



Disc Mower

EasyCut R 280
EasyCut R 320

(from serial no.: 856 285)

Order no.: 150 000 145 03 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: **Krone disc mower**
Type/types: **EasyCut R 280; EasyCut R 320**

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, 08.11.11

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

Year of manufacture:

Machine No.:

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2 Foreword

Dear Customer!

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

To be able to use the disc mower optimally, please read these operating instructions thoroughly before you start using the machine.

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 disc mower.



Note

In the operating instructions which follow, the disc mower 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

3 To this Document

3.1 Validity

These operating instructions apply to disc mowers of the series:
EasyCut R 280 and EasyCut R 320

3.1.1 Direction Information

Direction information in these operating instructions such as front, rear, right and left always applies in direction of travel.

3.2 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:

3.3 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.

4 Safety

4.1 Purpose of Use

The EasyCut disc mower is used for cutting crops growing on the ground (except maize).

4.2 Intended Use

The disc mower is built exclusively for customary use in agricultural work (intended 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.

4.3 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.

4.3.1 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.

4.3.2 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

4.3.3 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.

4.4 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 Use extreme caution when attaching or detaching implements onto or from the tractor!
- 12 Always attach ballast weights properly to the fixing points provided!
- 13 Observe permitted axle loads, gross weight and transport dimensions!
- 14 Check and attach transport equipment, such as lighting, warning devices and protective equipment!
- 15 Actuating mechanisms (cables, chains, linkages etc.) for remote controlled devices must be positioned in such a way that no movements are unintentionally triggered in any transport or working positions.
- 16 Ensure that implements are in the prescribed condition for on-road travel and lock them 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 Start up implements only when all safety 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!

- 26 Parts operated by external power (e.g. hydraulically) can cause crushing and shearing injuries!
- 27 Before leaving the tractor, lower the implement onto the ground, apply the parking brake, switch off the engine and remove the ignition key!

4.5 Attached devices

- 1 Use extreme caution when attaching or detaching implements onto or from the tractor!
- 2 Couple the respective application devices to the appropriate couplings (e.g. three-point suspension) only and secure them in a way (transport, use) that excludes inadvertent lifting or lowering of the device.
- 3 When using three-point linkage, the attachment categories of the tractor and the device (e.g. PTO speed, hydraulic system) must be coordinated!
- 4 When using the outside controls for the three-point linkage, do not step between the tractor and the device (risk of injury)!

4.6 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 tractor matches the permissible implement speed!
- 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. The machine may be worked on only if it is completely at standstill and if the flywheel is secured by the parking brake.
- 14 Cleaning, lubricating or adjusting PTO driven implements or the PTO shaft only with PTO disengaged, engine switched off and ignition key withdrawn! Secure the fly-wheel with the parking brake.
- 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)

4.7 Hydraulic system

- 1 The hydraulic system is pressurised!
- 2 When connecting hydraulic cylinders and motors, make sure the hydraulic hoses are connected as specified!
- 3 When connecting the hydraulic hoses to the tractor hydraulics, make sure that the hydraulics of both the tractor and the implement have been depressurized!
- 4 In the case of hydraulic connections between tractor and machine, the coupling sleeves and plugs should be marked to ensure a proper connection! If the connectors are interchanged, the function will be reversed (e. g. raising/lowering) - Risk of accident!
- 5 When searching for leaks, use suitable aids to avoid the risk of injury!
- 6 Liquids escaping under high pressure (hydraulic oil) can penetrate the skin and cause serious injury! Seek medical help immediately should injuries occur! Danger of infection!
- 7 Before working on the hydraulic system, depressurise the system and switch off the engine!
- 8 Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The new hoses must fulfill the technical requirements set by the manufacturer of the implement!

4.8 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 and carry it along with you.
 - Remove universal shaft on tractor side.
- 2 Observe the safety clearance behind the machine! In normal operation, the safety distance is 5m!
Observe the safety clearance laterally to the machine! It is 3 m in normal operation!
- 3 Regularly check that nuts and bolts are properly seated and tighten if necessary!
- 4 When performing maintenance work with the machine raised, always secure it with suitable supporting elements!
- 5 Oils, greases and filters must be disposed of correctly!
- 6 If protective devices and guards are subject to wear, check them regularly and replace them in good time!
- 7 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!
- 8 When replacing working tools with cutting edges, use suitable tools and gloves!
- 9 Repairs to pretensioned energy stores (springs, accumulators, etc.) require adequate knowledge and correct assembly tools and may be performed in specialist workshops only!

4.9 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.

4.10 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.

4.11 Working in the vicinity of power transmission lines

- 1 Always take great care when working under or in the vicinity of power transmission lines.
- 2 Ensure that when in operation or being transported, the machine cannot exceed a total height of approx. 4m.
- 3 If there is any need to travel under overhead lines, the machine operator must request information on the rated voltage and the minimum height of the overhead lines from the overhead line operator.
- 4 Always keep the safety distances according to the table.

Rated voltage kV	Safe distance from overhead lines m
To 1	1
Above 1 to 110	2
Above 101 to 220	3
Above 220 to 380	4

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Machine Description

5 Machine Description

5.1 Machine overview

EasyCut R 280 / EasyCut R 320

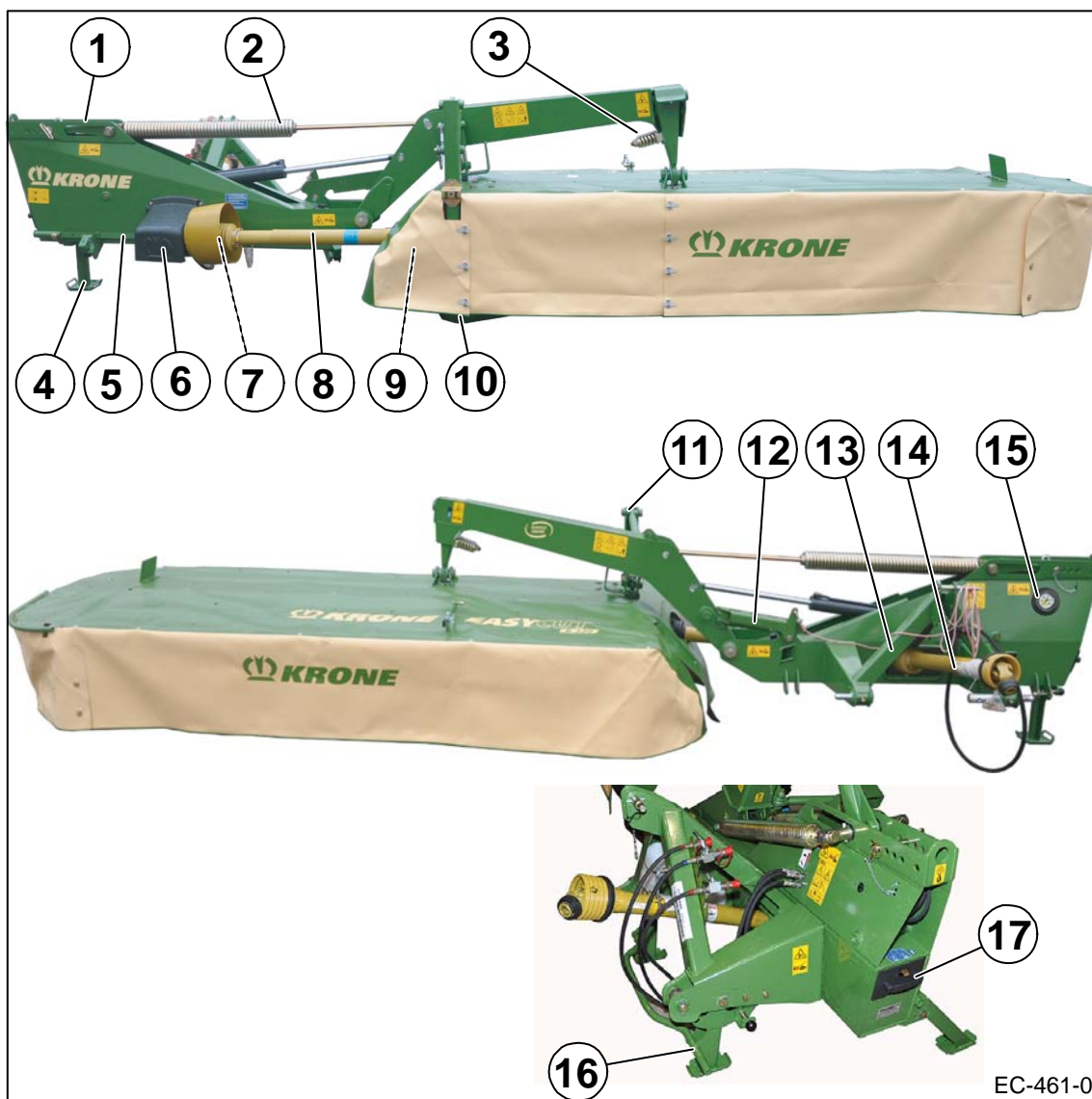


Fig. 1

Pos.	Description	Pos.	Description
1)	Adjusting lever for relief springs	2)	Relief springs
3)	Pole protection mechanism	4)	Parking support (series)
5)	Blade key*)	6)	Main gearbox
7)	Friction clutch	8)	Intermediate universal shaft
9)	Mower drive gearbox	10)	Cutter bar
11)	Lateral suspension arms	12)	Locking
13)	Three-point linkage	14)	Drive universal shaft
15)	Pressure gauge, for the hydraulic spring relief design*)	16)	Additional parking supports *)
17)	Tool box		

*) optional

Machine Description

5.2 Identification Plate

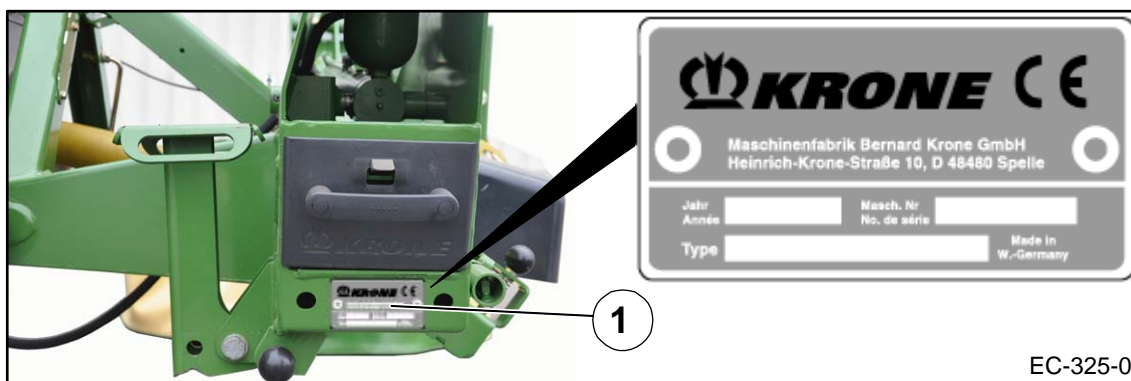


Fig. 2

The machine data are located on the type plate (1). The type plate is attached on the face side on the three-point block.

5.3 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.

5.3.1 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

5.4 Introduction

The disc mower is equipped with all 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!



WARNING!

Danger of injury on machine parts if danger zones have not been marked when warning pictograms are missing, damaged or illegible.

Danger of injury due to dangerous parts and other residual risks as users or third parties enter the danger area or reach into it as they are not aware of the danger.

- Immediately replace damaged or illegible labels.
- Following repair work, always attach appropriate adhesive safety labels 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.

5.4.1 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").

5.4.2 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.

Machine Description

5.5 Position of the Adhesive Safety Stickers on the Machine

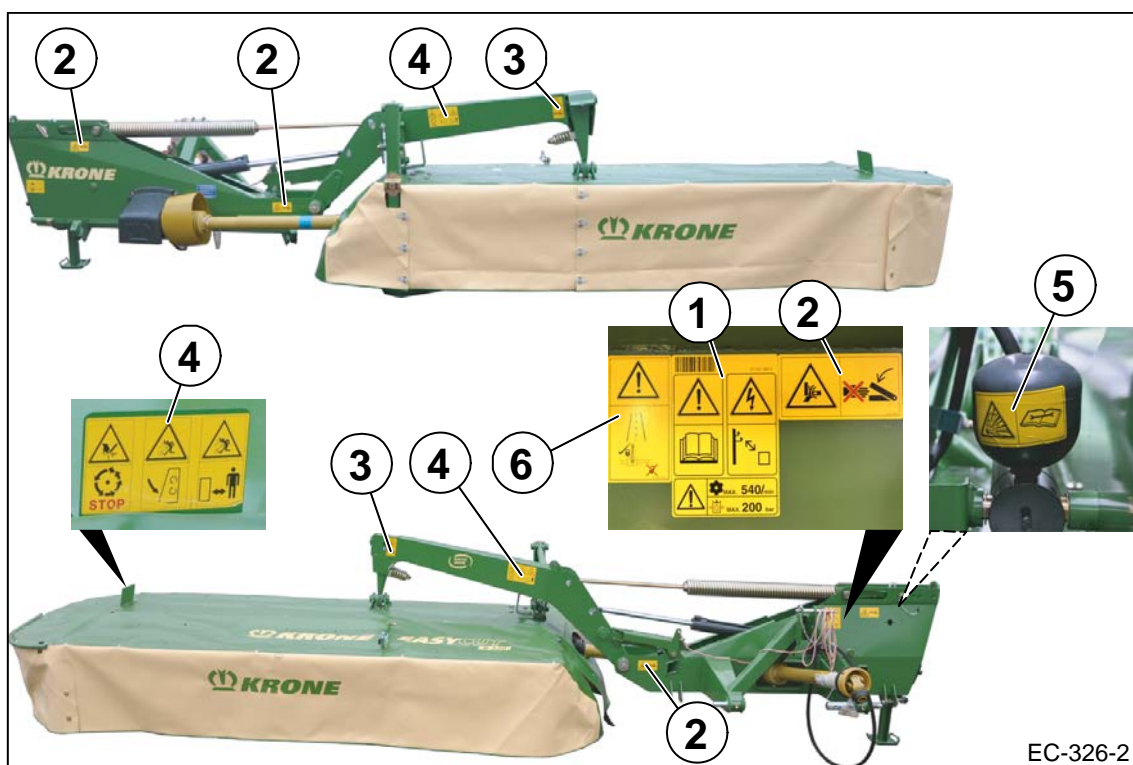
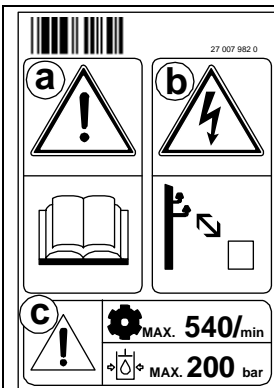


Fig. 3

EC-326-2

1 Order No. 27 007 982 0 (1x)

With green main gearbox



a)

Danger from improper operation and ignorance

Improper operation and ignorance of the machine as well as inappropriate behaviour in dangerous situations cause a danger to life for operators and third parties.

- Prior to start-up, read and observe operating instructions and safety instructions.

b)

Danger from electric shock.

Serious injuries due to voltage flashover when machine parts come too close to high-voltage transmission lines.

- Keep the stipulated safety distance to electrical high-voltage transmission lines.

c)

Danger when exceeding the maximum permissible PTO speed or the maximum permissible operating pressure.

When exceeding the permissible PTO speed, machine parts may be destroyed or be flung out uncontrollably.

When exceeding the maximum permissible operating pressure, hydraulic parts may be damaged.

Thus persons may get seriously hurt.

- Note the permissible PTO speed.
- Note the permissible operating pressure.

Machine Description

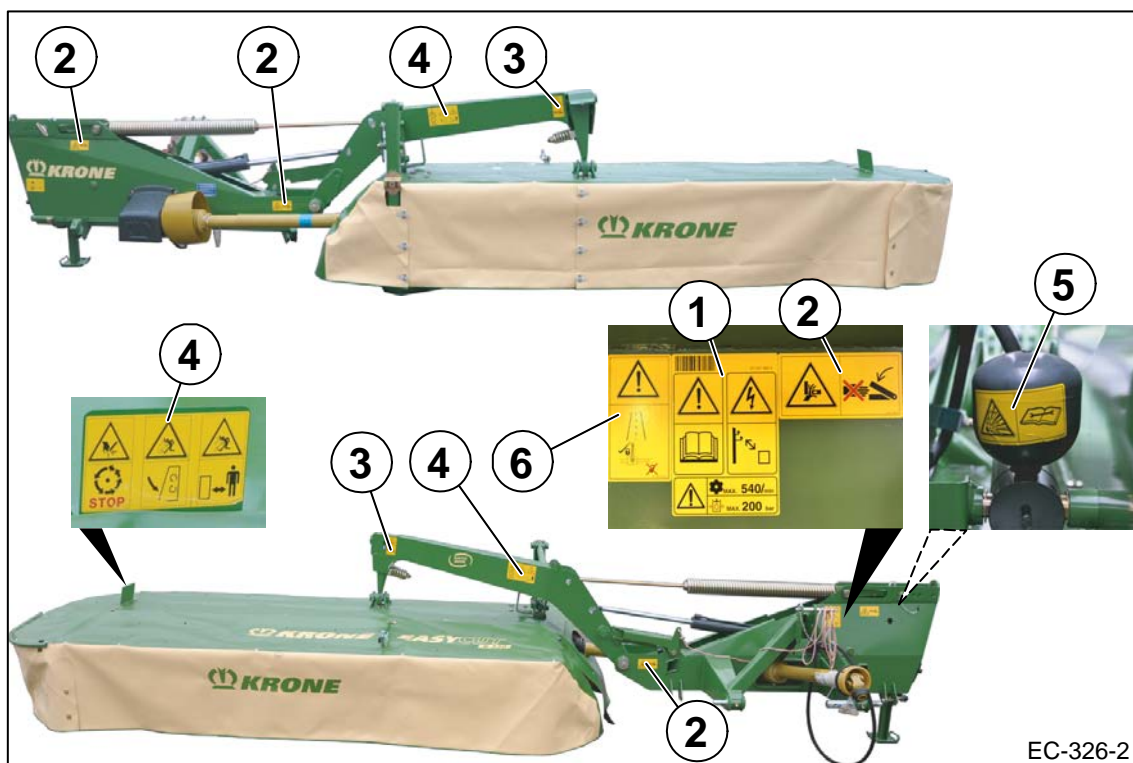
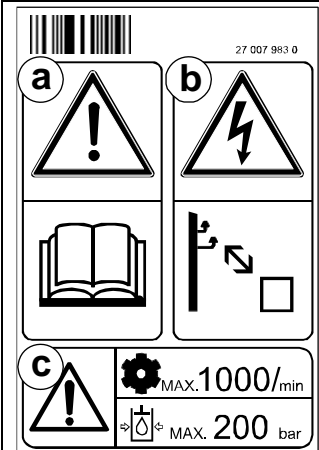


Fig. 4

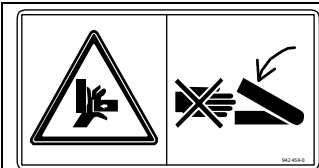
EC-326-2

1 Order No. 27 007 983 0 (1x)

With beige main gearbox

	<p>a) Danger from improper operation and ignorance Improper operation and ignorance of the machine as well as inappropriate behaviour in dangerous situations cause a danger to life for operators and third parties.</p> <ul style="list-style-type: none"> • Prior to start-up, read and observe operating instructions and safety instructions. <p>b) Danger from electric shock. Serious injuries due to voltage flashover when machine parts come too close to high-voltage transmission lines.</p> <ul style="list-style-type: none"> • Keep the stipulated safety distance to electrical high-voltage transmission lines. <p>c) Danger when exceeding the maximum permissible PTO speed or the maximum permissible operating pressure. When exceeding the permissible PTO speed, machine parts may be destroyed or be flung out uncontrollably. When exceeding the maximum permissible operating pressure, hydraulic parts may be damaged. Thus persons may get seriously hurt.</p> <ul style="list-style-type: none"> • Note the permissible PTO speed. • Note the permissible operating pressure.
---	---

2) Order no. 942 459 0 (4x)

	<p>Danger due to crushing or shearing Risk of injury due to crushing or shearing points on moving machine parts.</p> <ul style="list-style-type: none"> • While parts are moving, never reach into areas where there is a risk of being crushed.
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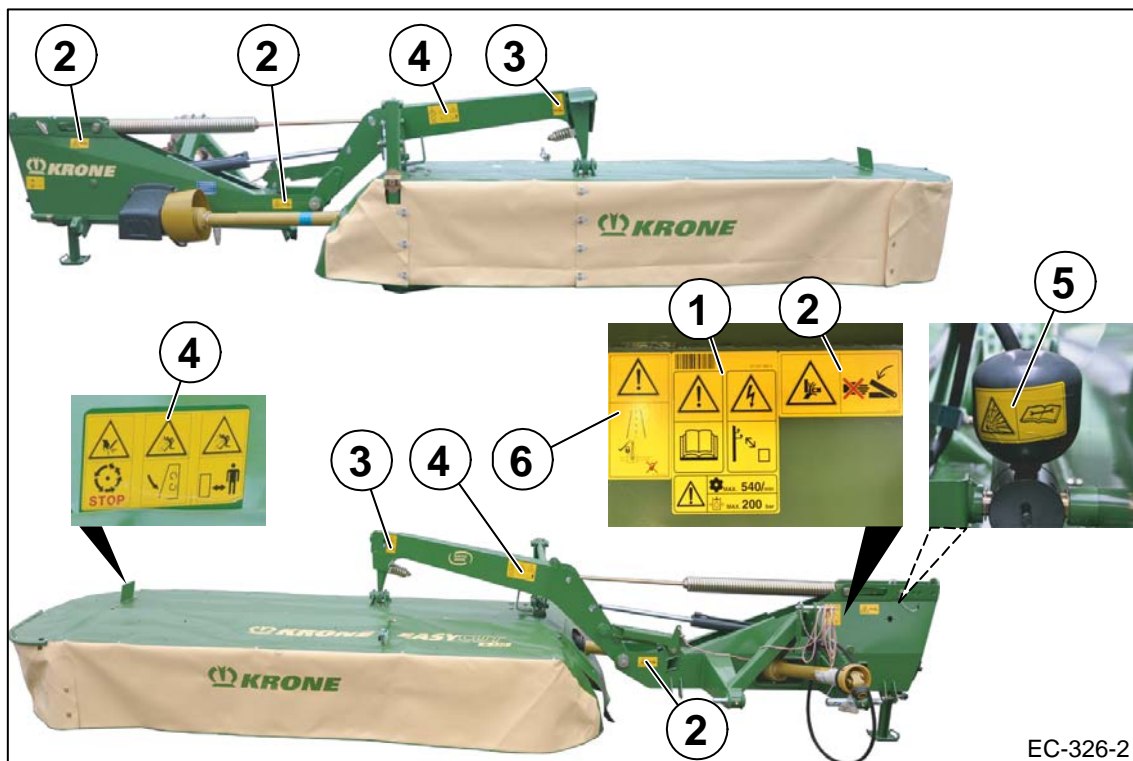





Fig. 5

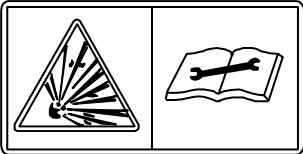
3) Order no. 942 196 1 (2x)

	<p>Danger due to crushing or shearing Risk of injury due to crushing or shearing points on moving machine parts.</p> <ul style="list-style-type: none"> • While parts are moving, never reach into areas where there is a risk of being crushed.
--	---


4) Order No. 939 576 0 (3x)

a)	b)	c)	<p>a)</p> <p>Danger from turning machine parts</p> <p>There is a risk of injury as machine parts may still continue to run for a certain time after being switched off</p> <ul style="list-style-type: none"> Do not touch any moving parts of the machine. Wait until the machine parts have come to a complete stop. <p>b)</p> <p>Danger from objects being flung out</p> <p>When the machine is running, there is a risk of injury as objects may be flung out uncontrollably.</p> <ul style="list-style-type: none"> Before start-up, move guards into protective position. <p>c)</p> <p>Danger from objects being flung out</p> <p>When the machine is running, there is a risk of injury as objects may be flung out uncontrollably.</p> <ul style="list-style-type: none"> Keep your distance when the machine is running.
			

5) Order no. 939 529 0 (1x)

	<p>Danger due to high-pressure liquid.</p> <p>The accumulator is under gas and oil pressure. If the accumulator is not removed or repaired properly, there is a risk of injury.</p> <ul style="list-style-type: none"> Before removing and repairing the accumulator, follow the information in the operating instructions. The accumulator may be removed and repaired by a service centre only.
---	--

6) Order No. 27 002 459 0 (1x)

	<p>Danger due to machine parts that fold down or swivel out unintentionally</p> <p>Danger of injury for road users due to machine parts that fold down or swivel out unintentionally.</p> <ul style="list-style-type: none"> Each time before transporting the machine or driving on roads, make sure that the stop cock is closed.
---	---

Machine Description

5.6 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.

EasyCut R 280

Dimensions	
Working width	2730 mm
Transport height	3500 mm
Transport width	2013 mm
Acreage output	3.0 – 3.5 ha/h
Dead weight	approx. 780 kg

Hydraulic connections	
Raises and lowers the mowing unit	1x single-action control unit
With hydraulic spring compensation design	1x double-action control unit

Minimum tractor requirements	
Power requirement	40 kW (55 HP)
PTO speed	max. 540 rpm

Equipment of the machine (series)	
Understeering coupling	Cat. II
SafeCut	Series
Blade quick fastener or blade screw connection	Series
Mechanical spring relief	Series
Number of mowing discs	4 units
Number of mower drums	2 units

Equipment of the machine (optional)	
Hydraulic spring relief	
Four parking supports	
High cut skids	

EasyCut R 320

Dimensions	
Working width	3160 mm
Transport height	3900 mm
Transport width	2013 mm
Acreage output	3.5 – 4.0 ha/h
Dead weight	approx. 840 kg

Hydraulic connections	
Raises and lowers the mowing unit	1x single-action control unit
With hydraulic spring compensation design	1x double-action control unit

Minimum tractor requirements	
Power requirement	50 kW (68 HP)
PTO speed	max. 540 rpm

Equipment of the machine (series)	
Understeering coupling	Cat. II
SafeCut	Series
Blade quick fastener or blade screw connection	Series
Mechanical spring relief	Series
Number of mowing discs	4 units
Number of mower drums	2 units

Equipment of the machine (optional)	
Hydraulic spring relief	
Four parking supports	
High cut skirts	

Machine Description

5.7 Lubricants

5.7.1 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.

	Filling Quantity [litres]	filtered oils Brand name	Bio-degradable lubricants Brand name
Main gearbox	0.5 l	SAE 90	On request
Mower Drive Gearbox	0.3 l		
Cutter bar EasyCut R 280	6.0 l		
Cutter bar EasyCut R 320	7.0 l		

6 Commissioning**6.1 First installation**

The document "Assembly Instructions" describes how to install the device for the first time.

6.2 Special Safety Instructions**WARNING!**

When performing repair, maintenance or cleaning work on the machine, or in case of technical intervention, drive elements may start moving. Thus there is a risk of serious injuries or death.

- Switch off tractor engine, remove the ignition key and carry it with you.
- Secure the tractor against accidental start-up and against rolling.
- Wait until all machine parts have come to a complete stop and have been cooled down completely.

**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.

**Danger! - Missing guard cloths**

Effect: Lebensgefahr, schwere Verletzungen oder schwere Schäden an der Maschine.

- Before starting up the machine for the first time, install all supplied guard cloths on the machine.

Commissioning

6.3 Mounting onto the Tractor

6.3.1 Clutching points

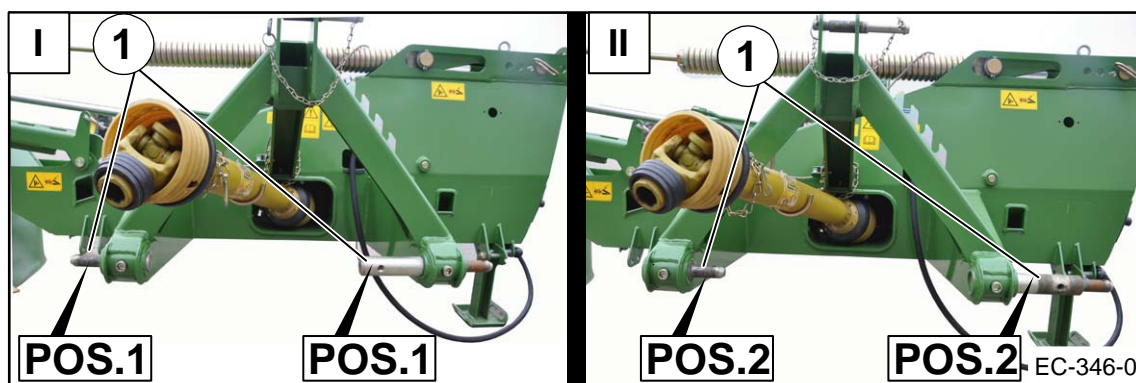


Fig. 6

There are 2 possibilities for attaching the mowing unit.

I)

The steerable pinions are designed according to cat. II. Normally, the mowing unit is hooked to the tractor in pos. 1. When using broad tractors or when working in combination with front mowing units (working width of approx. 2.8 - 3.2 m), the mowing unit should be attached at pos. 2.



CAUTION!

Only assemble the machine directly to the three-point suspension of the tractor.
It is not permitted to assemble the machine to a "Quick-Hitch frame" (U-frame coupler).

6.4 PTO shaft

6.4.1 Length adjustment



Danger! - Inadvertent uncoupling of the machine during road travel or work.
 Effect: Danger to life, serious injuries or serious damage to the machine.

- Use extreme caution when attaching or detaching devices to or from the tractor! The accident prevention regulations must be complied with absolutely.
- The lower suspension arms on the tractor must be fixed in position with the retaining chains or bars to prevent the machine from swivelling out during transport or work. If the lower suspension arms (1) are equipped with catch hooks, the following items must be taken into consideration:

Especially in the headland position, high forces develop in the lower suspension arm bolts (3) that act upwards in the left-hand hook.

For this reason, the catch hooks must be in a flawless condition.

Additionally, the catch hooks must be secured in the provided locking hole (4) against unwanted opening after the machine has been connected to the tractor.

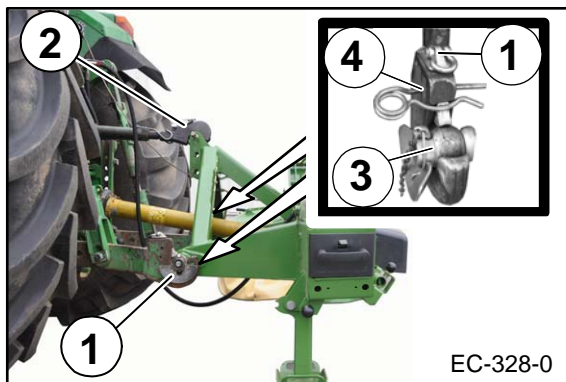


Fig. 7

- Attach the machine onto the lower suspension arm (1) of the tractor.
- Hook the top link (2) into the upper hole of the 3-point support.

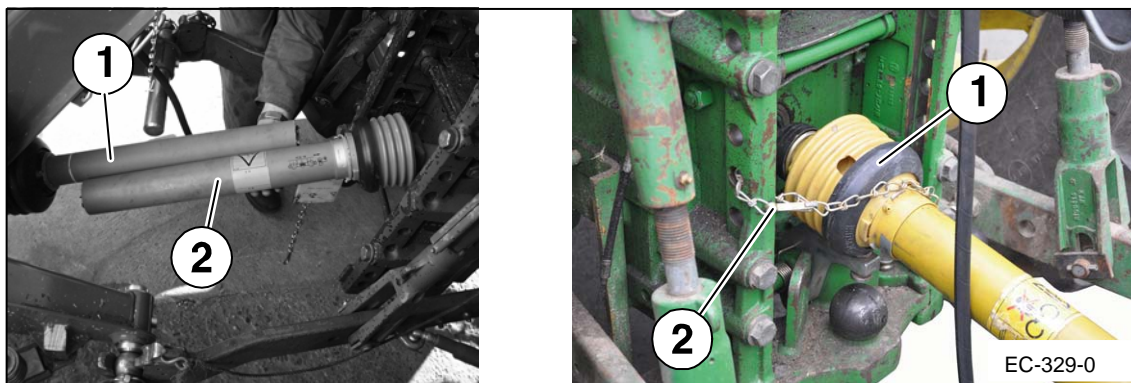


Fig.8

The length of the PTO shaft (1) must be adjusted.

- Disassemble the PTO shaft.
- Install each half (1) and (2) on the tractor and machine side respectively.
- Check the special section tubes and guard tubes.
- Shorten the special section tubes and guard tubes to such an extent that the PTO shaft can still be pushed together by at least 150 mm in its shortest operating position. (This clearance is required to be able to push together the PTO shaft when the pole protection mechanism is triggered.)
- **Coverage of at least 200 mm (shift length) must be ensured for the special section tubes and guard tubes in every operating position.**
- For additional operating instructions refer to the operating instructions of the PTO shaft manufacturer.



Caution! - Swivel range of the PTO shaft

Effect: Damage to the tractor or the machine

- Check the swivel range and clearance of the PTO shaft!



Caution! - Changing the tractor

Effect: Damage to the machine

When using the machine for the first time and whenever changing the tractor Check PTO shaft for the correct length. If the length of the PTO shaft does not match the tractor, always observe the chapter entitled "Adjusting the length of the PTO shaft".

7 Start-up**7.1 Mounting onto the Tractor****Danger! - Inadvertent uncoupling of the machine during road travel or work.**

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

- Use extreme caution when attaching or detaching devices to or from the tractor! The accident prevention regulations must be complied with absolutely.
- The lower suspension arms on the tractor must be fixed in position with the retaining chains or bars to prevent the machine from swivelling out during transport or work. If the lower suspension arms (1) are equipped with catch hooks, the following items must be taken into consideration:

Especially in the headland position, high forces develop in the lower suspension arm bolts (3) that act upwards in the left-hand hook.

For this reason, the catch hooks must be in a flawless condition.

Additionally, the catch hooks must be secured in the provided locking hole (4) against unwanted opening after the machine has been connected to the tractor.

**Warning - Impairment of the steerability of the tractor.**

Effect: Damage to the tractor or the machine.

The attachment of implements at the front and rear must not cause exceedance of the max. permissible weight, of the permissible axle loads and of the carrying capacities of the tractor tyres. Even with a fitted rear-mounted accessory unit, the front axle must always be loaded with a minimum 20% service weight of the tractor.

Make sure that these prerequisites are met prior to driving.

**CAUTION!**

Only assemble the machine directly to the three-point suspension of the tractor.

It is not permitted to assemble the machine to a "Quick-Hitch frame" (U-frame coupler).

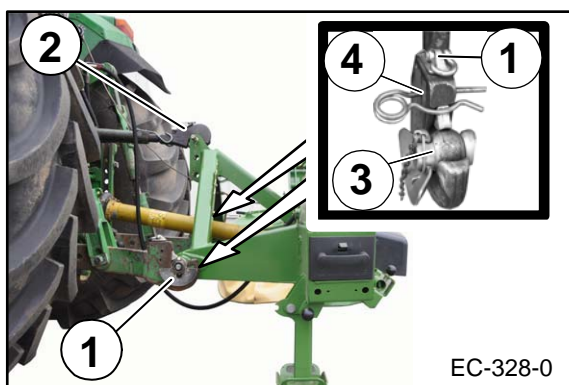


Fig. 9

- Attach the machine onto the lower suspension arm (1) of the tractor.
- Hook the top link (2) into the upper hole of the 3-point support.

7.2 Hydraulics

7.2.1 Special Safety Instructions



Warning ! - Connection of the hydraulic line

Effect: severe injuries due to penetration of hydraulic oil under the skin.

- When connecting the hydraulic hoses to the hydraulic system of the tractor, the system must be relieved of the pressure on either side.
- Due to the risk of injury when searching for leaks, always use suitable tools and wear protective goggles.
- Seek medical help immediately should injuries occur! Danger of infection.
- Depressurise prior to uncoupling the hydraulic hoses and working on the hydraulic system!
- Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The replacement hoses must fulfil the technical requirements set by the equipment manufacturer.

7.2.2 Connecting the hydraulic lines



Warning - If the hydraulic hoses are interchanged when connecting them to the hydraulic system of the tractor, the functions will be interchanged as well.

Effect: Injuries, serious damage to the machine

- Identify the hydraulic connections.
- Always ensure correct connection between the machine and the tractor.
- When engaging the hydraulic hose, the hydraulic control unit must be in float position or in "lowering" position.



Caution! - Soiling of the hydraulic system

Effect: Damages to the machine

- When connecting the quick couplings, ensure that these are clean and dry.
- Note chafing areas or points of contact.



Danger! - Unintended actions triggered.

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

- The actuating rope must be routed in such a way that no movements are unintentionally triggered in any transport or working positions.
- The actuating rope must not come into contact with the tractor tyres
- Note chafing areas or points of contact.

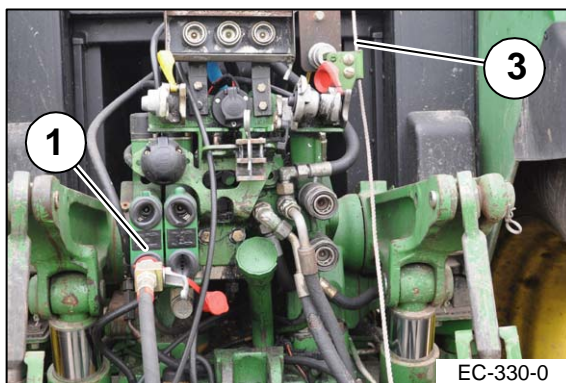


Fig. 10

- Set the control units of the tractor to float position.
- Turn off the tractor and secure it against the possibility of rolling back.
- Connect the hydraulic coupling of the machine to a single-action control unit of the tractor.
- Put down the actuating rope (3) in the tractor cab.

With hydraulic spring relief design

- Connect the hydraulic couplings (red 3/blue 3) of the machine to a double-action control unit of the tractor.

7.3 PTO shaft



Danger! - Rotating PTO shaft

Effect: Danger to life or serious injuries

- Install or detach the PTO shaft only with the engine switched off and the ignition key removed.
- Secure the tractor against rolling.
- Make sure that the PTO shaft is coupled properly (the lock of the PTO shaft must have snapped in).
- Make sure that the protective devices are attached properly.
- Never use a PTO shaft, the protective devices of which have not been attached.
- Replace damaged protective devices immediately
- Attach the safety chain of the PTO shaft so that the guard tube does not rotate simultaneously with the PTO shaft.



Danger! - Incorrect PTO speed

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

- This machine may only be driven with a max. PTO speed of 540 rpm.
- Before switching on the PTO, make sure that you have selected the correct PTO speed.



Caution! - Swivel range of the PTO shaft

Effect: Damage to the tractor or the machine

- Check the swivel range and clearance of the PTO shaft!

7.4 Install the PTO shaft

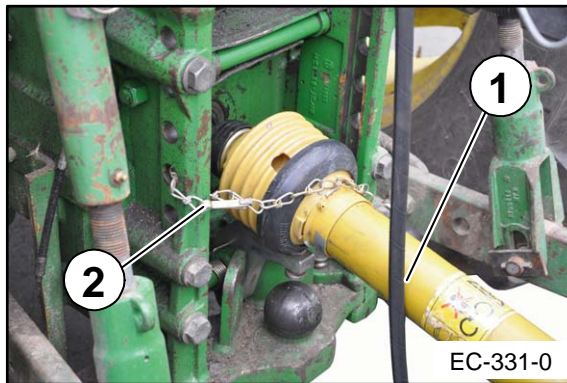


Fig. 11

- Slide the PTO shaft (1) onto the PTO end of the tractor and secure it.
- Secure the PTO shaft guard against turning with the retaining chain (2).

7.5 Intermediate PTO shaft

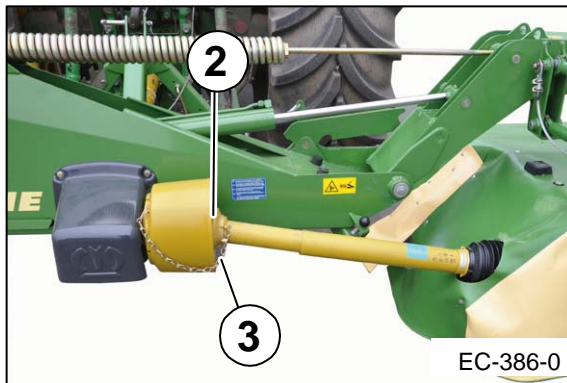


Fig. 12

The intermediate PTO shaft for the mowing unit drive is coupled to the gearbox of the three-point block via the friction clutch (2). Fasten the retaining chain (3) to the mower.



Note - Friction Clutch

Effect: Conserve functionality and increased service life

- The friction clutch (2) must be vented prior to commissioning and once a year prior to harvesting. (See section Before the Start of the New Season "Friction clutch")
-

7.6 Swivelling parking support into transport position

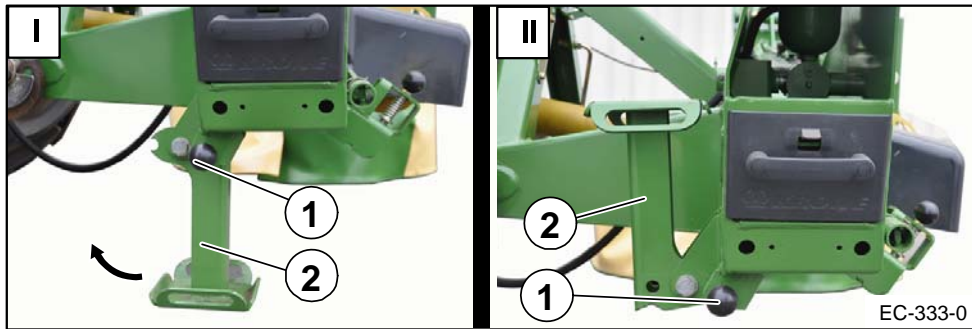


Fig. 13

I) Parking position

II) Transport position

After the machine is attached, swivel the parking support into transport position.

- Use the three-point hydraulic system to raise the parking support somewhat.
- Swivel the parking support (2) into transport position and lock it in place with the bolt (1).

7.6.1 Four supports (optional)

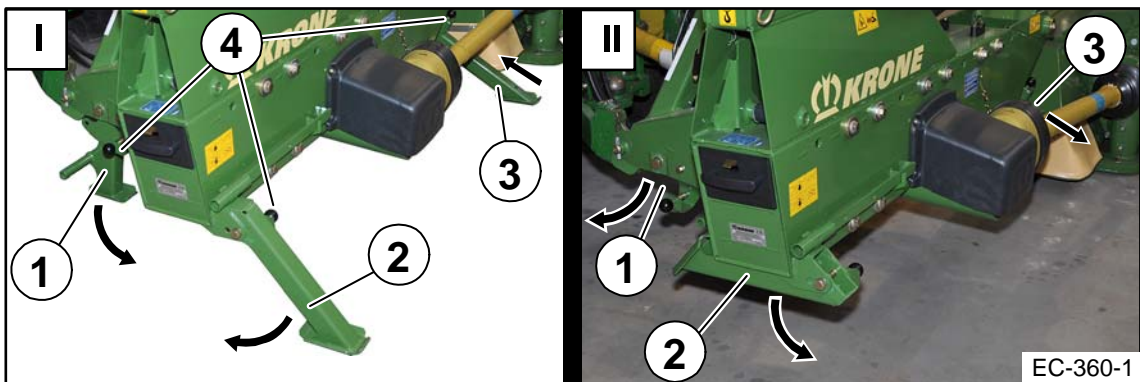


Fig. 14

I) Parking position

II) Transport position

- Raise the machine via three-point hydraulics until the parking supports can be swivelled.
- Swivel the parking support front (1) back and lock it via bolt (4).
- Swivel the parking support rear (2) to the front and lock it via bolt (4).
- Insert the parking support rear (3) completely and lock it via bolt (4).

8 Driving and Transport**WARNING! - Transport travel on roads**

Accidents may occur when the following points are not observed during transport travel on roads. Thus there is a risk of serious injuries or death.

- When driving on public roads, the provisions of the Road Traffic Licensing Regulations must be adhered to (lighting, identification, axle loads, permissible measurement of additional housing component, etc.)!
- When being transported on public roads, the mower must be lifted.
- In the transport position of the mower, always observe the larger height of the vehicle.
- Riding on the mower is not permitted.

**DANGER! - Transport / Road Travel**

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

- In transport position, always make certain that the locking mechanism (2) has snapped into place.

8.1 Switching from working position to transport position



WARNING!

During the swivelling operation of the mower, persons may be gripped by the mower and be seriously injured.

- Before swivelling the mower up into transport position, turn off the PTO shaft.
- Do not swivel up the machine until
 - all machine parts have come to a complete stop.
 - there is no one in the swivel range.

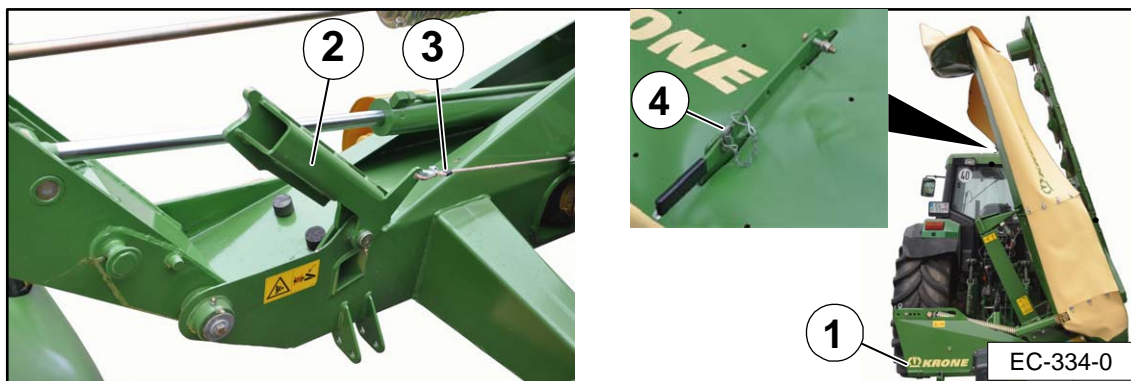


Fig. 15

For transport / road travel, the disc mower must be folded up.

Before road travel, make certain

- the PTO operation is turned off.
- the folding protection is locked in the protective position and secured with spring cotter pin (4).
- the parking support(s) are swivelled into transport position and secured, refer to chapter Start-up “Swivelling Parking Support into Transport Position”.
- the mowing unit is in transport position, refer to chapter Operation “From Working Position to Transport Position”.
- the locking (2) is lowered and locked by the locking of the outriggers.

9 Operation

9.1 Before mowing



DANGER! - Using the machine for work

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

- The glide skids must rest on the ground before start-up and during work
- Maintain an adequate safety distance from the cutting tools during operation
- There is danger of foreign objects being forcibly ejected even when the machine is operated properly. Persons must therefore be directed out of the danger zone of the machine.
- Special care should be taken when working near roads and buildings)

9.2 Mowing

- Swivel parking supports into transport position.
- Move the machine to the working position.
- Block the rear power lift.
- Fold down the safety device.
- Set the lateral guides correctly.
- Before switching on the PTO make sure that the selected RPM and the direction of rotation of the tractor PTO agrees with the direction of rotation of the machine and its permitted maximum RPM.
- Before driving into the crop engage the tractor PTO in neutral gear and slowly bring it up to the nominal machine RPM.
- Drive into the crop.
- Check the mowing unit suspension during mowing.
- To ensure a clean cut, adjust the driving and cutting speeds to the prevailing conditions (soil condition, state of the crop, height, density).



Note! - While mowing

Effect: Proper use of the machine

- Leave control unit(s) in the "Lower" or "Float position" position for work.
-

9.2.1 Folding down the Safety Device



DANGER! – Stones forcibly projected during operation

Effect: Danger to life or serious injuries.

- Check the guard cloths regularly. Worn or damaged guard cloths must be replaced!
- The protective equipment on the mowing unit, e.g. cloths and hoods, protects against flying stones and similar objects, and also prevents access to dangerous parts. Because of this, you must always move it to its protective position before starting work
- Fold the side plate(s) down and secure with twist locks before use

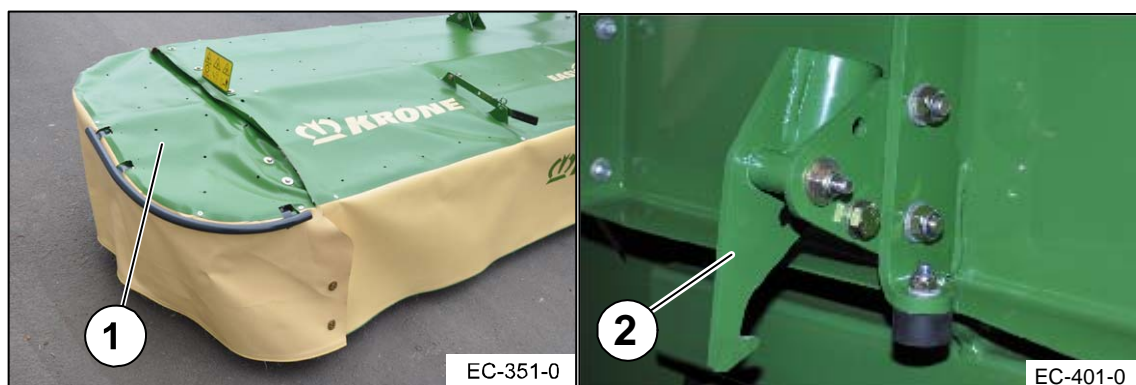


Fig. 16

Ensure before use that the side panel (1) of the machine is folded down and that it is secured by the locking (2). Adjust the locking, if necessary (refer to chapter Settings “Adjust Locking”).



Note

The side panel (1) and the locking (2) must be adjusted in that way that

- the side panel (1) folds down independently when swivelling the machine from transport position to working position and that it is secured by the locking (2)
- the side panel (1) slides independently from the locking when swivelling the machine from working position to transport position and that the side panel is folded over to transport position. Thus the transport height is reduced.

9.2.2 Adjusting the lateral suspension arm



Danger! - Height adjustment of the lower suspension arms on the tractor

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

- Switch off the PTO.
- Secure the tractor against rolling.
- Do not step into the space between the tractor and the machine.

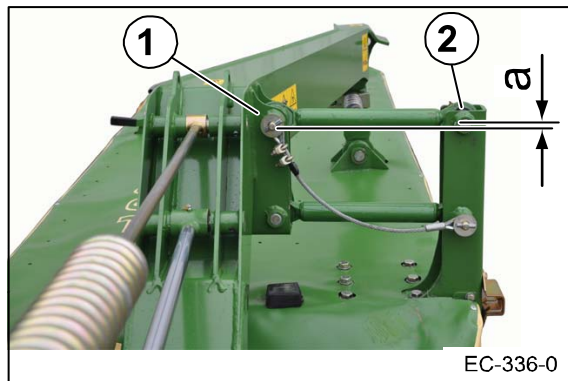


Fig. 17

During mowing, the height of the headstock must be adjusted so that the lateral suspension arms (1) in the front area (1) and the rear area (2) are at the same level (**a= ca. 0 mm**).

The adjustment is made through the height adjustment of the lower suspension arms on the tractor.

9.3 From transport into working position



Danger! - Lowering the mowing unit into the working position

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

- Lower the mowing unit only when you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.
- Switch on the PTO only when the mowing unit is resting on the ground.



Danger! - Check whether the locking mechanism (1) is folded down completely.

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

The folded-down locking mechanism secures the mowing unit against inadvertent lifting while the machine is running.



Fig. 18

- Activate the single-action control unit until there is no tension on the locking.
- Pull the actuating rope tight and keep it until the locking (1) is released.
- Move the single-action control unit to float position to lower the mowing unit.
- Release the actuating rope.

9.3.1 Headland Position



Danger! - Lifting the mowing unit from the working position into headland position

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

- Lift the mowing unit into headland position only when you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.



Danger! - Check whether the locking mechanism (1) is folded down completely.

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

The folded-down locking mechanism secures the mowing unit against inadvertent lifting while the machine is running.

Prerequisite:

- The locking is folded down and the operating cable is not tensioned.

Moving the mowing unit from working position to headland position

- Activate the single-action control unit until the mowing unit is raised into headland position.

Lowering the mowing unit from headland position to working position

- Move the single-action control unit to float position until the mowing unit is lowered into working position.

9.4 Switching from working position to transport position

Prerequisite:

- The PTO shaft drive is turned off.
- The parking supports are swivelled into transport position and they are locked by bolts, refer to chapter Start-up “Swivelling Parking Support into Transport Position”.
- To raise the locking, tighten the actuating rope and keep it tight.
- Activate the single-action control unit until the mowing unit is raised into transport position.
- Release the actuating rope.

9.5 Swivelling parking support into transport position



Caution! - Parking support(s) not swivelled into transport position before road/transport travel and for work!

Effect: Damage to the machine

- Make certain before road/transport travel and for work that the parking support(s) is/are raised or folded in and secured in place with a bolt!

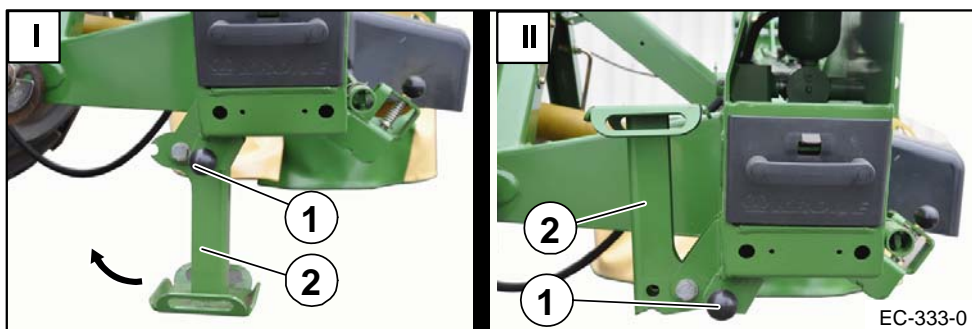


Fig. 19

I) Parking position

II) Transport position

Lift the parking support (2) into the working position of the disc mower and lock it in place with the bolt (1).

9.5.1 Four supports (optional)

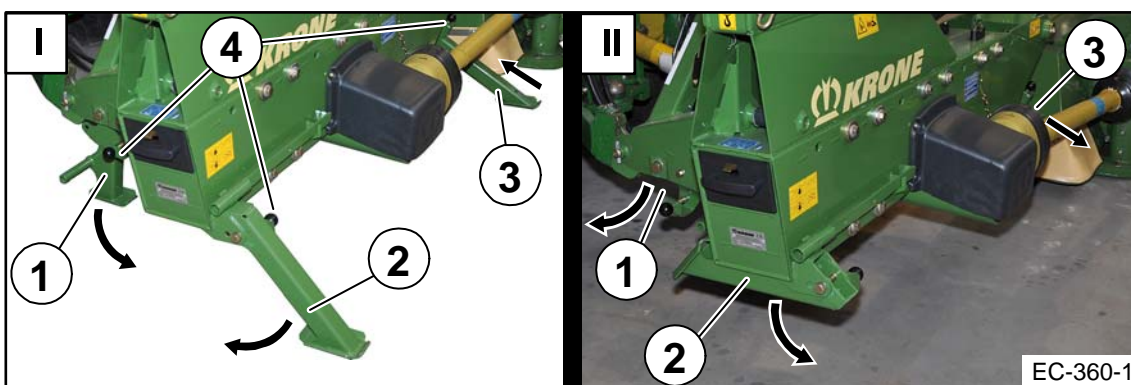


Fig. 20

I) Parking position

II) Transport position

- Raise the machine via three-point hydraulics until the parking supports can be swivelled.
- Swivel the parking support front (1) back and lock it via bolt (4).
- Swivel the parking support rear (2) to the front and lock it via bolt (4).
- Insert the parking support rear (3) completely and lock it via bolt (4).

9.6

Detaching the machine**Danger! - Unexpected movements of the machine**

Effect: Danger to life, serious injuries

- No one is permitted inside the danger zone.
- Park the machine on a solid and even surface.
- You should not unhitch the machine until the engine has been switched off and the ignition key has been removed.
- Secure the tractor against rolling.
- Use extreme caution when attaching implements to or detaching them from the tractor! The accident prevention regulations must be complied with absolutely.
- When connecting the hydraulic hose to and disconnecting it from the hydraulic system of the tractor, the tractor system as well as the machine system must be depressurised! Move the appropriate control valves into the flow position.
- When detaching the machine, do not walk between the tractor and the machine!

**Danger! - Setting on the compensation springs**

Effect: Danger to life or serious injuries

- The compensation springs should be adjusted only while the machine is in the transport position. In the working position the compensation springs are subject to high tensile stress.
- Severe injury can be caused if the compensation springs are removed while in the working position.
- The lower threaded blocks on the compensation springs must be fully screwed in.

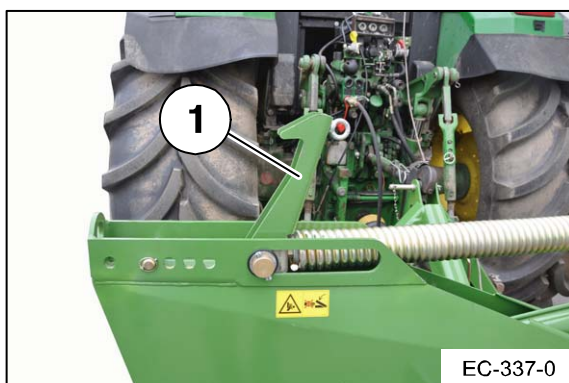


Fig. 21

- **Disable the compensation springs by reversing the adjusting lever (1) (only possible in transport position).**
- Move the mower into the working position.

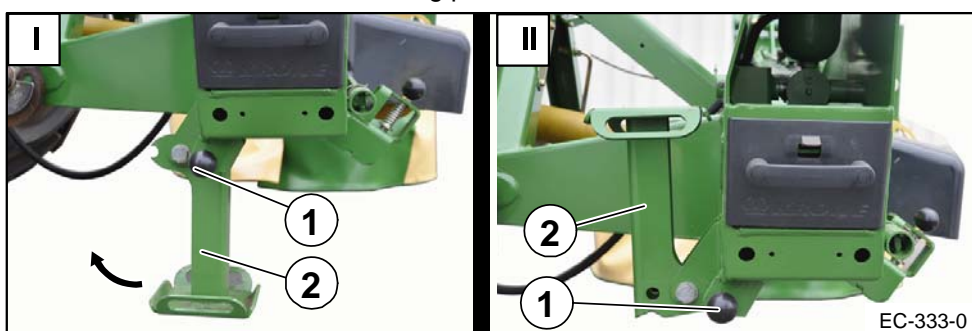


Fig. 22

I) Parking position

II) Transport position

- Lower the parking support (2) and secure it in place with the bolt (3).
- Via the tractor hydraulics, lower the machine to the ground.

9.6.1 Four supports (optional)

**CAUTION! Danger of tipping**

Machine may be lowered into transport position only with additionally attached parking supports on a firm and level base (concrete/paving).

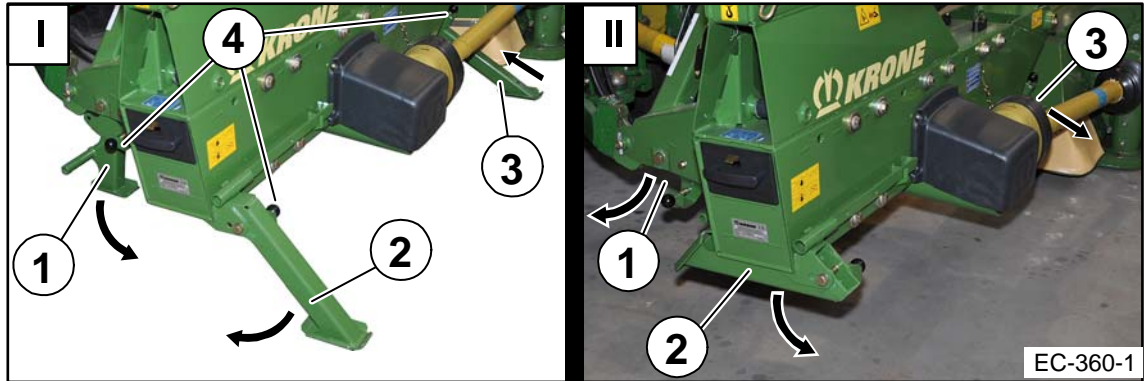


Fig. 23

I) Parking position

II) Transport position

With “four supports” option, the mowing unit can be put down both in working position and in transport position.

- Swivel down parking support front (1) and secure with bolt (4).
- Swivel down parking support rear (2) and secure with bolt (4).
- Completely push out the parking support rear (3) and secure with bolt (4).
- Lower the machine via tractor hydraulics onto the ground.

Operation

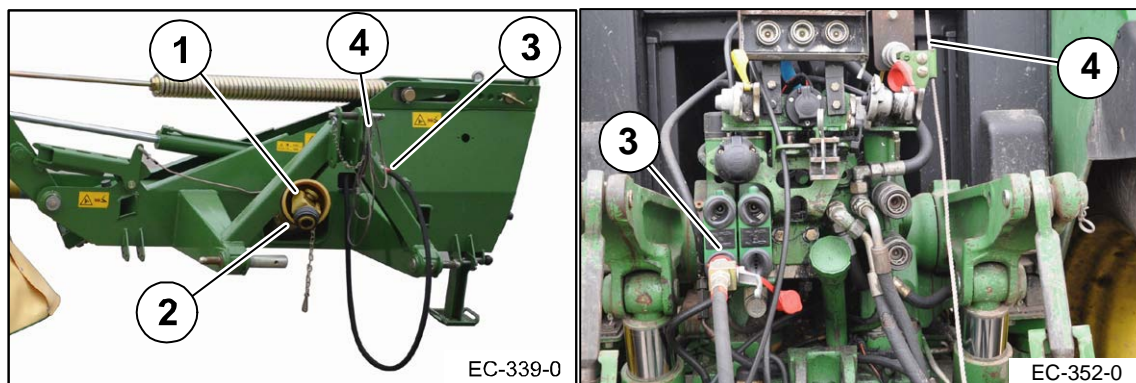


Fig.24

- Remove the PTO shaft (1) from the tractor and place it onto the storage surface (2).
- Disconnect the hydraulic hose (3) from the tractor (set the dust cap in place).
- Remove the synthetic rope (4) from the tractor.
- Release the upper link and pull out the bolt on the machine side or unhook the upper link.
- Pull off the lower suspension arm / release the catch hook.

10 Settings



DANGER! - Unexpected movement of the machine

Effect: Danger to life or serious injuries.

- Setting tasks must only be performed when the drive is switched off and the engine is at a standstill!
- Switch off engine.
- Remove the ignition key and carry it with you.
- Secure the tractor against rolling away.

10.1 Adjusting the cutting height

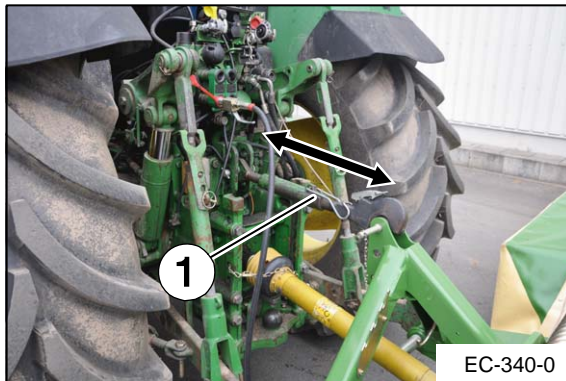


Fig. 25

The cutting height is adjusted via the top link (1).

To do this:

- Swivel the parking support(s) down
- Lower the machine into working position and set it down on the parking support(s).
- Rotate the top suspension arm (1).
- Fold in the parking support(s).

Top suspension arm longer = bigger cutting height

Top suspension arm shorter = smaller cutting height

10.2 Adjust Locking

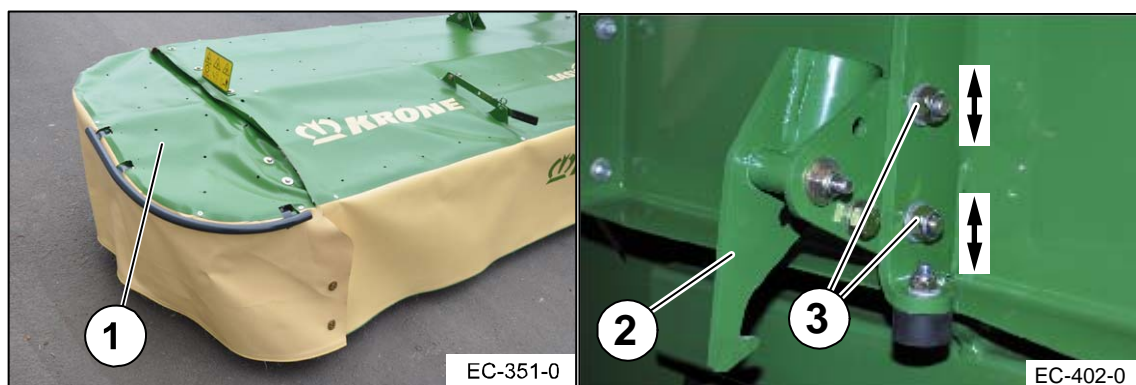


Fig. 26

The locking (2) prevents during use that the side panel folds up and that foreign objects are slung away. Therefore, it is very important to ensure before every use that the side panel (1) of the machine is folded down and that the locking (2) is secured.

The side panel (2) must be adjusted in that way that

- the side panel (1) folds down when swivelling the machine from transport position to working position and that it is secured by the locking (2)
- the side panel (1) slides independently from the locking when swivelling the machine from working position to transport position and that the side panel is folded over to transport position. Thus the transport height is reduced.

If this is not the case, the locking (2) must be set via the screw connection (3).

To do this:

- Loosen the screw connection (3)
- Readjust the locking in the oblong hole
- Tighten the screw connection (3)

10.3

Adjusting the Compensation Springs

**Danger! - Setting on the compensation springs**

Effect: Danger to life or serious injuries

- The compensation springs must only be removed in transport position. In the working position the compensation springs are subject to high tensile stress.
- Severe injury can be caused if the compensation springs are removed while in the working position.
- The lower threaded blocks on the compensation springs must be fully screwed in.

The ground pressure for the cutter bar is adjusted to local conditions by means of the compensation springs. In order to protect the sward the load on the mowing spar must be relieved so that it does not jump when mowing, yet does not leave any skid marks on the ground.

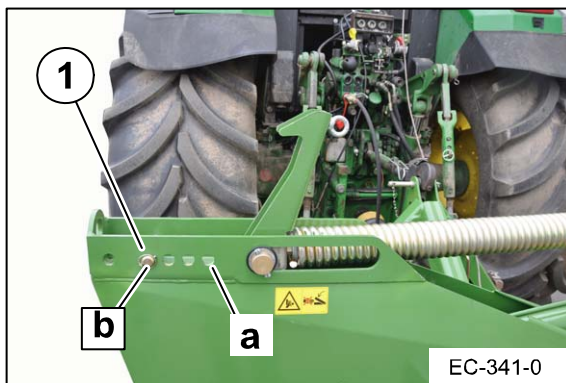


Fig. 27

**Note**

To adjust the compensation springs, move the disc mower to transport position. This is the only position in which the bolt (1) can be moved in the pattern of holes to change the spring pre-tensioning of the compensation springs.

Position "a" = lowest compensation

Position "b" = highest compensation

10.4 Hydraulic spring compensation (optional)



Note

The hydraulic hose line for the hydraulic spring compensation does not necessarily have to be connected to the tractor hydraulics during use. In this case, however, the ground pressure of the cutter bar cannot be changed during use.

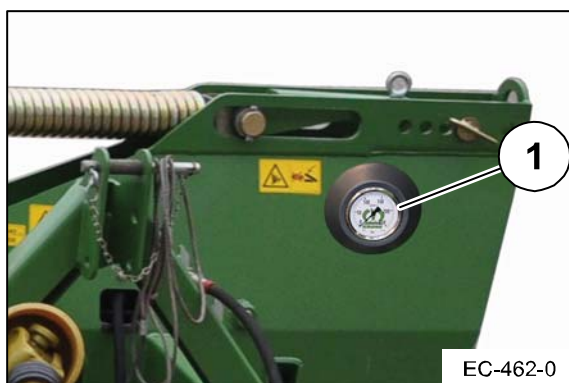


Fig. 28

- For setting / correcting the ground pressure, connect the hydraulic hose lines (red 3/blue 3) to the connection of the double-acting control unit

The set ground pressure can be read off on the pressure gauge (1).

Recommended setting range:

Type	Setting range
EasyCut R 280	50 – 100 bar
EasyCut R 320	50 – 100 bar

Setting the ground pressure:

- Continue activating the control unit until the desired ground pressure is displayed
Set the ground pressure according to the ground conditions

The higher the pressure, the smaller the ground pressure

The smaller the pressure, the higher the ground pressure

10.5 Setting of the pole protection mechanism



Caution! - Adjusting the pole protection mechanism

Effect: Damage to the machine

- If the setting value is changed, the trigger moment will also change. If the spring on the pole protection mechanism is pretensioned more than prescribed by the manufacturer, there is a risk of damaging the disc mower.
- The spring on the pole protection mechanism must be tensioned at least to the extent that the pole protection mechanism does not respond in transport position even with abrupt loads.

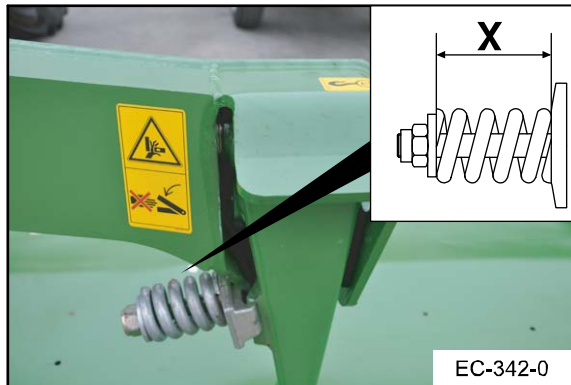


Fig. 29

In order to protect the disc mower against damages during driving over obstacles, it is equipped with a so-called pole protection mechanism.

The optimal setting for the trigger moment takes place in the factory.

Mower type	Dimension x
EASYCUT R 280	80 mm
EASYCUT R 320	80 mm

After the pole protection mechanism is triggered, the mowing unit swings back and, at the same time, in the front area upwards. This allows the mower to climb over small obstacles, e.g., stones. The pole protection mechanism will catch again as soon as you move back.

11 Maintenance

11.1 Special Safety Instructions

**WARNING!**

When performing repair, maintenance or cleaning work on the machine, or in case of technical intervention, drive elements may start moving and thus there is a risk of injuries or death.

- Switch off tractor engine, remove the ignition key and carry it with you.
- Secure the tractor against accidental start-up and against rolling.
- Wait until all machine parts have come to a complete stop and have been cooled down completely.
- Perform work on the disc mower only if it is in the working position.

**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!

11.1.1 Test run

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

Effect: Danger to life or serious injuries

- The mowing unit must be in working position
- Do not switch on the drives until the mowing unit 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 only from the driver's seat.

11.2 Spare Parts

**Warning! - 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.

11.3 Maintenance table

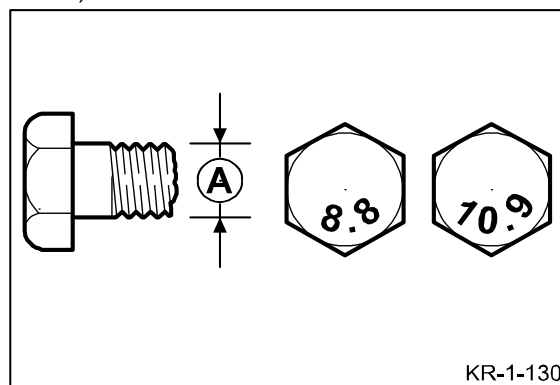
Maintenance work	Maintenance interval					
	Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 50 hours	Every 200 hours
Cutter bar						
Oil level check		X	X			
Oil change	Not required					
All gearboxes						
Oil level check		X	X			
Oil change				X		X
Check cutting blades		X	X			
Check retaining bolts for cutter blades		X	X			
Check material thickness of leaf spring, with blade quick fastener design		X	X			
Cutting disc / blade drum		X	X			
Linings on cutter bar		X				
Tighten screws / nuts						
All screws		X			X	
Friction clutch						
Vent		X				
Guard cloths						
Check guard cloths for wear and damage			X			

11.4 Tightening torques

Tightening torque M_A 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

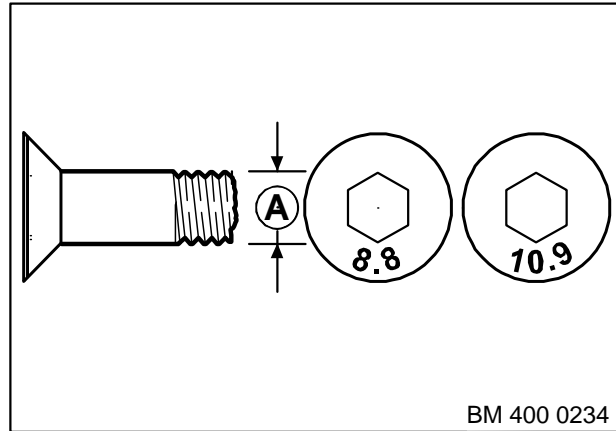
The table above does not apply to countersunk screws with hexagonal socket in case the countersunk screw is tightened via hexagonal socket.

11.5 Tightening torques (countersunk screws)

Tightening torque M_A 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 does not apply to countersunk screws with hexagonal socket and metric thread which are tightened via hexagonal socket.

11.5.1 Deviating Torque

Screws / nuts	M_A [Nm]
Nut for cutting disc flange	850
Nut for shear protection (rotary hub)	300
Bearing housing for cutting disc	50
Bearing housing for blade drum	50

11.6 Rotary hub with shear fuse (optional)

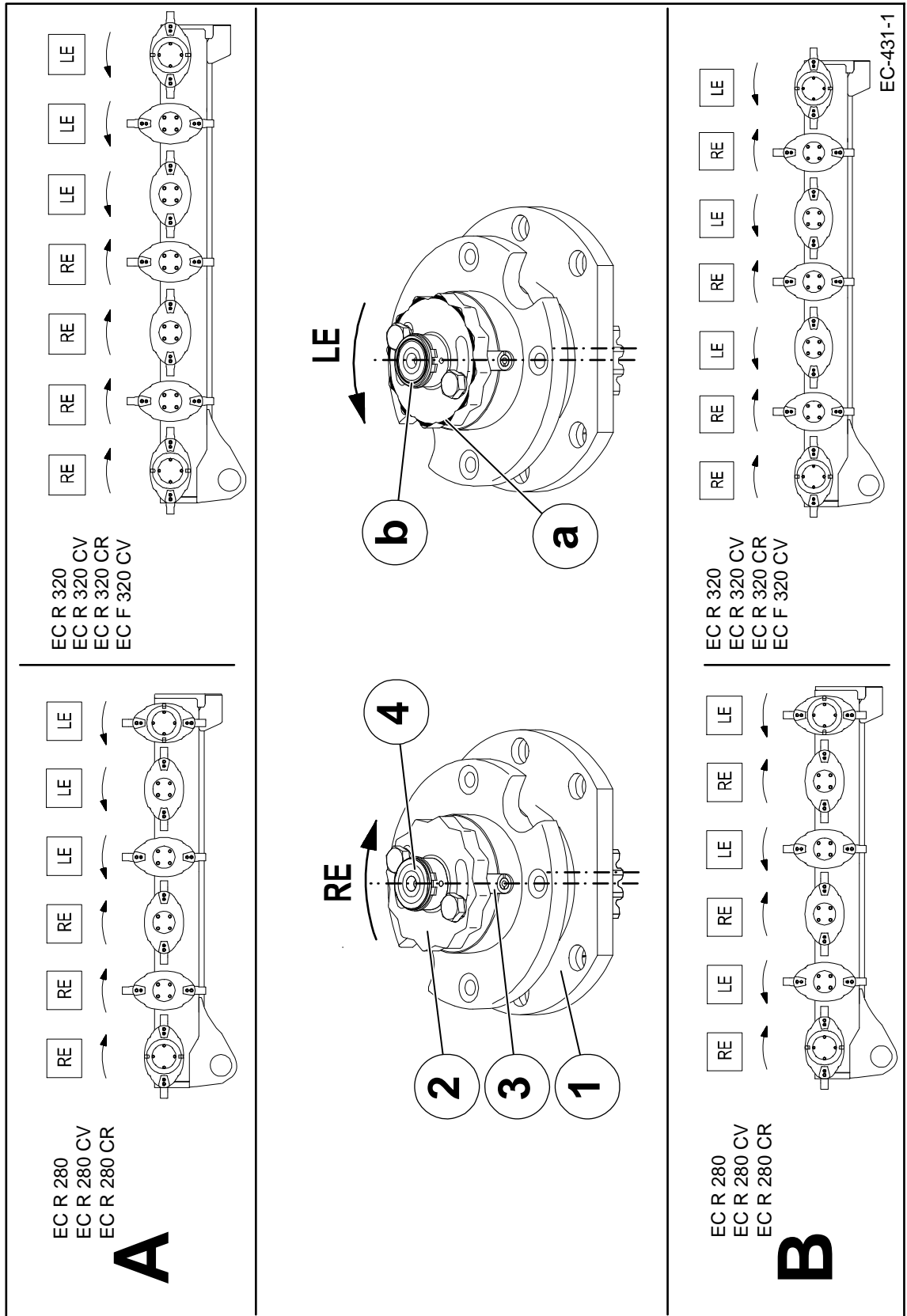


Fig. 30

**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.

11.6.1 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).

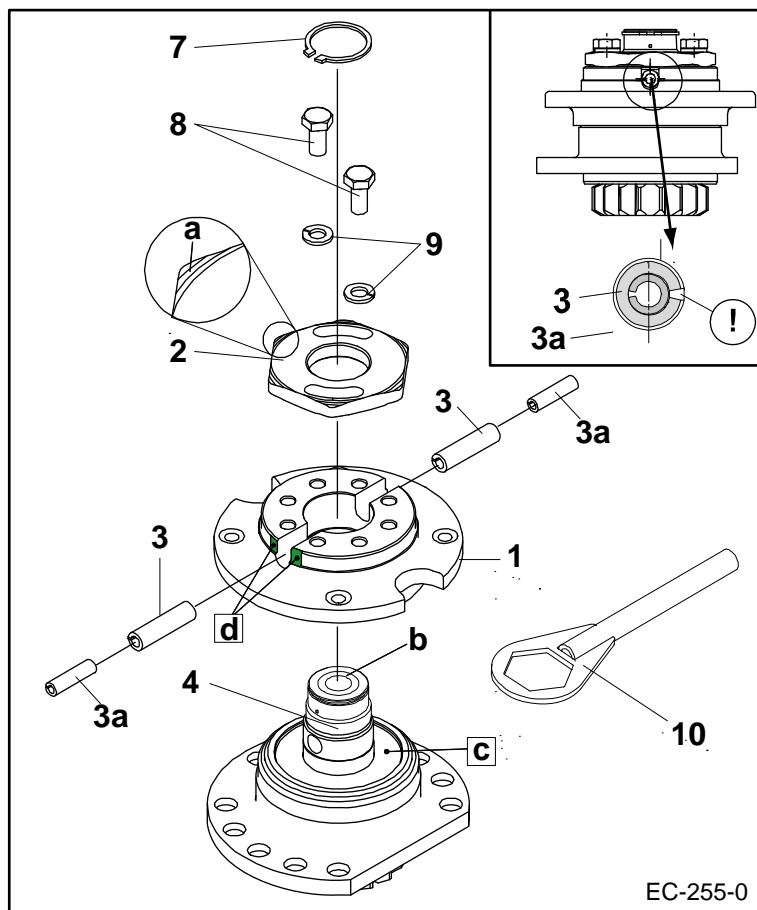


Fig. 31

- 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).

12 Maintenance - Gearbox

12.1 Main gearbox



Note

Perform oil level check and oil change while the machine is in a horizontal position!



Fig. 32

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

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"

- Remove the guard (4)

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.
- Install the guard (4)

- Remove the guard (4)

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.

- Install the guard (4)



Note

The used oil must be disposed of correctly

12.2 Mower Drive Gearbox



Note

Perform oil level check and oil change while the machine is in a horizontal position!

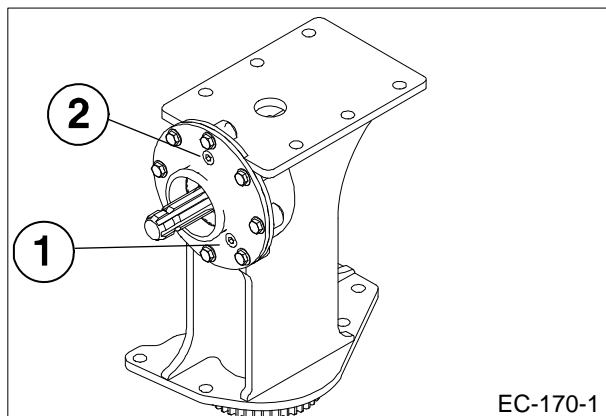


Figure 33

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

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"

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:

- Move the machine to transport position.
- Switch off the tractor engine, remove the ignition key and secure the tractor from rolling away.

Collect escaping oil in a suitable container.

- Screw out inspection screw and filler plug and drain the oil.
- Move the machine to working position.
- Switch off the tractor engine, remove the ignition key and secure the tractor from rolling away.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in inspection screw and filler plug and tighten them securely.



Note

The used oil must be disposed of correctly

12.3 Oil level check and oil change on the cutter bar

12.3.1 Oil change



Note

No oil change is required on the cutter bar.

12.3.2 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.

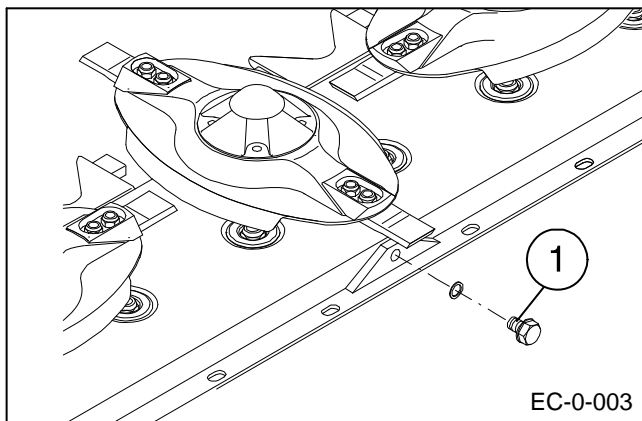


Fig. 34

- Allow the machine to run briefly.
- Wait until cutting discs/blade drums have come to a complete stop.
- Move the cutter bar into transport position.

Check the oil level before every use

- Remove the oil level inspection screw (1) from the cutter bar.
- 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.

13 Maintenance - Blade Changing

13.1 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

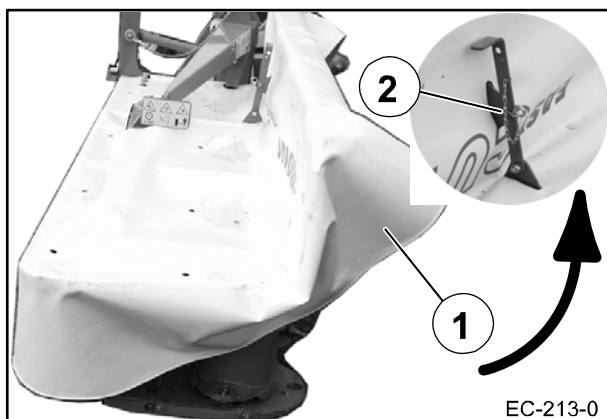


Figure 35:

For inspecting and fitting of the blades, fold up the protective device (1) and secure the lock with spring cotter pin (2). Now you can access the blades.



Note

After the inspection and installation tasks are completed, move the protective device into its protective position and lock it.

13.1.1 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).

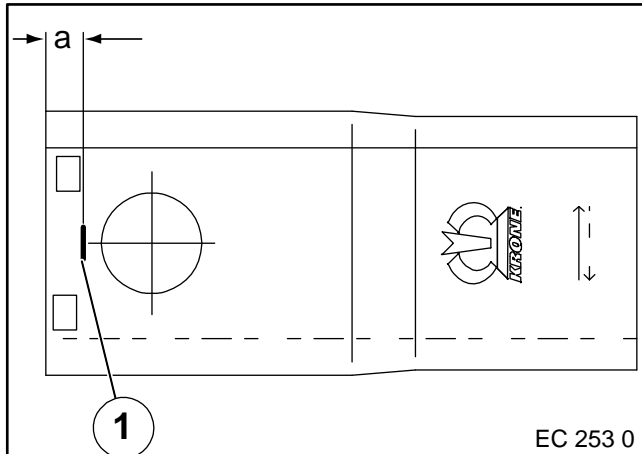


Fig. 36



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

13.1.2 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.

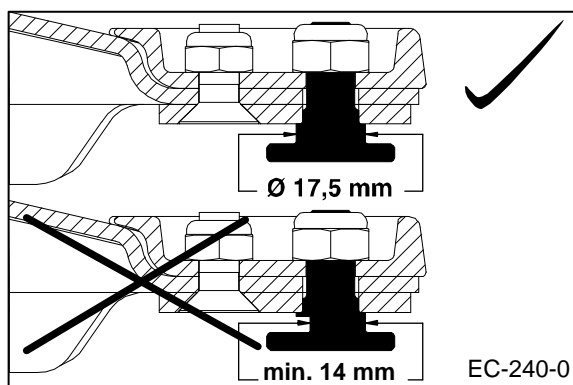


Fig. 37

13.1.3 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.

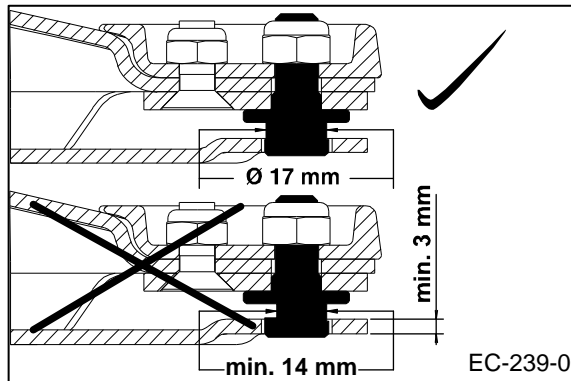


Fig. 38

13.1.4 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.

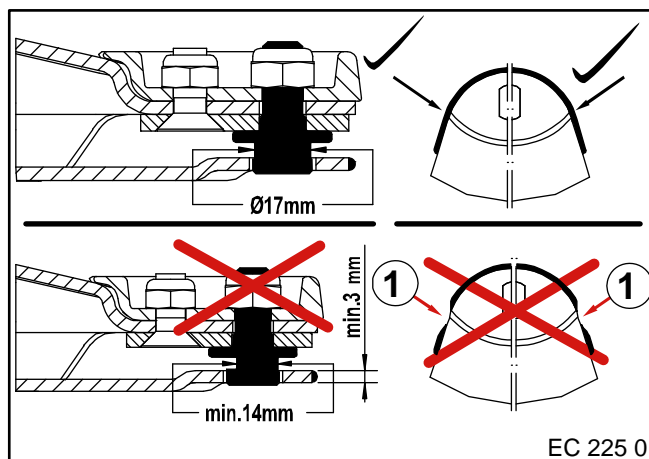


Fig. 39



Note

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

13.1.5 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 $A = 48$ mm must never be exceeded.

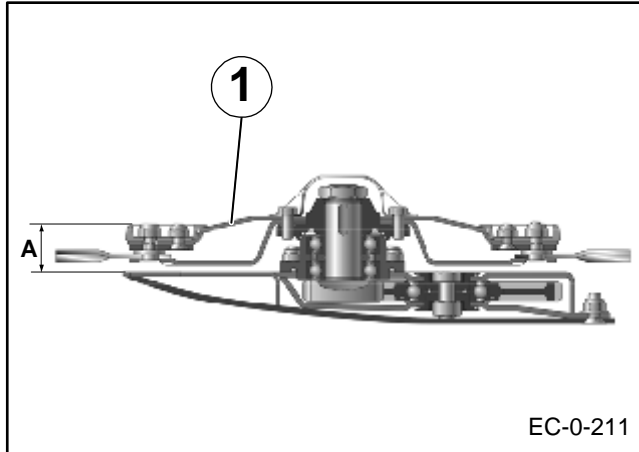


Fig. 40



Note

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

13.1.6

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.

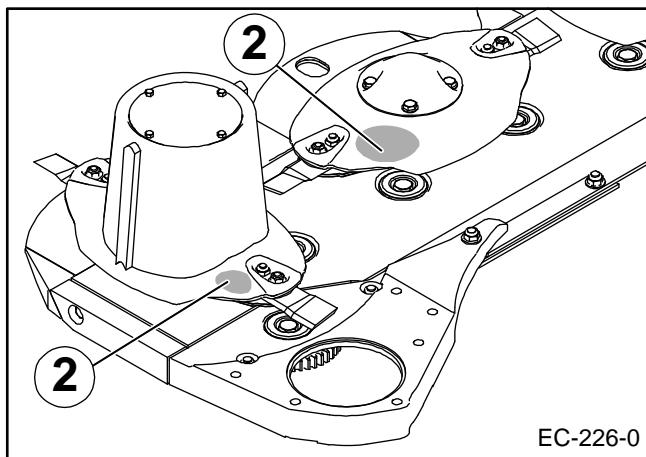


Fig. 41



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 .

13.2 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.

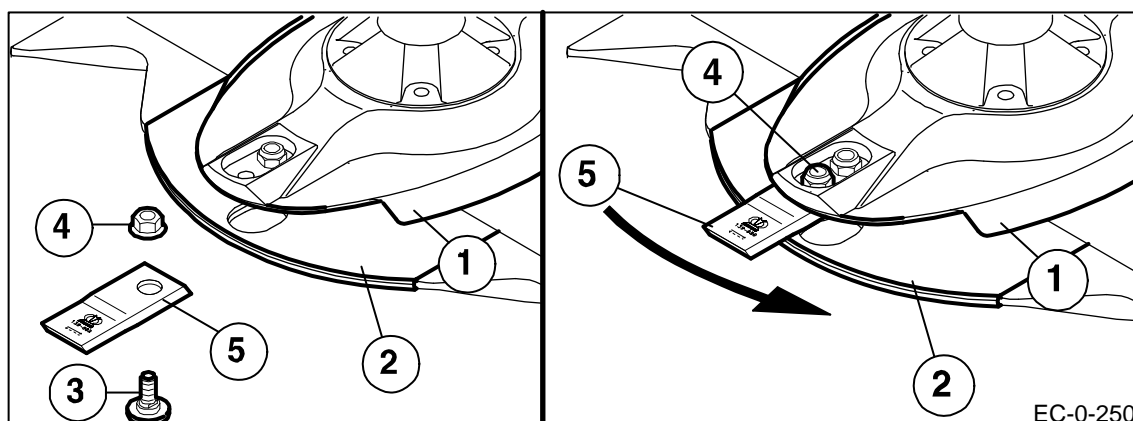


Danger! - Cutter blades coming loose

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!

13.2.1 Blade Screw Connection



Pic. 42

- 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

13.2.2 Blade Quick-Fit Device

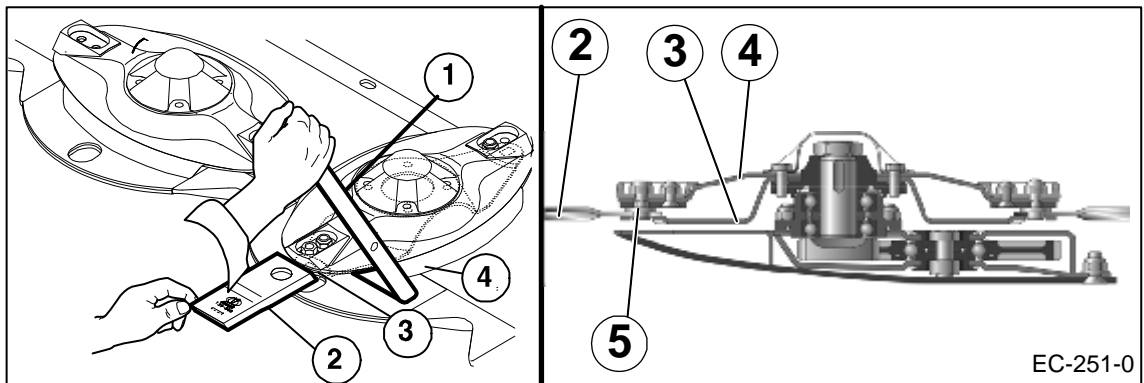


Fig. 43

- 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

13.3

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. •

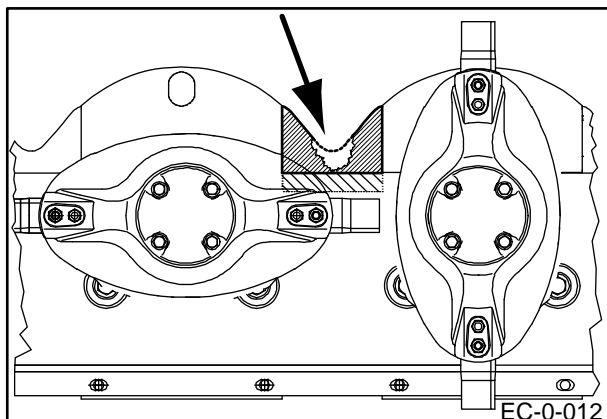


Fig. 44

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

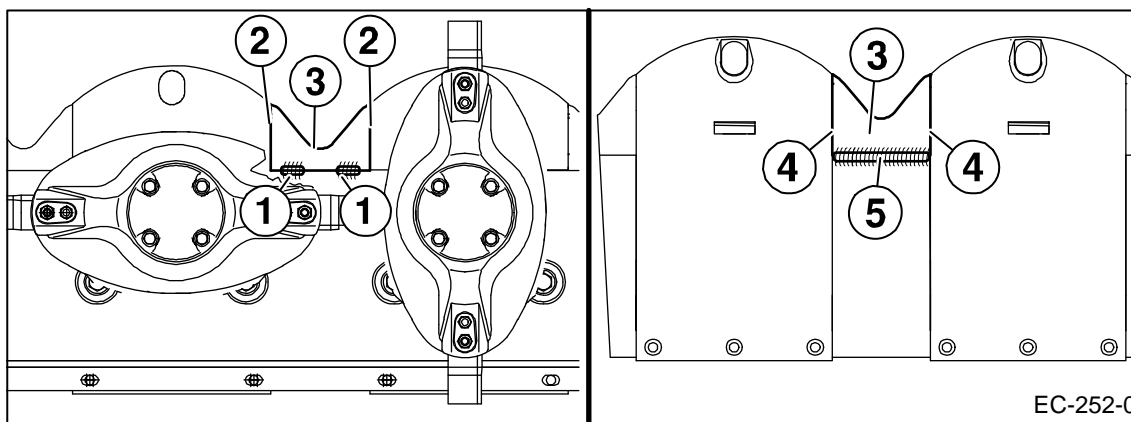


Fig. 45

- 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).

14 Maintenance – lubrication chart

14.1 Special Safety Instructions



WARNING!
When performing repair, maintenance or cleaning work or in case of technical intervention, drive elements may start moving (caution: cutting discs continue to run).
 Effect: Danger to life, injuries or damage to the machine.

- Turn off the PTO shaft.
- Move the machine to the working position and lower it to the ground.
- Switch off the engine of the tractor, remove the ignition key and carry it with you.
- Secure the tractor against accidental start-up and against rolling.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and safety 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 physician immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.

14.2 PTO shaft

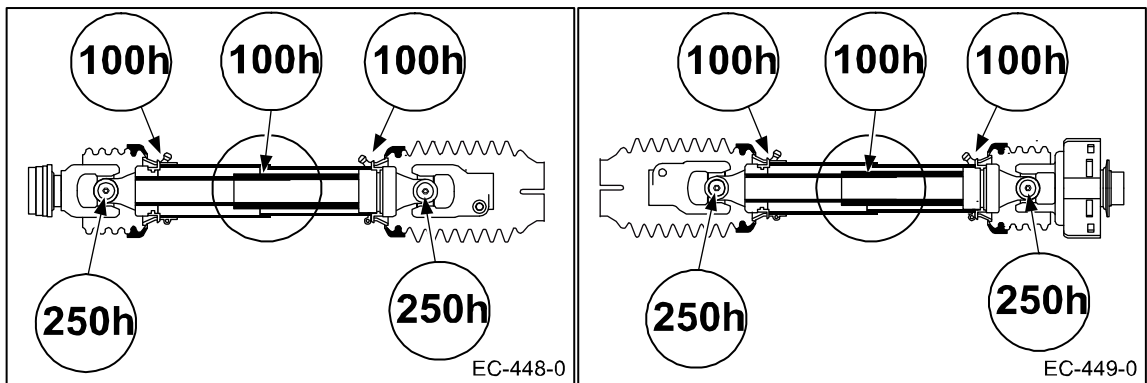


Fig. 46

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

14.3 Lubrication Chart



Fig.47

15 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.

16 Before the Start of the New Season

16.1 Special Safety Instructions



WARNING!

When performing repair, maintenance or cleaning work or in case of technical intervention, drive elements may start moving (caution: cutting discs continue to run).

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

- Turn off the PTO shaft.
- Move the machine to the working position and lower it to the ground.
- Switch off the engine of the tractor, remove the ignition key and carry it with you.
- Secure the tractor against accidental start-up and against rolling.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and safety 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 physician immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.

16.2 Test run.



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

Effect: Danger to life or serious injuries

- The mowing unit must be in working position
- Do not switch on the drives until the mowing unit 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 only from the driver's seat.

- 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.

- Vent the friction clutch to release the adhesion of the friction lining.

16.3**Friction Clutch****Caution! - Manipulation of the friction clutch**

Effect: Serious damage to the machine

- Manipulation of the overload protection changes the slip torque. This will lead to a loss of warranty claims! Original KRONE spare parts only may be used.

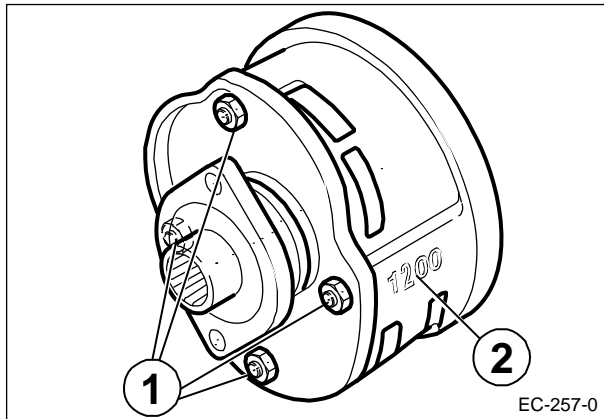


Fig. 48

The friction clutch protects the tractor and the machine against damage. It is designed with a permanently adjusted turning torque M_R . The torque is applied on the housing of the friction clutch (2).

Venting the friction clutch

Tighten the four nuts (1). Block the machine and move the friction clutch manually to the point where it slips through. Loosen the nuts again.

**Note - Friction Clutch**

Effect: Conserve functionality and increased service life

- The friction clutch (2) must be vented prior to commissioning and once a year prior to harvesting. (See section Before the Start of the New Season "Friction clutch")

17 Special equipment

17.1 Special Safety Instructions



WARNING!

When performing repair, maintenance or cleaning work or in case of technical intervention, drive elements may start moving (caution: cutting discs continue to run).

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

- Turn off the PTO shaft.
- Move the machine to the working position and lower it to the ground.
- Switch off the engine of the tractor, remove the ignition key and carry it with you.
- Secure the tractor against accidental start-up and against rolling.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and safety 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 physician immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.

17.2 Adjusting Skids

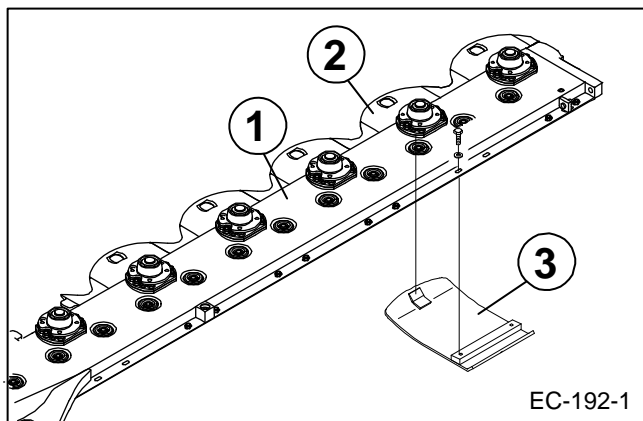


Fig. 49

Adjusting skids can be used to increase the cutting height (see chapter entitled "Adjusting the cutting height")

To do this, insert the adjusting skids (3) into the glide skids (2) and screw them in place. The adjusting skids must always be mounted underneath the mowing discs that run next to the mower drum.

18 Disposal of the machine**18.1 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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