



Disc Mower

EasyCut R 360

(from serial no.: 888 544)

Order no.: 150 000 146 02 en





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	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 360	
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, 08.11.2011		
		
_____ Dr.-Ing. Josef Horstmann (Managing Director, Design and Development)		
Year of manufacture:	Machine No.:	

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Foreword

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 360

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.

Safety

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.

Safety

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)!

Safety

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!
- 2 Regularly check that nuts and bolts are properly seated and tighten if necessary!
- 3 When performing maintenance work with the machine raised, always secure it with suitable supporting elements!
- 4 Oils, greases and filters must be disposed of correctly!
- 5 If protective devices and guards are subject to wear, check them regularly and replace them in good time!
- 6 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!
- 7 When replacing working tools with cutting edges, use suitable tools and gloves!

Safety

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

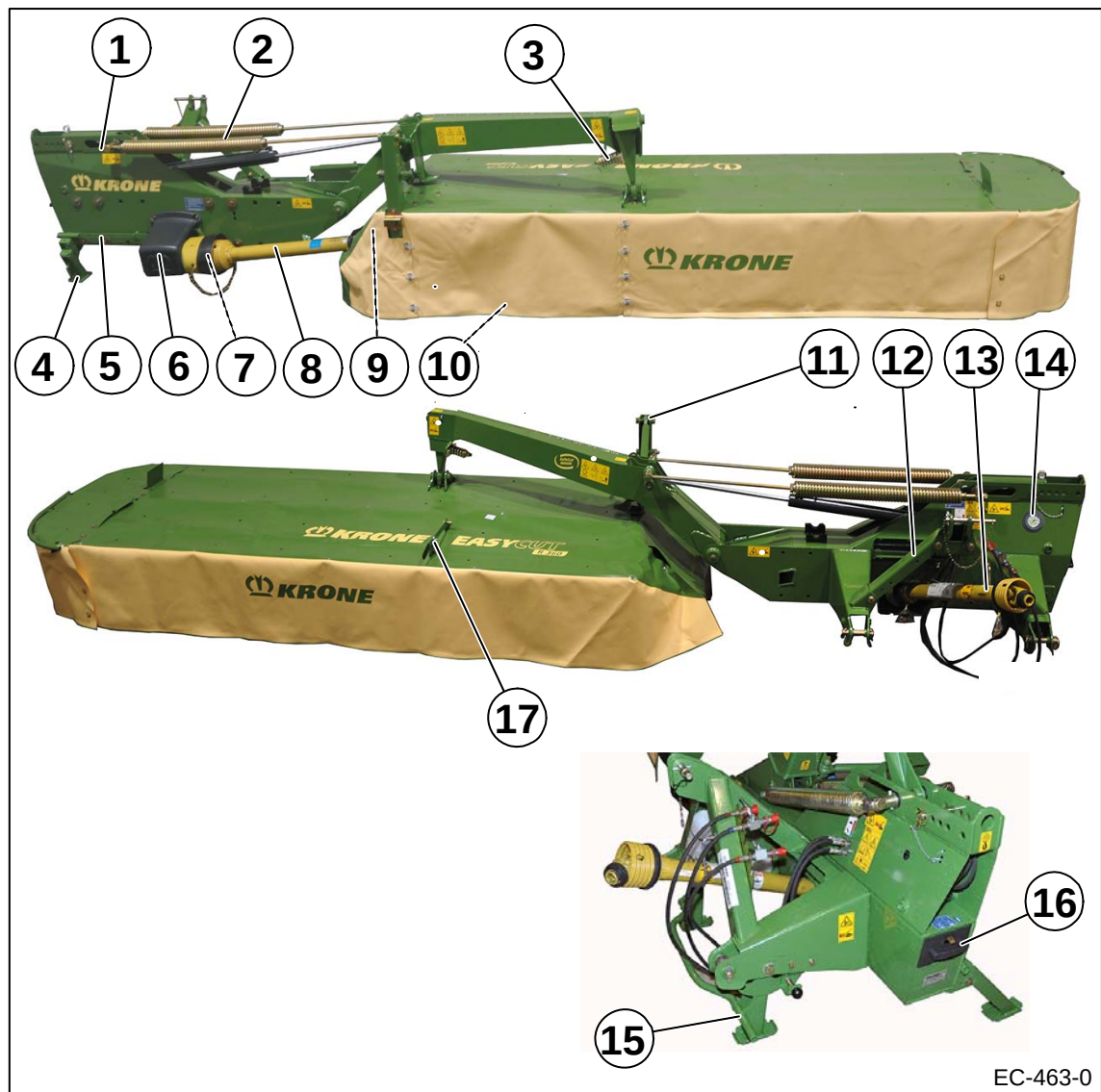


Fig. 1

EC-463-0



Machine Description

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)	Three-point linkage
13)	Drive universal shaft	14)	Pressure gauge, for the hydraulic spring relief design
15)	Additional parking support*)	16)	Blade box
17)	Locking for front guard		

*) optional

Machine Description

5.2 Identification Plate

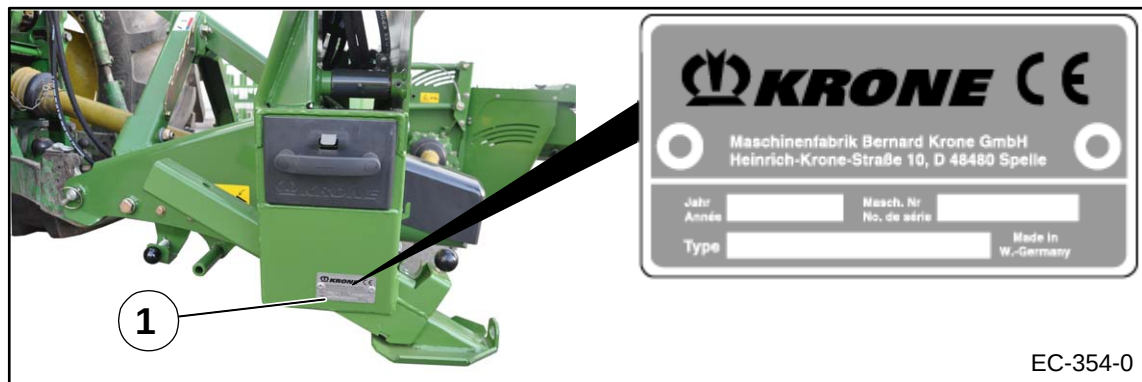


Fig. 2

The machine data are specified on the type plate (1). It is attached to the carrying bar.

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

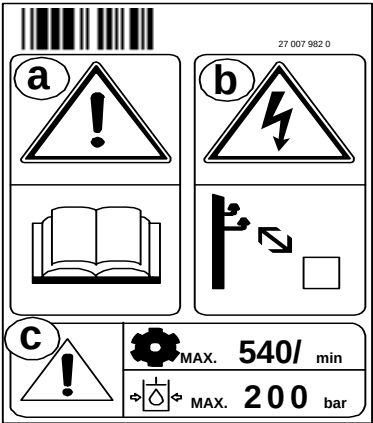
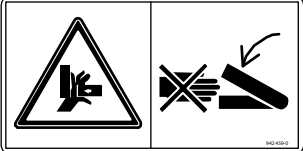
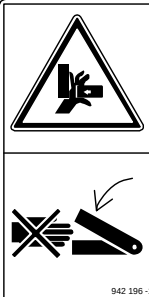
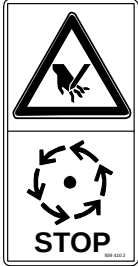
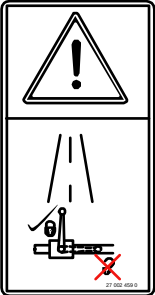
- The surface for affixing the adhesive label must be clean and free of dirt, oil and grease.

Machine Description

5.5 Position of the Adhesive Safety Stickers on the Machine



Fig. 3

1) Order No. 27 007 982 0 (1x) a) Before placing the machine into operation, read the operating instructions and safety instructions. Both must be heeded. b) Keep the stipulated safe distance from power transmission lines. c) The PTO speeds must not exceed 540 rpm! The operating pressure of the hydraulic system must not exceed 200 bar!	1a)  1b) 1c)
2) While parts are moving, never reach into areas where there is a risk of being crushed.  Order No. 942 459-0 (5x)	3) While parts are moving, never reach into areas where there is a risk of being crushed. Order No. 942 196 1 (2x) 
Order No. 939 576-0 (3x) a) Caution: Some machine parts will stay in operation for an extended period of time before being switched off completely. Do not touch any moving parts of the machine. Wait until they have come to a complete stop. b) Move the safety devices into protective position prior to start-up. c) When the machine is running, keep your distance.	a)  b)  c) 
5) Before transport or road travel, always close the stop cock. Order No. 27 002 459 0 (1x) 	

Technical Data of the Machine

6 Technical Data of the Machine

6.1 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.

Dimensions	
Working width	3600 mm
Transport height	4000 mm
Transport width	2013 mm
Acreage output	4.0 – 4.5 ha/h
Dead weight	approx. 1040 kg

Hydraulic connections	
Raises or lowers the mowing unit from transport to headland position or vice versa.	1x double-action control unit
Raising the mowing unit from working position to headland position.	1x single-action control unit
With hydraulic spring compensation design	1x double-action control unit

Minimum tractor requirements	
Power requirement	53 kW (72 HP)
PTO speed	max. 540 rpm

Machine equipment (series)	
Understeering coupling	Cat. II
SafeCut	Series
Blade quick fastener or blade screw connection	Series
Mechanical spring relief	Series
Number of mowing discs	4 ⁽¹⁾ / 6 ⁽²⁾ units
Number of mower drums	4 ⁽¹⁾ / 2 ⁽²⁾ units

(1) Direction of rotation "A" = deposition to the middle

(2) Direction of rotation "B" = in pairs

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

**6.2 Lubricants****6.2.1 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	1,7 l	SAE 90	On request
Mower Drive Gearbox	0,3l		
Cutter bar EasyCut R 360	8,0 l		

Commissioning

7 Commissioning

7.1 First installation

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

7.2 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.

7.3 Mounting onto the Tractor

7.3.1 Clutching points

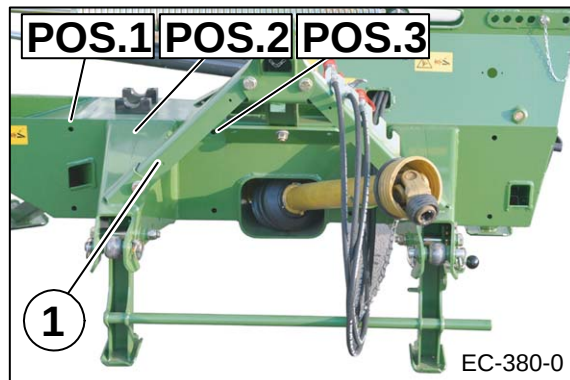


Fig. 4

The mounting possibilities of the mowing unit are designed for Cat. II.

The mowing unit may additionally be moved by 150mm to the left or to the right for the adjustment to the tractor width or to the overcut.

The three-point console is mounted as standard in the centre (position 2).

Mounting position 1:

- In case of front mower use with maximum overcut.

Mounting position 2:

- In case of standard tractor track with standard tyres with or without front mower use.

Position 3:

In case of a wide tractor track and/or wide tyres without front mower use.



Note

Observe the weight of the part when moving the three-point console.
Use safe lifting equipment.



Note

Tighten the hexagonal nuts on the coupling points with a torque of **210 Nm**.

Commissioning

7.4 PTO shaft

7.4.1 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.

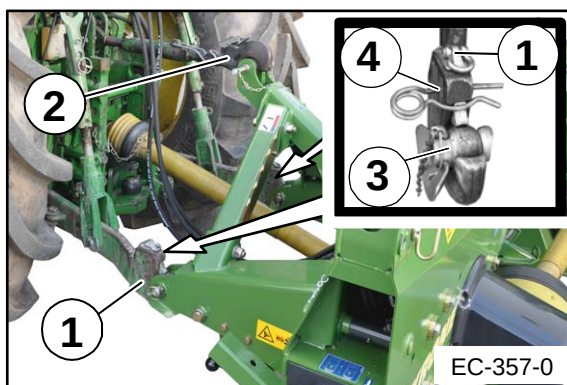


Fig. 5

- 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.

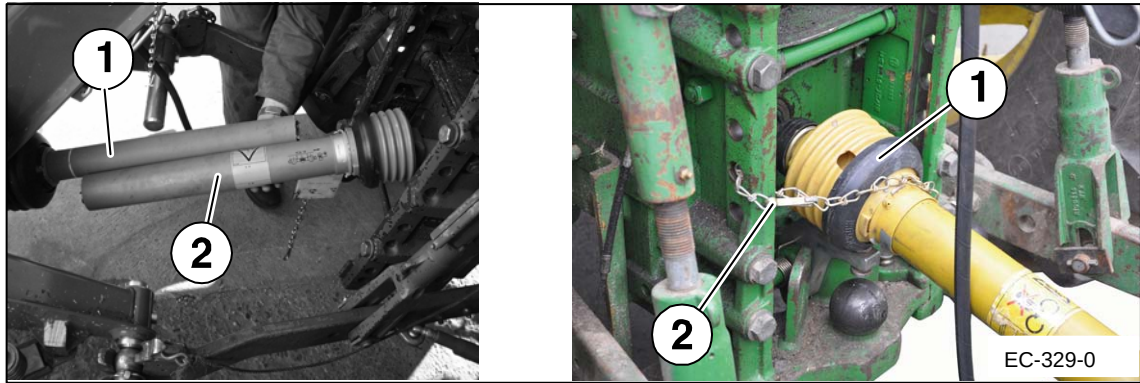


Fig.6

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".

Start-up

8 Start-up

8.1 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).

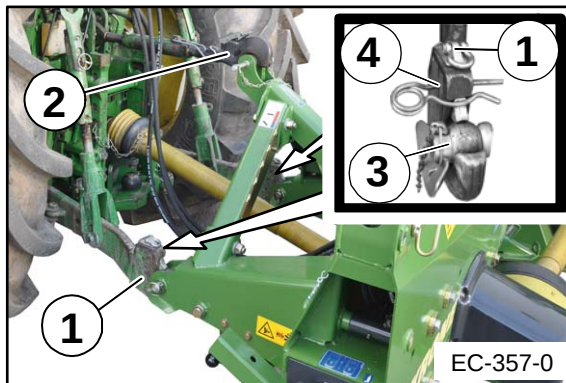


Fig. 7

- 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.

8.2 Hydraulics

8.2.1 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.

8.2.2 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.

Start-up



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.



Note

Connect the hydraulic lines correctly

- The hydraulic hoses are identified by coloured hose clips.

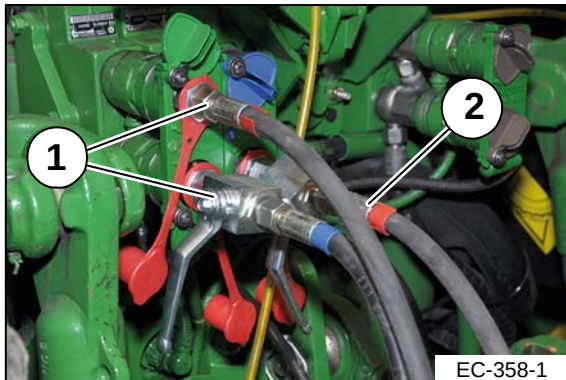


Fig. 8

1) Double-action control unit

2) Single-action control unit

- 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 couplings (red 2/blue 2) of the machine to a double-action control unit of the tractor.
- Connect the hydraulic coupling (red 1) of the machine to a single-action control unit of the tractor.

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.

8.3 PTO shaft

8.3.1 Special Safety Instructions



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!

Start-up

8.3.2 Install the PTO shaft

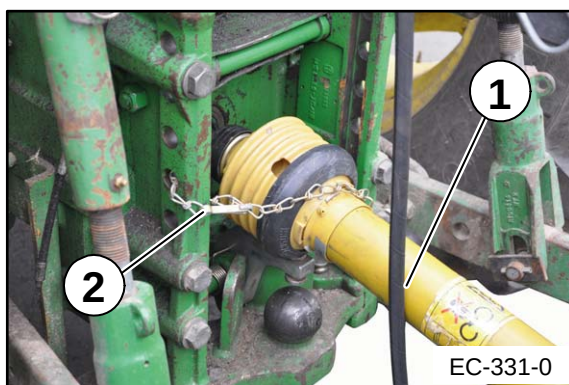


Fig. 9

- 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).

8.4 Intermediate PTO shaft

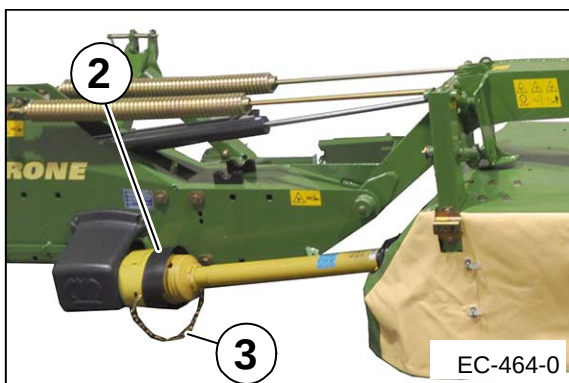


Fig. 10

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")

8.5 Swivelling parking support into transport position

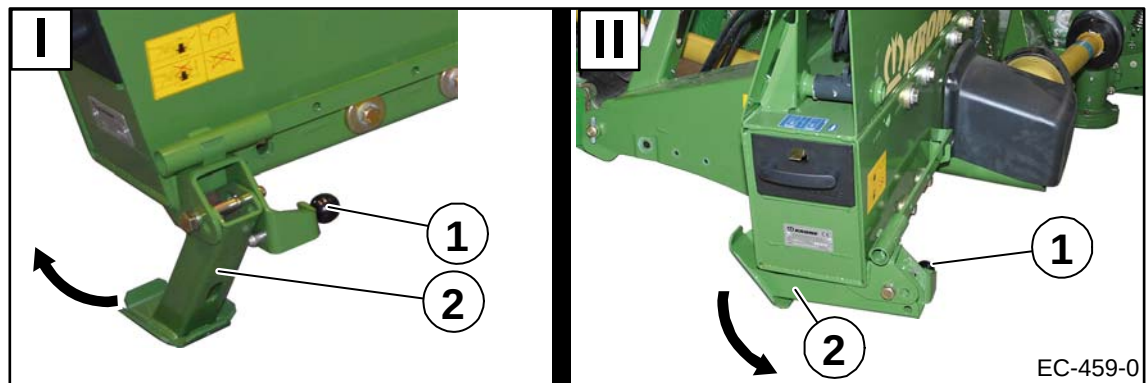


Fig. 11

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).

8.5.1 Four supports (optional)

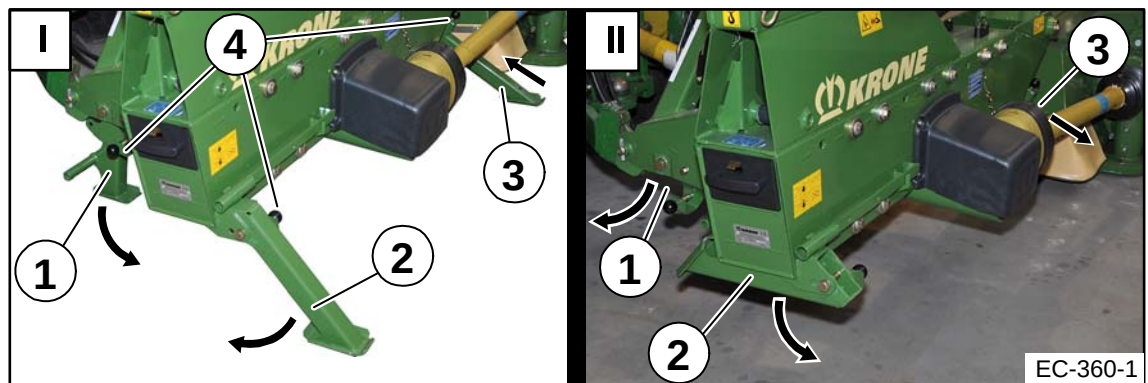


Fig. 12

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).

Driving and Transport

9 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.



WARNING! - Transport / road travel

Risk of accident due to non-locked stop cocks.

Machine components can be activated unintentionally when the stop cocks are not locked during transport travel. This may result in serious accidents.

- To prevent functions from being triggered accidentally, always close the hydraulic stop cocks in the transport position.

9.1 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.

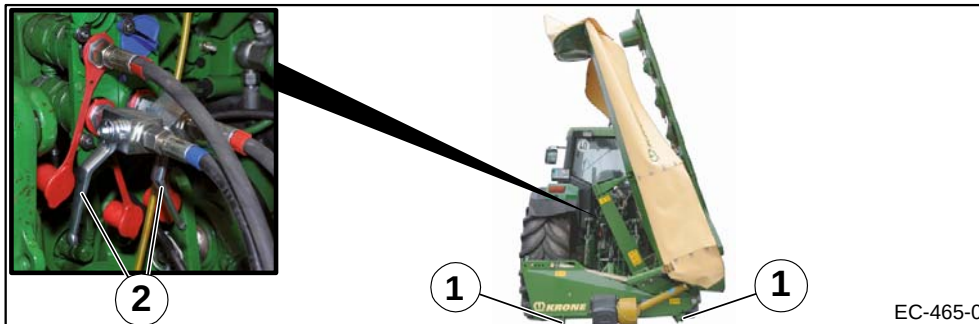


Fig. 13

The disc mower must be folded up for transport / road travel.

Before road travel, make certain

- the PTO operation is turned off.
- the parking support(s) are swivelled into transport position and secured there, 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 hydraulic stop cocks (2) are closed.



10 Operation

10.1 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)

10.2 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.

Operation

10.2.1 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

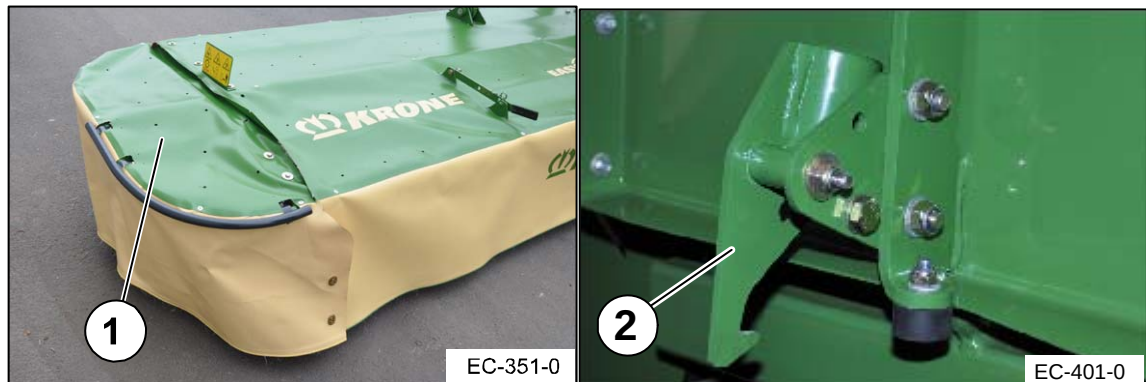


Fig. 14

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 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.

10.2.2 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.

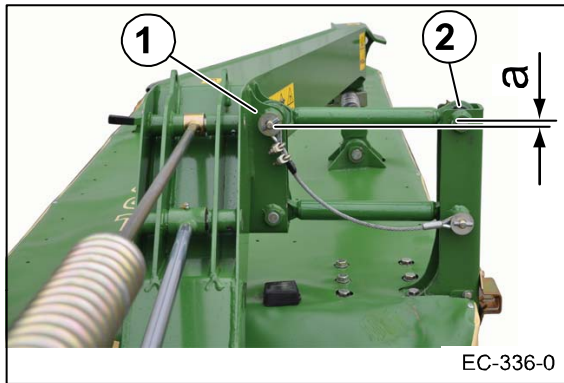


Fig. 15

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 ($a = \text{ca. } 0 \text{ mm}$).

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

Operation

10.3 Folding Down Mowing Unit



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.

10.3.1 From Transport Position to Headland 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.

From transport position to headland position

- Activate the double-action control unit (red 2/blue 2) until the mowing unit is lowered into headland position.

10.3.2 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.

Prerequisite:

- The mowing unit is in headland position.

Lowering the mowing unit from headland position to working position

- Move the single-action control unit (red 1) to float position until the mowing unit is lowered into working position.

Moving the mowing unit from working position to headland position

- Activate the single-action control unit (red 1) until the mowing unit is raised into headland position.

10.3.3 From Headland Position to Transport Position

Prerequisite:

- The PTO shaft drive is turned off.
- The parking supports are swivelled into transport position and locked by bolts, refer to chapter Start-up "Swivelling Parking Support into Transport Position".
- The machine is in headland position.

From headland position to transport position:

- Activate the double-action control unit (red 2 / blue 2) until the mowing unit is raised from headland position to transport position.

10.4 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!

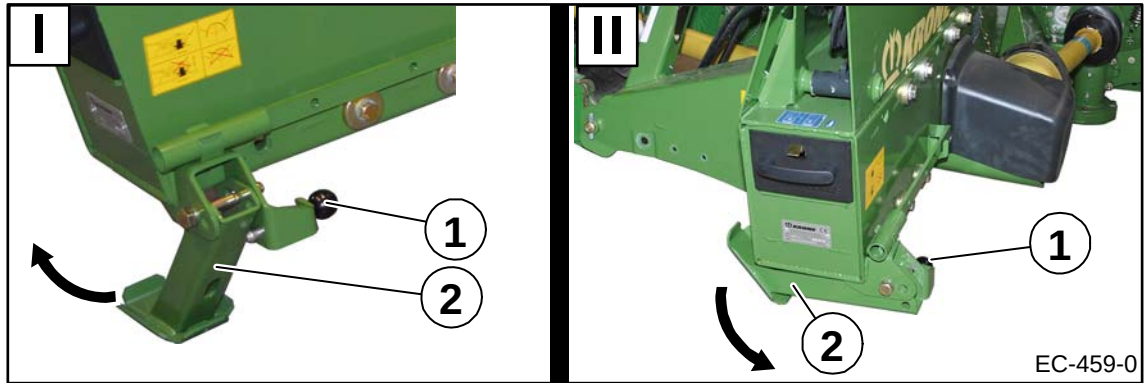


Fig. 16

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).

10.4.1 Four supports (optional)

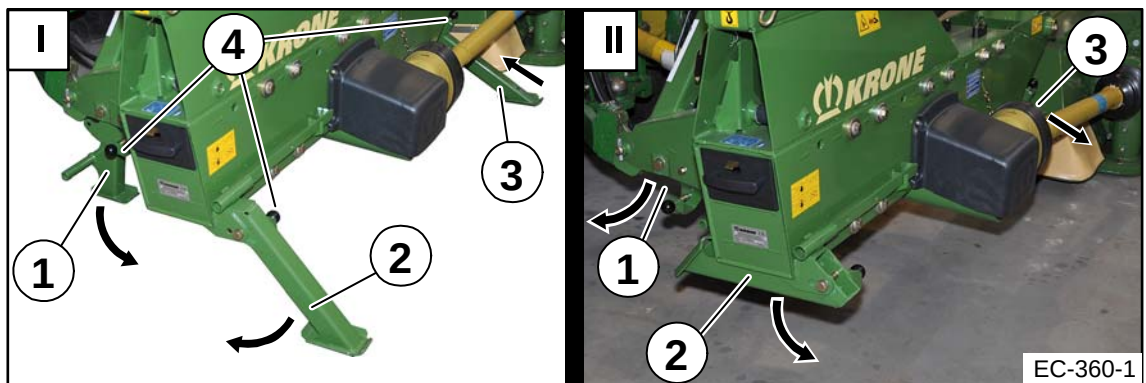


Fig. 17

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).

Operation

10.5 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. 18

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

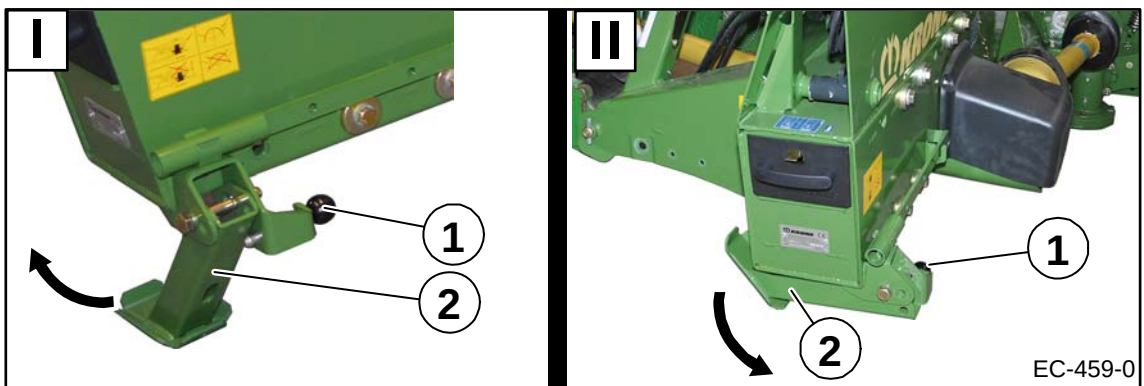


Fig. 19

I) Parking position

II) Transport position

Before parking the machine, move the parking support into parking position.

- Swivel parking support (2) down and lock it in place via bolt (1).

Operation

10.5.1 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).

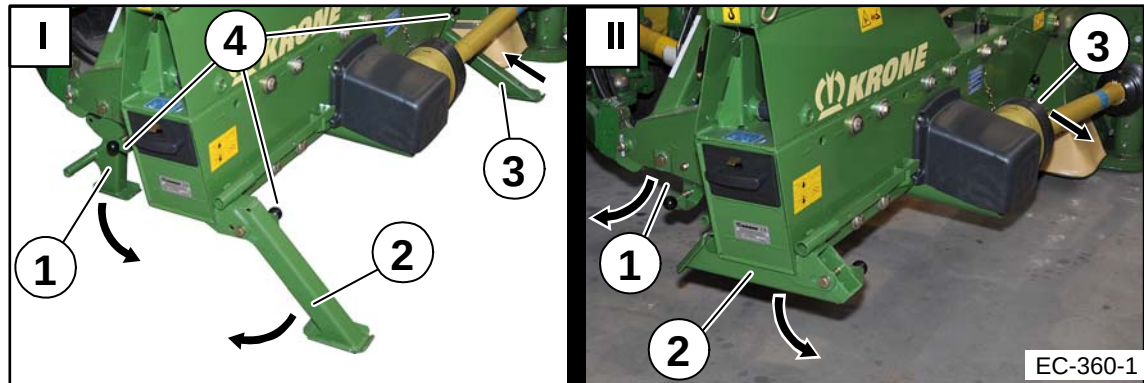


Fig. 20

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.

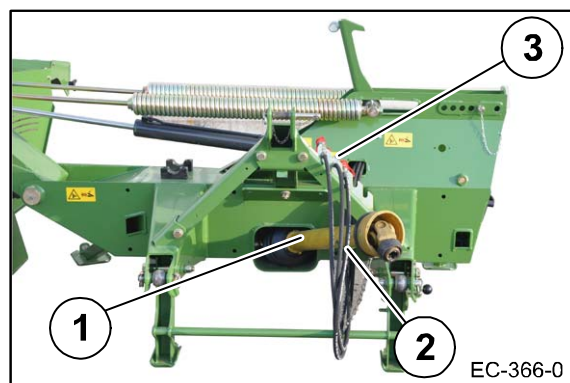


Fig. 21

- Remove the cardan shaft (1) from the tractor and place on storage surface (2).
- Disconnect the hydraulic hoses (3) from the tractor (fit dust caps) and insert into the support on the machine provided for this purpose.
- Release the suspension arm and pull out the bolt on the machine side or unhook the suspension arm.
- Pull out the lower suspension arm / release the catch hook

11

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.

11.1

Adjusting the cutting height

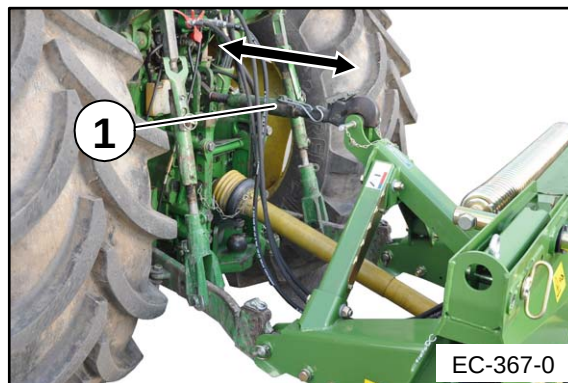


Fig. 22

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

Settings

11.2 Adjust Locking

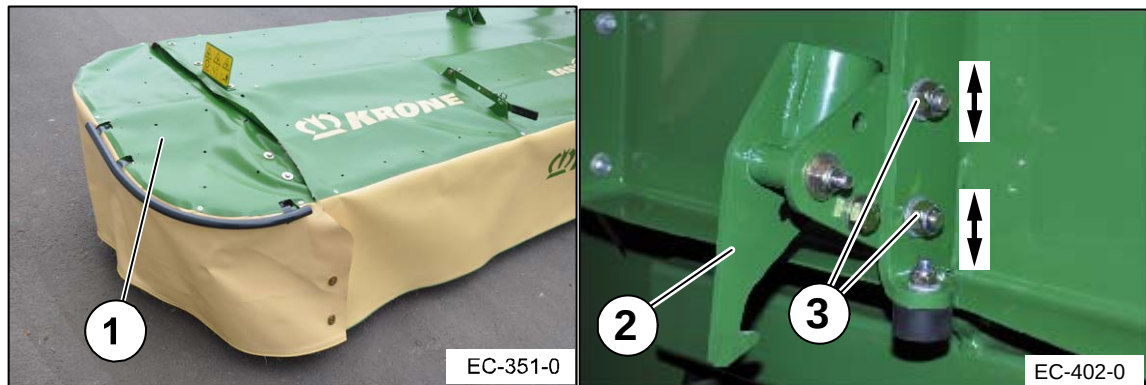


Fig. 23

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)

11.3
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.

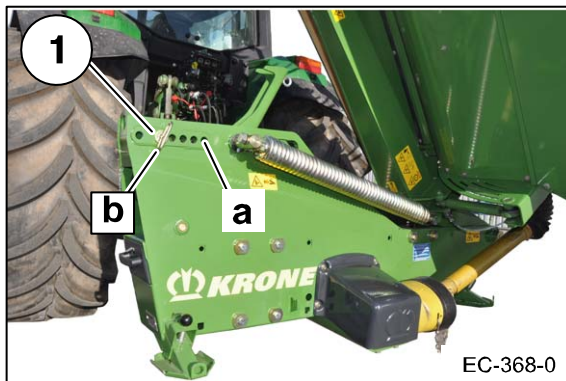


Fig. 24


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" = highest ground pressure

Position "b" = lowest ground pressure

Settings

11.4 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.

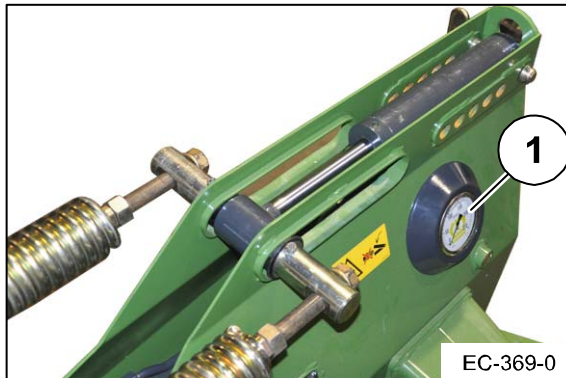


Fig. 25

- 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 360	50 – 100 bar
EasyCut R 280 CV	50 – 100 bar
EasyCut R 320 CV	70 – 120 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

11.5 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.

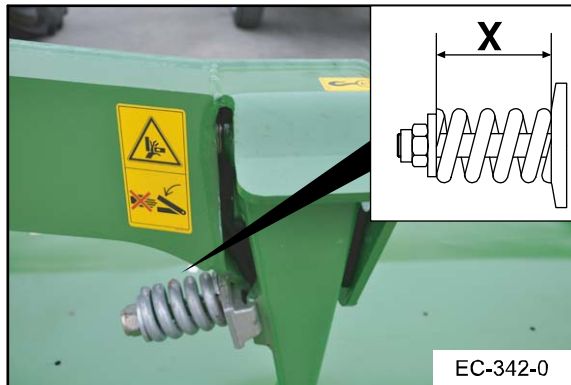


Fig. 26

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 360	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.



Note

If the pole protection mechanism does not engage automatically when it moves back, release the tension on the compensation springs (see chapter on Operation "Detaching the machine") and move back until the pole protection mechanism engages.

Maintenance

12 Maintenance

12.1 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!

12.1.1 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.

12.2 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.

12.3
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			

Maintenance

12.4 Tightening torques

12.4.1 Metric Thread Screws with Control Thread



NOTICE

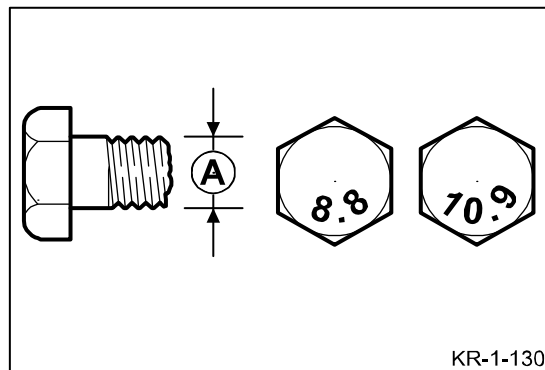
The table does not apply to countersunk screws with hexagonal socket in case the countersunk screw is tightened via hexagonal socket.

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M4		3.0	4.4	5.1
M5		5.9	8.7	10
M6		10	15	18
M8		25	36	43
M10	29	49	72	84
M12	42	85	125	145
M14		135	200	235
M16		210	310	365
M20		425	610	710
M22		571	832	972
M24		730	1050	1220
M27		1100	1550	1800
M30		1450	2100	2450

A = thread size

(stability class can be seen on screw head)



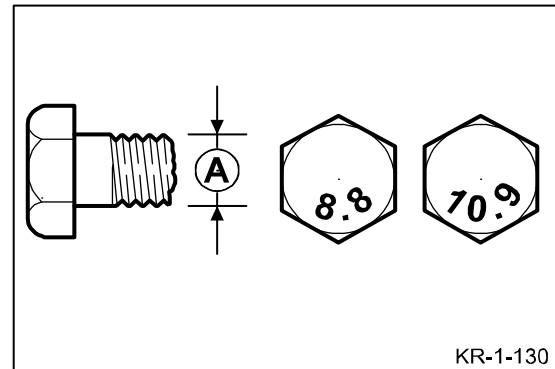
12.4.2 Metric Thread Screws with Fine Thread

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M12 x 1.5:		88	130	152
M14 x 1.5		145	213	249
M16 x 1.5		222	327	382
M18 x 1.5		368	525	614
M20 x 1.5		465	662	775
M24 x 2		787	1121	1312
M27 x 2		1148	1635	1914
M30 x 1.5		800	2100	2650

A = thread size

(stability class can be seen on screw head)



12.4.3 Metric Thread Screws with Countersunk Head and Hexagonal Socket



NOTICE

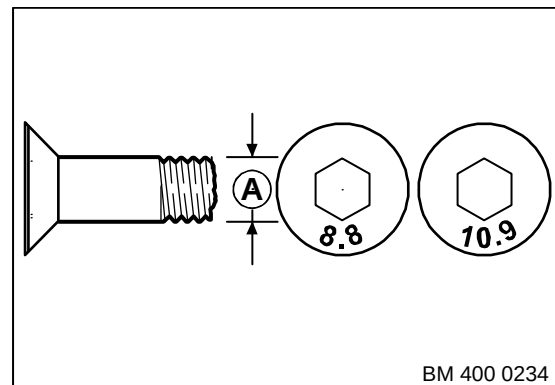
The table applies only to countersunk screws with hexagonal socket and metric thread which are tightened via hexagonal socket.

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M4		2.5	3.5	4.1
M5		4.7	7	8
M6		8	12	15
M8		20	29	35
M10	23	39	58	67
M12	34	68	100	116
M14		108	160	188
M16		168	248	292
M20		340	488	568

A = thread size

(stability class can be seen on screw head)



12.4.4 Deviating Torque

Screws / nuts	MA [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

Maintenance

12.5 Rotary hub with shear fuse (optional)

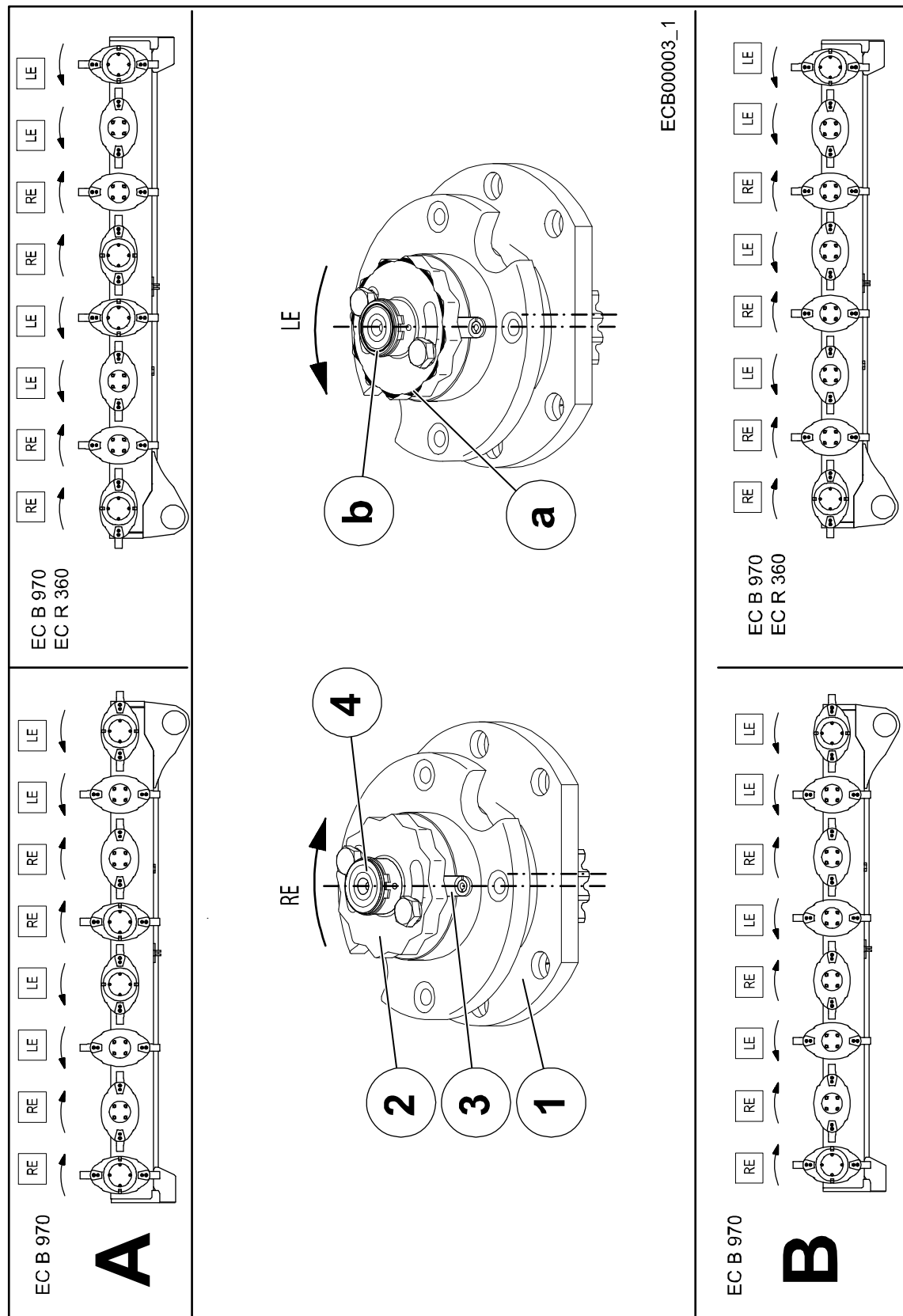


Fig. 27



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.

Maintenance

12.5.1 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).

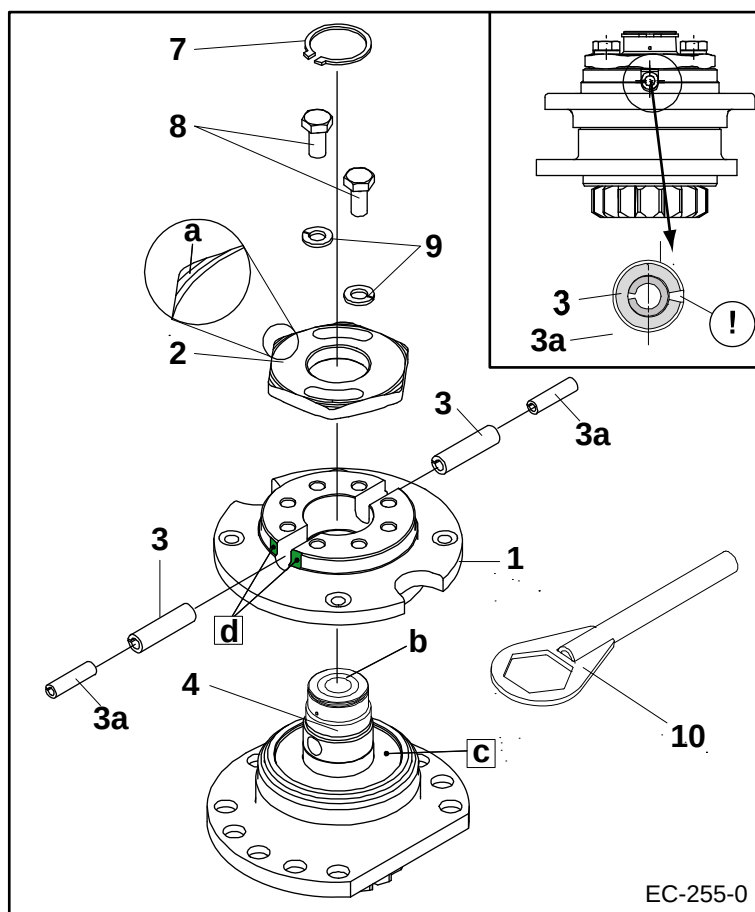


Fig. 28



- 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).

Maintenance - Gearbox

13 Maintenance - Gearbox

13.1 Main gearbox



Note

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

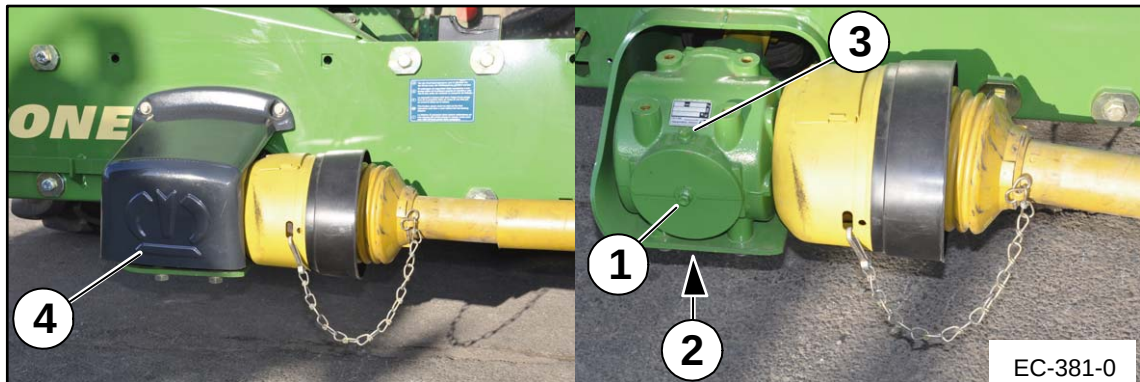


Fig. 29

- | | |
|------------------------------------|---------------|
| 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

Maintenance - Gearbox

13.2 Mower Drive Gearbox



Note

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

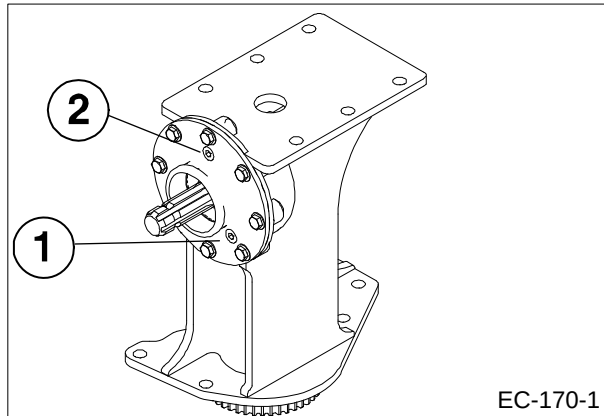


Figure 30

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

13.3 Oil level check and oil change on the cutter bar

13.3.1 Oil change



Note

No oil change is required on the cutter bar.

13.3.2 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.

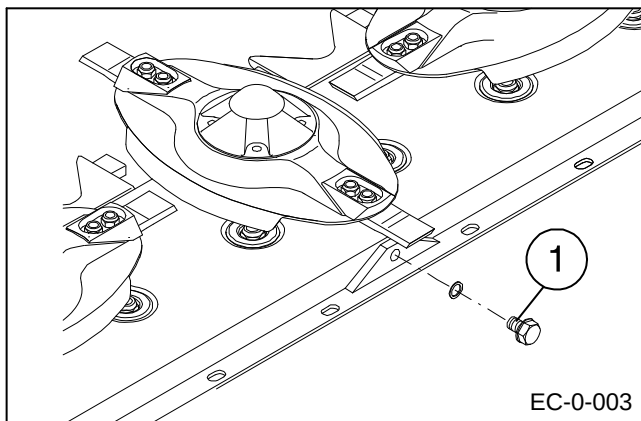


Fig. 31

- 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.

Maintenance - Blade Changing

14 Maintenance - Blade Changing

14.1 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

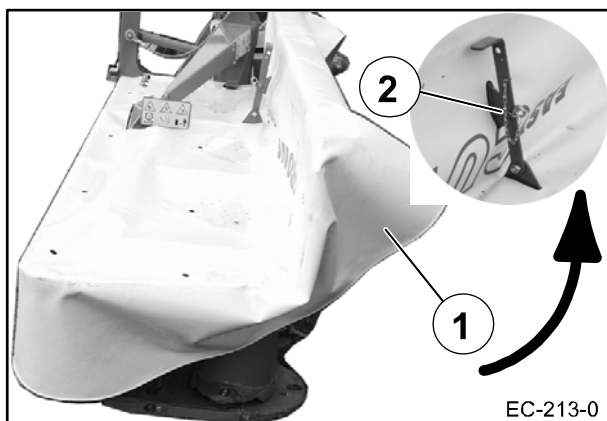


Figure 32:

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.

14.1.1 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).

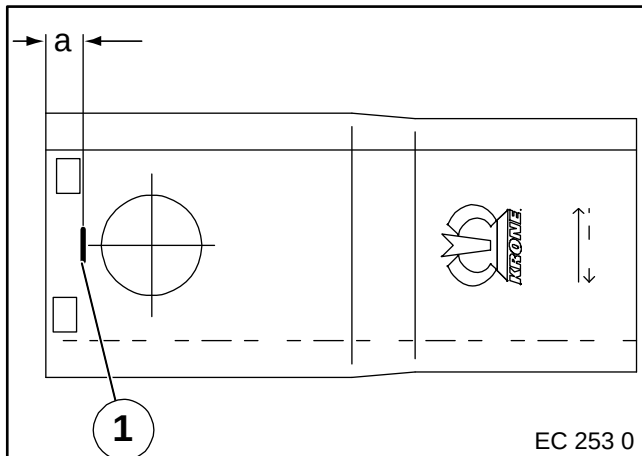


Fig. 33



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

Maintenance - Blade Changing

14.1.2

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.

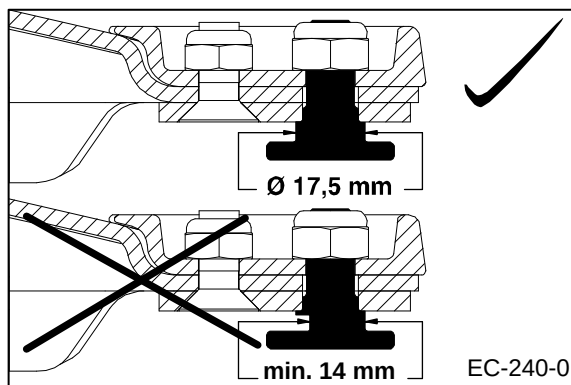


Fig. 34

14.1.3**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.

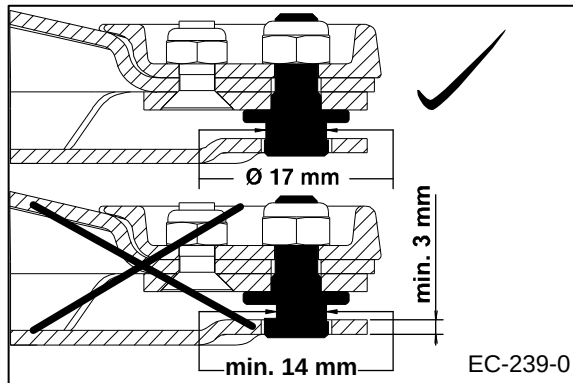


Fig. 35

Maintenance - Blade Changing

14.1.4 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.

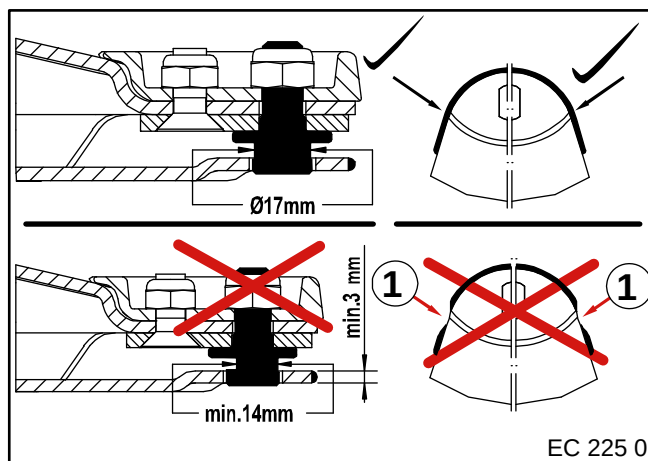


Fig. 36



Note

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

14.1.5 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.

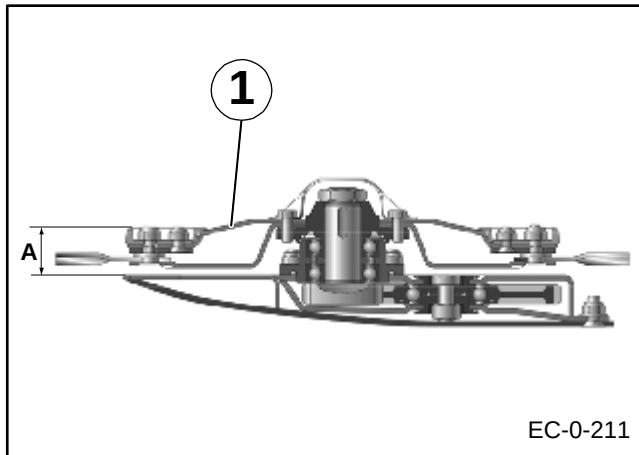


Fig. 37



Note

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

Maintenance - Blade Changing

14.1.6

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.

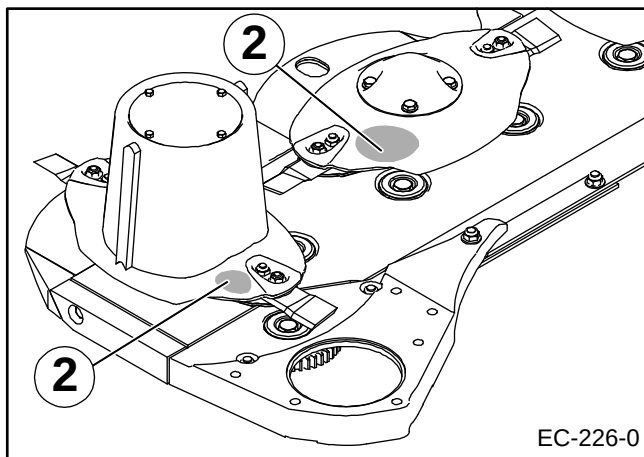


Fig. 38



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 .



14.2 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.



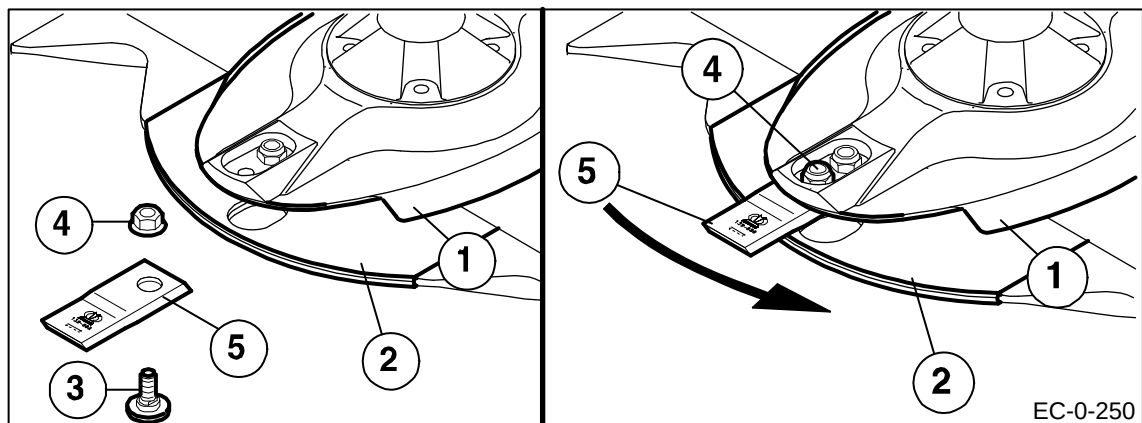
Danger! - Cutter blades coming loose

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!

Maintenance - Blade Changing

14.2.1 Blade Screw Connection



Pic. 39

- 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

14.2.2 Blade Quick-Fit Device

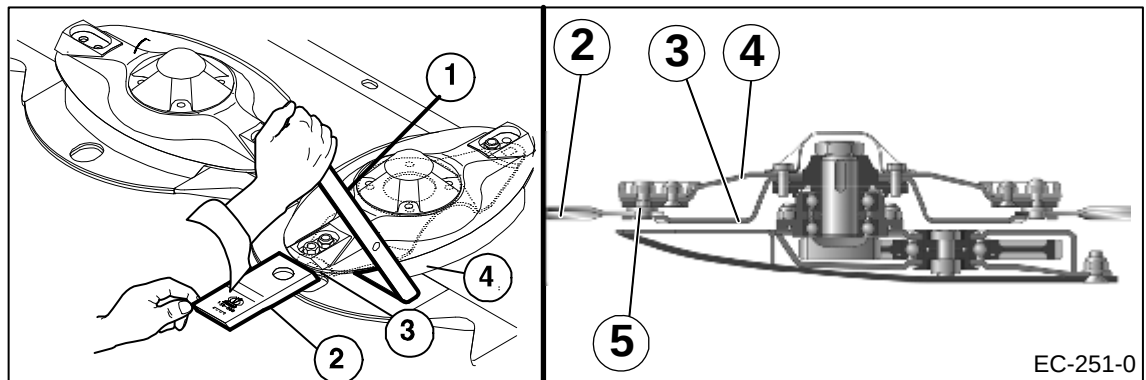


Fig. 40

- 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 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

Maintenance - Blade Changing

14.3

Replacing the linings



Caution! - If the linings are checked irregularly.

Effect: Damage to the machine

- Always check the moving 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. •

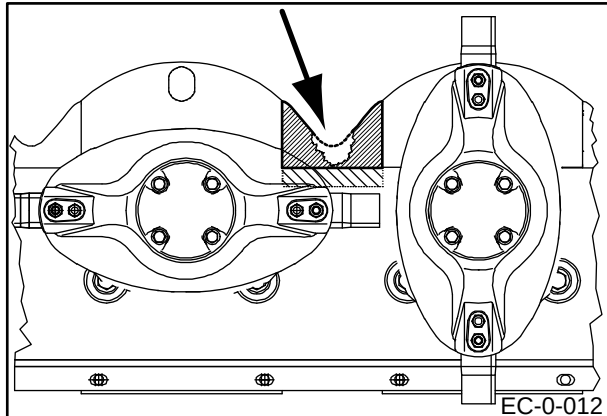


Fig. 41

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

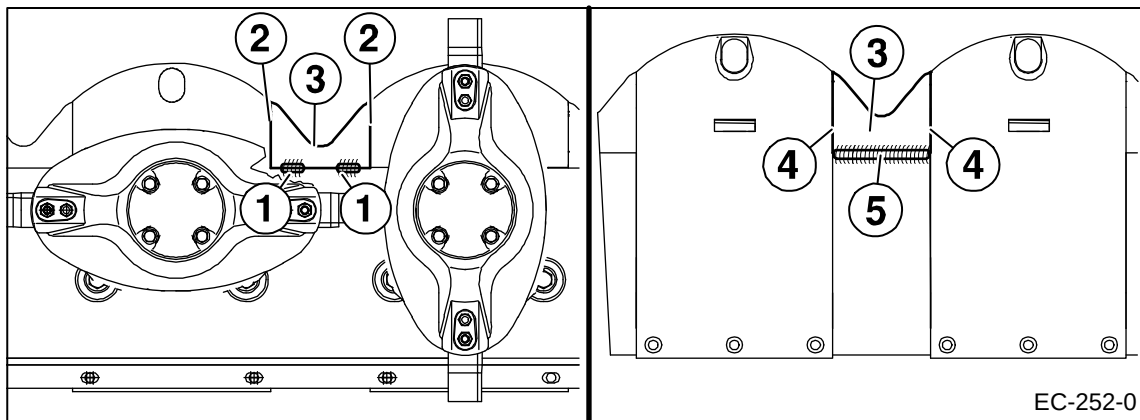


Fig. 42

- 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).

15 Maintenance – lubrication chart

15.1 Special Safety Instructions



Danger! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving (caution, the cutting discs continue to run).

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

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

15.2 PTO shaft

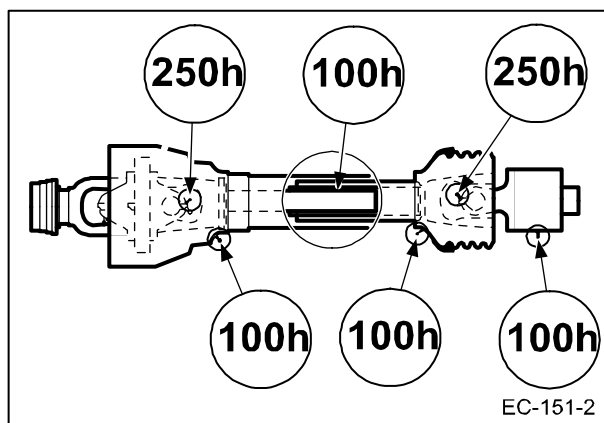


Fig. 43

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.

Maintenance – lubrication chart

15.3 Lubrication Chart

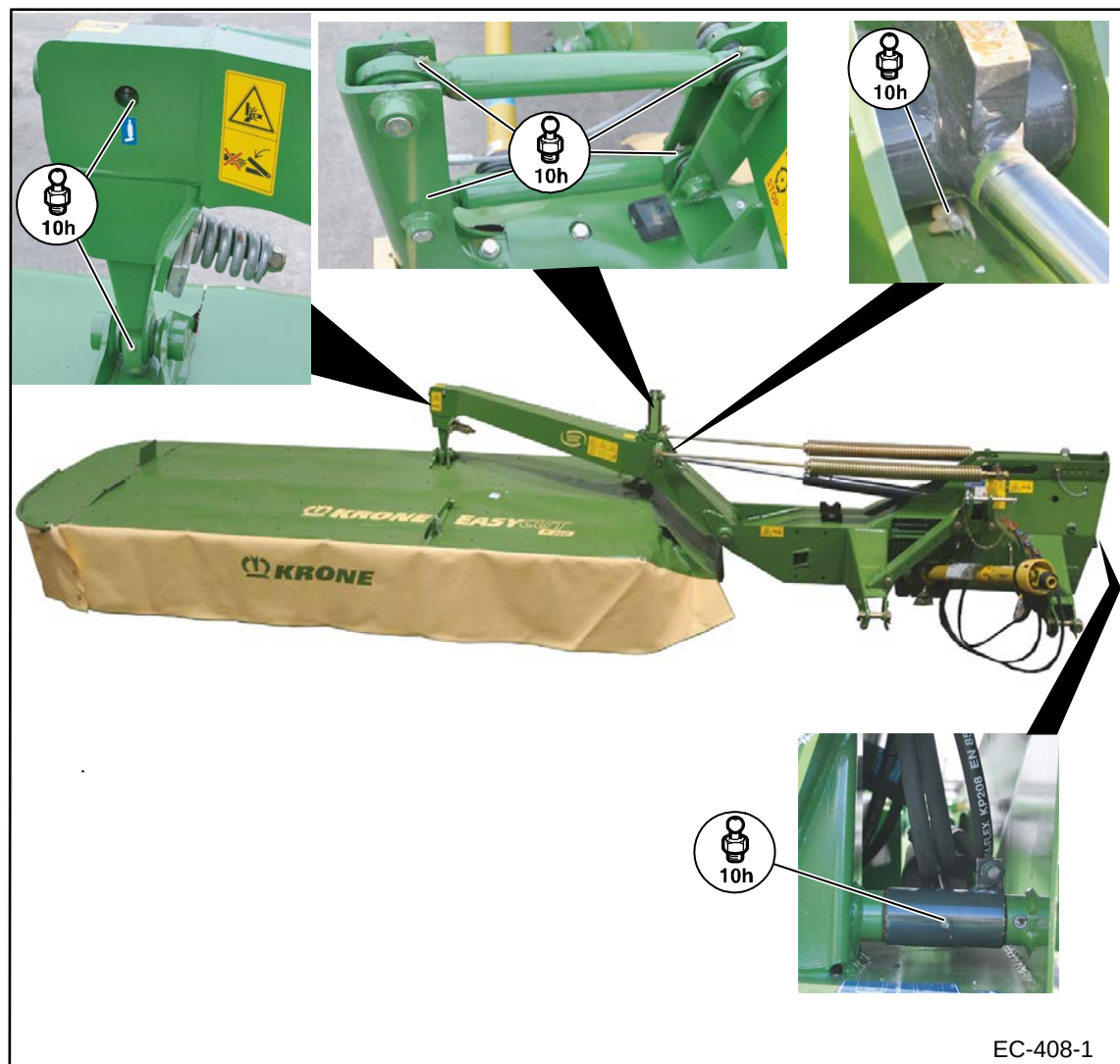


Fig. 44



16

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.

Before the Start of the New Season

17 Before the Start of the New Season

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 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.

17.3

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.

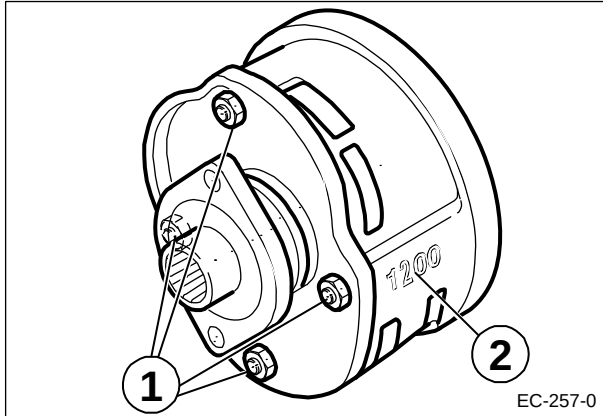


Fig. 45

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")

Special equipment

18 Special equipment

18.1 Special Safety Instructions



Danger! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving (caution, the cutting discs continue to run).

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

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

18.2 Adjusting Skids

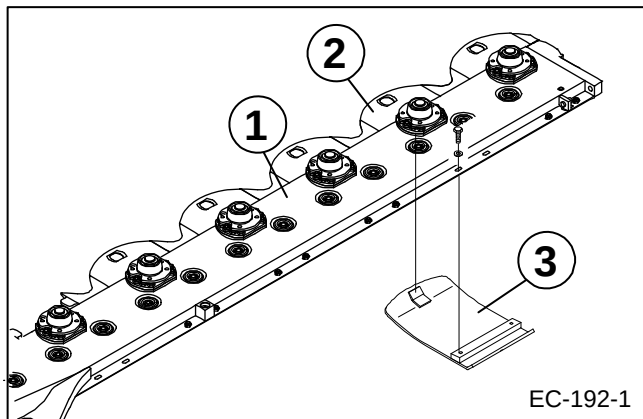


Fig. 46

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.

18.3 Hydraulic spring compensation (optional)

18.3.1 Scope of the accessories kit

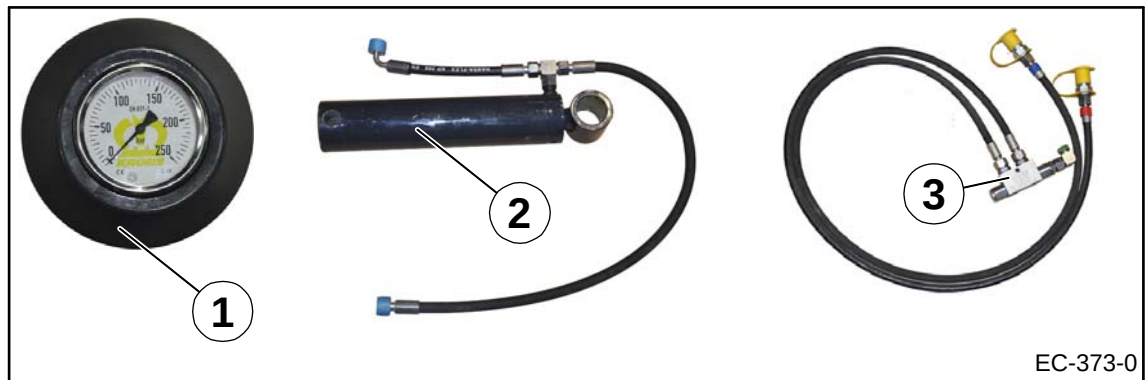


Fig. 47

Number	Pos.	Part No.		Dimensions
1	4	00 900 244 0		M6 x 50
1	5	00 908 704 1		M6
1	6	00 909 906 0		SKM 6
1	7	00 910 411 1		6.4/12.5 x 1.6
1	8	00 912 645 2		6 x 45
1	9	00 910 347 0		17/37 x 3
2	10	00 335 279 1		45.5/60.3 x 11

Special equipment

18.3.2 Mounting



Danger! - Unexpected movement of the machine

Effect: Danger to life, serious injuries

- There must be nobody between the tractor and machine.
- There must be nobody within the swivel range while the machine is being swivelled from the transport into the working position or vice versa.
- When leaving the driver's seat, switch off the engine, remove the ignition key, and secure the tractor against rolling away.
- Wait until all machine parts have come to a complete stop.
- When working under or on the raised machine, support the machine securely.



WARNING!

Before working on the hydraulic system, depressurise it.



DANGER! – Setting on the compensation springs

Effect: Danger to life or serious injuries

- Set the compensation springs only when the tension has been released (adjusting lever (a) must be unlocked)
- Compensation springs may be released only in the transport position or headland position by moving the adjusting lever. In the working position the compensation springs are subject to high tensile stress when the adjusting lever is locked.
- 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 compensation springs are removed and installed always in the working position.



Fig. 48

- Bring the machine into the transport position
- Unlock adjusting lever (a) as illustrated
- Move the machine to the working position

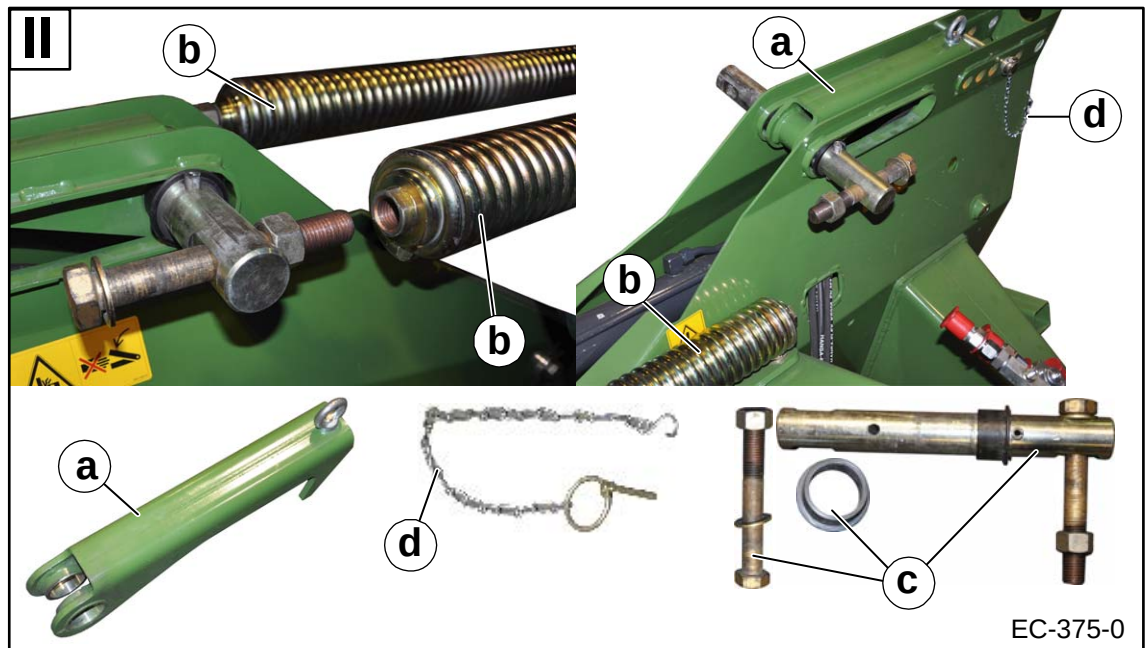
Unscrewing compensation springs


Fig. 49

- Unscrew compensation springs (b) and place on machine
- Remove components (C) from the three-point block
- Remove adjusting lever (a) and put aside
- Remove safety chain with cotter pin from the three-point block and put aside

Special equipment

Installing pre-assembled cylinder

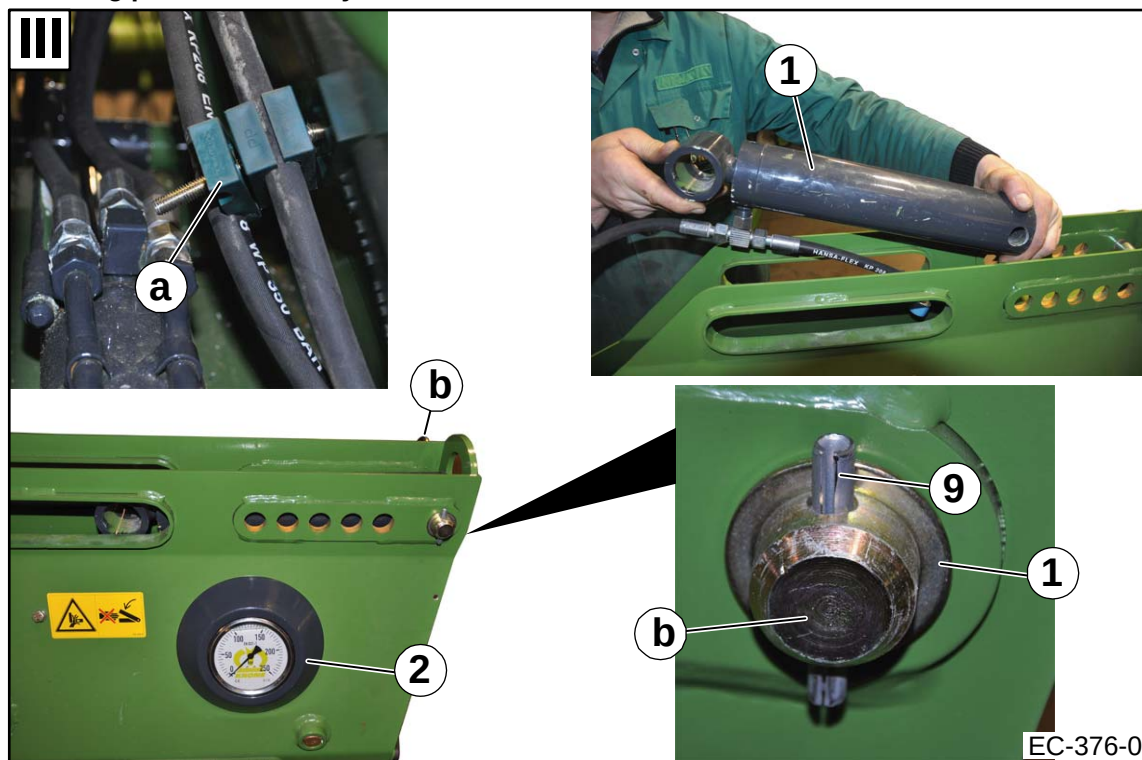


Fig. 50

- Remove upper hose clamp half (a)
- Install pre-assembled cylinder (1) (b) in the rear hole using available pin
- Secure pin (b) with washer (9) and cotter pin (8)
- Screw pressure gauge (2) onto three-point block

Screwing on compensation springs

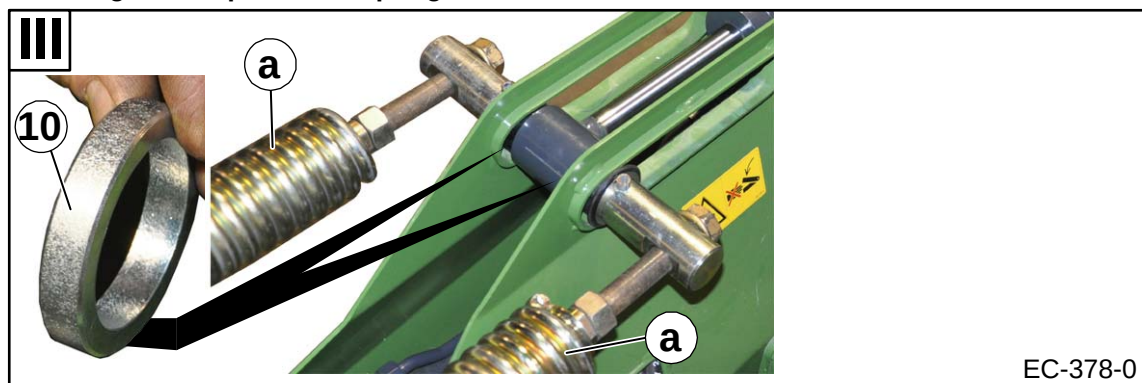


Fig. 51

- Install compensation springs (a)

Ensure that you install the spacers (10) on the right and left of the cylinder.

Installing double locking block and connecting hydraulic hoses

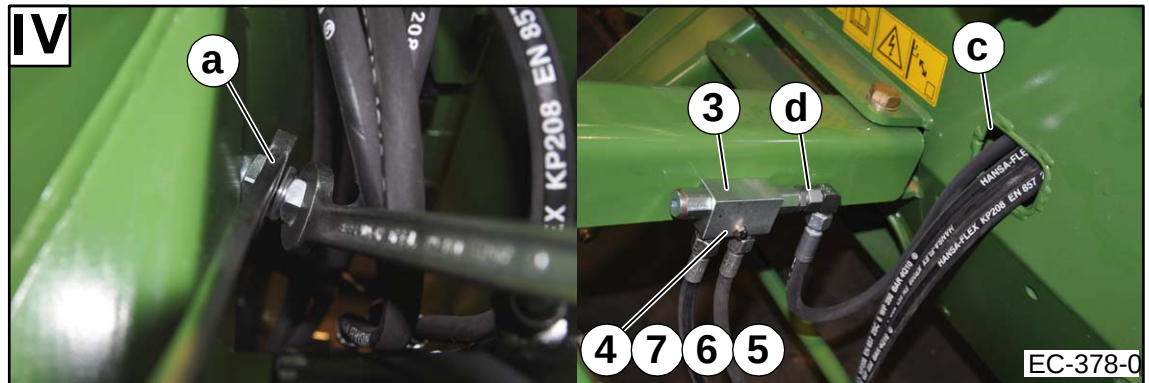


Fig. 52

- Screw pre-assembled double locking block (3) onto the three-point block using bolt (4), washer (7), detent edge washer (6) and nut (5)
- Screw hydraulic hose (90 degrees) onto the pressure gauge connection

Always counter with a 2nd wrench (a) on the pressure gauge connection

- Install upper hose clamp half
- Feed the longer hydraulic hose of the pre-assembled cylinder through the opening (c) in the three-point block and attach to the double locking block (d)

Disposal of the machine

19 Disposal of the machine

19.1 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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