Original operating instructions

Disc Mower

EasyCut 3210 CV
EasyCut 3210 CRi
EasyCut 4013 CV

(from serial no.: 898935)

Order no.: 150 000 008 03 en

24.02.2015

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 3210 CV ; EasyCut 3210 CRI , EasyCut 4013 CV**

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, 10.05.10

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

Year of manufacture:	**Machine No.:**

Dear customer,
Dear customer,

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

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

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

1 Table of Contents

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 Introduction

These operating instructions contain fundamental instructions. These must be observed in operation and maintenance. For this reason, these operating instructions must be read by operating personnel before commissioning and use, and must be available for easy reference.

Follow both the general safety instructions contained in the section on safety and the specific safety instructions contained in the other sections.

3.1 Purpose of Use

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

3.2 Validity

These operating instructions apply to disc mowers of the series:
EasyCut 3210 CV, EasyCut 3210 CRI, EasyCut 4013 CV

3.2.1 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

3.3 Identification Plate

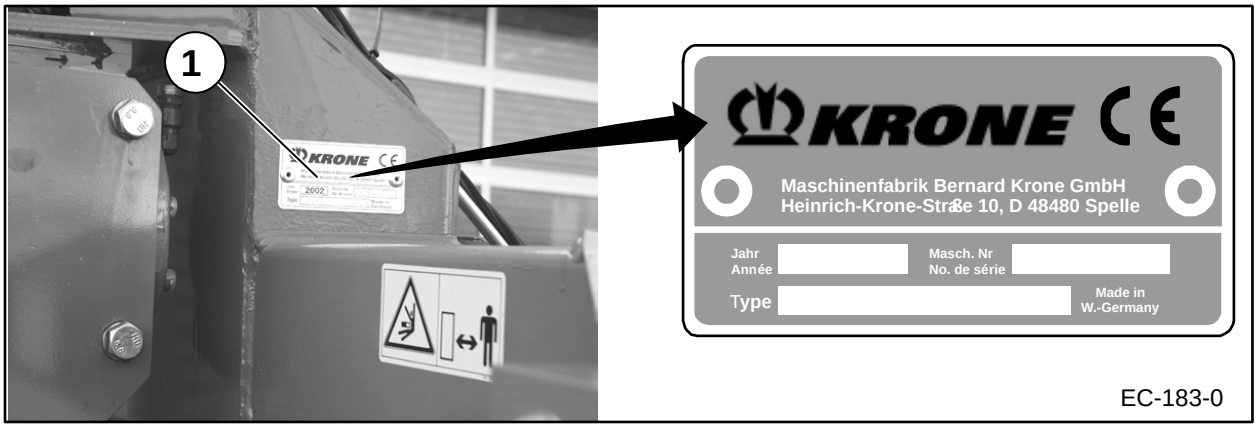


Fig. 1:

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

3.4 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.

3.5 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.

3.6 Service life of the machine

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

3.7 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.

Danger! - Transport / road travel

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

Since the transport width of the EasyCut 4013 CV exceeds 3 m, it is not permitted to drive the EasyCut 4013 CV on public roads.

Type		**Easy Cut 3210 CV**	**Easy Cut 3210 CRI**	**EasyCut 4013 CV**
Working width	[mm]	3140	3140	4010
Transport width	[mm]	3000	3000	4000
Number of mowing discs		5	5	5
Number of mower drums		2	2	2
Conditioner system		V-shaped prong	Roller conditioner	V-shaped prong
Speed of the conditioner	[rpm]	600/900	760	600/900
Width of conditioner system	[rpm]	2490	2400	2500
Acreage	[ha/h]	3,5 - 4	3,5 - 4	4 - 5
Power consumption	[kW/HP]	59 / 80	59 / 80	74 / 100
PTO speed	[rpm]	1000 [1)]/540 [2)]	1000 [1)]/540 [2)]	1000 [1)]/540 [2)]
Hydraulic connections required		1 x EW* 1 x DW**	1 x EW* 1 x DW**	1 x EW* 1 x DW**
Service weight	[kg]	approx. 2100	approx. 2100	approx. 2500
Maximum permissible speed	[km/h]	40	40	40

[1)] 1000 rpm, green gearbox standard
[2)] 540 rpm, beige gearbox on request
*) EW= Single-action control unit
**) DW= Double-action control unit

4 Safety

4.1 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:

4.2 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.

4.2.1 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.

4.2.2 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

4.2.3 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.

4.3 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!

4.4 Hitched Implements

1 Secure implements against rolling.

2 Observe the maximum supported load on the trailer coupling, swing drawbar or hitch!

3 If a drawbar coupling is used, make certain that there is enough play at the coupling point.

4.5 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)

4.6 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!

4.7 Tyres

1 When working on the tyres, make sure that the implement is safely lowered and secured against rolling (wheel chocks).
2 Installing wheels and tyres requires adequate knowledge and suitable tools!
3 Repair work on the tyres and wheels should be done by specially trained personnel using appropriate installation tools only!
4 Check tyre pressure regularly! Inflate the tyres to the recommended pressures!
5 Check the wheel nuts periodically! Missing wheel nuts can result in a wheel falling off and the machine tipping over.

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 carrying out maintenance work on a raised mowing unit, always use suitable means to secure it against falling.
4 When replacing working tools with cutting edges, use suitable tools and gloves!
5 Oils, greases and filters must be disposed of correctly!
6 Always disconnect the power supply before working on the electrical system!
7 If protective devices and guards are subject to wear, check them regularly and replace them in good time!
8 When performing electrical welding work on the vehicle and mounted devices, turn the power supply off at main battery switch or disconnect generator cable and battery!
9 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!
10 Only use nitrogen for filling pneumatic accumulators - risk of explosion!

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 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.

4.12 Position of the Adhesive Safety Stickers on the Machine

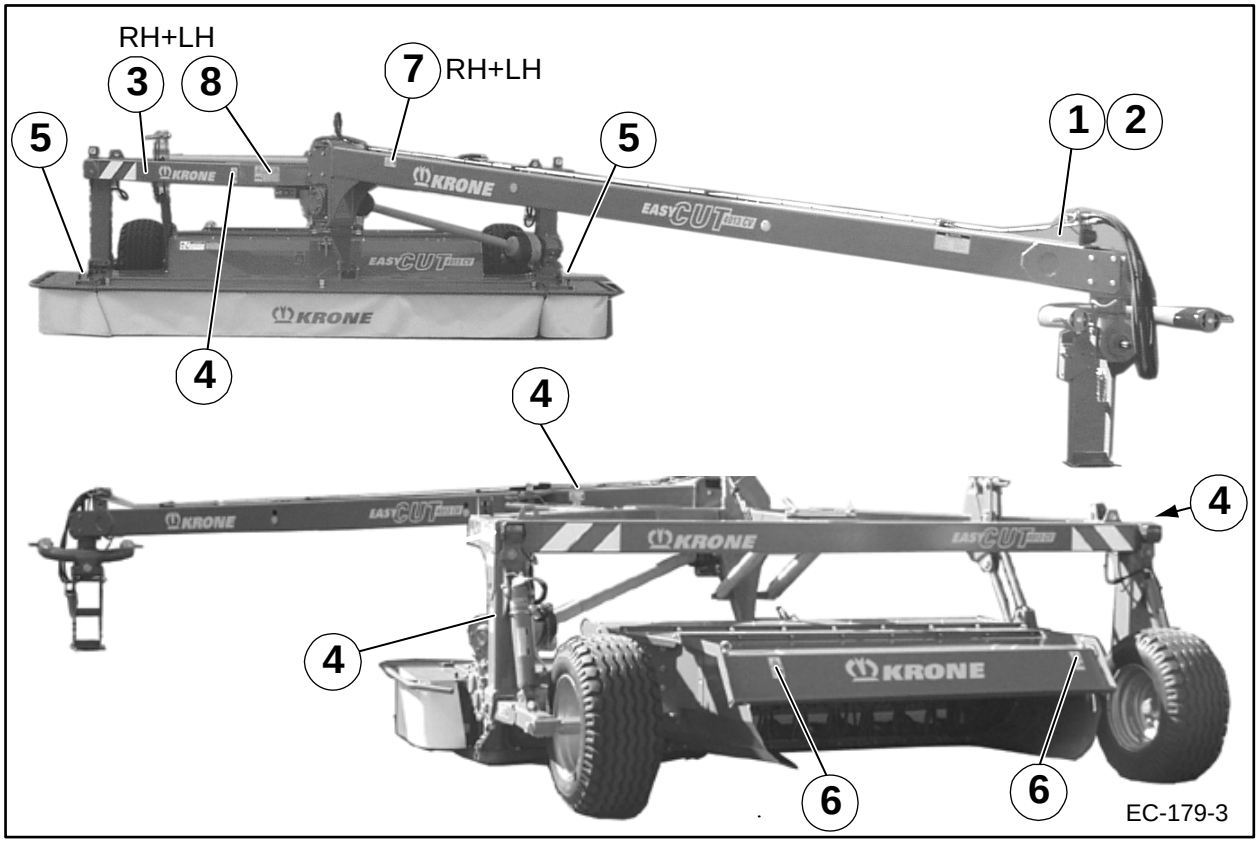
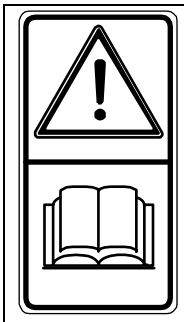


Fig. 2

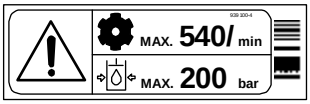
RH = right-hand side of the machine
LH= left-hand side of the machine

1) Order no. 939 471 1 (1x)

	**Danger due to incorrect operation and lack of knowledge** Incorrect operation and lack of knowledge of the machine as well as incorrect behaviour in hazardous situations is risking the life of the operator and third parties. • Before starting up the machine, read and follow the operating instructions and safety instructions.

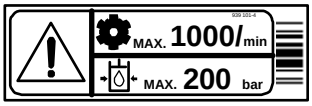
2) Order no. 939 100 4 (1x)

On the beige gearbox

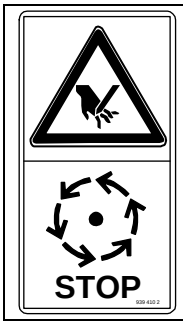
	**Danger if the maximum permitted PTO speed or the maximum permitted operating pressure is exceeded.** If the maximum permitted PTO speed is exceed, parts of the machine may be destroyed or forcibly ejected. If the maximum permitted operating pressure is exceeded, hydraulic parts may be damaged. As a result, people may be receive serious or life threatening injuries. • Observe the permitted PTO speed. • Observe the permitted operating pressure.

Order no. 939 101 4 (1x)

On the green gearbox

	**Danger due to exceeding the maximum permissible PTO speed or the maximum permissible operating pressure.** If the permissible PTO speed is exceeded, machine parts may be destroyed or flung out. If the maximum permissible operating pressure is exceeded, hydraulic components may be damaged. As a result, people may be seriously or fatally injured. • Observe the permissible PTO speed. • Observe the permissible operating pressure.

3) Order no. 939 410 2 (2x)

	**Danger due to rotating machine parts.** After switching off the machine, there is a risk of injury from coasting machine parts. • Do not touch any moving machine parts. • Wait until the machine parts have come to a standstill.

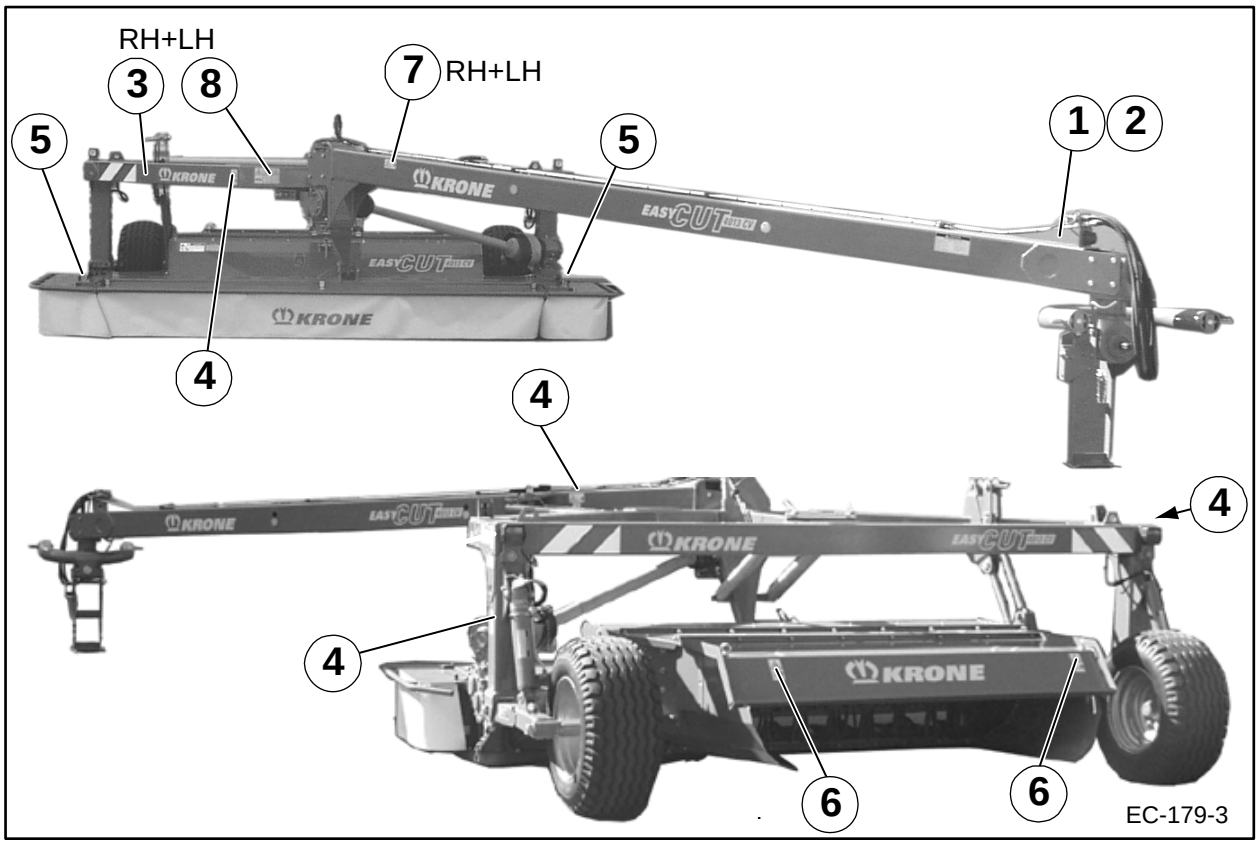
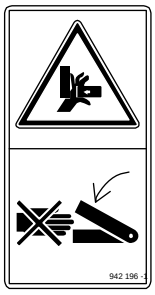


Fig. 3

RH = right-hand side of the machine
LH= left-hand side of the machine

4) Order no. 942 196 1 (4x)

	**Danger due to crushing or shearing** Risk of injury due to crushing or shearing points on moving machine parts. • While parts are moving, never reach into areas where there is a risk of being crushed.

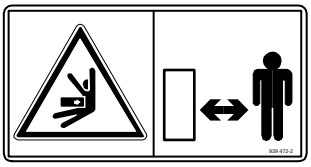
5) Order no. 939 572 0 (2x)

	**Danger from objects being flung out** When the machine is running, there is a risk of injury as objects may be flung out uncontrollably. • Before start-up, move guards into protective position.

6) Order No. 942 197 1 (2x)

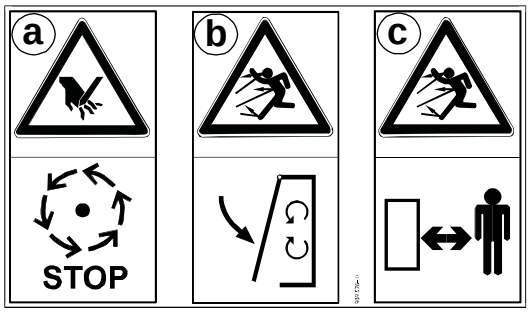
	**Danger from objects being flung out.** When the machine is running, there is a risk of injury as objects may be flung out uncontrollably. • Keep your distance when the machine is running.

7) Order No. 939 472 2 (2x)

	**Danger due to impact** Risk of death due to swivelling movements of the machine. • Ensure that there is nobody in the swivel range of the machine. • Maintain distance from moving machine parts.

8) Order No. 939 576 0 (2x)

a) b) c)



a)

Danger from turning machine parts

There is a risk of injury as machine parts may still continue to run for a certain time after being switched off

- Do not touch any moving parts of the machine.
- Wait until the machine parts have come to a complete stop.

b)

Danger from objects being flung out

When the machine is running, there is a risk of injury as objects may be flung out uncontrollably.

- Before start-up, move guards into protective position.

c)

Danger from objects being flung out

When the machine is running, there is a risk of injury as objects may be flung out uncontrollably.

- Keep your distance when the machine is running.

4.12.1 Re-Ordering the Adhesive Safety and Information Labels

Note

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

4.12.2 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.

5 Commissioning

5.1 First installation

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

5.2 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.

5.3 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.

5.3.1 Clutching points

The steerable pinions are designed according to cat. II.

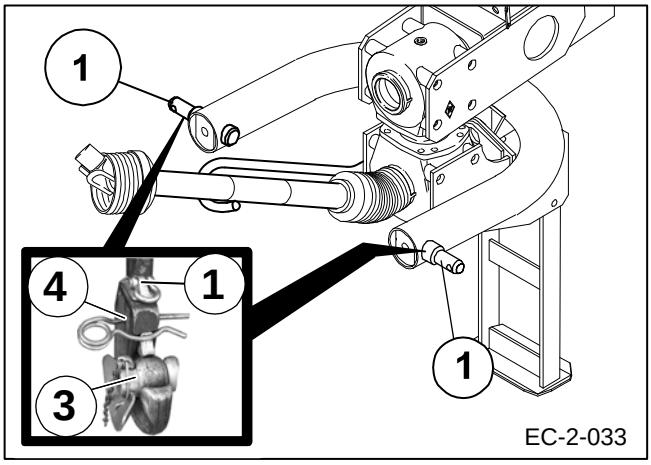


Figure 4

- Connect the machine with the steerable pinions (1) to the tractor.
- Place the machine onto the parking supports.

5.4 PTO shaft

5.4.1 Length adjustment

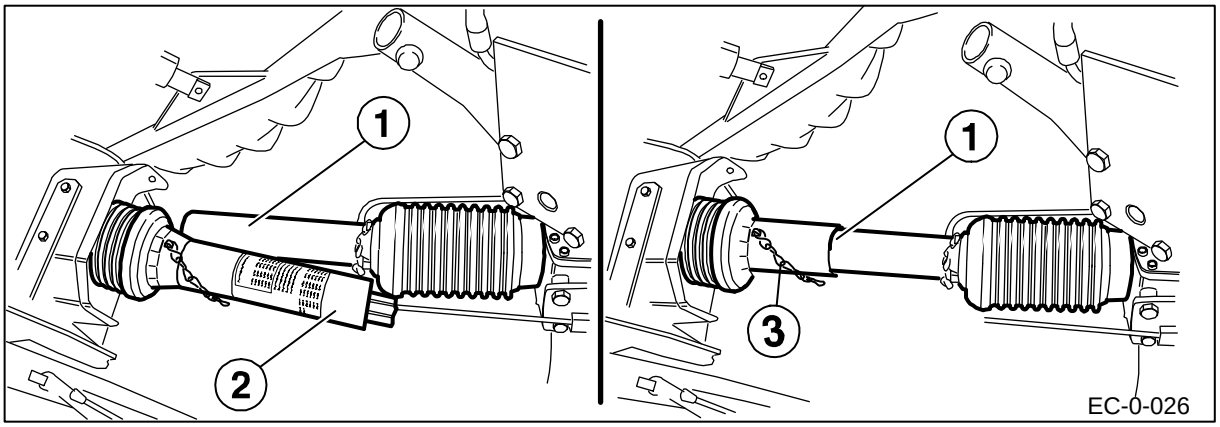


Figure 5

The ends of the PTO shaft which has been provided are equipped with a longer and a shorter guard over the joints. The joint with the longer guard must be pushed onto the gear input shaft towards the machine.

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 special section tubes and guard tubes to an extent that the PTO shaft can move freely in the shortest operating position.
- For additional operating instructions refer to the operating instructions of the PTO shaft manufacturer.

5.5 Install the PTO shaft

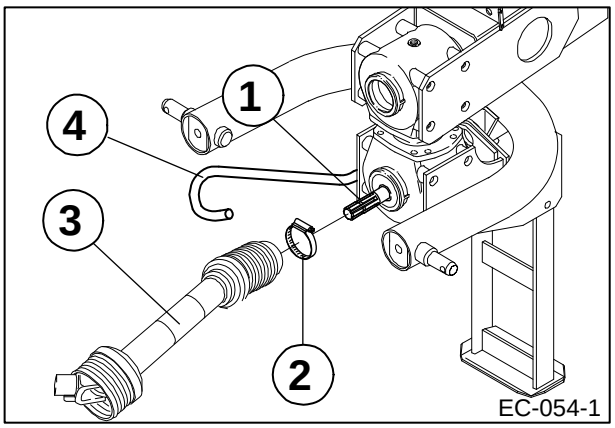


Figure 6

- Slide the PTO shaft (3) onto the gear input shaft (1) of the swivel gear.
- The safety mechanism must engage.
- Secure the PTO shaft guard against turning with pipe clamp (2).
- Set the PTO shaft down on the PTO shaft support (4).

Make sure the PTO shaft lock has engaged. Never use the safety chains to hold the PTO shaft in place.

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".

5.6 Height of tractor lower suspension arms

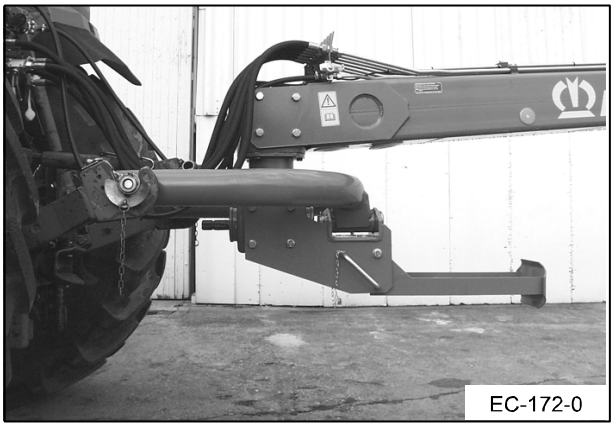


Fig. 7:

Perform default setting on a level surface.

Adjust the height of the lower suspension arms in such a way that the frame of the machine is in parallel to the ground.

6 Start-up

6.1 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.

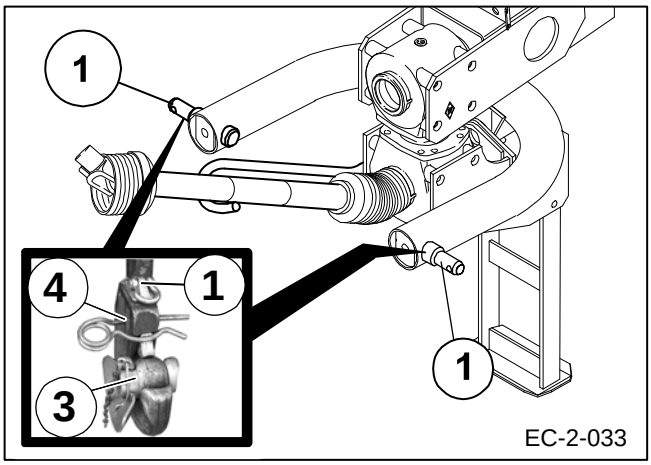


Figure 8

- Connect the machine with the steerable pinions (1) to the tractor.
- Place the machine onto the parking supports.

6.2 Hydraulics

6.2.1 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.

6.2.2 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.

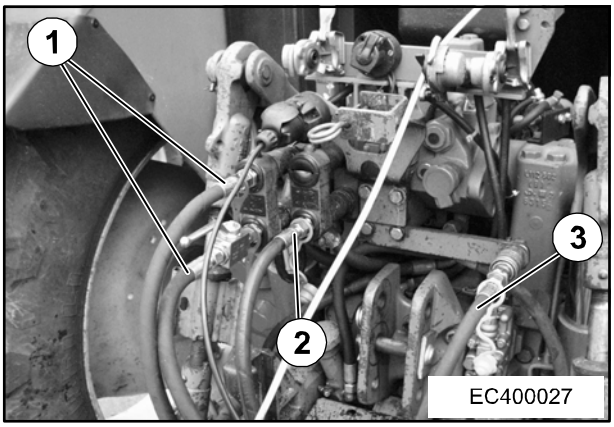


Figure 9

Note

Connect the hydraulic lines correctly

- The hydraulic hoses are identified by coloured hose clips.

Both a double-action and a single-action control unit are required on the tractor to operate the machine.

An additional single-action control unit is required for the cross conveyor option.

Control unit (1) double-action (red 2/blue 2):

- Swivel the drawbar from the transport position to the working position and vice-versa.

Single-action control unit (2) (red 1):

- raises or lowers the mowing unit from the transport to working position or vice-versa

With the cross conveyor only

Single-action control unit (3) (red 3):

- Raises and lowers the cross conveyor.

6.3 Connecting the electrical controls

The connection of the electrical controls is performed by means of the power supply cable

- Insert the plug of the power supply cable into the tractor's continuous power socket.
- Position the cable so that it will not come in contact with the wheels.

Caution! - Connecting the electrical controls

Effect: Damage to the control unit

Before inserting the plugs, make certain the plugs and sockets are clean and dry. Dirt and moisture may result in short circuits!

6.4 Lighting

Danger! - Lighting system

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

- Before transporting on public roads, always connect the lighting system and perform a function check.
- Keep the lighting system clean. Soiled lights and spotlights impair road safety.
- Replace defective light bulbs or broken spotlights.
- When transporting on public highways, the machine must be in the transport position.

6.5 Lighting connection

To comply with the Road Traffic Licensing Regulations, the machine is equipped as follows by default:

- at the front with white clearance lamps (3)
- 3-chamber rear lamps (4) (direction indicator: reversing light and brake light)
- with red reflectors on the rear (5)

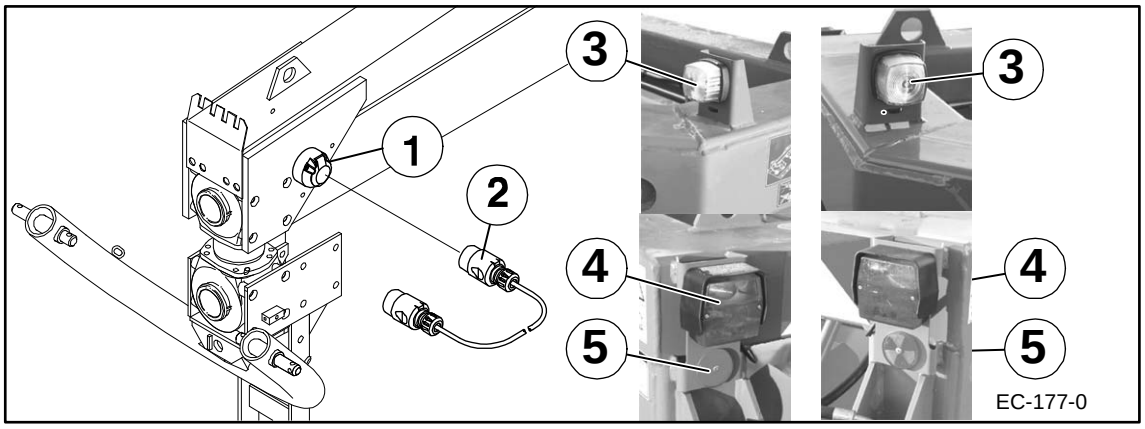


Figure 10

The lighting system is connected via the 7-pin connection cable (2).

To do this:

- Insert the 7-pin connection cable plug (2) into the appropriate socket (1) of the machine.
- Insert the 7-pin connection cable plug (2) into the appropriate socket of the tractor.
- Position the cable so that it will not come in contact with the wheels.

Note

Before inserting the plugs, make certain the plugs and sockets are clean and dry. Dirt and moisture may result in short circuits!

6.6 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 1000 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!

6.7 Install the PTO shaft

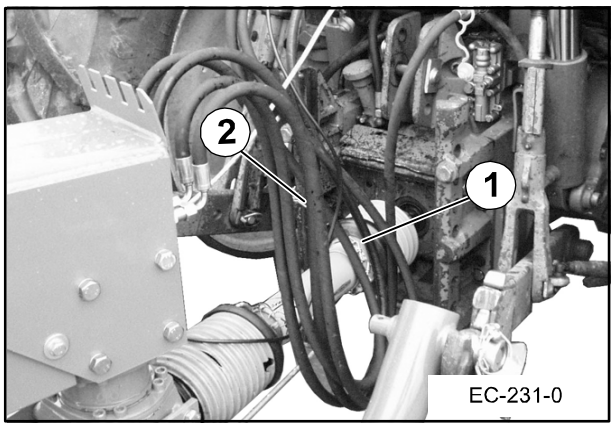


Figure 11

- 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).

6.8 Intermediate PTO shaft

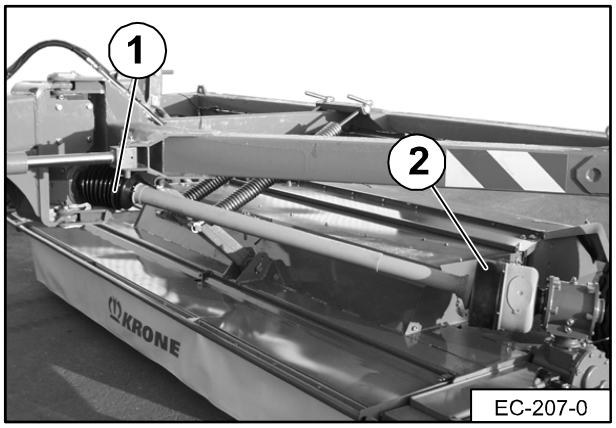


Figure 12

The intermediate PTO shaft together with the free-wheel (1) is mounted towards the lower swivel gear. The friction clutch (2) of the intermediate PTO shaft is coupled to the input gearbox.

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")

6.9 Using the safety chain

WARNING!

When using a wrongly dimensioned safety chain, the safety chain may tear if the machine loosens unintentionally. This can result in serious accidents.

- Always use a safety chain with a minimum tensile strength of 89 kN (20.000 lbf).

Note

Using the safety chain

Attachment of the safety chain is not stipulated in all countries.

The safety chain serves as an additional safety precaution for trailed devices, should they come loose from the swinging drawbar during transport. Attach the safety chain with the respective mounting parts to the swinging drawbar holder of the tractor or to another specified coupling point. The safety chain must have enough play so that driving around curves with maximum steering angle and simultaneous driving a slope up or down is possible.

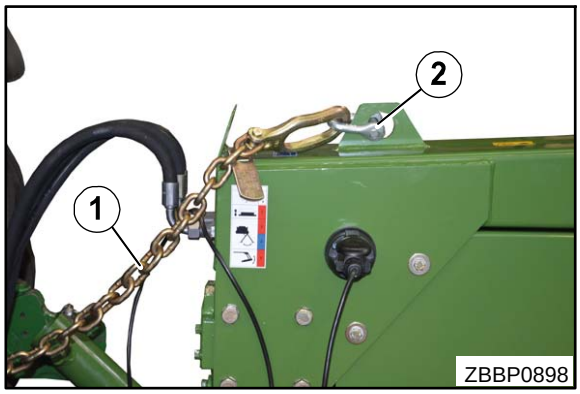


Fig. 13

- Install the safety chain (1) with the shackle (2) on the disc mower

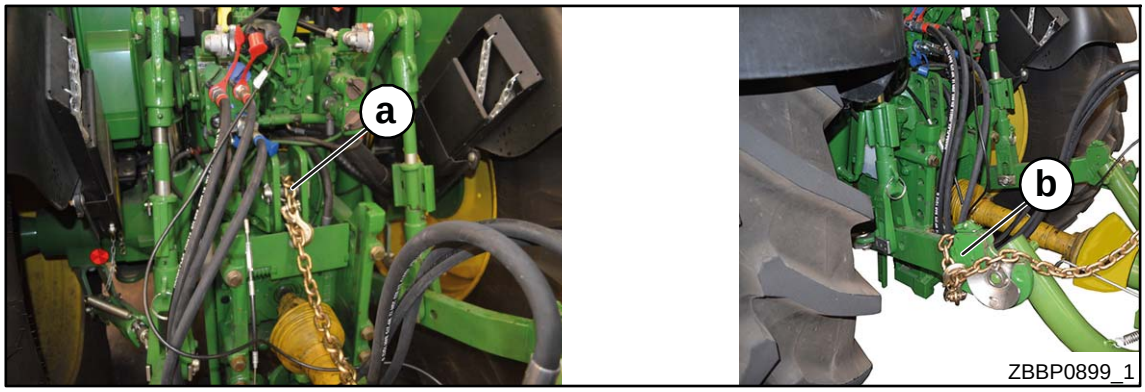


Fig. 14

- Install safety chain (1) on an eligible position (for example: a or b) on the tractor.

6.10 Swivelling parking support into transport position

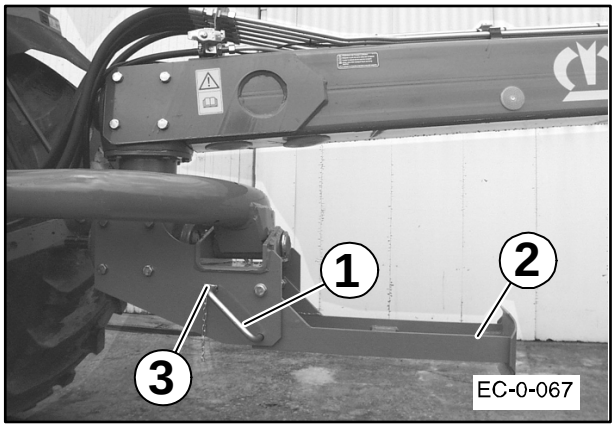


Figure 15

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).
- Secure bolt (1) with spring cotter pin (3).

7 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!

There is a risk of accident when the regulating valves of the tractor are not locked and the operation unit is not switched off.

Machine components can be activated unintentionally when regulating valves are not locked or the operation unit is not switched off. This can result in serious accidents.

To prevent functions from being triggered accidentally:

- The operation unit must be switched off.
- The control units must be in neutral position and locked.

Danger! - Transport / road travel

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

- In transport position, always close the hydraulic shut-off valves.

7.1 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 hurt.

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

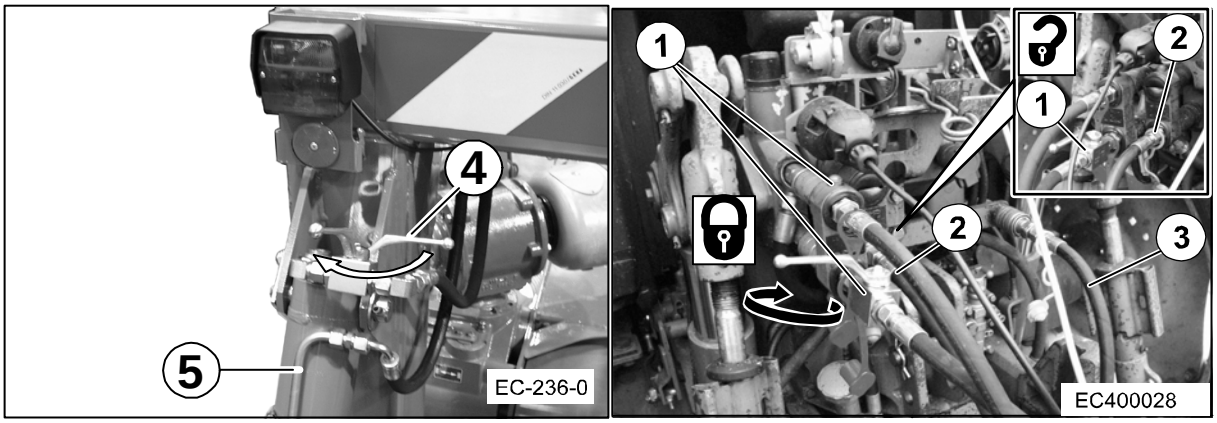


Figure 16

During transport / road travel the disc mower must be raised.

To do this:

- Switch off PTO drive
- Swivel the parking support into transport position and lock it into position with the bolt (see chapter on start-up entitled "Swivelling the parking support into transport position").

With cross conveyor option:

- Activate the single-action (red 3) control unit (3) to swivel the cross conveyor into working position.
- Switch off the control unit.
- Activate the single-action (red 1) control unit (2) to lift the mowing unit.
- Activate the double-action (red2/blue2) control unit (1) to swivel the machine into transport position.
- Close the shut-off valve (1) on the pressure hose to the double-acting swivel cylinder (working, transport position).
- Close the shut-off valve (4) on the left lifting cylinder (5) of the wheel arm.

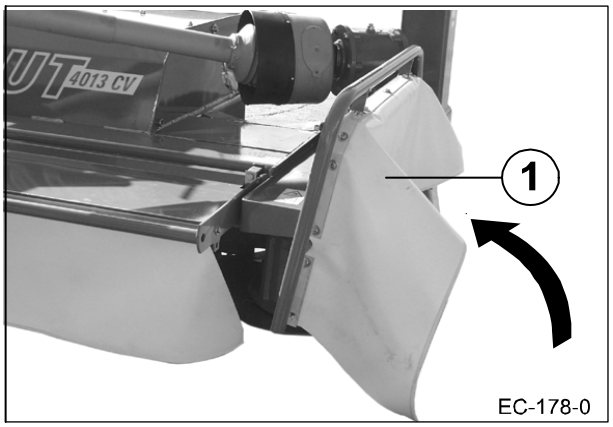


Figure 17

Always move the guard (1) from the right and left-hand sides to the transport position before road travel.

Allow the guards to engage.

7.2 Clamp and Buffer

Fig. 18

Check the clamp and buffer (1) for tight fit every time before transport or road travel.

If the clamp and buffer show signs of damage or wear, replace them.

Item No.: 00 250 831 1

8 Operation

8.1 From transport into working position

Danger! - Swivelling the mowing unit into working position

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

- Do not swivel the machine into its working position until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.
- 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.

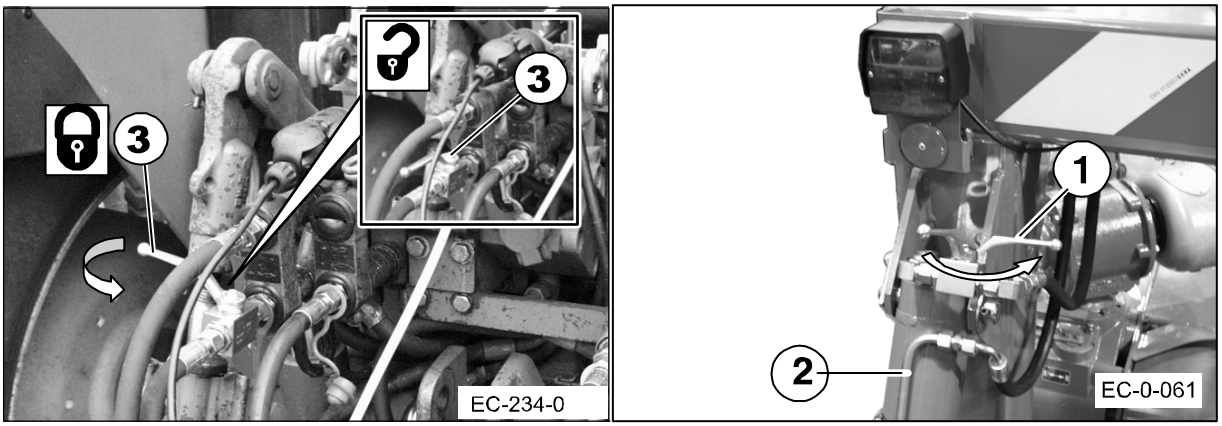


Figure 19

To do this:

- Open the shut-off valve (1) on the left lifting cylinder (2) of the wheel arm.
- Open the shut-off valve (3) on the pressure hose to the double-acting swivel cylinder (working, transport position).
- Activate the double-action (red2/blue2) control unit (1) on the tractor to swivel the machine into working position.
- Activate the single-action (red1) control unit (2) on the tractor to lower the mowing unit.

8.2 Before mowing

WARNING!

Foreign bodies may be hurled up during the operation. Thus there is a risk for persons staying in the danger zone to be seriously hurt or killed.

Therefore the following points must be observed before the machine is used:

- The mower must be in working position.
- Move protective equipment into protective position and make sure that it is not damaged.
- Replace damaged protective equipment immediately.
- Instruct persons to leave the danger zone.
- Special care should be taken when working near roads and buildings.
- Make sure each time before the mower is used that blades, retaining bolts, leaf springs and cutting discs or mower drums are not damaged, worn or missing; replace them, if necessary!

Danger! - Before mowing / Before start-up and while working

Effect: Danger to life or serious injuries.

- The mowing unit is not suitable for mowing embankments!
- Maintain an adequate safety distance from the cutting tools during operation.
- The support skids must rest on the ground before start-up and during work!
- Do not enter the area between the tractor and the mowing unit while it is swivelled from transport into working position and vice versa.
- Stones and other objects may be hurled up, even when the mowing unit is used correctly. For this reason, no one is permitted in the danger zone. Special care should be taken when working near roads and buildings.

Warning! - Do not drive in reverse when using the machine for work.

Effect: Damage to the machine.

The machine is designed to travel forwards. Never reverse while the machine is in operation and in working position. Lift the machine first.

8.2.1 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

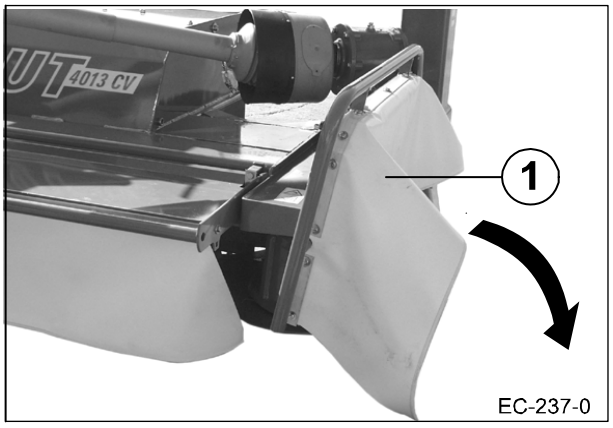


Figure 20

Fold down the protective devices (1) (guard cloths) on the left and right side before operation.

8.3 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!

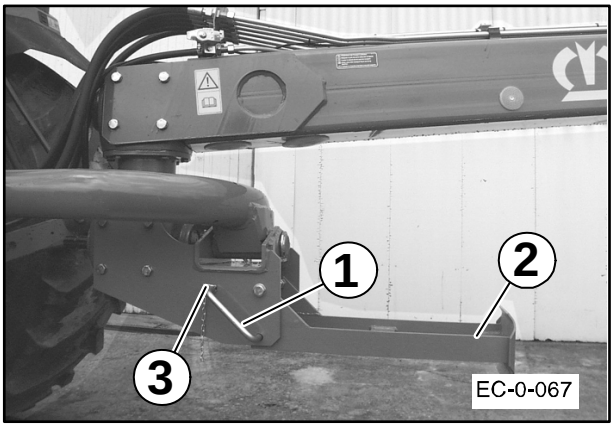


Figure 21

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

- Secure bolt (1) with spring cotter pin (3).

8.4 Function of the switches on the control unit

Fig. 22:

The control unit can be used to adjust the speed of the cross conveyor. The following table explains the function of the individual switches.

Item	Designation	Function
1	Pilot lamp (red)	Lit when the control unit is turned on.
2	Flip switch	Top: Control unit on Bottom: Control unit off
3	Rotary potentiometer	The rotary potentiometer can be used to adjust the speed of the cross-conveyor belt. clockwise = faster anticlockwise = slower

8.5 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!

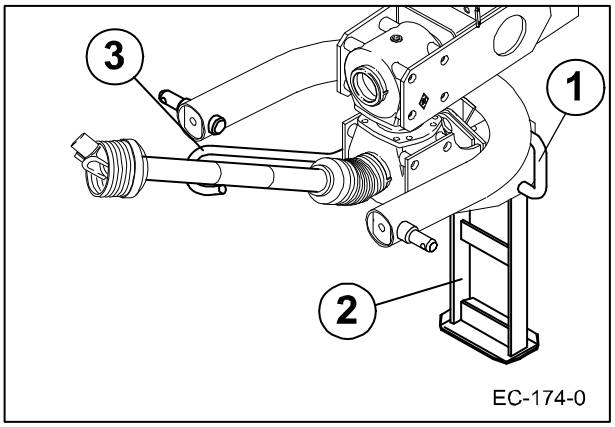


Figure 23

- Swivel the parking support (2) down and lock it in place with the bolt (1). Secure bolt with spring cotter pin.
- Via the tractor hydraulics, lower the machine to the ground.
- Remove the PTO shaft guard retaining chains. Remove the PTO shaft from the PTO and place it onto the PTO shaft support (3).
- Uncouple the lower suspension arm. Pull out the electrical connection cable between tractor and machine from the plug on the tractor.

- Swivel the parking support (2) down and lock it in place with the bolt (1). Secure bolt with spring cotter pin.
- Via the tractor hydraulics, lower the machine to the ground.
- Remove the PTO shaft guard retaining chains. Remove the PTO shaft from the PTO and place it onto the PTO shaft support (3).
- Uncouple the lower suspension arm. Pull out the electrical connection cable between tractor and machine from the plug on the tractor.

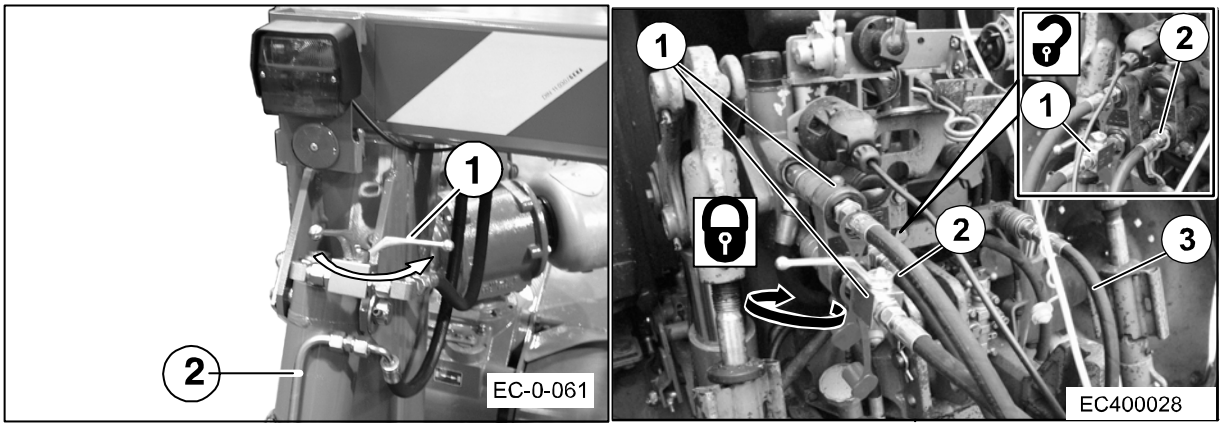


Figure 24

- Close the shut-off valve (1) on the hydraulics pressure hose to the double-action hydraulic cylinder.
- Depressurise the hydraulic system. Move the control valves on the tractor into the flow position.
- Close the shut-off valve (4) on the left lifting cylinder (5) of the wheel arm.
- Disconnect the hydraulic hoses (1,2,3) and connect them to the support on the machine provided for this purpose.

9 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.

The disc mower is always equipped with a green swivel gear that operates at a drive speed of 1000 rpm. If necessary, a swivel gear that operates at a drive speed of 540 rpm can be installed. This gearbox has a beige colour.

9.1 Adjusting the cutting height

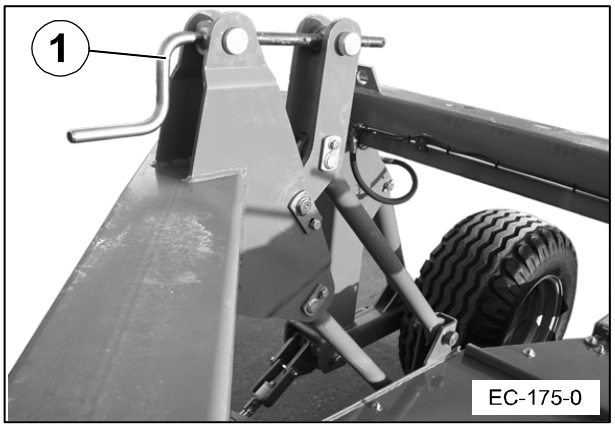


Figure 25

The cutting height can be adjusted to different soil conditions.
The cutting height adjustment is set by turning the crank (1).
For larger modifications of the cutting height, the setting of the forward guards must be checked.

9.2 Adjusting the Guards

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

9.2.1 Lateral guards

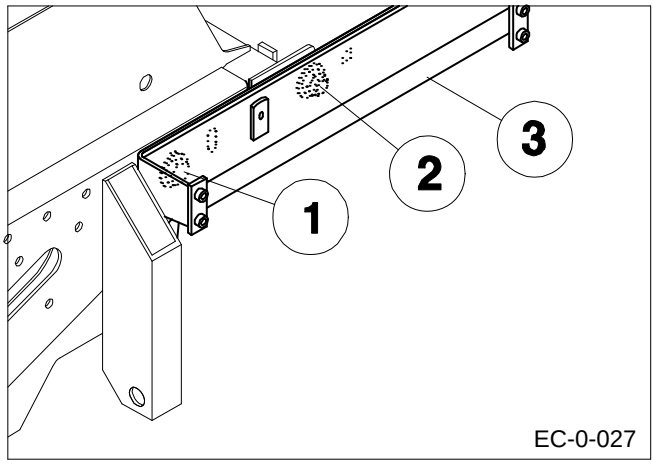
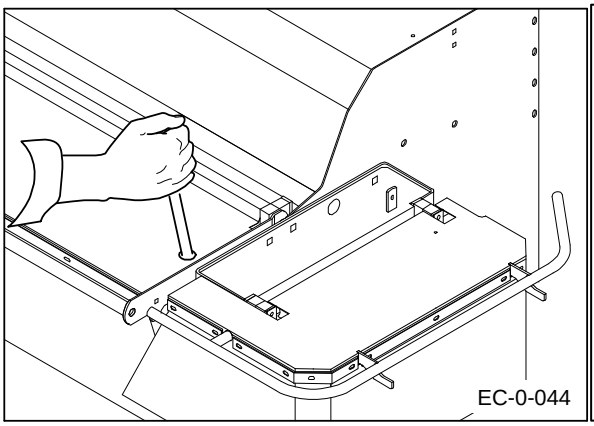


Fig. 26

Lateral guards can be vertically adjusted. For this purpose, unscrew the screws (1) and (2). Adjust the mounting bar (3) vertically. Tighten the screws.

9.2.2 Front guards



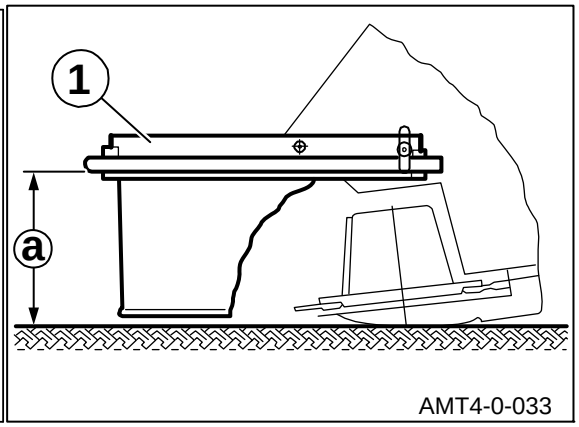


Figure. 27

Height adjustment determined by side guards.

Dimension a = 440 mm.

Predefined dimension **"a"** on the front guard (1) offers optimum protection against ejected objects. (Guard is in parallel to the ground)

A screw driver is used to open the front guards. Use the screwdriver to push in the ratchet mechanism.

9.3 Setting of the Ground Pressure

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.

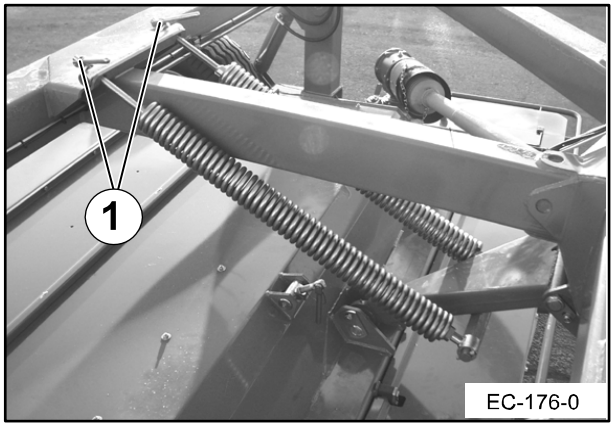


Figure 28

The ground pressure can be adjusted through threaded spindles (1). To set the ground pressure the machine must be lifted.

9.4 Adjusting the Tedder Speed

EasyCut 3210 CRi ; EasyCut 4013 CV

Danger! - Settings on the machine

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

- Setting tasks must only be performed when the drive is switched off and the engine is at a standstill! Remove the ignition key!

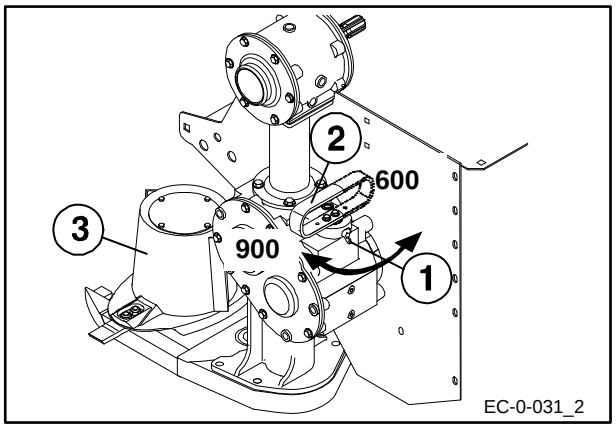


Figure 29

Two tedder speeds can be set on the speed gearbox. This affects the conditioning effect and the power consumption.

Minimum speed: 600 rpm.

Maximum speed: 900 rpm.

- Unscrew the wing screw (1) from the actuating lever (2).
- Rotate the actuating lever (2) 180°. In doing so, turn the mower drum (3) so that the actuating lever can be rotated completely.
- Secure the actuating lever (2) with the wing screw (1).

9.5 Adjusting the conditioner plate

EasyCut 3210 CRi ; EasyCut 4013 CV

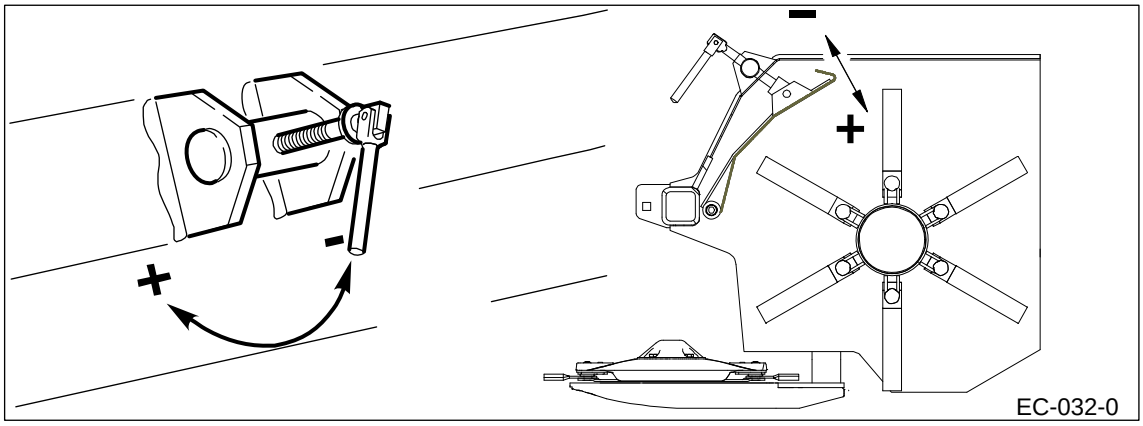


Fig. 30

The conditioning of the mowed crop can be influenced by adjusting the conditioning plate through the crank (1). The adjustment depends on the desired degree of conditioning of the crop.

+: Degree of conditioning is increased

-: Degree of conditioning is decreased

Always check the tedder for damaged tines before the machine is used:

Straighten any bent tines.

Replace any broken tines.

9.6 Adjusting the Swath Width

Two different forms of spreading are available:

- Swathing
- Wide spreading

9.6.1 Swathing

EasyCut 3210 CRi ; EasyCut 4013 CV

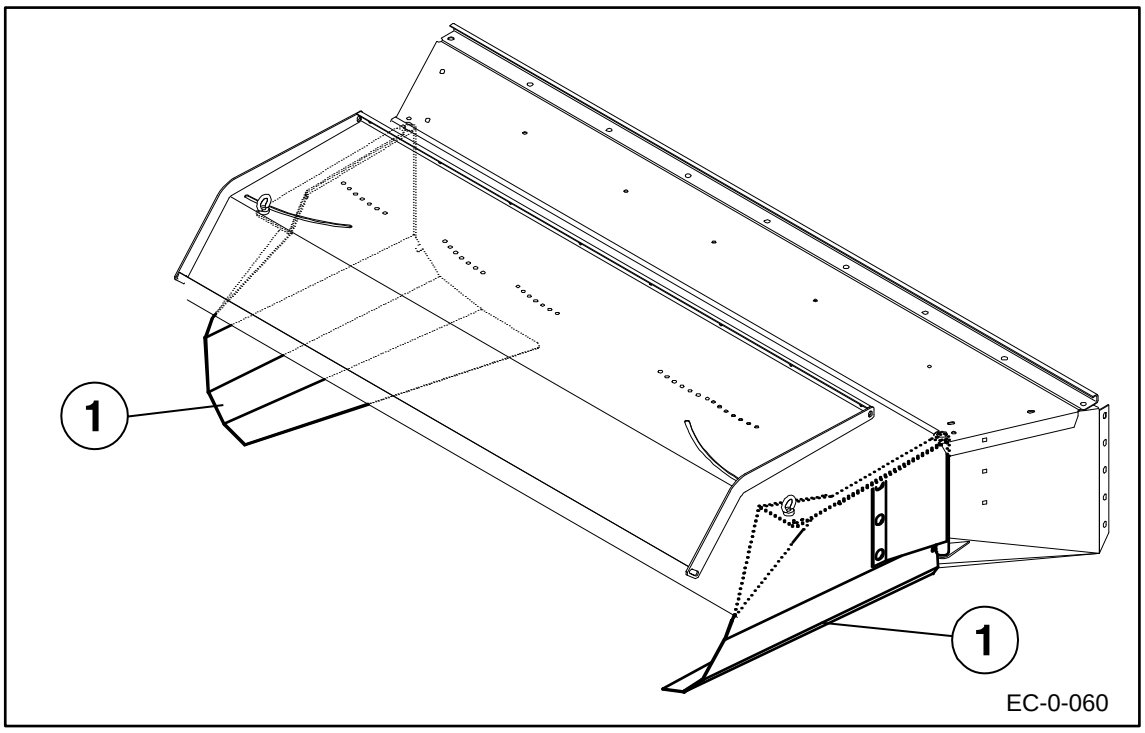


Fig. 31

The swath width is adjusted by the swath flaps (1) on the rear of the machine. The swath flaps are locked in position by means of the ring nuts.

9.6.2 Wide spreading

EasyCut 4013 CV

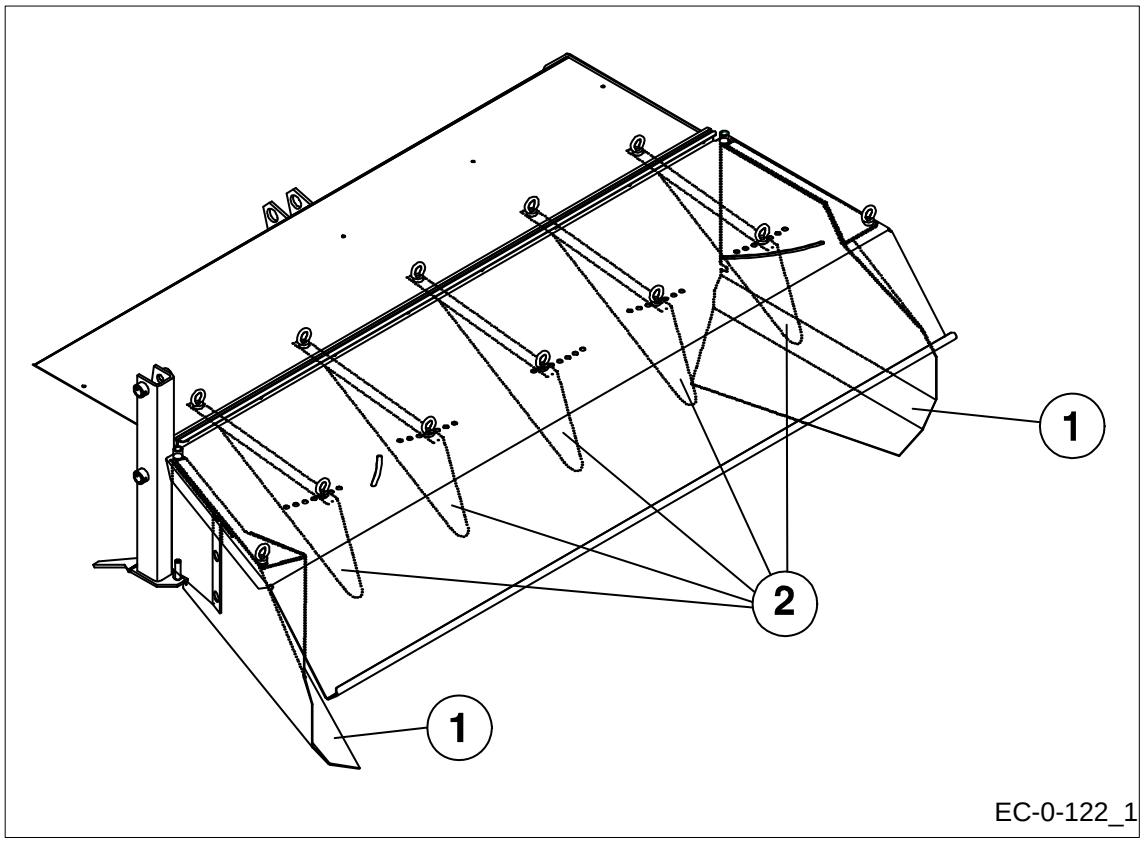


Fig. 32

The tedder flaps (1) are fully open. Mount the deflector plates (2) as shown here. Depending on the operating conditions, the deflector plates (2) may have to be adjusted to provide for equal distribution across the entire area.

9.6.3 Wide Spreading and Swathing

Machine type	Number of deflector sheets (2)	Number of deflector sheets (3)
2801 CV	4	5
3201 CV	5	6
3600 CV	6	7
3210 CV	5	6

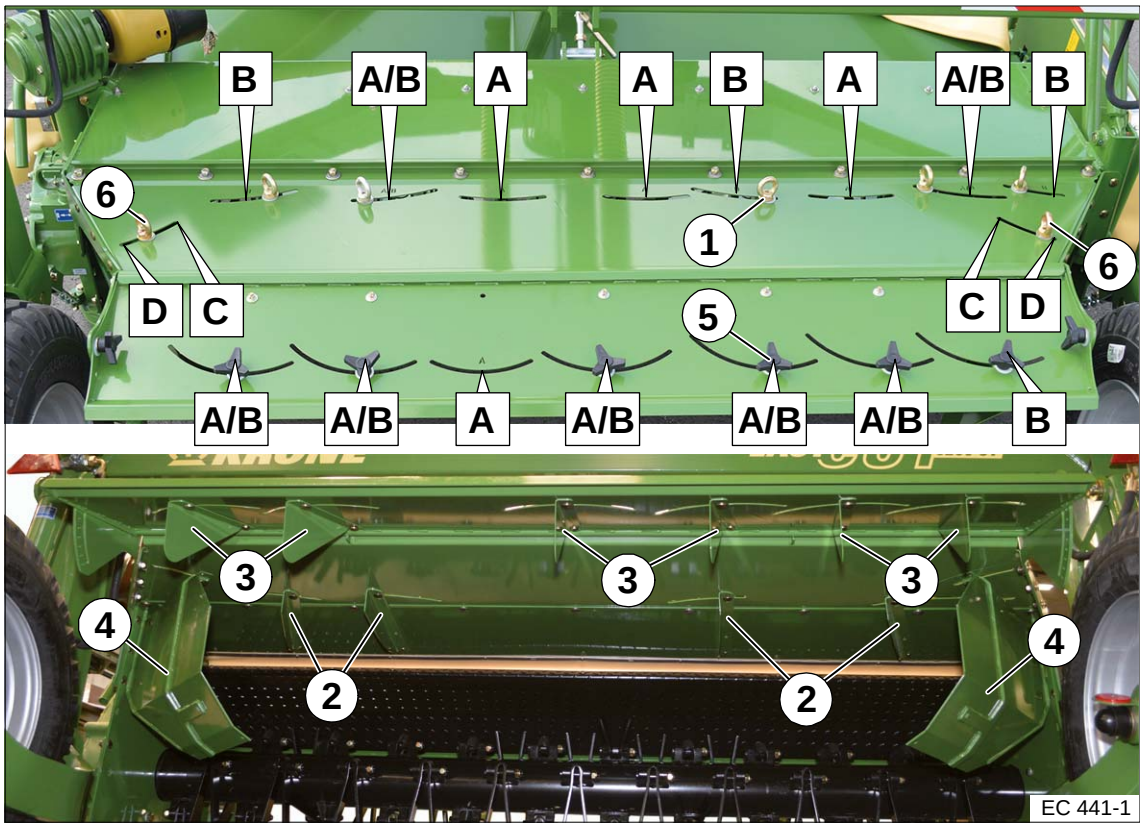


Fig. 33

The position of the deflector sheets (2,3) depends on the direction of rotation of the cutter bar („A“ or „B“).

Direction of rotation of cutter bar “A” (all cutting discs turn to the centre)

Mount the deflector sheets (2, 3) in the marked positions (A).

Direction of rotation of cutter bar “B” (cutting discs turn in pairs to the centre)

Mount the deflector sheets (2, 3) in the marked positions (B).

Note

When changing the direction of rotation of the cutter bar from “A” to “B” or from “B” to “A”, the positions of the deflector sheets (2, 3) must be changed.

9.6.4 Setting Deflector Sheets/Swath Sheets

In order to obtain a uniform distribution of cutting crops across the entire area, it may be necessary depending on the operating conditions to readjust the deflector sheets (2, 3) and the swath sheets (4).

Setting the deflector sheets

- Observe the safety instructions at the beginning of the section.

Deflector sheet (2)

- Unscrew ring nut (1).
- Move deflector sheet (2) in the desired position and tighten ring nut (1).

Deflector sheet (3)

- Loosen palm knob (5).
- Move the deflector sheet (3) in the desired position and tighten palm knob (5).

Note

The star knobs may work loose due to vibrations, possibly resulting in the loss of the star knobs, screws and swath plates.

- Manually tighten star knobs as tight as possible to ensure that they cannot work loose during operation due to vibrations

9.6.5 Setting Swath Sheets

Swathing

- Loosen ring nut (6) and swivel swath flap (4) into position (C).
- Tighten ring nut (6).

Wide spreading

- Loosen ring nut (6) and swivel swath flap (4) into position (D).
- Tighten ring nut (6).

9.6.6 Setting wide distributor plate

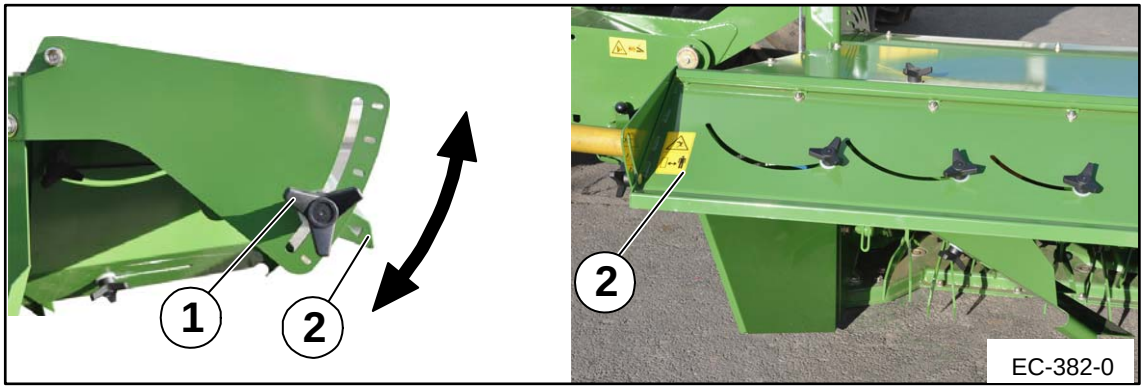


Fig. 34

- Observe the safety instructions at the beginning of the section.

For swathing set the wide distributor plate (2) all the way down.
For wide spreading the wide distributor plate can be adjusted individually to the amount of forage.

To do this:

- Loosen the star knob (1) (right and left sides of machine)
- Swivel wide distributor plate (2) into the required position
- Tighten the star knobs (1)

Swath Flap Extension (Optional)

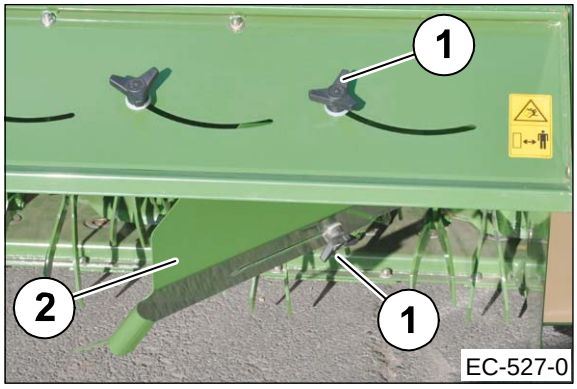


Fig. 35

The swath width can additionally be set by means of the extension on the swath flaps.

To do this:

- Loosen palm knobs (1) (right-hand and left-hand side of the machine)
- Set the swath flap extension (2)
- Tighten palm knobs (1)

Note

The star knobs may work loose due to vibrations, possibly resulting in the loss of the star knobs, screws and swath plates.

- Manually tighten star knobs as tight as possible to ensure that they cannot work loose during operation due to vibrations

9.7 Adjusting the roller conditioner (optional extra/ CRI)

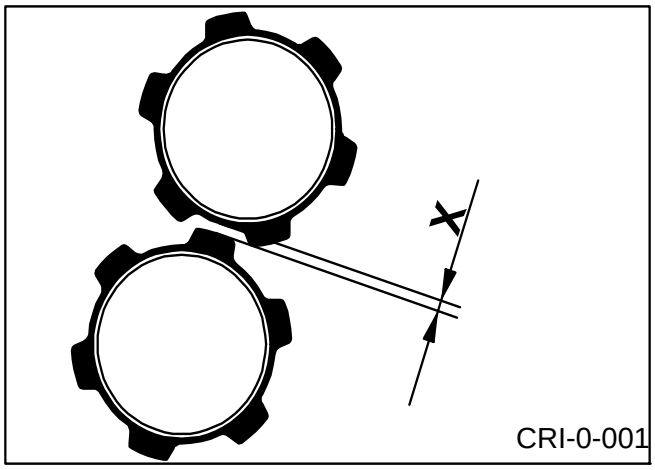


Figure 36:

General

The roller conditioner is supplied for use with leguminous vegetation or other leaf crops. The conditioning intensity can be adjusted by means of screws and tension springs to change the distance between, or the contact pressure on the rollers. The minimum distance (x) between the rollers should always be at least 2 mm.

9.8 Adjusting the roller distance

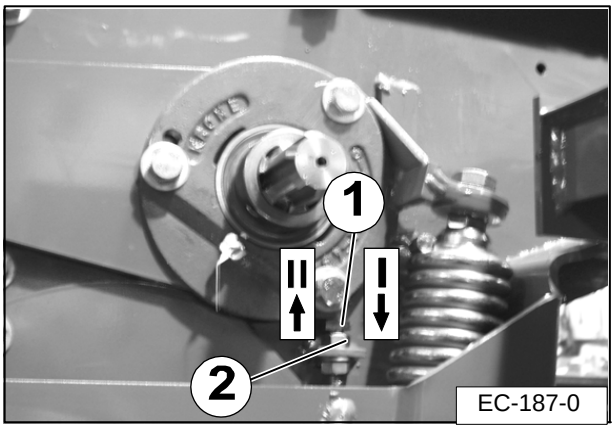


Figure 37:

The roller distance (X) can be adjusted by means of the screw (1) located at the right and the left sides of the machine. Loosen the counter nut (2) and make the adjustment by turning the screw (1).

Screw turned in direction 1 => distance is increased

Screw turned in direction 2 => distance is decreased

- Tighten the counter nut (2) again.

10 Maintenance

10.1 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!

10.1.1 Test run

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

Effect: Danger to life or serious injuries

- The mowing unit must be in working position
- Do not switch on the drives until the mowing units are 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.

10.2 Spare Parts

Danger! - Using non-approved spare parts.

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

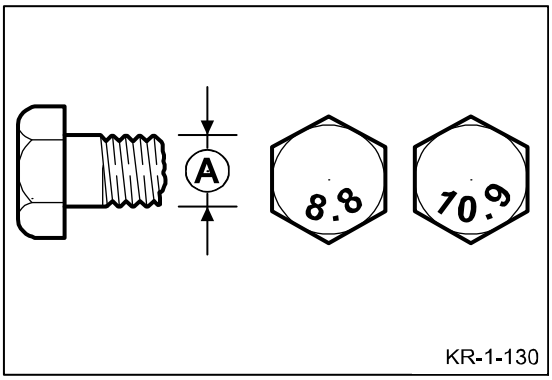
- Use only authentic KRONE spare parts and accessories authorised by the manufacturer. The use of spare parts, accessories or additional equipment not manufactured, tested or approved by KRONE will exclude any liability for consequential damage.

10.3 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

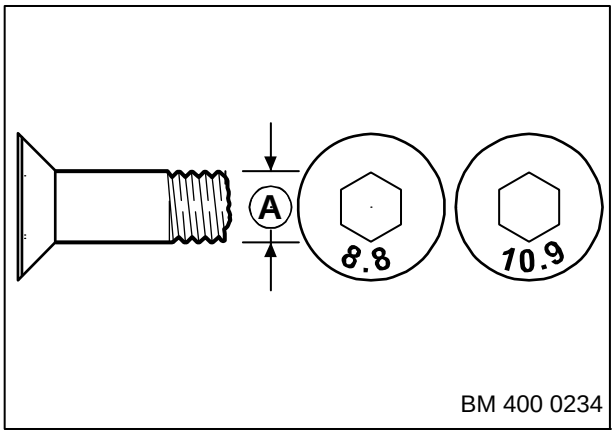
The table above does not apply to countersunk screws with hexagonal socket in case the countersunk screw is tightened via hexagonal socket.

10.4 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.

10.4.1 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

Note
Regularly check that nuts and bolts are tightly in place (approx. every 50 hours) and tighten them if necessary.

10.5 Tyres

Warning! - Tyre fitting incorrect
Effect: Injuries or damage to the machine

- Fitting tyres requires sufficient knowledge and the availability of proper tools!
- If tyres are not correctly fitted, it could explode when pumped up. This can cause serious injury. If you do not have sufficient experience of fitting tyres, have tyres fitted by the KRONE dealer or a qualified tyre specialist.
- When fitting tyres on the wheel rims, the maximum pressure given by the tyre manufacturer must not be exceeded. The tyre or even the wheel rim could explode and/or burst.
- If the tyre heels do not fit properly when the maximum permitted pressure is reached, let out the air, align tyres, lubricate the tyre heels and pump up the tyre again.
- Detailed information about how to fit tyres onto agricultural machinery can be obtained from the tyre manufacturers.

10.5.1 Checking and maintaining tyres

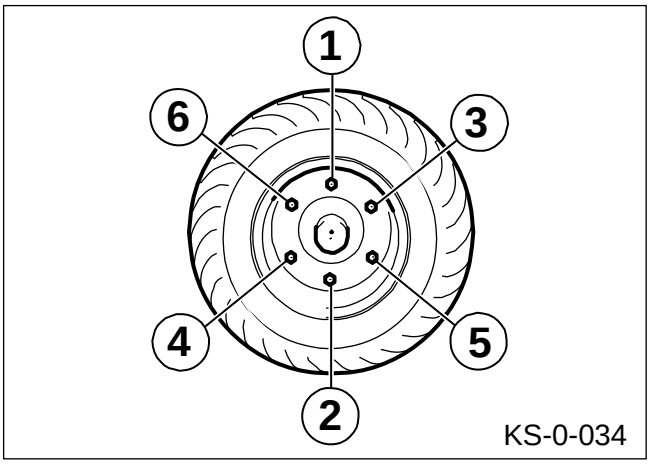


Fig. 38

When loosening and tightening the wheel nuts, observe the order indicated in the illustration. 10 operating hours after they have been mounted, check the wheel nuts and retighten them if necessary. After that, check them every 50 operating hours to make certain they are tight. Check the tyre pressure at regular intervals and refill if necessary. The tyre pressure depends on the size of the tyres. The values are listed in the table.

Type	Tyre identification	Tyre pressure [bar]
EasyCut 3210 CV	11.5/80-15.3 PR	1,5
EasyCut 3210 CRI		
EasyCut 4013 CV	15.0/55-17 10 PR	1,5

Threading	Key size	Max. tightening torque [Nm]	
		black	galvanised
M 18 x 1.5	24	265	245

10.6 Filling Quantities and Lubrication Designations for Gearboxes

Note
No oil change is required on the cutter bar.

		Filling Quantity [litres]	Filtered oils Brand name	Bio-degradable lubricants Brand name
Front swivel gear	EasyCut 3210 CV/CRi	2 x 0,85	SAE 90	**On request**
	EasyCut 4013 CV	2 x 1,6	Synthetic DIN 51502-PGLP *	
Lower swivel gear	EasyCut 3210 CV/CRi	2 x 085	SAE 90	
	EasyCut 4013 CV	2 x 2.0		
Input Gearbox		0,7 l		
Speed gearbox (CV machines)		1,9		
Angular gearbox of top part (CRi)		0.4 l		
Gearbox for top roller drive		0,3		
Cutter bar	EasyCut 3210 CV/CRi	7,0		
	EasyCut 4013 CV	9,0		

*) = Order No. 926 028 0 (5 litres)

10.6.1 Oil Level Check and Oil Change Intervals (Gearboxes)

Note - Oil level check and oil change (gearboxes) and lubricating the machine
Effect: Long expected service life of machine

- First oil change on all gearboxes after 50 operating hours, then every 200 operating hours (but at least once a year).
- Before using the machine always check the oil level.
- With bio-degradable oils the changing intervals must be complied with absolutely because of ageing of the oils.

10.7 Swivel Gear

10.7.1 (EasyCut 3210 CV/CRI)

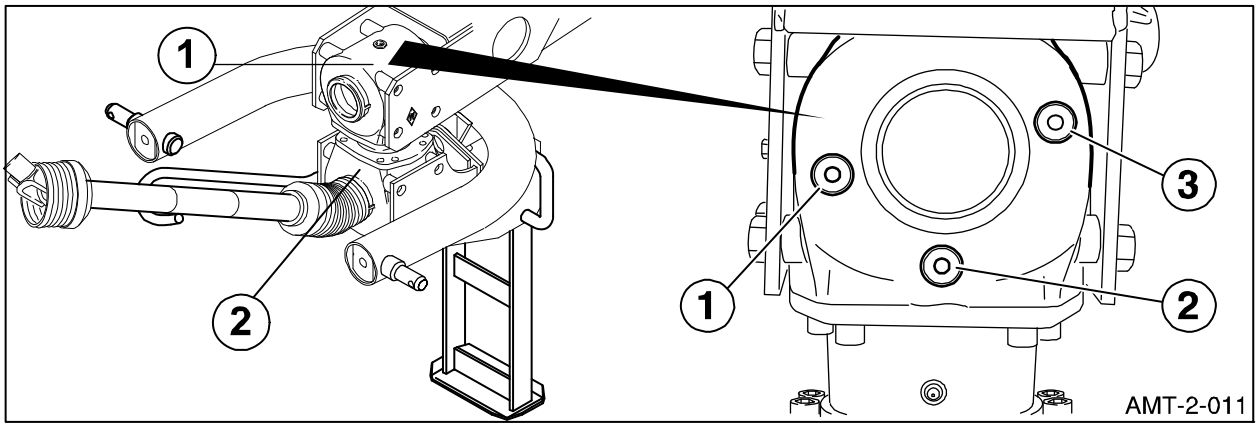


Figure 39:

The swivel gear consists of an upper (1) and lower (2) gearbox.

upper (1) part of the swivel gear

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the oil drain plug (2)
- Collect the used oil in a suitable drip pan
- Screw in the oil drain plug (2)
- Top up the oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and locking screw (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

lower (2) part of the swivel gear

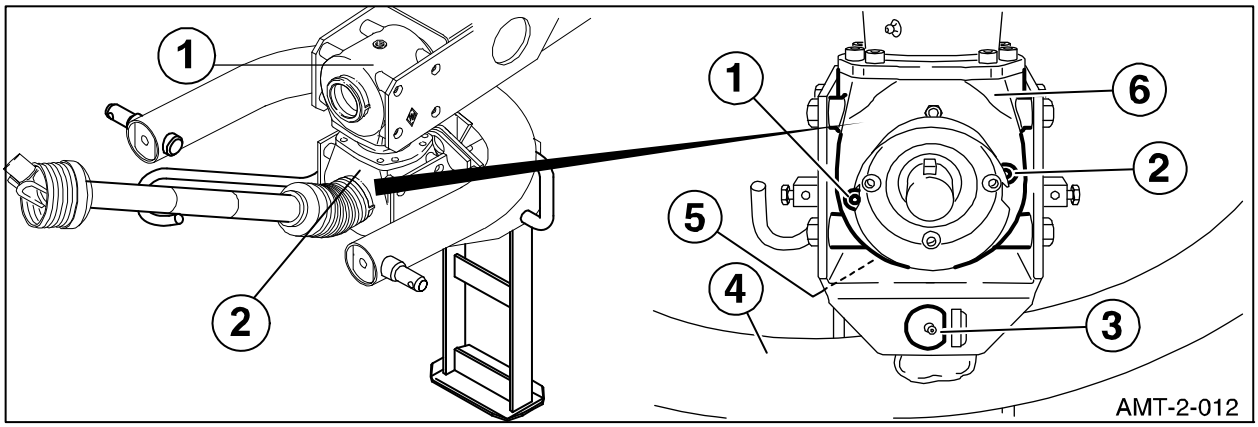


Figure 40:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Punch bolt (3) out of its housing and remove the lower suspension arm holder (4).
- Unscrew the oil drain plug (5) (under the gearbox (6)).
- Collect the used oil in a suitable drip pan
- Fit the oil drain plug (5) with a new seal.
- Top up the oil through bore hole (2) (oil level up to bore hole (1)).

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

10.8 Swivel Gear

10.8.1 (EasyCut 4013 CV)

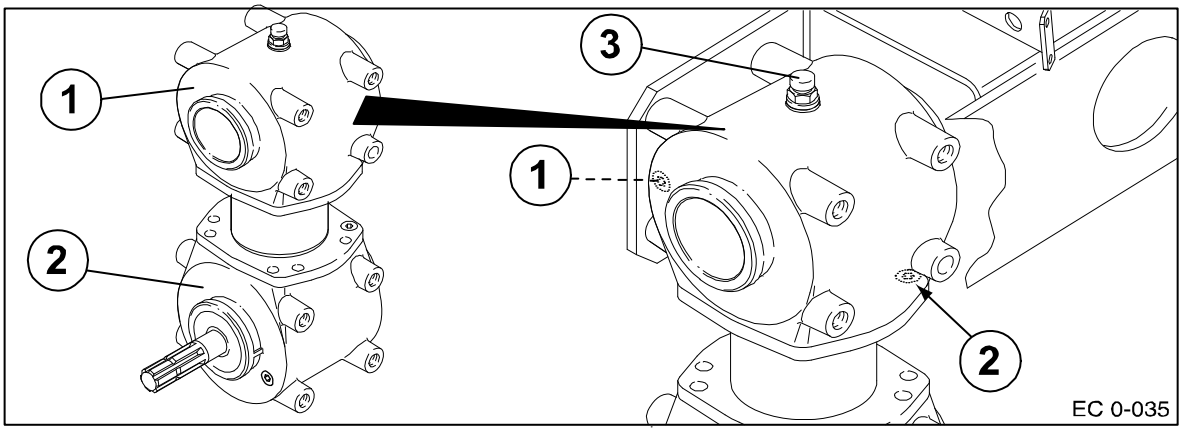


Figure 41

The swivel gear consists of an upper (1) and lower (2) gearbox.

upper (1) part of the swivel gear

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and ventilation filter (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

lower (2) part of the swivel gear

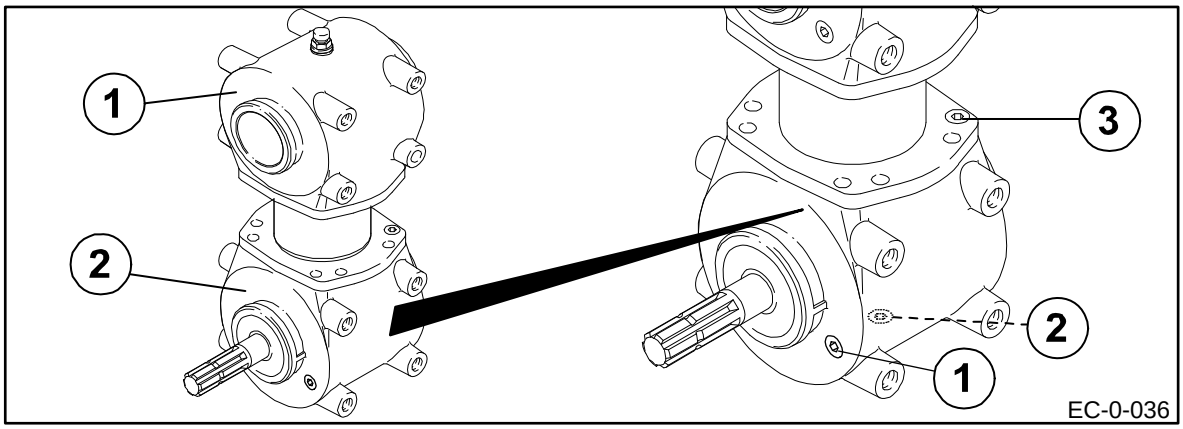


Figure 42

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the oil drain plug (2)
- Collect the used oil in a suitable drip pan
- Screw in the oil drain plug (2)
- Top up the oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and locking screw (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note
The used oil must be disposed of correctly

10.9 Input gearbox

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

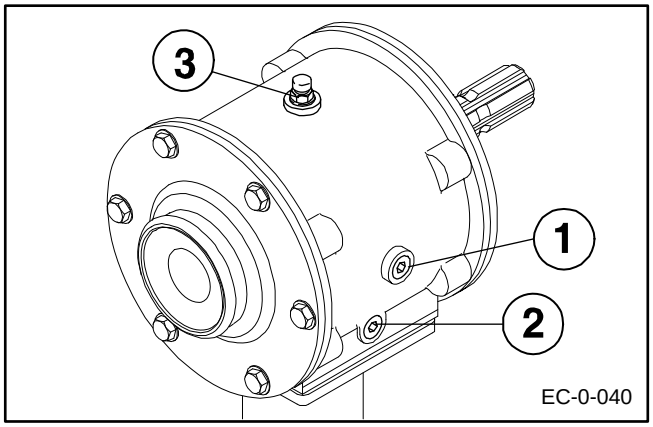


Fig. 43

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”

Oil level check:

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

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

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

Oil change:

Collect escaping oil in a suitable container.

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

Note
The used oil must be disposed of correctly

10.10 Speed gearbox

(EasyCut 3210 CV ; EasyCut 4013 CV)

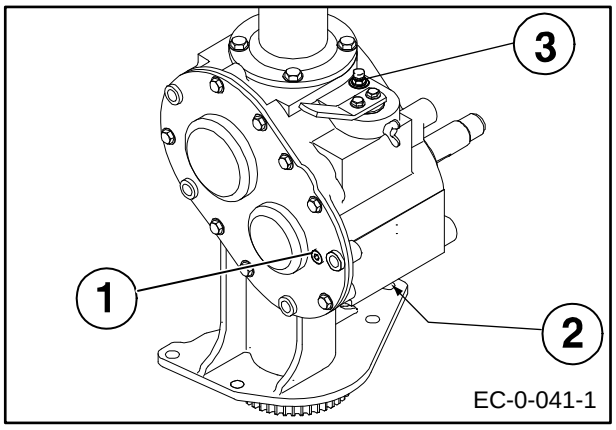


Figure 44

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”

Oil level check:

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

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

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

Oil change:

Collect escaping oil in a suitable container.

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

Note
The used oil must be disposed of correctly

10.11 Angular gearbox

CR design

10.11.1 Bottom part

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

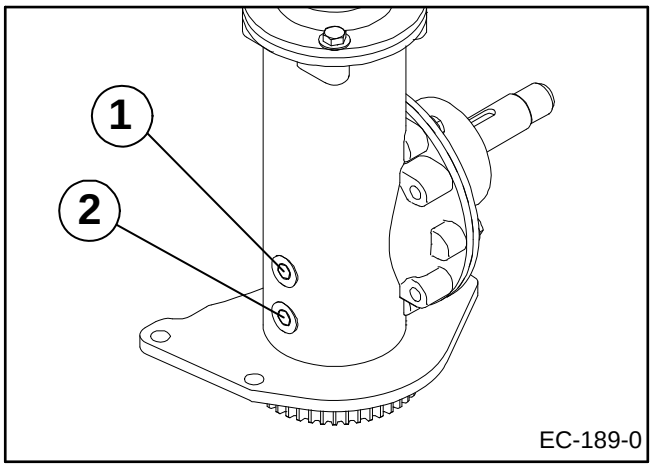


Fig. 45:

1) Inspection screw / control hole 2) Drain plug

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:

- Top up oil via control hole until the control hole is reached.
- Screw in the inspection screw and tighten it securely.

Oil change:

Collect escaping oil in a suitable container.

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

Note
The used oil must be disposed of correctly

10.12 Gearbox for Top Roller Drive

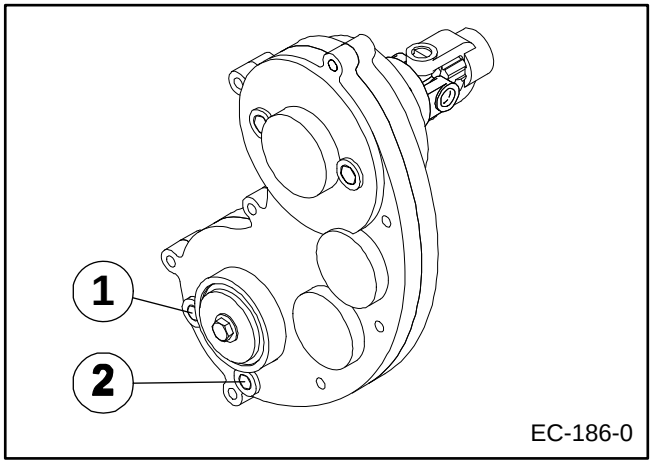


Fig. 46:

1) Inspection screw / control hole 2) Drain plug

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:

- Top up oil via control hole until the control hole is reached.
- Screw in the inspection screw and tighten it securely.

Oil change:

Collect escaping oil in a suitable container.

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

Note

The used oil must be disposed of correctly

10.13 Oil level check and oil change on the cutter bar

10.13.1 Oil change

Note
No oil change is required on the cutter bar.

10.13.2 Checking the oil level

Danger! - Rapidly rotating cutting discs/blade drums.
Effect: Danger to life or serious injuries.
Lower guards. Nobody should be in the danger zone around the machine.

Danger! - Rapidly rotating cutting discs/blade drums.
Effect: Danger to life or serious injuries.
- Switch off the engine and remove the ignition key.
- The cutting discs/blade drums continue to run!
- Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.

10.13.3 Aligning the Cutter Bar

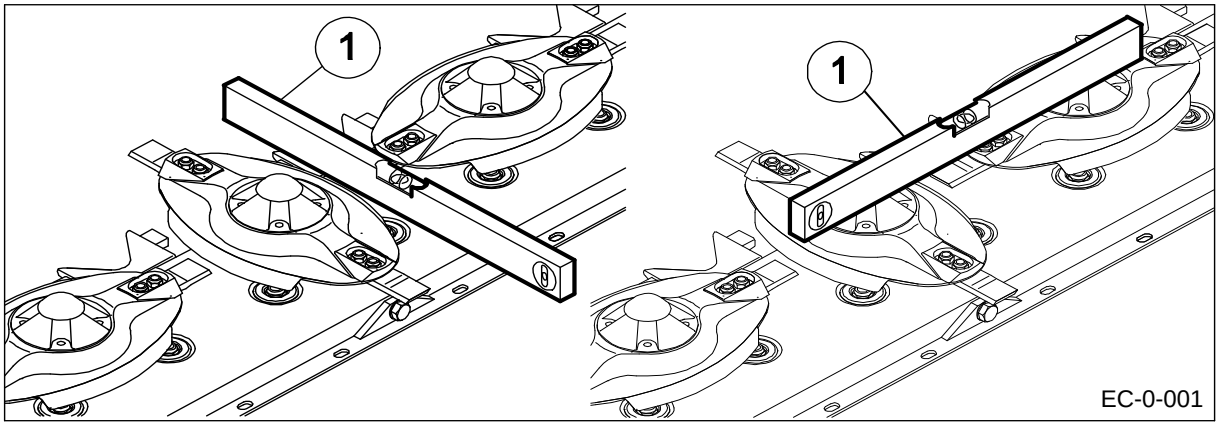


Fig. 47

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

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

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

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

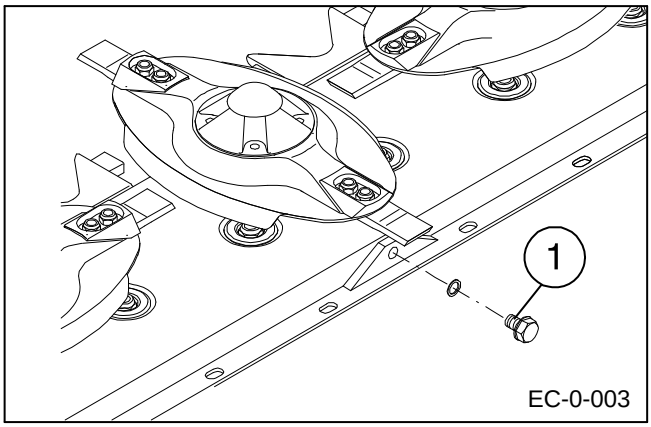


Fig. 48:

Check the oil level before every use

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

10.14 Checking the Cutter Blades and Blade Holder

Warning! - Missing and damaged cutter blades and cutter blade retainers.
Effect: Danger to life, serious injuries or damage to the machine
- Check cutter blades at least once per day and check retaining bolts every time you change the blades or after contact with foreign objects.
- Immediately replace missing or damaged cutter blades and cutter blade retainers

10.14.1 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).

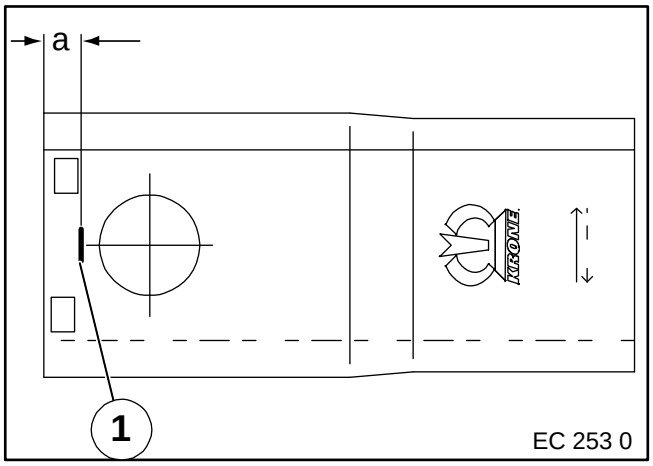


Fig. 49

Note - The cutter blades can be turned around and used on both sides.
- When cutter blades are missing or damaged, they must be replaced as a complete set. This prevents dangerous unbalanced rotation

10.14.2 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.

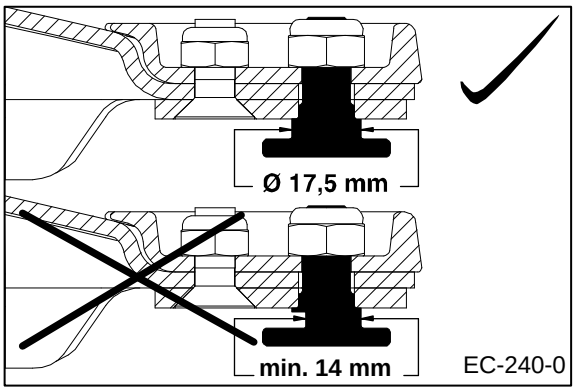


Fig. 50

10.14.3 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.

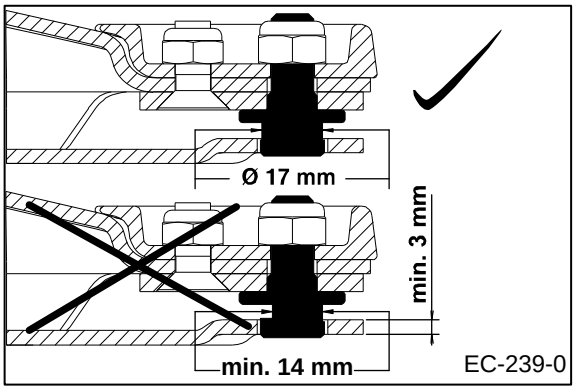


Fig. 51

10.14.4 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.

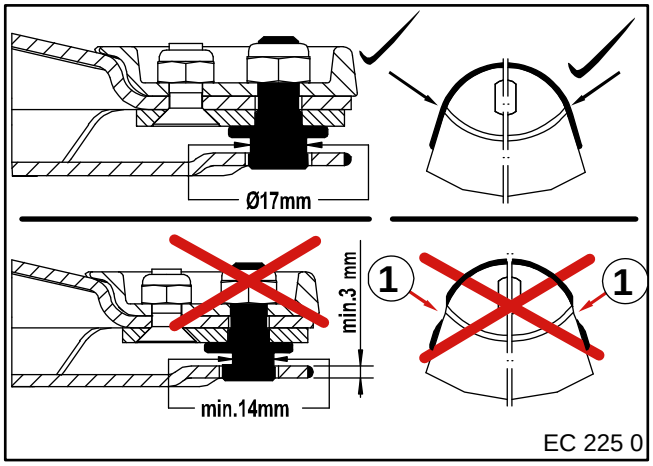


Fig. 52

Note

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

10.14.5 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.

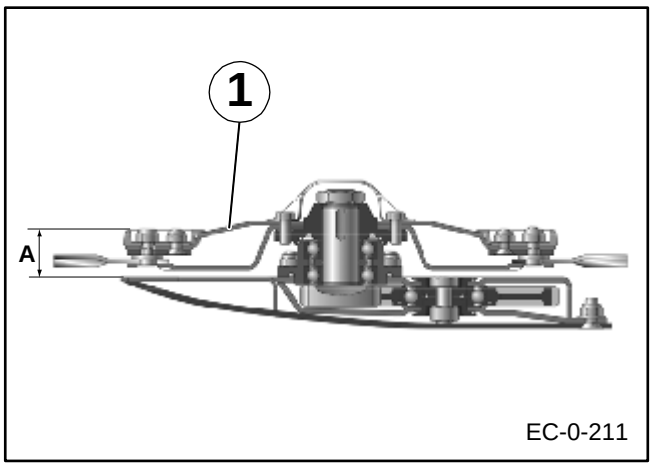


Fig. 53

Note

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

10.14.6 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.

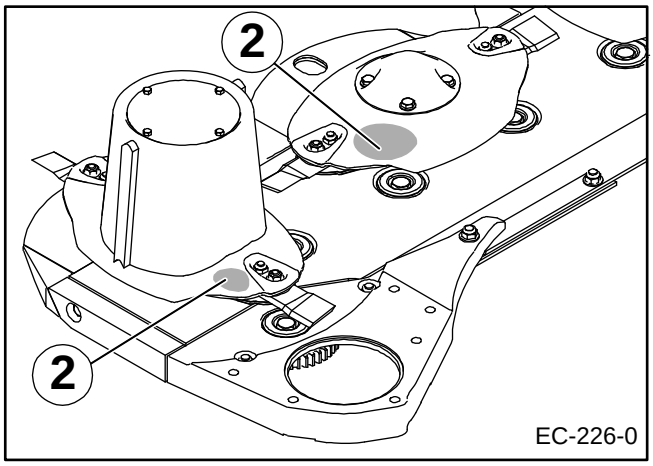


Fig. 54

Note

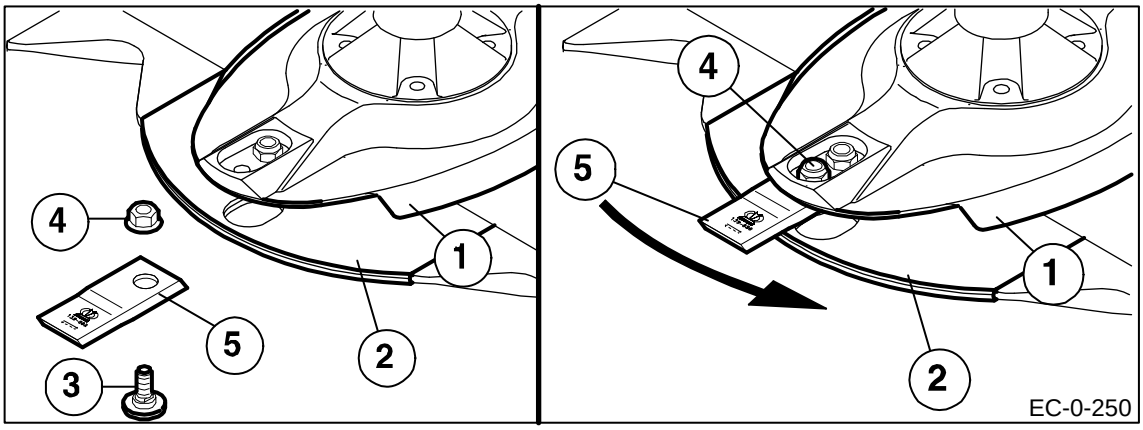
If cutting discs or blade drums show deformations or wear in form of abrasions (2) or similar, these components have to be replaced by Original Krone spare parts .

10.15 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!

10.15.1 Blade Screw Connection



Pic. 55

- 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

10.15.2 Blade Quick-Fit Device

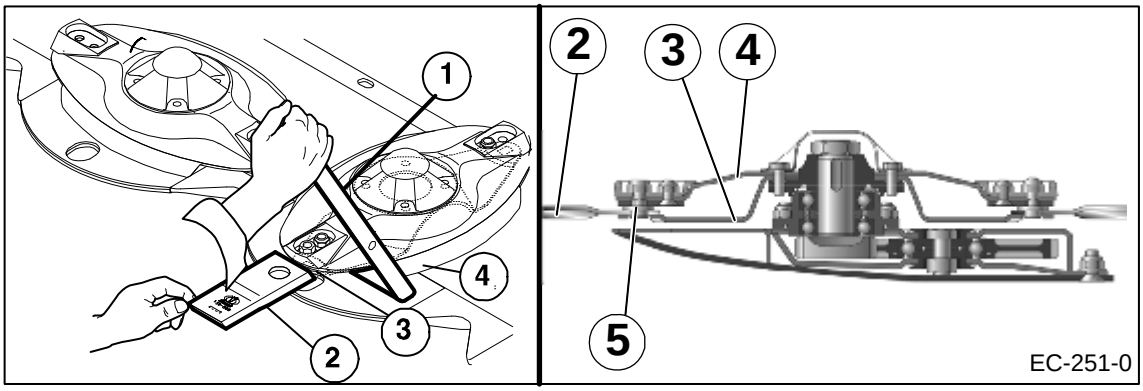


Fig. 56

- 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

10.16 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.•

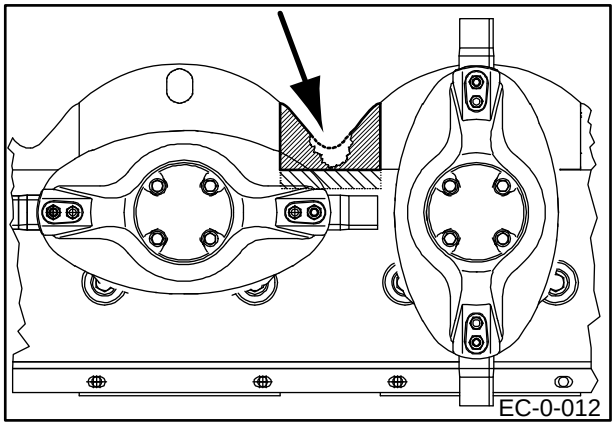


Fig. 57

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

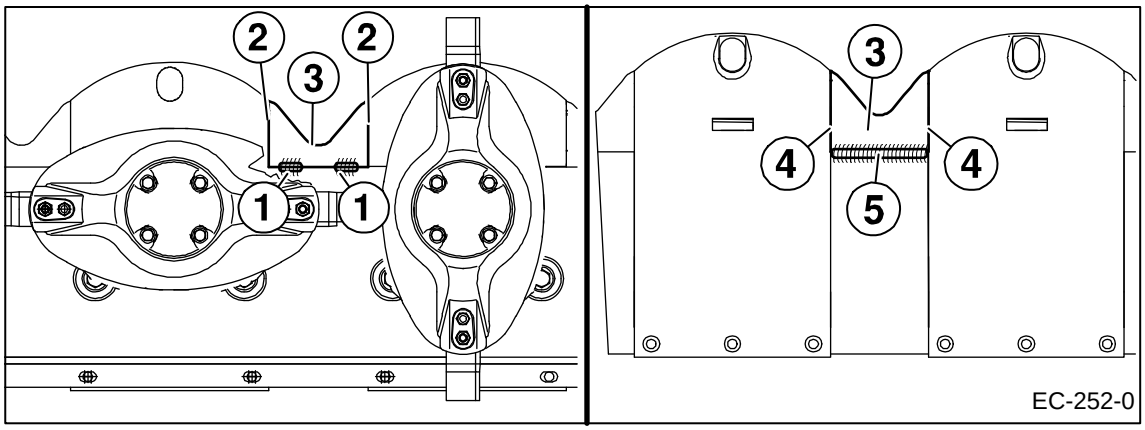


Fig. 58

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

10.17 Rotary hub with shear fuse (optional)

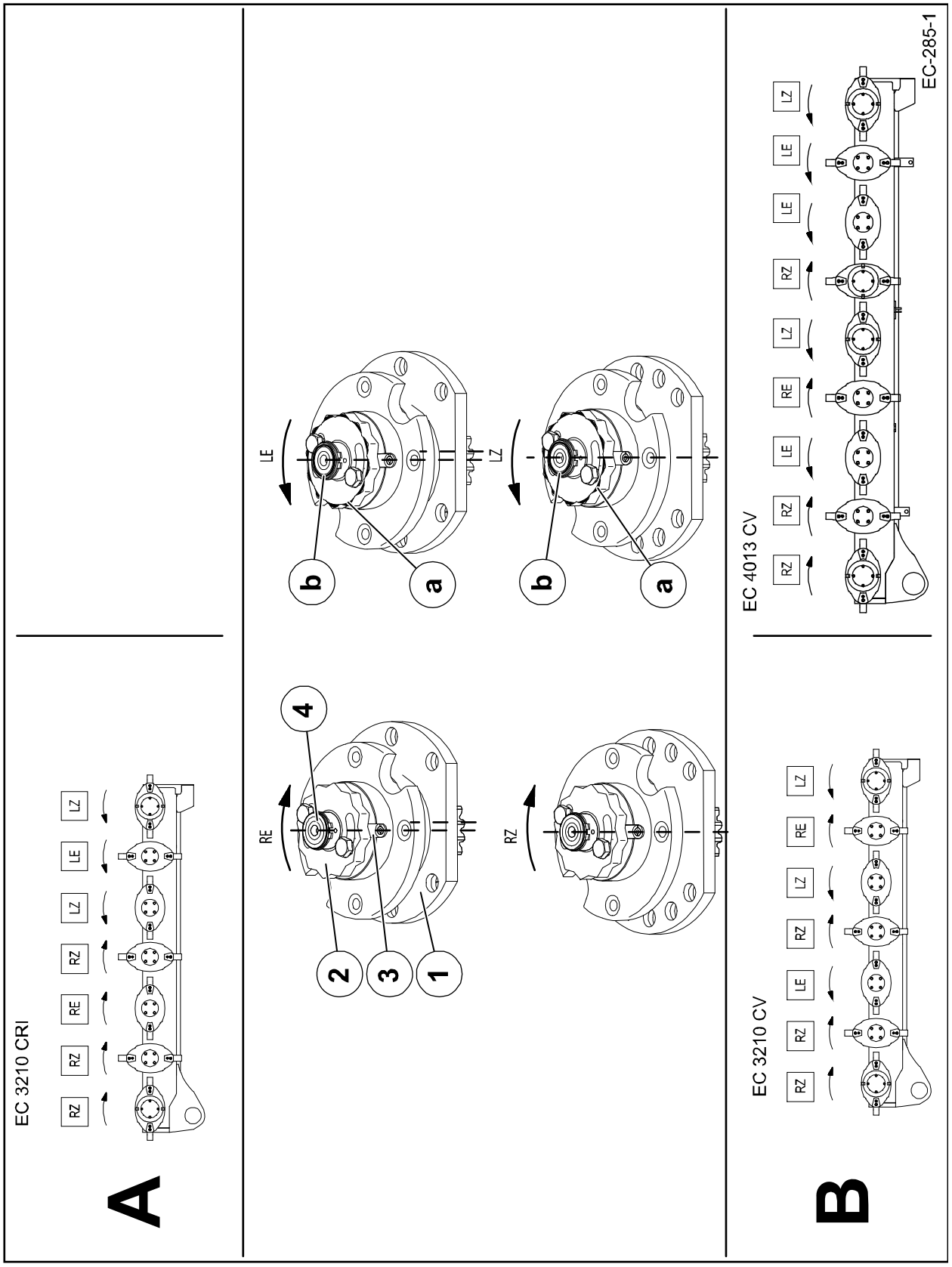


Fig. 59:

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
RZ= Central bearing housing (clockwise threading), without identifying groove.
RE= Eccentric bearing housing (clockwise threading, without identifying groove).
LZ= Central bearing housing (anticlockwise threading), with 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/LZ) have left-handed threading.
- The cutting discs or drums which move crop to the right (in the direction of travel) (RE/RZ) have right-handed threading.

To distinguish between right-hand (clockwise) threading (RE/RZ) and left-hand (anti-clockwise) threading (LE/LZ), the nuts (2) and pinion shaft (4) for left-hand threading (LE/LZ) have a distinctive grove (a, b).
- Left-handed (LE/LZ) nuts (2) have distinctive grooves (a) on the bevel.
- Left-handed (LE/LZ) pinion shafts (4) have a distinctive groove (b) on the face.

10.17.1 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).

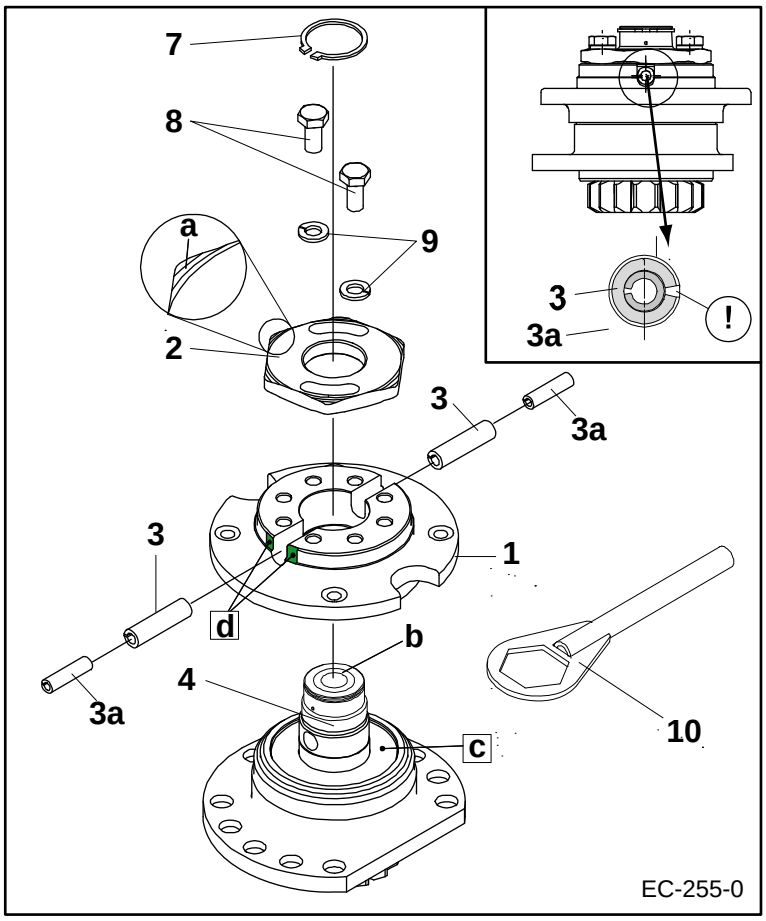


Fig. 60

- 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).
- he 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).

11 Maintenance – lubrication chart

11.1 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.

11.2 PTO shaft

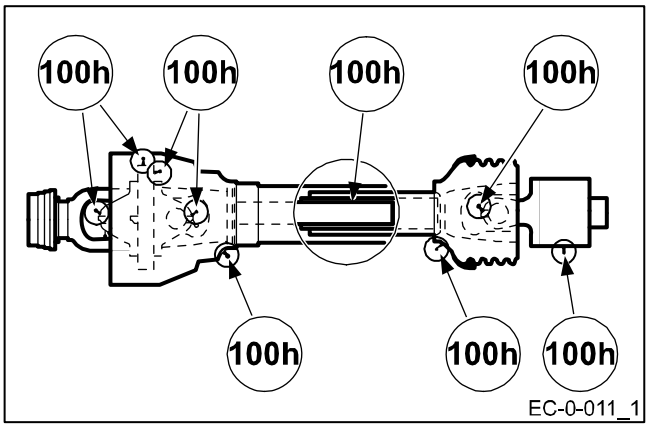


Fig. 61

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.

11.3 Lubrication Chart

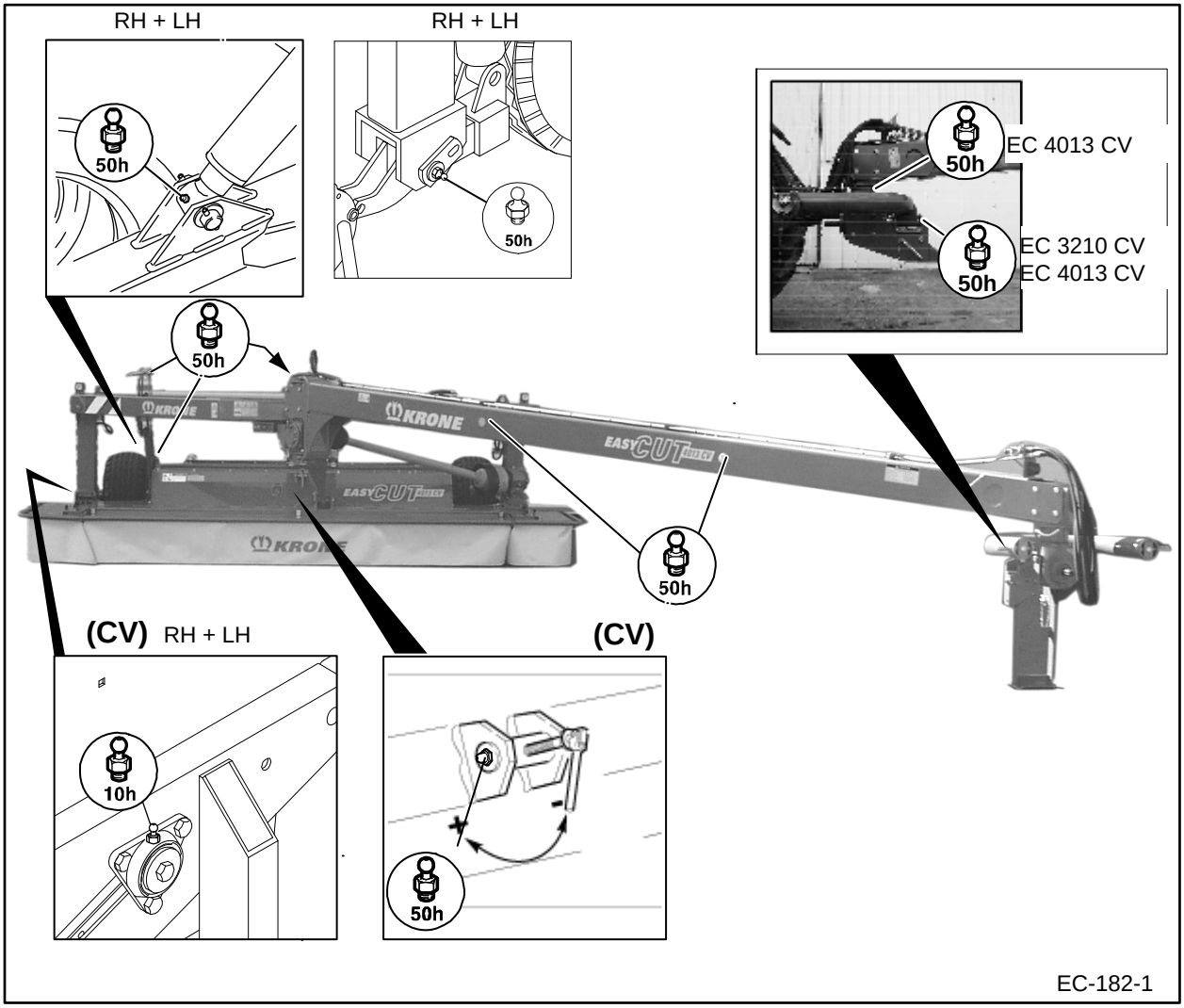


Figure 62:

LH= left-hand side of the machine
RH = right-hand side of the machine

12 Placing in Storage

- Park the machine in a dry location, but not in the vicinity of artificial fertilisers or livestock buildings.
- Before placing the machine in winter storage, clean inside and outside thoroughly. Dirt adducts humidity and causes corrosion. 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.
- Lubricate the machine thoroughly.
- Disassemble the PTO shaft. Grease the protective tubes of the PTO shaft to prevent freezing. 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.

CAUTION!

The machine should only be placed on blocks with a suitable vehicle lifting device. Make certain that the machine is stable and safe when it is on blocks.

- To remove load from the tyres, set the machine on blocks. Protect the tyres against external influences such as oil, grease and direct sunlight, etc.
- 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.

13 Before the Start of the New Season

13.1 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.

13.2 Test run.

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

Effect: Danger to life or serious injuries

- The mowing unit must be in working position
- Do not switch on the drives until the mowing units are 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.

13.3 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.

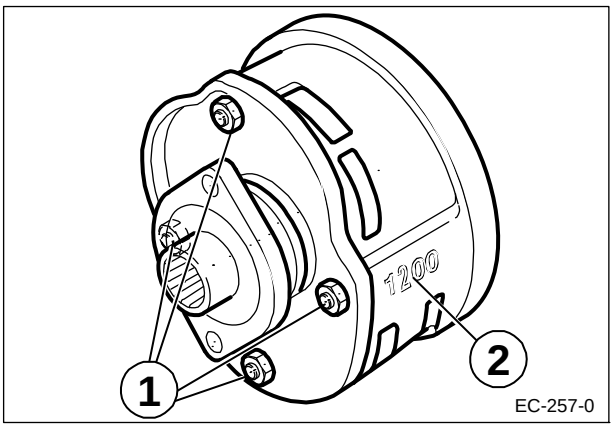


Fig. 63

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")

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14 Special equipment

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 Adjusting Skids

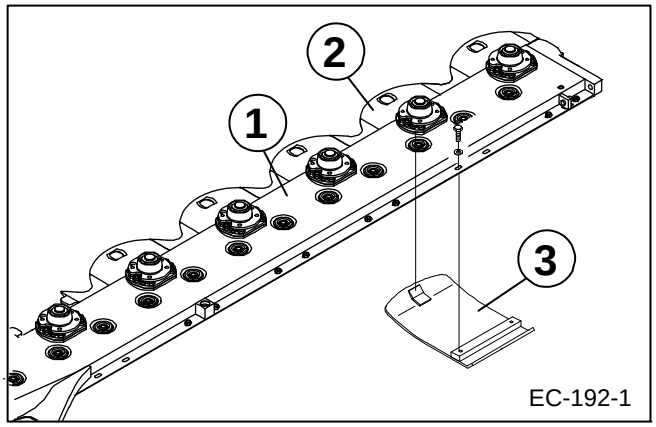


Fig. 64

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.

14.3 Cross conveyor

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.

The KRONE cross conveyor is equipped with all the necessary safety devices (protective devices). However, it is not possible to eliminate all the potential hazards on this additional equipment as this would impair the machine's full functional capability. You will find corresponding danger warnings which warn against any remaining dangers on the machine.

14.4 Safety Instructions on the Machine

The safety instructions on the machine warn of residual risks associated with the machine. They consist of warning pictograms and a work safety symbol. All safety instructions must be followed. Always keep the safety instructions clean and in clearly legible condition! If any safety instructions are damaged or missing, request them from your dealer and then put them in the places provided for them. Where these safety instructions are and what they mean will be described in the following chapters.

14.5 Position of the Adhesive Safety Stickers on the Cross Conveyor

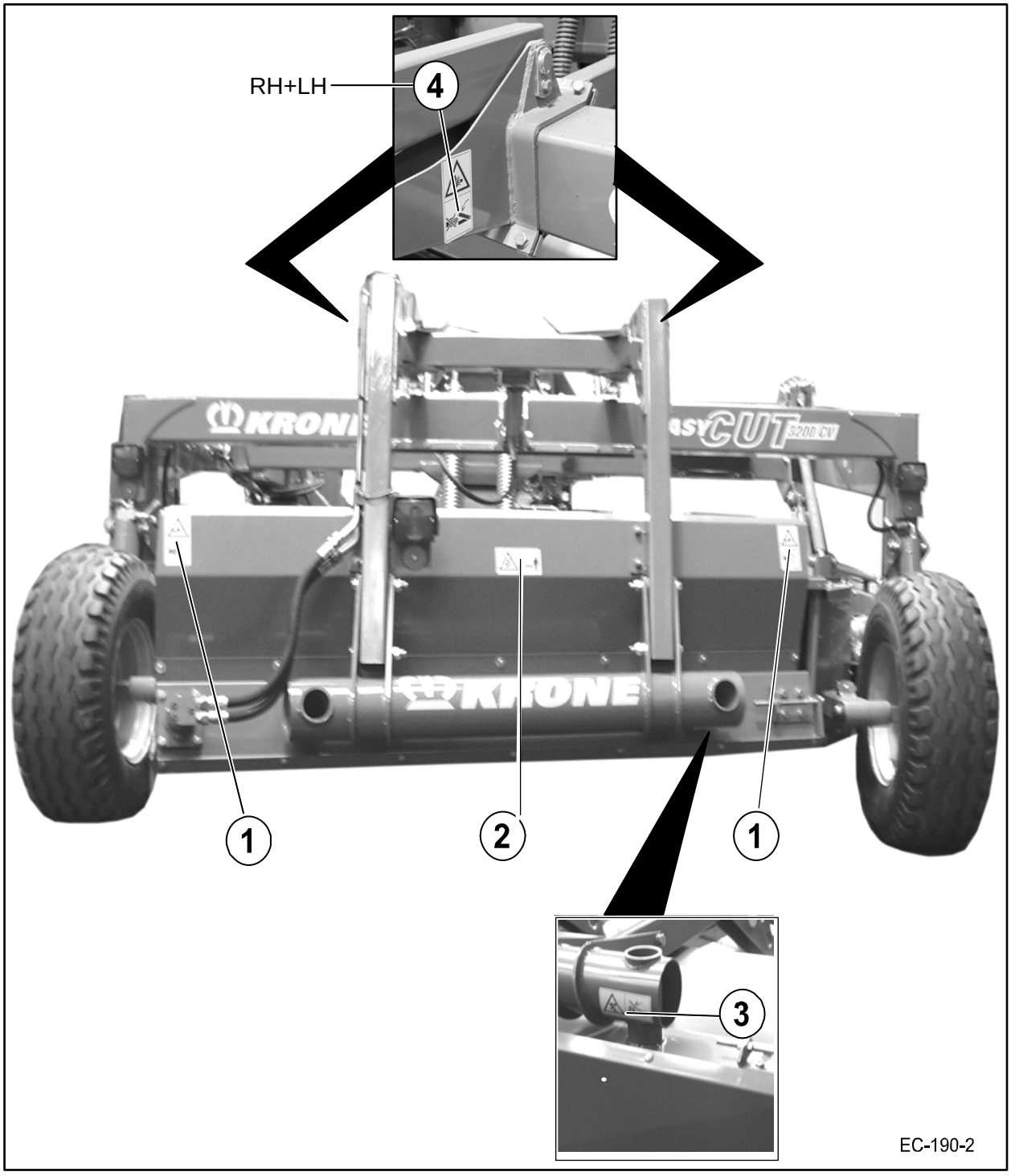


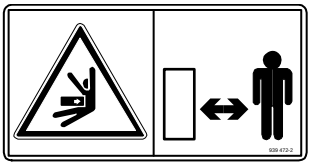
Fig. 65

RH = right-hand side of the machine / LH= left-hand side of the machine

9) Order no. 942 200 1 (2x)

	**Danger due to rotating machine parts.** When approaching the danger zone, there is a risk of being drawn in by the rotating machine parts. • Keep a sufficient distance from rotating machine parts.

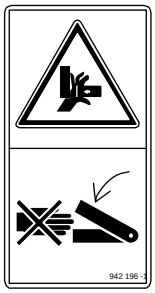
10) Order No. 939 472 2 (1x)

	**Danger due to impact** Risk of death due to swivelling movements of the machine. • Ensure that there is nobody in the swivel range of the machine. • Maintain distance from moving machine parts.

11) Order no. 939 469 1 (1x)

	**Danger due to impacts or crushing** Danger to life from machine parts folding down or lowering. • Ensure that there is nobody in the swivel range of the machine parts. • Maintain distance from moving machine parts.

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

	**Danger due to crushing or shearing** Risk of injury due to crushing or shearing points on moving machine parts. • While parts are moving, never reach into areas where there is a risk of being crushed.

Danger! - Failure to observe adhesive safety stickers on the basic machine!

Effect: Danger to life or serious injuries.

Observe also the adhesive safety stickers on the basic machine (see in chapter on Safety "Position of the Adhesive Safety Stickers on the Machine").

14.6 General

The cross conveyor makes it possible to form a double swath. To form a double swath, the cross conveyor is swivelled down from the raised position to the conditioner hydraulically. During this rotation process, the conveyor belt is automatically turned on. The speed of the conveyor belt can be pre-set with the aid of a rotary potentiometer (3). This setting determines the discharge distance of the crops. For the building of a single swath, the cross conveyor will be rotated from the conditioner hydraulically. The conveyor belt switches off automatically.

Warning - Transport / road travel
Effect: Damage to the machine
The cross conveyor must be moved to the working position for transport of the machine.

14.6.1 Hydraulics

Connect the hydraulic lines as described in the chapter on Start-up entitled "Connecting the Hydraulic Lines".

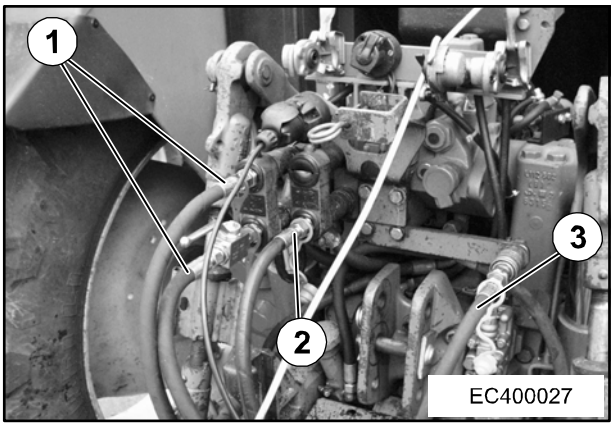


Figure 66

With the cross conveyor only
Single-action control unit (3) (red 3):

- Raises and lowers the cross conveyor.

14.7 Function of the switches on the control unit

Fig. 67:

The control unit can be used to adjust the speed of the cross conveyor. The following table explains the function of the individual switches.

Item	Designation	Function
1	Pilot lamp (red)	Lit when the control unit is turned on.
2	Flip switch	Top: Control unit on Bottom: Control unit off
3	Rotary potentiometer	The rotary potentiometer can be used to adjust the speed of the cross-conveyor belt. clockwise = faster anticlockwise = slower

14.8 Setting Conveyor Belt

The conveyor belt must be tensioned to an expansion of approx. 0.6%.

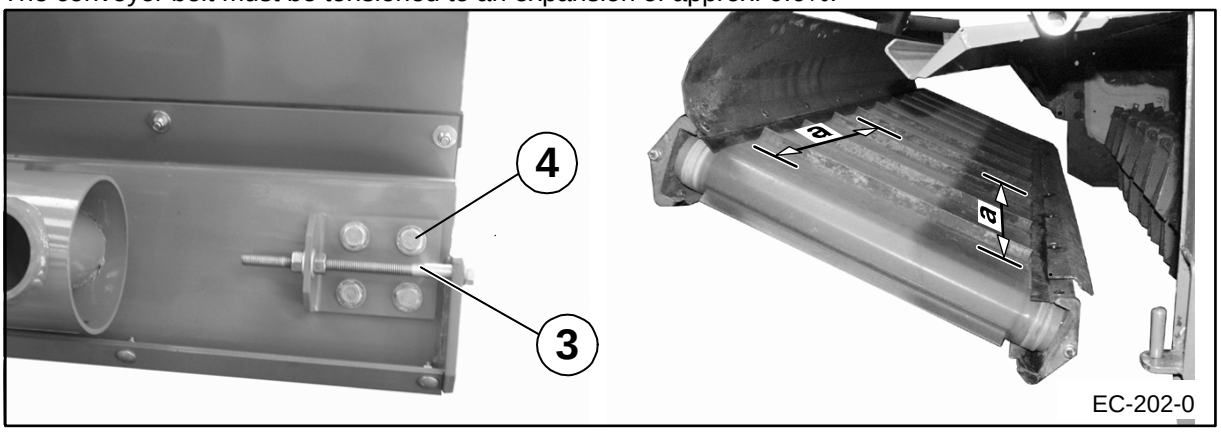


Figure. 68

To do this:

- Loosen the bearing bolts (4) on the right-hand and left-hand sides of the conveyor belt.
- Use the adjustment screws (3) on the right-hand and left-hand sides to relieve the conveyor belt.
- Mark the conveyor belt at a distance of a = 1000 mm.
- Use the adjustment screws (3) to tighten the conveyor belt until the marks have a dimension of **a = 1006 mm**.
- Tighten the bearing bolts (4) on the right and left (see in Maintenance chapter "Tightening Torques").

14.9 Hydraulic system

WARNING!

Risk of injury as a result of incorrect handling of liquids under high pressure.

Effect: Escaping high-pressure liquids can penetrate the skin and cause serious injury.

Repair work on the hydraulic system may only be performed by authorised KRONE professional workshops.

- Depressurise the system before disconnecting lines.
- When searching for leaks, use suitable aids and wear protective goggles.
- High-pressure liquid that is escaping from a small opening is virtually invisible. Therefore, you should use a piece of cardboard or something similar when searching for leaks. Protect your hands and body.
- If liquid penetrates the skin, consult a doctor immediately. The liquid must be removed from the body as quickly as possible. Danger of infection! Physicians who are not familiar with this area must consult appropriate information from a competent medical source.
- Check hydraulic hoses regularly and replace if there are any signs of damage or ageing! The replacement lines must comply with the requirements of the device manufacturer.
- Ensure that all line connections are tight before the pressure in the system builds up again.

14.9.1 Filling Quantities and Lubricant Designations

	Filling Quantity [litres]	**filtered oils Brand name**	**Bio-degradable lubricants Brand name**
Oil Tank	approx. 10 l	HLP 46 (ISO VG 46)	**On request**

Note - Observe maintenance intervals

Effect: Long expected service life of machine

- With bio-degradable oils always observe the change intervals because of the ageing of the oils.

14.9.2 Oil Tank

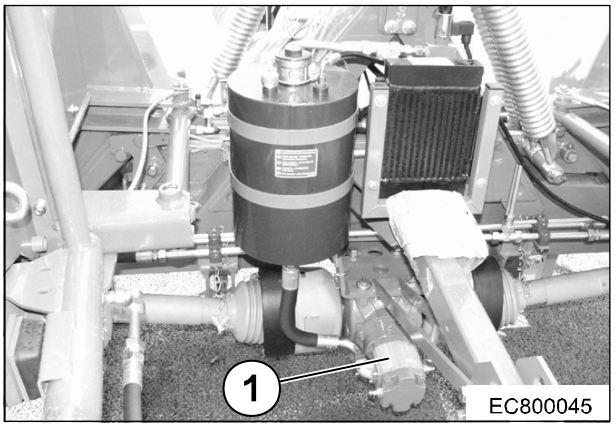


Figure 69

Pressure is supplied to the on-board hydraulic system of the machine through its own hydraulic pump (1). The hydraulic pump (1) is connected to the lower part of the main gearbox by a flange and requires no maintenance.

Note! - Do not mix different types of oil.

Effect: Damage to the machine

- Never mix different types of oil.
- Before changing the type of oil, consult customer service. Never use engine oil.

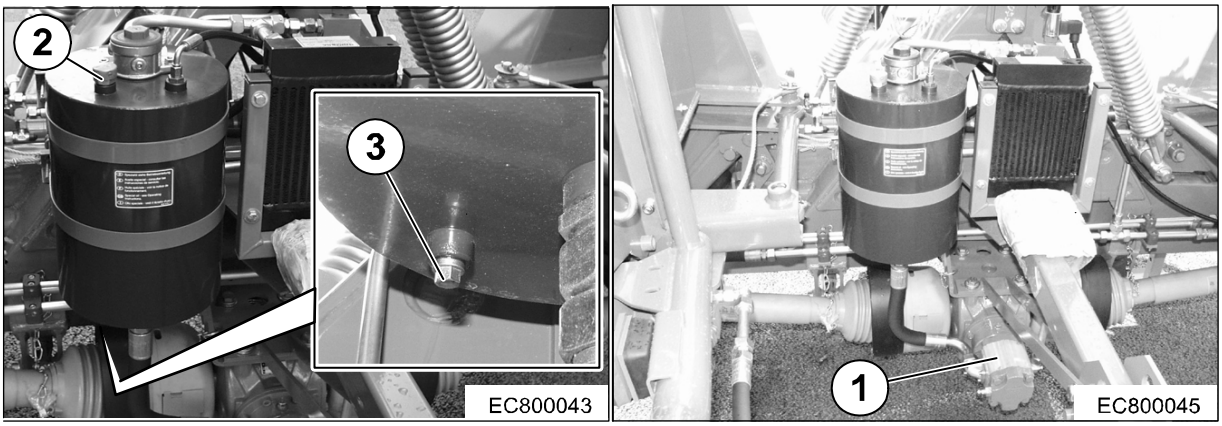


Figure 70

14.9.3 Checking the oil level

Check the hydraulic oil level after every 10 operating hours of the cross conveyor.
To do this:

- Lower the machine and switch off the engine.
- Unscrew and remove the ventilation filter (2) (with measuring rod).
- • Use a lint-free cloth to clean the ventilation filter (2) and insert it again completely.
- Pull out the ventilation filter (2) again.
- The oil level must lie between the min. and max. mark.
- Top off with hydraulic oil if necessary.
- Screw in and tighten the ventilation filter (2).

14.9.4 Oil change

Change the hydraulic oil every 500 hours (but at least once a year).

- Unscrew and remove the ventilation filter (2) (with measuring rod).
- Screw out the oil drain plug (3).
- Collect the used oil in a suitable drip pan.
- Screw in the oil drain plug (3).
- Top up oil (2) (the oil level must lie between the min. and max. mark).
- Screw in and tighten the ventilation filter (2).

14.9.5 Replacing the hydraulic oil filter

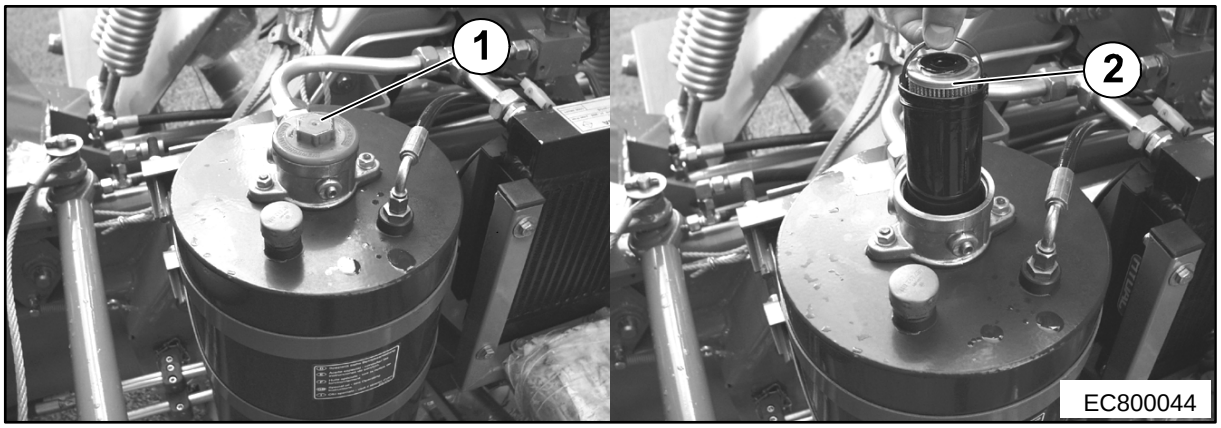


Figure 71

Note
Ensure total cleanliness when changing the filter
Properly dispose of filter cartridge that was removed

Replace the hydraulic oil filter before every season (but at least once year)

- Unscrew the screw cover (1).
- Lift the filter insert (2) and allow hydraulic oil to drip out.
- Remove the filter insert and dispose of it correctly.
- Moisten the seal surface of the new filter insert with oil and set it in place.
- Tighten the screw cover (1).

15 Disposal of the machine

15.1 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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