



## Disc Mower

**AM 203 S**

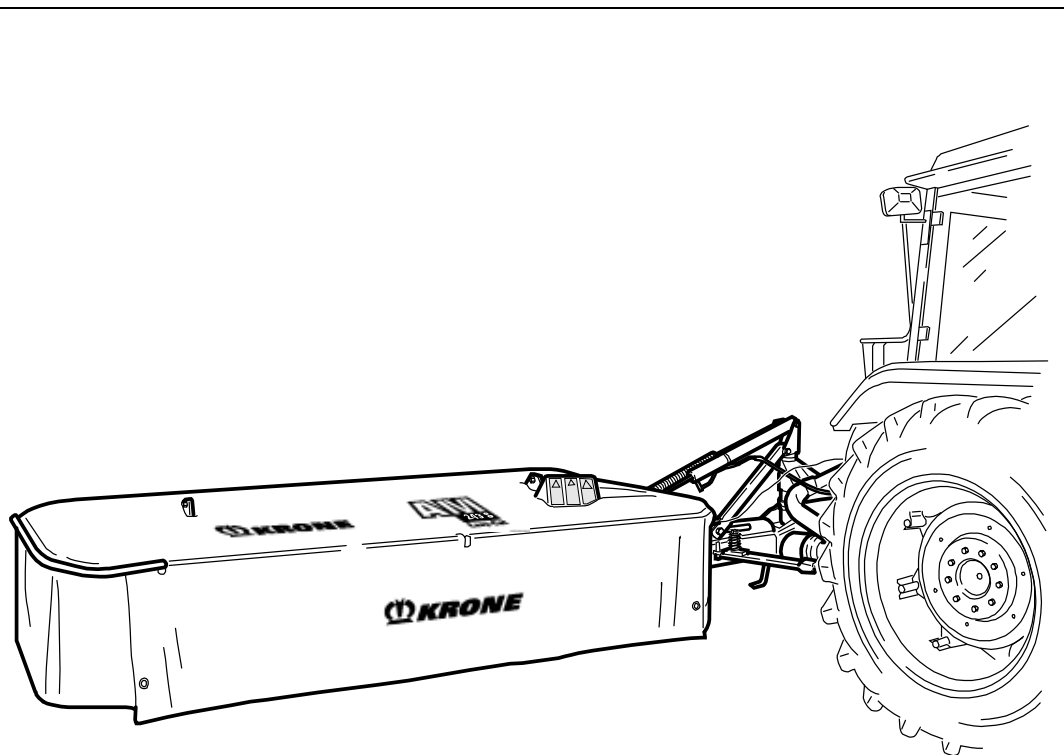
**AM 243 S**

**AM 283 S**

**AM 323 S**

**(from serial no.: 829 190)**

**Order no.: 150 000 002 02 en**





## EC Declaration of Conformity



We

**Maschinenfabrik Bernard Krone GmbH & Co. KG**

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

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

Machine: **Disc Mower**

Type: **AM 203 S, AM 243 S, AM 283 S, AM 323 S**

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

- **EC Directive 2006/42/CE (machines).**

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

Spelle, 20.04.2016



**Dr.-Ing. Josef Horstmann**

(Managing Director, Design & Development)

**Year of manufacture:**

**Machine no.:**

## 1 Table of Contents

<b>1</b>	<b>Table of Contents .....</b>	<b>3</b>
<b>2</b>	<b>Foreword .....</b>	<b>6</b>
<b>3</b>	<b>Introduction.....</b>	<b>7</b>
3.1	Purpose of Use.....	7
3.2	Validity.....	7
3.2.1	Contact.....	7
3.3	Identification Plate .....	8
3.4	Information Required for Questions and Orders .....	8
3.5	Intended use.....	9
3.6	Service life of the machine .....	9
3.7	Technical data .....	9
<b>4</b>	<b>Safety .....</b>	<b>11</b>
4.1	Identifying Symbols in the Operating Instructions .....	11
4.2	Identification of the hazard warnings.....	11
4.2.1	Personnel Qualification and Training .....	12
4.2.2	Dangers in Case of Non-compliance with the Safety Instructions .....	12
4.2.3	Safety-conscious work practices.....	12
4.3	Safety Instructions and Accident Prevention Regulations .....	13
4.4	Attached devices .....	14
4.5	PTO operation .....	14
4.6	Hydraulic system .....	15
4.7	Maintenance .....	15
4.8	Unauthorised Conversion/Modification and Spare Parts Production .....	15
4.9	Inadmissible Modes of Operation.....	15
4.10	Working in the vicinity of power transmission lines .....	16
4.11	Introduction.....	17
4.12	Position of the Adhesive Safety Stickers on the Machine .....	18
4.13	Position of the General Information Labels on the Machine .....	20
4.13.1	Re-Ordering Safety Labels and Information Labels .....	21
4.13.2	Attaching Safety Labels and Information Labels .....	21
<b>5</b>	<b>Commissioning.....</b>	<b>23</b>
5.1	First installation .....	23
5.2	Special Safety Instructions .....	23
5.3	Mounting onto the Tractor .....	24
5.3.1	Clutching points.....	24
5.3.2	Attaching the Three-Point Block .....	26
5.4	PTO shaft .....	27
5.4.1	Length adjustment.....	27
5.5	Adjustment Piece for Lifting Cylinder and Compensation Spring .....	28
<b>6</b>	<b>Start-up.....</b>	<b>29</b>
6.1	Mounting onto the Tractor .....	29
6.2	Hydraulics.....	30
6.2.1	Special Safety Instructions.....	30
6.2.2	Connecting the hydraulic lines .....	30
6.3	PTO shaft .....	31
6.4	Install the PTO shaft.....	31

## Table of Contents

6.5	Fastening the Compensation Spring .....	32
<b>7</b>	<b>Driving and Transport .....</b>	<b>33</b>
7.1	Switching from working position to transport position .....	33
7.2	Lighting .....	34
<b>8</b>	<b>Operation .....</b>	<b>35</b>
8.1	From transport into working position .....	35
8.2	Before mowing .....	36
8.2.1	Folding down the Safety Device .....	36
8.3	Using the Machine for Work .....	37
8.4	Headland Position .....	37
8.5	Detaching the machine .....	38
<b>9</b>	<b>Settings .....</b>	<b>41</b>
9.1	Adjusting the cutting height .....	41
9.2	Setting the Relief Springs .....	42
9.3	Setting of the pole protection mechanism .....	43
9.4	Default Setting of the Tractor's Lower Suspension Arms .....	44
9.5	Adjustable throttles .....	44
<b>10</b>	<b>Maintenance .....</b>	<b>45</b>
10.1	Special Safety Instructions .....	45
10.1.1	Test run .....	45
10.2	Spare Parts .....	45
10.3	Tightening torques .....	46
10.3.1	Metric Thread Screws with Control Thread .....	46
10.3.2	Metric Thread Screws with Fine Thread .....	47
10.3.3	Metric Thread Screws with Countersunk Head and Hexagonal Socket .....	47
10.3.4	Tightening Torques for Locking Screws and Bleed Valves on the Gearboxes .....	48
10.3.5	Deviating Tightening Torques .....	49
10.4	Filling Quantities and Lubrication Designations for Gearboxes .....	50
10.4.1	Oil Level Check and Oil Change Intervals (Gearboxes) .....	50
10.5	Main gearbox .....	51
10.6	Gearbox on the carrying bar .....	52
10.7	Oil level check and oil change on the cutter bar .....	53
10.7.1	Oil change .....	53
10.7.2	Checking the oil level .....	53
10.8	Guard Cloths .....	54
10.9	Maintenance of pole protection .....	55
10.10	Checking the Cutter Blades and Blade Holder .....	56
10.10.1	Cutter Blades .....	57
10.10.2	Blade Screw Connection .....	58
10.10.3	Blade Quick-Fit Device .....	58
10.11	Blade Changing on Cutting Discs .....	59
10.12	Special Tool .....	59
10.12.1	Blade Screw Connection .....	60
10.12.2	Blade Quick-Fit Device .....	61
10.13	Replacing the Linings .....	62
<b>11</b>	<b>Maintenance – lubrication chart .....</b>	<b>63</b>
11.1	Special Safety Instructions .....	63
11.2	PTO shaft .....	63



## Table of Contents

11.3	Lubrication Chart .....	64
<b>12</b>	<b>Placing in Storage .....</b>	<b>65</b>
<b>13</b>	<b>Before the Start of the New Season .....</b>	<b>66</b>
13.1	Special Safety Instructions .....	66
13.2	Test run. ....	66
13.3	Friction Clutch .....	68
13.4	Walterscheid Overload Coupling.....	68
<b>14</b>	<b>Special equipment.....</b>	<b>69</b>
14.1	Special Safety Instructions .....	69
14.2	Adjusting Skids.....	69
<b>15</b>	<b>Disposal of the machine .....</b>	<b>70</b>
15.1	Disposal of the machine .....	70
<b>16</b>	<b>Index .....</b>	<b>71</b>

### 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 & Co. KG

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 disc mower is used for cutting crops growing on the ground.

#### **3.2 Validity**

These operating instructions apply to disc mowers of series:  
AM 203 S; AM 243 S; AM 283 S and AM 323 S

##### **3.2.1 Contact**

Maschinenfabrik Bernard Krone GmbH & Co. KG  
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](mailto:info.ldm@krone.de)

## 3.3 Identification Plate

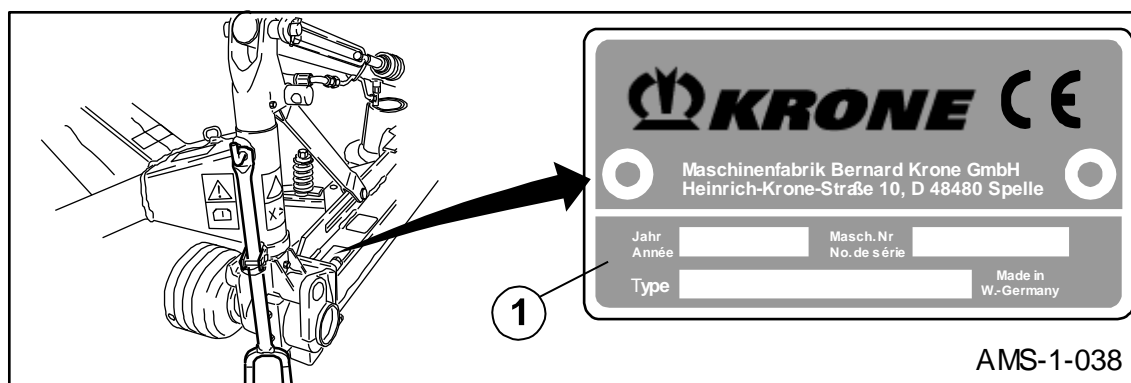


Fig. 1

The machine data are rendered 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).

Unauthorised modifications to the machine may have a negative effect on the machine characteristics or safe and reliable use of the machine or may interfere with proper operation. Unauthorised modifications shall therefore release the manufacturer of any liability 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.

Type	AM 203 S	AM 243 S	AM 283S	AM 323 S
Working width [mm]	2000	2400	2800	3200
Transport width [mm]	Tractor width			
Number of mowing discs	3	4	5	6/4
Number of mowing drums	2	2	2	2/4
Acreage [ha/h]	2.5	3	3.5	4
Power consumption [kW/HP]	27/37	32/43	38/52	44/60
PTO speed [rpm]	540			
Hydraulic connections required	1 x EW*			
Service weight [kg]	approx. 420	approx. 460	approx. 500	approx. 550

\*) EW= Single-action control unit

## Introduction

---

This page has been left blank deliberately!!

## 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 Attached devices

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

### 4.5 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 Maintenance**

- 1 Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning!
  - Remove the ignition key and carry it along with you.
  - Remove universal shaft on tractor side.
- 2 Observe the safety clearance behind the machine! In normal operation, the safety distance is 5m!  
Observe the safety clearance laterally to the machine! It is 3 m in normal operation!
- 3 Regularly check that nuts and bolts are properly seated and tighten if necessary!
- 4 When performing maintenance work with the machine raised, always secure it with suitable supporting elements!
- 5 Oils, greases and filters must be disposed of correctly!
- 6 If protective devices and guards are subject to wear, check them regularly and replace them in good time!
- 7 Replacement parts must at least comply with the technical requirements set by the manufacturer of the implements! This is guaranteed by original KRONE spare parts!
- 8 When replacing working tools with cutting edges, use suitable tools and gloves!

**4.8 Unauthorised Conversion/Modification and Spare Parts Production**

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

**4.9 Inadmissible Modes of Operation**

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

### 4.10 Working in the vicinity of power transmission lines

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

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

## 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

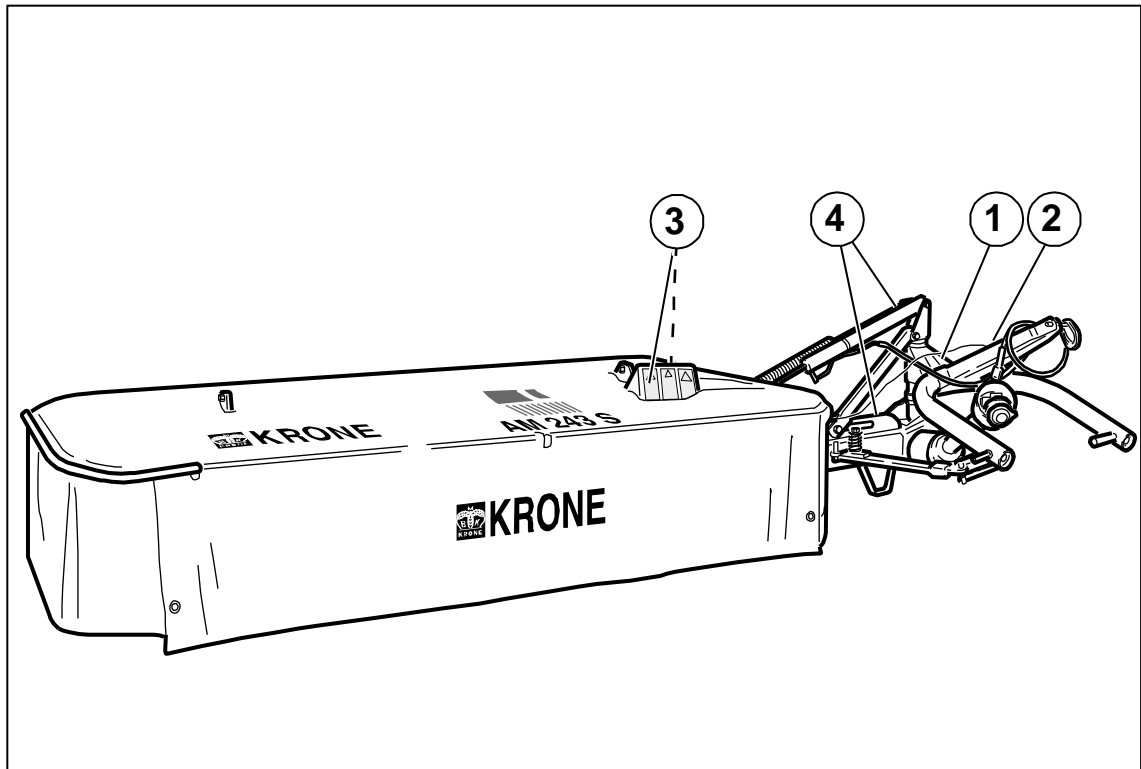
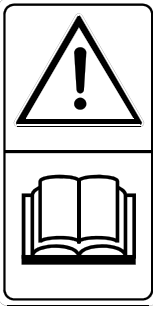
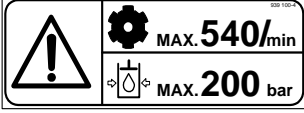
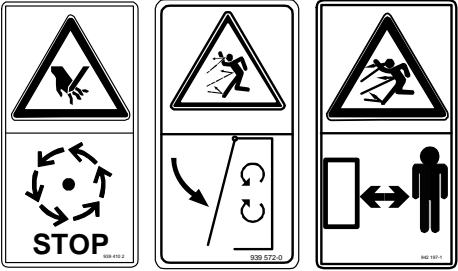
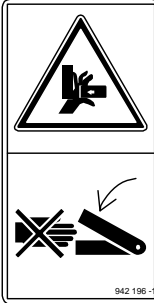


Fig. 2

<p>1) Before starting the machine, read and observe the operating instructions and safety instructions.</p> <p>Order No. 939 471-1 (1x)</p>		<p>2) The PTO speeds must not exceed 540 rpm! The operating pressure of the hydraulic system must not exceed 200 bar!</p>  <p>Order No. 939 100-4 (1x)</p>
<p>3) Order No. 939 576-0 (2x)</p> <p>a) Caution: machine parts coast for a long time until they come to a standstill. Do not touch any moving parts of the machine. Wait until they have come to a complete stop.</p> <p>b) Move the safety devices into their protective position prior to start-up.</p> <p>c) When the machine is running, keep your distance.</p>		<p>3a                      3b                      3c</p>
<p>4) While parts are moving, never reach into areas where there is a risk of being crushed.</p> <p>Order No. 942 196-1 (2x)</p>		

#### 4.13 Position of the General Information Labels on the Machine

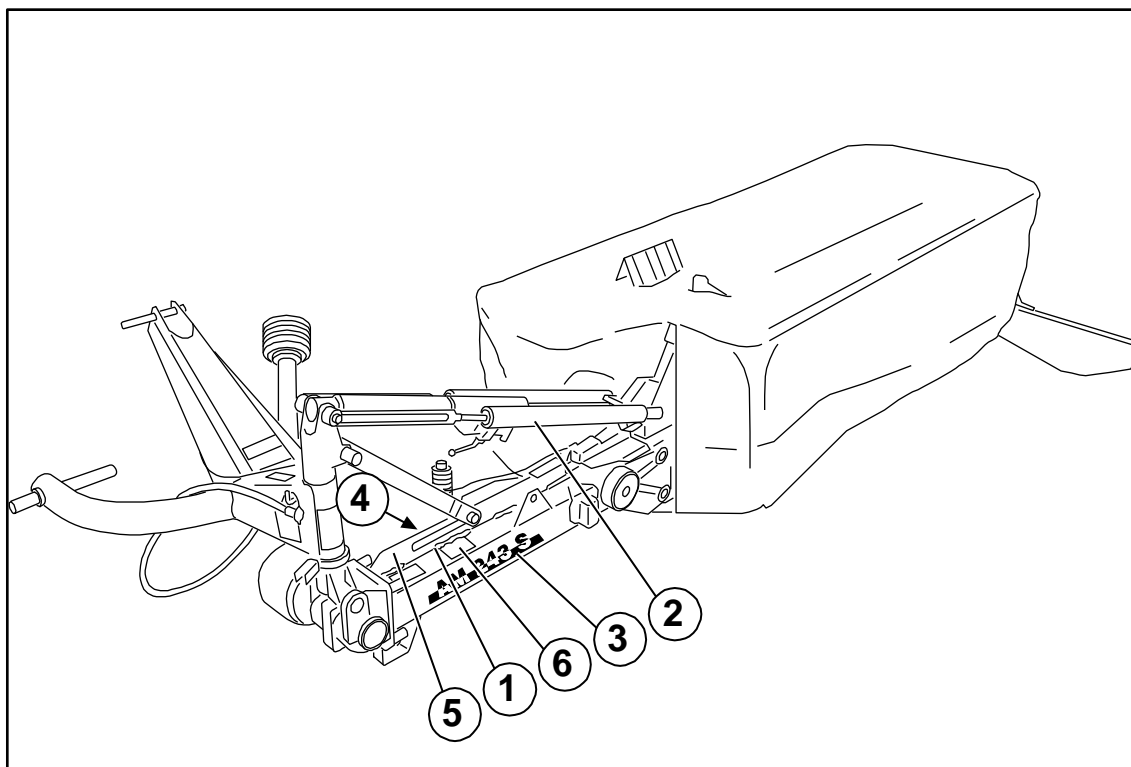
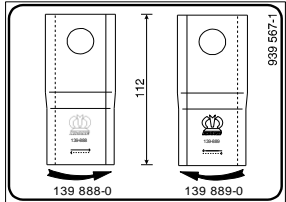
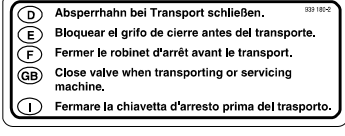


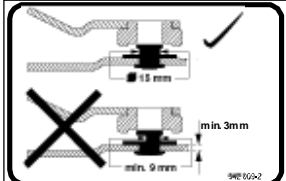
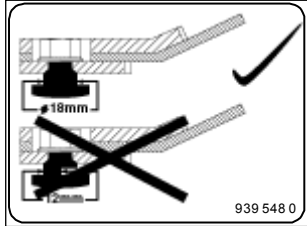


Fig. 3

<p>1)</p>  <p>939 567-1 (1x)</p>	<p>2)</p>  <p>939 180 2 (1x)</p>	<p>3)</p>  <p>939 541 2 (1x) AM 203 S 939 542 2 (1x) AM 243 S 939 546 2 (1x) AM 283 S 939 545 2 (1x) AM 323 S</p>
<p>4)</p>  <p>942 132 0 (1x)</p>	<p>5)</p>  <p>942 009 2 (1x) with blade screw connection</p>	<p>5)</p>  <p>939 548 0 (1x) with blade screw connection</p>

<p>6)</p> <div> <p>939 278-2</p> <p><b>D</b> Vor der Erstinbetriebnahme und 1x jährlich vor der Ernte muss die Reibkuppelung gelüftet werden.</p> <p><b>E</b> El embrague de seguridad debe someterse a una purga antes de la primera puesta en marcha y una vez al año antes de iniciarse la campaña de trabajo.</p> <p><b>F</b> La sécurité à friction doit faire l'objet d'une purge lors de la première mise en route et une fois par an avant le début de la saison.</p> <p><b>G</b> The friction clutch must be bled at the first operation and once a year before the harvesting season.</p> <p><b>I</b> La frizione di sicurezza deve essere sottomessa ad uno spurgo alla prima messa in campo come pure una volta all'anno prima della campagna.</p> </div> <p>939 278-2 (1x)</p>		
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--

## 4.13.1 Re-Ordering Safety Labels and Information Labels



### Note

Each safety and information label is provided with an order number and can be ordered directly from the manufacturer or from authorised dealer (refer to chapter "Contact Person").

## 4.13.2 Attaching Safety Labels and Information Labels



### Note - Attaching a label

Effect: Adhesion of label

- The attachment area must be clean, dry and free from dirt, oil and grease.

This page has been left blank deliberately!!

### 5

### Commissioning



#### Note

Before placing the machine in operation for the first time, the oil level must be checked in all gearboxes.

#### 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.

## Commissioning

### 5.3 Mounting onto the Tractor

#### 5.3.1 Clutching points

There are 3 ways to attach the mowing unit:

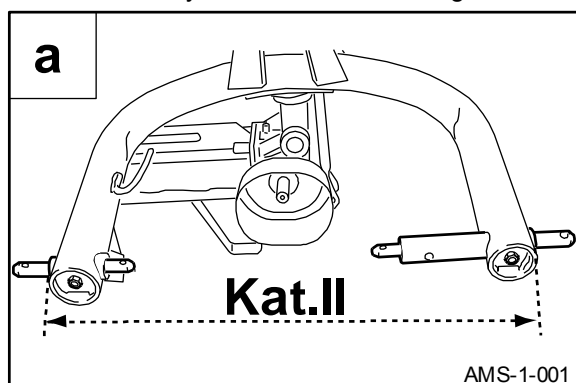


Fig. 4

#### a) Cat. II

The standard setting of the steerable pinions is for **Cat. II**.

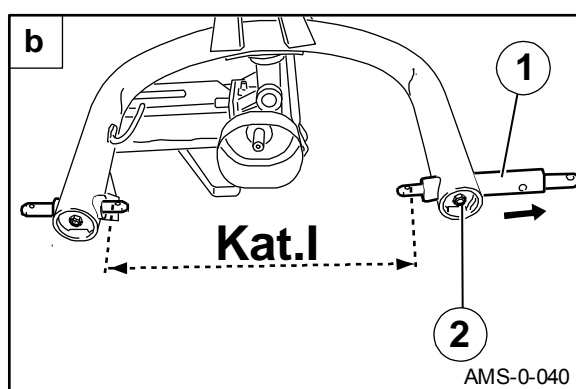


Fig. 5

#### b) Cat. I

For **Cat. I** the steerable pinion (1) must be offset to the outside.

To do this:

- Remove the screw (2)
- Offset the steerable pinion (1) outwards
- Tighten the screw (2) again

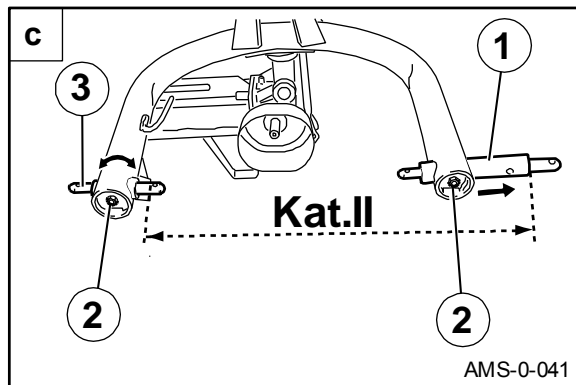


Fig. 6

**c) Cat. II offset to the side**

To offset the mower to the side for **Cat. II**, turn the steerable pinion (3) 180° and shift the steerable pinion (1) outwards.

- Remove the screws (2)
- Insert the steerable pinion (3), rotated 180°
- Offset the steerable pinion (1) outwards
- Tighten the screws (2) again

### 5.3.2 Attaching the Three-Point Block



#### **Danger! - Inadvertent uncoupling of the machine during road travel or work.**

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

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

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

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

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

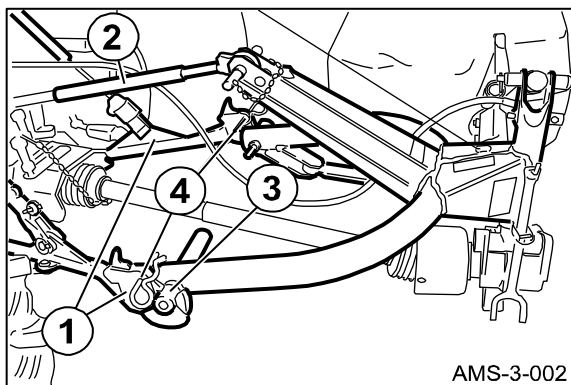
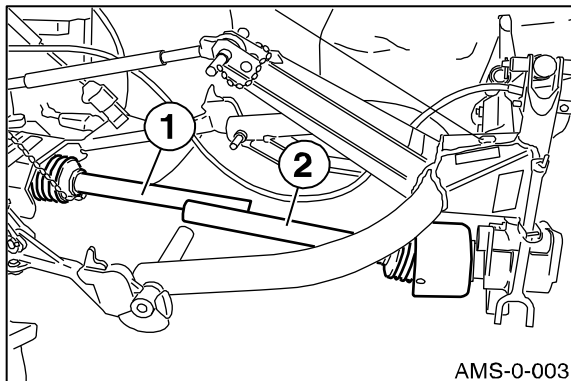


Fig. 7

- Attach the machine onto the lower suspension arm (1) of the tractor
- Couple the top suspension arm (2) and secure it in place

**5.4 PTO shaft****5.4.1 Length adjustment****Fig. 8**

The machine is connected to three-point linkage of tractor.

The length of the universal shaft (1) must be adapted.

- Disassemble universal shaft.
- Install one half on tractor side (1) and the other one on machine side (2).
- Check overlap of section tubes and guard tubes.
- Shorten section tubes and guard tubes so that the universal shaft can move freely in the shortest operating position.
- For further procedure, please refer to the operating instructions of universal shaft manufacturer.

**Caution! - Swivel range of the PTO shaft**

Effect: Damage to the tractor or the machine

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

**Caution! - Changing the tractor**

Effect: Damage to the machine

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

### 5.5 Adjustment Piece for Lifting Cylinder and Compensation Spring

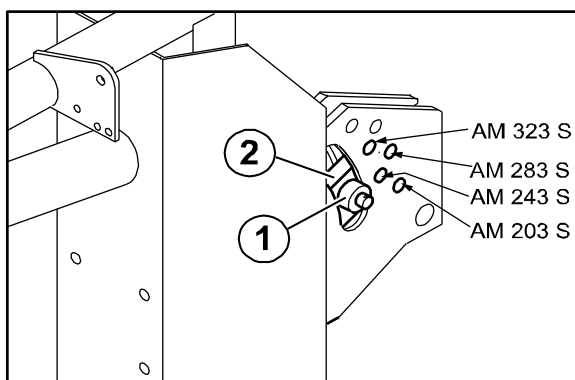


Fig. 9

The lower bearing bolt for the lifting cylinder and the compensation spring must be locked in a specific position depending on the type of the machine.



#### Note

The setting is mounted in the factory and must not be changed.  
The bolt (1) is mounted with the lever (2).

## 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.



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

Effect: Damage to the tractor or the machine.

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

Make sure that these prerequisites are met prior to driving.

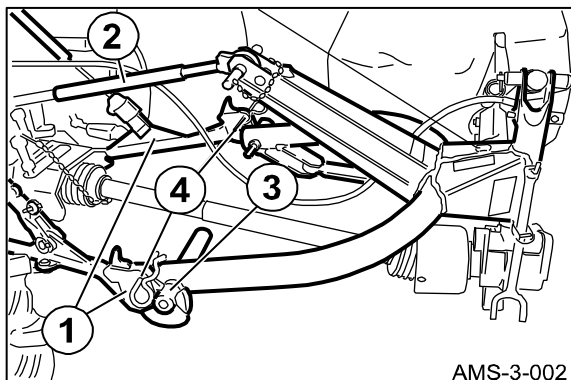


Fig. 10

- Attach the machine onto the lower suspension arm (1) of the tractor
- Couple the top suspension arm (2) and secure it in place

## Start-up

### 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.



##### **Danger! - Unintended actions triggered.**

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

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

A single-action control unit is required on the tractor to operate the machine.

- Release the pressure from the hydraulic system on the tractor side
- Insert the hydraulic hose into the hydraulic coupling of the control valve
- Set down the actuating rope for unlocking the "transport position" at a suitable place in the tractor cab

### 6.3 PTO shaft



#### **Danger! - Rotating PTO shaft**

Effect: Danger to life or serious injuries

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



#### **Danger! - Incorrect PTO speed**

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

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



#### **Caution! - Swivel range of the PTO shaft**

Effect: Damage to the tractor or the machine

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

### 6.4 Install the PTO shaft

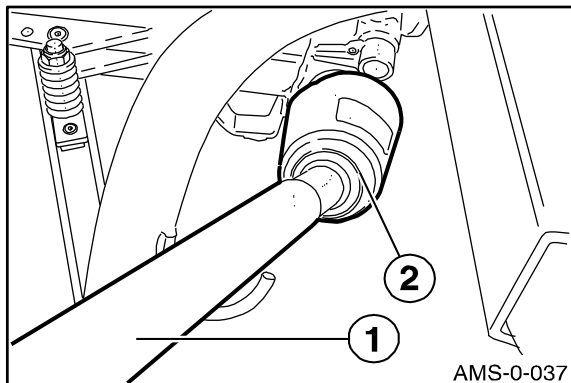


Fig. 11

- Push the PTO shaft (1) with the overload coupling (2) onto the disc mower gear input shaft towards the disc mower and secure it in place
- Slide the PTO shaft (1) onto the PTO end of the tractor and secure it

**Make sure all locks of the PTO shaft have snapped in.**

- Secure the PTO shaft guard against turning with the retaining chain

## 6.5 Fastening the Compensation Spring

(for AM 283 S and AM 323 S)



### **DANGER! – Installing the compensation spring(s)**

Effect: Danger to life or serious injuries

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



### **Note**

The rear compensation spring can only be mounted in the transport position of the machine.

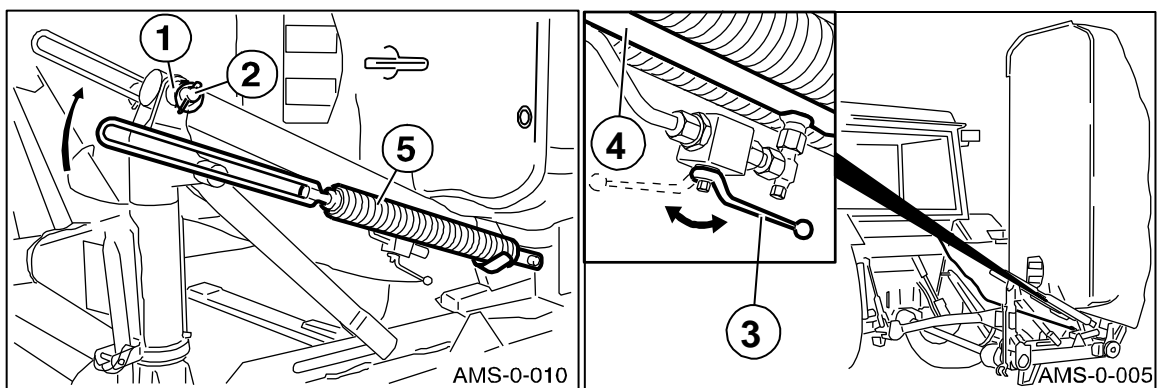


Fig. 12

- Bring the machine into the transport position
- **Closing the Shut-Off Valve (3) on the Hydraulic Cylinder (4)**
- Remove the cotter pin (1) and washer (2) from the upper retaining bolt (spacer sleeve remains on the bolt)
- Push the compensation spring (5) onto the retaining bolt
- Mount the washer and cotter pin again

## 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.

**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 valve.
- Always make certain that the lock (1) has snapped into place.

## 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 injured.**

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

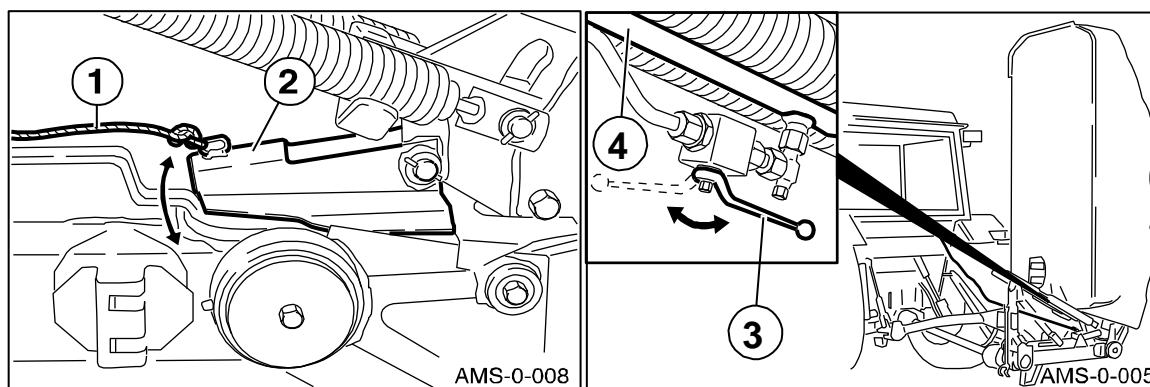


Fig. 13

**During transport / road travel the disc mower must be folded up.**

To do this:

- To release the locking mechanism (2), pull the actuating rope (1) up from the tractor
- Actuate the control valve for the hydraulic cylinder on the tractor. The mowing unit lifts up into the transport position
- Lower the lock (2)
- **Closing the Hydraulic Shut-Off Valve (3) on the Hydraulic Cylinder (4)**



### Note

Locked position of the shut-off valve = hand lever 90° in the direction of the line

## 7.2

### Lighting

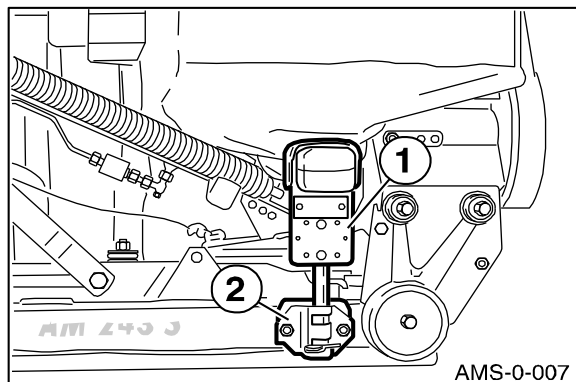


Fig. 14

- Push the lighting (1) into the light holder (2) from above
- Secure it with a cotter pin
- Check function

## 8 Operation

### 8.1 From transport into working position



#### **Danger! - Lowering the mowing unit into the working position**

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

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



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

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

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

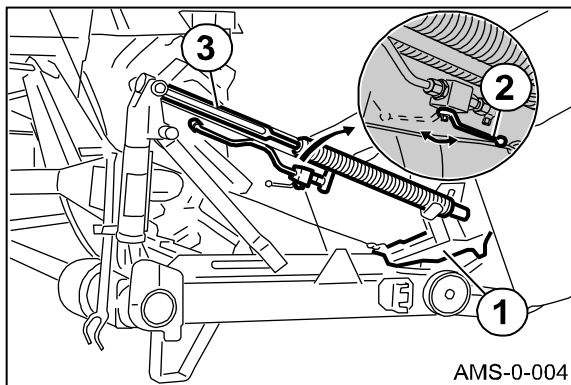


Fig. 15

- Open the hydraulic shut-off valve (2) on the hydraulic cylinder (3)
- To lower the mowing unit, pull up the lock (1) from the tractor using the actuating rope
- Activate the double action control valve on the tractor to slowly 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!



#### **Note! - While mowing**

Effect: Proper use of the machine

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

### 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

### 8.3 Using the Machine for Work



#### **DANGER! - Using the machine for work**

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

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

### 8.4 Headland Position



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

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

- Lift the mowing unit into headland position only when you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.
- During driving in the headland position, the mowing unit will only be raised or lowered by the hydraulic cylinder of the disc mower. The locking mechanism for folding up the mowing unit must not be actuated.

In headland position, lift the disc mower by activating the single-action control unit on the tractor side.

### 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!



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

Effect: Danger to life or serious injuries

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

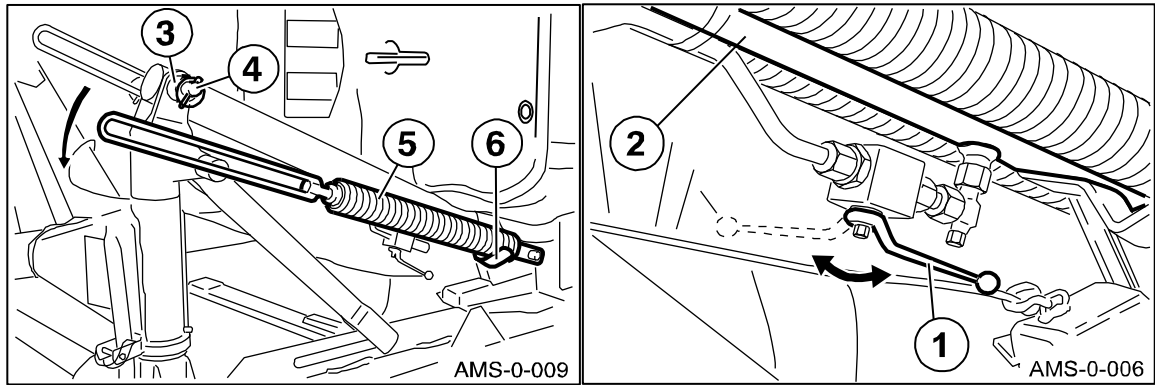


Fig. 16

To simplify later attachment of the disc mower to the tractor, it is advisable to remove the rear compensation spring.

To do this:

- Bring the machine to the transport position (the compensation spring(s) may only be removed in this position)
- **Closing the Shut-Off Valve (1) on the Hydraulic Cylinder (2)**
- Pull out the cotter pin (3) on the upper retaining bolt (4) of the rear compensation spring (5)
- Remove the washer
- Pull the compensation spring out of the top retaining bolt and set it down on the support (6)
- Open the shut-off valve ( ) on the hydraulic cylinder (2) of the disc mower (see dotted item)
- To lower the mowing unit, pull up the lock from the tractor using the actuating rope
- Activate the double action control valve on the tractor to slowly lower the mowing unit
- Disconnect the hydraulic hose from the tractor (set the dust cap in place)
- Take the actuating rope off the tractor

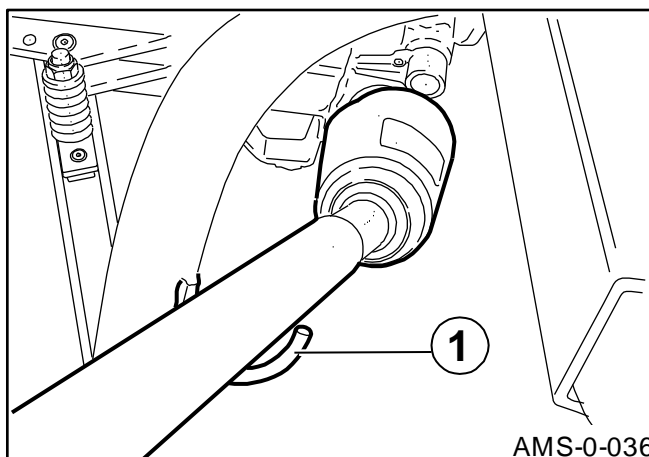


Fig. 17

- Remove the safety chain from the PTO shaft guard
- Pull the PTO shaft off the tractor PTO and set it down on the PTO shaft support (1)
- Disconnect the disc mower from the top suspension arm and lower suspension arms of the tractor

This page has been left blank deliberately!!

## 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.

### 9.1

### Adjusting the cutting height

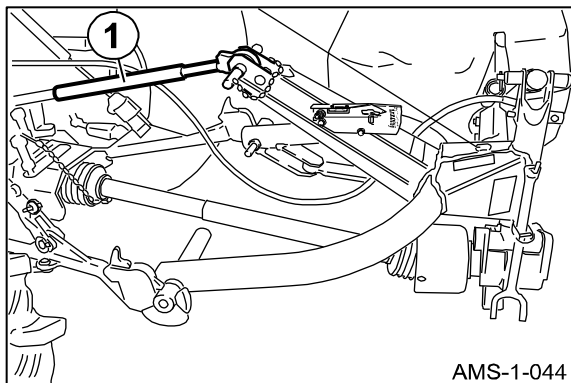


Fig. 18

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

To do this:

- Lower the machine into the working position
- Rotate the top suspension arm (1)

**Top suspension arm longer = bigger cutting height**

**Top suspension arm shorter = smaller cutting height**

## 9.2

### Setting the Relief Springs



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

Effect: Danger to life or serious injuries

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

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

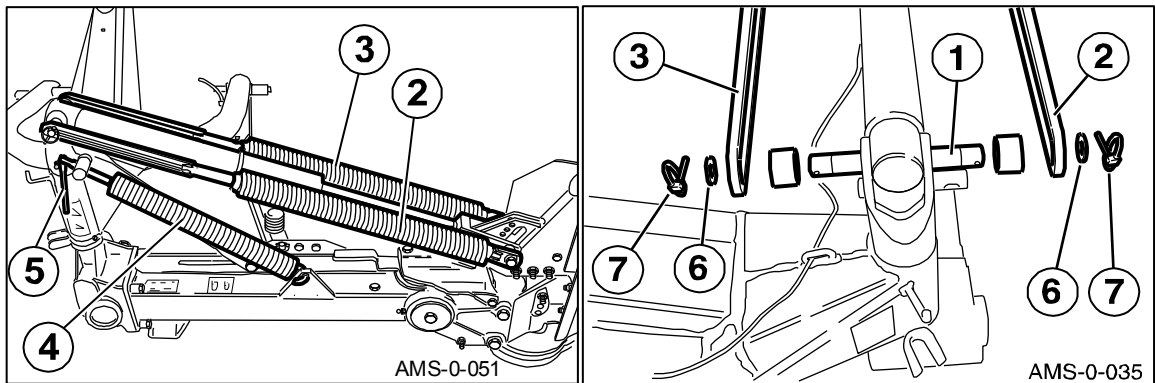


Fig. 19



#### **Note**

Springs (2) and (3) relieve the cutter bar on the outside.

- Bring the machine into the transport position
- Close the shut-off valve on the hydraulic cylinder
- Remove the compensation springs (2,3) in the transport position of the disc mower from the top retaining bolt (1)
- Turn the upper adjustment pieces to change the length

**The further the adjustment pieces are screwed in, the greater the relief on the mowing unit.**

- After the setting is made, attach the compensation spring on the retaining bolt again and secure it with a washer (6) and cotter pin (7)



#### **Note**

In disc mowers with two compensation springs, the two compensation springs must be set to the same length.

## AM 323 S



### Note

Spring (4) relieves the cutter bar on the inside.

- The compensation spring (4) can be adjusted with the spindle (5)

## 9.3

### Setting of the pole protection mechanism



### Caution! - Adjusting the pole protection mechanism

Effect: Damage to the machine

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

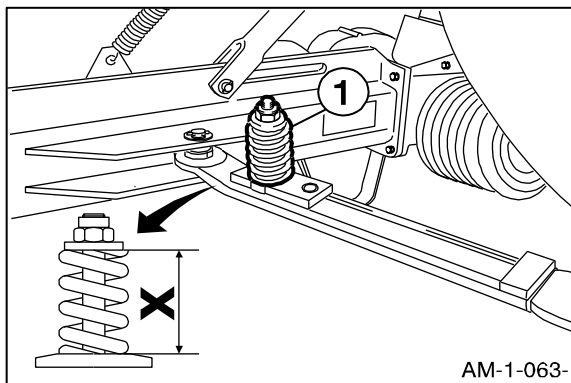


Fig. 20

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

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

Mower type	Dimension x
AM 203 S	81 mm
AM 243 S	80 mm
AM 283 S	79 mm
AM 323 2	78 mm

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



### Note

The bolt of the trigger cam disc must always be greased.

### 9.4 Default Setting of the Tractor's Lower Suspension Arms

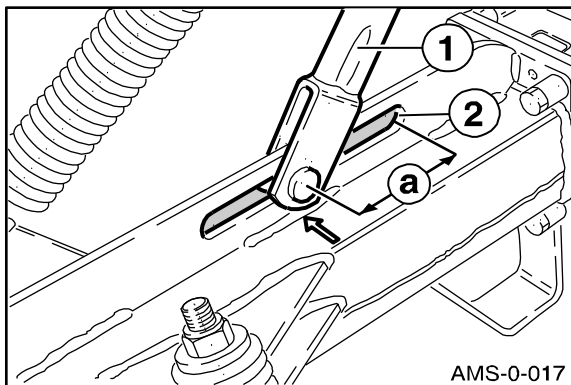


Fig. 21

The optimum height is set when the connecting rod (1) is in the oblong hole (2) at a distance of about  $a = 70 \text{ mm}$ . If it is not located here, the height must be changed as required by raising or lowering the lower suspension arm.

### 9.5 Adjustable throttles

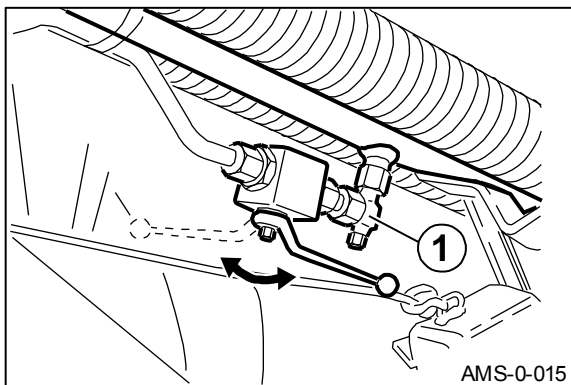


Fig. 22

#### Throttle (1)

Throttle (1) adjusts the lifting speed from working position to headland position.



#### Note

Adjustment on the throttles

Even the smallest adjustments to the stud bolts or throttle setting screws may significantly change the lifting and lowering speed.



#### Note

Adjustment on the throttles

After an adjustment has been made to the throttles, lock the hexagonal nuts and Allen head screw. Then test functionality.

## 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 unit is resting on the ground and you are absolutely sure that neither persons, animals nor objects are in the danger zone.
- Start a trial run of the machine only from the driver's seat.

### 10.2 Spare Parts

**Warning! - Using non-approved spare parts.**

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

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

## Maintenance

### 10.3 Tightening torques

#### 10.3.1 Metric Thread Screws with Control Thread



#### NOTICE

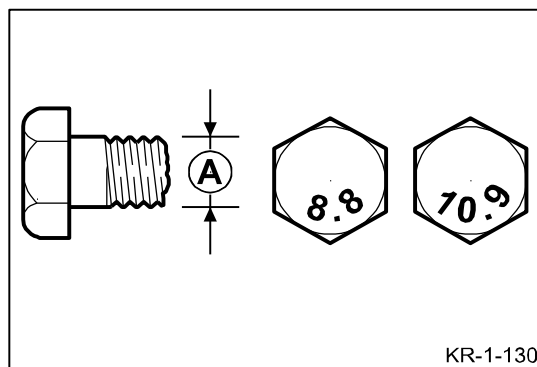
The table does not apply to countersunk screws with hexagonal socket in case the countersunk screw is tightened via hexagonal socket.

**Tightening torque in Nm (unless otherwise stated)**

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

**A = thread size**

**(stability class can be seen on screw head)**

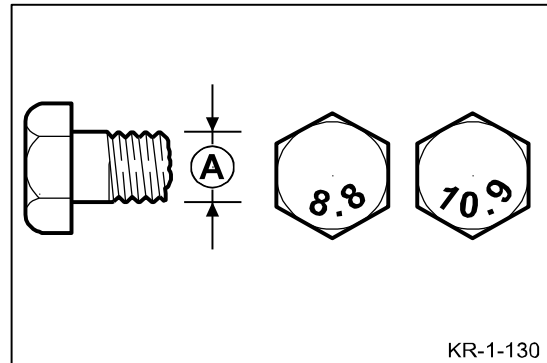


**10.3.2 Metric Thread Screws with Fine Thread**

**Tightening torque in Nm (unless otherwise stated)**

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

**A = thread size**  
(stability class can be seen on screw head)


**10.3.3 Metric Thread Screws with Countersunk Head and Hexagonal Socket**

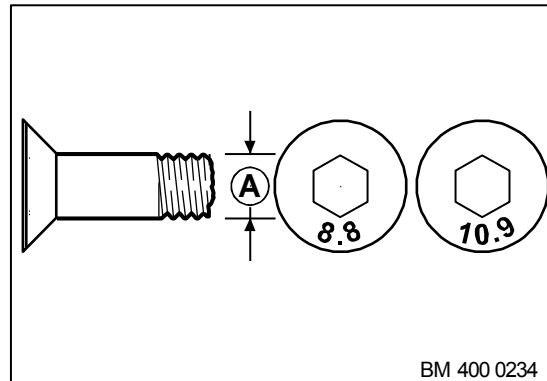
**NOTICE**

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

**Tightening torque in Nm (unless otherwise stated)**

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

**A = thread size**  
(stability class can be seen on screw head)



## 10.3.4 Tightening Torques for Locking Screws and Bleed Valves on the Gearboxes



### NOTE

The tightening torques only apply to assembly of locking screws, viewing glasses, ventilation and breather filters and bleed valves in gearboxes with cast housings or aluminium or steel housings. The term "locking screw" includes the drain plug, the inspection screw as well as the ventilation and breather filters.

**This table applies only to locking screws with external hex in connection with copper seal ring for bleed valves made of brass with shaped seal ring.**

Thread	Locking screw and viewing glass with copper ring*) Ventilation/breather filter made of steel		Bleed valve made of brass Ventilation and breather filter made of brass	
	Steel and cast	Aluminium	Steel and cast	Aluminium
	Maximum tightening torque (Nm) ( $\pm 10\%$ )			
M10x1			8	
M12 x 1.5			14	
G1/4"			14	
M14 x 1.5			16	
M16 x 1.5	45	40	24	24
M18 x 1.5	50	45	30	30
M20 x 1.5			32	
G1/2"			32	
M22X1.5			35	
M24x1.5			60	
G3/4"			60	
M33x2			80	
G1"			80	
M42x1.5			100	
G1 1/4"			100	

\*) Always replace copper rings



### Note

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

## 10.3.5 Deviating Tightening Torques

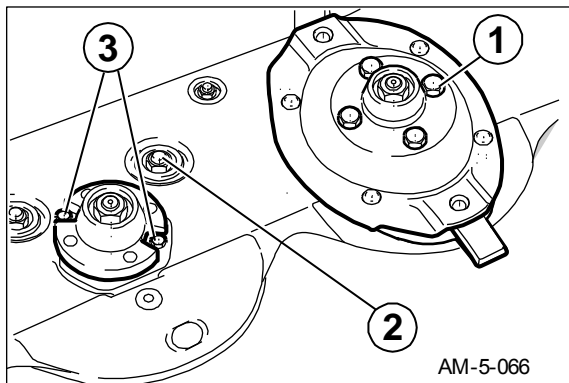


Fig. 23

Screws/nuts	Tightening torque
Bearing housing for cutting disc (1)	55 Nm
Clamping pot screw (2)	210 Nm
Bearing housing for mower drum (3)	55 Nm

## Maintenance

### 10.4 Filling Quantities and Lubrication Designations for Gearboxes

	Filling quantity [litres]	Refined oils Brand name	Bio-degradable lubricants Brand name
Main gearbox	0.4 l	SAE 90	On request
Gearbox on the carrying bar	0.5 l		
Cutter bar AM 203 S	4.0 l		
Cutter bar AM 243 S	5.0 l		
Cutter bar AM 283 S	6.0 l		
Cutter bar AM 323 S	7.0 l		

#### 10.4.1 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.

## 10.5

### Main gearbox



#### Note

Tighten the locking screws on the gearboxes with the prescribed tightening torques, refer to chapter Maintenance "Tightening Torques for Locking Screws and Bleed Valves on Gearboxes".

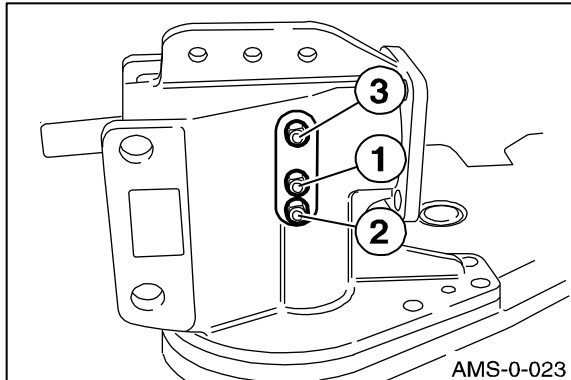


Fig. 24

#### 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

## 10.6 Gearbox on the carrying bar



### Note

Tighten the locking screws on the gearboxes with the prescribed tightening torques, refer to chapter Maintenance "Tightening Torques for Locking Screws and Bleed Valves on Gearboxes".



### Note

Align the carrying bar using a spirit level (4).

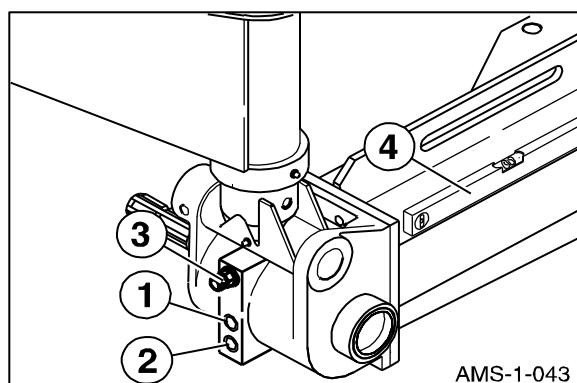


Fig. 25

### 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

## 10.7 Oil level check and oil change on the cutter bar

### 10.7.1 Oil change



#### Note

No oil change is required on the cutter bar.

### 10.7.2 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.



#### Note

Tighten the locking screws on the gearboxes with the prescribed tightening torques, refer to chapter Maintenance "Tightening Torques for Locking Screws and Bleed Valves on Gearboxes".

- Allow the machine to run briefly
- Turn off the PTO
- Wait until cutting discs/blade drums have come to a complete stop
- Move the cutter bar into transport position
- Switch off the tractor engine and remove the ignition key
- Close the shut-off valve on the hydraulic cylinder of the disc mower

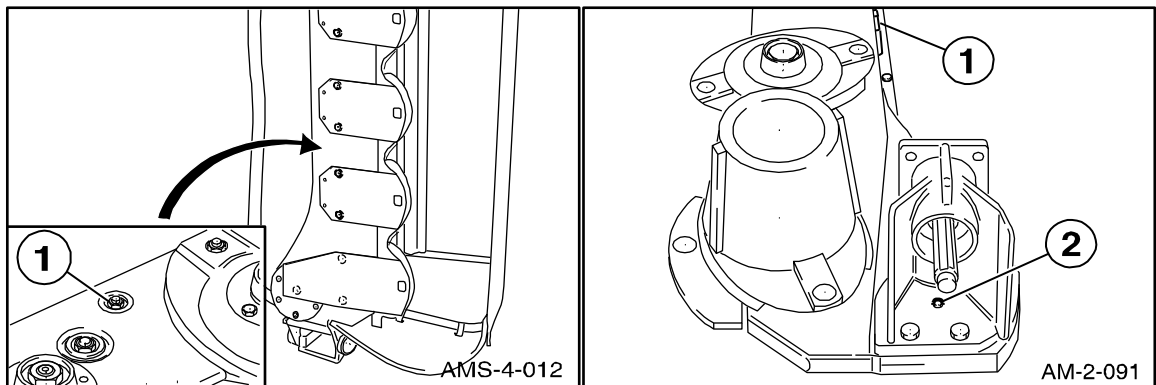


Fig. 26

#### **Check the oil level before every use**

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

### 10.8

#### Guard Cloths



##### **Danger! - Missing or damaged guard cloths**

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

The protective equipment on the machine, e.g. guard cloths and hoods, protects against flying stones and similar objects and also prevents access to dangerous parts.

- Damaged or worn guard cloths must be replaced without delay
- Use only original cloths
- Move the guard cloths into position prior to starting work

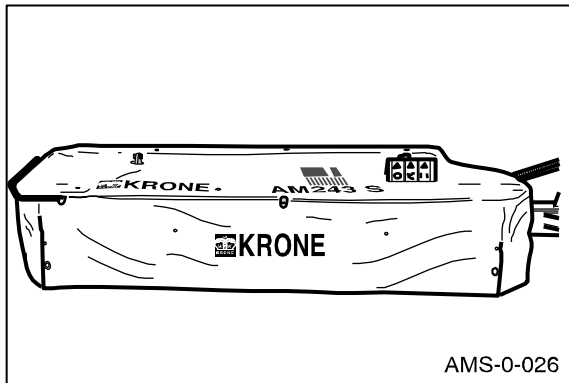


Fig. 27



##### **Note**

The protective frame and guard cloths protect against objects that would be forcibly ejected upward. They also prevent contact with rotating blades.

Check the guard cloths regularly. Replace worn or damaged guard cloths immediately.

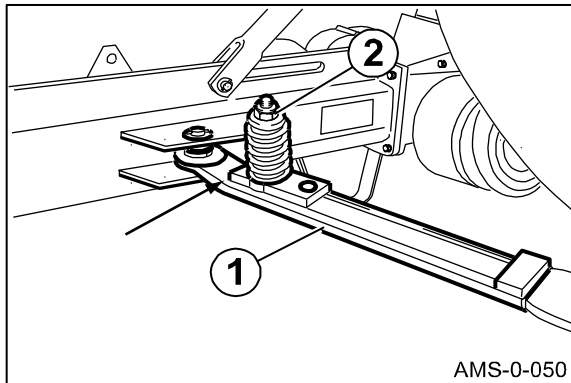
**10.9****Maintenance of pole protection**

Fig. 28

**The pole protection (1) must be maintained at least once a year.**

To perform maintenance, release the tension on the spring (2) and remove it. Then pull the pole protection (1) apart and clean the contact surfaces of both inclined bevels. Then grease the inclined bevels and mount the pole protection.

**Note**

For the triggering moment setting, see "Pole Protection Setting" in the Settings chapter

### 10.10 Checking the Cutter Blades and Blade Holder

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

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

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

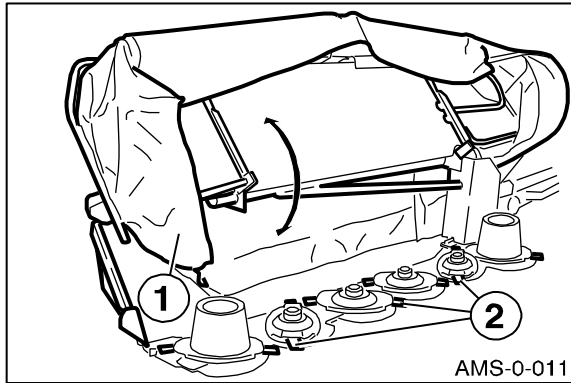


Fig. 29

To check and fit the blades, fold up the protective device (1). Now you can access the blades (2).

**Note**

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

## 10.10.1 Cutter Blades

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



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

Effect: Danger to life or serious injuries.

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

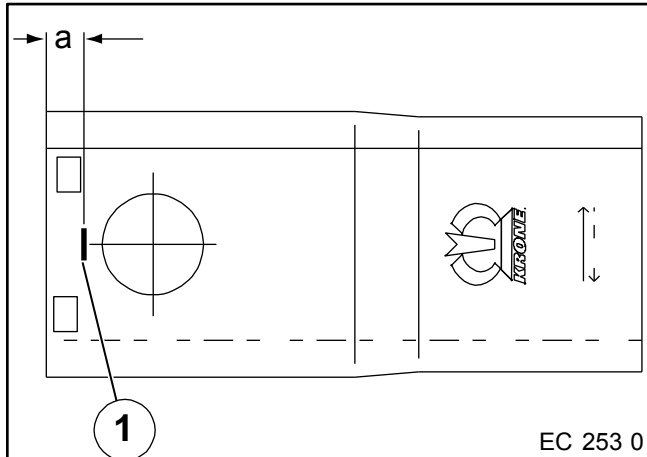


Fig. 30



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

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

## 10.10.2 Blade Screw Connection



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

Effect: Danger to life or serious injuries.

- Every time a blade is changed, 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 12 mm at the weakest point.

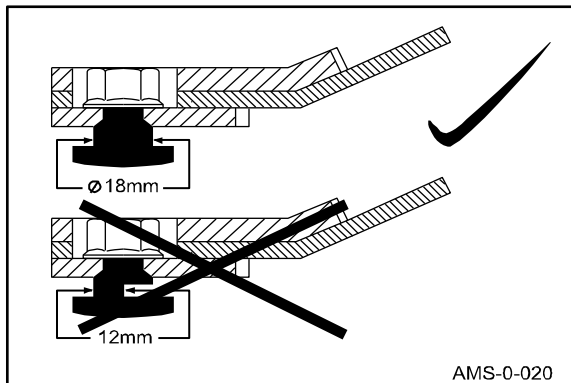


Fig. 31

## 10.10.3 Blade Quick-Fit Device



### **DANGER! – Insufficient thickness of material on the retaining bolts.**

Effect: Danger to life or serious injuries.

- Every time a blade is changed, 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 9 mm at the weakest point.
- The material thickness of the leaf spring must not be less than 3 mm at the weakest point.

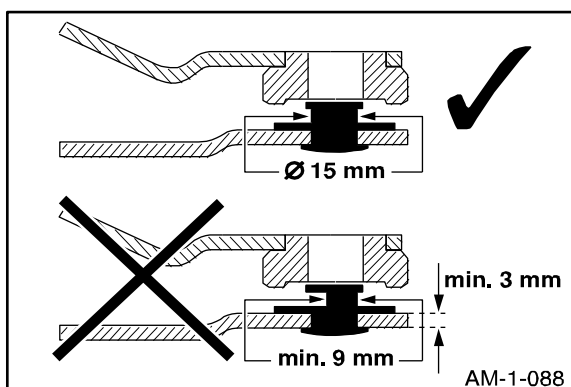


Fig. 32

## 10.11 Blade Changing on Cutting Discs



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

Effect: Danger to life or serious injuries.

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



### **Danger! - Cutter blades coming loose**

Effect: Danger to life or serious injuries.

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

## 10.12 Special Tool

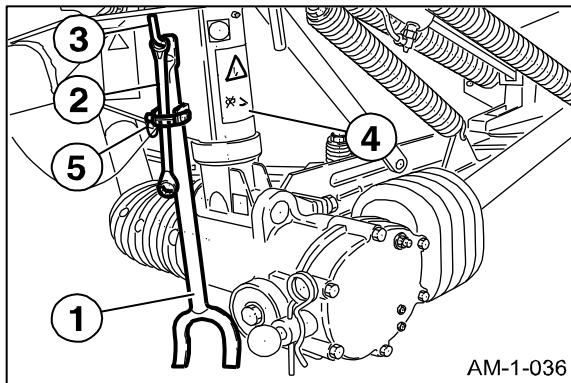


Fig. 33

The special tool (1) {blade wrench for blade quick-fit device} or the offset ring spanner (2) {for blade screw connection} are included in the scope of delivery.

The tool (1 or 2) is located on the holder (3) on the rear hinge pipe (4) of the three-point block. After the tool has been used, insert it in the holder (3) again and secure it with the linch pin (5).

## 10.12.1 Blade Screw Connection

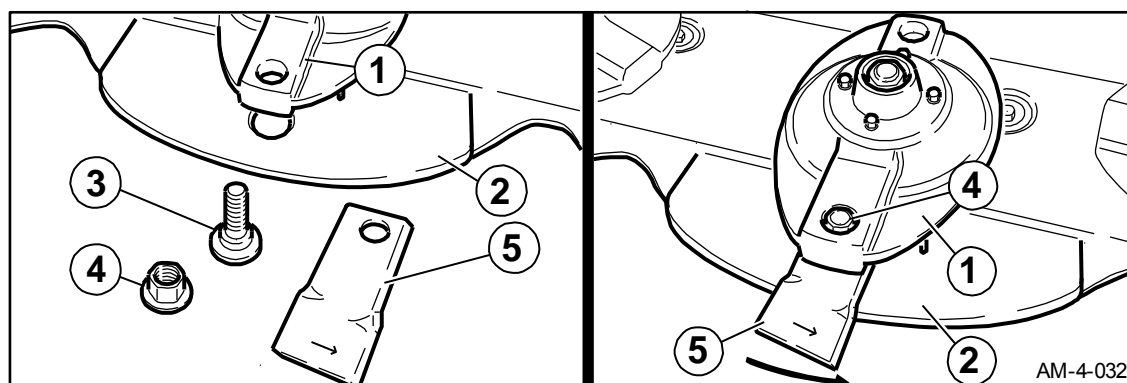


Fig. 34

- Fold up the protective device
- Clean the area
- Remove damaged or worn blades
- To fit a blade (5), insert it between the wear plate (2) and the cutting disc (1)
- Insert the retaining bolt (3) from below through the wear plate, the blade and the cutting disc
- Place the hex nut (4) on the bolt from above and tighten it firmly (for torque see section "Torques").
- Repeat this process for all blades, including those on the blade drums
- After fitting the blades, fold the protective 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**

**Alternatively:**

**Order No. for roof-shaped blade (clockwise and anticlockwise threading): 139 800**

## 10.12.2 Blade Quick-Fit Device

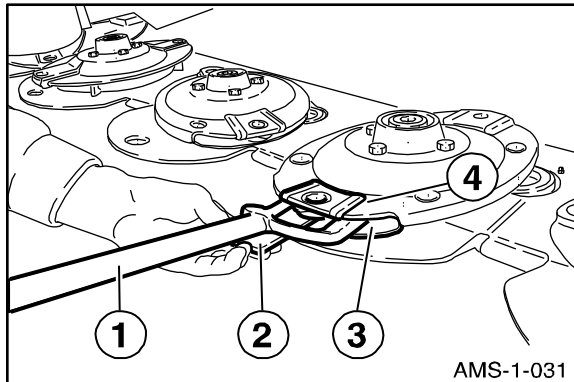


Fig. 35

- Fold up the protective device
- 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
- Repeat this process for all blades, including those on the blade drums
- After fitting the blades, fold the protective 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

**Order No. for clockwise rotating blade: 139-889**

**Order No. for anticlockwise rotating blade: 139-888**

**Alternatively:**

**Order No. for roof-shaped blade (clockwise and anticlockwise threading): 139 800**

## 10.13 Replacing the Linings



### Caution! – Linings not checked

Effect: Damage to the machine

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

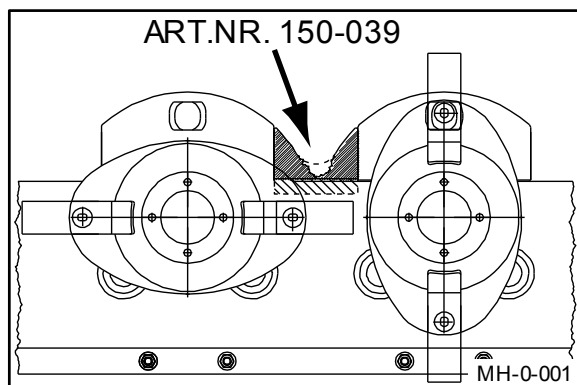


Fig. 36

## 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

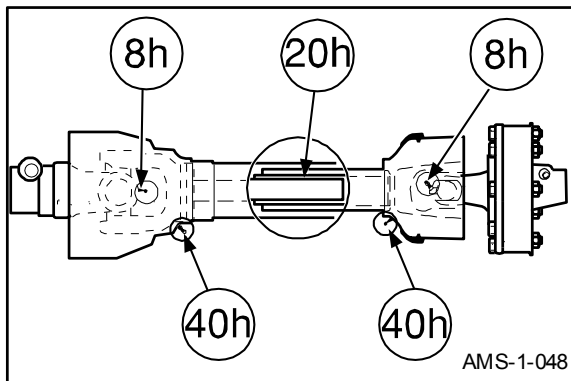


Fig. 37

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

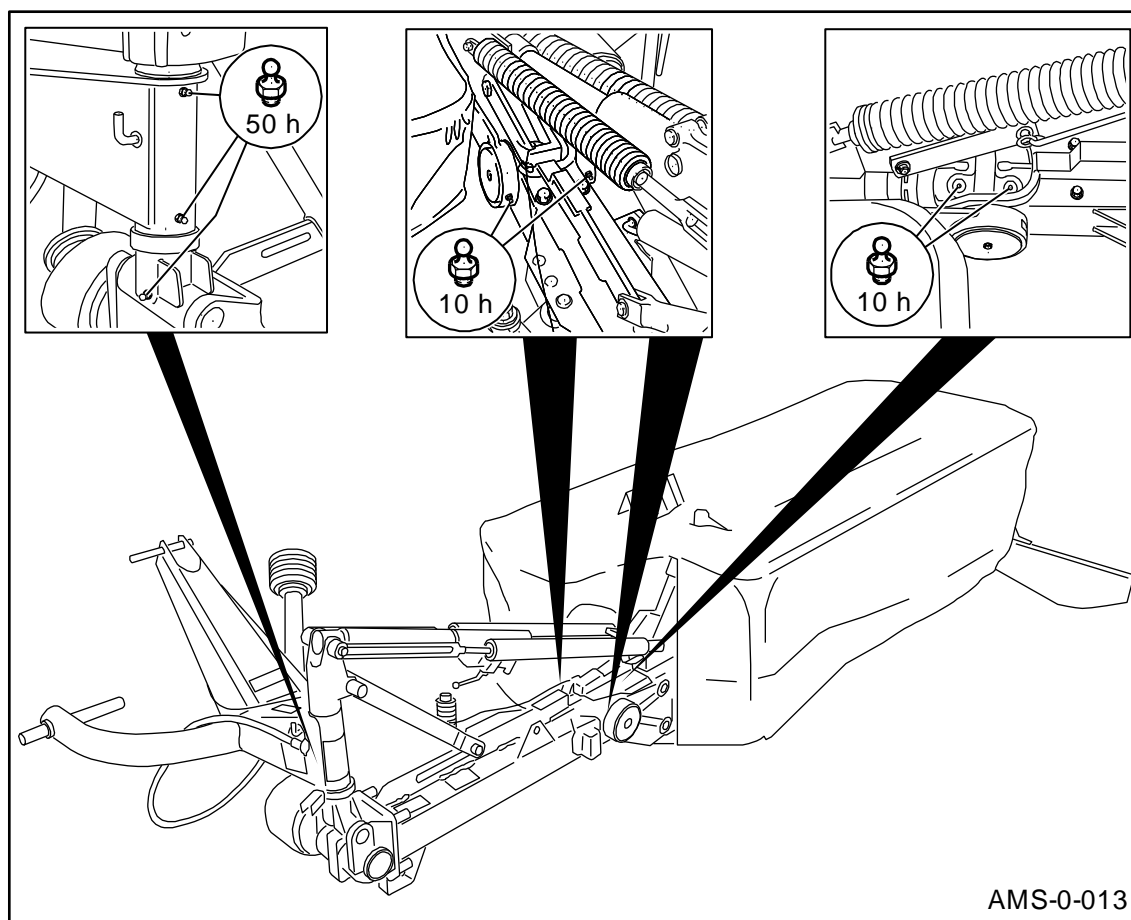


Fig. 38

### 12

### Placing in Storage

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

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

### 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 unit is resting on the ground and you are absolutely sure that neither persons, animals nor objects are in the danger zone.
- Start a trial run of the machine only from the driver's seat.

- Wipe off the grease and oil used for preservation
- 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.



#### **Note**

To place the machine in service again, attach it to the tractor and switch on the PTO shaft. When the overload coupling is vented, the cutting discs should not be turning with it. If the cutting discs do turn, it is because the overload coupling is jammed or rusted and stiff, in which case it must be disassembled. (Loosen the friction lining from the plates. If necessary smooth the friction surfaces with emery paper.) Then attach the PTO shaft again and proceed as described in section "Walterscheid Overload Coupling".



#### **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")

### 13.4 Walterscheid Overload Coupling

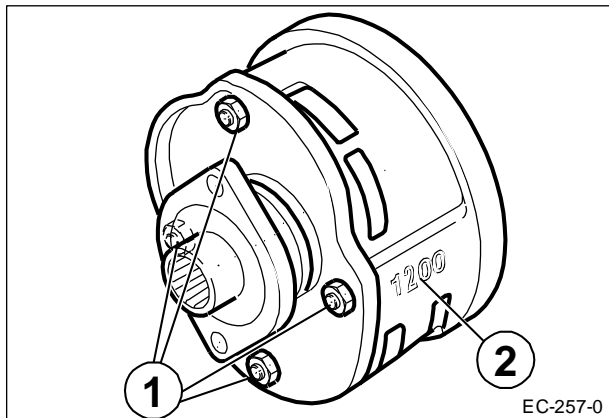


Fig. 39

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.

## 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



#### **DANGER! – Machine drops without control**

Danger to life or serious injuries.

- Never walk under a raised machine
- Support the raised machine safely

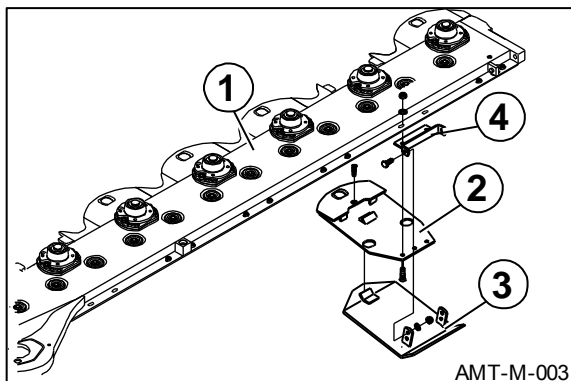


Fig. 40

Adjusting skids can be used to adjust the cutting height in two stages (see section entitled "Adjusting the Cutting Height")

To do this screw on the bar (4) under the cutter bar (1). Then insert the adjusting skid (3) into the glide skid (2) and screw together with the bar at the required height (4).

The adjusting skids must always be mounted underneath the cutting discs that run next to the mower drums.

### 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.

**16 Index**
**A**

Adjustable throttles .....	44
Adjusting Skids .....	69
Adjusting the cutting height .....	41
Attached devices .....	14
Attaching Safety Labels and Information Labels .....	21
Attaching the Three-Point Block .....	26

**B**

Before mowing .....	36
Before the Start of the New Season .....	66
Blade Changing on Cutting Discs .....	59
Blade Quick-Fit Device .....	58, 61
Blade Screw Connection .....	58, 60

**C**

Checking the Cutter Blades and Blade Holder .....	56
Clutching points .....	24
Commissioning .....	23
Connecting the hydraulic lines .....	30
Contact .....	7
Cutter Blades .....	57

**D**

Dangers in Case of Non-compliance with the Safety Instructions .....	12
Default Setting of the Tractor's Lower Suspension Arms .....	44
Detaching the machine .....	38
Deviating Tightening Torques .....	49
Disposal of the machine .....	70
Driving and Transport .....	33

**F**

Fastening the Compensation Spring .....	32
Filling Quantities and Lubrication Designations for Gearboxes .....	50
First installation .....	23
Folding down the Safety Device .....	36
Friction Clutch .....	68
From transport into working position .....	35

**G**

Gearbox on the carrying bar .....	52
Guard Cloths .....	54

**H**

Headland Position .....	37
Hydraulic system .....	15
Hydraulics .....	30

**I**

Identification Plate .....	8
Identifying Symbols in the Operating Instructions .....	11
Inadmissible Modes of Operation .....	15
Information Required for Questions and Orders .....	8
Install the PTO shaft .....	31
Intended use .....	9
Introduction .....	7

**L**

Lighting .....	34
Lubrication Chart .....	64

**M**

Main gearbox .....	51
Maintenance .....	15, 45
Maintenance – lubrication chart .....	63
Metric Thread Screws with Control Thread .....	46
Metric Thread Screws with Countersunk Head and Hexagonal Socket .....	47
Metric Thread Screws with Fine Thread .....	47
Mounting onto the Tractor .....	24, 29

**O**

Oil Level Check and Oil Change Intervals (Gearboxes) .....	50
Oil level check and oil change on the cutter bar .....	53
Operation .....	35

**P**

Personnel Qualification and Training .....	12
Placing in Storage .....	65
Pole protection .....	55
Position of the Adhesive Safety Stickers on the Machine .....	18
Position of the General Information Labels on the Machine .....	20
PTO operation .....	14
PTO shaft .....	27, 31, 63
Purpose of Use .....	7

**R**

Re-Ordering Safety Labels and Information Labels .....	21
Replacing the Linings .....	62

**S**

Safety .....	11
Safety Instructions and Accident Prevention Regulations .....	13

Safety-conscious work practices .....	12
Service life of the machine.....	9
Setting of the pole protection mechanism .....	43
Setting the Relief Springs .....	42
Settings .....	41
Spare Parts .....	45
Special equipment .....	69
Special Tool .....	59
Start-up .....	29
Switching from working position to transport position.....	33
<b>T</b>	
Technical data .....	9

Test run .....	66
Test run .....	45
Tightening torques .....	46
Tightening Torques for Locking Screws and Bleed Valves on the Gearboxes .....	48

## U

Unauthorised Conversion/Modification and Spare Parts Production .....	15
Using the Machine for Work .....	37

## W

Walterscheid Overload Coupling .....	68
Working in the vicinity of power transmission lines .....	16





THE POWER OF GREEN

**Maschinenfabrik  
Bernard Krone GmbH & Co. KG**

Heinrich-Krone-Straße 10, D-48480 Spelle  
Postfach 11 63, D-48478 Spelle

Phone +49 (0) 59 77/935-0  
Fax +49 (0) 59 77/935-339  
Internet: <http://www.krone.de>  
eMail: [info.ldm@krone.de](mailto:info.ldm@krone.de)