

Operator's manual

AMAZONE

Cenius 3001 special / super

Mulch cultivator



MG1092
BAG 0008.0 03.05
Printed in Germany



Before starting operation
carefully read and adhere to
this operator's manual.
Keep for other users.



Reading the instruction

manual and to adhere to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything would work by itself. The person concerned would not only harm himself but also make the mistake of blaming the machine for the reason of a possible failure instead of himself. In order to ensure a good success one should go into the mind of a thing or make himself familiar with every part of the machine and to get acquainted with its handling. Only this way, you would be satisfied both with the machine as also with yourself. To achieve this is the purpose of this operator's manual.

Leipzig-Plagwitz 1872. Rud. Sark.



Identification data

Manufacturer: AMAZONEN-WERKE
H. DREYER GmbH & Co. KG

Machine-Ident-No.:

Type: **Cenius 3001**

Permissible system pressure bar:

Year of construction :

Factory:

Power kW:

Basic weight kg:

Allowable total weight kg:

Address of manufacturer

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H. DREYER GmbH & Co. KG
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D-49202 Hasbergen
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Fax.: + 49 (0) 5405 501-106
E-mail: et@amazone.de
Spare parts online catalogue: www.amazone.de
When ordering spare parts please always state the serial number of your machine.

Formal remarks to this operator's manual

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Preface

Dear Customer,

You decided to purchase one of our high quality machines from the comprehensive range of farm machinery produced by AMAZONEN-WERKE, H. DREYER GmbH & Co. KG. Thank you for your confidence.

When receiving the machine, please check immediately that no damage has been caused in transit and that all parts are present. Please check whether all parts mentioned in the delivery note including the ordered optional equipment are present. Only the immediate reportage of damage will be considered for compensation.

Before the first operation, please read and adhere to this operator's manual and the safety advice. After having thoroughly read the operator's manual you can make fullest use of the advantages of your recently purchased machine.

Please ensure that this operator's manual is made available to any operator before he or she starts to operate the machine.

In case of any questions or problems, please refer to this operator's manual or just call us.

Maintenance and in regular intervals and the exchange of worn or damaged parts in time increases the life expectancy of your machine.

User's review

Dear reader,

Our operator's manuals are regularly updated. With your suggestions for improvement you will help to create an always user friendly operator's manual. Please send your suggestions by fax.

AMAZONEN-WERKE

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1 User advice

The chapter "User advice" provides information for dealing with the operator's manual

1.1 Purpose of the document

The present operator's manual

- describes the operation and the maintenance for the machine.
- gives important hints for a safety conscious and efficient operation with the machine.
- is part of the implement and should be kept so that it is always to hand on the machine or in the towing vehicle.
- should be kept for future use.

1.2 Information about directions in this operator's manual

All information about direction in this operator's manual are to be understood in direction of travel.

1.3 Illustrations used

Operational action and react

The steps of operation to be carried out by the operational staff are described in a numbered list. Adhere to the sequence of the steps. The reactions on the individual operational step are marked with an arrow. Example:

1. Operational action step 1
→ Reaction of the machine on operational action step 1
2. Operational action step 2

Enumerations

Enumerations without indispensable sequence are described as a list with enumeration items. Example:

- Item 1
- Item 2

Position figures in illustrations

Figures in round brackets refer to position figures in illustrations. The first figure refers to the illustration, the second figure refers to the item number in the illustration.

Example (Fig. 3/6)

- Figure 3
- Item 6



2 General safety advice

This chapter contains important hints for the safety conscious operation of the machine.

2.1 Obligations and liability

Observe the advice given in this operator's manual

The knowledge of the basic safety advice and safety regulations are the pre-condition for the safety conscious dealing with the machine and its trouble free operation.

Obligation of the user

The user commits himself to have the machine only operated by persons who

- are acquainted with the basic prescriptions regarding the operational safety and accident prevention.
- have been introduced to the machine.
- have read and understood this operator's manual.

The owner commits himself

- to keep all warning signs on the machine in well readable condition.
- to replace damaged warning signs.

Obligation of the operator

Before commencing any operation all persons who are instructed to operate the machine commit themselves to

- observe the basic regulations regarding the operational safety and accident prevention.
- to read and to adhere to the chapter "Safety".
- to read and to adhere to the chapter "Warning signs and other signs on the machine" (Page 14).
- In case of queries, please contact the manufacturer.

Danger when dealing with the machine

The machine has been manufactured according to the state of the art and the certified safety regulations. Nevertheless, the operation of the machine could cause danger and adverse effects on

- body and life of the operator or third parties,
- the machine itself,
- other tangible assets.

Only use the machine

- for the purpose it has been designed for.
- in a perfect safety engineering condition.

Immediately remedy all failures affecting the safety.

Warranty and liability

As a matter of principle our "General terms of sale and delivery" prevail. These will be made available to the user on the date of conclusion of contract at the latest. Warranty and liability claims for injury to life or property are rejected when they have been put down to one or several of the following causes:

- not designed use of the machine.
- improper fitting, taking into operation, operating and maintenance of the machine.
- operating the machine with defect safety facilities or not properly fitted or not functioning safety devices and guards.
- not adhering to the operator's manual regarding putting into operation, operation and maintenance.
- arbitrary changes on the machine.
- poor monitoring of the wearing parts of the machine.
- improper repair work.
- in an emergency due to alien elements and force majeure.

2.2 Illustration of safety advice

The safety advice is identified by a symbol and a warning. The warning describes the seriousness of the threatened danger. The individual symbols have the following meaning:



Danger!

Immediately imminent danger for life and health of persons (severe injuries or death).

Not adhering to this advice will cause severe damage to health up to life threatening injuries.



Warning!

Possibly danger for life and health of persons.

Not adhering to these hints may cause severe adverse health effects up to life threatening injuries.



Caution!

Possibly dangerous situation (slight injuries, material damage).

Not adhering to these hints may cause slight injuries or material damage.



Important!

Obligation of particular behaviour or action for the appropriate handling of the machine.

Not adhering to these hints may cause trouble on the machine or the environment.



Hint!

Hint for use and particularly useful information.

These hints will help you to optimally make use of the functions on your machine.

2.3 Organising measures

The operator must ensure the availability of the personal protective equipment, e.g.:

- safety glasses,
- safety shoes,
- protective clothing,
- skin protecting agent, etc..



Important!

The operator's manual

- **should always be kept at the place where the machine is operated!**
- **should always be available for the operator and the servicing staff!**

Regularly check all existing safety devices!

2.4 Safety device and guards

Only operate the machine with all safety devices and guards fitted and properly functioning. Regularly check all safety devices and guards.

Defective safety devices

Defective or missing safety device and guards will cause dangerous situations.

2.5 Informal safety measures

Besides the safety advice in this operator's manual observe and adhere to the national, local and generally valid advice for operational safety, accident prevention and environmental care.

Please particularly observe the accident prevention prescriptions of your national authorised trade association.

2.6 Training of the staff

Only people who are trained and familiarised may operate with/on the machine. The responsibility of persons for operation and maintenance should clearly be prescribed.

A trainee may only operate the machine under the supervision of a skilled person.

Action \ Personnel	Particularly trained persons	Instructed operator	Persons with specialist training (authorised workshop)
Loading/Transport	X	X	X
Putting into operation	--	X	--
Installation, setting up	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Searching for faults and remedy	X	--	X
Disposal	X	--	--

Legend:

X allowed

--..not allowed



2.7 Safety measures and normal operation

Operate the machine only with all safety devices and guards properly functioning.

Check the machine at least once a day for externally recognisable damage and for function of the safety devices and guards.

2.8 Danger from residual power

Observe the incidence of mechanic, hydraulic, pneumatic, and electric/electronic residual power on the machine.

Undertake appropriate measures when instructing the operating staff. Detailed hints are again given in the relevant chapters of this operator's manual.

2.9 Maintenance and repair, remedy of faults

Carry out all prescribed setting-, maintenance and servicing work in due time.

Secure all operating systems like compressed air and hydraulics against unintended starting.

When exchanging larger components carefully affix them to the hoisting implement.

Check slackened screw joints for firm seating. After having finished maintenance work, carefully check all safety devices for proper function.

2.10 Constructional changes

Never carry out any alterations or fittings or changes on the machine without approval of the AMAZONEN-WERKE. This also applies for welding work on bearing parts.

All fitting or alteration measures require the written approval of AMAZONEN-WERKE. Only use the conversion and optional parts approved by Messrs. AMAZONEN-WERKEN so that the operating permit remains valid according to national and international regulations.

Vehicles and devices and implements, connected with a vehicle with an official operating permit for road traffic according to the traffic law should correspond to the condition as stipulated by the relevant permit.



Important!

Prohibited on principle is

- boring on the frame or the chassis.
- re-boring existing holes on the frame or the chassis.
- welding on bearing parts.

2.10.1 Spare parts and wearing parts and auxiliary parts

Only use original-**AMAZONE**-spare- and wearing parts or the parts approved by Messrs. AMAZONEN-WERKEN so that the operating permit remains valid according to the national and international regulations. When using spare and wearing parts from other manufacturers it is not ensured that they have been designed and manufactured to fulfil the operational stress and safety demands.

The AMAZONEN-WERKE do not accept any liability for damage by using not approved spare or wearing parts or auxiliary parts.

2.11 Cleaning and disposal

Utilise agents and materials and dispose them in the appropriate manner particularly

- when working with greasing systems and devices and
- when cleaning with solvent agents..

2.12 Workplace of the operator

The machine may only be operated by one single person from the seat in the tractor cab.

2.13 Safety symbols and other identifications on the machine



Important!

Always keep all safety symbols on the machine clean and in well readable condition! Replace not readable safety symbols. Ask your dealer for warning signs stating the relevant order number (e.g. MD 075).

Warning signs - composition

Warning signs indicate dangerous points on the machine and warn about danger. At these points permanently existing or unexpectedly occurring danger prevail.

The warning sign consists of 2 fields:



Field 1

Gives a vivid description of the danger and is surrounded by a triangle safety symbol.

Field 2

Gives the vivid instruction to avoid these dangers.

Warning sign - Explanation

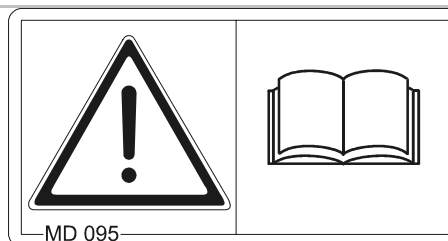
The column **Order Number and explanation** provides the description to the opposite warning sign. The description of the warning sign is always the same and states in the sequence indicated:

1. Description of danger.
For example: Danger from cutting or cutting off!
2. Consequences when not adhering to the given advice how to avoid dangers.
For example: will cause severe injury on finger or hand.
3. The advice to avoid danger.
For example: Touch machine parts only then when they have come to a full standstill.

Picture No. and Explanation

MD 095

Before commencing operation read thoroughly operators manual and safety advice!

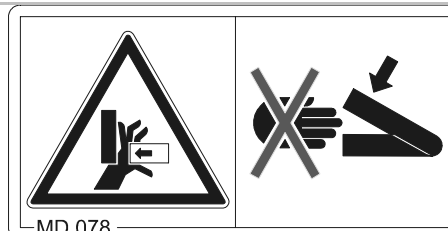


MD 078

Danger of squeezing!

Will cause severe injury for finger or hand.

Never reach into the squeezing danger zone. There is danger of squeezing as long as parts are still moving.

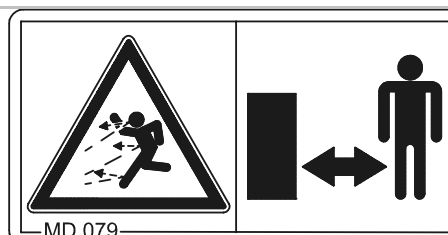


MD 079

Danger from flinging parts.

Danger of severe injury for the entire body.

Observe sufficient clearing to the machine as long as the tractor engine is running.



MD 082

Danger of falling for persons.

Will cause severe injury for the entire body.

Riding on the machine during transport travel and/or climbing up running machines is prohibited. This applies also to machines with boards or platforms.



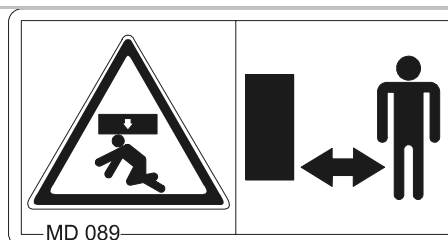
MD 089

Danger!

Danger of squeezing.

Will cause severe injury for the entire body or fatal injury.

Observe sufficient clearance to lifted, unsecured machines.



MD 097

Danger of squeezing.

Will cause severe injury for the entire body or fatal injury.

When the power is actuated keep away from the lifting area of the three point linkage.

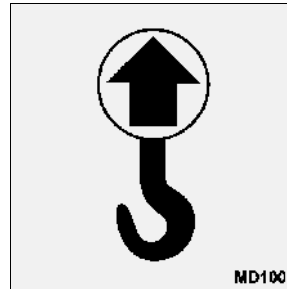
Staying of persons within the lifting area of the three point linkage whilst the three point power lift is actuated is prohibited.



General safety advice

MD 100

Fixing point for lifting strap when loading.

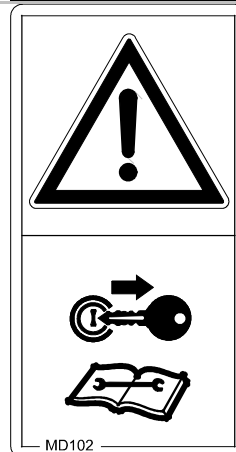


MD 102

Danger from unintended starting the machine.

Will cause severe injury for the entire body or fatal injury.

- Before commencing any maintenance and repair work stop the tractor engine and remove the ignition key.
- Read and adhere to the advice given in the technical manual before commencing any maintenance and repair work.



2.13.1 Positioning of warning decals and other identifications

Warning decals

The following illustrations show the arrangement of the warning decals.

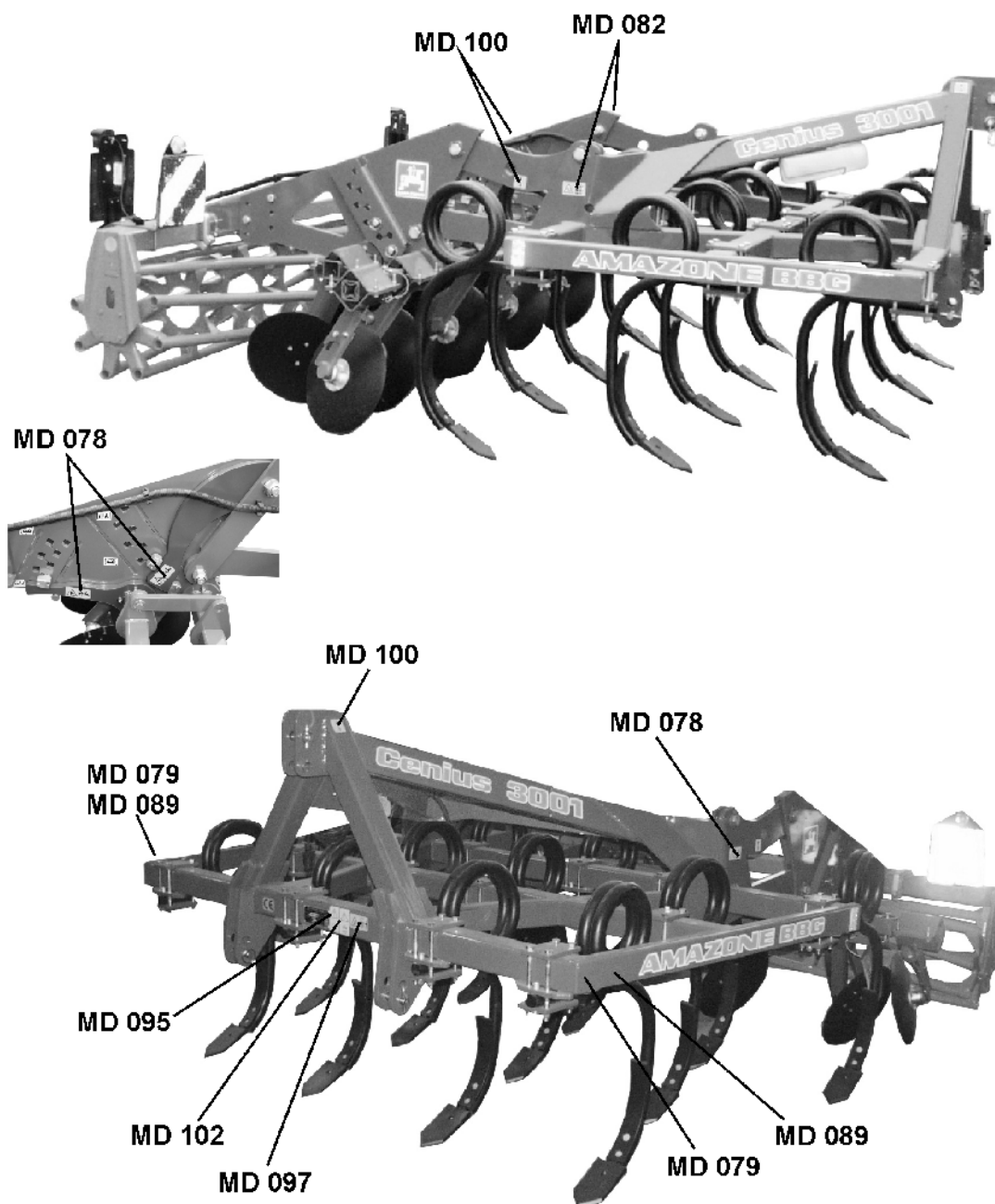


Fig. 1

2.14 Danger when not adhering to the safety advice

Not adhering to the safety advice

- may result in endangering persons, also the environment and also the machine itself.
- may result in the rejection of any claim for damage.

Not paying attention to the safety advice may cause the following risks:

- Danger to persons not excluded from operational areas.
- Failure of important functions within the machine.
- Failure of carrying out prescribed measures of maintenance and repair.
- Danger to persons through physical or chemical contact.
- Danger to persons, or the environment by leaking hydraulic oil.

2.15 Safety conscious operation

Besides the safety advice in this operator's manual additionally, the national, and generally valid operation safety and accident prevention advice of the authorised trade association are binding.

Adhere to the advice given on the warning signs to avoid danger.

When travelling on public roads observe the traffic regulations in force in your country.

2.16 Safety advice for the operator



Warning!

Always check traffic and operational safety before putting the machine to operation!

2.16.1 General safety and accident prevention advice

- Adhere to the general rules of health- and safety precautions besides the advice in this operator's manual!
- The fitted warning- and advising decals give important hints for a safe operation. Adhering to them protects your own safety!
- Before beginning to move, check surrounding area (children etc.)! Ensure sufficient visibility!
- Riding or any transport on the machine is prohibited.

Coupling and uncoupling the machine

- The machine should only be transported and driven by a tractor which fulfils the power requirements.
- When fitting to the three-point linkage the mounting categories at the tractor and the implement must be compatible!
- By mounting implements at the front or in the rear of a tractor, do not exceed
 - the permissible tractor total weight
 - the permissible tractor axle loads
 - the permissible tyre carrying capacity of the tractor tyres
- Secure the tractor and the machine against unintended rolling away before mounting or dismounting the machine.
- Allow nobody to stand between tractor and implement while the tractor is backing up.

Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- Before mounting and dismounting the machine to the three-point linkage secure the control lever for the tractor hydraulics in such a position that an unintended lifting or lowering is impossible.
- When attaching or removing the machine bring any parking or storing devices into the corresponding position (standing safety)!
- Danger of squeezing and shearing when actuating the supporting device.
- Special care should be taken when coupling the machines on or off the tractor. There exist squeezing and shearing points at the coupling points between tractor and implement.
- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Attach implements as advised and couple the machine in the appropriate manner to the prescribed devices.
- The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.
- Park uncoupled machines safely.



Operation of the machine

- Become acquainted with the machine controls and functions before beginning the operation. Doing this during operation would be too late.
- Wear close-fitting clothes. Wearing loose-fitting clothes would increase the danger of getting caught by the drive shafts.
- Only start the machine with all guards fitted and in serviceable condition.
- Observe the maximum payload of the mounted / trailed machine and the permissible axle and support loads of the tractor. If necessary, only travel with partly filled hopper.
- The standing of persons within the operational range of the machine is prohibited.
- Standing of persons within the pivot and swivel area of the machine is prohibited.
- On all hydraulically actuated pivoting parts exists danger of injury by bruising and trapping.
- Machine parts may only be hydraulically actuated when persons observe sufficient clearance to the machine.
- Before leaving the tractor
 - lower the machine to the ground
 - stop the tractor engine
 - remove the ignition key
- Always park the uncoupled machine safely.

Transport of the machine

- When travelling on public roads observe your legal national traffic regulations.
- Always ensure sufficient steering braking of the tractor.
Steering and braking of the tractor are influenced by mounted or trailed machines and front or rear ballast weights.
- If necessary, use ballasts weights.
The tractor front axle load must be at least 20 % of the tractor's net weight in order to ensure a sufficient steering.
- Attach the front or rear ballast weights in the appropriate manner on the fixing points provided.
- Observe the max. payload of the mounted / trailed machine and the permissible axle and support loads of the tractor.
- The tractor must provide the prescribed brake lag for the laden combination (tractor plus mounted / trailed machine).
- Before starting to travel on public roads, check function of brakes.
- When driving round bends note the width of the mounted or trailed machine and the gyrating mass of the machine.
- Before starting to travel on public roads ensure the sufficient lateral locking of the tractor lower link arms when the machine is fixed to the three point hydraulics or the lower link arms of the tractor.
- Before starting to travel get all swivelling machine parts into transport position.
- Before starting to travel secure all swivelling machine parts in transport position against dangerous movement from their position. For this use the intended transport securing devices.
- Before starting to travel secure the lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.
- Before any transport travel ensure that the required transport device is correctly fitted on the machine, as, e.g. traffic lights, warning devices, guards.
- Adapt your travelling speed to the prevailing conditions.
- Choose a lower gear when driving down hill.
- As a matter of principle switch off the single wheel braking (lock the pedal) before starting any transport travel.



2.16.2 Hydraulic system

- The hydraulic system is under high pressure!
- Connect hydraulic hoses to the hydraulic rams and motors according to the advice in the instructions!
- When fitting the hydraulic hoses to the tractor hydraulic sockets always ensure that the hydraulic system on the tractor as well as on the implement is without pressure!
- Before starting to do repair work to the hydraulic system,
 - lower machine to the ground,
 - release the pressure and
 - stop tractor engine.
- All hydraulic hoses must be checked for their operational safety by a skilled person at least once a year. In case of damage or ageing replace the hydraulic hoses. Only use original **AMAZONE** hydraulic hoses.
- The period of use of any hose circuit should not exceed six years including a possible storing period of two years maximum. Also when stored and used properly hoses and hose circuits do age. Therefore their longevity and period of use is limited. Deviations from the above may be accepted by the Health- and Safety Authorities depending on the experience they have had and the danger potential. For hoses and hose circuits made of thermoplasts other guide lines may prevail.
- Danger of infection! Liquids leaking under high pressure (hydraulic oil) can penetrate the skin and cause severe injury! When injured see a doctor immediately!
- When searching for leaks appropriate aids should be used because of the danger of injury!

2.16.3 Electric outfit

- When working on the electric system always disconnect the battery (negative pole).
- Use prescribed fuses only. When using too strong fuses the electric circuit may be damaged - danger of fire.
- Make sure the polarity is correctly fitted. First connect positive pole and then negative pole. - When disconnecting vice versa.
- Always provide plus pole with supplied cover. At accidental earth contact there is danger of explosion!
- Danger of explosion! Avoid sparks and open fire near the battery!
- The function of the implements' electronic components and parts may be affected by the electro magnetic transmittance of other devices. Such affects may endanger third parties when the following safety advice has not been adhered to:
 - When retrofitting electric and electronic devices and/or components to the implement with a connection to the tractor's on-board electric circuit, the onus is on the user to ensure that the installation will not cause any disturbance to either the tractor's electronics or other components.
 - Special attention must be paid that the retrofitted electric and electronic parts correspond to the EMV-guideline 89/336/EC in the relevant valid edition and that they bear the CE-mark.

2.16.4 Maintenance, repair- and care-work

- Repair-, maintenance- and cleaning operations as well as the remedy of function faults should principally be conducted with
 - drive stopped
 - engine stopped
 - remove ignition key
 - implement plugs removed from the on-board computer
- Check nuts and bolts for tightness and retighten if necessary!
- Before carrying out any maintenance-, repair- and cleaning work ensure the lifted implement or lifted implement parts against unintended lowering.
- When exchanging operational tools with cutting edges use appropriate tools and wear gloves.
- Dispose of oil, grease and filters in the appropriate manner.
- Before conducting any electric welding on the tractor and the mounted implements remove the cable from generator and tractor battery.
- Any spare parts fitted must, as a minimum meet with the implement manufacturers' fixed technical standards! Using original - **AMAZONE**- spare parts for example ensures this!

3 Loading

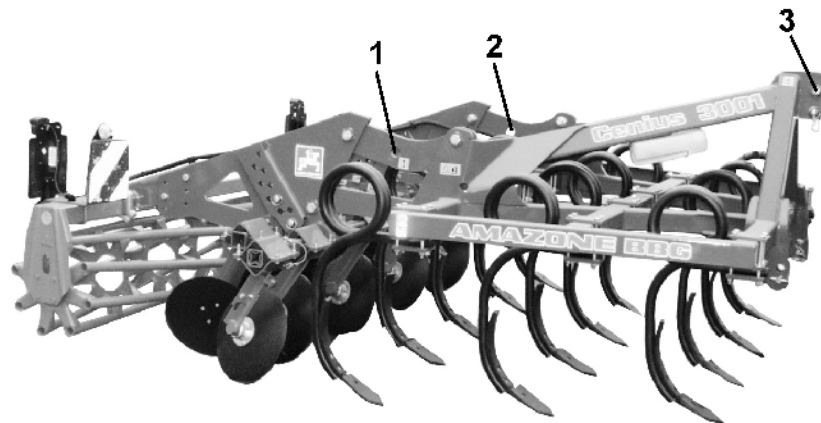


Fig. 2
Loading with a hoist crane:

- Cenius 3001 is provided with 3 fixing points (Fig. 2/1,2,3) for lifting straps.



Caution!

- When loading the machine with a hoist crane use the indicated points for fixing the lifting straps.
- The minimum tensile strength per lifting strap must be 1500 kg!

4 Product description

This chapter

- provides you with a comprehensive survey about the design of the machine.
- provides the descriptions of the individual components and parts.

Read this chapter when standing at the machine. In this way you will get optimally acquainted to the machine.

The machine consists of the main components:

- Frame with three row tine section and concave discs
- Wedge ring roller / open cage roller

4.1 Overview – components

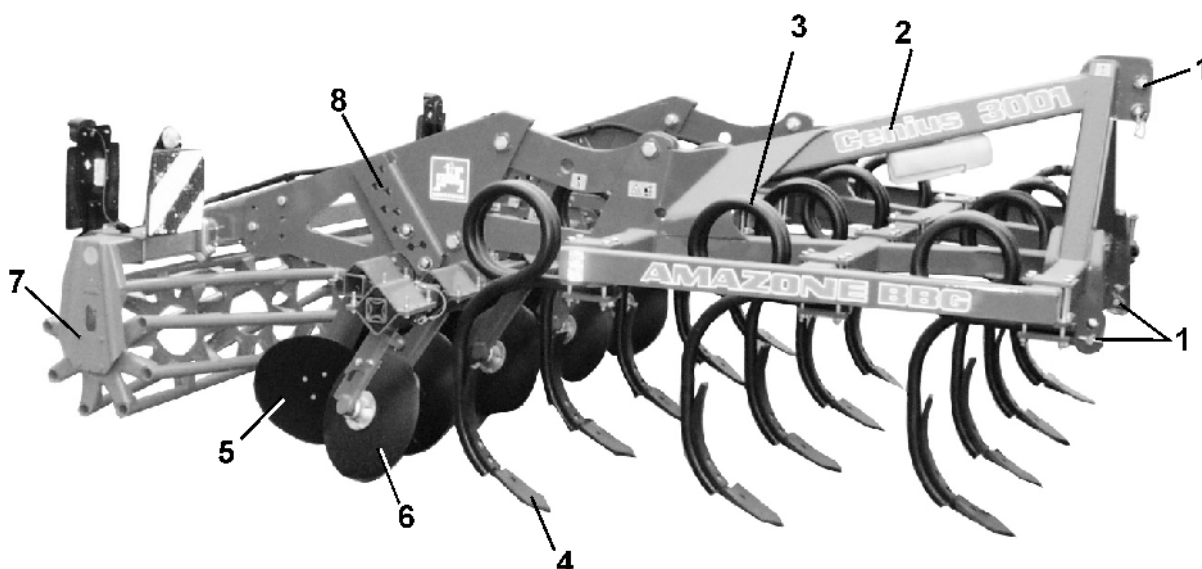


Fig. 3

- | | |
|--|--|
| (1) Rear three point linkage | (6) Extractable side discs |
| (2) Frame | (7) Following roller |
| (3) Three row tine section | (8) Inserting points for eccentric pins to set the working depth |
| (4) Shares | |
| (5) Two row arrangement of concave discs | |

4.2 Traffic safety kit

Fig. 4/...

- (1) 2 rear lights
- (2) 2 stop lights
- (3) 2 indicators (required when the tractor indicator is hidden by the machine)
- (4) 2 red reflectors
- (5) 2 rear warning plates

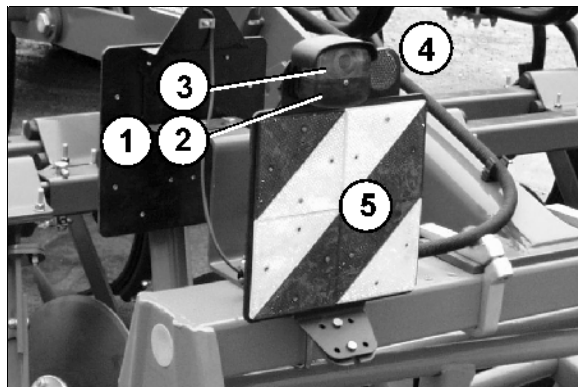


Fig. 4

Fig. 5/...

- (1) 2 front warning plates
- (2) 2 front limiting lights

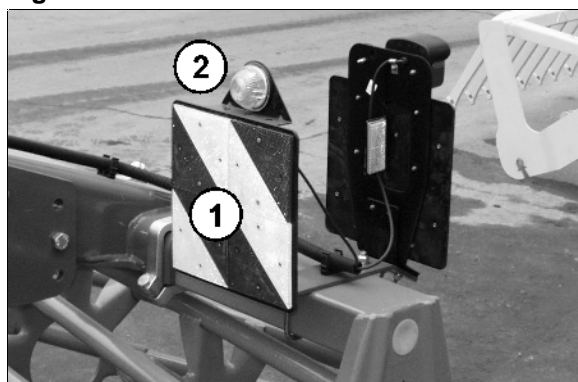


Fig. 5

Fig. 6/...

- (1) 4 lateral indicators

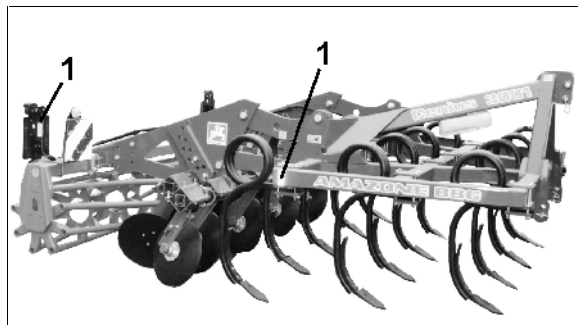


Fig. 6

4.3 Designated use of the machine

The **Cenius 3001** as mounted disc cultivator

- has exclusively been designed for the usual operation in agriculture.
- is coupled via the upper and lower links on to a tractor and operated by one person.

Operating on slopes is possible under following conditions

- When operating across slopes
maximum angle of machine in the direction of travel to the left 20 %
maximum angle of machine in the direction of travel to the right 20 %
- When operating up and down hill
uphill 20 %
downhill 20 %

The **Cenius 3001 special** requires tractors with a capacity of max. 120 kW (160 HP).

The declined use also includes:

- The declined use also includes:
- observing all hints in this operator's manual.
- adhering the service and maintenance work.
- the exclusive use of original **-AMAZONE-** spare parts.

Other use than that stipulated is prohibited and is no longer considered as designed use.

For damage resulting from not designed use

- the operator himself will carry the full risk,
- the manufacturer will not accept any responsibility.

4.4 Danger zones

Within these zones permanently existing danger or unexpectedly arising danger exist. Safety symbols identify these danger zones. Here particular safety advices are valid. Please refer to chapter "General safety advice", page 14.

Danger zones prevail:

- between tractor and mounted sprayer, particularly when hitching on or off
- within the operational range of moving parts
- in the swivel range of the sprayer booms

4.5 Conformity

The machine fulfils the:

Guide lines- / Standard terms

- Machine guide line 98/37/EG
- EMV- guide line 89/336/EEG

4.6 Type plate and CE declaration

The following illustrations show the arrangement of the type plate and the CE declaration.

The type plate (Fig. 7/1) and the CE declaration (Fig. 7/2) are located on the frame.

On the type plate are mentioned:

- Machine-Ident-Nr.:
- Type
- Year of construction
- Factory
- Allowable total weight kg

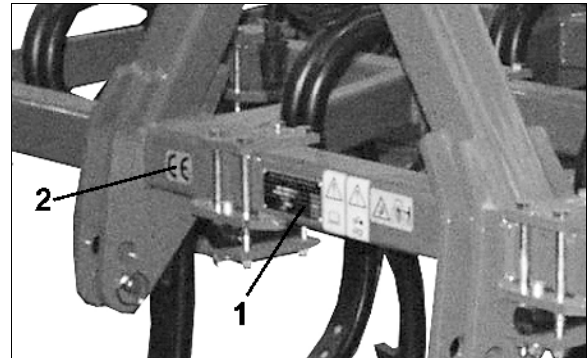


Fig. 7



Fig. 8

The CE-sign on the machine indicates the compliance with the valid EC guide lines!

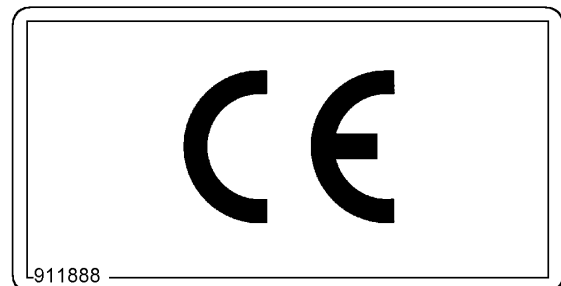


Fig. 9

4.7 Technical data

Cenius 3001		special	super
Working width	[m]	3	
Number of tine rows	[piece]	3	
Line spacing	[mm]	230	
Number of disc rows	[piece]	2	
Disc diameter	[mm]	460	
Operating speed	[km/h]	10-15	
Transport width	[m]	3	
Total length	[m]	3,75	
Total weight			
with wedge ring rollers	[kg]	2050	2250
with open cage roller	[kg]	1870	2070
Linkage		Cat. II	
Centre of gravity distance (d)	[mm]	1900	

4.8 Required tractor equipment

In order to be able to operate the machine, the tractor must fulfil the power requirements and must be provided with the necessary electric, hydraulic and brake connections for the brake system..

Tractor engine power

Cenius 3001 from 90 kW (120 PS)

Electrical system

- | | |
|--------------------|---------------|
| Battery voltage: | • 12 V (Volt) |
| Socket for lights: | • 7-polig |

4.9 Details about noise level

The tractor operator seat related emission value is 74 dB (A), measured when operating with shut tractor cab at the ear of the tractor operator.

Measuring implement: OPTAC SLM 5.

The noise level depends on the type of tractor used.

5 Assembly and function

The following chapter informs you about the assembly of the machine and the functions of the individual components.



Fig. 10

The mounted disc cultivator **Cenius 3001** is suited for

- o Stubble tilth
- o Non inverting primary cultivation
- o Seed bed preparation

Cenius has been designed with a working width of 3 m and with a rigid frame for 3-point linkage on to a tractor.

It consists of

- o the three stagger spring tine section which allows for the equipment with different shares.
- o the two row concave disc equipment.
- o one following roller.

Cenius 3001 super for

- o Most difficult conditions
- o Stony soil
- o High tractor capacities.

Cenius 3001 special for

- o Light and to a large extent stone free soil
- o Tractors up to 160 HP

5.1 Tines

The three stagger tine section with spring steel tines is carries in a frame. The line spacing is 23 cm ensuring cultivation across the entire working width.

- **Square steel tines (Fig. 11/1)**

Equipment for **Cenius 3001 special**.

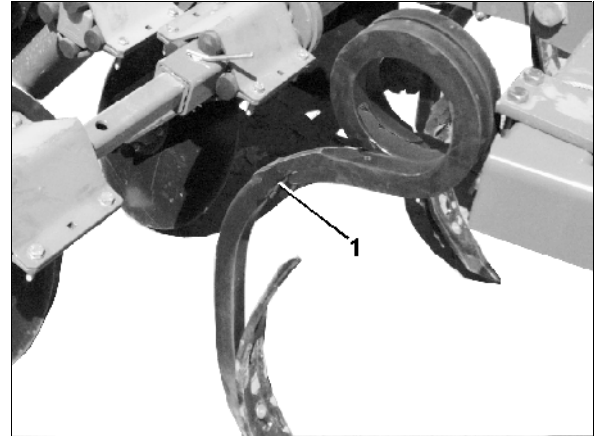


Fig. 11

- **Round steel tines (Fig. 12/1)**

Equipment for **Cenius 3001 super**.

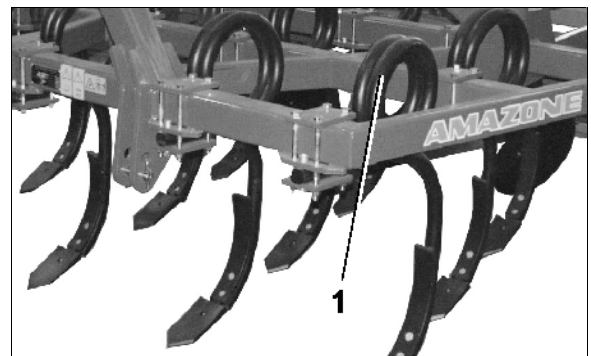


Fig. 12

- **Depth setting of the tines**

The roller provides the depth control of the tines. Depth setting by repositioning the - **AMAZONE**-square eccentric pin (Fig. 13/1) above the bracing arm.

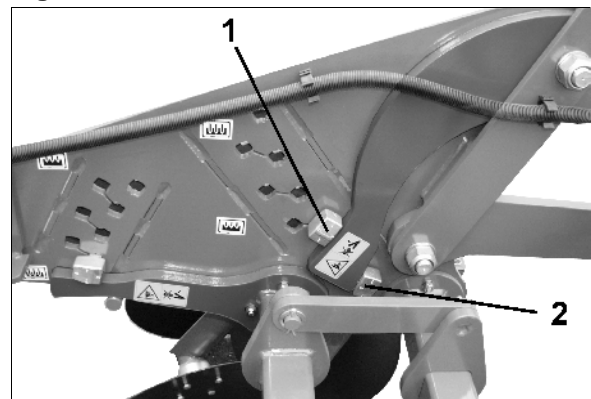


Fig. 13

5.2 Shares

- **Inversion share (75 mm) (Fig. 14/1,2)**

For the medium top soil operation; good incorporation of organic matter (standard execution).

- **Side shares for inversion share (Fig. 14/3,4)**

- **Stubble share (Fig. 14/5)**

For the shallow working depth operation, good incorporation.

- **Narrow share (50mm) (Fig. 14/6)**

For deep loosening of the top soil. At deep loosening the clods are kept in the lower level.

- **Clip on-share exchangeable share tips**

- o Narrow share (Fig. 15/1)
- o Stubble share (Fig. 15/2)
- o Wide wing share (Fig. 15/3,4)

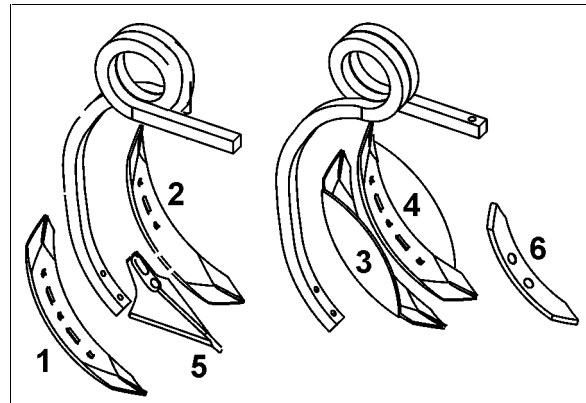


Fig. 14

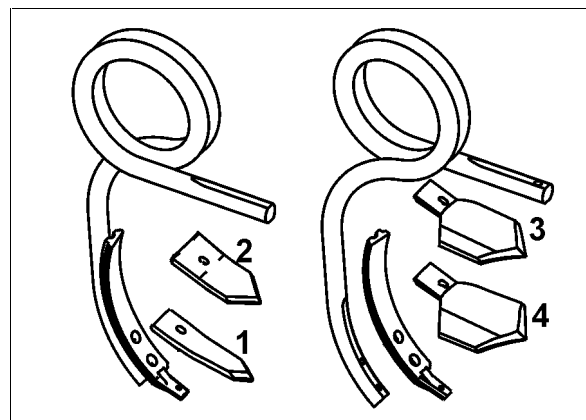


Fig. 15

5.3 Concave discs

- **concave discs**

The concave discs arranged in two rows provide levelling. The discs mix, crumble and level the soil.

The concave discs are provided with maintenance-free double row angular roller bearings with face seals and oil fill.

The discs are equipped with rubber sprung mountings that offer overload protection. This way, the disc assemblies are automatically returned to the operational position after clearing the obstacle.

- **Depth control of the discs**

The working depth of the disc assemblies is controlled by the roller independent of the main frame.

The depth setting is carried out by re-positioning the **AMAZONE**-square eccentric pin (Fig. 17/1) above the bracing arm.



Fig. 16

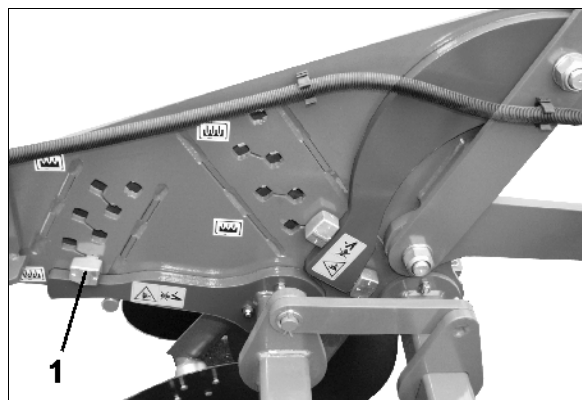


Fig. 17

5.4 Side discs

Extractable side discs create an even field without any lateral ridges.

- For road transport completely push in both side discs and secure (Fig. 18).
- For operation the side discs can be re-positioned in different holes (Fig. 19).
- For the better management of the soil "boil" the side disc at the **rear left hand side** can also be inserted into the front disc row.



Caution!

Before any transport travel re-attach the side disc at the rear and push in completely.



Fig. 18



Fig. 19

Adjustable side discs

The adjustable side discs (Fig. 20) (option) can be set in their length and by twisting the cutting angle can be adapted.



Fig. 20

5.5 Rollers

- **Wedge ring roller (Fig. 21/1)**

with adjustable scrapers (Fig. 22)

The wedge ring roller provides the reconsolidation in strips and levels the soil surface.

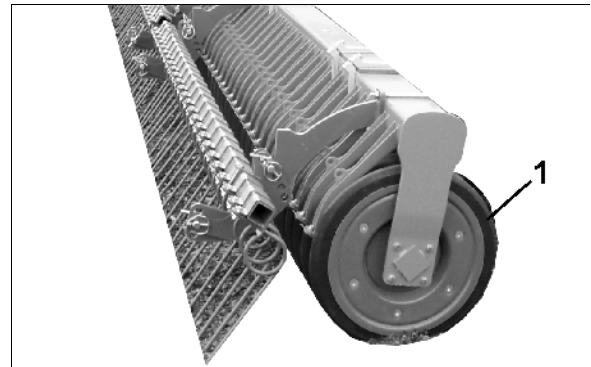


Fig. 21



Fig. 22

- **Open cage roller**

The open cage roller as an alternative is for less soil re-consolidation.



Fig. 23

5.6 Following harrow

The following harrow (Fig. 24/1) (option) allows for crumbling and levelling the soil.

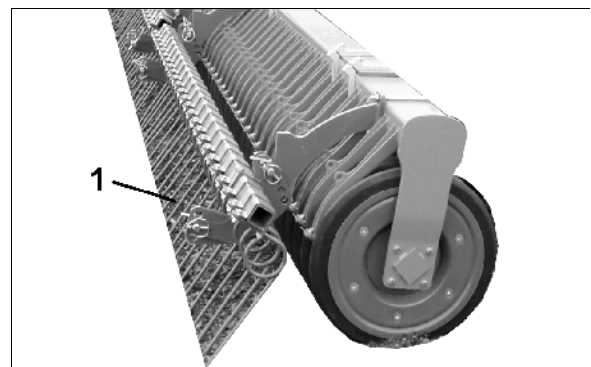


Fig. 24

6 Putting into operation

In this chapter you will find information for putting your machine into operation.



Danger!

- Before putting the machine into operation ensure that the operator has read and understood the operator's manual.
- Before hitching the machine on or off read the chapter "Safety advice for the operator", page 19
 - Coupling and uncoupling the machine
 - Transport of the machine
 - Operation of the machine
- Take account to these effects and allow sufficient steering and braking of your tractor!
- If necessary use ballast weights!
- When mounting of machines at the front and/or in the rear do not exceed
 - the permissible tractor total weight
 - the permissible tractor axle loads
 - the permissible tyre carrying capacity of the tractor tyres
- Before starting to operate the combination tractor/mounted implement, carefully determine the actual values for:
 - the tractor total weight
 - the tractor axle loads
 - the tyre carrying capacity
 - the minimum ballast

(by calculating or weighing the tractor-implement combination)

For this please refer to chapter "Calculation of the actual values for the tractor total weight, tractor axle loads and tyre carrying capacity as well as the necessary minimum ballast", on page 39.
- The tractor must provide the prescribed brake lag for the laden combination according to the national legal traffic regulations.
- Tractor and machine must correspond to the local and national legal traffic regulations.
- Both, the vehicle owner and operator are responsible for adhering to the legal traffic rules.
- Observe the max. payload of the mounted or trailed machine and the axle loads of the tractor. If necessary travel with only partly filled hopper.
- Before any transport travel secure the control lever of the three point hydraulics against unintended lifting or lowering of the mounted or trailed machine.

6.1 First operation

6.1.1 Determining the actual values for the tractor total weight, tractor axle loads, tyre carrying capacity as well as the required minimum ballast weights

6.1.1.1 Required data for the calculation

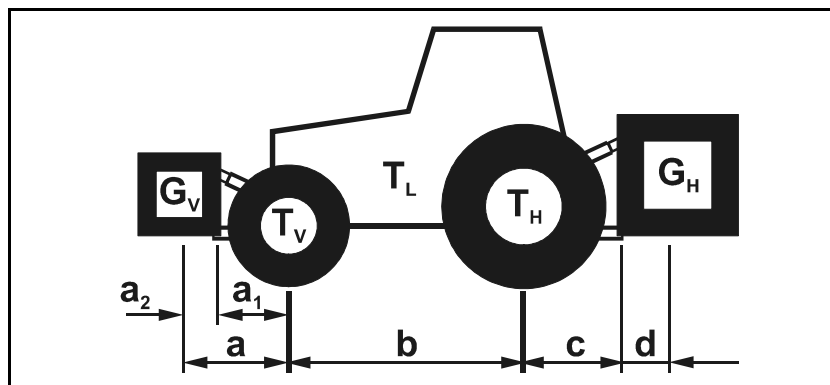


Fig. 25

T_L	[kg]	Tractor net weight	please see tractor Operator's manual / registration papers
T_V	[kg]	Front axle load of the empty tractor	
T_H	[kg]	Rear axle load of empty tractor	
G_H	[kg]	Front weight (if existing)	please see technical data of the machine or rear ballast weight
G_V	[kg]	Support load with full hopper	please see technical data of the front mounted machine or front ballast weight
a	[m]	Distance between the centre of gravity of the front mounted machine or front weight and centre of the front axle (sum $a_1 + a_2$)	please see technical data of tractor and front mounted machine or front ballast weight or measure
a_1	[m]	Distance between centre of the front axle and the lower link joint	please see tractor Operator's manual or measure
a_2	[m]	Spacing between centre lower link ball and centre of gravity of the front mounted machine or front weight (point of gravity spacing)	please see technical data front mounted machine or front ballast weight or measure
b	[m]	Wheel base of tractor	please see tractor Operator's manual or vehicle registration papers or measure
c	[m]	Spacing between centre rear axle and centre lower link ball	please see tractor Operator's manual or vehicle registration papers or measure
d	[m]	Tractor net weight	please see technical data of the machine

6.1.1.2 Calculation of the minimum ballast front $G_{V \min}$ to ensure the steer ability

$$G_{V \min} = \frac{F_H \cdot c - T_V \cdot b + 0,2 \cdot T_L \cdot b}{a + b}$$

Enter into the table the figure for the determined minimum ballast weight $G_{V \min}$, which is required in the front of the tractor (see chap. 6.1.1.7).

6.1.1.3 Calculation of the actual front axle load $T_{V \text{ tat}}$

$$T_{V \text{ tat}} = \frac{G_V \cdot (a + b) + T_V \cdot b - F_H \cdot c}{b}$$

Enter the figure for the calculated actual total front axle load and the permissible front axle load indicated in the operator's manual for the tractor into the table (see chap. 6.1.1.7).

6.1.1.4 Calculation of the actual total weight of the combination tractor/mounted implement

$$G_{\text{tat}} = G_V + T_L + F_H$$

Enter the figure for the calculated actual total weight and the permissible tractor total weight as indicated in the tractor-operator's manual into the table (see chap. 6.1.1.7).

6.1.1.5 Calculation of the actual rear axle load $T_{H \text{ tat}}$

$$T_{H \text{ tat}} = G_{\text{tat}} - T_{V \text{ tat}}$$

Enter the figure for the actual rear axle load and the permissible tractor rear axle load indicated in the tractor-operator's manual into the table (see chap. 6.1.1.7).

6.1.1.6 Tyre carrying capacity

Enter double the value (two tyres) of the tyre carrying capacity (please refer e.g. to the documentation of the tyre manufacturer) into the table (see chap. 6.1.1.7).

6.1.1.7 Table

	Actual value according to the calculation	Permissible value according to the tractor-operator's manual	Double the permissible tyre carrying capacity (two tyres)
Minimum ballast Front / rear	<div style="border: 1px solid black; padding: 5px; text-align: center;">/ kg</div>	--	--
Total weight	<div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	--
Front axle load	<div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>
Rear axle load	<div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>	≤ <div style="border: 1px solid black; padding: 5px; text-align: center;">kg</div>


Hint!

Please take the permissible values for the tractor total weight, axle loads and tyre carrying capacity from the registration papers of your tractor.


Danger!

- The actual calculated values must be smaller than /equal to (\leq) the permissible values!
- Coupling the machine on to the tractor on which the calculation is based is prohibited, if
 - just one of the actual calculated values is bigger than the permissible value.
 - the tractor is not provided with a front weight (if necessary) for the required minimum front ballasting ($G_{V \min}$).


Important!

- In case the tractor axle load is exceeded on only one axle apply weight to the tractor by using front or rear ballast weight.
- Special cases:
 - In case the weight of the front mounted machine (G_V) does not provide the required minimum front ballast weight ($G_{V \min}$), use extra weights in addition to the front mounted machine.
 - In case the weight of the rear mounted machine (G_H) does not provide the required minimum rear ballast weight ($G_{H \min}$), use extra weights in addition to the rear mounted machine.

7 Coupling and uncoupling the machine



Danger!

- Only couple and transport the machine with a tractor which has been designed for this task and fulfils the power requirements.
 - When fitting the machine to the tractor three point linkage the mounting categories on the tractor and the implement must coincide.
 - When coupling tractor and implement, only use the prescribed tools.
 - Standing of persons between the machine to be coupled and the tractor is prohibited whilst the tractor is backing up.
- Any assistants may only stay at the side of the vehicle and help to direct it. Only when the vehicles have come to a full standstill they are allowed to step between them.
- When coupling and uncoupling implements, observe the chapter "Safety advice for the operator", page 19.



Danger!

- Special care should be taken when coupling implements on or off the tractor.
- For mounting or dismounting care for securing by the supports in their appropriate position (standing safety).
- Adhere to the max. support load of the tractor!
- Secure the lower link arms of the tractor's three point hydraulics utilising stabilising bars or chains. Secure the lower link arms of the tractor to prevent the machine from swinging to and fro.



Hint!

Cenius is designed for the rear three point linkage cat II.

7.1 Hitching up

- Mount the lower link arms of the tractor to the lower coupling points of the machine using lower link pins (Fig. 25/1) and secure using clip pins (Fig. 25/2).
- Use the upper link pin to mount the upper link of the tractor to the upper coupling point of the implement (Fig. 25/3) and secure using a clip pin (Fig. 25/4).
- Lift the machine until it is in a horizontal position, i.e. the frame in alignment with the ground.

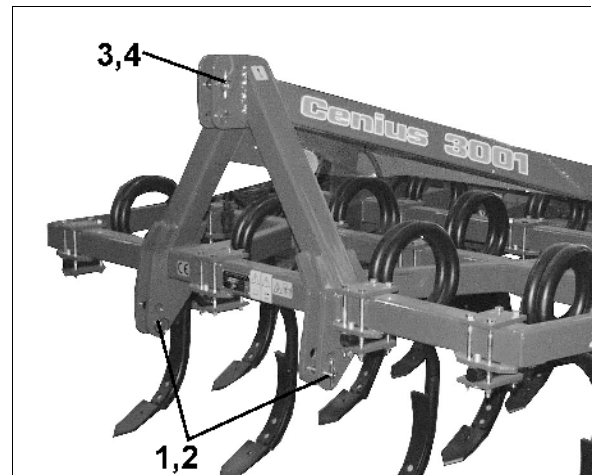


Fig. 26

7.1.1 Traffic light kit

- Insert the power supply cable plug for the traffic light on the tractor.



Caution!

Check indicators, traffic and brake light for proper function.

7.2 Unhitching

- Lower the implement.



Hint!

If the implement is parked for a prolonged period, apply an anti corrosive protective coating to the mounted discs.

Important!

Before dismounting the disc harrow ensure that the coupling points (upper and lower link) are relieved.

8 Settings

8.1 Working depth



Warning!

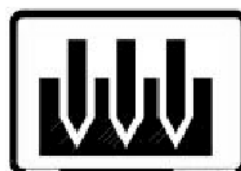
The implement is in the raised position!

The accurate depth control is achieved by the individual adjustment of the shares (tines) and discs (Zinken). The resetting and/or twisting of the so-called eccentric pins (Fig. 27) allow a nearly infinitely variable setting of the working depth.

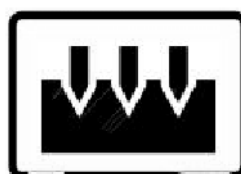
After repositioning the eccentric pin into a inserting hole upwards or downwards (Fig. 27) the working depth of the tines or discs will change on the lowered implement.

The fine tuning of the working depth is achieved by twisting the eccentric pin (Fig. 28) of position 1 (shallow) up to position 4 (deep).

1. Slacken clip pin.
2. Insert the eccentric in higher/lower and/or turn (position 1-4).
3. Retighten clip pin (Fig. 29/1).



Large working depth



Shallow working depth

Fig. 27

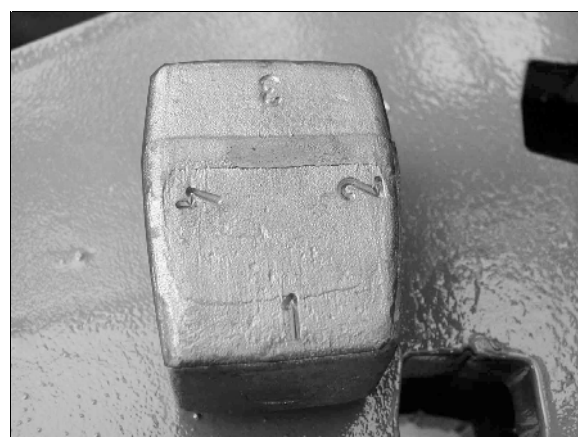


Fig. 28



Danger!

Danger of squeezing between eccentric pins and bracing arms.

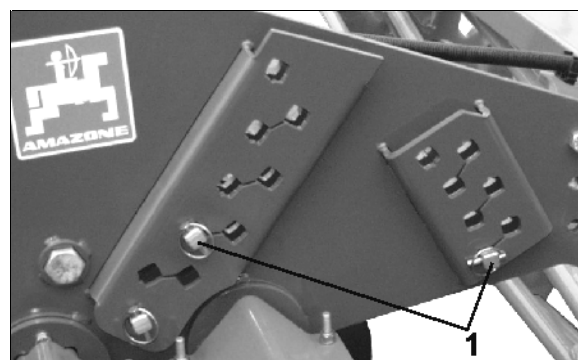


Fig. 29

8.1.1 Setting the depth of the concave discs

Depth control of the concave discs via the rear roller with the aid of an eccentric pin on the inserting bar of the rear disc row (Fig. 30).

- Reset the eccentric pin (Fig. 30/1)
 - o upwards to reduce the working depth of the concave discs.
 - o downwards to increase the working depth of the discs on the lowered implement concave discs.
- Turn the eccentric pin (Fig. 30/1)
 - o to position 1 to reduce the working depth of the wing shares.
 - o to position 4 to increase the working depth of the wing shares.

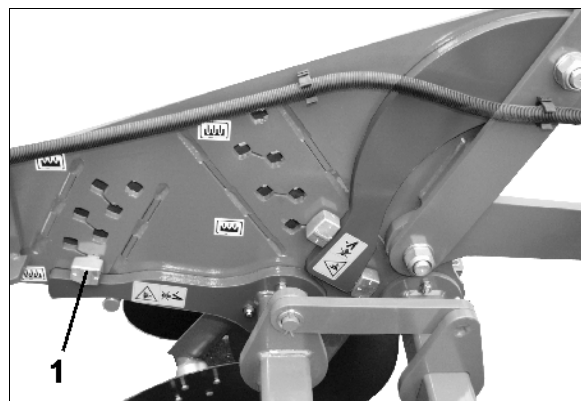


Fig. 30

8.1.2 Working depth of the shares

The depth setting of the shares is carried out on both sides by repositioning the eccentric pins.

- Reposition the eccentric pin (Fig. 31/1) in one of the provided inserting points:
 - o upwards to increase the working depth of the wing shares.
 - o downwards to reduce the working depth of the wing shares.
- Twist the eccentric pin (Fig. 31/1)
 - o to position 4 to increase the working depth of the wing shares.
 - o to position 1 to reduce the working depth of the wing shares.

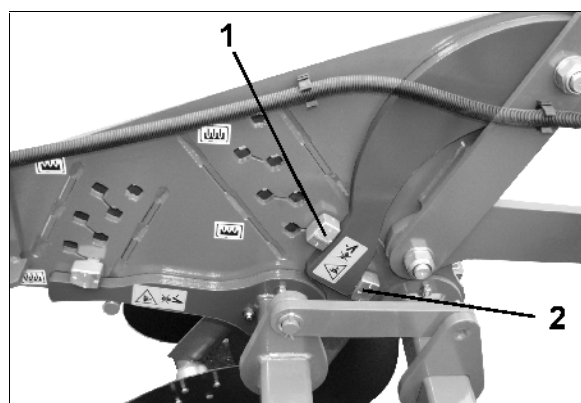


Fig. 31



Important!

The chosen setting holes (Fig. 31/1) must coincide. Equally set the numbers on the stops of the eccentric pins on both machine sides.



Hint!

In case the shares are not pulled in sufficiently, reposition the 3rd eccentric pin (Fig. 31/2) directly underneath the bracing arms. In this way the shares are additionally loaded by the roller..



Important

For repositioning the eccentric pins underneath the bracing arms pull the tools into the soil in order to free the inserting point.

8.2 Setting the scraper on the wedge ring roller

The scrapers (Fig. 32) are factory set. In order to adapt the setting to the operational conditions proceed as follows:

1. slacken bolted connections.
2. set the scraper in the slotted hole.
3. retighten bolted connections.



Important!

Ensure the minimum spacing of 1 cm between scraper and plastic ring, otherwise danger of excessive wear..



Fig. 32

8.3 Rough setting of the working width

In case of an insufficient depth setting via the eccentric pins the working depth of the tools can be increased by re-positioning the roller to the upper inserting points (Fig. 33/1).



Caution!

Authorised workshop job:
Before removing the roller, care for safe support or hold with the aid of a hoisting crane.

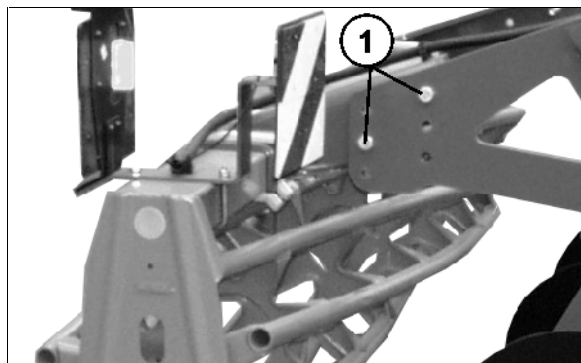


Fig. 33

9 Transport travel



Danger!

- Prior any transport travel observe the chapter "Safety advice for the operator", page 21.
- The vehicle owner and operator are responsible for adhering to the legal traffic rules!
- Check traffic lights for proper function!
- When transporting mounted implements the traffic lights of the tractor must not be hidden.
- The transport width of 3 m should not be exceeded.
- Before travelling on public roads with a lifted implement lock the control lever against unintended lowering!
- Slide in the outer side discs.

10 Operation of the machine



Danger!

- When operating the machine observe the chapter "Safety advice for the operator", page 19.
- Observe the warning signs on the machine. The warning signs provide you with important hints for the safe operation of the machine. Adhering to these hints serves your safety!

10.1 Conversion from transport into operating position



Hint!

Lift the machine on level ground.

Putting both side discs (Fig. 34) into operating position: :

- o Pull out the side discs (Fig. 34/1) and affix by using the securing pin (Fig. 34/2) and lynch pin (Fig. 34/3).

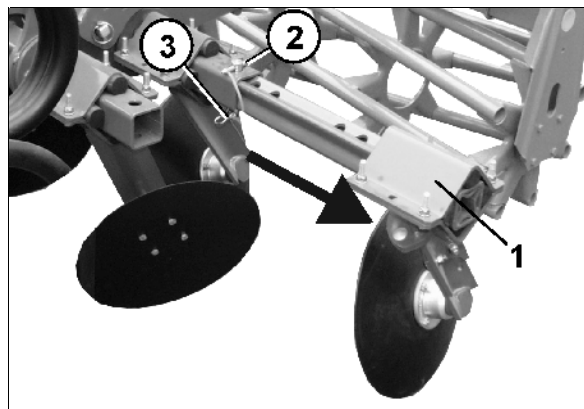


Fig. 34

10.2 Operation

Operate the **Cenius** in the float position of the tractor rear three point linkage. Depth control via the following roller.

During operation in the field, the implement is only lifted at the headlands and then lowered again.

- The machine is coupled onto the tractor.
- The working depth of tines and disc cultivator has been adjusted.
- The machine is in operating position.



Important!

Avoid reverse driving when the machine is in the operating position.



Hint!

Set the implement at the lifting arm spindles and the tractor's upper linkage so that during operation the frame is always parallel to the soil surface in longitudinal and lateral direction!

10.3 Driving at the headlands



Important!

- When driving narrow curves in the headlands lift the implement!
- At the headlands only lower the implement into operational position when the implement and operational direction coincide!

10.4 Conversion from operating into transport position



Hint!

Lift the machine on level ground.

- Push in both side discs (Fig. 35/1) completely and affix by using securing pin (Fig. 35/2) and lynch pin (Fig. 35/3).

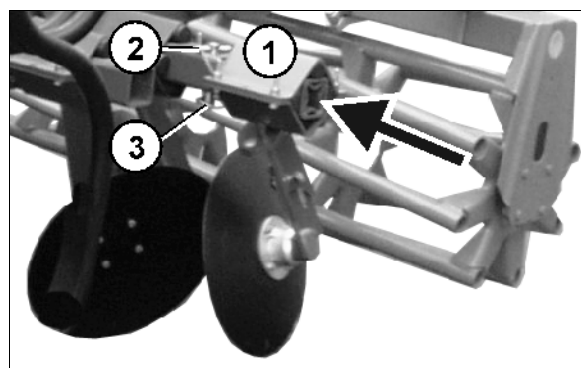


Fig. 35

11 Faults

Faults	Remedy
Discs / tine rows are blocked by plant residue.	Lift the machine and lower again.
Formation of "boil" of soil in front of the roller.	Lift the machine and lower again Reduce the working depth
Blockage of packer roller	Readjust the scrapers

12 Maintenance, repair and care



Danger!

- When carrying out any maintenance, repair and care work, observe the chapter "Safety advice for the operator", on page 23,
- When carrying out maintenance work on the lifted implement use appropriate supports.
- Check traffic lights for proper function!



Important!

- In case of repair work with painting replace the product graphs and hint signs.
- Replace worn and damages parts. Only use original spare parts.
- Grease all lubrication points according to the lubrication plan (see below) and apply grease to the slide and hinge points.
- Clean the tools after any operation.

12.1 Cleaning



Important!

- Monitor brake-, air and hydraulic hoses with special care.
- Never ever treat brake-, air- and hydraulic hoses with petrol, benzole, paraffin or mineral oils..
- After cleaning grease the machine, especially after cleaning with a high pressure cleaner / steam jet or fat soluble agents.
- Observe the legal prescriptions for the handling and disposal of cleaning agents.

Cleaning by using a high pressure cleaner / steam jet



Important!

- Implicitly observe the following points when using a high pressure cleaner / steam jet for cleaning:
 - Do not clean any electric parts.
 - Do not clean any chromium plated parts.
 - Never point with the cleaning jet of the cleaning nozzle of the high pressure cleaner / steam jet directly at grease or bearing points.
 - Always ensure a minimum distance between the cleaning jet of the high pressure cleaner or steam jet and the machine.
 - Observe the safety advice for operating with high pressure cleaners.

12.2 Lubrication advice



Hint!

Only use lithium saponified multipurpose grease with EP additives:



Important!

Apply grease to all greasing nipples (keep seals clean).

Grease / lubricate the machine in the intervals indicated (operating hours – h).

The greasing points on the machine are identified with a decal (Fig. 36).

Carefully clean the grease nipples and grease gun before the grease is applied, so that no dirt penetrates the bearings. Carefully remove the dirty grease from the bearings and replace by ne3w grease!

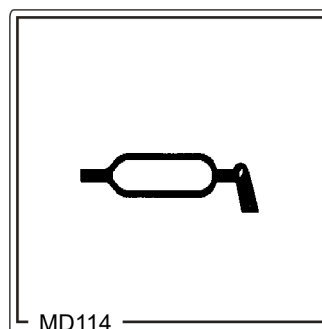


Fig. 36

	Greasing point	Number	Interval [h]	Name of lubricant
1	Flange bearing for the roller	2	50	SWA 532

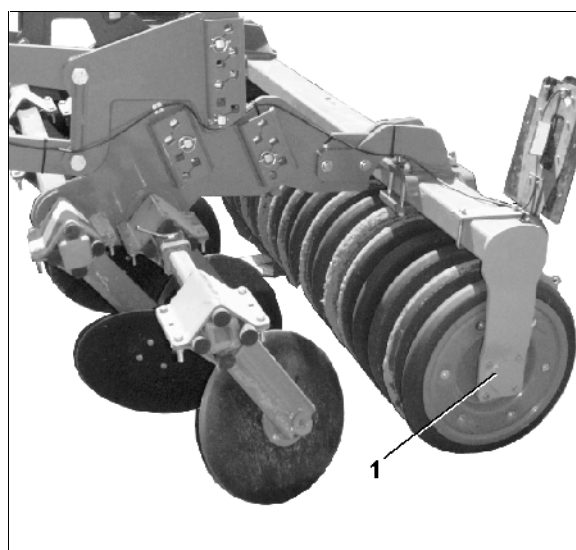


Fig. 37

12.3 Maintenance and care - Review

- | | |
|--------------|---|
| Daily | • Check traffic lights for proper function. |
| If necessary | • Replace the shares. |

12.4 Exchanging shares

- **Authorised workshop job, if necessary**

During operation the shares are subject to a permanent wear.

Replace worn shares by original Amazone shares.

The shares (Fig. 38/1-6) are fixed with 2 bolts on the tine.

Clip-on-share.

On the Clip-on-share the tine tips (Fig. 39/1-4) allow for replacement.

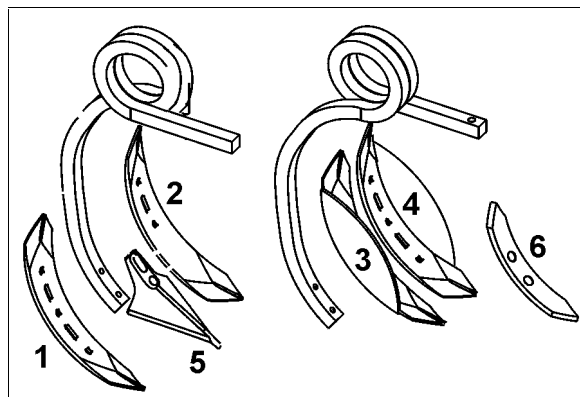


Fig. 38

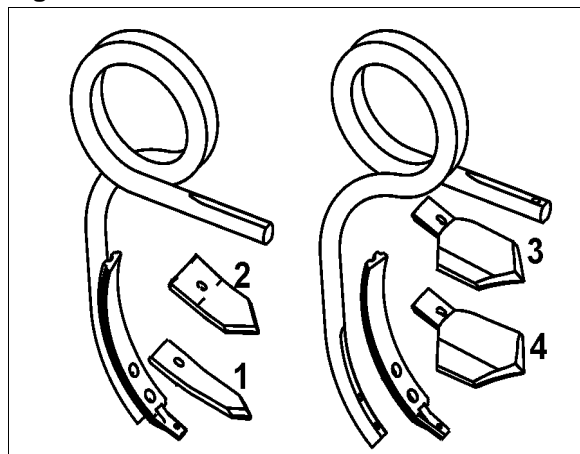


Fig. 39

12.5 Mounting and dismounting of disc segments



Hint!

- When dismounting spring loaded elements (disc segments) mind the pre-tensioning. Use appropriate tools!
- For mounting and dismounting use additional longer bolts as auxiliary tool!

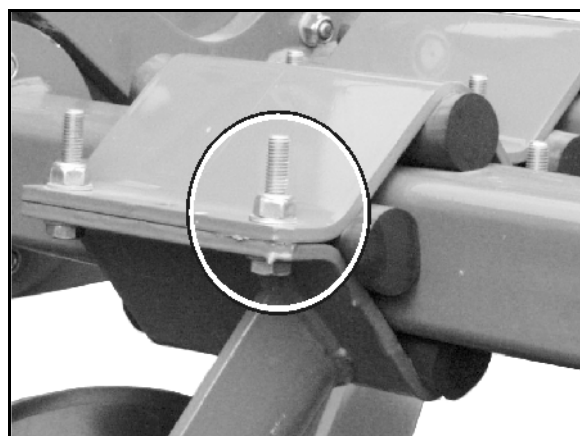


Fig. 40

12.6 Bolt torques

Thread	Spanner size [mm]	Torques [Nm] depending on bolt / nut quality		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1,5		90	125	150
M 14	22	135	190	230
M 14x1,5		150	210	250
M 16	24	210	300	355
M 16x1,5		225	315	380
M 18	27	290	405	485
M 18x1,5		325	460	550
M 20	30	410	580	690
M 20x1,5		460	640	770
M 22	32	550	780	930
M 22x1,5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700



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