

Instruction manual

AMAZONE

TL 302

Deep Loosener



MG3199
BAH0003-1 04.09



**Before starting operation,
please carefully read and
adhere to this instruction
manual and safety advice!**



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 instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

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

Machine-Ident-Nr.:

Type: **TL 302**

Permissible pressure of system
[bar]:

Year of construction:

Factory:

Power kW:

Basic weight kg:

Allowable total weight kg:

Address of manufacturer:

AMAZONEN-WERKE
H. DREYER GmbH & Co. KG
Postfach 51
D-49202 Hasbergen
Tel.: + 49 (0) 5405 50 1-0
Fax.: + 49 (0) 5405 501-234
E-mail: amazone@amazone.de

Spare parts ordering

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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 instruction manual

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

Preface

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 instruction manual and the safety advice. After having thoroughly read the instruction manual you can make fullest use of the advantages of your recently purchased machine.

Please ensure that this instruction 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 instruction 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 instruction manuals are regularly updated. With your suggestions for improvement you will help to create an always user friendly instruction 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 instruction manual.

1.1 Purpose of the document

The present instruction 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 instruction manual

All information about direction in this instruction 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 instruction 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 instruction 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" (on page 15).
- 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, putting into work, operation and maintenance of the machine,
- operating the machine with defective safety facilities or incorrectly fitted or non functioning safety devices and guards,
- not adhering to the instruction manual regarding putting into work, 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!

Immediate imminent danger to life and health of persons (severe injuries or death).

Not adhering to this advice will cause severe damage to health with the possibility of life threatening injuries.



Warning!

Possible danger to life and health of persons.

Not adhering to these hints may cause severe adverse health effects with the possibility of life threatening injuries.



Caution!

Possible dangerous situation (slight injuries, material damage).

Not adhering to these warnings may cause slight injury or material damage.



Important!

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

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



Hint!

Hint for use and particularly useful information.

These hints will help you to optimally make use of the function of the 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 instruction 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 instruction 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

*) All maintenance and repair work which has been marked with the addendum "authorised workshop" must be carried out in an authorised specialist workshop. Only the personnel of a specialist authorised workshop has the necessary knowledge and is provided with the appropriated aids (tools, lifting and supporting devices) for the proper and safety relevant execution of this maintenance and repair work.

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 instruction 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 with an official licence or implements and equipment connected with a vehicle with an official licence or permit for road traffic should be maintained in the appropriate condition.



Important!

Prohibited on principle is

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



2.10.1 Spare parts and wearing parts and auxiliary parts

Immediately exchange defective machine 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:

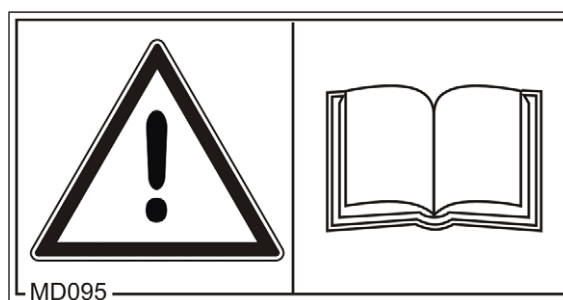
1. Description of danger.
For example: Danger from cutting or cutting off!
2. Consequences when not adhering to the given advice how to avoid dangers.
For example: will cause severe injury on finger or hand.
3. The advice to avoid danger.
For example: Touch machine parts only then when they have come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

Picture No. and Explanation

Safety symbols

MD 095

Before commencing operation read thoroughly operators manual and safety advice!



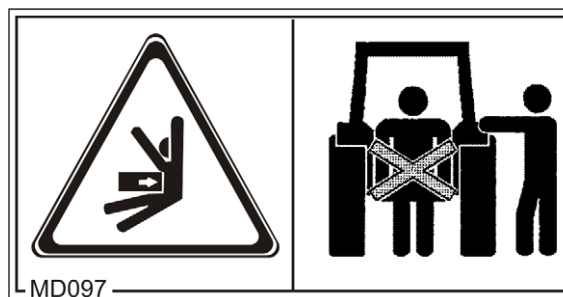
MD 097

Danger of squeezing!

Will cause severe to the entire body or even fatal injury.

When actuating the power lift observe sufficient clearance distance from the lifting area of the three point linkage.

When the three point lifting device is actuated, the standing of persons within the lifting area of the three point linkage is prohibited!



2.13.1 Positioning of warning decals and other identifications

Warning decals

The following illustrations show the arrangement of the warning decals.

TL 302 deep loosener



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 Conscious operation

Besides the safety advice in this instruction 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 instruction 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.

Transport of the machine

- When travelling on public roads observe your legal national traffic regulations.
- Always ensure sufficient steering and 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 loaded 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 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 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!

2.16.3 Mounted implements

- When fitting to the three-point linkage, implicitly ensure that the mounting categories on tractor and implement are compatible. Otherwise they have to be matched.
- Observe the manufacturer's prescriptions.
- 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.
- Danger of squeezing or shearing within the operational range of the three point linkage.
- Actuating the external control for the tractor lower links is prohibited. Only actuate the tractor lower links in the tractor cab.
- The machine should only be transported and driven by a tractor which fulfils the power requirements.
- Danger of injury when coupling implements on and off the tractor.
- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Danger of squeezing and shearing when actuating the supporting device.
- 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
- Observe the max. payload of the mounted implement and the permissible axle loads of the tractor!
- Before starting to travel on public roads ensure the sufficient lateral locking of the tractor lower link arms!
- Before starting road travel secure the lever of the three point hydraulics against unintended lowering.
- Before any road travel ensure that all devices are in transport position.
- Any mounted implements and ballast weights affect the driving behaviour and the steering and braking of the tractor.
- The tractor front axle load must be at least 20 % of the tractor's net weight in order to ensure a sufficient steering. If necessary apply front weights.
- As a matter of principle carry out any repair and cleaning work and remedy of faults only with removed ignition key.
- Ensure that all guards are fitted and properly functioning.

3 Loading



Danger!

Never stand underneath machines lifted by a crane.

3.1 Loading the TL 302 deep loosener

Load the TL 302 deep loosener with the aid of a crane.

Secure the machine in the appropriate manner on the transport vehicle.

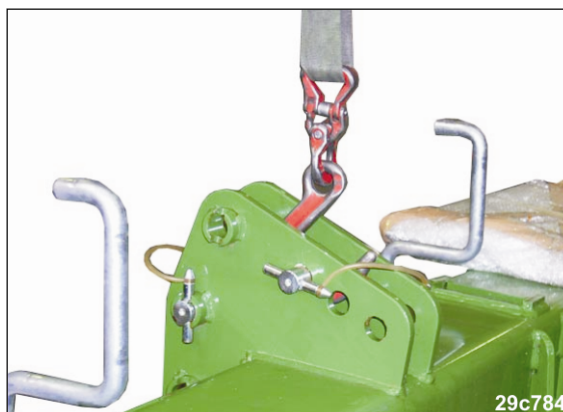


Fig. 2

4 Description of product

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.

4.1 Overview – Components



Fig. 3

Fig. 3/...

(1) Main frame

(2) Crank for setting the working depth

(3) Soil guide share

(4) Wing share

(5) Side guide plate extension

4.2 Traffic safety kit

Fig. 4/...

- (1) 2 rear lights
- (2) 2 brake lights
- (3) 2 indicators
- (4) 2 red reflectors
(round, rectangular, or triangular)
- (5) 2 warning plates facing to the rear.



Fig. 4

Fig. 5/...

- (1) 2 limiting lights facing to the front
- (2) 2 warning plates facing to the front.



Fig. 5



Important!

On public roads and ways only transport the TL deep loosener within a combination.

The combination consists of the following implements

- **AMAZONE** - rotary cultivator
- **AMAZONE** - roller
- **AMAZONE** - Pack Top sowing machine (option).

4.3 Designated use of the machine

The TL deep loosener

- is designed for soil tillage in combination with the **AMAZONE** - rotary cultivator with roller with or without Pack Top seed drill.
- is suited for the initial tillage and stubble working.
- is coupled on to a tractor with the aid of the tractor three point linkage 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 15 %
maximum angle of machine
in the direction of travel to the right 15 %
- When operating up and down hill
uphill 15 %
downhill 15 %

The declined use also includes:

- observing all hints in this instruction 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 on page 19.

Danger zones prevail:

- between tractor and machine, especially when coupling and uncoupling and when filling the seed hopper.
- within the range of moving machine components
- when climbing up the machine
- within the swivel range of the track marker
- within the swivel range of the machine wings
- underneath lifted, not secured machines and machine parts
- when folding out and in the machine wings within the vicinity of power lines.

4.5 Conformity

Guide lines- / Standard terms

The machine fulfils the:

- Machine guide line 98/37/EG
- EMV- guide line 89/336/EWG.

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. 6) and the CE sign are attached to the machine as described below.

The following details are stated on the type plate:

- Machine Ident-No.
- Machine type
- Permissible total weight kg
- Year of construction
- Factory.



Fig. 6

The CE-sign (Fig. 7)

Fig. 7) on the machine indicates the compliance with the valid EC guide lines!

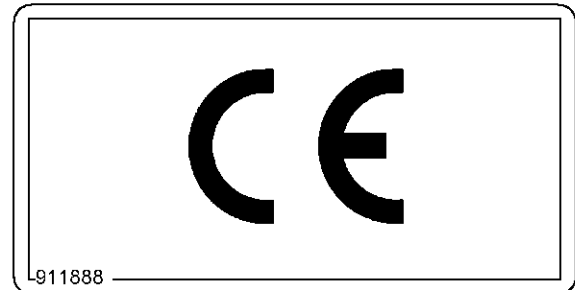


Fig. 7

The type plate and the CE sign (Fig. 8) are fixed on the frame next to the upper link point.



Fig. 8

4.7 Technical data

Technical data		TL 302 deep loosener
Working width	[m]	3,0
Transport width	[m]	3,0
Number of wing shares		4
Width of wing shares	[mm]	300 or 600 (option)
Frame height	[mm]	1000
Net weight of the basic equipment	[kg]	530

Technical data*	Total weight G_H [kg]	Distance d [m]
Combination - TL 302 deep loosener - KG 303 rotary cultivator - KW 302/580 wedge ring roller	2185	1,05
Combination - TL 302 deep loosener - KG 303 rotary cultivator - KW 302/580 wedge ring roller - AD 303 Pack Top seed drill with RoTeC-coulters (incl. seed)	2970	1,33

* Technical data for calculating the tractor weights and tractor axle loads (see on page 36).

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

Power requirement in combination with

TL, deep loosener

KG, rotary cultivator

KW wedge ring roller and

AD Pack Top seed drill incl. seed: from 88 kW (120 HP).

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. 9

The TL deep loosener (Fig. 9) allows for plough-less cultivation methods even in heavy trash conditions. Thanks to the compact, close coupled design the required lifting power requirement of the sowing combination is only slightly increased.

The widely breaking up wing shares allow for large distances between the tools and result blockage free operation even where large amounts of straw prevail.

Stubble working – deep loosening - sowing

For the initial stubble working pass deep loosener and rotary cultivator should operate only at a working depth of 6 to 8 cm.

In the following second pass deep loosening of 15 to 25 cm, deep straw mix and the removal of volunteer grain and weeds is then carried out.

For sowing a deep loosening is not required.

Incorporation of straw and sowing in one operational pass

If the crop rotation sequence is limited and does not allow a prior stubble cultivation, the deep loosener operates then with working depth of 15 to 25 cm in one pass together with rotary cultivator, wedge ring roller and Pack Top seed drill with RoTeC coulters.



Fig. 10

5.1 Wing shares

Wing share (300 mm)

The deep loosener is equipped with 300mm wide wing shares (Fig. 11/1).

With large working depths between 15 and 25 cm a loosening effect across the entire working width is achieved. The soil between the wing shares breaks diagonally upwards and is loosened as well.

Wing share (600 mm)

The 600 mm wide wing shares (Fig. 11/2, option) should only be used for a shallow working depth of between 5 and 10 cm.

With the use of the 600 mm wide wing shares for stubble working the roots are cut across the entire working width and the soil is broken up.

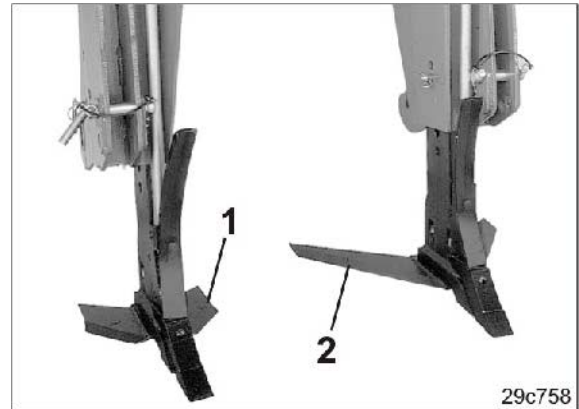


Fig. 11



Important!

For mulch sowing winter wheat after late crop like sugar beet or maize, we recommend to operate the deep loosener with the 300 mm wide wing shares.

5.2 Soil guide share

The soil guide shares (Fig. 12/1) provide rising soil ridges and eject them diagonal to the front towards the machine centre. In this way the soil-straw mixture will not escape from the operational range of the combination.

Where straw prevails the soil guide shares improve the mixing effect in stubble working.

The arising soil ridges clean the shares from long straw and reduce danger of blocking.

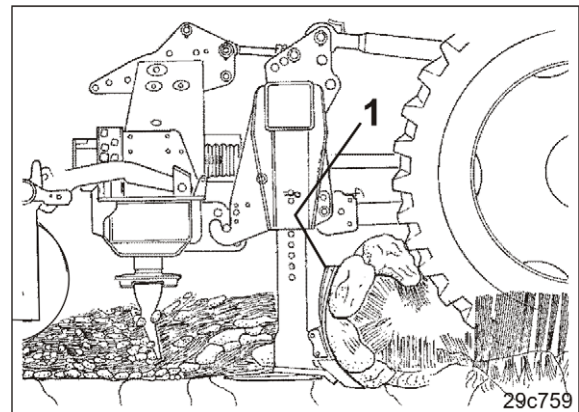


Fig. 12

5.3 Side guide plate extension

The side guide plates of the rotary cultivator prevent the worked soil from escaping from the operational range of the rotary cultivator.

Within the range of the deep loosener the side plate extensions (Fig. 13/1) hold back the worked soil.



Fig. 13

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 instruction manual.
- Before hitching the machine on or off read the chapter "Safety advice for the operator", on 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 "Determining the actual values for the tractor total weight, tractor axle loads, tyre carrying capacity as well as the required minimum ballast weights", on page 36.
- The tractor must provide the prescribed brake lag for the loaded 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 Initial 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

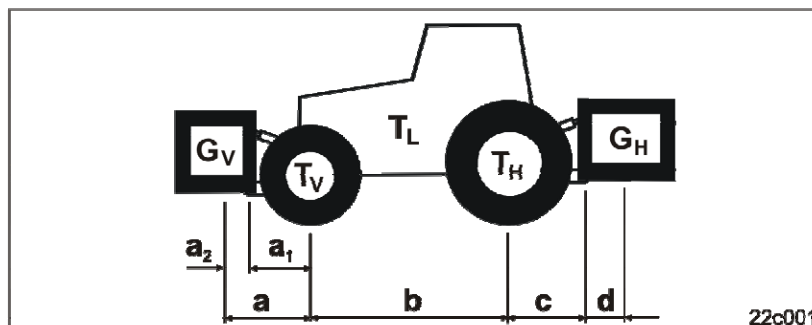


Fig. 14

T_L	[kg]	Tractor net weight	Please see tractor Instruction manual / registration papers
T_V	[kg]	Front axle load of the empty tractor	
T_H	[kg]	Rear axle load of empty tractor	
G_V	[kg]	Total weight of front mounted implement or front weight	Please see technical data front mounted implement or front weight
G_H	[kg]	Total weight rear mounted implement or rear weight	Please see technical rear mounted implement or rear 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 tractor and front mounted machine or front weight or measure
a_1	[m]	Distance between centre of the front axle and the lower link joint	Please see tractor Instruction 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 weight or measure
b	[m]	Wheel base of tractor	Please see tractor operator's manual or measure
c	[m]	Spacing between centre rear axle and centre lower link ball	Please see tractor Instruction manual, registration papers or measure
d	[m]	Distance between centre lower link point and centre of gravity of rear mounted implement or rear weight (centre of gravity distance)	Please see technical data implement

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

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

Enter into the table (on page 38) the figure for the determined minimum ballast weight $G_{V \min}$, which is required in the front of the tractor.

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

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

Enter the figure for the calculated actual total front axle load and the permissible front axle load indicated in the instruction manual for the tractor into the table (on page 38).

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

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

Enter the figure for the calculated actual total weight and the permissible tractor total weight as indicated in the tractor-instruction manual into the table (on page 38).

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-instruction manual into the table (on page 38).

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 (on page 38).

6.1.1.7 Table

	Actual value according to the calculation	Permissible value according to the tractor-instruction manual	Double the permissible tyre carrying capacity (two tyres)
Minimum ballast Front / rear	/ kg	--	--
Total weight	kg	≤ kg	--
Front axle load	kg	≤ kg	≤ kg
Rear axle load	kg	≤ kg	≤ kg



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 (≤) 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!

- Apply ballast to the tractor with the aid of a front or rear weight if the tractor axle load is exceeded on just one axle.
- 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!

6.1.2 Fitting the hydraulic hose extension (option) and hose carrier (option)

1. Relief the hydraulic system of the seed drill from pressure (please see operator's manual for the seed drill).
2. Uncouple the rotary cultivator/seed drill-combination from the tractor (please see operator's manual for the rotary cultivator).
3. Attach the hose carrier (Fig. 15/1) on the tower of the rotary cultivator (see Fig. 16).
4. Equip the hydraulic hoses of the seed drill which are connected with the tractor spool valves with hydraulic hose extensions (Fig. 15/2).
5. Hook the hydraulic hoses and cables into the hose carrier (Fig. 16/1).

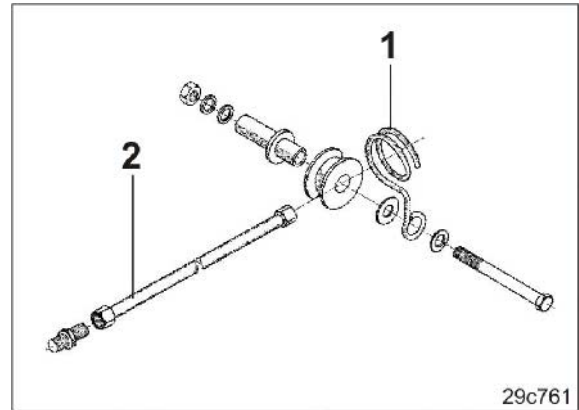


Fig. 15



Fig. 16

6.1.3 Fitting the side guide plate extensions

1. Bolt the side guide plate extensions (Fig. 17/1) on to the side guide plates (Fig. 17/2) of the rotary cultivator.

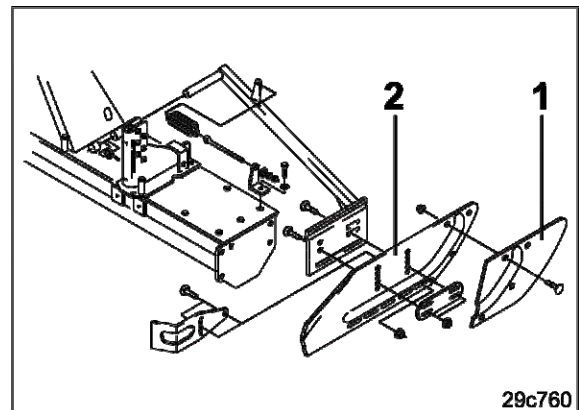


Fig. 17

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", on page 19.

7.1 Coupling the deep loosener on to the tractor

1. The deep loosener is equipped with cat III. lower and upper link pins.

Depending on the tractor type (please refer to the operator's manual for the tractor) the pins of the lower and upper links, secured with the aid of lynch pins, should be equipped with catching balls.

2. Open the tractor lower link locking, that means, it should be ready for coupling.
3. Carefully back the tractor.
4. Couple tractor lower links and implement.
5. Check whether the safety device of the tractor lower link locking is closed and secured (please see operator's manual for the tractor).
6. Connect the tractor upper link arm (Fig. 19/1).
7. Set the upper link arm in such a way that the deep loosener in about horizontal operational position.

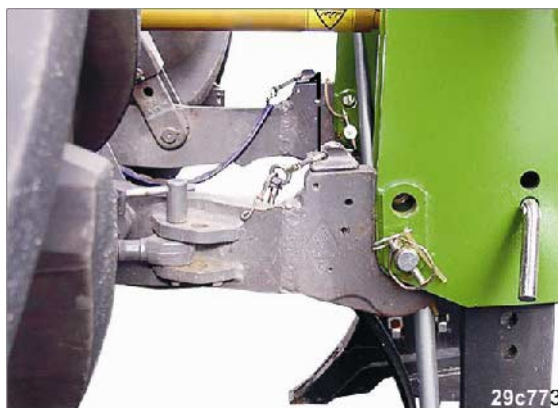


Fig. 18

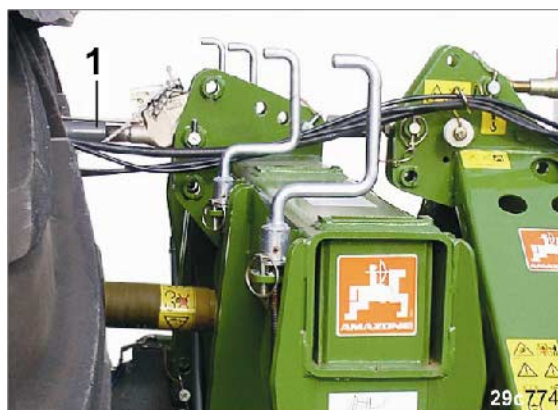


Fig. 19



Important!

Ensure that the soil guide shares do not touch the tractor tyres when the deep loosener is lifted.

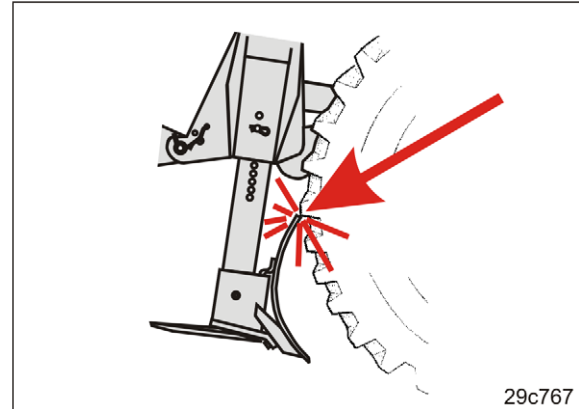


Fig. 20

7.2 Coupling the rotary cultivator-combination on to the deep loosener

Usually the tools of the deep loosener and the rotary cultivator are matched in such a way that they work in different depths in the soil. Before coupling the two machines adjust the tools of the deep loosener to the level of the rotary cultivator (see chapter "Setting the working depth of the deep loosener", on page 43).

1. Position the locking piece (Fig. 21/1) as illustrated.
2. Insert the pin (Fig. 21/2) and secure using a lynch pin (Fig. 21/3). The pin fixes the locking piece.
3. Carefully back the tractor.
4. Couple the lower links of the deep loosener and the rotary cultivator.

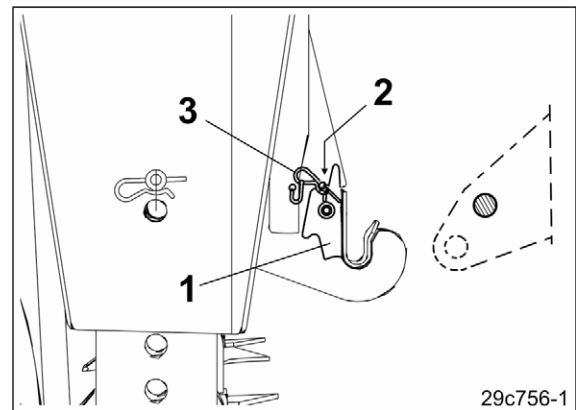


Fig. 21

5. Connect the upper link of the deep loosener (Fig. 22/1).
6. Switch off universal joint shaft, apply the parking brake, stop the engine and remove the ignition key.
7. Set the upper link arm length in such a way that the rotary cultivator is in about horizontal operational position.

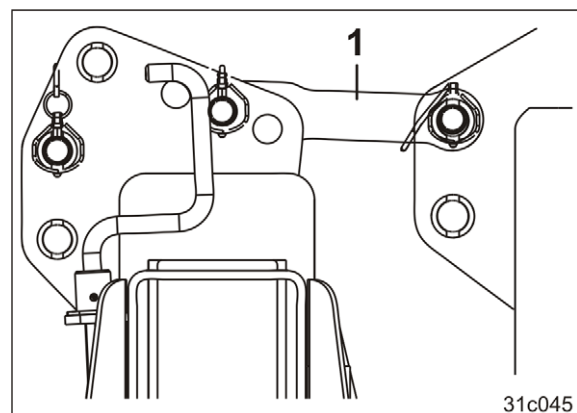


Fig. 22

Coupling and uncoupling the machine

8. Pull out the pin (Fig. 21/2). The pin is secured with the aid of a lynch pin (Fig. 21/3).
9. Position the locking piece (Fig. 23/1) on the lower link pin of the rotary cultivator.
10. Insert the pin (Fig. 23/2) and secure using a lynch pin (Fig. 23/3). The pin fixes the locking piece.

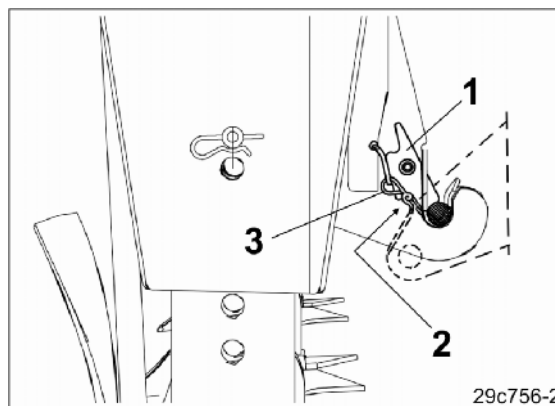


Fig. 23

11. Secure the second lower link connection in the same way.
12. Connect the PTO shaft of the rotary cultivator with the tractor universal joint shaft (please see operator's manual for the rotary cultivator).



Fig. 24



Important!

Equip the rotary cultivator with a longer PTO shaft when the rotary cultivator is coupled with a deep loosener.

Only use PTO shaft P 500/960mm.

Prior to the first coupling on to the tractor and when changing the tractor type, always match the PTO shaft length (see operator's manual for the rotary cultivator).



Caution!

Prior to coupling the combination adjust the tools of the deep loosener in one level with the rotary cultivator tools (please see chapter "Setting the working depth of the deep loosener", on page 43).

8 Settings

8.1 Setting the working depth of the deep loosener



Caution!

Before adjusting the working depth couple the deep loosener on to the tractor..



Danger!

Switch off the tractor universal joint shaft, apply the parking brake, stop tractor engine and remove the ignition key.

1. Lift the deep loosener and the combination.
2. Switch off the tractor universal joint shaft, apply the parking brake, stop the tractor engine and remove the ignition key.



Fig. 25

3. Remove lynch pin (Fig. 26/1).
4. Pull out the pin (Fig. 26/2). The pin is secured with the aid of a lynch pin.
5. Set the desired working depth of the share by turning the crank (Fig. 26/3).

Crank turn

Turn to the right: reducing the working depth

Turn to the left: increasing the working depth.

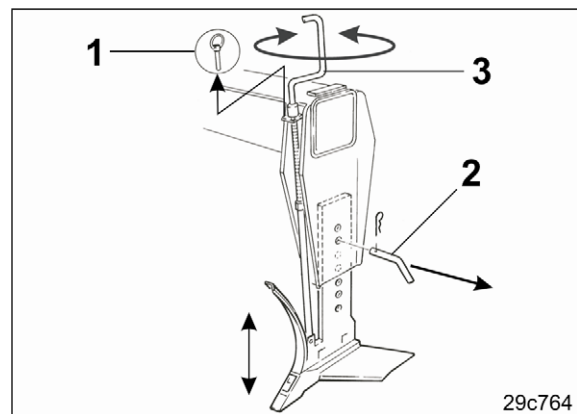


Fig. 26

Settings

6. Insert the pin (Fig. 27/1) and secure using a lynch pin (Fig. 27/2).
The pin is the mechanical securing of the share leg.

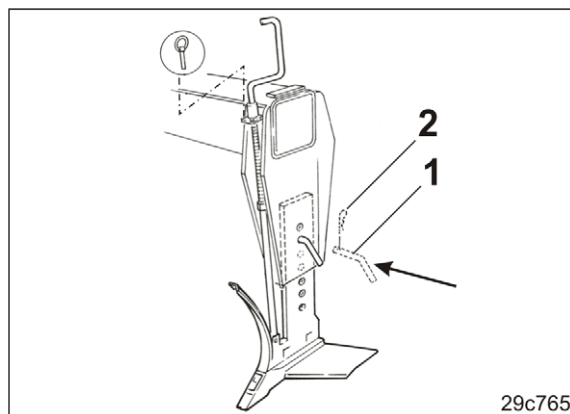


Fig. 27

7. Turn the crank (Fig. 28/1) counter clockwise once..
The distance "A" between crank and bracket must be clearly visible. The crank must not rest on the bracket.
8. Secure the crank against turning by using a lynch pin (Fig. 28/2).
9. Adjust all shares to the same working depth.

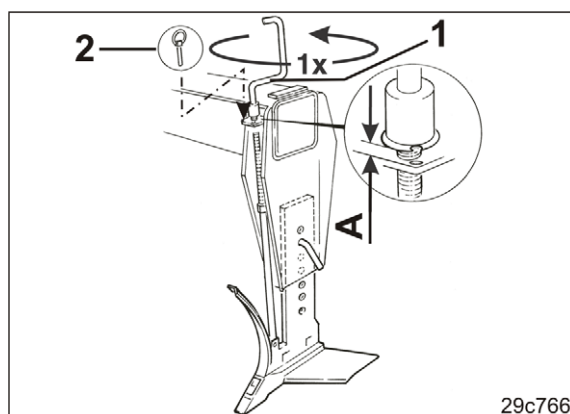


Fig. 28

9 Transport on public roads



Danger!

Prior any transport travel observe the chapter "Safety advice for the operator", on page 19.

When travelling on public roads and ways, ensure that tractor and machine correspond to the national road transport and traffic rules (in Germany STVZO and STVO) and to the accident prevention advice (in Germany the trade association).

Both, the vehicle owner and the operator are responsible for adhering to the legal traffic rules.

In addition all advice given in this chapter should be adhered to before and during travelling.



Important!

On public roads and ways only transport the deep loosener within a combination.

The combination consists of the machines

- **AMAZONE** - Rotary cultivator
- **AMAZONE** – roller
- **AMAZONE** – Pack Top seed drill (option).

For the prescribed traffic safety kit please refer to the description in the operator's manual of the rotary cultivator and the seed drill V (please also refer to chapter „Traffic safety kit“, on page 26).

10 Operation



Danger!

- When operating the machine observe the chapter "Safety advice for the operator", on 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 Starting operation

1. Adjust the working depth of the deep loosener (see chapter "Setting the working depth of the deep loosener", on page 43)
2. Lower the combination until the shares of the deep loosener are just above the soil.
In this position the angling of the PTO shaft of the rotary cultivator should be within the range of tolerance.
3. Drive the tractor universal joint shaft speed with the prescribed rev. speed of the rotary cultivator.
4. Start driving and lower the combination.



Important!

- When the combination is lifted the angling of the running PTO shaft should be within the range of tolerance, otherwise switch off the tractor universal joint shaft.
- Switch off the tractor universal joint shaft if the rotary cultivator works unsteadily when lifted.

10.2 Turning at the headlands

If it is intended that the PTO shaft of the rotary cultivator continues to run when turning or when the combination is lifted, ensure that the shares are lifted out of the soil and that the angling of the PTO shaft is within the range of tolerance.



Important!

Switch off the universal joint shaft before turning

- in case the angling of the PTO shaft is beyond the range of tolerance
- the rotary cultivator runs unsteadily when lifted.

11 Faults

11.1 Incorporation of large amounts of straw

With normal amounts of straw on the field surface and normal forward speed the straw/soil mix is lifted and inverted by the soil guide shares (Fig. 12/1) of the deep loosener. The rotary cultivator mulchs the straw at the surface.

Large amounts of straw, large working depth and high forward speeds may cause problems of blockage directly in front of the rotary cultivator. The soil/straw mix has not yet settled sufficiently and is bulldozed by the frame of the rotary cultivator.

This can be remedied by reducing the forward speed.

Lock the levelling bar of the rotary cultivator in the upper most position.

12 Maintenance, repair and care

**Important!**

When carrying out any maintenance, repair and care work, observe the chapter "Safety advice for the operator", on page 22.

The maintenance intervals are valid for normal operation. Harder conditions will shorten the intervals.

Thoroughly clean the machine prior to prolonged breaks of operation.

**Danger!**

All work identified by "authorised workshop" must only be carried out in an authorised workshop.

**Danger!**

After any maintenance-, repair- and cleaning work mount all safety devices and guards.

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.

**Danger!**

Wear a protective mask. When removing dressing agent dust with the aid of compressed air do not inhale the poisonous dust.

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.

12.1.1 Cleaning the machine

1. Clean the machine with a jet of water, a high pressure cleaner or with the aid of compressed air.

12.1.2 Parking the deep loosener over a prolonged period

1. Thoroughly clean and dry the coulters.
2. Paint the coulters (Fig. 29) with strip paint to prevent the formation of rust.



Fig. 29

12.2 Table for maintenance and care – Overview



Important!

- After having carried out maintenance for the first time follow the maintenance intervals mentioned below.
- All intervals, operational hours or maintenance intervals mentioned in the possibly provided separate documentation are of priority.

Daily after operation	Cleaning	Chapter 12.1
Every 2 weeks, every, 100 operational hours at the latest	Check the coulter tips	
Every 6 months after the season	Check the coulters	

12.3 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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Factories for mineral fertiliser spreaders, field sprayers, seed drills, soil tillage implements,
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