Operating Manual

AMAZONE

Precision airplanter EDX 9000-T



(6

MG 2429 BAH0019.1 03.08 Printed in Germany



Please read this operating manual before first commissioning. Keep it in a safe place for future use.





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. Rub. Sark!



dentification data		
	Enter the machine identification tion data on the rating plate.	data here. You will find the identifica-
	Machine identification number: (ten-digit)	
	Туре:	EDX 9000-T
	Maximum permissible system pressure:	200 bar
	Year of manufacture:	
	Basic weight (kg):	
	Permissible total weight (kg):	
	Maximum load (kg):	

Manufacturer's address

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Spare part orders

AMAZONEN-WERKE

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Fax:	+ 49 (0)5405 501-106
E-mail:	et@amazone.de
Online sp	are parts catalogue: www.amazone.de
Always q	uote the number of your machine when ordering spare parts.

Formalities of the operating manual

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Foreword

Dear Customer,

You have chosen one of the quality products from the wide product range of AMAZONEN-WERKE, H. DREYER GmbH & Co. KG. We thank you for your confidence in our products.

On receiving the machine, check to see if it was damaged during transport or if parts are missing. Using the delivery note, check that the machine was delivered in full including any special optional equipment ordered. Damage can only be rectified if problems are signalled immediately.

Before first commissioning, read and understand this operating manual, and particularly the safety information. Only after careful reading will you be able to benefit from the full scope of your newly purchased machine.

Please ensure that all the machine operators have read this operating manual before commissioning the machine.

Should you have problems or queries, please consult this operating manual or give us a call.

Regular maintenance and timely replacement of worn or damaged parts increases the lifespan of your machine.

User evaluation

Dear Reader,

We update our operating manuals regularly. Your suggestions for improvement help us to create ever more user-friendly manuals. Send us your suggestions by fax.

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1 User Information

The User Information section supplies information on use of the operating manual.

1.1 Purpose of the document

This operating manual

- Describes the operation and maintenance of the machine.
- Provides important information on safe and efficient handling of the machine.
- Is a component part of the machine and should always be kept with the machine or the traction vehicle.
- Keep it in a safe place for future use.

1.2 Locations in the operating manual

All the directions specified in the operating manual are always seen from the direction of travel.

1.3 Diagrams used

Handling instructions and reactions

Activities to be carried out by the operator are given as numbered instructions. Always keep to the order of the handling instructions. The reaction to the handling instructions is given by an arrow. Example:

- 1. Handling instruction 1
- \rightarrow Machine response to instruction 1
- 2. Handling instruction 2

Lists

Lists without an essential order are shown as a list with bullets. Example:

- Point 1
- Point 2

Number items in diagrams

Numbers in round brackets refer to the item numbers in the diagrams. The first number refers to the diagram and the second number to the item in the figure.

Example: (Fig. 3/6)

- Figure 3
- Item 6



2 General Safety Instructions

This section contains important information on safe operation of the machine.

2.1 Obligations and liability

Comply with the instructions in the operating manual

Knowledge of the basic safety information and safety regulations is a basic requirement for safe handling and fault-free machine operation.

Obligations of the operator

The operator is obliged only to let those people work with/on the machine who

- Are familiar with basic workplace safety information and accident prevention regulations.
- Have been trained in working with/on the machine.
- Have read and understood this operating manual.

The operator is obliged

- To keep all the warning symbols on the machine in a legible state.
- To replace damaged warning symbols.

Obligations of the operator

Before starting work, anyone charged with working with/on the machine is obliged

- To comply with the basic workplace safety instructions and accident prevention regulations.
- To read and understand the "General safety information" section of this operating manual.
- To read the "Warning symbols and other labels on the machine" section of this operating manual (on page 18) and to follow the safety instructions of the warning symbols when operating the machine.
- To get to know the machine.
- To read the sections of this operating manual, important for carrying out your work.

If the user discovers that a function is not working properly, then they must eliminate this fault immediately. If this is not the task of the user or if the user does not possess the appropriate technical knowledge, then they should report this fault to their superior (operator).



Risks in handling the machine

The machine has been constructed to the state-of-the art and the recognised rules of safety. However, there may be risks and restrictions which occur when operating the machine

- For the health and safety of the operator or third parties,
- For the machine,
- For other goods.

Only use the machine

- For the purpose for which it was intended.
- In a perfect state of repair.

Eliminate any faults immediately which could impair safety.

Guarantee and liability

Our "General conditions of sales and business" are always applicable. These shall be available to the operator, at the latest on the completion of the contract. Guarantee and liability claims for damage to people or goods will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the machine.
- Improper installation, commissioning, operation and maintenance of the machine.
- Operation of the machine with defective safety equipment or improperly attached or non-functioning safety equipment or protective equipment.
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance.
- Unauthorised structural changes to the machine.
- Insufficient monitoring of machine parts which are subject to wear.
- Improperly executed repairs.
- Disasters through the impact of foreign objects and acts of God.



2.2 Representation of safety symbols

Safety instructions are indicated by the triangular safety symbol and the highlighted signal word. The signal word (DANGER, WARNING, CAUTION) describes the gravity of the risk and has the following significance:

\wedge	DANGER
	Indicates an immediate high risk which will result in death or serious physical injury (loss of body parts or long term dam-age) if not avoided.
	If the instructions are not followed, then this will result in im- mediate death or serious physical injury.
A	WARNING
<u> </u>	Indicates a medium risk, which could result in death or (serious) physical injury if not avoided.
	If the instructions are not followed, then this may result in death or serious physical injury.
\wedge	CAUTION
	Indicates a low risk which could incur minor or medium level physical injury or damage to property if not avoided.
	IMPORTANT
	Indicates an obligation to special behaviour or an activity required for proper machine handling.
	Non-compliance with these instructions can cause faults on the ma- chine or in the environment.
	Non-compliance with these instructions can cause faults on the ma- chine or in the environment.
•	Non-compliance with these instructions can cause faults on the ma- chine or in the environment.
	Non-compliance with these instructions can cause faults on the ma- chine or in the environment. NOTE Indicates handling tips and particularly useful information.





2.3 Organisational measures

The operator must provide the necessary personal protective equipment, such as:

- Safety glasses
- Protective shoes
- Protective suit
- Skin protection agents etc.



2.4 Safety and protection equipment

Before each commissioning of the machine, all the safety and protection equipment must be properly attached and fully functional. Check all the safety and protection equipment regularly.

Faulty safety equipment

Faulty or disassembled safety and protection equipment can lead to dangerous situations.

2.5 Informal safety measures

As well as all the safety information in this operating manual, comply with the general, national regulations pertaining to accident prevention and environmental protection.

When driving on public roads and routes, then you should comply with the statutory road traffic regulations.



2.6 User training

Only those people who have been trained and instructed may work with/on the machine. The operator must clearly specify the responsibilities of the people charged with operation, maintenance and repair work.

People being trained may only work with/on the machine under the supervision of an experienced person.

People	Person spe- cially trained for the activity ¹⁾	Trained person	Person with specialist training (specialist work- shop) ³⁾
Loading/Transport	Х	Х	Х
Commissioning		Х	
Set-up, tool installation			Х
Operation		Х	
Maintenance	_	_	Х
Troubleshooting and fault elimina- tion		Х	Х
Disposal	Х		

Legend:

X = permitted

— = not permitted

- ¹⁾ A person who can assume a specific task and who can carry out this task for an appropriately qualified company.
- ²⁾ A person shall be considered as having been instructed, if they have been instructed in the tasks they have to carry out and in the possible risks in the case of improper behaviour and also have been informed about the necessary protective equipment and measures.
- ³⁾ People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible risks. Comment:

A qualification equivalent to specialist training can be obtained through long term activity in the appropriate field of work.

Only a specialist workshop may carry out maintenance and repair work on the machine, if such work is additionally marked "Workshop". The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the machine in a way which is both appropriate and safe.



2.7 Safety measures during normal operation

Only operate the machine if all the safety and protection equipment is fully functional.

Check the machine at least once a day for visible damage and check the function of the safety and protection equipment.

2.8 Danger from residual energy

Note that there may be residual mechanical, hydraulic, pneumatic and electrical/electronic energy on the machine.

Use appropriate measures to inform the operating personnel. You can find detailed information in the relevant sections of this operating manual.

2.9 Maintenance and repair work, fault elimination

Carry out prescribed setting, maintenance and inspection work in good time.

Secure all media such as compressed air and the hydraulic system against unintentional start-up.

Carefully fix and secure larger subassemblies to lifting gear when carrying out replacement work.

Check all the screw connections for a firm seat. On completing maintenance work, check the function of safety and protection equipment.



2.10 Structural changes

You may make no changes, expansions or modifications to the machine without the authorisation of **AMAZONEN-WERKE**. This is also valid when welding support parts.

Any expansion or modification work shall require the written approval of **AMAZONEN-WERKE**. Only use the modification and accessory parts released by **AMAZONEN-WERKE** so that the operating permit, for example, remains valid in accordance with national and international regulations.

Vehicles with an official type approval or with equipment connected to a vehicle with a valid type approval or approval for road transport according to the German road traffic regulations must be in the state specified by the approval.



WARNING

Risk of being crushed, cut, caught, drawn in or struck if supporting parts break.

It is forbidden to:

- Drill holes in the frame or on the running gear.
- Increase the size of existing holes on the frame or the running gear.
- Welding support parts.



2.10.1 Spare and wear parts and auxiliary materials

Immediately replace any machine parts which are not in a perfect state.

Use only genuine **AMAZONE** spare and wear parts or the parts cleared by **AMAZONEN-WERKE** so that the operating permit retains its validity in accordance with national and international regulations. The use of wear and spare parts from third parties does not guarantee that they have been constructed in a way as to meet the requirements placed on them.

AMAZONEN-WERKE accepts no liability for damage arising from the use of non-released spare parts, wear parts or auxiliary materials.

2.11 Cleaning and disposal

Handle and dispose of any materials used carefully, in particular

- When carrying out work on lubrication systems and equipment and
- When cleaning using solvents.

2.12 Operator workstation

The machine may be operated by only one person sitting in the driver's seat of the tractor.



2.13 Warning symbols and other labels on the machine



Warning symbols - structure

Warning symbols indicate dangers on the machine and warn against residual dangers. At these points, there are permanent or unexpected dangers.

A warning symbol consists of two fields:



Field 1

is a symbol describing the danger, surrounded by triangular safety symbol.

Field 2

is a symbol showing how to avoid the danger.

Warning symbols - explanation

The column **Order number and explanation** provides an explanation of the neighbouring warning symbol. The description of the warning symbols is always the same and specifies, in the following order:

1. A description of the danger.

For example: risk of cutting.

2. The consequence of nonobservance of the risk-avoidance instructions.

For example: causes serious injuries to fingers or hands.

3. Risk-avoidance instructions.

For example: only touch machine parts when they have come to a complete standstill.



Order number and explanation

Warning symbols

MD 076

Risk of hands or arms being drawn in or caught by power-driven, unprotected chain or belt drives.

This hazard can cause extremely serious injuries with the loss of parts of the hand or arm.

Never open or remove the guard devices on chains or belt drives

- While the tractor engine is running and the PTO shaft is connected/hydraulic drive is engaged
- or the ground wheel drive is moving.

MD 078

Risk of fingers or hands being crushed by accessible, moving machine parts.

This hazard can cause extremely serious injuries with the loss of body parts such as fingers or hands.

Never reach into the danger area when the tractor engine is running with the PTO shaft/hydraulic system connected.

MD 080

Risk of crushing to torso in the articulated area of drawbar due to sudden steering movements.

This hazard will cause serious injuries to the torso or death.

It is forbidden to stand in the danger area between the tractor and the machine for as long as the tractor engine is running and the tractor is unprotected against unintentional rolling.







Risk of falling from treads and platforms when riding on the machine.

This hazard can cause extremely serious injuries to any part of the body.

It is forbidden to ride on the machine and/or climb the running machine. This ban also applies to machines with treads or platforms.

Ensure that no-one rides with the machine.

MD 083

Risk of your arm or upper torso being drawn in or caught by power driven, unprotected machine elements.

This hazard can cause extremely serious injuries to the arm or upper torso.

Never open or remove guard devices from driven machine elements when the tractor engine is running with the PTO shaft connected/hydraulic drive engaged.

MD 084

Risk of any part of the body being crushed by machine parts moving down from above.

This hazard can cause extremely serious injuries to any part of the body.

It is forbidden to stand in the swivel area of moving machine parts.

Instruct people to leave the swivel area of moving machine parts before the machine parts move down.



L_{MD082}-









Danger

Risk of any part of the body being crushed in the danger area beneath suspended loads/machine parts.

This hazard can cause extremely serious injuries to any part of the body, including death.

The presence of persons under suspended loads/machine parts is prohibited.

In the interest of your own safety, stay well clear of suspended loads/machine parts.

Ensure that all personnel maintain a safe distance from suspended loads/machine parts.

Direct persons away from the danger area of suspended loads/machine parts.

MD 090

Risk of crushing from unintentional rolling of the uncoupled, unsecured machine.

This hazard can cause extremely serious injuries to any part of the body, including death.

Secure the machine against unintentional rolling, before uncoupling the machine from the tractor. For this, use the tractor parking brake and/or the wheel chock(s).

MD 095

Read and understand the operating manual safety information before starting up the machine.









Risk of infection to the whole body from liquids escaping at a high pressure (hydraulic fluid).

This hazard can cause extremely serious injuries to any part of the body, if hydraulic fluid escaping at high pressure passes through the skin and into the body.

Never attempt to plug leaks in hydraulic lines using your hand or fingers.

Read and understand the information in the operating manual before carrying out maintenance and repair work.

If you are injured by hydraulic fluid, contact a doctor immediately.

MD 097

Risk of crushing your torso in the stroke range of the three-point suspension due to the narrowing spaces when the three-point hydraulic system is actuated.

This risk causes extremely serious injuries and even death.

Personnel are prohibited from entering the stroke area of the three-point suspension when the three-point hydraulics are actuated.

Actuate the operating controls for the tractor's three-point hydraulic system

- only from the designated workstation
- if you are outside of the danger area between the tractor and the machine.

MD 101

This symbol shows application points for lifting gear (jack).



<u>МD097</u>





Risk of the unintentional starting and rolling during interventions on the machine, e.g. installation, adjusting, troubleshooting, cleaning, maintaining and repairing.

This hazard can cause extremely serious injuries to any part of the body, including death.

- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- Depending on the type of intervention, read and understand the information in the relevant sections of the operating manual.

MD 104

Risk of your torso getting crushed by laterally swivelling machine parts.

This hazard will cause serious injuries to the torso or death.

Maintain a sufficient safety distance between you and any moving machinery parts.

It is forbidden to stand in the swivel area of moving machine parts.

Ensure that all personnel maintain a sufficient safety distance from moving machine parts.

Instruct personnel to leave the swivelling area of any moving machine parts before you swivel the machine parts.

MD 110

This symbol shows the machine parts that serve as a holding point.









General Safety Instructions

MD 115 The maximum operating pressure of the hydrau- lic system is 200 bar.		max. 200 bar
MD 119		
Nominal speed (maximum 1,000 rpm) and direc- tion of rotation of the machine-side drive shaft.	max. 1000	
	L _{MD119}	
MD 150 Risk of cutting or cutting off fingers or hand by unprotected driven parts of the machine.		\mathcal{N}
This risk could cause extremely serious injuries with the loss of body parts such as fingers or hands.	N.	
Never open or remove guard devices from driven machine parts when the tractor engine is running with the PTO shaft connected / hydraulic drive engaged.	MD150	
MD 181		
Check the wheel nuts for firm seating.		

L_{MD181} -



2.13.1 Positioning of warning symbols and other labels

Warning symbols

The following diagrams show the arrangement of the warning symbols on the machine.



Fig. 1



Fig. 2















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2.14 Risks if the safety information is not observed

Nonobservance of the safety information

- Can pose both a risk to people and also to the environment and machine.
- Can lead to the loss of all warranty claims.

Seen individually, non-compliance with the safety information could pose the following risks:

- Risk to people from working in an unsafe working environment.
- Failure of important machine functions.
- Failure of prescribed methods of maintenance and repair.
- Risk to people through mechanical and chemical influences.
- Risk to environment through leakage of hydraulic fluid.

2.15 Safety-conscious working

Besides the safety information in this operating manual, the national general workplace safety and accident prevention regulations are binding.

Comply with the accident prevention instructions on the warning symbols.

When driving on public roads and routes, comply with the appropriate statutory road traffic regulations.



2.16 Safety information for the operator



2.16.1 General safety and accident prevention information

- Beside these instructions, comply with the general valid national safety and accident prevention regulations.
- The warning symbols and labels attached to the machine provide important information on safe machine operation. Compliance with this information guarantees your safety.
- Before moving off and starting up the machine, check the immediate area of the machine (children). Ensure that you can see clearly.
- It is forbidden to ride on the machine or use it as a means of transport.
- Drive in such a way that you always have full control over the tractor with the attached machine.

In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.

Connecting and disconnecting the machine

- Only connect and transport the machine with tractors suitable for the task.
- When connecting machines to the tractor three-point hydraulic system, the linkage of the tractor and the machine must always be the same.
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines to the front or the rear of the tractor, the following may not be exceeded:
 - o The approved total tractor weight
 - o The approved tractor axle loads
 - o The approved load capacities of the tractor tyres
- Secure the tractor and the machine against unintentional rolling before coupling or uncoupling the machine.
- It is forbidden for people to stand between the machine to be coupled and the tractor, whilst the tractor is moving towards the machine.

Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.

• Secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is impossible, before connecting the machine to or disconnecting the machine from the tractor



three-point hydraulic system.

- When coupling and uncoupling machines, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a risk of injury from nip and shear points.
- Be particularly careful when coupling the machine to the tractor or uncoupling it from the tractor. There are nip and shear points in the area of the coupling point between the tractor and the machine.
- It is forbidden to stand between the tractor and the machine when actuating the three-point hydraulic system.
- Coupled supply lines:
 - o Must easily give way to all movements in bends without tensioning, kinking or rubbing
 - o May not scour other parts.
- The release ropes for quick couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled machines are stable.



Use of the machine

- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine is already in operation.
- Do not wear loose-fitting clothing. Loose clothing increases the risk over being caught by drive shafts.
- Only start-up the machine, when all the safety equipment has been attached and is in the safety position.
- Comply with the maximum load of the connected machine and the approved axle and drawbar loads of the tractor. If necessary, drive only with a partially-filled hopper.
- It is forbidden to stand in the working area of the machine.
- It is forbidden to stand in the turning and swivel area of the machine.
- There are nip and shear points on externally-actuated (e.g. hydraulic) machine parts.
- Only actuate externally-actuated machine parts when you are sure that there is no-one within a sufficient distance from the machine.
- Secure the tractor against unintentional start-up and rolling, before you leave the tractor.

For this:

- o Lower the machine onto the ground
- o Apply the tractor parking brake
- o Switch off the tractor engine
- o Remove the ignition key.

Transporting the machine

- Comply with the national road traffic regulations when using public highways.
- Before moving off, check:
 - o The correct connection of the supply lines
 - o The lighting system for damage, function and cleanliness
 - o The brake and hydraulic system for visible damage
 - o That the tractor parking brake is released completely
 - o The function of the brake system.
- Ensure that the tractor has sufficient steering and braking power.

Any machines and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.

• If necessary, use front weights.

The front tractor axle must always be loaded with at least 20% of the empty tractor weight, in order to ensure sufficient steering power.

- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load of the connected machine and



the approved axle and drawbar loads of the tractor.

- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the machine is fixed to the three-point hydraulic system or lower links of the tractor.
- Before moving off, move all the swivel machine parts to the transport position.
- Before moving off, secure all the swivel machine parts in the transport position against risky position changes. Use the transport safety catches intended for this.
- Before moving off, secure the operating lever of the three-point hydraulic system to prevent unintentional raising or lowering of the connected machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- Before transportation, carry out a visual check that the upper and lower link pins are firmly fixed with the lynch pin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, always switch off the independent wheel braking (lock the pedals).
- Observe the maximum permissible total weight. Only transport the machine with empty seed and fertiliser tanks.



2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
 - o are continuous or
 - o are automatically locked or
 - o require a float position or pressure position due to their function.
- Before working on the hydraulic system
 - o Lower the machine
 - o Depressurise the hydraulic system
 - o Switch off the tractor engine
 - o Apply the tractor parking brake
 - o Take out the ignition key.
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use original **AMAZONE** hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic lines using your hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries. If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection.

• When searching for leakage points, use suitable aids, to avoid the serious risk of infection.



2.16.3	Electrical system		
		•	When working on the electrical system, always disconnect the battery (negative terminal).
		•	Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – risk of fire.
		•	Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
		•	Always place the appropriate cover over the positive battery ter- minal. If there is accidental earth contact, there is a risk of explo- sion.
		•	Risk of explosion. Avoid the production of sparks and naked fla- mes in the vicinity of the battery.
		•	The machine can be equipped with electronic components, the function of which may be influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
			o In the case of retrofitting of electrical units and/or compo

- In the case of retrofitting of electrical units and/or components on the machine, with a connection to the on-board power supply, the user must check whether the installation might cause faults on the vehicle electronics or other components.
- Ensure that the retrofitted electrical and electronic components comply with the EMC directive 89/336/EEC in the appropriate version and carry the CE mark.

2.16.4 Attached machines

- Comply with the approved combination options for the attachment equipment on the tractor and the machine drawbar.
 Only couple approved combinations of vehicles (tractor and attached machine).
- In the case of single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power.
 - Machines connected to a tractor can influence your driving behaviour, as well as the steering and braking power of the tractor, in particular in the case of single axle machines with the drawbar load on the tractor.
- Only a specialist workshop may adjust the height of the drawbar on yoke bars with a drawbar load.



2.16.5 Brake system

	•	Only specialist workshops or recognised brake service may carry out adjustment and repair work on the brake system.
	•	Have the brake system checked regularly.
	•	If there are any functional faults in the brake system, stop the tractor immediately. Have any malfunctions rectified immediately.
	•	Before performing any work on the braking system, park the ma- chine safely and secure the machine against unintentional lower- ing and rolling (wheel chocks).
	•	Be particularly careful when carrying out any welding, burning or drilling work in the area of the brake lines.
	•	After carrying out any adjusting and repair work on the brake system, always carry out a brake test.
Pneumatic braking system		
	•	Before coupling the machine, clean any dirt on the sealing rings on the hose couplings of the supply and brake lines.
	•	Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.
	•	Drain the air reservoir every day.
	•	Before driving without the machine, lock the hose couplings on the tractor.
	•	Hang the hose couplings of the machine supply and brake lines in the appropriate empty couplings.
	•	When filling up or replacing the brake fluid, use the prescribed fluid. When replacing the brake fluid, comply with the appropriate regulations.
	•	Do not make any changes to the specified settings on the brake valves.

- Replace the air reservoir if:
 - o The air reservoir can be moved in the tensioning belts
 - o The air reservoir is damaged
 - o The type plate on the air reservoir is rusty, loose or missing.



Hydraulic braking system for export machines

- Hydraulic brake systems are not approved in Germany.
- When filling up or replacing the brake fluid, use the prescribed hydraulic fluids. When replacing the hydraulic fluids, comply with the appropriate regulations.

2.16.6 Tyres

- Repair work on tyres and wheels may only be carried out by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Observe the specified air pressure. If the air pressure in the tyres is too high, then there is a risk of explosions.
- Park the machine in a safe place and lock the machine against unintentional falling and rolling (tractor parking brake, wheel chocks), before carrying out work on the tyres.
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of **AMAZONEN-WERKE**.

2.16.7 Operation of the seed drill

- Observe the permissible fill levels for seed/fertiliser tanks.
- Only fill the fertiliser tank using the ladder and the platform. It is forbidden to ride on the machine during operation.
- During the calibration test, note the danger points from rotating and oscillating machine parts.
- Do not place any parts in the hopper.
- Before transportation, lock the track marker (constructiondependent) in the transport position.



2.16.8 Universal joint shaft operation

- You may only attach or detach the machine from the universal joint shaft if
 - o The universal joint shaft is switched off
 - o The tractor engine is switched off
 - o The ignition key has been removed
- Always ensure that the machine is correctly fitted and secured.
- Before switching on the universal joint shaft, check whether
 - o People are present in the danger area of the machine
 - o The selected universal joint shaft speed of the tractor corresponds to the permissible drive speed of the machine
- When work is being carried out on the universal joint shaft, personnel must
 - o Stay clear of the rotating universal joint shaft
 - o Stay clear of the danger area of the machine
- Never switch on the universal joint shaft when the tractor engine is not running.
- Caution: Once the universal joint shaft is switched off, the subsequent inertia of rotating machine parts poses a risk of injury.

Stay clear of the machine during this time. You should only start work on the machine once all machine parts are at a complete standstill.

- You may only clean, lubricate or adjust universal joint shaftdriven machines if
 - o The universal joint shaft is switched off
 - o The tractor engine is switched off
 - o The ignition key has been removed
- Once the machine has been detached, mount the protective sleeve on the universal joint shaft stub.
- When using the travel-dependent universal joint shaft, note that the universal joint shaft speed depends on the drive speed, and that the direction of rotation reverses when you drive in reverse.


2.16.9 Cleaning, maintenance and repairs

- Only carry out cleaning, maintenance and repair work on the machine when:
 - o The drive is switched off
 - o The tractor engine is at a standstill
 - o The ignition key has been removed
 - The machine's connector has been disconnected from the on-board computer.
- Regularly check the nuts and bolts for a firm seat and retighten them as necessary.
- Secure the raised machine and/or raised machine parts against unintentional lowering before performing any cleaning, maintenance or repair work on the machine.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate way.
- Disconnect the cable to the tractor generator and battery, before carrying out electrical welding work on the tractor and on attached machines.
- Spare parts must meet at least the specified technical requirements of **AMAZONEN-WERKE**. This is ensured through the use of genuine **AMAZONE** spare parts.



3 Loading and unloading

Loading and unloading with a tractor

A	DANGER			
	The machine may not be equipped with its own brake system.			
	There is a risk of accidents occurring under the following cir- cumstances			
	If the tractor is unsuitable			
	 If the brake system of the machine is not connected to the tractor and filled. 			

•	Correctly couple the machine to the tractor, before loading the machine onto a transport vehicle or unloading it from a transport vehicle.
•	You may only couple and transport the machine with a tractor for loading and unloading, as long as the tractor fulfils the power requirements.
•	Pneumatic braking system: Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.

Connect the machine to a suitable tractor to load it on, or unload it from, a transport vehicle (see section "Commissioning", on page 84 and section "Coupling and uncoupling the machine", on page 93).

Make the following connections on the tractor

- all service brake connections
- all hydraulic connections
- the free return line of the hydraulic fan connection.

Connection of the control terminal **AMATRON+** is not required.







WARNING

A marshalling person is required for the loading and unloading.



3.1 Loading the attached machine

- 1. Put the machine in the transport position (see section "Transportation", on page 124).
- Push the machine carefully backwards onto the transport vehicle. A marshalling person is required for loading.

- 3. Secure the machine according to the instructions.
- 4. Disconnect the tractor from the machine.



Fig. 8



Fig. 9

3.2 Unloading the attached machine

- 1. Couple the machine to the tractor (see section 3, on page 38).
- 2. Remove the transport safety catch.
- 3. Pull the attached machine carefully away from the transport vehicle. A marshalling person is required for unloading.
- 4. After unloading uncouple the machine from the tractor (see section 7.2, on page 101).



This section:

- Provides a comprehensive overview of the machine structure.
- Provides the names of the individual modules and controls.

Read this section when actually at the machine. This helps you to understand the machine better.

4.1 Overview of subassemblies



Fig. 10

- (1) Fertiliser tank
- (2) Fertiliser coulter with hydraulic fertiliser coulter adjustment
- (3) Fertiliser distributor head
- (4) Running gear
- (5) Support wheel
- (6) Blower fan for singling
- (7) Universal joint shaft-driven hydraulic pump for blower fan drive (fertiliser)

- (8) Seed hopper
- (9) Central scraper adjustment
- (10) Central (air) fluidised bed adjustment
- (11) Seed line hoses
- (12) Double disc type coulter with hydraulic coulter pressure adjustment
- (13) Track marker
- (14) Wheel chocks



Fig. 11/...

AMATRON+ operator terminal



Fig. 11



Fig. 12



Fig. 13



Fig. 14

Fig. 12/...

- (1) Draw rail
- (2) Stand, extendable

Fig. 13/...

(1) Mounting for supply lines

Fig. 14/...

(1) Level sensor (seed)



Fig. 15/...

Double disc type coulter

 (1) Level sensor (fertiliser) Note: the charging sieves (shown in the folded up position for clarity) remain closed

when adjustments are being made.







Fig. 16



Fig. 17



Fig. 18

Fig. 17/...

Fig. 16/...

- (1) Star wheel
- (2) Loading board with ladder
- (3) Holding point

Fig. 18/...

- (1) Swivel cover
- (2) Cover hook



Fig. 19/...

(1) Blower fan for fertiliser conveyance with oil radiator attachment



Fig. 19



Fig. 20







Fig. 22

Fig. 20/...

(1) Vario gearbox for adjustment of fertiliser quantity

Fig. 21/...

- (1) Calibration crank (transport bracket)
- (2) Dosing unit with integrated fertiliser dosing roller
- (3) Injector sluice
- (4) Calibration trough (in mounting for calibration test)

Fig. 22/...

(1) Trailer brake valve



Fig. 23/...

(1) Electrohydraulic control block 1

Functions:

- o Operate track marker
- o Lift rear frame (coulter)
- Functions that run automatically:
- o Lift star wheel
- o Fold rear carrier (lighting)
- (2) Electrohydraulic control block 2

Functions:

- o Pressure, double disc type coulter
- o Pressure, fertiliser coulter
- o Pressure/fold machine extension arms

Functions that run automatically:

o Height adjustment, seed hopper



Fig. 23



4.2 Safety and protection equipment

Fig. 24/...

(1) Charging sieves (acts as guard screen in the hopper)



Fig. 24



Fig. 25



Fig. 26

- Fig. 25/...
- (1) Locking hook (for locking the machine extension arm during transport)

- Fig. 25/...
- (1) Limit stop of machine extension arm
- (2) Adjusting screw for limit stop (4 pieces/machine)



4.3 Overview – Supply lines between the tractor and the machine





On tractor side		On machine side (EDX)							
		Fig. 27/		Running di- rection	Marking		king	Function	
	1	Double- acting		(1)	Feed line		1	Yellow	 Operate track marker Lift rear frame (coulter) Pressure, double disc type coulter Pressure, fertiliser coulter Pressure/fold machine extension arms
Init				(1a)	Return line		2		
ntrol u	2	Double-	draulic line	(2)	Feed line	ble tie	1	_ green	
or co	5 ² acting	acting		(2a)	Return line		2		
Tracto	3	Single- acting or double- acting	H	(3)	Feed line ¹⁾	Ca	1 Red		Blower fan hydraulic motor (blower fan for singling)
Pressureless line			(4)	Return line 2)		2			

¹⁾ Pressure hose with priority

²⁾ Pressureless line (see section "Assembly specifications, hydr. blower fan drive connection (singling)", on page 92).

Fig. 27/	Designation	Marking	Function
(5)	Brake line	Yellow	Dual circuit air braka avetem
(5a)	Supply line	Red	
(6)	Lipivoraal joint aboft drivan hydraulie	Player for for fortilion conveyance	
(6a)	Blower fan for fertiliser conveyanc		
(7)	Machine connector	On-board computerAMATRON+	
(8)	Connector (7-pin)		Road-use lighting system
No Fig.	Hydraulic brake line (see section 7.2		

¹⁾ not permitted in Germany and some other EU countries



4.4 Transportation equipment

Fig. 28/...

- (1) 2 rear-facing warning boards
- (2) 1 speed sign



Fig. 28



Fig. 29

Fig. 29/...

- (1) 2 rear-facing indicators
- (2) 2 reflectors, yellow.
- (3) 2 brake and tail lights
- (4) 2 red reflectors
- (5) 1 light for licence plate
- (6) 2 Reflectors, triangular



Fig. 30/...

Fig. 31/...

(1) 2 forwards-facing warning boards

(1) 2 side lights pointing forwards(2) 2 forwards-facing indicators







Fig. 31



(1) 2 x 4 spotlights, yellow, (laterally with a max. spacing of 3 m)



Fig. 32



4.5 Intended use

The machine

- Is designed for the singling and sowing of commercially-available seed
- This is coupled to the tractor using the lower tractor line and is operated by an additional person.

Slopes can be travelled

•	Along the contours	
	Direction of travel to left	10 %
	Direction of travel to right	10 %
•	Along the gradient	
	Up the slope	10 %
	Down the slope	10 %

Intended use also comprises:

- Compliance with all the instructions in this operating manual.
- Execution of prescribed inspection and maintenance work.
- Exclusive use of genuine **AMAZONE** spare parts.

Other uses to those specified above are forbidden and shall be considered as improper.

For any damage resulting from improper use:

- The operator bears sole responsibility
- **AMAZONEN-WERKE** assumes no liability whatsoever.



4.6 Danger area and danger points

The danger area is the area around the machine in which people can be caught:

- By work movements made by the machine and its tools
- By materials or foreign objects thrown out of the machine
- By tools rising or falling unintentionally
- By unintentional rolling of the tractor and the machine

Within the machine danger area, there are danger points with permanent or unexpected risks. Warning symbols indicate these danger points and warn against residual risks, which cannot be eliminated for structural reasons. Here, the special safety regulations of the appropriate section shall be valid.

Personnel must stay clear of the machine danger area under the following circumstances:

- While the tractor engine is running with the universal joint shaft hydraulic system connected.
- as long as the tractor and machine are not protected against unintentional start-up and running.

The operating person may only move the machine or switch or drive the tools from the transport position to the working position or viceversa when there is no-one in the machine danger area.

Danger points exist:

- Between the tractor and the machine, particularly when coupling and uncoupling and when filling the hopper
- In the vicinity of moving parts
- In the area of the swivelling machine extension arms
- In the area of the swivelling track marker
- Under raised, unsecured machines and machine parts
- When folding the machine extension arms in/out near overhead power lines
- Behind the machine in the area of the seed hopper. If the seed hose is torn off, seed shoots out of the optical sensor.





4.7 Rating plate and CE mark

The following illustrations show the position of the rating plate (Fig. 33/1) and CE mark (Fig. 33/2).

The rating plate shows:

- Vehicle identification number (machine ID no.)
- Туре
- Year of manufacture
- Basic weight, kg
- Perm. total weight, kg
- Perm. axle load, front / drawbar load, kg
- Perm. axle load, kg
- Permissible system pressure, bar
- Factory

The CE mark (Fig. 34) on the machine indicates compliance with the stipulations of the applicable EU directives.



Fig. 33



Fig. 34



Technical data 4.8

Precision airplanter		EDX 9000-T
Working width	[m]	9.0
Row spacing of coulter	[cm]	37.5 - 100
Number of sowing units		75 cm 12 rows
Seed hopper capacity		2x1,000,000 grains
Payload, seed hopper (on the field)	[1]	2 x 400
Fertiliser tank capacity	[I]	5,000
Working speed	[km/h]	15
Power requirement (from)	[kW/bhp]	from 130/180
Oil flow rate (minimum).	[l/min]	80
Max. hydraulic working pressure	[bar]	200
Electrical system	[V]	12 (7-pin)
Gearbox/hydraulic fluid		Gearbox/hydraulic fluid Utto SAE 80W API GL4
Coupling point category		Cat. III Cat. IV (optional) Cat. V (optional)
Tyres		700/55-26.5
Continuous acoustic pressure level	[dB(A)]	78
Total length (in working position)	[mm]	6,985
Total height (in working position)	[mm]	3,573
Maximum drawbar load with full seed hopper (on the field)	[kg]	5,000
Service brake system (optional) ¹⁾ (connection on tractor)		Dual-circuit pneumatic braking system or hydraulic braking system ¹⁾

¹⁾ The following is not permitted in Germany and in several other countries.
Operation without brake system
Hydraulic brake system



Road transportation data (only with empty fertiliser tank and seed hopper)

Precision a	irplanter		EDX 9000-T
Overall width (in	transport position)	[m]	3.0
Total length (in tr	ansport position)	[m]	8.5
Overall height (in	transport position)	[m]	4.0
Empty weight (basic weight)		[kg]	7,700
Permissible total weight		[kg]	8,000
Maximum load for road transportation		[kg]	300
Permissible axle load, rear		[kg]	5,400
Perm. drawbar load (F _H) when driving on the road (see rating plate)		[kg]	2,000
Permissible top speed	without brake system ¹⁾	[km/h]	25
	with brake system	[km/h]	40

¹⁾ Operation without a brake system is not permitted in Germany and in several other countries.

4.9 Conformity

The machine fulfils the:

- Machines directive 98/37/EC
- EMC directive 89/336/EEC

4.10 Necessary tractor equipment

For operation of the machine in compliance with the intended use the tractor must fulfil the following requirements.

Tractor engine power	
EDX 9000-T	from 130 kW (180 bhp) upwards

Battery voltage:	12 V (volts)
Lighting socket:	7-pin



Hydraulic system

Maximum operating pressure:	200 bar			
Tractor pump capacity:	At least 80 l/min at 150 bar			
Machine hydraulic fluid:	Gearbox/hydraulic fluid Utto SAE 80W API GL4			
	The machine hydraulic/transmission fluid is suitable for the combined hydraulic/transmission fluid circuits of all standard makes of tractor.			
Control unit 1:	Double-acting control unit			
Control unit 2:	Double-acting control unit			
Control unit 3:	1 single-acting or double-acting control unit with priority control for the feed line			
	• 1 unpressurised return line with a large push-fit coupling (ND 16) for the unpressurised oil return line. In the return line the bank-ing-up pressure must be 10 bar at the maximum.			
Universal joint shaft-driven hy- draulic pump (1,000 rpm)	Blower fan drive for fertiliser conveyance			
Service brake system				
• Dual-circuit service brak- ing system:	 1 hose coupling (red) for the supply line 1 hose coupling (yellow) for the brake line 			
Hydraulic braking system:	1 hydraulic coupling in accordance with ISO 5676			
1	The hydraulic braking system is not permitted in Germany and several other EU countries.			

4.11 Noise production data

The workplace-related emission value (acoustic pressure level) is 78 dB(A), measured in operating condition at the ear of the tractor driver with the cabin closed.

Measuring unit: OPTAC SLM 5.

The sound power level is primarily dependent on the vehicle used.



5 Design and function



The following section provides information on the machine structure and the functions of the individual components.

Fig. 35

The **EDX-T** is equipped with 2 seed hoppers (Fig. 35/1). The spread rate is adjusted by keying the desired value into the **AMATRON+** on-board computer. The **AMATRON+** determines the working speed and distance based on the pulses from the star wheel (Fig. 35/2).

An electric motor below the seed hopper drives the singling drum [shown in window (Fig. 35/3)] with reference to the specified spread rate and working speed.

The central adjustment (Fig. 35/4) for the scrapers that prevent multiple occupancy of seed grains on the drum and the central adjustment (Fig. 35/5) for the air guides are conveniently accessible.

A hydraulic pump (Fig. 35/6) mounted on the tractor universal joint shaft drives the blower fan that generates the flow of air required to convey the fertiliser.

The figure (Fig. 36) shows the progression of the seed grains from singling through to placement by the double disk type coulter (Fig. 35/7) in the seed furrow.

The fertiliser is carried on-board in the fertiliser tank (Fig. 35/8). The required quantity of fertiliser is set steplessly at the Vario gearbox and applied by the dosing roller in the dosing unit (Fig. 35/9).

The dosing roller in the dosing unit is driven by the star wheel. The drive speed of the dosing roller is determined by the working speed and fertiliser quantity set.

The air flow generated by the blower fan (Fig. 35/10) conveys the fertiliser from the injector sluice to the distributor head (Fig. 35/11). The fertiliser is distributed evenly amongst all connected fertiliser coulters (Fig. 35/12) in the distributor head.

The fertiliser is deposited on the ground next to the seed by the fertiliser coulters. The depth of the fertiliser coulters is set centrally by us-



ing an adjustment valve on the machine.

The field connection run is marked by track markers (Fig. 35/13), e.g. with 75 cm row spacing, in the centre of the tractor.

The various parts of the machine can be retracted to achieve a transport width of 3 m.





The seed hopper (Fig. 36/1) is equipped with a singling drum (Fig. 36/2) on which the precise pneumatic singling of seed grains takes place for a maximum of 12 rows.

The centrally-adjustable air flow sets the gains in the fluid bed (Fig. 36/3) in motion. Every hole in the drum is closed by a seed grain. Surplus seed grains are removed by centrally-adjustable scrapers in the event of double occupancy.

The suction force that acts on the grain is interrupted by a roller (Fig. 36/4) attached to the inside of the drum. The roller closes the hole directly in front of the outlet nozzle to which the seed hose (Fig. 36/5) will subsequently be attached. The excess pressure escapes via the hose. The grain is released from the drum, is accelerated rapidly by the flow and emerges with high velocity at the coulter. A catcher roller (Fig. 36/6) softly intercepts the seed grain and pushes it firmly into the furrow.

The modular separation of the singling and sowing operations makes reliable seed placement possible, even at high working speeds up to 15 km/h.

The cross-section of the furrow generated is rectangular. A positive closure is formed between the catcher roller and the edge of the furrow which ensures optimum placement, even with varying ground conditions and at high working speeds.



5.1 Electrohydraulic control block

The hydraulic functions of the machine are actuated via the electrohydraulic control blocks.

Initially the desired hydraulic function has to be selected on the **AMATRON**⁺ (see section 5.5, on page 65) before the hydraulic function can be executed via the appropriate control unit.

By enabling the hydraulic function in **AMATRON+**, it is possible to operate all hydraulic functions with only

- 2 tractor control units for the machine functions
- 1 tractor control unit for the blower fan.



Fig. 37

5.2 Hydraulic hose lines



5.2.1 Coupling the hydraulic hose lines

	WARNING Risk of crushing, cutting, being trapped or drawn in, or impact through faulty hydraulic functions when hydraulic hose lines are incorrectly connected. When coupling the hydraulic hose lines, observe the coloured mark- ings on the hydraulic plugs.	
	 Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of the tractor. Do not mix any mineral oils with biological oils. 	

- Observe the maximum approved hydraulic fluid pressure of 200 bar.
- Only couple clean hydraulic connectors.
- Push the hydraulic push-fit connector(s) into the hydraulic sockets until the hydraulic connector(s) perceivably lock(s).
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.

Design and function



- 1. Swivel the actuation lever on the spool valve on the tractor to float position (neutral position).
- 2. Clean the hydraulic connectors of the hydraulic hose lines before you couple the hydraulic hose lines to the tractor.
- 3. Connect the hydraulic hose line(s) to the tractor control unit(s).



Fig. 38

5.2.2 Uncoupling the hydraulic hose lines

- 1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
- 2. Unlock the hydraulic connectors from the hydraulic sockets.
- 3. Safeguard the hydraulic connectors and hydraulic connector sockets against soiling with the dust protection caps.
- 4. Place the hydraulic hose lines in the hose cabinet.



Fig. 39



5.3 Dual circuit air brake system

The machine is equipped with a dual circuit air brake system.

The dual circuit air brake system acts on two brake cylinders that operate the brake shoes in the brake drums.

The tractor must also be equipped with a dual circuit air brake system.

The dual circuit air brake system consists of

- A supply line (Fig. 40/1) with coupling head (red)
- A brake line (Fig. 40/2) with coupling head (yellow).



Fig. 40



Fig. 41

The machine's service brake system responds when the tractor brake pedal is operated and the tractor parking brake is engaged.

When the supply line (red) is released from the tractor the service brake system automatically acts on the machine in the same manner as a parking brake.

When the supply line (red) is coupled with the tractor, the parking brake is released automatically as soon as the operating pressure has built up and the tractor parking brake is released.



The maintenance intervals must be observed without fail to ensure the proper functioning of the brake system.

• A trailer brake valve (Fig. 41/1)



5.3.1 Coupling the brake and supply lines





WARNING

Risk of being crushed, cut, caught or struck by the machine unintentionally rolling when the operating brake is released.

Always couple the hose coupling of the brake line (yellow) first, followed by the hose coupling of the supply line (red).

The operating brake of the machine moves out of the brake position immediately the red hose coupling has been coupled.

- 1. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 2. Open the covers (Fig. 42/1) of the hose couplings on the tractor.
- 3. Check the sealing rings on the hose coupling for damage and cleanliness.
- 4. Clean the dirty sealing rings and replace any damaged sealing rings.
- 5. Fasten the hose coupling of the brake line (yellow) in compliance with regulations in the coupling marked yellow (Fig. 42/2) on the tractor.



Fig. 42



- 6. Remove the hose coupling of the supply line (red) from the empty coupling.
- 7. Check the sealing rings on the hose coupling for damage and cleanliness.
- 8. Clean the dirty sealing rings and replace any damaged sealing rings.
- 9. Fasten the hose coupling of the supply line (red) in the coupling marked red on the tractor in accordance with regulations.
- \rightarrow The black button is pushed out when the supply line (red) is coupled.

If the tractor parking brake

- o is engaged, the service brake of the machine is also engaged
- o is not engaged, the service brake of the machine is also not engaged



DANGER

In the event of an emergency, pull out the red button (Fig. 43/1) to brake the machine.

The machine cannot apply a braking force if the tractor parking brake is released when the supply line is connected (red).



Fig. 43



5.3.2 Uncoupling the supply and brake lines



DANGER

Always secure the machine with the wheel chocks before you uncouple the machine from the tractor.

WARNING

Risk of being crushed, cut, caught or struck by the machine unintentionally rolling when the operating brake is released.

Always uncouple the hose coupling of the supply line (red) first followed by the hose coupling of the brake line (yellow).

The service brake of the machine adopts the braking position when the supply line (red) is uncoupled from the tractor.

Always keep to this order, as otherwise the service brake system will trip and may set the unbraked machine moving.

- 1. Secure the machine against unintentional rolling. To do this, use the tractor parking brake and wheel chocks.
- 2. Release the hose coupling (Fig. 44) of the supply line (red).
- 3. Release the hose coupling of the brake line (yellow).
- 4. Fasten the hose couplings in the empty coupling points.
- 5. Close the covers of the coupling heads on the tractor.



Fig. 44



5.3.3 Controls of the dual circuit air brake system

DANGER



Never release the parking brake on sloping ground when the machine is uncoupled.

The machine is braked automatically when the supply line (red) is released.

If you need to manoeuvre the machine once it has been uncoupled from the tractor, e.g. during a visit to the workshop (only on a level surface), you can operate the dual circuit air brake system using the controls (Fig. 45).

The compressed-air tank must be charged to do this. The parking brake cannot be released with the assistance of the controls when the compressed-air tank is empty.

Releasing the parking brake:

Push in the black button (Fig. 45/1), e.g. to manoeuvre the uncoupled machine on level ground.

Engaging the parking brake:

Pull out the black button (Fig. 45/1).



Do not operate the red button (Fig. 45/2). This is always pulled out.



Fig. 45

When the supply line (red) is coupled to the tractor, the parking brake is released automatically and the black button (Fig. 45/1) is automatically pulled out of the fitting as soon as the operating pressure has built up.



5.4 Hydraulic service brake system

To control the hydraulic service brake system, the tractor requires hydraulic braking equipment.

5.4.1 Coupling the hydraulic service brake system



Only couple clean hydraulic couplings.

- 1. Remove the protective cap (Fig. 47/1).
- 2. If necessary, clean the hydraulic connectors (Fig. 46) and hydraulic connector socket.
- 3. Connect the hydraulic connector socket on the machine face with the hydraulic connector on the tractor face.



Fig. 46

5.4.2 Uncoupling the hydraulic service brake system

- 1. Unlock the hydraulic connectors from the hydraulic sockets.
- 2. Secure the hydraulic connectors and hydraulic connector socket with protective caps (Fig. 47/1) against soiling.
- 3. Place the hydraulic hose line in the hose cabinet.



Fig. 47



5.5 **AMATRON**⁺ operator control terminal

The **AMATRON**⁺ consists of the operator control terminal (Fig. 48), the basic equipment (cable and fastening material) and the job computer on the machine.

Follow the instructions in the operating manual to mount the operator control terminal inside the tractor cab **AMATRON+**.





The following are performed via the operator control terminal (Fig. 48)

- input of the machine-specific data
- input of the job-related data
- activation of the machine that modifies the sowing rate during the sowing operation
- disconnecting the hydraulic functions before the hydraulic functions can be executed via the appropriate control unit
- monitoring of the seed drill during sowing operation.
- monitoring of the fill level in the seed and fertiliser tank.

The AMATRON+ determines

- the instantaneous travel speed [km/h]
- the current sowing rate [grains/ha]
- the actual seed/fertiliser tank content [kg].
- the distance remaining [m] until the seed/fertiliser tank is empty.

Once a job has been started, the AMATRON+ stores

- the daily and total volume of seed/fertiliser applied [kg]
- the day and total area cultivated [ha]
- the day and total sowing time [h]
- the average performance [ha/h].



5.6 Frame and machine extension arms



Fig. 49

The machine has:

- a main frame (Fig. 49/1) with integrated running gear and fertiliser tank.
- a foldable rear frame (Fig. 49/2)
 - o that raises the coulter prior to turning at the end of the field
 - o is positioned more or less vertically before the machine extension arms are retracted (Fig. 49/3).
- two machine extension arms which are retractable for transportation purposes (Fig. 49/3).



5.7 Seed dosing and application

5.7.1 Seed dosing

The seed hopper is equipped with a pressuretight lockable lid (Fig. 50/1). The lid is operated via a lockable lever (Fig. 50/2).

The lid is opened with the assistance of two gaspressure springs.



Fig. 50

 Always keep the lid closed and locked, particularly under the fol- lowing circumstances
o When the blower fan is running
o Before retracting the machine extension arms for transpor- tation purposes.
Remove other parts from the seed hopper before filling it.
 Do not fill the seed hopper with moist or sticky seed.

The seed box (Fig. 51/1) is located above the singling drum housing (Fig. 51/2).

The hoppers lower into the transport position before the machine extension arms are moved into the transport position.



Fig. 51

Design and function

The seed flows through an opening that can be adjusted via a reducing screen (Fig. 52/1) into the fluid bed.

Air flows through the fluid bed upstream of the singling drum and loosens the seed.

If too much seed enters the fluid bed area, the size of the aperture must be reduced by locating the reducing screen at a lower point in the hole arrangement.

Secure the reducing screen with a safety splint following every adjustment (Fig. 52/2).

The air flows through the holes in the singling drum. The seed grains are larger than the holes and remain attached to the drum, providing the strength of the air flow has been set correctly.

If the air flow is too weak, the grains will fall from the drum. The strength of the air flow can be adjusted via the blower fan speed.

The air guide in the singling housing can be adjusted via the lever (Fig. 53/2).

If a hole is occupied twice, a centrally-adjustable scraper removes the surplus seed grains. The scraper is adjusted via the lever (Fig. 53/3).



Fig. 52



Fig. 53



5.7.2 Digital seed fill level monitoring

The level sensor (Fig. 54/1) monitors the seed level in the seed hopper.



Fig. 54

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tramline rhythm No working width:	o.: 15 6.0m	machine
level lou	too	Set up 29c214_GB

Fig. 55

If the seed level reaches the level sensor, **AMATRON+** displays the warning message (Fig. 55). An alarm signal sounds simultaneously. This alarm signal is intended to remind the tractor driver to fill up the seeds again.

The **AMATRON**⁺ issues an alarm when the level sensor is no longer covered with seed.



5.7.3 Blower fan (singling)

The required air pressure for a singling drum occupied with grains is 50 mbar – the air pressure can be read off from the **AMATRON+**.

This air pressure is generated by the blower fan (Fig. 56/1) at a speed of between 3,500 and 4,000 rpm.

The blower fan speed can be adjusted at the tractor's flow control valve.



Fig. 56



The fan speed alters until the hydraulic fluid has reached its working temperature.

On initial operation correct the fan speed up to attainment of the working temperature.

If the fan is put back into operation after a long stoppage period, the preset fan speed is not attained until the hydraulic fluid has heated up to working temperature.



5.7.4 Double disc type coulter

The double disc type coulter (Fig. 57/1) is supported by the two carrier rollers (Fig. 57/2) and maintains a constant working depth. The diameters of the double disc type coulter and carrier rollers are especially large.

Remaining vegetation in front of the furrow former (Fig. 57/3) is moved to one side by the double disc type coulter.

The adjustable press rollers (Fig. 57/4) close and press on the seed furrow.

The seed placement depth is adjusted via a spindle (Fig. 58/1). The scale (Fig. 58/2) is provided as an adjustment aid.

Adjust all sowing units so that the same value appears on the scale.

The maximum placement depth is 10 cm



Fig. 57



Fig. 58

Check the planting depth and grain spacing

- Following every adjustment to the planting depth
- When changing from light to heavy soil and vice-versa. The carrier rollers penetrate the ground more deeply with light soil than with heavy soil.



Design and function

The adjustable coulter pressure applies a load of up to 250 kg on the double disc type coulter. This provides ideal sowing conditions for large-area plough, mulch and direct sowing applications.

The coulter pressure can be read off via the pressure gauge (Fig. 59/2). The pressure can also be read off from the tractor seat via a second pressure gauge (Fig. 61/1).

The pressure can be modified

- at the valve (Fig. 59/1) or
- via a setting motor (optional) that is operated from the **AMATRON+** inside the tractor cab.



Fig. 59



If the coulter pressure is too low, the necessary placement depth will not be achieved. The coulters do not run smoothly.

If the coulter pressure is too high, the furrows formed by the carrier rollers will be too deep. The machine lifts out.

The coulters are supported on the machine frame. In order to be able to adapt the coulter to the ground conditions, the pressure of the machine extension arms can be adjusted.

The pressure acting on the machine extension arms can be read off at the pressure gauge (Fig. 60/2). The pressure can also be read off from the tractor seat via a second pressure gauge (Fig. 61/2).

The pressure can be modified

- at the valve (Fig. 60/1) or
- via a setting motor (optional) that is operated from the **AMATRON+** inside the tractor cab.

The following can be read off from the tractor seat

- the coulter pressure, on the pressure gauge (Fig. 61/1)
- the pressure acting on the machine extension arms, on the pressure gauge (Fig. 61/2).



Fig. 60



Fig. 61


5.7.5 Press rollers



The adjustable press rollers (Fig. 62/1) close the seed furrow and push soil over the seed.

Ground contact pressure	
	The ground contact pressure increases as the height at which the tab (Fig. 62/2) engages in the toothed segment increases (Fig. 62/3).
Intensity of the rollers	
	Adapting the axial displacement (Fig. 63) of the pross rollers to the

Adapting the axial displacement (Fig. 63) of the press rollers to the soil or seed furrow.

ad from rainwater.

vehicle is in motion.

tach or detach the rubber loops.

5.8 Fertiliser dosing and application

5.8.1 Fertiliser tank

The fertiliser tank (Fig. 64/1) is readily accessible for the purposes of filling, calibration and emptying.

The shape of the hopper ensures an unobstructed view of the tools during the work.

The full-area opening of the hopper means that it can be filled quickly from bulk bags or a loading truck.

The tarpaulins (Fig. 65/1) protect the fertiliser lo-

The rubber loops (Fig. 65/2) secure the tarpaulin to prevent it from opening accidentally when the

The tarpaulin hooks (Fig. 65/3) are used to at-



Fig. 64

Fig. 65





5.8.2 Digital fertiliser fill level monitoring (optional)

Level sensors monitor the fertiliser level in the hopper.

If the fertiliser level reaches the level sensor, **AMATRON**⁺ displays the corresponding warning message (Fig. 66). An alarm signal sounds simultaneously. This alarm signal is intended to remind the tractor driver to promptly replenish the fertiliser.

machine type:	Cirrus	Order
order No.:	6	drill calibr.
tramline rhythm working width:	No.: 15 6.0m	machine
level	l too w	Setup

Fig. 66

The height of the level sensor (Fig. 67/1) in the fertiliser tank can be adjusted. This means that the remaining fertiliser level at which the warning message and the alarm signal should be trig-gered, can be adjusted.

You can only adjust the height of the level sensor when the fertiliser tank is empty.

A level sensor is installed above every dosing unit. Mount the level sensors at a uniform height.

The charging sieves are normally not visible and are shown folded up in the figure (Fig. 67) for illustration purposes. Do not fold the charging sieves up to adjust the level sensor.



Fig. 67

Increase the volume of remaining fertiliser that triggers the alarm under the following circumstances:

- the greater the spread rate
- the greater the working width.





Design and function

5.8.3 Fertiliser dosing unit and injector sluice

The dosing unit (Fig. 68/1) applies the necessary quantity of fertiliser.





Every dosing unit is equipped with a fertiliser dosing roller (Fig. 69).

The dosing roller is driven by the star wheel via the Vario gearbox.



Fig. 69

The fertiliser falls from the dosing unit into the injector sluice (Fig. 70) and is directed by the air flow to the distributor head and then to the fertiliser coulters.

For calibration testing and emptying purposes, the fertiliser falls through an opening in the floor of the injector sluice. The opening is closed by a sliding element. The sliding element is operated via a lever (Fig. 70/1). Make sure that the lever engages when opening and closing the sliding element.



The machine is equipped with two injector sluices.

The opening in the floor of the injector sluice is closed if

- the lever (Fig. 70/1) for the left injector sluice is pointing to the left when viewed in the direction of travel
- the lever for the right injector sluice is pointing to the right when viewed in the direction of travel.

Note:

The illustration shows the injector sluice on the left-hand side.

Lever position (Fig. 70/1): closed

Lever position (Fig. 70/2): open.

Fig. 70

5.8.4 Adjusting the fertilising rate at the Vario gearbox

The required fertilising rate is set using the lever (Fig. 71/1) of the Vario gearbox.

Adjusting the lever changes the fertilising rate. The higher the number the gearbox lever points to on the scale (Fig. 71/2), the higher the fertilising rate is.

Carry out a calibration test to determine whether the lever is correctly set and whether the right quantity of fertiliser is used during subsequent sowing.

A number of calibration tests are often necessary to determine the correct gearbox setting.

The gearbox setting can be calculated from the values of the first calibration test using the calculating disc rule. Always check the value determined on the calculating disc rule with a further calibration test.

The calculating disc rule has three scales

- an outer white scale (Fig. 72/1) for all fertilising rates over 30 kg/ha
- an inner white scale (Fig. 72/2) for all fertilising rates below 30 kg/ha
- a coloured scale (Fig. 72/3) with all gearbox settings from 1 to 100.









Fig. 72



5.8.5 Calibration test

The purpose of the calibration test is to determine whether the specified and actual fertilising rates correspond.

Always carry out a calibration test:

- when changing the type of fertiliser
- if the same type of fertiliser is used, but with a different size, shape and specific weight of grain
- if there are any differences between the determined and actual fertilising rates.

The quantity of fertiliser to be used for the calibration test drops into the calibration trough.

The number of calibration troughs corresponds to the number of dosing units.

The calibration troughs are nested for transport and fastened to the rear wall of the hopper, secured with a clip pin (Fig. 73/1).



Fig. 73



Fig. 74

In the parking position the calibration crank (Fig. 74/1) is inserted in the transport bracket.



5.8.6 Blower fan (fertiliser)

The blower fan (Fig. 75/1) generates the air pressure required to transport the fertiliser from the injector sluice to the fertiliser coulters.

The hydraulic motor (Fig. 75/2) drives the blower fan.

A hydraulic pump (Fig. 76/1) is plugged on to the tractor's universal joint shaft and drives the hy-

draulic motor (Fig. 75/2).



Fig. 75



Fig. 76

Set the speed of the tractor's universal joint shaft to 1,000 rpm.

Tractor universal joint shaft speed: 1,000 rpm.



Fig. 77



5.8.7 Distributor head

The fertiliser is distributed evenly amongst all fertiliser coulters in the distributor head (Fig. 78/1).

One fertiliser dosing unit always supplies one distributor head.



Fig. 78

5.8.8 Star wheel

The star wheel (Fig. 79/1) drives the fertiliser dosing roller via the Vario gearbox.

The distance covered is measured via the star wheel. The The **AMATRON+** requires this data to calculate

- the travel speed
- the worked area (hectare counter)
- the speed of the electric motor required for singling.



Fig. 79



5.8.9 Single disc type fertiliser coulter

The implement is equipped with central depth adjustment for single disc type fertiliser coulters (Fig. 80/1).

The depth of the fertiliser coulters is evenly adjusted by operating tractor spool valve 2, or by changing the fertiliser coulter pressure.

The maximum placement depth of the fertiliser is 15 cm

The gap between the furrow former and disc is adjustable.

The pressure can be read off at the pressure gauge (Fig. 81/2).

The pressure can be modified

- manually at the valve (Fig. 81/1) or
- via a setting motor (optional) that is operated from the **AMATRON**⁺ inside the tractor cab (see **AMATRON**⁺ operating manual).

The hydraulic pressure acting on the fertiliser coulters can be read off from the tractor seat on a second pressure gauge (Fig. 82/1).



Fig. 80



Fig. 81



Fig. 82

The fertiliser placement depth depends on the following factorsthe condition of the soil

- the coulter pressure
- working speed:

Check the placement depth at regular intervals.



5.9 Track marker



The hydraulically-actuated track markers (Fig. 83/1) dig into the ground alternately on the left and the right of the machine.

In so doing, the active track marker creates a mark. This mark serves as an orientation aid for the next run after turning.

On the next run, the tractor driver drives over the centre of the mark.

The inactive track marker (Fig. 83/2) is raised when work is in progress.

The following are adjustable

- The length of the track marker
- The working intensity of the track marker, depending on the type of soil.



Before the machine extension arms are retracted for road transportation purposes, the track markers (Fig. 84) butt tightly against them.



Design and function

Raise the active track marker to bypass any obstacles in the field.

To prevent damage, a bolt (Fig. 85/1) shears off if the track marker strikes a fixed obstacle which causes the arm to swing backwards.

Only use the spare shear bolts (Fig. 85/2) supplied with the machine. For the bolt size, refer to the online spare parts list (see www.amazone.de).



Fig. 85

5.10 Wheel mark eradicator (optional)

The wheel mark eradicators (Fig. 86/1) break up the solid tyre tracks of the machine and cover them with loose soil.

The wheel mark eradicators can be fixed to the flanges provided on the machine and vertically adjusted.



Fig. 86



6 Commissioning

This section contains information

- on commissioning your machine
- on checking how you may attach the machine to your tractor.
- Before commissioning the machine, the operator must have read and understood the operating manual.
- Take heed of section "Safety information for the operator", from on page 28 onwards on
 - o connecting and disconnecting the machine
 - o transporting the machine
 - o using the machine
- Only couple and transport the machine to/with a tractor which is suitable for the task.
- The tractor and machine must meet the national road traffic regulations.
- The operator and the user shall be responsible for compliance with the statutory road traffic regulations.

WARNING

Risk of crushing, shearing, cutting, and being drawn in or trapped in the vicinity of hydraulically or electrically actuated components.

Do not block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:

- are continuous or
- are automatically locked or
- due to their function require a float position or pressure position.



6.1 Checking the suitability of the tractor

A	WARNING			
	Risk of breaking during operation, insufficient stability and in- sufficient tractor steering and braking power on improper use of the tractor.			
	•	Check the suitability of your tractor before you attach or hitch the machine to the tractor.		
		You may only connect the machine to tractors suitable for the purpose.		
	•	Carry out a brake test to check whether the tractor achieves the required braking delay with the machine connected.		

Requirements for the suitability of a tractor are, in particular:

- The permissible total weight
- The approved axle loads
- The approved drawbar load at the tractor coupling point
- The load capacity of the installed tyres
- The approved trailer load must be sufficient

You can find this data on the rating plate or in the vehicle documentation and in the tractor operating manual.

The front axle of the tractor must always be subjected to at least 20% of the empty weight of the tractor.

The tractor must achieve the brake delay specified by the tractor manufacturer, even with the machine connected.



6.1.1 Calculating the actual values for the total tractor weight, tractor axle loads and load capacities, as well as the minimum ballast

i	 The permissible total tractor weight, specified in the vehicle documentation, must be greater than the sum of the tractor's empty weight ballast weight and total weight of the attached machine or drawbar load of the hitched machine.
1	This notice applies only to Germany. If, having tried all possible alternatives, it is not possible to comply with the axle loads and / or the permissible total weight, then a survey by an officially-recognised motor traffic expert can, with the approval of the tractor manufacturer, be used as a basis for the responsible au- thority to issue an exceptional approval according to § 70 of the Ger- man Regulations Authorising the Use of Vehicles for Road Traffic and the required approval according to § 29, paragraph 3 of the German Road Traffic Regulations.



6.1.1.1 Data required for the calculation (hitched machine)



F	ia		87
•	- 3	•	•••

TL	[kg]	Tractor empty weight	See tractor operating manual or vehicle documentation
Τv	[kg]	Front axle load of the unladen tractor	
Т _Н	[kg]	Rear axle load of the unladen tractor	
Gv	[kg]	Front weight (if available)	See front weight in technical data, or weigh
F _H	[kg]	Maximum drawbar load	See section "Technical data", on page 52
а	[m]	Distance between the centre of gravity of the front machine mounting or the front weight and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front ma- chine mounting or front weight or measure- ment
a ₁	[m]	Distance from the centre of the front axle to the centre of the lower link connection	See tractor operating manual or measure- ment
a ₂	[m]	Distance between the centre of the lower link connection point and the centre of grav- ity of the front-mounted machine or front ballast (centre of gravity distance)	See technical data of front machine mounting or front weight or measurement
b	[m]	Tractor wheel base	See tractor operating manual or vehicle documents or measurement
С	[m]	Distance between the centre of the rear axle and the centre of the lower link connection	See tractor operating manual or vehicle documents or measurement



6.1.1.2 Calculation of the required minimum ballasting at the front $G_{V min}$ of the tractor for assurance of the steering capability

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

Enter the numeric value for the calculated minimum ballast $G_{V min}$, required on the front side of the tractor, in the table (section 6.1.1.7).

6.1.1.3 Calculation of the actual front axle load of the tractor T_{V tat}

$$T_{V_{tat}} = \frac{G_V \bullet (a+b) + T_V \bullet b - F_H \bullet c}{b}$$

Enter the numeric value for the calculated actual front axle load and the approved tractor front axle load specified in the tractor operating manual in the table (section 6.1.1.7).

6.1.1.4 Calculation of the actual total weight of the combined tractor and machine

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

Enter the numeric value for the calculated actual total weight and the approved total tractor weight specified in the tractor operating manual in the table (section 6.1.1.7).

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

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

Enter the numeric value for the calculated actual rear axle load and the approved tractor rear axle load specified in the tractor operating manual in the table (section 6.1.1.7).

6.1.1.6 Tyre load capacity

Enter the double value (two tyres) of the approved load capacity (see, for example, tyre manufacturer's documentation) in the table (section 6.1.1.7).



6.1.1.7 Table

	Actual value according to calculation		Approved value ac- cording to the tractor operating manual		Double approved load capacity (two tyres)
Minimum ballast front / rear	/ kg				
Total weight	kg	<	kg		
Front axle load	kg	≤	kg	≤	kg
Rear axle load	kg	<	kg	≤	kg
•	You can find t	he a	approved values for the	tota	al tractor weight,

1	•	axle loads and load capacities in the tractor registration papers.
	•	The actually calculated values must be less than or equal to (\leq) the permissible values.

^	WARNING		
	Risk of crushing, cutting, being caught or drawn in, or impact through insufficient stability and insufficient tractor steering capability and brake power.		
	It is forbidden to couple the machine to the tractor used as the basis for calculation, if		
	 one of the actual, calculated values is greater than the approved value. 		
	 there is no front weight (if required) attached to the tractor for the minimum front ballast (G_{V min}). 		

0

You must use a front weight, which is equal to at least the required minimum front ballast ($G_{V\,\text{min}}).$



6.1.2 Requirements for tractor operation with attached machines



6.1.3 Machines without their own brake system

Use of the machine without its own braking system is not approved in Germany or in several other countries.

A	WARNING
	Risk of crushing, cutting, being caught or drawn in, or impact through inadequate tractor brake power.
	The tractor must achieve the brake delay specified by the tractor manufacturer, even with the machine connected.
	If the machine does not possess its own brake system:
	 The actual tractor weight must be greater than or equal to (≥) the actual weight of the connected machine.
	• The maximum movement speed is 25 km/h.



6.2 Securing the tractor / machine against unintentional start-up and rolling



- 1. Only park the tractor with the machine on firm flat ground.
- 2. Lower raised, unsecured machine parts.
- \rightarrow This is how to prevent unintentional falling.
- 3. Shut down the tractor engine.
- 4. Remove the ignition key.
- 5. Apply the tractor parking brake.
- 6. Secure the machine with wheel chocks against unintentional rolling.



6.3 Assembly specifications, hydr. blower fan drive connection (singling)

The banking-up pressure of 10 bar must not be exceeded. The installation regulations therefore have to be complied with when connecting the hydraulic fan connection.

- Connect the hydraulic coupling of the pressure line (Fig. 88/5) to a single-acting or double-acting tractor control unit with priority.
- Connect the large hydraulic coupling of the return line (Fig. 88/6) only to an unpressurised tractor connection with direct access to the hydraulic fluid tank (Fig. 88/4).
 In order that the banking-up pressure of 10 bar is not exceeded, do not connect the return line to a tractor control unit.
- For retro-installation of the tractor return line, use only piping with ND 16, e.g. 20 id. x 2.0 mm with a short return path to the hydraulic fluid tank.

The output of the tractor's hydraulic pump must be at least 80 l/min. at 150 bar.

Fig. 88/...

- (A) On the machine face
- (B) On the tractor face
- (1) Hydraulic fan motor N_{max.} = 4,000 rpm.
- (2) Filter
- (3) Single-acting or double-acting control unit with priority
- (4) Hydraulic fluid tank
- (5) Feed line: pressure line with priority (marking: 1 cable tie, red)
- (6) Return line: unpressurised line with "large" push-fit coupling (marking: 2 cable ties, red)







The hydraulic fluid must not overheat.

High oil flow rates in conjunction with small oil tanks encourage rapid heating-up of the hydraulic fluid. The capacity of the tractor's oil tank (Fig. 88/4) should be at least twice the oil flow rate. If the hydraulic fluid heats up excessively, the installation of an oil radiator is required at a specialist workshop.



7 Coupling and uncoupling the machine

When coupling and uncoupling the machine take heed of the section "Safety information for the operator", on page 28.



WARNING

Risk of crushing from unintentional starting and rolling of the tractor and machine when coupling or uncoupling the machine.

Secure the tractor and machine to prevent unintentional starting and rolling before entering the danger area between the tractor and machine to couple or uncouple the machine. For more information, see section 6.2, on page 91.





7.1 Coupling the machine







WARNING

Risk of crushing when coupling the machine and standing between the tractor and the machine.

Instruct people to leave the danger area between the tractor and the machine before you approach the machine.

Any helpers may only act as guides standing next to the tractor and the machine, and may only move between the vehicles when both are at a standstill.



WARNING

Risk of crushing, being cut, caught or pulled in, or impact when the machine is unexpectedly released from the tractor.

- Use the intended equipment to connect the tractor and the machine in the proper way.
- When coupling the machine to the tractor's three-point hydraulic system, ensure that the linkage of the tractor and the machine are the same.

 WARNING

 Risk of energy supply failure between the tractor and the machine through damaged power lines.

 During coupling, check the course of the power lines. The power lines

 • must give slightly without tension, bending or rubbing during all movements of the coupled or attached machine.

 • may not scour other parts.

DANGER

Always observe the following once the machine is no longer attached to the tractor

- secure the machine with the service parking brake and also with 2 wheel chocks.
- always secure the machine with 4 wheel chocks if it is not equipped with a brake system.



DANGER

The lower link of the tractor must not have any lateral play so that the machine always runs centrically behind the tractor and does not knock back and forth.





The machine can be extended/retracted and coupled/uncoupled.



WARNING

Only remove the wheel chocks if the machine is connected to the tractor's lower links and the tractor parking brake is applied.

1. Check that the machine is secured with wheel chocks (Fig. 89/1).



Fig. 89



Coupling and uncoupling the machine

Fasten one ball sleeve (Fig. 90/1) with collector tray above each lower link pin on the drawbar (for category of coupling points, see section "Technical data", on page 52) and secure these with a clip pin.

The type of ball sleeve used for the lower linkage is determined by the tractor type (see tractor operating manual).



Fig. 90



CAUTION

Risk of getting crushed in the area of the moving draw rail.

- 3. Open the tractor lower link securing device, i.e. it must be ready for coupling.
- 4. Align the lower link hooks so that they are flush with the linking points of the machine.
- 5. Direct people away from the danger area between the tractor and machine before you approach the machine with the tractor.
- 6. Drive the tractor in reverse up to the machine so that the lower link hooks of the tractor automatically pick up the ball of the machine.
 - \rightarrow The lower link hooks lock automatically.
- Check whether the securing device of the tractor's lower link locking system is closed and secured (see tractor's operating manual).
- 8. Lift the tractor's lower link until the stand (Fig. 91/1) is free of the ground.
- 9. Secure the tractor against unintentional starting and unintentional rolling.
- 10. Check whether the universal joint shaft of the tractor is switched off.
- 11. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 12. Connect the supply hoses to the tractor (see sections 7.1.1 to 7.1.4, from on page 98).
- 13. Connect the hydraulic pump (see section "Coupling the hydraulic pump" on page 104).



- 14. Hold on to handle of the stand (Fig. 91/1) and remove the positioning bolt (Fig. 91/2).
- 15. Push up the stand (Fig. 91/1) and locate with the positioning bolt.
- 16. Secure the positioning bolt with the clip pin provided.







Check the route of the supply lines.

The power lines

- must easily give way to all movements in bends without tensioning, kinking or rubbing
- may not scour other parts.
- 17. Check the function of the braking and lighting system.
- Stow the wheel chocks in the mountings and secure them with spring tensioners (Fig. 92/1).
- 19. Before commencing a run, perform a braking test.



Fig. 92



7.1.1 Establishing the hydraulic connections



Clean the hydraulic couplings before connecting them to the tractor. Minor oil impurities from particles can cause a failure of the hydraulic system.

On tractor side		On machine side (EDX)							
		Fig. 27/		Running direction	Marking		king	Function	
	1	Double-		(1)	Feed line		1	Yellow	o Operation of track marker
unit		acting	-	(1a)	Return line	Return line 2		o Lift rear frame (coulter)	
ntrol ı	2	Double-	lic line	(2)	Feed line	e	1	green	o Pressure, double disc type coulteo Pressure, fertiliser coulter
or co		acting	draul	(2a)	Return line	ble ti	2		 Pressure/fold machine extension arms
Tracto	3	Single- acting or double- acting	H	(3)	Feed line ¹⁾	Ca	1	Red	Blower fan hydraulic motor (blower fan for singling)
Pressureless line			(4)	Return line 2)	2				

¹⁾ Pressure hose with priority

²⁾ Pressureless line (see section "Assembly specifications, hydr. blower fan drive connection (singling)", on page 92).

During work, tractor control unit 1 is actuated more frequently than any other control unit. Assign the connections of control unit 1 to an easily reachable control unit in the tractor cab.
 Tractors with constant-flow hydraulic systems are not suitable for connection to the hydraulic pressure system of sowing and fertiliser coulters and machine extension arms. The machine will need to be modified accordingly. If you have any queries in this regard, please contact **AMAZONEN-WERKE**.



7.1.2 Connecting the electrical connections

Connection/function	Installation information
Plug (7-pin) for the road-use lighting system	
AMATRON+ machine connector	Connect the plugs to the terminal as described in the AMATRON+ operating manual.

7.1.3 Connecting the dual circuit air brake system

Couple the brake and supply line to the tractor (see section "Coupling the brake and supply lines", on page 60).

Tractor connection		Function	
Connection	Marking		
Brake line	Yellow	Dual circuit air brake system	
Supply line	Red		

Couple to the tractor	
•	first of all the yellow hose coupling (brake line)
•	then the <u>red</u> hose coupling (supply line).



7.1.4 Connecting the hydraulic service brake system

Required on the tractor face is a hydraulic braking device that drives the hydraulic braking system of the Cirrus (not allowed in Germany and several other EU countries).

Connect the hydraulic brake connection (Fig. 93) to the tractor's hydraulic brake connection.



Fig. 93



Check the hydraulic connection for cleanliness before coupling.



DANGER

Check the routing of the brake line. The brake line must not chafe on foreign parts.



7.2 Uncoupling the machine





- 1. Switch off the tractor's universal joint shaft.
- Park the tractor and machine on a solid horizontal surface in the straight-ahead position.
- 3. Fully expand or retract the machine.
- 4. Switch off the **AMATRON+**.
 - 4.1 Press button (Fig. 94/1).
- 5. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 6. Hold the stand (Fig. 95/1) tight and remove the positioning bolt (Fig. 95/2).
- 7. Lower the stand and locate it using the positioning bolt supplied.
- 8. Secure the positioning bolt with the clip pin provided.



Fig. 94



Fig. 95



- 9. Remove the wheel chocks from the transport bracket(s).
 - 9.1 Release the spring-loaded pins (Fig. 96/1) and remove the wheel chocks from the transport bracket.
- 9.2 Repeat the process on the second transport bracket (if installed).



10.1 Repeat the procedure on the second machine tyre if the machine is not equipped with a brake system.







Fig. 97

11. Uncouple the supply line and brake line from the tractor (see section "Uncoupling the supply and brake lines", on page 62).



When uncoupling the pneumatic brake lines first of all disconnect the red hose coupling (supply line) and then the yellow hose coupling (brake line) from the tractor.

- 12. Uncouple all supply hoses from the tractor.
- 13. Seal the hydraulic connector with protective caps.
- 14. Store the supply hoses in the hose cabinet (Fig. 98).



Fig. 98



- 15. Uncouple the hydraulic pump from the tractor's universal joint shaft (see section "Uncoupling the hydraulic pump" on page 106).
- 16. Set the machine down on the stand.



WARNING

Only park the machine on a horizontal solid surface.

Ensure that the stand does not sink into the ground. If the stand does sink into the ground, it will be impossible to recouple the machine.

- 17. Open the securing device (Fig. 100) of the tractor's lower link (see tractor operating manual).
- 18. Uncouple the tractor's lower link.
- 19. Pull the tractor forwards.



DANGER

While pulling the tractor forwards no personnel are allowed to be between the tractor and the machine.



Fig. 99







CAUTION

Risk of getting crushed in the area of the moving draw rail.



7.3 Coupling the hydraulic pump



7.3.1 Connecting the hydraulic pump

- 1. Check whether the tractor's universal joint shaft is switched off.
- 2. Clean and grease the tractor's universal joint shaft.
- 3. Couple the tractor and machine.
- 4. Secure the tractor against unintentional starting and unintentional rolling.
- Couple the hydraulic pump (Fig. 101/1) to the tractor's universal joint shaft.

The hydraulic pump is equipped with a QC fastener. Make sure the QC fastener has engaged correctly.

6. Set the adjuster segment so that the buffer (Fig. 101/1) rests against it.









The hydraulic pumps delivered with the machine may be of differing types (see Fig. 101 / Fig. 102).









Fig. 104

Fig. 103

Only check the oil level in the oil glass (Fig. 105/1) in the horizontal position as shown. To check the oil level, pull the hydraulic

pump off the tractor's universal joint shaft and turn it upside down if necessary.



Fig. 105



7.3.2 Uncoupling the hydraulic pump



- Switch off the tractor's universal joint shaft. Wait until the universal joint shaft stops moving.
- 2. Park the machine on level, solid ground.
- 3. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 4. Pull the hydraulic pump off of the tractor's universal joint shaft.



8 Settings

Δ	WARNING	
	Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through	
	 Unintentional falling of the machine raised using the trac- tor's three-point hydraulic system. 	
	Unintentional falling of raised, unsecured machine parts.	
	 Unintentional start-up and rolling of the tractor-machine combination. 	
	Secure the tractor and the machine against unintentional starting and rolling before you make any adjustments to the machine. On this subject see section 6.2, on page 91.	



DANGER

Before making adjustments (if no other description is provided),

- Fold out the machine extension arms (see section 10.1, on page 131)
- Switch off the tractor's universal joint shaft
- Wait until the tractor's universal joint shaft stops moving
- Apply the tractor's parking brake
- Switch off the tractor's engine
- Remove the ignition key.



8.1 Seed dosing and application

8.1.1 Setting the level sensor

- 1. Release the wing nuts (Fig. 106/1).
- 2. Adjust the height of the level sensor (Fig. 106/2).
- 3. Fully tighten the wing nuts.
- 4. Repeat the adjustment at the second level sensor (if fitted).



Fig. 106

8.1.2 Adjusting the sowing rate

Adjust the following in the AMATRON+

- the number of sowing units
- the row spacing
- the desired sowing rate [grains/ha]

For a more detailed description refer to the operating manual **AMATRON+**.



Fig. 107


8.1.3 Adjusting the air guide

The central air guide adjustment has the effect of loosening the seed in the fluid bed.

The lever (Fig. 108/1)

can be turned in the clockwise direction (+) to loosen the seed further.



Fig. 108



8.1.4 Adjusting the scraper

If a hole is occupied twice, a centrally-adjustable scraper removes the surplus seed grains.

Shifting the lever (Fig. 109/1)

- in the anticlockwise direction (-) reduces the working intensity of the scraper.
- in the clockwise direction (+) increases the working intensity of the scraper.







- Make the same adjustment at all seed hoppers (if several tanks fitted).
- Once the working speed has been reached, the optical sensor units detect multiple occupancies and the **AMATRON+** issues an alarm to indicate that the scraper requires adjustment.



8.1.5 Adjusting the planting depth

- 1. Put the machine in the working position in the field (see Chapter "Use of the machine", on page 129).
- 2. Release the safety splint (Fig. 110/1).
- 3. Set the required placement depth via the spindle (Fig. 110/2).

Spindle adjustment

Turn to right: reduce working depth Turn to left: increase working depth.

4. Secure the spindle with the safety splint (Fig. 110/1) to prevent turning.



Fig. 110

5. Check the placement depth of the first sowing unit and adjust if required (see section "Checking the planting depth and grain spacing", on page 112).



Check the planting depth of the seed following every adjustment (see section "

Checking the planting depth and grain spacing", on page 112).

- 6. If the spindle adjustment does not produce the required planting depth,
 - o adjust the coulter pressure (see section "Setting the coulter pressure", on page 111)
 - o change the load applied due to the weight of the machine (see section "Adjusting the pressure of the machine extension arms to achieve an optimum match between the coulter and the ground conditions", on page 111).
- 7. Adjust all sowing units to match the value of the first sowing unit and check the placement depth of each sowing unit.



8.1.5.1 Setting the coulter pressure

- 1. Release the lock nut (Fig. 111/1).
- 2. Adjust the coulter pressure by turning the valve screw (Fig. 111/2).
- → Read off the coulter pressure at the pressure gauge (Fig. 111/3).
- 3. Tighten the lock nut.



Fig. 111

8.1.5.2 Adjusting the pressure of the machine extension arms to achieve an optimum match between the coulter and the ground conditions

- 1. Release the lock nut (Fig. 111/1).
- 2. Adjust the pressure on the machine extension arms by turning the valve screw (Fig. 111/2).
- → Read off the hydraulic pressure on the pressure gauge (Fig. 111/3).
- 3. Tighten the lock nut.



Fig. 112



8.1.6 Closing the seed furrow by adjusting the press roller

- 1. Lift up the lever (Fig. 113/1) briefly and locate the tab (Fig. 113/2) in the toothed segment (Fig. 113/3).
- Make the same axial adjustment at each of the press rollers (Fig. 113/4) and secure (clip pin, Fig. 113/5).
- 3. Adjust the position of the tab and axial adjustment of the press rollers until the required working result is achieved.
- 4. Perform the same adjustment at all sowing units.



8.1.7 Checking the planting depth and grain spacing

- 1. Sow approximately 100 m at working speed.
- Expose the grains at several points using the multi-placement tester (optional). Use the read-off edge to remove the earth in layers.
- 3. Place the multi-placement tester (Fig. 114) horizontally on the ground
- 4. Place the pointer (Fig. 114/1) on the seed grain and read off the planting depth from the scale (Fig. 114/2).
- 5. Measure the grain spacing with the ruler.



Fig. 114





8.2 Fertiliser dosing and application

8.2.1 Setting the level sensor

- 1. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 2. Climb into the fertiliser tank using the steps (Fig. 115).





- 3. Release the wing nuts (Fig. 116/1).
- 4. Adjust the height of the level sensor (Fig. 116/2).
- 5. Fully tighten the wing nuts.
- 6. Repeat the adjustment at the second level sensor (if fitted).



Fig. 116



8.2.2 Installing/removing the dosing roller

1. Remove the clip pin (Fig. 117/2). (only necessary when the hopper is not empty so it can be closed with the slider (Fig. 117/1).



The dosing roller can be replaced more easily when the hopper is empty.

- 2. Push the slider (Fig. 118/1) into the dosing unit up to the stop.
- → The slider seals the hopper. Fertiliser cannot pour out inadvertently when the dosing roller is replaced.







Fig. 118



- 3. Slacken but do not unscrew the two winged nuts (Fig. 119/1).
- 4. Turn the bearing cover and pull it off.





5. Pull the dosing roller out of the dosing unit.



The dosing roller is installed in the reverse order.



Fig. 120



Equip all dosing units fitted on the machine with the same dosing roller.

Open all the sliders (Fig. 117/1) and secure them [clip pins (Fig. 117/2)].



8.2.3 Setting the fertilising rate using a calibration test

- 1. Fill the hopper with at least 200 kg of fertiliser (see section "Filling the hopper", on page 136).
- 2. Fold out the machine into the operating position (see section "Extending and retracting the machine extension arms and track marker", on page 131).
- 3. Push a calibration trough into the mounts under each dosing unit.

4. Open all injector sluice flaps (see section "Fertiliser dosing unit and injector sluice",

on page 76).



Fig. 121



- Fig. 122
- 5. Select "Seed rate remote control: none" on the AMATRON+
- 6. If required, set up a job on the **AMATRON+**.



- 7. Undo the locking knob (Fig. 123/1).
- Set the gearbox lever pointer (Fig. 123/2) to the gearbox setting value "50" <u>from be-</u> <u>low</u>.
- 9. Fully tighten the locking knob.









- 14. Open all injector sluice flaps (see section "Fertiliser dosing unit and injector sluice", on page 76).
- 15. Turn the star wheel anticlockwise the number of crank turns specified in the table (Fig. 125).

	EDX 9000-T			
Number of sowing units	12			
Row spacing [cm]	75			
Crank turns for 1/40 [ha]	13.0			

Fig. 125



- 11. Using the calibration crank, turn the star wheel in an anticlockwise direction until the worm gears of the dosing roller have filled all dosing units with fertiliser.
- Close all injector sluice flaps (see section "Fertiliser dosing unit and injector sluice", on page 76).
- 13. Empty the calibration trough below each dosing unit then fasten it back on below the unit.

Settings



- 16. Weigh the volume of seed collected in the calibration troughs (taking the weight of the trough into consideration) and multiply
 - o by a factor of 40 (for 1/40 ha) or
 - o by a factor of 10 (for 1/10 ha).

Check the accuracy of the scales display.





Calibrating on 1/40 ha:

Spread rate [kg/ha]	=	volume of fertiliser used for calibration [kg/ha] x 40
---------------------	---	--

Calibrating on 1/10 ha:

Spread rate [kg/ha]	=	volume of fertiliser used for calibration [kg/ha] x 10
---------------------	---	--

Example:

Volume of fertiliser used for calibration: 3.2 kg on 1/40 ha

28 [kg/ha]	128 [=	3.2 [kg/ha] x 40	=	ertiliser quantity [kg/ha]
20 [10	1201				or anoor quartery [reg/ria]



The desired spread rate is not generally achieved in the first calibration test. The correct gearbox setting can be determined using the calculating disc rule based on the values obtained during the first calibration test and calculated spread rate (see "Determining the gearbox setting using the calculating disc rule", on page 119).

- 17. Repeat the calibration test until the desired spread rate is achieved.
- 18. Fasten the calibration trough(s) to the hopper.
- 19. Close the injector sluice flap(s).
- 20. Clip the calibration crank into its transport bracket.



8.2.3.1 Determining the gearbox setting using the calculating disc rule

_	-
Evam	nlai
LAaiii	pie.

Values of calibration test	
calculated spread rate: gearbox setting:	175 kg/ha 70
required spread rate:	125 kg/ha.

- 1. Line up the values from the calibration test
 - o calculated spread rate 175 kg/ha (Fig. 127/A)
 - o gearbox setting 70 (Fig. 127/B)

opposite one another on the calculating disc rule.

- 2. Read off the gearbox setting for the desired spread rate of 125 kg/ha (Fig. 127/C) from the calculating disc rule.
- \rightarrow Gearbox setting 50 (Fig. 127/D).
- 3. Set the gearbox lever to the value read from the disc.
- 4. Check the gearbox setting with another calibration test (see "8.2.3", on page 116).



Fig. 127

8.2.4 Adjusting the blower fan speed monitoring system on the **AMATRON**⁺

Adjust the blower fan speed monitoring system in the on-board computer **AMATRON+** (see **AMATRON+** operating manual).

- Enter the blower fan speed (rpm) to be monitored, or adopt the current blower fan speed (rpm.) as the setpoint when work is in progress.
- Enter the percentage deviation [± 10 (%)] that must exist for the alarm to be triggered in the event the blower fan speed and the setpoint diverge.



8.2.5 Adjusting the fertiliser placement depth

- 1. Release the lock nut (Fig. 128/1).
- 2. Turn the valve screw (Fig. 128/2) to adjust the fertiliser coulter pressure.
- → Read off the fertiliser coulter pressure at the pressure gauge (Fig. 128/3).
- 3. Tighten the lock nut.



Fig. 128

Always check the placement depth of the fertiliser:

- before starting work
- following every adjustment of the fertiliser coulter pressure
- if the travel speed changes when work is in progress
- if the ground conditions change.

Drive the machine across the field for a distance of roughly 100 m at the intended working speed and check the placement depth, adjust if necessary.



8.3 Adjusting the track marker length and working intensity



DANGER

It is forbidden to stand in the swivelling area of the track marker.

- 1. Direct people away from the danger area.
- Fold out both track markers simultaneously on the field (see **AMATRON**⁺ operating manual) and drive several metres.
- 3. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 4. Undo the screw (Fig. 129/1).
- 5. Set the track marker length to distance "A" (see section 8.3.1, on page 122).



Fig. 129

- 6. Release both screws (Fig. 129/2).
- 7. Turn the track marker disc to adjust the working intensity of the track marker so that it runs roughly parallel to the direction of travel on light soil and is more attuned to grip on heavier soil.
- 8. Fully tighten all screws.
- 9. The machine is equipped with two track markers. Repeat the procedure as described.



8.3.1 Calculating the track marker length

The working width is the track marker length A (Fig. 130), measured from the centre of the machine to the contact surface of the track marker wheel on the ground.



Fig. 130



8.4 Adjusting the wheel mark eradicator

- 1. Hold the wheel mark eradicator by the handle (Fig. 131/1).
- 2. Remove the bolt (Fig. 131/2).
- 3. Adjust the wheel mark eradicator as follows
 - o adjust in a vertical direction
 - o locate with the pin
 - o secure with the clip pin supplied.



Fig. 131



9 Transportation

When driving on public roads and ways the tractor and machine must comply with the national road traffic regulations (in Germany the StVZO and the StVO) and the accident prevention regulations (in Germany those of the industrial injury mutual insurance organisation).

The vehicle keeper and driver are responsible for compliance with the statutory stipulations.

Furthermore, the instructions in this section have to be complied with prior to starting and during travel.

•	For transport journeys take heed of the section "Safety informa- tion for the operator", on page 28.		
•	Before moving off, check:		
	o The correct connection of the supply lines		
	o The lighting system for damage, function and cleanliness		
	o The brake and hydraulic system for visible damage		
	o That the tractor parking brake is released completely		
	o the function of the brake system.		

WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact when making interventions in the machine, through unintentional machine movements.

- On folding machines, check that the transport locking mechanisms are locked correctly.
- Secure the machine against unintentional movements before starting transportation.



WARNING

Risk of crushing, cutting, being caught and/or drawn in, or impact from tipping and insufficient stability.

Drive in such a way that you always have full control over the tractor with the attached machine.
 In so doing, take your personal abilities into account, as well as

the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.

• Before transportation, fasten the side locking of the tractor lower link, so that the connected or coupled machine cannot swing back and forth.







Risk of falling from the machine if riding against regulations.

It is forbidden to ride on the machine and/or climb the running machine.

Instruct people to leave the loading site before approaching the machine.



DANGER

Empty all hoppers.

The brake system is only designed for journeys with empty hoppers.

Once the work is complete, put the machine in the transport position in the field

- 1. Retract the track marker (Fig. 132/1) and put it in the transport position.
 - 1.1 Select "Fold track marker into transport position" on the **AMATRON+**.
 - 1.2 Actuate tractor control unit 2.





2. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.





DANGER

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

- 1. Empty the fertiliser tank (see section "Emptying the fertiliser hopper and/or dosing unit", on page 146).
- Empty the seed hopper (see section Remove deposits on the closing slider and/or empty seed hopper, on page 145).
- 3. Close the tarpaulins (Fig. 133/1).
- 4. Attach the rubber lashing straps to the tarpaulin hooks (Fig. 133/2).



Lift up and lock the ladder in place (Fig. 134).



CAUTION

Risk of getting crushed. Hold the ladder only at the marked positions.



Fig. 134



Lift up and lock the ladder (Fig. 134) in place after use.

If the ladder remains down, it may be damaged by the drawbar when the machine is turned.



Transportation

- 6. Retract the machine extension arms (see section "Extending and retracting the machine extension arms and track marker", on page 131).
- Check the lighting system for operation (see section "Transportation equipment", on page 47).
- 8. Disable the tractor control units.



Fig. 135



The warning boards and yellow reflectors must be clean and undamaged.



DANGER

Disable the tractor control units during transportation.

9. Switch off the **AMATRON+**. (see **AMATRON+** operating manual).



DANGER

Switch off the **AMATRON**⁺ during transportation.



Fig. 136

Transportation



- ¹⁾ The permissible maximum speed for attached work equipment differs in the various countries according to national traffic regulations. Ask your local importer / machine dealer about the maximum permissible speed on public roads.
- ²⁾ The machine is not approved for use in Germany and several other countries without its own brake system (see section 6.1.3).



10 Use of the machine

When using the machine, observe the information in the sections

- "Warning symbols and other labels on the machine", as of on page 18 and
- "Safety information for the operator", on page 28.
- Observing this information is important for your safety.

WARNING

Risk of breaking during operation, insufficient stability and insufficient tractor steering and braking power on improper use of the tractor.

Comply with the maximum load of the connected machine and the permissible axle and drawbar loads of the tractor. Only drive with the hoppers empty.

WARNINGRisk of crushing, cutting, being caught and/or drawn in, or impact through insufficient stability and tipping of the tractor and/or the attached machine.Drive in such a way that you always have full control over the tractor and attached machine.Also take your own level of expertise, as well as the road, traffic, visibility and weather conditions, and the road-handling characteristics of the tractor and connected machine into account.

 WARNING

 Risk of crushing, being caught and/or drawn in and trapped if the intended protective equipment is not used during machine operation.

 Only ever start up the machine when the protective equipment is fully installed.



Only actuate the tractor control units from inside the tractor cab.





WARNING

Risk of being crushed, caught or struck by damaged components or foreign objects ejected from the machine.

Before switching on, check that the tractor's universal joint shaft speed corresponds to the permissible drive speed of the machine.

WARNING

Risk of crushing, entrapment and entanglement and risk of foreign objects being hurled out in the danger area of the driven universal joint shaft.

- Direct people away from the danger area of the machine before switching on the tractor's universal joint shaft.
- Stay at a safe distance from the driven universal joint shaft.
- Direct people away from the danger area of the driven universal joint shaft.
- Switch off the tractor engine immediately if a dangerous situation occurs.



10.1 Extending and retracting the machine extension arms and track marker (transport/working position)



Align the tractor and machine straight on a flat surface before you fold the machine's extension arm out or in.

Position the tractor in front of the machine at a slight angle. This makes the locking hooks (Fig. 137/1) for the machine extension arms more visible.



Fig. 137



Switch off the tractor's universal joint shaft before retracting the machine extension arms and only switch it back on once they are fully extended.



Always carry out the instructions shown on the display (**AMATRON**⁺) before acknowledging them as otherwise parts of the machine may collide.



10.1.1 Extend the machine extension arms (from transport to working position)

- 1. Apply the tractor parking brake.
- 2. Switch on the tractor engine.
- 3. Switch off the tractor's universal joint shaft.
- 4. Switch on the AMATRON+.
- Select "Retract/extend machine" on the **AMATRON+**.
- 5. Lift the machine extension arms (Fig. 138/1) out of the transport lock (Fig. 138/2).
 - 5.1 Actuate control unit 1 until both machine extension arms come free.



Fig. 138



- 6. Extend the machine extension arms.
 - 6.1 Actuate control unit 2 until the machine extension arms are fully unfolded (see Fig. 139).
 - 6.2 Set tractor control unit 2 to the circulating position and use this setting when work is in progress.



- 7. Fold the rear frame into the working position (see Fig. 140).
 - 7.1 Actuate control unit 1 until the rear frame is fully folded out, i.e. rear frame in the working position and seed hoppers vertically upright.
 - → The star wheel lowers when the rear frame folds out.
 - 7.2 Set tractor control unit 1 to the neutral position and use this setting when work is in progress.



Fig. 140

10.1.2 Folding the track markers



DANGER

Direct people away from the danger area of the track marker.

10.1.2.1 Fold the track markers into the working position

- 1. Select "Fold track marker" on the **AMATRON+**.
- 2. Actuate control unit 1 until both track markers are vertically upright.



Fig. 141

10.1.2.2 Fold the track markers into the transport position

- 1. Select "Fold track marker" on the **AMATRON+**.
- Actuate control unit 1 until both track markers butt against the machine extension arms.



Fig. 142



10.1.3 Retract the machine extension arms (from working position into transport position)

- 1. Apply the tractor parking brake.
- 2. Switch on the tractor engine.
- 3. Switch off the tractor's universal joint shaft.
- 3. Select "Retract/extend machine" on the **AMATRON+**.
- 4. Fold the track markers into the transport position (see section "10.1.2", on page 133).



Before retracting the machine extension arms, fold the track marker into the transport position.



- 5. Raise the rear frame until it is roughly 10⁰ short of the vertical position (see Fig. 143).
 - 5.1 Actuate control unit 1 until the rear frame is raised and the seed hoppers are in the transport position.
 - \rightarrow Actuation of control unit 1 causes the star wheel to lift up.



- 6. Retract the machine extension arms.
 - 6.1 Actuate control unit 2 until both machine extension arms (Fig. 144/1) butt against the runners (Fig. 144/2) of the transport locking mechanism.

Be careful to avoid any collisions with the machine.

Adjust the tilt of the rear frame (see Fig. 143) if necessary.

- 6.1 Actuate tractor control unit 1 until
- the machine extension arms lower and are arrested by the locking hooks (Fig. 144/3)
- o the rear carrier (Fig. 145) with light fittings and warning signs is folded into the road transport position.



Fig. 144



Fig. 145





DANGER

Check that the locking hooks are fitted correctly (Fig. 144/3).

7. Place the machine in a horizontal position by operating the tractor's lower link.



The machine requires sufficient ground clearance in all driving situations.







10.2 Filling the hopper

DANGER
 Couple the machine to the tractor before filling the hopper (see section "Coupling and uncoupling the machine", on page 93).
 Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and re- move the ignition key.
 The seed box is pressurised when the blower fan is run- ning.
• Observe the approved filling levels and total weights.
 Transportation of the machine on roads and lanes with filled hoppers is prohibited. The brake system is designed for an empty machine only.

10.2.1 Filling the seed hopper

- 1. Lower the rear frame.
- 2. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- Fold the loading boards down (see Fig. 147).









7. The machine is equipped with two seed hoppers. Repeat the procedure as described.

- 4. Open the lid (Fig. 148/1) of the hopper.
 - 4.1 Unlock the lever (Fig. 148/2).
 - 4.2 Open the lid (Fig. 148/1) by operating the lever.
- 5. Fill the hopper.
- 6. Close and lock the lid.



10.2.2 Filling the fertiliser tank

1. Release the rubber loops (Fig. 149/1) together with the cover hook (Fig. 149/2).



Fig. 149

2. Lift the ladder (Fig. 150) out of its locking device and lower it to the stop.



CAUTION

Risk of crushing. Hold the ladder only at the marked positions.

Fig. 150

- 3. Climb on the loading board via the ladder.
- 4. Release the rubber loops on the end face.
- 5. Open the swivel cover.
- 6. Remove other parts from the hopper if necessary.
- Adjust the level sensor(s) in the hopper (see section "Setting the level sensor", on page 108).



Fig. 151



Use of the machine

8. Switch the interior lighting of the seed hopper on and off for night-time working.

The interior lighting is coupled with the driving lights of the tractor.



Fig. 152

- 9. Fill the hopper
 - o with sacked merchandise from a supply vehicle (see section "10.2.2.1", on page 139)
 - o with a filling auger from a supply vehicle (see section "10.2.2.2", on page 139)
 - o from bulk bags (see section "10.2.2.3", on page 140).
- 10. Close the swivelable hopper cover and secure it with rubber loops.
- 11. Push the ladder (Fig. 150) up and lock in place.



Push up the ladder (Fig. 150) and lock it in place after use. The drawbar can damage the lowered ladder when the machine is turned.



10.2.2.1 Load the fertiliser tank with sacked merchandise from a supply vehicle

- 1. Drive the machine up to the open loading edge of the trailer.
- 2. Put the tractor on an extreme steering lock (approx. 90° to the machine).
- 3. Reverse onto the supply vehicle until the loading board is lying up against the supply vehicle with no gap, but is not touching the vehicle (marshalling person required).
- 4. Raise / lower the tractor's lower link until the loading board and the loading area of the trailer are level.
- 5. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- Fill the hopper from the loading board only and make sure you always maintain a firm grip when transferring the sacked merchandise to the hopper.



Fig. 153



10.2.2.2 Filling the fertiliser tank with a filling auger

- 1. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 2. Approach the machine carefully with the supply vehicle.
- 3. Load the hopper via the filling auger taking the manufacturer's directions into account.



Fig. 154



CAUTION

Never move between the supply vehicle and the machine.



10.2.2.3 Filling the fertiliser tank using bulk bags

- 1. Set the machine down on a flat surface.
- 2. Apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 3. Approach the machine carefully with the bulk bag.
- 4. Climb onto the loading board.
- 5. Unload the contents of the bulk bag into the hopper.



Fig. 155



DANGER

Never move between the supply vehicle and the machine. Never stand under suspended loads.

10.2.3 Entering filling quantities in the **AMATRON**⁺

If known, enter the quantities of seed and fertiliser filled in the **AMATRON**⁺ (see **AMATRON**⁺ operating manual).

The amount remaining in the hoppers (in kg) at which the level alarm is to be triggered can then be entered.

The AMATRON+ triggers an alarm, if

- the theoretically calculated remaining amount is reached and the level sensor is logged off on the AMATRON⁺ or
- the level sensor is no longer covered with fertiliser.



10.3 Starting work



Fig. 156

Ŵ	 DANGER Direct people away from the danger area of the machine, particularly the swivelling range of the machine extension arms, the rear frame, the track marker and the universal joint shaft-driven hydraulic pump. Actuate the tractor's control units only in the tractor cab.
	 Place the machine in a more or less horizontal position. Lower/raise the tractor's lower link. Extend the machine extension arms and track marker into the working position (see section "Extending and retracting the machine extension arms and track marker", on page 131). Put the track marker (Fig. 132/1) in the working/standby position (see AMATRON⁺ operating manual).
	Pull the machine slightly forwards when lowering the rear frame. Never drive backwards once the coulters are in the ground as this could block them. Before stopping in a field, raise the coulters to the point where they have just emerged from the soil (risk of blockage).



4. Switch on the tractor's universal joint shaft to apply fertiliser (speed 1,000 rpm).



Information to be observed on working with the universal joint shaft-driven hydraulic pump.

- Before switching on the universal joint shaft, observe the safety instructions relevant to operation of the universal joint shaft in the section entitled "Safety information for the operator", on page 36.
- Observe the permissible drive speed of the tractor's universal joint shaft.
- In tractors equipped with a hydraulically or pneumatically switchable universal joint shaft, the universal joint shaft must only be switched on when the engine is idling to prevent damage to the hydraulic pump.
- 5. Switch on the blower fan.
- 6. Start.
- 7. Check that the required air pressure of 50 mbar has been reached as soon as the holes in the singling system are occupied by seed grains, and adjust this pressure if necessary. Adjust the air pressure to the required setting by changing the blower fan speed [see section "Blower fan (singling)", on page 70].
- 8. Check the placement depth and grain spacing of the seed as well as the placement depth of the fertiliser, and adjust if necessary (see section "Checking the planting depth and grain spacing", on page 112)
 - o after 100 m
 - o after changing from light to heavy soil and vice-versa.



10.4 During work

Retracting the track marker if an obstacle is approaching

Press the obstacle button to retract the active track marker and prevent it from striking an obstacle and being damaged (see **AMATRON+** operating manual).

When the obstacle button is activated the track marker is raised

- sowing and fertilising of the field continues
- the coulter frame is not lifted up.

Locking the track marker actuation

If you do not require the track marker, raise both track markers (see Fig. 157) or put both track markers in the transport position (see Fig. 158)

Then disable track marker operation (see **AMATRON+** operating manual).







Fig. 157

Visual check of fertiliser distributor heads

From time to time, check the fertiliser distributor heads for soiling.



Contamination and seed remains can block up the distributor heads and have to be removed immediately [see section "Cleaning the fertiliser distributor head", on page 158].



10.4.1 Turning at end of the field

Before turning at the end of the field

- 1. Slow down your travel speed.
- 2. Do not reduce the tractor's rotational speed too far so that the hydraulic functions continue without interruption at the headland.
- 3. Actuate tractor control unit 1 until the following are fully raised
 - o the active track marker
 - o the star wheel
 - o the coulter.
- 4. Turn the combination.



Fig. 159



Only reduce the universal joint shaft speed if the star wheel has been raised and there is no more fertiliser in the pipes between the injector sluice and the fertiliser coulters. If the fertiliser in the pipes stops moving it may block them.



When the seed hopper is raised, e.g. when turning at the end of the field, this has the effect of shifting the seed down.

After turning at the end of the field

- 1. Actuate tractor control unit 1 until the following are fully lowered
 - o the coulter
 - o the star wheel
 - o the active track marker
- 2. Actuate tractor control unit 1 for a further 15 seconds then put it in the neutral position.

Actuate tractor control unit 1 in the neutral position when work is in progress.



DANGER

After turning, if control unit 1 is actuated, the opposite track marker is moved to the working position.


10.5 End of work in the field

Only actuate the tractor control units from inside the tractor cab.

- 1. Switch off the tractor's universal joint shaft.
- 2. Switch off the blower fan (singling).
- 3. Fold the track markers into the transport position (see section "10.1.2", on page 133).
- 4. Empty the seed hopper (see section 10.6, below).
- 5. Empty the fertiliser tank (see section "10.7", on page 146).
- 6. Put the machine extension arms in the transport position (see section 10.1, on page 131).
- 7. Switch off the AMATRON+.

10.6 Remove deposits on the closing slider and/or empty seed hopper





WARNING

The seed hopper is pressurised when the blower fan is running.

- 1. Pull the closing slider (Fig. 160/1) out of the seed hopper.
- → Deposits that have accumulated on the closing slider drop out.



Fig. 160

Use of the machine



- 2. Place a suitable container under the seed hopper.
- 3. Pull out the screen slider (Fig. 161/1) to empty the seed hopper.
- 4. Clean and reinstall the sliders.



Fig. 161

10.7 Emptying the fertiliser hopper and/or dosing unit



DANGER

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

10.7.1 Emptying the fertiliser tank

1. Open the slider (Fig. 162) and empty the fertiliser into the calibration trough or a suitable container.



A commercially available hose (DN 140) can be fitted.

2. Empty the residue (see section Emptying the dosing unit, below).





10.7.2 Emptying the dosing unit

1. Push a calibration trough into the mounting under the dosing unit.



Fig. 163





If you do not wish to empty the hopper, close the sliders (Fig. 164/1) (see section "Installing/removing the dosing roller", on page 114) on all dosing units.



Fig. 164



Fig. 165



Fig. 166

- 2. Empty the residue from the hopper and dosing unit.
 - 2.1 Turn the handle (Fig. 165/1).
- \rightarrow The dosing unit is emptied via the residue emptying flap.
- The machine is equipped with two dosing units. Repeat the procedure as described.
- 3. Open and empty both injector sluices (Fig. 166) (see section 5.8.3, on page 76).



- 4. Empty the dosing units and the dosing rollers completely.
 - 4.1 Turn the star wheel (Fig. 167) anticlockwise with the calibration crank.
- To completely clean the dosing unit, remove and reinstall the dosing roller (see section "Installing/removing the dosing roller", on page 114).



Fig. 167

- 6. Open the slider(s) (Fig. 117/1) and secure (clip pin).
- 7. Close the residue emptying flap(s) (Fig. 165/1).
- 8. Close the injector sluice flap(s) (Fig. 166/1).
- 9. Secure the calibration trough(s) on the transport bracket (Fig. 73).
- 10. Clip the calibration crank into its transport bracket.



11 Faults

Δ	WARNING
	Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through
	 Unintentional falling of the machine raised using the trac- tor's three-point hydraulic system.
	 Unintentional falling of raised, unsecured machine parts.
	 Unintentional start-up and rolling of the tractor-machine combination.
	Secure the tractor and the machine against unintentional start-up and rolling, before you eliminate any faults on the machine. On this subject see section 6.2 on page 91.
	Wait for the machine to stop, before entering the machine danger area.

11.1 Display of amount remaining

If the residual supply in one of the hoppers is undercut (and if the level sensor is set correctly), the **AMATRON+** displays a warning message (Fig. 168) which is accompanied by an acoustic signal.

The residual supply should be large enough to prevent fluctuations in the spread rate.

Order	Cirrus	machine type:
drill calibr.	6	order No.:
machine	No.: 15 6.0m	tramline rhythm working width:
Setup	too	leve
	ົພ	1202

Fig. 168



11.2 Cleaning the seed tube



If the coulter in the seed planting area is blocked (Fig. 169/1), the carrier air flow breaks away.

Seed is no longer transported through the seed hose. The **AMATRON+** issues an alarm.



(Fig. 170).

Pull the machine forward when lowering the coulter into the ground.

Blockages may occur when driving backwards or if the coulter is lowered on to the field and the machine is not pulled forwards. 1 30c476-4

Fig. 169









4. Pull out the safety splint (Fig. 171/1).

1. Switch off the blower fan (singling).

 Raise the coulters to the point where they have just come clear of the ground.
 Slacken, but do not remove, the two screws



- 5. Fold up the press rollers.
- 6. Insert the safety splint (Fig. 172/1).
- 7. Clear the blockage in the shoot pipe, remove the shoot pipe to clean it if necessary.
- 8. Put the coulter in the working position.





Pull several times on the sealing lip (Fig. 173/1) below the relevant seed tube.

The air flow in the seed tube breaks away in the event of a blockage and the supply of seed in the seed tube is interrupted. Seed accumulates on the sealing lip.

The grains fall when the sealing lip (Fig. 173/1) is pulled down and emerge from the housing at the opening provided.



Fig. 173



If the sealing lip is pulled when the fan is running this makes cleaning easier.



11.3 Failure of the **AMATRON**⁺ when work is in progress

If the **AMATRON**⁺ fails when work is in progress on the field it will not be possible to continue the sowing operation. The machine can be retracted for the purposes of road transportation (see section 11.3.1, below).

11.3.1 Transporting the machine to the specialist workshop following failure of the **AMATRON**⁺

Δ.	DA	NGER
<u> </u>	٠	Only actuate the tractor control units from the tractor cab.
	•	Before actuating the tractor control units, direct any people out of the danger area.
	•	Only fold the machine using the emergency override if the AMATRON ⁺ fails.

- 1. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- 2. Remove the control block casing (Fig. 174).
- 3. Direct people out of the danger area.
- 4. Screw the two valve pins (Fig. 174/1) out of the valves and lock in place by turning them through 45.
- 5. Fold in the track marker.
 - 5.1 Actuate tractor control unit 1
 - \rightarrow The track markers fold in.
- 6. Fold in the boom.
 - 6.1 Actuate tractor control unit 2
 - \rightarrow The booms fold in.





7. Put the machine in road transport position (see section 9, on page 124).



DANGER

Go to the nearest specialist workshop without delay.



Put the valve pins (Fig. 174) in the normal position once the repair is complete.



11.4 Fault table

Fault	Possible cause	Remedy
Track marker not changing	Working position sensor set in- correctly	Set the sensor
	Working position sensor defec- tive	Replace the working position sensor
	Hydraulic valve jamming	Replace the hydraulic valve
The track marker switches too early	Working position sensor set in- correctly	Set the sensor
	Alarm limit wrongly set	Alter the alarm limit
	Oil volume too low or too high	Set the oil volume
	Fan sensor defective	Replace the fan sensor
Distance sensor (star wheel/Vario gearbox) not functioning	Distance sensor defective	Replace the distance sensor
Grains are not placed with the target spacing	The incorrect calibration value (pul./100) is being used for sow-ing	Determine the calibration value (pul./100) and calibrate the AMATRON+ again.
	The seed hose is not fully in- serted into the sockets	Mount the hose properly (see section 11.2, on page 150)
Warning message: "Pressure of singling"	The system is leaking. Compressed air may escape un- checked.	Check the air-ducting hoses. Check the seed hopper for leak- tightness.
Gaps in entire rows	The accumulation of grains is preventing singling	Cleaning the seed tube, see on page 150.
	Foreign objects in front of hole rows	Remove foreign objects
The outer rows are not occupied.	The screen slider is blocked.	Remove deposits, see on page 145)
The electric motors of the sin- gling drums are not starting	The "working position" sensor requires adjustment or is defec- tive	Adjust/replace sensor



12 Cleaning, maintenance and repairs





WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through unprotected danger points

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the machine.
- Replace defective protective equipment with new equipment.





12.1 Securing the connected machine

Before working on the machine, place the machine connected to the tractor on the stand (Fig. 175/1) to prevent unintentional lowering of the tractor's lower link.



Fig. 175

12.2 Cleaning the machine

Ŵ	DANGER Wear a face mask. Do not inhale toxic dressing dust when re- moving dressing dust by means of compressed air.
\wedge	DANGER Fully extend or retract the machine before cleaning it.
	Never clean the machine if the rear frame and machine extension arms are not fully extended/retracted.
	•
	 Pay particular attention to the brake, air and hydraulic hose lines.
	 Never treat brake, air and hydraulic hose lines with petrol, ben- zene, petroleum or mineral oils.
	 After cleaning, grease the machine, in particular after cleaning with a pressure washer/steam jet or liposoluble agents.
	Observe the statutory requirement for the handling and removal of cleaning agents.





- 1. To clean, always place the machine connected to the tractor on the stand (Fig. 175/1).
- 2. Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.
- Empty the seed hopper (see section Remove deposits on the closing slider and/or empty seed hopper, on page 145).
- 4. Empty the fertiliser tank and dosing unit (see section Emptying the fertiliser hopper and/or dosing unit, on page 146).
- 5. Clean the fertiliser distributor head (see section Cleaning the fertiliser distributor head, on page 158).
- Fully extend or retract the machine before cleaning it (see section 10.1, on page 131). Never clean the machine if the rear frame and machine extension arms are not fully extended/retracted.
- 7. Clean the machine with water or with a pressure washer.



12.2.1 Remove the singling drum to clean it

1. Empty the seed hopper (see section "10.6", on page 145).



Only use the screen and closing slider again once the housing cover (Fig. 176/1) is attached to the housing.

- 2. Release the knurled nuts (Fig. 176/2).
- 3. Remove the housing cover (Fig. 176/1).



Do not open the housing cover on the opposite side with the electric motor.

4. Pull the singling drum (Fig. 177) out of the housing.



To prevent damage to the sealing lips, turn the drum slowly in a clockwise direction when removing/installing it.



Fig. 176



Fig. 177



12.2.2 Cleaning the fertiliser distributor head (specialist workshop)

- 1. Fold out the machine's extension arm (see section 10.1, on page 131).
- Switch off the tractor's universal joint shaft and apply the tractor parking brake, switch off the tractor engine and remove the ignition key.

WARNING

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

There is a risk of slipping on the route to the distributor head and also in the area around the distributor head.

- 3. Slacken the wing nuts (Fig. 178/2) and remove the clear plastic cap (Fig. 178/1) from the distributor head.
- 4. Remove any impurities with a brush, and wipe out the distributor head and plastic cap with a dry cloth.
- 5. Refit the plastic cap.



Fig. 178



12.2.3 Fastening the seed hose

The seed hoses (Fig. 179/2) are secured by the clamping rings (Fig. 179/1).

Each clamping ring (Fig. 179/1) has two possible positions:

Position A: seed hose released

Position B: seed hose secured

The seed hose can be installed and removed in position A.

The seed hose is secured in position B.

Always insert the seed hose as far as it will go to prevent seed accumulating in front of the seed tube. Once installed, mark the position of the hoses. This means you will notice immediately if a hose has become detached.



Fig. 179



12.3 Lubrication specifications



WARNING

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

The lubrication points on the machine are marked with a foil sticker (Fig. 180).

Carefully clean the lubrication nipple and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease out of the bearings completely and replace it with new grease.





Lubricants

For lubrication, use a lithium saponified, multipurpose grease with EP additives:

Company	Lubricant designation
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Ratinax A



12.3.1 Overview of lubrication points



Fig. 181

Fig. 181/	Assembly	Quan- tity	see Figure	Lubrication interval [h]
1	Tensioned crosspiece	3	Fig. 182	25
2	Pivot points, hydraulic cylinder	12	Fig. 183 to Fig. 186	25
3	Pivot points, machine extension arms	4	Fig. 187	25
4	Track markers	6	Fig. 188 to Fig. 189	25
5	Axis	See sect	ion 12.4, on page 163	





Fig. 182



Fig. 183



Fig. 185



Fig. 184







Fig. 187







Fig. 188

Fig. 189

12.4 Maintenance schedule – overview



Before commissioning	Specialist workshop	Check and service the hydraulic hose lines. The inspection must be documented by the operator.	Section 12.4.8
		Checking the oil level in the Vario gearbox	Section 12.4.1
		Check the running gear tyre pressure	Section 12.4.3
		Checking the tyre pressure of the support wheels	Section 12.4.4
After the first 10 operating hours	Specialist workshop	Check tightening torques of wheel nuts (spe- cialist workshop)	Section 12.4.5
	Specialist workshop	Check and service the hydraulic hose lines. The inspection must be documented by the operator.	Section 12.4.8
After the first 20 operating hours	Specialist workshop	Check that all screw connections are tight.	Section 12.5
10 operating hours after a wheel change	Specialist workshop	Check tightening torques of wheel nuts (spe- cialist workshop)	Section 12.4.5



Daily before starting work		Visual check of the dual circuit air brake sys- tem	Section 12.4.15.1
		Drain the compressed-air tank	Section 12.4.15.5
		Visual check of lower link pin	Section 12.4.2
When refilling the seed/fertiliser tank,		Checking the planting depth and grain spac- ing	Section 8.1.7
		Remove surplus grains from sealing lips	Section 11.2
		 Check the seed and fertiliser hoses for contamination for correct seating for damage 	
During the work		Check fertiliser distributor head(s) for contamination and clean if necessary (see section "Cleaning the fertiliser distributor head")	Section 12.2.2
		Check fertiliser dosing units for contamination and clean if necessary (see section "Emptying the fertiliser hopper and/or dosing unit")	Section 10.7
Daily at the end of		Cleaning the machine (as required)	Section 12.2
WORK		Remove deposits on the interlocking bar	Section 10.6
Every week, at the lat- est every 50 operating hours	Specialist workshop	Check and service the hydraulic hose lines. The inspection must be documented by the operator.	Section 12.4.8
Before the season, then every 2 weeks		Check the running gear tyre pressure	Section 12.4.3
		Checking the tyre pressure of the support wheels	Section 12.4.4
		Checking the oil level in the Vario gearbox	Section 12.4.1
Every 200 operating hours	Specialist workshop	Lubricating the brake shaft bearings (special- ist workshop)	Section 12.4.9



Every 3 months, at the latest every 500 oper-	Specialist workshop	Brake inspection (specialist workshop)	Section 12.4.15.2
ating nours		External check of compressed-air tank (dual circuit air brake system	Section 12.4.15.6
	Specialist workshop	Checking the pressure in the compressed-air tank of the dual-circuit air-brake system (specialist workshop)	Section 12.4.15.7
	Specialist workshop	Leak-tightness test for dual circuit air brake system (specialist workshop)	Section 12.4.15.8
	Specialist workshop	Cleaning the filter for the dual circuit air brake system line (specialist workshop)	Section 12.4.15.9
Every 6 months before the season	Specialist workshop	Check and service the hydraulic hose lines. The inspection must be documented by the operator.	Section 12.4.8
Every 6 months after		Servicing roller chains and chain wheels	Section 12.4.6
the season		Servicing the sowing shaft bearing	Section 12.4.7
Every 6 months, and every	Specialist workshop	Lubrication of the ECO-Master automatic linkage adjuster (specialist workshop)	Section 12.4.11
at the latest	Specialist workshop	Replacing the grease in the wheel hub bear- ings (specialist workshop)	Section 12.4.10
	Specialist workshop	Adjusting the wheel brake on the linkage ad- juster (specialist workshop)	Section 12.4.12
	Specialist workshop	Functional check of the automatic linkage ad- juster (specialist workshop)	Section 12.4.13
	Specialist workshop	Checking/adjusting the bearing clearance of the wheel hubs (specialist workshop)	Section 12.4.14
	Specialist workshop	Checking the brake drum for soiling (special- ist workshop)	Section 12.4.15.3
	Specialist workshop	Brake lining inspection (specialist workshop)	Section 12.4.15.4
Following every brake pad change	Specialist workshop	Lubrication of the ECO-Master automatic linkage adjuster (specialist workshop)	Section 12.4.11



12.4.1 Checking the oil level in the Vario gearbox

- 1. Position the machine on a horizontal surface.
- 2. Check the oil level.

The oil level must be visible in the oil sight glass (Fig. 190/1).

There is no need to change the oil.

The Vario gearbox is filled via the oil filler neck (Fig. 190/2).

For the type of transmission oil required, refer to the table (Fig. 191).



Hydraulic fluid grades and fill level of the Vario gearbox		
Total filling level:	0.9 litres	
Transmission fluid (alternatives):	Wintershall Wintal UG22 WTL-HM (ex-works)	
Transmission nulu (alternatives).	Fuchs Renolin MR5 VG22	

Fig. 191

12.4.2 Visual check of lower link pin



WARNING

Risk of crushing, catching, trapping or impact when the machine unexpectedly releases from the tractor.

Check the lower link pin for conspicuous defects whenever the machine is coupled. Replace the drawbar if there are any clear signs of wear to the lower link pin.



12.4.3 Check the running gear tyre pressure

Check compliance with specified tyre pressure (see table Fig. 192).



Observe the inspection intervals (see section Maintenance schedule – overview, on page 163).

Tyres	Nominal tyre pressure	
700/55-26.5	1.8 bar	

Fig. 192

12.4.4 Checking the tyre pressure of the support wheels

Check compliance with specified tyre pressure (see table Fig. 193).



Observe the inspection intervals (see section Maintenance schedule – overview, on page 163).

Tyres	Nominal tyre pressure	
400/50-15.5	3.5 bar	
		30c639-3

Fig. 193



12.4.5 Check tightening torques of wheel nuts (specialist workshop)

Check compliance with specified tightening torques (see table Fig. 194).



Observe the inspection intervals (see section Maintenance schedule – overview, on page 163).

		rightening torque
1) M20x	1.510.9	400 Nm



Fig. 194

12.4.6 Servicing roller chains and chain wheels

After the season carry out the following work on all roller chains:

- clean (including the chain wheels and chain tensioner)
- check their condition
- Iubricate with low-viscosity mineral oil (SAE30 or SAE40).

12.4.7 Servicing the sowing shaft bearing

Lightly grease the seat of the sowing shaft bearing with a thin mineral oil (SAE 30 or SAE 40).



Fig. 195



12.4.8 Hydraulic system

WARNING	
Risk hyd	c of infection through the high pressure hydraulic fluid of the raulic system entering the body.
•	Only a specialist workshop may carry out work on the hydraulic system.
•	Depressurise the hydraulic system before carrying out work on the hydraulic system.
•	When searching for leak points, always use suitable aids.
•	Never attempt to plug leaks in hydraulic lines using your hand or fingers.
	Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries.
	If you are injured by hydraulic fluid, contact a doctor immedi- ately. Risk of infection.
	WAI Risk hyd • •

•	When connecting the hydraulic hose lines to the hydraulic sys- tem of connected machines, ensure that the hydraulic system is depressurised on both the drawing vehicle and the trailer.
•	Ensure that the hydraulic hose lines are connected correctly.
•	Regularly check all the hydraulic hose lines and couplings for damage and impurities.
•	Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
•	Replace the hydraulic hose line if it is damaged or worn. Only use original AMAZONE hydraulic hose lines.
•	The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connec- tions are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk poten- tial into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
•	Dispose of old oil in the correct way. If you have problems with disposal, contact your oil supplier.
•	Keep hydraulic fluid out of the reach of children.
•	Ensure that no hydraulic fluid enters the soil or waterways.



12.4.8.1 Labelling hydraulic hose lines

The labelling of the assembly provides the following information:

Fig. 196/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose line
 (08/02 = Year / Month = February 2008)
- (3) Maximum approved operating pressure (210 BAR).



12.4.8.2 Maintenance intervals

After the first 10 operating hours, and then every 50 operating hours

- 1. Check all the components of the hydraulic system for tightness.
- 2. If necessary, tighten screw unions.

Before each start-up

- 1. Check hydraulic hose lines for visible damage.
- 2. Eliminate any scouring points on hydraulic hose lines and pipes.
- 3. Replace any worn or damaged hydraulic hose lines immediately.

12.4.8.3 Inspection criteria for hydraulic hose lines



For your own safety, comply with the following inspection criteria.

Replace hydraulic hose lines, on determining any of the following during the inspection:

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose or the hose line. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Untight points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the assembly.
- Corrosion of assembly, reducing the function and tightness.



- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the assembly is decisive for determining these six years. If the date of manufacture on the assembly is "2008", then the hose should not be used beyond February 2014. See also "Labelling of hydraulic hose lines".

12.4.8.4 Installation and removal of hydraulic hose lines

•	When installing and removing hydraulic hose lines, always observe	
	the follo	wing information:
-	• Or	ly use original AMAZONE hydraulic hose lines.
	• En	sure cleanliness.
	• Th op	e hydraulic lines must always be installed so that, under all erating conditions:
	0	There is no tension, apart from the hose's own weight.
	0	There is no possibility of jolting on short lengths.
	0	Outer mechanical influences on the hydraulic hose lines are avoided.
		Use appropriate arrangements and fixing to prevent any scouring of the hoses on components or on each other. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.
	0	The approved bending radii may not be exceeded.
	 When the second s	nen connecting a hydraulic hose line to moving parts, the hose gth must be appropriate so that the smallest approved bend- radius is not undershot over the whole area of movement d/or the hydraulic hose line is not overtensioned.
	• Fix usi cha	the hydraulic hose lines to the intended fixing points. Avoid ng hose clips at points where the natural movement and anges in length of the hose will be restricted.
	• It is	s forbidden to paint over hydraulic hose lines.



12.4.9 Lubricating the brake shaft bearings (specialist workshop)

Lubricate the inside and outside of the brake shaft bearings (Fig. 197/1).









12.4.10 Replacing the grease in the wheel hub bearings (specialist workshop)

Changing the grease in the wheel hub bearing (Fig. 199/1):

1. Jack up the machine safely at the designated points (Fig. 198).





- 2. Release the brake.
- 3. Remove the wheels and dust caps.
- 4. Remove the lynch pin and unscrew the axle nut.





- 5. Use a suitable extraction device to remove the wheel hub and brake drum, taper roller bearing and sealing elements from the axle stub.
- 6. Label the removed wheel hubs and bearing cages so that you do not confuse them when refitting.
- 7. Check the tapered-roller bearing for wear, replace if necessary
- Clean the brakes, check for wear, sound condition and proper operation and replace worn parts.
 The interior of the brake must be kept free from lubricants and dirt deposits.
- 9. Thoroughly clean the interior and exterior of the wheel hubs. Remove all traces of old grease. Thoroughly clean the bearings and seals (diesel oil) and check for reusability.

Before refitting the bearings, lightly grease the bearing seats and then refit all parts in the reverse order. Carefully fit interference fit parts using tubular bushings without twisting or damaging them.

The bearings, the wheel hub cavity between the bearings and the dust cap must be smeared with grease before fitting. The grease should fill approximately a quarter to a third of the space in the fitted hub.

10. Fit the axle nut and adjust the bearing and brake. Finally, carry out a function check and an appropriate test run and rectify any detected faults.



12.4.11 Lubrication of the ECO-Master automatic linkage adjuster (specialist workshop)

Lubrication of the ECO-Master automatic linkage adjuster

(Fig. 200/1):

- 1. Remove the rubber stopper cap.
- 2. Apply grease (80g) until a sufficient quantity of clean grease emerges at the adjusting screw.
- Slacken the adjusting screw by approximately one turn with a ring spanner. Actuate the brake lever several times by hand. The automatic readjustment should function smoothly. Repeat several times, if necessary.
- 4. Refit the stopper cap. Apply grease again.



Fig. 200

12.4.12 Adjusting the wheel brake on the linkage adjuster (specialist workshop)

Measure the free travel of the long-stroke diaphragm cylinder pressure rod:

- 1. Move the linkage adjuster by hand (Fig. 201) in the pressure direction.
- 2. Measure the free travel (Fig. 201/a) of the long-stroke diaphragm cylinder pressure rod.

The maximum free travel distance (Fig. 201/a) should be 35 mm.

Adjust the wheel brake if the free travel is greater than 35 mm.

Adjusting the wheel brake at the linkage adjuster:

The wheel brake is set at the adjustment hexagon nut of the linkage adjuster (Fig. 202/1).

Set the free travel (Fig. 201/a) to 10-12% of the brake lever length (Fig. 201/B).

Example:

Lever length B	=	150 mm
Free travel a	=	15 – 18 mm.







Fig. 202



12.4.13 Functional check of the automatic linkage adjuster (specialist workshop)

The basic settings of the automatic linkage adjuster (Fig. 203/1) are made in the same way as the standard linkage adjuster.

The required free travel is set automatically once the cam has rotated through approximately 15° .

The ideal lever position (which cannot be altered owing to the attachment of the cylinder) is approx. 15° short of perpendicular, the same as the actuation direction.

Functional check of the automatic linkage adjuster:

- 1. Remove the rubber stopper cap.
- 2. Using a ring spanner, turn back the adjusting screw (arrowed) through approx. ³/₄ turn anti-clockwise.

The free travel must be at least 50 mm for a lever length of 150 mm.

- 3. Actuate the brake lever several times by hand. During this process
 - o the automatic readjustment should be smooth
 - o the coupling should audibly engage
 - the adjusting screw should turn slightly in a clockwise direction on the return stroke.
- 4. Refit the stopper cap.
- 5. Lubricate using only BPW special longlife grease ECO Li91.







Fig. 204



12.4.14 Checking/adjusting the bearing clearance of the wheel hubs (specialist workshop)

Check the bearing clearance of the wheel hubs:

- 1. Raise the axle until the tyres lift off the ground.
- 2. Release the brake.
- 3. Place two levers between the tyre and the ground and check the bearing clearance.
- 4. Adjust the bearing if significant play in the bearing is apparent.

Fig. 205



Fig. 206

Adjust the bearing clearance of the wheel hubs:

- 1 Remove the dust cup or hub cap.
- 2. Remove the lynch pin from the axle nut.
- 3 Tighten the wheel nut while turning the wheel until the wheel hub is lightly braked as it turns.
- Turn the axle nut back to the next available lynch pin hole. To the next matching hole (max. 30°).
- 5. Replace the lynch pin with a lynch pin of the same type.
- 6. Fit the lynch pin and bend slightly open.
- 7. Apply fresh longlife grease to the dust cap and drive/screw it into the wheel hub.



12.4.15 Dual circuit air brake system

•	For optimum brake performance with a minimum of wear, we recom- mend that the brakes on the tractor are balanced with those on the machine. After the service braking system has been run in for a suit- able period, arrange for the brakes to be balanced by a specialist workshop.
	To avoid problems with the brakes, adjust all vehicles in accordance with EC Directive 71/320 EEC.

DANGER		
 Only specialist workshops or recognised brake services may perform adjustment and repair work on the brake system. 	\$-	
 Have the brake system checked thoroughly on a regular to sis (see section "Maintenance schedule – overview", on page 163). 	a-	
• Be particularly careful with welding, burning and drilling work in the vicinity of brake lines.		
 No welding or soldering may be performed on value fitting or pipes. Any damaged parts must be replaced. 	js	
 Always perform a braking test after any adjusting or repair work on the braking system. 	ir	
 For servicing and maintenance work on the braking syste observe the section "Safety information for the operator", on page 28. 	m	



12.4.15.1 Visual check of the dual circuit air brake system

Check the brake system for compliance with the following criteria before setting off:

- Piping, hose lines and hose couplings must not be externally damaged or rusted.
- Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.
- Ropes and cables
 - o Must be properly run.
 - o May not have any visible cracks.
 - o May not be knotted.
- Check the brake cylinder piston stroke. Only 2/3 of the brake cylinder stroke travel should be used. If this is not the case, adjust the brake accordingly (specialist workshop).
- Replace damaged dust protection sleeves.
- External check of compressed-air tank (see section "External check of compressed-air tank", on page 181).



If the visual inspection, function or action testing of the service brake system shows any signs of deficiencies, have a thorough inspection of all components performed immediately at a specialist workshop.



12.4.15.2 Brake inspection (specialist workshop)

Work that must be carried out by a specialist workshop every 3 months, or every 500 operating hours¹⁾ at the latest:

- check that the service brake system is in a safe condition
- check the wear of brake linings.
 - Replace the brake shoes (bonded linings) if the thickness of the lining is less than 2.0 mm. Only use genuine brake shoes with type-tested brake linings. Also replace the brake shoe return springs if necessary.
- Checking the pressure in the compressed-air tank (see on page 182).
- Leak-tightness test for dual circuit air brake system (see on page 182).
- Cleaning the filter for the dual circuit air brake system line (specialist workshop) (see on page 183)
- ¹⁾ This is the recommended maintenance interval. This may need to be reduced depending on use, e.g. constant driving on hilly terrain.





In Germany Section 57 of the regulation BGV D 29 of the industrial injuries mutual insurance organisation requires as follows: the keeper has to have vehicles tested as required, however at least once annually, by an expert as to their safe operating condition.



12.4.15.3 Checking the brake drum for soiling (specialist workshop)

- 1. Unscrew the two cover plates (Fig. 207/1) on the inside of the brake drum.
- 2. Remove any dirt and plant debris which may have entered the drum.
- 3. Refit the cover plates.







12.4.15.4 Brake lining inspection (specialist workshop)

Replace the brake lining if the remaining thickness is

- 5 mm with riveted linings
- 2 mm with bonded linings

To perform the check, remove the rubber plug (Fig. 208/1) from the inspection hole.

Reinsert the rubber plug once the check is complete.



Fig. 208


12.4.15.5 Drain the compressed-air tank (dual-circuit air-brake system)

- 1. Run the tractor engine (approx. 3 mins.), until the compressed-air tank (Fig. 209/1) has filled.
- 2. Switch off the tractor engine, apply the tractor parking brake and remove the ignition key.
- Pull the drainage valve (Fig. 209/2) in a sideways direction by the ring until no more water escapes from the compressed-air tank.
- 4. If the escaping water is dirty, let off air, unscrew the drainage valve from the compressed-air tank and clean it.
- 5. Fit the drainage valve and check the compressed-air tank for leak-tightness (see section 12.4.15.8, on page 182).



Fig. 209

12.4.15.6 External check of compressed-air tank (dual circuit air brake system)

External testing of the compressed-air tank (Fig. 210/1).

If the compressed-air tank moves in the tensioning bands (Fig. 210/2)

 \rightarrow tension or replace the compressed-air tank

If the compressed-air tank has any external corrosion damage or is damaged

 \rightarrow replace the compressed-air tank.

If the type plate (Fig. 210/3) is rusty, loose or the type plate is missing from the compressed-air tank

 \rightarrow replace the compressed-air tank.



The compressed-air tank may be replaced in a specialist workshop only.



Fig. 210



12.4.15.7 Checking the pressure in the compressed-air tank of the dual-circuit air-brake system (specialist workshop)

- 1. Connect a pressure gauge to the test connection on the compressed-air tank.
- 2. Run the tractor engine (approx. 3 mins.) until the compressed-air tank has filled.
- 3. Check whether the pressure gauge displays the setpoint range 6.0 to 8.1 bar.
- 4. If the reading drops below or exceeds the setpoint range, have the defective parts of the braking system replaced in a specialist workshop.

12.4.15.8 Leak-tightness test for dual circuit air brake system (specialist workshop)

- Test all connections, pipe, hose and screw unions for sealtightness
- Eliminate any abrasion points on pipes and hoses
- Replace any porous and damaged hoses (specialist workshop)
- The dual-circuit air-brake system is considered to be tight if the pressure drop after 10 minutes is no greater than 0.10 bar (i.e. about 0.6 bar per hour) when the engine is switched off.
- If the values are not maintained, have the leakage sealed or the defective components of the
- braking system replaced at a specialist workshop.



12.4.15.9 Cleaning the filter for the dual circuit air brake system line (specialist workshop)

The dual circuit air brake system consists of

- a brake line filter (Fig. 211/1)
- a supply line filter (Fig. 212/1)



Fig. 211



Fig. 212

To clean the line filters:

- 1. Press the two lugs (Fig. 211/2) together and take out the closure piece complete with O-ring, pressure spring and filter insert.
- 2. Clean the filter insert with petrol or thinner (wash it) and dry with compressed air.
- 3. When re-assembling in the reverse order, ensure that the O-ring does not jam in the guide slot.



12.5 Bolt tightening torques

Thread	Width across flats [mm]	Tightening torques [Nm] as a function of the bolt/nut grade		
		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	1,000	1,200
M 24x2		780	1,100	1,300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700



Tightening torques of wheel and hub bolts [see table (Fig. 194), on page 168].





13 Hydraulic diagram

13.1 Hydraulic diagram EDX 9000-T

Fig. 213/	Designation	Note		
T01	Tractor			
T02	Locking block, dosing unit			
T03	Fertiliser coulter pressure, left			
T04	Fertiliser coulter pressure, right			
T05	ED coulter pressure, left			
T06	ED coulter pressure, right			
T07	Dosing unit height adjustment, left			
T07	Dosing unit height adjustment, left			
T08	Dosing unit height adjustment, right			
T08	Dosing unit height adjustment, right			
T09	Boom folding			
T10	Control valve, dosing unit height adjustment			
T11	ED blower fan			
T12	Control block, coulter pressure			
T13	Control block, headland			
T14	Control valve, light folding operation			
T15	Locking block, light folding operation			
T16	Light folding operation			
T17	Lift, rear frame			
T18	Star wheel lift			
T19	Track marker left 1			
T20	Track marker left 2			
T21	Track marker right 1			
T22	Track marker right 2			
T23	Shutoff valve, track marker			
T24	2 cable ties, yellow			
T25	1 cable tie, yellow			
T26	1 cable tie, green			
T27	2 cable ties, green			
T29	1 cable tie, red			
T30	Shuttle valve, track marker locking device			
T31	Motor protection valve			
T32	Radiator			
T33	Fertiliser blower fan			
T34	Universal joint shaft pump			
T35	Oil tank with filter			
T36	Fertiliser coulter pressure			
T36	Fertiliser coulter pressure			
T37	ED coulter pressure			
T37	ED coulter pressure			
T38	Boom pressure			
T38	Boom pressure			
Т39	Throttle, light folding operation			
T40	Control valve, dosing unit height adjustment			
T41	2 cable ties, red			
All position specifications in direction of travel				









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