

Operating manual

AMAZONE

Catch crop seed drill

GreenDrill GD200-E / GD200-H

GreenDrill GD500-H / GD500-D



MG4167
BAH0054-9 11.17

Please read this
operating manual
before initial operation.
Keep it in a safe place for future use!

en





Manufacturer address

AMAZONEN WERKE H. Dreyer GmbH & Co. KG

Postfach 51
D-49202 Hasbergen

Tel.: 49 (0) 5405 501-0

E-mail: amazone@amazone.de

Spare part ordering

Spare parts lists are freely accessible in the spare parts portal at www.amazone.de.

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

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1 User information

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

This operating manual is valid for all versions of the implement.

Figures serve as a reference and are to be understood as representations of the principle.

All of the equipment is described without indicating it as special optional equipment. A description may be provided for equipment that is not fitted on the implement or is only available in certain markets. The sales documents provide information on the equipment of your implement or consult your local service partner for more detailed information.

All information in this operating manual corresponds to the state of knowledge at the time of publication. Due to ongoing development of the implement, deviations are possible between the implement and the information in this operating manual. No claims can be made based on differences in the specifications, figures or descriptions.

If you want to sell the implement, ensure that the operating manual is supplied with the implement.

1.1 Purpose of the document

This operating manual

- describes the operation and maintenance of the implement.
- provides important information on safe and efficient handling of the implement.
- is a component part of the implement and should always be kept with the implement or the towing vehicle.
- must be kept 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 in the direction of travel.

1.3 Diagrams

Instructions and responses

Activities to be carried out by the user are given as numbered instructions. Always observe the sequence of the instructions. If applicable, the reaction to the respective instructions is marked with an arrow. Example:

1. Instruction 1
→ Reaction of the implement to handling instruction 1
2. Instruction 2

Lists

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

- Point 1
- Point 2



2 General safety instructions

This section contains supplementary information on the safety advice in the operating manual to ensure safe operation of the implement.

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 implement operation.

Obligations of the operator

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

- are aware of the basic workplace safety information and accident prevention regulations.
- have been instructed in working with/on the implement.
- have read and understood this operating manual.

The operator is obliged

- to keep all the warning symbols on the implement in a legible state.
- to replace damaged warning symbols.

If you still have queries, please contact the manufacturer.

Obligations of the user

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

- to comply with the basic workplace safety instructions and accident prevention regulations.
- to read and understand the section "General safety information" of this operating manual.
- to read the section "Warning symbols and other labels on the implement" in this operating manual and to follow the safety instructions represented by the warning symbols when operating the implement.
- to get to know the implement.
- 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 have the appropriate technical knowledge, they should report this fault to their superior (operator).

Risks in handling the implement

The implement has been constructed to the state-of-the art and the recognised rules of safety. However, operating the implement may cause risks and restrictions to

- the health and safety of the user or third persons.
- the implement itself.
- other property.

Only use the implement

- 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 delivery" are always applicable. These shall be available to the operator, at the latest on conclusion of the contract. Guarantee and liability claims for damage to people or property will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the implement
- Improper installation, commissioning, operation and maintenance of the implement
- Operation of the implement with defective safety equipment or improperly attached or non-functioning safety and protective equipment
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance
- Unauthorised design changes to the implement.
- Insufficient monitoring of implement parts which are subject to wear
- Improperly executed repairs
- Disasters due to the effects of foreign objects and force majeure.

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 severity of the risk, and carries the following meaning:



DANGER

Indicates a direct threat at high risk which will result in death or most serious bodily harm (loss of limbs or long-term harm), should it not be prevented.

If the instructions are not followed, then this will result in immediate death or serious physical injury.



WARNING

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.



CAUTION

Indicates a low risk which could cause 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 implement handling.

Non-compliance with these instructions can cause faults on the implement or disturbance to the environment.



NOTE

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your implement in the best way possible.

2.3 Organisational measures

The operator must provide the necessary personal protective equipment as per the information provided by the manufacturer of the crop protection agent to be used, such as:

- Safety glasses
- Protective shoes
- Chemical-resistant overalls
- Skin protection agents etc.



The operation manual

- must always be kept at the place at which the implement is operated.
- must always be easily accessible for the user and maintenance personnel.

Check all the available safety equipment regularly.

2.4 Safety and protective equipment

Before starting up the implement each time, all the safety and protection equipment must be properly attached and fully functional. Check all 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 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 implement. The operator must clearly specify the responsibilities of the people charged with operation and maintenance work.

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

Person \ Job	Person explicitly trained for the activity ¹⁾	Instructed person ²⁾	Persons with specialist training (specialist workshop) ³⁾
Loading/Transport	X	X	X
Start-up	—	X	—
Set-up, tool installation	—	—	X
Operation	—	X	—
Maintenance	—	—	X
Troubleshooting and fault elimination	—	X	X
Disposal	X	—	—

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) Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.
- 3) Persons with specialised technical training shall be considered as a specialist. Due to their specialised training and their knowledge of the applicable regulations, they can evaluate the work with which they have been tasked and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained from several years' experience in the relevant field.



Only a specialist workshop may carry out maintenance and repair work on the implement, 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 implement in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

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

Check the implement 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 implement.

Use appropriate measures to inform the operator. 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 assemblies to lifting gear when carrying out replacement work.

Check all the bolted connections for tightness. On completion of the maintenance work, check the function of the safety and protective devices.

2.10 Design changes

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

Any expansion or conversion work shall require the written approval of AMAZONEN-WERKE. Only use conversion and special equipment parts approved 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 crushing, cutting, being trapped or drawn in, or impact through the failure of support parts.

It is strictly 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,
- weld on load-bearing parts.

2.10.1 Spare and wear parts and aids

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

Use only original 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. If you use wear and spare parts from third parties, there is no guarantee that they have been designed and manufactured in such a way as to meet the requirements placed on them.

AMAZONEN-WERKE shall accept no liability for damage caused by the use of non-approved spare and wear parts or aids.

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 User workstation

The implement 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 implement



Always keep all the warning symbols of the implement clean and in a legible state. Replace illegible warning symbols. You can obtain the warning symbols from your dealer using the order number (e.g., MD 075).

Warning symbols - Layout

Warning symbols indicate danger areas on the implement 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 symbol - Explanation

The **Order number and explanation** column provides an explanation of the adjacent 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 non-compliance with the risk avoidance instructions.
For example: causes serious injuries to fingers or hands.
3. The risk avoidance instructions.
For example: only touch implement parts when they have come to a complete standstill.

General safety instructions

Order number and explanation

Warning symbol

MD 076

Risk of hands or arms being caught or drawn into the implement due to moving force transmission parts.

This hazard can cause the most severe injuries with loss of body parts.

Never open or remove protective equipment,

- while the tractor engine is running with the universal joint shaft or the hydraulic/electronic system connected.
- if the ground wheel drive is moving.

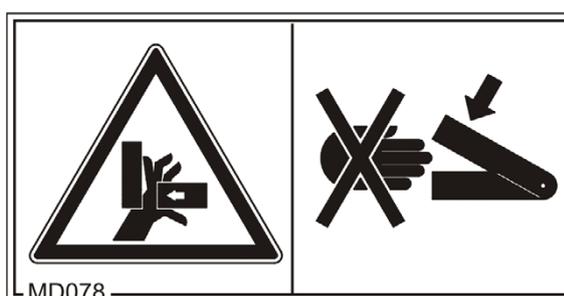


MD 078

Risk of crushing of fingers / hand by accessible, moving parts of the implement.

This hazard can cause the most severe injuries with loss of body parts.

Never reach into the danger area when the tractor engine is running with the universal joint shaft or hydraulic / electronic system connected.

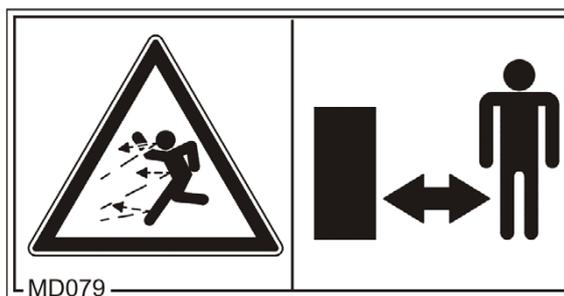


MD 079

Risk of materials or foreign objects being flung away from or out of the implement when entering or standing in the danger area of the implement.

These dangers can inflict severe injuries on all parts of the body.

- Stay well clear of the danger area of the implement.
- Ensure that all persons maintain a sufficient safety distance from the danger area of the implement as long as the tractor engine is running.



MD 082**Risk of falling when riding the implement on treads or platforms.**

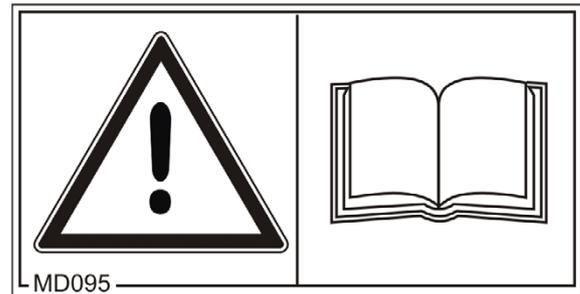
Causes serious, potentially fatal injuries anywhere on the body.

It is forbidden to ride on the implement or climb the implement when it is running. This prohibition also applies to implements with step surfaces or platforms.

Make sure that nobody is riding on the implement.

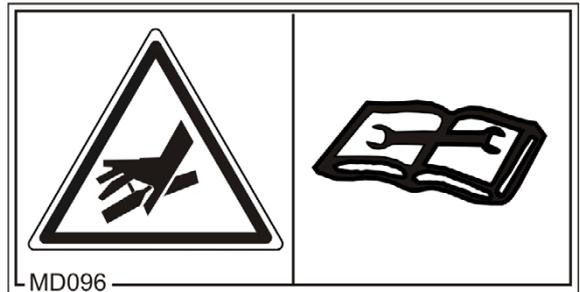
**MD 095**

Before commissioning the implement read and observe the operating manual and the safety instructions carefully.

**MD 096****Danger from escaping high-pressure hydraulic fluid due to leaking hydraulic hose lines.**

This danger may cause serious injuries, perhaps even resulting in death, if escaping high-pressure hydraulic fluid passes through the skin and into the body.

- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
- Read and observe the instructions in the operating manual before carrying out any maintenance or repair work on the hydraulic hose lines.
- If you are injured by hydraulic fluid, contact a doctor immediately.



General safety instructions

MD 102

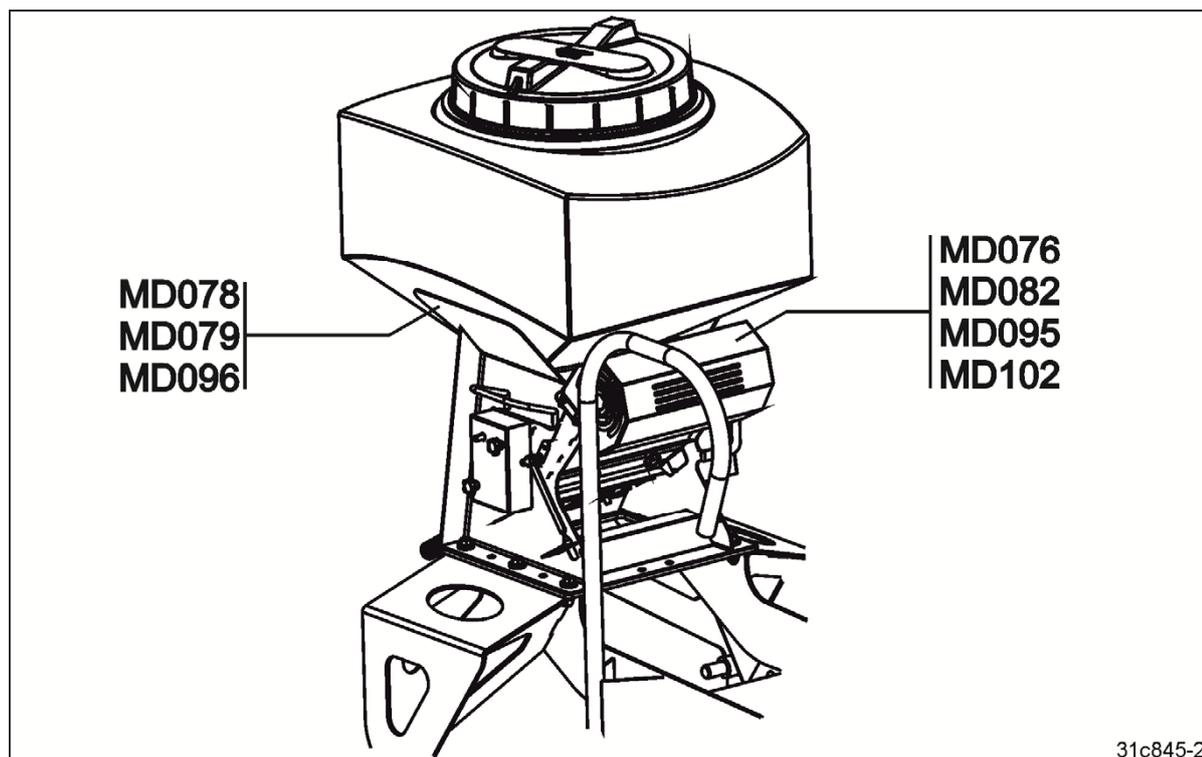
Danger from intervention in the implement, e.g. installation, adjusting, troubleshooting, cleaning, maintaining and repairing, due to the tractor and the implement being started unintentionally and rolling away.

These dangers can cause extremely serious and potentially fatal injuries.

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



2.13.1 Positions of warning symbols and other labels



31c845-2



2.14 Safety information for users

Switch off control terminal

- before road transport.
- before adjustment, maintenance and repair work.

Risk of accident due to unintentional starting up of the metering unit or other implement components.

2.14.1 General safety instructions and accident prevention instructions

- In addition to these instructions, also comply with the generally valid national and safety and accident prevention regulations.
- The warning symbols attached on the implement provide important instructions for safe operation of the implement. Compliance with these instructions is essential for your safety.
- Before moving off and starting up the implement, check the immediate area of the implement (children). Ensure that you can see clearly.
- It is forbidden to ride on the implement 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 implement. 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 or coupled implement.



General safety instructions

Use of the implement

- Before starting work, make sure that you understand all the equipment and control elements of the implement and their functions. It is too late for this when the implement is already in operation.
- Wear tight-fitting clothing. There is an increased risk of loose clothing getting caught or entangled on drive shafts.
- Only put the implement into operation after all protective devices have been attached and are in protective position.
- Comply with the maximum load of the mounted/towed implement and the permissible 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 implement.
- It is forbidden to stand in the turning and swivel range of the implement.
- There are crushing and shearing hazards on implement parts actuated by external force (e.g. hydraulically).
- Only operate implement parts actuated by external force if bystanders are maintaining an adequate safety distance to the implement.
- Secure the tractor against unintentional start-up and rolling away before you leave the tractor.
For this:
 - Lower the implement onto the ground.
 - Apply the parking brake
 - Switch off the tractor engine.
 - Remove the ignition key.

2.14.2 Hydraulic system

- The hydraulic system is under high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurized on both the implement 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:
 - are continuous or
 - are automatically locked or
 - require a float position or pressure position due to their function.
- Before working on the hydraulic system
 - Lower the implement.
 - Depressurize the tractor's hydraulic system.
 - Switch off the tractor engine.
 - Apply the tractor parking brake.
 - Take out the ignition key.
- Have the hydraulic hose lines checked for proper functioning by a specialist at least once a year.
- Replace the hydraulic hose lines if they are damaged or worn. Use only 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 aging, thus limiting the duration 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 lines made of thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
Escaping high-pressure fluid (hydraulic fluid) can penetrate into the body through the skin and cause serious injuries.
If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection.
- When searching for leaks, use suitable aids to avoid the serious risk of infection.

2.14.3 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 – first 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 terminal. If there is accidental earth contact, there is a danger of explosion.
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- The implement may be equipped with electronic components whose function can be influenced by electromagnetic interference from other devices. Such interference can pose risks to people, if the following safety information is not observed.
 - In the case of retrofitting electrical units and/or components on the implement, with a connection to the on-board power supply, the operator is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
 - Ensure that the retrofitted electrical and electronic components comply with EMC directive 89/336/EEC in the respectively valid version and carry the CE mark.

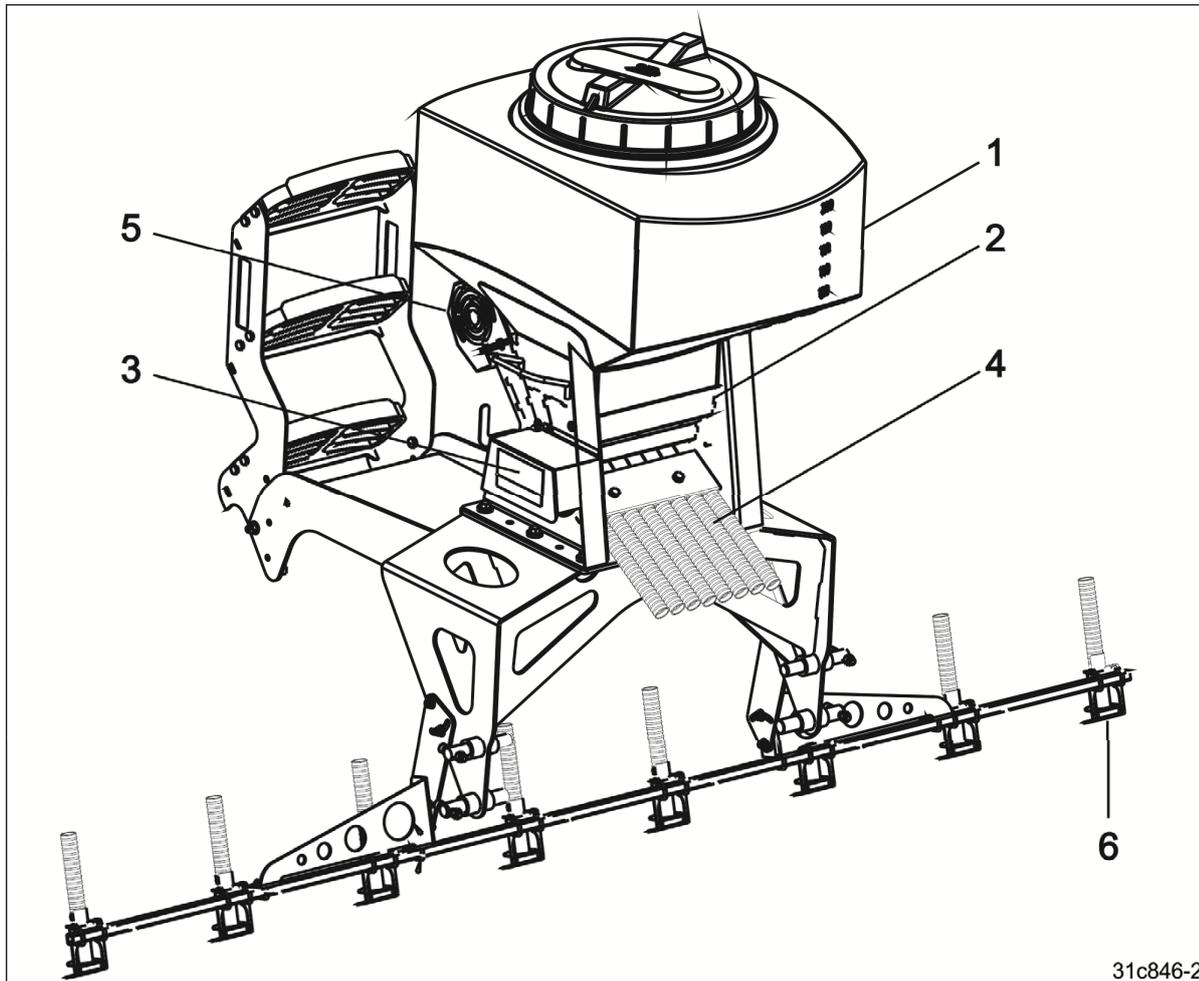
2.14.4 Seed drill in operation

- Observe the permissible filling quantities of the seed hopper (seed hopper capacity).
- Only use the ascent and the platform when filling the seed hopper.
It is forbidden to ride on the implement during operation.
- When calibrating, pay attention to the danger points from rotating and oscillating implement parts.
- Before road transport, remove the track discs of the tramline marker.
- Do not place any parts in the seed hopper.
- Lock the track marker (construction-dependent) in transport position before road transport.

2.14.5 Cleaning, maintenance and repair

- Only carry out cleaning, maintenance and repair work on the implement when:
 - the drive is switched off.
 - the tractor engine is at a standstill.
 - the ignition key has been removed.
 - the implement plug has been disconnected from the control terminal.
- Regularly check the nuts and bolts for a firm seat and retighten them if necessary.
- Secure the raised implement or raised implement parts against unintentional lowering before performing any cleaning, maintenance or repair work on the implement.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate manner.
- Disconnect the cable to the tractor generator and battery before performing electrical welding work on the tractor and mounted implements.
- Spare parts must at least comply with the specified technical requirements of AMAZONEN-WERKE. This is ensured through the use of original AMAZONE spare parts.

3 Product description



31c846-2

- (1) Seed hopper
- (2) Metering unit with seeding shaft
- (3) Electric motor for seeding shaft drive
- (4) Seed delivery hose
- (5) Blower fan
- (6) Baffle plate

3.1 Intended use

The GreenDrill catch crop seed drill

- is designed for metering and placing certain commercially available seeds during agricultural work.
- is mounted on a carrying implement approved by AMAZONE for this purpose.

3.1.1 Approved AMAZONE carrying implements

GreenDrill	AMAZONE carrying implements								
GD200-E GD200-H	Catros Special	2503	3503	4003					
		3003							
GD200-E GD200-H	Catros	3001	3501	4001					
GD200-E GD200-H				4002-2	5002-2	6002-2			
GD200-H GD500-H				4002-2TS	5002-2TS	6002-2TS			
GD500-H							7003-2TX	8003-2TX	9003-2TX
GD200-E GD200-H	Cenius	3003	3503	4003					
GD200-H GD500-H				4002-2T					
				4003-2T					
				4003-2TX	5003-2TX	6003-2TX	7003-2TX		
GD500-H	Certos			4001-2TX	5001-2TX	6001-2TX	7001-2TX		
GD200-E GD200-H	KG/KE	3000	3500	4000					
GD200-E GD200-H	KX	3000							
GD500-D	Cirrus	3003 Compact	3503 Compact	4003					
				4003-2		6003-2			
GD200-E	Cataya Super	3000							
GD200-E	D9-60								
GD200-E	D9 6000-TC								

Any use other than those listed above, especially mounting the GreenDrill on implements from other manufacturers or AMAZONE implement that are not listed here, is considered as non-intended.

Mounting the GreenDrill using the assembly parts that are not intended for the respective implement is also considered non-intended use.

AMAZONEN-WERKE is not liable for any damage resulting from non-intended use, the operator bears the sole responsibility.

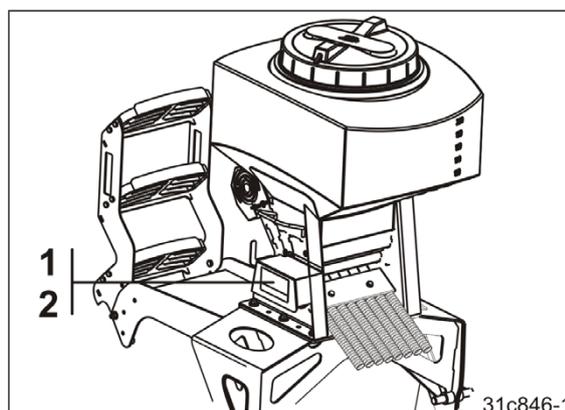
3.2 Technical Specifications

Catch crop seed drill	GreenDrill GD200-E	GreenDrill GD200-H	GreenDrill GD500-H	GreenDrill GD500-D
Seed hopper volume [l]	200	200	500	500
Outlets [number]	8	8	8	8
Blower fan drive	Electric	hydraulic	hydraulic	from the carrying implement
Metering unit	Metering with electrical metering motor			
Automatic seed rate control when changing speed	Only possible with GreenDrill control terminal 5.2. A connection of the metering motor to the 7-pin signal socket of the tractor or the radar or GPS device is required.			
Seed placement	via baffle plate			

3.3 Rating plate and CE mark

The figure shows the arrangement of the rating plate (1) and the CE mark (2) on the implement.

The CE marking on the indicates compliance with the stipulations of the valid EU directives.



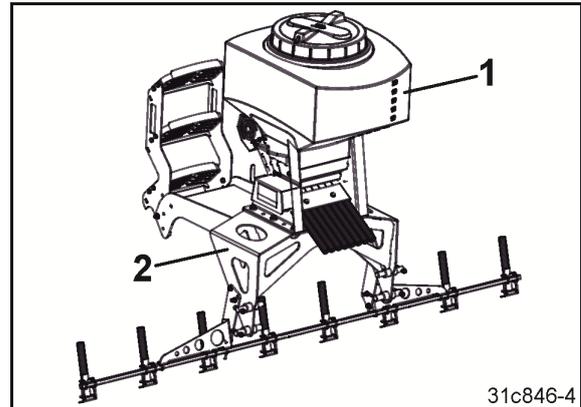
The following information is specified on the rating plate and the CE mark:

- (1) Implement ID no.
- (2) Type
- (3) Basic weight (kg)
- (4) max. payload kg
- (5) Factory
- (6) Model year
- (7) Year of manufacture

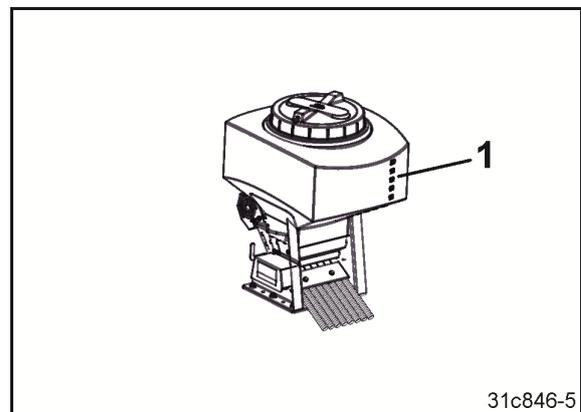
AMAZONE			
Amazonen-Werke H.Dreyer GmbH&Co.KG Am Amazonenwerk 9-13 D-49205 Hasbergen			
Masch.-Ident-Nr.	<input type="text" value="1"/>		
Typ	<input type="text" value="2"/>		
Grundgewicht kg	<input type="text" value="3"/>	Werk	<input type="text" value="5"/>
max. Zuladung kg	<input type="text" value="4"/>	Modelljahr	<input type="text" value="6"/>
		Baujahr Annee de fabrication year of construction Дата изготовления	
		<input type="text" value="7"/>	
			
34c442			

3.4 EC Declaration of Incorporation

AMAZONE delivers the GreenDrill catch crop seed drill (1) together with the fitting assembly set (2) for the carrying implement. With the delivery of the carrying implement, the GreenDrill is already mounted or is then mounted in a specialist workshop based on the supplied instructions. In this operating manual in the section "Intended use" (see page 27), a list of all carrying implements that are approved for mounting the GreenDrill are listed. The GreenDrill is marked for this use with the CE mark and the declaration of conformity.



If you have purchased the GreenDrill (1) without an assembly set, it is considered as an incomplete implement. Without the assembly set, the GreenDrill is marked with a factory plate (see below) and an EC Declaration of Incorporation is included. The EC Declaration of Incorporation states that the product fulfills the relevant basic safety and health requirements of the EC Directive as well as the requirements of the EMC Directive.



The operator is responsible for the proper mounting of the GreenDrill onto the carrying implement and for compliance with the standards and legal requirements.

The operator must ensure that the GreenDrill is operated without danger. This may include a suitable platform for safe operation of the GreenDrill. The platform must also be easily accessible. This may require the installation of steps.

Any danger for persons due to the mounting of the GreenDrill on the carrying implement must be ruled out in all situations.

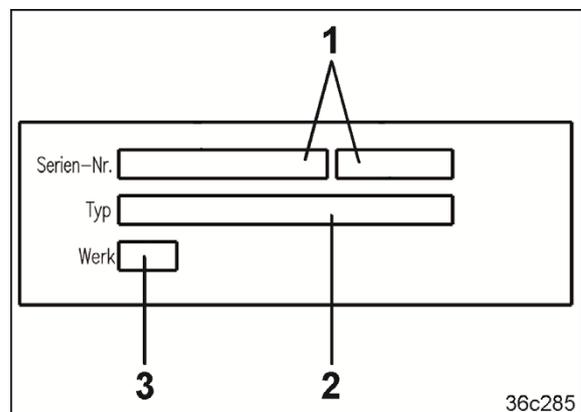


NOTE

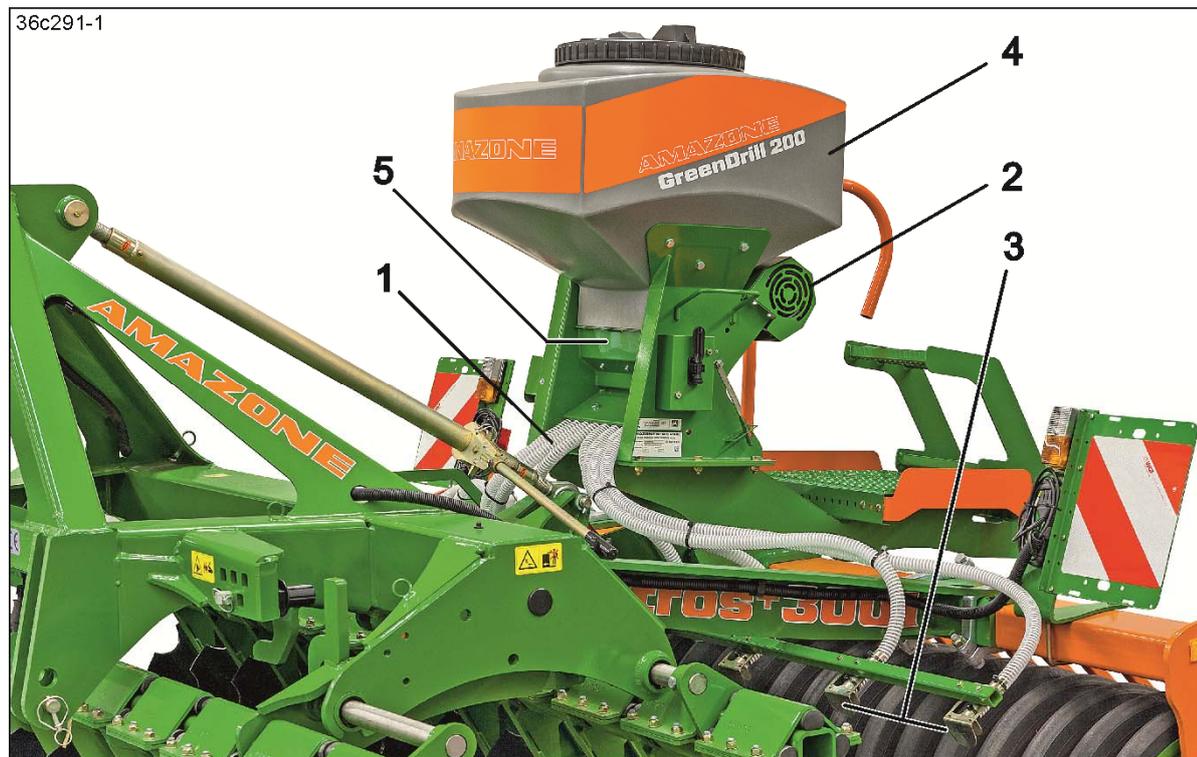
AMAZONE is not liable for damage caused by faulty mounting and improper operation of the GreenDrill.

The factory plate contains the

- (1) Serial number
- (2) Type
- (3) Factory



4 Layout and function



The GreenDrill is used for spreading catch crops and re-seeding grass.

The seed metered by the seed metering wheels is conveyed into the seed hoses (1).

An electrically or hydraulically driven blower fan (2) produces the air flow to deliver the seed. The GreenDrill GD500-D is fed by the blower fan of the carrying implement. The seed is spread using baffle plates (3) in the operating area of the tillage implement tools working in the soil.

The seed hopper (4) has a volume of 200 or 500 litres, depending on the version. The seed hopper and metering unit form a sealed pressurised system.

Dosing is carried out by a seeding shaft equipped with seed metering wheels, located in the dosing housing (5). A 12 V electric drive motor drives the seeding shaft.

The GreenDrill control terminal is available in 2 versions and is operated from the driver's seat in the tractor cab.

Control terminal 3.2

serves to switch the seeding shaft and the blower fan on and off. The speed of the seeding shaft can be adjusted.

Control terminal 5.2

has a selection menu, e.g. for assisting with the calibration procedure.

The control terminal 5.2 must be connected to the 7-pin signal socket of the tractor or the radar or GPS device to display the forward speed, the worked area and the working hours.

The control terminal then shows the forward speed [km/h] and adjusts the seeding shaft speed according to the changing forward speed. The seed rate [kg/ha] remains unchanged even at varying forward speeds. If it is set correctly, speed differences of 50 % are adjusted up and down. Even turning at the end of the field is automatic.

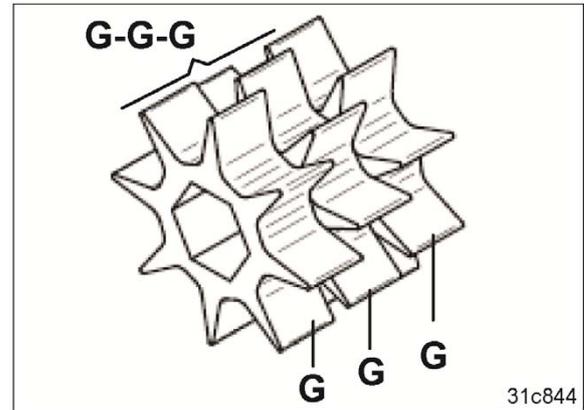
4.1 Metering

4.1.1 Seeding shaft with seed metering wheels

The seed metering wheels are selected based on the seed type. You can find the right seed metering wheel to meter your seed in the seeding tables in the Appendix.

Each seed metering wheel is made up of several smaller units.

Example:
the coarse seed metering wheel G-G-G consists of 3 coarse seed metering wheels G.

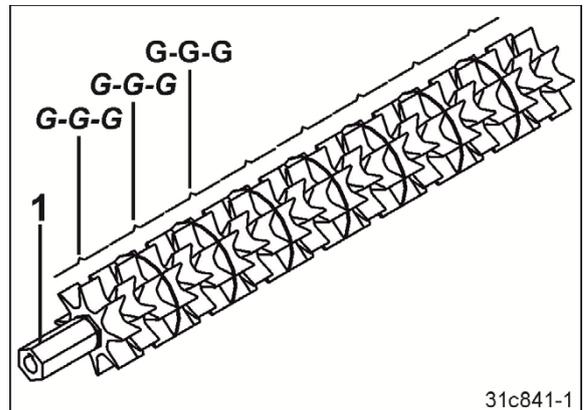


If it is necessary to exchange the seed metering wheels, the seeding shaft is pulled out of the metering unit. The seed metering wheels can be individually exchanged on the seeding shaft. It is more convenient to equip a second seeding shaft with the required seed metering wheels. Then only the seeding shafts need to be exchanged.

4.1.1.1 Seeding shaft with coarse seed metering wheels G-G-G

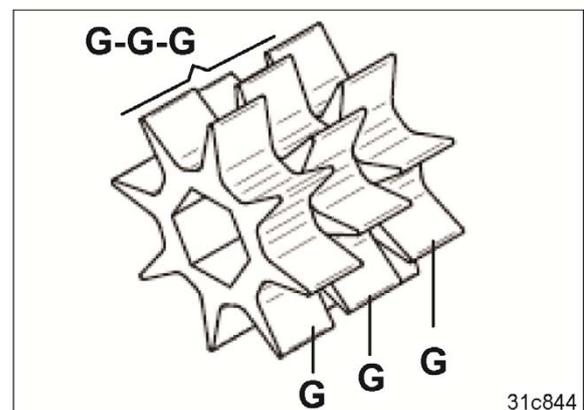
The seeding shaft (1) with 8 coarse seed metering wheels G-G-G is used for seeds

- with large grain size
- with high spread rates, e.g. grasses and cereals.



The coarse seed metering wheel G-G-G consists of

- 3 coarse seed metering wheels G.

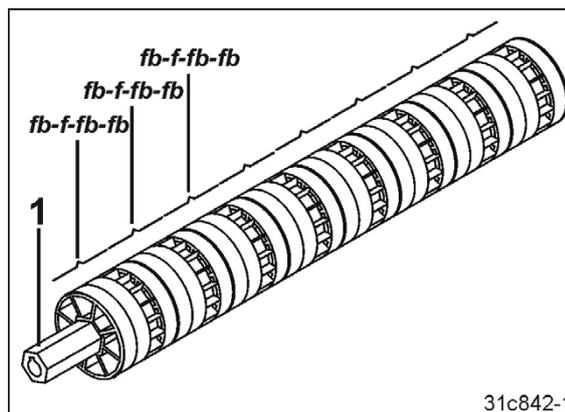


Layout and function

4.1.1.2 Seeding shaft with fine seed metering wheels fb-f-fb-fb

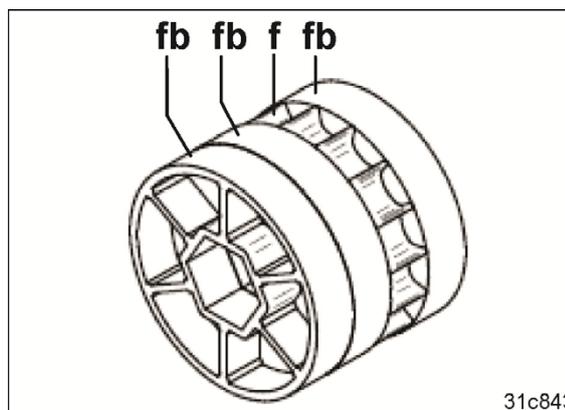
The seeding shaft (1) with 8 fine seed metering wheels fb-f-fb-fb is used for seed

- with small grain size
- with low spread rates, e.g. mustard and buckwheat.



The fine seed metering wheel fb-f-fb-fb consists of

- 1 fine seed metering wheel f
- 3 blind seed metering wheels fb. Blind seed metering wheels do not meter any seed.



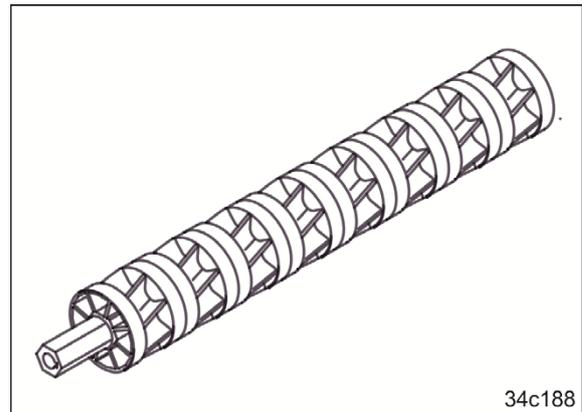
For error-free delivery, only spread fine seed up to 12 kg/min, with the GreenDrill on

- Catros 7/8/9003-2TX
- Cenius 4/5/6/7003-2TX
- Certos 4/5/6/7001-2TX.

4.1.1.3 Seeding shaft with Flex 20 seed metering wheels

The seeding shaft with 8 Flex 20 seed metering wheels is used for seeds such as

- Peas
- Beans.

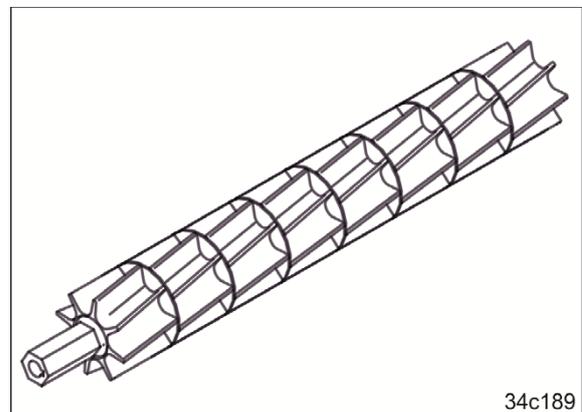


34c188

4.1.1.4 Seeding shaft with Flex 40 seed metering wheels

The seeding shaft with 8 Flex 40 seed metering wheels is used for seeds such as

- Peas
- Beans.

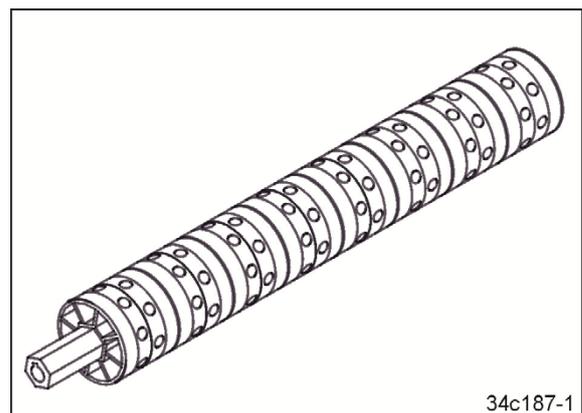


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4.1.1.5 Seeding shaft with seed metering wheels fb-efv-efv-fb

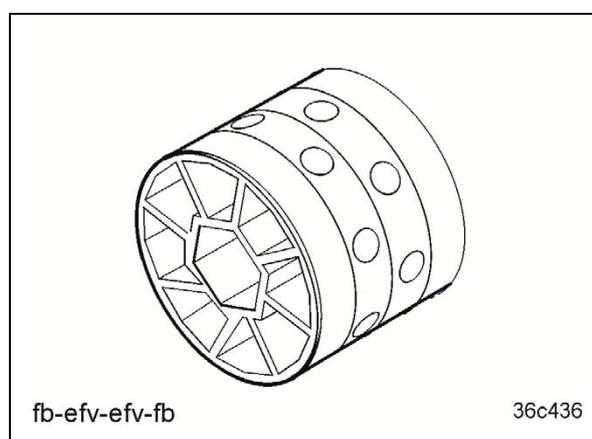
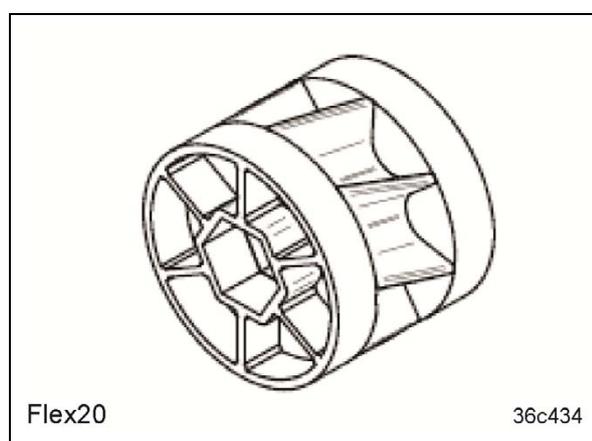
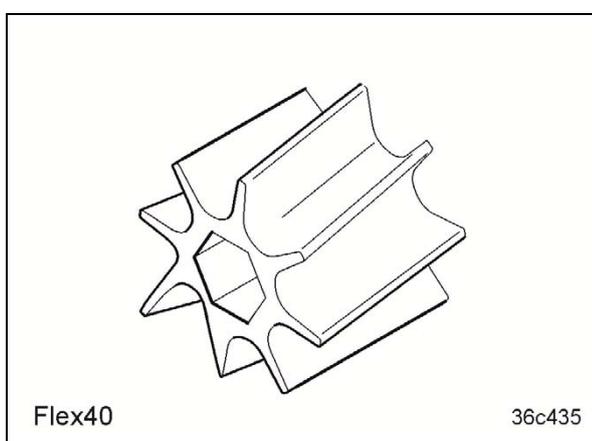
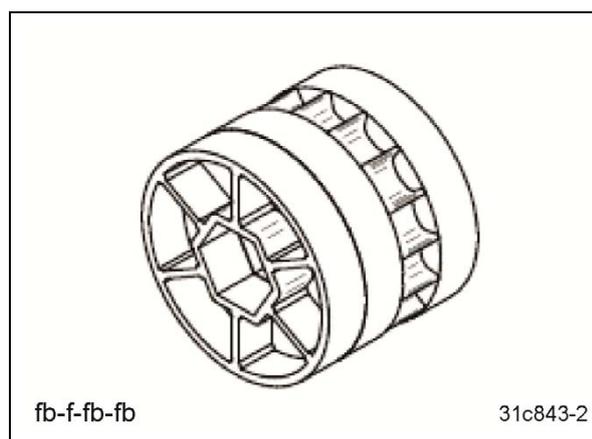
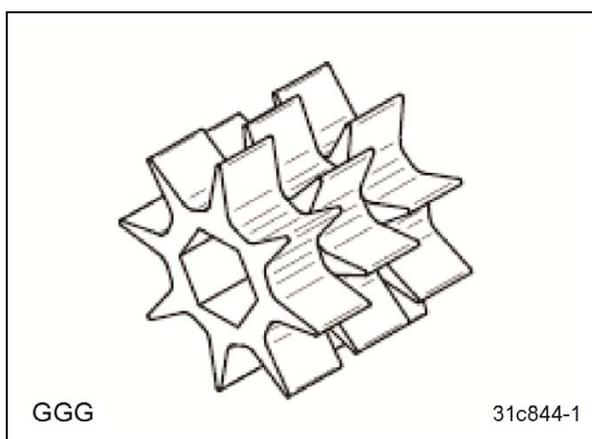
The seeding shaft with 8 seed metering wheels fb-efv-efv-fb is used for seeds such as

- Rapeseed
- Mustard.



34c187-1

4.1.1.6 Seed metering wheel table



4.1.2 Seeding shaft speed

Control terminal 3.2

An electric motor drives the seeding shaft. The working speed selected for the calibration test must always be maintained, as the speed of the seeding shaft determined with the calibration test does not change.

Control terminal 5.2

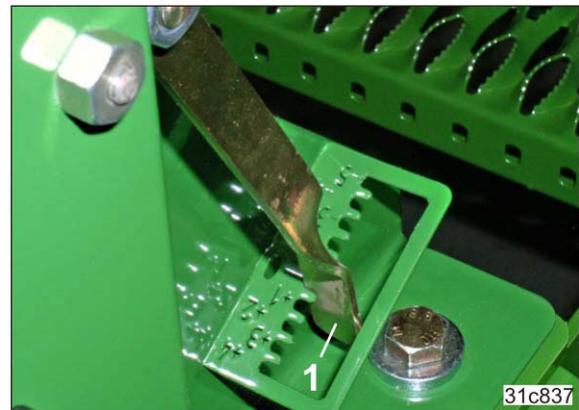
An electric motor drives the seeding shaft. If the control terminal is connected to the 7-pin tractor signal socket with speed sensor or the implement is equipped with a radar or GPS device, the speed of the seeding shaft is automatically adjusted for the working speed. The seed rate [kg/ha] always remains the same even at different working speeds.

4.1.3 Scraper

A brush is attached above the seed metering wheels. The scraper can be adjusted using a lever (1) on a scale from +4 to -5.

Brush lever position

- for free-flowing fine seeds, slightly in the minus range.
- for large seeds, slightly in the plus range.



Adjusting the lever allows finer adjustment of the seed spread rate.

Scale values -1 to -5:

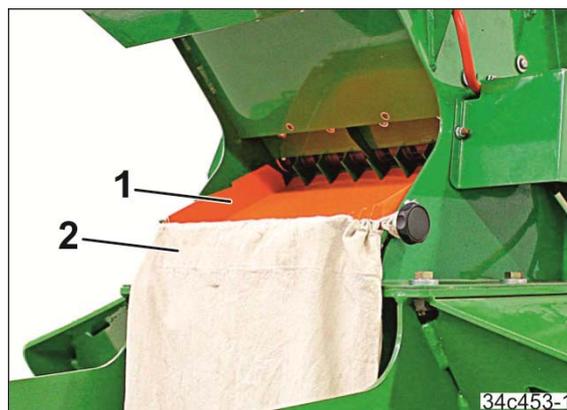
The brush is pressed against the seed metering wheels using the lever. The spread rate is slightly reduced.

Scale values +1 to +4:

The brush is lifted off the seed metering wheels using the lever. The spread rate is slightly increased.

4.1.4 Calibration test

For calibration and when emptying the seed hopper, the seed drops into the collection bag (2) over the chute (1).



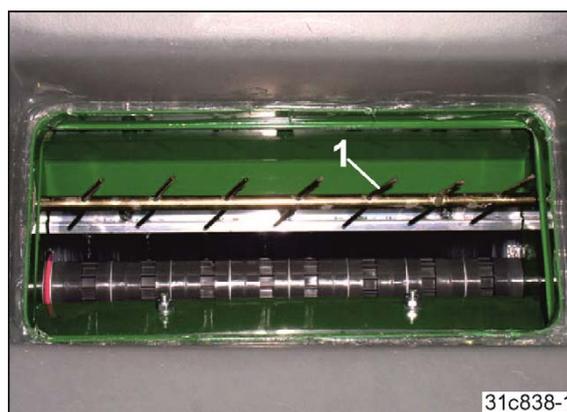
Always perform a calibration test

- during the initial operation.
- when changing the sort.
- if the same sort is used, but of a different quality and specific weight.
- after changing the seed metering wheels
- if the seed hopper is emptied faster/slower than expected. The actual spread rate then does not correspond with the spread rate determined by calibration.
- when changing the working speed (not required with terminal 5.2 and connection to the 7-pin signal socket of the tractor or the radar or GPS device).

4.2 Agitator shaft

When seeding spelt-type and very light seeds, e.g. grasses, the rotating agitator shaft (1) prevents faulty seeding caused by seed blockage in the seed hopper.

With seeds that flow down well, rotation of the agitator shaft is not necessary.



4.3 Blower fan

The blower fan generates a flow of air that conveys the metered material to the baffle plates. The air current becomes stronger with increasing blower fan speed.

A strong air current is required for optimal distribution of the seed. If the air flow is too strong, the seed can be damaged on the baffle plates. If the air flow is too weak, there may be blockage in the seed tube hoses.

The blower fan is driven either by an electric motor or a hydraulic motor.

4.3.1 Electric blower fan drive

If your implement is equipped with the electric blower fan drive, the control terminal is used to

- switch the electric blower fan drive on an off, and
- adjust the blower fan speed
 - with control terminal 3.2, see section "Adjusting the blower fan speed", page 55
 - with control terminal 5.2, see section "Adjusting the blower fan speed", page 80.

Read the preliminary blower fan speed from the table.

The values in the table are reference values and depend on the

- seed (grain size and weight)
- spread rate
- working width
- working speed.

Working width	Seeding with	
	coarse seed metering wheels	fine seed metering wheels
3.0 m	3000-3100	1400-2900
6.0 m	3400-3500	1550-3300
12.0 m	4200-4300	1650-4000
	Blower fan speed [rpm]	

Set the blower fan speed to the value from the table and check the spread pattern on the field. Optimise the spread pattern by adjusting the blower fan speed.

The blower fan speed does not change when the working speed changes. To ensure that the spread pattern does not change during operation, constantly maintain the selected blower fan speed.

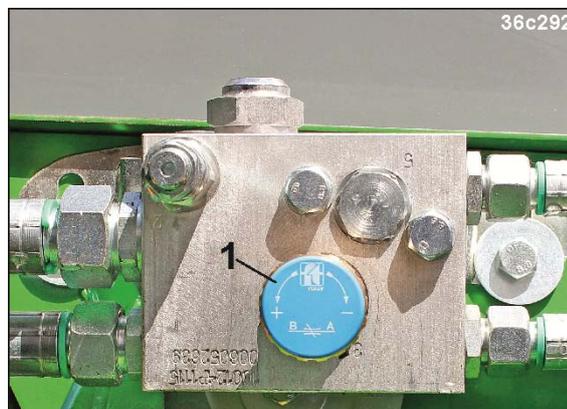
4.3.2 Hydraulic blower fan drive

If your implement is equipped with the hydraulic blower fan drive, the control terminal shows whether the blower fan is switched on or off. When the blower fan is switched on, the red control lamp above the  button is illuminated. The  button has no function with the hydraulic blower fan drive.

The blower fan speed is not displayed.

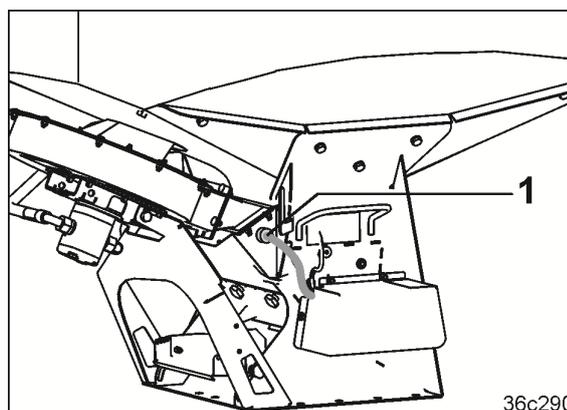
The tractor control unit serves to switch the blower fan on and off. The blower fan speed is adjusted using the flow control valve of the tractor.

If the tractor does not have a flow control valve, the blower fan speed is adjusted using the control valve (1) of the GreenDrill.



To ensure that the seeding shaft can only be switched on when the blower fan is running, the switch position of the blower fan is requested by a pressure sensor (1).

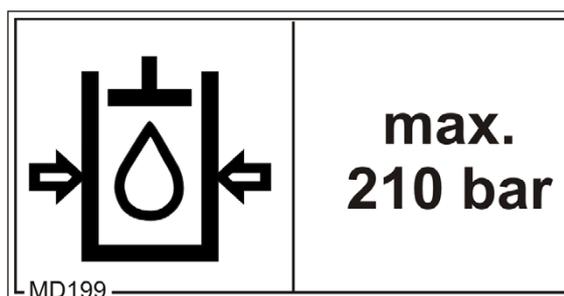
This ensures that the seeding shaft cannot be switched on when the blower fan is not running and prevents blockage in the seed hose lines.



The following maximum values must not be exceeded:

Operating pressure of the hydraulic system:	max. 210 bar
Blower fan hydraulic fluid temperature:	max. 80°C
Oil flow rate (tractor pump output):	max. 80 l/min.

Higher oil flow rates can exceed the maximum permissible blower fan hydraulic fluid temperature.



A measurement strip with a scale shows the housing temperature [°C] of the hydraulic motor.

With increasing temperature (from 71°C to 110°C), the scale becomes black.



4.3.3 GreenDrill GD500-D without blower fan drive

The GreenDrill GD500-D is not equipped with a blower fan. The air current for the GreenDrill GD500-D is produced by the blower fan of the carrying implement.

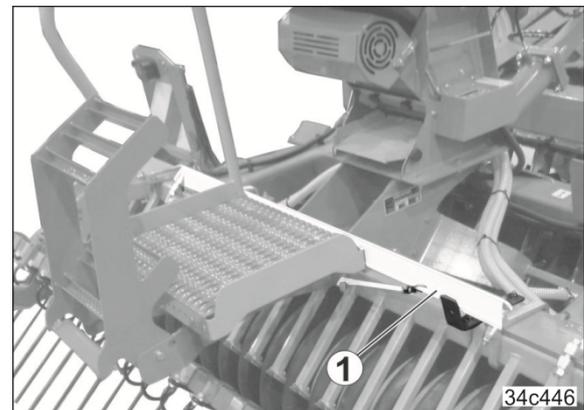
The blower fan speed depends on the carrying implement. Set the blower fan speed as described in the operating manual for the carrying implement.

4.4 Transport safety bar for the carrying implement

With ex-factory deliveries, the brackets for the transport safety bar can be mounted differently than described in the operating manual for your carrying implement.

If you attach the GreenDrill subsequently onto the carrying implement based on the assembly instructions, it may be necessary to reposition the brackets for the transport safety bar.

The displaced parking position of the transport safety bar (1) on the rigid implements Cenius and Catros with mounted GreenDrill is shown.



5 Settings before commissioning



DANGER

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- **unintentional lowering of the implement raised using the tractor's 3-point hydraulic system.**
- **unintentional lowering of raised, unsecured implement parts.**
- **unintentional start-up and rolling away of the tractor-implement combination.**

Before working on the implement

- unfold the combination (if necessary)
- switch off the components of the implement
- wait until the implement comes to a standstill
- position the combination on a firm, horizontal surface
- switch off the control terminal.
Risk of accident due to unintentional activation of the metering unit or other implement components caused by radar pulses.
- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
- Secure the tractor and implement against unintentional start-up and rolling away.
- Never crawl under a raised, unsecured implement.
- Mount protective equipment, which you removed when cleaning, maintaining and repairing the implement.
- Replace defective protective equipment with new equipment.



DANGER

Risk of crushing, cutting, being trapped or drawn in, or impact through inadequate roadworthiness and operational safety.

Before starting up the machine and tractor, always check their roadworthiness and operational safety.



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with the body.

When filling and emptying the seed hopper, when calibrating, and when removing dressing dust, e.g. with compressed air, wear a protective suit, face mask, safety goggles and gloves.

**WARNING**

When using the machine, observe the safety instructions

- in this operating manual
- in the operating manual of the carrying implement.

**CAUTION**

Never open the seed hopper cover or metering unit cover with the blower fan running. Seed escapes uncontrollably.

The seed hopper and metering units form a sealed pressurised system.



Leaks in the sealed system can change the spread rate.

5.1 Folding and unfolding the ladder of the GreenDrill

To fill and adjust the GreenDrill, use the loading board that is equipped as a standard on the carrying implement. If the GreenDrill cannot be reached using the loading board of the carrying implement, the GreenDrill is equipped with its own loading board with a ladder. This section provides general instructions that should be observed when folding the ladder.

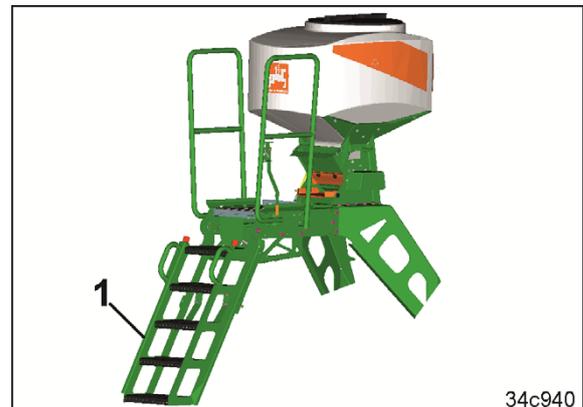
5.1.1 Unfolding the ladder



The ladder should only be unfolded when filling the hopper and adjusting the GreenDrill.

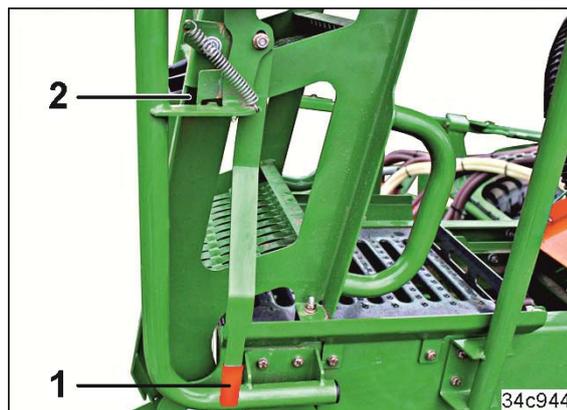
To prevent collisions, the ladder should always be folded up when it is not in use, e.g. during operation and before road transport.

1. Move the carrying implement into working position.
2. Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
3. Unlock the ladder (1) and unfold.



Settings before commissioning

- 3.1 Hold the ladder and pull on the lever (1).
This releases a latch (2) that represents the mechanical transport locking mechanism.
- 3.2 Unfold the ladder.



5.1.2 Folding the ladder

1. Fold in the ladder (1).
Ensure that the ladder engages in the mechanical transport locking mechanism.



DANGER

A latch (1) represents the mechanical transport locking mechanism for the ladder.

Check the latch (1) for proper seating after folding in the ladder.



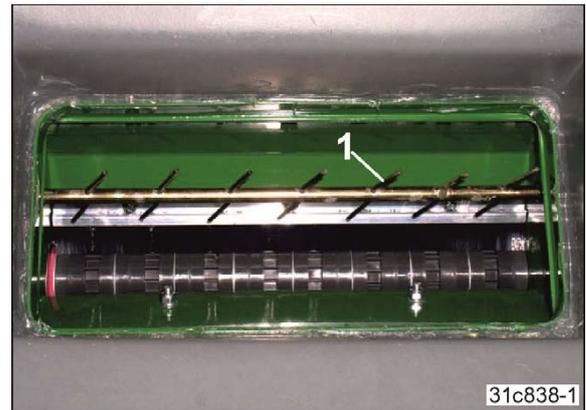
5.2 Switching off the agitator shaft drive

1. Switch off the control terminal.



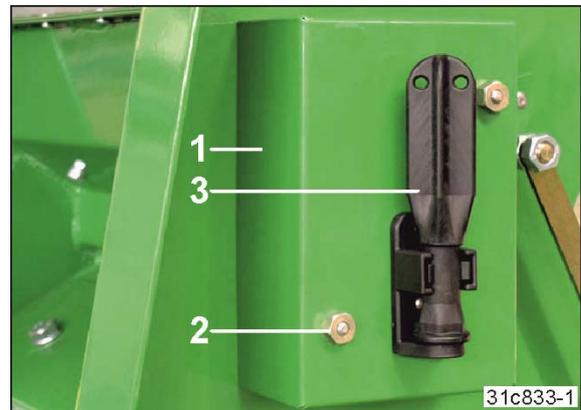
The agitator shaft (1) should be running when using seeds that

- tend towards bridging.
- are very light, e.g. grass.

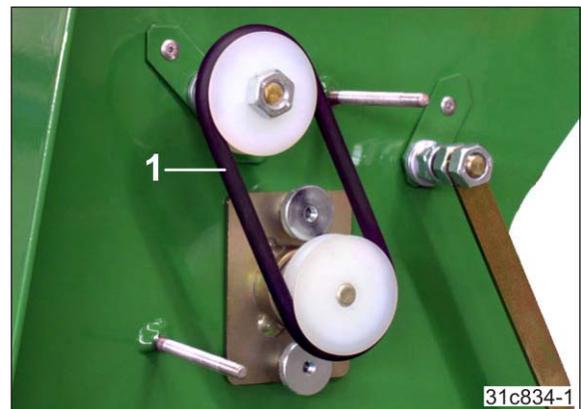


2. Remove the protective cover (1).

- 2.1 Loosen and remove the 2 hexagonal nuts (2) with the socket wrench (3).

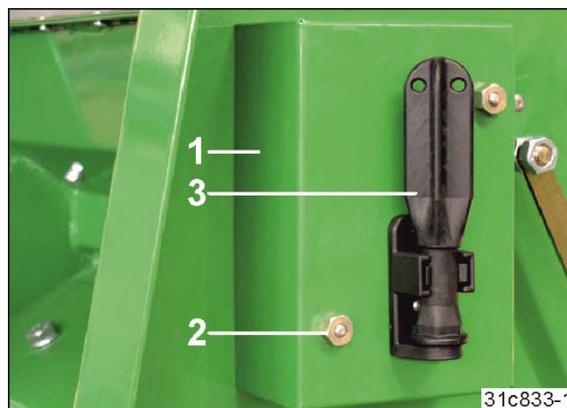


3. Remove the round belt (1).
The agitator shaft is driven by the seeding shaft via the round belt.
4. Install the protective cover.

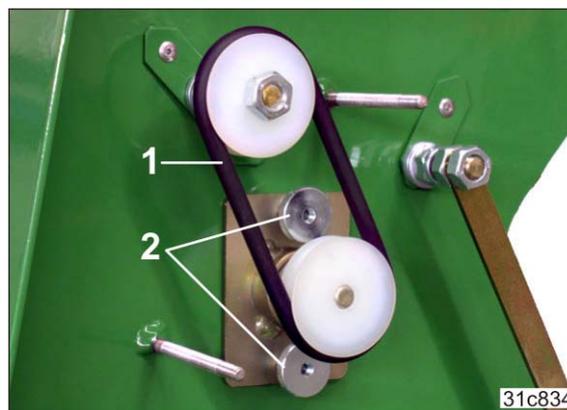


5.3 Replacing the seeding shaft

1. Switch off the control terminal.
2. Empty the seed hopper.
3. Remove the protective cover (1).
 - 3.1 Loosen and remove the 2 hexagonal nuts (2) with the socket wrench (3).



4. Remove the round belt (1).
5. Release the knurled nuts (2).

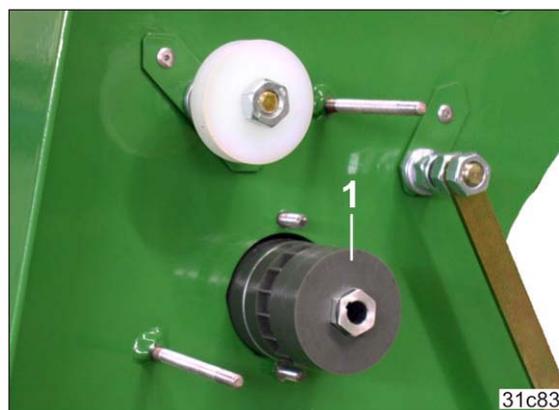


6. Remove the cover and pull out the seeding shaft (1).
7. Refer to the seeding table for the required seed metering wheels (see section 9, page 107).

The seeding shaft is installed in the reverse sequence.



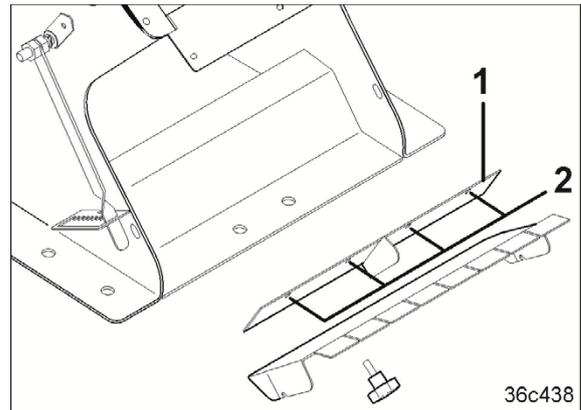
The existing seeding shaft can be reinstalled after converting the seed metering wheels. It is more convenient to install a second seeding shaft that is already equipped with the required seed metering wheels.



5.4 Seeding with Flex seed metering wheels

For the gentle seeding of large seeds, e.g. peas and field beans, the flexible Flex seed metering wheels are used (see section "Seeding tables", page 107).

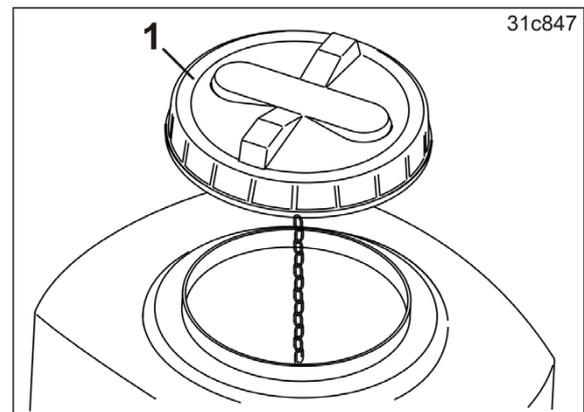
To prevent damage to the Flex seed metering wheels, the air plate (1) must be removed. The air plate is attached with 4 Torx screws M6x12 (TX30).



5.5 Fill the seed hopper

The seed hopper cover (1) has a threaded seal.

1. Switch off the control terminal.
2. Open the seed hopper cover and slowly fill the seed hopper. Do not exceed the nominal volume.
3. Screw on the seed hopper cover so that the seed hopper is closed air-tight.

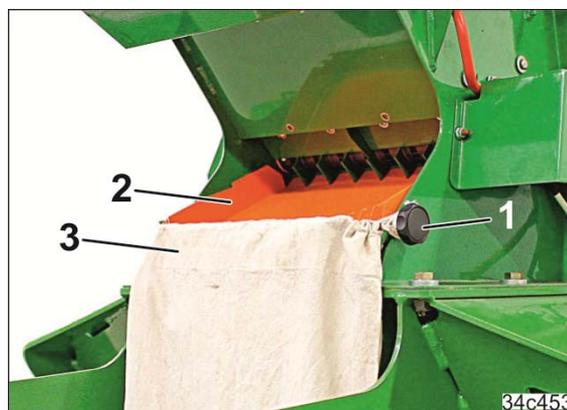


5.6 Preparing the implement for calibration or for emptying the seed hopper

1. Release the star handles (1) and remove the calibration plate (2).



2. Release the star handle (1), push up the chute (2) and re-fasten.
3. Fasten the collection bag (3) on the chute to collect the seed.



4. Perform the calibration test, as described for
 - o Control terminal 3.2 (see section 6.4, page 54)
 - o Control terminal 5.2 (see section 7.6, page 69)
5. Empty the seed hopper, as described for
 - o Control terminal 3.2 (see section 6.9, page 57)
 - o Control terminal 5.2 (see section 7.16, page 84)
6. The chute is reassembled in the reverse sequence.

5.7 Hydraulic blower fan drive

Before you adjust the blower fan speed, check the program settings, see

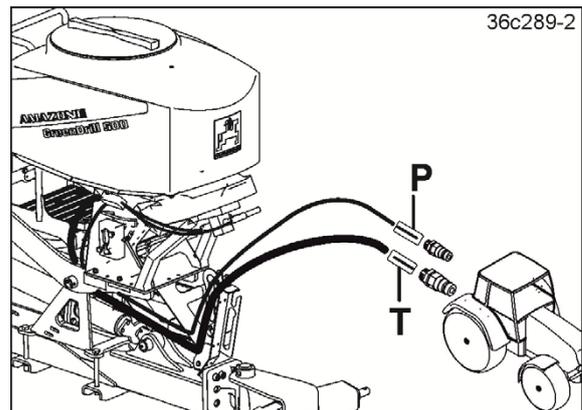
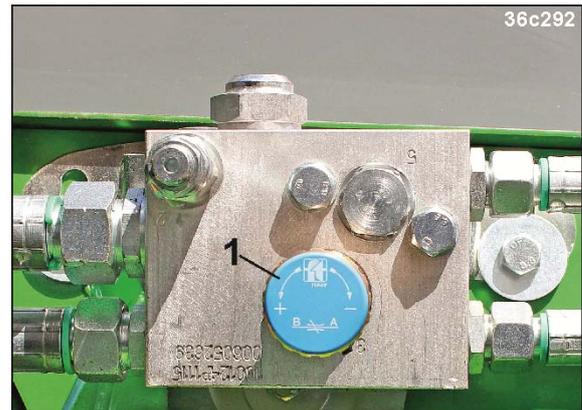
- section 7.20.2, page 100
- section 7.20.8, page 103
- section 7.20.9, page 103

5.7.1 Connecting the hydraulic hose lines to the tractor

The GreenDrill is equipped with a hydraulic control block with control valve (1).

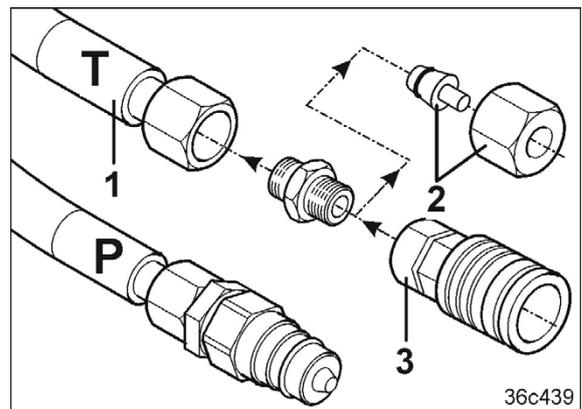
The following are connected to the hydraulic control block

- 2 hydraulic lines to the blower fan hydraulic motor and
- 2 hydraulic hose lines to the tractor. The hydraulic hose lines are labelled with P (red) and T (yellow).



Check whether the return flow line (1) marked in yellow has a sealing plug (2).

Remove the sealing plug (2) and attach the separately supplied coupling sleeves (3) on the return flow line.



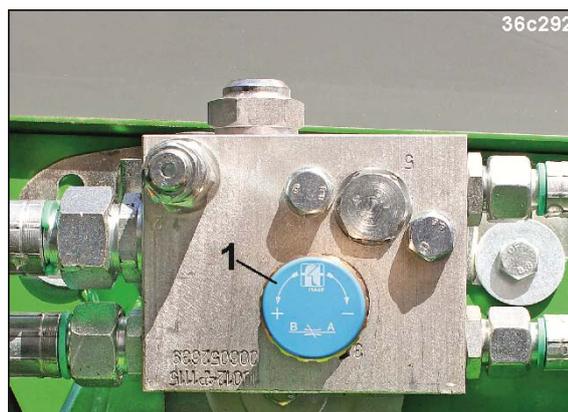
Settings before commissioning

Connect the hydraulic hose lines to the tractor hydraulic system as follows:

Pressure line with the label P (red)	Connection to a single-acting tractor control unit with priority.
Return flow line with the label T (yellow)	Connection to an unpressurised tractor connection with direct access to the hydraulic fluid tank. The capacity of the tractor's oil tank should be at least twice the oil flow rate. High oil flow rates in conjunction with small oil tanks encourage rapid heating of the hydraulic fluid. The pressure in the oil return flow may not exceed 10 bar. Do not connect the return line to a tractor control unit to prevent the back pressure from exceeding 10 bar.
Important	Connection to the tractor: First connect the return line, and then the pressure line. Uncoupling from the tractor: First disconnect the pressure line, and then the return line.

5.7.2 Setting the blower fan speed on tractors with flow control valve

1. Close the flow control valve of the tractor.
2. Turn the control valve (1) of the GreenDrill counter clockwise (+) and open it completely.
3. Run the tractor engine up to operating speed.
4. Set the blower fan to the required blower fan speed.
 - 4.1 Use the flow control valve of the tractor to slowly increase the oil quantity.
 - 4.2 Check the spread pattern on the field.
 - 4.3 Optimise the spread pattern by adjusting the blower fan speed.

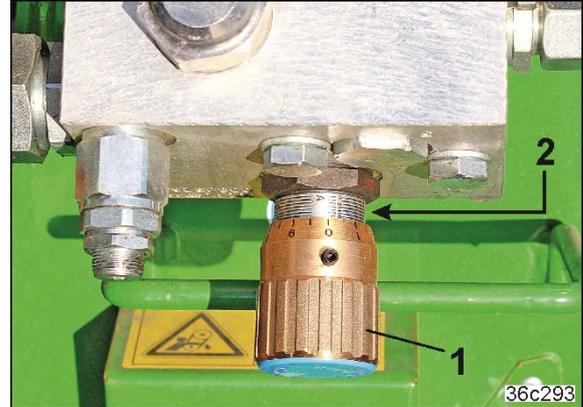


5.7.3 Setting the blower fan speed on tractors without flow control valve



Close the control valve (1) of the hydraulic control block before actuating the tractor control unit to prevent damage when the blower fan over-revs.

1. Close the control valve (1) of the GreenDrill.
 - 1.1 Turn the control valve (1) of the GreenDrill clockwise (-) up to the stop.
2. Run the tractor engine up to operating speed.
3. Apply pressure on the control block with the control valve (1).
 - 3.1 Actuate the tractor control unit.



4. Set the blower fan to the required blower fan speed.
 - 4.1. Read the scale value (2) from the following table.

Working width	3.0 m	6.0 m	12.0 m	
Scale value	3	4	max.	Normal seed
	2	3	4	Fine seed

- 4.2. Set the scale value (2) on the control valve (1).
- 4.2 Check the spread pattern on the field.
- 4.3 Optimise the spread pattern by adjusting the blower fan speed.

6 GreenDrill control terminal 3.2



- (1) GreenDrill control terminal 3.2
- (2) Bracket for the control terminal
- (3) Power cable for 3-pin tractor standard socket (12-volt).

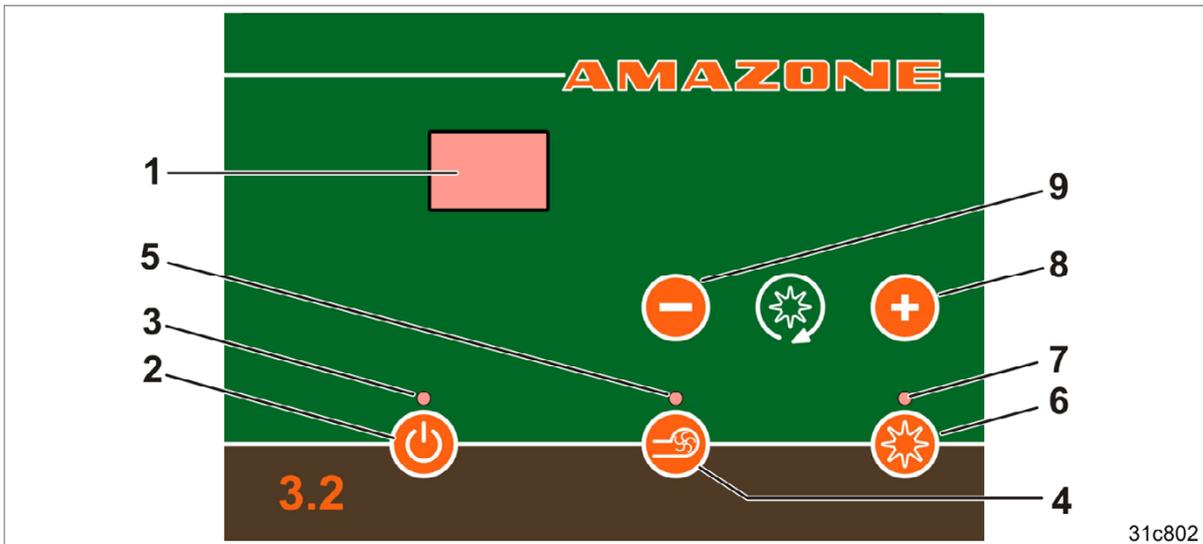


- (1) Plug (3-pin) for power supply
- (2) Signal plug (6-pin) for the implement cable
The implement cable connects the control terminal with the GreenDrill.
- (3) 30 A fuse



When not in use, protect the plug of the implement cable from moisture. Use the plug protective cap.

6.1 Control elements



- | | |
|--|---|
| (1) Display | (6) Switch seeding shaft on/off |
| (2) On/Off button | (7) The control lamp is illuminated when the seeding shaft is running |
| (3) The control lamp is illuminated when the control terminal is switched on | (8) Increase the seeding shaft speed |
| (4) Switch the electric blower fan drive on and off | (9) Decrease the seeding shaft speed |

The button is without function with the hydraulic blower fan drive

- (5) The control lamp is illuminated when the blower fan is switched on.

With the hydraulic blower fan drive, a pressure sensor is required, see section "Hydraulic blower fan drive", page 38

6.2 Initial operation of control terminal 3.2

6.2.1 Switching on the control terminal

1. Instruct any people in the area to stand at a minimum distance of 10 m from the implement.
2. Press the  button.
 - The control lamp above the button is illuminated
 - The control terminal is switched on
 - The two-part display shows
 - o the device version
 - o then the last set seeding shaft speed, e.g., 50 %.

The seeding shaft motor and blower fan motor do not rotate.



The control terminal is switched off after 1.5 hours if no button has been pressed in this time and the seeding shaft is switched off.

6.2.2 Switching off the control terminal



When work is completed, first switch off the seeding shaft, then the blower fan, and finally the control terminal.

1. Press the  button.
 - the control lamp above the button is turned off
 - the control terminal is switched off.
2. Pull the power cable plug for the control terminal out of the socket.



After switching off the control terminal, pull the power cable plug out for the control terminal out of the socket.

6.3 Determining the seeding shaft speed

To spread the desired seed rate, read the required seeding shaft speed [%] from the seeding tables (as of page 107).

Example:

Seed: Rapeseed
Desired spread rate: 20.2 [kg/ha] = 1.62 [kg/min.]
Forward speed: 12.0 [km/h]
Working width: 4.0 [m]
Seeding shaft with seed metering wheels: .fb-f-bb
Seeding shaft speed: 50 [%]

Conversion of the spread rate from [kg/ha] to [kg/min]

The desired spread rate [kg/min] is specified in the seeding table. The following formula is used to convert the spread rate in [kg/ha] to spread rate in [kg/min.]. The inserted values come from our example (see above).

$$\text{spread rate [kg/min.]} = \frac{\text{spread rate [kg/ha]} \times \text{tractor speed [km/h]} \times \text{working width [m]}}{600}$$

$$\text{Spread rate [kg/min.]} = \frac{20.2 \text{ [kg/ha]} \times 12.0 \text{ [km/h]} \times 4.0 \text{ [m]}}{600} = 1.62 \text{ [kg/min.]}$$

6.4 Calibration test



Switch off the seeding shaft motor and the blower fan motor.

The blower fan cannot be switched on during calibration.

1. Prepare the implement for the calibration test (see section 5.6, page 46).
2. Check that the correct seed metering wheels have been fitted.
3. Fill the seed hopper (see section 5.5, page 45).
4. Adjust the brush for the seed type (see section 4.1.3, page 35).
5. Determine the seeding shaft speed (see section 6.3, page 53).
6. Switch on the control terminal (see section 6.2.1, page 52).
7. Enter the determined seeding shaft speed (e.g. 50 [%]) on the control terminal using the  button.
8. Start the calibration test:
Press the  button, hold, and press the  button
→ The seeding shaft rotates for precisely one minute.
9. Weigh the seed quantity collected during calibration and compare with the required seed quantity.

Example:

- Required spread rate: 1.62 kg/min.
- Actual spread rate: 1.46 kg/min. (at a seeding shaft speed of 50%).

The actual spread rate is 10% lower than the desired spread rate.

Increase the seeding shaft speed by 10% to 55%.

10. Repeat the calibration test until the desired spread rate is achieved.



The calibration test can be terminated early by pressing one of the buttons   and .

6.5 Adjusting the blower fan speed (electric blower fan drive)

1. Press and hold the  button for 2 seconds.
→ The display flashes the current blower fan speed.
2. Enter the desired blower fan speed with the   buttons (e.g. 60 %).
3. Save the entry with the  or  button.
→ The display shows the current seeding shaft speed.



The blower fan speed of the electrically driven blower fan can also be adjusted, as described above, during operation.

6.6 Adjusting the blower fan speed (hydraulic blower drive)

The section "Hydraulic blower fan drive", page 47, describes the adjustment of the blower fan speed.

6.7 Starting work at the beginning of the field



Do not switch off the blower fan during use.

Before starting work

1. Close the seed hopper cover.
2. Check if the deflector plates have the same distance.
3. Check that the seed delivery hoses drop downwards along the entire length.

Work commencement

1. Instruct any people in the area to stand at a minimum distance of 10 m from the implement.
2. Start the tractor.
3. Press the  button.
 - The green control lamp above the button is illuminated.
 - The control terminal is switched on
 - The two-part display shows
 - the implement version
 - and then the seeding shaft speed [speed in %].
4. Press the  button.
 - The red control lamp above the button is flashing
 - The blower fan begins to rotate
 - When the blower fan nominal speed is reached, the control lamp stops flashing and is constantly illuminated.
5. Press the  button.
 - The green control lamp above the button is illuminated.
 - The seeding shaft rotates at the nominal speed.
 - The seed is metered.



To prevent blockage in the seed tube lines, the seeding shaft can only be switched on when the blower fan is running.

The speeds of the seeding shaft and blower fan do not change with changing working speeds.

6.8 Turning at end of the field

1. Press the  button.
 - The green control lamp above the button is turned off
 - The seeding shaft stops
 - The blower fan continues to run.
2. Lift the carrying implement, turn, and move back to working position.
3. Start driving and press the  button.
 - The green control lamp above the button is illuminated.
 - The seeding shaft rotates at the nominal speed.
 - The seed is metered.

6.9 Emptying the seed hopper

1. Prepare the implement for emptying the seed hopper (see section 5.6, page 46).
2. Switch on the control terminal.
3. Do not switch on the blower fan.
4. Press the  button, hold it and press the  button.
 - The seeding shaft rotates at maximum speed.
5. Press the  button as soon as the seed hopper is empty and the seed metering wheels no longer convey seed.
 - The seeding shaft stops.



The seeding shaft drive can be switched off at any time by pressing the  button.

6.10 Faults



DANGER

Before eliminating a fault

- Read and observe the "Faults" section in the operating manual for the carrying implement
- Position the combination on a firm, horizontal surface
- Switch off the seeding shaft and blower fan of the GreenDrill
- Switch off the GreenDrill control terminal.
Risk of accident due to accidental starting up of the blower fan or metering unit.
- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key
- Secure the tractor and implement against unintentional start-up and rolling away.

Is displayed on the screen after switching on the control terminal, if there is no display, check

- whether the power cable is properly attached
 - to the control terminal
 - in the tractor socket
- the fuse in the control terminal
- the cable connections on the battery poles,
if the standard socket is connected to the tractor battery.

In case of a system fault

- The control terminal shows the fault message in a coded form (see Table, unterhalb)
- An acoustic signal is issued.

Fault message	Cause	Troubleshooting
01	Operating voltage is too low	Reduce consumer Check the battery and cables Check the alternator
02	Operating voltage is too high	Check the alternator
03	Internal control voltage is too low	Contact the service partner
04	The seeding shaft is blocked	Switch off the control terminal Remove any foreign objects from the seed drill and agitator shaft area.
05	The seeding shaft motor is without current	Check the connector and cable
06	The seeding shaft motor is not rotating. <ul style="list-style-type: none"> • with proper connection • without being blocked. 	Contact the service partner
07	The blower fan motor is blocked	Switch off the control terminal Remove any foreign objects from the blower fan area.
08	The wiring is incorrect or not even connected	Check the connector and cable
09	The blower fan motor is not rotating. <ul style="list-style-type: none"> • with proper connection • without being blocked. 	Contact the service partner

6.11 Installations and connections – Control terminal 3.2

6.11.1 Installation of the control terminal 3.2

1. Fasten the bracket (1) in the tractor cab with 2 screws.
2. Bend the bracket to ensure optimal reading of the display.
3. Attach the control terminal on the bracket in the tractor cab.



6.11.2 Connecting the GreenDrill to the control terminal using the implement cable

The implement cable connects the control terminal with the GreenDrill.

Connect the implement cable to the 6-pin signal socket (1) of the control terminal.



Store the spare cable in the cab.
Do not coil up the cable.

6.11.3 Power connection

6.11.4 Tractor with standard socket (3-pin)

Connect the power cable (1) to control terminal and the 3-pin standard socket in the tractor cab.



Never connect the 12 volt power supply to the cigarette lighter socket.



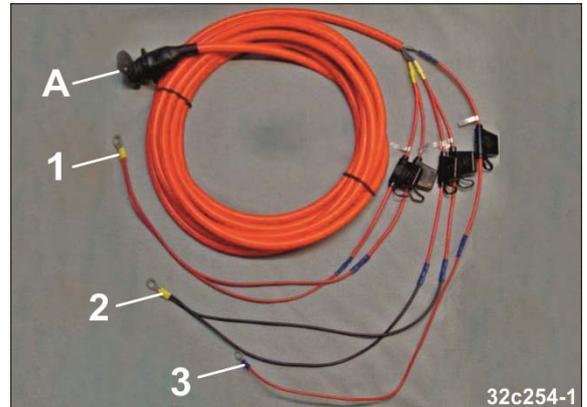
6.11.5 Tractor without standard socket (3-pin)

If the tractor is not equipped with a 3-pin standard socket, have the battery cable retrofitted on your tractor at a specialist workshop. The battery cable has a 3-pin standard socket (A).

Have the 3-pin standard socket (A) of the battery cable routed to the tractor cab.

Connect the cable ends of the battery cable as follows:

No.	Colour	Connection
1	Red	Positive battery terminal
2	Black	Negative battery terminal
3	Red	Ignition plus terminal



Never run a battery charging device together with the control terminal.

6.12 Programming by your AMAZONE service partner

This section explains the programming of the implement configuration on control terminal 3.2. Have the programming performed by your AMAZONE service partner.



Before each setting, first switch off the seeding shaft motor and then the blower fan motor.

6.12.1 Blower fan drive

Settings in the program:

Setting with electric blower fan drive:..... ON

Setting with hydraulic blower fan drive:..... OFF

1. Switch the control terminal off and then back on again (see page 52).
2. Press and hold the  button when switching on and then also press the  button. The program is opened when the buttons are released.
3. Press the  button repeatedly until the desired setting (ON or OFF) appears on the display.
4. Save the programming with the  or  button and exit the program.

6.12.2 Selecting the seeding shaft gearbox motor

Settings in the program:

Setting for GreenDrill with 8 outlets: 8

Setting for GreenDrill with 16 outlets: 16

1. Switch the control terminal off and then back on again (see page 52).
2. Press and hold the  button when switching on and then also press the  button. The program is opened when the buttons are released.
3. Press the  button repeatedly until the desired setting (8 or 16) appears on the display.
4. Save the programming with the  or  button and exit the program.

7 GreenDrill control terminal 5.2



- (1) GreenDrill control terminal 5.2
- (2) Bracket for the control terminal
- (3) Power cable for 3-pin tractor standard socket (12-volt)

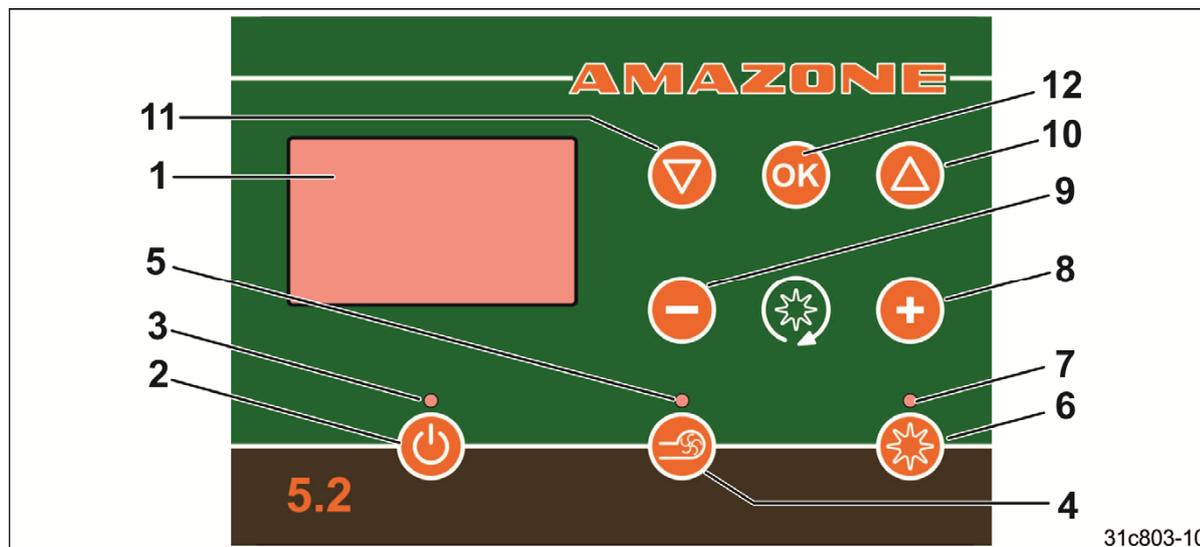


- (1) Socket (3-pin) for power supply
- (2) Signal socket (6-pin) for the implement cable
The implement cable connects the control terminal with the GreenDrill.
- (3) 30 A fuse
- (4) Signal socket (12-pin) for connection
 - o to the 7-pin tractor signal socket or
 - o to a splitter (see e.g. section "7.18.4.3", page 95).



When not in use, protect the plug of the implement cable from moisture. Use the plug protective cap.

7.1 Control elements



- | | |
|---|---|
| <p>(1) Graphic display</p> <p>(2) On/Off button</p> <p>(3) The control lamp is illuminated when the control terminal is switched on</p> <p>(4) Switch the electric blower fan drive on and off.
The button is without function with the hydraulic blower fan drive.</p> <p>(5) The control lamp is illuminated when the blower fan is switched on.
With the hydraulic blower fan drive, a pressure sensor is required, see section "Hydraulic blower fan drive", page 38.</p> | <p>(6) Switch seeding shaft on/off</p> <p>(7) The control lamp is illuminated when the seeding shaft is running</p> <p>(8) Increase the seeding shaft speed</p> <p>(9) Decrease the seeding shaft speed</p> <p>(10) Cursor key (moves up in the menu)</p> <p>(11) Cursor key (moves down in the menu)</p> <p>(12) Button for confirming the selection</p> |
|---|---|

7.2 Initial operation of control terminal 5.2

7.2.1 Switching on the control terminal

1. Instruct any people in the area to stand at a minimum distance of 10 m from the implement.
2. Press the  button.
 - The control lamp above the button is illuminated
 - The control terminal is switched on
 - The terminal type and the software version appear on the display.
 - The display switches to the main menu.



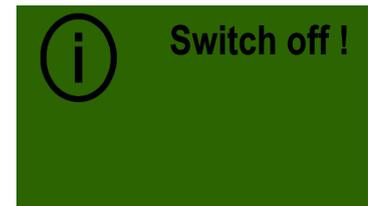
The control terminal is switched off after 1.5 hours if no button has been pressed in this time and the seeding shaft is switched off.

7.2.2 Switching off the control terminal



When work is completed, first switch off the seeding shaft, then the blower fan, and finally the control terminal.

1. Press the  button.
 - Brief display before switching off the control terminal
 - The control lamp above the button is turned off
 - The control terminal is switched off.
2. Pull the power cable plug for the control terminal out of the socket.



After switching off the control terminal, pull the power cable plug out for the control terminal out of the socket.

7.3 Main menu

7.3.1 During operation - Display without speed sensor

Line 1 in the main menu shows

the seeding shaft speed [%] set for calibration.

Line 2 in the main menu shows

the forward speed [km/h] set for calibration.

The seeding shaft speed is not adjusted for changing forward speeds. Always maintain the indicated forward speed [km/h] during operation.



7.3.2 During operation - Display with speed sensor

Line 1 in the main menu shows the seeding shaft speed [%]

Setpoint 50 %

Actual value 25 %

Line 2 in the main menu shows the forward speed [km/h]

Setpoint 20 km/h

Actual value 10 km/h



Display	Setpoint	Actual value
Seeding shaft speed [%]	The target seeding shaft speed is calculated during the calibration test	The actual seeding shaft speed is calculated according to the forward speed and is shown in the main menu
Forward speed [km/h]	The set forward speed is adjusted in the "Calibration" submenu	The actual forward speed [km/h] is measured using the speed sensor and is shown in the main menu.



The current seeding shaft speed should not undercut the 10 % displayed value to prevent deviations in the spread rate.

7.3.3 During operation - Changing the spread rate

In the main menu, the seeding shaft speed and therefore the spread rate can be changed in 1 %-increments during operation.

The spread rate is

- increased by pressing the  button.
- reduced by pressing the  button.



SW %	61 /	50.3
km/h	10.0 /	8.3
kg/ha	+10%	13.2

7.3.4 Pre-metering

If the seeding shaft rotates before beginning the field pass or when standing still on the field, press and hold the  button. The blower fan starts running and after a few seconds, the seeding shaft begins to rotate at the speed determined during calibration.

As soon as the button is released, the seeding shaft speed is adapted to the forward speed.

If the control terminal is connected to the 7-pin signal socket on the tractor or if the working position sensor is active, the carrying implement must be in working position.

7.4 Submenus

With the   buttons, the following submenu can be called up from the main menu:

1. Language
2. Operating voltage
3. Hectare counter
4. Working hour counter
5. Emptying the seed hopper
6. Calibration (kg/ha or grains/m²)
7. Calibration (pulses/100 m)
8. Set the blower fan speed.



If no button is pressed, the display switches to the main menu after approx. 60 seconds.

7.5 Set language

1. Call up the submenu using the   buttons.
2. Confirm the selection with the  button.
3. Select the desired language with the   buttons.
4. Confirm the selection with the  button.
5. Back to the main menu with the   buttons.



Sprache	Language
Lange	Язык ?



Sprache	Language
Lange	Язык ?
English	

7.6 Calibration [kg/ha and grains/m²]



The seed calibration can be terminated at any time by pressing the  button or  button.

The blower fan cannot be switched on during calibration.

1. Prepare the implement for the calibration test (see section 5.6, page 46).
2. Check that the correct seed metering wheels have been fitted.
3. Fill the seed hopper (see section 5.5, page 45).
4. Adjust the brush for the seed type (see section 4.1.3, page 35).
5. Call up the "Calibration" submenu using the   buttons.
6. Confirm the selection with the  button.
7. Select the display with the   buttons.
8. Confirm the selection with the  button.
9. Select the display with the   buttons.
10. Confirm the selection with the  button.
11. Enter the working width with the   buttons (e.g., 3.7 m).
12. Confirm the entry with the  button.
13. Select the display with the   buttons.
14. Confirm the selection with the  button.
15. Enter the forward speed with the   buttons (e.g. 12.5 km/h).
16. Confirm the entry with the  button.
17. Select the desired calibration test with the   buttons
 - o calibration [kg/ha] or
 - o calibration [grains/m²].

Calibration test

Settings

Working width ?

3.7 m

Tractor-speed ?

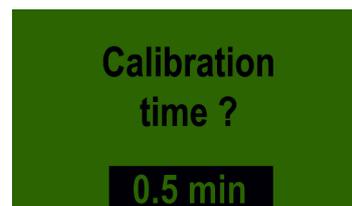
12.5 km/h

Calibration via

kg/ha

7.6.1 Calibration [kg/ha]

1. Make all of the entries shown in section 7.6, page 69.
2. Select the display with the   buttons.
3. Confirm the selection with the  button.
4. Enter the desired spread rate with the   buttons (e.g. 103.5 kg/ha).
5. Confirm the entry with the  button.
6. Select the display with the   buttons.
7. Confirm the selection with the  button.
8. Enter the desired duration ¹⁾²⁾ for the calibration test with the   buttons (e.g. 0.5 min).
9. Confirm the entry with the  button.



¹⁾ Calibrate for 0.5 minutes
for seeds, e.g., wheat, barley, peas and large spread rates

Calibrate for 1.0 minute
for all seeds (standard)

Calibrate for 2.0 minutes
for fine seeds, e.g., rapeseed and phacelia.

²⁾ The "Calibration duration" menu item does not appear when

- o the GreenDrill has a calibration button (see section 7.6.3, page 74) and
- o the menu item "Calibration button available" (see section 7.20.10, page 104) is answered with "YES".

10. Select the display with the   buttons.
11. Confirm the selection with the  button.

The calibration starts.

- The seeding shaft begins to rotate (without blower fan).
- The seeding shaft stops automatically after the set time has elapsed.
- During calibration, keep the calibration button (if available) pressed. The seeding shaft stops after the button is released.

Do not select a shorter duration for the calibration than specified (see point 8).

12. Weigh the collected seed.

13. Select the display with the   buttons.

14. Confirm the selection with the  button.

15. Enter the weight [kg] of the collected seed on the control terminal using the   buttons (e.g. 3.25 kg).

16. Confirm the entry with the  button.

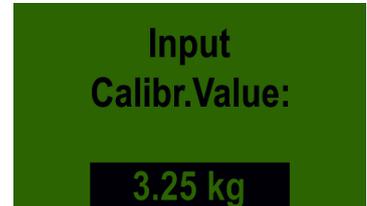
- The required seeding shaft speed is calculated automatically.

The theoretical seeding shaft speed is calculated from the initial data (working width and forward speed). If the calibrated seeding shaft speed deviates by more than 3%

- the adjacent display appears.
- repeat the calibration.

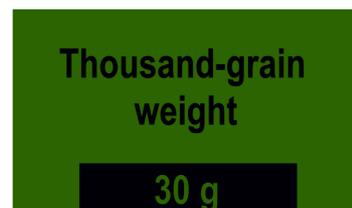
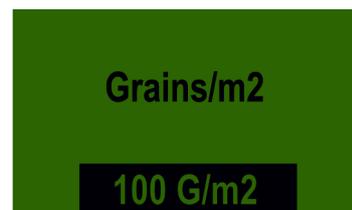
Display after correctly terminated calibration test.

If no button is pressed, the display switches to the main menu after approx. 5 seconds (see page 66).

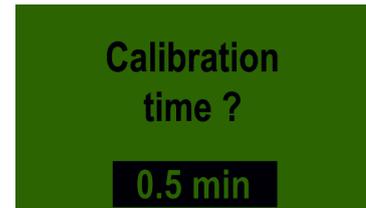


7.6.2 Calibration [grains/m²]

1. Make all of the entries shown in section 7.6, page 69.
2. Select the display with the   buttons.
3. Confirm the selection with the  button.
4. Enter the desired spread rate (e.g. 100 grains/m²) with the   buttons.
5. Confirm the entry with the  button.
6. Select the display with the   buttons.
7. Confirm the selection with the  button.
8. Enter the 1000-grain weight with the   buttons (e.g. 30 g).
9. Confirm the entry with the  button.
10. Select the display with the   buttons.
11. Confirm the selection with the  button.
12. Enter the germination capacity of the seed with the   buttons (e.g. 95 %).
13. Confirm the entry with the  button.



14. Select the display with the   buttons.
15. Confirm the selection with the  button.
16. Enter the desired duration ¹⁾²⁾ for the calibration test with the   buttons (e.g. 0.5 min).
17. Confirm the entry with the  button.



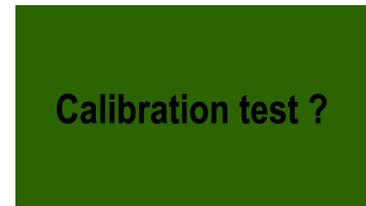
1) Calibrate for 0.5 minutes
for seeds, e.g., wheat, barley, peas and large spread rates

Calibrate for 1.0 minute
for all seeds (standard)

Calibrate for 2.0 minutes
for fine seeds, e.g., rapeseed and phacelia.

- 2) The "Calibration duration" menu item does not appear when
- o the GreenDrill has a calibration button (see section 7.6.3, page 74) and
 - o the menu item "Calibration button available" (see section 7.20.10, page 104) is answered with "YES".

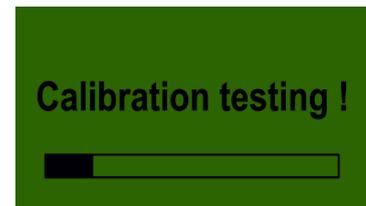
18. Select the display with the   buttons.
19. Confirm the selection with the  button.



The calibration starts.

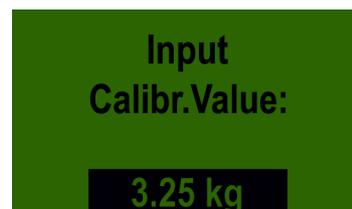
- The seeding shaft begins to rotate (without blower fan).
- The seeding shaft stops automatically after the set time has elapsed.
- Keep the calibration button (if available) pressed for the duration of the calibration test. The seeding shaft stops after the button is released.

Do not select a shorter duration for the calibration test than specified above (see Point 16).



GreenDrill control terminal 5.2

20. Weigh the collected seed.
21. Select the display with the   buttons.
22. Confirm the selection with the  button.
23. Enter the weight [kg] of the collected seed on the control terminal using the   buttons (e.g. 3.25 kg).
24. Confirm the entry with the  button.
 - The required seeding shaft speed is calculated automatically.



The theoretical seeding shaft speed is calculated from the initial data (working width and forward speed). If the calibrated seeding shaft speed deviates by more than 3%

- the adjacent display appears.
- the calibration must be repeated.



Display after correctly terminated calibration test

If no button is pressed, the display switches to the main menu after approx. 5 seconds. (see page 66).



7.6.2.1 Conversion of the seed rate [grains/m²] in [kg/ha]

$$\text{Seed rate [kg/ha]} = \frac{\text{TGW [g]} \times \text{grains/m}^2}{\text{Germination capacity [\%]}}$$

7.6.3 Seed calibration button

The calibration button (1) serves for starting the seed calibration test and for emptying the seed hopper.

The seeding shaft starts rotating when the calibration button is pressed. The seeding shaft rotates as long as the calibration button is pressed.

During the seed calibration test, the running time of the seeding shaft is automatically included in the calculation.

The calibration button is attached to the implement with magnets.



7.7 Calibration (pulses/100 m)

The calculation requires the "pulses/100 m" calibration value

- the travel speed [km/h].
- the worked area [ha] (hectare counter).
- the seeding shaft speed.

If the calibration value is not known, it must be determined by means of a "Pulses per 100 m" calibration run. The calibration value must be determined under operating conditions on the field.

If

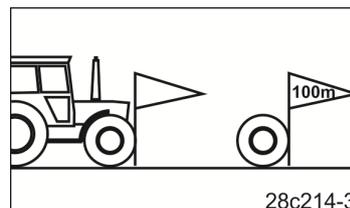
- the "Pulses per 100 m" calibration value is known, it can be entered manually.
- the system has a GPS device, the "Pulses per 100 m" calibration value is not required.

Determine the calibration value

- before initial use.
- when changing from heavy to light soil and vice versa.
On different soils, the calibration value (pulses/100 m) can change due to
 - slippage of the measuring or drive wheel
 - a change in the number of pulses from the radar device.
- if there are differences between the indicated and actual forward speed.
- if there are differences between the measured and actual worked area.

7.7.1 Calibration by driving a calibration distance

1. On the field, measure out a calibration distance of exactly 100 m.
Mark the start and end point of the calibration distance.
2. Drive the tractor to the starting position and put the carrying implement into working position.



3. Select the display with the   buttons.
4. Confirm the selection with the  button.



5. Confirm the display with the  button.



6. Actuate the  button and drive exactly the calibration distance.



7. Stop after exactly 100 m and press the  button.



→ Display when the calibration is complete

If no button is pressed, the display switches to the main menu after approx. 5 seconds.



7.7.2 Calibration by comparing the speedometer

1. Select the display with the   buttons.
2. Confirm the selection with the  button.
3. Select the display with the   buttons.
4. Confirm the display with the  button.
5. Start the tractor for the calibration run.
During the calibration run, compare the speeds shown on the display with those on the tractor's speedometer.
Correct the value using the    buttons, until both values are the same.



Calibrate
Speed ?



Manual ?



Manual ?

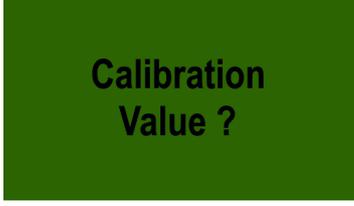
13 km/h 125 %

7.7.3 Enter the calibration value manually

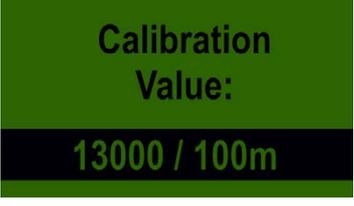
1. Select the display with the   buttons.
2. Confirm the selection with the  button.
3. Select the display with the   buttons.
4. Confirm the display with the  button.
5. If known, enter the calibration value with the   buttons, e.g., "13000" for 13000 [pulses/100 m].



Calibrate
Speed ?



Calibration
Value ?



Calibration
Value:

13000 / 100m

7.7.4 Restoring the factory setting for the calibration value (reset)

1. Select the display with the   buttons.

2. Confirm the selection with the  button.

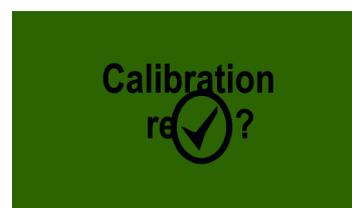
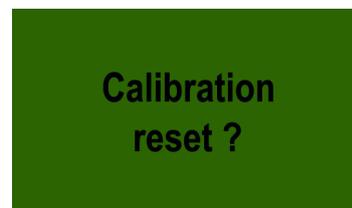
3. Select the display with the   buttons.

4. Confirm the display with the  button.

→ The factory setting for the calibration value has been restored.

Display after completed reset

If no button is pressed, the display switches to the main menu after approx. 5 seconds.



7.8 Hectare counter

Area calculation

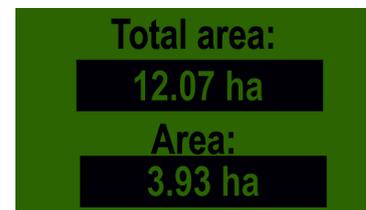
- is carried out using the "actual" forward speed values.

The control terminal must be connected

- to the 7-pin tractor signal socket (see section 7.18.4.1, page 93) or
 - to the radar device (see section 7.18.4.3, page 95) or
 - to the GPS device (see section 7.18.4.4, page 96).
- begins as soon as the seeding shaft starts rotating and the tractor starts moving.

7.8.1 Display of the areas / deleting part areas

1. Select the display with the   buttons.
2. Confirm the selection with the  button.
The following are displayed
 - the total area [ha]
 - the part area [ha]
3. Press and hold the  button for 5 seconds to set the part area to zero.
The total area cannot be reset.



7.9 Operating hours counter

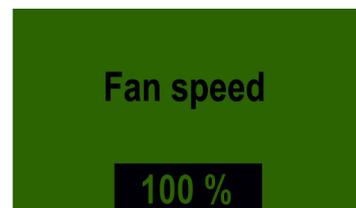
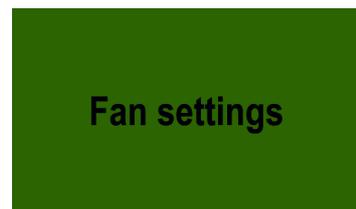
The working hour counter shows the run time of the seeding shaft.

1. Select the display with the   buttons.
2. Confirm the selection with the  button.
The following are displayed
 - the total hours [h]
 - the daily hours [h]
3. Press and hold the  button for 5 seconds to set the daily hours to zero.
The total hours cannot be reset.



7.10 Adjusting the blower fan speed (electric blower fan drive)

1. Select the display with the   buttons.
2. Confirm the selection with the  button.
3. Select the display with the   buttons.
4. Confirm the selection with the  button.
5. Enter the desired blower fan speed with the   buttons (e.g., 100 %).
6. Confirm the entry with the  button.



If no button is pressed, the display switches to the main menu after approx. 5 seconds.



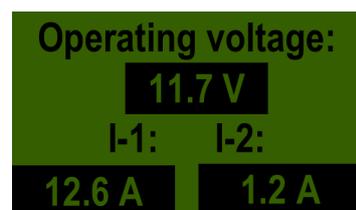
The blower fan speed of the electrically driven blower fan can also be adjusted during operation.

7.11 Adjusting the blower fan speed (hydraulic blower drive)

The section "Hydraulic blower fan drive", page 47, describes the adjustment of the blower fan speed.

7.12 Operating voltage

1. Select the display with the   buttons.
2. Confirm the selection with the  button.



Display:

- [V] Operating voltage [volt]
- I-1 Shows the current consumption [amps] of the electrically driven blower fan motor.
- I-2 Shows the current consumption [amps] of the seeding shaft motor.

If there are strong fluctuations in the operating voltage during operation, there may be errors in the seeding rate.

7.13 Starting work at the beginning of the field



Do not switch off the blower fan during use.

Before starting work

1. Close the seed hopper cover.
2. Check if the deflector plates have the same distance.
3. Check that the seed delivery hoses drop downwards along the entire length.

Work commencement

1. Instruct any people in the area to stand at a minimum distance of 10 m from the implement.
2. Start the tractor.
3. Press the  button.
 - The green control lamp above the button is illuminated.
 - The control terminal is switched on
 - The two-part display shows
 - the implement version
 - and then the seeding shaft speed [speed in %].
4. Press the  button.
 - The red control lamp above the button is flashing
 - The blower fan begins to rotate
 - When the blower fan nominal speed is reached, the control lamp stops flashing and is constantly illuminated.
5. Press the  button.
 - The green control lamp above the button is illuminated.
 - The seeding shaft rotates at the nominal speed.
 - The seed is metered.



To prevent blockage in the seed tube lines, the seeding shaft can only be switched on when the blower fan is running.

The speeds of the seeding shaft and blower fan do not change with changing working speeds.

7.14 Turning at end of the field

Turning with position signal (working/transport position)

The turning procedure takes place automatically when the implement receives the following signals:

- The implement is in working position
- The implement is in transport position.

To do so, the implement must

- be connected to the tractor socket (7-pin) or
- have a working position sensor.

When turning, the seeding shaft is automatically switched off as soon as the implement is in transport position. After turning, the seeding shaft is automatically switched on again as soon as the implement is in working position. The blower fan is not switched off during the whole procedure.

Turning without position signal (working/transport position)

Turning without position signal (working/transport position):

1. Press the  button.
 - The green control lamp above the button is turned off
 - The seeding shaft stops
 - The blower fan continues to run.
2. Lift the carrying implement, turn, and move back to working position.
3. Start driving and press the  button.
 - The green control lamp above the button is illuminated.
 - The seeding shaft rotates at the nominal speed.
 - The seed is metered.

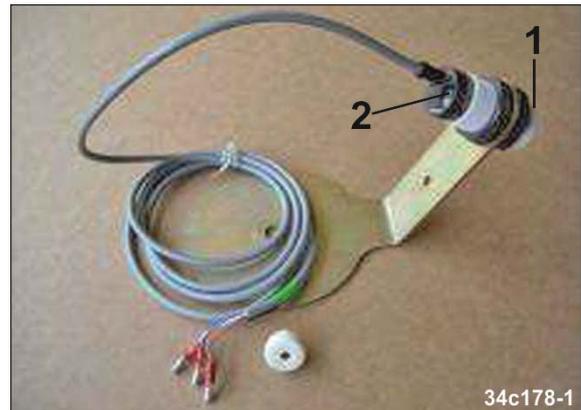
7.15 Fill level control

A low level sensor (1) monitors the seed level in the seed hopper.

If the seed level reaches the low level sensor, an acoustic signal is emitted. At the same time, the control terminal displays a warning message. This warning message is intended to remind the tractor driver to refill the seeds in due time.

The height of the low level sensor is adjustable when the seed hopper is empty.

The intensity of the sensor can be changed with the small sensor bolt (2).



The fastening height of the low level sensor depends on the filled material.

Cereals and legumes:

attach the sensor in the upper area.

Fine seed types (e.g., rapeseed):

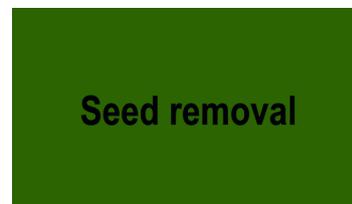
Fasten the sensor in the lower area.

7.16 Emptying the seed hopper

The seed hopper can be emptied through the menu controls or with the calibration button.

7.16.1 Emptying the seed hopper through the menu controls

1. Prepare the implement for emptying the seed hopper (see section 5.6, page 46).
2. Select the display with the   buttons.
3. Confirm the selection with the  button.
 - The seeding shaft motor is rotating at maximum speed. The blower fan cannot be switched on.
4. Press the  button as soon as the seed hopper is empty and the seed metering wheels no longer convey seed.
 - The seeding shaft stops
 - The display switches to the main menu.



The seeding shaft drive can be switched off at any time by pressing the  button.

7.16.2 Emptying the seed hopper with the calibration button

The calibration button must be signed in (see section 7.20.10, page 104).

1. Prepare the implement for emptying the seed hopper (see section 5.6, page 46).
2. Press the calibration button.
 - The seeding shaft motor is rotating at maximum speed. The blower fan cannot be switched on.
3. Keep pressing the calibration button until the seed hopper is empty and the seed metering wheels no longer convey seed.



7.17 Error messages

Error message	Description	Remedy
 Internal VCC (5V) not OK !	Control voltage is too low	Contact the service partner
 Operating voltage low !	Operating voltage (at least 10 volt) undercut, see section "7.12", page 80	<ul style="list-style-type: none"> • Minimise the consumers • Check the battery • Check the alternator • Check wiring
 Operating voltage not OK !	Operating voltage (at least 10 volt) undercut, or large voltage fluctuation, see section 7.12, page 80	<ul style="list-style-type: none"> • Minimise the consumers • Check the battery • Check the alternator • Check wiring
 Operating voltage high !	Operating voltage too high, see section 7.12, page 80	Check the alternator
 Hopper almost empty	Alarm from the low level sensor	Refill seed
 Calibration Value too high !	Calibration value "pulses per 100 m" is too high	Repeat the calibration, (see section 7.7, page 75)

Error message	Description	Remedy
 Calibration Value too low !	The calibration distance is too short "pulses/100 m"	Repeat the calibration, (see section 7.7, page 75)
 Sowing shaft speed too low!	The seeding shaft speed is too low. Display during seed calibration	Use seed metering wheels with a smaller volume or seeding shaft with fewer seed metering wheels
 Sowing shaft speed too high!	Seeding shaft speed is too high Display during seed calibration	Use seed metering wheels with a larger volume or seeding shaft with more seed metering wheels
 Calibration time too short!	Calibration time is too short Display when using the calibration button	Press and hold the calibration button for at least 30 seconds during calibration
 Tractor speed too high !	Forward speed too high	<ul style="list-style-type: none"> • Compare the displayed speed with the actual driven speed • Reduce the forward speed or • Use larger seed metering wheels
 Tractor speed too low !	The forward speed is too low	<ul style="list-style-type: none"> • Compare the displayed speed with the actual driven speed • Increase the forward speed or • Use smaller seed metering wheels

Error message	Description	Remedy
 <p>Motor overloaded (Sowing shaft) !</p>	<p>The seeding shaft is not rotating</p>	<p>Switch off control terminal.</p> <p>Check whether any foreign objects are hindering the rotation of the seeding shaft or agitator shaft.</p>
 <p>No motor rotation speed (Sowing shaft) !</p>	<p>The seeding shaft motor</p> <ul style="list-style-type: none"> • is connected • is not overloaded • is not rotating 	<p>Switch off control terminal.</p> <p>Contact the service partner.</p>
 <p>Motor not connected (Sowing shaft) !</p>	<p>The seeding shaft motor is not wired correctly</p>	<p>Check the cables and plug connections to the seeding shaft motor</p>
 <p>Please turn on fan</p>	<p>Blower fan with hydraulic drive and pressure sensor</p> <ul style="list-style-type: none"> • is not rotating • Control lamp without function. 	<p>Back pressure in the return flow is too high (see section 5.7.1, page 47).</p>

Error message	Description	Remedy
	<p>The blower fan is not rotating</p>	<p>Switch off control terminal.</p> <p>Check if</p> <ul style="list-style-type: none"> • foreign objects are hindering the rotation of the blower fan • the calibration plate is installed wrong (see section 5.6, page 46)
	<p>Blower fan motor with electric drive</p> <ul style="list-style-type: none"> • is connected • is not overloaded • is not rotating. 	<p>Switch off control terminal.</p> <p>Contact the service partner.</p>
	<p>The blower fan motor with electric drive is not wired correctly</p>	<p>Check the cables and plug connections to the blower fan motor.</p>

Fault	Possible fault elimination
Seeding shaft rotates in transport position	<ul style="list-style-type: none"> • Change the lifting unit signal (see section 0, page 102)
Seeding shaft does not rotate in working position	<ul style="list-style-type: none"> • Switch on the seeding shaft and start driving • Check the speed signal • Change the lifting unit signal (see section "Entry of the working position sensor signal source", page 102)
Low level sensor without alarm message	<ul style="list-style-type: none"> • Check the plug and cable • Change the intensity of the sensor (see section 7.15, page 83).
Low level sensor with continuous alarm	<ul style="list-style-type: none"> • Realign the low level sensor • Change the intensity of the sensor (see section 7.15, page 83)
Speed signal is missing	<ul style="list-style-type: none"> • Check the settings for the speed sensor (see section 7.20, page 99) • Check the labels and connections of the splitter • Test whether the speed signal is received on the control terminal, if the speed sensor is not connected to the splitter but rather to the control terminal. If signals are received, replace the defective splitter.
Lifting unit signal is missing	<ul style="list-style-type: none"> • Check whether the sensor and magnets are opposite to each other in the end position • Check the sensor settings (see section 7.20, page 99) • Check the connections and labels on the splitter • Test whether the lifting unit signal is received on the control terminal, if the lifting unit signal sensor is not connected to the splitter but rather to the control terminal. If signals are received, replace the defective splitter.
The control terminal cannot be switched on	<ul style="list-style-type: none"> • Check the plug and power cable • Check the fuse • Check the battery • Check the connections of the battery cable (if equipped) (see section 7.18.3.2, page 92).
The control terminal is switched off when the blower fan or seeding shaft motor is switched on	<ul style="list-style-type: none"> • Check the battery voltage • Check the contacts <ul style="list-style-type: none"> ○ Power cable plug ○ Implement cable plug



GreenDrill control terminal 5.2

Continuous or occasional forward speed display: 0.0 km/h	<p>The speed signal is not being detected</p> <p>Set the signal in section 7.20.4 to NO, if all of the settings in the sections</p> <p>section 7.20.4, section 7.20.5, section 7.20.6, section 0 and section 0</p> <p>(from page 100) are set to AUTO.</p>
The spread rate (kg/ha or grains/m ²) is not displayed	<p>Calibrate the seed (see section 7.6, page 69)</p>
The GreenDrill is spreading too much or too little seed	<ul style="list-style-type: none">• Correct the speed• Calibrate the speed sensor (see section 7.7, page 75). <p>Not required with GPS device.</p> <ul style="list-style-type: none">• Check the hectare counter (see section 7.8, page 79)• Calibrate the seed (see section 7.6, page 69)• Lifting unit sensor not correctly set switches over during operation• Only hydr. blower fan: Reduce the blower fan speed
The pressure in the oil return flow may be greater than 10 bar	<ul style="list-style-type: none">• Check the return line of the hydraulic hose line on the tractor (see section "Connecting the hydraulic hose lines to the tractor", page 47)• Use a larger return flow line• Use a larger hydraulic coupling• Use a new return line filter

7.18 Installations and connections – Control terminal 5.2

7.18.1 Installation of the control terminal 5.2

Fasten the bracket (1) in the tractor cab with 2 screws.

Bend the bracket so as to provide optimum reading of the display.

Insert the control terminal on the bracket in the tractor cab.



7.18.2 Implement cable connection

The implement cable connects the control terminal with the GreenDrill.

Connect the implement cable to the 6-pin signal socket (1) of the control terminal.



Store the spare cable in the cab.
Do not coil up the cable.

7.18.3 Power cable connection

7.18.3.1 Tractor with standard socket (3-pin)

Connect the power cable (1) to control terminal and the 3-pin standard socket in the tractor cab.



Never connect the 12 volt power supply to the cigarette lighter socket.



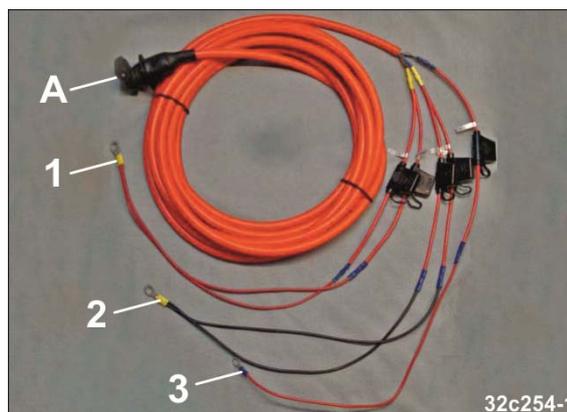
7.18.3.2 Tractor without standard socket (3-pin)

If the tractor is not equipped with a 3-pin standard socket, have the battery cable retrofitted on your tractor at a specialist workshop. The battery cable has a 3-pin standard socket (A).

Have the 3-pin standard socket (A) of the battery cable routed to the tractor cab.

Connect the cable ends of the battery cable as follows:

No.	Colour	Connection
1	Red	Positive battery terminal
2	Black	Negative battery terminal
3	Red	Ignition plus terminal



Never run a battery charging device together with the control terminal.

7.18.4 Signal sources

The control terminal shows the forward speed [km/h] and adjusts the seeding shaft speed according to the changing forward speed. The seed rate [kg/ha] remains unchanged even at varying forward speeds. If it is set correctly, speed differences of 50 % are adjusted up or down.

When the implement is raised, e.g., when turning at the end of the field, the seeding shaft automatically stops rotating. When the implement is lowered to the working position after turning, the seeding shaft starts rotating again.

For displaying, control terminal 5.2 needs the following 3 signals:

- Actual forward speed [km/h]
- The implement is in working position (e.g. lifting gear signal from the tractor)
- The implement is in transport position (e.g. lifting gear signal from the tractor).

The signal source must be entered in the programming menu (see section "Signal sources", page 101).

7.18.4.1 Tractor signal socket (7-pin)

The signal cable (1) transmits the 3 signals from the 7-pin tractor signal socket to the control terminal.



Connect the signal cable to the 12-pin signal socket (1) of the control terminal.



7.18.4.2 Working position sensor

The working position sensor (1) is required when the tractor has a 7-pin signal socket that does not emit a "Working position" signal [see section "Tractor signal socket (7-pin)", page 93].

The working position sensor (1) can be attached on the tractor three-point or on the swivelling running gear of the carrying implement.

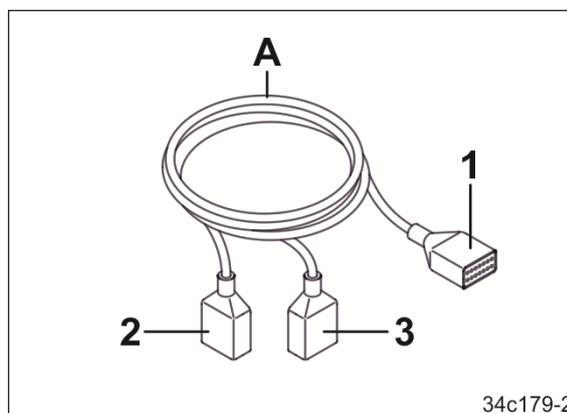
The working position sensor transmits the current position of the GreenDrill to the control terminal:

- The implement is in working position
- The implement is in transport position.

Have retroactively purchased special equipment installed by a specialist workshop based on the supplied assembly instructions.

The supplied splitter (A) has 3 connections:

- Connection (1): Control terminal
- Connection (2): 7-pin tractor socket
The connection transmits the forward speed [km/h].
- Connection (3): Working position sensor



7.18.4.3 Measuring the forward speed with the radar device

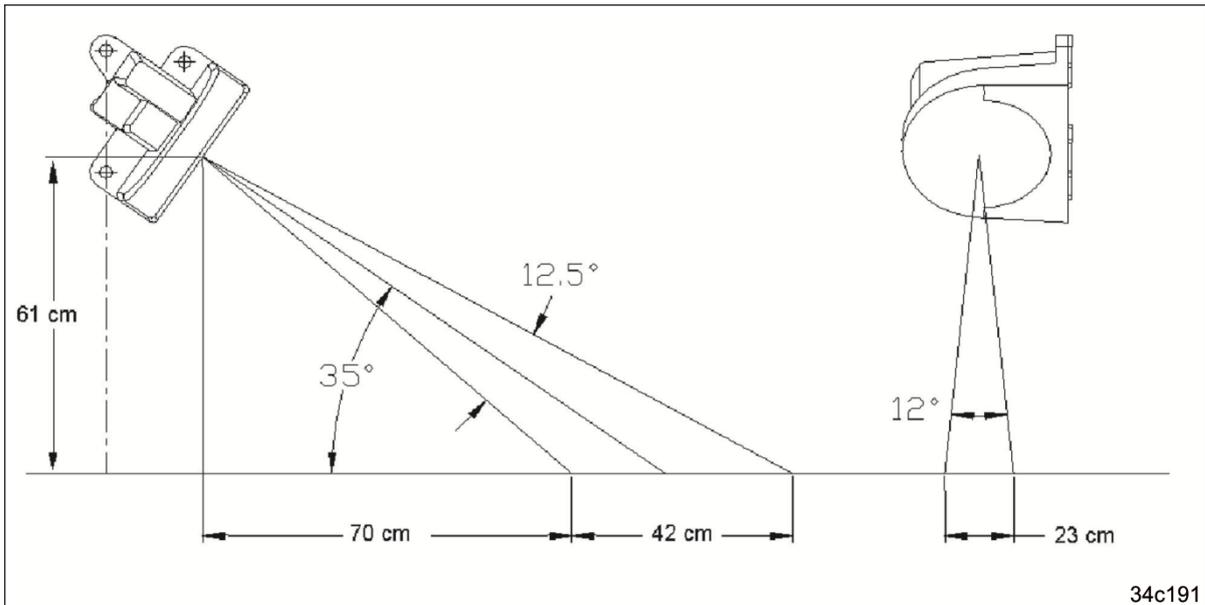
If the tractor does not have a 7-pin signal socket, control terminal 5.2 requires

- a working position sensor (see section "Working position sensor", page 94) and
- a radar device or a GPS device (see section "Measuring the forward speed with the GPS device", page 96).

The radar device provides the pulses for the forward speed [km/h].

Have retroactively purchased special equipment installed by a specialist workshop based on the supplied assembly instructions and operating manual.

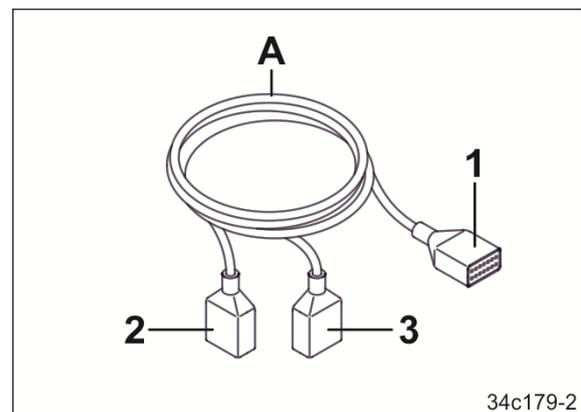
Adjust the radar device based on the diagram:



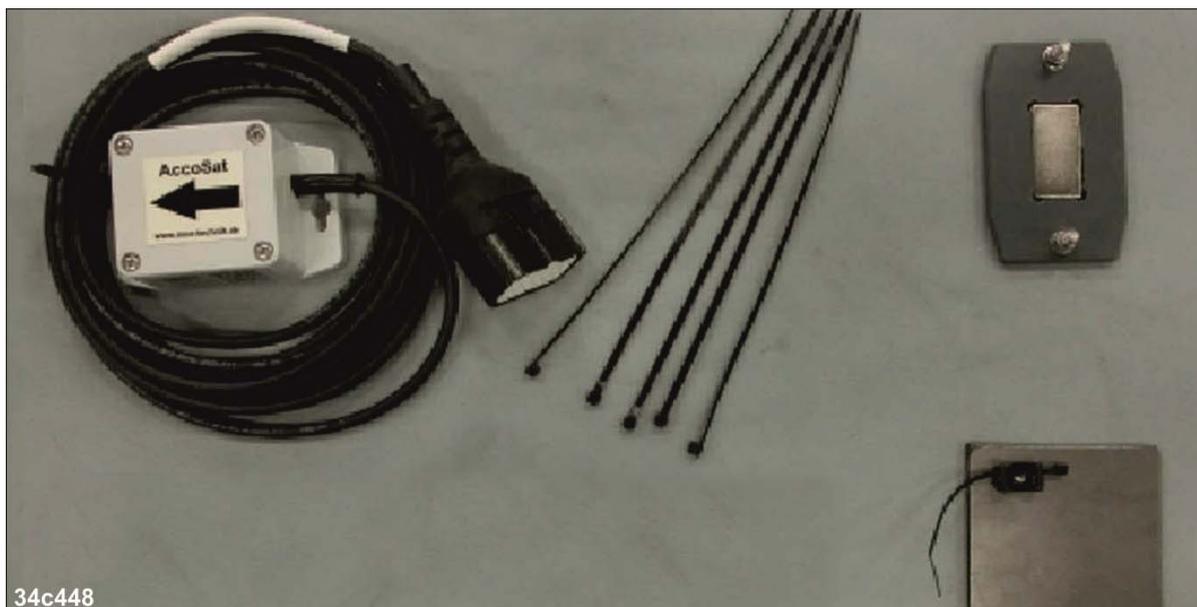
The supplied splitter (A) has 3 connections:

- Connection (1): Control terminal
- Connection (2): Working position sensor
- Connection (3): Radar device

The radar device transmits the measured forward speed [km/h].



7.18.4.4 Measuring the forward speed with the GPS device



If the tractor does not have a 7-pin signal socket, control terminal 5.2 requires

- a working position sensor (see section "Working position sensor", page 94) and
- a GPS device or a radar device (see section "Measuring the forward speed with the radar device", page 95).

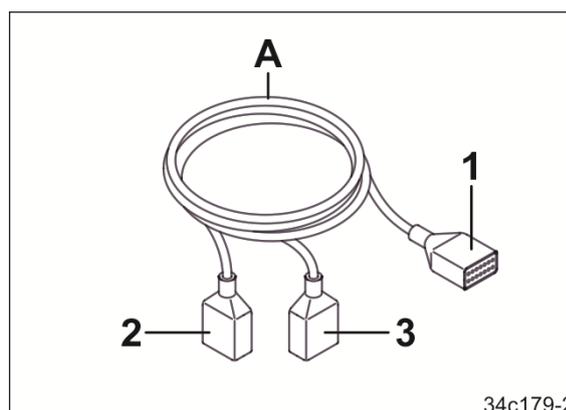
The horizontally mounted GPS device provides the pulses for the forward speed [km/h]. The current forward speed is measured using the combination of a GPS device and a 3D acceleration sensor. Calibration (pulses/100 m, see section 7.7, page 75) is not necessary.

Have retroactively purchased special equipment installed by a specialist workshop based on the supplied assembly instructions and operating manual.

The supplied splitter (A) has 3 connections:

- Connection (1): Control terminal
- Connection (2): Working position sensor
- Connection (3): GPS device

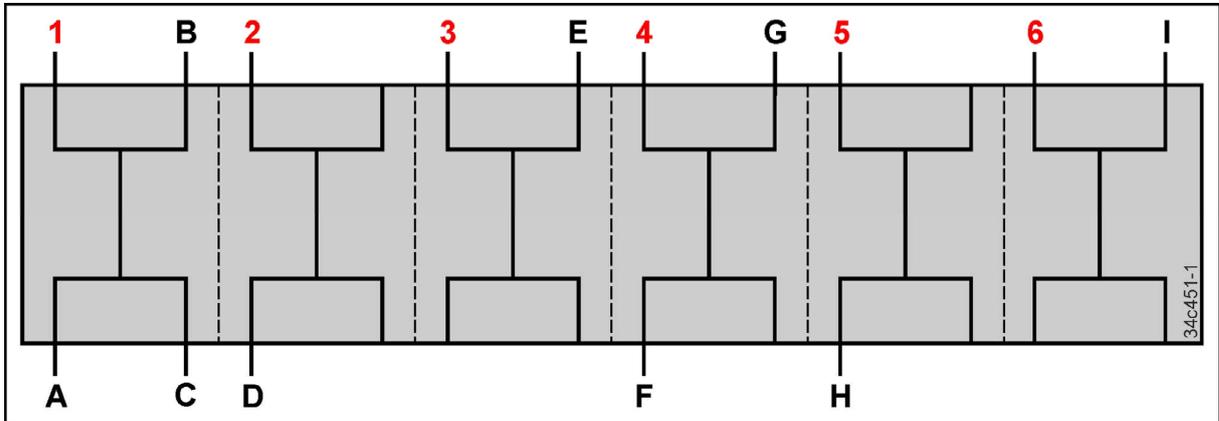
The GPS device transmits the measured forward speed [km/h].



34c179-2

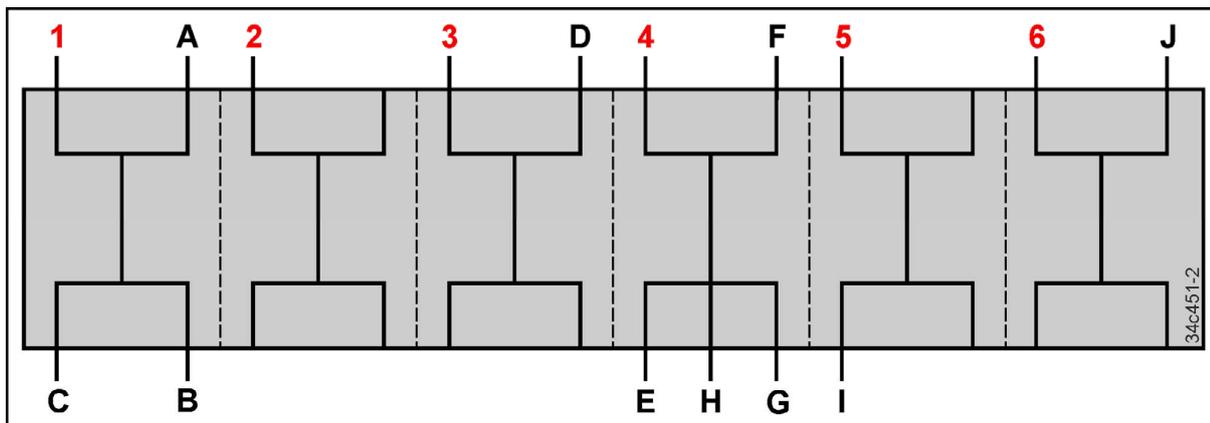
7.19 Implement cable connection diagram

7.19.1 Implement cable connection diagram for implements with electric blower fan



Implement cable signal socket 6-pin		Cable blower fan motor		Cable seeding shaft motor		Cable low level sensor		Cable seed calibration button			
PIN	cable										
1	Blue 4 mm ²	A	Blue 4 mm ²	B	Black 1.5 mm ²	C	Brown 0.75 mm ²				
2	Brown 4 mm ²	D	Brown 4 mm ²								
3	Blue 1.5 mm ²			E	Red 1.5 mm ²						
4	Grey 1.5 mm ²					F	Blue 0.75 mm ²	G	Brown 0.75 mm ²		
5	Brown 1.5 mm ²					H	White 0.75 mm ²				
6	Black 1.5 mm ²							I	Black 0.75 mm ²		

7.19.2 Implement cable connection diagram for implements with hydraulic blower fan



Implement cable signal socket 6-pin		Cable seeding shaft motor		Cable low level sensor		Cable seed calibration button		Cable pressure sensor blower fan		Cable blower fan speed sensor	
PIN	cable										
1	Blue 4 mm ²	A	Black 1.5 mm ²	B	Brown 0.75 mm ²					C	Brown 0.75 mm ²
2	Brown 4 mm ²										
3	Blue 1.5 mm ²	D	Red 1.5 mm ²								
4	Grey 1.5 mm ²			E	Blue 0.75 mm ²	F	Brown 0.75 mm ²	G	Blue 1.5 mm ²	H	Blue 0.75 mm ²
5	Brown 1.5 mm ²			I	White 0.75 mm ²						
6	Black 1.5 mm ²					J	Black 0.75 mm ²				

7.20 Programming by your AMAZONE service partner

Many functions of the GreenDrill can be automated when the implement is connected to control terminal 5.2. The functions can only be activated when the implement configuration is programmed on the control terminal.

Have the programming performed by your AMAZONE service partner.



Before making any settings, switch off the blower fan motor and seeding shaft motor.

7.20.1 Opening the program

1. Switch the control terminal off and then back on again (see page 65).
2. When switching on, press and hold the  button and also press the   buttons until the programming menu is opened.

You can navigate in the program with the following button combinations:

Buttons  and  are used to move around within the program.

Change the parameters using the   buttons.

Confirm the programming with the  button and exit the program.



If "AUTO" is selected in the following menus, the system automatically detects transmitting sensors.

7.20.2 Blower fan drive

Setting with electric blower fan drive: YES

Setting with hydraulic blower fan drive: NO

Change the parameters using the  buttons.

1. Electr. fan present:

YES

7.20.3 Seeding shaft signal tone

An acoustic warning tone is issued when the seeding shaft is switched on and off.

YES or NO

Change the parameters using the  buttons.

2. Signal when sowing shaft is switched on / off

YES

7.20.4 Implement wheel sensor

The forward speed signals come from a sensor on the wheel of the implement on which the GreenDrill is mounted.

YES, NO or AUTO

"AUTO" automatically detects whether work is being performed with or without implement running wheel.

Change the parameters using the  buttons.

3. Ground wheel present:

AUTO

7.20.5 Tractor or guide wheel sensor

The forward speed signals come from the sensor on the tractor wheel or a guide wheel on the implement on which the GreenDrill is mounted.

YES, NO or AUTO

"AUTO" automatically detects whether work is being performed with or without the speed sensor of the tractor.

Change the parameters using the  buttons.

4. Speed sensor on Tractor wheel present:

AUTO

7.20.6 Signal sources

The control terminal 5.2 requires several signals. The signals are provided either by 7-pin tractor signal socket or the signals come from other sources. The source must be named in the control terminal.

Forward speed signal source [km/h]

The following sources can, if equipped, deliver the "Forward speed [km/h]" signal:

- The actual signal
is delivered to PIN 1 of the 7-pin tractor signal socket.
- The theoretical signal
is delivered to PIN 2 of the 7-pin tractor signal socket.
The signal comes from e.g. a gearbox sensor or a different source.
Note: If possible, use the more precise signal from PIN 1.
- The signal comes from a radar device (see page 95) that is connected to the control terminal through a splitter.
- The signal comes from a GPS device (see page 96) that is connected to the control terminal through a splitter.

Working/transport position signal source

The "working/transport position" signals show the position of the GreenDrill:

- Working position or
- Transport position.

The following sources can, if equipped, deliver the signals:

- The signals are delivered by the 7-pin tractor signal socket
- The signals come from a working position (see page 94) that is connected to the control terminal through a splitter.

Entry of the forward speed signal source [km/h]

The control terminal receives the "Actual forward speed [km/h]" signal through one of the 3 connections:

- Connection on the 7-pin tractor signal socket or
- Connection on the radar device or
- Connection on the GPS device

YES, NO or AUTO

"AUTO" automatically detects whether the signal comes from the 7-pin tractor signal socket, from the radar device or the GPS device.

Change the parameters using the  buttons.

The control terminal receives the "Theoretical forward speed [km/h]" signal

YES, NO or AUTO

"AUTO" automatically detects where the theoretical speed signal is coming from.

Change the parameters using the  buttons.

5. DIN-Signal
"actual speed"
present:

AUTO

6. DIN-Signal
"theoretical speed"
present:

AUTO

Entry of the radar sensor signal source

The control terminal receives the "Actual forward speed [km/h]" signal from the radar device.

YES, NO or AUTO

"AUTO" automatically detects whether the radar device is connected.

Change the parameters using the  buttons.

7. Radar sensor
present:

AUTO

Entry of the working position sensor signal source

The control terminal receives the "Working/transport position]" signal from the working position sensor (see section 7.18.4.2, page 94).

YES, NO or AUTO

Change the parameters using the  buttons.

In working position, the working position sensor sends

HI or LO

Change the parameters using the  buttons.

Note:

On some tractors, the lifting unit signal is inverted. Invert the lifting unit signal if the GreenDrill is e.g. seeding in transport position.

8. Lifting unit
present:

AUTO

9. Signal level
"Lifting unit in
operating position":

LO

7.20.7 Acoustic warning signal

In case of an error message during operation,

- an acoustic warning signal is emittedON
- no acoustic warning signal is emittedOFF

Change the parameters using the  buttons.

10. Buzzer:

ON

7.20.8 Seeding shaft gearbox motor

The GreenDrill with 8 outlets has a P8 motor

The GreenDrill with 16 outlets has a P16 motor

Change the parameters using the  buttons.

**11. Motor
sowing shaft:**

P8 Motor

7.20.9 Pressure sensor

The hydraulically driven blower fan has a pressure sensor (see section 4.3.2, page 38).

- Yes
- No

Change the parameters using the  buttons.

**12. Manometric
switch present:**

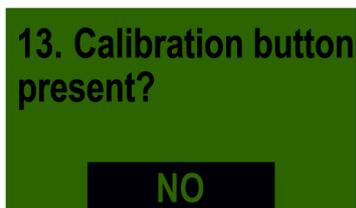
YES

7.20.10 Calibrat. button

The GreenDrill has a calibration button (see section 7.6.3, page 74).

- Yes
- No

Change the parameters using the  buttons.



7.20.11 Systems of units

Display

- Metric system(m, ha, km/h, kg)
- Anglo-American system(ft, ac, mph, lb)

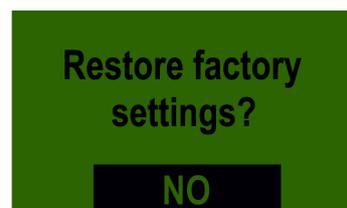
Change the parameters using the  buttons.



7.20.12 Factory settings

- YES.....The factory setting will be restored
- NOThe current settings will be maintained

Change the parameters using the  buttons.



When the factory settings are restored, the following data is maintained:

- (The set language
- (The total hours
- (The total area.

8 Cleaning, maintenance and repairs



DANGER

Danger of crushing, shearing, cutting, being caught or drawn in, winding and knocks through:

- **unintentional lowering of the implement raised using the tractor's 3-point hydraulic system.**
- **unintentional lowering of raised, unsecured implement parts.**
- **unintentional starting or rolling away of the tractor-implement combination.**

Before working on the implement

- Unfold the combination (if necessary)
- Switch off the components of the implement
- Wait until the implement comes to a standstill
- Position the combination on a firm, horizontal surface
- Switch off the control terminal.
Risk of accident due to unintentional activation of the metering unit or other implement components caused by radar pulses.
- Apply the tractor parking brake, switch the tractor engine off and remove the ignition key.
- Secure the tractor and implement against unintentional start-up and rolling away.
- Never crawl under a raised, unsecured implement.
- Mount protective equipment, which you removed when cleaning, maintaining and repairing the machine.
- Replace defective protective equipment with new equipment.



Before charging the tractor battery with a charger, remove the cable from the control terminal. Otherwise, voltage peaks can damage the control terminal.

8.1 First operation

Tighten all bolted connections after approx. 20 operating hours, then check these connections every 250 operating hours.

8.2 Cleaning

1. Empty the seed hopper and metering units.
2. Remove the seeding shaft to thoroughly clean the metering unit.
3. Blow out the seed hopper and metering unit with compressed air or dry clean it with a paintbrush.
4. Clean only the outside of the seed hopper with water or a high-pressure cleaner.



DANGER

Dressing dust is toxic and must not be inhaled or come into contact with the body.

When emptying the machine and removing dressing dust, e.g. with compressed air, wear a protective suit, face mask, safety goggles and gloves.



Blow out the seed hopper and the metering units with compressed air. Water may not enter the seed hopper or the metering units.



Empty and clean the metering unit after use.

In metering units that are neither emptied nor cleaned,

- a viscous to solid mass may form there is water enters under the metering roller. The metering roller is braked strongly and deviations may occur between the pre-set and actual seed rates.
- seed residues and fertiliser may swell or germinate in the metering units. As a result, rotation of the metering rollers is blocked and damage can be caused to the drive!



Always observe the following points when using a high pressure cleaner:

- Do not clean any electrical components.
- Always maintain a minimum nozzle distance of 300 mm between the high-pressure nozzle and the implement.
- Observe the safety regulations for working with high pressure cleaners.

9 Seeding tables



The seeding table values are reference values

- that can change due to grain shape, grain size, thousand grain weight, and dressing. The exact seeding shaft speed for the required spread rate is derived from the calibration values.
- for implements with 8 seed hose lines. If your implement has 6 seed hose lines, the spread rate is reduced accordingly.
- and were determined at brush lever position "0". (see section "Scraper", page 35).

Perennial rye	Spread rate	
	kg/min.	
Seeding shaft speed [%]		
2	0.46	
5	0.99	
10	1.87	
15	2.74	
20	3.62	
25	4.50	
30	5.33	
35	6.16	
40	6.98	
45	7.81	
50	8.64	
55	9.45	
60	10.27	
65	11.08	
70	11.89	
75	12.71	
80	13.44	
85	14.18	
90	14.92	
95	15.14	
100	18.10	
Seed metering wheel	G-G-G	

Barley	Spread rate	
	kg/min.	
Seeding shaft speed [%]		
2	0.54	
5	0.87	
10	1.41	
15	1.96	
20	2.51	
25	3.06	
30	3.61	
35	4.16	
40	4.71	
45	5.26	
50	5.81	
55	6.70	
60	7.59	
65	8.48	
70	9.38	
75	10.27	
80	11.16	
85	12.05	
90	12.95	
95	13.84	
100	14.73	
Seed metering wheel	G-G-G	

Seeding tables

Wheat	Spread rate		
	kg/min.	kg/min.	kg/min.
Seeding shaft speed [%]			
2	0.52	0.34	0.48
5	1.18	0.58	1.03
10	2.30	0.99	1.95
15	3.41	1.39	2.68
20	4.52	1.79	3.78
25	5.64	2.19	4.69
30	6.70	2.59	5.61
35	7.76	2.99	6.52
40	8.82	3.39	7.44
45	9.88	3.79	8.35
50	10.94	4.19	9.27
55	11.21	4.59	10.19
60	11.48	4.99	11.10
65	11.76	5.40	12.02
70	12.03	5.80	12.93
75	12.30	6.20	13.85
80	12.57	6.60	14.76
85	12.84	7.00	15.68
90	13.12	7.40	16.59
95	13.93	7.80	17.51
100	17.75	8.34	18.42
Seed metering wheel	G-G-G	fb-Flex20-fb	Flex40

Buckwheat	Spread rate		
	kg/min.	kg/min.	kg/min.
Seeding shaft speed [%]			
2	0.54	0.33	0.27
5	0.99	0.50	0.70
10	1.74	0.78	1.40
15	2.49	1.07	2.11
20	3.24	1.35	2.82
25	3.99	1.64	3.53
30	4.68	1.92	4.23
35	5.38	2.21	4.94
40	6.07	2.49	5.65
45	6.76	2.78	6.36
50	7.45	3.07	7.07
55		3.35	7.77
60		3.64	8.48
65		3.92	9.19
70		4.21	9.90
75		4.49	10.60
80		4.78	11.31
85		5.06	12.02
90		5.35	12.73
95		5.63	13.44
100		5.92	14.14
Seed metering wheel	G-G-G	fb-Flex20-fb	Flex40

Seeding tables

Hafer	Spread rate	
	kg/min.	kg/min.
Seeding shaft speed [%]	kg/min.	kg/min.
2	0.01	0.15
5	0.02	0.46
10	0.04	0.98
15	0.06	1.50
20	0.07	2.02
25	0.09	2.54
30	0.12	3.03
35	0.14	3.52
40	0.17	4.01
45	0.19	4.50
50	0.22	4.99
55	0.23	5.42
60	0.24	5.85
65	0.25	6.29
70	0.26	6.72
75	0.27	7.15
80	0.27	7.58
85	0.27	8.02
90	0.27	8.45
95	0.28	8.73
100	0.31	10.23
Seed metering wheel	fb-f-fb-fb	G-G-G

Rapeseed	Spread rate	
	kg/min.	kg/min.
Seeding shaft speed [%]	kg/min.	kg/min.
2	0.11	0.01
5	0.21	0.02
10	0.38	0.05
15	0.55	0.08
20	0.72	0.10
25	0.89	0.13
30	1.03	0.16
35	1.18	0.19
40	1.32	0.22
45	1.47	0.24
50	1.62	0.27
55	1.69	0.30
60	1.75	0.33
65	1.82	0.36
70	1.89	0.38
75	1.96	0.41
80	2.03	0.44
85	2.10	0.47
90	2.17	0.50
95	2.30	0.52
100	2.44	0.55
Seed metering wheel	fb-f-fb-fb	fb-efv-efv-fb

Mustard	Spread rate	
	Seeding shaft speed [%]	kg/min.
2	0.04	
5	0.15	
10	0.33	
15	0.50	
20	0.68	
25	0.86	
30	1.00	
35	1.15	
40	1.29	
45	1.43	
50	1.58	
55	1.65	
60	1.72	
65	1.79	
70	1.86	
75	1.93	
80	2.00	
85	2.07	
90	2.14	
95	2.31	
100	2.48	
Seed metering wheel	fb-f-fb-fb	

Fodder radish	Spread rate	
	Seeding shaft speed [%]	kg/min.
2	0.66	
5	1.18	
10	2.05	
15	2.92	
20	3.79	
25	4.66	
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
Seed metering wheel	G-G-G	

Seeding tables

Phacelia	Spread rate	
	Seeding shaft speed [%]	kg/min.
2	0.14	
5	0.31	
10	0.61	
15	0.90	
20	1.19	
25	1.49	
30	1.52	
35	1.56	
40	1.59	
45	1.63	
50	1.66	
55	1.75	
60	1.85	
65	1.94	
70	2.04	
75	2.13	
80	2.23	
85	2.32	
90	2.42	
95	2.52	
100	2.62	
Seed metering wheel	fb-f-fb-fb	

Grass	Spread rate	
	Seeding shaft speed [%]	kg/min.
2	0.27	
5	0.61	
10	1.17	
15	1.73	
20	2.30	
25	2.86	
30	3.42	
35	3.98	
40	4.55	
45	5.11	
50	5.67	
55	6.23	
60	6.79	
65	7.36	
70	7.92	
75	8.48	
80	9.05	
85	9.61	
90	10.17	
95	10.73	
100	11.30	
Seed metering wheel	G-G-G	

Lupins	Spread rate	
	kg/min.	
Seeding shaft speed [%]		
2	0.42	
5	1.11	
10	2.26	
15	3.41	
20	4.56	
25	5.71	
30	6.87	
35	8.03	
40	9.19	
45	10.35	
50	11.51	
55	12.48	
60	13.44	
65	14.41	
70	15.37	
75	16.33	
80	17.30	
85	18.26	
90	19.23	
95	21.71	
100	24.20	
Seed metering wheel	G-G-G	

Alfalfa	Spread rate	
	kg/min.	
Seeding shaft speed [%]		
2	0.10	
5	0.21	
10	0.40	
15	0.60	
20	0.79	
25	0.98	
30	1.15	
35	1.32	
40	1.49	
45	1.65	
50	1.82	
55	1.86	
60	1.90	
65	1.93	
70	1.97	
75	2.01	
80	2.04	
85	2.08	
90	2.12	
95	2.24	
100	2.36	
Seed metering wheel	fb-f-fb-fb	

Seeding tables

Red clover	Spread rate	
Seeding shaft speed [%]	kg/min.	
2	0.04	
5	0.15	
10	0.33	
15	0.51	
20	0.70	
25	0.88	
30	1.06	
35	1.23	
40	1.41	
45	1.58	
50	1.76	
55	1.82	
60	1.87	
65	1.93	
70	1.98	
75	2.04	
80	2.09	
85	2.15	
90	2.20	
95	2.33	
100	2.46	
Seed metering wheel	fb-f-fb-fb	

Vetches	Spread rate	
Seeding shaft speed [%]	kg/min.	
2	0.76	
5	1.42	
10	2.51	
15	3.61	
20	4.71	
25	5.81	
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
Seed metering wheel	fb-f-fb-fb	

Peas	Spread rate	
	kg/min.	kg/min.
Seeding shaft speed [%]	kg/min.	kg/min.
2	0.46	0.95
5	0.67	1.45
10	1.02	2.29
15	1.37	3.12
20	1.72	3.96
25	2.07	4.80
30	2.42	5.63
35	2.77	6.47
40	3.12	7.30
45	3.48	8.14
50	3.83	8.98
55	4.18	9.81
60	4.53	10.65
65	4.88	11.49
70	5.23	12.32
75	5.58	13.16
80	5.93	13.99
85	6.28	14.83
90	6.64	15.67
95	6.99	16.50
100	7.34	17.34
Seed metering wheel	fb-Flex20-fb	Flex40

Field (broad) beans	Spread rate	
	kg/min.	kg/min.
Seeding shaft speed [%]	kg/min.	kg/min.
2	0.46	1.02
5	0.66	1.57
10	1.00	2.49
15	1.34	3.40
20	1.68	4.32
25	2.02	5.23
30	2.36	6.15
35	2.70	7.06
40	3.04	7.98
45	3.38	8.89
50	3.71	9.81
55	4.05	10.72
60	4.39	11.64
65	4.73	12.55
70	5.07	13.47
75	5.41	14.38
80	5.75	15.30
85	6.09	16.21
90	6.43	17.13
95	6.77	18.05
100	7.11	18.96
Seed metering wheel	fb-Flex20-fb	Flex40



AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

Postfach 51
D-49202 Hasbergen-Gaste
Germany

Tel.: + 49 (0) 5405 501-0
email: amazone@amazone.de
http:// www.amazone.de

