Operating manual

AMAZONE

AmaDrill 2

Control computer

MG6156
BAG0182.1 07.19
Printed in Germany

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

en

READING THE INSTRUCTION

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

Leipzig-Plagwitz 1872. Rud. Sark.

1 User information

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

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 keep to the order of the instructions. The reaction to the handling instructions is given by an arrow.

Example:

1. Instruction 1

→ Implement response to instruction 1

2. Instruction 2

Lists

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

Example:

- Point 1
- Point 2

Item numbers in diagrams

Numbers in round brackets refer to items in diagrams.

Example (6) → Item 6

2 General safety instructions

This section contains important information on 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.

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.

3 Product description

3.1 Intended use

The AmaDrill2 is intended as a display, monitoring and control unit for AMAZONE seed drills.

The on-board computer works with the following AMAZONE implements:

- Cataya
- Centaya

3.2 Function

The AmaDrill2 has the following functions:

- Control and display terminal during operation
- Regulation of the speed-dependant spread rate
- Calibration of the metering unit for the correct spread rate
- Task management

3.3 Software version

This operating manual is valid from software version:

Cataya:	NW206-B.002
Centaya:	NW177-B.001

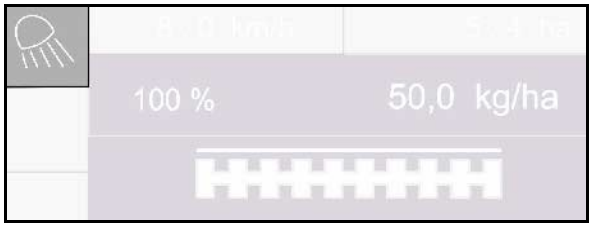
3.4 Control computer with buttons

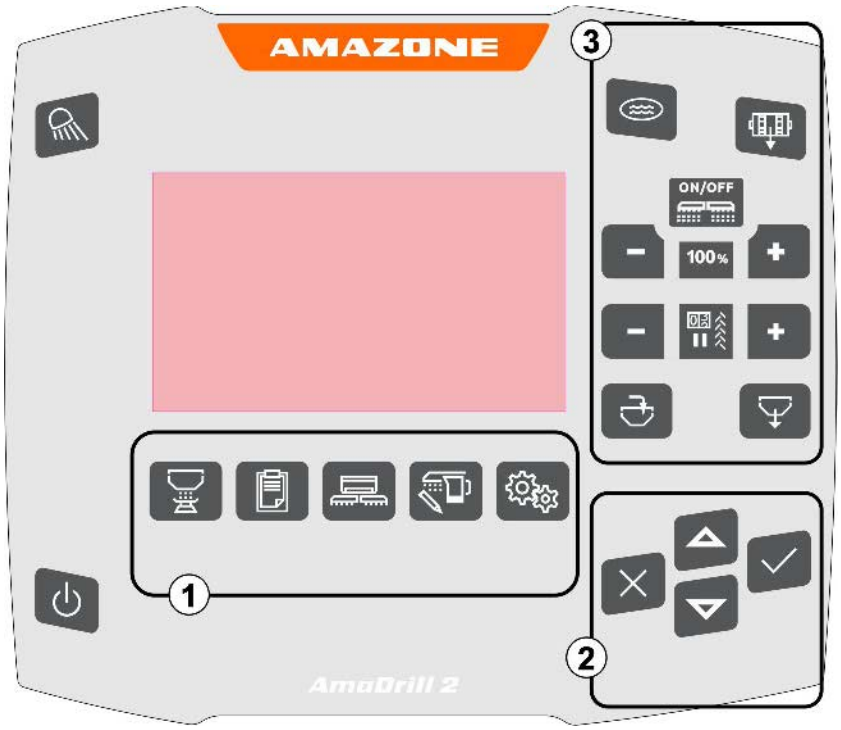
 Switching on and off

Press and hold the button for 3 seconds.

 Work lights

 Keep the work lights off when driving on roads.





Buttons

(1) Menus

The AmaDrill2 is divided into the following menus:

 Calibration

 Documentation

 Working

 Product

 Settings

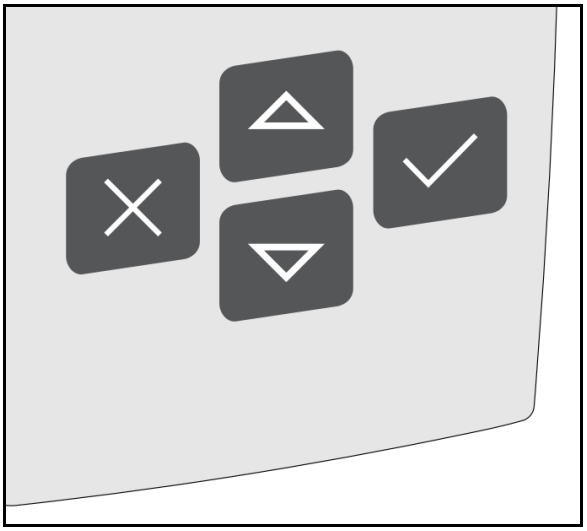
(2) Selection, data entry, navigation

(3) Functions in the Work menu

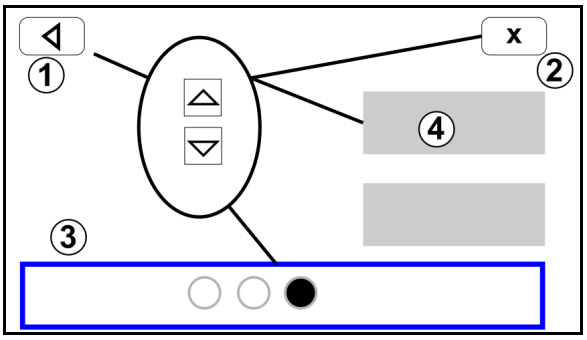
The Work menu appears after switching on the control computer.

3.5 Navigating in the menu

-  ,  - Make selection (mark in blue)
-  - Confirm selection
-  - Cancel



To navigate / select in the menu, the corresponding field must be marked in blue.



For example:

(1) Back in the menu

(2) Cancel

(3) Scroll in the menu

 Page 1,

 Page 2,

 Page 3

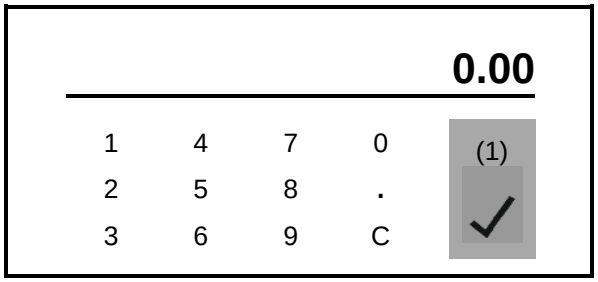
(4) Enter, continue, save (grey fields)

3.6 Entering numerical values

Enter numerical values in digits from left to right.

Enter a comma if required.

1.  ,  Make selection.
2.  Confirm selection.
3. Repeat the procedure for each digit.
4.  ,  Select (1) confirmation.
5.  Confirm value entry.



3.7 Power supply

12 V tractor socket

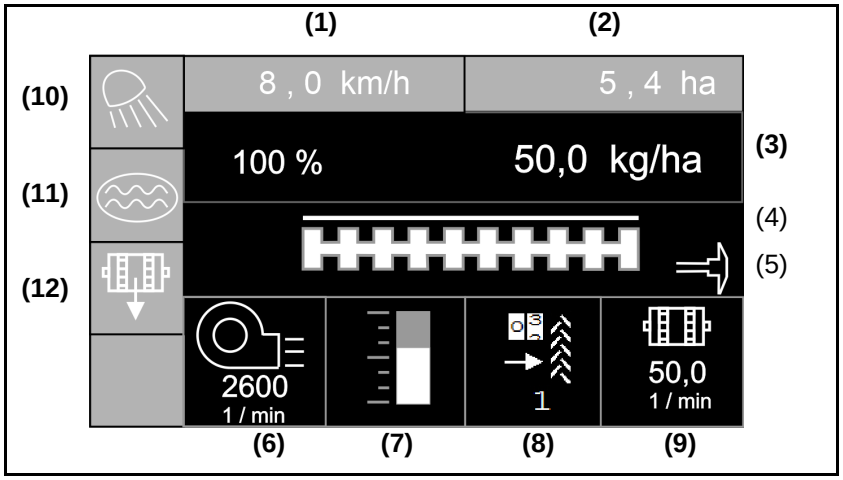
4 Working

Before beginning seeding

- Enter the product data,
- Perform calibration.

4.1 Displays in the Work menu

Select the Work menu to operate the implement.



Displays in the Work menu

(1) Forward speed
(2) Worked area
(3) Spread rate
(4) Seeding
(5) Active track marker
(6) Fan speed (Centaya)
(7) Seed hopper fill level
(8) Tramline
(9) Speed of metering unit
(10) Work lights
(11) Seeding in water hole function
(12) Pre-calibrate

4.2 Implement functions

Implement on / off

Switch the implement on and off

Switch on the implement before beginning seeding.

→ Seeding starts when driving off, if the implement is in working position.

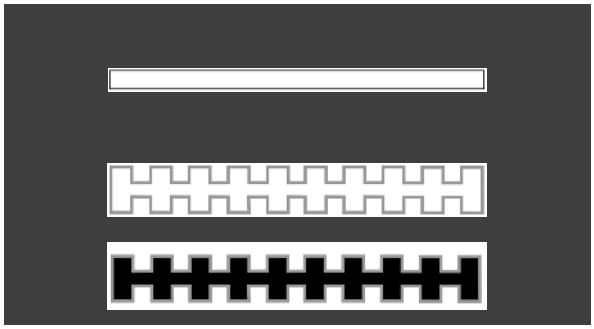
→ Centaya: switch on the fan (fan speed > 200 rpm).

→ Cataya: ascent in transport position

→ Seeding can be interrupted while driving in working position.

→ Seeding can be resumed while driving.

- Display illuminated → Implement in working position
- Display flashing → Implement not in working position
- Symbol filled in white → Implement in operation (seeding)
- Symbol not filled → Implement not in operation



When engaging the implement after the headland, the metering unit starts automatically.

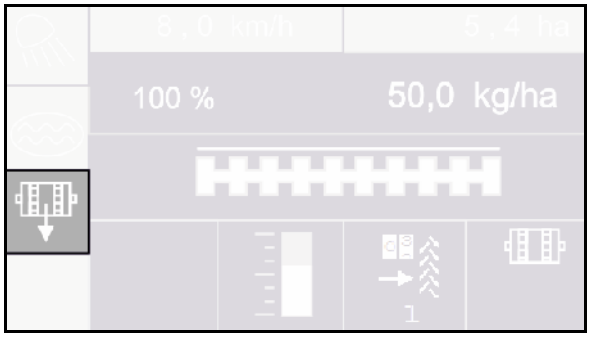
Switching off the metering unit can be useful, since even small movements in front of the radar sensor can cause the metering unit to start running
(e.g. when manoeuvring on the field in working position).

Pre-metering at a standstill

Pre-metering enables seeding at the desired target quantity when driving off from a standstill.

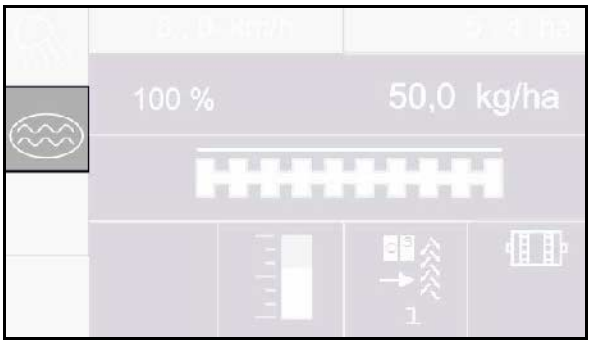
1.  Start the pre-metering.
2. Start.

The implement must be switched on.



Water hole function

The water hole function allows driving through wet areas with the implement lifted without interrupting seeding.



1.  Activate the water hole function while driving before reaching the water hole.
2. Raise the implement before reaching the water hole.
3. Drive through the passage without interrupting the seeding.
4. Lower the implement again.

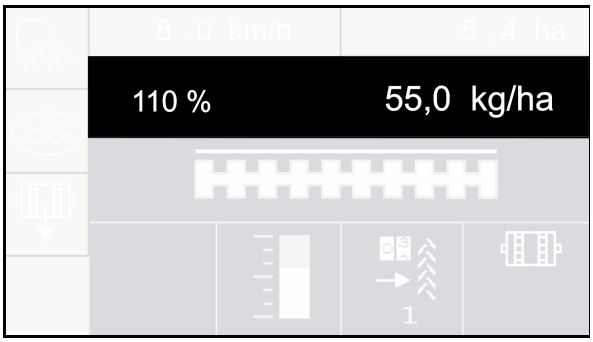
→ Water hole function is deactivated.

Changing the target quantity

The target quantity can be changed as required during operation.

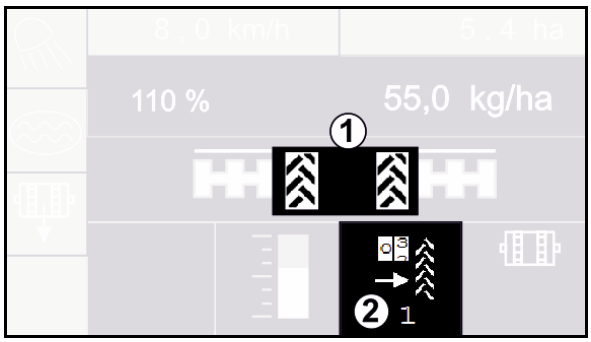
The changed target quantity is shown in the work menu:

- in kg/ha or grains/m^2
- in percent



-  Each time the key is pressed, the seeding rate is increased by the quantity increment (e.g.:+10%).
-  Each time the key is pressed, the seeding rate is reduced by the quantity increment (e.g.:-10%).
-  Reset the seeding rate to 100%.

Tramlines



(1) Display tramline is being created

(2) Tramline counter

The tramline counter counts the passes on the field until a tramline is created.

The tramline is created when the tramline counter displays 0!

 , 
The tramline number can be corrected at any time if it has unintentionally advanced by one number when raising the implement out of the ground or lifting the track marker.

Suppress shifting of the tramline counter

1. 
Pause the tramline counter.

   When raising the implement, the tramline counter is not advanced.

2. 
Cancel tramline counter pause.

   When the implement is raised, the tramline counter is advanced.

4.3 Procedure during operation

To maintain the set spread rate, the calibration factor must be determined before starting work.

1. Move the implement into working position.
2. Select the Work menu.
3. Lower the desired track marker.
4. 

Switch on the implement.
5. Drive off and start seeding.

→ A signal tone indicates the starting of the metering unit.

6. After approx. 30 m, come to a stop and check the seeding.

- In the headland position, the metering unit stops automatically.
- After the headland, the metering unit starts as soon as the working position is reached.
- When stopping, the metering unit stops automatically.

→ A double signal tone indicates the stopping of the metering unit.

- 

If necessary, switch off the metering unit (e.g. when manoeuvring on the field in working position).

4.4 Driving on the road

Road travel mode active

- Forward speed greater than 20 km/h
- Not in working position
- Fan switched off (if equipped)

→ All buttons in the Work menu are blocked

→ All functions are switched off

Road travel active!

Terminate road travel mode.

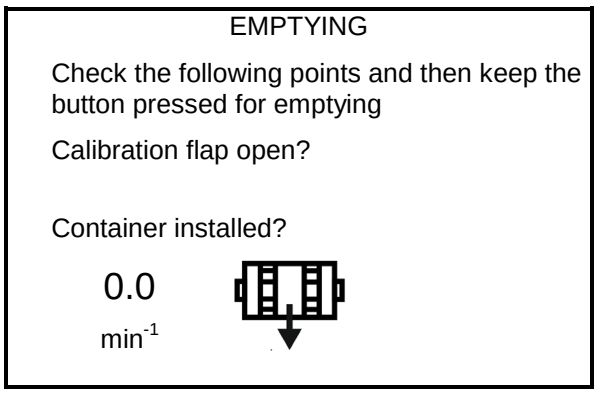
4.5 Emptying menu

1. Stop the implement.
2.  Open the Emptying menu.
3. Secure the tractor and implement against unintentional rolling.
4. Open the calibration flap.
5. Put the calibration bucket into collection position.
6.  Start residual emptying, keep the key pressed.

Or

Press and hold the calibration button.

7. Close the calibration flap after emptying.



4.6 Call menu

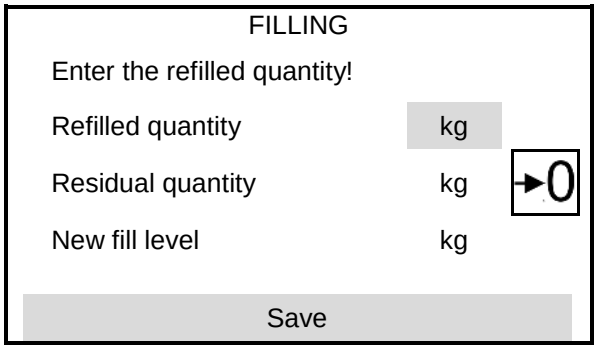
1.  Open the filling menu.
2.  If necessary, set the residual quantity to 0.

→ The theoretical residual quantity will be displayed.

3. Enter the refilled quantity.

→ The new fill level will be displayed.

4. ✓ Confirm the correct fill level.



5 Calibration

The calibration checks whether the required seed quantity is spread during subsequent seeding.

Calibration must always be performed

- when the seed type is changed,
- if the seed type is identical, but the grain size, grain shape, specific weight and dressing are different,
- when changing the metering roller.

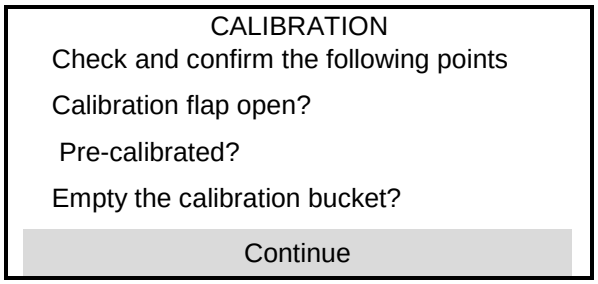
Refer to the seed drill operating manual to prepare the implement for calibration.

Open the Calibration menu to calibrate the metering unit

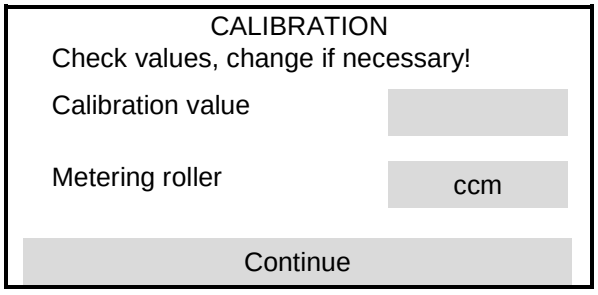
1. Move the calibration flap and collection bucket into the calibration position.
2.  Perform the pre-metering (for constant seed flow during calibration).
3. Empty the calibration bucket again.
4. Open the calibration flap.

→ Refer to the implement operating manual.

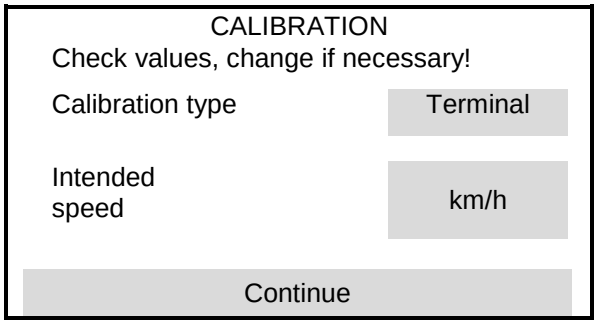
5. Continue



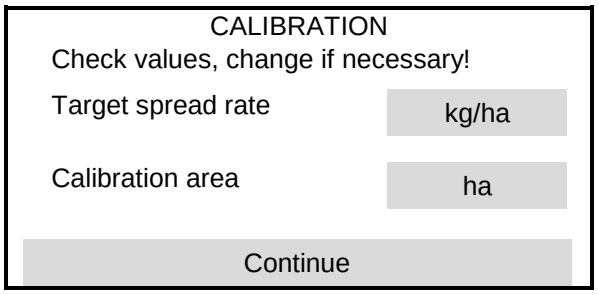
6. Enter a calibration value of 1 or empirical value.
7. Enter the volume of the metering roller in ccm, refer to the implement operating manual.
8. Continue



9. Select the calibration type
   - o AmaDrill 2 terminal
   - o Calibration button
10. Enter the intended speed.
11. Continue



12. Enter the target spread rate.
13. Enter the calibration area (area for which an appropriate quantity is metered during the calibration procedure).
14. Continue



15. On the terminal: Continue

→ Start calibration.

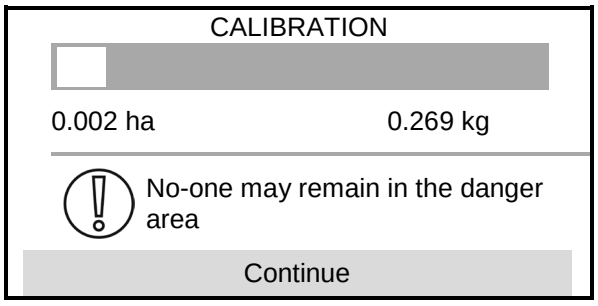
Calibration button on the implement: Press and hold the button.

→ Start calibration.

→ The calibration stops automatically.

→ The bar diagram shows the progress of the calibration.

→ Continue To cancel the calibration.



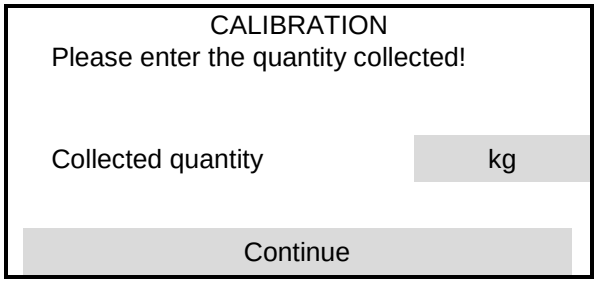
WARNING
Risk of injury from the driven metering shaft.

Direct people out of the danger area.

16. Weigh the collected quantity.

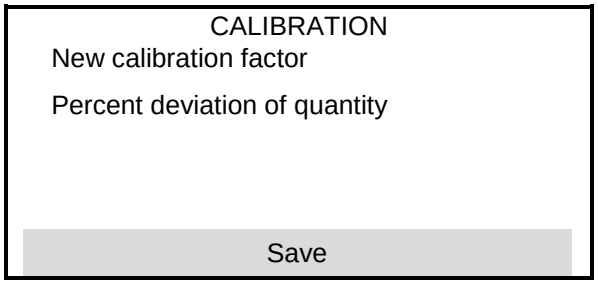
→ Take account of the weight of the bucket.

17. Enter the value for the collected quantity in kg.
18. Continue



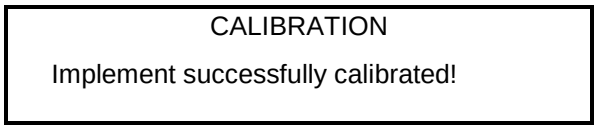
→ The new calibration value and the percent deviation compared to the target quantity are shown.

19. Save



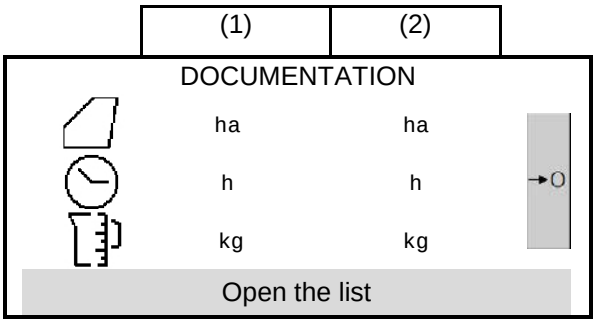
If there were errors during calibration (e.g., uneven flow), repeat the calibration.

After calibration, put the calibration flap and collection bucket into working position.



6 Documentation

Documentation menu to display the recorded data



(1) Total data

(2) Daily data

- Worked area (total / day)
- Working time (total / day)
- Spread quantity (total / day)

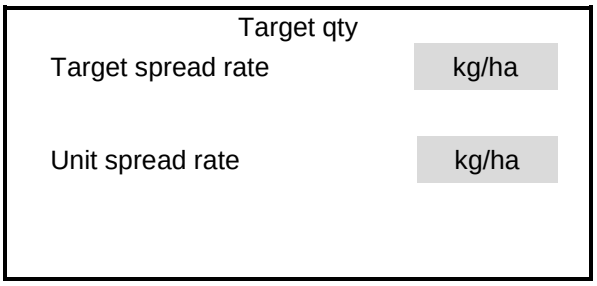
Delete day data

7 Product

Product menu for entering data on the seed

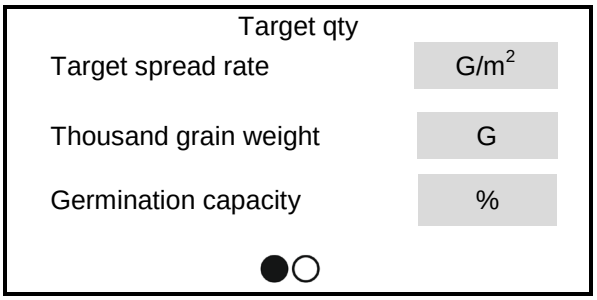
- Enter the target spread rate in the selected unit
- Units for the spread rate.
  - o kg/ha
  - o grains /m²

The entered data will be adopted in the calibration menu.



Grains /m²:

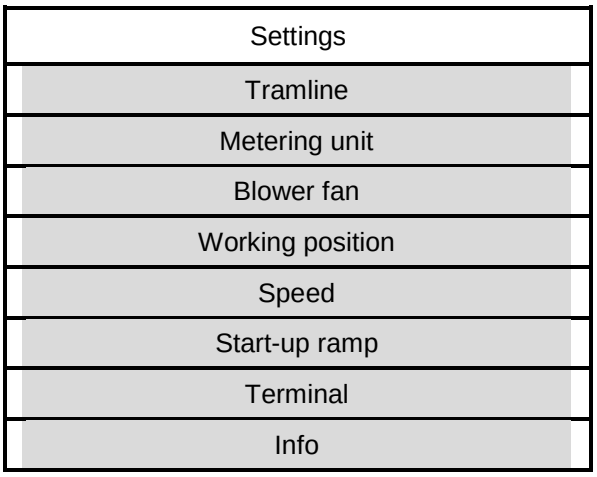
- Thousand grain weight
- Germination capacity



8 Settings

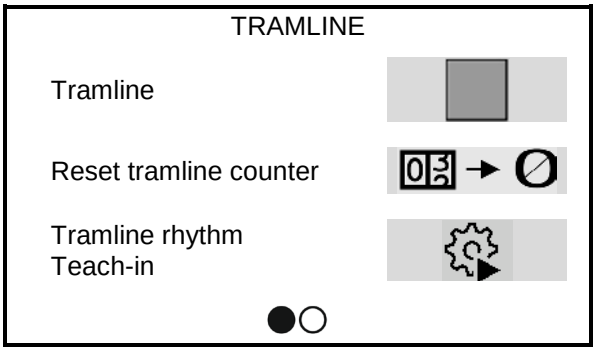
Make important settings for operating the implement

- Settings for creating tramlines
- Settings for the metering unit
- Settings for the fan (Centaya)
- Settings for the working position sensor
- Settings for the working speed sensor
- Settings for the start-up ramp
- Entries for the terminal
- Information

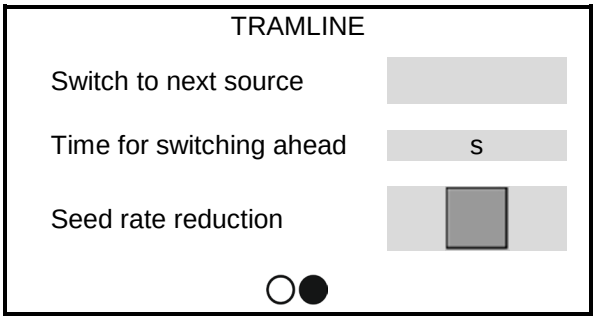


8.1 Tramline

- Create tramline
  - o ☑ yes
  - o ☐ no
- Reset the tramline to tramline counter = 0
- Teach-in tramline rhythm



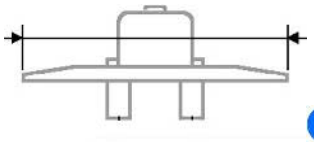
- Source for advancing the tramline counter
  - o Working position - headland position
  - o Switching of the track marker
- Time for advancing the tramline counter
- Seed rate reduction when creating a tramline
  - o ☑ yes
  - o ☐ no



Teach-in tramline rhythm

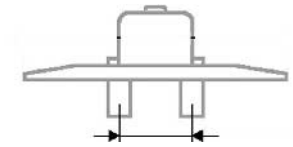
A tramline rhythm is calculated according to the entries.

1. Enter the working width of the cultivating implement.



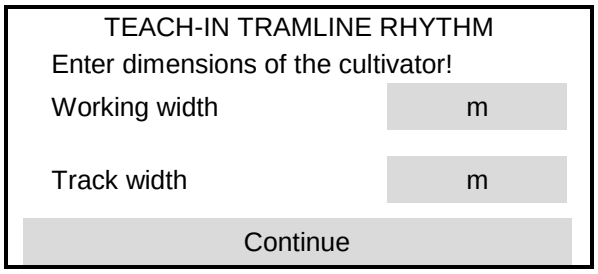
Entry in **m**.

2. Enter the track width of the cultivating implement.

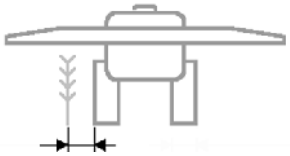


Entry in **m**.

3. Continue

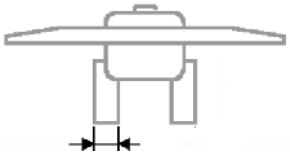


4. Enter the distance from the outer edge of the tyres to the plants.



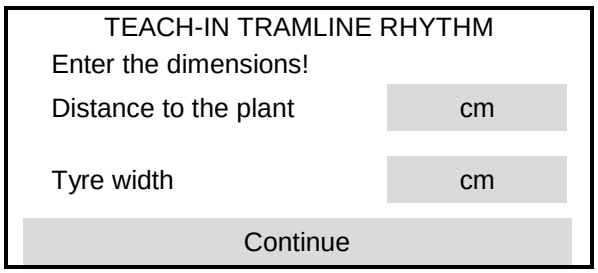
Entry in **cm**.

5. Enter the tyre width of the cultivating implement.



Entry in **cm**.

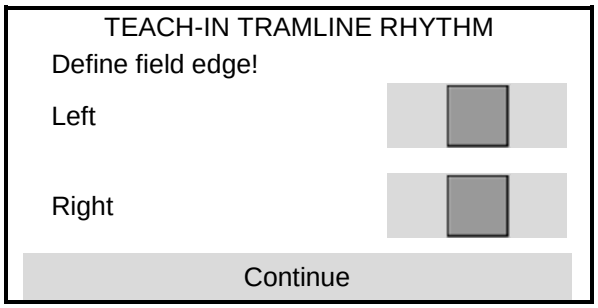
6. Continue



7. Field edge when starting work on the left or right.

   o ☑ yes
   o ☐ no

8. Continue



9. Working width in the first track

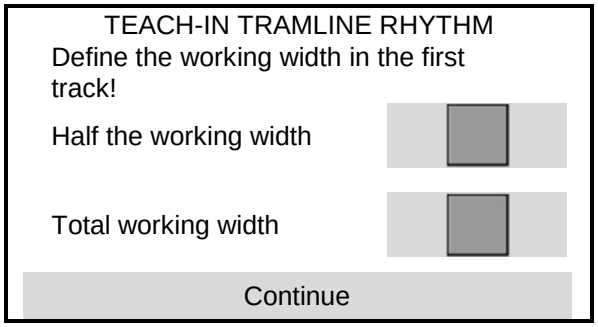
- Half the working width.

  o ☑ yes
  o ☐ no

- Total working width.

  o ☑ yes
  o ☐ no

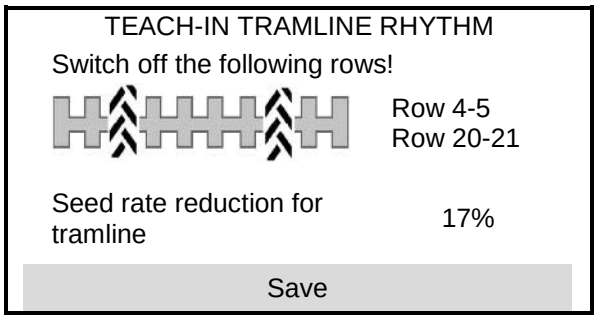
10. Continue



Overview:

The rows to be switched off (beginning from the left) when creating tramlines are displayed.

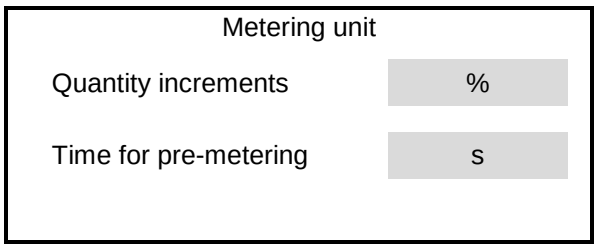
11. Save



No matching configuration could be found, repeat the procedure and check the entries.

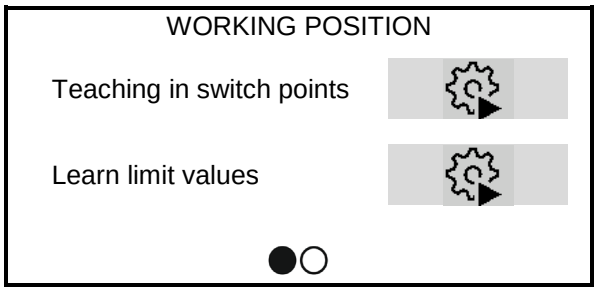
8.2 Metering unit

- Enter the quantity increment in % (value for spread rate change in percent during operation).
- Enter time for pre-metering.
  Default value: 5 s



8.3 Working position

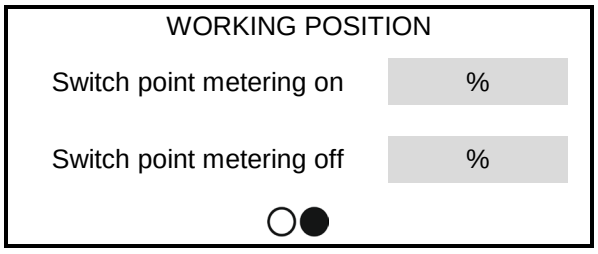
- Teach-in switch points
- Teach-in limit value for the tractor 3-point hydraulic system



- Switch point metering on in %

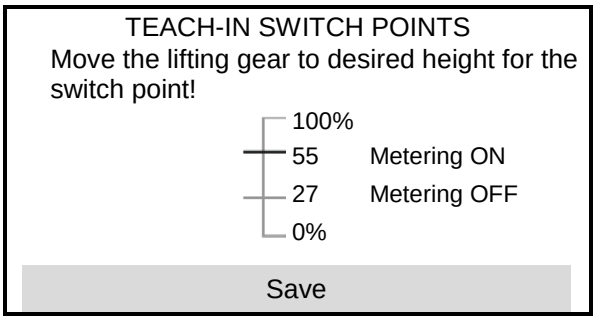
  From headland position to working position
- Switch point metering off in %

  From working position in headland position



Teaching in switch points

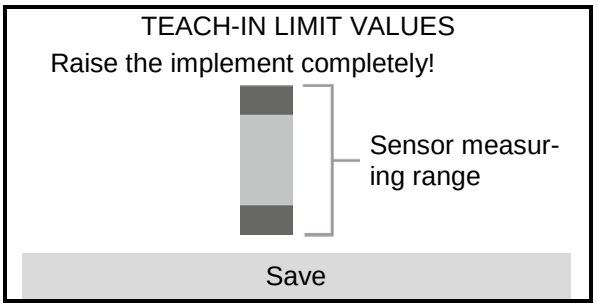
1. Move the lifting gear to desired height for the ON switch point.
2. Save
3. Move the lifting gear to desired height for the OFF switch point.
4. Save



The correct setting of the switch points is important for precise switching of the implement on the field.

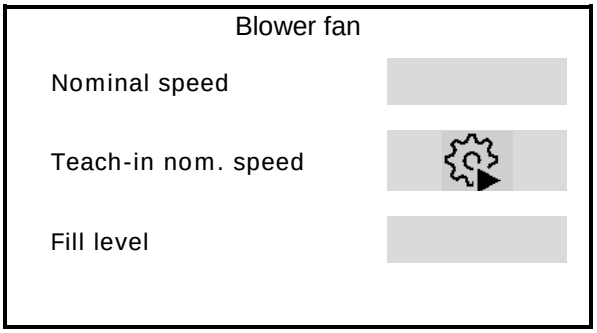
The ON and OFF values should be as far apart as possible.

1. Lower the implement into working position.
2. Save
3. Raise the implement completely.
4. Save



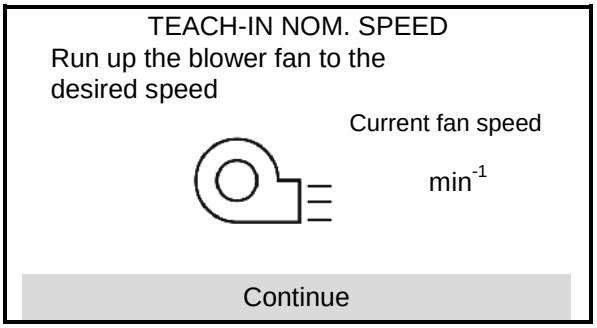
8.4 Blower fan

- Enter the nominal speed
- Teach-in nominal speed
- Enter alarm limit in %



Teaching-in the nominal speed

1. Run up the blower fan to the desired speed.
2. Continue



8.5 Speed signal

The implement computer needs a speed signal for a correct rate control.

There are different sources for the forward speed signal input.

- The speed signal can be calculated using the pulses per 100 m.
- The speed signal can be simulated by entering a speed.

  Entering a simulated speed allows you to continue operation even if the speed signal fails.

- Select the source of the speed signal.
  - o Sensor (implement)
  - o Tractor
    speed signal via separate connection on the rear of the terminal.
  - o Simulated

    Enter simulated speed

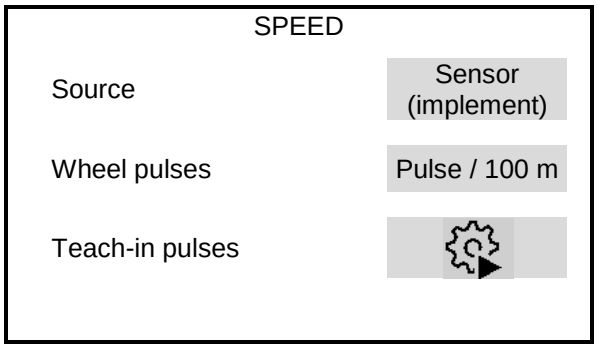
    → The entered speed must be observed later in all cases.

    → If another source for the speed signal is detected, the simulated speed is automatically deactivated.

Check the accuracy of the utilised speed source

→ Inaccurate speed sources can cause seeding errors.

- Enter value for pulses per 100 m, or
- Teach-in pulses per 100 m

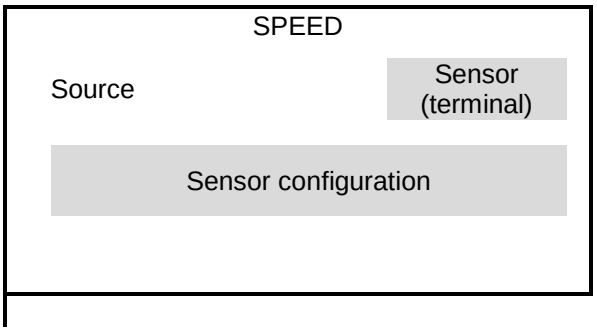


Configuring the speed signal via the terminal (from the tractor)

(Teach-in pulses per 100 m with terminal sensor)

1. Start the sensor configuration for the terminal.

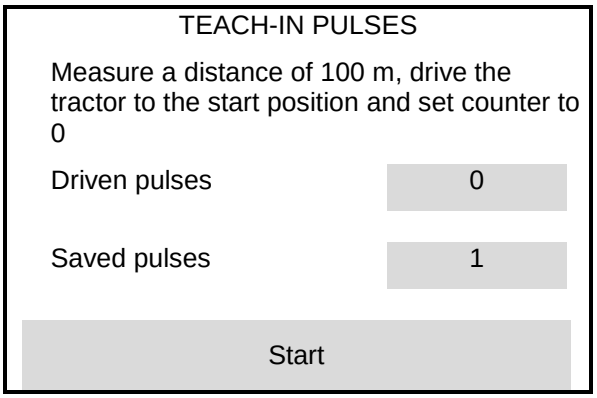
During the sensor configuration, the implement may not be in the working position.



2. On the field, measure out a calibration distance of exactly 100 m.
3. Mark the start and end points.
4. Connect the signal cable from the tractor to the terminal.
5. Move the tractor to the start position.
6.  Set the value for the driven pulses to 0
7. Start
8. Accurately travel along the measurement section from start to finish.

→ The pulses are detected continuously and shown on the display.

9. Stop exactly at the end point.
10. Save the value.



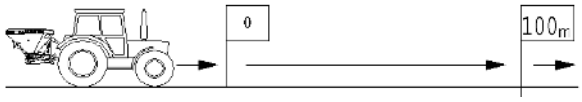
Teaching-in the pulses per 100 m using the implement sensor

You must determine the wheel pulses per 100 m in working position under the prevailing operating conditions.

1. On the field, measure out a calibration distance of exactly 100 m.
2. Mark the start and end points.
3. Move the tractor to the start position.
4. Continue
5. Accurately travel along the measurement section from start to finish.

→ The pulses are detected continuously and shown on the display.

6. Stop exactly at the end point.
7. Save value.



TEACH-IN PULSES

Drive the measured distance!

Driven pulses

Saved pulses

Continue

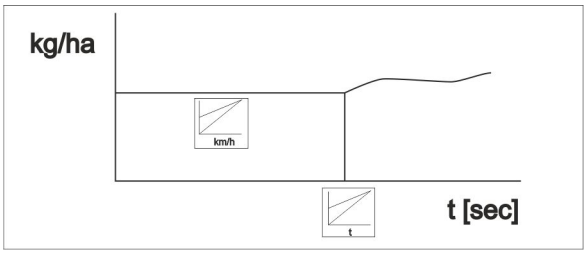
Check the number of pulses by comparing the speed display of the tractor and the control terminal.

8.6 Start-up ramp

The start-up ramp prevents under metering when starting up.

When beginning work, the metering is applied according to the simulated start-up speed until the specified time expires. After that, the speed-dependent rate control is regulated.

Once the speed entered has been reached or exceeds the simulated speed, the quantity regulation starts.

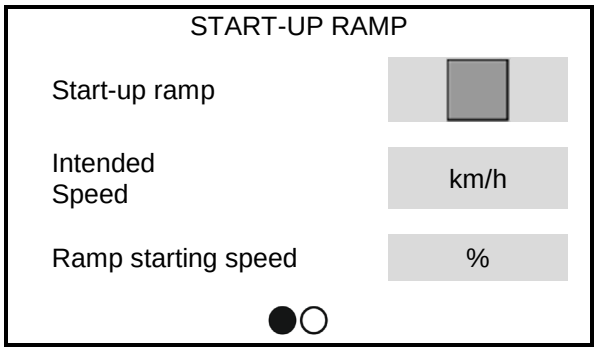


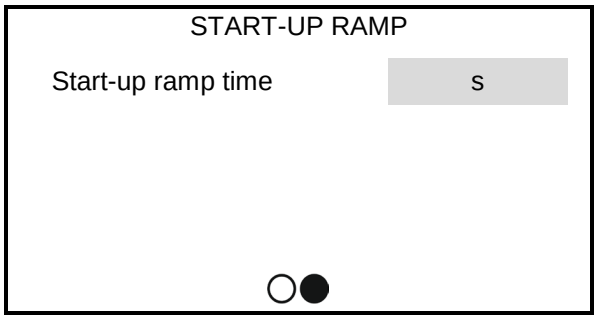
- Start-up ramp on /off
  - o ☑ on
  - o ☐ off
- Intended speed, working speed in km/h.

  Default value: 12 km/h
- Ramp start speed as a %-value of the intended speed at which the metering starts.

  Default value: 50%
- Time that passes until the simulated speed is actually reached in seconds.

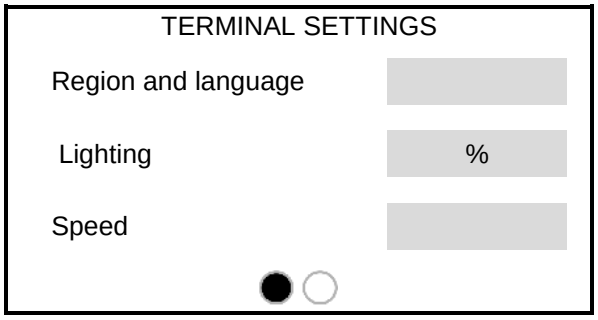
  Default value: 5 s



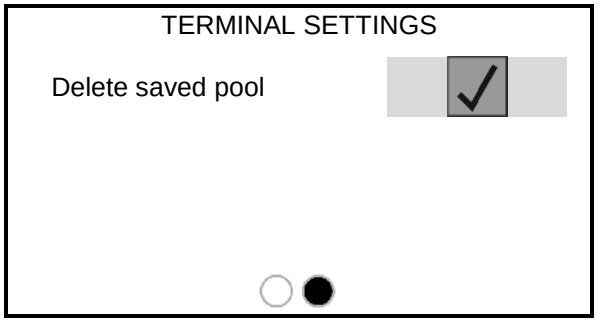


8.7 Terminal

- Select the region and language
- Display illumination in %
- Speed

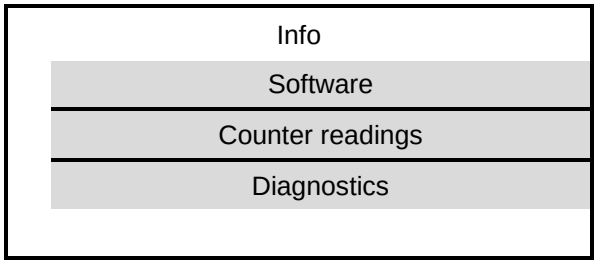


- Delete saved pool



8.8 Info

- Display of the software version
- Display of the counter statuses
- Display of the diagnosis data for Customer Service



9 Attachment

(1) Implement connection

(2) Signal cable connection for tractor speed
Only required if the the terminal sensor (tractor) is selected as the speed signal

9.1 Fault table

Number	Type	Cause	Remedy
F45001	Notification	Metering unit cannot turn slower.	Driving faster. Repeat calibration. Adapt spread rate.
F45002	Notification	Metering unit cannot turn faster.	Drive slower. Repeat calibration. Adapt spread rate.
F45003	Notification	The regulation of the metering system is fluctuating too much.	Repeat calibration. Adjust spread rate and check.
F45004	Alarm	No communication possible with motor 1 (left)	Check the connection of the metering motor to the wiring harness.
F45006	Alarm	No valid signal found at the sensor input for the steps.	Sensor defective or cable break on the wiring harness.
F45007	Warning	Mechanical defect or defective sensor or cable break.	Check the mechanism of the tramline gap or call up the diagnosis menu
F45008	Warning	The tramline control cannot be actuated	Check the connection of the tramline control to the wiring harness.
F45009	Warning	Blockage in the tramline control	Check the tramline control and the metering system.
F45032	Alarm	No valid signal found at the sensor input for the working position.	Check the position and the current value of the sensor. Sensor defective or cable break on the wiring harness.
F45034	Notification	Fan is operating outside of the set tolerance range.	Change tolerance range, check the sensor, check the hydraulics
F45039	Alarm	No valid signal found at the sensor input for the steps.	Sensor defective or cable break on the wiring harness.
F45048	Alarm	The implement is in working position and a speed is detected. The steps are folded down and therefore the metering units are disabled.	Fold up the steps.
F45049	Notification	The residual quantity in the hopper set by the user has been reached.	Refill the tank.

F45050	Alarm	The input for the working position sensor is outside of the measuring range.	Check the working position sensor and wiring harness.
F45056	Notification	The main part-width section switch is deactivated and the implement is in working position, and a speed is detected.	Activate the main part-width section switch to begin with seeding.
F45057	Warning	Speed below 200 rpm, defective sensor, cable break.	Check speed, check sensor in the Diagnosis menu, check the wiring harness.
F45060	Notification	The user has switched to simulated speed and the sensor (implement) has detected a speed	Rectify defect in the sensor (implement) or continue work with simulated speed. If a sensor (implement) is defective, it must be removed from the wiring harness.
F45061	Notification	The user tried to change the switch points of the working position sensor. The taught-in work points are in an invalid range.	Check the value range for the working position sensor in the Diagnosis menu and change the mounting position if necessary.
F45062	Notification	When teaching-in the valid working range of the working position sensor, an invalid range was used.	Check the mounting position of the working position sensor. The value range between the switch points might be too small.
F45067	Warning	Wrong software version on the named system.	The components must be updated to a compatible software version.
F45068	Warning	Wrong software version on the named system.	The components must be updated to a compatible software version.
F45070	Warning	The absolute low level alarm in the metering unit is not detecting any seed.	Refill the implement or check the sensor.

10 Bearing

Store the on-board computer in a dry place when you remove it from the tractor cab.

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