

## Operating manual

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Printing	12.2018
Language	EN [Original]
For software from	1.06
For	Pneumatic seeding machines
Reference number	A139309840

## Identification of the machine

In order for your dealer to assist you as fast as possible, you will need to provide some information about your machine.

Please enter the details here.

Designation	E-COM-SINGLE software
Working width	
Weight	
Machine number	
Accessories	
Address of dealer	
Address of manufacturer	Kverneland Group Soest GmbH Coesterweg 42 D-59494 Soest Germany  Tel. +49 (0) 2921/974-0

<b>Preliminary information</b> .....	<b>4</b>
Safety	4
Instruction	4
Other applicable documents	4
Symbols	5
Pictograms	5
<b>Getting started</b> .....	<b>6</b>
<b>Start screen</b> .....	<b>7</b>
<b>Information screen</b> .....	<b>8</b>
Information area – top	9
Information area – centre	10
Information area – bottom	11
<b>"Seeding" menu</b> .....	<b>12</b>
Changing the application rate	14
Changing the tramline rhythm	14
<b>Calibration</b> .....	<b>15</b>
Keys	15
<b>Calibration test</b> .....	<b>17</b>
<b>Tramlines</b> .....	<b>23</b>
<b>Task Records</b> .....	<b>26</b>
Page 2	27
<b>Configuration</b> .....	<b>28</b>
Events	40
Totals	41
Diagnostics	42
Information	43
Voltages	44
Actuators	45
Inlets	46
Outlets	47
Access	48
<b>Storage</b> .....	<b>49</b>
Storage	49
<b>Faults</b> .....	<b>50</b>
<b>Notes</b> .....	<b>55</b>
<b>Index</b> .....	<b>56</b>

# Preliminary information

## Target group

This operating manual is intended for trained farmers and individuals who are otherwise qualified to perform agricultural activities and who have received instruction in the operation of this software.

## Safety

Study the contents of this operating manual carefully, which are relevant for your activity, before initial operation or assembly of the machine.

This operating manual describes software which is intended for the operation of a certain seeding machine model. This operating manual therefore only applies in conjunction with the operating manual of the associated machine.

Always read through the safety instructions in the "Safety" chapter of the machine's operating manual and observe the warning information in the individual chapters of this operating manual as well as the machine's operating manual. In this way, you will achieve optimum work results and operational safety.

## For the employer

Staff must be instructed in the safe handling of the software before the initial commissioning. Untrained or unauthorised persons are not permitted to use the software.

The following are included in this training:

- Checking that staff possess the necessary requirements for safely handling the software.
- Handing out the operating manual and the other relevant and applicable documents or an intensive course of training which, in particular, includes the safe handling of the software.

## Regular instruction sessions

Instruct your staff regularly, but at least once year, concerning the basic procedural measures for safely handling the software.

## Instruction

You will receive training from your dealer concerning using the controls and safe operation of the software. Initial operation without first receiving training is not permitted.

## Other applicable documents

In addition to the operating manual, other documents also form an integral part of the machine:

Operating manual of the seeding machine	Integral part of the delivery of the seeding machine
Operating manual for the terminal	For example, IsoMatch Tellus
"GEOCONTROL" operating manual	Integral part of the delivery of the software

## Symbols

In order to make this manual clear and easy to read, we have used various symbols. They are explained below:

- A bullet point accompanies each item in a list
- ▶ A triangle indicates operating functions which must be performed
- An arrow indicates cross-references to other text passages

[+] A plus sign indicates an accessory that is not included in the standard version.

## Pictograms

We have also used pictograms to help you find instructions more quickly:



The warning triangle indicates warning information. Failure to observe these safety instructions can result in:

- Moderate to serious injury
- Fatal injury

You will find the warning information associated with individual operations, where it is important to observe the warning information before these operations are carried out.



This sign indicates important instructions regarding the machine. Failure to observe these safety instructions can result in:

- Serious faults in the correct operation of the machine
- Damage to the machine



This symbol indicates information, tips and notes on operation.



This symbol indicates tips for assembly or adjustment work.



This symbol indicates examples that assist a better understanding of the instructions.

Parts in the text which refer to individual machines or to conditions have a coloured background. After the coloured section, the text then again applies to all conditions and machines. For example:

Before folding out only:

- ▶ Release the locking mechanism for transport
- ▶ Actuate the control unit

# Getting started

## Switching on



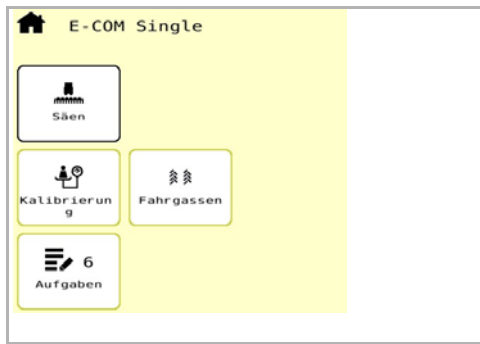
### **When working on the machine, disconnect the terminal from the machine**

During all work on the machine, disconnect the terminal from the machine in order to exclude the possibility of unintended commands being sent.

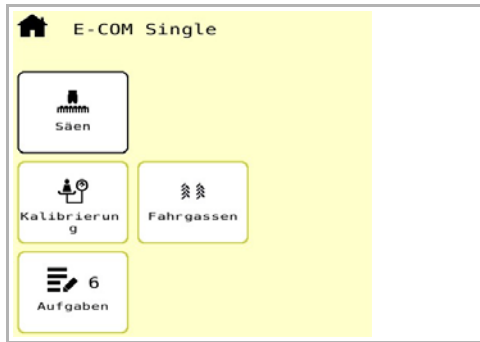
*Unintended commands sent from the software to the machine may trigger unpredictable movements on the machine which could cause personal injury or death.*

The system is ready to operate after being connected up and can be switched on.

- ▶ Switch on the terminal
- Operating manual for the terminal



The system performs a short self-test. You will then see the start screen.



The start screen provides an overview of all menus. Touch any key to open its respective menu.

## Buttons



Switches to the "Seeding" menu  
→ »Seeding" menu«, page 12



Switches to the "Calibration" menu  
→ »Calibration«, page 15



Switches to the "Tramlines" menu  
→ »Tramlines«, page 23



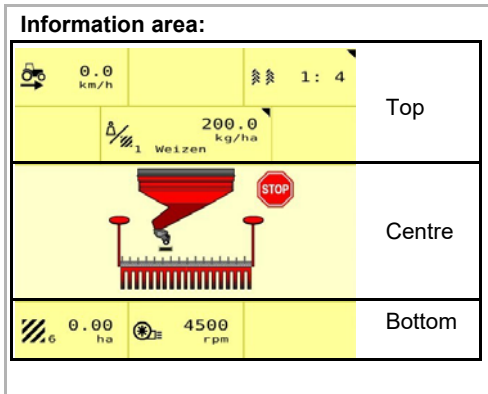
Switches to the "Tasks" menu  
→ »Task Records«, page 26



Switches to the "Configuration" menu  
→ »Configuration«, page 28

# Information screen

## General



The information screen displays all of the most important values during seeding work.

### Information area at top

You can read off all of the current values during seeding work in the information area at the top. In addition, the quantity of seed or fertiliser applied for one metering device is displayed. The values change when activating an increased or decreased amount during seeding.

You can change the application amount of seed or fertiliser also by inputting the quantity directly. Exceeding or not reaching the amount from the calibration test by more than 50% is not possible.

### Information area at the centre

The machine is shown in the information area at the centre. Information on the metering device will be displayed.

### Information area at bottom

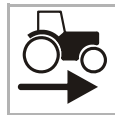
The information area at the bottom is used to display the current status of the fan and the area being worked.

The meaning of the symbols will be described on the next pages.

## Information area – top



## Symbols



Speed in km/hour



Information about the tramlines  
Only visible if tramlines are activated.



Example:

1 : 4

1 = Current pass

4 = Total number of passes in a rhythm



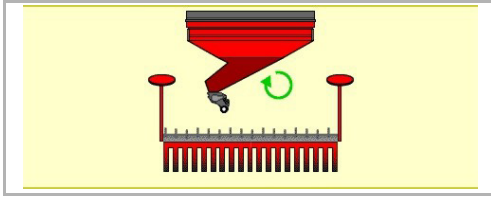
Amount of seed [kg/ha] or the number of grains per m<sup>2</sup>.  
The pre-set amount of seed is displayed.



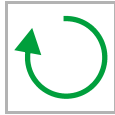
Selected seed or fertiliser and number of calibration test

# Information screen

## Information area – centre



### Symbols

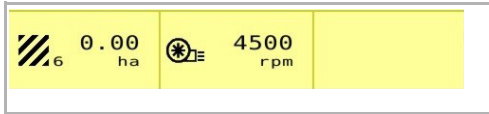


Metering device in operation. Metering device display.



The stop sign indicates that the machine is currently not in operation. No seeding will take place in these circumstances.

## Information area – bottom



## Symbols



Cultivated area, in ha

The number over “ha” specifies the active task from the menu “Task”.



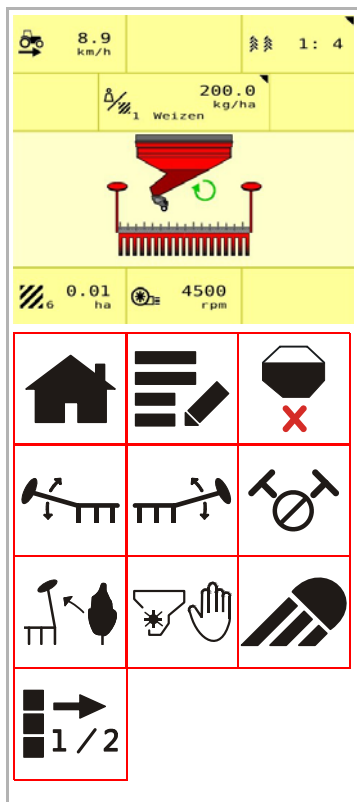
Fan speed in revolutions per minute

The current value is displayed



Switch the working lights (+) on and off

# "Seeding" menu



- The seeding settings can be entered here.

Explanations of the symbols:  
→ Chapter »Information screen«



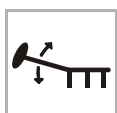
Return to the start screen



Information on the current task



Switch off the metering device.



### Track marker:

Activate the track marker on the left side



Activate track marker on right side

To fold the track marker the machine must be folded out and must be in work position.

- ▶ To perform seeding work, preselect the track marker which has to be opened out first. The symbol flashes.
- ▶ Actuate the control unit on the tractor. The track marker is folded out.

The flashing symbol indicates that the hydraulic valve is active. Lift out the machine at the end of the field and actuate the control unit for the track markers. Lifting out the machine will cause the second track marker to be pre-selected automatically and lowered when the control unit is actuated.



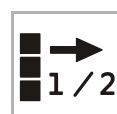
Depending on the type of machine, passes for setting up tramlines automatically will only continue to be counted if the track marker was actuated and the machine was lifted.



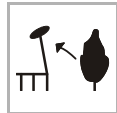
The second track marker is activated after a delay of three seconds.



Only the current track marker is used. The second track marker remains folded. For information purposes, the flashing symbol appears in the information area.



Turn to the next page



## "Obstacle" key

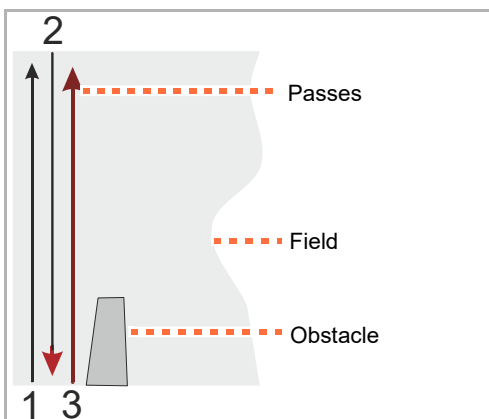
The folded out track marker is activated for folding in. The tramline sequence is not counted any further until the key is pressed again.



You can also use the "Obstacle" key if a track marker cannot be used on one section during a pass.



In the third pass, an obstacle appears on the right-hand side. In headland management, the track marker would extend in the third pass, thereby hitting the obstacle. To avoid this, proceed as described in the table:



Pass number	Track marker	On the headland
1	Right-hand side folded out	Headland management
2	Left-hand side folded out	<ul style="list-style-type: none"> <li>▶ Lift the machine</li> <li>▶ Deactivate track marker on right side</li> </ul>
3	Right side folded in until after the obstacle.	<ul style="list-style-type: none"> <li>▶ Lower the machine</li> </ul> <p>After the obstacle:</p> <ul style="list-style-type: none"> <li>▶ Activate track marker on right side</li> <li>▶ Activate the "Obstacle" key</li> <li>▶ Fold out track marker on right side</li> <li>▶ Deactivate the "Obstacle" key</li> </ul>



## Start the metering device manually

The speed adopted is the preselected speed, irrespective of the actual speed of the tractor. Manual starting remains active for 15 seconds or until the actual speed exceeds the preselected speed.



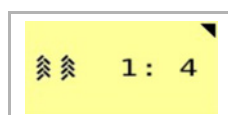
## Switch the working lights (+) on or off



## Increase or reduce the application rate

- ▶ Select the field on the screen

→ Section »Changing the application rate«, page 14



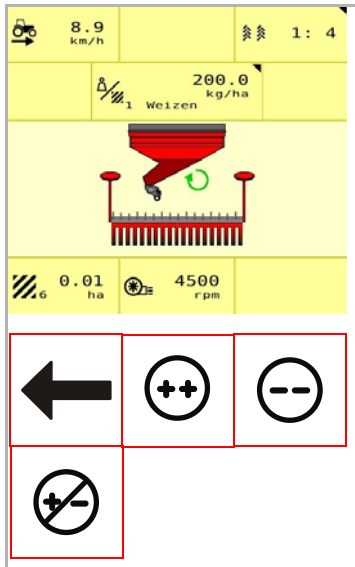
## Alter settings for the tramline rhythm

- ▶ Select the field on the screen

→ Section »Changing the tramline rhythm«, page 14

# "Seeding" menu

## Changing the application rate



Switch back to the previous view



Increase application rate by a defined percentage

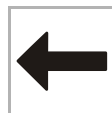
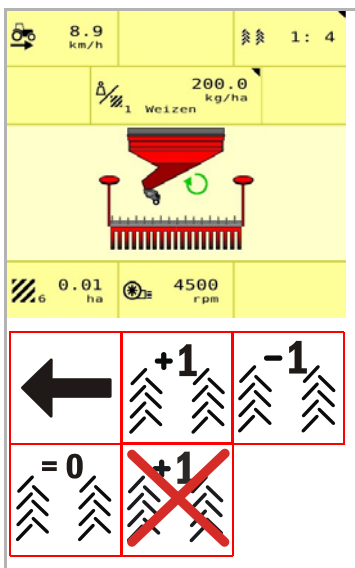


Decrease application rate by a defined percentage



Reset the application rate to the normal value

## Changing the tramline rhythm



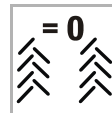
Switch back to the previous view



Current pass +1



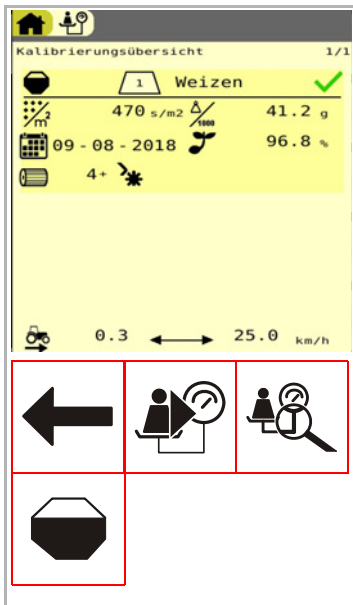
Current pass -1



Set current pass to first pass. The rhythm begins afresh.

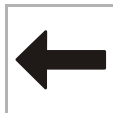


Activate or deactivate the tramline control system  
If the tramline control system is deactivated, the current pass is continued.



- The inputs for a calibration test are entered in the calibration overview.

## Keys



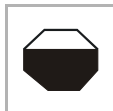
Switch back to the previous view



Start the calibration test

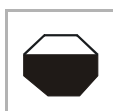


Start the calibration test



Make preselection on the metering device  
→ »Prepare calibration test«, Page17

## Symbols



Metering device



Number of the calibration test of the respective metering device. Must be individually entered by the driver.

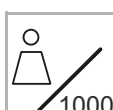


Calibration test

Red means that the calibration test has not yet been performed  
Green means that the calibration test has been performed successfully



Enter the desired application rate in kg/ha  
When doing this ensure that the correct seed is selected.



Thousand grain weight of the seed



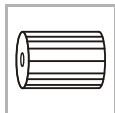
Date display



Germination capacity of the seed



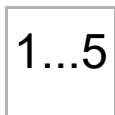
Date display



Information on making settings on the metering device. You will receive the correct information automatically from the software:

- Number of the rotor that is to be used
- Information about whether or not the auxiliary plate should be installed in the metering device

► Make the settings on the metering device according to the information provided by the software.



Number of the rotor. The number can be found on the side of the rotor.

Number	Rotor
1	
2	
3	
4	
5	

The rotor is selected by the software. Install the rotor specified according to the calibration test in the metering device.



Auxiliary plate

Depending on the seed and application rate, it may be necessary to fit the auxiliary plate. The auxiliary plate prevents the drive motor from being overloaded.

→ Seeding machine operating manual



Minimum and maximum driving speed [km/h]

If the limits are not reached or exceeded, an alarm is triggered. The information provided relates to the driving speed theoretically supported by the metering device. Out on the field, the maximum driving speed is determined by other factors. The type of the seed, nature of the soil, equipment of the seeding machine and the desired accuracy of seed placement, for example, are such factors.

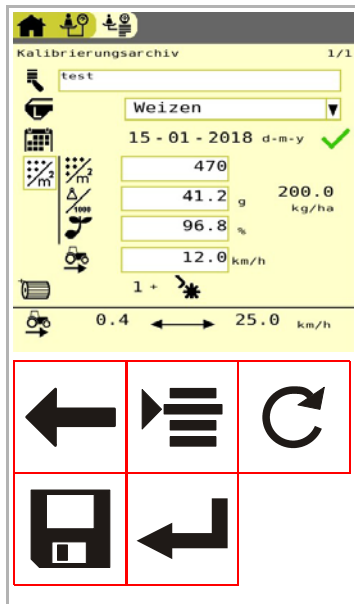


A calibration test must be performed for each seed or type of fertiliser. The number of the calibration test active in each case flashes.

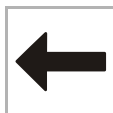


Do you wish to spread a seed type which is not in the software's selection list or mixture of seed?  
Chapter »Calibration test«, section »Special seed«, page 20

## Prepare calibration test



### Keys



Switch back to the previous view



List of saved calibration tests



Call up the saved input values




Save the input values






Save the calibration tests

# Calibration test

## Symbols

 test

Saatgut: Weizen

 15 - 01 - 2018 d-m-y  

Free text field for entering comments

Select the seed type

Date with display showing whether calibration test has been performed (green) or is still open (red)



Input selection in kg/ha or grains/m<sup>2</sup>.

 470

Desired application rate [kg/ha] or [grains/m<sup>2</sup>]

 41.2



Enter the thousand grain weight of the seed in grams

 96.8


Enter the germination capacity of the seed in percent

 12.0

Desired driving speed







 1 + 



Information on making settings on the metering device

 0.4 ↔ 25.0

Minimum and maximum driving speed

Kalibrierungsarchiv 1/1

1	Weizen	15-01-2018	470 sd/m <sup>2</sup>	
2	Weizen		200.0 kg/ha	
3	Weizen		200.0 kg/ha	
4	Weizen		200.0 kg/ha	
5	Weizen		200.0 kg/ha	
6	Weizen		200.0 kg/ha	

Overview of saved calibration tests

Switch back to the previous screen

Scroll down the list

## Performing a calibration test

You can start the calibration test via the terminal or directly on the metering device.



### Do not start the tractor

During the calibration test, persons may be in the machine's hazard area. Do not start the tractor and leave the tractor's handbrake applied.

*Anyone located in the hazard area of the machine may be seriously or fatally injured by moving machine parts or by movement of the machine itself.*

## Input

The following values must be entered first of all:

Input	Example
Seed	Wheat
Application rate [kg/ha]	200
Enter the germination capacity of the seed in percent	98,2
Desired driving speed [km/h]	6

From this, the software calculates the adjustments you have to make to the metering device:

Setting	Example
Select the rotor as specified and install it in the metering device	Rotor 1
Auxiliary plate	Install

- ▶ Place a catch pan under the metering device
- ▶ Performing a calibration test
- ▶ Start the test run

# Calibration test

## Special seed

Proceed as follows if you wish to spread a seed type which is not in the software's selection list or a mixture of seed:

- Select a seed type which is most similar to the size and nature of your seed
  - ▶ Performing a calibration test
  - ▶ Start the test run



The software cannot compensate for differences between the desired application rate and the actual application rate because the properties of the special seed are unknown. It is therefore not possible to achieve exactly the desired application rate.



You can increase or decrease the application rate manually. Use the settings for increased amount or decreased amount to do this.  
→ Chapter »Operation« on page 29

## Mixture

If you wish to spread a mixture of two or more seed types, proceed as follows:

- Start with the largest seed and select the seed from the selection list in the software
  - ▶ Performing a calibration test
  - ▶ Start the test run



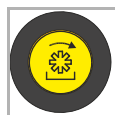
The more the seed types differ, the greater the difference will be between the desired application rate and the actual application rate. The distribution of the mixture changes as soon as filling starts and later on in the seed hopper, for example due to vibrations. This separates the seed types. You will not be able to achieve the exact application rate that is desired. This applies particularly for smaller seed types in the mixture.



You can increase or decrease the application rate manually. Use the settings for increased amount or decreased amount to do this.  
→ Chapter »Operation« on page 29

## Manual starting

You can start the metering device manually. A key is located directly on the metering device.



- ▶ Press the key. The metering device starts.

Pause	Press the key again
End pause	Press the key again

## Filling



- ▶ Start the calibration test

The metering device is now filled. To do so there must be sufficient seed in the seed hopper.



- ▶ Abort filling



- ▶ Pause
- ▶ Press again: Resume filling



- ▶ Start filling or start manually
- Chapter »Calibration test«, section »Manual starting«, page 20



- ▶ Start filling the metering device

- ▶ Empty the catch pan and put it back under the metering device
- A calibration is performed after filling.



- ▶ Start calibration or start manually.
- Chapter »Calibration test«, section »Manual starting«, page 20



- ▶ Abort calibration



- ▶ Pause
- ▶ Press again: Resume calibration



- ▶ Start calibration

After calibration, the seed from the catch pan must be weighed.

- ▶ Enter the weighing result in kg



The amount weighed can deviate from the desired amount. For example, if 200 kg/ha of wheat are to be applied, but the amount weighed at 0.10 ha corresponds to only 18 kg instead of the expected 20 kg, this is then not an error. Please enter the result of the weighing from the calibration. Not until the test run is a working run simulated with the set values. Therefore always perform a test run.

# Calibration test

After the weighing result has been entered, "OK" appears on the display.

When confirmed, the weighing result is converted to the driving speed.

- ▶ Confirm the "OK" on the display

## Start the test run



A test run is advisable, especially if a calibration test with a different seed quality is to be adopted.



Abort the test run



Start test run or start manually

→ Chapter »Calibration test«, section »Manual starting«, page 20



Pause

Press again: Continue test run



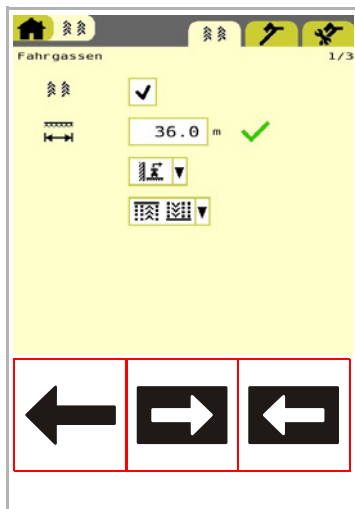
- ▶ Place a catch pan under the metering device or devices

- ▶ Start test run or start manually

- ▶ Weigh the seed from the catch pan and compare it with the setpoint value

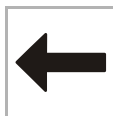
- ▶ If there are any deviations, perform a new calibration test

## Tramlines

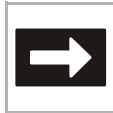


- Tramlines are laid down for spraying/fertilising units such as field sprayers or fertiliser spreaders.

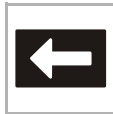
## Keys



Switch back to the previous view

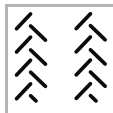


To the next page



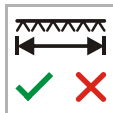
To the previous page

## Symbols



Tramlines

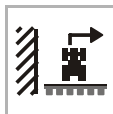
Allows tramline incorporation to be activated or deactivated



Working width of the spraying/fertilising unit in metres

For example, field sprayers or fertiliser spreaders

Display is green if tramline rhythm is possible, otherwise red.



Selection menu:

Begin the seeding work at the left/right side of the field

**Is only displayed if just one selection is possible**

Laying of the tramlines symmetrically or asymmetrically



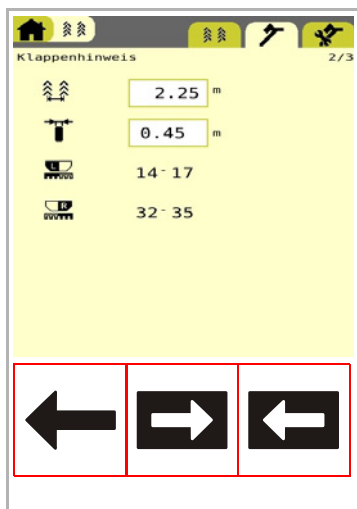
Set up symmetrical tramlines:

Both marks will be created during one pass.

Set up asymmetrical tramlines:

Just one mark will be set up in one pass.

## Flaps Advice

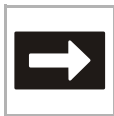


- Calls up the configuration of the shut-off valves

## Keys



Switch back to the previous view



To the next page



To the previous page

## Symbols



Enter the spraying/fertilising unit track width

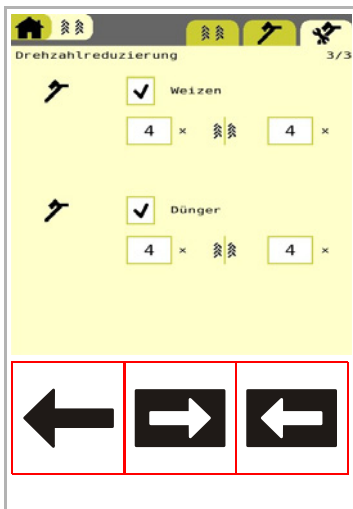


Enter the spraying/fertilising unit tyre width



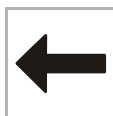
Number of coulters on which shut-off valves need to be fitted for the corresponding tramline rhythm.

## RPM Reduction

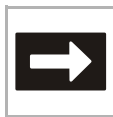


- Activate or deactivate the automatic reduction of the amount of seed when creating tramlines.
- When creating tramlines, the seed is distributed from the blocked seed coulters to the remaining seed coulters. The increased amount of seed can be compensated for on the metering device by reducing the amount of seed.

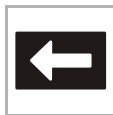
## Keys



Switch back to the previous view

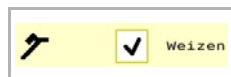


To the next page



To the previous page

## Symbols



Activate or deactivate shut-off valves



Number of shut-off valves which are closed when creating tramlines for the left or right track. Enter the number.

# Task Records

## Page 1



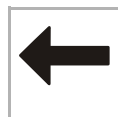
- The current task is shown here. Twenty different tasks can be stored at once. The following information is stored from the start of the task for each task:

Aufgaben		1/1
Ansicht: # 6	Aktiv: # 6	
→	23-04-2018	9:46
→		
🕒	0:02	h:m
🕒	0:16	h:m
🌱	0.18	ha
🚲	0.448	km
👤	34	kg



The task is only completed if a new task has been selected.

## Keys



Switch back to the previous view



List of saved tasks



Delete data

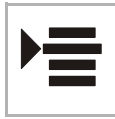


Start the task

The active task is shown as a number in the information screen.  
→ »Information screen«, Page8

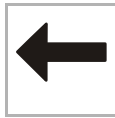
## Page 2

#			ha
1	09-10-2017	14:45	15.1 ✓
2	??-??-????		0.0
3	??-??-????		0.0
4	??-??-????		0.0
5	09-10-2017	14:20	0.0
6	??-??-????		0.0



- The second page shows the list of saved tasks.

## Keys



Switch back to the previous view



Scroll down the list

# Configuration



- Here, the seeding machine can be configured according to the desired requirements.

## Keys



Return to the start screen

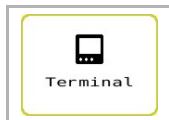
## Buttons



Switches to the "Operation" submenu  
→ »Operation«, Page29



Switches to the "Task controller" submenu  
→ »Task Controller«, Page32



Switches to the "Terminal" submenu  
→ »Terminal«, Page36

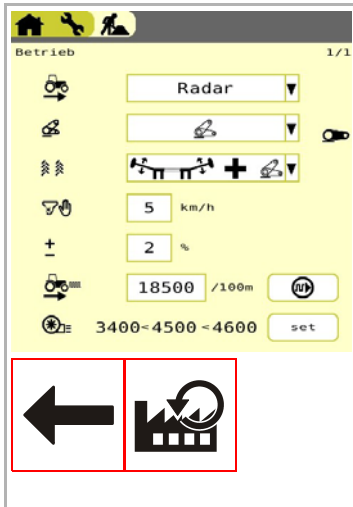


Switches to the "Alarms" submenu  
→ »Alarms«, Page37



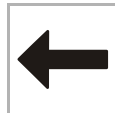
Switches to the "System" submenu  
→ »System«, Page39

## Operation



- The operational settings can be entered here

## Keys

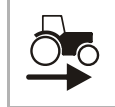


Switch back to the previous view



Restore factory settings  
All inputs are reset to the stored factory setting.

## Symbols



Speed sensor

The type of speed sensor can be set here:



• ISOBUS drive wheel	Wheel sensor on the tractor via ISO 11783 interface
• ISOBUS radar	Radar sensor on the tractor
• Manual	Here you can enter a speed which is independent of the sensors, e.g. if the speed sensor is defective but you wish to continue sowing. Drive at the entered speed then.
• GPS J1939	GPS aerial
• Radar	Radar sensor on the machine
• NMEA 2000	NMEA 2000 signal from the tractor




# Configuration



## Start-stop sensor





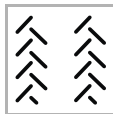
The type of start-stop sensor can be set here:

	Enter start and stop manually
	Starting and stopping are controlled automatically by sensors on the seeding machine
 <b>ISO11783</b>	Starting and stopping are controlled automatically by sensors on the tractor



## Indicates the work position of the machine




	The machine is in work position
	The machine is lifted and not in work position



## Sensor for the creation of tramlines



The type of sensor to be used for incorporating tramlines can be set here:

	The work position of the seeding machine controls how tramlines are incorporated in the field
	Sensors on the track marker and the work position of the seeding machine control how tramlines are incorporated in the field
 <b>ISO11783</b>	Sensors on the tractor control how tramlines are incorporated in the field



## Metering device speed

Minimum speed for metering seed. This speed is used to calculate the metering quantity, irrespective of the actual speed of the tractor. Activate using the key on the information screen. Manual starting remains active for 15 seconds or until the actual speed exceeds the preselected speed.



Increased or decreased amount. Enter the desired percentage steps for the increased and decreased amounts during seeding.



Number of pulses from the radar sensor over 100 m. The pre-set value is 18500 pulses over 100 metres.



Begin a new calibration with "START".



Recommendation: You can determine this value through calibration. This procedure is more accurate and is adapted to the current soil conditions:

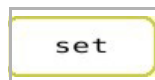
- ▶ Exactly measure off 100 metres on the field
- ▶ Move the machine to its work position
- ▶ Activate "Start"
- ▶ Drive 100 m
- ▶ Activate "Stop"

The number of pulses will be indicated.

- ▶ Confirm the value with "OK"



The fan speed can be stored here as a setpoint. To do so, run the fan at the desired speed. The actual value is displayed in blue in the centre.



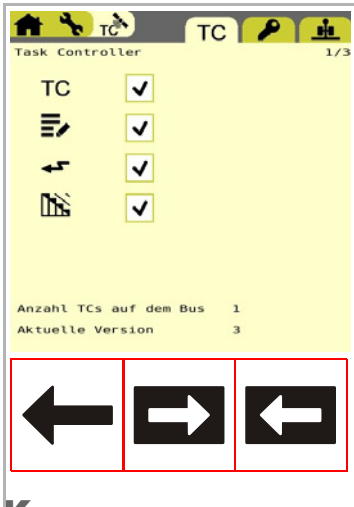
- ▶ Once the value is reached, store it with "SET"

The bottom and top limits for an alarm are then calculated automatically.

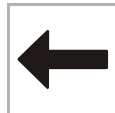
# Configuration

## Task Controller

- Additional operational settings can be made here.



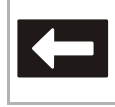
### Keys



Switch back to the previous view



To the next page



To the previous page



Display of "Instance Number"

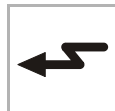
### Symbols



Select TaskControl



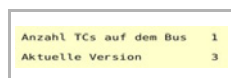
Task management via TaskControl



Apply seed over area maps



Select automatic deactivation of sowing units



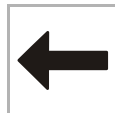
Number of task controllers on the bus and display of used TaskControl software version.

## License



- The licence key can be entered here.

## Keys



Switch back to the previous view



To the next page



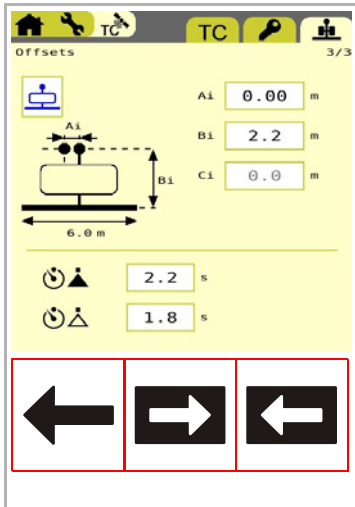
To the previous page



License key input. Green confirms the correct licence key.

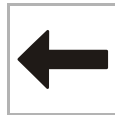
# Configuration

## "Offsets"

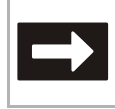


- Settings for the offsets on the machine to the tractor.

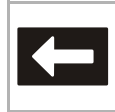
## Keys



Switch back to the previous view



To the next page





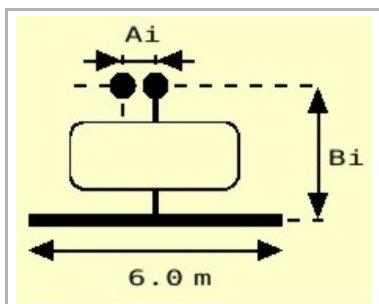
To the previous page

## Symbols



Type of attached machine:

	Attached seeding machine
	Trailed seeding machine



Display of offsets

A.i  m

Lateral offset to the tractor centre

B.i  m

Distance from the centre of the machine's rear axle to the centre of the seed coulter

C.i  m

Distance from the connection point on the tractor to the centre of the machine's rear axle



"T-ON": The metering device is switched on in advance.

"T-ON": The seeding machine is to apply seed starting from a particular point, for example after leaving the headland.

To do this, the metering device must already be delivering seed before that point is reached. A few seconds are required for transporting the seed from the metering device to the coulters.

Specify the time here in seconds when the metering device should start to deliver seed before the point is reached. You will thereby ensure that the seed has arrived at the coulters when the point is reached. The "T-ON" value must be greater than the "T-OFF" value.



"T-OFF": The seeding machine is to apply no seed starting from a particular point, for example when reaching the headland.

To do this, the metering device must already stop delivering seed before that point is reached. A few seconds are required for transporting the seed from the metering device to the coulters.

Specify the time here in seconds when the metering device should stop delivering seed before the point is reached. You will thereby ensure that no more seed arrives at the coulters when the point is reached. The "T-OFF" value must be smaller than the "T-ON" value.

The "T-ON" and "T-OFF" times are dependent on a number of factors. For example:

- Driving speed when reaching the point at which seed is to be applied – "T-ON" or no more seed is to be applied – "T-OFF"
- Type of seed
- Nature of the seed

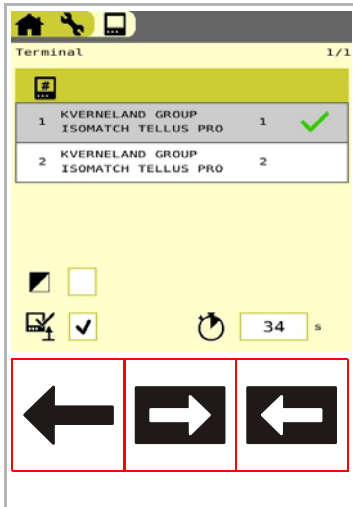
The guide values are only indications, and adjustment on the field is required in all cases.



	"T-ON"	"T-OFF"
Guide value [s]	2,2	1,8

# Configuration

## Terminal



- The terminal can be selected here.

## Keys



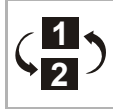
Switch back to the previous view



Display showing terminal number



Scroll down the list



Replace the contents of the screen:

Screen	Swap with screen
Top	Bottom
Left	Right

## Symbols



Display showing terminal number



A green tick shows the terminal is activated



Selection for black/white screen



Each time the machine is started, a check will be run to determine whether the terminal has already been linked with this machine before. This can help to reduce loading times.



Set connection time

## Alarms

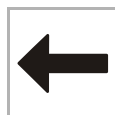


- Menu for activating or deactivating individual alarms.

### Activating or deactivating:

Activate	=	Tick in box
Deactivate	=	No tick in box

## Keys



Switch back to the previous view

## Symbols



Activate or deactivate the alarm if the target speed is not reached or is exceeded.

The alarm is triggered if the speed for the exact application of seed is too low or too high. The alarm can be deactivated. We recommend that the alarm is always switched on.



Activate or deactivate the sensor on the fan

### Machines with radar sensor:

#### Activate the fan sensor

On machines with a radar sensor, the fan sensor must be activated. *If the fan sensor is deactivated, the metering device motor can start unexpectedly when the machine is stationary. Persons who carry out work on the metering device may be injured.*



- ▶ Check whether the fan sensor is activated. If not, activate the fan sensor.

# Configuration



Activate or deactivate the sensor for monitoring the rotor



Activate or deactivate the hopper low level sensor

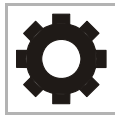
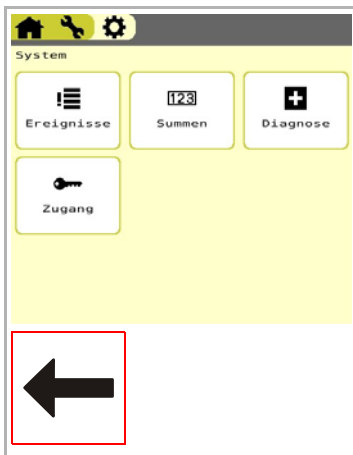


Activates or deactivates the alarm if the flap on the metering device is open. In the event that the alarm is activated, you will receive a message if the flap on the metering device is open during sowing.



Activate or deactivate the audible signal when the metering device motors are started.  
When the alarm is activated, you will receive an audible signal when the metering device starts.

## System

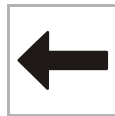


- These pages are generally of interest to the service technician. The test menu can provide you with assistance when troubleshooting or checking settings.



Exiting the test menu will quit any tests already running. Set values will not be saved.

## Keys



Switch back to the previous view

## Buttons



Switch to the "Events" submenu  
→ »Events«, Page40



Switch to the "Totals" submenu  
→ »Totals«, Page41



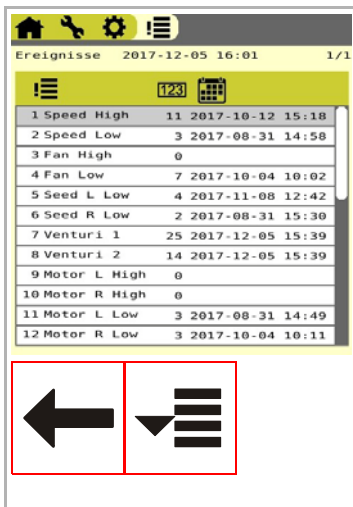
Switch to the "Diagnosis" submenu  
→ »Diagnostics«, Page42



Switch to the "Access" submenu  
→ »Access«, Page48

# Configuration

## Events

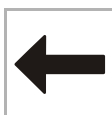


The screenshot shows a mobile application interface for 'Ereignisse' (Events) on 2017-12-05 at 16:01. It features a table with 12 rows of event data, a top navigation bar with icons for home, settings, and a list, and a bottom navigation bar with a left arrow and a list icon. A red box highlights the bottom navigation bar.

ID	Event Name	Count	Date	Time
1	Speed High	11	2017-10-12	15:18
2	Speed Low	3	2017-08-31	14:58
3	Fan High	0		
4	Fan Low	7	2017-10-04	10:02
5	Seed L Low	4	2017-11-08	12:42
6	Seed R Low	2	2017-08-31	15:30
7	Venturi 1	25	2017-12-05	15:39
8	Venturi 2	14	2017-12-05	15:39
9	Motor L High	0		
10	Motor R High	0		
11	Motor L Low	3	2017-08-31	14:49
12	Motor R Low	3	2017-10-04	10:11

- All events are listed here.

## Keys



Switch back to the previous view



Scroll down the list

## Symbols



List of individual results

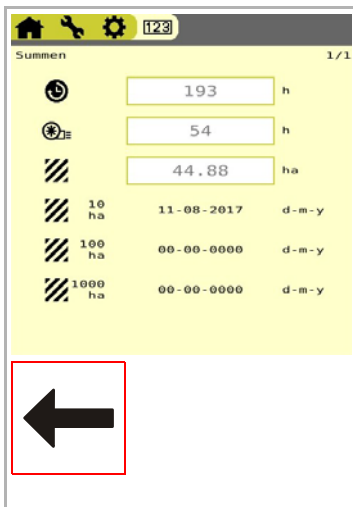


Displays the total number of individual events



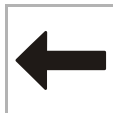
Displays the date and time of the event

## Totals



- Operating data of the seeding machine.

### Keys

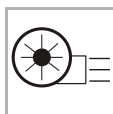


Switch back to the previous view

### Symbols






Total hours [software switched on]



Total hours [signals from fan and speed sensor]



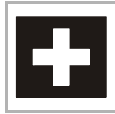
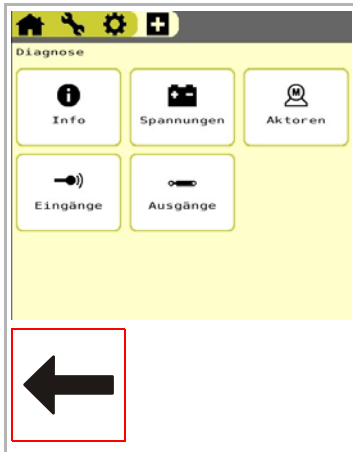
Total area performance

	10 ha	11-08-2017	d-m-y
	100 ha	00-00-0000	d-m-y
	1000 ha	00-00-0000	d-m-y

Details on which date a total area of 10, 100 and 1000 ha was achieved

# Configuration

## Diagnostics



- Test runs can be carried out here.



The tests described here should be performed before each use of the machine. This will allow sources of faults to be easily identified and removed.



Example:

The metering device drive motor must be tested.

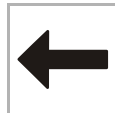
- ▶ Activate the drive motor(s) to do so

L = Left (rear)

R = Right (front)

The entry is confirmed and the motor will begin to turn at the set speed.

### Keys



Switch back to the previous view

### Buttons



Switch to the "Info" submenu

→ »Information«, Page43



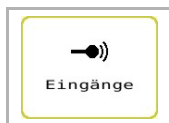
Switch to the "Supply voltages" submenu

→ »Voltages«, Page44



Switch to the "Actuators" submenu

→ »Actuators«, Page45



Switch to the "Inlets" submenu

→ »Inlets«, Page46



Switch to the "Outlets" submenu

→ »Outlets«, Page47

## Information



- Information about the software is entered here.

The screenshot shows the 'Informationen' screen with the following data and callouts:

	KVERNELAND E_COM_SINGLE	Information about the seeding machine
	E_COM_SINGLE 0.06 2018-03-29	Current software version
	SGE A136164000 1.1 0268453369	Information about the PCB
	LDR_SGE 1.02 2016-03-08	
		Display showing ISOBUS version

www.aef-isobus-database.org

A red box highlights a back arrow button in the bottom left corner of the screenshot.

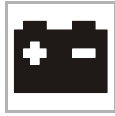
## Keys



Switch back to the previous view

# Configuration

## Voltages



- Display showing power supply to the computers/sensors.

Home ... + Battery

Spannungen 1/1

	12V - OUT	14.4 V	
	ACT - PWR1	14.5 V	
	ACT - PWR2	14.5 V	
	5V - OUT	5.0 V	
	TEMP	29 °C	

**Power supply to sensors**

Target	Possible causes for deviations	Remedy
12 V, ± 2 volts	Voltage insufficient or too high	Check the power supply

**Power supply to computers**

Target	Possible causes for deviations	Remedy
12 V/5 V, ± 0.5 V	Voltage insufficient or too high	Check the power supply

**Temperature monitor**

Target	Possible causes for deviations	Remedy
Below 70 °C	The components on the PCB are defective	Inform the Customer Service

## Keys



Switch back to the previous view

## Actuators



- Information on connected motors and sensors.

Aktoren 1/1

TARGET RPM: 2500 FOR Motor

RUN MODE: Manual

ENCODER	1
ROTOR SENSOR	1
ROTOR	1
MOTOR RPM	0.0 rpm
ROTOR RPM	0.00 rpm
AVG CURRENT	0.0 A
ALARM CURRENT	0.0 A
MOTOR REVS	0.0
ROTOR REVS	0.0
LAST RUN	0.00 s
DUTY CYCLE	0.00 %

Input of the rotational speed at which the motor or the rotor on the metering device is to turn. Motor: 50–5000 rpm. Rotor: 2–48 rpm

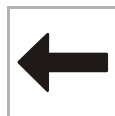
Activation for test purposes: Motor or rotor

Activation for test purposes: Manually, by time or revolutions

Information on connected motors and sensors  
Display only for activation of the motor at the metering device (see table below)

START LEFT

## Keys



Switch back to the previous view



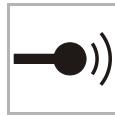
Start the test on the left

### Connected motors and sensors

	Target	Possible causes for deviations	Remedy
Encoder	Switch between 1 and 0	Encoder defective	Inform the Customer Service
Rotor sensor	Switch between 1 and 0	Sensor defective or set incorrectly	Inform the Customer Service
Rotor	Number of the rotor	Sensor defective	Inform the Customer Service
Motor RPM/rotor RPM	Set value for "Motor", $\pm 10\%$	See under "Current"	See under "Current"
AVG current / alarm current	5 A maximum	Some compacted seed or fertiliser residue may still remain in the metering device	Check the metering device

# Configuration

## Inlets



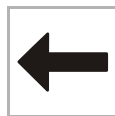
- Display showing the individual sensors.

The screenshot shows a configuration interface with a header bar containing a home icon, a plus sign, and a sensor icon. Below the header, the text 'Eingänge' is followed by '1/1'. A list of sensors is displayed in two columns, with a red dashed box highlighting the right column. A red dashed line points from the text 'Display for the sensors' to the table below.

Target	Possible causes for deviations	Remedy
Switch between 1 and 0	Sensor defective or set incorrectly	Inform the Customer Service

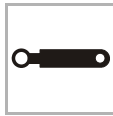
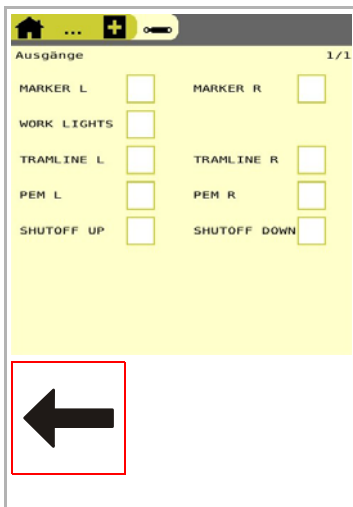
A red box highlights a left-pointing arrow icon in the bottom left corner of the screenshot.

## Keys



Switch back to the previous view

## Outlets



- Display for hydraulic valve testing purposes.



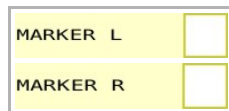
All valves can be energised manually.  
This allows the respective tools to be moved individually.

## Keys



Switch back to the previous view

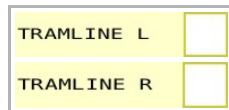
## Symbols/displays



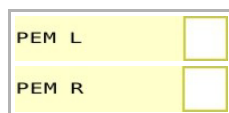
Hydraulic valve for track marker left [L] or right (R)



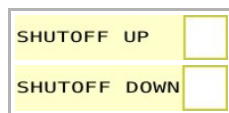
Work light



Left-hand (L) or right-hand (R) shut-off valves



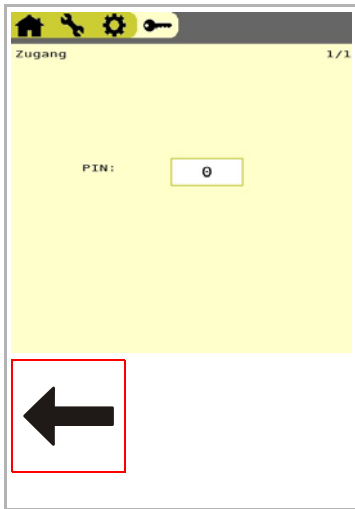
Hydraulic valve for pre-emergence marker left [L] or right (R)



Start up or shut down half-width shut-off

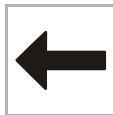
# Configuration

## Access



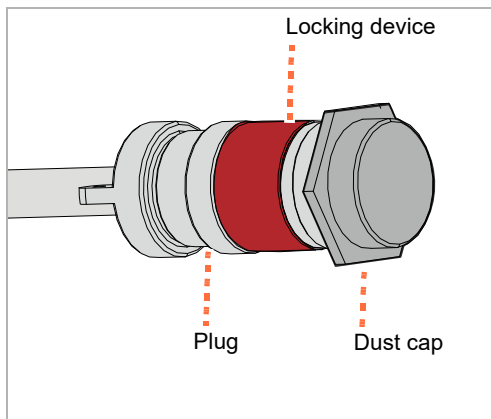
Information pages for Customer Service  
Some blocked functions on the test pages can be activated by entering a PIN.

## Keys



Switch back to the previous view

## Removal



- ▶ Release the plug and withdraw it carefully
- ▶ Place the dust cap on the plug immediately and secure in place. The plug is very sensitive to mechanical influences and is easily damaged without a dust cap.


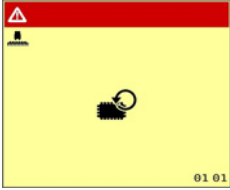
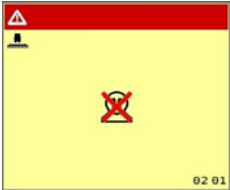
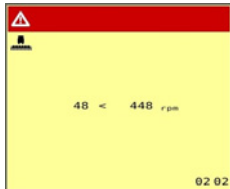
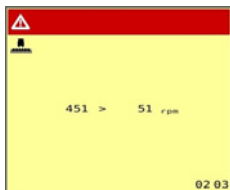


## Storage

There should be no major fluctuations in temperature where the terminal is stored. A dry and frost-free storage location is a prerequisite for a long service life of the device.

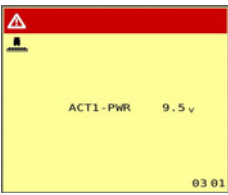
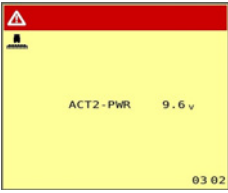
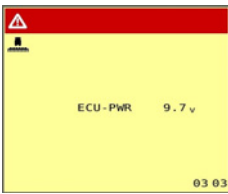

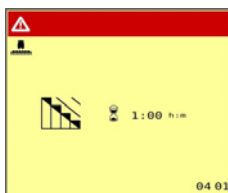

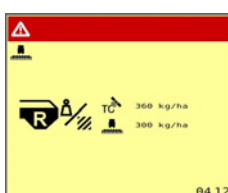
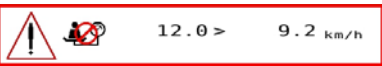
# Faults

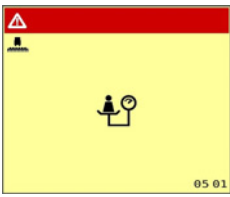
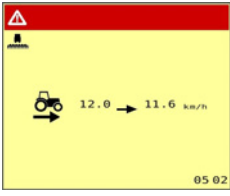


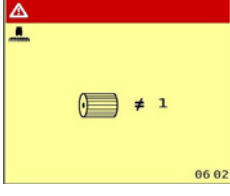
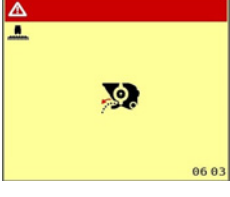
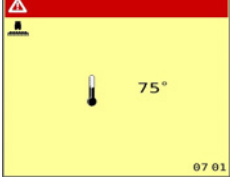
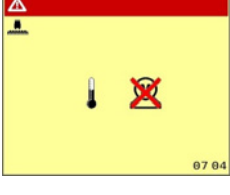
Faults can often be eliminated in a fast and easy manner. Before calling Customer Service, refer to the table below to check whether you can eliminate the fault yourself. If any faults occur, do not continue to sow.

Fault	Cause	Remedy
The device cannot be switched on	The poles of the supply voltage are reversed	<ul style="list-style-type: none"> <li>• Have the polarity checked</li> </ul>
	Power supply interrupted	<ul style="list-style-type: none"> <li>• Check the battery connecting cables</li> <li>• Check the terminals on the battery</li> <li>• Check the fuse</li> <li>• If necessary: Replace the 60 A fuse</li> <li>• Connect the power cable if the power supply was disconnected</li> <li>• Check the voltage: The supply voltage must be 12 – 14 V</li> </ul>
	System failure	Inform the Customer Service
No read out on the display	The contrast regulator is set incorrectly	Make adjustments until the display text is visible
	Display does not receive any pulse	Start the device again. If, after a new start, nothing is shown in the display or the display cannot be changed, send the device back to the manufacturer.
The computer displays unexpected values	A mobile telephone, radio or radio antenna is operating too close to the device	Keep a minimum distance of 1 metre
Speed is not displayed or is displayed too low	Entry of an pulse missing	Enter the number of pulses
	Cable on the wheel sensor is defect or the wheel sensor is defective	Check cable and replace if necessary
	The device is defective	Inform the Customer Service

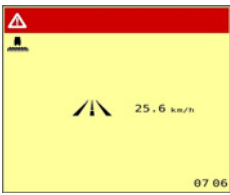
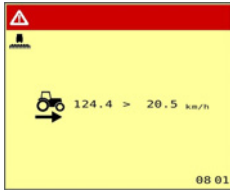
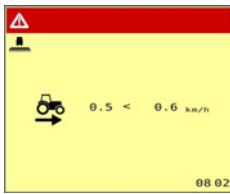
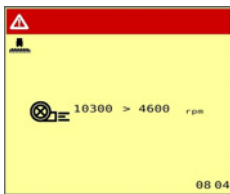

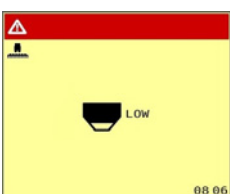


Fault	Cause	Remedy
<p>Alarms can be confirmed with the “OK” key. The audible warning signal will stop and you can look for and eliminate the cause of the alarm without being disturbed.</p>		
	No speed signal	
	The machine is lifted	Only an item of information, not an alarm
	The machine is in transport position	Only an item of information, not an alarm
	Sensor defective	Inform the Customer Service
	<p><b>Alarm ID: 01-01</b> All values have been reset to the factory setting Incorrect entries or errors on the board</p>	Re-enter all inputs for the machine. If the error occurs again, the board is defective and must be replaced.
	<p><b>Alarm ID: 02-01</b> The metering device drive motor is rotating at a speed under 25 rpm</p>	Check the metering device for foreign bodies
	<p><b>Alarm ID: 02-02</b> The rotational speed of the metering device drive motor is falling below the set rotational speed by more than 10%</p>	Check the metering device for foreign bodies
	<p><b>Alarm ID: 02-03</b> The set rotational speed of the metering device drive motor is being exceeded by more than 10%</p>	Check the metering device for foreign bodies
	<p><b>Alarm ID: 02-05</b> Drive motor on the metering device is working too laboriously</p>	Clean the metering device
	<p><b>Alarm ID: 02-06</b> Drive motor on the metering device is working too laboriously</p>	Clean the metering device




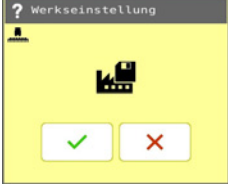
# Faults

Fault	Cause	Remedy
	<b>Alarm ID: 03-01</b> Nominal current of actuator one is below 11 V	Check the cables! Check the cables for a short circuit if the indicator shows "0.0 V"
	<b>Alarm ID: 03-02</b> Nominal current of actuator two is below 11 V	Check the cables! Check the cables for a short circuit if the indicator shows "0.0 V"
	<b>Alarm ID: 03-03</b> Supply voltage required for the PCB (10 V) insufficient	Check the battery Check the cables of the connected sensors for a short-circuit if the indicator shows "0"
	<b>Alarm ID: 03-04</b> Supply voltage required for the electrical system (4.5 V) insufficient	Check the battery Replace the fuse if the indicator shows "0"
	<b>Alarm ID: 04-01</b> The time for the free TC section control testing is running out	If required, purchase a TC module and activate it
	<b>Alarm ID: 04-02</b> Changes have been made to the settings; as a result, the TC module must be resynchronised	Confirm or discard the changes
	<b>Alarm ID: 04-12</b> The TC application page is above or below the completed calibration tests	Adjust the calibration test
	<b>Warning</b> Calibration test: The required speed does not correspond to the inputs in the calibration test	Select the corresponding speed

Fault	Cause	Remedy
	<b>Alarm ID: 05-01</b> No active calibration test selected	Performing a calibration test
	<b>Alarm ID: 05-02</b> Calibration test: The required speed is too high and will be adjusted	Confirm the alarm and travel at the specified speed
	<b>Alarm ID: 06-01</b> Flap on the metering device is open during seeding	Close the flap
	<b>Alarm ID: 06-01</b> Flap on the metering device is closed during calibration	Open the flap
	<b>Alarm ID: 06-02</b> Wrong rotor installed	Replace the rotor
	<b>Alarm ID: 06-03</b> The emptying function is activated	-
	<b>Alarm ID: 07-01</b> Temperature on the PCB is higher than 70 °C	Switch the system off and then on again. If the temperature remains high, inform Customer Service.
	<b>Alarm ID: 07-04</b> Temperature at the motor outlet too high	Confirm alarm. Then continue travelling.

# Faults

Fault	Cause	Remedy
	<p><b>Alarm ID: 07-06</b> Driving speed &gt; 25 km/h. All hydraulic functions are deactivated.</p>	<p>Reduce the driving speed</p>
	<p><b>Alarm ID: 08-01</b> The maximum driving speed from the calibration is being exceeded</p>	<p>Reduce the driving speed</p>
	<p><b>Alarm ID: 08-02</b> The driving speed is falling below the minimum driving speed from the calibration</p>	<p>Increase the driving speed</p>
	<p><b>Alarm ID: 08-04</b> The set fan speed is being exceeded by more than 10%</p>	<p>Reduce the fan speed</p>
	<p><b>Alarm ID: 08-05</b> The fan speed is falling below the set fan speed by more than 10%</p>	<p>Increase the fan speed</p>
	<p><b>Alarm ID: 08-06</b> Seed hopper is almost empty</p>	<p>Fill the seed hopper</p>
	<p><b>Alarm ID: 08-15</b> Machine released and speed signal shown, but still locked</p>	<p>-</p>
	<p><b>Alarm ID: 08-16</b> Rotating machine components</p>	<p>Stay clear of the working area of the machine</p>

Note	Meaning	Action
	<p><b>Note:</b> Using the diagnostics outputs can damage the machine. Danger of injury due to crushing.</p>	<p>Confirm/Do not confirm</p>
	<p><b>Note:</b> Using the actuator diagnosis can damage the machine. Danger of injury due to crushing.</p>	<p>Confirm/Do not confirm</p>
	<p><b>Note:</b> Reset to factory settings</p>	<p>Confirm/Do not confirm</p>
	<p><b>Note:</b> Save these settings as factory settings</p>	<p>Confirm/Do not confirm</p>

# Index

<b>A</b>		<b>I</b>	
Access	48	Information	43
Actuators	45	Information area	8
Alarms	51	Bottom	8
Auxiliary plate	16	Centre	8
		General	8
		Top	8
		Information screen	8
		Instruction	4
		Instruction sessions	4
<b>C</b>		<b>L</b>	
Calibration	15, 31	Licence key	33
Calibration test		License	33
Filling	21		
Input	19	<b>M</b>	
Manual starting	20	Menu	
Mixture	20	Sowing	12
Performing	19	Motors	45
Special seed	20		
Start the test run	22	<b>O</b>	
Starting	15	Obstacle	13
Test	15	Offset	34
Configuration	28	Offsets	34
Access	48	Other applicable documents	4
Diagnostics	42		
Events	40	<b>P</b>	
Inlets	46	Power supply	44
Outlets	47	Pulses	31
System	39		
Totals	41	<b>R</b>	
Voltages	44	Removal	49
Coulters	24	Rotor	16
		RPM Reduction	25
<b>D</b>		<b>S</b>	
Diagnostics	42	Safety	4
		Screens	
<b>E</b>		Information screen	8
Eliminating faults	50	Sensors	45
Employer	4	Shut-off valves	24
		Software	43
<b>F</b>		Software version	43
Fan speed	31	Sowing	12
Faults	50	Speed sensor	29, 30
Flaps Advice	24	Start screen	7
		Start-stop sensor	30
<b>G</b>		Storage	49
Germination capacity	16	Switching on	6
		Symbols	5
<b>H</b>			
Hopper low level sensor	38		
Hydraulic valves	47		

## T

Target group	4
Task	26
Task Controller	32
T-OFF	35
T-ON	35
Track marker	12
Track width	24
Tramlines	23
Tyre width	24

## V

Velocity	16
Version	
Software	43