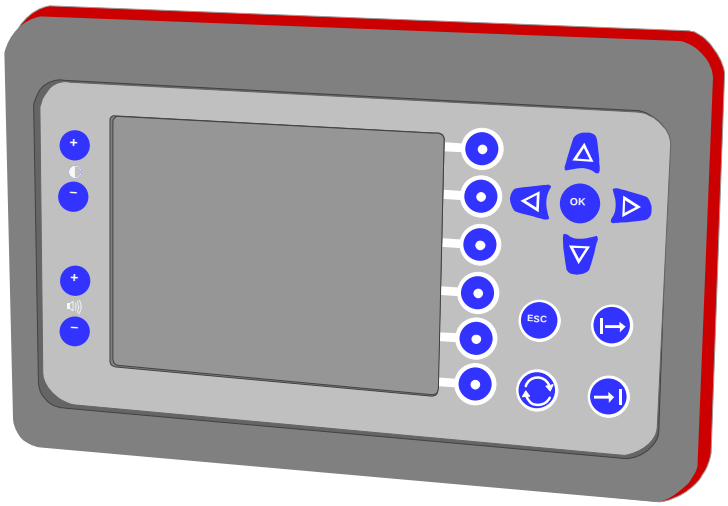


Focus 2 for sowing machines

Operating manual

Edition	6/2007
Printing	10.2007
Language	EN
For software from	1.03
For hardware version from	–
Article number	AC 758971

kverneland group

Identification of the machine

Your dealer will require certain information about your machine to be able to help you as quickly as possible. Please enter the following data.

Designation	Focus 2
Operating width	
Weight	
Machine number	
Accessories	
Address of dealer	
Manufacturer's address	Kverneland Group Soest GmbH Coesterweg 42 D-59 494 Soest Telephone +49 (0)2921 / 974-0

Table of contents

Target group for this operating manual

This operating manual is designed for use by trained agriculturists and persons who are otherwise qualified to work in agriculture and who have been instructed on how to use this machine.

For your safety
Please familiarise yourself with the contents of this operating manual before commissioning or assembling the machine. You will obtain optimal operating results and will also be working more safely.

As an employer
All personnel are to be instructed on a regular basis, but at least once a year, according to the provisions of Employer's Liability Insurance Association Article 1. Untrained or unauthorised persons must not be allowed to use the machine.

Instruction

You will receive instruction from your dealer about how to operate and take care of the machine.

Meaning of the symbols

We have used various symbols in the text to make the presentation clearer. They are described below:

- A point stands next to enumerations

> A triangle is located before activities which you should undertake

→ An arrow indicates cross-references to other texts

We also use pictograms which will aid you in finding text passages:

NOTE The word "Note“ refers to tips and guidelines concerning operating the machine.

The screwdriver symbol announces tips concerning assembly or setting up work.

The hazard warning triangle refers to important safety instructions. Nonobservance of these can lead to the following consequences:

- General malfunctioning of the machine
- Damage to the machine
- Injury to persons or accidents.

A star indicates examples which serve better understanding.

Checking the **cables**
Check cables before connecting them up and replace damaged cables. Damaged cables can lead to damage occurring to the machine or to uncontrolled behaviour of the electronic control system.

Observe the prescribed temperature range
The device will only operate reliably within the prescribed temperature range. Higher or lower temperatures can lead to uncontrolled behaviour of the electronic control system.

Behaviour as a result of malfunctions
Please stop working immediately if a malfunction occurs and switch off the device. Look at the chapter "Removing faults"»Removing faults« and remove the fault. Inform our Customer Service Department if the fault cannot be removed. Continuing to operate a faulty machine can lead to major damage to the machine and errors in the seed deposit.

Maintenance work
Disconnect from the power supply to the machine before conducting maintenance work. It may prove impossible otherwise to exclude damaging the device.

This section contains general information on your machine as well as information on:

- Area of use
- Features
- Technical data and
- functions

Area of use of the device

The device is designed for use in agriculture. It controls agricultural machinery and devices.

Intended use

The device is designed to be used in connection with agricultural machinery and devices to control and monitor their functions. Any other use is forbidden.

Mode of operation

A travel sensor determines the route and distance travelled and a job computer calculates the current speed. The rotary speed necessary for the drive motor on the metering device is determined from the current speed and the preset setpoint for the amount of seed per hectare.

Notes on the ISOBUS standard

Not all of the display device features are standardised in the ISOBUS standard. It may therefore be the case that a terminal made by another manufacturer has more or fewer selection keys. Depending on the number and arrangement of the selection keys, the symbols identifying their assignment may be in different positions. The description here applies only to the device specified on the title page.
The Focus 2 terminal does not comply with the ISOBUS standard. It can only be used in conjunction with machines made by the Kverneland Group.

Features

Control and monitoring are possible using a terminal in connection with further components on the respective machine which can be matched to the type of machine being used. The overall system consists of the components

- Terminal [+]
- Switched power cable [+]
- Job computer
- Travel sensor
- and possibly other sensor or actors

The individual functions are shown graphically in the display. We have dispensed with text as far as possible.

Terminal [+]

The terminal serves to enter and monitor sowing values.

Switched power cable [+]

The switched power cable is the interface between the tractor and the machine. Some tractors have already been fitted out with this interface at the works. Please have the switched power cable installed on your tractor by the dealer or a specialist workshop if this is not the case.

Job computer

The job computer creates the connection between terminal, sensors and actors. It is mounted on the seed sowing machine.

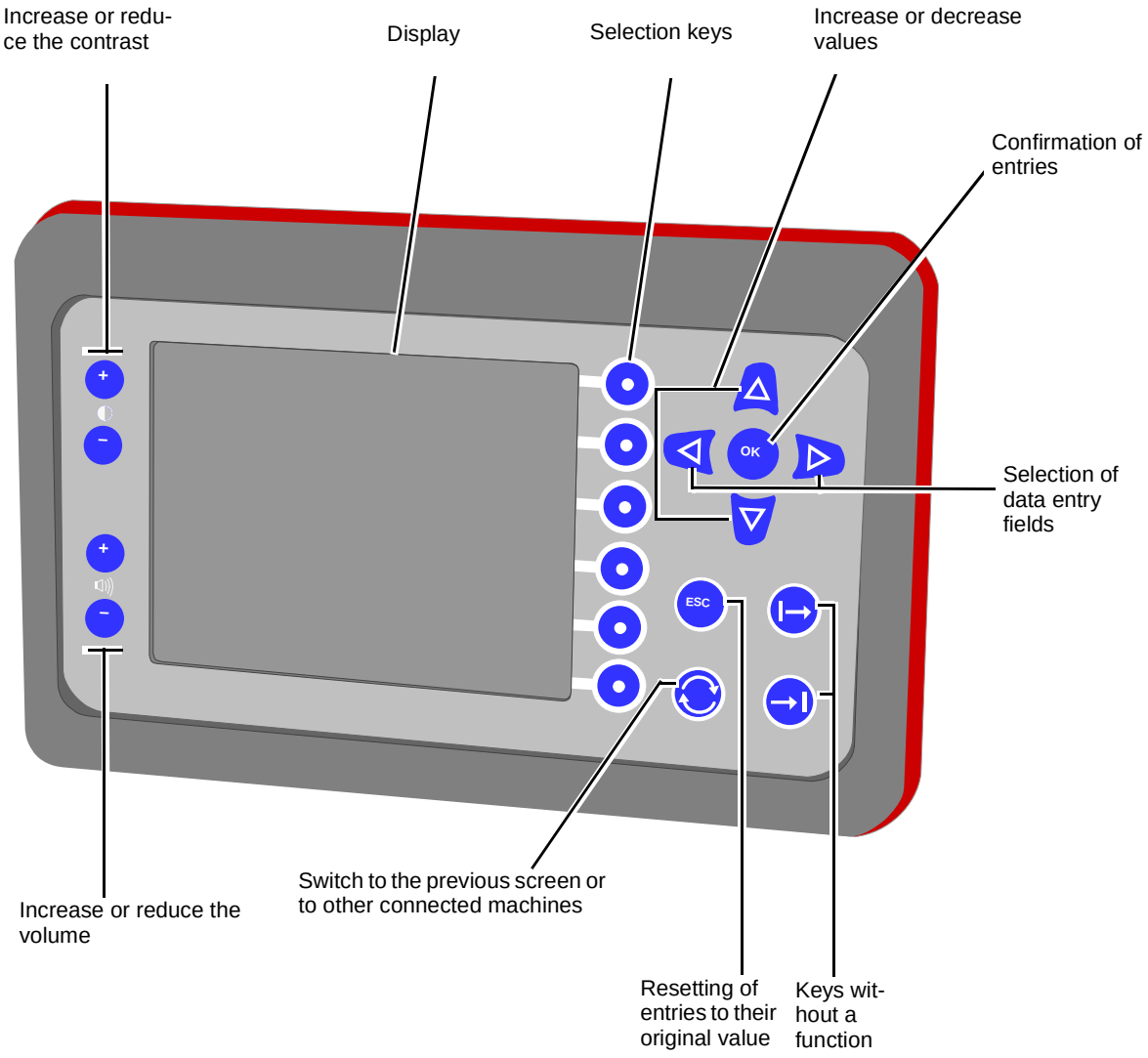
Travel sensor

A travel sensor determines the distance travelled.

An overview of the device

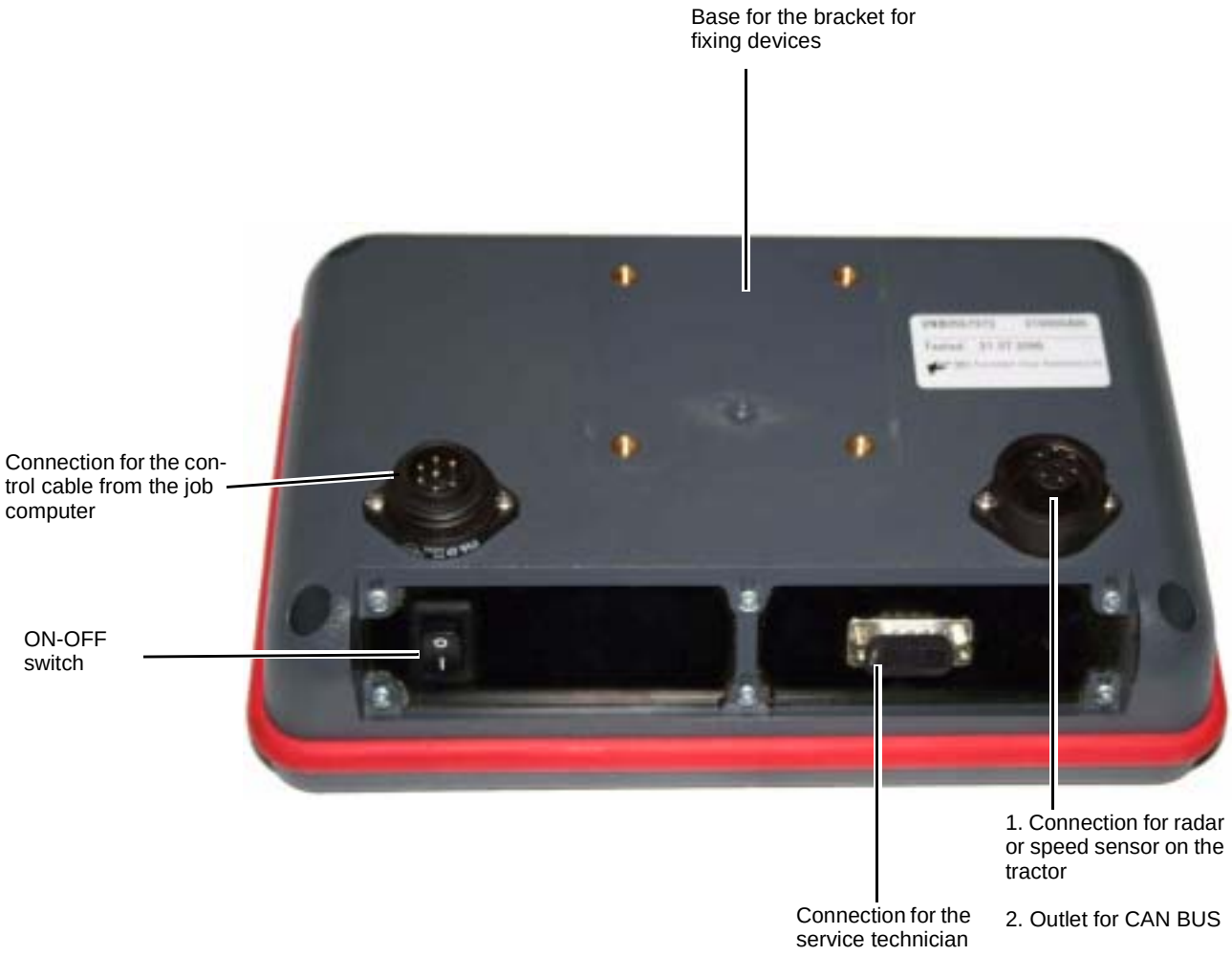
The front side

The overview shows the display and all of keys which have each been allocated a function.



The rear side

The overview shows all connections on the rear side.



Technical data

Focus 2	
Power supply (V) DC	12-14
Safety fuse (A) • Switched power cable • Central printed circuit board • Battery cable for power supply to the terminal • Battery cable for power supply to the motors	 25 1x 30 A; 1x 5 A 25 60
Protective classes • Terminal • Control unit	 IP 54 IP 65
Temperature range (°C)	-10 to +50

functions

The device possesses the following functions:

- Regulation of the amount of seed
- Automatic tramlining control system
- Automatic tramline marking [+]
- Determination of the processed area per task
- Determination of the overall area processed
- Indication of speed
- Determination of the operating time
- Adjustment to partial widths (of a trench)

Checking the scope of delivery

The following items are mounted on the seed sowing machine at the works:

- Job computer
- Travel sensor

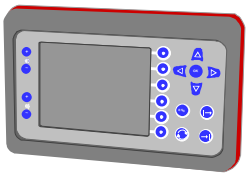
The following can be supplied as accessories:

- Switched power cable
- Terminal

NOTE A claim should be made without delay to your dealer, the importer or the manufacturer for any missing parts or parts which have been damaged during transport.

Assembly

Terminal



Maintain defined minimum clearances
When mounting the terminals a minimum distance of one metre must be maintained from mobile telephones, radios or radio antennae. Unforeseen malfunctions could occur if the distance is too small.

Ensuring a good view
The terminal must not limit the operator's view. Access to all functions of the tractor must remain unimpaired. Accidents can arise if the operator's view is blocked or there are impairments to operating tractor functions.

> The terminal should be mounted on the tractor in such a way that you can easily read the display and can easily reached all operating keys.

Switched power cable

The switched power cable should only be installed on the tractor by the dealer or a specialist workshop.

Connecting up the machine

Prerequisites for connecting up the machine are:

- The machine is coupled to the tractor.
- All components are installed in an orderly manner.
- All cables and plugs are in perfect condition.

Safety

Checking the cables
Check cables before connecting them up and replace damaged cables. Damaged cables can trigger unexpected malfunctions.

Observe the prescribed temperature range
The device will only operate reliably within the prescribed temperature range. Higher or lower temperatures can trigger unexpected malfunctions.

Connecting the Focus 2

It is necessary to connect up two cables to operate the Tellus.

- Cable from machine to switched power cable.
- Cable for control system to terminal

Cable from machine to switched power cable

> Remove dust cap from plug
> Connect plug to switched power cable
> Secure plug

Cable for control system to terminal

> Connect cable to the rear of the terminal
> Secure plug

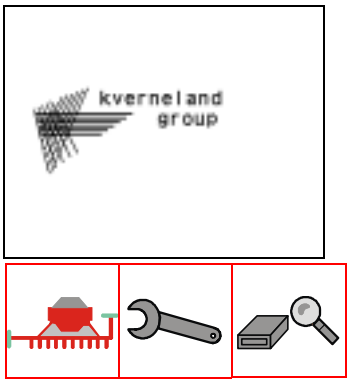
Switching on

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

> Actuate the On-Off switch on the rear side of the terminal

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

Opening screen



You will see certain symbols in the key area on the opening screen. If no keys are pressed, the terminal will switch over automatically to the information screen.

Key area

Pressing the key will take you to the information screen.

- Basic settings at the terminal

- Display of terminal data

Back to the opening screen:

> Press key

Basic settings at the terminal

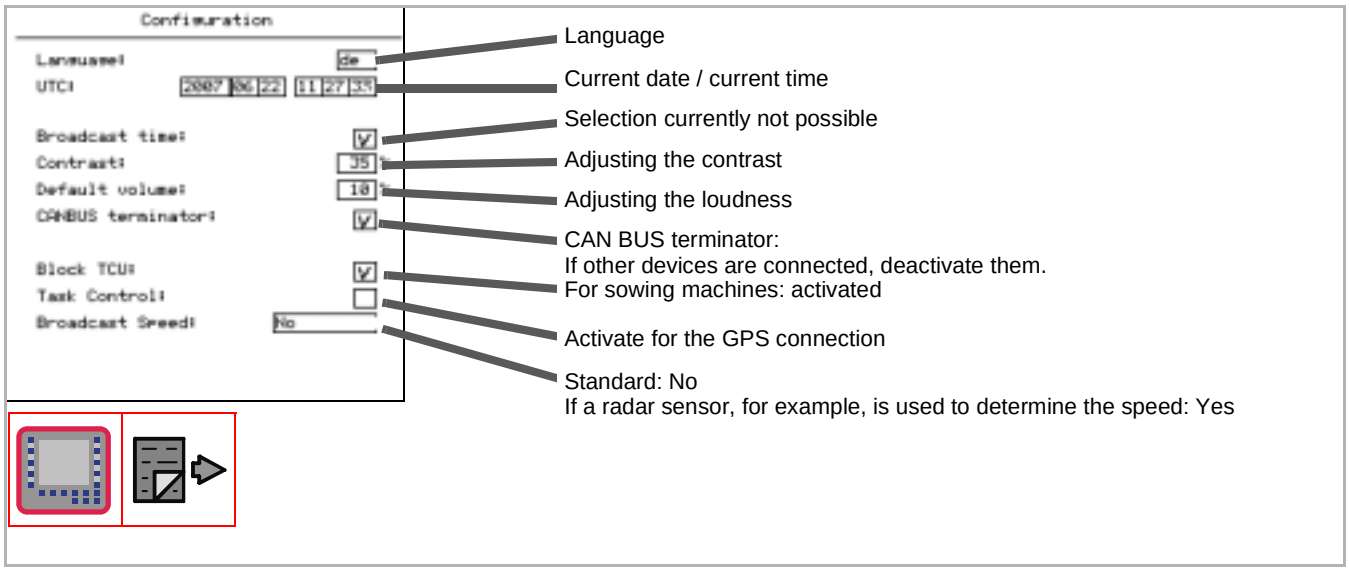
In the top area you can make several settings to adapt the terminal to suit your wishes. These include:

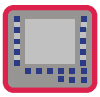
> Press key

> Setting the value required using keys

> Confirm the value by pressing the key

Page 1

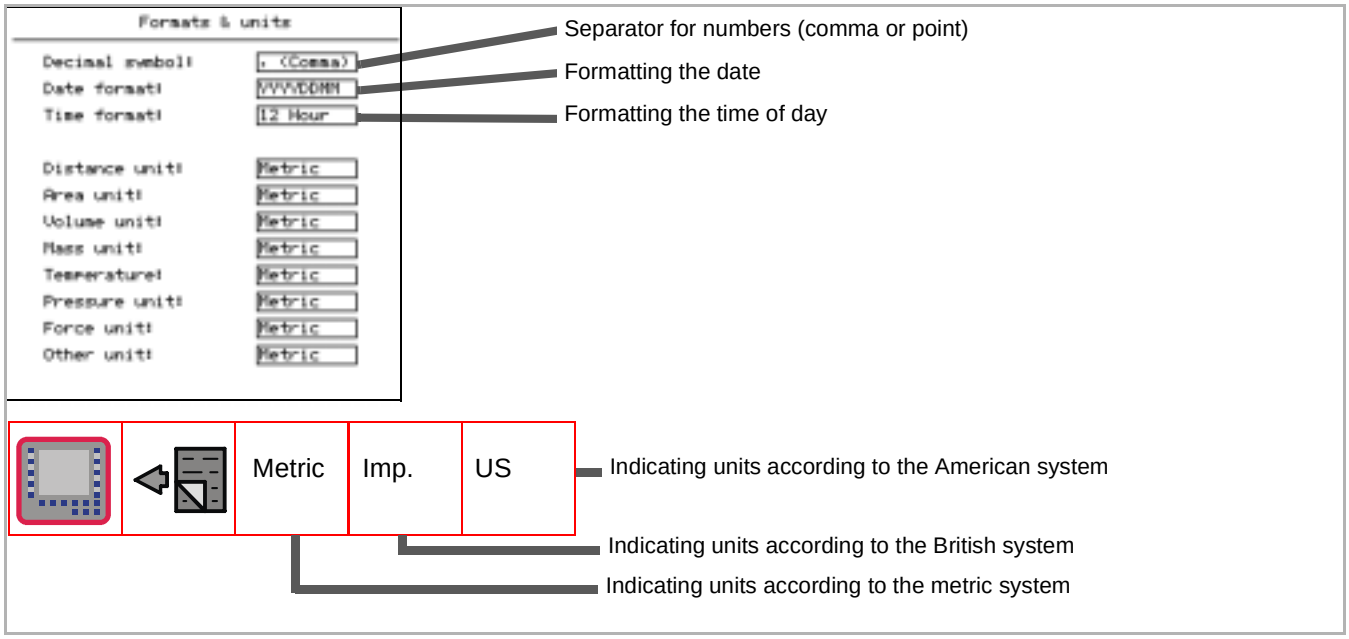


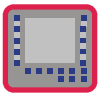


Back to the opening screen

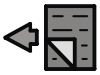
To the next page

Page 2



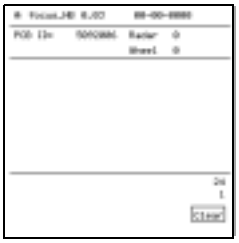


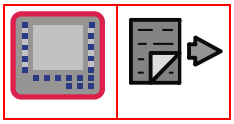
Back to the opening screen



To the previous page

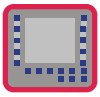
Display of terminal data





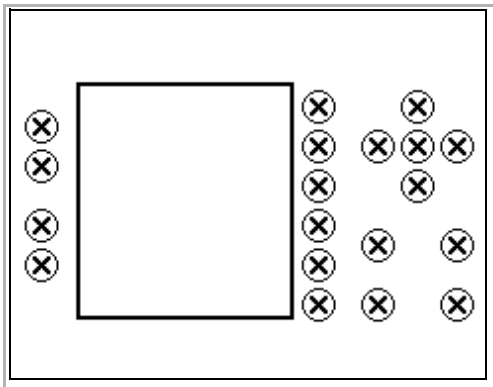
This screen shows the software version. Knowledge of which version of software is being used could be required when calling the technical customer service.

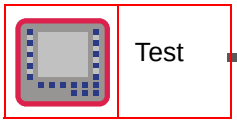
You will also find information on memory space assignment, which may be required by customer service.



Back to the opening screen

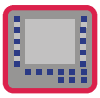
To the next page





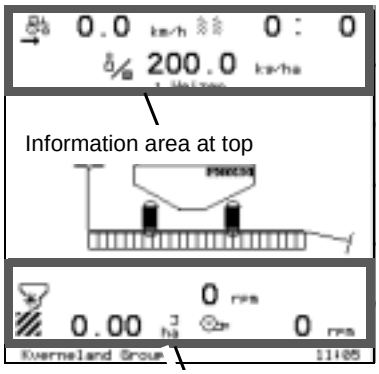
Test

Test menu. Here you can check whether the keys are in good working order. If the terminal receives a signal when the key is pressed, the display shows "OK" for the key.
All keys must be tested, only then can you exit the test menu.



Back to the opening screen

Information screen

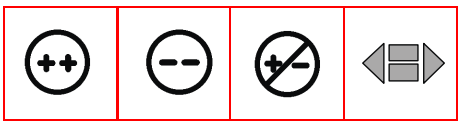


The information screen displays all of the most important values during seeding work.

Information area at top
You can read off all of the current values during seeding work in the information area.

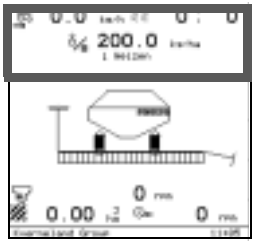
Information area at bottom
The indication area is used to display the current status of the sowing unit through the use of symbols.

The meaning of the symbols will be described on the next pages. You can also go directly into the menu "Basic settings" and check and alter entries there.
→ Page 28



The symbols

In the information area at top



Speed in km/hour

Information about the tramlines.
Only visible if tramlines are activated.

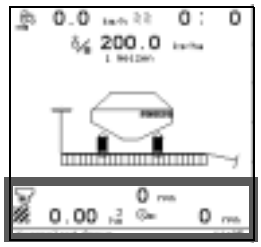
An example:
1 : 4
1 = current pass
4 = total number of runs in a rhythm

Amount of seed in kg/ha The preset amount of seed is displayed.

1 Weizen

Number of the calibration test and selected seed.

In the information area at bottom



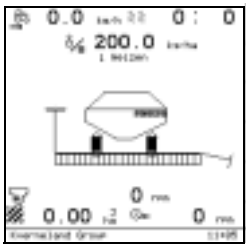
Speed at shaft of metering device in rpm
With two metering devices the value for the left-hand metering device is displayed on the left. The value for the right-hand metering device is displayed on the right.

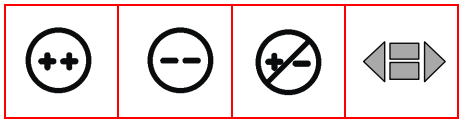
Processed area in hectares
The number over "ha" specifies the active task from the menu "Task".

Fan speed in revs per minute
The current value is displayed.

Key area

Page 1





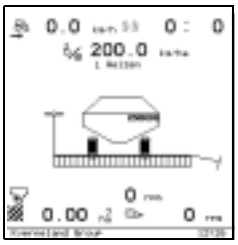
Increase application rate by a defined percentage.

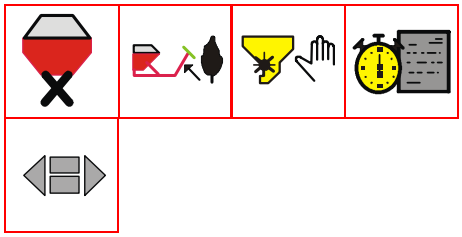
Decrease application rate by a defined percentage.

Reset the application rate to the normal value.

Turn to the next page.

Page 2





Switch off the metering device.

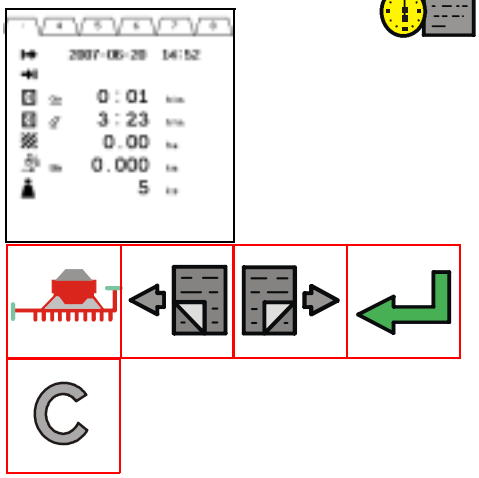
Continue to sow after obstacle. The tramline sequence is then not counted any further. Press the key before and after the obstacle.

Start the metering device manually. The metering device starts so that the seed output rate corresponds to a tractor speed of 5 km/h. This is also the case when the tractor is travelling more slowly. If after 10 seconds the tractor reaches a speed above 5 km/h, the values are adopted by the speed sensor and the seed output rate is adjusted to this speed. This function may be useful, for example, when sowing on awkward terrain and only very low speeds can be reached.

Task processing.
→ Page 20

Turn to the next page.

Task processing



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

- The start time
- Total time expired since beginning the task

Machine data

- Period of time the sowing machine has worked for
- Time during which the sowing machine did not operate
- Processed area in hectares
- Kilometres driven
- Amount of seed output in kg (calculated)

The task is only completed if a new task has been selected. The following will continue to be recorded if no new task has been selected:

- the total time and
- the time during which the sowing machine did not operate

Back to the information screen

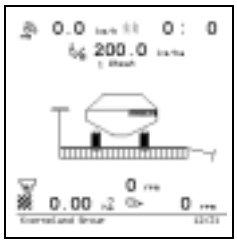
To the previous task.

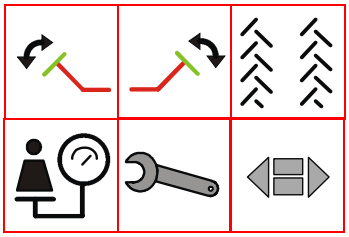
To the next task.

Start the task.
The active task is shown as a number in the information screen.

Delete data.

Page 3





- Activate the track marker on the left side.

- Activate track marker on right side

- Tramlines.

- Calibration test

- Basic settings

Turn to the next page.

Track marker

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

> To perform seeding work, preselect the track marker which has to be opened out first. The symbol flashes.

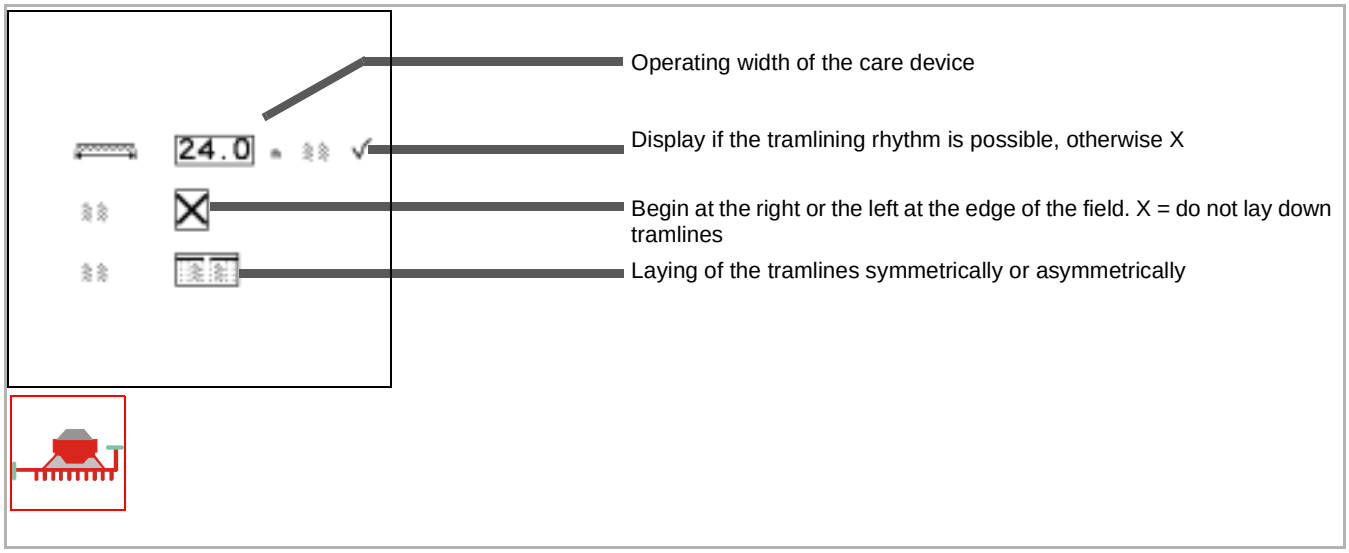
> Actuate the control valve on the tractor. The track marker is opened out.

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

NOTE Passes for laying down tramlines automatically will only continue to be counted if the track marker is actuated and the machine was raised.

Tramlines

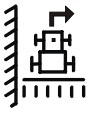
Tramlines are laid down for the fertilising equipment such as field sprayers or fertiliser spreaders.



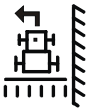
Back to the information screen

Symbols

Operating width of the care device in metres, for example field sprayers or fertiliser spreaders.



Beginning the seeding work at the left-hand side of the field.



Beginning the seeding work at the right-hand side of the field.

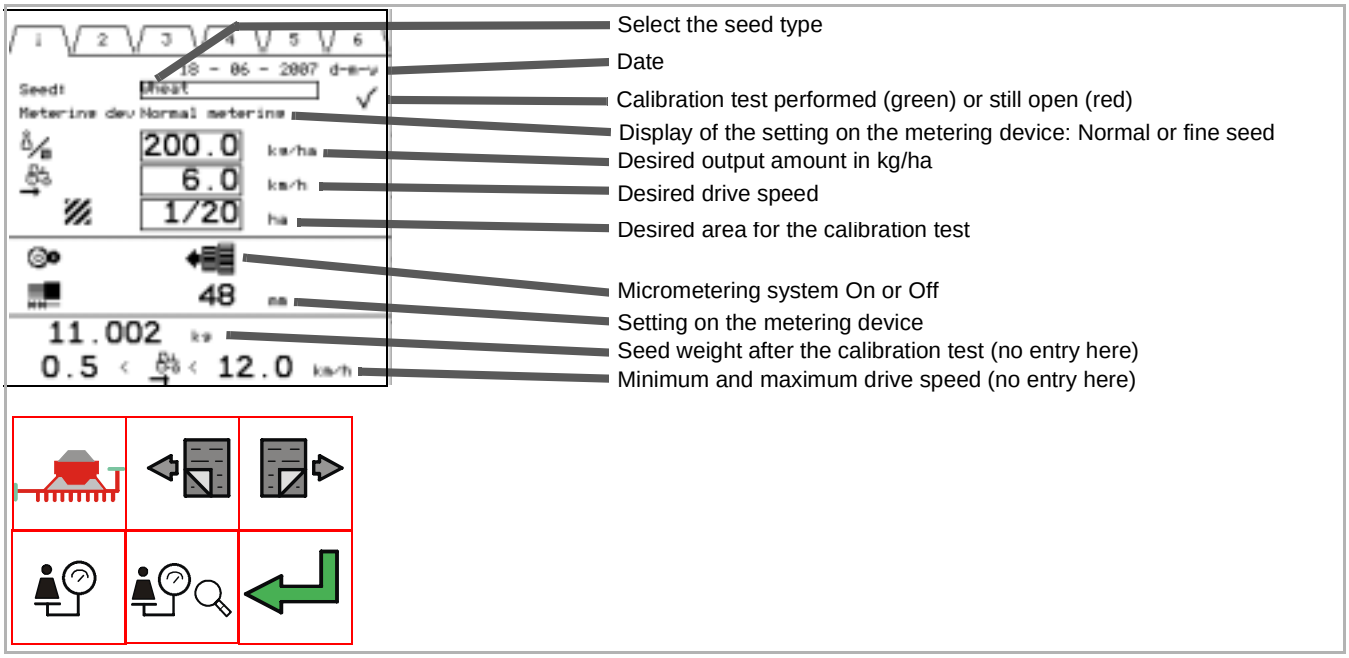
Do not lay down any tramlines.

Is only displayed if just one selection is possible.
Laying down tramlines symmetrically. Both tramlines will be laid down in one pass.

Is only displayed if just one selection is possible.
Laying down tramlines asymmetrically. Just one tramline will be laid down in one pass.

Calibration test

A calibration test must be performed for each seed.



Symbols

Calibration test not yet performed

Calibration test performed successfully

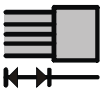
Accept the calibration test. Only possible after successful calibration test.

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

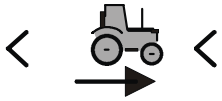
Enter the desired "normal" drive speed. The normal drive speed is roughly 3 km/h less than the maximum speed shown in the sowing machine operating manual. The minimum and maximum speeds are calculated from the normal drive speed.

Enter the desired area for the calibration test. The larger the area selected, the more exact is the result of the calibration test. The calibration test can also take longer, though, and the amount of seed quantity can become greater. We recommend that you do not exceed a value of 1/10 ha.

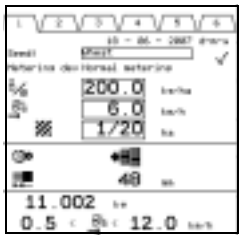
Switch the micrometering system on the metering device On or Off. This prompt is calculated from the values entered.

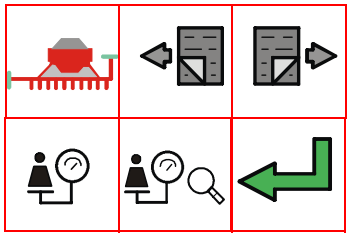


Adjust the setting on the metering device. This value is calculated from the values entered.



Minimum and maximum drive speed in km/h. An alarm is triggered, if the limits are underachieved or exceeded.





Keys
Several calibration tests can be generated. With the same seed and the same properties the values of a calibration test already performed can be used.

NOTE However, if, for example, the TKG (thousand grain weight) of the seed differs, we recommend that a new calibration test be performed.

Back to the information screen.

Go to the previous calibration test.

Go to the next calibration test.

Start the calibration test.

Start the test run.

Accept the calibration test. The values are then accepted as the basis for the seeding work.

Perform calibration test

The following values must be entered first of all:

Input	Example
Seed	Wheat
Quantity output in kg/ha	200
Drive speed in km/h	6
Area for the calibration test in ha	1/10

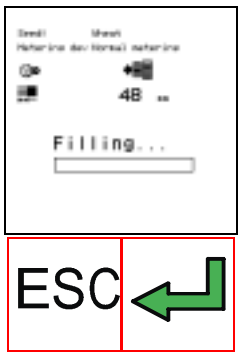
The following adjustments are calculated and must be set on the metering device:

Adjustment	Example
Metering device setting	Normal seed
Micrometering	Off
Setting on the metering device	48

> Place a catch pan under the metering device or devices.

> Start the calibration test.

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



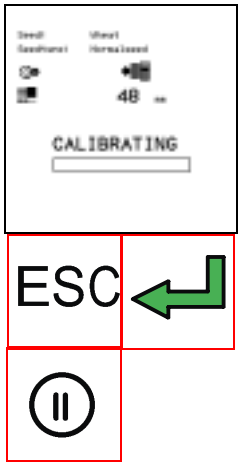
> Start filling the cell wheel.

> Empty the catch pan and put it back under the metering device

A calibration is performed after filling.

ESC Abort filling

 Start filling



> Start calibration.

After calibration the seed from the catch pan has to be weighed.

> Enter the weighing result in kg and press the OK key OK on the terminal to confirm

ESC Abort calibration

Start calibration

Pause.
Press again: Continue calibration

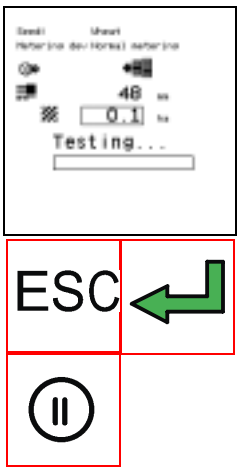
NOTE The amount weighed can deviate from the desired amount. For example, should 200 kg/ha of wheat be output, the amount weighed at 1/10 ha represents only 18 kg instead of the expected 20 kg. This is then not an error. Please enter the result of the weighing from the calibration. Not until the test run is a working run simulated with the set values. Therefore always perform a test run.

After entering the weighing result and confirming with the OK key OK on the terminal, "OK" appears on the display.
When confirmed, the weighing result is converted to the drive speed.

> Confirm the "OK" on the display

Start the test run

A test run is particularly useful, if a calibration test with a different seed quality is to be taken over.



> Place a catch pan under the metering device or devices.
> Enter the desired area. Entries possible between 0.1 and 10 ha.
> Start the test run

Weigh the seed from the catch pan and compare it with the setpoint value. If there are any deviations, perform a new calibration test.

ESC Abort the test run

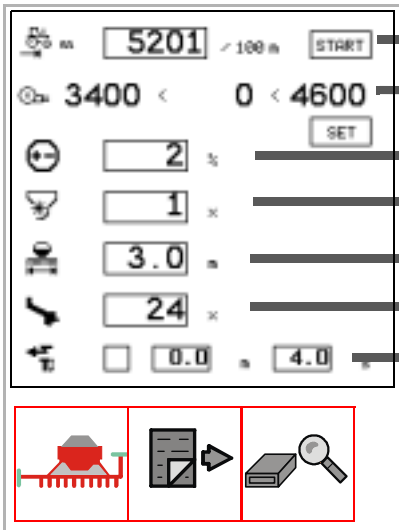
Start the test run

Pause.
Press again: Continue the test run

Basic settings

Basic settings refer to machine data which is important for controlling functions or triggering alarms. Basic settings are spread over a number of pages.

Basic settings Page 1



Number of impulses/100 m. Start recalibration with "START"

Fan speed. Store the value with "SET".

Increased or reduced quantity

Number of metering devices

Working width of the machine in metres

Number of shares

Only active if the GPS connection has been selected (Task Control)
m = distance from GPS aerial to the rear, middle share
s = time required by seed from metering device to share

Symbols

m

Number of impulses from the travel sensor over 100 metres.
You can determine this value through calibration:

> Exactly measure off 100 metres on the field

> Bring the machine into the operating position

> Activate "Start“ and drive the measured 100 metres

> Activate "Stop“

The number of impulses 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.

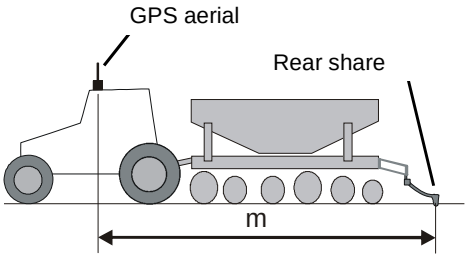
Enter the desired percentage steps for increasing and decreasing the sowing amounts. The sowing quantity is increased or decreased in the information screen using the appropriate keys.
→ Page 18

Enter the number of available metering devices

Enter the working width of the machine in metres

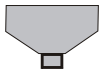
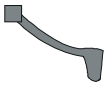
Enter the number of available seed coulters

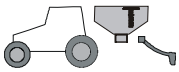
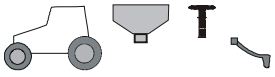
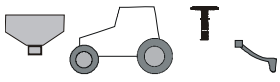
Input for the GPS connection.



m = distance from GPS aerial to the rear, middle share, measured in metres.

s = time required by seed from metering device to share
The following table gives you an indication of the runtime of the seed from the metering device to seed coulter. The machine types are presented in diagram form and show:

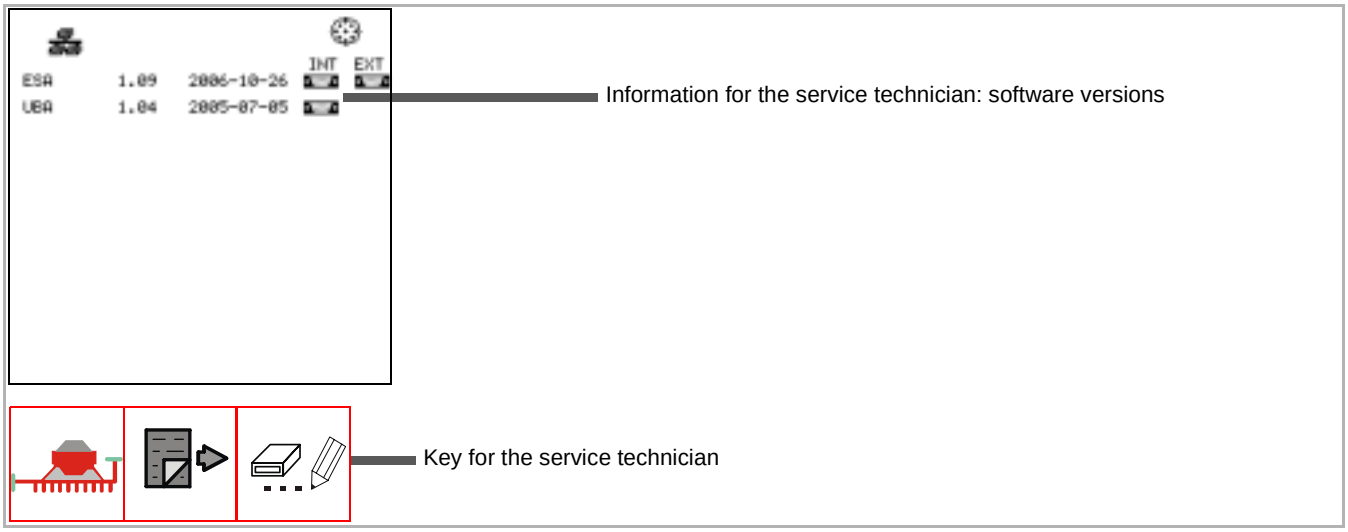
-  Seed hopper and metering device
-  Distributor head
-  Seed coulter

Machine type	Runtime (s)
	2.5
	3.5
	4.0

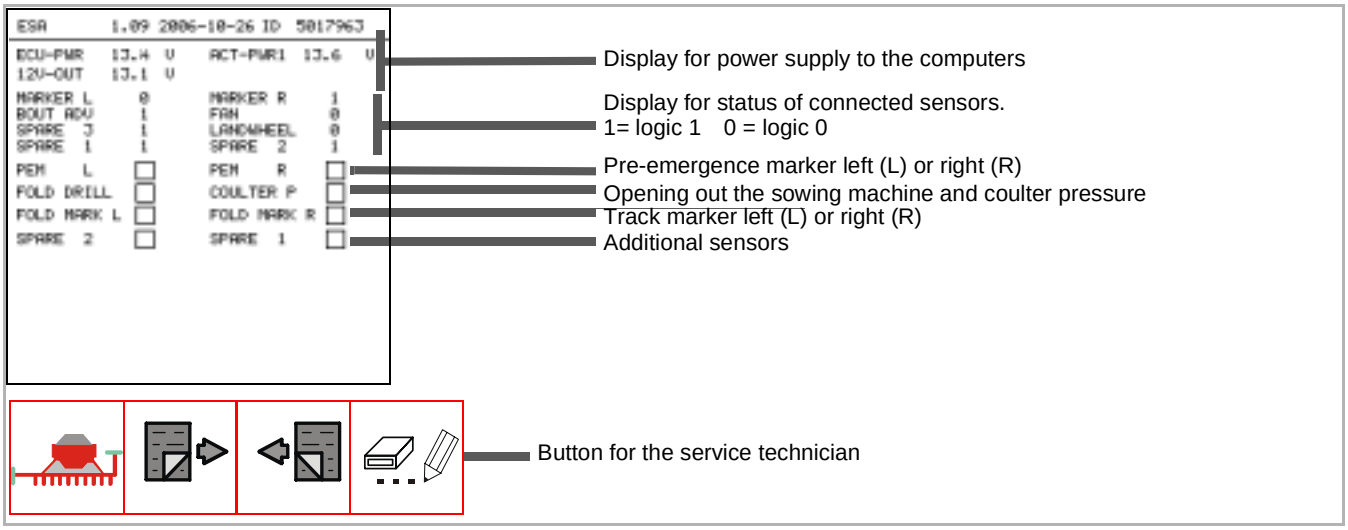
To test menu

The test menu consists of 4 pages.

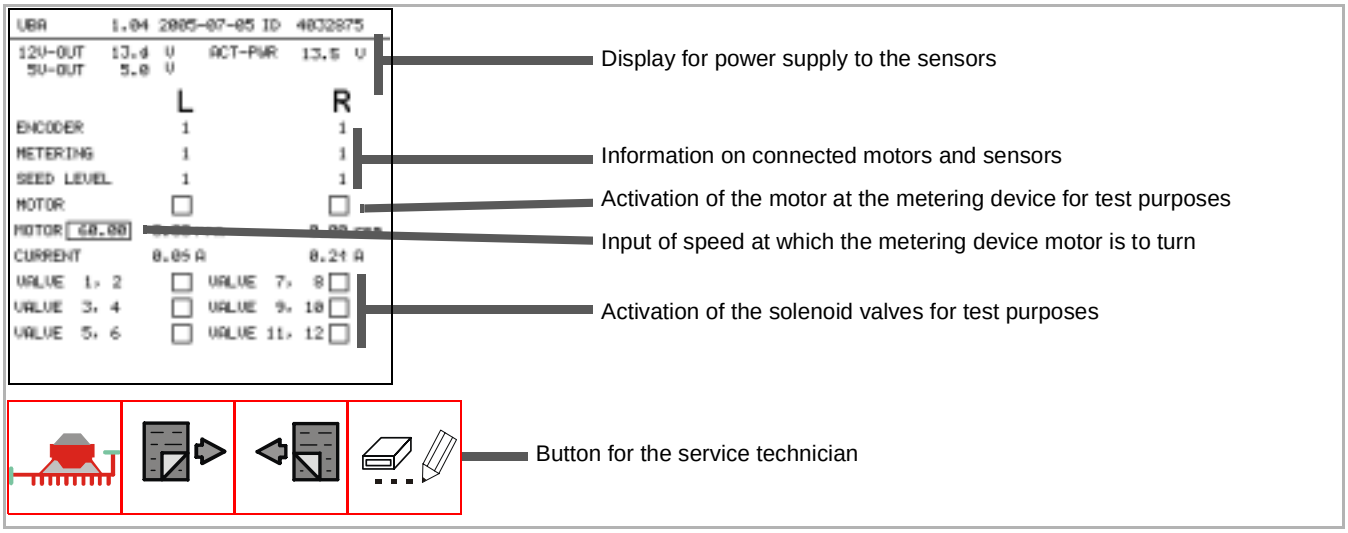
Page 1 Information



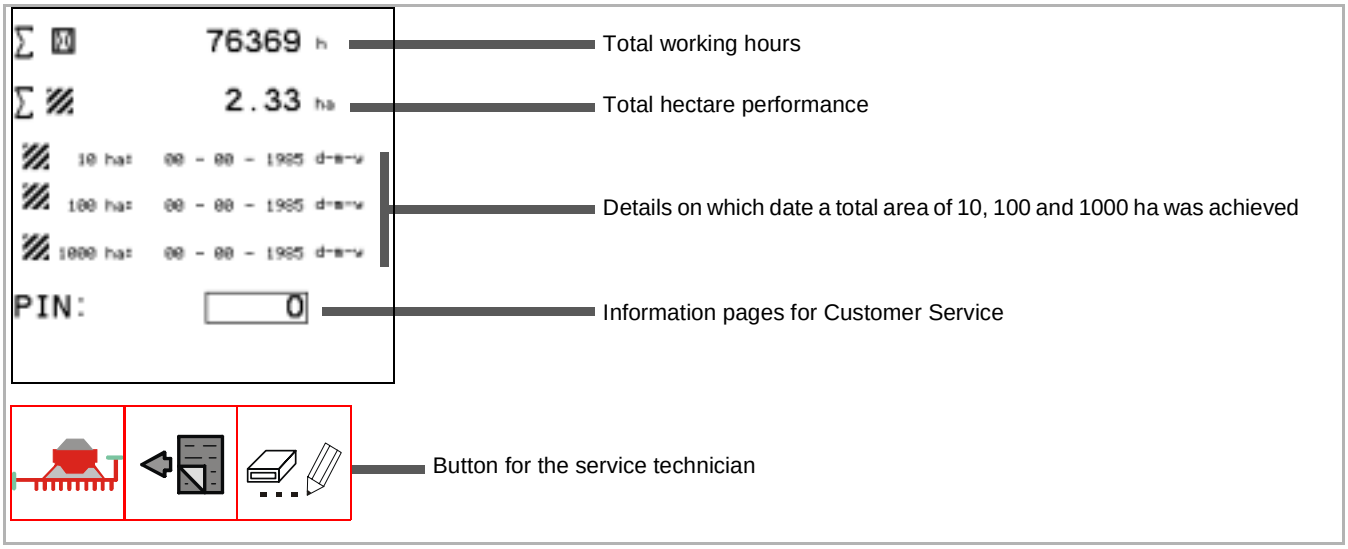
Page 2: Test



Page 3: Test



Page 4: Information

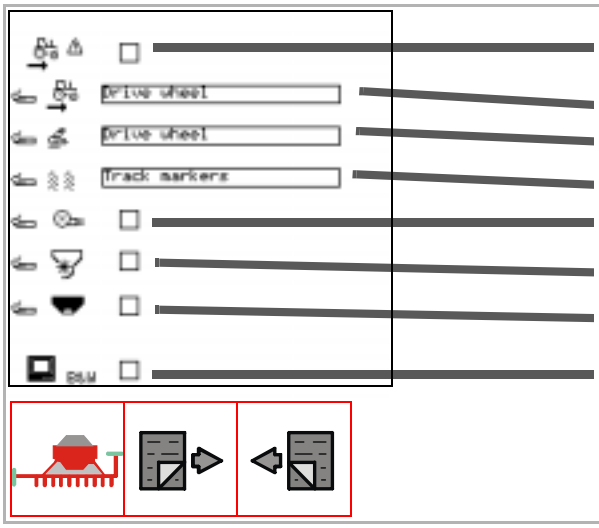


Back to the information screen

To the next page

To the previous page

Basic settings Page 2



Activate or deactivate the alarm, if the speed drops below or exceeds the setpoint speed

Select type of speed sensor

Select type of start-stop sensor

Select type of tramline sensor

Activate or deactivate the sensor on the fan

Activate or deactivate the sensor on the metering unit shaft

Activate or deactivate the hopper low level sensor

Activate or deactivate the black/white display No function on Focus 2

Activating or deactivating:

Activate	= tick in box
Deactivate	= no tick in box

Symbols

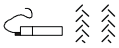
The alarm is triggered, if the speed for the exact output of seed is too low or too high. The alarm can be deactivated. We recommend that the alarm is always left switched on.

The type of speed sensor can be set here:

- Drive wheel — Drive wheel on sowing machine
- GPS J1939 — GPS aerial
- 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. You then drive at the entered speed.
- ISOBUS radar — Radar sensor on the tractor
- ISOBUS drive wheel — Speed sensor on the tractor via ISO11783 interface

The type of speed sensor can be set here:

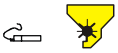
- Drive wheel — Drive wheel on sowing machine
- Track marker — Sensors on the track marker arms
- Manual — Enter start and stop manually
- ISO11786 working position — Sensor via ISO11786 interface
- ISO11783 working position — Sensor via ISO11783 interface



The type of sensor for the pre-emergence marker can be set here:

- Track marker — Sensors at the track marker arms control the pre-emergence marker
- ISO11786 working position — Sensor via ISO11786 interface
- ISO11783 working position — Sensor via ISO11783 interface

Activate or deactivate the sensor on the fan



Activate or deactivate the sensor on the metering unit shaft

Activate or deactivate the hopper low level sensor

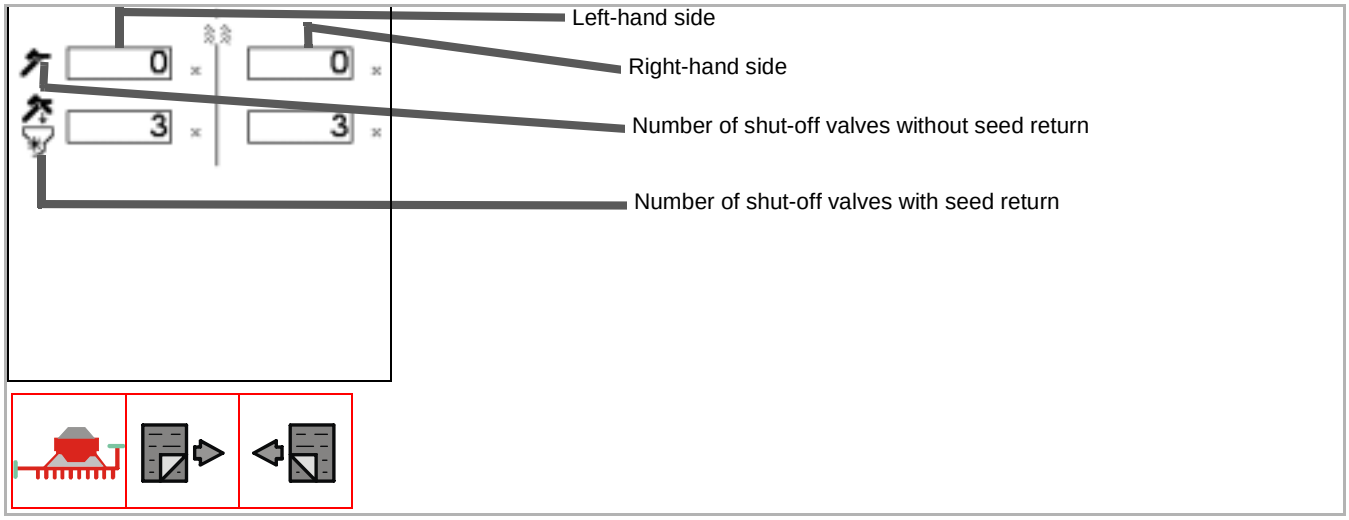
Activate or deactivate the black/white display When the black/white display is deactivated the menus are in colour. Not on Focus 2.

Keys
Back to the information screen

To the next page

To the previous page

Basic settings Page 3



Symbols

Number of shut-off valves without seed return

Number of shut-off valves with seed return

Keys

Back to the information screen

To the next page
A PIN code for the service technician is required on the next pages. Subsequent pages show special information about individual motors and sensors. This information is intended for the service technician.

To the previous page

Removal

Two plugs must be unplugged:

- The plug on the cable from machine to switched power cable.
- The plug on the cable for control system to terminal

> Loosen the securing device on the plug and unplug the plug 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.

> Loosen the securing device on the plug and unplug the plug carefully

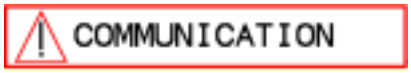
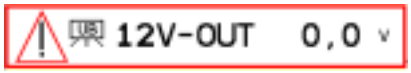
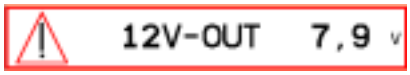
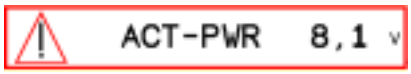
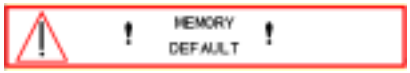
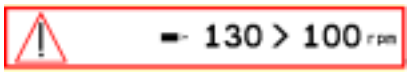
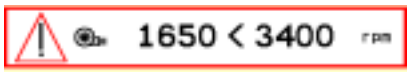
Storage

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 working life of the device.

Removing faults

Faults can often be easily and rapidly removed.
Please check with the aid of the table whether you can remove the fault yourself before calling in the customer service. 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	• Have the polarity checked.
	Power supply interrupted	• Check the battery connecting cable • Check the terminals on the battery • Check fuses. Where necessary: Replace the 60 A fuse • Connect up the power cable if the power supply was uncoupled • Check the voltage; the supply voltage must be 12-14 V
	System failure	Inform the Customer Service
No read out on the display	The contrast regulator is adjusted wrongly	Make adjustments until the display text is visible.
	Display does not contain any impulse	Start the device from the beginning again Send the device back to the manufacturer if the display still shows nothing after the new start or the display cannot be changed.
The computer displays unexpected values	A mobile telephone, radio or radio antenna is operating too close to the device	Maintain a minimum separation of 1 metre
Speed is not displayed or is displayed too low	Entry of an impulse missing	Enter the number of impulses
	Cable on the wheel sensor is defect or the wheel sensor is defect	Check cable and replace if necessary
	The device is defect	Inform the Customer Service

Fault	Cause	Remedy
	No data interchange between Tellus and the machine	Check all the cable connections.
	Voltage necessary for the unit box is too low	Check the battery. If "0" displayed, check the cables of the connected sensors for a short-circuit.
	The voltage necessary for the electrical system is too low	Check the battery. Replace the fuse if the indicator shows "0“.
	The voltage necessary for the motors and hydraulics is too low.	Check the battery. Replace the fuse if the indicator shows "0“.
	All values have been reset to the ex-factory setting. Erroneous entries or errors on the board	Re-enter all inputs for the machine. If the error occurs again, the board is defective and must be replaced.
	Short-circuit in the cable of the drive motor on the metering device.	Replace the cable
	Drive motor on the metering device is working too laboriously.	Clean the metering device
	Metering device is blocked by a foreign body	Remove the foreign body
	Short-circuit in the cable of the drive motor on the metering device	Short-circuit in the cable
	Drive motor on the metering device is not connected	Connect the drive motor
	The drive motor on the metering device is turning too quickly or too slowly	Adapt the drive speed
	The metering device is working with the wrong settings	Check the micrometering setting
	The sensor on the metering device is defective	Replace the sensor
	The fan speed is too high or too low	Keep the fan speed within the target range
	Wrong setting on the metering device	Check the setting
	Seed hopper almost empty	Fill the seed hopper
	Calibration test not correct	Perform the calibration test again

Disposal

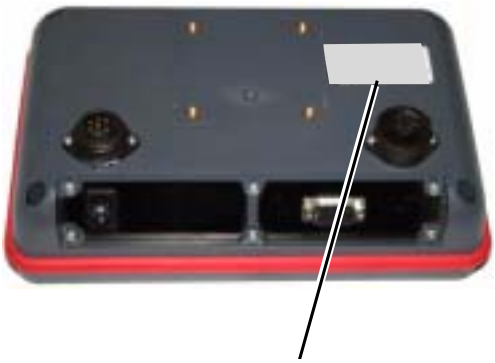
The device must be disposed of in an orderly manner it finally comes to the end of its working life. Please observe the currently valid disposal regulations.

Plastic parts
The plastic parts can be disposed of in the normal domestic rubbish according to specific national laws (residual waste).

Metal parts
All components can be delivered to an used iron recycling centre.

Electronics
The printed circuit board is electronic waste and is a special waste item. You can return the electronic part for disposal to the manufacturer if you are not able to locate a special waste collection centre near you. It will be disposed of in an environmentally favourable manner from there.

according to EC Directive 98/37/EC



Model plate and CE symbol

Kverneland Mechatronics
Hoofdweg 1278
NL- LR Nieuw Vennep

declares under its sole responsibility that the following product complies with EC Directive 98/37/EC, supplemented by 98/79/EC:

Focus 2

Kverneland Mechatronics
Nieuw Vennep, 15.6.2007

Ton van der Voort van der Kley
Managing Director

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