



PSD software

## Operating manual

Edition	08.2015
Printing	04.2018
Language	EN [Original]
For software from	1.10
For	Precision seeding machines
Reference number	AC758922

## 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

PSD 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
<b>Switching on .....</b>	<b>6</b>
Opening screen	6
<b>PSD software .....</b>	<b>7</b>
Transport or work position	16
Sowing distance in the row	17
Task processing	18
Basic settings	19
Information and testing	30
Tramlines	32
Manual filling of the cells	35
Manual starting of the drive motors	35
<b>PSD folding software .....</b>	<b>36</b>
Basic settings	38
Information menu	39
<b>GEOCONTROL .....</b>	<b>42</b>
<b>ECU screen .....</b>	<b>44</b>
<b>Storage .....</b>	<b>45</b>
Storage	45
<b>Eliminating faults .....</b>	<b>46</b>
PSD software	47
PSD folding software	50
<b>Index .....</b>	<b>51</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 machine.

## Safety

Study the contents of this operating manual carefully, which are relevant for your activity, before initial operation or assembly of the machine. Always read through the safety instructions in the chapter "Safety" and observe the warning information in the individual chapters. You will obtain optimal operating results and will also be working more safely.

## For the employer

Provide instruction in these safety instructions for personnel working with the machine on a regular basis and provide information on statutory regulations. Untrained or unauthorised persons must not be allowed to use the machine.

The following are included in this training:

- Checking that staff possess the necessary requirements for safely handling the machine
- 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 machine

## Regular instruction sessions

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

## Instruction

You will receive training from your dealer concerning using the controls, safe operation and care of the machine. 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
"TASKcontrol" 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 stands next to enumerations
- ▶ A triangle is located before activities which you should undertake
- 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 also use pictograms which will help you in finding text passages:



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 assembling or setting up 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

# Switching on



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

Disconnect the terminal from the machine during all work on the machine in order to exclude the possibility of sending unintended commands.

*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

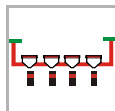
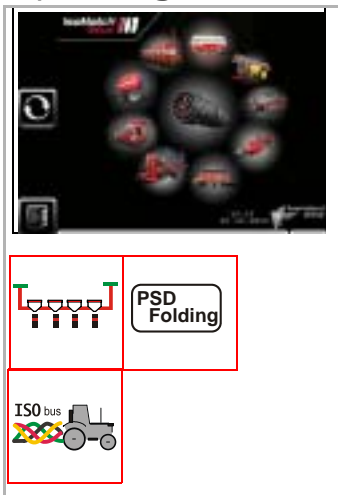
The system performs a short self-test. You will then see the information screen.



Apart from the opening screen and the information screen there is also an ECU screen available. The inputs are described in a separate operating manual.

→ "IsoMatch Tellus" operating manual

## Opening screen



### To the PSD software

→ Chapter »PSD software«, page 7



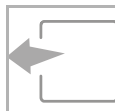
### To the PSD folding software

→ Chapter »PSD folding software«, page 36



### To the ECU screen

→ Operating manual for "IsoMatch Tellus" or another ISOBUS-compatible screen



### Back to the last function

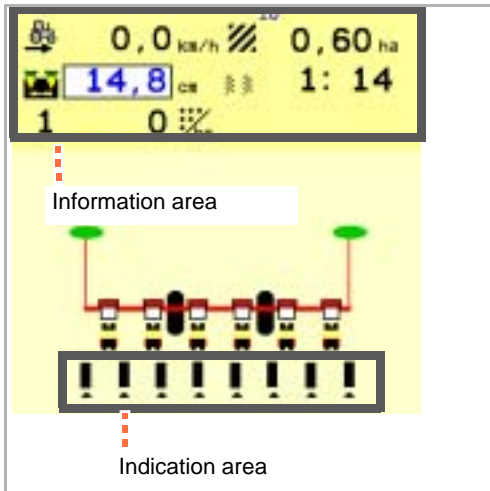
- ▶ Press the symbol



### Back to the opening screen

- ▶ Press the symbol

## Information screen



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

### Information area

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

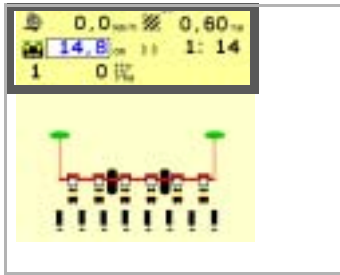
### Indication area

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

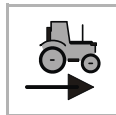
The meaning of the symbols will be described on the next pages. You can also go directly into the menu "Basic settings" and check and alter entries there.

→ Chapter »PSD software«, section »Basic settings«, page 19

## Information area



## Symbols



Speed in km/hour



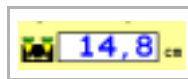
Cultivated area, in ha

This number specifies the active job from the menu "Task".



Sowing distance in the row [cm]

The sowing distance in the row can be changed on the information screen.



- ▶ Click on the input field.  
A keyboard for inputting values appears.

- ▶ Input value as desired

- ▶ Confirm value



The sowing distance for individual sowing units is set in a separate menu. If the sowing distance for individual sowing units is set, the sowing distance in the information screen cannot be changed.

→ Chapter »PSD software«, section »Sowing distance in the row«, page 17



Display when setting the sowing distance for individual sowing units  
The average spacing in the row is displayed. It is only possible to change the values for individual sowing units in the menu for the sowing distance.

→ Chapter »PSD software«, section »Sowing distance in the row«, page 17



Information about the tramlines

Only visible if tramlines are activated. Two different tramlines can also be displayed if two tramline rhythms were set.



Example:

1 : 4

1 = Current pass

4 = Total number of passes



Desired quantity of seeds per hectare in 1000

Change the desired quantity of seeds per hectare:  
→ Chapter »PSD software«, section »Basic settings«, page 19



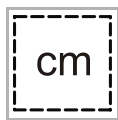
Example:

Desired quantity of seeds per hectare:	90.000
Display:	90



The sowing distance is calculated automatically. An input is not necessary.

If an input for the sowing distance is performed on the information screen in addition, the value for the desired quantity of seeds per hectare is not taken into consideration.



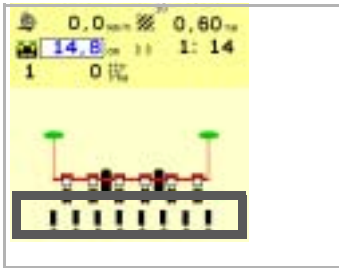
Sowing distance in the row [cm]

In addition, the desired quantity of seeds per hectare is displayed in 1000s.

To change the sowing distance in the row:

→ Chapter »PSD software«, section »Basic settings«, page 19

## Indication area

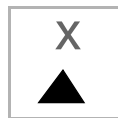


## Symbols

Every sowing unit is indicated in the display by a symbol.



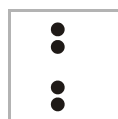
Sowing unit without a fault



Sowing unit is switched off



Tramline is set up



Seed hopper is almost empty



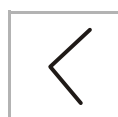
Seed hopper is empty



Opto-sensor deactivated



Speed of drive motor too high



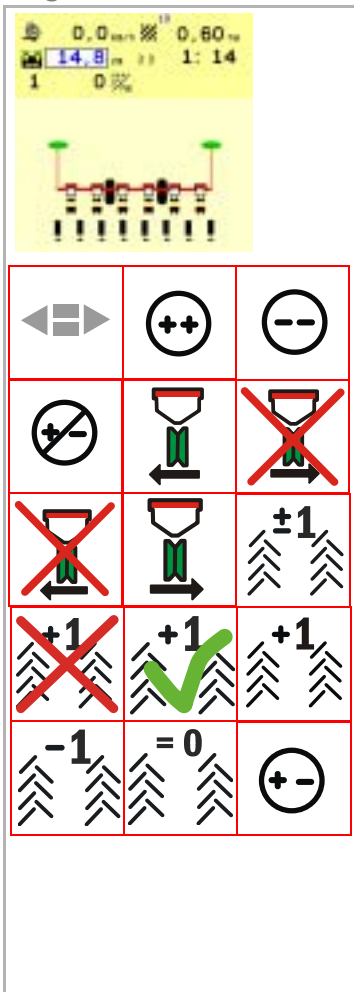
Speed of drive motor too low



Drive motor for the sowing unit blocked

Keys

Page 1



- Increase application rate
- Decrease application rate
- Switch off individual sowing units
- Switch on individual sowing units



Scroll to the next or previous page



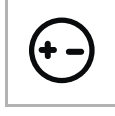
Increase application rate by a defined percentage



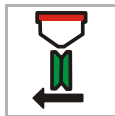
Decrease application rate by a defined percentage



Reset the application rate to the normal value



Change the settings for the application rate  
(The key allocation changes)



Switch on individual sowing units from the right



Switch off individual sowing units from the left



Switch off individual sowing units from the right



Switch on individual sowing units from the left



Change the settings for the tramline rhythm  
(The key allocation changes)



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



When the tramline control system is deactivated, the symbol for activating or deactivating the tramline control system flashes and a red cross appears in the information area next to the display for the tramline.



Current pass +1

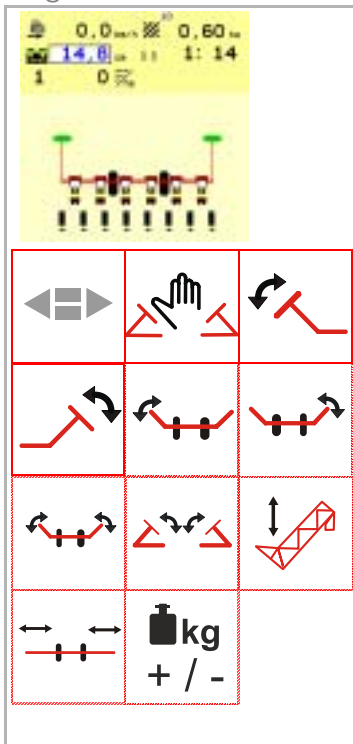


Current pass -1



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

Page 2



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

- Folding the track markers
- Lift or lower the side of the machine
- Move the machine into the transport position or the work position



Scroll to the next or previous page



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



Fold out the track marker on the left side



Fold out the track marker on the right side

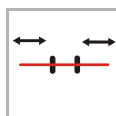
- ▶ To perform seeding work, preselect the track marker which has to be opened out first. The symbol flashes.
- ▶ Actuate the control unit on the tractor. The track marker is folded out.

The flashing symbol indicates that the control 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.



For 18-row machines with PH frames, a separate menu controls the folding process.

→ Chapter »Information menu«, section »18-row machines with PH frames«, page 36



### Not on all types of machine

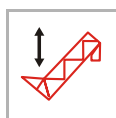
Retracting or extending the machine



### Only lower the filling auger when the machine is extended

Before lowering the filling auger, check that the machine is extended.

*If the filling auger is lowered when the machine is retracted, the sowing units may be damaged.*



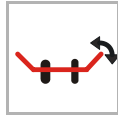
Lifting or lowering the filling auger

Only use this function when the machine is extended

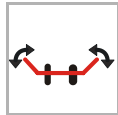


### Depending on the machine type

Lift or lower the left side of the machine



Lift or lower the right side of the machine



### Depending on the machine type

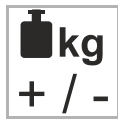
Move the machine into the transport position or the work position  
→ Chapter »PSD software«, section »Transport or work position«,  
page 16



For machines with a foldable frame, the following symbol is used for folding the track marker into the transport position or the work position.



Move the machine into the transport position or the work position



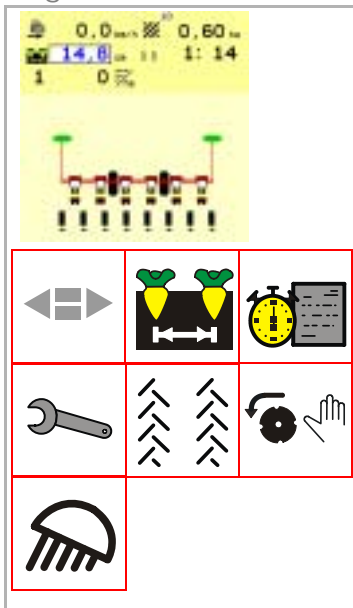
Frame ballasting.

### Switching on the frame ballasting

- ▶ Activate the control unit for frame ballasting on the tractor
- ▶ Press and hold the frame ballasting control unit on the tractor and press the key until the desired pressure is reached.

### Switching off the frame ballasting

- ▶ To release the frame ballasting, press the key without activating the control unit on the tractor

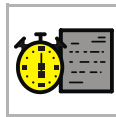


- Set the sowing distance in the row. This value applies for all seed rows. Should the individual seed rows have different values, enter the sowing distance in the row for each individual seed row.
- Select task processing
- Make basic settings
- Set tramline
- Start manual filling of the cells



Set the sowing distance in the row for each individual sowing unit. An average value is then calculated, which is displayed in the information screen. The values for the individual seed rows are not displayed in the information screen.

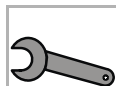
→ Chapter »PSD software«, section »Sowing distance in the row«, page 17



Task processing

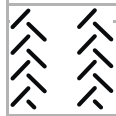
When TaskControl is activated, the symbol is not visible.

→ Chapter »PSD software«, section »Task processing«, page 18



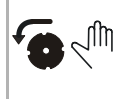
Basic settings

→ Chapter »PSD software«, section »Basic settings«, page 19



Tramlines

→ Chapter »PSD software«, section »Tramlines«, page 32



Manual filling of the cells

→ Chapter »PSD software«, section »Manual filling of the cells«, page 35



Switching the work light on the machine on or off

- ▶ Press the symbol

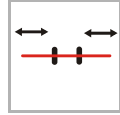
A display is only shown if the work light has been activated.

→ Chapter »PSD software«, section »Page 5«, page 28

## Transport or work position

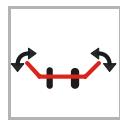
The machine can be folded in/out from the:

- Transport position into the work position
- Work position into the transport position



### For machines without a foldable frame:

- ▶ Press the key. The symbol flashes.
- ▶ Actuate the control unit on the tractor and the frame will be retracted or extended
- ▶ Press the key again. The symbol stops flashing.



### For machines with a 9,00 m foldable frame:

- ▶ Press the key. The symbol flashes.
- ▶ Actuate the control unit on the tractor and the frame will be folded in or out
- ▶ Press the key again. The symbol stops flashing.



Prerequisites for automatically increasing passes for the creation of tramlines:

- A track marker is actuated
- The machine is lifted

### For machines with PH frame and 18 sowing units:

Machines with PH frame and 18 sowing units are folded in or out using their own software.

→ Chapter »PSD folding software«, section »18-row machines with PH frames«, page 36

Sowing distance in the row



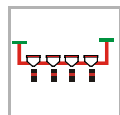
You can determine the sowing distance in the row here for each individual sowing unit. The spacing is specified in centimetres.

10%		++ 2%	
10,0	20,0	10,0	20,0
20,0	10,0	20,0	20,0
10,0	20,0	10,0	20,0
20,0	10,0	20,0	20,0
10,0	20,0	10,0	20,0
20,0			

Percentage step for increased and decreased amounts when setting up tramlines

Percentage step for increased and decreased amounts

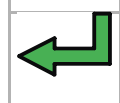
Sowing distance input for each sowing unit. Inputting "0" will turn off the sowing unit. In this way, you can create tramlines manually.



To the information screen  
→ Chapter »Switching on«, section »Opening screen«, page 6

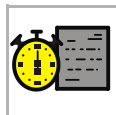
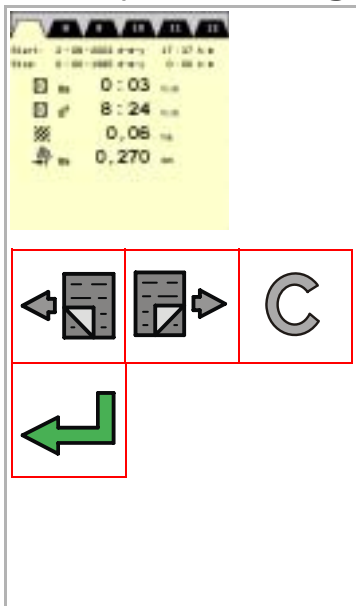


Values for individual seed rows are set to a consistent value.



Save inputs

## Task processing



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

**Start:**

- Date and time when the task was started

**Stop:**

- Date and time when the task was stopped

Machine data



- Period of time the machine has operated for



- Period of time during which the machine was not operated



- Cultivated area, in ha



- Kilometres driven



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



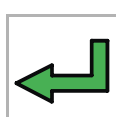
To the previous task



To the next task



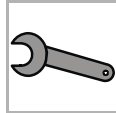
Delete data



Start the task

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

## 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.

### Page 1

Percentage step for increased and decreased amounts

Maximum speed (alarm at a higher speed)

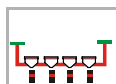
Maximum speed (alarm at a lower speed)

Number of sowing units which should be switched off for partial width switching off

Sensitivity of the opto-sensor

Sowing distance in the row or quantity of seeds in 1000s per hectare

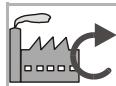
### Keys



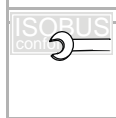
To the information screen  
→ Chapter »PSD software«, section »Information screen«, page 7



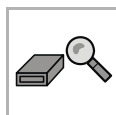
To the next page



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

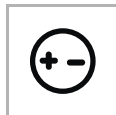


Screen and GEOCONTROL settings  
→ Chapter »GEOcontrol«, page 42



To the information menu  
→ Chapter »PSD software«, section »Information and testing«, page 30

## Symbols



Enter the desired percentage steps for the increased and decreased amounts during seeding. The amount of seed is increased or decreased in the information screen by this percentage using the appropriate keys.  
→ Page10



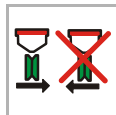
### Upper data entry window

Use the upper data entry window to enter the maximum speed. An alarm will sound if this speed is exceeded. The maximum speed at which perfect placing of the seed is still possible depends on the machine and the soil conditions. It is therefore important to verify placing of the seed on the field.

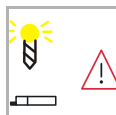
### Lower data entry window

Use the lower data entry window to enter the minimum speed. An alarm will sound if the actual speed is less than this figure. You can select any value you wish for the minimum speed. You must, however, maintain the minimum value for your machine.

Minimum values	
Monopill	4.0 km/hour
Unicorn	1.0 km/hour
Optima	1.0 km/hour
Multicorn	1.0 km/hour



It may be necessary to switch off individual sowing units if the field shape is unfavourable. Enter the number of sowing units which can be switched off simultaneously.



In difficult conditions, such as dust or wetness, the opto-sensor can frequently trigger false alarms. It can then be useful to reduce the sensitivity.



Reduced sensitivity



Normal sensitivity

You can select here how you would like specify the amount of seed:



Sowing distance in the row [cm]

The desired quantity of seeds per hectare is then calculated automatically.



Quantity of seeds in 1000s per hectare

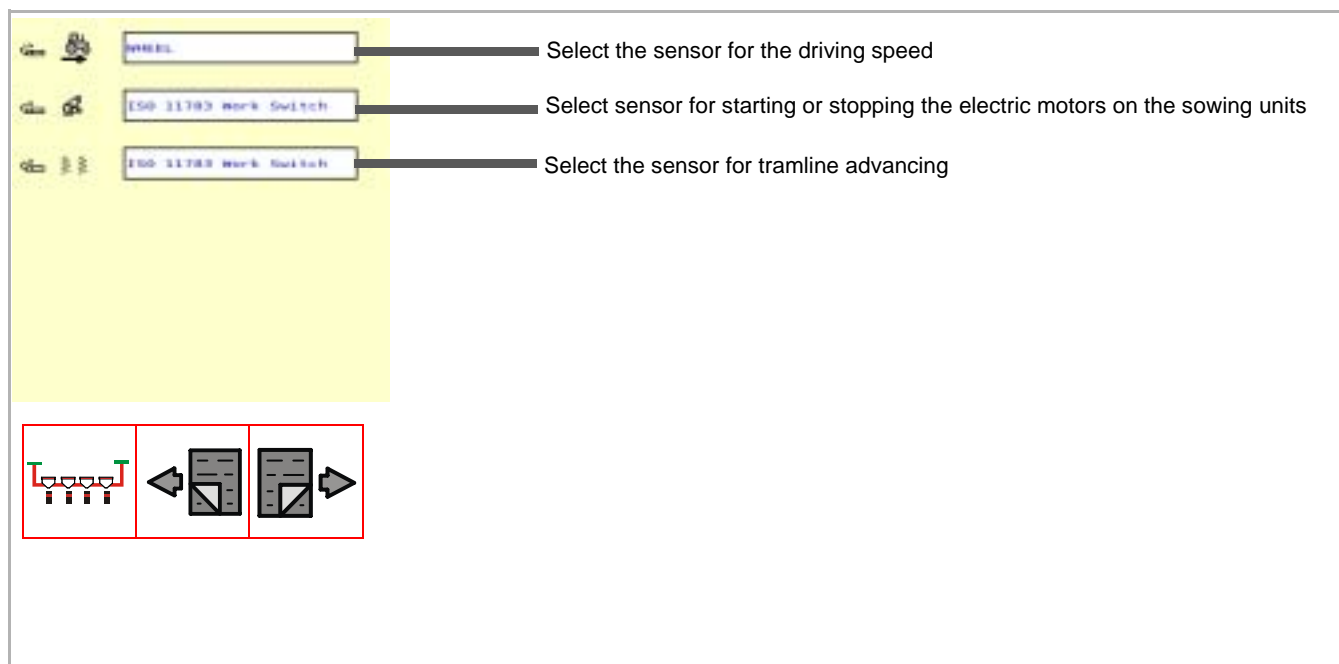
The sowing distance is then calculated automatically.



When entering “Number 1000 seeds per ha”, the values may be adjusted.

**Example:**

You would like to enter 620,000 seeds per ha. From that data, the software calculates the sowing distance. The sowing distance can be calculated to exactly 1 mm. Intermediate values are automatically rounded by the software and taken into account for the display “Number 1000 seeds per ha”. Depending on the row spacing, the number could be 625,000 seeds per ha, for example.



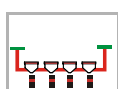
The screenshot shows a software interface with a yellow background. On the left, there are three sensor selection options, each with a small icon and a text box:

- WHEEL**: Select the sensor for the driving speed
- ISO 11783 Work Switch**: Select sensor for starting or stopping the electric motors on the sowing units
- ISO 11783 Work Switch**: Select the sensor for tramline advancing

Below these options, there are three navigation icons in a row, each in a separate box:

- A red-bordered box containing a sensor icon.
- A box containing a left-pointing arrow and a document icon.
- A box containing a document icon and a right-pointing arrow.

### Keys



To the information screen  
→ Chapter »PSD software«, section »Information screen«, page 7

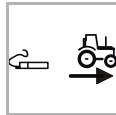


To the previous page



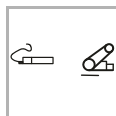
To the next page

Symbols




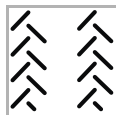
Selecting the sensor for the driving speed:

1. Wheel	Wheel sensor on machine
2. ISO 11783 radar	Radar sensor on the tractor
3. ISO 11783 wheel	Wheel sensor on tractor
4. Manual	No sensor Speed is manually entered and driven with the tractor
5. RADAR	Radar sensor on the machine
6. COMBI	FlexCart in combination with Optima PH



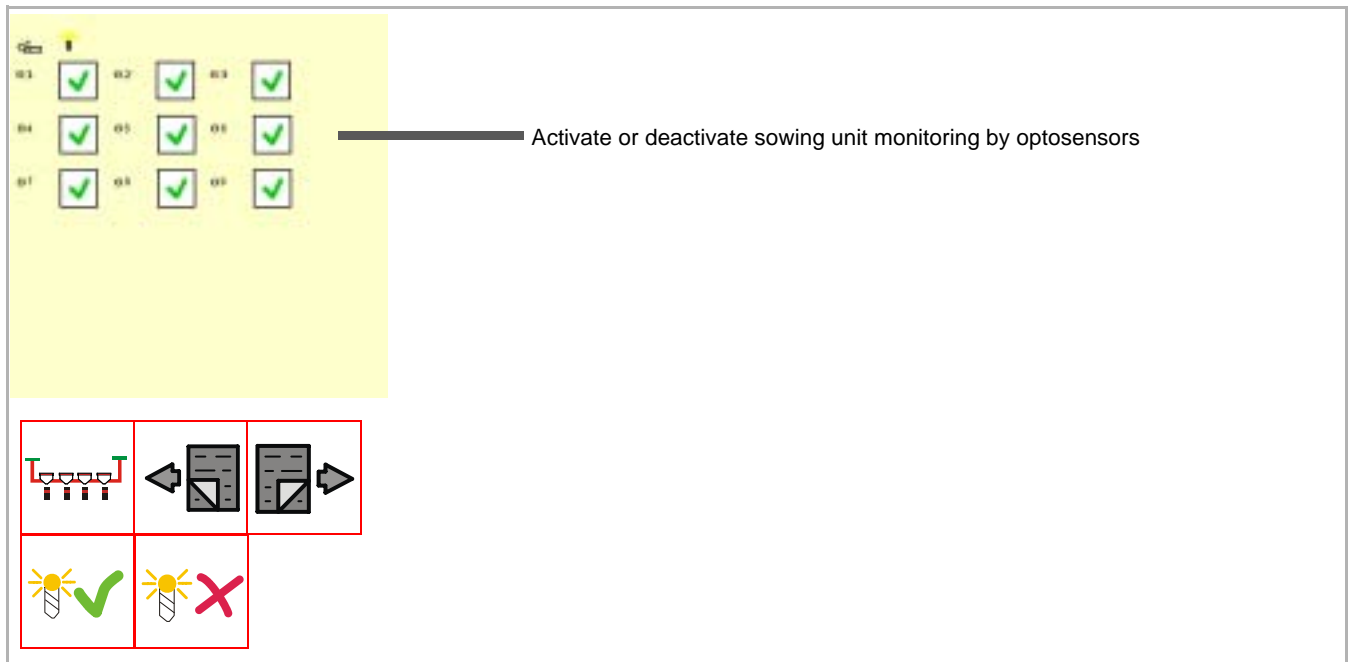
Select sensor for starting or stopping the electric motors on the sowing units:

1. Work switch	Lifting the machine
2. ISO 11783 work switch	Lift the tractor's lower link balls  Prerequisite: The tractor supports the ISOBUS and ISO 11783.   If you have chosen this setting, choose also "ISO 11783 work switch" for the sensor for advancing the tramlines.

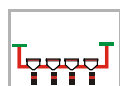


Select the sensor for tramline advancing:

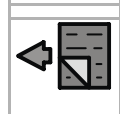
1. Work switch + markers	Lift the machine and change the active track marker arm. This is the factory setting.
2. Work switch	Lifting the machine. The tramline is advanced by a delay of three seconds. This is how undesired advancing of the tramline on uneven ground will be avoided. When creating a tramline, you will hear a signal sound.
3. ISO 11783 work switch	Lift the tractor's lower link balls  Prerequisite: The tractor supports the ISOBUS and ISO 11783.



## Keys



To the information screen  
→ Chapter »PSD software«, section »Information screen«, page 7



To the previous page



To the next page



Activate opto-sensor for all sowing units



Deactivate opto-sensor for all sowing units

## Symbols



Activate or deactivate the opto-sensor  
It is meaningful to deactivate the opto-sensor on individual sowing units which are not being used at all.

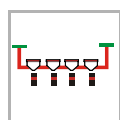
The screenshot shows the PSD software interface with the following annotated elements:

- 32 x**: Number of holes in the seed disc
- 8 x**: Number of sowing units
- 75.0 cm**: Distance between the sowing units
- START**: Number of pulses from the travel sensor
- 0 < 0 < 0**: Start calibration
- SET**: Target fan speed

Below the main interface, three navigation icons are shown in a red-bordered box:

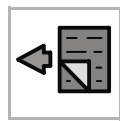
- Information screen icon (seed disc diagram)
- Previous page icon (left arrow and screen)
- Next page icon (screen and right arrow)

Keys



To the information screen

→ Chapter »Switching on«, section »Opening screen«, page 6



To the previous page

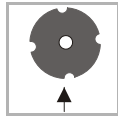


To the next page

## Symbols



If you change values and have activated TaskControl, the changed values are automatically transferred to TaskControl. You will then receive an instruction displayed on the screen.



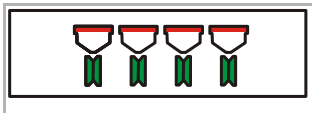
Enter here the number of holes in the seed disc. The number is written on the seed disc.



Number of sowing units on your seed sowing machine



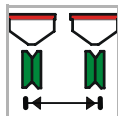
This option is not available on every machine type  
On machines that are equipped for narrow seed the row spacing can be doubled by switching off every other sowing unit.



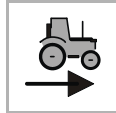
All sowing units are switched on



Every other sowing unit is switched off



Distance between sowing units [cm]



Number of impulses from the travel sensor or radar sensor over 100 metres. The pre-set value is dependent on the machine type:

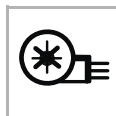
Machine	Pre-set value (guide value)
Travel sensor	
Optima, Multicorn DP II	9450
Monopill	3880
Unicorn	3880
Radar sensor	
All machines	18500

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” and drive the measured 100 metres
- ▶ Activate “Stop”

The number of pulses will be indicated.

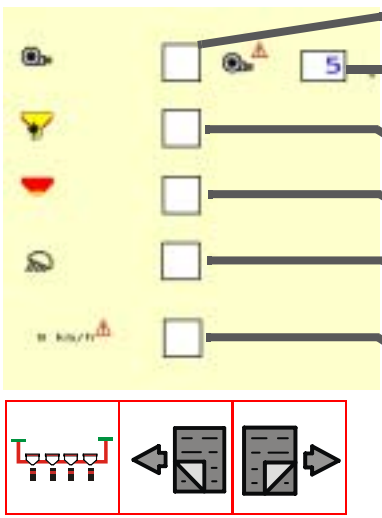
- ▶ Confirm the value with “OK”



Enter the fan speed. If the entered fan speed differs by 10 % above or below, an alarm sounds.



For precision seeding machines, the fan speed is dependent on the vacuum required on the sowing units. The vacuum can be read on the manometer. An entry for monitoring the fan speed is therefore only of limited use.



Activate the fan speed sensor

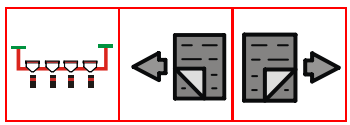
Delay time in seconds for the fan speed alarm when speed is too high or too low. An input for monitoring a front hopper may be useful.

Activate the metering device sensor

Activate the sensor in the seed hopper

Activate or deactivate the work light

Activate or deactivate the alarm at speed "0"



### Keys

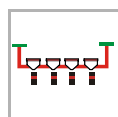


To the previous page



To the next page

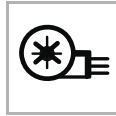
A PIN code for the service technician is required on the next pages. Subsequent pages show special information about individual sowing units, motors and sensors. This information is intended for the service technician.



To the information screen

→ Chapter »Switching on«, section »Opening screen«, page 6

## Symbols



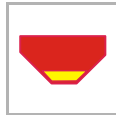
## Fan speed sensor

When the sensor is activated, an alarm sounds if the fan speed exceeds or falls short of the specified value.



## Metering device sensor

When the sensor is activated, an alarm sounds if the metering device does not turn even though the machine is running.



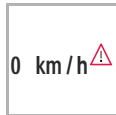
## Sensor in the fertiliser hopper

When the sensor is activated, an alarm sounds if the sensor is no longer covered by fertiliser.



## Activate or deactivate the work light

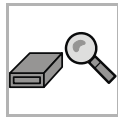
When the work light is activated, you can switch the work light on the machine on or off using the terminal.



## Activate or deactivate the alarm

When the alarm is activated, you will receive an alarm if the software receives no pulses from the speed sensor with the machine in work position.

## Information and testing



The information pages contain:

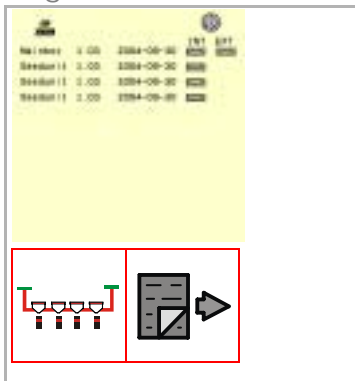
- The software version of the machine
- Performance data of the machine
- Information for the service technician

On the test pages you will find:

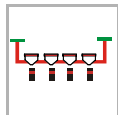
- Tests for various sensors (for the service technician)
- Tests for pre emergence marker and sowing unit drive motors

## Information

### Page 1



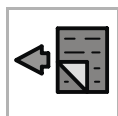
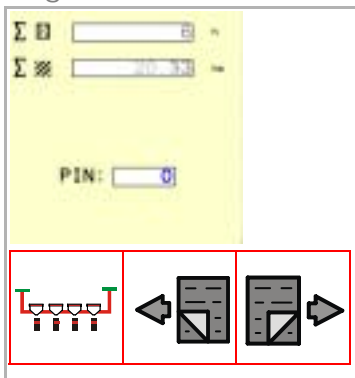
To the next page



To the information screen

→ Chapter »Switching on«, section »Opening screen«, page 6

### Page 2

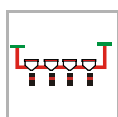


To the previous page



To the next page

Subsequent pages show special information about individual sowing units, motors and sensors. This information is intended for the service technician.



To the information screen

→ Chapter »Switching on«, section »Opening screen«, page 6

## Checking

### Page 1

This screen page is intended for the service technician. Here several sensors are checked and the voltage supply is displayed.

The screenshot displays the following data:

PSD NO 1	ECU-PWR 11,6 V	ACT-PWR1 12,0 V
	12V-OUT 11,5 V	ACT-PWR2 0,1 V
PARKER L 0	PARKER R 1	
WORK SW. L 1	WORK SW. R 1	
PETERING 0	WHEEL 1	
SEED LEVEL 1	PAN 0	
PARKER L [checkbox]	PARKER R [checkbox]	
PEN L [checkbox]	PEN R [checkbox]	
FOLDING L [checkbox]	FOLDING R [checkbox]	
WORK LIGHT [checkbox]	FOLD MARK [checkbox]	

Navigation icons at the bottom:

Current voltage

Sensors

Activation of the track markers, left or right

Activation of the pre-emergence markers, left or right

Activation of the side section folding, left or right

Activation of the track marker folding, left or right

### Page 2

Here you can check the function of the pre emergence markers and the sowing unit motors.

Each main distributor has 3 sowing units assigned. There is a screen page for each main distributor.

The screenshot displays the following data for SU1:

SU 1	12V-OUT 3,4 V	ACT-PWR 14,4 V	
	5V-OUT 5,0 V		
7.2 km/h	L	M	R
ENCODER 1	0	0	0
OPTO 0	0	0	0
SPARE 4	1	5	
PEN- [checkbox]	[checkbox]	[checkbox]	[checkbox]
PEN+ [checkbox]	[checkbox]	[checkbox]	[checkbox]
MOTOR [checkbox]	[checkbox]	[checkbox]	[checkbox]
MOTOR RPM 150	150	0	0
SEED MISSED 94%	0%	0%	0%
CURRENT 1,26 A	0,00 A	0,00 A	

Navigation icons at the bottom:

Current voltage on:

1 = Job computer

2 = Micro processor

3 = Main distributor

Position of sowing unit:

L = Left

M = Middle

R = Right

Pre-emergence markers in the work position

Pre emergence marker in neutral position

Sowing unit drive motor

Display of drive motor speed

Display of shortage A test without seed indicates 99 %.

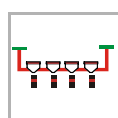
Display of drive motor power consumption



To the next page



To the previous page



To the information screen

→ Chapter »Switching on«, section »Opening screen«, page 6

## Tramlines



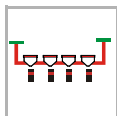
Tramlines are laid down for spraying/fertilising units such as field sprayers or fertiliser spreaders. It is possible to create two tramlines independently of one another, for example for a field sprayer and sprinkler system.

## Page 1

1

- ✓ Set up a tramline
- ✓ Set up a second tramline
- Start seeding work at the right or left side of the field
- 10% Increase the amount of seed in the rows next to the tramlines (data in percent)
- If selected: Tramlines are visibly created and saved. When sowing on the headland, the software switches on the sowing units so that the tramlines from previous passes at right angles to the headland are filled with seed. If deselected: Tramlines are created, but are not visible on the screen and are not saved. On the headland, the tramlines cannot be filled with seed in a targeted way.

## Keys



To the information screen  
→ Chapter »Switching on«, section »Opening screen«, page 6













To the next page

## Symbols

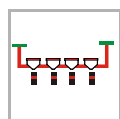
→ Chapter »PSD software«, section »Symbols«, page 34

Page 2

		Set up one or two tramlines
	<input type="text" value="2,250"/>	Track width of the care tractor or care device
	<input type="text" value="46,0"/>	Operating width of the care device
	<input type="text" value="2"/>	Number of sowing units which are blocked per mark when setting up the tramlines
		Laying of the tramlines symmetrically or asymmetrically

Keys



To the information screen  
→ Chapter »Switching on«, section »Opening screen«, page 6

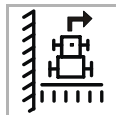


To the previous page

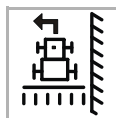


To the next page

## Symbols



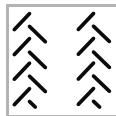
Beginning the seeding work at the left side of the field



Beginning the seeding work at the right side of the field



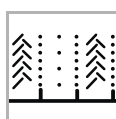
Continue and do not increase the current pass of the rhythm



Setting up two tramlines

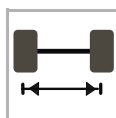


Setting up just one tramline (on the right)

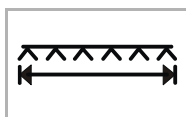


Setting up tramlines means that the plants in the rows next to the tramlines receive more nutrients and more light. They are larger on average than the plants in the normal rows. The amount of seed placed in the rows next to the tramlines can be increased to obtain an even range of plant sizes. The desired increase is entered as a percentage. An increase during seeding work is achieved in the information screen.

→ Chapter »PSD software«, section »Keys«, page 11



Track width of the care tractor or care device in metres.



Working width of the spraying/fertilising unit in metres  
For example, field sprayers or fertiliser spreaders



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

Setting up symmetrical tramlines

Both marks will be created during one pass.



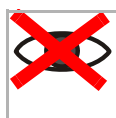
**Is only displayed if just one selection is possible**

Setting up asymmetrical tramlines

Just one mark will be set up in one pass.



If selected: Tramlines are visibly created and saved. When sowing on the headland, the software switches on the sowing units so that the tramlines from previous passes at right angles to the headland are filled with seed.



If deselected: Tramlines are created, but are not visible on the screen and are not saved. On the headland, the tramlines cannot be filled with seed in a targeted way.

## Manual filling of the cells



Before the seeding work on the field all cells should be filled with seed. This can be effected with the help of this key.



- This option is not available on every machine type
- Before starting, the seed hoppers must be filled on the sowing units.
- While the cells are being filled, seed falls onto the soil. If the seed is to be collected, suitable catch pans have to be placed under the sowing units.

- ▶ Switch on the fan
- ▶ Press the key and hold it down as long as desired. The electric motors on the sowing units start up and fill the cells with seed.

The cells are filled, when seed drops at regular intervals out of the sowing units.



Manual filling is only possible if the machine is stationary. While the machine is travelling, this function is deactivated.

## Manual starting of the drive motors



The drive motors on the sowing units can be started at a pre-set speed. The key can be used, for example, for adjusting the singulation at the seed discs.



- This option is not available on every machine type
- Select the speed with which you will later sow
- When the seed hoppers are full, seed drops onto the soil upon starting. If the seed is to be collected, suitable catch pans have to be placed under the sowing units.



### Observe the Safety Instructions

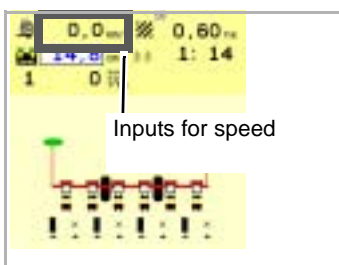
Take heed of the safety instructions on lifted machines. Never go under an unsecured machine.  
*Serious or fatal injury can result.*

- ▶ Lift the machine
- ▶ Switch on the fan
- ▶ Press the key
- ▶ Click on the input field.  
A keyboard for inputting values appears.
- ▶ Input value as desired

Confirm value

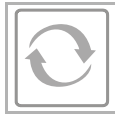
The drive motors start at the pre-selected speed.

- ▶ Press the key again to stop the drive motors



# PSD folding software

## 18-row machines with PH frames



The menu for folding 18-row machines with PH frames can be reached via a key.

- ▶ Press the key until you reach the folding menu



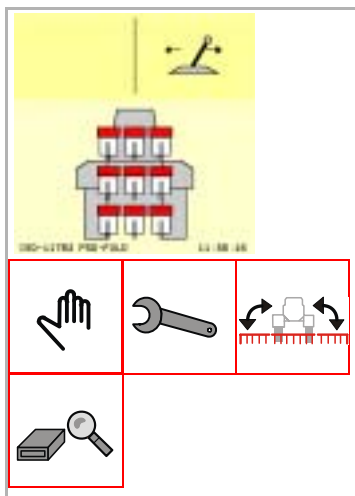
### Observe the machine when folding

The machine must be observed constantly when folding. Should irregularities occur, interrupt the process immediately.

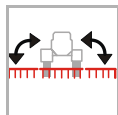
*If the process is continued despite a fault, there may be serious damage to the machine.*

Depending on the status of the machine, a simplified representation of the machine may appear.

Machine is folded in:

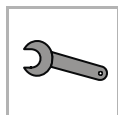


Folding the machine out manually



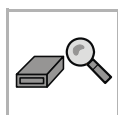
Folding out the machine

- ▶ Select the desired function and actuate the corresponding control unit on the tractor



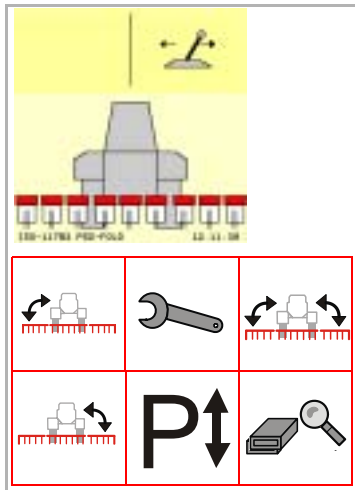
Basic settings

→ Chapter »PSD folding software«, section »Basic settings«, page 38

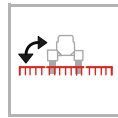


To the information menu

→ Chapter »PSD folding software«, section »Information menu«, page 39

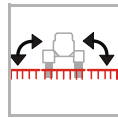


Machine is folded out:



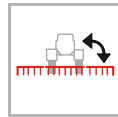
Folding the left side in

- ▶ Actuate the corresponding control unit on the tractor



Folding both sides in

- ▶ Actuate the corresponding control unit on the tractor



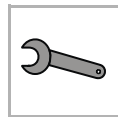
Folding the right side in

- ▶ Actuate the corresponding control unit on the tractor



Setting the pressure

→ Chapter »PSD folding software«, section »Setting the pressure (Unicorn/Monopill)«, page 37



Basic settings

→ Chapter »PSD folding software«, section »Basic settings«, page 38

Setting the pressure (Unicorn/Monopill)



The side sections must be able to swing back and forth. Therefore, it is necessary to apply pressure to the hydraulic cylinder.

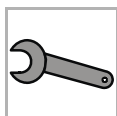
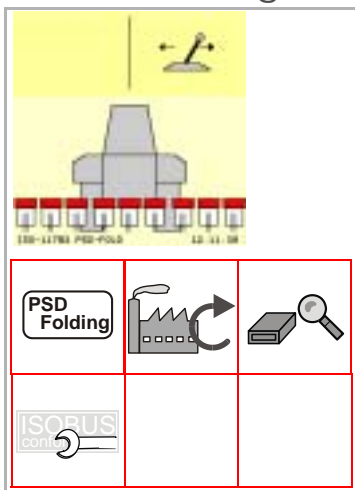
- ▶ Select the function and keep the key pressed
- ▶ Observe the pressure values on the manometer. The pressure values are according to the row spacing.

Row spacing [cm]	bar
45	40
50	100

- ▶ Apply pressure to the cylinder via the control unit on the tractor until the manometer displays the desired pressure

# PSD folding software

## Basic settings

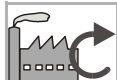


The basic settings of the PSD folding software refer to machine data which is important for controlling functions or triggering alarms.

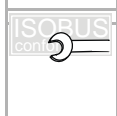
## Keys



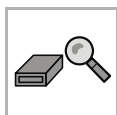
To the PSD folding software



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



Screen and GEOCONTROL settings  
→ Chapter »GEOcontrol«, page 42



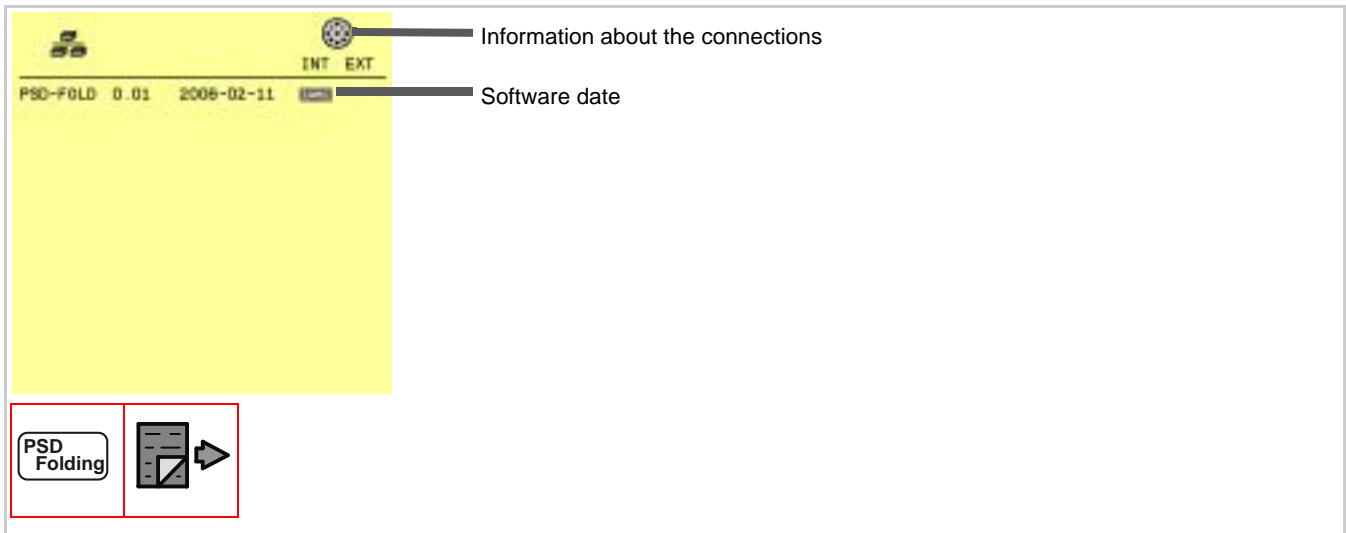
To the information menu  
→ Chapter »PSD folding software«, section »Information menu«, page 39

## Information menu



You can obtain information about the status of the system on the following pages in the menu. This information is generally only of interest to the service technicians.

## Page 1



## Keys



To the PSD folding software



To the next page

# PSD folding software

Page 2

The screenshot shows the PSD-FOLD 0.01 software interface. At the top, it displays 'PSD-FOLD 0.01' and the date '2006-02-11'. Below this, it shows 'PDB ID: 0'. The main display area is divided into two columns of data:

EDU-PWR	0.0 V	5V-OUT	4.9 V
ACT-PWR	13.2 V	12V-OUT	13.2 V
Di01	0	AD 1	101
Di02	1	AD 2	123
Di03	0	AD 3	198
Di04	0	AD 4	96

Below the data table, there are four analog gauges labeled 1, 2, 3, and 4, with numerical values 103, 124, 198, and 96 respectively. To the right of the gauges, there are seven output indicators labeled 'Ou11' through 'Ou17'. At the bottom of the interface, there are three navigation buttons: 'PSD Folding', a left arrow, and a right arrow.

Annotations with arrows point to the following elements:

- Software date
- Electric values of the potentiometers
- Fold out pressure switch
- Fold in pressure switch
- Sensors on the shifter piece
- Balancer cylinder, left
- Lifting cylinder, left
- Balancer cylinder, right
- Lifting cylinder, right

Keys




To the PSD folding software



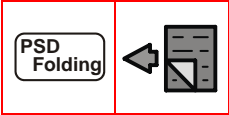
To the previous page



To the next page



An analogue values of the potentiometer. The values should lie between 96 and 103. If the values diverge from this range, the frame must be calibrated. Contact your dealer.



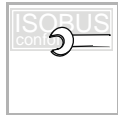
## Keys



To the PSD folding software



To the previous page



Settings can be made to the screen and GEOCONTROL here.

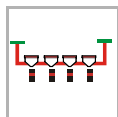
Page 1

1 — Current screen

120 — Waiting time for information from connected implements. Not adjustable.

2 — Select screen

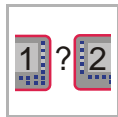
Keys



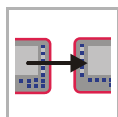
To the information screen  
→ Chapter »Switching on«, section »Opening screen«, page 6



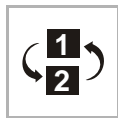
To the next page



Identification of the screen



Replace the terminals



Replace the contents of the screen:

Screen	Replace with screen
Top	Bottom
Left	Right

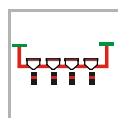
## Page 2

Select TaskControl  
 Task management using TaskControl  
 Use cards for distributing seed  
 Select automatic switch-off of sowing units  
 Enter licence key  
 Enter number of sowing units  
 "0" basic setting

## Page 3

Type of machine: Attached or trailed  
 A1 0,00 Sideways offset from the centre of the tractor to the coupling point  
 B1 9,0 Distance from the centre of the machine's axle to the centre of the seed coulters  
 C1 1,0 Distance from the coupling point to the centre of the machine's axle  
 2,5 Switch on the sowing units before reaching the defined boundary. Data in seconds. Minimum/Maximum input (seconds) 0.2/15  
 2,5 Switch off the sowing units before exiting the defined boundary. Data in seconds. Minimum/Maximum input (seconds) 0.2/15

## Keys



To the information screen  
→ Chapter »Switching on«, section »Opening screen«, page 6



To the previous page



To the next page



For new inputs: Save the values



For new inputs: Quit without saving

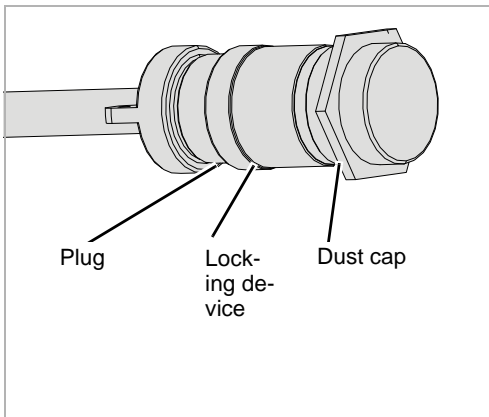
# ECU screen



You will find an explanation of the keys and symbols in a separate operating manual.

→ "IsoMatch Tellus" operating manual

## Removal



- ▶ Release 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.

## 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.

# Eliminating faults



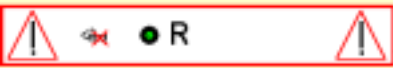

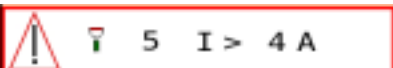
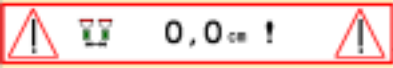
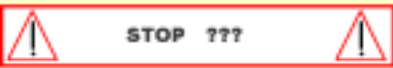
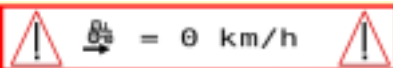

Faults can often be eliminated in a fast and easy manner. Before calling Customer Service, refer to the table below to check whether you can eliminate the fault yourself.


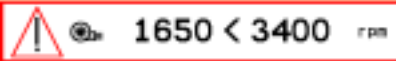

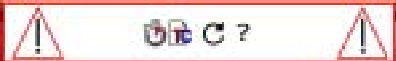
Fault	Cause	Remedy
The device cannot be switched on	The poles of the supply voltage are reversed	<ul style="list-style-type: none"> <li>• Have the polarity checked</li> </ul>
	Power supply interrupted	<ul style="list-style-type: none"> <li>• Check the connector cable</li> <li>• Check the terminals on 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.
Terminal 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
	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
The opto-sensor does not send signals to the job computer	Opto-sensor defective	Inform the dealer
	Opto-sensor is contaminated	Clean opto-sensor with a brush
Indication of the seeds/hectare varies a lot	Irregular separation of the seeds	Set the sowing units correctly
	Opto-sensor is contaminated	Clean opto-sensor with a brush

## PSD software

Fault	Cause	Remedy
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.		
 PWR-SRC1 0,0 v	Insufficient voltage for the main box	Check the battery Replace the fuse if the indicator shows "0"
  PWR-SRC1 0,0 v	Insufficient voltage supply for the sowing unit	Check the battery Replace the fuse if the indicator shows "0"
  12V-OUT 6,7 v	Insufficient voltage supply for the job computer	Check the battery Check the opto-sensor if the indicator shows "0"
 ACT-PWR1 7,0 v	Insufficient voltage supply for the drive motors	Check the battery Replace the fuse if the indicator shows "0"
 ECU-PWR 6,8 v	Insufficient voltage supply for the sensors	Check the battery Replace the fuse if the indicator shows "0"
 ! MEMORY DEFAULT ! 	The inputs in the memory could not be restored  The memory was reset to the standard values	Input the data again  When starting the terminal, do not press any key
 ! IMPERIAL NOT SUPPORTED ! 	The terminal does not support the language set in the main box software	Equip the main box software with a language which is supported
 COMMUNICATION 0 ROWS 	One or more sowing units do not work	Check the cables
   !=   	Different software versions in the main box and terminal	Inform the Customer Service
   	Different software versions in the main box and sowing unit	Inform the Customer Service
  0,0 > 0,0 km/h	The speed is above the set maximum speed	Drive more slowly
  0,0 < 0,0 km/h	The speed is below the set minimum speed	Drive faster
  1  LOW! 	Little seed in the seed hopper	Add seed
  1  	Patchy seeding when depositing grain	Check the seeding heart for clogging Fill up with seed as required


# Eliminating faults

Fault	Cause	Remedy
	Rotational speed of the seed disc too low	Check the drive motor
	The difference in relation to the rotational speed of other seed discs is too great for a considerable time	Check the drive motor
	No pulse from the wheel sensor	Check connecting cable
	Drive motor does not run	Check connecting cable Check fuses
	Encoder defective	Replace defective encoder
	Excessive current consumption at individual sowing units	<ul style="list-style-type: none"> <li>▶ Confirm stopping and alarm</li> <li>▶ Drive off again</li> </ul> <p><b>If the alarm returns:</b> Check the sowing unit for mechanical stress, for example caused by foreign bodies, such as seed jammed in position at the seed disc.</p>
	Distance between sowing units set at "0"	Enter the correct number
	Limit switch triggered during sowing. The machine is most likely working too low.	Check the depth setting of the machine, correct as necessary
	<p><b>Note:</b> This alarm can also be triggered during lifting if the track markers have not yet been folded in and the drive wheels are still running on during lifting. You can in this case confirm and ignore the alarm.</p>	
	No impulse from the speed sensor.	Check the cables Check the sensor
	<p><b>Note:</b> This alarm can also occur while filling the machine in the work position. You can in this case confirm and ignore the alarm.</p>	<p>Switch off the alarm → Chapter »PSD software«, section »Page 5«, page 28</p>
	Fertiliser hopper almost empty	Fill the fertiliser hopper

Fault	Cause	Remedy
	<p>The metering device is not working</p> <p>The sensor on the metering device is defective</p>	<p>Check the setting</p> <p>Replace the sensor</p>
	<p>The fan speed is too high or too low</p>	<p>Keep the fan speed within the target range</p> <p>For precision seeding machines, the fan speed is dependent on the vacuum required on the sowing units. The vacuum can be read on the manometer. An entry for monitoring the fan speed is therefore only of limited use.</p> <p>→ Chapter »PSD software«, section »Basic settings«, page 19</p>
	<p>Limit switch triggered during sowing. The machine is most likely working too low.</p> <p><b>Note:</b> This alarm can also be triggered during lifting if the track markers have not yet been folded in and the drive wheels are still running on during lifting. You can in this case confirm and ignore the alarm.</p>	<p>Check the depth setting of the machine, correct as necessary</p>
	<p>The values relevant for GEOCON-TROL have been changed in the basic settings for the machine.</p>	<p>Check entry of the data in the basic settings. If the changes are correct, confirm the alarm. The changed values are then automatically adopted in GEOCON-TROL.</p>

# Eliminating faults

## PSD folding software

Fault	Cause	Remedy
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.		
	The sensors on the frame are incorrectly set or defective	Set or replace the sensors

<b>A</b>			
Alarms			
PSD folding software	50	Eliminating faults	47
PSD software	47	Filling the cells	35
<b>B</b>		Indication area	10
Basic settings		Information and test pages	30
PSD software	19	Information area	8
<b>C</b>		Information screen	7
Checking		Opening screen	6
Page 1	31	Sowing distance in the row	17
Page 2	31	Starting the drive motors manually	35
<b>E</b>		Task processing	18
ECU screen	44	Tramlines	32
Eliminating faults	46	<b>R</b>	
PSD folding software	50	Removal	45
PSD software	47	<b>S</b>	
Employer	4	Safety	4
Regular instruction sessions	4	Screens	
<b>F</b>		ECU screen	44
Frame ballasting	14	Opening screen	6
Switch off	14	PSD software information screen	7
Switching on	14	Sowing distance	17
<b>G</b>		Storage	45
GEOCONTROL		Symbols	5
Page 1	42	<b>T</b>	
Page 2	43	Target group	4
Page 3	43	Task processing	18
<b>I</b>		Tramlines	32
Instruction	4	Transport position	16
<b>P</b>		<b>W</b>	
Pictograms	5	Work position	16
PSD folding software			
Alarms	50		
Basic settings	38		
Eliminating faults	50		
Information menu	39		
PSD software			
Alarms	47		
Basic settings			
Machine data	19		