RAUCH

Complementary instructions

Please read this manual carefully before using the machine!

Keep for future use

This operator's and assembly manual is an integral part of the machine. Suppliers of new and second-hand machines are required to document in writing that the operator's and assembly manual was delivered with the machine and handed over to the customer.

AXIS 25 ISOBUS

Version 6.10.00

5903833-b-en-0925

Original instructions

Dear customer,

By purchasing the machine control unit AXIS 25 ISOBUS for the AXIS 25 mineral fertilizer spreader, you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable machine control unit.

However, in case unexpected problems arise, our customer service department is always there for you.

Please read this operator's manual as well as the operator's manual for the machine carefully before using the machine, and follow the advice given.

This manual may also describe equipment that is not included in your machine control unit.

Note the serial number of the machine control unit and of the machine

The machine control unit AXIS 25 ISOBUS has been calibrated at the factory for the fertilizer spreader with which it was supplied. It cannot be connected to another machine without new calibration.

Please enter the serial number of the machine control unit and of the machine here. When connecting the machine control unit to the machine, these numbers must be checked.

Serial number of electronic machine control unit:

Machine serial number:

Machine year of manufacture:

Technical improvements

We continuously strive to improve our products. For this reason, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. We do not accept any obligation to make such improvements or changes on machines that have already been sold.

We will be pleased to answer any other questions that you might have.

Yours sincerely

RAUCH Landmaschinenfabrik GmbH

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1 User instructions

1.1 About this operator’s manual

This operator's manual is an **integral part** of the machine control unit.

The operator’s manual contains important instructions for **safe**, **proper**, and economic **use** and **maintenance** of the machine control unit. Compliance with its stipulations helps to **avoid risks**, reduce repair costs and downtime, and to increase the reliability and service life of the machine controlled with it.

The operator's manual must be kept in an easily accessible location close to where the control unit is operated (such as in the tractor).

The operator's manual does not replace your **own responsibility** as operator and operational staff of the machine control unit.

1.2 Meaning of warnings

The warnings in the operator’s manual are classified according to the severity of the risk and the probability of its occurrence.

The warning symbols draw attention to the residual risks to which users of the machine are exposed. The warnings used are structured as follows:

Symbol + **signal word**
Explanation

Level of danger of warnings
The level of danger is indicated in the signal word. The levels of danger are classified as follows:

⚠ DANGER!

Type and source of danger

This warning warns of a danger posing an immediate threat to the health and life of people.

Ignoring these warnings will result in severe injury or death.

- ▶ Always observe the measures described to prevent this danger.

⚠ WARNING!

Type and source of danger

This warning warns of a potentially dangerous situation for personal health.

Ignoring these warnings leads to severe injury.

- ▶ Always observe the measures described to prevent this danger.

⚠CAUTION!

Type and source of danger

This warning warns of a potentially dangerous situation for personal health.

Ignoring these warnings leads to injury.

▶ Always observe the measures described to prevent this danger.

NOTICE!

Type and source of danger

This warning warns of material and environmental damage.

Ignoring these warnings will result in damage to the machine and to the environment.

▶ Always observe the measures described to prevent this danger.

This is an instruction:
General instructions contain tips for the operation and information that is particularly useful, but no warnings about hazards.

1.3 Notes on text descriptions

1.3.1 Instructions and procedures

Steps that must be performed by operating staff are displayed as follows

▶ Instructions step 1

▶ Instructions step 2

1.3.2 Lists

Lists without a specific sequence are shown as lists with bullet points:

- Property A
- Property B

1.3.3 References

References to other sections in the document are shown with paragraph number, header text and/or page number:

- **Example:** Please also note *2 Layout and function*

References to other documents are shown as information or instructions without the exact chapter or page number:

- **Example:** Follow the instructions in the operator's manual of the universal drive shaft manufacturer.

1.3.4 Menu hierarchy, keys and navigation

Menus are the entries listed in the **main menu** window.

The menus list **submenus and/or menu items** where settings can be made (selection lists, text or number entries, starting a function).

The various menus and buttons of the machine control unit are illustrated **in bold letters**.

The hierarchy and the path to the requested menu item are marked with an > (arrow) between menu and/or menu item(s):

- System / Test > System / Test > Test/diagnosis means that you can reach the menu item Voltage via the menu item System / Test and the menu item Test/diagnosis.
    - The arrow > corresponds to the operation of the **scroll wheel** and/or the button at the screen (touchscreen).

2 Layout and function

This chapter is limited to the description of the functionality of the electronic machine controller; it does not specify any particular ISOBUS terminal.

- The instructions for the operation of the ISOBUS terminal can be found in the relevant operator's manual.

2.1 Overview of supported machines

Some models are not available in all countries.

- AXIS 25 (+W)

Supported functions

- Spreading depending on forward speed
- RPM control
  - AXIS 25 EMC + W: Drive shaft speed
- EMC - mass flow control
- Continuous section control

2.2 Control elements

■ ***ISOBUS lite in conjunction with CCI-60***

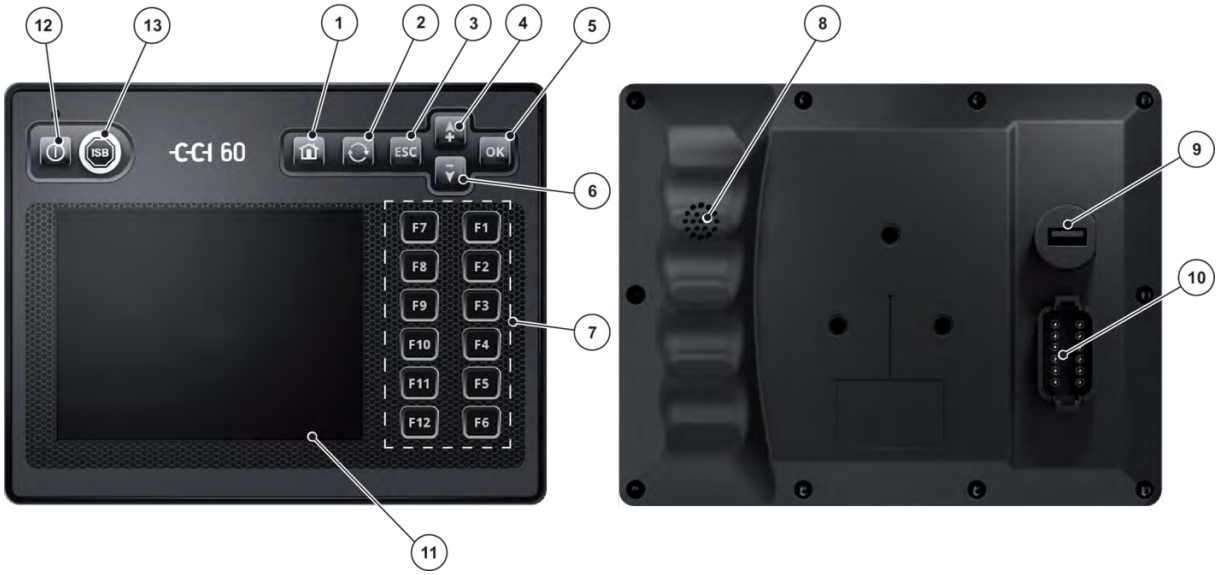


Fig. 1: Control elements

[1] Main menu key
[2] Switch over key
[3] ESC key
[4] Up arrow key
[5] OK key
[6] Down arrow key
[7] Function keys F1 to F12
[8] Buzzer
[9] USB port
[10] DT/A insertion plug
[11] Display screen
[12] ON / OFF key
[13] ISB key

1	Main menu key	Return to main menu
2	Switch over key	Switch over to the next machine
3	ESC key	The ESC key has the same function as the ESC or “back” buttons on the operating touch screen: • To abort an action after it had started. • To revert to the superior touch screen. • Changes are not saved, previous values are retained.
4	Up arrow key	The arrow keys allow navigation amongst the buttons on an operating touch screen. ▶ To navigate to the desired button. ▶ Press the OK button. Those buttons that are assigned to one of the F1-F12 function keys cannot be accessed using the arrow keys.

5	OK key	The OK key has the same function as the OK button on the operating touch screen: • Save a changed value. • Acknowledge a message.
6	Down arrow key	See 4 - Up arrow key
7	Function keys F1 to F12	There are 12 function keys (F1-F12) located to the right of the display screen. The keys can be used as an alternative to the buttons that are displayed at the right edge of the display screen.
8	Buzzer	The purpose of the sound level of the buzzer is: • To signal alarm states. • To give acoustic feedback.
9	USB port	The USB port is protected by a cap against ingress of moisture and dust.
10	DT/A insertion plug	12-pin plug connector
11	Display screen	• Touch-sensitive display (touch screen) • Size: 5.7” • Resolution: 640x480 pixels • High-contrast illumination suitable for daytime and nighttime use As an alternative to the touch screen, the operating and function keys allow full access to the terminal controls.
12	ON / OFF key	Switches the terminal on and off
13	ISB key	Sends an ISB command (if present)

2.3 Display

The display shows the current status information as well as the selection and input options for the electronic machine control unit.

The most important information concerning the operation of the machine is displayed in the **working screen**.

2.3.1 Description of the working screen

The exact representation of the working screen depends on the actual settings selected and on the machine type.

■ ***AXIS 25***

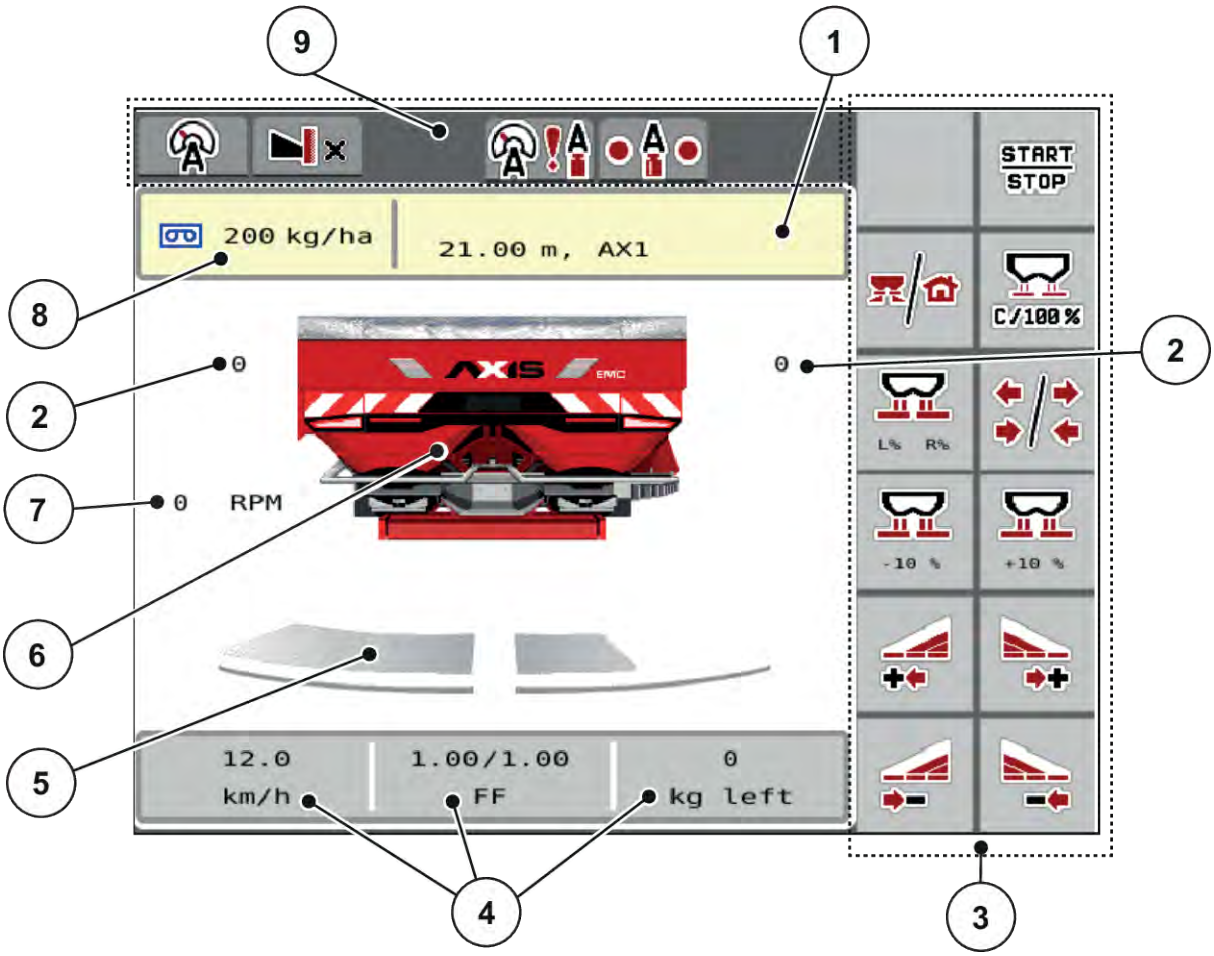


Fig. 2: Display of the AXIS 25 machine controller

[1] Fertilizer information display (fertilizer name, working width and type of spreading disc)
Button: Adjustment in the fertilizer chart

[2] Metering slide position, right/left

[3] Function keys

[4] Freely definable display fields

[5] Metering slide opening status, right/left

[6] Mineral fertilizer spreader display

[7] Spreading disc speed

[8] Current application rate from the fertilizer settings or the task controller
Button: direct entry of the application rate

[9] Other icons (operating mode, EMC status, etc.)

2.3.2 Display fields

The working screen contains three freely definable display fields. Assign the following values to the display fields:

The working screen contains three freely definable display fields. Assign the following values to the display fields:

- Forward speed
- Flow factor (FF)
- ha trip
- kg trip
- m trip
- kg left
- m left
- ha left
- Idle time (Time until the next idle measurement)
- Torque (Spreading disc drive)
- Idling torque

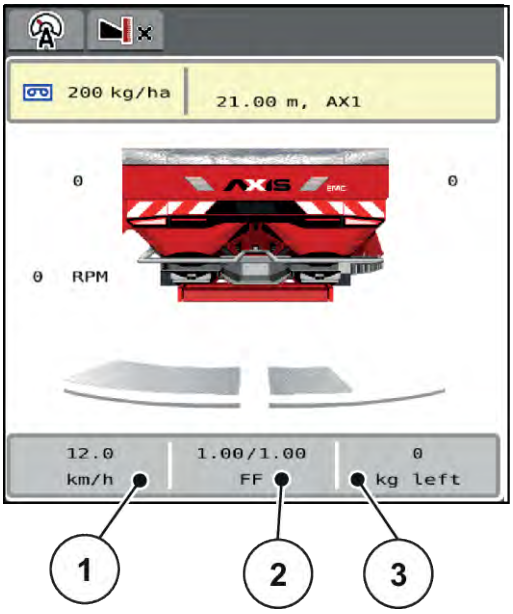


Fig. 3: Display fields

[1] Display field 1
[2] Display field 2
[3] Display field 3

Select display

▶ Press the corresponding display field in the touch screen.

The available options are displayed in a list.

▶ Highlight the new desired value.

▶ Press the OK button.

The working screen is displayed.

The new value will be displayed in the relevant display field.

2.3.3 Display of the metering slide status

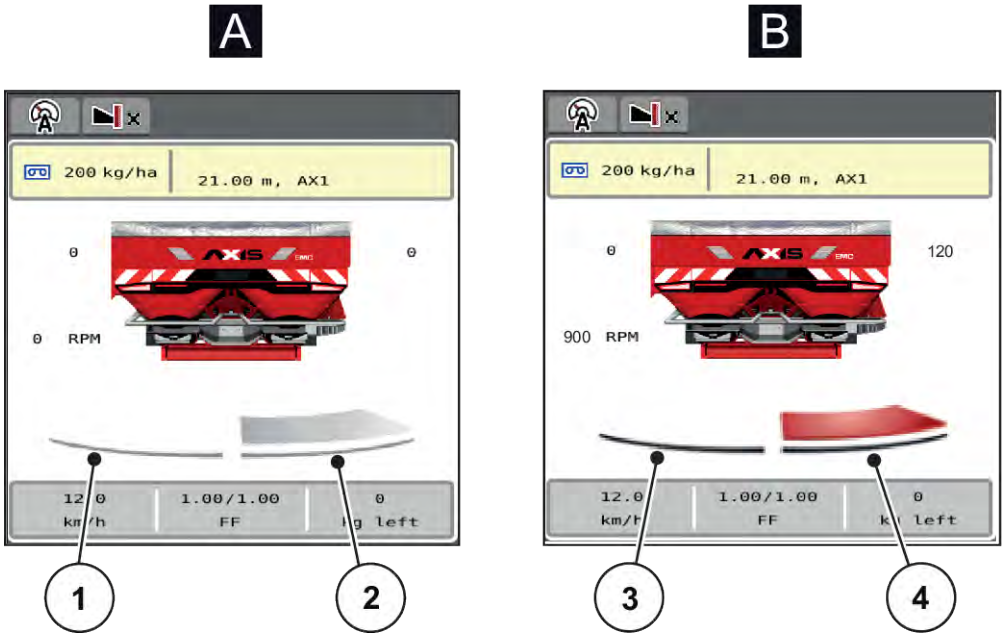


Fig. 4: Display of the metering slide status

[A] Spreading operation inactive
[1] Section deactivated
[2] Section activated
[B] Machine in spreading operation
[3] Section deactivated
[4] Section activated

■ ***Deactivating a complete spreading side***

In the border area a complete spreading side can be immediately deactivated. This is particularly helpful for a quick spreading operation in field corners.

▶ Press the section reduction softkey for longer than 500 ms.

2.3.4 Display of sections

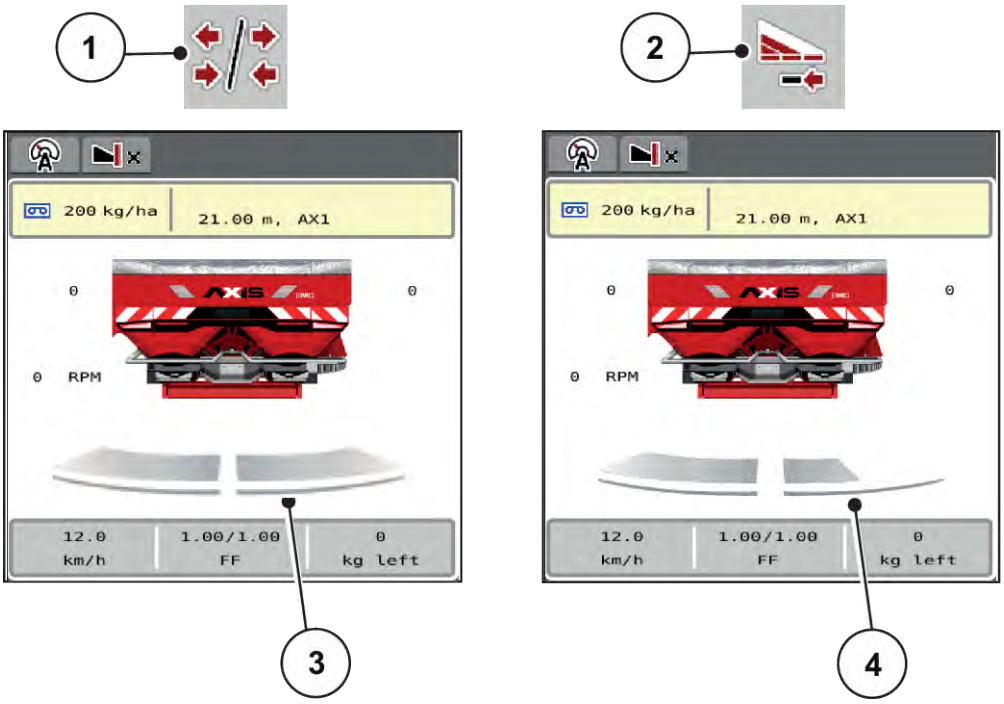


Fig. 5: Display of the section statuses

[1] Sections/border spreading toggle key
[2] Reduce right section button
[3] Activated sections on entire working width
[4] Right section is reduced by several partial sections

For further display and setting facilities, see *5.3 Working with sections*.

2.3.5 Display of the EMC status

Status of the EMC control:
- Red dot: EMC control inactive
- Green dot: EMC control active

When side/limited border spreading, no EMC control is active on the side/limited border spreading side, which is why the dot remains red on the corresponding side.

2.4 Library of icons used

2.4.1 Navigation

Icon	Meaning
	Go to the left; previous page

Icon	Meaning
	Go to the right; next page
	Back to the previous menu
	Back to main menu
	Switch between working screen and menu window
	Acknowledgment of warning messages
	Cancellation, closing the dialog window

2.4.2 Menus

Icon	Meaning
	Switch from a menu window directly to the main menu.
	Switch between working screen and menu window
	SpreadLight operating lights
	Hopper cover
	Fertilizer settings
	Machine settings
	Fast emptying
	System/Test

Icon	Meaning
	Information
	Weighing/Trip counter

2.4.3 Working screen icons

Icon	Meaning
	Start spreading and control of application rate
	The spreading operation has started; stop the application rate regulation
	Reset the quantity adjustment to the pre-set application rate
	Switch between working screen and menu window
	Switch between boundary spreading and sections on the left, right or both spreading sides
	Sections on the left side, boundary spreading on the right spreading side
	Selection of the surplus/shortage quantity on the left, right or both spreading sides (%)
	Quantity adjustment + (plus)
	Quantity adjustment - (minus)
	Quantity adjustment, left + (plus)

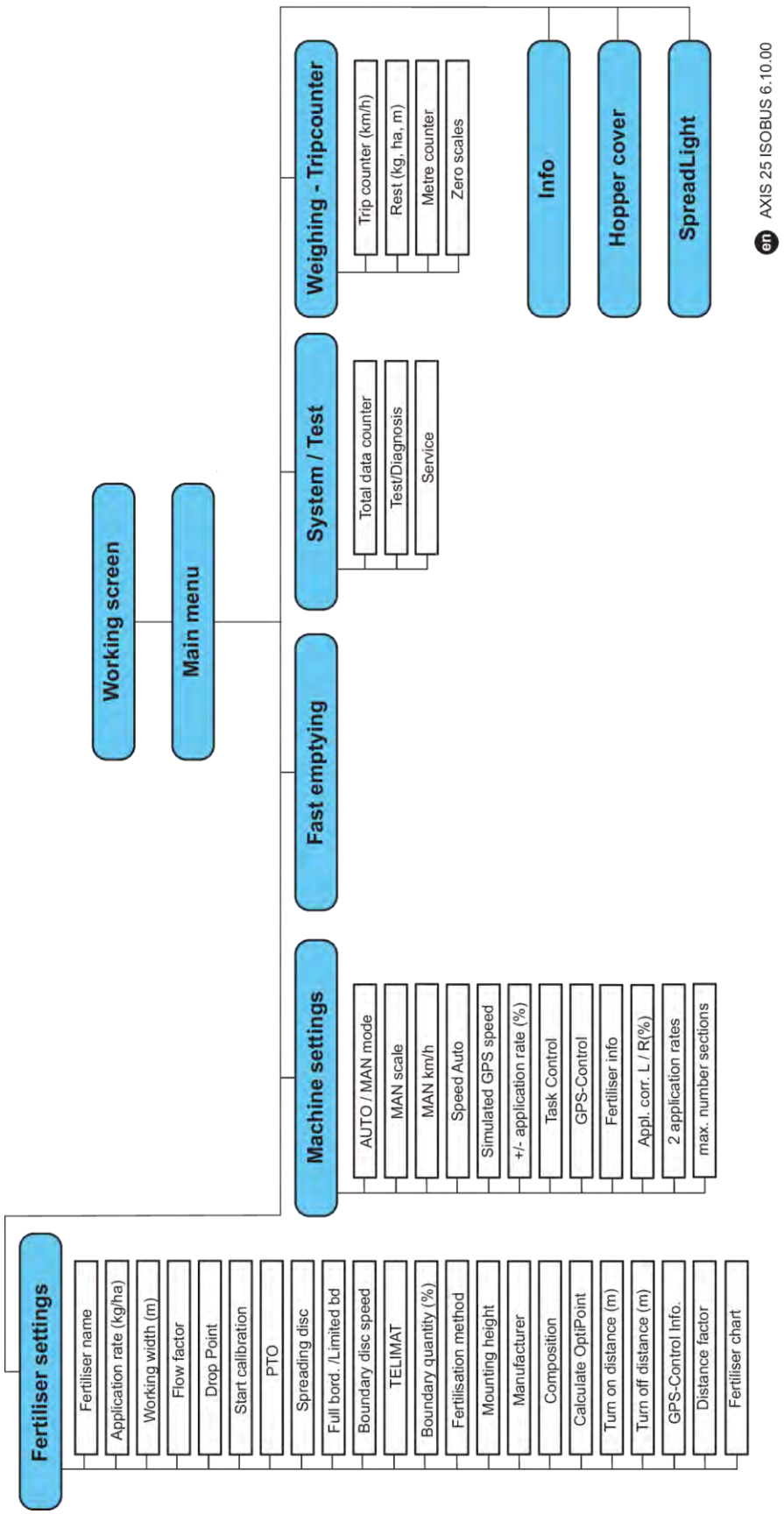
Icon	Meaning
	Quantity adjustment, left - (minus)
	Quantity adjustment, right + (plus)
	Quantity adjustment, right - (minus)
	Manual quantity adjustment + (plus)
	Manual quantity adjustment - (minus)
	Right spreading side inactive
	Right spreading side active
	Reduce left section (minus) **In boundary spreading mode:** Pressing and holding (> 500 ms) immediately deactivates an entire spreading side.
	Increase left section (plus)
	Reduce section, right (minus) **In boundary spreading mode:** Pressing and holding (> 500 ms) immediately deactivates an entire spreading side.
	Increase right section (plus)
	Activate right boundary spreading function/TELIMAT
	Right boundary spreading function/TELIMAT active

2.4.4 Other icons

Icon	Meaning
	Start idle measurement, in the main menu
	Limited border spreading mode, in the working screen
	Full border spreading mode, in the working screen
	Full border spreading mode, in the main menu
	Operating mode AUTO km/h + AUTO kg
	Working mode AUTO km/h
	Operating mode MAN km/h
	Operating mode MAN scale
	EMC control deactivated
	Status EMC
	Loss of the GPS signal (GPS J1939)
	The minimum mass flow is undercut
	The maximum mass flow is exceeded.

2.5 Structural menu overview

- ***AXIS 25 EMC***


Working screen
Main menu
Fertiliser settings
Fertiliser name
Application rate (kg/ha)
Working width (m)
Flow factor
Drop Point
Start calibration
PTO
Spreading disc
Full bord. /Limited bd
Boundary disc speed
TELIMAT
Boundary quantity (%)
Fertilisation method
Mounting height
Manufacturer
Composition
Calculate OptiPoint
Turn on distance (m)
Turn off distance (m)
GPS-Control Info.
Distance factor
Fertiliser chart
Machine settings
AUTO / MAN mode
MAN scale
MAN km/h
Speed Auto
Simulated GPS speed
+/- application rate (%)
Task Control
GPS-Control
Fertiliser info
Appl. corr. L / R(%)
2 application rates
max. number sections
Fast emptying
System / Test
Total data counter
Test/Diagnosis
Service
Weighing - Tripcounter
Trip counter (km/h)
Rest (kg, ha, m)
Metre counter
Zero scales
Info
Hopper cover
SpreadLight
en
AXIS 25 ISOBUS 6.10.00

3 Attachment and installation

3.1 Tractor requirements

Before installing the machine control unit, ensure that the tractor satisfies the following requirements:

- A minimum voltage of **11 V** must **always** be guaranteed, even if multiple loads are connected concurrently (e.g. air conditioning system, lights)
- AXIS 25: The PTO speed must have the following values and must be complied with (basic requirement for a correct working width).
  - AXIS 25: minimum **540** rpm

On tractors without load-switchable transmission, the forward speed must be selected by using the correct gear ratio in such a way that it corresponds to a PTO speed of **540 rpm** (AXIS 25).

- 9-pin socket (ISO 11783) located at the rear of the tractor, for connecting the machine control unit to ISOBUS
- 9-pin terminal plug (ISO 11783) for connecting an ISOBUS terminal to the ISOBUS

If the tractor is not equipped with a 9-pin socket at the rear, a tractor assembly set including a 9-pin socket for the tractor (ISO 11783) and a forward speed sensor may be purchased additionally as special equipment.

3.2 Connections, sockets

3.2.1 Power supply

The power supply of the machine control unit is implemented via the 9-pin socket at the rear of the tractor.

3.2.2 Connecting the machine control unit

Depending on the equipment, there are different methods for connecting the machine control unit to the mineral fertilizer spreader. Further information can be found in the operator’s manual of the machine.

■ **Schematic connection diagram**

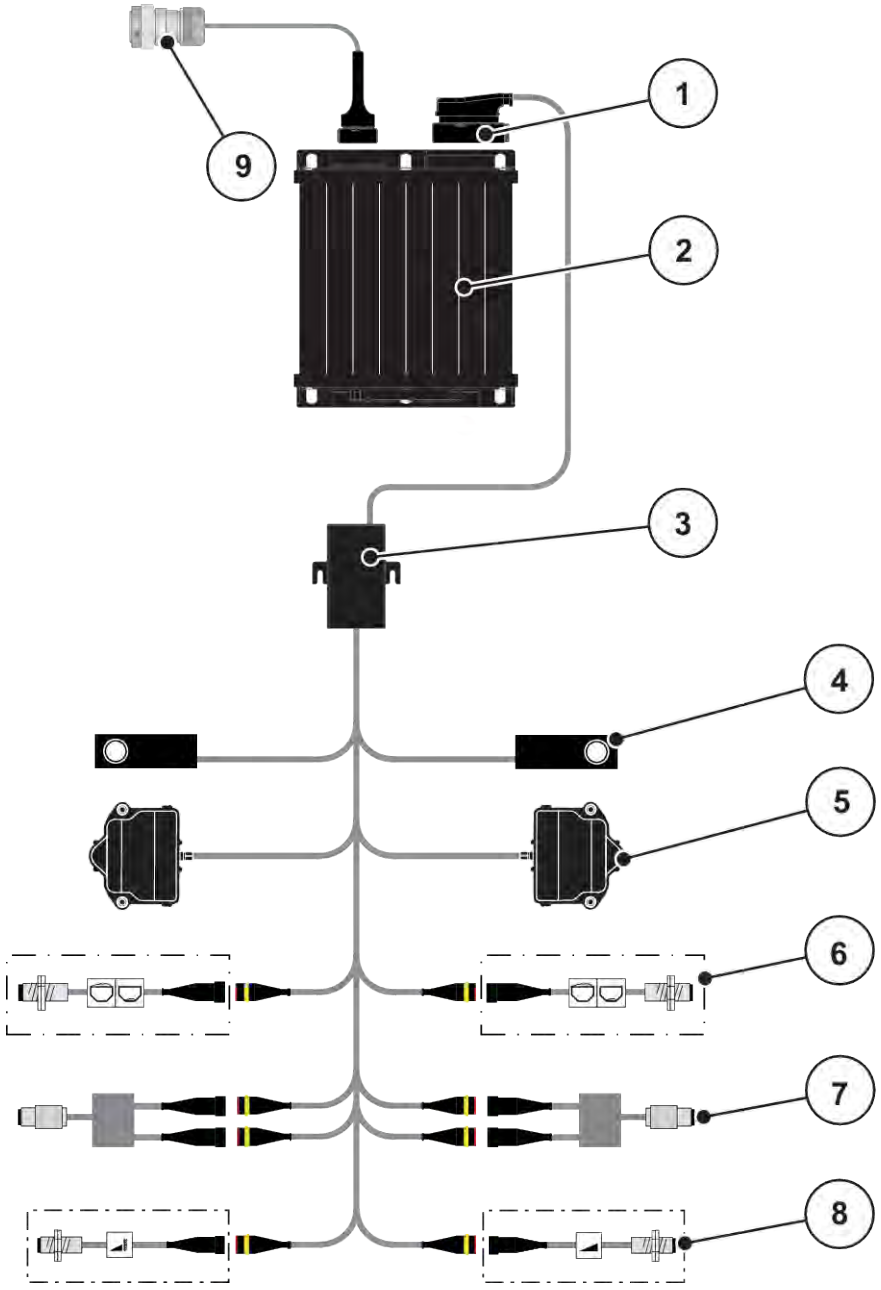


Fig. 6: AXIS 25: Schematic connection diagram

[1] Machine plug
[2] Job computer
[3] Cable distributor
[4] Weigh cell left/right
[5] Metering slide rotary drive, left/right
[6] Level sensor left/right
[7] Torque/speed sensor, left/right
[8] TELIMAT sensor, top/bottom
[9] ISOBUS connector plug

3.2.3 Metering slide preparation

The machine control has an electronic slide actuator to set the application rate.

Refer to the operator’s manual of the machine.

4 Operation

⚠CAUTION!

Risk of injury due to discharged fertilizer

In the case of a fault, it is possible that the metering slide unexpectedly opens during road transport to the spreading location. There is a risk of slipping and personal injury due to ejected fertilizer.

▶ **Before leaving for the spreading location**, always switch off the electronic machine control unit.

The settings of each menu are very important for optimal **mass flow control (EMC function)**.

Take particular note of the specifics of the EMC function for the following menu items:

- In the Fertiliser settings >Spreading disc menu, see *4.4.5 Disc type*
- In the Fertiliser settings > Disc speed menu or the Fertiliser settings > Normal disc speed menu, see *4.4.6 Rotation speed*
- In the Machine settings > AUTO/MAN mode menu, see *4.5.1 AUTO/MAN mode*

4.1 Switching on the machine control unit

Requirements:

- The machine control unit is correctly connected to the machine and the tractor.
  - For an example, see *3.2.2 Connecting the machine control unit*.
- The minimum voltage of **11 V** is guaranteed.

▶ Start the machine control unit.

After a few seconds, the **start-up screen** *of the machine control unit is displayed.*

Subsequently, the machine control unit displays the **activation menu** *for a few seconds.*

▶ Press the enter key.

The working screen then appears.

4.2 Navigation within the menus

Refer to chapter *1.3.4 Menu hierarchy, keys and navigation* for important notes regarding the display and navigation between menus.
The techniques for accessing menus and menu entries **by touching the touch screen or pressing the function keys**by touching the touch screen or pressing the function keys are described below.

- Refer to the operator's manual of the terminal that is used.

■ ***Accessing the main menu***

▶ Press the **Working screen/main menu** function key. See *2.4.2 Menus*.

The main menu is displayed.

■ ***Accessing the sub-menu via the touch screen***

▶ Press the button of the desired sub-menu.

Windows appear with prompts for various actions.
- Text input
- Value input
- Settings made in further sub-menus

Not all parameters are displayed simultaneously on one screen. Use the **left/right arrow** keys to skip to the next or previous menu windows (tabs).

■ ***Exiting menus***

▶ Confirm settings by pressing the **Return** key.

Back to the **preceding menu** .

▶ Press the **working screen/main menu** key.

Back to the **working screen**.

▶ Press **ESC**.

The previous settings are retained.

Back to the **preceding menu** .

4.3 Main menu

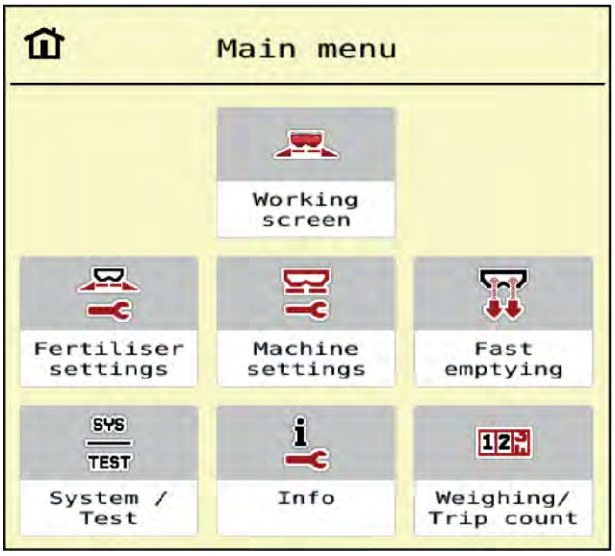


Fig. 7: Main menu with sub-menus

Sub-menu	Meaning	Description
Working screen Working screen	Switches to the working screen	
Fertiliser settings Fertiliser settings	Fertilizer and spreading operation settings	*4.4 Fertilizer settings*
Machine settings Machine settings	Tractor and machine settings	*4.5 Machine settings*
Fast emptying Fast emptying	Direct access to menu for fast emptying of the machine	*4.6 Fast emptying*
System/Test System / Test	Settings and diagnosis of the machine control unit	*4.7 System/Test*
Info Info	Machine configuration display	*4.8 Info*
Weighing / Trip count Weighing/Trip count.	Values regarding spreading work performed and functions for weighing operation	*4.9 Weighing/Trip counter*

In addition to the sub-menus, in the main menu, the function keys Idle measurement and Bound. sprd.type can be selected.

- Idle measurement: This function key enables a manual start of the idle measurement. See *5.6 Idle measurement*.

4.4 Fertilizer settings

In this menu, the fertilizer and spreading settings can be changed.

▶ Call up the Main menu > Fertiliser settings menu.

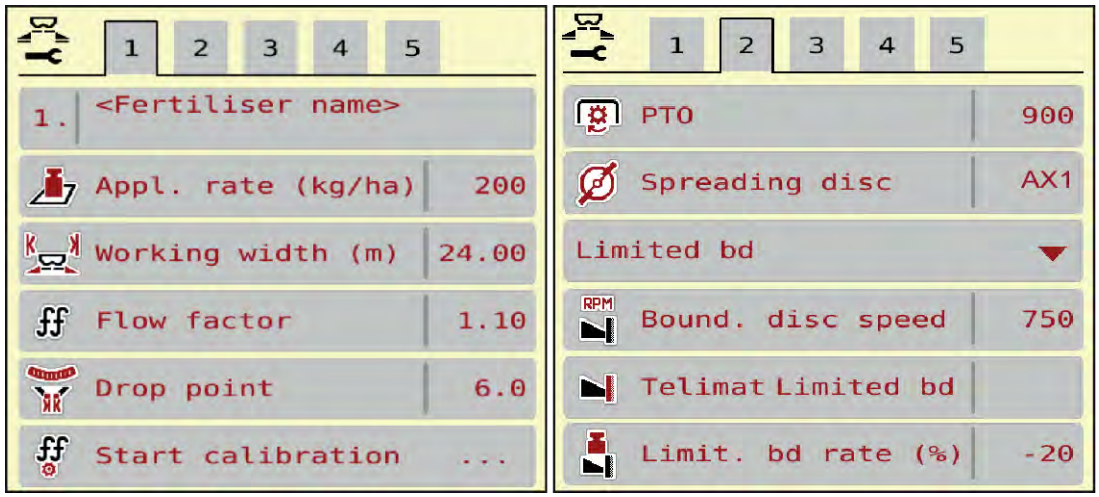


Fig. 8: Fertiliser settings menu, mechanical drive, tab 1 and 2

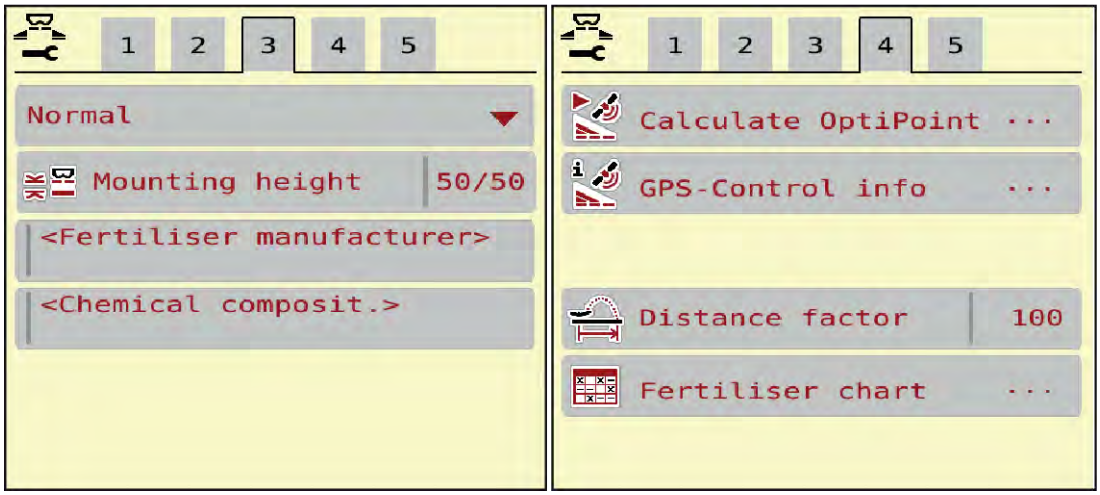


Fig. 9: Fertiliser settings menu, tab 3 and 4

Sub-menu	Meaning	Description
Fertiliser name Fertiliser name	Fertilizer selected from the fertilizer chart	*4.4.11 Fertilizer charts*
Application rate Appl. rate (kg/ha)	Inputting the set application rate in kg/ha	*4.4.1 Application rate*

Sub-menu	Meaning	Description
Working width Working width (m)	Determination of the working width to be spread	*4.4.2 Setting the working width*
Flow factor Flow factor	Input of flow factor of the fertilizer used	*4.4.3 Flow factor*
Drop point Drop point	Input of the drop point	Refer to the operator's manual of the machine.
Start calibration Start calibration	Accessing the sub-menu for executing the calibration	*4.4.4 Calibration test*
PTO PTO	Influences the EMC mass flow control Factory setting: • AXIS 25: 540 rpm	*4.4.6 Rotation speed*
Spreading disc Spreading disc	Setting of the disc type mounted on the machine The setting influences the EMC mass flow control.	Selection list: • AX1 • AX2 • AX3
Boundary spreading type Bound. sprd.type	Selection list: • Limited bd • Full bord.	Selection with arrow keys, confirmation with the Enter key This is adjusted by means of the speed of the tractor PTO shaft.
Boundary spreading speed Bound. disc speed	Pre-setting the rpm in the border spreading mode	To be entered in a separate input window
Boundary drop point Bound. drop point	Pre-setting the drop point in the border spreading mode	To be entered in a separate input window
Boundary quantity Limit. bd rate (%)	Pre-setting the application rate reduction in border spreading mode	To be entered in a separate input window
TELIMAT	Saving the TELIMAT settings for border spreading	
Fertilisation method Fertilisation method	Selection list: • Normal • Late sprd.	Selection with the **arrow keys** Confirmation with the **Enter key**

Sub-menu	Meaning	Description
Mounting height Mounting height	Indicated in cm front/cm rear Selection list: • 0/6 • 40/40 • 50/50 • 60/60 • 70/70 • 70/76	
Manufacturer Manufacturer	Fertilizer manufacturer input	
Composition Composition	Percentage of the chemical composition	
Calculate OptiPoint Calculate OptiPoint	Input of the GPS control parameters	*4.4.9 Calculate OptiPoint*
Distance factor Distance factor	Input of the distance factor from the fertilizer chart. Required for OptiPoint calculation	
Turn on distance Turn on dist. (m)	Input of turn on distance	
Turn off distance Turn off dist. (m)	Input of turn off distance	
GPS Control Info GPS-Control info	Display of information of the GPS Control parameters	*4.4.10 GPS Control info*
Fertiliser chart Fertiliser chart	Management of fertilizer charts	*4.4.11 Fertilizer charts*

4.4.1 Application rate

In this menu, the target value for the desired application rate can be set.

Enter the application rate:

▶ Call up the Fertiliser settings > Appl. rate (kg/ha) menu.

The **currently applied** *application rate is displayed.*

▶ Enter the new value in the input field.

▶ Press **OK**.

The new value is saved in the machine control unit.

4.4.2 Setting the working width

The working width (in meters) can be set in this menu.

▶ Call up the Fertiliser settings > Working width (m) menu.

The **currently applied** *working width is displayed.*

▶ Enter the new value in the input field.

▶ Press **OK**.

The new value is saved in the machine control unit.

The working width cannot be adjusted whilst spreading is in progress.

4.4.3 Flow factor

The flow factor lies within the range of **0.2** to **1.9**.

With identical basic settings (km/h, working width, kg/ha), the following applies:

- If the flow factor is **increased**, the flow factor is **reduced**
- If the flow factor is **reduced**, the metering quantity is **increased**

An error message is displayed if the flow factor is outside the preset range. See *6 Alarm messages and possible causes*.

When spreading bio-fertilizers or rice, reduce the minimum factor to 0.2, to avoid a constant display of the error message.

If the flow factor is already known from earlier calibrations or from the fertilizer chart, enter it manually in this selection window.

Via the Start calibration menu, the flow factor can be determined and entered using the control unit. See *4.4.4 Calibration test*

For the mineral fertilizer spreader, the flow factor is calculated via the EMC mass flow control. It may however also be entered manually.

The flow factor calculation depends on the operating mode used. See chapter *4.5.1 AUTO/MAN mode* for further information.

Entering the flow factor:

▶ Call up the Fertiliser settings > Flow factor menu.

The **currently set** *flow factor is displayed.*

▶ Enter the value obtained from the fertilizer chart into the input field.

If the specific type of fertilizer does not appear on the fertilizer chart, input **1.00** as the flow factor.
In the AUTO km/h operating mode, we highly recommend executing a **calibration** in order to be able to accurately determine the flow factor for this fertilizer.

▶ Press OK.

The new value is saved in the machine control unit.

For the AXIS EMC mineral fertilizer spreader (AUTO km/h + AUTO kg operating mode), we recommend having the flow factor displayed on the working screen. This allows the regulation of the flow factor to be monitored during spreading. See *2.3.2 Display fields*.

4.4.4 Calibration test

⚠ WARNING!

Risk of injury during calibration test

Rotating machine parts and discharged fertilizer could cause injury.

▶ Before starting the calibration, ensure that all requirements have been met.
▶ Observe the calibration chapter in the operator's manual for the machine.

For weighing spreaders and all machines in the **operating mode** AUTO km/h + AUTO kg, the Start calibration menu is blocked. This menu item is inactive.

In this menu the flow factor is determined on the basis of a calibration test and is saved in the in machine control unit.

Perform the calibration test:
- Before spreading for the first time
- If the fertilizer quality has changed significantly (moisture, high dust content, granulate damage)
- If a new fertilizer type is used

The calibration must either be conducted with a running PTO at a standstill or while driving over a test section.

- ▶ Remove both spreading discs.
- ▶ Move the drop point to the calibration position (value 0).

Entering the working speed:

- ▶ Call up the Fertiliser settings > Start calibration menu.
- ▶ Enter the average working speed.

  This value is required for calculation of the slide position during calibration.
- ▶ Press the Continue button.

  The new value is saved in the machine control unit.

  The second calibration page is displayed.

Select the section

- ▶ Set the spreader side on which the calibration is to be performed.

  Press the function key of the left spreading side.

  Press the function key of the right spreading side.

  The icon indicating the selected spreader side has a red background.

- ▶ Press **Start/Stop**.

  The metering slide of the previously selected section opens and the calibration is started.

The calibration test can be interrupted at any time by pressing the ESC button. The metering slide is closed and the display shows the Fertiliser settings menu.

The calibration time is not relevant to the accuracy of the results. However, a **minimum of 20 kg** should be calibrated.

- ▶ Press **Start/Stop** again.

  The calibration is completed.

  The metering slide closes.

  The third calibration page is displayed.

■ ***Recalculating the flow factor***

⚠ WARNING!

Risk of injury due to rotating machine parts

Any contact with rotating machine parts (drive shaft, hubs) may lead to bruises, abrasions, and crushing injuries. Body parts or objects may be caught or drawn in.

- ▶ Switch off the tractor engine.
- ▶ Switch off the hydraulics system and secure it against unauthorized activation.

- ▶ Weigh the collected weight (taking into account the empty weight of the collection tray).
- ▶ Enter the weight under the **Calibrated quantity** menu entry.
- ▶ Press **OK**.

  The new value is saved in the machine control unit.

  The **Flow factor calculation** *menu is displayed.*

The flow factor must be between 0.4 and 1.9.

- ▶ Set the flow factor.

  In order to apply the newly calculated flow factor, press the Confirm flow factor button.

  To confirm the previously saved flow factor, press the **ESC** key.

The flow factor is saved.

The "Approach drop point" alarm message is displayed.

4.4.5 Disc type

For optimal idle measurement, check the correct input in the Fertiliser settings menu.

- The entries in the Spreading disc and Normal disc speed or PTO menu items must correspond to the actual settings of the machine.

The mounted type of spreading disc has a default factory setting. If other spreading discs are mounted on the machine, enter the correct type.

- ▶ Call up the Fertiliser settings > Spreading disc menu.
- ▶ Activate the type of spreading disc in the selection list.

The Fertiliser settings window is displayed with the new spreading disc type.

4.4.6 Rotation speed

- ■ ***PTO***

For optimal idle measurement, check the correct input in the Fertiliser settings menu.

- The entries in the Spreading disc and PTO menu items must correspond to the actual settings of the machine.

The specified PTO speed is preset in the control unit to 540 rpm as a standard factory setting. To set another PTO speed, change the value saved in the control unit.

▶ Call up the Fertiliser settings > PTO menu.

▶ Enter the speed in rpm.

The Fertiliser settings window is displayed with the new PTO speed.

Refer to chapter *5.4 Spreading with the automatic operating mode (AUTO km/h + AUTO kg)*.

4.4.7 Boundary spreading mode

This menu allows selection of the appropriate mode for spreading at the edge of the field.

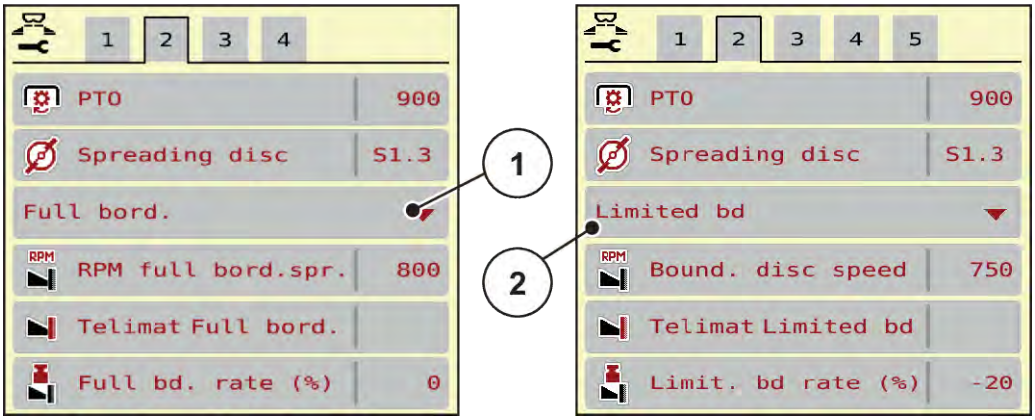


Fig. 10: Border spreading mode setting values

[1] Full bord. - edge spreading

[2] Limited bd - border spreading

▶ Call up the menu Fertiliser settings.

▶ Switch to tab 2.

▶ Select border spreading mode Full bord. or Limited bd.

▶ If required, adjust the RPM, Drop point or quantity reduction in accordance with the information provided in the fertilizer chart.

4.4.8 Boundary spreading quantity

The quantity reduction (in percent) can be specified in this menu. This setting is used for the activation of the limited border spreading function and/or the TELIMAT unit (AXIS-M only).

We recommend reducing the quantity on the border spreading side by 20 %.

Entering the border spreading application rate:

- ▶ Call up the Fertiliser settings > Limit. bd rate (%) menu.
- ▶ Enter the value in the input field and confirm.

The Fertiliser settings window is displayed with the new border spreading application rate.

4.4.9 Calculate OptiPoint

The parameters to calculate the optimum turn-on and turn-off distances in the headlands can be entered in the Calculate OptiPoint menu. For an accurate calculation, it is very important to enter the aerodynamic factor for the fertilizer used.

The calculation should be performed only after all the data for the desired spreading process have been transferred in the menu Fertiliser settings.

For the correct aerodynamic factor for the fertilizer being used, see the fertilizer chart for the machine.

- ▶ Enter the required value in the menu Fertiliser settings > Distance factor.
- ▶ Call up the Fertiliser settings > Calculate OptiPoint menu.

  The first page of the Calculate OptiPoint menu is displayed.

The indicated forward speed refers to the forward speed in the area of the switching positions! See *5.10 GPS control*.

- ▶ Enter the average forward speed in the range of switching positions.

  The second page of the menu is displayed.
- ▶ Press OK.
- ▶ Press the Continue button.

  The third page of the menu is displayed.

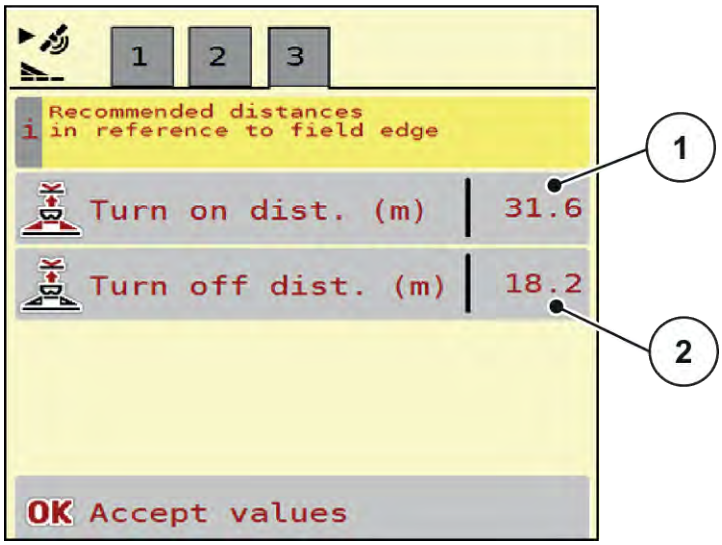


Fig. 11: Calculate OptiPoint, page 3

Number	Meaning	Description
[1]	Turn on dist - Turn on dist. (m) Distance from the field border (in meters) at which the metering sliders open.	*Fig. 33 Distance on (measured from field border)*
[2]	Turn off dist - Turn off dist. (m) Distance from the field border (in meters) at which the metering sliders close.	*Fig. 34 Distance off (measured from field border)*

This page allows the parameter values to be input manually. See *5.10 GPS control*.

Changing the values

- ▶ Open the desired list entry.
- ▶ Enter the new values.
- ▶ Press OK.
- ▶ Press the Accept values - Accept values button.

The OptiPoint is calculated.

The machine control unit switches to the GPS-Control info window.

4.4.10 GPS Control info

The GPS-Control info menu provides information about the setting values that were entered in the Calculate OptiPoint menu.

Depending on the terminal used, the display will show 2 distances (CCI, Müller Elektronik) or 1 distance and 2 time values (John Deere, etc.).

- With most ISOBUS terminals, the values displayed here are applied automatically to the corresponding settings menu of the GPS terminal.
- With some terminals, however, a manual entry is required.

This menu is for information purposes only.

- Refer to the operator's manual of the GPS terminal.

- ▶ Call up the Fertiliser settings > GPS-Control info menu.

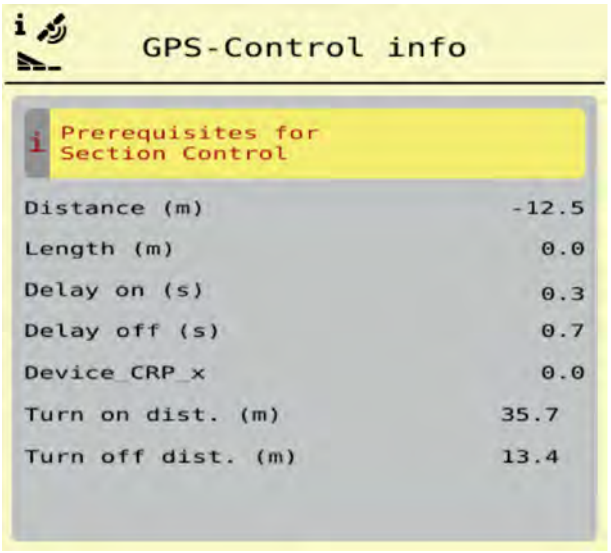


Fig. 12: GPS Control info - GPS-Control info menu

4.4.11 Fertilizer charts

The fertilizer charts are created and managed in this menu.

Selecting a fertilizer chart affects the machine, fertilizer settings and the machine control unit. The set application rate is overwritten by the stored value from the fertilizer chart.

■ ***Creating a new fertilizer chart***

Up to 30 fertilizer charts can be created in the electronic machine control unit.

[1] Indicates a fertilizer chart filled with values
[2] Indicates an active fertilizer chart
[3] Fertilizer chart name field
[4] Empty fertilizer chart
[5] Chart number

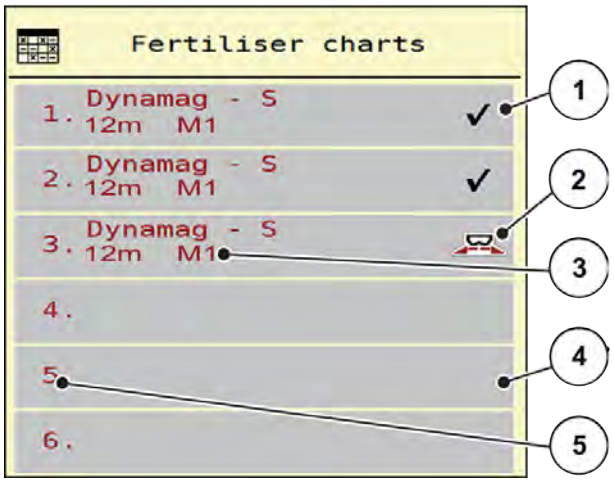


Fig. 13: Fertiliser charts - Fertiliser charts menu

▶ Call up the Fertiliser settings > Fertiliser charts menu.

▶ Select an empty fertilizer chart.

The name field consists of the fertilizer name, the working width and the spreading disc type.

The display shows the selection window.

▶ Press the option Open and back to fertiliser settings.

The Fertiliser settings menu is displayed and the selected element is loaded into the fertilizer settings as the active fertilizer chart.

▶ Call up the Fertiliser name menu item.

▶ Enter a name for the fertilizer chart.

We recommend naming the fertilizer chart after the fertilizer. This allows the fertilizer chart for a fertilizer to be more easily recognized and accessed.

▶ Edit the parameters of the fertilizer chart. See *4.4 Fertilizer settings*.

■ ***Selecting a fertilizer chart***

▶ Access the menu Fertiliser settings > Open and back to fertiliser settings.

▶ Select the desired fertilizer chart.

The display shows the selection window.

▶ Select the option Open and back to spreading mat. settings.

The Fertiliser settings menu is displayed and the selected element is loaded into the fertilizer settings as the active fertilizer chart.

When selecting an existing fertilizer chart, all values in the Fertiliser settings menu will be over-written with the stored values obtained from the selected fertilizer chart, including the drop point and the normal disc speed.

- The machine control unit will move the drop point to the value stored in the fertilizer chart.

■ ***Copying an existing fertilizer chart***

▶ Select the desired fertilizer chart.

The display shows the selection window.

▶ Select the option Copy element.

A copy of the fertilizer chart is now in the first free position on the list.

■ ***Deleting an existing fertilizer chart***

▶ Select the desired fertilizer chart.

The display shows the selection window.

The active fertilizer chart cannot be deleted.

▶ Select the option Delete element.

The fertilizer chart is deleted from the list.

■ ***Managing the selected fertilizer chart via the working screen***

The fertilizer charts can be managed directly on the working screen

▶ Press the fertilizer chart button [2] on the touch screen.

The active fertilizer chart is displayed.

▶ Enter the new value in the input field.

▶ Press OK.

The new value is saved in the machine control unit.

[1] Button Application rate
[2] Button Fertiliser chart

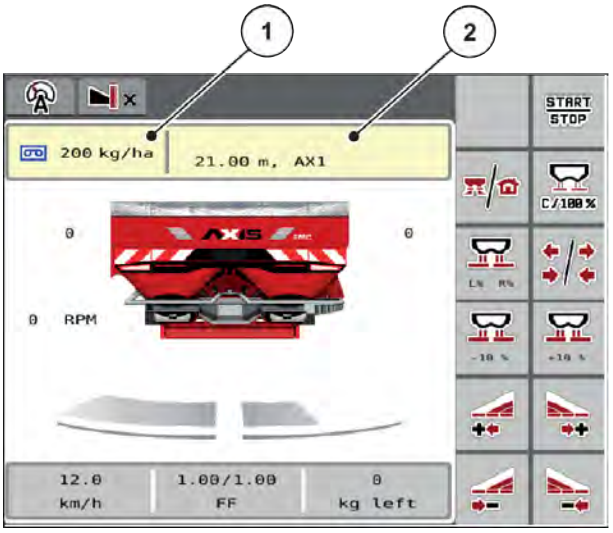


Fig. 14: Managing the fertilizer chart via the touch screen

4.5 Machine settings

The settings for the tractor and the machine can be specified in this menu.

▶ Call up the menu Machine settings.

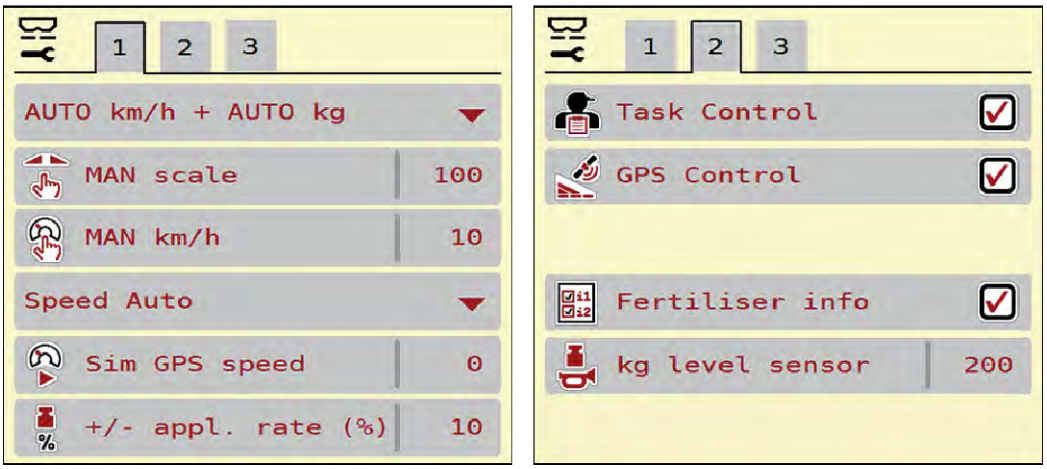


Fig. 15: Machine settings menu, tab 1 and 2

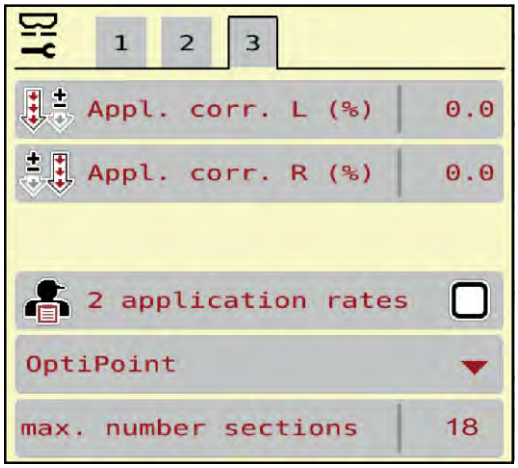


Fig. 16: Machine settings menu, tab 3

Sub-menu	Meaning	Description
AUTO/MAN mode AUTO/MAN mode	Specifying automatic or manual operating mode	*4.5.1 AUTO/MAN mode*
MAN scale MAN scale	Setting the manual scale value. (only influences the respective operating mode)	To be entered in a separate input window.
MAN km/h MAN km/h	Setting the manual speed. (only influences the respective operating mode)	To be entered in a separate input window.
Speed/signal source	Selection/limitation of the speed signal • Speed AUTO (automated selection of either transmission or radar/GPS [1]) • GPS J1939 [1] • NMEA 2000	
Sim GPS speed Sim GPS speed	For GPS J1939 only: Indication of forward speed in the event of loss of the GPS signal	**NOTE!** The entered forward speed is to be maintained constantly at all times.
+/- appl. rate (%) +/- appl. rate (%)	Pre-setting the application rate change for the different spreading types	To be entered in a separate input window

[1]) The manufacturer does not assume any liability in the event of a loss of the GPS signal.

Sub-menu	Meaning	Description
Task Control Task Control	Activation of the ISOBUS Task Controller functions for documentation and for application map spreading • Task Control on (checked) • Task Control off	
GPS-Control GPS-Control	Activation of the function to control the machine sections via GPS control unit • Task Control on (checked) • Task Control off	
Fertiliser info Fertiliser info	Activation of the fertilizer information (fertilizer name, type of spreading disc, working width) in the working screen	
kg level sensor kg level sensor	Input of the remaining quantity to trigger an alarm message via the weigh cells	
Application rate correction • Appl. corr L - Appl. corr. L (%) • Appl. corr R - Appl. corr. R (%)	Correction of the deviations between the entered application rate and the actual application rate • Correction in percent on the right and/or left side	
2 application rates 2 application rates	Only when working with application maps: Activation of two separate application rates for the right and left side, respectively	
OptiPoint version	Select the OptiPoint calculation to be used	
max. number sections max. number sections	Enter the number of sections across the whole width of the boom	**16** is the factory default setting

4.5.1 AUTO/MAN mode

The machine control unit automatically adjusts the metering quantity according to the speed signal. This adjustment is influenced by the application rate, working width, and flow factor.

It is normal to work with the machine in **automatic** mode.

Only in the following cases should the machine work in **manual** mode:
- If there is no speed signal (radar or wheel sensor not available or defective)
- Application of slug pellets or seeds (fine seeds)

For uniform spreading of the spreading material, a **constant forward speed** must be maintained in manual operating mode.

Spreading in different operating modes is described in *Chapter 5 - Spreading operation - Page 57*.

Menu	Meaning	Description
AUTO km/h + AUTO kg	Selecting automatic mode with automatic weighing	Page *62*
AUTO km/h + static kg	Selecting automatic mode with static weighing Only for AXIS 25 W	Page *63*
AUTO km/h	Selecting automatic mode	Page *66*
MAN km/h	Adjustment of forward speed for manual mode	Page *67*
MAN scale	Metering slide adjustment for manual mode This operating mode is suitable for spreading slug pellets or fine seeds.	Page *68*

Selecting the operating mode

▶ Start the machine control unit.

▶ Call up the Machine settings > AUTO/MAN mode menu.

▶ Select the desired menu item from the list.

▶ Press OK.

▶ Follow the instructions on the screen.

We recommend that the flow factor is displayed on the working screen. This allows monitoring of the mass flow control whilst spreading. See *2.3.2 Display fields*.

Important information on the use of operating modes for spreading operations is provided in chapter *5 Spreading operation*.

4.5.2 +/- quantity

This menu allows setting of the percentage increment of the **application rate change** for normal spreading.

The preset value of the metering slide opening serves as the basis (100 %).

Function keys during operation:

- \+ Quantity/- Quantity: The spreading quantity can be changed at any time by means of the +/- Quantity factor.
- C 100 % key back to the default values.

Specifying the application rate reduction:

▶ Call up the Machine settings > +/- appl. rate (%) menu.

▶ Enter the percentage by which the application rate is to be changed.

▶ Press OK.

4.6 Fast emptying

In order to quickly clean the machine after spreading or to quickly empty any residual material, select the Fast emptying menu.

For this purpose, before placing the machine in storage, we recommend **completely opening** the metering slides with the fast emptying function and switching off the control unit in this state. This prevents the build-up of moisture in the hopper.

Before starting the fast emptying process, make sure that all the requirements have been met. To do this, refer to the operator's manual for the mineral fertilizer spreader (discharging residual material).

Carrying out the fast emptying process:

- ▶ Call up the Main menu > Fast emptying menu.
- ▶ Press the **function key** to select the section for which the fast emptying function is to be performed.

  The selected section is displayed as an icon (Fig. 17 position [3]).
- ▶ Press **Start/Stop**.

  The fast emptying process starts.
- ▶ Press **Start/Stop** when the hopper is empty.

  Fast emptying is complete.
- ▶ ESC to return to the Main menu.

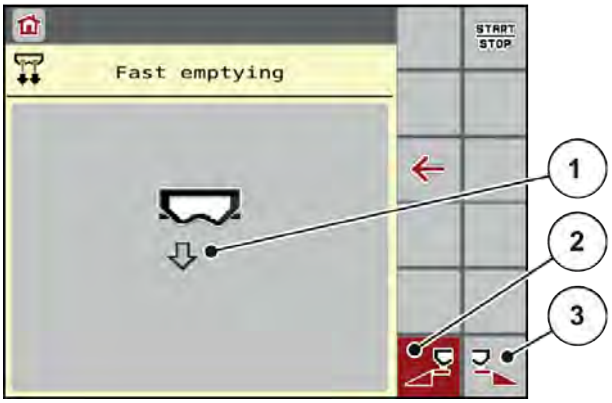


Fig. 17: Fast emplying - Fast emptying menu

[1] Symbol for fast emptying (here: left side selected, not started)

[2] Fast emptying of the left section (selected)

[3] Fast emptying of the right section (not selected)

4.7 System/Test

SYS / TEST

In this menu, the system and test settings for the machine control unit can be configured.

- ▶ Call up the Main menu > System / Test menu.

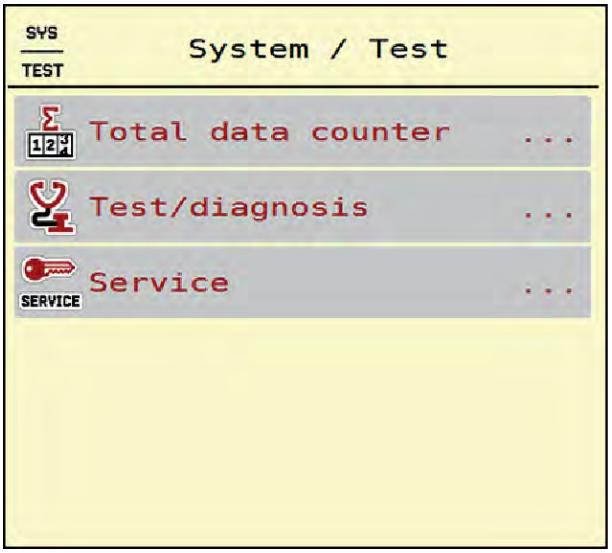


Fig. 18: System / Test - System / Test menu

Sub-menu	Meaning	Description
Total data counter Total data counter	Display list • spread quantity in kg • spread area in ha • spread time in h • distance traveled in km	*4.7.1 Total data counter*
Test/diagnosis Test/diagnosis	Checking of actuators and sensors	*4.7.2 Test/diagnosis*
Service Service	Service settings	Password-protected; only accessible for service personnel

4.7.1 Total data counter

In this menu, all of the spreader's counter readings are displayed.

This menu is for information purposes only.

- kg calculated - kg calculated: spread quantity in kg
- ha - ha: spread area in ha
- hours - hours: spread time in h
- km - km: distance traveled in km

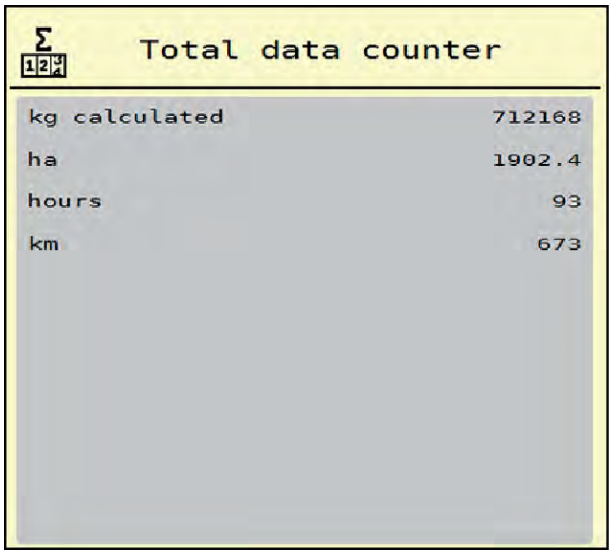


Fig. 19: Total data counter - Total data counter menu

4.7.2 Test/diagnosis

The Test/diagnosis menu allows the functions of all actuators and sensors to be checked.

This menu is for information purposes only.

The list of sensors depends on the equipment of the machine.

⚠CAUTION!

Risk of injury due to moving machine parts

During the tests, machine parts may move automatically.

▶ Before carrying out the tests, ensure that nobody is present in the danger zone of the machine.

Sub-menu	Meaning	Description
Voltage	Checking the operating voltage	
Metering slider	Moving the left and right metering slides	*Example of metering slides*
Test points slider	Test for approaching the various position points of the metering slides	Calibration check
Spreading disc	Manual activation of the spreading disc	
Agitator	Checking the agitator	
EMC sensors	Checking the EMC sensors	
Weigh cell	Checking the sensors	
Level sensor	Checking the level sensors	
Hopper cover	Checking the actuators	

■ ***Example of metering slides***

▶ Call up the Test/diagnosis > Metering slider menu.

The status of the motors/sensors is displayed.

The Signal display shows the status of the electrical signals for the left and right side separately.

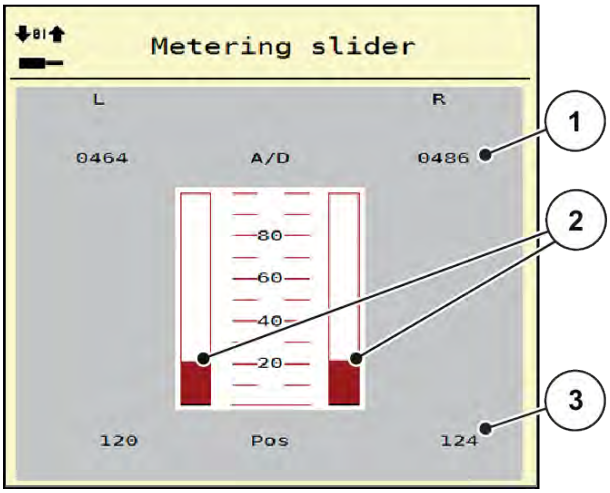


Fig. 20: Test/diagnosis; Example: Metering slider - Metering slider

[1] Signal display
[2] Signal bar graph
[3] Position display

⚠CAUTION!

Risk of injury due to moving machine parts

During the tests, machine parts may move automatically.

▶ Before carrying out the tests, ensure that nobody is present in the danger zone of the machine.

The up/down arrows can be used to open and close the metering slides.

4.7.3 Service

An input code is required to configure the settings in the Service menu. These settings can only be modified by authorized service personnel.

4.8 Info

The Info menu provides information on the machine control unit.

This menu provides information on the configuration of the machine.

The information list depends on the equipment of the machine.

4.9 Weighing/Trip counter

This menu provides values regarding spreading work performed and functions for the weighing operation.

▶ Call up the Main menu > Weighing/Trip count. menu.

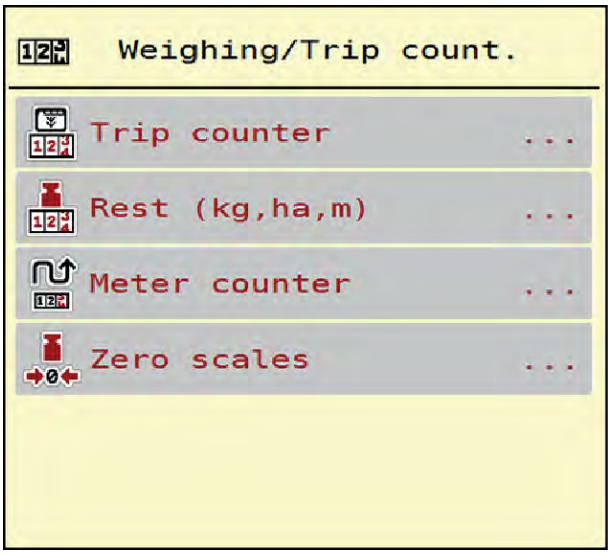


Fig. 21: Weighing/Trip count - Weighing/Trip count. menu

Sub-menu	Meaning	Description
Trip counter Trip counter	Display of the fertilizer quantity spread, area spread, and spread distance	*4.9.1 Trip counter*
Rest (kg, ha, m) Rest (kg, ha, m)	For weighing spreaders only: Display of the quantity remaining in the machine hopper	*4.9.2 Rest (kg, ha, m)*
Meter counter Meter counter	Display of the distance traveled since the last reset of the meter counter	Reset (zeroing) by pressing the **C 100%** key
Zero scales Zero scales	For weighing spreaders only: Weighing value for empty scales is set to “0 kg”	*4.9.3 Zero scales*

4.9.1 Trip counter

In this menu, the values of the spreading work performed can be interrogated, the remaining spreading quantity can be monitored and the trip counter can be reset by deleting the value.

▶ Call up the Weighing/ Trip count > Trip counter menu.

The Trip counter menu appears.

During spreading, i.e. with the metering slides open, the display can be switched to the Trip counter menu, where the current values can be viewed.

For continuous monitoring of the values during spreading, the values kg trip, ha trip or m trip can be assigned to the freely selectable display fields in the working screen, see *2.3.2 Display fields*.

Clear down the trip counter

- ▶ Access the sub-menu Weighing/Trip count. > Trip counter.

  The values for spread quantity, area, and distance calculated since the last deletion are displayed.

- ▶ Press the Delete trip counter - Delete trip counter button.

All values of the trip counter are reset to 0.

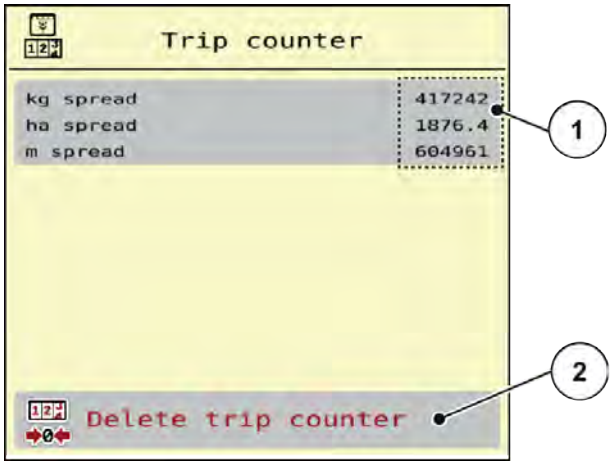


Fig. 22: Trip counter - Trip counter menu

[1] Spread quantity, area and distance display fields

[2] Delete trip counter - Delete trip counter

4.9.2 Rest (kg, ha, m)

The Rest (kg, ha, m) menu can be interrogated to check the quantity remaining in the hopper. The menu indicates the possible area (ha) and distance (m) which can still be spread with the remaining fertilizer quantity.

The current fill weight **in the weighing spreader can only be determined by weighing**. In all other spreaders, the remaining fertilizer quantity is calculated from the fertilizer and machine settings as well as from the drive signal, and the filling quantity must be entered manually (see below). The Application rate and Working width values cannot be changed in this menu. They are for information purposes only.

▶ Call up the Weighing/Trip count. > Rest (kg, ha, m) menu.

The Rest (kg, ha, m) menu appears.

[1] kg rest - kg left input field
[2] Appl. rate (kg/ha) - Application rate, Working width (m) - Working width display fields, and the available spread area and distance

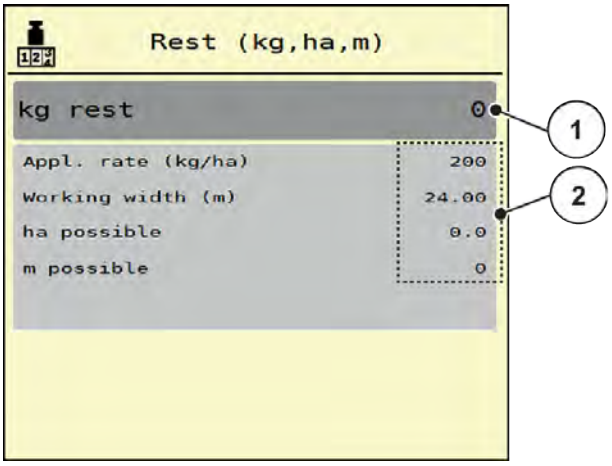


Fig. 23: Rest (kg, ha, m) - Rest (kg, ha, m) menu

For machines without weigh cells

▶ Fill the hopper.

▶ In the Rest (kg) area, enter the total weight of the fertilizer left in the hopper.

The unit calculates the values for the possible spread area and distance.

4.9.3 Zero scales

■ ***For weighing spreaders only***

In this menu, set the weighing value for the empty hopper to 0 kg.

For taring the scales, the following requirements have to be fulfilled:
- the hopper is empty,
- the machine is at a standstill,
- the PTO is switched off,
- the machine is in a horizontal position and off the ground,
- The tractor is at a standstill.

Zero scales:

▶ Call up the Weighing/Trip count. > Zero scales menu.

▶ Press the Zero scales button.

The weighing value for the empty scales is now set to 0 kg.

Tare the scales before each use in order to ensure problem-free calculation of the remaining quantity.

4.10 Special functions

4.10.1 Changing the system of units

This chapter is limited to the description of the functionality of the electronic machine controller; it does not specify any particular ISOBUS terminal.

- The instructions for the operation of the ISOBUS terminal can be found in the relevant operator's manual.

The system of units has been preset at the factory. However, the system can be changed from metric to imperial units at any time.

- ▶ Open the Settings menu for the terminal system.
- ▶ Call up the menu Unit.
- ▶ Select the desired unit system from the list.
- ▶ Press OK.

All values of the various menus are converted.

Menu/value	Conversion of metric to imperial units
kg left	1 x 2.2046 lb.-mass (lbs left)
ha left	1 x 2.4710 ac (ac left)
Working width (m)	1 x 3.2808 ft
Rate (kg/ha)	1 x 0.8922 lbs/ac
Mounting height cm	1 x 0.3937 in

Menu/value	Conversion of metric to imperial units
lbs left	1 x 0.4536 kg
ac left	1 x 0.4047 ha
Working width (ft)	1 x 0.3048 m
Appl. rate (lb/ac)	1 x 1.2208 kg/ha
Mounting height in	1 x 2.54 cm

4.10.2 Using the joystick

A joystick may also be used as an alternative to the settings in the working screen of the ISOBUS terminal.

If you wish to use a different joystick, please contact your dealer.

- Please refer to the instructions in the operator's manual of the ISOBUS terminal.

■ CCI A3 joystick

Fig. 24: CCI A3 Joystick, front and rear

[1] Light sensor
[2] Display/touch panel
[3] Plastic grid (replaceable)
[4] Shift key

■ CCI A3 Joysticks operating levels

The Level key allows switching between three operating levels. The plane that is active in each case is indicated by the position of an illuminated bar at the lower edge of the display.

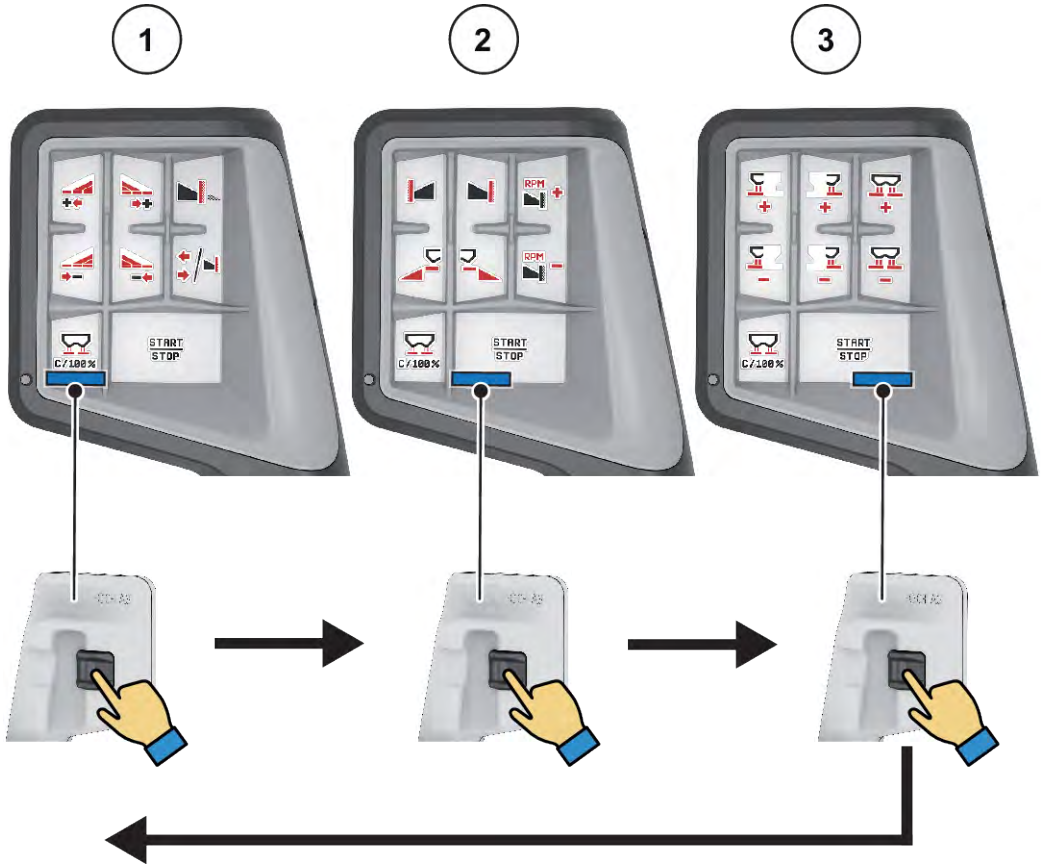


Fig. 25: CCI A3 joystick, operating level display

[1] Level 1 active
[2] Level 2 active
[3] Level 3 active

■ CCI A3 joystick button functions

The joystick offered is pre-programmed with specific functions at the factory.

For the meaning and function of the symbols see *2.4 Library of icons used*.

The assignment of the keys differs from one machine type to another.

[1] Button functions Level 1
[2] Button functions Level 2
[3] Button functions Level 3

To change the assignment of level functions to the three keys, see the instructions in the joystick operator's manual.

5 Spreading operation

The machine control unit helps you to enter the machine settings before starting work. During spreading, functions of the machine control unit are also active in the background. This allows you to monitor the quality of the fertilizer spreading.

5.1 Requesting the remaining quantity during spreading

■ ***For weighing spreaders only***

During spreading, the remaining quantity is continuously recalculated and displayed.

During spreading, i.e. with the metering slides open, switch to the Trip counter menu, where the current value for the quantity remaining in the hopper can be viewed.

For continuous monitoring of the values during spreading, assign the values kg left, ha left or m left to the freely selectable display fields in the working screen, see *2.3.2 Display fields*.

Working with the weighed remaining quantity, refilling the hopper:

- ▶ Tare the scales.
  See *4.9.3 Zero scales*.
- ▶ Select the fertilizer type used.
  See *4.4.11 Fertilizer charts*.
- ▶ Fill the hopper.
- ▶ Weigh the fertilizer quantity in the hopper.
- ▶ Start work.

When the hopper is empty, fill it up again:

- ▶ Fill the hopper.
- ▶ Weigh the fertilizer quantity in the hopper.
- ▶ Start work.

5.2 Border spreading unit TELIMAT X

[1] TELIMAT icon

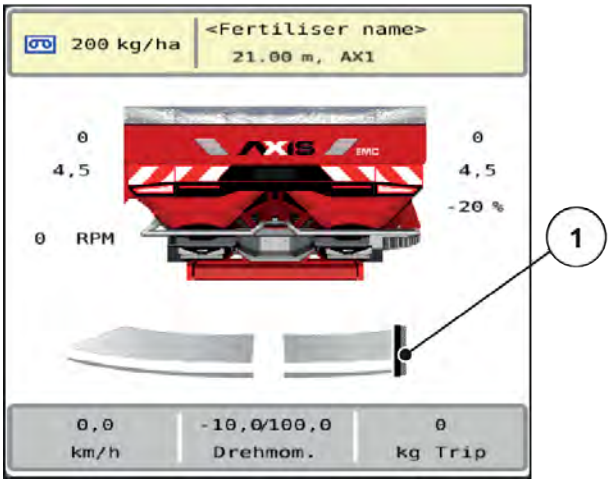


Fig. 26: TELIMAT X display

Pressing the **TELIMAT** function key moves the TELIMAT X unit to the border spreading position. During the adjustment, an **? icon** appears on the display and then disappears once the working position is reached. The TELIMAT X system is tested using two sensors at the limit positions. These are activated at the terminal.

If the TELIMAT X unit is blocked, alarm 23 will appear; see *6.1 Meaning of the alarm messages*.

5.3 Working with sections

5.3.1 Displaying the spreading type in the operating screen

The machine control unit offers 2 different types of spreading for the spreading operation. These settings can be configured directly in the working screen. During the spreading operation, the machine can be switched between the types of spreading in order to optimally adapt to the field requirements.

Button	Spreading type
	Activate section on both sides
	Section on the left side Optionally the border spread function can be displayed on the right side

▶ Press the function key several times until the desired spreading type is displayed.

5.3.2 Spreading with reduced sections: VariSpread V18

You can spread fertilizer to sections on one or both sides, to adapt the full spreading width to the field requirements. Every spreading side can be set continuously in the automatic mode and to a maximum of 4 steps in the manual mode.

▶ Press the border spreading/sections toggle key.

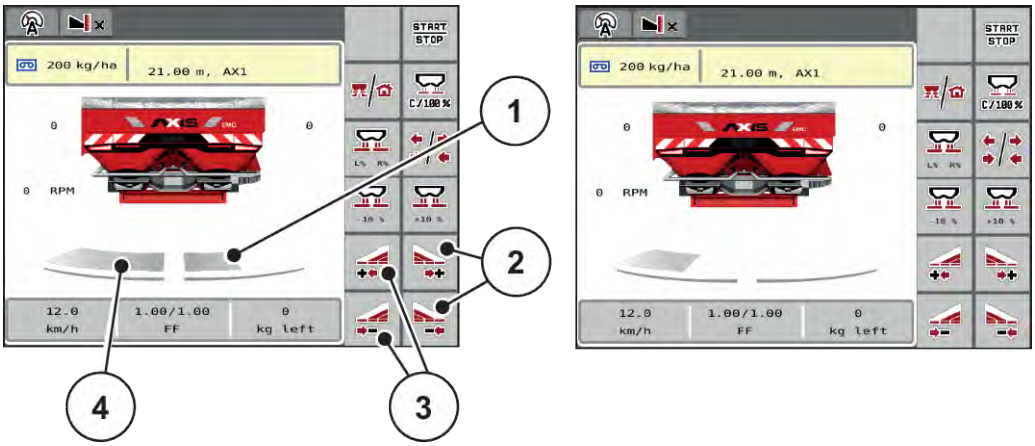


Fig. 27: Working screen: Sections with 4 levels

[1] The right section is reduced to 2 steps.
[2] Function keys for increasing or reducing the spreading width on the right
[3] Function keys for increasing or reducing spreading width on the left
[4] The left spreading side spreads across the entire half.

Each section can be reduced or increased in steps.

- Press the reduce left spreading width or the reduce right spreading width function key. The section of the spreading side will be reduced by one step.
- Press the increase left spreading width function key or the increase right spreading width function key. The section of the spreading side will be increased by one step.

The sections are **not** graded proportionally. The VariSpread spreading width wizard sets the spreading widths automatically.

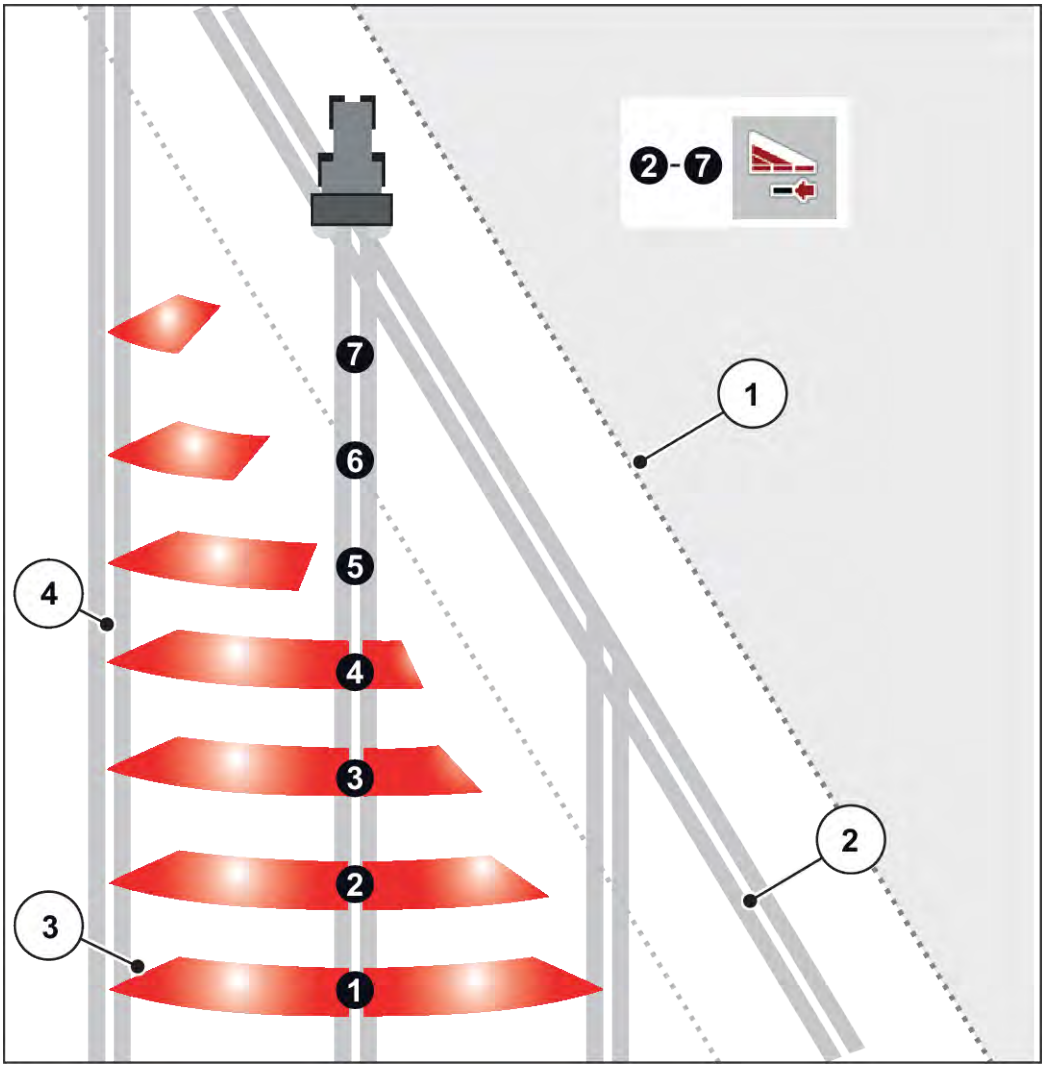


Fig. 28: Automatic section control

[1] Field edge
[2] Headlands tramline
[3] Sections 1 to 4: Section reduction on the right hand side
Sections 5 to 7: further section reductions
[4] Tramline in the field

5.3.3 Spreading operation with one section and in boundary spreading mode

■ ***VariSpread V18***

During the spreading operation the sections can be modified step by step. Border spreading can also be deactivated.

The figure below shows the working screen with border spreading activated and a section activated.

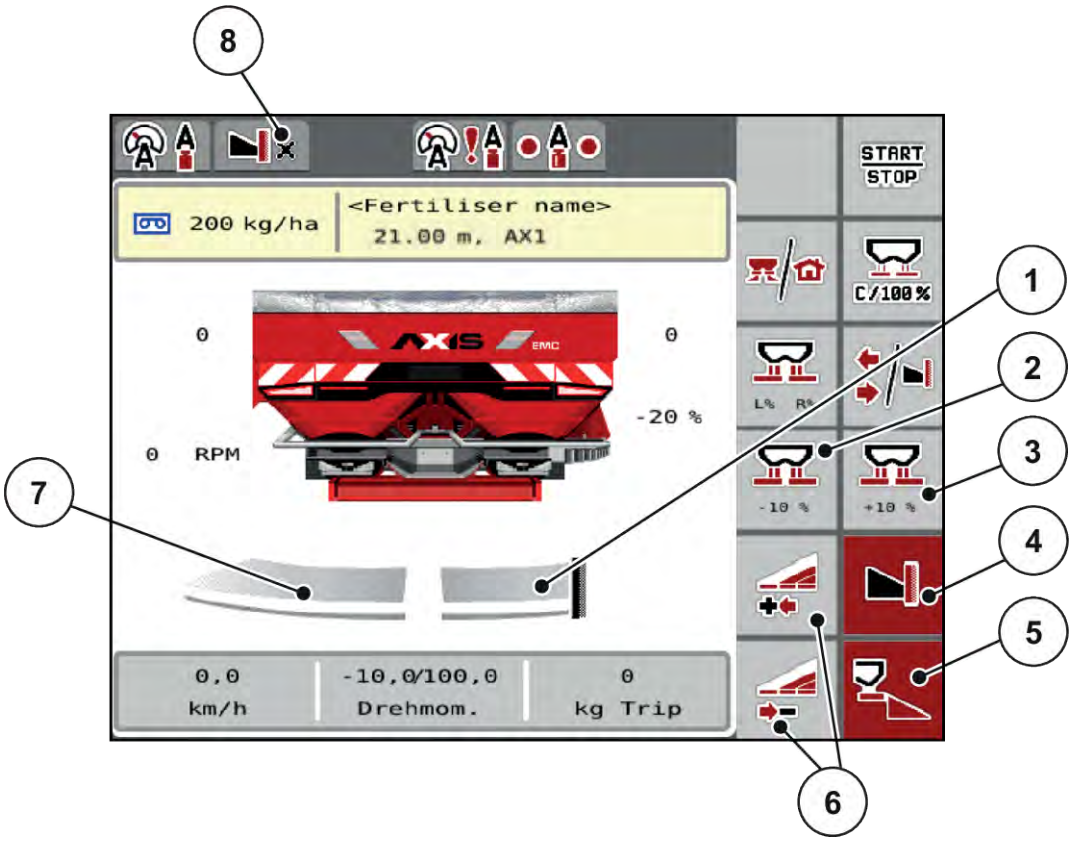


Fig. 29: Working screen with one section on the left, border spreading side on the right

[1] Spreading side on the right in the border spreading mode
[2] Reducing the application rate
[3] Increasing the application rate
[4] Border spreading mode is activated
[5] Right spreading side is activated
[6] Reduce or increase left section
[7] Left section adjustable in 4 steps
[8] The current border spreading mode is the boundary.

- The application rate on the left is set to the full working width.
- The **Right border spreading** function key has been pressed: Border spreading is activated and the application rate is reduced by 20 %.

Function keys:

- Press the **Reduce left spreading width** function key in order to steplessly reduce the section.
- **C/100 %**: reverts to the full working width.
- Right border spreading: border spreading is deactivated.

The border spreading function is also available in automatic mode with GPS Control. The border spreading side must be manually operated at all times. See *5.10 GPS control*.

5.4 Spreading with the automatic operating mode (AUTO km/h + AUTO kg)

The AUTO km/h + AUTO kg operating mode allows for continuous regulation of the application rate during the spreading operation. The mass flow control is corrected at regular intervals on the basis of this information. This way, fertilizer metering can be optimized.

The AUTO km/h + AUTO kg operating mode is preselected as the standard factory default.

Requirements for spreading:

- The AUTO km/h + AUTO kg operating mode is active (see *4.5.1 AUTO/MAN mode*).
- The fertilizer settings are defined:
  - Application rate (kg/ha)
  - Working width (m)
  - Spreading disc
  - Normal disc speed (rpm)

▶ Fill the hopper with fertilizer.

⚠ WARNING!

Risk of injury caused by ejected fertilizer

Ejected fertilizer may cause severe injury.

▶ Make sure nobody is present in the spreading zone of the machine before switching on the spreading discs.

Start or stop the transmission **at low PTO speeds only**.

▶ The spreading disc starts when the tractor PTO is started.

The spreading starts.

We recommend displaying the flow factor in the working screen (refer to *2.3.2 Display fields*), in order to monitor the mass flow control while spreading.

In the event of problems with flow factor control (clogging, ...), after troubleshooting at a standstill, switch to the Fertilizer settings menu and enter the flow factor 1.0.

Resetting the flow factor

If the flow factor has fallen below the minimum value (0.4 and/or 0.2), alarm no. 47 and/or 48 will appear: see *6.1 Meaning of the alarm messages*.

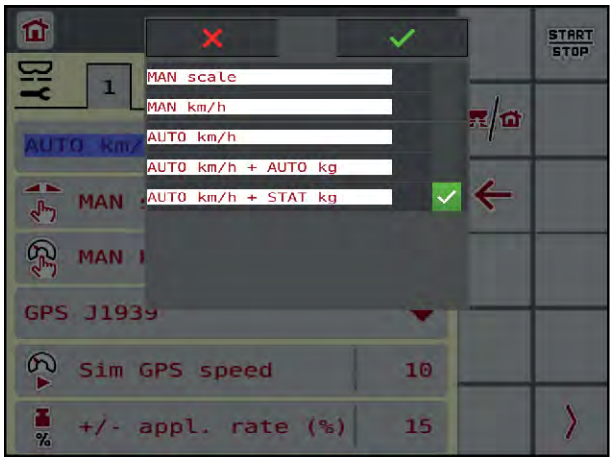
5.5 Spreading with the AUTO km/h + static kg working mode

■ ***Operating mode AUTO km/h + static kg***

In this operating mode the **flow factor revolutions/kg** is determined by means of the weigh cells.

For use only with mass flows < 30 kg/min or on hilly or very uneven ground.

- ▶ Switch on the machine control unit.
- ▶ Call up the Machine settings > AUTO/MAN mode - AUTO/MAN mode menu.
- ▶ Select the operating mode AUTO km/h + static kg
- ▶ Acknowledge with the green check.

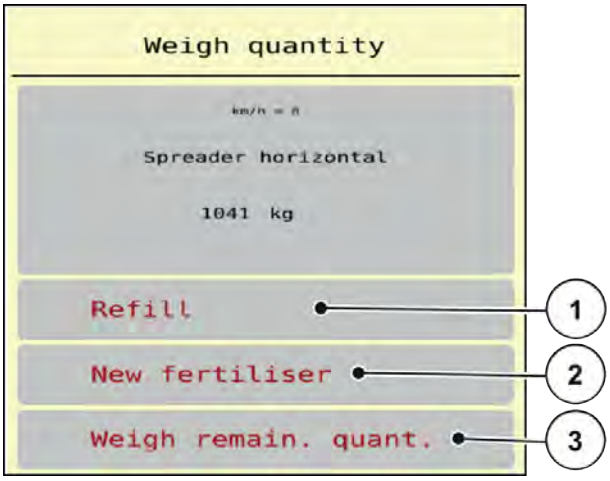


- ▶ Fill the hopper with fertilizer.
  - ▷ Filling weight > 200 kg
  - ▷ The Weigh quantity - Weigh quantity window is displayed.

The machine control unit switches to the working screen.

- ▶ When first filling with a new type of fertilizer, select New fertiliser.
  - ▷ The spreader must be standing horizontally.

  Selecting New fertiliser resets the flow factor to 1.0 FF.

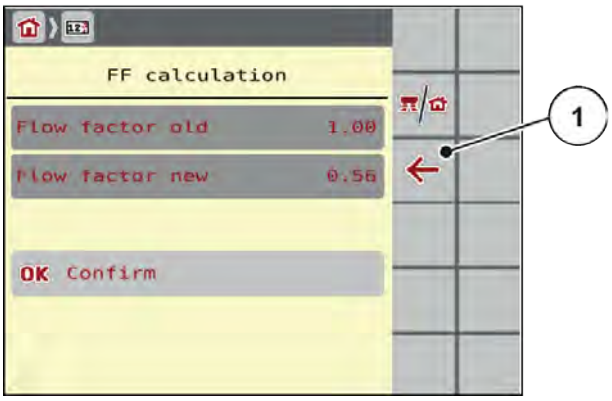


[1] Refill - Refill
[2] New fertiliser - New fertiliser
[3] Weigh remain. quant. - Weigh remain. quant.

Recalculating the flow factor

- ▶ After spreading a quantity > 150 kg
- ▶ Select Weigh remain. quant. - Weigh remain. quant.
- ▶ Select Flow factor new - FF calculation.

The machine control unit switches to the working screen.



5.6 Idle measurement

5.6.1 Automatic idle measurement

In order to achieve a high control accuracy, the EMC control must regularly measure and store the idling pressure.

The idle measurement for the determination of the idling pressure will start when the system is restarted.

It will also automatically start the idle measurement under the following conditions:
- The defined period since the last idle measurement has expired.
- Changes have been made in the Fertilizer settings menu (RPM, type of spreading disc).

During the idle measurement, the following window appears.

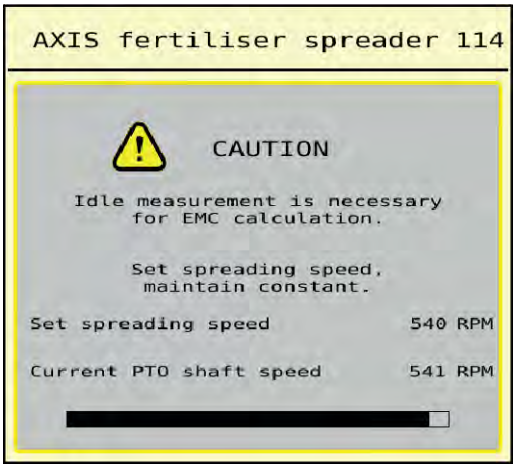


Fig. 30: Alarm display of idle measurement

When starting the spreading disk for the first time, the machine control adjusts the idling torque of the system. See *6.1 Meaning of the alarm messages*.

If the alarm message is displayed repeatedly even though the transmission oil is warm:

- Compare the installed spreading disc with the type entered in the Fertiliser settings menu. If necessary, modify the type to suit.
- Check the spreading disc for tight seat. Re-tighten the wheel nut
- Check the spreading disc for damage. Replace the spreading disc.

Once the idle measurement has been completed, the machine control unit will set the idling time to 19:59 minutes in the display of the working screen.

▶ Press **Start/Stop**.

The spreading starts.

The idle measurement runs in the background, even if the metering slides are closed. However, no screen is shown on the display.

Once this idling time has expired, a further idle measurement is started automatically.

[1] Time until the next idle measurement

Fig. 31: Display of the idle measurement in the working screen

If the spreading disc speed is reduced, no idle measurement can be executed if border spreading or section reduction are activated!

When the metering slides are closed, an idle measurement is always performed in the background (without alarm message)!

Do not reduce the engine speed during the idle measurement in the headlands!

The tractor and hydraulics circuit must have reached their operating temperature!

5.6.2 Manual idle measurement

In the case of unusual changes in the flow factor, start the idle measurement manually.

▶ In the Main menu, press the idle measurement key.

The idle measurement is started manually.

5.7 Spreading with the AUTO km/h operating mode

Machines not fitted with weighing technology operate in this mode by default.

In this operating mode the application rate can be reduced to as low as 1 kg/ha.

Requirements for spreading:

- The AUTO km/h operating mode is active (see *4.5.1 AUTO/MAN mode*).
- The fertilizer settings are defined:
  - Application rate (kg/ha),
  - Working width (m)
  - Spreading disc
  - Normal disc speed (RPM)

▶ Fill the hopper with fertilizer.

In order to achieve an optimum spreading result in the AUTO km/h operating mode, calibration should be performed before starting spreading.

▶ Carry out a calibration to determine the flow factor or obtain the flow factor from the fertilizer chart and enter the flow factor manually.

⚠WARNING!

Risk of injury caused by ejected fertilizer

Ejected fertilizer may cause severe injury.

▶ Make sure nobody is present in the spreading zone of the machine before switching on the spreading discs.

▶ The spreading disc starts when the tractor PTO is started.

The spreading starts.

5.8 Spreading with the MAN km/h operating mode

If no speed signal is present, the machine operates in MAN km/h mode.

▶ Call up the Machine settings > AUTO/MAN mode menu.

▶ Select the MAN km/h menu item.

The display shows the input window Forward speed.

▶ Enter the value for the forward speed during spreading.

▶ Press OK.

▶ Configure the fertilizer settings:

- ▷ Application rate (kg/ha)
- ▷ Working width (m)

▶ Fill the hopper with fertilizer.

In order to achieve an optimum spreading result in the MAN km/h operating mode, a calibration must be performed before starting the spreading.

▶ Carry out a calibration to determine the flow factor or obtain the flow factor from the fertilizer chart and enter the flow factor manually.

▶ The spreading disc starts when the tractor PTO is started.

The spreading starts.

Comply with the set forward speed at all times during spreading.

5.9 Spreading in the MAN scale operating mode

In MAN scale operating mode, the opening of the metering slide can be adjusted manually during the spreading operation.

Work in manual operating mode:
- If there is no speed signal (radar or wheel sensor not available or defective)
- when spreading slug pellets or fine seeds

The MAN scale operating mode is appropriate for slug pellets and fine seeds since the automatic mass flow control cannot be activated due to the low weight reduction.

In manual operating mode, a constant forward speed must be maintained to achieve uniform spreading of the spreading material.

▶ Call up the Machine settings > AUTO/MAN mode menu.

▶ Select the MAN scale menu item.

The Position of dosing slider opening window is displayed.

▶ Enter the scale value for the dosing slider opening.

▶ Press OK.

▶ Switch to the working screen.

▶ The spreading disc starts when the tractor PTO is started.

The spreading starts.

▶ To change the metering slide opening, press the MAN+ or MAN- function key.

▷ L% R% for selecting the side of the metering slide opening
▷ MAN+ to increase the metering slide opening or
▷ MAN- to reduce the metering slide opening.

In order to achieve an optimum spreading result in manual mode as well, we recommend using the metering slide opening and forward speed values provided in the fertilizer chart.

5.10 GPS control

The machine control unit can be combined with an ISOBUS terminal with SectionControl. Various data are exchanged between the two devices to achieve automated control.

The ISOBUS terminal with SectionControl communicates the specifications for the opening and closing of dosing sliders to the machine control unit.

The **A** symbol next to the spreading wedges indicates that the automatic function is enabled. The ISOBUS terminal with SectionControl opens and closes the individual sections depending on the respective position in the field. Spreading starts when the **Start/Stop** button is pressed.

⚠WARNING!

Risk of injury due to discharged fertilizer

The SectionControl function automatically starts the spreading operation without warning.

Ejected fertilizer can harm the eyes and nasal mucous membranes.

There is also a risk of slipping.

▶ Ensure that nobody is present in the hazard zone during the spreading operation.

During spreading, **one or several sections** can be closed at any time. If the sections are activated for automatic operation again, the state last requested is restored.

If the ISOBUS terminal with SectionControl is changed from automatic mode to manual mode, the machine control unit closes the metering slides.

For the use of the **GPS control** functions of the machine control unit, the GPS-Control setting in the Machine settings menu must be activated!

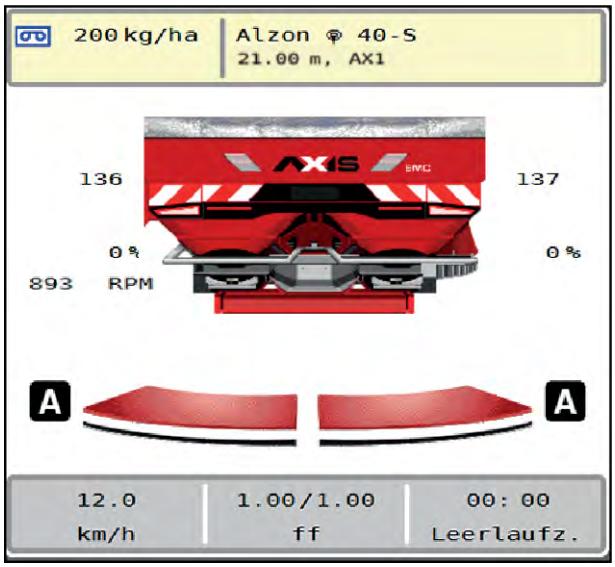


Fig. 32: Spreading operation display in the working screen with GPS Control

The **OptiPoint** function calculates the optimal turn on and turn off position for spreading in the headlands based on the settings in the machine control unit. See *4.4.9 Calculate OptiPoint*.

To ensure correct configuration of the OptiPoint function, enter the correct aerodynamic factor for the fertilizer being used. The aerodynamic factor can be obtained from the fertilizer chart for the machine.
See *4.4.9 Calculate OptiPoint*

■ ***Turn on distance (m)***

The Turn on dist. (m) parameter refers to the switch-on distance [A] measured from the field border [C]. At this position in the field, the metering sliders open. This distance depends on the type of fertilizer and represents the ideal switch-on distance for optimized fertilizer distribution.

[A] Turn on distance
[C] Field border

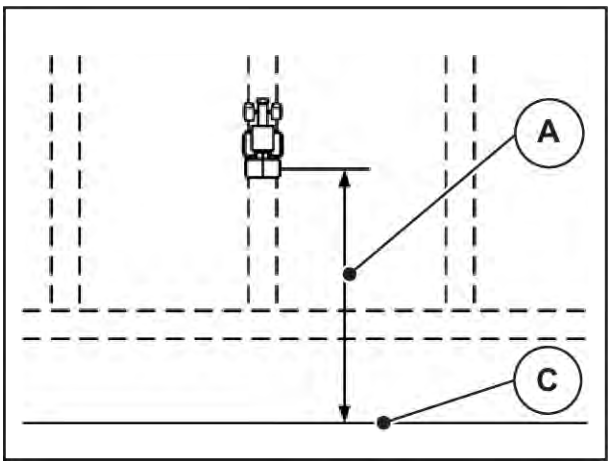


Fig. 33: Distance on (measured from field border)

To change the switch-on position within the field, modify the Turn on dist. (m) value to suit.

- A lower value for this distance means that the switch-on position is closer to the field border.
- A greater value means that the switch-on position is closer to the center of the field.

■ *Turn off distance (m)*

The Turn off dist. (m) parameter refers to the turn off distance [B] measured from the field border [C]. At this position in the field, the metering sliders start to close.

[B] Turn off distance
[C] Field border

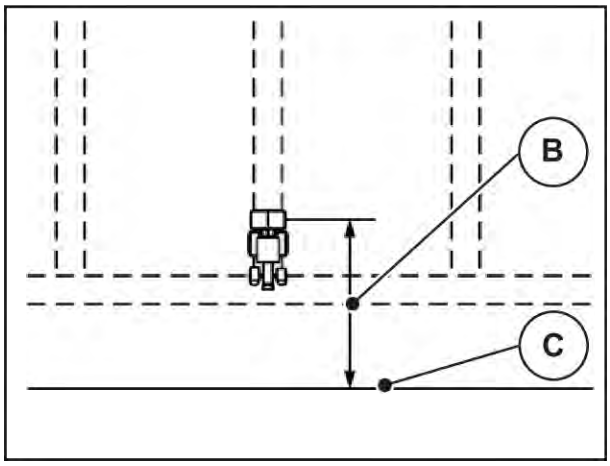


Fig. 34: Distance off (measured from field border)

To change the switch-off position within the field, modify the Turn off dist. (m) value to suit.

- A lower value means that the switch-off position is closer to the field border.
- A greater value means that the switch-off position is closer to the center of the field.

6 Alarm messages and possible causes

6.1 Meaning of the alarm messages

Various alarm messages can be displayed on the ISOBUS terminal display.

No.	Message in display	Meaning and possible cause
1	Fault in dosing system, stop !	The motor of the metering system cannot reach the specified target value: • Blockage • No position feedback
2	Max. outlet reached! Speed or application rate too high	Metering slide alarm • The maximum metering opening is reached. • The set application rate (+/- quantity) exceeds the maximum metering opening.
3	Flow factor is outside limits	The flow factor must lie within a range between 0.40 and 1.90. • The newly calculated or entered flow factor is outside this range
4	Hopper left empty!	The filling level sensor on the left reports “empty.” • The left hopper is empty.
5	Hopper right empty!	The filling level sensor on the right reports “empty.” • The right hopper is empty.
14	Error by setting TELIMAT	Alarm for the TELIMAT sensor This error message is displayed if the TELIMAT status is not detected for more than 5 seconds.
15	Memory full, Delete one private fertiliser chart	A maximum of 30 fertilizer types are stored in the memory for the fertilizer charts.
20	Error at LIN bus participant:	Communication problem • Defective cable • Loose plug connector

No.	Message in display	Meaning and possible cause
21	Spreader overloaded!	For weighing spreaders only: The fertilizer spreader is overloaded. • Too much fertilizer in the hopper
22	Unknown condition Function-Stop	Communication problem with terminal • Possible software error
27	Discs started up without activation	Defective or manually switched hydraulics valve
30	The discs shall be activated before opening the metering sliders.	Correct software operation • Start spreading discs • Open metering slides
31	Idle measurement is necessary for EMC calculation.	Alarm message before the idle measurement
32	Externally controlled parts can be moved.Risk of injury through squeezing and shearing! - Direct ALL persons out of the danger zone - Read the instruction manual Confirm with ENTER	If the machine control unit is activated, components may move unexpectedly. • Follow the displayed instructions only if all risks have been eliminated.
33	Stop the discs and close the metering sliders	You may only switch to the System / Test menu area if the spreading operation has been deactivated. • Stop spreading discs. • Close the metering slide.
45	Error at M-EMC sensors. EMC control deactivated!	The sensor has stopped sending signals. • Cable breakage • Defective sensor
46	Spreading speed error. Observe spreading speed of 450..650 rpm!	The PTO speed is outside the range for the M EMC function.
47	Left dosing error, hopper empty, outflow blocked!	• Hopper empty • Outlet blocked
48	Right dosing error, hopper empty, outflow blocked!	• Hopper empty • Outlet blocked
49	Idle meas. implausible. EMC control deactivated!	• Defective sensor • Defective transmission

No.	Message in display	Meaning and possible cause
50	Idle meas. impossible. EMC control deactivated!	PTO speed not permanently stable
51	Hopper empty!	The kg level sensor reports “empty.”
71	Impossible to reach disc speed	The spreading disc speed is not within the 5 % target range. • Problem with oil supply • Proportional valve spring is jammed.
88	Error at disc speed sensor	The spreading disc RPM could not be determined • Cable breakage • Defective sensor
89	Disc speed too high	Alarm of the spreading disc sensor • The maximum RPM is reached. • The set RPM exceeds the maximum admissible value.
93	This disc type requires a modification on the TELIMAT device. Please follow the mounting instructions!	Spreading disc S1 is installed and the machine is equipped with TELIMAT. Spreading errors possible during border spreading • This spreading disc type requires conversion of the TELIMAT device.

6.2 Fault/alarm

An alarm message is displayed with a red frame and with a warning symbol.

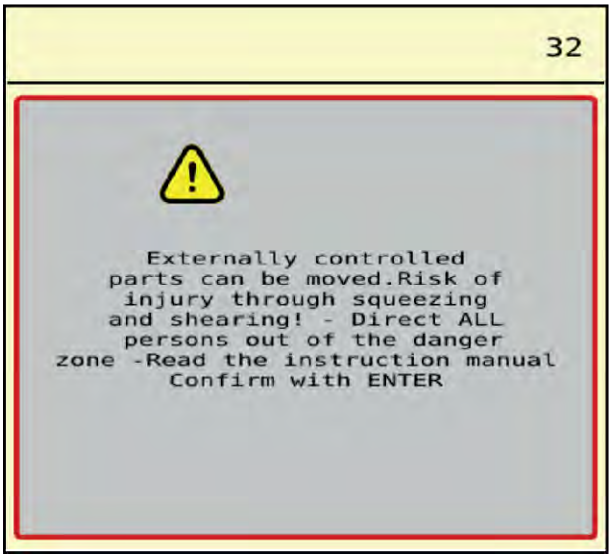


Fig. 35: Alarm message (example)

6.2.1 Acknowledging an alarm message

Acknowledging an alarm message:

- ▶ Rectify the cause of the alarm message.

  Refer to the operator's manual for your mineral fertilizer spreader.
  See also *6.1 Meaning of the alarm messages*.
- ▶ Acknowledge the alarm message by selecting the green check icon.
- ▶ Use various keys to acknowledge the other messages with a yellow frame:
  - ▷ Enter
  - ▷ Start/Stop
- ▶ Follow the instructions on the screen.

The acknowledgment of alarm messages may differ on different ISOBUS terminals.

7 Special equipment

Illustration	Designation
	Level sensor
	CCI A3 joystick

8 Guarantee and warranty

RAUCH devices are manufactured using modern production methods and with the greatest of professional care, and are subjected to numerous inspections.

This is why RAUCH is offering a 12 month warranty if the following conditions are met:

- The warranty starts on the date of purchase.
- The warranty covers material or manufacturing defects. We are liable for third-party products (hydraulics, electronics) only to the extent of the relevant manufacturer During the warranty period, manufacturing and material defects will be rectified free of charge with the replacement or repair of the affected parts. Other rights extending beyond the above, such as claims for conversion, reduction, or replacement for reasons of damage not suffered by the supplied product are explicitly excluded. Warranty services are provided by authorized workshops, by RAUCH factory representatives or the factory itself.
- Consequences of natural wear, dirt, corrosion, and all defects caused by improper use as well as external influences shall be excluded from the warranty. Any unauthorized repairs or changes to the original condition will void the warranty. The warranty is voided if any spare parts other than genuine RAUCH spare parts were used. Therefore, the directions in the operating manual must be observed. Please contact our company representatives of the parent company if you have any questions or doubts. Warranty claims must be submitted to the company within 30 days at the latest after the damage has occurred. The date of purchase and the machine number must be indicated. If repairs under the warranty are required, they must be carried out by the authorized workshop only after consultation with RAUCH or the company's appointed representatives. The warranty period will not be extended by warranty work. Transport damage is not a factory defect and is therefore not covered by the manufacturer's warranty manufacturer.
- Claims for damage other than to the RAUCH devices will not be accepted. This also means that no liability will be accepted for damage resulting from spreading errors. Unauthorized modifications of the RAUCH devices may result in consequential damage, for which the manufacturer will not accept any liability. The manufacturer's exclusion from liability will not apply in the case of willful intent or gross negligence by the owner or a senior employee, and in cases where – according to the product liability law – there is liability for personal injury or material damage to privately used objects in the event of defects in the supplied product. The exclusion from liability will also not apply if characteristics are missing that are explicitly guaranteed, if the purpose of their guarantee was to protect the purchaser against damage not suffered by the supplied product itself.

RAUCH Streutabellen
RAUCH Fertilizer Chart
Tableaux d'épandage RAUCH
Tabele wysiewu RAUCH
RAUCH Strooitabellen
RAUCH Tabella di spargimento
RAUCH Spredetabellen
RAUCH Levitystaulukot
RAUCH Spridningstabellen
RAUCH Tablas de abonado

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