OPERATING MANUAL
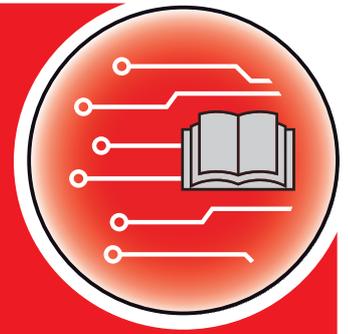
Please read carefully before using the machine.

Keep for future reference.

This instruction manual/assembly instruction is to be considered as part of the machine. Suppliers of new and second-hand machines are required to document in writing that the instruction manual/assembly instruction was delivered with the machine and handed over to the customer.

AXENT ISOBUS

Version 4.02.00

Original manual

5901646-**h**-en-1219

Preface

Dear Customer,

By purchasing this **AXENT 100.1** large area 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.

However, in case of unexpected problems: our Customer Service is always ready to help.

Please read this operating manual carefully before starting to use the large area spreader and follow the instructions provided.

This operating manual provides detailed instructions on the operation of the machine, as well as valuable information on assembly, maintenance, and care.

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

Please note that damage caused by incorrect operation or improper use is not covered by warranty claims.

NOTE

Please enter the type and serial number as well as the year of construction of your machine here.

This information can be obtained from the nameplate and/or on the frame.

Please state this information when ordering spare parts or accessories, and in case of complaints.

Type	Serial number	Year of construction

Technical improvements

We are continuously improving our products. Therefore, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. This constitutes no 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

Table of Contents

1   User notices

1.1   About this operating manual

This operating manual is an **integral part** of the **AXENT ISOBUS** machine control unit.

The operating manual contains important information for **safe**, **appropriate** and **economic use** and **maintenance** of the machine control unit. Compliance with its stipulations helps to **avoid risks**, reduce maintenance costs and downtime and to increase the machine's reliability and service life.

The operating manual is an integral part of the machine. The complete documentation must be kept in an easily accessible location close to where the machine control unit is used (e.g. on the tractor).

The operating manual does not replace your **own responsibility** as the operator and operating personnel of the AXENT ISOBUS machine control unit.

1.2   Significance of warnings

The warning instructions in this manual have been structured according to the degree of danger and the probability of their occurrence.

Danger signs and symbols inform the user about other construction-related and unavoidable residual risks that may be encountered when operating the machine. The warning notes used are structured as follows:

	Signal word
Symbol	Explanation

Example

⚠ DANGER

Risk to life if warning is not observed

Description of the danger and possible consequences.

Ignoring these warnings will result in very serious or even fatal injury.

▶ Measures to prevent the danger.

Warning severity level

The degree of danger is indicated by the signal word. The levels 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 persons.

Ignoring these warnings will result in very serious or even fatal injury.

▶ Always observe the measures described to prevent this danger.

⚠ WARNING

Type and source of danger

This warning warns of a possible dangerous situation for the health of persons.

Ignoring these warnings will result in very serious 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 or of material and environmental damage.

Ignoring this warning can result in injuries and damage to the product or the general area.

▶ Always observe the measures described to prevent this danger.

NOTICE

General information containing application tips and particularly useful information, but which constitutes neither warnings nor hazards.

1.3   Notes on the depiction of information in this manual

1.3.1   Instructions and procedures

Steps that the operator must carry out are shown as a numbered list.

1. Instruction for action step 1

2. Instruction for action step 2

Instructions involving only one step are not numbered. The same applies for action steps that do not have a specific sequence.

A bullet is placed in front of these instructions:

● Handling instruction

1.3.2   Listings

Listings without a specific sequence are shown with bullet points (level 1) and dashes (level 2):

● Property A

- Point A

- Point B

● Property B

1.3.3   References

References to other text passages in the document are indicated with section number, headline text and page number:

● **Example**: See also Chapter 3: Attachment and installation, page 19.

References to other documents are indicated as note or instruction without exact chapter or page number:

● **Example**: Please also observe the instructions contained in the manual for the universal drive shaft.

1.3.4   Menu hierarchy, keys and navigation

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

In the menus, **submenus and/or menu items** are listed in which settings can be implemented (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, menu item/s:

● **System / test > Test/diagnosis > Voltage** means that you can access the **Voltage** menu item via the **System / test** menu and the **Test/diagnosis** menu item.

- The arrow **>** corresponds to the operation of the **scroll wheel** and/or the button at the screen (touch screen).

1   User notices

2   Layout and function

NOTICE
Due to the large number of different ISOBUS-compatible terminals, this chapter is restricted to the functions of the electronic machine control unit without indicating a specific ISOBUS terminal.

● Please observe the instructions for operating your ISOBUS terminal in the corresponding operating manual.

2.1   Display

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

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

2.1.1   Description of the working screen

NOTICE
The exact representation of the working screen depends on the currently selected settings.
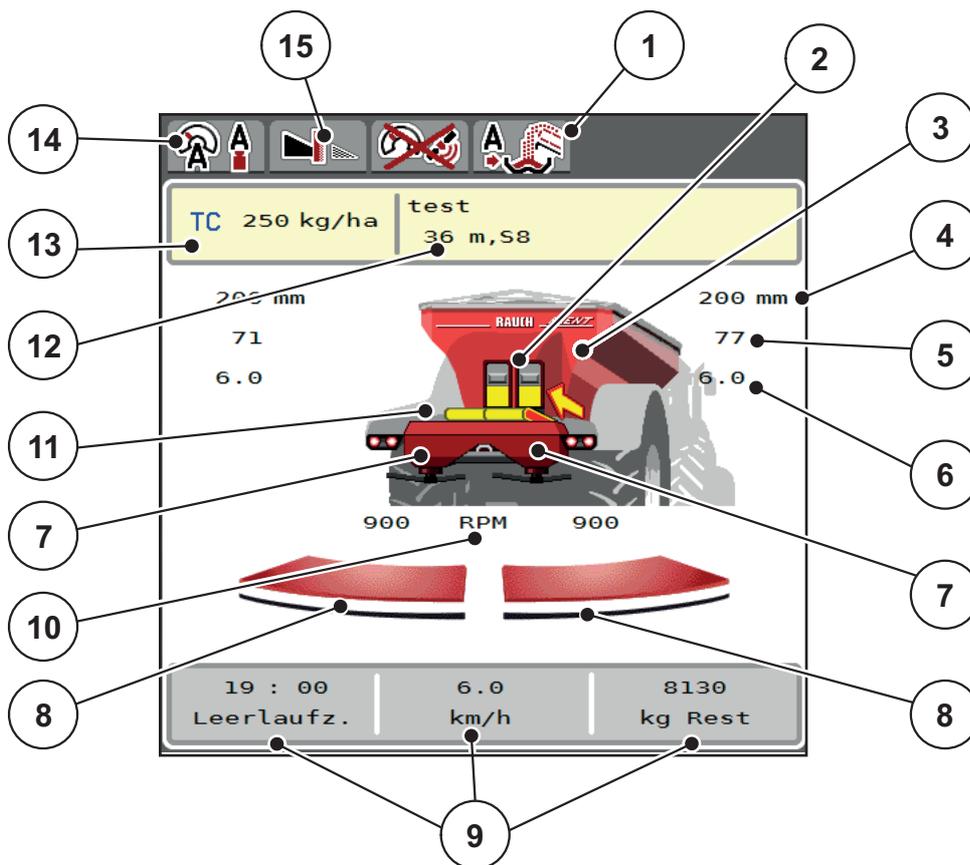
Figure 2.1:   Machine control display

[1] Display of the operating mode for transfer
[2] Display of pre-metering sliders, right/left
[3] Level indicator for the large area spreader
[4] Current opening position of pre-metering
     sliders, left/right
[5] Application rate adjustment, right/left
[6] Drop point position, right/left
[7] Level indicator for the spreading units,
     right/left
[8] Opening status of metering sliders, right/left
[9] User-definable display fields
[10] Spreading disc speed, right/left

[11] Conveyor belt display
[12] Display of fertiliser information (name of
     fertiliser, working width and spreading disc
     type)
     Button: adjustment in the fertiliser chart
[13] Current application rate from the fertiliser
     settings or the task controller
     Button: direct input of the application rate
[14] Selected operating mode
[15] Border spreading mode

2.2   Display fields

You can customise the three display fields on the working screen (Figure 2.1 [8]) and optionally assign the following values to them:

● Forward speed

● Flow factor (FF)

● ha trip

● kg trip

● m trip

● ha left

● kg left

● m left

● Idling (period until the next idle measurement)

● Torque for the spreading disc drive

● Belt speed in mm/s
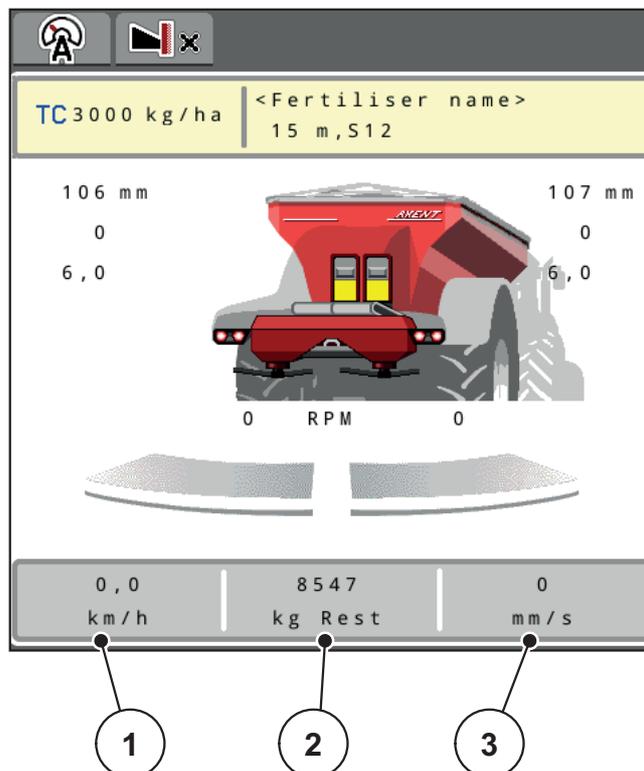
Figure 2.2:   Display fields

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

Select display

1. Press the respective **display field** on the touch screen.
    ▷   The available displays are shown in a list.
2. Select the new value to be assigned to the display field.
3. Press the **OK** button.
    ▷   The display shows the **working screen**. The new value is now displayed in the respective **display field**.

2.3   Display of metering slider statuses
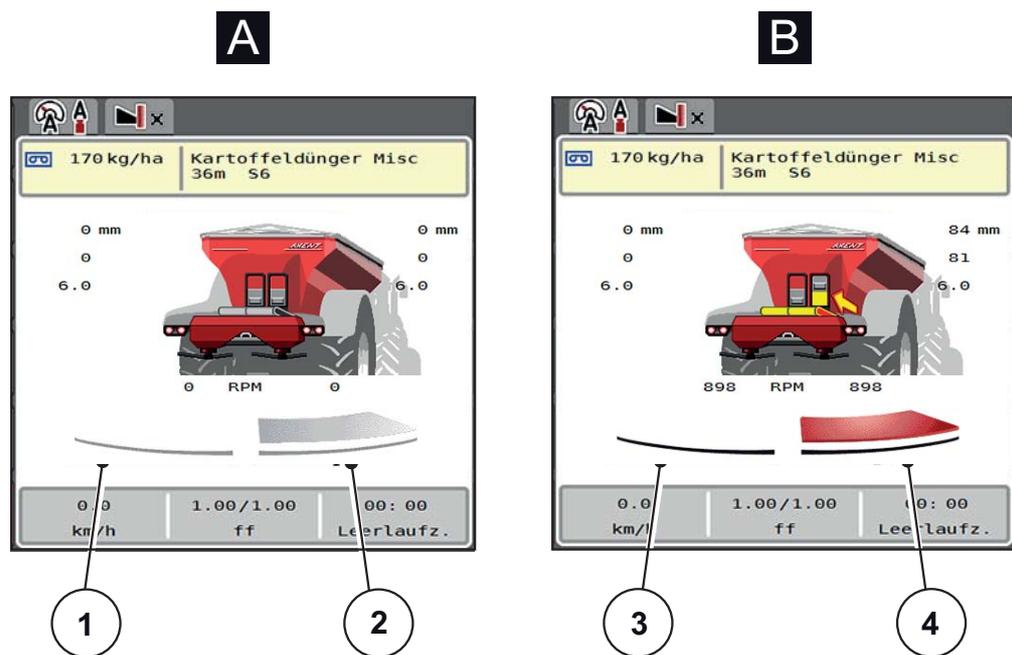
Figure 2.3:   Display of metering slider statuses

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

You can **deactivate a complete spreading side immediately.** To do this, press the section reduction soft key for longer than 500 ms. This is particularly helpful in field corners for fast spreading.

2.4   Display of the sections
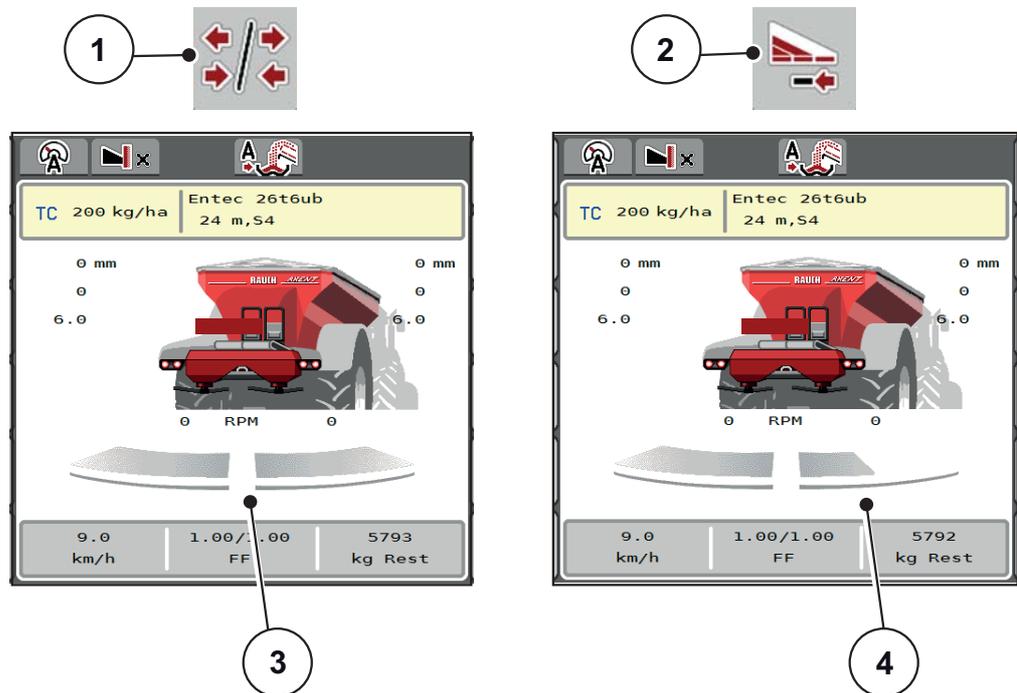
Figure 2.4:   Display of the section status

[1]   Toggle key: sections / border spreading
[2]   Key: reduce right section
[3]   Activated sections across the entire working width
[4]   The right section has been reduced by several section stages

Further display and setting options are explained in the chapter .

NOTICE

We recommend restarting the terminal in the following cases:

● You have changed the working width.

● You have called up a different fertiliser chart entry.

After restarting the terminal, the section display adjusts to the new settings.

2.5   Library of symbols used

The machine control AXENT ISOBUS shows symbols for the menus and
functions on the screen.

2.5.1   Navigation

Symbol	Meaning
〈	To the left; previous page
〉	To the right; next page
←	Back to the previous menu
⌂	Back to main menu
🚜/⌂	Switch between working screen and menu window
ESC	Escape; close dialogue window
ACK	Acknowledge warning messages

2.5.2   Menus

Symbol	Meaning
	Switch directly from a menu window to the main menu
	Switch between working screen and menu window
	SpreadLight operating lights
	Hopper cover
	Machine settings
	Fast emptying
	System/Test
	Information
	Weighing – Trip counter

2.5.3   Working screen symbols

Symbol	Meaning
	Automatic transfer is active
	Manual transfer is active
	Operating mode AUTO km/h + AUTO kg
	Operating mode AUTO km/h
	Operating mode MAN km/h
	Operating mode MAN scale
	Warning symbol: the cover is open
	AXIS PowerPack Limited border spreading mode
	AXIS PowerPack Full border spreading mode
	Switch between working screen and menu window
	Reset the opening position of the pre-metering sliders to the preset opening value.
	Start regulation of the application rate
	The spreading operation has started; stop regulation of the application rate

Symbol	Meaning
	Start the spreading discs
	Turn the spreading discs; stop the spreading discs
	• Selection of the opening position for the pre-metering sliders (%) in manual mode • Selection of the boosted/reduced application rate on the left side, right side or both spreading sides (%)
	Application rate adjustment + (plus)
	Application rate adjustment - (minus)
	Application rate adjustment, left + (plus)
	Application rate adjustment, left - (minus)
	Application rate adjustment, right + (plus)
	Application rate adjustment, right - (minus)
	Manual application rate adjustment + (plus)
	Manual application rate adjustment - (minus)
	Increase spreading disc speed (plus)
	Reduce spreading disc speed (minus)

Symbol	Meaning
	Spreading side on the left inactive
	Spreading side on the left active
	Spreading side on the right inactive
	Spreading side on the right active
	Reduce right section (minus) **In border spreading mode (AXIS PowerPack only):** A long press (> 500 ms) immediately deactivates a complete spreading side. This is particularly helpful in field corners for fast spreading.
	Increase right section (plus)
	Activate border spreading function/TELIMAT on the right
	Border spreading function/TELIMAT active on the right
	AXIS PowerPack Activate border spreading function on the left
	AXIS PowerPack Border spreading function active on the left
	Loss of the GPS signal (GPS J1939)
	The minimum mass flow was not met
	The maximum mass flow was exceeded
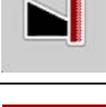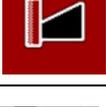
2.5.4   Other symbols

Symbol	Meaning
	Start idle measurement, in the main menu
	AXIS PowerPack Limited border spreading mode in the main menu
	AXIS PowerPack Full border spreading mode in the main menu
	Start manual transfer
	Manual transfer is active; stop transfer
	Increase opening of pre-metering sliders + (plus)
	Reduce opening of pre-metering sliders - (minus)
	Increase conveyor belt speed (plus); only for terminals with 2x6 function keys
	Reduce conveyor belt speed (minus); only for terminals with 2x6 function keys

2.6   Structural menu overview

2.6.1   AXENT with AXIS PowerPack

AXENT ISOBUS 4.02.00
AXIS-PowerPack

Main menu

Working screen

Fast emptying

Machine settings
- AUTO / MAN mode
- MAN scale
- MAN km/h
- Speed Auto
- Simulated GPS speed
- +/- application rate (%)
- Task Control
- GPS-Control
- Change disc speed
- Fertiliser info
- kg level sensor
- Appl. correction L/R (%)
- Tractor (km/h)
- Manual mode
- Pre-metering (mm)
- +/- opening (%)
- Belt speed (mm/s)
- +/- belt sp (mm/s)
- AXMAT

Fertiliser settings
- Fertiliser name
- Application rate (kg/ha)
- Working width (m)
- Flow factor
- Drop Point
- Start calibration
- Normal disc speed
- Spreading disc
- Boundary spreading type
- Boundary disc speed
- Boundary drop point
- Boundary quantity (%)
- Fertilisation method
- Mounting height
- Manufacturer
- Composition
- Fertiliser
- Distance factor
- Calculate OptiPoint
- Turn on distance (m)
- Turn off distance (m)
- GPS-Control Info
- Fertiliser chart
- Calibrate AXMAT

System / Test
- Total data counter
- Test/Diagnosis
- Service

Weighing - Tripcounter
- Trip counter (km/h)
- Rest (kg, ha, m)
- Zero scales
- Metre counter

Info

SpreadLight

Hopper cover

2.6.2   AXENT with LIME PowerPack

Working screen

Main menu

Fertiliser settings
- Fertiliser name
- Application rate (kg/ha)
- Working width (m)
- Flow factor
- Normal disc speed
- Spreading disc
- Boundary spreading type
- Boundary disc speed
- Boundary quantity (%)

Machine Configuration
- AUTO / MAN mode
- MAN km/h
- Speed Auto
- Simulated GPS speed
- +/- application rate (%)
- Change disc speed
- Fertiliser info
- kg level sensor
- Tractor (km/h)

Fast emptying

System / Test
- Total data counter
- Test/Diagnosis
- Service

Weighing - Tripcounter
- Trip counter (km/h)
- Rest (kg, ha, m)
- Zero scales
- Metre counter

Info

SpreadLight

Hopper cover

AXENT ISOBUS 4.02.00
LIME-PowerPack

en

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3   Attachment and installation

3.1   Tractor requirements

Before attaching the electronic machine control unit, check that your tractor meets the following requirements:

● A minimum voltage of **11 V** must be guaranteed **at all times**, even when several consumers are connected at the same time (e. g. air conditioning, lights).

● The PTO speed can be set to **1000 rpm**, which must be adhered to.

NOTICE
For tractors without power shift transmissions, the forward speed must be selected by the right gear ratio so that it corresponds to a PTO speed of **1000 rpm**.

● 9-pin socket (ISO 11783) on the rear of the tractor to connect the machine control unit to the ISOBUS.

The machine control unit is powered via the 9-pin ISOBUS socket on the rear of the tractor.

NOTICE
If the tractor **does not have** a 9-pin socket at the rear, a tractor installation kit with 9-pin socket (ISO 11783) can be purchased as optional equipment.

● The tractor must provide the speed signal on the ISOBUS.

NOTICE
Check with your dealer that your tractor has the necessary connections and sockets.

● Due to the numerous tractor/machine/terminal configurations, your dealer will help you choose the right connection

3.2   Connections, sockets

NOTICE
If you want to connect the terminal to existing ISOBUS basic equipment, first check its compatibility according to **international standard ISO 11783** "Tractors and machinery for agriculture and forestry – Serial control and communications data network".

NOTICE

For details on connecting your terminal, refer to the operating manual from the terminal manufacturer.

3.2.1   Connecting the ISOBUS terminal

NOTICE

Follow the operating instructions supplied with your terminal.

Perform the work steps in the following order.

●   Select a suitable position in the tractor cabin (within the **driver's field of vision**) where you want to attach the ISOBUS terminal.

●   Attach the ISOBUS terminal using the **mounting bracket** in the tractor cabin.

3.2.2   Overview of actuators and sensors

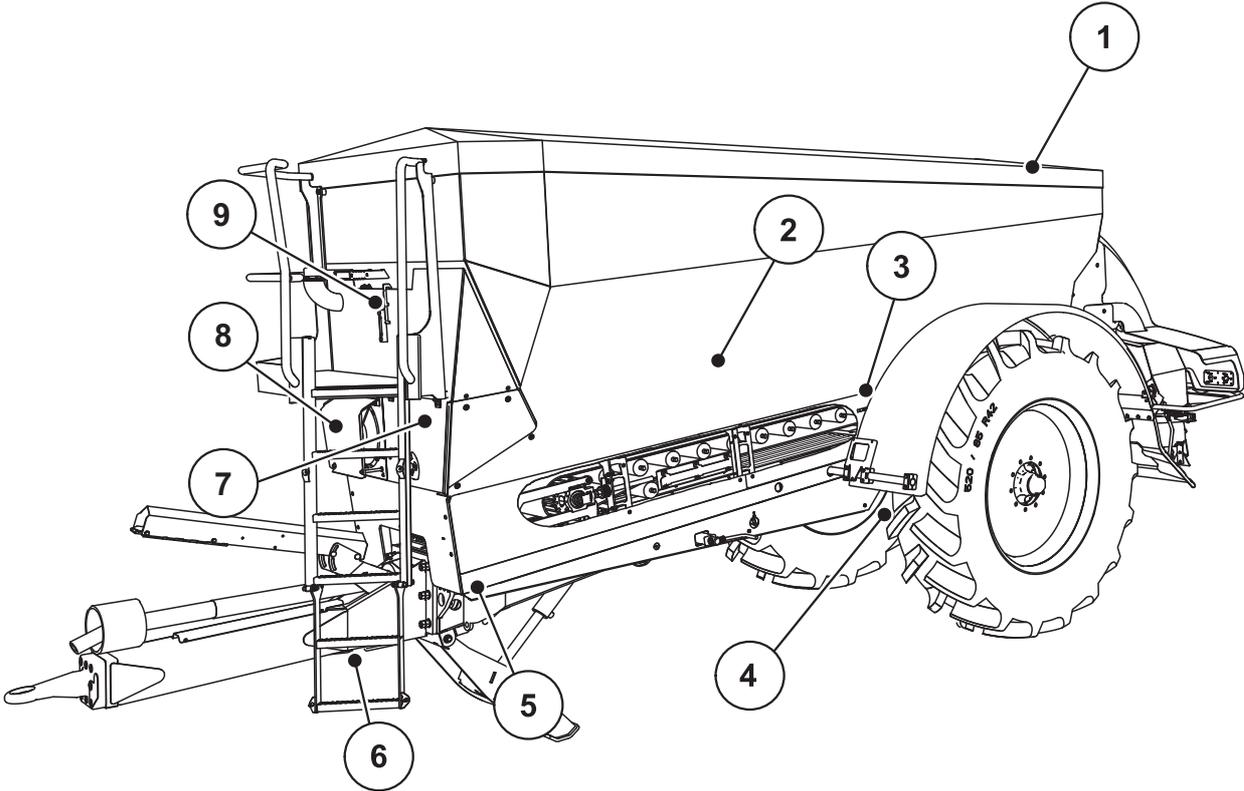| *NOTICE* |
| --- |
| The following overviews do not show the exact position of the actuators and sensors on the machine. This sub-chapter only serves to provide information about the modules and sensors actuated by the electronics. |

Figure 3.1:   Overview of actuators and sensors on the AXENT large area spreader

[1] Hopper cover
[2] Level sensor
[3] Vibrator motor (option)
[4] Axle angle sensor
     Weigh cells at rear left/right
     Steering cylinder (option)
     Locking valve, steering axle A/B (option)

[5] Weigh cells at front left/right
[6] Drawbar angle sensor
[7] Hydraulic block with valves
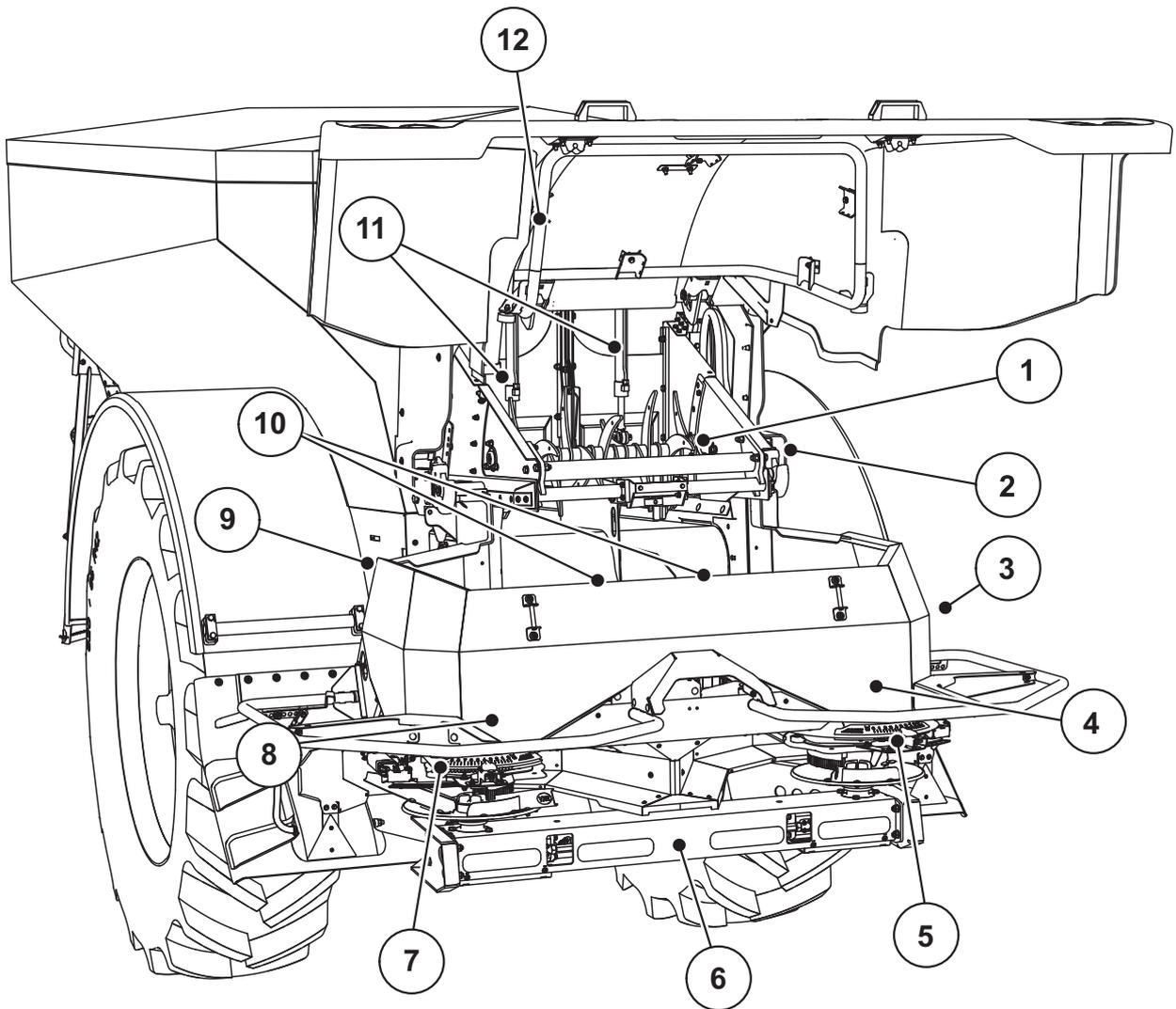[8] Oil temperature sensor
     Oil cooler
[9] Hydraulic circuit float switch

Figure 3.2:   Overview of the actuators and sensors on the AXENT large area spreader and AXIS PowerPack fertiliser spreading unit

[1] Comb roller
[2] Belt drive
      Belt speed sensor
[3] Speed sensor (on the right wheel)
[4] Actuator metering slider, right
      Agitator on the right
[5] Drop point actuator, right
[6] FAG sensor in the hydraulic motor, left/right

[7] Drop point actuator, left
[8] Actuator metering slider, left
      Agitator on the left
[9] Interface plug for the spreading units
[10] Ultrasonic sensors
[11] Hydraulic cylinders of pre-metering sliders
[12] Switch for cover

The following actuators and sensors are installed on the LIME PowerPack lime spreading unit:

● Pressure sensors for hydraulic motors (left/right and return)

● Speed sensor, left/right, for the spreading discs

3.2.3   Metering slider preparation (AXIS PowerPack only)

The AXENT mineral fertiliser spreader has an electric slide control for setting the application rate.

NOTICE
Follow the operating manual for your mineral fertiliser spreader.

4   AXENT ISOBUS operation

<table>
<tr><td colspan="2">**⚠ CAUTION**</td></tr>
<tr><td rowspan="2">⚠</td><td>**Risk of injury caused by ejected fertiliser**</td></tr>
<tr><td>In the event of a fault, the slides may open unexpectedly when driving to the spreading location. There is a risk of slipping and personal injury due to ejected fertiliser.</td></tr>
<tr><td></td><td>▶ Be sure to always switch off the AXENT ISOBUS electronic machine control unit **before driving to the spreading location**.</td></tr>
</table>

4.1   Switching on the machine control unit

Prerequisites:

●   The machine control unit is connected correctly to the large area spreader and the tractor (for an example, see chapter).

●   A minimum voltage of **11 V** is guaranteed.

NOTICE
The operating manual describes the functions of AXENT ISOBUS machine control units with **software version 4.02.00** or higher.

1.   Start the machine control unit.

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

▷   Shortly after, the machine control unit displays the **Activation menu** for a few seconds.

2.   Press the **Enter key**.

▷   **Subsequently, the working screen appears.**

Status query for the rear cover

The rear cover is important safety equipment for the safe operation of the machine. You cannot carry out a transfer when the cover is open.

The rear cover is equipped with a switch. The switch reports the open or closed position of the cover to the machine control unit. When the cover is open, all consumers controlled by the machine control unit will stop (conveyor belt, pre-metering sliders, comb roller, hopper cover).

NOTICE

If the rear cover is open, an error message appears on the screen. See 7.1: Meaning of the alarm messages, page 111

● All outputs are dead, **all functions are deactivated**

1. Close the rear cover.

   See the operating manual for your machine.

2. Press the ACK key.

   ▷ The alarm message is acknowledged and disappears.

As long as the rear cover is open, the warning symbol appears in the upper area of the working screen.

4.2   Navigation in the menus

NOTICE
Important information regarding the display and navigation between menus are provided in chapter 1.3.4: Menu hierarchy, keys and navigation, page 3.

In the following sections, we describe calling up the menus or menu items **by touching the touchscreen or pressing the function keys**.

● Follow the operating manual of the terminal used.

Accessing the main menu

● Press the **Working screen/Main menu** function key. See 2.5.2: Menus, page 11.

▷ The main menu appears on the display.

Accessing the submenu via the touchscreen:

● Press the button of the desired submenu.

Windows appear prompting you to perform various actions.

● Text input
● Value input
● Settings made in further submenus

NOTICE
Not all parameters are displayed simultaneously in one menu window. You can use the **left/right arrow keys** to jump to the adjacent window.

Exiting the menu

● Confirm the settings by pressing the **Back** key.

▷ You return to the **previous menu**.

● Press the **Working screen/Main menu** key.

▷ This returns you to the **working screen**.

● Press the **ESC** key.

▷ The previous settings are retained.

▷ You return to the **previous menu**.

4.3   AXENT ISOBUS function description: Status display

The AXENT ISOBUS control unit informs you about the current fill levels and sensor states of the large area spreader and the attached AXIS PowerPack or LIME PowerPack spreading units.

4.3.1   Conveying of spreading material

The AXENT conveyor belt starts when the AXENT pre-metering sliders are opened.
The spreading material then flows from the outlet into the AXIS PowerPack or LIME PowerPack spreading unit.
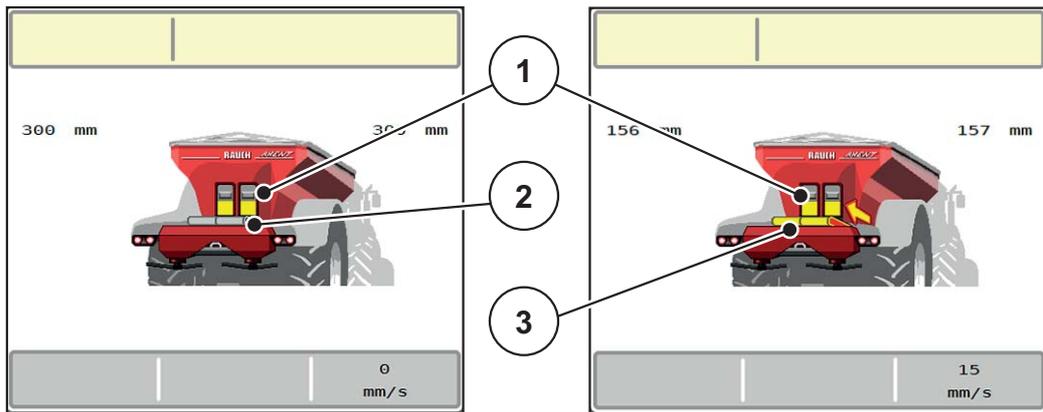

Figure 4.1:   Display of opened pre-metering sliders

[1]   Opened pre-metering sliders
[2]   Stationary conveyor belt
[3]   Running conveyor belt

AXIS PowerPack
The flowing spreading material fills the intermediate hopper in the AXIS Power-Pack. The transfer process runs continuously, in accordance with the rate of spreading. The belt speed and the pre-metering are adjusted automatically.

LIME PowerPack
The spreading material (lime) falls from the conveyor belt directly onto the spreading discs.

4.3.2   AXENT hopper empty

<table>
<tr><td>*NOTICE*</td></tr>
</table>

The level sensor has no function if **kg empty detector is** active.

● See "Machine settings" on page 54.

The level sensor for the AXENT hopper is not on the bottom of the hopper.

At the time of the empty message, there is usually still enough spreading material in the hopper for a few transfers.

Despite the alarm message, the AXENT ISOBUS machine control system tries to transfer the entire remaining amount.
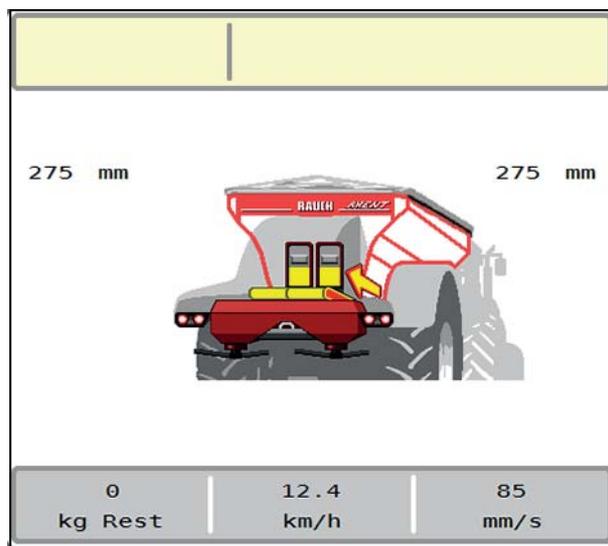

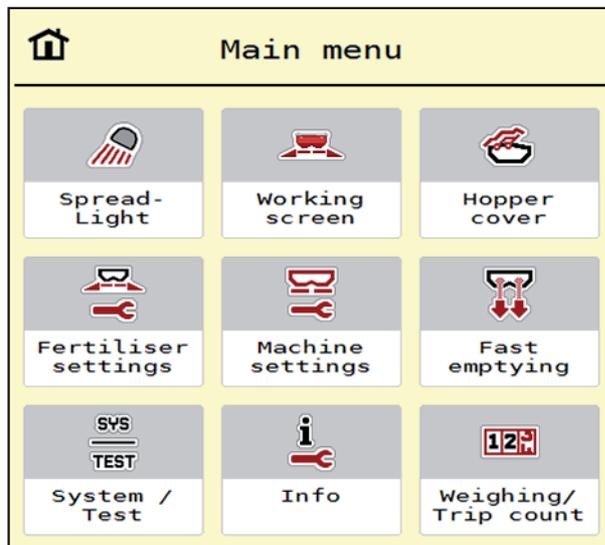**Figure 4.2:**   AXENT hopper level indicator

4.4   Main menu

Figure 4.3:   Main menu AXENT ISOBUS

The main menu offers the following submenus.

Submenu	Meaning	Description
SpreadLight	Switch the operating lights on/off	Page 82
Working screen	Switch to the AXENT working screen	
Hopper cover	Open/close the hopper cover	Page 80
Fertiliser settings	Settings for spreading material and spreading operation	AXIS PowerPack Page 31
		LIME PowerPack Page 49
Machine settings	Settings for tractor and large area spreader	Page 54
Fast emptying	Direct access to the menu for fast emptying of the large area spreader	Page 67
System/Test	Settings and diagnosis of the machine control unit	Page 69
Info	Display of the machine configuration	Page 76
Weighing – Trip count	Values for spreading work completed and functions for weighing	Page 76

In addition to the submenus, you can select function keys in the **main menu**.

4.5   Fertiliser settings for AXIS PowerPack

> ### *NOTICE*
>
> The machine control unit automatically recognises the attached spreading unit when the ISOBUS plug is connected to the AXENT large area spreader.
>
> Some menu items vary depending on whether the AXIS PowerPack fertiliser spreading unit or the LIME PowerPack lime spreading unit is attached.

You can adjust the settings for fertiliser and spreading operation in this menu.

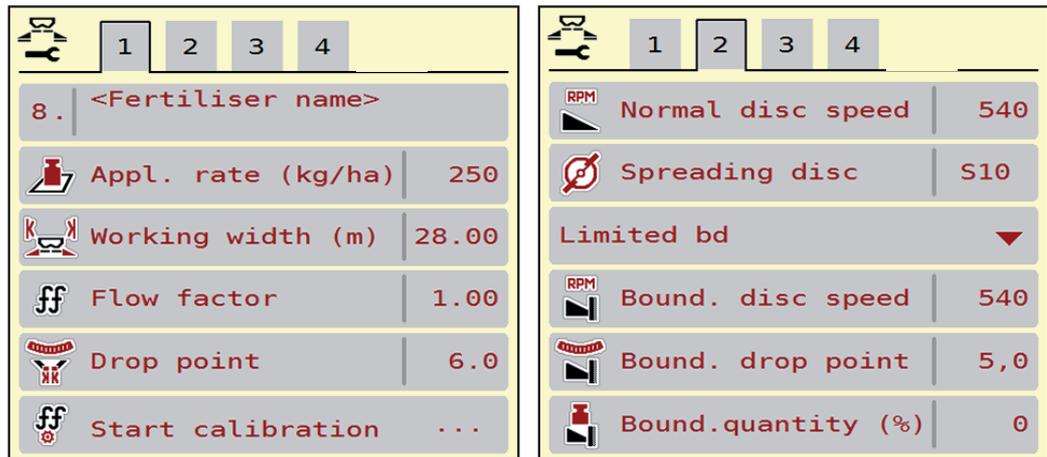● Call up the **Main menu > Fertiliser settings** menu.

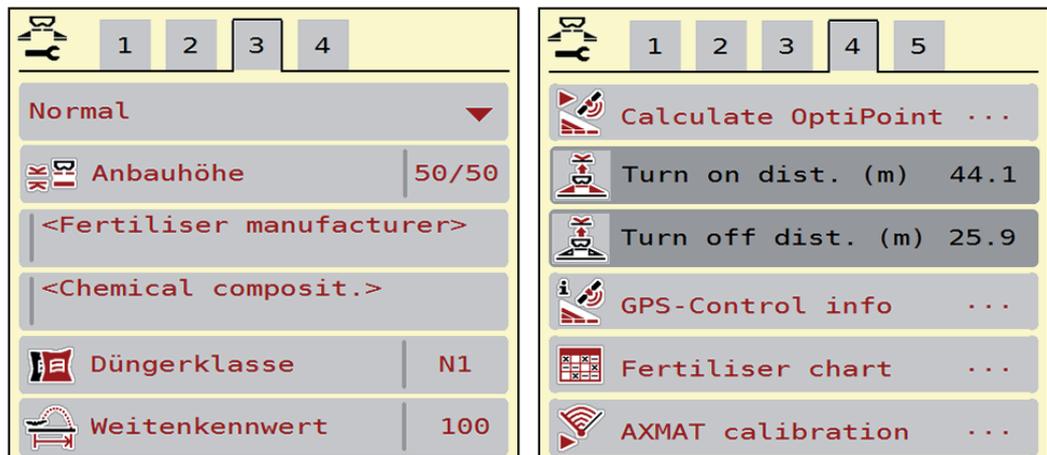**Figure 4.4:**   Fertiliser settings menu, tabs 1 and 2

Figure 4.5:   Fertiliser settings menu, tabs 3 and 4

> ### *NOTICE*
>
> Not all parameters are displayed simultaneously on one screen. You can use the **left/right arrow keys** to jump to the adjacent menu window (tab).

Submenu	Meaning/possible values	Description
Fertiliser name	Fertiliser selected from the fertiliser chart	[Page 46](#)
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha	[Page 34](#)
Working width (m)	Determination of the working width to be spread	[Page 35](#)
Flow factor	Enter the flow factor of the fertiliser used	[Page 37](#)
Drop point	Enter the drop point	Follow the operating manual for the machine [Page 37](#)
Start calibration	Open the submenu for carrying out the calibration	[Page 38](#)
Normal disc speed	Enter the desired spreading disc speed Influences the EMC mass flow control	[Page 41](#)
Spreading disc	Setting of the spreading disc type mounted on the AXIS PowerPack Influences the EMC mass flow control Note: Spreading disc U2 applies to LIME PowerPack only	Select type: ● S1 ● S4 ● S6 ● S8 ● S10 ● S12
Full/Limited border	Selection of the desired type of fertilisation, sorted into full and limited border spreading	[Page 42](#)
Bound. disc speed	Presetting of the speed in border spreading mode	To be entered in a separate input window
Bound. drop point	Presetting of the drop point in border spreading mode	To be entered in a separate input window
Border spreading rate	Presetting of the rate reduction in border spreading mode	To be entered in a separate input window
Fertilisation method: Normal/Late	Selection of the desired type of fertilisation, sorted into normal fertilisation and late fertilisation	Select with **arrow keys** Confirm by pressing the **Enter key**

Submenu	Meaning/possible values	Description
Mounting height	No function	
Manufacturer	Enter the fertiliser manufacturer	
Composition	Percentage of chemical composition	
Fertiliser class	Selection list	Select with **arrow keys** Confirm by pressing the **Enter key**
Distance factor	Enter the distance factor from the fertiliser chart. Required to calculate OptiPoint	
Calculate OptiPoint	Enter the GPS Control parameters	Page 43
Turn on dist. (m)	Enter the turn-on distance	
Turn off dist. (m)	Enter the turn-off distance	
GPS Control info	Display of information for the GPS Control parameters	Page 45
Fertiliser chart	Management of fertiliser charts	Page 46
Calibrate AXMAT	Open the submenu for calibration of the AXMAT function	Follow the operating manual for the optional equipment

4.5.1   Application rate

In this menu, you can enter the target value for the desired application rate.

Entering the application rate:

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

    ▷   The display shows the **currently active** application rate.

2. Enter the new value in the input field.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

You can also enter or adjust the application rate directly on the working screen.

1. Press the Application rate [1] button on the touchscreen.
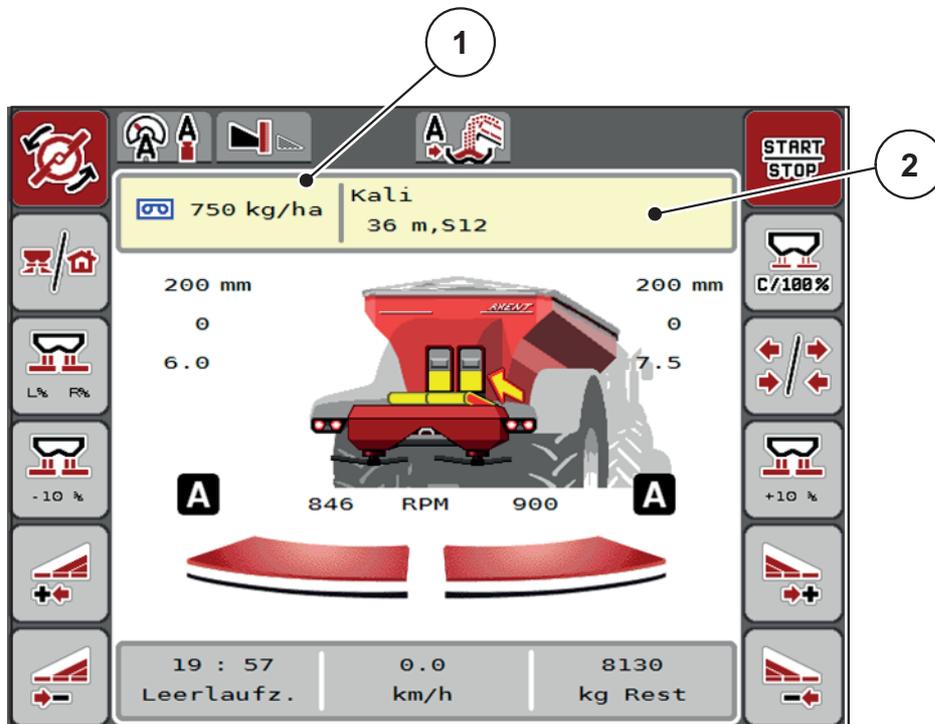
    ▷   The number input window opens.

Figure 4.6:   Entering the application rate on the touchscreen

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

2. Enter the new value in the input field.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

4.5.2   Working width

In this menu, you can set the working width (in metres).

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

   ▷   The display shows the **currently applied** working width.

2. Enter the new value in the input field.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

4.5.3   Flow factor

The flow factor is within the range of **0.2** to **1.9**. At identical basic settings (km/h, working width, kg/ha), the following applies:

● If the flow factor is **increased**, the application rate **decreases**.

● If the flow factor is **reduced**, the application rate is **increased**.

An error message appears as soon as the flow factor is outside the specified range. See 7: Alarm messages and possible causes, page 111.

If you are spreading organic fertiliser or rice, you need to reduce the minimum factor to 0.2. This will prevent the error message from appearing all the time.

If you know the flow factor from earlier calibrations or from the fertiliser chart, enter it **manually** here.

NOTICE
Via the **Start calibration** menu, the flow factor can be determined and entered using the . See chapter 4.5.5: Calibration, page 38

With the AXIS PowerPack fertiliser caps spreading unit and **AUTO kg + AUTO km/h** operating mode, the flow factor is determined by the EMC mass flow control.

NOTICE
The flow factor calculation depends on the operating mode used. Further information on the flow factor is provided in chapter 4.7.1: AUTO/MAN mode, page 57.

Entering the flow factor:

1. Call up the **Fertiliser settings > Flow factor** menu.

    ▷   The display shows the **currently applied** flow factor.

2. Enter the value from the fertiliser chart in the input field.

<div style="background-color:#0096d6; color:white; text-align:center;">

NOTICE
</div>

If your fertiliser is not listed in the fertiliser chart, enter a flow factor of **1.00**.

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 fertiliser.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

<div style="background-color:#0096d6; color:white; text-align:center;">

NOTICE
</div>

With the AXIS PowerPack fertiliser spreading unit (**AUTO km/h + AUTO kg** operating mode), we recommend displaying the flow factor on the working screen. In this way you can observe the flow factor control during spreading. See 2.2: Display fields, page 7

Minimum factor

The machine control system automatically sets the minimum factor to one of the following values, according to the flow factor value entered:

●   The minimum factor is 0.2 if the input value is less than 0.5.

●   The minimum factor is reset to 0.4 as soon as you enter a value above 0.5.

4.5.4   Drop point

With the AXIS PowerPack fertiliser spreading unit, the drop point is set with electrical drop point adjustment.

1. Call up the **Fertiliser settings > Drop point** menu.

2. Determine the position for the drop point using the fertiliser chart.

3. Enter the determined value in the input field.

4. Press **OK**.

▷ **The Fertiliser settings window appears with the new drop point on the display.**

In the event of blockages of the drop point, alarm 17 appears;
see chapter .

⚠ CAUTION
Risk of injury due to automatic adjustment of the drop point After pressing the **Start/Stop** function key, the drop point is automatically moved to the preset value by means of an electric actuating cylinder. This can cause injuries. ▶ Before pressing **Start/Stop**, make sure that nobody is in the hazard zone of the machine. ▶ Press Start to acknowledge the "Move to drop point" alarm.

4.5.5   Calibration
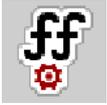
> *NOTICE*
>
> The **Start calibration** menu is disabled for weighing spreaders and for all machines in **AUTO km/h + AUTO kg** mode. This menu item is inactive.

In this menu, you determine the flow factor based on a calibration and save it in the machine control unit.

Perform the calibration:

- Before spreading for the first time.
- If the fertiliser quality has changed significantly (moisture, high dust content, grain breakage).
- If a new type of fertiliser is used.

The calibration must be carried out either while the PTO shaft is running while the tractor is stationary, or while driving on a test track.

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

Entering the working speed:

1. Call up the **Fertiliser settings > Start calibration** menu.
2. Enter the average working speed.

   This value is required to calculate the slide position during the calibration.
3. Press the **Continue** button.

   ▷   The new value is saved in the machine control unit.

   ▷   The second page of the calibration appears on the display.

Select section:

4. Determine the spreading side on which the calibration is to be carried out.

   - Press the function key for the spreading side **on the left** or
   - Press the function key for the spreading side **on the right**.

   ▷   **The symbol of the selected spreading side is highlighted in red.**

<div align="center">

⚠ **WARNING**

</div>

Risk of injury during the calibration

Rotating machine parts and escaping fertiliser can lead to injuries.

   ▶ **Before starting** the calibration, make sure that all requirements are met.

   ▶ Observe the **Calibration** chapter in the operating manual of the machine.

5. Press **Start/Stop**.

   ▷ The metering slider of the previously selected section opens and the calibration starts.

<div align="center">

NOTICE

</div>

The calibration can be stopped at any time by pressing the **ESC** key. The metering slider closes and the display shows the
Fertiliser settings menu.

<div align="center">

NOTICE

</div>

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

6. Press **Start/Stop** again.

   ▷ The calibration is ended.

   ▷ The metering slider closes.

   ▷ The third page of the calibration appears on the display.

Recalculating the flow factor

<div align="center">

⚠ **WARNING**

</div>

Risk of injury due to rotating machine components

Contact with rotating machine components (cardan shaft, hubs) may cause bruises, abrasions and crushing injuries. Body parts or objects may be caught or pulled in.

   ▶ Switch the tractor motor off.

   ▶ Switch off the hydraulics and secure them against unauthorised activation.

7. Weigh the collected weight (taking into account the empty weight of the collecting vessel).

8. Enter the weight under the **Input collected** menu item.

9. Press **OK**.

▷   The new value is saved in the machine control unit.

▷   The display shows the **Flow factor calculation** menu.

NOTICE

The flow factor must be between 0.4 and 1.9.

10. Define the flow factor.

To apply the **newly calculated** flow factor, press the **Confirm flow factor** button.

Press **ESC** to confirm the **previously saved** flow factor.

▷   **The flow factor is saved.**

▷   **The display shows the Move to drop point alarm.**

⚠ **CAUTION**

Risk of injury with the automatic adjustment of the drop point

The display shows the **Move to drop point** alarm. After pressing the **Start/Stop** function key, the drop point moves automatically to the preset value by means of an electric actuating cylinder. This may cause injury and material damage.

▶ Before pressing **Start/Stop**, make sure that nobody is in the hazard zone of the machine.

4.5.6 Spreading disc type

<table>
<tr><td align="center">*NOTICE*</td></tr>
</table>

For **optimal idle measurement** you must check that the entries in the **Fertiliser settings** menu are correct.

● The values in the **Spreading disc** and **Normal speed** menu entries must match the actual settings of your machine.

The mounted spreading disc type is preset in the control unit at the factory. If you have mounted different spreading discs on your machine, you must enter the correct type in your control unit.

1. Call up the **Fertiliser settings > Spreading disc** menu.

2. Activate the spreading disc type in the selection list.

▷ **The display shows the Fertiliser settings window with the new disc type.**

4.5.7 Speed

<table>
<tr><td align="center">*NOTICE*</td></tr>
</table>

For **optimal idle measurement** you must check that the entries in the **Fertiliser settings** menu are correct.

● The values in the **Spreading disc** and **Normal speed** menu entries must match the actual settings of your machine.

The set PTO speed is pre-programmed in the control unit to 750 rpm. If you want to set a different PTO speed, change the value saved in the control unit.

1. Call up the **Fertiliser settings > Normal speed** menu.

2. Enter speed in rpm.

▷ **The display shows the Fertiliser settings window with the new speed.**

4.5.8   Full/limited border spreading mode

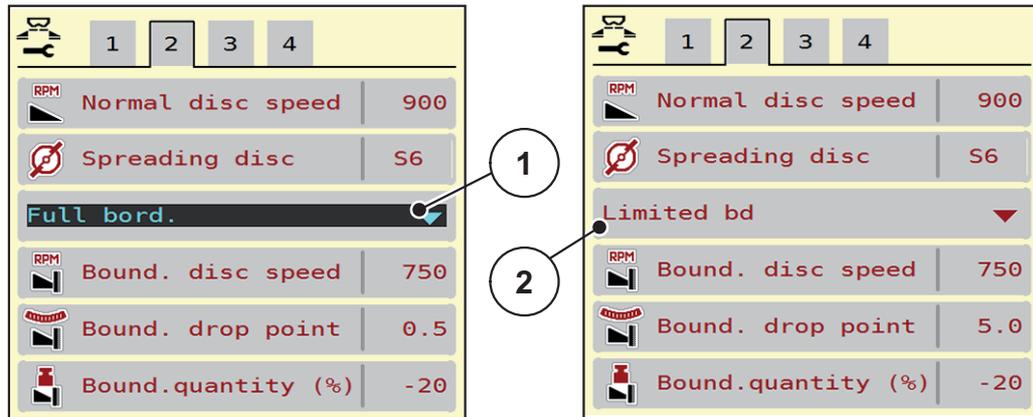In this menu you can select the appropriate spreading mode at the field margin.

Figure 4.7:   Border spreading mode settings

[1]   Full border spreading
[2]   Limited border spreading

1. Call up the **Fertiliser settings** menu.

2. Switch to tab 2.

3. Select **full** border spreading mode or **limited** border spreading mode.

   ▷ **Only the values** of the lower three settings menus adapt to the selected mode. The **menu names** remain unchanged.

4. If necessary, adjust the speed, drop point or rate reduction according to the information in the fertiliser chart.

4.5.9   Bound. quantity

In this menu, you can define the reduction in the application rate (in percent). This setting is used when the border spreading function is activated.

NOTICE

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

Entering the border spreading rate:

1. Call up the **Fertiliser settings > Bound. quantity** menu.

2. Enter the value in the input field and confirm.

▷ **The "Fertiliser settings" window appears with the new border spreading rate on the display.**

4.5.10   Calculate OptiPoint

In the **Calculate OptiPoint** menu, enter the parameters for calculating the optimal turn-on and turn-off distances **in the headlands**.

For an exact calculation, it is very important to enter the distance factor of the fertiliser used.

NOTICE
The distance factor for the fertiliser you are using can be found in the fertiliser chart for your machine.

1. Enter the specified value in the **Fertiliser settings > Distance factor** menu.
2. Call up the **Fertiliser settings > Calculate OptiPoint** menu.
   ▷ The first page of the **Calculate OptiPoint** menu appears.

NOTICE
The specified forward speed refers to the forward speed in the area of the turn-on and turn-off positions. See chapter 5.2.7: GPS Control, page 103.

3. Enter the **Average forward speed** in the area of the turn-on and turn-off positions.
   ▷ The display shows the second page of the menu.
4. Press **OK**.
5. Press the **Continue** button.
   ▷ The display shows the third page of the menu.
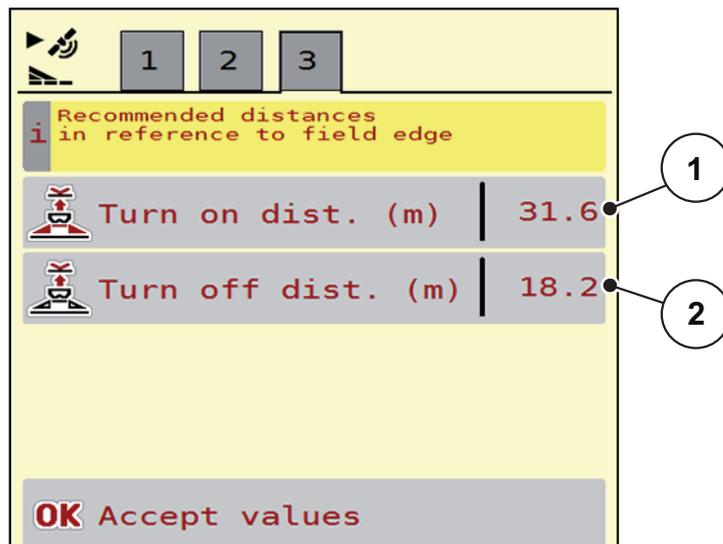
Figure 4.8:   Calculate OptiPoint, page 3

Number	Meaning	Description
1	Distance (in metres) away from the field boundary at which the metering sliders open	Page 105
2	Distance (in metres) away from the field boundary at which the metering sliders close.	Page 106

NOTICE

You can manually adjust the parameter values on this page.
See chapter 5.2.7: GPS Control, page 103.

Changing the values

6. Call up the desired list item.

7. Enter the new values.

8. Press **OK**.

9. Press the **Accept values** button.

▷ **The OptiPoint has been calculated.**

▷ **The machine control system changes to the GPS Control info window.**

4.5.11   GPS Control info

In the **GPS-Control info** menu, you can see the settings calculated in the **Calculate OptiPoint** menu.

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

- With most ISOBUS terminals, the values displayed here are transferred **automatically** to the corresponding settings menu of the GPS terminal.

- However, **manual** entry is required for some terminals.

<div align="center">

NOTICE
</div>

This menu is for information purposes only.

- Follow the operating manual of the terminal used.

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

4.5.12 Fertiliser charts

In this menu, you can create and manage your own **fertiliser charts**.

NOTICE

Selecting a fertiliser chart has an effect on the fertiliser settings, the machine control unit and the AXIS PowerPack fertiliser spreading unit. The set application rate is overwritten by the stored value from the fertiliser chart.

NOTICE

You can automatically manage spreading charts and transfer them from your ISOBUS terminal.

- **FertChart app**: Contact your dealer to install the FertChart app on your ISOBUS terminal.

- The fertiliser charts can also be transferred via a WLAN module and your smartphone.

Creating a new fertiliser chart

You can create up to **30** fertiliser charts in the electronic machine control unit.

1. Call up the **Fertiliser settings > Fertiliser charts** menu.
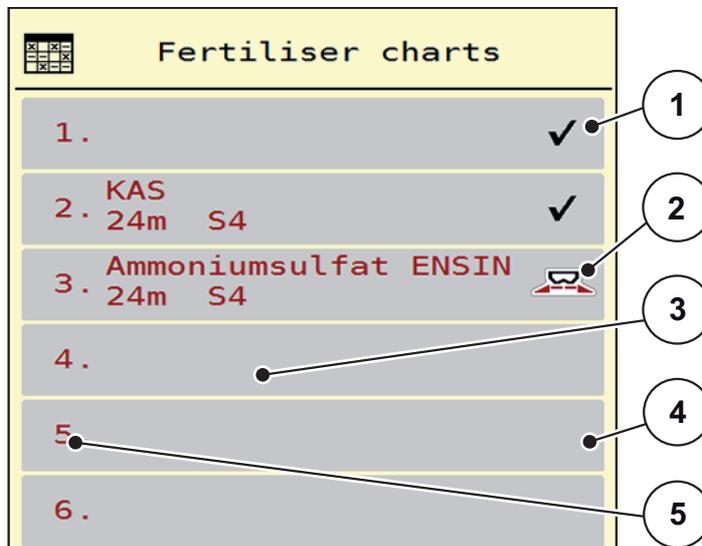
Figure 4.9: Fertiliser charts menu

[1] Display for a fertiliser chart filled with values
[2] Display for an active fertiliser chart
[3] Fertiliser chart name field
[4] Empty fertiliser chart
[5] Chart number

2. Select an empty fertiliser chart.

The **Name field** consists of the name of the fertiliser, the working width and the disc type.

▷ The selection window is displayed.

3. Select the **Open and back to...** option.

▷ The **Fertiliser settings** menu is displayed, and the selected element is loaded into the fertiliser settings as the **active fertiliser chart**.

4. Call up the **Fertiliser name** menu item.

5. Enter a name for the fertiliser chart.

NOTICE

We recommend giving the fertiliser chart the name of the fertiliser. This way, specific fertilisers can be assigned to fertiliser charts more easily.

---

6. Editing the parameters of the **fertiliser chart**.

See chapter 4.5: Fertiliser settings for AXIS PowerPack, page 31.

Selecting a fertiliser chart:

1. Call up the **Fertiliser settings > Fertiliser chart** menu.

2. Select the desired fertiliser chart.

▷ The selection window is displayed.

3. Select the **Open and back to...** option.

▷ **The Fertiliser settings menu is displayed, and the selected element is loaded into the fertiliser settings as the active fertiliser chart.**

NOTICE

Selecting an existing fertiliser chart overwrites all values in the **Fertiliser settings** menu with the values stored in the selected fertiliser chart, including the drop point and normal speed.

● The machine control unit will move the drop point to the value stored in the fertiliser chart.

Copying an existing fertiliser chart

1. Select the desired fertiliser chart.

▷ The selection window is displayed.

2. Select the **Copy element** option.

▷ **A copy of the fertiliser chart is now on the first free position of the list.**

Deleting an existing fertiliser chart

NOTICE
The active fertiliser chart **cannot** be deleted.

1. Select the desired fertiliser chart.

   ▷   The selection window is displayed.

2. Select the **Delete element** option.

▷   **The fertiliser chart is deleted from the list.**

Managing the selected fertiliser chart via the working screen

You can also manage the fertiliser chart directly via the working screen.

1. Press the Fertiliser chart [2] button on the touchscreen.

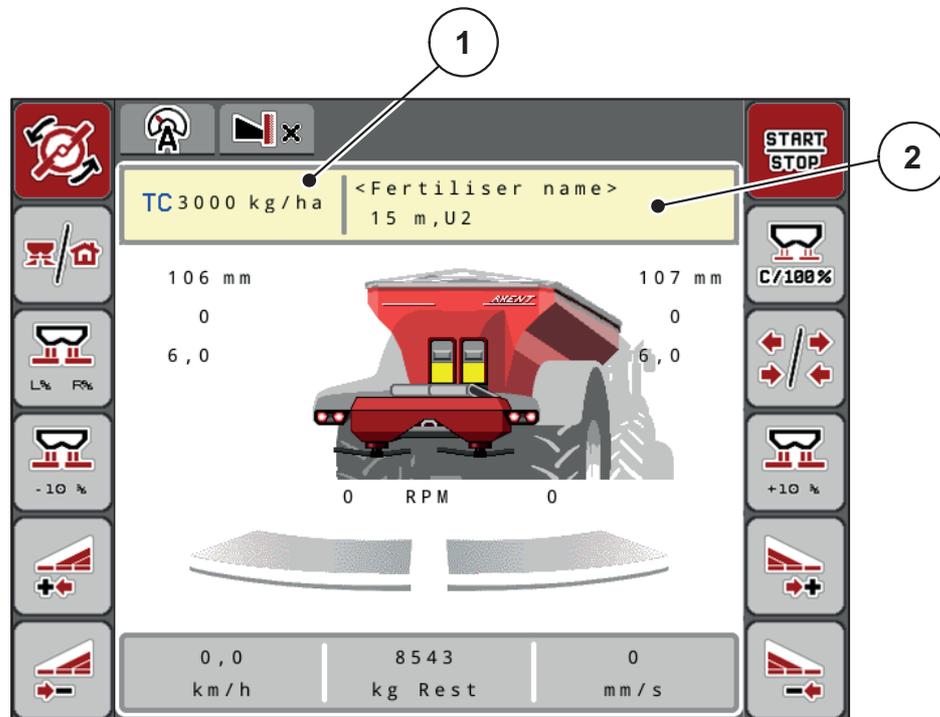   ▷   The active fertiliser chart is displayed.
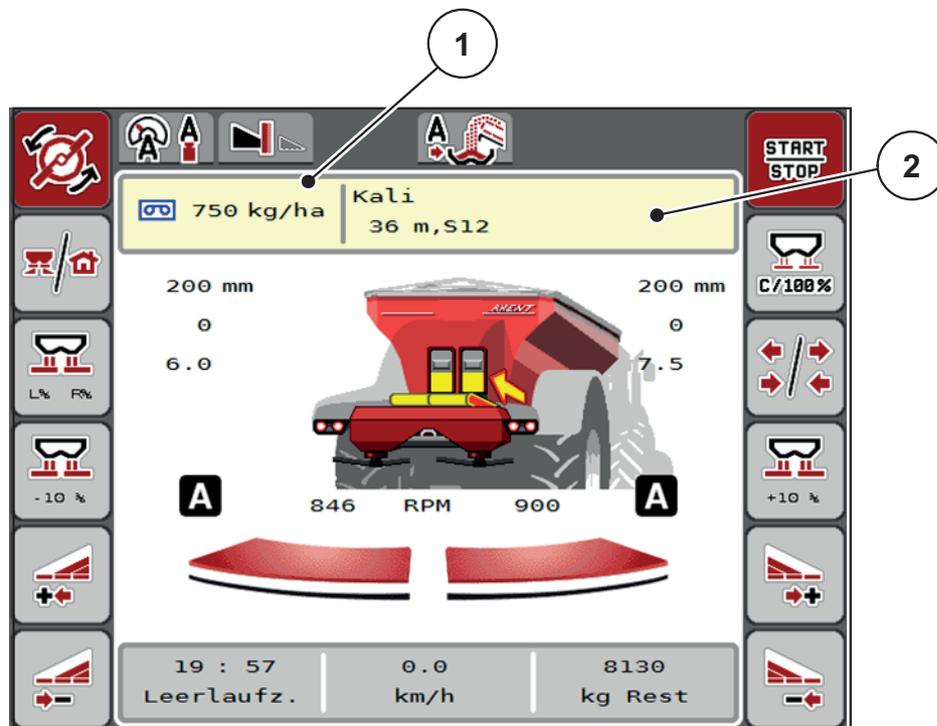
Figure 4.10:   Managing the fertiliser chart via the touchscreen

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

2. Enter the new value in the input field.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

4.6   Fertiliser settings for LIME PowerPack

> **NOTICE**
>
> The machine control unit automatically recognises the attached spreading unit when the ISOBUS plug is connected to the AXENT large area spreader.
>
> Some menu items vary depending on whether the AXIS PowerPack fertiliser spreading unit or the LIME PowerPack lime spreading unit is attached.

You can adjust the settings for fertiliser and spreading operation in this menu.

● Call up the **Main menu > Fertiliser settings** menu.

> **NOTICE**
>
> Not all parameters are displayed simultaneously on one screen. You can use the **left/right arrow keys** to jump to the adjacent menu window (tab).
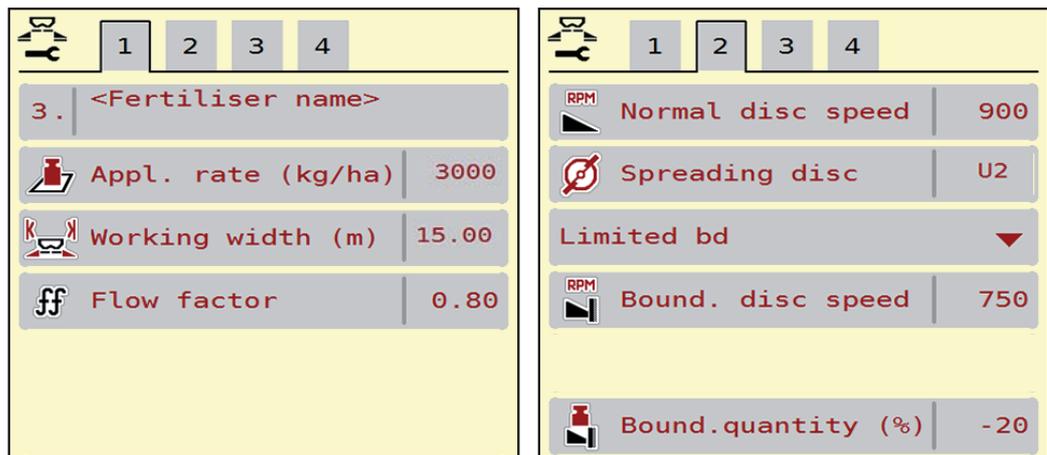
Figure 4.11:   Fertiliser settings menu for lime operation, pages 1 and 2

> **NOTICE**
>
> The menu entries on pages 3 and 4 are irrelevant for the LIME PowerPack lime spreading unit.

Submenu	Meaning/possible values	Description
Fertiliser name	Fertiliser selected from the fertiliser chart	Page 46
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha	Page 34
Working width (m)	Determination of the working width to be spread	Page 35

Submenu	Meaning/possible values	Description
Flow factor	Enter the flow factor of the fertiliser used	Page 37
Normal disc speed	Enter the desired spreading disc speed	Page 41
Spreading disc	Setting of the spreading disc type mounted on the LIME PowerPack Note: The Sxx spreading discs are only valid for the AXIS PowerPack	Select type: ● U2
Full/Limited border	Selection of the desired type of fertilisation, sorted into full and limited border spreading	Page 42
Bound. disc speed	Presetting of the speed in border spreading mode	To be entered in a separate input window
Bound. quantity	No function. The application rate is reduced by speed reduction	

4.6.1   Application rate

In this menu, you can enter the target value for the desired application rate.

Entering the application rate:

1. Call up the **Fertiliser settings > Appl.rate (kg/ha)** menu.
    ▷   The display shows the **currently active** application rate.
2. Enter the new value in the input field.
3. Press **OK**.
▷   **The new value is saved in the machine control unit.**

You can also enter or adjust the application rate directly on the working screen.

1. Press the Application rate [1] button on the touchscreen.
    ▷   The number input window opens.

Figure 4.12:   Entering the application rate on the touchscreen

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

2. Enter the new value in the input field.
3. Press **OK**.
▷   **The new value is saved in the machine control unit.**

4.6.2   Working width

In this menu, you can set the working width (in metres).

1. Call up the **Fertiliser settings > Working width (m)** menu.
   ▷ The display shows the **currently applied** working width.
2. Enter the new value in the input field.
3. Press **OK**.
▷ **The new value is saved in the machine control unit.**

4.6.3   Flow factor

The flow factor is within the range of **0.2** to **1.9**. At identical basic settings (km/h, working width, kg/ha), the following applies:

● If the flow factor is **increased**, the application rate **decreases**.

● If the flow factor is **reduced**, the application rate is **increased**.

An error message appears as soon as the flow factor is outside the specified range. See <u>7.1: Meaning of the alarm messages, page 111</u>.

Entering the flow factor:

1. Call up the **Fertiliser settings > Flow factor** menu.
   ▷ The display shows the **currently applied** flow factor.
2. Enter the value from the fertiliser chart in the input field.
3. Press **OK**.
▷ **The new value is saved in the machine control unit.**

Minimum factor

The machine control system automatically sets the minimum factor to one of the following values, according to the flow factor value entered:

● The minimum factor is 0.2 if the input value is less than 0.5.

● The minimum factor is reset to 0.4 as soon as you enter a value above 0.5.

4.6.4   Spreading disc type

The mounted spreading disc type is preset in the control unit at the factory. If you have mounted different spreading discs on your machine, you must enter the correct type in your control unit.

1. Call up the **Fertiliser settings > Spreading disc** menu.

2. Activate spreading disc type **U2**.

▷ **The display shows the Fertiliser settings window with the new disc type.**

4.6.5   Speed

The set disc speed is factory-programmed in the operating unit to 900 rpm. If you want to set a different PTO speed, change the value saved in the control unit.

1. Call up the **Fertiliser settings > Normal speed** menu.

2. Enter speed in rpm.

▷ **The display shows the Fertiliser settings window with the new speed.**

4.7   Machine settings

In this menu, you can configure the tractor and machine settings.

● Call up the **Machine settings** menu.

	1	2	3		
AUTO km/h + AUTO kg			▼		
MAN scale				100	
MAN km/h				10	
Speed Auto			▼		
Sim GPS speed				0	
+/- appl. rate (%)				10	

	1	2	3		
Task Control				☑
GPS Control				☑
Change speed				☑
Fertiliser info				☑
kg level sensor			200
AXMAT				☑
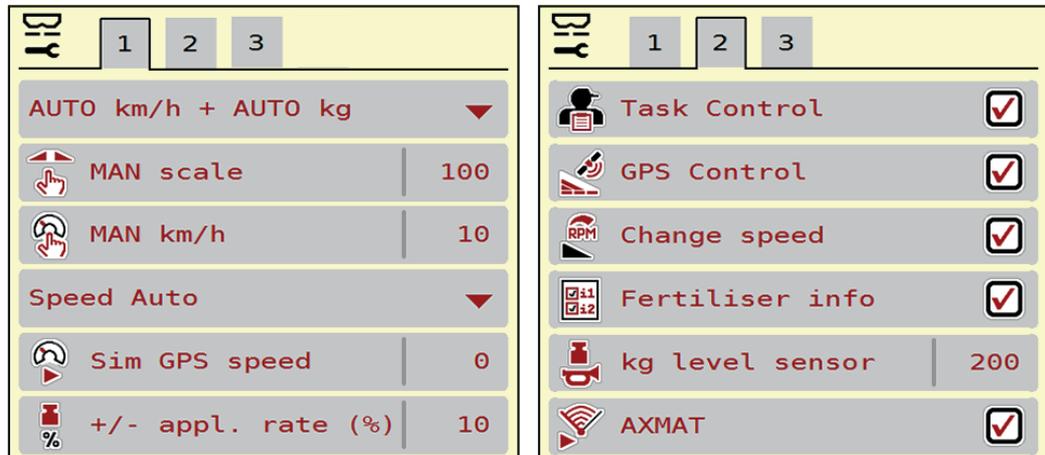
Figure 4.13: Machine settings menu, tab 1 and 2

	1	2	3	4	
Appl. corr. L (%)				0.0
Appl. corr. R (%)				0.0
Tractor (km/h)				...
Manual mode				☑
Pre-metering (mm)				100
+/- opening (%)				10

	1	2	3	4	
Belt speed (mm/s)				90
+/- belt sp (mm/s)				10
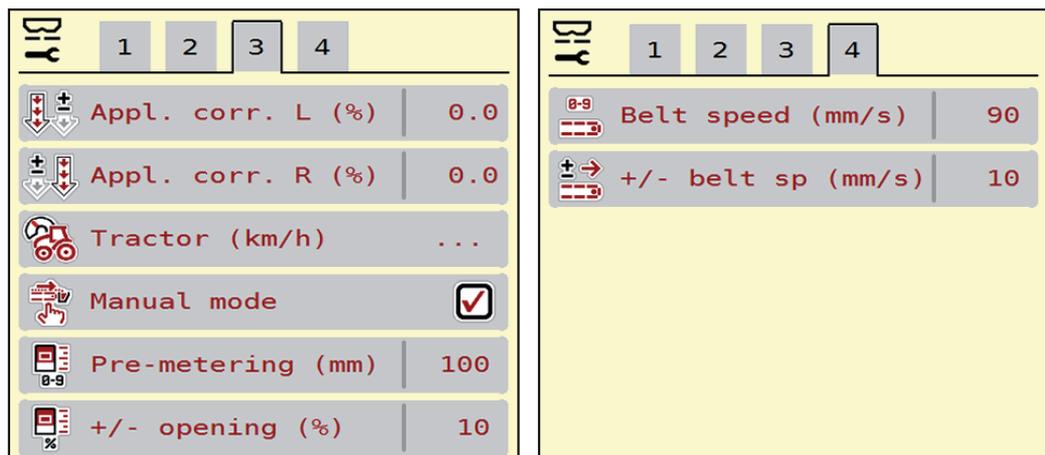
Figure 4.14: Machine settings menu, tab 3 and 4

NOTICE

Not all parameters are displayed simultaneously on one screen. You can use the **left/right arrow keys** to jump to the adjacent menu window (tab).

Submenu	Meaning	Description
Operating mode	Setting of the operating mode to automatic or manual.	Page 60
MAN scale	Setting of the manual scale value. (Effective only for the relevant operating mode)	Entered in a separate input window. **No function in lime operation**
MAN km/h	Manual speed setting. (Effective only for the relevant operating mode)	Entered in a separate input window.
Speed/signal source	Selection/limitation of the speed signal ● AUTO speed (automatic selection of either gearbox or radar/GPS[1]) ● GPS J1939[1]	
+/- appl. Rate (%)	Presetting the application rate adjustment for the different types of spreading.	Entered in a separate input window.
Task Control	Activation of the ISOBUS Task Controller functions for documentation and for application map spreading. ● Task Control On (with tick) ● Task Control Off	
GPS-Control	Activation of the function for controlling the machine's sections using a GPS control unit. ● GPS-Control AUTO (with tick) ● GPS-Control Off	
Change speed	Activation of the function for changing the speed in border spreading mode on the working screen. If the function is deactivated, changes can only be made in percent (%)	**No function in lime operation**
Fertiliser info	Activation of the display for fertiliser information (fertiliser name, spreading disc type, working width) on the working screen.	

Submenu	Meaning	Description
kg level sensor	Enter the quantity at which an "empty" alarm message will be triggered via the weigh cells.	
AXMAT	**AXIS PowerPack only** Activate the AXMAT function	Follow the operating manual for the optional equipment
Application rate correction L/R (%)	Correction of the deviations between the entered application rate and the actual application rate. ● Correction in percent on the right side and/or the left side	**No function in lime operation**
Tractor (km/h)	Determining or calibrating the speed signal.	Page 64
Manual mode		Page 62 **No function in lime operation**
Pre-metering (mm)	Setting the opening of the pre-metering sliders.	**No function in lime operation** Entered in a separate input window.
+/- opening (%)	Presetting the opening change for the pre-metering sliders	**No function in lime operation** Entered in a separate input window.
+/- belt sp (mm/s)	Presetting the speed change for the conveyor belt	**No function in lime operation**
Belt speed (mm/s)	Setting of the conveyor belt speed.	Page 62 **No function in lime operation**
kg level sensor	Enter the quantity at which an "empty" alarm message will be triggered via the weigh cells.	

1. The manufacturer of the machine control unit is not responsible if the GPS signal is lost.

4.7.1 AUTO/MAN mode

The machine control unit controls the metered rate automatically based on the speed signal. In doing so, it takes into account the application rate, the working width and the flow factor.

By default, you work in **automatic** mode.

You only work in the **manual** mode if:

- There is no speed signal (radar or wheel sensor not available or defective)
- when spreading slug pellets or seeds (fine seeds).

<div style="background:blue;color:white;text-align:center">*NOTICE*</div>

For even spreading of the spreading material, you need to work with a **constant forward speed** in the manual operating mode.

<div style="background:blue;color:white;text-align:center">*NOTICE*</div>

Spreading work with the different operating modes can be found in the chapters 5: Spreading operation with the AXIS PowerPack, page 87 and 6: Spreading operation with the LIME PowerPack, page 107.

Menu	Meaning	Description
AUTO km/h + AUTO kg	**AXIS PowerPack only** Selection of automatic mode with automatic weighing	Page 95
AUTO km/h	Selection of automatic mode	Page 99
MAN km/h	Forward speed adjustment for manual mode	Page 100
MAN scale	**AXIS PowerPack only** Metering slider adjustment for manual mode. This operating mode is suitable for spreading slug pellets or fine seeds.	Page 101

Selecting the operating mode

1. Start the AXENT ISOBUS machine control unit.

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

3. Select the desired menu item from the list.

4. Press **OK**.

5. Follow the instructions on the screen.

NOTICE

We recommend displaying the flow factor on the working screen. In this way you can observe the mass flow control during the spreading work. See chapter 2.2: Display fields, page 7 and chapter 4.7.1: AUTO/MAN mode, page 57.

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*   Important information on the use of the operating modes during spreading operation is provided in chapters 5: Spreading operation with the AXIS PowerPack, page 87 and 6: Spreading operation with the LIME PowerPack, page 107.

4.7.2   +/- appl. rate

In this menu you can specify the increment of the percentage change in **application rate** for the normal spreading type.

The basis (100%) is the default value for the opening of the metering sliders.

NOTICE

During operation, you can use the **Appl. rate + / Appl. rate -** function keys to change the application at any time by the factor entered in **+/- appl. rate**.

Use the **C 100% key** to restore the default settings.

Setting an application rate reduction:

1. Call up the **Machine settings > +/- appl. Rate (%)** menu.

2. Enter the percentage by which you wish to change the application rate.

3. Press **OK**.

4.7.3   Operating mode of the transfer function

> ### *NOTICE*
>
> The transfer function with the different operating modes is described in the chapters <u>5.1: Transfer, page 87</u> and <u>6.1: Transfer, page 107</u>.
>
> ● Also follow the operating manual of your AXENT large area spreader.

You control the transfer of the fertiliser into the AXIS PowerPack or LIME PowerPack spreading units with two possible operating modes.
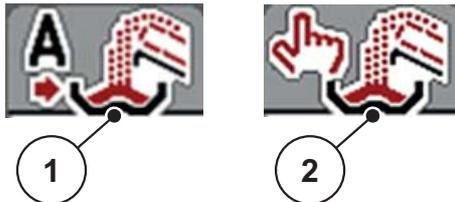
Figure 4.15:   Operating mode symbols

[1]   Automatic
[2]   Manual

● We recommend always working in **automatic** mode.
The machine control unit controls the valves for fertiliser delivery **fully automatically** based on the information from the sensors.

● In the **Manual** mode, you start and stop the transfer by pressing the **activation key**. The sensor statuses tell you what steps you need to take.

Selecting the operating mode

1. Switch on the AXENT ISOBUS machine control unit.

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

3. Select the desired menu item from the list.

4. Press **OK**.

Automatic

> ### ⚠ WARNING
>
> **Risk of crushing and shearing from powered parts**
>
> The pre-metering sliders and the conveyor belt move without warning and can injure people.
>
> ▶ Ensure that nobody is present in the hazard zone.

● See also <u>5.1.1: Transfer with automatic operating mode, page 87</u> and <u>6.1: Transfer, page 107</u>.

Manual (with AXIS PowerPack only)

> ⚠ **CAUTION**
>
> **Danger of slipping and of damage to the environment from escaping fertiliser**
>
> Activate the **Manual** mode only in exceptional cases. If the transfer is active, the fertiliser spreader can overflow and an excessive amount of fertiliser can flow out of the hopper unexpectedly. People could slip and injure themselves. Danger to the environment.
>
> ▶ Check manual transfer continuously during spreading.
> ▶ Only use the manual operating mode for a short time in exceptional cases.
> ▶ Use **automatic** mode where possible.

5. Select the **Manual mode** menu item.

▷ Warning message No. 39 appears. See 7.1: Meaning of the alarm messages, page 111.

6. Press the **ACK** key.

▷ The warning message is acknowledged.

You decide when to transfer, and you stop the transfer manually.

1. Press the **Transfer start** key.

▷ **The transfer starts.**

The transfer process follows the same order as for the **automatic** mode.

2. Press the **Transfer start** key.

▷ **The transfer stops.**

● See also 5.1.2: Transfer with manual operating load, page 89.

4.7.4   Lime operation

When the machine control unit is started up, the attached lime spreading unit (LIME PowerPack) is automatically detected and the machine control unit switches to lime operation.
Lime operation is speed-dependent: the speed of the conveyor belt and the opening of the pre-metering sliders automatically adapt to your forward speed in order to ensure the even spreading of lime.

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

2. Select the **AUTO km/h** or **MAN km/h** menu item.

▷ **You can start lime operation.**
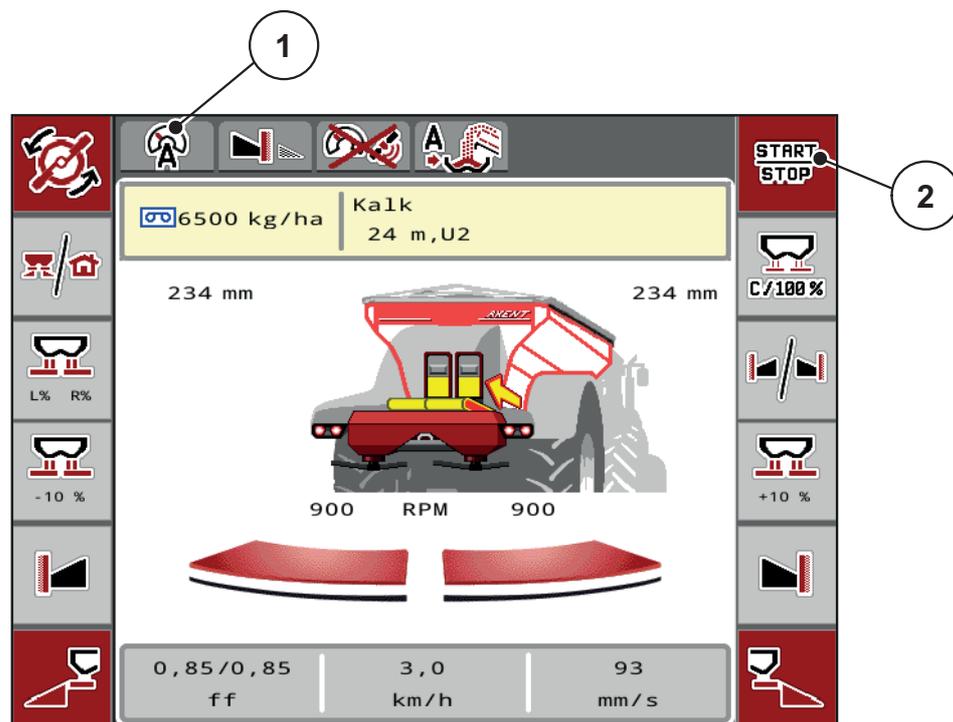
Figure 4.16:   Working screen in lime operation

[1]   Symbol for active operating mode: lime AUTO km/h
[2]   Starting spreading operation

4.7.5   Conveyor belt speed (with AXIS PowerPack only)

In this menu you can set the **speed** of the conveyor belt.

During operation, you can change the speed of the conveyor belt on the working screen. See .

1. Call up the **Machine settings > Belt speed (mm/s)** menu.
2. Enter the value by which you wish to change the speed.
3. Press **OK**.

4.7.6   +/- belt sp (with AXIS PowerPack only)

In this menu you can preset the **speed change** .

NOTICE
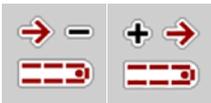
Only available in Manual mode: during operation, you can change the speed of the conveyor belt by the preset value (mm/s) at any time using the **Speed + / Speed -** function keys.

Use the **C 100% key** to restore the default settings.

Set the speed change:
1. Call up the **Machine settings > Belt speed (mm/s)** menu.
2. Enter the value by which you wish to change the speed.
3. Press **OK**.

4.7.7   Opening of the pre-metering sliders (with AXIS-PowerPack only)

In this menu, you can set the **opening** of the pre-metering sliders.

During operation you can change the opening of the pre-metering sliders on the working screen.

1. Call up the **Machine settings > Pre-metering slider (mm)** menu.
2. Enter the value that you took from the fertiliser chart.
3. Press **OK**.

4.7.8   Opening change (with AXIS PowerPack only)

In this menu you can define a percentage **change** in the pre-metering slider opening.

The basis (100%) is the default value for the opening of the pre-metering sliders.

NOTICE

Only available in Manual mode: During operation, you can change the opening of the pre-metering sliders by the factor of **Opening (%)** at any time using the function keys **Open +/Open -**.

Use the **C 100% key** to restore the default settings.

Set the opening change:

1. Call up the **Machine settings > +/- opening (%)** menu.
2. Enter the percentage by which you wish to change the opening.
3. Press **OK**.

4.7.9   Speed calibration

The speed calibration is the basic requirement for an exact spreading result. Factors such as e.g. tyre size, slippage between tyres and ground, ground characteristics and tyre pressure all influence the speed measurement and therefore the spreading result.

Preparing the speed calibration:

The exact calculation of the number of speed pulses over 100 m is very important for the precise spreading of fertiliser.

● Carry out the calibration on a field. This reduces the influence of the ground characteristics on the calibration result.

● Determine a **100 m** long reference track as precisely as possible.

● Fill only half of the machine, if possible.

Calling up the speed settings:

In the AXENT ISOBUS control unit, you can save up to **4 different profiles** for the type and number of pulses. You can assign names to these profiles (e.g. tractor name).

Before spreading, check that the correct profile is opened in the control unit.

● Call up the **Machine settings > Tractor (km/h)** menu.
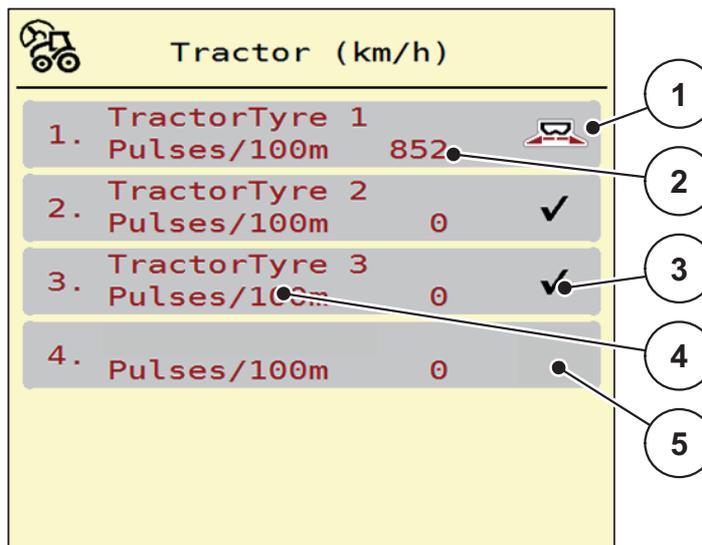
Figure 4.17:   Tractor (km/h) menu

[1]   Active tractor profile
[2]   Number of pulses over 100 m
[3]   Profile is created, currently not used
[4]   Tractor type
[5]   Empty tractor profile

Recalibrating the speed signal:

You can either overwrite an existing profile or create a profile in an empty memory location.

1. Call up the desired profile in the **Tractor (km / h)** menu.
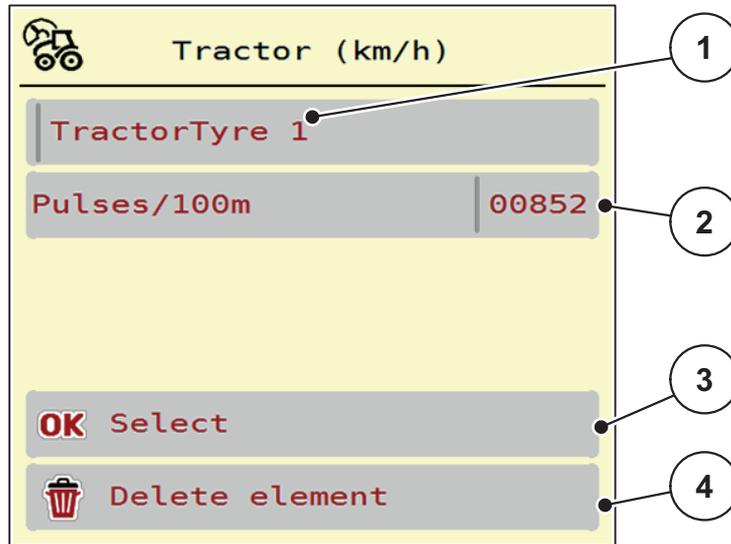
Figure 4.18: Tractor profile

[1]   Tractor name field
[2]   Display of number of pulses over 100 m
[3]   Confirm selection of the profile
[4]   Delete profile

2. Open the **name field [1]**.

3. Enter the name of the profile.

4. Press **OK [3]**.

▷ **The profile is active.**

NOTICE

The input of the name is restricted to **16 characters**.

Use the name of the tractor for ease of understanding.

The number of pulses of the speed signal must still be specified below. If the exact number of pulses is known, you can enter it directly:

5. Call up the **Imp/100m** menu item from the selected tractor profile.

▷ **The display shows the Pulses menu for the manual input of the pulse count.**

If you **do not know** the exact number of pulses, you can start the **calibration run**.

6. Press the calibration key in the tractor profile.

▷ The calibration run working screen is shown on the display.

7. Press the **Start key** at the starting point of the reference track.

▷ The pulse display is now set to zero.

▷ The control unit is ready to count pulses.

8. Drive a reference distance of 100 m.

9. Stop the tractor at the end of the reference distance.

10. Press the **Stop key**.

▷ The display shows the number of received pulses.

▷ **The new pulse count is saved.**

▷ **This returns you to the profile menu.**

4.8   Fast emptying

In order to quickly clean the machine after the spreading work or to quickly empty any remaining material, you can select the **Fast emptying** menu.

Before storing the machine, we recommend **completely opening** the pre-metering sliders by fast emptying, and then switching off the AXENT ISOBUS in that state. This prevents accumulation of humidity in the hopper.

> *NOTICE*
>
> Ensure that all preconditions have been met **before starting** the fast emptying process. Follow the operating manual of the machine (discharging remaining material).

Performing fast emptying:

1. Call up the **Main menu > Fast emptying** menu.

> **⚠ CAUTION**
>
> **Risk of injury due to automatic adjustment of the drop point**
>
> For the **AXIS PowerPack** fertiliser spreading unit, the **Move to drop point** alarm appears. After the **Start/Stop** function key is pressed, the drop point automatically moves to position 0. After the calibration, the drop point automatically returns to the preset value. This may cause injury and material damage.
>
> ▶ Before pressing **Start/Stop,** make sure that **nobody** is in the hazard zone of the machine.
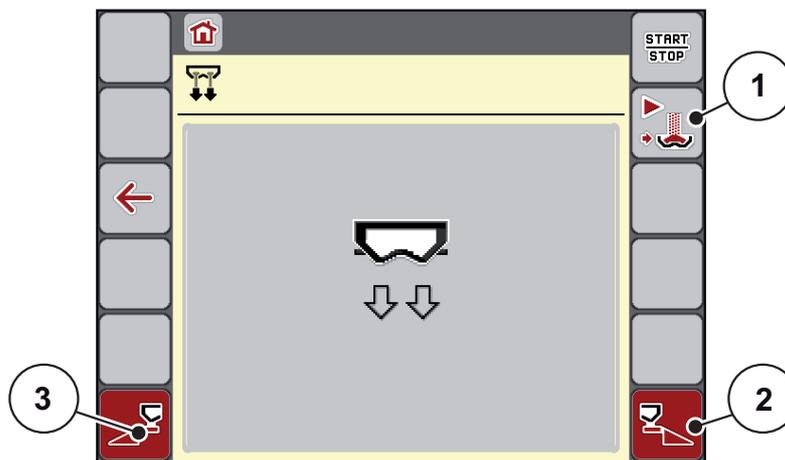
Figure 4.19: Fast emptying menu

[1] Start manual transfer
[2] Fast emptying of the right section (selected)
[3] Fast emptying of the left section (selected)

2. Use the **function key** to select the section where the fast emptying is to be carried out.

▷ The display shows the selected section as a symbol (Figure 4.19, [2]).

3. Press **Start/Stop**.

▷ The fast emptying process starts.

4. Press **Start/Stop** when the hopper is empty.

▷ The fast emptying process is stopped.

5. Press **ESC** to return to the **main menu**.

⚠ CAUTION
Risk of injury due to automatic adjustment of the drop point For the **AXIS PowerPack** fertiliser spreading unit, the **Move to drop point** alarm appears. After the **Start/Stop** function key is pressed, the drop point automatically moves to the preset value. This may cause injury and material damage. ▶ Before pressing **Start/Stop,** make sure that **nobody** is in the hazard zone of the machine.

4.9   System/Test

In this menu, you can configure the system and test settings for the machine control unit.

● Call up the **Main menu > System/Test** menu.
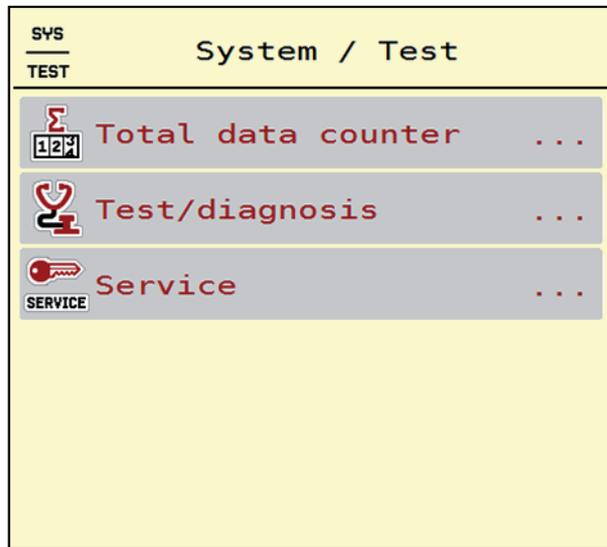
Figure 4.20:   System/Test menu

Submenu	Meaning	Description
Total data counter	Display of the entire ● amount of material spread, in kg ● Spread area in ha ● Spreading time in h ● Distance travelled in km	Page 70
Test/Diagnosis	Checking of actuators and sensors.	Page 71
Service	Service settings	Password-protected; accessible only for service personnel

4.9.1   Total data counter

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

- Amount of material spread, in kg
- Spread area in ha
- Spreading time in h
- Distance travelled in km

NOTICE

This menu is for information purposes only.

Figure 4.21:   Total data counter menu

4.9.2   Test/Diagnosis

In the **Test/Diagnosis** menu, you can monitor and test the function of some sensors/actuators.

NOTICE

This menu is for information purposes only.

The list of sensors depends on the equipment of the machine and the attached spreading unit (AXIS or LIME PowerPack).

⚠ **CAUTION**

Risk of injury caused by moving machine parts.

Machine parts can move automatically during the tests. This can lead to personal injuries.

▶ Before the tests, order everyone to leave the hazard zone of the machine.

Submenu	Meaning	Description
Voltage	Checking the operating voltage.	
Metering slider	Manual actuation of the actuators.	Page 74
Test points slider	Test for moving to the various positioning points of the slides.	Checking the calibration
Drop point	Manual actuation of the actuators.	
Test points drop pt.	Approaching the drop point.	Checking the calibration
LIN bus	Checking the communication of the drop point cylinders.	Page 75
Spreading disc	Turning on the spreading discs manually.	
Agitator	Checking the agitator.	
EMC sensors	Checking the pressure sensors.	
Weigh cell	Checking the sensors.	
Level sensor	Checking the sensor.	
AXMAT sensor status	Checking the sensor.	
Oil tank	Checking the oil temperature and oil level.	
Pre-metering	Test function for opening/closing the pre-metering sliders.	Checking the calibration

Submenu	Meaning	Description
Belt drive	Manual movement of the conveyor belt	
Hopper cover	● Test function for opening/closing the hopper cover. ● Condition of the valves	
Sensor cover	Checking the safety switch on the cover	Page 72
Lime functions	Control of the comb roller and the vibrator motor.	Page 73

Example: cover sensor

1. Call up the **System/Test > Test/Diagnosis** menu.

2. Use the left/right arrows to scroll up to the **Sensor cover** page.

   ▷ The status of the actuators/sensors is displayed.
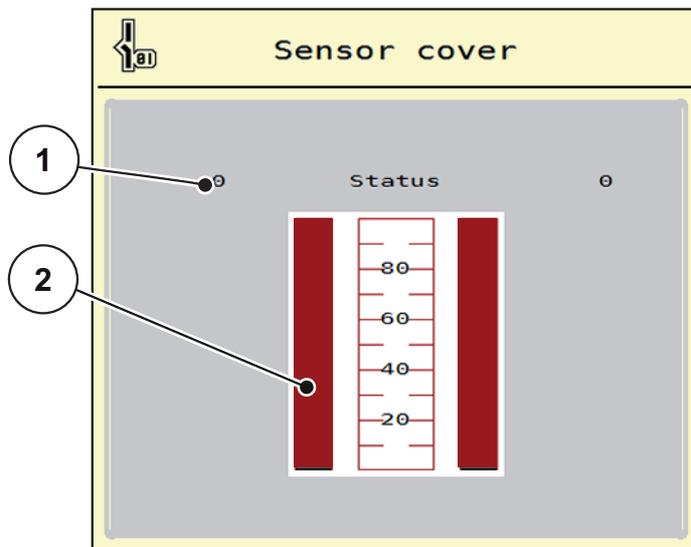
Figure 4.22: Test/Diagnosis; example: Sensor cover

[1]   Signal display; 1: cover is closed; 0: cover is open
[2]   Bar graph for signal

Example: lime functions

1. Call up the **System/Test > Test/Diagnosis** menu.

2. Use the left/right arrows to scroll up to the **Lime functions** page.

   ▷ The status of the optional devices is displayed.
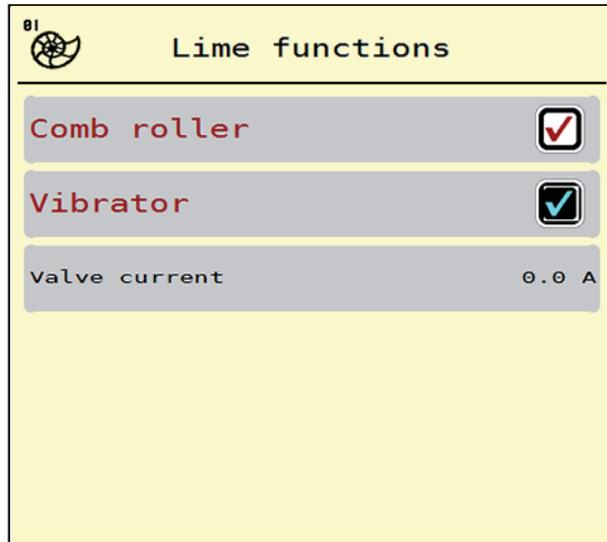
Figure 4.23:   Test/Diagnosis; example: lime functions

3. Tick box(es) on the touchscreen.

4. Press **Start/Stop**.

   ▷ The test to activate the selected device begins.

5. Press **Start/Stop** again.

   ▷ The test is finished.

Example: test/diagnosis of metering sliders

1. Call up the **Test/Diagnosis > Metering slider** menu.

▷ **The status of the actuators/sensors is displayed.**
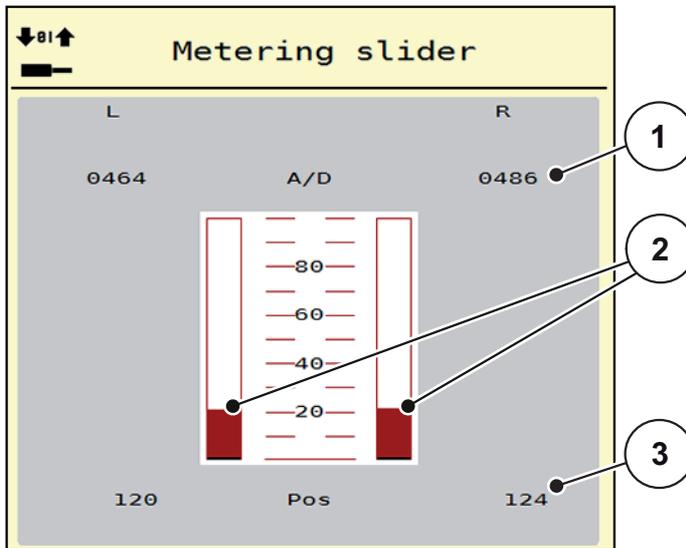
Figure 4.24:   Test/Diagnosis; example: actuator metering slider

[1]   Signal display
[2]   Bar graph for signal
[3]   Position display

The **signal** display shows the state of the electrical signal for the left and right side separately.

You can extend and retract the actuators using the up/down arrows.

Example: Linbus

1. Call up the **System/Test > Test/Diagnosis** menu.

2. Call up the **Linbus** menu item.

    ▷ The status of the actuators/sensors is displayed.
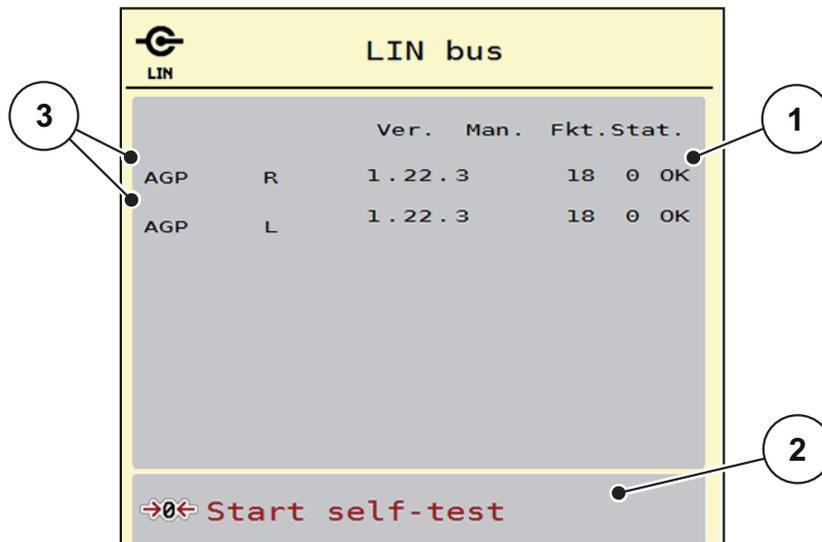
Figure 4.25: Test/Diagnosis; example: Linbus

[1] Status display
[2] Start self-test
[3] Connected actuators

Status message for Linbus device

The actuators have several different states:

* 0 = OK; no fault on the actuator

* 2 = blockage

* 4 = overload

4.9.3 Service

NOTICE

To adjust the settings in the **Service** menu, an input code is required. These settings can **only** be modified by authorised service personnel.

4.10 Info

You can find information about the machine controller in the **Info** menu.

<div style="background:#0a6cc4;color:#fff;text-align:center;font-style:italic;">NOTICE</div>

This menu provides information on the configuration of the machine.

The information list depends on the equipment of the machine.

4.11 Weighing – Trip count

In this menu you will find values for spreading work completed and functions for weighing.

● Call up the **Main menu > Weighing – Trip count** menu.

▷ The **Weighing – Trip count** menu appears.
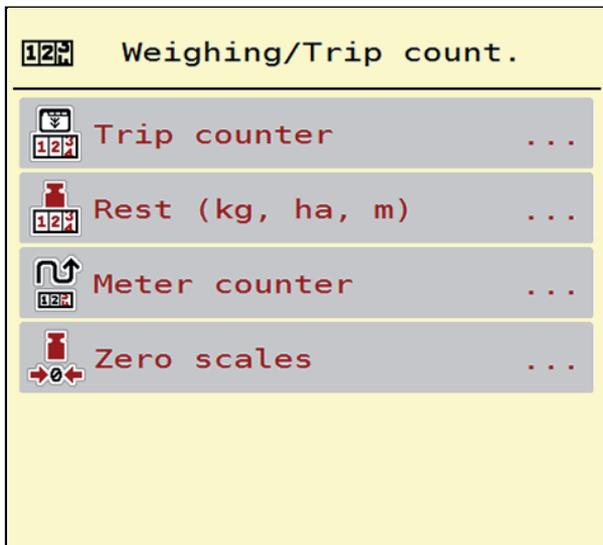
Figure 4.26: Weighing /Trip count menu

Submenu	Meaning	Description
Trip count	Display of the amount of material spread, the area covered and the distance covered.	Page 77
Rest (kg, ha, m)	Display of the remaining amount in the machine hopper.	Page 78
Meter counter	Displays the distance travelled since the metre counter was last reset.	Reset (zeroing) by pressing the **C/100% key**
Zero scales	Only for large area spreader with weighing function: Weighing value for an empty scale is set to "0 kg".	Page 79

4.11.1   Trip count

In this menu you can query the values of the spreading work performed, observe the remaining material available for spreading, and reset the trip counter by clearing it.

- Call up the menu **Weighing – Trip count > Trip count**.

  ▷   The **Trip count** menu appears.

During the spreading work (with the metering sliders open) you can go to the **Trip count** menu and view the current values.

NOTICE

If you wish to continuously observe the values during the spreading work, you may also assign the user-selectable display fields on the working screen to **kg trip**, **ha trip** or **m trip**; see 2.2: Display fields, page 7.
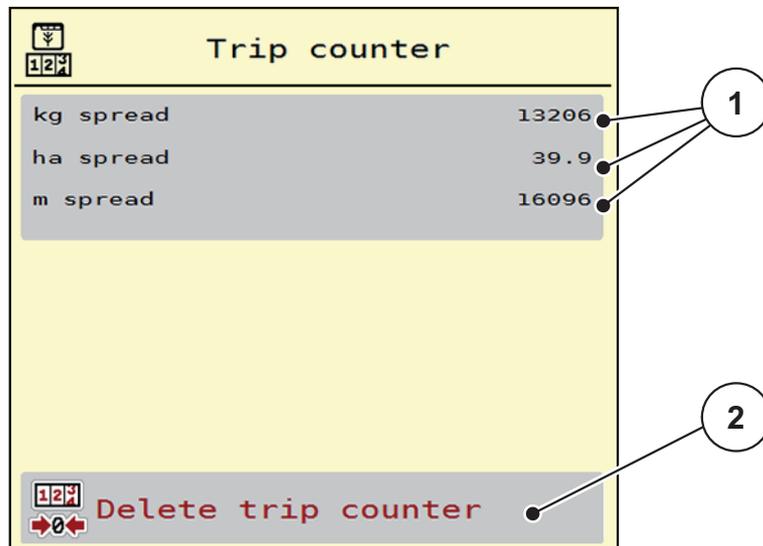
Figure 4.27:   Trip count menu

[1]   Display fields for material spread, area covered and distance covered
[2]   Delete trip count

Clearing the trip counter:

1. Call up the submenu **Weighing – Trip count > Trip count**.

   ▷   The display shows the values recorded for the amount of material spread, the area covered and the distance covered **since the last time the counter was cleared**.

2. Press the **Delete trip counter** button.

▷   **All the values of the trip counter are reset to 0.**

4.11.2   Remaining quantity

In the **Rest (kg, ha, m)** menu, you can query the **quantity remaining** in the hopper. The menu indicates the possible **area (ha)** and **distance (m)** that can still be spread with the remaining quantity of fertiliser.

● Call up the **Weighing – Trip count > Rest (kg, ha, m)** menu.

▷ The **Rest** menu appears.

▷ The display shows the remaining quantity.

NOTICE

The current loading weight can only be determined by weighing in a **weighing spreader**. In all other spreaders, the remaining fertiliser quantity is calculated from the fertiliser and machine settings and the driving signal, and the filled quantity must be entered manually (see below).

The values for **application rate** and **working width** cannot be changed in this menu. They are provided here for information only.
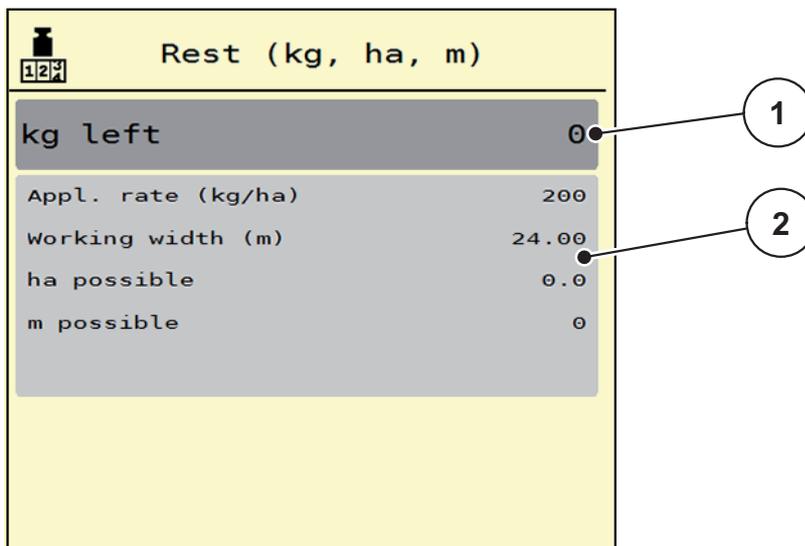
Figure 4.28:   kg left menu

[1]   Display of remaining quantity (in kg)
[2]   Display fields for application rate, working width and the possible area and distance that can be spread

4.11.3   Zero scales (only for large area spreaders with weighing function)

In this menu you set the weighing value to 0 kg when the hopper is empty.

The following conditions must be met when taring the scale:

- The hopper is empty.
- The machine is at a standstill.
- The machine is horizontal and free from the ground.
- The support leg is retracted.
- The PTO shaft is switched off.
- The tractor is at a standstill.

1.   Call up the menu **Weighing – Trip count > Zero scales**.

2.   Press the **Zero scales** button.

▷   **The weighing value with an empty scale is now set to 0 kg.**

NOTICE

Tare the scale before each use to ensure that the remaining quantity is calculated correctly.
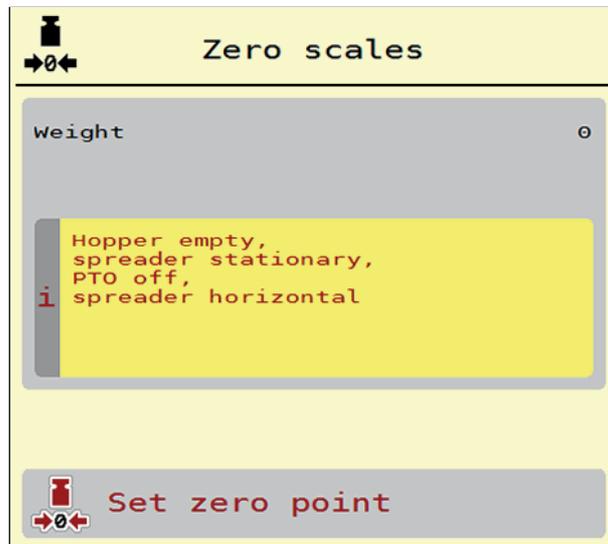
Figure 4.29:   Weighing – Trip count menu

4.12   Hopper cover (optional equipment for AXENT)

⚠ WARNING

Risk of crushing and shearing from powered parts

The hopper cover moves without warning and can injure people.

▶ Ensure that nobody is present in the hazard zone.

The AXENT large area spreader has a hydraulically controlled hopper cover. When refilling at the end of the field, you can open or close the hopper cover using the control unit and 2 hydraulic valves.

NOTICE

The menu is only for operating the valves for opening or closing the hopper cover. The AXENT ISOBUS machine control unit does not track the exact position of the hopper cover.

● Watch the movement of the hopper cover.
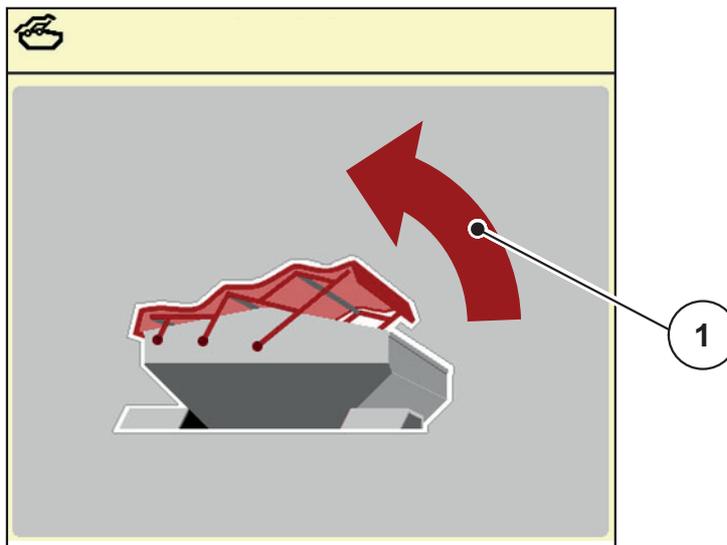
Figure 4.30:   Hopper cover menu

[1]   Display of opening process

⚠ CAUTION

Property damage due to insufficient space

Opening and closing the hopper cover requires sufficient space above the AXENT hopper. If the space is too small, the hopper cover can tear. The frame of the hopper cover can break and the hopper cover can cause damage to the surroundings.

▶ Make sure there is enough space above the hopper cover.

You can call up the **Hopper cover** menu using the **menu** key:

Moving the hopper cover

1. Press the function key and hold it until the hopper cover opens completely.

   ▷ During the movement an arrow appears which shows the **OPEN** direction.

2. Release the function key.

   ▷ The valve stops operating.

   ▷ The hopper cover stops.

3. Pour in the fertiliser.

4. Press the function key until the hopper cover closes completely.

   ▷ During the movement an arrow appears which shows the **CLOSE** direction.

5. Release the function key.

   ▷ The valve stops operating.

NOTICE
Hold down the function keys only as long as necessary. Otherwise there is a risk of the **components overheating**.

4.13   Operating lights (SpreadLight)

In this menu, you can activate the SpreadLight function and can monitor the spreading pattern even in night mode.

You switch the operating lights on and off via the machine control unit in automatic or manual mode.
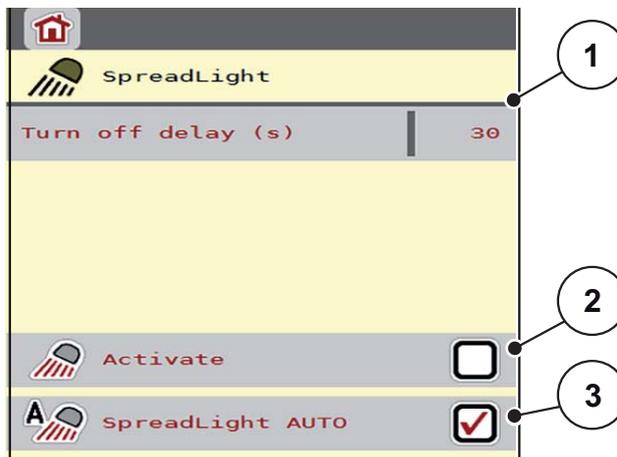
Figure 4.31:   SpreadLight menu

[1]   Turn off delay
[2]   Manual mode: Switch on operating lights
[3]   Activate automatic mode

Automatic mode:

In automatic mode, the operating lights are switched on as soon as the metering sliders open and the spreading process starts.

1.   Call up the **Main menu > SpreadLight** menu.

2.   Tick the box for the **SpreadLight AUTO** [3] menu item.

   ▷   The operating lights come on when the metering sliders open.

3.   Enter a turn off delay [1] in seconds.

   ▷   When the metering sliders close, the operating lights will turn off after the entered delay has expired.

   ●   Range from 10 to 100 seconds.

4.   Untick the box for the **SpreadLight AUTO** [3] menu item.

   ▷   Automatic mode is deactivated.

Manual mode:

In manual mode, you switch the operating lights on and off yourself.

1.   Call up the **Main menu > SpreadLight** menu.

2.   Tick the box for the **Switch on** [2] menu item.

   ▷   The operating lights are activated and remain on until you untick the box or leave the menu.

4.14   Special functions

4.14.1   Changing units of measurements

Your units of measurement have been preset at the factory. However, you can switch from metric to imperial values and vice versa at any time.

3. Call up the **Settings** menu of the terminal system.
4. Call up the **Unit** menu.
5. Select the desired system of measurement from the list.
6. Press **OK**.
▷ **All the values in the various menus will be converted.**

Menu/value	Conversion factor, metric to imperial
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
Application rate kg/ha	1 x 0.8922 lbs/ac
Mounting height cm	1 x 0.3937 in
Conveyor belt speed mm/s	1 x 0.0394 in/s
Oil temperature °C	°C * 1.8 + 32 = °F

Menu/value	Conversion factor, imperial to metric
lbs left	1 x 0.4536 kg
ac left	1 x 0.4047 ha
Working width ft	1 x 0.3048 m
Application rate lbs/ac	1 x 1.2208 kg/ha
Mounting height in	1 x 2.54 cm
Conveyor speed in/s	1 x 25.4 mm/s
Oil temperature °F	(°F - 32) / 1.8 = °C

4.14.2   Using a joystick

As an alternative to the settings on the working screen of the ISOBUS terminal, you can use a joystick. The joystick we supply is pre-programmed with certain functions at the factory.

> *NOTICE*
>
> If you want to use a different joystick, contact your dealer.
>
> ● Follow the instructions in the operating manual for the ISOBUS terminal.

Functions of keys on the WTK joystick
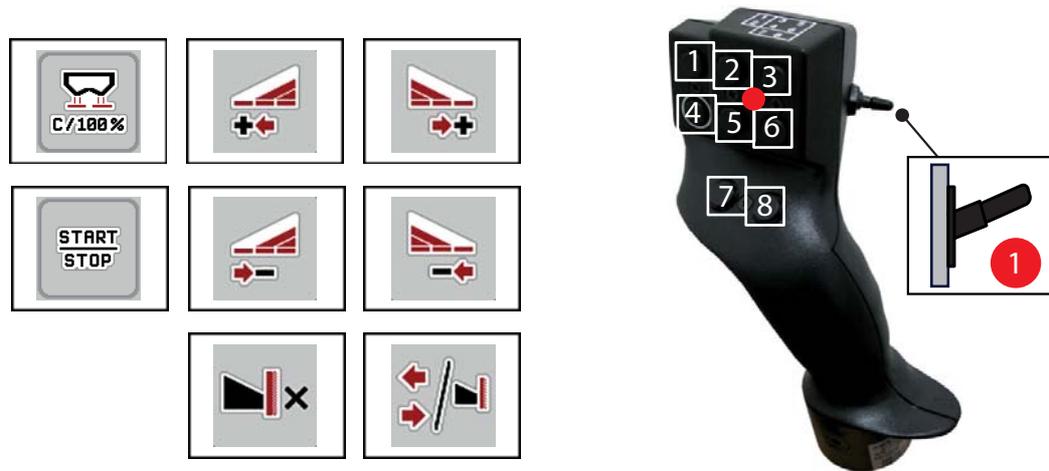
Figure 4.32:   Key functions, level 1 (LED is red)

[1]   Reset
[2]   AXIS PowerPack: increase left section,
        LIME PowerPack: no function
[3]   AXIS PowerPack: increase right section
        LIME PowerPack: no function
[4]   Start/stop regulation of the application rate
[5]   AXIS PowerPack: reduce left section (minus)
        LIME PowerPack: no function
[6]   AXIS PowerPack: reduce right section (minus)
        LIME PowerPack: no function
[7]   Toggle between full/limited border spreading modes
[8]   AXIS PowerPack: toggle between sections/border spreading
        LIME PowerPack: no function
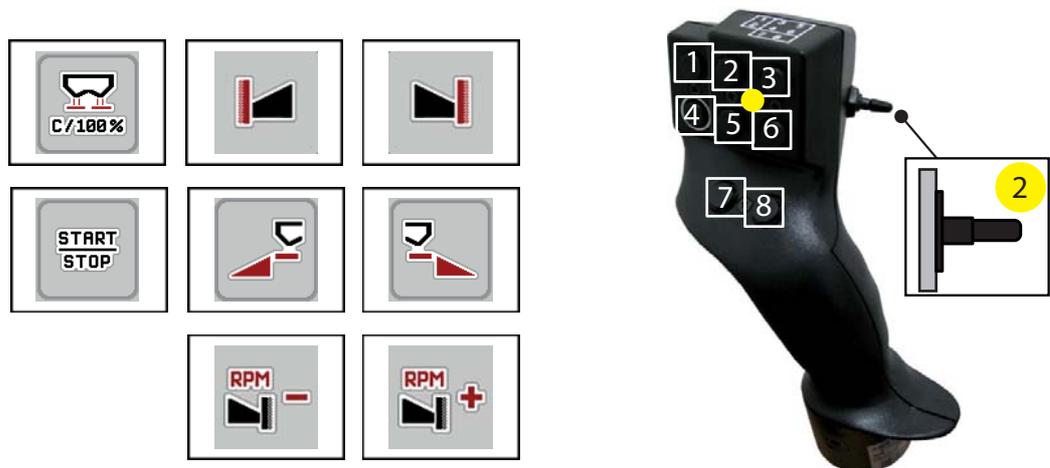
Figure 4.33:   Key functions, level 2 (LED is yellow)

[1]   Reset
[2]   Border spreading on the left side
[3]   Border spreading on the right side
[4]   Start/stop regulation of the application rate
[5]   Activate the left spreading side
[6]   Activate the right spreading side
[7]   Reduce the spreading disc speed
[8]   Increase the spreading disc speed
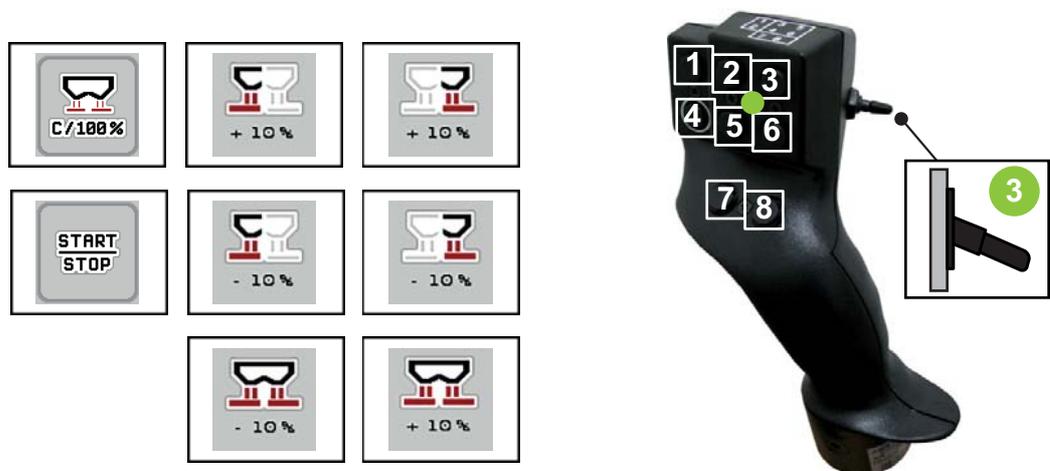
Figure 4.34:   Key functions, level 3 (LED is green)

[1]   Reset
[2]   AXIS PowerPack: increase application rate on the left
       LIME PowerPack: no function
[3]   AXIS PowerPack: increase application rate on the right
       LIME PowerPack: no function
[4]   Start/stop regulation of the application rate
[5]   AXIS PowerPack: reduce application rate on the left
       LIME PowerPack: no function
[6]   AXIS PowerPack: reduce application rate on the right
       LIME PowerPack: no function
[7]   Reduce the application rate on both sides
[8]   Increase the application rate on both sides

4.14.3   WLAN module (optional equipment)

A WLAN module can be used for wireless communication between a smartphone and the job computer. The following functions are possible:

● Transfer of information from the fertiliser chart app to the job computer. In this way, the fertiliser settings no longer have to be entered manually.

● Transfer of the remaining weight display from the job computer to the smartphone.

Figure 4.35:   WLAN module

You can find more information in the operating manual for the WLAN module.

5   Spreading operation with the AXIS PowerPack

5.1   Transfer

5.1.1   Transfer with automatic operating mode

Transfer is fully automatic and always follows the same sequence.

NOTICE

You can observe the sensor states and the transfer on the working screen. However, the messages are sent **without sound**.

Preconditions:

- **Automatic** mode is active.
    -

Function/control	Working screen display
● Press **Spreading disc start**. ● The conveyor belt starts. ● The pre-metering sliders open automatically. ● The PowerPack hopper fills up. When the maximum filling quantity is reached, the belt stops automatically.	
● Start spreading operation.	
● Transfer is active. ● Start spreading.	
● The transfer process runs continuously, in accordance with the rate of spreading. The belt speed and the pre-metering are adjusted automatically.	

Function/control	Working screen display
● Press the Start/Stop key at the end of the work. ● Stop the spreading discs.	
● The pre-metering sliders close automatically as soon as the spreading discs have stopped.	

5.1.2   Transfer with manual operating load

You can start and stop the transfer with the **Transfer start** key when one spreading side is empty. The sensor statuses tell you what steps you need to take.

Preconditions:

- The **Manual** operating mode is selected.

  - See.

- The spreading operation starts.

Function/control	Working screen display
● One of the two level sensors (LLST or LRST) reports empty.	
● Press **Transfer start**.	
● Transfer is active.	
● The pre-metering sliders open. ● The conveyor belt starts at the same time. ● Fertiliser flows into the spreading unit hopper.	
● Adjust the speed of the conveyor belt and the opening of the pre-metering sliders.	
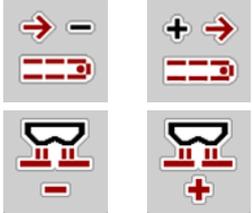
Function/control	Working screen display
● Both level sensors (LLST or LRST) are energised.	156 mm 157 mm
● The overflow has been reached.	
● Press **Transfer start**. ● The conveyor belt stops. ● The pre-metering sliders close.	
● The transfer is finished.	

5.2   Spreading fertiliser

5.2.1   Working with sections

Displaying the spreading type in the working screen

The machine control unit offers 4 different spreading types for the spreading operation of the AXIS PowerPack machine. These settings can be enabled directly in the working screen. During spreading operation you can switch between spreading types and thus perfectly adapt it to the field requirements.

Button	Spreading type
	Activate section on both sides
	Section on the left, with border spreading function possible on the right
	Section on the right, with border spreading function possible on the left
	Border spreading function on both sides
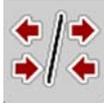
1. Keep pressing the function key until the desired spreading type is displayed.

Spreading with reduced sections

Spreading can be done with sections on one or both sides, in order to adapt the overall spreading width to the field requirements. Infinitely variable adjustment of each spreading side is possible in automatic mode, and adjustment in up to four steps in manual mode.

● Press the **Change between border spread/sections** key.
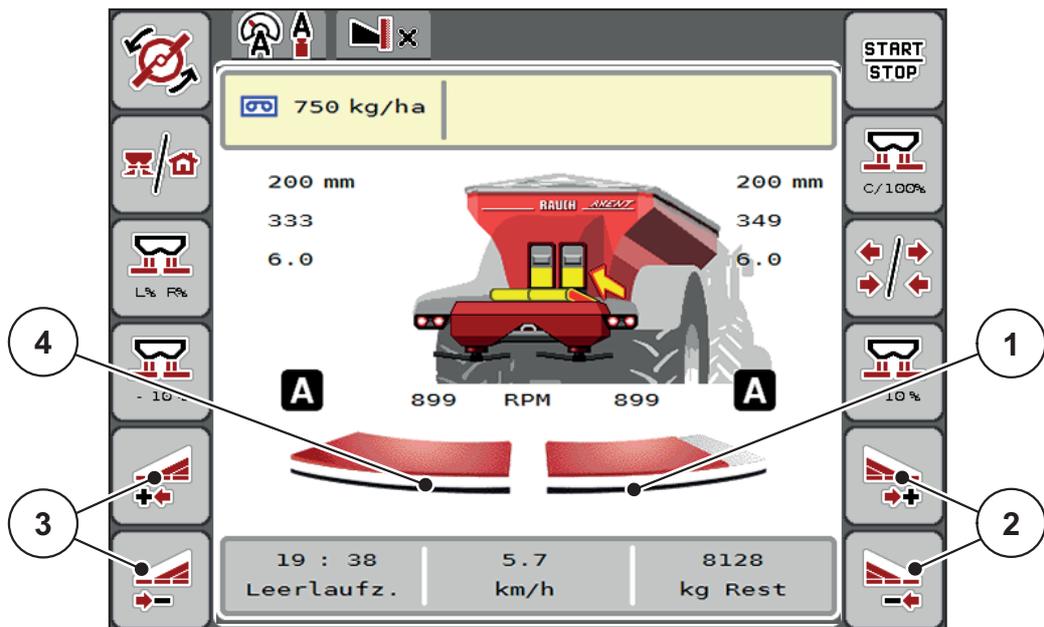
Figure 5.1:   Working screen, 2 sections

[1]   The right section is reduced to several steps
[2]   Function keys for increasing or reducing spreading width on the right
[3]   Function keys for increasing or reducing spreading width on the left
[4]   Left section will spread to the entire half

NOTICE

- Each section can be reduced or increased in steps.

- Section control is possible from the outside to the inside or vice versa.
  See .

We recommend restarting the terminal in the following cases:

- You have changed the working width.

- You have called up a different fertiliser chart entry.

After restarting the terminal, the section display adjusts to the new settings.

---

1. Press the **Reduce left spreading width** or **Reduce right spreading width**
    function key.

    ▷   The section of the spreading side will be reduced by one step.

2. Press the **Increase left spreading width** or **Increase right spreading width**
    function key.

    ▷   The section of the spreading side will be increased by one step.

NOTICE

The sections are not scaled proportionally. The VariSpread spreading width
wizard automatically adjusts the spreading widths.
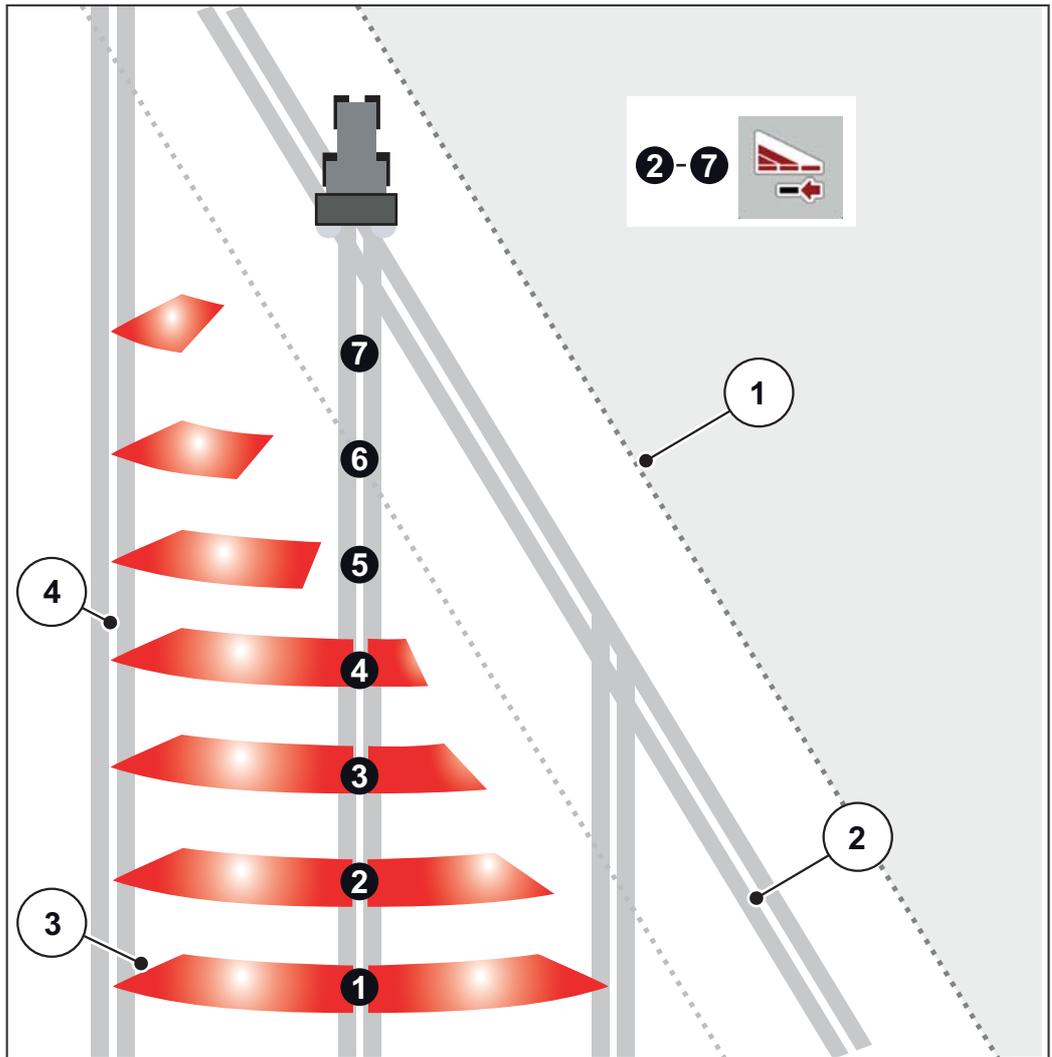
Figure 5.2:   Automatic section control

[1]   Field margin
[2]   Headland 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

Spreading operation with a section and in border spreading mode

During spreading operation, you can change the sections step-by-step and can deactivate border spreading. The figure below shows the working screen with activated limited border spreading and an activated section.
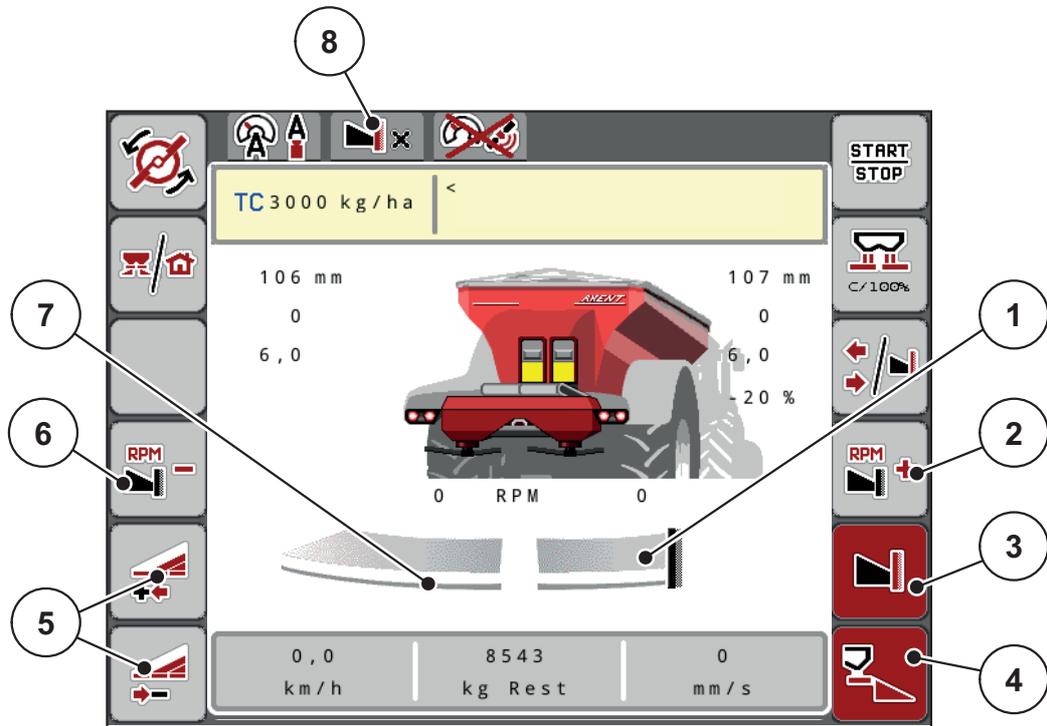
Figure 5.3:   Working screen: a section on the left, border spreading side on the right

[1]   Spreading side on the right in border spreading mode
[2]   Increase the spreading disc speed on the border spreading side
[3]   Limited border spreading mode is activated
[4]   Right spreading side is activated
[5]   Reduce or increase section on the left
[6]   Reduce the spreading disc speed on the border spreading side
[7]   Section on the left, adjustable in 4 steps
[8]   The currently active border spreading mode is limited border spreading.

● The application rate on the left is set to the full working width.

● The **Right border spread** function key has been pressed, border spreading has been activated and the application rate has been reduced by 20%.

● Fertiliser is spread over half of the working width on the right.

● Press the **Reduce left spreading width** function key in order to reduce the section by one step.

● Press the **C/100%** function key to immediately return to full working width.

● Press the **Right border spread** function key to deactivate border spreading.

NOTICE

The border spreading function is also possible in automatic mode with GPS Control.

● See 5.2.7: GPS Control, page 103.

5.2.2   Spreading with the AUTO km/h + AUTO kg operating mode

The **AUTO km/h + AUTO kg** operating mode enables continuous regulation of the application rate during spreading operation. The flow factor regulation is corrected at regular intervals on the basis of this information. This way, fertiliser metering can be optimised.

NOTICE

The **AUTO km/h + AUTO kg** operating mode is pre-selected by default at the factory.

Preconditions for spreading:

- The **AUTO km/h + AUTO kg** operating mode must be active (see 4.7.1: AUTO/MAN mode, page 57).
- The fertiliser settings are defined.
    - Application rate (kg/ha)
    - Working width (m)
    - Spreading disc type
    - Normal speed (RPM)

Procedure:

1. Fill the hopper with fertiliser.

⚠ WARNING

Risk of injury caused by ejected fertiliser

Ejected fertiliser may cause severe injury.

   ▶ Make sure no one is within the spreading zone around the machine before switching on the spreading discs.

2. Press **Spreading disc start**.

3. Confirm alarm messages with the Enter key. See 7.1: Meaning of the alarm messages, page 111.

   ▷ The idle measurement screen is displayed.

   ▷ The idle measurement starts automatically. See 5.2.3: Idle measurement, page 97.

4. Press **Start/Stop**.

   ▷ **The spreading starts.**

NOTICE

We recommend displaying the flow factor on the working screen (see 2.2: Display fields, page 7) in order to observe the flow factor regulation while spreading.

NOTICE
In the case of problems in the regulating behaviour of the flow factor (blockages etc.), rectify the error during a standstill and then navigate to the **Fertiliser settings** menu and enter a flow factor of 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 appears. See .

5.2.3   Idle measurement

Automatic idle measurement

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

The idle measurement to determine the idling pressure will start automatically under the following conditions:

● You have activated the spreading disc start.

● The specified time since the last idle measurement has expired.

● You have made changes in the **Fertiliser settings** menu (speed, spreading disc type).

● You have switched from border spreading to normal spreading.

During the idle measurement, the following window appears.
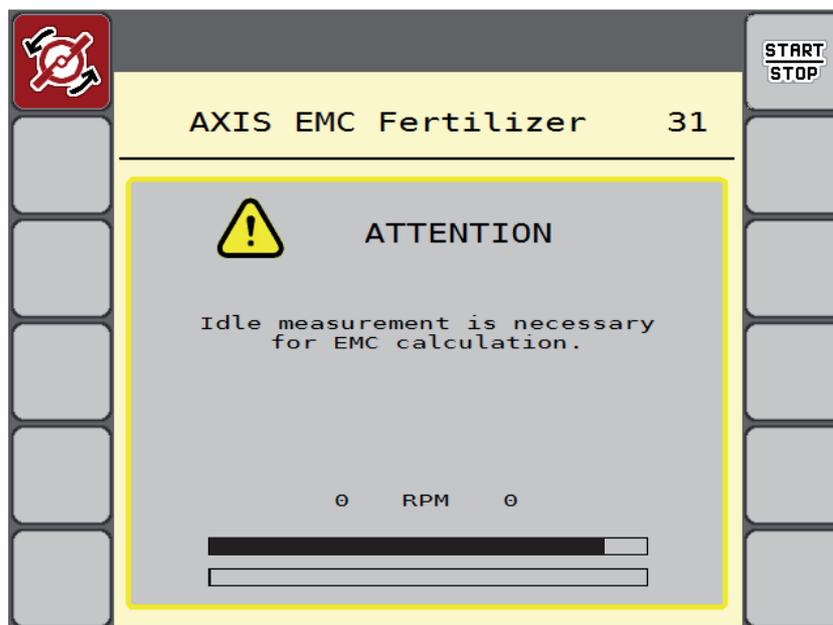
Figure 5.4:   Idle measurement alarm display

● At the first start of a spreading disc, the machine control unit checks the oil temperature of the gearbox. See .

NOTICE

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

● Compare the installed spreading disc with the type entered in the **Fertiliser settings** menu. If necessary, adjust the type.

● Check that the spreading disc is firmly installed. 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.

1. Press **Start/Stop**.

▷ The spreading starts.

▷ The idle measurement runs in the background, even if the metering sliders are closed. However, no dialogue box is shown on the display.

Once this idling time has expired, a further idle measurement is started automatically.
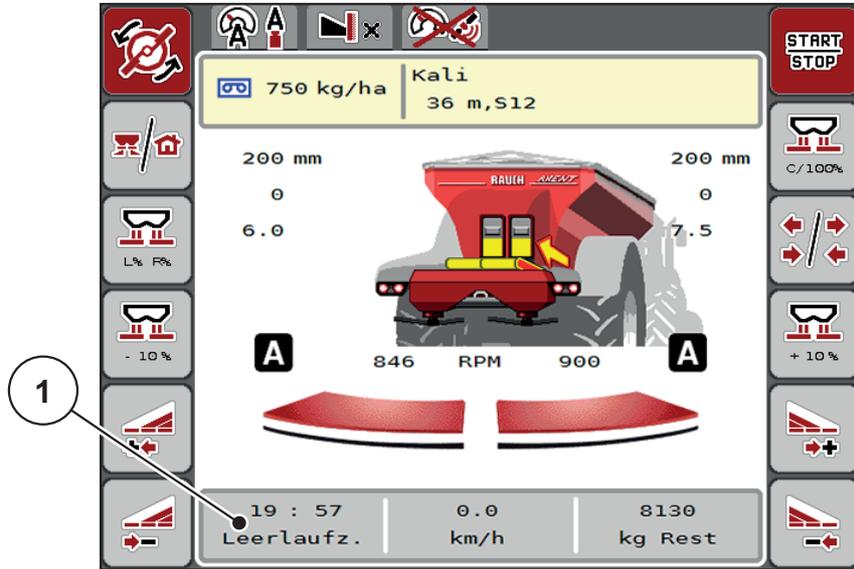
Figure 5.5:   Display of the idle measurement on the working screen

[1]   Time until the next idle measurement

NOTICE

At a reduced spreading disc speed, **no** idle measurement can be performed if border spreading or section reduction are activated!

NOTICE

When the metering sliders are closed, an idle measurement is carried out in the background at all times (without alarm message)!

NOTICE

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

The tractor and hydraulic circuit must be at operating temperature!

Manual idle measurement

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

● Press the Idle measurement key in the **Main menu**.

▷ The idle measurement is started manually.

5.2.4   Spreading with AUTO km/h operating mode

You work in this operating mode by default when using machines **without weighing technology**.

Preconditions for spreading:

- The **AUTO km/h + AUTO kg** operating mode is active (see).
- The fertiliser settings are defined.
  - Application rate (kg/ha)
  - Working width (m)
  - Spreading disc type
  - Normal speed (RPM)

1. Fill the hopper with fertiliser.

NOTICE

In order to achieve an optimum spreading result in the **AUTO km/h** operating mode, carry out a calibration before starting the spreading work.

---

2. Perform calibration for flow factor determination

or

Obtain the flow factor from the fertiliser chart and manually enter the flow factor.

⚠ WARNING

Risk of injury caused by ejected fertiliser

Ejected fertiliser may cause severe injury.

▶ Before activating the spreading discs, ensure that nobody is present in the spreading zone of the mineral fertiliser spreader.

---

3. Press **Spreading disc start**.

4. Press **Start/Stop**.

▷ **The spreading starts.**

5.2.5   Spreading in the MAN km/h operating mode

You work in the MAN km/h operating mode if there is no speed signal.

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

2. Select the **MAN km/h** menu item.

▷ The display shows the **Speed** selection window.

3. Enter the forward speed during spreading.

4. Press **OK**.

5. Configure the fertiliser settings:

● Application rate (kg/ha)

● Working width (m)

6. Fill the hopper with fertiliser.

NOTICE
In order to achieve an optimum spreading result in the MAN km/h operating mode, carry out a calibration before starting the spreading work.

7. Perform calibration for flow factor determination

or

Obtain the flow factor from the fertiliser chart and manually enter the flow factor.

8. Press **Spreading disc start**.

9. Press **Start/Stop**.

▷ **The spreading starts.**

NOTICE
Always maintain the set speed during spreading.

5.2.6   Spreading in the MAN scale operating mode

In the **MAN scale** operating mode, you can manually change the metering slider openings during the spreading operation.

You only work in the **manual** 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** is useful for slug pellets and fine seeds because the automatic mass flow control cannot be activated due to the low weight loss.

NOTICE

For even spreading of the spreading material, you need to work with a **constant forward speed** in the manual operating mode.
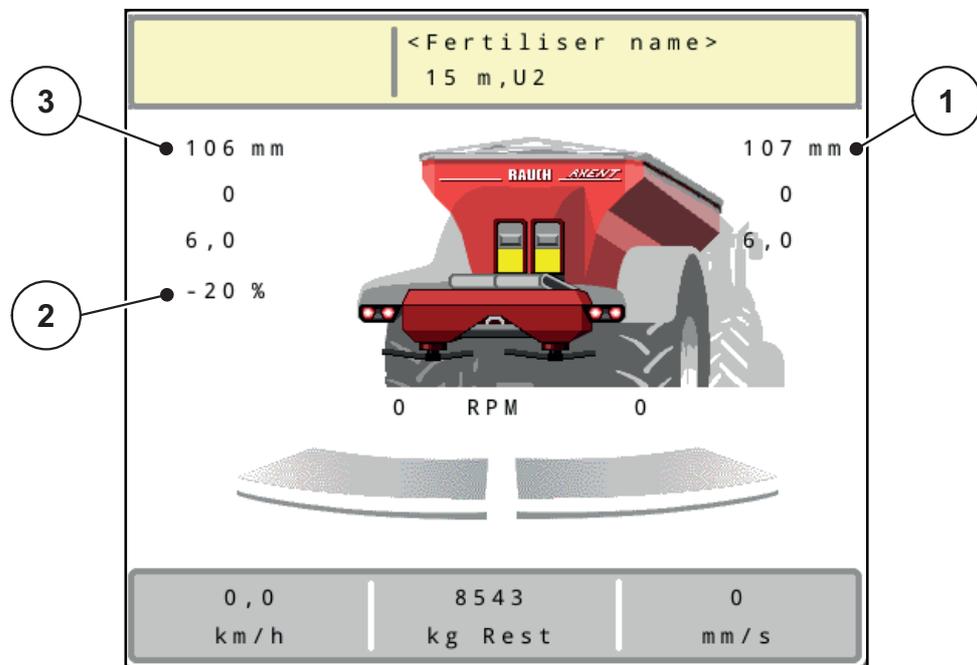
Figure 5.6:   MAN scale working screen

[1]   Display of target scale position for metering slider
[2]   Display of current scale position for metering slider
[3]   Application rate adjustment

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

2.   Select the **MAN scale** menu item.

   ▷   The display shows the **Metering slider opening** window.

3.   Enter the scale value for the metering slider opening.

4.   Press **OK**.

5. Switch to the working screen.

6. Press **Spreading disc start**.

7. Press **Start/Stop**.

▷ **The spreading starts.**

8. To change the metering slider opening, press the **MAN+** or **MAN-** function key.

L% R% for selecting the side for the metering slider opening

MAN+ to increase the metering slider opening or

MAN- to reduce the metering slider opening.

NOTICE

In order to achieve an optimum spreading result in manual mode as well, it is recommended to apply the metering slider opening and ground speed values provided in the fertiliser chart.

5.2.7   GPS Control

The AXENT ISOBUS machine control unit can be combined with an ISOBUS terminal with SectionControl. Various items of data are exchanged between both devices in order to automate section control.

The ISOBUS terminal with SectionControl transfers the specifications on the opening and closing of metering sliders to the machine control unit.

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

⚠ WARNING

Risk of injury caused by ejected fertiliser

The SectionControl function automatically starts the spreading operation without warning. Escaping fertiliser may lead to injury of the eyes and nasal mucous membranes. There is also a risk of slipping.

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

You can close **one or more sections** at any time during spreading work. If you re-activate the sections for automatic operation, the last state requested is restored.

If you switch from automatic to manual mode in the ISOBUS terminal with SectionControl, the machine control unit closes the metering sliders.

NOTICE

The **GPS Control** setting in the **Machine settings** menu must be activated in order to use the GPS control functions of the machine control unit!
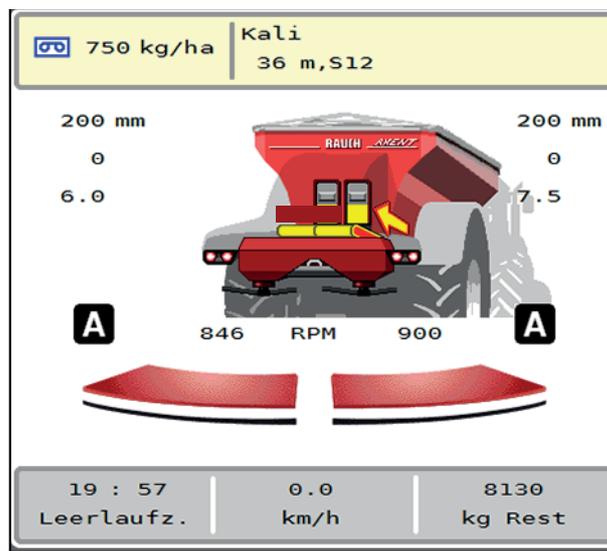
Figure 5.7:   Spreading operation display on the working screen with GPS Control

The **OptiPoint** function calculates the optimal switching-on and switching-off point for spreading in the headlands based on the settings in the machine control unit; see .

NOTICE

For correct setting of the OptiPoint function, please enter the correct distance factor for the fertiliser you are using. The distance factor can be obtained from the fertiliser chart for your machine.

● See .

Switch-on distance (m)

Switch-on distance refers to the switch-on distance (Figure 5.8 [A]) relating to the field border (Figure 5.8 [C]). At this position in the field, the metering slides start to open. This distance depends on the type of fertiliser and represents the ideal switch-on distance for optimised fertiliser distribution.
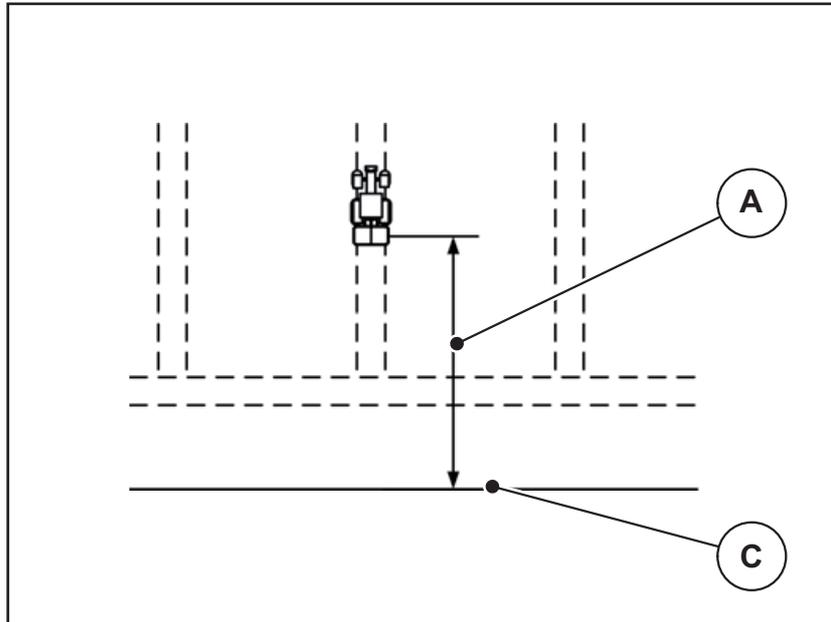
Figure 5.8:   Switch-on distance (relating to field border)

[A]   Switch-on distance
[C]   Field border

If the switch-on position in the field is to be changed, the **switch-on distance** has to be adjusted.

● A lower distance value 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 centre of the field.

Switch-off distance (m)

Switch-off distance refers to the switch-off distance (Figure 5.9 [B]) relating to the field border (Figure 5.9 [C]). At this position in the field, the metering slides start to close.
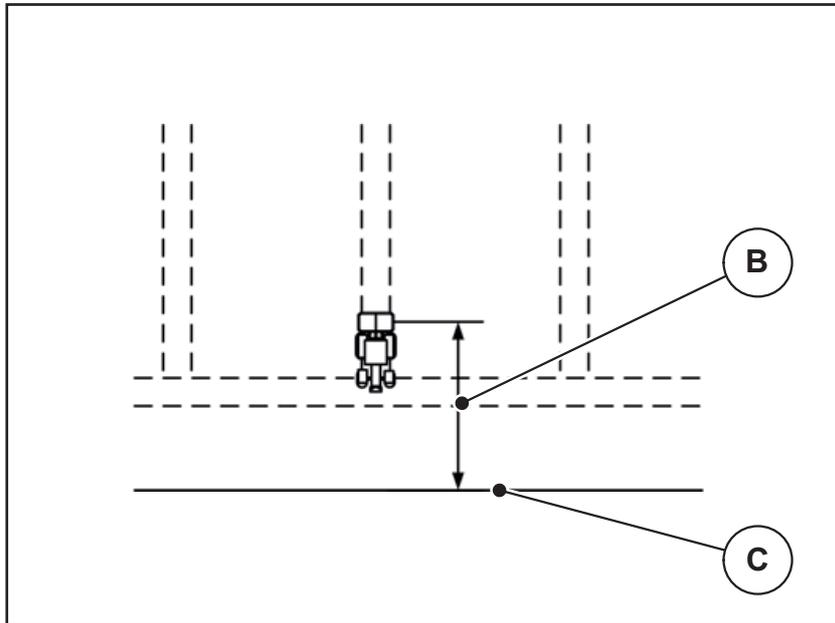
Figure 5.9:   Switch-off distance (relating to field border)

[B]   Switch-off distance
[C]   Field border

6   Spreading operation with the LIME PowerPack

6.1   Transfer

Transfer is fully automatic and always follows the same sequence.

Preconditions:

- **Automatic** mode is active.

   - See.

Function/control	Working screen display
● Press **Spreading disc start**. ● The pre-metering sliders open automatically.	
● Start spreading operation. ● The conveyor belt starts.	
● Transfer is active. ● Start spreading.	
● Press the Start/Stop key at the end of the work. ● Stop the spreading discs.	
● The pre-metering sliders close automatically as soon as the spreading discs have stopped.	

6.2   Spreading lime

When the machine control unit is started up, the attached lime spreading unit is automatically detected and the machine control unit switches to lime operation. Lime operation is speed-dependent: the speed of the conveyor belt and the opening of the pre-metering sliders automatically adapt to your forward speed in order to ensure the even spreading of lime.

6.2.1   Entering the settings on the ISOBUS terminal

Entering the application rate:

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

    ▷   The display shows the **currently active** application rate.

2. Enter the desired application rate in the range between 500 to 10,000 kg/ha.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

Specify the working width:

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

2. Enter the desired working width in the range between 12 m to 15 m.

3. Press **OK**.

▷   **The new value is saved in the machine control unit.**

Selecting the operating mode

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

2. Select the **AUTO km/h** or **MAN km/h** menu item.

▷   **You can start lime operation.**

Setting the spreading disc type

1. Call up the **Fertiliser settings > Spreading disc** menu.

2. Select spreading disc type **U2**.

▷   **You can start lime operation.**

6.2.2   Starting spreading operation
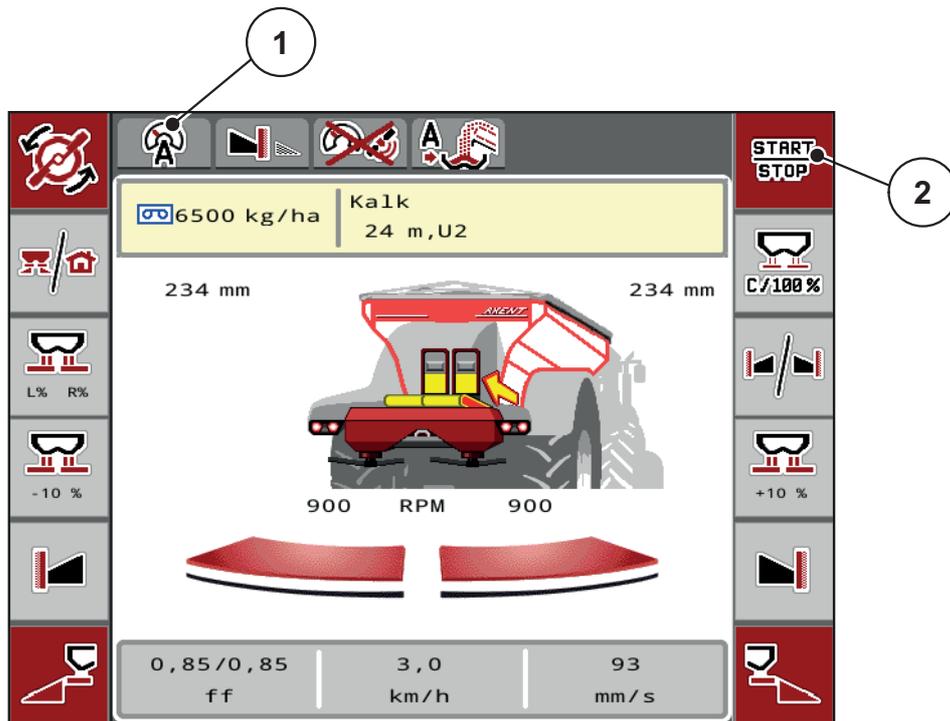
Figure 6.1:   Working screen in lime operation

[1]   Symbol for active operating mode: lime AUTO km/h
[2]   Starting spreading operation

Function/control	Working screen display
● Press **Spreading disc start**. ● The pre-metering sliders open automatically.	
● Start spreading operation. ● The conveyor belt starts.	
● Transfer is active.	
● Start spreading.	

Function/control	Working screen display
● The conveyor belt speed and the pre-metering slider opening adapt to the forward speed.	156 mm 157 mm
● Press Start/Stop on the headland. ● The conveyor belt stops. ● The pre-metering sliders remain open.	START STOP
● Press Start/Stop again when you drive onto the field. ● The conveyor belt starts.	START STOP
● Press **Transfer start** at the end of the work. ● The conveyor belt stops. ● The transfer is finished.	START STOP

7   Alarm messages and possible causes

Various alarm messages can be displayed on the AXENT ISOBUS machine control unit display.

7.1   Meaning of the alarm messages

No.	Message on the display	Meaning/possible cause/action
1	Fault in dosing system. Stop!	The motor for the metering system cannot reach the set value it is to be moved to. ● Blockage ● No position feedback
2	Maximum outlet reached! Speed or application rate too high	Metering slider 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 - 1.90**. ● The newly calculated or entered flow factor is outside of 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.
15	Memory full. Delete one private fertiliser chart.	A maximum of 30 fertilisers can be stored in the memory for the fertiliser charts.
16	Approach drop point Yes = Start	Safety request before the drop point is automatically approached. ● Drop point can be set in the **fertiliser settings** menu. ● Fast emptying
17	Error by setting	The drop point setting cannot reach the target value it is to be moved to. ● Fault, for instance with the power supply ● No position feedback
18	Drop point blocked	The drop point setting cannot reach the target value it is to be moved to. ● Blockage ● No position feedback ● Calibration

No.	Message on the display	Meaning/possible cause/action
19	Defect by setting drop point.	The drop point setting cannot reach the target value it is to be moved to. ● No position feedback
20	Error on LIN bus participant: [Name].	Communication problem. ● Defective cable ● Loose plug connector
21	Spreader overloaded!	The machine is overloaded ● The load inside the machine exceeds 10,000 kg
22	Unknown condition function stop.	Communication problem at terminal. ● Possible software error
23	Error by setting TELIMAT	The TELIMAT adjustment cannot reach the specified target value. ● Blockage. ● No position feedback.
24	Error by setting TELIMAT	The TELIMAT adjustment is overloaded.
25	Defect by setting TELIMAT	Defective TELIMAT actuator.
26	Activate disc start. Confirm with ENTER	
27	Discs are started up without activation.	Defective or manually switched hydraulics valve.
28	Spreading discs could not start up properly. Deactivate disc start	Spreading discs do not rotate. ● Blockage ● No position feedback
29	The agitator motor is over-loaded	Agitator is blocked. ● Blockage ● Defective connection
30	The discs shall be activated before opening the metering sliders.	Correct software operation. ● Start the spreading discs ● Open the metering sliders
31	Idle measurement is necessary for EMC calculation.	Alarm message before the idle measurement. ● Activate spreading disc start.
32	Externally controlled parts may move. Risk of injury through squeezing and shearing! Direct ALL persons out of the danger zone. Read the instruction manual.	If the machine control unit is activated, components may move unexpectedly. ● Follow the displayed instructions only if all risks have been eliminated.

No.	Message on the display	Meaning/possible cause/action
33	Stop the discs and close the metering sliders.	You can only switch to the System/Test menu area when the spreading operation has been deactivated. ● Stop spreading discs ● Close the metering sliders
39	Manual mode active. Risk of fertiliser overflow.	The message is displayed when switching from automatic to manual.
45	Error M-EMC sensors. EMC control deactivated!	The sensor is no longer sending any 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 measurement implausible. EMC control deactivated!	● Defective sensor ● Defective transmission
50	Idle measurement impossible. EMC control deactivated!	PTO speed permanently unstable
52	Error at hopper cover	The hopper cover position could not be reached ● Blockage ● Defective actuator
53	Defect at hopper cover	The hopper cover position could not be reached ● Blockage ● Defective actuator
57	Error at hopper cover	The hopper cover actuator cannot reach the specified target value. ● Blockage ● No position feedback
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
72	Error at SpreadLight	Power supply is too high; the operating lights are switched off
73	Error at SpreadLight	Overload

No.	Message on the display	Meaning/possible cause/action
74	Defect at SpreadLight	Connection error ● Defective cable ● Loose plug connector
75	Conveyor belt speed could not be reached	The conveyor belt has not reached the target speed within 5 s.
76	Error at left pre-metering slider cylinder	The position on the left pre-metering slider could not be reached ● Blockage ● Hydraulic cylinder defective
77	Error at right pre-metering slider cylinder	The position on the right pre-metering slider could not be reached ● Blockage ● Hydraulic cylinder defective
78	AXENT empty	The hopper is empty.
79	Cover open!	Switch is not operated, the transfer function is not possible. The cover is open and not properly closed.
80	Stop loading!	The message is displayed when switching to the System/test menu during operation. 1. Stop spreading operation. 2. Open the System/test menu.
81	Low oil level!	Insufficient oil level in the hydraulic circuit. ● Stop the machine and refill oil.
88	Error at disc rotation 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.
90	Stop AXMAT	The AXMAT function is automatically deactivated and no longer regulates the fertiliser ● More than 2 sensors signal an error. ● Communication error

7.2   Clearing a fault / alarm

7.2.1   Confirming an alarm message

Alarm messages are highlighted on the display and displayed with a warning symbol.
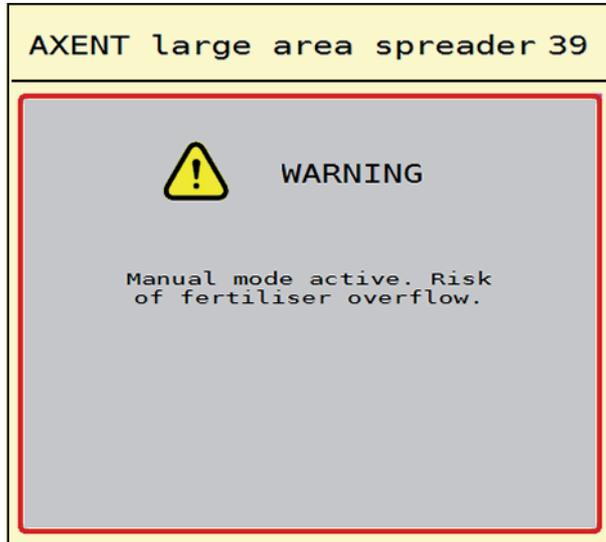
Figure 7.1:   Alarm message (example)

1. Rectify the cause of the alarm message.

Please observe the operating manual of the machine and section 7.1: Meaning of the alarm messages, page 111.

2. Press the **ACK** key.

▷ **The alarm message is cleared.**

8   Optional equipment

No.	Illustration	Designation
1		Joystick
2		WLAN module

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Terms/conditions of warranty

RAUCH units are manufactured with modern production methods and with the greatest care and are subject to numerous inspections.

Therefore RAUCH offers a 12-month warranty subject to the following conditions:

- The warranty begins on the date of purchase.

- The warranty covers material and manufacturing faults. Our liability for third-party products (hydraulic system, electronics) is limited to the warranty of the manufacturer of the equipment. During the warranty period, manufacturing and material faults are corrected free of charge by replacement or repair of the affected parts. Other rights extending beyond the above, such as claims for conversion, reduction or replacement for damages that did not occur in the object of supply are explicitly excluded. Warranty services are provided by authorised workshops, by RAUCH factory representatives or the factory.

- The following are excluded from coverage by the warranty: natural wear, dirt, corrosion and all faults caused by improper handing and external causes. The warranty is rendered void if the owner carries out repairs or modifications to the original state of the supplied product. Warranty claims are rendered void if RAUCH original spare parts were not used. Therefore, the directions in the operating manual must be observed. In all cases of doubt contact our sales representatives or the factory directly. Warranty claims must be submitted to the factory by 30 days at the latest after occurrence of the problem. The date of purchase and the serial number must be indicated. If repairs under the warranty are required, they must be carried out by the authorised workshop only after consultation with RAUCH or the company's appointed representatives. The warranty period is not extended by work carried out under warranty. Shipping faults are not factory faults and therefore are not part of the warranty obligation of the manufacturer.

- No claims for compensation for damages that are not part of RAUCH machines themselves will be accepted. This also means that no liability will be accepted for damage resulting from spreading errors. Unauthorised modifications of RAUCH machines may result in consequential damage, for which the manufacturer will not accept any liability. The manufacturer's liability exclusion will not apply in case of wilful 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. It will also not apply in the event that assured properties are absent, if the purpose of the assured properties was to protect the purchaser against damage that does not involve 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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