

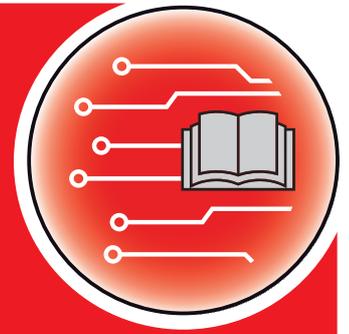
INSTRUCTION MANUAL



**Please read carefully
before using the ma-
chine.**

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.



AXIS EMC ISOBUS

Version 3.30.00

Original instructions

5902834-a-en-1218

Preface

Dear Customer,

By purchasing the **machine control unit** AXIS EMC ISOBUS for the AXIS-M 20.2 EMC mineral fertiliser spreader, you have shown confidence in our product. Thank you very much! We would like to justify the trust that you have placed in us. You have purchased a powerful and reliable **machine control unit**. If any unexpected problems should occur: Our customer service will always be there for you.



We ask that you carefully read through and adhere to this operating manual and the operating manual of the machine before putting it into operation.

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

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

IMPORTANT

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

The machine control unit AXIS EMC ISOBUS was calibrated for the mineral fertiliser spreader with which it was supplied in the factory. It cannot be connected to a different machine without an additional recalibration.

Please enter the serial number of the machine control unit and the machine here. These numbers must be checked when connecting the machine control unit to the machine.

Serial number of electronic machine control unit

Serial number
AXIS-M 20.2 EMC

Year of construction
AXIS-M 20.2 EMC

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

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1 User instructions

1.1 About this operating manual

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

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

The operator's manual must be kept in an easily accessible location close to where the machine control unit is used (e. g. on the tractor).

The operator's manual does not replace your **own responsibility** as operator and operational staff of the 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	
	<p>Risk to life if warning is not observed</p> <p>Description of the danger and possible consequences.</p> <p>Ignoring these warnings will result in very serious or even fatal injury.</p> <p>► Measures to prevent the danger.</p>

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 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

1.4 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

1.5 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 17](#).

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.

1.6 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).

2 Layout and function

NOTICE

Due to the great variety of different ISOBUS-compatible terminals, this chapter is restricted to the functions of the electronic machine control system without indicating a specific ISOBUS terminal.

- Please observe the instructions on the operation of your ISOBUS terminal in the corresponding operator's manual.

2.1 Overview of supported AXIS fertiliser spreaders

- AXIS-M 20.2 EMC, AXIS-M 20.2 EMC + W

Supported functions

- Spreading depending on forward speed
- Electrical drop point adjustment
- RPM control
 - AXIS-M 20.2 drive shaft speed
- EMC – Mass flow control
- Section control

2.2 Display

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

The most important information concerning the operation of the mineral fertiliser spreader is displayed in the **operating screen**.

2.2.1 Operating screen description

NOTICE

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

AXIS-M EMC

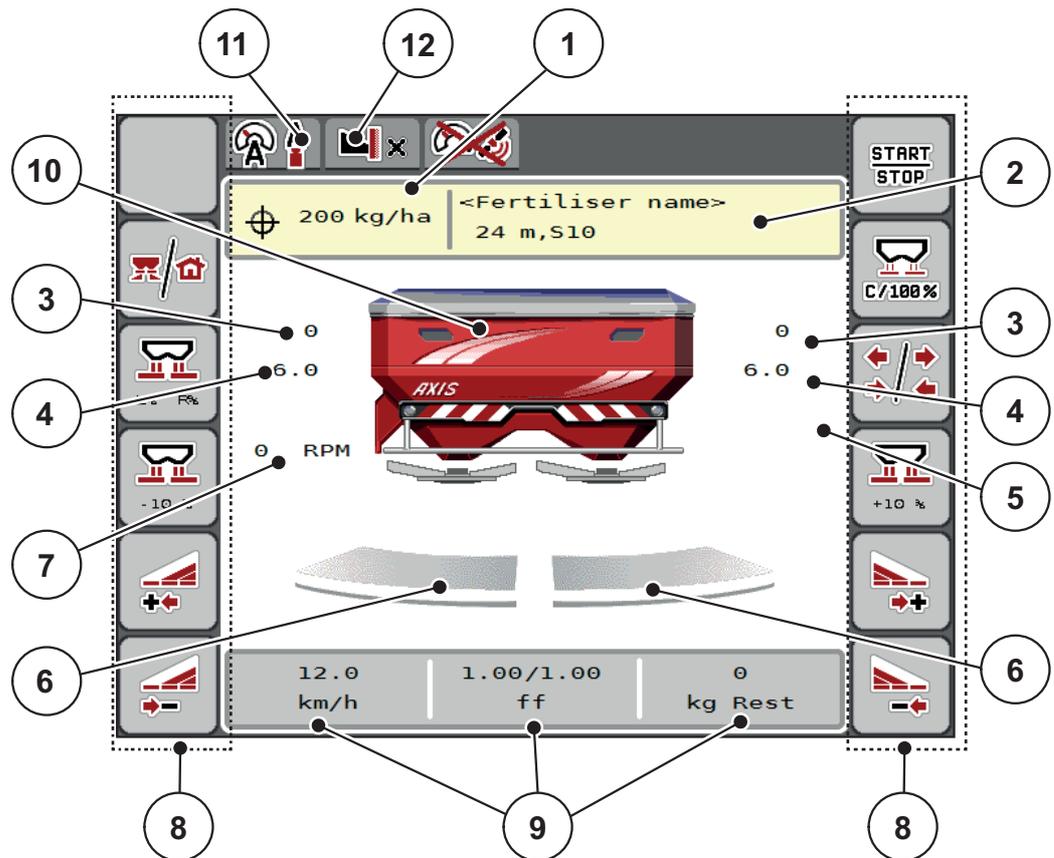


Figure 2.1: Machine control unit display

- [1] Current application rate from the fertiliser settings or the task controller
Button: direct entry of the application rate
- [2] Fertiliser information display (fertiliser name, working width and spreading disc type)
Button: Adjustment in the fertiliser chart
- [3] Metering slide position, right/left
- [4] Drop point position, right/left
- [5] TELIMAT application rate adjustment
- [6] Metering slide opening status, right/left
- [7] PTO speed
- [8] Function keys
- [9] Freely definable display fields
- [10] Mineral fertiliser spreader display
- [11] Selected operating mode
- [12] Display of boundary/border settings

2.2.2 Display fields

The three display fields in the operating screen ([Figure 2.1](#), Position [9]) can be individually adjusted and optionally assigned with the following values:

- Forward speed
- Flow factor (FF)
- ha trip
- kg trip
- m trip
- residual kg
- m left
- ha Rest
- Empty run (time until the next empty run measurement)
- Torque for the spreading disc drive

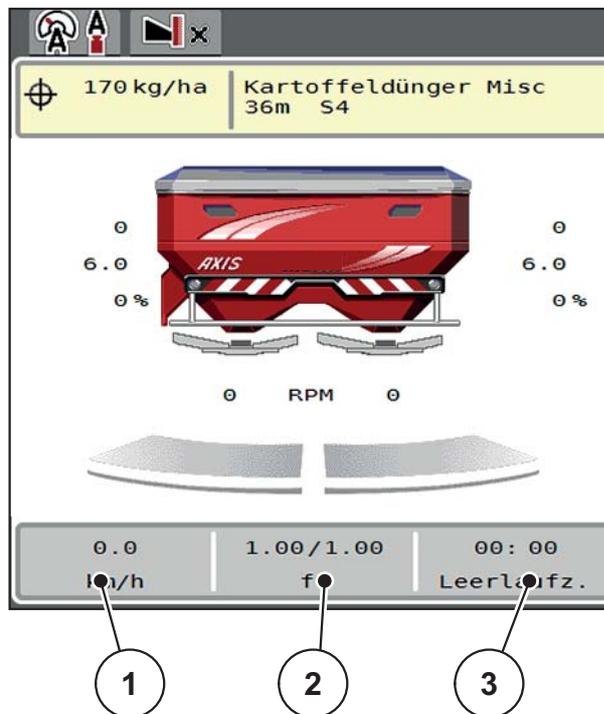


Figure 2.2: Display fields

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

Select display

1. Press the corresponding **display field** in the touch screen.
 - ▷ The available options are listed on the display.
2. Select the new value which is to be assigned to the display field.
3. Press the **OK button**.
 - ▷ The **operating screen** is displayed. The respective **display field** displays the new value.

2.2.3 Display of the metering slide states

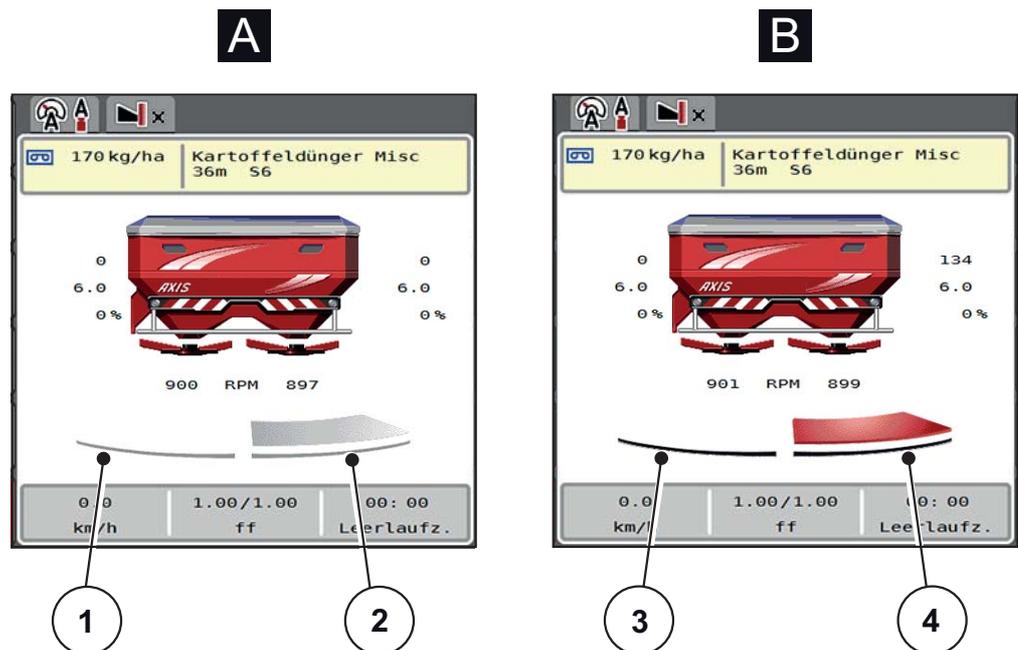


Figure 2.3: Display of the metering slide status

[A] Spreading operation inactive (STOP)

- [1] Section deactivated
- [2] Section activated

[B] Machine in spreading mode (START)

- [3] Section deactivated
- [4] Section activated



You can **immediately deactivate an entire spreading side** during limited border spreading. To do this press the softkey for further section reduction over 500 ms. This is particularly useful in field corners to ensure a quick spreading operation.

2.2.4 Display of sections

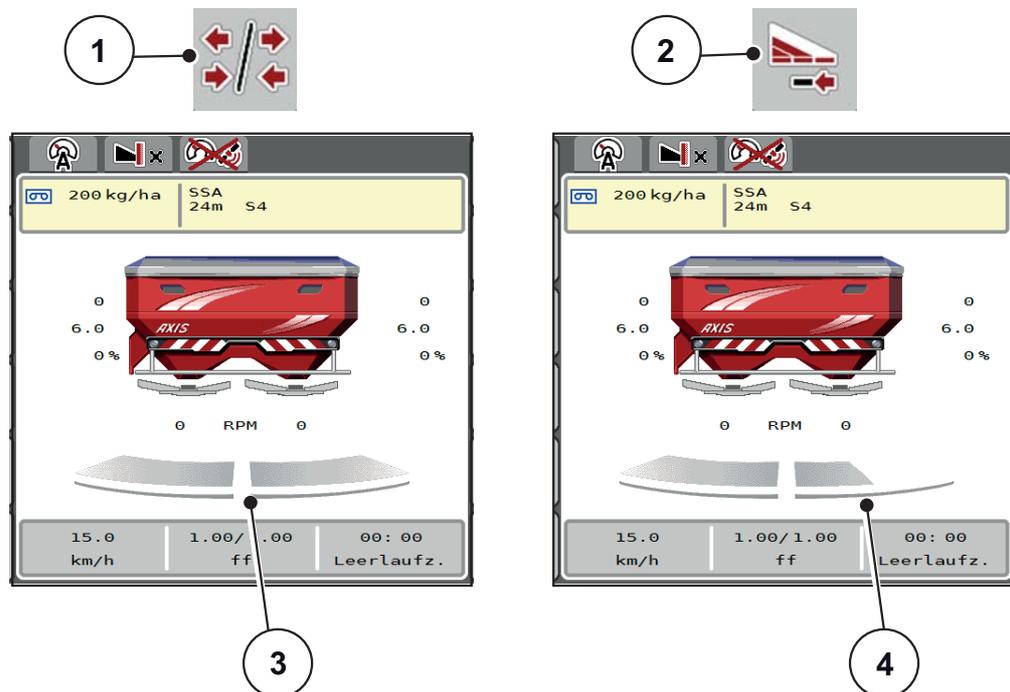


Figure 2.4: Display of the section status

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

Further display and setting options are explained in chapter [5.4: Working with sections, page 64](#).

NOTICE

We recommend that you restart the terminal in the following cases:

- If you have changed the working width.
- If you have opened a different fertiliser chart entry.

After restarting the terminal, the display of the section widths is adjusted to the new settings.

2.3 Library of symbols used

The AXIS EMC ISOBUS machine control unit displays symbols for the individual menus and functions.

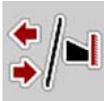
2.3.1 Navigation

Symbol	Meaning
	Go to the left; previous page
	Go to the right; next page
	Back to the previous menu
	Back to main menu
	Change between operating screen and menu window
	Acknowledgement of error messages
	Cancellation, closing the dialogue window

2.3.2 Menus

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

2.3.3 Operating screen symbols

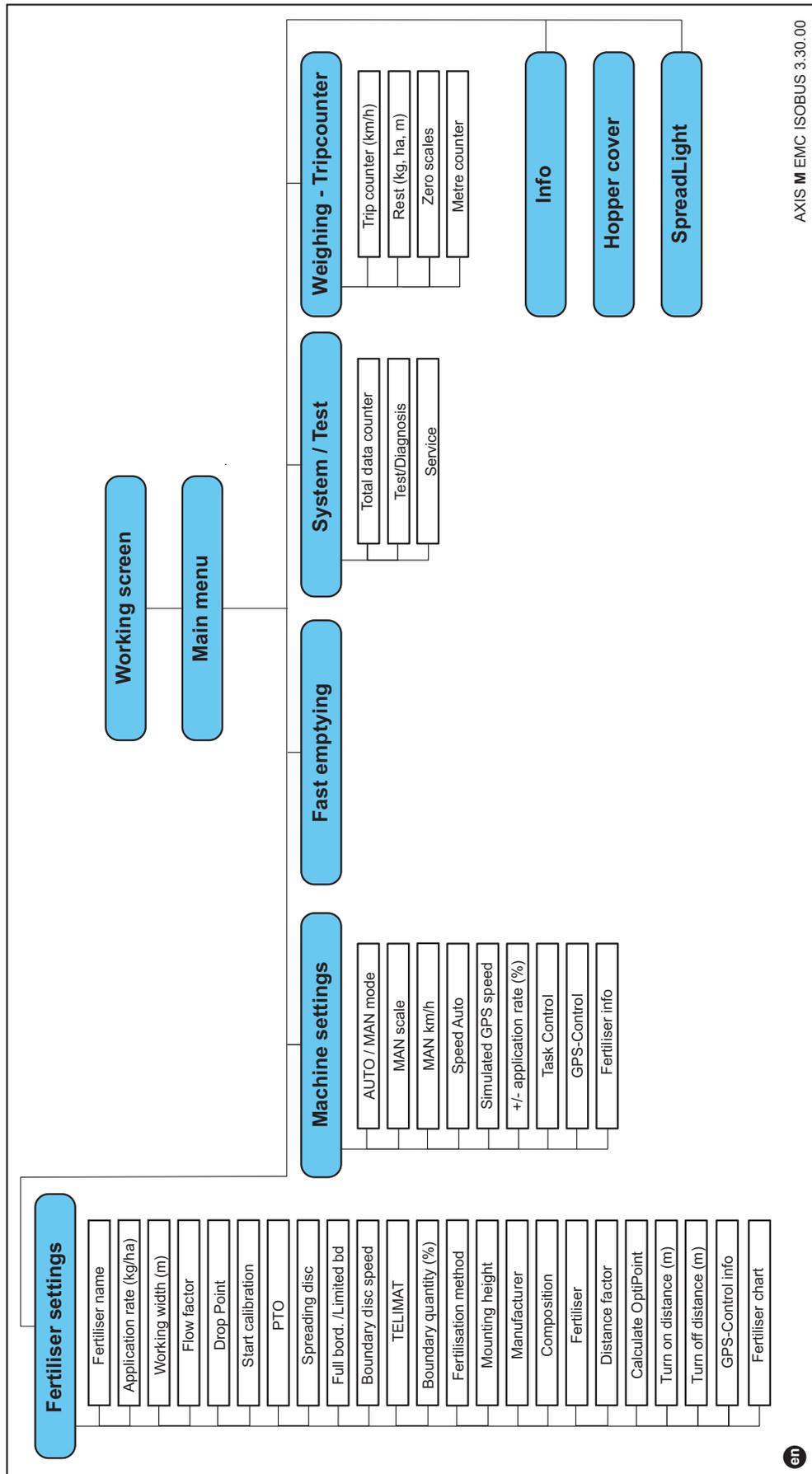
Symbol	Meaning
	Start the application rate regulation
	The spreading is started; stop the application rate regulation
	Reset the quantity adjustment to the pre-set application rate.
	Change between the operating screen and the menu window
	Change between limited border spreading and section widths on the left, right or both spreading sides.
	Sections on the left side, limited border spreading on the right spreading side.
	Selection of the surplus/shortage quantity on the left, right or both spreading sides (%)
	Quantity adjustment + (plus)
	Quantity adjustment - (minus)
	Quantity adjustment, left + (plus)
	Quantity adjustment, left - (minus)
	Quantity adjustment, right + (plus)

Symbol	Meaning
	Quantity adjustment, right - (minus)
	Manual quantity adjustment + (plus)
	Manual quantity adjustment - (minus)
	Left spreading side inactive
	Left spreading side active
	Right spreading side inactive
	Right spreading side active
	Reduce section width, right (minus) In spreading operation: Pressing and holding (>500 ms) immediately deactivates an entire spreading side. This is particularly useful in field corners to ensure a quick spreading operation.
	Increase section width right (plus)
	Activate limited border spreading function/TELIMAT, right
	Limited border spreading function / TELIMAT, right, active

2.3.4 Other symbols

Symbol	Meaning
	Start idle measurement, in the main menu
	Operating mode AUTO km/h + AUTO kg
	Operating mode AUTO km/h
	Operating mode MAN km/h
	Operating mode MAN scale
	Loss of the GPS signal (GPS J1939)
	The minimum mass flow is undercut

2.4 AXIS-M EMC structural menu overview



3 Attachment and installation

3.1 Requirements for the tractor

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

- A minimum voltage of **11 V** must **always** be guaranteed, even if multiple loads are connected simultaneously (e.g. air conditioning system, lights),
- Oil supply: **max. 210 bar**, single or double-acting valve (depending on equipment),
- **AXIS-M**: The PTO speed must amount to **540 rpm** as a minimum requirement and it must be maintained (one basic requirement for a correct working width).

NOTICE

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

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

NOTICE

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

3.2 Connections, sockets

3.2.1 Power supply

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

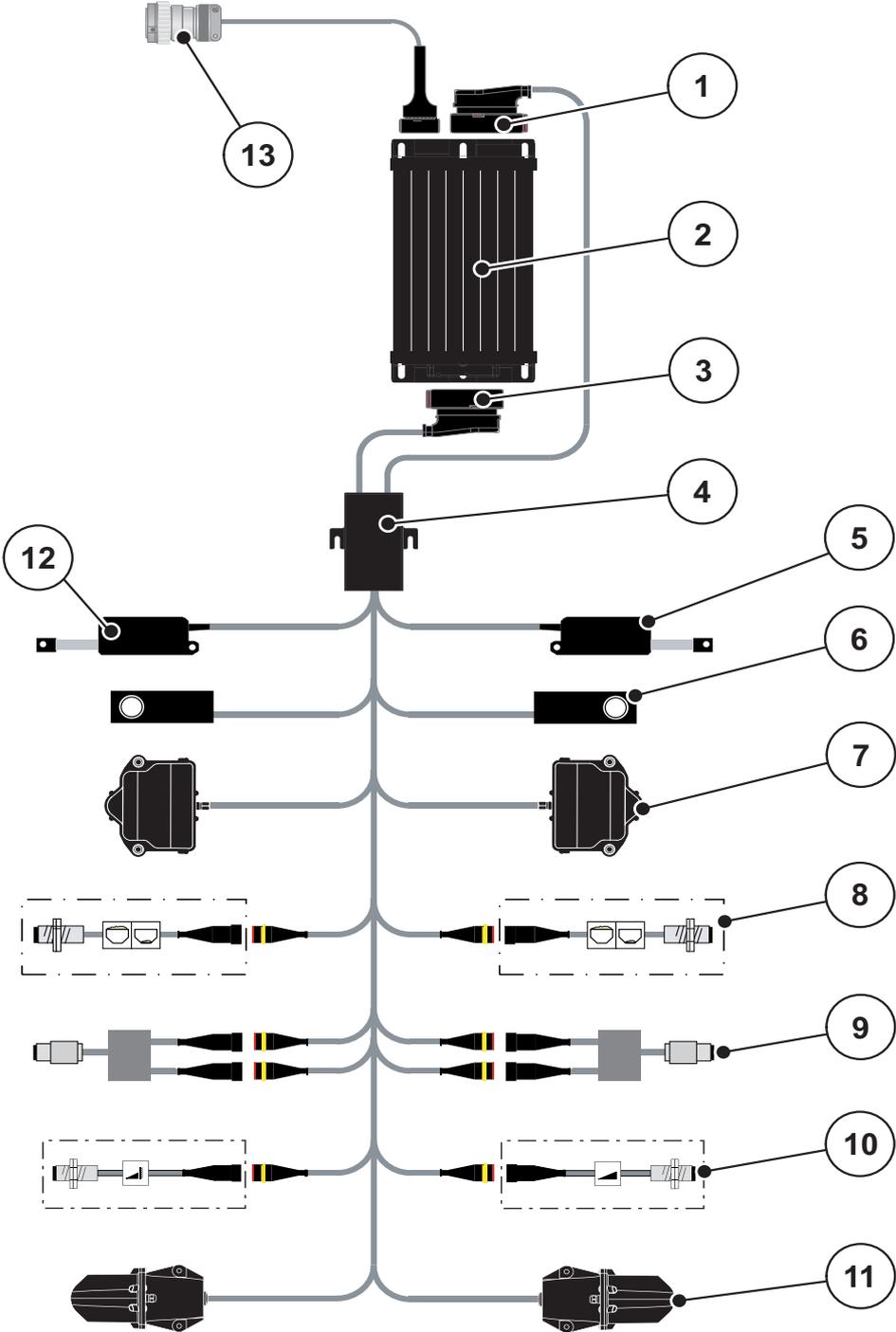
3.3 Connecting the machine control unit

Depending on the equipment, there are different methods for connecting the machine control unit to the mineral fertiliser spreader. Further information can be obtained from the operator's manual of your machine control unit.

3.3.1 Schematic connection diagram

- [“AXIS-M EMC: Schematic connection diagram“ on page 19](#)

AXIS-M EMC: Schematic connection diagram



- [1] Machine plug
- [2] Machine control unit
- [3] Machine plug
- [4] Cable distributor
- [5] TELIMAT actuator
- [6] Weigh cells left/right
- [7] Metering slider rotary drive, left/right
- [8] Level sensor left/right
- [9] Torque/speed sensor, left/right
- [10] TELIMAT sensors top/bottom
- [11] No function with AXIS-M 20.2
- [12] Hopper cover actuator
- [13] ISOBUS connector plug

3 Attachment and installation

3.4 Metering slide preparation

The AXIS EMC mineral fertiliser spreaders are equipped with an electronic metering slide actuator which is used to adjust the spreading quantity.

NOTICE

Observe the operating manual for your mineral fertiliser spreader.

4 Operation AXIS EMC ISOBUS

⚠ CAUTION



Risk of injury due to ejected fertiliser

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

- ▶ **Before leaving for the place of spreading**, the electronic machine control unit must always be switched off.

NOTICE

The operating manual describes the functions of the machine control unit **from software version 3.30.00**.

NOTICE

The settings in the individual menus are very important for optimal **automatic mass flow control (EMC function)**.

Please be particularly aware of the specifics of the EMC function for the following menu items:

- in the **Fertiliser settings** menu
 - Spreading disc. See [Page 33](#).
 - Spreading disc speed and/or PTO speed. See [Page 33](#).
- In the **Machine settings** menu
 - AUTO / MAN mode. See [Page 43](#) and chapter [\[5\]](#).

4.1 Activating the machine control unit

Requirements:

- The machine control unit is correctly connected to the machine and the tractor (for example, see chapter [3.3: Connecting the machine control unit, page 18](#)).
- A minimum voltage of **11 V** is guaranteed.

1. Start the machine control unit.

- ▷ After a few seconds, the **start-up screen** of the machine control unit is displayed.
- ▷ Shortly after, the machine control unit displays the **Activation menu**.

2. Press the **Enter** key.

- ▷ **The operating screen is then displayed.**



4.2 Navigation within the menu

NOTICE

You can find important information about the display and the navigation between menus in Chapter [1.6: Menu hierarchy, keys and navigation, page 3](#).

In the following, accessing menus and menu items **by touching the touch screen or pressing the function keys** is described.

- Follow the operating manual for the terminal used.
-

Accessing the main menu



- Press the **operating screen / main menu** function key. See [2.3.2: Menus, page 12](#).
 - ▷ The main menu is displayed.

Accessing the sub-menu via the touch screen:

1. Press the button of the desired sub-menu.

Windows appear prompting various actions.

- Text input
- Value input
- Settings are made in further sub-menus

NOTICE

Not all parameters are displayed simultaneously in one menu window. You can use the **left / right arrow keys** to switch to the next or previous window.

Exiting menus



- Confirm settings by pressing the **back** key.
 - ▷ You will return to the **previous menu**.
- Press the **operating screen / main menu** key.
 - ▷ You will return to the **operating screen**.
- Press the **ESC** key.
 - ▷ The previous settings are maintained.
 - ▷ You will return to the **previous menu**.

4.3 Main menu

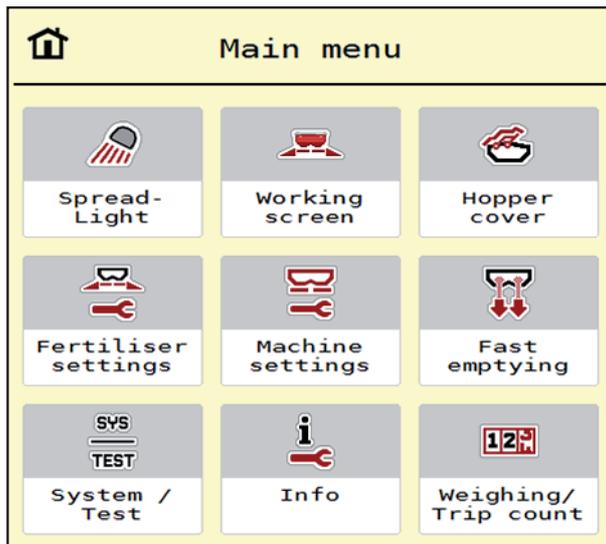


Figure 4.1: Main menu with sub-menus

Sub-menu	Meaning	Description
SpreadLight	Activation/deactivation of operating lights	Page 56
Hopper cover	Opening/closing the hopper cover	Page 57
Fertiliser settings	Fertiliser and spreading operation settings	Page 24
Machine configuration	Tractor and mineral fertilizer spreader settings	Page 41
Fast emptying	Direct access to the menu for fast emptying of the mineral fertiliser spreader	Page 44
System / test	Settings and diagnosis of the machine control unit.	Page 47
Info	Machine configuration display	Page 52
Weighing trip counter	Values regarding spreading work carried out and functions for weighing operation	Page 52



In addition to the sub-menus, in the **Main menu** the **Idle measurement** and **Boundary spreading type** function keys can be selected.

- Idle measurement: This function key enables a manual start of the idle measurement. See [5.6.2: Manual idle measurement, page 71](#)
- Boundary spreading type: You can choose between full border spreading and limited border spreading.

4.4 Fertiliser settings



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

- Open the **Main menu > Fertiliser settings** menu.

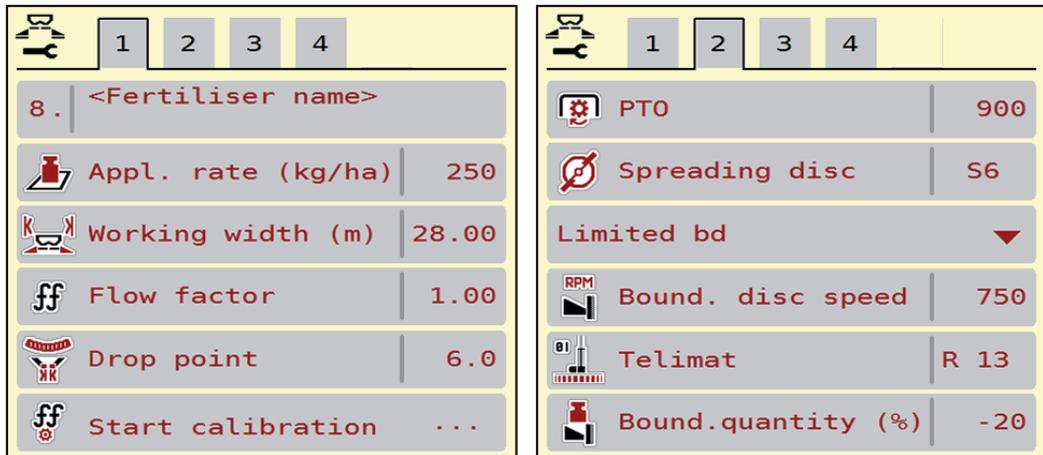


Figure 4.2: Fertiliser settings menu **AXIS-M**, tabs 1 and 2

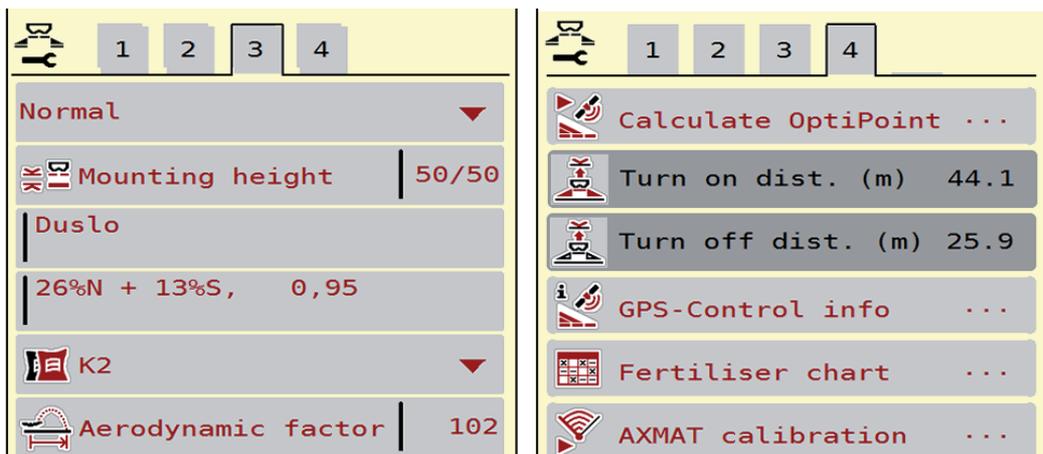


Figure 4.3: Fertiliser settings menu, tabs 3 and 4

NOTICE

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

Sub-menu	Meaning/possible values	Description
Fertiliser name	Fertiliser selected from the fertiliser chart	Page 38
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha.	Page 27
Working width (m)	Determination of the working width to be spread	Page 28
Flow factor	Input of flow factor of the fertiliser used	Page 28
Drop point	Input of the drop point	Please observe the operator's manual of the machine. Page 29
Start calibration	Accessing the submenu for calibration test	Page 30
PTO shaft	AXIS-M Factory setting: 540 rpm Influences the EMC mass flow control	Page 33
Spreading disc	Setting of the spreading disc type mounted at the mineral fertiliser spreader (influences the EMC mass flow control)	Selection list: <ul style="list-style-type: none"> ● S4 ● S6 ● S8 ● S10 ● S12 ● S1
Limited border / full border	No function for AXIS-M 20.2	
Limited border spreading disc speed	Presetting the RPM in the boundary spreading mode	To be entered in a separate input window
Bound drop point	Presetting the drop point in the boundary spreading mode.	To be entered in a separate input window
Bound.quantity	Presetting the quantity reduction in the boundary spreading mode.	To be entered in a separate input window
TELIMAT	Saving the TELIMAT settings for limited border spreading	Only for AXIS-M machines with TELIMAT

Sub-menu	Meaning/possible values	Description
Fertilisation method: Normal/late sprd.	Selection of the desired fertilisation method, sorted by normal fertilisation and late fertilising	Selection with Arrow keys Confirm by pressing the Enter key
Mounting height	Indicated in cm front/cm rear Selection list: <ul style="list-style-type: none"> ● 0/6 ● 40/40 ● 50/50 ● 60/60 ● 70/70 ● 70/76 	
Manufacturer	Fertiliser manufacturer input	
Composition	Percentage of the chemical composition	
Fertiliser class	Selection list	Selection with Arrow keys Confirm by pressing the Enter key
Distance factor	Input of the distance factor from the fertiliser chart. Required for Opti-Point calculation	
Calculate OptiPoint	Enter the GPS control parameters	Page 35
Turn on dist. (m)	Turn on distance input	
Turn off dist. (m)	Turn off distance input	
GPS-Control info	Display of information of the GPS Control parameters	Page 37
Fertiliser chart	Management of fertiliser charts	Page 38
AXMAT calibration	No function for AXIS-M 20.2	

4.4.1 Application rate



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

Entering the application rate:

1. Open the **Fertiliser settings > Appl. rate (kg/ha)** menu.
 - ▷ The **currently applied** application rate is displayed.
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 input and adjust the application rate directly through the operating screen.

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

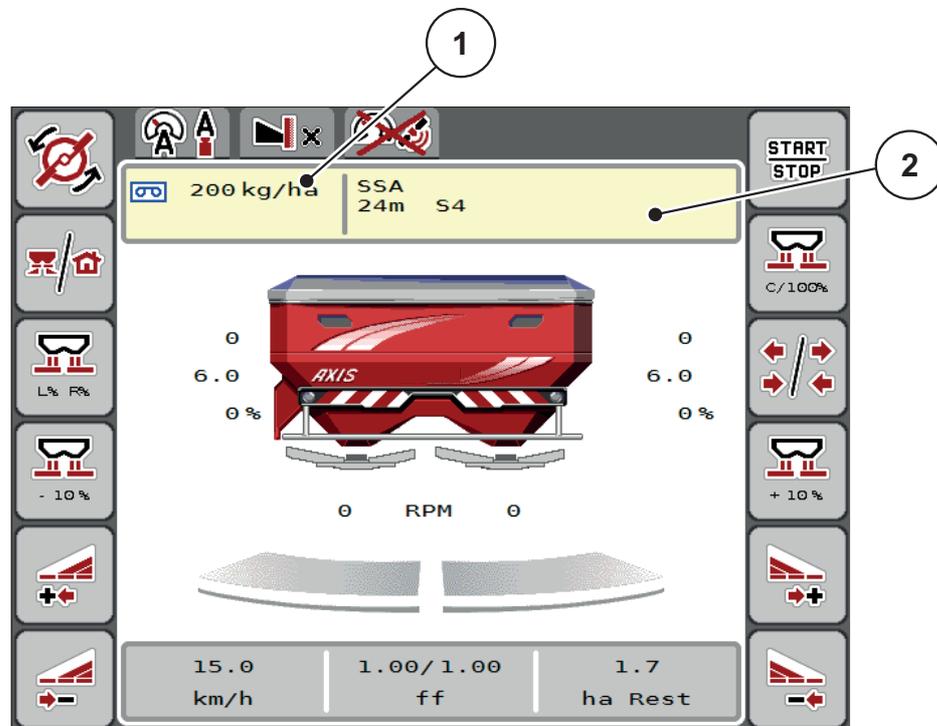


Figure 4.4: Entering the application rate on the touch screen

- [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.**

4.4.2 Working width



You can set the working width (in meters) in this menu.

1. Open the **Fertiliser settings > Working width (m)** menu.
 - ▷ The **currently set** working width is displayed.
2. Enter the new value in the input field.
3. Press **OK**.
 - ▷ **The new value is saved in the machine control unit.**

4.4.3 Flow factor



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

- If the flow factor is **increased**, the application rate is **decreased**.
- If the flow factor is **decreased**, the application rate is **increased**.

An error message is displayed if the flow factor is outside the preset range. See [6: Alarm messages and possible causes, page 81](#).

If you are spreading organic fertiliser or rice, the minimum factor has to be reduced to 0.2. Otherwise the error message will be displayed constantly.

If the flow factor has been obtained from earlier calibrations or from the fertiliser chart, enter it **manually** in this selection window.

NOTICE

In the **Start calibration** menu, the flow factor can be determined and entered with the help of the machine control unit. See Chapter [4.4.5: Calibration, page 30](#).

With the AXIS-H EMC mineral fertiliser spreader, the flow factor is calculated via the EMC mass flow control. However, the data can also be entered manually.

NOTICE

The flow factor calculation depends on the operating mode used. For further information on the flow factor, please refer to chapter [4.5.1: AUTO/MAN mode, page 43](#).

Entering the flow factor:

1. Open the **Fertiliser settings > Flow factor** menu.
 - ▷ The **currently set** flow factor is displayed.
2. Enter the value obtained from the fertiliser chart into the input field.

NOTICE

Should the fertiliser you use not be included in the fertiliser chart, then enter the flow factor as **1.00**.

In the **AUTO km/h operating mode**, we highly recommend implementing 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.**

NOTICE

It is recommended that you have the flow factor displayed on the operating screen when using the AXIS EMC mineral fertiliser spreader (operating mode **AUTO km/h + AUTO kg**). This allows you to monitor the flow factor control during the spreading. See [2.2.2: Display fields, page 8](#)

Minimum factor

The machine control unit automatically sets the minimum factor to one of the following values in accordance with the entered flow factor value:

- The minimum factor is 0.2 if the input value is smaller than 0.5.
- The minimum factor is reset to 0.4 as soon as you enter a value exceeding 0.5.

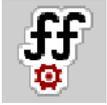
4.4.4 Drop point**NOTICE**

Entering the drop point with the **AXIS-M 20.2 EMC** is merely informative and does not affect the settings of the fertiliser spreader.

In this menu, you can enter the drop point for information purposes.

1. Open 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 the **Enter key**.
 - ▷ **The Fertiliser settings window with the new drop point is displayed.**

4.4.5 Calibration



NOTICE

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

In this menu, the flow factor can be determined based on a calibration and saved in the machine control unit.

Execute the calibration:

- before spreading for the first time.
- if the fertiliser quality has changed significantly (moisture, high dust content, granulate damage).
- if a new fertiliser type is used.

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

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

Entering the working speed:

1. Open 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 calibration page is displayed.



Selecting the section:

4. Determine which spreader side the calibration will be carried out on.
 - Press the function key of the **left** side of the spreader or
 - the function key of the **right** side of the spreader.
- ▷ **The symbol indicating the selected spreader side will be lit with a red light.**

▲ WARNING**Risk of injury during the calibration**

Rotating machine components and ejected fertiliser may cause injury.

- ▶ **Before starting** the calibration, ensure that all requirements have been met.
- ▶ Read the **Calibration** chapter in the machine operating manual.

**5. Press Start/Stop.**

- ▷ The metering slide of the previously selected section width opens and the calibration starts.

NOTICE

The calibration can be stopped at any time by pressing the **ESC** key. The metering slide is closed and the display screen shows the menu.

Fertiliser settings menu is displayed.

NOTICE

The calibration time is not relevant when it comes to the accuracy of the results. However, **a minimum of 20 kg** must be spread during the calibration.

6. Press Start/Stop again.

- ▷ The calibration ends.
- ▷ The metering slider closes.
- ▷ The third page of the calibration is displayed.

Recalculating the flow factor**▲ WARNING****Risk of injury due to rotating machine parts**

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

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

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

8. Enter the weight under the **Collected weight** menu item.
9. Press **OK**.
 - ▷ The new value is saved in the machine control unit.
 - ▷ The **Flow factor calculation** menu is displayed.

NOTICE

The flow factor must be between 0.4 and 1.9.

10. Determine the flow factor.
 - To adopt the **newly calculated** flow factor, press the **Confirm flow factor** button.
 - To confirm the **previously saved** flow factor, press the **ESC** key.
- ▷ **The flow factor is saved.**
 - ▷ **The display shows the Move to drop point alarm.**

⚠ CAUTION



Danger of injury during the automated drop point adjustment.

The display shows the **Move to drop point** alarm. By pressing the **Start/Stop** key, the drop point is automatically moved to the pre-set value by means of electrical actuating cylinders. This can cause personal injury and damage to property.

- ▶ Before actuating the **Start/Stop** key, ensure that **nobody** is present in the danger zone of the machine.
-

4.4.6 Spreading disc type

NOTICE

For an **optimal idle measurement**, check that the information in the **Fertiliser settings** menu is correct.

- The data contained in the **spreading disc** and **normal disc speed** and/or **PTO** menu entries must comply with the actual settings of your machine.

The mounted spreading disc type is factory pre-programmed in the control unit. If you have mounted different spreading discs on your machine, you must ensure that the correct type is entered in your control unit correspondingly.

1. Open the **Fertiliser settings > Spreading disc** menu.
 2. Select the spreading disc type from the list and activate it.
- ▷ **The Fertiliser settings window with the new spreading disc type is displayed.**

4.4.7 PTO speed

NOTICE

For an **optimal idle measurement**, check that the information in the **Fertiliser settings** menu is correct.

- The entries in the **Spreading disc** and **PTO shaft** menu items must comply with the actual settings of your machine.

The specified PTO speed is preset in the control unit to 750 rpm as a standard factory setting. If you want to set a different PTO speed, you must change the value stored in the control unit.

1. Open the **Fertiliser settings > PTO** menu.
 2. Enter the RPM.
- ▷ **The display shows the Fertiliser settings window with the new PTO speed.**

NOTICE

Please observe chapter [5.5: Spreading with the AUTO km/h + AUTO kg operating mode, page 68](#).

4.4.8 Limited border spreading quantity



You can set the quantity reduction (as a percentage value) in this menu. This setting is used to activate the limited border spreading function.

NOTICE

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

Entering the limited border spreading quantity:

1. Open the **Fertiliser settings > Bound.quantity** menu.
 2. Enter the value in the input field and confirm.
- ▷ **The fertiliser settings window with the new bound.quantity is displayed.**

4.4.9 Calculate OptiPoint



In the **Calculate OptiPoint** menu, you can enter the parameters to calculate the optimum turn on and turn off distances **in the headlands**.

It is very important to enter the distance factor of the fertiliser used to obtain an exact calculation.

NOTICE

Please refer to the fertiliser chart of the machine to find the distance factor for the fertiliser used.

1. Enter the prescribed value in the **Fertiliser settings > Distance factor** menu.
2. Open the **Fertiliser settings > Calculate OptiPoint** menu.
 - ▷ The first page of the **Calculate OptiPoint** menu is displayed.

NOTICE

The indicated forward speed refers to the forward speed in the area of the switching positions! See Chapter [5.10: GPS Control, page 76](#).

3. Enter the **average forward speed** in the range of switching positions.
 - ▷ The second page of the menu is displayed.
4. Press **OK**.
5. Press the **Continue** button.
 - ▷ The third page of the menu is displayed.

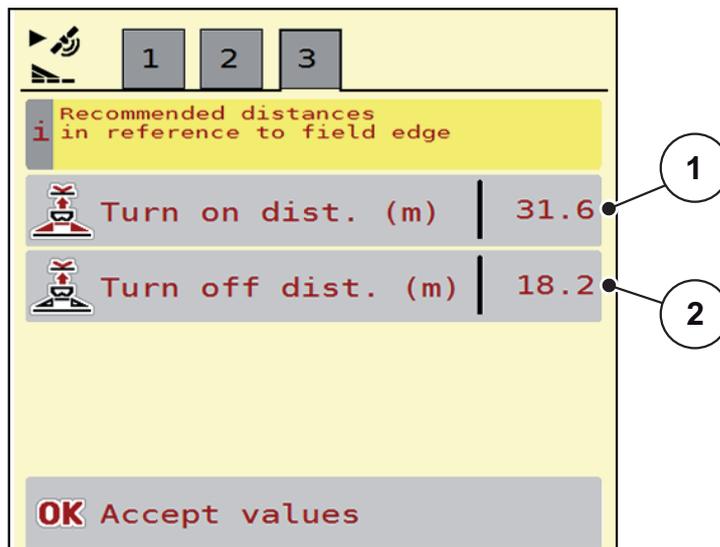


Figure 4.5: Calculate OptiPoint, page 3

Number	Meaning	Description
1	Distance (in meters) in relation to the field border at which the metering slides open.	Page 78
2	Distance (in meters) in reference to the field border from which the metering slides close.	Page 79

NOTICE

On this page, you can manually adjust the parameters. See Chapter [5.10: GPS Control, page 76](#).

Changing the values

6. Open the desired list entry.
 7. Enter the new values.
 8. Press **OK**.
 9. Press **Accept values**.
- ▷ **The OptiPoint has been calculated.**
 - ▷ **The machine control unit switches to the GPS Control Info window.**

4.4.10 GPS Control info



You can use the **GPS Control info** menu, to find information about the calculated setting values in the **Calculate OptiPoint** menu.

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

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

NOTICE

This menu is for information purposes only.

- Follow the operating manual for your GPS terminal.

1. Open the **Fertiliser settings > GPS-Control Info** menu.

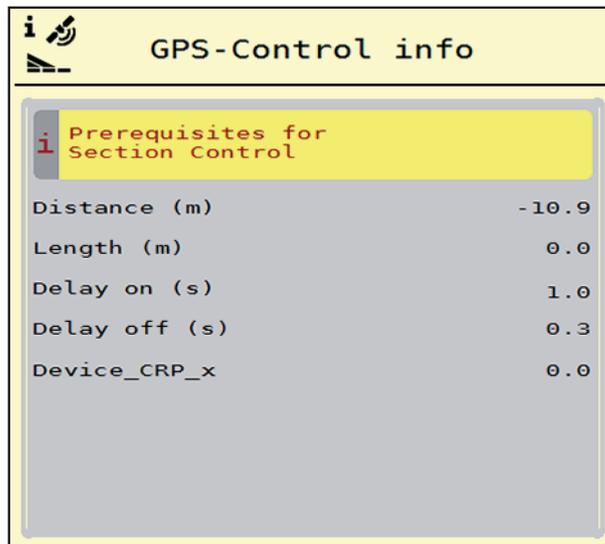


Figure 4.6: GPS Control info menu

4.4.11 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 mineral fertiliser spreader. The set application rate is overwritten by the stored value from the fertiliser chart.

NOTICE

You will be able to automatically manage fertiliser charts and to transfer them from your ISOBUS terminal.

- **FertChartApp:** Contact your dealer to install the FertCart app on your ISOBUS terminal.
- If supported by your ISOBUS terminal (e. g. CCI ISOBUS 1200), you can manage the fertiliser charts via a WLAN module and your smart phone.

Creating a new fertiliser chart

You will be able to create up to **30** fertiliser charts in the electronic machine control unit.

1. Open the **Fertiliser settings > Fertiliser charts** menu.

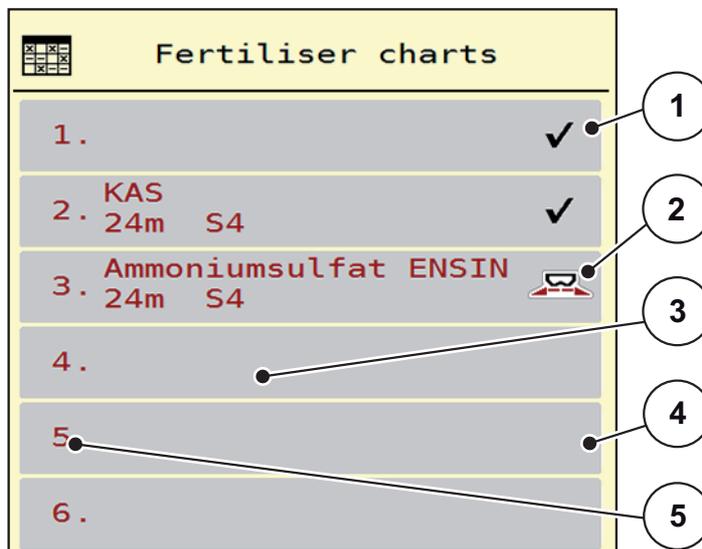


Figure 4.7: Fertiliser charts menu

- [1] Indicates a fertiliser chart filled with values
- [2] Indicates 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 fertiliser name, the working width and the spreading disc type.
▷ The selection window is displayed.
3. Press the **Open and return...** option.
▷ The **Fertiliser settings** menu is displayed and the selected element is loaded into the fertiliser settings as the **active fertiliser chart**.
4. Select the **Fertiliser name** menu item.
5. Enter a name for the fertiliser chart.

NOTICE

We recommend naming the fertiliser chart after the fertiliser. This makes it easier to assign fertilisers to the fertiliser chart.

6. Edit the parameters of the **fertiliser chart**.
See Chapter [4.4: Fertiliser settings, page 24](#).

Selecting a fertiliser chart:

1. Open the **Fertiliser settings > Fertiliser chart** menu.
2. Select the desired fertiliser chart.
▷ The selection window is displayed.
3. Select the **Open and return...** option.
▷ **The Fertiliser settings menu is displayed and the selected element is loaded into the fertiliser settings as the active fertiliser chart.**

NOTICE

When selecting an existing fertiliser chart, all values in the **fertiliser settings** menu will be overwritten with the stored values obtained from the selected fertiliser chart, including the drop point and the normal disc speed.

- The machine control unit will move the drop point to the value stored in the 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 touch screen.
 - ▷ The active fertiliser chart is displayed.

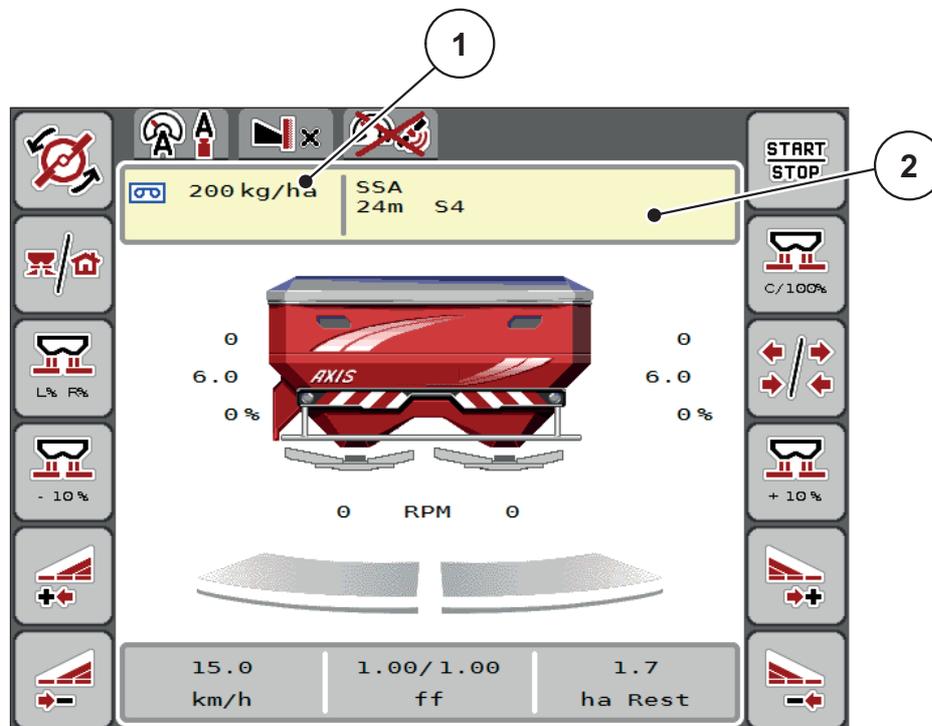


Figure 4.8: Managing the fertiliser chart via the touch screen

- [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 Machine settings



The tractor and machine settings can be configured in this menu.

- Open the **Machine settings** menu.

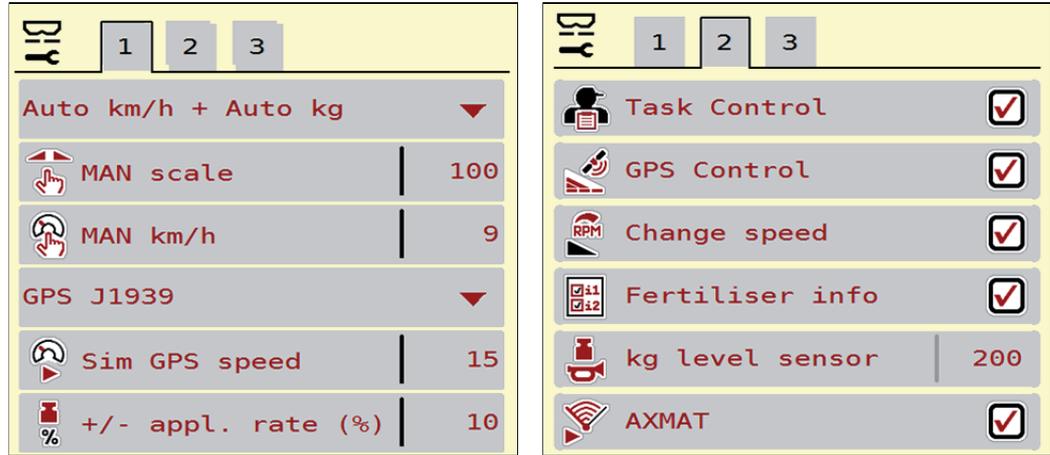


Figure 4.9: Machine settings menu, page 1 and 2

NOTICE

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

Sub-menu	Meaning	Description
Operating mode	Determining the automatic or manual operating mode.	Page 43
MAN scale	Setting the manual scale value. (only effective in the respective operating mode)	To be entered in a separate input window.
MAN km/h	Setting the manual forward speed. (only effective in the respective operating mode)	To be entered in a separate input window.
Forward speed/signal source	Selection/limitation of the forward speed signal <ul style="list-style-type: none"> • Forward speed AUTO (automated selection of either the transmission or the radar / GPS¹) • GPS J1939¹ 	

Sub-menu	Meaning	Description
Sim GSP speed	For GPS J1939 only: Indication of forward speed in the event of a loss of the GPS signal	NOTE! The indicated forward speed is to be maintained constantly at all times.
+/- quantity (%)	Presetting the quantity adjustment for the different spreading types.	To be entered in a separate input window.
Task Control	Activation of the ISOBUS Task Controller functions for documentation and for application map spreading. <ul style="list-style-type: none"> ● Task Control on (checked) ● Task Control off 	
GPS-Control	Activation of the function to control the machine sections of the machine via a GPS control unit. <ul style="list-style-type: none"> ● GPS-Control AUTO (checked) ● GPS-Control off 	
Change RPM	No function for AXIS-M 20.2	
Fertiliser info	Activation of the fertiliser info display (fertiliser name, spreading disc type, working width) in the working screen.	
kg level sensor	Input of the residual quantity to trigger an alarm message via the weigh cells.	
AXMAT	No function for AXIS-M 20.2	
Application rate correction L / R (%)	Correction of the deviations between the entered application rate and the actual application rate. <ul style="list-style-type: none"> ● Correction in percent either on the right or left side 	

1. The manufacturer of the machine control unit does not assume any liability in the event of a loss of the GPS signal.

4.5.1 AUTO/MAN mode

The machine control unit automatically controls the metering quantity according to the forward speed signal. The application rate, working width and flow factor are all taken into account here.

By default, the unit operates in **automatic** mode.

The **manual** mode is only used:

- if there is no speed signal (radar or wheel sensor not available or defective),
- when slug pellets or seeds (fine seeds) are spread.

NOTICE

To ensure regular spreading of the spreading material in manual operating mode, it is imperative that you work at a **constant forward speed**.

NOTICE

Spreading in different operating modes is described in Chapter [5: Spreading with the machine control unit AXIS EMC ISOBUS, page 61](#).

Menu	Meaning	Description
AUTO km/h + AUTO kg	Selecting the automatic mode with automatic weighing	Page 68
AUTO km/h	Selecting the automatic mode	Page 72
MAN km/h	Adjustment of forward speed for manual mode	Page 73
MAN scale	Metering slide adjustment for manual mode. This operating mode is suitable for spreading slug pellets or fine seeds.	Page 74

Selecting the operating mode

1. Start the AXIS EMC ISOBUS machine control unit.
2. Open 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 operating screen. By doing so, you can observe the mass flow control during spreading. Refer to chapter [2.2.2: Display fields, page 8](#) and chapter [4.5.1: AUTO/MAN mode, page 43](#).

- You can find important information about the use of the different operating modes for spreading operations in Chapter [5: Spreading with the machine control unit AXIS EMC ISOBUS, page 61](#).

4.5.2 +/- quantity



In this menu, you can set the step width of the percentage **quantity adjustment** for normal spreading.

The base (100%) is the pre-set value for the opening of the metering slide.



NOTICE

During operation, the **Appl. rate + / Appl. rate -** function keys can be used to adjust the spreading quantity by the **+/- appl. rate** factor at any time.

You can restore the default settings with the **C 100 % key**.

Determine the quantity reduction:

1. Open the **Machine settings > +/- Appl. rate (%)** menu.
2. Enter the percentage by which you want to adjust the spreading quantity.
3. Press **OK**.

4.6 Fast emptying



Select the **Fast emptying** menu to quickly clean the machine after the spreading or to quickly empty any residual material.

For this purpose, before storing the machine, we recommend **completely opening** the metering slides via the fast emptying function and switching off the AXIS EMC ISOBUS in this state. This prevents a build-up of moisture in the hopper.

NOTICE

Before starting the fast emptying process, it is to be ensured that all preconditions have been met. Observe the operating manual for the mineral fertiliser spreader (discharging the remaining quantity).

With the AXIS-M 20.2, the drop point must be mechanically zeroed before the fast emptying takes place ([See also "Drop point" on page -29](#)).

Carrying out the fast emptying process:

1. Open the **Main menu > Fast emptying** menu.

▲ CAUTION**Risk of injury due to automatic drop point adjustment**

With the **AXIS EMC**, the **Move to drop point** alarm notification appears. By pressing the **Start/Stop** function key, the drop point is automatically moved to position 0. After the calibration, the drop point automatically moves to the pre-set value. This can cause personal injury and damage to property.

- ▶ Before pressing **Start/Stop**, ensure that there is **no-one** in the danger zone of the machine.

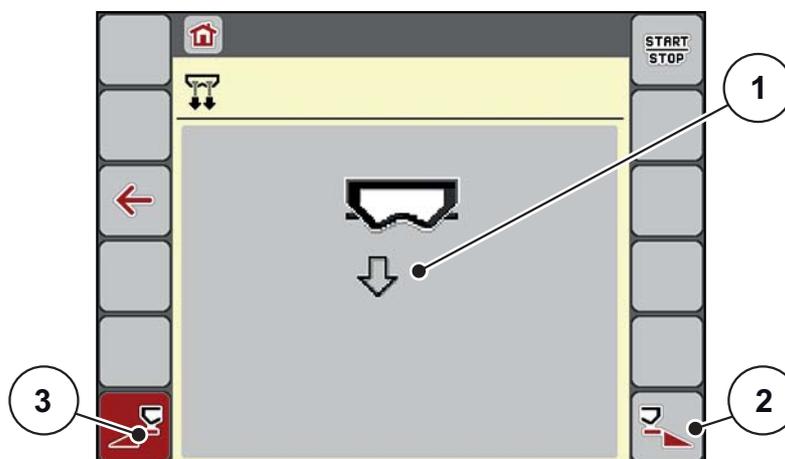


Figure 4.10: Fast emptying menu

- [1] Symbol for fast emptying (here: left side selected, not started)
- [2] Fast emptying of the right section (selected)
- [3] Fast emptying of the left section (not selected)

2. Press the **Function key** to select the section for which the fast emptying function is to be carried out.
 - ▷ The selected section width is displayed as a symbol ([Figure 4.10](#), position [2]).
3. Press **Start/Stop**.
 - ▷ The fast emptying process starts.
4. Press **Start / Stop** when the hopper is empty.
 - ▷ The fast emptying process ends.
5. Press **ESC** to return to the **Main menu**.

⚠ CAUTION



Risk of injury due to automatic drop point adjustment

On the **AXIS-H EMC**, the **Move to drop point** alarm notification appears. Upon actuation of the **start/stop** function key, the drop point automatically moves to the pre-set value. This can cause personal injury and damage to property.

- ▶ Before pressing **Start/Stop**, ensure that there is **no-one** in the danger zone of the machine.

Complete emptying:

Before storage, you can completely empty the hopper of your machine via the machine control unit.

1. Select both sections.
2. Press **Start/Stop**.
 - ▷ Both metering sliders open.
 - ▷ The drop point moves to the left and to the right, to the value 0.
3. Press **Start/Stop**.
 - ▷ The drop point automatically moves to the pre-set value.

4.7 System/Test



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

- Open the **Main menu > System / Test** menu.

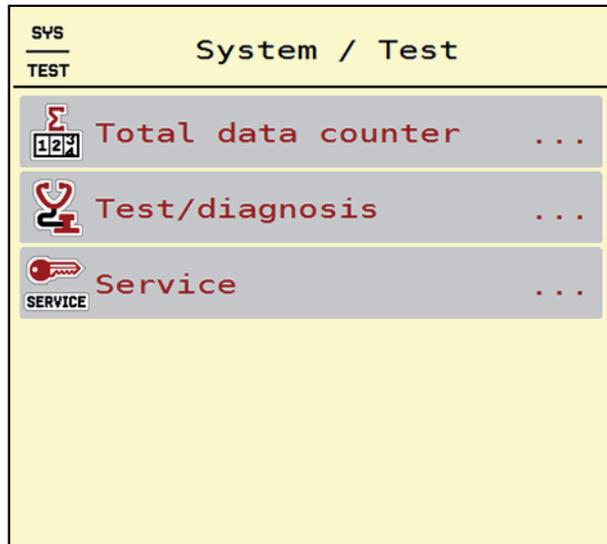


Figure 4.11: System/test menu

Sub-menu	Meaning	Description
Total data counter	Display of the total <ul style="list-style-type: none"> ● spread quantity in kg ● spread area in ha ● spread time in h ● distance travelled in km 	Page 48
Test/Diagnosis	Checking of actuators and sensors	Page 49
Service	Service settings	Password-protected; only accessible for service personnel

4.7.1 Total data counter



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

- spread quantity in kg
- spread area in ha
- spread time in h
- distance travelled in km

NOTICE

This menu is for informative purposes only.

Total data counter	
kg calculated	6479
ha	32.5
hours	2
km	12

Figure 4.12: Total data counter menu

4.7.2 Test / Diagnosis



In the **Test/diagnosis** menu, you can check the functions of all actuators.

NOTICE

This menu is for information purposes only.
The list of sensors depends on how the machine is equipped.

▲ CAUTION



Risk of injury due to moving machine parts.

During the tests, machine parts may start to move automatically.

- ▶ Before carrying out the tests, ensure that there is no-one in the area of the mineral fertiliser spreader

Sub-menu	Meaning	Description
Voltage	Checking the operating voltage.	
Metering slide	Manual movement of rotary actuators	Page 50
Test points slider	Test for approaching the various position points of the sliders.	Calibration check
Drop point	Manual movement of the drop point motor	
DP test points	Approaching the drop point	Calibration check
LIN Bus	Checking the communication of the drop point cylinders.	Page 51
Spreading disc	Manual activation of the spreading disc	
Agitator	Checking of the agitator	
EMC sensors	Checking the EMC sensors	
Weigh cell	Checking the sensors	
Level sensor	Checking the sensor	
Hopper cover	Checking the actuators	
SpreadLight	Checking the working headlights	

Example for metering slide test/diagnosis

1. Open the **Test/diagnosis > Metering slide** menu.

▷ **The display shows the status of the motors/sensors.**

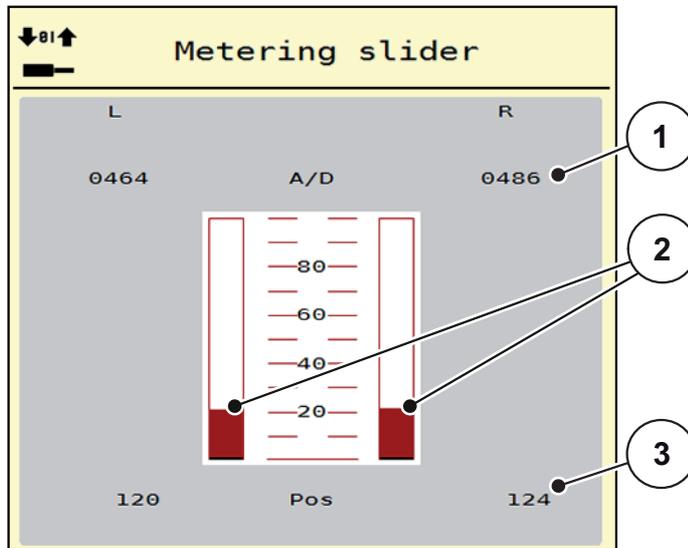


Figure 4.13: Test / Diagnosis, example: Metering slide

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

The status of the electrical signal for the left and right side is displayed separately in the **Signal** display.

⚠ CAUTION



Risk of injury due to moving machine parts

During the tests, machine parts may start to move automatically.

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

You can open and close the metering sliders via the top/bottom arrows.

Linbus example

1. Open the **System / Test > Test / Diagnosis** menu.
2. Select the **Linbus** menu item.
 - ▷ The display shows the status of the actuators/sensors.

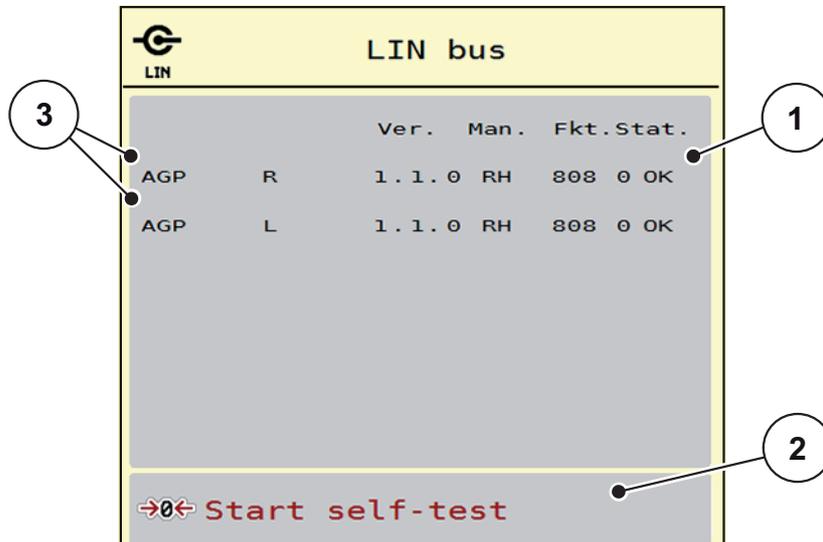


Figure 4.14: Test / Diagnosis, example: Linbus

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

Linbus participant status notification

The equipment shows different conditions:

- 0 = OK; no equipment error
- 2 = blockage
- 4 = overload

▲ CAUTION



Risk of injury due to moving machine parts.

During the tests, machine parts may start to move automatically.

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

4.7.3 Service



NOTICE

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

4.8 Info



In the **Info** menu, information on the machine control unit is provided.

NOTICE

This menu provides information on the configuration of the machine.
The information list depends on the equipment of the machine.

4.9 Weighing trip counter



This menu provides values for spreading work that has already been carried out and functions for the weighing operation.

- Open the **Main menu > Weighing trip counter** menu.
 - ▷ The **weighing trip counter** menu is displayed.

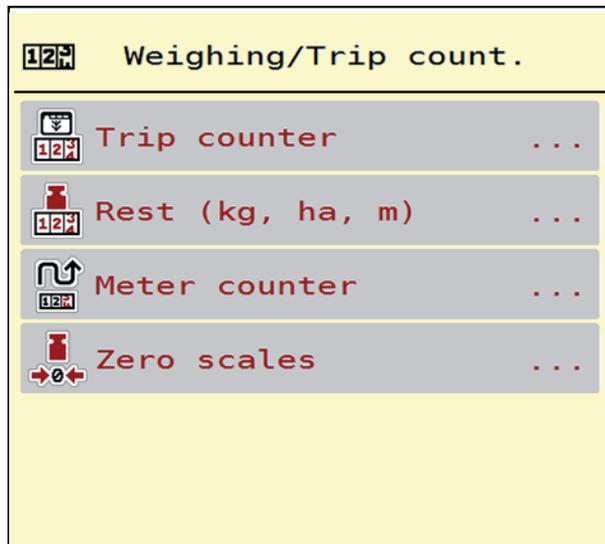


Figure 4.15: Weighing trip counter menu

Sub-menu	Meaning	Description
Trip counter	Display of the applied spreading quantity, area spread and spread distance	Page 53
Left (kg, ha, m)	For weighing spreaders only: Display of the residual quantity in the hopper	Page 54
Metre counter	Display of the distance travelled since the last reset of the meter counter.	Reset (zeroing) by pressing the C 100 % key
Tare the scales	For weighing spreaders only: Weighing value for empty scales is set to "0 kg"	Page 55

4.9.1 Trip counter



In this menu, you can obtain the values of the spreading work realized, check the remaining spreading quantity and reset the trip counter by clearing.

- Open the **Weighing trip counter > Trip counter** menu.
 - ▷ The **Trip counter** menu appears.

During spreading, when the metering slides open, the **Trip counter** menu can be opened to display the current values.

NOTICE

If you want to permanently monitor the values during spreading, freely assignable display fields in the operating screen can also be assigned **kg Trip**, **ha Trip** or **m Trip**, see [2.2.2: Display fields, page 8](#).

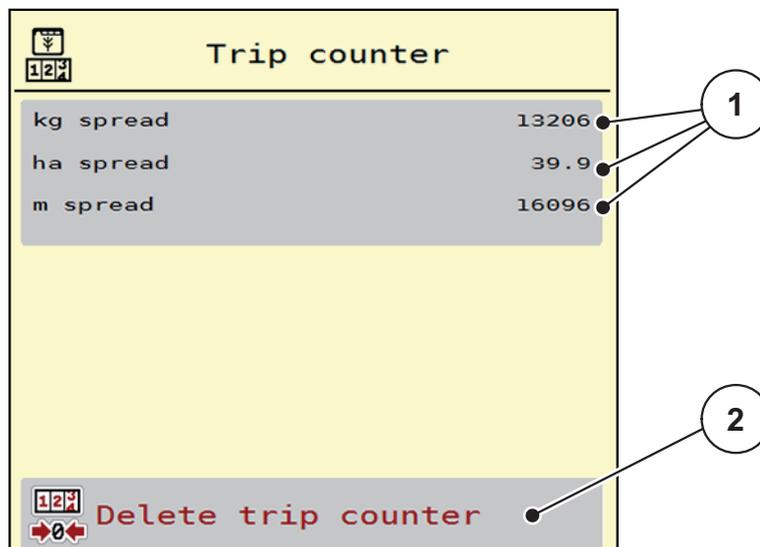


Figure 4.16: Trip counter menu

- [1] Spread quantity, area and distance display fields
 [2] Clear trip counter entry

Clearing the trip counter:

1. Open the **Weighing trip counter > Trip-counter** sub-menu.
 - ▷ The values for spreading quantity, area and distance determined **since the last deletion** are displayed.
2. Press the **Clear trip counter** button.
 - ▷ **All values of the trip counter are reset to 0.**

4.9.2 Rest (ka, ha, m)



In the **kg Left** menu, you can see the **quantity remaining** in the hopper. The menu shows the potential **area (ha)** and **distance (m)** which can still be spread with the residual fertiliser quantity.

- Open the **Weighing trip counter > Rest (kg, ha, m)** menu.
 - ▷ The **Rest** menu appears.

NOTICE

With **Weighing spreaders** the current loaded weight can only be determined by weighing. With all other spreaders, the residual fertiliser quantity is calculated from the fertiliser and machine settings as well as from the drive signal, and the filling quantity has to be entered manually (see below).

The **Application rate** and **Working width** values cannot be changed in this menu. They are for informative purposes only.

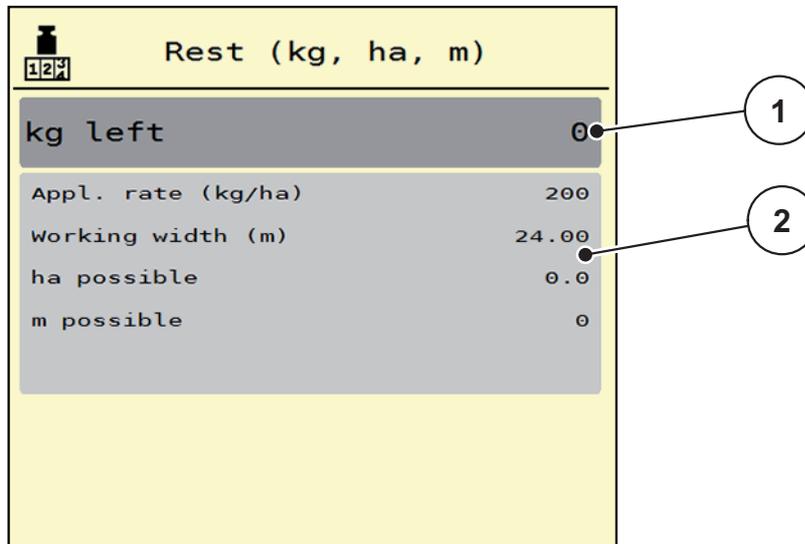


Figure 4.17: kg Left menu

- [1] Input window Rest (kg)
- [2] Application rate, working width, possible spread area and distance display fields

For machines without weigh cells

1. Fill the hopper.
2. In the **Rest (kg)** area, enter the total weight of the fertiliser left in the hopper.
 - ▷ The unit calculates the values for the possible spread area and distance.

4.9.3 Zero scales (weighing spreaders only)



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

The following requirements have to be fulfilled for zeroing the scales:

- the hopper is empty,
- the machine is at a standstill,
- the PTO shaft is switched off,
- the machine is in a horizontal position and off the ground,
- the tractor is at a standstill.

Taring the scales:

1. Open the **Weighing trip counter > Tare scales** menu.
2. Press the **Tare scales** button.

▷ **The weighed value for the empty scales is now set to 0 kg.**

NOTICE

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

4.10 Operating lights (SpreadLight)



In this menu, the SpreadLight function can be activated and the spreading pattern can be monitored even in the night mode.

The operating lights are switched on and off via the machine control unit when in automatic and manual mode.

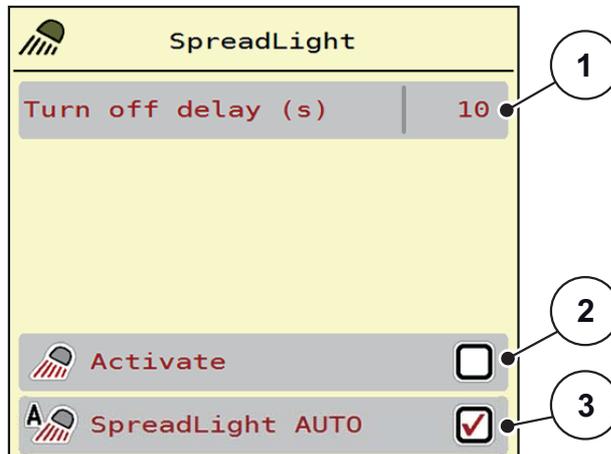


Figure 4.18: SpreadLight menu

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

Automatic mode:

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

1. Open the **Main menu > SpreadLight** menu.
2. Tick the check box in the **SpreadLight AUTO** [3] menu item.
 - ▷ The operating lights are switched on when the metering sliders open.
3. Enter a turn off delay [1] in seconds.
 - ▷ The operating lights will switch off after the entered delay when the metering sliders are closed.
 - Range from 0 to 100 seconds.
4. Untick the check box in the **SpreadLight AUTO** [3] menu item.
 - ▷ Automatic mode is deactivated.

Manual mode:

In the manual mode, the operating lights can be switched on and off.

1. Open the **Main menu > SpreadLight** menu.
2. Tick the check box in the **Activate** [2] menu item.
 - ▷ The operating lights are switched on and remain on until the check box is unchecked or the menu is exited.



4.11 Hopper cover



▲ WARNING



Danger of crushing and shearing due to components operated by an external force

The hopper cover will move without warning and can cause personal injury.

- ▶ Ensure that nobody is present in the hazard zone.

The AXIS EMC machine is equipped with an electrically operated hopper cover. During the refilling process at the end of the field, you can open and / or close the hopper cover using the control unit and an electrical drive.

NOTICE

The menu is only used for activating the actuators to open or close the hopper cover. The machine control unit AXIS EMC ISOBUS does not detect the exact position of the hopper cover.

- Monitor the movements of the hopper cover.

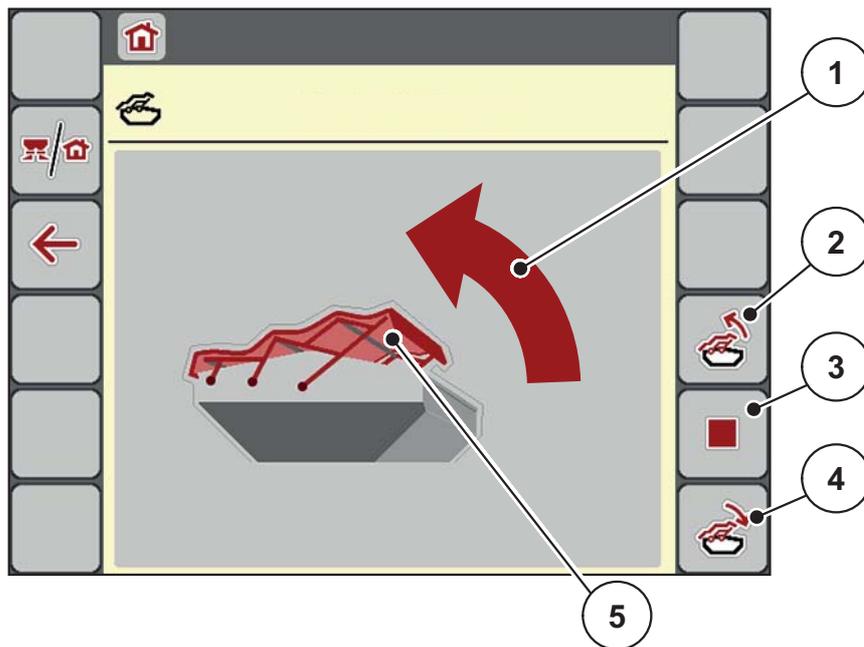


Figure 4.19: Hopper cover menu

- [1] Display of opening process
- [2] Open hopper cover
- [3] Stop process
- [4] Close hopper cover
- [5] Static display of hopper cover

⚠ CAUTION



Material damage due to insufficient clearance

Opening and closing the hopper cover requires a sufficient clearance above the hopper. If the clearance is insufficient, the hopper cover may tear. The hopper cover lever may be damaged and the hopper cover may damage the environment.

- ▶ Ensure that there is sufficient clearance above the hopper cover.



Moving the hopper cover

1. Press the **Menu** key.
2. Open the **Hopper cover** menu.
3. Press the **Open hopper cover** key.
 - ▷ During the movement, an arrow is displayed which indicates that the cover is **OPENING**.
 - ▷ The hopper cover will open entirely.
4. Fill with fertiliser.
5. Press the **Close hopper cover** key.
 - ▷ During the movement, an arrow is displayed which indicates that the cover is **CLOSING**.
 - ▷ The hopper cover will be closed.



If required, you can stop the movement of the hopper cover by pressing the **Stop**-key. The hopper cover remains in the intermediate position until you close or open it fully.

4.12 Special function: Using the joystick

As an alternative to the settings on the operating screen of the ISOBUS terminal, you can also use a joystick. See [7: Optional equipment, page 87](#). The joystick offered is pre-programmed with specific functions at the factory.

NOTICE

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

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

Key assignment of the WTK joystick

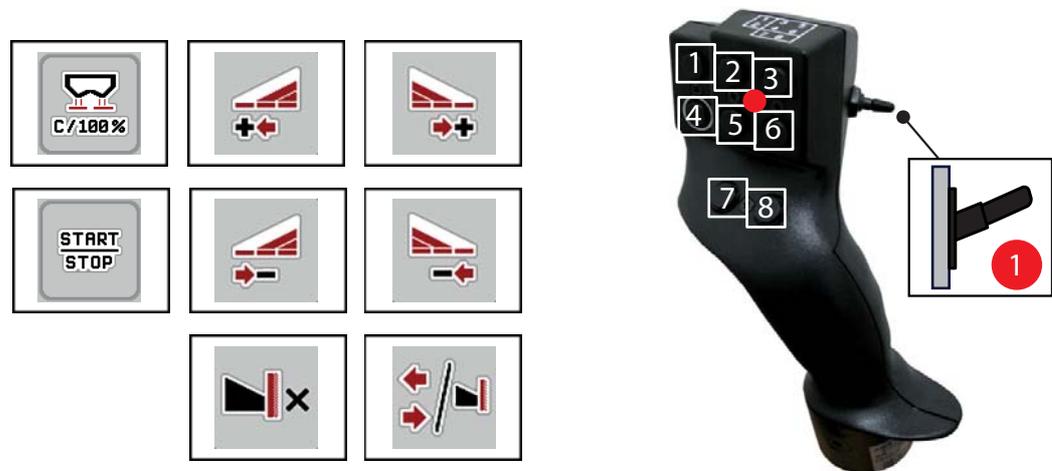


Figure 4.20: Key assignment, level 1 (LED is red)

- [1] Reset
- [2] Increase left section
- [3] Increase right section
- [4] Start/stop application rate regulation.
- [5] Reduce left section (minus)
- [6] Reduce section width, right (minus)
- [7] **AXIS-M:** No function
- [8] Switching between sections/limited border spreading

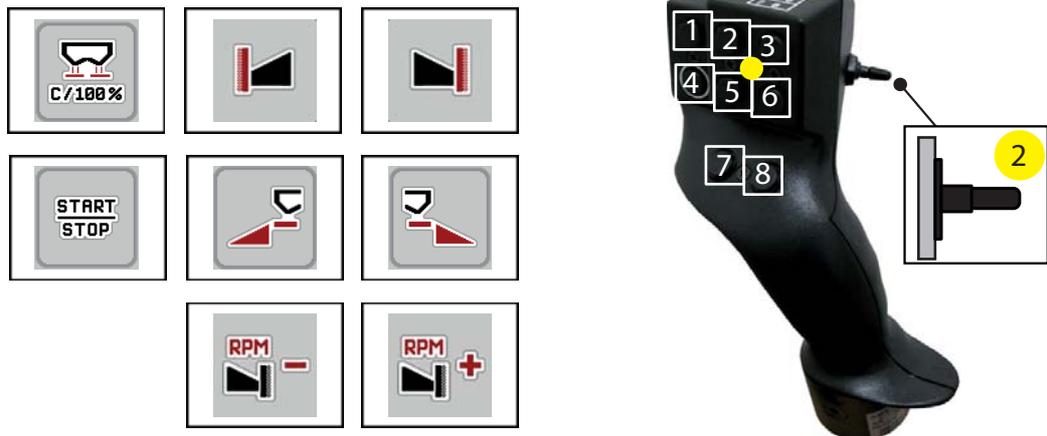


Figure 4.21: Key assignment, level 2 (LED is yellow)

- [1] Reset
- [2] **AXIS-M:** No function
- [3] Limited border spreading on the right side
- [4] Start/stop application rate regulation
- [5] Activate left spreading side
- [6] Activate right spreading side
- [7] **AXIS-M:** No function
- [8] **AXIS-M:** No function

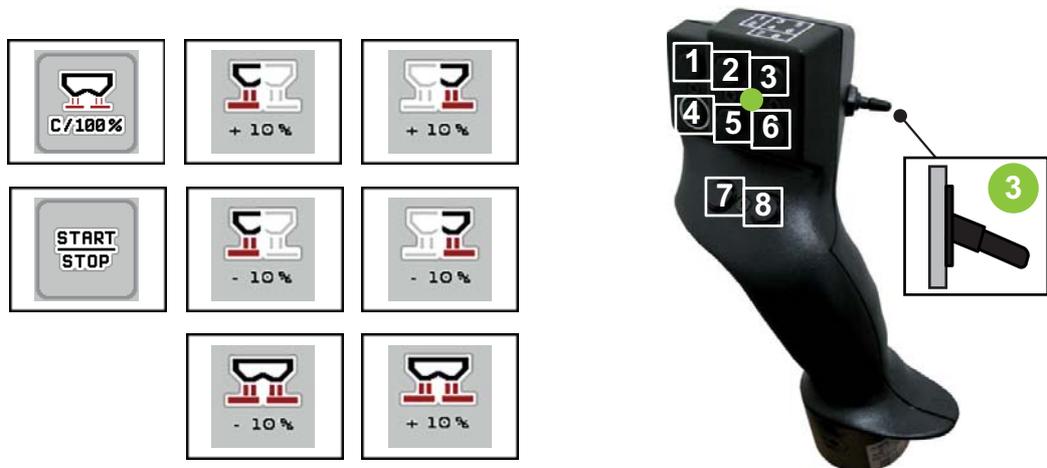


Figure 4.22: Key assignment, level 3 (LED is green)

- [1] Reset
- [2] Increase quantity on the left
- [3] Increase quantity on the right
- [4] Start/stop application rate regulation.
- [5] Reduce quantity on the left
- [6] Reduce quantity on the right
- [7] Reduce quantity on both sides
- [8] Increase quantity on both sides

5 Spreading with the machine control unit AXIS EMC ISOBUS

The machine control unit **AXIS EMC ISOBUS** helps you to make the right machine settings before starting to work. During spreading, the functions of the machine control unit are also active in the background. This allows you to monitor the quality of the fertiliser spreading.

5.1 Calling up the remaining quantity during spreading (weighing spreader only)

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

During spreading, i.e. with the metering slides open, the **trip counter** menu can be opened to display the remaining quantity currently in the hopper.

NOTICE

If you want to constantly monitor the values during the spreading, freely assignable display fields in the operating screen can also be assigned with the **kg left**, **ha left** or **m left**, see Chapter [2.2.2: Display fields, page 8](#).

Working with the weighed remaining quantity, refilling the hopper:

1. Zero the scales.
See chapter [4.9.3: Zero scales \(weighing spreaders only\), page 55](#).
2. Select the fertiliser type used.
See chapter [4.4.11: Fertiliser charts, page 38](#).
3. Fill the hopper.
4. Weigh the fertiliser quantity in the hopper.
5. Start your work.
When the hopper is empty, refill it.
6. Repeat steps 3 to 5.

5.2 Refilling (weighing spreader only)

Requirements:

- The kg level sensor function in the Machine settings menu is active.

NOTICE

If the menu entry is not displayed in your machine control, please contact your salesperson or customer service.

If the refill weight exceeds 400 kg, check the residual weight via the automatically displayed window.

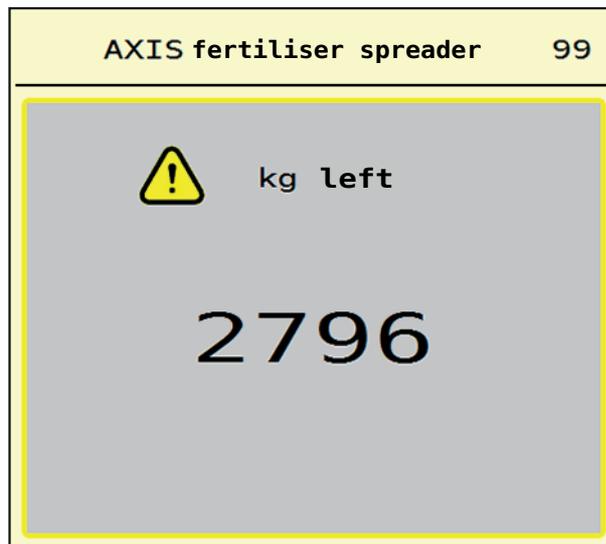


Figure 5.1: Refill weight



- Press the **ACK** foil key prior to spreading.
- Continue spreading.

NOTICE

If a WLAN module is being used, then the app also displays the weight.

5.3 Remote-controlled limited border spreading unit TELIMAT with AXIS-M 20.2 EMC

▲ CAUTION



Risk of injury due to the automatic adjustment of the TELIMAT!

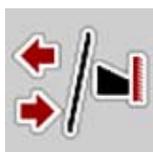
By pressing the **TELIMAT key**, the unit is automatically moved to the boundary spreading position by an electrical actuating cylinder. This can cause personal injury and damage to property.

- ▶ Before pressing the **TELIMAT key**, make sure that no one is in the machine's hazard zone.

NOTICE

The TELIMAT option is pre-set on the machine control unit by default!

TELIMAT with hydraulic remote control



The TELIMAT is hydraulically moved to its working or idle position. The TELIMAT unit can be activated or deactivated by pressing the **TELIMAT key**. Depending on the position, the display shows or hides the **TELIMAT icon**.

TELIMAT with hydraulic remote control and TELIMAT sensors

If TELIMAT sensors are connected and activated, the **TELIMAT icon** is shown on the display of the control unit as soon as the TELIMAT has been hydraulically brought to the operating position. If the TELIMAT is moved back to the idle position, the **TELIMAT icon** is hidden. The sensors monitor the TELIMAT adjustment and activate or deactivate the TELIMAT automatically. With this variant, the **TELIMAT key** has no function.

If the status of the TELIMAT unit cannot be detected for a period of more than 10 seconds, Alarm 14 will appear; see Chapter [6.1: Meaning of the alarm messages, page 81](#).

5.4 Working with sections

5.4.1 Displaying the spreading type on the operating screen

The machine control unit offers 2 different spreading modes for spreading operations using the AXIS EMC machines. These settings can be configured directly on the operating screen. During the spreading operation, you can change between the different spreading types in order to ideally adapt to the field requirements.

Button	Spreading type
	Activate section on both sides
	Section width on the left, limited border spreading function on the right possible

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

5.4.2 Spreading with reduced sections

Spreading can be realized with sections on one or both sides so that the spreading width can be adjusted to the field requirements. Every spreading side can be adjusted by a maximum of 2 steps in automatic and manual mode.



- Press the **Change limited border spreading/spreading sides** key.

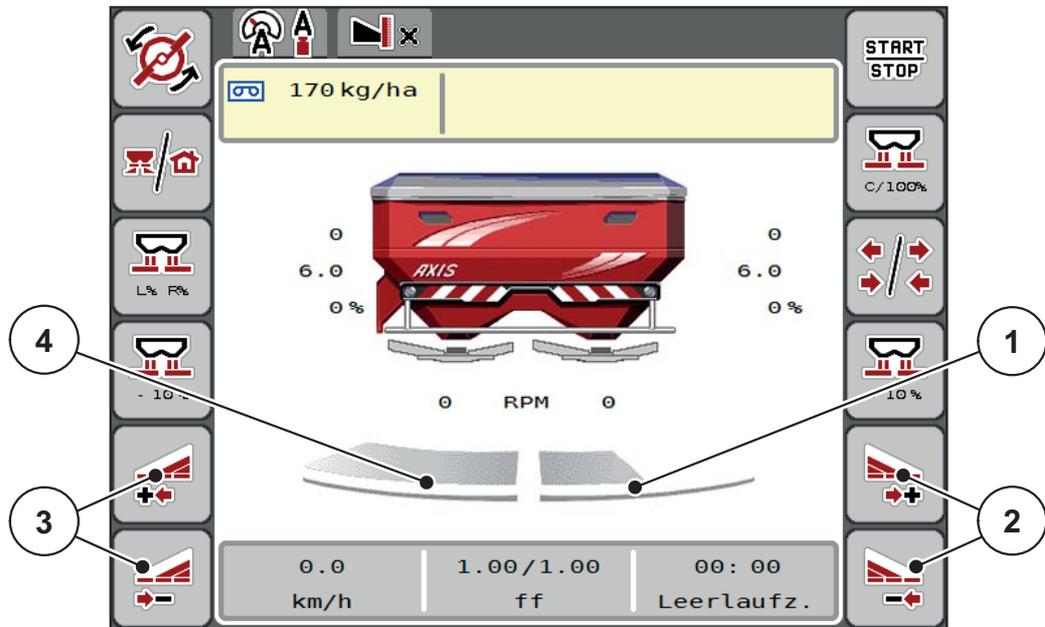


Figure 5.2: Operating screen, 2 section widths

- [1] The right section is reduced to one step
- [2] Function keys for increasing or reducing the spreading width on the right
- [3] Function keys for increasing or reducing the 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. See [Figure 5.3](#).

We recommend that you restart the terminal in the following cases:

- If you have changed the working width.
- If you have opened a different fertiliser chart entry.

After restarting the terminal, the display of the section widths is adjusted to the new settings.

1. Press the **Reduce left spreading width** or the **Reduce right spreading width** function key.
 - ▷ The section of the spreading side will be reduced by one step.
2. Press the **Increase left spreading width** or the **Increase right spreading width** function key.
 - ▷ The section width of the spreading side is increased by one level.

NOTICE

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

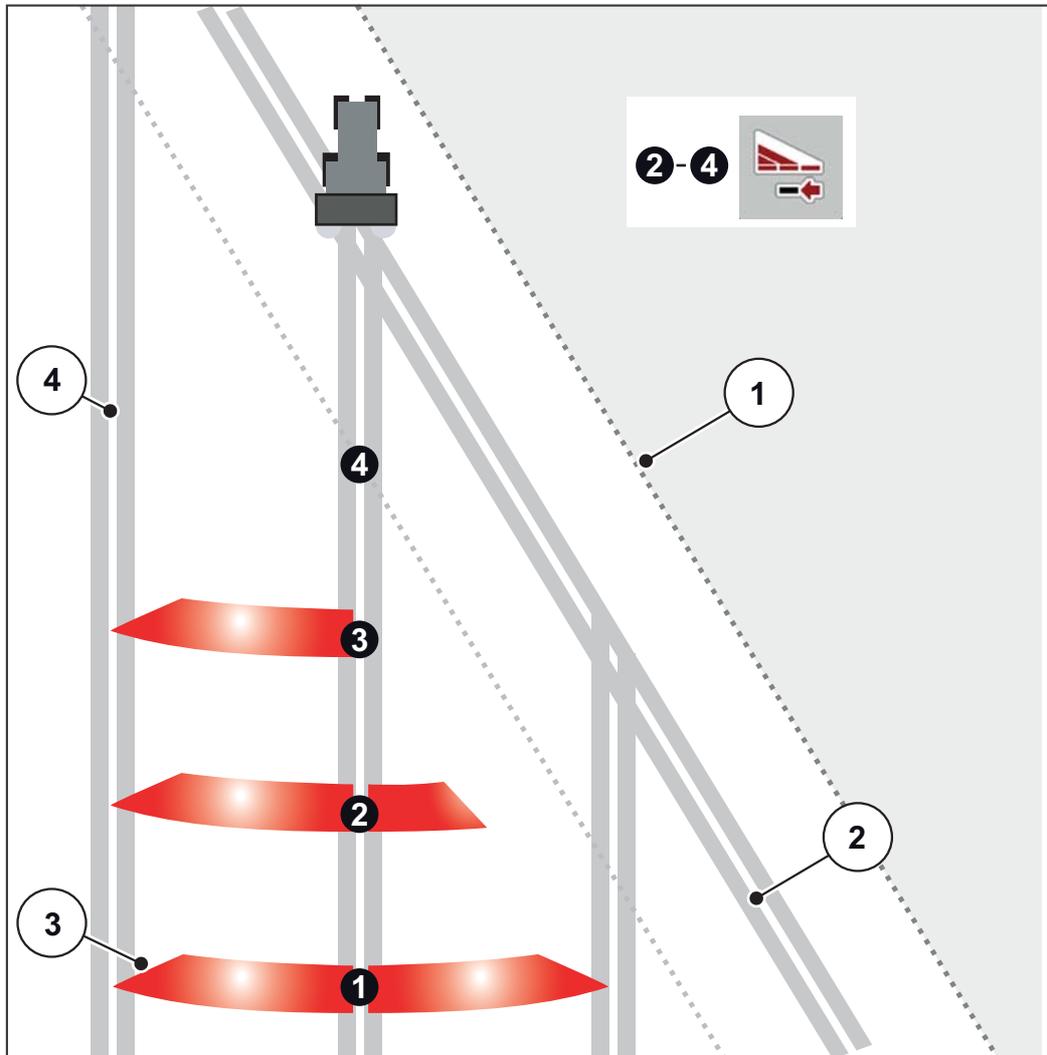


Figure 5.3: Automatic section control (AXIS-M 20.2)

- [1] Field border
- [2] Headlands tramline
- [3] Sections 1 to 4: Section reduction on the right side
- [4] Tramline in the field

5.4.3 Spreading operation with one section and in boundary spreading mode

During spreading operation, the sections can be changed gradually and limited border spreading can be deactivated. The figure below shows the operating screen with activated limited border spreading and activated section widths.

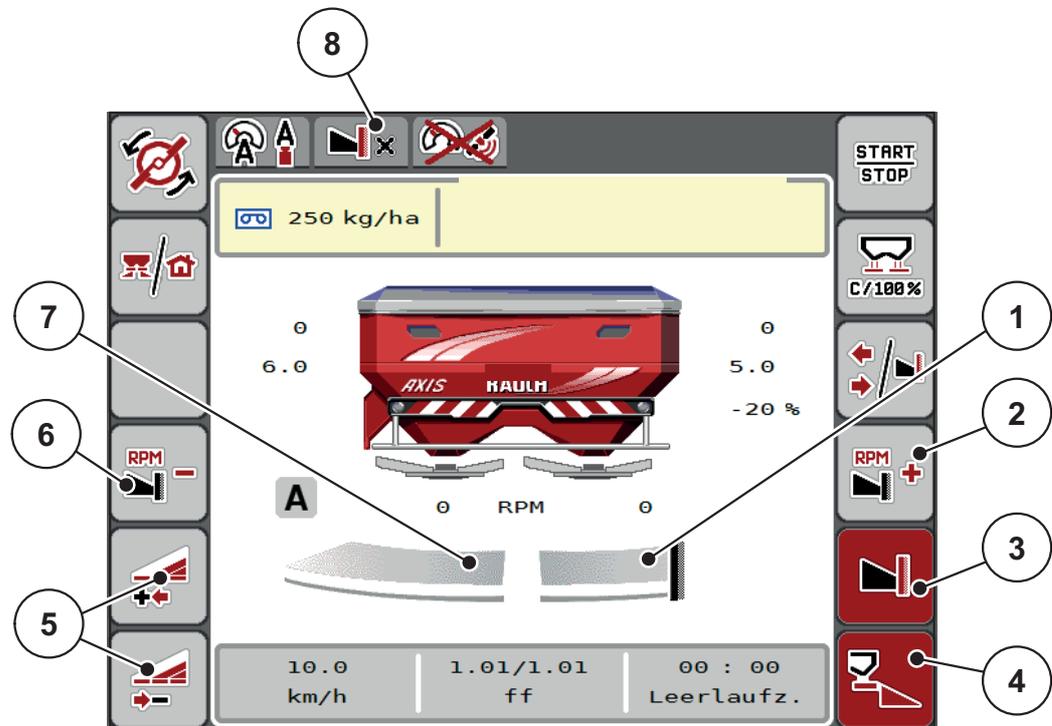


Figure 5.4: Operating screen, one section width on the left, limited border spreading side on the right

- [1] Spreading side on the right in the boundary spreading mode
- [2] Increase the spreading disc speed on the limited border spreading side
- [3] Boundary spreading mode is activated
- [4] Right spreading side is activated
- [5] Reduce or increase left section
- [6] Reduce the spreading disc speed on the limited border spreading side
- [7] Left section width adjustable in 2 steps
- [8] The current boundary spreading mode is Limited bd.

- The spreading quantity on the left is set to the full working width.
- The **Limited border spreading right** function key has been pressed, limited border spreading is activated and the application rate is reduced by 20%.
- The 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 restore the full working width.
- By pressing the **Right limited border spreading** function key, the limited border spreading function is deactivated.

NOTICE

The limited border spreading function is also possible in automatic mode with GPS-Control. The limited border spreading side must always be operated manually.

- See [Page 76](#).

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



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

NOTICE

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

Prerequisites for spreading:

- The **AUTO km/h + AUTO kg** operating mode is active (refer to [4.5.1: AUTO/MAN mode, page 43](#)).
- The fertiliser settings are defined.
 - Application rate (kg/ha)
 - Working width (m)
 - Spreading disc type
 - Normal disc speed (RPM)

Proceed as follows:

1. Fill the hopper with fertiliser.

⚠ WARNING



Danger due to ejected fertiliser

Ejected fertiliser may cause severe injury.

- ▶ Make sure that there is no-one in the spreading zone of the machine before switching on the spreading discs.

2. Acknowledge alarm messages by pressing the enter key. See [6.1: Meaning of the alarm messages, page 81](#).
 - ▷ The idle measurement screen is displayed.
 - ▷ The idle measurement starts automatically. See [5.6: Idle measurement, page 69](#).
3. Press **Start/Stop**.
 - ▷ **The spreading starts.**



NOTICE

We recommend displaying the flow factor on the operating screen (see [2.2.2: Display fields, page 8](#)) in order to monitor the flow factor control while spreading.

NOTICE

In the event of a problem with the regulating behaviour of the flow factor (blockages, ...), after troubleshooting at a standstill, switch to the **Fertiliser settings** menu and enter the flow factor 1.0.

Resetting the flow factor

If the flow factor has fallen below the minimum value (0.4 and/or 0.2), alarm no. 47 and/or 48 appears. See [6.1: Meaning of the alarm messages, page 81](#).

5.6 Idle measurement**5.6.1 Automatic idle measurement**

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

The idle measurement for the determination of the idling pressure will automatically start when the system is restarted. In addition, it starts automatically and under the following conditions:

- The defined period since the last idle measurement has expired.
- If you have made changes in the **Fertiliser settings** menu (RPM, spreading disc type).

During the idle measurement, the following window is displayed.

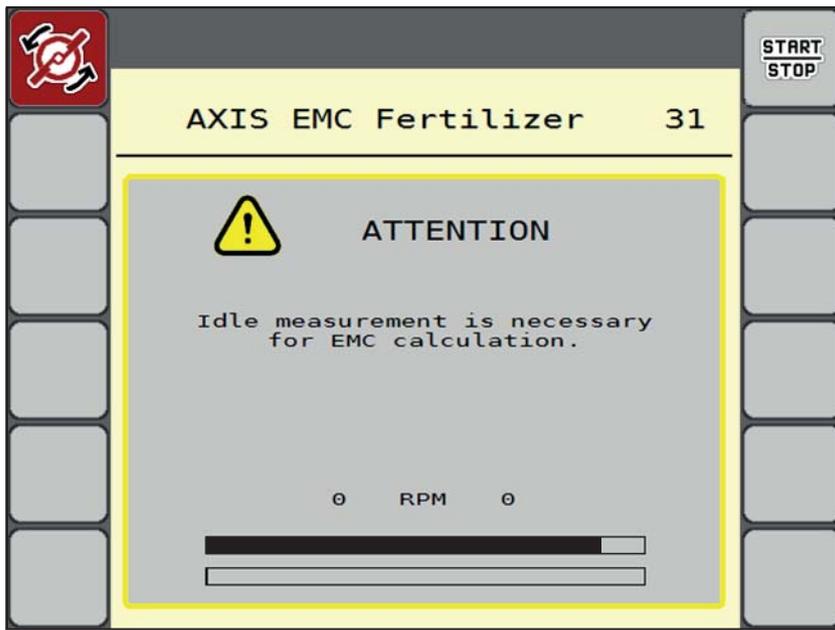


Figure 5.5: Idle measurement alarm display

- At the first start of the spreading disc, the machine control unit checks the oil temperature of the transmission. See [6.1: Meaning of the alarm messages, page 81](#).

NOTICE

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

- Compare the installed spreading disc with the type entered in the **Fertiliser settings** menu. If required, adjust the type.
- Check the spreading disc for tight seat. Re-tighten the wheel nut
- Check the spreading disc for damage. Replace the spreading disc.

- Once the idle measurement has been completed, the machine control unit will set the idling time to 19:59 minutes, which will be displayed on the operating screen.

1. Press Start/Stop.

- ▷ The spreading starts.
- ▷ The idle measurement runs in the background, even if the metering sliders are closed. However, no screen is shown on the display.



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

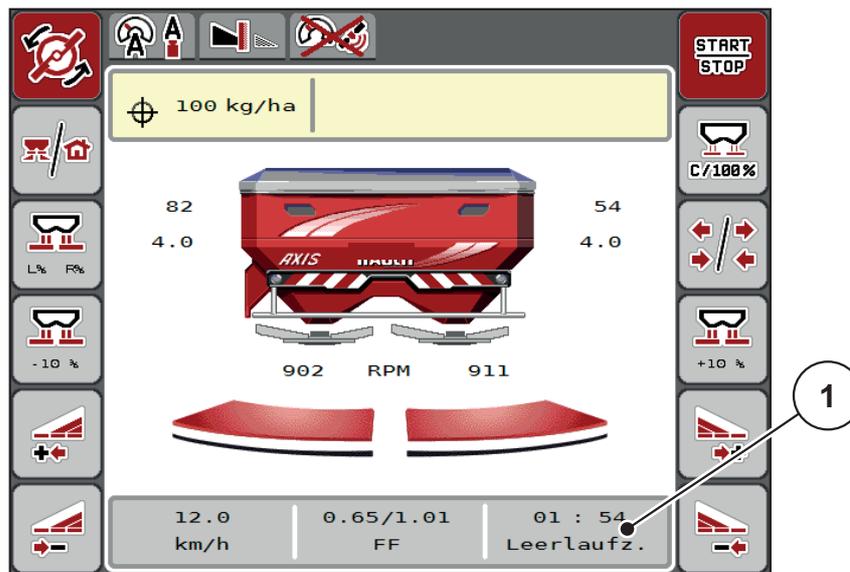


Figure 5.6: Display of the idle measurement on the operating screen

[1] Time until the next idle measurement

NOTICE

When the spreading disc speed is reduced, **no** idle measurement can be performed if limited border spreading or the section reduction is activated!

NOTICE

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

NOTICE

Do not reduce the engine speed during the idle measurement in the headlands! The tractor and hydraulics circuit must have reached their operating temperature!

5.6.2 Manual idle measurement

In the event of any 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.

5.7 Spreading in the AUTO km/h operating mode



This operating mode is applied by default for machines **without a weighing system**.

Prerequisites for spreading:

- The **AUTO km/h** operating mode must be active (see [4.5.1: AUTO/MAN mode, page 43](#)).
 - The fertiliser settings are defined.
 - Application rate (kg/ha)
 - Working width (m)
 - Spreading disc type
 - Normal disc speed (RPM)
1. Fill the hopper with fertiliser.

NOTICE

In order to achieve an optimal spreading result when working in **AUTO km/h** operating mode, a calibration must be carried out before spreading starts.

2. Carry out a calibration to determine the flow factor

or

Take the flow factor from the fertiliser chart and enter it manually.

⚠ WARNING



Danger due to 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 **Start/Stop**.

▷ **The spreading starts.**

5.8 Spreading in the MAN km/h operating mode



If there is no speed signal available, then you work in the MAN km/h operating mode.

1. Open the **Machine settings > AUTO / MAN mode** menu.
2. Select the **MAN km/h** menu item.
 - ▷ The **Speed** input window is displayed.
3. Enter the value for 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, a calibration is to be carried out before starting the spreading.

7. Carry out a calibration to determine the flow factor
or
Take the flow factor from the fertiliser chart and enter it manually.
8. Press **Start/Stop**.
 - ▷ **The spreading starts.**



NOTICE

Always observe the set speed during spreading.

5.9 Spreading in the MAN scale operating mode



The **MAN scale** operating mode enables the metering slide opening to be manually adjusted during the spreading operation.

The **manual** mode is only used:

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

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

NOTICE

To ensure regular spreading of the spreading material in the manual operating mode, it is imperative that you work at a **constant forward speed**.

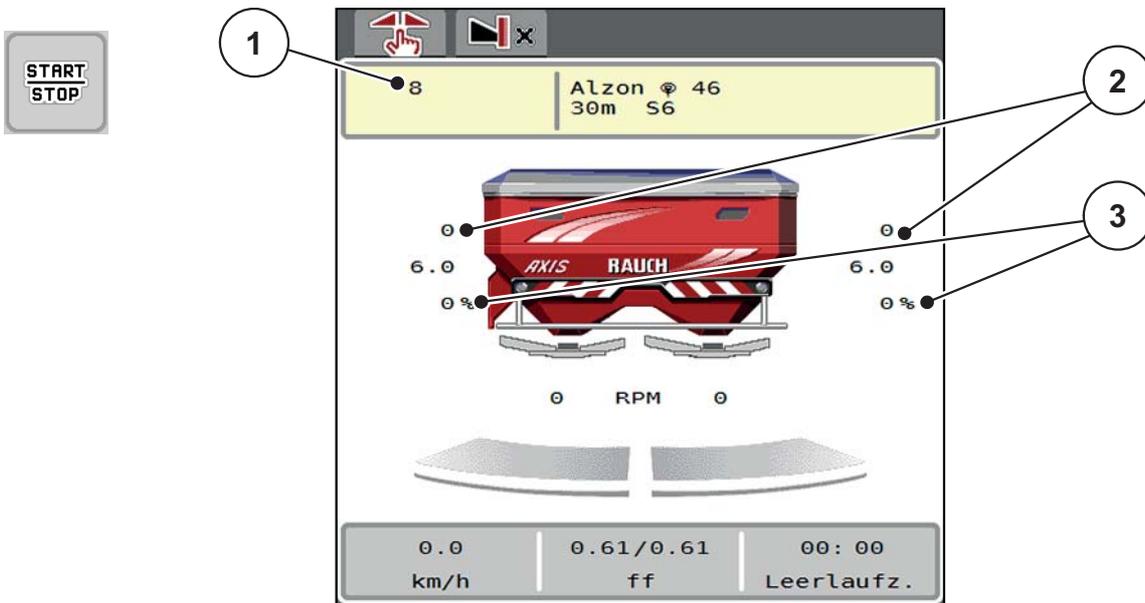


Figure 5.7: MAN scale operating screen

- [1] Display of metering slider target value scale position
- [2] Display of current metering slider scale position
- [3] Quantity adjustment

1. Open the **Machine settings > AUTO / MAN mode** menu.
2. Select the **MAN scale** menu item.
 - ▷ The **Slide opening** window is displayed.
3. Enter the scale value for the metering slide opening.
4. Press **OK**.

5. Switch to the operating screen.



6. Press **Start/Stop**.

▷ **The spreading starts.**

7. Press the **MAN+** or **MAN-** function key to change the metering slide opening.

L% R% to select the side of the metering slide opening

MAN+ to increase the metering slide opening or

MAN- to reduce the metering slide opening.



NOTICE

In order to achieve an optimal spreading result in manual mode as well, it is recommended that you adopt the metering slide opening and forward speed values provided in the fertiliser chart.

5.10 GPS Control



The AXIS EMC ISOBUS machine control unit can be combined with an ISOBUS terminal with SectionControl. Various data is exchanged between both devices to automate the control.

The ISOBUS terminal with SectionControl transmits the specifications regarding the opening and closing of metering slides to the machine control unit.

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

⚠ WARNING



Risk of injury due to ejected fertiliser

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

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

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

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

NOTICE

In order to use the GPS Control functions of the machine control unit, the **GPS Control** setting has to be activated in the **Machine settings** menu!

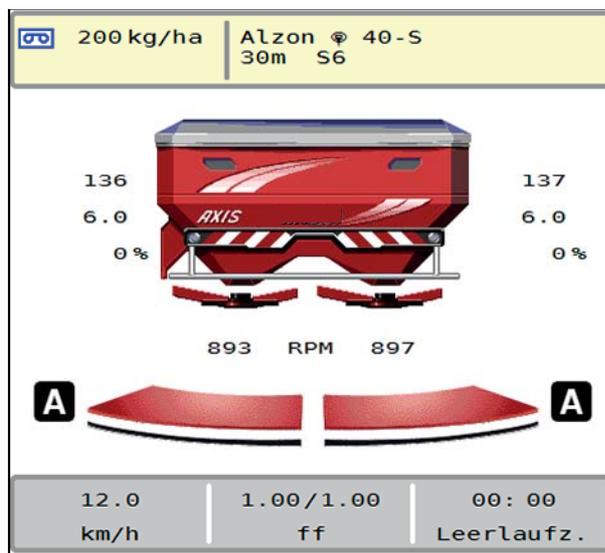


Figure 5.8: Spreading operation display on the operating screen with GPS Control

The **OptiPoint** function calculates the optimal on and off points for spreading in the headlands based on the settings in the machine control unit; see [4.4.9: Calculate OptiPoint, page 35](#).

NOTICE

To ensure correct configuration of the OptiPoint function, enter the correct distance factor for the fertiliser being used. The distance factor can be obtained from the fertiliser chart for your machine.

- See [4.4.9: Calculate OptiPoint, page 35](#).
-

Switch-on distance (m)

Switch-on distance refers to the switch-on distance (Figure 5.9 [A]) relating to the field border (Figure 5.9 [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.

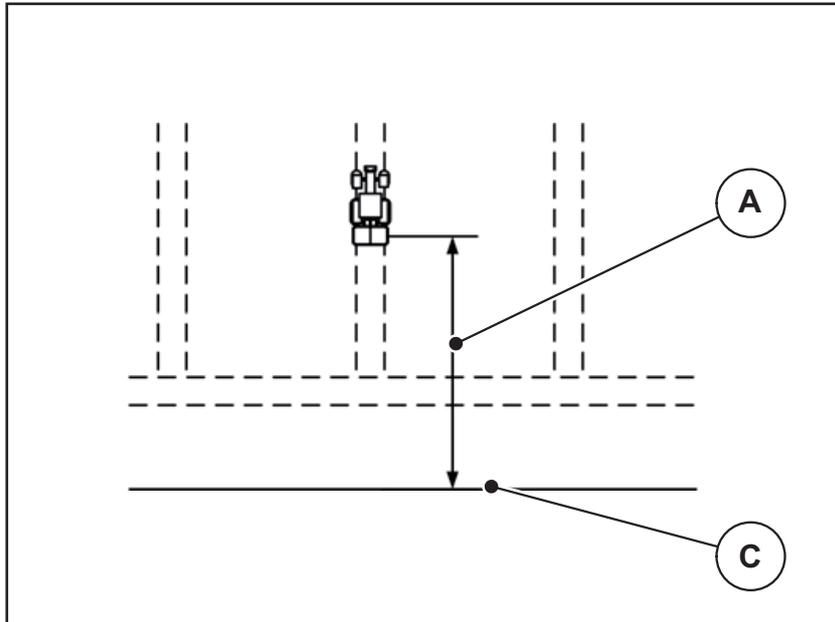


Figure 5.9: Switch-on distance (relating to field border)

- [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 5.10 [B]) relating to the field border (Figure 5.10 [C]). At this position in the field, the metering slides start to close.

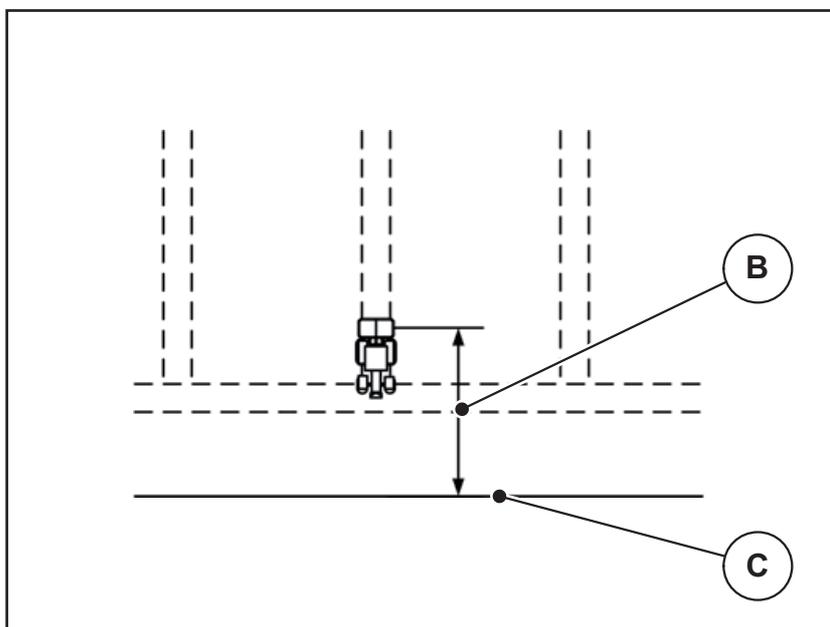


Figure 5.10: Switch-off distance (relating to field border)

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

If you wish to turn beyond the headland track, enter a greater distance in **Switch-off distance**.

Here, the adjustment must be as low as possible so that the metering slides close as soon as the tractor enters the headland track. An adjustment of the switch off distance may lead to an insufficient fertilisation in the area of the switch off position in the field.

6 Alarm messages and possible causes

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

6.1 Meaning of the alarm messages

No.	Message in display	Meaning and possible cause
1	Fault in dosing system. Stop!	The motor of the metering system cannot reach the specified target value. <ul style="list-style-type: none"> ● Blockage ● No position feedback
2	Maximum outlet reached! Speed or application rate too high	Metering slider alarm <ul style="list-style-type: none"> ● The maximum metering opening is reached. ● The set application rate (+/- quantity) exceeds the maximum metering opening.
3	Flow factor is outside limits.	The flow factor must lie within a range between 0.40 and 1.90 <ul style="list-style-type: none"> ● 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". <ul style="list-style-type: none"> ● The left hopper is empty.
5	Hopper right empty.	The filling level sensor on the right reports "empty". <ul style="list-style-type: none"> ● The right hopper is empty.
15	Memory full. Delete one private fertiliser chart.	A maximum of 30 fertilisers is stored in the memory for the fertiliser charts.
16	Approach drop point Yes = Start	Safety request before the drop point is automatically approached. <ul style="list-style-type: none"> ● The drop point can be set in the Fertiliser settings menu ● Fast emptying
17	Error by setting drop point.	The drop point adjustment cannot reach the specified target value. <ul style="list-style-type: none"> ● Fault, for instance with the power supply ● No position feedback

No.	Message in display	Meaning and possible cause
18	Drop point blocked	The drop point adjustment cannot reach the specified target value. <ul style="list-style-type: none"> ● Blockage ● No position feedback ● Calibration
19	Defect by setting drop point.	The drop point adjustment cannot reach the specified target value. <ul style="list-style-type: none"> ● No position feedback
20	Error on LIN bus participant: [Name].	Communication problem. <ul style="list-style-type: none"> ● Defective cable ● Loose plug connection
21	Spreader overloaded!	For weighing spreader only: The mineral fertiliser spreader is overloaded. <ul style="list-style-type: none"> ● Too much fertiliser in the hopper
22	Unknown condition function stop.	Communication problem at Terminal. <ul style="list-style-type: none"> ● Possible software error
23	Error by setting TELIMAT	The TELIMAT setting cannot reach the specified target value. <ul style="list-style-type: none"> ● 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. <ul style="list-style-type: none"> ● Blockage ● No position feedback
29	The agitator motor is overloaded	Agitator is blocked. <ul style="list-style-type: none"> ● Blockage ● Defective connection
30	The discs shall be activated before opening the metering sliders.	Correct software operation. <ul style="list-style-type: none"> ● Start the spreading discs ● Open metering slider
31	Idle measurement is necessary for EMC calculation.	Alarm message before the idle measurement. <ul style="list-style-type: none"> ● Activate spreading disc start.

No.	Message in display	Meaning and possible cause
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. Confirm with ENTER	If the machine control unit is activated, components may move unexpectedly. <ul style="list-style-type: none"> Follow the displayed instructions only if all risks have been eliminated.
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. <ul style="list-style-type: none"> Stop spreading discs Close metering slide
45	Error M-EMC sensors. EMC control deactivated!	The sensor does not send any signals <ul style="list-style-type: none"> 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!	<ul style="list-style-type: none"> Hopper empty Outlet blocked
48	Right dosing error, hopper empty, outflow blocked!	<ul style="list-style-type: none"> Hopper empty Outlet blocked
49	Idle measurement implausible. EMC control deactivated!	<ul style="list-style-type: none"> Defective sensor Defective transmission
50	Idle measurement impossible. EMC control deactivated!	PTO speed not permanently stable
52	Error at hopper cover	The position of the hopper cover could not be reached <ul style="list-style-type: none"> Blockage Defective actuator
53	Defect at hopper cover	The position of the hopper cover could not be reached! <ul style="list-style-type: none"> Blockage Defective actuator
57	Hopper cover blocked	The hopper cover actuator cannot reach the specified target value. <ul style="list-style-type: none"> Blockage No position feedback

No.	Message in display	Meaning and possible cause
71	Disc speed not reached.	The spreading disc speed is not within the 5% target range <ul style="list-style-type: none"> ● Problem with oil supply ● Proportional valve spring is jammed
72	Error at SpreadLight	The power supply is too high; the operating lights are switched off.
73	Error at SpreadLight	Overload
74	Defect at SpreadLight	Connection error <ul style="list-style-type: none"> ● Defective cable ● Loose plug connection
88	Error at disc rotation sensor	The spreading disc RPM could not be determined. <ul style="list-style-type: none"> ● Cable breakage ● Defective sensor
89	Disc speed too high	Alarm of the spreading disc sensor <ul style="list-style-type: none"> ● The maximum RPM is reached. ● The set RPM exceeds the maximum admissible value.
93	This disc type requires a modification on the TELIMAT device. Please follow the mounting instructions!	S1 disk is mounted and the machine is equipped with TELIMAT. Spreading errors possible during limited border spreading. <ul style="list-style-type: none"> ● This disk type facilitates TELIMAT apparatus mounting.

6.2 Fault/alarm

6.2.1 Acknowledging an alarm message

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

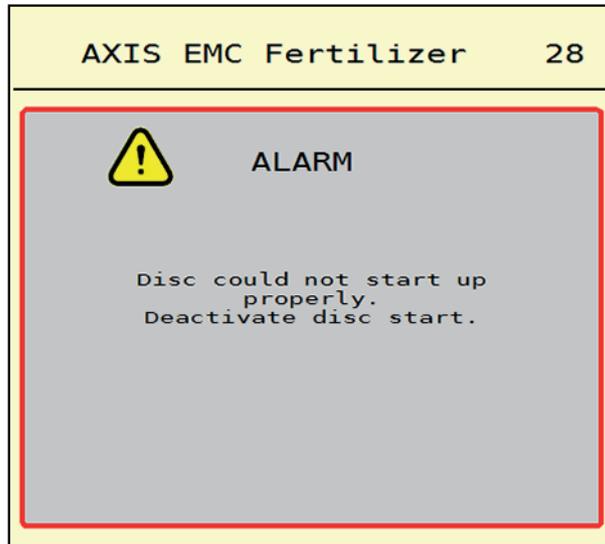


Figure 6.1: Alarm message (example)

Acknowledging an alarm message:

1. Rectify the cause for the alarm message.

Observe the operating manual for the mineral fertiliser spreader and Section [6.1: Meaning of the alarm messages, page 81](#).

2. Press the **ACK** (CCI 100) foil button.



NOTICE

In the case of different ISOBUS terminals, acknowledging the alarm messages may differ.

You can use various keys to acknowledge other messages with a yellow frame:

- Enter
- Start/stop

For this purpose, follow the instructions on screen.

7 Optional equipment

Illustration	Designation
 A black cable with a red connector and a black plug, coiled together.	Level sensor for AXIS-H EMC
 A black joystick with a white cable and a black connector.	Joystick
 A black WLAN module with a white cable and a black connector, and two small metal pins.	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 handling 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.

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<http://www.rauch-community.de/streutabelle/>



RAUCH Landmaschinenfabrik GmbH

 Landstraße 14 · D-76547 Sinzheim

 Victoria-Boulevard E200 · D-77836 Rheinmünster



info@rauch.de · www.rauch.de

Phone +49 (0) 7221/985-0

Fax +49 (0) 7221/985-200