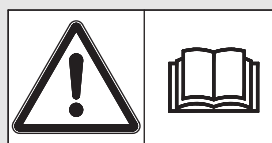
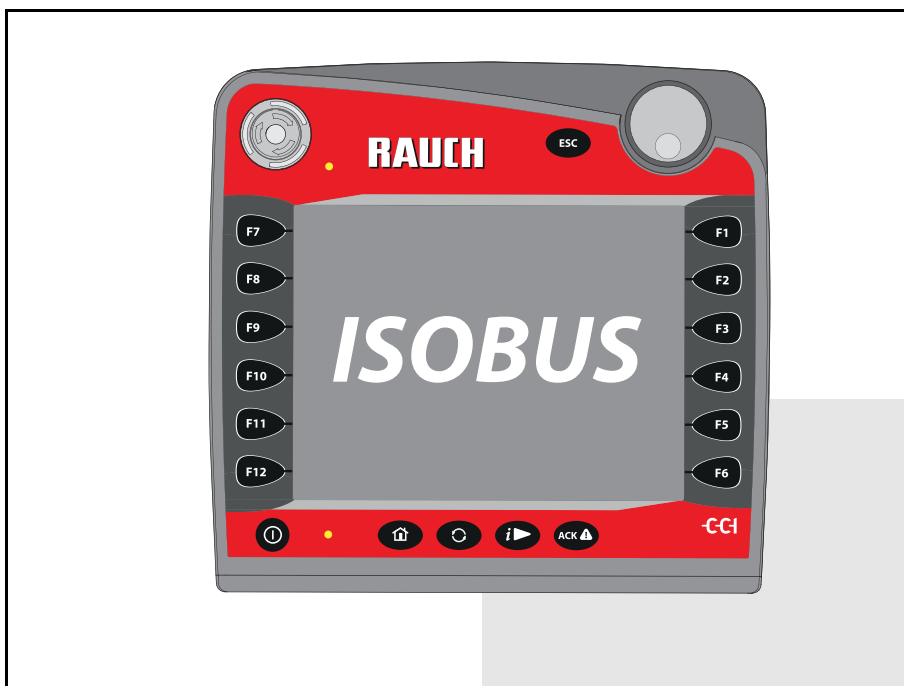




**RAUCH**

wir nehmen's genau

# 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.

**AXENT ISOBUS**

Original instructions

5901646-d-en-0716

## Preface

Dear Customer

By purchasing the AXENT ISOBUS **machine control unit** for the AXENT large area spreader, you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable **machine control unit**. If, contrary to expectations, any problems occur: our customer service is always there for you.



**Please read this operator's manual as well as the operator's manual of the machine carefully before commissioning and follow the advice given.**

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.

### NOTE

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

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

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

---

Serial number AXENT ISOBUS

---

Serial number AXENT

---

Year of construction  
AXENT

## 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

## Preface

Technical improvements

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# 1 User instructions

## 1.1 About this operator's manual

This operator's manual is an **Integral part** of the **AXENT ISOBUS** machine control unit.

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

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


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

## 1.2 Information on the illustration

### 1.2.1 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:

<b>Signal word</b>	
Symbol	Explanation
<b>Example</b>	
<b>⚠ DANGER</b>	
	<p><b>Risk to life if warning is not observed</b></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.

---



## 1.2.2 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

## 1.2.3 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

## 1.2.4 References

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

- **Example:** See also chapter [3: Safety, page 5](#).

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.

## 1.2.5 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, the present chapter is restricted to the layout and functions of the **CCI 100** ISOBUS terminal as an example.

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

### 2.1 Layout (CCI 100)

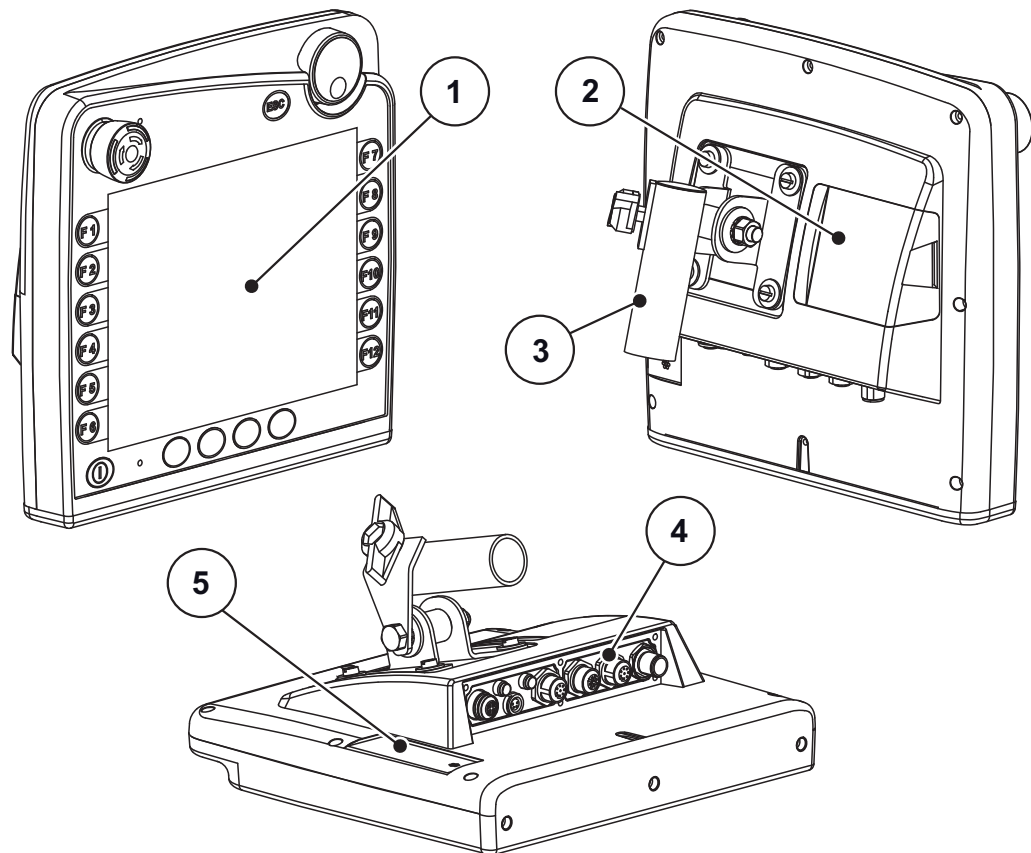


Figure 2.1: Terminal CCI 100 overview

No.	Designation	Function
1	Control panel	Including foil keys, display, scroll wheel and stop switch.
2	USB port with cover	Protects the USB port from dirt. For data exchange, task controller and terminal updates.
3	Mounting bracket	For mounting the terminal within the tractor cabin.
4	Terminal strip	Terminal strip for the cables of the ISOBUS system.
5	Softkey switch	Enables switching the functions from the left to the right side of the screen.

### 2.2 Control elements (CCI 100)

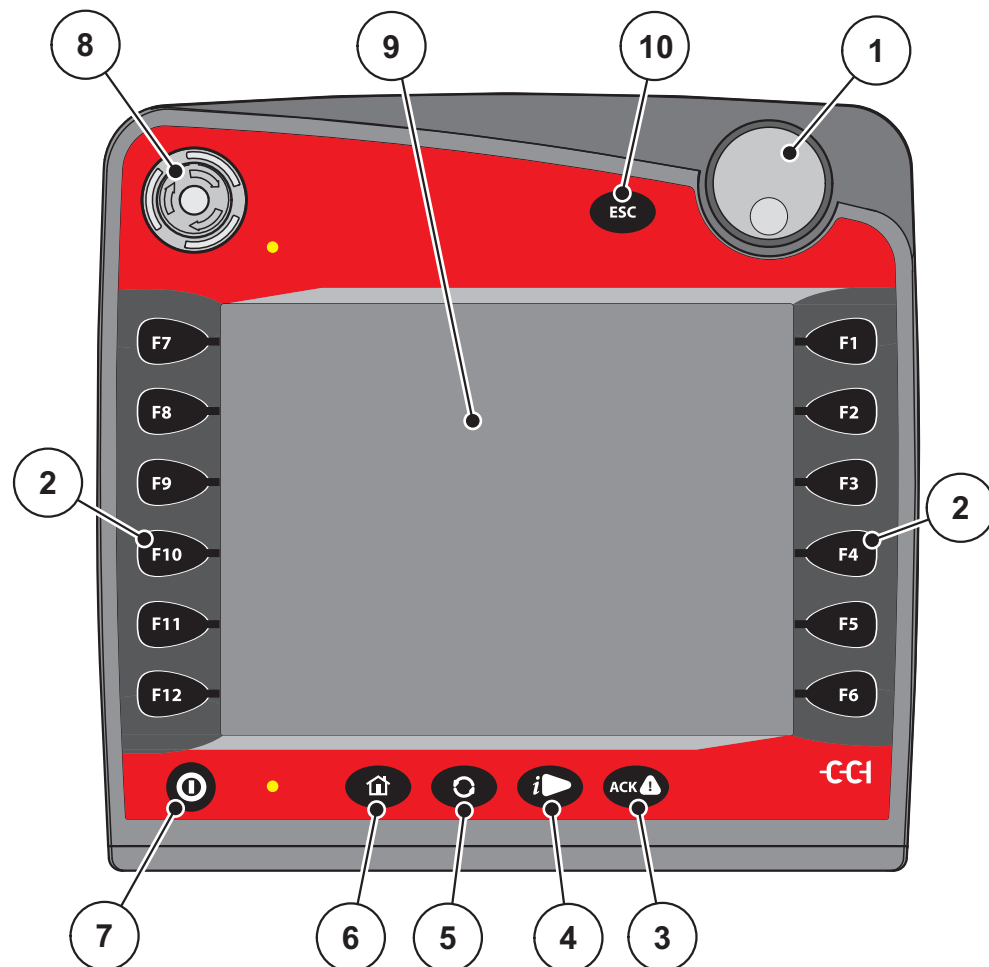
#### 2.2.1 Overview

The CCI 100 machine control unit is operated with the following control elements:

- **18 foil buttons** (6 firmly defined, 12 freely assignable foil buttons).
- Scroll wheel
- Stop switch
- Softkey switch

#### NOTICE

For further information on operating the CCI 100 terminal and its control elements, refer to the enclosed operating manual. The operating manual is an integral part of the terminal unit.



**Figure 2.2:** Operating panel on the front side of the unit

No.	Designation	Function
1	Scroll wheel	Navigation through the menus and input fields and to acknowledge entries.
2	Function keys F1 - F12	12 keys with variable functionalities, depending on the menu screen. <a href="#">Page 8</a>
3	<b>ACK key</b>	Acknowledgement of error messages.
4	<b>Information key</b>	Freely assignable key. Refer to the CCI 100 terminal operating manual.
5	<b>Double arrow key</b>	Navigation between the system screens of the terminal.
6	<b>Main menu key</b>	Changing to the main menu of the terminal (refer to the manufacturer operating manual).
7	ON/OFF	Switching the terminal on/off.
8	Stop switch	The stop switch puts the connected devices into a safe state. Not all ISOBUS terminals support the stop switch. <a href="#">Page 9</a>
9	Touch screen	<ul style="list-style-type: none"> <li>● Direct activation of the button</li> <li>● Input of values</li> </ul>
10	<b>ESC key</b>	Cancelling inputs.

### 2.2.2 Touch screen

The CCI 100 terminal is equipped with a touch screen. The buttons on the screen (OK, symbols in the working screen, etc.) can be pressed and menu entries can be opened directly.

#### **NOTICE**

Please observe the operating manual of the CCI 100 terminal. The operating manual is an integral part of the terminal/machine.

### 2.2.3 Function keys

Depending on the type of terminal, it can be equipped with **1x6** (minimum requirement), **2x5** or **2x6** function keys. On the left and right-hand side, next to the screen of the CCI 100 ISOBUS terminal, two groups of 6 function keys each are allocated in a vertical position.

The assignment of the function keys depends on the displayed menu screens. Functions are generally executed by pressing the function key next to the icon or by pressing the button on the touch screen.

Function keys without icon do not have **any** functionality in the respective menu screens.

### 2.2.4 Scroll wheel

The scroll wheel is used for fast navigation in the menus as well as for entering or changing data in input fields.

- Turning the scroll wheel enables navigation between the selectable fields.
- Pressing the scroll wheel to confirm the selection.

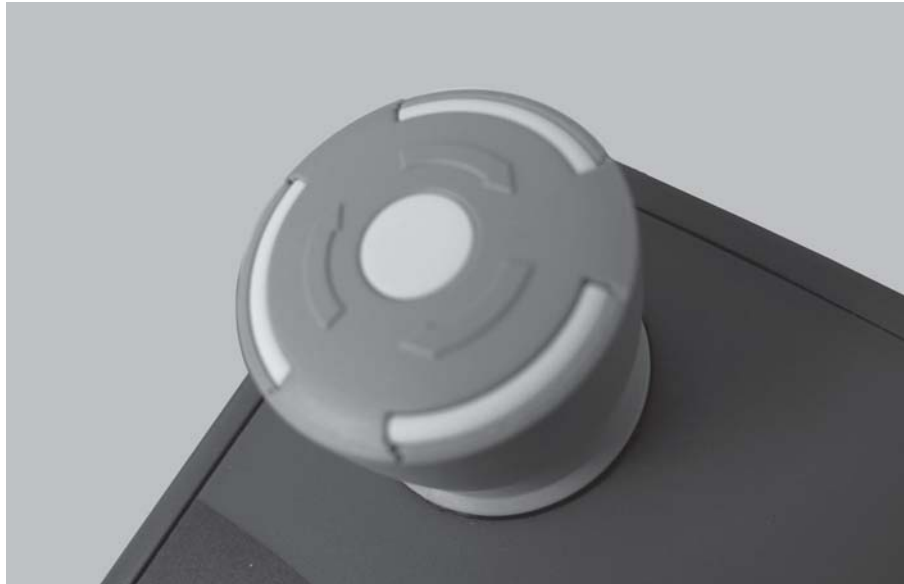


**Figure 2.3:** Scroll wheel at the CCI 100

## 2.2.5 Stop switch

By pressing the stop switch, all connected devices are set to a safe condition.

- For unlocking the stop switch, turn it in the direction of the arrow until the switch pops out again.
  - ▷ The stop switch is unlocked.



**Figure 2.4:** Stop switch at the CCI 100

### Case 1 - Spreading operation

Pressing the stop switch during spreading operation:

- the pre-metering slides are stopped.
- the conveyor belt is stopped.
- the comb roller is stopped.
- the hopper cover is stopped.

### Case 2 - No spreading operation (example: calibration/fast emptying)

If no spreading operation is active, all functions are stopped and the metering slides remain open.

#### ▲ CAUTION



#### Risk of injury from rotating spreading discs!

The spreading discs are not stopped.

- ▶ Switch off the PTO shaft of the tractor.
- ▶ Ensure that nobody is in the hazard zone.

A warning message is displayed as soon as the stop switch is actuated.

1. Rectify the cause of the fault.
2. Unlock the stop switch
  - ▷ Another alarm message warning against possible unexpected movements is displayed.
3. Press the **ACK** foil key



### 2.3 Display

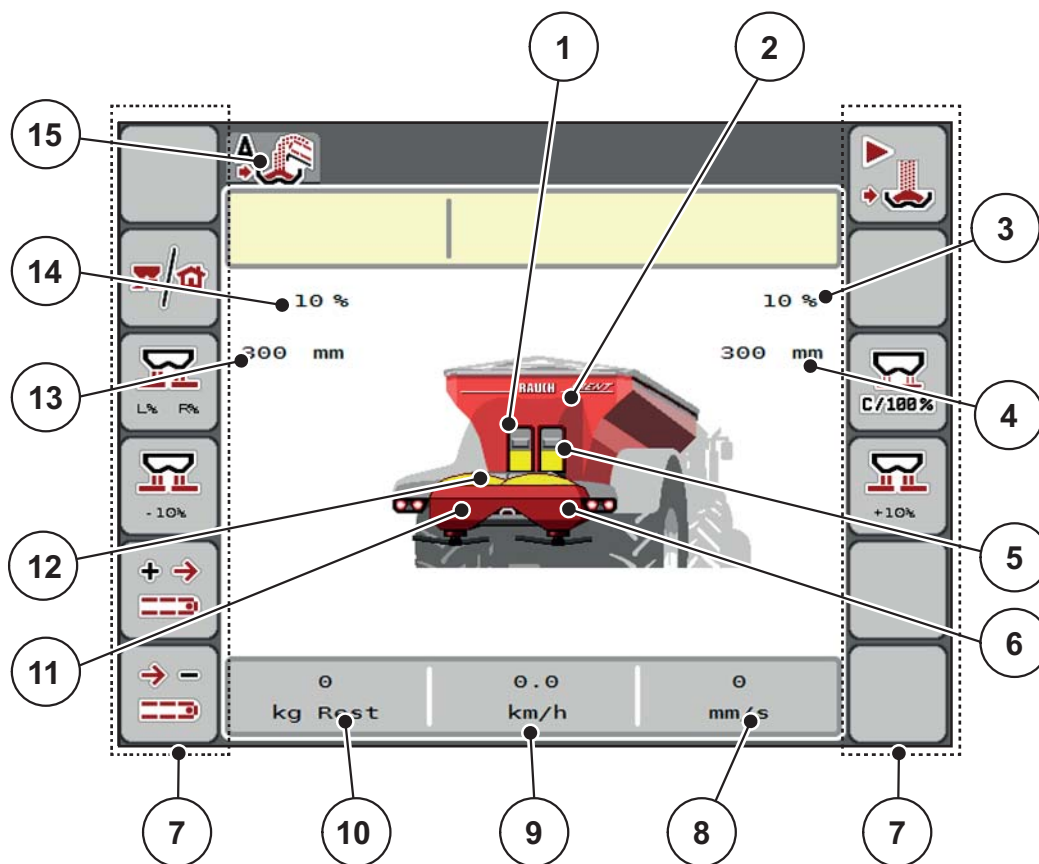
The display shows the current status information as well as the selection and input options for the machine control unit.

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

#### 2.3.1 Description of the operating screen

#### NOTICE

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



**Figure 2.5:** Machine control unit display







- |  |  |
|--|--|
| [1] Left pre-metering slide display                      | [9] Display field: Forward speed                         |
| [2] Large area spreader filling level display            | [10] Display field: Residual quantity in AXENT hopper    |
| [3] Right application rate adjustment                    | [11] Left spreading unit filling level display           |
| [4] Current opening position of right pre-metering slide | [12] Conveyor belt display                               |
| [5] Right pre-metering slide display                     | [13] Current opening position of left pre-metering slide |
| [6] Right spreading unit filling level display           | [14] Left application rate adjustment                    |
| [7] Function keys  | [15] Selected operating mode                             |
| [8] Display field: Conveyor belt speed                   |  |











## 2.4 Library of symbols used

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














### 2.4.1 Navigation




Symbol	Meaning
	Go to the left; previous page
	Go to the right; next page
	Back to the previous menu
	Back to main menu
	Switching between working screen and menu window
	Cancellation, closing the dialogue window

### 2.4.2 Menus

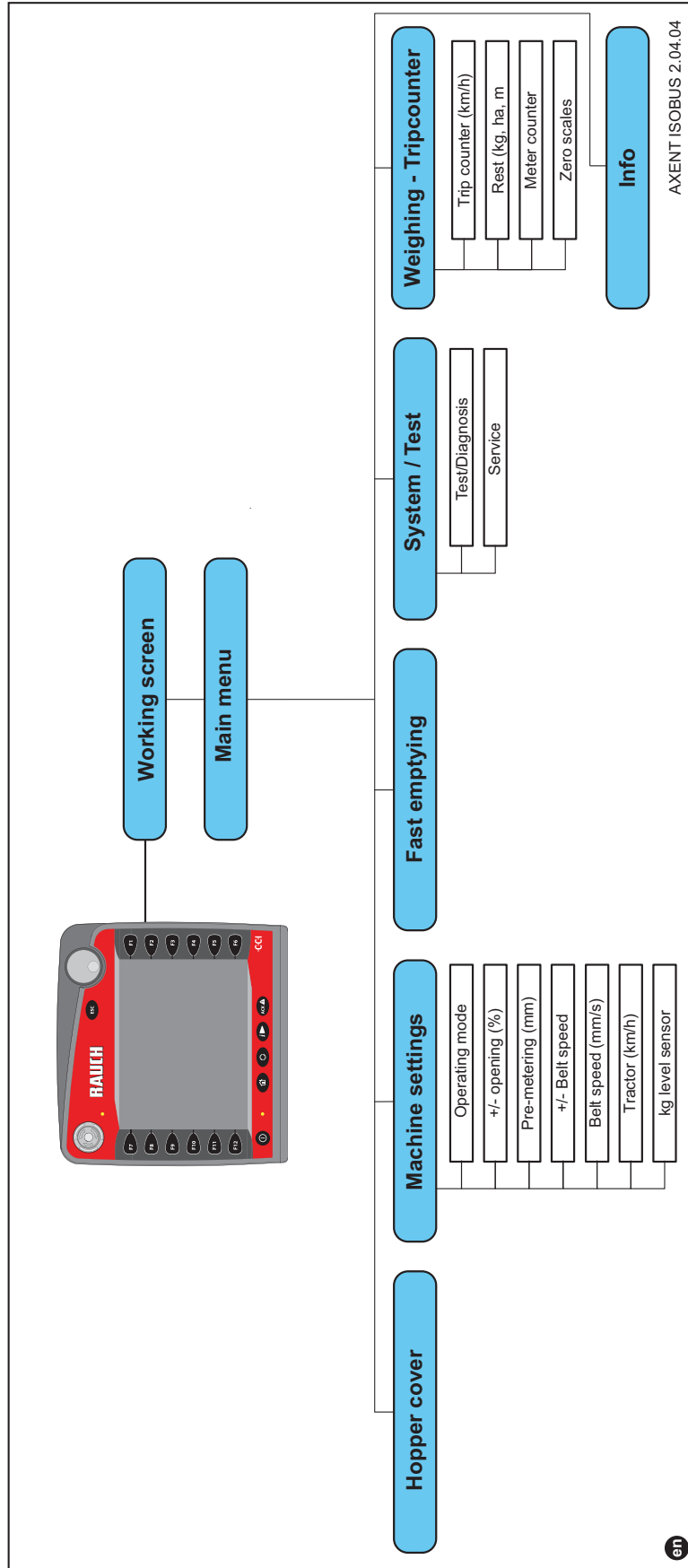
Symbol	Meaning
	Change from a menu window directly to the main menu.
	Switching between working screen and menu window
	Hopper cover
	Machine settings
	Fast emptying
	System/test
	Information
	Weighing/Trip counter

2.4.3 Operating screen symbols

Symbol	Meaning
	Automatic operating mode
	Manual operating mode
	Speed-dependent lime spreading operating mode
	Warning symbol: The rear cover is open
	Start loading
	Start lime spreading
	Stop lime spreading
	The pre-metering slide can be closed.
	The "keep pre-metering slide open" function is active.
	Selection of the open position for pre-metering slide (%)
	Increase + (plus) pre-metering slide opening
	Decrease – (minus) pre-metering slide opening
	Increase (plus) conveyor belt speed; Terminals with 2x6 function keys only

Symbol	Meaning
	Decrease (minus) conveyor belt speed; Terminals with 2x6 function keys only
	Switching between working screen and menu window
	Pre-metering slide open position reset to preset opening value.

## 2.5 Structural menu overview





## 3 Attachment and installation

### 3.1 Tractor requirements

Before installing the electronic 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).
- The PTO speed can be set to **1000 U/min** and has to be complied with.

#### NOTICE

In tractors without load-switchable gear, the forward speed must be selected using the correct transmission ratio in a way that it corresponds to a PTO speed of **1000 U/min**.

- 9-pin socket (ISO 11783) located at the rear of the tractor for connecting the machine control unit with the ISOBUS.

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

#### NOTICE

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

- The tractor has to provide the speed signal to the ISOBUS.

#### NOTICE

Check with your dealer that your tractor is equipped with the required connections and sockets.

- Due to the numerous configurations of tractor/machine/terminal, please contact your dealer for selection of the correct connection

### 3.2 Connections, sockets

#### NOTICE

If the terminal is to be connected to already existing ISOBUS basic equipment, its compatibility with **the international standard ISO11783** "Tractors and machinery for agriculture and forestry - Serial control and communications data network" is to be checked in advance.

#### NOTICE

For details on the connection of the terminal, please refer to the operator's manual of the terminal manufacturer.

---

#### 3.2.1 ISOBUS terminal connection

#### NOTICE

Observe the supplied operator's manual of the terminal.

---

Proceed in the following order.

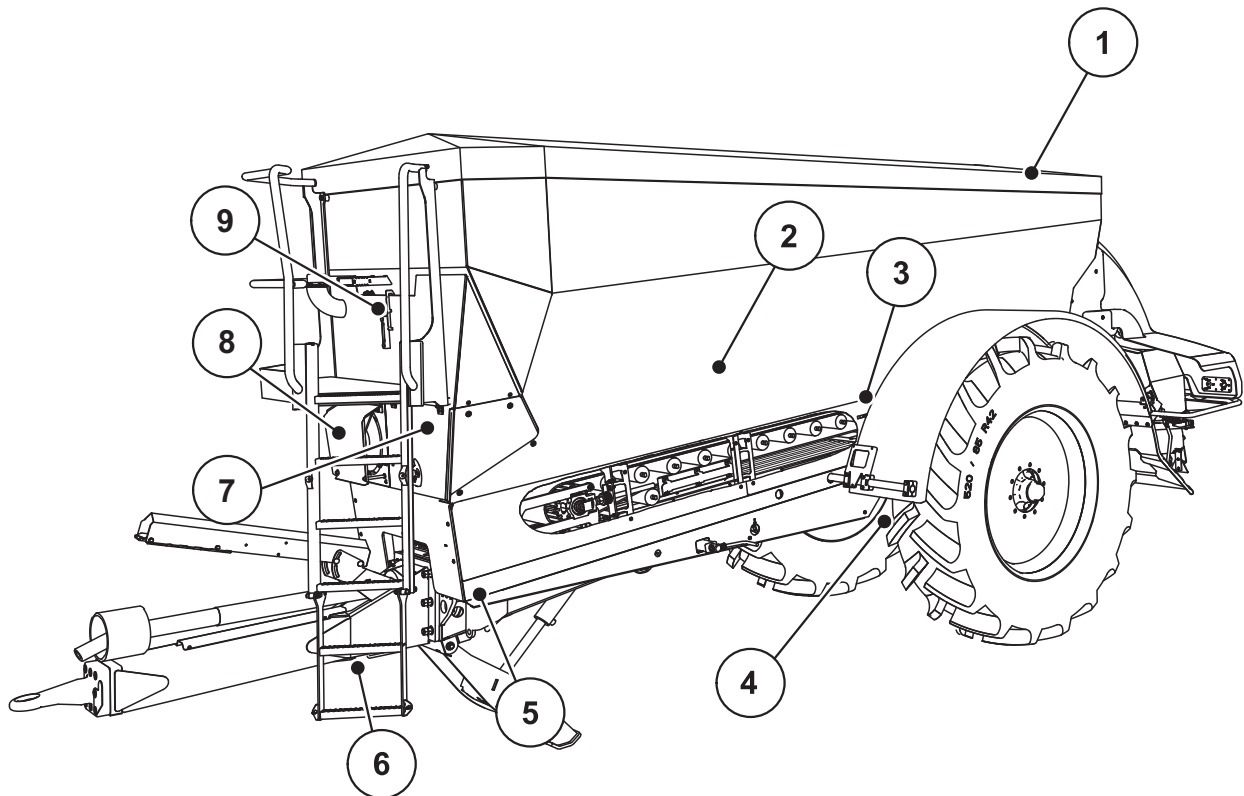
- Select a suitable position in the tractor cabin (within **the driver's field of vision**) to fix the ISOBUS terminal.
- Attach the ISOBUS terminal with the **bracket** in the tractor cabin.



## 3.2.2 Overview of actuators and sensors

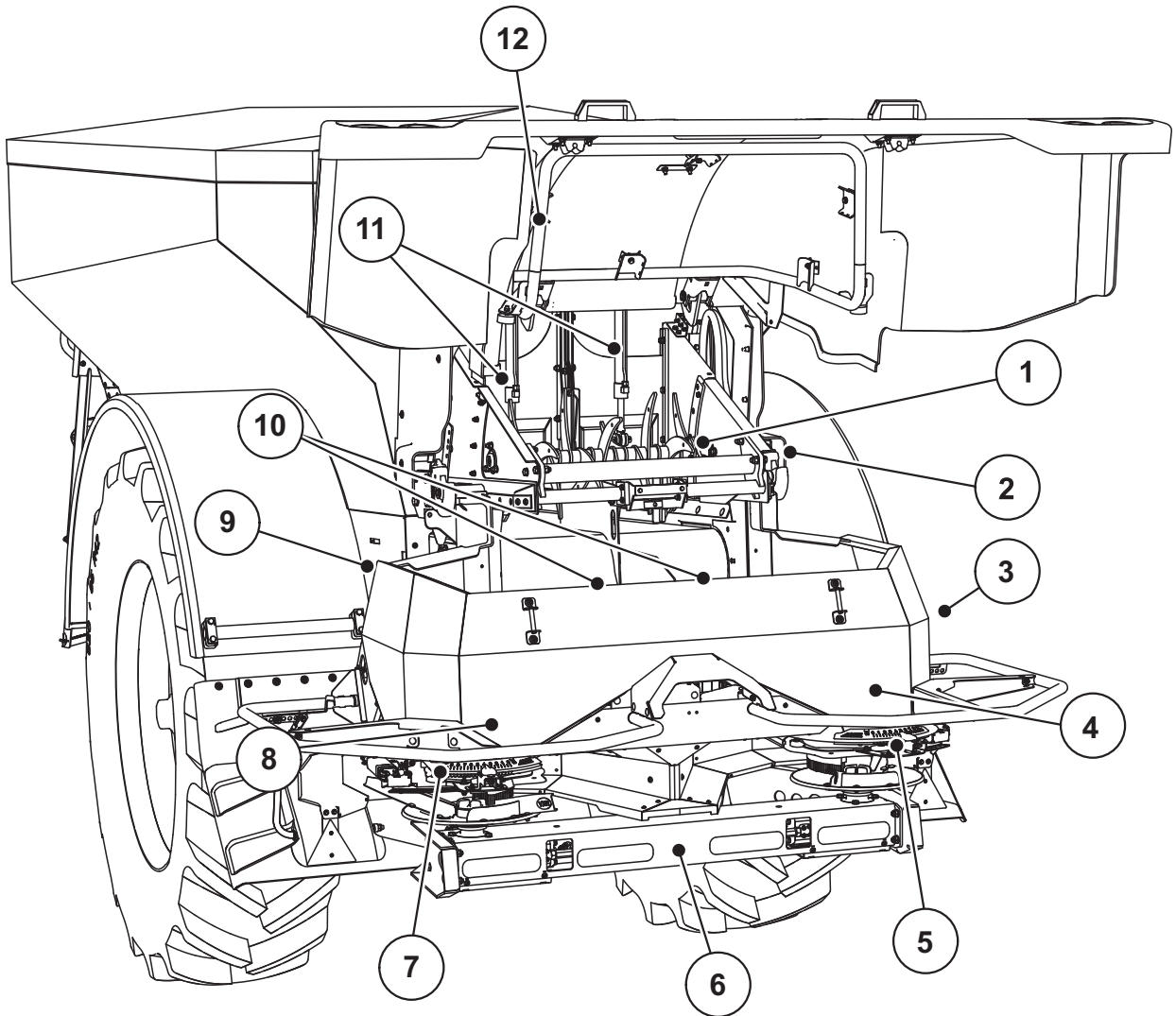
**NOTICE**

The following overviews do not represent the exact position of actuators and sensors at the machine. This sub-chapter only serves for information on the assemblies and sensors controlled by the electronic system.



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

- |   |                                       |
|---|---------------------------------------|
| [1] Hopper cover                        | [5] Front weigh cells, left/right     |
| [2] Level sensor                        | [6] Towing bar angle sensor           |
| [3] Vibrator (optional)                 | [7] Hydraulic block with valves       |
| [4] Axis angle sensor                   | [8] Oil temperature sensor            |
| Rear weigh cells, left/right            | Oil chiller                           |
| Steering cylinder (optional)            | [9] Hydraulic circuit floating switch |
| Steering axle A/B stop valve (optional) |                                       |



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

- |   |  |
|---|--|
| [1] Comb roller                               | [7] Drop point actuator, left                |
| [2] Belt drive                                | [8] Metering slide actuator, left            |
| [3] Belt speed sensor                         | [9] Left agitator                            |
| [4] Forward speed sensor (at right wheel)     | [10] Interface connector for spreading units |
| [5] Metering slide actuator, right            | [11] Ultrasonic sensors                      |
| [6] Right agitator                            | [12] Pre-metering slide hydraulic cylinder   |
| [7] Drop point actuator, right                | [12] Rear cover switch                       |
| [8] FAG sensor in hydraulic motor, left/right |  |

**The LIME-PowerPack lime spreading unit is equipped with the following actuators and sensors:**

- Hydraulic motor pressure sensors (left/right and return)
- Speed sensor left/right for spreading discs

## 4 Operation AXENT ISOBUS

### ⚠ CAUTION



#### **Risk of injury due to ejected fertiliser!**

In case of a fault, the metering slide can open unexpectedly during road transport to the spreading location. There is a risk of slipping and personal injury due to discharged fertiliser.

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

### 4.1 Activating the machine control unit

#### **Requirements:**

- The machine control unit is properly connected to the large area spreader and the tractor (an example is provided in chapter [3.2.1: ISOBUS terminal connection, page 18](#)).
- A minimum voltage of **11 V** is guaranteed.

### NOTICE

The operator's manual describes the functions of the machine control unit AXENT ISOBUS **as of software version 02.04.04**.

### Activation:

- **Press the ON/OFF switch.**
  - ▷ After a few seconds, the **start-up screen** of the machine control unit is displayed.
  - ▷ Subsequently, the control unit displays the **Start diagnosis** for a few seconds.
  - ▷ Afterwards, the **operating screen** is displayed.



**Figure 4.1:** Start AXENT ISOBUS

[1] ON/OFF switch

### Requesting the status of the rear cover

The rear cover is important safety equipment for safe machine operation. Loading cannot be realized if the rear cover is open.

The rear cover is equipped with a switch. The switch reports the open or closed position of the rear cover to the machine control unit. If the rear cover is open, all actuators controlled via the machine control unit are stopped (conveyor belt, pre-metering slide, comb roller, hopper cover).

### NOTICE

If the rear cover is open, an error message is displayed. See [6.1: Meaning of the alarm messages, page 63](#)

- All outputs are de-energized, **all functions are deactivated**,

1. Close rear cover.

Please refer to the operator's manual of the machine.



2. Press the ACK key.

▷ The alarm message is acknowledged and disappears.



As long as the rear cover is open, the warning symbol is displayed in the top of the operating screen.

### 4.2 Navigation in the menus and between machine control units

#### 4.2.1 Navigation in the AXENT ISOBUS machine control unit

#### NOTICE

Please refer to chapter [1.2.5: Menu hierarchy, keys and navigation, page 3](#) for important notes regarding the display and navigation between menus.

In the following, accessing menus and menu items **by touching the touch screen or pressing the function keys** is described. Menus can also be accessed with the scroll wheel (turning/pressing).

- Observe the operator's manual of the terminal used.
- 

#### Accessing the main menu



- Press the **Operating screen/main menu** function key. See [2.4.2: Menus, page 12](#).
  - ▷ The main menu is displayed.

#### Accessing a sub-menu with the scroll wheel:

1. Move the scroll wheel.
  - ▷ A selection bar moves up and down.
2. Highlight the desired sub-menu with the bar on the display.
3. Access the selected sub-menu by pressing the scroll wheel.

#### 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 made in further sub-menus

#### NOTICE

Not all parameters are displayed simultaneously in one menu window. The **Arrow keys** enable switching to the next or previous windows.

---

### Exiting the menu



- Confirm settings by pressing the **Return** key.
  - ▷ The **previous menu** is displayed.
- Press the **Operating screen/main menu** key.
  - ▷ The **operating screen** is displayed again.
- **Press the ESC** key.
  - ▷ The previous settings are retained.
  - ▷ The **previous menu** is displayed.

### 4.2.2 Switching between machine control units

Loading control of spreading material, machine filling level checks and fertiliser and machine settings adjustments at the attached spreading unit can be realized simultaneously. The ISOBUS terminal enables switching between the two machine control units **AXENT ISOBUS** and **AXIS H ISOBUS**.

The following settings are recommended to switch between screens during spreading.



#### Requirement:

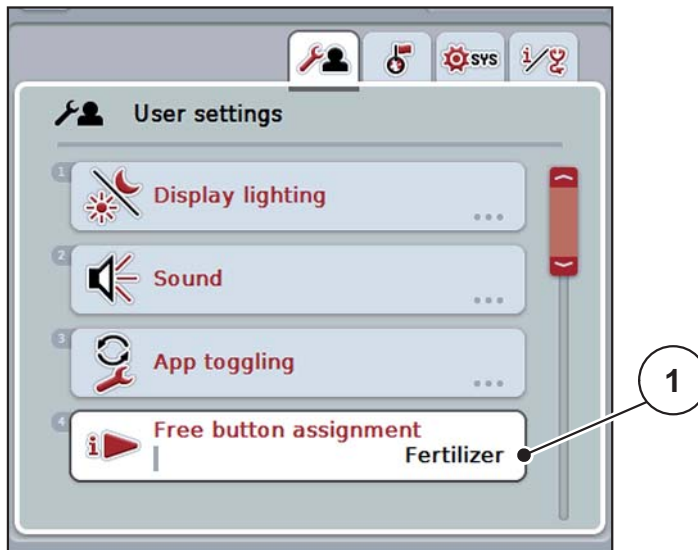
- The implement ECUs are registered at the ISOBUS terminal with the following versions.
  - AXENT ISOBUS version 2.04.00
  - AXIS H EMC ISOBUS version 03.10.00

#### Assignment programming of a free key



1. Press the **HOME** foil key at the terminal. See ["Operating panel on the front side of the unit" on page 6](#).
  - ▷ The main menu of the terminal is displayed.

2. Open the **User settings** menu.



**Figure 4.2:** User settings menu of the ISOBUS terminal

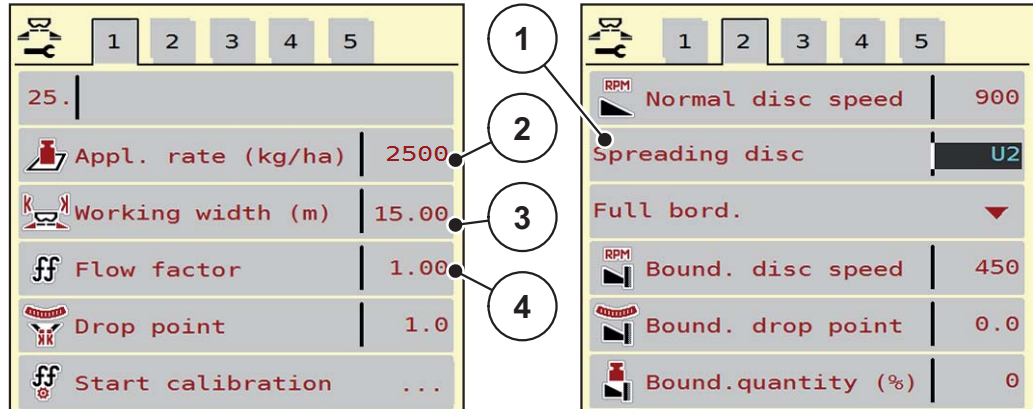
3. Select **Free button assignment** in the selection list.
4. Mark the **Fertiliser** entry.
5. Press OK.



### 4.3 Interaction between both machine control units

Lime spreading requires pre-settings in the AXIS H ISOBUS machine control unit.

1. Switch on the AXIS H ISOBUS machine control unit.
1. In the **Machine settings** menu, select the AUTO km/h operating mode.
2. In menu **Fertiliser settings > Spreading disc**, select type U2.



**Figure 4.3:** Transmission of fertiliser settings from AXIS H ISOBUS

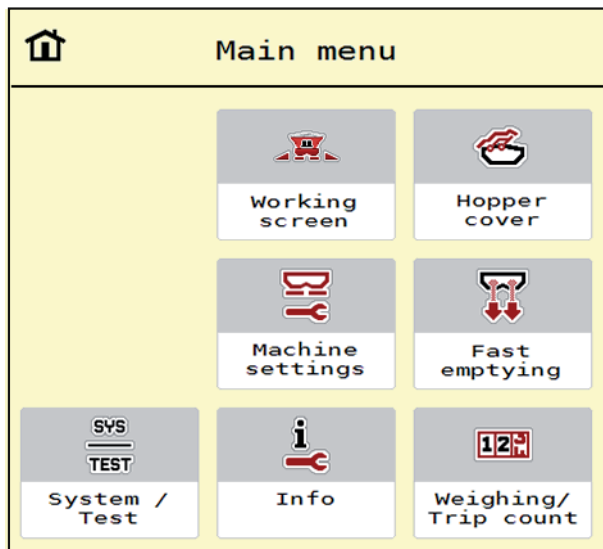
- [1] Spreading disc type U2 for lime spreading unit
- [2] Application rate
- [3] Working width
- [4] Flow factor

▷ **The application rate [2], the working width [3] and the flow factor [4] are transferred automatically at the AXENT ISOBUS machine control unit.**

If the application rate at the lime spreading unit is incorrect, the flow factor can be adjusted in percent in the AXIS H ISOBUS machine control unit.

- In the **Machine settings > Appl. rate corr. %** menu, adjust the flow factor.

4.4 Main menu



**Figure 4.4:** Main menu AXENT ISOBUS

The main menu offers the following sub-menus.

Sub-menu	Meaning	Description
Working screen	Switches to the AXENT operating screen.	
Hopper cover	Opening/closing the hopper cover	<a href="#">Page 29</a>
Machine settings	Tractor and large area spreader settings.	<a href="#">Page 33</a>
Fast emptying	Direct access to menu for fast emptying of the large area spreader.	<a href="#">Page 44</a>
System/Test	Settings and diagnosis of the machine control unit.	<a href="#">Page 45</a>
Info	Display of machine configuration.	<a href="#">Page 48</a>
Weighing/trip count	values regarding spreading work carried out and functions for weighing operation.	<a href="#">Page 49</a>

## 4.5 Hopper cover (optional)

### ⚠ 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.

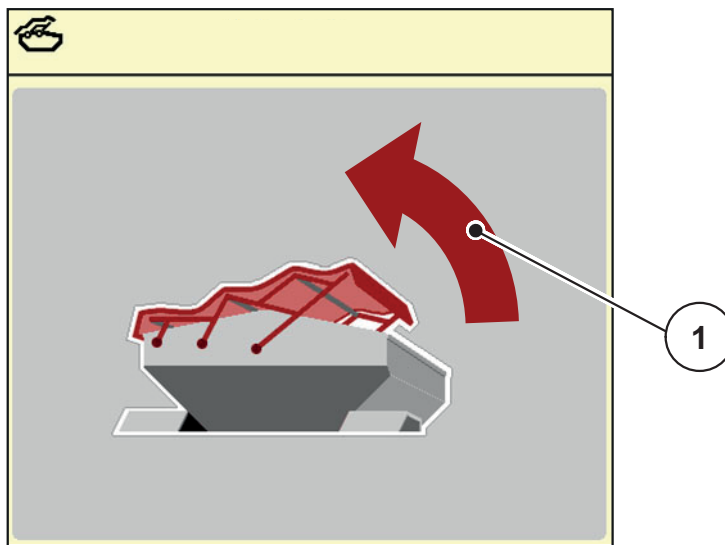
- ▶ Ensure that nobody is present in the hazard zone.

The AXENT large area spreader is equipped with an hydraulically controlled hopper cover. During the refilling process at the end of the field, the hopper cover can be opened and/or closed via the control unit and 2 hydraulic valves.

### NOTICE

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

- Observe the movements of the hopper cover.



**Figure 4.5:** Hopper cover menu

[1] Display of opening process

### ⚠ CAUTION



#### **Material damage due to insufficient clearance**

Opening and closing the hopper cover requires sufficient clearance over the AXENT hopper. If the clearance is insufficient, the hopper cover may tear. The rods of the hopper cover may be damaged and the hopper cover may damage the environment.

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

The **Hopper cover** menu can be accessed by pressing the **Menu** key:

### Moving the hopper cover



1. Keep the function key pressed until the hopper cover is fully opened.
  - ▷ During the movement, an arrow appears which indicates the **OPEN** direction.
2. Release the function key.
  - ▷ Operation of the valve is stopped.
  - ▷ The hopper cover is stopped.
3. Fill in fertiliser.



4. Keep the function key pressed until the hopper cover is fully closed.
  - ▷ During the movement, an arrow appears which indicates the **CLOSED** direction.
5. Release the function key.
  - ▷ Operation of the valve is stopped.

### NOTICE

Keep the function key only pressed as long as necessary. Otherwise, there is the risk of **component overheating**.

---

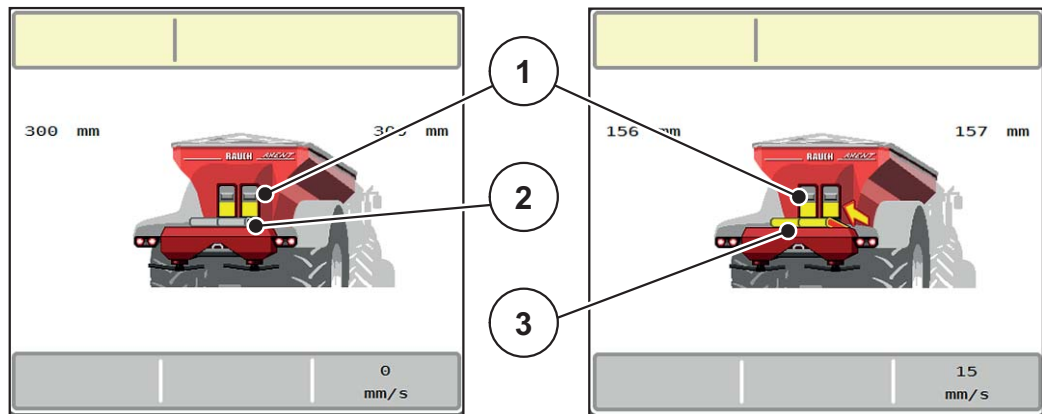
## 4.6 AXENT ISOBUS functional description: Status indicator

The AXENT ISOBUS control unit provides information on the current filling levels and sensor conditions of the large area spreader and the attached AXIS-Power-Pack or LIME-PowerPack spreading unit.

### 4.6.1 Spreading material supply

The AXENT conveyor belt is started up with opening of the AXENT pre-metering slides.

The spreading material is discharged through the outlet into the AXIS-PowerPack or LIME-PowerPack spreading unit.



**Figure 4.6:** Open pre-metering slide display

- [1] Open pre-metering slide
- [2] Standing conveyor belt
- [3] Running conveyor belt

### 4.6.2 AXENT hopper empty

#### NOTICE

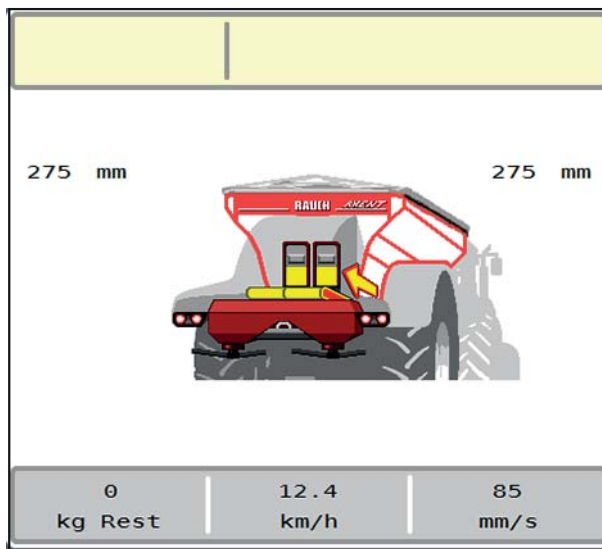
The filling level sensor does not have a function if the **kg level sensor** is active.

- See "[Machine settings](#)" on page 33.

The filling level sensor for the AXENT hopper is not at the hopper base.

At the time of empty notification, the remaining spreading material in the hopper is usually sufficient for a few loading operations.

Despite the alarm message, the AXENT ISOBUS machine control unit attempts full loading of the residual quantity.



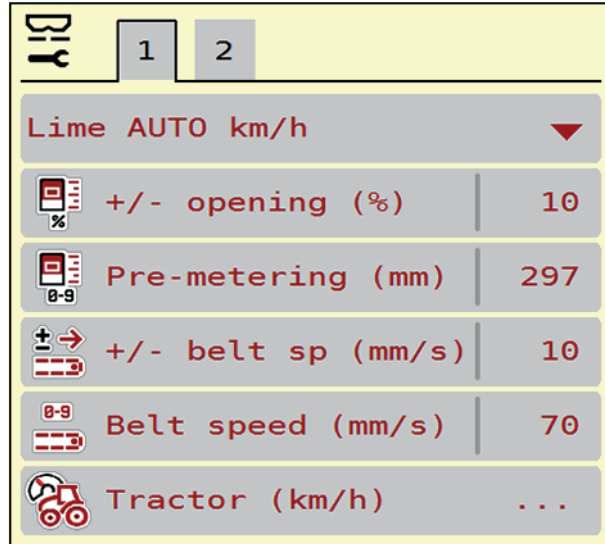
**Figure 4.7:** AXENT hopper filling level indicator

## 4.7 Machine settings



In this menu, the tractor and machine settings can be configured.

- Open the **Machine settings** menu.



**Figure 4.8:** Machine settings menu

### NOTICE

Not all parameters are displayed simultaneously on one screen. The **Arrow keys** enable switching to the next or previous menu windows (tab).

Sub-menu	Meaning	Description
Operating mode	Definition of the operating mode <ul style="list-style-type: none"> <li>• Manual</li> <li>• Automatic</li> <li>• Lime AUTO km/h</li> </ul>	<a href="#">Page 36</a>
+/- opening (%)	Pre-setting of the opening adjustment for pre-metering slide	<b>No function in lime operation</b> To be entered in a separate input window.
Pre-metering (mm)	Opening adjustment of pre-metering slides.	<b>No function in lime operation</b> To be entered in a separate input window.
+/- belt sp (mm/s)	Pre-setting of the speed adjustment for the conveyor belt	<b>No function in lime operation</b>

Sub-menu	Meaning	Description
Belt speed (mm/s)	Conveyor belt speed setting.	<a href="#">Page 39</a> <b>No function in lime operation</b>
Tractor (km/h)	Definition or calibration of the speed signal.	<a href="#">Page 41</a>
kg level sensor:	Input of the residual quantity to trigger an alarm message via the weigh cells.	



Besides the sub-menus, in menu **Machine settings**, select the **VT toggle** function key.

- ISOBUS function: Switching between multiple VT (Virtual Terminals)

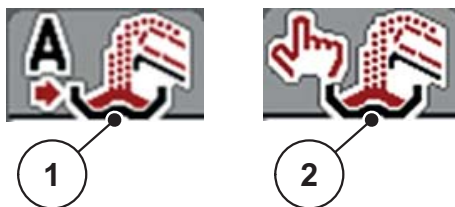
#### 4.7.1 Operating mode of fertiliser supply

### NOTICE

The loading function with different operating modes is described in chapter [5: Loading with AXENT ISOBUS machine control unit, page 57](#).

- Observe the operator's manual of your large area spreader AXENT.

They control loading of fertiliser into the fertiliser spreader via 2 optional operating modes.



**Figure 4.9:** Symbolic operating mode

- [1] Automatic  
[2] Manual

- It is recommended to always work in **automatic** operating mode. The machine control system **fully automatically** controls the valves for fertiliser supply according to sensor information.
- Start in **Manual** operating mode and stop loading by pressing the **Activation key**. The sensor conditions signal the required steps.





### Operating mode selection

1. Switch on the AXENT 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.**

### Automatic

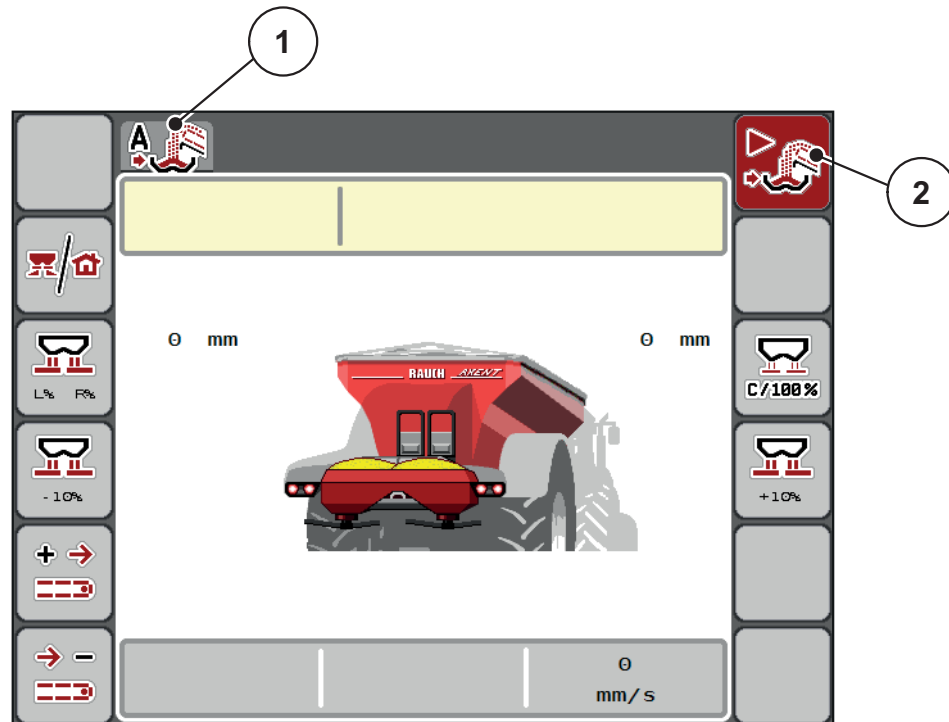
**▲ WARNING**



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

The pre-metering slide and the conveyor belt move without warning and may lead to personal injury.

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



**Figure 4.10:** Operating screen in automatic

- [1] Symbol of active automatic operating mode
- [2] Spreading operation active

Manual

**⚠ CAUTION**



**Risk of slipping and environmental damage due to ejected fertiliser**

Activate the **Manual** operating mode. If loading is active, overflow in the fertiliser spreader may occur and excessive fertiliser may leak unexpectedly from the hopper. Persons may slip and be injured. Risk for the environment.

- ▶ Continuously check manual loading during spreading operation.
- ▶ The manual operating mode is only to be used temporarily in exceptions.
- ▶ Use **automatic** operating mode if possible.

5. Select the **Manual** menu entry.

- ▷ A warning message is displayed.



Figure 4.11: Menu entry



6. Press the ACK key.

- ▷ The warning message is acknowledged.



The time of loading is defined and loading is stopped manually.

1. Press the Start loading key.

▷ **Loading is started.**

Loading is realized in the same order as for the **automatic** operating mode.

2. **Press the Start loading key.**

▷ **Loading is stopped.**

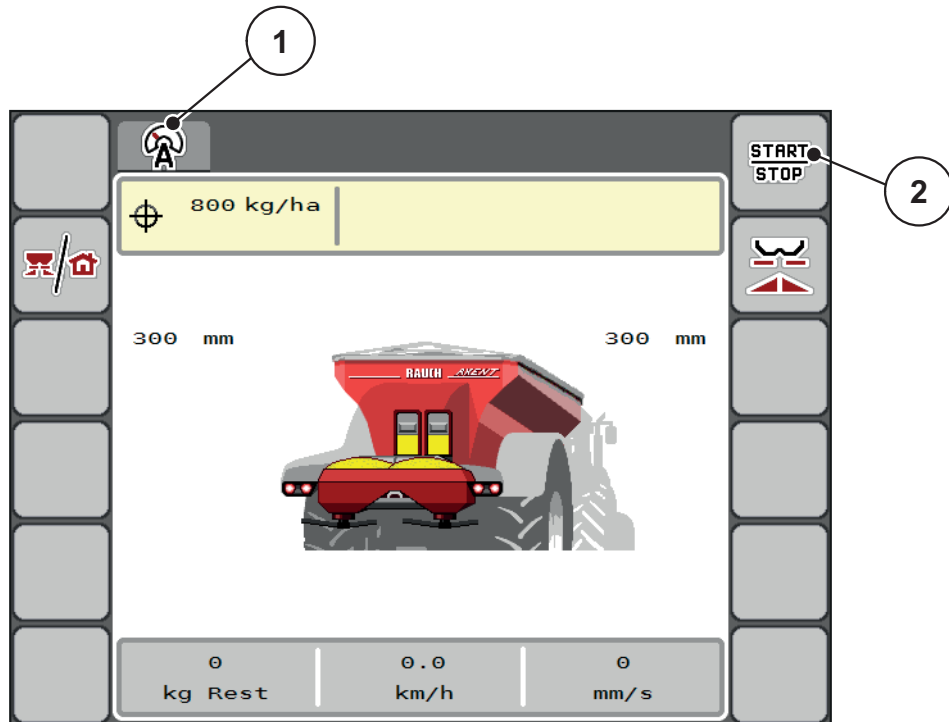


● See also [5.2: Loading in manual operating mode, page 59](#).

### 4.7.2 Lime operation

For lime spreading with the LIME-PowerPack lime spreading unit, activate lime operation. Lime operation is speed-dependent: The speed of the conveyor belt and opening of the pre-metering slide are automatically adjusted to the forward speed to ensure even lime spreading.

1. Open the **Machine Open Settings > Operating mode**.
  2. Select the **Lime AUTO km/h** menu entry.
- ▷ **The bottom menu entries do not have any function.**



**Figure 4.12:** Operating screen in lime operation

- [1] Symbol of active lime AUTO km/h operating mode
- [2] Spreading operation start

#### NOTICE

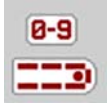
Application rate, working width and flow factor for lime operation are set via the AXIS H ISOBUS machine control unit.

- Observe the operator's manual of the AXIS H ISOBUS machine control unit.
- Please also refer to [4.3: Interaction between both machine control units, page 27](#)

### 4.7.3 Belt speed (mm/s)

In this menu, the **speed** of the conveyor belt can be defined.

During operation, the speed of the conveyor belt can be adjusted in the operating screen. See ["+/- belt speed" on page 39](#).



1. Open the **machine settings > Belt speed (mm/s)** menu.
2. Enter the value of the speed adjustment.
3. **Press OK.**

### 4.7.4 +/- belt speed



In this menu, the **speed adjustment** of the conveyor belt can be defined.

**NOTICE**



Terminals with 2x6 function keys only: During operation, the conveyor belt speed can be adjusted by the preset value (mm/s) at any time by pressing the **Speed +/-Speed -** function keys.

The pre-configuration can be restored with the **C 100 % key**.

**Setting the speed adjustment:**

1. Open the **Machine settings > +/- belt speed (mm/s)** menu.
2. Enter the value of the speed adjustment.
3. **Press OK.**

### 4.7.5 Opening the pre-metering slides (mm)

In this menu, the pre-metering slide **opening** can be defined.

During operation, the pre-metering slide opening can be adjusted in the operating screen.



1. Open the **Machine settings > Pre-metering slide (mm)** menu.
2. Enter the value from the fertiliser chart.
3. **Press OK.**

### 4.7.6 Opening adjustment (%)



In this menu, a percentage **adjustment** of the pre-metering slide opening can be defined.

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

#### **NOTICE**

During operation, the **Opening +/-Opening** - function keys can be used to adjust the pre-metering slide opening by the **Opening (%)** factor at any time.

The pre-configuration can be restored with the **C 100 % key**.

---

#### **Defining the opening adjustment:**

1. Open the **Machine settings > +/- opening (%)** menu.
2. Enter the percentage by which the opening is to be adjusted.
3. **Press OK.**

### 4.7.7 Forward speed calibration

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

#### Preparing the speed calibration:

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

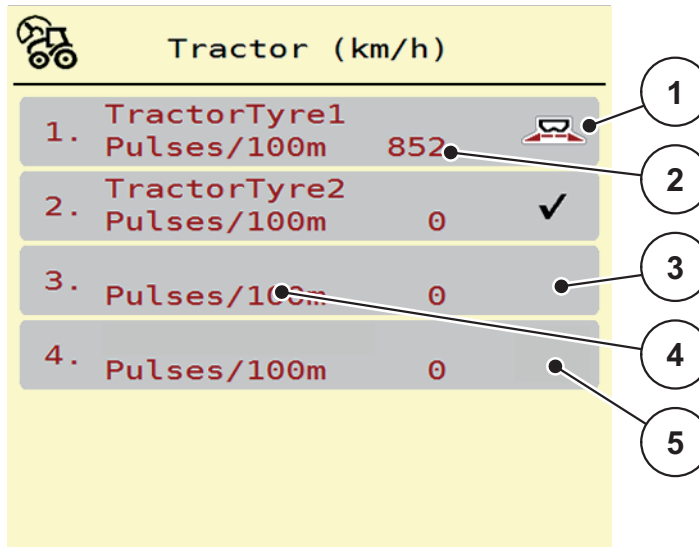
- Conduct the calibration on the field. This reduces the influence of the ground characteristics on the calibration result.
- Determine a **100 m** long reference track as precisely as possible.
- Fill only half of the machine, if possible.

#### Opening the speed settings:

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

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

- Open the **Machine settings > Tractor (km/h)** menu.



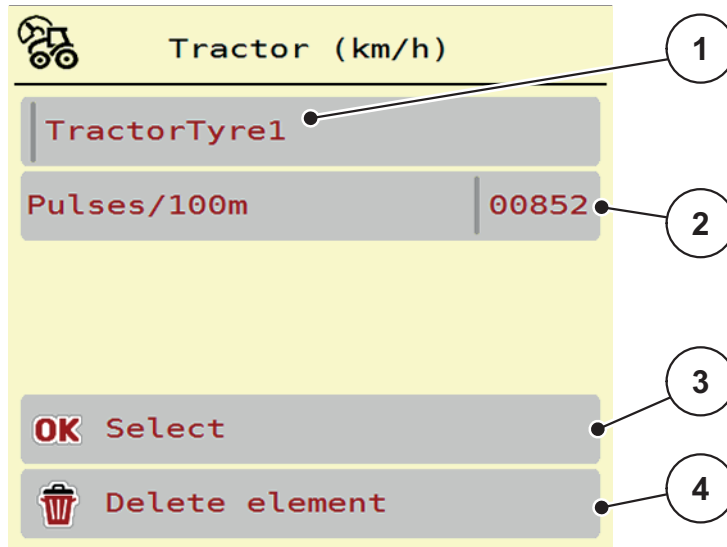
**Figure 4.13:** Tractor (km/h) menu

- [1] Active tractor profile
- [2] Display of pulses on 100 m
- [3] Profile is created, currently not used
- [4] Tractor designation
- [5] Empty tractor profile

**New calibration of the forward speed signal:**

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

1. In the **Tractor (km/h)** menu, select the desired profile.



**Figure 4.14:** Tractor profile

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

2. **Open Name field [1].**

3. Input the name of the profile.

Entering text into the control unit is described in section [4.12.1: Text input, page 53](#).

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

▷ **The profile is active.**

**NOTICE**

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

We recommend using the profile with the name of the tractor for ease of understanding.



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

5. From the selected tractor profile, select the **Imp/100m** menu entry.

▷ **The Pulses menu for manual pulse count input is displayed.**

Entering values into the control unit is described in section [4.12.1: Text input, page 53](#).

If the exact pulse count is **unknown**, a **calibration** has to be started.



6. Press the calibration key in the tractor profile.

▷ The calibration operating screen is displayed.



7. Press **Start** at the starting position of the reference distance.

▷ The pulse display is now on zero.

▷ The control unit is ready for counting pulses.

8. Drive along the 100m long reference distance.

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



10. Press **Stop**.

▷ The display shows the number of received pulses.

▷ **The new pulse count is saved.**

▷ **The profile menu is displayed again.**

### 4.8 Fast emptying



To clean the machine after spreading or to quickly empty residual spreading material, select the **Fast emptying** menu.

For this purpose, before storing the machine, we recommend **completely opening** the pre-metering slides via the fast emptying function and switching off the AXENT ISOBUS in this condition. This prevents accumulation of humidity in the hopper.

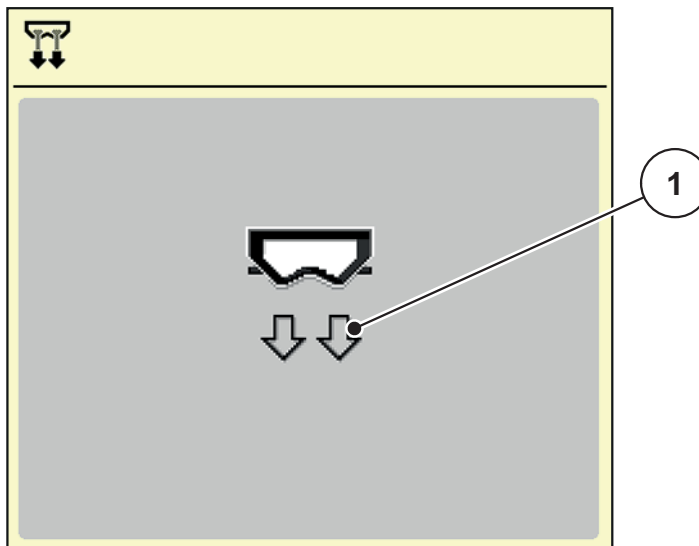
#### NOTICE

**Before starting** the fast emptying process, it is to be ensured that all preconditions have been met. Please observe the operator's manual of the machine (emptying of residual material).

---

#### Carrying out the fast emptying process:

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



**Figure 4.15:** Fast emptying menu

[1] Metering slide opening display

2. Press **Start/Stop**.
  - ▷ The fast emptying process starts.
3. Press **Start/Stop** once the hopper is empty.
  - ▷ Fast emptying is complete.

### 4.9 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.

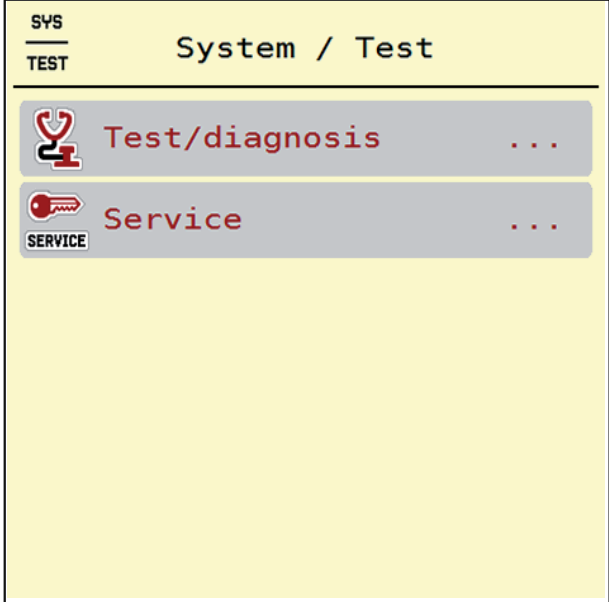


Figure 4.16: System/test menu

Sub-menu	Meaning	Description
Test/diagnosis	Checking of actuators and sensors.	<a href="#">Page 46</a>
Service	Service settings	Password-protected; only accessible to service personnel

4.9.1 Test/diagnosis



The **Test/diagnosis** menu enables function monitoring and checking of specific sensors/actuators.

**NOTICE**

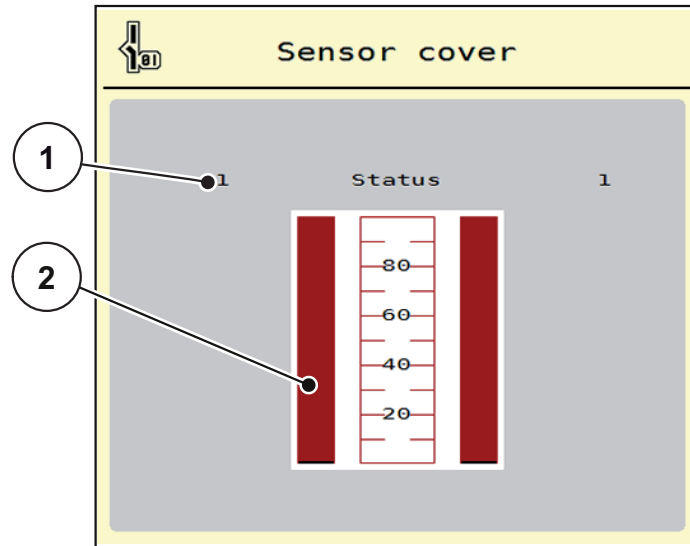
This menu is for information purposes only.

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

Sub-menu	Meaning	Description
Voltage	Checking the operating voltage.	
Pre-metering	Test function for opening/closing the pre-metering slides	Checking the calibration
Belt drive	Manual operation of the conveyor belt	
Sonic sensor	Checking the sensors in fertiliser spreading unit hopper.	
AXENT level sensor	Checking the level sensor in the AXENT hopper.	
Oil reservoir	Checking the oil temperature and the oil level.	
Hopper cover	<ul style="list-style-type: none"> <li>● Test function for opening/closing the hopper cover.</li> <li>● Valve condition</li> </ul>	
Sensor cover	Checking of the safety switch at the rear cover	<a href="#">Page 47</a>
Weigh cells	Checking the weigh cells.	
Lime functions	Control of the comb roller and the vibrator.	<a href="#">Page 48</a>

**Sensor cover example**

1. Open the **System/test > Test/diagnosis** menu.
2. Press the left/right arrows to navigate to the **Sensor cover** page.
  - ▷ The display shows the actuator/sensor status.

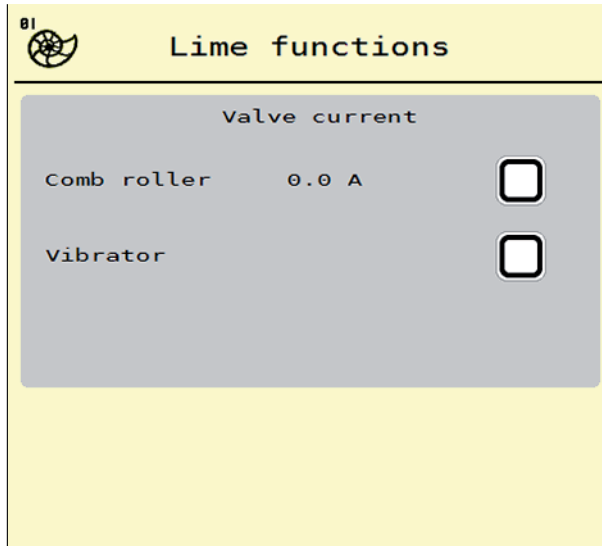


**Figure 4.17:** Test/diagnosis; example: Sensor cover

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

### Example lime functions

1. Open the **System/test > Test/diagnosis** menu.
2. Press the left/right arrows to navigate to the **Lime functions** page.
  - ▷ The display shows the status of optional equipment.



**Figure 4.18:** Test/diagnosis; example: Lime functions

3. Check the function at the touch screen or with the scroll wheel.
4. Press **Start/Stop**.
  - ▷ The test for control of the selected equipment is started.
5. Press **Start/Stop** again.
  - ▷ The test is completed.



### 4.9.2 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.

---

### 4.10 Info



The **Info** menu provides information on the control unit.

#### NOTICE

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

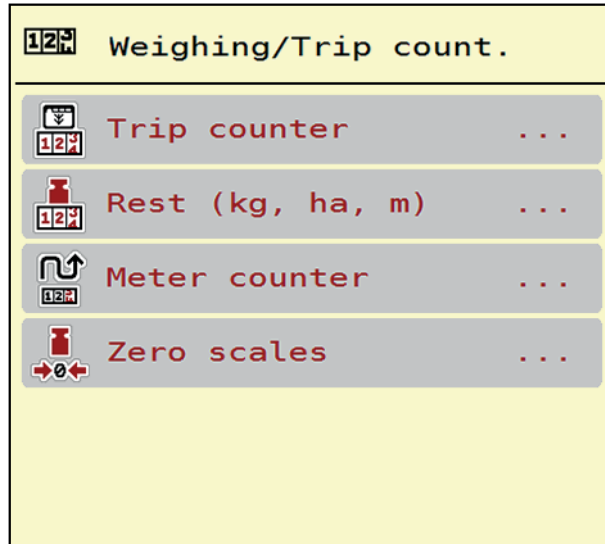
---

### 4.11 Weighing/Trip counter



This menu provides values regarding spreading work carried out and functions for weighing operation.

- Open the **Main menu > Weighing/Trip count.** menu.
  - ▷ The **Weighing/Trip count.** menu is displayed.



**Figure 4.19:** Weighing/Trip counter menu

Sub-menu	Meaning	Description
Trip counter	<b>Only for lime operation:</b> Display of the applied spreading quantity, area spread and spread distance.	<a href="#">Page 50</a>
Rest (kg, ha, m)	<b>Only large area spreader with weighing function:</b> Display of the residual quantity in the hopper.	<a href="#">Page 51</a>
Metre counter	Display of the distance travelled since the last reset of the meter counter.	Reset (zeroing) by pressing <b>C/100 %</b>
Zero scales	<b>Only large area spreader with weighing function:</b> Weighing value for empty scales is set to "0 kg".	<a href="#">Page 52</a>

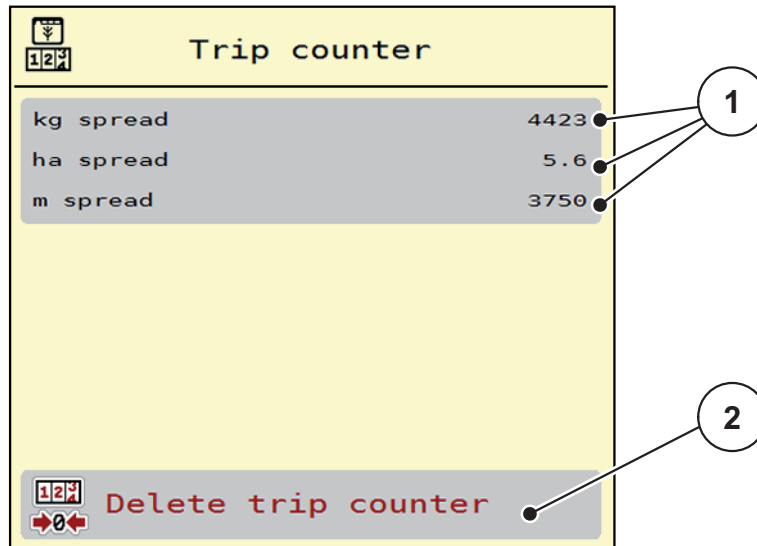
4.11.1 Trip counter (only lime operation)



In this menu, the values of the spreading work realized can be obtained, the remaining spreading quantity can be observed and the trip counter can be reset by clearing.

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

During the spreading work, i.e. with the metering slides being open, you can change into the **Trip counter** menu and obtain the current values there.



**Figure 4.20:** Trip counter menu

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

**Delete trip counter:**

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



#### 4.11.2 Residual quantity (only large area spreader with weighing function)



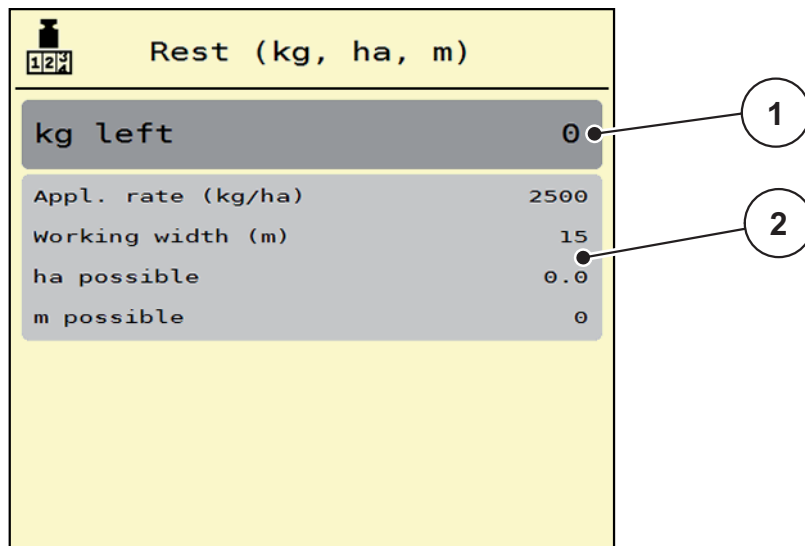
In the **Rest (kg, ha, m)** menu, the **remaining quantity** in the hopper can be queried. The menu indicates the possible **area (ha)** and **distance (m)** which can still be spread with the residual fertiliser quantity.

- Open the **Weighing/Trip counter > Rest (kg, ha, m)** menu.
  - ▷ The **Rest** menu appears.
  - ▷ The residual quantity is displayed.

#### NOTICE

The display of residual quantity is only possible for machines with weighing function. **If the large area spreader is not equipped with weigh cells, this menu has no function.**

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



**Figure 4.21:** Rest menu

[1] Residual quantity display (in kg)

[2] Application rate, working width, possible spread area and distance display fields

### 4.11.3 Zero scales (only large area spreader with weighing function)



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

For taring the scales, the following requirements have to be fulfilled:

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

1. Open the **Weighing/Trip counter > Zero scales** menu.

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

▷ **The weighing 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 residual quantity.

---

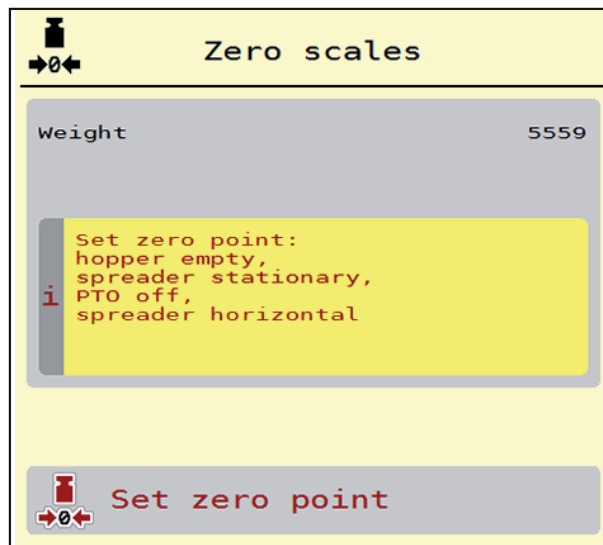


Figure 4.22: Weighing/Trip counter menu

## 4.12 Special functions

### 4.12.1 Text input

In some menus, it is possible to enter freely editable text; for this purpose, 2 different input windows are displayed.



Figure 4.23: Alphanumeric input

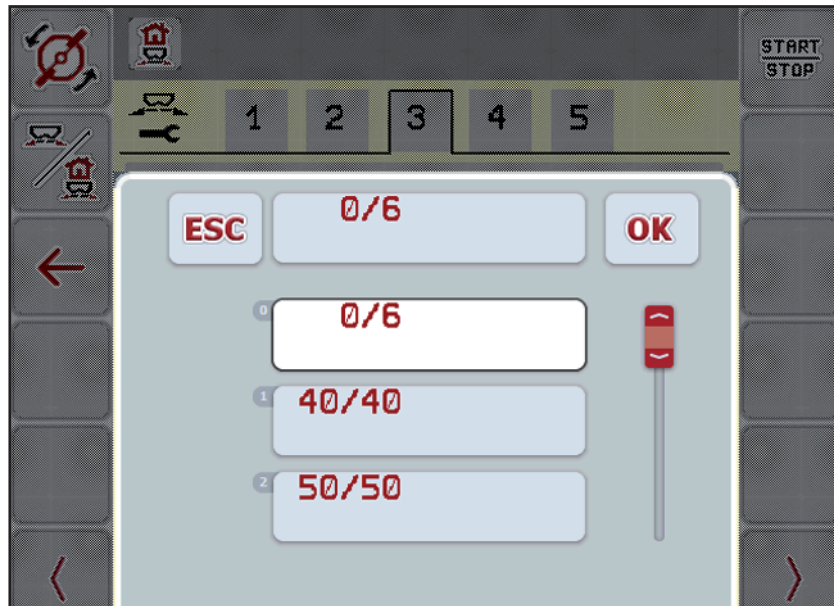


Figure 4.24: Numerical input

1. Enter the desired text or the desired value via the keyboard.
2. Press **OK**.
  - ▷ The text will be stored in the machine control unit.
  - ▷ The previous menu is displayed.
3. Cancel the input by pressing the **ESC** key.
  - ▷ Back to the previous menu.

### 4.12.2 Selection window

Some menus include selection windows.



**Figure 4.25:** Selection window

1. Select the desired entry in the selection window.
2. **Press OK.**
  - ▷ The selection will be stored.
  - ▷ The previous menu is displayed.
3. Cancel the input by pressing the **ESC** key.
  - ▷ The previous menu is displayed.

### 4.12.3 Setting the system of units

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

**NOTICE**

Due to the great variety of different ISOBUS-compatible terminals, the present chapter is restricted to the layout and functions of the **CCI 100** ISOBUS terminal.

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



1. Press **Home** at the terminal.  
See [2.2: Control elements \(CCI 100\), page 6](#).
2. Press the **Tool** key.  
▷ 4 tabs for terminal configuration are displayed.
3. Change to the **Country settings** tab.
4. Open the **Units** menu.
5. Select the desired unit system from the list.  
See [4.12.2: Selection window, page 54](#).
6. Press **OK**.  
▷ **All values of the various menus are converted.**

Menu/value	Conversion factor metric to imperial
kg Rest	1 x 2.2046 lb.-mass (lbs rest)
ha Rest	1 x 2.4710 ac (ac rest)
Working width m	1 x 3.2808 ft
Application rate (kg/ha)	1 x 0.8922 lbs/ac
Mounting height (cm)	1 x 0.3937 in
Conveyor belt speed mm/s	1 x 0.0394 in/s
Oil temperature °C	°C * 1.8 + 32 = °F

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



## 5 Loading with AXENT ISOBUS machine control unit

### 5.1 Loading in automatic operating mode





Loading is fully automatic and always in the same sequence.




**NOTICE**

The sensor conditions and loading can be observed on the operating screen. However, the messages are displayed **without sound**.

**Requirement:**

- The **automatic** operating mode is active.
  - See: [Automatic, page 35](#).

Function/control	Operating screen display
<ul style="list-style-type: none"> <li>● The loading function is active.</li> </ul>	
<ul style="list-style-type: none"> <li>● One of both level sensors (LLST or LRST) reports empty.</li> </ul>	
<ul style="list-style-type: none"> <li>● Open the pre-metering slides.</li> <li>● The conveyor belt starts up simultaneously.</li> <li>● Fertiliser flow runs into the spreading unit hopper.</li> </ul>	
<ul style="list-style-type: none"> <li>● Both level sensors (LLST or LRST) are dampened.</li> </ul>	

Function/control	Operating screen display
<ul style="list-style-type: none"> <li>● The overflow is reached.</li> <li>● The conveyor belt is stopped.</li> <li>● The pre-metering slides remain open.</li> <li>● Loading is completed.</li> </ul>	
<ul style="list-style-type: none"> <li>● Press the loading key at the end of work.</li> </ul>	
<ul style="list-style-type: none"> <li>● Close the pre-metering slides.</li> </ul>	





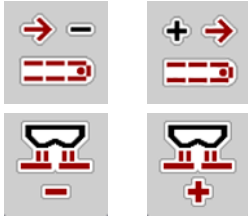





## 5.2 Loading in manual operating mode

Loading is started and stopped by pressing the **Start loading** key if a spreader side is empty. The sensor conditions signal the required steps.

**Requirement:**

- The **Manuel** operating mode is selected.
  - See: [Operating mode selection, page 35](#).
- The spreading operation is started.

Function/control	Operating screen display
<ul style="list-style-type: none"> <li>• One of both level sensors (LLST or LRST) reports empty.</li> </ul>	
<ul style="list-style-type: none"> <li>• Press <b>Start loading</b>.</li> </ul>	
<ul style="list-style-type: none"> <li>• Loading is active.</li> </ul>	
<ul style="list-style-type: none"> <li>• Open the pre-metering slides.</li> <li>• The conveyor belt starts up simultaneously.</li> <li>• Fertiliser flow runs into the spreading unit hopper.</li> </ul>	
<ul style="list-style-type: none"> <li>• Adjust the conveyor belt speed and the opening of the pre-metering slides.</li> </ul>	
<ul style="list-style-type: none"> <li>• Both level sensors (LLST or LRST) are dampened.</li> </ul>	








Function/control	Operating screen display
<ul style="list-style-type: none"> <li>● The overflow is reached.</li> </ul>	
<ul style="list-style-type: none"> <li>● Press <b>Start loading</b>.</li> <li>● The conveyor belt is stopped.</li> <li>● Close the pre-metering slides.</li> </ul>	
<ul style="list-style-type: none"> <li>● Loading is completed.</li> </ul>	

### 5.3 Loading in lime operation

Lime operation depends on the forward speed.

**Requirement:**

- The **lime operation** operating mode is selected.
  - See [4.7.2: Lime operation, page 38](#).
- In the AXIS H ISOBUS machine control unit, the U2 spreading disc is selected and the values are set in the **Fertiliser settings** menu.
  - See [4.3: Interaction between both machine control units, page 27](#).

Function/control	Operating screen display
<ul style="list-style-type: none"> <li>● Press <b>Start loading</b>.</li> </ul>	
<ul style="list-style-type: none"> <li>● Loading is active.</li> </ul>	
<ul style="list-style-type: none"> <li>● Start spreading.</li> </ul>	
<ul style="list-style-type: none"> <li>● The speed of the conveyor belt and the pre-metering slide opening are automatically adjusted to the forward speed.</li> </ul>	
<ul style="list-style-type: none"> <li>● Press <b>Start loading</b> in the headlands.</li> <li>● The conveyor belt is stopped.</li> <li>● The pre-metering slides remain open.</li> </ul>	
<ul style="list-style-type: none"> <li>● Press <b>Start loading</b> again during travel into the field.</li> <li>● The conveyor belt is started.</li> </ul>	
<ul style="list-style-type: none"> <li>● At the end of operation, press <b>Start loading</b>.</li> <li>● The conveyor belt is stopped.</li> </ul>	
<ul style="list-style-type: none"> <li>● Press conveyor belt pause.</li> <li>● Close the pre-metering slides.</li> </ul>	
<ul style="list-style-type: none"> <li>● Loading is completed.</li> </ul>	



## 6 Alarm messages and possible causes

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

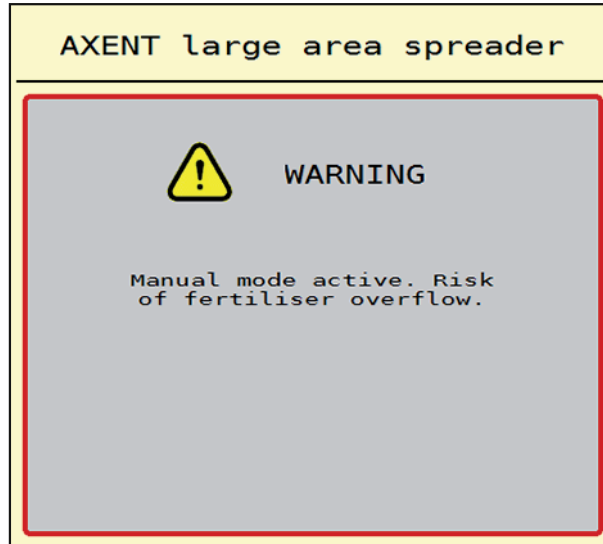
### 6.1 Meaning of the alarm messages

Message in display	Possible cause/action
Error at left pre-metering slider cylinder	The position at the left pre-metering slide could not be reached <ul style="list-style-type: none"> <li>● Blockage</li> <li>● Hydraulic cylinder defective</li> </ul>
Error at right pre-metering slider cylinder	The position at the right pre-metering slide could not be reached <ul style="list-style-type: none"> <li>● Blockage</li> <li>● Hydraulic cylinder defective</li> </ul>
AXENT empty	The hopper is empty.
Function-Stop	All connected devices are in a safe condition. The stop switch was operated.
Spreader overloaded!	The machine is overloaded <ul style="list-style-type: none"> <li>● The load inside the machine exceeds 10,000 kg</li> </ul>
Manual mode active. Risk of fertiliser overflow.	The message is displayed on switching over from automatic to manual.
Cover open!	Switch is not operated, the loading function is not possible. The rear cover is open and not properly closed.
Stop loading!	The message is displayed on switching over to the system/test menu during operation. <ol style="list-style-type: none"> <li>1. Stop spreading operation.</li> <li>2. Open the system/test menu.</li> </ol>
Low oil level!	Insufficient oil level in the hydraulic circuit. <ul style="list-style-type: none"> <li>● Stop the machine and refill oil.</li> </ul>
Cannot be selected!	The operating mode set in the AXIS H ISOBUS machine control unit does not comply with the settings of the AX-ENT ISOBUS machine control unit. <ul style="list-style-type: none"> <li>● Set the correct operating mode. See: <a href="#">Operating mode selection, page 35</a></li> </ul>
Belt speed not reached	The conveyor belt has not reached the target speed within 5 s.

### 6.2 Clearing an error/alarm

#### 6.2.1 Acknowledging an alarm message

An alarm message is highlighted in the display and displayed with a warning symbol.



**Figure 6.1:** Alarm message (example)

1. Correct the cause of the alarm message.

Please observe the operator's manual of the machine and section [6.1: Meaning of the alarm messages, page 63](#).

2. Press the **ACK** key.  
▷ **The alarm message is cleared.**



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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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