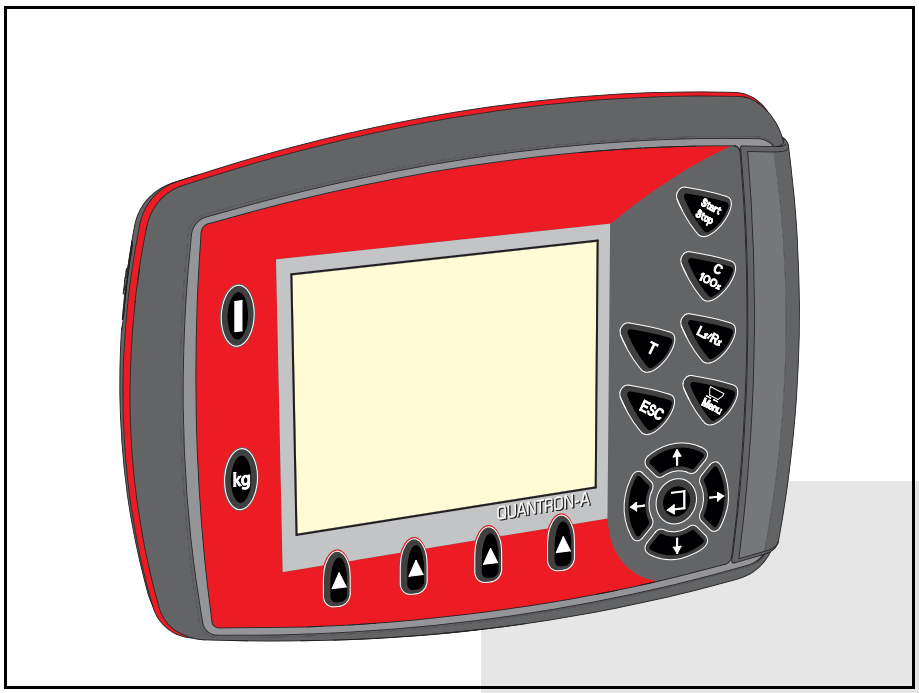
RAUCH
wir nehmen's genau

INSTRUCTION MANUAL



Please read carefully before using the machine.

Keep for future reference.

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

QUANTRON A AXIS MDS

Original instructions

5901034-C-en-1214

Preface

Dear Customer

By purchasing the **control unitQUANTRON-A** for the AXIS and MDS fertiliser spreader, you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a reliable, high-performance **control unit**. If, contrary to expectations, any problems occur: our customer service is always there for you.

Please read this operating manual as well as the operating manual of the fertiliser spreader carefully before commissioning, and follow the advice given. Thisoperating manual explains in detail how to operate the spreader and contains important information on operation, care and maintenance.

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

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

CAUTION

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

The control unit QUANTRON-A is factory-calibrated for the fertiliser spreader with which it has been delivered. It cannot be connected to another fertiliser spreader without requiring additional calibration.

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

Type	Serial number	Year of construction

Technical improvements

We are continuously improving our products. Therefore, we reserve the right to make any improvements and changes to our machine that we consider necessary without notice. This constitutes no obligation to make such improvements or changes on machines that have already been sold.

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

Yours sincerely

RAUCH

Landmaschinenfabrik GmbH

1 User instructions

1.1 About this operating manual

This operating manual is an **integral part** of the control unit **QUANTRON A**.

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

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

The operating manual does not replace your **own responsibility** as the operator and operating personnel of the control unit QUANTRON A.

1.2 Notes on the depiction of information in this manual

1.2.1 Meaning 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 remaining dangers that may be encountered when operating the machine. The safety warnings are structured as follows:

	Signal word
Symbol	Explanation

Example

⚠ DANGER

Description of the sources of danger

Description of the danger and possible consequences.

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

▶ Measures to prevent the danger.

Warning severity level

The degree of danger is indicated by the signal word. The levels are classified as follows:

⚠ DANGER

Type of hazard and source of danger

This advice 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 of hazard and source of danger

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

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

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

⚠ CAUTION

Type of hazard and source of danger

This note warns of a potentially dangerous situation for personal health or of material and environmental damage.

Ignoring these warnings can result in damage to the product or the general area.

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

NOTICE

General information contain application tips and particularly useful information but 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:

- See also Chapter 3: Safety, page 5.

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

- Please also observe the instructions contained in the manual for the universal drive shaft.

1.2.5 Menu hierarchy, keys and navigation

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

In the menus, **submenus and/or menu items** are listed where you can make settings (selection lists, text or number entries, starting functions).

The different menus and keys of the control unit are illustrated in **bold** letters:

- Access the highlighted submenu by pressing the **Enter key**.

Hierarchy and the path to the requested menu item are marked with **>** (arrow) between menu, menu item/s:

- **System / Test > Test/Diagnosis > Voltage** means that you can access the menu item **Voltage** via the **System / Test** menu and the **Test/Diagnosis** menu item.
  - The arrow **>** correpsonds to confirmation with the **Enter key**.

2 Layout and function

2.1 Overview of supported AXIS and MDS fertiliser spreaders

Function/Options	AXIS	MDS
Spreading operations depending on the forward speed	● AXIS-M 20.1 Q ● AXIS-M 30.1 Q ● AXIS-M 40.1 Q	● MDS 10.1 Q ● MDS 11.1 Q ● MDS 12.1 Q ● MDS 17.1 Q ● MDS 19.1 Q
4 section steps (VariSpread4)	● AXIS-M 20.1 Q ● AXIS-M 30.1 Q ● AXIS-M 20.1 Q ● AXIS-M 30.1 W ● AXIS-M 20.1 W	
8 section steps (VariSpread8)	● AXIS-M 50.1 W	

2.2 Layout of the control unit - overview

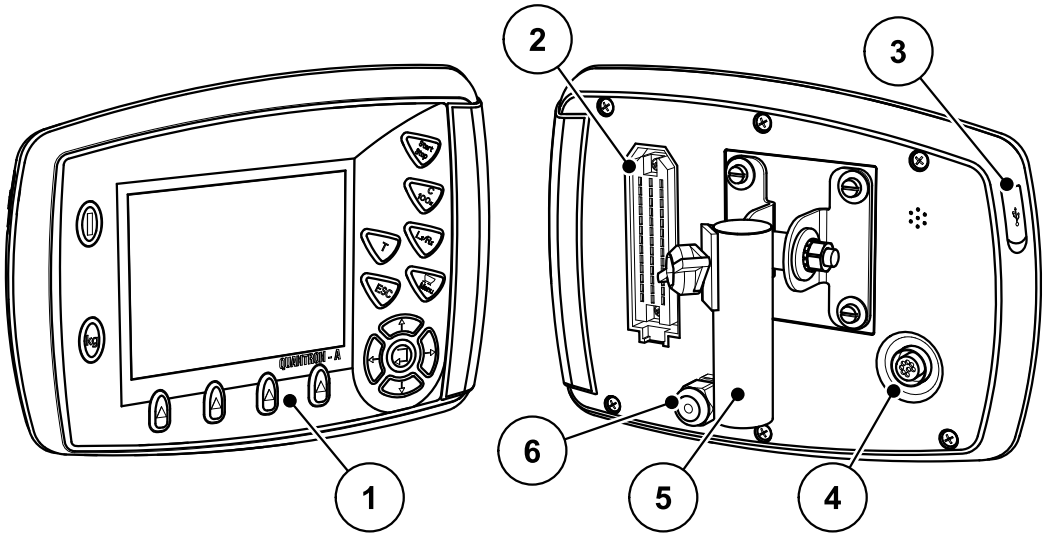


Figure 2.1: Control unit QUANTRON-A

No.	Designation	Function
1	Operating panel	Consisting of foil buttons used to operate the device and the display for operating screens.
2	Machine cable plug connector	39-pin plug connector for connecting the machine cable to sensors and actuating cylinders.
3	USB port with cover	For exchanging data and updating the PC. Cover serves as protection against dust.
4	V24 data port	Serial interface (RS232) with LH 5000 and ASD protocol, designed for connecting a Y-RS232 cable for the connection to a remote terminal. Plug connection (DIN9684-1/ISO11786) for connecting the 7-pin to the 8-pin cable for the speed sensor.
5	Bracket	Attaches the control unit to the tractor.
6	Power supply	3-pin plug connector conforming to DIN9680 / ISO12369 for connecting the power supply.

2.3 Control elements

The control unit is operated via **17 foil buttons** (13 firmly defined and 4 freely configurable foil buttons).

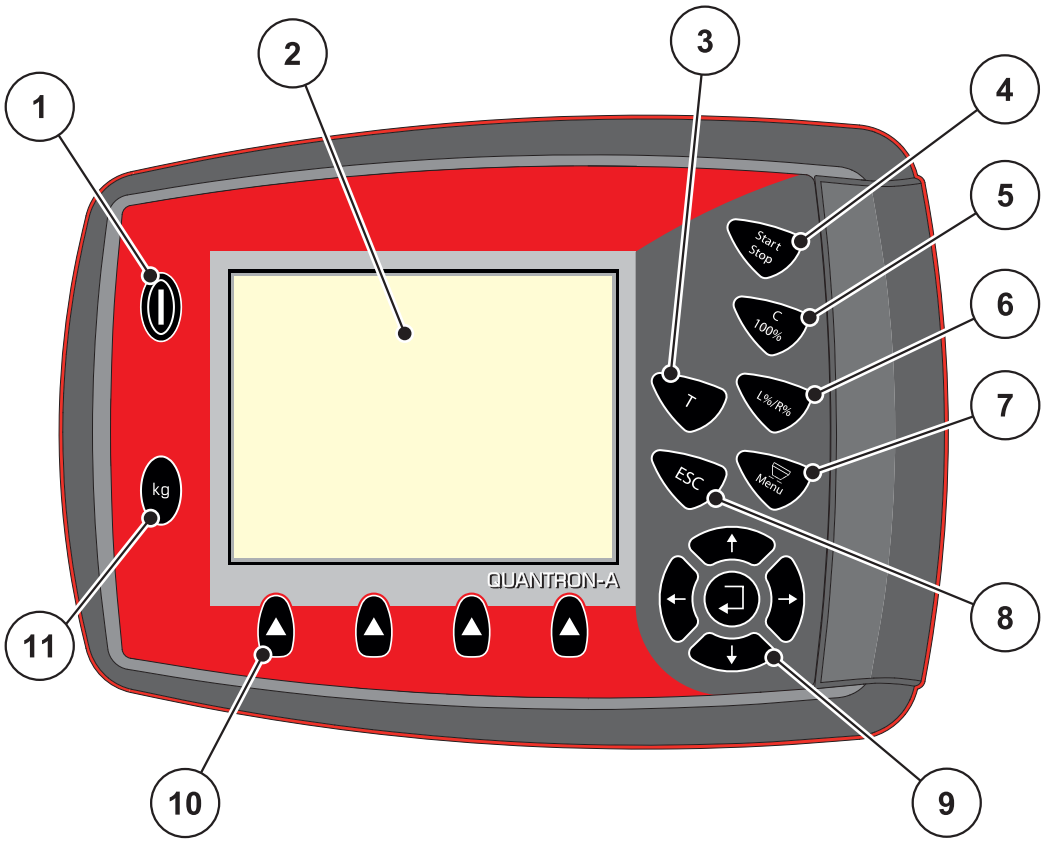


Figure 2.2: Operating panel on the front panel of the unit

NOTICE

The instruction manual describes the functions of the QUANTRON-A **from software version 2.00.00**.

No.	Designation	Function
1	ON/OFF	Switches the device on/off
2	Display	Display of operating screens
3	T key (TELIMAT)	Key for displaying the TELIMAT position
4	Start/Stop	Start/stop spreading.
5	Clear/Reset	• Clear an input in an input field, • Reset the excess quantity to 100%, • Acknowledge alarm messages.

No.	Designation	Function
6	Preselected section setting	Toggle key for alternating between 4 states. ● Pre-selection of sections for changing the quantity. page 63 - **L**eft - **R**ight or - **L**eft **+** **R**ight ● **Only for AXIS**: Section management (VariSpread function) page 12
7	Menu	Switch between operating screen and main menu.
8	ESC	For aborting information input and/or returning to the previous menu at the same time.
9	Navigation field	4 **arrow keys** and one **enter key** for navigating through the menus and input fields. ● **Arrow keys** for moving the cursor on the display or for highlighting an input field. ● **Enter key** to confirm an input.
10	Function keys F1 to F4	Selection of the functions displayed above the function keys.
11	Weighing/Trip counter	● Display of the remaining fertiliser that is still in the hopper. ● Trip counter ● kg Rest ● Metre counter

2.4 Display

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

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

2.4.1 Description of the operating screen

NOTICE

The exact representation of the operating screen depends on the actual settings selected, see chapter 4.10.2: Display configuration, page 69.

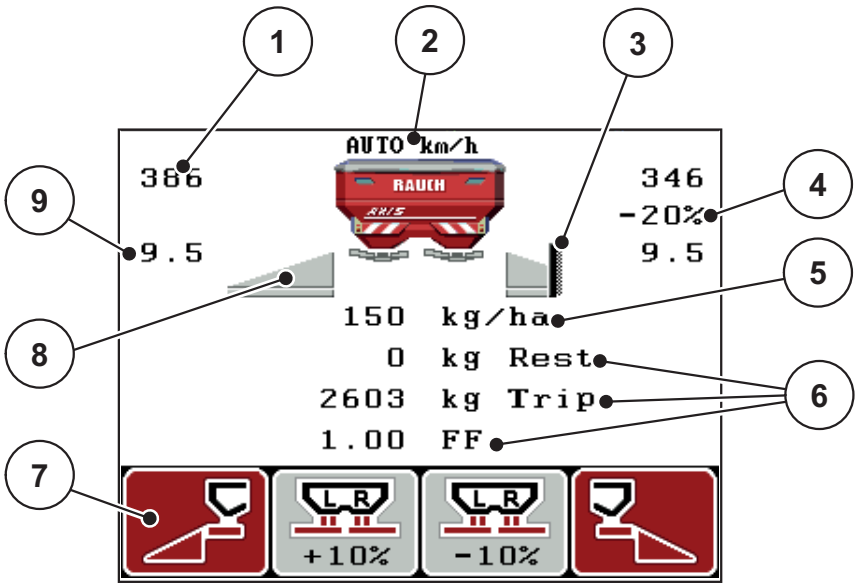


Figure 2.3: Control unit display (Example operating screen AXIS)

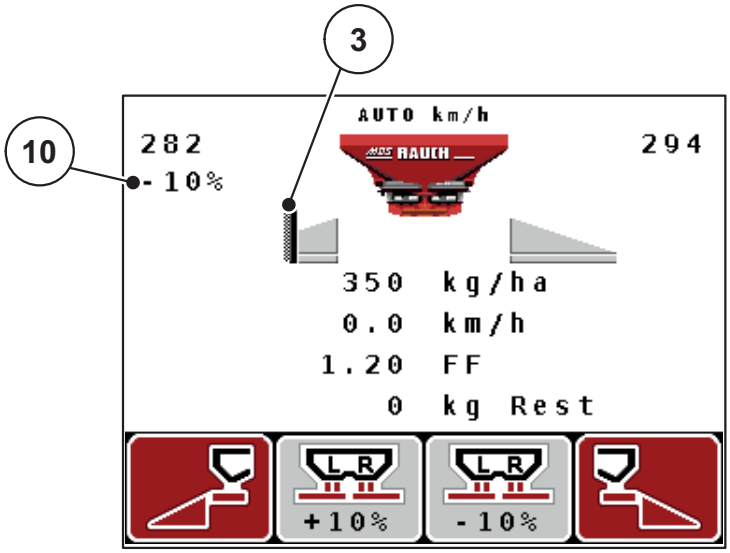


Figure 2.4: Control unit display (Example operating screen MDS)

The icons and displays in the example have the following meaning:

No.	Icon / Display	Meaning (in the example shown)
1	Metering slide scale opening left	Current opening position of the left metering slide.
2	Operating mode	Shows the current operating mode. ● AUTO km/h uses the radar signal or wheel signal to determine the speed.
3	Symbol TELIMAT	In AXIS this symbol is on the right hand side, whereas in MDS this symbol is on the left hand side, if the **TELIMAT sensors** are installed and the **TELIMAT function** is enabled (factory setting) or the **T button** is enabled.
4	Quantity change right	Application rate adjustment (**+/-**) in percent. ● Display of application rate adjustment. ● Range of values +/- **1.99 %** possible.
5	Application rate	**Preset** application rate.
6	Display fields	Configurable display fields (here: forward speed, flow factor, kg rest). ● Possible configuration: see chapter 4.10.2: Display configuration, page 69.
7	Icon fields	Icon assignment to the fields **depending on the menu**. ● Selection of the function by means of the **function keys** below.
8	Section left	Display of status of left section.See 2.4.2: Display of the metering slide status, page 11.
9	Drop point	Current position of the drop point.
10	Quantity change right	Application rate adjustment (**+/-**) in percent. ● Display of application rate adjustment. ● Range of values +/- **1.99 %** possible.

2.4.2 Display of the metering slide status

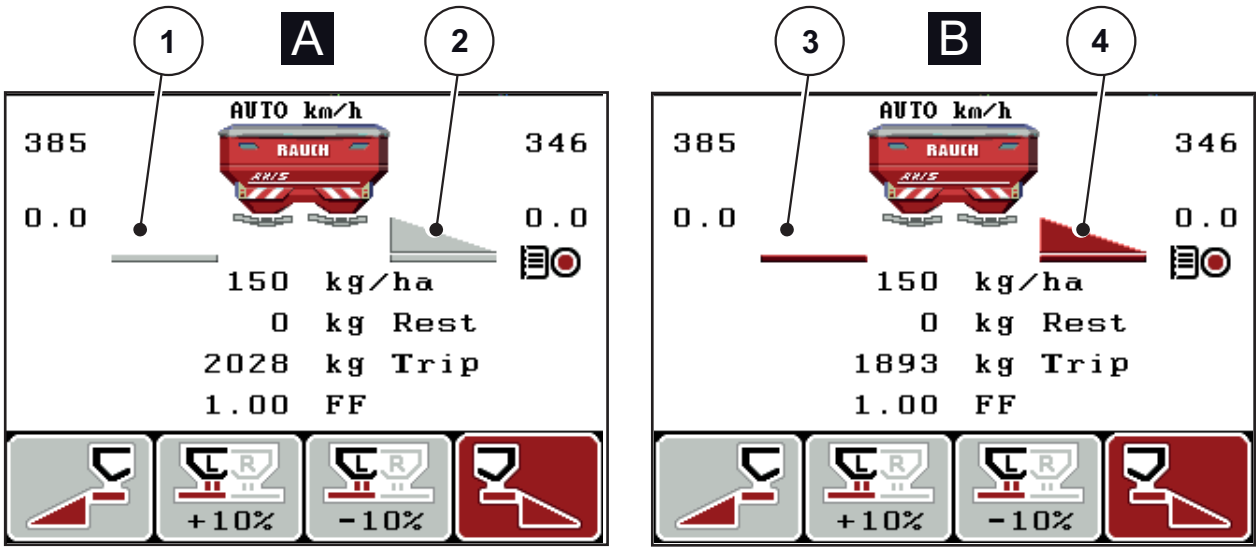


Figure 2.5: Display of the metering slide status AXIS

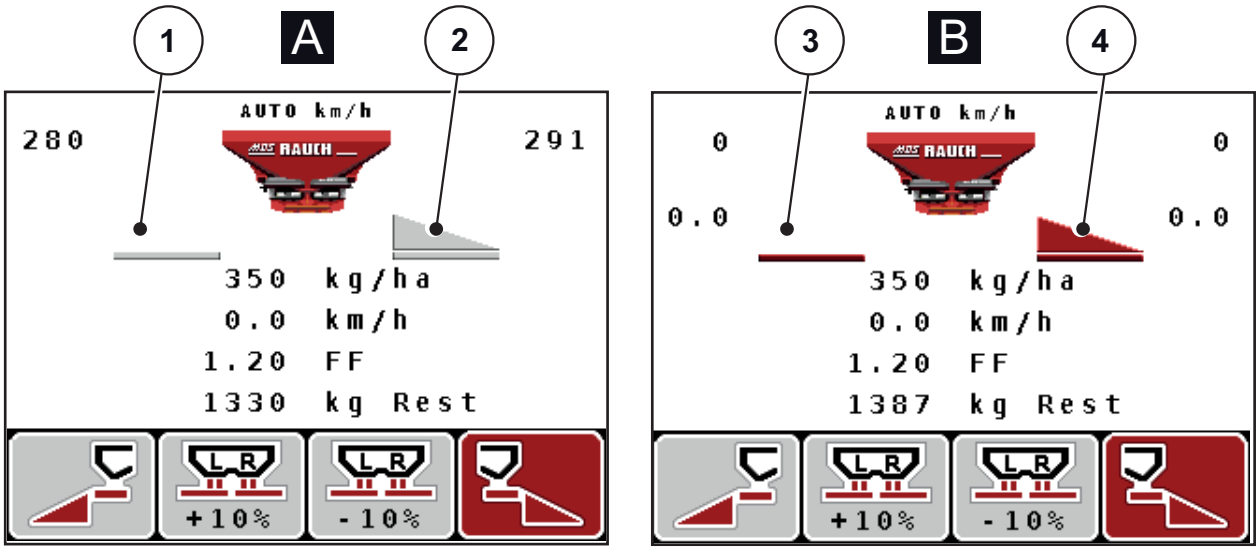


Figure 2.6: Display of the metering slide status MDS

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

2.4.3 Display of sections (Only for AXIS)

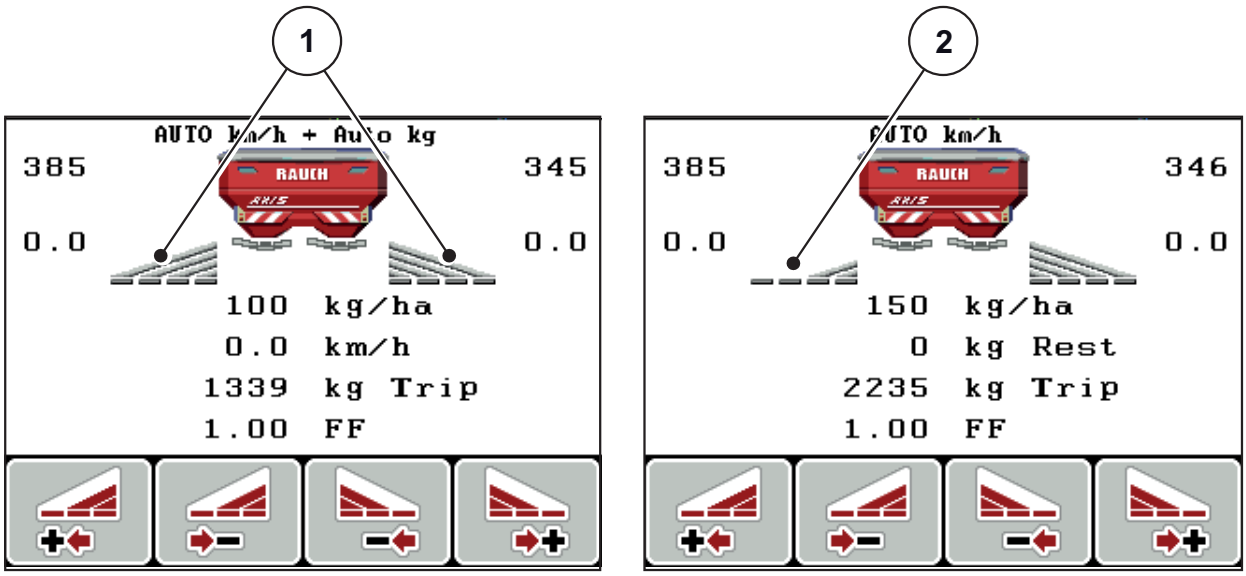


Figure 2.7: Display of the section status (Example by VariSpread 8)

[1] Activated sections with 4 possible spreading width steps
[2] The left section is reduced by 2 section steps

2.5 Library of symbols used

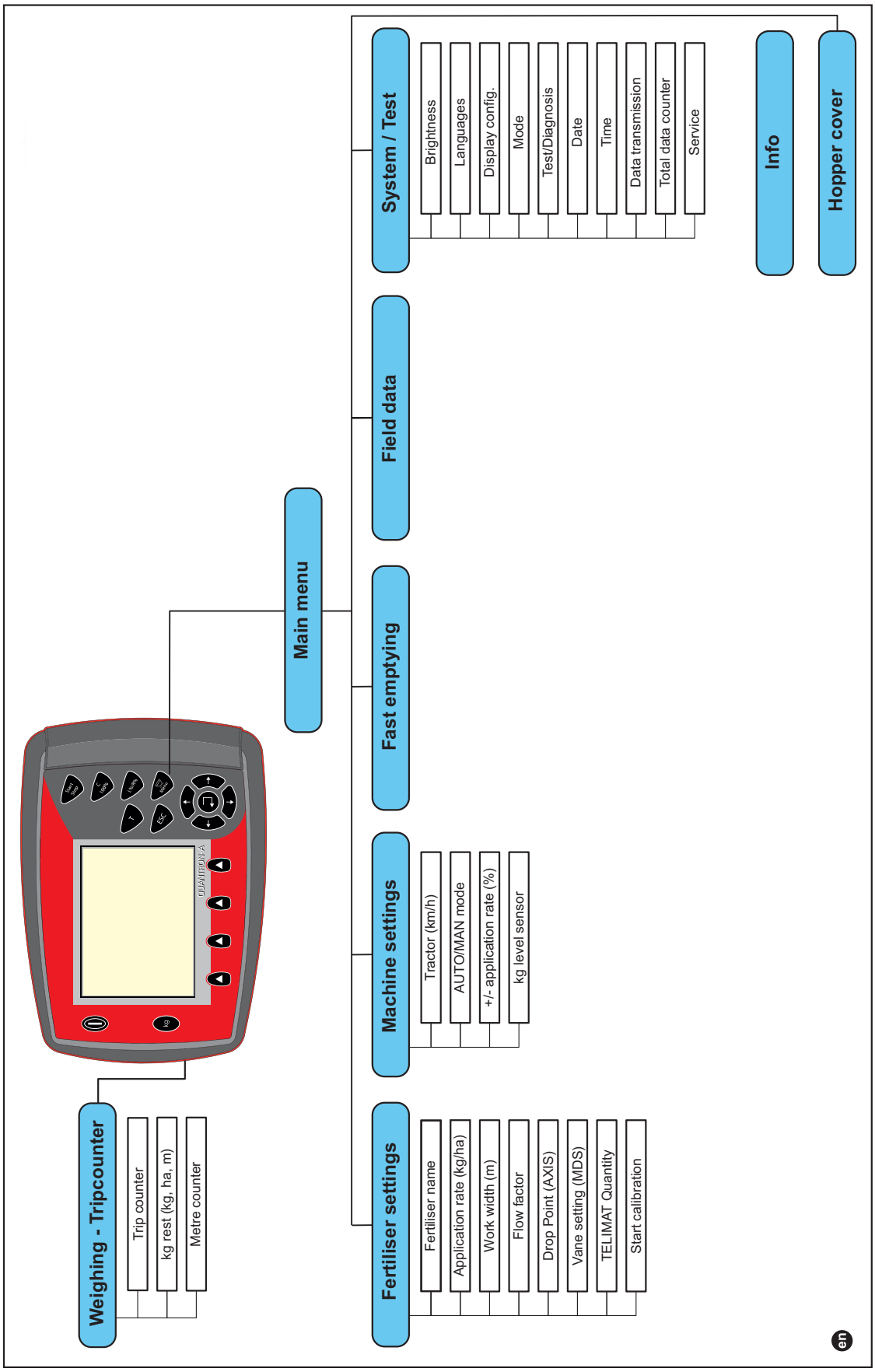
The screen of the QUANTRON-A control unit displays symbols for menus and functions.

Symbol	Meaning
	Quantity adjustment + (plus)
	Quantity adjustment - (minus)
	Quantity adjustment, left + (plus)
	Quantity adjustment, left - (minus)
	Quantity adjustment, right + (plus)
	Quantity adjustment, right - (minus)
	Manual change of the metering slide position + (plus)
	Manual change of the metering slide position - (minus)
	Left spreading side active
	Left spreading side inactive
	Right spreading side active
	Right spreading side inactive

Symbol	Meaning
	Reduce right section (minus)
	Increase right section (plus)
	Reduce left section (minus)
	Increase left section (plus)

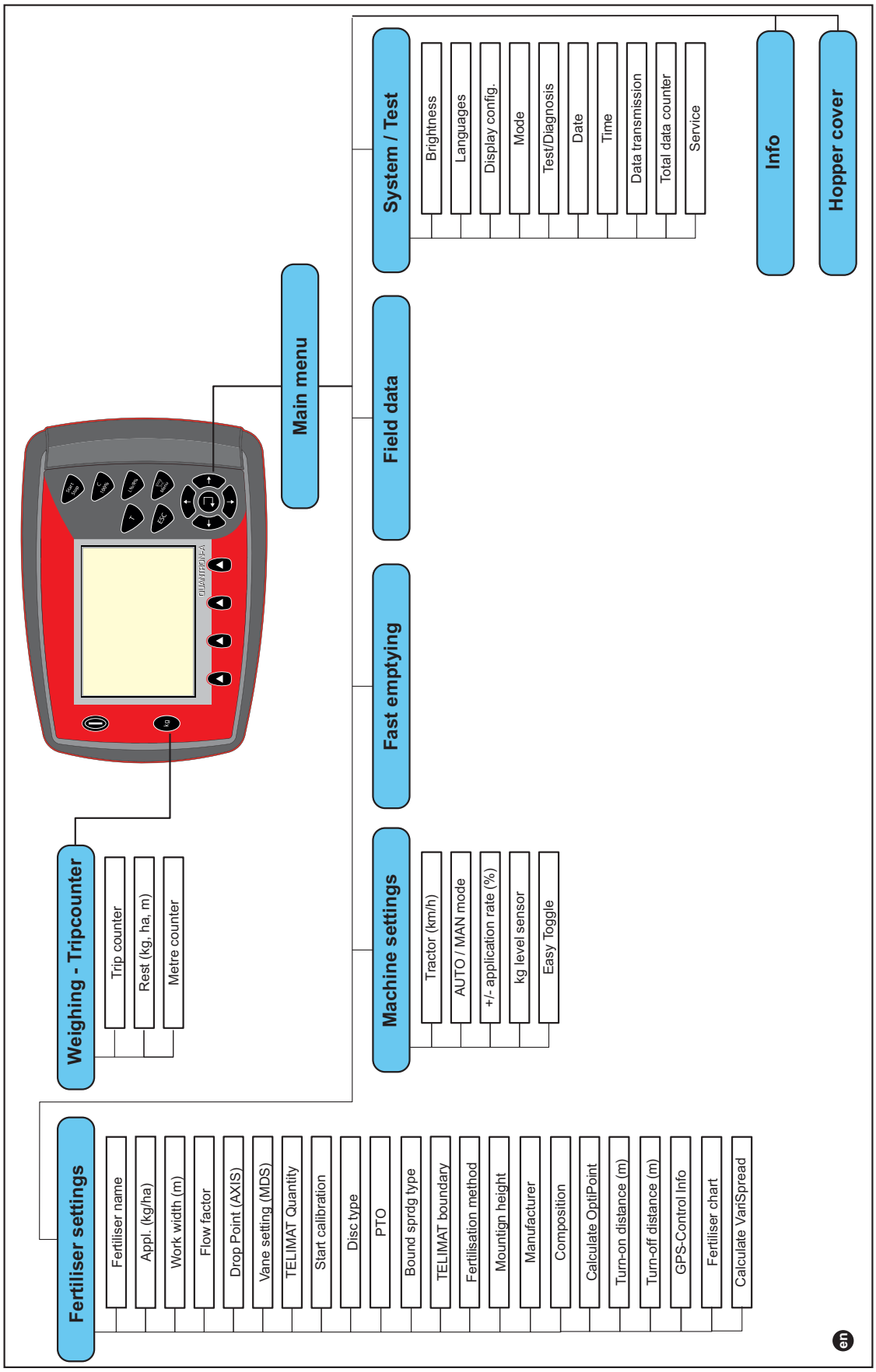
2.6 Structural overview of Easy Mode menu

Setting the mode is described in section 4.10.3: Mode, page 70.



2.7 Structural overview of Expert Mode menu

Setting the mode is described in section 4.10.3: Mode, page 70.



3 Attachment and installation

3.1 Requirements for the tractor

Before installing the control unit, check to make sure your tractor meets the following requirements:

- A minimum voltage of **11 V** is essential **at all times,** even if multiple loads are connected simultaneously (e. g. air conditioning system, lights).
- The PTO speed can be set to **540 rpm** and must be maintained (basic requirement for correct working width).

NOTICE

On tractors without load-switchable gears, 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.

- A 7-pin socket (DIN 9684-1/ISO 11786). The control unit receives the pulse for the current forward speed through this socket.

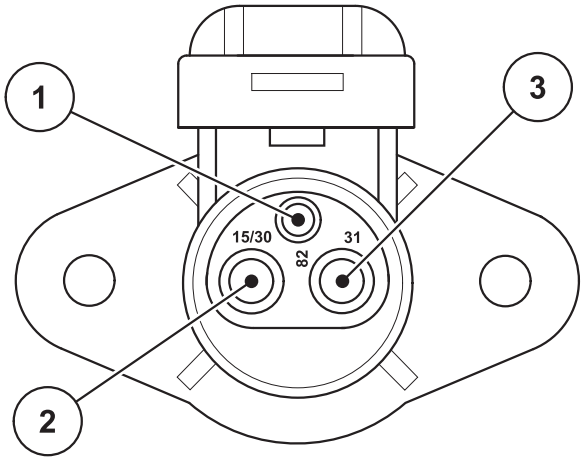
NOTICE

The 7-pin socket for the tractor and the forward speed sensor can be obtained as an expansion kit (option), see figure 3.3 to figure 3.5.

3.2 Connections, sockets

3.2.1 Power supply

The control unit is supplied with power from the tractor via the 3-pin power supply socket (DIN 9680/ISO 12369).

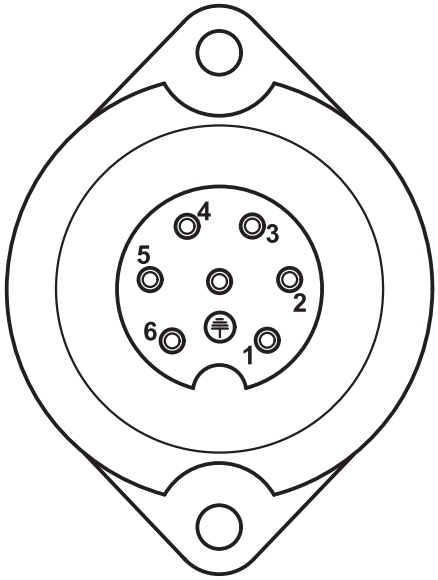


[1] PIN 1: not required
[2] PIN 2: (15/30): +12 V
[3] PIN 3: (31): mass

Figure 3.1: PIN assignment of power socket

3.2.2 7-pin plug connector

The control unit receives the pulses for the current forward speed via the 7-pin plug connector 9684-1/ISO 11786). For this purpose, the 7-pin to 8-pin cable (accessory) is connected to the forward speed sensor at the plug connector.



[1] PIN 1: actual forward speed (radar)
[2] PIN 2: theoretical forward speed (e. g. gearbox, wheel sensor)

Figure 3.2: PIN assignment for 7-pin plug connector

3.3 Connecting the control unit

NOTICE

After having switched on the QUANTRON-A control unit, the display shows the machine number for a short time.

NOTICE

Note the machine number

The control unit QUANTRON-A has been calibrated at the factory for the mineral fertiliser spreader with which it was supplied.

Only connect the control unit to the correct mineral fertiliser spreader.

Depending on the equipment, there are different methods of attaching the control unit to the mineral fertiliser spreader. For schematic connection diagrams see below:

- for the standard connection, see page 20,
- for the connection with the wheel sensor, see page 21,
- for the connection with the wheel sensor and machine cable, see page 22.

Carry out the process steps in the following order.

- Select a suitable position in the tractor cabin (within **the driver's field of vision**) to fix the control unit.
- Fix the control unit by means of **brackets** in the tractor cabin.
- Connect the control unit to the 7-pin socket or to the forward speed sensor (depending on the equipment, see figure 3.3 to figure 3.5).
- Connect the control unit to the actuators of the machine using the 39-pin machine cable.
- Connect the control unit to the tractor's power supply using the 3-pin plug connector.

Standard schematic connection diagram:

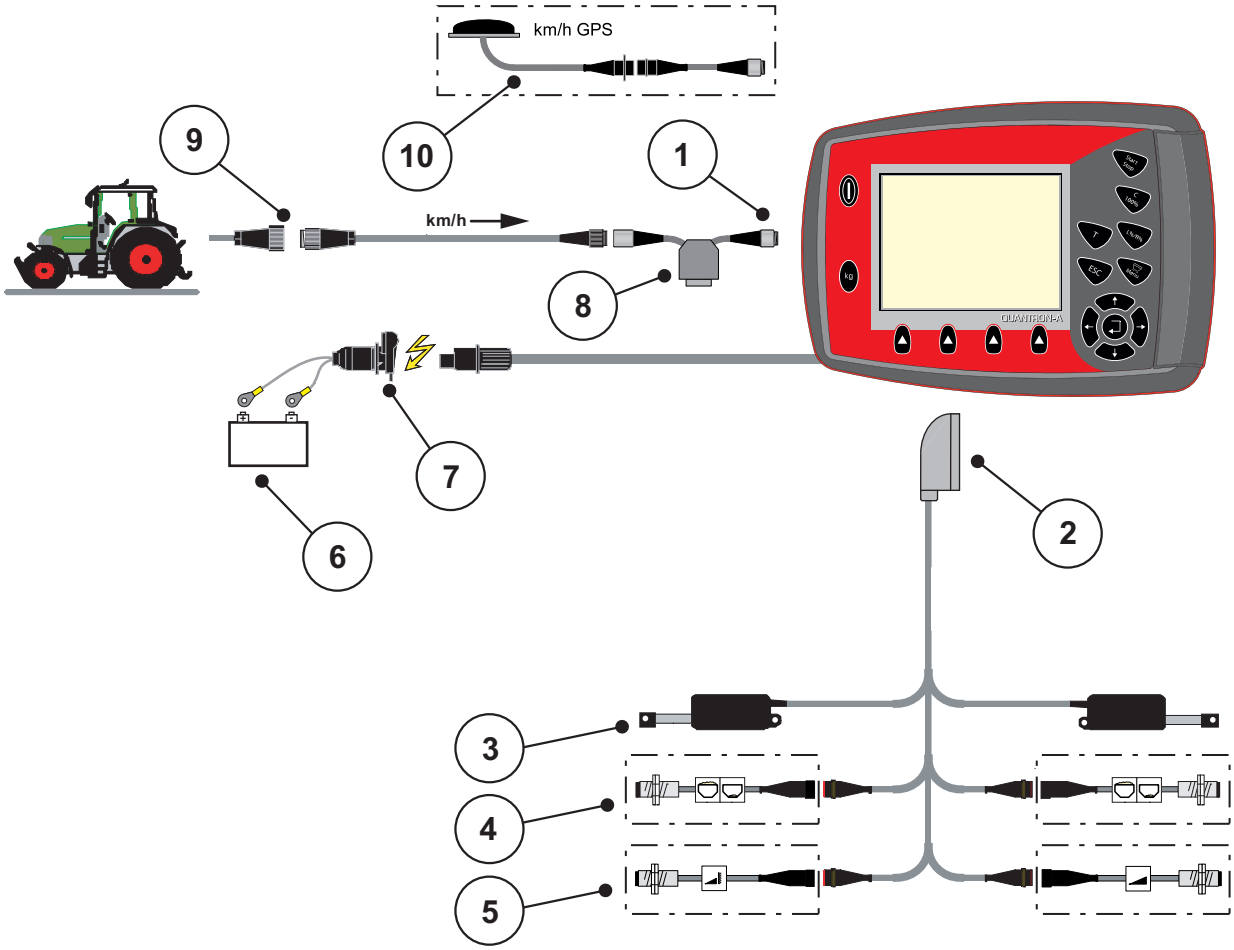


Figure 3.3: Standard schematic connection diagram QUANTRON-A

[1] Serial interface RS232, 8-pin plug connector
[2] 39-pin machine plug
[3] Metering slide actuator left/right
[4] Option (level sensor left/right)
[5] Option (TELIMAT sensor top/bottom)
[6] Battery
[7] 3-pin plug connector conforming to DIN9680 / ISO12369
[8] Option: Y-cable (V24 RS232 interface for storage medium)
[9] 7-pin plug connector conforming to DIN9684
[10] Option: GPS cable and receiver

Schematic connection diagram for wheel sensor:

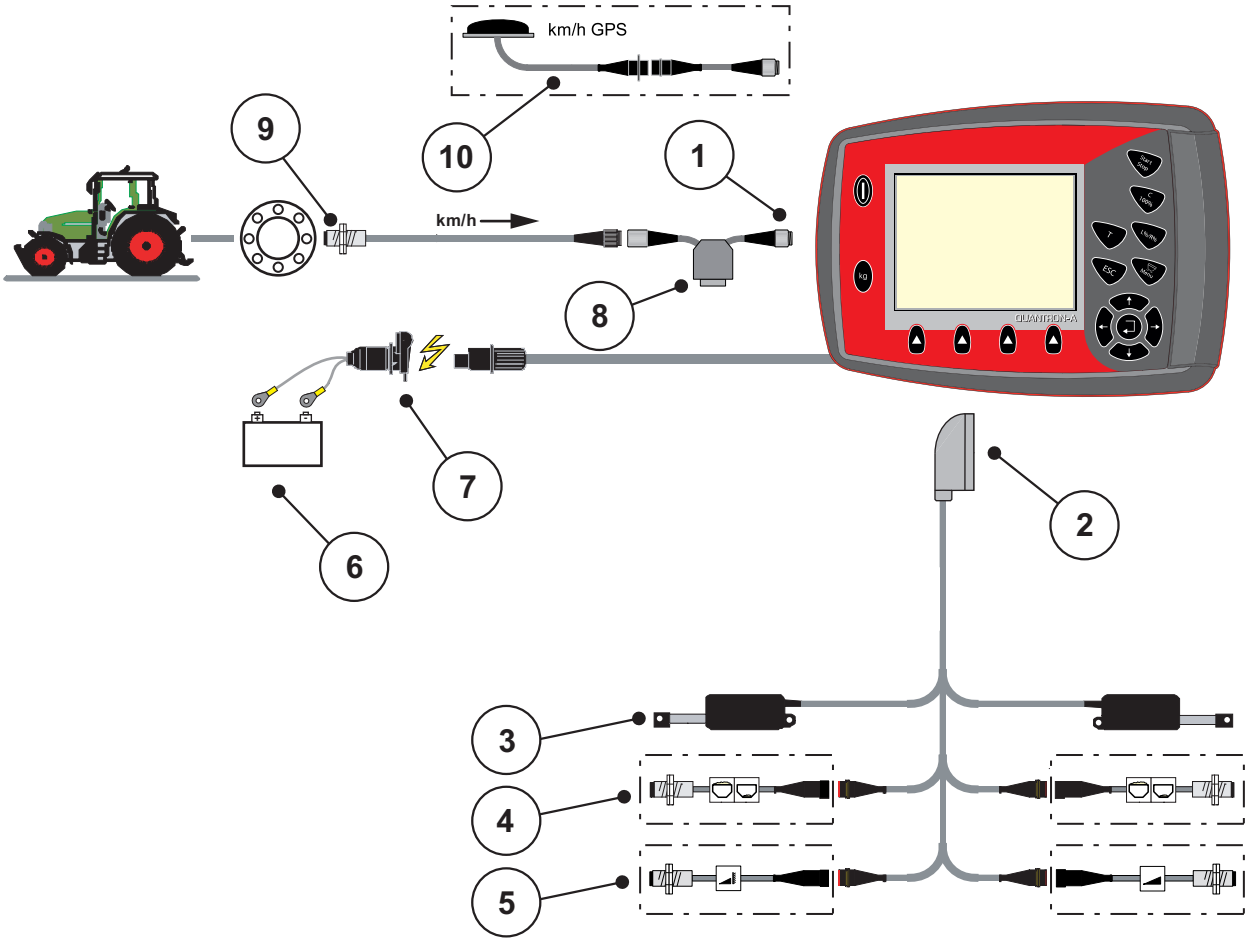


Figure 3.4: Schematic connection diagram QUANTRON-A (wheel sensor)

[1] Serial interface RS232, 8-pin plug connector
[2] 39-pin machine plug
[3] Metering slide actuator left/right
[4] Option (level sensor left/right)
[5] Option (TELIMAT sensor top/bottom)
[6] Battery
[7] 3-pin plug connector conforming to DIN9680 / ISO12369
[8] Option: Y-cable (V24 RS232 interface for storage medium)
[9] Forward speed sensor
[10] Option: GPS cable and receiver

Schematic connection diagram: Power supply via ignition lock

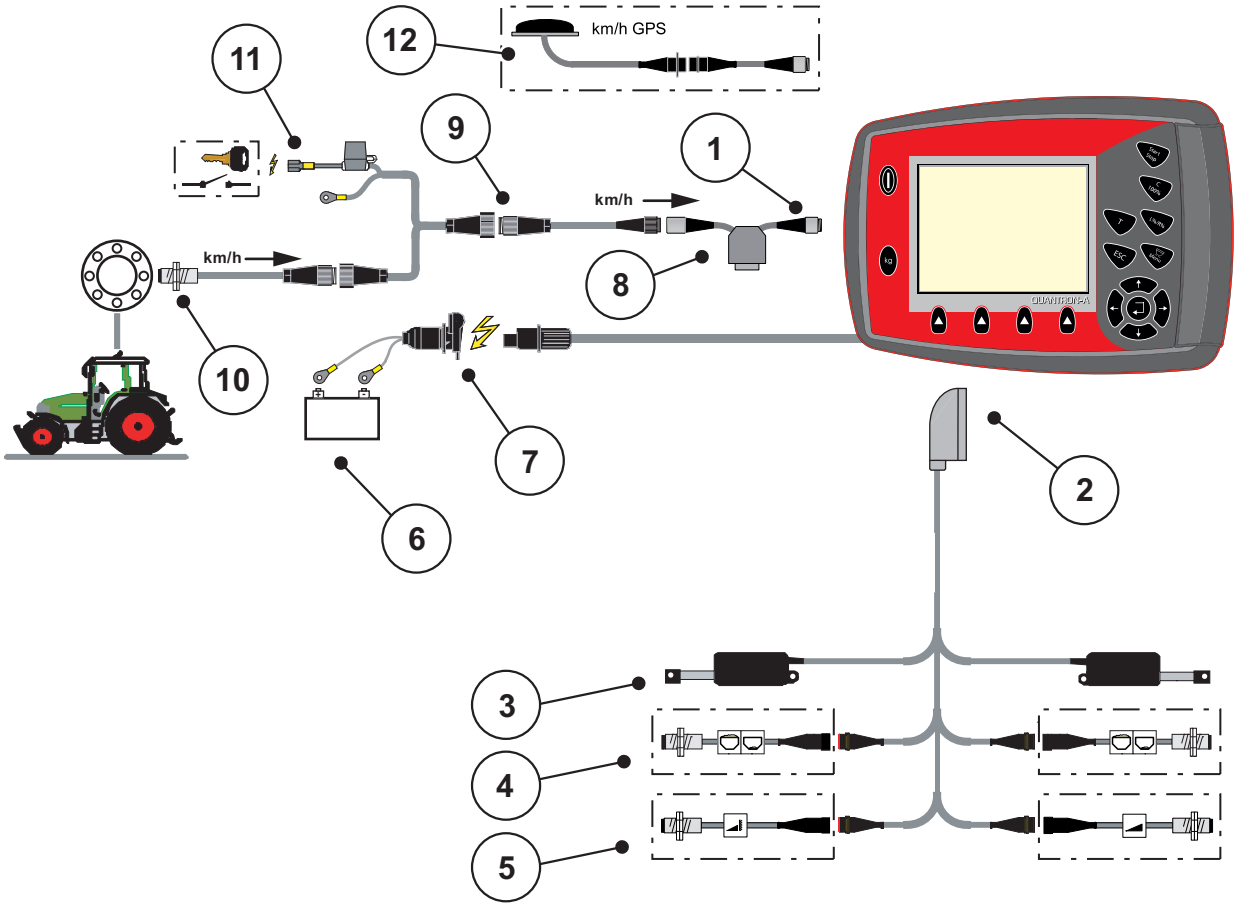


Figure 3.5: Schematic connection diagram QUANTRON-A (power supply via ignition lock)

[1] Serial interface RS232, 8-pin plug connector
[2] 39-pin machine plug
[3] Metering slide actuator left/right
[4] Option (level sensor left/right)
[5] Option (TELIMAT sensor top/bottom)
[6] Battery
[7] 3-pin plug connector conforming to DIN9680 / ISO12369
[8] Option: Y-cable (V24 RS232 interface for storage medium)
[9] 7-pin plug connector conforming to DIN9684
[10] Forward speed sensor
[11] Option: Power supply QUANTRON-A via ignition lock
[12] Option: GPS cable and receiver

3.4 Metering slide preparation

The fertiliser spreaders AXIS Q and MDS Q are fitted with an electric slide actuation for setting the spreading volume.

⚠ CAUTION

Observe the position of the metering slides of the AXIS Q fertiliser spreader

The operation of the actuators by the QUANTRON-A can cause damage to the metering slides of the AXIS Q fertiliser spreader if the stop levers are incorrectly positioned.

▶ Always clamp the stop levers at the maximum scale position.

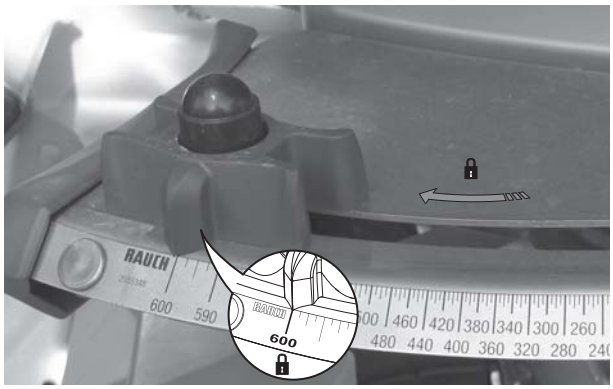


Figure 3.6: Preparation of the metering slide (example)

NOTICE

Observe the operating manual of the fertiliser spreader.

4 Operation QUANTRON-A

⚠ 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 discharged fertiliser.

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

4.1 Switching on the control unit

Requirements:

- The control unit is connected properly to the mineral fertiliser spreader and the tractor (for an example, see chapter 3.3: Connecting the control unit, page 19).
- A minimum voltage of **11V** is guaranteed.

NOTICE

The operating manual describes the functions of the control unit QUANTRON-A **as of software version 2.00.00**

Activation:

1. Actuate the **ON/OFF switch [1]**.
   - ▷ After a few seconds, the **start-up screen** of the control unit appears.
   - ▷ Shortly after, the control unit will display the **activation menu** for a few seconds.
2. Press the **Enter key**.
   - ▷ The **start diagnosis** will be displayed for a few seconds.
   - ▷ Subsequently, the **operating screen** appears.

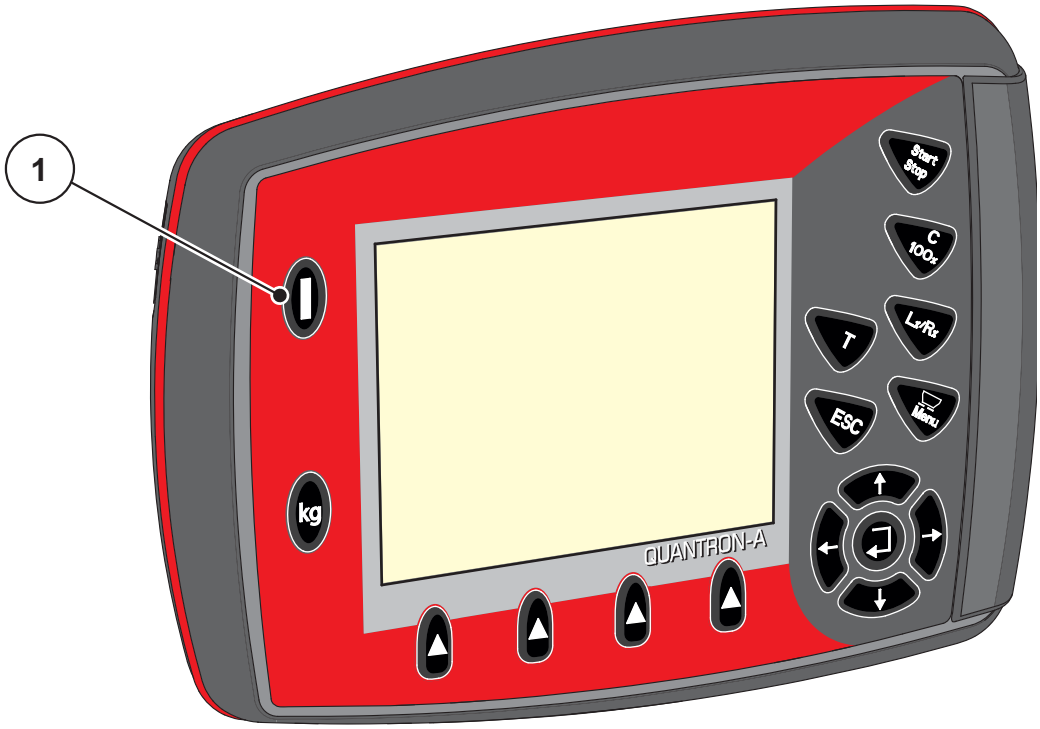


Figure 4.1: Start QUANTRON-A

[1] ON/OFF switch

4.2 Menu navigation

NOTICE

Important notes regarding the display and the navigation between menus are provided in chapter 1.2.5: Menu hierarchy, keys and navigation, page 3.

Accessing the main menu

- Press the **Menu key**. See 2.3: Control elements, page 7.
  - ▷ The main menu is displayed.
  - ▷ The bar indicates the first sub-menu.

NOTICE

Not all parameters are displayed simultaneously in one menu window.
The **arrow keys** enable changing over to the adjacent windows.

Accessing a sub-menu:

1. Move the bar up and down with the **arrow keys**.
2. Highlight the desired sub-menu with the bar on the display.
3. Access the highlighted sub-menu by pressing the **Enter key**.

Windows appear which prompt various actions.

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

Exiting the menu

- Confirm settings by pressing the **Enter key**.
  - ▷ You will return to the **previous menu**.

  or
- press ESC key.
  - ▷ The previous settings are maintained.
  - ▷ You will return to the **previous menu**.
- Press the **Menu key**.
  - ▷ The **Operating screen** is displayed.
  - ▷ Press the **Menu key** once more to return to the menu that you left.

4.3 Weighing trip counter

This menu provides values regarding the spreading work carried out as well as the functions for weighing operation.

- Press the **kg** key at the control unit.
  ▷ The **Weighing/Trip counter** menu is displayed.

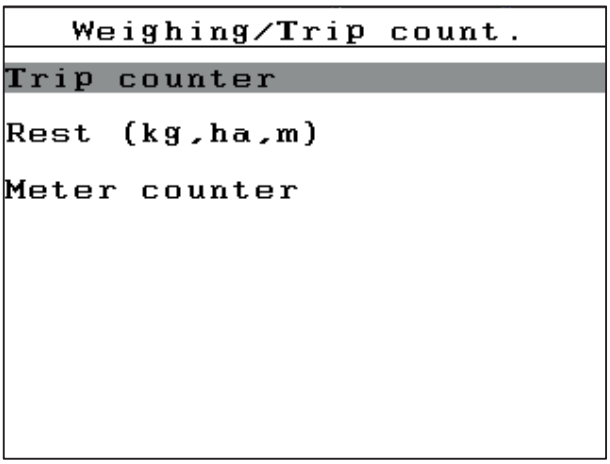


Figure 4.2: Weighing trip counter menu

Sub-menu	Meaning	Description
Trip counter	Display of the applied spreading quantity, applied area and applied distance.	Page 29
Rest (kg, ha, m)	Display of the residual spread quantity, area and distance.	Page 30
Metre counter	Display of the distance travelled since the last reset of the metre counter.	Reset (zeroing) by pressing the **C 100%** key
Tare the scales	**AXIS with weigh cells only:** The weighing value for empty scales is set to “0 kg".	

4.3.1 Trip counter

This menu provides the following values:

- kg spread
- spread area (ha)
- spread distance (m)

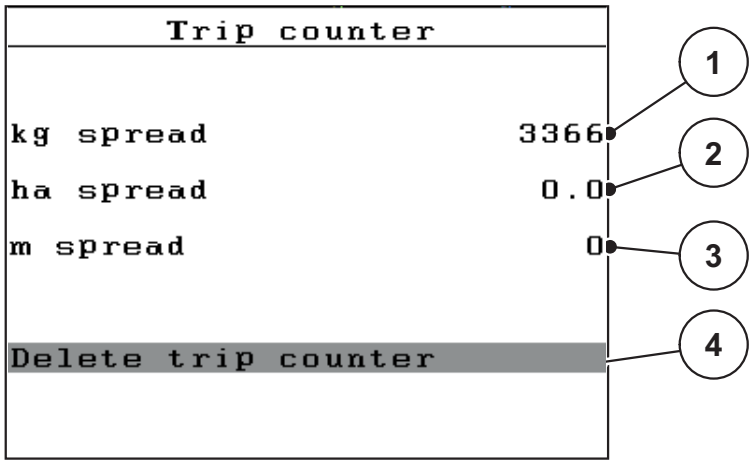


Figure 4.3: Trip counter menu

[1] Display of spread quantity since the last reset
[2] Display of spread area since the last reset
[3] Display of spread distance since the last reset
[4] Clearing the trip counter: all values to 0

Clearing the trip counter:

1. Open the **Weighing/Trip counter > Trip counter** sub-menu.
   ▷ The calculated values for the spread quantity, area and distance **since the last clearing** are displayed.

   The **Delete trip counter** field is highlighted.
2. Press the **Enter key**.
   ▷ All values of the trip counter are reset to 0.
3. Press the **kg** key.
   ▷ This returns you to the operating screen.

Checking the trip counter during spreading:

During spreading, i.e. with the slides open, the **Trip counter** menu can be opened to display the current values.

NOTICE

If the values are to be permanently monitored during spreading, freely assignable display fields in the working screen may also be assigned the **kg Trip**, **ha Trip** or **m Trip** values, refer to chapter 4.10.2: Display configuration, page 69.

4.3.2 Displaying the residual quantity

In the **Rest (kg, ha, m)** menu, you can query or input the **residual quantity** in the hopper.

The menu shows the possible **area (ha)** and **distance (m**) which can still be spread with the residual fertiliser quantity. Both displays are calculated based on the following values:

- Fertiliser settings
- Input in the **residual quantity** input field,
- application rate,
- working width.

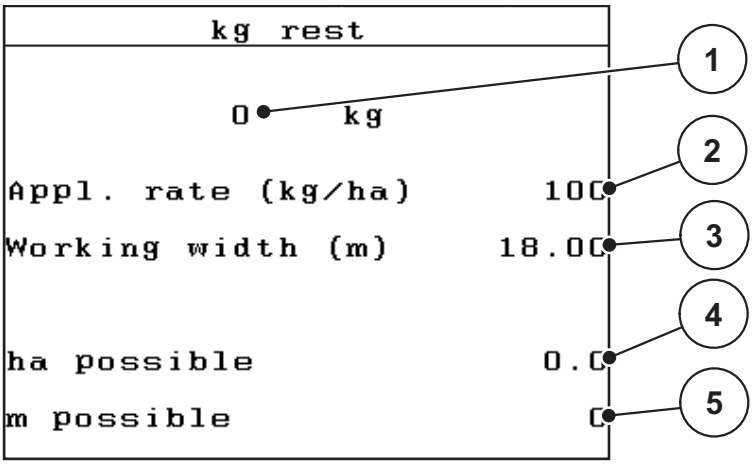


Figure 4.4: Rest (kg, ha, m) menu

[1] Residual quantity input field
[2] Application rate (display field from fertiliser settings)
[3] Working width (display field from fertiliser settings)
[4] Display of possible area that can be spread with the residual quantity
[5] Display of possible distance that can be spread with the residual quantity

Entering the residual quantity when refilling:

1. Open the **Weighing/Trip counter > Rest (kg, ha, m)** menu.
   ▷ The residual quantity from the last spreading process is displayed.
2. Fill the hopper.
3. Enter the new total weight of the fertiliser in the hopper.
   See also chapter 4.13.2: Entering values with the cursor keys, page 79.
4. Press the **Enter key**.
   ▷ The device calculates the values for the possible spread area and the possible spread distance.

NOTICE

The application rate and working width values **cannot** be changed in this menu. **These values are for information only.**

5. Press the **kg** key.

▷ **The operating screen is displayed again.**

Calling up the residual quantity during spreading:

During spreading, the residual quantity is continuously recalculated and displayed. Refer to chapter 5: Spreading operation with the QUANTRON-A control unit, page 81

4.3.3 Tare the scales (AXIS with weigh cells only)

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 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 > Zero scales** menu.
2. Press the **Enter key**.

▷ **The weighing value for the empty scale is now set to 0 kg.**

▷ **The Weighing trip counter menu is displayed.**

NOTICE

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

4.4 Main menu

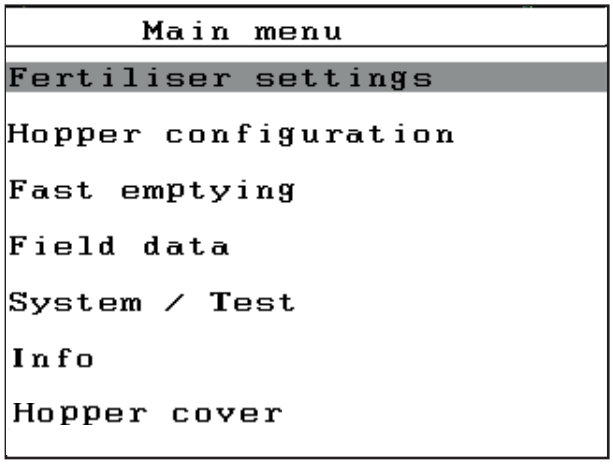


Figure 4.5: Main menu QUANTRON-A

The main menu offers the following sub-menus.

Sub-menu	Meaning	Description
Fertiliser settings	Fertiliser and spreader operation settings.	Page 36
Machine Settings	Tractor and fertiliser spreader settings.	Page 52
Fast emptying	Direct access to the menu for a fast emptying of the fertiliser spreader.	Page 59
Field data	Opens the menus for selecting, creating or deleting field data.	Page 61
System / Test	Settings and diagnosis of the control unit.	Page 66
Information	Display of machine configuration.	Page 74
Hopper cover	**AXIS only:** Opening/closing the hopper cover (optional equipment)	Page 75

4.5 Fertiliser settings in the Easy mode

The mode settings are described in section 4.10.3: Mode, page 70.

In this menu, the fertiliser and spreading operation settings are implemented.

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

NOTICE

The **Fertiliser settings** menu is different for the AXIS and MDS fertiliser spreader.

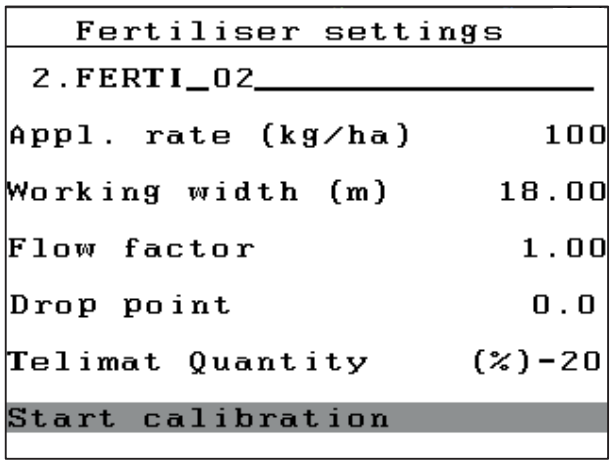


Figure 4.6: AXIS fertiliser settings menu, Easy mode

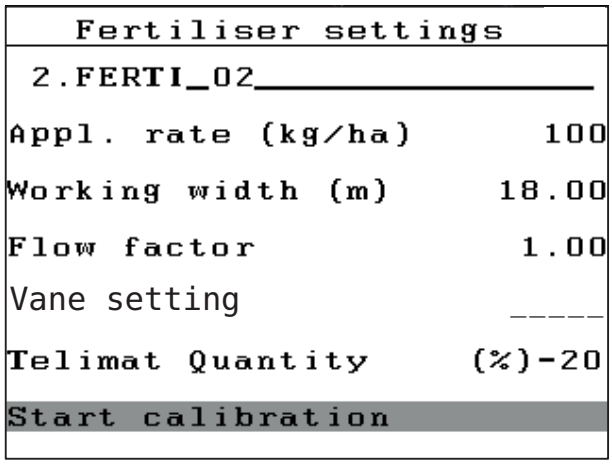


Figure 4.7: MDS fertiliser settings menu, Easy mode

Sub-menu	Meaning/possible values	Description
Fertiliser name	Selected fertiliser.	
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha.	Page 39
Working width (m)	Determination of the working width to be spread.	Page 39
Flow factor	Input of flow factor of the fertiliser used	Page 39
Drop point **(AXIS only)**	Drop point input. This display is for information only. **For AXIS with electrical drop point actuators**: Drop point adjustment.	Observe the operating instructions for the fertiliser spreader
Vane settings **(MDS only)**	Input of spreader vane settings. The display is for information only.	Observe the operating instructions for the fertiliser spreader
TELIMAT Quantity	Quantity reduction pre-setting for boundary spreading.	For fertiliser spreaders with TELIMAT only.
Start calibration	Open the sub-menu to execute the calibration.	Page 42

4.6 Fertiliser settings in Expert mode

The mode settings are described in section 4.10.3: Mode, page 70.

In this menu, the fertiliser and spreading operation settings are implemented. In comparison to the Easy mode, this menu contains further setting pages as well as the fertiliser chart.

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

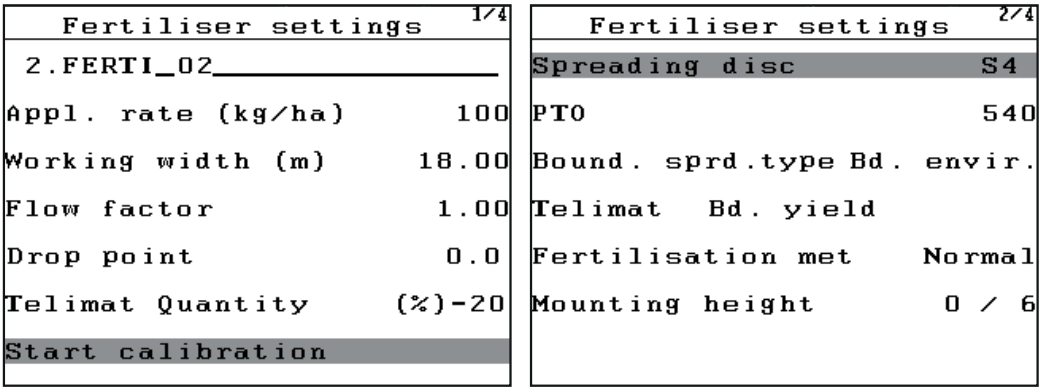


Figure 4.8: AXIS fertiliser settings menu, page 1 and 2

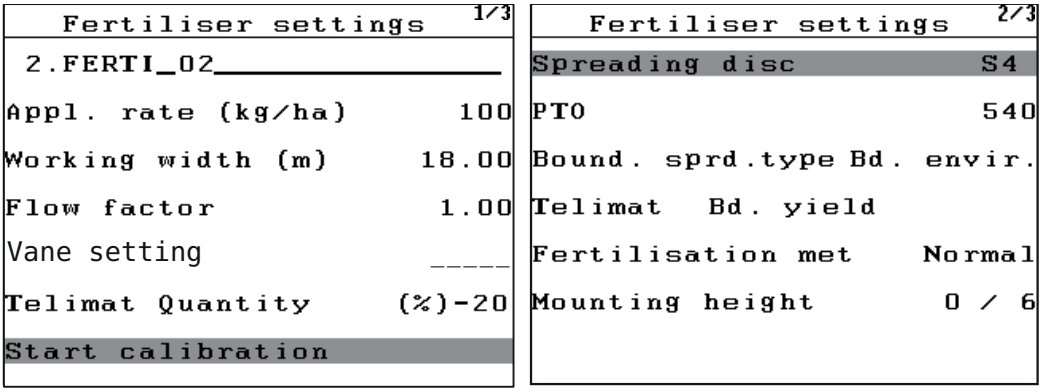


Figure 4.9: MDS fertiliser settings menu, page 1 and 2

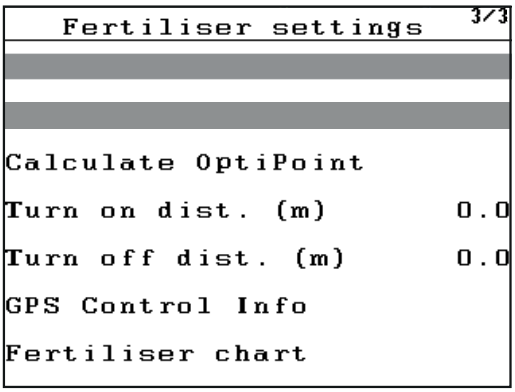


Figure 4.10: Fertiliser settings menu, page 3 (AXIS/MDS)

The main menu offers the following sub-menus.

NOTICE

A page 4 (VariSpread calculation) appears additionally with the AXIS with section function.

- See “VariSpread calculation (AXIS only)“ on page 50.

Sub-menu	Meaning/possible values	Description
Fertiliser name	Fertiliser selected from the fertiliser chart.	Page 48
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha.	Page 39
Working width (m)	Determination of the working width to be spread.	Page 39
Flow factor	Input of flow factor of the fertiliser used.	Page 39
Drop point **(AXIS only)**	Drop point input. This display is for information only. **For AXIS with electrical drop point actuators**: Drop point adjustment.	Observe the operating instructions for the fertiliser spreader
Vane settings **(MDS only)**	Input of spreader vane settings. The display is for information only.	Observe the operating instructions for the fertiliser spreader
TELIMAT quantity	Quantity reduction pre-setting for boundary spreading.	Page 41
Starting the calibration	Open the sub-menu to execute the calibration.	Page 42
Disc type **AXIS**	Selection list: ● S2 ● S4 ● S6 ● S8	Selection with **Arrow keys** Confirmation with the **Enter key**
Disc type **MDS**	Selection list: ● M1C ● M1XC	Selection with **Arrow keys** Confirmation with the **Enter key**
PTO	Factory setting: 540 rpm	

Sub-menu	Meaning/possible values	Description
Boundary spreading type	Selection list: ● Boundary ● Border	Selection with **Arrow keys** Confirmation with the **Enter key**
TELIMAT boundary	Saving the TELIMAT settings for boundary fertilisation.	For fertiliser spreaders with TELIMAT sensor only.
Fertilisation method	Selection list: ● Normal ● Late	Selection with **Arrow keys** Confirmation with the **Enter key**
Mounting height	Input in cm, Selection list: 0/6, 40/40, 50/50, 60/60, 70/70, 70/76	Selection with **Arrow keys** Confirmation with the **Enter key**
Manufacturer	Entering the manufacturer of the fertiliser.	
Composition	Percentage content of chemical composition.	
Calculation of OptiPoint	Input of the GPS control parameters	Page 45
Switch on distance (m)	Switch on distance display	Page 87
Switch off distance (m)	Switch off distance display	Page 88
GPS control information	Display of information of the GPS control parameters.	Page 47
Fertiliser chart	Management of fertiliser charts.	Page 48
VariSpread calculation	**AXIS only: Page 4 of the fertiliser settings menu** Calculation of values for adjustable sections	Page 50

4.6.1 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 > Application rate (kg/ha)** menu.
   ▷ The **currently applied** application rate is displayed.
2. Enter the new value in the input field.
   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.
3. Press the **Enter key**.

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

4.6.2 Working width

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

1. Open the **Fertiliser settings > Working width (m)** menu.
   ▷ The **currently applied** working width is displayed.
2. Enter the new value in the input field.
   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.
3. Press the **Enter key**.

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

4.6.3 Flow factor

The flow factor is within the range of **0.4** to **1.9**. The following applies under the same basic conditions (km/h/, working width, kg/ha):

- If the flow factor is **raised**, the dosing quantity is **reduced**.
- If the flow factor is **reduced**, the dosing quantity is **raised**.

If the flow factor is known from earlier calibrations or from the fertiliser chart, it can be entered **manually** in this menu.

NOTICE

Via the Calibration menu, the flow factor can be determined and entered by means of the QUANTRON-A. Refer to chapter 4.6.6: Calibration, page 42

NOTICE

The flow factor calculation depends on the operating mode used. For further information about the flow factor, refer to chapter 4.7.2: AUTO/MAN mode, page 56.

Entering the flow factor:

1. Open the **Fertiliser settings > Flow factor** menu.
   ▷ The **currently set** flow factor is displayed.
2. Enter the new value in the input field.
   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.

NOTICE

If the fertiliser is not listed in the fertiliser chart, a flow factor of **1.00** is to be entered.

In the **AUTO km/h** and **MAN km/h** operating modes, it is highly recommended to carry out a **calibration test** in order to be able to accurately determine the flow factor for this fertiliser.

3. Press the **Enter key**.

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

4.6.4 Drop point

NOTICE

Entering the drop point with the **AXIS-M Q** 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.

   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.
4. Press the **Enter key**.

▷ **The Fertiliser settings window with the new drop point is displayed.**

4.6.5 TELIMAT Quantity

In this menu, the TELIMAT quantity reduction can be set (in percent). This setting is used for the activation of the boundary spreading function via the TELIMAT sensor or the **T key**.

NOTICE

It is recommended to reduce the application rate at the boundary spreading side by 20 %.

Entering the TELIMAT rate:

1. Open the **Fertiliser settings > TELIMAT Quantity** menu.
2. Enter the value in the input field.

   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79
3. Press the **Enter key**.

▷ **The fertiliser settings window with the new TELIMAT quantity is displayed.**

4.6.6 Calibration

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

Carry out calibration:

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

The calibration test must be carried out with engaged PTO at a standstill or during travel over a test section.

- Remove both spreading discs.
- Set the drop point to calibration position (AGP 0).

Entering the working speed:

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

   This value is required for calculating the slide position during the calibration.
3. Press the **Enter key**.
   - ▷ The new value is saved in the control unit.
   - ▷ The **Approach drop point** alarm message (**AXIS only**) appears in the display.

⚠ CAUTION

Risk of injury due to automatic drop point adjustment

With machines equipped with electrical drop point actuators, the **Approach drop point** alarm message appears. Upon actuation of the **Start/Stop** function key, the drop point automatically moves to the pre-set value by means of the electrical actuating cylinders. This may cause injury and material damage.

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

4. Press the **Start/Stop** key.
   - ▷ The drop point is activated.
   - ▷ The alarm is cleared.
   - ▷ The **Prepare calibration** operating screen is displayed.

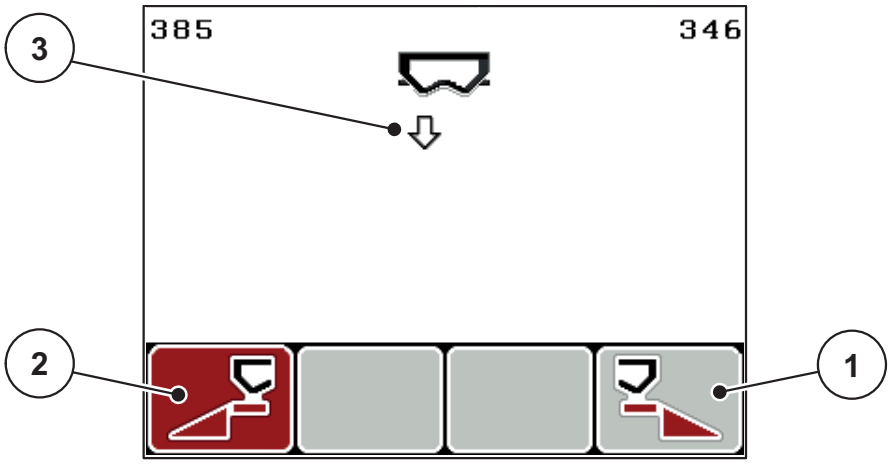


Figure 4.11: Prepare calibration operating screen

[1] Symbol above function key F4 to select right spreading side
[2] Symbol above function key F1 to select left spreading side
[3] Display of section

Selecting the section:

5. Determine the spreading side on which you wish to conduct the calibration.

- Press the **F1** function key to select **left** spreading side.
- Press the **F4** function key to select **right** spreading side.

▷ **The symbol indicating the selected spreading side has a red background.**

Running the calibration test:

⚠ WARNING

Risk of injury during calibration

Rotating machine components and ejected fertiliser may cause injury.

▶ **Before starting** the calibration, it is to be ensured that all preconditions have been met.
▶ Observe the **calibration** chapter in the operating manual of the machine.

6. Press the **Start/Stop** key.

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

▷ The **Run calibration** operating screen is displayed.

NOTICE

The calibration can be stopped at any time by pressing the **ESC key**. The metering slide is closed and the **Fertiliser settings** menu is displayed.

NOTICE

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

7. Press the **Start/Stop** key once more.
   - ▷ The calibration is finished.
   - ▷ The metering slide will be closed.
   - ▷ The display shows the **Input collected weight** menu.

New calculation of the flow factor

⚠ WARNING

Risk of injury due to rotating machine components.

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

- ▶ Switch the tractor motor off.
- ▶ Switch off the PTO and secure it against unauthorised activation.

8. Weigh calibrated quantity (taking into account the empty weight of the collecting vessel).
9. Input collected weight.

   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.
10. Press the **Enter key**.
    - ▷ The new value is saved in the control unit.
    - ▷ The **Flow factor calculation** menu is displayed.

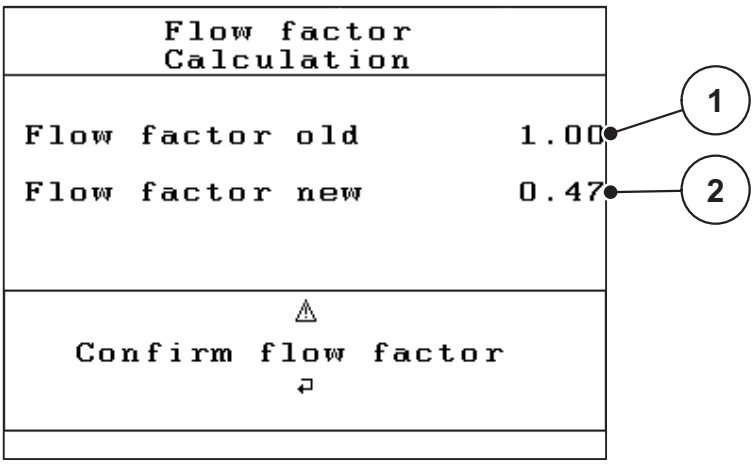


Figure 4.12: Flow factor calculation menu

[1] Display of the previously saved flow factor
[2] Display of the newly calculated flow factor

NOTICE

The flow factor must lie between 0.4 and 1.9.

11. Determine the flow factor.

For taking over the **newly calculated** flow factor, press the **Enter key**.

For confirming the **previously saved** flow factor, press the **ESC key**.

▷ **The flow factor is saved.**

▷ **The Fertiliser settings menu is displayed.**

4.6.7 Calculate OptiPoint

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

1. Open the **Fertiliser settings > Calculate OptiPoint** menu.

▷ The first page of the **Calculate OptiPoint** menu is displayed.

NOTICE

The distance factor for the fertiliser used can be taken from the fertiliser chart of the machine.

2. Enter the distance factor from the fertiliser chart provided.

Please also refer to 4.13.2: Entering values with the cursor keys, page 79.

3. Press the **Enter key**.

▷ The second page of the menu is displayed.

NOTICE

The indicated forward speed refers to the forward speed in the area of the switching positions! Refer to chapter 5.5: GPS-Control, page 85

4. Enter the **Average forward speed** in the range of switching positions.

5. Press **OK**.

6. Press the **Enter key**.

▷ The third page of the menu is displayed.

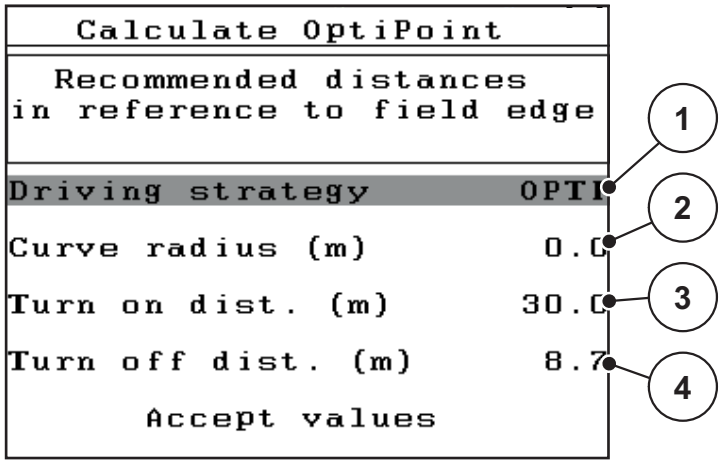


Figure 4.13: Calculate OptiPoint, page 3

Number	Meaning	Description
1	Driving strategy: ● OPTI (OPTIMAL): - The switch off distance is close to the field border; - The tractor makes a turn between the headland track and the field border or outside the field. ● GEOM (GEOMETRICALLY) - The switch-off position is closer to the centre of the field. - **The GEOM option should only be used in special cases!** Contact your dealer.	Page 86
2	The curve radius is used for calculating the switch-off distance for the GEOM driving strategy. With the OPTI driving strategy, leave the curve radius at 0.	With the **OPTI** driving strategy, the entered curve radius **has no influence**
3	Distance (in meters) with reference to the field border at which the metering slides open	Page 87
4	Distance (in meters) in reference to the field border from which the metering slides close.	Page 88

NOTICE

On this page, the parameters can be manually adjusted.
Refer to chapter 5.5: GPS-Control, page 85.

Changing the values

7. Highlight the selected input.
8. Press the **Enter key**.
9. Enter the new values.
10. Press the **Enter key**.
11. Highlight the **Accept values** menu item.
    ▷ The **GPS Control Info** menu is displayed.
12. Press the **Enter key**.

▷ **The OptiPoint has been calculated.**

▷ **The control unit changes to the GPS Control Info window.**

4.6.8 GPS Control info

The **GPS Control Info** menu, provides information on the calculated values set in the **Calculate OptiPoint** menu.

- **Manually** enter the values displayed here in the respective settings menu of the GPS terminal.

NOTICE

This menu is for information purposes only.

- Observe the operating manual of your GPS terminal.

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

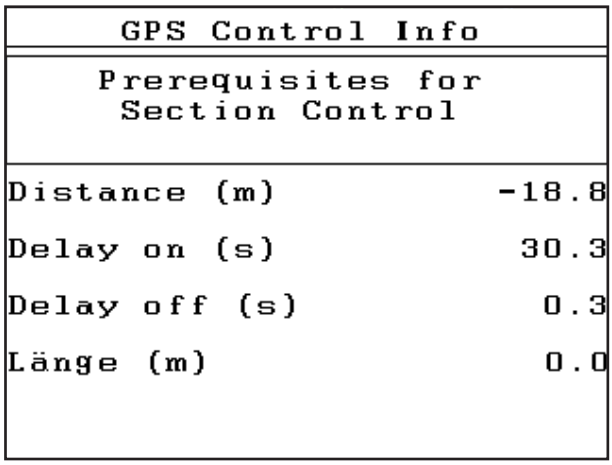


Figure 4.14: GPS Control info menu

4.6.9 Fertiliser chart

In these menus you can create and manage **fertiliser charts** in the Expert mode.

NOTICE

The selection of a fertiliser chart has an effect on the fertiliser settings, the control unit and the mineral fertiliser spreader. The set application rate is overwritten by the stored value from the fertiliser chart.

Creating a new fertiliser chart

You have the option of creating up to **30** fertiliser charts in the control unit.

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

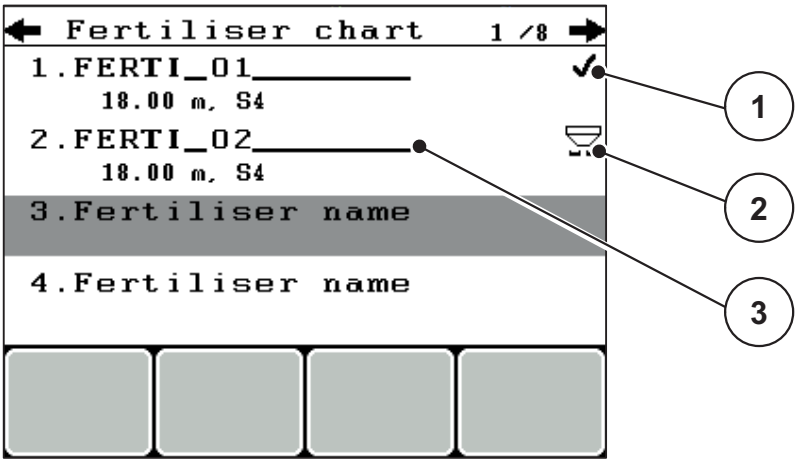


Figure 4.15: Fertiliser chart menu

[1] Display of the fertiliser chart filled with values
[2] Display of the active fertiliser chart
[3] Fertiliser chart name field

2. Highlight the **name field** of an empty fertiliser chart.
3. Press the **Enter key**.
   ▷ The display shows the selection window.
4. Highlight the **Open element...** option.
5. Press the **Enter key**.
   ▷ The **Fertiliser settings** menu is displayed and the selected element is loaded into the fertiliser settings as **Active fertiliser chart**.
6. Highlight the **Fertiliser name** menu item.
7. Press the **Enter key**.
8. Enter the name for the fertiliser chart.

NOTICE

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

9. Edit the parameters of the **fertiliser chart**.

   Refer to chapter 4.6: Fertiliser settings in Expert mode, page 36.

Selecting a fertiliser chart:

1. Open the **Fertiliser settings > Fertiliser chart** menu.
2. Highlight the required fertiliser chart.
3. Press the **Enter key**.
   ▷ The display shows the selection window.
4. Highlight the **Open element...** option.
5. Press the **Enter key**.

▷ **The fertiliser settings menu is displayed and the selected element is loaded into the fertiliser settings as 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 PTO speed.

- **Machine with electrical drop point actuators:** The machine control unit will move the actuators of the drop point to the value stored in the fertiliser chart.

Copying an existing fertiliser chart

1. Highlight the required fertiliser chart.
2. Press the **Enter key**.
   ▷ The display shows the selection window.
3. Highlight the **Copy element** option.
4. Press the **Enter key**.

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

Deleting an existing fertiliser chart

1. Highlight the required fertiliser chart.
2. Press the **Enter key**.
   ▷ The display shows the selection window.
3. Highlight the **Delete element** option.
4. Press the **Enter key**.

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

4.6.10 VariSpread calculation (AXIS only)

The VariSpread section assistant calculates the section steps based on your inputs made on the first pages of the **fertiliser settings**.

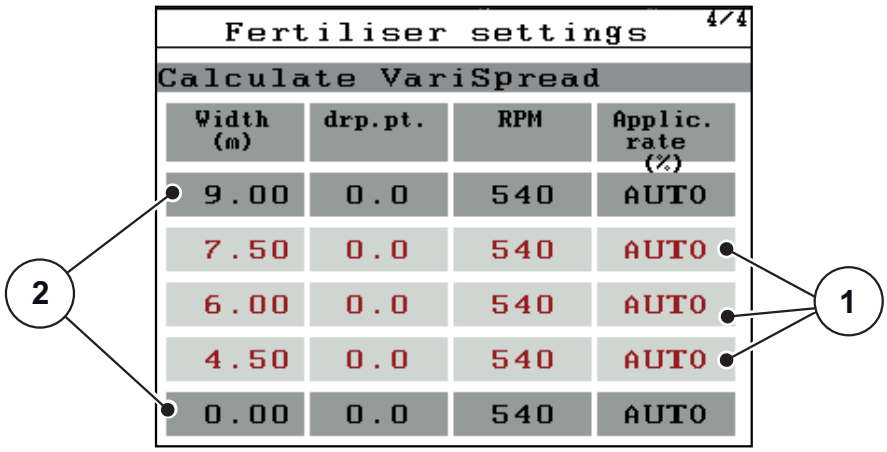


Figure 4.16: VariSpread calculation, example with 8 sections (4 on each side)

[1] Adjustable section settings
[2] Predefined section setting

1. Press the **VariSpread calculation** menu entry.

▷ The machine control unit will calculate the settings values.

▷ The calculated values are filled into the table.

▷ The quantity reduction is set to **AUTO**.

NOTICE

Up to 3 section steps can be set.

- The first line corresponds to the pre-set values from the **Fertiliser settings** menu. These values are fixed and cannot be modified.
- Lines 2 to 4 represent the adjustable section.
- You can adjust the different values in the table according to your requirements.
  - Width (m): Spreading width referring to one spreading side,
  - Drop point: Drop point at reduced speed,
  - Application (%): Shortage quantity as percentage reduction of the set application rate.

NOTICE

The quantity adjustment of 0% automatically corresponds to the quantity required in the case of the reduced working width and should not be changed!

- The last line corresponds to the closed position of the sections. No fertiliser is spread.

Adjustment of section values

- Requirements: The VariSpread calculation menu item is highlighted.

1. Press the arrow down key.
   ▷ The input field for the first value in the chart is highlighted.
2. Use the **arrow up / arrow down** keys to enter the value.
3. Use the **arrow right** key to change over to the subsequent number to be modified.
4. Press the **Enter key**.
   ▷ The value is stored.
5. Use the **arrow right** key to change over to the subsequent input field to be modified.
6. Adjust the values to your requirements.
   Please also refer to “Entering values with the cursor keys“ on page 79.
7. Check the values in the table.

NOTICE

- Press the **Calculate VariSpread** item if you wish to reset the adjusted values to the automatically calculated values.
- Use the **Arrow left** key to navigate upwards through the chart up to the **VarisSpread calculation** item.

NOTICE

If you adjust the working width, the drop point or the PTO speed in the **Fertiliser settings** menu, the VariSpread calculation will be implemented automatically in the background.

4.7 Machine settings

You can adjust the settings for the tractor and machine in this menu.

- Open the **Machine settings** menu.

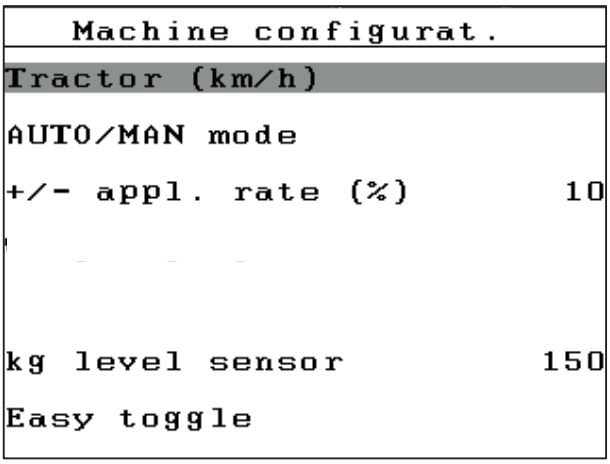


Figure 4.17: Machine configuration menu

Sub-menu	Meaning	Description
Tractor (km/h)	Determining or calibrating the speed signal.	Page 53
AUTO / MAN mode	Determining the automatic or manual operating mode.	Page 56
+/- application rate	Pre-setting the quantity reduction for the different spreading types.	Page 57
Kg level sensor	Input of the residual quantity to trigger an alarm message via the weigh cells.	
Easy toggle	**For AXIS only:** Restricts the L%/R% toggle key to two conditions	Page 58

4.7.1 Forward speed calibration

Forward speed calibration is a basic requirement for an exact spreading result. Factors such as tyre size, a different tractor, all-wheel drive, 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 100m 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.
- Switch on four-wheel drive.
- Fill only half of the machine, if possible.

Opening the speed settings:

In the QUANTRON-A control unit, up to **4 different profiles** for the type and number of pulses can be saved. You can assign names to these profiles (e.g. tractor name).

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

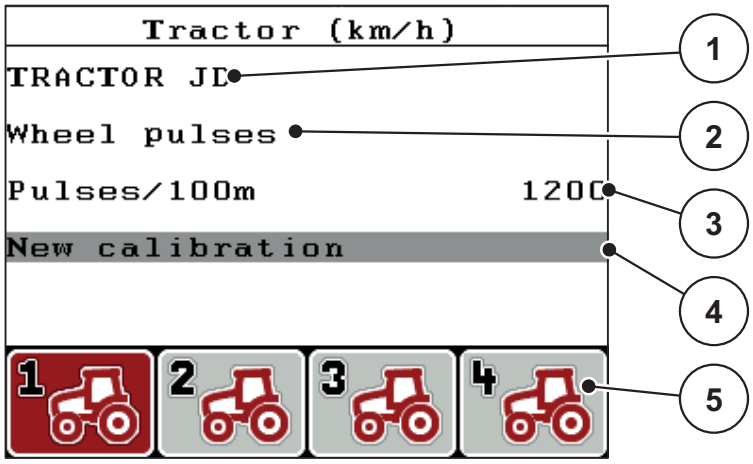


Figure 4.18: Tractor calibration menu

[1] Tractor type
[2] Transducer display for the speed signal
[3] Display of number of pulses over 100m
[4] Calibrate tractor sub-menu
[5] Symbols for saving locations of profiles 1 to 4

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

   The displayed values for name, origin and number of pulses refer to the profile highlighted in black.

2. Press the function key (**F1-F4**) under the memory location symbol.

Recalibrating the forward speed signal:

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

1. Select the desired memory location in the **Tractor calibration** menu using the function key below.
2. Select the **New calibration** field.
3. Press the **Enter key**.

▷ **The display shows the Tractor (km/h)** calibration menu.

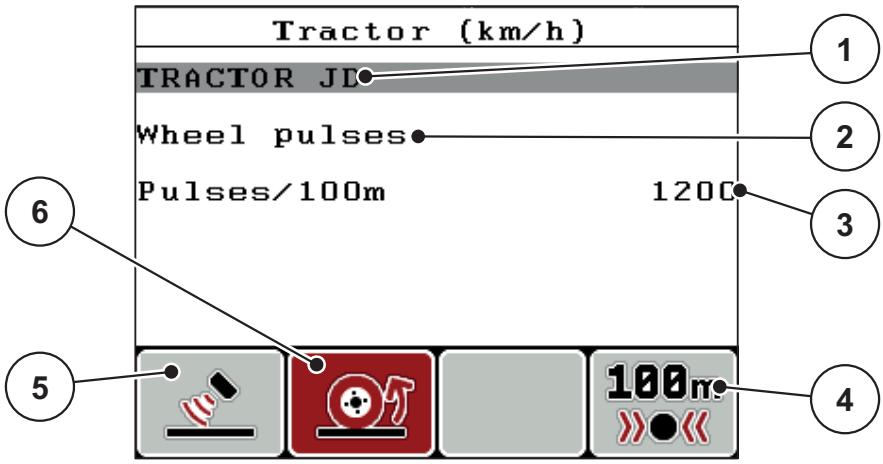


Figure 4.19: Tractor (km/h) calibration menu

[1] Tractor name field
[2] Display of origin of speed signal
[3] Display of number of pulses over 100m
[4] Automatic calibration sub-menu
[5] Radar pulse transducer
[6] Wheel pulse transducer

4. Highlight the **Tractor name field**.
5. Press the **Enter key**.
6. Input the name of the profile.

NOTICE

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

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

Entering text into the control unit is described in section 4.13.1: Text input, page 77.

7. Select the pulse transducer for the forward speed signal.
   - For **Radar pulses** press the **F1** function key.
   - For **Wheel pulses** press the **F2** function key.

▷ **The display shows the pulse transducer.**

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:

8. Call up the **Tractor (km/h) > New calibration > Imp/100m** menu item.

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

Entering values into the control unit is described in section 4.13.2: Entering values with the cursor keys, page 79 .

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

9. Press the **F4 (100 m AUTO)** function key.

▷ The calibration run operating screen is shown in the display.

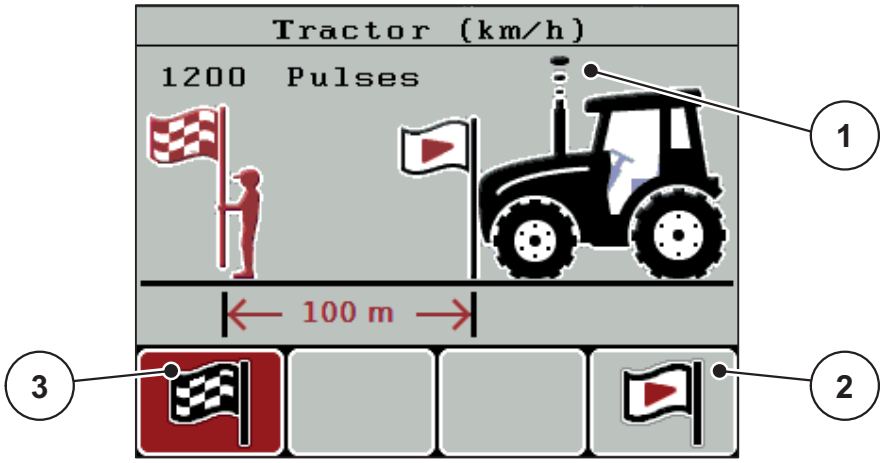


Figure 4.20: Calibration run speed signal operating screen

[1] Pulse display
[2] Start recording pulses
[3] Stop recording pulses

10. Press the **F4** function key at the starting position of the reference distance.

▷ The pulse display is now on zero.

▷ The control unit is ready for counting pulses.

11. Drive along the 100m long reference distance.

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

13. Press the **F1** function key.

▷ The display shows the number of received pulses.

14. Press the **Enter key**.

▷ **The new pulse count is saved.**

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

4.7.2 AUTO/MAN mode

The default operating mode is **AUTO**. The control unit automatically controls the actuators based on the speed signal.

The **manual** mode is only applied in the following cases:

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

NOTICE

For a regular spreading of the spreading material, it is imperative to work with a **constant forward speed** in manual operating mode.

Menu	Meaning	Description
AUTO km/h	Selection of automatic mode	Page 82
MAN scale	Metering slide adjustment for manual mode	Page 84
MAN km/h	Adjustment of forward speed for manual mode	Page 83

Selecting the operating mode

1. Switch on the control unit QUANTRON-A.
2. Open the **Machine configuration > AUTO/MAN mode** menu.
3. Highlight the desired menu item.
4. Press the **Enter key**.
5. Follow the instructions on screen.

- Important information on the use of operating modes for spreading is provided in chapter 5: Spreading operation with the QUANTRON-A control unit, page 81.

NOTICE

The specified operating mode is displayed in the operating screen.

4.7.3 +/- application rate (%)

In this menu, an **Application rate adjustment** percentage for standard spreading can be specified.

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

NOTICE

During operation, you can use the **F2/F3** function keys to change the application rate by the factor of **+/- application rate** at any time.

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

Specifying the quantity reduction:

1. Open the **Machine settings > +/- appl. rate (%)** menu.
2. Enter the percentage by which you wish to modify the spreading quantity.

   Refer to chapter 4.13.2: Entering values with the cursor keys, page 79.
3. Press the **Enter key**.

4.7.4 Easy Toggle (AXIS only)

Here, you can limit the toggle function of the **L%/R %** key to 2 conditions of the **F1** to **F4** function keys. By doing so, you can avoid unnecessary toggling action in the operating screen.

1. Highlight the **Easy Toggle** sub-menu
2. Press the **Enter key**.
   - ▷ The display shows a tick.
   - ▷ The option is active.
   - ▷ In the operating screen, the **L%/R%** key may only alternate between the quantity change (L+R) and section management (VariSpread) functions.
3. Press the **Enter key**.
   - ▷ The tick disappears.
   - ▷ You can switch between the 4 different conditions by means of the **L%/R%** key.

Assignment of function keys	Function
	Quantity change on both sides
	Quantity change on the right side **Hidden if the Easy toggle function is active**
	Quantity change on the left side **Hidden if the Easy toggle function is active**
	Increase or reduce sections

4.8 Fast emptying

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

Before storing the machine, it is also recommended to **completely open** the metering slides using the fast emptying function and to switch off the QUANTRON-A in this state. By doing so, you can prevent accumulation of moisture in the hopper.

NOTICE

Before starting the fast emptying process, it has to be ensured that all preconditions have been met. Observe the operating instructions for the fertiliser spreader (emptying of residual quantities).

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

⚠ CAUTION

Risk of injury due to automatic adjustment of the drop point!

With machines equipped with electrical drop point actuators, the **Approach drop point** alarm message appears. Press **Start/Stop** to automatically move the drop point to the preconfigured value by means of the electrical actuating cylinder. This may cause injury and material damage.

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

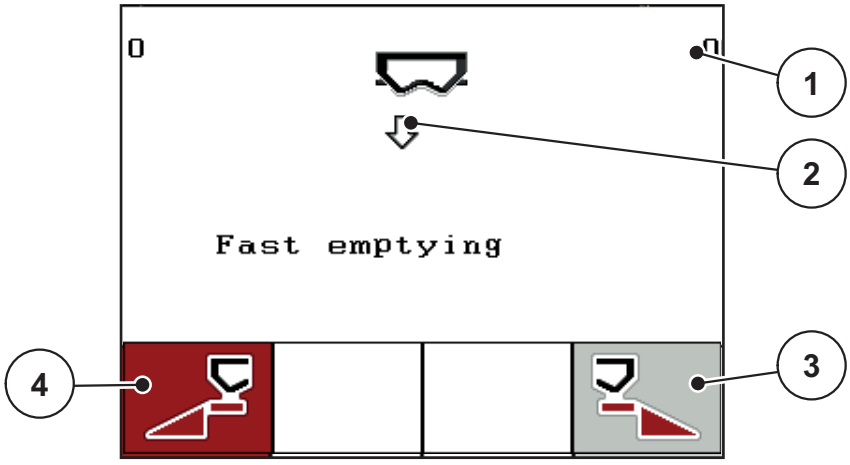


Figure 4.21: Fast emptying menu

[1] Metering slide opening display
[2] Symbol for fast emptying (here: left side selected, but not yet started)
[3] Fast emptying of right side (here: not selected)
[4] Fast emptying of left side (here: selected)

2. Press the **Function key** to select the side for which the fast emptying function is to be carried out.
   ▷ The selected side is shown as an icon in the display.
3. Press the **Start/Stop** key.
   ▷ The fast emptying process starts.
4. Press the **Start/Stop key** again.
   ▷ The fast emptying process is completed.

With machines equipped with electrical drop point actuators, the **Approach drop point** alarm message appears.

5. Actuate the **Start/Stop** key
   ▷ The alarm is acknowledged.
   ▷ The electrical actuators are activated at the pre-set value.
6. Press the **ESC** key to return to the **main menu**.

4.9 Field data

In this menu, you can create and manage up to **200 field data**.

- Open the **Main menu > Field data** menu.

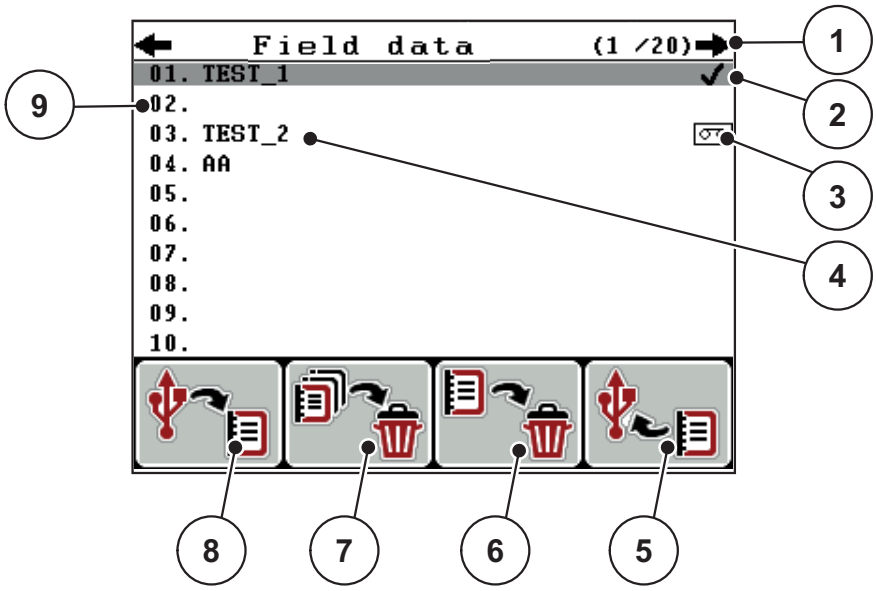


Figure 4.22: Field data menu

[1] Display of page number
[2] Display of filled field data
[3] Display of active field data
[4] Name of field data
[5] F4 function key: Export
[6] F3 function key: Deleting field data
[7] F2 function key: Deleting all field data
[8] F1 function key: Import
[9] Display of memory location

4.9.1 Selecting a field data

You can re-select a previously saved field data and proceed with it. The data already saved in the field data are **not overwritten**, but instead the new values are **added**.

NOTICE

With the **left/right arrow keys** you can jump forward and back through the pages in the **Field data** menu.

1. Select the required field data.
2. Press the **Enter key**.
   ▷ The first page of the current field data is displayed.

4.9.2 Starting the recording

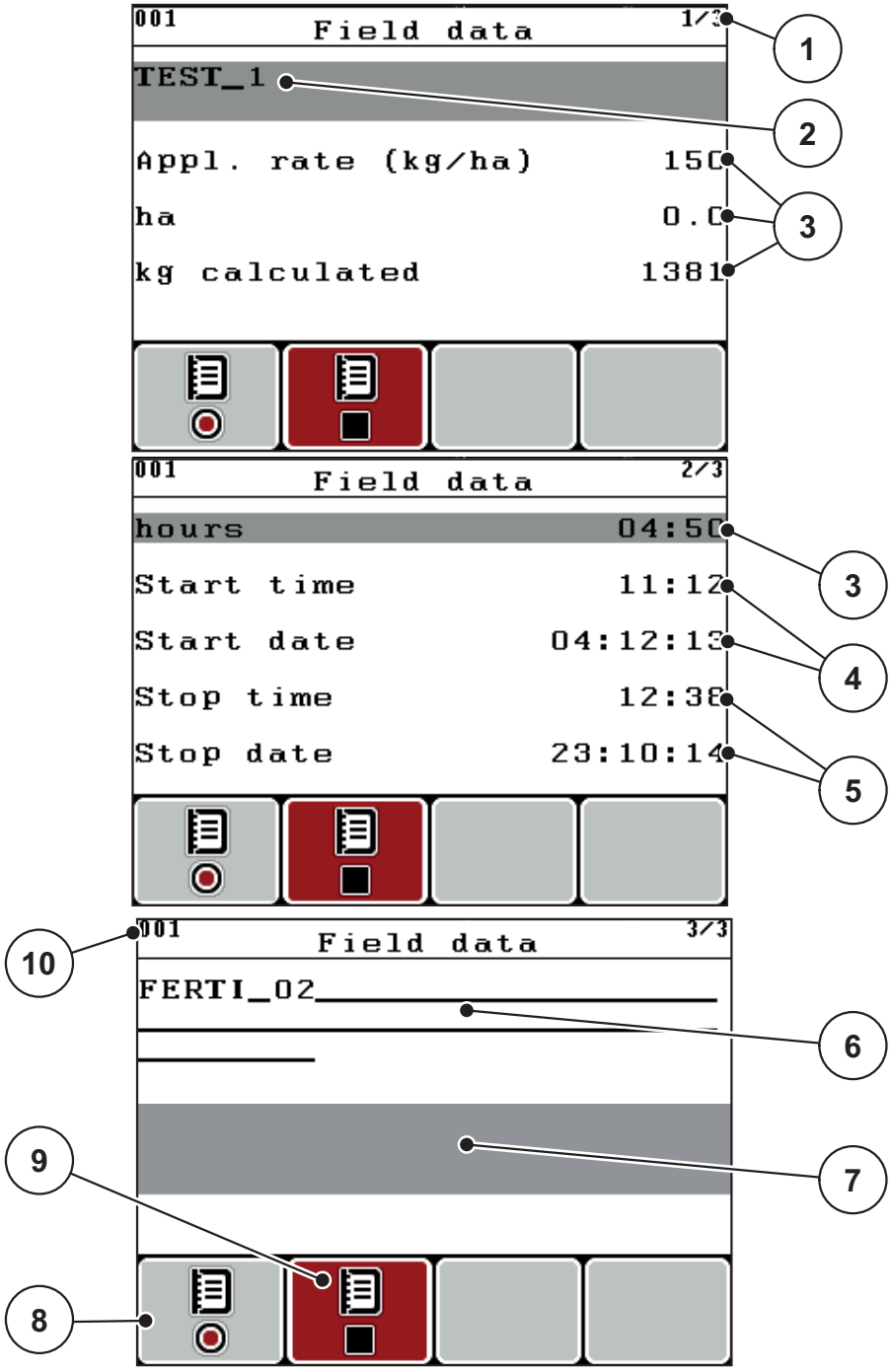


Figure 4.23: Display of current field data

[1] Display of the page number
[2] Name field of field data
[3] Value fields
[4] Display of the start time/date
[5] Display of the stop time/date
[6] Name field of fertiliser
[7] Name field of fertiliser manufacturer
[8] Function key Start
[9] Function key Stop
[10] Display of memory location

3. Press the **F1** function key below the start icon.
   ▷ The recording starts.
   ▷ The **Field data** menu displays the **recording symbol** for the current field data.
   ▷ The **operating screen** displays the **recording symbol**.

NOTICE

If a different field data file is opened, the current field data file is stopped. The active field data file cannot be deleted.

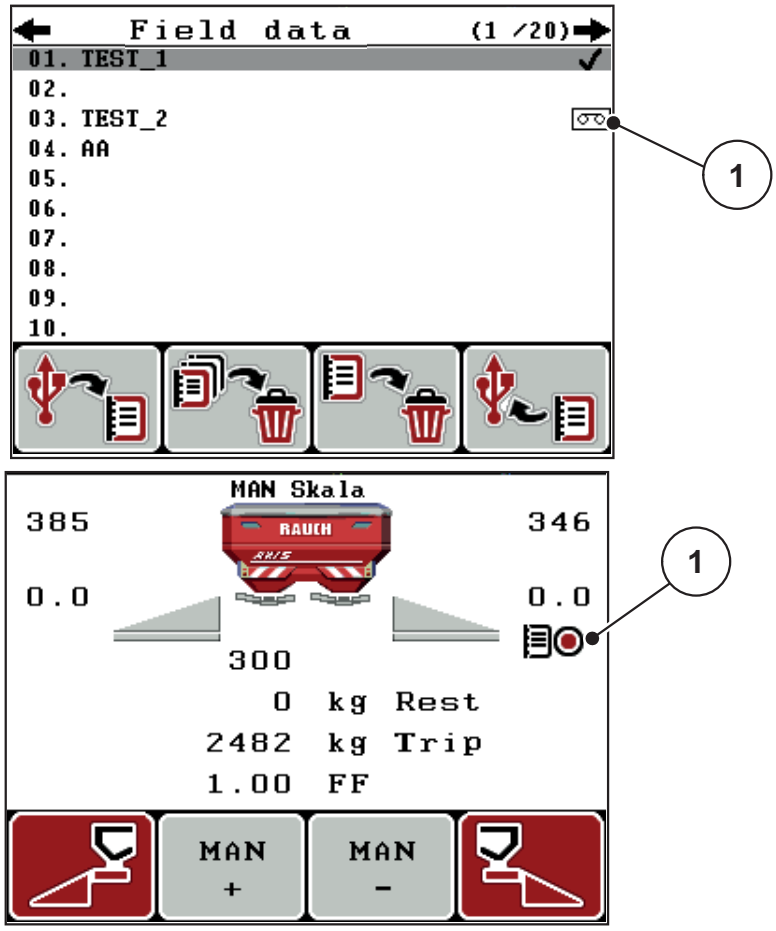


Figure 4.24: Recording symbol display

[1] Recording icon

4.9.3 Stopping the recording

1. In the **Field data** menu, Access the page of the active field data.
2. Press the **F2** function key below the stop icon.
   ▷ Recording is finished.

4.9.4 Importing and exporting field data

The control unit QUANTRON-A allows for importing and/or exporting the recorded field data.

Importing field data (PC to QUANTRON-A)

Requirements:

- Use the USB stick supplied.
- **Do not** alter the directory structure on the USB stick.
  - The data on the USB stick are available in the following folder: „\\USB-BOX\QuantronE\Schlagdateien\Import“

1. Call up the **Field data** menu.
2. Press **F1** function key (see figure 4.22).
   ▷ Error message no. 7 appears indicating that the current files will be overwritten. See 6.1: Meaning of the alarm messages, page 89.
3. Press the **Start/Stop** key.

NOTICE

You can interrupt the field data import at any time by pressing the **ESC** key!

The consequences of importing field data are as follows

- All field data currently stored in the QUANTRON-A are overwritten.
- If you have defined the application rate on the PC, the application rate is automatically transferred and immediately activated in the **Fertiliser settings** when starting the field data.
- If you enter an application rate outside the range of 10-3000, the value in the **Fertiliser settings** menu is not overwritten.

Exporting field data (QUANTRON-A to PC)

Requirements:

- Use the USB stick supplied.
- **Do not** alter the directory structure on the USB stick.
  - The data on the USB stick are available in the following folder: „\\USB-BOX\QuantronE\Schlagdateien\Export“

1. Call up the **Field data** menu.
2. Press **F4** function key (see figure 4.22).

4.9.5 Deleting field data

The control unit QUANTRON-A allows for deleting the recorded field data.

NOTICE

Only the content of the field data will be deleted, the field data name will still be displayed in the name field!

Deleting field data

1. Call up the **Field data** menu.
2. Select a field data from the list.
3. Press the **F3** function key below the **Delete** icon (see figure 4.22).
   ▷ The selected field data has been deleted.

Deleting all field data

1. Call up the **Field data** menu.
2. Press the **F2** function key below the **Delete all** icon (see figure 4.22).
   ▷ A message appears indicating that all data will be deleted (see 6.1: Meaning of the alarm messages, page 89).
3. Press the **Start/Stop** key.
   ▷ All field data are deleted.

4.10 System/Test

Use this menu for the system and test settings of the control unit.

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

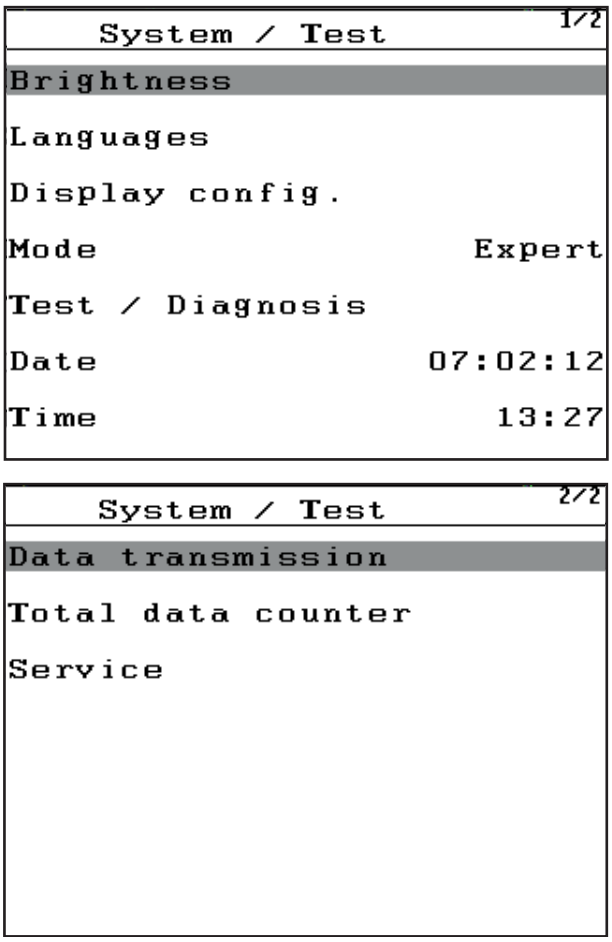


Figure 4.25: System/ Test menu

Sub-menu	Meaning	Description
Brightness	Display settings	The settings can be adjusted with the function keys **+** or **-**.
Languages	Language setting for the menu navigation	Page 68
Display configuration	Determining the displays on the operating screen.	Page 69
Mode	Settings of current mode	Page 70
Test/diagnosis	Check of actuators and sensors	Page 71
Date	Setting the current date.	Selection and modification of the settings by means of the **Arrow keys**, confirmation with the **Enter key**

Sub-menu	Meaning	Description
Time	Setting the current time.	Selection and modification of the settings by means of the **Arrow keys**, confirmation with the **Enter key**
Data transmission	Menu for data exchange and serial protocols	Page 73
Total data counter	Display of total ● spread quantity in kg ● spread area in ha ● spread time in h ● distance travelled in km	
Service	Service settings	Password-protected; only accessible for service personnel

4.10.1 Setting the language

In the QUANTRON-A control unit, **several languages** can be set.

The language package for your country is pre-set at the factory.

1. Open the **System/Test > Languages** menu.
   ▷ The display shows the first of four pages.

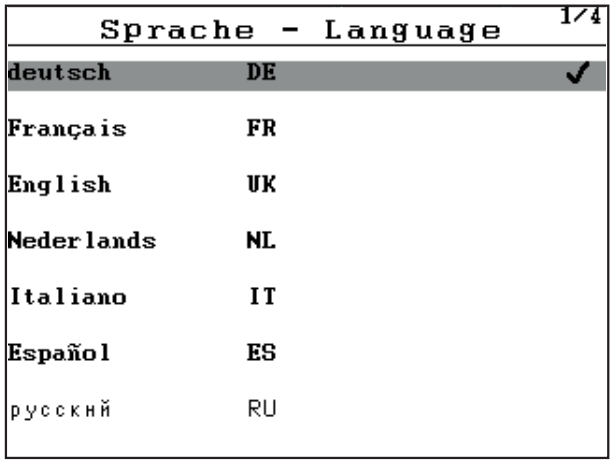


Figure 4.26: Language sub-menu, page 1

2. Select the language for the menus to be displayed.

NOTICE

The languages are listed in several menu windows. The **arrow keys** enable switching to the next or previous windows.

3. Press the **Enter key**.

▷ **The selection is confirmed.**

▷ **The QUANTRON-A control unit restarts automatically.**

▷ **The menus are set to the selected language.**

4.10.2 Display configuration

The display fields in the operating screen of the control unit can be configured as desired. You can assign the three display fields with the following values if desired:

- Forward speed
- Flow factor (FF)
- Time
- ha trip
- kg trip
- m trip
- kg Rest
- m Rest
- ha Rest

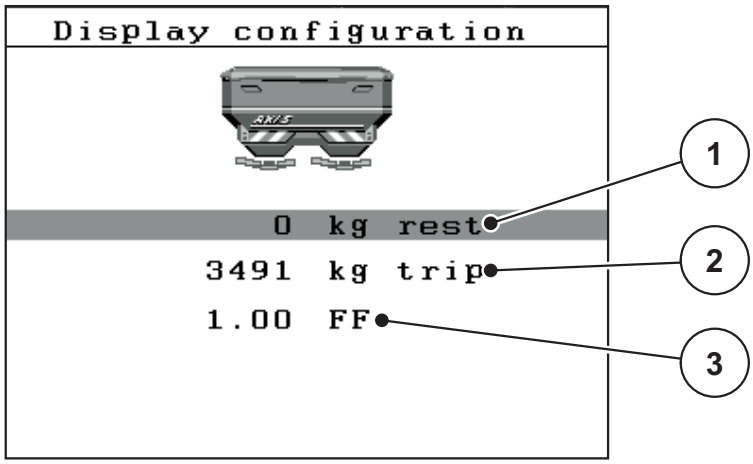


Figure 4.27: Display configuration menu

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

Select display

1. Open the **System/Test > Display configuration** menu.
2. Select the required **display field**.
3. Press the **Enter key**.
   ▷ The possible displays are listed in the display.
4. Highlight the new value which is to be assigned to the display field.
5. Press the **Enter key**.
   ▷ The **operating screen** is displayed. The respective **display field** displays the new value.

4.10.3 Mode

In the QUANTRON-A control unit, **2 different modes** are possible:

The **Easy** mode or the **Expert** mode.

- In the **Easy** mode, only the parameters of the fertiliser settings required for spreading can be accessed: It is not possible to create or manage fertiliser charts.
- In **Expert** mode, all available parameters can be accessed in the Fertiliser settings menu.

Selecting a mode

1. Highlight the **System/Test > Mode** menu entry.
2. Press the **Enter key**.

▷ **The active mode is displayed.**

You can switch between the two modes by pressing the **Enter key**.

4.10.4 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.

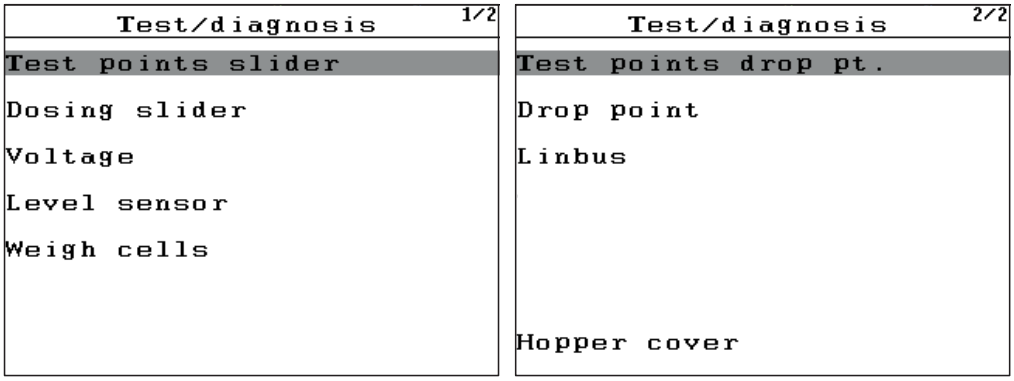


Figure 4.28: Test/Diagnosis menu

Sub-menu	Meaning	Description
Test points slider	Test for approaching the various position points of the slides.	Checking the calibration
Metering slide	Driving the left and right metering slide	Page 72
Voltage	Checking the operating voltage.	
Level sensor	Checking the level sensors	
Weigh cells	Checking the weigh cells.	
TELIMAT sensor	Checking the TELIMAT sensors	
Test points drop point	Test for approaching the various position points of the drop point.	Checking the calibration
Drop point	Approaching the drop point.	
Linbus	Checking the assemblies registered via LINBUS.	
Hopper cover	Checking the actuators.	

Example for metering slide test/diagnosis

⚠ CAUTION

Risk of injury due to moving machine parts.

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

▶ Ensure that nobody is present in the area of the machine before carrying out the tests.

1. Open the **System/Test > Test/Diagnosis** menu.
2. Highlight the **Slide** menu item.
3. Press the **Enter key**.

   ▷ The status of the sensors/actuators is displayed.

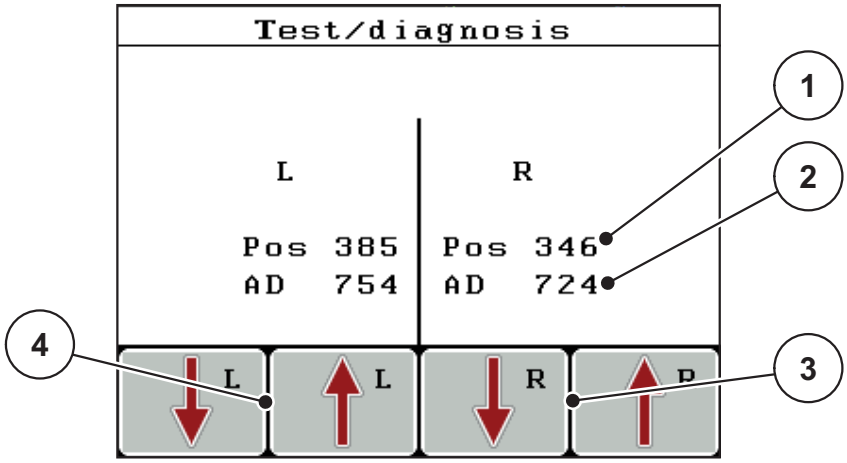


Figure 4.29: Test/diagnosis, example: Slide

[1] Position display
[2] Signal display
[3] Function keys for right actuator
[4] Function keys for left actuator

The status of the signal for the left and right hand side is displayed separately by means of the **Signal** display.

The actuators can be extended and retracted by pressing the **F1 - F4** function keys.

4.10.5 Data transmission

Data transmission is carried out using various data protocols.

Sub-menu	Meaning
ASD	Automatic field documentation; transmission of field data to a PDA and/or Pocket PC via Bluetooth
LH5000	Serial communication e.g. spreading using application cards
GPS Control	Protocol for the automatic section control with an external terminal
VRA GPS control	VRA Variable Rate Application Protocol for the automatic transmission of the target application rate
TUVR	Protocol for automatic section control and application rate adjustment for specific sub-areas with an external Trimble Terminal
GPS km/h	**Only possible with TUVR protocol and Trimble Terminal**. ● Can be activated/deactivated If activated, the speed signal of the GPS device is used as signal source for the **AUTO km/h** operating mode. **1.** Mark menu item with bar. **2.** Press the Enter key. ▷ A check mark appears on screen. ▷ **GPS km/h is active.** ▷ **The speed signal of the GPS device is used as signal source for the AUTO km/h operating mode.**

4.10.6 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 information purposes only.

4.10.7 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.

As a general rule, we recommend that all settings in this menu are carried out by authorized service personnel.

4.11 Information

Information on the machine control can be obtained from the Info menu.

NOTICE

This menu provides information on the configuration of the machine.

The information list depends on the equipment of the machine.

4.12 Hopper cover (AXIS only, optional equipment)

⚠ 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-H EMC is equipped with an electrically operated 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 actuators.

NOTICE

The menu is used for activating the actuators for opening and/or closing the hopper cover exclusively. The QUANTRON-E2 control unit does not detect the exact position of the hopper cover.

- Observe the movements of the hopper cover.

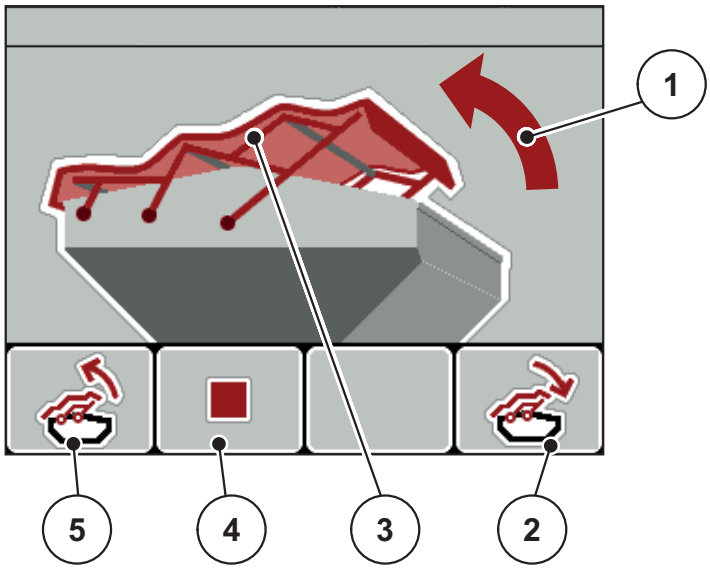


Figure 4.30: Hopper cover menu

[1] Display of opening process
[2] F4 function key: Close hopper cover
[3] Static display of hopper cover
[4] F2 function key: Stop process
[5] F1 function key: Open 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 rods of the hopper cover may be damaged and the hopper cover may damage the environment.

▶ Ensure that a sufficient clearance above the hopper cover is given.

Moving the hopper cover

1. Press the **Menu** button.
2. Open the **Hopper cover** menu.
3. Press the **F1** function key.
   - ▷ During the movement, an arrow appears which indicates the **OPEN** direction.
   - ▷ The hopper cover will open entirely.
4. Fill in the fertiliser.
5. Press the **F4** function key.
   - ▷ During the movement, an arrow appears which indicates the **CLOSED** direction.
   - ▷ The hopper cover will be closed.

If required, you can stop the movement of the hopper cover by pressing the **F2** function key. The hopper cover remains in the intermediate position until you close or open it entirely again.

4.13 Special functions

4.13.1 Text input

In some menus, freely editable text can be entered.

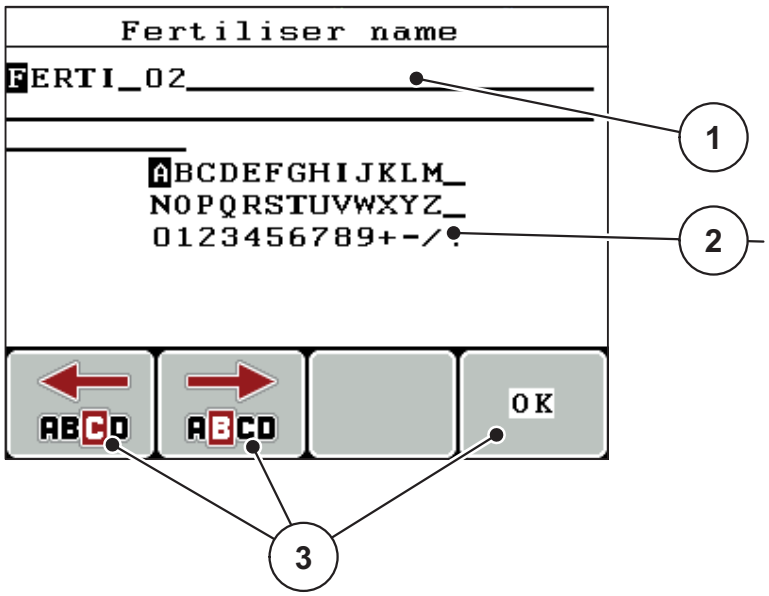


Figure 4.31: Text input menu

[1] Input field
[2] Character field, display of available characters (language-dependent)
[3] Function keys for navigation in the input field

Entering text:

1. Switch from the superordinate menu to the **Text input** menu.
2. Use the **function keys** to move the cursor to the position of the character to be written first in the input field.
3. Use the **arrow keys** to highlight the character to be written in the character field.
4. Press the **Enter key**.
   - ▷ The highlighted character appears in the input field.
   - ▷ The cursor jumps to the next position.

Continue until you have entered the entire text.

5. To **confirm** your input, press the **OK** function key.
   - ▷ The control unit saves the text.
   - ▷ The display shows the previous selection window.

Overwriting characters:

A single character can be overwritten by another character.

1. Use the **function keys** to move the cursor to the position of the character to be deleted first in the input field.
2. Use the **arrow keys** to select the character to be written in the character field.
3. Press the **Enter key**.
   ▷ The character is overwritten.
4. To **confirm** the input, press the **OK** function key.
   ▷ The text will be saved to the control unit.
   ▷ The previous menu is displayed.

NOTICE

Individual characters can only be deleted by replacing them with blank spaces (underline at the end of the first two character lines).

Deleting an input:

The complete input can be deleted.

1. Press the **C 100 % key**.
   ▷ The complete input is deleted.
2. Enter new text, if necessary.
3. Press the **OK** function key.

4.13.2 Entering values with the cursor keys

In some menus, numerical values can be entered.

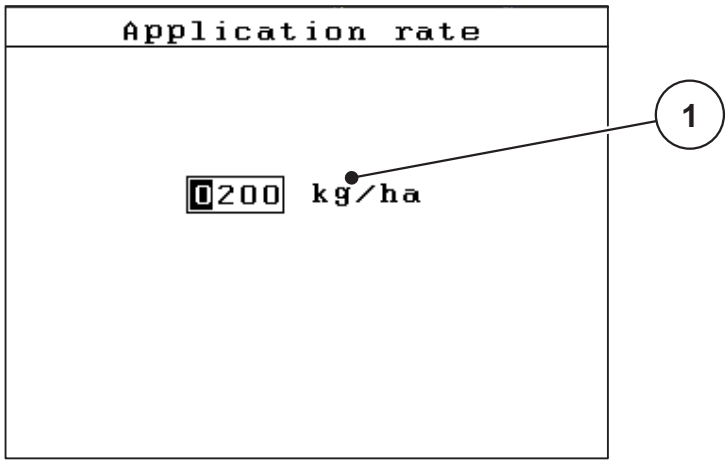


Figure 4.32: Input of numerical value (example application rate)

[1] Input field

Requirements:

You are already in the menu in which you can enter numerical values.

1. Use the **horizontal arrow keys** to move the cursor to the position of the numerical value to be written first in the input field.
2. Use the vertical **arrow keys** to enter the required numerical value.

   Arrow up: Value increases.

   Arrow down: Value decreases.

   Arrow left/right: Cursor moves to the left/right.
3. Press the **Enter key**.

Deleting an input:

The complete input can be deleted.

1. Press the **C 100 %key**.

   ▷ The complete input is deleted.

5 Spreading operation with the QUANTRON-A control unit

The QUANTRON-A control unit supports you with the setting of your machine before you start your work. During spreading, functions of the control unit are also active in the background. With these functions, the quality of the fertiliser spreading can be monitored.

5.1 TELIMAT

NOTICE

The Telimat option is preset for the control unit at the factory!

TELIMAT with hydraulic remote control

The TELIMAT is hydraulically moved to its working or idle position. The TELIMAT can be activated or deactivated by pressing the **T 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. The **T key** has no function for this option.

If the status of the TELIMAT unit cannot be verified for more than 5 seconds, the alarm message 14 will be displayed. Refer to chapter 6: Alarm messages and possible causes, page 89.

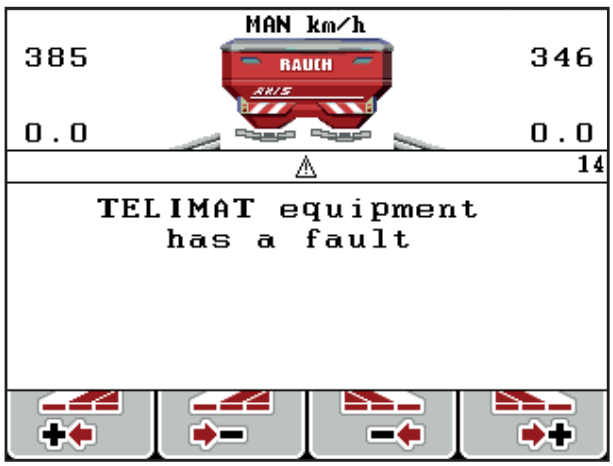


Figure 5.1: TELIMAT alarm message display

5.2 Spreading with AUTO km/h operating mode

In AUTO km/h operating mode, the control unit automatically controls the actuator depending on the speed signal.

1. Configure the fertiliser settings:
   - Application rate (kg/ha)
   - Work width (m)
2. Fill in the fertiliser.

NOTICE

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

3. Carry out calibration for flow factor determination

   or

   Obtain the flow factor from the fertiliser chart.
4. Enter the flow factor manually.
5. Press the **Start/Stop** key.

▷ **The spreading starts.**

5.3 Spreading in the MAN km/h operating mode

If there is no speed signal, the MAN km/h operating mode is active.

1. Switch on the control unit QUANTRON-A.
2. Open the **Machine settings > AUTO/MAN mode** menu.
3. Select the **MAN km/h** menu entry.
4. Enter the forward speed.
5. Press **OK**.
6. Configure the fertiliser settings:
   - Application rate (kg/ha)
   - Work width (m)
7. Fill in the 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.

8. Conducting calibration for flow factor determination

   or

   Obtain the flow factor from the fertiliser chart.
9. Enter the flow factor manually.
10. Press the **Start/Stop** key.

▷ **The spreading starts.**

NOTICE

Always observe the set speed during spreading.

5.4 Spreading in the MAN scale operating mode

The **MAN scale** operating mode enables manual adjustment of the metering slide opening during spreading.

Requirements:

- The metering slides are open (activation with the **Start/Stop key**).
- In the **MAN scale** operating screen, the icons for sections are filled in red.

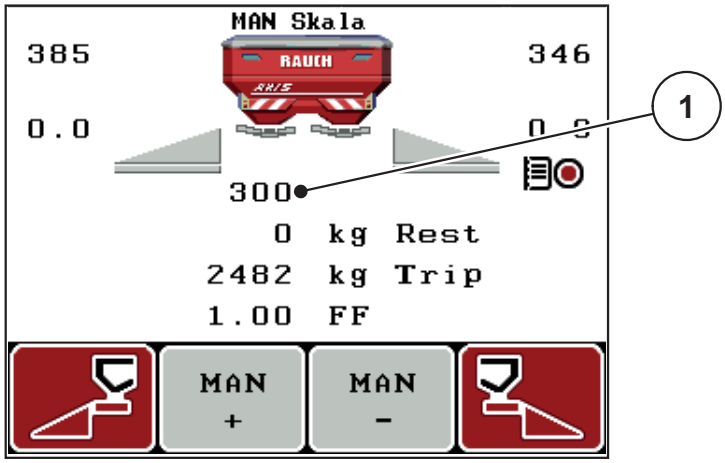


Figure 5.2: MAN scale operating screen

[1] Display of current metering slide scale position

11. To change the dosing slide opening, press the **F2** or **F3** function key.

F2: **MAN+** to increase the metering slide opening or

F3: **MAN-** to reduce the metering slide opening.

NOTICE

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

5.5 GPS-Control

The QUANTRON-A control unit can be combined with GPS-compatible devices. Data is exchanged between both devices for automatic switching.

NOTICE

We recommend using our QUANTRON-Guide control unit in combination with QUANTRON-A.

- Please contact your dealer for further information.
- Observe the operating manual for QUANTRON-Guide.

The **OptiPoint** function from RAUCH calculates the optimal switching-on and switching-off point for spreading in the headline on the basis of the settings in the control unit; see 4.6.7: Calculate OptiPoint, page 45.

NOTICE

To use the GPS-Control functions of QUANTRON-A, the serial communication must be activated via the **GPS-Control** sub-menu point in the **System/Test > Data transmission** menu.

The symbol **A** next to the spreading wedges indicates that the automatic function is enabled. The control unit 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 GPS Control function starts the spreading operation automatically, without warning. Escaping 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 hazard zone during the spreading operation.

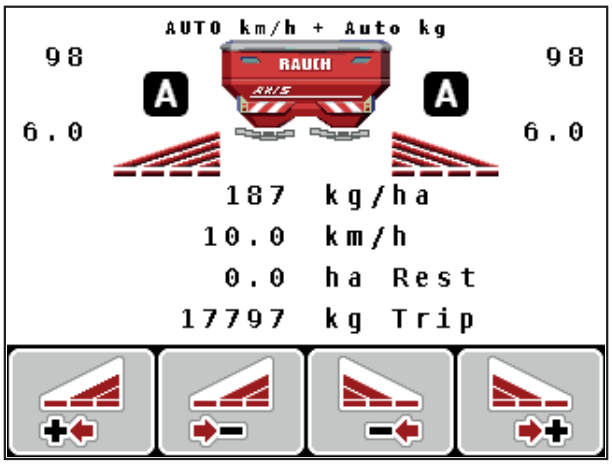


Figure 5.3: Spreading operation display in the operating screen with GPS Control

OPTI driving strategy

The **driving strategy** refers to the position of the switch off distance in relation to the headland tracks. Depending on the type of fertiliser, the ideal switch off distance (Figure 5.4, [B]) may be close to the field border (Figure 5.4, [C]).

In this case, it is no longer possible to turn into the headland track with the tractor and to enter the subsequent field track. The turning procedure must be executed between the headland track and the field border or outside of the field. The fertiliser distribution in the field is ideal.

NOTICE

For the first calculation of OptiPoint, as a rule, select the **OPTI** driving strategy.

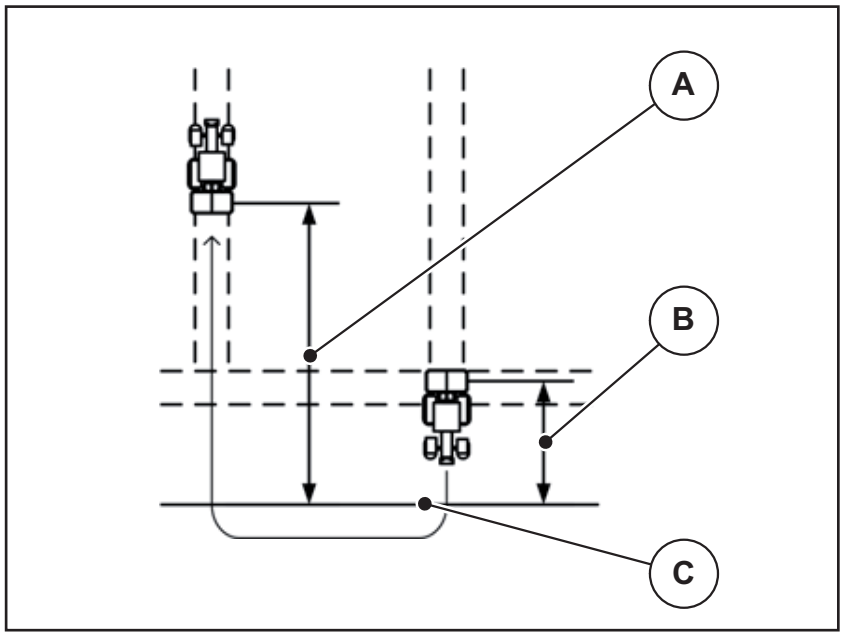


Figure 5.4: OPTI driving strategy

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

Switch on distance (m)

Switch on distance refers to the switch on distance (Figure 5.5 [A]) in relation to the field border (Figure 5.5 [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.

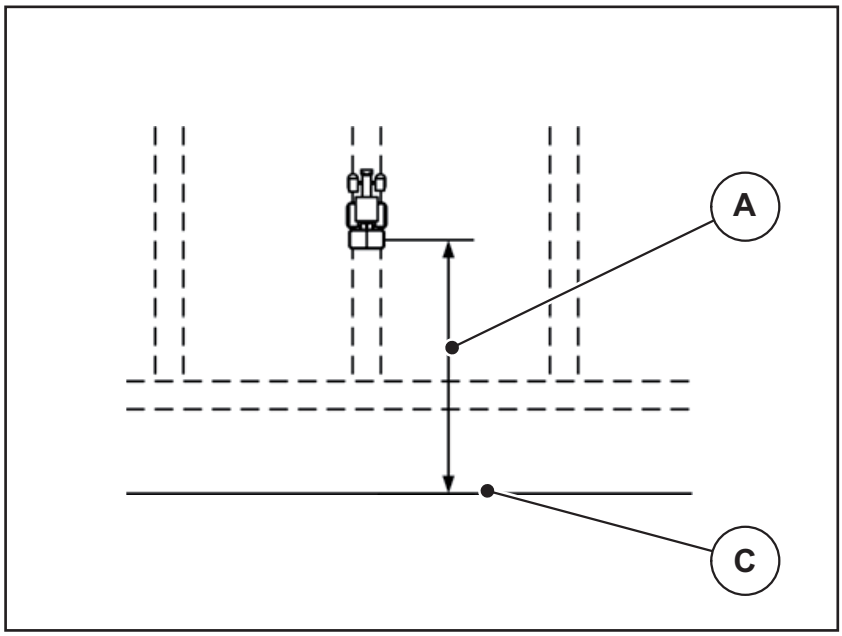


Figure 5.5: Distance on (in relation to field border)

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

If you want to change the switching-on position in the field, you must adjust the **Switch on distance**.

- 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 5.6 [A]) in relation to the field border (Figure 5.6 [C]). At this position in the field, the metering slides start to close.

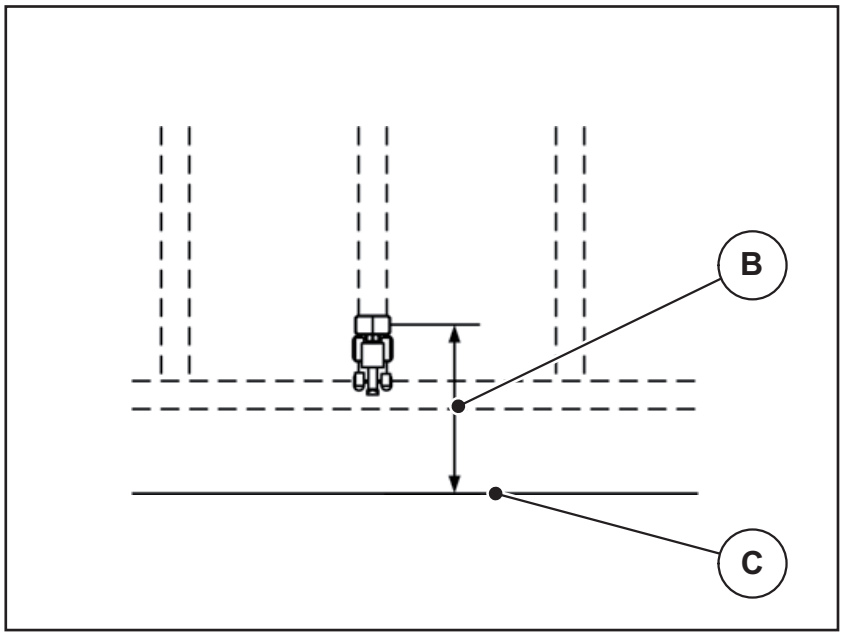


Figure 5.6: Distance off (relating to field border)

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

If the **OPTI driving strategy** is selected, the optimal switch off distance is calculated according to the type of fertiliser in order to guarantee an optimized fertiliser distribution in the field.

To change the switch off position in the field, the **Switch off distance** value has to be adjusted accordingly.

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

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 QUANTRON-A control unit display.

6.1 Meaning of the alarm messages

No.	Message in display	Meaning ● **Possible cause**
1	Fault in dosing system. Stop!	The actuator for the metering system cannot reach the set value it is to be moved to. ● Blockade ● No position feedback
2	Maximum outlet reached! Speed or application rate too high	Metering slide alarm ● The maximum metering opening is reached. ● The set dosing quantity (+/- Quantity) exceeds the maximum metering opening.
3	Flow factor is outside limits.	The flow factor must lie within a range of **0.40 - 1.90**. ● The newly calculated or entered flow factor is outside this range.
4	Hopper left empty.	The left level sensor reports "empty". ● The left hopper is empty.
5	Hopper right empty.	The right level sensor reports "empty". ● The right hopper is empty.
7	Data will be deleted! Delete = START Cancel = ESC	Safety alarm to prevent the unintentional deletion of data.
9	Application rate Min. setting = 10 Max. setting = 3000	Reference to the value range of the **Application rate** ● Entered value is not permitted.
10	Working width Min. setting = 2.00 Max. setting = 50.00	Reference to the value range of the **Working width**. ● Entered value is not permitted.
11	Flow factor Min. setting = 0.40 Max. setting = 1.90	Reference to the value range of the **flow factor**. ● Entered value is not permitted.

No.	Message in display	Meaning ● **Possible cause**
12	Transmission fault. No RS232 connection	An error has occurred during data transmission to the control unit. The data have not been transmitted.
14	Error by setting TELIMAT.	Alarm for the TELIMAT sensor. This error message is displayed if the TELIMAT status cannot be detected for more than 5 seconds.
15	Memory full. Delete one private fertiliser chart.	A maximum of 30 fertiliser charts can be saved. ● No additional saving possible
16	Approach drop point Yes = Start	**For machines with electrical drop point actuators**: Safety request before drop point is approached automatically. ● Drop point can be set in the **Fertiliser settings** menu. ● Fast emptying.
17	Error by setting drop point.	The actuator for the drop point setting cannot reach the set value it is to be moved to. ● Blockade. ● No position feedback.
18	Error by setting drop point.	Actuator overloaded.
19	Defect by setting drop point.	Actuator defective.
20	Error on LIN bus participant: [Name].	Communication problem. ● Remove actuator. ● Cable breakage.
21	Spreader overloaded!	The mineral fertiliser spreader is overloaded. ● Too much fertiliser in the hopper
23	Error by setting TELIMAT	The TELIMAT setting actuator cannot reach the set value it is to be moved to. ● Blockade. ● No position feedback.
24	Error by setting TELIMAT	Actuator overloaded.
25	Defect by setting TELIMAT	Defective TELIMAT actuator.

No.	Message in display	Meaning ● 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. ● Follow the displayed instructions only if all risks have been eliminated.
51	Hopper empty.	The kg level sensor emits an “empty” notification. The entered value is undercut.
52	Error at hopper cover	Actuator overloaded
53	Defect at hopper cover	Defective TELIMAT actuator
54	Change TELIMAT position	The TELIMAT position does not correspond to the condition notified by GPS Control

6.2 Clearing an error/alarm

6.2.1 Acknowledging an alarm message

Alarm messages are highlighted on the display and displayed with a warning symbol.

Figure 6.1: Alarm message (e.g. metering device)

Acknowledging an alarm message:

1. Rectify the cause of the alarm message.

   Observe the operating manual of the fertiliser spreader and section 6.1: Meaning of the alarm messages, page 89.

2. Press the **C/100 %** key.

▷ **The alarm message is cleared.**

7 Special equipment

No.	Illustration	Name
1		Empty signal sensor for AXIS/MDS
2		Forward speed sensor for QUAN-TRON-A
3		Y cable RS232 for data exchange (e. g. GPS, N sensor, etc.)
4		System tractor cable set for QUANTRON-A AXIS 12 m

No.	Illustration	Name
5		GSP cable and receiver
6		TELIMAT sensor AXIS
7		Universal mounting bracket for QUANTRON-A

Index

Terms/conditions of warranty

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

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

- The warranty begins on the date of purchase.
- The warranty covers material and manufacturing faults. Our liability for third-party products (hydraulic system, electronics) is limited to the warranty of the manufacturer of the equipment. During the warranty period, manufacturing and material faults are corrected free of charge by replacement or repair of the affected parts. Other rights extending beyond the above, such as claims for conversion, reduction or replacement for damages that did not occur in the object of supply are explicitly excluded. Warranty services are provided by authorised workshops, by RAUCH factory representatives or the factory.
- The following are excluded from coverage by the warranty: natural wear, dirt, corrosion and all faults caused by improper handing and external causes. The warranty is rendered void if the owner carries out repairs or modifications to the original state of the supplied product. Warranty claims are rendered void if RAUCH original spare parts were not used. Therefore, the directions in the operating manual must be observed. In all cases of doubt contact our sales representatives or the factory directly. Warranty claims must be submitted to the factory by 30 days at the latest after occurrence of the problem. The date of purchase and the serial number must be indicated. If repairs under the warranty are required, they must be carried out by the authorised workshop only after consultation with RAUCH or the company's appointed representatives. The warranty period is not extended by work carried out under warranty. Shipping faults are not factory faults and therefore are not part of the warranty obligation of the manufacturer.
- No claims for compensation for damages that are not part of RAUCH machines themselves will be accepted. This also means that no liability will be accepted for damage resulting from spreading errors. Unauthorised modifications of RAUCH machines may result in consequential damage, for which the manufacturer will not accept any liability. The manufacturer's liability exclusion will not apply in case of wilful intent or gross negligence by the owner or a senior employee, and in cases where – according to the product liability law – there is liability for personal injury or material damage to privately used objects in the event of defects in the supplied product. It will also not apply in the event that assured properties are absent, if the purpose of the assured properties was to protect the purchaser against damage that does not involve the supplied product itself.

RAUCH
POWER FOR PRECISION

RAUCH Landmaschinenfabrik GmbH

Landstraße 14 · D-76545 Sinzheim

Victoria-Boulevard E200 · D-77836 Rheinmünster

Phone +49 (0) 7221/985-0 · Fax +49 (0) 7221/985-200
info@rauch.de · www.rauch.de · wap.rauch.de