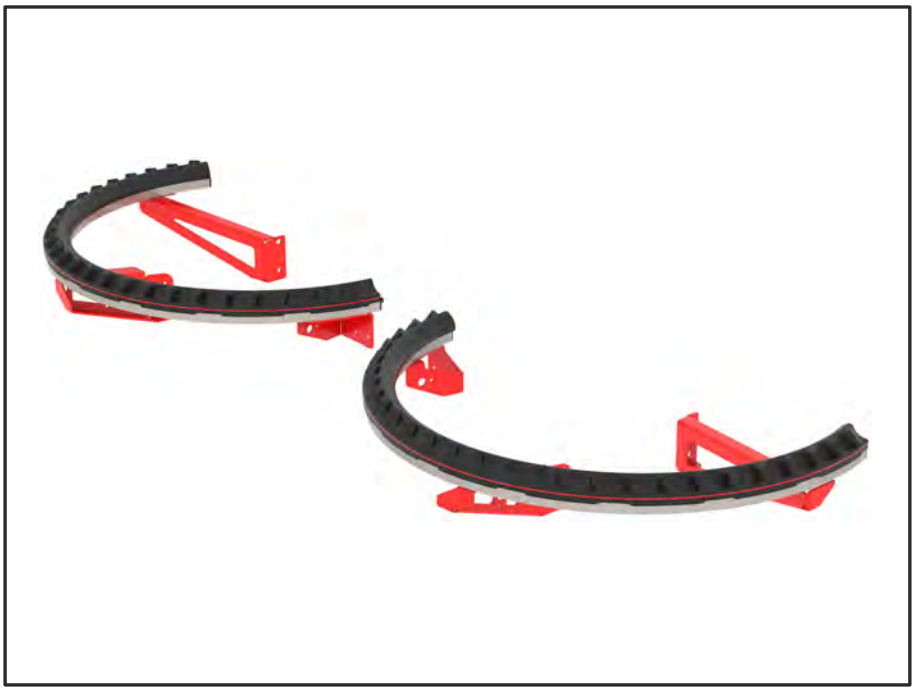
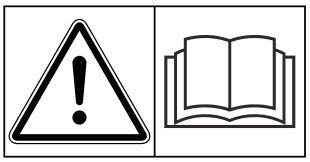
RAUCH

Complementary instructions





Please read this manual carefully before using the machine!

Keep for future use

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

AXMAT duo

Version 4.13.00

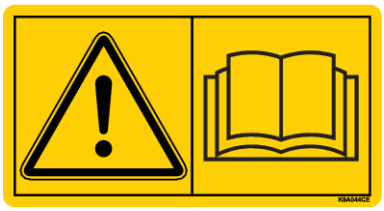
5902878-C-en-0325

Original instructions

Dear customer,

By purchasing the AXMAT duo special equipment you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable machine control unit.

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



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

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

Please note that damage caused by operator errors or improper use cannot be covered by warranty claims.

Technical improvements

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

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

Yours sincerely

RAUCH Landmaschinenfabrik GmbH

Table of contents

1 User instructions

1.1 About this operator’s manual

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

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

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

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

1.2 Meaning of warnings

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

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

Symbol + **signal word**
Explanation

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

⚠ DANGER!

Type and source of danger

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

Ignoring these warnings will result in severe injury or death.

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

⚠ WARNING!

Type and source of danger

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

Ignoring these warnings leads to severe injury.

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

⚠CAUTION!

Type and source of danger

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

Ignoring these warnings leads to injury.

▶ Always observe the measures described to prevent this danger.

NOTICE!

Type and source of danger

This warning warns of material and environmental damage.

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

▶ Always observe the measures described to prevent this danger.

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

1.3 Notes on text descriptions

1.3.1 Instructions and procedures

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

▶ Instructions step 1

▶ Instructions step 2

1.3.2 Lists

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

- Property A
- Property B

1.3.3 References

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

- **Example:** Please also note *1.3.4 Menu hierarchy, keys and navigation*

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

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

1.3.4 Menu hierarchy, keys and navigation

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

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

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

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

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

2 Layout and function

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

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

Depending on the version of the machine control unit, the menu entries on the display may appear in different menu windows. However the access paths remain the same for all versions of the machine control unit.

2.1 Overview of supported machines

Some models are not available in all countries.

The AXMAT duo special equipment is mounted on fertilizer spreaders of the AXIS series from a working width of 18 m.

- AXIS H 50.2 EMC + W
- AXIS Power Pack for AXENT 100.1
- AXIS-H 50.1 EMC + W (AXMAT version 4.13.00 for TEEJET job computer)

2.2 Function

The AXMAT duo special equipment is used to monitor fertilizer spreading during the spreading operation. The cross-distribution on each control side is optimized based on control values by adjusting the respective drop point.

In the presence of moisture and a heavy covering of the sensor housing with dust, correct functioning of the AXMAT duo special equipment can no longer be guaranteed.

- Deactivate the function; see *3.4.1 Activate the AXMAT function*.

2.3 Structure

AXMAT optional equipment consists of the following assemblies:

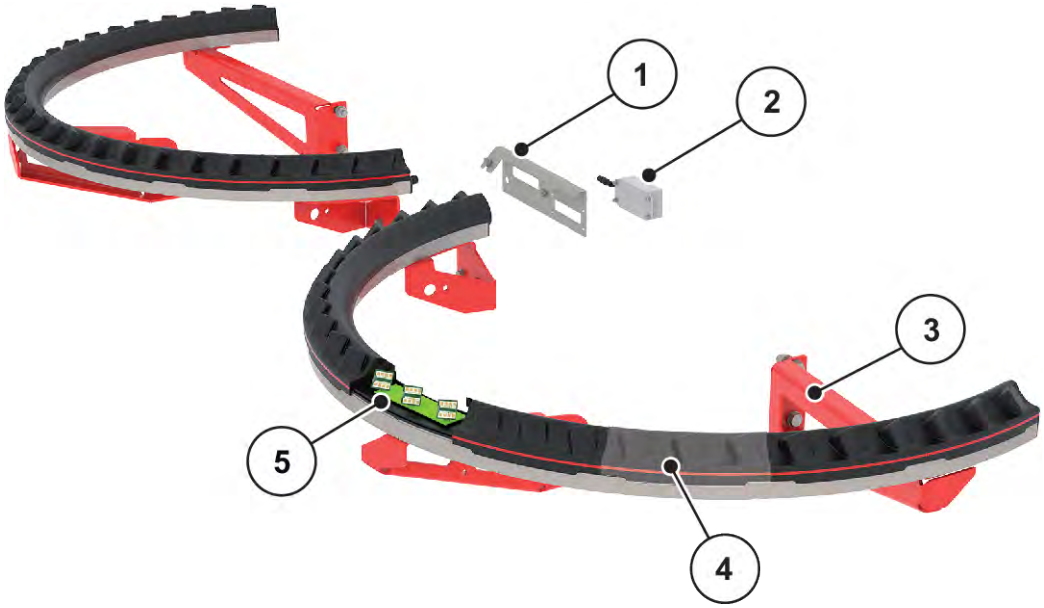


Fig. 1: AXMAT optional equipment

[1] Bracket of the communication module
[2] Communication module
[3] Brackets for mounting to the machine frame
[4] 9 sensor modules per spreader side
[5] 3 sensors per module

3 Adjustments

3.1 Minimum requirements

The configuration of the AXMAT duo special equipment can be performed when the following conditions are met.

- ISOBUS terminal
- The AXMAT duo special equipment in the machine control unit is enabled and calibrated by your Service Dept. or specialist workshop (menu Service).
- Machine control unit AXIS-H ISOBUS from version 4.10.13
- You have laid out collecting trays in your test field for the special equipment practical test kit PPS. See *4.1 Prepare for calibration*

3.2 Navigation within the menus

Please refer to chapter *1.3.4 Menu hierarchy, keys and navigation* for important notes regarding the display and navigation between menus.
Accessing menus and menu entries **by touching the touch screen or pressing the function keys** is described below.

- For additional information, refer the operator's manual of the terminal used.

■ ***Accessing the main menu***

▶ Press the **Working screen/main menu** function key. See *1.3.4 Menu hierarchy, keys and navigation*.

The main menu is displayed.

Accessing the sub-menu via the touch screen

▶ Press the button of the desired sub-menu.

Windows appear with prompts for various actions.

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

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

■ ***Exiting menus***

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

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

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

You will return to the **working screen**.

▶ Press **ESC**.

The previous settings are retained.

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

3.3 Fertilizer settings

When the AXMAT duo function is activated, the menu entry Drop point will be grayed out and has no function here.

See *3.4.1 Activate the AXMAT function*

Pre-settings

▶ Open a new fertilizer chart.

▶ Perform the fertilizer settings.

- ▷ Working width
- ▷ Normal disc speed
- ▷ Spreading disc
- ▷ Distance factor

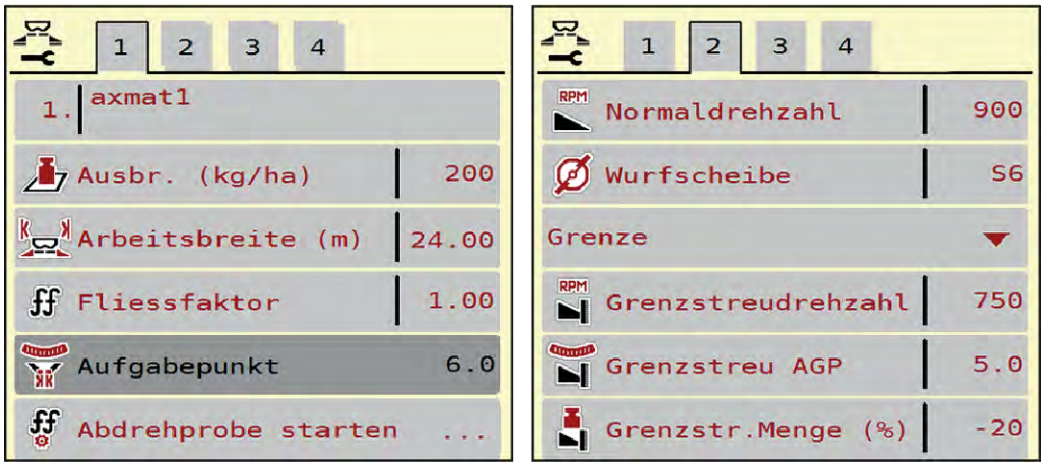


Fig. 2: Fertiliser settings menu, tab 1 and 2

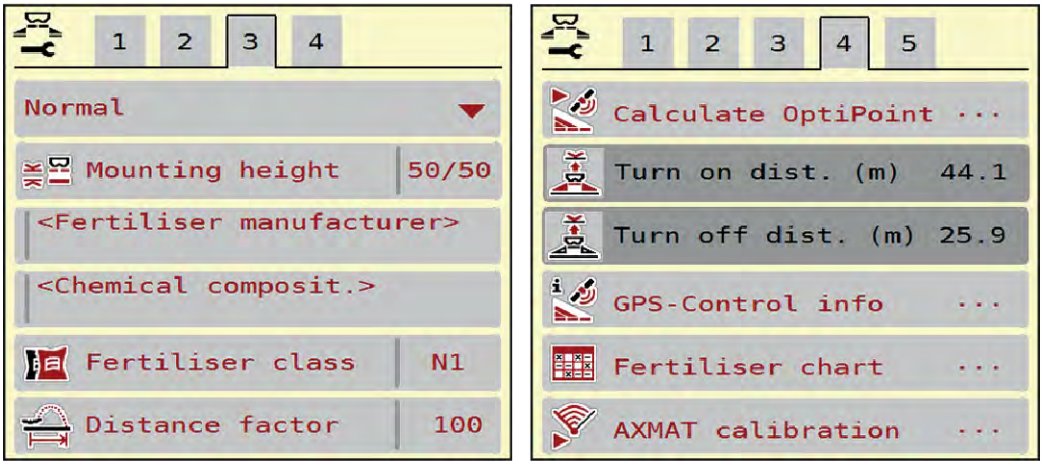


Fig. 3: Fertiliser settings menu, tab 3 and 4

The most important settings for the AXMAT duo function are described here. You can find further information for the operation of the machine control unit in the operator's manual supplied.

Sub-menu	Meaning	Description
Fertiliser name	Fertilizer selected from the fertilizer chart	*3.3.5 Fertilizer charts*
Appl. rate (kg/ha)	Input of target value for the application rate in kg/ha	*3.3.1 Application rate*
Working width (m)	Determination of the working width to be spread	*3.3.2 Working width*
Drop point	When the AXMAT duo function is activated, no entries for the drop point can be made.	
Normal disc speed	**AXIS-H** Input of the desired spreading disc speed Influences the EMC mass flow control	*3.3.4 Rotation speed*
Spreading disc	Setting of the disc type mounted on the machine The setting influences the EMC mass flow control.	Selection list: • S4 • S6 • S8 • S10 • S12

Sub-menu	Meaning	Description
Fertilizer class	Selection list	Selection with arrow keys; Confirmation with the Enter key
Fertiliser chart	Management of fertilizer charts	*3.3.5 Fertilizer charts*
Calibrate AXMAT	**AXIS-H 50.2 only** Open the sub-menu for calibration of the AXMAT function	Please observe the operator's manual for the special equipment

3.3.1 Application rate

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

Enter the application rate:

- ▶ Access the menu Fertiliser settings > Appl. rate (kg/ha).

  The **currently applied** *application rate is displayed.*
- ▶ Enter the new value in the input field.
- ▶ Press **OK**.

The new value is saved in the machine control unit.

3.3.2 Working width

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

- ▶ Access the menu Fertiliser settings > Working width (m).

  The **currently applied** *working width is displayed.*
- ▶ Enter the new value in the input field.
- ▶ Press **OK** .

The new value is saved in the machine control unit.

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

3.3.3 Disc type

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

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

The mounted spreading disc type has a default factory setting. If you have mounted different spreading discs on your machine, you must enter the correct type.

▶ Access the menu Fertiliser settings > Spreading disc.

▶ Activate the spreading disc type in the selection list.

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

3.3.4 Rotation speed

■ ***Normal disc speed***

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

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

The factory default speed is set to 750 rpm. If you want to set a different speed, you must change the saved value.

▶ Access the menu Fertiliser settings > Normal disc speed.

▶ Enter the speed value.

The Fertiliser settings window is displayed with the new speed.

3.3.5 Fertilizer charts

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

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

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

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

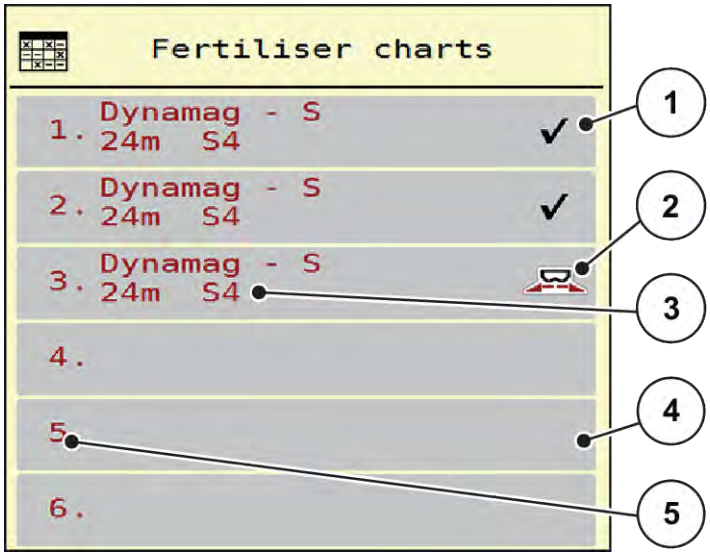


Fig. 4: Menu Fertiliser charts

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

- ▶ Access the menu Fertiliser settings > Fertiliser charts.
- ▶ Select an empty fertilizer chart.

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

  The display shows the selection window.
- ▶ Press the option Open and back to fertiliser settings.

  The Fertiliser settings menu is displayed and the selected element is loaded into the fertilizer settings as the active fertilizer chart.
- ▶ Call up the Fertiliser name menu item.
- ▶ Enter a name for the fertilizer chart.

We recommend naming the fertilizer chart after the fertilizer. Specific fertilizers can thus be assigned to fertilizer charts more easily.

- ▶ Edit the parameters of the fertilizer chart. See *3.3 Fertilizer settings*.

■ ***Selecting a fertilizer chart***

- ▶ Access the menu Fertiliser settings > Open and back to fertiliser settings.
- ▶ Select the desired fertilizer chart.

  The display shows the selection window.
- ▶ Select the option Open and back to spreading mat. settings.

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

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

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

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

- ▶ Select the desired fertilizer chart.

  The display shows the selection window.
- ▶ Select the option Copy element.

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

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

▶ Select the desired fertilizer chart.

The display shows the selection window.

The active fertilizer chart cannot be deleted.

▶ Select the option Delete element.

The fertilizer chart is deleted from the list.

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

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

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

▶ Enter the new value in the input field.

▶ Press OK.

The active fertilizer chart is displayed.

The new value is saved in the machine control unit.

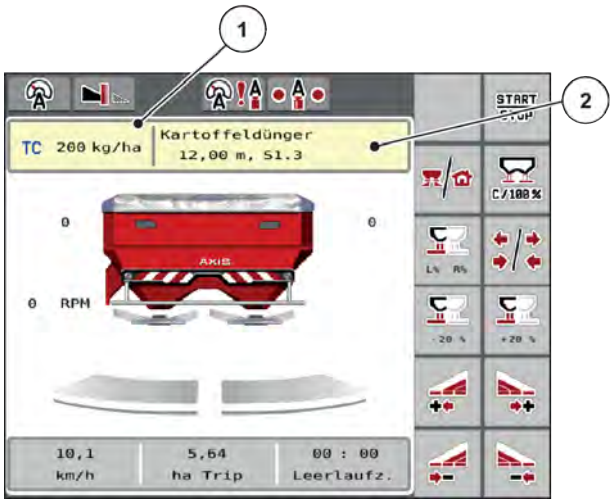


Fig. 5: Managing the fertilizer chart via the touch screen

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

3.4 Machine settings

Depending on the version of the machine control unit, the menu entries on the display may appear in different menu windows. However the access paths remain the same for all versions of the machine control unit.

3.4.1 Activate the AXMAT function

- ▶ Access the menu Main menu > Machine settings.
- ▶ Put a check mark in the menu item AXMAT.

  The AXMAT duo function is activated.

  In the menu Fertiliser settings the menu entry Drop point is grayed out: No manual input can be entered.

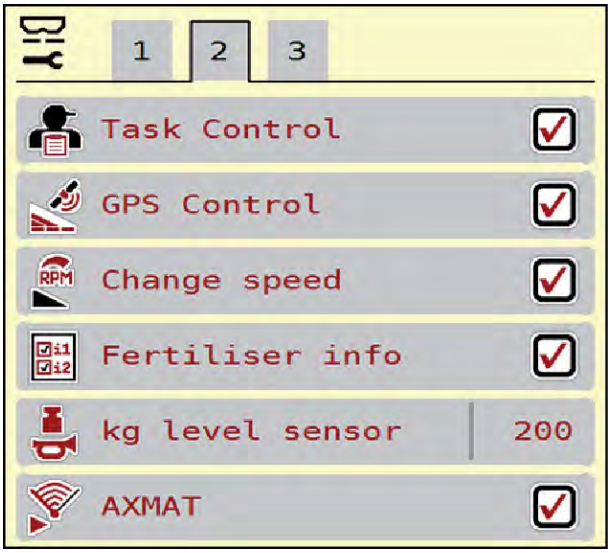


Fig. 6: Machine settings, page 2

In the event of an error the AXMAT duo function is deactivated automatically. You must reset the check again in order reactivate the AXMAT duo function.

- ▶ Delete the check mark in the menu item AXMAT.

  The AXMAT duo function is deactivated.

4 Operation

⚠CAUTION!

Risk of injury due to discharged fertilizer

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

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

The operator's manual describes the functions of the machine control unit as of software version 3.21.00.

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

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

- In the Fertiliser settings >Spreading disc menu, see *13*
- In the Fertiliser settings >Disc speed menu, see *14*
- In the Machine settings > AUTO/MAN mode menu, see the operator's manual for the machine control unit.

4.1 Prepare for calibration

Use the practical test kit to calibrate the AXMAT duo device in the machine control unit.

Refer to the supplementary manual for the practical test kit PPS 5 AXIS-H.

4.2 AXMAT calibration

Perform the calibration of the AXMAT duo function in the following circumstances:

- When you are putting the AXMAT duo special equipment into use for the first time.
- When have made changes to the settings in the fertilizer settings menu:
  - Type of fertilizer
  - Disc type
  - Spreading disc speed
  - Working width
- The desired application quantity has greatly changed.

- ▶ Access the menu Main menu > Fertiliser settings.
- ▶ Call up the Calibrate AXMAT menu item.
- ▶ Determine the position for the drop point using the fertilizer chart.
- ▶ Enter the determined value in the input field.
- ▶ Press OK.

- ▶ Press **Spreading disc start**.

- ▶ Press **Start/Stop**.

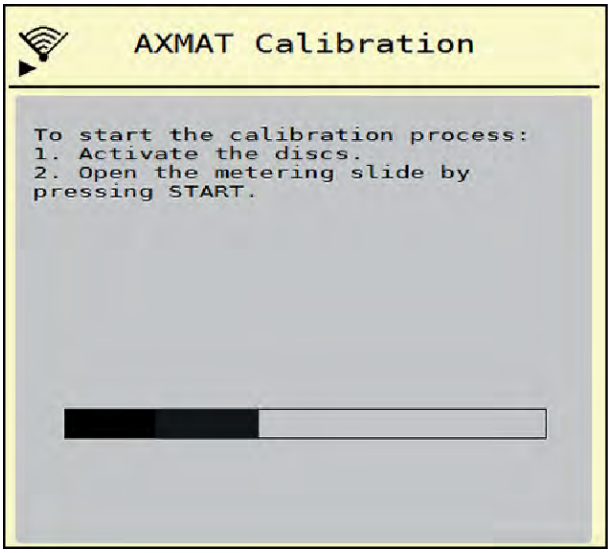


Fig. 7: Perform calibration of AXMAT duo

- ▶ Start the test drive over the laid-out collecting trays.
  See the supplementary manual for the practical test kit PPS 5 AXIS-H.

  - The calibration starts after 6 seconds.
  - The display shows a progress bar.
  The calibration and spreading must take place at the same time.
  Continue until the progress bar has completed and you have driven right across the collecting trays with the distribution pattern.

- ▶ Press **Start/Stop**.

  Close the metering slide.
  The machine control unit switches to the next calibration window.

- ▶ Press **Spreading disc start**.

  The spreading discs will stop.
- ▶ Check the results of the spreading test.
  See the supplementary manual for the relevant practical test kit PPS 5 AXIS-H, PPS 5 AXIS-M or PPS 5 MDS.

4.2.1 Adjust the drop point

The machine control unit switches automatically to the next calibration window.

- ▶ Determine the drop point.
  - ▷ To confirm the drop point previously saved, press OK.
  - ▷ To input a new drop point, press New drop point.
- ▶ Enter a new value for the drop point based on the listed results, and enter the recommended corrections.

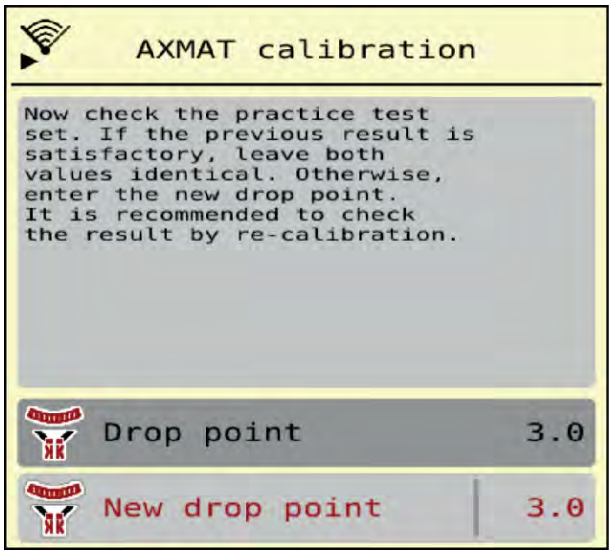


Fig. 8: Perform calibration of AXMAT duo

You can enter the values in increments of 0.5. The AXMAT duo function controls the drop point in spreading operations increments of 0.1.

- ▶ Press OK.
- ▶ Perform a pass one more time to check the adjusted values.
  You have previously emptied the collecting trays.

The drop point is saved in the fertilizer chart.

The AXMAT duo device is calibrated and operational.

4.3 Test/diagnosis

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

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

This menu is for information purposes only.

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

⚠CAUTION!

Risk of injury due to moving machine parts

During the tests, machine parts may move automatically.

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

▶ Call up the menu Test/diagnosis > AXMAT Sensor Status.

The display shows the status of the sensors.

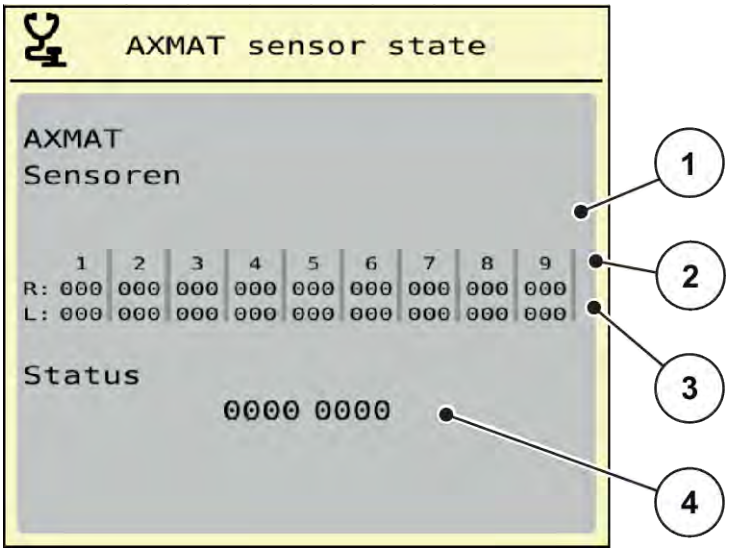


Fig. 9: Test/diagnosis; Example: AXMAT duo Sensor status

[1] Number of sensor module
[2] Status display of individual sensors, right spreading side viewed in the direction of travel
[3] Status display of individual sensors, spreading side on the left viewed in the direction of travel
[4] Error coding

Status message from the sensors [2] and [3]

- 0 = OK; no equipment fault
- 1 = Fault

If more than 3 sensors are reporting a fault, the AXMAT duo function is deactivated automatically.
- Contact your specialist workshop or Customer Services.
- Once the fault has been rectified, reset the check under Machine settings > AXMAT again.
The AXMAT duo function is active once again.

Error coding [4]

- Get in touch with your dealer or specialist workshop. You will be supported in the process of resolving the fault.

4.4 Using the AXMAT function in spreading operations

The AXMAT duo function controls the drop point in spreading operations increments of 0.1.

Requirements:

- The AXMAT duo function is enabled. See *Chapter 4.1 - Prepare for calibration - Page 19*
- The AXMAT duo function is activated. See *Chapter 3.4.1 - Activate the AXMAT function - Page 18*
- The AXMAT duo function is calibrated. See *Chapter 4.2 - AXMAT calibration - Page 19*

▶ Press **Spreading disc start**.

The spreading discs will start.

▶ Press **Start/Stop**.

The metering slides open.

The AXMAT duo function controls the drop point automatically during the spreading operation.

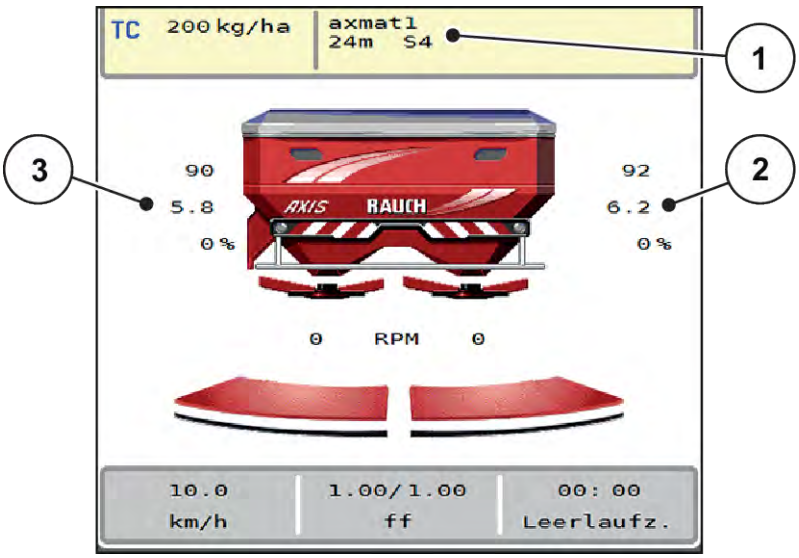


Fig. 10: Control of the drop point during spreading operations

[1] Active fertilizer chart
[2] Value of the drop point, right hand spreading side
[3] Value of the drop point, left hand spreading side

Note:

- In border spreading mode or in partial width mode on one side, the AXMAT duo function is deactivated for the side on which spreading is reduced.
- As soon as normal spreading is resumed, the AXMAT duo function is reactivated for both sides.

5 Alarm messages and possible causes

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

5.1 Meaning of the alarm messages

No.	Message in display	Meaning and possible cause
17	Error by setting drop point	The drop point adjustment cannot reach the specified target value. • Fault, for instance with the power supply • No position feedback
18	Error by setting drop point	The drop point adjustment cannot reach the specified target value. • Blockage • No position feedback • Calibration test
19	Defect by setting drop point	The drop point adjustment cannot reach the specified target value. • No position feedback
20	Error at LIN bus participant:	Communication problem • Defective cable • Loose plug connector
32	Externally controlled parts can be moved.Risk of injury through squeezing and shearing! - Direct ALL persons out of the danger zone -Read the instruction manual Confirm with ENTER	If the machine control unit is activated, components may move unexpectedly. • Follow the displayed instructions only if all risks have been eliminated.
90	AXMAT-Stop	The AXMAT function is automatically deactivated and no longer regulates. • More than 2 sensors are reporting an error. • Communication error

5.2 Fault/alarm

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

Fig. 11: Alarm message (example)

5.2.1 Acknowledging an alarm message

Acknowledging an alarm message:

▶ Rectify the cause of the alarm message.

Observe the operator's manual of the mineral fertilizer spreader. See also *5.1 Meaning of the alarm messages*.

▶ Press the ACK foil key

Alarm message confirmation may vary with different ISOBUS terminals.

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

- Enter
- Start/Stop

For this purpose, follow the instructions on screen.

6 Guarantee and warranty

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

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

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

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