

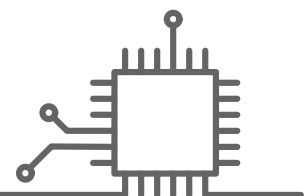


Original operating manual

ISOBUS software

Precea

This operating manual is valid as of software version NW110-M and NW356-E



SmartLearning



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About this operating manual

1

CMS-T-00000539-I.1

1.1 Copyright

CMS-T-00012308-A.1

Reprinting, translation and reproduction in any form, including excerpts, require the written approval of AMAZONEN-WERKE.

1.2 Meaning of the operating manual

CMS-T-006245-A.1

The operating manual is an important document and a part of the implement. It is intended for the user and contains safety-related information. Only the instructions provided in the operating manual are reliable. If the operating manual is not observed, it can result in serious injury or death.

1. The safety section must be completely read and observed before initial operation of the implement.
2. Before starting work, also read and observe each section of the operating manual.
3. Keep the operating manual available.
4. Hand over the operating manual to the subsequent user.

1.3 Diagrams

CMS-T-005676-F.1

1.3.1 Warnings and signal words

CMS-T-00002415-A.1

Warnings are marked with a vertical bar with a triangular safety symbol and the signal word. The signal words *"DANGER"*, *"WARNING"* or *"CAUTION"* describe the severity of the potential danger and have the following meanings:



DANGER

- Indicates a direct threat with high risk for severe physical injury, such as loss of limbs or death.



WARNING

- Indicates a possible threat with moderate risk for severe physical injury or death.



CAUTION

- Indicates a threat with low risk for light or moderately severe physical injuries.

1.3.2 Further instructions

CMS-T-00002416-A.1



IMPORTANT

- Indicates a risk for damage to the implement.



ENVIRONMENTAL INFORMATION

- Indicates a risk for environmental damage.



NOTE

Indicates application tips and instructions for optimal use.

1.3.3 Instructions

CMS-T-00000473-D.1

1.3.3.1 Numbered instructions

CMS-T-005217-B.1

Actions that have to be performed in a specific sequence are represented as numbered instructions. The specified sequence of the actions must be observed.

Example:

1. Instruction 1
2. Instruction 2

1.3.3.2 Instructions and responses

CMS-T-005678-B.1

Reactions to instructions are marked with an arrow.

Example:

1. Instruction 1
- ➔ Reaction to instruction 1
2. Instruction 2

1.3.3.3 Alternative instructions

CMS-T-00000110-B.1

Alternative instructions are introduced with the word "or".

Example:

1. Instruction 1
- or
- Alternative instruction
2. Instruction 2

1.3.3.4 Instructions with only one action

CMS-T-005211-C.1

Instructions with only one action are not numbered, but rather shown with a arrow.

Example:

- ▶ Instruction

1.3.3.5 Instructions without sequence

CMS-T-005214-C.1

Instructions that do not require a specific sequence are shown as a list with arrows.

Example:

- ▶ Instruction
- ▶ Instruction
- ▶ Instruction

1.3.3.6 Workshop work

CMS-T-00013932-B.1



WORKSHOP WORK

- ▶ Identifies maintenance work that must be performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.

1.3.4 Lists

CMS-T-000024-A.1

Lists without an essential order are shown as a list with bullets.

Example:

- Point 1
- Point 2

1.3.5 Item numbers in figures

CMS-T-000023-B.1

A framed number in the text, e.g. a 1, indicates an item number in an adjacent figure.

1.3.6 Direction information

CMS-T-00012309-A.1

Unless otherwise specified, all directions are always seen in the direction of travel.

1.4 Other applicable documents

CMS-T-00000616-B.1

A list of other applicable documents can be found in the Appendix.

1.5 Your opinion is important

CMS-T-000059-D.1

Dear reader, our documents are updated on a regular basis. Your suggestions for improvement help us to create ever more user-friendly documents. Please send us your suggestions by post, fax or email.

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CMS-I-00000638

ISOBUS requirements

2

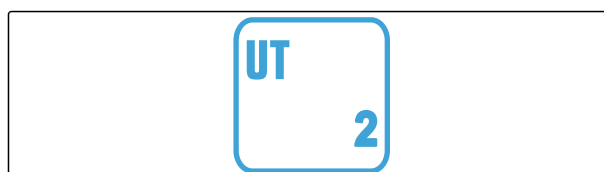
CMS-T-00010917-A.1

2.1 Minimum ISOBUS requirements

CMS-T-00010916-A.1

Universal Terminal:

- Generation 2
- Screen resolution: 240
- Colour depth: 8 bit / 256 colours
- Buttons: 8

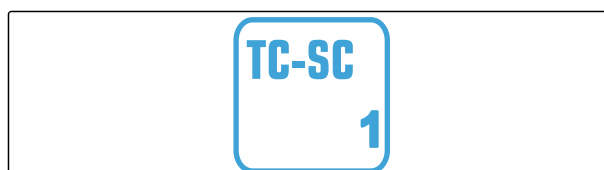


CMS-I-00007472

Other functions are required, depending on the application:

Task Controller Section Control:

- Generation 1
- Booms: 1
- Number of part-width sections: 1



CMS-I-00007474

Task Controller geo-based:

- Generation 1
- Number of control channels: 1



CMS-I-00007475

Task Controller basic:

- Generation 1



CMS-I-00007476

Auxiliary Control new:

- Generation 1



CMS-I-00007473

2.2 Recommended ISOBUS requirements

CMS-T-00010918-A.1

Universal Terminal:

- Generation 2
- Screen resolution: 480
- Colour depth: 8 bit / 256 colours
- Buttons: 12



CMS-I-00007472

Task Controller Section Control:

- Generation 1
- Booms: according to the implement equipment
- Number of part-widths sections: according to the implement equipment. 2 part-width sections for one-sided switching. Up to 126 sections with segment distributor head with return flow and single-row control



CMS-I-00007474

Task Controller geo-based:

- Generation 1
- Number of control channels: number of products according to the implement equipment



CMS-I-00007475

Task Controller basic:

- Generation 1



CMS-I-00007476

Auxiliary Control new:

- Generation 1



CMS-I-00007473

Overview of the functions

3

CMS-T-00000818-D.1

The Precea precision airplanter is operated with the ISOBUS software. The ISOBUS software can be displayed and operated with an ISOBUS control terminal.

The ISOBUS software includes the following functions:














- Monitoring the implement data
- Switching the work lights
- Calibrating the metering unit
- Weighing the fertiliser hopper
- Entering the refilled quantity of fertiliser
- Emptying the fertiliser hopper
- Switching part-width sections automatically and manually
- Regulating the coulter pressure
- Setting the sections pressure
- Regulating the spread rates
- Creating tramlines
- Creating tramline markings
- Pre-metering fertiliser
- Filling the singling disc
- Correcting the singling unit manually and automatically
- Configuring products
- Documenting work

Main menu overview

4

CMS-T-00000788-C.1

The Main menu is divided into the Field menu and the menu for the settings.

Field menu	Settings
<div><div></div><div>FIELD MENU</div><div><div> Working</div><div> Calibration</div><div> Filling</div><div> Documen tation</div><div> Emptying</div></div></div>	<div><div></div><div>SETTINGS</div><div><div> Implement</div><div> Profile</div><div> Info</div><div> Products</div></div></div>

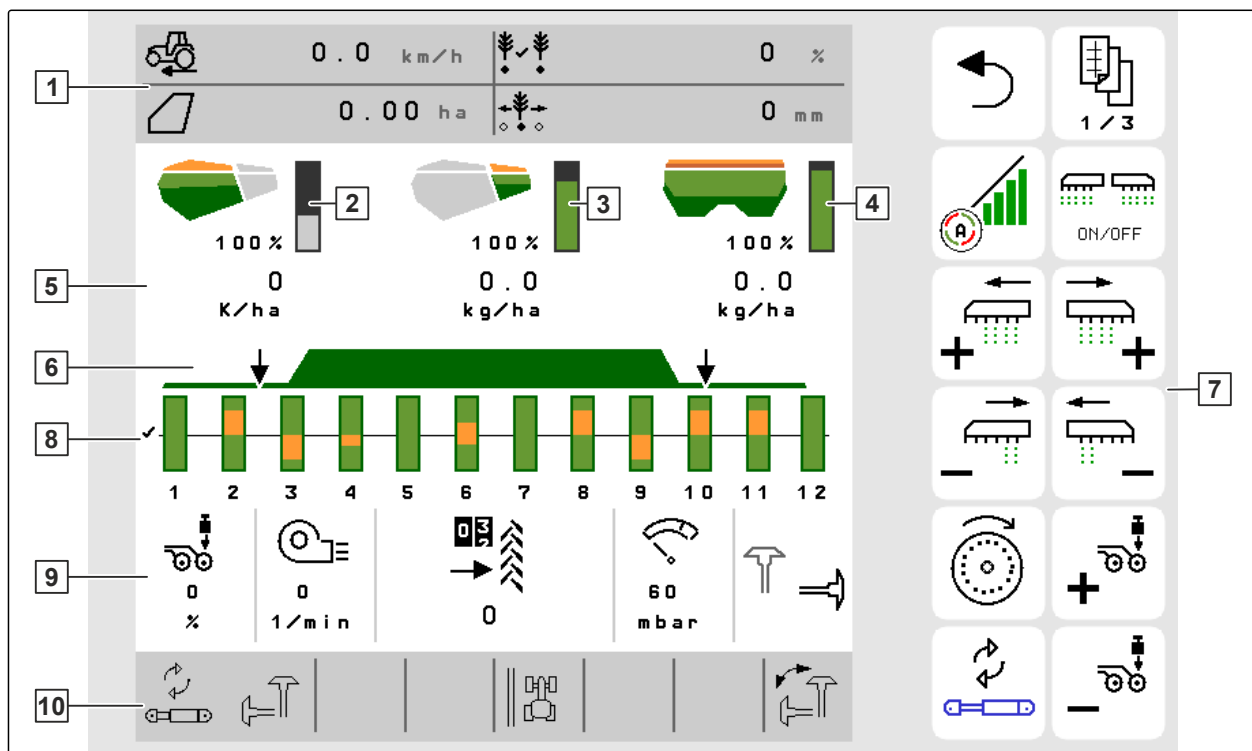
Work menu

5

CMS-T-00000921-H.1

5.1 Overview of the Work menu

CMS-T-00000922-D.1



CMS-I-00000680

- | | |
|---|---|
| 1 Multi-function display | 2 Display for the seed quantity |
| 3 Display for the micropellet quantity | 4 Display for the fertiliser quantity |
| 5 Displays for the spread rates | 6 Status of the working position and Section Control |
| 7 Button bar | 8 Bar graphs for the seeding coulters |
| 9 Implement data | 10 Status bar |

5.2 Multi-function display

CMS-T-00008365-B.1

Up to 4 different values can be displayed in the Work menu on the multi-function display. The values can be adjusted (see "Changing the multi-function display").



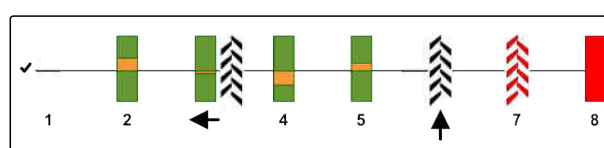
CMS-I-00005703

5.3 Bar graphs for the seeding coulters

CMS-T-00000932-E.1

A bar graph is shown in the Work menu for each seeding coulters. The bar graphs show the operating status of each seeding coulters.

If too much seed is being spread, the bar graph will be coloured in orange towards the top. If too little seed is being spread, the bar graph will be coloured in orange towards the bottom. The larger the orange area, the bigger the deviation. The display range for the bar graphs is defined in the settings.



CMS-I-00000727

When the bar graph is hidden like for Row 1, the seeding coulters is deactivated by Section Control. When the bar graph is shown in red like for Row 8, the seeding coulters is deactivated manually.

When the bar graph is supplemented with a black tractor track like for Row 3, a shifted tramline is being created. The arrow under the bar graphs shows the shifting direction of the seeding coulters.

When the bar graph is replaced by a black tractor track like for Row 6, a tramline marking is being created. The arrow under the tractor tracks indicates that the seeding coulters is lifted and that a tramline marking is being created.

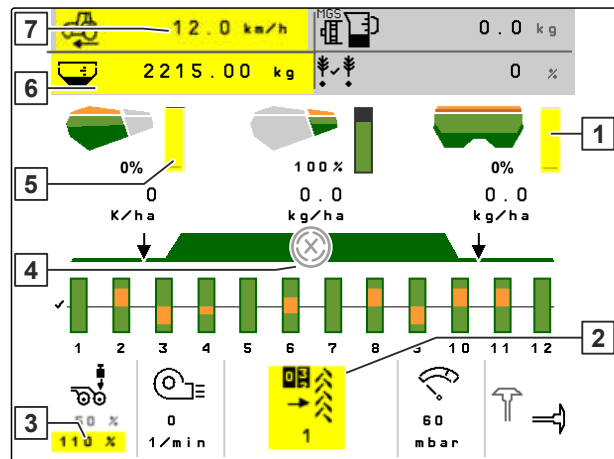
When the bar graph is replaced by a red tractor track like for Row 7, the row is blocked.

5.4 Deviation from the nominal state

CMS-T-00009444-B.1

Displays marked in yellow are indications for a deviation from the nominal state.

- 1 Fertiliser hopper empty
- 2 Tramline counter paused
- 3 Coulter pressure when coulter are lifted
- 4 The conditions for Section Control have not been met
- 5 Seed hopper empty
- 6 Falsified measured result
- 7 Simulated speed active/information source not available



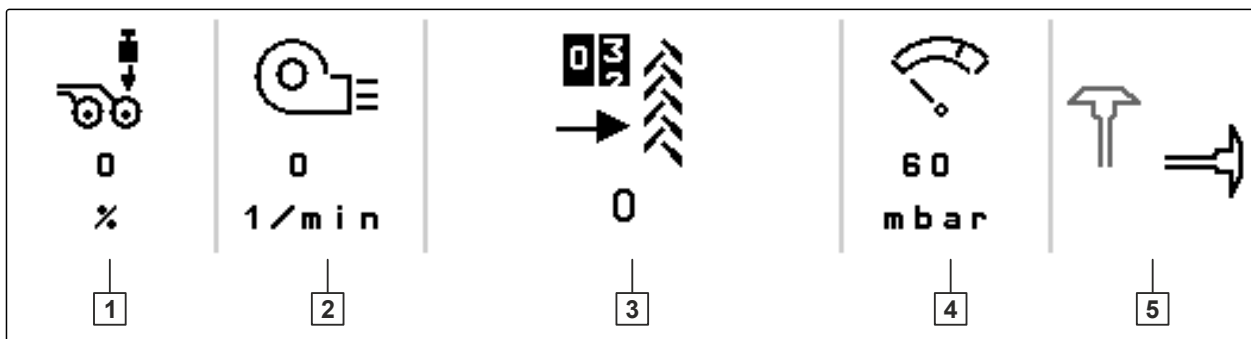
CMS-I-00007511

NOTE

If the display for the scale turns yellow, the measured result is falsified due to vibrations or the mounted implement is lifted. For precise measurement, the implement must be lowered and standing still.

5.5 Implement data

CMS-T-00000926-B.1

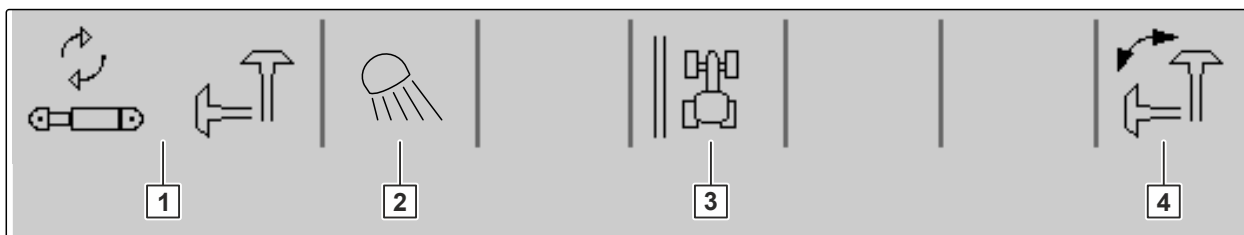


CMS-I-00000702

- 1 Coulter pressure
- 2 Fan speed
- 3 Tramline counter
- 4 Fan air pressure
- 5 Position of the track marker

5.6 Status bar

CMS-T-00000927-C.1



CMS-I-00000703

- | | |
|---|---|
| 1 Selected hydraulic function for Comfort hydraulic system | 2 Work lights switched on |
| 3 Display of the field edge as a reference line | 4 Selected track marker function |

5.7 Functions in the button bar






CMS-T-00000928-G.1







Back	Scroll	Switch Section Control on and off	Switch all part-width sections and the metering unit on and off	Fill the singling disc


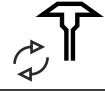



Switch on part-width sections to the right	Switch on part-width sections to the left	Switch off part-width sections to the left	Switch off part-width sections to the right	Switch on all part-width sections	Start GPS recording





Increase tramline counter by 1	Reduce tramline counter by 1	Pause and start tramline counter	Reset tramline counter to 0	Switch work lights on and off	Change pre-selected hydraulic function

Increase coulter pressure	Reduce coulter pressure	Increase section pressure	Reduce section pressure

				
Increase fertiliser application rate	Reduce fertiliser application rate	Set fertiliser application rate to target rate	Pre-meter fertiliser	Pre-stop fertiliser

					
Increase seed application rate	Reduce seed application rate	Set seed application rate to target rate	Increase micropellet application rate	Reduce micropellet application rate	Set micropellet application rate to target rate

				
Water hole mode	Change track marker function	Trigger track marker function	Switch over field edge for tramline calculation	Block rows

				
Increase the Central Seed Supply setpoint pressure difference	Reduce the Central Seed Supply setpoint pressure difference	Tractor wheel mark eradicator automatic mode	Starting and stopping the offline scale	

Basic operation

6

CMS-T-00000803-F.1

6.1 Switch between the Field menu and the Settings

CMS-T-00000804-E.1

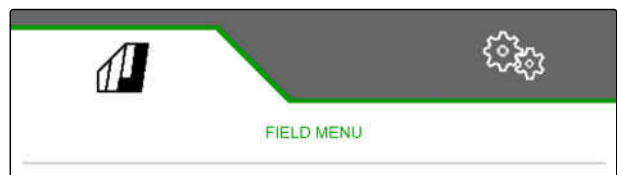
- To switch to the Field menu,

select .

or

- To switch to the settings,

select .



CMS-I-00006431

6.2 Switch to the previous menu

CMS-T-00000805-C.1

- Select  on the button bar.

6.3 Scrolling through the menus and button bar

CMS-T-00000806-B.1

- To scroll through the menus in the settings,

select .

- To scroll through the button bar,

select .

Adjusting the implement

7

CMS-T-00008402-E.1

7.1 Configuring the tramline control

CMS-T-00000920-F.1

1. In the "Settings" menu, select "Implement" > "Tramline".

2. *If a tramline should be created:*
Under Tramline, select "one"

or

If a tramline should be created with a tramline marker:
select "Tramline marker"

or

If a tramline should be created with a shifted tramline:
select "Shifted tramline".

3. Select "Teach-in tramline rhythm".
4. Enter the "Working width" and "Track width of the cultivating implement".
5. Continue with >
6. Enter the "Tyre width of the cultivating implement" and "Distance from the plant".
7. Continue with >



CMS-I-00000588

8. *If the distance from the cultivating implement to the field edge is not 0:*

Enter the overlapping distance of the cultivating implement

or

Enter the underlapping distance of the cultivating implement.



NOTE

Use half the row spacing as a reference value for the overlapping or underlapping distance.

9. *When starting on the left or right edge of the field:*
Select the field edge under "Teach-in tramline rhythm".
10. *When starting with half the implement width or the full implement width:*
Select the implement width under "Teach-in tramline rhythm".

11. Continue with >

- ➔ "Configuration successful!" indicates that a tramline rhythm has been calculated.
- ➔ If a suitable configuration cannot be calculated, repeat the procedure. The last successful configuration will be maintained.

When changing the cultivating implement, adjustments are required on the implement for use of the shifted tramline or the tramline marker.

12. *If the tramline rhythm does not actuate the desired coulters:*

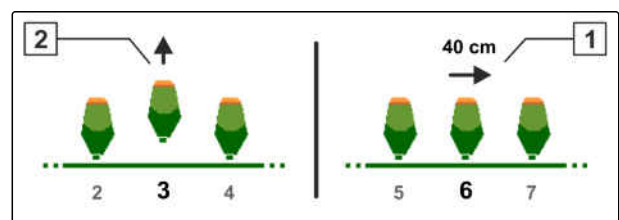
Connect the displayed coulters **1** to the shifting cylinder

or


Connect the displayed coulters **2** to the lifting cylinder.

13. *If manual tramline control should be activated:*
Set the checkmark under "Manual tramline".

14. select "Settings for manual tramlines".



CMS-I-00004039

15. Continue with 
16. enter the *"Passes until repetition"*.
17. Under *"Select field pass"*, enter the pass at which the tramline is activated.
18. Enter the rows under *"Select rows"*.
- ➔ Depending on the configuration, the selected rows are deactivated, lifted or shifted during the tramline.



NOTE

To be able to select the GPS signal, a GPS receiver and a track line must be configured on the control terminal.

Depending on the implement configuration, the signal for the tramline counter can come from different sources:

- Working position: The tramline counter advances by one track when the seed drill is moved into working position.
- ISOBUS: The tramline counter advances by one track when the tractor lift linkage is moved into working position.
- GPS: The tramline counter advances by one track when the implement drives into the next track.

19. Select the source for the tramline counter under *"Source for advancing"*.

20. Call up the next page with .

To prevent the tramline counter from advancing by one track when the selected signal from the source is short, adjust the signal duration for the source.

21. Enter the signal duration for the source under *"Source for advancing"*.

22. *To increase the target spread rate of the seed for the rows beside the tramlines:*
Enter the desired percent value under *"Seed rate increase in the adjacent rows"*.

7.2 Configuring the rate increments

CMS-T-00009107-E.1

The spread rate can be increased or reduced by setting the rate increments.

1. In the "Settings" menu, select "Implement" > "Metering unit".
2. Depending on the implement equipment, select the desired hopper.
3. To define the percent value for the increments to increase or reduce the metering, enter the desired value under "Rate increments".



CMS-I-00000608

7.3 Pre-stop configuration

CMS-T-00003911-F.1

To ensure that all products are spread at one point in the seedbed, regardless of the length of the conveyor section, the metering units can be pre-stopped for each hopper. The time for the duration of the pre-stop must be specified.

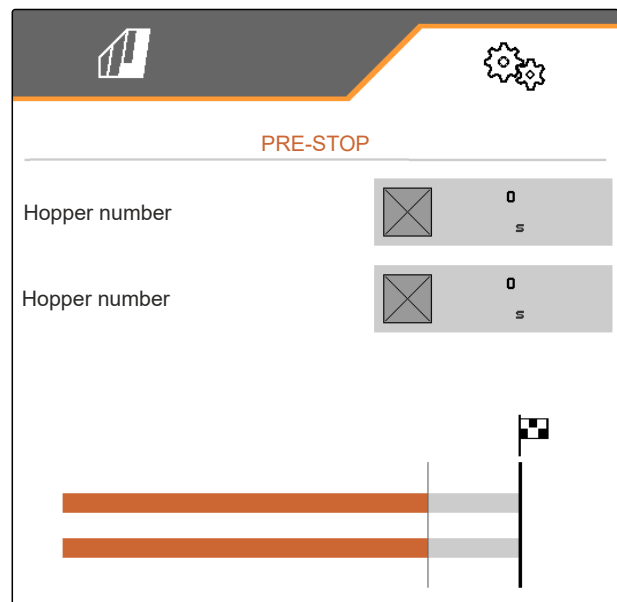
Depending on the implement equipment, the pre-stop function can be deactivated.

1. In the "Settings" menu, select "Implement" > "Metering unit".
2. Activate the pre-stop for the desired hopper.
3. Enter the duration of the pre-stop for the desired hopper.



NOTE

The duration of the pre-stop does not affect Section Control. The times for Section Control are set separately.



CMS-I-00002887

7.4 Pre-metering configuration

CMS-T-00000935-G.1

To ensure that all products are spread at one point, regardless of the length of the conveyor section, the metering units can be pre-metered for each hopper.

The time for the duration of the pre-metering must be specified.

NOTE

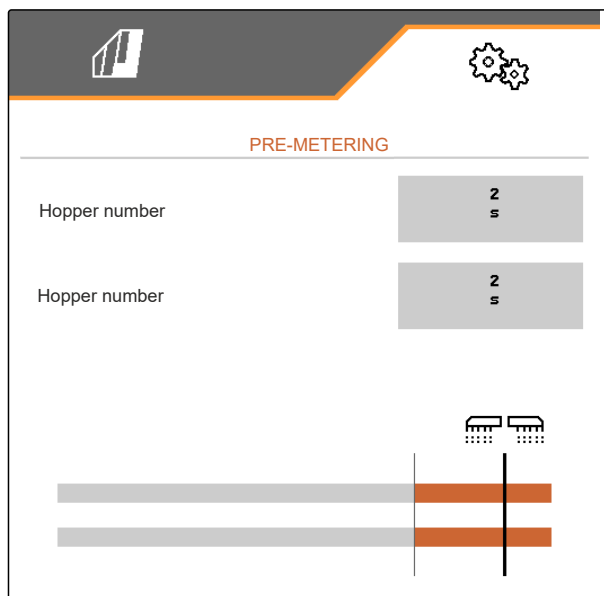
The duration of the pre-metering does not affect Section Control. The times for Section Control are set separately.

1. In the "Settings" menu, select "Implement" > "Metering unit".

NOTE

If the time for pre-metering is incorrectly set, overlaps or gaps in the seed can occur. This can also happen when driving off too fast or too slowly.

2. Enter the duration of the pre-metering for the desired hopper.



CMS-I-00000595

7.5 Configuring the working position sensor

CMS-T-00008403-B.1

7.5.1 Configuring digital working position sensors

CMS-T-00000761-E.1

The working position sensor determines whether the implement is in working position. If the implement is in working position, the implement control can start automatically. When the implement is moved out of the working position, the implement control is automatically stopped.

The following sources can be used for the working position:

- Sensor on the rear-mounted implement
- Sensor on the frame of the towed implement
- Sensor on the front-mounted hopper
- Sensor signal from the ISOBUS

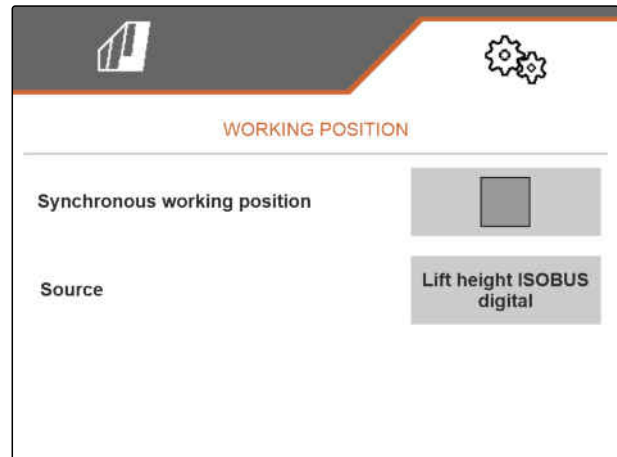
1. In the "Settings" menu, select "Implement" > "Working position".
2. If the same working position sensor should be used for all of the metering units, activate "Synchronous working position".

If the implement has several hoppers, the switch points can be configured for each hopper.

3. Under "Hopper switch points", select the desired hopper and under "Source", assign the desired sensor

or

Select the desired sensor under "Source".



CMS-I-00002902

7.5.2 Configuring analogue working position sensors

CMS-T-00008404-B.1

The working position sensor determines whether the implement is in working position. If the implement is in working position, the metering unit can start automatically. When the implement is moved out of the working position, the metering unit is automatically stopped. To determine when the implement is in working position, the positions are specified as a percent value of the total position path. The positions can be taught in.

To determine the total position path of the working position sensor, the limit values need to be taught in.

The following sources can be used for the working position:

- Sensor on the rear-mounted implement
- Sensor on the frame of the towed implement
- Sensor on the front-mounted hopper
- Sensor signal from the ISOBUS

Depending on the implement equipment, different switch points can be defined. The switch points define the position of the implement frame in which the metering unit is activated or how far the seeding coulters are lifted on the headlands.

1. In the "Settings" menu, select "Implement" > "Working position".

7 | Adjusting the implement

Configuring the working position sensor

2. *If the same working position should be used for all of the metering units, activate "Synchronous working position".*

3. *If the percent values for the switch points are known, enter the percent value for the switch points under "Switch point metering ON" and "Switch point metering OFF"*

or

If the percent values of the synchronous switch point are not known,

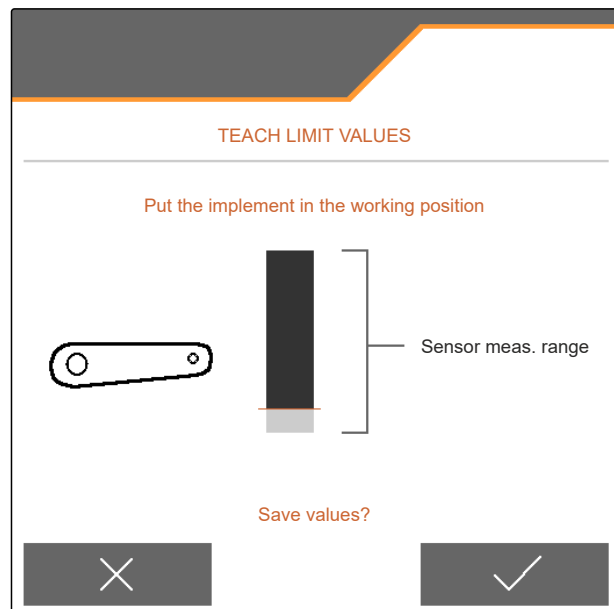
continue with > and teach in the limit values under "Limit values".

4. *To define the lower limit value, Move the implement into working position.*

5. *To save the value, press ✓.*

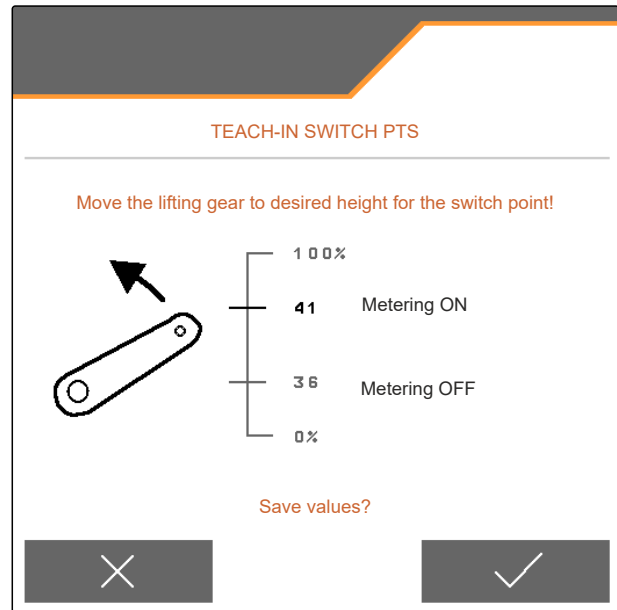
6. *To define the upper limit value, lift the implement completely.*

7. *To save the value, press ✓.*



CMS-I-00006630

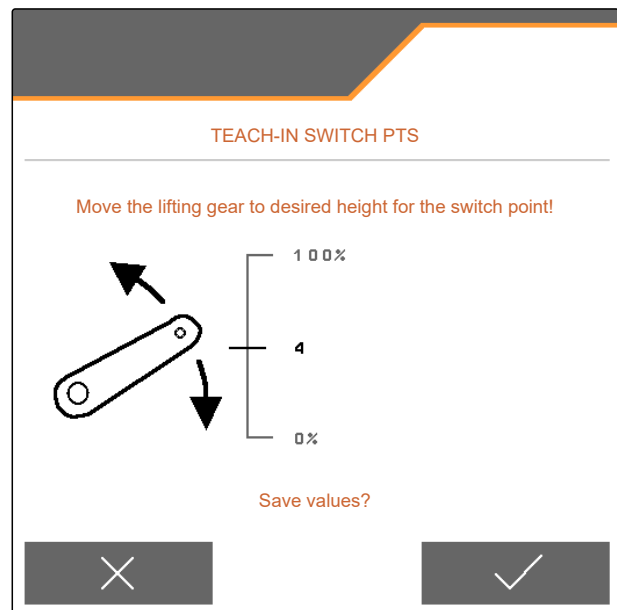
8. *If the synchronous working position is not activated,*
select the desired product and continue with > .
9. *To define the desired switch-off point for the metering of the product,*
lift the implement to the desired height.
10. *To save the value,*
press ✓ .
11. *To define the desired switch-on point for the metering of the product,*
lift the implement to the desired height.
12. *To save the value,*
press ✓ .



CMS-I-00006631

Depending on the implement configuration, a switch point must be configured for the headlands.

13. Under "Switch points, headlands", continue with > .
14. *To define the desired switch point for the headland position,*
lift the implement to the desired height.
15. *To save the value,*
press ✓ .



CMS-I-00006632

7.6 Setting up the fan speed monitoring

CMS-T-00000760-F.1

The singling unit fan produces the overpressure in the grain singling. The fan speed is set via the tractor hydraulic system of the PTO shaft speed.

To monitor the singling unit fan, a nominal speed is specified. In addition, the pressure in the singling unit fan can be monitored. For implements with front hopper, the fan speed can also be monitored on the hydraulically driven conveyor fan.

7 | Adjusting the implement

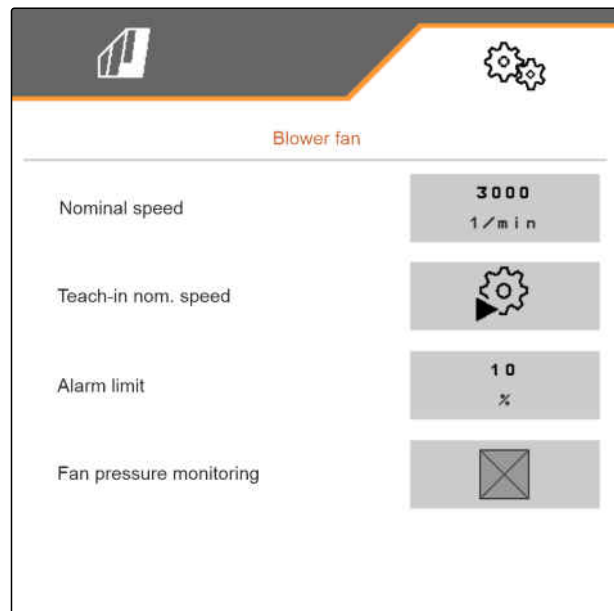
Configuring the source for the speed signal

1. In the "Settings" menu, select "Implement" > "Fan" > "Singling unit" or "Front hopper".
2. Enter the desired nominal speed for the fan under "Nominal speed"

or

Select "Teach-in nominal speed" and follow the instructions on the display.

3. To define the deviation from the nominal speed at which an alarm should be issued, enter the deviation in percent under "Alarm limit".
4. If the pressure in the singling unit fan should be monitored, activate "Fan pressure monitoring".



CMS-I-00000603

7.7 Configuring the source for the speed signal

CMS-T-00000841-I.1

7.7.1 Configuring the simulated speed

CMS-T-00000762-F.1

To control the implement, a speed signal is required. If no speed signal is available, the simulated speed can be used.



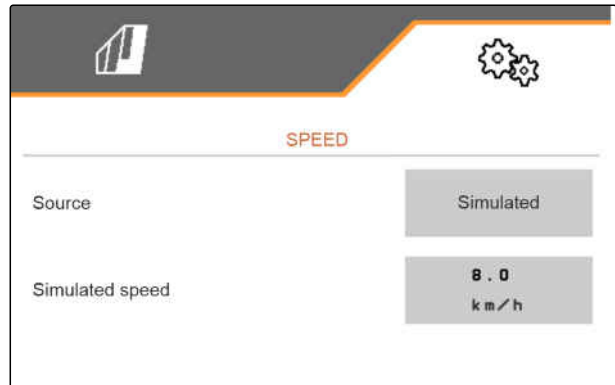
NOTE

The simulated speed must be maintained during operation.

When a speed signal is detected, the simulated speed will be deactivated.

After restarting the implement, the simulated speed is set to 0 km/h.

1. In the "Settings" menu, select "Implement" > "Speed".
2. Under "Source", select "Simulated".
3. Under "Simulated speed", enter the desired speed.



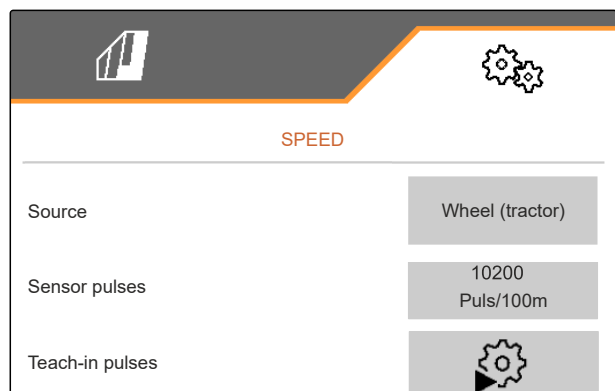
CMS-I-00000623

7.7.2 Setting up the speed sensor on the implement

CMS-T-00000842-H.1

To control the implement, a speed signal is required. The speed sensor on the implement can be used for this.

1. In the "Settings" menu, select "Implement" > "Speed".
2. Under "Source", select "Implement".
3. If the desired value for the pulses is known, enter the pulses per 100 m under "Sensor pulses".

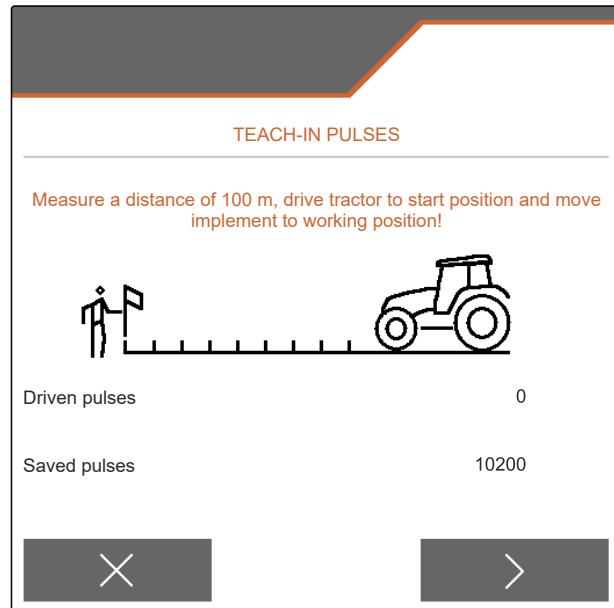


CMS-I-00000622

7 | Adjusting the implement

Configuring the source for the speed signal

4. *To check the number of pulses:*
Compare the speed display of the tractor and the control terminal.
5. *If the desired value for the pulses is not known,*
Select "*Teach-in pulses*" and follow the instructions on the display.
6. *To save the recorded pulses,*
press > .



CMS-I-00007281

7.7.3 Using the ISOBUS speed signal

CMS-T-00000843-G.1

To control the implement, a speed signal is required. The speed signal that is determined by the sensors on the tractor and provided to the implement through the ISOBUS can be used for this.

1. In the "*Settings*" menu, select "*Implement*" > "*Speed*".

Only existing sources will be shown. If, for example, a speed is not available from "Radar (tractor)", this selection option will also not be offered.

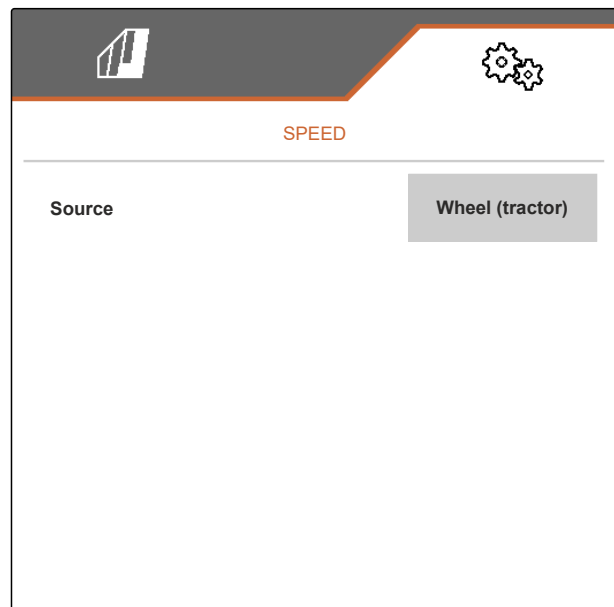
2. Under "*Source*", select "*Radar (tractor)*", "*Wheel (tractor)*" or "*Satellite (NMEA2000)*".



NOTE

Inaccurate sources for the speed signal cause faulty control.

3. *To check the accuracy of the source for the speed signal:*
Compare the speed display of the tractor to the displayed speed on the control terminal.



CMS-I-00006151

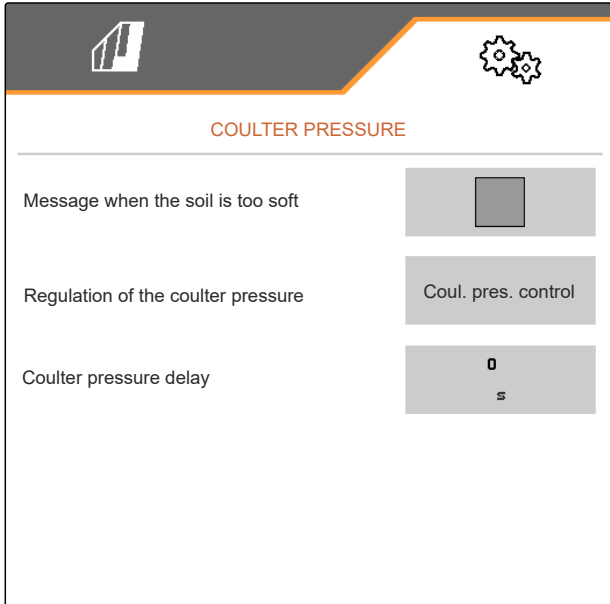
7.8 Configuring the coulter pressure monitoring

CMS-T-00008405-C.1

1. In the "Settings" menu, select "Implement" > "Coulter pressure".
2. To monitor the coulter pressure, activate "Message when the soil is too soft".

The signal for the coulter pressure monitoring can come from 2 different sources:

- Coulter pressure control: A sensor determines the pressure in the hydraulic coulter pressure system.
 - Contact force regulation: At least 2 sensors determine the contact force on the coulter.
3. Select the source for the coulter pressure signal under "Regulation of the coulter pressure".
 4. Enter the desired time for delayed use of the coulter pressure under "Coulter pressure delay".



CMS-I-00006633

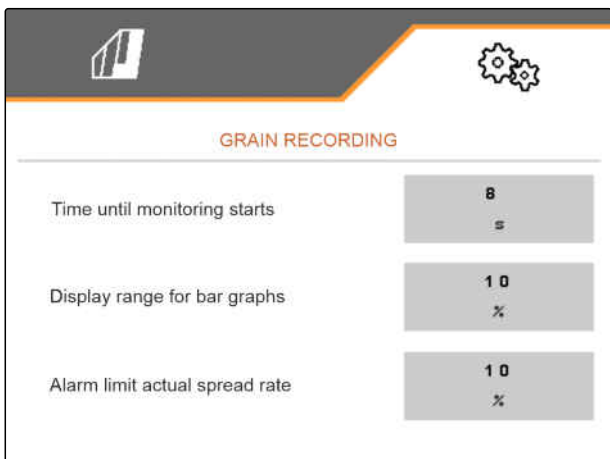
7.9 Configuring the grain recording

CMS-T-00000763-E.1

1. In the "Settings" menu, select "Implement" > "Grain recording".
2. To avoid getting alarms right after starting to spread, set a monitoring delay under "Time until monitoring starts".

The grain monitoring is shown in the Work menu with bar graphs. The bar graphs show the deviation from the target spread rate. The display range of the bar graphs corresponds to a defined percent value of the target spread rate.

3. Enter the percent value under "Display range for bar graphs".
4. To define the deviation from the target spread rate at which an alarm should be issued, enter the deviation from the target spread rate in percent under "Actual spread rate alarm limit".



CMS-I-00000594



NOTE

For seeding squash, set the "Display range for bar graphs" and "Actual spread rate alarm limit" to 30%.

7.10 Defining the geometry




CMS-T-00012002-C.1

7.10.1 Geometry values for mounted implements

CMS-T-00000764-I.1

The grain placement is controlled based on the geometry.

The geometry values are pre-set. If the geometry values need to be changed, the distances must be precisely remeasured.

Implement version	Hitch	Distance from placement point			
		Fertiliser 	Seed 	Micropellets 	
				In the furrow	On the surface
Rigid or telescopic frame	Short mounting frame	69 cm	142 cm	168 cm	198 cm
	Long mounting frame	96 cm	169 cm	195 cm	225 cm
Folding frame	Short mounting frame	69 cm	142 cm	168 cm	198 cm
	Long mounting frame	117 cm	190 cm	216 cm	246 cm
3 m pack top frame	Soil tillage implement	174 cm	247 cm	273 cm	303 cm
6 m pack top frame		190 cm	263 cm	289 cm	319 cm



REQUIREMENTS

- ☑ Multi Boom is licensed and available on the control terminal
- ☑ Multi Boom is switched on on the control terminal

1. In the "Settings" menu, select "Implement" > "Geometry".
2. enter the number of rows under "Installed rows".
3. Enter the row spacing under "Row spacing".
4. To enter the positions of the placement points:
continue with >

CMS-I-00004085

Depending on the software version, 2 or 3 booms are available when "Multi Boom" is activated. Either one boom is available for each applied material or seed is switched together with micropellets via one boom. Fertiliser is switched via another boom. When "Multi Boom" is deactivated, the placement point is defined for seed.

5. To activate "Multi Boom":
In the "Settings" menu, select "Profile" > "ISOBUS" and activate "Multi Boom".
6. Read the distance to the placement points from the table and enter it under **1**.
7. For offset to the left:
Enter the offset with a negative prefix under **2**

or

For offset to the right:




Enter the offset with a positive prefix.

CMS-I-00000596

7.10.2 Geometry values for towed implements

The grain placement is controlled based on the geometry.

The geometry values are pre-set. If the geometry values need to be changed, the distances must be precisely remeasured.



Implement version	Distance between hitch and drawbar		Distance from placement point			
			Fertiliser 	Seed 	Micropellets 	
					In the furrow	On the surface
Towed with 9 m or 12 m	K80 or drawbar eye	650 cm	223 cm	279 cm	305 cm	335 cm
	Lower link	640 cm				
Towed with 6 m	K80 or drawbar eye	xxx cm	xxx cm	xxx cm	xxx cm	xxx cm
	Lower link	xxx cm				



REQUIREMENTS

- ✓ Multi Boom is licensed and available on the control terminal
- ✓ Multi Boom is switched on on the control terminal

1. In the "Settings" menu, select "Implement" > "Geometry".
2. enter the number of rows under "Installed rows".
3. Enter the working width of the implement under "Working width".
4. Enter the row spacing under "Row spacing".
5. To enter the distances from the seeding rail position:
Continue with >

GEOMETRY

Installed rows

24

Working width

1200.0 cm

Row spacing

50.0 cm

Seeding rail pos.

>

CMS-I-00007690

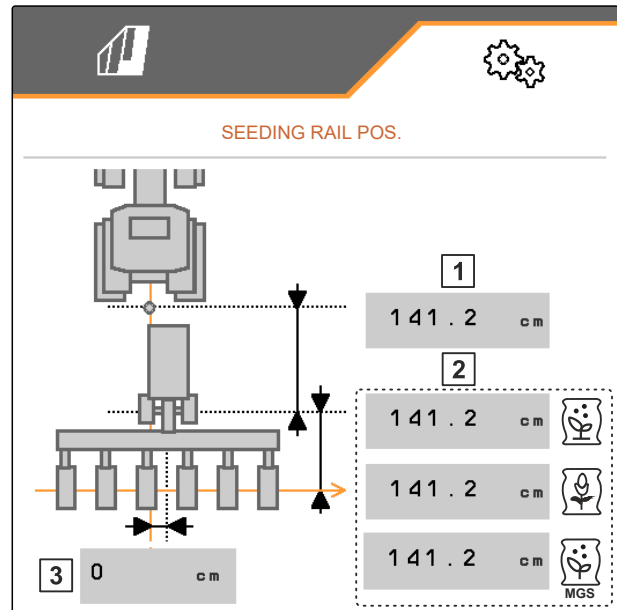
When "Multi Boom" is activated, a placement point can be defined for each applied material. When "Multi Boom" is deactivated, the placement point is defined for seed.

6. *To activate "Multi Boom":*
In the "Settings" menu, select "Profile" > "ISOBUS" and activate "Multi Boom".
7. Read the distance between connection device of the tractor and the implement axle from the table and enter it under **1**.
8. Read the distance to the placement points from the table and enter it under **2**.
9. *For offset to the left:*
Enter the offset with a negative prefix under **3**

or

For offset to the right:

Enter the offset with a positive prefix.

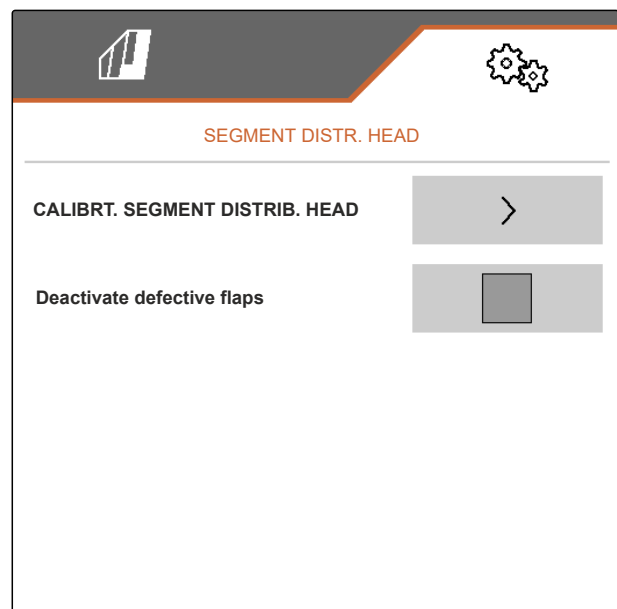


CMS-I-00007691

7.11 Configuring the segment distributor head


CMS-T-00009169-E.1

1. In the "Settings" menu, select "Implement" > "Segment distributor head".
 2. Under "Calibrate segment distributor head", press > .
 3. *To start the calibration,*
press > .
- ➔ The function of the flaps in the segment distributor head will be checked.



CMS-I-00007189


4. *When the calibration was successfully completed,*

press  .

or


If the calibration detects faulty flaps,
acknowledge the error message.

5. *To confirm the display of the faulty flaps,*

press  .

or

To repeat the calibration,

press  .

6. *To temporarily deactivate defective flaps in case of flap failure:*

Set the checkmark under "Deactivate defective flaps"

7.12 Configuring the scale

CMS-T-00005771-C.1

7.12.1 Taring the scale

CMS-T-00005773-C.1

Taring the scale serves to determine the weight of the hopper with 0 kg hopper contents. The displayed fill quantity of the empty tank must be 0 kg. Taring is necessary before initial operation and after mounting special equipment on the weighing hopper.



REQUIREMENTS

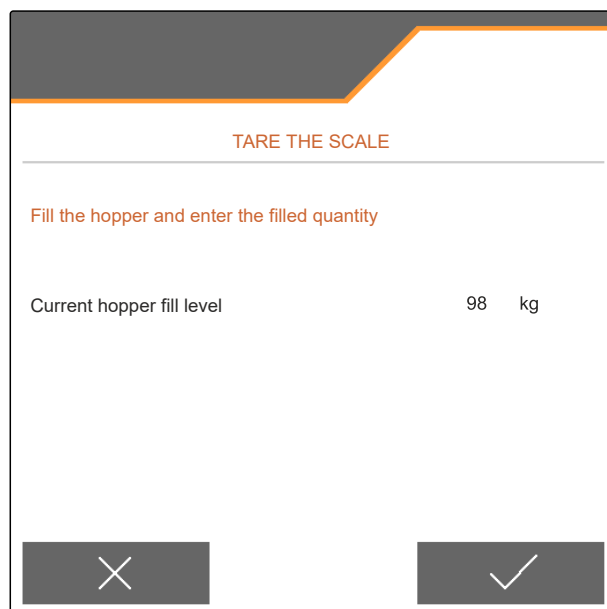
- ✓ The hopper is empty
- ✓ The fan is switched off
- ✓ The implement is stopped
- ✓ The implement is lowered on level ground

1. In the "Settings" menu, select "Implement" > "Scale" > "Tare scale".

2. Start the procedure with ✓

or

Discard the procedure with ✗.



CMS-I-00004084

7.12.2 Adjusting the scale

CMS-T-00005772-B.1

Adjusting the scale serves to correct the scale with a full hopper. Adjustment is necessary if the wrong hopper content is displayed after filling.



REQUIREMENTS

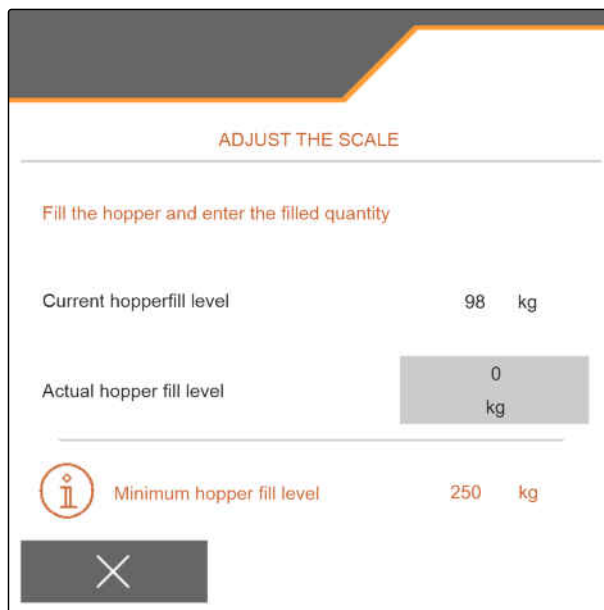
- ✓ Scale is tared
- ✓ The filling quantity is known

1. In the "Settings" menu, select "Implement" > "Scale" > "Adjust scale".

2. Start the procedure with ✓
or

Discard the procedure with ✗.

3. Follow the instructions on the display.



CMS-I-00004083

7.13 Defining the blockable rows

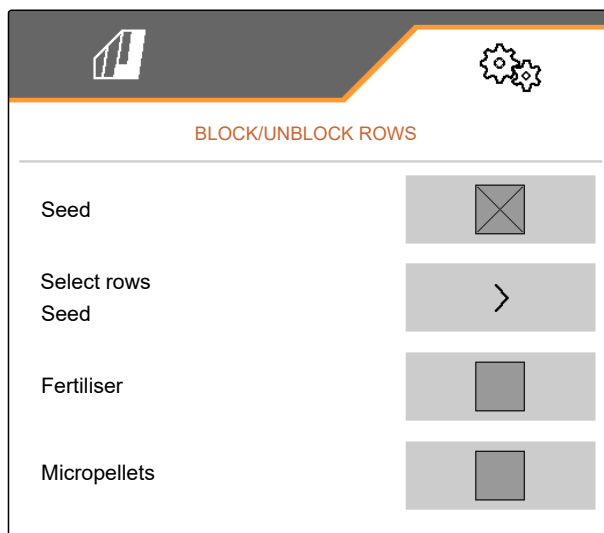
CMS-T-00003894-D.1

Spreading can be stopped for individual seeding coulters if necessary. To do so, the desired seeding coulters must be selected.

1. In the "Settings" menu, select "Implement" > "Block/unblock rows".

2. Set the checkmark at the desired metered materials.

3. Press > to select rows.



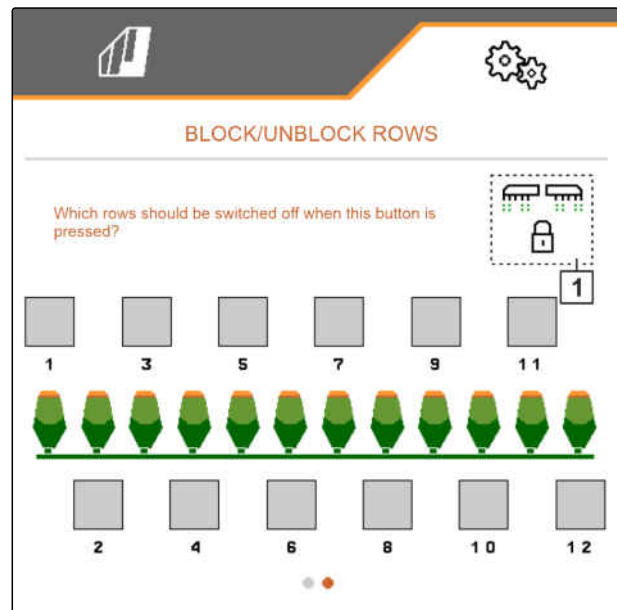
CMS-I-00005696

4. Set

or

remove the checkmark for the desired number.

➔ Deactivate the selected rows in the Field menu with the **1** button.



CMS-I-00002866

7.14 Pairing the Bluetooth device

CMS-T-00008356-C.1

The implement can be connected to a mobile end device via Bluetooth. To do so, the desired application from the App Store or Google Play Store must be installed.

1. In the "Settings" menu, select "Implement" > "Bluetooth".

2. To activate pairing:

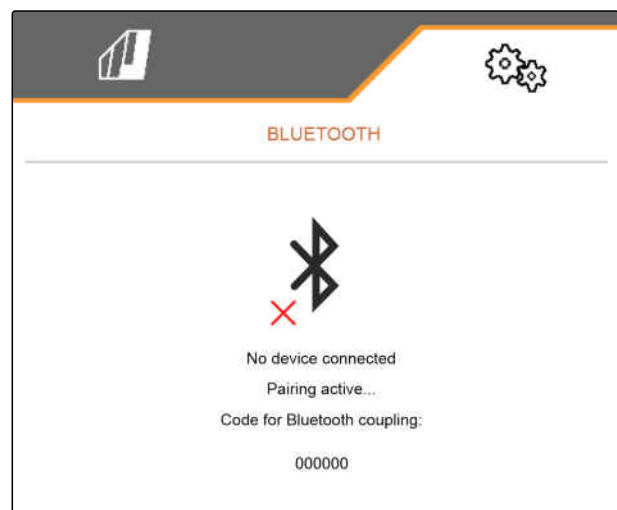
select .

➔ Pairing is active.

➔ The code for Bluetooth pairing is shown.

3. Start the application on the mobile end device.

4. From the application, establish the Bluetooth pairing with the implement.



CMS-I-00005695



NOTE

Depending on the software version, a code does not need to be entered for Bluetooth pairing.

5. If prompted, enter the code for Bluetooth pairing on the mobile end device.

➔ The connection was successfully established.



CMS-I-00007811

7.15 Activating the GPS recording

CMS-T-00000765-F.1

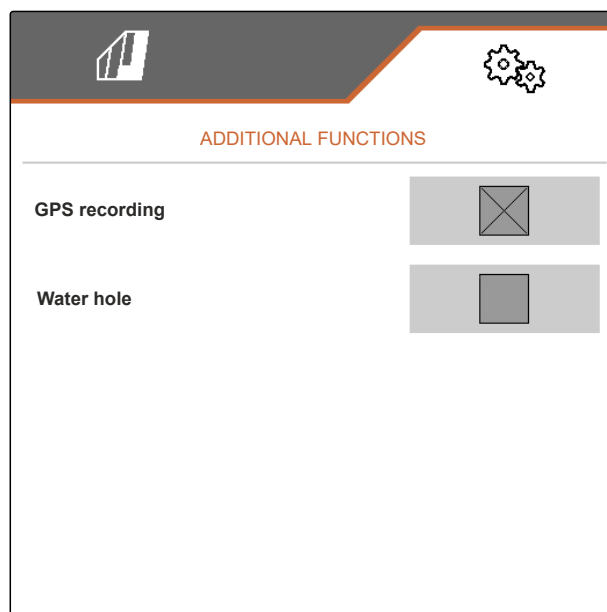
With GPS recording, spreading can be simulated for the connected control terminal without spreading seed. The control terminal marks the driven area as the worked area. The worked area can be used to create a field boundary.



REQUIREMENTS

- ☑ The implement is stopped
- ☑ All fans are switched off

1. In the "Settings" menu, select "Implement" > "Additional functions".
2. Set the checkmark under "GPS recording".
3. To use the GPS recording, see page 85.



CMS-I-00007428

7.16 Activating SmartControl

CMS-T-00000766-D.1

SmartControl automatically controls the scrapers on the singling discs. This automatically reduces gaps and doubles.

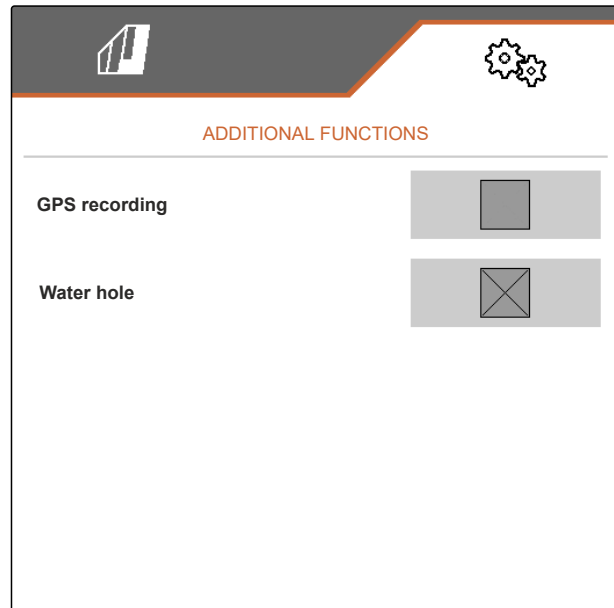
1. In the "Settings" menu, select "Implement" > "Additional functions".
2. Set the checkmark under "SmartControl".

7.17 Activating the water hole function

CMS-T-00003895-F.1

The water hole function allows driving through wet areas with the implement lifted without interrupting seeding.

1. In the "Settings" menu, select "Implement" > "Additional functions".
2. Set the checkmark under "Water hole".
3. To use the water hole function, see page 87.




CMS-I-00007427

7.18 TwinTerminal

CMS-T-00005780-D.1

The TwinTerminal serves as an external control terminal located directly on the implement. The TwinTerminal is operated using 4 buttons **2**. The function fields **1** show the current function of the buttons.


When  is shown, a malfunction has occurred. The ISOBUS control terminal shows an error code or a text message.



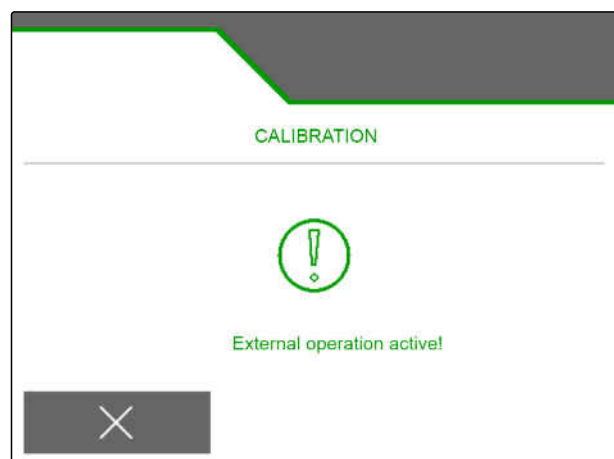
CMS-I-00004042

1. To transfer the operation to the TwinTerminal, select the TwinTerminal in the corresponding menu on the ISOBUS control terminal.

➔ External operation is active.

2. To terminate operation on the TwinTerminal, press .

➔ The ISOBUS control terminal is active again.



CMS-I-00004092

7.19 AmaPilot⁺ multi-function stick

CMS-T-00005800-C.1

The implement functions can be executed using the AmaPilot⁺. AmaPilot⁺ is an AUX-N control element with freely selectable button assignment. A default button assignment is pre-configured for every Amazone ISOBUS implement. The functions are spread over 3 levels and can be selected by pressing with your thumb. The standard level is loaded when starting the implement. The illuminated ring **1** is lit green.



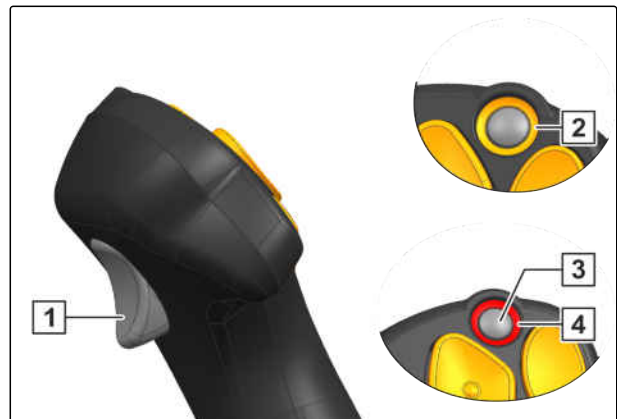
CMS-I-00004071

1. Hold the button **1**.

➔ Level 2 is active, the illuminated ring **2** is lit orange.

2. Press the button **3**.

➔ Level 3 is active, the illuminated ring **4** is lit red.



CMS-I-00004072

Managing profiles

8

CMS-T-00008399-D.1

8.1 Creating a new profile

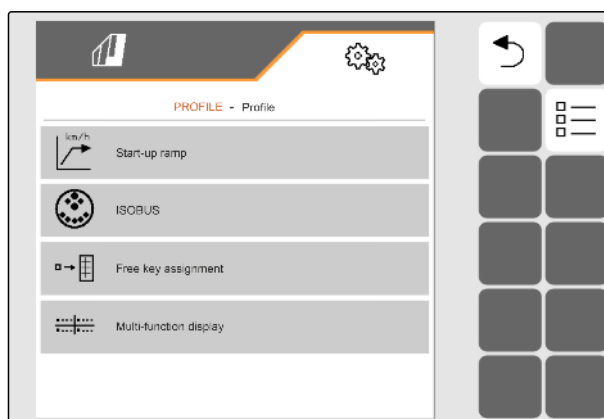
CMS-T-00003898-C.1

Each user can save a personal profile with settings for the terminal and the implement. The following configurations are saved here:


- Multi-function display
- Button assignment
- ISOBUS
- Alarm limit
- Rate increments
- Start-up ramp

1. In the "Settings" menu, select "Profile".

2. select .



CMS-I-00002870

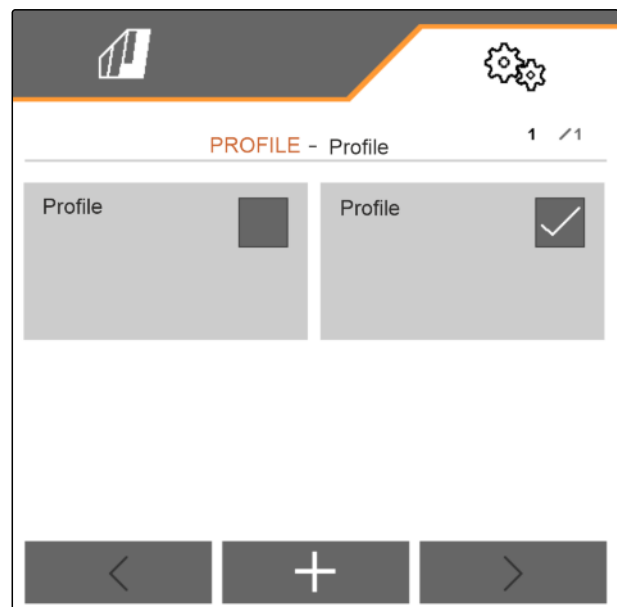
3. select .

➔ A new profile is created.



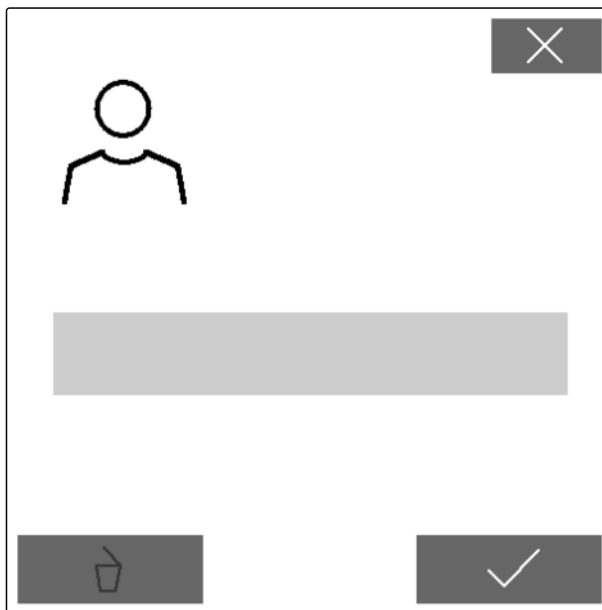
CMS-I-00002872

4. Select the newly created profile.



CMS-I-00002874

5. Enter the profile name.



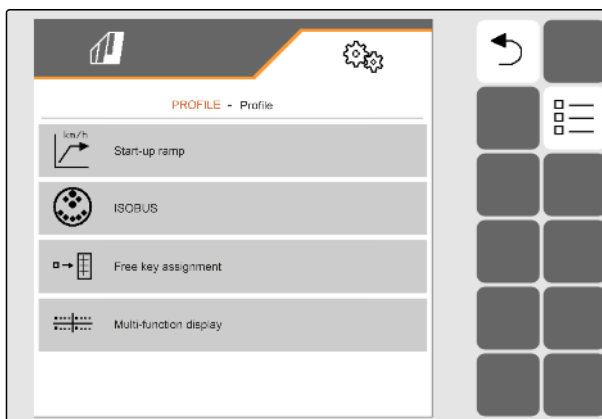
CMS-I-00002873

8.2 Selecting a profile

CMS-T-00003899-B.1

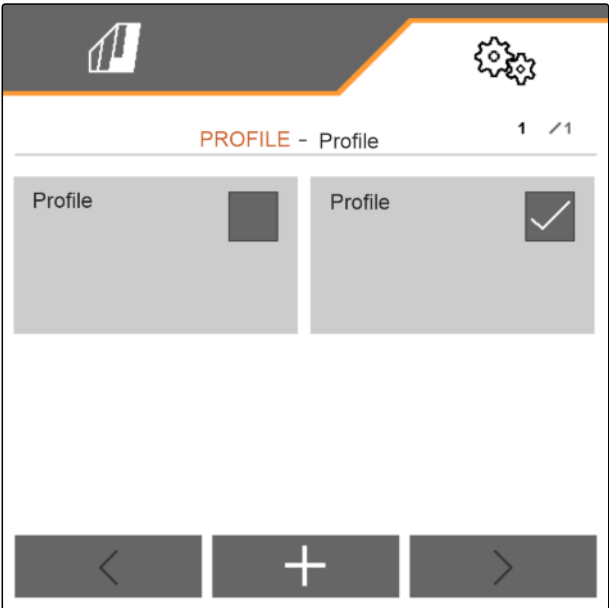
1. In the "Settings" menu, select "Profile".

2. select .



CMS-I-00002870

3. Set the checkmark for the desired profile.




CMS-I-00002874

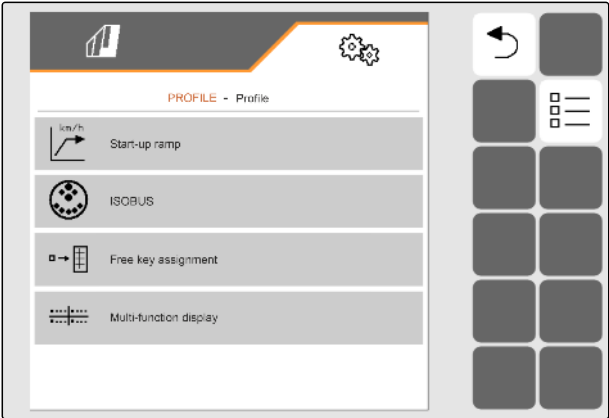
8.3 Deleting profiles

CMS-T-00009456-A.1

Only deactivated profiles can be deleted. A last activated profile must always exist and cannot be deleted.

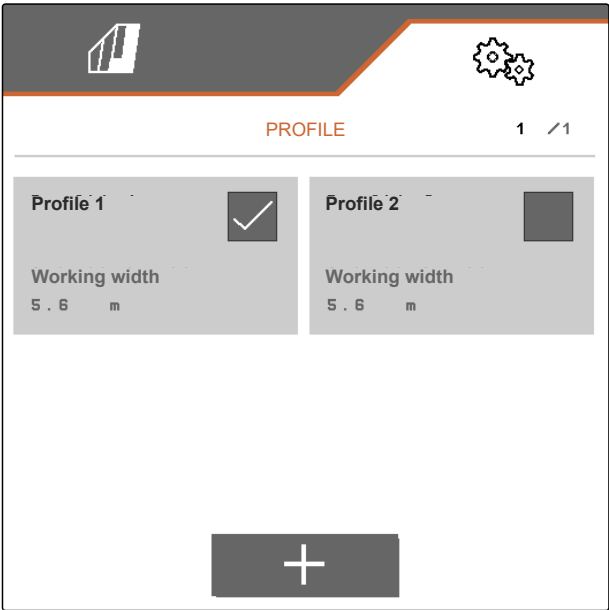
1. In the "Settings" menu, select "Profile".

2. select .




CMS-I-00002870

3. Select the desired profile.



CMS-I-00006010

4. select .



CMS-I-00004641

8.4 Setting the profile

CMS-T-00008400-D.1

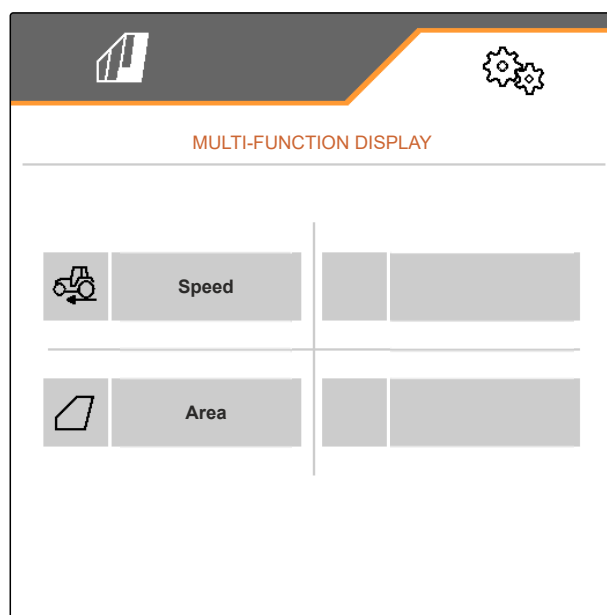
8.4.1 Changing the multi-function display

CMS-T-00000775-E.1

4 different values van be displayed in the Work menu on the multi-function display. The following table contains all of the available values.

Value	Explanation
Speed	Current speed in km/h
Seed target spread rate	Set target spread rate for the seed
Area	Worked area in hectares
Fertiliser quantity	Spread fertiliser quantity
Fan actual speed	Fan speed in revolutions per minute
Fan actual speed, front hopper	Fan speed in revolutions per minute
Remaining area	Area in hectares that can still be worked with the remaining fertiliser
Remaining distance	Distance in metres that can still be worked with the remaining fertiliser
ISO coefficient of variation	Value for the grain placement accuracy according to ISO. The smaller the value, the better the accuracy of the grain placement
ISO standard deviation	Average deviation from the target placement points in millimetres
Fertiliser calibration factor	Factor for determining the spread rate. The calibration factor will be determined during the calibration
Seeded area	Seeded area in hectares
MPS quantity	Spread micropellet quantity
Target depth ratio	Ratio of correctly placed grains in percent

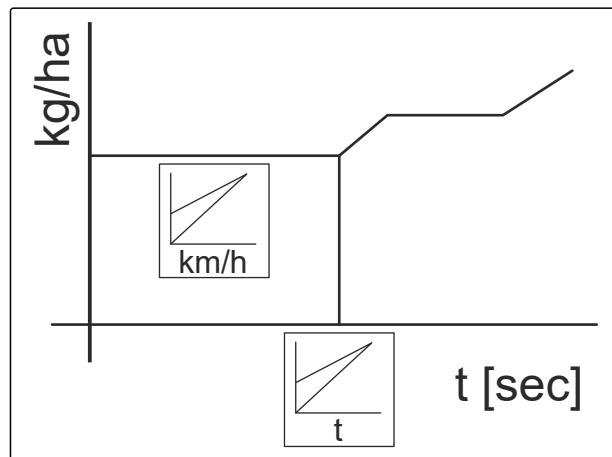
1. In the "Settings" menu, select "Profile" > "Multi-function display".
2. To change a display, select the desired display.
➔ A list with the available values will be displayed.
3. Select the desired value from the list.
4. Confirm the selection.



CMS-I-00000679

8.4.2 Configuring the start-up ramp

The spread rate of the metering unit depends on the working speed. When the implements starts moving, less metered material is spread. The start-up ramp prevents too little metered material from being spread. As long as the regular working speed has not been reached, spreading will be regulated based on the pre-selected speed.



CMS-T-00000769-G.1

CMS-I-00006527

1. In the "Settings" menu, select "Profile" > "Start-up ramp".
2. Activate the start-up ramp under "Start-up ramp".
3. Enter the desired speed for the spread rate regulation under "Intended speed".

The ramp start speed is a percent value of the pre-selected speed at which spreading starts.

4. Enter the desired percent value under "Ramp start speed".

Time passes until the working speed increases from the ramp start speed to the regular working speed. This time is the duration of the start-up ramp.

5. Enter the time in seconds under "Duration of the start-up ramp".


The screenshot shows the 'Start-up ramp' configuration screen. It includes a header with a gear icon and a title 'Start-up ramp'. Below the title, there are four settings: 'Start-up ramp' (checked), 'Intended forward speed' (8.0 km/h), 'Ramp starting speed' (50 %), and 'Start-up ramp time' (5 s).

CMS-I-00000605

8.4.3 Configuring ISOBUS

The connected control terminals are identified with numbers. If multiple terminals are being used, the terminals must be assigned for implement operation, documentation, and Section Control. If only one control terminal is connected, this control terminal is automatically assigned. The numbers can be determined in the settings of the control terminal.

CMS-T-00000772-H.1

1. In the "Settings" menu, select "Profile" > "ISOBUS".
2. select .
3. Under "Terminal for implement operation", enter the desired number of the control terminal.
4. Under "Terminal for documentation and Section Control", enter the desired number of the control terminal.



CMS-I-00002875

- All products: the terminal can transmit target rates for seed, fertiliser and micropellets.
 - Seed or fertiliser or micropellets: if the control terminal accepts less than 3 products, only the selected product can exchange target rates with the terminal.
5. *If the setpoints for the application rates should be adopted from the control terminal:*
Select the desired product or "All products" under "Offer external setpoints for".

Depending on the software version, 2 or 3 booms are available when "Multi Boom" is activated. Either one boom is available for each applied material or seed is switched together with micropellets via one boom. Fertiliser is switched via another boom. When "Multi Boom" is deactivated, the placement point is defined for seed.

6. *If a separate placement point is required for each applied material:*
Activate "Multi Boom"

or

If the control terminal only supports one boom:
Deactivate "Multi Boom".



CMS-I-00002875

8.4.4 Changing the free button assignment

CMS-T-00000774-E.1

With the free button assignment, the assignment of the buttons in the Work menu can be changed. To do


so, a list of all functions is shown on the left side and the Work menu on the right side.

NOTE

An orange checkmark on the button indicates that the respective function was already assigned at least once.

1. In the "Settings" menu, select "Profile" > "Free button assignment".

2. If the desired function cannot be found on the first page,

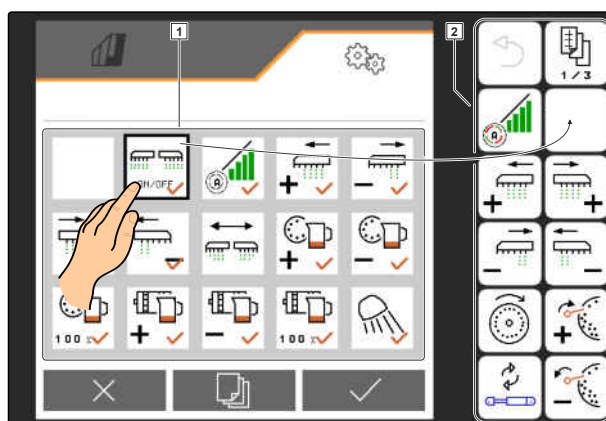
call up the next page with .

3. Tap the desired function from the list **1**.

➔ The selected function will be framed.

4. Tap the desired button in the Work menu **2**.

➔ The selected button is assigned to the selected function.



CMS-I-00000589

5. Assigning other buttons

or

Confirm the assignment with .

or

reject the assignment with .

8.4.5 Changing the multi-function display

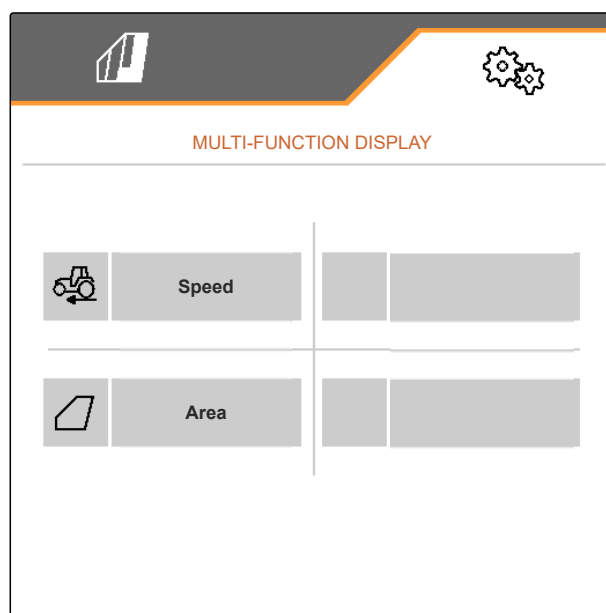
CMS-T-00008401-B.1

4 different values can be displayed in the Work menu on the multi-function display. The following table contains all of the available values.

Value	Explanation
Speed	Current speed in km/h
Seed target rate	Set target rate for the seed
Area	Worked area in hectares
Fertiliser quantity	Applied fertiliser quantity
Fan actual speed	Fan speed in revolutions per minute

Value	Explanation
Fan actual speed, front hopper	Fan speed in revolutions per minute
Remaining area	Area in hectares that can still be worked with the remaining fertiliser
Remaining distance	Distance in metres that can still be worked with the remaining fertiliser
ISO coefficient of variation	Value for the grain placement accuracy according to ISO. The smaller the value, the better the accuracy of the grain placement
ISO standard deviation	Average deviation from the target placement points in millimetres
Singling pressure, right	Singling pressure for the right implement section in millibar
Singling pressure, left	Singling pressure for the left implement section in millibar
Central Seed Supply pressure	Delivery pressure for the seed conveyor system in millibar
Fertiliser calibration factor	Factor for determining the application rate. The calibration factor will be determined during the calibration
Seeded area	Seeded area in hectares
MPS quantity	Applied micropellet quantity
Target depth ratio	Ratio of correctly placed grains in percent

1. In the "Settings" menu, select "Profile" > "Multi-function display".
2. To change a display, select the desired display.
➔ A list with the available values will be displayed.
3. Select the desired value from the list.
4. Confirm the selection.



CMS-I-00000679

Managing products

9

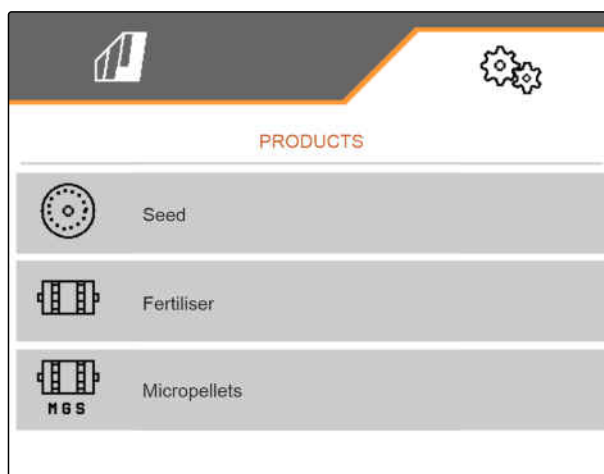
CMS-T-00000780-M.1

9.1 Creating a new product

CMS-T-00003915-D.1

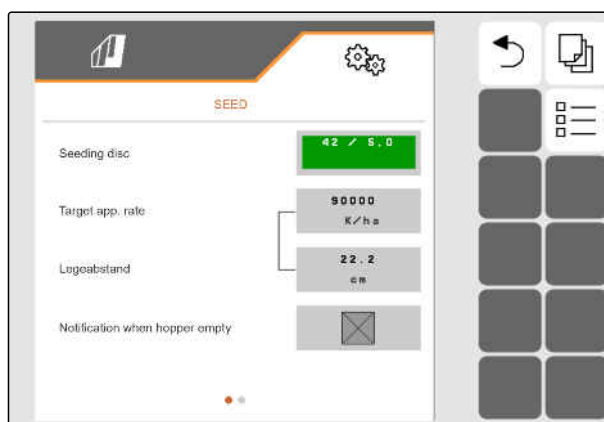
One product is always active. The active product cannot be deleted. If other products are required, new products can be created.

1. In the "Settings" menu, select "Products".
2. Select "Seed", "Fertiliser" or "Micropellets".




CMS-I-00002891

3. select

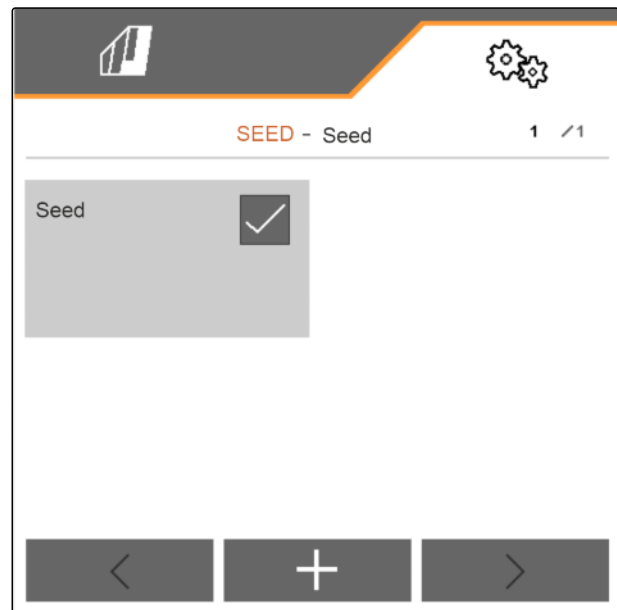


CMS-I-00002888

4. To create a new product,
select .

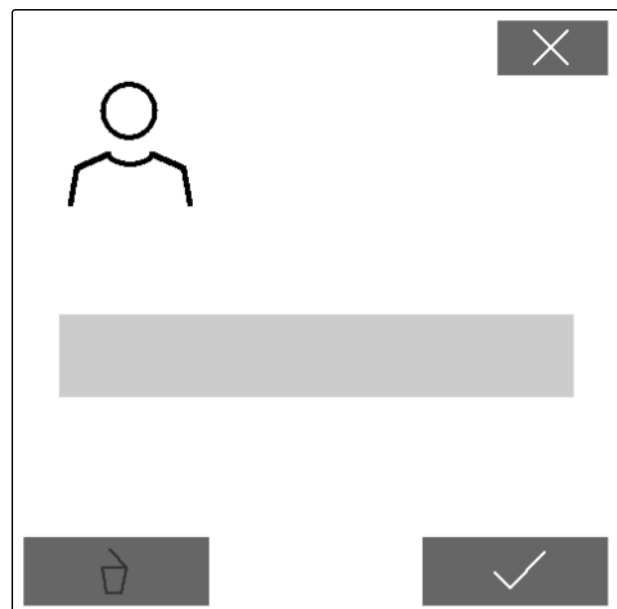
➔ A new product is created.

➔ The new product is automatically selected.



CMS-I-00002889

5. To name the new product,
Select Product. Enter the product name.

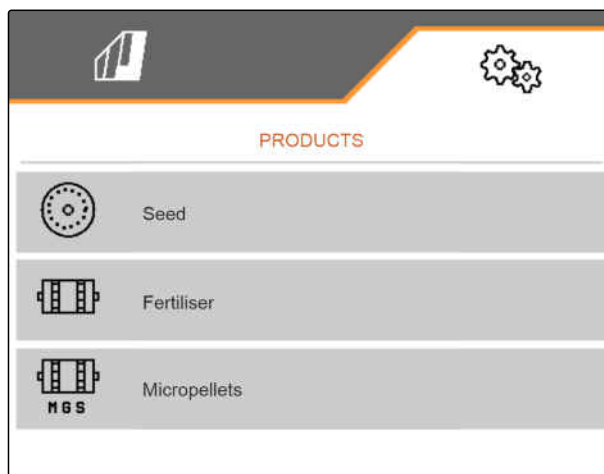


CMS-I-00002873

9.2 Selecting a product

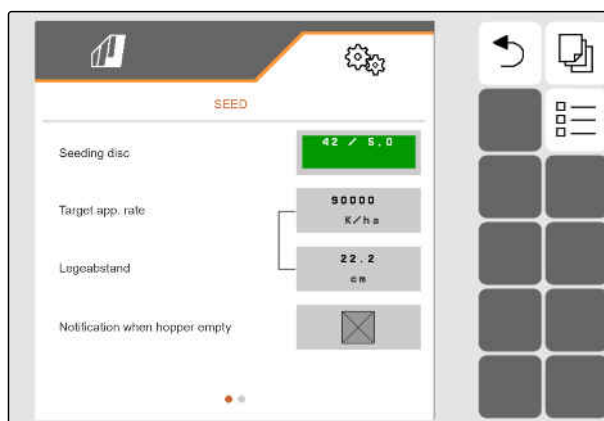
CMS-T-00003916-C.1

1. In the "Settings" menu, select "Products".
2. Select "Seed", "Fertiliser" or "Micropellets".



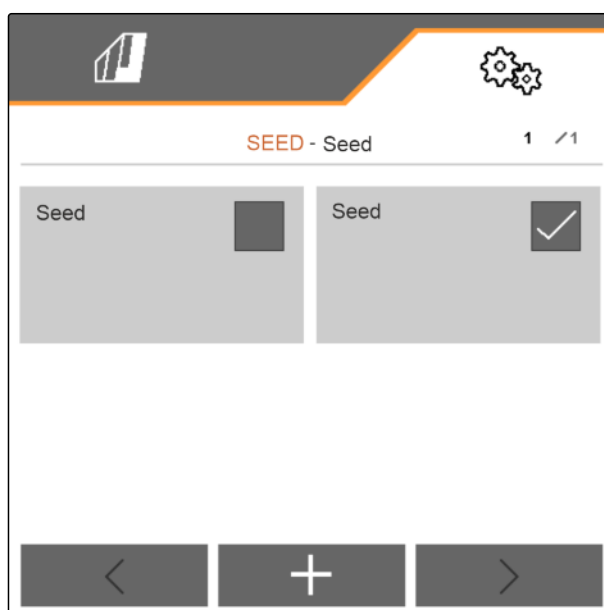
CMS-I-00002891

3. select .



CMS-I-00002888

4. Set the checkmark for the desired product.



CMS-I-00002890

9.3 Configuring seeds

CMS-T-00000781-J.1

1. In the "Settings" menu, select "Products" > "Seed".
2. Under "Seeding disc", select the desired seeding disc or select "..." in the selection menu above and enter a user-defined disc.

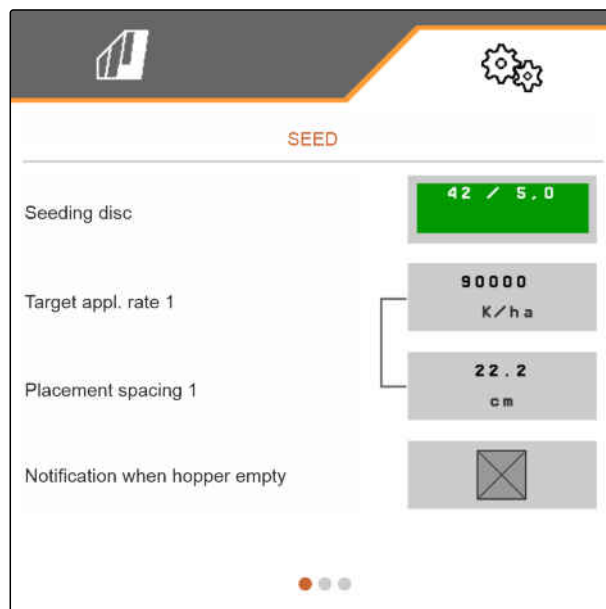
When the target spread rate is entered, the software calculates the placement spacing. When the placement spacing is entered, the software calculates the target spread rate.

3. Enter the desired spread rate in grains per hectare under "Target spread rate 1"

or

Enter the desired spacing of the grains under "Placement spacing 1".

4. If you want to monitor how much seed is left, activate "Low level monitoring".



CMS-I-00000604

5. Scroll through the menu pages with



WARNING

Incorrect measurement when the sensitivity is too high

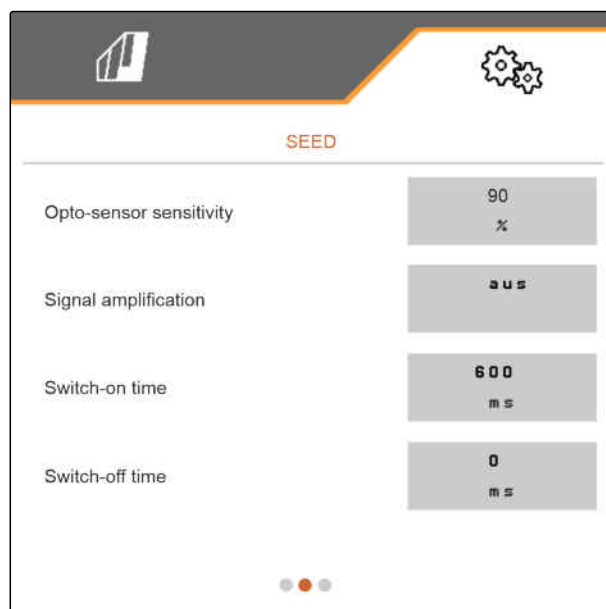
When the selected sensitivity of the opto-sensor is too high, it can detect dust, sand grains or contamination as seed.

- Do not set the opto-sensor sensitivity too high.

With the sensitivity of the opto-sensor, the size of the seed to be detected is defined, and it ensures that small seeds are also detected.

The following values are recommended for the sensitivity of the opto-sensors:

Seed	Sensitivity
Rapeseed	100 %
Sorghum	≤ 90 %
Soybean	≤ 90 %
Field bean	≤ 90 %



CMS-I-00004086

Seed	Sensitivity
Maize	≤ 90 %
Sugar beet	≤ 90 %
Sunflower	≤ 90 %
Squash	≤ 90 %

6. Set the sensitivity of the opto-sensors.

The signal amplification increases the signal of the opto-sensor.

With increasing soiling, the amplification can be gradually increased:

- Off
- Low
- Medium
- High
- Maximum

The following values are recommended for the signal amplification of the opto-sensors:

Seed	Signal amplification
Rapeseed	Low
Sorghum	Low
Soybean	Low
Field bean	Low
Maize	Low
Sugar beet	Low
Sunflower	Low
Squash	Low



WARNING


Incorrect measurement when the signal amplification is too high

When the selected signal amplification for the opto-sensor is too high, it can detect dust, sand grains or contamination as seed.

- Do not set the signal amplification too high.

7. Set the signal amplification for the opto-sensors.

8. To adjust the switch-on and switch-off time, see "Configuring Section Control".

9. Scroll through the menu pages with .

When a tramline is being created, the target spread rate can be increased in the adjacent rows.

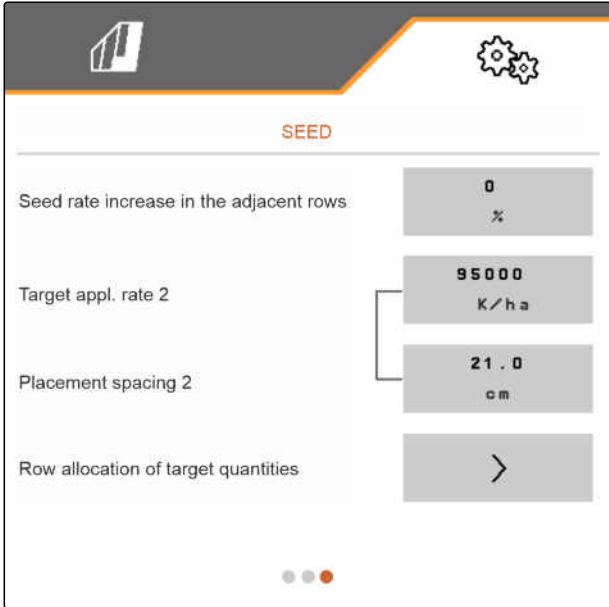
10. Enter the percent rate increase under "Seed rate increase in the adjacent rows".

When the target spread rate is entered, the software calculates the placement spacing. When the placement spacing is entered, the software calculates the target spread rate.

11. Enter the desired spread rate in grains per hectare under "Target spread rate 2"

or

Enter the desired spacing of the grains under "Placement spacing 2".



The screenshot shows a software interface for configuring seeds. At the top, there is a header bar with a gear icon on the right and a stylized 'M' logo on the left. Below the header, the word 'SEED' is displayed in red. The main area contains four input fields with corresponding labels on the left:

- Seed rate increase in the adjacent rows:** A numeric input field showing '0' with a '%' symbol below it.
- Target appl. rate 2:** A numeric input field showing '95000' with 'K/ha' below it.
- Placement spacing 2:** A numeric input field showing '21.0' with 'cm' below it.
- Row allocation of target quantities:** A button with a right-pointing arrow '>'.

At the bottom of the screen, there are three small circles: two grey and one orange, indicating the current page in a sequence.

CMS-I-00005691

12. If different target rates should be assigned to the rows:

Continue with >

13. Enter the target spread rate for each row.



ROW ALLOCATION OF TARGET QUANTITIES

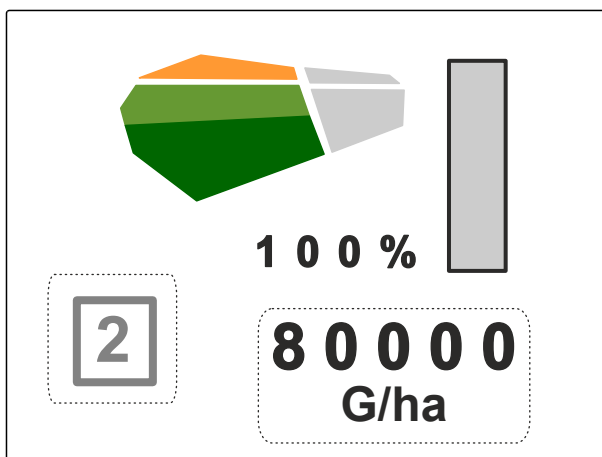
1	70000 G/ha	2	90000 G/ha	3	70000 G/ha
4	90000 G/ha	5	70000 G/ha	6	90000 G/ha
7	70000 G/ha	8	90000 G/ha	9	70000 G/ha
10	90000 G/ha	11	70000 G/ha	12	90000 G/ha

CMS-I-00005692

NOTE

If 2 target spread rates are being spread, a **2** is shown in the Work menu.

If 2 target spread rates are being spread, the target spread rate is shown in the Work menu as an average value of the different target spread rates.



100%

80000 G/ha

2

CMS-I-00007477

9.4 Configuring fertilisers

CMS-T-00000782-F.1

1. In the "Settings" menu, select "Products" > "Fertiliser".


On implements with decentralised metering units, the metering wheel volume per row is specified. On implements with central metering units, the metering roller volume for all rows is specified.

2. Under "Metering wheel", select the desired metering wheel or select "..." in the selection menu above and enter a user-defined metering wheel volume

or

Under "Metering rollers", select the desired metering roller volume or select "..." in the selection menu above and enter a user-defined metering roller volume.

3. Enter the desired spread rate under "Target spread rate".




CMS-I-00000593

The calibration area corresponds to the area on which fertiliser is spread during calibration.

4. Enter the desired calibration area.
5. Enter an empirical value as the calibration factor

or

Keep the value.

6. Scroll through the menu pages with .
7. If you want to monitor how much fertiliser is left, activate "Low level monitoring".
8. Enter the percent rate increase under "Rate increase in the adjacent rows".
9. To adjust the switch-on and switch-off time, see "Configuring Section Control".

9.5 Configuring micropellets

CMS-T-00000933-F.1

1. In the "Settings" menu, select "Products" > "Micropellets".

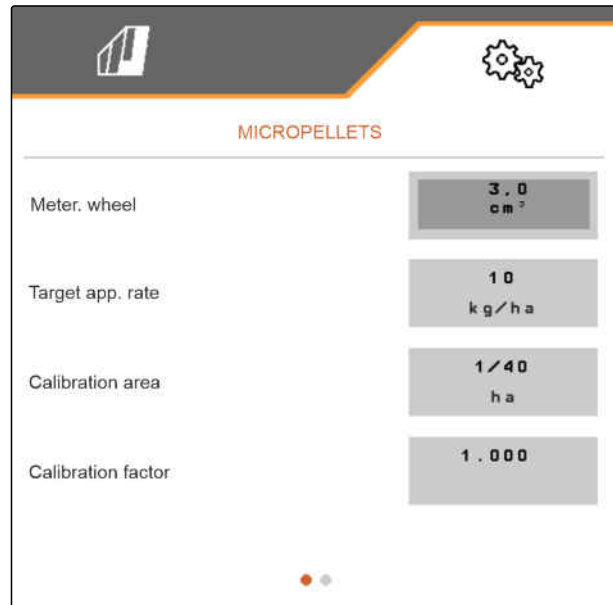
On implements with decentralised metering units, the metering wheel volume per row is specified. On implements with central metering units, the metering roller volume for all rows is specified.

2. Under "Metering wheel", select the desired metering wheel or select "." in the selection menu above and enter a user-defined metering wheel volume

or

Under "Metering rollers", select the desired metering roller volume or select "." in the selection menu above and enter a user-defined metering roller volume.

3. Enter the desired spread rate under "Target spread rate".




CMS-I-00000600

The calibration area corresponds to the area on which micropellets are spread during calibration.

4. Enter the desired calibration area.
5. Enter an empirical value as the calibration factor

or

Keep the value.

6. Scroll through the menu pages with .
7. *If you want to monitor how much micropellets are left, activate "Low level monitoring".*
8. Enter the percent rate increase under "Rate increase in the adjacent rows".

9.6 Switching times for Section Control

CMS-T-00000773-I.1

Hopper	Product	Switch-on time	Switch-off time
Rear hopper (mounted implements)	Seed	600 ms	0 ms
	Fertiliser	2000 ms	1000 ms
	Micropellets	2000 ms	1000 ms
Front-mounted hopper	Seed	600 ms	0 ms
	Fertiliser	3000 ms	3700 ms
	Micropellets	3000 ms	1000 ms
Rear hopper (towed implements)	Seed	600 ms	0 ms
	Fertiliser	3000 ms	3700 ms
	Micropellets	2000 ms	1000 ms

The switch-on and -off times in the table are the pre-set times for Section Control. They can be adjusted to prevent overlaps or unworked areas.

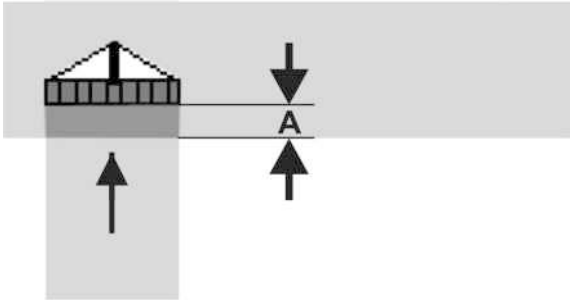
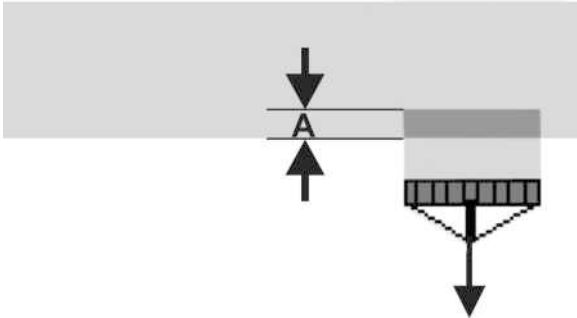
When the placement points are switched per Section Control, it takes a few milliseconds until the drives respond. The length of the conveyor section up to the application point also affects precise switching at the headlands. These delays can cause overlaps or unworked areas. The switching times compensate for these delays when switching on and off.

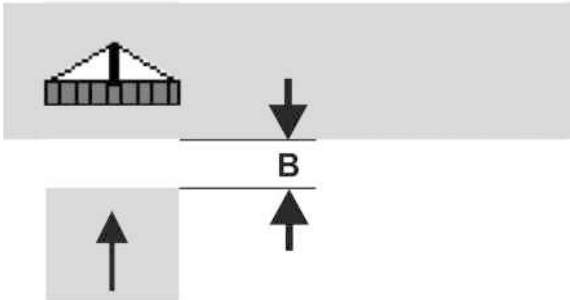
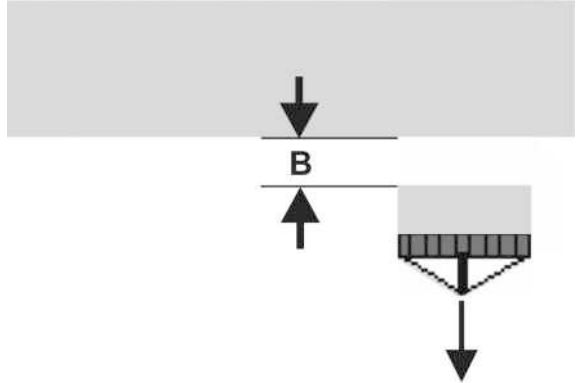


NOTE


For precise switching at the headlands, especially for seed drills, the following points are absolutely necessary:

- RTK accuracy of the GPS receiver (update rate: at least 5 Hz, recommended 10 Hz)
- Constant speed when driving into the headlands or out of the headlands

Switch-off time	Switch-on time
Switching off when entering a worked area	Switching on when moving off a worked area
	
(A) Length of the overlap	

Switch-off time	Switch-on time
Switching off when entering a worked area	Switching on when moving off a worked area
	
(B) Length of the unworked area	

1. In the "Settings" > "Products" menu, select the desired hopper.

2. Scroll through the menu pages with .

or

If overlaps are produced when entering a worked area,
increase the switch-off time

or

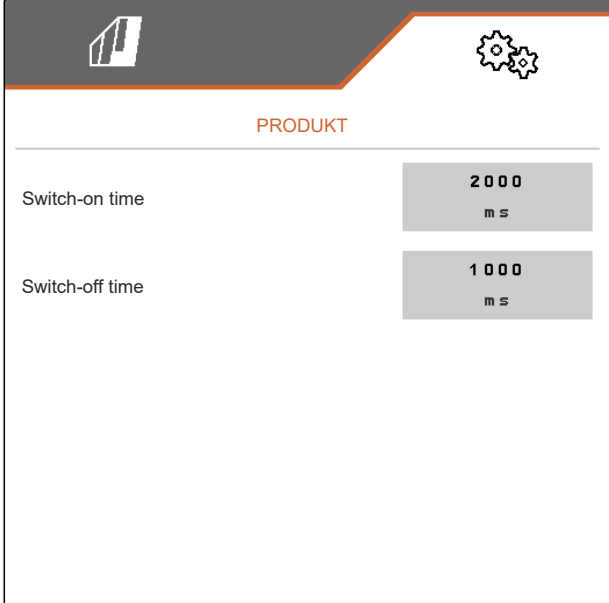
If unworked areas are produced when entering a worked area,
reduce the switch-off time

or

If overlaps are produced when moving off a worked area,
reduce the switch-on time

or

If unworked areas are produced when moving off a worked area,
increase the switch-on time.



The screenshot shows a settings interface for a product. At the top, there is a header bar with a logo on the left and a gear icon on the right. Below the header, the word 'PRODUKT' is centered. The main content area has two rows. The first row is labeled 'Switch-on time' and has a value of '2000' with 'm s' below it. The second row is labeled 'Switch-off time' and has a value of '1000' with 'm s' below it. The values are displayed in a grey box.

CMS-I-00007861

9.7 Adjusting the Central Seed Supply setpoint pressure difference

CMS-T-00009906-D.1



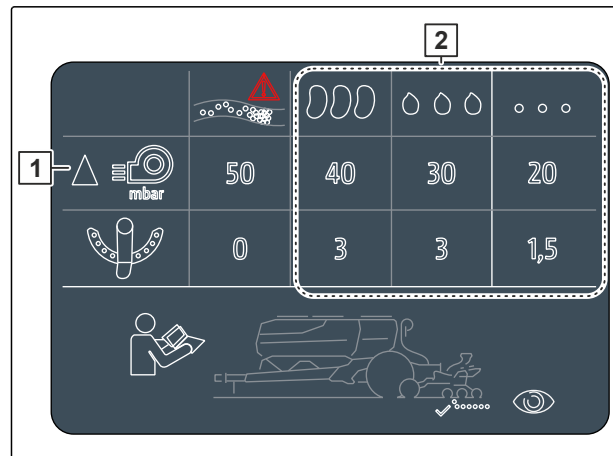
REQUIREMENTS

- ✓ The seed hoppers are filled
- ✓ The implement is unfolded
- ✓ The fan is switched on
- ✓ The singling discs are filled with seed grains

The fan speed changes until the hydraulic fluid has reached its operating temperature.

Depending on the equipment, a pressure gauge, control computer or control terminal shows the air pressure. The specified fan pressures are reference values. Check the grain placement after driving a short distance.

1. Depending on the seed type **2**, read the pressure difference **1** from the sticker.



CMS-I-00007533



WARNING

Risk of injury due to parts of the fan being flung out

If the fan is operated at excessive speeds, fan parts can break and be flung out.

- Make sure that the fan speed does not exceed 5,000 1/min.

2. In the "Settings" menu, select "Products" > "Seed".


3. Scroll through the menu pages with

In automatic mode, the setpoint difference between the Central Seed Supply pressure and the singling pressure is entered. The fan speed is regulated automatically.


4. To switch on automatic mode:
activate the "Central Seed Supply automatic function".

5. Enter the pressure difference under *"Setpoint difference Central Seed Supply and singling pressure"*.
6. Enter the pressure difference for the empty hopper under *"Setpoint pressure difference for empty hopper"*.

7. *To adjust the setpoint pressure difference:*

press ^{CSS} +  in the Work menu

or


press ^{CSS} -  in the Work menu.

- ➔ The *"Setpoint difference Central Seed Supply and singling pressure"* value is set for the full hopper.
- ➔ The *"Setpoint pressure difference for empty hopper"* is set for the full hopper.


In manual mode, the fan speed can be infinitely adjusted until the desired setpoint difference between the Central Seed Supply and singling pressure is reached.

8. *To switch off automatic mode:*
deactivate the *"Central Seed Supply automatic function"*.

9. *To adjust the setpoint pressure difference:*

press ^{CSS} +  in the Work menu

or

press ^{CSS} -  in the Work menu.

- ➔ The *"Setpoint difference Central Seed Supply and singling pressure"* value is set for the full hopper.
 - ➔ The *"Setpoint pressure difference for empty hopper"* is set for the full hopper.
10. *To monitor the fan,*
refer to *"Configuring the fan speed monitoring"* in the ISOBUS operating manual



NOTE

If the desired fan pressure is not reached, a bigger hydraulic motor can help.

Please contact your AMAZONE Customer Service.

Calibrating the metering unit

10

CMS-T-00005786-G.1

10.1 Calibration with the ISOBUS terminal or the calibration button

CMS-T-00000755-G.1



REQUIREMENTS

- ☑ The fan is switched off
- ☑ The implement is at a standstill

1. In the *"Field menu"* > *"Calibration"*, select the desired hopper.
2. Enter the subsequent working speed under *"Intended speed"*.
3. Enter the target spread rate.

On implements with decentralised metering units, the metering wheel volume per row is specified. On implements with central metering units, the metering roller volume is specified for all rows.

4. Under *"Metering wheel"*, select the desired metering wheel or select *"..."* in the selection menu above and enter a user-defined metering wheel volume

or

Under *"Metering rollers"*, select the desired metering roller volume or select *"..."* in the selection menu above and enter a user-defined metering roller volume.

5. Continue with >

The screenshot shows a 'CALIBRATION' screen with a green header bar. Below the header, there is a green instruction: 'Check values, change if necessary!'. The screen contains three input fields, each with a label on the left and a value box on the right. The first field is 'Intended forward speed' with a value of '12.0 km/h'. The second field is 'Target app. rate' with a value of '100.00 kg/ha'. The third field is 'Meter. wheel Metering vol.' with a value of '210 ccm'. At the bottom of the screen, there are two large grey buttons: a left arrow (X) and a right arrow (>).

CMS-I-00006401

The calibration area corresponds to the area on which metered material is spread during calibration.

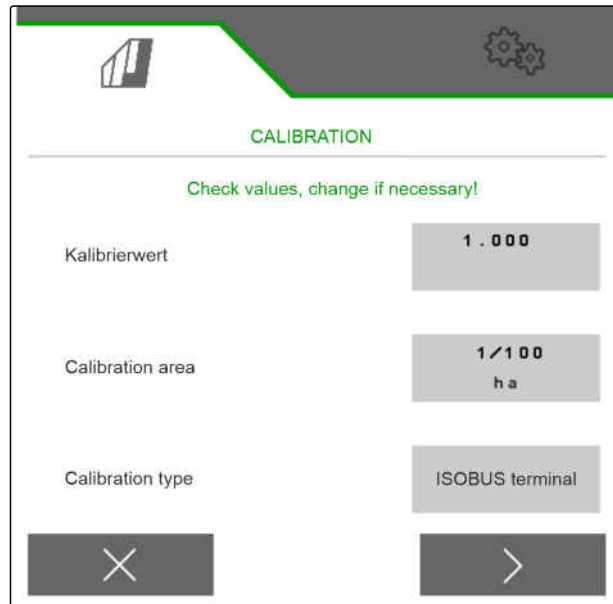
6. Enter the desired calibration area.

The calibration type defines how the calibration is started.

7. *To start the calibration with the ISOBUS control terminal,*
select ISOBUS control terminal as the
"Calibration method"

or

To start the calibration with the calibration button,
select calibration button as the "Calibration method".




The screenshot shows the 'CALIBRATION' screen with a green header bar. Below the header, there is a green instruction: 'Check values, change if necessary!'. The screen contains three input fields: 'Kalibrierwert' with the value '1.000', 'Calibration area' with the value '1/100 ha', and 'Calibration type' with the value 'ISOBUS terminal'. At the bottom, there are two buttons: a grey button with a white 'X' and a grey button with a white right-pointing arrow.

CMS-I-00000706

8. Continue with >

9. *To prepare the implement for calibration,*
refer to the implement operating manual.

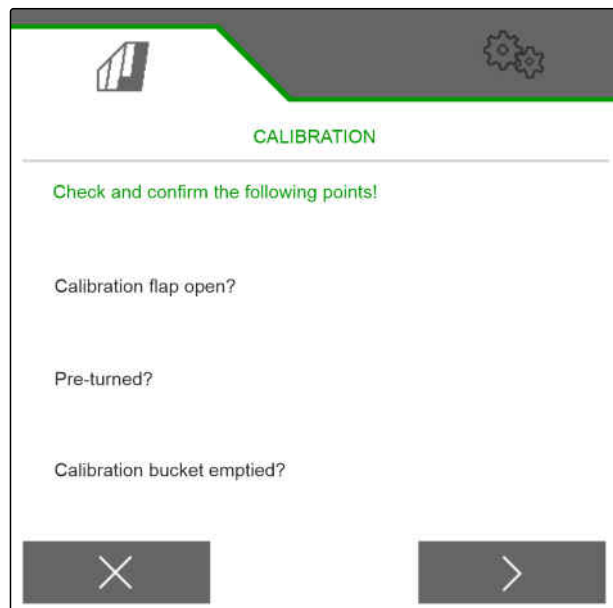
10. *If the points shown on the display are fulfilled,*
continue with >

11. Press pre-metering  .

12. *If the ISOBUS control terminal was selected as the calibration method,*
perform the calibration on the ISOBUS control terminal

or


If the calibration button was selected as the calibration method,
perform the calibration on the implement.



The screenshot shows the 'CALIBRATION' screen with a green header bar. Below the header, there is a green instruction: 'Check and confirm the following points!'. The screen contains three checklist items: 'Calibration flap open?', 'Pre-turned?', and 'Calibration bucket emptied?'. At the bottom, there are two buttons: a grey button with a white 'X' and a grey button with a white right-pointing arrow.

CMS-I-00000707

13. To start the calibration,

press  and hold

or

Press and hold the calibration button.

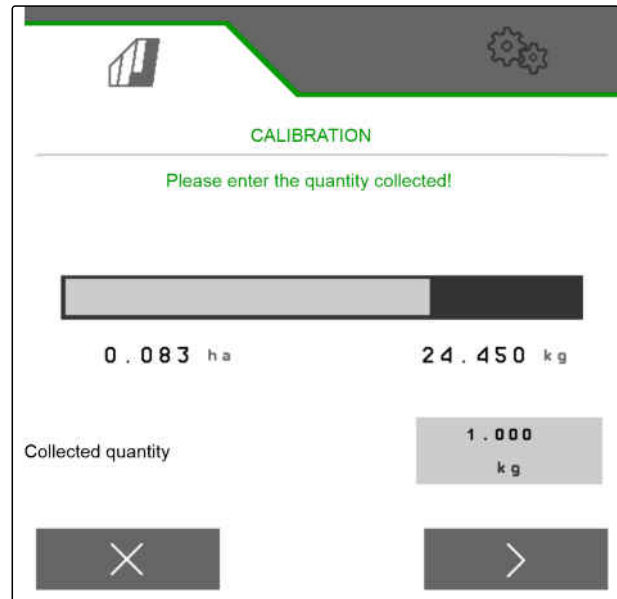
➔ During the calibration procedure, the theoretic spread quantity will be displayed.



NOTE

At high metering quantities, the calibration can be paused to empty the calibration bucket.

The calibration can also be terminated prematurely if the collected quantity is enough for checking.



CMS-I-00000710


14. Weigh the collected quantity.

15. Take account of the weight of the calibration bucket.

16. Enter the weight of the collected quantity.


17. Continue with .

➔ The calibration factor will be calculated.


18. Accept the displayed calibration factor with 

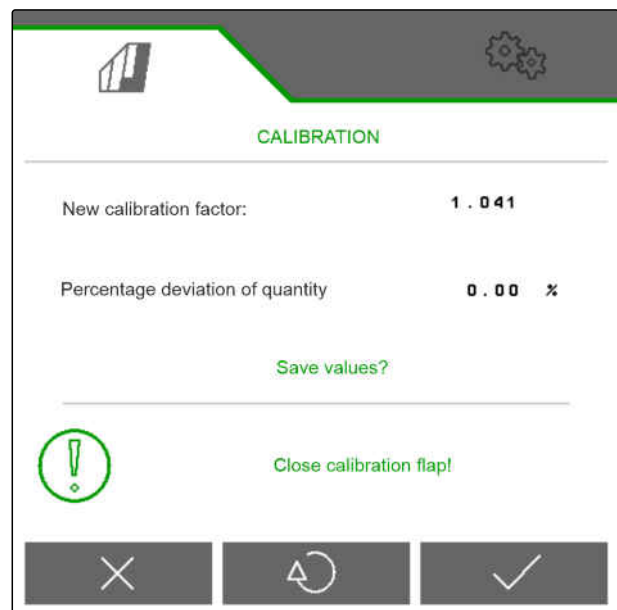
or

To accept the displayed calibration factor and to repeat the calibration for optimisation,

select 

or

Reject the displayed calibration value with .



CMS-I-00000709

10.2 Calibrating with the TwinTerminal

CMS-T-00005787-F.1



REQUIREMENTS

- ✓ The fan is switched off
- ✓ The implement is at a standstill

1. In the *"Field menu"* > *"Calibration"*, select the desired hopper.
2. Enter the subsequent working speed under *"Intended speed"*.
3. Enter the target rate.

On implements with decentralised metering units, the metering wheel volume per row is specified. On implements with central metering units, the metering roller volume is specified for all rows.

4. Under *"Metering wheel"*, select the desired metering wheel or select *"..."* in the selection menu above and enter a user-defined metering wheel volume

or

Under *"Metering rollers"*, select the desired metering roller volume or select *"..."* in the selection menu above and enter a user-defined metering roller volume.

5. Continue with >

The calibration area corresponds to the area on which metered material is applied during calibration.

6. Enter the desired calibration area.

The calibration type defines how the calibration is started.

7. To perform the calibration with the *TwinTerminal*, select *TwinTerminal* as the *"Calibration method"*

8. Continue with >

The screenshot shows the 'CALIBRATION' screen with the following fields and values:

Field	Value	Unit
Intended forward speed	12.0	km/h
Target app. rate	100.00	kg/ha
Meter. wheel Metering vol.	210	ccm

At the bottom, there are two buttons: a back button (X) and a forward button (>).

CMS-I-00006401

The screenshot shows the 'CALIBRATION' screen with the following fields and values:

Field	Value	Unit
Kalibrierwert	1.000	
Calibration area	1/100	ha
Calibration type	ISOBUS terminal	

At the bottom, there are two buttons: a back button (X) and a forward button (>).

CMS-I-00000706

9. Check the entries before the calibration.

10. Confirm the entries with **OK** .

or

To correct the entries,


press  .



CMS-I-00004049

11. To prepare the implement for calibration, refer to the implement operating manual.

12. To fill the metering unit,

press and hold pre-metering  .

13. When the pre-metering is complete,

press **OK** .



CMS-I-00004059

14. Empty the calibration bucket.

15. Place a calibration bucket under the metering unit.

16. When the metering unit is open and an empty calibration bucket is positioned,

press **OK** .

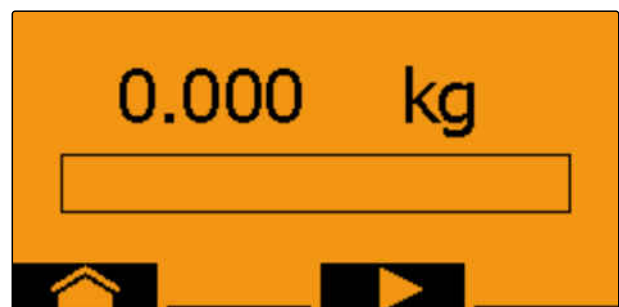


CMS-I-00004054

17. To start the calibration,

press  and hold.

➔ During the calibration procedure, the theoretic applied quantity will be displayed.



CMS-I-00004053

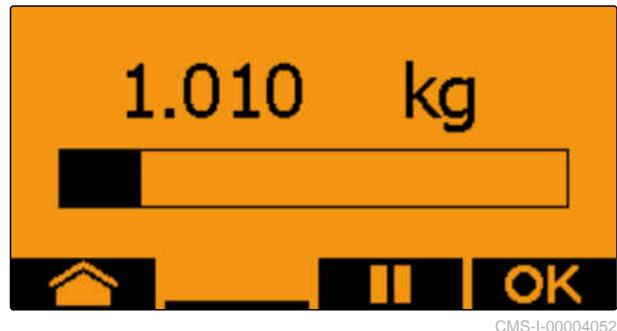
NOTE

At high metering quantities, the calibration can be paused to empty the calibration bucket.

If the collected quantity is enough for checking, the calibration can also be terminated prematurely.

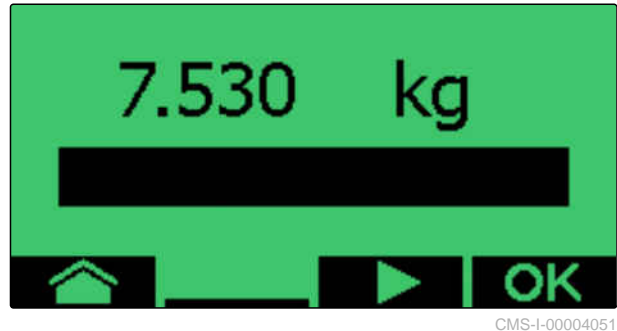
As soon as "OK" appears, the calibration test can be ended prematurely.

18. To terminate the calibration,
press **OK** .



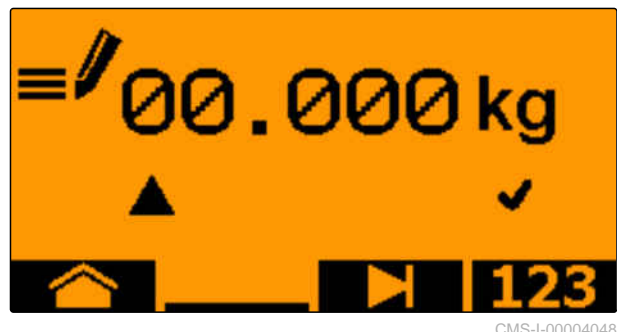
When the display turns green, the selected calibration area was reached and the calibration is finished. The metering unit stops automatically.

19. To switch to the Input menu,
press **OK** .



20. To select the desired position,
press **▶** or **◀** .

➔ The selected position is indicated by an arrow
▲ .



21. To switch to the numeric entry,
press **123** .

The underscore indicates the selected numeric entry.

22. To enter the desired value,
press **+** or **-** .



23. To accept the entered value,
press **OK** .

24. Enter all of the values.

25. Press **▶** until ☒ is selected.

26. To accept the calibration factor,
press **OK** .



The new calibration factor and the percent difference between the calibration quantity and the theoretical quantity is displayed.

27. To exit the Calibration menu,

press **OK** .

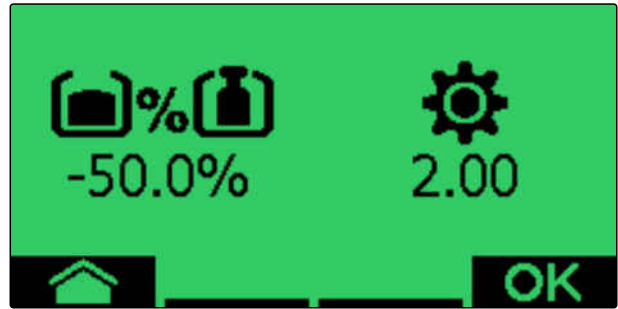
or

To discard the calibrated values and start a new calibration,

press  .

28. To activate the operation on the ISOBUS control terminal after the calibration,

press  .



Working

11

CMS-T-00008406-D.1

11.1 Unfolding the implement sections

CMS-T-00009458-A.1



REQUIREMENTS

- ✓ Speed is under 5 km/h
- ✓ The implement is raised

1. In the Field menu, select *"Hydraulic system"* > *"Unfolding"*.

➔ The folding cylinders are activated.

2. actuate the *"green 1"* tractor control unit.

➔ The implement sections are unfolded.

➔ When the implement sections are unfolded, the implement frame is then lowered.

➔ When the implement frame is lowered, the coulters will then be lowered.

11.2 Folding the implement sections

CMS-T-00009460-A.1



REQUIREMENTS

- ✓ Speed is under 5 km/h
- ✓ The implement is raised

1. In the Field menu, select *"Hydraulic system"* > *"Folding"*.

➔ The folding cylinders are activated.

2. actuate the *"green 2"* tractor control unit.

➔ The implement frame is lifted.

- ➔ The coulters are lifted.
- ➔ When the implement frame reaches the headland position, the loading board and wheel mark eradicator are folded.
- ➔ When the implement frame is folded, the implement sections are then folded.






11.3 Starting spreading

CMS-T-00000756-D.1



REQUIREMENTS

- ☑ The implement is configured
- ☑ The spread rate is calibrated
- ☑ The correct profile was selected
- ☑ The profile is configured
- ☑ The products are configured
- ☑ The implement is error free
- ☑ The implement is in working position
- ☑ The fan has reached the nominal speed
- ☑ For Section Control: Section Control is activated on the control terminal

1. Call up the "Work" menu.
2. *If the tramline counter should start at 0,*

 reset the tramline counter with  0 .
3. Switch on the part-width sections with .
4. *If Section Control is being used,*
 switch on Section Control with .
5. Drive at a constant speed.



NOTE

When the implement is strongly braked or accelerated, the placement accuracy of the seed is reduced. AMAZONE recommends using the speed signal from the implement.

11.4 Changing the seed spread rate


CMS-T-00000792-C.1



REQUIREMENTS


- ✓ Target spread rate for the seed is defined
- ✓ Quantity increments for the seed spread rate are defined

- *To increase the spread rate by the defined quantity increment,*

select  in the Work menu


or

To reduce the spread rate by the defined quantity increment,

select  in the Work menu

or

To adjust the defined target spread rate,

select  in the Work menu.

11.5 Changing the spread rate for fertiliser


CMS-T-00000793-B.1



REQUIREMENTS


- ✓ Target spread rate for the fertiliser is defined
- ✓ Quantity increments for the fertiliser spread rate are defined

- *To increase the spread rate by the defined quantity increment,*

select  in the Work menu


or

To reduce the spread rate by the defined quantity increment,

select  in the Work menu

or

To adjust the defined target spread rate,

select  in the Work menu.

11.6 Changing the spread rate for micropellets


CMS-T-00000923-A.1



REQUIREMENTS


- ☑ Target spread rate for micropellets is defined
- ☑ Quantity increments for the spread rate of the micropellets is defined

- *To increase the spread rate by the defined quantity increment,*

select  in the Work menu


or

To reduce the spread rate by the defined quantity increment,

select  in the Work menu

or

To adjust the defined target spread rate,

select  in the Work menu.

11.7 Switching part-width sections manually

CMS-T-00000794-B.1


The part-width sections can be switched on and off manually from the right to left or from left to right.



NOTE


When the implement is moved out of the working position, the part-width sections are switched off together. The part-width sections can also be switched off together with the main part-width section switch. If all of the part-width sections are switched off together, all of the part-width sections are also switched back on together. Manual switching of the part-width sections will not be saved.

- To switch on the part-width section from left to right,

select  in the Work menu


or

To switch on the part-width section from right to left,

select  in the Work menu


or

To switch off the part-width section from left to right,

select  in the Work menu


or

To switch off the part-width section from right to left,

select  in the Work menu.



or

To switch on all part-width sections,

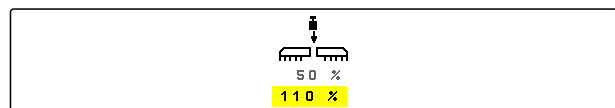
select  in the Work menu.

11.8 Adjusting the section pressure

CMS-T-00009185-C.1


Operating conditions	Section pressure
Heavy soils	Increase the section pressure: 
Light soils	Reduce the section pressure: 

The setpoint is shown in the status bar. If the section pressure is highlighted in yellow, the actual value deviates from the setpoint.




CMS-I-00006528

1. To increase the section pressure:

select  in the Work menu.

2. *To reduce the section pressure:*



select  in the Work menu.

3. *To check the setting:*

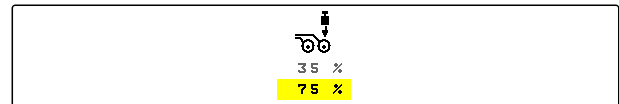
seed for 30 m at working speed and then check the work pattern.

11.9 Adjusting the coulter pressure

CMS-T-00003907-C.1

Operating conditions	Coulter pressure or contact force
Heavy soils	Increase the coulter pressure or contact force: 
Light soils	Reduce the coulter pressure or contact force: 


When the coulter pressure control is used, the status bar shows a percent value. If the actual value deviates from the setpoint, the coulter pressure is highlighted in yellow.




CMS-I-00006529

When the contact force regulation is used, the Work menu shows the additional weight in kilograms.

1. *To increase the coulter pressure or contact force,*

select  in the Work menu.

2. *To reduce the coulter pressure or contact force,*

select  in the Work menu.

3. *To check the setting,*

seed for approx. 30 m at working speed and then check the work pattern.

4. *When the operating conditions do not allow uniform contact pressure regulation, use the coulter pressure control. See "Configuring the coulter pressure monitoring".*

11.10 Using Section Control

CMS-T-00009477-E.1



REQUIREMENTS

- ✓ Section Control is licensed and available on the control terminal
- ✓ Section Control is switched on on the control terminal
- ✓ Implement is working error-free



indicates that the conditions for Section Control have been met and Section Control is activated.



indicates that the conditions for Section Control have not been met and Section Control is not activated.

1. *To switch on the implement:*



In the Work menu, select **ON/OFF**.

2. *To switch on Section Control automatic mode:*



In the Work menu, select



CMS-I-00006452

→ is shown in the Work menu.

→ When the implement is in working position, the fan is switched on and Section Control emits the switch-on signal, seeding starts when driving off.

→ If Section Control is overridden manually, the rows or sections are shown in red in the Work menu. The seeding procedure was interrupted.

3. *To switch off Section Control automatic mode:*



In the Work menu, select

→ is shown in the Work menu.

11.11 Using the tramline counter

CMS-T-00000795-F.1

To create tramlines, individual part-width sections are switched off. The rhythm with which the tramlines are created must be configured. To check the tramlines, the tracks and the created tramlines are counted. The

counters are shown in the implement data in the Work menu.

When a tramline is detected, the control terminal responds by emitting 3 acoustic warning signals.



REQUIREMENTS

- ☑ Tramline control is activated
- ☑ Tramline control is configured

- To set the tramline counter to 0,

 select .

- If the value for the tramline counter is not correct,

correct the tramline counter with  or .

- To pause the tramline counter,

 select .

- ➔ The tramline counter will turn yellow.

- To start the tramline counter,

 select  again.

11.12 Using the telescopic axle

CMS-T-00009461-A.1

REQUIREMENTS

- ☑ The speed is between 1 - 10 km/h

1. In the Field menu, select "Hydraulic system" > "Telescoping".

- ➔ The hydraulic cylinder of the telescopic axle is now activated.

2. To extend the telescopic axle,
actuate the "green 1" tractor control unit

or


To retract the telescopic axle,
actuate the "green 2" tractor control unit.


11.13 Using the tractor wheel mark eradicator



CMS-T-00009462-A.1

The tractor wheel mark eradicator can be moved automatically when lifting and lowering the implement or moved manually.

The tractor wheel mark eradicator can also be moved manually when in automatic mode. Moreover, the tractor wheel mark eradicator is always retracted automatically when lifting the implement.

 in the status bar indicates that the automatic mode of the tractor wheel mark eradicator is activated.

 in the status bar indicates that the automatic mode of the tractor wheel mark eradicator is deactivated.

1. *To switch on the automatic mode of the tractor wheel mark eradicator,*
select  in the Work menu.
 2. *To move the tractor wheel mark eradicator manually,*
select "Hydraulic system" in the Field menu.
 3. *Depending on the implement configuration,*
press  in the Work menu.
 4. In the Hydraulic system menu, select "Moving the tractor wheel mark eradicator".
- ➔ The hydraulic cylinder of the tractor wheel mark eradicator is now activated.
5. *To lower the tractor wheel mark eradicator,*
actuate the "green 1" tractor control unit

or

To raise the tractor wheel mark eradicator,
actuate the "green 2" tractor control unit.

11.14 Folding the loading board

CMS-T-00009463-A.1



REQUIREMENTS

- ☑ The implement must be unfolded.

1. In the Field menu, select *"Hydraulic system"* > *"Fold loading board"*.

➔ The hydraulic cylinders of the loading board are now activated.


2. *To unfold the loading board,*
actuate the *"green 1"* tractor control unit

or

To fold the loading board,
actuate the *"green 2"* tractor control unit.

11.15 Using the shifted tramline

CMS-T-00005776-B.1

When a shifted tramline is created, the bar graph for the corresponding coulter is supplemented with a tyre profile and an arrow for the shifting direction .

The coulter is shifted when the implement is lifted.

- ▶ *To shift the coulter when the implement is lowered,*
slowly drive up with the implement lowered.

11.16 Using tramline marking

CMS-T-00005777-C.1

When a tramline marking is created, the bar graph for the corresponding coulter is replaced by a tyre profile



REQUIREMENTS

- ☑ Tramline control is configured

- ▶ *To lift the coulter when the implement is lowered,*
slowly drive up with the implement lowered.

11.17 Mirroring the tramline control

CMS-T-00003906-B.1

The tramline control is configured in the implement settings. During the configuration, you must specify which side the field edge is on when beginning to work. Accordingly, the rows for the tramlines will be switched off with each track change. To be able to drive opposite to the configured track rhythm during operation, the tramline control can be mirrored.

- Select  on the button bar.

11.18 Adjusting the scraper manually

CMS-T-00000816-C.1

11.18.1 Adjusting all scrapers manually

CMS-T-00000797-C.1

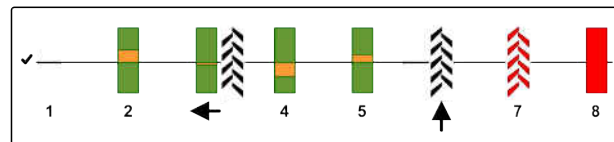
The scrapers single the seed on the singling disc. If the effect of the scraper is too strong, gaps are produced. If the effect of the scraper is too weak, doubles are produced.





REQUIREMENTS

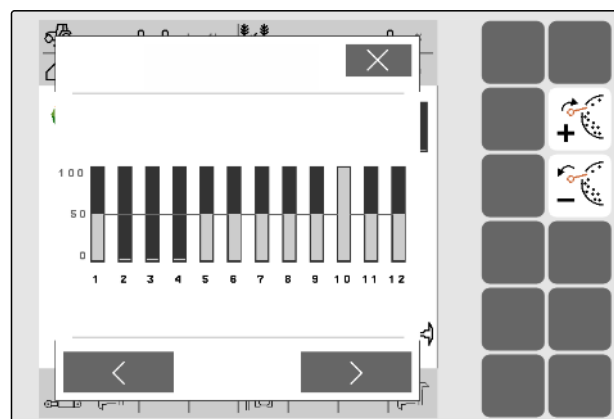
- ☑ SmartControl is deactivated

1. Select the bar graphs in the Work menu.



CMS-I-00000727

2. If too many gaps are produced,
reduce the effect of the scraper with .
3. If too many doubles are produced,
increase the effect of the scraper with .



CMS-I-00002885

11.18.2 Adjusting individual scrapers manually

CMS-T-00000817-C.1

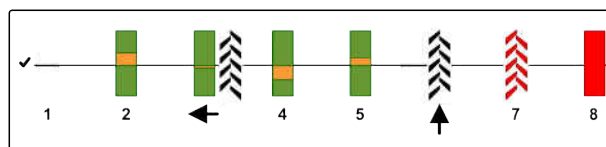
The scrapers single the seed on the singling disc. If the effect of the scraper is too strong, gaps are

produced. If the effect of the scraper is too weak, doubles are produced.

REQUIREMENTS

- ☑ SmartControl is deactivated

1. Select the bar graphs in the Work menu.



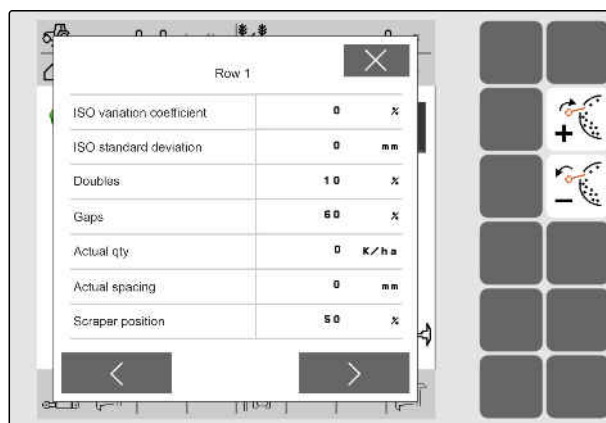
CMS-I-00000727

2. Select the desired seeding coulter using the arrows.

➔ The values for the selected seeding coulter are shown.

3. *If too many gaps are produced,*
reduce the effect of the scraper with

4. *If too many doubles are produced,*
increase the effect of the scraper with



CMS-I-00002886

11.19 Pre-metering the metering unit

CMS-T-00000798-C.1

Pre-metering enables punctual supply of seed at the beginning of the field. This prevents areas without seed at the beginning of the field.

REQUIREMENTS

- ☑ Time for pre-metering defined in the settings
- ☑ Implement at a standstill

- In the Work menu, select

➔ The metering units are pre-metered in the defined time.

11.20 Pre-stopping the metering unit

CMS-T-00011023-A.1


Pre-stopping enables a standstill of the metering units while driving:

- This prevents fertiliser residues or seed residues on the seedbed.
- This prevents fertiliser residues or seed residues in the conveyor section.




REQUIREMENTS

- ☑ The implement is in motion

1. In the Work menu, select .

➔ The metering units are stopped.

➔  is shown in the status bar.

➔ Depending on the implement equipment, the flaps in the distributor head remain open.

2. *To restart the metering units:*
Move the implement into headlands position.
Resume operation.


11.21 Using the Comfort hydraulic system

CMS-T-00000800-D.1

With the Comfort hydraulic system, the same tractor control unit can be used to execute different hydraulic functions. The different hydraulic functions can be selected in the Work menu. The pre-selected hydraulic function is shown in the status bar.

The following table shows the available hydraulic functions.

Operating the implement sections		Operating the track markers	Operating the frame ballasting
			

1. Pre-select the hydraulic function with .

➔ The pre-selected hydraulic function is shown in the status bar.






WARNING An unexpected hydraulic function is activated



- Before you actuate the tractor control unit, check the selected hydraulic function of the Comfort hydraulic system.

2. Actuate the "green" tractor control unit.

11.22 Controlling the track markers

CMS-T-00003910-C.1


				
Use both track markers alternately	Use the left track marker	Use the right track marker	Use both track markers simultaneously	Do not use track markers

1. To select the track marker function, select  on the button bar.
2. To trigger the track marker function, select  on the button bar.

11.23 Filling the singling disc

CMS-T-00000801-A.1

When the fan is switched off, the seeds falls off of the singling disc. To spread the seed without delays, the singling disc can be manually filled with seed.

- In the Work menu, select .

11.24 Using GPS recording


CMS-T-00000802-C.1

With GPS recording, spreading can be simulated for the connected control terminal without spreading seed. The control terminal marks the driven area as the worked area. The worked area can be used to create a field boundary on the control terminal.



REQUIREMENTS


- ✓ The utilised control terminal can create a field boundary from the worked area
- ✓ GPS recording activated in the settings

1. In the Work menu, select .

➔ GPS recording is switched on.

2. Drive around the field boundary.

3. *When manoeuvring on the field and the recording should be stopped,*

switch off GPS recording with .


4. Create a field boundary on the control terminal.

5. Delete the worked area on the control terminal.


11.25 Using the work lights

CMS-T-00000815-D.1

1. *Depending on the configuration of the button bar,*

press  in the Work menu.

2. *To switch on the work lights,*

press  in the Work menu.

➔ A symbol for the work lights is shown in the status bar.

3. *To switch off the work lights for road travel,*

press  again.


➔ The symbol in the status bar is turned off.

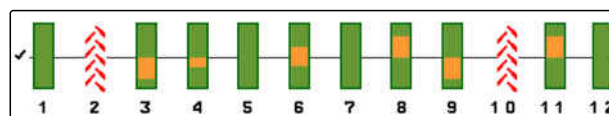
11.26 Blocking rows

CMS-T-00003908-B.1



REQUIREMENTS

- ☑ Blockable rows are defined
- ▶ *To block or unblock the rows,*
select  in the Work menu.
- ➔ Tramline symbols will be shown for the blocked rows instead of the bar graphs.
- ➔ The working width of the implement remains unchanged.



CMS-I-00002897




NOTE

To adjust the working width of the implement, refer to the implement's operating manual, "Adjusting the number of seed rows".

11.27 Using the water hole function

CMS-T-00003909-B.1

To lift the implement without stopping spreading, the water hole function can be used.

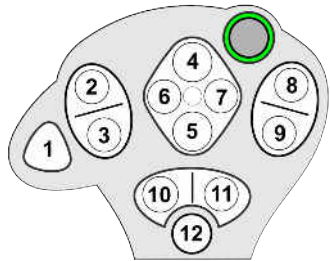
1. In the Work menu, activate  while driving before reaching the water hole.
- ➔ A symbol for the water hole function is shown in the status bar.
2. Lift the implement before reaching the water hole.
3. Drive through the passage without interrupting the seeding.
4. lower the implement.
- ➔ The water hole function is stopped and the symbol in the status bar is turned off.

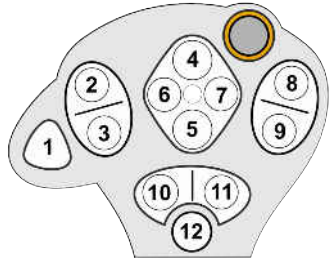
11.28 Using the AmaPilot+ multi-function stick

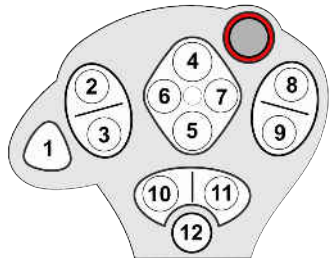
CMS-T-00005809-B.1

NOTE

The tables show the default assignment of the AmaPilot+. Multi-function sticks with free assignment can be assigned with the desired function on the control terminal.

Number	Function	Level 1
1	Fertiliser pre-stop function	
2	Switch on row from the right	
3	Switch off row from the left	
4	Singling unit seed rate increase	
5	Singling unit seed rate reduction	
6	Fertiliser rate increase	
7	Fertiliser rate reduction	
8	Switch on row from the left	
9	Switch off row from the right	
10	Set the fertiliser target rate change to 100 %	
11	Set the singling unit target rate change to 100 %	
12	Fertiliser pre-metering	

Number	Function	Level 2
1	Comfort hydraulic system switch	
4	Micropellet rate increase	
5	Micropellet rate reduction	
12	Pre-assigning the singling unit	

Number	Function	Level 3
4	Increment the tramline	
5	Decrement the tramline	
6	Increase the scraper distance	
7	Reduce the scraper distance	
12	Tramline stop	

1. Start working with the default assignment

or

Configure the assignment on the control terminal.

2. Actuate the desired function.

Filling and emptying

12

CMS-T-00009525-A.1

12.1 Filling the hopper

CMS-T-00000753-E.1

1. In the Field menu, select "Filling"
or
Select "Filling and emptying" > "Filling".
2. Select the desired hopper.
3. *If the displayed residual quantity does not match the actual residual quantity, empty the hopper.*

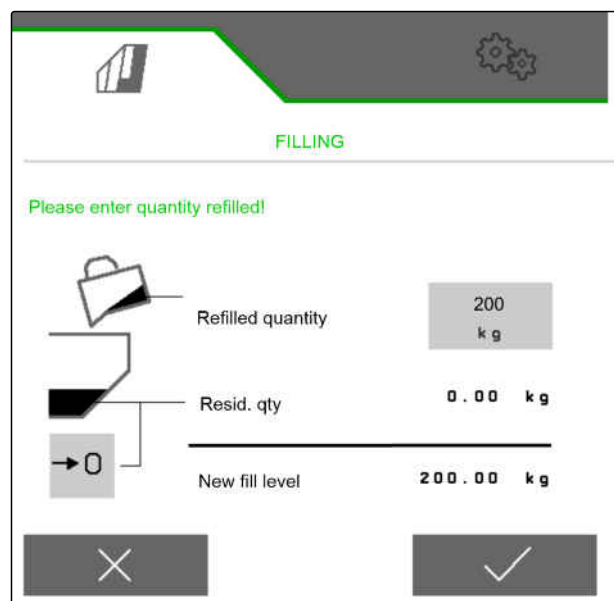
4. To reset the residual quantity to zero,

tap →0

or

If a residual quantity is displayed, although the hopper is empty,

tap →0 .



CMS-I-00000729

The refilled quantity will be added to the residual quantity.

5. Enter the refilled quantity.


➔ The new fill level will be shown.

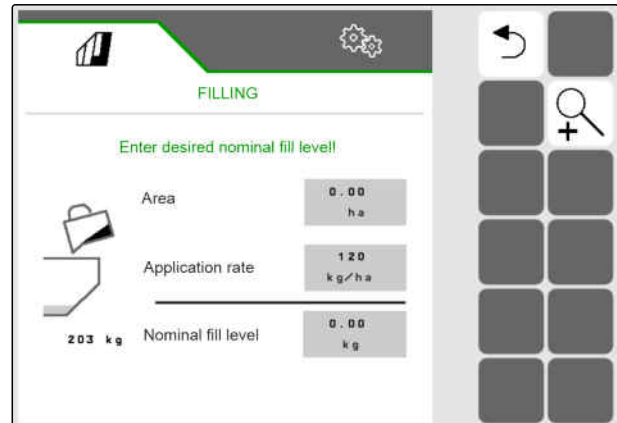
6. To confirm the new fill level,

tap ✓ .

12.2 Filling the weighing hopper

CMS-T-00005779-C.1

1. In the Field menu, select *"Filling"*
or
Select *"Filling and emptying"* > *"Filling"*.
 2. Select the desired hopper.
 3. Enter the area to be worked and the desired spread rate
or
Enter the target fill level.
 4. *To monitor the fill level on the control terminal,*
press .
 5. Fill the hopper.
- ➔ When the fill level approaches the target fill level, the work lights start flashing more rapidly.
- ➔ When the target fill level is reached, the work lights are lit continuously.

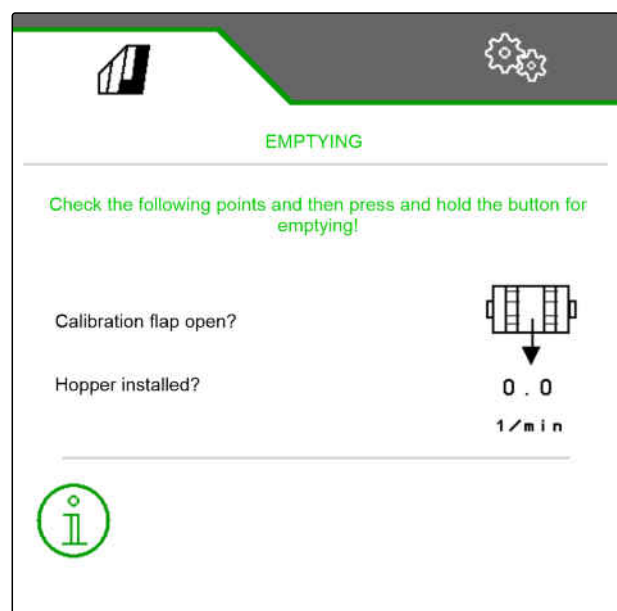


CMS-I-00004095

12.3 Emptying the hopper


CMS-T-00000754-D.1

1. In the Field menu, select *"Emptying"*
or
Select *"Filling and emptying"* > *"Emptying"*.
2. *Depending on the implement equipment,* select the desired hopper.
3. Check the points shown on the display.



CMS-I-00000728

4. *If the displayed points are fulfilled,*

press and hold  on the control terminal,

or

Press and hold the  button on the TwinTerminal,

or

Press and hold the calibration button.

➔ After a brief start-up period, the metering unit runs at maximum speed.

Documenting work

13

CMS-T-00000929-G.1

13.1 Calling up the documentation

CMS-T-00000930-F.1

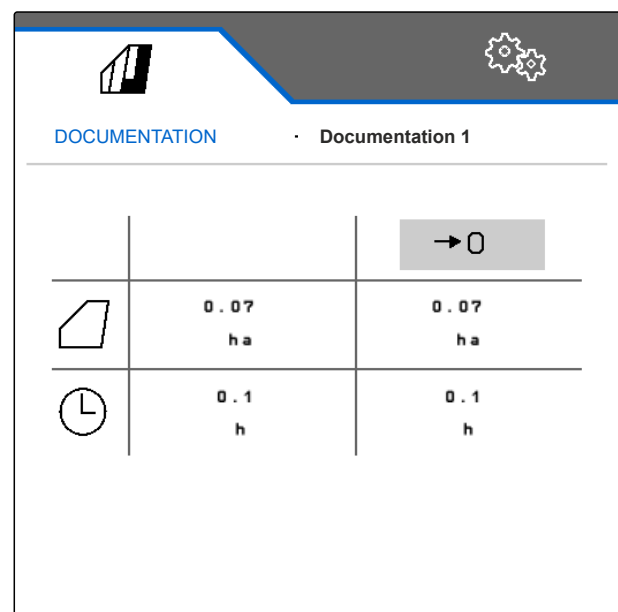
- In the Field menu, select "Documentation".
- ➔ A table with the values for the selected documentation is shown in the menu. The left column shows the total values, and the right column shows the daily values.



NOTE

The worked area is calculated based on the total working width of the implement. Switched-off rows are not taken into account.







The seeded area is calculated based on the actual working width of the implement. Tramlines are counted with the seeded area, while switched-off rows are not counted with the seeded area.

Due to system-related deviations, the specification of the spread rate for fertiliser and micropellets can deviate by up to 5%.



	Total	Daily
	0.07 ha	0.07 ha
	0.1 h	0.1 h

CMS-I-00000714

Symbol	Meaning
	Worked area
	Seeded area
	Working time
	Spread seed quantity
	Spread fertiliser quantity
	Spread micropellet quantity







13.2 Reset daily counter

CMS-T-00000757-E.1

If you want to work on a different field, the daily counter for the documentation can be reset to 0.

NOTE
The total values for the selected documentation are maintained.

- 1. In the Field menu, select "Documentation".
- 2. select →0 .

<div></div> <div>DOKUMENTATION - Dokumentation</div>		
		→0
	14.11 ha	14.11 ha
	2.0 h	2.0 h
1 	857.3 kg	857.3 kg
2 	864.3 kg	864.3 kg


CMS-I-00007470

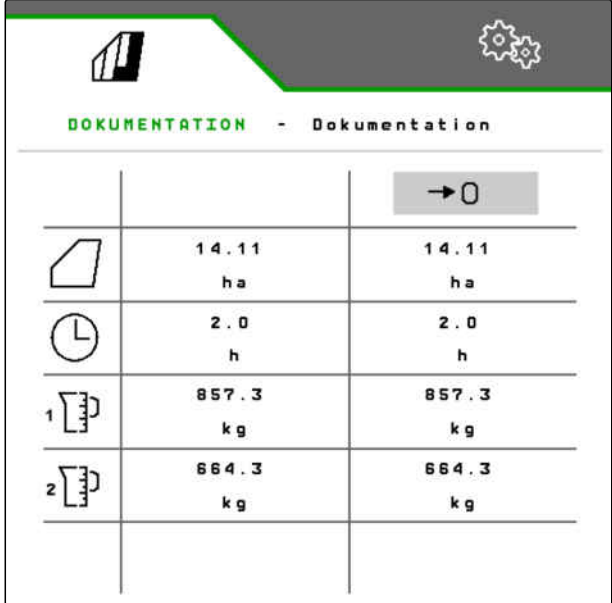
13.3 Managing the documentation

CMS-T-00000931-C.1





The values for the selected documentation are shown in the overview. When working with the implement, the values for the selected documentation are updated.

1. In the Field menu, select "Documentation".

2. select .



The screenshot shows a menu titled 'DOKUMENTATION' with a sub-header 'Dokumentation'. Below the header is a table with three columns. The first column contains icons: a trapezoid, a clock, a measuring cup with '1', and a measuring cup with '2'. The second and third columns contain numerical values and units. A button with a right arrow and '0' is located at the top right of the table.


		→ 0
	14.11 ha	14.11 ha
	2.0 h	2.0 h
1 	857.3 kg	857.3 kg
2 	664.3 kg	664.3 kg

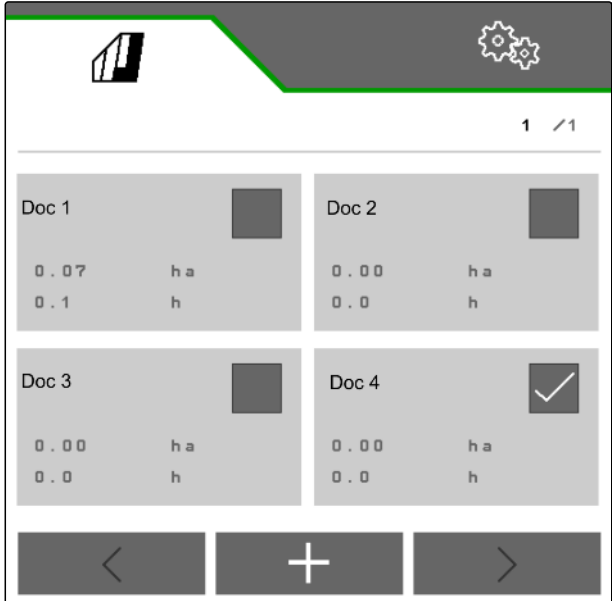
CMS-I-00007470

3. To select, rename or delete a documentation, select the desired documentation from the list

or

To create a new documentation,

select .



The screenshot shows a screen with four document cards labeled 'Doc 1' through 'Doc 4'. Each card displays two rows of values and units. A plus icon is at the bottom center, and navigation arrows are on the left and right. A checkmark is visible on the right side of Doc 4.

Doc	Value 1	Unit 1	Value 2	Unit 2
Doc 1	0.07	ha	0.1	h
Doc 2	0.00	ha	0.0	h
Doc 3	0.00	ha	0.0	h
Doc 4	0.00	ha	0.0	h

CMS-I-00000718

Calling up information

14

CMS-T-00009181-C.1

14.1 Calling up the software information

CMS-T-00008330-D.1

The following information can be called up:

- AEF functions
- Software versions
- Implement number

1. In the "Settings" menu, select "Info".

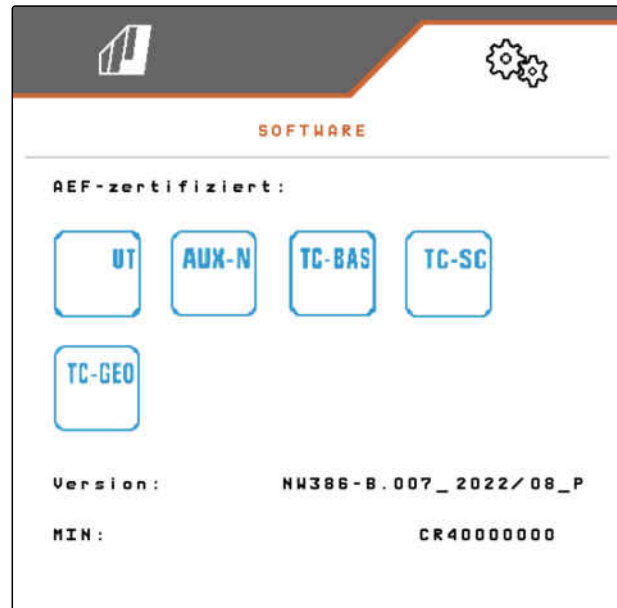
To facilitate support, the buttons on the button bar can be numbered.

2. *If the buttons should be numbered,* select "Show button numbers".



CMS-I-00007466

3. To call up the software information:
select "Software".



CMS-I-00007467

14.2 Calling up the counter readings

CMS-T-00008331-C.1

The following information can be called up:

- Total area
- Seeded area
- Total time
- Total quantities:
 - Seed
 - Fertiliser

1. In the "Settings" menu, select "Info".

To facilitate support, the buttons on the button bar can be numbered.

2. If the buttons should be numbered,
select "Show button numbers".
3. To call up the counter readings for the
implement,
select "Counter readings".


14.3 Calling up the diagnosis data

CMS-T-00008332-B.1

In the centre column, the switching states **1**, speeds, current consumptions and voltage consumptions are listed.

In the right column, the switching procedures **2** are counted and maximum values are listed.

In the left column, diagnosable components are listed.

PRE00000000		1	2
ID	Order Name	Value	Counter Max Physical Value
XA.S01	Calibration button		1
XA.B50	Working position	7.5 mA	7.6
XA.B01	Radar	0 Hz	1


CMS-I-00007491

1. In the "Settings" menu, select "Info".
2. select "Diagnosis".
3. To call up the diagnosis for the base computer:
select "Base computer".
4. To call up the diagnosis for the actuators:
select Actuators.

or

To call up the diagnosis for the sensors:
select sensors.

5. To reset the counted switching procedures:
select $\rightarrow 0$.

PRE00000000		BASE COMPUTER		1	/ 1
ID	Order Name	Value	Counter Physical	Max Value	
	XA.S01 Calibration button			1	
XA.B50	Working position	7.5 mA		7.6	
XA.B01	Radar	0 Hz		1	
XA.B31	Fan sensor	418 Hz		52819	
	XA.B40 Fertilizer weigh cell, left	5.7 mA		5.8	
	XA.B41 Fertilizer weigh cell, right	4.8 mA		4.9	
XA.B71	Fan pressure	6.5 mA		6.6	

Sensors

Actuators



CMS-I-00005678

6. In the "Settings" menu, select "Info".
7. select "Diagnosis".
8. *To call up the diagnosis for the fertiliser hopper:*
select "Fertiliser hopper".
9. *To call up the diagnosis for the actuators:*
select Actuators.

or

To call up the diagnosis for the sensors:
select sensors.

10. To reset the counted switching procedures:
select $\rightarrow 0$.

PRE00000000		FERTILISER HOPPER		1	/ 1
ID	Order Name	Value	Counter	Physical	Max Value
XA.B01	Calibration button				1
XA.B31	Fan sensor	475 Hz			57727
XA.B11	Fertiliser fill level, left				0
XA.B10	Fert. fill level right				0
XA.B50	Working position				0

Sensors

Actuators

CMS-I-00005679

The switching states, counter reading, degree of soiling and current consumptions are listed.

11. In the "Settings" menu, select "Info".

12. select "Diagnosis".

13. To call up the diagnosis for the coulter computer:
select "Rows".

14. Select the desired row.



NOTE

With increasing soiling of the opto-sensor, the intensity of the light barrier is increased. The

intensity of the light barrier can be reset with .

ROW 1		
Motor		
RPM	0	1/min
Current	0.0	A
Scraper position	2	%
Pre-assign. button	1	
Current hopperfill level	0	
Opto-sensor		
Counted grains	0	K
Degree of soiling	0	%

CMS-I-00005684

15. In the "Settings" menu, select "Info".

16. select "Diagnosis".

17. To call up the diagnosis for the central segment distributor head:
select "Job computer 1".

or

To call up the diagnosis for the left segment distributor head:

select "Job computer 1".

or

To call up the diagnosis for the right segment distributor head:

select "Job computer 2".

PRE0000000		SEGMENT DISTR. HEAD		1 / 6
ID	oder Name	Value	Counter Physical	Max Value
Klappe 1	Position offen	2.05 v	46	ms
Position	geschlossen	1.13 v	156	ms
Anzahl	Schaltzyklen	2		
Anzahl	Revitali- sierungsdurchläufe	0		
Klappe 2	Position offen	1.78 v	47	ms
Position	geschlossen	1.11 v	150	ms
Anzahl	Schaltzyklen	2		
Anzahl	Revitali- sierungsdurchläufe	0		
Klappe 3	Position offen	1.82 v	48	ms

CMS-I-00007492



Eliminating faults


15


CMS-T-00005759-G.1

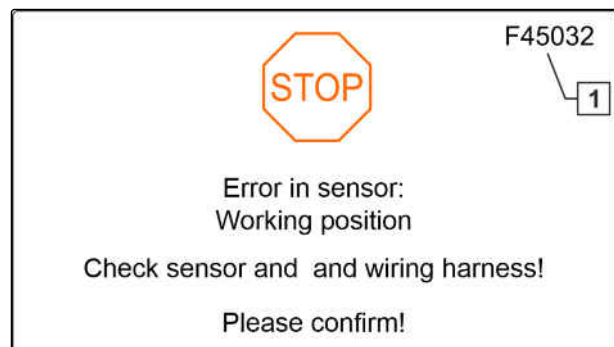
15.1 Handling error messages

CMS-T-00007372-D.1

After a notification  or a warning , the work results of the implement can deviate from expectations. A notification is signalled with a slow beeping acoustic warning signal. A warning is signalled with a rapid beeping acoustic warning signal.

After an alarm , there is a risk of implement damage. An alarm is signalled with a continuous acoustic warning signal.

1. *If an error message appears on the display, stop working immediately.*
2. *To find the proposed solutions for the error code , see "Troubleshooting".*



CMS-I-00005170

15.2 Troubleshooting

CMS-T-00007406-F.1

Error code	Errors	Cause	Solution
F45001	Fertiliser metering speed is too slow, drive faster	The metering unit cannot turn slower and is spreading too much fertiliser.	<ul style="list-style-type: none"> ▶ Drive faster ▶ Repeat calibration ▶ Adjust the application rate
F45002	Fertiliser metering speed is too high, drive slower	The metering unit cannot turn faster and is spreading too little fertiliser.	<ul style="list-style-type: none"> ▶ Drive slower ▶ Repeat calibration ▶ Adjust the application rate
F45003	Setpoint value for the fertiliser metering unit cannot be maintained	The regulation of the metering system is fluctuating too much	<ul style="list-style-type: none"> ▶ Repeat calibration ▶ Check the application rate ▶ Adjust the application rate ▶ Check the metering unit for ease of movement
F45004	Overcurrent at output: fertiliser metering unit. Please check the actuator(s) and wiring harness!	The fertiliser metering drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45005	Opto-sensor in the following row is soiled: X	The sensor for seed detection is soiled. This can result in counting errors.	<ul style="list-style-type: none"> ▶ Clean the sensor as described in the operating manual ▶ <i>If the soiling cannot be removed:</i> Deactivate SmartControl
F45006	Step sensor failed	No valid signal found at the sensor input for the steps.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45007	Rotary cultivator tines not turning	Mechanical defect on the rotary cultivator or defective sensor	<ul style="list-style-type: none"> ▶ Check the rotary cultivator for proper function ▶ Check the sensor for proper function ▶ Check the wiring harness
F45008	Tramline control is not responding	The tramline control cannot be actuated	<ul style="list-style-type: none"> ▶ Check the connection of the tramline control to the wiring harness
F45009	Tramline control is switched	The tramline control cannot be actuated	<ul style="list-style-type: none"> ▶ Check the functioning of tramline control
F45010	Tramline counter is inactive		<ul style="list-style-type: none"> ▶

Error code	Errors	Cause	Solution
F45011	The following software version is not compatible: ...	Wrong software version on the named system.	► Update of the components to a compatible software version is necessary
F45012	Setpoint deviates significantly from calibration value	The entered setpoint deviates significantly from the setpoint that was used for the last calibration.	► Repeat calibration
F45013	External operation active	Operation has been switched to the TwinTerminal or mySeeder app	► see page 117
F45014	Supply voltage not reached	The supply voltage of the implement has not been reached.	<ul style="list-style-type: none"> ► Check the battery voltage ► Charge the battery ► Check the cable connection
F45015	Calibration not possible	Calibration flap closed	► Open the calibration flap
F45016	Seeding not possible	Calibration flap open	► Close the calibration flap
F45017	The implement must be stopped to carry out this action	The desired procedure not possible while the implement is driving.	<ul style="list-style-type: none"> ► Stop the implement ► Check the source of the speed signal for proper function
F45020	Sensor error: loading board. Please check the sensor and wiring harness	No valid signal found at the sensor input for the loading board.	<ul style="list-style-type: none"> ► Check the sensor for proper function ► Check the wiring harness
F45020	No communication to the motor of the fertiliser metering unit	No communication possible between the motor and the implement.	<ul style="list-style-type: none"> ► Check the supply voltage ► Check the wiring harness
F45021	Seed fill level is too low	The row with low level sensor in the hopper detects no seed.	<ul style="list-style-type: none"> ► Refill the hopper with seed ► The notification can be deactivated for fine seed
F45023	The terminal can process fewer target rates than provided by the implement. Adjust the ISOBUS settings of the implement	The terminal's Task Controller supports fewer target rates than that offered by the implement.	<ul style="list-style-type: none"> ► Only assign specific target rates to the terminal, the target rates that are not assigned must be used as static target rates ► Use of a terminal with more options for target rate control
F45024	Seed line in the following row is blocked: X	The sensor for counting the grains on the singling unit has detected a blockage.	<ul style="list-style-type: none"> ► Eliminate the blockage on the coulter ► Restart the implement

Error code	Errors	Cause	Solution
F45025	Overcurrent at the output: Tramline control 1. Please check actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45026	Overcurrent at the output: Tramline control 2. Please check actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45027	Overcurrent at output: work lights. Please check the actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45028	Overcurrent at the output: Valve 1. Please check actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45029	Overcurrent at the output: Valve 2. Please check actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45030	Overcurrent at the output: Valve 3. Please check actuator(s) and wiring harness!	The displayed output on the control unit was overloaded.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check actuators
F45031	Sensor error: radar sensor. Please check the sensor and wiring harness!	An internal error was detected in the radar sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45032	Error in the sensor: working position. Please check the sensor and wiring harness!	No valid signal found from the working position sensor.	<ul style="list-style-type: none"> ▶ Check the position and current value of the sensor ▶ Check the sensor for proper function ▶ Check the wiring harness
F45033	Seed coulter blocked	The blockage sensor on the coulter is reporting an error.	<ul style="list-style-type: none"> ▶ Remove the blockage on the coulter ▶ Check the sensor for proper function ▶ Check the wiring harness ▶ Restart the implement
F45034	Fan nominal speed cannot be maintained.	The fan is operating outside of the set tolerance range.	<ul style="list-style-type: none"> ▶ Adjust the tolerance range ▶ Check the speed sensor ▶ Check the hydraulic supply

Error code	Errors	Cause	Solution
F45035	Sensor error: Fill level sensor 1. Please check sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45036	Sensor error: Fill level sensor 2. Please check sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45037	Sensor error: rotary cultivator. Please check the sensor and wiring harness!	No valid signal found at the sensor input for the rotary cultivator.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45038	Sensor error: PTO shaft. Please check the sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45039	Sensor error: track marker. Please check the sensor and wiring harness!	No valid signal found at the sensor input for the track marker.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45040	Sensor error: coulter pressure. Please check the sensor and wiring harness!	No valid signal found at the sensor input for the coulter pressure.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45041	Sensor error: calibration flap. Please check the sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45042	Sensor error: calibration button. Please check the sensor and wiring harness.	No valid signal found at the sensor input of the calibration button.	<ul style="list-style-type: none"> ▶ Check the calibration button ▶ Check the wiring harness
F45043	Sensor error: tramline control 1. Please check sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45044	Sensor error: tramline control 2. Please check sensor and wiring harness!	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45045	Metering system is stiff! Need to check the powertrain!	The metering system is soiled or damaged.	<ul style="list-style-type: none"> ▶ Check the powertrain. ▶ Clean the metering system.

Error code	Errors	Cause	Solution
F45046	Section Control cannot be activated! The following conditions must be met: 1. Section Control activated on the terminal (Task Controller) 2. Implement without faults	The user wants to activate Section Control. One of the specified prerequisites is not met.	<ul style="list-style-type: none"> ▶ <i>To activate Section Control on a faultless functioning implement:</i> activate Section Control on the terminal (Task Controller) ▶ Check the implement for faultless function
F45047	Section Control has been deactivated!	Section Control has been deactivated by the user on the control terminal.	<ul style="list-style-type: none"> ▶ The user selects the other operating modes for the implement ▶ <i>If Section Control was accidentally deactivated:</i> Check for the cause on the terminal, e.g. poor GPS signal.
F45048	Step is folded down	The implement is in working position and a speed is detected. The steps are folded down and therefore the metering units are disabled.	<ul style="list-style-type: none"> ▶ Fold up the step
F45049	Fertiliser fill level alarm limit undercut!	The residual quantity in the hopper set by the user has been reached.	<ul style="list-style-type: none"> ▶ Refill the hopper
F45050	Working position sensor source has failed!	The signal from the working position sensor is outside of the measuring range.	<ul style="list-style-type: none"> ▶ Check the working position sensor ▶ Check the wiring harness
F45051	Internal opto-sensor error in the following row: X	The sensor for counting the grains on the singling unit is faulty.	<ul style="list-style-type: none"> ▶ Check the plug connections ▶ Check the degree of soiling of the sensor ▶ Check the sensor ▶ Restart the implement
F45052	GPS recording not possible! The following conditions must be met: 1. Implement is stopped 2. Fan is switched off	The user cannot activate the GPS recording function, because the named conditions have not been met.	<ul style="list-style-type: none"> ▶ <i>To activate the function:</i> stop the implement ▶ deactivate the fan
F45053	Micropellet metering unit in the following row is not responding: X	The motor for this row is not running.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis

Error code	Errors	Cause	Solution
F45054	Micropellet metering speed is too low, drive faster	The metering unit cannot turn slower and is spreading too much micropellets.	<ul style="list-style-type: none"> ▶ Drive faster ▶ Repeat calibration ▶ Adjust the application rate
F45055	Micropellet metering speed is too high, drive slower	Metering unit cannot turn faster and is spreading too little micropellets.	<ul style="list-style-type: none"> ▶ Drive slower ▶ Repeat calibration ▶ Adjust the application rate
F45056	Seeding not possible! The following conditions must be met: 1. Metering unit switched on 2. Fan switched on.	The described conditions for seeding have not been met.	<ul style="list-style-type: none"> ▶ Switch on the metering unit ▶ Switch on the fan
F45057	Minimum fan speed not reached, metering unit stopped!	The fan speed is less than 200 rpm.	<ul style="list-style-type: none"> ▶ Check the fan speed ▶ Check the speed sensor in the Diagnosis menu ▶ Check the wiring harness
F45058	The source selected for the forward speed is not available! Select an existing source!	The source selected for the speed signal is currently no longer available.	<ul style="list-style-type: none"> ▶ <i>To use a different signal source: "Configure the source for the speed signal"</i>
F45059	Current source for the speed signal is not available! Source will be changed!	The current source for the speed signal is currently no longer available.	<ul style="list-style-type: none"> ▶ <i>To use a different signal source: "Configure the source for the speed signal"</i>
F45060	A speed signal greater than zero has been detected - the simulated speed has been deactivated!	The user has switched to a simulated speed. The speed sensor on the implement has detected a speed. As a result, the simulated speed has been deactivated!	<ul style="list-style-type: none"> ▶ Fix the defect on the sensor (implement) ▶ <i>If operation should continue with the simulated speed: Remove the defective sensor (implement) from the wiring harness.</i>
F45061	Setpoint value for the micropellet metering unit cannot be maintained	The regulation of the metering system is fluctuating too much.	<ul style="list-style-type: none"> ▶ Repeat calibration ▶ Adjust and check the application rate ▶ Check the metering unit for ease of movement
F45062	Minimum pressure was not reached	The pressure for the singling unit is too low.	<ul style="list-style-type: none"> ▶ Increase the fan speed ▶ Check the air system and singling unit for leaks ▶ Check the function of the pressure sensor
F45063	Maximum pressure exceeded	The pressure for the singling unit is too high.	<ul style="list-style-type: none"> ▶ Reduce the fan speed ▶ Check the function of the pressure sensor

Error code	Errors	Cause	Solution
F45064	Error in the sensor: fan pressure. Please check the sensor and wiring harness	No valid signal found at the sensor input for the fan pressure.	<ul style="list-style-type: none"> ▶ Check sensor for cleanliness ▶ Check the sensor for proper function ▶ Check the wiring harness
F45065	Error in the sensor: fan speed. Please check the sensor and wiring harness	No valid signal found at the sensor input for the fan speed.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45066	Maximum fan speed exceeded	The permitted fan speed is too high.	<ul style="list-style-type: none"> ▶ Reduce the fan speed
F45067	The following scraper did not reach the position: X	This scraper cannot reach its target position.	<ul style="list-style-type: none"> ▶ Check function of the scraper ▶ Ensure that the scraper can move smoothly ▶ Remove blockages due to grains ▶ Move the scraper manually
F45068	Angle sensor for the following scraper has failed: X	No valid signal found from the angle sensor for the scraper.	<ul style="list-style-type: none"> ▶ Check function of the scraper ▶ Check the wiring harness ▶ Move the scraper manually
F45069	Overcurrent at micropellet metering unit output on the following row: X. Please check the actuator(s) and wiring harness!	The micropellet spreader drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45070	Overcurrent at seed metering unit output on the following row:	The singling unit drive has exceeded the maximum current limit	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis

Error code	Errors	Cause	Solution
F45071	Singling unit in the following row is not responding: X	Motor for this row is not running	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45072	No product flow detected on the following row: X	The sensor for counting the grains on the singling unit is not detecting any grains.	<ul style="list-style-type: none"> ▶ Eliminate the blockage in the singling unit ▶ Check function of the singling unit
F45073	Fill level alarm limit for micropellets has been undercut	The residual quantity in the hopper set by the user has been reached.	<ul style="list-style-type: none"> ▶ Refill the hopper
F45074	Target rate was undercut on the following row: X	The sensor for counting the grains is detecting fewer grains than the set target rate.	<ul style="list-style-type: none"> ▶ Check function and ease of movement of the singling unit ▶ Check scraper position ▶ Check hopper fill level ▶ Check singling unit air supply (open cover) ▶ Check settings for the alarm limit ▶ Check the degree of soiling of the sensor ▶ Check adjustment of the sensitivity for counting the grains
F45075	Target rate was exceeded in the following row: X	The sensor for counting the grains is detecting more grains than the set target rate.	<ul style="list-style-type: none"> ▶ Check function of the singling unit ▶ Check scraper position ▶ Check the disc selection ▶ Check settings for the alarm limit ▶ Check adjustment of the sensitivity for counting the grains
F45076	Singling unit metering speed is too low, drive faster	The minimum speed of the motor has not been reached	<ul style="list-style-type: none"> ▶ Drive faster ▶ Check the disc selection ▶ Check the application rate
F45077	Singling unit metering speed is too high, drive slower	The maximum speed of the motor has been exceeded	<ul style="list-style-type: none"> ▶ Drive slower ▶ Check the disc selection ▶ Check the application rate

Error code	Errors	Cause	Solution
F45078	The following participant is missing:	A special equipment option is configured, but it cannot be found.	<ul style="list-style-type: none"> ▶ Check the wiring harness and installation of the participant, e.g. check coulter computer ▶ Check the setting for the number of rows ▶ Restart the implement
F45080	Sensor error: folding monitoring	Folding found	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45082	Sensor error: fertiliser hopper fan speed. Please check the sensor and wiring harness	No valid signal found from the fan speed sensor on the fertiliser hopper.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45083	Minimum fan speed of the fertiliser hopper undercut, metering unit stopped!	The fan speed is less than 200 rpm.	<ul style="list-style-type: none"> ▶ Check the speed ▶ Check the sensor in the Diagnosis menu ▶ Check the wiring harness
F45084	Nominal fan speed of the fertiliser hopper cannot be maintained	The fan is operating outside of the set tolerance range.	<ul style="list-style-type: none"> ▶ Check the hydraulic system ▶ Adjust the speed ▶ Adjust the nominal speed ▶ Check the sensor for proper function
F45085	Maximum fan speed of the fertiliser hopper exceeded	The permitted fan speed is too high.	<ul style="list-style-type: none"> ▶ Reduce the speed
F45086	Metering unit empty fertiliser 1	The absolute low level sensor in the metering unit is not detecting any metered material.	<ul style="list-style-type: none"> ▶ Refill the hopper ▶ Check the sensor for proper function
F45087	Fertiliser metering unit switched off due to overload	The fertiliser metering unit drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45088	Micropellet metering unit switched off due to overload on the following row: X. Check motor.	The micropellet metering unit drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis

Error code	Errors	Cause	Solution
F45089	Seed motor switched off due to overload on the following row: X. Check motor and singling unit.	The singling unit drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45090	The following participant was added: front hopper	The front hopper was automatically detected.	<ul style="list-style-type: none"> ▶ No further action is necessary
F45091	Contact force cannot be maintained	The requested contact force cannot be applied: actual force is smaller than target force	<ul style="list-style-type: none"> ▶ Check if the implement is not being lifted ▶ Activate frame ballasting ▶ Reduce the forward speed ▶ Reduce the target force ▶ Check the hydraulic power (fan speed)
F45092	The soil is too soft! Less force cannot be applied on the coulters!	The desired contact force cannot be applied: actual force is greater than target force.	<ul style="list-style-type: none"> ▶ Unload the implement ▶ Reduce the forward speed ▶ Increase the target force
F45093	The following participants are no longer available: fertiliser hopper	The front hopper is no longer recognised as a participant.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check the plug connections
F45094	The number of rows has been changed. The implement must be restarted!	The number of rows in the implement geometry has been changed.	<ul style="list-style-type: none"> ▶ Restart the implement
F45095	Force sensor failure on the following row: X. Please check the sensor and wiring harness	No valid signal found at the sensor input for the contact force.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45096	Left weigh cell failed	No valid signal found at the sensor input for the left weigh cell.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45097	Right weigh cell failed	No valid signal found at the sensor input for the right weigh cell.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness

Error code	Errors	Cause	Solution
F45098	Overcurrent at fertiliser metering unit output on the following row: X. Please check the actuator(s) and wiring harness!	The fertiliser metering drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45099	Seed fill level is too low	The row with low level sensor in the hopper detects no seed.	<ul style="list-style-type: none"> ▶ Refill the hopper with seed ▶ The notification can be deactivated for fine seed
F45100	Fertiliser metering unit not responding on the following row: X	No communication possible with the motor	<ul style="list-style-type: none"> ▶ Check the connection of the metering motor to the wiring harness
F45101	Sensor error: seed fill level. Please check the sensor and wiring harness	No valid signal found at the sensor input	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45102	Sensor error: micropellet fill level. Please check the sensor and wiring harness	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45103	Too many contact force sensors have failed. Regulation is not possible.	Contact force regulation not possible.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45104	Not enough contact force sensors detected.	Contact force regulation not possible.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45105	GPS tramline not possible. No communication with the terminal. No warranty for displaying the correct track number.	Failure of the GPS tramline function on the terminal	<ul style="list-style-type: none"> ▶ Check the GPS reception ▶ Check the function of the GPS tramline on the terminal, using the manufacturer handbook to do so
F45106	The terminal cannot process enough placement points	The terminal's TaskController supports a fewer part-width sections than offered by the implement.	<ul style="list-style-type: none"> ▶ Check the ISOBUS settings on the implement. ▶ Check the licenses on the terminal.
F45107	Wrong direction of travel! Drive the track from the other side!	The implement detected an incorrect direction of travel, only possible when using GPS tramline	<ul style="list-style-type: none"> ▶ Check the direction of travel in the current track ▶ Check the settings in the TL Wizard ▶ Check the GPS tramline settings on the terminal, use the manufacturer handbook to do so

Error code	Errors	Cause	Solution
F45108	Sensor error: faulty working position for fertiliser	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45109	Sensor error: faulty working position for micropellets. Please check the sensor and wiring harness	The connection cable of the sensor is defective or an internal error was detected in the sensor.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness
F45110	Selected source for sensor calibration does not exist		<ul style="list-style-type: none"> ▶ Check source
F45111	Fertiliser 2 fill level alarm limit has been reached	The residual quantity in the hopper set by the user has been reached.	<ul style="list-style-type: none"> ▶ Refill the hopper
F45113	Section Control not possible, the following flaps are faulty: XY	The flaps on the segment distributor head are not working properly.	<ul style="list-style-type: none"> ▶ Check the flaps for ease of movement ▶ Check the wiring harness
F45114	Flap cannot reach its position on row XY	The flaps on the segment distributor head are not working properly.	<ul style="list-style-type: none"> ▶ Check the flaps for ease of movement ▶ Check the wiring harness
F45115	Sensor values of following flaps outside of measuring range: XY	The flaps on the segment distributor head are not working properly.	<ul style="list-style-type: none"> ▶ Check the flap for ease of movement ▶ Check the sensor for proper function
F45116	Calibration of following flaps failed: XY	The flaps on the segment distributor head are not working properly.	<ul style="list-style-type: none"> ▶ Check the flap for ease of movement ▶ Check the wiring harness
F45117	Calibration of following flaps failed, Section Control not possible: XY	The flaps on the segment distributor head are not working properly. Section Control cannot be activated.	<ul style="list-style-type: none"> ▶ Check the flap for ease of movement ▶ Check the wiring harness
F45118	Error in sensor of following flap: XY	The flaps on the segment distributor head are not working properly.	<ul style="list-style-type: none"> ▶ Check the flap for ease of movement ▶ Check the wiring harness
F45119	Configuration of the segment distributor head is not supported		<ul style="list-style-type: none"> ▶ <i>If the configuration is not supported:</i> Contact your specialist workshop.
F45120	The following ECU has failed: XY		<ul style="list-style-type: none"> ▶ Check ECU
F45121	Metering unit empty fertiliser 2	The absolute low level sensor in the metering unit is not detecting any metered material.	<ul style="list-style-type: none"> ▶ Refill the hopper ▶ Check the sensor for proper function

Error code	Errors	Cause	Solution
F45122	Telescopic axle not retracted	The implement is too wide for road transport.	► <i>To retract the telescopic axle:</i> see page 79
F45123	Sensor for the left section is defective	No valid signal found at the folding sensor for the left section.	► Check the sensor for proper function ► Check the wiring harness
F45124	Sensor for the right section is defective	No valid signal found at the folding sensor for the right section.	► Check the sensor for proper function ► Check the wiring harness
F45125	The end position of the section cannot be reached	No valid signal found at the folding sensors for the sections.	► Check sensors for proper function ► Check the wiring harness
F45126	Sensor for the position of the left telescopic axle has failed	No valid signal found at the sensor for the left telescopic axle.	► Check the sensor for proper function ► Check the wiring harness
F45127	Sensor for the position of the right telescopic axle has failed	No valid signal found at the sensor for the left telescopic axle.	► Check the sensor for proper function ► Check the wiring harness
F45128	Sensor for the left singling pressure has failed	No valid signal found at the sensor for the left singling pressure.	► Check the sensor for proper function ► Check the wiring harness
F45129	Sensor for the right singling pressure has failed	No valid signal found at the sensor for the right singling pressure.	► Check the sensor for proper function ► Check the wiring harness
F45130	Central Seed Supply: sensor has failed	No valid signal found at the sensor input for the Seed on Demand.	► Check the sensor ► Check the wiring harness for cable breaks
F45131	Central Seed Supply: increase pressure Singling pressure X mbar Pressure difference X mbar	The pressure difference between the singling unit and CSS is too small.	► Increase CSS pressure
F45132	Central Seed Supply: reduce pressure Singling pressure X mbar Pressure difference X mbar	The pressure difference between the singling unit and CSS is too large.	► Reduce CSS pressure
F45133	Check the position of the flap for pressure distribution Singling pressure on the left X mbar Singling pressure on the right X mbar	The difference between the singling pressure on the left and right is too great.	► <i>To set the singling pressure evenly:</i> Move the flap for pressure distribution to the desired position.

Error code	Errors	Cause	Solution
F45134	Voltage supply of the onboard generator not reached. Check the generator.	The onboard generator is not working properly.	<ul style="list-style-type: none"> ▶ Check the charging control lamp ▶ Check the onboard generator ▶ Check the battery
F45135	Function not possible! The following conditions must be met: 1. Implement is stopped 2. Implement in working position 3. Minimum quantity is reached	The listed conditions are not met.	<ul style="list-style-type: none"> ▶ Implement stopped ▶ Implement in working position ▶ Minimum quantity reached
F45136	The following ECU has failed: XY	Communication with the specified ECU is interrupted.	<ul style="list-style-type: none"> ▶ Check the wiring harness ▶ Check ECU
F45137	Overcurrent at output: proportional valve for section pressure. Check actuator(s) and wiring harness	The proportional valve for the section pressure has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check valve ▶ Check the wiring harness
F45138	Sensor error: centre weigh cell. Please check the sensor and wiring harness	No valid signal found at the weigh cell sensor input.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45139	Sensor error: fertiliser fill level on the right. Please check the sensor and wiring harness	No valid signal found on the fertiliser fill level sensor on the right.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45140	Sensor error: fertiliser metering unit 2. Please check sensor and wiring harness	No valid signal found on the fertiliser fill level sensor on the right.	<ul style="list-style-type: none"> ▶ Check the sensor for proper function ▶ Check the wiring harness
F45141	Supply voltage exceeded	The supply voltage of the implement has been exceeded.	<ul style="list-style-type: none"> ▶ Check the generator ▶ Check the cable connection
F45142	Overvoltage on fertiliser metering unit in following row: XY. Check actuator(s) and wiring harness!	The fertiliser metering drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis
F45143	Fertiliser metering unit switched off due to overload on the following row: XY. Check motors!	The fertiliser metering unit drive has exceeded the maximum current limit.	<ul style="list-style-type: none"> ▶ Check the metering unit for ease of movement ▶ Actuate the motor at an idle ▶ Check the power consumption in the diagnosis

Error code	Errors	Cause	Solution
F45144	Micropellet fill level alarm limit has been reached	The residual quantity in the hopper set by the user has been reached.	► Refill the hopper
F45145	Fertiliser metering unit or agitator motor not responding	Motor for this row is not running.	<ul style="list-style-type: none"> ► Check the metering unit for ease of movement ► Actuate the motor at an idle ► Check the power consumption in the diagnosis
F45146	Sensor error: seed fill level. Check actuator(s) and wiring harness!	No valid signal found at the sensor input for the seed fill level.	<ul style="list-style-type: none"> ► Check the sensor for proper function ► Check the wiring harness
F45147	Sensor error: XA.B12 micropellet fill level. Check actuator(s) and wiring harness!	No valid signal found at the sensor input for the micropellet fill level.	<ul style="list-style-type: none"> ► Check the sensor ► Check the wiring harness
F45148	Proportional valve of Central Seed Supply pressure regulation has failed	No valid signal found at the proportional valve.	<ul style="list-style-type: none"> ► Check the proportional valve ► Check the wiring harness for cable breaks
F45149	Central Seed Supply automatic function is not possible. The following sensors and valves must be fault-free: singling pressures sensors, Central Seed Supply pressure sensors, linear drive of the Central Seed Supply pressure control, fan speed sensors for fertiliser and singling unit.	Error in the sensors or valves.	<ul style="list-style-type: none"> ► Check the singling pressure sensors ► Check the Central Seed Supply pressure sensors ► Check the proportional valve for Central Seed Supply pressure regulation ► Check the fan speed sensors for fertiliser and singling unit
F45150	The difference between the CSS and singling pressure cannot be maintained	The regulation of the CSS fan is fluctuating too much.	<ul style="list-style-type: none"> ► Check the singling pressure sensors ► Check the Central Seed Supply pressure sensors ► Check the proportional valve for Central Seed Supply pressure regulation ► Check the fan speed sensors for fertiliser and singling unit

Error code	Errors	Cause	Solution
F45151	Hopper internal pressure sensor 1 failed	No valid signal found at the sensor input for the hopper internal pressure sensor 1.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness for cable breaks and proper function
F45152	Minimum hopper internal pressure 1 not reached	The hopper internal pressure is too low.	<ul style="list-style-type: none"> ▶ Increase the fan speed ▶ Check the sensor ▶ Check the hopper and conveyor section for leaks
F45153	Yaw rate sensor has failed	Communication with the yaw rate sensor is interrupted.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness for cable breaks
F45154	Hopper internal pressure sensor 2 failed	No valid signal found at the sensor input for the hopper internal pressure sensor 2.	<ul style="list-style-type: none"> ▶ Check the sensor ▶ Check the wiring harness for cable breaks and proper function
F45155	Minimum hopper internal pressure 2 not reached	The hopper internal pressure is too low.	<ul style="list-style-type: none"> ▶ Increase the fan speed ▶ Check the sensor ▶ Check the hopper and conveyor section for leaks

F45013

External operation active

CMS-T-00010733-C.1

- ▶ Perform operation on the TwinTerminal or mySeeder app

or

Cancel external operation.

Appendix

16

CMS-T-00000924-C.1

16.1 Other applicable documents

CMS-T-00000925-C.1

- Operating manual - Precea 3000-A
- Operating manual - Precea 6000-A
- Operating manual - Precea 3000/4500/6000
- Operating manual - Precea 4500-2
- Operating manual - Precea 6000-2
- Operating manual - Precea 9000-TCC
- Operating manual - Precea 12000-TCC

Directories

17

17.1 Glossary

CMS-T-00007107-A.1

A

Application map

Application maps contain data that can be used to control an element of an implement. This data includes application rates or working depths.

AUX

AUX stands for "Auxiliary" and refers to an additional input device, e.g. a multi-function stick.

B

Baud rate

Data transfer rate, measured in bits per second.

C

Correction source

Correction sources are the different systems used to improve and correct the GPS signal.

E

ECU

ECU refers to the implement control that is installed in the implement. The implement control can be accessed using control terminals to operate the implement.

EGNOS

European Geostationary Navigation Overlay Service. European system for satellite navigation correction.

F

Farm Management Information System

A Farm Management Information System, or FMIS for short, is a program for managing agricultural operations. Such programs can be used to manage jobs and master data.

Firmware

A computer program that is permanently embedded in a device.

G

GPS drift

GPS drift is defined as the deviations of the GPS signal that result from the use of correction sources with low precision. GPS drift can be recognised when the vehicle symbol on the control terminal no longer corresponds to the actual position of the vehicle.

GLONASS

Russian global navigation satellite system

H

HDOP

(Horizontal Dilution of Precision) Measurement for the precision of the horizontal position data (longitude and latitude) that is sent by the satellites.

M

MSAS

Multifunctional Satellite Augmentation. Japanese system for satellite navigation correction.

R

RTK

Paid system for the correction of satellite data.

S

shape file

The shape file saves geometry information and attribute information in a data set. The geometry information forms shapes that can be used as boundary lines. The attribute information is required for the applications, e.g. to control the application rate. The shape file is in ".shp" format.

Setpoint receiver

The setpoint receiver refers to the controllable element of the implement. On a field sprayer, the spray pressure controller can be defined as a controllable element, which then regulates the application rate.

T

TASK.XML

The TASK.XML is a file that contains data on the jobs.

U

Universal Terminal

The Universal Terminal can be used to display the user interface of the ECU on the control terminal.

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