Eagle GP-240-Force-R

Introduction

Please read these operating instructions and the spreader operating instructions carefully before starting up and follow the instructions contained therein. The operating instructions contain a comprehensive description of the operation and valuable hints for use, maintenance and care. The operating instructions are part of the machine. Keep the complete documentation at the place of use of the controller (e.g. in the tractor).

This manual may also describe items of equipment that are not part of your Controller.

We emphasise that we cannot accept warranty claims for damage caused by operating errors or the machine not being used as intended.

The manufacturer of the electrical control and the body responsible for its service and technical advice is **Rootsey**.

TIP

Note the serial number of the controller and machine.
The Eagle GP-240-Force-R controller is calibrated at the factory for use with the fertiliser spreader with which it was supplied. It cannot be connected to another fertiliser spreader without additional calibration.
This information is always required when ordering spare parts, special equipment for assembly and complaints.

Type	Serial number	Year of production

Technical improvements

In connection with the continuous improvement of our products, we reserve the right to make improvements and changes of various kinds without prior notice if we deem it necessary, while excluding the obligation to make such improvements and changes to previously sold equipment.

Table of contents

1. General information

The fertiliser spreader controller consists of the following components:

- control panel
- machine controller
- GPS antennas
- electric actuators
- connection harness (connecting control panel, machine controller, GPS antenna and electric actuators)

Technical characteristics:

- supply voltage: 12-16V
- Degree of protection of the control panel: IP66
- Degree of protection of the module: IP66
- Actuator degree of protection: IP66
- operating temperature range: -20 to +60°C
- Control panel display: Monochrome LCD
- Control panel mounting: Installation in the tractor cab using a dedicated bracket
- overvoltage, blackout and spike protection: Yes
- UV-resistant: Yes

NOTE

There is a connecting harness to the controller, which must be positioned and fixed so that it is not accidentally damaged.
The controlled spreader must be cleaned with special agents after each use, taking care of the electrical installation and stored in a dry and shady place.

NOTE

The controller is supplied with 12V from the tractor's installation. The power cable supplied with the control unit must be connected directly to the battery clamps. The device must be protected by 7.5 A fuses on the power cable.

DANGER

In the event of a situation that poses a risk to safety or health, immediately immobilise the machine by switching off the power take-off rotation and pressing the WORK START/STOP button on the controller

2. Design and operation

2.1 Controller design - overview

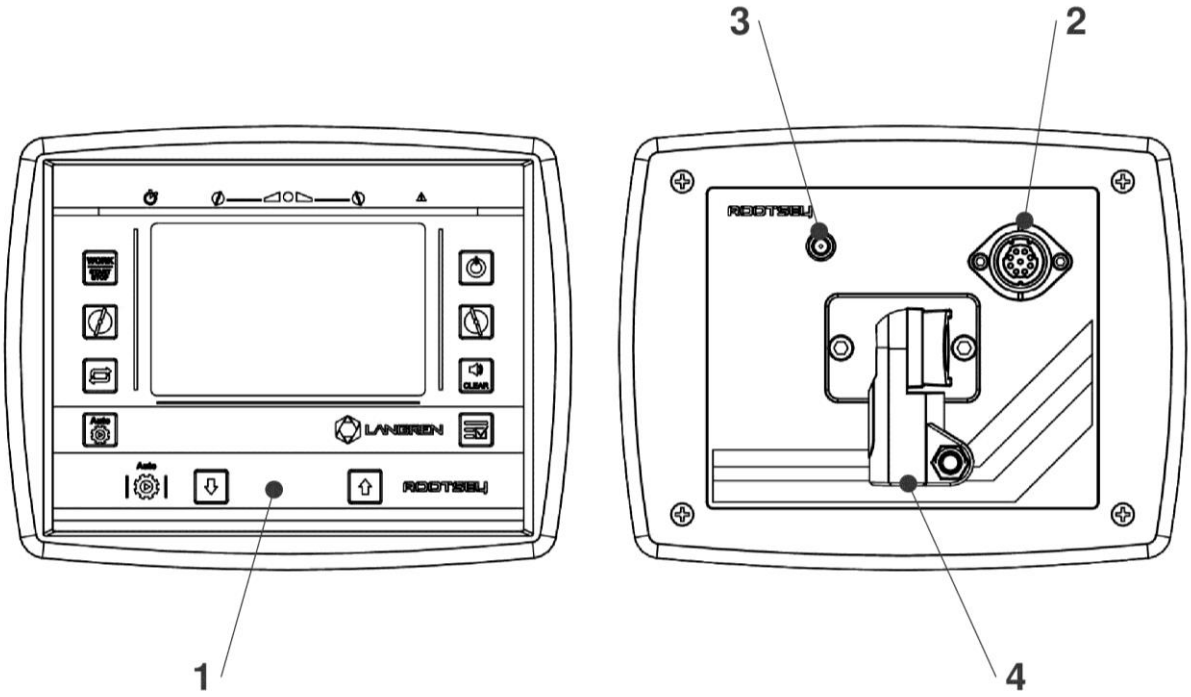


Figure 2.1 EAGLE GP-240-FORCE-R controller.

No.	Designation	Function
1	Control panel	It consists of buttons for operating the device and display.
2	connector electric and Communications.	SPP1310-9WW 9-pin plug-in connector for power supply to the terminal and communication between the terminal and the module.
3	GPS antenna connector	Crimp connector for GPS antenna connection.
4	Device holder	Mounting the controller on the tractor.

2.2 Operating elements

Control is via **10 predefined buttons.**

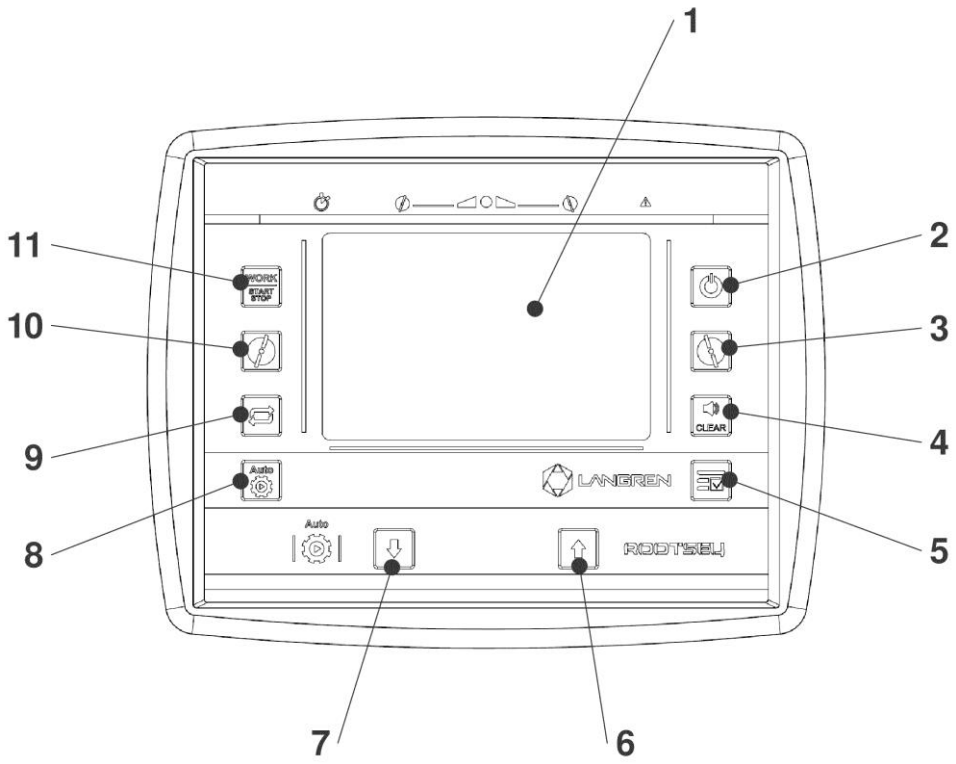


Figure 2.2 Control panel on the front of the unit.

No.	Designation	Function
1	Display	Display of operating status screens
2	ON/OFF key	Switching the device on and off
3	RIGHT DOOR key	Activate/deactivate right-hand slider.
4	CLEAR key	Mute audio messages.
5	MENU/ENTER key	Switching between the work screen and the main menu / validation. To switch to the menu, hold down the key for 3 seconds. To confirmpress the key.

No.	Designation	Function
6	Up arrow key	Controlling the slider in manual mode / changing the percentage of output in automatic mode / navigating the controller menu.
7	Down arrow key	Controlling the slider in manual mode/changing the percentage of output in automatic mode/ navigating the controller menu.
8	AUTO key	Switching on and off automatic mode only.
9	Field selection key	Approval of changes.
10	LEFT SLIDE key	Activate/deactivate left-hand slider.
11	WORK START/STOP key	Starting or stopping spreading.

2.3 Indicator lights

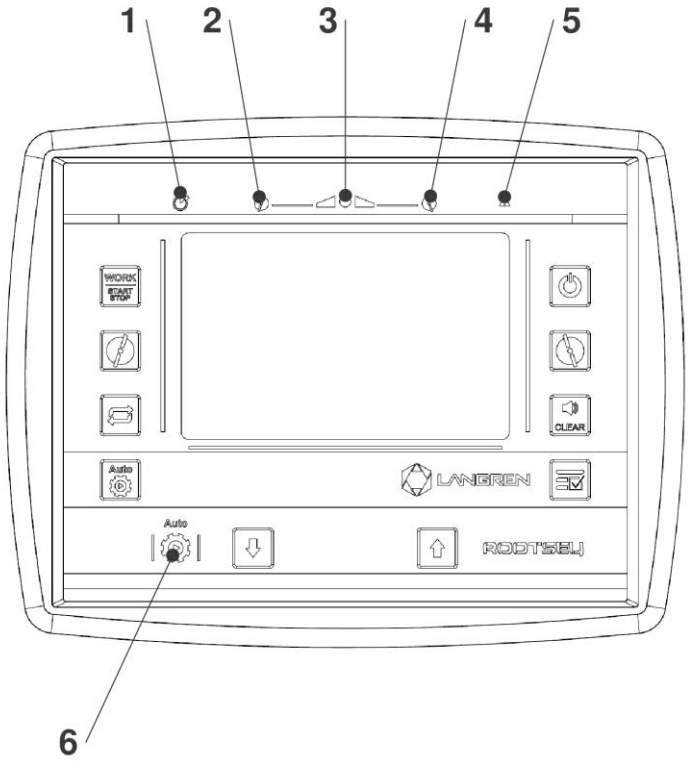


Figure 2.3 Control panel on the front of the unit.

No.	Designation	Function
1	Red diode	Looking forward to being ready for work
2	Left green LED	Active left slider
3	Green centre light	Spreading launched
4	Left green LED	Active right slider
5	Orange LED	Alarm messages
6	Blue LED	Active curly trial

2.4 Display

The display shows current status information, selection and input options of the controller.
Important information on how to operate the spreader will be displayed on the **screen Working**.

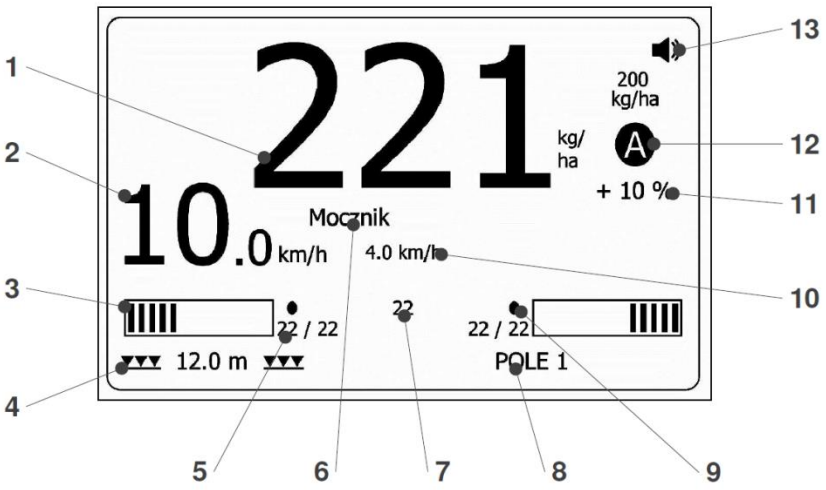


Figure 2.4 Work screen during fertiliser spreading in automatic mode.

No.	Symbol / indication	Meaning (in the example shown)
1	Measurement of current speed	Current speed 10 km/h
2	Actual expenditure	Actual output equal to 221 kg/h (+ *10 %*)
3	Expenditure set	Fixed output of 200 kg/h
4	Variable parameters	Spreading width of 12 m
5	Position of metering slider	Position of metering slide fixed by computer at 22 mm
6	Current position of the metering slider	Current position of metering slider at 22 mm
7	Slider status	A full dot indicates that the slider is active
8	Mode of operation	Automatic
10	Percentage change in dose	+10% (*calculation example 200kg/ha + 10% = 200kg/ha x 1.1 = 220kg/ha*)
11	Speaker	Full speaker means that the alarm sounder is switched off
12	Basic speed - minimum	Minimum speed set at 4km/h.
13	Type of fertiliser chosen	Urea-type fertiliser spreading
14	Selected field	Field number 1

2.5 Variable parameters

The measurement of the registered parameter is changed by pressing  .

Parameters displayed:

- ▼▼▼ 12.0 m ▼▼▼ - current worm width,
- 0.000 ha .0 ha - acreage measurement, permanent and periodic,
- 0.0 km/h-GPS 0.0 km/h - speed measurement from GPS, measurement from speed sensor,
- 0.0 kg/min - kilograms of fertiliser spread per minute,
- 000.00 H 00000 H - spreading time, when sliders open,
- 000.00 ha/h - work output hectare per hour.

3. Assembly and installation

3.1 Requirements for the tractor

Before fitting the controller, ensure that the tractor meets the following requirements requirements:

- The minimum voltage+ 11 V must always be ensured at all times, even when more than one powered device is connected at the same time.

(e.g. air conditioning, lighting).

- The power take-off speed must be set to 540 rpm and must be

maintained (basic requirement for correct working width).

- The 3-pole power contact socket (DIN 9680/ISO 12369) allows the controller to be powered by the tractor.

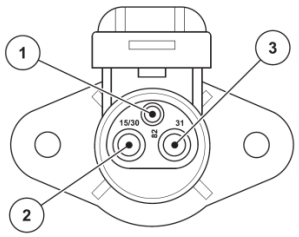


Figure 3.1 Pin layout of the power plug socket: 1 STICK - unused, 2 STICK - (15/30) +12 V, 3 STICK - (31) ground.

TIP

For tractors without load-switching , the forward speed must be selected to correspond to a power take-off speed of 540 rpm by means of a suitable gear ratio.

NOTE

The controller is supplied with 12V from the tractor's installation. The power cable supplied with the control unit must be connected directly to the battery clamps. The device must be protected by 7.5 A fuses on the power cable.

3.2 Wiring diagram

3.3 Speed sensor

Information on operating speed can come from:

- from the tractor wheel,
- from the drive shaft of the front axle of a 4 x 4 tractor,
- from the GPS sensor (antenna).

TIP

The recommended solution is to use the signal from the GPS antenna. The signal is then refreshed at a rate of 0.2 s, while maintaining smooth control of the sliders. This solution is also simple to install.

4. Controller operation

4.1 Switching on and off.

To switch on the controller:

- Connect the communication cable to connection **2** (fig.2.1).
- Connect the connector of the GPS antenna or speed sensor.
- Connect the power cable to the power socket on the tractor.
- Correct connection is signalled by an acoustic signal and the lighting up of the LEDs on the module once on the controller.
- After commissioning, the **Langren** welcome logo will appear on the display, followed by ,,Initialisation" during which time the panel establishes a connection with the control module. If verification is correct, the start-up screen will be displayed. After this stage, the controller is ready for operation.
- In the event of incorrect communication, check the correct connection, the power source and the condition of the communication cable, if everything is correct contact **Rootsey** or **Langren** corporate service.
- Failure of any of the LEDs to illuminate or the absence of an audible signal indicates that they are faulty and the operator panel should be referred for service.

To switch off the appliance:

- To switch off the controller, press  .
- Disconnect from power supply.

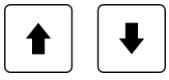
TIP

Refer to diagram 3.2 when connecting the wires.

NOTE

The controller needs a power supply between +11V and +16V to work properly.

4.2 Manual operation.

- Manual operation is used for spreading unusual amounts of fertiliser and for service work.
- To start working in manual mode you need to:
- Go to the speedometer menu and select the appropriate sensor type.
- Set the slider slot that corresponds to your needs using  .
- Activate the selected sliders with the keys  .
- Use the  key to start and stop spreading.
- The slider gap can be changed at any time with the keys  .

NOTE

During manual mode, the controller does not indicate individual variable parameters.

4.3 Automatic operation

To start working in automatic mode you need to:

- Go to Field Configuration (*see section 4.8, page 15*), select the relevant field, set its parameters and confirm.
- Move to the field selection with the  key and confirm your selection with the  key
- Go to the speedometer menu and select the appropriate sensor type.

- Switch to automatic mode by pressing Auto. The A icon will appear on the screen. The activated automatic mode is indicated by a blinking blue LED located in the symbol Auto.
- Activate the sliders with and press WORK START STOP.
- The controller will automatically control the sliders to achieve the correct constant application rate per hectare regardless of the current forward speed. The travel speed is indicated on the display as ,,xxkmh" where xx is the current travel speed read from the GPS or inductive sensor expressed in km/h.
- The sliders are automatically closed when the speed falls below the level previously set in the speedometer menu (default: 1km/h) and a light and sound alarm is displayed if the speed falls below 4km/h.
- The keys are used to change the percentage application rate in real time.
- To exit automatic mode, press WORK START STOP, followed by Auto. The M icon will appear on the screen.

NOTE

Below a minimum speed of 4 km/h a light and sound message will appear, you must then increase your speed above this value to maintain the correct application rate.

4.4 Settings.

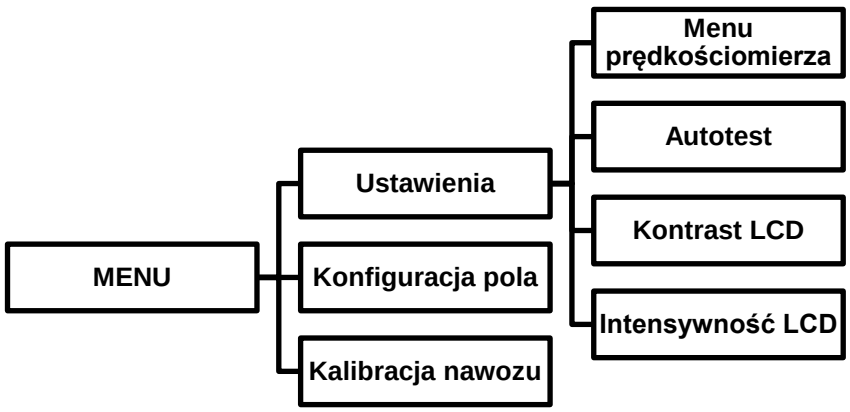


Figure 4.4 Diagram of the settings menu.

To enter the settings, press and hold . Then confirm your choice of settings by pressing .
After entering the settings, the following parameters can be selected by pressing .

After selecting the relevant parameter with the key , we move on to editing it.
To validate the change made, exit the settings and the controller will automatically save the changes. The display will show the message , "Saving".

4.5 Speedometer menu

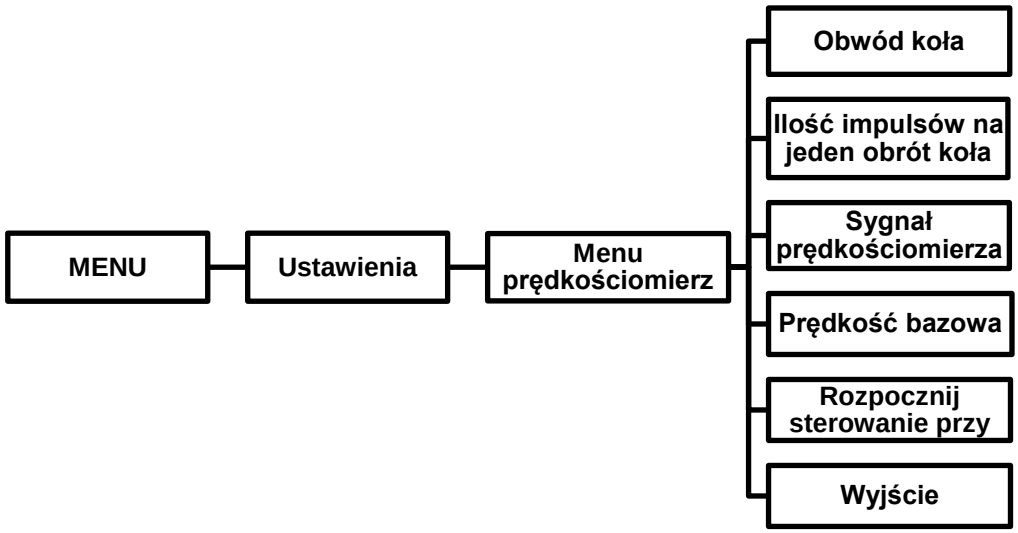


Figure 4.5 Diagram of the speedometer menu.

In the speedometer menu, we can select either the speedometer signal from the GPS or the inductive sensor placed on the circumference of the wheel. If the inductive sensor is selected, enter the circumference on which speed will be measured and specify the number of pulses per revolution.
The Start Control function determines **at** what speed the metering slide will open or close, starting or stopping automatic control. **The base speed**, on the other hand, is the minimum speed below which it is not possible to achieve the correct spread rate. If this value is exceeded, a light and sound message will be activated.

NOTE

A difference in tyre pressure can lead to a speed reading deficiency of 0.5÷1 km/h.

4.6 Auto test

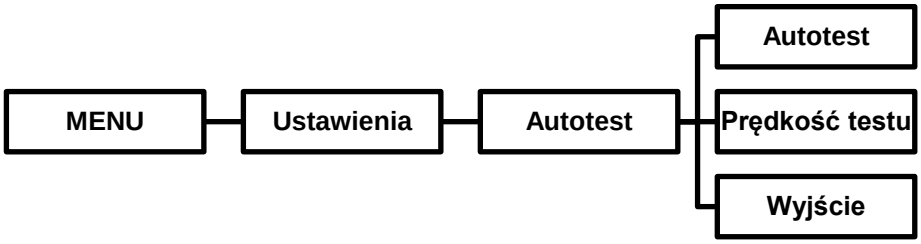


Figure 4.6 Diagram of the auto test menu.

To perform the test, go to settings and specify the test speed. Then, to activate the test, select **Auto test** and with the keys select , "On". Go to the work screen, select the field and its parameters (*see section 4.3, page 12*). Activate Auto mode, activate the sliders and press WORK START STOP . The computer will open the metering sliders to the correct value for the specified speed, selected fertiliser and spread rate.

4.7 LCD contrast, LCD intensity

To change the contrast or intensity of the LCD screen, access the menu, select the desired level of contrast or LCD intensity with the keys , confirm with and exit the menu.

4.8 Field configuration.

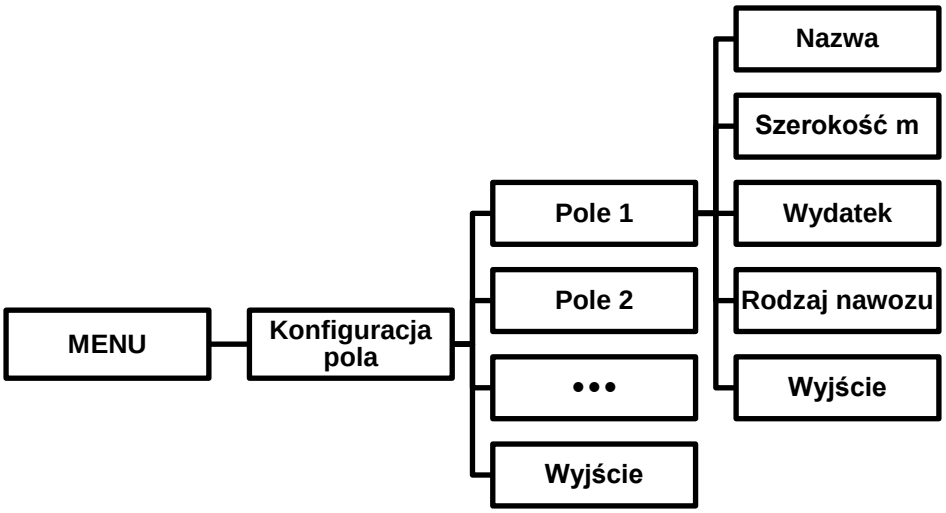


Figure 4.8 Diagram of the field configuration menu.

In the field configuration menu, we select the fertiliser and set parameters such as working width or percentage application rate.
When making a change to a field name, a single letter, a number, a character or an empty field is selected with the keys and confirmed with . In order to facilitate entering names, the number of characters is limited to twelve.

4.9 Calibration test.

To perform the curly test you need to:

1. Equip the test site with a scale, stopwatch, containers to fill with fertiliser or put a tarpaulin under the test site.
2. Remove the right or left spreader blade disc.
3. Fit the island gutter **1** in place of the previously removed spreader disc to the tail boom **2** using M8x25 bolts.
4. Hang the control container (bucket) in the chute holder.
5. Connect the terminal to the power supply.
6. Switch on the terminal by pressing .
7. Close the metering sliders.
8. Fill the spreader box with fertiliser.
9. Set the slider opening value for **Setting 1** so that the value of the weight to be entered is greater than 1 kg.

10. Activate the slider under which the calibration kit is located by pressing  or  .
11. Open the metering slide by pressing  for 1 minute. Measure the time with a stopwatch.
12. Weigh the spilled material.
13. Enter the value for opening the shutter (**setting 1)** and the weight of the spreading material **(quantity kg setting 1)** in the corresponding fields of **MENU**> **Fertiliser calibration>Universal 1 or Universal 2.**
14. Repeat points 9 to 13 for **Setting 2 and Setting 3**, making sure that the opening values of the metering slide are greater than the previous setting and differ in the quantity of material discharged by a minimum of 1 kg.
15. The calibrated fertiliser can be selected in the **MENU**> **Field configuration**.

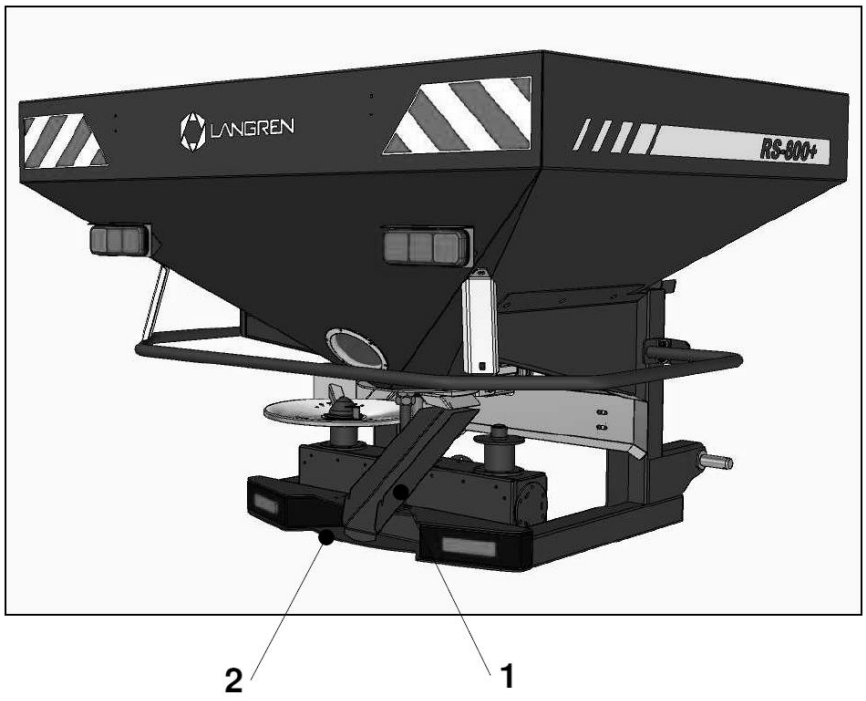


Figure 4.9 The spreader during the calibration test: 1- island trough, 2- rear beam of spreader frame.

NOTE

When entering the weight of the discharged fertiliser in the calibration test into the controller, remember to subtract the weight of the buckets. Only enter the value of the spread fertiliser in the controller!

DANGER

Special care should be taken when performing the test.
For safety reasons, it is advisable to uncouple the PTO shaft.
Users must establish the sequence of operations and warning signals before carrying out the test.

4.10 Calibration of the slider position.

To calibrate the position of the metering slide, follow the steps below:

1. Remove the spreader discs and field guard.
2. Connect the electrical control set to the power source.
3. Switch on the terminal by pressing  .
4. In manual mode, open the left and right sliders to position **60**.
5. Check the correct position of the slider. The face of gate valve **1** should in the same plane as the face of hole **2** in the bottom of the hopper (*see Figure 4.10*).
6. If the faces are not in the same plane, loosen nuts **3** and **4** with a spanner spanner and then move the slider on bolt **5** so that the faces are aligned (*see Figure 4.10*).
7. Tighten nut **3** as far as it will go.
8. Fit the field guard and discs with spreader vanes.

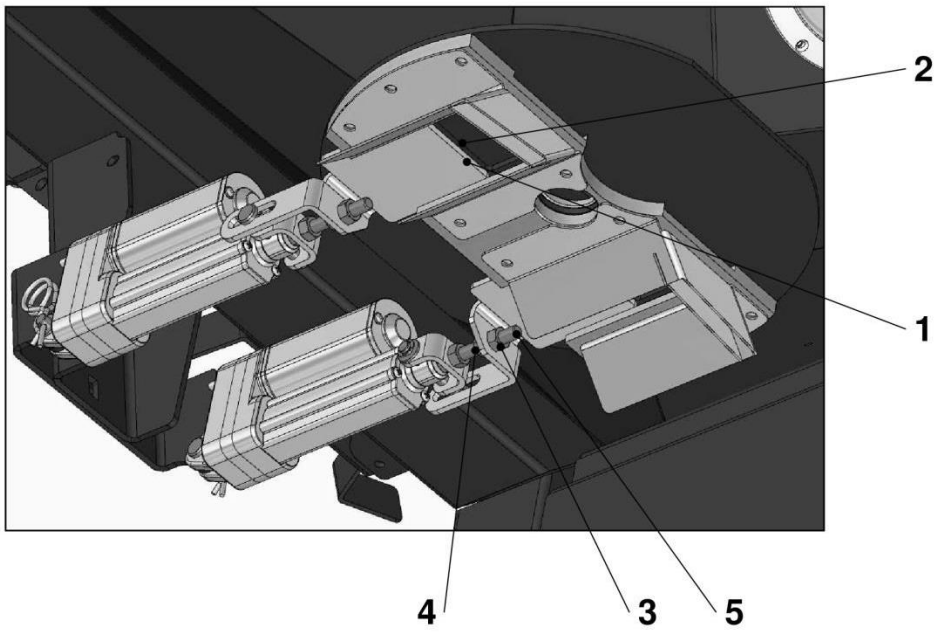


Figure 4.10 Metering system: 1- face plane of the gate valve, 2- face plane of the hole in the bottom of the tank, 3- lock nut M8, 4- thrust nut M8, 5- adjusting screw M8.

TIP

Aligning the face planes, rest the slider on nut **1**.
When tightening nut **2**, do not allow nut **1** to rotate.

DANGER

Particular care must be taken when calibrating the sliders.
For safety reasons, it is advisable to uncouple the PTO shaft and secure the machine against falling.

LANGREN S. C. City....., Date.....
M. Wozniak M. Wozniak
Krosino 2a
78-300 Swidwin

WARRANTY CARD

Eagle controller GP-240-Force-R

Production date.....Factory number.....
Buyer details.....
Date of sale.....

.....
Seller's signature

The controller has a 12-month warranty period from the date of sale. The warranty is provided under the following conditions:

- The guarantee starts on the day of purchase.
- The guarantee covers material and manufacturing defects. For products originating from from other manufacturers (plumbing and electrical installation) we are responsible for only to the extent of the guarantees provided by those manufacturers. During the guarantee period, material and manufacturing defects are disposed of free of charge by means of replacement or repair of the defective parts. Other, also more far-reaching rights, such as demands for the cancellation of the contract, reduce or cover damage that is not related to the subject matter of the delivery, are completely excluded.
- The warranty does not cover the effects of normal wear and tear, dirt, corrosion nor anomalies arising from mishandling exposure to the product or external factors. The warranty will be void if you attempt to repair it yourself. or changes to the original condition of the product. Right to receive parts a spare part expires if original parts have not been used interchangeable. The operating instructions must therefore be observed. In case of doubt, contact your representatives or directly to companies. Warranty claims must be made at the factory at the latest within 30 days of the occurrence of the damage. Indicate the date of purchase and machine number. Repairs provided under the guarantee should be carried out by an authorised workshop only after agreement contact LANGREN or its official representative. Works warranty does not extend the warranty period. Transport damage are not manufacturing defects and therefore the manufacturer is not obliged to coverage.

Notes

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