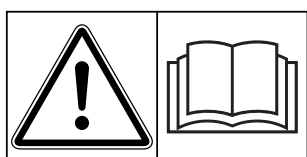


OPERATOR'S MANUAL



**Please read carefully
before using the ma-
chine.**

Keep for future reference.

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

EcoTron

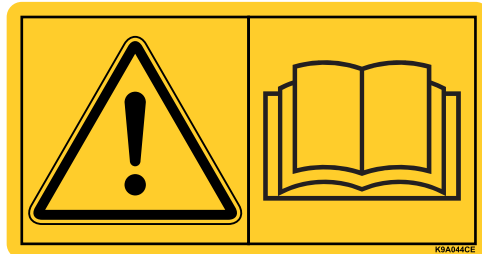
Original maual

5903062-**b**-en-1120

Preface

Dear Customer

By purchasing the machine control unit **EcoTron** for the winter service spreader of the **TAXON** series you have shown confidence in our product. Thank you very much! We want to justify this confidence. You have purchased a powerful and reliable machine control unit. However, in case unexpected problems arise: Our customer service is always there for you.



Please read this operator's manual and the operator's manual of the machine carefully before commissioning the winter service spreader and follow the advice given.

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

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

HINWEIS

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

The **EcoTron** control unit has been calibrated at the factory for the winter service spreader with which it was supplied. It cannot be connected to another winter service spreader without additional new calibration..

Please state this information when ordering spare parts or special equipment for retrofitting, and in case of complaints.

Serial number of control unit

Serial number TAXON

Year of construction TAXON

Technical improvements

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

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

Yours sincerely

RAUCH

Landmaschinenfabrik GmbH

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Subject to technical changes and errors excepted!

1. Safety

1.1 Symbols for safety instructions

Safety instructions in this manual are marked as follows:



Warning!

Indicates potentially dangerous situations.
Failure to avoid these could result in death or serious injuries.



Caution! / Attention!

Indicates potentially dangerous situations.
Failure to avoid these could result in slight or minor injuries.



Important!

Indicates application tips and other particularly useful information.

1.2 Risks associated with this control unit

This control unit features state-of-the-art technology and has undergone a wide range of safety tests. However, in the event of careless or grossly negligent behaviour, as well as misuse or incorrect operation, there are risks to the life and limb of the operator and other persons, and risks of damage to the machine or other property.

All persons involved in the installation, commissioning, operation and maintenance of the control unit must carefully read and observe the following instructions.

This is for your safety!

Please also note and observe:

- The operating instructions for the spreader unit
- The operating instructions of the carrier vehicle
- User directive 89/355/EEC
- StVO and StVZO
- The general regulations (VBG 1) of the German institution for statutory accident insurance and prevention in the administrative sector
- The health and safety regulations for power-driven equipment (VBG 5) of the German institution for statutory accident insurance and prevention in the administrative sector
- Safety regulations in road maintenance service - operation

1.3 Intended use

The EcoTron control unit is only suitable for controlling single chamber spreader units without liquid salt equipment TAXON by RAUCH Landmaschinenfabrik GmbH.

The manufacturer accepts no responsibility for other uses!

Unauthorised conversions and alterations to the control unit are prohibited for safety reasons.

1.4 Danger sources

1.4.1 Risk of scorching and smouldering fires

In the event of incorrect, careless or grossly negligent handling of the control unit, especially if using it with damaged cables and plug-in connections, scorching or even smouldering fires may occur in some situations.



**Therefore, always check that cables and plug connections etc. are in proper condition prior to use!
Replace damaged parts immediately!**

Only use the fuses specified by the manufacturer:

Connection box: Blade fuse, 20 Ampere

Battery and speedometer cable: Blade fuse, 20 Ampere

1.5 Authorised users

The owner of the control unit must make the instruction manual available to the operator and ensure that he has read and understood it. Only then may he install and start to use control unit.

Responsibility for the various activities involved in the control unit (installation, operation, maintenance and repair) must be clearly defined and observed. There must not be any unclear competences, as this could endanger the safety of the users.

The operator is also responsible for ensuring that only authorised persons work with the control unit and that operation by unauthorised persons is prevented.



Assembly, maintenance and repair work must only be carried out when the drive is switched off and, if possible, when the control unit has been removed! Additional protective measures may need to be taken in this respect. When working on the spreader unit, switch off the control unit and disconnect it from the power supply! -> **Switch off hydraulic system!**

The ignition key of the carrier vehicle must be removed and kept safe against unintentional or accidental operation.

All protective equipment must be correctly reinstalled following assembly, maintenance and repair work!

2. Installation

2.1 Equipment supplied with the EcoTron



EcoTron control panel



Battery cable coupling and plug socket, 3-pin/terminal

2.2 Control panel holder

The control unit is fitted in the driver's cab using the control panel holder provided so that it is easy for the driver to operate.

When fitting the control panel holder, it is important to ensure that none of the vehicle parts or cables get damaged.



Universal control panel holder

2.3 Wiring



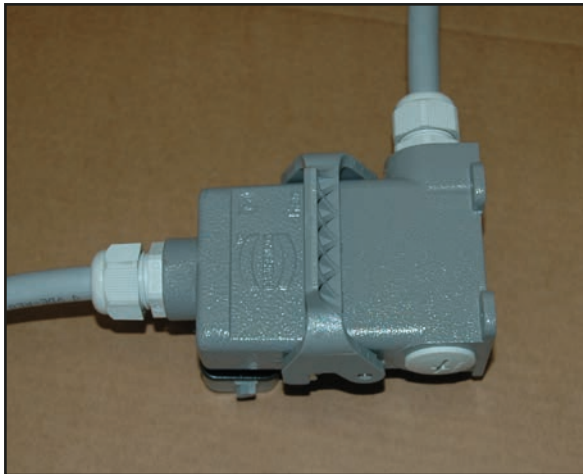
All cables must be wired in the vehicle chassis in such a way that they do not get pinched when lowering the tipper. The plugs of the cables must not be disassembled. The cables must not be extended or shortened!

The cables must be used with their original plugs and no additional couplings may be fitted.

If the electronic connectors are pulled out, cover all of the plug sockets and plugs with plug caps - first check that the plug caps are clean!

When carrying out any assembly, maintenance and repair work when the loading bridge is raised, first insert a tipper bridge support to prevent the tipper from accidentally falling back down again!

2.4 Cable harness separator behind the driver's cab



Certain vehicles feature a cable harness separator (15-pin) behind the driver's cab.

Fit the cable harness separator in such a way that it is protected against external influences as much as possible!

When fitted, the cable harness separator should not interfere with operation of the carrier vehicle.



If the electronic connector is pulled out, the protective cap of the cable harness separator must be securely covered. First check that the plug caps are clean!

If the spreader unit is cleaned or washed when installed, make sure that the plug connections are always securely sealed!



The control unit must be connected in accordance with the operating voltage of the spreader unit!

2.4.1 Connected using 3-pin plug

Battery cable



Battery cable, plug socket, 3-pin/terminal

The cable for the power supply to the terminal and the black box is connected to the 3-pin plug socket in the driver's cab of the carrier vehicle.

The terminal is connected to the plug socket integrated in the cable and the 4-pin Superseal plug. The cable from the spreader is plugged into the 15-pin Harting plug socket.

3. Operating the EcoTron control unit

The EcoTron control terminal is a CAN bus system.

The CAN bus system allows flexible processing of sensor and transmitter information and, from this, generates the necessary electrical signals for controlling the valves. The cabling consists of just one bus cable and a power supply.

The EcoTron control terminal always includes a black box, which is located in the equipment compartment of the spreader unit.



EcoTron terminal



Connection box with black box in equipment compartment

3.1 Main ON-OFF switch



The control unit is switched on and off at the main switch (bottom right).

The Bucher Logo appears while the system is starting up, and then switches to the start menu.



Always switch the control unit off at the ON/OFF switch when not in use so that the processor can shut down its operating system properly.

The system is only completely shut down once the button backlighting has gone out.

3.2 Rotary switches and buttons

The terminal has two rotary switches and eight buttons. Pressing the buttons selects the respective function, which is then displayed with the symbol beside it.

Turning the rotary switches allow you to increase or reduce a value. Pressing the rotary switches allows you to toggle between dual functions.

3.3 Setting the spreading density

Turning rotary switch A allows you to change the spreading density from the default minimum value to the maximum value.



3.4 Acknowledging a warning or error message

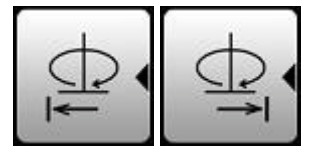
Pressing rotary switch A allows you to acknowledge any warn or error messages that occur and to mute the warning/alarm buzzer.



3.5 Setting the spreading distribution using asymmetrical settings

Adjusting the spreading width without electronic spread pattern programmer:

Turning rotary switch B allows you to change the spreading width from 2 m to 8 m or from 3 m to 12 m depending on the spreader type.



Adjusting the spreading width with electronic spread pattern programmer:

Turning rotary switch B allows you to adjust the spreading width to the left of the centre of the vehicle. Pressing rotary switch B allows you to switch the setting of the spreading width to the right of the centre of the vehicle.

3.6 Functions of buttons

“START” button:

Pressing the “START” button switches to spreading mode and spreading begins as soon as there is a drive signal. If the button is pressed again, spreading is switched back off.



3.6.1 Functions of buttons in road travel mode (spreading OFF)

Button 1:

This button allows you to open the Info menu.

This contains the following items:

- Material consumption and service time
- Resetting the consumption counter



Holding the button down opens the driver/calibration menu once the password has been entered.

Menu	Key combination
Driver menu	1234
Calibration menu	3144

Button 2:

The “Material” button allows you to choose between salt and grit.



Button 3:

This button activates emptying and the worm rollers run at maximum speed. The button must be pressed again to finish.



There must be no one in the danger area of the spreader disc during emptying! The spreader unit must be raised and the carrier vehicle must be at a standstill!

Button 4:

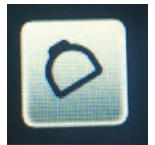
This button allows you to simulate a preset travelling speed.

This is displayed on the screen in km/h. The spreader unit spreads at the same rate as if the vehicle were actually travelling at this speed. This function is primarily used to test or calibrate the spreader unit when at a standstill.



Button 5:

Button 5 switches the work lights on and off.



Button 6:

Button 6 switches the rotary beacon on and off.



3.6.2 Functions of buttons in spreading mode (spreading ON)

Button 1:

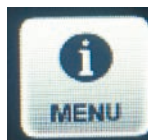
This button allows you to increase the spread quantity to the maximum value during spreading. The calibration menu allows you to set whether the maximum amount is to be spread for as long as the button is held down or whether the spread quantity is to be increased for a predefined travel distance.



Button 2:

This button allows you to open the Info menu.

Only the material consumption and service time are displayed during spreading.



Button 4:

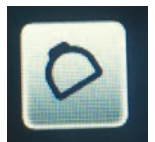
This button allows you to simulate a preset travelling speed. This is displayed on the screen in km/h. The spreader unit spreads at the same rate as if the vehicle were actually travelling at this speed.

This function is primarily used to test or calibrate the spreader unit when at a standstill.



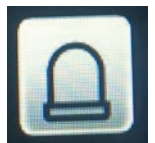
Button 5:

Button 5 switches the work lights on and off.



Button 6:

Button 6 switches the rotary beacon on and off.





3.7 Status displays

- a) Displays the entire spreading width in metres
- b) Displays the spread quantity in grams
- c) Displays the operating state of the infrared spread control
If the spread control detects material, the symbol is white.
If no feed is detected, the symbol turns orange and the “Material” message and warning buzzer are issued after a preset time
- d) Displays the selected material
(If the Thermomat is activated, the selected graph appears here)
- e) Displays the error codes
If an error occurs, the warning symbol will turn orange
- f) Displays error codes
- g) Date and time display
- h) Level indicator of salt container
If the spreader is filled, the symbol has a green background. If the container is empty, the symbol has a red background and a warning message appears
- i) Displays the operating state of the work lights and rotary beacon
- j) Displays the travel/simulated speed of carrier vehicle
- k) Spreading width left of spreader disc centre
- l) Visual display of spreader position left and right of the spreader disc centre
- m) Spreading width to right of spreader disc centre

3.7.1 EcoTron error codes and warning messages

Code:	Cause:
16	CAN disconnected
161	PowerPack Reboot (voltage interruption to computer)
1	Feedback from disc
2	Feedback from worm roller 1
72	Feedback from worm roller 2
40	Feedback from spread pattern programmer
100	Autocalibration worm roller 1
101	Autocalibration worm roller 2
503	Spread control
507	Material K1 -> salt container 1 empty

4. Calibrating the EcoTron control unit

4.1 Starting position

- Connect control unit to 12V power supply (see point 2.5)
- There must be a connection to the spreader unit
- When calibrating the control unit with the magnetic valves, there must be a guaranteed hydraulic supply to the spreader unit of 40 l/per minute. The spreader unit must be at least half filled with material.



- **The operator must ensure that there is no one in the danger area of the spreader!**
- Start up control unit at ON/OFF switch

4.2 Opening the various calibration menus



Holding down the “Menu” button opens the driver menu/calibration menu once the password has been entered.

Menu	Key combination
Driver menu	1234
Calibration menu	3144

Turn knob A to select the various menu items and press to open them. The values can be changed in single increments with knob A and in increments of five with knob B. Pressing the “Back” button (button 1) takes you back up a level in the menu, pressing the “Home” (button 6) exits the menu.

The calibration instructions do not cover menu items that are not relevant to our spreader units!

4.3 Driver menu

4.3.1 Program

This is where you can set the width, dosage and asymmetry parameters for starting up the control unit.

4.3.2 Machine parameters

4.3.2.1 Drive signal

- Position: Must be set to "Driver's cab".
- Pulses per metre: Can be set from 0 to 2000 pulses per metre travelled.
Factory setting: 8.0 pul./m.
- Start speed: Speed at which spreading is to begin. Can be set from 0 to 100 km/h.
- End speed: (stop speed): Speed at which spreading is to stop. Can be set from 0 to 5 km/h.
- Drive signal filter: Filtering of incoming drive signal. Can be set from 0 to 10 km/h.

4.3.3 Settings

4.3.3.1 Display settings

- Brightness: This is where the brightness of the display can be set from 10 % to 100 %.
- Automatic brightness: This is where automatic dimming can be enabled.

4.3.3.2 SHOW DATE HOUR

Activates the date and time display on the screen.

4.4 Calibration menu

4.4.1 Configuration

4.4.1.1 Program

This is where you can set the width, dosage and asymmetry parameters for starting up the control unit.

4.4.2 Materials

4.4.2.1 Salt

- **Minimum value**: can be set from 0 g to 35 g
- **Maximum value**: can be set from 0 g to 40 g
- **Increment**: Changes the quantity per notch on rotary switch
- **Dosing function**:
 - Coefficient: Can be used to adjust the spread rate over the entire range.
Can be set from 5 to 250 %. Factory setting 100 %
 - Type of function:
 - Linear*: The material graph is calculated in linear form using an adjustable value in kg per revolution
 - Table*: The material graph is created from a table

- Function (for "Table" setting)

Number: Number of table items. Can be set from 2 to 20

Dosing table:



In the "RPM" column enter the worm roller speeds in even increments across the entire speed range! When you press button 3 "Start", the spreader unit starts feeding at the selected speed. Pressing it again stops the process and the time is shown in the right-hand column. The material fed must now be weighed and the weight entered in the third column. The terminal automatically calculates the kg/min rate depending on the speed. The more items entered in the table, the more accurate the material graph.



The worm roller speeds must be calibrated before the material calibration (see 4.3.3.6 Worm roller).

- Function: (for "Linear" setting)

Volume: 3.85 kg/rev

This is where you set how many kilograms the worm roller conveys per revolution.

The values in the table below are only approximate. It is, therefore, recommended to run the worm roller for 10 revolutions and weigh the material feed.

Divide this result by ten to work out the actual volume per revolution of the worm rollers.

Spreader type	Salt... kg/rev	Grit... kg/rev
Husky V low-speed motor	0.7	-
Husky V Standard	1.9	2.75
Yeti W	8m: 3.85; 12 m: 6.2	8m: 5.05; 12 m: 7.8
Icebear V	8m/12m: 2.62	8m/12m: 3.45
Icebear W	8m: 3.85; 12 m: 6.2	8m: 5.05; 12 m: 7.8
Phoenix	5.5	7.8

(See also Appendix 7.2 EcoTron Material Calibration)

- Asymmetry type:

- No asymmetry: No electronic spread pattern programmer fitted.
Casting direction left or right, according to display.
Adjust spreading width using rotary switch C.
- 2-But.Shift Feedback: Spread pattern programmer with feedback.
Rotary switch B: Projection range to right from centre of spreader disc.
Pressing rotary switch B toggles between left and right spreading width.
- Speed adapter Liq. OFF
- Spreading distribution pattern tracking: In the table you can set the asymmetry tracking for the preset speed ranges.
In the "Selection" column you can set the value from -100 (left) to +100 (right).
- Control type: Standard for 8 m disc, regulated with 12 m disc.

4.4.3.4 Drive signal

- Position: Must be set to "Driver's cab".
- Pulses per metre: Can be set from 0 to 2000 pulses per metre travelled.
Factory setting: 8.0 pul./m.
- Start speed: Speed at which spreading is to begin.
Can be set from 0 to 100 km/h.
- End speed (stop speed): Speed at which spreading is to stop. Can be set from 0 to 5 km/h.
- Drive signal filter: Filtering of incoming drive signal.
Can be set from 0 to 10 km/h.

4.4.3.5 Disc

- Disc type: The type must be set here according to the spreading width of the spreader.
- Pulses: The factory setting of 6 pulses must not be changed!
- Disc width:
 - Minimum value:** Adjustable, minimum 1 m.
 - Maximum value:** Adjustable, maximum 12 m.
 - Increment:** Changes the width per notch on rotary switch.
- Disc setting:

The relevant revolutions per minute must be entered in the third column (see table) to calibrate the disc speeds. Pressing rotary switch A activates the selected spreading width and the disc begins to rotate. The last column displays the actual disc speed. This must be adjusted to the required speed by changing the power value in the second column (Power).



	2 m - 8 m	2 m - 8 m with FS30	3 m - 12 m	3 m - 12 m with FS30
2 m	100 rpm	90 rpm		
3 m	150 rpm	135 rpm	100 rpm	100 rpm
4 m	210 rpm	190 rpm	140 rpm	125 rpm
5 m	270 rpm	240 rpm	190 rpm	150 rpm
6 m	330 rpm	300 rpm	220 rpm	180 rpm
7 m	400 rpm	360 rpm	230 rpm	200 rpm
8 m	460 rpm	415 rpm	240 rpm	220 rpm
9 m			265 rpm	240 rpm
10 m			290 rpm	260 rpm
11 m			320 rpm	280 rpm
12 m			330 rpm	300 rpm

The values specified in the table are only approximate.
Exact spreading widths must be calculated (if desired) by road testing.

- Disc setting brine off: Table for dry material spreader.
- Disc switch-off:
 - Immediate stop: The disc stops immediately after vehicle standstill in spreading mode.
 - No stop: The disc continues in spreading mode with the currently set spreading width at vehicle standstill.
- Disc motion:
 - Minimum speed: In road travel (spreading off) the spreader disc continues to turn at a preset speed, even when the vehicle is at a standstill.
 - Stopped: The spreader disc does not turn in road travel (spreading off).

- Minimum spreader disc speed: This is where the minimum speed at which the spreader disc should run is set.

- Spread material tracking

Table:

This table allows you to set the speed-up of the disc for the preset speed ranges.

In the "Selection" column you can set the value from 0 to 100 revolutions.

4.4.3.6 Worm roller

- Number of pulses:

The factory setting of 200 pulses must not be changed!

- Calibration points:

Number of calibration points in the table

- Calibration:

The relevant revolutions per minute must be entered in the second column of the table to calibrate the worm roller speeds. The lowest speed should not be below 1.8 revolutions and the other speeds should be evenly distributed over the entire range.

Pressing rotary switch A activates the selected worm roller speed and the worm roller begins to rotate. The last column displays the actual speed. This must be adjusted to the required speed by changing the power value in the first column (Power).

- Shortened ranged:

This is where the transmission of the worm gear is set. This value must be left at the factory setting!

Gear type:	Shortened ranged:	Bucher gear (new)
Powershift transmission		2.8
Spur gears 5703		2.8
Chain gear 5701		2.8

- Activate emptying:

Enables emptying



4.4.3.7 Sensors

- Disc stop, electronic: NPN.NC (only if a sensor is installed for the spreader disc shutdown)

- Salt sensor container: NPN.NC

- Worm roller sensor: NPN.NO

- Disc sensor: NPN.NO

4.4.3.8 Spreader type

This is where the spreader type is saved at the factory

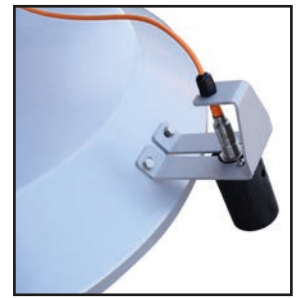
4.4.3.9 Equipment number

This is where the serial number of the spreader is saved at the factory

4.4.3.10 Spread control

- Time: This is where the time is set, after which the infrared spread control should activate if no more material is detected. Factory setting: 10 seconds, can be set from 1 to 100 seconds.
- Sensor type: "Optic" must be set here.

- Sensor type: If spread control is installed: PNP. NO.
Without spread control: No.



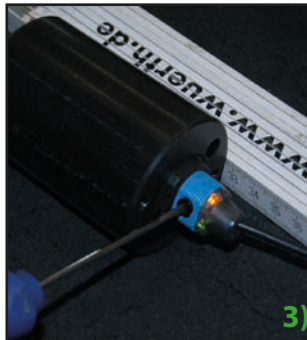
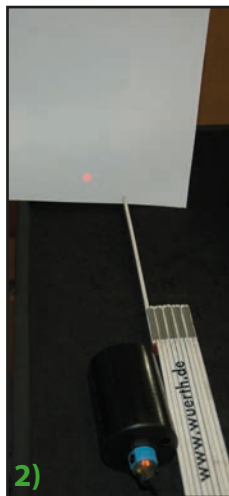
Infrared ESK

Setting the measuring field of the infrared spread control

This setting must be made when the hydraulic system is switched off!

Type A:

1. Switch on EcoTron control unit.
2. Place white sheet of paper at a distance of approx. 25 cm in front of the spread control.
3. The distance is set using the screw.
4. Turn the screw so that the orange LED is just about still on. As soon as the orange LED goes out, the ESK is switched off.
5. Remove the piece of paper from the spread control.



Type B:

1. Switch on EcoTron control unit.
2. The switching distance is set in such a way using the rotary potentiometer at the infrared sensor that material is detected up to approx. 20 cm below the spreader disc.

4.4.3.11 Chamber volume

- **Chamber volume** This is where you have to enter the filling quantity of the container in KG.

4.4.3.12 Analogue values

The asymmetry point must be enabled if available.

4.4.3.13 Lighting



The EcoTron control unit can control two different types of lighting. In the second column of the table, the respective output can be activated with the setting H (high). In the next two columns you can select whether the respective light switches on as soon as spreading mode is activated (column 3) or whether it switches on when the terminal is switched on (column 4). The lighting must be connected to the relevant outputs in the connection box.

4.4.4 Settings

4.4.4.1 Language

Selection menu of relevant language.

4.4.4.2 Clock

Setting menu, time and date.

4.4.4.3 Display settings

- Brightness: This is where the brightness of the display can be set from 10 to 100 %.
- Automatic brightness: This is where the day and night brightness can be set for automatic dimming.

4.4.4.4 Show Date Hour

See point 4.3.3.2

4.4.4.5 Alarm management

The Alarm Management table allows you to set which components of the spreader unit are to be monitored and which alarms are to be issued.

Knob A is used to select and set the desired row, buttons 4 and 5 are used to select the individual columns.

- The first column contains the name.
- In the second column Release monitoring can be activated.

- In the third column Confirm you can select whether any messages that occur need to be acknowledged.
- In the fourth column Spreading off you can set whether spreading is disabled when an error occurs.
- The fifth column Alarm code displays the error code number.
- In the sixth column Delay you can set a time delay after which the error is read by the control unit following occurrence.
- In the seventh column Display delay you can set a time delay after which the error is displayed.

Code:	Cause:
16	CAN disconnected
161	PowerPack Reboot (voltage interruption to computer)
1	Feedback from disc
2	Feedback from worm roller 1
40	Feedback from spread pattern programmer
100	Autocalibration worm roller 1
101	Autocalibration worm roller 2

4.4.4.6 Driver management

- Number of drivers: Can be set from 1 to 20.
- Total reset: This is where you can set whether or not the driver can reset the spreading data.
- Name change: This is where you can set whether or not the driver can change the names.

4.4.4.7 Warning messages

Knob A is used to select and set the desired row, buttons 3 and 5 are used to select the individual columns.

- The first column contains the name.
- In the second column Release the warning message can be activated.
- In the third column Confirm you can select whether the warning message needs to be acknowledged.
- The fourth column Warning code displays the warning code number.

Code:	Cause:
503	Spread control
507	Material K1 -> salt container 1 empty

4.4.4.8 Power Pack Type

The factory setting "On Line" must not be changed.

4.4.5 Data

4.4.5.1 Statistics (operating hours)

- Delete: The statistics can be deleted here.
- Data download: No function.
- View: This is where you can view all of the operating data for the spreader.

5. EcoTron connecting cables

5.1 Cable connecting connection box to coupling with Harting 15-pin plug

Cable: 10 x 1.5 mm²

Harting 15-pin plug with plastic protective cover

Assignment:

Plug	Cable number
A1	1 +
A2	2 +
A3	3 +
B1	4 -
B2	5 -
B3	6 -
C1	7 CAN H
C2	8 CAN L
C3	9 GND
C4	10 Wake Up

Counter side: open wires

5.2 Cable connecting connection box to ABD coupling with Nato 11-pin plug

Cable: 10 x 1.5 mm²

11-pin plug with plug cap

Assignment:

Plug	Cable number
E	1 +
E	2 +
E	3 +
F	4 -
F	5 -
F	6 -
A	7 CAN H
B	8 CAN L
C	9 GND
D	10 Wake Up

Counter side: open wires

5.3 Cable connecting connection box to coupling with Multicar 21-pin plug

Cable: 7 x 1.5 mm²

21-pin plug with plug cap

Assignment:

Plug	Cable number
R	1 +
S	2 -
A	3 CAN H
B	4 CAN L
C	5 GND
D	6 Wake Up

Counter side: open wires

5.4 Cable connecting coupling to battery and terminal with plug socket with 2 CAN/battery inputs

Cable: CAN 4 x 1.0 mm²

Battery 7 x 1.5 mm²

Plug socket: Harting 15-pin with 2 inputs, with plastic cover

Assignment:

Plug socket	Cable number
A1	1 + 1.5 mm ²
A2	2 + 1.5 mm ²
A3	3 + 1.5 mm ²
B1	4 - 1.5 mm ²
B2	5 - 1.5 mm ²
B3	6 - 1.5 mm ²
C1 CAN H	1 1.0 mm ²
C3 CAN L	2 1.0 mm ²
C3 GND	3 1.0 mm ²
C4 Wake Up	4 1.0 mm ²

Counter side:

CAN cable:

Plug: AMP Tyco Superseal flat plug, 4-pin

Plug no.	Cable number
1 CAN H	1
2 CAN L	2
3 GND	3
4 Wake Up	4

Battery cable:

Cable numbers 1, 2 and 3 combined on a 20A flying fuse (plus terminal).

Cable numbers 4, 5 and 6 loose (minus terminal).

5.5 Cable connecting coupling to Unimog plug socket and terminal with additional 3-pin plug socket

Cable: CAN 4 x 1.0 mm²

Plug, 3-pin 7 x 1.5 mm²

Plug socket, 3-pin 3 x 1.5 mm²

Plug socket: Harting 15-pin with 2 inputs, with plastic cover

Assignment:

Plug socket	Cable number
A1	1+ 1.5 mm ²
A2	2+ 1.5 mm ²
A3	3+ 1.5 mm ²
B1	4- 1.5 mm ²
B2	5- 1.5 mm ²
B3	6- 1.5 mm ²
C1 CAN H	1 1.0 mm ²
C2 CAN L	2 1.0 mm ²
C3 GND	3 1.0 mm ²
C4 Wake Up	4 1.0 mm ²

Counter side:

CAN cable:

Plug: AMP Tyco Superseal flat plug, 4-pin

Plug no.	Cable number
1 CAN H	1
2 CAN L	2
3 GND	3
4 Wake Up	4

Power supply cable:

Plug terminal	Cable number to Harting plug socket	Cable number to 3-pin plug socket
15/30	1 +	1 +
15/30	2 +	
15/30	3 +	
31	4 -	2 -
31	5 -	
31	6 -	
82		yellow/green

5.6 Cable connecting coupling to ABD terminal with Nato plug

Cable: CAN 4 x 1.0 mm²

Plug, 11-pin

Plug	Cable number
A CAN H	1 1.0 mm ²
B CAN L	2 1.0 mm ²
C GND	3 1.0 mm ²
D Wake Up	4 1.0 mm ²

Counter side:

Plug: AMP Tyco Superseal flat plug, 4-pin

Plug no.	Cable number
1 CAN H	1
2 CAN L	2
3 GND	3
4 Wake Up	4

5.7 Cable connecting coupling to Multicar terminal with 21-pin plug

21-pin plug with plug cap

Cable: CAN 4 x 1.0 mm²

Plug	Cable number
A CAN H	1 1.0 mm ²
B CAN L	2 1.0 mm ²
C GND	3 1.0 mm ²
D Wake Up	4 1.0 mm ²

Counter side:

Plug: AMP Tyco Superseal flat plug, 4-pin

Plug no.	Cable number
1 CAN H	1
2 CAN L	2
3 GND	3
4 Wake Up	4

5.8 Battery cable with 3-pin plug socket for operating unit with drive signal

Plug socket, 3-pin

Cable: 2 x 2.5 mm² battery; 1 x 1 mm² for drive signal

Battery cable:

red = "plus" power supply
Black = "minus" power supply
black (thin cable) = Drive signal (82)

6. Terminal pin assignment

6.1 Connection box for standard spreader

No.	X1	X2	X3	No.	X5	X6
1	Disc feedback	Ub	Earth	1	Disc magnet -	Disc magnet +
2	Worm roller feedback	Ub	Mass	2	Worm magnet -	Worm roller magnet +
3				3		
4	Salt level	Ub	Mass	4		
5				5		
6	ESBV feedback	Ub	Mass	6		
7	ESK (infrared)	Ub	Mass	7	Mass	Free
8	Disc stop sensor	Ub	Mass	8	Light 1 -	Light 1 +
9				9	Light 2 -	Light 2 +
10				10		
11	Spare	Ub	Mass	11		
				12	Mass	Free
				13	ESBV relay, left 12 m	ESBV, left 8m
				14	ESBV relay, right 12 m	ESBV, right 8m

No.	X7	X8
1	1 Batt. +	8 CAN low
2	2 Batt. +	7 CAN high
3	3 Batt. +	8 CAN low
4	4 Batt. -	7 CAN high
5	5 Batt. -	10 Wake Up
6	6 Batt. -	9 Ground

No.	X4
1	ESBV, left 12 m
2	ESBV, right 12m

6.2 Sensor cable colours

	Signal	Ub	Mass
Disc	Black	Brown	Blue
Worm roller	Green	Brown	White + shield
Salt level	Black	Brown	Blue
ESK	Black	Brown	Blue
Disc stop	Black	Brown	Blue

6.3 Electronic spread pattern programmer cable colours

6.3.1 ESBV 8 metres

Colour	Function	Assignment
Green	Ub +	X2 no. 6
Black	Mass	X3 no. 6
Yellow	Feedback	X1 no. 6
Blue	Left	X6 no. 13
Red	Right	X6 no. 14

6.3.2 ESBV 12 metres

Colour	Function	Assignment
White	Ub +	X2 no. 6
Black	Mass	X3 no. 6
Purple	Feedback	X1 no. 6
Brown	Left	X4 no. 1
Blue	Right	X4 no. 2
Bridge	X6 no. 13	X5 no. 13
Bridge	X6 no. 14	X5 no. 14

6.4 Pin assignment of digital hour counter

Hour counter pin	Assignment	Function
1	X2 no. 12	Signal
2	X7 no. 1	+
3	X7 no. 4	-

6.5 Pin assignment of EcoTron terminal

- 3-pin plug for power supply and drive signal

Terminal	Cable colour	Function
15/30	red	+
15/30	Green	+
31	Yellow	-
31	Black	-
82	Blue	Drive signal
82	Grey	Drive signal

- 4-pin Superseal plug for the CAN connection

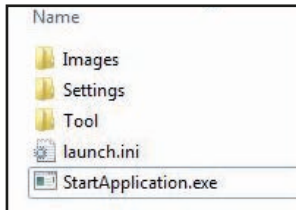
Pin	Cable colour	Function
1	Brown	CAN H
2	White	CAN L
3	Yellow	Ground
4	Green	Wake Up

7. Appendices

7.1 Saving and installing description of EcoTron settings

Use a USB stick.

Unzip the basic program. The basic program must comprise the following folders:



Send these folders to the empty USB stick. The USB stick now contains a basic program with which backups can be created.

Data backup:

Plug the USB stick into the EcoTron control unit using a mini USB adapter.

Press the ON button on the EcoTron operating unit. The boot menu will appear on the EcoTron screen.



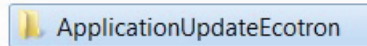
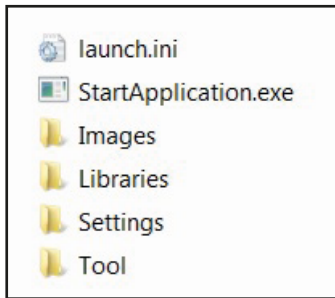
Use the white push buttons at the bottom to enter the **code "2631"**.



Use the top knob to select "**Update EcoTron**" and press to confirm.

Press **“Clone”** to save the setting data to the USB stick.

After a few minutes **“Copy...files”** will appear in marquee. You can then switch off the EcoTron control unit at the power button and remove the USB stick and adapter.

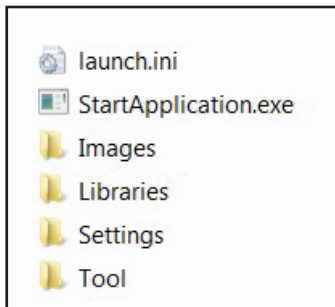


Plug the USB stick into your computer.

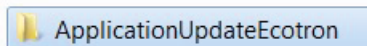
There is now a **“Backup”** folder under **“Tools”**–“Application UpdateEcoTron” in the menu.

This folder now contains all the settings of the control unit.

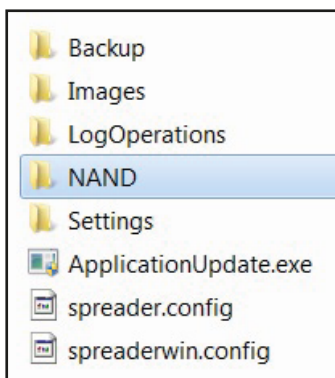
This data can be used as a backup, or the data can be transferred to several spreader units.



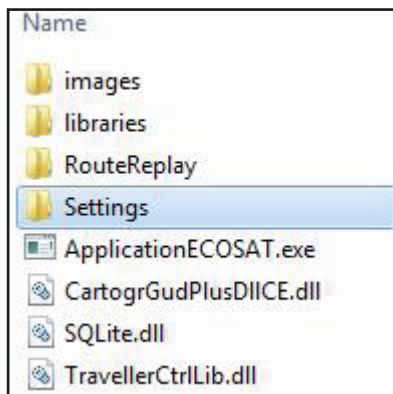
Open **“Tool”** from the menu on your computer.



Open the **“Application Update EcoTron”** folder.



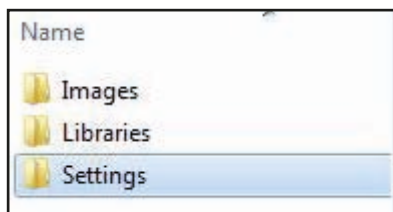
Open the **“NAND”** folder.



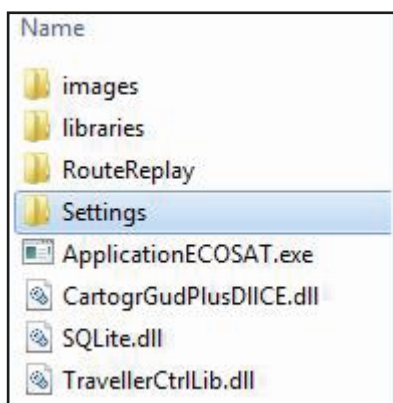
Delete the **“Settings”** folder.



Open the **“Backup”** folder.



Copy the **“Settings folder”** from the backup file to the **“NAND”** folder where you deleted the old settings.



Once you have copied the **“Settings”** folder to the **“Nand”** folder, delete the **“Backup”** folder from the USB stick.

You now have the basic program with the setting values from the first spreader units.
Now plug the USB stick into the bottom of the EcoTron control unit using a mini USB adapter.
Press the ON button on the operating unit. The boot menu will appear on the EcoTron screen.



Use the white push buttons at the bottom to enter the **code "3144"**.



Use the top knob to select **"Update EcoTron"** and press to confirm.



To transfer the setting data from the USB stick to the control unit, press **"Clean"**.
 After a few minutes **"Clean...files"** will appear in marquee.
 Then press the **"Update"** button. After a few minutes **"Update successful"** will appear in marquee. You can then switch off the EcoTron control unit at the power button and remove the USB stick and adapter. The settings have been applied to the second spreader.

7.2 EcoTron material calibration



WARNING!

- **Safety instructions in the operating instructions must be observed!**
- **Appropriate protective equipment (safety shoes, long clothing, protective eyewear, gloves) must be worn when weighing material!**
- **The spreader unit is raised for the weighing process. The worm roller rotates in the spreader tunnel.**
The operator of the control panel must ensure that only instructed staff are in the spreader discharge area during the weighing process (cordoned off)!



The EcoTron control unit offers two options for calibrating the material feed as spreading materials can vary considerably in their density and composition:

- 1) Quick adjustment: **Linear calibration**
- 2) Exact adjustment: **Calibration by table function**

1) Linear calibration

The power/speed graphs need to be calibrated before performing the measurements.

- Menu
- 3144
- Worm roller
- Calibration

... **rpm** and **actual value** must match. Adjust by changing the power value (Power column).

EcoTron linear calibration: Material

The quantity parameters can be adjusted quickly using the **pulses of the worm roller** . This involves calibrating the kg per revolution.

- Menu:
- 3144
- Material





The values in the table are approximate.

To obtain exact values, we recommend calculating the values yourself. To do this, set a test speed in the operating unit and start spreading. Weigh the kg per roller revolution in the spreader tunnel. The best way to do this is to measure at least 10 revolutions and divide the amount by 10.

To avoid having to perform a measurement in the case of slight deviations, the linear graph can be adjusted using the coefficient.

Spreader type	Salt... kg/rev	Grit... kg/rev
Husky V low-speed motor	0.7	-
Husky V Standard	1.9	2.75
Yeti W	8m: 3.85; 12 m: 6.2	8m: 5.05; 12 m: 7.8
Yeti W twin chamber	8 m:1.9; 12 m: 3.1	8m: 2.5; 12 m: 3.9
Icebear V	8m/12m: 2.62	8m/12m: 3.45
Icebear W	8m: 3.85; 12 m: 6.2	8m: 5.05; 12 m: 7.8
Icebear W twin chamber	8 m:1.9; 12 m: 3.1	8m: 2.5; 12 m: 3.9
Phoenix	5.4	7.8

Setting the shortened range (gear ratio)

- Menu
- 3144
- Worm roller
- Shortened range...

Gear type:	Shortened ranged:	Bucher gear (new)
Powershift transmission		2.8
Spur gears 5703		2.8
Chain gear 5701		2.8



2) Calibration by table function

As the feed behaviour changes slightly at different speeds, **“real” weighing** is possible.

Material calibration

This means:

Materials (salt, grit) have different specific weights.

This function allows you to calibrate the feed volume depending on the speed using the worm roller.

Preparation for weighing:

A stopwatch, scales and a collection container (approx. 80 litres) are required

- Switch on the EcoTron control unit.
- After startup, press **“Menu”** and enter the password **“3144”**.



- Then go to Material in the menu and select e.g. **“Salt”**.
The **“Salt”** menu will open.



- Now go to the **“Dosing function”** tab.
In this menu **“Table”** must be set under function type.



Up to 20 weighing points can be set under **"Funktion"** in the menu of the **"Numbers"** tab. Six weighing points are recommended. The more weighing points, the more accurately the machine will work.



- Enter the values shown in the **"Revolution per minute"** column.

Now for the actual weighing:

Perform the following steps:

- Note the warnings on page 2!
- Switch on the vehicle hydraulic system
- The spreader unit must be raised
- Allow the screw conveyor to run for approx. 10 revolutions by opening the emergency manual control so that it is filled with material. Then close the emergency manual control again.
- Place the trough under the vertical chute
- Press Start. The worm roller will now begin to rotate and the material will fall into the trough



It is recommended to do this for approx. five minutes for the first revolution.
At higher speeds, e.g. 40 or 60 rpm, do this for approx. 20 or 30 seconds.



- Press Stop after the desired time. The EcoTron will enter the time in the "Time" column.



- Enter the weight measured in the **“Weight”** column. The EcoTron will now automatically calculate the relationship between the time and weight (Dosing column). Now repeat these steps for the other five rpm rows.

The EcoTron control unit calculates the exact dosing across the entire range of worm roller speeds using these **“real”** measurements. This method is very precise and calculates the actual material discharge.

Test measurement:

- Setting, e.g. 20g, 4 m, 30 km/h;
- Press “Start spreading” and measure the discharged material for e.g. 1 minute (stopwatch). Slight deviations can be corrected using the coefficient.

Terms/conditions of warranty

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

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

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


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



<http://www.rauch-community.de/streutabelle/>



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