UK

Operating and mounting instruction:
VARIO-EXACT

Slug security, universal seeder for seeding small seeds and slug pellets.

Seeder unit: stainless steel. The seed output is carried out by a serrated seed roll. With the speed of the seed roll you can adjust the output amount. Step 1 is for the smallest amount output and the highest is on step 10. From the hopper the seed gets out to the spreader plate through the seed rolls and 1 tube. The spreader plate distributes the seed semicircular.

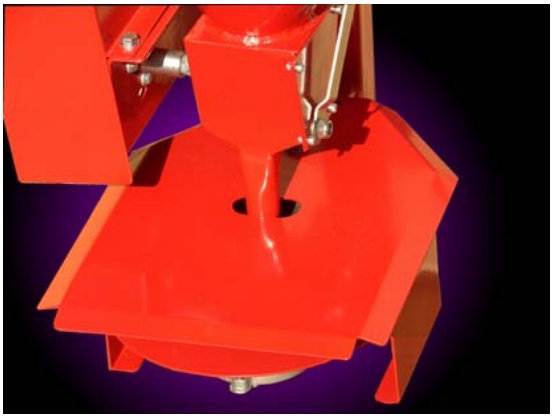
According to the speed oft he spreader plate the spreader width varies. Step 1 is for a small spreader width and step 10 for the most possible width. The spreader width depends on the character of the seed. With heavy seed (f.e.: slug pellets to 24 m; mustard, peas, rape) you can reach a higher spreader width than with small and light seed (f.e.: grass seed to 6-7m).

Take attention when adjusting the bottom flap (hand gear lateral to seed unit). For big seed a small slot has to be that the seed doesn´t crumble. For small seed put the bottom flap as near as possible to the seed roll (otherwise you get amount differences).

The hopper is closed with a sealed cap. The seal has to be proofed periodical with seal silicone.

For moving the outlet tube loose the 2 bolts. Now you can adjust the spreader radius exactly. Every corn has its own flying character. So it is profitable to have the chance of adjusting the

spreader radius. Additionally you can adjust it also with the throw blades on the spreader plate. If you turn the throw blades clockwise (seen from above) the seed (seen in driving direction by mounting on a sub sequent basic unit) is taken more to the left. Adjusting against clockwise turn effects the opposite.



Calibration:

To get the seed in the tank remove the bolt near the carrier profile. Then you can put the outlet tube to one side and catch the seed in the tank.

f.e.: working width 1,5 m x driving speed 8 km/h x output amount/ha 20 kg

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60 min.

1,5 x 8 = 1,2 ha/h x 20 kg/ha = 24 kg/h : 60 min. = 0,4 kg/min.

Results an amount of 0,4 kg/min. which has to be collected in a tank.

Safety regulation:

During working on the machine make sure that the machine is turned off and the current supply is broken. The motor is very powerful and doesn't stop because of fingers, hair or loose cloth. Keep safe clearance. Before starting check if there are no persons, animals or easy damaging things in the danger area. Keep children away from the machine.

With the delivered control unit you can adjust the speed stepless.

1 = lowest rotation speed

10 = highest rotation speed

Direction of seed roll rotation:

Take attention on the direction of seed roll rotation. Because of false direction it rolls up the thread in the seed roll.

- **IMPORTANT:**
- **Clean carefully and inject the machine after every season.**
- **For filling mount an antislip and an overturn safe climb.**

Programming of Exact-Steer Computer in short steps (extra equipment)

Before starting read the whole manual to the Exact-Steer Computer.
Make sure that the electric power supply is correct and safety before starting with the calibration!

CALIBRATION:

With the arrow key you can choose between kg/ha, kg total, ha, km/h after each calibration

1. programming kg/ha
   The diode by **kg/ha** has to flash green.

   - Press SET button for 2 seconds.
   - The Kilogram-by-hectare value will be displayed, and the display will start to flash. (e.g. 10 kg = 10,0 enter)
   - The value can now be changed by pressing up-arrow or down-arrow.
   - Press SET button to accept the new value (The display will stop flashing).
   - By pressing RESET button the value is not accepted and you are leaving the setup-routine, the value is not changed.

2. programming of motorsenor on the magnetwheel
   The diode by **kg total** has to flash green.

   - Press the SET button for 2 seconds, this will activate the calibration function.
   - The display is now showing the calibration value (the display is flashing). The calibration value is in gram-by-pulse [set gramm/motor pulse to 1,00].
   - Press SET to activate the motor feeding.

   Note! The ON/Auto-switch must be in off-mode when entering this new state, else the ON-led will flash telling you to turn of the switch.

   - The motor can now be turn on by switching the motor-switch to ON.
   - Feed out seed for measurement, the display will show you the value of the outputted seed with the current calibration value in kilograms *[kg]*.
   - Measure the seed you have put out, and adjust the value on the display with the up and down button. The value is showed in kilogram, with three decimal.
   - Accept this value by pressing SET button.
   - The now corrected calibration value will be displayed. Press SET to accept this value, this will finish the calibration procedure.
   - You can always abort a current calibration by pressing the RESET button.

3. programming of the working wide
   The diode by **ha** has to flash green.

   - Press SET button for 2 seconds.
   - The working-width value will be displayed, and the display will start to flash. (e.g. 6 meter = 600 enter)
   - The value can now be changed by pressing up-arrow or down-arrow.
   - Press SET button to accept the new value (The display will stop flashing).
   - By pressing RESET button the value is not accepted and you are leaving the setup-routine, the value is not changed.

4. programming of speedsensor
   The diode by **km/h** has to flash green.

   - Press the SET button for 2 seconds, this will activate the calibration function.
   - The display is now showing the calibration value (the display is flashing). The calibration value is millimetre/speed-pulse *[mm/speed-pulse]* from impulse to impulse or from bolt head to bolt head
     (e.g. 430mm way = 430 enter; maximum 500mm).
   - Press SET and drive a known length, example 100 metres, the display will show you how far you have driven with the current calibration value in metres *[m]*.
   - If the display is showing you the wrong driven length, change the length by pressing up or down. It will show you the length in metres, with one decimal.
   - Press SET when the value is the same as the length you have driven.
   - The current and changed calibration value will be displayed.
   - Accept this value by pressing SET button again, this will finish the calibration procedure.
   - You can always abort a current calibration by pressing the RESET button.

The programming is now finished
Press the rocker switch in position „AUTO“ and the seeder machine will be driven automatically.

A good trip wishes you

HE-VA

Functional description
for
Exact-Steer computer
(extra equipment)

1. Display

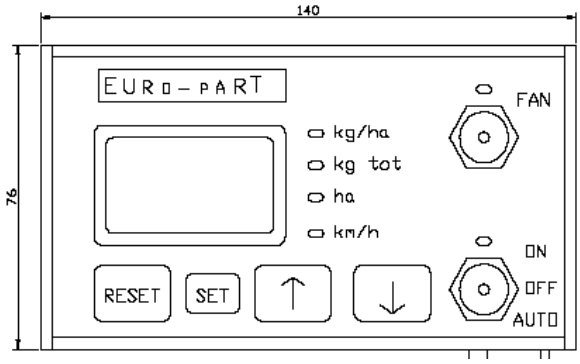


Fig 1. Control-box.

1.1 Values

The display is capable of showing four different types of values. These are:

Kg/ha: This is the value of how much you want to put out of the seeder. The value is in kilogram by hectare, with one decimal.

Kg total: The total weight that has been put out. Value is in kilogram, with one decimal. This value can be cleared by pressing RESET for 3 seconds.

Ha: The driven area in hectare, with one decimal.
This value can be cleared by pressing RESET for 3 seconds.

Km/h: Current speed, kilometre by hour, with one decimal.

The current value to show on the display is selected by pressing either ***up-arrow*** or ***down-arrow***. A led tells you which value that is currently displayed.

1.1 Area switch

The display also indicates either the area-switch is on or off. When the area-switch is activated a colon is flashing in the display.

1.2 Hidden value

Ha total: The total driven area in hectare.

1. Press up-arrow and down-arrow at the same time for about 3 seconds.
2. The **ha** led will start flash, and the ha total value will be displayed.
3. Press RESET button for 3 seconds for clearing this value.
4. Press SET for return to **ha**.

1.3 Program version

Current program version is displayed on power up of the system for about 3 seconds.
Example: P001 for version 001.

2. Controlling fan and seed output.

The two switches controllers the fan and the seed output.

Pulling the switch named ***fan*** up activates the fan. A led is indicating the state of the fan. The led is on if the fan is on and off when the fan is off. Pulling the switch down deactivates the fan.
The state of the fan is memorised in the program and is started in that state when system is started.
The second switch if for controlling the seed output. There are three positions for this switch, ***On***, ***Off*** and ***Auto***.

On:	The switch is in up position and the seeder is always controlled.
Off:	Switch is in middle position, none controlling of the seeder.
Auto:	Switch is in down position and the seeder is controlled if area-switch input is not activated.

The seeder will only be controlled when the fan is on. If you set the control-switch to on while the fan is off, error E 05 will be shown in the display.

3. Settings

3.1 Kilogram-by-hectare [kg/ha]

Kilogram-by-hectare is putted in in kg/ha with one decimal.
Example: 20 kg/ha for outputted seed, the display value should be 20.0 .

1. Set the displayed value to kg/ha.
2. Press SET button for 2 seconds.
3. The Kilogram-by-hectare value will be displayed, and the display will start to flash.
4. The value can now by changed by pressing up-arrow or down-arrow.
5. Press SET button to accept the new value (The display will stop flashing).
6. By pressing RESET button the value is not accepted and you are leaving the setup-routine, the value is not changed.

3.2 Working-width [cm]

Working-width is put in in cm.
Example: 6 metres working-width, the display value should be 600 (no decimal)

1. Set the displayed value to ha.
2. Press SET button for 2 seconds.
3. The working-width value will be displayed, and the display will start to flash.
4. The value can now by changed by pressing up-arrow or down-arrow.
5. Press SET button to accept the new value (The display will stop flashing).
6. By pressing RESET button the value is not accepted and you are leaving the setup-routine, the value is not changed.

4. Advanced settings

Two regulator parameter can be changed.

Default values for the parameters are:

Parameter 1: 250
Parameter 2: 50

This is done by holding both SET button and RESET button down for 2 seconds when the ***kg/ha*** value is displayed. The RESET button must be released before the SET button for activating the changing procedure.

The first regulator parameter is displayed and the display is flashing. Press UP or DOWN for changing the value.

By pressing SET the value is accepted and saved and the second regulator parameter is displayed. Press UP or DOWN for changing this value.

By pressing SET again this value is accepted and saved, and the display will go back for displaying the ***kg/ha*** value.

Pressing RESET will abort the current settings if its not accepted with SET.

5. Calibrations

Calibrations for speed-sensor and motor-sensor have to be done before the system can work correctly.

5.1 Speed-sensor

Calibration value for the speed sensor is in mm per pulse.
Example: If you have 430 mm between two pulses, the display value for the calibration-value should be 430 (no decimal).

1. Set the display value to ***km/h***.
2. Press the SET button for 2 second, this will activate the calibration function.
3. The display is now showing the calibration value (the display is flashing). The calibration value is millimetre/speed-pulse *[mm/speed-pulse]-[maximum 500 mm]*.
4. Press SET and drive a known length, example 100 metres, the display will show you how far you have driven with the current calibration value in metres *[m]*.
5. If the display is showing you the wrong driven length, change the length by pressing up or down. It will show you the length in metres, with one decimal.
6. Press SET when the value is the same as the length you have driven.
7. The current and changed calibration value will be displayed.
8. Accept this value by pressing SET button again, this will finish the calibration procedure.
9. You can always abort a current calibration by pressing the RESET button.

5.1 Motor-sensor

1. Set the display value to ***kg tot***.
2. Press the SET button for 2 seconds, this will activate the calibration function.
3. The display is now showing the calibration value (the display is flashing). The calibration value is in gram-by-pulse [set gram/motor pulse to 1,00].
4. Press SET and to activate the motor feeding.
   Note! The ON/Auto-switch must be in off-mode when entering this new state, else the ON-led will flash telling you to turn of the switch.
5. The motor can now be turn on by switching the motor-switch to ON.
6. Feed out seed for measurement, the display will show you the value of the outputted seed with the current calibration value in kilograms *[kg]*.
7. Measure the seed you have put out, and adjust the value on the display with the up and down button. The value is showed in kilogram, with three decimal.
8. Accept this value by pressing SET button.
9. The now corrected calibration value will be displayed. Press SET to accept this value, this will finish the calibration procedure.
10. You can always abort a current calibration by pressing the RESET button.

Advanced settings (new program)

There are three settings:
Two regulator parameters that can be changed (PI-regulator) and the polarity of the area-switch.

Default values for the parameters are:

Parameter 1: 250 (Gain, P-factor) *
Parameter 2: 50 (Integration, I-factor)**
Parameter 3: 0 (Polarity area-switch, 0 or 1)***

Changing the parameters are done by holding both SET button and RESET button down for 2 seconds when the ***kg/ha*** value is displayed.
The RESET button must be released before the SET button for activating the changing procedure.
The first regulator parameter is displayed and the display is flashing. Press UP or DOWN for changing the value.
By pressing SET the value is accepted and saved and the second regulator parameter is displayed. Press UP or DOWN for changing this value.
Press SET and the value is accepted and saved and the third parameter is displayed to change the polarity of the area-switch. Press UP or DOWN for changing this value.
By pressing SET again this value is accepted and saved, and the display will go back for displaying the ***kg/ha*** value.
Pressing RESET will abort the current settings if it is not accepted with SET.

** If parameter 1 is set to high the seed output starts to oscillate. If oscillation occurs then reduce parameter 1.*

*** If parameter 2 is set to high the seeder output can be unstable. If the seeder output is unstable try to reduce parameter 2. If the amount from the seeder output is not correct according to driven area try to increase parameter 2.*

**** If parameter 3 is set to 0 the machine is active when the area-switch input signal is high. When parameter 3 is set to 1 the machine is active when the area-switch input signal is low.*

6. Error messages

The display can show four different error-messages.

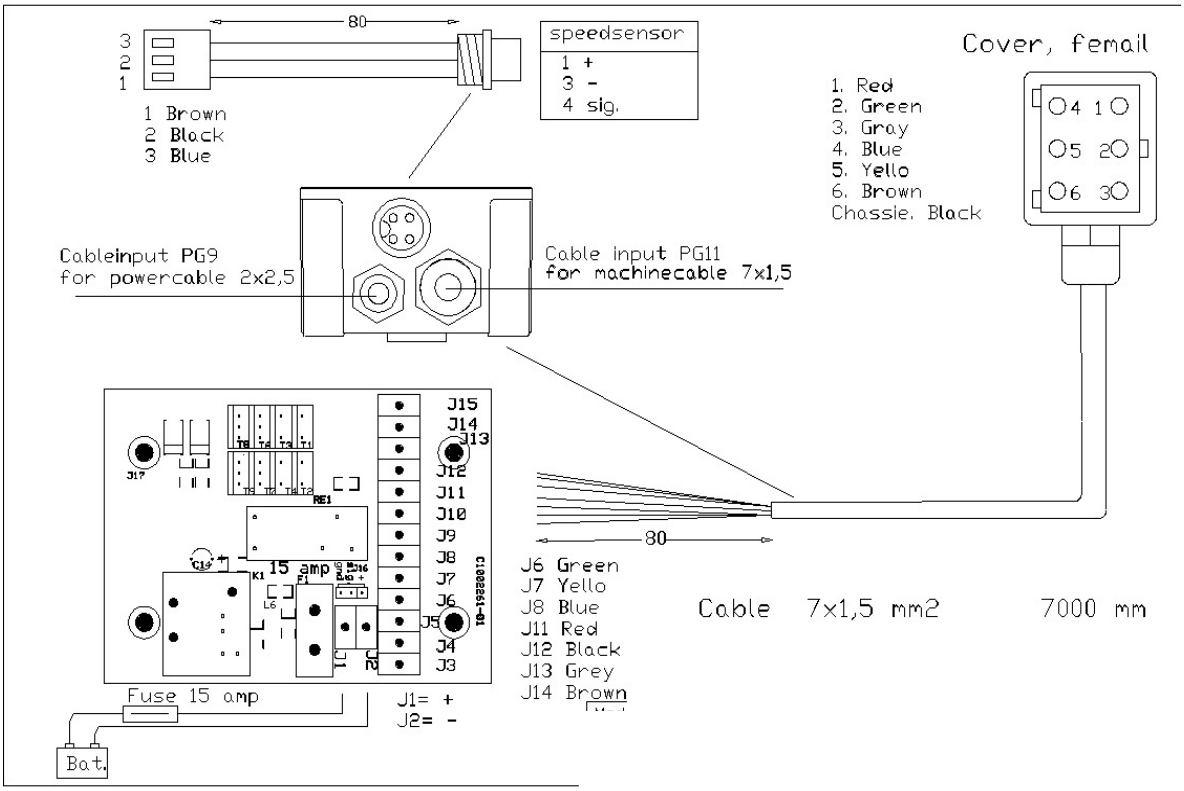
Error	Error description	Measure
- - - -	VCC error. Supply voltage is below 10 voltages.	Check the power-cable.
E 00	Calibration value error. One or many calibration values are either zero or greater than 9999.	Pressing RESET button turns this error message off. Check all calibration values and regulator-parameters
E 01	Memory error. All saved values in memory is set to default values.	Pressing RESET button turns this error message off. New calibrations has to be done before the unit will work correctly.
E 02	Minimum output on motor. With the current kg/ha or the current speed, the motor is going to slow for correct regulation.	Either select a higher kg/ha-value or raise your current speed.
E 03	Maximum output on motor. With the current kg/ha or the current speed, the motor is going to fast for correct regulation. This error can also occur if there's an error on the motor sensor or the motor axle.	1. Select a lower kg/ha-value or reduce your current speed. 2. Check signal on motor sensor. 3. Check the rotation on the motor axle.
E 04	Motor error. The motor is going to fast or is not responding to regulation. This error will occur when the divergence or the kg/ha has been more than 10% for over 5 seconds.	Check power-signal to motor.
E 05	Fan not activated. The ON/OFF/AUTO switch is in ON or AUTO but the fan is not on.	Activate the fan by pulling the fan-switch to ON.

Note. No errors, apart from VCC error, can deactivate the head-relay. When an error occurs it is up to the user to turn of the motor and the fan. The motor can by turned off by setting the ON/OFF/AUTO switch to OFF position.

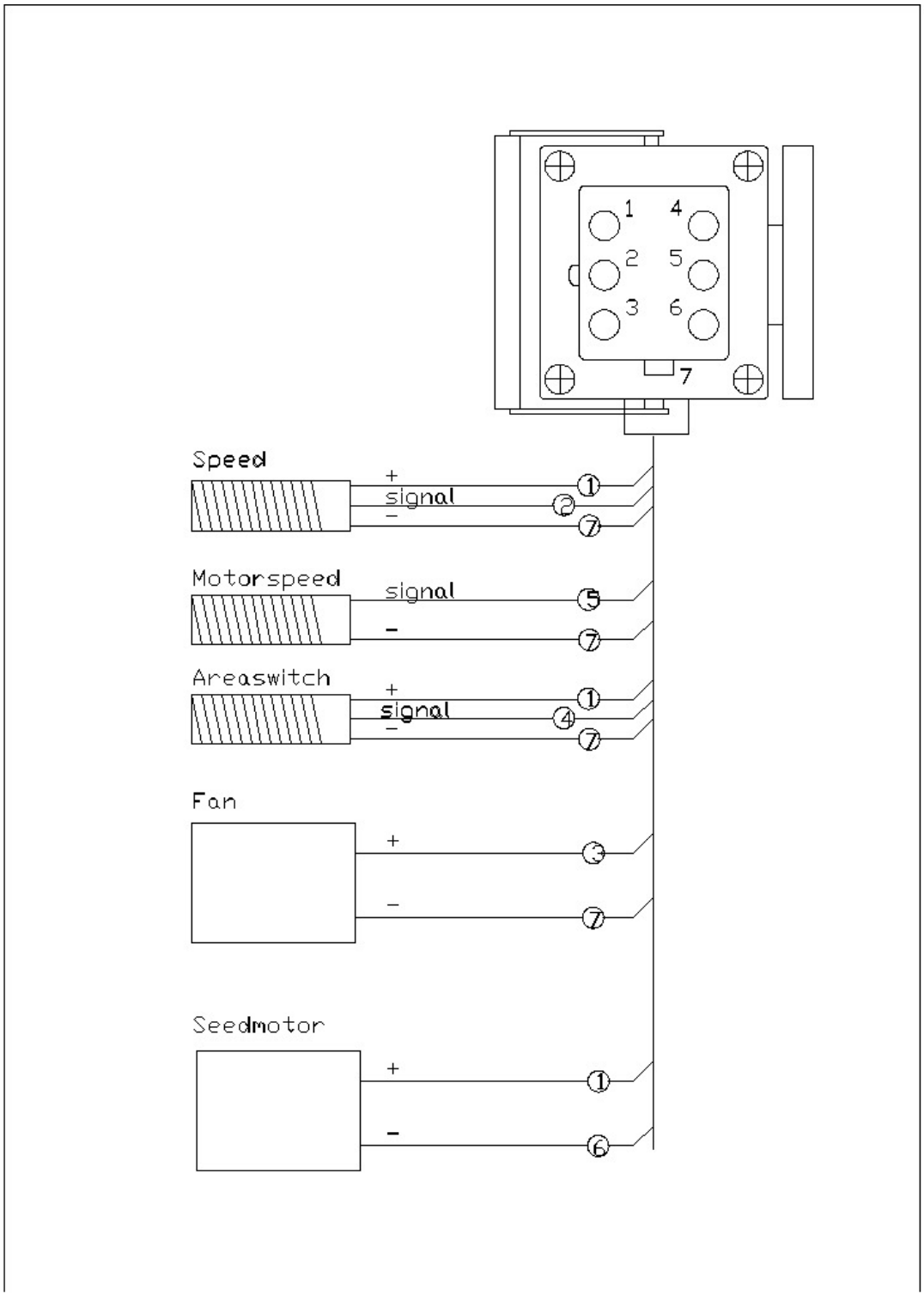
Seed shaft do not work for calibration:
Sensor on magnetic plate no contact, wire damaged or no connection in the plug.

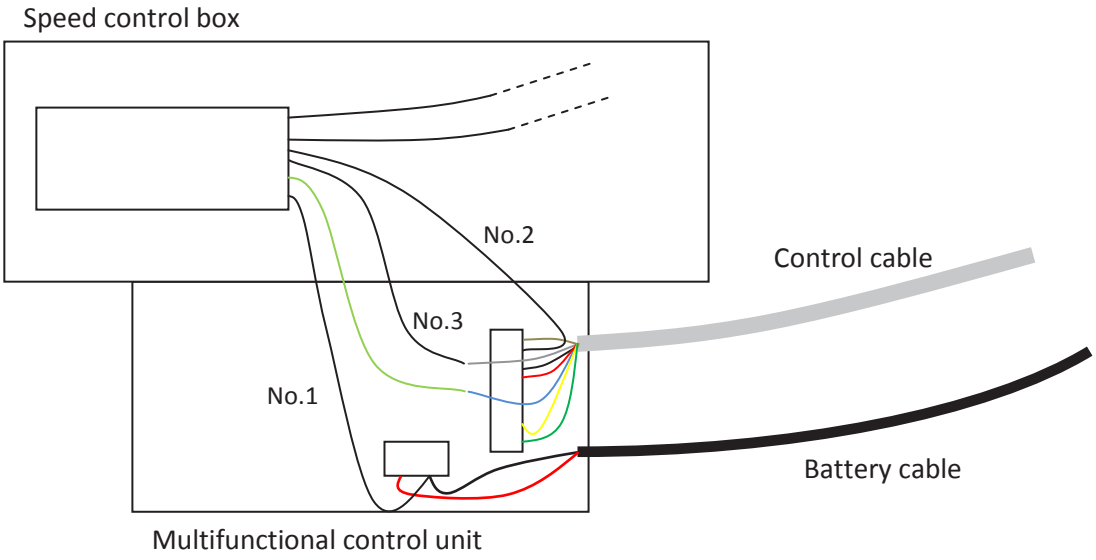
Hektarcounter and seedmotor not working:
Groundspeed sensor damaged or no connection to plug.

7. Connection scheme: Tractor unit



7. Connection scheme: Machine cable





Connecting the speed control box with the multifunctional control unit:

Cables from the Speed control box:

No. 1 connect with the minus cable (black cable) from the battery cable and put them together in the socket no. J2

No. 2 put in socket no. J13

No. 3 connect with the grey cable (take it out from socket no. J13) from the control cable

Cable green/yellow connect with the blue cable (take it out from socket no. J8) from the control cable

Change in socket mounted on the frame of the slug security:

Open the socket and put the cable from the socket no.7 together with cable no.1 (is already in socket no. 4) to socket no.4