

# Technik-Plus

For following models:

**ÖKO-Turbo**

Serial number: \_\_\_\_\_

\*Translation from original instruction\*



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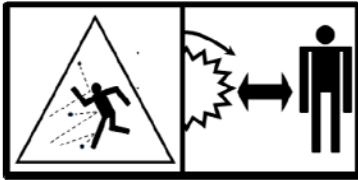
Stand: 02/2011

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## Description of the icons on our spreader:

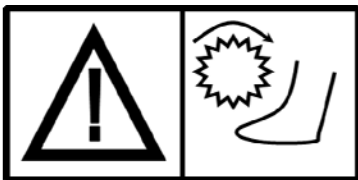
Icons point out possible danger areas. They serve the safety of all persons who work with seeder or have to do with it in any way. Pictograms must be displaced and can be reordered with the quoted order number.



During operation of the machine do not enter the danger area. People and animals can be injured or objects can be damaged.



Please use protective clothing (for filling the hopper, for works on the machine...)! Also read the bag before opening it.



Attention to rotating parts! The motors are very powerful to damage or injure clothes or bodily parts. Before doing works on the machine please disconnect the power supply.



On these positions you will find the icons.

## CE conformity mark:

The CE conformity placing through the producer documents outwards the conformity of the machine with all regulations of the directives of the machine and other corresponding EC directives

EC declaration of conformity (see page 29)

By signing the EC declaration of conformity the producer validates that the introduced machine complies with all constitutional safety and healthy requirements.

## **Getting started:**

Please check following points:

1. Check of external shipping damage.
2. Completeness of machine according to delivery note.
3. Operating, commissioning and maintenance only by using the operating instruction.
4. When rotating or moving parts to check tightness.
5. Mounting of machine correctly according to operating instruction and safety regulations.
6. Test run.
7. After all 40 hours of operation or at least prior to each season please check tightness of rotating parts.
8. Note the call sign (!). Everywhere there is to ensure your safety.
9. On the machine you will find the necessary safety regulations on the plastic tank. If this label is lost it must be reordered! All safety information can be found in the operating instruction!

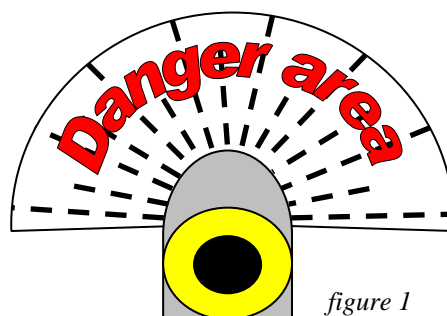
## **Dissemination:**

The user has to be familiar with all safety and operating instructions of the machine. Therefore, it is necessary to hand the operating instruction on the user. The operating instruction will remain even after selling the machine!

## **Safety instructions:**

### ***A. Danger area of machine:***

The danger area extends in a semicircle towards to the spreading direction (see figure 1). Depending on the working width the size of the danger area varies from 8-26 m. Please note that the individual grains at a set working width of eg 24 m still can fly. Different weight of seeds leads to different working widths => danger area is the zone where flying material can injure or damage people, animals and objects.



Other danger areas are agitator and spreader plates or feeder and feeder motor.

## ***B. In general:***

- ! Please study the operating instruction exactly before you start to work!
- ! Please keep enough safety distance during operation! All rotating and moving parts are very powerful and can pull in fingers or clothes! Take potential care when setting and calibrating the machine!
- ! Before starting to work make sure that no people, animals or easy to damage things are in the danger area!
- ! When spreading agricultural chemicals please read the bag before purchasing the seed! Use safety clothing and breath mask when spread poisoned material!
- ! Empty the tank after completed work to avoid any risk to people and animals!
- ! Attention to the agitator! The emptying of the tank or replacement of the agitator bolt or other spare parts may execute with interrupted electrical connection!
- ! Keep children away of the machine!
- ! During operation: Do not open the lid of the tank and not look directly into the hopper and spreader plate!
- ! Make sure that the seeder is switched off (main control switch>OFF) and the feeder is closed before you connect the machine with battery!
- ! Do not enter the danger area during operation and during the machine is connected with electricity!
- ! **Before any work on the machine or its components take care that the power supply is interrupted!**
- ! Use safety clothing and breath mask when filling the tank!
- ! For each work with the machine you have to use just work gloves!
- ! Adjusting the throwing blades or setting of output amount may only do with switched off machine and interrupted electrical connection.
- ! During calibration the danger area may only entered with switched off machine and interrupted electrical connection.
- ! Take care that no danger for people comes from the basic machine during remodelling of the seeder (=> switching off tractor (ignition), hydraulic assuring against moving, ...)

## ***C. Control and electrical connection:***

- ! To keep functionality of control unit keep it dry, protect it from shocks and falls, and also take care of correct polarity of battery (do not mix + and – !)
- ! Control unit box must be fixed beyond of danger area! (eg tractor cabin). If the supplied cable is not sufficient, take care to the right cross section of the cable when extending this. Connections have to be clean, i.e. open wires are important to isolate and protruding wires are not allowed.
- ! Make sure that the wires are correctly assembled at connections, so that enough electricity can flow through.
- ! Protect cables against friction and heavy heat. When cable isolation is damages please exchange immediately.

## **D. Fitting and console:**

*Please note following points when mounting the seeder:*

- ! If you mount an own fitting console, there must be a load capacity of at least 100 kg!
- ! During operation seeder and frame are exposed strong vibrations. → Frame and bolting must stand these vibrations; check bolting before and after each operation to their fixed hub; also control cross beams and fitting console before and after each operation to damages and cracks! On the seeders there are screw holes and a square tube for fitting on the frame.
- ! The seeder must have enough space around it, so that settings and reconstruction work on the machine can be carried out safely.
- ! The steps to the tank to filling this shall be fitted with a grab. (Height 90-110 cm, but it needs at the each point of the steps the same height). Optimal steps height: 18 cm; optimal steps lowness: 27 cm; optimal steps width: 80 cm

## **Operation:**

- ! This seeder is not intended for aggressive seeds (mineral fertiliser).
- For spreading rape, clover, mustard, slug corn, phacelia, lucerne, rye, oats, peas, micro granular, (wheat), grass seed ...
- For fitting on curry comb, disc harrow, grubber, roller, seedbed combine, grassland harrow, harvester, harvester thresher, ...
- ! The machine is developed for agricultural work to spreading seeds. For another operation warranty and product liability will expiate!

## **Warranty:**

The manufacturer warranty is 1 year and applies in following points:

- Spare parts damaging because of false fitting or material defect within this time.
- If you use original spare parts.

Warranty applies in following points:

- Spare parts, which have to be changed regularly on normal operation (abrasion).
- Spare parts damaging because of accidents, carelessness, misuses and faulty use and installation.
- If you use replica parts or spare parts from other manufacturers.
- If you not keep in mind operating and mounting instructions.

**Before delivery each seeder will be checked out in all its functions during a long test run!**

## **Product liability:**

The product liability applies only to correct operation. If the seeder is not maintained correctly (eg regulary control of scatter diagram and functionality of particular parts,...) the manufacturer assumes no liability.

## **Description:**

Multifunctional seeder with stainless steel unit with 5 outlet tubes and 50x50 square tube; hoses; 5 spreader plates; 300 lit. plastic hopper with liter-indication, 12V drive from tractor battery; when you need 3 rows you can close the middle outlets and you can change the seed roll segments into full ones; adjustable flap; standard seedroll ;single speed motor: 12V/1,9A/70W/max. 70U/min.

**For seeding:** Granulates for potato-cultivation and vegetable-gardening, corned silage mixture, different seeds (rape, clover, mustard, grass seed, ...)

**Control unit (in the cab):**      **MULTIFUNCTIONAL CONTROL BOX**

**Weight of hopper:**      60lit. = 29kg  
                                  90lit. = 31kg  
                                  105lit. = 33kg  
                                  130lit. = 36kg



## **Technical details:**

Operating voltage:	12 V
Seedroll motor:	12V/ 1,9A/ 70W/ max. 70U/min.
Working width:	1,00m – maximal 1,80m
Hopper volume:	60 – 90 (Standard) – 105 – 130lit.
Net weight:	
60lit.	ca. 27kg
90lit.	ca. 29kg
105lit.	ca. 30kg
130lit.	ca. 33kg
300 lit.	ca. 43 kg

Dimension (cm):	height	Max. length	Max. breadth
60lit.	50	48	90 - 120
90lit.	50	48	105 - 135
105lit.	50	48	116 – 146
130lit.	80	50	116 - 146
300lit.	100	70	70

## **Operating and Mounting-Instruction:**

### **A. Speed adjustment of seedroll motor**

The speed control has been introduced to give the farmer the opportunity to spread small seeds of various kinds in various amounts too. If smaller output amounts are requested, these can be adjusted by the speed control.

### **B. Fitting of Technik-Plus spreader:**

It is possible to fit the TECHNIK-PLUS spreader in any position of the tractor or implement. The control box can be fitted anywhere in the vehicle or in the tractor cab.

#### **- In general:**

Attend when mounting the machine, that the spreader becomes much heavier when filled with seed or granules (lifting capacity at least 100kg).

If you mount the seeder so that this bends a little forward (frame with hopper bends towards the ground), you have to mount an extra fixture to avoid a pulling out of the hopper. In this position working width reduces (it depends on the force of the bent).

Attend correct height on fitting the seeder – optimal height: 1 m from the ground to the spreader plate. The metal frame on the spreader has screw holes at bottom and rear (Use M10 bolts). A square tube can fit from bottom-upwards and fixed by a clamp screw.



**- Fitting on a vehicle (Tractor, Quad, Unimog, Jeep, ...):**

The spreader can be fitted in front-, side- (footsteps) or rear section of the particular vehicle. Attend that you can board up and down safely and riskless if you mount the seeder on the footsteps of the vehicle. The spreader must not block up the way from vehicle's cabin (escape in a pinch!)

**- Fitting on an implement:**

It is possible to fit the spreader in any position of the implement, where you can build up a square tube (40x40). Then fix the spreader by a clamp screw. Now you can fit it to the required height.

**-Speed regulation:**

Please mount speed regulation outside of danger area (eg in the cabin).

All parts of the speed regulation must be mounted moisture-protected and must not be opened. On the housing of control unit box you are not allowed to screw, drill or make other changes. You can add the control unit box with a Velcro or cable clip anywhere within reach of the user. The main switch must be easy accessible and immediately reachable in an emergency.

- ! When you switch off the motor please note that the spreader plate can continue to rotate a few seconds longer and so can rope in clothes or hairs. => Risk of injury for people and animals!

When laying the cable please consider that there arise no chafe or pressure marks and kinks. The cable must not tensioned too much otherwise wires can be ripped of contacts.

(Lengthening see point C. electrical connection)

Attention: If assembling the cable too loosely, during operation it can impose or pull out from stretcher. If the cable is too long, please put the off cut correctly away from people and animals (eg rolling up in the cabin and adding slip-proof).

## **C. Electrical connection**

The seeder is equipped with a 12 V spreader motor which needs 15 A for starting and 10 A in use.

**- Connection:**

Connect the seeder direct with the battery. Please use the provided cable with fitted battery connectors and fuses (20A, length 21 cm).

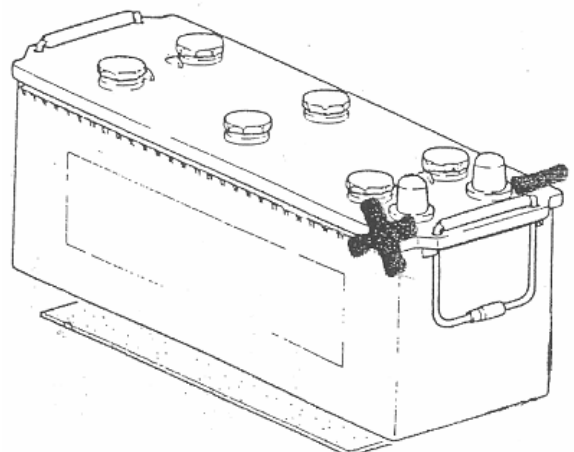
Take attention to the right pole on the battery!

+ = Plus Pole (red) direct to battery (use fuse!)

- = Minus Pole (black) direct to battery

**A DIRECT CONNECTION TO BATTERY  
IS ESSENTIAL! →**

**A false connection will ruin the board.  
(no warranty!)**



**ATTENTION!** If you mount another plug (instead of the provided short cable) a good power supply is necessary like connecting direct to battery. If not the warranty expires!

The cable which comes from the control unit box is poled as follows:

- + = Plus Pole (cable no 2) direct to battery (use fuse!)
- = Minus Pole (cable no 1) direct to battery

### **- Lengthening:**

For lengthening the cables use smallest 2,5 mm<sup>2</sup> cable. Attention to proper connections! (no distant wires, connection only with a few wires, ...) Please note a good isolation of the connection to avoid dangers.

## **D. Multifunctional control unit - Programming**

We offer for different operations special seed rolls. For seeding grass, respectively voluminous seed or big output amount we advise to mount the delivered grass seed roll. For mustard, oilradish, clover, Phacelia you can use the standard seed roll and for small seed we have a special seed roll with different breadth 5mm, 10mm or 15mm (optional).

It is necessary to make a calibration to get the right adjustment.

### **1. DISPLAY:**

#### **1.1.Values:**

The display is capable of showing four different types of values:

- 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 2 seconds.
- Ha:** The driven area in hectare, with one decimal. This value can be cleared by pressing RESET for 2 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.

#### **1.2. Area switch (seed roll ON-OFF):**

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.

#### **1.3. 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 2 seconds for clearing this value.
4. Press SET for return to **ha**.

## **2. CONTROLLING FAN and SEED OUTPUT:**

The two switches control the fan and the seed output:

1. Pulling the first 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.
2. The second switch is for controlling the seed-output. There are 3 positions for this switch:
  - 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 .

When the sensor has a contact the seed roll is OFF. 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. Kiloqram-by-hectare [kg/ha]:

Kilogram-by-hectare is putted **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 be 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. Workingwidth (cm):

Working-width is put **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 be 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:**

There are three settings:

Two regulator parameters 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.*

## **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) but minimally 1!!*

1. Set the display value to *km/h*.
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 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– but minimally 1 !!).

#### **Calculate the way as follows:**

You have, f.e., a wheel with a diameter of 2m. The wheel amplitude ( $A_{\text{mplitude}} = D_{\text{iameter}} \times 3,14 \Rightarrow A = 6,28$ ) is 6,28m=6280mm. The maximum distance from Impulse to Impulse has to be under 500mm driven way. As a fact of this (6280/500=12,56) you need MINIMUM 13 signals. Better to use about 20 signals. It doesn't matter if the signals are mounted with a distance of 30mm (near the middle of the wheel) or 300mm (more outside the wheel). You have to mount 20 signals. The value you put now into the control unit is the estimated driven way from signal to signal. In this case put in (6280/20=314) 314mm=314.

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.

### 5.2. 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.
5. *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.*
6. The motor can now be turn on by switching the motor-switch to ON.
7. Feed out seed for measurement, the display will show you the value of the outputted seed with the current calibration value in kilograms [*kg*].
8. 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.
9. Accept this value by pressing SET button.
10. The now corrected calibration value will be displayed. Press SET to accept this value, this will finish the calibration procedure.
11. You can always abort a current calibration by pressing the RESET button.

### 6. ERROR MESSAGES:

The display can show different error messages:

---- VCC error. Supply voltage is below 10 voltages.  
**Check the power-cable.**

**E00** *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**

**E01** *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.**

**E02** *Minimum output on motor* - With the current kg/ha or the current speed, the motor is going to slow for correct regulation.  
**Possibilities:** - **Select a higher kg/ha-value**  
 - **Raise your current speed**  
 - **Mount seed roll for small amount (optional)**

**E03** *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.

- Select a lower kg/ha-value or reduce your current speed.
- Check signal on motor sensor.
- Check the rotation on the motor axle.

**E04** *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.**

**E05** *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.**

**E06** *Tank level too low*  
**Check tank level, check signal from levelsensor.**

**Seed shaft do not work for calibration:**

Sensor motor plate no contact, wire damaged or no connection in the plug.

**Hektarcouter and seedmotor not working:**

Groundspeed sensor damaged or no connection to plug.

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

**7. SHORT-STEP-PROGRAMMING:**

Before starting the machine, read the whole manual to the multifunctional control unit!

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 **kg/ha** has to flash green.

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

**2. programming of motor-sensor and magnet-wheel:**

The diode **kg total** has to flash green.

1. Press the SET button for 2 seconds, this will activate the calibration function.
2. 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].

3. 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.**
4. The motor can now be turn on by switching the motor-switch to ON.
5. Feed out seed for measurement, the display will show you the value of the outputted seed with the current calibration value in kilograms [kg]
6. 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.
7. Accept this value by pressing SET button.
8. The now corrected calibration value will be displayed. Press SET to accept this value, this will finish the calibration procedure.
9. You can always abort a current calibration by pressing the RESET button.

### 3. programming of the working width:

The diode **ha** has to flash green.

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

### 4. programming of speed sensor:

The diode **km/h** has to flash green.

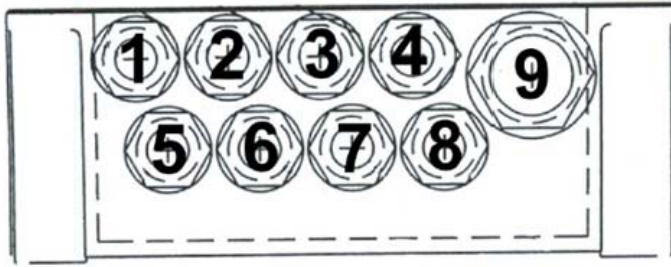
1. Press the SET button for 2 seconds, this will activate the calibration function .
2. The display is now showing the calibration value (the display is flashing). The calibration value is millimetre/speed-pulse [mm/speed-pulse] from impulse to impulse or from bolt head to bolt head (e.g. 430mm way = 430 enter; maximum 500mm – but minimally 1 !!).

#### Calculate the way as follows:

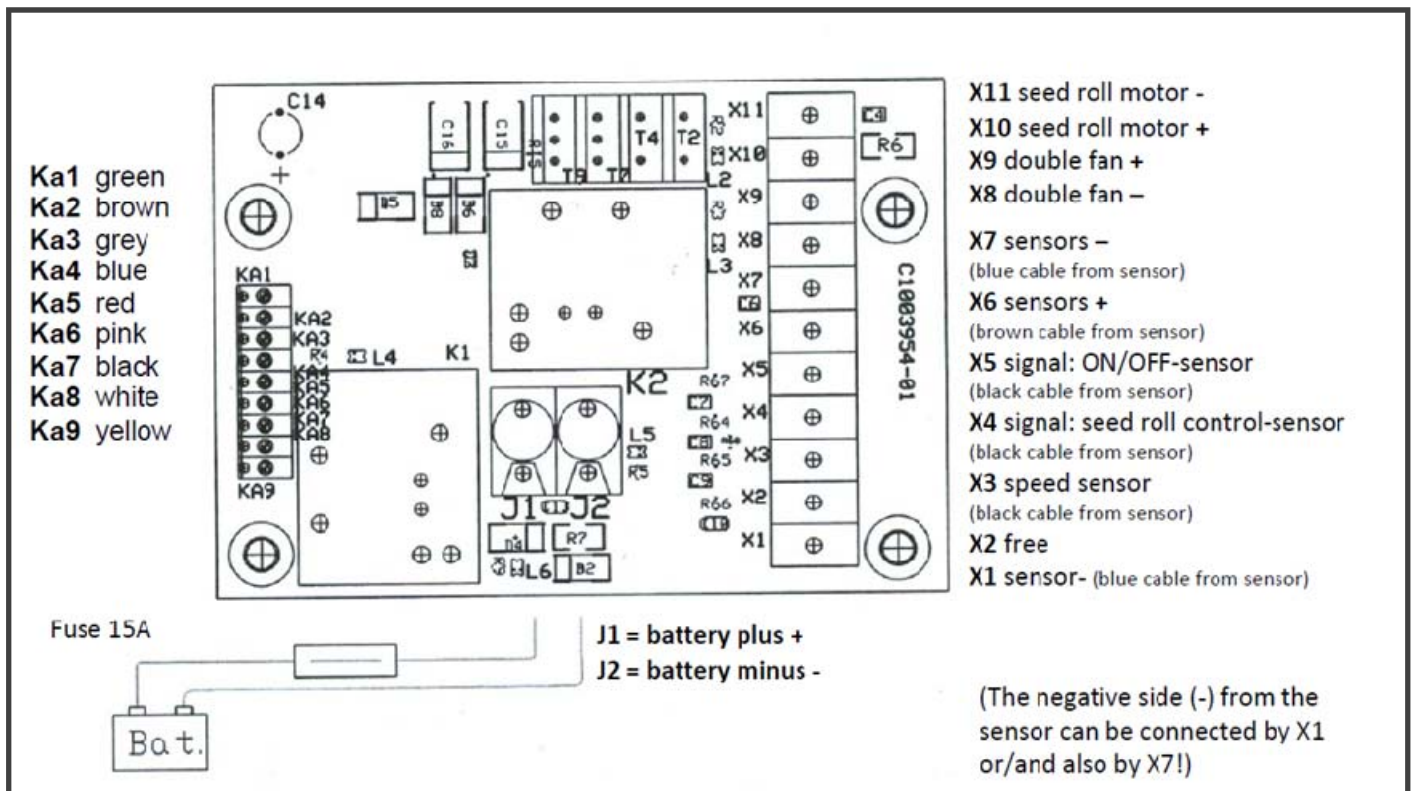
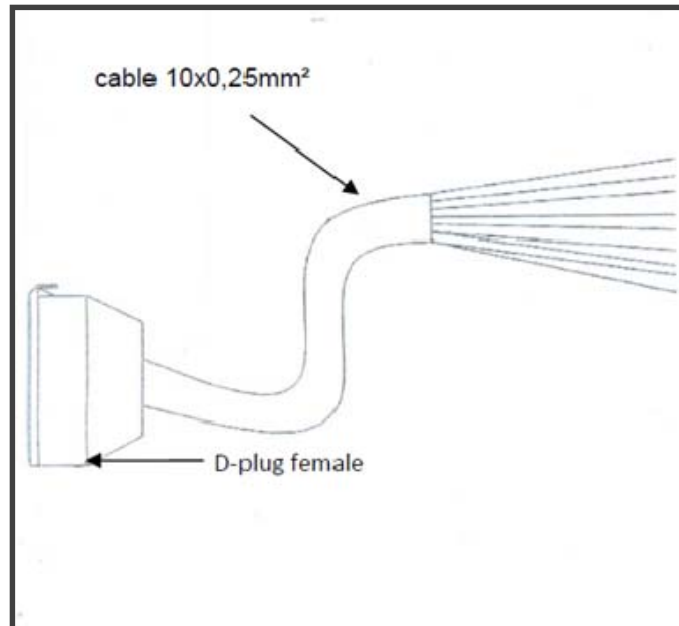
You have, f.e., a wheel with a diameter of 2m. The wheel amplitude (Amplitude=Diameter x 3,14 => A=6,28) is 6,28m=6280mm. The maximum distance from Impulse to Impulse has to be under 500mm. As a fact of this (6280/500=12,56) you need MINIMUM 13 signals. Better to use about 20 signals. It doesn't matter if the signals are mounted with a distance of 30mm (near the middle of the wheel) or 300mm (more outside the wheel). You have to mount 20 signals. The value you put now into the control unit is the estimated driven way from signal to signal. In this case put in (6280/20=314) 314mm=314.

3. 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].
4. 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.
5. Press SET when the value is the same as the length you have driven.
6. The current and changed calibration value will be displayed.
7. Accept this value by pressing SET button again, this will finish the calibration procedure.
8. You can always abort a current calibration by pressing the RESET button.
9. The programming is now finished.
10. Press the rocker switch in position „AUTO“ and the seeding machine will be driven automatically .

**Control box:**



1. battery cable for double fan
2. cable ON/OFF-sensor
3. cable speed sensor
4. battery cable for seed roll motor
5. data cable to multifunctional control box
6. free
7. cable for seed roll control-sensor
8. battery cable to relais
9. cable to battery (2 x 4 mm<sup>2</sup>)





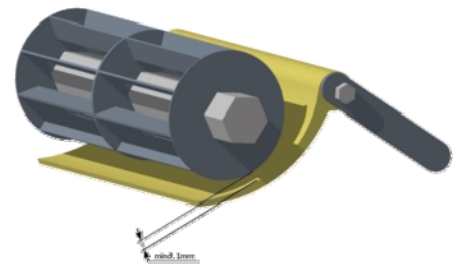
## E. Operation:

### Changing the seed roll:

1. Disconnect the power supply.
2. Put on your personal safety clothes!
3. Demount the lever of the flap (scale down screw nut).
4. Put down the cover on the side of the lever. Then take out the 6 screws.  
**ATTENTION!** If it is possibly please positions the machine that the open side look up, because the seedroll otherwise can fall down.
5. Hold seedroll and change the segments.
6. Mount cover of hopper with the 6 bolts.
7. Fit on flap lever (fix with screw nut)

### Flap:

The flap is mounted on the side of the bearing block of the agitator cover. For seeding small seed turn up the flaps (see picture) to avoid a difference between calculated amount and the output amount. (Don't put the flaps completely to the seed roll. Between seed roll and flap has to be about 1mm so it cannot rub.) For big seed (peas, rye, oat, vetch) open the flaps a little bit to avoid braking of seed.



## F. Maintenance and problem handling:

### **- Maintenance:**

Also for this work please use safety clothing and breath mask and make sure that the power supply is disconnected. Before starting first operation (and after 15 minutes of work) it is necessary to check any bolt and electrical connection. Please do that every 6 working hours and clean the machine after every use. The hopper is fitted with two hand knob screws so you can take it off for emptying and cleaning. With a special function of the hopper it is also easy to empty hopper rests. For cleaning please take a wet cloth or clean the seeder with a compressor. Do not use a high-pressure washer otherwise motors can be broken. Please keep the seeder moisture-protected. With proper care and maintenance will increase lifetime of the spreader.

### **- In General**

#### Connecting on battery:

control unit:

- + = Plus Pole (red) direct to battery (use fuse)
- = Minus Pole (black) direct to battery

short battery cable:

- + = Plus Pole (cable No. 2) power supply direct to battery (use fuse)
- = Minus Pole (cable No. 1) power supply direct to battery