KONGSKILDE KONNECT 1000

Instruction manual

EN

Edition: 251018

KONGSKILDE

CONTENTS

1. FOREWORD

KONGSKILDE this I would like to congratulate the purchase of new electronic Tramline monitor **KONNECT 1000** for monitoring electronic functions of the drill, including the establishment of tramlines.

In order to use the **KONNECT 1000** correctly and safely, we recommend that you familiarize yourself with it by studying this instruction manual.

The correct use of the **KONNECT 1000**, along with careful maintenance, lubrication and storage, will help to keep it in good working order.

FEATURES

While working **KONNECT 1000** provides data, as follows:
- The speed set tractor-seeder,
- Partial or total value of the area sown,
- Controls the rotation of the sowing shaft,
- Informs about the low level of seed in the hopper,
- Provides current information on the status of tramlines.

TRAMLINES

Tramline system, we want to get is determined by the working width of the drill and held a working width of the sprayer / spreader.
These data, as input, we give using the keyboard:
- **KONNECT 1000** device automatically calculates and gives the possible combinations of paths to follow,
- Counting the passing takes place by means of sensors counting raising and lowering the markers on the turning circle,
- Paths are formed by stopping the operation of selected sowing wheels. Wheels are retained on a clutch controlled from the device,
- During the passage without making tramlines, all the sowing wheels work.

KONNECT 1000 device is powered using the included cable to the electrical system (12 V) of the tractor. The terminal can be located in the tractor cab at any place. On the back wall is built magnet for easy mounting.

2. TECHNICAL DATA

Power supply	+10.... +15V
Current consumption	120mA without active tramline outputs
Output current	max. 5A for tramline outputs
Working temperature range	-5....+60º C
Storage temperature	-25....+60º C
Protection grade	IP 65
Fuse	10A automotive fuse inside the power plug
LC-Display	2,5" monochrome 128 x 64 Pixel

The device is EMC tested according:

Electromagnetic emission EN 55022
Electromagnetic immunity DIN EN 14982

3. EQUIPMENT

The KONNECT 1000 is fitted with the following equipment:

- Operator terminal KONNECT 1000 and a 6 m cable
- Main harness ended plugs, fitted in the machine frame
- Two sets to tracks with couplings and connectors
- One set of marker sensors with 1,5 m wires
- Set of sensor for hopper level control(optional)
- Half working width clutch for seeding shaft controlled by a LINAK actuator (optional)
- Set of tramlining valves NS 4100, NS 5100, NS 1500\1900, Vibro Seeder

4. SAFETY PRECAUTIONS

Clutch housings and sowing wheels must not be cleaned with liquids containing chlorine and hydrocarbons, e.g. petrol. Do not power wash down the clutches with water.
KONNECT 1000 should be kept in a dry place. Therefore do not leave it in the tractor cab for a long period after the sowing season has finished.
When unused for a long period it is important to check that the tube carrying the sowing wheels has not locked on the sowing shaft. This done by turning forward with your hand the tube with the sowing wheels (the same direction as the sowing shaft turns when the machine is working).
This can be done without electric current on the clutch. Never use pipe grips or other tools on the tube, as it might become deformed and therefore lock on to the sowing shaft.

BEFORE SOWING

When using the electronic tramlining device the markers must be adjusted accurately according to the working width in order to avoid overlaps and unsown areas with a sprayer or fertilizer distributor.

5.KEYBOARD

The handling of **KONNECT 1000** is possible via keypad with 9 keys.

With the "**ON/OFF**" key the operator terminal is powered on and by pressing the key with 1s duration it is switches off. If no key is pressed one hour and in the same time no velocity is measured, the device switches off automatically.

In the upper line are placed the keys for parameter adjustment. With the "**MENU OK**" (Function key) several setup menus are selected one by one. Adjusted values must be stored by pressing the "**MENU OK**" for 5 sec until the beep. In some menus the 3 upper keys also are used as soft-keys, their actual function is shown at the lower border of the display.

The left button in the middle row "**km / h**" show us the current forward speed.

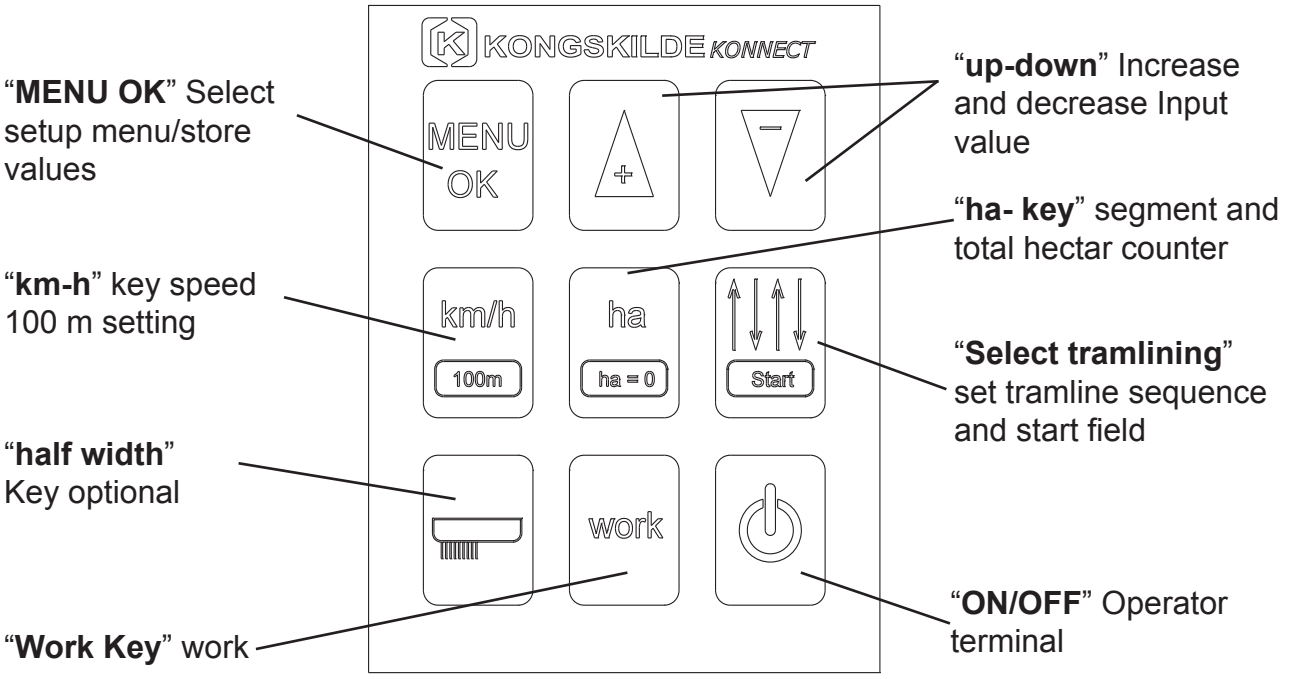
In addition, by using this button to set the number of pulses that will calculate the system for calculating the sown area.

Middle button "**ha**" gives us the current value of area sown field or value overall.

The "**Select tramlining**" supports tramlining. When pressed, the tramline function is entered. Use the "**up-down**" to select sequentially tramlining systems. You should choose the right system and then confirm it by holding down the "**MENU OK**" for 5 seconds. Beep to confirm the selection system.

The lower left "**half width**" is active after selecting half sowing seed (optional).

The middle button "**WORK**" we use at the start of work on the field.

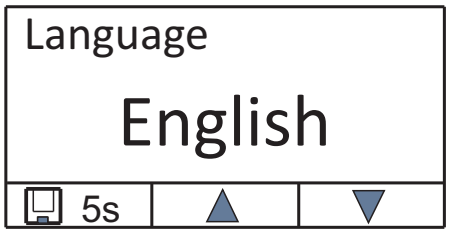


6.MONITOR SETUP

Setting the individual parameters of the work is done by pressing the function key “**MENU OK**”. In addition, the “**MENU OK**” is for approval settings. After confirming the selection by holding down the button for 5 seconds - the symbol of the floppy disc, the lower left corner of the screen. A beep confirms the setting.

6.1 LANGUAGE SELECTION

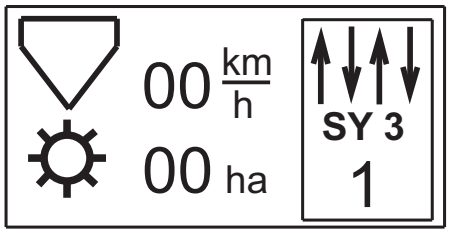
It is possible to choose a number of different languages.
English, Polish, German, French, Danish, Dutch, Hungarian, Italian, Swedish, Spanish.



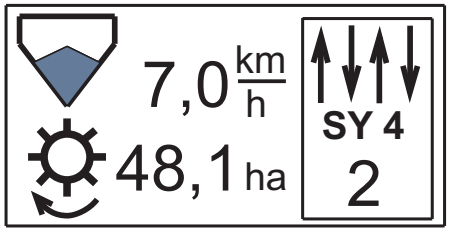
Use the “**up-down**” select the language.
When the function key “**MENU OK**” is pressed and held for 5 seconds, the system approves and memorizes the selected language.

6.2 WORK SCREEN

After first pressing the “**ON/OFF**” get the screen working. It is the main screen, always used while working in the field. First turned on the monitor does not contain information on the screen with required parameters for work. Look below:



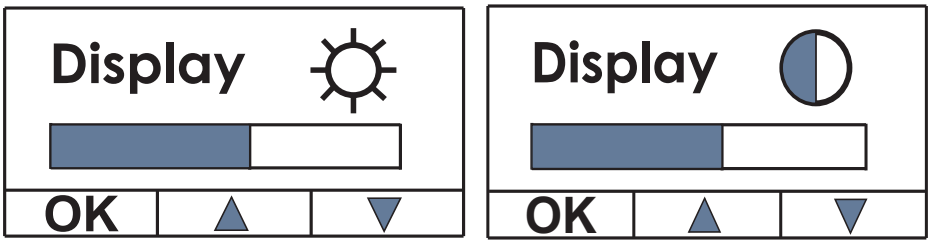
Typical appearance of the screen working, as observed during field work. Look below:



The top row from left: symbol hopper shows us the status of full box of seed (only two states: empty, full), the current speed of the machine and the selected tramlining system.
Bottom row from left: sowing shaft rotation, the area sown so far.

6.3 SCREEN BRIGHTNESS AND CONTRAST

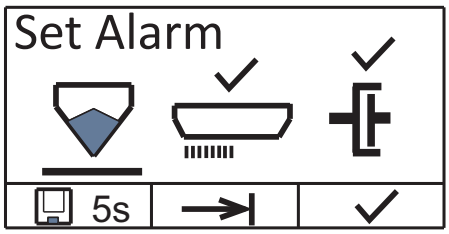
The third press of the "**MENU OK**" selects the display brightness setting.



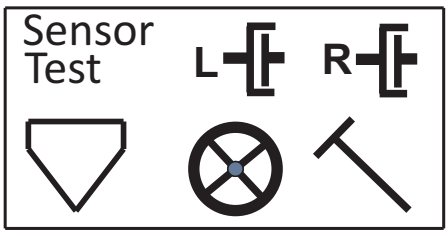
Use the arrow keys "**up-down**" select, by means of a bar chart, the corresponding value of the brightness of the display. Pressing the "**MENU OK**" approve the selected level.

6.4 ALARM SETTINGS

The seed level in the hopper and work couplings pathnames can be monitored by means of audible alarms. Activation or deactivation of alarms make the level below the monitor.

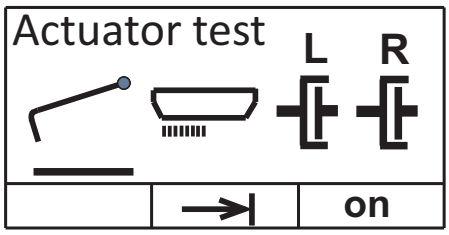


Use the "**up-down**" select the type of alarm - horizontal bar under the selected icon, and further put a check mark - "**bird**" - up button. Confirm the settings by pressing the function key "**MENU OK**" - hold it for 5 seconds. Beep saves the settings.
Carrying out the sensor test is to check the condition of electrical connections, the state plugs connecting cables, the technical condition of the sensors.



The top row of icons is a state of coupling the left and right control tramlines. The bottom row of icons indicates the level of seed in the tank, turns the sowing shaft and position markers. Covering the sensor in the transmission, e.g. Hand, appears to us a symbol of a full box. By turning the crank sowing shaft - appears to us arrow icon on the wheel, leaving the marks we see the variable position of the marker icon.

The following screen display shows the status of the sensors:



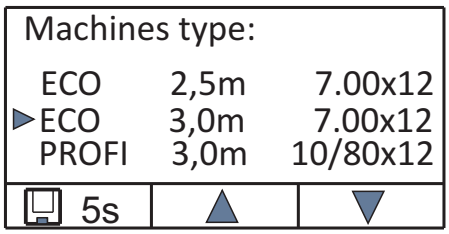
Use the “**up**” select the type of sensor - a horizontal line under the icons, which is checked. Highlighted in black icon indicates that the sensor is active.

6.5 ALARMS

Watching of hopper and tramline clutches work at a speed of more than 1 km/h. In case of a fault an alarm screen with flashing icon is displayed and the outputs 5 beeps. The alarm can be acknowledged by the work-key. This action returns to the work screen.The tramline clutches are checked, that they have stopped, when tramlines are active. When tramlines are not active the sensors in the clutches have to output impulses. At clutches alarm the side is displayed with the characters L (left) or R (right).

6.6 SELECTION OF THE TYPE OF MACHINE

This is very important because the type of machine contains the type of the drive wheel and the working width.



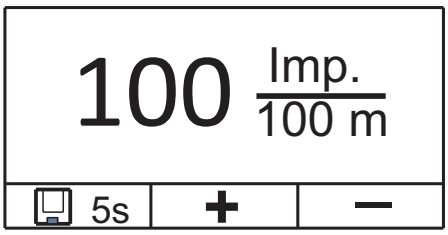
Use the “**up-down**” select the type of machine.
When you press the function key “**MENU OK**” for 5 seconds, the system approves and memorizes the type of drill.

6.7 SELECTION OF THE NUMBER OF PULSES

Area meter accuracy of the calculation depends on the number of impulses in the system collects during operation of the drill in the field. The following method is to calculate the number of pulses according to the following formula:

$$\text{pulses} = \frac{3183}{\text{rubber wheel diameter (in cm)}}$$

Choose the speed display of the machine by the “**MENU OK**”

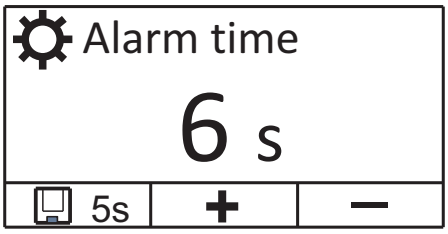


Enter the number of impulses from the table below.
Saving in memory the number of pulses is necessary for the correct indication of sown area. Depending on the drill (diameter of the wheel), medium slides on the soil - the number of counted pulses is different. When you press the function key “**MENU OK**” for 5 seconds, the system approved by us in memory the value of the number of pulses.

Type drill	Type wheel drive	Wheel impulses per 100 m
Eco Line	Wheel 7.00x12	48
Profi Line	Wheel 6.00x16	52
Profi Line	Wheel 10.0/80x12	54
Master Line	Land wheel	50
NS 4100	Land wheel	50
NS 5100	Land wheel	50

6.8 ALARM TIME

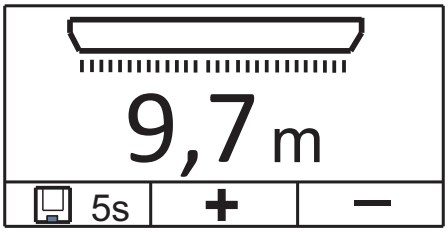
Determining the time after which the alarm is activated is very important. This time can be adjusted from 1 second to 20 seconds - the key “**up-down**”



The shorter the response time of the system, the faster we can detect any problems during operation, e.g. locked sowing shaft, low seed in the hopper and so on.
When you press the function key “**MENU OK**” for 5 seconds, the system approved by us in memory the type of drill.

6.9 WORKING WIDTH

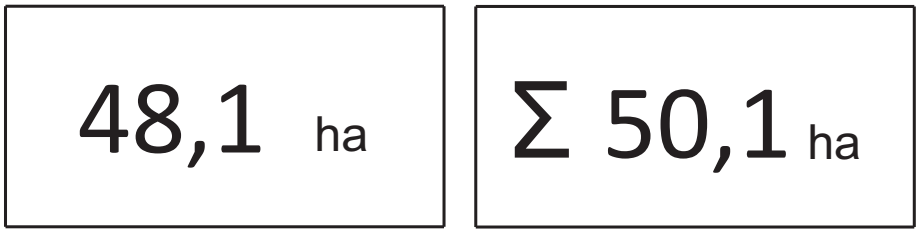
This option allows changing the working width of the drill.
There is a choice of width in the range from 2m to 12m with intervals of 0,1 m.



Use the "**up-down**" select the working width.
When pressing the function key "**MENU OK**" for 5 seconds, the system approves and memorizes the selected working width.

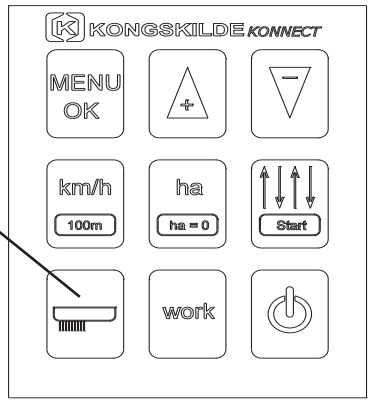
6.10 HECTARE COUNTER

The first press: "**ha**" gives us a partial result of the count sown area, but repeated pressing gives the total area sown so far surfaces. Then, before the digit number of hectares sign appears: " Σ "Shown the value of sown area can be reset by long pressing on the button "ha" 5 seconds**.**



6.11 HALF WORKING WIDTH SETUP - OPTION

In some tramline sequence systems, it is necessary to begin with a half working width. Then the icon "**half width**" is displayed automatically. In contrast, we can always use this function at any time by pressing the button in the lower left corner of the keyboard icon "**half width**"



The drill should be equipped with LINAK actuator system.
Then sowing shaft is disconnected in the middle of its length by means of the clutch center. Thereby half the sowing wheels on the left hand side of the drill from the rear of the machine are not running.

7.GENERALLY

To find the right seed rate, you must calibrate the drill. To do this, perform the test as described in the Manual according to your type of drill.

We can also use **KONNECT 1000** test - the calibration sequence below. However the results obtained from the test should be regarded as indicative. Correct data on the sowing rate can only be obtained by testing using the traditional method.

When we use **KONNECT 1000** you are required:

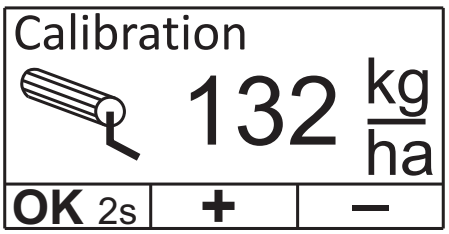
- Prepare the scale for weighing the sample sowing material,
- Set the bottom flaps and seed housing shutters in the right position according to the sowing table,
- Hang the calibration trays under the seed funnels,
- Next fill the hopper, continue to do a few turns the crank to evenly fill all seed housings. Then remove from the calibration trays measuring seed,
- The turnover crank perform slowly and evenly (one turn 1 sec) so as not to interfere with the accuracy of attempts,
- Change the display values using the keys "**up-down**"
- Save and continue to next menu using key "**MENU OK**"

7.1 CALIBRATION SEQUENCE

NOTE: Before starting the test, make sure that you have selected the correct type of drill - see point **6.6.** The choise of the type of drill is related to the number of revolutions of the crank for gear Vario. The number of crank rotation is different for each type of drill. See table **7.2** - page 14.

STEP 1 Selection of the required value of seed material per hectare.

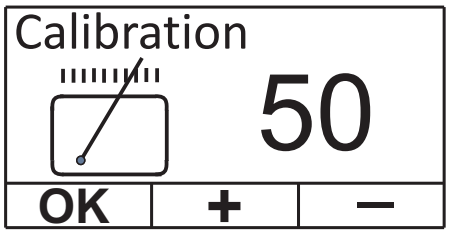
Enter the desired seed quantity per hectare using sowing table from the Manual suitable for your drill. The example below.



Use "**up-down**" keys to select the correct numbers on screen and next use "**MENU OK**". Then time pressing - 2 sec.

STEP 2 Choice the position of the lever on the scale gear.

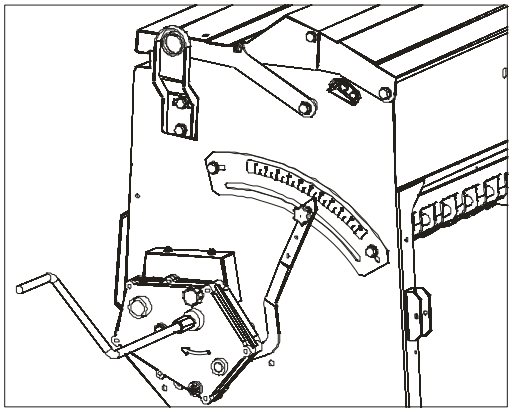
Select the gear lever according to the sowing table in the Manual for a certain amount of seed per hectare. Then enter the lever position to the screen.

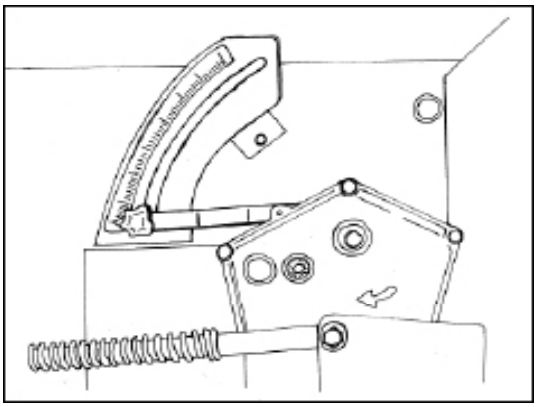


Use "**up-down**" keys to select the correct numbers on screen and next use "**MENU OK**"

STEP 3 Lock lever on the scale gear.

Move the lever on the drill position in line with the number of revolutions of the crank in the Manual and shown on the screen and then lock lever in this position.

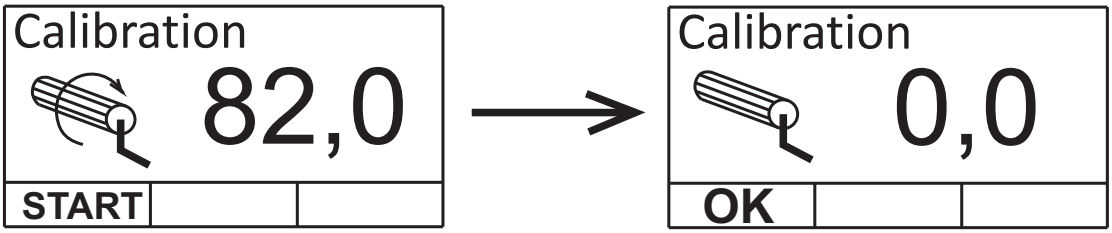




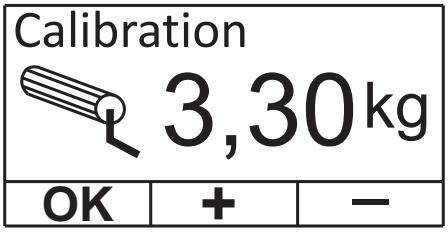
STEP 4 Calibrate the number of turns displayed by using the crank.

The screen will be appropriate for the type of drill required number of revolutions of the crank. After pressing key "**MENU OK**" perform revolutions.

NOTE: Terminal counts the number of turns of the crank backwards from the value displayed. As a result the display always shows how many turns of the crank are still to be made. The last 5 turns of the crank are signaled additionally acoustically to prepare the operator to end the calibration process. On reaching the value "**0,0**" , continuous signal tone is triggered to cause the operator to end the calibration immediately.



Pressing key “**MENU OK**” we can see on the screen suggested weight of the sample seed material on 1/40 hectare field. The example below.

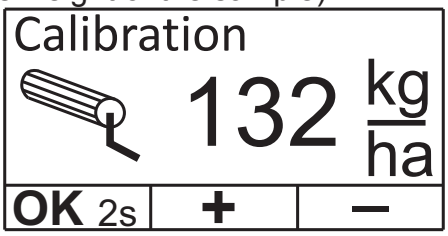


STEP 5 Weighing the sample of sowing material and check value of seed per hectare.

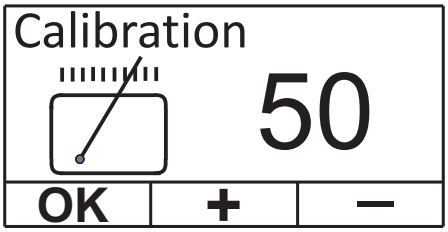
The seed material collected in the calibration trays must be weighed.

5.1 Sample weight of seed material is the same as suggested on the screen.

We do not change the weight value on the screen.
Pressing key “**MENU OK**” we see on the screen the total amount of seed per hectare. The example below. (The system calculates the total value of multiplying 40 times the weight of the sample)



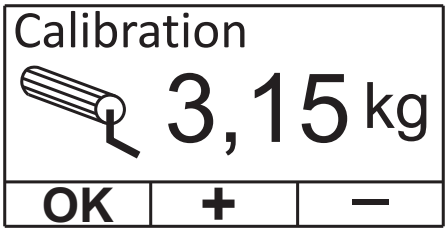
Pressing key “**MENU OK**” we see suggested the lever on the scale of the drill - the same as at the beginning of the test.



Test complete. To obtain correct results, we recommended making several sowing tests.

5.2 Sample weight of seed material it is not the same as suggested on the screen.

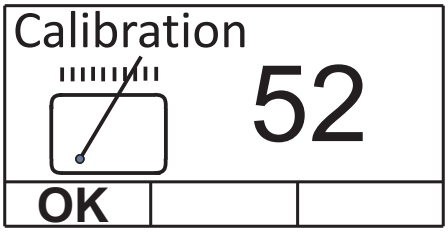
We change the weight value on the screen. We enter actual weight of the sample seed material. The example below.



Use “**up-down**” keys to select the correct numbers on screen and next use “**MENU OK**”

Pressing key “**MENU OK**” we see on the screen the total amount of seed per hectare after weight correction. The example below. (The system calculates the total value of multiplying 40 times the weight of the sample)

Pressing key “**MENU OK**” we see suggested the lever on the scale of the drill - this is corrected, the new position of the lever that is required.



It is recommended to move the lever to a new position according to the value visible on the screen and perform the sowing test again to obtain the expected value of seed per hectare.

To obtain correct results, we recommended making several sowing tests.

7.2 TABLE OF REVOLUTIONS

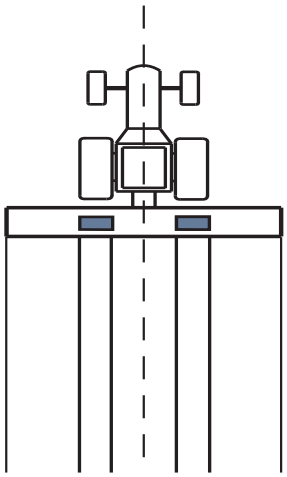
Type drill	No revolutions (1/40 ha)	Type drill	No revolutions (1/40 ha)
Eco Line 2.5m	98	NS 4100 3m	103
Eco Line 3.0m	82	NS 4100 4m	77
Profi Line 3.0m	82	NS 5100 3.0m	78
Profi Line 4.0m	62	NS 5100 4.0m	59
Profi Line 4.5m	55	NS 5100 5.0m	47
Master Line 3.0m	63	NS 5100 6.0m	39
Master Line 4.0m	47		

8. TRAMLINING CHOICE OF METHOD

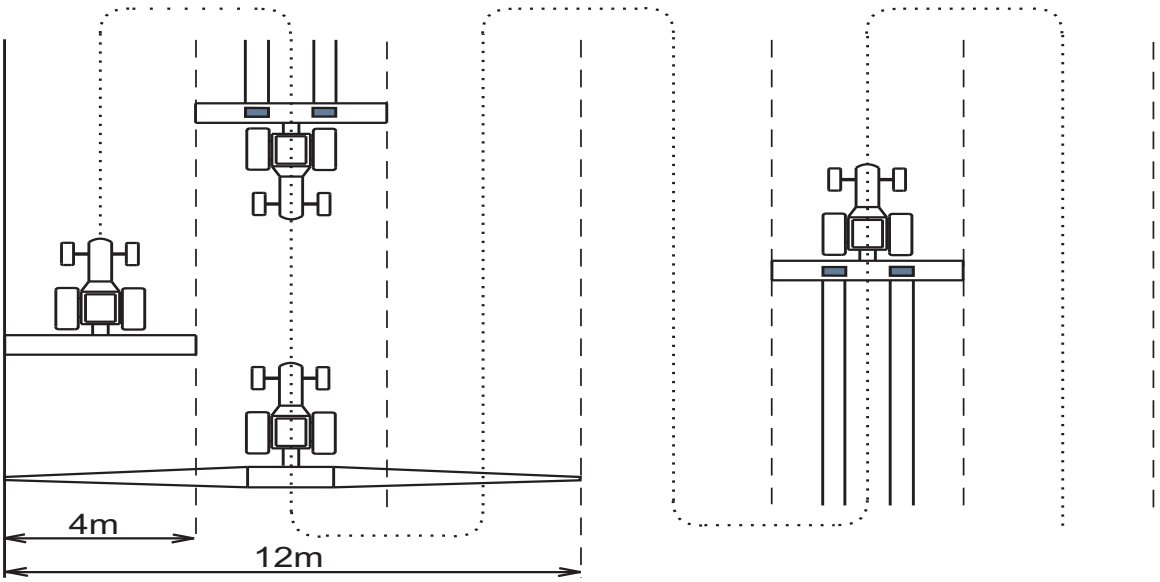
The choice of methods for creating tramlines is brought to the sequence on the surface of the field so as to create a passage of unsown stripes that will be used in later crop treatments like fertilization and spraying. The distance between tracks depends on the working width of the drill and the sprayer. Usually, when determine the distance between the tracks, turn off two or three metering units on one track path. Spacing marks / tracks depends on the track of the tractor used in the treatment of fertilization or spraying.

8.1 SYMMETRICAL TRAMLINES

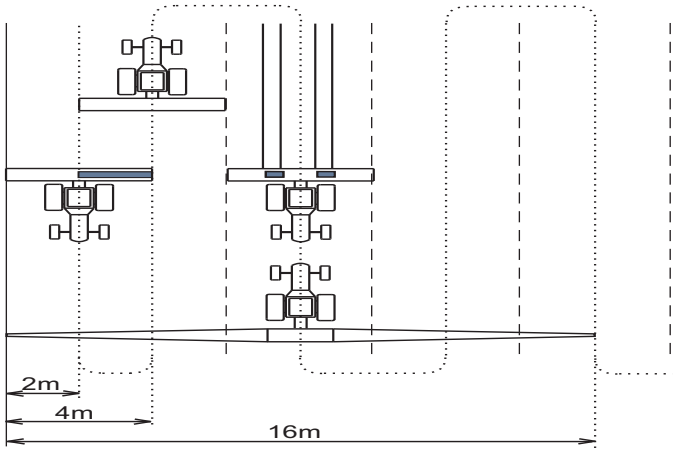
With this system of tracks, two tracks are made in a single pass. See the figure below.



In this case, the system of tracks the field is created as shown below.

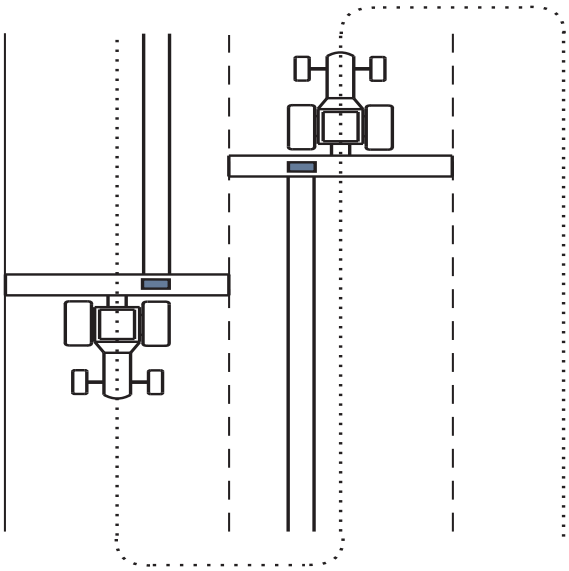


In the case of a symmetrical arrangement of paths, even when the value scale: 4/6/8, working width of the drill and sprayer does not cover the first pass through the field. Depending on where it will be located at the beginning of the first run of the field may arise area not sprayed. There are two ways to solve this problem:
a)Using a drill with a smaller width, the two traces the path may be established in the first stint and sprayer must be on the first pass off half of the boom.
b) the exclusion of half-drill



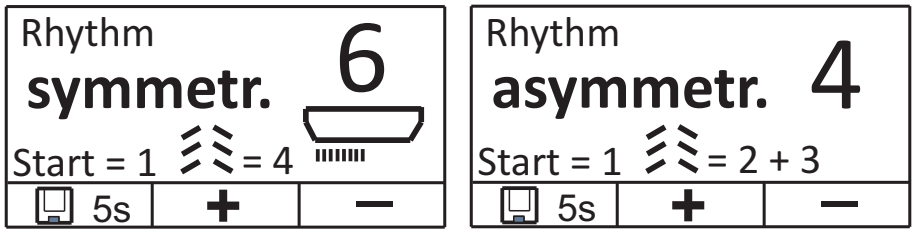
8.2 ASYMMETRICAL TRAMLINES

With asymmetrical arrangement of paths, to set up two traces the path you need two pass of the drill. See the figure below. The disadvantage of this method is the need for more extensive driving unit in two pass assuming the path, which in some field conditions can be difficult. The asymmetrical arrangement of paths may be used only with pitches 4/6/8. When the first pass drill working full working width. Working width of the drill and sprayer overlap covering the entire portion of the surface of the field on the first pass. This method is required to perform two consecutive passes to the disabled one pathway in the drill.

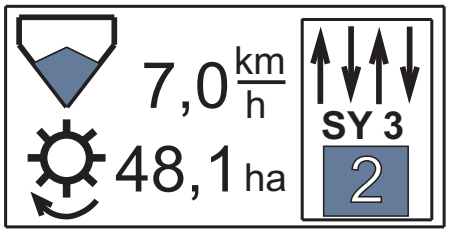


8.3 RULES FOR SELECTION OF TRAMLINE PATH

Press the function key "**MENU OK**"**.** Further, by pressing the "**up-down**" to select the right conditions for our tramlining system. It is helpful to our table with the settings depending on the working width of the drill and the working width of the sprayer /spreader. See tables page: 16 - 18. Press the function key "**MENU OK**" for 5 seconds, the system approves and memorizes the selected method.



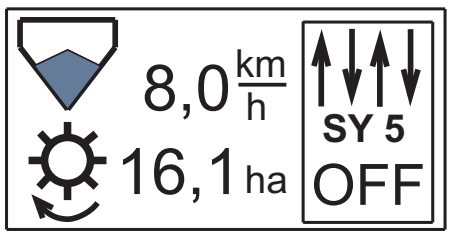
An important principle is that, after setting and approval of all parameters, to start work by pressing the "**WORK**" and setting the markers in the starting position - vertically. Tramlining system is based on counting the movement marks on the headlands (lifting, lowering). The number of the current passage is visible on the screen. When a number is highlighted in black - is made for pass track.



When we choose a tramlining system that requires start work with half the drill, we must equip the drill in the LINAK actuator system. It allows disconnecting the sowing shaft from system level - is not required manually using the "**half width**"

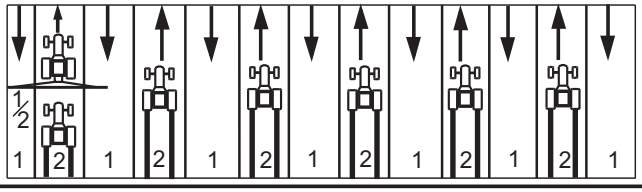
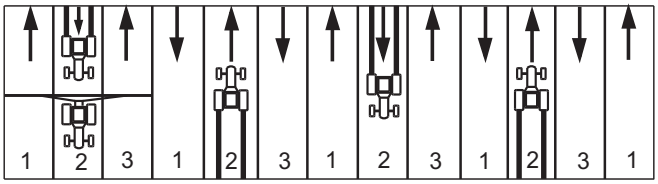
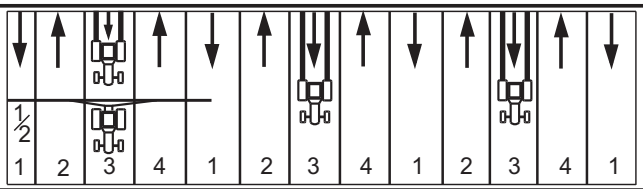
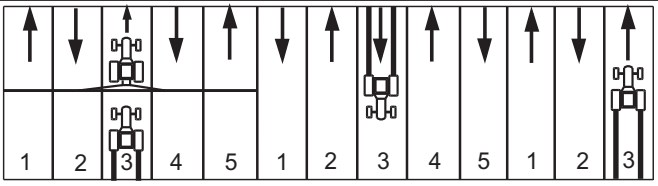
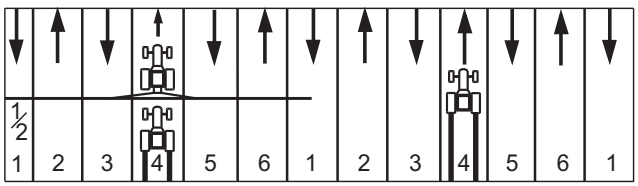
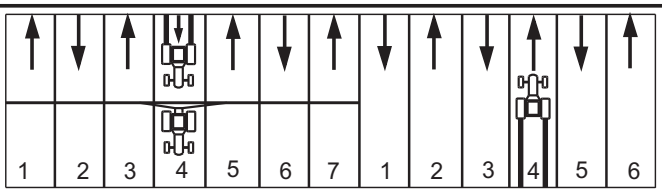
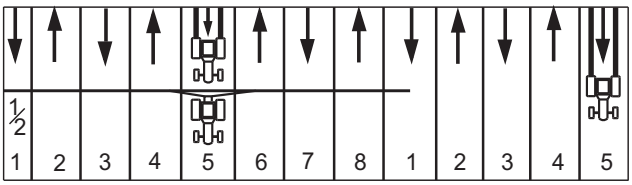
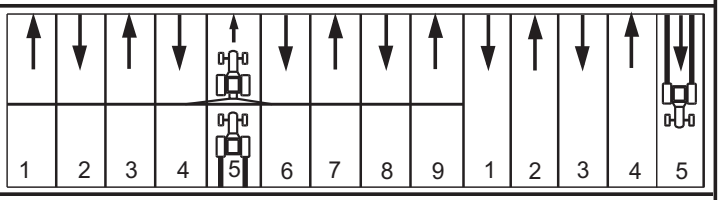
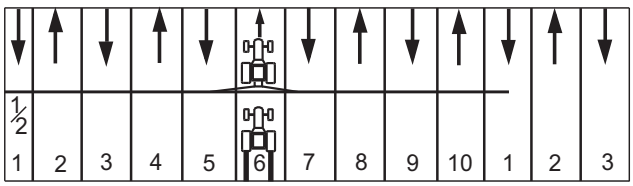
8.4 MANUALLY STOP THE TRAMLINING SYSTEM

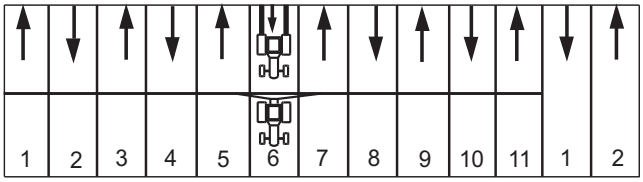
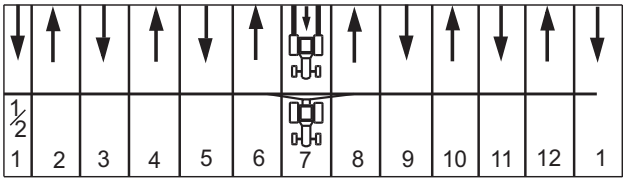
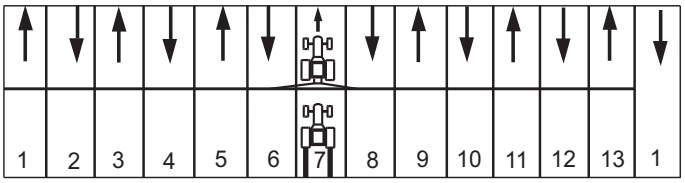
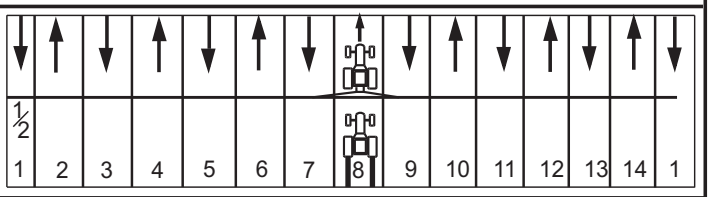
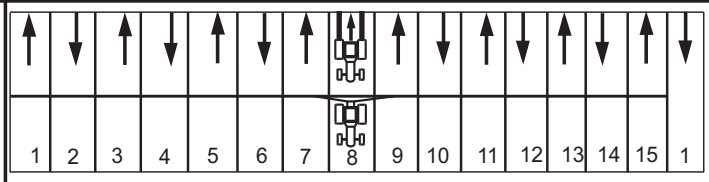
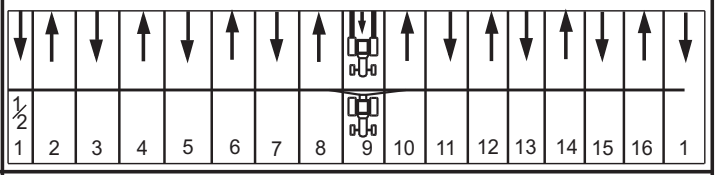
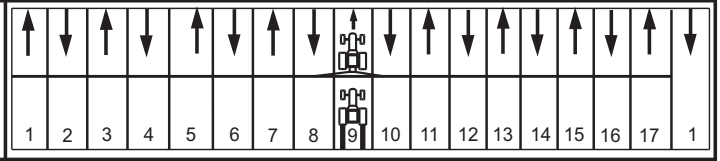
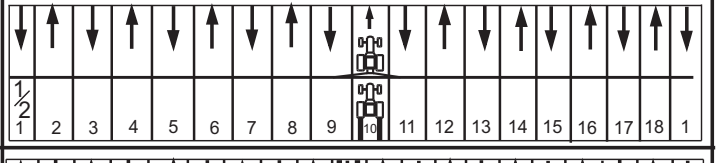
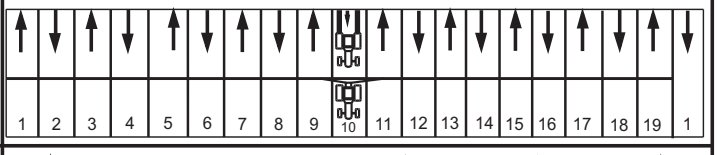
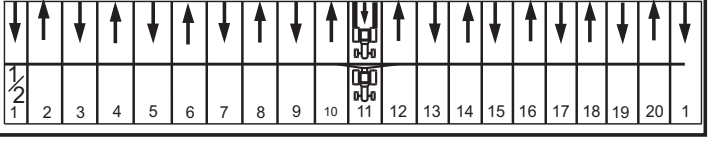
If it is desired to raise the left or right marker, e.g. due to passing a post or other obstacle in the field, it is also desired to stop counting paths through the system. In this case, press the button "**WORK**"



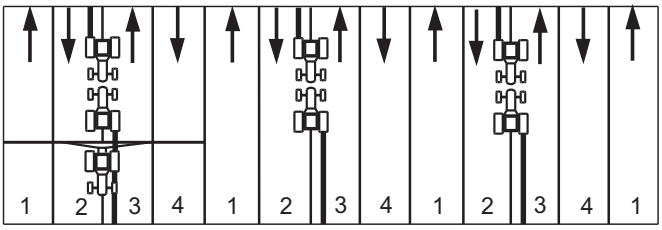
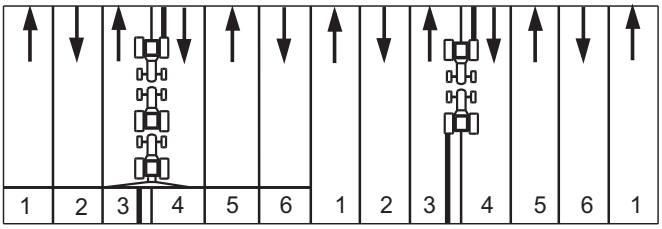
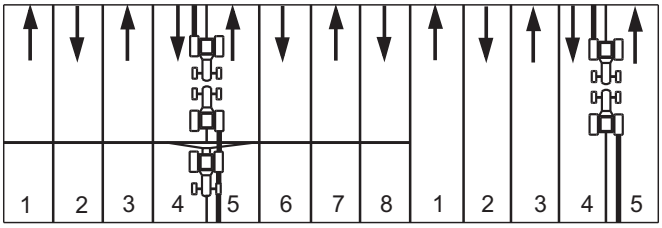
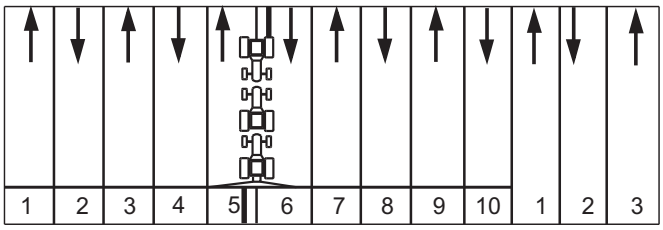
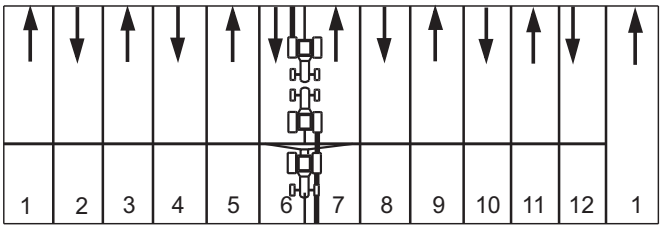
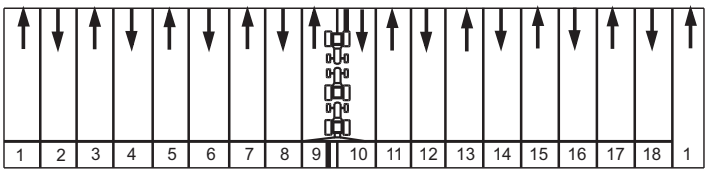
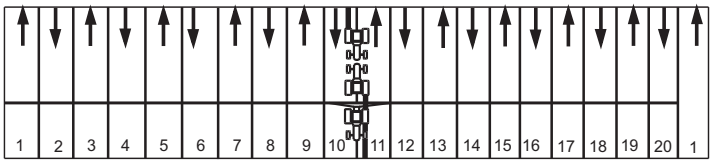
We will see on the screen "**OFF**" This is information that the tramlining system is frozen. At this time it is possible to lower or raise markers without changing the tramline modus. Pressing the "**WORK**" restores the previous settings.

9. TABLES OF SYMMETRICAL TRAMLINES

Path	Seed drill working width	Sprayer/ spreader width	Symetrical tramline placement in one pass
2	2.50 m 3.00 m 4.00 m 5.00 m 6.00 m	5 m 6 m 8 m 10 m 12 m	
3	2.50 m 3.00 m 4.00 m 5.00 m 6.00 m	7.5 m 9 m 12 m 15 m 18 m	
4	2.50 m 3.00 m 4.00 m 4.50 m 5.00 m 6.00 m	10 m 12 m 16 m 18 m 20 m 24 m	
5	2.50 m 3.00 m 4.00 m 5.00 m 6.00 m	12.5 m 15 m 20 m 25 m 30 m	
6	2.50 m 3.00 m 4.00 m 4,50 m 5.00 m 6.00 m	15 m 18 m 24 m 27 m 30 m 36 m	
7	2.50 m 3.00 m 4.00 m 4.50 m	17.5 m 21 m 28 m 31.5 m	
8	2.50 m 3.00 m 4.00 m 4.50 m 5.00 m 6.00 m	20 m 24 m 32 m 36 m 40 m 48 m	
9	2.50 m 3.00 m 4.00 m	23.5 m 27 m 36 m	
10	2.50 m 3.00 m 4.00 m	25 m 30 m 40 m	

Path	Seed drill working width	Sprayer/ spreader width	Symetrical tramline placement in one pass
11	2.50 m 3.00 m 4.00 m	28 m 33 m 44 m	
12	2.50 m 3.00 m 4.00 m	30 m 36 m 48 m	
13	2.50 m 3.00 m 4.00 m	33 m 39 m 52 m	
14	2.50 m 3.00 m 4.00 m	35 m 42 m 56 m	
15	2.50 m 3.00 m 4.00 m	36 m 45 m 60 m	
16	2.50 m 3.00 m 4.00 m	40 m 48 m 64 m	
17	2.50 m 3.00 m 4.00 m	43.5 m 51 m 76 m	
18	2.50 m 3.00 m 4.00 m	45 m 54 m 72 m	
19	2.50 m 3.00 m 4.00 m	48.5 m 57 m 76 m	
20	2.50 m 3.00 m 4.00 m	45 m 54 m 72 m	

10. TABLE OF ASYMMETRICAL TRAMLINES

Path	Seed drill working width	Sprayer/ spreader width	Asymetrical tramline placement in two passes
4 2+3	2.50 m 3.00 m 4.00 m 4.50 m 5.00 m 6.00 m	10 m 12 m 16 m 18 m 20 m 24 m	
6 3+4	2.50 m 3.00 m 4.00 m 4.50 m 5.00 m	15 m 18 m 24 m 27 m 30 m	
8 4+5	2.50 m 3.00 m 4.00 m	20 m 24 m 32 m	
10 5+6	3.00 m 4.00 m 5.00 m	30 m 40 m 50 m	
12 6+7	3.00 m 4.00 m 5.00 m	36 m 48 m 54 m	
18 9+10	2.50 m 3.00 m 4.00 m	45 m 54 m 72 m	
20 10+11	2.50 m 3.00 m 4.00 m	50 m 60 m 80 m	

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