“ALPETRONIC - Super Plus” COMPUTER

for Seed-Drills Mod. AS1- ASF

Codice	D15686/2	CE		GB	OWNER’S MANUAL
Da matr:	33950				
A matr:					

PLEASE READ THIS OWNER'S MANUAL CAREFULLY BEFORE USING THE INSTRUMENT. THE KNOWLWEDGE OF ITS CONTENTS IS ESSENTIAL FOR THE SAFE USE OF THE MACHINE AND IT MUST BE KEPT DURING THE ENTIRE LIFE SPAN OF THE IMPLEMENT

We thank you for choosing this product. You have purchased a high-quality instrument, guaranteed by an experience of dozens of years.
Each instrument is carefully checked before it leaves our Company, so as to guarantee that it is free of defects. However, should a defect in the material still occur, please contact your Dealer immediately.
In order to constantly improve our products and to keep them at the highest quality levels we are gladly at your disposal for any explanation or piece of information you may require.

PLEASE PAY ATTENTION TO THIS TRIANGLE. IT WARNS YOU AGAINST DANGER

THE TERM MACHINE REPLACES THE COMMERCIAL BRAND NAME WHICH THE PRESENT OWNER'S MANUAL REFERS TO

The illustrations in this Owner's Manual have a purely indicative value. They may, therefore, present some small differences which are, however, uninfluential as far as the directions given in this Owner's Manual are concerned.

Index

1. GENERAL INFORMATION

1.1. PURPOSE OF THE OWNER'S MANUAL

This Owner's Manual has been written by the manufacturer of the machine and it is an integral part of the documents accompanying the machine.
This Owner's Manual defines the purposes for which the machine has been manufactured, specifying its correct use and the limits of the same.
The punctual application of the data contained in the present Owner's Manual guarantees the safety of the persons using the machine, economy of operation and a longer lifespan of the machine.
The present Owner's Manual has been divided into different paragraphs in order to make the search for the various items and the consultation of the initial index easier.
The pictures included in this Owner's Manual are supplied by way of information only. Even if they greatly differ from your machine, the safety rules and the information are always guaranteed at any rate.

1.2. WARRANTY

At the time of delivery, check whether the machine has been damaged in transit and if all the accessories are present.
Possible claims must be made in writing within 6 days.

INVALIDATION OF THE WARRANTY
The warranty becomes immediately void:
-if damage is caused by an incorrect maneuver
-in case the instructions given in this manual have not been strictly followed
-if non-original parts have been used
-if modifications have been made to the machine without the consent of the Manufacturer.
-if a damage has been caused accidentally
-if the damage has been caused by events of force majeure (lightening, floods, fire or other independent causes)

2. TECNICAL SPECIFICATIONS

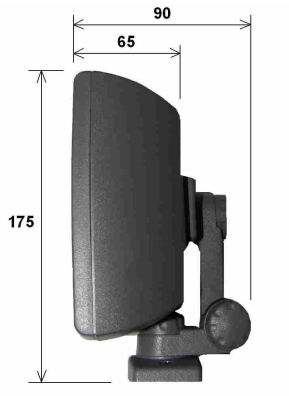
2.1. GENERAL DESCRIPTION

The multi-function electronic computer of the **"ALPETRONIC Super Plus"** series has been designed for agricultural, pneumatic row-seeding seed-drills
Alpetronic Super Plus has been designed to automatically and continuously monitor the quantity of seed distributed by the seed-drill. With the machine in operation and depending on the soil conditions, it is possible to increase or decrease the normally pre-set seed flow
This computer can manage and monitor the following functions:

- **Tramline :** it automatically shuts off some of the rows to obtain a non-seeded track to be used as a "road" for the subsequent operation with a sprayer.
- **Pre-start :** it allows the start of the seed metering unit while the machine is idle, in order to guarantee a precise drilling when the seed-drill work is resumed.

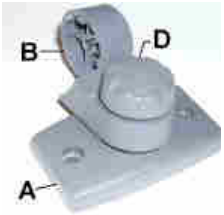
It displays and checks the following data:

- Driving speed recorded by radar (Km/h).
- Number of hectares seeded, through two independent totalizators (partial and total)
- Quantity in kg of seed distributed through two independent totalizators (partial and total)
- Total number of hours worked (cannot be reset)
- Number of hectares seeded (cannot be reset)
- Seed-level in rear hopper
- RPM of distributor fan



2.2. INSTALLATION OF THE COMPUTER

To install the computer proceed as follows:
• On a flat surface inside the cabin of the tractor bore two holes (D. 8 mm) at the same distance as the holes which are present in the holding bracket (ref. **A**), then attach the bracket to the frame of the tractor through two bolts;
• Assemble the elements to attach the monitor, which are supplied disassembled. To do this perform the operations as shown in the following pictures

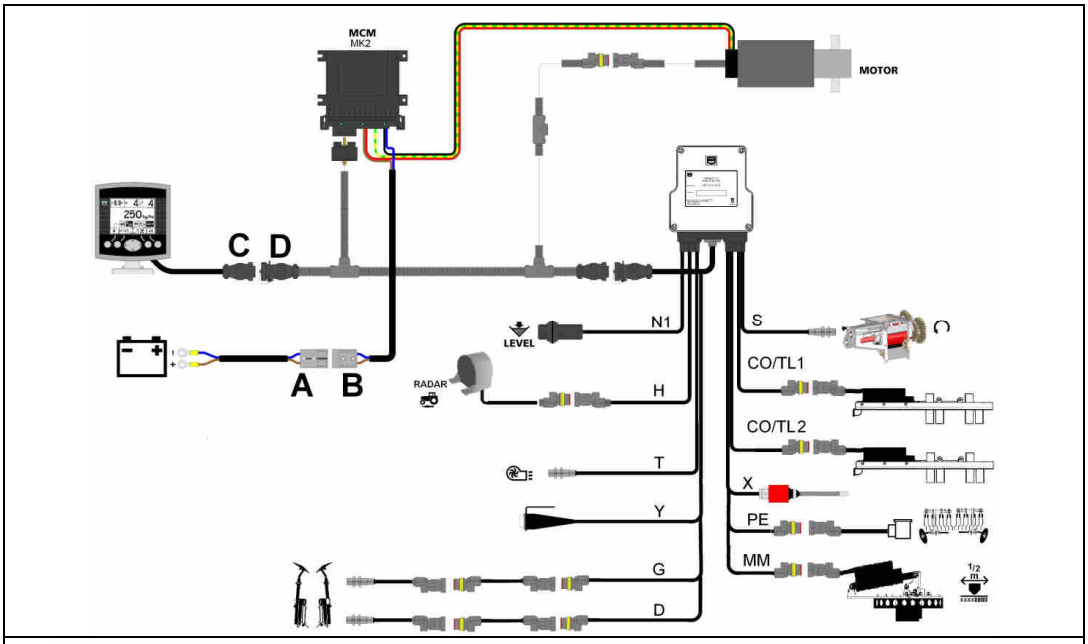
			
Components	**1°operation (Rif A)**	**2°operation**	**3°ope ration**

We suggest that you install the computer right in front of the operator in order to Make its use easier during the working cycle.

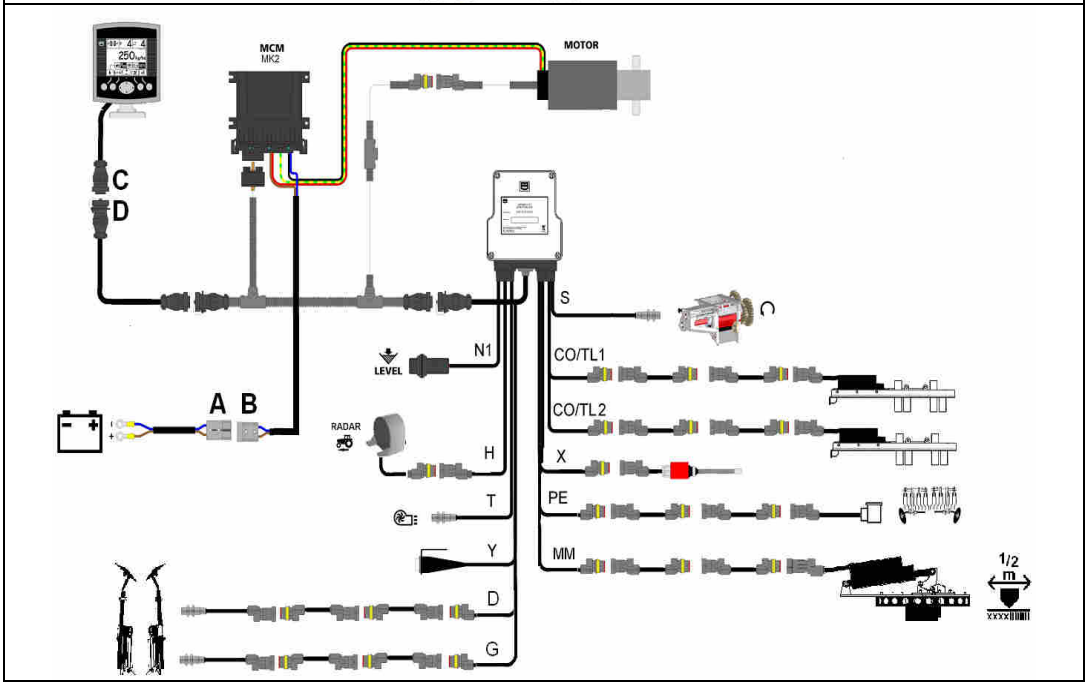
3. INSTALLATION

3.1. ELECTRIC WIRING

AS1



ASF



Connect cable **A directly** with the tractor battery. Be careful to connect the poles correctly (**brown + / blue -)** and wire the cable correctly to the tractor.

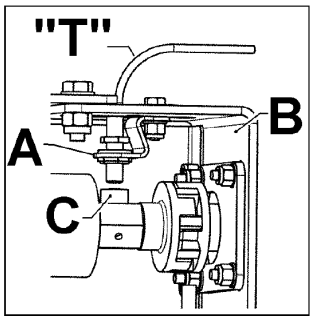
⚠	**From time to time check the voltage of the tractor battery, since the electric part of this instrument requires a constant 12 volt supply. If the power is lower it may cause malfunctions. (go to the page "Diagnostic) and select "Instrument": this will show the voltage of the battery**

- Connect the connectors of cable **A** to the connector of cable **B**
- Fix the monitor inside the cabin
- Connect cable **C** with cable **D** and fasten the 2 connectors tightly.

3.2. INSTALLATION OF THE SENSOR OF THE METERING UNIT “S” RPM

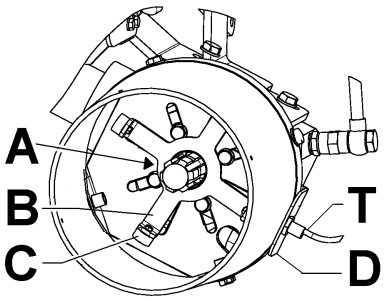
This type of sensor feels the presence of the magnets. It is, therefore, necessary to attach at least 3 magnets to the shaft of the metering unit. The minimum distance between the sensor and the magnet must be of about 2 / 3 mm.

3.3. INSTALLATION OF THE SENSOR OF THE DISTRIBUTION FAN “T”



3.3.1. HYDRAULIC VERSION

The sensor for the reading of the fan **“T”** RPM must be installed on the proper bracket **(A),** which, in turn, must be attached to the fan support **(B)** perpendicular to the rotating shaft, at a distance of 2 /3 mm. from the magnetic reference **(C).** The sensor will read the passage of insert **C.**

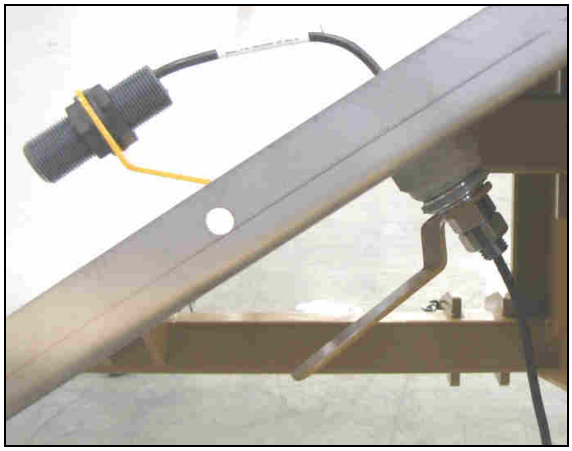


3.3.2. MECHANICAL VERSION

The sensor for the reading of the fan **“T”** RPM must be installed on the proper bracket **(D),** which, in turn, must be attached to the multiplier of the fan.
Assemble the protective bottom **E00600** and attach it to the bracket **D.**
Position the sensor **“T”** perpendicularly to the star reference **“B”** at a distance of 2 / 3 mm . The sensor will read the passage of insert **C.**

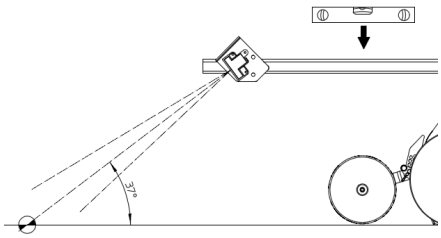
3.4. INSTALLATION OF THE SENSOR OF THE PRODUCT-LEVEL INDICATOR “N1”

The capacitive sensor recording the product level must be positioned so as to record the level of the product in the hopper when it drops below the reserve limit; it is positioned inside the hopper and mounted on the frame. It is important for the head of the capacitive sensor to be directly in touch with the product: thus, when the sensor is covered by the product it issues no alarm signal, but when the seed drill is in operation and the sensor head is uncovered, the relevant alarm signal is activated.

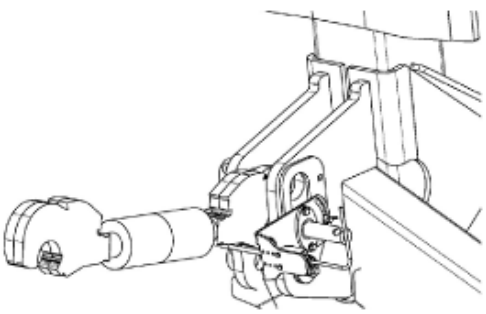


3.5. INSTALLATION OF THE RADAR “H”

The radar must be positioned at a height comprised between 40 and 100 cm. from the ground, it must be facing backwards in relation to the implement and at an angle of 30° in relation to the ground.
From time to time make sure that the radar is clean.



3.6. INSTALLATION OF THE “X” LIFTING POSITION SENSOR



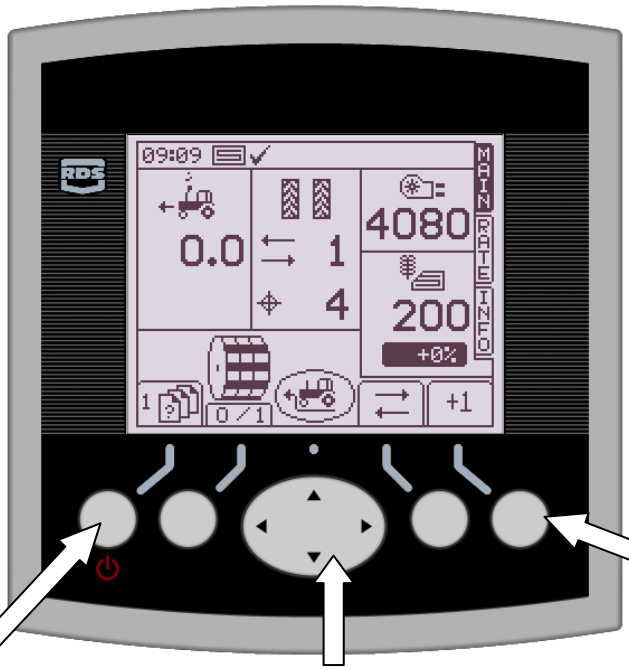
This sensor must be installed with its relevant elements and must be adjusted so as to record the changing position of the implement from its working to its lifted position.

For the assembly details see the special manual concerning the component S31155 (cod.D13007).

4. FUNCTION

4.1. DESCRIPTION OF THE CONTROL PANEL

All the functions of the instrument are accessible through FIVE menu keys below the LCD computer screen. Picture 1



ON / OFF KEY
-Key for the display of the screen shots (Ref. A)

KEY FOR SPECIFIC FUNCTIONS AND PROGRAMMING MENUS (Ref C)

Pre-Start Key (Ref B)
Key to increase seed quantity
Scroll / selection key

A few seconds after pressing the ON / OFF key **(Ref A)** the main screen shot **"MAIN"** will appear**,** then, by pressing again the key you will have access to the screen shots: **"RATE" "INFO"** and **programming menu.**

The key in the middle **(Ref B) makes it possible to:**

1. Activate the manual Pre-start (see par..4.5.4)
2. Increase the percentage of the seed quantity (see par. 4.6)
3. Scroll the various Menus and enter the values and the parameters

The three keys under the LCD screen **Ref C** control various functions in the main screen (for instance: blocking the rotation of the electric motor , blocking the Tramline) and in the programming menus they are used to select and enter several parameters. The texts and the icons are displayed at the side of the keys to indicate their functions

To **turn off** the instrument press for **more than 5 seconds**

4.2. STATUS INDICATOR

On the upper section of the display and in all the screen shots there is a bar showing the time but also all the icons. Said icons indicate:

Function Status	
In operation	
Not in operation	

4.3. USE OF THE MONITOR KEYS

To modify/ enter number values use the middle key:

to increase /decrease the values use the up and down arrows 

to choose adjacent values use the right /left arrows 

To move the dot, it is necessary to select it and to use the up / down arrows 

Press the key under the “OK” icon to enter the modified value
Press the key under the “ESC” icon to go back to the previous page

To move the black triangular cursor use the up /down arrows 

To access the menus press the side of the middle key 

To move the black triangular cursor use the up /down arrows 

To access the titles of the sub-menus press the key under the "**OK"** icon

Press the key under the "ESC" icon to go back to the previous page

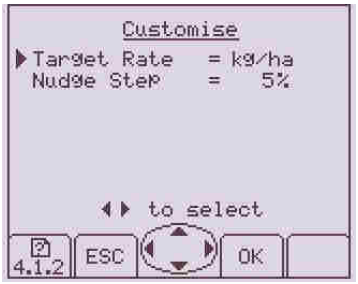
In order to modify some of the parameters it is necessary to:

- Select them by moving the triangular cursor using the up / down arrows 
- press the key under the "OK" icon

- change the values using the up / down arrows  and the right / left arrows 
- press the key under the "OK" icon to confirm the modified value

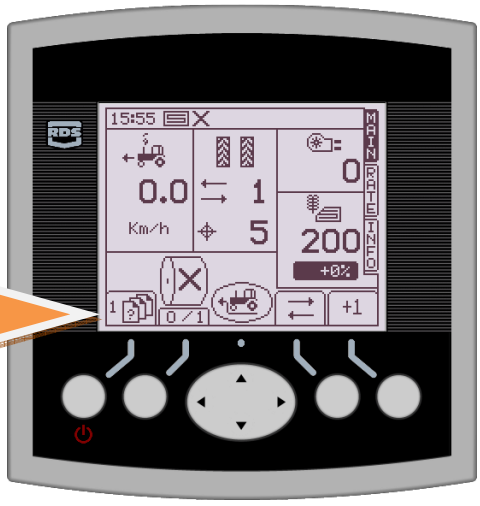
In order to modify other parameters it is necessary to:

- select them by moving the triangular cursor using the up / down arrows 
- change the value using the right / left arrows  (a sign on the screen will show that the right / left arrows are being used, as in the example)
- press the key under the "OK" icon to confirm the modified value



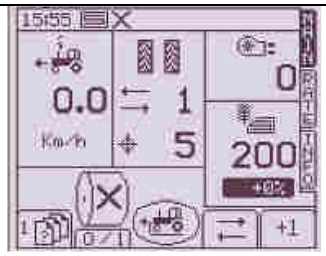
4.4. LIST OF THE SCREEN SHOTS

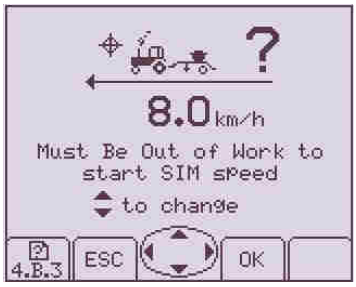
Once the monitor has been turned on, each time you press the key, you will enter a different page

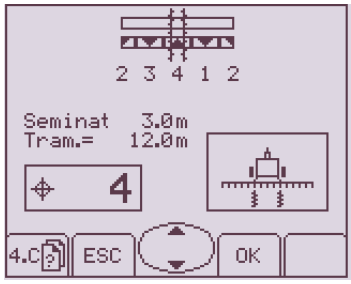
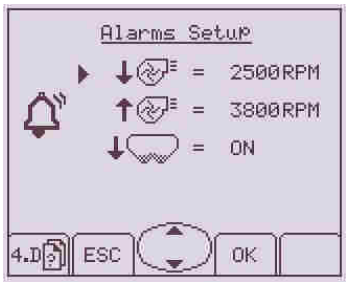


Indicator of the SCREEN SHOT number

Below is the listing of the screen shots with the main page numbers, which are to be used to set the various parameters

SCREEN SHOT 1 It is the **main screen shot** which is displayed when the monitor is turned on In the upper right section of the screen the **MAIN** sign will appear (see par. 4.5)	
SCREEN SHOT 2 It is the screen shot which will appear when the key is pressed once. In the upper right section of the screen the **RATE** sign will appear . This indicates the quantity of seed in weight per hectare to be entered (see par. 4.6)	
SCREEN SHOT 3 It is the screen shot which will appear when the key is pressed twice. In the upper right section of the screen the **INFO** sign will appear , which indicates the quantity of seed distributed and the number of hectares (total and partial) which have been drilled (see par. 4.7)	
SCREEN SHOT 4 It is the screen shot which will appear when the key is pressed three times From here on all the parameters necessary to operate the seed drill will be set. By pressing the main key (the largest one) on the side of the enter arrow, as shown in this screen shot, you will be able to access the various menus (see par. 5.8) **Page No. 4.1** Operator's configuration **Page No. 4.2** Seed-Drill configuration **Page No. 4.3** Manufacturer's configuration **Page No. 4.4** Diagnostic	

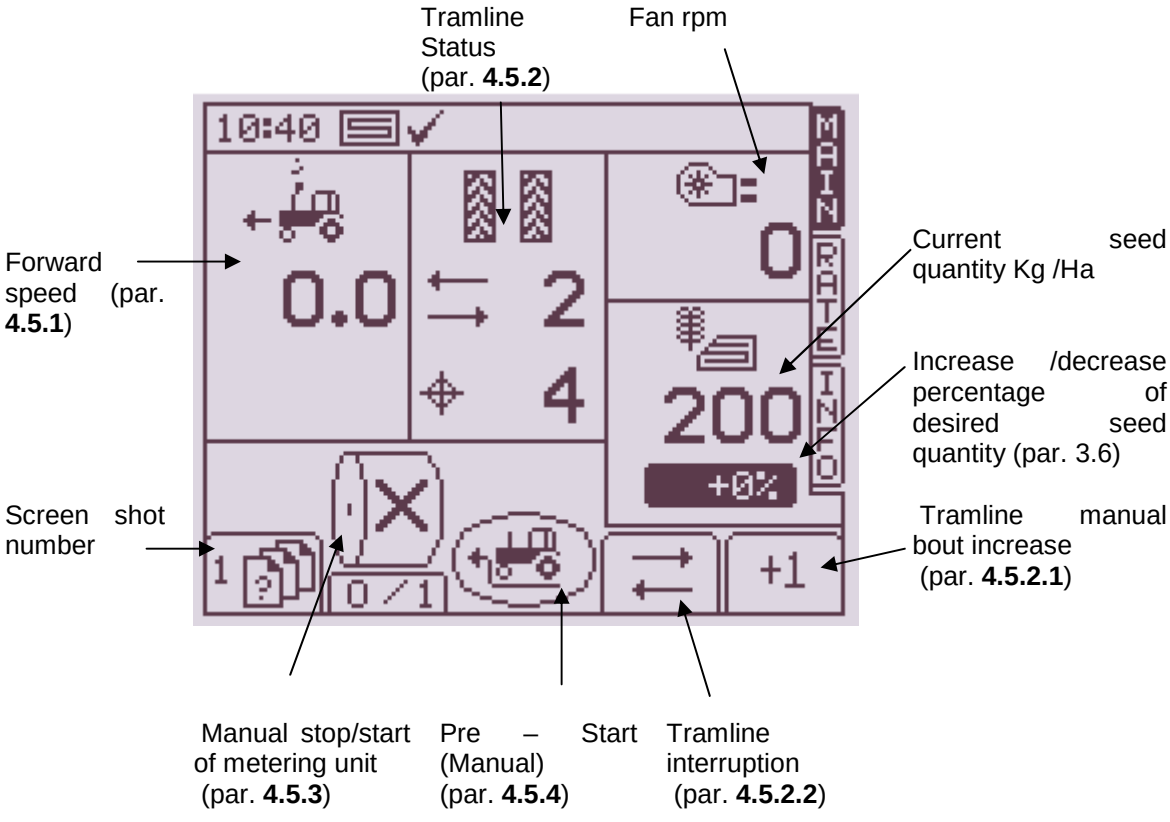
SCREEN SHOT 4.B	
It is the screen shot which will appear when the key from screen shot 4 is pressed From here you will begin to enter the following parameters of the seed drill: **Calibration rate** **Width of the seed drill (m)** By pressing the key under the OK icon you will select the value and with the arrows of the main key you can modify the values. Always remember to press the OK key to confirm the value (see par. 5.4 / 5.5)	
SCREEN SHOT 4.B1	
It is the screen shot which will appear when the key is pressed and the **"Speed sensor"** is selected From here you will begin to enter the following parameters of the seed drill: -SSF (speed factor) - Auto-calibration (see par. 5.3)	
SCREEN SHOT 4.B.2	
It is the screen shot which will appear when the key is pressed and the **"Speed sensor"** is selected, then **Autocalibraz** is also selected From here you will begin to enter the **Speed rate** automatically, by driving a distance of 100m with the seed drill in operation (see par. 5.3.1)	
SCREEN SHOT 4.B.3	
It is the screen shot which will appear when the key is pressed and the **"Speed sensor"** is selected, and the key under the SIM icon is pressed Value of simulated speed in case the radar is damaged: also, this value is very important, since it represents the working speed during the pre-start function(see par. 5.3.2)	
SCREEN SHOT 4.B.3	
It is the screen shot which will appear when the key is pressed and the key under the SIM icon is also pressed In this screen shot you enter the weight for the calibration test (see par. 5.6)	

SCREEN SHOT 4.C	
It is the screen shot which will appear when the key from screen shot 4 is pressed In this screen shot the tramline program is chosen, which allows the use of the your own sprayer Seed drill : Seed drill width (m) Tram : Sprayer width (m) (see par. 5.1)	
SCREEN SHOT 4.D	
It is the screen shot which will appear when the key from screen shot 4 is pressed This window is used to program the alarms of: Minimum rpm of the fan Maximum rpm of the fan Activation/ deactivation of the seed level (see par. 5.7)	

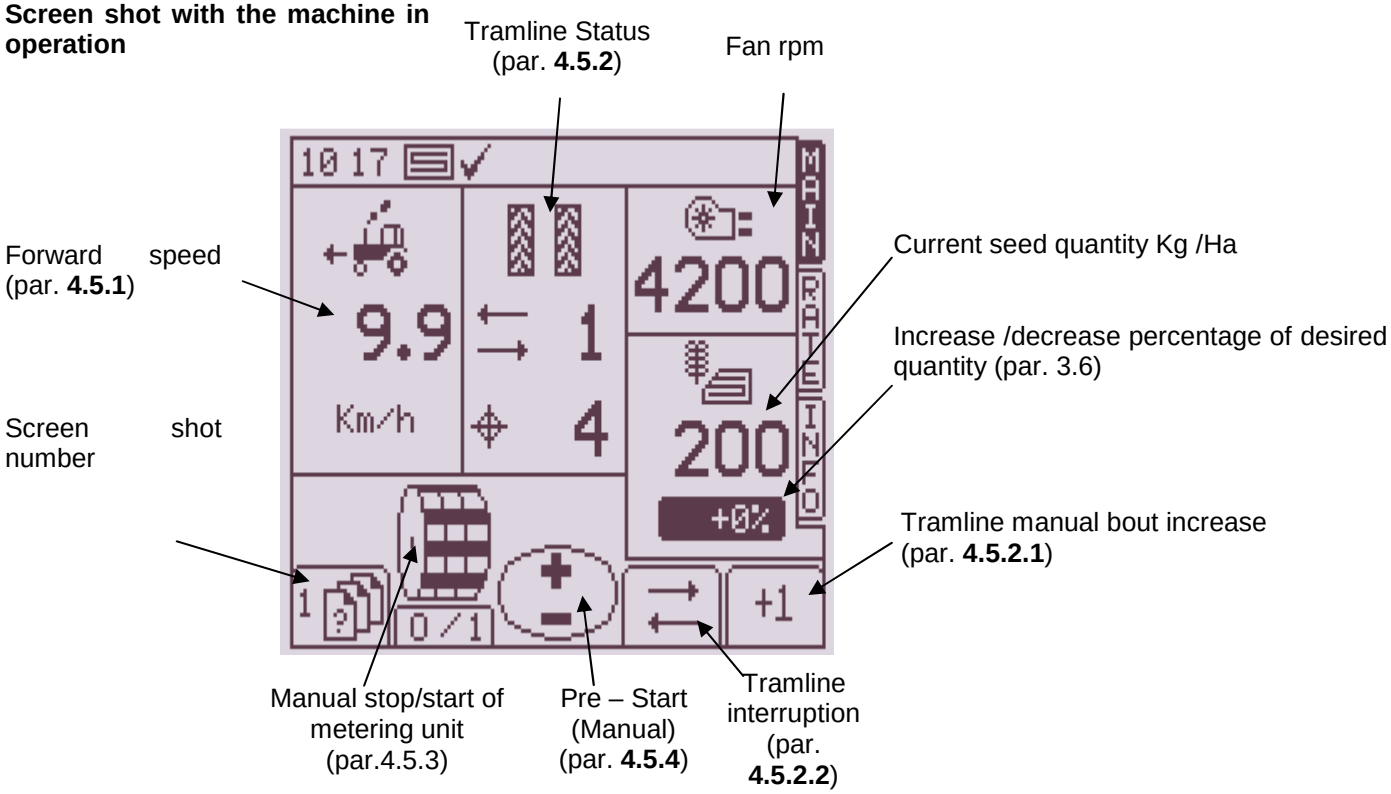
4.5. DESCRIPTION OF THE MAIN SCREEN SHOT("MAIN")

Whenever the computer is switched on the main screen shot ("MAIN") will be accessed directly. This screen shot is divided into 5 sections which display the following functions

Screen shot with the machine not in operation



Screen shot with the machine in operation

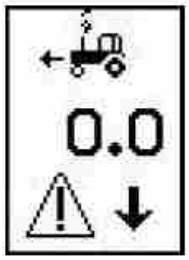


4.5.1. FORWARD SPEED AND ALARMS

With the exception of sudden speed variations, the forward speed displayed at any given moment will be the average speed calculated every 3 seconds.
The instrument is programmed to set off a “low speed” and a “high speed” alarm.

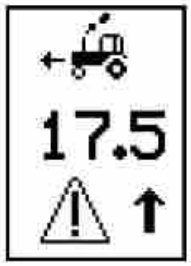
If the seed drill is working at a forward speed of **less than 0.5 Km/h** an alarm will blink on the main screen shot (see picture at the right), at the same time an acoustic alarm will be set off. **<u>At any rate the minimum speed value can be altered at the discretion of the end-user. (see par. 4.3)</u>**

Low speed alarm

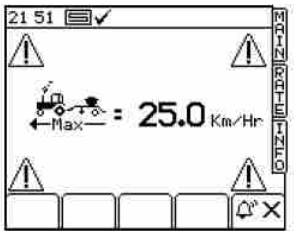


If the seed drill is working at a speed **exceeding** the speed calculated and permitted by the computer (indicated in the main screen shot “RATE”) an alarm will blink on the main screen shot (see picture at the right), at the same time an acoustic alarm will be set off.

High speed alarm

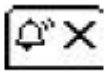


When a new seed quantity to be distributed is inserted in the RATE screen shot, the instrument will re-calculate and display the maximum speed at which the new quantity can be maintained.



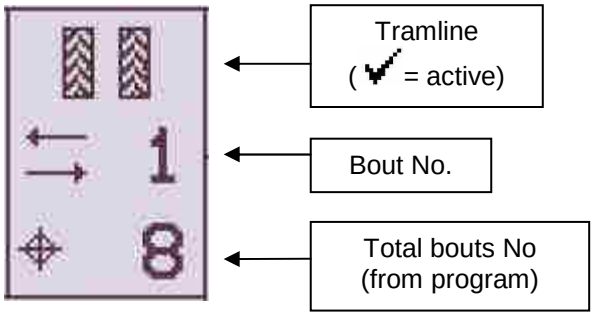
Said calculation takes the following data into consideration :

- New quantity of seed to be distributed
- Working width
- Calibration rate (calculated by the instrument with the calibration routine)
- Reduction rate of the electric motor
  Maximum RPM of the electric motor

Press key  to go back to the "RATE" screen shot .
N.B: If the forward speed is too low, the operator must modify (increase) the opening of the metering unit and perform the calibration routine again to increase the calibration rate.

4.5.2. TRAMLINE STATUS / FUNCTIONS

The main screen shot "MAIN" will display the tramline "status"



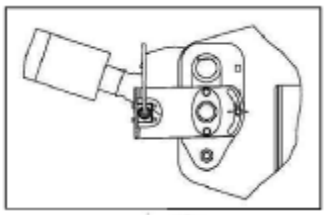
TRAMLINE RHYTHM

SYMMETRICAL	LEFT ASYMMETRICAL	RIGHT ASYMMETRICAL
		

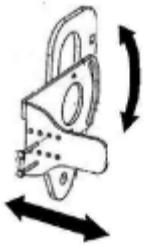
INCREASE OF NUMBER OF BOUTS

The tramline rhythm does not always begin at bout "1"; check programming carefully (see par. 5.1) The increase of the number of bouts is determined by the lifting of the machine until the tie-rod of the upper arm of the tractor lift activates a micro-switch which is present on the top link of the 3-point hitch of the machine.

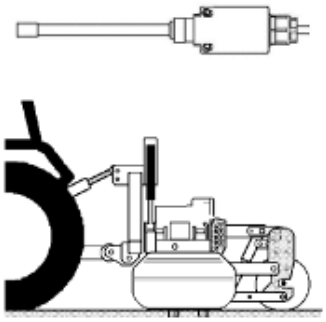
The pin of the micro-switch must always be positioned below the top link of the 3-point hitch.



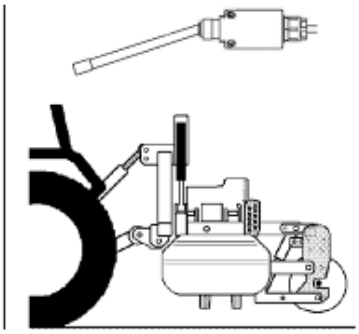
The bracket must be adjusted (see picture at the right) so that - while in the working position - the pin of the micro-switch never comes in touch with the top link of the 3-point hitch and when the machine is lifted the pin is tilted.



WORKING POSITION



LIFTED POSITION



Pay special attention to and take particular care of this micro-switch. NEVER TEMPER WITH IT FOR ANY REASON, since it would jeopardize the function of the metering system control.

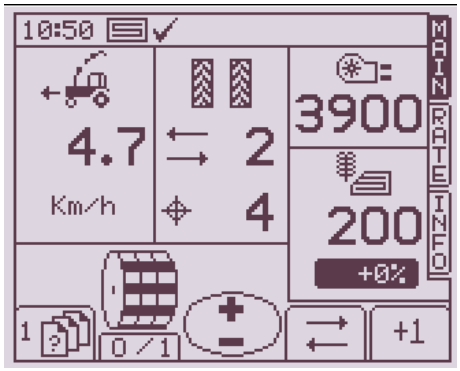
If necessary press key [+1] to change and obtain the correct number of the bout ; for instance, if while working it becomes necessary to lift the machine in order to avoid an obstacle, the +1 key is used to go back to the initial working bout.

HOLDING THE TRAMLINE BOUT NUMBER

Press key  in order to hold the current tramline bout number. This is a very useful function when it becomes necessary to perform unforeseen maneuvers during the working process.

The icon  indicates that the bout number is being held. Press the key under this icon to activate the relevant tramline bout number again

4.5.3. MANUAL CONTROL OF THE METERING UNIT ROTATION



With the fan in full operation/ and after the forward speed has been registered by pressing the key under the 

icon it is possible to stop the rotation of the metering unit.
This function is useful when the soil needs to be cultivated further, without, however, being seeded .

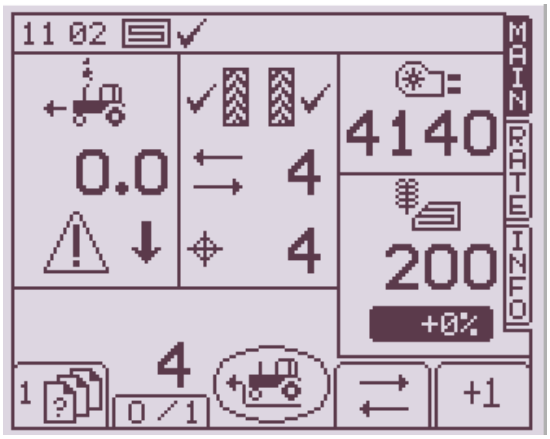
By pressing the key under the icon 

for the second time the rotation of the metering unit controlled by the radar and by the micro-switch which is on the top link of the machine is resumed

Whenever the seed drill is lifted off the ground the rotation of the metering unit is stopped thanks to the action of the micro-switch which is located on the top link of the 3-point hitch.

4.5.4. PRE-START FUNCTION (MANUAL)

This function is particularly useful in order to prevent unseeded areas when starting at the beginning of the field; it allows the seeds to reach the seeding coulters while the machine is idle.
In order to use this function it is necessary to:
1) Bring the distribution fan to its working running speed



2) Press the key under the icon  in the Main screen shot

3) With the machine not running the electric motor will cause the metering unit to rotate at the simulated working speed for a period of time to be set by the end-user from the Menu “Operator’s Configuration/Pre-Start (see par.. 5.8) In the main screen shot you will see the countdown of the set time
This period of time will allow to

- Reach a speed of 2 Km/h necessary to automatically disable this function; when this speed is exceeded the RPM of the metering unit will be proportional to the forward speed of the tractor registered by the radar of the seed-drill.

At each new start of the seed-drill from an idle position it is necessary to manually press this key again.

4.5.5. PRE-START FUNCTION (AUTOMATIC)

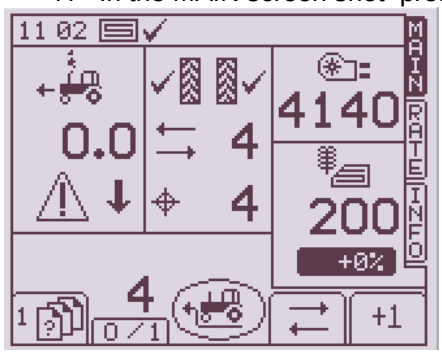
In order to use this function it is necessary to:

1. Access screen shot 4 (see par. 4.4)
2. Select Operator's Configuration / Pre Start (screen shot 5.1.7)
3. Set a period of time necessary to reach 2Km/h
4. Press the key under the AUTO MAN icon to modify the function and press OK TO CONFIRM

   AUTO MAN Manual Pre Start ACTIVATED

   AUTO MAN Automatic Pre Start ACTIVATED

5. Go back to the main screen shot (1)
6. Bring the fan of the seed distributor to its working rpm
7. In the MAIN screen shot press the key under the icon



8. With the machine not running the electric motor will cause the metering unit to rotate at the simulated working speed for a period of time to be set by the end-user from the Menu "Operator's Configuration/Pre-Start (see par.. 5.8) In the main screen shot you will see the countdown of the set time

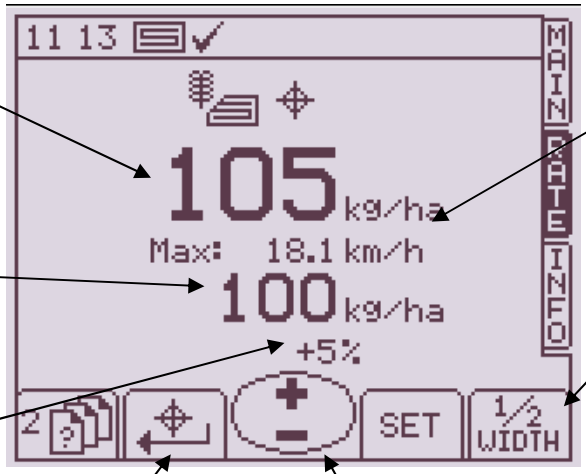
This period of time will allow to

- Reach a speed of 2 Km/h necessary to automatically disable this function; when this speed is exceeded the RPM of the metering unit will be proportional to the forward speed of the tractor registered by the radar of the seed-drill.

Each time the machine is lowered to the ground and the micro-switch in the top link is in its working position, the pre-start will be automatically turned on without pressing the key.

4.5.6. DESCRIPTION OF THE “RATE” SCREEN SHOT

Go to screen shot 2 (see par. 4.4)



Currently distributed seed quantity (5% more than the pre-set value).

Quantity of seeds distributed before the beginning of the seeding operation. In order to enter this value, use the keyboard and press the “SET” key.

Currently set % value (+5% in the example)

Maximum speed allowed to distribute the pre-set seed quantity

By pressing the key under the 1/2 WIDTH icon you activate the (optional) device, which reduces by one half the outlets of the distribution head, thereby reducing by one half the width of the seeding bar.

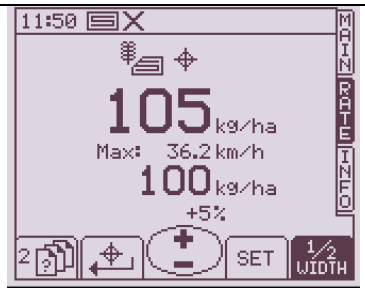
Reset: by pressing the key under this icon the current seed quantity is brought back to the quantity set before the beginning of the drilling operation

By pressing the middle key under the icon (upward – downward arrow) the pre-set value will be increased or decreased by 1 % point (see par. 5.8)

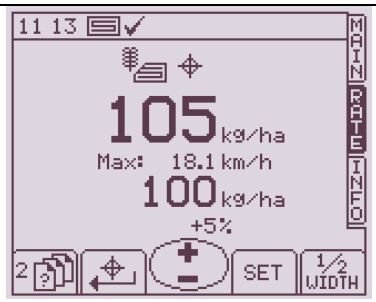
The currently distributed seed quantity is always displayed also on the “MAIN” screen shot ; If the quantity is increased or decreased by one or more percentage steps, this value (percentage) is also displayed on the main screen shot .

4.5.7. HALF-WIDTH FUNCTION

By pressing the key under the 1/2 WIDTH icon from the "RATE" screen shot half of the outlets from the distribution head will be shut off and the electric motor will automatically reduce by 50% the amount of seed to be distributed.

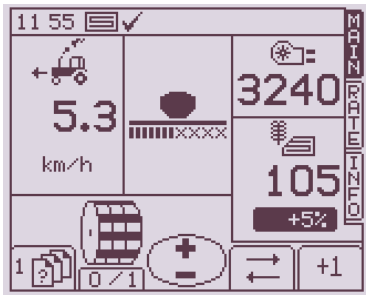


Half machine
ACTIVATED

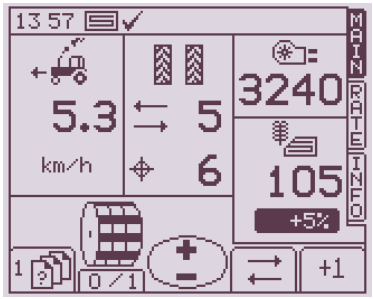


Half machine
DISABLED

In the "MAIN" screen shot the section representing the tramline bouts will be replaced by the icon representing the ACTIVATED machine half width. During the bout with the ACTIVATED machine half width the pre-selected tramline is DISABLED.



"MAIN" Screen shot

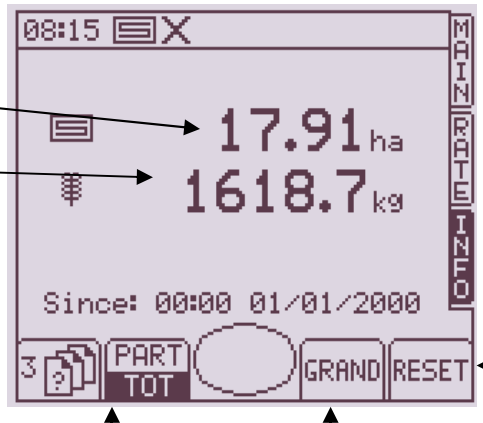


"MAIN" Screen shot

Once the bout with half the width of the machine has been completed and the 1/2 WIDTH control has been desabled from the "**RATE**" screen shot, all the outlets of the distribution head will be used again and the electric motor will **automatically** restore the quantity of seed determined by the calibration test over the entire width of the seeding bar

4.5.8. DESCRIPTION OF THE "INFO" SCREEN SHOT

Go to screen shot **3** (see par. 3.4)



Total number of worked hectares

Total weight (Kg) of seeds distributed

Reset Area:
By selecting one of the 2 areas (PART-TOT) and by pressing the RESET key the number of worked hectares and the Kgs of distributed seeds are cancelled.

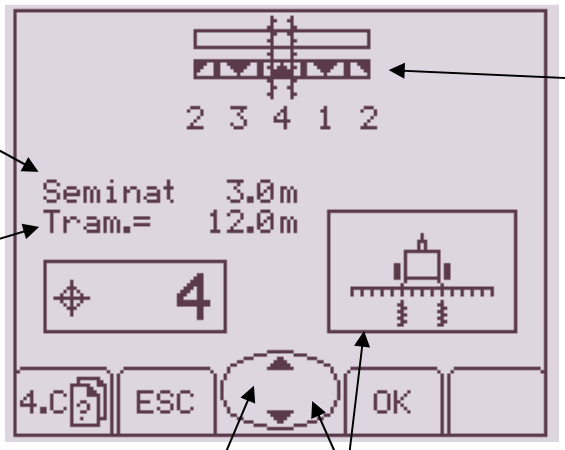
By pressing the key under this icon the display of the values of this screen shot is changed from TOTAL to PARTIAL; in this example the numbers of hectares and Kgs. are TOTAL

By pressing the key under this icon the following data are displayed:
Total worked area
Total worked hours
during the entire lifespan of the instrument.
THESE NUMBERS CANNOT BE CANCELLED.

5. PROGRAMMING

5.1. MENU FOR TRAMLINE PROGRAMMING

Go to screen shot 4C (see par. 3.4)



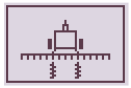
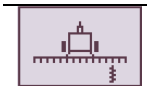
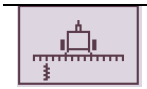
Seed-drill width

Width of sprayer. This value is modified by entering the number of bouts of the tramline

Graphic sequence of the tramline: in the example given it is necessary to enter the bout number 2 in the main screen shot before work is begun.

By pressing the keys under the arrows (up / down) the tramline program is modified. Scroll the "numbers" until the desired sprayer width has been reached.

By pressing the right or left side of the middle key the type of tramline program to be used is selected: symmetrical / asymmetrical right / asymmetrical left

	Symmetrical Program
	Asymmetrical right Program
	Asymmetrical left Program

In the MAIN screen shot (1) the types of selected programs are displayed as follows:

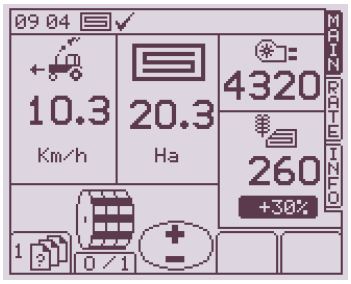
SYMMETRICAL	LEFT ASYMMETRICAL	RIGHT ASYMMETRICAL
		

IN ORDER TO DISABLE THE TRAMLINE PRESS THE MIDDLE KEY (DOWN ARROW) AND BRING THE NUMBER OF BOUTS TO O.

Press OK to confirm and ESC to exit.

WHEN YOU GO BACK TO THE **MAIN** SCREEN SHOT **(1)** THE SECTION DEVOTED TO THE TRAMLINE HAS DISAPPEARED AND THE VALUE OF THE **TOTAL HECTARES WORKED** HAS REPLACED IT.

The keys under the  icons are disabled.



5.1.1. **TRAMLINE** DESCRIPTION

The new tramline with shut-off valve has been designed and developed to obtain any desired rhythm:

The device consists of::

A. Linear actuator

B. Sliding shut-off valves.

C. Sliding bar for symmetrical / asymmetrical adjustment.

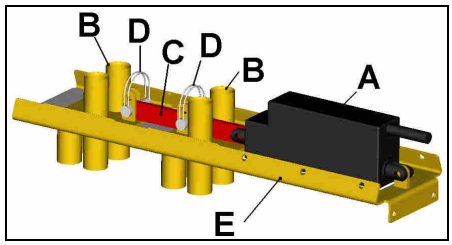
D. Connecting wrist pin

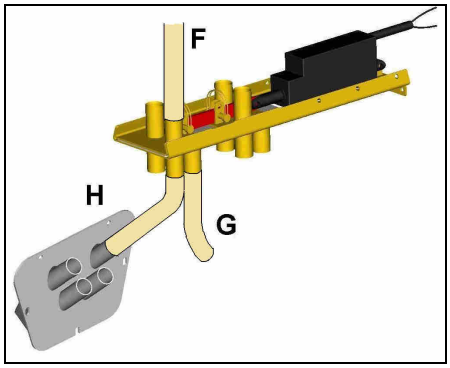
E. Fixed shut-off valve

F. Seed hose connected with the distributor's head

G. Seed hose connected with the seeding coulter

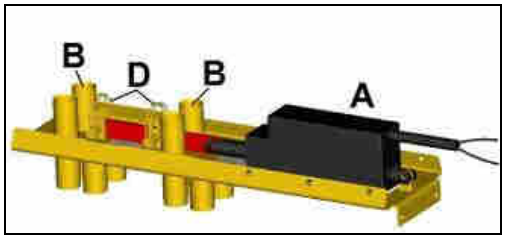
H. Seed hose connected with the return of the seeds into the hopper





The seed outlets for the tramline from the distribution head are 4 and they are connected with the two mobile shut-off valves **B** through the hoses **F;** 2 outlets to create the right-side track of the coulter bar and 2 outlets to create the left-side track of the coulter bar. When performing the connections to the sliding elements make sure that the hoses for the right or the left side are mounted in pairs on the same sliding shut-off valve.
Before beginning the tramline operations it is indispensable to check which shut-off valve is dedicated to the right-hand and which to the left-hand side, so as to optimize the use of special rhythms of the asymmetrical type.
Check the connection of the hoses of the fixed element to the return into the hopper **H** and to the seeding coulters **G**

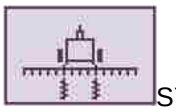
When the actuator **A** is activated it causes the 2 shut-off sliding valves **B** to move with a linear movement and leads them into two positions: 1 drilling (see layout over pos. G), 2 return into the hopper (see layout over pos. H)
The position of wrist-pin **D** may either activate or disable the movement of one of the two sliding shut-off valves, thereby permitting the use of special rhythms.

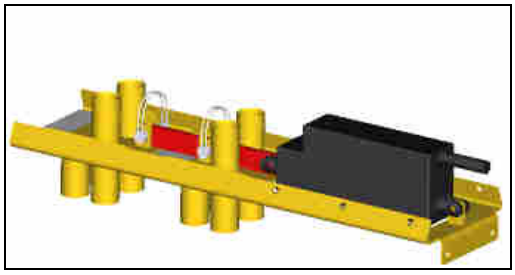


The position of wrist-pin D must be determined by the end-user after he has made the proper evaluations of the cycle only when the actuator A is at its *maximum extension (initial position):* if that is not the case, malfunctions in the set cycles may occur.

5.1.2. SYMMETRICAL RHYTHMS

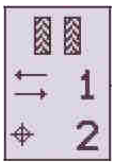
The configuration shown in the picture at the right side with both pins mounted is used for rhythms of the type:


SYMMETRICAL



The "rhythm" to be entered into the computer is obtained by dividing the width of the sprayer B by the width of the seed-drill S

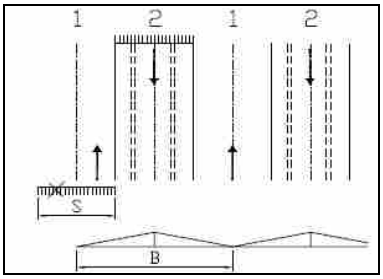
EXAMPLES OF SYMMETRICAL RHYTHMS

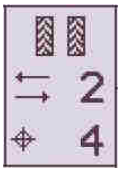


If the rhythm **"2"** is selected, the sliding shut-off valves B move at each alternate bout and cause the special hoses for the tramline to close.
We suggest you use this value, since the seed-drill is not equipped with any device to exclude half the coulter bar at the first bout.

This rhythm is appropriate for :

***Seed-drill* S (m)**	***Sprayer* B (m)**
3	6
3.5	7
4	8
4.5	9
5	10



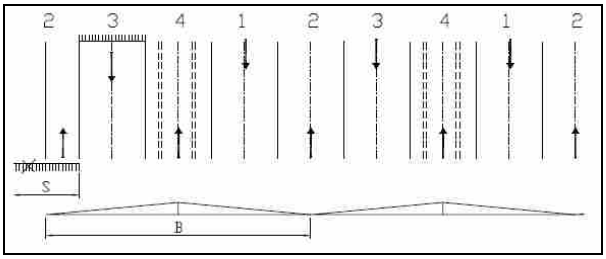


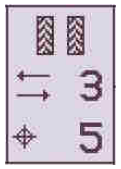
If the rhythm **"4"** is selected, the sliding shut-off valves B move at every 4th bout and cause the special hoses for the tramline to close.
We suggest you use this value, since the seed-drill is not equipped with any device to exclude half the coulter bar at the first bout

Enter bout "2"

This rhythm is appropriate for:

Seed-drill S (m)	*Sprayer* B (m)
3	12
3.5	14
4	16
4.5	18
5	20



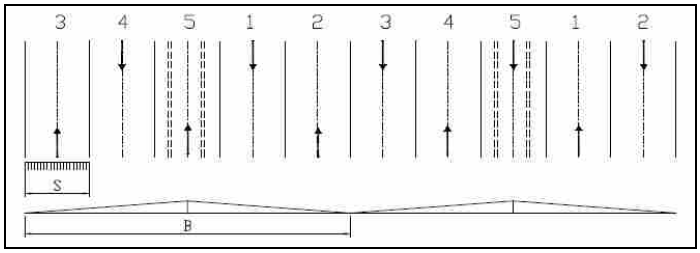


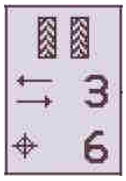
If the rhythm **"05"** is selected, the sliding shut-off valves B move at every 5th. bout and cause the special hoses for the tramline to close.

Enter bout "3"

This rhythm is appropriate for:

Seed-drill S (m)	*Sprayer* B (m)
3	15
3.5	17.5
4	20
4.5	22.5
5	25



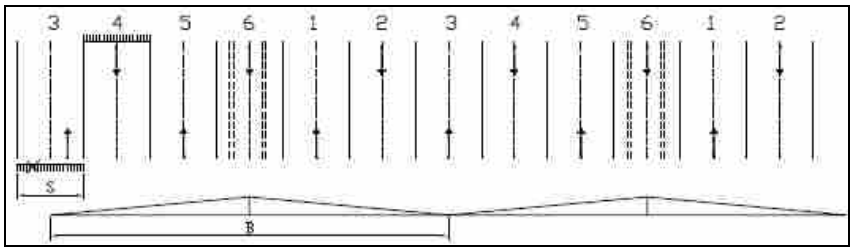


If the rhythm **"06"** is selected, the sliding shut-off valves B move at every 6th bout and cause the special hoses for the tramline to close.
We suggest you use this value, since the seed-drill is not equipped with any device to exclude half the coulter bar at the first bout..

Enter bout "3"

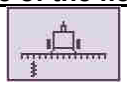
This rhythm is appropriate for:

Seed-drill S (m)	*Sprayer* B (m)
3	18
3.5	21
4	24
4.5	22.5
5	30



5.1.3. ASYMMETRICAL RHYTHMS

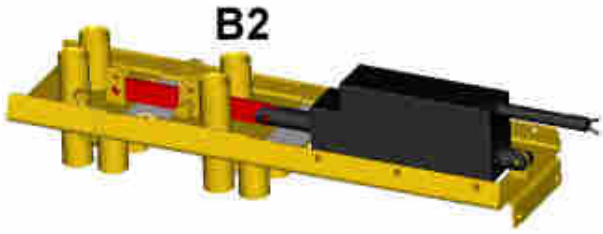
The asymmetrical rhythms are those special programs used for drilling with **the entire seed-drill when entering from the right or the left side of the field.**

The rhythm to be entered is  (even if it is left-side asymmetrical in the serial program)

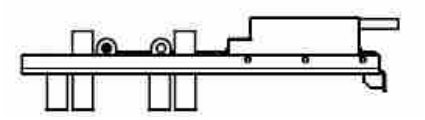
Before starting the tramline operation it is necessary to check which of the two sliding shut-off valves is connected with the right-side and which with the left side of the coulter bar.

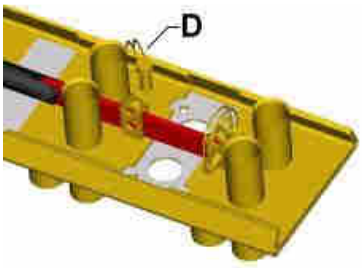
Let's assume that **B1** is the sliding shut-off valve of the hoses for the left side of the seed drill and **B2** is the sliding shut-off valve of the hoses for the right side of the seed drill (see picture): the rhythms will be as shown below, if you want to enter **the field from the right side**

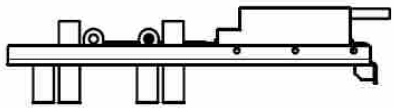
B1= sliding shut-off valve for the left side of the seed-drill. In this position only the sliding valve B1 will move

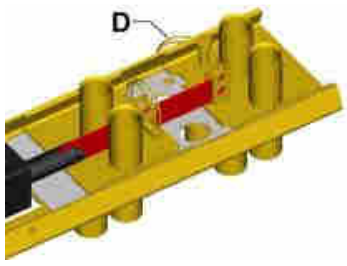


B2= sliding shut-off valve for the right side of the seed-drill. In this position only the sliding valve B2 will move



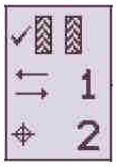




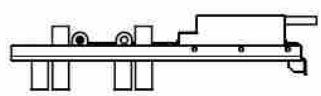


IN ORDER TO AVOID AN ACCIDENTAL MOVEMENT OF THE SLIDING SHUT-OFF VALVE WHICH SHOULD NOT MOVE, IT IS NECESSARY TO BLOCK IT BY INSERTING THE WRIST-PIN "D" INTO THE APPROPRIATE HOLE

EXAMPLES OF RIGHT-SIDE ASYMMETRICAL RHYTHMS

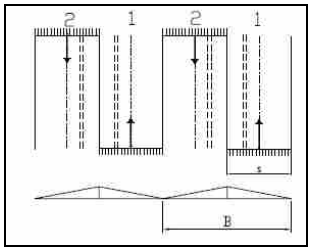


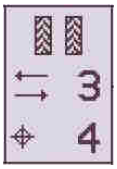
If you select the rhythm "**2**" entering from the right side of the field, B1 must remain connected and B2 must be disabled.
The two coulter discs on the left side will be disabled at bouts 1 and 2



This rhythm is appropriate for:

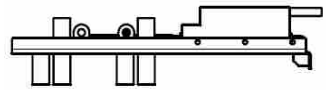
***Seed-drill* S (m)**	***Sprayer* B (m)**
3	6
3.5	7
4	8
4.5	9
5	10





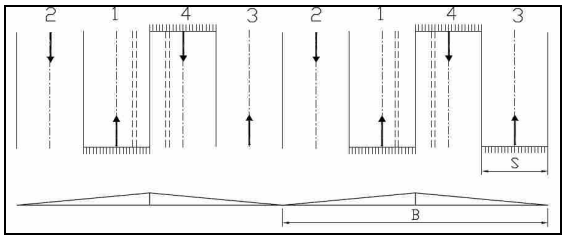
If rhythm **"4"** is selected entering **from the right side of the field** the sliding shut-off valve **B2** must remain connected **B1** must be disabled.
The two coulter discs on the left side will be disabled at bouts 4 and 1.

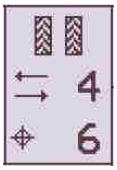
Enter bout "3"



This rhythm is appropriate for:

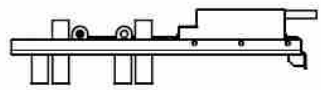
***Seed-drill* S (m)**	***Sprayer* B (m)**
3	12
3.5	14
4	16
4.5	18
5	20





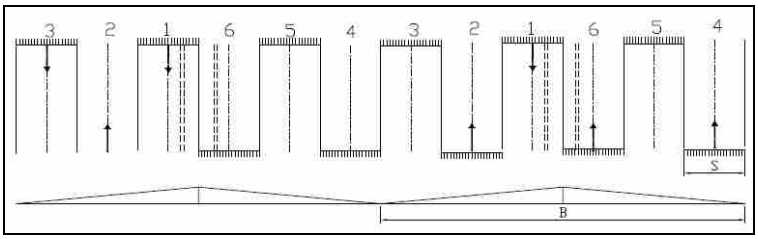
If rhythm **"6"** is selected entering **from the right side of the field** the sliding shut-off valve **B1** must remain connected **B2** must be disabled.
The two coulter discs on the left side will be disabled at bouts 6 and 1

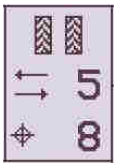
Enter bout "4"



This rhythm is appropriate for

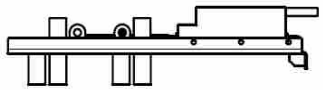
***Seed-drill* S (m)**	***Sprayer* B (m)**
3	18
3.5	21
4	24
4.5	27
5	30





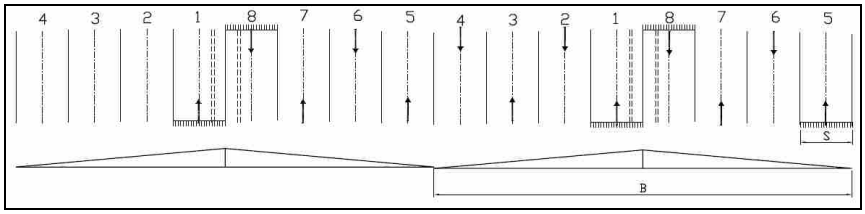
If you select the rhythm **"8"** entering from the **right side** of the field, **B2** must remain connected and **B1** must be disabled.The two coulter discs on the left side will be disabled at bouts 8 and 1

Enter bout "4"

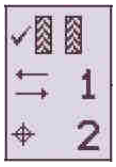


This rhythm is appropriate for

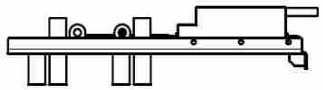
Seed-drill S (m)	*Sprayer* B (m)
3	24
3.5	28
4	32
4.5	36
5	40



EXAMPLES OF LEFT-SIDE ASYMMETRICAL RHYTHMS

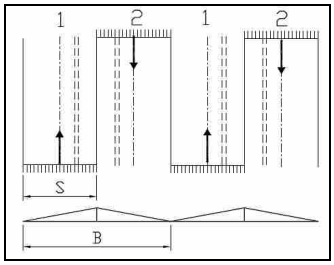


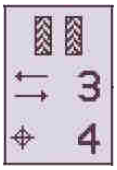
If you select the rhythm **"2"** entering from the **left side** of the field, **B2** must remain connected and **B1** must be disabled.
The two coulter discs on the left side will be disabled at bouts 1 and 2.



This rhythm is appropriate for:

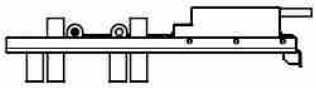
Seed-drill S (m)	*Sprayer* B (m)
3	6
3.5	7
4	8
4.5	9
5	10





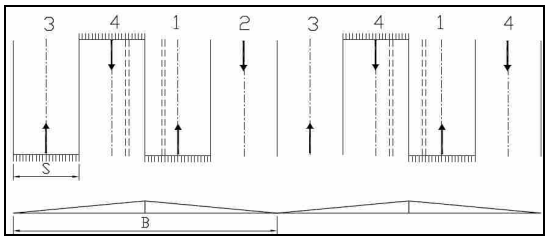
If you select the rhythm **"4"** entering from the **left side** of the field, **B1** must remain connected and **B2** must be disabled.
The two coulter discs on the left side will be disabled at bouts 4 and 1.

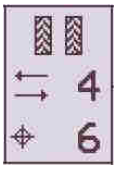
Enter bout "3"



This rhythm is appropriate for:

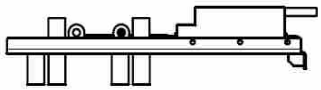
Seed-drill S (m)	*Sprayer* B (m)
3	12
3.5	14
4	16
4.5	18
5	20





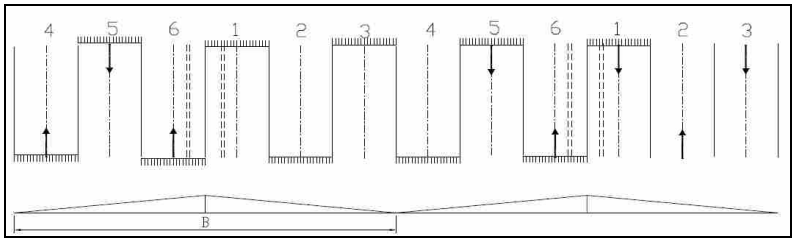
If you select the rhythm **"6"** entering from the **left side** of the field, **B2** must remain connected and **B1** must be disabled. The two coulter discs on the left side will be disabled at bouts 6 and 1

Enter bout "4"



This rhythm is appropriate for:

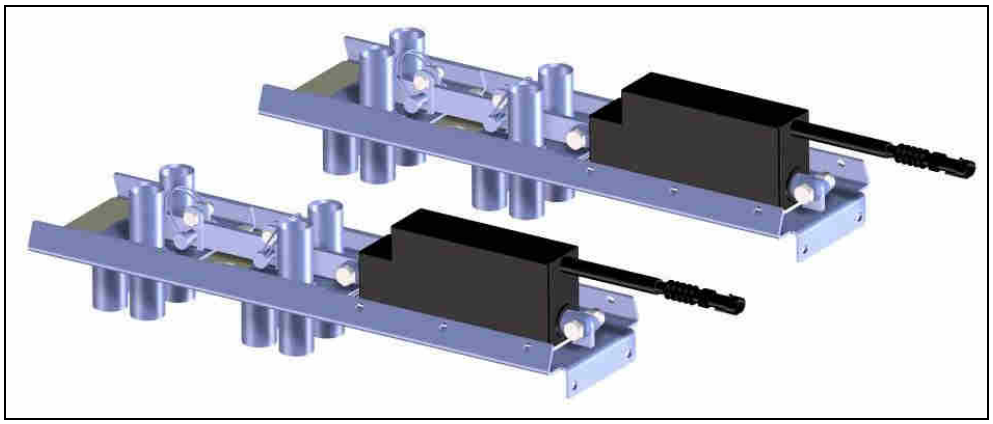
Seed-drill S (m)	*Sprayer* B (m)
3	18
3.5	21
4	24
4.5	27
5	30



5.1.4. SPECIAL RHYTHMS (DOUBLE SLIDING)

The computer includes programs of special asymmetrical tramlines which are necessary to make possible the use of sprayers having widths, which are not direct multiples of the width of the seed-drill.

In order to make this possible, it is necessary to add a second tramline sliding shut-off valve (option).

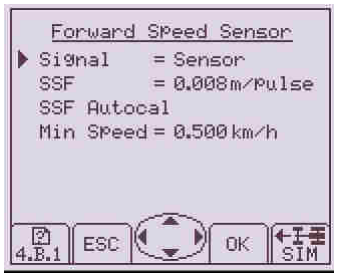


The following chart lists the special programs for the width of the seed–drill and the width of the sprayer

PROGRAM NO.	WIDTH OF SEED-DRILL	WIDTH OF SPRAYER
8-pass	4.5m	12m
	6m	16m
10-pass	4.5m	15m
	6m	20m
14-pass	4.5m	21m
	6m	28m
16-pass	4.5m	24m
	6m	32m
22-pass	4.5m	33m
	6m	44m

5.2. PROGRAMMING MENU FOR THE FORWARD SPEED SENSOR

Go to screen shot **4.B.1** (see par. 4.4)



Through the middle key move the cursor to:

Signal:	It mentions the device by which the speed is recorded (cannot be modified)
SSF 0.008 m / imp:	Speed rate devoted to the registration of the speed by the radar (can be modified through the middle key) 0.008 is the standard radar value, however, IT IS ADVISABLE to perform an AUTOMATIC CALIBRATION TEST in the field, as described in paragraph 5.3.1, to obtain a more precise value of the forward speed, and, therefore, of the number of hectares worked by the machine.
Autocalib.:	Automatic calculation of the speed rate through 100 m test run in the field . (see par. 5.3.1)
Speed:	Minimum speed below which the speed alarm will be activated (this value can be modified through the middle key).

Press ESC to go back to the previous page.

5.3. RADAR AUTOMATIC CALIBRATION

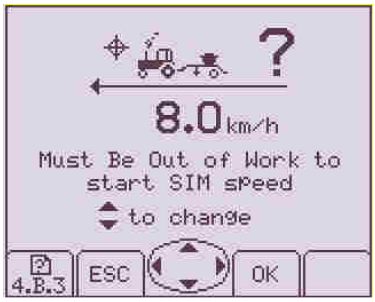
Go to screen shot **4.B.2** (see par. 4.4)

1. Mark and measure a straight path of 100 meters with an instrument suited to verify the measurement.

2. Start working with the machine during the test and press the key under the **"OK"** icon
3. Drive the 100 meters at the desired working speed and maintain the speed as constant as possible

4. Start working with the machine during the test and press the key under the **"OK"** icon
5. The new speed rate will be stored in the instrument.

5.4. SET SIMULATED FORWARD SPEED

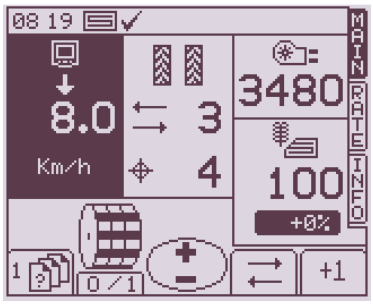


Go to screen shot **4.B.3** (see par. 4.4)

Should a malfunction occur in the radar, it is possible to simulate the desired forward speed; by pressing the middle key in the direction of the arrows, as shown in the icon, the speed rate will be modified

- Lift the machine, so as to lower the pin of the micro-switch
- Press the key under the "OK" icon to activate the simulated speed.

For each modification remember to press **"OK"** to confirm the new data.



In the MAIN screen shot the section of the forward speed will be modified as shown in the screen shot at the left.
Whenever the machine is lowered to the ground in its working position, even when the tractor is not moving, the rotational speed of the metering unit is proportional to the simulated speed; in the example, the speed of the metering unit is already 8 Km/h, even though the machine is "idle".
The pre-start function cannot be used.

In order to disable the simulated speed, go back to screen shot 4 and press the key under the 

icon.

Check the simulated forward speed; the calibration test will be performed at this speed.

5.5. PROGRAMMING MENU FOR THE SEED-DRILL WIDTH

Go to screen shot **4.B** (see par. 4.4)

In this screen shot it is possible to set / modify the width of the seed drill.
Through the middle key move the cursor to "Width", press the key under the **"OK"** icon and, always using the middle key, change the width and enter by pressing the key under the **"OK"** icon.

5.6. PROGRAMMING MENU FOR THE MANUAL ADJUSTMENT OF THE CALIBRATION RATE

Go to screen shot **4.B** (see par. 4.4)

In this screen shot it is possible to manually modify the calibration rate.

Usually this rate is calculated through the calibration test by the computer or through the relevant switch.
However, the operator may record:

- The type of seed
- The quantity of seed (value entered into the RATE screen shot)
- The opening position of the metering unit
- The value of the calibration rate obtained from the calibration test,

so that, by entering these data, the calibration test can be dispensed with in future drilling operations

5.7. PROGRAMMING MENU FOR THE CALIBRATION TEST FROM THE MONITOR

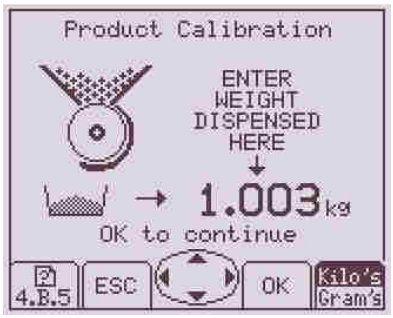
Go to screen shot **4.B.3** (see par. 4.4)

N.B: BEFORE DOING THIS, MAKE SURE YOU HAVE ENTERED THE DESIRED QUANTITY OF SEED IN THE "RATE" SCREEN-SHOT (SEE PAR. 4.6)

While the hopper is empty shut off completely the alveolar rotor with the crank (see Owner's Manual of the seed – drill).
From the seed chart attached to the seed drill calculate, depending on the type and quantity of seed to be distributed, the opening rate of the alveolar rotor and, using the crank, make it coincide with the value marked on the indexed tag. (see Owner's Manual of the seed–drill).
Do not shut the alveolar rotor with seed inside the metering unit: it would cause the breaking of the metering elements.
Remember to weigh the (empty) container before performing the calibration test.
-Place the container under the opening for the calibration test of the metering unit (see Owner's Manual of the seed –drill).

Enter the seed quantity (through the keyboard) which you wish to obtain from the calibration test and press the key under the **"OK"** icon to confirm the value.

Wait for the metering unit to fill up the container for the calibration test.



As soon as the metering unit stops rotating, a screen shot like this one will appear.
Weigh the container and enter into this screen shot the Net weight obtained through the use of the middle key
Once you have entered the weight press the key under the **"OK"** icon to confirm the value.

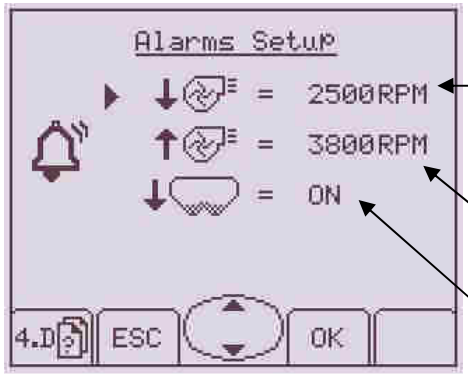
After the weight has been entered and confirmed, the following screen shot will appear. It will display the following data:

- The value of the calibration rate Kg /revolution of the preceding calibration test
- The value of the calibration rate Kg /revolution of the calibration test you have just performed
- The error between the two preceding tests
- The max. speed at which the metering unit guarantees a constant distribution of the seed

It is of the utmost importance for the values to be confirmed by pressing the key under the **"OK"** icon for the values to be actually stored.

5.8. PROGRAMMING MENU OF FAN / SEED-LEVEL ALARMS

Go to screen shot **4.D** (see par.4.4)



It shows the minimum speed of the seed distribution fan below which the monitor will display the min. RPM alarm

It shows the maximum speed of the seed distribution fan above which the monitor will display the max. RPM alarm

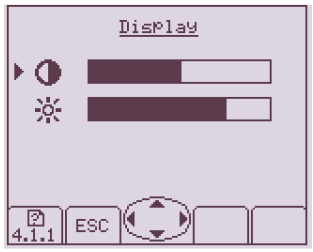
It indicates that the seed-level sensor has been activated.
Press ESC to go back to the previous page.

5.9. MENU FOR THE OPERATOR'S CONFIGURATION

Go to screen shot **4.1** (see par. 4.4)

By pressing the middle key in the direction of the arrows as shown in the icon (of the key) the cursor is moved to the various titles of the menu and by pressing the key under the "**OK**" icon the following screen shots are accessed:

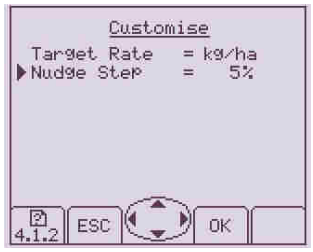
Press ESC to go back to the previous page.



Select title **1** (Display)

By pressing the keys under the arrows you can adjust the contrast and the brightness of the screen

Press ESC to go back



Select title **2** (Customise)

Measuring unit = It is possible to change the calibration measuring unit in the RATE screen shot : **Kg/ha** or **Seeds/m^2**

Interval = It is possible to enter the percentage increase or decrease steps in the Rate display

Whenever you modify a datum, remember to press **"OK"** in order to confirm the new data.

Select the title 3 (time /date)
By pressing the middle key in the direction of the arrows as shown in the icon you can enter the hour / minutes / day / month / year.

Whenever you modify a datum, remember to press **"OK"** in order to confirm the new data.

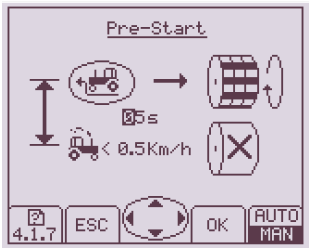
Select title **5** (Language)

By pressing the middle key in the direction of the arrows as shown in the icon you can select the desired language.

Whenever you modify a datum, remember to press **"OK"** in order to confirm the new data.

By selecting title **6** "Motor Reminder" you choose to activated an acoustic alarm ON whenever the motor is blocked by lifting the machine.

In the OFF mode this alarm is disabled.



By selecting title **7**" (Pre-Start)

By pressing the middle key you select the period of time necessary to simulate the speed of 0.5 Km/h above which the radar will take control of the rotational speed; this speed is modifiable (see par. 4.3)

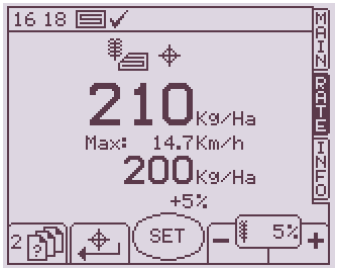
By pressing the key under the 

icon you can select the automatic or the manual Pre-Start (see par. 3.5.4 e 3.5.5)

5.10. CALIBRATION TEST THROUGH THE SWITCH ON THE MACHINE

While the hopper is empty shut off completely the alveolar rotor with the crank (see Owner's Manual of the seed – drill).
From the seed chart attached to the seed drill calculate, depending on the type and quantity of seed to be distributed, the opening rate of the alveolar rotor and, using the crank, make it coincide with the value marked on the indexed tag. (see Owner's Manual of the seed –drill).
Do not shut the alveolar rotor with seed inside the metering unit: it would cause the breaking of the metering elements.

Remember to weigh the (empty) container before performing the calibration test.
-Place the container under the opening for the calibration test of the metering unit (see Owner's Manual of the seed –drill).
- turn on the monitor



Go to screen shot "RATE" and enter the quantity of seed to be distributed, then press the key under the **"OK"** icon to confirm the value.

Press push-button **A** and keep it depressed (see picture) for as long as it takes to fill the container sufficiently

A screen shot like this one will appear and the value of the weight will begin to increase as the seeds drop into the calibration test container

Release the push button **A** and a screen shot like the one at the left will appear

Weigh the container with appropriate scales and record in this screen shot the net weight obtained, then press the key under the **"OK"** icon to confirm the value.

After the weight has been entered and confirmed, the following screen shot will appear. It will display the following data:

- The value of the calibration rate Kg /revolution of the preceding calibration test
- The value of the calibration rate Kg /revolution of the calibration test you have just performed
- The error between the two preceding tests
- The max. speed at which the metering unit guarantees a constant distribution of the seed

It is of the utmost importance for the values to be confirmed by pressing the key under the **"OK"** icon for the values to be actually stored.

IT IS ADVISABLE TO PERFORM SEVERAL CALIBRATION TESTS IN ORDER TO OBTAIN A HIGHER PRECISION.

Once the calibration tests have been completed and the data have been confirmed, the seed drill is ready for drilling.
N.B.:It is always necessary to perform the calibration test for each type of seed to be drilled.

6. DIAGNOSTIC

6.1. DIAGNOSTIC - ISTRUMENT

Volts supplied by the battery

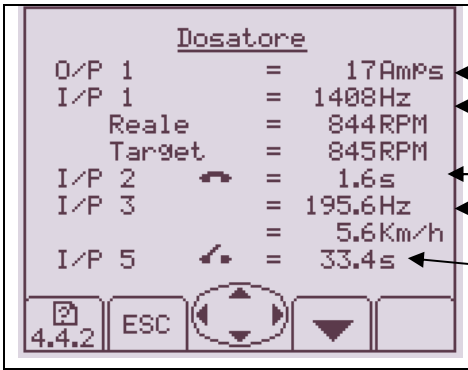
Seed level1 ; 12V full hopper ; 0V empty hopper (series) **(N1)**

Seed level 2 ; 12V full hopper ; 0V empty hopper (opt)

Row-marking discs **(G-D)**

Fan ; 64-71 Hz optimum speed **(T)**

6.2. DIAGNOSTIC – METERING UNIT



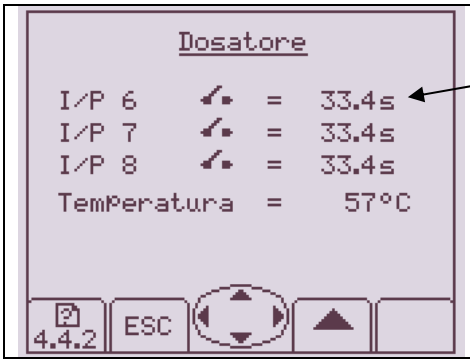
0/P 1 Tension required by electric motor

I/P 1 speed of electric motor from encoder;
Actual=real target=theoretical

I/P2 metering unit rpm sensor **(S)**

I/P3 Forward speed **(RADAR)**

I/P5 Switch for calibration test **(Y)**

	**I/P6** Micro-switch on upper link, Area Cut out **(X)**

6.3. DIAGNOSTIC – HYSTORY

	
	Total area covered by the system MCM Not Conn= It displays the number of times the MCM module has not been connected It displays the total number of revolutions performed by the electric motor

7. MAINTENANCE

7.1. NORMAL MAINTENANCE

The normal maintenance is limited to the cleaning of the computer.
Clean the computer with a damp cloth and a delicate detergent to avoid erasing the screen printing on the panel

Warning:
Do not use high-pressure jets. Do not use abrasive detergents or solvents.

7.2. REPLACEMENT OF THE SAFETY FUSES

To replace the safety fuse against short circuits proceed as follows:

- Disconnect the computer from the electric supply line;
  Remove the safety guards and the fuse and replace it with one having the same characteristics 40 A

Warning

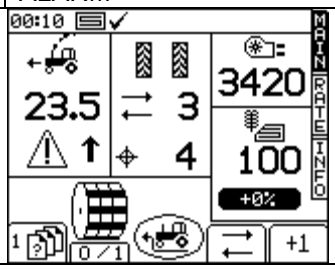
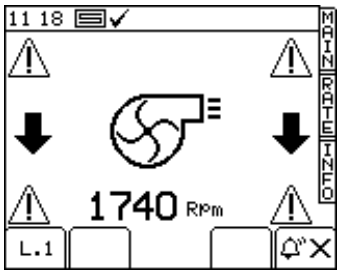
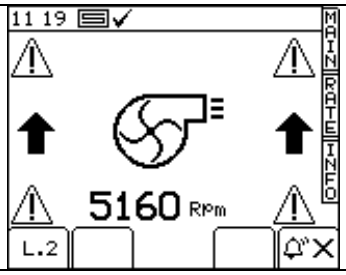
Do not use fuses with higher values or direct wiring connections which would severely damage the computer, which, in turn, would void the warranty

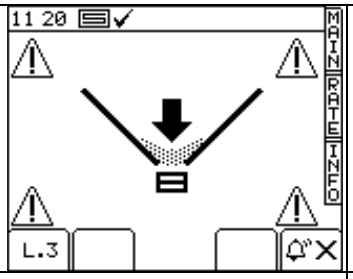
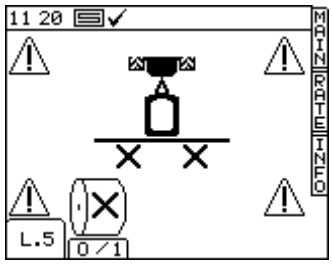
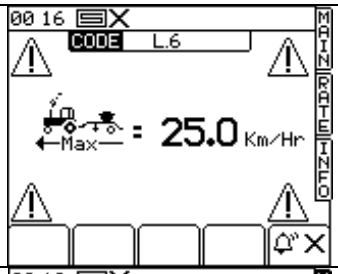
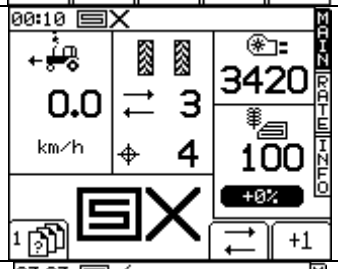
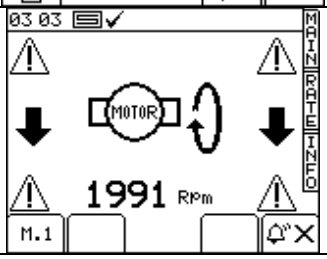
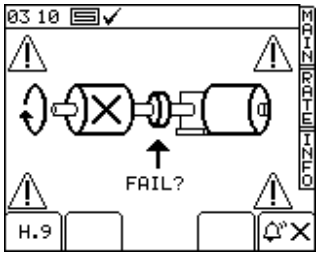
7.3. MAIN CONNECTOR PROTECTION

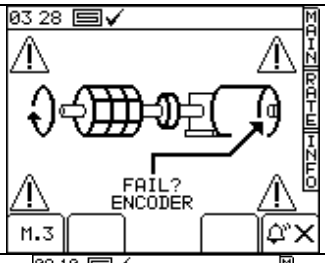
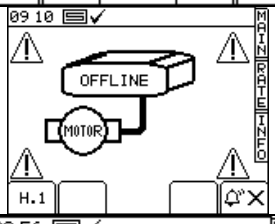
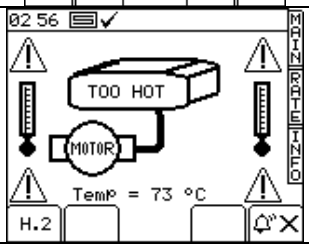
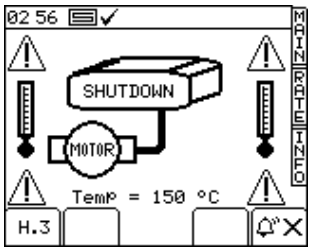
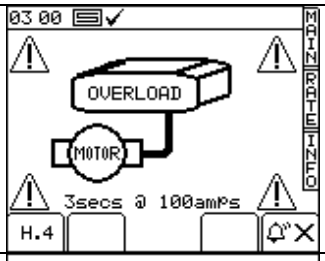
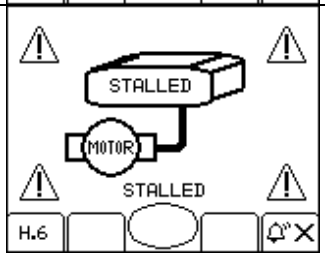
Should the instrument remain idle for a long period of time, it is advisable to disconnect the main connector **C** (of the computer) and **D** (sensor cable) and to insulate them from the environment. It is enough to protect them by covering them with the protecting caps (see electric wiring par. **2.1**)

7.4. SPECIAL MAINTENANCE

Operations of special maintenance are to be performer exclusively by authorized personnel.

CODE	ALARM	DESCRIPTION OF ALARM	TROUBLE SHOOTING
N/A		**High forward speed** The forward speed exceeds the max. speed calculated by the system in the **« RATE »** screen shot	Adjust the metering unit so as to increase the rate Kg/rev. (Kg per revolution) then repeat the calibration test in order to increase the calculation of the max. forward speed
L.1		**Low rpm of the DISTRIBUTION fan** The number of the fan RPM is lower than the min. speed programmed in the alarm menu	- Increase the pressure in the circuit of the fan motor - Check that there are no oil leaks from the hoses or the motor - Adjust the magnetic sensor more precisely - Check the software setting **page 4.7 "Fan"**
L2		High rpm of the DISTRIBUTION fan The number of the fan RPM is higher than the max. speed programmed in the alarm menu	- Decrease the pressure in the circuit of the fan motor - Adjust the magnetic sensor more precisely - Check the software setting page 4.7 "Fan"

L3		**Low seed level** The seed no longer covers the level sensor in the rear hopper	Fill up the hopper with seeds
L5		The motor of the metering unit is not working	- The motor does not work, because the press-button for the manual blocking of the motor has been pressed in the main screen shot (**MAIN**) Press it again to make it work (<u>with the tractor moving forward and the micro-switch disabled</u>), otherwise ignore the alarm, if you wish to work without drilling
L6		**Maximum forward speed**	- Depending on the calibration rate, this is the max. speed which can be reached If it is too low, increase the opening of the metering unit and adjust with a new calibration test
N/A		**Area Cut out (Not drilled area)** It blinks 1 second in 3 when the system is idle	The power harrow is lifted from the ground, the pin of the micro-switch is triggered, the motor is idle and the tramline is increased by one bout. Lower the power harrow to the ground and resume working: the micro-switch is no longer triggered and it allows the motor to rotate
M.1		**Low rpm of the electric motor** The error between the recorded rpm and the calculated rpm exceeds 10%	- Check the battery voltage (12.7Volt - 13.5 Volt) - Change the opening of the metering unit and modify the calibration rate so as to decrease the electric motor rpm.
M2		**The metering unit is not turning**	- Visually make sure that there are no broken elements in the transmission between the metering unit and the electric motor (this operation is to be performed with the disconnected wiring) - Check the distance between the sensor and the magnet - Check that the magnet is present on the shaft of the metering unit - Check the setting of the software

M3		**No signal for the motor rpm is received** The motor no longer adapts the rpm of the metering unit to the forward speed. The motor may have stopped	Check the wiring between the motor and the module Make sure that the connectors are properly tightened Make sure that the screw attaching the wire to the module is completely tightened
H1		**The MK2 module controlling the motor is disconnected from the motor**	Check the wiring between the motor and the module and make sure that the 16-way connector is well tightened
H2		**The module of the electric motor is "too hot"** The temperature of the module exceeds the programmed value of **81℃**	Check if the motor turns slowly An excessive load has been applied to the motor, which over a long period of time has caused the motor module to overheat
H3		**The module of the electric motor is turned off due to excessive heat** The temperature of the module exceeds the programmed value of **90℃**	Check if the motor turns slowly An excessive load has been applied to the motor, which over a long period of time has caused the motor module to overheat The module will not re-start until it cools down to a temperature of **67.5℃**
H4		**The module of the electric motor is turned off due to a power overload** The power required by the motor is excessive **(**more than **17 A**) so as to turn off the module and prevent the motor from working	The motor is stalling Too much dragging or an excessive resistance of the metering unit requires too many amperes from the motor
H6		**The motor is stalling**	Make sure there are no blocks/hindrances in the metering unit Disconnect the motor from the metering unit and make sure that both turn without excessive hindrances. Check the motor and the gearbox

NOTE:

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