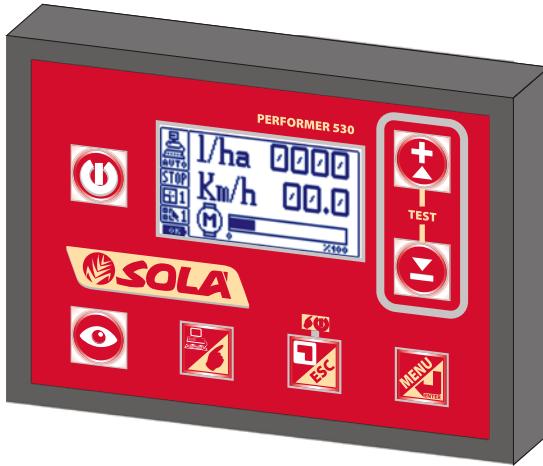


PERFORMER 530



ELECTRONIC EQUIPMENT for
[LIQUID and] MICRO-GRANULAR PRODUCTS DISTRIBUTION CONTROL



TECHNICAL ASSISTANCE and USER INSTRUCTION

COD. 11711501 EN - REV. 05
software ver. 3.2



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1 GENERAL

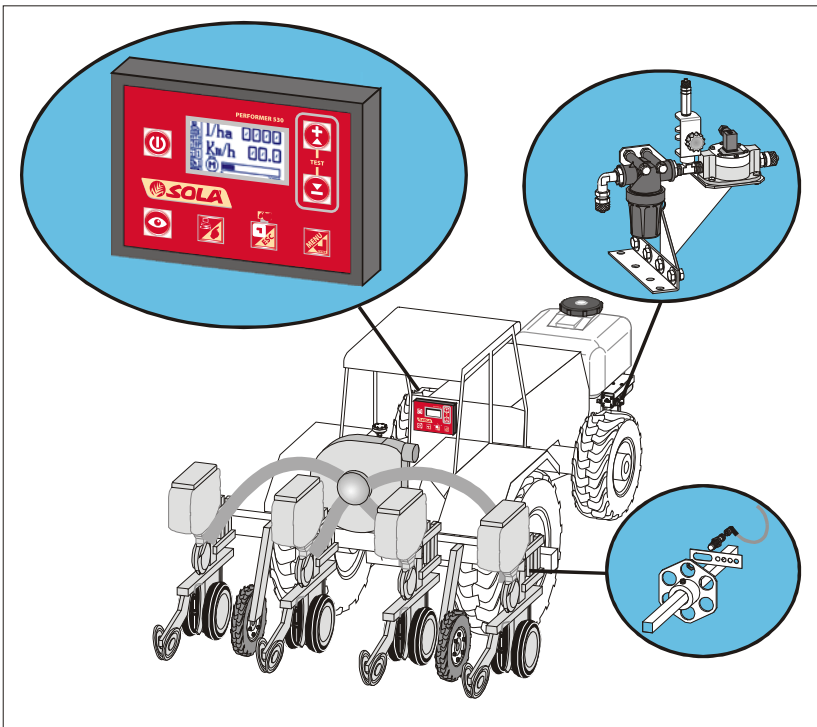
These instructions include the “**USER INSTRUCTION**”, as well as the last section “**CUSTOMER SERVICE USE INSTRUCTION**” reserved to the Customer Service operators.

2 INTRODUCTION

Congratulations for having chosen PERFORMER 530.

This equipment was especially designed and manufactured to automatically adjust the distribution of [liquid and] micro-granular products for agriculture, according to the means speed and to the quantity of product to be distributed for each hectare.

Any use with products or for applications other than specified is to be avoided and is at the risk and responsibility of the person using it.



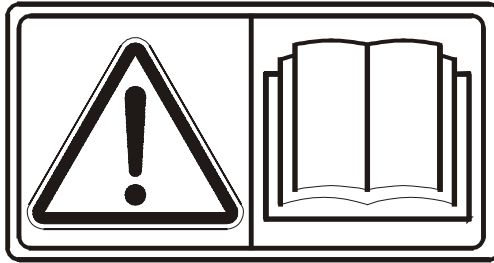
3 SAFETY

The PERFORMER 530 equipment was especially designed and manufactured to automatically adjust the distribution of [liquid and] micro-granular products for agriculture, according to the means speed and to the quantity of product to be distributed for each hectare.

Any use with products or for applications other than specified is to be avoided and is at the risk and responsibility of the person using it.

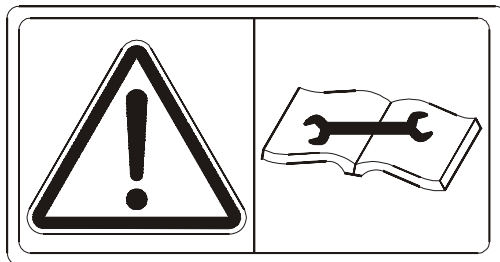
The company accepts no responsibility for any improper use of the kit.

Always comply also with the instructions and recommendations of the manufacturer of the products to be distributed.



Carefully read these instructions before assembling or using PERFORMER 530 and, if necessary, contact your dealer or the manufacturer.

Carefully read also the instructions of the fittings and components to be connected to PERFORMER 530.



We especially recommend you to stop the motor(s) and disconnect the PERFORMER 530 power cable before carrying out any conversion or maintenance operation.

The PERFORMER 530 unit complies with IEC 61-33, IEC EN 60335-2-60 applicable standards.



4 DESCRIPTION

The standard PERFORMER 530 equipment consists of a case, whose front cover has 7 function keys, and a graphic 128x64 pixel LCD display.

All the parameters can be programmed through simple operations clearly displayed on the LCD display.

PERFORMER 530 operates with a 12-Volt continuous current power supply and is usually connected to the battery.

Several devices may be connected to PERFORMER 530. They are suitable to enable the performance of required functions. These devices, as well as their connections, may be different for the various PERFORMER models.

The Standard model includes:

- distributed product detection sensor (e.g. flow meter, encoder, etc.);
- speed of travel detection sensor. It can be supplied:
 - inductive sensor (standard), or
 - GPS sensor; or
 - cable for the ISO 11786/DIN socket of the tractor; or
 - magnetic sensor;
 - or connect to a compliant radar or GPS;
- continuous current variable-speed motor control to adjust distribution;
- distribution adjusting valve;
- On/Off valve control.

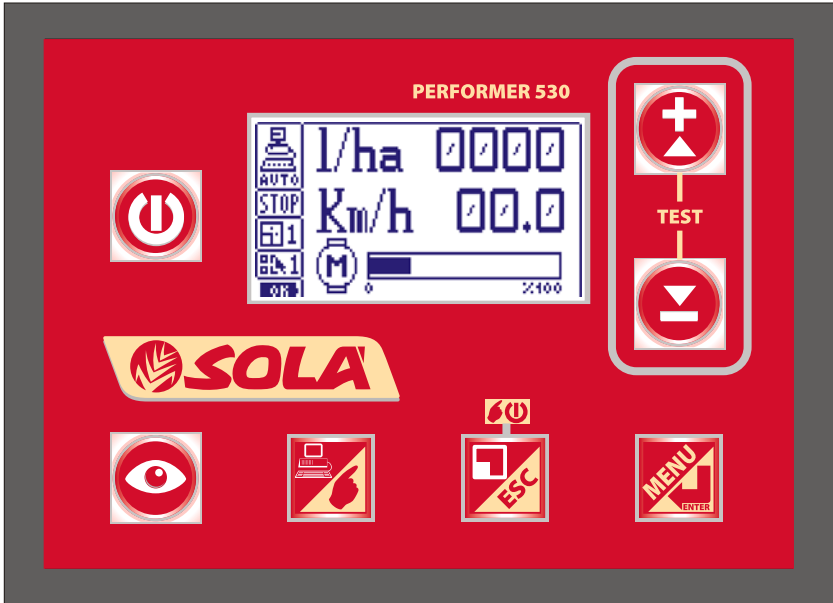
At your request, it is also possible to connect the following devices:

- a distribution enabling external sensor (Start/Stop);
- an output for buzzer or failure warning light.

The following device is also supplied:

- internal sensor checking the proper power supply of the battery.

DESCRIPTION





5 ASSEMBLY

Below is described the assembly of a Standard PERFORMER 530. Your PERFORMER 530 can lack some fittings or may be preset for a particular operation.



Operators, who are skilled in the operation of the machine onto which it is applied, should carry out the assembly of PERFORMER 530.

The operators should also be expert in mechanical and electric applications. More than one skilled operator, for instance a mechanic and a car electrician, may also carry out the assembly.

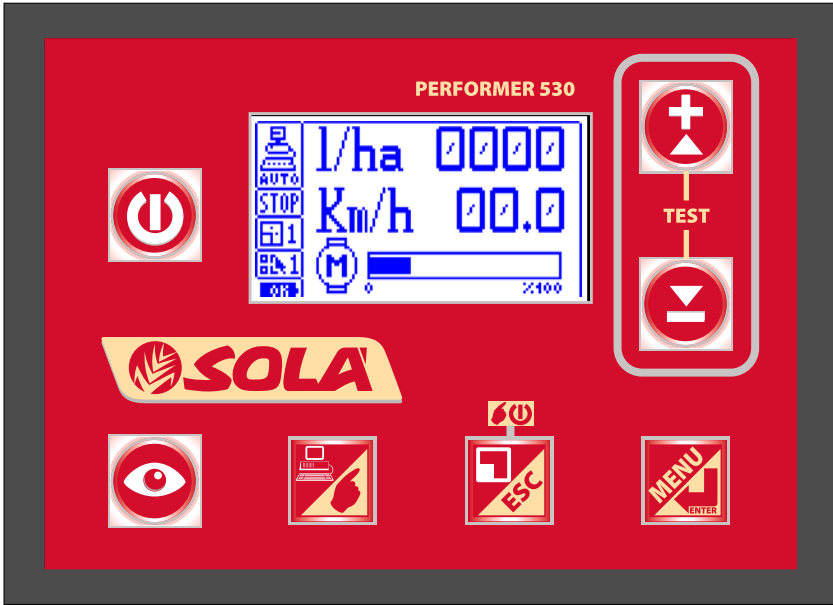
The operations should be carried out by means of suitable tools and instruments.

The manufacturing firm declines all and any responsibility for damages to persons or things, due to an improper and non-workmanlike assembly.

Check that the PERFORMER 530 model complies with the specifications of the machine, onto which it is to be installed (number and type of devices to control and special model of the machine to be adjusted, if any).

Below are reported some general warnings and information for the assembly of PERFORMER 530; before carrying out the equipment assembly and connection, it is also necessary to verify the specifications and compatibility of the different devices and sensors both with the PERFORMER 530 equipment and with the machine or equipment to be adjusted.

The following instructions may be applied in a different manner. Sometimes, it is necessary to use different instructions in order not to create problems to the machine operation or to the distribution of the products. In case of doubts, contact your dealer or the manufacturer.



Find a comfortable position that is easily accessible to the operator to fix the unit; use the supplied bracket or make a bracket to fasten the unit by means of the two screws with wing nut bolts that are placed on the unit rear side. The unit has a power cable 2,5m long with fuse and a standard 3 pin 25A ISO 12369 plug.

It must be connected to an outlet with adequate capacity, according to the polarity: RED wire to the positive pole (+) and the BLACK wire to the negative pole (-). Make sure that the contacts are properly executed

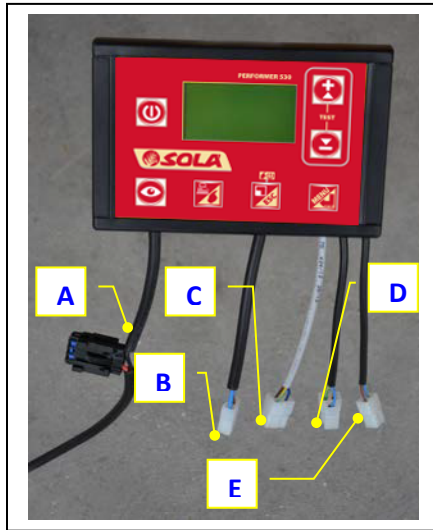
If the polarity is reversed, the unit fuse will blow: in this case, properly connect the wires with the correct polarity and replace the blown fuse with the one supplied.

Always use fuses having the same capacity as the original fuses. Never assemble fuses with higher capacities.

**WARNING**

The PERFORMER 530 unit should only be powered with 12-VOLT DIRECT CURRENT.

EXAMPLE OF CONNECTIONS TO STANDARD PERFORMER 530 FOR MOTOR CONTROL AND ADJUSTMENT.



Connect the standard PERFORMER 530 as follow:

- A. Board tension 12Vdc (fuse 10A or 15A) general alimentation.
Wires: red: +12V; black (-): ground.

- B. Piloting motor exit.

2 pins black cable with connector for the connection from 12Vdc moto reducer to 12 Volt direct current, maximum up to 10A or 15A.

Wires: brown: +12V; blue (-): ground.

- C. Speed source input.
3 pins grey cable with connector for the connection of one advance speed sensor.
Wires: brown: +12V; blue (-): ground; yellow/green: signal.

- D. Moto reducer encoder input.
3 pins black cable with connector for the connection of one distributed product sensor (e.g.: encoder, flowmeter).
Wires: brown: +12V; blue (-): ground; yellow/green: signal.

- E. START / STOP signal input.
2 pins black cable with connector for the connection of one sensor or one switch to control the distribution start and stop.
Wires: blue (-): ground; brown: contact return.

Arrange the cables of the different devices close to the control unit, following the most suitable path, and fasten them with cable clamps or otherwise.

Make sure that the unit is off.

1. Connect the motor cable connector to the relevant two-pole connector on the unit;
2. connect the speed of travel detection sensor grey cable connector to the relevant three-pole connector on the unit;
3. connect the distributed product detection sensor (e.g.: flow meter, encoder, etc.) black cable connector to the relevant three-pole connector on the unit;
4. if provided, connect the cable from the start / stop sensor to the respective two pin connector of the control unit with black cable.



6 USE MODE

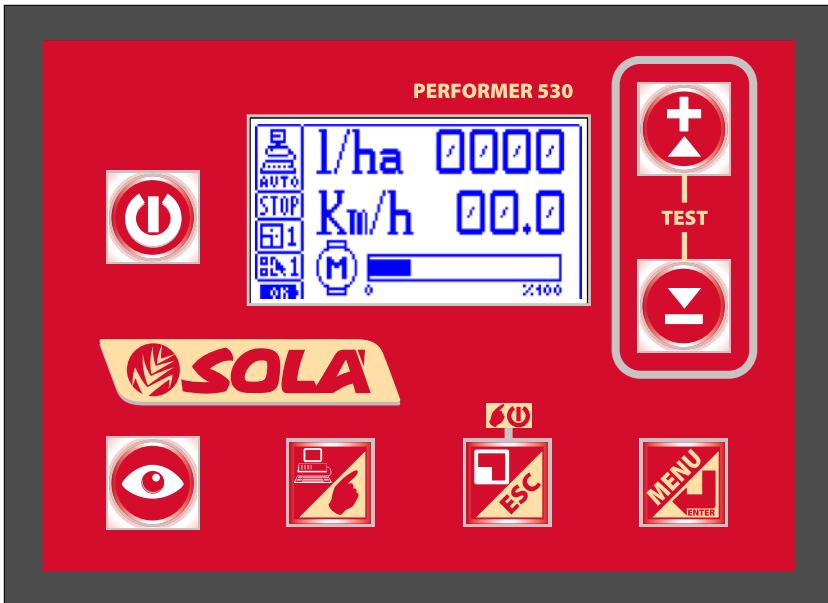
The PERFORMER 530 equipment was especially designed and manufactured to automatically adjust the distribution of [liquid and] solid products for agriculture, according to the means speed and to the quantity of product to be distributed for each hectare.

Any use other than specified is to be avoided and is at the risk and responsibility of the person using it.

It is advisable to verify the compatibility of the products to be distributed before starting any operation.

We recommend you to perform a preliminary calibration test before starting the work, as well as to carry out periodic checks.

PERFORMER 530 consists of a case, whose front cover has 7 keys to control all the different functions, and a graphic LCD display.



Motor operation

The Motor operation envisages the connection to a motor (e.g. ratio-motor or electric pump or other device) and represents the primary operation of PERFORMER 530, but it can be disabled if the unit has mainly been pre-set for a different operation.

Valve operation (if pre-set and enabled)

The Valve operation enables to control a motor-operated adjusting valve, along with a solenoid valve or a motor-operated exhaust valve.

In this operating mode, the motor icon on the display turns into a butterfly valve and the intensity and direction of delivered pulses are displayed next to the icon. The exhaust valve icon is also present. The exhaust valve is usually open, but it will close once the adjustment operation starts.

Measure operation (if pre-set and enabled)

The Measure operation enables to use PERFORMER 530 as a measuring device.

Essentially, all the measurements of the standard operation are carried out without having to perform any adjustment.

In addition, the delivery percentage error compared to the pre-set quantity is displayed, by any means.

Selectable programs (if pre-set and enabled)

PERFORMER 530 can store 10 different delivery programs. Any program is unrelated to the others; they only share the plots. The selected program is shown over the battery icon. The default program is not displayed, while the others are shown with a progressive number from 1 to 9.

Plots

PERFORMER 530 allows displaying the counters (if enabled) corresponding to the measurements performed in the different plots, up to a total number of 9, as well as the Grand Total.

The Grand Total counter is displayed also when the plots are not enabled.



6.1 FUNCTION KEYS



ON/OFF (0/1) key

It enables to switch the PERFORMER 530 unit on and off.



DISPLAY (VIS) key

- it enables to change the display on screen, allowing to view the three screens that describe the on going activities;
- during the calibration stage, it resets the counters (m/imp and imp/Kg [imp/l]).



MENU or ENTER (ENT) key

- it enables to access the different menus;
- it selects the required item;
- it confirms and stores set data;
- pressed for at least 5 seconds enables to access to Customer Service Menu.



+ key

- it increases the data to set;
- it scrolls upwards the menu items;
- on switching on, if pressed at the same time as the “-” key, it enables to access the TESTS;
- when the machine is not running, allows to change the plot number on which is desired to work.



- key

- it decreases the data to set;
- it scrolls downward the menu items;
- on switching on, if pressed at the same time as the “+” key, it enables to access the TESTS.



AUTO/MAN key

- it enables to switch from AUTOMATIC to MANUAL operating mode and vice versa;
- during the tests, it allows quitting TEST.



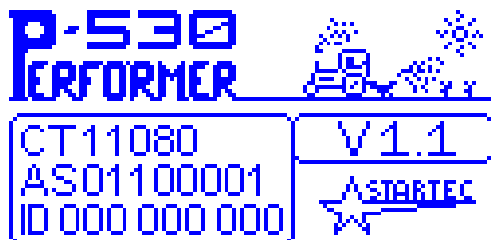
ESC or MANUAL RUN / STOP (CLR) key

- it enables to exit the menus;
- it enables to exit the pre-setting step without saving;
- in MANUAL and TEST mode, it enables to start/stop (RUN/STOP) the operation;
- it resets the measured values of the displayed plot.



6.2 SWITCHING ON

Press the "0/1" key to switch the unit on and start its operation; the display below appears on the screen (the figures on the right hand-side of the letter V, show the version):



After 3 seconds approximately, the main screen appears, it contains the operating condition of the machine, as well as the following information:

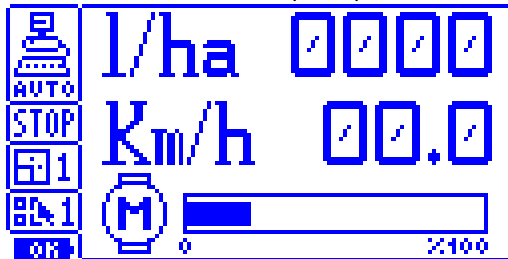
- the AUTO-MAN operating mode (when switched on, the equipment always starts in Automatic Mode);
- the RUN-STOP active or inactive distribution;
- on screen 3 the number of the working plot corresponding to the work program used; could be modified by using the keys "+" and "-".

When the box is light and no number appears, it means that the default program is running.

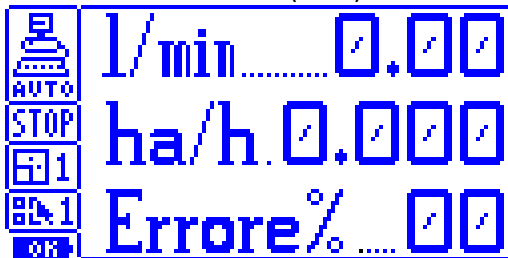
The battery symbol shows the power supply level: when the whole battery symbol is dark and the word OK appears, also during operation, the power supply level is good; on the contrary, when the battery symbol shows some light sections, the power supply level is low or insufficient.

When switched on, the equipment always starts from screen 1.
 Below are shown the three different possible screens obtained by pressing the “VIS” key:

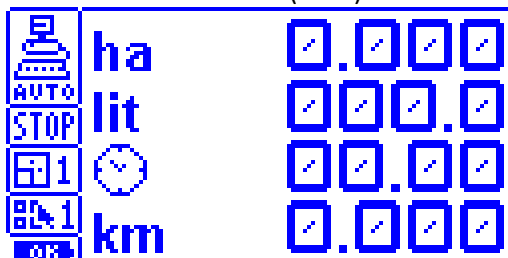
Screen V1 (“V1”)



Screen V2 (“V2”)



Screen V3 (“V3”)





“V1” screen

The first screen (V1) shows: the quantity per hectare (Kg/ha [l/ha]) measured during operation, the speed of travel expressed in Km/h, the activation or not of the distribution (Start or Stop) and the percentage of motor activation (or of the motor-operated adjusting valve condition).

“V2” screen

The second screen (V2) enables to check: the quantity delivered per minute, the hectares tilled per hour and the value of the product distribution percentage error.

“V3” screen

The third screen (V3) displays the number of the plot being examined, along with: the hectares tilled, the quantity of distributed product, the number of hours of operation and the kilometres covered in the plot.

The plots represent the different allotments that have been tilled.

The data are updated only for the displayed plot.

In addition, the plot corresponding to the total of plots is always updated.

If enabled, the plots are 9 plus the Grand Total (displayed by the letter "T" in correspondence of the “plot” entry).

The measurements of the Grand Total are displayed also when the plots are not enabled.

The information concerning the distributed product may be expressed in kilograms [litres], with one decimal figure when the total displayed is lower than 10.

When the machine is not running, using the “+” and “-” keys, it is possible to shift from one plot to another; while, by keeping the “CLR” key pressed for about 3 seconds, the data concerning the displayed plot are reset.

To simultaneously reset all the plots, it is necessary to enter the User Menu and to select the “Reset Plots” item.

NOTE



If the management of plots is not enabled, this screen only shows the figures of the plot total counter.

6.3 OPERATING MODES

PERFORMER 530 has three operating modes: **AUTOMATIC**, **MANUAL** and **TEST**.

The **AUTOMATIC MODE** (“**AUTO**”) is pre-set by default when the machine is switched on. In this mode, when the equipment is operated, the product starts being delivered according to the data that have been programmed. The adjusting mechanism tries to keep the quantity of product to be distributed per hectare as much as possible steady. If the speed drops below the work minimum speed programmed value, or when the enabling sensor, if present, is closed, the delivery is stopped. When the delivery is stopped, anyhow the delivered product calculation continues.

The **MANUAL MODE** (“**MAN**”) is used to empty or to wash the equipment and to distribute the product in an even and non-proportional to progress manner.

It is enabled, by pressing the “**AUTO / MAN**” key,



when the machine is not running and the equipment is in Automatic Mode. In this mode, when the display shows screen 1, it is possible to manually start the motor and to adjust its speed.

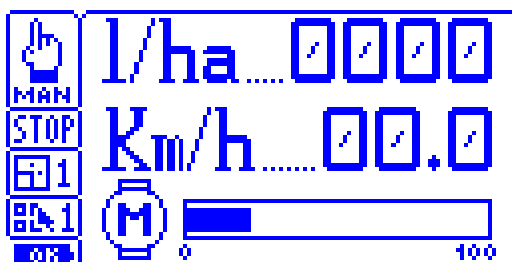
The motor speed may be set using the “+” and “-” keys also when the motor is stopped, then, it is necessary to shortly press the “**RUN / STOP MAN**” key to start it.



In this mode, the distribution sensor is irrelevant. The pre-set motor speed remains stored also when the motor is switched off and then on again.



The Manual Mode default display is shown below:



In this mode, also the Automatic Mode screens can be displayed.

As you may notice, the screen shows the same data as the Automatic Mode: the only difference is that the motor speed is not automatically adjusted, but should be set and adjusted by the user.

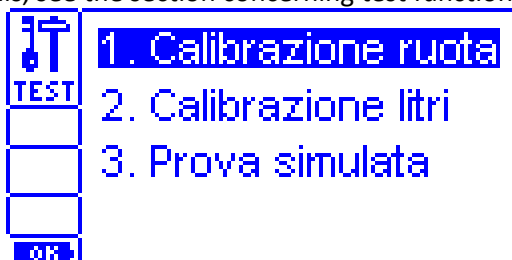
NOTE



The Manual Mode can be activated also when the machine is running, but only when this operation is enabled in the Customer Service Menu.

The “TEST” Mode is activated by pressing and keeping the “+” and “-” keys simultaneously pressed for a few seconds while the machine is switched on. Once the main screen has been displayed, as shown below, it is possible to select one of the three possible functions: Progress Calibration, Product Calibration and Simulation.

For further details, see the section concerning test functions



In this mode, the other screens cannot be displayed.

7 PROGRAMMING

PROGRAMMING MENU

Using a menu, it is possible to pre-set the system operation parameters.

To access the User Menu, you only need to shortly press the “MENU” key.



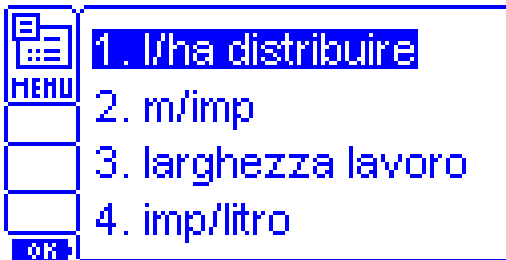
A list of the available items, preceded by an identification number, appears on the screen: using the “+” and “-” keys, it is possible to shift from one item to the other, whereas, using the “ENT” key, it is possible to enter the parameter and change its value.

The “ESC” key enables to exit the menus.

Once you have selected an item, you can change it by means of the “+” and “-” keys.

To confirm the data entered, press “ENT”, on the contrary, to exit without saving, press “ESC”.

Below is shown a standard menu screen:



This menu enables to set the operation parameters of the machine.

Below are listed all the available items. If some items do not appear on the menu of your machine, it means that these items have not been pre-set or enabled.

If you think you need them to be enabled, turn either to your dealer or to the Customer Service or to the manufacturer.



1. kg/ha [l/ha] quantity

By means of this parameter, it is possible to enter the kilograms [lites] to be distributed per each hectare. The parameter range varies from 1,0 to 1000: up to 99,9 Kg/ha [l/ha], there is an increase by 0,1 kilograms [liters], while over 99,9 Kg/ha [l/ha], the increase is by 1 kilogram [liter].

The unit of measure may be turned into l/ha [kg/ha], if enabled.

2. Program selection

By means of this parameter, it is possible to select the work program among the 10 selectable programs from 0 = Default to 9.

NB: the parameter is displayed only when the management is enabled.

3. m/imp progress

By means of this parameter, it is possible to enter the distance covered by the machine per each pulse of the progress sensor.

The parameter range is included between 0,010 and 2,500 meters with increases by 1mm.

It may usually be obtained, by dividing the distance covered for a complete revolution of the shaft where the sensor is mounted for the number of pulses per each revolution.

In general, it is simple and accurate to use the calculation automatic procedure of TEST – Progress Calibration. See section “TEST”.

4. Total width

This parameter allows setting the useful work width for each run.

The parameter range varies from 0,50 and 25,0 meters with increases by 1 cm. This parameter is displayed, if the “Total Width” item has been selected from the “Width Management” menu in the Customer Service Menu.

5. Number of rows

The parameter allows setting the number of rows in the machine.

This information, along with the “Distance of Rows” parameter, allows calculating the work width. The number of selectable programs is included between 1 and 99. This parameter is displayed, if the “Management of Rows” item has been selected from the “Width Management” menu 8 in the Customer Service Menu.

6. Distance of rows

This parameter allows setting the distance between one row and the following one in the machine. This information, along with the “Number of Rows” parameter, allows calculating the work width. The distance between one row and another may vary from 5 cm to 2,5 m. This parameter is displayed, if the “Management of Rows” item has been selected from the “Width Management” menu 8 in the Customer Service Menu.

7. imp/kilogram [imp/liters]

This parameter allows setting the delivery sensor impulses per kilogram [liter].

The parameter range varies between 10 and 65000: up to 2500 the increase is by unit, over it is by 10.

In general, it is simple and accurate to use the calculation automatic procedure of TEST – Progress Calibration. See section “TEST”.

The unit of measure may be turned into imp/l [imp/kg], if enabled.

8. Adjustment feedback

This parameter allows setting the adjustment feedback speed.

The range varies between 1 and 9: high figures show a quick feedback, while low figures show a slower feedback.

In case of a motor equipped with an encoder, to adjust the product distribution, feedback figures included between 6 and 9 are usually used.

In the case of an electric pump and of a flow meter, feedback figures between 2 and 4 are generally used.

NB: the parameter is displayed only if this management is enabled.

9. Dosage change

This parameter allows setting the quantity to be added to or deducted from the programmed dosage to be delivered for each pressure of the “+” and “-” keys during the standard automatic working cycle.

The figures may vary from 1,0 to 100 kg/ha [l/ha].

NB: the parameter is displayed only if this management is enabled.



10. Dosage error

This parameter allows setting the percentage of distribution error; when this threshold is exceeded, a dosage error is notified.

The parameter varies between 5 and 50% with steps by 5%.

NB: the parameter is displayed only if this management is enabled; when it is disabled, the item is not operative.

11. Unit of measure

This parameter allows setting the unit of measure to be displayed: the possible figures are Kg/ha [l/ha] and all the other data in kilograms [liters].

NB: the parameter is displayed only if this management is enabled.

12. Plots reset

This parameter allows resetting the measurements of all the plots, as well as of the Total Plot

The possible figures are: “1÷9” or “1÷ Grand Total”.

NB: the parameter is displayed only if the plot management is enabled.
The total counter can be reset, only if the zero setting is enabled

13. Minimum Km/h for operation

This parameter allows setting the minimum speed, under which the distribution should be stopped. The calculation of the time needed to calculate the minimum speed is performed, therefore, when this time is exceeded, the distribution stops. The maximum time, anyhow, is 5 seconds. The range of this parameter varies from 0,3 to 3,0 Km/h.

NB: for work speeds lower than 4 Km/h, set the “minimum Km/h for operation” parameter lower than the work speed of 0,5 - 1 Km/h.
For higher work speeds, set the maximum value, that is to say 3 Km/h.

The parameter is displayed only if this management is enabled.

14. Motor activation percentage

This parameter allows setting the motor starting speed percentage in Automatic Mode at the beginning of the operation. The parameter varies between 5 and 100% with increases by 5%. There is a further parameter before 5%, that is to say the “= =%” parameter. This figure is used, when the motor has not a high starting effort (e.g. sowing machines for vegetables). In this mode, the motor starting percentage, after the first start up, is equal to the one of the last stop.

NB: the parameter is displayed only if the plot management is enabled.

15. Operation

This parameter enables to specify the type of PERFORMER 530 operation. Three types may be selected: Motor, Valve and Measure.

16. Program name

This parameter enables to choose a name for each selected program (e.g. program 1 = “SPINACH”, program 2 = “CORN”, etc.).

The name can consists in 10 characters maximum belonging to the following set: “space” A B C through Z () * + - / 0 1 through 9: ; < = > ? and will be displayed on top of the main working screen (screen 1).

- Setting the name:

Select the first character, using the arrow keys (+ and -) and confirm it by means of the “ENT” key. You will notice that the cursor (shown by the “PENCIL” symbol) shifts by one position, so that the second character may be entered.

The character entering procedure will stop when all the 10 characters have been entered or when you confirm the “PENCIL” symbol by means of the “ENT” key.

If you press the “ESC” key or when you have not pressed any key for a long time, the previously entered name will be displayed.



- Changing the name:

To change the name, it is possible to confirm each single character by pressing once one of the arrow keys and then the “ENT” key to shift to the following character or to change it, by pressing many times the suitable arrow key and then pressing the “ENT” key to confirm and shift to the following character.

The change procedure will stop when all the 10 characters have been entered or when you confirm the “PENCIL” symbol.

Warning: The characters entered after the “PENCIL” symbol will be deleted.

17. Language

This parameter enables to set the language used for the light displayed messages. The available languages are: Italian, English, French, German, Spanish and Portuguese.

18. LCD contrast

This parameter allows adjusting the LCD display contrast.

19. LCD brightness

This parameter allows adjusting the LCD display lightness brightness.

8 TEST

Test Mode

By entering this mode (simultaneously pressing the “+” and “-” keys while switching the equipment on), you will access the menu for the selection of the procedure to be performed, as shown in the section “Use Mode – Operating Modes”.

The different functions that are available are shown below.

8.1 PROGRESS CALIBRATION

When accessing this function, the impulses detected by the speed sensor, the meters covered and the m/imp calculation appear on the screen.

The calibration procedure consists in the following steps:

1. set the meters per impulse (m/imp) on item “3 metres/impulse Progress” in the User Menu, according to the manufacturer’s instructions (one parameter should already be pre-set);
2. starting from meters and impulses set at zero, make the machine cover a known length path (for example, 20 meters);
3. check the value of covered meters on the display;
4. if the value does not tally with the length that has been actually covered, adjust the covered meters up to the actual length (20 meters) using the “+” and “-” keys;
5. the actual m/imp are automatically calculated and displayed in the m/imp box;
6. record this new calibration datum;
7. shortly press the “MENU” key to access the programming menu, shift to the “3. m/imp progress” item and press “ENT” to access the parameter. The new calibration datum is displayed.
To confirm the datum, press “ENT”, whereas, to exit without saving press “ESC”.
8. exit the Test Mode by switching the PERFORMER 530 equipment off, then switch it on again, access the menu and check the new datum;
9. if necessary, perform the test again to check it further.



8.2 PRODUCT CALIBRATION

When accessing this function, the following figures are displayed on the screen: the impulses detected by the kilograms-counter, the kilograms that have been delivered, the imp/kilogram [imp/l] and the motor activation percentage.

Perform the calibration procedure by doing the following steps:

1. set the imp/kg [imp/l] on item "7 Impulses/Kilogram" ["7 impulses/liter"] in the User Menu, according to the manufacturer's instructions (the parameter should already be preset);
2. fill the product tank with a known quantity of product (or measure the product once it has been distributed);
3. start the motor by means of the "RUN/STOP MAN" key; if necessary, adjust the speed using the "+" and "-" keys;
4. once the delivery is completed, switch the motor off by means of the "RUN/STOP MAN" key";
5. the display shows the number of detected impulses and the quantity of delivered product; If the product quantity is not correct, you can change the quantity of calculated kilograms [liters], using the "+" and "-" keys;
6. record this new calibration datum;
7. shortly press the "MENU" key to access the programming menu, shift to the "7 Impulses/Kilogram" ["7 impulses/liter"] item and press "ENT" to access the parameter.

The new calibration datum is displayed. To confirm the datum, press "ENT", whereas, to exit without saving press "ESC".

8. exit the TEST Mode by switching the PERFORMER 530 equipment off; then switch it on again, access the menu and check the new datum;
9. if necessary, perform the test again to check it further.

8.3 SIMULATION

By accessing this function, it is possible to simulate the standard automatic adjustment operation without moving the machine.

This mode is useful to check the correct setting of parameters and the speed at which the adjustment is most effective.

The main screen (screen 1) is shown on the display: the test starts by pressing the "RUN/STOP MAN" key at a speed of 5 Km/h.

Using the "+" and "-" keys, (both in STOP and in RUN mode), you can change the speed of travel of the machine and check how it affects the motor adjustment.

Keep in mind that it is easier to adjust the motor if the operation graphic bar is in the middle or never close to one of the two ends by any means

Eventually adjust the ratio setting with a better one.

Exit the Test Mode by switching the PERFORMER 530 equipment off.



9 OPERATION

Once you have entered the "AUTO" mode, the machine is ready to start working.

As soon as the first pulse comes from the speed sensor, the motor is started according to the activation percentage pre-set for programming parameter 13.

Afterwards, by means of the pulses coming from the speed and delivery sensors, the distribution is adjusted according to the calculated speed and taking into account the programmed adjustment feedback factor.

It is obvious that more the means speed is steady, more accurate is the adjustment. All the displayed figures are updated every second.

When the machine speed drops below the figure set for parameter 12 "Minimum Km/h for Operation", the adjustment is stopped and will be resumed when the same speed plus an hysteresis of 0.4 Km/h is exceeded.

NB: for work speeds lower than 4 Km/h, set the "minimum Km/h for operation" parameter lower than the work speed of 0,5 - 1 Km/h.

For higher work speeds, set the maximum value, that is to say 3 Km/h.

If the distribution-enabling sensor has been assembled, it makes the system perform a distribution pause.

In this mode, the motor is stopped and, therefore, the calculations of the surface and of the working time are stopped apart from the delivered product calculation, if any. In any case, the speed is displayed.

When the sensor gives the triggering to the PERFORMER 530 again, the delivery resumes.

Using the "+" and "-" keys, from screen 1 (Kg/ha [l/ha], Km/h and MOTOR), it is possible to change the delivered quantity according to the value preset for parameter 6 "Dosage Change" in the User Menu: the new value is displayed in the "Kg/ha" ["l/ha"] and in the opposite field for 3 seconds approximately, then the actually delivered quantity is displayed again on the screen.

If the shift from AUTOMATIC to MANUAL during operation is enabled, it is possible to shift from AUTOMATIC to MANUAL mode also when the machine is moving.

From the Automatic Mode and when the machine is running, you only need to press the "AUTO/MAN" key to shift to the Manual Mode: the pump remains activated at the same percentage as the Automatic Mode (of course, it is possible to change the pump speed, using the "+" and "-" keys, as well as to stop the pump by means of the "RUN / STOP MAN" key).

When you press again the "AUTO / MAN" key, the pump control shifts to AUTOMATIC.



10 DISPLAYED MESSAGES

The system includes a functional control of some basic parameters for the proper operation of the PERFORMER 530 equipment.

In case of anomalous values, an error message appears on the screen and, if necessary, the system stops the operation of the equipment.

The following messages may be displayed:

DEFECTIVE MEASURING DEVICE!

It denotes the lack of pulses from kilograms-counters concerning the product to be distributed.

It may be displayed during AUTOMATIC operation.

Check:

- the connection of cables;
- the proper product distribution, pump rotation, presence of pressure, etc.;
- kilograms-counter clogging, jamming, if any, and proper cleaning.

Press ENTER to restart the equipment operation.

MOTOR OVERCURRENT!

It denotes a motor current absorption higher than 10-12 A for a few seconds.

The system stops the motor power supply.

Check:

- the connection of cables;
- pump or distributor clogging or jamming, if any;
- the proper motor rotation and idling.

Press "ENTER" to restart the equipment operation.

Do not persist in restarting the equipment before having removed the cause; repeated starts with a too high current may damage the unit and the motor.

INADEQUATE POWER SUPPLY

The power supply voltage of the equipment is monitored through an analogue input.

In this way, it is possible to supply an accurate display of the battery voltage. The battery symbol, which is shown at the bottom on the left hand side of the screen, shows the battery charge: when the symbol is empty it means that the battery is running down. If the battery voltage drops below the limit value for at least 5 seconds, the “INADEQUATE POWER SUPPLY” message also appears on the screen every 5 seconds for about one second.

In addition, the battery symbol is crossed.

Under these conditions, the reliability of adjustments is not correct.

INCORRECT QUANTITY

If you have previously set the product distribution error percentage, you can check if the dosage falls within allowable limits.

The error percentage is displayed on screen “V2”: when the error exceeds the limit set for parameter 9 “Dosage Error” for at least 5 seconds, the message “Incorrect Quantity” appears on the screen every 5 seconds for about one second and the output for the buzzer or warning light control, if they are connected, is enabled.



11 MAINTENANCE

Once you have finished using the equipment, disassemble and keep the unit and the parts that may be damaged in a safe shelter.

In particular from the weathering and from prolonged direct exposure to the sun.

Before starting any operation and distribution again, it is better to check the equipment: restart the motor and check that it properly works with an antifreeze fluid.

The assembly and disassembly operation should be carried out by qualified operators and by means of suitable tools.

In case of replacement of parts, always replace them with original spare parts.

12 ADJUSTMENT

The products should be distributed according to the quantities and modes recommended by the experts.

Tables and other supplied information, if any, are purely as an indication and may be used to simplify the calibration operation, but the quantities should always be checked.

Keep in mind that temperature variations may change the viscosity and density of products; therefore, the distributed quantity may be different. Periodically check the distribution calibration.

During operation, frequently check that the distributed product corresponds with the tilled surface.

13 **RESERVED SECTION TO THE CUSTOMER SERVICE**

Carefully read these instructions before assembling and using this equipment.

In case of need, contact your dealer or the manufacturer.

13.1 CUSTOMER SERVICE PROGRAMMING MENU

It is possible to set all the system operation parameters by means of a series of menus.

There are two different kinds of menu: **User Menu, Customer Service Menu.**

To access the **User Menu**, you only need to shortly press the "MENU" key.

A list of all the available items, preceded by an identification number, appears on the screen; using the "+" and "-" keys, it is possible to shift from one item to the other, whereas, using the "ENT" key, it is possible to enter the parameter and change its value.

The "ESC" key enables to exit the menus.

Once you have selected an item, you can change it by means of the "+" and "-" keys. To confirm the data entered, press "ENT", on the contrary, to exit without saving, press "ESC".

To access the **Customer Service Menu**, it is necessary to press the "MENU" key for 15 seconds approximately, until a message appears requiring you to enter an input Password. The cursor is located on the first figure on the left-hand side, use the "+" and "-" keys to change the figure and the "ENT" key to confirm and shift to the following figure.

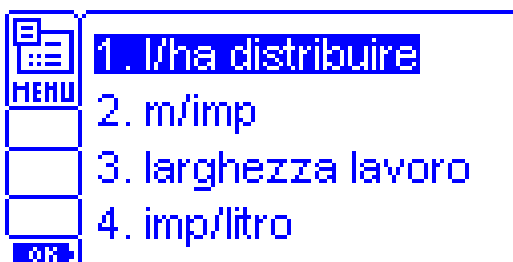
Once the full code has been entered, if it is correct, you will access the Customer Service Menu. The navigation in the menu follows the rules that have been described above for the User Menu.

The default Password of the Customer Service Menu for 1.3 and the following versions is: **1 2 3 4**.

The ID code xxx xxx xxx, which appears for a few seconds when the equipment is switched on, represents the cryptograph of the Customer Service Menu access Password. If the customer forgets the Password, the manufacturer can get it out of this code.



Below is shown the standard screen of a Customer Service Menu:



13.2 CUSTOMER SERVICE MENU

The Customer Service Menu allows the Customer Service centre to enable or disable some functions, so as to make the PERFORMER 530 equipment easily manageable by any kind of user.

It is important to make sure that only the functions that will be used by the customer or that the user is able to use are enabled.

It may be advisable to limit the number of enabled functions, if they can create confusion or be difficult to use.

The available parameters are as follows:

1. Alarm activation

This parameter allows enabling the management of the alarm warning that the delivery is not properly adjusted.

2. Adjustment feedback

This parameter allows enabling the management of the distribution adjustment feedback parameter.

3. Plots

This parameter allows enabling the management of tilled land plots.

4. Dosage change

This parameter allows enabling the management of the distributed quantity increase (or decrease) function during the working cycle.

5. Unit of measure

This parameter allows enabling the display of the alternative unit of measure. It enables to shift from kilograms to litres and vice versa [from liters to kilograms and viceversa].

6. Total reset by the user

This parameter allows enabling the user's possibility to delete the total counter (Total Plot).

7. Work hours

The parameter enables to select the counter hour count type.

It is possible to select the count of the equipment switching-on hours or of the distribution operation hours (default).

8. Width management

The parameter enables to set the type of work width setting. It is possible to choose between "Total Width" and "Management of Rows". According to the selected function, the User Menu will display the "Total Width" menu or the "Number of Rows" and "Distance of Rows" menus respectively.

9. Automatic/Manual

The parameter allows enabling the shift from Automatic to Manual Mode, when the machine is running, by pressing the corresponding key.

10. Minimum Km/h for operation

The parameter allows enabling or disabling the selection of the minimum Km/h value for operation by the user.

11. Motor activation percentage

The parameter allows enabling or disabling the selection of the motor-on percentage value by the user.

12. Motor

The parameter allows enabling or disabling the selection of the PERFORMER 530 operation as motor or pump or positive-displacement pump controller by the user.



13. Valve

The parameter allows enabling or disabling the selection of the PERFORMER 530 operation as controller of a motor-operated valve and of the relevant exhaust valve by the user.

14. Measure

The parameter allows enabling or disabling the selection of the PERFORMER 530 operation as measuring device by the user.

15. Programs

The parameter allows enabling or disabling the user's possibility to access the PERFORMER 530 programs.

16. Change of programs

If enabled, this parameter allows the user to modify the programs and to save the modifications.

If it is disabled, the user cannot modify the parameters of the programs.

17. Exclusion

This parameter allows you to set the action of the external sensor.

- **Pause:** the closed sensor stops distribution, and on the display compares the word "Pause".
- **Start:** the opening of the sensor distribution, also in the absence of feed forward up to 12 seconds; after that, if there is no forward, the feed distribution stops.
Needs to anticipate the distribution referring to forward.
- **Pause + Start:** at the closure of the sensor stops the distribution and "Pause" appears on the display; at the opening starts again the distribution as in Start.

18. "ESC" key

This parameter refers to the additional function of the "ESC" key.
Disabled: disable any additional function of its "ESC" key.

- Pause + Start,
- Start
- Pause

have the same effect as the previous parameter, but the action is activated or disabled by pressing manually the "ESC" key.

19. Width/2

This parameter allows to automatically reduce the working width of 50% to the closing of the contact sensor specially installed.

20. m/imp forward

It allows to select the parameter m/imp forward:

- Prg 0: This parameter is equal for all programs and is used to set the program 0. It is used when you distribute different products with the same machine. By changing the parameter in the program 0 automatically changes the value of this on all programs.
- Prg. 0-10: This parameter m/imp forward can be set individually for each program.

21. Working width

It has the same function of the parameter related to the previous one, with reference to the parameter 'Working width'.

22. Display

The current display is the 2.

Select a range of suitable contrast to display installed.

23. Password

This function enables to change the Customer Service Password.



24. Minimum motor mode

This function allows to manage in two different ways the minimum speed of the motor

- 1 = Standard. The controller adjusts the minimum power of the motor always in function of the required dose and up to zero.
- 2 = the minimum supply of the motor is generated automatically and increases in case of increase of the effort at the start. The minimum supply corresponds to the zero of the percentage of activation of the motor in the view V1 in Automatic Mode. When the unit is turned off, the minimum motor supply is reset.
