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# **Hardi Sonar**

## **Instruction book**

67300102-GB-2000/1



Congratulations on having chosen a **HARDI** crop protection product. This product's reliability and efficiency depend on the care it receives. **Read this instruction book attentively.** It contains the necessary information to enable efficient use and to prolong the life of this quality product.

## Description

The HARDI SONAR control unit, for use in agriculture, is a system that has been devised to save chemical product and to care for the environment. Its main components are:

- Mail control panel
- Encased oleo-hydraulic set
- Ultrasound cells

It is equipped with a programmable analogical signal processor and two ultrasound proximity detectors.

The programming screen is liquid crystal and the displayed information is easily read. It features:

- Clock
- Individual electrovalve On/Off impulse display
- Quick change parameter settings

The main control panel has lever switches for ON/OFF calve operations, and automatic or manual sector opening or closing, individualised throughout. It is also equipped with a digital side counter, wich shows the number of sides of vegetation treated up to that point.

Inside the panel there are the power point connections and the multi-connections. The system's defence fuse, wich protects it against opposing polarities and overloads, is readily accesible.

Connected to the electrovalve protector is the junction box, consisting of a multi-pin connector wich joins them to the ultrasonic cells.

The system has a permanent memory. The base values have already been programmed into the system. The materials and the components' electronics have been developed for many years of agricultural tasks.

The system's function is to detect the tree that needs treating (by means of the ultrasound cells). Automatically a signal is sent to the processor which, after the programmed time lapse, opens the corresponding sector and when it no longer detects the tree waits the programmed time lapse before closing the sector.

The programmed times can be different in each sector, for both opening and closing.

For the Hardi Sonar to work perfectly the maximum width to be detected by each cell is 6 metres and the minimum 60 centimetres.

If in possession of one or more programming cards (they are supplied as an optional extra), different times can be retained for the client wishing to treat fields with different characteristics. The advantage is not having to program the Hardi Sonar in every field to be worked in, but rather by just changing the card the Sonar is programmed automatically.

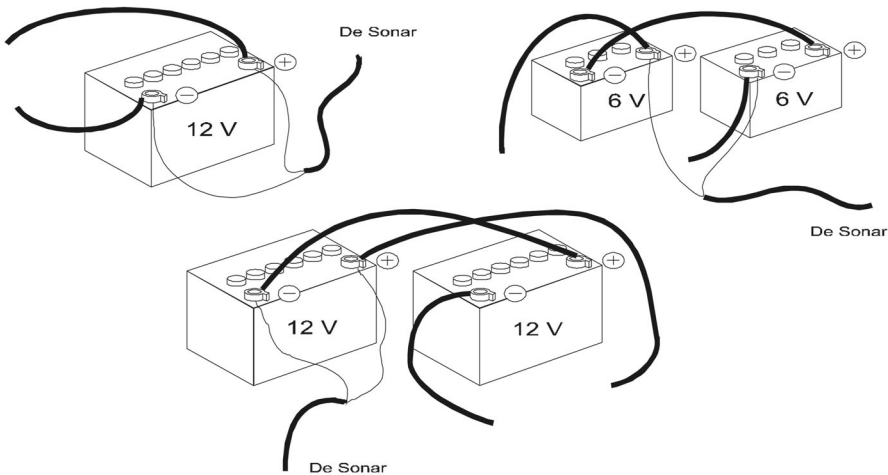
## Power supply

The voltage must always be a constant 12 V.

- \* Brown (+) positive
- \* Blue (-) negative

The power supply must come directly from the battery.

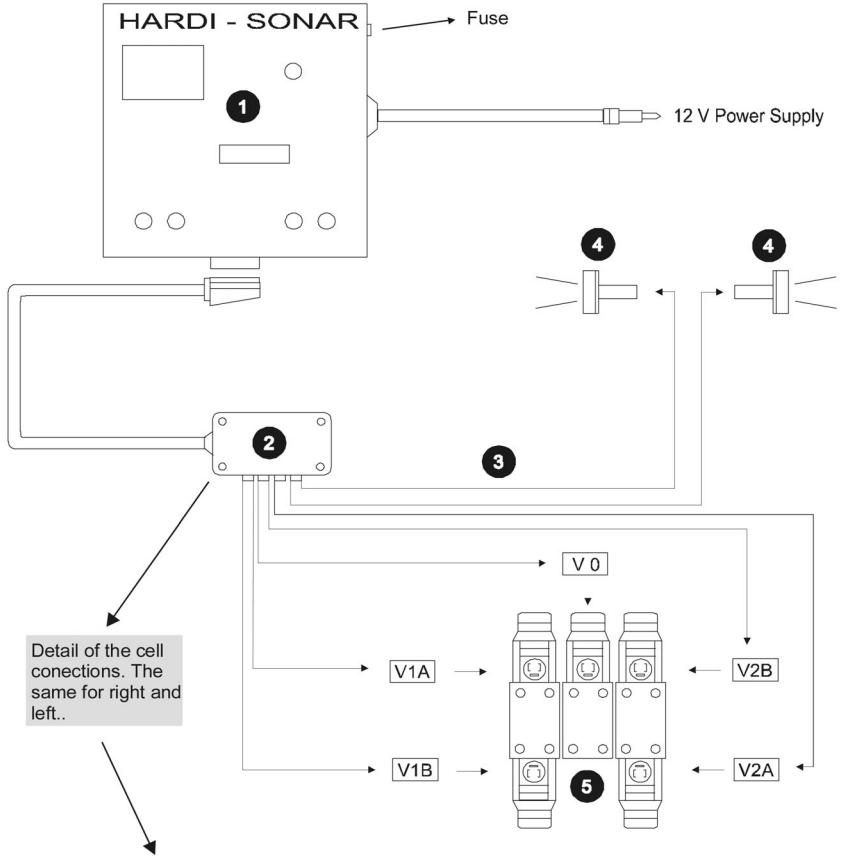
**Warning :** The current must never be taken as it leaves the generator, as the power surges that it produces can seriously damage the system.



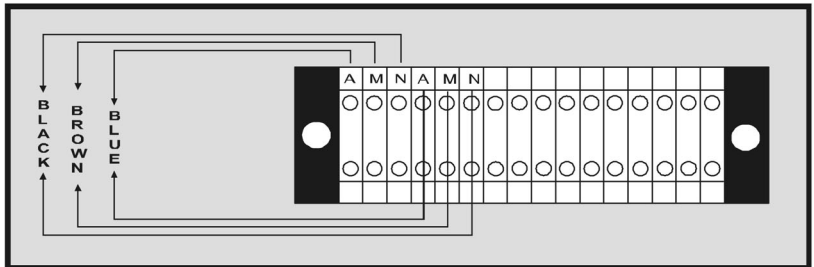


# Assemblage Diagram

- 1 - Control panel
- 2 - Junction box
- 3 - Wires
- 4 - Cells
- 5 - Electrovalves



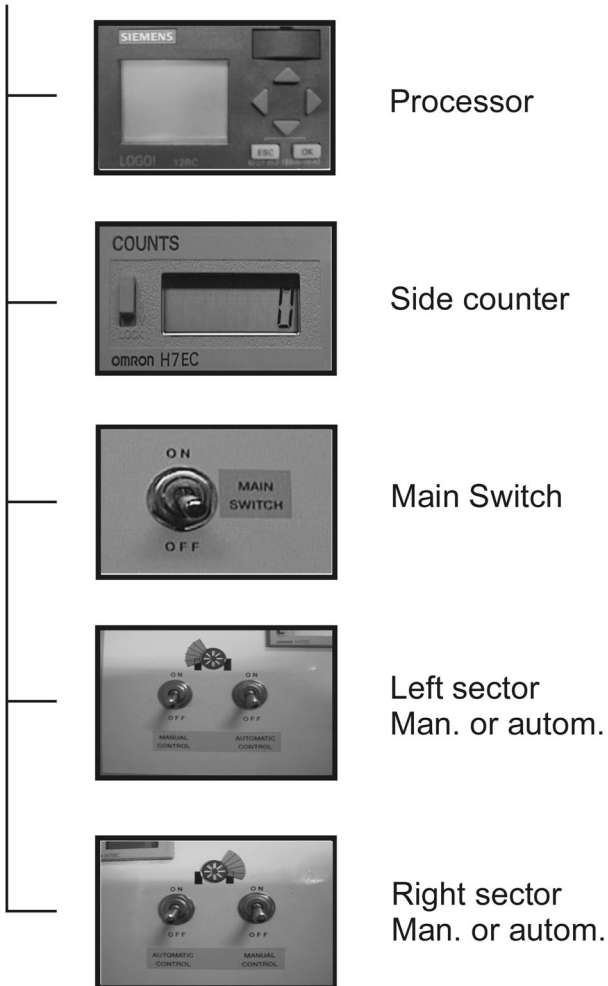
Detail of the cell connections. The same for right and left..



# Hardi Sonar's components

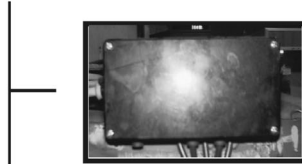


Main control panel





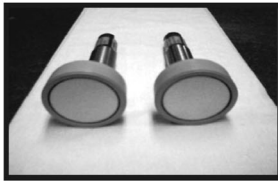
Encased oleo-hydraulic unit



Junction box



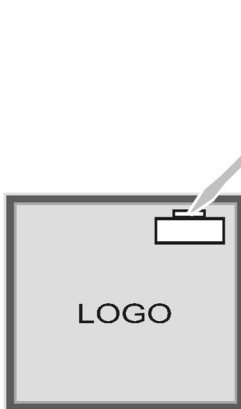
Volumetric operating unit



Ultrasound cells



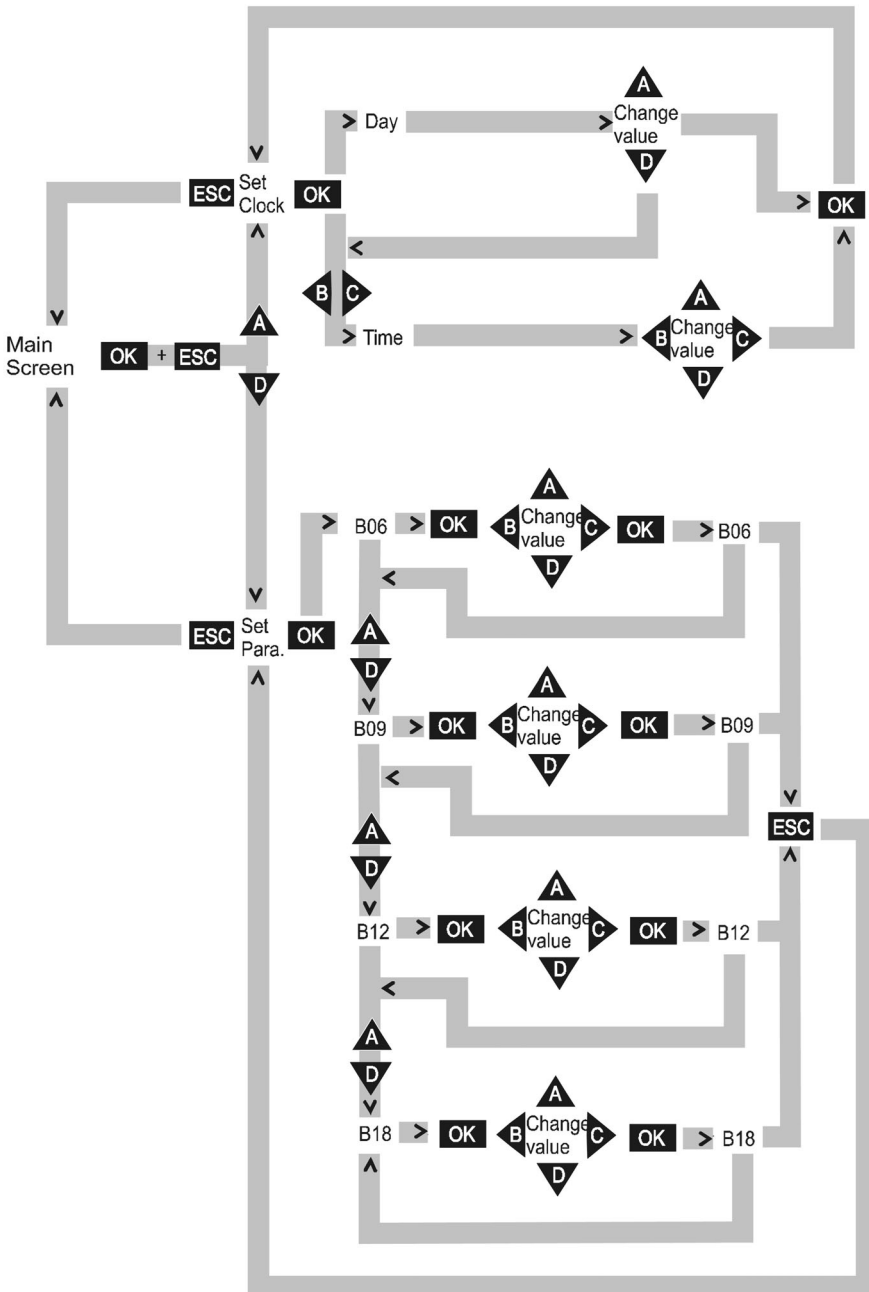
## Guide to changing the card



To change the card a screwdriver should be inserted in the slot and be used to carefully lever out the cover, without damaging either the slot or the cover, and the new card inserted in the place of the previous one.

The new card should be placed in the slot and pressed down with the finger until correctly situated.

# Programming menu for the clock and param.



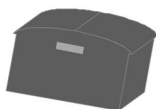
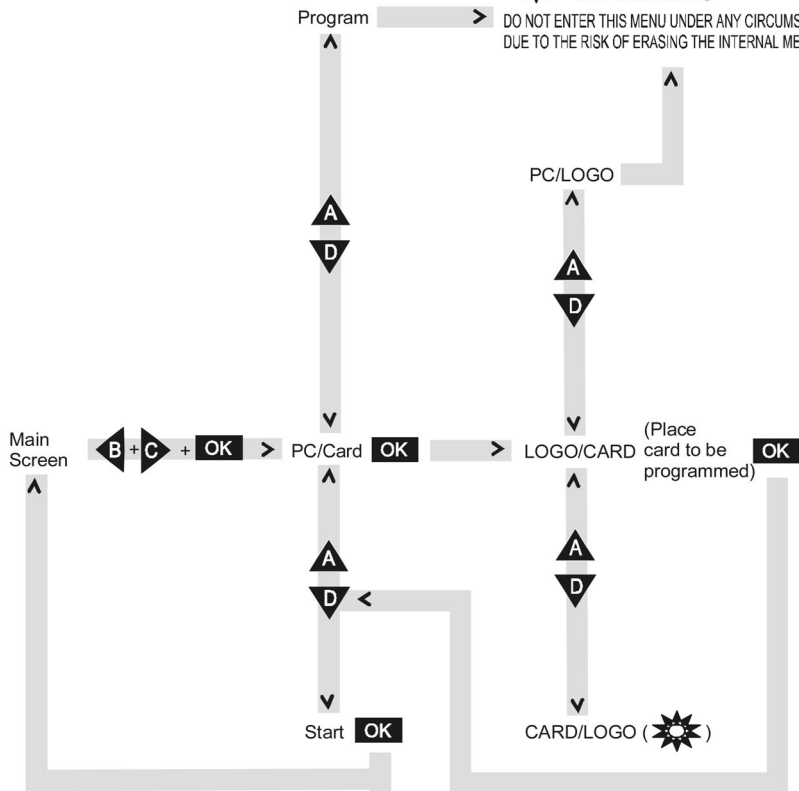


## Card programming menu (option)



### WARNING

DO NOT ENTER THIS MENU UNDER ANY CIRCUMSTANCES DUE TO THE RISK OF ERASING THE INTERNAL MEMORY.



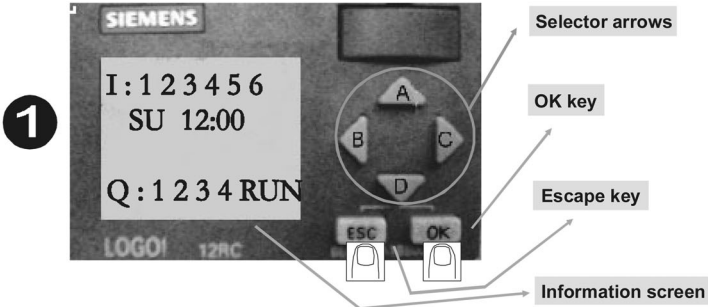
Card Ref. 269056

**Note :** The card is advisable above all when working in different fields where the speeds and treatment times are different. The advantage is that it becomes unnecessary to program the Sonar every time, instead it is only necessary to take out one card and replace it with another.

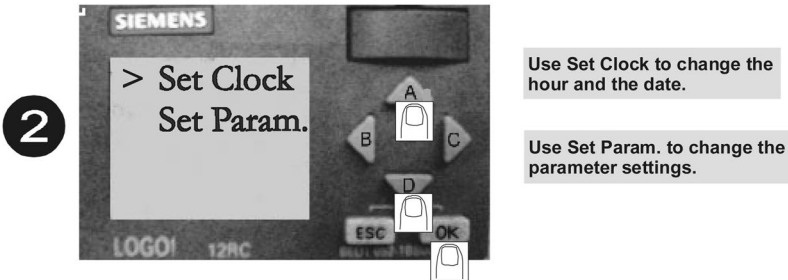


# Clock and parameter programming

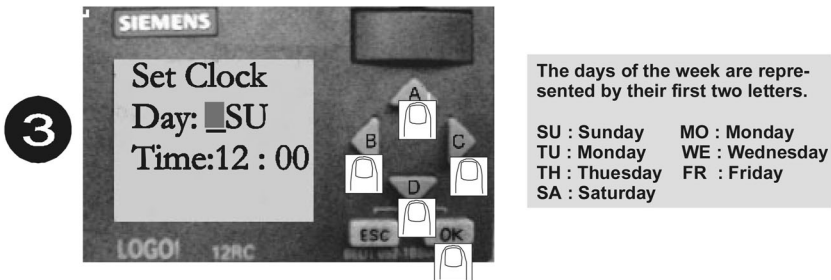
After having connected the Hardi Sonar to the power supply, place the **Main Switch** in the **ON** position and after a few seconds the screen will display.



In order to enter the programming screen the **OK** and **ESC** keys must be pressed at the same time (Fig. 1). Thereon the screen will display:



Select **Set Clock** and **Set Param.**, Press keys **A** or **D** to choose. If **Set Clock** has been selected and **OK** pressed, (Fig.2) screen will display:

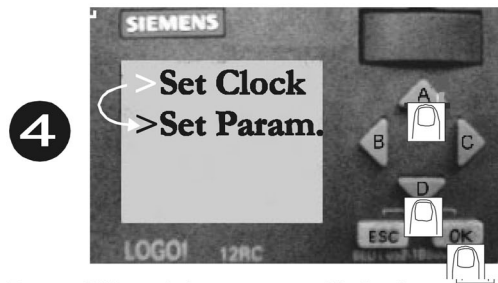


The days of the week are represented by their first two letters.

|               |                |
|---------------|----------------|
| SU : Sunday   | MO : Monday    |
| TU : Tuesday  | WE : Wednesday |
| TH : Thursday | FR : Friday    |
| SA : Saturday |                |

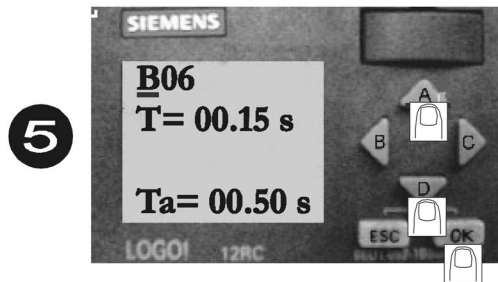
To select the setting to be changed press **B** or **C**. To alter the setting press **A** or **D**. The cursor will change its position to indicate the setting that is being modified.

After changing the settings press **OK** and the display will be that of Fig. 2 once more. If not wishing to program the parameters press **ESC** to return to the main screen (Fig. 1). To reset the parameters **Set Param.** should be selected with the keys **A** or **D** (Fig.4).



This should be on display when Set Param. is selected

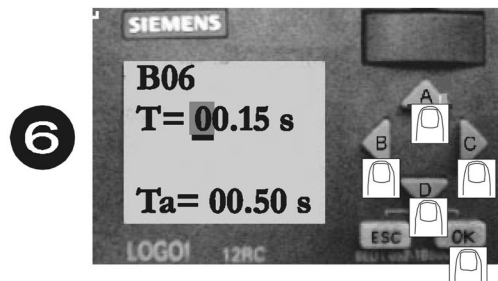
Press **OK** and the screen will display :



The programmable parameters are distributed in the following way:

- B06 : Right opening time
- B09 : Left opening time
- B12 : Right closing time
- B18 : Left closing time

If not wishing to modify **B06** then **A** or **D** must be pressed to select **B09**, or **B12**, or **B18**. After selecting the screen display of the parameter to be modified the following steps will be the same for all cases. When on the screen display of the parameter to be modified, press **OK** (Fig.5), and the cursor will move to the following position:



There are other screen displays whose base values must never be altered, as they are the internal memory of the processor. The screen displays are: B10, B13, B20 and B21.

It can be seen that most of the programmable screens display parameters Ta. Some show quantity, while others do not; however they cannot be altered as they are part of the internal memory.

Select parameter with **B** or **C**, alter it with **A** or **D**, press **OK** to finish (Fig.6). When wishing to return to the main screen display press **ESC** twice.

After having carried out all of these steps it is now possible to work with the unit. There are different ways of employing the Hardi Sonar, as both sides can work independently of each other, one side for example working with automatic detection while the other is being used manually, regardless of which side is which. It is also possible to employ both sides manually, or both automatically.

## Parameter recall table

| KM /H | B06 | B09 | B12 | B18 |
|-------|-----|-----|-----|-----|
| 2     |     |     |     |     |
| 3     |     |     |     |     |
| 4     |     |     |     |     |
| 5     |     |     |     |     |
| 6     |     |     |     |     |
| 7     |     |     |     |     |
| 8     |     |     |     |     |

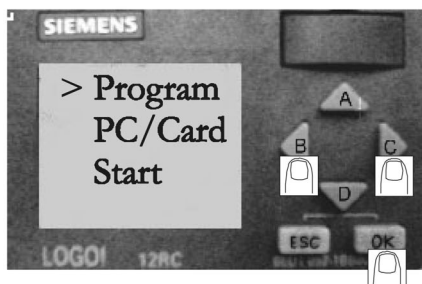


## Programming card (optional)

If having acquired one or more programming cards they should be programmed as follows:



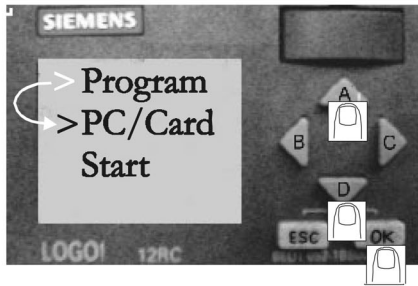
7



Do not enter the Program menu under any circumstances, as indicated in the diagram on page

From the main screen display press the keys **B**, **C** and **OK** and the card menu will automatically appear (Fig.7).

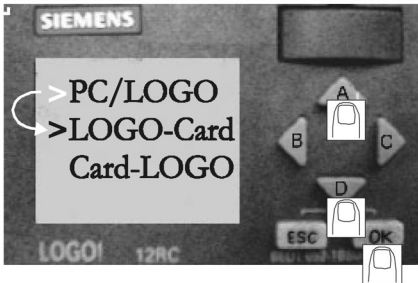
8



In the case of accidentally entering the Program menu press ESC to return to the screen display 8.

From here go directly to **PC/Card**, as before by using the keys **A** or **D** and then pressing **OK** (Fig.8). The screen will display:

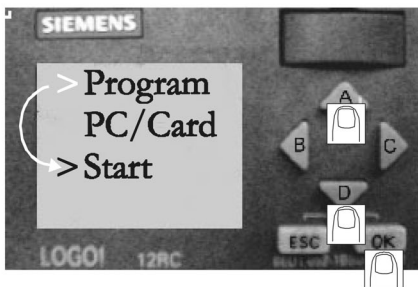
9



In the case of accidentally entering the Card-LOGO or PC-LOGO menus press ESC to return to the screen display 8..

With **A** or **D** select **LOGO-Card**. Then place the card to be programmed and press **OK** (Fig.9). The computer will then program the card and after a few seconds the screen will display:

10



Press **A** or **D** again to select **Start** and press **OK** and you will return to the main screen display (Fig.1). The card is now programmed..

The **PC-LOGO** and **Card-LOGO** options are not for the operator's use as they are part of the processor's internal memory and are destined for use solely by HARDI technicians..

## Precautions

Never start up the vehicle with the Main switch in the ON position, as this may produce a power overload in the system with the subsequent risk of a serious breakdown..



## Fault diagnosis



| Fault                                      | Cause  | Solution  |
|--|--|---|
| * The screen doesn't light up              | * The supply wire is severed or in bad condition | * Wire up correctly or replace wire                         |
| * Cells don't work                         | * There is a bad connection between wires        | * Check connection  |
| * The electro-valves leak oil              | * Broken O-rings                                 | * Replace O-rings<br><br>* Apply hydraulic sealer on screws |
| * Weak signal from the cells               | * Fused internal power supply                    | * Replace supply  |
| * Excess oil flow to the unit              | * The tractor provides too great a flow          | * Divert oil flow to tank                                   |
| * Excess oil pressure at the unit's intake | * Fused internal power supply                    | * Replace supply  |
| * Chemical product Circuit is blocked      | * No electrical current                          | * Check power supply  |
|  | * No oil pressure                                | * Loose oil tube or non functioning level                   |
|  | * Broken internal valve Spring                   | * Replace   |
|  | * Damaged rod sleeve on electrohydraulic Valve   | * Replace   |

