

SERVICE MANUAL



CRYSTAL SERIES.

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1.- INTRODUCTION

- The machine is prepared to sell tobacco in different formats, from a short format to an extra long format
- The model is defined by its depth, number of channel slides and number of pushbuttons.
- The partitions and extractors are moveable, so they can be adjusted to different tobacco formats.
- It is possible to modify the machine variables very easily to adapt it to the needs of each customer.
- The machine is designed for indoor use.

2.- SAFETY INSTRUCTION



Read these instructions carefully before starting up the machine.

- Before opening the machine, **take it down from the pallet** and place it on a surface that is level, stiff and stable.
- The machine should be attached to the wall to ensure its verticality.
- Check mains characteristics coincide with the machine's and that the machine is properly grounded.
- Access to electrical parts of the machine should be done by authorised personnel only.
- Before handling any component, disconnect the machine from mains.
- Should the mains cable be damaged call our technical support service.
- The machine should not be used for any purpose other than that indicated by the manufacturer.
- The manufacturer shall not assume any liability for damages arising from improper use of the machine.
- Always maintain the machine as indicated in the maintenance instructions.

3.- TECHNICAL SPECIFICATIONS

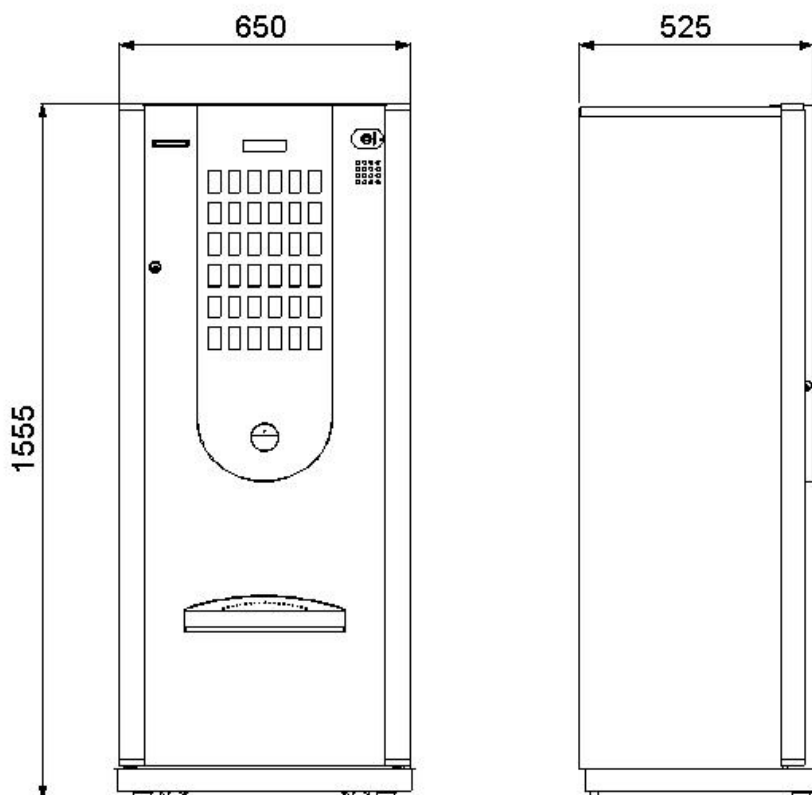
3.1.- OPERATING SPECIFICATIONS

• Voltage:	230 Vac.
• Maximum current:	1 A.
• Maximum power:	72 W.
• Temperature range:	Between -5° C y 60° C
• Humidity range:	Between 35% and 95% relative humidity.

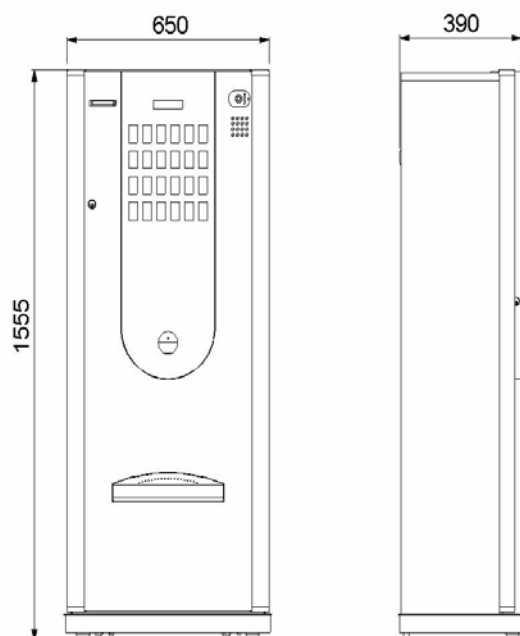
3.2.- DIMENSIONS

	HEIGHT	WIDTH	DEPTH	WEIGHT
CRYSTAL MAXI	1555	650	525	145
CRYSTAL MIDI	1555	650	390	120
CRYSTAL MIDI SLIM	1555	460	390	85

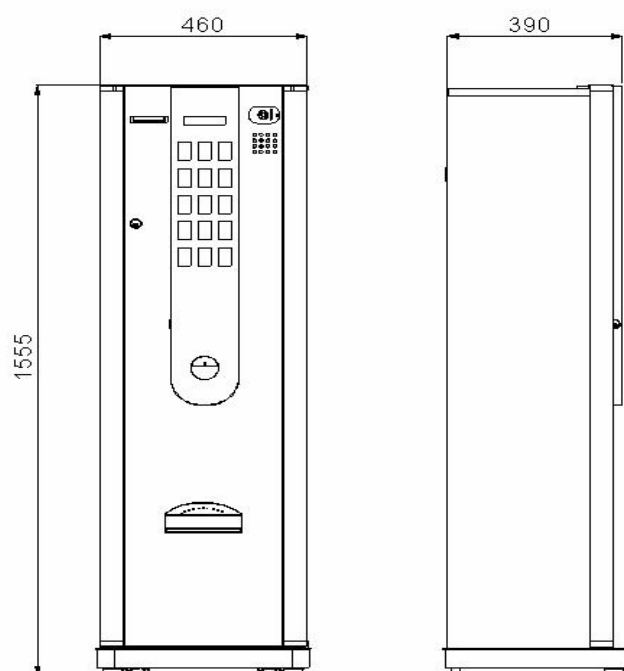
CRYSTAL MAXI .



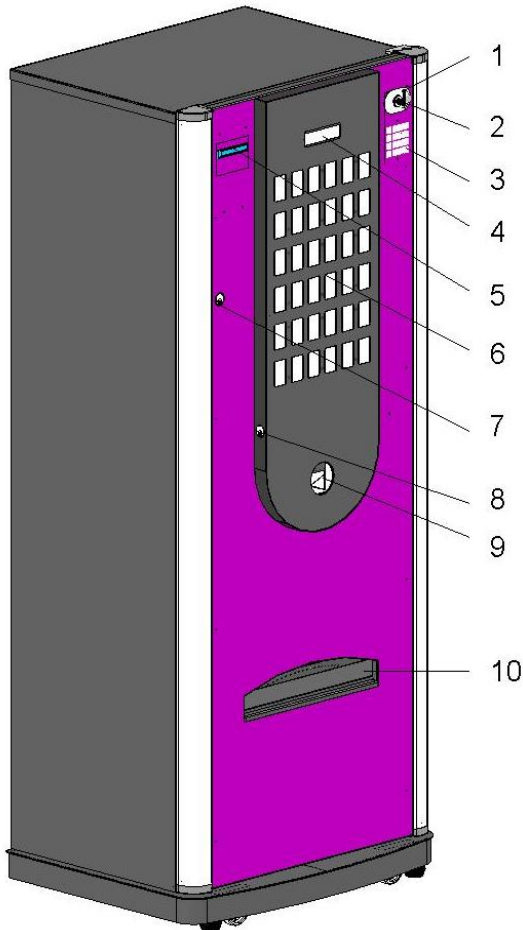
CRYSTAL MIDI



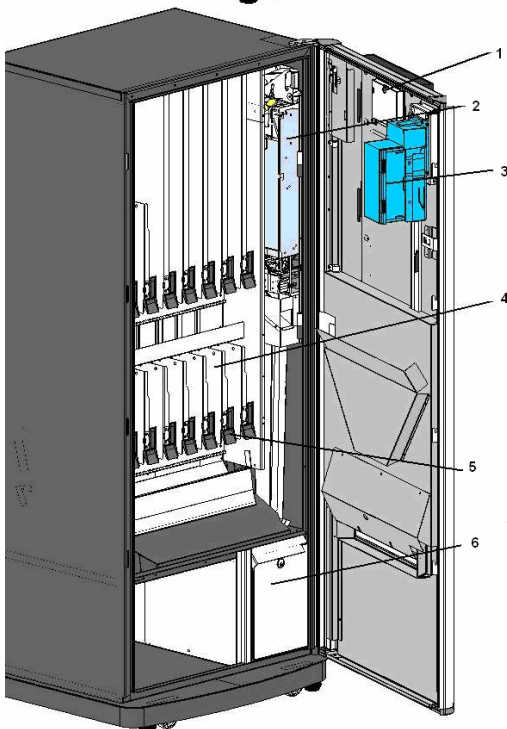
CRYSTAL MIDI SLIM



4.- MACHINE DESCRIPTION



1. Coins slot
2. Coin return pushbutton
3. Programming keyboard
4. Display
5. Note reader
6. Product selection pushbuttons
7. Door lock
8. Pushbuttoner lock
9. Coin return box
10. Tray for collecting product



1. Program button
2. Coin mec
3. Bill reader
4. Channels
5. Nails
6. Coin box

5.- INSTALLATION AND START-UP

5.1.- UNPACKING AND LOCATION THE KEYS.

- With a sharp object to remove the plastic shell of the machine
- Remove the cardboard honeycomb that protects the machine
- Cut strips of plastic that holds the machine to the pallet.
- Lower the machine pallet.
- In the drop cable are fixed the two sets of keys in a bag, such games are on the machine and pendant set

5.2.- ELECTRICAL INSTALLATION.

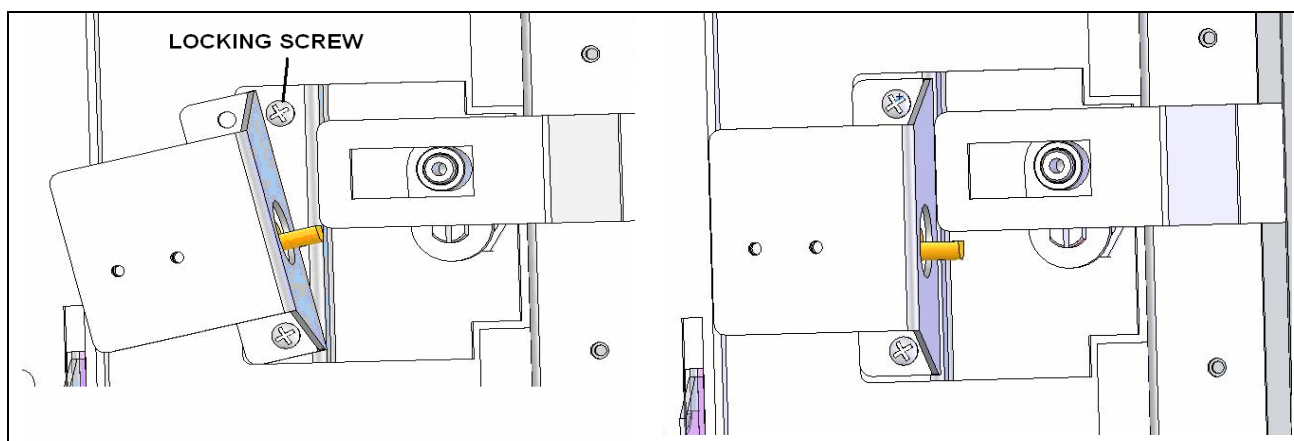
- There should be a power point of 220V $\pm 10\%$ AC, 50 Hz, 10 A with a English-type earthed plug (to match the machine plug).
- The installation should comply with Low Voltage Installations Regulations.
- After installing the machine the earthing should be checked to see if it works.

5.3 .- ACTIVATION ELECTRONIC SAFETY LOCKS

The machine is standard equipped with a locking of the lock through a coil of security, the coil is activated in programming but physically inhibited, so if you want to work with this system we of:

Remove the locking screw shown in the image on the left

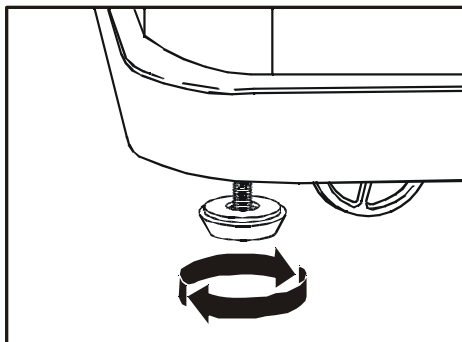
Place it in the position indicated in the figure on the right and fix it again with the screw



The key to opening the door is by default 0204 but in case you want to customize or change the option do we have the option of programming in 01.20.

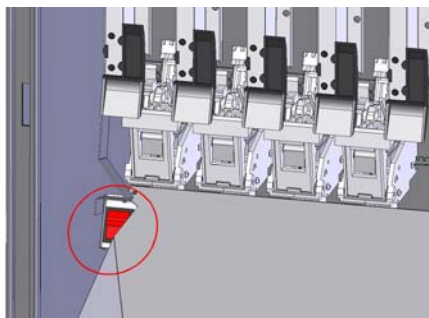
5.4.- LEVELLING.

- Una vez ubicada la máquina en su emplazamiento definitivo, regule las patas hasta que quede perfectamente estable.



5.5.- START-UP

- Connect the machine to mains and press the main switch.



- The machine will carry out an internal check and the time will appear on the display WHEN IT IS OVER.

- boot1. version
- program version
- change giver version
- gm com protocol


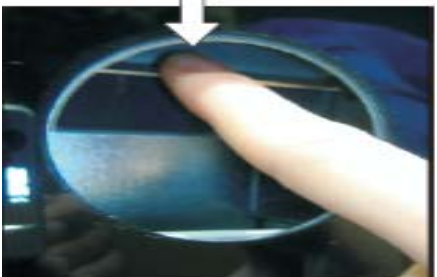


5.6.- RELATIONSHIP BETWEEN CHANNEL SLIDES AND PUSHBUTTONS

- When loading product keep in mind the correspondence between channel and switches as described in 01.19 option.
- All machines carry a label, which shows the relationship between channels and product selection buttons.
- If the machine has more buttons than channels must make a channel bonding (see Chapter 01.19 of the programming options).
- Place each product label in the corresponding pad.
- When loading snuff check that packages are not stuck together.
- Place each product label in the relevant pushbutton.
- When loading the tobacco check that the packets are not stuck to one another.

5.7.-MAKING A PURCHASE

1. Press the desired selection to see the product price
2. As you insert coins in the machine, the display will show the amount of the sum accepted; rejected coins will be placed in the coin return box.
3. When the product price chosen has been reached or exceeded press the corresponding pushbutton and the product will be served in a few moments. Any change due can be collected from the coin return.

5.8.- OPENING AND CLOSING OF THE KEYPAD

	<p>Enter the key in the lock</p>
	<p>Push down the piece located in the storage of coins falling</p>
	<p>Pull the panel to open</p>
	<p>Push up the piece located in the box to drop coins and turn to turn the lock</p>

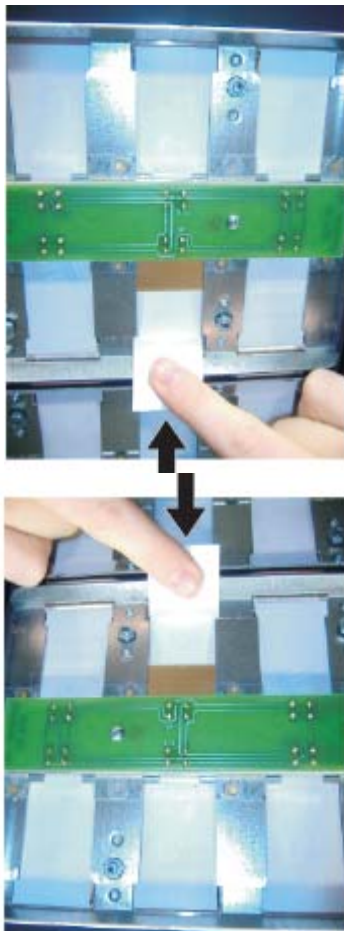
5.9 .- CHANGE PRODUCT LABELS.

The machine contains an envelope with a broad set of product labels. Select the ones you need.

Open the keypad with the key and insert each tag in the hole in the desired position of an easy and convenient way .

- **Placing a label.**

Introduces the label for the spot as shown in the drawing



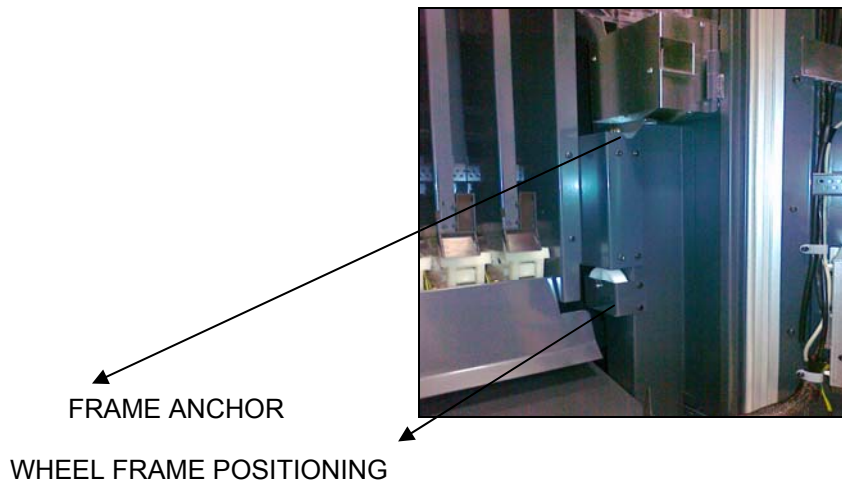
- **Removing a label.**

Press your finger on the label and pull up.

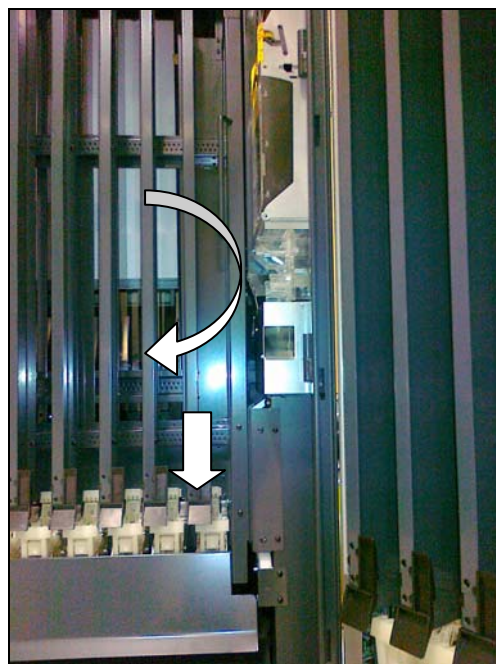


5.10.- OPENING AND CLOSING OF FRAME IN CRYSTAL SET 48 .

It has built a new system that facilitates the closure and anchor the new machine frame 48 and Crystal, because of their size has been necessary to make such changes. This system consists of a wheel which is responsible for positioning and securing the frame and an anchor which sets the frame.



For the opening of it must go the anchor frame and the frame folded left hand to press the left



6.- PRINCIPAL COMPONENTS .

6.1. Bill reader MARS VN serie 2000 model 2612

- Stacker 500 notes
- Voltage: 24V
- Power :
 - Waiting : 5 W
 - Working : 10 W
 - Working full of bills : 50 W
- Weight : 1.8 KG .
- Working bills : 5 and 10 EU.
- Temperature range : -15° C a 60° C .
- With flash memory to program
- Communication protocol MDB .



6.2 – Coin mec CF7000 5T MDB

- Voltage: 24V
- Accept coins: 0.05 , 0.10 , 0.20 , 0.50 1 y 2 EU.
- Flexible configuration.
- Dimensions : 380.9 X 1387.5 X 77 mm
- Weight :
- Communication protocol MDB.
- Operating temperature range : -15° C a 60° C



7.- PROGRAMMING .

7.1.- GENERIC PROGRAMMING MODE.

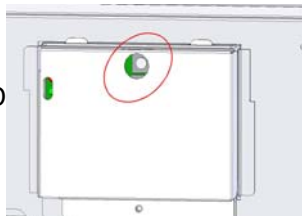
1. Access to programming options: (Fig.1)

Programming pushbuttons (P-PROG)

When entering programming mode the LCD display will show the current option name and number.

For example:
 Message-----
 Option-----

Reload credit
 00.00



display will show the current option name

The programming options are shown using a four-digit code :

YX.ZZ

- **ZZ:** Option number. Value between 00 and 99.
- **X:** Sub-option number. Value between 0 and 9. Option enabled (X=1) or disabled (X=0).
- **Y:** Sub-option number. Value between 0 and 9. Option enabled (Y=1) or disabled (Y=0).

2. Moving between options: (Fig.2)

- **Programming pushbutton (P-PROG):** Exit programming.
- **▲ (Programming keyboard):** Changes to the next option .
- **▼ (Programming keyboard):** Changes to the previous option .
- **# (Programming keyboard):** Changes to the desired option .

1. Press key #.

2. The LCD display will show the message :

Go to option
 00.00

3. Enter the desired option (ZZ).

Go to option
 00.ZZ

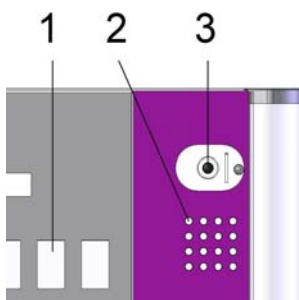
4. Press key #.

If you press # without entering any option, it will return to the previous option.

If you enter an option that does not exist or that cannot be accessed, the program will go to the next accessible option or will exit programming.

3. Programming of options : (Fig.2)

- **Selection pushbuttons (P-SEL):** (1)
 Entering data within an option
- **Programming keyboard:** (2)
 Entering data within an option
- **Coin return pushbutton (P-REC):** (3)
 Enabling and validating options .



7.2.- PROGRAMMING LEVELS.

7.2.1- First level programming functions .

00.00 Reloading coin return tubes Reload tubes

Action	Function
►	• Access to option dineRo recargado
1...6	• Number of inserted coins monedas a tubo X • Amount of money inserted per tube.
*	• Value of the coin corresponding to each tube. moneda tubo x

To reload the tubes, just insert coins.

When the tubes reach their limit, that coin is inhibited and the value blinks on the display.

Option disabled :

- When there is not MDB coin changer working.

00.01 Discharging coin return tubes and hoppers unload tubes

Action	Function
0...9	• Value of the coin in the tube coins tubo x • Coin discharge.
*	• Value of the coin corresponding to each tube coin tube x

If the machine is equipped with hoppers and these are enabled, these can be discharged using the key after the last tube (e.g.: machine with 4 tubes⇒ first hopper key 5) coins hopper x

Opción disabled:

- When there is not MDB coin charger working or enabled hopper.

00.02 Disables clock display. 01.02 Enables clock display Clock setting.	Display 0000 Display clock
---	-------------------------------

Access to option ► . Enter to modify the day of the week

Action	Function
P-REC	• Enables/disables the clock display.
*	• Key which allows you to change between “day of the week” and “date and time”.
►	• Modifies the day of the week (Increasing) • Allows you to move (from left to right) to the digit you wish to change of the date and time.
◄	• Modifies the day of the week (Decreasing) • Allows you to move (from right to left) to the digit you wish to change of the date and time..
0...9	• Modifies the digit that is currently blinking

If the machine has a modem:

- Using the sequence of selection pushbuttons (**P-SEL**) “p10, p10+p9, p10, p10+p8, p10 , none” an order is given to carry out a data transmission to the machine modem indicating that the vault has been changed.
- Using the sequence of selection pushbuttons (**P-SEL**) “p8, p8+p9, p8, p8+p10, p8, none” an order is given to carry out a data transmission to the machine modem.

- To reset accounting (option 00.30), maintaining prices, codes, associations, configuration, etc., press the following sequence of selection pushbuttons (**P-SEL**) “p5, p5+p6, p5, p5+p7, p5, none”.

01.03 Programming the prices with keypad . prg. Price keyb.

Pressing (**P-SEL**) the product price will appear on the LCD display.

Action	Function
P-SEL	Selects the product price to be modified. Product price
0...9	Introduce the product price (maximum 8 digits).
◀	Deletes the last key pressed.

This allows you to set a price to assign it to several pushbuttons. To do this press **P-SEL** and enter the price

Set it pressing **P_REC** and select the selection pushbuttons **P-SEL** to which you want to assign that price.

Fix price

To delete the setting for that price, press **P_REC** again.

selecct product

Option disabled: When there is not MDB coin changer working.

02.03 Programming the prices with money prg. Price money

Access to option ▶ .

- Insert money until you reach the desired price. The machine returns each coin and the LCD display shows the value entered.
- When you press P-SEL the price is set for that selection pushbutton.
- If you want to begin again just press the coin return button.

Option disabled: When there is not MDB coin changer working.

00.04 Manual operations of extractors Move motors

- When you press **P-SEL** the associated extractors will move
- The LCD display will show the number of selection pushbutton assigned to the extractor which is moving and the number of that extractor. (e.g. 07.07 pushbutton 7, extractor 7).

If the extractor has undertaken any wrong extraction cycle the LCD display will show the number of wrong cycles. (E.g. 03.07 wrong cycles 3, extractor 7). This allows you to delete the number of errors by pressing **P-REC** when it finishes its cycle.

- Pressing 1 all the desprogramming of extractors will be corrected.

01.04 Manual operation of the hoppers and of the escrow unit hopper & escrow

Action	Function
1	Moves hopper 1.
2	Moves hopper 2.
3	Moves the recovery blade of the escrow unit.
4	Moves the collection blade of the escrow unit.

We recommend that you do not use the movement of the hoppers to discharge its coins, as accounting would not be correct.

Option disabled:

- When the machine does not have hoppers or escrow unit, or the corresponding options are disabled.

0X.05 Machine accounting

Allows you to view or print a ticket with the machine accounting.

To change from one sub-option to the next use the following keys:

Action	Function
►, ◄, P_REC	Moving between sub-options

The options are as follows:

00.05 Partial accounting of products sold per channel:

partial sales

When you press P-SEL you will see on the LCD display the amount of products sold, since the last accounting reset, corresponding to that channel.

01.05 Partial accounting of sales of products lost per channel:

part, sales lost

When you press P-SEL you will see on the LCD display the amount of products lost (which have not taken place), since the last accounting reset, corresponding to that channel.

02.05 Total accounting of products sold per channel:

total sales

When you press P-SEL you will see on the LCD display the amount of products sold, during the life of the machine, corresponding to that channel.

They cannot be reset or set to zero with option **08.05**.

03.05 Total accounting of sales of products lost per channel:

toTAL sales lost

When you press P-SEL you will see on the LCD display the sales of products lost (which have not taken place), during the life of the machine, corresponding to that channel.

They cannot be reset or set to zero with option **08.05**.

04.05 Product accounting:

part/ tot product

Action	Function
P-SEL 9	Partial of products lost.
P-SEL 10	Total of products lost.
P-SEL 11	Partial sale of products sold.
P-SEL 12	Total sale of products sold.

05.05 Accounting of sales

part/ tot sale

Action	Function
P-SEL 7	Partial sale undertaken when out of change.
P-SEL 8	Total sale of products sold.
P-SEL 9	Partial return.
P-SEL 10	Total return.
P-SEL 11	Partial sale (in product value).
P-SEL 12	Total sale.

06.05 Vault accounting, overpayment and other means of payment:

part/ tot coinbox

Represents the value of the sale which has been directed to the vault.

Action	Function
--------	----------

P-SEL 5	Partial discount / surcharge.
P-SEL 6	Total discount / surcharge.
P-SEL 7	Partial sales carried out with tokens.
P-SEL 8	Total sales carried out with tokens.
P-SEL 9	Partial overpayment
P-SEL 10	Total overpayment.
P-SEL 11	Vault partial accounting.
P-SEL 12	Vault total accounting.

07.05 Accounting in coin return tubes.

Money in tubes

Action	Function
P-SEL 6	Partial money discharged manually.
P-SEL 7	Total money discharged manually.
P-SEL 8	Partial money reloaded manually.
P-SEL 9	Total money reloaded manually.
P-SEL 10	Value of partial money of sales which has been sent to the tubes.
P-SEL 11	Value of total money of sales which has been sent to the tubes.
P-SEL 12	Amount of money existing in the coin return tubes.

08.05 Reset of the machine partial accounting data.

reset partials

Action	Function
P-SEL 12	Reset (setting to zero) of partial accounting data.

You will see the value **08.05** blinking on the LCD display.

Once you have carried out the partial reset, this allows you to completely reset the accounting with the sequence of selection pushbuttons (**P-SEL**) “p5, p5+p6, p6, p6+p7, p7, p7+p5, p5, none”.

If the sequence has been properly entered, the value **08.05** stops blinking.

09.05 Printing an accounting data ticket. print tickets

Once you are inside this option and the printer is connected, if you press **P-SEL 12**, the value r232 will appear blinking and the data will be sent to the printer.

When it finishes, the LCD display will show **09.05**.

10.05 Extra accounting:

extra accounting

Action	Function
P-SEL 5	Partial money discharged manually from the hoppers.
P-SEL 6	Total money discharged manually from the hoppers.
P-SEL 7	Partial refund from the hoppers.
P-SEL 8	Total refund from the hoppers.
P-SEL 9	Partial money from sales made with cards.
P-SEL 10	Total money from sales made with cards.
P-SEL 11	Stacker partial accounting.
P-SEL 12	Stacker total accounting.

00.06 Disables machine lighting

without lighting

01.06 Enables machine lighting .

with lighting

Programming turning machine lighting on and off.

Action	Function
P-SEL	Enables/disables the machine lighting

Access to option ▶ . timetable range

Action	Function
▶ , ◀	Allows you to move to the digit you wish to change
0...9	Modifies the digit that is currently blinking

In order to maintain the machine always on, the start time must be the same than the end time.

00:00 ...

00:00

00.07 Coin inhibition. inhibit coins

Access to option ▶ .

If a coin is inhibited, it will blink and a message will appear on the LCD display.

Action	Function
▶, ◀	Allows you to move to the coin you wish to modify
1	Modifies the current acceptance/rejection status of a coin

Option disabled: When there is not MDB coin changer working

00.09 Products stock products stock

Pressing (P-SEL) the product stock will appear on the display.

Action	Function
P-SEL	Selects the product stock to modify.
0...9	Introduce the product stock (4 digits maximum)
◀	Erase the last key pressed.

Allows to fix a stock to assign to several pushbuttons. For that press **P-SEL** and introduce the stock. Fix it pressing **P_REC** and select the pushbuttons **P-SEL** to which you desire to assign this stock.

To delete the fixation of that stock, press **P_REC** again.
Select Product

00.10 Access code to superior programming levels. password

To access programming options at a higher level, press key ▶ and introduce the code.

Action	Function
0...9	Keys to enter the access code.
◀	Keys that allows you to delet the last digit of the code you have entered.
P_REC	Validates the code you have entered.

The code to access the second programming level is 1111 .

7.2.2- Functions of the second programming level .

01.11 Products codes programming . product codes

Action	Function
P-SEL	Select the code of product to be modified. Product code
0...9	Introduce the product code (maximum 4 digit).
◀	Delete last key pressed.

It is possible to fix a code to assign to various push buttons: Press **P-SEL** and introduce the code.

Fix it by pressing **P_REC** and select the push buttons **P-SEL** to which you wish to assign that code.
fix code

To erase the code fixing, press again **P_REC**. select product

0X.12 Programming type of sale.

Action	Function
--------	----------

►, ◄, P_REC	Moving between options.
00.12:	simple sale.
01.12:	Multiple sale.
02.12:	Free sale.

0X.13 Programming type of sale when there is no change.

Action	Function
►, ◄, P_REC	Moving between options.
	<ul style="list-style-type: none"> 00.13: Exact price sale. Exact price 01.13: Sale with no return. Without return 02.13: Sale maintaining credit some time. temporary credit 03.13: Sale maintaining credit always. Permanent credit

In the multiple sale option (01.12) it is not possible to programme Sale at Exact Price. It goes automatically to Sale keeping change for a While option.

0X.14 Programming obliged sale

Action	Function
►, ◄, P_REC	Change option status
	<ul style="list-style-type: none"> 00.14: No obliged sale . No obliged sale It is possible to recoup the money if there is change in tubes 01.14: Obligated sale . obliged sale It is no possible to recoup the money

1X.14 Presenting sold out products without change

Action	Function
►, ◄, P_REC	Change option status

10.14: Do not show sold out products D not show sold out .

A button with product sold out shows the price if there is no credit inserted.

11.14: show sold out products show sold out .

A button with product sold out shows "product sold out" when there is no credit introduced in the machine.

2X.14 Presenting push buttons no linked to extractors

Action	Function
►, ◄, P_REC	Change option status

20.14: Do not show not linked push buttons. Sold out product

A not linked push button will show either the price or product sold out depending on the option 1X.14, but will not show Not Linked Push Button.

21.14: show not linked push buttons. Not linked push button

A not linked push button shows Push Button not linked to a Product.

00.15 Programming of minimums. minimum in tubes

Minimum quantity of coins to be in devolution tubes so that the machine gives change sold out message.

Action	Function
--------	----------

1...6	<ul style="list-style-type: none"> 1st press: Visualize the minimum reprogrammed . coins tube x 2nd press: Set up a minimum of zero coins. 3rd press and further: Increases the minimum one unit by one.
*	Value of coin corresponding to each tube. Coin tube x

Option disabled: When there is not MDB coin changer working

0X.16 Escrow

Action	Function
►, ◀, P_REC	Moving between options.

- 00.16: There is not escrow unit. Without escrow
 01.16: There is an escrow unit but it's not used . not used escrow
 02.16: There is an escrow unit and it is used. Used escrow

00.17 Credit value / maximum devolution of coins .

Maximum credit --- maximum change

This option allows you to set in terms of the current type of sale, maximum admissible credit (00.12) or maximum change which can be returned (01.12).

Access to option ► .

Action	Function
0...9	Introduce credit or change value (max. 8 digits)
◀	Delete last digit.
P_REC	Validate maximum credit or change, going to following option if correct. keep max credit ---keep max change

00.18 Deactivate discount/recharge on sales.

without disc / rech

01.18 Activate discount/recharge on sales. with disc / rech

Action	Function
P_REC	Activate / deactivate discount / recharge on sales.

When the option is activated (01.18) it is reprogrammed the time schedule for the application of the discount or recharge, as well as the percentage to be applied.

Enter the option ► . Time schedule

Action	Function
*	Modify time schedule and percentage.
P_REC	Change, within the percentage, between discount and recharge. discount ---recharge
►, ◀	Go to the digit to be modified.
0...9	Modify the blinking digit.

01.19 Programming channels – extractors links . connections

-Total reset of channels-extractors links:

By using the following sequence of decals: "p5, p5+p6, p6, p6+p7, p7, p7+p5, p5, none".

If the sequence is introduced successfully, the display will show 00.19 flashing.

Press ► to reprogram the links. Link push button

- Manual reprogramming of links :

- Press the push buttons (**P_SEL**) you wish to link .
- Press the product detecting switches of the extractors you wish to link . link extractor
- Press reject button to validate them (**P_REC**). Link ok

It is allowed to link only what you wish, there is no need to link every channel and push buttons.

If there is a channel with no link, when pressing P_SEK the LCD will not display the price but LINKED TO PRODUCT

- Programming channel links with the keyboard :

Action	Function
0...9	Introduce the number of push button or extractor to be linked .
*	Validate one push button or extractor every time it is written .
* + #	Exchange among push buttons and extractors to create links .
◀	Delete the last digit .
P_REC	Validate a link .

- Visualizing channels – extractors links :

To visualize links press 1. pushbuttons (p) extractors (m)

Now press the push button (**P_SEL**) whose link you wish to visualize. It will show every push button (top line) and every extractor (bottom line) which are linked. There will appear various screens till every push button and extractor are shown.

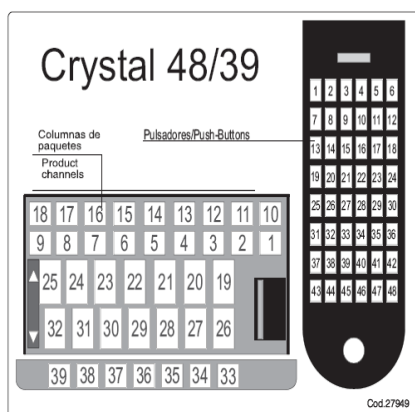
IMPORTANT: If links are modified the restrictions will disappear (00.25) .

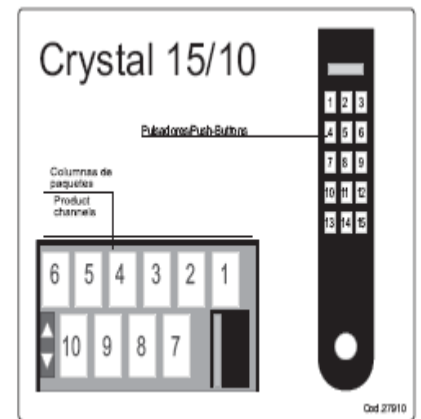
- Visualizing channels that not link to any pushbutton:

Press 2. Push buttons (p) Extractors (m)

Now press the push button (**P_SEL**) whose link you wish to visualize. It will show every push button (top line) and every extractor (bottom line) which are linked. There will appear various screens till every push button and extractor are shown.

IMPORTANT: If links are modified the restrictions will disappear (00.25), and the stocks (00.09) will be reset.





00.20 Modifying the access code to programming superior levels . change password

Access to option ► . New password

Action	Function
0...9	Introduce the digits of the new code.
◀	Delete the last digit of the new code.
P_REC	Validate the new code . modified password

01.20 Modifying the door opening code. opening password

Access to option ► New password

Action	Function
0...9	Introduce the digits of the new code.
◀	Delete the last digit of the new code.
P_REC	Validate the new code . modified password

00.21 Disables hopper 1. not use hopper 1
10.21 Enables hopper 1. use hopper 1
20.21 Enables hopper 1 ccTalk. Hopper 1 cctalk
Programming the value of the coin of hopper 1 .

Action	Function
P_REC	Enables/disables hopper 1.

Enter the option ► , the LCD displays the coin that has assigned at that moment.

Action	Function
►	Go towards the coin of highest value.
◀	Go towards the coin of lowest value.
0	If the hopper is ccTalk, the display shows information about the maker, version and model.

01.21 Disables hopper 2. not use hopper 2
11.21 Enables hopper 2. use hopper 2
21.21 Enables hopper 2 ccTalk. Hopper 2 cctalk
Programming the value of the coin of hopper 2

Action	Function
--------	----------

P_REC	Enables/disables hopper 2.
--------------	----------------------------

Enter the option ► , the LCD displays the coin that has assigned at that moment.

Action	Function
►	Go towards the coin of highest value.
◄	Go towards the coin of lowest value.
0	If the hopper is ccTalk, the display shows information about the maker, version and model.

00.22 Machine without bill reader .	Without note val.
10.22 Machine with MDB bill reader .	MDB note valid.
20.22 Machine with pulse bill reader .	PULSe note valid.
40.22 Machine with ccTalk bill reader	cctalk note valid.

Action	Function
►, ◄, P_REC	Enables/disables the use of note validator..
0	If the bill reader is MDB or ccTalk, the display shows information about the maker, version and model.

01.22 Disables the programming of bills.	prg. notes off
11.22 Enables the programming of bills.	prg. notes on

Action	Function
P_REC	Enables/disables programming bills.

Access to option ► . please insert bill
Insert the bills of value to be programmed. Actual value
When the first bill is introduced it is erased every recorder value

Action	Function
0...9	Insert the first bill. New value
◄	Delete the last digit.
P_REC	Validate the value introduced. Value recorded

Option disabled: When there is not pulse note validator working.

02.22 Machine without MDB selector–change giver.	Without change giver/sel
12.22 Machine with MDB change giver.	MMDB change giver
22.22 Machine with 12V selector .	12 v Selector
32.22 Machine with 24V selector.	24 v Selector

Action	Function
►, ◄, P_REC	Moving between options.
0	If the change giver is MDB, the display shows information about the maker, version and model.

The 12 V selector option is for NRI G – 13 selectors, and the 24 V option is for NRI G – 40 or MARS 330 models

03.22 Deactivate the programming of the value of each coin .	Coins prg. off
13.22 Activate the programming of the value of each coin	

Coins prg. on

Action	Function
P_REC	Activate / deactivate the programming of the value of each coin.
*	If there is not a note validator, allows to modify de number of decimals

Access to option ▶. please insert coin

Insert the coins of value to be programmed. Actual value

When the first coin is introduced it is erased every recorder value

Action	Function
0...9	Introduce the value of coin New value
*	Modify the number of decimals (0 to 3).
◀	Delete the last digit.
P-SEL 12	Identify the coin as token New value token
P_REC	Validate the new value inserted. recording value

Option deactivated:

- When there is no coin selector.

04.22 Deactivate the purchase by using the token.

not use token/re

14.22 Activate the purchase by using the token. Use token

24.22 Activate the purchase by remote control.

Use remote control

Action	Function
▶, ◀, P_REC	Moving among options .

00.25 Deactivate the use of restrictions .

Without restric.

01.25 Activate the use of restrictions .

with restriction

Access to option ▶. time schedule range

Action	Function
*	Moving between time schedule range and restrictions.
▶, ◀	Go to the digit to be modified.
0...9	Modify the flashing digit.

To restrict push buttons it is enough with being at the screen restriction when pressing a push button. It will be restricted every push button linked together.

- Visualizing restricted push buttons :

Press 1 when entering the option. The screen will show every restricted push button.

00.26 Disables advertising displaying.

No advertising

01.26 Enables advertising displaying.

with advertising

Action	Function
P_REC	Enables/disables advert. displaying

Access to option ▶. line 1 text

Action	Function
1...9	Allow to introduce digits and letters. Pressing quickly, go from one letter to other among the range of letters assigned to the push button.
*	Delete a character. Pressing it continuously introduce grammatical signs.

0	Introduce the 0, the signs + and -, and Ç.
►, ◀	Go to the character to be introduced.
P-SEL 11	Keep pressed to write letters in lower case letter.
P_REC	Delete the whole line.
P-SEL 12	Exchange the text between top (1) and bottom (2) lines. Text line 2

Y2.26 Modify the presentation of the top line of the advertising.

Action	Function
▶,◀ , P_REC	Moving among options .

Option disable:

- When the advertising displaying is not activated .

Y3.26 Modify the presentation of the bottom line of the advertising.

Action	Function
▶, ◀, P, REC	Moving among options .

- **02.26:** Fix text. fixed text
- **12.26:** Blinking text. Blinking text
- **22.26:** Right to left movement . MOV Right-left
- **32.26:** Left to right movement . MOV Left-right
- **42.26:** Letter by letter right to left . LETter Right-left
- **52.26:** Letter by letter left to right . LETter Left-right

Option disabled:

- When the advertising displaying is not activated .

00.28 Disables the modem.	not use modem
10.28 Enables the modem for GSM use. Programming the telephone number	use modem
20.28 Enables the modem for GPRS use.	Gprs / ethernet

Action	Function
P REC	Enables/disables the use of modem.

Enter the option ▶ . The LCD displays the actual telephone number. telephone number

Action	Function
P_REC	Delete the telephone number.
►, ◄	Go to the digit to be modified.
1...9	Modify the flashing digit.
0 +	Introduce the digit 0. A second press introduces the sign + and a third press the sign -.
*	Introduce the digit “,” and a second press the empty gap “.”.

Change giver replacement :

With the existing change giver, go to option 01.28 and by following the sequence of decals “p5, p5+p4, p5, p5+p3, p5, none”, the machine makes a connection with the PC to make the last data transfer before the replacement.

After the data transmission switch off the machine, replace the change giver with a new one and make a normal transmission or a coin box transmission in option 0X.02. This transmission makes a total data reset, which obliges to empty the coin box .

02.28 Dial telephone number by tones. Dial by tones
12.28 Dial telephone number by pulses. dial by pulses

Action	Function
►, ◄, P_REC	Telephone number by tones / Telephone number by pulses.

Option disabled:

- When the machine has no active MODEM..

Y3.28 Model of modem

Select the model of MODEM to use in the machine .

Action	Function
►, ◄	Select the model of modem.


- **03.28** Modem Analógico Tellink 1200/2400. Multitech multitech - d
- **13.28** Modem GSM. modem gsm
- **23.28** Modem Analógico Tellink 14400. Multitech F. multitech - f
- **33.28** Modem Analógico Smartlink 56k. smartlink 56k
- **43.28** Modem Audiotel GPRS+. Audiotel gprs+
- **53.28** Modem Sony Ericsson GM29. SONY ERIC.GM29
- **63.28** Modem CEP-AG GS64 o Sony GR64 modem gs64/gr64
- **73.28** Ethernet Digi Connect module d.connect (wi)me
- **83.28** Modulo Wismo228 Modulo wismo228

If it is necessary to use a wire connected directly to serial port (COM) of the PC, select any of the analogical MODEM options.

Option disabled: When the machine has no active modem.

Verifying the network coverage level .

During a maximum of 2 minutes time after switching on the machine, it is possible to check the network coverage level of the GSM MODEM by using the sequence of keys (**P-SEL**) “p8, p8+p9, p8, p8+p10, p8, none”.

The LCD displays the symbol  where the lines mean the coverage level .

If we work in GPRS the options are as follows:

Action	Function
0	Shows the coverage level.
1	Shows the local IP.
2	Starts the process of remote change of software.
3	Loads the remote configuration.
5	Transmit a sales report.
9	Shows the firmware version of the modem.

00.29 Machine identification. IDentification

Enter the option ► . The LCD displays the actual identification number of the machine .

Action	Function
0...9	Introduce the identification number. (Maximum 7 digits).
◀	Delete the last digit introduced.
P_REC	Record the new identification number. Identification recorded

00.30 Total reset of the machine . reset machine

Reset every internal variable of the machine.
Enter the option ▶ .

1- Identifying the pushbutton panel:

Action	Function
P-SEL	Press the first selection pushbutton of each row starting from the left. (P-SEL 1, P-SEL 7, P-SEL 13...).
P_REC	Confirms the selection entered
P_PROG	Validates the pushbutton panel entered.

The pushbuttoners which identify the CRYSTAL machines are as follows:

PUSHBUTTONS	DESCRIPTION
P-SEL 1, 4, 7, 10, 13	Pushbuttoner 15(3+3+3+3+3)
P-SEL 1, 7, 13, 19	Pushbuttoner 24 (6+6+6+6)
P-SEL 1, 7, 13, 19, 25, 31	Pushbuttoner 36(6+6+6+6+6+6)

2- Selección del idioma: seleccion idioma

Action	Function
▶, ◀	Select language.
P-REC	Confirms the selection entered

After detecting the type of push button board and language, the machine will move every extractor, detect the type of machine (possible number of extractors), type of extractor, initialise every necessary variable for its proper functioning, and when finishes the LCD will display the option **00.30** flashing. End reset machin

3- Machine fatigue: extractors fatigue

Only when the machine is in option 00.30 .

Action	Function
P-SEL 12	Extractors cycles (50 times per extractor). Fatiguing extractors xx
P-REC	Interrupts the fatigue (only possible between one cycle and the following).

In option 0.30, it is possible to modify various options individually, by using the programming keyboard.

Key 2	select the language	Select the language .
Key 3	initialising codes	Initialising codes.
Key 4	Initialising prices	Initialising prices.
Key 5	initialising variables	Initialising every variable of the machine except prices, codes and links.
Key 6	Initialising time and RAM	Initialising the clock and detecting the type of RAM memory .
Key 7	pushbuttoner identif.	Identifies pushbutton panel and assign links by default.
Key 8	copying configuration	Copying information of the EPROM into the RAM memory of the machine, except the statistics data and extractors. It is used to copy information among machines .
Key 9	Remaking all the configuration	Copying ALL the information of the EPROM into the RAM memory. It is used to repair machines.

8.- MAINTENANCE.

8.1.- DIAGNOSTIC OF MALFUNCTIONINGS .

Switch off and on the machine before calling the Technical Service

In view of an error, press programming button and check if the problem has disappeared .

If the error is still there, take a look at the list below which shows the messages that the LCD may display and the possible solutions .

- | | | |
|---------------------------------|--|--|
| • ERR IN EXTRACTOR number
xx | Error: Extractor out of order. The LCD displays the extractor number. | The machine says product sold out when there is stock. |
| • ERR. COIN BOX FLAP | Error: The machine cannot accept the charging flap of the V escrow. | The machine does not accept any coin. |
| • ERR. DEVOLUTION FLAP. | Error: The machine cannot activate the devolution flap of the V escrow | The machine does not accept any coin. |
| • ERR. REJECT BUTTON. | Error: The reject button is permanently pressed . | The machine does not accept any coin. |
| • ERR. PRODUCT PUSH
BUTTON. | The program does not allow moving among options . | The push button is invalid. |
| • ERR. Tel dialling pad . | | The program does not allow moving among options . |
| • Deprog. Prices | Error: Prices deprogrammed. | Solution: Program them again .Option 01.03, 02.03 |
| • Deprog. codes | Error: Product code deprogrammed. | Solution: Program it again. Option 01.11 |
| • Deprog. links | Error: Link of channels deprogrammed. | Solution: Program it again. Option 01.19 |
| • Deprog. machine | Error: Type of machine deprogrammed. | Solution: Program the machine |
| • Deprog. sales | Error: Type of sale deprogrammed. | Solution: Program it again. Option 0X.12 |
| • Deprog. statics. | Error: Some statistic value deprogrammed. | Solution: Press programming . |

8.2.- CLEANING MACHINE EXTERIOR .

Do not use any spray to clean the outside of the machine. Use lukewarm water (between 20°C and 40°C) with dishwashing liquid, shampoo or glass cleaner without bio alcohol.

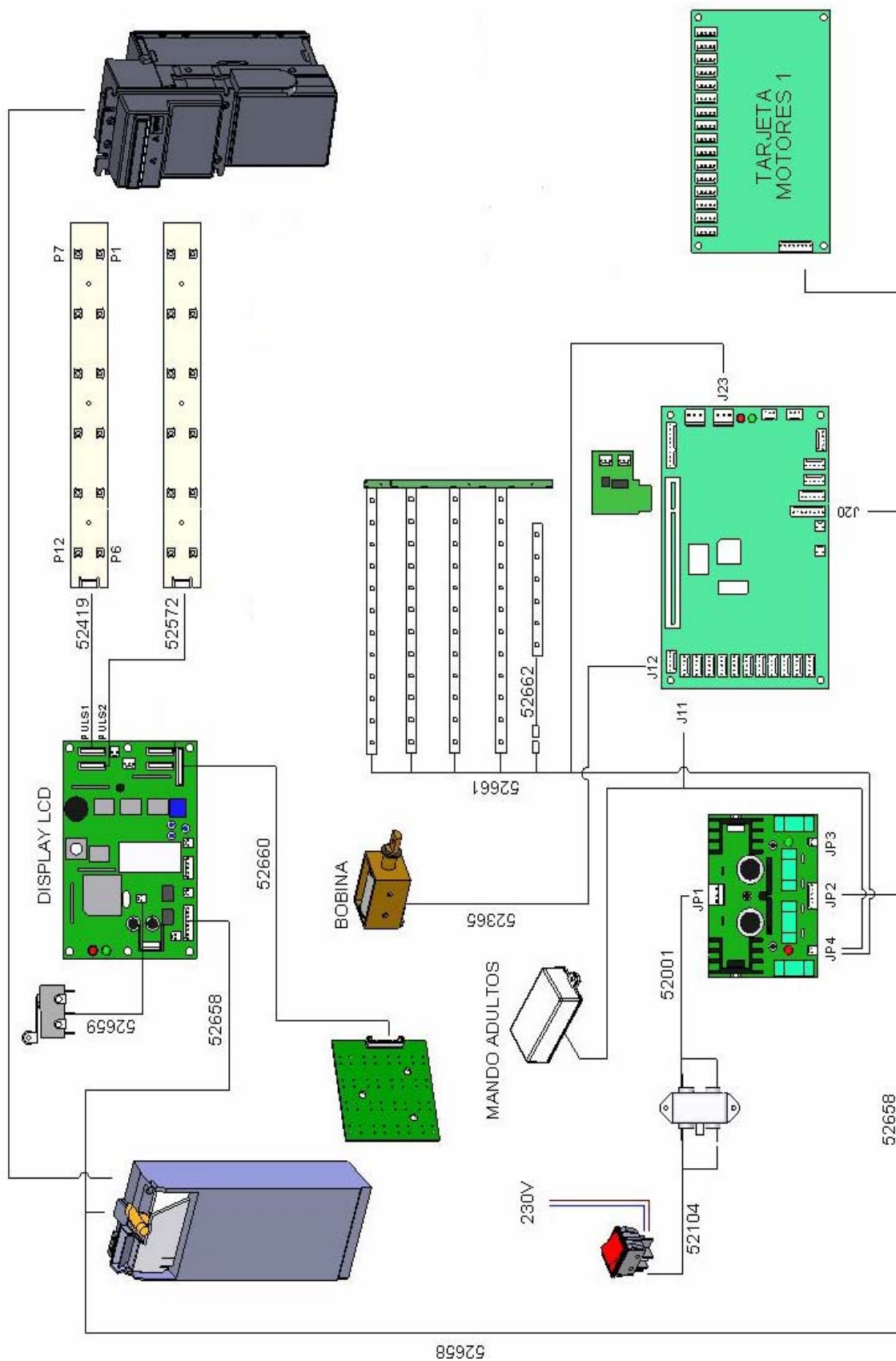
To rinse the machine use a 2% solution of vinegar (acetic acid) in water and dry with a soft cloth.

For persistent stains use a 1% solution of sanitary alcohol in water.

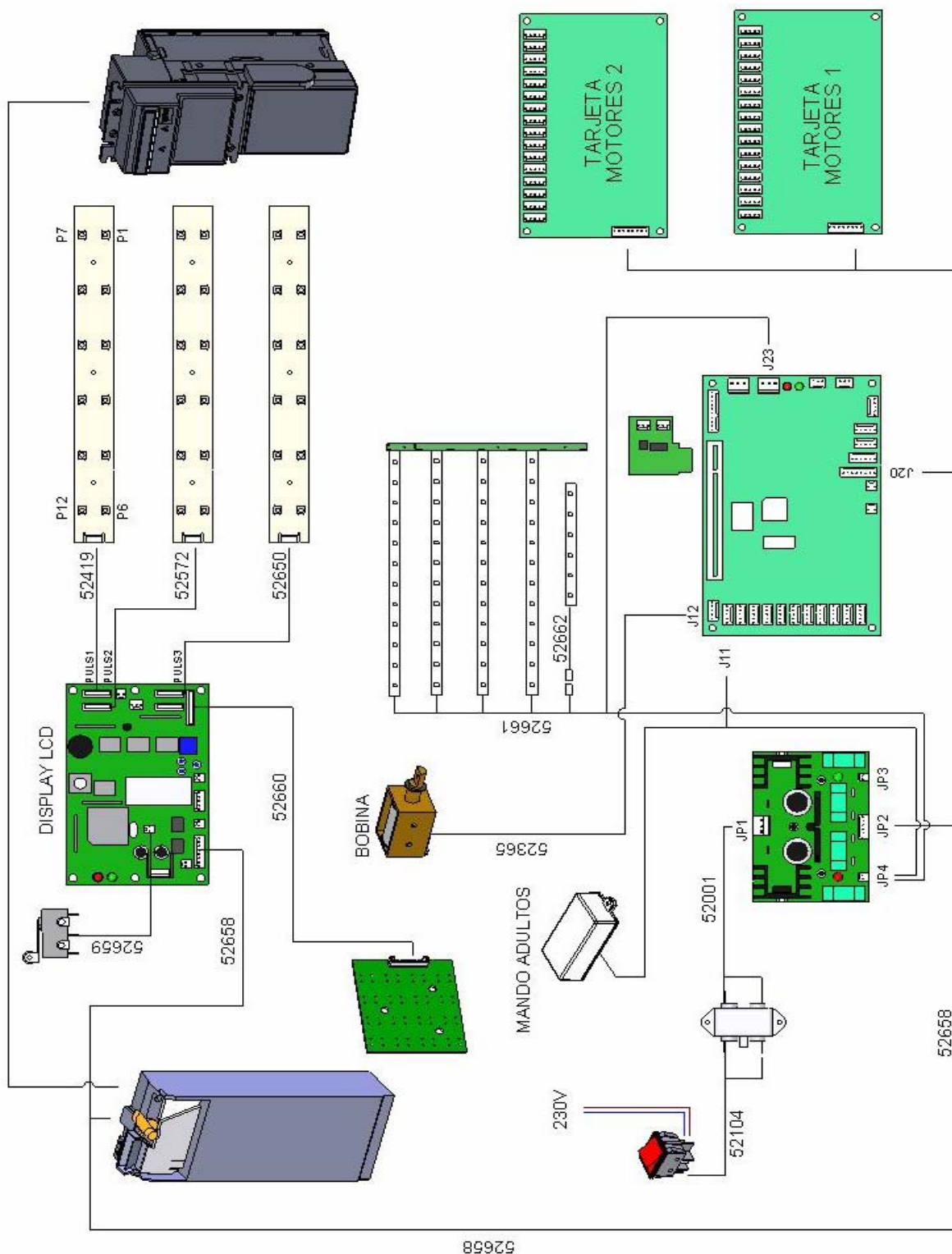
9.1.- Crystal 15 .



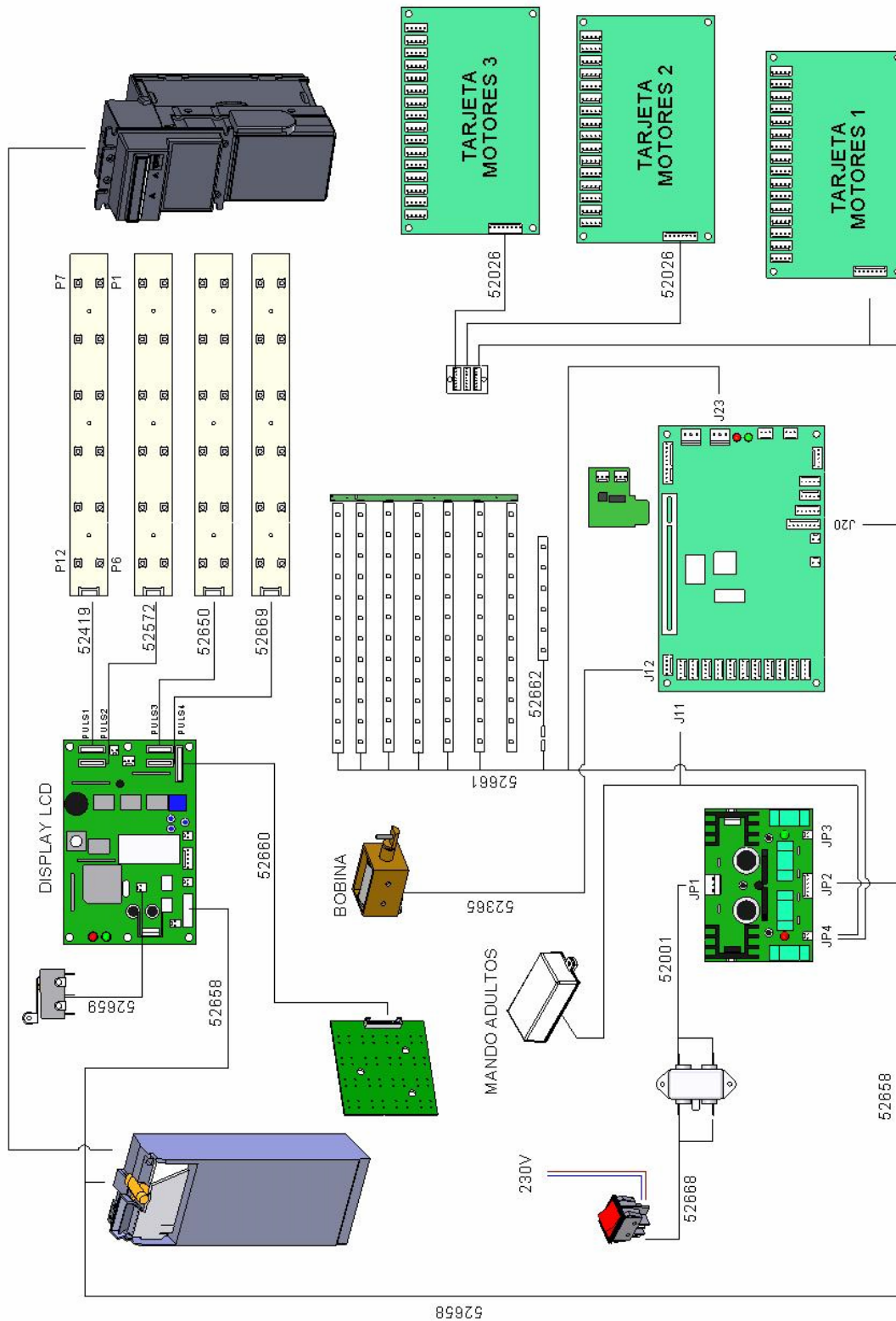
9.2.- Crystal 24 .



9.3.- Crystal 36 .



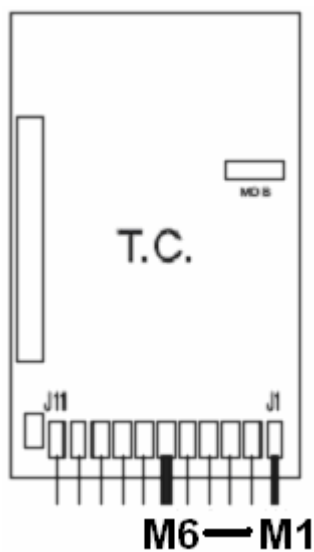
9.4.- Crystal 48.



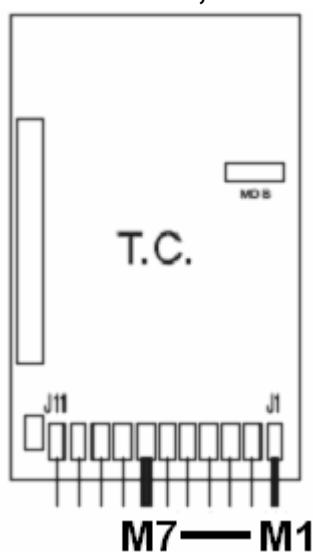
10.- CONNECTIONS MOTOR - BOARD

	CRYSTAL 15	CRYSTAL 24	CRYSTAL 36	CRYSTAL 48
Control board	X	X	X	X
Motor board 1	X	X	X	X
Motor board 2	--	X	X	X
Motor board 3	--	--	--	X

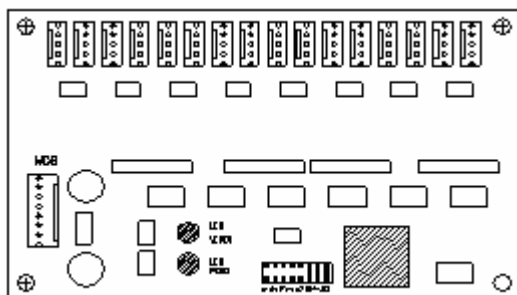
CRYSTAL 15.



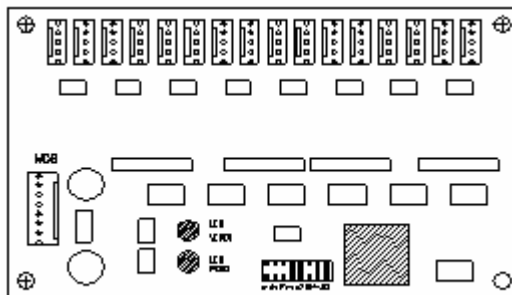
CRYSTAL 24, 36 Y 48.



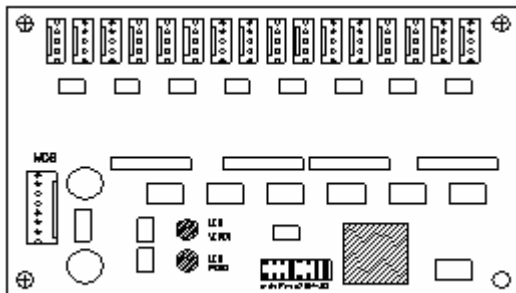
Motor board 1 motors 8 al 23.



Motor board 2 motors 24 al 39.



Motor board 3 motors 40 al 56.



11.- ACCESSORIES

11.1.- Assembly Kit Hopper 965176 (5 C) and 965180 (10 C) .

- You can put one or two hoppers
- In the case that only place a Hopper, it is preferable to place it in the bottom position. In the case of placing two Hopper procedure is the same.
- The codes 961244, 961245 and 961246 are preinstalled hoppers.

11.2.- Material necessary.

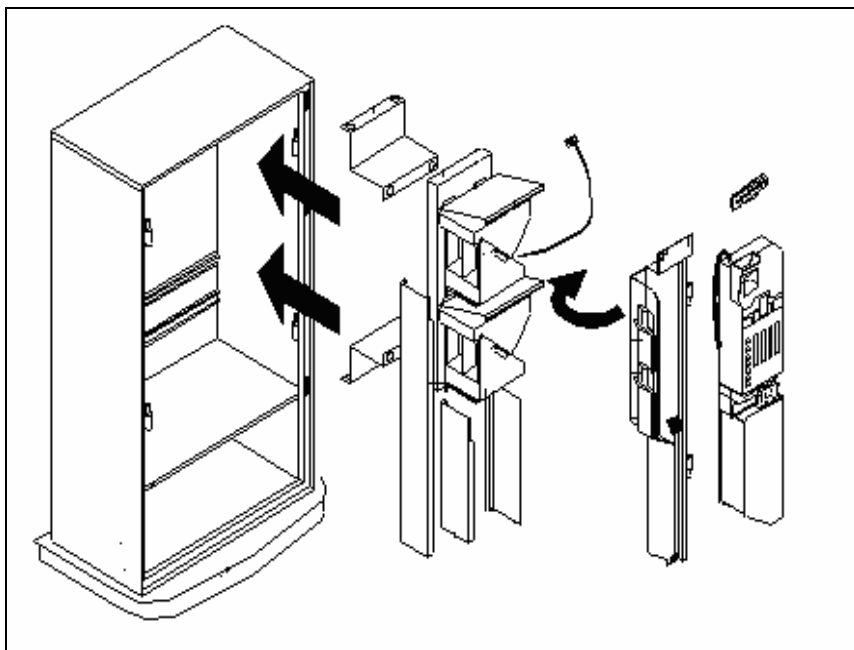
HOPPER 5C EURO			HOPPER 10C EURO		
Nº	Descripción	Quantity	Nº	Descripción	Quantity
229681181	HOPPER 5c EURO	1	229681213	HOPPER 10C EURO	1
221652023	CABLE HOPPER	1	221652023	CABLE HOPPER	1
201610003	TORN.CH. BZ 3,9x6,5 Zn NEG	3	201610003	TORN.CH. BZ 3,9x6,5 Zn NEG.	3
416601890	SOPORTE HOPPER PINT.	1	416601890	SOPORTE HOPPER PINT.	1
416601960	TAPA HOPPER PINT.	1	416601960	TAPA HOPPER PINT.	1
201610002	TORN.CH.BZ3,9x9,5 Z.N.	3	201610002	TORN.CH.BZ3,9x9,5 Z.N.	3
204671349	Brida atacables FTMN-063	1	204671349	Brida atacables FTMN-064	1
203612023	ARAN.PLAN.A 4,3 ST	1	203612023	ARAN.PLAN.A 4,3 ST	1

11.3.- Connecting to the Control Board and activation

- Hopper 1 connected J 9 and activate in option 00.21
- Hopper 2 connected J 8 and activate in option 01.21

11.4.- Check operation

- There will be a manual operation of the Hopper, Opción 01.04 .
- Make a couple of purchases, to ensure that returns the exact change.



11.5.- Assembly GM Com system.

Material necessary.

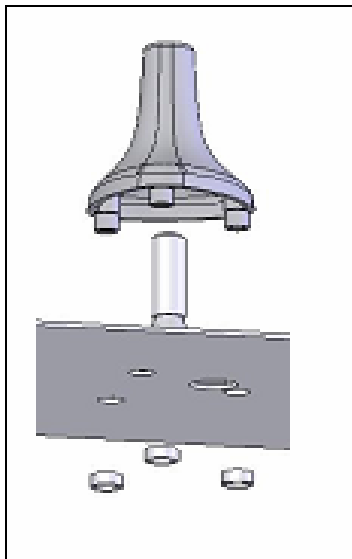
	965267 KIT MODEM GSM/GPRS	0
Nº	Descripción	Quantity
229681287	MODEM GS64 TERMINAL	1
201610078	TORN.CH.B 3,5x32 CINC NEG.	2
221652460	CONEX.MODEM-T.CONTROL GLOBAL T OP	1
221652160	CABLE ALIMENTACION MODEM GSM	1
229681289	ANTENA MAGNETICA MTX-FME F 3 METROS	1
245670164	PROTECTOR ANTENA	1
201610002	TORN.CH.BZ3,9x9,5 Z.N.	3
264615226	DISTANCIADOR PROTECT.ANTENA	3
264615224	VARILLA DIAMETRO 8 ANTENA	1

Installing the modem in the machine.

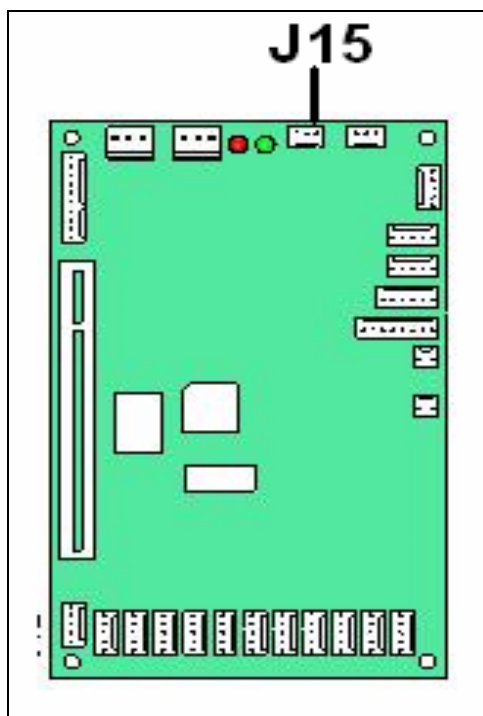
Each modem has its communication cables, power and antenna

Antenna Installation :

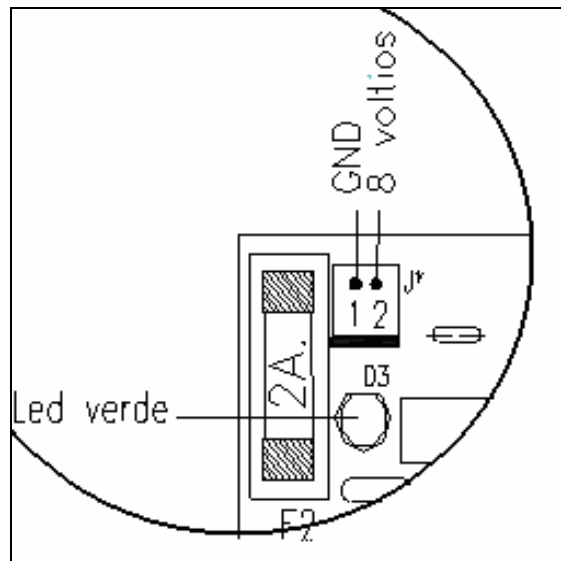
- Insert the cable through the hole indicated in the drawing and connect the power base. Host the cable goes in the hole where the cable has been introduced.
- Screw the antenna at its base and snap the shield into the holes. Place a cap on each axle and screw with 3 screws.



- The modem will always connect the communication cable with the connector J15221652460 (rs-232 B)



- The supply voltage for the GSM / GPRS modems will be supplied from the card's power transformer of the machine.
- Connection to the power board of the machine is made in the connector that supplies a voltage of 8 volts DC. This connector is located, as shown next to the green LED on the transformer.



- The following are the types of modem installed in GM Vending machines with accessories (and their codes) needed to connect to the machine.

• 03.28 Modem Analógico Tellink 1200/2400. Multitech D.	multitech - d
• 13.28 Modem GSM.	modem gsm
• 23.28 Modem Analógico Tellink 14400. Multitech F.	multitech - f
• 33.28 Modem Analógico Smartlink 56k.	smartlink 56k
• 43.28 Modem Audiotel GPRS+.	Audiotel gprs+
• 53.28 Modem Sony Ericsson GM29.	Sony eric.gm29
• 63.28 Modem CEP-AG GS64 o Sony GR64	modem gs64/gr64
• 73.28 Módulo Ethernet Digi Connect	d.connect (wi)me
• 83.28 Modem Telit GT863-864	telit gt863/864

Programming Options.

- 00.28** Disable / Enable the modem. GSM / GPRS.
- 02.28** Brand phone number by pulse or tone
- X3.28** Modem model
- 00.29** ID Machine.
- 00.02** Disable display clock / launches the call.

12.- DOCUMENTARY CHANGES

- Maquina documentada: Tobacco machine crystal series
- Documento original: Crystal_ing _07_11.doc

Date	Change	New document
22/07/2011	Create the manual	Crystal_ing _07_11

13.- GUARANTEE

Manufacturer guarantees its products as follows:

□□□ Any product manufactured by the manufacturer should be free material or manufacturing defects for a period of 6 months from date of purchase by product user and repairs for manufacturing defects shall not be charged. The manufacturer does not accept any liability for damages incurred during transport or because of negligence, improper installation or undue or abnormal use of the machine or improper maintenance of the machine, as indicated in the instruction manual. The manufacturer shall not accept any other particular guarantee offered by third parties on its products.

□□□ Thus, the only obligation of the manufacturer is to repair or replace defective products expressly guaranteed under the conditions herein. For a claim to be valid, it should be accompanied by the guarantee document, duly filled in by the vendor and clearly indicating the date of purchase. Any obligation is subject to written notification about the defect discovered. The manufacturer reserves the right to inspect claimed defects, either at point of sale or in factory. No product should be returned to the manufacturer without prior authorisation.

□□□ This guarantee will be rendered without effect:

- When the machine has been worked on by non-authorised personnel.
- When the indications in the instruction manual are not complied with
- In case of negligence, misuse or mistreatment.
- When the data plate has been removed or altered.