

# StarFood

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**DICHIARAZIONE DI CONFORMITA'**  
**DECLARATION OF CONFORMITY**  
**DÉCLARATION DE CONFORMITÉ**  
**KONFORMITÄTSEKTLÄRUNG**  
**DECLARACIÓN DE CONFORMIDAD**  
**DECLARAÇÃO DE CONFORMIDADE**  
**VERKLARING VAN OVEREENSTEMMING**  
**INTYG OM ÖVERENSSTÄMMELSE**  
**OVERENSSTEMMELSESERKLÆRING**

Valbrembo, 03/05/2001

Dichiara che la macchina descritta nella targhetta di identificazione, è conforme alle disposizioni legislative delle direttive: **89/392, 89/336, 73/23 CEE** e successive modifiche ed integrazioni.

Declares that the machine described in the identification plate conforms to the legislative directions of the directives: **89/392, 89/336, 73/23 EEC** and further amendments and integrations.

Déclare que l'appareil décrit dans la plaque signalétique satisfait aux prescriptions des directives: **89/392, 89/336, 73/23 CEE** et modifications/intégrations suivantes.

Erklärt, daß das im Typenschild beschriebene Gerät den **EWG** Richtlinien **89/392, 89/336, 73/23** sowie den folgenden Änderungen/Ergänzungen entspricht.

Declara que la máquina descrita en la placa de identificación, resulta conforme a las disposiciones legislativas de las directivas: **89/392, 89/336, 73/23 CEE** y modificaciones y integraciones sucesivas.

Declara que o distribuidor descrita na chapa de identificação é conforme às disposições legislativas das directivas **CEE 89/392, 89/336 e 73/23** e sucessivas modificações e integrações.

Verklaart dat de op de identificatieplaat beschreven machine overeenstemt met de bepalingen van de **EEG** richtlijnen **89/392, 89/336** en **73/23** en de daaropvolgende wijzigingen en aanvullingen.

Intygat att maskinen som beskrivs på identifieringsskylten överensstämmer med lagstiftningsföreskrifterna i direktiven: **89/392, 89/336, 73/23 CEE** och påföljande och kompletteringar.

Det erklæres herved, at automaten angivet på typeskiltet er i overensstemmelse med direktiverne **89/392, 89/336** og **73/23 EU** og de senere ændringer og tillæg.

Forsikrer under eget ansvar at apparatet som beskrives i identifikasjonsplaten, er i overensstemmelse med vilkårene i EU-direktivene **89/392, 89/336, 73/23** med endringer.

  
ANTONIO CAVO  
C.E.O





THE INTERNATIONAL CERTIFICATION NETWORK

# CERTIFICATE

IQNet and  
CISQ/IMQ-CSQ

hereby certify that the organization

**NECTA VENDING SOLUTIONS S.p.A.**

Via Roma, 24 - I-24030 VALBREMBO (BG)

for the following field of activities  
Design, manufacturing and sale of  
electromechanical vending machines  
has implemented and maintains a  
Quality Management System  
which fulfills the requirements of the following standard

**ISO 9001**

Issued on: 2000 - 03 - 31

Registration Number: IT - 12979

**- IQNet -**  
THE INTERNATIONAL CERTIFICATION NETWORK

*Catherine Neville*  
Catherine Neville  
President of IQNet



*Gianrenzo Prati*  
Gianrenzo Prati  
President of CISQ

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ITALIAN CERTIFICATION OF COMPANY QUALITY SYSTEMS

**esq**

CERTIFICATO n. **9130.ZAVE**  
CERTIFICATE n.

SI CERTIFICA CHE IL SISTEMA QUALITÀ DI  
NE HEREBY CERTIFY THAT THE QUALITY SYSTEM OPERATED BY

**NECTA VENDING SOLUTIONS S.p.A.**

UNITÀ OPERATIVE  
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Via Roma, 24 - 24030 VALBREMBO (BG)

È CONFORME ALLA NORMA  
IS IN COMPLIANCE WITH THE STANDARD **UNI EN ISO 9001**

PER LE SEGUENTI ATTIVITÀ  
CONCERNING THE FOLLOWING ACTIVITIES

Progettazione, produzione e commercializzazione di  
apparecchiature elettromeccaniche/elettroniche per la  
distribuzione automatica e la ristorazione  
Design, manufacturing and sale of  
electromechanical vending machines

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Prima emissione  
First issue **1 Giugno 1994**

Emissione corrente  
Current issue **31 Marzo 2000**

La validità del presente certificato è subordinata a sorveglianza annuale e al riesame completo del Sistema di  
Qualità con periodicità triennale secondo le procedure dell'IMQ S.p.A.  
The validity of the certificate is submitted to annual audit and a reassessment of the entire Quality System  
within three years according to IMQ S.p.A. rules

*Stefano*  
IMQ - VALQUINTO (BG) - 20138 MILANO



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# INTRODUCTION

**This technical documentation is part and parcel of the vending machine and must always follow the machine in case it is moved or transfer of ownership, so as to allow consultation by different operators.**

Before starting installation and using the machine, it is first necessary to carefully read and understand the instructions contained in this manual, as they offer important information on installation safety, operating instructions and maintenance.

**This manual is divided into three sections.**

The **first section** describes the loading and routine maintenance operations which are carried out in areas of the machine accessible with simple use of the door key, without using any other tools.

The **second section** contains the instructions for correct installation and all information necessary for optimum use of the machine.

The **third section** describes maintenance operations which involve the use of tools to access potentially dangerous areas.

**The operations described in the second and third sections must be carried out only by personnel who have the specific knowledge of the machine functioning from a point of view of electrical safety and health regulations.**

## IDENTIFICATION OF THE VENDING MACHINE AND ITS CHARACTERISTICS

Every machine is identified by its own serial number, indicated on the rating plate attached inside the cabinet on the right side.

This plate is the only one acknowledged by the manufacturer as identification of the machine, and carries all data which readily and safely gives technical information supplied by the manufacturer. It also assists in the spare parts management.

## IN CASE OF FAILURE

In most cases, any technical problems are corrected by small repair operations; however, before contacting the manufacturer we recommend that this manual be read carefully.

Should there be serious failures or malfunctions, then contact the following:

NECTA VENDING SOLUTIONS SpA  
Via Roma 24  
24030 Valbrembo  
Italy - Tel. +39 035606111

## TRANSPORT AND STORAGE

To prevent any damage, special care should be taken when loading or unloading the vending machine.

The machine can be lifted by a motor-driven or manual forklift truck, and the forks are to be placed underneath the machine from the side clearly indicated by the symbol on the cardboard package.

**Do not:**

- overturn the vending machine;
- drag the vending machine with ropes or similar;
- lift the vending machine by its sides;
- lift the vending machine with slings or ropes;
- shake or jolt the vending machine and its packing.

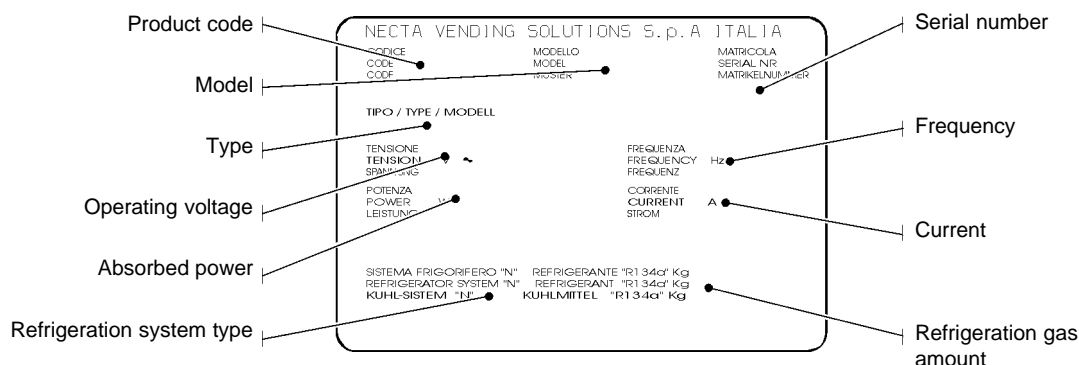
The machine should be stored in a dry room where the temperature remains between 0° C and 40 °C.

Avoid stacking machines one on top of the other and always keep it upright as indicated by the arrows on the packing.

## USING THE VENDING MACHINE FOR PACKAGED PRODUCTS

A different sale price can be set for each product selection by the machine electronic control. The various functions are programmed through the selection buttons without any need for additional equipment.

All models are fitted with variable configuration drums, permitting the number of partitions to be either increased or reduced to adapt the machine to the size of the products to be dispensed, thus optimising the machine capacity.





The vending machine is suitable for dispensing packaged food kept refrigerated, as well as packaged food kept at room temperature.

Strictly comply with the producer's specifications regarding storage temperature and expiry date for each product.

Any other use is unsuitable and thus potentially dangerous.

## POSITIONING THE VENDING MACHINE

The vending machine is not suitable for outdoor installation. It must be positioned in a dry room where the temperature remains between 2° C and 32° C, and not where water jets are used for cleaning (e.g. in large kitchens, etc.). To ensure correct machine operation we recommend installing the air baffle plate / spacer to the back of the machine.

Screw the 2 quick-snap pins, supplied with the machine, to the rear feet and insert the clips into the holes provided on the spacer.

Insert the baffle plate's tangs into the special slots and click on the clips.

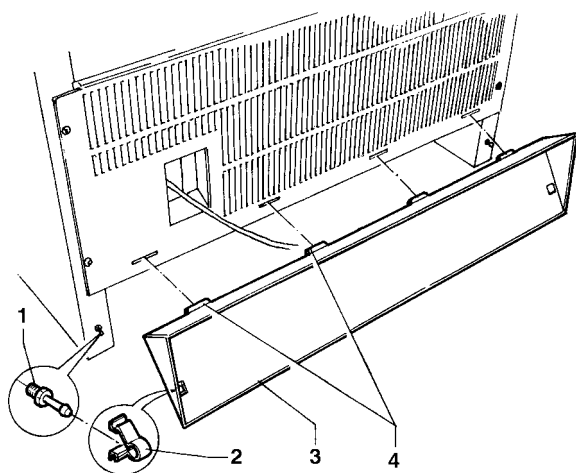


Fig. 1

- 1 - Quick-snap pins
- 2 - Clips
- 3 - Air baffle plate / spacer
- 4 - Tangs

The machine should be positioned with a maximum inclination of 2°.

If necessary provide proper levelling by way of the adjustable feet included.

A front foot panel is available as accessory.

## WARNING FOR INSTALLATION

The machine installation and the following maintenance operations should be carried out by qualified personnel only, who are trained in the correct use of the machine according to the standards in force.

The machine is sold without payment system, therefore the installer of such a system is responsible for any damage to the machine or to things and persons caused by faulty installation.

The integrity of the vending machine and its conformity with the rules and regulations in force for its relevant systems must be checked by qualified personnel at least once a year.

## PRECAUTIONS IN USING THE MACHINE

The following precautions will assist in protecting the environment:

- use biodegradable products only to clean the machine;
- adequately dispose of all containers of the products used for loading and cleaning the machine;
- switch off the machine lighting during periods of inactivity, thus achieving considerable energy savings;
- keep the machine away from heat sources;
- regularly check the condition of the door seal to limit any heat dispersion;
- limit as much as possible door opening time during loading operations to avoid temperature increase inside the cabinet and subsequent power consumption.

## WARNING FOR SCRAPPING

Whenever the machine is to be scrapped, the laws in force regarding environment protection should be strictly observed. More specifically:

- ferrous and plastic materials and the like are to be disposed of in authorized areas only;
- insulating materials and the gas inside the cooling unit (see the data plate), should be recovered by qualified companies by means of special equipment.

## WARNING FOR LOADING

Before refilling the machine **check** that the **expiry date** of any unsold products has not been exceeded.

**Loading operations should be carried only when the room temperature is between 0°C and 32°C.**



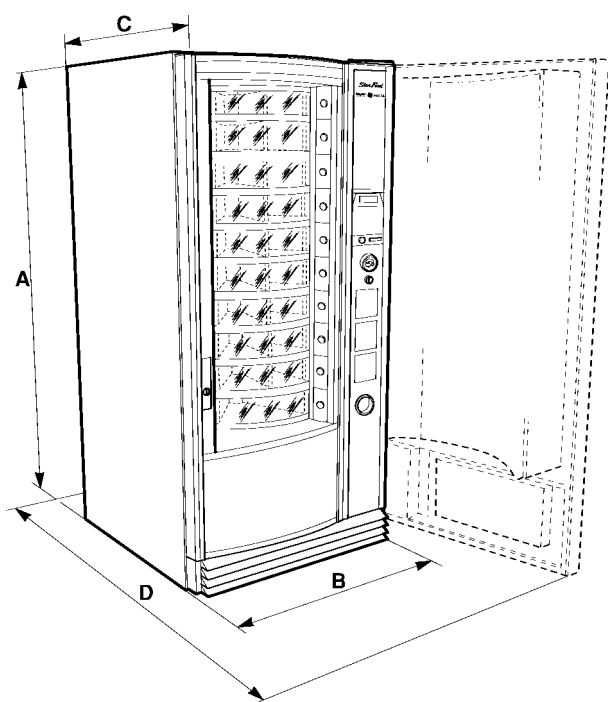
## TECHNICAL DATA

Power supply voltage	230	V~
Power supply frequency	50	Hz
Max absorbed power	1300	W
Lighting lamps	2 x	36 W

### DIMENSIONS

Height	(A)	1830	mm
Width	(B)	850	mm
Depth	(C)	895	mm
Overall depth	(D)	1650	mm
Weight (with packing)		359	Kg

Fig. 2



### REFRIGERATING SYSTEM

Operating conditions:

Max temperature: 32° C, max relative humidity: 75%

Compressor: 18 cm<sup>3</sup>

Kg 0.3 Kg of R134a refrigerant

Fan-forced evaporator

Programmable defrosting cycle

### NOISE LEVEL

The continuous, weighted equivalent acoustic pressure level is below 70 dB.

## PAYMENT SYSTEM

The machine is supplied with all electrical prearrangement for systems with Executive, BDV and MDB protocol, as well as for installation of 24 V DC validators.

Beside the coin mechanism housing, suitable space is provided for the installation (optional) of the most widely used payment systems.

### SALES PRICES

For each single selection, a different price can be set in 4 time bands, programmable for each day of the week; the standard setting has the same price for all selections, without using time bands.

### COIN BOX

Cover and lock are available as an optional feature.

## POWER CONSUMPTION

The machine power consumption depends on many factors, such as temperature and ventilation of the room where it is installed, temperature of loaded products, internal temperature of the refrigerated box.

Under average conditions, and namely:

- Ambient temperature: 20° C
- Refrigerated box temperature: 3° C
- temperature of loaded products (machine completely empty) 5° C

the following power consumption levels resulted:

- to reach operating temperature 12.460 Wh
- Hourly stand-by power consumption 505 Wh

The above power consumption calculated from average data should only be taken as an indication.

## MAIN FEATURES

The machine has been designed to dispense products which are very different from each other; therefore all drums are modular and can be configured with various combinations to satisfy many different needs.

- Each drum can be subdivided into 6, 12, 18, 24 or 36 sectors.
- Microprocessor control.
- Coin mechanisms or electronic payment systems with interface for the most widely used communication protocols can be installed (Executive, BDV, MDB), alternatively, parallel-type validators can be used.
- Liquid Crystal Display, for messages to the user and for programming functions.
- Liquid Crystal Display for each drum to indicate the sales price.
- Cooling unit with electronic temperature control.



# LOADING AND CLEANING

## VENDING SYSTEMS

- **Shopper:** by pressing the rotation button #, the desired product can be brought to dispensing position (on the right hand side of the slider window).
- **First in/First out:** the product is brought to dispensing position (First out) with the same sequence of loading (First in).

The product availability is checked by counting the number of selections made in relation to the number of sectors.

It is however possible to have a combination of the two systems in any desired sequence.

The following options are also possible with a suitable type of coin mechanism:

- **Single vend:** The change is returned automatically at the end of the selection procedure.
- **Multivend:** After the selection procedure, the credit is available for other selections until it is claimed through the coin return button.
- **With purchase obligation:** At least one selection must be made to be able to recover the money inserted.
- **Without purchase obligation:** The money inserted can be recovered at any time through the coin return button.

## DISPENSING CYCLE

When keeping the rotation button # pressed the drums programmed for "shopper" mode start rotating. When releasing button # the drum rotation is stopped and the desired product is brought to dispensing position (on the right hand side of the slider window).

The drums which are programmed for First in/First out mode, or that are empty, do not rotate.

Each single drum has its own selection button; if there is sufficient credit, when pressing the button corresponding to the desired drum, the slider opens automatically to allow the product to be picked up.

After a programmable time (10 seconds by default) the slider closes and the empty sector moves to the right.

During the closing phase the slider can be reopened, within 10 seconds, by pressing any button

### N.B.

Should the slider be obstructed during the closing phase, four consecutive closing attempts will be made before disabling the machine.

For the following 10 minutes the closing attempts will be repeated every minute, then the machine will lock.

The closing attempts are indicated by a sound and on the display.

## CONTROLS AND INFORMATION

The user controls and information are on the outside of the door.

The credit and all function messages are indicated on the display.

Button # is used to rotate the drums which are programmed for "shopper" dispensing.

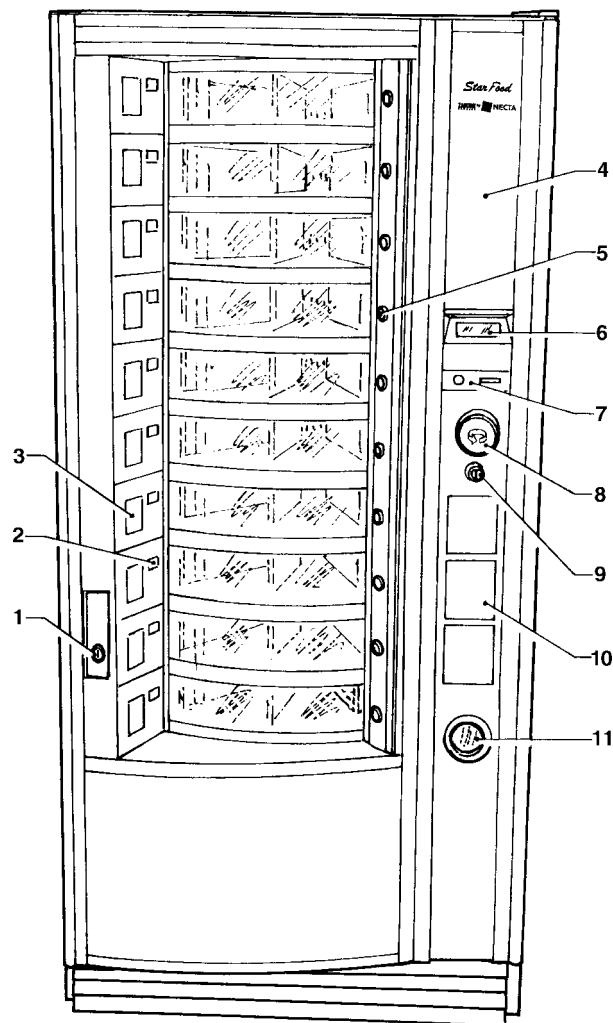


Fig. 3

- |    |                                       |
|----|---------------------------------------|
| 1  | Lock for refrigerated box             |
| 2  | Price indicator display               |
| 3  | Product labels                        |
| 4  | Space for payment system installation |
| 5  | Selection buttons                     |
| 6  | Liquid crystal display                |
| 7  | Coin slot / return button             |
| 8  | Drum rotation button                  |
| 9  | Lock for payment system door          |
| 10 | Space for user information            |
| 11 | Coin return flap                      |



## INTERNAL COMPONENTS

The cooling unit positioned in the lower section of the cabinet ensures correct product temperature.

The evaporator is defrosted automatically every 6 hours by reversing the gas flow. The timing can however be programmed between 1 and 99 hours.

The C.P.U. (central processing unit) board, accessed from the payment system compartment, and the power board, located on the door, control the different functions of the vending machine.

The power supply unit, located in the lower section of the cabinet, contains the protection fuses and the main switch.

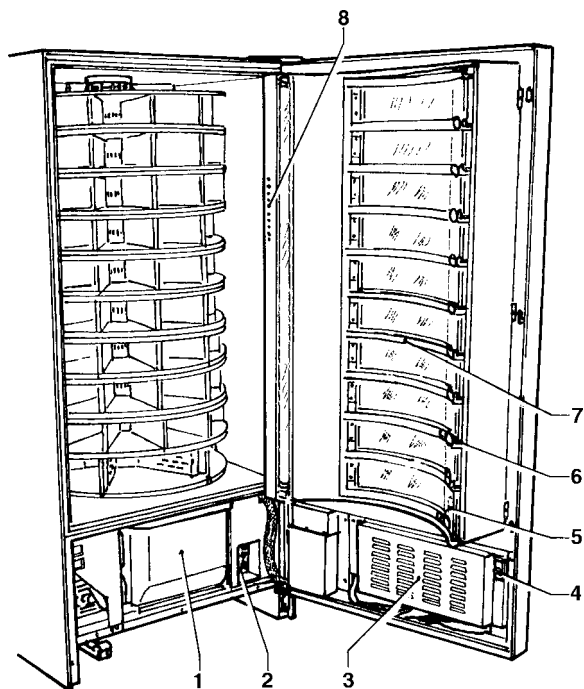


Fig. 4

- 1 Cooling unit
- 2 Power supply unit
- 3 Actuation board
- 4 Loading switch
- 5 Slider motors
- 6 Slider opening microswitch
- 7 Slider guide assemblies
- 8 Loading buttons

## LOADING SWITCH

The loading microswitch is fitted on the lower right-hand side of the door.

When the door is open, the drum rotation buttons are enabled for loading.

The message "Loading with the door open" is indicated on the display and dispensing is disabled.

## PROGRAMMING SWITCH

When opening the payment system compartment door the programming switch is triggered.

The message "Loading" is indicated on the display and the selection buttons are assigned programming functions.

This allows programming and/or loading operations to be carried out with the refrigerated box door closed.

The vending cycle is disabled.

### IMPORTANT NOTICE!!

**The loading and programming switches DO NOT disconnect the power supply from the machine.**

**To switch the machine off the main switch must be used and the plug must be pulled out.**

**All operations which require the machine to be energised and the protective casings removed must be carried out by qualified personnel, informed about the specific risks of such condition.**

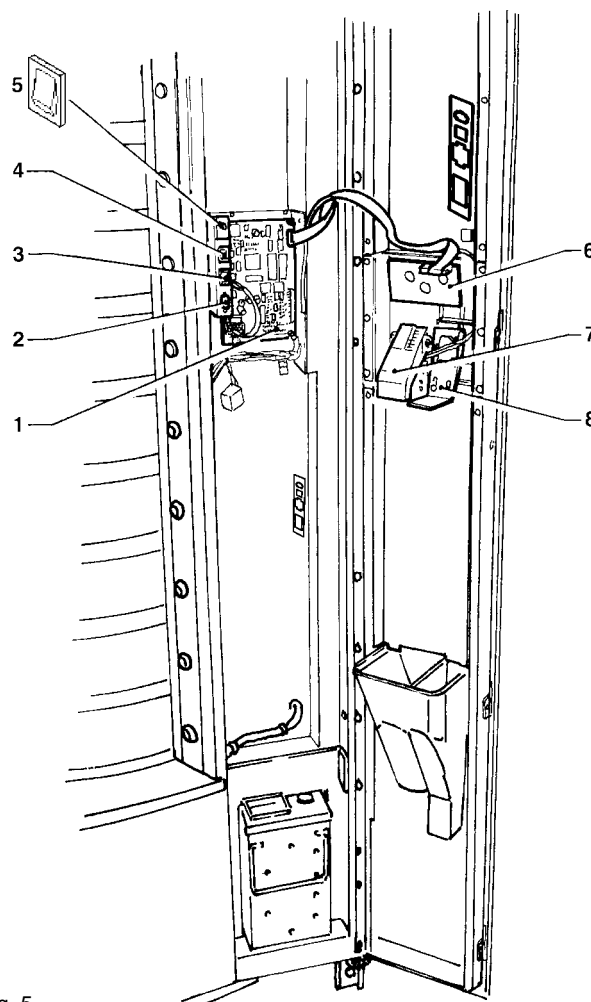


Fig. 5

- 1 CPU board
- 2 RS 232 serial port
- 3 Programming access button
- 4 Failure reset button
- 5 Programming switch
- 6 Liquid crystal display
- 7 Coin chute
- 8 Coin return lever



## HYGIENE AND CLEANING

According to current health and safety regulations, the vending machine operator is responsible for its hygiene and maintenance.

It is advisable to use sanitising products (chlorine based detergent or similar) to clean all surfaces even if not in direct contact with food.

Some parts of the machine can be damaged by strong detergents.

**Do not use any soaked cloth to clean motors, lighting lamps, loading buttons or the front cover of the power supply unit (see Fig. 4).**

The manufacturer declines all responsibility for damage caused by non-compliance with the above instructions or by the use of strong or toxic chemical agents.

**Under no circumstances should sprayed water be used.**

**Always disconnect the machine from the power supply grid before any cleaning operations.**

**The integrity of the vending machine and its conformity with the rules and regulations in force for its relevant systems must be checked by qualified personnel at least once a year.**

## LOADING PRODUCTS

### Important notice!!!

When starting the machine for the first time, before loading the refrigerated products it is necessary to switch the power on and then wait until the normal operating temperature is reached (up to 3 hours to pull-down stage).

**Before loading, it is necessary to check that the internal temperature of the machine is lower than 5°C.**

Before refilling the machine **check** that the **expiry date** of any unsold products has not been exceeded.

The machine control system stores the number of days to the expiry date for each drum sector; and after this is exceeded the sector is considered empty and therefore the product not to be sold.

When opening the front or rear door (on models where it is fitted), the relevant loading buttons are enabled.

Pressing one of loading buttons will cause the corresponding drum to rotate, bringing each sector into loading position.

**The drum will be considered completely full and the counting of days to the expiry date for the sectors of that drum will be reset.**

Special attention must be paid to the dispensing mode setting for the drum being loaded, if programmed for "shopper" it will be possible to leave some sectors empty, if programmed for F.I.F.O. it will be necessary to fill all sectors.

For loading, the instructions indicated on the inside of the door must be followed, particularly ensuring that:

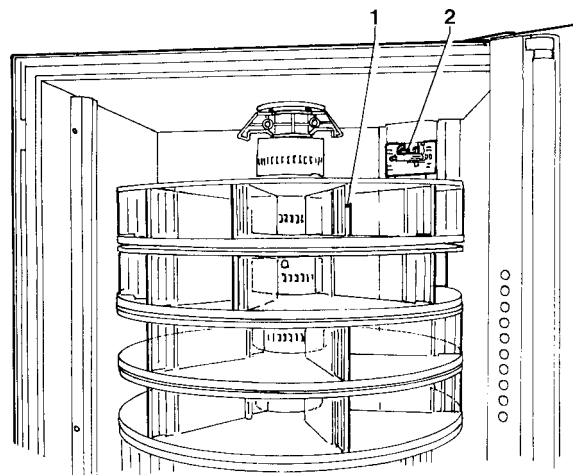


Fig. 6

- 1 Partitions
- 2 Partition counter lever

- All products are loaded, **without** inserting products with a temperature above 5° C for refrigerated food, filling all spaces.
- The bottom of the products rest at the bottom of the compartment with the label facing the window so that they can be identified.
- The product packaging does not interfere with the partition counter lever.

### LOADING WITH THE DOOR CLOSED

If only few products are to be loaded, it might be convenient to insert them into the machine through the dispensing sliders without opening the door, thus ensuring that the products already in the machine stay cold.

By opening the payment system compartment door, the machine goes into manual loading mode and the number of empty sectors, or with expired products, for each drum is indicated on the price display.

When pressing the selection button, the first empty/expired sector is presented and the slider opens so that the product can be inserted.

Then, when pressing the selection button again, the next sector is presented for filling or the slider closes if the drum is full.

Loading operations for a drum can be interrupted by pressing the button of another selection.

**All loading operations must however be carried out as quickly as possible, to avoid that the temperature of products exceeds the safety temperature.**



## ROUTINE MAINTENANCE

Before carrying out any cleaning or maintenance operations, disconnect the machine from the mains power supply.

**Under no circumstances should sprayed water be used to wash the machine.**

## PERIODICAL CLEANING

Clean metal parts with lukewarm soapy water, then rinse thoroughly and wipe dry carefully.

**When cleaning metal parts do not use detergents containing abrasive or corrosive agents; do not use common steel wool, wire brushes or steel scrapers.**

Clean varnished parts with silicone wax.

**Switch off the machine in the event of failure or malfunction. Any repairs should be carried out exclusively by qualified personnel using original spare parts only.**

## SUSPENDING FROM USE

For long periods of inactivity the following recommendations should be observed:

- disconnect the plug from the power outlet;
- remove all products from the drums and clean the inside and all accessories;
- using a cloth lightly damp with Vaseline oil, apply a protective film on all metal surfaces.



# INSTALLATION

The machine installation and the following maintenance operations should be carried out with the **machine energised** and therefore by qualified personnel, who are trained in the correct use of the machine and are aware of the specific risks of such condition.

**The machine is not suitable for outdoor installation, it must be installed in a dry room where the temperature remains between 2° C and 32° C.**

**It cannot be positioned where water jets are used for cleaning (e.g. in large kitchens, etc.).**

**The machine should be positioned with a maximum inclination of 2°.**

## UNPACKING THE VENDING MACHINE

After removing the packing, ensure that the machine is intact.

If the vending machine is found to be damaged, immediately inform the carrier and do not use the machine.

**No packing elements (i.e. plastic bags, polystyrene foam, nails, etc.) should be left within the reach of children, as they are potentially dangerous.**

Packing materials must be disposed of in authorised containers and the recyclable ones must be recovered by qualified companies.

## CONNECTING TO THE POWER SUPPLY

The machine is designed to operate under single-phase 230 V~ voltage and is protected by 15 A fuses.

Before making the connection, ensure that the rating corresponds to that of the power grid, and more specifically:

- the supply voltage rating must be within the range recommended for the connection points;
- the main switch should be capable of withstanding the peak load required, and at the same time ensure proper omnipolar disconnection from the power grid with an opening gap of the contacts of at least 3 mm.

**The switch, the power outlet and the plug must be located in an easily accessible position.**

The electrical safety of the machine is ensured only when it is correctly earthed according to the safety standards in force.

**This fundamental safety requirement must be duly verified, and if in doubt the system must be carefully tested by qualified technicians.**

The power supply cable is of the type with a fixed plug. Any replacement (see figure) should be done by qualified personnel only, using exclusively cables of the type HO5 RN - F or HO5 V V-F or H07 RN-F with a section of 3x1-1.5 mm<sup>2</sup>.

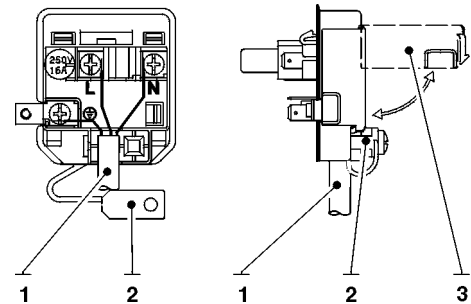


Fig. 7

- 1 - Cable from the mains
- 2 - Cable clamp
- 3 - Lift cover

**Do not use adapters, multiple sockets and/or extensions.**

**THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR ANY DAMAGE CAUSED BY NON-COMPLIANCE WITH THE ABOVE MENTIONED PRECAUTIONS.**

## INSTALLING THE PAYMENT SYSTEM

**The machine is sold without payment system, therefore the installer of such a system is responsible for any damage to the machine or to things and persons caused by faulty installation.**

- Install the desired coin mechanism according to the appropriate instructions and make sure that the relevant parameters are programmed correctly.
- adjust the selector opening lever bracket to allow complete opening of the selector;
- adjust the coin chute according to the type of coin mechanism installed.



## OPERATING MODES

The vending machines in this range have four different function levels, and namely:

- normal operation;
- loading;
- filler menu;
- technician menu.

According to the operating mode, the display and keypad functions change as described in the following paragraphs.

## USER INTERFACE

The interaction between system and user occurs through the following components:

- Button #, used to rotate those drums that are programmed for “Shopper” mode or, with the door open, all drums.
- Liquid crystal display (LCD) 4 lines of 20 characters.
- The first four selection buttons, which in maintenance and programming mode have the following functions (see Fig. 8):

### Scrolling keys “↑” and “↓”:

To move to the next or previous menu option.

### Confirm key “→”:

To go from a menu to a sub-menu, or to confirm the information on the display.

### Exit key “←”:

To move back from a sub-menu to the higher level menu, or used to cancel the current information on the display.

### Programming button “⏏”:

(See Fig. 5) To move back from a sub-menu requiring the use of selection buttons to the higher level menu.

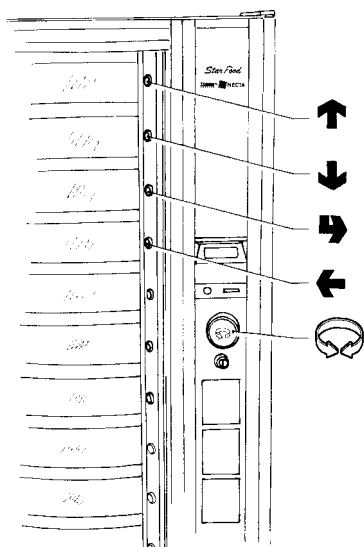


Fig. 8

## NORMAL OPERATING MODE

The machine is preset to “Normal operation” mode when connected to the power supply with the door closed (see programming switch).

The lighting lamps are switched on and the product dispensing messages are indicated on the display, as well as other information like temperature and time or details of any current failures.

When pressing button # the drums programmed for “shopper” mode will rotate until the button is released.

If there is sufficient credit, when pressing a selection button the corresponding slider, driven by the motor, opens automatically to the slider stop.

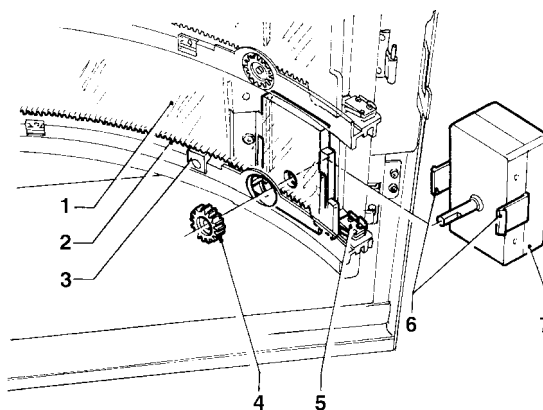


Fig. 9

- 1 - Product slider
- 2 - Rack
- 3 - Slider stop
- 4 - Cog wheel
- 5 - Slider microswitch
- 6 - Motor snap tangs
- 7 - Slider motor

The control system detects the increase in electrical absorption of the motor and stops it for a programmable time (10 seconds by default).

After this time lapses, the motor starts closing the slider. During the closing phase the slider can be opened again by pressing a selection button:

Should the slider be obstructed in some way, four consecutive closing attempts will be made before disabling the machine.

For the following 10 minutes the closing attempts will be repeated every 60 seconds.

The closing attempts are indicated by a sound and on the display.



Each drum is monitored by a device which counts the sectors with sold products, so that the empty drums are identified, as well as allowing or preventing the rotation by means of a magnet.

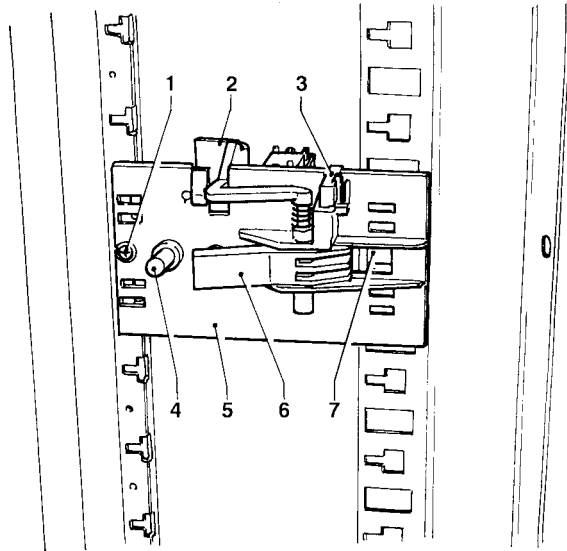


Fig. 10

- 1 - Securing screw
- 2 - Sector counter lever
- 3 - Home point magnet sensor
- 4 - Stop magnet pin
- 5 - Drum monitoring device
- 6 - Anti-rotation lever
- 7 - Quick snap hook

Counting is by means of a lever, operated by the passage of partitions.

A sensor detects the passage of a magnet, located on the edge of each drum, identifying the home point.

## LOADING

### With the door open

A special switch (see Fig. 4) signals to the control system that the door is open.

The loading buttons are activated and product vending is disabled.

When pressing a loading button, the corresponding drum rotates, to allow refilling, until the button is released.

As soon as it is operated, the drum is considered completely full and the counter of number of days to the expiry date for that drum is reset.

### With the door closed

In order to avoid a temperature increase inside the refrigerated box, the products can be loaded through the dispensing sliders.

The machine is preset for loading with the door closed (release of a single slider) by opening the payment system compartment door; the number of empty sectors is indicated on the price display of each drum.

When pressing the selection button, the first empty/expired sector is presented and the slider opens so that the product can be inserted.

Then, when pressing the selection button again, the next sector is presented for filling or the slider closes if the drum is full.

Loading operations for a drum can be interrupted by pressing the button of another selection.

## AUTO-CONFIGURATION



If the machine is disconnected from the mains power supply by unplugging the cable or using the main switch (see Fig. 20), when restarting the machine will go through an auto-configuration cycle.

The drums will be rotated at least a full turn, then the number of detected compartments for each drum and the position of the home point magnet will be stored.



## FILLER MENU

The machine is preset to “filler menu” mode when the payment system compartment door is opened and the programming button is pressed (see Fig. 5).

The keys “” and “” scroll through the menu items, which include:

“Statistics”	Data reading
“Prices”	Changing the price for one selection
“BDV tube control”	Manual refilling and release of change tubes (BDV only)
“Air adjustment”	Movement of stack and drums to align the air flow regulators flusso aria
“Anti-tampering”	Checking if the sold compartments contain any objects
“Test”	activating the drums; activating the sliders; test dispensing for each drum.

## STATISTICS

Data on the machine operations is stored in both general counters and relative counters, which can be reset without losing total data.

### PRINT

Connect an RS232 serial printer having a Baud rate of 9600, 8 data bit, no parity, 1 stop bit (the CITIZEN I-DP 3110-24RF 230A p/n 9210219 printer is recommended) to the serial port located on the push button board to print all of the statistics, and namely:

#### Total



- 1 - counter by single selection;
- 2 - counter by time bands;
- 3 - failure counter;
- 4 - coin mechanism data.

#### Relative

- 1 - counter by single selection;
- 2 - counter by time bands;
- 3 - failure counter;
- 4 - coin mechanism data.

The printout will also contain the machine code, the date and the software version.

To connect the printer, do as follows:

- press the confirm print button “”, displaying the message “Confirm?”;
- connect the printer before confirming;
- press the confirm button “” again to start printing.


## DISPLAY


When pressing the confirm button “#” the data described in the paragraph “Printing the statistics” is sequentially displayed.

## RESET

Statistics can be reset for relative counters globally (all types of data) or selectively for:

- selections
- failures
- coin mechanism data

Press the confirm button “”, and the message “Confirm?” starts blinking.

Press the confirm button “”, the message “Working” is displayed for a few seconds and all statistics are reset.


## SELECTION PRICES

This function is used to change the sales price for all compartments of a drum, for time band 0 and for all days of the week.

## CHANGE TUBES CONTROL

By accessing the “Tube control” function the change tubes can be filled or released manually.

Confirm refilling, and the display will indicate “Credit: —” which is the value of money available in change the tubes; insert the desired coin into the selector and the display will indicate the value of money available in the change tubes.

When confirming releasing, it will be possible to decide which tube to release. Each time the confirm button “” is pressed, a coin is ejected from the active tube.

## ADJUSTING THE AIRFLOW

The cold air flow coming from the central stack can be adjusted for each drum by means of the special adjustment screw. In order to make any adjustment the screws must be aligned with the corresponding holes on the drums. With this function the entire stack can be rotated by pressing a loading button, until the screws are positioned in front of the operator.

It is also possible to unlock a single drum to be rotated manually until the hole is aligned with the adjustment screw.



## ANTI-TAMPERING CHECK

### (To be implemented)

This function is used to align to vending position the compartments recognised as empty by the machine control software to visually check that no products were accidentally left.

## TEST

### DRUM TEST

With this function the correct functioning of the drum rotation can be tested by pressing the selection buttons. With these functions, pressing the loading buttons **does not change the status** of a drum and/or of a sector (full/empty/expired).

## SLIDER TEST

With this function the correct functioning of the sliders can be tested by pressing the selection buttons without rotating the drums.

With these functions, pressing the loading buttons **does not change the status** of a drum and/or of a sector (full/empty/expired).

### COMPLETE SELECTIONS

Normal product dispensing can be simulated without inserting any money.

With this function, when pressing the selection button **the status** of a drum and/or of a sector is **changed** (full/empty/expired).





## TECHNICIAN MENU

Using the programming procedures described in this section, it is possible to set all variables regarding machine configuration.

The machine is preset to “technician menu” mode when connected to the power supply with the payment system door open and the programming button is pressed twice.

**N.B. When pressing the button again while in the programming menu, the machine will return to “loading” mode.**

The keys “” and “” scroll through the technician menu items, which include:

Failures	Reading present failures		
	Reading drum/slider failures		
	Cancel		
	Lighting	Neon lamps On/ Off with out of service	
Progr. parameters	Cash	Prices Coin mech. Decimal point Bonus	
	Drums/sliders	Drum param. Slider param.	
	Cold parameters	Temperature Defrosting Air adjustment Cooling unit	
	Display	Language User messages Prom. message Euro Display counter	
	Miscellaneous	Password Energy saving Progr. level	
	Statistics	Print	Partial
	Relative print	Partial Total	
	Display	Partial Total	
	Relative display	Partial Total	
	Cancel	Partial Total	
Cancel relative	Partial Total		
	Display counter at start-up		

Test

Drum

Slider

Complete selection

Miscellaneous

Machine info

Installation date


Machine code


Operator code

Initialising

## PRESENT FAILURES

### READING

When the “Failure” function is displayed, press the confirm button “” to display the present failures.

If no failures are currently present, after pressing the confirm button “” the message “End failures” will be displayed.

The monitored failures are:

### Compressor

The machine is locked if the compressor runs non-stop for more than 24 hours.

### Coin mechanism

The machine is locked if it receives a pulse longer than 2 seconds on a validator line or the communication with the serial coin mechanism does not take place for more than 30 seconds (Executive protocol) or 75 seconds (BDV protocol).

### RAM Data

One or more areas of the RAM contain wrong data which was corrected with the default values.

The machine will continue to function, but it would be advisable to initialise as soon as possible.

### Probe

The machine is locked after 5 minutes if the internal temperature sensor is disconnected; the display will indicate a temperature of -11° C.

The machine is locked after one hour if a sensor short circuit is detected; in this case the display will indicate a temperature of +41° C.

### Machine control board

Failed dialogue between C.P.U. board and machine control board.

### Gas temperature sensor

The display will indicate the message if a short-circuit is detected on the temperature control sensor of the hot-gas evaporator.

### Slider failure

If the motor electrical absorption is absent or above the programmed threshold, power is disconnected from the motor and the selection is disabled.

### Slider open

If the microswitch does not return to normal position within 3 attempts of 10 seconds after opening the slider, the machine is set out of service.

10 more closing attempts are made at 60 second intervals.



## Drum failure

If the “home” point magnet is not detected after a complete drum rotation, or if a microswitch does not detect the passage of the partition after making a selection, the selection is disabled.

## RESET

By confirming this function all current failures will be reset

## EXTERNAL LIGHTING

Setting whether or not the lighting lamps in the external panels are to be switched on when the machine is out of service or during the “Energy saving” time band.

# PROGRAMMING PARAMETERS

## CASH

This set of functions controls all parameters regarding the payment systems and the sales prices.

### SELECTION PRICES

Four different prices can be set for each selection, and for each day of the week, programmed according to the time bands, if enabled.

For each of the 4 time bands prices (0 to 65,535) can be programmed globally (same price for all selections) or for the single selections.

Should the majority of products be sold at the same price, it will be convenient to set the price globally and then change the figure of the selections with different prices.

### TIME BANDS

Four programmable time bands are provided for selling products at different prices.

The time periods are programmable for beginning and end time by hours (00 to 23) and minutes (00 to 59).

If the values for start and end of the time band are set to 00.00 the time period is disabled.

The reference time is kept by an internal clock, programmable as:

day/month/year week-day 1-7

and then

hour/minutes/seconds.

### COIN MECHANISMS

It is possible to decide which of the payment system protocols available are to be enabled for the functions.

The available payment systems are:

- Executive
- Validators
- BDV
- MDB

By selecting one of the systems it is possible to control its functions.

## EXECUTIVE

The following payments systems are available for the Executive system:

- Standard
- Price Holding
- Coges
- U-Key
- Sida

## VALIDATORS

When the “Validat. Lines” (line setting) function of the “Technician” menu is displayed, the value of the 6 validator coin lines can be changed.

### BDV / MDB

The BDV and MDB protocol menus are relatively similar. The following structure shows the differences.

### Type of vending

Setting the operating mode for multiple or single dispensing. With multiple dispensing, the change is not automatically returned after a successful selection, however the credit is available for further selections. When pressing the coin return button, the available credit is returned if its value is lower than the maximum change value.

### Credit control

This function enables/disables the return of credit if no selections are made.

If enabled, this function will hold the credit until the first selection has been made. If however a selection fails for any reason, the change will be returned if requested.

### Maximum credit

This function is used to define the maximum accepted credit.

### Maximum change

It is possible to set a limit to the total amount of change returned by the coin mechanism when pressing the coin return button or after a single dispensing serving.

The value can be 0 to 250 basic coins. Any credit exceeding the amount programmed with this function will be cashed.

### Accepted coins

It is possible to define which, among the coins recognised by the validator, are to be accepted.

Check the label on the coin mechanism for the correct coin to value matching, indicating the position of the coins.

### Rejected coins (BDV only)

This function programs the rejection of coins when in “exact amount” mode.

Check the label on the coin mechanism for the correct coin to value matching, indicating the position of the coins.



### Disabled coin return (MDB only)

This function disables the return of a specific coin.

### Dispensing buttons (BDV only)

This function enables or not the buttons on the coin mechanism used to release the coins in the change return tubes.

### Value of “exact amount” (BDV only)

This value defines the combination of empty coin tubes, setting the coin mechanism in “exact amount” mode. The possible combinations of empty coin tubes are indicated below. For greater simplicity, the combination is described with reference to tubes A, B and C, where tube A receives the lower value coins and tube C the greater value coins.

0	=	A or (B and C)
1	=	A and B and C
2	=	A and B only
3	=	A and (B or C)
4	=	A only
5	=	A or B only (default)
6	=	A or B or C
7	=	A or B only
8	=	A or C only
9	=	B and C only
10	=	B only
11	=	B or C only
12	=	C only

### C.P.C. devices (BDV only)

It dialogues with the coin mechanism if devices are installed or removed from the serial interface (C.P.C.-type devices - the monitoring unit is always enabled by default).

### Minimum level of tubes

It brings forward the “Insert exact amount” message for the user, by adding a number of coins between 0 and 15 to the programmed number of coins, to set the “full change tubes” status.

### Free Vend (BDV only)

Most payment systems with the BDV protocol control the free vend function.

However, there are some payment systems without such function.


In this case, if free selections are to be dispensed, free vending must be enabled with VMC (vending machine control, disabled by default) and the price of the selections must be set to zero.

### Immediate change


Normally, the amount of credit inserted for a selection is cashed after the machine sends the message “Selection successful”.

When this function is enabled, disabled by default, the cash message is sent at the beginning of dispensing.

### DECIMAL POINT

Press the confirm button “” to display the position of the decimal point, i.e.:

0	decimal point disabled
1	XXX.X
2	XX.XX
3	X.XXX

Press the confirm button “”, these values will start blinking and can then be modified as necessary.

## FREE VEND BONUS

### (To be implemented)

This function, compatibly with the national laws, permits the dispensing of a free product every certain number of sold selections.

## DRUMS / SLIDERS

This set of functions is used to define the control parameters of the different drums and sliders.

## DRUM VENDING PARAMETERS

The programmable drum parameters are as follows:

### Type of vending

Setting the vending mode (Shopper or First In - First Out) for each drum;

### Drum status

Enabling or disabling a drum for vending

### Drum status by time band

Enabling or disabling a drum for vending according to the programmed time bands.

### Drum expiry date

Setting the number of days from the last refill after which the sectors are considered expired (vending disabled). The counter is reset for all sectors of a drum at each refill. With the number of days to expiry date set to zero (default) this function is disabled.

### Drum rotation

Setting the amount of time between the slider closing and the moment when the drum rotation can start. During this time the slider can be reopened.

### Drum codes (To be implemented)

A four-digit code can be assigned to each drum, identifying the drum when processing the statistical data.

## SLIDER PARAMETERS

### Slider opening time

Setting the amount of time for slider opening (10 sec. by default).



## COLD PARAMETERS

The operation of the refrigeration system can be programmed for the following functions.

### TEMPERATURE

#### Internal temperature

The internal temperature of the machine during normal operation can be set directly in °C (3 to 25); the default setting is 3° C.

#### Safety temperature

This function enables the control over the temperature (4° C higher than the rated internal temperature) to be reached within 45 minutes from switching the machine on, from closing the door or after 15 minutes of normal operation. When this function is active, if the temperature is not reached the machine is locked.

#### Temperature log

The internal temperature is stored every 10 minutes. With this function, it is possible to read the date, time and stored temperature.

### DEFROSTING

#### Automatic defrosting (with hot gas)

This function allows for a defrosting cycle (flow of hot gas to the evaporator) of 10 minutes maximum. The time interval between cycles can be programmed from 0 to 99 hours (the default setting is 6 hours); the time interval will be determined according to the relative ambient humidity and to the frequency of door openings.

With the timing set to 0 the function is disabled.

#### Defrosting cycle log

The duration in minutes of every defrosting cycle is stored. With this function, it is possible to read the date, time and stored duration.

### ADJUSTING THE AIRFLOW

The cold air flow coming from the central stack can be adjusted for each drum by means of the special adjustment screw. In order to make any adjustment the screws must be aligned with the corresponding holes on the drums.

With this function the entire stack can be rotated by pressing a loading button, until the screws are positioned in front of the operator.

It is also possible to unlock a single drum to be rotated manually until the hole is aligned with the adjustment screw.

### COLD UNIT ENABLE

The cooling unit operation can be disabled. The change will apply when restarting the machine.

## DISPLAY

This set of functions is used to manage the messages indicated on the external display.

### LANGUAGE

There is a choice of language, selected among the ones included in the EPROM, to be used for the messages on the display.

### DISPLAYING MESSAGES FOR THE USER

It is possible to choose the kind of information to be indicated on the display during normal operation.

The following information can be displayed:

- No information
- Internal temperature
- Date and time

It is possible to choose the language for the displayed messages.

### PROMOTIONAL MESSAGE

#### Enable

When in this menu, press the confirm button "↵" to display the status of the message (enabled or disabled). The status can then be changed using the "↑" and "↓" buttons.

#### Setting

The 4-line message can be written using the "↑" and "↓" buttons to scroll through the available characters.

Press the confirm button "↵", the first character will start blinking and can be modified.

The message is stored by pressing button "↵".

### CUSTOMISING THE MESSAGES

The machine uses standard messages to give information to the user during normal operation (e.g. "Ready", "Take" etc.). When this function is enabled, the message can be changed in the same manner as setting the promotional message. Changes are stored as copies of the standard messages.

Therefore, if this function is disabled, the standard messages will be displayed again, but the changed messages are still stored.

### EURO

It is possible to decide whether the selection prices are to be displayed in Euros, the local currency or both.

### SELECTION COUNTER DISPLAY

This function is used to enable/disable the display of the total number of sales since the last statistic reset, during the start-up phase of the machine.



## MISCELLANEOUS

This set of functions contains some sub-menus, used less frequently, which permit control of the functions described below.

### PASSWORD

#### ENTERING THE PASSWORD

It is a 5-digit numeric code which is required to access programming.

The default value of this code is set to 00000.

#### ENABLING THE PASSWORD

This function is used to enable the option of requesting the password to access programming; the password request is disabled by default.

### ENERGY SAVING

In order to save electric energy when the machine is not in use, this function is used to switch off the external lighting.

2 switch-off time bands can be programmed on a weekly basis; the week days are identified by a progressive number (1=Monday, 2=Tuesday etc.).

The same time band cannot include days from different weeks.

If time bands are set overlapping, the machine will remain switched on for the shorter period.

For example, in order to set energy saving time bands to run the vending machine from 07.00 to 22.00 during the week and leave it switched off on the weekend, the time bands should be set, using the special menu, as indicated in the table below.

Day		1	2	3	4	5	6	7
Band 1	start	00.00	00.00	00.00	00.00	00.00	00.00	00.00
	end	07.00	07.00	07.00	07.00	07.00	23.59	23.59
Band 2	start	22.00	22.00	22.00	22.00	22.00	00.00	00.00
	end	23.59	23.59	23.59	23.59	23.59	00.00	00.00

### DISPLAYING THE FILLER MENU

This function is used to determine the filler menu options to be left active or to be disabled.

The reference numbers of the menus do not change even if some are disabled.

## STATISTICS

Data on the machine operations is stored in both general counters and relative counters, which can be reset without losing total data.

### PRINT

Connect an RS232 serial printer having a Baud rate of 9600, 8 data bit, no parity, 1 stop bit (the CITIZEN I-DP 3110-24RF 230A p/n 9210219 printer is recommended) to the serial port located on the push button board to print all of the statistics, and namely:

#### Total

1 - counter by single selection;

2 - counter by time bands;

3 - failure counter;

4 - coin mechanism data.

#### Relative

1 - counter by single selection;

2 - counter by time bands;

3 - failure counter;

4 - coin mechanism data.

The printout will also contain the machine code, the date and the software version.

To connect the printer, do as follows:

- press the confirm print button "➡", displaying the message "Confirm?";

- connect the printer before confirming;

- press the confirm button "➡" again to start printing.

### DISPLAY

When pressing the confirm button "➡" the data described in the paragraph "Printing the statistics" is sequentially displayed.



## RESET

Statistics can be reset either globally (all types of data) or partially for:

### Total

- selections
- failures
- coin mechanism data

### Relative

- selections
- failures
- coin mechanism data

Press the confirm button "➡", and the message "Confirm?" starts blinking.

Press the confirm button "➡", the message "Working" is displayed for a few seconds and all statistics are reset.

## TEST

### DRUM TEST

With this function the correct functioning of the drum rotation can be tested by pressing the loading buttons. With these functions, pressing the loading buttons **does not change the status** of a drum and/or of a sector (full/empty/expired).

### SLIDER TEST

With this function the correct functioning of the sliders can be tested by pressing the loading buttons without rotating the drums.

With these functions, pressing the loading buttons **does not change the status** of a drum and/or of a sector (full/empty/expired).

### COMPLETE SELECTIONS

Normal product dispensing can be simulated without inserting any money.

With this function, when pressing the selection button **the status** of a drum and/or of a sector is **changed** (full/empty/expired).

## MISCELLANEOUS

This menu contains some sub-menus, used less frequently, which permit control of the functions described below.

### MACHINE INFORMATION

The machine can memorize a series of codes which will identify it when retrieving statistics.

More specifically the following can be stored:

- The 6-digit operator code which also represents the password to access code change mode;
- 8-digit vending machine code which identifies the machine.

### INSTALLATION DATE

This function is used to store the current date of system as installation date.

The date is printed when retrieving the statistics.

### MACHINE CODE

When the "Machine code" function is displayed the eight-digit numeric code identifying the machine can be changed (from the default 0).

### OPERATOR CODE

When the "Operator code" function is displayed the six-digit numeric code identifying groups of machines can be changed (from the default 0).

### INITIALISING

When the "Initialise" function is displayed the vending machine can be initialized restoring all default data.

This function should be used if there is a memory data error or when the EPROM is replaced.

All statistic information will be reset.

Press confirm button "➡" to display the message "Confirm?". Press confirm button "➡" a second time and the message "Working" is displayed for a few seconds.



## PROGRAMMER (Optional)

### AUTOMATIC SETUP TRANSFER

Using the programmer device it is possible to read the programming data (except the machine code) set and transferred to other machines from a reference vending machine.

This data is preserved also when the programmer is disconnected thanks to two Duracell batteries LR03 Format AAA 1.5 V (to be replaced every 12 months).

The programmer allows up to twenty different programs (setups) to be stored.

To differentiate among the 20 setups available those containing data, a special character is displayed, and namely:

< - > = Setup free

< > = Setup with data.

When creating the setup only those programs containing data are available; if no setup contains data, the message "no data available" will appear on the programmer display.

To connect the programmer to the machine, the special holder must be used connecting the cable to the special connector on the push-button board.

Then enter the "programming" mode.

Now, by inserting the programmer into its holder, the connection will take place automatically, and the setup menu will be shown on the programmer display:

- press key "E" to access the displayed function
- press key "O" to display the next function
- press key "C" to display the previous function

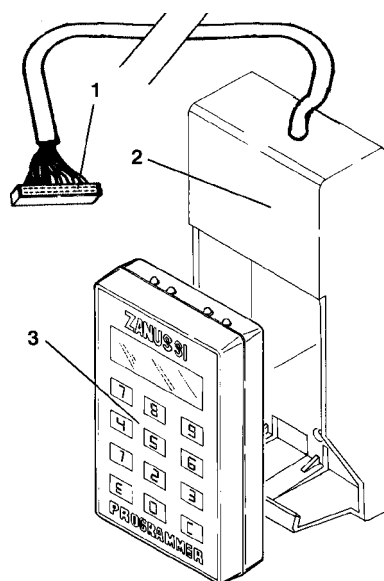


Fig. 11

- 1 - Connector
- 2 - Programmer holder
- 3 - Programmer

PROGRAMMER SETUP READING	SETUP READING SETUP 01 <X>	SETUP 01 <X> Confirm?
	SETUP READING SETUP 20 <X>	
PROGRAMMER CREATE SETUP	CREATE SETUP SETUP 01 <X>	SETUP 01 <X> Confirm?
	CREATE SETUP SETUP 20 <X>	

### CONFIGURING THE LANGUAGE

It is possible to change the programmer configuration regarding the language in which the messages are to be displayed as well as to reset all of the data therein contained.

To activate the "Programmer configuration" mode do as follows:

- insert the programmer in its holder and start the machine.
- wait for about 10" and then press programmer keys "C" and "O"; the first function will be thus displayed:

CONFIGURATION LANGUAGE	CONFIGURATION ITALIAN	CONFIGURATION Confirm?
	CONFIGURATION FRENCH	
	CONFIGURATION GERMAN	
	CONFIGURATION ENGLISH	
	CONFIGURATION SPANISH	
CONFIGURATION INITIALISING	INITIALISING Confirm?	
CONFIGURATION CONFIG. END	Exit from the configuration menu The software restarts from address 0000 (as at machine start-up)	



# MAINTENANCE

## PRINTED BOARD FUNCTIONS AND INDICATOR LIGHTS

### CPU BOARD

The C.P.U. card (Central Processing Unit) is located inside the payment system compartment; it communicates with the machine control board and processes the input signals from the push-buttons, the payment system and controls the display.

The card houses the "Flash EPROM" (the chips that contain the program) and a series of minidips (see Fig. 15) permitting the card to be configured according to the use of the machine (see relevant chapter).

The card also houses some LEDs which, during the machine operation, give the following indications:

- Green LED (2): blinks during normal operation of the C.P.U. board;
- Yellow LED (3): glows when 5 VDC are detected;
- red LED (4): glows in the event of a program error;
- red LED (5): glows during the card reset.

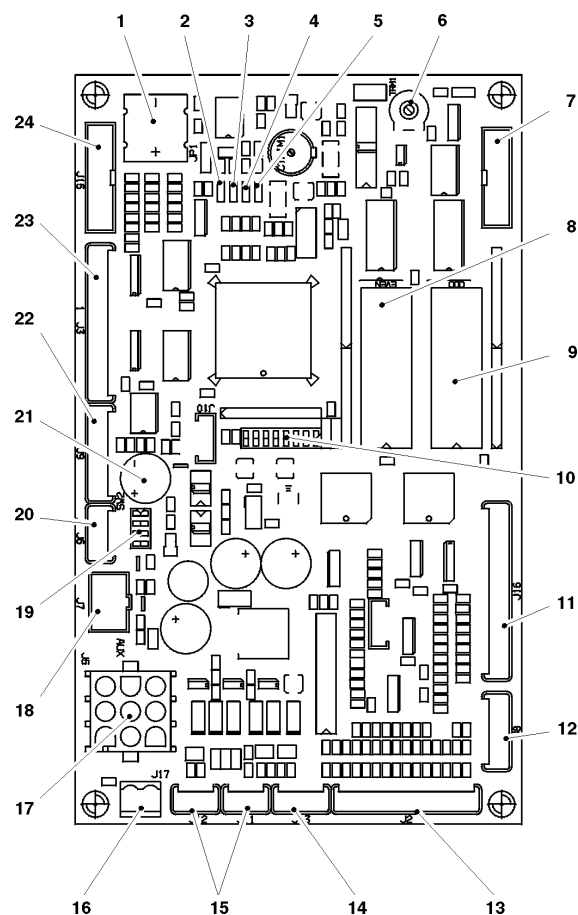


Fig. 12

- 1 - Battery
- 2 - Green LED: RUN
- 3 - Yellow LED: 5 VDC
- 4 - Red LED: program error
- 5 - Red LED: board reset
- 6 - LCD contrast control trimmer
- 7 - LCD connector
- 8 - Flash EPROM: EVEN
- 9 - Flash EPROM: ODD
- 10 - Configuration Minidips
- 11 - Service buttons connector
- 12 - Price display connector
- 13 - Selection buttons connector
- 14 - Connector not used
- 15 - Connectors for control board communication
- 16 - 24 V DC power supply to board
- 17 - BDV connector
- 18 - MDB connector
- 19 - Coin mechanism setting Minidip
- 20 - Connector not used
- 21 - Buzzer
- 22 - RS232 connector to programmer
- 23 - Connector not used
- 24 - Validator connector



## ACTUATION BOARD

This board (see Fig. 20) activates, by means of relays, some of the 230V~ components of the machine.

This board is powered with 24 VDC.

The control board Flash EPROM is fitted on this board:

- green LED, blinking at intervals of approximately one second, indicates that the microprocessor is working correctly; if blinking fast it indicates that there is no communication with the CPU card.
- red LED "H1", indicates
- red LED "H2", indicates
- red LED "H2", indicates

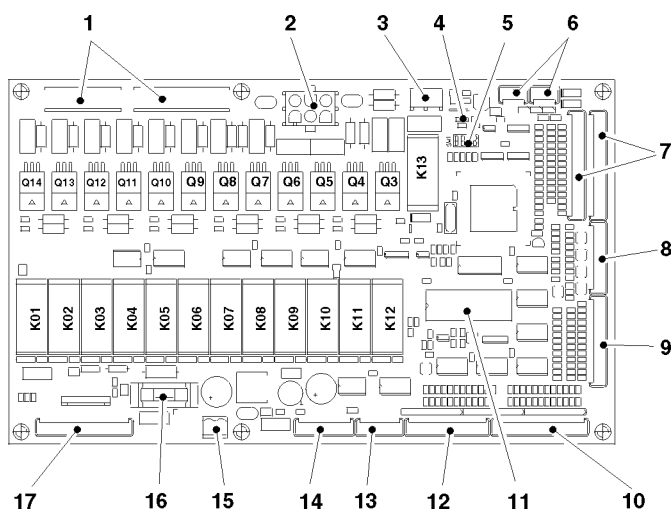


Fig. 13

RELAY AND TRIAC FUNCTION (see Wiring diagram)

K01	=	slider motor 1
K02	=	slider motor 2
K03	=	slider motor 3
K04	=	slider motor 4
K05	=	slider motor 5
K06	=	slider motor 6
K07	=	slider motor 7
K08	=	slider motor 8
K09	=	slider motor 9
K10	=	slider motor 10
K11	=	slider motor 11
K12	=	slider motor 12
K13	=	slider heating elements
Q3	=	drum magnet 1
Q4	=	drum magnet 2
Q5	=	drum magnet 3
Q6	=	drum magnet 4
Q7	=	drum magnet 5
Q8	=	drum magnet 6
Q9	=	drum magnet 7
Q10	=	drum magnet 8
Q11	=	drum magnet 9
Q12	=	drum magnet 10
Q13	=	drum magnet 11
Q14	=	drum magnet 12

## CONFIGURING THE C.P.U. BOARD

By using the configuration minidips the CPU card can be preset to operate with the different payment systems (minidips 1-4) and show the messages on the LCD display in different languages (minidips 6-8).

Minidip 5 is not used.

The 2 minidips for MDB coin mechanism setting (see Fig. 9) must both be set to OFF (Executive).

## SOFTWARE UPDATE

The machine is fitted with Flash EPROMs which can be electronically updated.


By means of a special program and suitable system (Personal Computer or similar) the machine management software can be updated without replacing the EPROMs.

- 1 - Drum magnets connection
- 2 - Power supply to drum magnets and slider heating elements
- 3 - Slider motors connection
- 4 - Green LED
- 5 - board configuration minidips 1-4: OFF 2-3: ON
- 6 - Connection to CPU board
- 7 - Connection to internal loading buttons
- 8 - Connection to sensors
- 9 - Connection to slider closing microswitches
- 10 - Connection to disk home point microswitches
- 11 - EPROM
- 12 - Connection to drum sectors microswitches
- 13 - Not used
- 14 - Connection to 230 VAC user relays
- 15 - 24 V DC power supply
- 16 - Slider motor fuses
- 17 - Slider motors connection



## SELF-DIAGNOSIS FUNCTION

A function to check, in a semiautomatic manner, the correct operation of some devices is implemented in the software.

Some checks occur automatically, others need the manual operation of the monitored component; button  is pressed to go to the next check.

The function is activated by setting Minidip 1 on the CPU board to = ON.

When starting the machine, the display indicates for a few seconds the message "Autotest" and then:

### "Shopper button"

Press the Shopper button .

If the connection is correct the message "OK" is indicated on the display together with a sound signal and advance to the next check.

### "Display test"

Rectangles are shown on the entire display to check the integrity of all pixels.

Automatic advance to the next check.

### "LCD test"

8.8.8.8. is displayed on the sliders' LCDs to check the integrity of all segments.

Automatic advance to the next check.


### "Lamp test"

The vending machine neon lamps are lit for a few seconds.

Automatic advance to the next check.

### "Small door microswitch"

By operating the switch on the payment system door the status of 'Closed micro' or 'Open micro' changes.

 to advance to the next check.

### "Programming button"

Press the Programming button (see Fig. 5).

If the connection is correct the message "OK" is indicated on the display together with a sound signal and advance to the next check.

This check can be skipped by pressing .

### "Reset button"


Press the Reset button (see Fig. 5).

If the connection is correct the message "OK" is indicated on the display together with a sound signal and advance to the next check.

This check can be skipped by pressing .


### "Rear door microswitch"

By operating the switch on the rear door (if fitted) the status of 'Closed micro' or 'Open micro' changes.

 to advance to the next check.

### "Large door microswitch"

By operating the switch the status of 'Closed micro' or 'Open micro' changes.

 to advance to the next check.

### "Selection buttons" - "Selection number 01"

Press the first selection button.

If the connection is correct the message "OK" is indicated on the display together with a sound signal and advance to the next selection.


This check can be skipped by pressing  various times.

### "Slider test"

By pressing the selection buttons, the corresponding sliders are opened and closed (this operation can be carried out only with the door closed).

If the slider opens and closes correctly the message "OK" is indicated on the display together with a sound signal and advance to the next selection.


The status of the opening microswitch and the closing safety can be checked.

 to advance to the next check.

### "Drum test"

By pressing the loading buttons inside the machine, the corresponding drums are activated.

The rotation causes the sector counter microswitch to trigger, and the passage of the magnet on the relevant sensor.

 to advance to the next check.


### "Compressor test"

The compressor is activated.

After 10 seconds, automatic advance to the next check.


### "Compressor fan test"

The compressor fan is activated.

 to advance to the next check.

### "Fan test"

The ventilation fan is activated.


 to advance to the next check.

### "Temperature"

The values of temperature detected by the probes are displayed.

In the event of disconnection the value -11.0 is displayed.

In the event of a short-circuit the value 41.0 is displayed.

 to advance to the next check.

At the end of the test cycle, switch the machine off and place Minidip 1 back to the OFF position.



## DRUM MAINTENANCE

### DISASSEMBLY AND RE-ASSEMBLY OF THE PRODUCT DRUMS

After opening the quick snaps, the two drum halves can be removed.

Using the loading buttons, the drums must be rotated until the joint line and the locking bolt are visible.

- Insert the special wrench onto the locking bolt and open the quick snap (tension cam) by turning slightly to the left (clockwise).

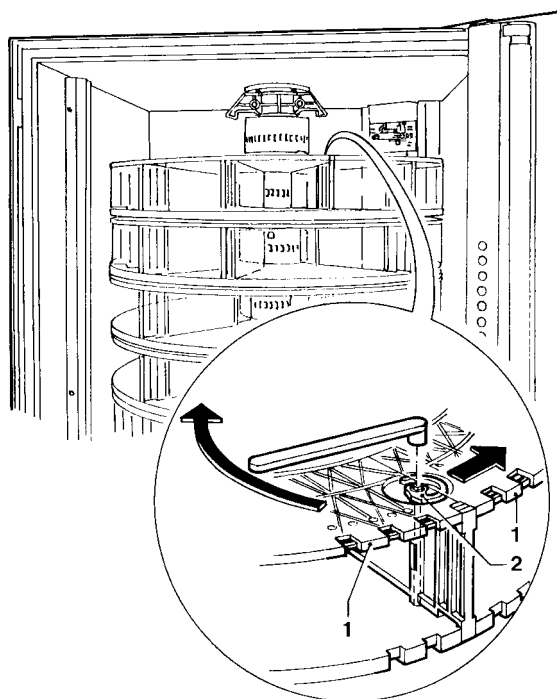


Fig. 14

- 1 - Drums halves
- 2 - Quick snap

- Continue rotating the drum 180° and open the next locking bolt.
- Continue rotating a further 90°.
- Remove the first drum half in small jerks.
- Continue rotating the drum a further 180° and take out in small jerks the second drum half.
- Re-assembly will be done likewise but in the reverse order!

Only those drum halves with exactly the same section partitioning (see Fig. 15) can be assembled.

## CHANGING THE COMPARTMENTS OF A DRUM

Each drum can be subdivided into 6, 12, 18, 24 or 36 sectors according to the number and type of partitions used.

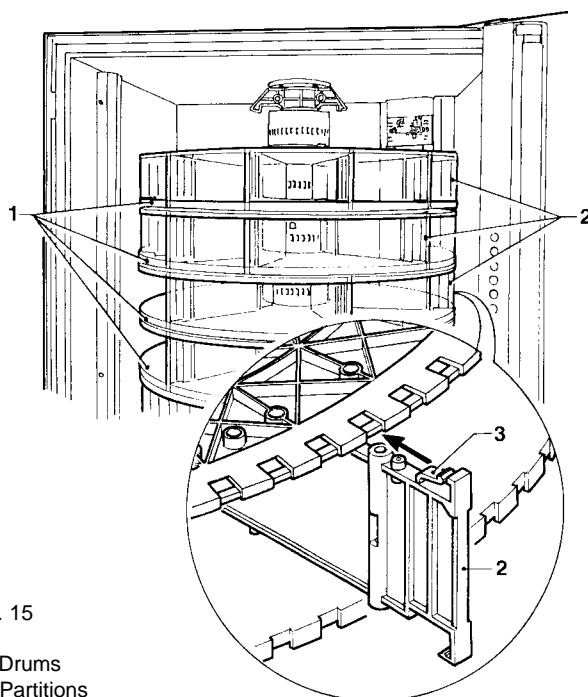


Fig. 15

- 1 - Drums
- 2 - Partitions
- 3 - Locking tangs

A new division of the sectors can be made by inserting the partition walls into the designated slots. Pay attention to the correct locking of the partition locking nose.

**Each drum can only be divided into sectors of equal size!**

No. of sectors	No. of partitions	No. of free slots
6	6	11
12	12	5
18	18	3
24	24	2
36	36	1

**Warning: after each new sector partitioning the machine must be reprogrammed (see programming chapter).**

### IMPORTANT NOTICE:

After every change to the number of sectors, the stop device (see Fig. 9) on the slider guide must be adjusted again.

Undo the stop screw, using a Phillips screwdriver, and move it to the new position.



Some models are fitted with drums that have shaped dividers (available also as accessories for later installation) so that rectangular shape products can be accommodated (see Fig. 16).

In this case the number of compartments cannot be changed.

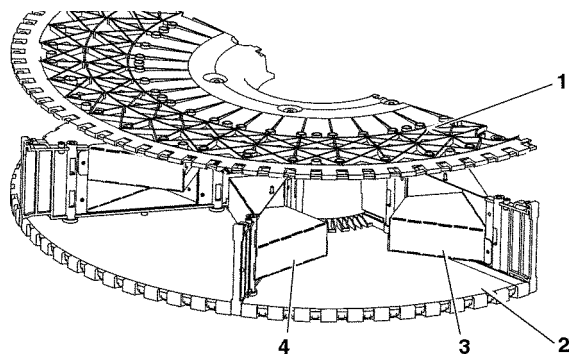


Fig. 16

- 1 - Upper half-disk
- 2 - Lower half-disk
- 3 - Right-hand shaped divider
- 4 - Left-hand shaped divider

## DISASSEMBLING THE DRUM STACK

Because of the dimension of the stack two persons are necessary to remove the entire drum stack easily.

- Remove the upper drum.
- Undo the 2 hexagon head screws of the drum shaft support.
- Remove the external shaft support.
- Lift the stack assembly and pull it outwards from below.

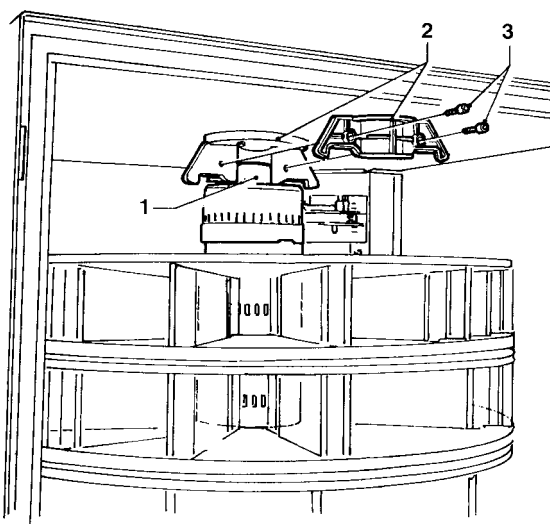


Fig. 17

- 1 - Shaft
- 2 - Shaft supports
- 3 - Hexagon head screws

- Re-assembly will be done in the reverse order.

## COOLING SYSTEM

The cooling unit is mounted onto the base.

The cooling temperature, between 0° C and 3° C, is preset by the manufacturer.

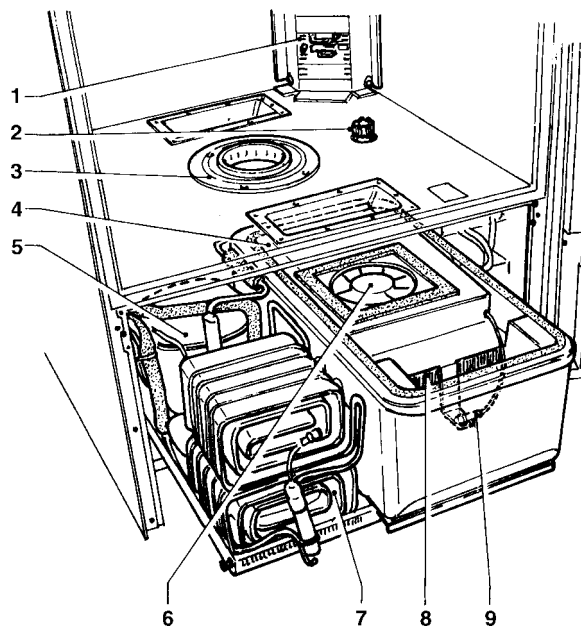


Fig. 18

- 1 - Stack of magnets
- 2 - Drive cog wheel
- 3 - Drum sliding guide
- 4 - Rear evaporator
- 5 - Compressor
- 6 - Central ventilation
- 7 - Condenser
- 8 - Front evaporator
- 9 - Temperature sensor

## AUTOMATIC DEFROSTING DEVICE

Automatic defrosting is enabled through programming. The defrosting system operation, indicated in Fig. 19, is as follows:

The bypass solenoid valve stays open until the sensor on the evaporator detects a temperature of 4° C. However, the software ensures that the defrosting cycle does not exceed 10 minutes.



The hot gas produced by the compressor flows directly to the evaporator through the bypass pipe.  
With the bypass solenoid valve open the evaporator fans are stopped, to avoid a temperature increase inside the refrigerated box.

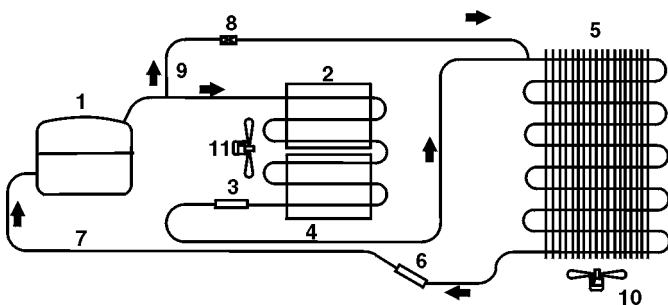


Fig. 19

- |                          |                      |
|--------------------------|----------------------|
| 1 - Compressor           | 6 - Liquids trap     |
| 2 - Condenser            | 7 - Suction pipe     |
| 3 - Dehumidifying filter | 8 - Bypass valve     |
| 4 - Capillary pipe       | 9 - Hot gas pipe     |
| 5 - Evaporator           | 10 - Evaporator fans |
|                          | 11 - Condenser fan   |

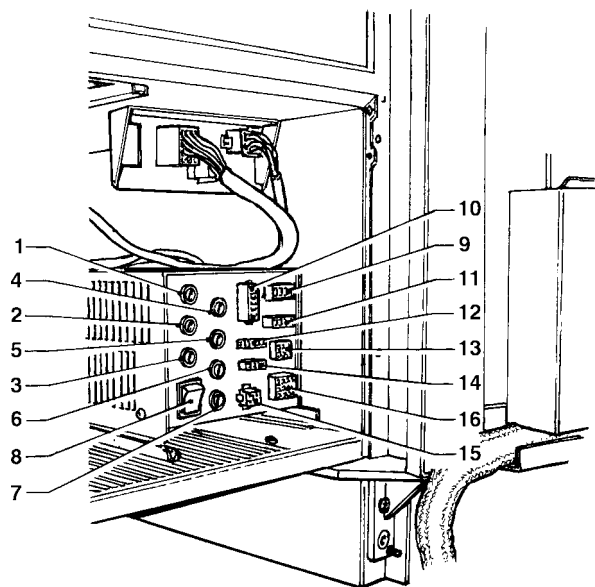


Fig. 20

- |    |   |
|----|---|
| 1  | Transformer primary winding fuse                  |
| 2  | Executive coin mechanism fuse                     |
| 3  | 24 V DC fuse                                      |
| 4  | Heating element fuse                              |
| 5  | Drum magnet fuse                                  |
| 6  | Line fuse   |
| 7  | Line fuse   |
| 8  | Main switch                                       |
| 9  | Power supply to drum magnets and heating elements |
| 10 | Connection to stack motor                         |
| 11 | Connection to door lamp                           |
| 12 | Connection to cabinet lamp                        |
| 13 | Power supply to coin mechanism and CPU board      |
| 14 | Connection to sensors                             |
| 15 | Connection to cold unit                           |
| 16 | Connection to control board                       |

## MAINTENANCE AND CLEANING

The machine must be kept clean at all times, both inside and outside.

Normally available products, as long as they are mild, may be used for cleaning.

When cleaning the drum halves in a dish washer, the water temperature should never exceed 60° C.

**Any detergent residue can cause unpleasant odour inside the machine!**

To ensure perfect operation, the product slider guides should always be kept clean.

**Never use grease or oil!**

### IMPORTANT NOTICE

The drums must never come into contact with grease or oil!

The condenser must be kept clean using a vacuum cleaner, a brush etc.

## POWER SUPPLY UNIT

The fuses, switches and connectors which are on the front of the power supply unit have the functions indicated below.

When the protective casing is fitted, only the fuses and the main switch are accessible.

When replacing any fuses the machine must be disconnected from the power supply.



## Filler menu - Summary

### TOTAL STATISTICS

With the printer connected  
print all data as displayed

Print data by:

Selections  
Time bands  
Discount-overprice  
Failures  
Coin mech data

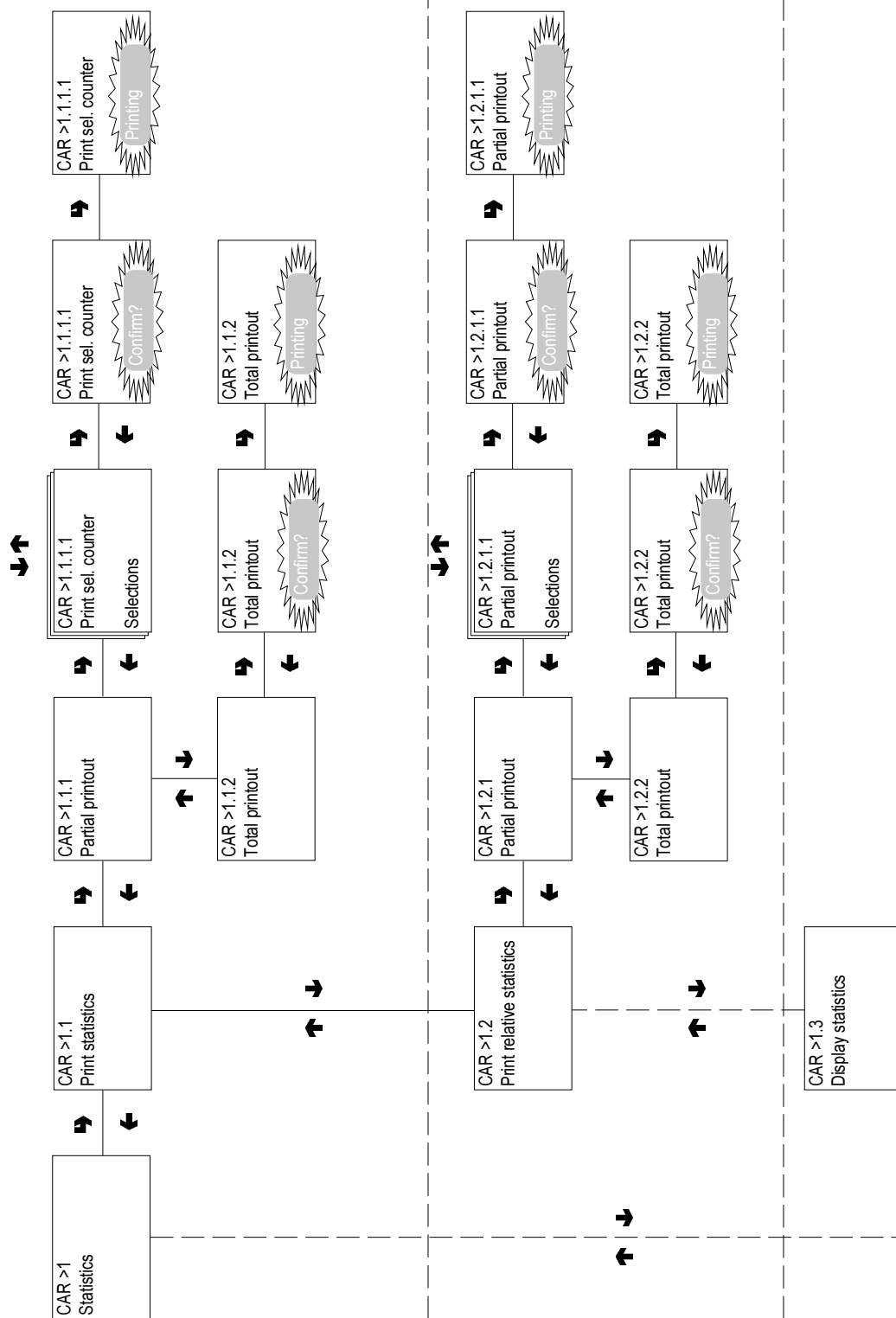
Heading:

Current date  
Machine model  
Software edition  
Operator code  
Machine code  
Installation date

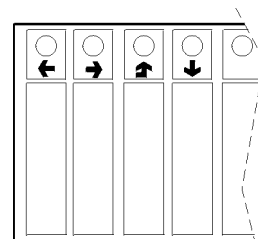
Print data by:

Selections  
Time bands  
Discount-overprice  
Failures  
Coin mech data

### RELATIVE STATISTICS

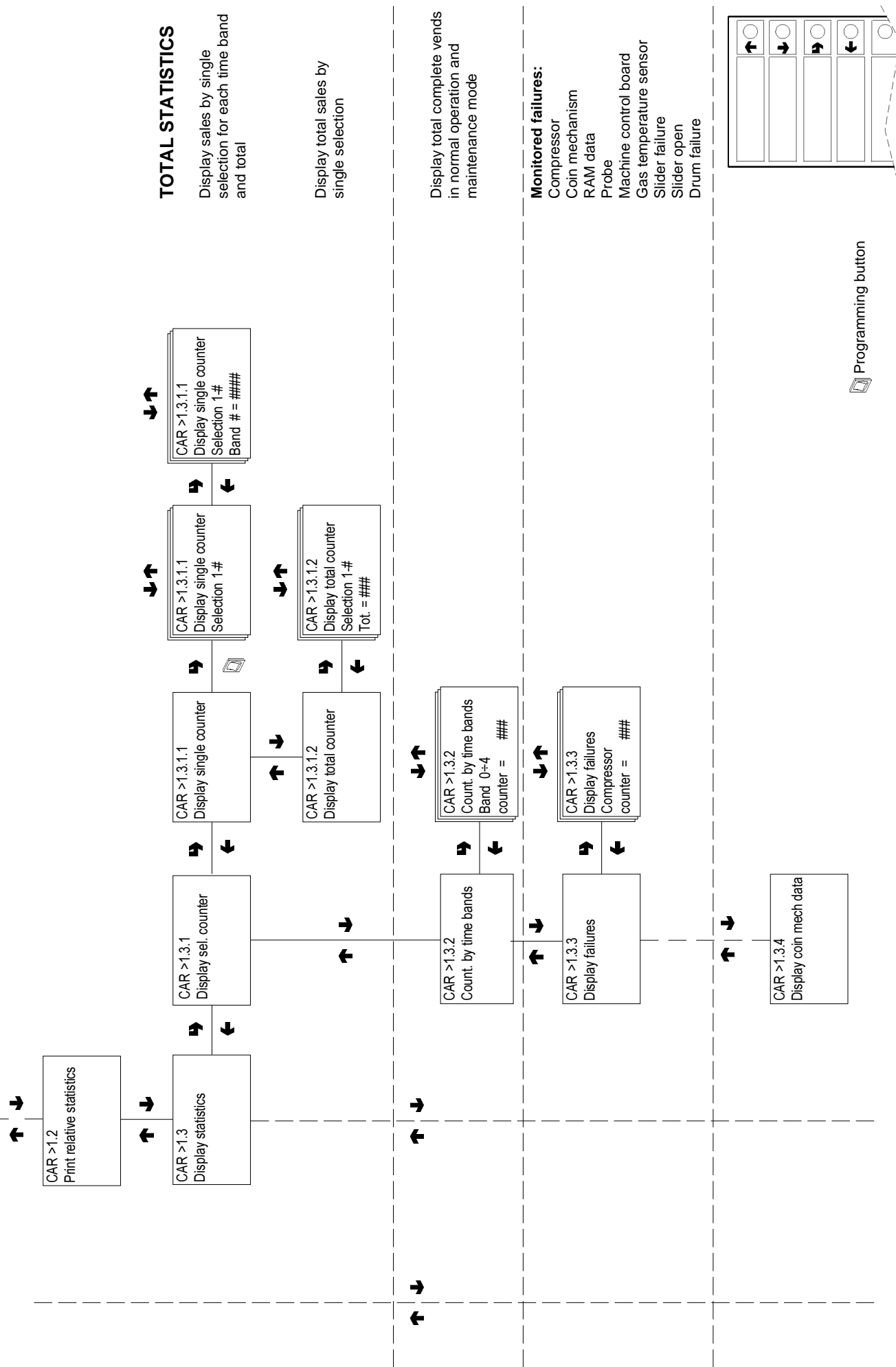


Programming button



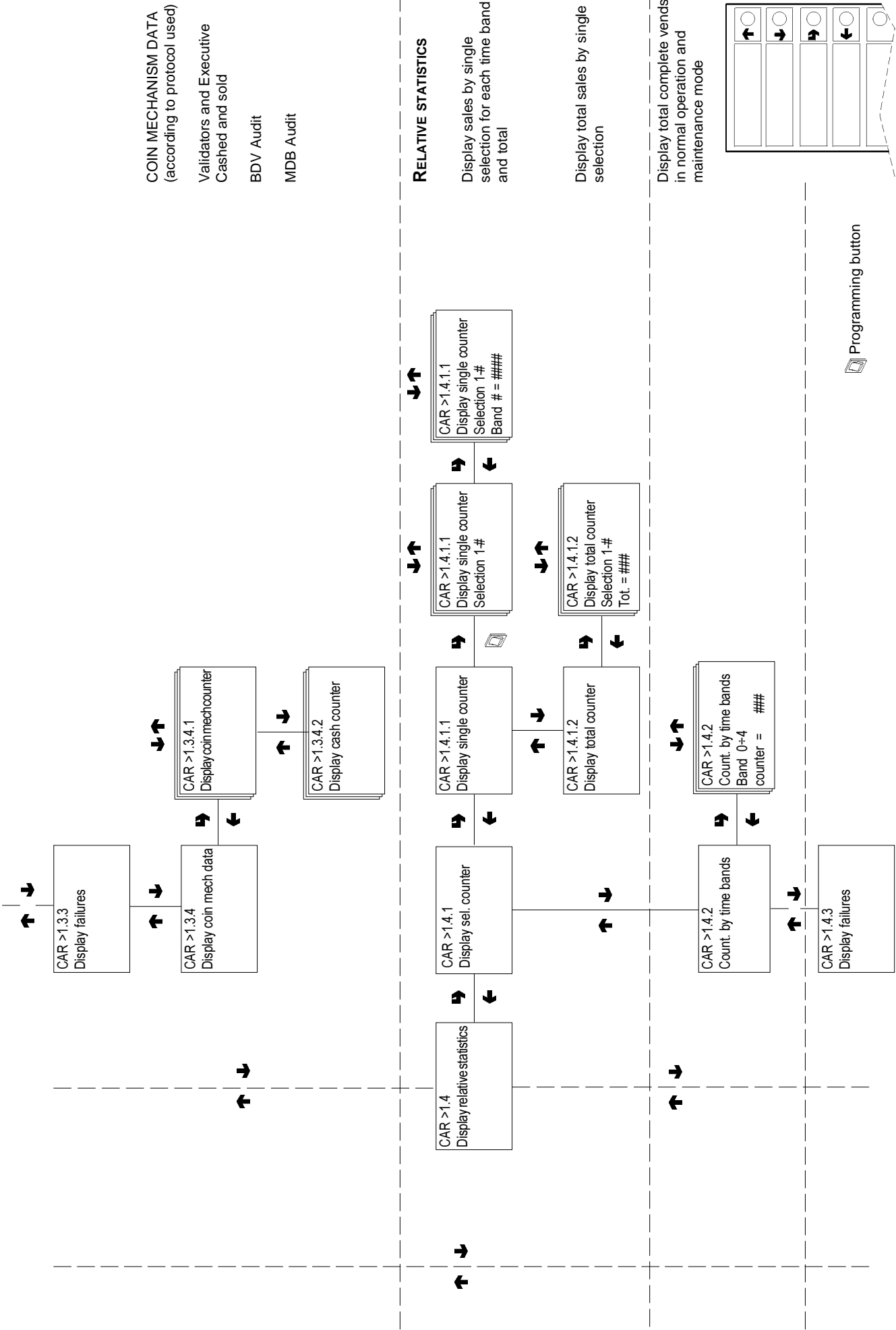


## Filler menu - Summary



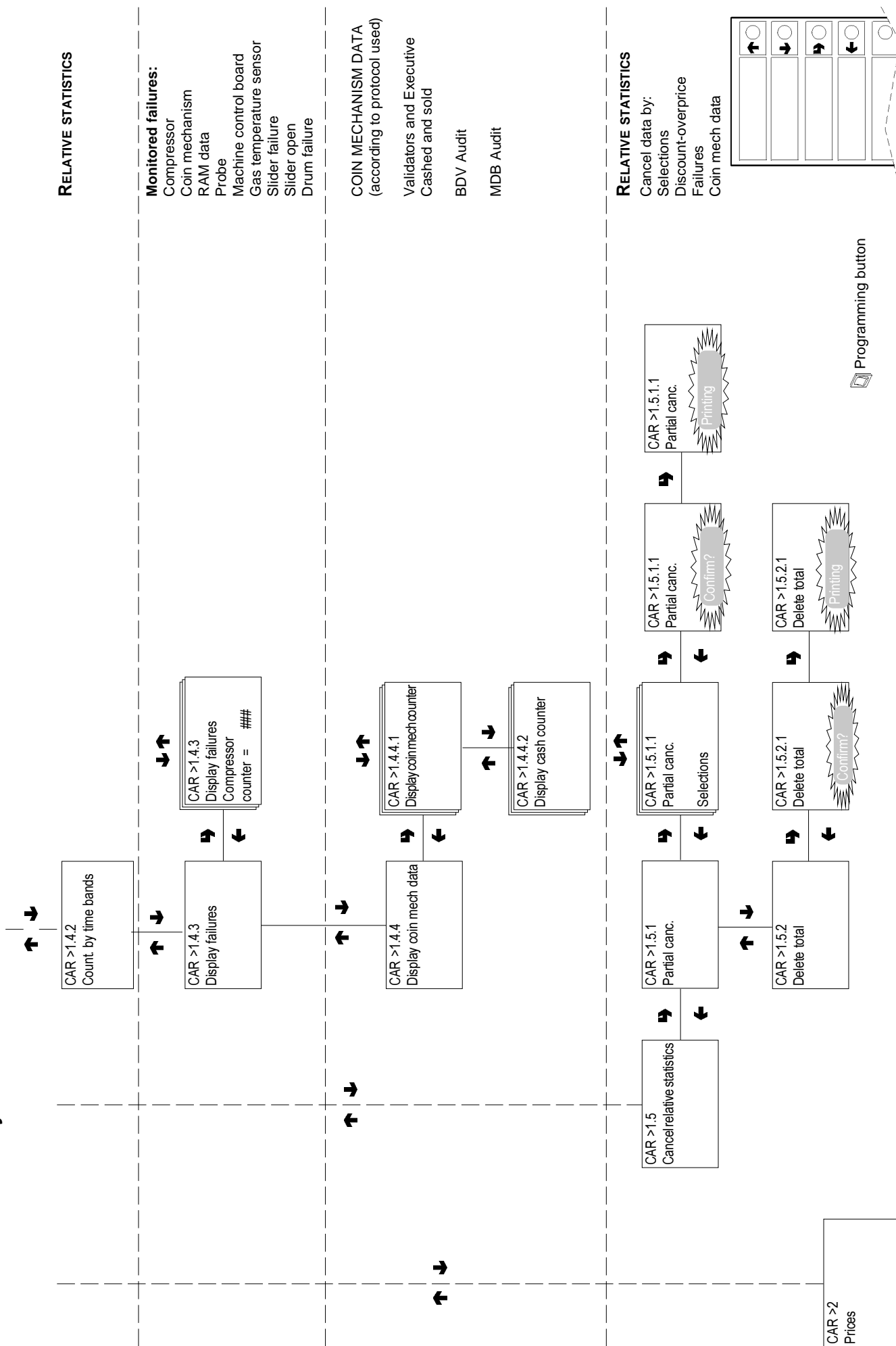


Filler menu - Summary



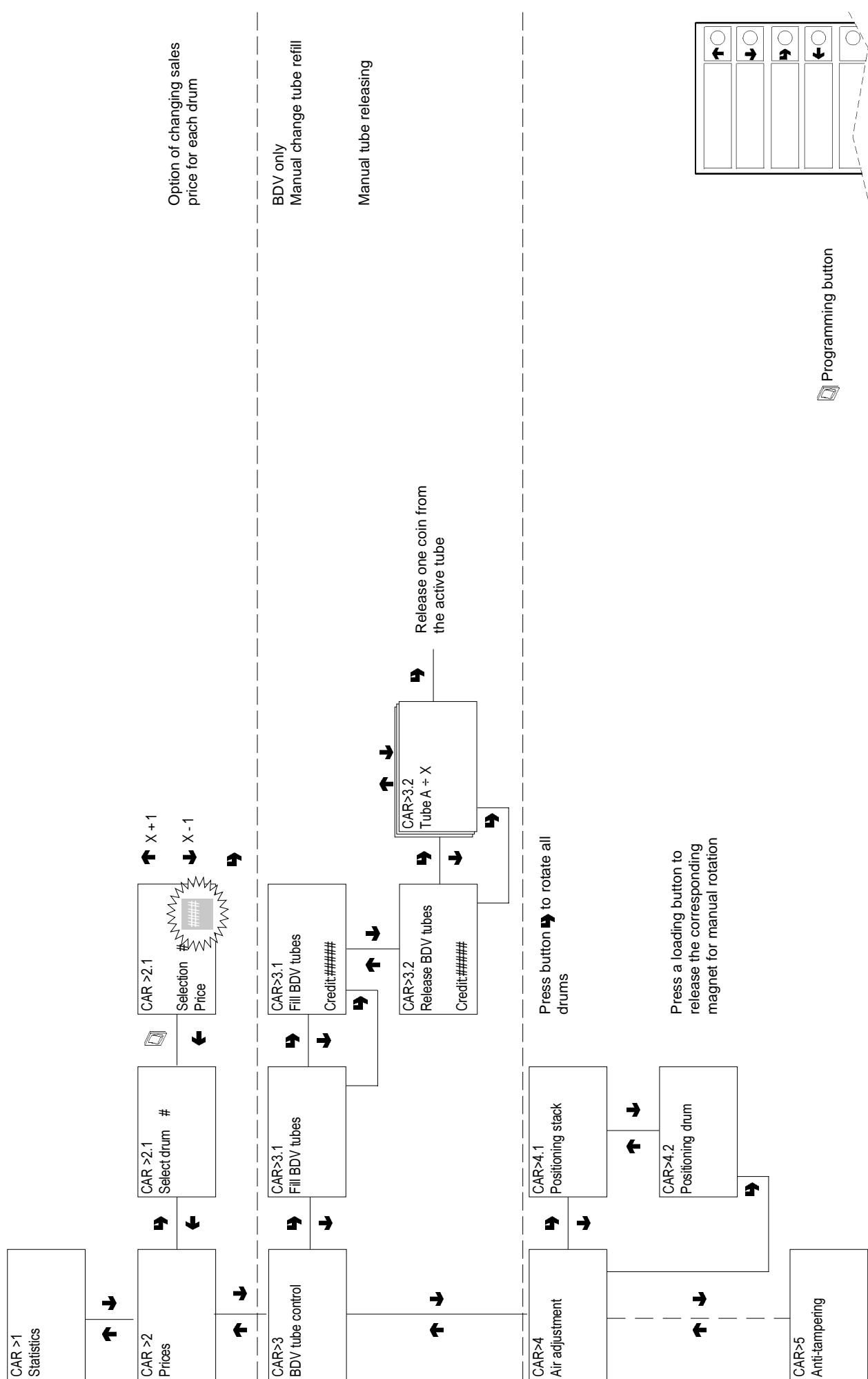


## Filler menu - Summary



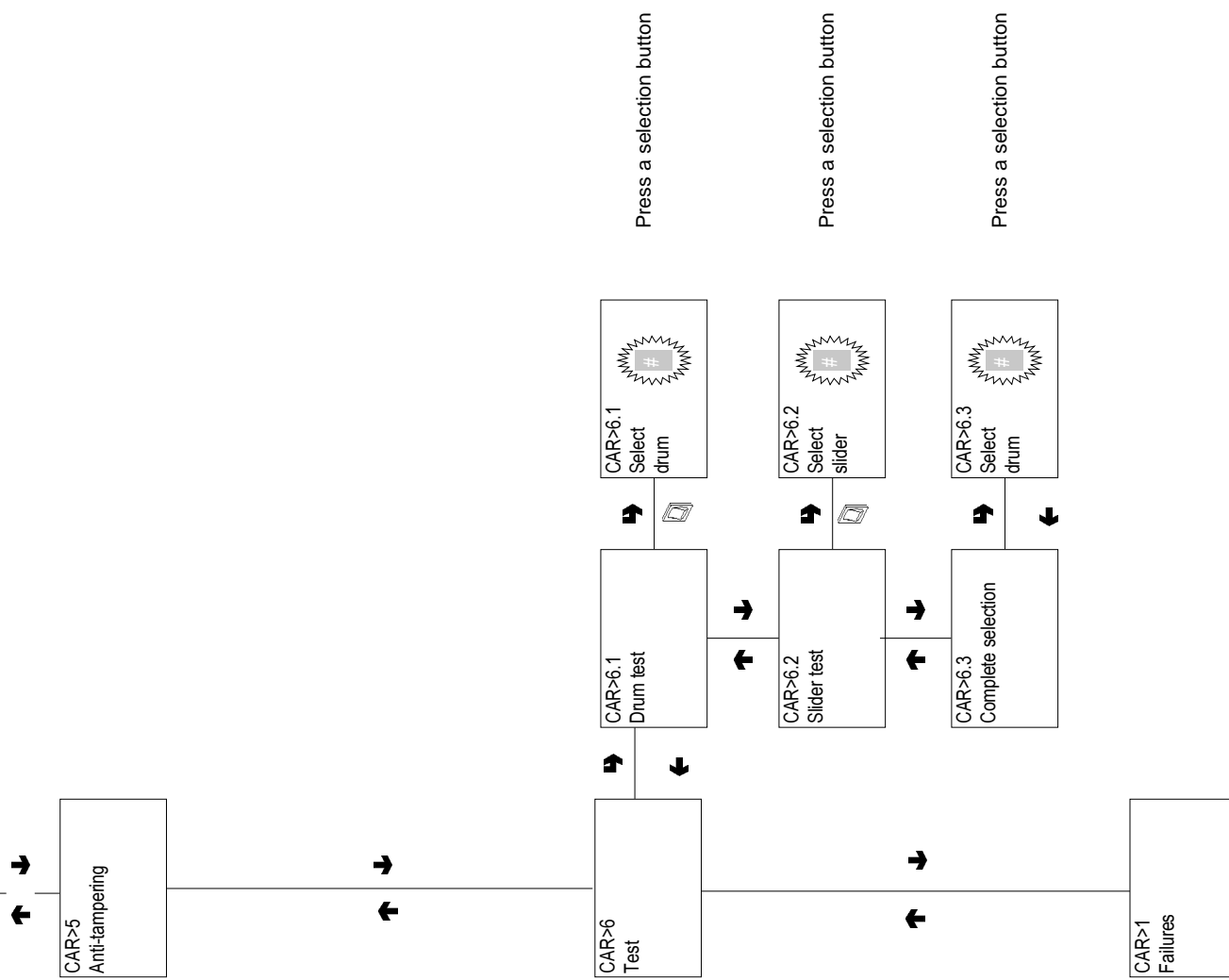


## Filler menu - Summary

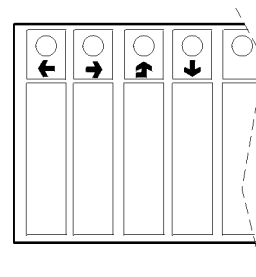




## Filler menu - Summary



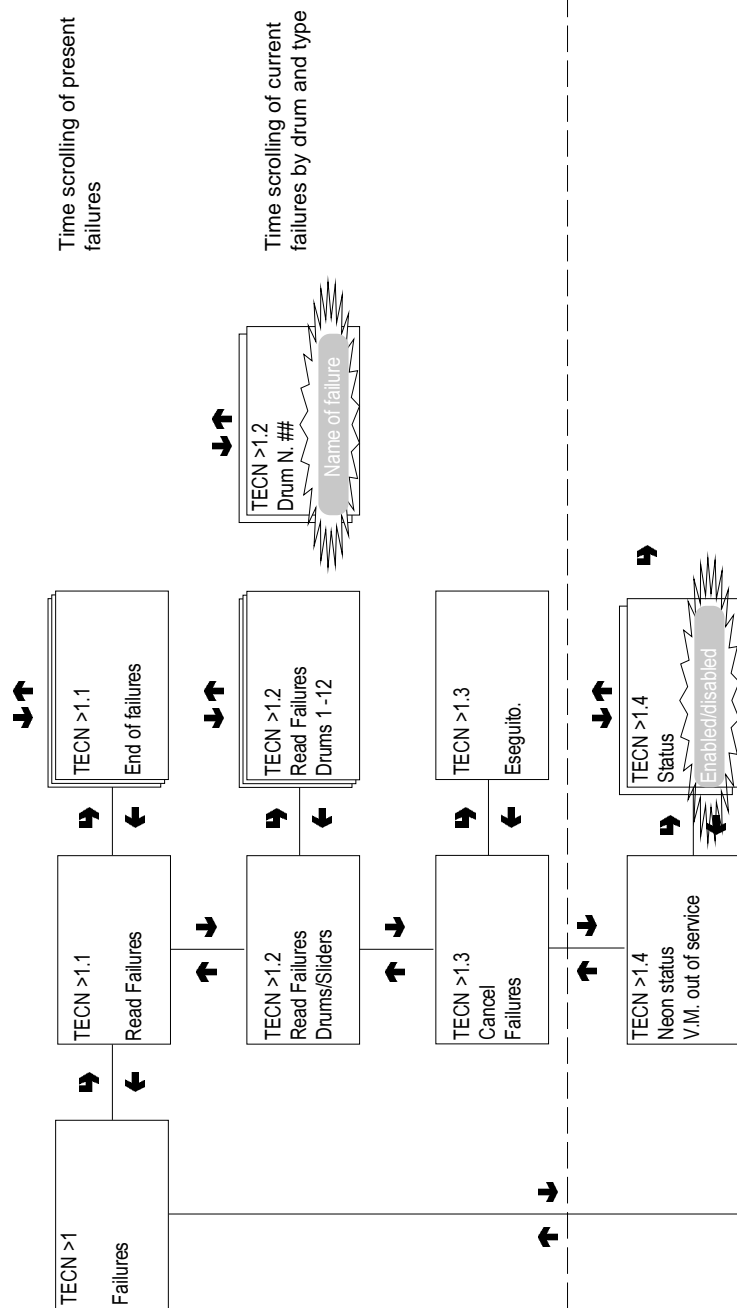
To be implemented



Programming button



## Technician menu - Summary




### DISPLAY FAILURES

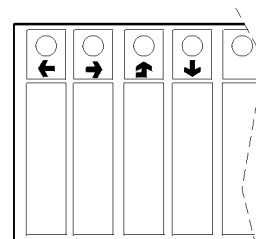
Monitored failures:

Compressor  
Coin mechanism  
RAM data  
Probe  
Machine control board  
Gas temperature sensor

1 to 12

Slider failure  
Slider open  
Drum failure

 Programming button



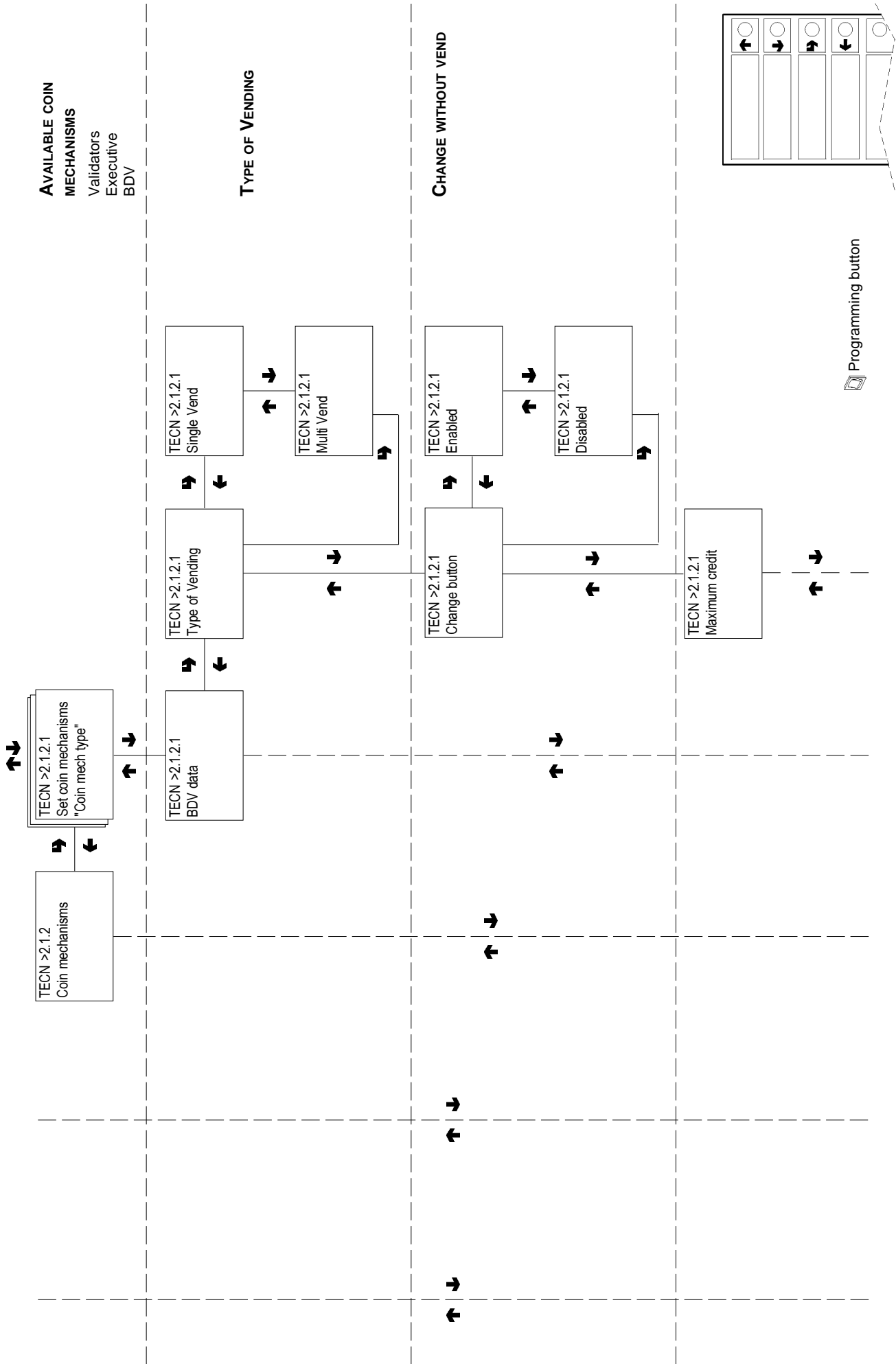


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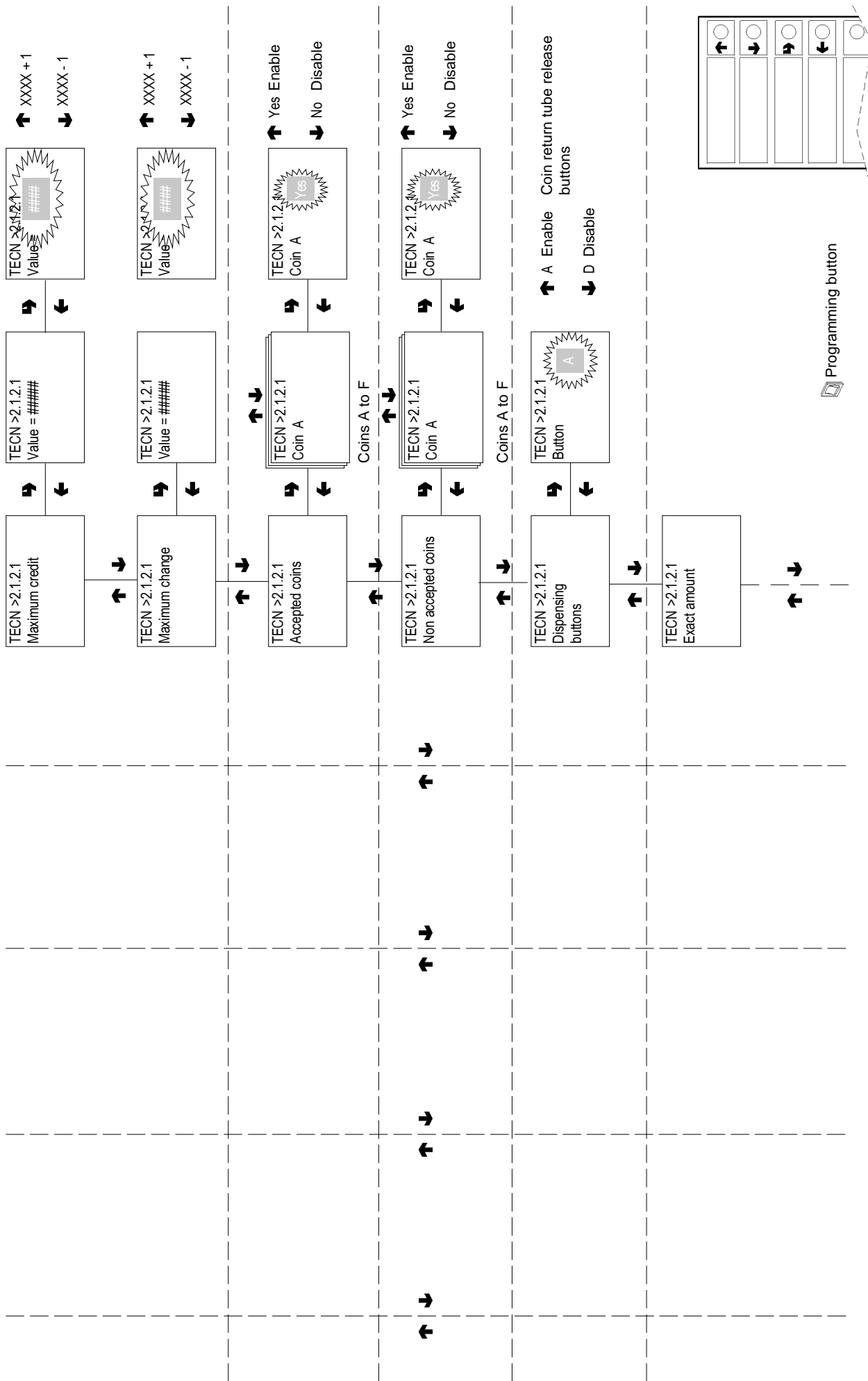


Technician menu - Summary



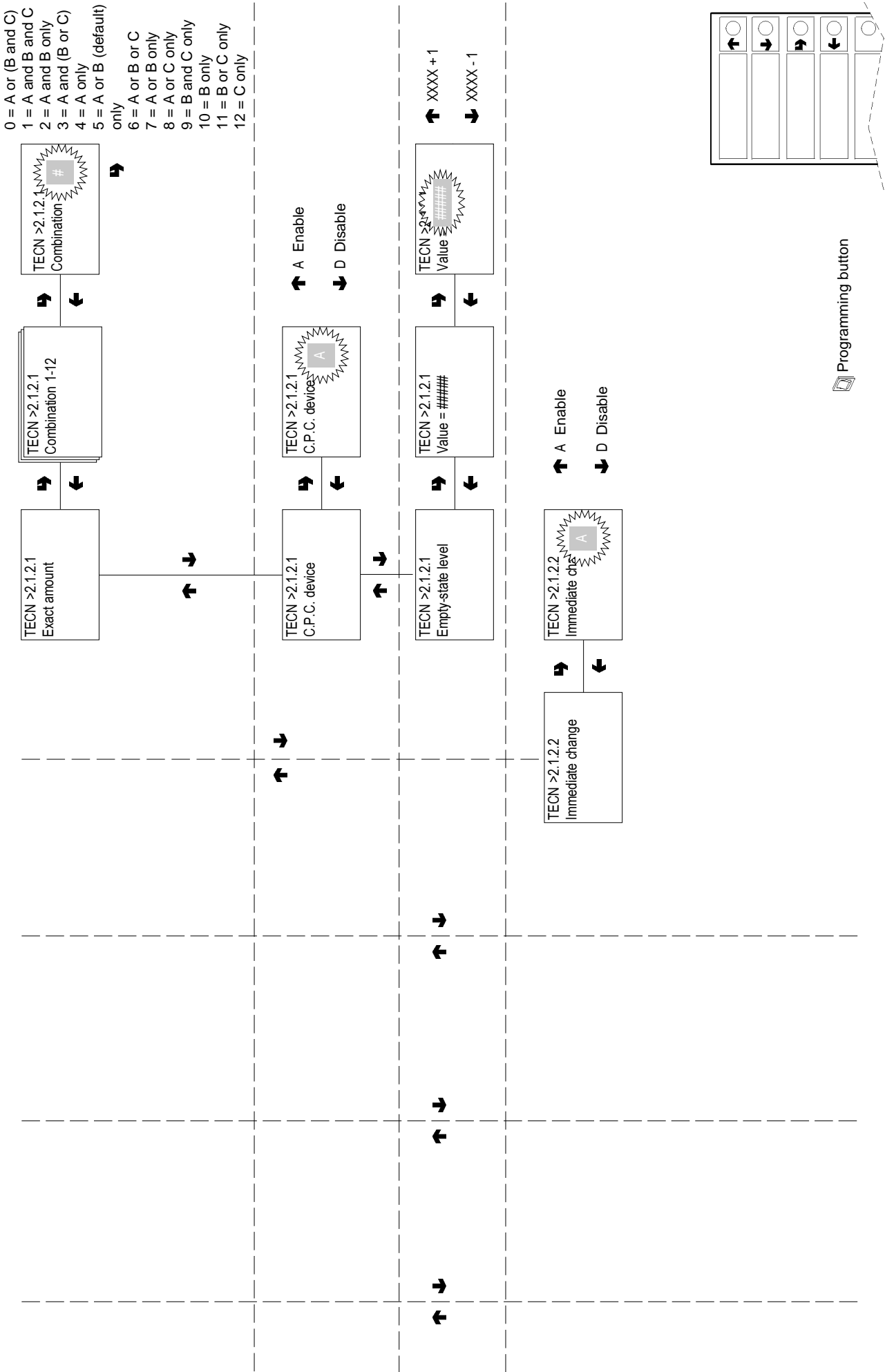


## Technician menu - Summary



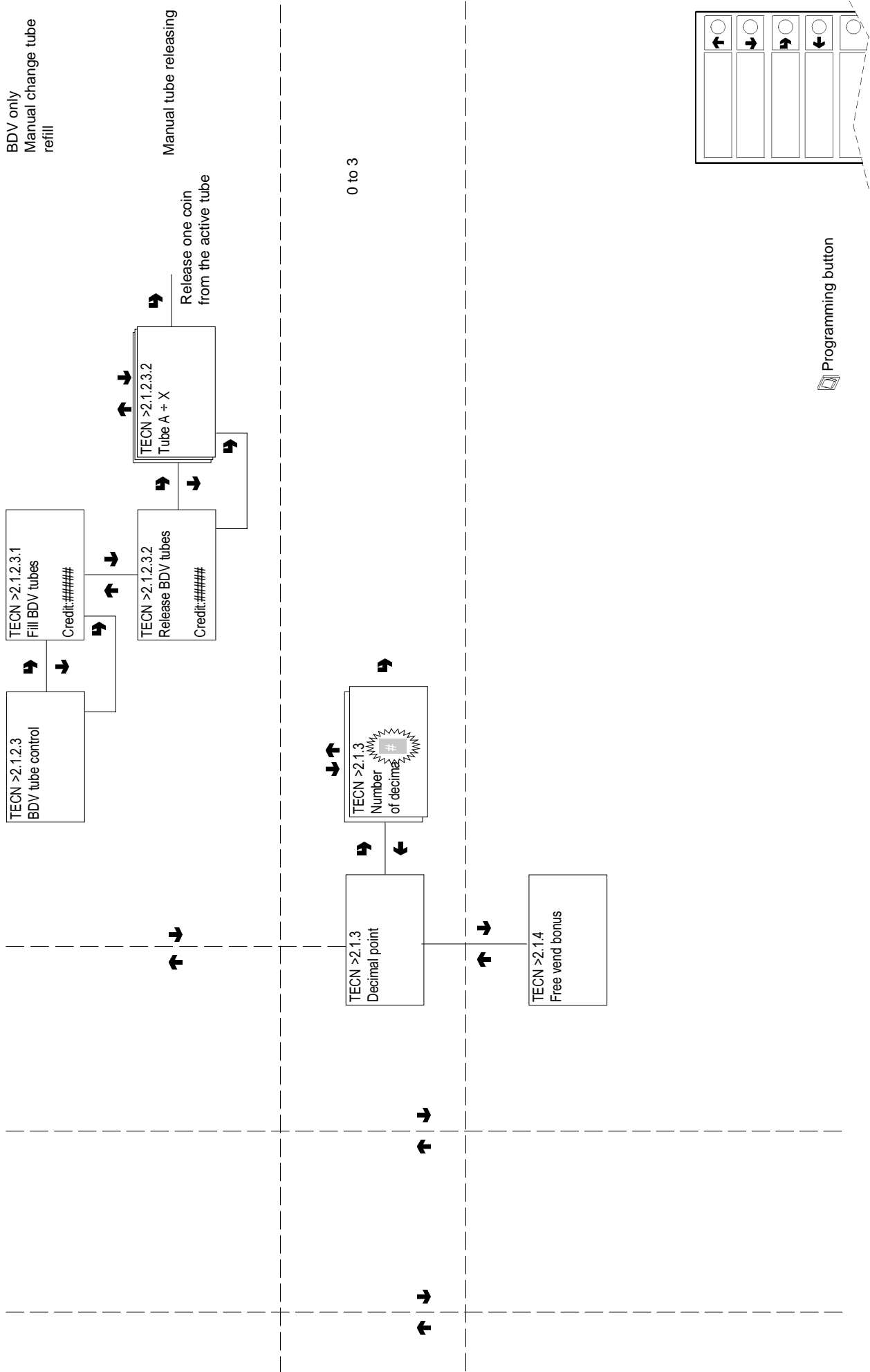


Technician menu - Summary

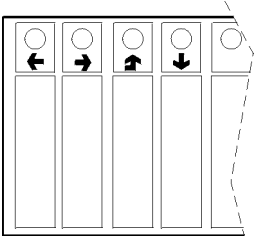




Technician menu - Summary

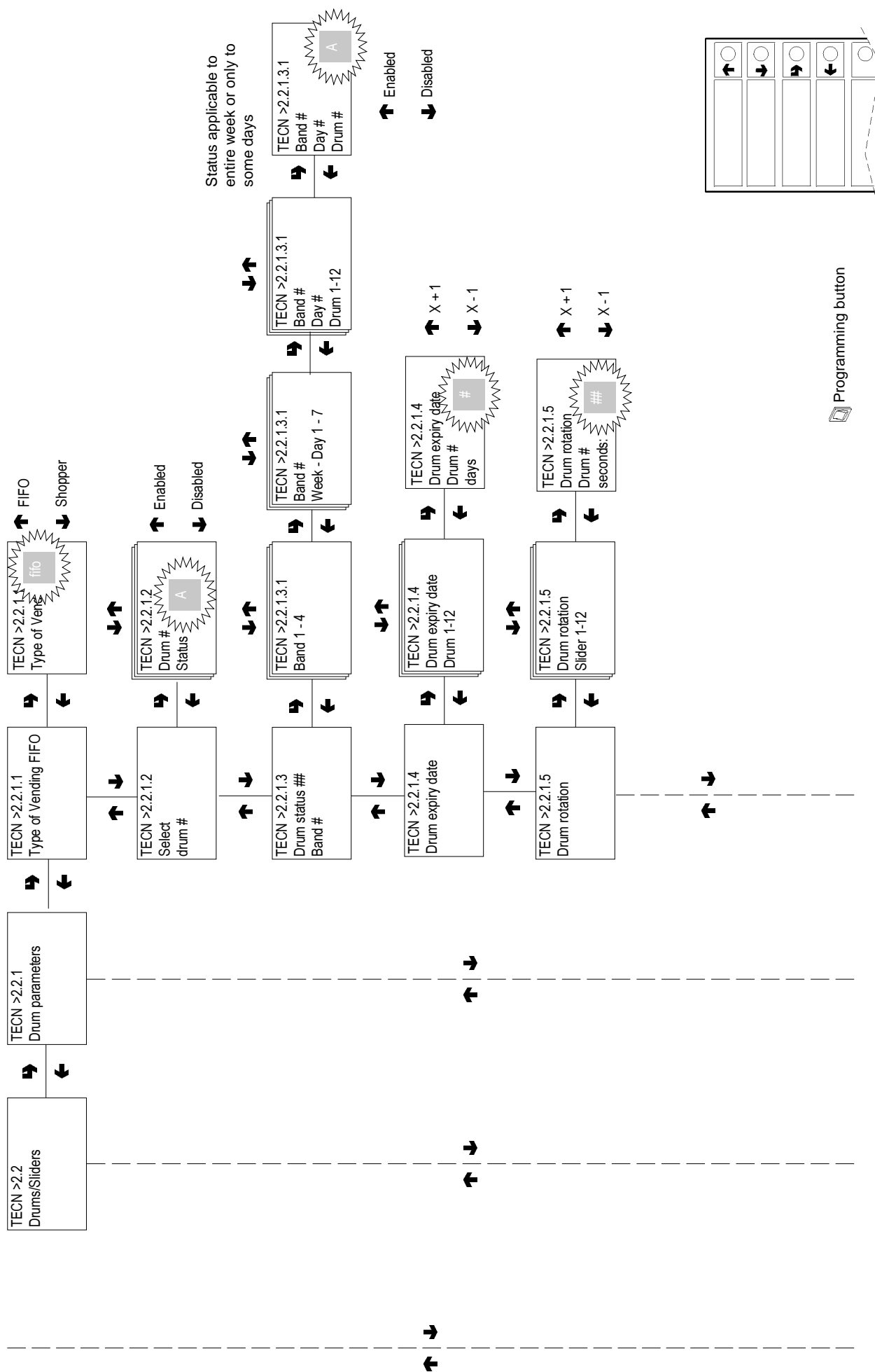


Programming button





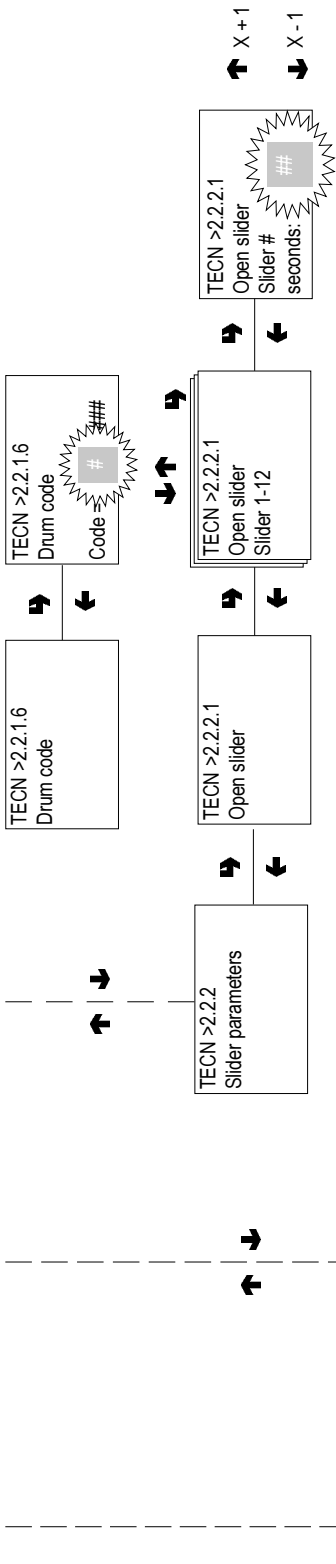
## Technician menu - Summary




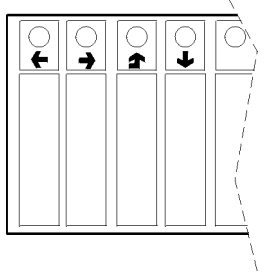
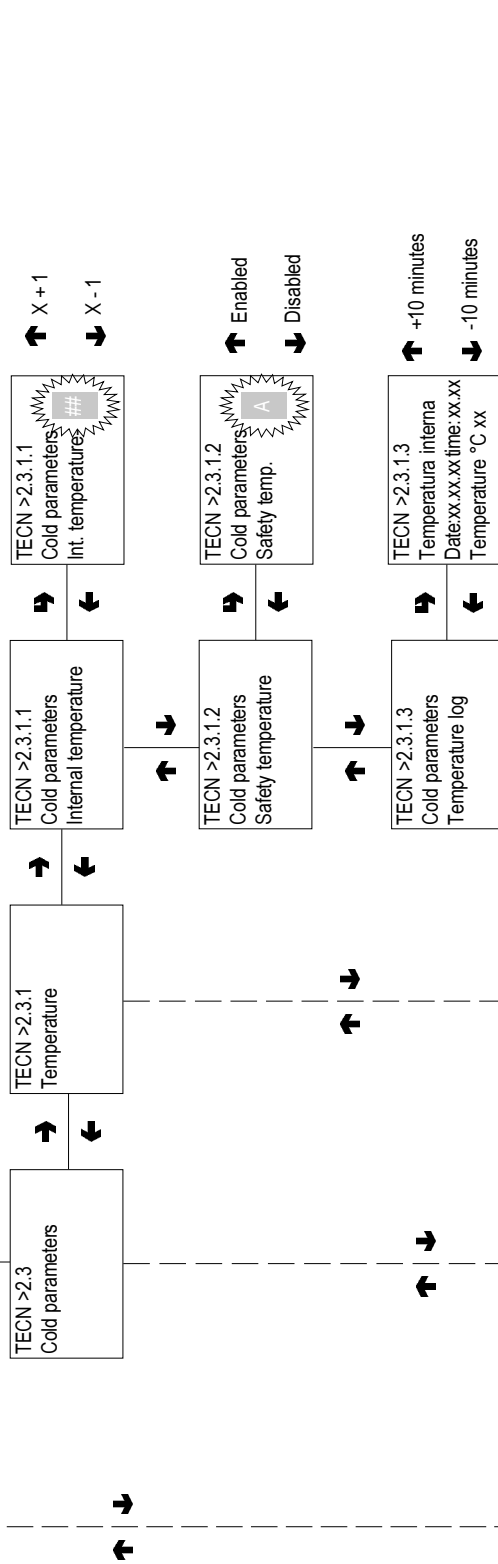


## Technician menu - Summary

4-digit number identifying  
the machine



Operating temperature  
3 to 15°C.  
3°C by default

 Programming button



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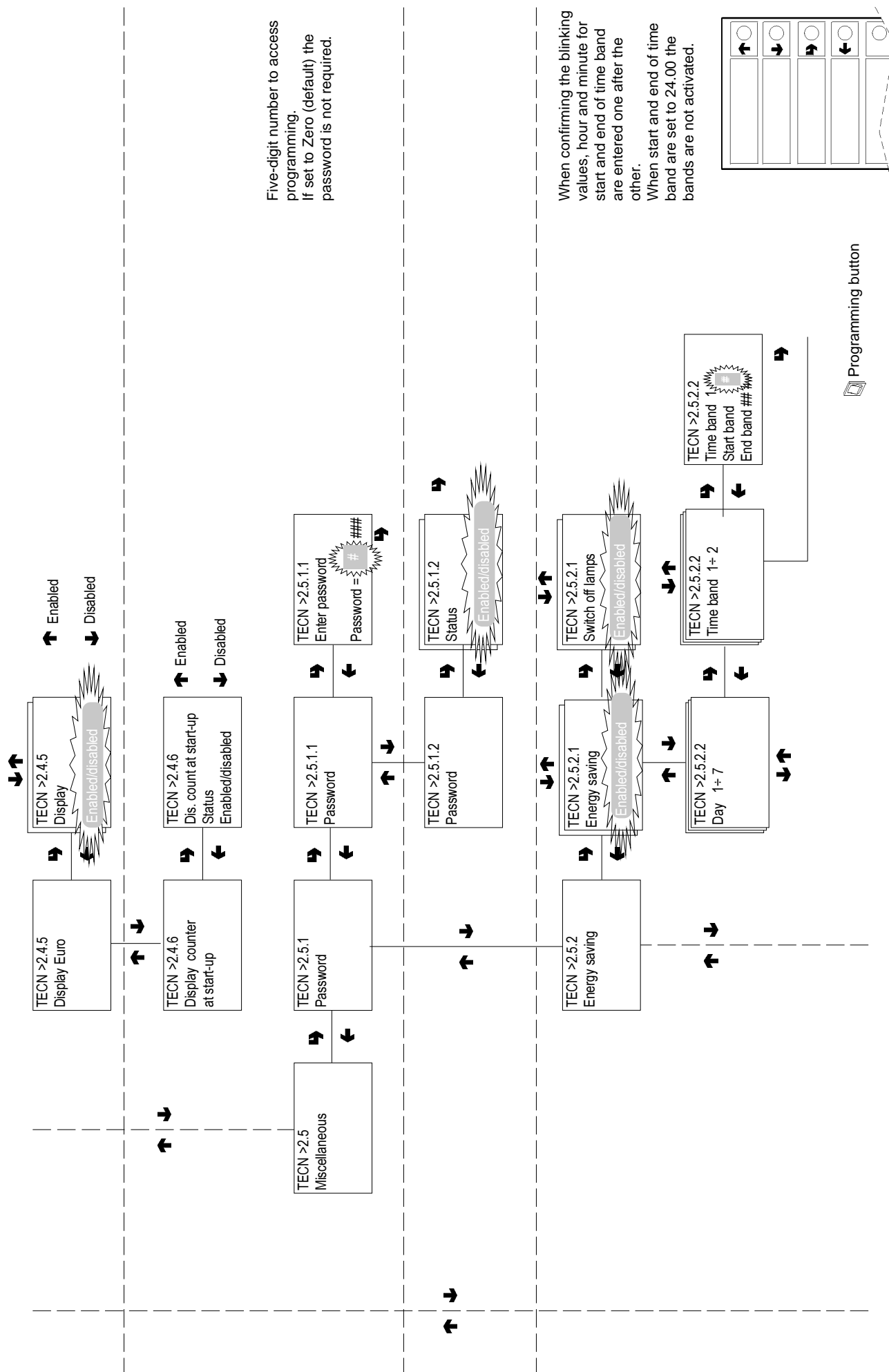


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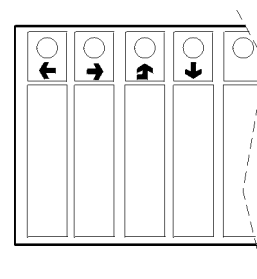
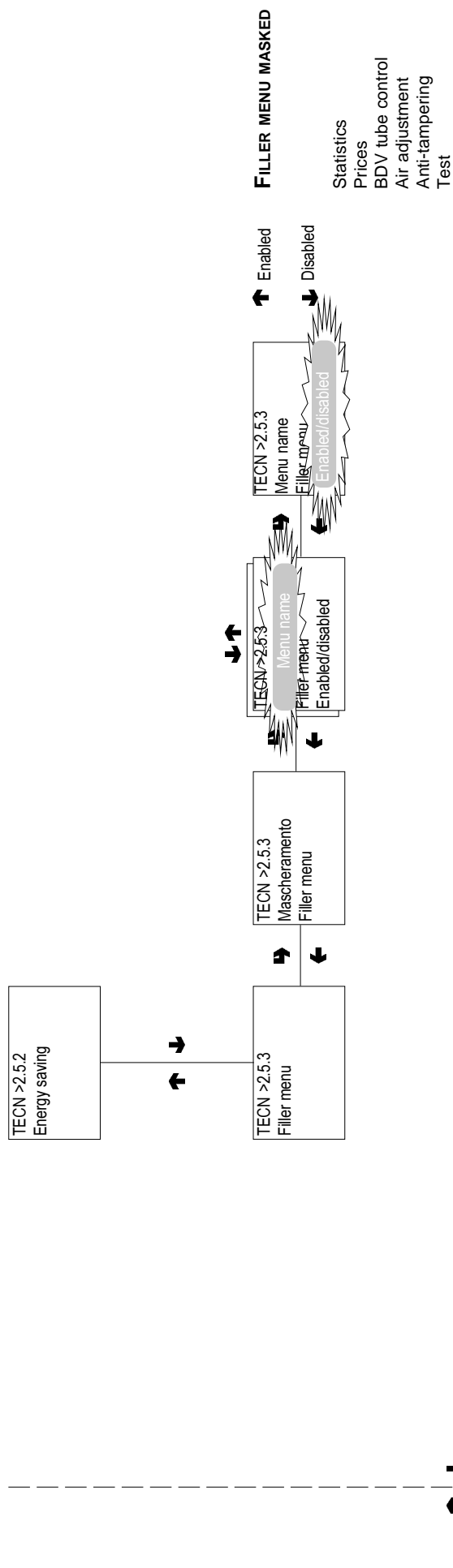


## Technician menu - Summary





## Technician menu - Summary

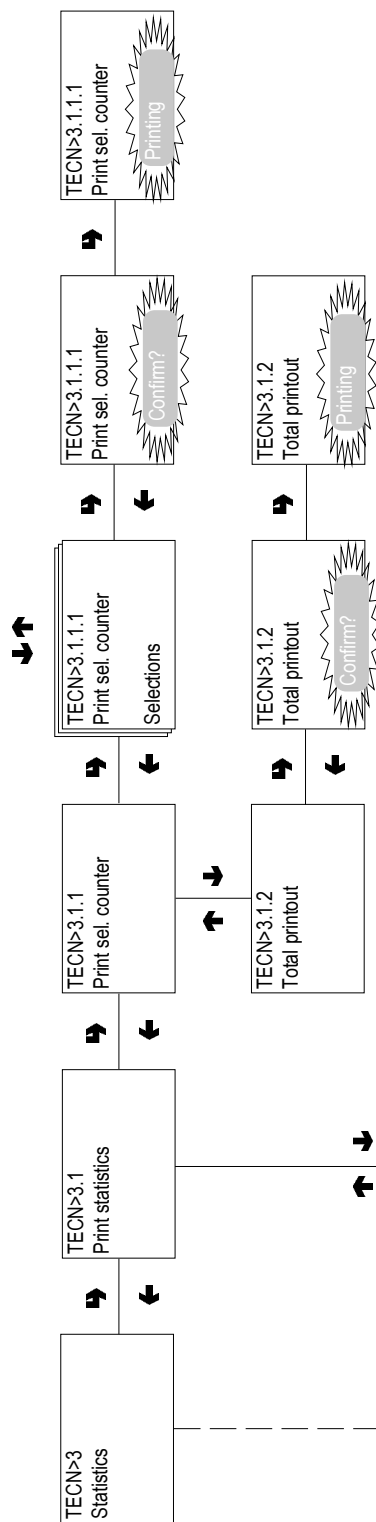
 Programming button



## Technician menu - Summary

### TOTAL STATISTICS

With the printer connected  
print all data as displayed



Print data by:

Selections  
Time bands  
Discount-overprice  
Failures  
Coin mech data

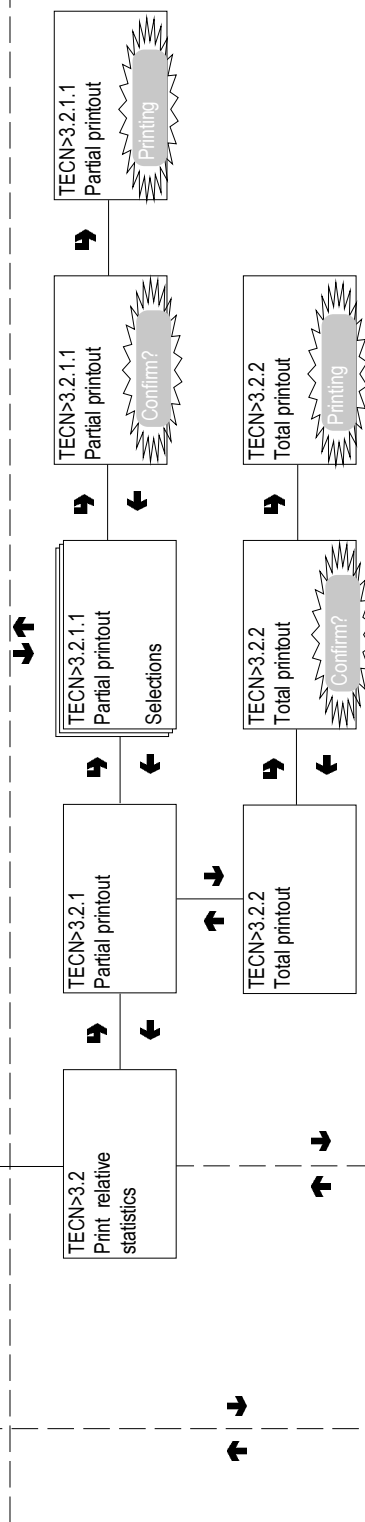
Heading:

Current date  
Machine model  
Software edition  
Operator code  
Machine code  
Installation date


Print data by:

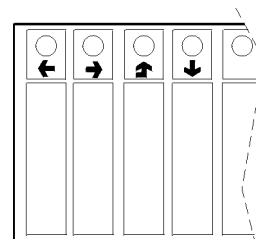
Selections  
Time bands  
Discount-overprice  
Failures  
Coin mech data

### RELATIVE STATISTICS



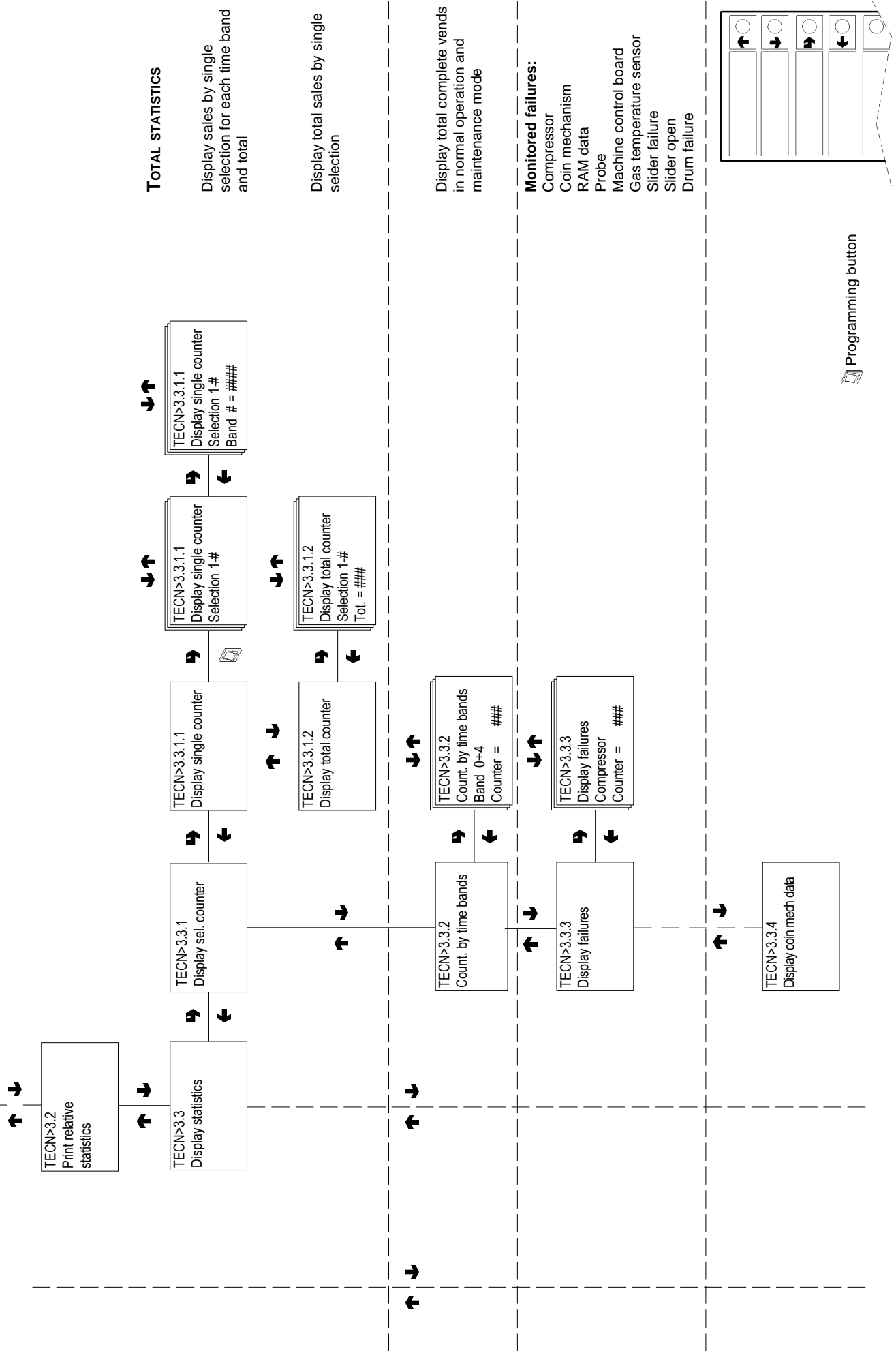
TECN>3.3  
Display statistics

 Programming button





## Technician menu - Summary





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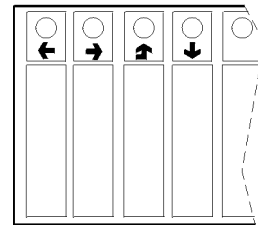
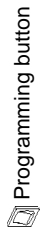
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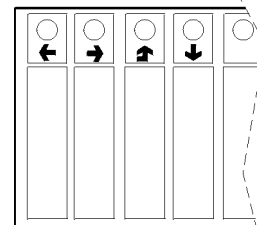
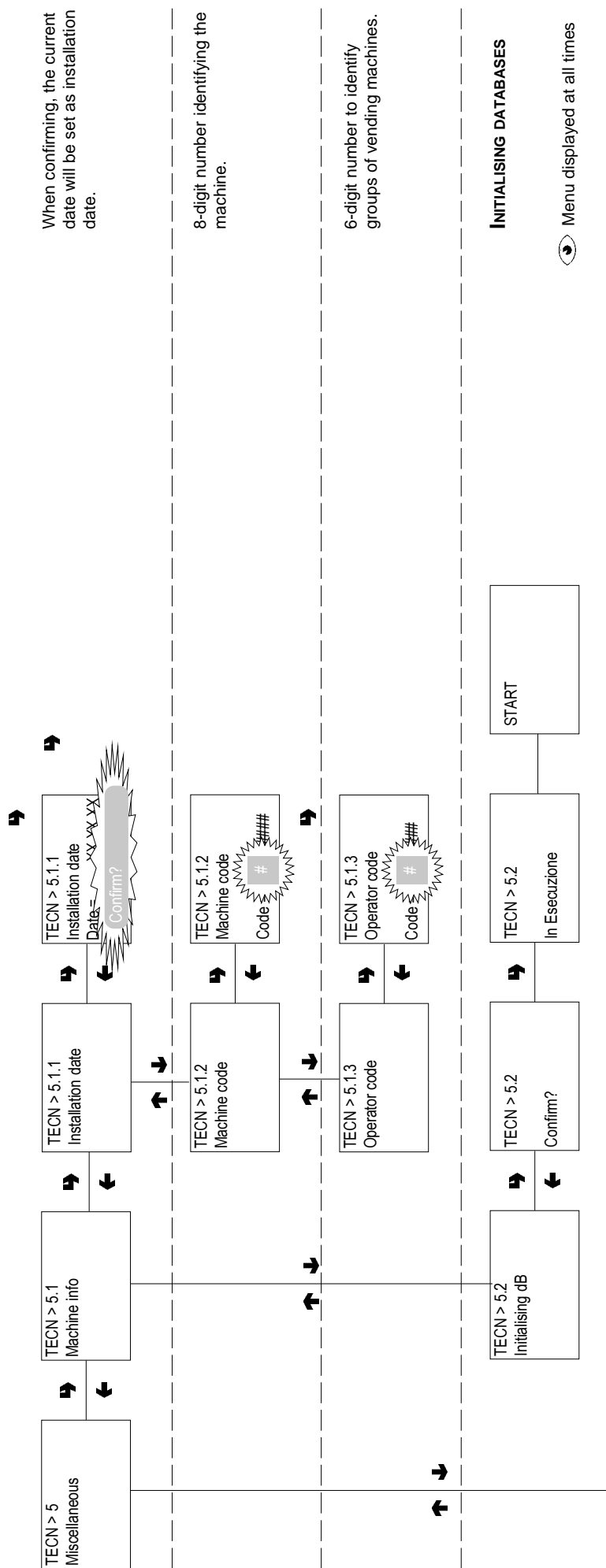
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Cancel data by:  
Selections  
Discount-overprice  
Failures  
Coin mech data





## Technician menu - Summary



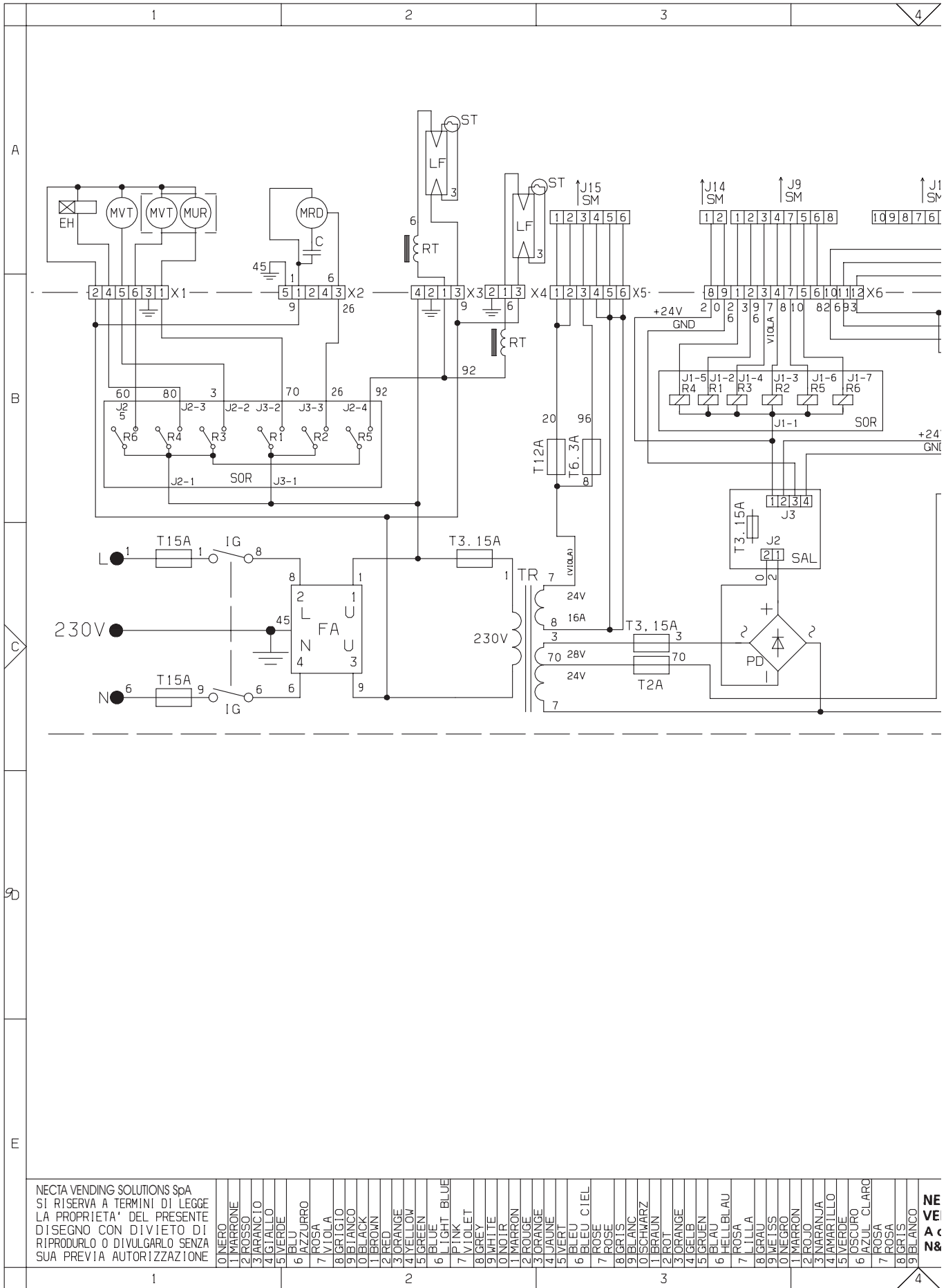
Programming button



## WIRING DIAGRAM LEGEND

CODE	DESCRIPTION	CODE	DESCRIPTION
BDV	BDV COIN MECH CONNECTORS	NTC1-	TEMPERATURE PROBE
ED1-..	DRUM SOLENOIDS	NTC2	EVAPORATOR TEMPERATURE PROBE
EH	HOT-GAS SOLENOID VALVE	NTC3	REFRIG. BOX 2ND TEMPERATURE PRO
EX	EXECUTIVE COIN MECH CONNECTOR	P1-...	SELECTION BUTTONS
FA	RADIO INTERFERENCE SUPPRESSOR	PAG	FAILURE RESET BUTTON
FREE	FREE VENDING SWITCH	PD	DIODE RECTIFIER
GAL	POWER SUPPLY UNIT	PIP	PROGRAMMING BUTTON
IG	MAIN SWITCH	PRD	DRUM ROTATION BUTTON
LF	LAMP	R1-...	RELAIS
MA1-..	SLIDER OPENING MOTOR	RT	BALLAST
MDB	CONNECTOR FOR MDB COIN MECHANI	SLCD	LIQUID CRYSTAL DISPLAY
MIS1-.	SECTOR COUNTER MICROSWITCH	SM	CONTROL BOARD
MP1	OPEN DOOR MICROSWITCH	SOR	OUT/R BOARD
MP2	OPEN PAYMENT COMPT. MICROSWITCH	SP	PUSH-BUTTON BOARD
MRD	DRUM MOTOR	SP1-10	LOADING BUTTONS
MS1-..	SLIDER MICROSWITCH	ST	STARTER
MUR	COMPRESSOR	SUC	C.P.U. BOARD
MVT	FAN	TR	TRANSFORMER
NTC1	REFRIG. BOX TEMPERATURE PROBE	TX....	DELAYED FUSE (X=COURRENT)

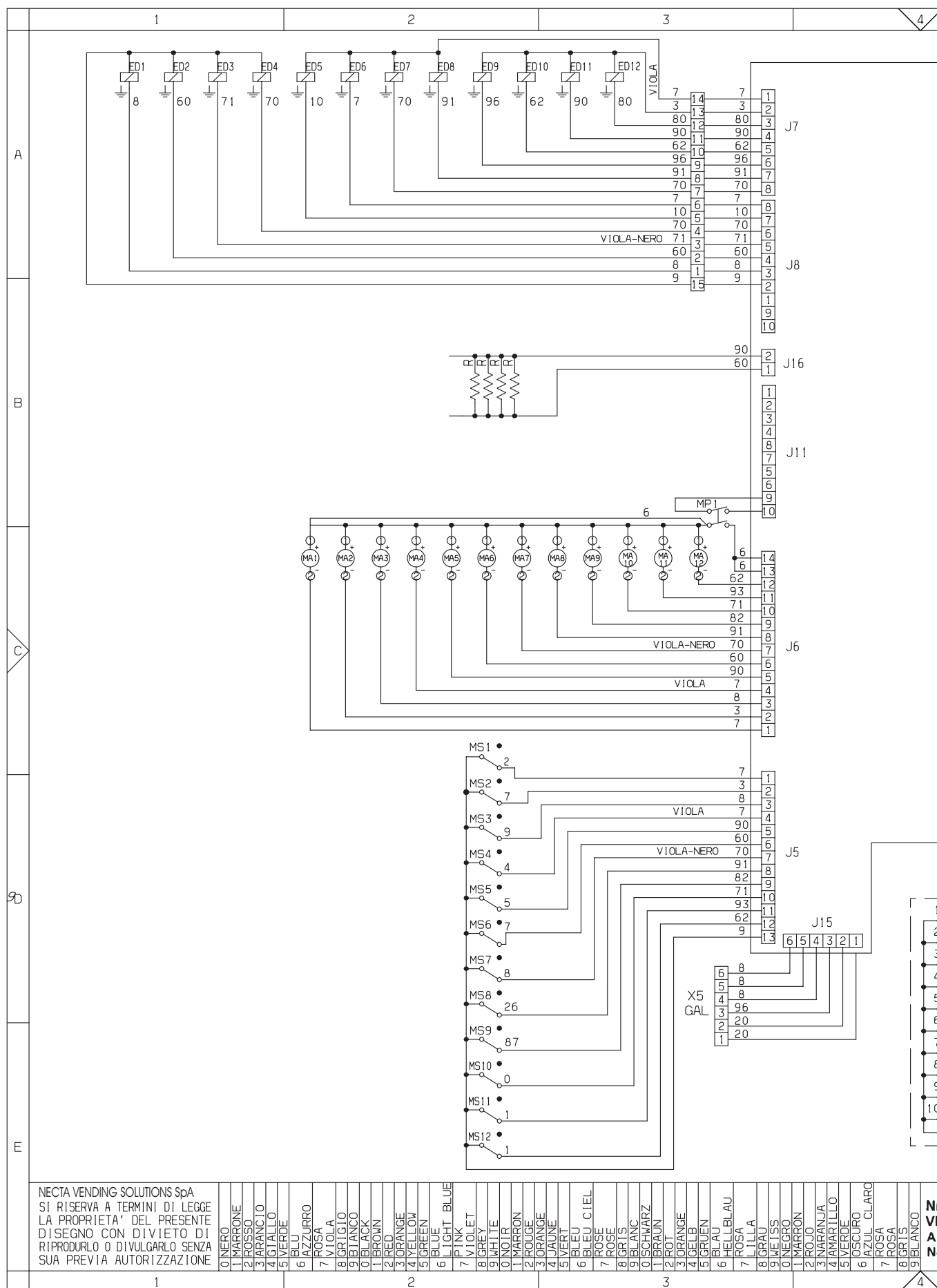










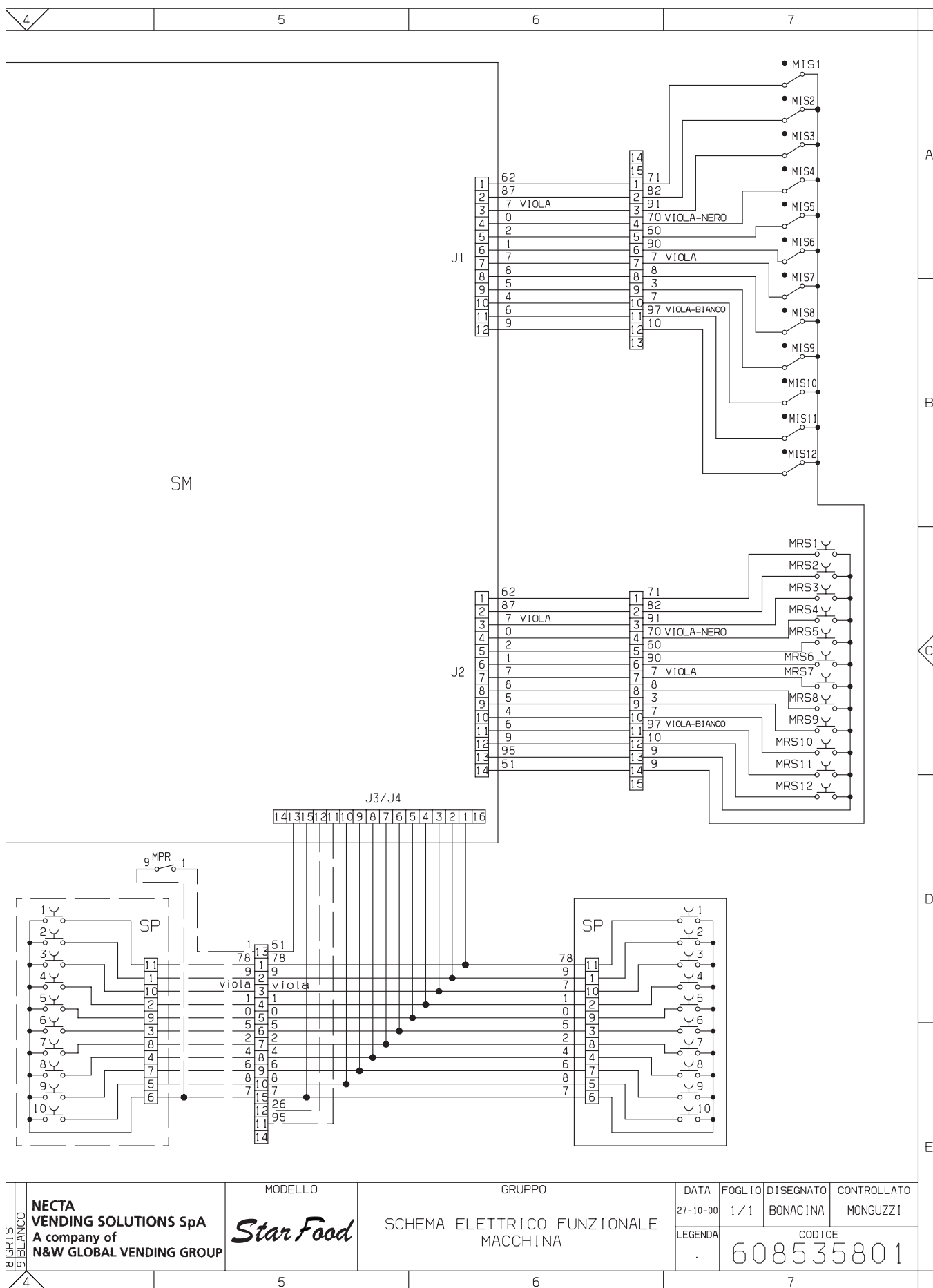


NECTA VENDING SOLUTIONS SpA  
SI RISERVA A TERMINI DI LEGGE  
LA PROPRIETA' DEL PRESENTE  
DISEGNO CON DIVIETO DI  
RIPRODURLO O DIVULGARLO SENZA  
SUA PREVIA AUTORIZZAZIONE

NERO	MARRONE	ROSSO	MARANCIO	GIALLO	VERDE	BLU	PAZZURRO	ROSA	VIOLEA	GRIGIO	BIANCO	BLACK	BROWN	PRED.	GRANGE	YELLOW	GREEN	BLUE	LIGHT BLUE	PINK	VIOLET	GREY	WHITE	NOIR	MARRON	POUGE	ORANGE	JAUNE	VERT	BLEU	CIEL
7	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

NE  
VE  
A  
N8



















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