

# Zenith

Espresso

Instant

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**ZANUSSI** by  **NECTA**  
V E N D I N G



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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 ÖVERENSSTÄMMESE  
OVERENSSTEMMESESERKLÆRING**

Valbrembo, 04/04/00

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.

Zanussi intyggar 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 ovsdirektiverne **89/392, 89/336** og **73/23 CEE** og de senere ændringer og tillæg.

GOFFREDO BUTTAZZONI

Direttore Generale  
Directeur General  
Director General  
Directeur-generaal  
Direktør

General Manager  
Generaldirektor  
Director-Geral  
Verkställande direktor

**ZANUSSI**  
V E N D I N G

A handwritten signature in black ink, appearing to read "Goffredo Buttazzoni".



THE EUROPEAN NETWORK FOR QUALITY SYSTEM ASSESSMENT AND CERTIFICATION

*This is to state that*

ZAMUSSI VENDING S.p.A.  
Via Roma, 24 - 24030 VALEREMBO (BG)

*holds the Quality System Certificate*

CISQ/CISQ 9130-ZA18

*for the standard from the  
ISO 9000 / EN 29000  
series, and the scope as specified therein*

Signed for and on behalf of EQNet member

Federazione CISQ  
IL PRESIDENTE  
Dr. Ing.

DATE

June 1st, 1994

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The issuing member holds all other EQNet members harmless for any claims arising from the existence of this document.



CERTIFICAZIONE ITALIANA DEI SISTEMI  
QUALITA' AZIENDALI  
ITALIAN CERTIFICATION OF COMPANIES  
QUALITY SYSTEMS



CERTIFICATO n.  
CERTIFICATE No. 9130-ZA18

SI CERTIFICA CHE IL SISTEMA QUALITA' DI  
WE HEREBY CERTIFY THAT THE QUALITY SYSTEM OPERATED BY

ZAMUSSI VENDING S.p.A.

Via Roma, 24 - 24030 VALEREMBO (BG)

UNITA' OPERATIVA  
OPERATIVE UNIT

Via Roma, 24 - 24030 VALEREMBO (BG)

E' CONFORME ALLA NORMA  
IS IN COMPLIANCE WITH THE STANDARD UNI-EN 29001-ISO 9001

PER I SEGUENTI TIPI DI PRODOTTI - PROCESSI - SERVIZI  
CONCERNING THE FOLLOWING KINDS OF PRODUCTS - PROCESSES - SERVICES

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

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL REGOLAMENTO  
DELL'IMQ PER LA CERTIFICAZIONE DEI SISTEMI QUALITA' DELLE AZIENDE  
THIS CERTIFICATE SHALL SATISFY THE REQUIREMENTS ESTABLISHED BY IMQ  
FOR THE CERTIFICATION OF SUPPLIERS' QUALITY SYSTEMS

25 Luglio 1994

DATA DI RILASCIO  
ISSUED ON

IMQ

Il presente certificato annulla e sostituisce il precedente 9130.ZA18 del 01.06.94  
This certificate supersedes the previous one 9130.ZA18 issued on 01.06.94

CISQ è un sistema internazionale di  
certificazione indipendente del Siste-  
mi Qualità aziendali, gestito in modo  
coordinato da organismi di certifica-  
zione referenziali.

The CISQ is an international system of  
independently certification of Suppliers'  
Quality Systems, which is coordinated  
by several certification bodies.

MLU 373-500-694

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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 hints on installation, operating and maintenance safety.

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

This manual describes the following machines:

- models with two units for brewing espresso coffee and reconstituting instant products;
- models with one unit for brewing espresso coffee and reconstituting instant products;
- instant models for reconstituting instant products.

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 the identification of the apparatus, and carries all the data which readily and safely give 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 S.p.A.  
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 fork lift 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 MACHINES OF HOT DRINKS IN OPEN CONTAINERS (Ex.: plastic cups, ceramic cups, jugs)

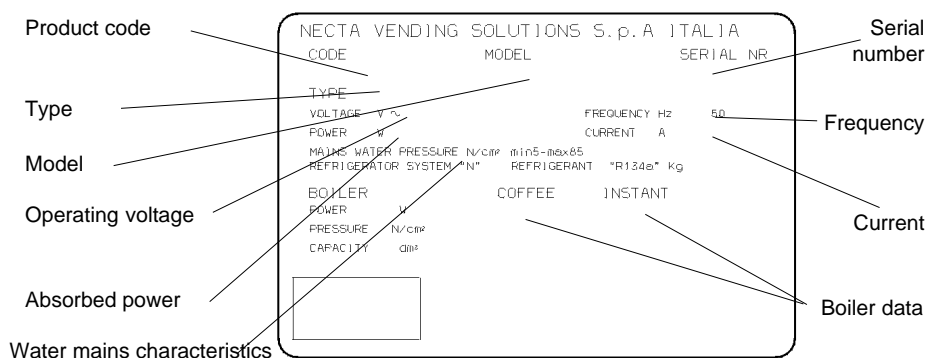
The vending machines of drinks in open containers should be used only to sell and dispense drinks obtained by:

- brewing products like coffee and tea;
- reconstituting instant and lyophilized products;

These products should be declared by the manufacturer as "suitable for automatic vending" in open containers.

**The dispensed products should be consumed immediately. They should never be preserved and/or packed for later consumption.**

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 installed in a dry room where the temperature is between 2°C and 32°C, and not where water jets are used for cleaning (e.g. in large kitchens, etc.).

The machine should be placed close to a wall, so that the back panel is at a minimum distance of 4 cm from it and correct ventilation may be ensured.

The machine must never be covered with cloth or the like. The machine should be positioned with a maximum inclination of 2°.

If necessary provide proper levelling by way of the adjustable feet included (see Figure 10).

## 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 has sole responsibility 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.**

All packing materials shall be disposed of in a manner which is safe for the environment.

## 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 the machine off during periods of inactivity, thus achieving considerable energy savings.

## WARNING FOR SCRAPPING

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

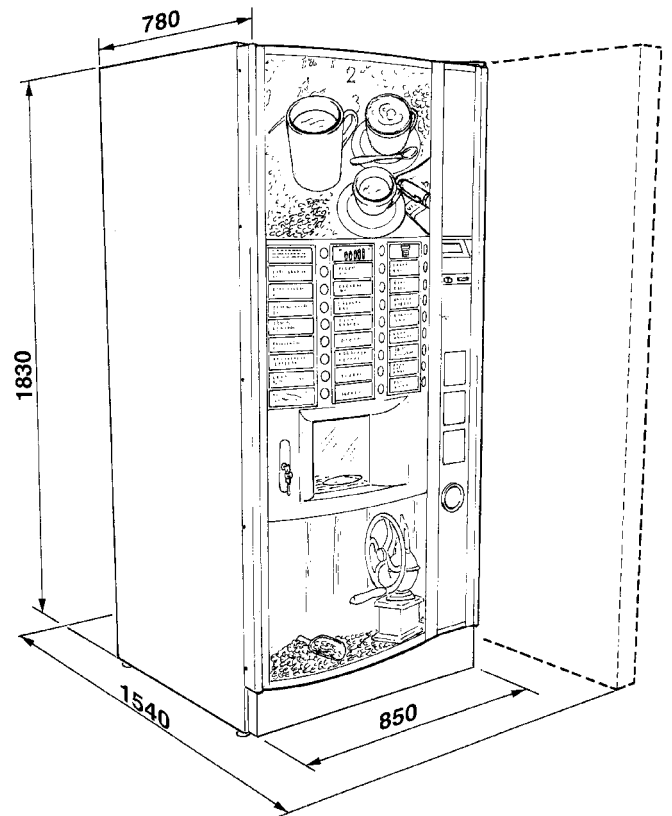
- ferrous and plastic materials and the like are to be disposed of in authorized areas only;
- insulating materials should be recovered by qualified companies.

## DIMENSIONS

Height	1830 mm
Width	850 mm
Depth	780 mm
Overall depth with door open	1540 mm

Weight:

Zenith	2 Units	1 Unit	instant
Kg	235	230	220



## TECHNICAL SPECIFICATIONS

Power supply voltage 230 V~

Frequency 50 Hz

Installed power:

Zenith	2 Units	1 Unit	instant
W	2400	2400	2400

Lighting power:

230 V ~ lamps	No.	W
Advertising panels	2	15
Selection menus	3	8
Inside lighting (option)	1	8

## CUP DISPENSER

- Suitable for cups with a rim diameter of 70-71 mm. with a capacity of approximately 900 cups;

## 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 validators.

Beside the coin mechanism housing, modular elements for installation (optional) of the following payment systems are provided.

## SALES PRICES

A different price in 4 programmable time periods can be set for each selection; the standard setting has the same sales price for all selections without any time bands.

## COIN BOX

Made of aluminized plate.  
Cover and lock are available as accessories.

## WATER SUPPLY

From the mains, with a pressure of 5 to 85 N/cm<sup>2</sup>.

## AVAILABLE ADJUSTMENTS

Espresso: volumetric adjustment for coffee, granulometry, instant products and water doses.

Instant: time adjustment for coffee, instant products and water doses.

Temperature control programmable via software.

## CONTROLS

- Presence of cups
- Presence of water
- Presence of coffee
- Presence of the coffee unit
- Coffee unit in start position
- Liquid waste container full
- Operating temperature reached
- Position of mobile dispensing spouts

## SAFETY DEVICES

- Door switch
- Manual-reset boiler safety thermostats
- Air-break float jamming
- Overflow solenoid valve
- Float for full liquid waste container
- Instant boiler anti-overboiling thermostat
- Boiler sensor short-circuit/failure control
- Timer protection for:
  - Pump
  - Coffee unit ratiomotor
  - Coffee dispensing
  - Coffee grinder

- Temperature protection for:
  - Doser units
  - Coffee unit ratiomotor
  - Coffee release magnets
  - Pump
  - Electric mixers
  - Coffee grinder motor
- Fuse protection for:
  - Main electrical circuit
  - Board power supply transformer
  - Coin mechanism power supply

## CAPACITY OF CONTAINERS

Coffee beans	5	Kg
Sugar	10.8	Kg
Powdered milk	1.4	Kg
Decaffeinated coffee	1.2	Kg
Tea	4.3	Kg
Chocolate	3.0	Kg
Stirrers	1000	Approx.

## POWER CONSUMPTION

The machine power consumption depends on many factors, such as the temperature and ventilation of the room where it is installed, the inlet water and boiler temperature, etc. Under average conditions, i.e.:

- Ambient temperature: 20° C
- Coffee boiler temperature: 96° C
- Instant boiler temperature: 90° C
- Inlet water temperature: 18° C
- Water amount per selection (average): 90 cc

the following power consumption levels resulted:

Power consumption (Wh)	2 units	1 unit	Instant
To reach operating temperature	515	500	370
For each hour of stand-by	300	270	215
For each selection (average)			
For one litre of drink			

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

## ACCESSORIES

A wide range of accessories can be installed on the machine to change its performance:

The various kits are supplied with their own installation instructions, which must be strictly observed to ensure the machine's safety.

**Installation and the following testing operations, must be carried out only by qualified personnel who have the specific knowledge of the machine functioning from a point of view of both electrical safety and health regulations.**



# LOADING AND CLEANING

## DOOR SWITCH

When opening the door a special switch disconnects the power from the machine electrical system to allow the operations described below, regarding loading and routine cleaning, in full safety.

**All operations requiring the machine to be energized should be carried out by qualified personnel ONLY, informed about the specific risks of such situation.**

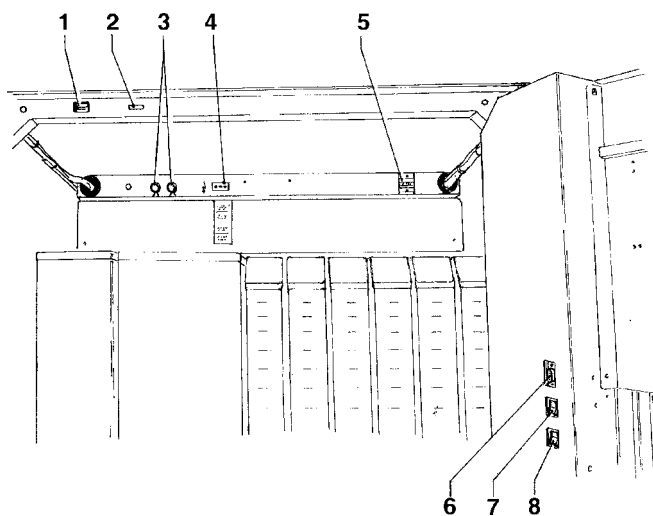
The service power outlet, always live, has a capacity suitable for small tools, however be sure not to exceed the ratings indicated on the relevant data plate.

To energize the system with open door, simply insert the special key into the slot (see Figure 1).

The door can be closed only after removing the key.

Fig. 1

- 1 - Door switch
- 2 - internal lamp switch (optional)
- 3 - Network fuses
- 4 - Permanently live power outlet (230V~ 2 A. Max)
- 5 - Mechanical counter
- 6 - RS232 serial port
- 7 - Mixer cleaning button
- 8 - Programming button



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

The manufacturer declines all responsibility for any damage caused by the use of strong or toxic chemicals.

**Before starting any maintenance operations requiring parts of the unit to be removed, the machine must always be switched off.**

## CONTROLS AND INFORMATION

All user controls and information are conveniently located on the external side of the door (see Figure 2).

The labels with the selection menu and the operating instructions supplied with the machine must be inserted at the time of installation.

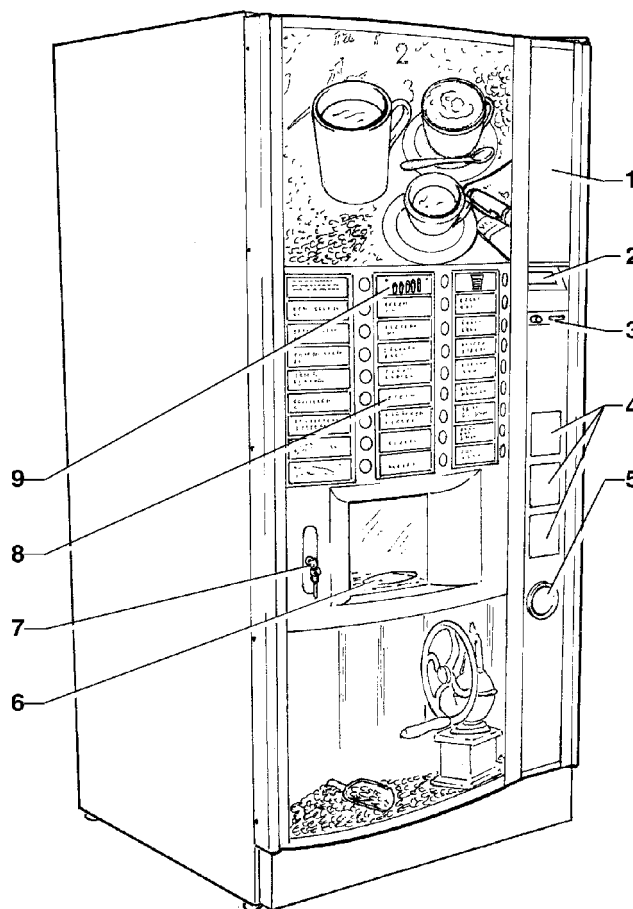


Fig. 2

## MAINTENANCE AND DISINFECTION

According to current safety and health rules and regulations, the operator of an automatic vending machine is responsible for the hygiene and the maintenance of the foodstuff circuits, to prevent formation of bacteria.

**At installation the hydraulic circuits and the parts in contact with foodstuff should be fully sanitised to remove any bacteria which might have formed during storage.**

It is advisable that specific sanitising agents (such as chlorine-based detergents or similar) are used for cleaning also the surfaces which are not directly in contact with foodstuff.

- 1 - Modular elements for payment system
- 2 - Alphanumeric display (4x20)
- 3 - Coin slot-return
- 4 - Operating instructions labels
- 5 - Coin return flap
- 6 - Dispensing compartment
- 7 - Lock
- 8 - Selection menu
- 9 - Sugar dose selection

The Programming button, to access the machine functions, and the mixer cleaning button are located on the cover of the coin mechanism compartment.

## LOADING CUPS

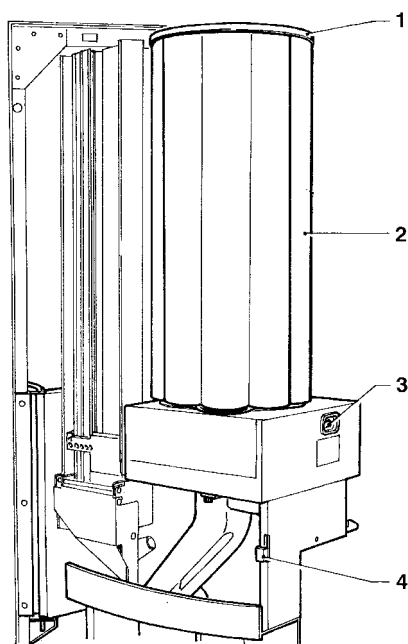
When loading cups for the first time (i.e. with the cup dispenser completely empty) do as follows:

- disconnect the electricity from the machine;
- remove the cover of the cup container;
- fill the columns with cups, except the one aligned with the dispensing opening;
- turn the machine on and the full column will be positioned automatically over the dispensing opening;

**All operations requiring the machine to be energized should be carried out by qualified personnel ONLY, informed about the specific risks of such situation.**

- fill the empty column;
- release one or more cups with the special button and replace the cover.

Fig. 3

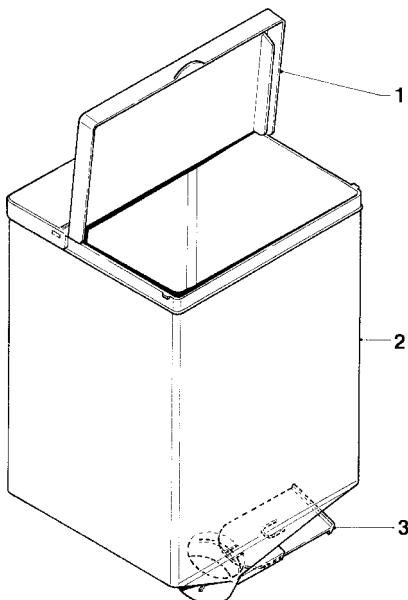


- 1 - Cover
- 2 - Cup stacker
- 3 - Cup release button
- 4 - Shelf release lever

## LOADING COFFEE

Lift the cover and fill the hopper with coffee, ensuring that the shutter is fully open (see Figure 4).

Fig. 4



- 1 - Cover
- 2 - Coffee hopper
- 3 - Shutter

## LOADING SUGAR AND INSTANT PRODUCTS

A self-adhesive label indicating the product is attached on each container.

After lifting their cover, fill the single containers with the appropriate products, taking care not to compress them to prevent packing. Make sure the products do not contain any clots.

## LOADING STIRRERS

In order to load correctly the double stirrer stacker do as follows:

- remove the inner and outer stirrer weights, from above (see Figure 5);
- ensure that the inner column is pushed back using the special lever, so that the stirrers from the outer guide (in view) are dispensed first. By lifting the lever handle to lift the residual stirrers, the column can be pushed towards the inside until the release mechanism is reset.

With the profile positioned inside the stirrer columns, 90 or 105 mm stirrers can be dispensed;

Without the profile, 115 mm stirrers can be dispensed.

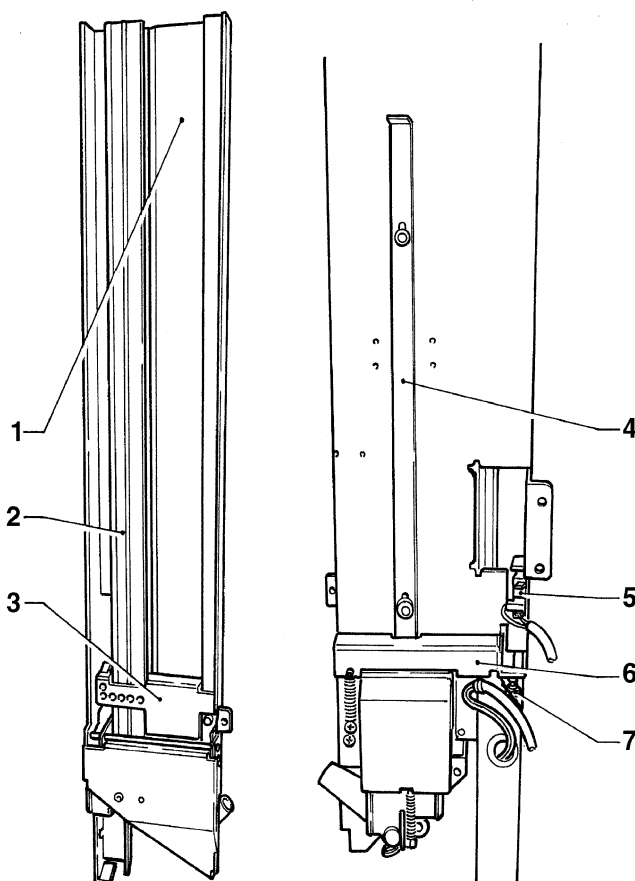


Fig. 5

- 1 - Double column
- 2 - Stirrer profile
- 3 - Removable weight
- 4 - Reset lever
- 5 - External column "empty" micro-switch
- 6 - Internal column lock device
- 7 - Thermo-expander

## SANITISING THE FOODSTUFF CIRCUITS AND THE MIXERS

When installing the unit, and then at least once a week or even more frequently according to the use of the machine and the quality of the inlet water, the mixers and the dispensing conduits must be thoroughly sanitised (cleaned and disinfected), to guarantee proper hygiene of the dispensed products.

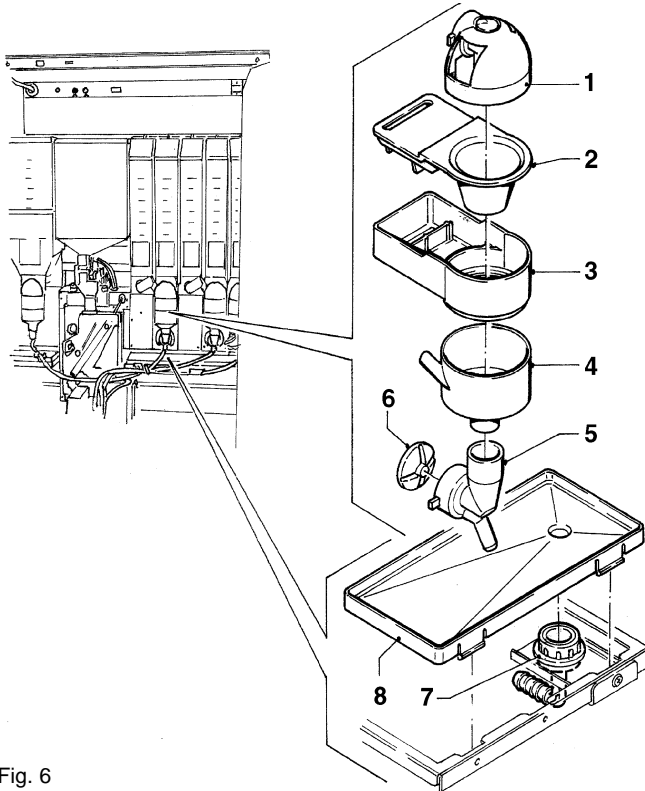


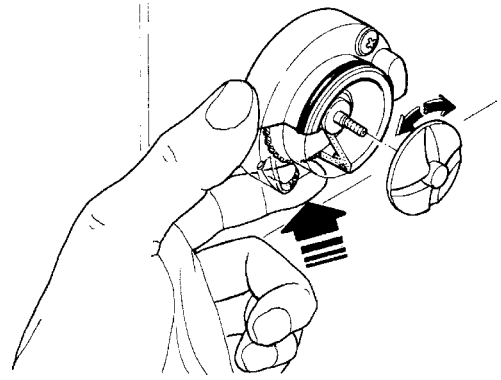
Fig. 6

- 1 - Powder feeder
- 2 - Powder funnel
- 3 - Powder deposit drawer
- 4 - Water funnel
- 5 - Feeder
- 6 - Mixer wheel
- 7 - Tray drain
- 8 - Overflow tray

The parts to be cleaned are the following:

- powder deposit drawers, mixer and instant drink dispensing conduit;
- coffee dispensing spout;
- cup chute;
- dispensing compartment.
- remove the covers, the powder and the water funnels, the feeders, the powder deposit drawers and the mixer wheels from the mixers (see Figure 6);
- in order to remove the wheels, block the disk fitted on the mixer shaft with a finger;

Fig. 7



- wash all parts with detergent being sure that all visible residue and product layers are mechanically removed, using a brush if necessary;

Disinfection should be carried out using chlorine-based detergents.

- soak all components for approx. 20 minutes in a container filled with the previously prepared chlorine-based detergent;
- reinstall the feeders and the water funnels;
- reinstall the powder deposit drawers and the powder funnels after thoroughly drying them.

**After reinstalling all parts the following is however required:**

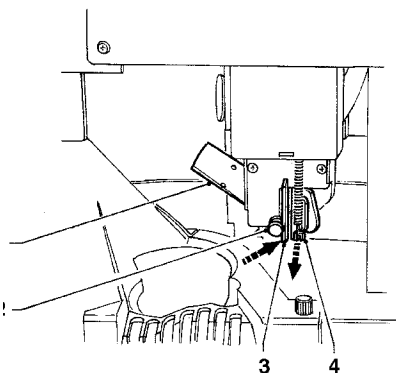
- enter into "Maintenance" mode to clean the mixers (see relevant paragraph) and add a few drops of the chlorine-based detergent in the various funnels.
- After disinfection thoroughly rinse all components to ensure that all residue of the detergent solution is removed.

## CLEANING THE SUGAR DISPENSER

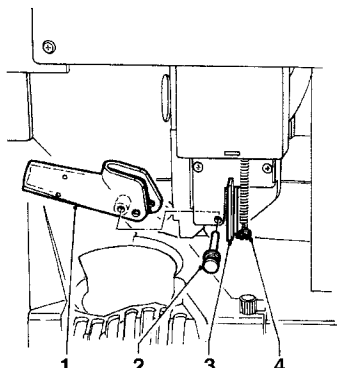
For models with sugar dispensed directly into the cup, the sugar dispensing system must be cleaned periodically using hot water (see figure) proceeding as follows:

- lift the flexible lever to free the pin;
- remove the pin and the dispensing spout;
- after cleaning, reinstall all parts in the reverse order, ensuring that all parts are thoroughly dry.

Fig. 8



- 1 - Sugar dispensing spout
- 2 - Pin
- 3 - Flexible lever
- 4 - Return spring



mains used to supply the machine (see table below).

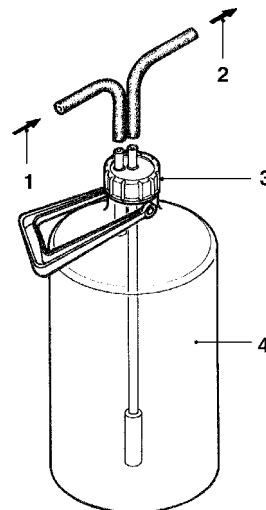
To regenerate the resins correctly do as follows:

- remove the softener unit from the cabinet and shake it vigorously to eliminate any preferential paths which may have formed;
- fill 1.5 Kg. of sodium chloride (ordinary salt);
- connect the side hose union to a tap and the middle rubber-holder to a drain point; the direction of the water flow must be

**NECESSARILY**

the one shown in the figure

Fig. 9



- 1 - From tap
- 2 - To drain point
- 3 - Cap
- 4 - Softener

**WEEKLY CLEANING OF THE COFFEE UNIT**

Every time coffee is refilled, or at least once a week, any powder residue should be removed from the external parts of the coffee unit, particularly from the coffee funnel.

**REGENERATING THE SOFTENER UNIT**

The ion-exchange resins, contained in the softener unit, should be regenerated at least once a week or even more frequently depending on the hardness of the water from the

- adjust the water flow in such a way as to completely dissolve the salt in 20 litres water within 35 minutes;
- during the regeneration operation, ensure that the softener unit is always full of water, bleeding any air which may have entered;
- at the end of this operation ensure that outlet water is no longer salted; it is advisable to check the hardness of the water by means of appropriate chemical reagents: the outlet water hardness should be 0°F.

**SUSPENDING FROM USE**

If for any reason the machine is switched off for a period exceeding the use-by date of the products, the following will be necessary:

- completely empty the containers and thoroughly wash them with the chlorine-based detergents used to clean the mixers.
- completely empty the dosing grinder by dispensing coffee until the empty condition is indicated.
- completely empty the air-break and the instant product boiler, loosening the clamp on the hose.

Water hardness		N. of selections	
° F.	° G.	60 cc.	130 cc.
10	5.6	25,000	12,500
20	11.2	12,500	6,000
25	14	11,000	5,250
30	16.8	9,400	4,500
40	22.4	6,300	3,000
50	28.0	5,500	2,500

# INSTALLATION

Installation and the following maintenance operations should be carried out with the **machine switched on** and therefore by qualified personnel only, who are trained in the correct use of the machine and informed about the specific risks of such situation.

**The machine should be installed in a dry room where the temperature remains between 2° C and 32° C.**

**At installation the hydraulic circuits and the parts in contact with foodstuff should be fully sanitised to remove any bacteria which might have formed during storage.**

## UNPACKING THE VENDING MACHINE

After removing the packing, check that the machine is not damaged.

If in doubt 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.**

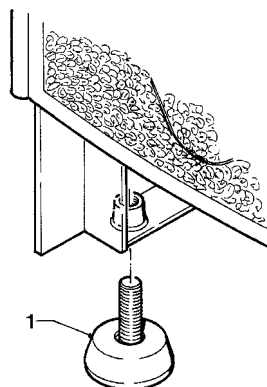
Packing materials must be disposed of in authorized areas only, and all recyclable materials must be recovered by specialised companies.

### Important notice!!

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

If necessary provide proper levelling by way of the adjustable feet included (see Figure 10).

Fig. 10



1 - Adjustable foot

## INSERTING THE PRODUCT LABELS

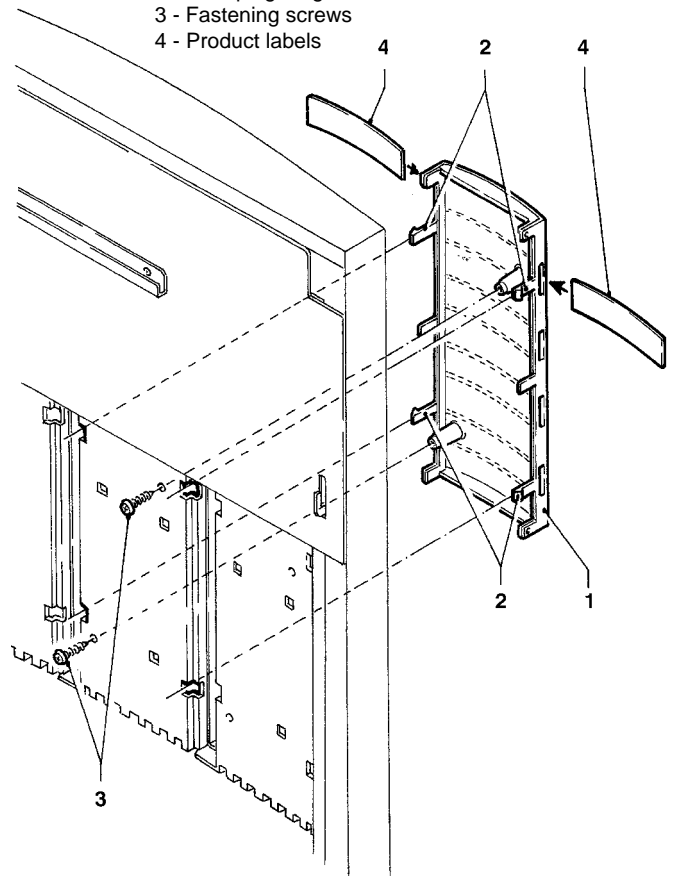
To be able to insert the product labels, the front panel must be removed. Undo the fastening screws and then press the clamping tangs (see fig. 11).

The labels must be inserted into the special slots with the opening positioned alternating on the left and right hand side.

According to the model, some buttons may not be used (refer to the selection dose table).

Fig. 11

- 1 - Label support
- 2 - Clamping tangs
- 3 - Fastening screws
- 4 - Product labels



## CONNECTING THE MACHINE TO THE WATER MAINS

The machine must be connected to the drinking water mains. The water pressure must be 5 to 85 N/cm<sup>2</sup>. Run some water from the mains until it is clear and without impurities.

Use a hose capable of withstanding the water mains pressure and suitable for use with foodstuff (min. inside diameter of 6 mm) to connect the water supply to the union (1/4" gas) of the water inlet solenoid valve (see Figure 12).

**It is good practice to install the water supply tap outside the machine in an easily accessible position.**

- 1 - Water inlet union (1/4" gas)
- 2 - Water supply hose
- 3 - Overflow hose
- 4 - Inlet hose union

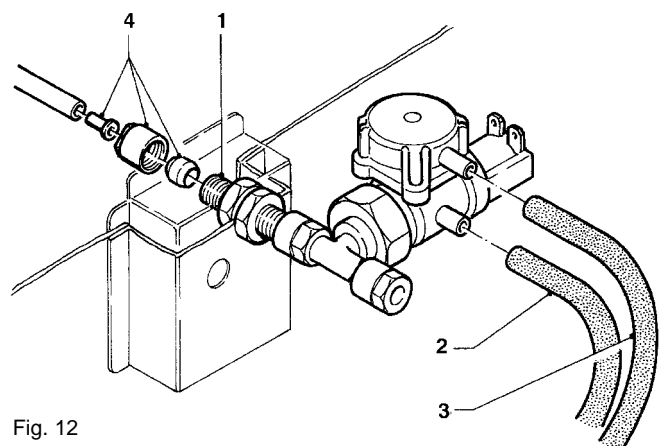


Fig. 12

## OVERFLOW DEVICE

The water inlet solenoid valve (see Fig. 12) is equipped with an overflow device which mechanically stops the water inlet if there is a malfunction in the solenoid valve or in the boiler water level control device.

To restore normal operation, proceed as follows:

- drain the water contained in the overflow pipe;
- shut off the valve of the water supply outside the machine;
- loosen the nut which secures the solenoid valve supply hose to relieve the water mains residual pressure and then tighten again (see Fig. 12);
- open the valve and switch on the machine.

## CONNECTING THE POWER SUPPLY

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

Before connecting the power supply make sure that the ratings correspond to those of the power grid, and more specifically:

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

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 supply cable is of the type with a fixed plug.

Any replacement of the supply cable should be made by qualified and suitably trained personnel only using only cables of the type HO5 RN - F, HO5 V V-F or H07 RN-F with a section of 3x1-1.5 mm<sup>2</sup>.

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

Before switching on the machine, be sure it is correctly connected to the water mains and the cutoff valve is open.

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

## DOOR SWITCH

When opening the door a special micro-switch disconnects the power from the machine electrical system.

To energize the system with the open door, simply insert the special key into the slot (see Fig. 1).

**With the door open, there is no access to energised parts. The only energised parts inside the machine are the ones protected with covers carrying a plate with the wording "disconnect power supply before removing the cover".**

**Before removing such covers disconnect the external switch.**

The door can be closed only after removing the key from the door switch.

## 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 programming of the relevant parameters is correct.
- adjust the selector opening lever square piece in order to enable complete opening of the selector;
- adjust the coin chute according to the type of coin mechanism installed.

## CLEANING THE SOFTENER RESINS (MODELS C ONLY)

Before filling the machine water system the resins contained in the softener unit must be cleaned, doing as follows:

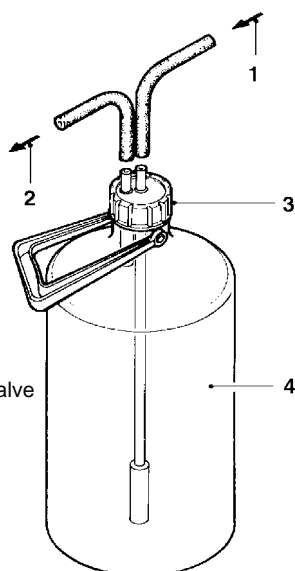
- remove the hose connected to the air-break from the softener unit hose union (see Fig. 13);

## OPERATION OF THE COFFEE UNIT

### COFFEE DISPENSING CYCLE

When selecting coffee, the grinder is started and will continue until the coffee doser chamber is full (see Fig.14).

Fig. 13



- 1 - From the water inlet solenoid valve
- 2 - To the air-break
- 3 - Plug
- 4 - Softener unit

- insert a new hose provided onto the now freed hose union and direct it towards a drain;
- switch the machine on;
- bleed air out of the softener unit by loosening the plug, wait until it is full of water and tighten the plug, let a few litres of water flow out until it is clear;
- re-insert the hose connected to the air-breaks.

### FILLING THE WATER SYSTEM

If the air-break device indicates the no-water condition for more than 10 seconds after the machine has been switched on, an installation cycle will automatically be started, and namely:

- the display will show

"OUT OF SERVICE"

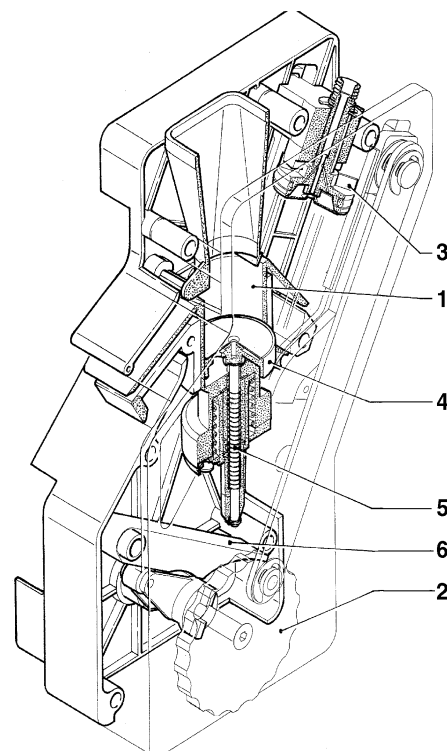
for the entire duration of the cycle;

- the air-break and the instant product boiler are filled;
- (for the espresso models only) the coffee solenoid valve is opened so that the air may be bled from the boiler and 800 cc. of water filled.

**N.B.: If there is no water flow from the mains during the installation cycle, the machine will be blocked until the water is resumed or the machine is switched off.**

**This operation must be carried out by hand after any maintenance requiring the boiler to be emptied but not the air-break.**

Fig. 14



- 1 - Brew chamber
- 2 - External disk
- 3 - Upper piston
- 4 - Lower piston
- 5 - Pre-brewing spring
- 6 - Swinging lever

When the doser unit is full, the ground coffee dose is released into the coffee unit.

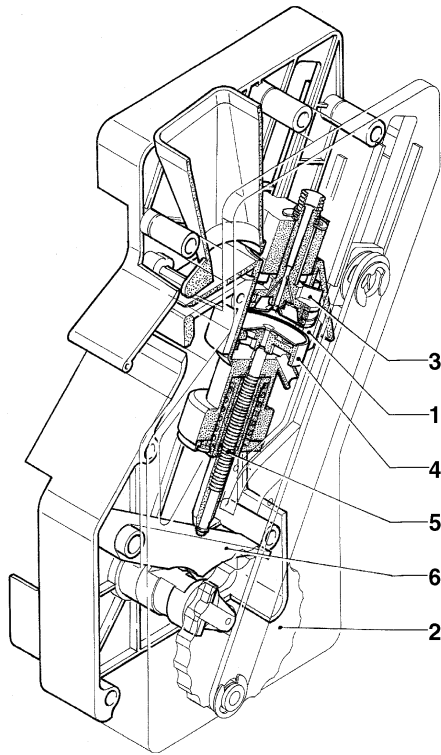
The coffee falls into the vertical brew chamber (1) (see Fig.14).

The ratiomotor handle engaged with the disk (2) located outside of the unit rotates by 180°, making the brew chamber swing and lowering the upper piston (3) (see Fig. 15).

Due to the water pressure, the pre-brewing spring (5) sinks and the lower piston (4) goes down 4 mm, thus forming a water cushion which allows an even use of the coffee dose. At the end of the dispensing cycle and during a pause of 3 seconds, the pre-brewing spring (5) will discharge the water through the third way of the dispensing solenoid valve, lightly pressing the used coffee dose.

By completing its rotation, the ratiomotor makes the swinging lever (6) lift the pistons and the coffee dose. At the same time, when the brew chamber returns to its vertical position, the scraper on the coffee hopper stops the used coffee dose and drops it. The lower piston now returns to the bottom dead centre.

Fig. 15



- 1 - Brew chamber
- 2 - External disk
- 3 - Upper piston
- 4 - Lower piston
- 5 - Pre-brewing spring
- 6 - Swinging lever

## STANDARD SETTINGS

The vending machine is supplied with the following settings:

- coffee temperature (at the spout) approx. 85-89°C;
- instant product temperature (at the spout) approx. 75°C;

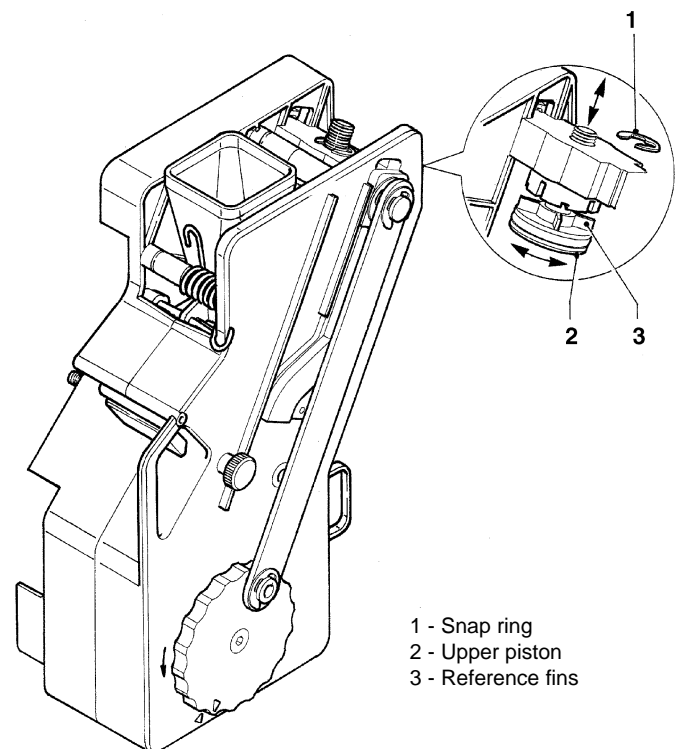
The machine standard settings assign the same price, expressed in number of basic coins, to all selections.

## ADJUSTING THE SETTING OF THE COFFEE UNIT PISTON STROKE

When the upper piston is correctly positioned, the coffee unit can operate with coffee doses of 5.5 to 7.5 g. To change the piston position (see Fig. 16):

- remove the snap ring from its seat;
- place the piston in the proper adjusting notches:
  - .less deep notches for 5.5 to 6.5 g doses;
  - .deeper notches for 6.5 to 7.5 g doses.

Fig. 16



- 1 - Snap ring
- 2 - Upper piston
- 3 - Reference fins

## CHECKING AND ADJUSTING THE MACHINE SETTINGS

To get the best results from the product used, the following should be checked:

### for coffee

That the used coffee dose is lightly compressed and damp.

The granulometry of the ground coffee.

The weight of the ground coffee.

The dispensing temperature.

The water dose.

### For instant products

The weight of the instant products.

The drink temperature.

The water dose.

Should the standard settings be varied, proceed as indicated in the next sections of this manual.

The weight of the instant products, the water dose and temperature are directly controlled by the microprocessor.

To adjust them it is therefore necessary to follow the programming procedures.



## ADJUSTING THE GRADE OF GRINDING

When a variation in the grade of grinding is desired, turn the relevant adjusting knob on the grinder (see Fig. 14) as follows:

- turn the knob anticlockwise for coarser grinding;
- turn the knob clockwise for finer grinding.

For optimum results, it is good practice to vary the grade of grinding with the coffee grinder motor running.

**N.B.: After adjustment of the grade of grinding, at least 2 test selections must be performed in order to check the new granulometry of the ground coffee:**

the finer the grade of grinding the longer the time necessary for dispensing the coffee and vice versa.

## ADJUSTING THE COFFEE DOSE

The dose adjusting lever can be positioned in one of the 6 reference notches bearing in mind that:

- the dose is increased by lifting the lever;
- the dose is reduced by lowering the lever;
- every notch changes the dose by approx. 0.25 g.

In addition, when the lever is fully rotated upwards, the ratchet can be released from the groove in the dose regulator (see Fig. 17) and replaced into a different groove to change the average dose setting to:

- low            6 g. ± 0.5
- medium      7 g. ± 0.5
- high          8 g. ± 0.5

To take the dose just remove the coffee unit and press key "2" from the "maintenance" menu (see relevant section).

### Warning!!!

**To refit the coffee unit, pay special attention to the piston position. Reference notches on the external disk and on the unit case should match (see Fig. 20).**

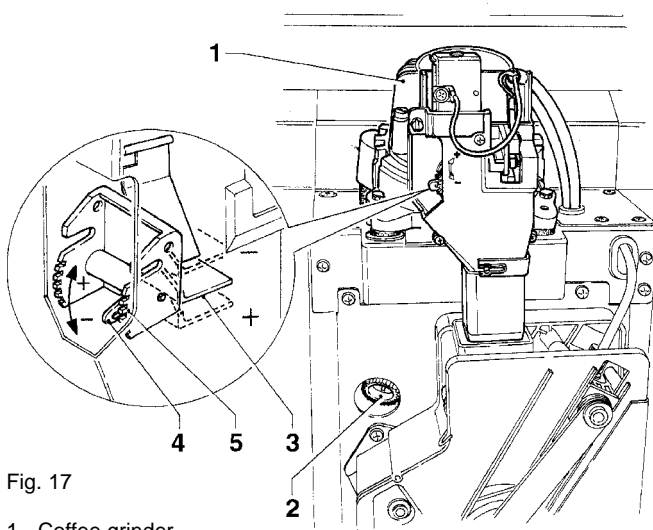


Fig. 17

- 1 - Coffee grinder
- 2 - Grinding adjusting knob
- 3 - Dose regulator
- 4 - Dose adjusting lever
- 5 - Reference notches

## OPERATING MODES

Three different operating modes are provided for the machine, accordingly the buttons may have different functions based on the preset mode of the buttons. The available operating modes are as follows:

	FUNCTIONS
<b>Normal operating mode</b>	coins accepted products dispensed
<b>Maintenance mode</b>	test dispensing machine maintenance
<b>Programming mode</b>	programming the different parameters

## USER INTERFACE

The following components are used as interface between the system and the user:

- Liquid Crystal Display (LCD), 4 lines x 20 characters.
- External push-button panel, with keys which have the following functions when in maintenance and programming mode (see Fig. 18):

### Scrolling Keys "↑" and "↓" :

to move to the previous or next menu option.

### Confirm key "→" :

to move from one menu to a sub-menu or to confirm the data on the display.

### Exit key "←" :

to return from a sub-menu to the higher level menu, or to clear the data on the display.

It is also used to go from "programming" mode to "maintenance" mode and vice versa.

↓	⊖	↑	⊕	☰	○
A	○	B	○	➡	○
C	○	D	○	⬅	○
E	○		○		○
F	○		○		○
	○		○		○
	○		○		○
	○		○		○
	○		○		○

"No Accessories"	Dispensing test without cup, sugar and stirrer
"Accessories only"	Dispensing cup, sugar and stirrer only (if dispensed into cup).
"Boiler temperat."	Display of the boiler temperatures in C degrees.
"Unit Control"	Temporary enabling and request for actuation of the A through F buttons
"Autotest"	Actuation in sequence of the power users: .electric dosing units .mixers .cup dispenser .stirrer dispenser .neon lamp .door led .pushbutton panel .mobile spouts .coffee dose .unit rotation .waste container

Fig. 18

## NORMAL OPERATING MODE

When switching the machine on, the message "Starting" is displayed for a few seconds, after which the machine goes into normal operating mode.

The displayed messages indicating the operation being carried out are fixed, while the instructions requiring an action from the user are blinking; the messages include the following:

DISPLAY	FUNCTION
Select drink Press key	Machine ready
Vending machine out of service	Machine out of service
Selected drink processed Wait please	Processing the drink
Drink ready Take drink	Dispensing ended correctly

When enabled, dispensing of espresso coffee based drinks can be stopped with pushbutton "☰".  
 In any case at least 60% of the programmed dose is dispensed.

## MAINTENANCE OPERATING MODE

When pressing the programming key on the coin mechanism compartment once, the machine goes into "Maintenance" mode.

The first option of the "maintenance" menu is displayed to activate the following functions:

"Compl. selec."	Dispensing test including cup, sugar and stirrer
"Water only"	Dispensing water only
"Powd. only"	Dispensing powder only

For complete or partial dispensing tests each key is assigned a selection (see the dose selection table).

**N.B. For espresso coffee based selections, only the additions are dispensed with the partial dispensing of powder and water; if a selection requires no addition the message "Sel. disabled" indicating a disabled selection will be displayed.**

Button "A" is used to operate the coffee unit if this is connected to the electrical system, and to release a dose of coffee if disconnected.

Button "B" has the same function if the second coffee unit is installed.

Button "C" controls the first "Fresh Brew" unit, when this is connected to the electrical system;

Button "D" controls the second "Fresh Brew" unit, when this is connected to the electrical system;

Button "E" permanently controls a solenoid valve of the coffee boiler, so that the boiler can be drained through the special drain plug.

**N.B. This operation should be carried out by qualified personnel ONLY, informed about the specific risks of such situation.**

To shut off the solenoid valve the machine must be switched off.

Button "F" controls the syrup dispensing devices (for those models which use a cold unit).

# PROGRAMMING

When pressing key "←" from "maintenance" mode the machine is set to "Programming" mode. The first option of the programming menu is displayed, enabling the following functions:

Prices	sales price setting
Statistics	data reading
Selections	selection parameter setting
General data	general data setting
Coin mechanisms	setting the payment system protocol
Initialising	RAM data initialising
Failure control	list of current failures
Miscellaneous	list of sub-menus
	Time bands    internal clock, 4 time bands for different prices
	Pre-selections    enable disable
	FB unit data    setting brewing times
	Temperature    setting boiler temperature
	Display counter    enable/disable display of counter at machine start
	Machine codes    managing identification codes
	PasswordPW entry
	PW enable    PW request can be either enabled or disabled

Custom	custom selections
Jug facilities	setting number of selections
Euro	enables the display of prices in euros/currency

## SELECTION PRICES

Four different prices can be set for each selection according to the programmed time bands for when the time table option is 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.

If the majority of products had the same price, it would be easier to program the prices globally and then change the value of the selections with a different price.

## STATISTICS

### DISPLAY

When pressing the confirm key "→" the stored data is sequentially displayed at 1 second intervals if no other key is pressed, and namely:

- 1 - single selection counter;
- 2 - single price counter;
- 3 - single coin type counter ;
- 4 - total cash counter;
- 5 - failure counter.

### PRINT

Connect a serial printer RS-232 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 described in the paragraph "statistics display". The printout will also contain the machine code number and the printout progressive number.

The progressive printout number can only be reset by initializing the machine.

To connect the printer do as follows:

- Press the confirm print key "→", displaying the message "Confirm?";
- Connect the printer before confirming;
- Press the confirm key "→" to start printing.

## RESET

Statistics can be reset either globally or partially for data regarding:

- selections
- discountss/overprices
- failures
- coin mechanism data

Press confirm key "↵", displaying the message "Confirm?" blinking.

Press confirm key "↵", the message "Running" is displayed for a few seconds and all statistics are reset.

## SELECTION MENU

The selection menu is composed of various sub-menus which allow setting of the different parameters

### WATER DOSE

The water dose, expressed in cc, can be set for each selection key and therefore each product assigned to it; the display indicates the name of the product being selected. It is also possible to set the water flow rate of the single solenoid valves expressed in cc/s (the default value setting in cc/s is indicated in the selection dose table) to calculate the amount of water to be dispensed.

### POWDER DOSE

The powder dose, expressed in grams, can be set for each selection key and therefore each product assigned to it; the display indicates the name of the product being selected. It is also possible to set the flow rate of the single dosing units expressed in g/s to calculate the amount of powder to be dispensed.

### ACCESSORIES

Dispensing of sugar, stirrer and cup can be enabled or disabled for each single selection key.

### SELECTION STATUS

Each single selection key can either enabled or disabled.

### KEY/SELECTION ASSOCIATION.

Each selection key can be associated with one of the selections included in the EPROM.

Refer to the "selection doses" table supplied with the machine to identify the selection numbers.

## GENERAL DATA

The general data menu is composed of various sub-menus which allow setting of the different parameters.

### LANGUAGE

It is possible to select the language, among the ones included in the EPROM, to be used for the messages on the display.

### DECIMAL POINT

Press the confirm key "↵" to display the position of the decimal point, i.e.:

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

Press the confirm key "↵" to display these values blinking to be modified as necessary.

### AUTOMATIC CLEANING

It is possible to determine whether or not to enable the automatic cleaning function for the mixers and for the brewing units, and the time when this will occur.

### PROMOTIONAL MESSAGE ENABLE

When this menu is selected, pressing confirm button "↵" it will be displayed whether this message is enabled or not. With buttons "↑" and "↓" this status can be changed.

### PROMOTIONAL MESSAGE ENTRY

The 4 lines message can be written using buttons "↑" and "↓" to select among the available characters.

Pressing confirm button "↵" will make the first character blink, which can then be changed.

The message is saved by pressing button "←".

### COFFEE STOP FUNCTION

This function enables/disables the actuation of the espresso coffee selections stop button "☰" during normal machine operation.

## COIN MECHANISMS

It is possible to select the payment system to be used to control the functions.

The payment system options 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 "Validator Lines" function is displayed while in the "programming" menu, the value of the 6 validator coin lines, A to F, can be changed.

#### BDV / MDB

The BDV and MDB protocol menus are similar to each other: the following structure shows the differences.

#### Type of vending

Setting the operating mode for multiple of 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 unload 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. peripherals (BDV only)

It dialogues with the coin mechanism if peripherals are installed or removed from the serial interface (C.P.C.-type peripherals - 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.

## INITIALISING

When the "Initialising" 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 statistics information will be reset. Press confirm key "↵" to display the message "Confirm?". Press confirm key "↵" a second time and the message "Running" is displayed for a few seconds.

## CURRENT FAILURES

### READING

When the "Failure" function is displayed, press the confirm key "↵" to display the current failures. If no failures are currently present, after pressing the confirm key "↵" the message "End failures" will be displayed. The possible failures are indicated in the following cases:

#### Water failure

If the air-break micro-switch is closed for more than one minute, the water inlet solenoid valve will remain energized until the water flow is restored.

#### Instant boiler

The machine is locked if after 20 minutes of heating time from machine start or from the last selection, the instant boiler fails to reach the operating temperature.

#### Espresso boiler

The machine is locked if after 10 minutes of heating time from machine start or from the last selection, the coffee boiler fails to reach the operating temperature.

#### Mobile spouts

If the spouts do not reach the dispensing position, the machine is disabled.

#### Cup failure

When the empty cup column micro-switch opens, the column shift motor is activated. If after one full turn of the cup dispenser the micro-switch is not closed the machine locks.

#### Espresso unit 1

This failure is due to a mechanical lock of the unit or when the unit is not present. The machine is not locked, but all coffee-based selections are disabled.

#### Coffee failure 1

If after a period of 15 seconds of grinding coffee, a dose is not obtained, all coffee-based selections are disabled.

#### Coffee release

If after releasing the ground coffee dose the micro-switch of the coffee dosing unit indicates the presence of coffee in the dosing chamber, all coffee-based selections are disabled.

#### Volumetric counter

Failed computation of the volumetric counter within a max. given time.

#### Liquid waste container full

This occurs after the liquid waste container float is triggered.

#### Air-break failure

The machine is locked if after 7 selections the micro-switch has never signalled the lack of water.

#### 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

The data contained in the RAM is wrong and must be retrieved from the Eprom, whereas all the statistic data will be lost.

#### Machine control board

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

#### Fresh-brew unit

Due to wrong positioning of the unit (piston opening time > 8 seconds). The machine is not locked, but all fresh product based selections are disabled.

#### FB scraper

Wrong positioning of the waste ejection scraper (movement time > 6 seconds). The machine is not locked, but all fresh product based selections are disabled.

## RESETTING

By confirming this function all current failures will be reset

## MISCELLANEOUS MENU

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

### CLOCK SETTING

This function is used to set date and time in the internal clock.

The data format is as follows:  
day/month/year week day 1-7  
and then  
hour/minutes/seconds.

### TIME BANDS

Four programmable time bands are provided, regarding switching off the window's lighting lamp (Energy Saving) and sales of products at discounted prices.

The time bands can be programmed as hour (00 to 23) and minutes (00 a 59) for start and end.

The reference time is kept by an internal clock, programmable as year, hour and minutes.

If the values for start and end of the time band are set to 24.00 the time period is disabled.

## PRE-SELECTIONS

There is the option of enabling some selection buttons to have dispensing:

- without cup, where the user can use his own ceramic cup;
- with extra sugar, i.e. a greater amount of sugar (programmable) on all selections where it is dispensed;
- unsweetened, i.e. without sugar on all selections where it is dispensed.

The "-" and "+" keys can be used to vary the amount of sugar or, alternatively of coffee (strong and light).

The LEDs will indicate the average dose change.

- moka, i.e. a reduction in the amount of water (programmable) for coffee.
- Strong, i.e. an increase in the amount of product (programmable) for coffee.
- Light, i.e. a reduction in the amount of product (programmable) for coffee.

For each pre-selection it is possible to decide whether or not it is to be enabled, which button will be assigned to, the selection price change and the percentage change in product dose.

## FRESH-BREW UNIT DATA

For each of the two Fresh-brew units installed in the machine, it is possible to set the brewing time, the drying time for the used dose whether or not to enable product mixing and automatic cleaning of the brewing unit.

## TEMPERATURE

This function is used to set the operating temperature, expressed in °C, of the boilers installed in the machine. After selecting the boiler, press the confirm key "↵" to display the temperature value blinking to be modified as necessary.

## COUNTER DISPLAY WITH

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

## PROGRAMMING THE MACHINE CODE

When the "Machine code" function is displayed the identification code number of the machine can be changed (from the default 999999).

## PASSWORD

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

The default value is set to 0; in this case the function is disabled and no password will be required.

## PASSWORD ENABLE

This function allows to enable/disable the password request to enter the programming mode; by default the password request is disabled.

## CUSTOM SELECTIONS

The machine has the option of customising up to four selections as alternative to the standard ones.

If these alternative selections are described in the software it is possible to decide to which button assign then, replacing the standard selection).

## JUG FACILITIES

Some models, supplied with a special key, permit dispensing of a number of selections (programmable between 1 to 9; 5 as default) without cup to fill a jug.

## PROGRAMMER (OPTIONAL)

### AUTOMATIC SETUP TRANSFER

Using the programmer device makes it possible to read out the programming routines 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.

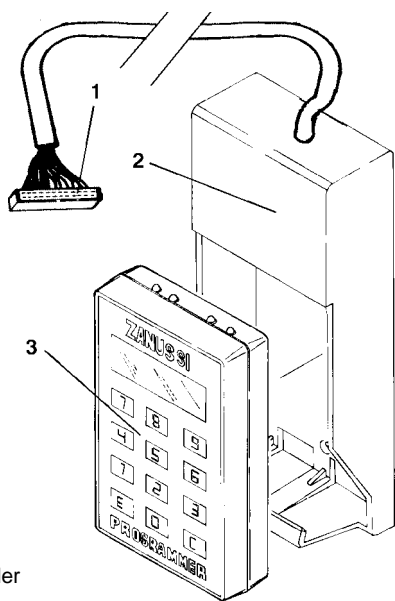
To connect the programmer to the machine, the special holder is to be used (see Fig. ) connecting the cable to the special connector of the push-button board (see Fig. ).

Then enter the "programming" mode by pressing twice the relevant key on the coin mechanism compartment.

Now, inserting the programmer in its holder, an automatic connection will take place, 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 following function;
- Press key "C" to display the previous function.

Fig. 19



- 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>	

### TRANSFERRED DATA

The following data is transferred with the setup:

- . Water and powder doses
- . Price table
- . Prices and selections status
- . Basic coin
- . Decimal point position
- . Value of the validator lines
- . BDV / MDB data
- . N. of "Jug Facilities" selections

### 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" operate as follows:

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

LANGUAGE CONFIGURATION	CONFIGURATION ITALIAN	CONFIGURATION Confirm?
	CONFIGURATION FRENCH	
	CONFIGURATION GERMAN	
	CONFIGURATION ENGLISH	
	CONFIGURATION SPANISH	
CONFIGURATION	INITIALISE INITIALISE	Confirm?
CONFIGURATION CONFIG. END	Exit from the configuration menu The software starts again from address 0000 (as when the machine is started)	



# MAINTENANCE

The integrity of the machine and compliance with the standards of the relevant systems must be checked at least once a year by qualified personnel.

Before starting any maintenance operations requiring parts of the unit to be removed, the machine must always be switched off.

The operations described below 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.

## INTRODUCTION

To ensure correct operation for a long period, the machine must be subjected to regular maintenance.

The following sections contain the procedures and the maintenance schedule, which are only a general indication, as they greatly depend on the operating conditions (e.g. water hardness, environmental humidity and temperature, type of product used, etc.).

The procedures described in this chapter are not exhaustive of all maintenance operations to be carried out.

More complex operations (e.g. boiler descaling) should be carried out by qualified technicians only having specific knowledge of the machine.

To prevent oxidation or the action of chemical agents, the stainless steel and varnished surfaces should be kept clean by using mild detergents (solvents must not be used).

**Never use water jets to clean the machine.**

## MAINTENANCE OF THE BREWING UNIT

Every 10,000 selections or every 6 months some maintenance of the coffee unit must be carried out.

Maintenance is carried out as follows:

- remove the boiler teflon hose connection from the upper piston, paying attention not to lose the seal (see fig. 20);
- undo the knob securing the unit to the bracket;
- remove the coffee unit.

### Removing the upper filter

- Take the snap ring out of its seat;
- remove the piston from the crosspiece;
- remove the filter and the piston sealing.

### Removing the lower filter

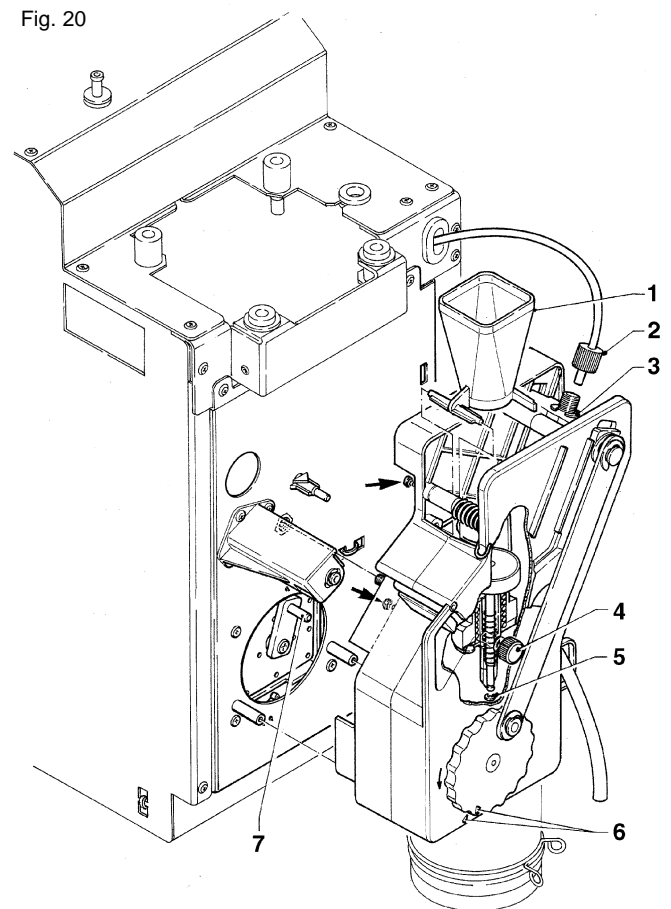
- Loosen screws A and B enough to release the coffee funnel (see fig. 20);
- remove the lower piston snap ring;
- take the piston from out of brew chamber and remove the filter.

Soak all components removed from the unit in a solution of boiling hot water and coffee machine detergent for approx. 20 minutes.

Thoroughly rinse and dry all parts, then reinstall them in the reverse order of disassembly, taking particular care that:

- the piston is positioned in the correct notch for the coffee dose used (see relevant section);
- the two reference notches match and that the coffee unit is inserted.

Fig. 20



- 1 - Coffee funnel
- 2 - Boiler connecting hose
- 3 - Unit securing knob
- 4 - Upper piston snap ring
- 5 - Lower piston snap ring
- 6 - Reference notches
- 7 - Ratiomotor handle pin

### Important notice!!!

**Check that the handle pin of the ratiomotor is correctly engaged in its seat.**

## ANNUAL SANITISING

At least once a year, or more frequently according to the use of the machine and the quality of the inlet water, the entire foodstuff circuit system must be cleaned and sanitized in the following way:

- all parts of the hydraulic system in contact with food, including the hoses, must be removed from the unit and fully disassembled;
- all visible residue and product films are mechanically removed using brushes or similar tools, if necessary;
- all components must be soaked in a sanitising solution for at least 20 minutes;
- the unit internal surfaces are to be cleaned with the same sanitising solution;
- Thoroughly rinse and then reinstall the parts.

**Before restarting the unit, the same sanitising procedure described in section "Sanitising the foodstuff circuits and the mixers" should be repeated.**

## PRINTED BOARD FUNCTIONS AND INDICATOR LIGHTS

### CPU BOARD

The C.P.U. (Central Processing Unit) board is housed in the coin mechanism compartment; this board controls the communication with the control board and processes the input signals from the Key-pad, the payment system and controls the display.

The board houses the EPROM (the chip containing the program) and a series of minidips (see fig. ) which allow configuration of the board according to use of the machine (see relevant chapter).

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

- green LED (2) blinking during the normal operation of the C.P.U. board.
- yellow LED (3) lit to indicate the presence of 5 Vdc;
- red LED (4) lit if there is a program error;
- red LED (5) lit during the board reset.

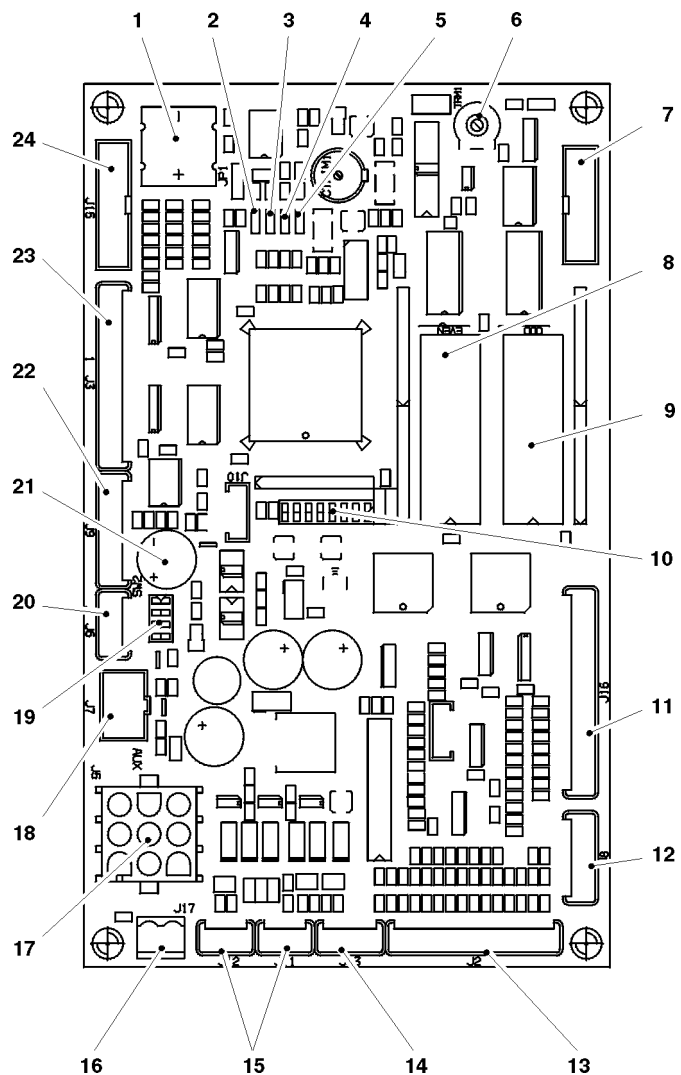
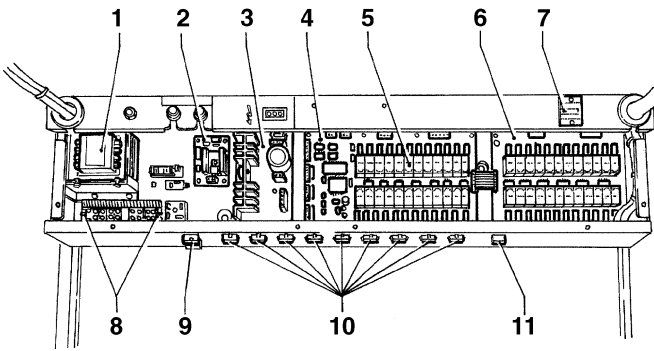


Fig. 21

- |    |  |
|----|--|
| 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  | - EPROM: EVEN                                |
| 9  | - EPROM: ODD                                 |
| 10 | - Configuration Minidips                     |
| 11 | - Service keys connector                     |
| 12 | - Connector not used                         |
| 13 | - Key-pad connector                          |
| 14 | - Cold unit connector                        |
| 15 | - Connectors for control board communication |
| 16 | - 24 Vdc 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 of cup and sugar control board   |
| 24 | - Validator connector                        |

Fig. 22



- 1 - Transformer
- 2 - Boiler control board
- 3 - Power supply board
- 4 - Actuation board
- 5 - Relay
- 6 - Expansion board
- 7 - Mechanical counter
- 8 - Transformer primary/secondary winding fuses
- 9 - Instant boiler connector
- 10 - Solenoid valve connector
- 11 - Sanitising kit connector (optional)

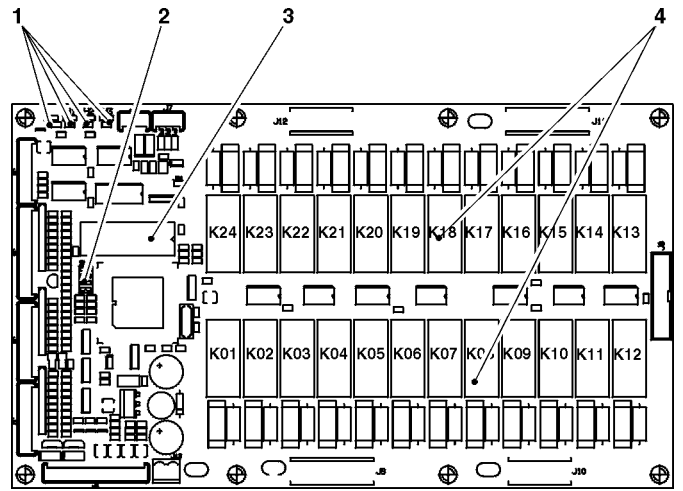


Fig. 23

- 1 - LED indicators
- 2 - EPROM
- 3 - Configuration Minidip
  - 1 = OFF
  - 2 = ON
  - 3 = ON
  - 4 = OFF
- 4 - Relay

RELAY FUNCTION (see Wiring diagram)

## BOILER CONTROL BOARD

This board controls the instant boiler heating element.

## ACTUATION BOARD

This board (see fig. 23) activates, by means of relays, some of the 230V~ components of the machine.

This board is supplied with 24 Vdc.

The control board EPROM is fitted on this board:

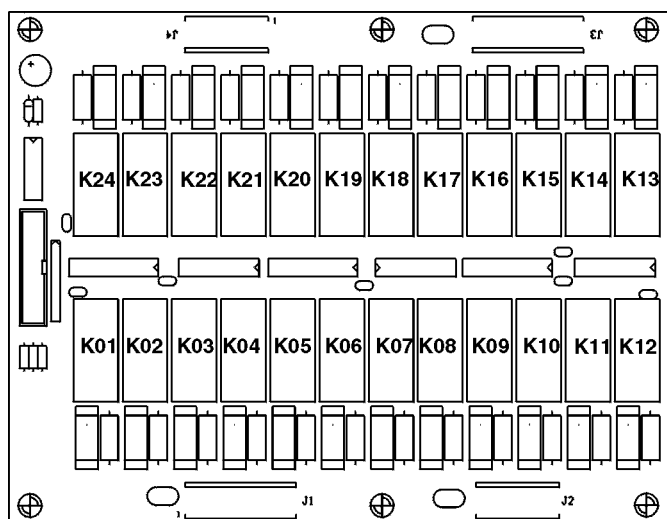
- green LED, blinking at intervals of approximately one second, indicates that the microprocessor is working correctly; if switched on fixed, it indicates that there is communication with the CPU board.
- red LED "H1", indicates the operating status of heating element on the first espresso boiler.
- red LED "H2", indicates the operating status of heating element on the second espresso boiler (if installed).
- red LED "H3", indicates the operating status of heating element on the instant boiler.

K01 =	PM	MF3	
K02 =	MFB	MD5	ESC
K03 =	ER1	MPF	MF5
K04 =	M	MDFB	MD3
K05 =	ER2	MF	MF4
K06 =	MAC	MD	MD4
K07 =	E8		
K08 =	MD1		
K09 =	MF1		
K10 =	MD2		
K11 =	MF2		
K12 =	VENT		
K13 =	E1		
K14 =	E2		
K15 =	E3		
K16 =	E4		
K17 =	E5		
K18 =	E6		
K19 =	E7		
K20 =	E9		
K21 =	MSB		
K22 =	MSU		
K23 =	MSCB		
K24 =	MSP		

## EXPANSION BOARD

This board (see fig. 24) activates, by means of relays, the other 230V~ components of the machine.

Fig. 24



RELAY FUNCTION (see Wiring diagram)

K01	=	PM (C2)	MF6	
K02	=	MPF	MF8	
K03	=	M (C2)	MDFB	MD6
K04	=	MF	MF7	
K05	=	MAC (C2)	MD	MD7
K06	=	ESC (C2)	MFB	MD8
K07	=	not used		
K08	=	MVP		
K09	=	not used		
K10	=	not used		
K11	=	MDZ		
K12	=	MD12		
K13	=	MD9		
K14	=	MF9		
K15	=	MD10		
K16	=	MF10		
K17	=	MD11		
K18	=	MF11		
K19	=	PM sanit.		
K20	=	LF		
K21	=	EV sanit.		
K22	=	EEA		
K23	=	not used		
K24	=	not used		

## CONFIGURING THE ELECTRONIC BOARDS

The electronic boards are designed to be used in many machine models.

When the boards are replaced, or when wishing to change the unit performance, ensure that the board configuration is correct.

Two series of minidip are fitted at the centre of CPU board (see Fig. 21) and of the actuation board (see Fig. 22) allowing the board to be configured for use on the various versions.

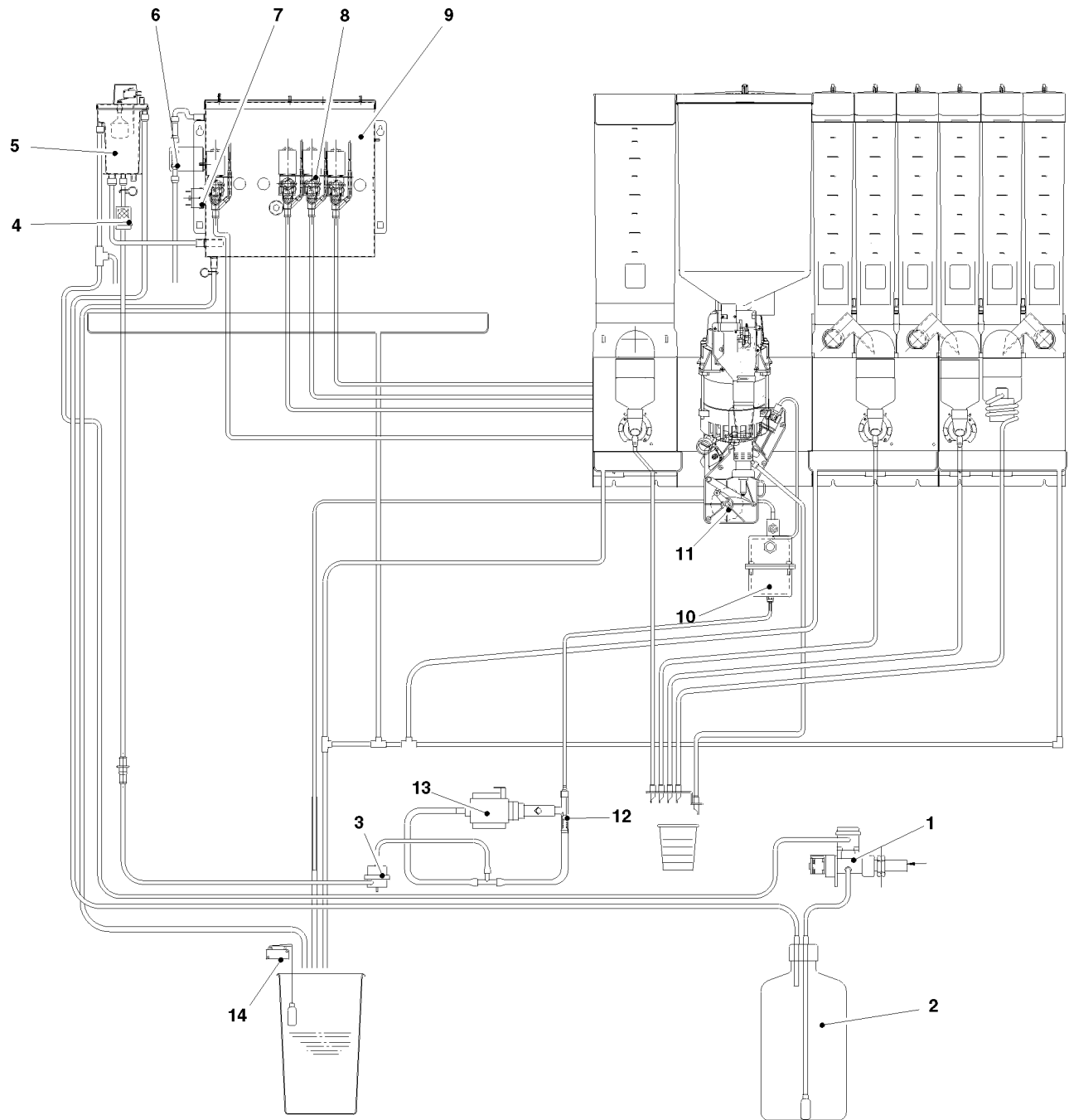
To correctly configure the boards, refer to the selection dose table.

## SOFTWARE UPDATING

The machine is equipped with flash EPROMs which can be re-written.

Using a special program and a suitable system (personal computer or similar) the machine control software can be re-written without replacing the EPROM.

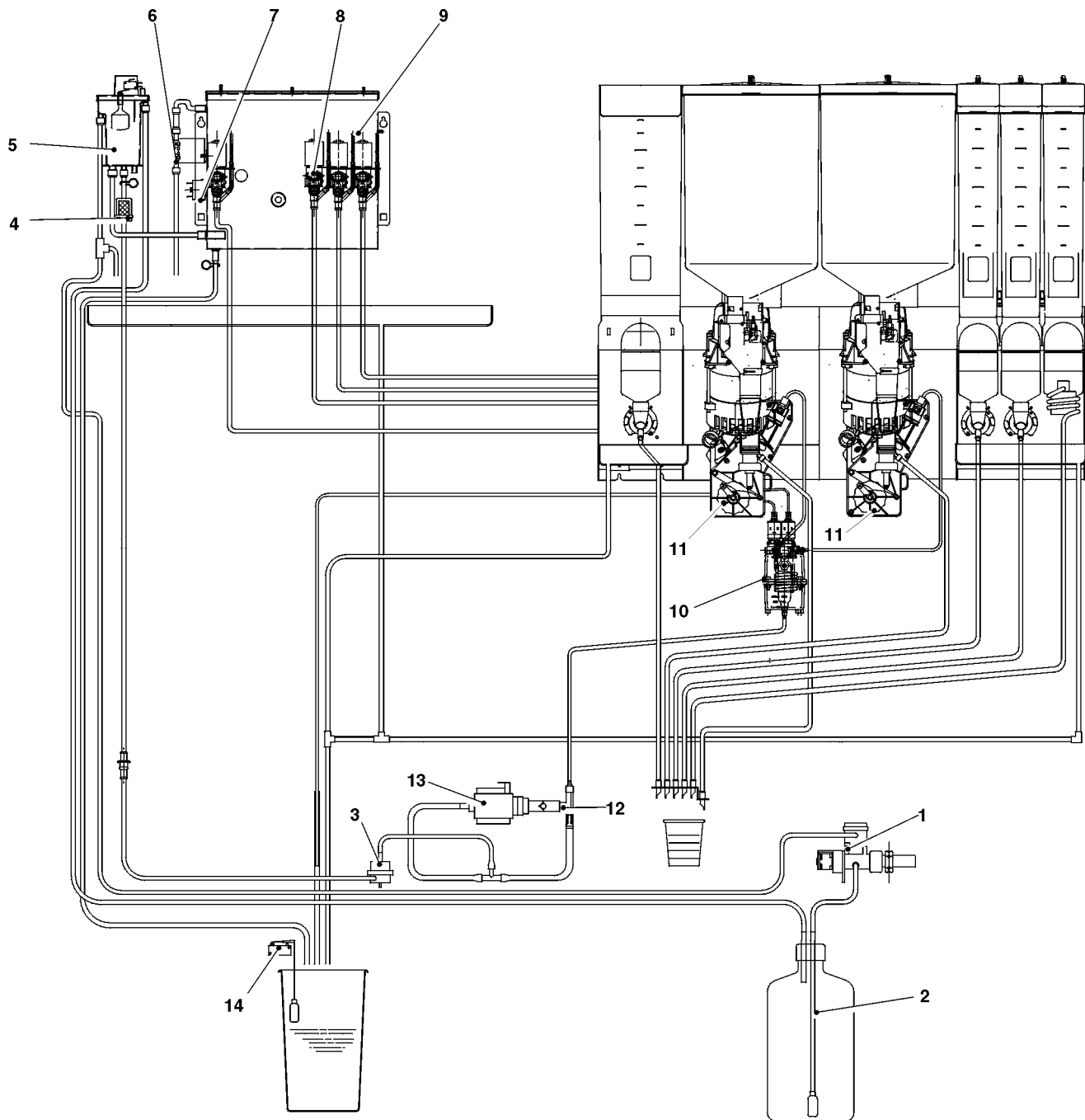
# HYDRAULIC SYSTEM FOR ESPRESSO



- 1 - Water inlet solenoid valve
- 2 - Water softener
- 3 - Volumetric counter
- 4 - Mechanical filter
- 5 - Air-break
- 6 - Anti-boiling thermostat
- 7 - Safety thermostat

- 8 - Instant prod. solenoid valves
- 9 - Instant prod. boiler
- 10- Coffee boiler
- 11- Coffee unit
- 12- Bypass
- 13- Vibration pump
- 14- Liquid waste container float

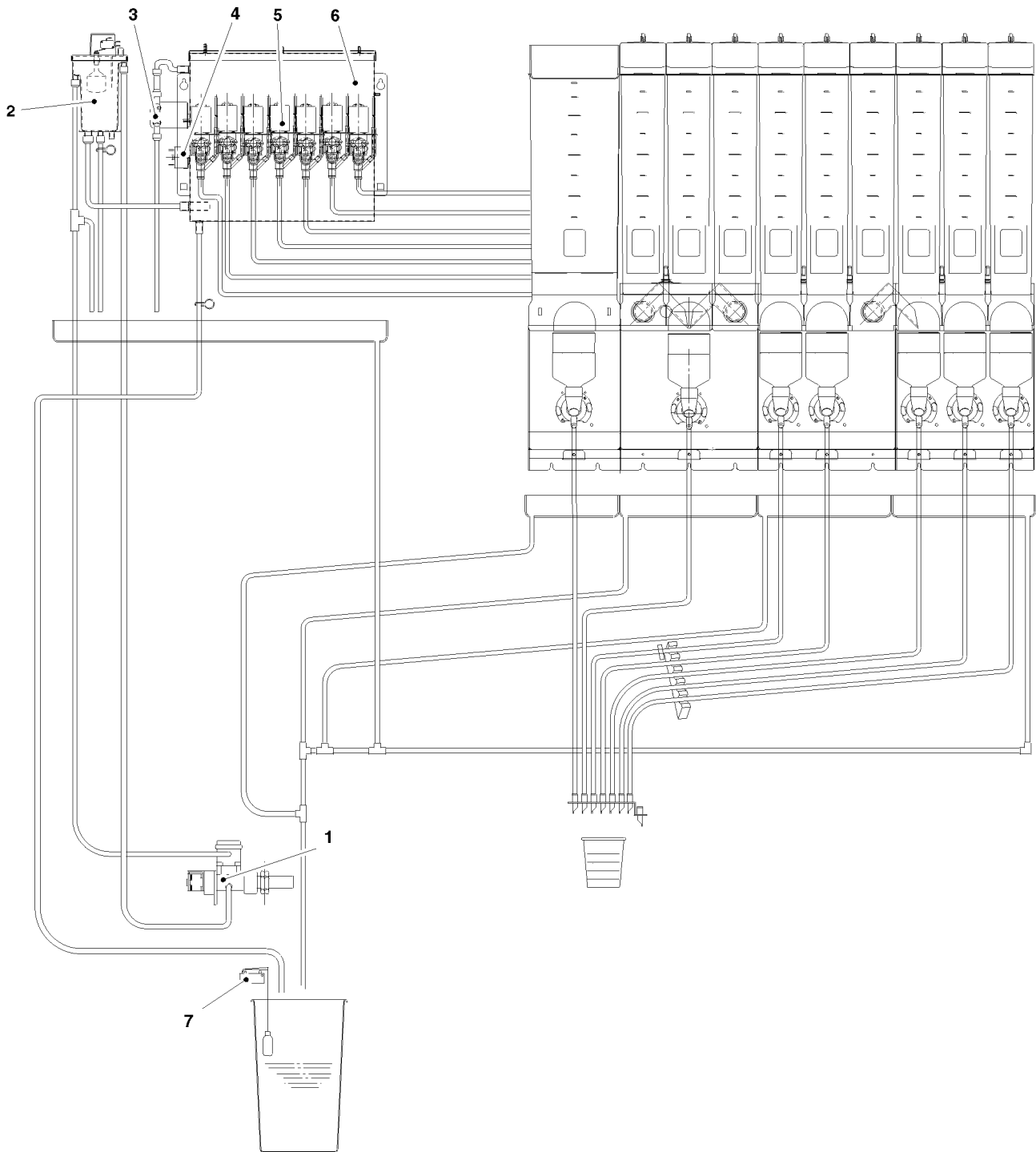
# HYDRAULIC SYSTEM FOR TWO ESPRESSO UNITS



- 1 - Water inlet solenoid valve
- 2 - Water softener
- 3 - Volumetric counter
- 4 - Mechanical filter
- 5 - Air-break
- 6 - Anti-boiling thermostat
- 7 - Safety thermostat

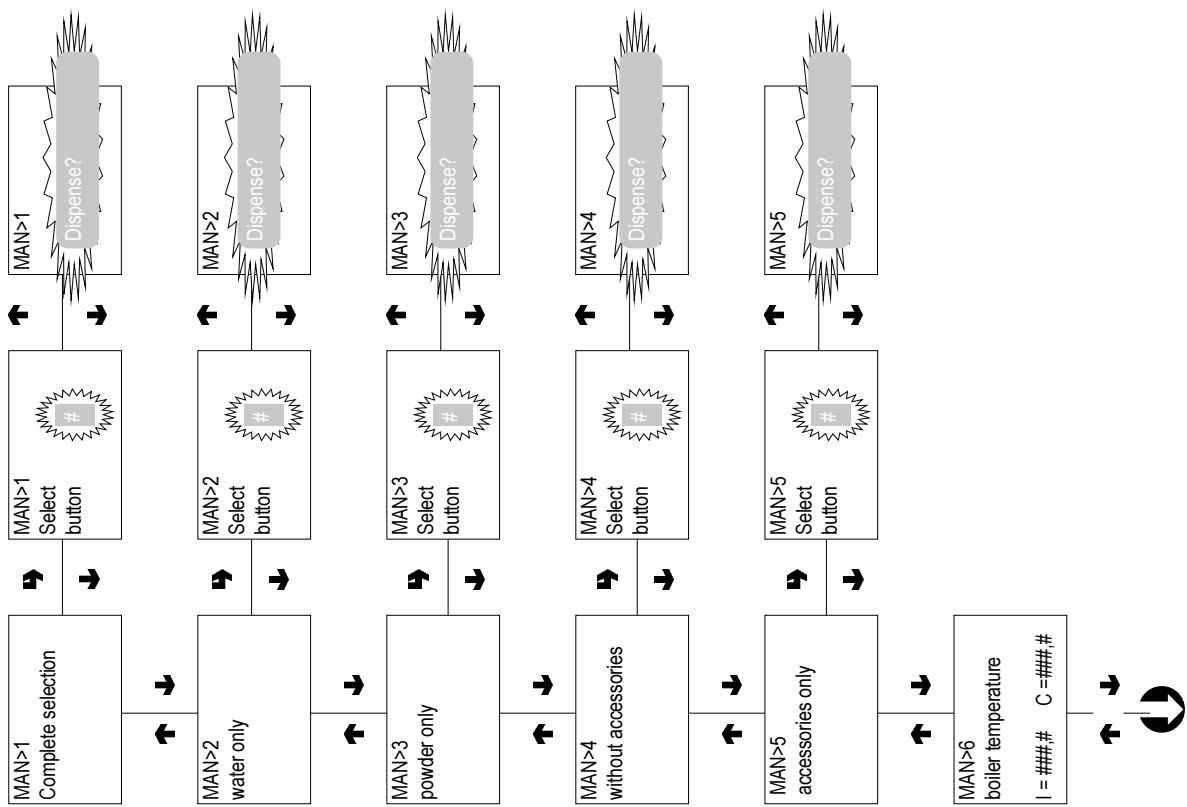
- 8 - Instant prod. solenoid valves
- 9 - Instant prod. boiler
- 10- Coffee boiler
- 11- Coffee unit
- 12- Bypass
- 13- Vibration pump
- 14- Liquid waste container float

## HYDRAULIC SYSTEM FOR INSTANT



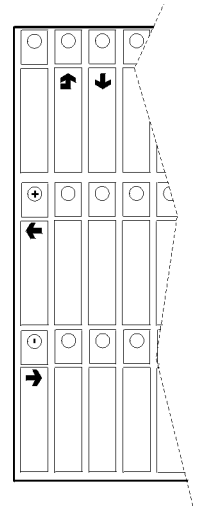
- 1 - Water inlet solenoid valve
- 2 - Air-break
- 3 - Anti-boiling thermostat
- 4 - Safety thermostat
- 5 - Instant prod. solenoid valves
- 6 - Instant prod. boiler
- 7 - Liquid waste container float

# Maintenance Menu - Summary



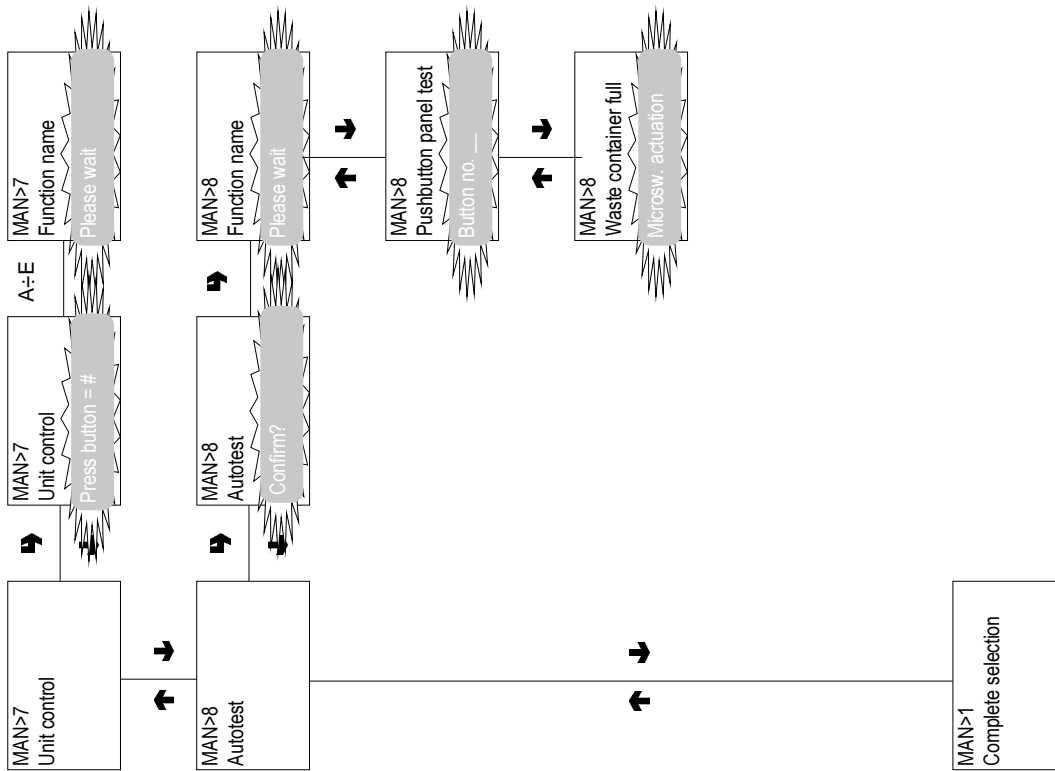
Pressing once the programming button

I = Instant boiler  
C = Coffee boiler





# Maintenance Menu - Summary

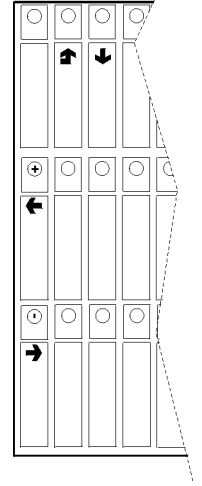


Function keys A through E  
(see fig. 18)

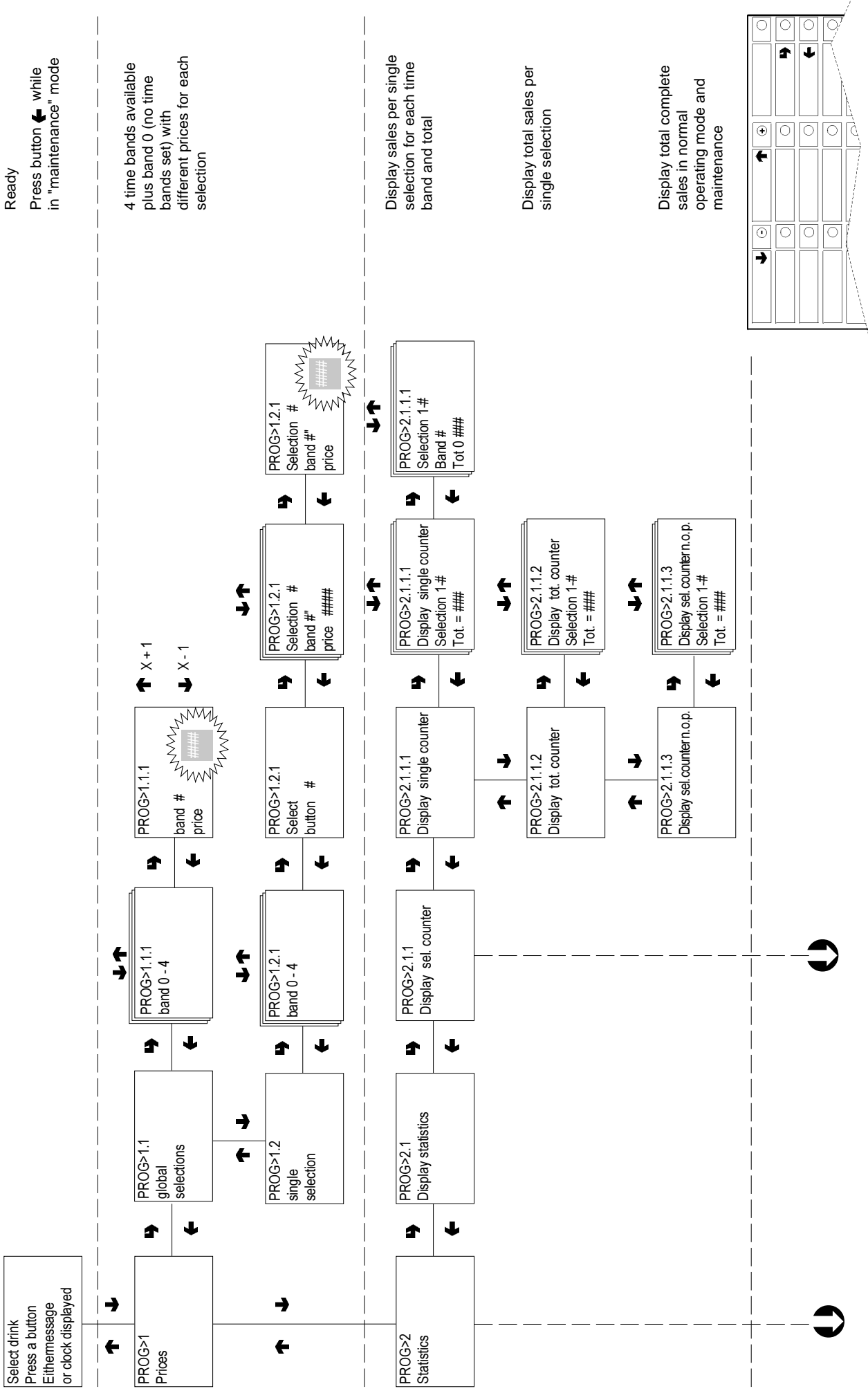
Actuation in sequence of the power users:

- .electric dosing units
- .mixers
- .cup dispenser
- .stirrer dispenser
- .neon lamp
- .door led
- .pushbutton panel\*
- .mobile spouts
- .coffee dose
- .unit rotation
- .waste container\*

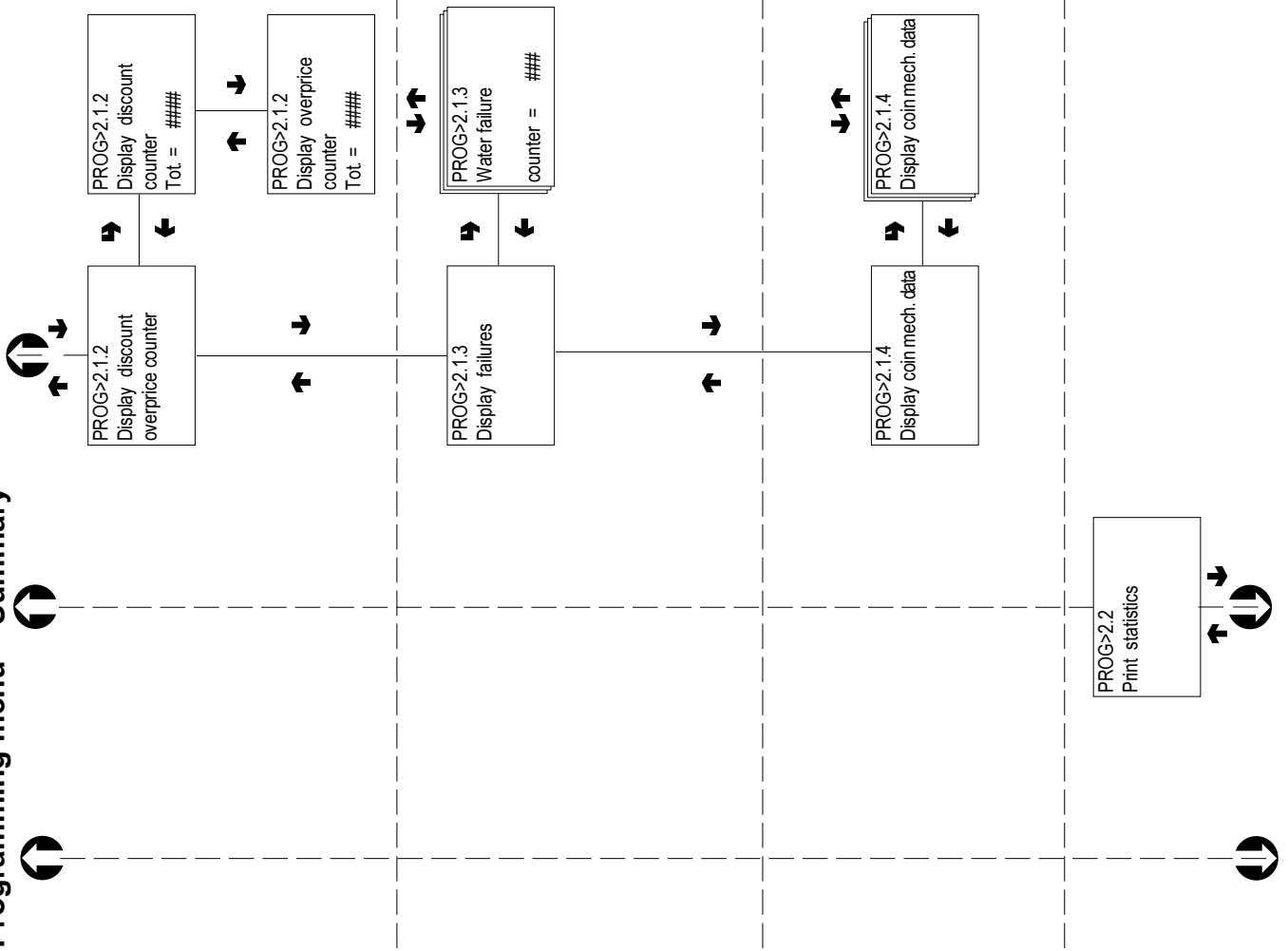
**\* these functions require the user attendance to operate the switches.**



# Programming menu - Summary



# Programming menu - Summary



Value of discount and overprice

## LIST OF FAILURES

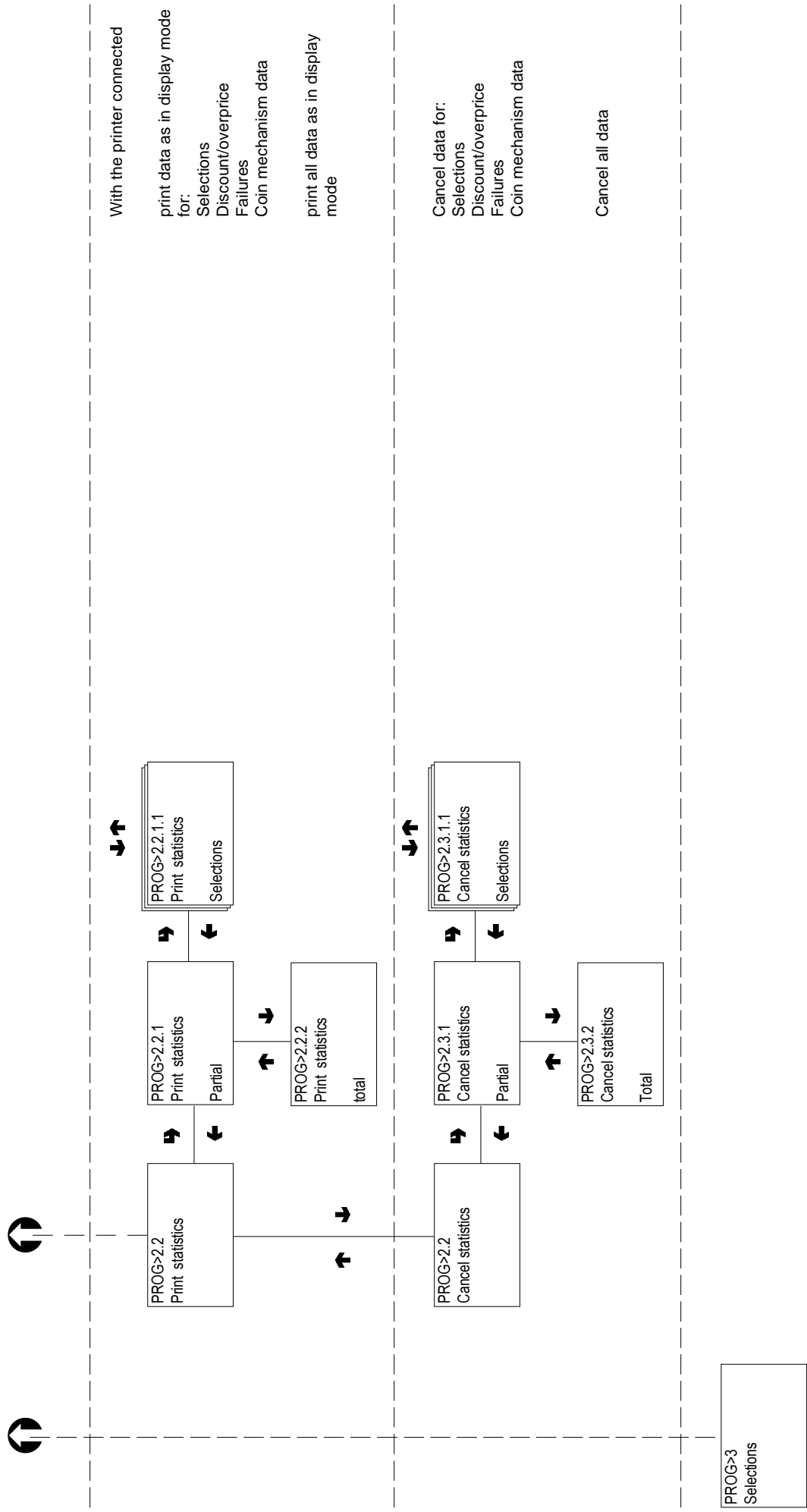
- Water failure
- Instant boiler
- Espresso boiler
- Mobile spouts
- Cup failure
- Coffee unit 1
- Coffee failure 1
- Coffee release
- Volumetric counter
- Liquid waste cont. full
- Air-break failure
- Coin mechanism
- RAM data

## COIN MECHANISM DATA (according to product used)

- Validators and Executive Cashed and sold
- Audit BDV
- Audit MDB

→	←	+	→	←	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○

# Programming menu - Summary

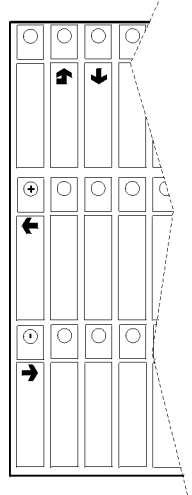


With the printer connected  
 print data as in display mode  
 for:  
 Selections  
 Discount/overprice  
 Failures  
 Coin mechanism data

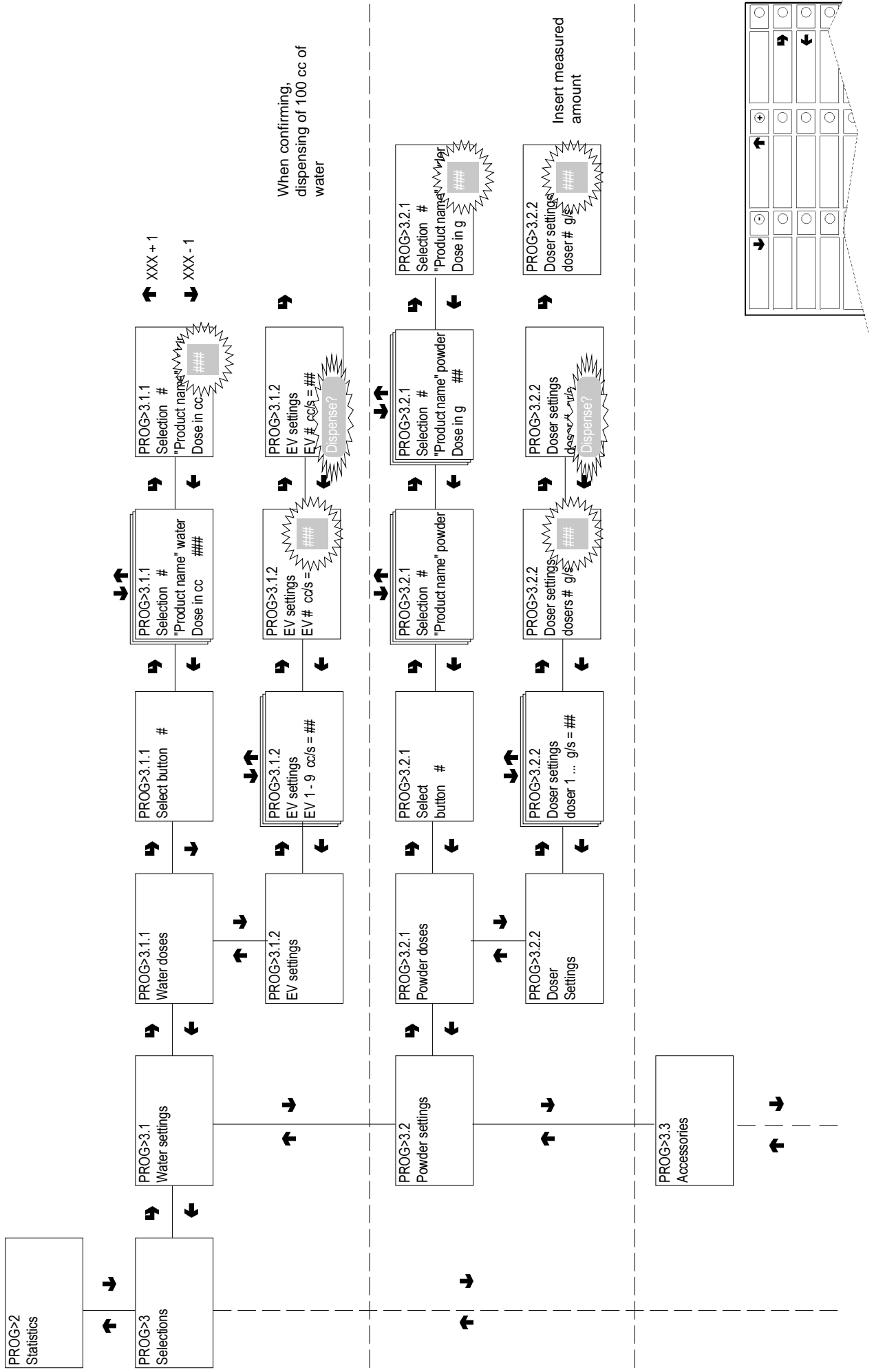
print all data as in display  
 mode

Cancel data for:  
 Selections  
 Discount/overprice  
 Failures  
 Coin mechanism data

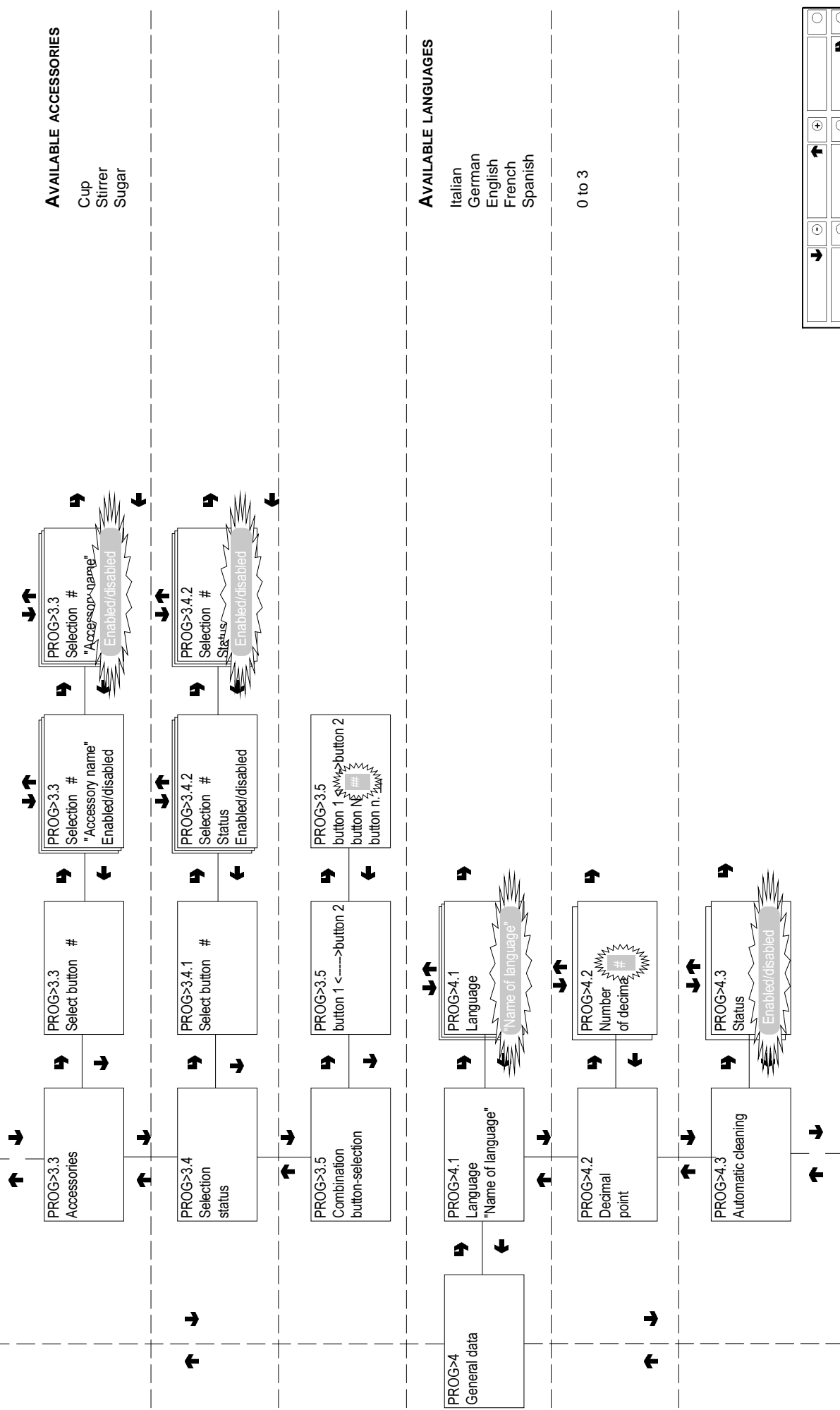
Cancel all data



# Programming menu - Summary

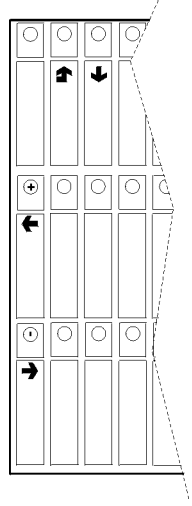
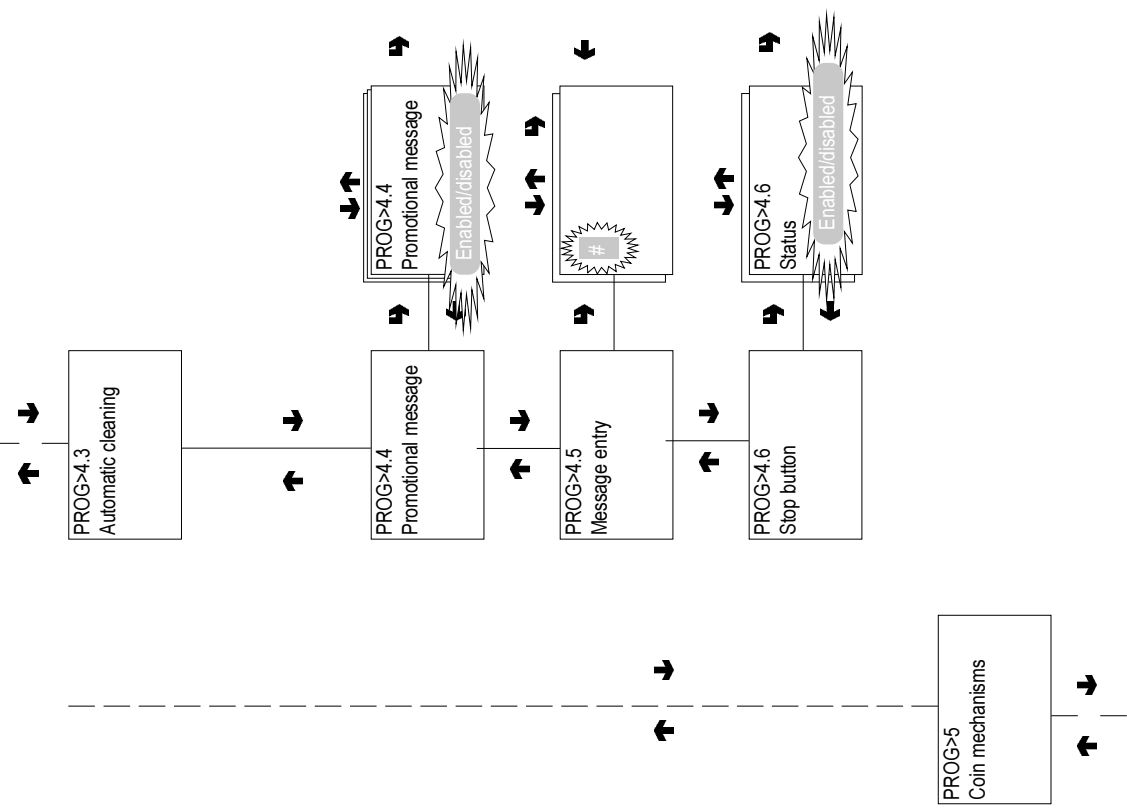


# Programming menu - Summary

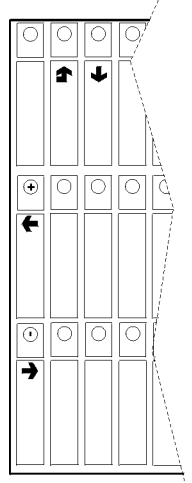
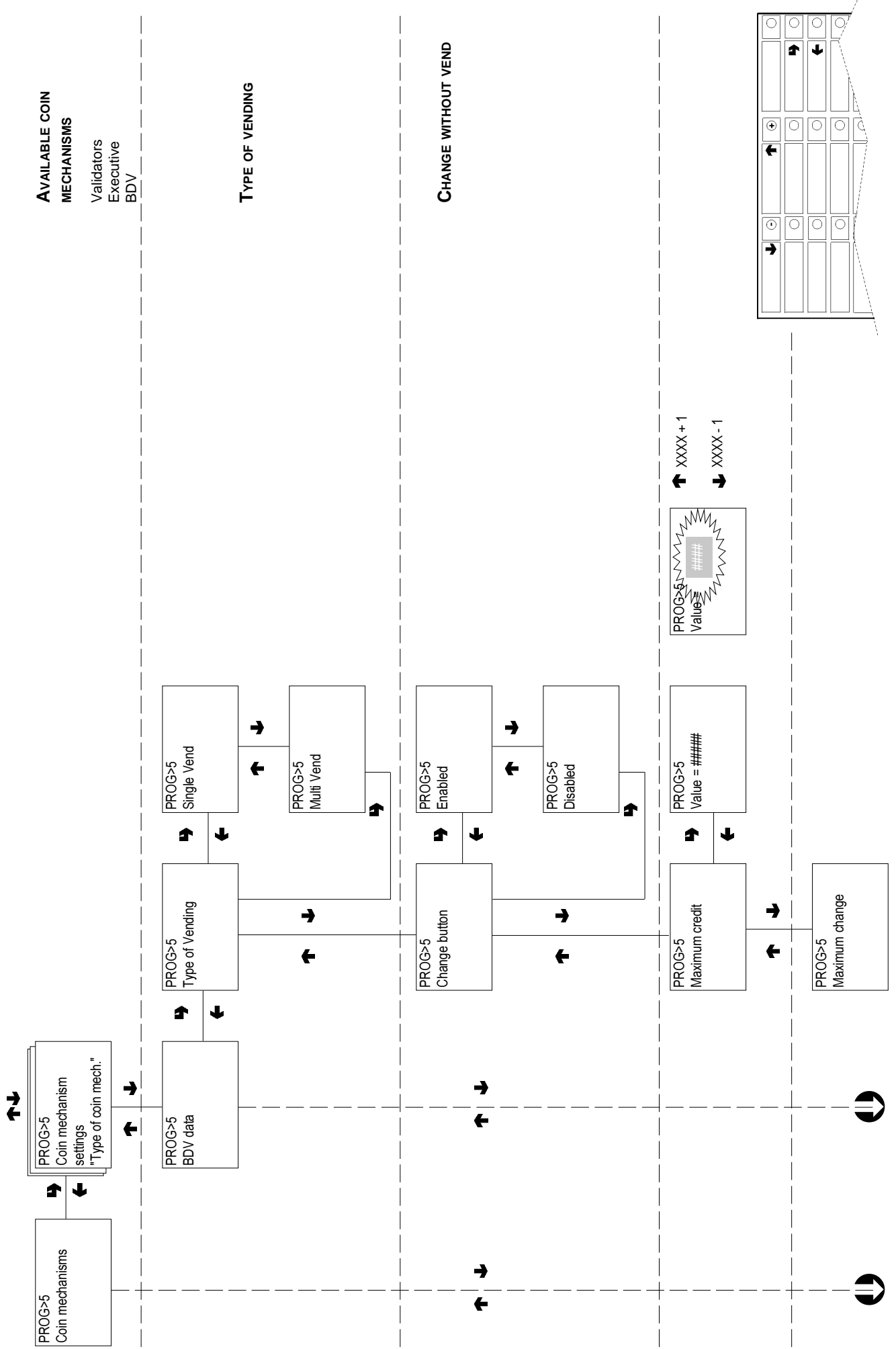


→	←	+	←	→	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○

# Programming menu - Summary

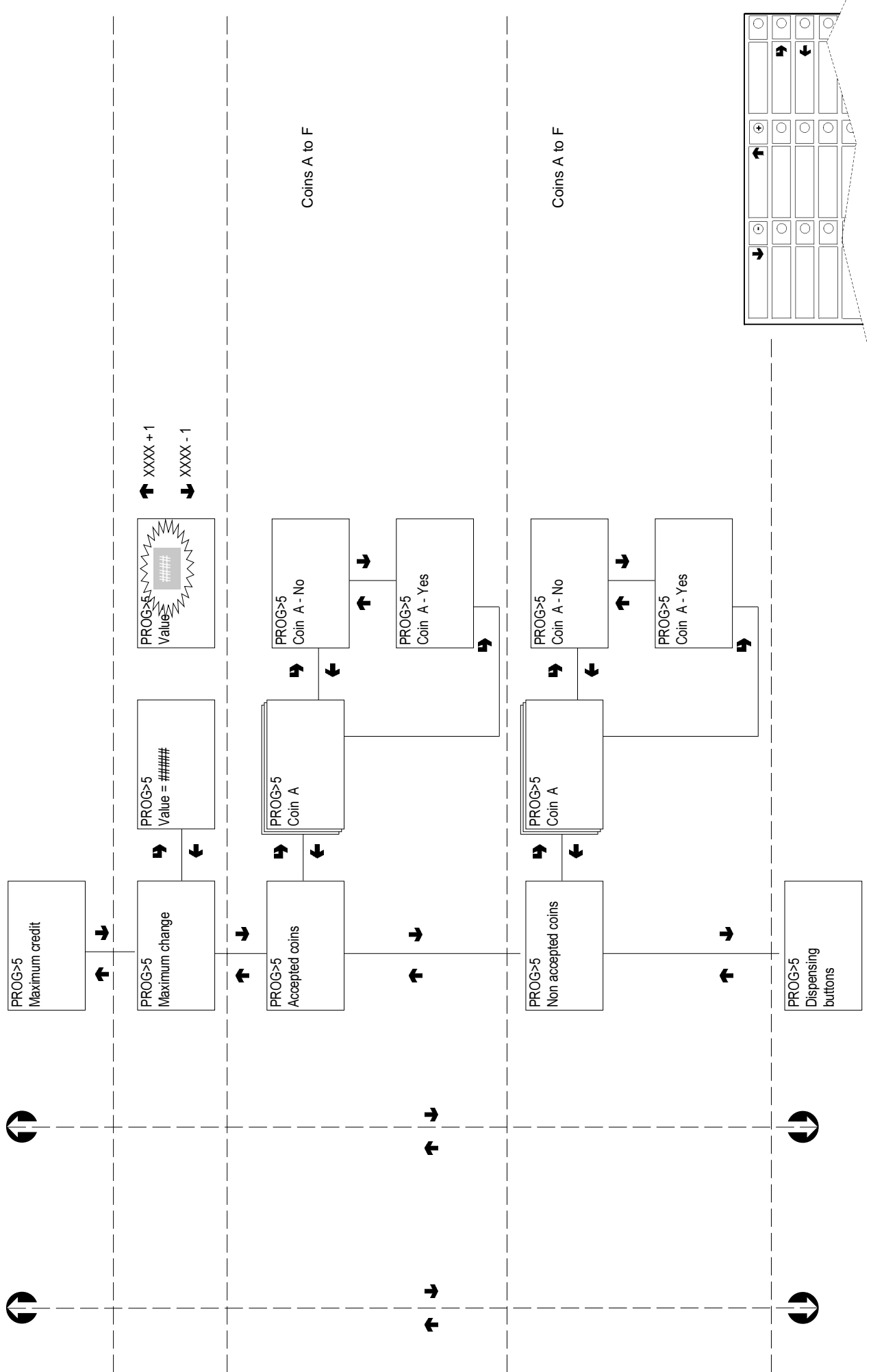


# Programming menu - Summary

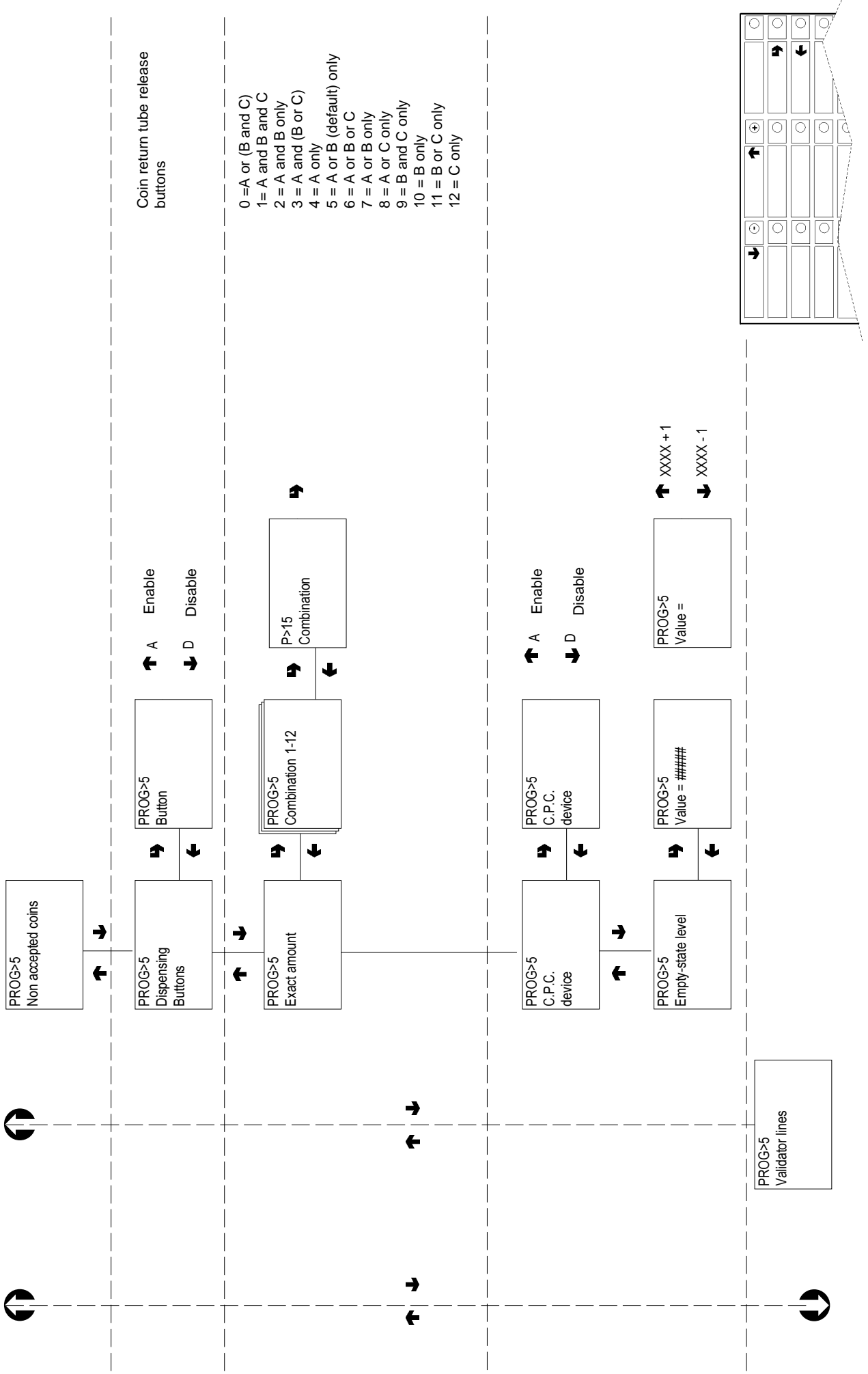




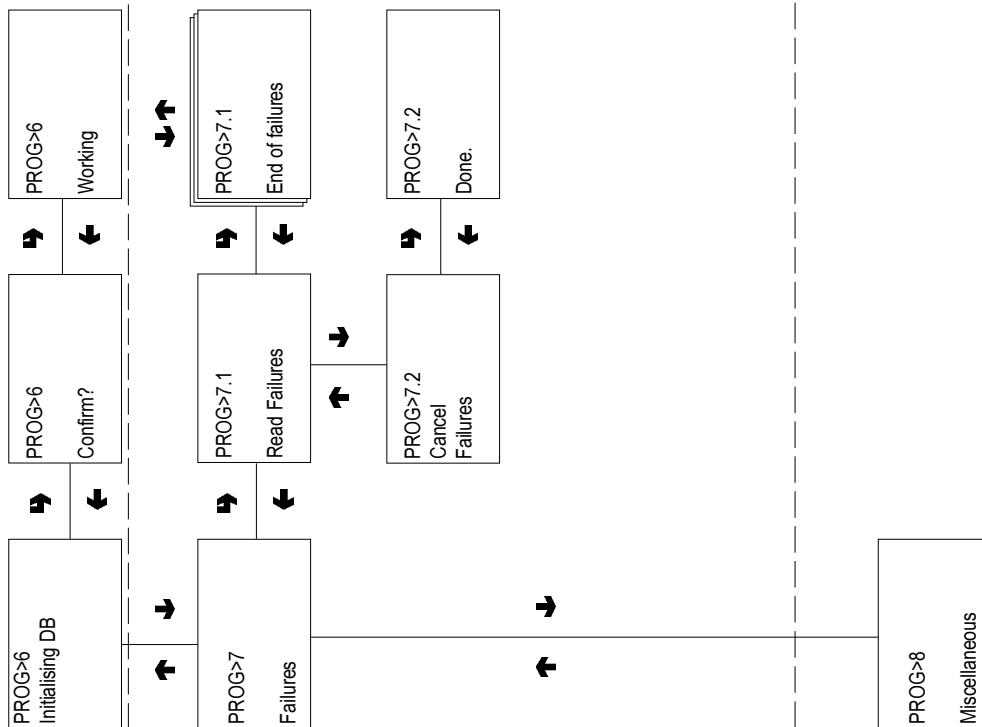
# Programming menu - Summary



# Programming menu - Summary



# Programming menu - Summary



## INITIALISING DATABASES

## DISPLAY FAILURES

If there are no failures, when pressing button **→** the message "End of failures" is displayed

### LIST OF FAILURES

- Water failure
- Instant boiler
- Espresso boiler
- Mobile spouts
- Cup failure
- Coffee unit 1
- Coffee failure 1
- Coffee release
- Volumetric counter
- Liquid waste cont. full
- Air-break failure
- Coin mechanism
- RAM data

→	←	↑	+	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○

# Programming menu - Summary

PROG>7  
Failures

PROG>8  
Miscellaneous

PROG>8.1  
Time bands

PROG>8.1.1  
Set date and time

PROG>8.1.1.1  
Set date and time  
Date ###/###/dd##

PROG>8.1.1.1  
Set date and time  
Time ##/##

PROG>8.2  
Time band 1-4

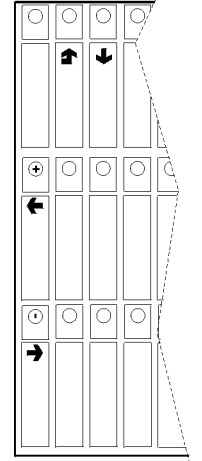
PROG>8.2.1  
Time band  
Start band #  
End band #

## CLOCK

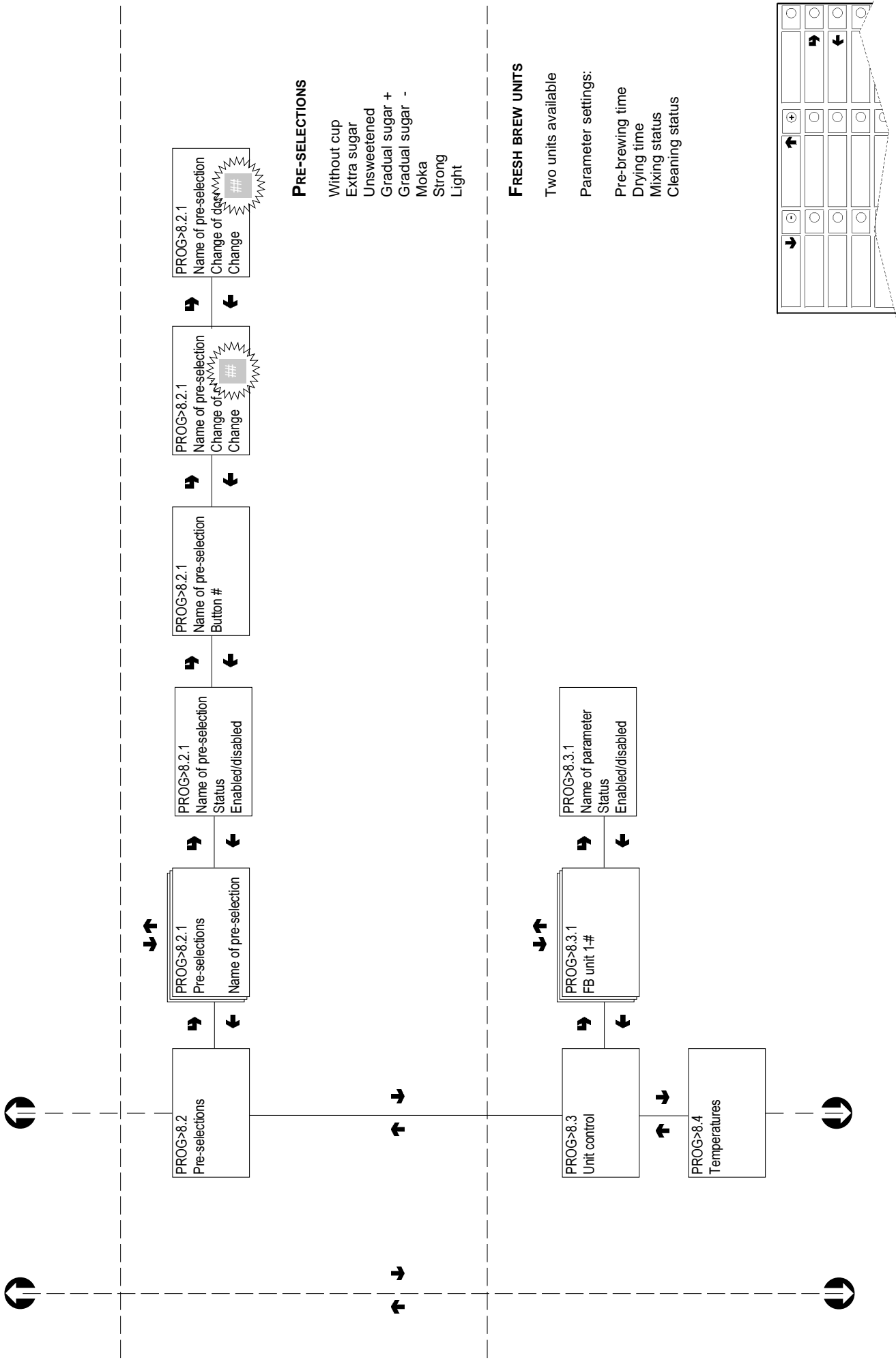
When confirming the blinking values, day, month, year and week day are entered one after the other: When confirming the week day hour and minutes are displayed, which can then be changed and confirmed.

## TIME BANDS

When confirming the blinking values, hour and minute for start and end of time band are entered one after the other. When start and end of time band are set to 24.00 the bands are not activated



# Programming menu - Summary



## PRE-SELECTIONS

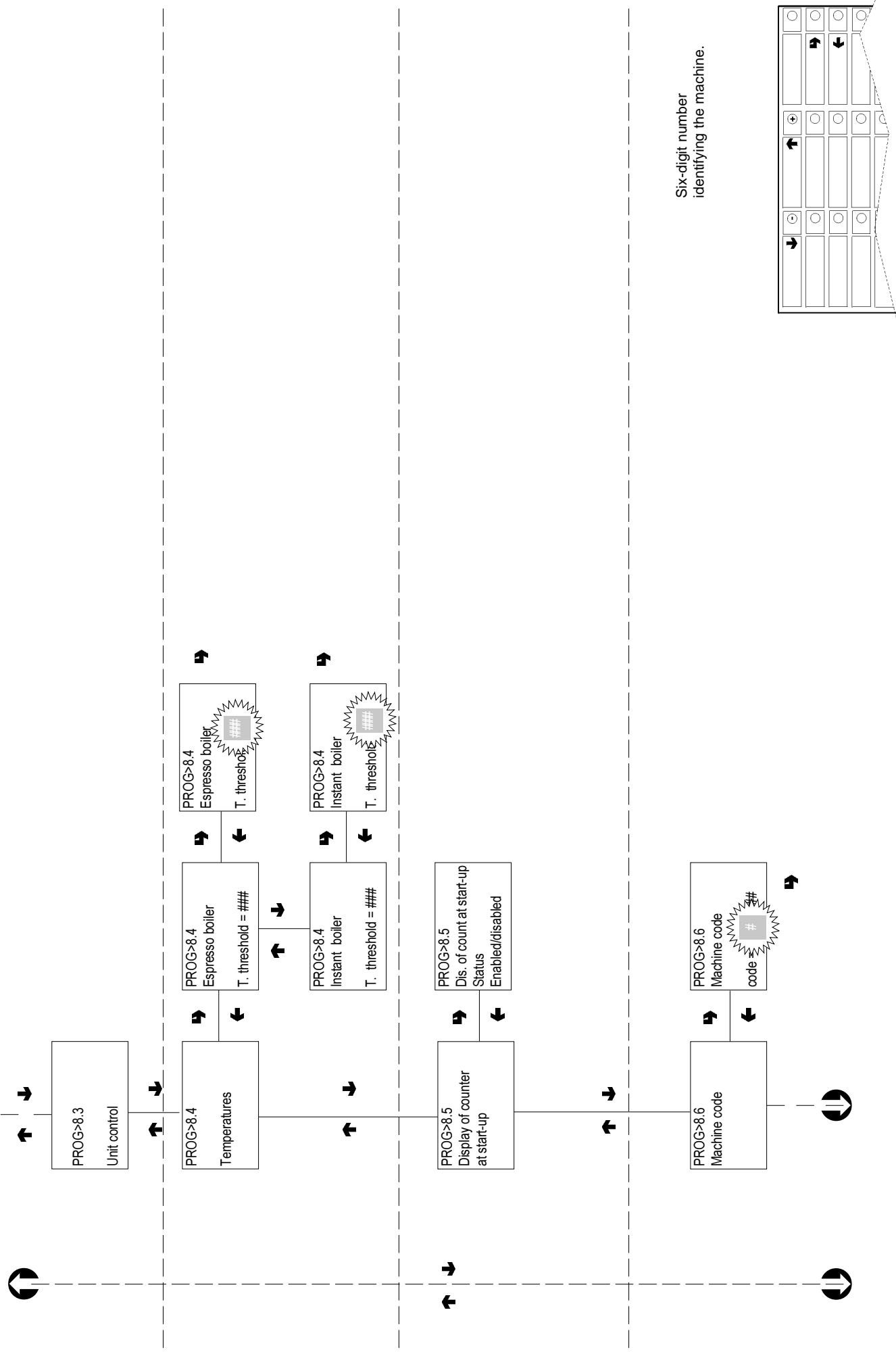
- Without cup
- Extra sugar
- Unsweetened
- Gradual sugar +
- Gradual sugar -
- Moka
- Strong
- Light

## FRESH BREW UNITS

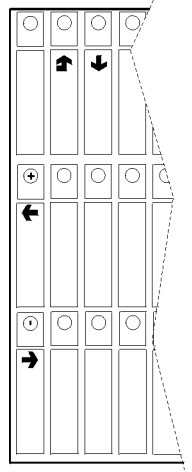
- Two units available
- Parameter settings:
- Pre-brewing time
- Drying time
- Mixing status
- Cleaning status

→	←	+	↑	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○

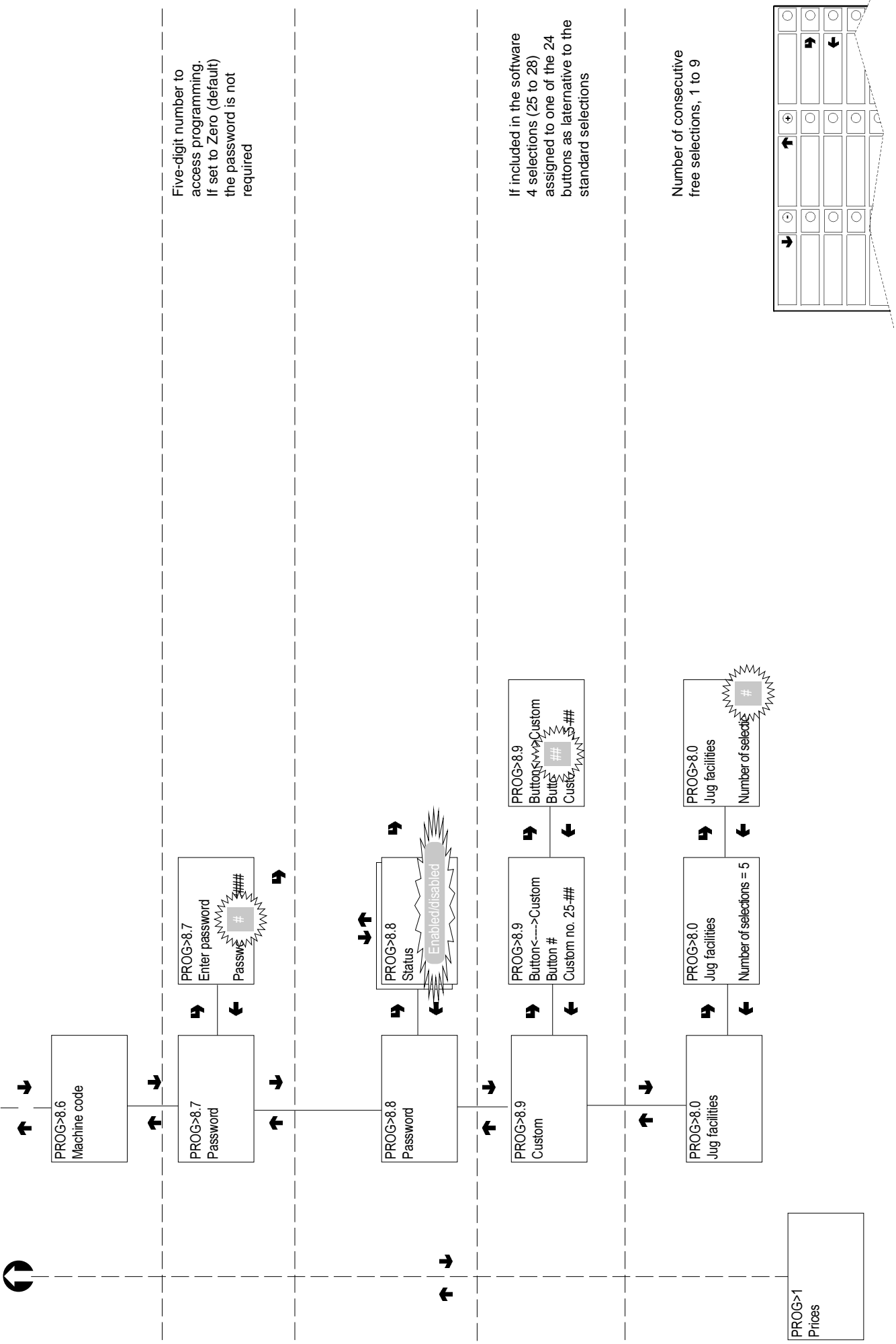
# Programming menu - Summary



Six-digit number identifying the machine.



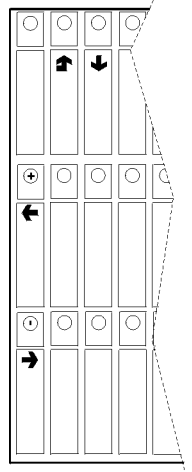
# Programming menu - Summary



Five-digit number to access programming. If set to Zero (default) the password is not required

If included in the software 4 selections (25 to 28) assigned to one of the 24 buttons as alternative to the standard selections

Number of consecutive free selections, 1 to 9



**WIRING DIAGRAM LEGEND**

CODE	DESCRIPTION
BDV	BDV COIN MECH CONNECTORS
CCG	GENERAL COUNTER
CM1	COFFEE UNIT MOTOR CAM
CM2	COFFEE DISPENSING POSITION CAM
CMF	FRESH BREW MOTOR CAM
CMPF	FRESH BREW UNIT PISTON MICRO-SWITCH
CMSB	CUP RELEASE MOTOR CAM
CV	VOLUMETRIC COUNTER
EEA	WATER INLET SOLENOID VALVE
ER	COFFEE DISPENSER SOLENOID VALVE
ESC	COFFEE RELEASE MAGNET
EV	SANITISING KIT SOLENOID VALVE
EX	EXECUTIVE COIN MECH CONNECTOR
FA	RADIO INTERFERENCE SUPPRESSOR
FREE	FREE VENDING SWITCH
I	SANITISING KIT SWITCH
ID	COFFEE DOSE SWITCH
IMSP	STIRRER RELEASE MICRO-SWITCH
IP	DOOR SWITCH
IPF	WASTE CONTAINER OVERFLOW SWITCH
IVA	EMPTY BOILER MICRO-SWITCH
IVB	EMPTY CUP DISPENSER MICRO-SWITCH
IVP	EMPTY STIRRER DISPENSER MICRO-SWITCH
JUG	JUG FACILITIES SWITCH
KC1-..	COFFEE BOILER CUTOUT
KS1-..	SAFETY CUTOUT
LF	LAMP
M	COFFEE UNIT MOTOR
MAC	GRINDER
MD1-..	MOTOR DOSER DEVICE - INSTANT
MDB	CONNECTOR FOR MDB COIN MECHANIS
MDFB	MOTOR DOSER DEVICE - FRESH BREW
MDZ	MOTOR DOSER DEVICE - SUGAR
MF1-..	MOTOR MIXERS - INSTANT
MFB	FRESH-BREW MOTOR

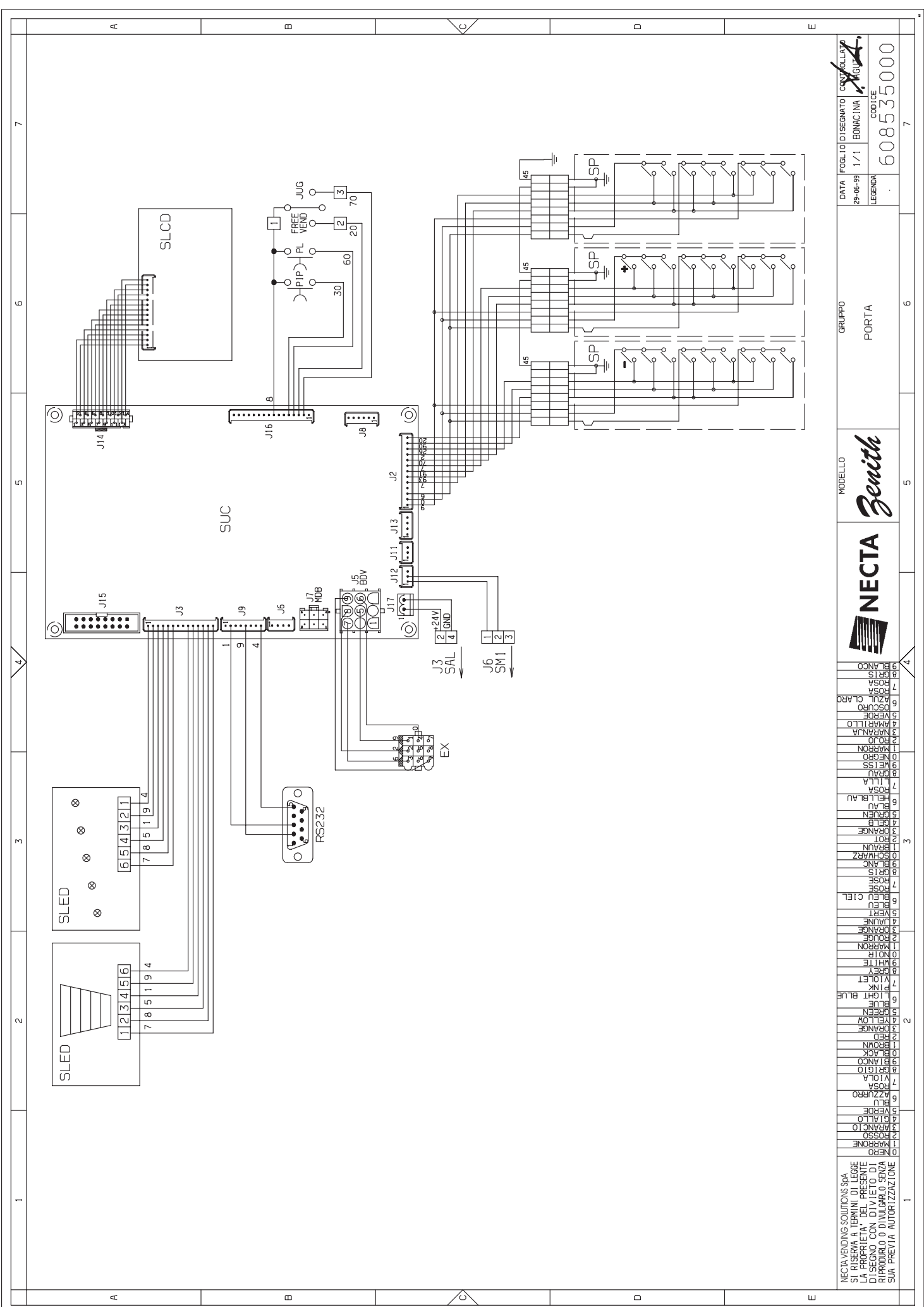
**WIRING DIAGRAM LEGEND**

CODE	DESCRIPTION
MPF	FRESH BREW PISTON MOTOR
MPU	SPOUT POSITIONING MICRO-SWITCH
MSB	CUP RELEASE MOTOR
MSCB	CUP CONTAINER SHIFT MOTOR
MSP	STIRRER RELEASE MOTOR
MSU	SPOUT MOVING MOTOR
MVP	EMPTY STIRRER DISPENSER MOTOR
NTC1-.	TEMPERATURE PROBE
NTCS	INSTANT BOILER TEMPERATURE PROBE
PAG	FAILURE RESET BUTTON
PB	POWER SUPPLY SOCKET
PD	DIODE RECTIFIER
PG	COFFEE UNIT BUTTON
PIP	PROGRAMMING BUTTON
PM	PUMP
PSB	CUP RELEASE BUTTON
RCC	COFFEE BOILER HEATING ELEMENT
RG	UNIT HEATING ELEMENT
RS232	SERIAL PORT
RT	BALLAST
SAL	VOLTAGE SUPPLY BOARD
SLCD	LIQUID CRYSTAL DISPLAY BOARD
SLED	LED BOARD
SM1	CONTROL BOARD
SM2	EXPANSION BOARD
SP	PUSH-BUTTON BOARD
ST	STARTER
STRC	BOILER HEATING TRIAC BOARD
SUC	C.P.U. BOARD
TR	TRANSFORMER
TX....	DELAYED FUSE (X=COURRENT)
TZ	CUP SENSOR
UPS	COLD UNIT PRINTED BOARD
VENT	FAN









<p>NECTA VENDING SOLUTIONS S.p.A.          SI RISPETTA PER IL PRESENTE          DI SEGNALI CON DIVIETO DI          RIPRODURRE O RIVENDERE SENZA          SUA PREVIA AUTORIZZAZIONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>	<p>DI NERO          DI BRUNO          DI ROSSO          DI BIANCO          DI GRIGIO          DI GIALLO          DI VERDE          DI AZZURRO          DI VIOLO          DI ROSA          DI MARRONE</p>
<p>MODELLO  <b>Zenith</b>  <b>NECTA</b></p>		<p>GRUPPO          PORTA</p>		<p>DATA: 29-06-99          FOGLIO DI SEGNATO 1/1          BONACCINA          LEGENDA</p>		<p>CODICE          608535000</p>		<p>CONFIDENZA          [Signature]</p>







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FOR APPROVAL

  
The Manager

