INSTALLATION, OPERATING AND MAINTENANCE MANUAL

# Kikko

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**VENDING SOLUTIONS SpA**
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**DICHIARAZIONE DI CONFORMITA'**

**DECLARATION OF CONFORMITY**

**DÉCLARATION DE CONFORMITÉ**

**KONFORMITÄTSERKLÄRUNG**

**DECLARACIÓN DE CONFORMIDAD**

**DECLARAÇÃO DE CONFORMIDADE**

**VERKLARING VAN OVEREENSTEMMING**

**INTYG OM ÖVERENSSTÄMMELSE**

**OVERENSSTEMMELSESERKLÆRING**

**YHDENMUKAISUUSTODISTUS**

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 descripta 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.

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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.

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ANTONIO CAVO

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## NECTA VENDING SOLUTIONS S.p.A.

Via Roma, 24 – I-24030 VALBREMBO (BG)

for the following field of activities
Design, manufacturing and sale of
electronical/electromechanical vending machines
has implemented and maintains a
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## ISO 9001

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*Registration Number:* IT - 12979

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*Design, manufacturing and sale of electronical/electromechanical vending machines*

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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 placed internally 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 failures or malfunctions that cannot be solved, then contact:

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 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;

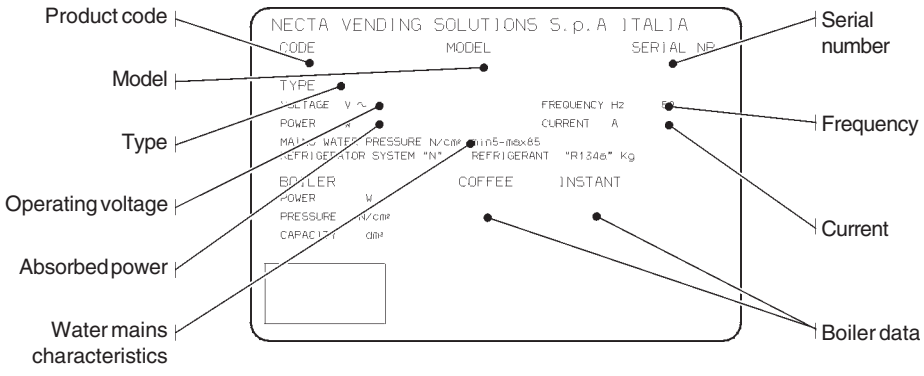


Fig. 1

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.

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## 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 12).

## 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, plastic and other materials are to be disposed of in authorized areas only;
- insulating materials should be recovered by qualified companies.

## TECHNICAL SPECIFICATIONS

| | | |
|---|---|---|
| Height | 1700 | mm |
| Height with the top lifted | 1985 | mm |
| Width | 540 | mm |
| Depth | 690 | mm |
| Overall depth with door open | 1120 | mm |
| Weight | 114 | Kg |

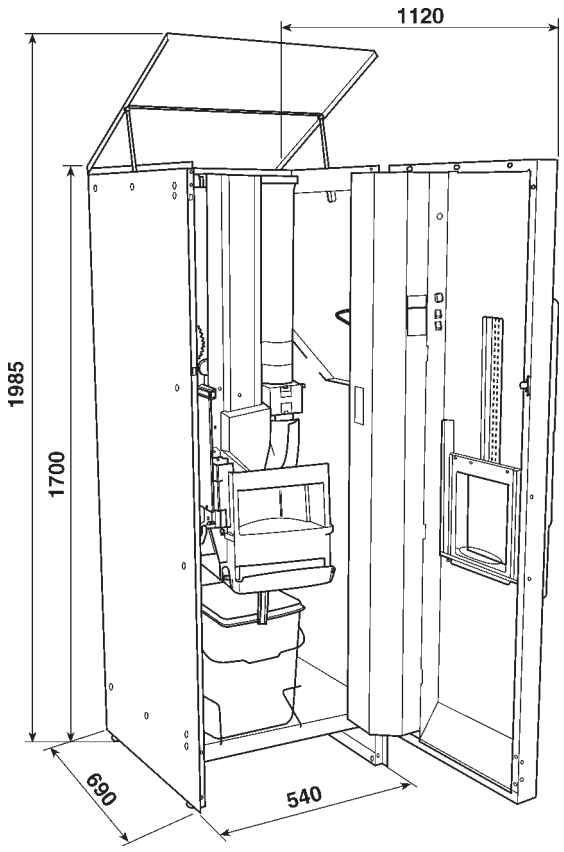


Fig. 2

| | | |
|---|---|---|
| Power supply voltage | 230 | V~ |
| Frequency | 50 | Hz |
| Installed power | 1800 | W |

**CUP DISPENSER**

Suitable for cups with a rim diameter of 70-71 mm. with a capacity of approximately 490 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, suitable space is provided for the installation (optional) of the most widely used payment systems.

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**SALES PRICES**

A different programmable can be set for each selection. The standard setting has the same sales price for all selections.

**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$^2$.
The machine software is pre-set to control the water supply from an internal tank (optional kit).

**REGOLAZIONI POSSIBILI**

espresso: granulometria; dose caffè, ed acqua volumetriche.
instant: dosi caffè, solubili ed acqua a tempo.

**Temperature**

Adjustable via software.

**CONTROLS**

- Presence of cups
- Presence of water
- Presence of coffee
- Presence of the coffee unit
- Liquid waste container empty
- Operating temperature reached
- Position of mobile dispensing spouts

**SAFETY DEVICES**

- Door switch
- Manual-reset boiler safety thermostat
- Air-break float jamming
- Overflow solenoid valve
- Float for full liquid waste container
- Boiler sensor short-circuit/failure control
- Timer protection for:
  - Pump
  - Coffee unit ratiomotor
  - Coffee dispensing
  - Coffee grinder
  - Cup column shift motor
- Overheating protection for:
  - Doser units
  - Coffee unit ratiomotor
  - Coffee release magnet
  - Pump
  - Electric mixers
  - Coffee grinder motor
- Fuse protection for:
  - Board and coin mechanism power supply transformer (primary and secondary)

**CAPACITY OF CONTAINERS**

| | |
|---|---|
| Coffee beans | 3.2 Kg |
| Stirrers | 450 Approx. |
| Cups | 490 Approx. |

For instant products, according to the models, 3.5 or 11 litre containers or two-compartment containers can be used. The product quantity is indicated in the following table:

| Container size (litres) | | | Compartment | |
|---|---|---|---|---|
| | 4.5 | 11 | 3.5 | 7 |
| Instant coffee Kg | 1.2 | | 0.9 | 1.8 |
| Milk Kg | 1.3 | 3.2 | 1.0 | 2.0 |
| Chocolate Kg | 3.1 | 7.5 | 2.4 | 4.8 |
| Sugar Kg | 4.2 | | 3.3 | 6.6 |
| Lemon tea Kg | 4.3 | | 3.4 | 6.8 |

## 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.
With an ambient temperature of 22° C the following power consumption levels resulted:

| | Espresso | Instant |
|---|---|---|
| 30 drink selections | 1.26 l | 1.22 l |
| average drink temperature | 81.2° C | 73.7° C |
| **Power consumption** | | |
| to reach operating temperature | 51.71 Wh | 174.1 Wh |
| 24 h of stand-by | 2102 Wh | 1824 Wh |
| 30 selections /hour | 231.7 Wh | 168.5 Wh |

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

## VARIABLE COMBINATION LOCK

Some machine models are fitted with a variable combination lock.
The lock is supplied with two silver colour keys to be used for normal opening and closing.
The lock can be customised by using a kit, available as accessory, which permits changing of the lock combination.
This kit includes a change key (black) for the current lock combination as well as change (gold) and use (silver) keys for the new combination.
Sets of change and use keys with other combinations can be supplied on request.
Additional sets of use keys (silver) may be requested, indicating the combination stamped on the keys.
Generally, only the use key (silver) is used, while the combination change keys (gold) can be kept as spares.

**Do not use the change key for normal opening, as it may damage the lock.**

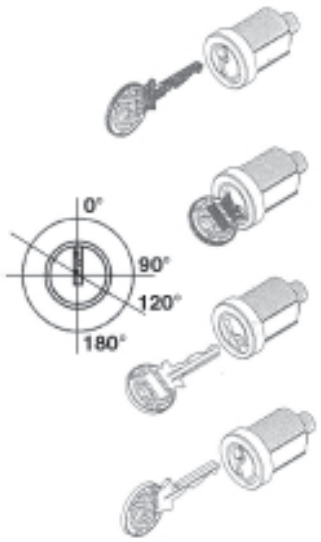
**To change combination do as follows:**

- insert the current change key (black) and rotate to the change position (reference notch at 120°);
- remove the current change key and insert the new change key (gold);
- rotate to the close position (0°) and remove the change key.

The lock will now have the new combination.

**Keys with the old combination cannot be used for the new combination.**

Fig. 3




## ACCESSORIES

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

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# LOADING AND CLEANING

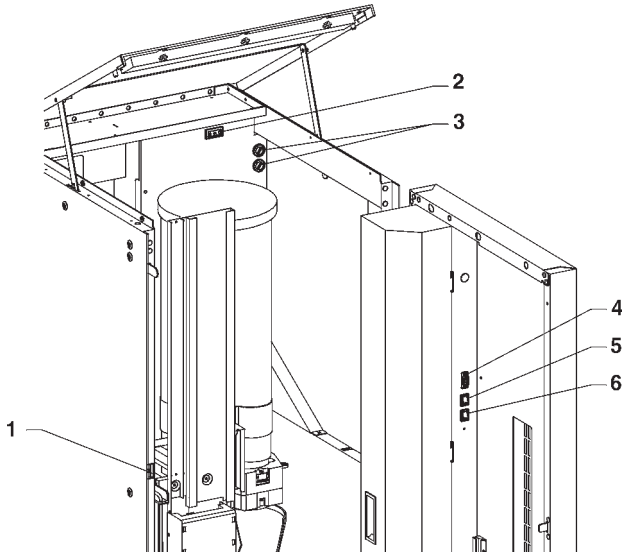
## DOOR SWITCH

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 with the door open should be carried out by qualified personnel ONLY, informed about the specific risks of such condition.**

To energize the system with the open door, simply insert the special key into the slot (see Fig. 4).
The door can be closed only after removing the key and lowering the machine top panel.

Fig. 4
1 - Door switch
2 - Permanently live socket (230V~ 2 A max)
3 - Network fuses
4 - RS232 serial port
5 - Programming access button
6 - Mixer wash button




## MAINTENANCE AND DISINFECTION

According to current safety and health rules and regulations, the operator of an automatic vending machine is responsible for the hygiene of materials that come in contact with foodstuff; therefore he must carry out maintenance on the machine to prevent the 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.

Some parts of the machine can be damaged by strong detergents.
The manufacturer declines all responsibility for any damage resulting from failure to comply with the above or from using strong or toxic chemical products.

**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 Fig. 5).
The labels with the selection menu and instructions, supplied with the machine, must be inserted at the time of installation.

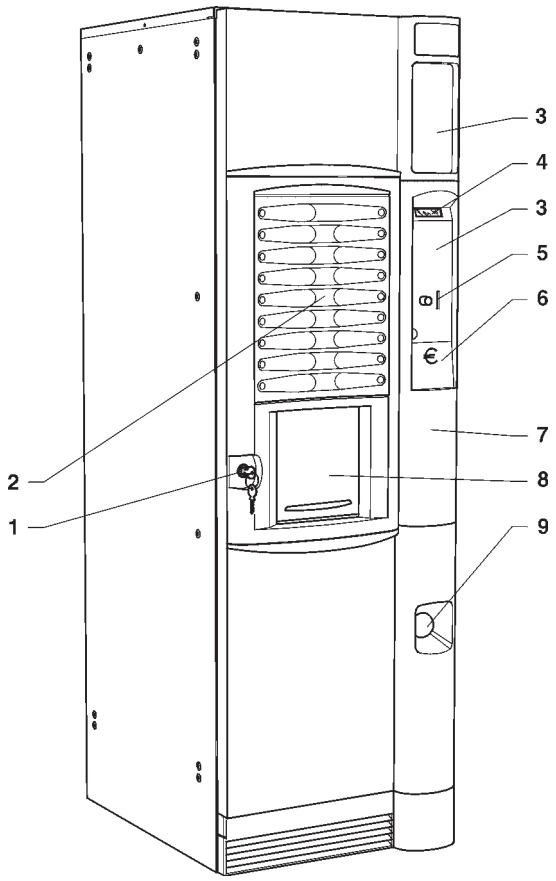



Fig. 5

1 - Lock
2 - Available selection menu
3 - Pre-arrangement for payment systems
4 - LCD Display: 2x16 characters
5 - Coin slot/return.
6 - Operating instructions plate
7 - Space for communication to the user
8 - Dispensing compartment
9 - Coin return flap

The Programming button, to access the machine functions, and the mixer cleaning button are located iside the machine, on the right-hand side of the coin mechanism compartment.

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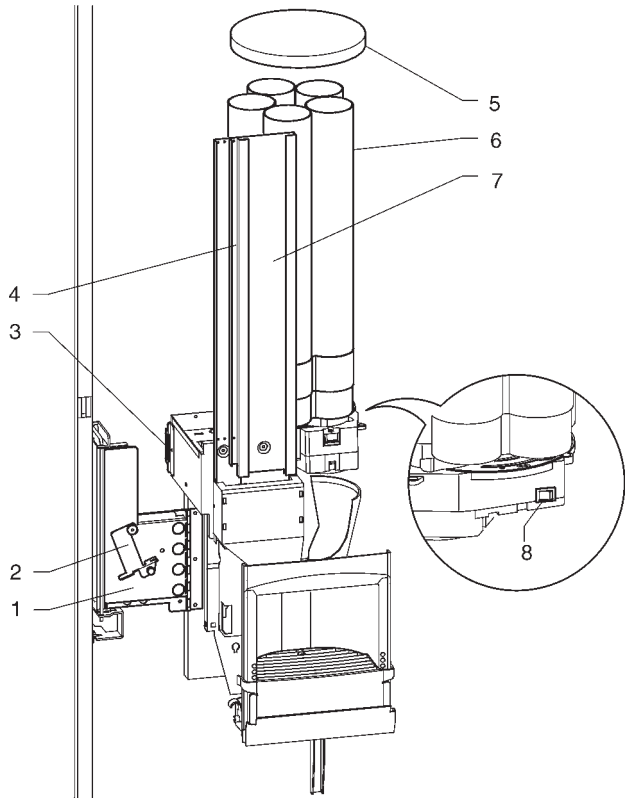
## LOADING CUPS

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

- disconnect the power from the machine;
- rotate the shelf outwards, forcing the resistance of the securing magnet;
- remove the cover from the cup container;
- fill the columns with cups, except the one aligned with the dispensing opening;
- switch the machine on and the full column will be positioned automatically over the dispensing opening;
- fill the empty column;
- release one or more cups with the special button and replace the cover.

The cup dispenser shelf has a double swivel that improves acees to the cup dispenser, especially when the machine is installed in a bank of machines.

Fig. 6

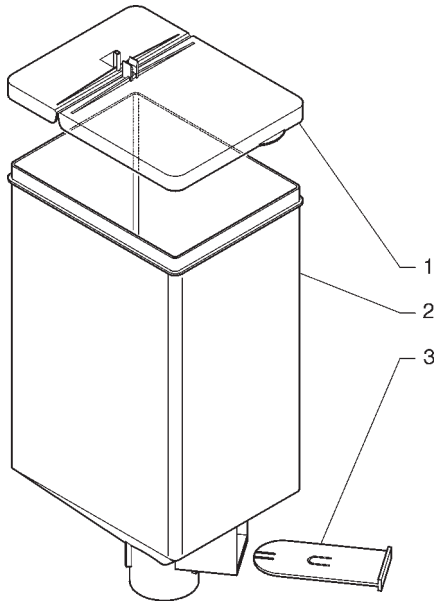



1 - Swivel shelf
2 - Swivel release lever
3 - Shelf positioning magnet
4 - Adjustable stirrer guide
5 - Cover
6 - Cup stacker
7 - Stirrer stacker
8 - Cup release button

## LOADING COFFEE

Lift the cover and fill the hopper with coffee, ensuring that the shutter is fully open (see Fig. 7).

Fig. 7




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.

## SANITISING THE MIXERS AND THE FOODSTUFF CIRCUITS

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.
The parts to be cleaned are as follows:

- powder deposit drawers, mixers and instant drink dispensing conduit;
- tubes and dispensing spouts;
- sugar 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 Fig. 8);

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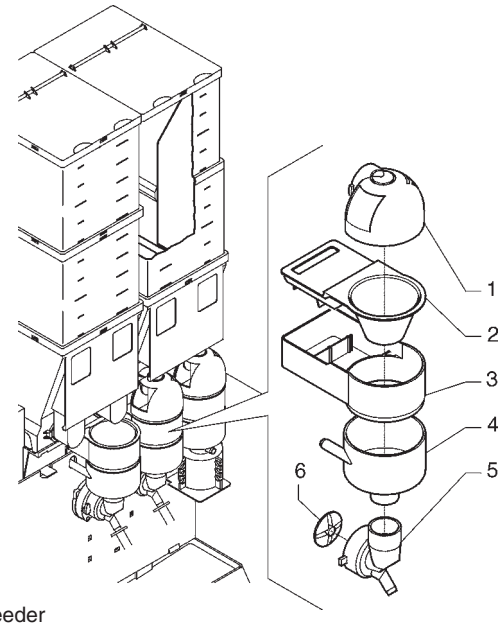
Fig. 8




1 - Powder feeder
2 - Powder funnel
3 - Powder deposit drawer
4 - Water funnel
5 - Mixer feeder
6 - Mixer rotor

- in order to unscrew the rotors, block the disk fitted on the mixer shaft with a finger;
- wash all parts with detergent (following the dose recommended by the manufacturer) making sure that all visible residue and product layers are mechanically removed, using a brush if necessary;

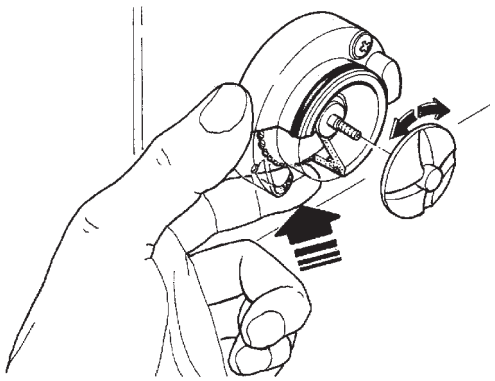
Disinfection should be carried out using chlorine-based detergents.

- 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 rinsing and drying them.

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

- enter into "Filler menu" 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.

Fig. 9

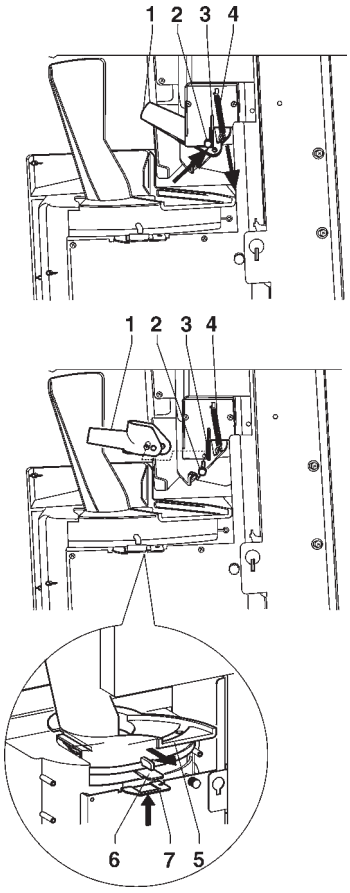


## CLEANING THE SUGAR DISPENSER

For models with sugar dispensed directly into the cup, the sugar dispensing system must be cleaned periodically using hot water (see Fig. 10) proceeding as follows:

- release the return spring;
- lift the flexible lever to free the pin;
- remove the pin and the dispensing spout;
- thoroughly rinse and dry;
- after cleaning, reinstall all parts in the reverse order.

Fig. 10




1 - Sugar dispensing spout
2 - Pin
3 - Flexible lever
4 - Return spring
5 - Cup chute
6 - Cup chute release lever
7 - Chute positioning catch

## 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, especially from the coffee funnel.

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

| 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 |

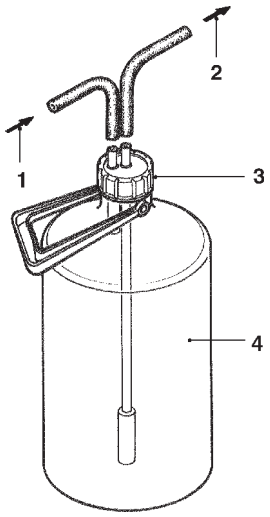
To regenerate the resins correctly do as follows:

- 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 (cooking 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

**ABSOLUTELY**

be the one shown in the figure 11

Fig. 11




1 - From the tap
2 - To the drain
3 - Cap
4 - Softener unit

- 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.

## 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.

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# 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.

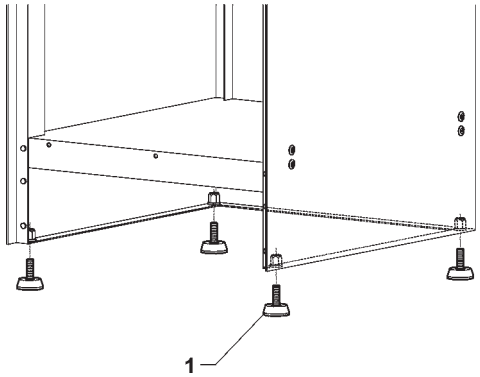
**No packing elements (i.e. plastic bags, polystyrene foam, nails, etc.) should be left within the reach of children, as they are potentially dangerous.**

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 Fig. 10).

Fig. 12




1 - Adjustable foot

## INSERTING THE PRODUCT LABELS

The labels indicating the available selections are supplied with the machine and must be inserted into the special slots at the time of installation, after removing the cover. According to the model, some buttons may not be used (refer to the selection dose table).

## 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$^2$.
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 fitting (3/4" gas) of the water inlet solenoid valve (see Fig. 13).

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

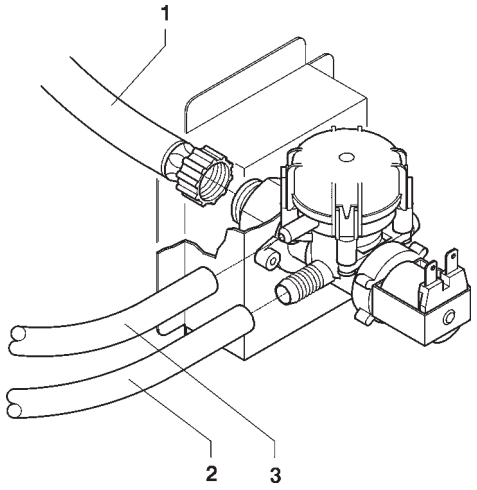



Fig. 13

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

### OVERFLOW DEVICE

The water inlet solenoid valve (see Fig. 13) 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:

- disconnect the power from the machine;
- drain the water contained in the overflow hose;
- shut off the water supply using the tap 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. 13);
- open the tap and switch the machine on.

## CONNECTING TO 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 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 should be carried out 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$^2$.

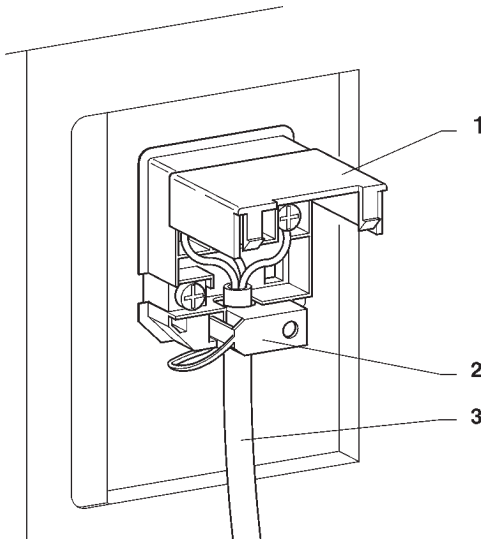



Fig. 14

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.**

## DOOR SWITCH

When opening the door a special microswitch 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. Inside the machine, the only parts that stay energised are those protected by covers and carrying a plate with the warning "Disconnect the power before removing the protective cover".**

**Before removing such covers disconnect the machine from the power grid.**

The door can be closed only after removing the key from the door switch and lowering the machine top panel.

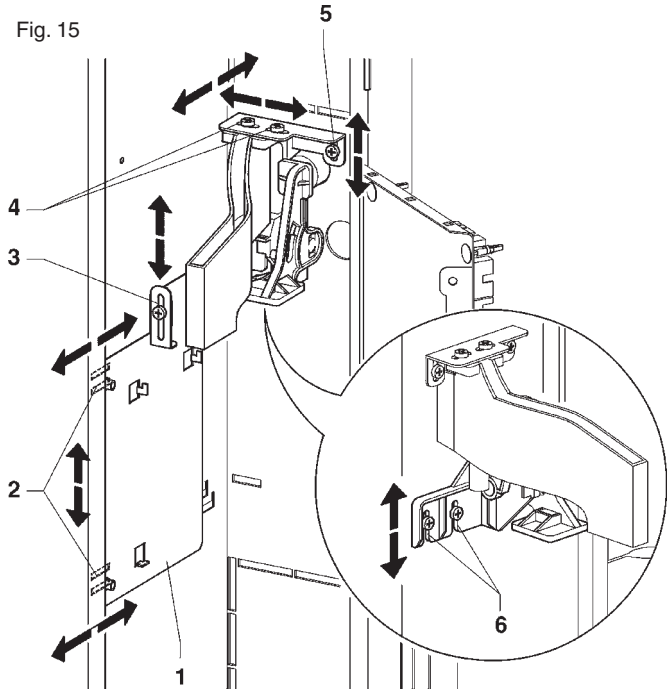
## INSTALLING THE PAYMENT SYSTEM

**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 incorrect installation.**

Install the coin mechanism paying attention, according to the type used, to:

- secure the coin mechanism onto the support choosing the most suitable securing holes;
- loosen the fastening screw and adjust the coin slot chute according to the coin mechanism opening;
- loosen the fastening screws and adjust the selector opening lever.

Fig. 15



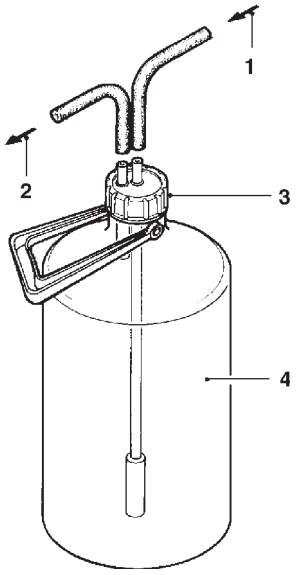

1 - Coin mechanism support
2 - Coin mechanism support adjustment
3 - Coin mechanism securing bracket
4 - Coin chute adjustment
5 - Coin chute vertical adjustment
6 - Coin return lever adjustment.

## CLEANING THE SOFTENER RESINS (MODELS C ONLY)

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

- remove the hose connected to the air-break from the softener unit fitting (see Fig. 16);
- insert a new hose, provided with the machine, onto the now free hose fitting 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-break.

Fig. 16




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

## 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

"INSTALLATION"

for the entire duration of the cycle;

- the air-break and the instant product boiler are filled;
- (for espresso models only) the coffee solenoid valve is opened to bleed air from the boiler and fill 800 cc. of water.

**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, using the special function from the "test" menu in "Technician" mode, if the **kit (optional) for water supply from an internal tank** is fitted or after any maintenance requiring the boiler to be emptied but not the air-break.

## INSTALLATION IN A BANK OF MACHINES

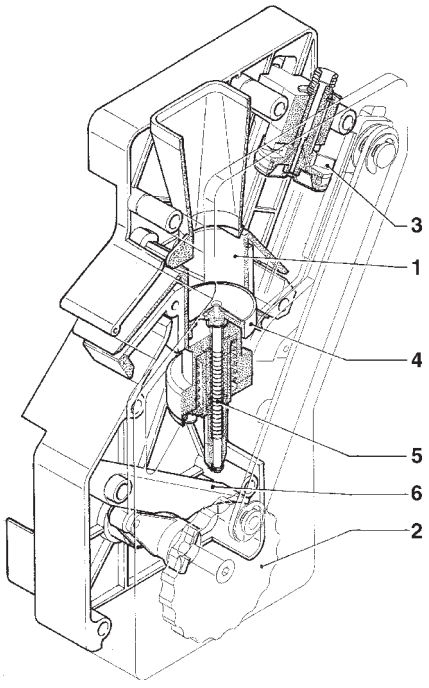
The machine control system is pre-set for the connection in a bank with other vending machines by means of special kits.
This allows the use of a single payment system and remote connection (GSM) for several machines.
In the case of installation in a bank of machines, this machine can be configured as “Master”, thus controlling the second machine, or as “Slave”, leaving the control to the other machine.
The operating mode in the two cases is very different.
This manual describes the use of the machine when installed alone, for the installation in a bank refer to the manual contained in the connection kit.

# COFFEE UNIT OPERATION

## COFFEE DISPENSING CYCLE

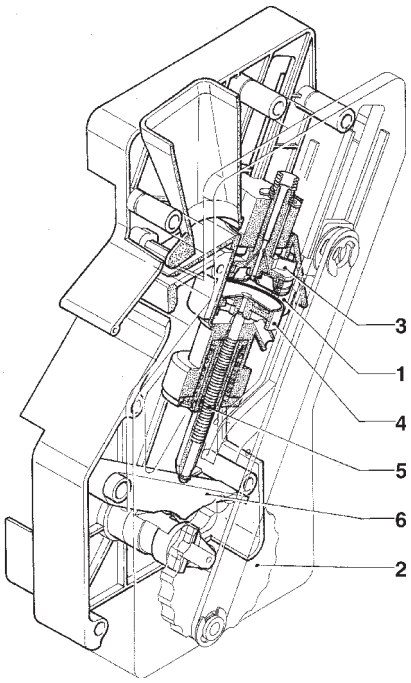
When selecting coffee, the grinder is started and will continue until the coffee doser chamber is full (see Figure 17).
When the doser unit is full, the ground coffee dose is released into the coffee unit.
The coffee falls into the vertical brewing chamber (1) (see Fig. 18).
The ratiomotor handle engaged with the disk (2) located outside of the unit rotates by 180°, making the brewing chamber swing and lowering the upper piston (3) (see Fig. 18).
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 brewing 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. 17




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

Fig .18




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

## 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 grade of grinding of ground coffee.

The dose weight of ground coffee.

The dispensing temperature.

The water dose.

**For instant products**

The dose weight of the instant products.

The drink temperature.

The water dose.

Should the standard settings need to be changed, proceed as indicated in the next sections of this manual.
The weight of 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.

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## 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 BREWING CHAMBER VOLUME

When the upper piston is correctly positioned, the coffee unit can operate with coffee doses of 5.5 to 8.5 g.
To change the piston position (see Fig. 19) do as follows:

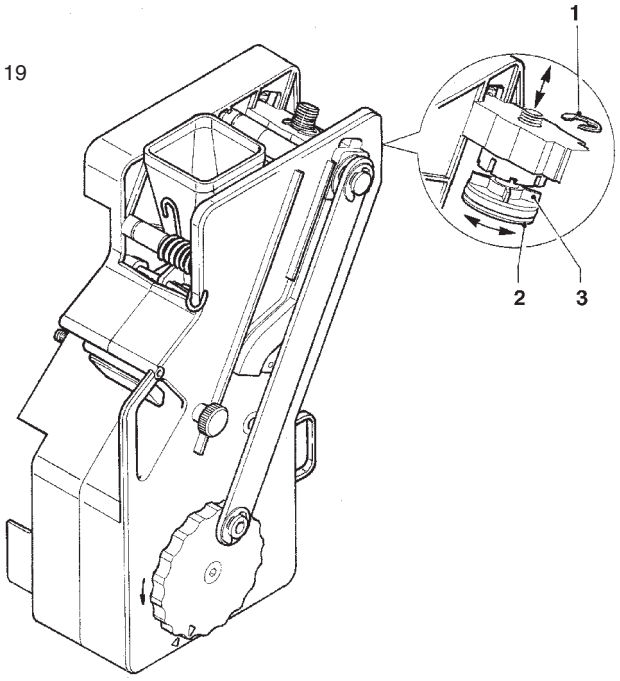
- remove the snap ring from its seat;

- place the piston in the proper adjusting notches:

  .less deep notches for 5.5 to 7.5 g doses;

  .deeper notches for 6.5 to 8.5 g doses.

Fig. 19




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

## 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. 20) and more specifically:

- turn the knob anticlockwise for coarser grinding;

- turn the knob clockwise for finer grinding.

It is advisable to adjust 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 made 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.14) 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 it will be sufficient to remove the coffee unit and use the special function from the “test” menu in “Technician” mode (see relevant paragraph).

**Important notice!!!**

**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. 23).**

## ADJUSTING THE WATER TEMPERATURE

The boiler temperature is controlled by the software and can be adjusted directly from the menu.

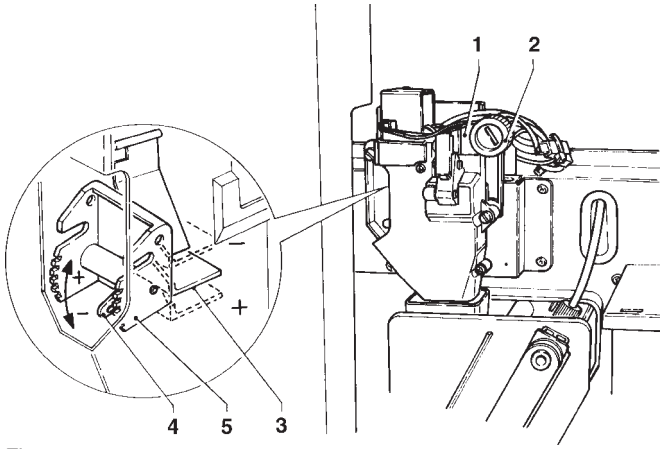



Fig. 20

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

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# OPERATING MODES

Three different operating modes are provided for the machine; the buttons will have different functions according to the machine operating mode.
The available operating modes are as follows:

| | FUNCTIONS |
|---|---|
| **Normal mode** | Coins accepted<br>products dispensed |
| **Filler menu** | Test dispensing<br>machine maintenance |
| **Technician menu** | Programming<br>different parameters |

## USER INTERFACE

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

- Liquid crystal display (LCD) 2 lines of 16 characters.
- External push-button panel, with keys which have the following functions when in “Filler” and “Technician” mode (see Fig. 21):

**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. It is also used to go from “filler” mode to “technician ” mode and vice versa.

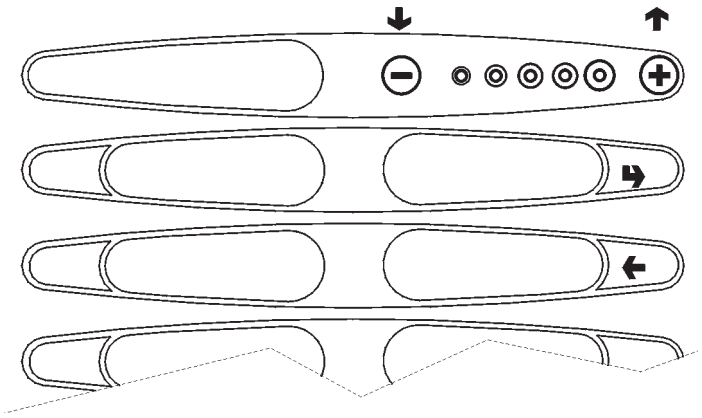

Fig. 21

## NORMAL OPERATING MODE

When switching the machine on, the message "Kikko" and the software version are displayed for a few seconds.
The machine does a boiler check, if necessary automatically filling the boiler, after which it is set to normal operating mode.
The displayed massages 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 | Machine ready |
| Vending machine<br>out of service | Machine out of service |
| Drink selected<br>Please wait | Processing the drink |
| Take drink | Dispensing ended<br>correctly |

# FILLER MENU

When pressing once the programming button located on the coin mechanism compartment, the machine goes into “Filler menu” mode.
The first option of the “filler” menu is displayed, allowing the following functions:

| | |
|---|---|
| "Statistics” | Data reading |
| “Prices” | Changing the price for one selection |
| “Tube control” | Manual refilling and release of change-giver tubes (BDV- MDB) |
| "Boiler temperature" | Displaying the boiler temperature in degree C. |
| “Test” | Complete selection<br>Dispensing water only<br>Dispensing powder only<br>Dispensing without accessories<br>Dispensing accessories only |
| "GSM" | Reset pre-alarm counters |

## 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 (or terminal) having a Baud rate of 9600, 8 data bit, no parity, 1 stop bit 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 - discount counter;

4 - failure counter;

5 - coin mechanism data.

**Relative**

1 - counter by single selection;

2 - counter by time bands;

3 - discount counter;

4 - failure counter;

5 - 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.

**DELETE STATISTICS**

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 "↳",
0 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 each selection and for each time band (if programmed).

**CHANGE TUBE 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.

**DISPLAYING THE TEMPERATURE**

With this function, it is possible to read, directly in °C, the temperature of the coffee boiler and instant boiler.

**TEST DISPENSING**

For complete or partial dispensing tests each button is controls its (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.**

**GSM PRE-ALARMS**

The control software can sent a "running-out" signal via GSM modem when a programmed number of pieces or grams of powder for a certain product have been used up. With this function the counters that control the pre-alarms are reset.

# TECHNICIAN MENU

When pressing button "🡐" from “Filler” mode the machine is set to “Technician menu” mode.
The first option of the technician menu is displayed, enabling the following functions:

| | | |
|---|---|---|
| Failures | Read present failures | |
| | Delete | |
| | External lamps status | |
| Prog.parameters | Cash | Prices |
| | | Coin mechanisms |
| | | Decimal point |
| | Selections | Water doses |
| | | Powder doses |
| | | Accessories |
| | | Selection status |
| | | Selection button |
| | Machine parameters | Boiler temperature |
| | | Tank |
| | | Wash button |
| | | Stop button |
| | | N. of maintenance selections |
| | | Automatic wash |
| | | Turn time of cup column |
| | | Energy saving |
| | Display | Language |
| | | Promotional message |
| | | Custom. messages |
| | Pre-selections | No cup |
| | | Extra sugar |
| | | Less sugar |
| | | More sugar |
| | | Less water (Mokka) |
| | | More powder |
| | | Less powder |
| | | Espresso |
| | | Coffee powder |
| Miscellaneous | Jug facilities | Set the number of selections |
| | Password | Enable the request and set password |
| Statistics | Electric counter | Read and delete |
| | Display | Selection counters |
| | Delete | Partial |
| | | Total |
| | Display relative | Selection counters |
| | Delete relative | Partial |
| | | Total |
| | Display counter at start-up | |
| | Print | Partial |
| | Relative printout | Partial |
| | | Total |
| Test | Dispensing | Complete |
| | | Water only |
| | | Powder only |
| | | Without accessories |
| | | Accessories only |
| | Special functions | Rotate unit |
| | | Release coffee |
| | | Empty boiler |
| | | Manual install. |
| | Autotest | Actuation in a sequence of: .doser devices .mixers .cup dispenser .stirrer dispenser .neon lamps .door LED .push-buttons .mobile spouts .coffee dose .unit rotation .waste cont. |
| Miscellaneous | Machine info | Installation date |
| | Machine codes | Machine identification code |
| | Operator code | Operator identification code |
| | Initialising | |
| GSM | Pin Code | Setting the code |
| | Pre-alarms | Set thresholds |
| | | Reset counters |

# FAILURES

### READING PRESENT FAILURES

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 possible failures are indicated in the following cases:

**Water failure**

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

**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.

**No cups**

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

**Espresso unit**

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**

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 microswitch of the coffee doser 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.

**Waste container full**

This occurs after the liquid waste container float is triggered.

**Air-break**

The machine is locked if after 7 selections the microswitch 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**

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.

**Machine control board**

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

### RESETTING

By confirming this function all current failures will be reset

# 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 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.
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.

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## 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 (minidip SW2 OFF)
- 24 V validators
- BDV (minidip SW2 OFF)
- 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

**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 (BDV only)**

According to the BDV protocol 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.

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### 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.

## SELECTIONS

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

### WATER DOSE

The water dose (expressed in volumetric counter pulses for the Espresso models and in cc for the Instant models) can be set for each selection button and therefore each product assigned to it; the display indicates the name of the product being selected.
The mixer actuation time can be programmed.
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 button and therefore each product assigned to it; the display indicates the name of the product being selected.
For correct conversion of product dose values, the flow rate of the single dosing units, expressed in g/s, can be set to calculate the amount of powder to be dispensed.
It also possible to program the doses of a product "Globally", i.e. setting all selections with a single operation.

### TANK

This function is used to define whether the water supply is from the mains or from the internal tank.

### ACCESSORIES

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

### SELECTION STATUS

Each single selection button can either be enabled or disabled.

### BUTTON/SELECTION COMBINATION

This function is used to change the order of the selections associated to the push-button panel.

## VENDING MACHINE PARAMETERS

### TEMPERATURES

This function is used to set the operating temperature, expressed in °C, for the boilers actually installed in the machine.
After selecting the boiler, press the confirm button "↵" , the temperature value starts blinking on the display and can be modified as necessary.

### ENABLE WASH BUTTON

This function is used to enable the functioning of the mixer wash button (see Fig. 4). Normally, the button is disabled.

### STOP COFFEE

This function is used to enable/disable button "☕" , which stops coffee selections during normal operation.

### SETTING THE REGENERATION COUNTER

It is possible to display the message
"Regenerate the water softener"
upon accessing "Filler" mode after a programmable number of drinks dispensed.

### AUTOMATIC WASH

Option of setting the time when automatically washing the mixers and rotating the brewing units installed. When setting the time to 24.00 the function is disabled (default).

### COLUMN ROTATION DELAY

This function is used to set the delay time in stopping the cup column rotation in order to compensate any inertia due to the cup type.

### ENERGY SAVING

In order to save electric energy when the machine is not in use, this function is used to switch off boiler heating and/or 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 |

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## 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.

### ENABLE THE PROMOTIONAL MESSAGE

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

### SETTING THE PROMOTIONAL MESSAGE

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.

### PRE-SELECTIONS

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

- without 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;
- mokka, i.e. with a reduced amount of water (programmable) for coffee.

The "-" and "+" buttons can be used to vary the amount of sugar or, alternatively of coffee.
The LEDs will indicate the average dose change.

- strong/light, i.e. varying the amount of product (programmable) for coffee.
- espresso, i.e. varying the amount of water (adjustable) for coffee selections.
- coffee powder, i.e. varying the amount of product (adjustable) for instant and fresh-brew 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.

## MISCELLANEOUS

### JUG FACILITIES

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

### 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.

### MASKING 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.

### CUSTOM SELECTION BUTTONS

The machine has the option of customising up to four selections as alternative to the 24 standard ones.
With this function it is possible to decide to which button assign them (replacing the standard selection).

# STATISTICS

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

**GENERAL COUNTER**

An electronic counter collectively stores all selections made since the last reset.

**DISPLAYING GENERAL DATA**

When pressing the confirm button "↵" he stored data is sequentially displayed at 1 second intervals, and namely:

1 - counter by single selection;

2 - counter by time bands;

3 - discount counter;

4 - failure counter;

5 - coin mechanism data.

**RESETTING GENERAL DATA**

Statistics can be reset either globally (all types of data) or partially for:
- selections
- discounts/overprice
- 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.

**DISPLAYING RELATIVE DATA**

When pressing the confirm button "↵" vengono visualizzati ithe stored data is sequentially displayed at 1 second intervals, and namely:

1 - counter by single selection;

2 - counter by time bands;

3 - discount counter;

4 - failure counter;

5 - coin mechanism data.

**RESETTING RELATIVE DATA**

Statistics can be reset either globally (all type of data) or partially for:
- selections
- discounts/overprice
- 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.

**DISPLAYING COUNTERS**

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.

**PRINT**

Connect an RS232 serial printer having a Baud rate of 9600, 8 data bit, no parity, 1 stop bit to the serial port located on the push button board to print all of the statistics described in the paragraph "statistics display". The print-out will also contain the machine code, the date and the software version.
Statistics can be printed partially or totally.
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.

# TEST

**COMPLETE SELECTION**

This function is used to get a complete selection with the door open without inserting any money.

**SPECIAL FUNCTIONS**

After accessing this function, it is possible to:

- activate the coffee unit;
- grind and release a coffee dose;
- open a solenoid valve to let air in when eptying the boiler for maintenance:

-install the boiler manually.

**AUTOTEST**

This function allows testing of the main machine components.
Press button "↵" and the message "AUTOTEST" will be displayed blinking.
Press button "←" to cancel the operation, confirm with button "↵" to cancel the operation, confirm with button "↵" to start the autotest routine.
In a sequence:

- the mixers are activated for 2 seconds
- the mixers are activated for 2 seconds
- a cup is released
- a stirrer is released
- the fluorescent lamps are switched on
- the door LEDs are lit
- the push-button panel is tested; the machine will display the number of the button which must be pressed and awaits the actuation before going to the next button
- the dispensing spouts are operated/repositioned
- (for espresso models only) the coffee unit is rotated, coffee is ground and then released when a full dose is reached.
- waste container switch; the machine awaits until the waste container microswitch is manually operated.

# MISCELLANEOUS

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

## MACHINE INFORMATION

### INSTALLATION DATE

This function is used to store the current date of system as installation date.
The date is printed when retrieving the statistics.

### PROGRAMMING THE MACHINE CODE

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

### PROGRAMMING THE 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 initialised restoring all default data.
This function should be used if there is a memory data error or when the software is replaced.
All statistic information will be reset.
Press confirm button “↵” to display the message “Confirm?”. Press confirm button “↵” a second time and some parameters are requested, which are:

**“Model”**

Defining whether the machine is Espresso or Instant.

**“Country”**

Intended as type of basic doses for the different selections (e.g. IT coffee = 45 cc - FR coffee = 80 cc).
The available “Countries” are:
IT - FR - ES.

**“Layout”**

A number of Button/Selection combinations to choose from is provided for each dose type model (the combinations available for each layout are indicated in the dose selection table supplied with the machine).

**“Tank”**

Intended as water supply from a tank. This can be enabled or disabled (water supply from the mains).
When confirming the options the message "Working" is displayed for a few seconds.

# GSM

The control software can send a machine failure signal or a “running-out” “pre-alarm” signal via GSM modem when a programmed number of selections for a certain product.

### PIN CODE

This function is used to program the identification codes that will be sent to the GSM modem (optional) when the machine is started.

### THRESHOLD SETTING

This function is used for setting the number of pieces or grams of powder for a certain product after which a “running-out” pre-alarm signal is sent via modem.

### RESET COUNTERS

With this function the counters that control the pre-alarms are reset.

# 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.**

## BREWING UNIT MAINTENANCE

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. 23);
- 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 seal.

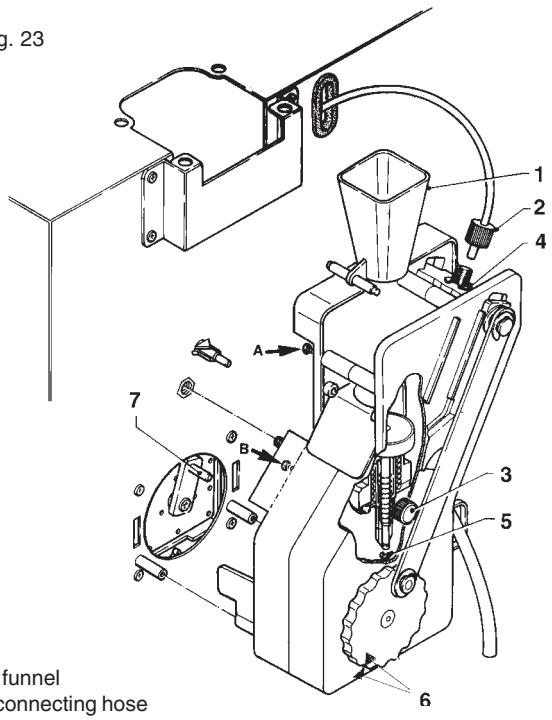
**Removing the lower filter**

- Loosen screws A and B enough to release the coffee funnel (see fig. 23);
- remove the lower piston snap ring;
- take the piston 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. 23




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.**

## CLEANING THE CUP DISPENSER

The cup dispenser is designed to be easily disassembled for maintenance.
Every single column of the cup stacker and the release ring can be disassembled without using any tools.

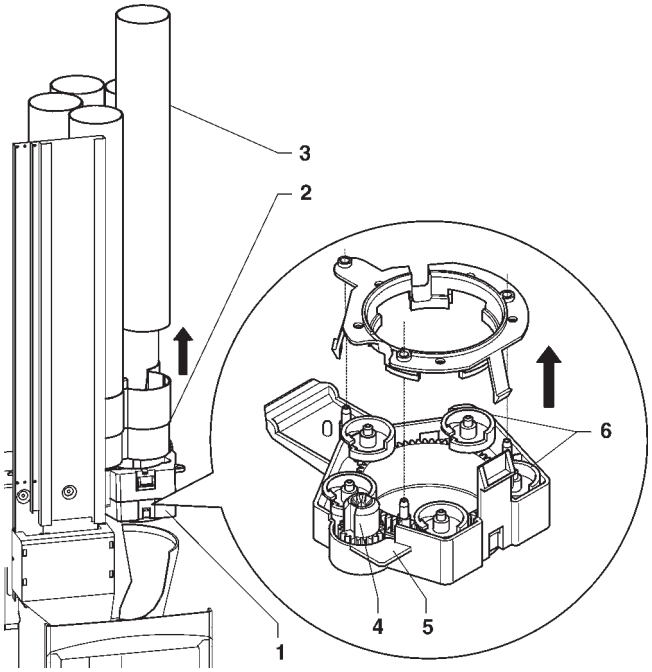
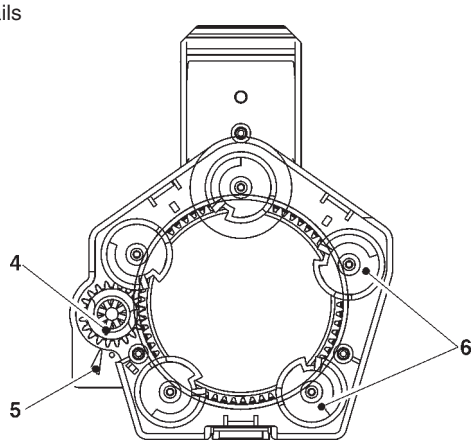



Fig. 24

1 - Cup release ring
2 - Cup stacker
3 - Removable column
4 - Microswitch actuation gear
5 - Snail support
6 - Cup release snails




The cup release ring must not be opened for normal cleaning.
If adjustments are necessary during re-installation, care must be taken to:

- align the notch on the microswitch actuation gear with the arrow on the snail support;
- ensure that the snails are oriented as indicated in the figure.

## 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.

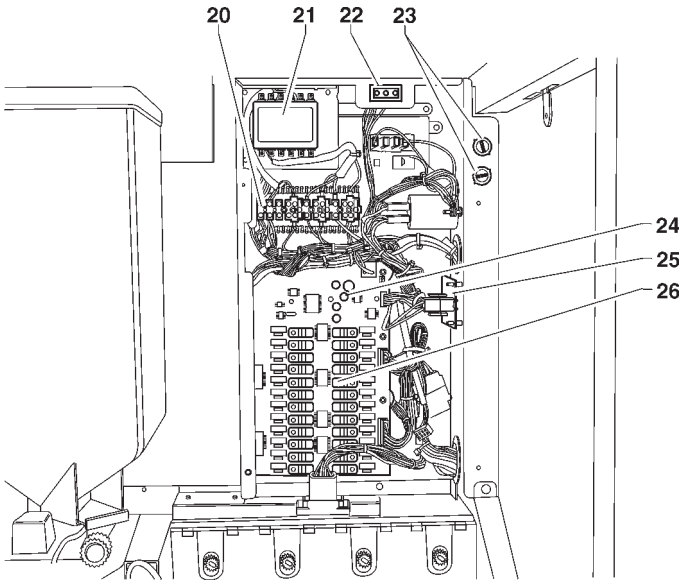
**Before restarting the machine, the same sanitising procedure described in section "Sanitising the mixers and the foodstuff circuits" should be repeated.**

# PRINTED BOARD FUNCTIONS AND INDICATOR LIGHTS

## ACTUATION BOARD

This board (see Fig. 25) activates, by means of relays, the 230V~ components of the machine. It also processes the signals from the cams and/or the microswitches on the different users and controls the boiler board.
This board is powered with 24 V AC.

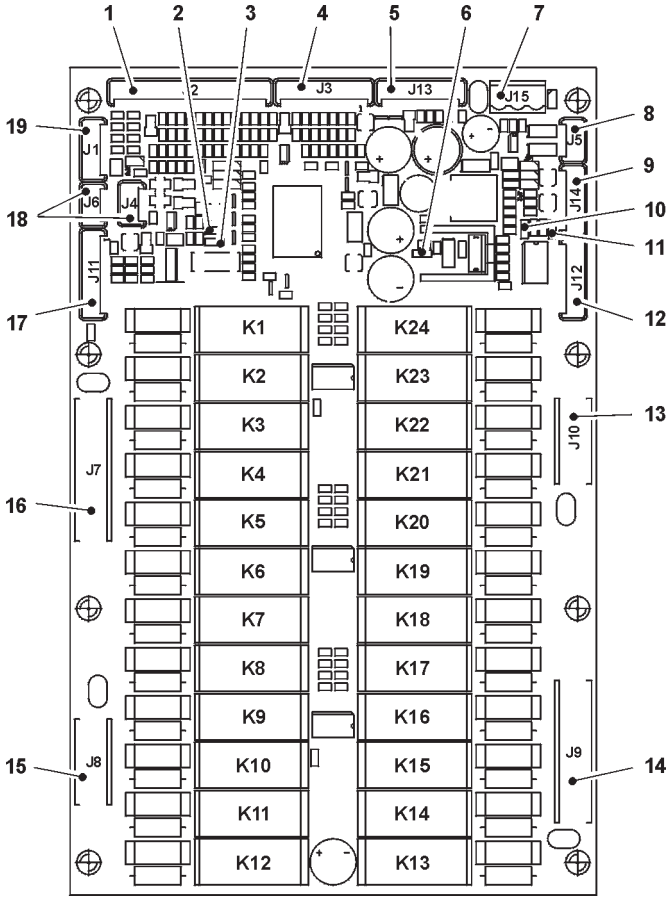
Fig. 25




1 - Input signals
2 - Green LED
3 - Red LED
4 - Not used
5 - Connector for board programming (RS232)
6 - Yellow LED
7 - Board power supply (24 Vac)
8 - Not used
9 - Probe and boiler control
10- Red LED: boiler heating element
11- Red LED (not used)
12- Connection to expansion board
13- 230 V~ users
14- 230 V~ users
15- 230 V~ users
16- 230 V~ users
17- Not used
18- "Can Bus" connection
19- Not used
20- Transformer fuses
21- Board and coin mechanism power supply transformer
22- Permanently live socket
23- Net fuses
24- LED
25- Boiler control board
26- Relays

The board control software is loaded directly onto the microprocessor (through RS232).

- Green LED (2) blinking during the normal operation of the board
- Yellow LED (6) indicating the presence of 5 V DC
- Red LED (3) glowing during the board reset
- Red LED (10) indicating the operating status of the Espresso boiler heating element.




RELAY FUNCTION (see Wiring diagram)

| | | ESPRESSO | INSTANT |
|---|---|---|---|
| K1 | = | ESC | MD6 |
| K2 | = | MSB | MSB |
| K3 | = | MSCB | MSCB |
| K4 | = | MSP | MSP |
| K5 | = | | |
| K6 | = | LF | LF |
| K7 | = | MSU | MSU |
| K8 | = | M | MF4 |
| K9 | = | MF3 | MF3 |
| K10 | = | MF2 | MF2 |
| K11 | = | MF1 | MF1 |
| K12 | = | MDZ | MDZ |
| K13 | = | PM | E4 |
| K14 | = | ER | E5 |
| K15 | = | E1 | E1 |
| K16 | = | E2 | E2 |
| K17 | = | E3 | E3 |
| K18 | = | EEA | EEA |
| K19 | = | | MF5 |
| K20 | = | MAC | MD5 |
| K21 | = | MD4 | MD4 |
| K22 | = | MD3 | MD3 |
| K23 | = | MD2 | MD2 |
| K24 | = | MD1 | MD1 |

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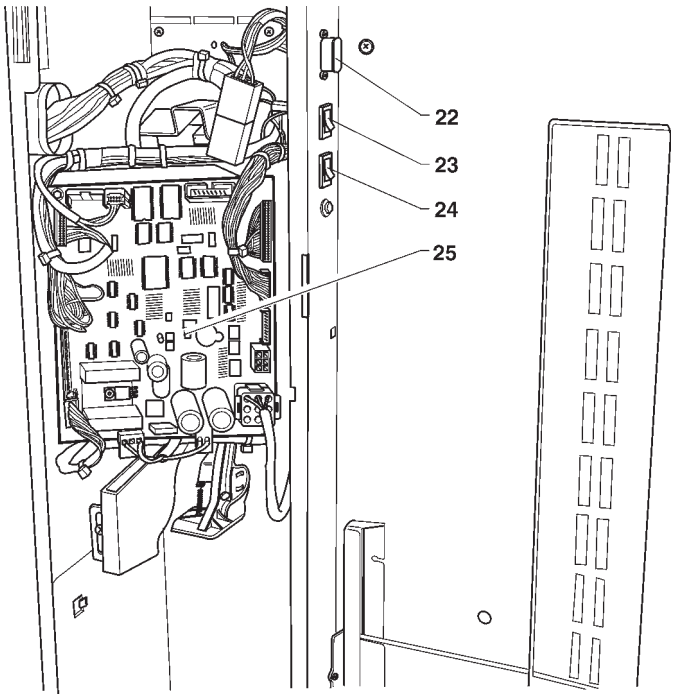
## BOILER CONTROL BOARD

This board (see Fig. 25) controls the instant boiler heating element.

## C.P.U. BOARD

The C.P.U. board (Central Processing Unit) controls all power users available for maximum configuration and processes the input signals from the push/button panel, the payment system and controls the actuation board.
The LEDs, during the machine operation, give the following indications:

- Green LED (3): blinks during normal operation of the C.P.U. board
- Yellow LED (4): glows when 5 V DC is present
- Red LED (16): glows in the event of a software reset.



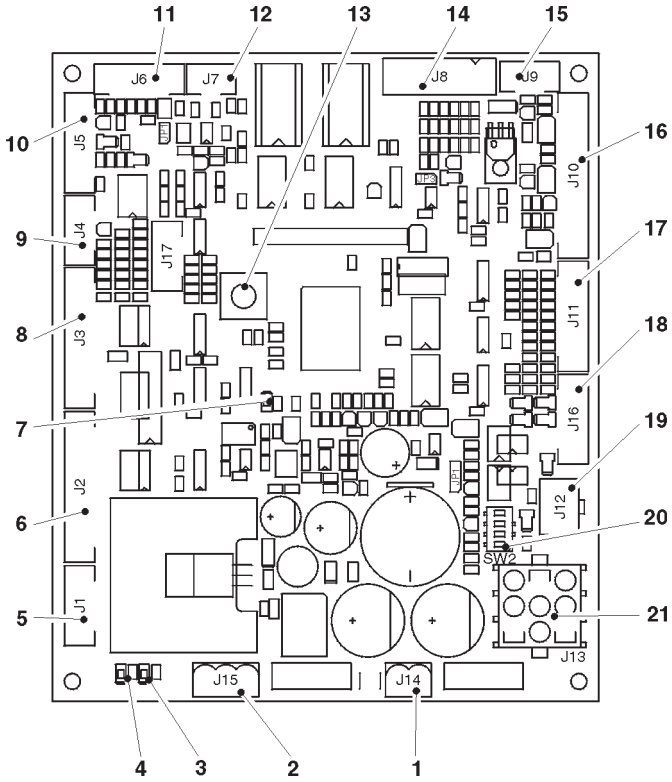




Fig. 26

1 - J14 Coin mechanism power supply
2 - J15 Board power supply
3 - Green LED: run (DL2)
4 - Yellow LED: 5 V DC (DL1)
5 - Connection to push-button panel LED
6 - Not used
7 - Red LED: CPU board reset (DL3)
8 - J3 Input/output
9 - J4 not used
10 - J5 programmer (RS232)
11 - J6 not used
12 - J7 Can bus
13 - Button not used
14 - J8 Validators
15 - J9 not used
16 - J10 LCD (Liquid crystal display)
17 - J11 Push-button panel
18 - J16 not used
19 - J12 Expansion for MDB
20 - Coin mechanism setting Minidip (SW2)
21 - J13 Expansion for BDV/EXE
22 - RS232 serial port
23 - Wash button
24 - Failure reset button
25 - C.P.U. board

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## 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 and download the appropriate software.

## 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.

# PROGRAMMER (OPTIONAL)

## AUTOMATIC SETUP TRANSFER

With the programmer device, the programming routines set and transferred to other machines can be read 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 set-ups 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. 27) connecting the special cable to the connector of the C.P.U. board (see Fig. 26).
Then enter the “programming” mode.
At this point, inserting the programmer in its holder, connection will take place automatically, and the setup menu will be shown on the programmer dsisplay:

- press key Ⓔ to access the displayed function;
- press key ⓪ to display the next function;
- press key Ⓒ to display the previous function.

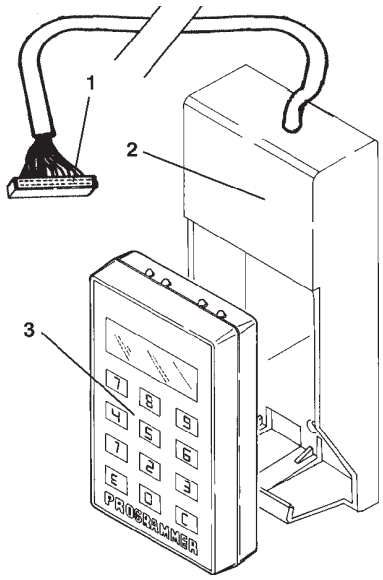


Fig. 27

1 - Connettore
2 - Tasca
3 - Programmer

| | | |
|---|---|---|
| PROGRAMMER<br>SETUP READING | SETUP READING<br>SETUP 01 <X><br>⋮<br>SETUP READING<br>SETUP 20 <X> | SETUP 01 <X><br>Confirm? |
| PROGRAMMER<br>CREATE SETUP | CREATE SETUP<br>SETUP 01 <X><br>⋮<br>CREATE SETUP<br>SETUP 20 <X> | SETUP 01 <X><br>Confirm? |

## TRANSFERRED DATA

The programming data which are transferred are as follows:

· Price table

· Prices/selection status

· Decimal point position

· Discount data

. Time bands

. Refrigeration parameters

## 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 about 10 seconds and then press programmer keys Ⓒ and ⓪; the first function will be displayed:

| | | |
|---|---|---|
| CONFIGURATION<br>LANGUAGE | CONFIGURATION<br>ITALIAN<br><br>CONFIGURATION<br>FRENCH<br><br>CONFIGURATION<br>GERMAN<br><br>CONFIGURATION<br>ENGLISH<br><br>CONFIGURATION<br>SPANISH | CONFIGURATION<br>Confirm? |
| CONFIGURATION | INITIALISING<br>INITIALISING | Confirm? |
| CONFIGURATION<br>CONFIG. END | Exit from the configuration menu<br>The software restarts from address 0000<br>(as when starting the machine) | |

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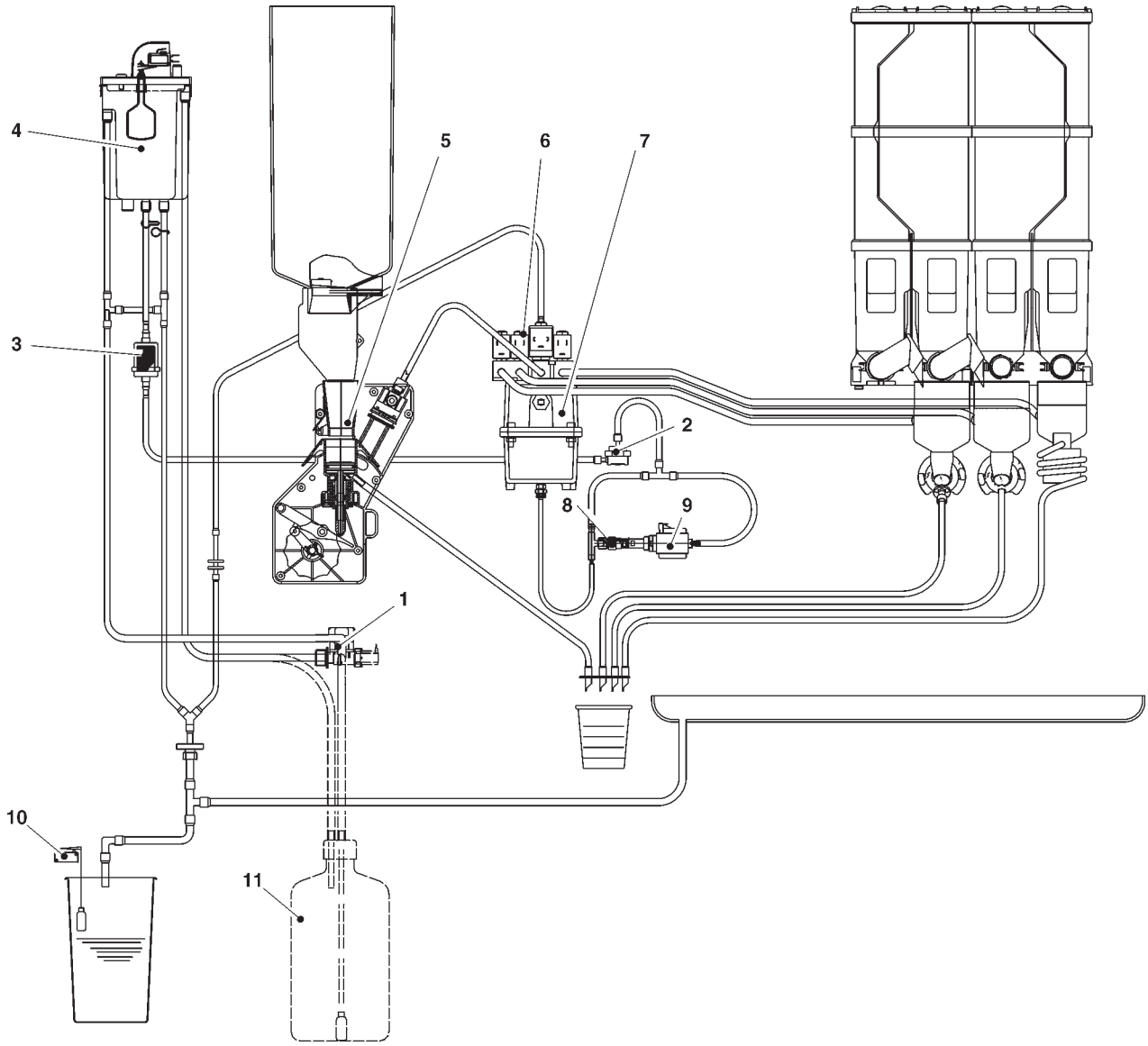
## HYDRAULIC SYSTEM FOR ESPRESSO




1 - Water inlet solenoid valve
2 - Volumetric counter
3 - Mechanical filter
4 - Air-break
5 - Coffee unit
6 - Instant prod. solenoid valves
7 - Coffee boiler
8 - By-pass
9 - Vibration pump
10 -Liquid waste container float
11 -Water softener (if provided)

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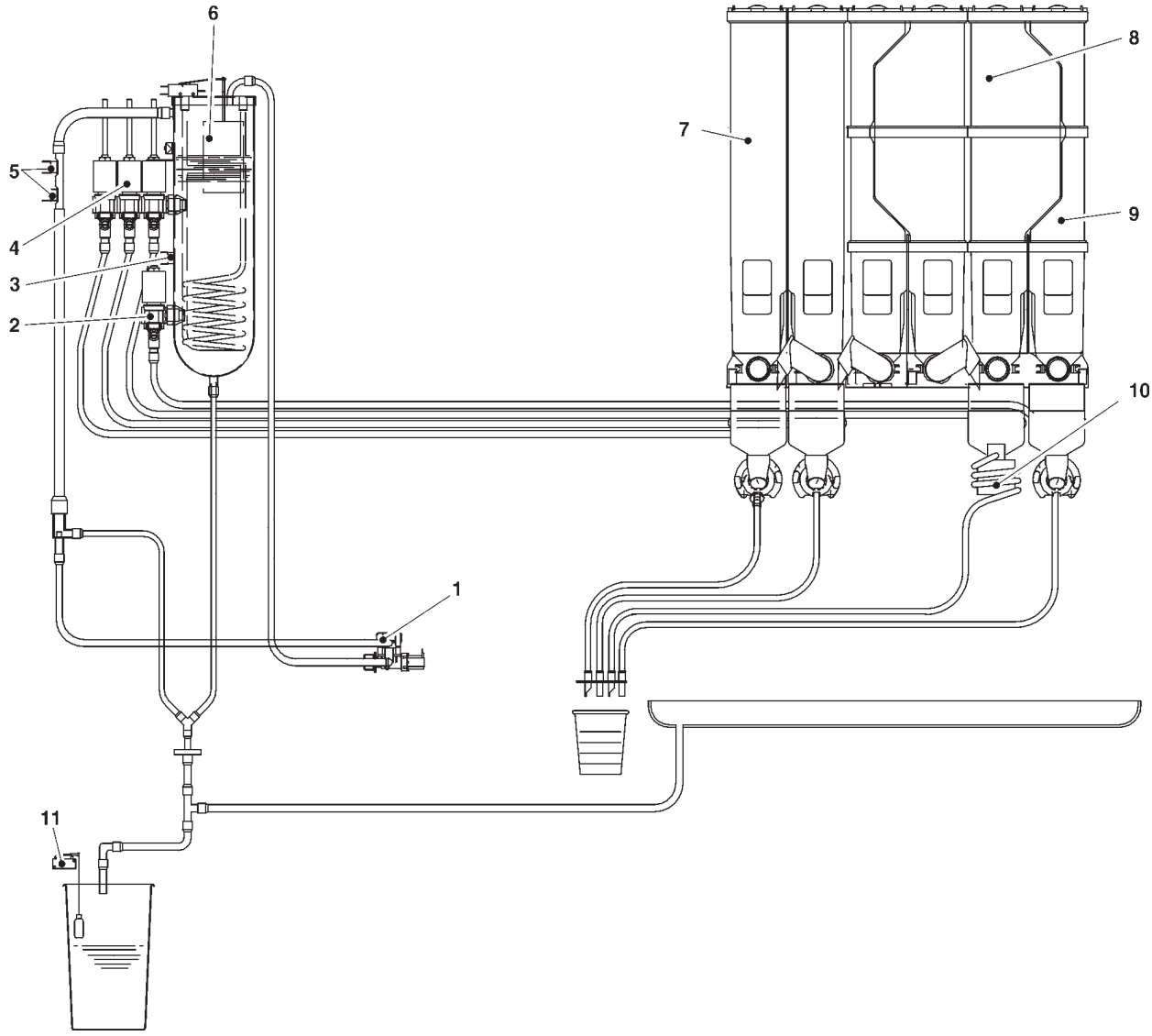
## HYDRAULIC SYSTEM FOR INSTANT




1 - Water inlet solenoid valve
2 - Hot water solenoid valve (if provided)
3 - Safety thermostat
4 - Instant prod. solenoid valves
5 - Anti-boiling thermostats
6 - Boiler float
7 - Single container
8 - Double container large compartment
9 - Double container small compartment
10 - Instant prod. coil (if provided)
11 - Liquid waste container float

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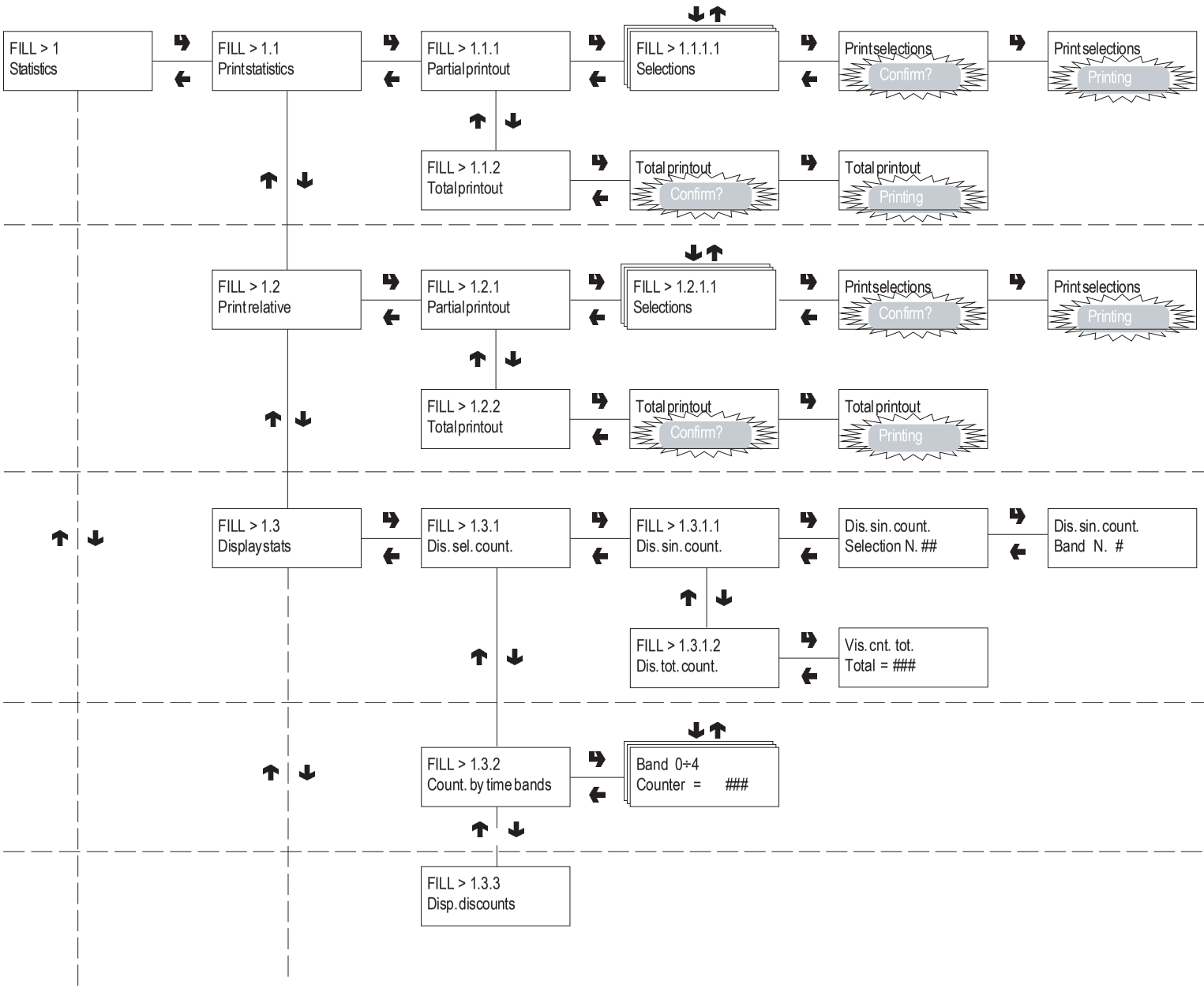
# Filler menu - Summary




With the printer connected print all data as displayed

**TOTAL STATISTICS**

Print data for:
Selections
Time bands
Failures
Coin mech data

**RELATIVE STATISTICS**

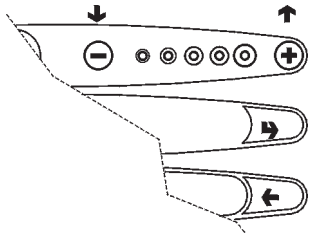
**Heading:**
Current date
Machine model
Software edition
Operator code
Machine code
Installation date

**TOTAL STATISTICS**

Display sales by single selection for each time band and total

Display total sales by single selection

Display total sales in normal operation and test mode



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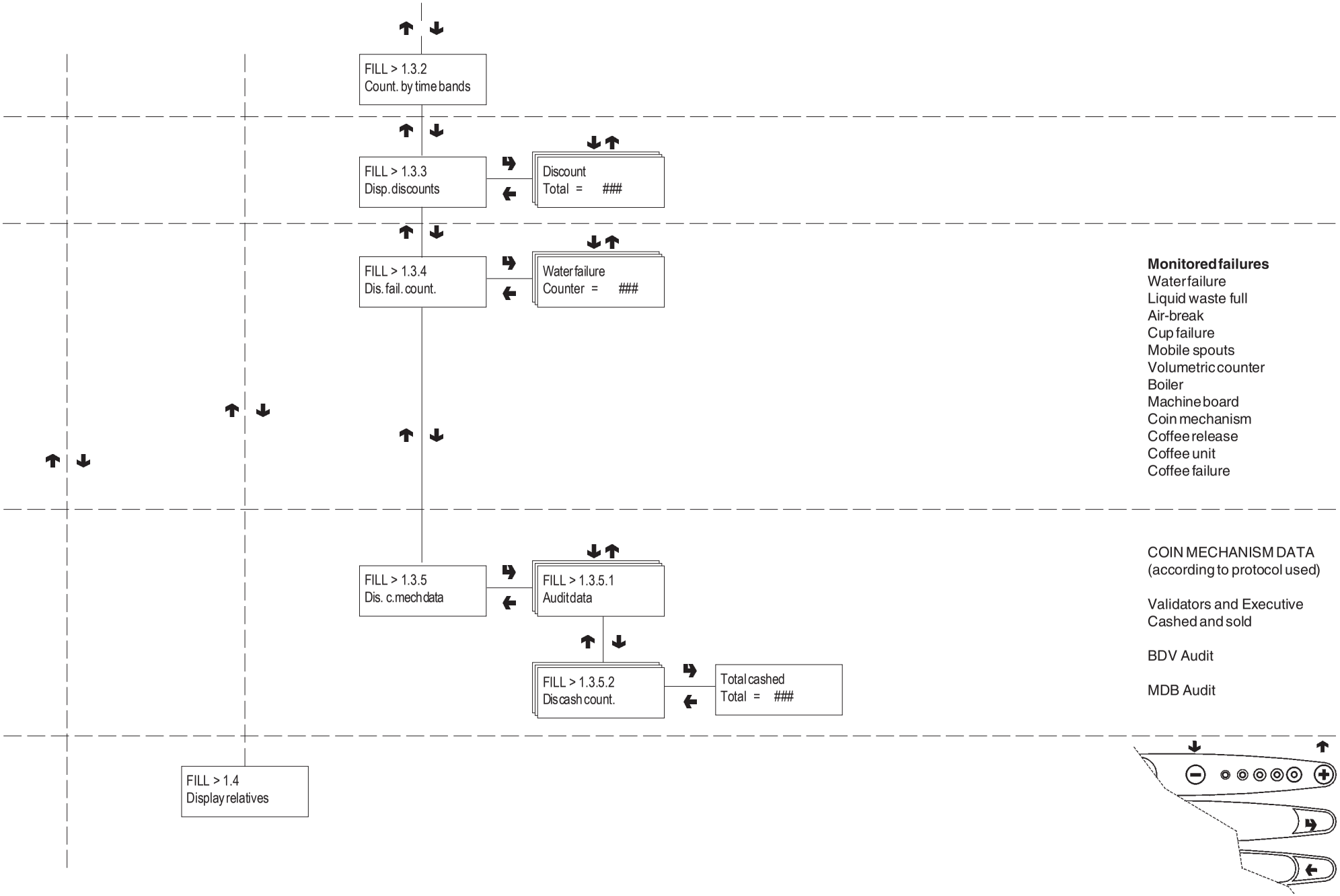
# Filler menu - Summary



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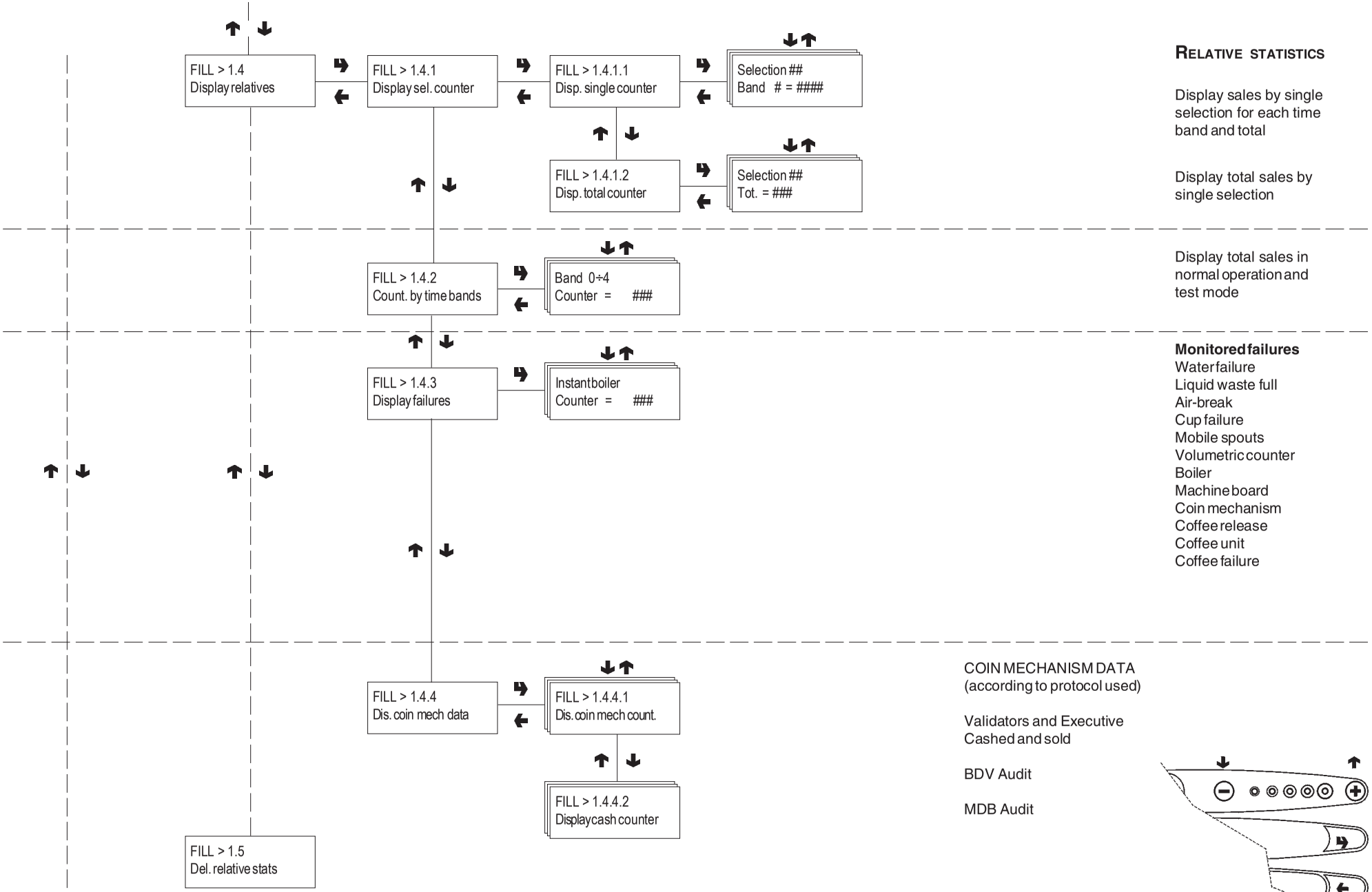
# Filler menu - Summary




**RELATIVE STATISTICS**

Display sales by single selection for each time band and total

Display total sales by single selection

Display total sales in normal operation and test mode

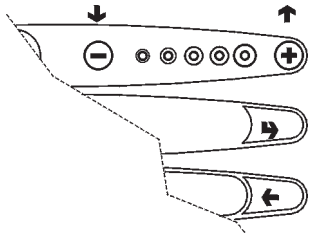
**Monitored failures**
Water failure
Liquid waste full
Air-break
Cup failure
Mobile spouts
Volumetric counter
Boiler
Machine board
Coin mechanism
Coffee release
Coffee unit
Coffee failure

COIN MECHANISM DATA
(according to protocol used)

Validators and Executive
Cashed and sold

BDV Audit

MDB Audit



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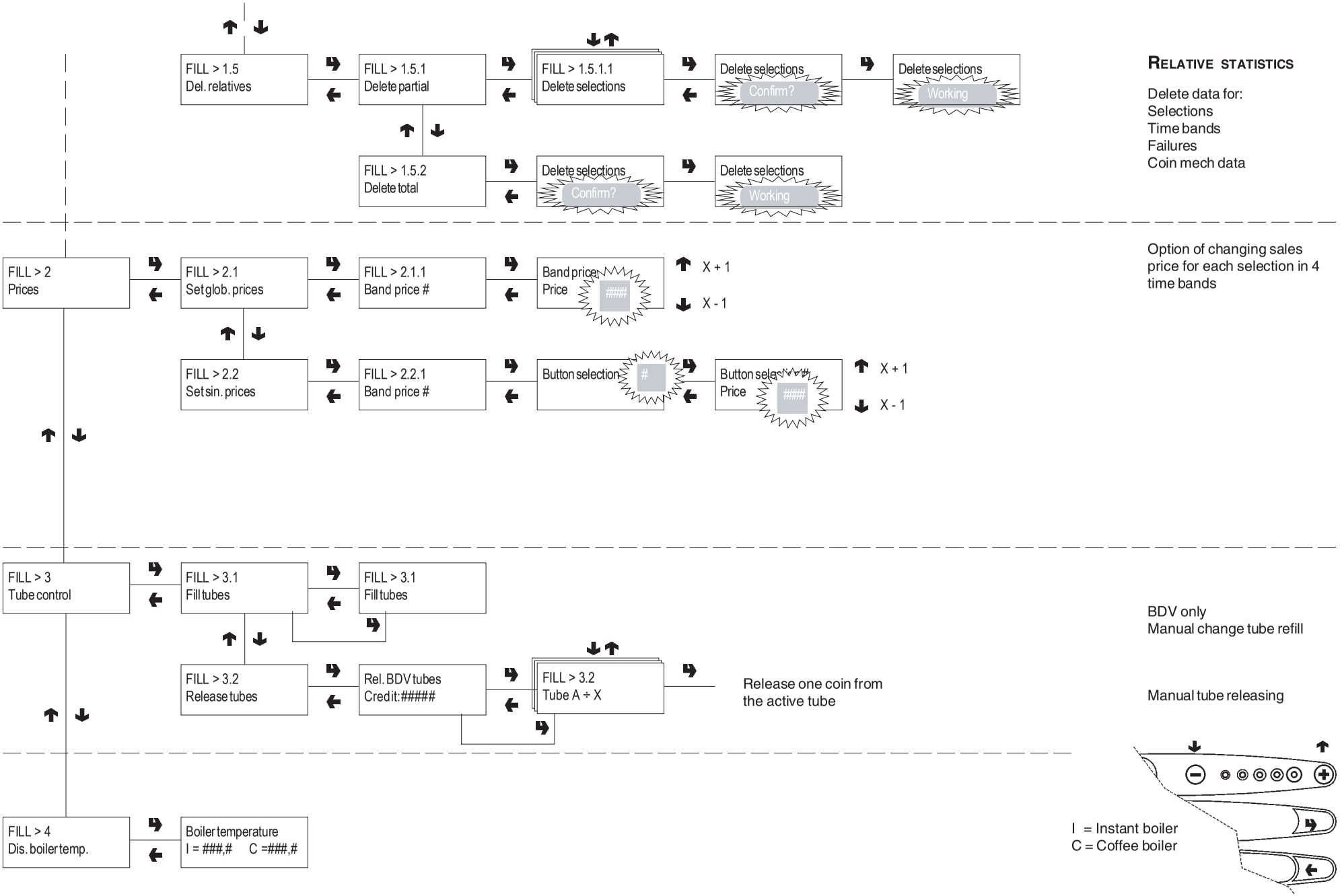
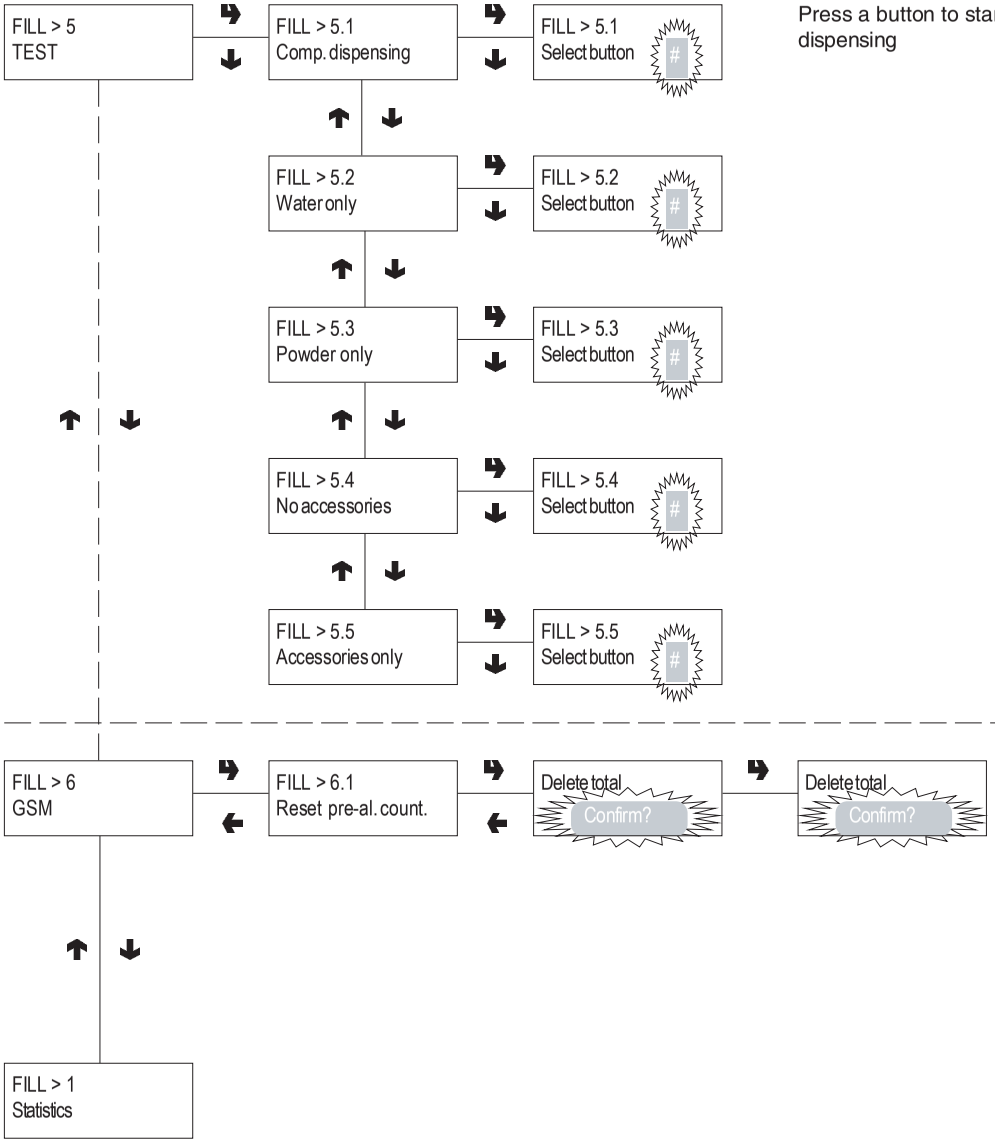
# Filler menu - Summary



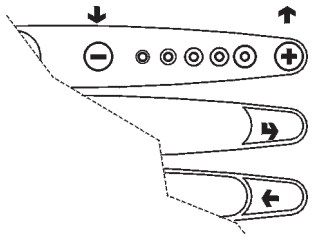
© by NECTA VENDING SOLUTIONS SpA

# Filler menu - Summary




Press a button to start dispensing

Press the programming button once



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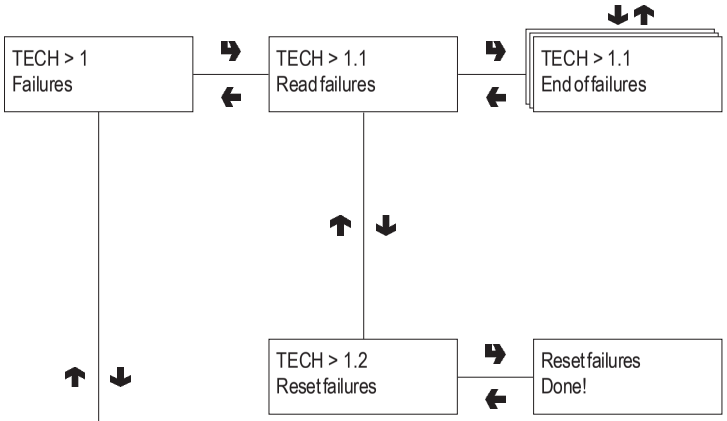
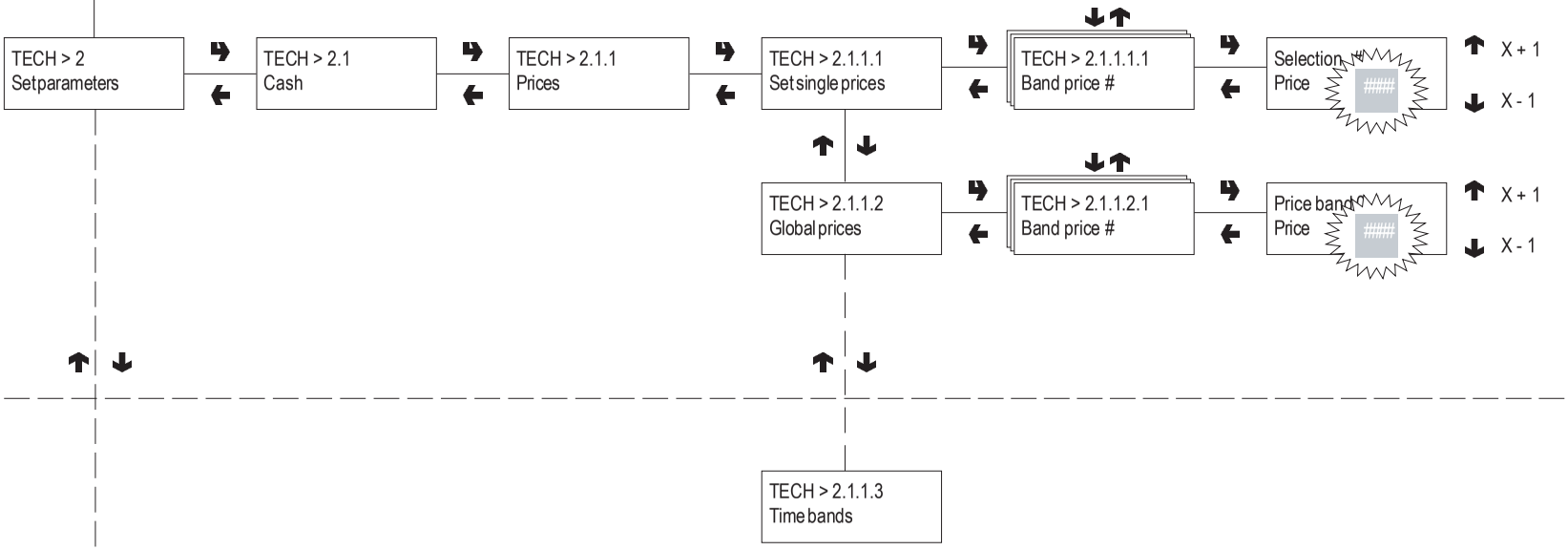
# Technician menu - Summary




Time scrolling of present failures

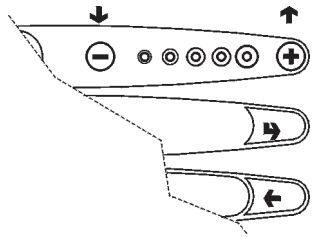
**DISPLAYING FAILURES**

**Monitored failures**
Water failure
Liquid waste full
Air-break
Cup failure
Mobile spouts
Volumetric counter
Boiler
Machine board
Coin mechanism
Coffee release
Coffee unit
Coffee failure




Option of changing sales price for each selection in 4 time bands

4 time bands plus band 0 (no time band set) available with different prices for each selection



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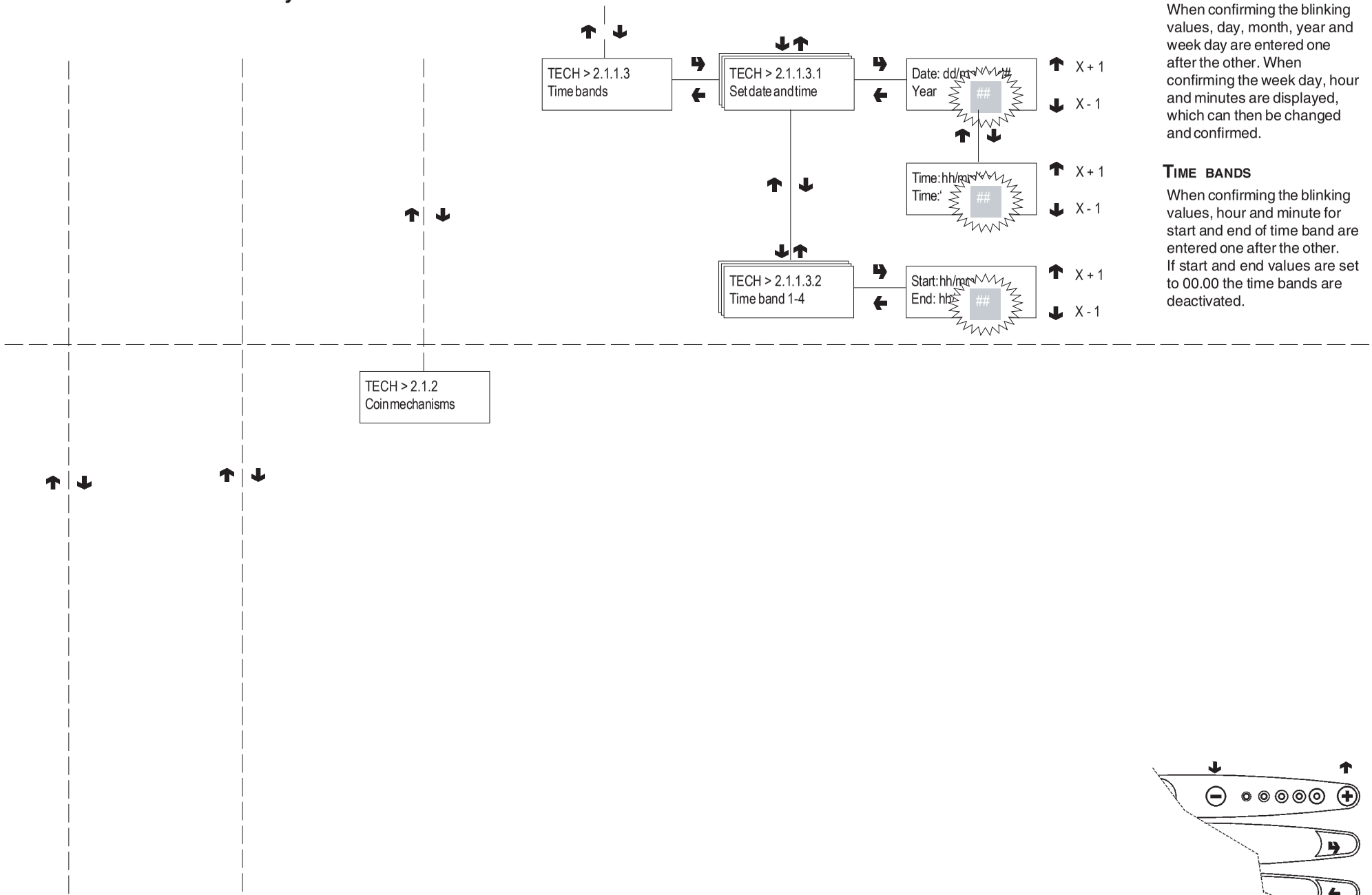
# Technician menu - Summary

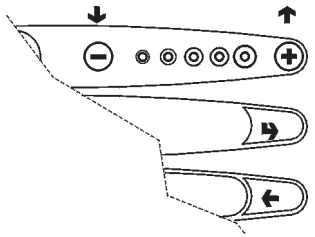



## CLOCK

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.
If start and end values are set to 00.00 the time bands are deactivated.



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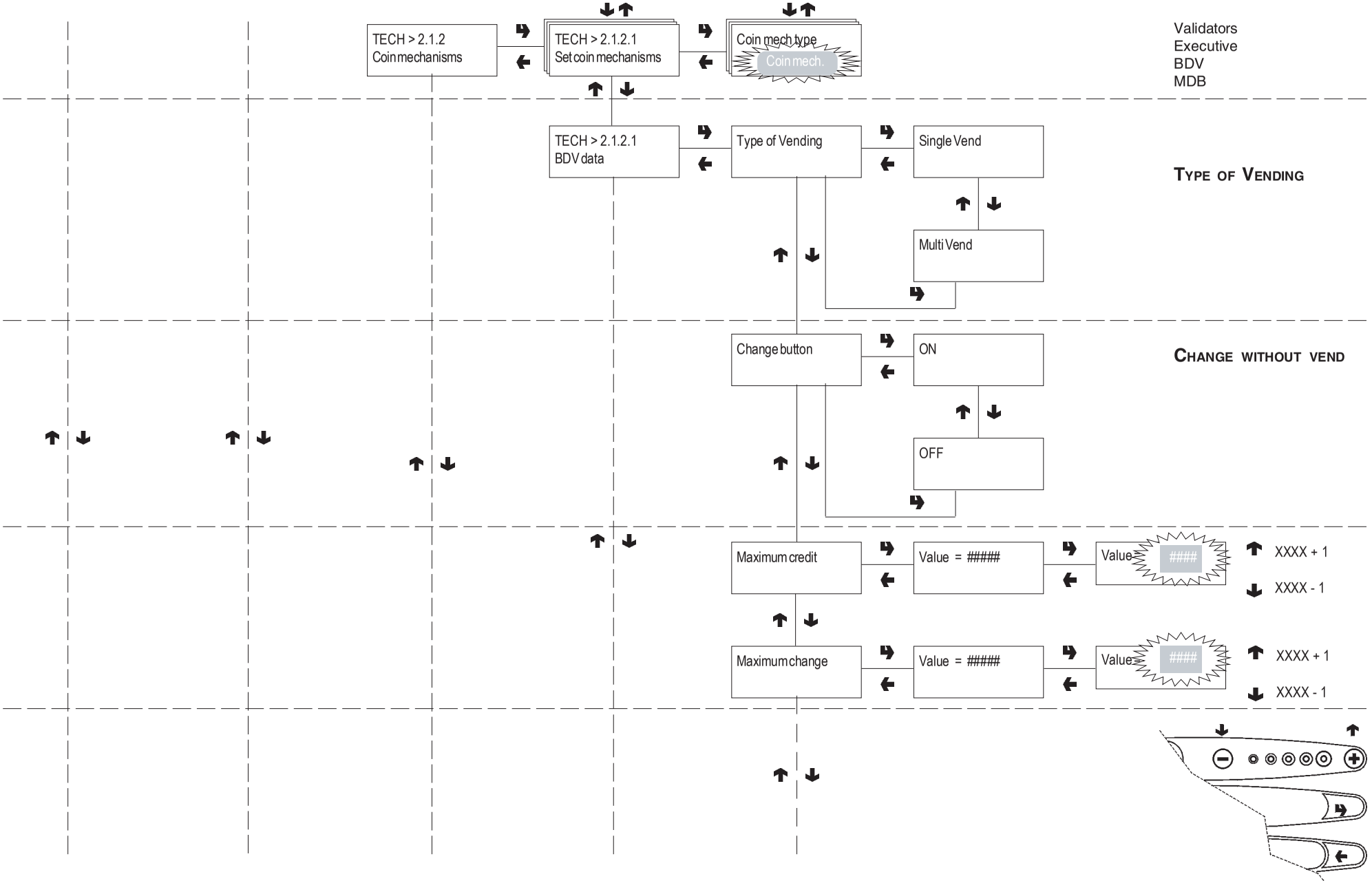
# Technician menu - Summary



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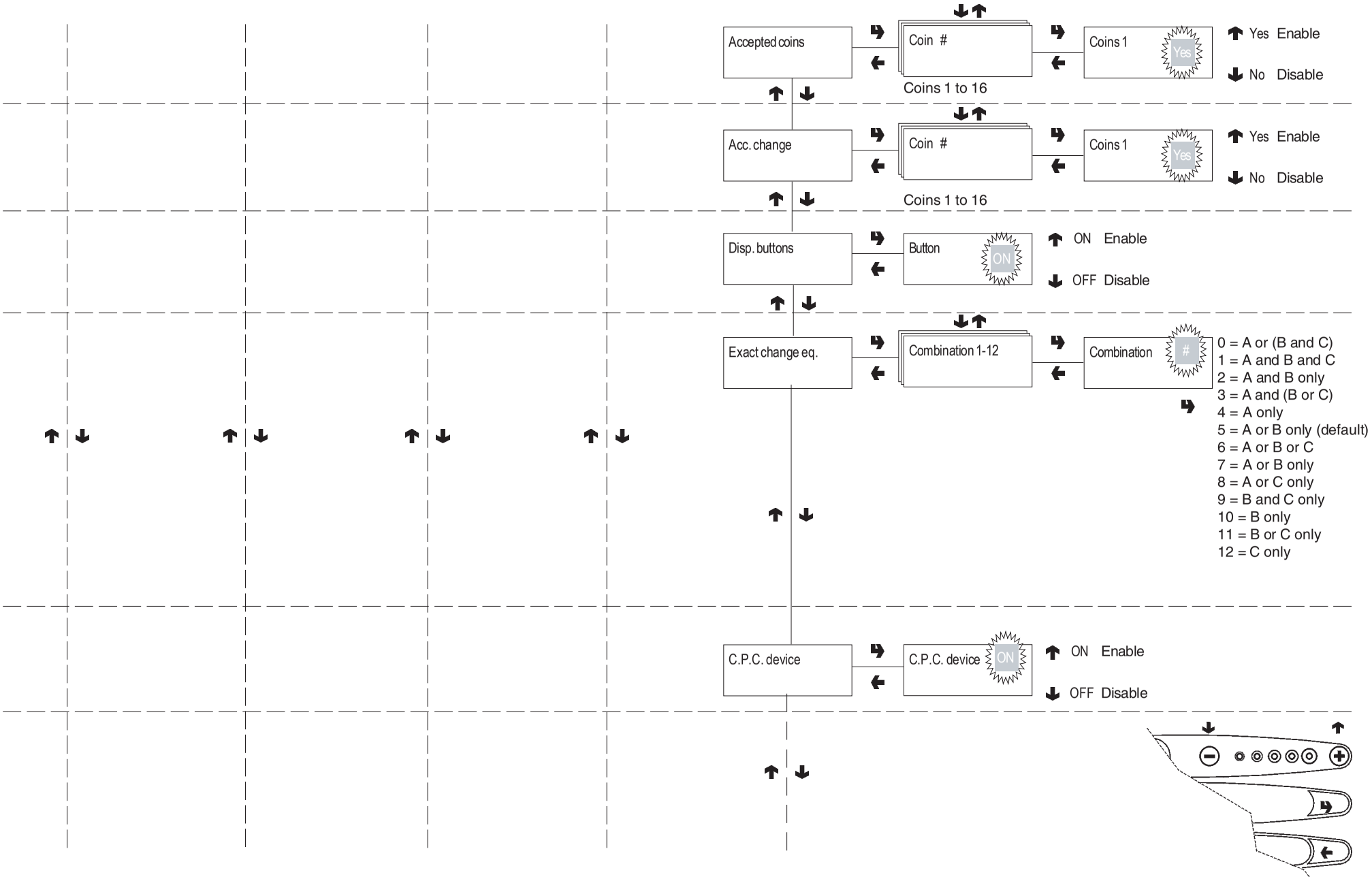
# Technician menu - Summary






0204 184-00

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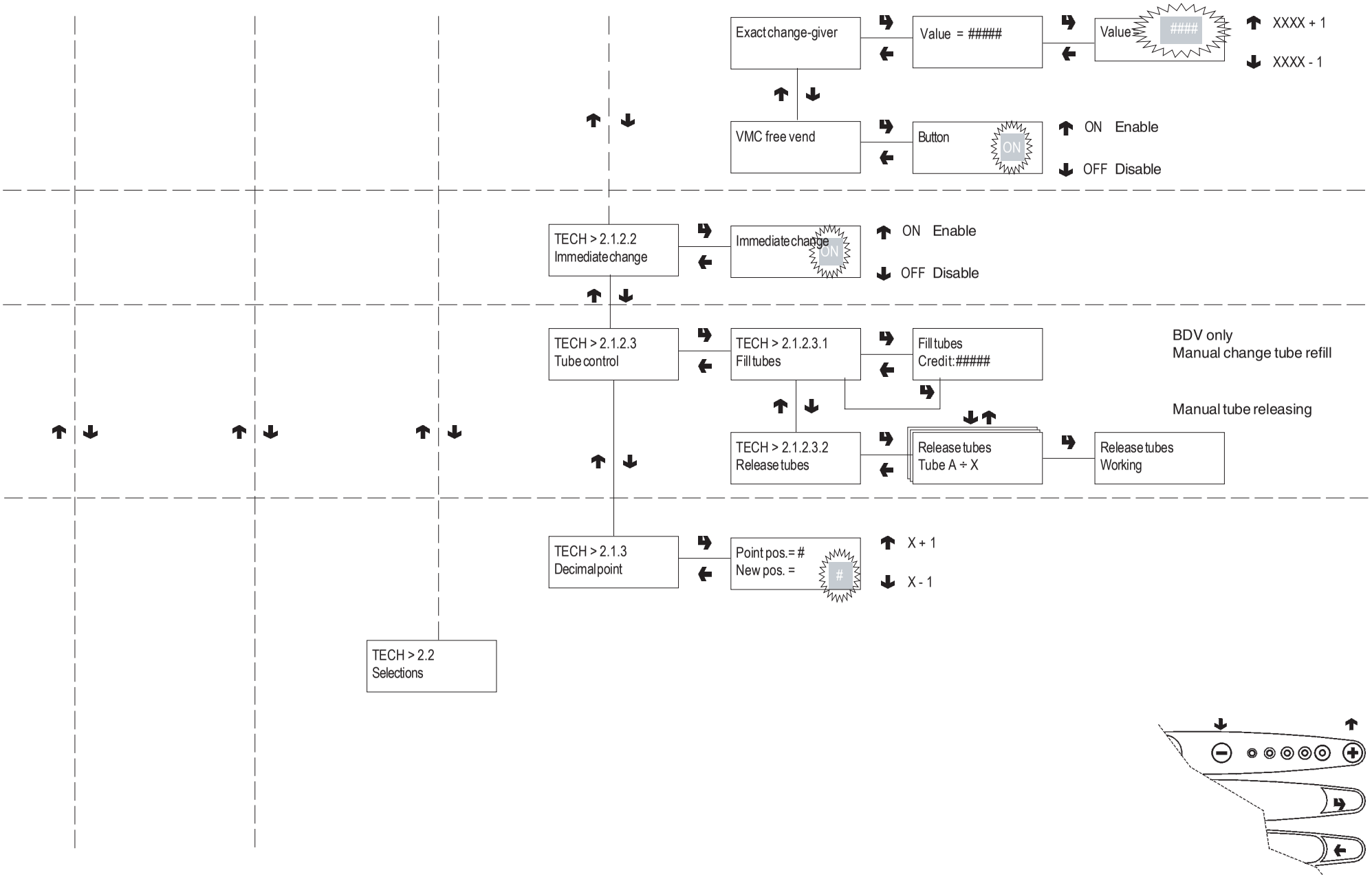
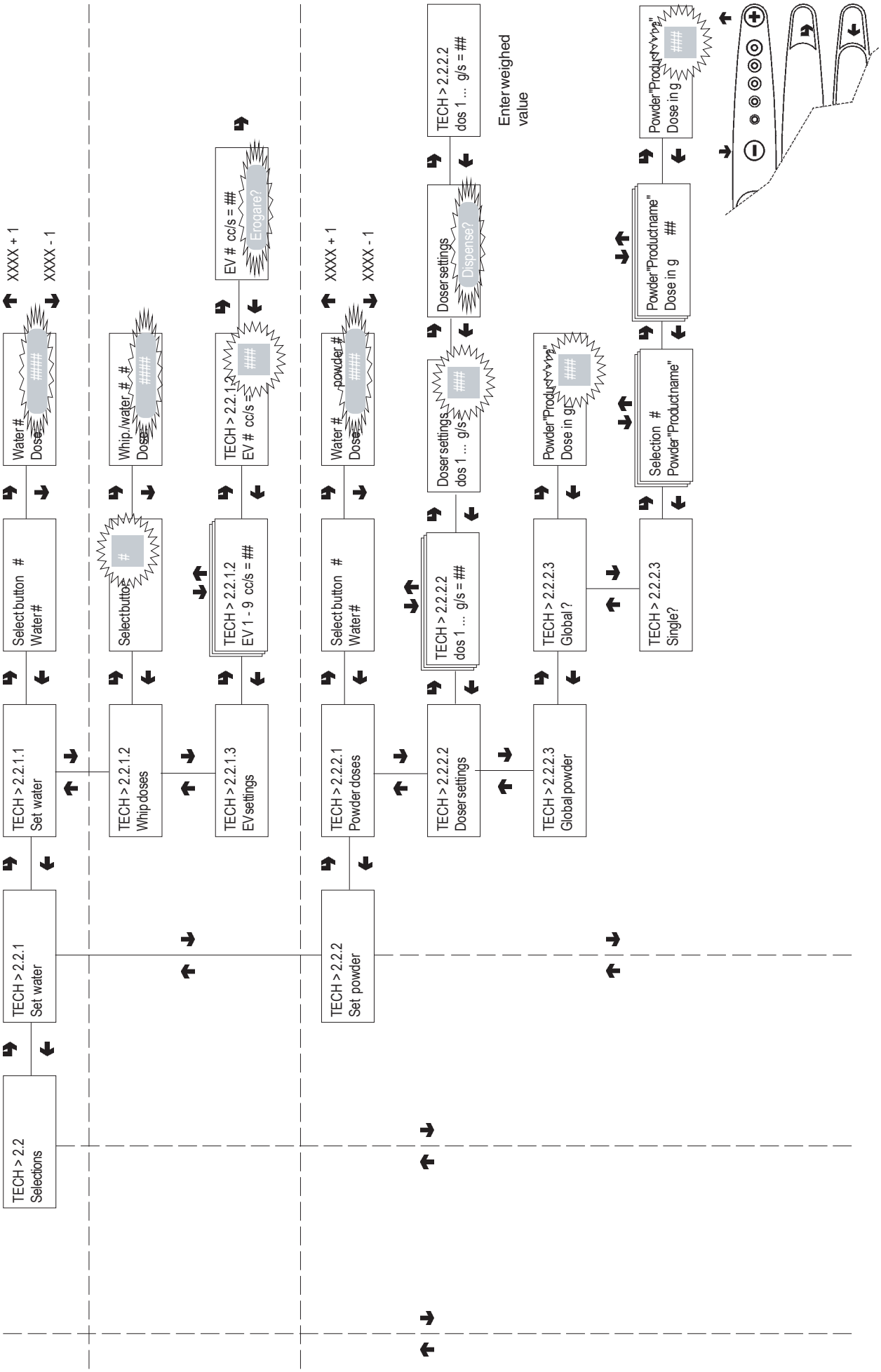
# Technician menu - Summary



# Technician menu - Summary



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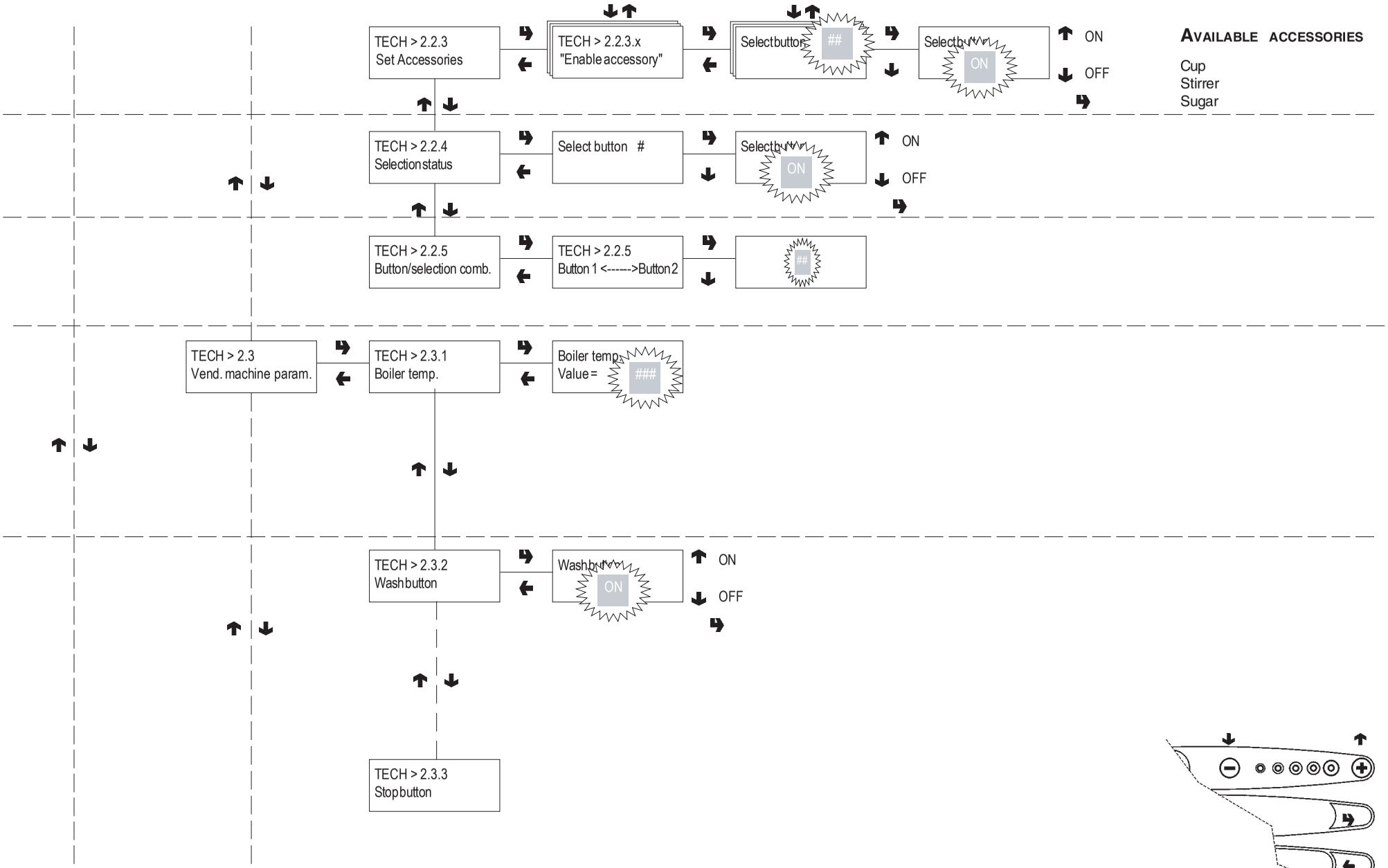
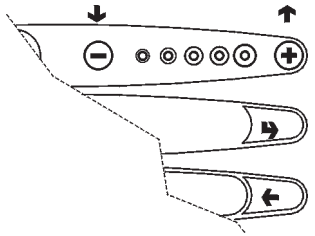
# Technician menu - Summary



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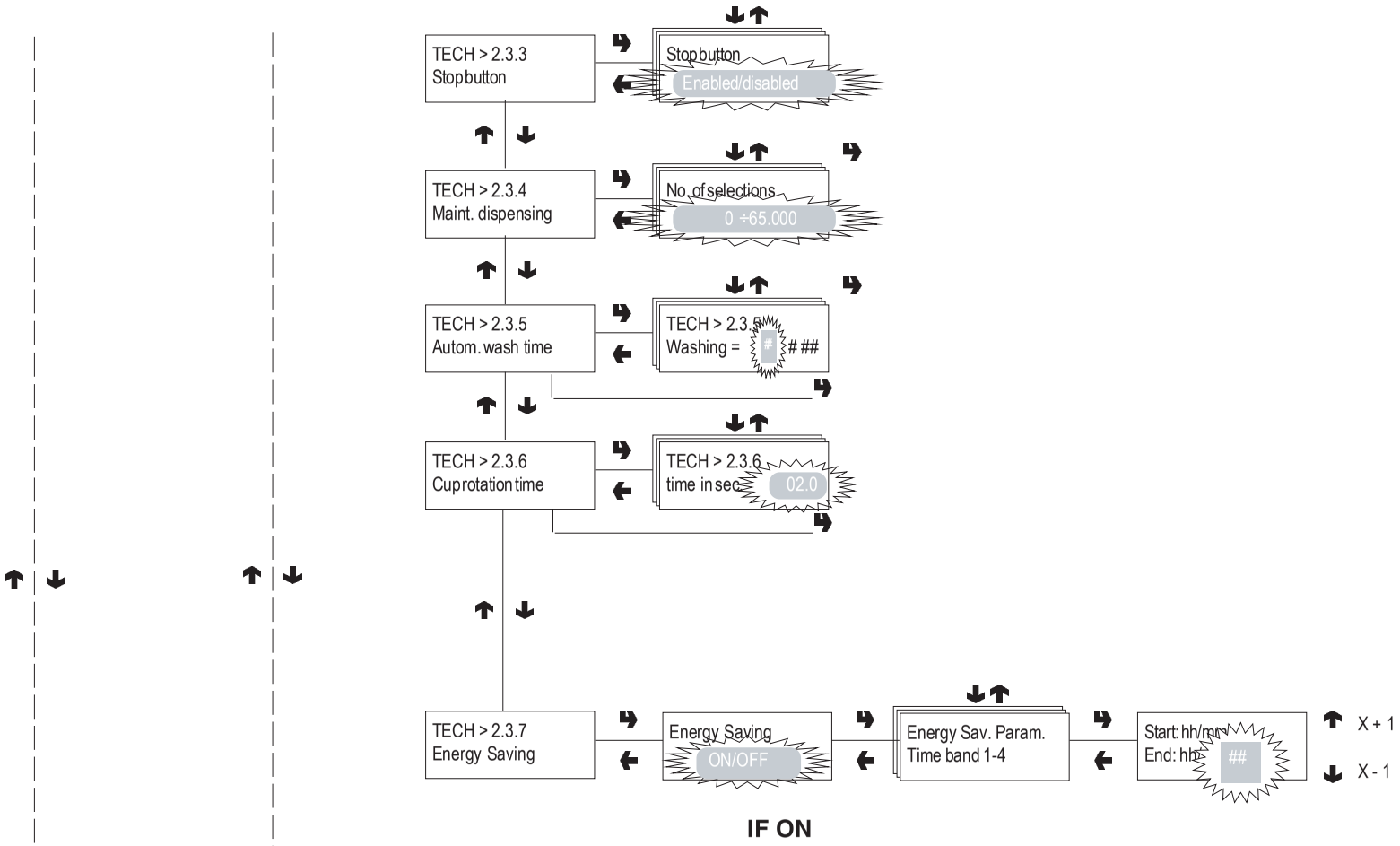
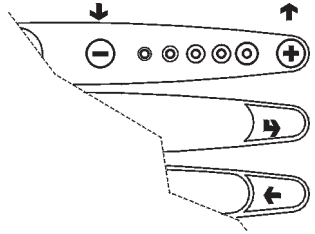
# Technician menu - Summary




When confirming the blinking values, hour and minute for start and end of time band are entered one after the other.
If start and end values are set to 00.00 the time bands are deactivated.



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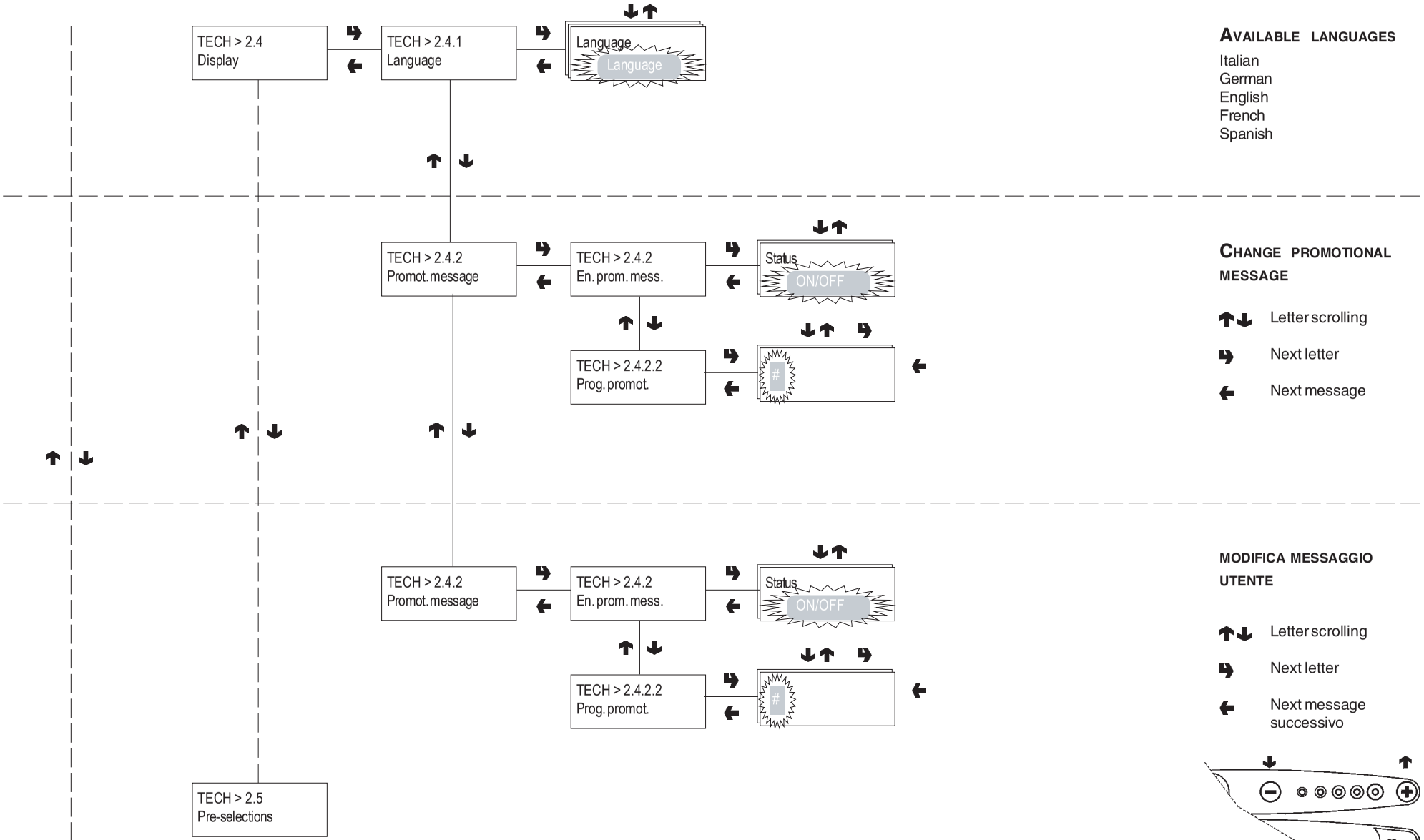
# Technician menu - Summary




**AVAILABLE LANGUAGES**

Italian
German
English
French
Spanish

**CHANGE PROMOTIONAL MESSAGE**

Letter scrolling

Next letter

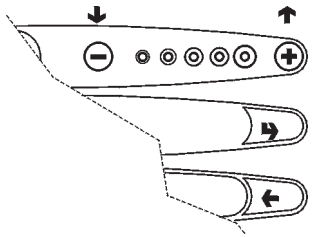
Next message

**MODIFICA MESSAGGIO UTENTE**

Letter scrolling

Next letter

Next message
successivo





0204 184-00

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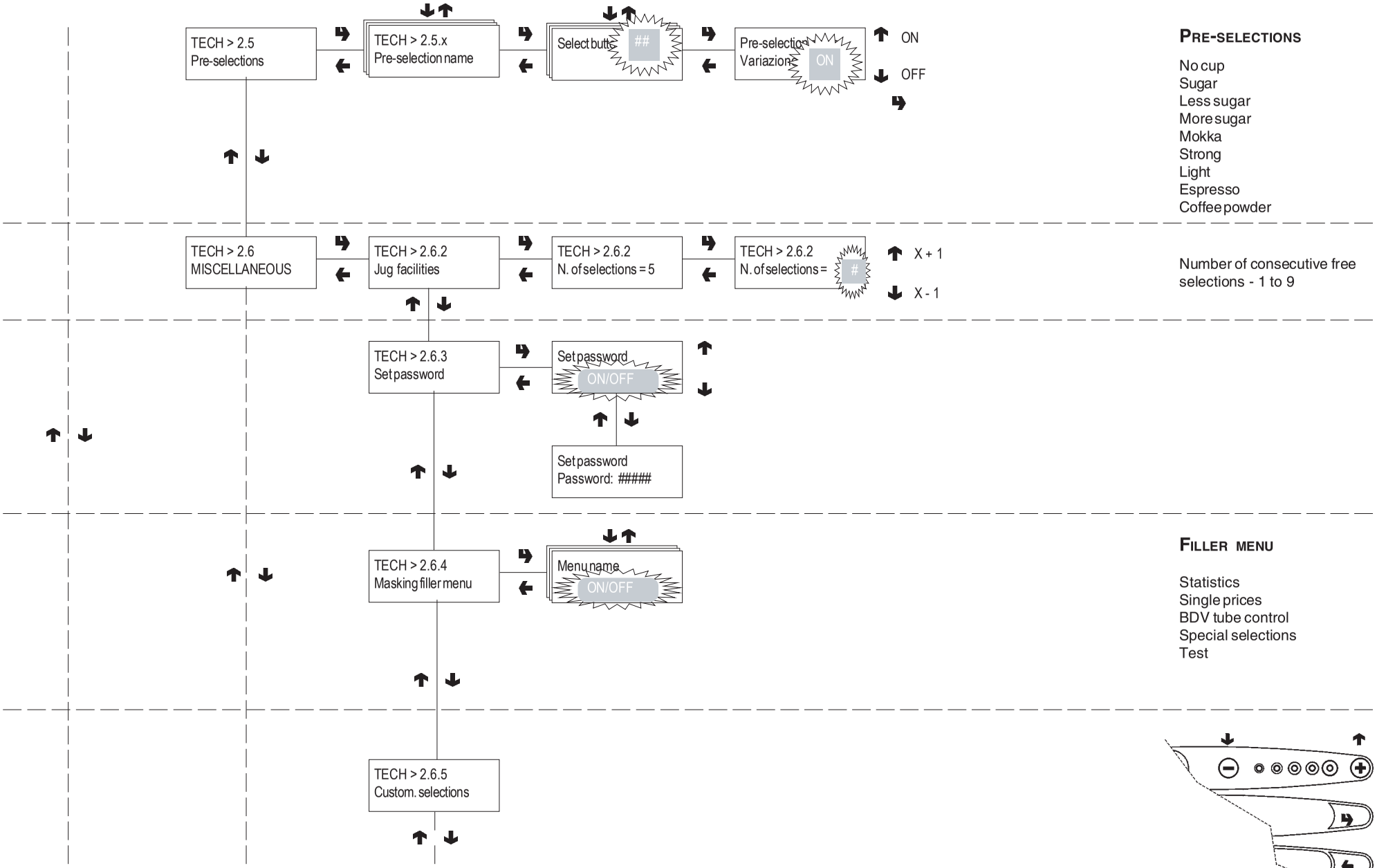
# Technician menu - Summary



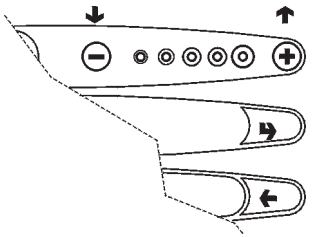

**PRE-SELECTIONS**

No cup
Sugar
Less sugar
More sugar
Mokka
Strong
Light
Espresso
Coffee powder

Number of consecutive free selections - 1 to 9

**FILLER MENU**

Statistics
Single prices
BDV tube control
Special selections
Test



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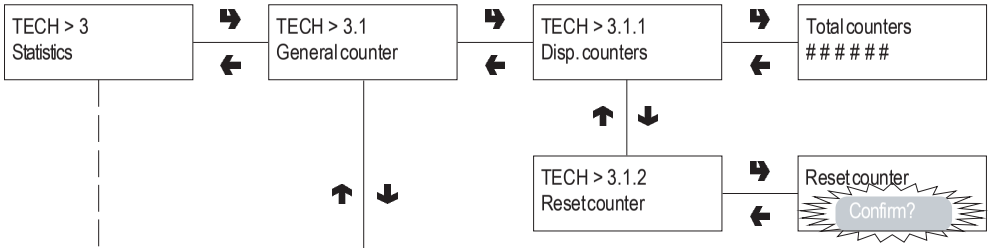
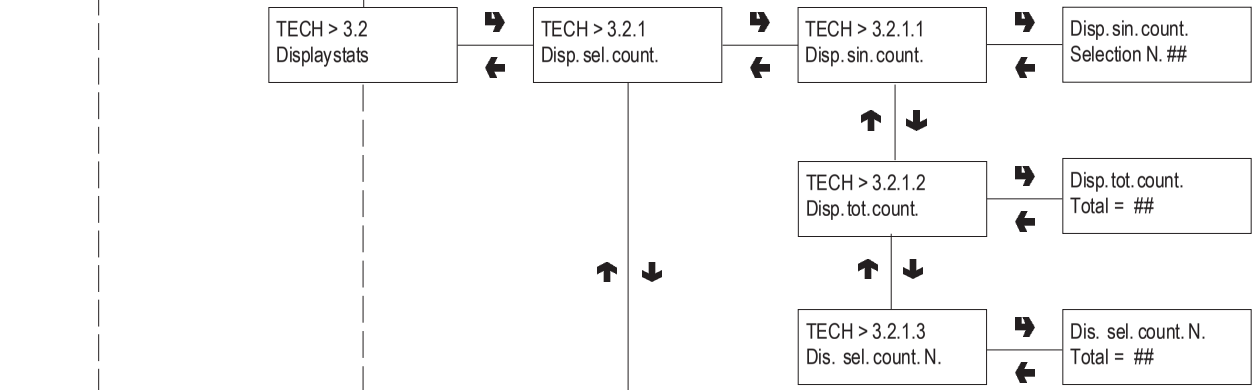
# Technician menu - Summary

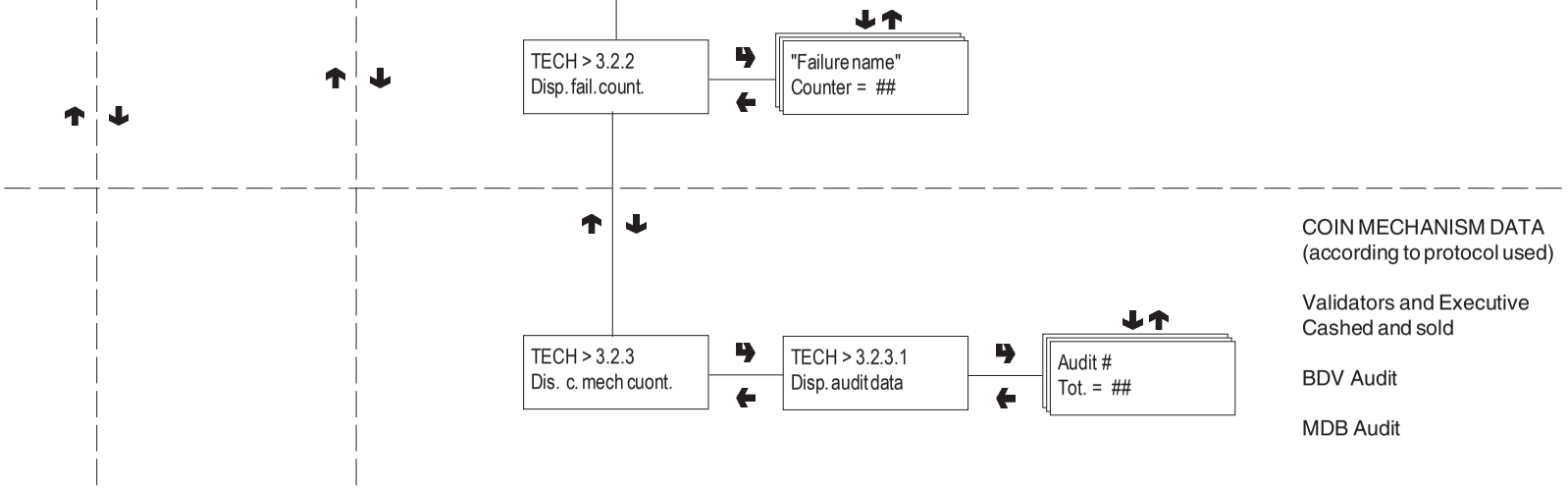



**TOTAL STATISTICS**

Display sales by single selection for each time band and total

Display total sales by single selection




COIN MECHANISM DATA
(according to protocol used)

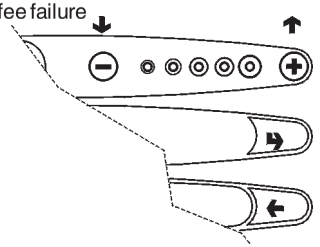
Validators and Executive
Cashed and sold

BDV Audit

MDB Audit

**Monitored failures**

Water failure
Liquid waste full
Air-break
Cup failure
Mobile spouts
Volumetric counter
Boiler
Machine board
Coin mechanism
Coffee release
Coffee unit
Coffee failure



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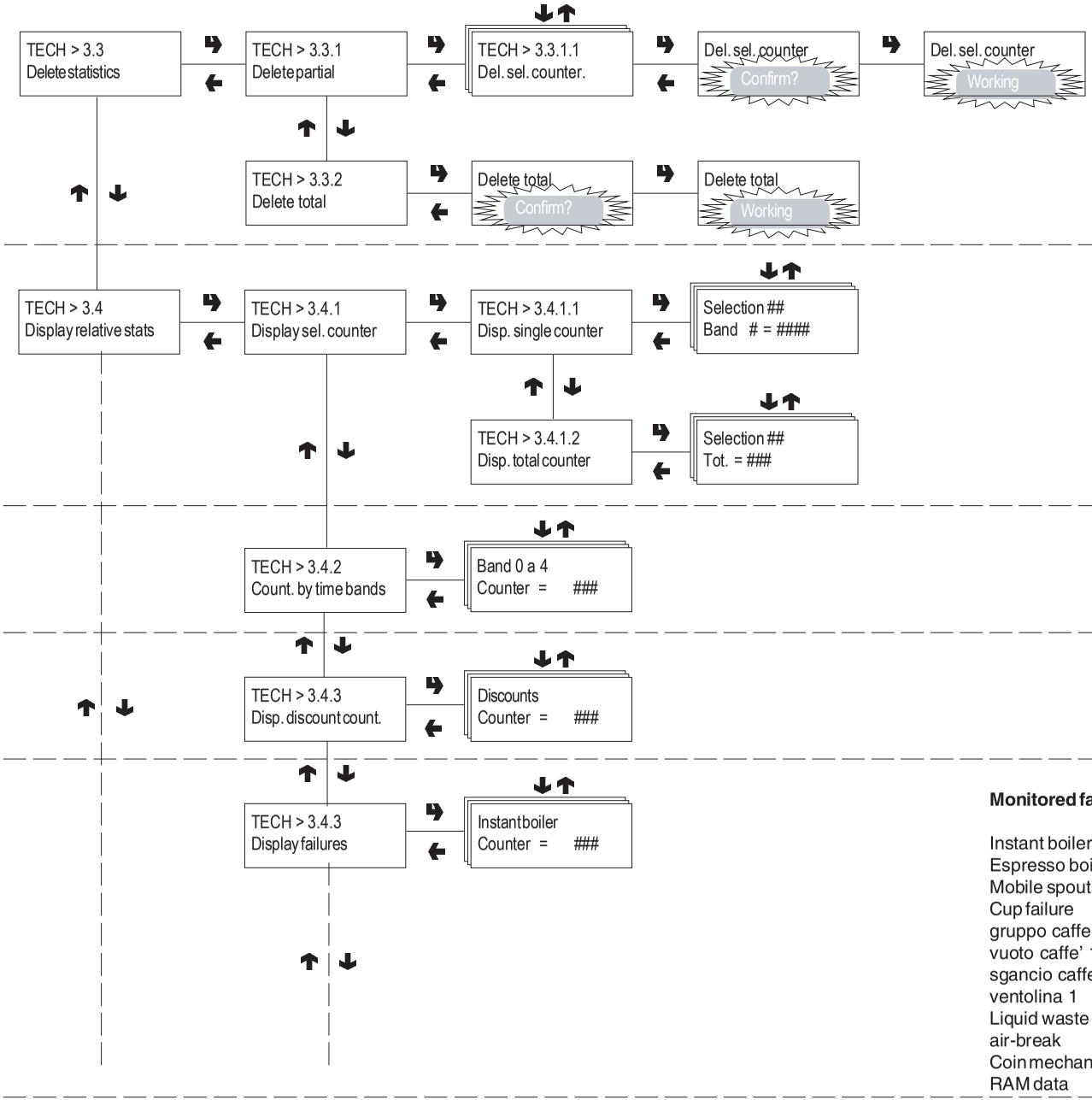
# Technician menu - Summary




## DELETE STATISTICS

Delete data for:
Selections
Time bands
Failures
Coin mech data
Photocell errors
Motor errors

## RELATIVE STATISTICS

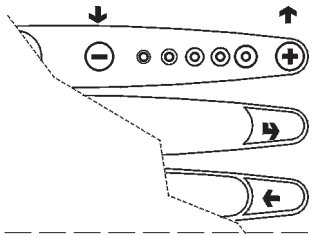
Display sales by single selection for each time band and total

Display total sales by single selection

Display total sales in normal operation and test mode

**Monitored failures:**

Instant boiler
Espresso boiler 1
Mobile spouts
Cup failure
gruppo caffe' 1
vuoto caffe' 1
sgancio caffe'
ventolina 1
Liquid waste full
air-break
Coin mechanism
RAM data



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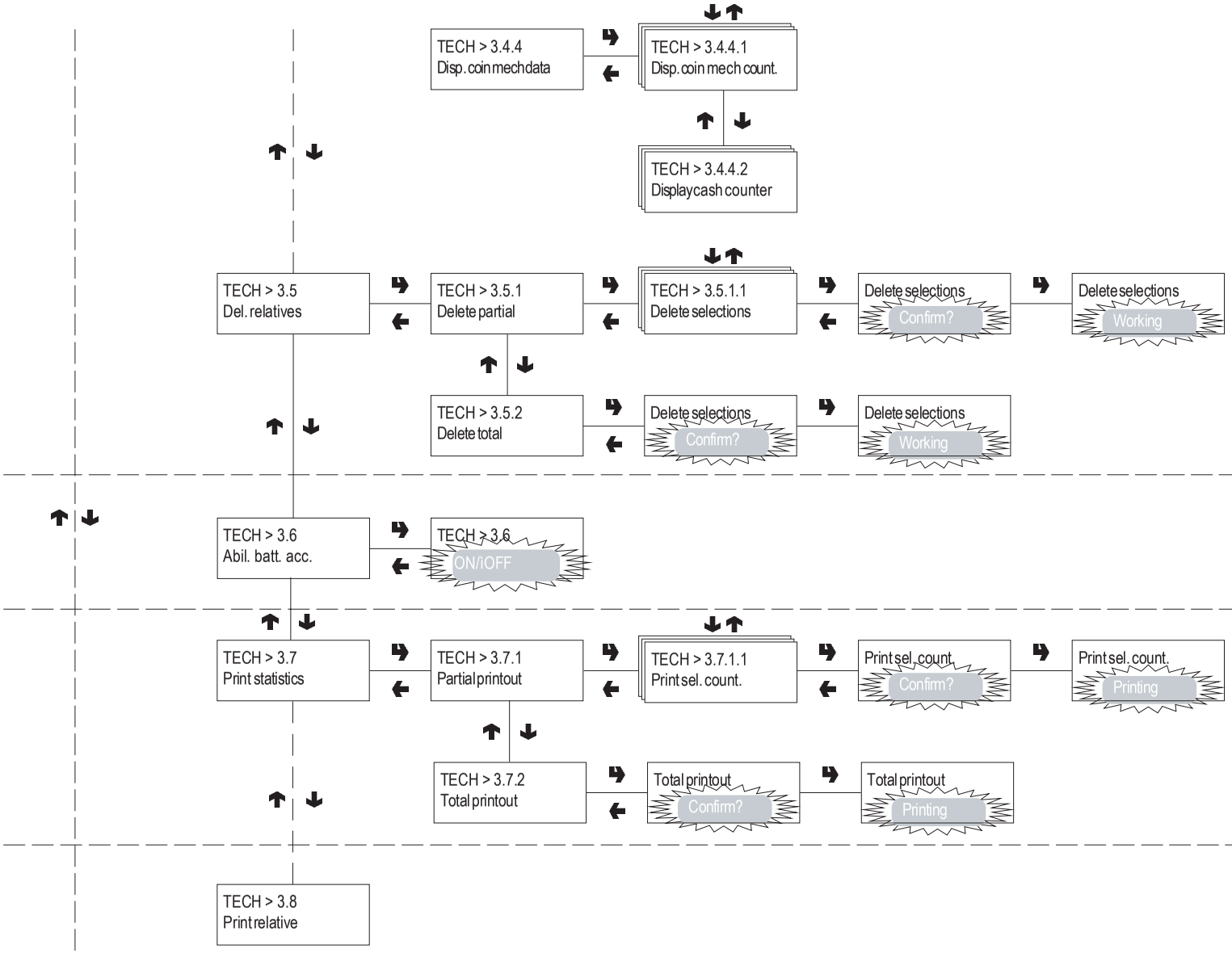
# Technician menu - Summary




COIN MECHANISM DATA
(according to protocol used)

Validators and Executive
Cashed and sold

BDV Audit

MDB Audit

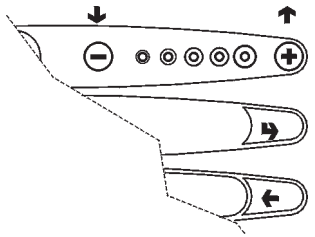
**RELATIVE STATISTICS**

Delete data for:
Selections
Time bands
Failures
Coin mech data

With the printer connected
print all data as displayed

**TOTAL STATISTICS**

Print data for:
Selections
Time bands
Failures
Coin mech data



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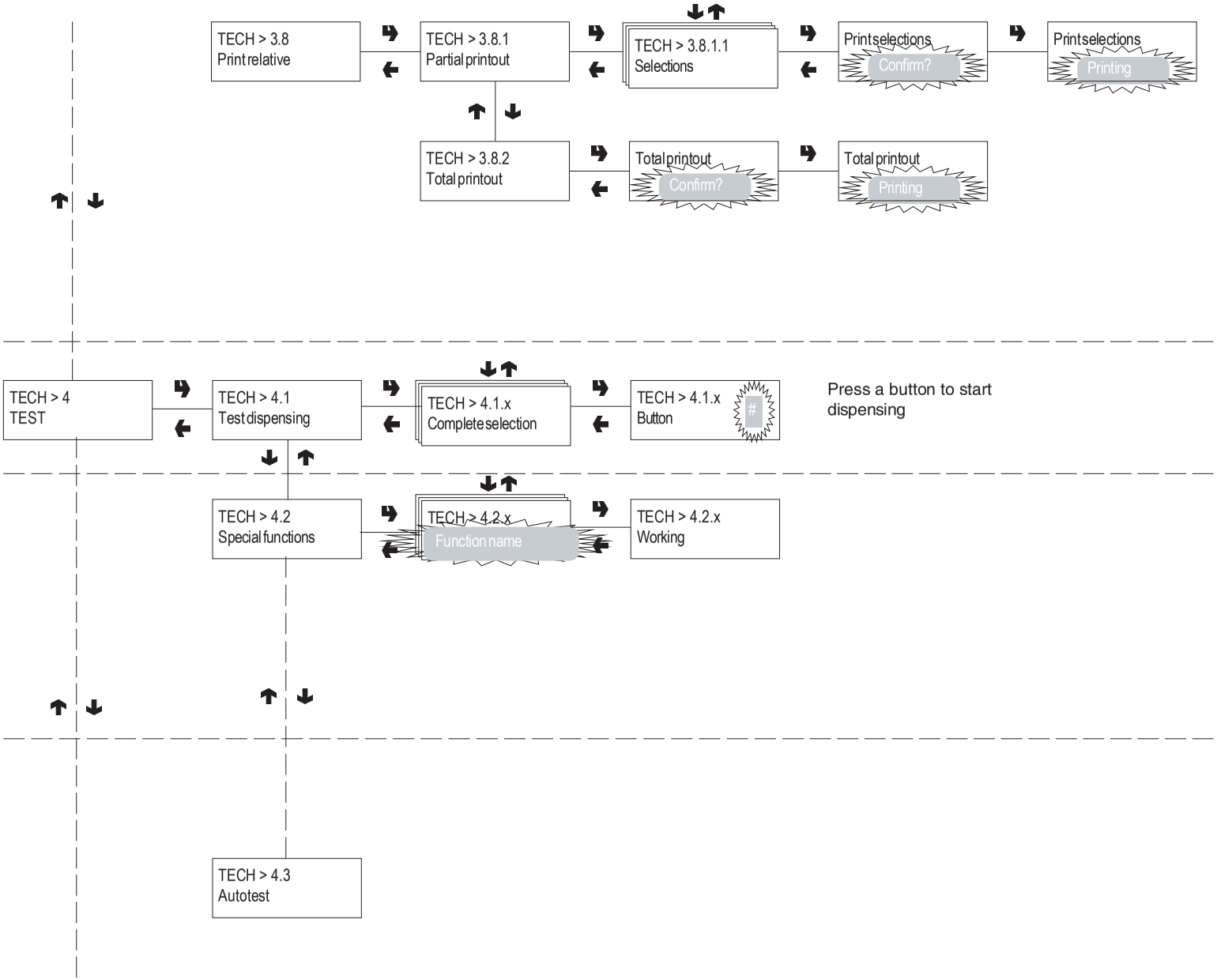
# Technician menu - Summary




Press a button to start dispensing

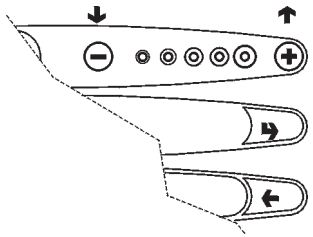
## RELATIVE STATISTICS

**Heading:**
Current date
Machine model
Software edition
Operator code
Machine code
Installation date

Dispensing for:
Complete selections
Water only
Powder only
No accessories
Accessories only

## FUNCTIONS

Rotate coffee unit
Release coffee dose
Empty boiler



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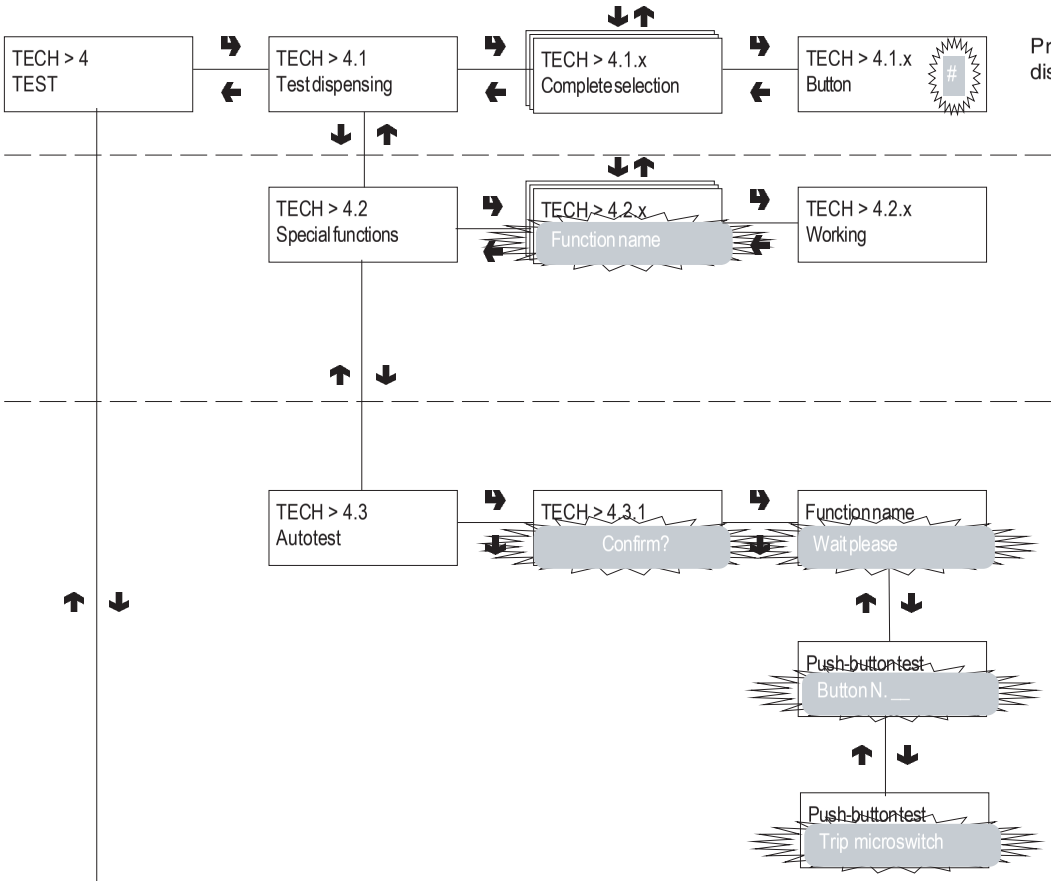
# Technician menu - Summary




Press a button to start dispensing

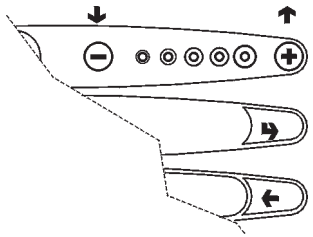
Dispensing for:
Complete selections
Water only
Powder only
No accessories
Accessories only

**FUNCTIONS**

Rotate coffee unit
Release coffee dose
Empty boiler

Actuation in a sequence of:
.doser devices
.mixers
.cup dispenser
.strirrer dispenser
.neon lamps
.door LED
.push-buttons*
.mobile spouts
.coffee dose
.unit rotation
.liquid waste full*

*** these functions require the assistance of the user to trip the switches.**



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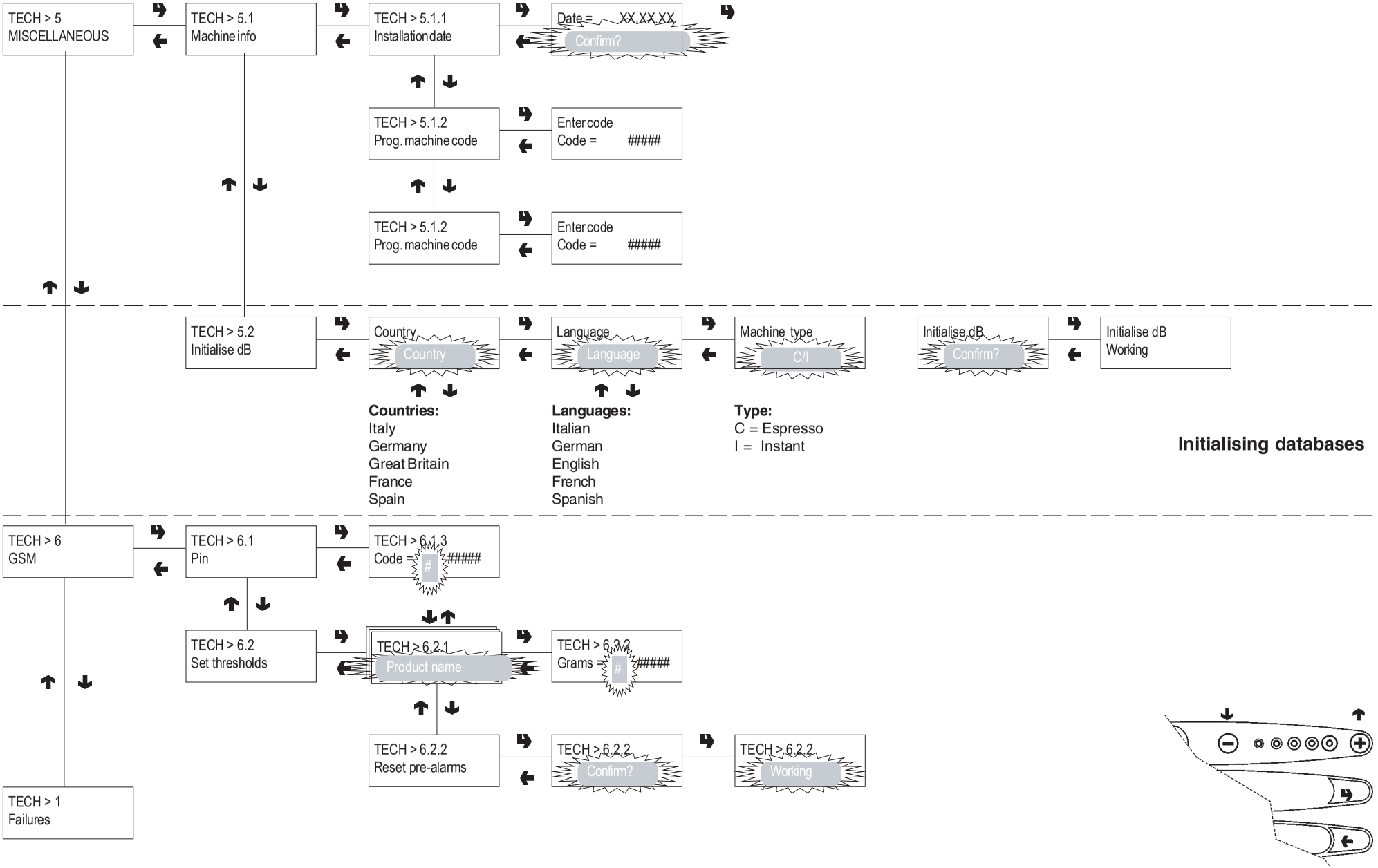
# Technician menu - Summary



## WIRING DIAGRAM LEGEND

| INITIALS | DESCRIPTION | INITIALS | DESCRIPTION |
|---|---|---|---|
| CM1 | COFFEE UNIT MOTOR CAM | MPU | SPOUT POSITIONING MICROSWITCH |
| CMSB | CUP RELEASE MOTOR CAM | MSB | CUP RELEASE MOTOR |
| CV | VOLUMETRIC COUNTER | MSCB | CUP CONTAINER SHIFT MOTOR |
| E1-... | INSTANT SOLENOID VALVE | MSP | STIRRER RELEASE MOTOR |
| EEA | WATER INLET SOLENOID VALVE | MSU | SPOUT MOVING MOTOR |
| ER | COFFEE DISPENSER SOLENOID VALV | NTC | TEMPERATURE PROBE |
| ESC | COFFEE RELEASE MAGNET | NTCS | INSTANT BOILER TEMPERATURE PRO |
| EX | EXECUTIVE COIN MECH CONNECTOR | PB | POWER SUPPLY SOCKET |
| FA | RADIO INTERFERENCE SUPPRESSOR | PIP | PROGRAMMING BUTTON |
| FREE | FREE VENDING SWITCH | PL | WASH CYCLE BUTTON |
| ID | COFFEE DOSE SWITCH | PM | PUMP |
| IMSP | STIRRER RELEASE MICRO-SWITCH | PSB | CUP RELEASE BUTTON |
| IP | DOOR SWITCH | RCC | COFFEE BOILER HEATING ELEMENT |
| IPF | WASTE CONTAINER OVERFLOW SWIT | RCS | INSTANT BOILER HEATING ELEMENT |
| IVA | EMPTY BOILER MICRO-SWITCH | RIS | COFFEE UNIT HEATER |
| IVB | EMPTY CUP DISPENSER MICRO SWITC | RS232 | SERIAL PORT |
| JUG | JUG FACILITIES SWITCH | SM | CONTROL BOARD |
| KC1-.. | COFFEE BOILER CUTOUT | SM1 | CONTROL BOARD |
| KS1-.. | SAFETY CUTOUT | SM2 | EXPANSION BOARD |
| LCD | LIQUID CRYSTAL DISPLAY | SP | PUSH-BUTTON BOARD |
| LF | LAMP | STRC | BOILER HEATING TRIAC BOARD |
| M | COFFEE UNIT MOTOR | SUC | C.P.U. BOARD |
| MAC | GRINDER | TR | TRANSFORMER |
| MD1-.. | INGREDIENT MOTOR - INSTANT | TX.... | DELAYED FUSE (X=COURRENT) |
| MDB | CONNECTOR FOR MDB COIN MECHANI | TZ | CUP SENSOR |
| MDZ | INGREDIENT MOTOR - SUGAR | UPS | COLD UNIT PRINTED BOARD |
| MF1-.. | WHIPPER MOTORS | VENT | FAN |

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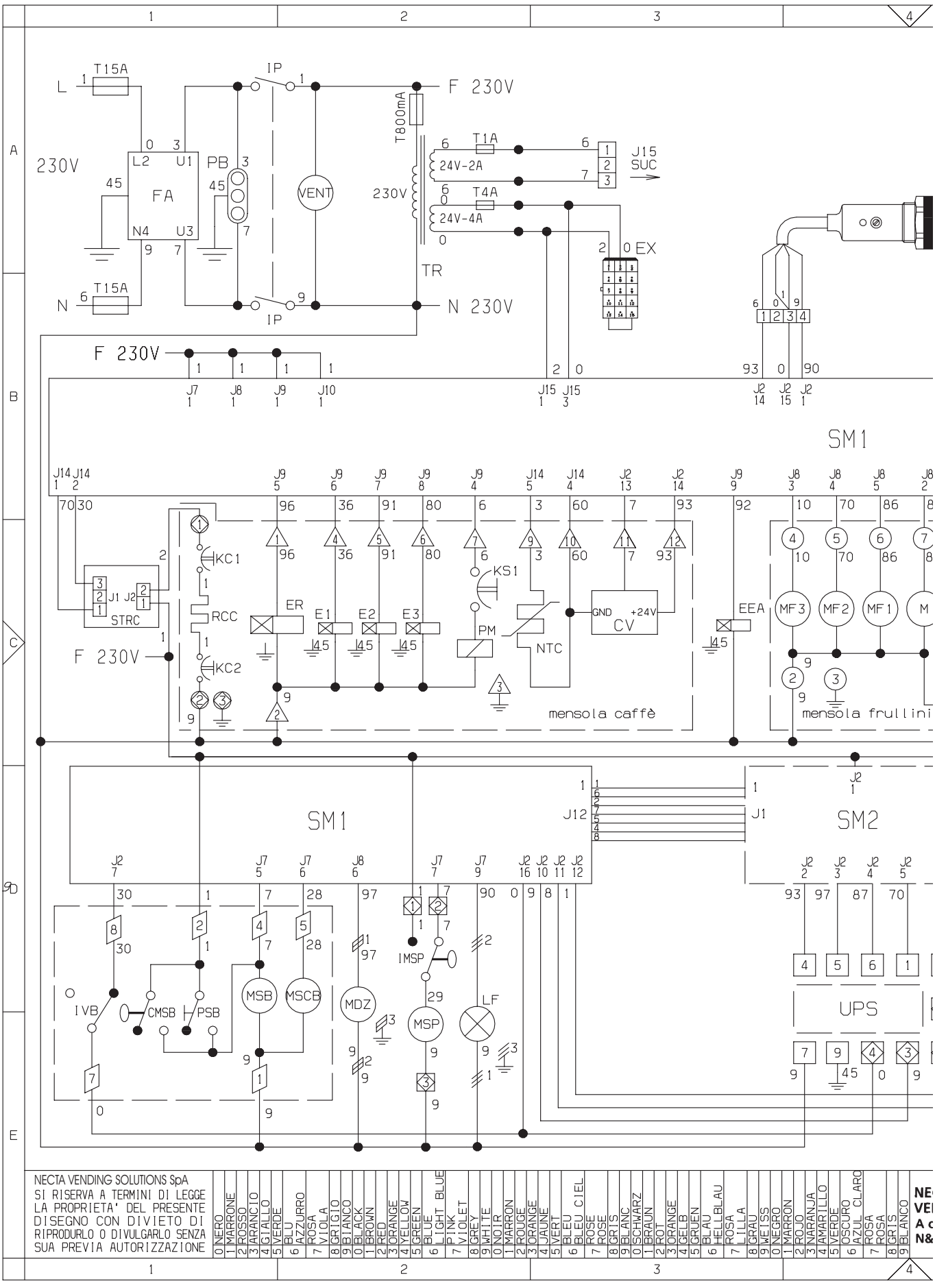
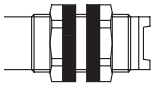
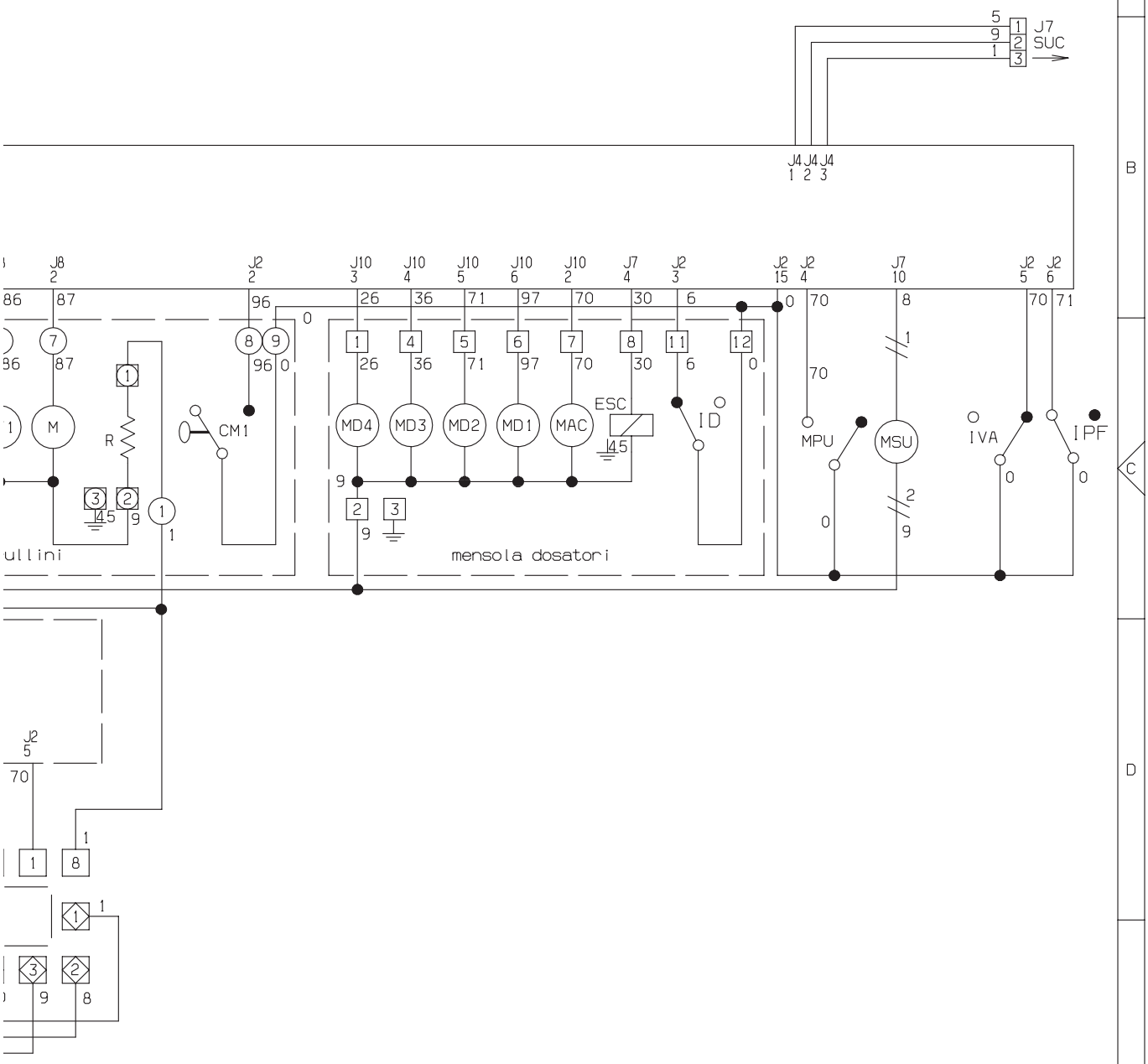


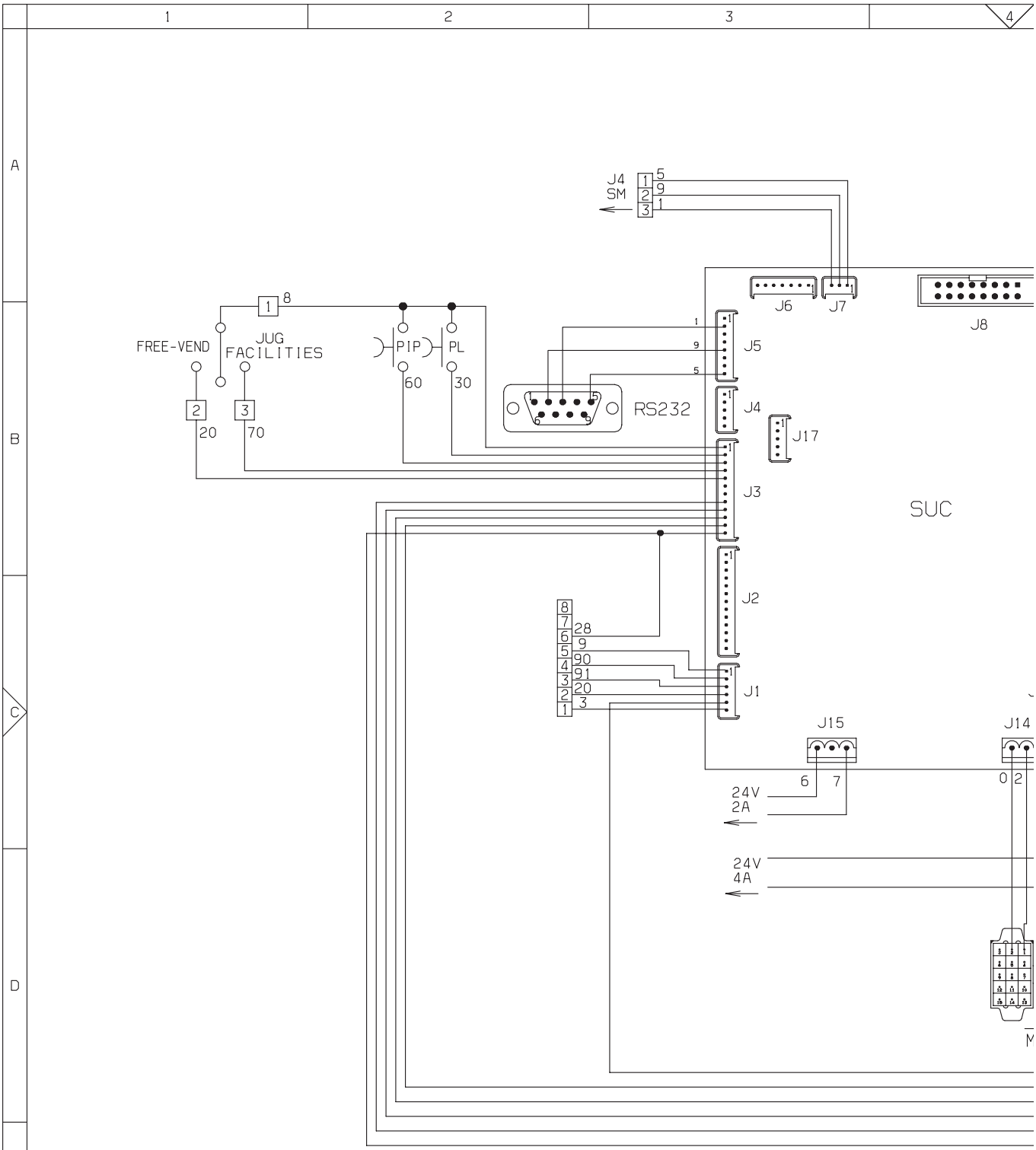

NECTA VENDING SOLUTIONS SpA
SI RISERVA A TERMINI DI LEGGE LA PROPRIETA' DEL PRESENTE DISEGNO CON DIVIETO DI RIPRODURLO O DIVULGARLO SENZA SUA PREVIA AUTORIZZAZIONE

| | | |






| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8 GRIS<br>9 BLANCO | NECTA<br>VENDING SOLUTIONS SpA<br>A company of<br>N&W GLOBAL VENDING GROUP | MODELLO<br>Kikko<br>*Espresso* | GRUPPO<br>SCHEMA ELETTRICO FUNZIONALE<br>MACCHINA | DATA<br>05-06-01 | FOGLIO<br>1/1 | DISEGNATO<br>BONACINA | CONTROLLATO<br>MONGUZZI |
| | | | | LEGENDA | CODICE<br>608537400 | | |

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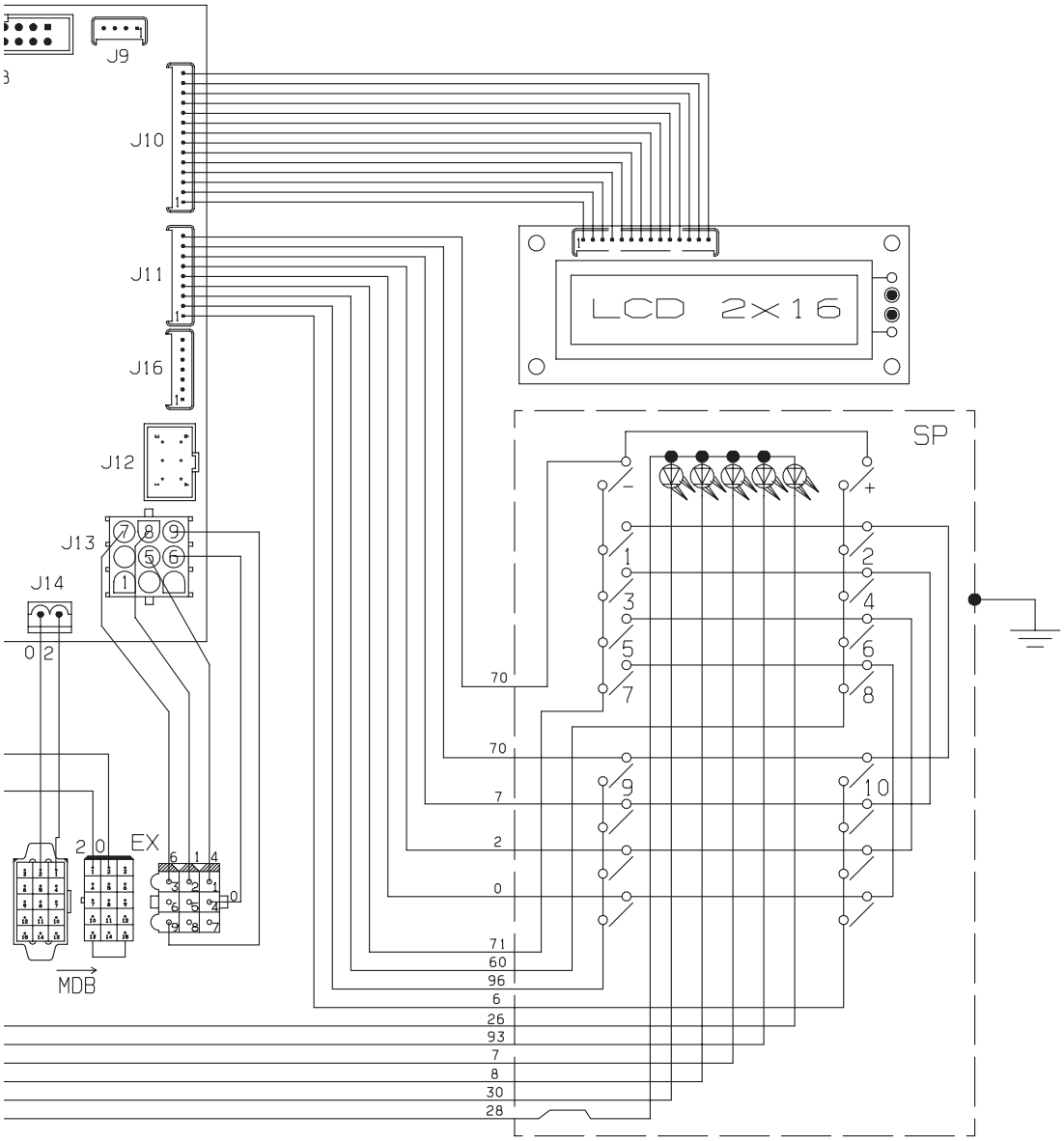
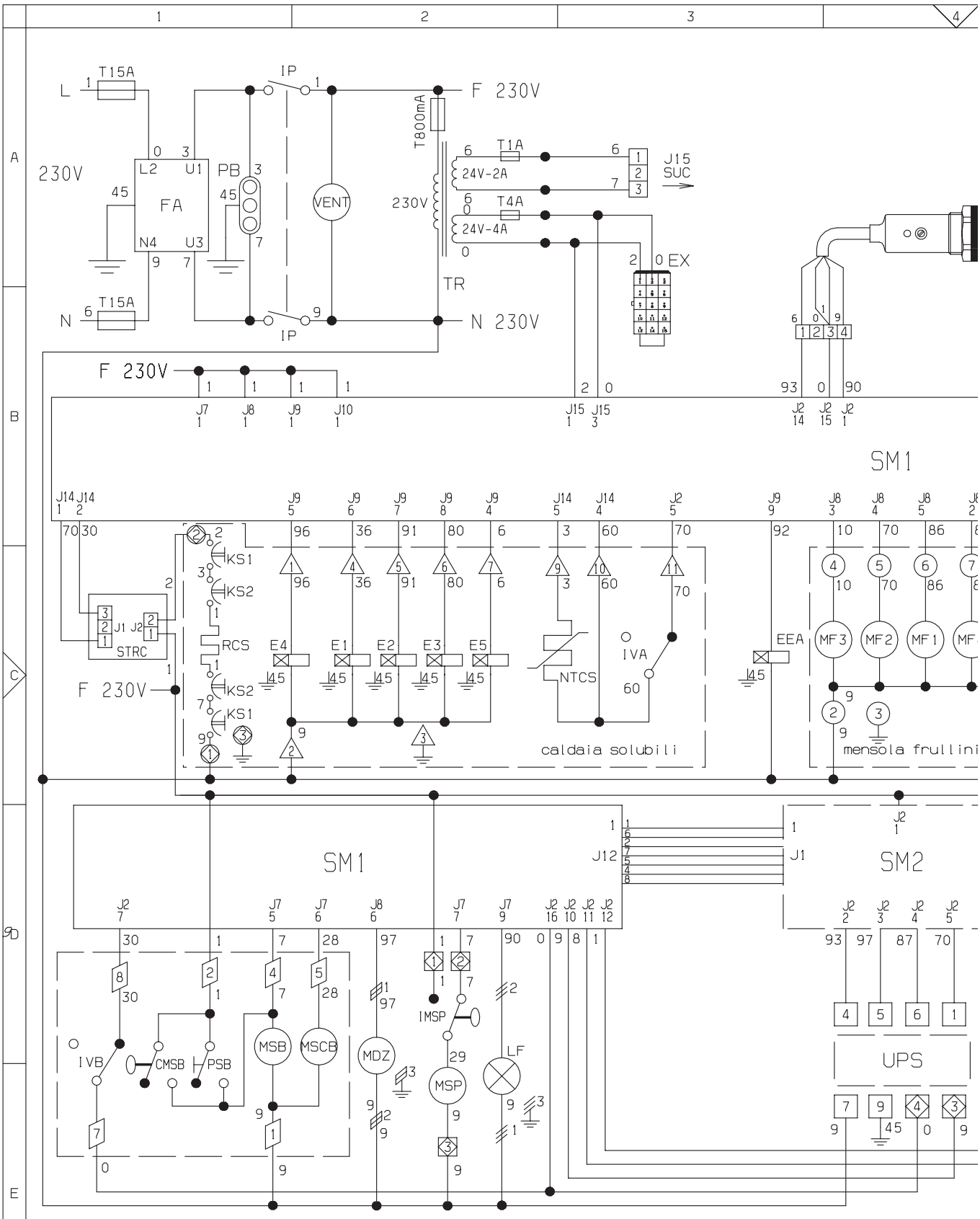



| | | | | | | |
|---|---|---|---|---|---|---|
| 8 GRIS<br>9 BLANCO | **NECTA**<br>**VENDING SOLUTIONS SpA**<br>**A company of**<br>**N&W GLOBAL VENDING GROUP** | MODELLO<br>Kikko | GRUPPO<br>PORTA<br>DOOR<br>TUER<br>PORTE<br>PUERTA | DATA<br>30-01-01 | FOGLIO<br>1/1 | DISEGNATO<br>BONACINA | CONTROLLATO<br>MONGUZZI |
| | | | | LEGENDA<br>. | CODICE<br>60853730 1 | | |

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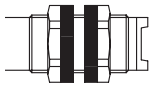

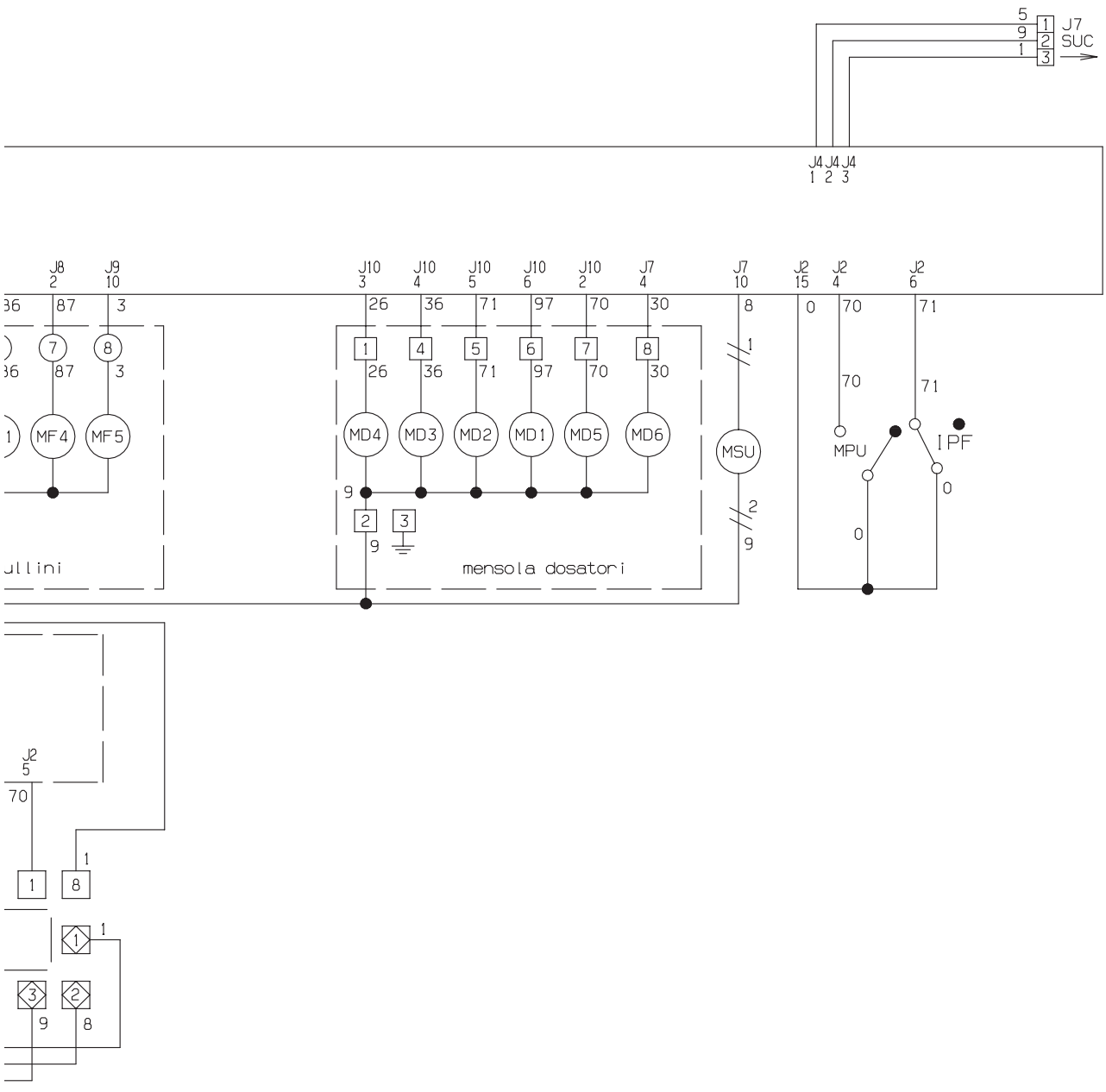


| | | | | | | |
|---|---|---|---|---|---|---|
| NECTA VENDING SOLUTIONS SpA A company of N&W GLOBAL VENDING GROUP | MODELLO: Kikko Instant | GRUPPO: SCHEMA ELETTRICO FUNZIONALE MACCHINA | DATA: 05-06-01 | FOGLIO: 1/1 | DISEGNATO: BONACINA | CONTROLLATO: MONGUZZI |
| 8 GRIS 9 BLANCO | | | LEGENDA: . | CODICE: 608537200 | | |

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**A company of**
**N&W GLOBAL VENDING GROUP**

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