

## TECHNICAL AND AFTER-SALES SERVICE



# SERVICE MANUAL

## “KORINTO”

(Fresh Brewer Version)

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# 1 - PLANNED MODELS



**INSTANT VERSION**



**DOUBLE CUP**



**SINGLE CUP**

**ESPRESSO VERSION &**

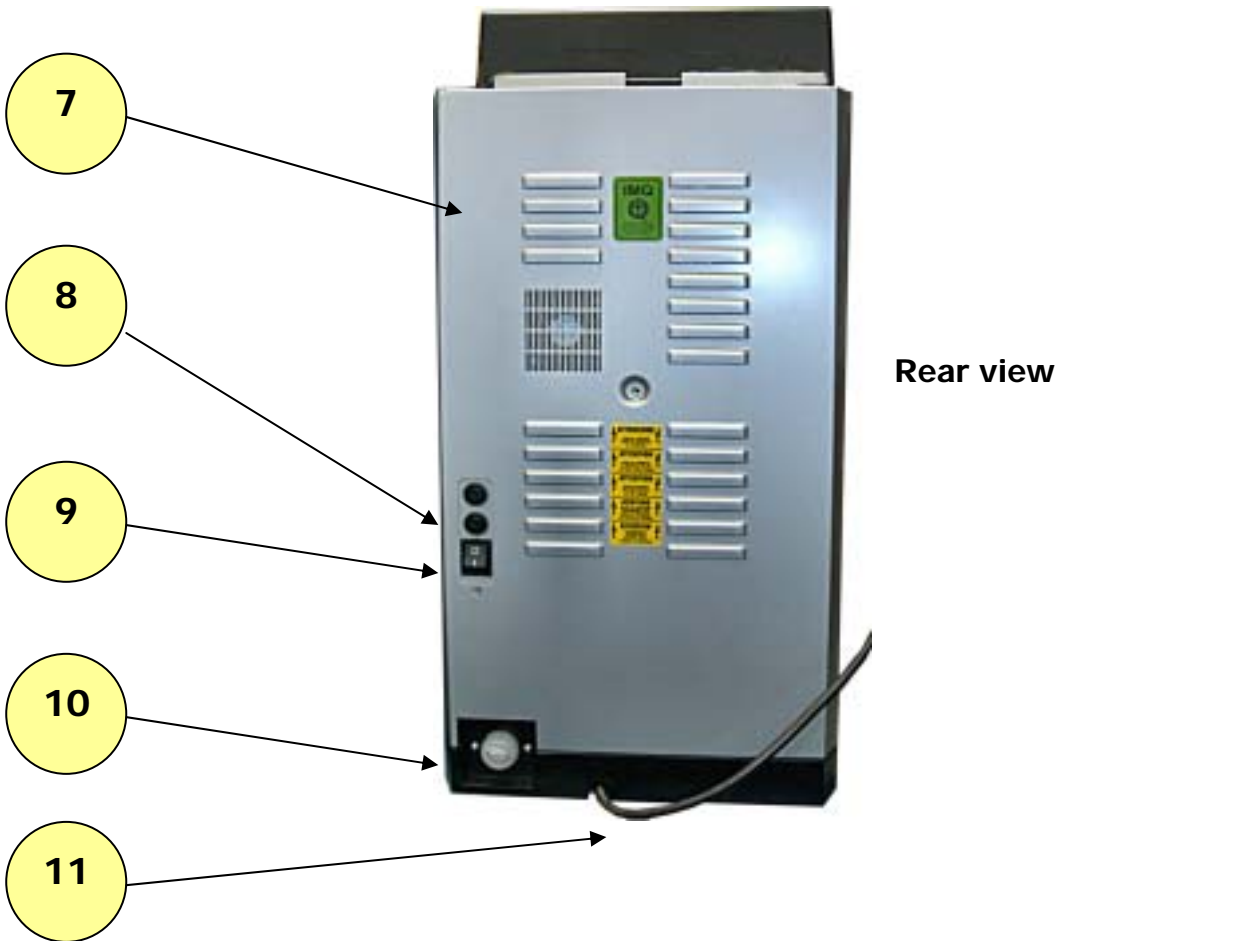


**ESPRESSO VERSION WITH FROTHER AND CUP-WARMER**

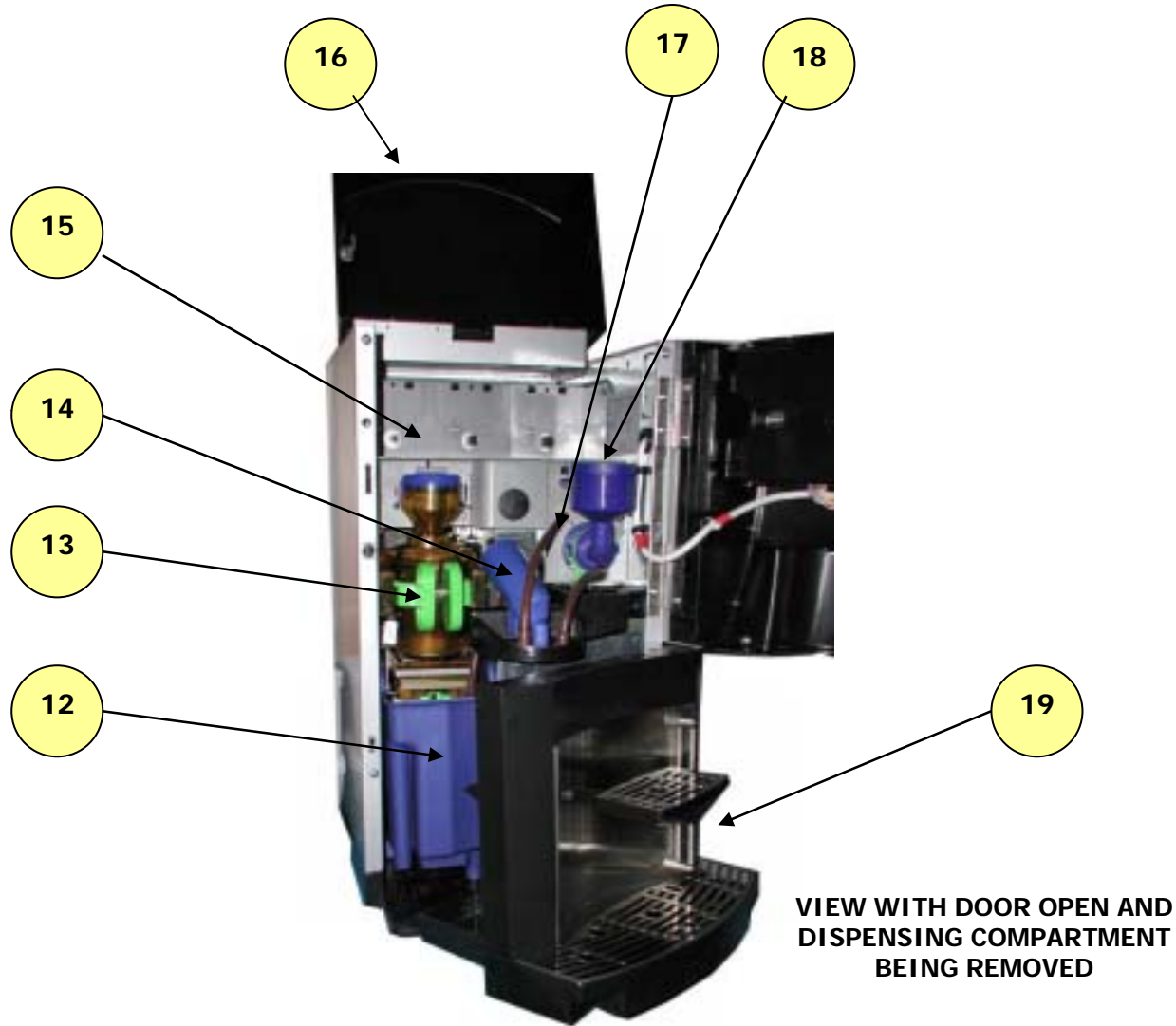


**FRESH BREWER VERSION**

# 1.1 MAIN EXTERNAL COMPONENTS

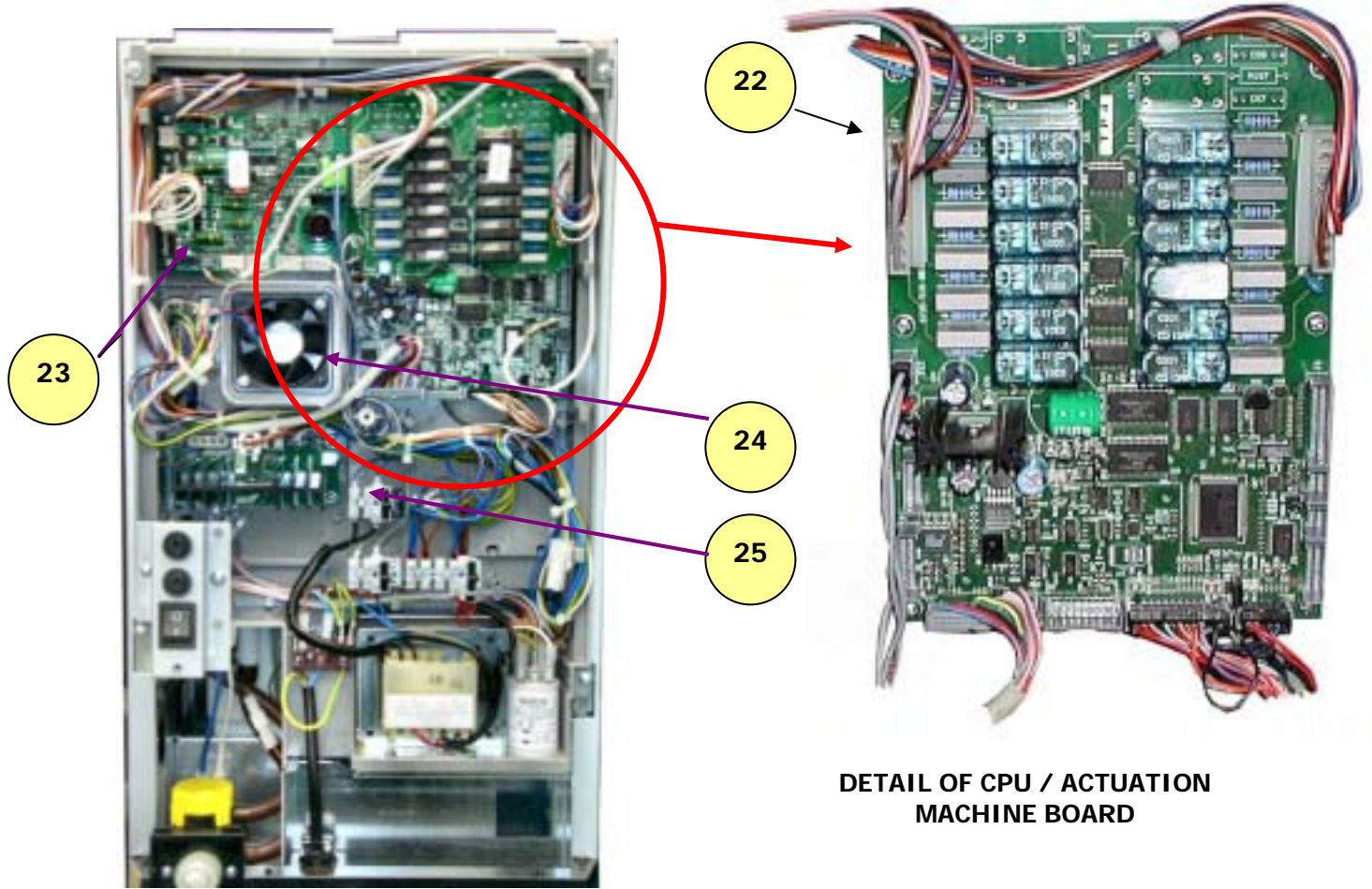


# 1.2 MAIN INTERNAL COMPONENTS



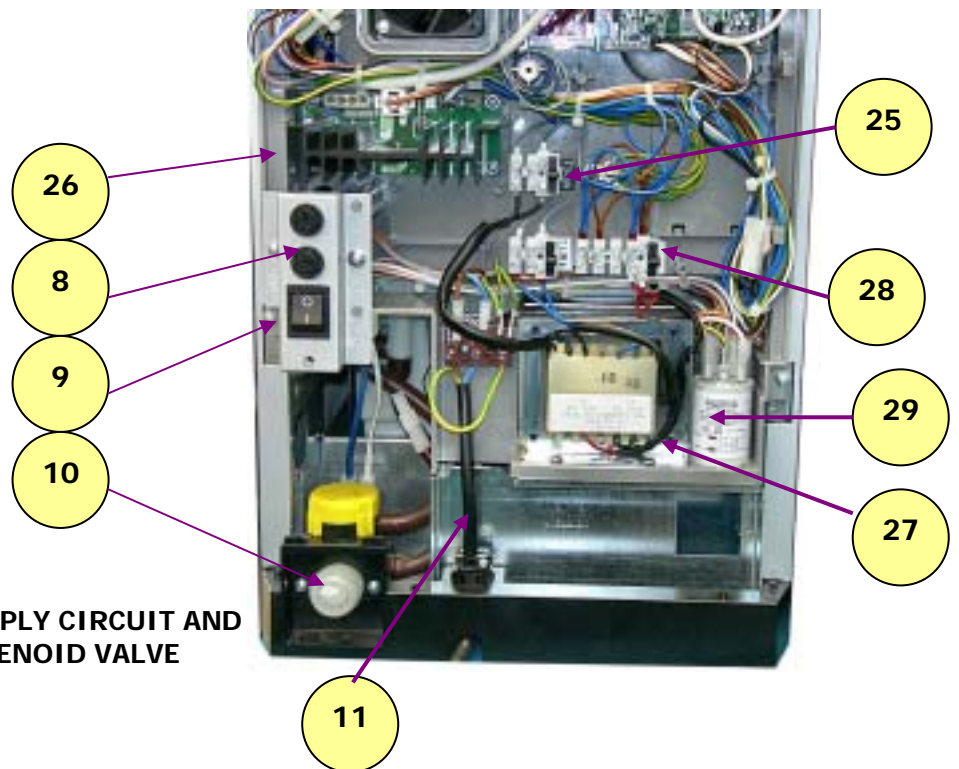
DETAIL OF POWDER CANISTER

# REAR COMPARTMENT WITHOUT PROTECTIVE CASING

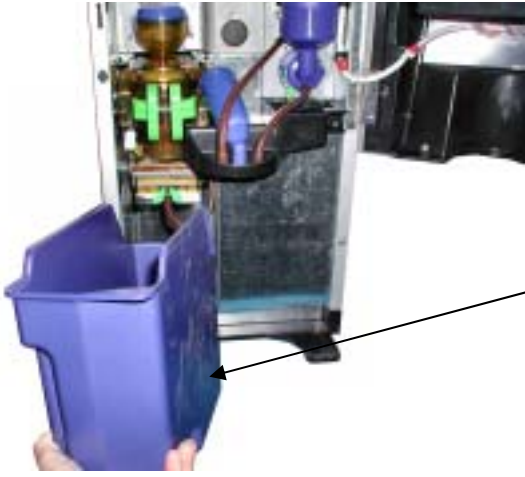


**DETAIL OF CPU / ACTUATION  
MACHINE BOARD**

**REAR VIEW WITHOUT  
PROTECTIVE CASING**



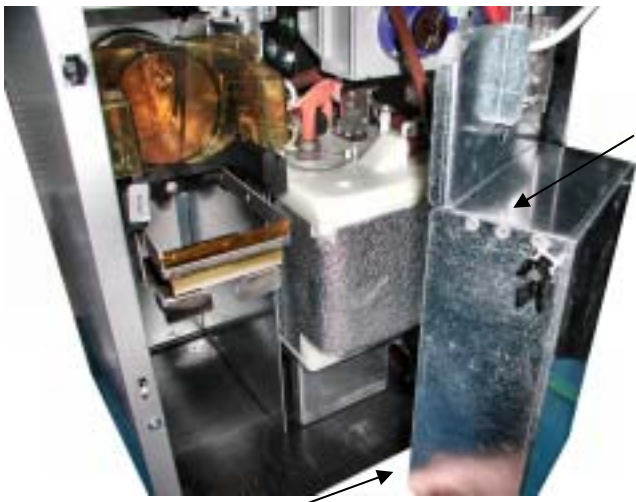
**DETAIL OF POWER SUPPLY CIRCUIT AND  
WATER INLET SOLENOID VALVE**



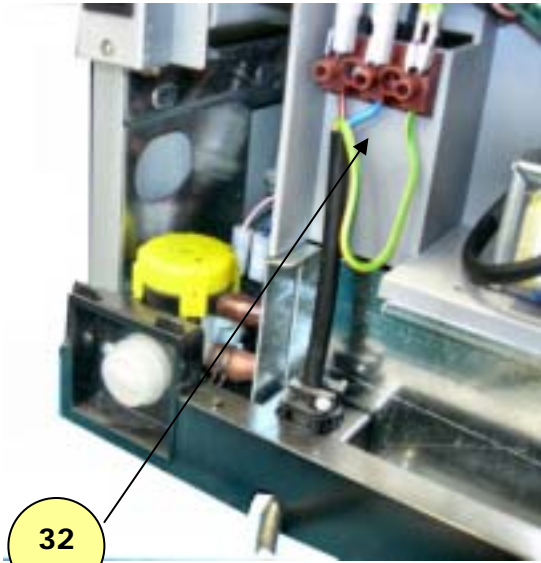
**FRONT VIEW WITH SOLID GROUNDS  
CONTAINER BEING REMOVED**



**FRONT VIEW WITHOUT PROTECTIVE  
CASING AND WITHOUT GROUNDS  
CONTAINER - INSTANT BOILER SIDE**



**FRONT VIEW WITH PROTECTIVE CASING  
BEING REMOVED - INSTANT BOILER SIDE**



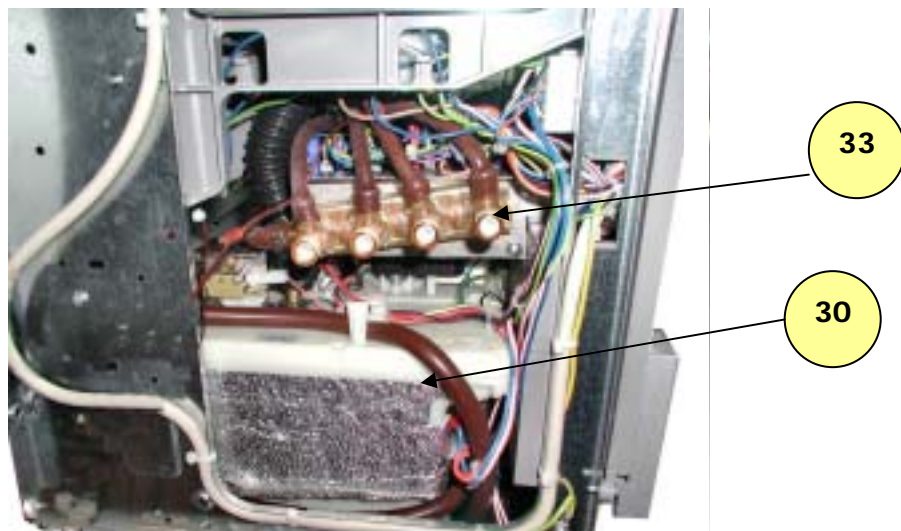
**DETAIL OF POWER SUPPLY  
CABLE CLAMPING**



**SIDE VIEW WITHOUT PROTECTIVE CASING -  
INSTANT BOILER SIDE  
(Only for INSTANT VERSION or FRESH BREWER)**



**FRONT VIEW WITHOUT PROTECTIVE  
CASING - INSTANT BOILER SIDE  
(Only for INSTANT VERSION)**



**DETAIL OF SOLENOID VALVES FOR INSTANT BOILER  
(Only for INSTANT VERSION or FRESH BREWER)**



## 2 - LIST OF MAIN COMPONENTS

| <b>N° Ref.</b> | <b>DESCRIPTION</b>                     |
|----------------|--|
| 1              | Cabinet                                |
| 2              | Lock                                   |
| 3              | User interface                         |
| 4              | Selection keypad                       |
| 5              | Cup tip-up support                     |
| 6              | Liquid waste collection container      |
| 7              | Rear protective casing                 |
| 8              | Power supply fuses                     |
| 9              | Main switch                            |
| 10             | Water inlet solenoid valve             |
| 11             | Power supply cable                     |
| 12             | Coffee grounds container               |
| 13             | Coffee brewer unit                     |
| 14             | Coffee spout                           |
| 15             | Powder container compartment           |
| 16             | Upper door                             |
| 17             | Hot water dispensing spout             |
| 18             | Mixer assembly                         |
| 19             | Dispensing compartment                 |
| 20             | Powder containers                      |
| 21             | Coffee container                       |
| 22             | CPU/Actuation board                    |
| 23             | FB unit control board                  |
| 24             | Exhaust fan                            |
| 25             | Secondary winding fuses                |
| 26             | Boiler power supply board              |
| 27             | Transformer                            |
| 28             | Terminal strip and transformer fuses   |
| 29             | Interference suppressor filter         |
| 30             | Open-top boiler                        |
| 31             | Boiler protective casing               |
| 32             | Power supply cable connector           |
| 33             | Instant boiler solenoid valve assembly |

# 3 – TECHNICAL DATA AND FEATURES

|                                     |              |
|-------------------------------------|--------------|
| <b>Height</b>                       | 28.25"       |
| <b>Width</b>                        | 13"          |
| <b>Depth</b>                        | 20.75"       |
| <b>Overall depth with door open</b> | 28.5"        |
| <b>Weight</b>                       | <b>75lb</b>  |
| <b>Power supply</b>                 | 120V 60Hz    |
| <b>Installed power</b>              | 1300w        |
| <b>Absorbed current</b>             | <b>11.3a</b> |

## Payment systems used:

The machine is pre-set to use (by means of special kits) payment systems, coin mechanisms and 24 V DC validators with EXECUTIVE, BDV and MDB protocols.

The payment systems must be housed in the special side module supplied as optional accessory together with the payment system kits.

## Water supply:

7-123PSI 0.05-0.85 Mpa 0.5-8.5 bar

## Available adjustments:

Coffee dose - time in tenths of a second  
Water doses for instant products and coffee by timing  
Powder doses for instant products by timing  
Boiler temperature adjusted via software

## Base versions:

Instant – Fresh brewer

## Installed boilers and temperature:

One open-top boiler for Instant and Fresh-brew versions - Temperature setting via SW

## Safety devices:

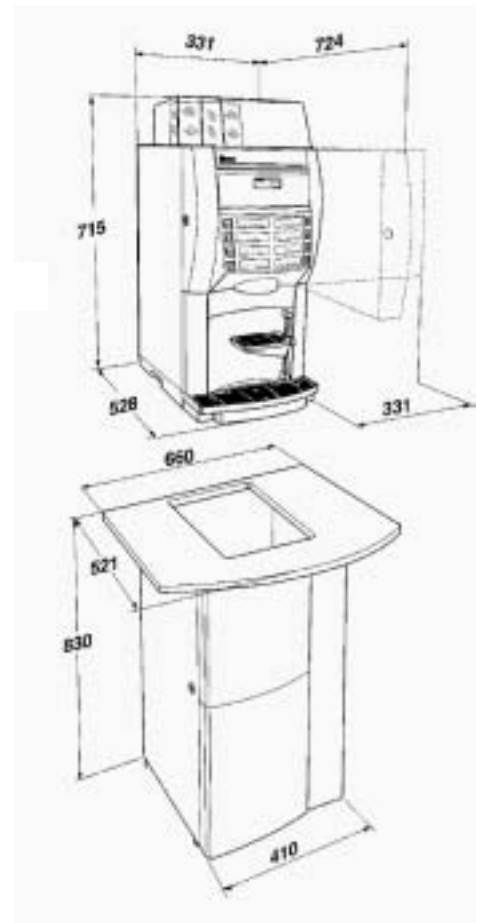
Main switch (at the back) – Main safety switch for opening the door  
Top panel opening safety micro-switch  
Water inlet solenoid valve with passive overflow device  
Manual-reset boiler safety thermostat  
Manual-reset instant boiler anti-boiling thermostat  
Air-break float jamming and instant boiler  
Presence of liquid waste tray – Presence of coffee grounds tray  
Boiler sensor control (short-circuit or failure)

## Double heating and timing protection for:

Pump – Doser devices – Coffee unit ratiomotor – Coffee grinder – Mixer motors  
Fuse protection for: Transformers, electronic boards and main wiring  
Protection for 100% impedance: Instant product solenoid valves, water inlet solenoid valve

## Controls:

Presence of water - Operating temperature reached



Overall size of vending machine and of base cabinet (optional)

## 4 – ELECTRICAL SAFETY AND RELEVANT STANDARDS

The vending machine **KORINTO** was designed and made in conformity with the provisions of the following directives and related European standards:

### **MACHINE SAFETY DIRECTIVE EEC 98/37**

EN 60529 UNI EN 292 –1-2 IEC 695-2-2

### **LOW VOLTAGE DIRECTIVE EEC 73/23; EEC 89/392; EEC 89/336**

(the low voltage directive covers all equipment powered with voltage below 400 V AC)

The following European standards are applied:

EN 60335-2-14 EN 60335-2-15 EN 60335-2-24 EN 60335-2-75

### **ELECTROMAGNETIC COMPATIBILITY DIRECTIVE**

EN 61000-3-3 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-11

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With regard to **Low Voltage** and **Electromagnetic Compatibility** this vending machine KORINTO was tested and certified by **IMO**, a certifying body authorised by ministerial decree at European level.

It is therefore prohibited (on pain of voiding the warranty and the responsibility of the certification) to

replace any electrical component with non-original parts during the routine and extraordinary maintenance operations.

#### **Therefore it is also prohibited to:**

Tamper with or deactivate the safety systems installed in the vending machine.

Install the vending machine outdoor or in any case in a place that is not protected from the weather.

Use the vending machine for purposes other than those indicated in the sales contract.

Connect the vending machine by means of extension cords or multiple sockets and/or adapters.

Use water jets for cleaning.

#### **Then, it is also compulsory to:**

Verify the conformity and suitability of power supply line and of the power outlet.

## 5 – REQUIREMENT FOR THE USERS

For safety purposes, three different operators with different qualifications have been defined.

### **USER**

The user is practically the final user who buys the products from the machine.

The user must not have any access whatsoever to the inside of the machine.

### **PERSON RESPONSIBLE FOR REFILLING AND ROUTINE CLEANING**

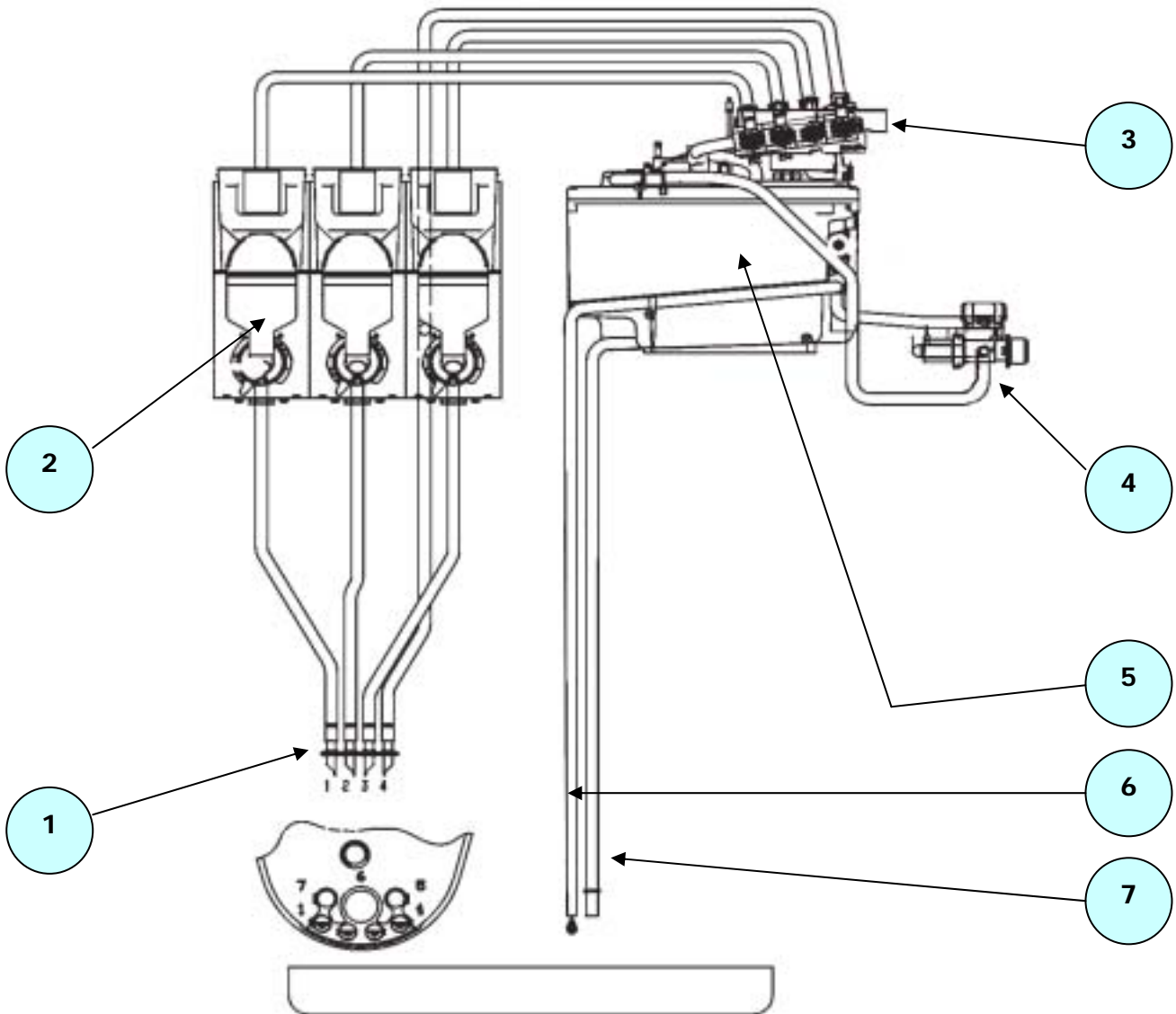
The person responsible for refilling has the key for opening the machine and is in charge of the refilling, cleaning and internal hygiene of the machine.

He must not have any access to energised parts or moving parts.

### **MAINTENANCE TECHNICIAN**

The maintenance technician must be a highly skilled person and must be aware of the electrical hazards in the event of complex technical operations and can operate with the machine switched on and the door open, using the safety key supplied.

## 6 – HYDRAULIC LAYOUT “INSTANT”

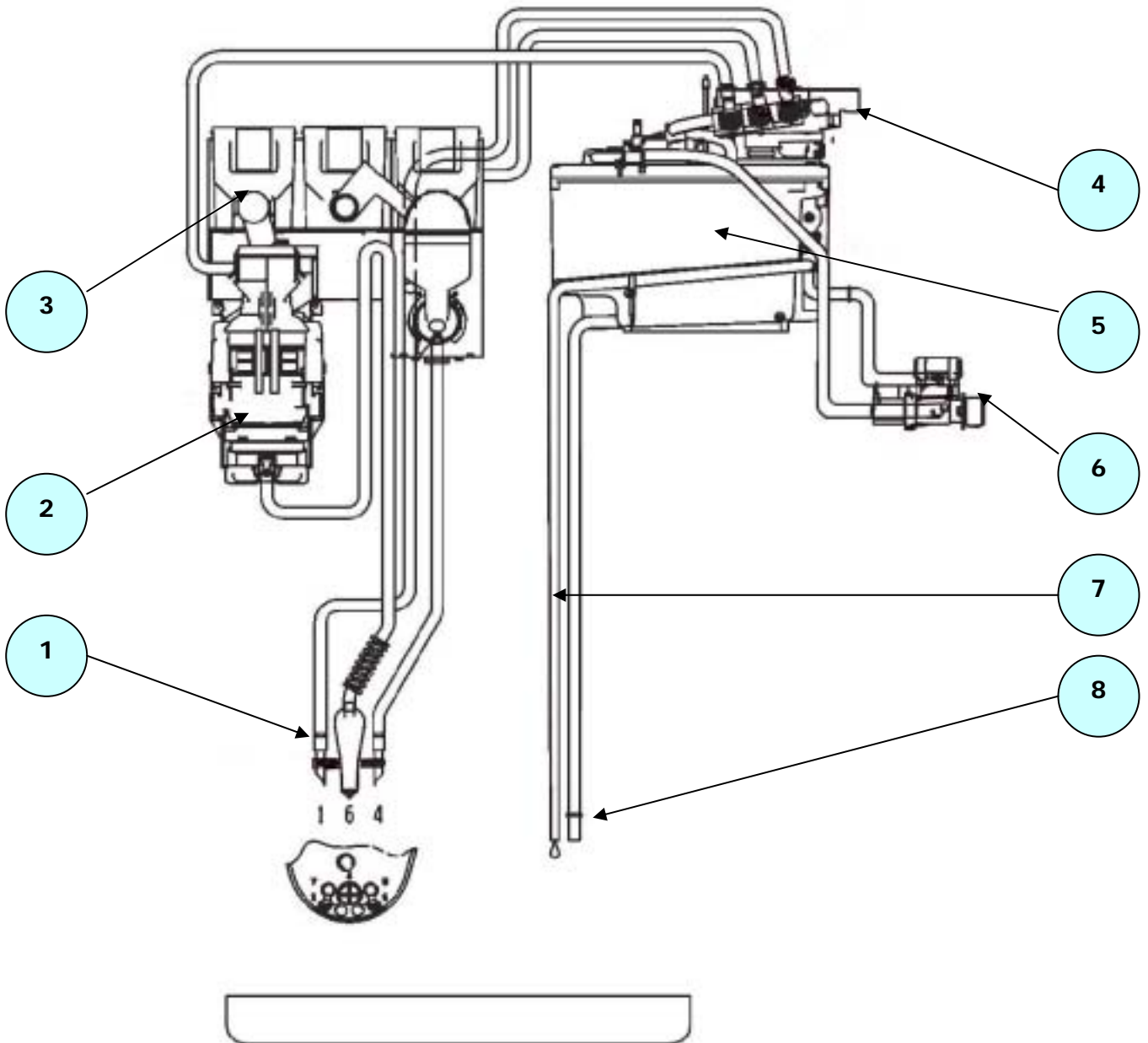


### INSTANT VERSION COMPONENTS

| REF. | DESCRIPTION          | REF. | DESCRIPTION     | REF. | DESCRIPTION      |
|------|----------------------|------|-----------------|------|------------------|
| 1    | Spouts Assembly      | 2    | Mixer           | 3    | Solenoid valves  |
| 4    | Water solenoid valve | 5    | Boiler assembly | 6    | Boiler vent tube |
| 7    | Drain tube           |      |                 |      |                  |

N.B. The diagram shown is given only as a reference as it may differ for each version.

# 7 – HYDRAULIC LAYOUT “FRESH BREWER”



## COMPONENTS OF FRESH BREWER VERSION

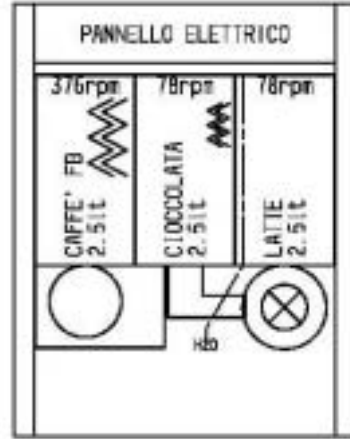
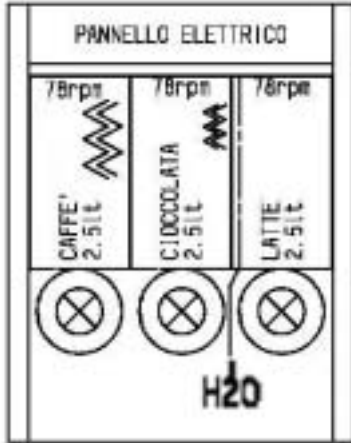
| REF. | DESCRIPTION     | REF. | DESCRIPTION       | REF. | DESCRIPTION          |
|------|-----------------|------|-------------------|------|----------------------|
| 1    | Spouts assembly | 2    | Sigma Brewer unit | 3    | Mixer                |
| 4    | Solenoid valves | 5    | Instant boiler    | 6    | Water solenoid valve |
| 7    | Vent tube       | 8    | Drain tube        | 9    |                      |

N.B. The diagram shown is given only as a reference as it may differ for each version.

# 8- INTERNAL LAYOUTS

## EXAMPLES OF INTERNAL LAYOUT

NOTE: THE FOLLOWING I LAYOUTS ARE ONLY GIVEN AS AN EXAMPLE FOR THE PURPOSE OF INDICATING THE CONFIGURATION POSSIBILITIES. REFER TO THE TABLES SUPPLIED WITH THE MACHINE FOR THE ACTUAL LAYOUT.



LAYOUT OF KORINTO INSTANT AND SELECTION PANEL

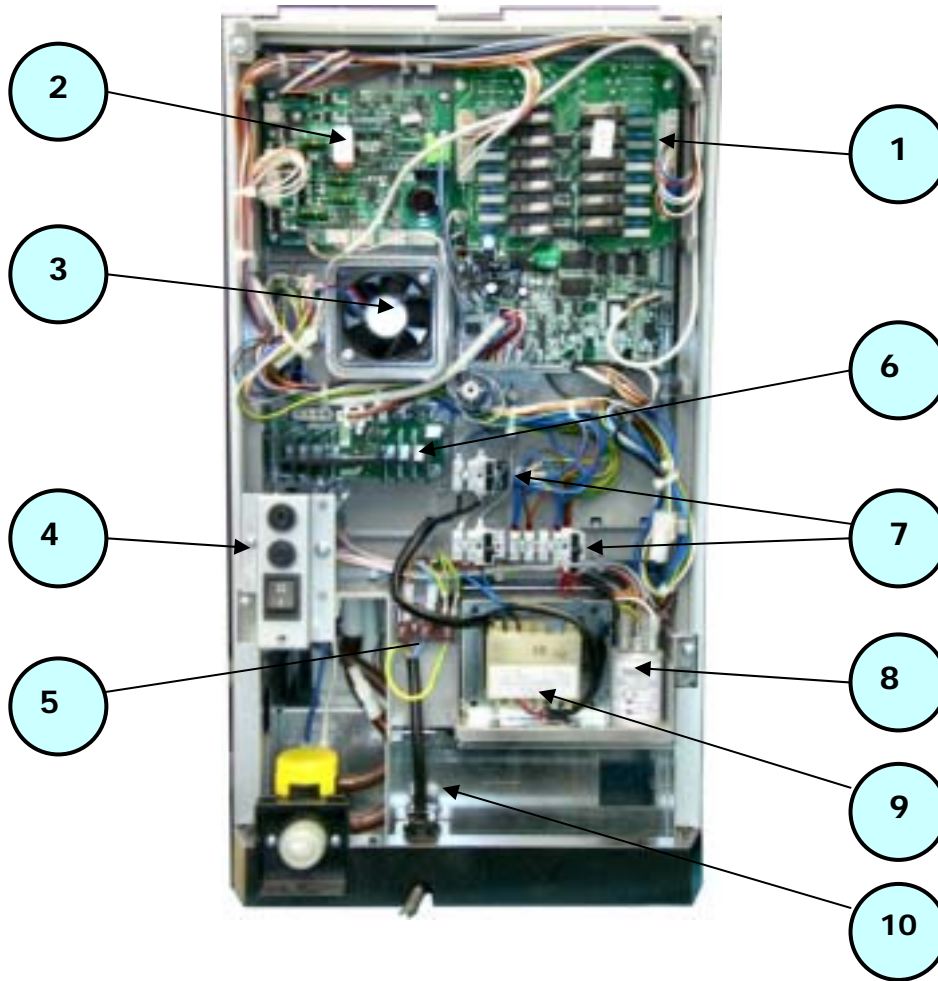


LAYOUT OF KORINTO FRESH BREWER AND SELECTION PANEL



# 9.1 – CONNECTION OF ELECTRONIC BOARDS

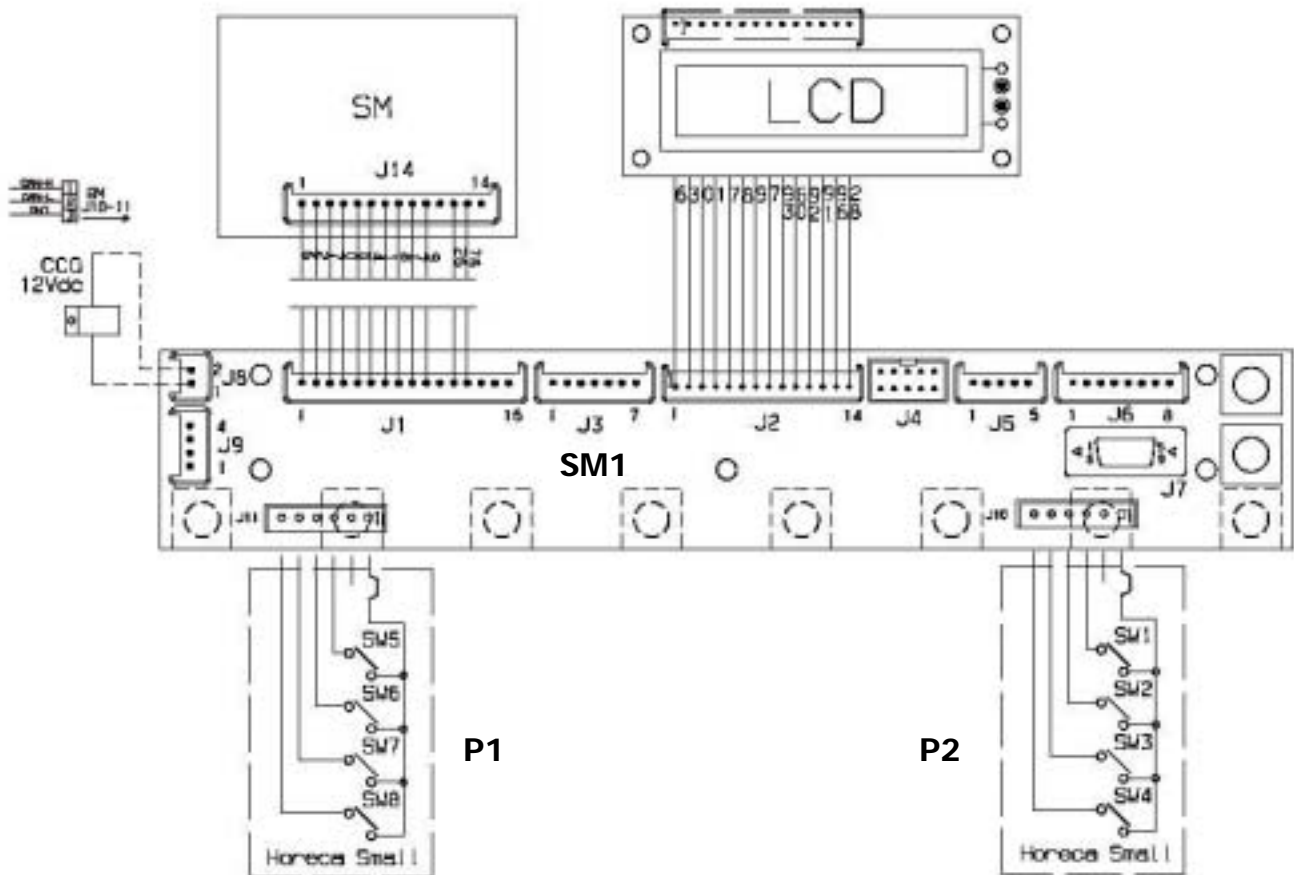
View of power supply unit compartment and control boards



|    |                                |
|----|--------------------------------|
| 1  | Actuation board                |
| 2  | Unit control board             |
| 3  | Steam exhauster                |
| 4  | Switch and fuses               |
| 5  | Terminal strip                 |
| 6  | Boiler control board           |
| 7  | Secondary winding fuses        |
| 8  | Interference suppressor filter |
| 9  | Transformer                    |
| 10 | Power supply cable             |



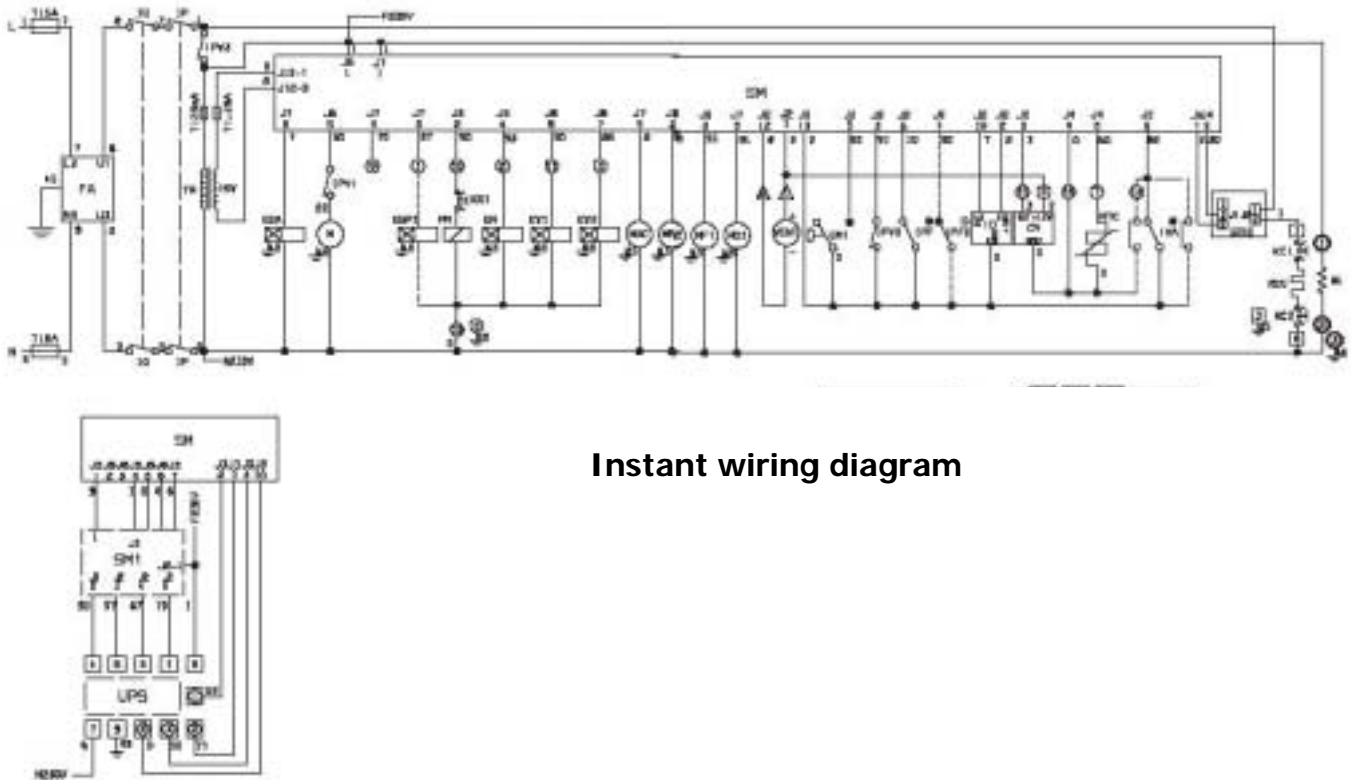
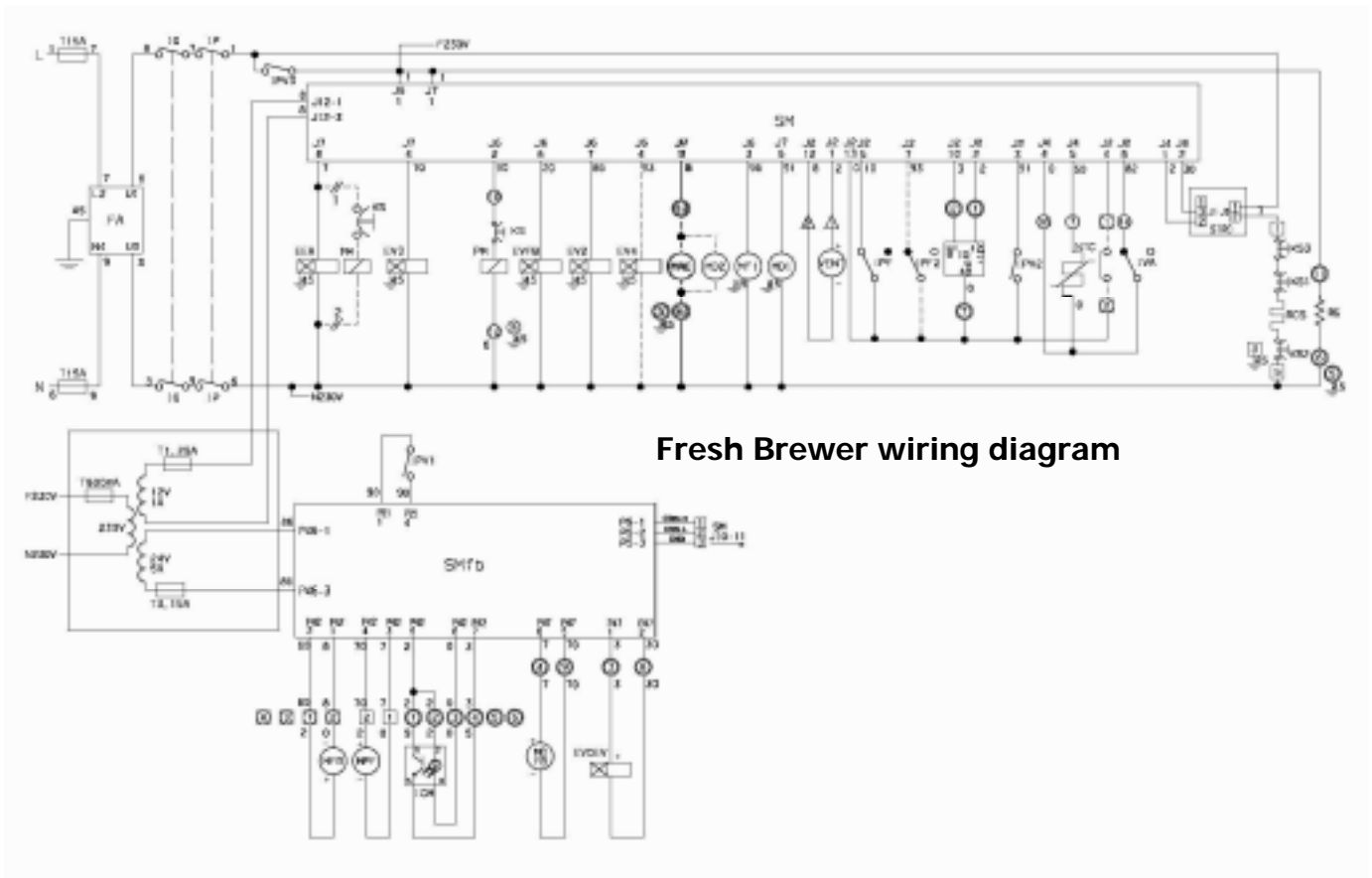
# BLOCK CONNECTIONS DIAGRAM



| Signal        | DESCRIPTION                                 |
|---------------|---|
| <b>SAL</b>    | Power supply card                           |
| <b>SM FB</b>  | Sigma brewer control board (where provided) |
| <b>SM</b>     | Actuation & control board                   |
| <b>CCG</b>    | Mechanical general counter                  |
| <b>SM 1</b>   | Push-button and display control card        |
| <b>LCD</b>    | Liquid Crystal Display                      |
| <b>IDEC</b>   | Decaf coffee door switch                    |
| <b>P1- P2</b> | Selection keypad                            |
| <b>UPS</b>    | Cold unit control board (optional)          |
| <b>J1-11</b>  | Connectors                                  |

NB: The above codes are indicated in the following wiring diagrams and in the tables supplied with the machine.

# 10 - WIRING DIAGRAMS



# 11 - ACTUATION BOARD – CONFIGURATIONS

## ACTUATION BOARD

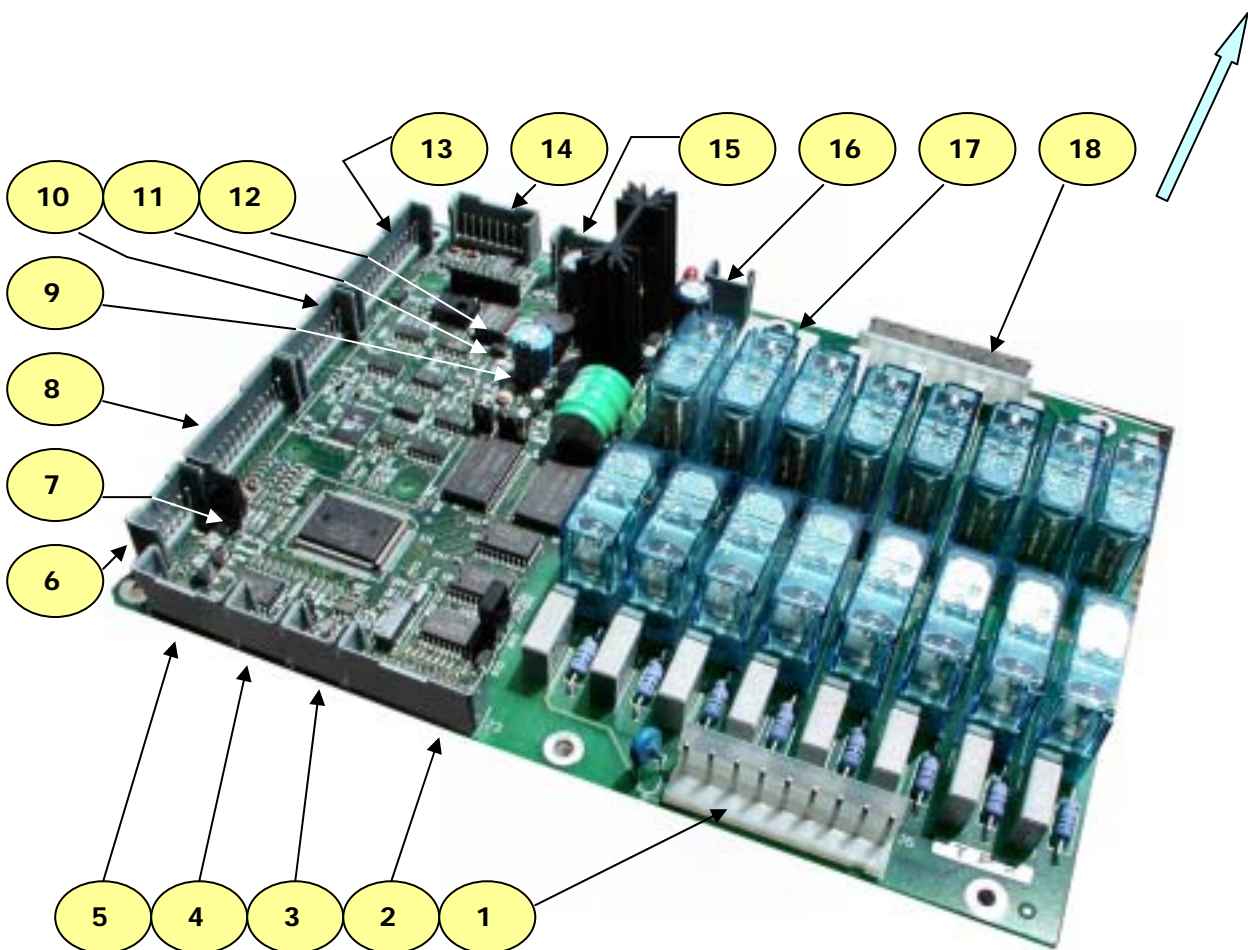
This board, placed at the back of the machine, processes the information from the push-button card and from the payment system (if fitted); it also controls the actuators, the input signals and the boiler board.

The 15 VAC voltage necessary for operating the board is supplied by the transformer, protected by a 125 mA T fuse on the primary winding and by a 1.25 AT fuse on the secondary winding; the voltage is rectified and stabilised directly by the board.

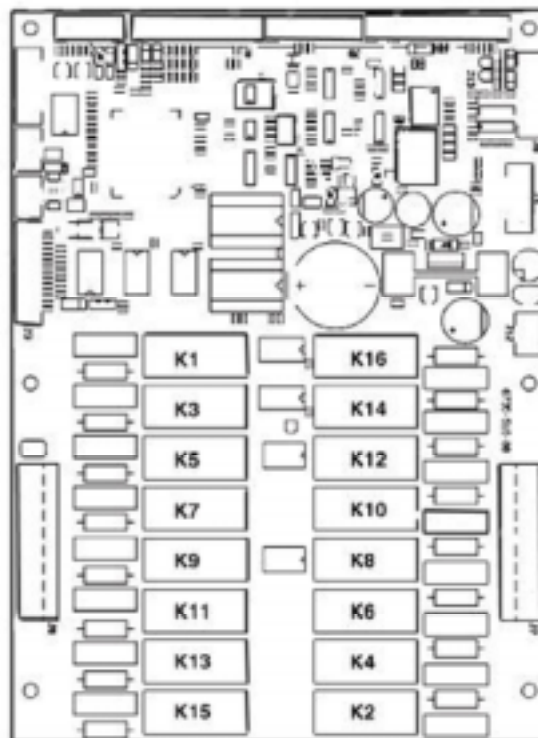
This board houses the Flash EPROM. The control software of the board is installed directly (via RS232) in the microprocessor.

The program can be updated or some of its functions can be changed through a PC or palmtop with special Software.

- The red LED (7) indicates the operating status of the boiler heating element;
- The red LED (9) for resetting the CPU glows during the board reset;
- The green LED (11) blinking indicates that the microprocessor is working correctly;
- The yellow LED (12) indicates the presence of 12 V DC.



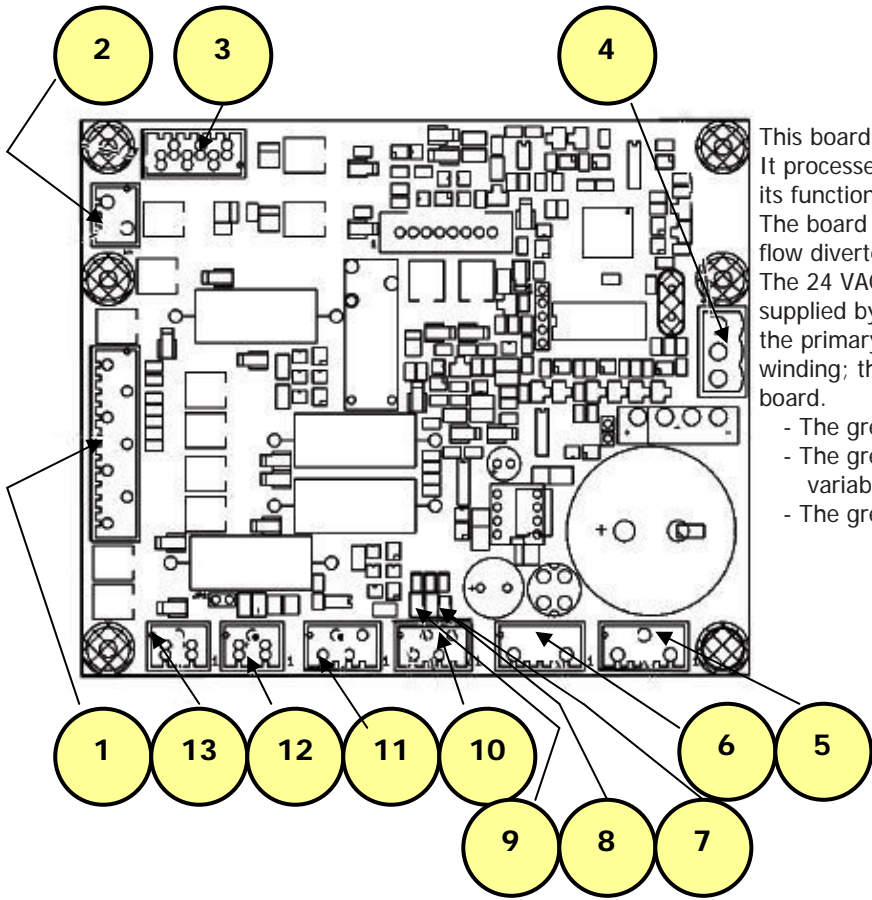
- 1 - 120 V~ power users
- 2 - Input signal
- 3 - Can-Bus connection
- 4 - Can-Bus connection
- 5 - Relay expansion connection
- 6 - Boiler control probes
- 7 - Red LED - boiler heating element
- 8 - Input signal
- 9 - Red LED
- 10 - Not used
- 11 - Green LED
- 12 - Yellow LED
- 13 - To the push-button board
- 14 - Connector for board programming (RS232)
- 15 - Up-Key connector
- 16 - Board power supply (15Vac)
- 17 - Relays K1 to K16
- 18 - Connector for 120 V AC power users



**SM: REFERENCE TO RELAY CODE AND ACTUATIONS – ESPRESSO VERSION**

| FRESH BREWER CONFIGURATION |                                  | INSTANT CONFIGURATION            |
|----------------------------|----------------------------------|----------------------------------|
| K 1                        | Starting pump                    | Starting pump                    |
| K 2                        | Not used                         | Not used                         |
| K 3                        | Whipper motor MF1                | Whipper motor MF1                |
| K 4                        | Not used                         | Not used                         |
| K 5                        | Solenoid valve EV3               | Solenoid valve EV3               |
| K 6                        | Solenoid valve FB                | Not used                         |
| K 7                        | Not used                         | Not used                         |
| K 8                        | Not used                         | Not used                         |
| K 9                        | Solenoid valve EV 1              | Solenoid valve EV1               |
| K 10                       | Ratiomotor MD1                   | Ratiomotor MD1                   |
| K 11                       | Solenoid valve EV 2              | Solenoid valve EV 2              |
| K 12                       | Not used                         | Not used                         |
| K 13                       | Not used                         | Not used                         |
| K 14                       | Mains water inlet solenoid valve | Mains water inlet solenoid valve |
| K 15                       | Not used                         | Not used                         |
| K 16                       | Ratiomotor MD2                   | Ratiomotor MD2                   |

# 12 - SIGMA BREWER UNIT CONTROL BOARD



### SIGMA BREWER CONTROL BOARD

This board is located at the back of the machine. (see fig.) It processes the information from the brewer unit and controls its functions. The board also controls the dispensing of fresh product and the flow diverter solenoid valve from spout/external nozzle. The 24 VAC voltage necessary for operating the board is supplied by the transformer, protected by a 800 mA T fuse on the primary winding and by a 3.15 AT fuse on the secondary winding; the voltage is rectified and stabilised directly by the board.

- The green LED (7) indicates the presence of +5 V;
- The green LED (8) indicates the presence of 34 V DC variable;
- The green LED (9) indicates the presence of 34 V DC.

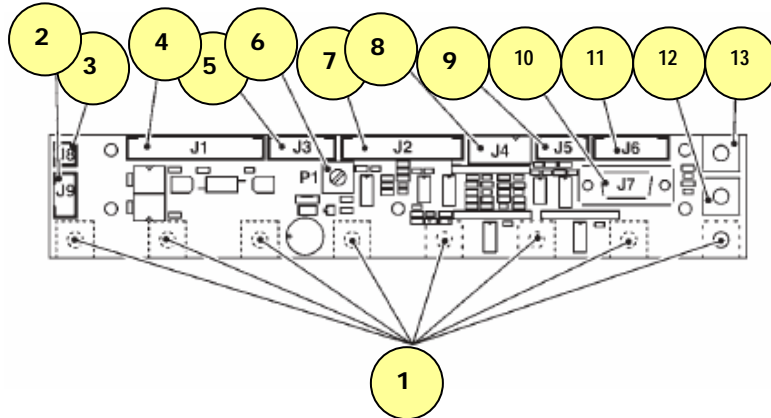


**DETAIL OF SIGMA BREWER CONTROL BOARD**

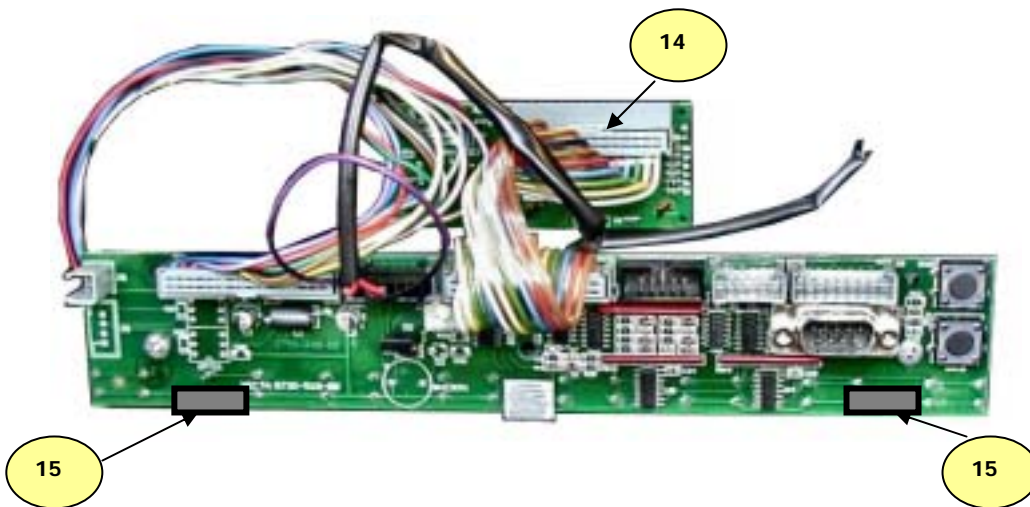
|    |                        |
|----|------------------------|
| 1  | Sigma Brewer connector |
| 2  | Sigma Brewer connector |
| 3  | Sigma Brewer connector |
| 4  | Sigma Brewer connector |
| 5  | Sigma Brewer connector |
| 6  | Sigma Brewer connector |
| 7  | Sigma Brewer connector |
| 8  | Sigma Brewer connector |
| 9  | Sigma Brewer connector |
| 10 | Sigma Brewer connector |
| 11 | Sigma Brewer connector |
| 12 | Sigma Brewer connector |
| 13 | Sigma Brewer connector |

# 13 - PUSH-BUTTON AND DISPLAY CONTROL BOARD

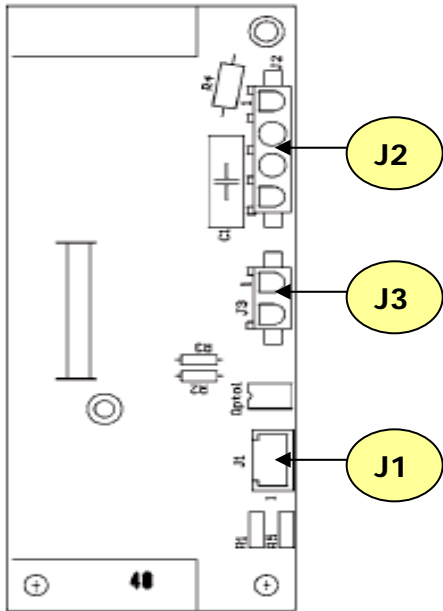
This board controls the display, the selection buttons and the programming button. It supports the coin mechanism connectors as well as the printer port.



- 1 - Selection buttons (not used)
- 2 - Not used
- 3 - To mechanical counter (optional)
- 4 - To actuation/CPU board
- 5 - Input
- 6 - Display adjustment trimmer
- 7 - To display
- 8 - 12 Vdc validators
- 9 - Not used
- 10 - RS232 serial port
- 11 - Not used
- 12 - Programming access button
- 13 - Wash button
- 14 - Display card
- 15 - Push-button board connectors



# 14 - BOILER CONTROL BOARD

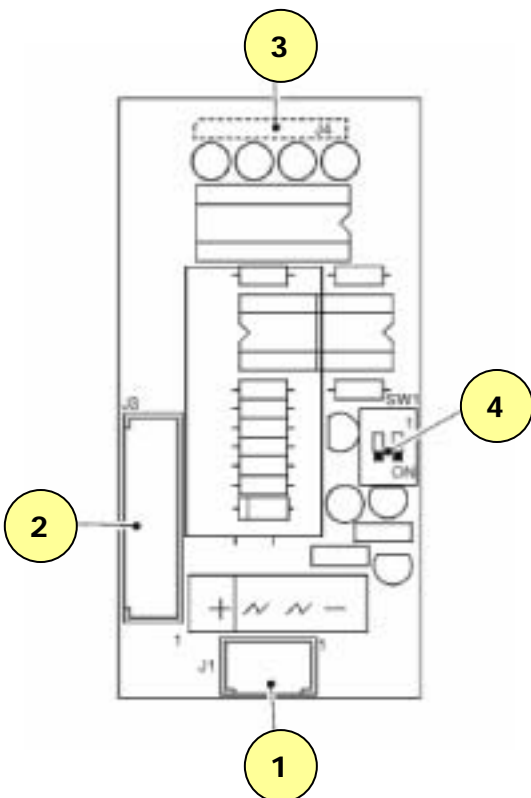


## Triac board

This board is controlled by the machine board and is powered under 120 V AC. It is used for controlling and starting the boiler heating element.

Connector **J3** is connected to a 120 V AC phase  
 Connector **J1** receives the information from the **SM** board that sends a consent signal to activate the triac for the power supply to the heating element.  
 Connector **J2** is connected to the boiler control

# 15 - PAYMENT SYSTEMS EXPANSION BOARD



This board is supplied with the installation kit for the payment systems.

It must be connected to the control board using the special connector.

With regard to the communication protocol, the two mididips (4) must be set to OFF for Executive and BDV or to ON for MDB.

- 1) Power supply (MDB-BDV)
- 2) Connection to the payment system
- 3) Connection to the control board
- 4) Configuration Minidips

# 16 – AIR-BREAK AND BOILERS

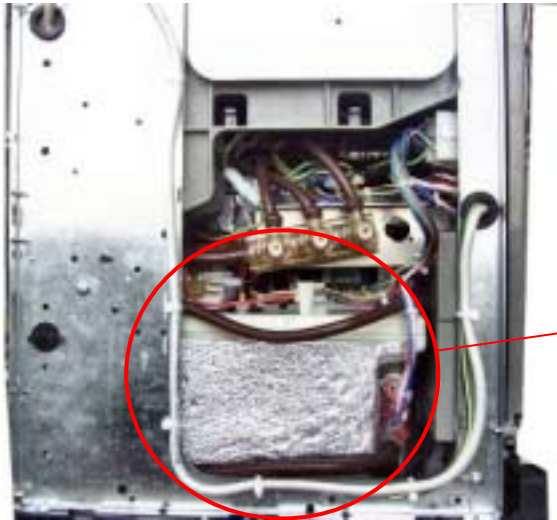
The air-break is a functional unit with the function of keeping the water level constant and of signalling a water flow interruption from the mains; in the event of such water failure it serves the purpose of completing the current selection. In the Instant and FB version the air-break is incorporated in the boiler.

For the **KORINTO Instant** version only the open-top instant boiler is used, fitted with a new design level control system already used in the KORO model.

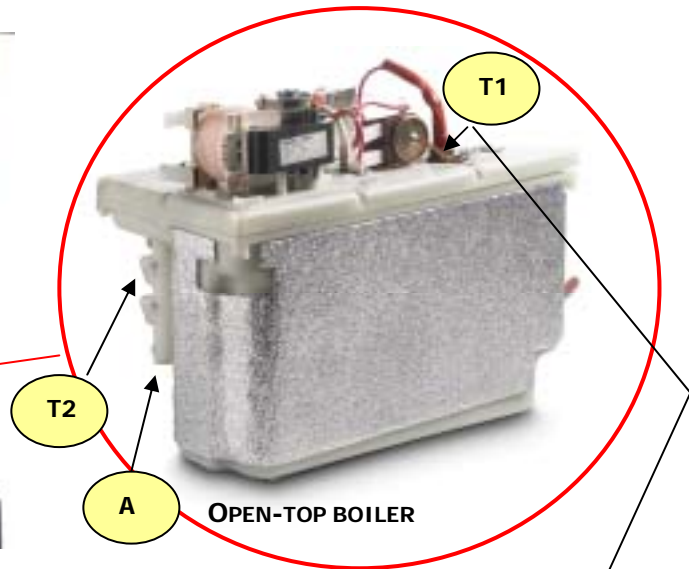
For the **Fresh brewer** model, the same open-top instant boiler used in the Instant version is adopted.

The open-top boiler for the Instant / FB version is a new and specific design with the feature of being molded from thermoplastic material with specific technical characteristics. For further technical information see the functional unit manuals.

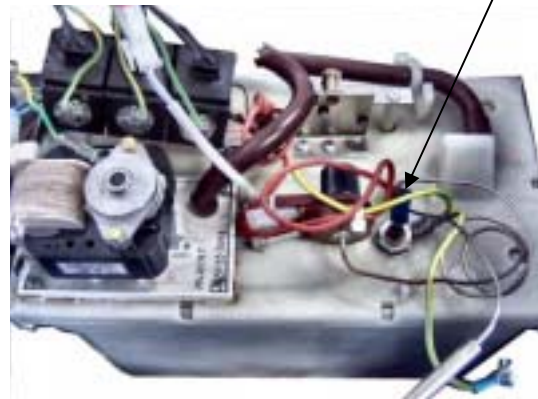
## OPEN-TOP BOILERS (Instant & Fresh Brewer models)



**SIDE VIEW WITHOUT PROTECTIVE CASING  
– OPEN-TOP BOILER COMPARTMENT**



**OPEN-TOP BOILER – DETAIL OF  
SOLENOID VALVES AND  
OVERHEATING PROTECTIONS**



**NOTE:** The open-top is made of special thermoplastic material and coated with insulating material for more efficient heat insulation; **two** overheating protections are fitted for safety. (practically it is the same boiler used in the **KORO** instant model).

- 1) Dry operation protection.**
- 2) Anti-boiling protection.**

In the event of failure to the control system and of boiler without water, the thermostat **T** is triggered at approximately **125°C**, disconnecting the power supply. In order to reactivate everything, the fault must be identified and the thermostat must be reset by pressing the central red button.

In the event of failure to the control system and of a full boiler, upon reaching boiling temperature, as the steam exits from tube **A** it touches and triggers the two thermostats **T2** (each thermostat disconnects one phase of the power supply).

Proceed as above to reset them; see specific chapter to identify the type of malfunction.

See relevant section in the functional unit manual for details, photos and complete description: **BOILERS**

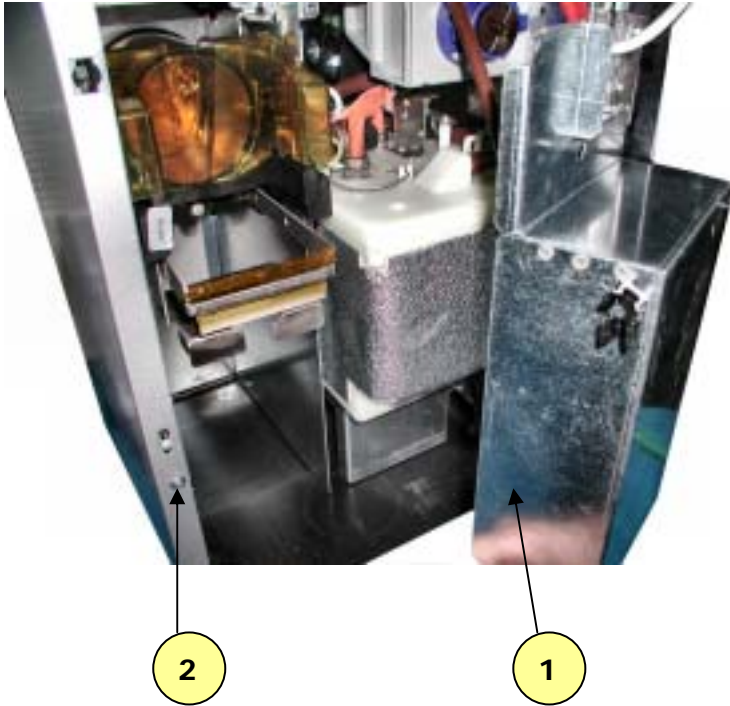
The internal temperature control is by means of an **NTC** type electronic probe fitted with an internal 12K ohm (+/- 4 ohm) resistance at a temperature of **25° C**. The following table shows the changes in internal resistance as the temperature changes.

We can see that the resistance decreases as the **NTC** temperature increases

The SW, when reading such changes, causes the activation or deactivation of the heating element with a specific cycle to avoid temperature changes that are too high.



| Boiler temperature °C | Value in ohm | Allowed tolerance |
|-----------------------|--------------|-------------------|
| 0                     | 35875        | +/-7 ohm          |
| 25                    | 12000        | +/- 4 ohm         |
| 50                    | 2900         | „                 |
| 85                    | 1475         | „                 |
| 90                    | 1260         | „                 |
| 100                   | 963          | „                 |



**Description for disassembling**

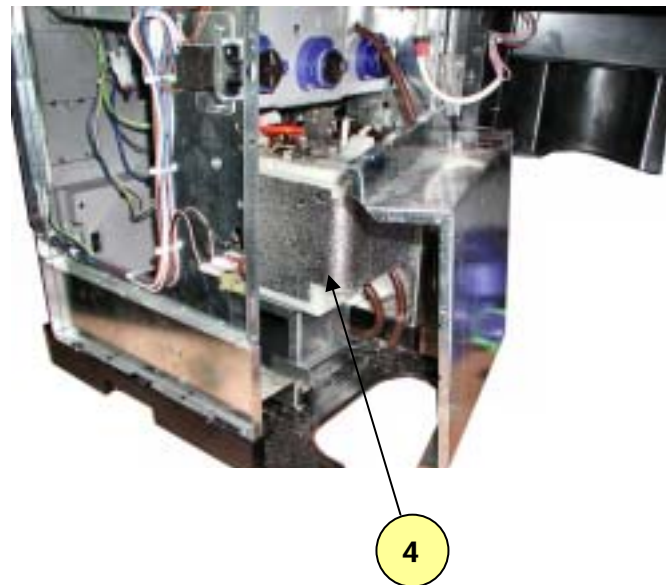
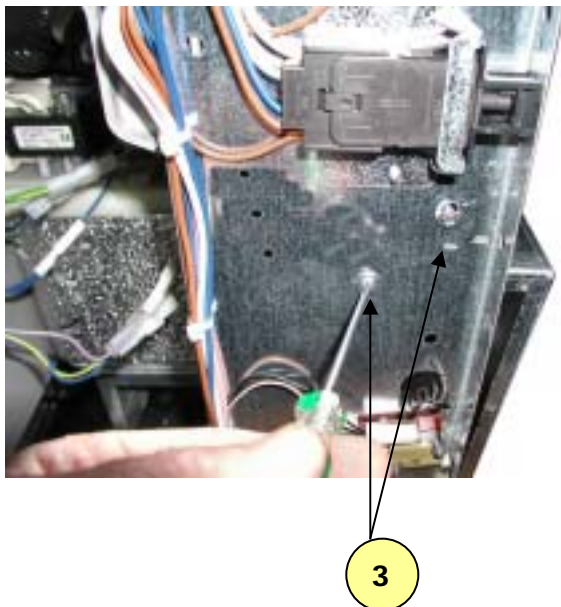
First, remove the front protective casing (1) and to accomplish this remove the side panels that close the internal frame and undo the front fastening screws (2), then slide out the panel.

Undo the two screws (3) that partly secure the casing.

Take out the casing.

Remove the boiler, disconnecting both hydraulic connections and wiring connections.

Before removing the boiler wait until it has cooled down.



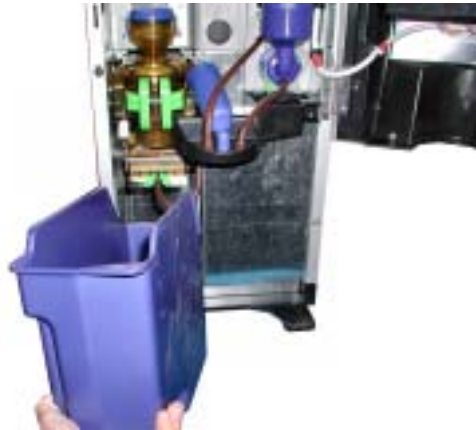
# 17 – FRESH BREWER UNIT

A specific brewer unit for filtered coffee, **SIGMA BREWER**, is used in the **FB** version. For further details on the functional units refer to the specific H&C functional unit manuals “**BREWER UNITS**”.

The Espresso brewer unit uses coffee that is ground on the spot by the grinder and doser unit, specifically designed for this model and that also uses a particular method of metering the ground coffee dose. The FB unit uses specific coffee, already ground to an optimum grade for quick and adequate brewing. The following figures show the procedure to be carried out for normal maintenance and daily cleaning.



DOOR OPEN WITH VIEW OF BREWER UNIT



REMOVE THE COFFEE GROUNDS CONTAINER



PRESSING THE GREEN PINCER WITH YOUR FINGERS, REMOVE THE BREWING CHAMBER APPLYING A FIRM ACTION



PRESSING WITH YOUR FINGERS THE TWO TABS LOCATED AT THE BASE OF THE FILTER HOLDER, REMOVE THE FILTER HOLDER ASSEMBLY APPLYING A FIRM ACTION



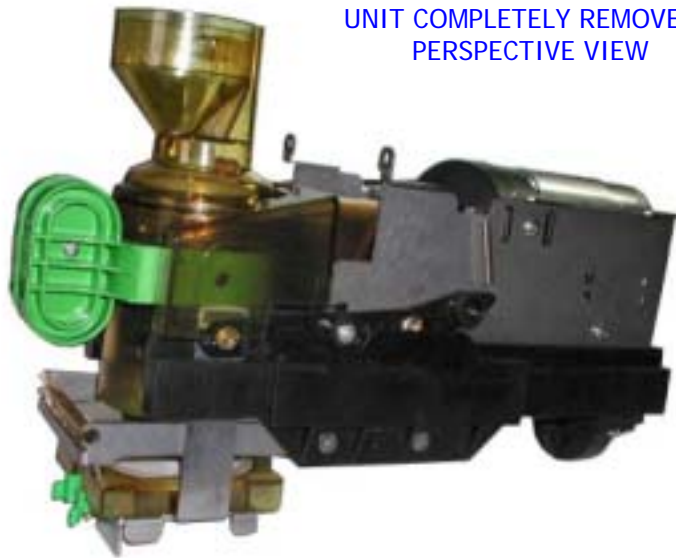
AT THIS POINT THE PUMP CYLINDER CAN BE TAKEN OUT



VIEW WITH ALL PARTS  
DISASSEMBLED FOR DAILY CLEANING



FILTER HOLDER BASE



UNIT COMPLETELY REMOVED -  
PERSPECTIVE VIEW

MORE IMPORTANT MAINTENANCE, THE UNIT MUST BE REMOVED FROM THE MACHINE COMPLETELY.

## 18 – SPOUTS ASSEMBLY



Because of the size of the vending machine  
FIXED SPOUTS have been designed.  
The spouts are mounted onto a tray that is  
easy to remove for daily cleaning



**DETAIL OF SUPPORT TRAY BEING REMOVED**

# 19 – POWDER PRODUCT CONTAINER AND DOSER DEVICES ASSEMBLY

According to new market requirements, it was necessary to design new solutions using quick fastening without any screws, to allow easy access for maintenance, as well as quick changes to the layout by means of preassembled modules.



**DOOR OPEN - VIEW OF COFFEE AND INSTANT POWDER CANISTERS**



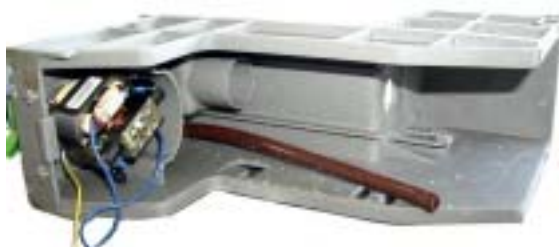
**MIXER RATIOMOTOR ASSEMBLY BEING REMOVED FROM ITS SEAT**



**DETAIL OF INSTANT PRODUCT CANISTER**



**RATIOMOTOR REMOVED FROM ITS SEAT**



**MIXER RATIOMOTOR ASSEMBLY VIEWED FROM BELOW**

Standard components are used, already adopted in other applications, but in a new support and with newly designed specific powder containers, comprising also the mixer assembly. The system is modular and of the same width as a powder container. It was designed for quick and easy removal as required by the particular type of machine.

## 20 – MIXER ASSEMBLY



**TRAY UNDER THE MIXER BEING REMOVED**



**MIXER IN EXTRACTION POSITION:  
DETAIL OF RELEASE LEVER**



**MIXERS WITH EXTERNAL PARTS SUBJECT TO  
DAILY HYGIENE BEING REMOVED**



**PLASTIC COMPONENTS OF DISASSEMBLED MIXER**

The mixers are newly designed, although many components are developed from the ones used in previous models.

The power supply is 230 V AC, the rotation velocity is 20,000 RPM, the motors have overheating self-protection and the axial sealing system is patented, using special "self-positioning" technical material. More specifically, the release and opening system of the external assembly is new, while the motor and the water tightness system are identical.

The new system permits easier disassembly for daily cleaning.

For further details and technical information refer to the specific "[Service Manual](#)".



## 22 – ROUTINE AND EXTRAORDINARY MAINTENANCE SCHEDULE

The vending machine KORINTO was designed to operate for a long time without malfunctions; however in order to ensure excellent reliability periodic maintenance is necessary.

Such maintenance must be performed according to the number of selections made and the time lapsed.

Periodic and correct maintenance ensures reliability, constant quality and also guarantees safety standards over time.

The following table indicates the functional units that must be subjected to periodic maintenance and the frequency of maintenance. For the operations to be carried out, refer to the specific **Functional unit manuals**.

| Name of unit                       | DESCRIPTION OF OPERATION   | N. of selections                | Max frequency  |
|------------------------------------|--|---------------------------------|----------------|
| Fresh Brewer Unit                  | 1) Check state of filters and wear of silicone O-ring seal; see details in the functional unit manual for FB coffee brewing  | 4000                            | 1 month        |
|                                    | 2) Open the unit and check the state of wear and internal lubrication and if necessary replace and lubricate.  | 40.000                          | annual         |
| Mixer Assembly                     | 1) Check the water tightness in the axial bush and the correct assembly, if necessary replace.<br>2) Check the wear of the motor brushes and clean off the excess of carbon powder.  | 50.000                          | annual         |
| Boiler And Solenoid Valve Assembly | If the boilers and the solenoid valves operate with soft water or are fitted with specific softener filters, they should be no need of periodic maintenance; otherwise periodically check the grade of scaling and if necessary proceed to complete descaling. | According to the water hardness | Every 6 months |
| Steam Exhauster Unit               | There is not need of any particular maintenance<br>For perfect functioning, it is necessary that the powder removal boxes be emptied periodically.<br>In addition, daily cleaning ensures also maximum hygiene of the machine.                                 |                                 | Every day      |

Extraordinary maintenance is carried out in the event of possible malfunctions.

For the most typical problems the vending machine is fitted with sensors that inform the software about any malfunction. The following tables list the possible malfunctions and possible remedies.



## 23 – TROUBLE-SHOOTING

| PROBLEM<br>(and/or indication on the display)  | POSSIBLE CAUSE  | SOLUTION  |
|--|---|---|
| <b>The machine does not go into the boiler heating phase and the display shows the message "WATER FAILURE"</b> | If the micro-switch of the air-break (if fitted) float in the instant boiler, or of the float in the water supply tank, is not activate within one minute, the software disables the machine and the solenoid valve remains energised until the water flow is restored.<br>If the machine is equipped with an internal water supply tank the pump will be switched off. | Check the following situations:<br><b>Machine with air-break:</b> check that there is water from the mains; if this is the problem, wait for the water from the mains to be resumed. Otherwise, check the operation of the inlet solenoid valve from the mains, check the operation of the air-break micro-switch<br><b>Machine with instant boiler:</b> in this case it is the boiler to perform the air-break function. Then, repeat the above checks.<br><b>Machine with water supply tank:</b> Check the operation of the magnetic float, and of the water supply pump.<br><b>Check the activation of relays K1 and K14</b> |
| <b>The display indicates the message "Waste container full"</b>  | When the float in the liquid waste tray triggers the signal micro-switch. If the machine is installed on a base cabinet, the float is located in the cabinet  | Empty the tray, removing it from the lower section of the cabinet.<br>Check the operation and correct functioning of float and micro-switch.  |
| <b>The display indicates the message "Air-break"</b>   | The machine locks if after 10 selections the float micro-switch does not change position.   | Check the following situations:<br><b>Machine with air-break:</b> check that there is water from the mains; if this is the problem, wait for the water from the mains to be resumed. Otherwise, check the operation of the inlet solenoid valve from the mains, check the operation of the air-break micro-switch<br><b>Machine with instant boiler:</b> in this case it is the boiler to perform the air-break function. Then, repeat the above checks.<br><b>Machine with water supply tank:</b> Check the operation of the magnetic float, and of the water supply pump.<br><b>Check the activation of relays K1 and K14</b> |
| <b>The display indicates the message "Boiler"</b>  | The machine will lock if after the maximum time of heating from the machine start, or from the last selection, there is no signal of correctly reaching the temperature set in the software.  | Check that the heating element and the STRC card are functioning correctly.<br>Check that the overheating control systems were not triggered.<br>Check the functioning of the probe (ohm control)<br>Should the overheating protection be triggered before resetting, the cause must be found and eliminated.   |
| <b>The display indicates the message "CAN-BUS board"</b>   | Failed dialogue between CPU board and can-bus board that controls the SIGMA BREWER unit.  | Check the connections.<br>Check that the power supply is correct.<br>Replace the board.   |
| <b>The display indicates the message "Coin mechanism"</b><br>(only if equipped with a payment system)          | The machine will lock if it receives an impulse longer than two seconds on a validator line or there is no communication with the serial coin mechanism for more than 30 seconds (executive protocol).<br>Or 75 seconds (BDV protocol)  | Check that connection is correct and the software setting is correct for the protocol.<br>If necessary replace the payment system.  |
| <b>The display indicates the message "RAM Data"</b>  | One or more areas of the RAM memory contain altered or non-compatible data, which is corrected by the software with default setting data; therefore the machine continues to operate with the initial data, but initialise will be required.  | Enter into the installation procedure and initialise the software; if the failure persists replace the CPU board.   |

|  |  |   |
|--|--|---|
| <p><b>The display indicates the message</b><br/><b>"Fresh-Brewer Piston"</b></p> | <p>The default position is determined by the micro-switches, and the position is factory preset; if for any reasons they are not triggered, FRESH-BREW coffee selections are disabled.</p> | <p>The standby position is checked by a position micro-switch, and every time the machine is started the unit is checked.<br/>check that:<br/>the motor is started, the position micro-switch works correctly, the brewing chamber is not clogged with too much coffee.<br/>the filter is not clogged.<br/>Check the connection with the FB board</p> |
| <p><b>The display indicates the message</b><br/><b>"Fresh-Brewer Brush"</b></p>  | <p>The default position is determined by the micro-switches, and the position is factory preset; if for any reasons they are not triggered, FRESH-BREW coffee selections are disabled.</p> | <p>The standby position is checked by a position micro-switch, and every time the machine is started the unit is checked.<br/>check that: the brush is new and the motor is activated.<br/>That there are not any mechanical blockages.<br/>Check the connection with the FB board</p>  |
| <p><b>The display indicates the message</b><br/><b>"Machine Lock"</b></p>        | <p>The machine is locked upon reaching the number of selections set with the "selection counter" function.<br/><b>"Selection counter"</b></p>  | <p>Remove the coffee grounds container, empty it and replace it. Reset will be automatic</p>  |
| <p><b>The mixers Clog Up</b></p>   | <p>Failed rotation of the mixer.<br/>Excessive instant product dose.<br/>Steam exhaust box clogged.<br/>Water to powder ratio not correct.</p>   | <p>Check for the motor overheat protection trigger, if necessary check the cause of such trigger.<br/>Empty the powder removal box, adjust and check the correct water to powder ratio.<br/>Check the logic of the cycles.<br/><b>Check the activation of relay K3.</b></p>   |

# 24 – HACCP DIRECTIVE

## **HACCP DIRECTIVE (EEC 93/43 and 96/3)**

Outline and instructions for use

### **Notes: What is it and what is indicated by the European Directive**

Directives **EEC 93/43 and 96/3** regard the hygiene of food products and are based on the **HACCP** (Hazard Analysis Critical Control Point).

The purpose of this directive is to safeguard the consumer health, suggesting a series of actions to be taken by the vending company, aimed at checking, identifying and correcting any critical aspects in the foodstuff chain, from the purchase of products and machines to the dispensing of the product.

The **HACCP** is therefore a system that addresses the analysis of any potential risks in the manufacturing and distribution cycle of food product and the identification of critical points where such risks can occur; the system also highlights the actions to be undertaken and the decisions to be made with regard to such critical points, as well as the implementation of checking and monitoring procedures.

*Therefore, each vending company must develop a Company Hygiene Self-control Manual according to the provisions of the directive - and if necessary use the information and recommendations formulated by some associations in the sector. The manual must contain a programming and checking schedule for the vending machine hygiene condition*

### **Important notes:**

For a correct use of the machine, the directives must be fully applied. **The operator is responsible for correct operations on a vending machine**

## **HACCP Directives (EEC 93/43 and 96/3)**

### **Guidelines for correct application**

- Ensure hygiene control with a special manual for correct hygiene practices.
- After cleaning, do not touch the surface of any elements that may come into contact with food.
- Wash your hands thoroughly, preferably using disinfectant, before starting any hygiene operations
- Use disposable sterile gloves
- Always use a clean cloth to wipe dry.
- Keep the work area tidy.
- Check that the product packages are intact and not damaged.
- Keep coffee and powder products in a cool, dark and dry place.
- Use products within the recommended time period (see expiry date on the package).
- Always use products from the warehouse according to the principle of "first-in first-out".
- Tightly close and seal any product packages not completely used.
- Coffee and consumables must be kept and transported separate from the cleaning products.
- The product containers must be cleaned regularly (see operation instructions).
- Only fill coffee or other product containers with sufficient amount for the expected use until the next cleaning.

## **Cleaning the machine (Pages 36, 37 & 38)**

- Carefully observe the following cleaning instructions!
- Clean the machine, preferably at the end of the day or in the morning before the machine is used.
- After cleaning, dispense and check a drink (see last check).
- Fill in the check list log for cleaning operations.
- When the display indicates an error message immediately check the trouble-shooting sheet.
- Use only recommended cleaning products approved for foodstuff, preferably liquid; avoid the use of powder and abrasive products.

# 25 – DAILY CLEANING AND HYGIENE SCHEDULE

## Daily cleaning and hygiene - ESPRESSO VERSION

( Expected time 6 min.)



Fig. 1

Open the door. **(FIG. 1)**

Remove the dispensing compartment and the tray. Clean and rinse the components thoroughly under current water. **(FIG 3)**

Remove the coffee grounds container, empty it and rinse it thoroughly. **(FIG. 2)**

Remove the drip tray located under the mixer, rinse it and eliminate any residue. **(FIG. 4)**

Slide out the external mixer assembly and disassemble it **(FIG. 5 – 6)**, clean and rinse out thoroughly all residue.

Remove the accessible plastic parts of the brewer unit, clean and rinse with hot water **(FIG. 7–8–9)**.

Reassemble all parts, taking care not to touch with your hands any parts that come into contact with food.

Carry out a mixer automatic wash cycle according to the pre-set procedures.

Close the door and make some test selections.

For the disassembly instructions, see specific service manuals or specific chapters.

NB: in order to speed up the operations, it is advisable to replace with components that were already cleaned and sanitised at the workshop, and take to the workshop the dirty components for cleaning and sanitising. The cleaning and hygiene operations must be carried out the evening, after the machine use, or the next morning before starting to use the machine.



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 7



Fig. 6



Fig. 8



Fig. 9

# 26 – WEEKLY CLEANING AND HYGIENE SCHEDULE

## WEEKLY CLEANING AND HYGIENE

( Expected time 6 min.)



Fig. 1

Open the door. Remove the dispensing compartment and the tray, slide out the coffee grounds container. Clean and rinse the components thoroughly under current water. (FIG. 1–2–3)



Fig. 2

Remove the powder and coffee containers, empty and clean them removing all encrustations. (FIG. 4–5)

Remove the spouts holder unit, clean and rinse thoroughly. (FIG. 8)



Fig. 4



Fig. 3

Remove the mixer assembly, clean and rinse thoroughly. (FIG. 7)

Remove the accessible parts of the brewer unit, clean thoroughly and rinse with hot water. (FIG. 9–10–11)

Reassemble all parts, taking care not to touch any parts that come into contact with food.

Make some test selections.



Fig. 5



Fig. 6



Fig. 7



Fig. 9-10-11



Fig. 7



# 27 – MONTHLY CLEANING AND HYGIENE SCHEDULE

## Monthly cleaning and hygiene (or every 5000 selections)

Expected time 18 min.

ONCE A MONTH, OR EVERY 5000 SELECTIONS, THE FOLLOWING SCHEDULED MAINTENANCE OPERATIONS MUST BE CARRIED OUT; AS USUAL IT IS ADVISABLE TO CARRY OUT SUCH OPERATIONS AT THE WORKSHOP, AND ON SITE SIMPLY REPLACE THE UNITS WITH THE ONES WHICH WERE ALREADY SUBJECTED TO SCHEDULED MAINTENANCE.



FIG. 1



FIG. 3



FIG. 2



FIG. 4

Remove the "SIGMA BREWER" unit from the machine (FIG. 1)

disassemble all accessible plastic parts (FIG. 2 - 3 - 4), carry out the maintenance operations indicated in the specific manual, and more specifically, clean or replace the filters and lubricate the seals.

Remove all coffee residue using compressed air, check and if necessary replace the gaskets and the filters.

Remove the side casing to access the boiler assembly (FIG. 5-6-7), remove it, empty it and rinse it with specific hygiene products, at the same time rinse the entire hydraulic circuit.

Carry out all operations planned for the weekly schedule.

Reassemble all parts, taking care not to touch any parts that come into contact with food.

Make some test selections.



FIG. 5



FIG. 6



FIG. 7