

**AFTER-SALES SERVICE**

**Hot & Cold**



## **SERVICE MANUAL**

# **" Kikko "**

## **BASIC TECHNICAL MANUAL**

**THE CONTENTS OF THIS DOCUMENT ARE INTENDED FOR NECTA'S AFTER SALES PERSONNEL**

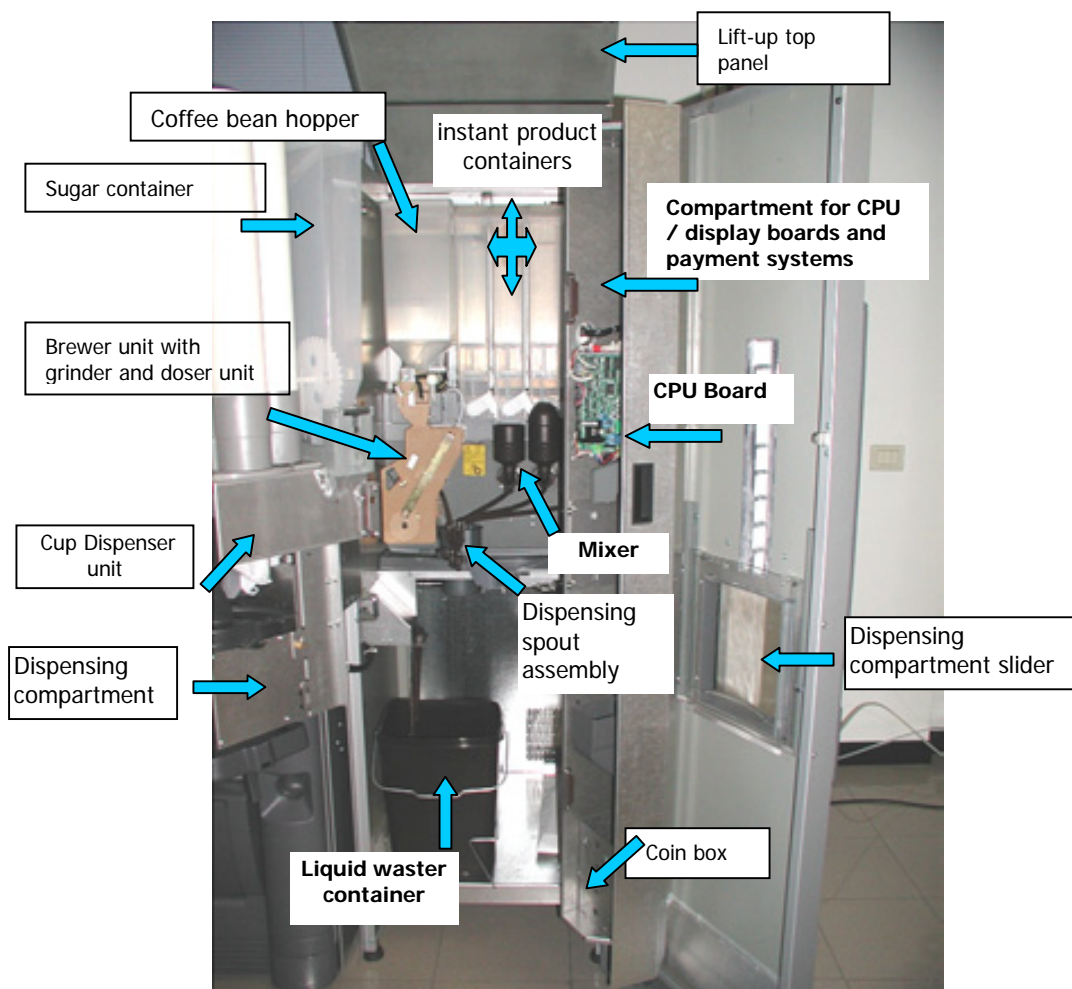
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### **NOTE**

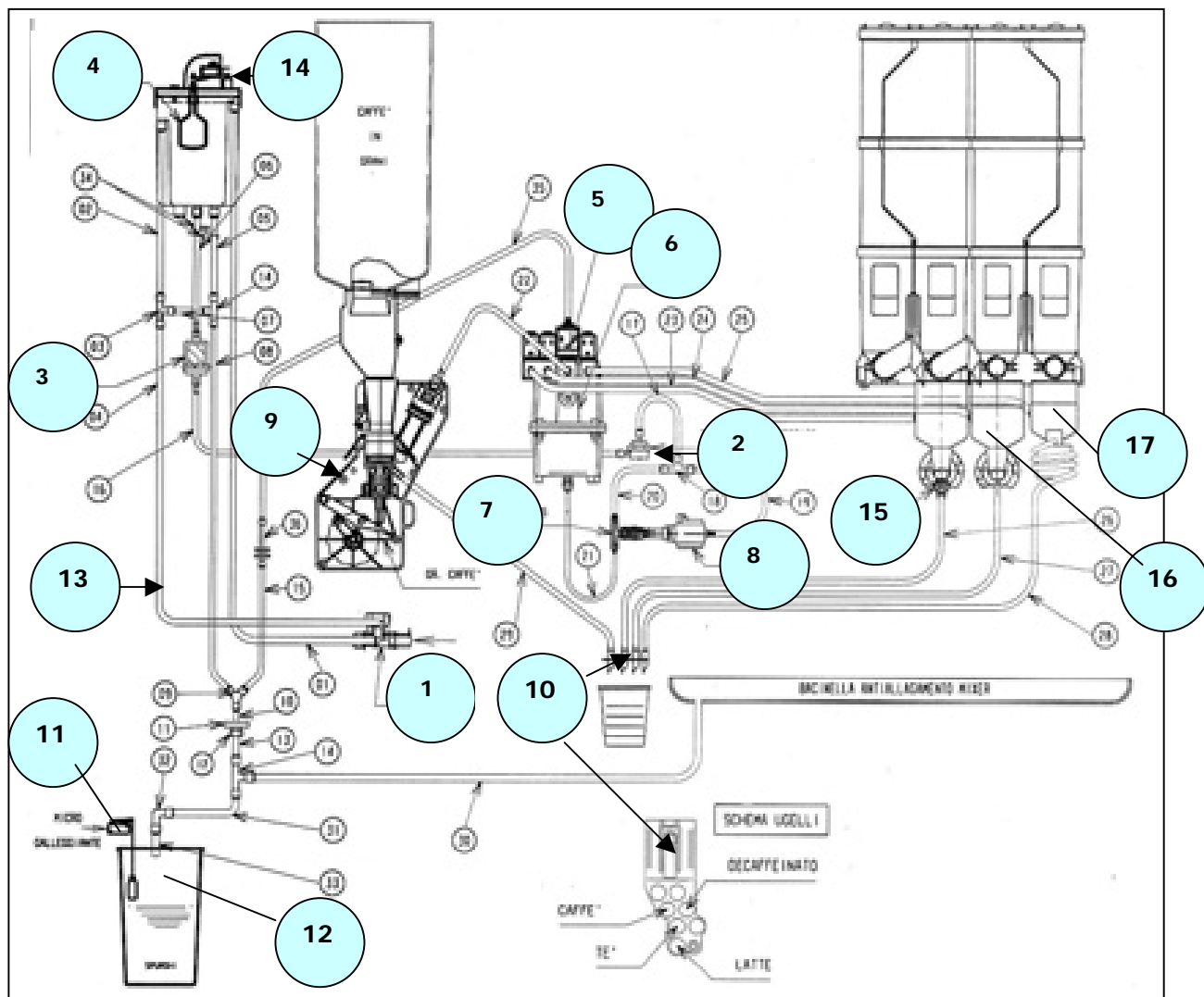
The above systems and functional units are specific to this machine.

All functional units installed but not listed in this document, are also used in other machines in the same range; therefore they will be described in a separate manual for machines belonging to the same range, where all base functional units will be described more in detail



**VIEW WITH DOOR OPEN**

# 1 – HYDRAULIC LAYOUT

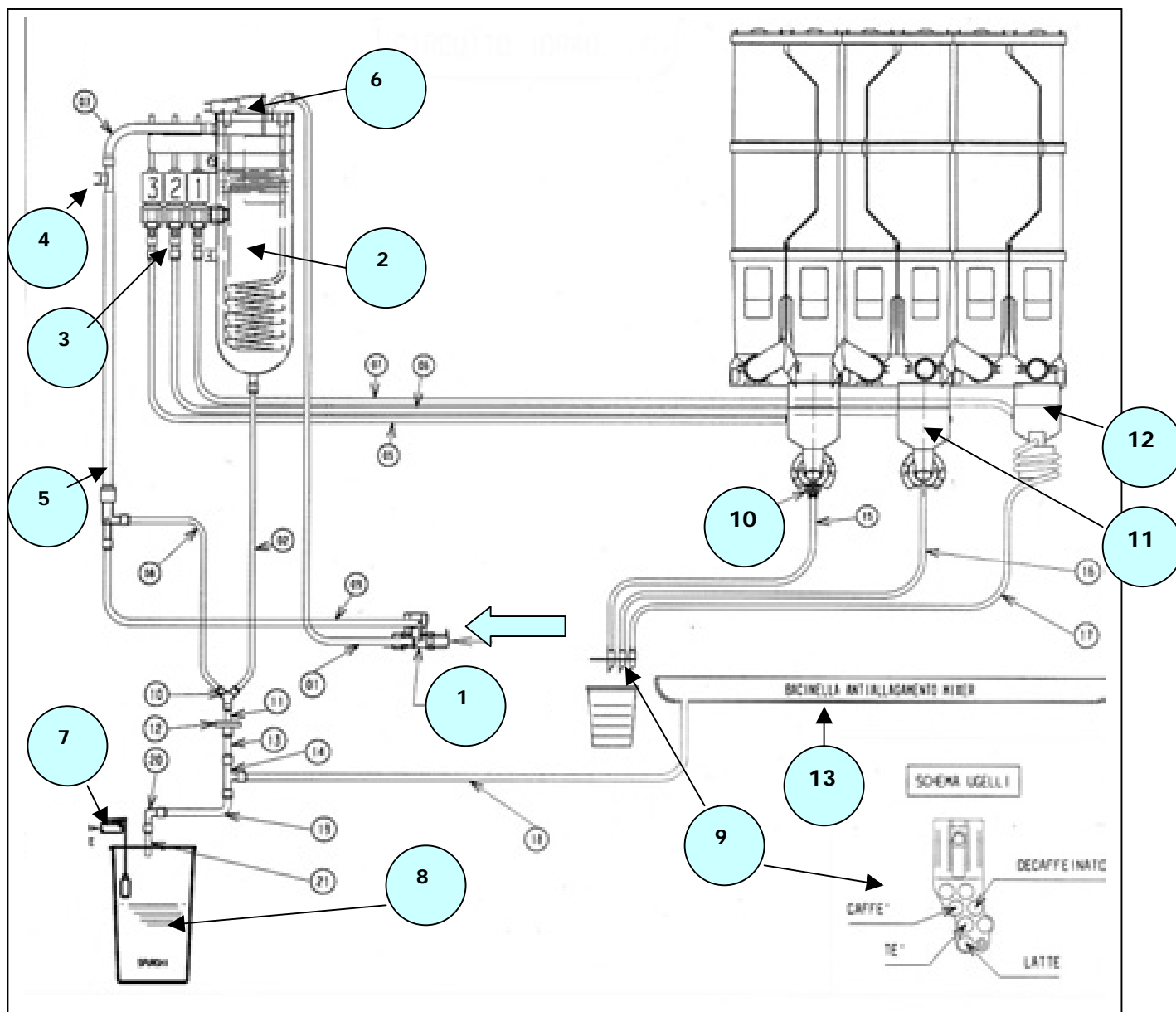


Hydraulic layout **"ESPRESSO"** version

REF.	DESCRIPTION	REF.	DESCRIPTION	REF.	DESCRIPTION
1	Water inlet solenoid valve	7	By pass	13	Overflow tube
2	Volumetric counter	8	Vibration pump	14	Air-break micro-switch
3	Water filter	9	Coffee unit	15	Instant coffee mixer
4	Air - break	10	Dispensing spout assembly	16	Milk/Chocolate mixer
5	Solenoid valve units	11	Float micro-switch	17	Tea mixer
6	Pressure boiler	12	Liquid waste container		

In the espresso version only one boiler is used (with by-pass set to 12 bar) that is also used for dispensing instant products.

## Hydraulic layout "INSTANT" version

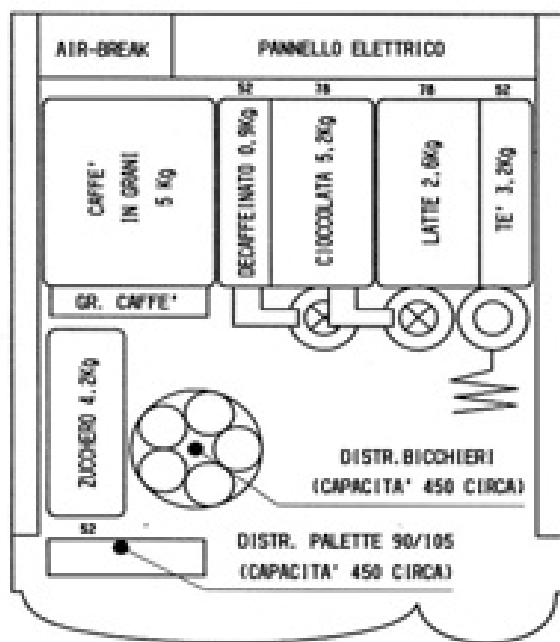


### INSTANT VERSION COMPONENTS

REF.	DESCRIPTION	REF.	DESCRIPTION
1	Water inlet solenoid valve	7	Waste level microswitch
2	Instant Boiler	9	Dispensing spouts
3	Instant solenoid valve	10	Coffee mixer
4	Anti-boiling thermostat	11	Milk/Chocolate mixer
5	Overflow tube	12	Tea mixer
6	Air-break level microswitch	13	Overflow tray

In the **Instant** version an open-top boiler, operating at the atmospheric pressure.

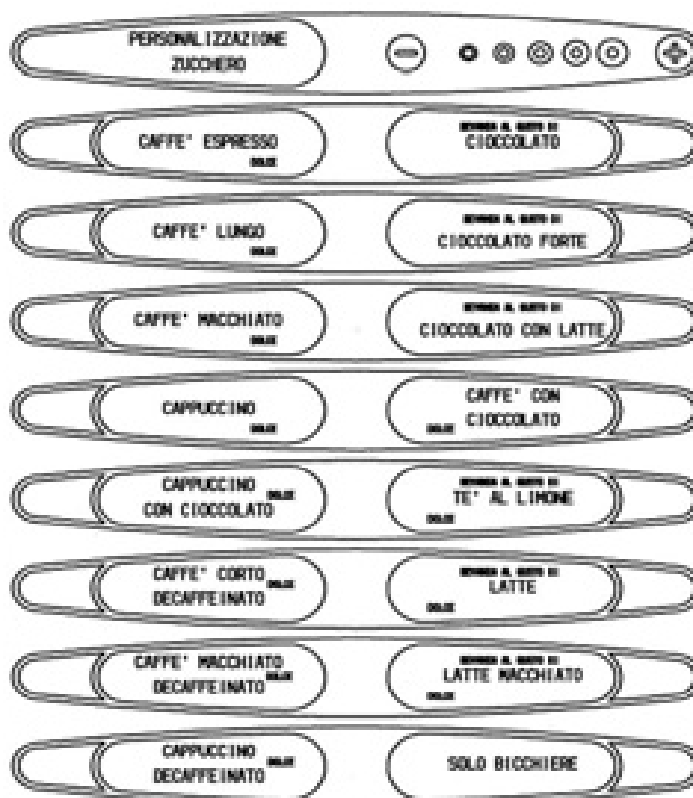
## BASE ESPRESSO VERSION LAYOUT



## NOTE CARATTERISTICHE

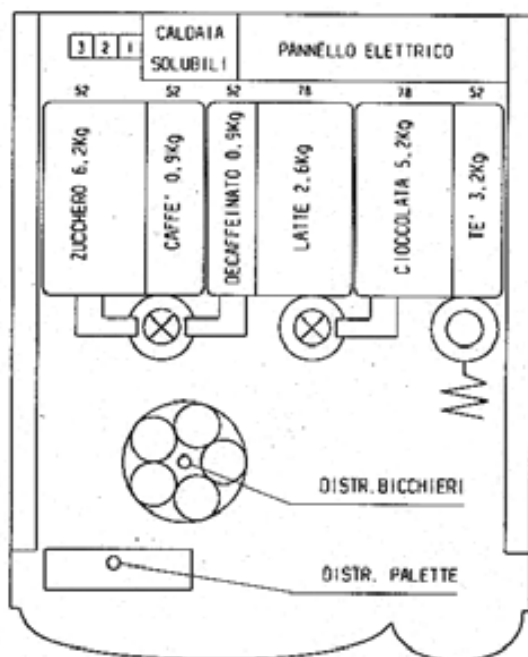
- DISTRIBUTORE BICCHIERI AUTOMATICO (Ø70-71)
- GRUPPO CAFFE' 2 2080 H
- DISTRIBUTORE PALETTE REGOLATO A 95mm

### BASE VERSION - ITALY



## PRODUCT BUTTONS AND LABEL DIAGRAM ESPRESSO VERSION - ITALY

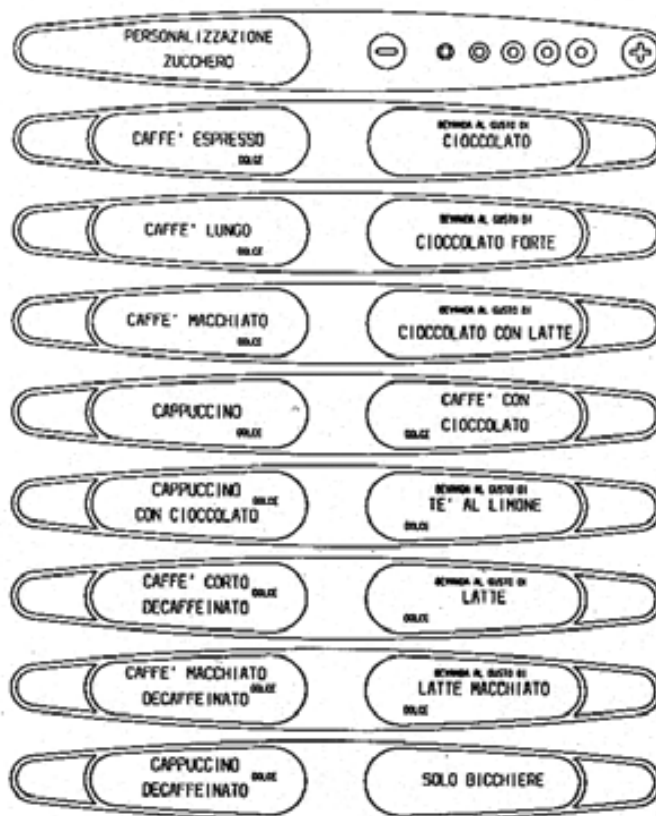
## BASE INSTANT VERSION LAYOUT



## NOTE CARATTERISTICHE

- DISTRIBUTORE BICCHIERI AUTOMATICO Ø70-71
- DISTRIBUTORE PALETTE REGOLATO A 95mm

## BASE VERSION - ITALY



## PRODUCT BUTTONS AND LABEL DIAGRAM INSTANT VERSION - ITALY

## 2 - ELECTRICAL SYSTEMS - CONNECTIONS - CONFIGURATIONS

The machine is designed to operate under a single-phase voltage of 230 V AC (+5-10V)

It is protected with a main 15 A fuse on both phases.

With regard to the transformer:

The primary winding is protected with a 125 mA fuse

The secondary winding is protected with a 1.25 mA fuse

The machine is fitted with a door opening safety switch.

The power cable can be supplied as a standard feature and chosen a HO5 RN – F copper with a 3 x 1.5 mm<sup>2</sup> section

HO5 V V – F „ „ „ „

HO5 V V – F „ „ „ „

Fitted with a fixed SCHUKO plug.

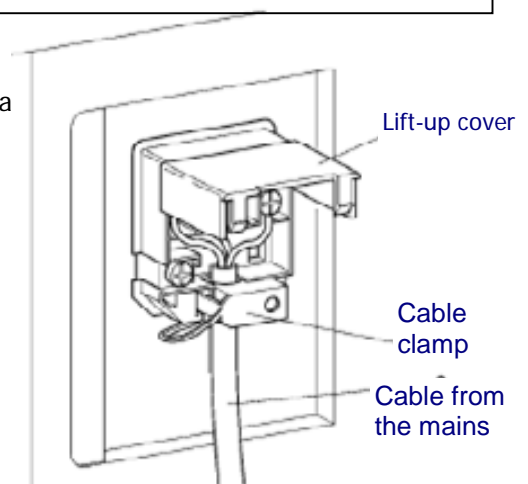
NB \*\*: it is possible that for some specific markets a cable with a specific plug is fitted at the factory, in accordance with the regulations in force in those countries.

In the event of replacement cables of exactly the same characteristics must be used.

Since the "Kikko" vending machine is approved by an electrical safety certification institute (IMQ), replacements with non-original components are not permitted.

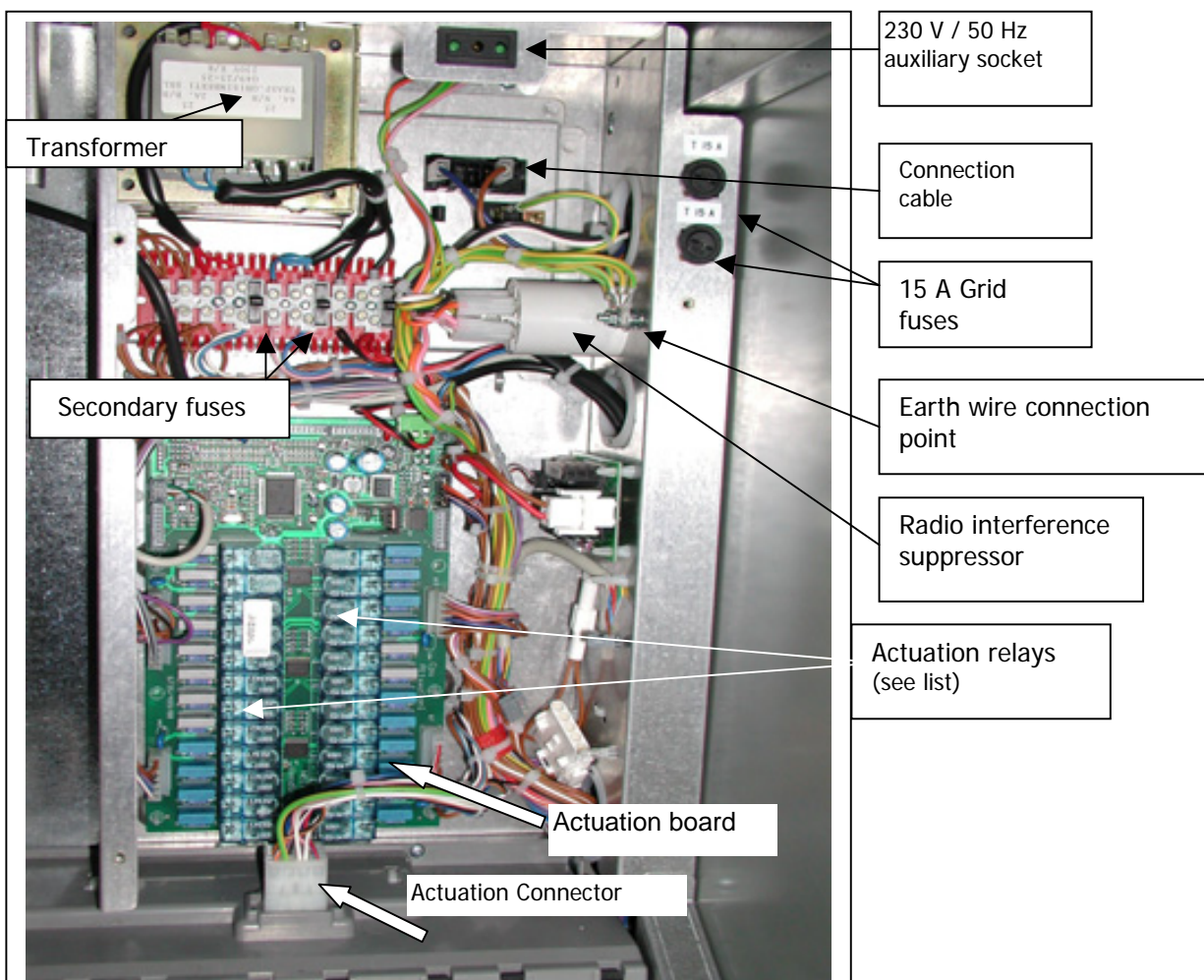
Otherwise the electrical safety certificate and the warranty will be void.

Power supply cable connection diagram



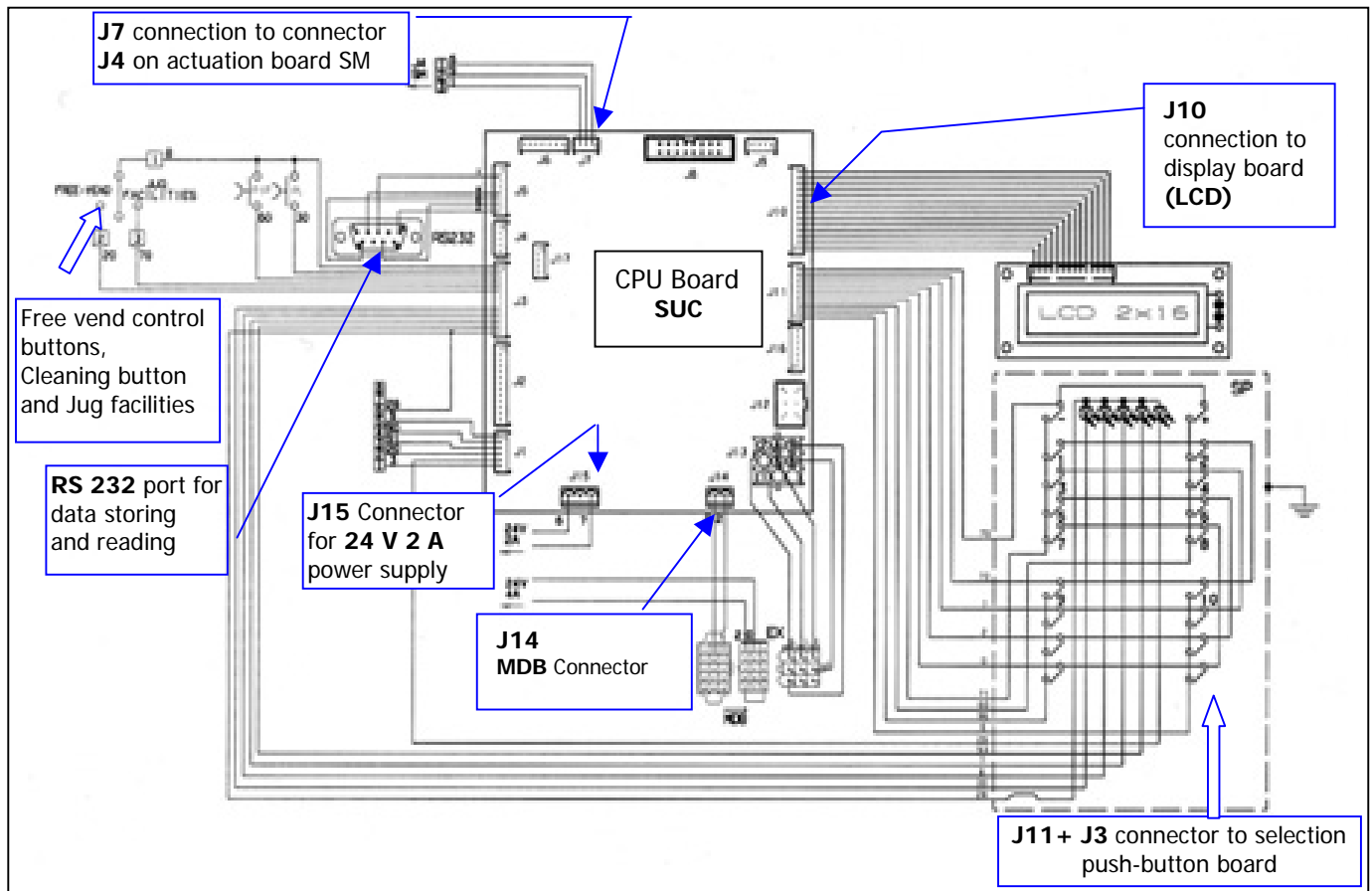
### 2.1 - Boards Connections

View of power supply unit and actuation board compartment (without casing)





## CPU Board connection diagram

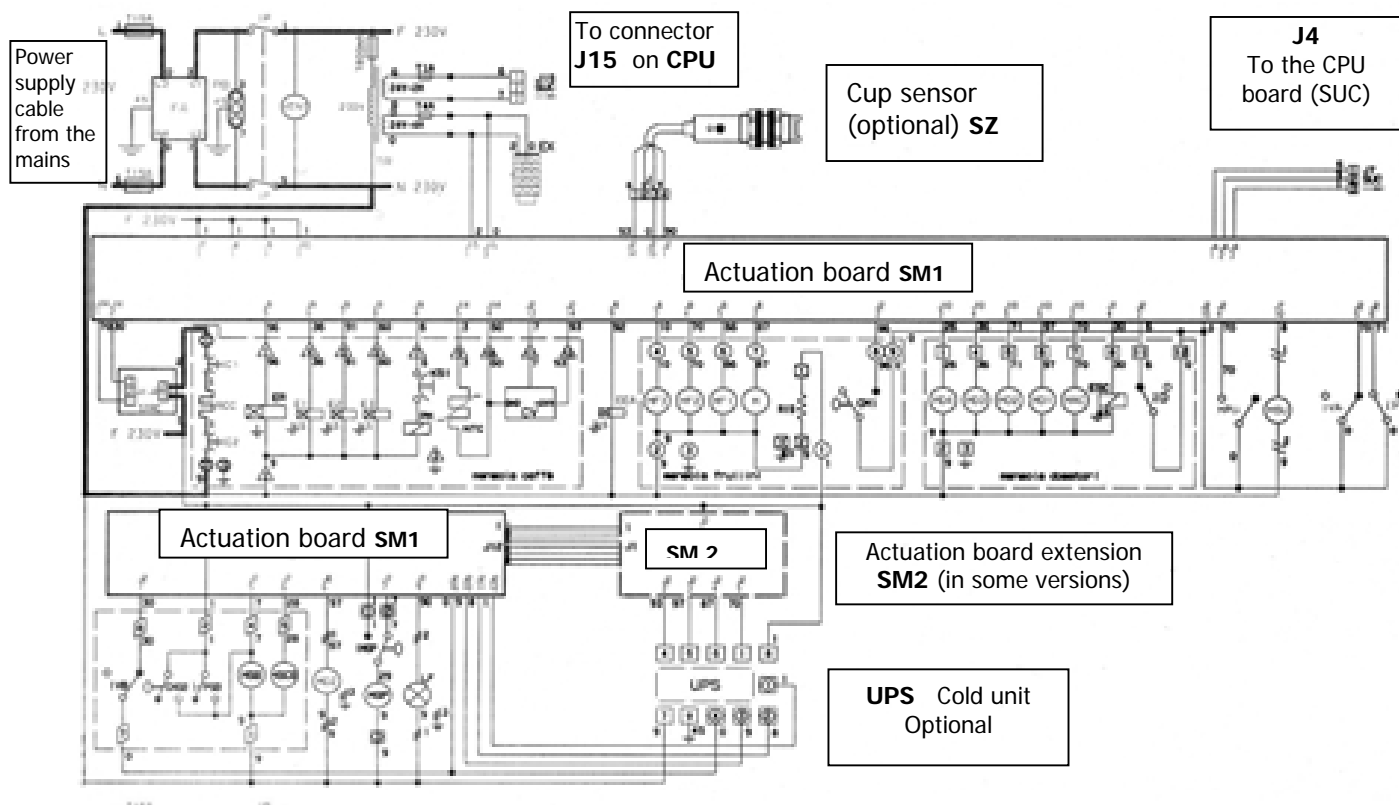


**NOTE:** The RS232 serial board for communication protocols can be supplied on request.  
**SERIAL** payment systems can be connected to such board, using the following protocols:  
 executive – MDB - BDV

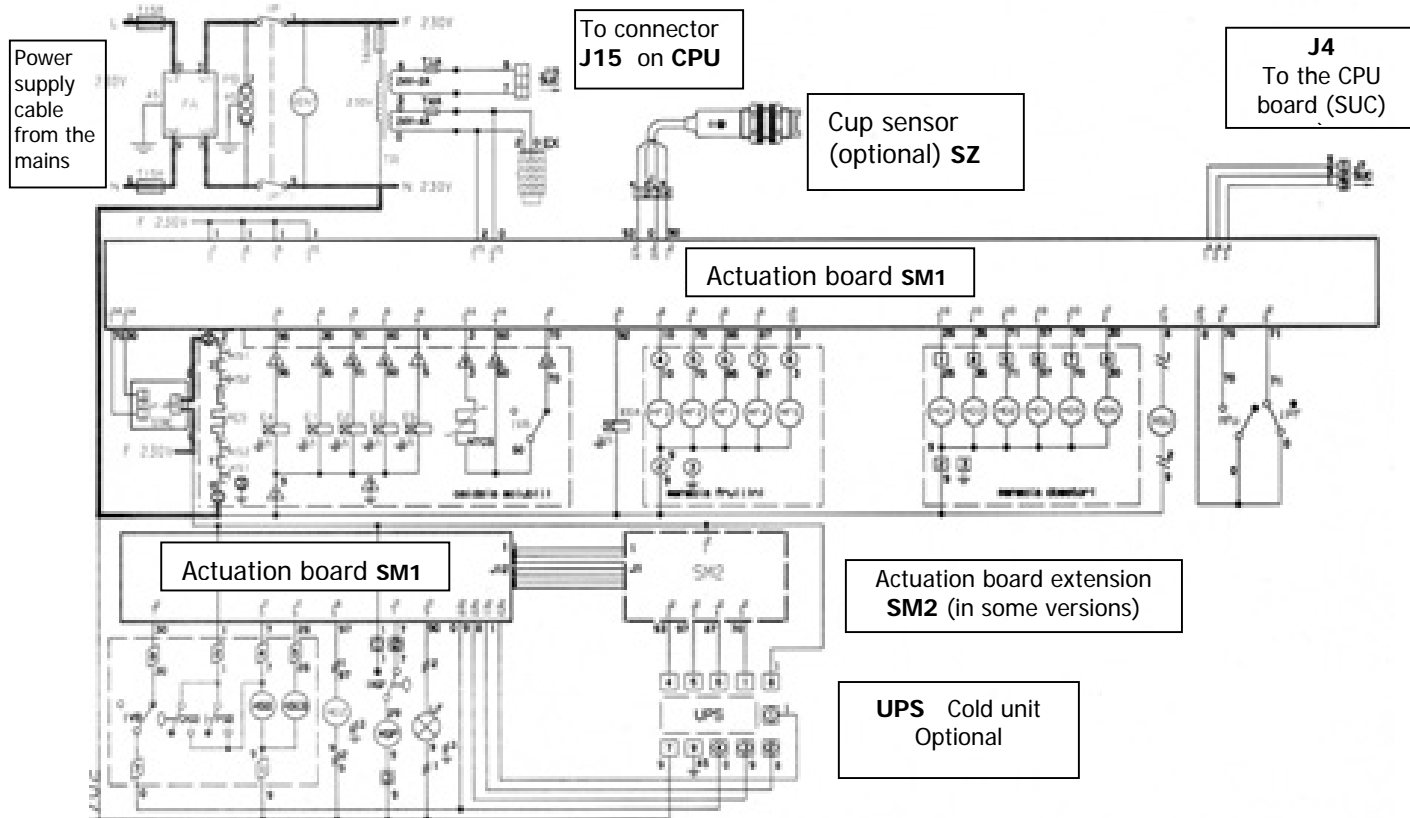
Code	Description
<b>SM</b>	Actuation and control board
<b>LCD</b>	LCD display card
<b>NTC</b>	Espresso temperature control probe
<b>NTCS</b>	Instant temperature control probe
<b>CV</b>	Volumetric counter
<b>RS 232</b>	Printer or data reading device port (only if the relevant optional board is installed)
<b>SP</b>	Push-button board
<b>IVB</b>	Cup sensor switch
<b>IVA</b>	Water sensor (level) switch
<b>IPF</b>	Liquid waste overflow switch
<b>CMSB</b>	Cup release motor cam
<b>MSU</b>	Spout shift motor
<b>MPU</b>	Spout position switch



## ESPRESSO VERSION WIRING DIAGRAM



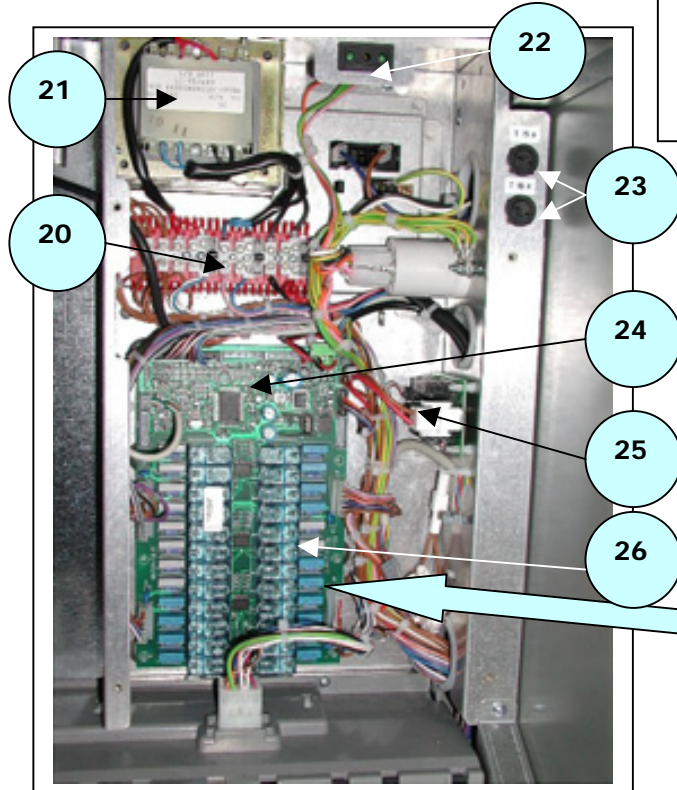
## INSTANT VERSION WIRING DIAGRAM



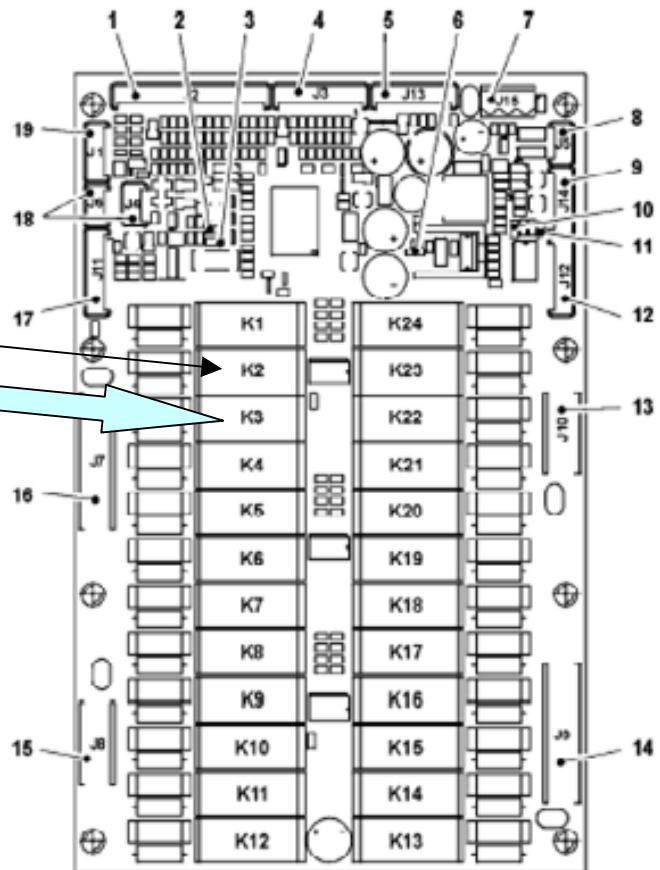
# ACTUATION BOARD

(Positioning, logics and actuation diagrams)

## VIEW OF ACTUATION BOARD AND POWER SUPPLY UNIT COMPARTMENT



The actuation board controls all 230 V AC power users by means of relays. It also processes the signals from the cams and the microswitches from the various users and controls the boiler board. The board is powered with 24 V DC by means of a power supply unit located in the panel. The control SW is loaded directly on the microprocessor. The **GREEN** LED (2) blinks during normal operation of the board. The **YELLOW** LED(6) indicates the presence of 12 V DC. The **RED** LED (3) glows during the card reset. The **RED** LED ( 10) indicates the operating status of the Espresso boiler heating element.

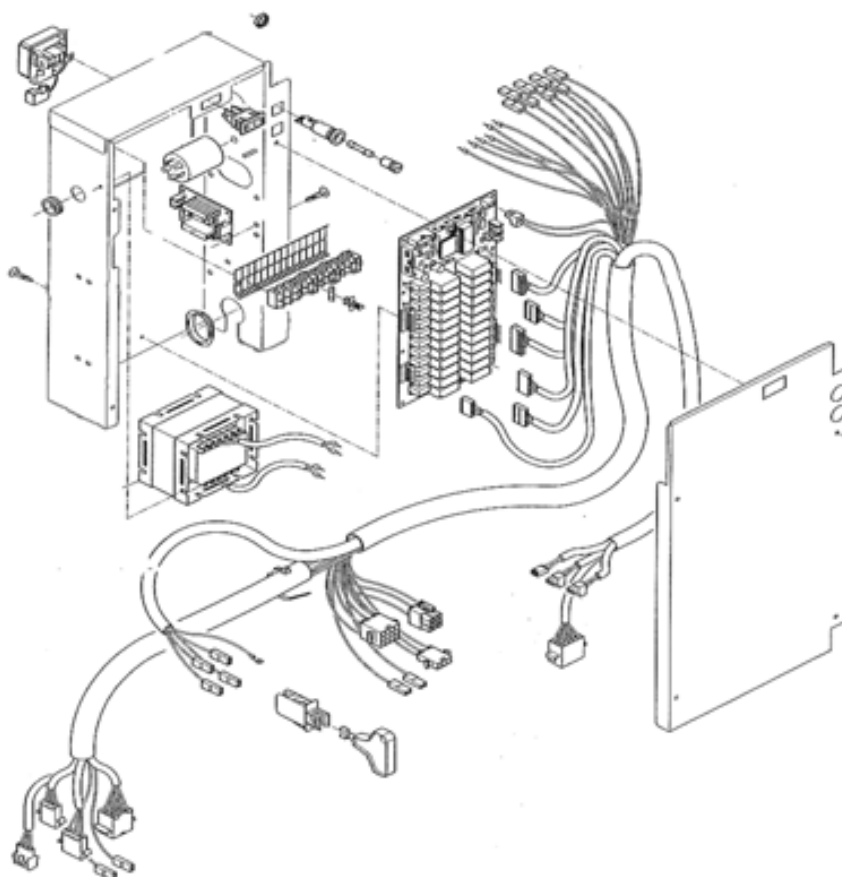


Actuation board layout

REF.	DESCRIPTION
1	CONNECTOR FOR INPUT SIGNALS
2	<b>GREEN</b> LED
3	RED LED
4	CONNECTOR NOT USED
5	CONNECTOR FOR BOARD PROGRAMMING
6	<b>YELLOW</b> LED
7	CONNECTOR FOR BOARD POWER SUPPLY
8	CONNECTOR NOT USED
9	CONNECTOR FOR PROBE AND BOILER CONTROL
10	RED LED FOR BOILER OPERATION
11	Red LED - BOARD RESET
12	CONNECTOR TO EXPANSION BOARD
13	230 V AC POWER USERS
14	230 V AC POWER USERS
15	230 V AC POWER USERS
16	230 V AC POWER USERS
17	CONNECTOR NOT USED
18	CAN BUS CONNECTOR**
19	CONNECTOR NOT USED
20	TRANSFORMER FUSES
21	POWER SUPPLY TRANSFORMER
22	PERMANENTLY LIVE 230 V AC SOCKET
23	NETWORK FUSES
24	LED
25	BOILER CONTROL BOARD
26	ACTUATION RELAY SERIES

CAN BUS \*\*  
Connector for multiple machine installation with GSM protocol

## EXPLODED VIEW OF POWER SUPPLY UNIT AND WIRING COMPARTMENT



### Reference to relay code and actuations - Espresso / Instant version

Espresso Configuration (see previous page references)		Instant Configuration (see previous page references)	
<b>K 1</b>	COFFEE RELEASE MAGNETS	<b>K 1</b>	DOSER DEVICE MD6
<b>K 2</b>	CUP RELEASE RATIOMOTOR	<b>K 2</b>	CUP RELEASE RATIOMOTOR
<b>K 3</b>	CUP COLUMN SHIFT MOTOR	<b>K 3</b>	CUP COLUMN SHIFT MOTOR
<b>K 4</b>	STIRRER DISPENSING MOTOR	<b>K 4</b>	STIRRER DISPENSING MOTOR
<b>K 5</b>	NOT USED	<b>K 5</b>	STIRRER DISPENSING MOTOR
<b>K 6</b>	SWITCHING LAMP ON	<b>K 6</b>	SWITCHING LAMP ON
<b>K 7</b>	DISPENSING SPOUT MOVEMENT RATIOMOTOR	<b>K 7</b>	DISPENSING SPOUT MOVEMENT RATIOMOTOR
<b>K 8</b>	COFFEE UNIT RATIOMOTOR	<b>K 8</b>	ELECTRIC MIXER MF4
<b>K 9</b>	ELECTRIC MIXER MF3	<b>K 9</b>	ELECTRIC MIXER MF3
<b>K 10</b>	ELECTRIC MIXER MF2	<b>K 10</b>	ELECTRIC MIXER MF2
<b>K 11</b>	ELECTRIC MIXER MF1	<b>K 11</b>	ELECTRIC MIXER MF1
<b>K 12</b>	SUGAR DOSER DEVICE	<b>K 12</b>	ELECTRIC MIXER MF3
<b>K 13</b>	STARTING PUMP	<b>K 13</b>	SOLENOID VALVE EV 4
<b>K 14</b>	ELETTROVALVOLA EROG. CAFFE'	<b>K 14</b>	SOLENOID VALVE EV 5
<b>K 15</b>	SOLENOID VALVE EV 1	<b>K 15</b>	SOLENOID VALVE EV 1
<b>K 16</b>	SOLENOID VALVE EV 2	<b>K 16</b>	SOLENOID VALVE EV 2
<b>K 17</b>	SOLENOID VALVE EV 3	<b>K 17</b>	SOLENOID VALVE EV 3
<b>K 18</b>	WATER INLET SOLENOID VALVE	<b>K 18</b>	WATER INLET SOLENOID VALVE
<b>K 19</b>	NOT USED	<b>K 19</b>	ELECTRIC MIXER MF5
<b>K 20</b>	GRINDER MOTOR	<b>K 20</b>	DOSER DEVICE MD5
<b>K 21</b>	DOSER DEVICE MD4	<b>K 21</b>	DOSER DEVICE MD4
<b>K 22</b>	DOSER DEVICE MD3	<b>K 22</b>	DOSER DEVICE MD3
<b>K 23</b>	DOSER DEVICE MD4	<b>K 23</b>	DOSER DEVICE MD2
<b>K 24</b>	DOSER DEVICE MD5	<b>K 24</b>	DOSER DEVICE MD1

## CPU Board ( Central processing unit)

The **CPU control board**, located inside the payment system compartment, processes the information from the push-buttons, the payment system and from the sensors installed throughout the machine; it also controls the actuators and the push-button board. It is built on SMT technology.

The LED's furnish the following indications during operation of the vending machine:

GREEN LED (3) blinking during normal operation

YELLOW LED (4) glows when 5 V DC are detected;

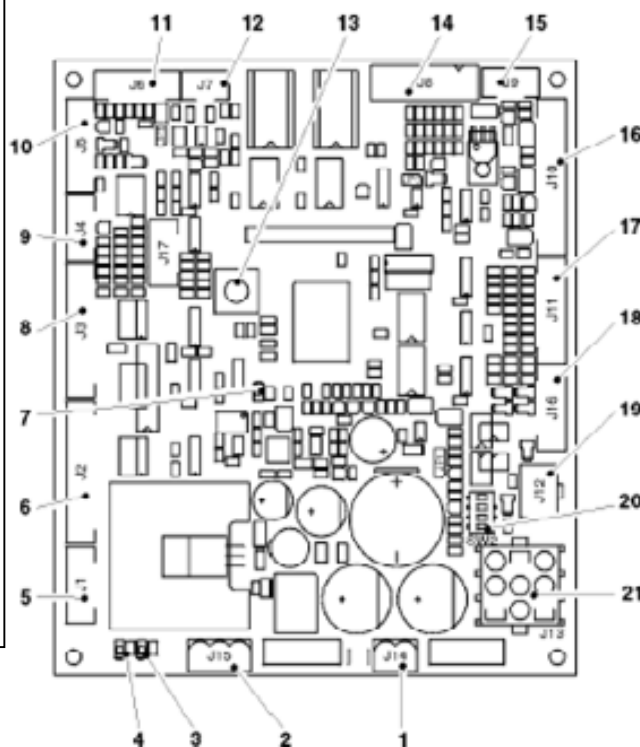
RED LED (16) glows during the software reset phase

Other two electronic boards are also installed:

The **PUSH-BUTTON BOARD**, located on the inside of the door, controls the alphanumeric display and it processes the push-button commands; it also supports the coin mechanism connectors and the RS232 printer port.

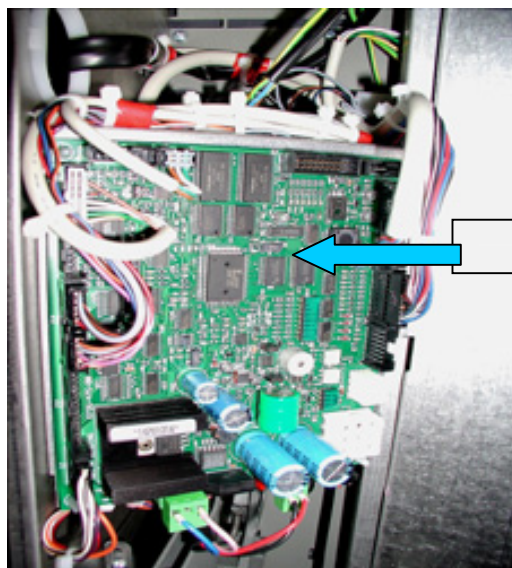
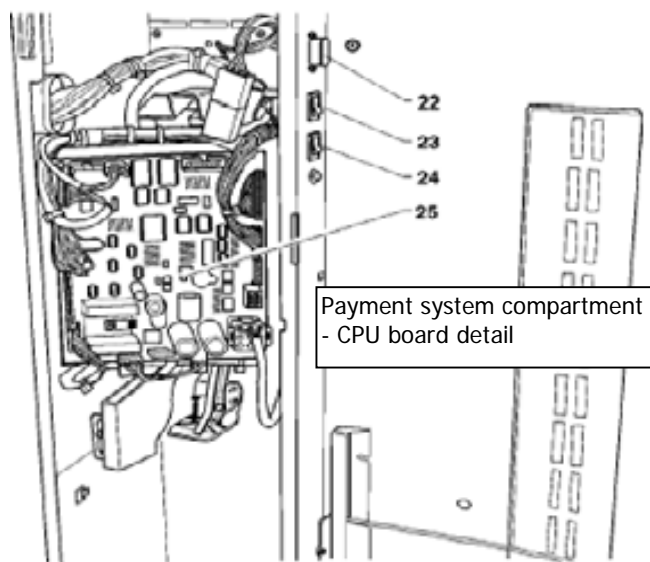
### DISPLAY CARD

It processes the information and converts it into readable signals.



### LIST OF CPU BOARD COMPONENTS

- 1 - J14 Coin mechanism power supply
- 2 - J15 power supply card
- 3 - Green LED: (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 Liquid crystal display (LCD)
- 17 - J11 push-button panel
- 18 - J16 Not used
- 19 - J12 MDB Expansion
- 20 - Coin mechanism setting Minidip (SW2)
- 21 - J13 BDV/EXE Expansion
- 22 - RS232 serial port
- 23 - Cleaning button
- 24 - Failure reset button
- 25 - CPU board



### CPU BOARD DETAIL

The CPU board is fitted with a FLASH EPROM. Such component is used to re-write the software when modified for an update or to change the configuration.

Therefore, by means of a Personal Computer and special management SW, it is possible to re-write the machine management software without replacing the EPROM.

The system allows simple and quick update of the SW throughout the entire operating life of the machine.

It is also possible to transfer settings from one machine to another using the "PROGRAMMER".

## 3 – AIR-BREAK & BOILERS

**The air-break's** function is to keep the water level constant and to signal a water flow interruption from the mains; in the event of such water failure the current selection can be completed.

In addition, it serves the purpose of holding a reservoir of water at normal atmospheric pressure, so that the pump can draw the correct water dose for the selection and deliver it to the Espresso boiler without changes in pressure that may affect the volumetric counter reading.

In the Kikko vending machine, the air-break is installed for the espresso version only with a pressure boiler, while in the instant version the air-break is incorporated in the boiler, which is of the open-top type, i.e. with internal pressure equal to the atmospheric one. Basically, it is the same component used on the Colibri, but having a different application.

The dose is measured by means of the volumetric counter in the espresso versions and by timed opening (in tenths of a second) of the solenoid valves in the instant versions.

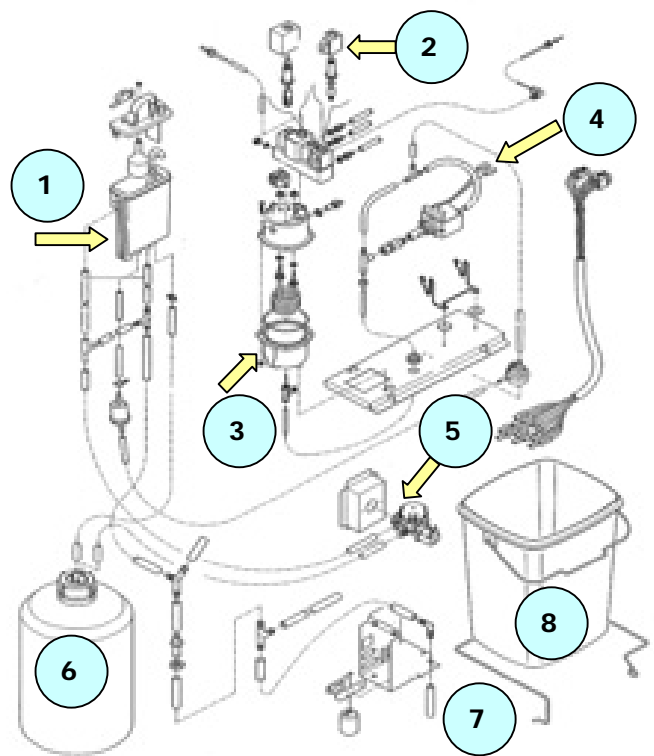
The water level is ensured by a float that triggers a microswitch, keeping the level between a factory set minimum and maximum (it is very important not to replace the microswitch with any another one of different mechanical characteristics, as a variety of malfunctions may occur).

Furthermore, in the event of failure to the maximum level microswitch, an overflow hole allows the water to be conveyed through a tube and to the safety device fitted on the water inlet solenoid valve, thus causing its mechanical lock (such safety device is triggered also in the event of a power failure).

The air-break also causes a signal to be sent to the machine control board that is necessary for the initial installation and for filling with water, that anyway needs to be done manually.

If, upon switching the machine on, the float does not trigger the maximum level microswitch within a set time (e.g. 60 sec) the vending machine locks due to a water failure.

**View of compartment showing position of air-break  
(without casing)**



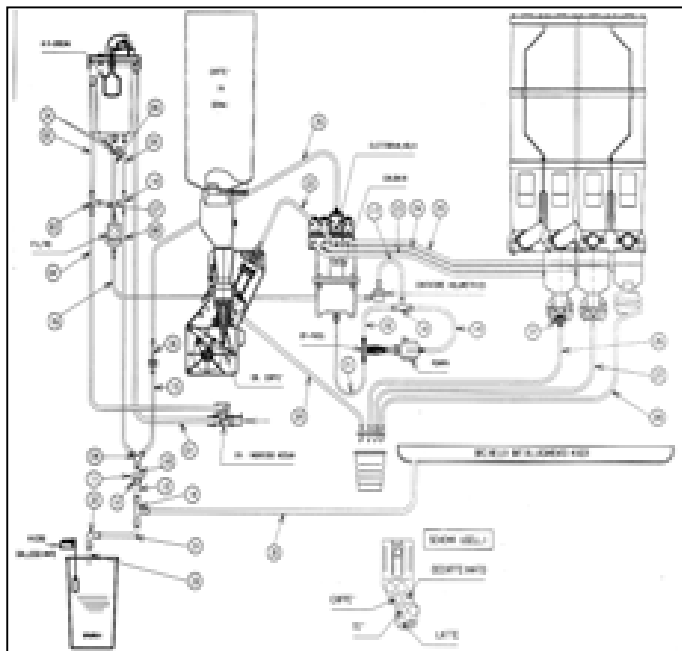
**Exploded view of air-break with Espresso boiler**

REF.	DESCRIPTION	REF.	DESCRIPTION
1	Air break	5	Water inlet solenoid valve
2	Solenoid valve unit	6	Water softener filter
3	Espresso boiler	7	Liquid waste container float
4	Vibration pump	8	Liquid waste bucket

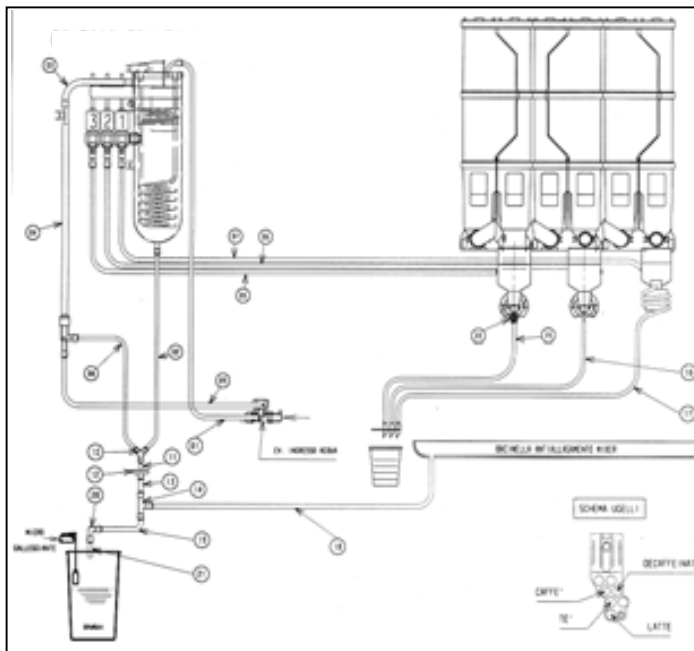


## 3.1 - BOILERS

For the **Kikko** model there are two versions, an **Espresso** version using only a **pressure** boiler, for both espresso and instant products, and an **Instant** version using an open-top boiler with incorporated float. The **espresso boiler** is the same used in the **Brio** model, therefore with the same known and consolidated features and reliability, but with a specific application for this machine. The open-top boiler for the **Instant** version is similar to the one used on the Brio but of a different size and with slightly different position of probes and thermostats, due to the specific space requirements of the Kikko.



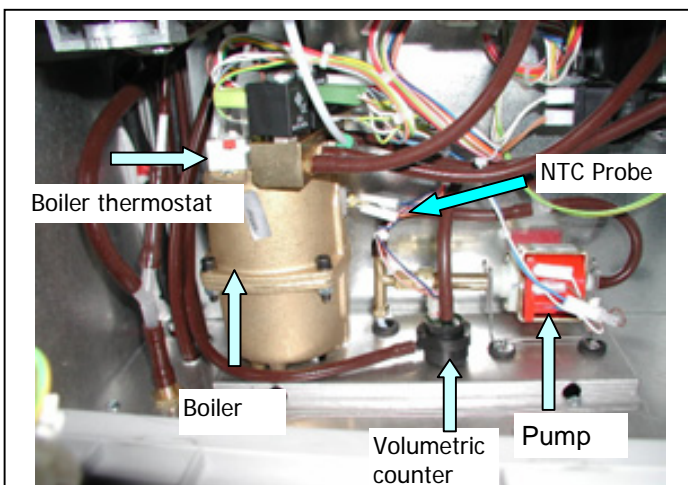
FUNCTIONAL DIAGRAM OF PRESSURE BOILER



FUNCTIONAL DIAGRAM OF OPEN-TOP BOILER



VIEW OF ESPRESSO BOILER COMPARTMENT WITH PUMP  
(MIXER SUPPORT WALL TILTED)



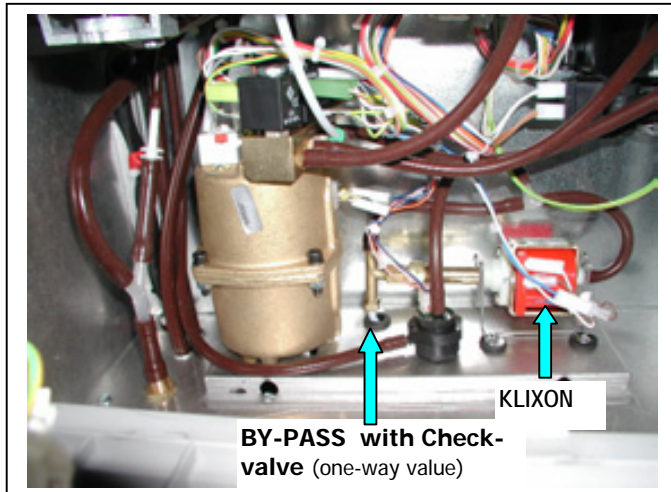
ESPRESSO BOILER : DETAIL

See relevant section in the functional unit manual for details, photos and a complete description

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. As the internal temperature increases the resistance is reduced progressively as indicated in the following table.

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

## 4 - PUMPS AND BY-PASS



VIEW OF PUMP/BOILER COMPARTMENT TILTED WALL

The same pump used in the Brio model is used to supply the boiler.

The difference being in the application, as pump, boiler and connections are positioned inside the mixer compartment and easy to access by tilting the compartment wall, locked only with two screws and a quick snap fastener.

This solution ensures maximum access for maintenance and hygiene.

The pump has overheating protection in case of continuous or dry operation by means of a 90° C self-reset klixon.

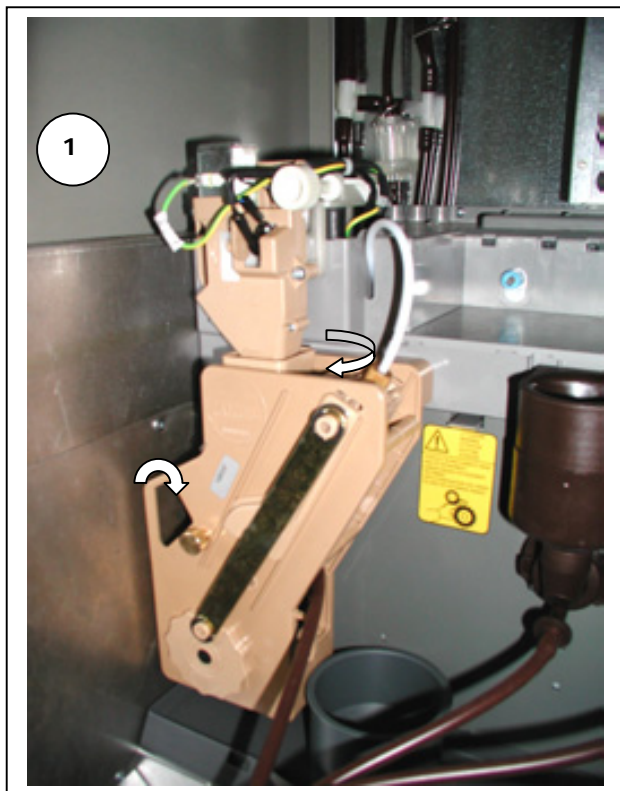
The by-pass is factory pre-set at **12 bar**.

**The pump is activated by relay K 13**

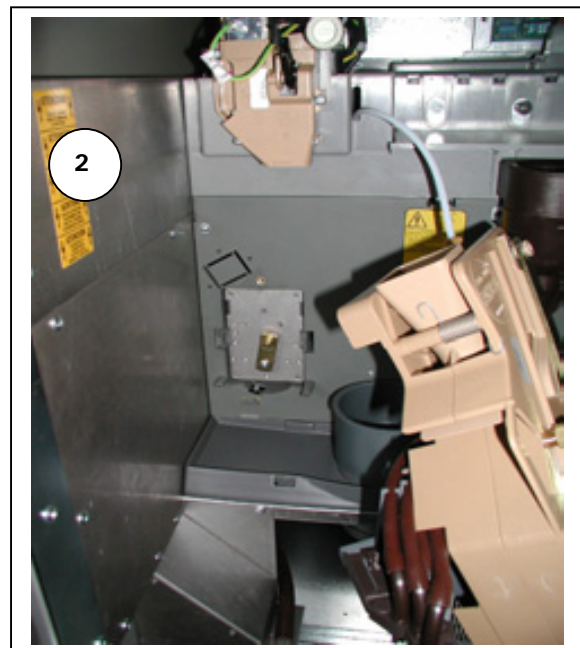
## - ESPRESSO COFFEE BREWER UNIT

The well known and reliable **Z 2000 M** unit is used, but with some changes to make it more suitable and with simpler operation, to take into account the Kikko characteristics.  
(Changes already introduced in the Colibri)

Espresso coffee brewer detail  
Positioned at the upper dead centre  
Ready for loading ground coffee



BREWER UNIT IN OPERATING POSITION (1)



AND BEING REMOVED FROM THE MACHINE (2)



## 6 – CUP DISPENSER UNIT (complete with Sugar and stirrer dispensers)

It is a newly designed functional unit specially conceived and optimised for the Kikko; it is integrated to the sugar and stirrer dispenser unit.

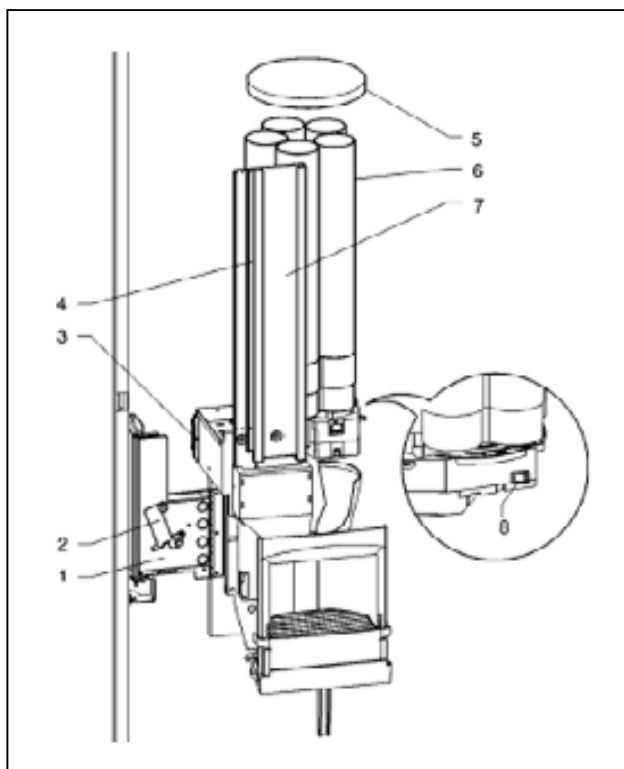
The new feature consists in the option of using three different size stirrers:

90 mm - 105 mm - and 115 mm stirrers

with a total capacity of 550 stirrers..

To adjust to the desired length it is sufficient to move the adapter profile inside the guide and place it in the preset position for the new size.

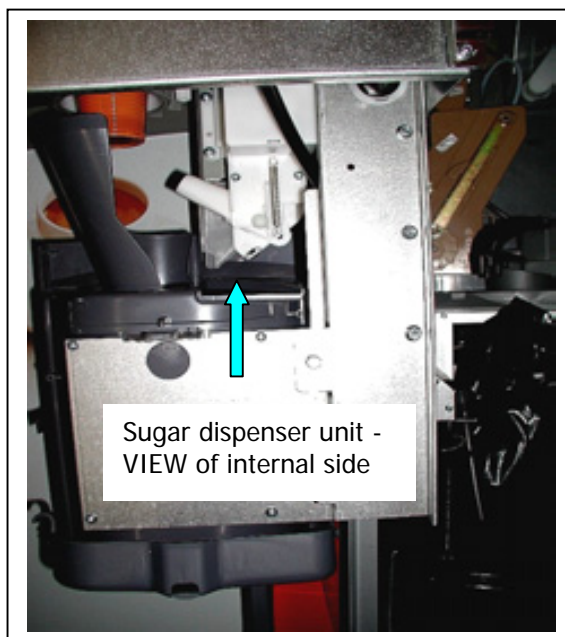
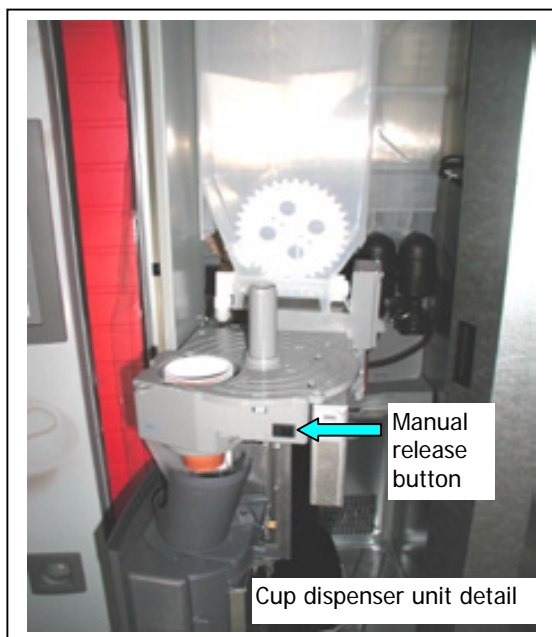
Operation: The release ratiomotor is triggered by relay K 2 and the sugar release spout is rotated at the same time as the stirrer release system is activated.

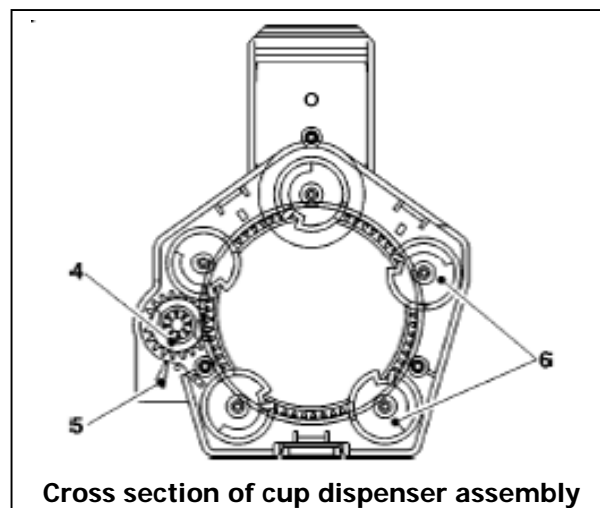
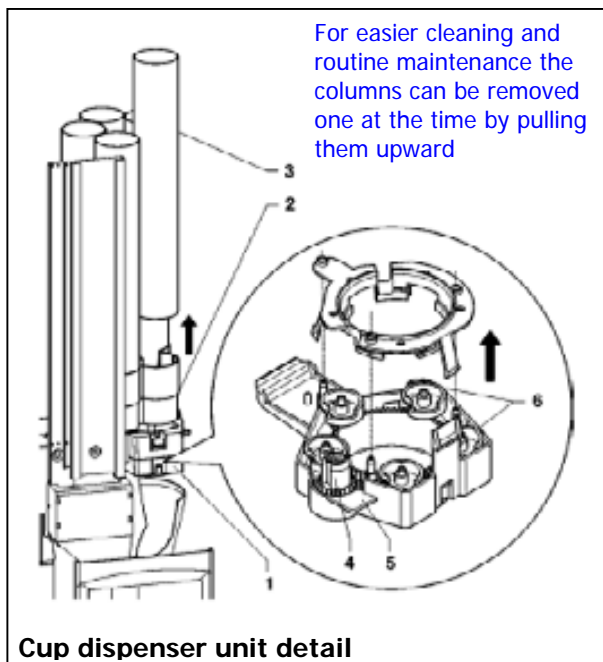


- 1 - Swivel shelf
- 2 - Swivel release lever
- 3 - Shelf positioning magnet
- 4 - Adjustable stirrer guide
- 5 - Cover
- 6 - Cup stacker
- 7 - Stirrer stacker
- 8 - Cup release button

Either plastic or wax paper cups can be dispensed with 70-71 mm or 72-73 mm diameter

For correct operation, the snails and the cup release ring must be replaced





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



The cup, stirrer & sugar dispenser is designed to be easily disassembled for normal cleaning and maintenance.

Every single column of the cup stacker and the release device can be disassembled without using any tools.

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.

Different diameter cups and different length stirrers can be used for a total of approximately 450-500 cups (according to the type used)

For the stirrers it is sufficient to widen the left-hand side guide, loosening the two screws **A** and repositioning the guide in the special holes.

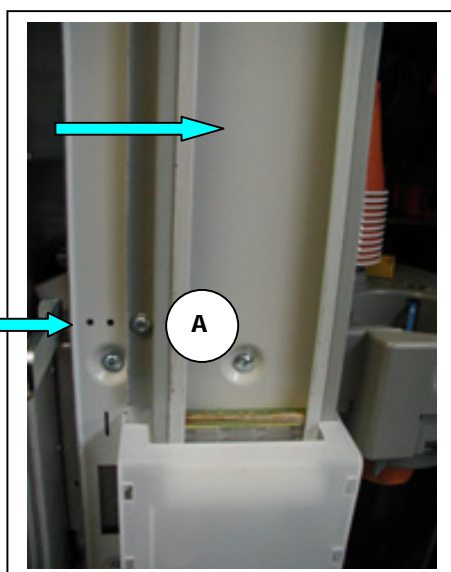
3 stirrer sizes can be used:

95 mm – 105 mm – 115 mm.

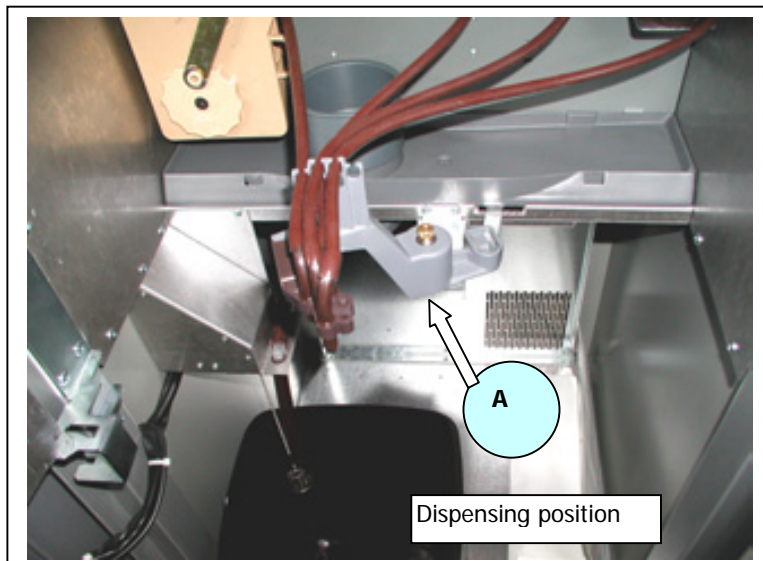
For larger diameter cups, the snails must be replaced with other specific ones identified by a different colour.

Stirrer stacking guide.  
(95 mm position)

Stirrer length adjustment



## 8 – MOBILE SPOUTS ASSEMBLY

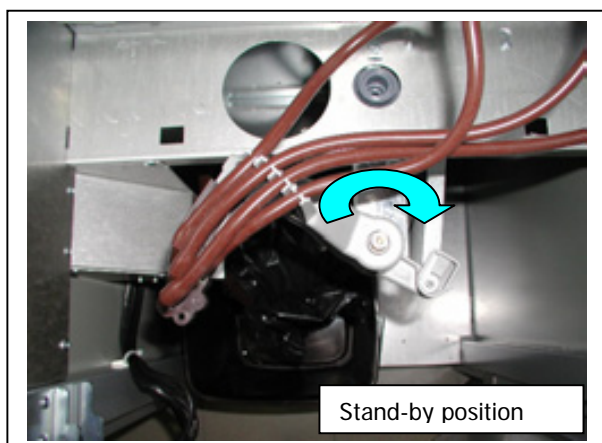


In order to ensure greater hygiene and optimum aesthetics, a new specific “Mobile spouts” assembly was designed.

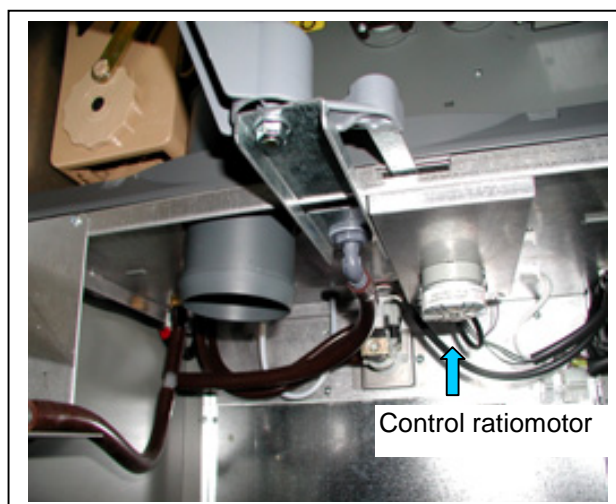
The system allows the spouts to be moved away during standby and moved close to the cup rim as much as possible during the drink dispensing phase. For normal maintenance and hygiene a single operation is necessary to easily disassemble by loosening the screw **A**.

The correct position during dispensing is ensured by a microswitch that is triggered by a special cam, while the position in standby is determined by the software with a set operating time

The motor is controlled by **relay K 7**



Mobile spout assembly viewed from above



Mobile spout assembly viewed from below



## 9 - DOSER DEVICES AND POWDER PRODUCT CONTAINERS

Due to the compact size of the Kikko new solutions needed to be designed, with quick fastening without any screws, to allow easy access for maintenance.



Container being removed

In order to optimise the internal space and allow the use of 7 powder containers (according to the model) modular and double containers were designed.

They are modular because they were conceived as three vertical parts that can be removed or inserted according to need or to the type of vending machine.

They are double because each container, although made as a single piece, is divided into two parts with different capacity to ensure maximum instant product optimisation.

For example, larger size for milk and chocolate and less volume for instant coffee and tea etc, according to different location needs.

In the instant versions there can be up to 7 containers.

The ratiomotors are secured with snap fasteners without screws, they are of the induction type powered with 230 V AC and fitted with overheating protection by means of a klixon on the coil. They are used at different speed according to the product to be dispensed, and are identified by a different colour drive gear.

This solution ensures maximum accuracy and quick operation.

The containers can be fitted with a whipper inside to optimise the dispensing of products that form clots; dispensing is through the rotation of food-safe plastic augers.

The powder dose is metered through by the timed rotation of the auger, with software settings in tenths of a second.

Available velocities 52 RPM - 78 RMP

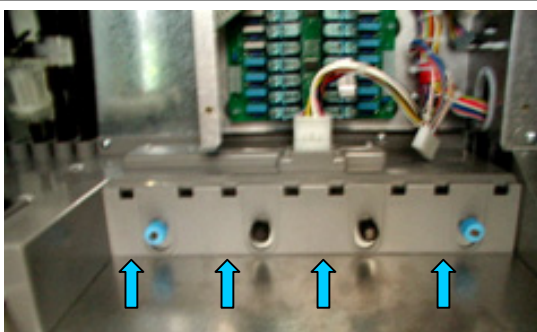
Activation is by means of relays:

k 21 – k22 – k23 – k24 for motors:

MD4 – MD3 – MD2 – MD5 in the espresso version.

k 20 - k 21 – k22 – k23 – k24 for motors:

MD5 - MD4 – MD3 – MD2 – MD1 in the instant version.



Container / ratiomotor cogged connections



Double container with different chamber capacities

Removal of containers



## 10 – MIXER UNIT

Apart from their application, the mixers are the usual excellent and reliable ones used in the entire Zanussi production.

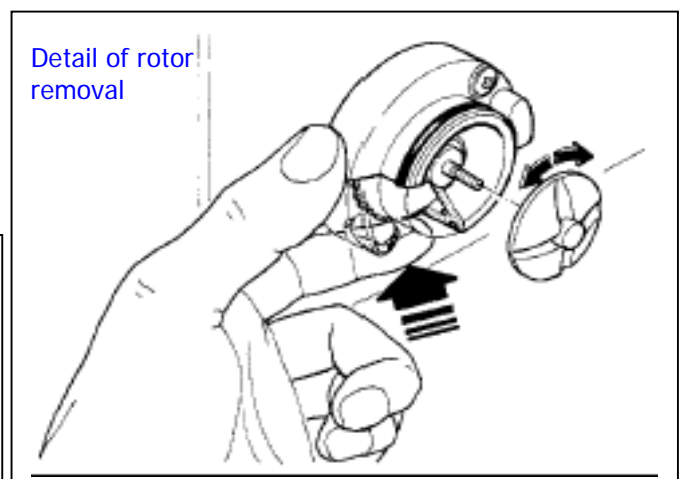
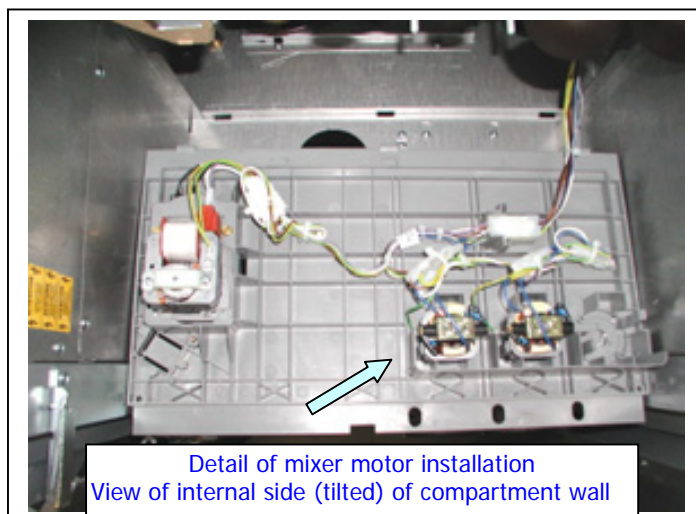
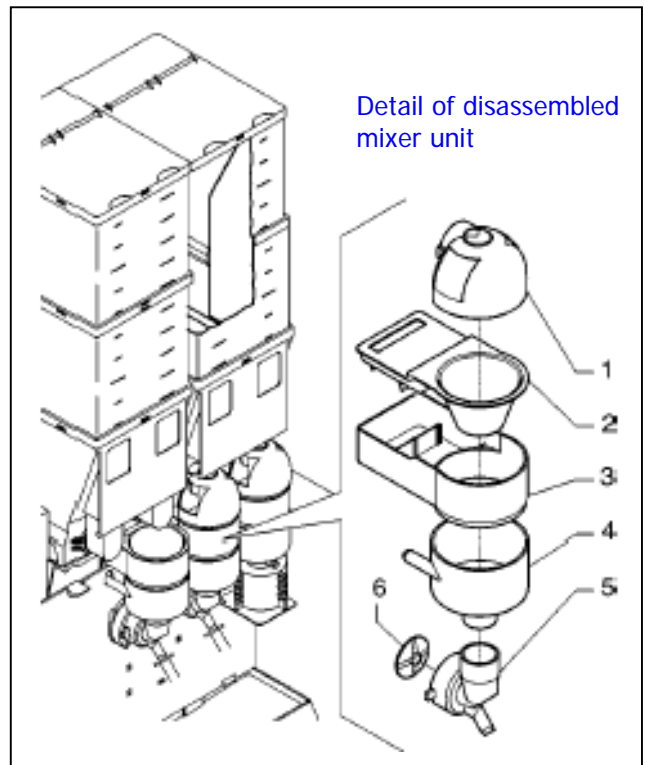
A mixer must have two main features:

- 1) Ease of disassembly and limited number of components to be able to meet the HACCP directive.
- 2) The quality of dispensed products that must have as much as possible the appearance of products served at the bar.

The powder removal tray is integrated in the conveyor (part 3)

This allows emptying each time the mixer is removed for cleaning, ensuring that such operation is not overlooked. The motors are special high rotation speed commutator motors (20,000 rpm) powered with 230 V AC and fitted with interference suppressors and self-resetting overheating protections.

The motors are activated by relay **K 09 – K 10 – K 11** (espresso version); **K 08 – K09 - K10 – K11 – K12** (instant version)



**Removal of wall for access to electric mixers**

The mixer motors are secured on the internal side of the compartment wall (mixer support shelf); to access them two screws need to be loosen and the snap fasteners undone.

The wall is tilted, thus gaining full access to the motors.

All other operations are the same performed on other vending machine models.

# 11 - POWDER AND LIQUID DOSE TABLES

## Factory “default” settings (doses for ITALY)

Selection	Notes	Coffee beans	Coffee Instant	Water c.c.	Powder g	Sugar g	Notes
<b>Short coffee</b> Espresso	Time	2 sec.	--	35 sec. 72 <b>cdv</b>	--	7 g	<b>CDV</b> = Flow-meter pulses
	Quantity	7 g		35			
<b>Long coffee</b>	Time	2 sec.	--	38 sec. 112 <b>cdv</b>	--	7 g	
	Quantity	7 g		60			
<b>Coffee with milk</b>	Time	2 sec.	--	38 sec. 82+32 <b>cdv</b>	--	7 g	
	Quantity	7 g		40+25 c.c.	2.0 g of milk		
<b>Cappuccino</b>	Time	2 sec.	--	45 sec. 60+75 <b>cdv</b>		7 g	
	Quantity	7 g		40+60	6.0 g of milk		
<b>Cappuccino with Chocolate</b>	Time	2 sec.		22 sec. 50 +82+32	3.5 g choc.	7 g	
	Quantity	7 g		<b>cdv</b> 40+40+25	6.0 g of milk		
<b>Instant coffee</b>	Time		1.3 g	22 sec. 50 <b>cdv</b>	--	7 g	
	Quantity	--		40 c.c.			
<b>Instant coffee with milk</b>	Time		1.3 g	27 sec. 55+ 35 <b>cdv</b>		7 g	
	Quantity	--		40 +25 c.c.	2.0 g of milk		
<b>Cappuccino Instant</b>	Time		1.3 g	31 sec. 55+ 72 <b>cdv</b>		7 g	
	Quantity	--		40 +55 c.c.	6.0 g of milk		
<b>Chocolate</b> Strong chocolate	Time			32 sec. 116 <b>cdv</b>	23 g		
	Quantity	--	--	90 c.c.	27 g	--	
<b>Instant tea</b> (Optional)	Time			32 sec. 116 <b>cdv</b>			
	Quantity	--	--	90 c.c.	12.5 g	--	
<b>Milk</b>	Time	--	--	32 sec. 116 <b>cdv</b>			
	Quantity			90 c.c.	8 g	7.5 g	

### NOTE 1

The water flow in the mixers is approximately 10 c.c. per second and it is given as an indication, as there are many variables that can affect the accuracy.

The liquid dose is determined by counting the flow-meter pulses (cdv).

Both versions (Instant and Espresso) use an electromechanical vibration pump (with the espresso boiler) for the water flow; therefore the liquid dose in both versions is measured in **cdv** (flow-meter pulses).

### NOTE 2

To be noted that the number of pulses does not change in a linear manner (i.e. double the amount of water does not correspond to double the number of pulses), however the counter varies the accuracy according to the water flow velocity, and namely:

For espresso coffee it is slowed considerably because of the coffee compress reaction that slows down the water flow, while it is accelerated in the instant drinks selections, since there are no obstructions to the water flow. Therefore, in the event of changing the default doses set at the factory, some measurements must be made using graduated measuring containers to check the accuracy of the doses.

## 12 – TROUBLE-SHOOTING

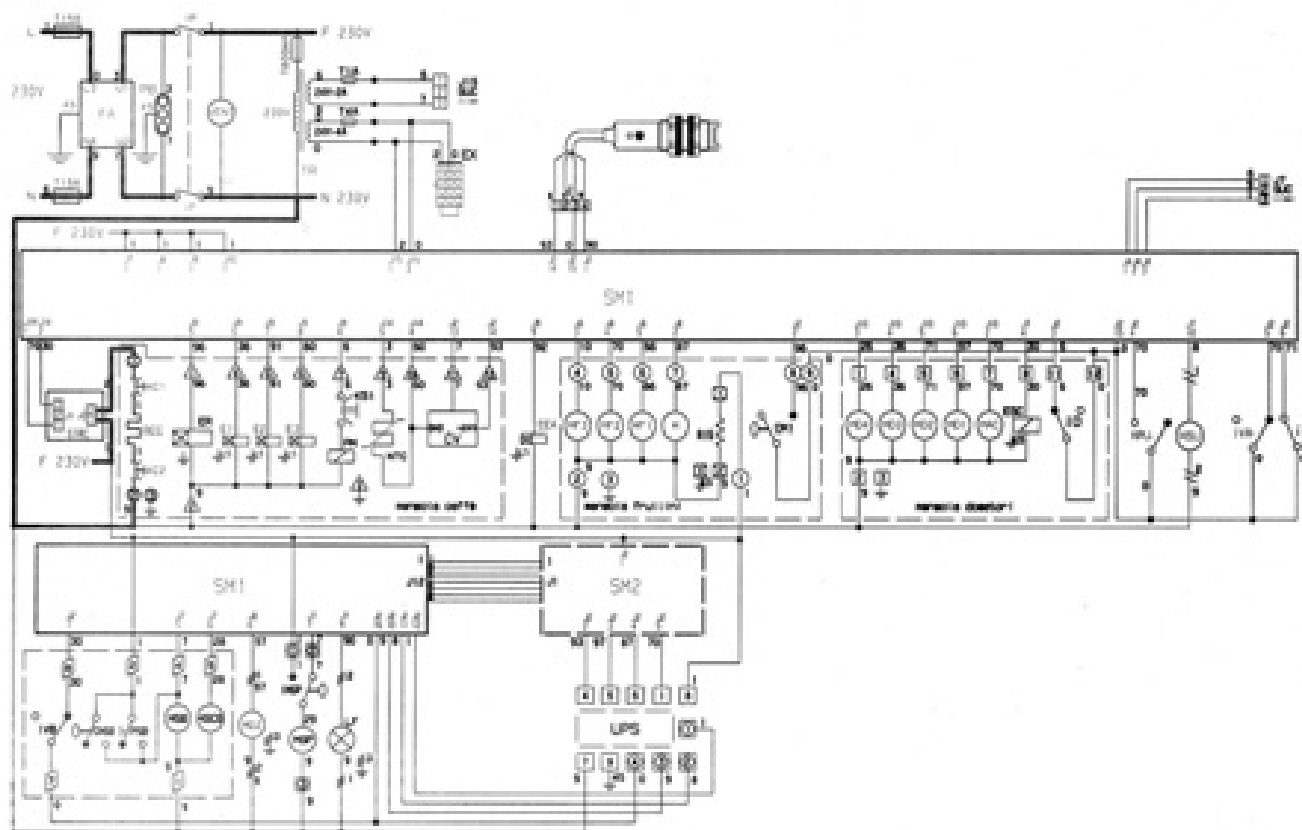
Problem (And/or indication on the display)	Possible cause	Solution
<b>The machine does not go into the boiler heating phase, remaining in the "installation" phase</b>	No water flow from the mains or insufficient pressure (5-85 N/cm <sup>2</sup> ) The air-break microswitch is faulty Water inlet solenoid valve locked by the overflow tube and activated by the relevant relay	Check for the presence of one or more of the situations indicated and once identifying the cause do as follows: Short-circuit the microswitch to check it's functioning Unlock the water inlet valve, undoing the threaded ring and emptying the overflow tube Check for 230 V AC voltage at the solenoid valve power supply ends Check the activation of relay K 18
<b>The display indicates the message "No coffee"</b>	The grinder motor is locked because there is no coffee The grinder wheels are locked because of foreign matter in the coffee Grinder motor overheating device triggered The coffee container shutter was not opened	When an espresso coffee selection is made the grinder is activated conveying coffee to the doser device, the motor lock is determined by the microswitch, which is triggered when the set dose is reached. If such microswitch is not triggered, the system disables all espresso coffee selections, indicating the message "No coffee" on the display, once identifying the cause: Check the wear of the brushes Free the grinder wheels with the utmost care, as blocked wheels could have triggered the overheating protection, which is reset-able. Open the shutter, add coffee
<b>The display indicates the message "Coffee release failure"</b>	Failure to the release magnet Failure to the coffee dose microswitch Failure to relay K 01	After grinding and during the attempt of releasing the ground coffee, the doser device plate triggers a microswitch that signals the coffee release If such microswitch is not triggered, there could have been two causes: Failure to the release magnet or overheating protection triggered (resetting is automatic, and after approximately 5 minutes it is reactivated, but the cause of such trigger must be identified). Failure to the microswitch: replace with an identical one designed for the KIKKO, in the event of using a microswitch with different characteristics considerable discrepancies in the ground coffee doses may occur.
<b>The display indicates the message "Boiler failure"</b>	The boiler does not heat Dry operation protection system triggered. Anti-boiling protection system triggered. (for instant boiler)	The machine is locked if after 10 minutes heating the set temperature is not reached. Check for the correct operation of the heating element, the thermostat, the probe and of the actuation triac. In the event of replacing the probe, the correct temperature must be re-adjusted using the trimmer. In the instant version, check also the over-boiling thermostat and if triggered identify its cause.
<b>The display indicates the message "No cups"</b>	No cups in the dispenser Microswitch failure The cup column does not rotate	If no cups were loaded when starting the machine, the column rotation ratiomotor is activated to search for a full column and if no cups are found within a 60 sec "time-out", indicated by the specific microswitch, the machine is locked. Excluding the fact of a real lack of cups, the correct microswitch functioning must be checked and in the event of failure they must be replaced with identical characteristic microswitches. If the ratiomotor is locked, the correct actuation of relays K 2 and K 3 must be checked.
<b>The display indicates the message "Espresso unit"</b>	The espresso unit failed to reposition. Failure to the lower dead centre positioning microswitch. Failure to relay K08	Check for the correct operation of the lower dead centre positioning microswitch. Check that the unit stops correctly at the upper dead centre (monitored via SW). If not replace the board or reprogram the CPU.



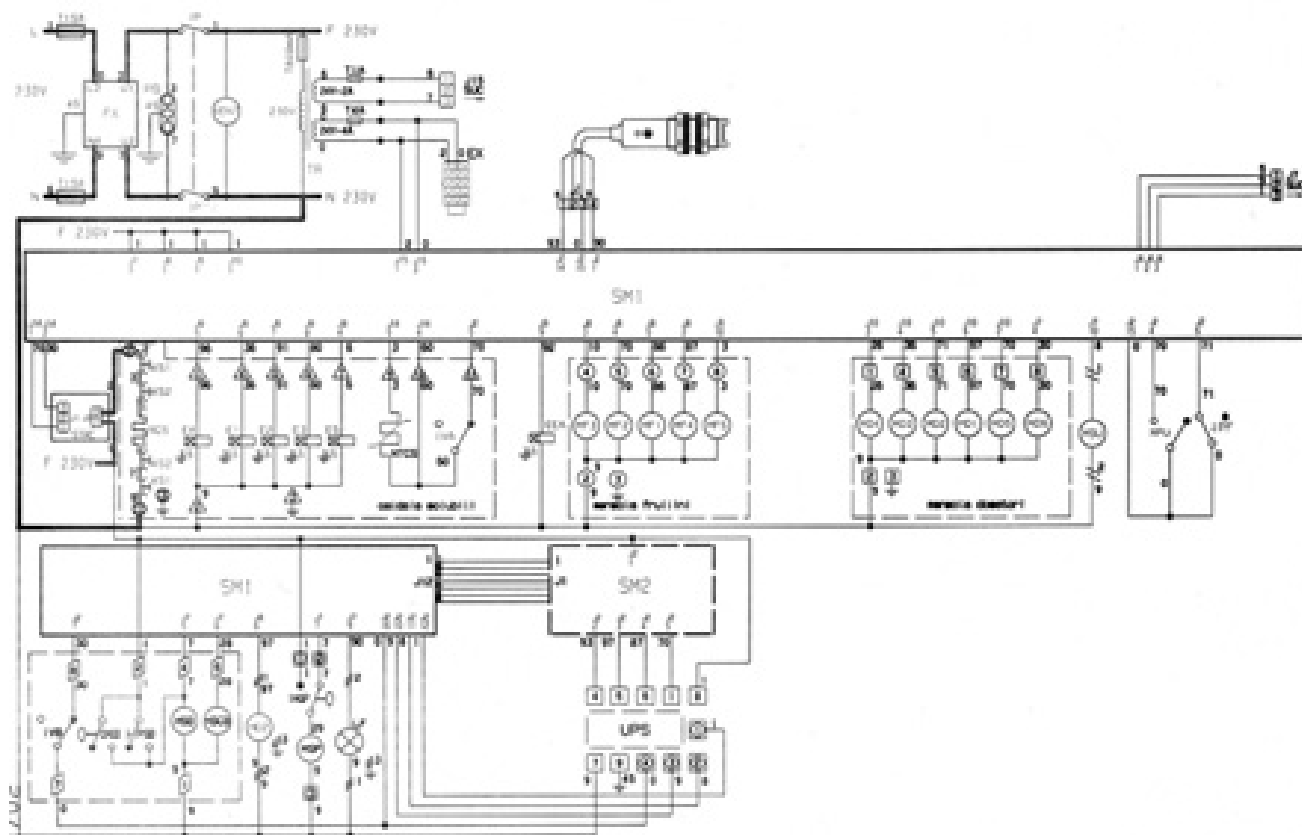
<p><b>The display indicates the message</b>  <b>"Volumetric counter"</b>  <b>(flow-meter)</b></p>	<p>The set liquid dose is not reached within 60 sec. (The volumetric counter in the KIKKO espresso model is used to measure also the water dose for instant products).  In the instant version the water dose is determined by timed solenoid valve opening via SW</p>	<p>The water amount for both espresso coffee and instant drink selections is ensured by a volumetric counter; with the water flow a wheel rotates and through sensors sends a number of pulses corresponding to the water dose programmed in the SW. If such dose is not reached within 60 sec. it means that there is a problem:  Check for the correct functioning of the volumetric counter; there must be 5 V AC on the terminals during the counter operation.  Check that coffee is not ground too fine and the dose excessive.  Check for clogging in the coffee filters.</p>
<p><b>The display indicates the message</b>  <b>"Air-break failure"</b></p>	<p>No water from the mains.  Faulty air-break microswitch  Failure to the float actuation Microswitch system.  In the instant version the air-break is incorporated in the <b>open-top</b> boiler.</p>	<p>If in the period taken to make 6 selections with any dose the microswitch controlled by the air-break float is not triggered  The vending machine is locked for air-break failure.  The malfunction could occur for lack of water from the mains, or because of a failure to the float microswitch system.  Replace the microswitch with one having the same characteristics, otherwise other malfunctions may occur.</p>
<p><b>The display indicates the message</b>  <b>" RAM data"</b></p>	<p>Wrong RAM data, which must be retrieved by initialising the EPROM. There may be various causes, including possible electromagnetic interference above the norm.</p>	<p>Enter into the installation procedure and initialise the software; if the failure persists replace the CPU or reprogram the Flash EPROM.</p>
<p><b>The display indicates the message</b>  <b>"Water failure"</b></p>	<p>If the air-break microswitch is closed for more than a minute, even with the solenoid valve activated.</p>	<p>Check the water inlet solenoid valve.  Check for the correct actuation of relay K 12.  Check the air-break microswitch.  Check the tank float microswitch.  Check the presence of water from the mains.</p>
<p><b>The coffee lacks body and cream and is dispensed too quickly</b></p>	<p>Excessively coarse grinding.  Insufficient ground coffee dose.</p>	<p>Inspect the grade of grinding, keeping in mind that it takes between 15 and 20 seconds to dispense optimum espresso coffee.  A shorter time means that the grade of grinding is too coarse.  With wear the grinding wheels must be adjusted regularly.  After 50,000 cycles, if necessary replace  Check the coffee dose, weighing it at least for 5 consecutive doses; the average weight must be between 6.5 and 7 grams.</p>
<p><b>Coffee is dispensed too slowly and it tastes burnt</b></p>	<p>Excessive coffee dose.  Grinding too fine.  Faulty pump by-pass.  Clogged coffee filters.  Scale deposits in the solenoid valves</p>	<p>Inspect the grade of grinding, keeping in mind that it takes between 15 and 20 seconds to dispense optimum espresso coffee.  A longer time means that the grade of grinding is too fine.  Adjust the grinding wheels.  Check the coffee dose, weighing it at least for 5 consecutive doses; the average weight must be between 6.5 and 7 grams.  The by-pass is set from the factory to trigger at 12 bars.  Lower settings will lengthen the dispensing time and make less cream.  Replace the coffee filters, replace the solenoid valves.</p>
<p><b>The mixers</b>  <b>"clog up"</b></p>	<p>The whipper failed to rotate.  Powder removal drawer full.  Insufficient water to powder ratio.  Error in the dispensing cycles, set by default</p>	<p>Check for the motor overheating protection trigger, if necessary check the cause of such trigger.  Empty the powder removal drawer.  Check / adjust the water to powder ratio.  Check the logic of the cycles.</p>
<p><b>The display indicates the message</b>  <b>"Coin mech. failure"</b></p>	<p>If there is no communication between the payment system and the software for more than 30 sec (with parallel communication systems this is not signalled.)</p>	<p>Check for correct connections, correct insertion of the protocol card, correct SW settings and if necessary replace the payment system.</p>

## 13 - WIRING DIAGRAMS

### Espresso version wiring diagram



### Instant version wiring diagram



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

## **Outline and instructions for use**

### **Notes: What is indicated by the Ec Directive**

Directives **EEC 93/43 and 96/3** concern 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 a system used to analyse any potential risks in the manufacturing and distribution cycle of food product and to identify 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 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**

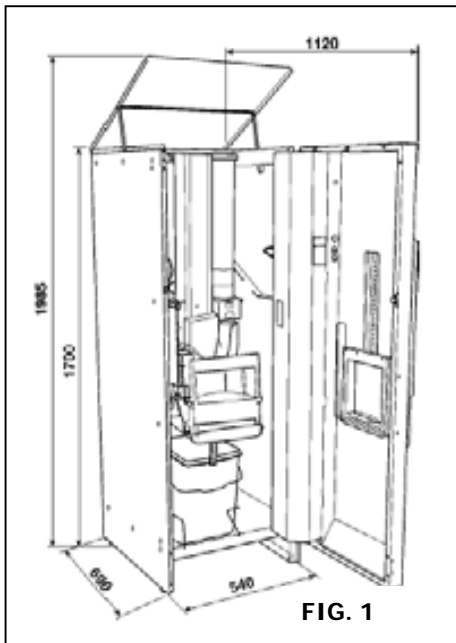
- Ensure hygiene control with a special manual for correct hygiene practices.
- After cleaning, do not touch the surface of any elements that may come into contact with food.
- Wash your hands thoroughly, preferably using disinfectant, before starting any hygiene operations
- Use disposable sterile gloves
- 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 (Page 26, 27, 28)**

- 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 checklist 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.

## DAILY CLEANING AND HYGIENE

(Expected time 5 min. 30 sec.)



Open the door and disconnect the machine from the power supply . (FIG 1)

Remove the liquid collection container, empty it and rinse it thoroughly. Empty the grounds container and rinse it thoroughly . Remove the powder dispensing spouts and clean thoroughly using specific hygiene products. (FIG 2-3)

Remove the waste container and clean  
Remove the coffee unit, clean and rinse with hot water. (FIG 7-8 )

Remove the sugar dispensing spout and clean thoroughly. (FIG.8)

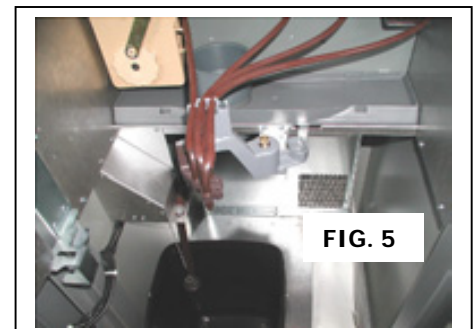
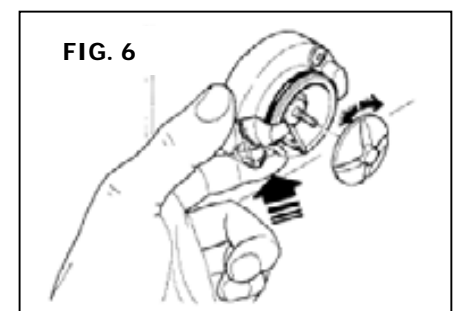
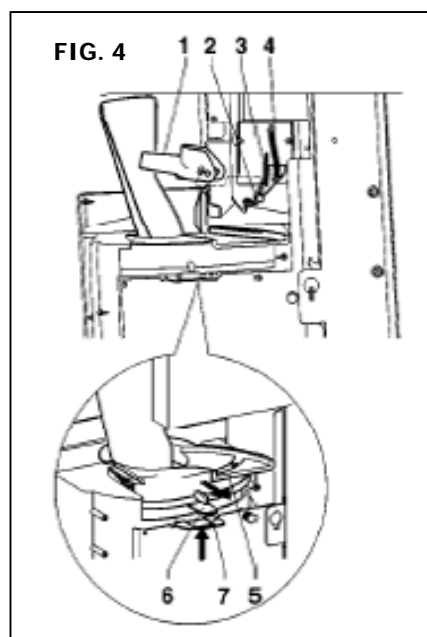
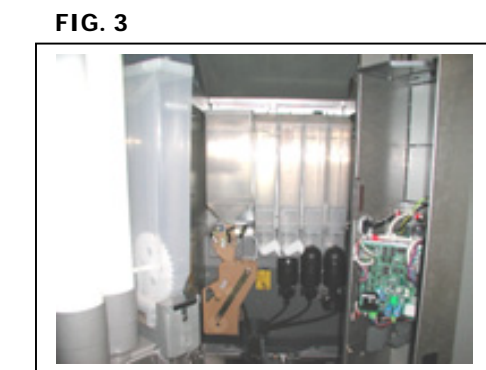
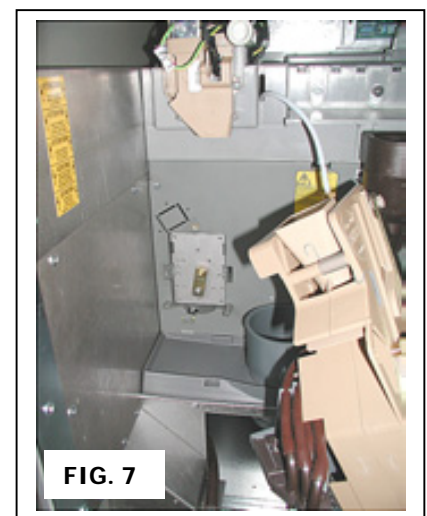
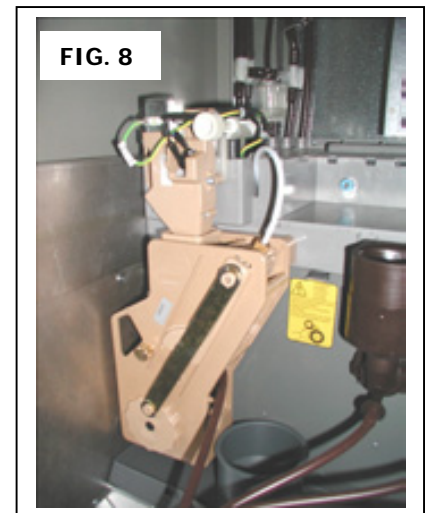
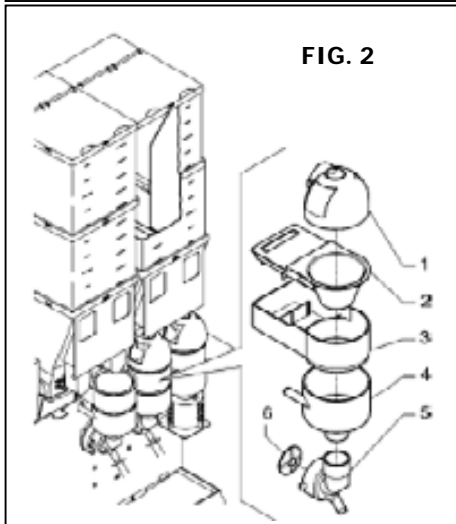
Clean the cup dispenser.( FIG. 8 )

Remove and clean the cup chute. ( FIG.8)

Remove and clean the mobile dispensing spout assembly. (FIG.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.





## WEEKLY CLEANING AND HYGIENE

(Expected time 10 min.)

FIG. 8

FIG. 1



Open the door and disconnect the machine from the power supply (FIG 1).  
Remove the powder dispensing spouts and clean thoroughly using specific hygiene products (FIG 3).  
Remove the containers, empty them completely and clean thoroughly (FIG. 3).  
Remove the liquid collection container (Fig. 2) and the grounds container, empty and clean them with a sponge damp with hot water (FIG 4).  
Empty any residue from the coffee grinder and doser assembly, clean thoroughly and rinse with a fresh clean sponge damp with hot water.  
Remove the coffee dispensing assembly and clean thoroughly.  
Remove and clean the mobile dispensing spout assembly. ( FIG 4)  
Remove and clean the dispensing compartment. (FIG .6-8)  
Disassemble completely the mixers and clean thoroughly (FIG. 7).  
Empty the powder collection containers, located within the steam suction system, and disinfect (FIG. 7).  
Reassemble all parts, taking care not to touch with your hands any parts that come into contact with food.  
Close the door and make some test selections.  
Carry out a mixer automatic wash cycle according to the pre-set procedures. Enter the operations carried out in the log.

FIG. 2



FIG. 3

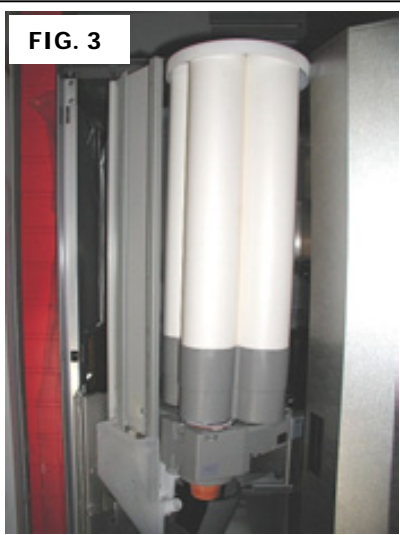


FIG. 4



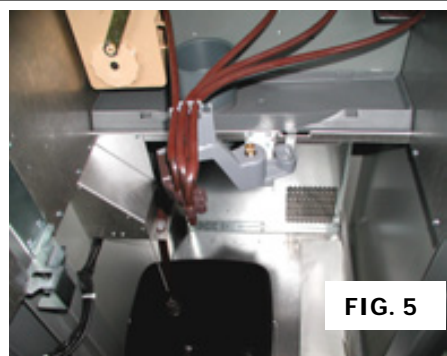
FIG. 7



FIG. 6



FIG. 5



## MONTHLY CLEANING AND HYGIENE (OR EVERY 5000 SELECTIONS)

**Expected time 18 min. (in addition to the time taken for regenerating the filter)**

**FIG. 1**



**FIG. 2**



**FIG. 3**



In addition to the **weekly** operations, also the following must be carried out:

Disconnect the machine from the power supply, open the door ( FIG 8 )

Remove the brewer unit from the machine and disassemble, then clean all residue and rinse thoroughly with hot water, check the filters for clogging and if necessary descale or replace them. Reassemble all parts and slightly lubricate the piston o-rings using food-safe grease or replace them if even slightly damaged ( FIG. 1-2 )

Disassemble the mixers completely, clean and wash using sanitising products, especially the powder removal areas, disassemble completely the wheel and check the state of the seal, when reassembling do not touch with bare hands (FIG. 6 )

**NOTE: it is advisable to perform this operation at the workshop and use mixers that were already sanitised with the 'come-and-go' method**

Regenerate the water softener (if installed) using the special salt solution, even if the softener efficiency test is still positive. (FIG. 4) The softener filter can be contaminated easily and therefore regeneration ensures maximum hygiene.

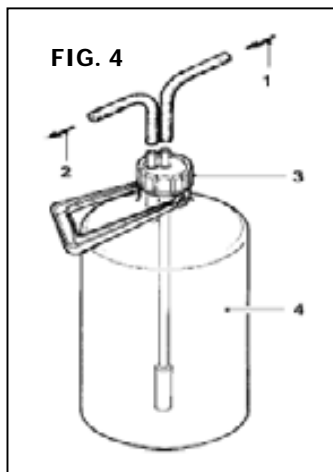
**NOTE: it is advisable to perform this operation at the workshop and use filters that were already regenerated with the 'come-and-go' method**

During regeneration, it is advisable to completely sanitise the hydraulic system and the water inlet solenoid valves, including the air-break (FIG. 3-5)

Thoroughly clean the cup , sugar and stirrer dispenser assembly, disassembling it if necessary (FIG. 7)

Enter the operations carried out in the HACCP hygiene program log

**FIG. 4**



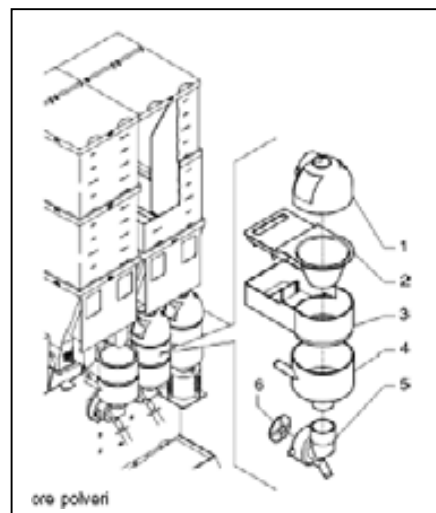
**FIG. 8**



**FIG. 7**



**FIG. 6**



**FIG. 5**

