NECTA

WITTENBORG

AFTER-SALES SERVICE **Hot & Cold**

SERVICE MANUAL

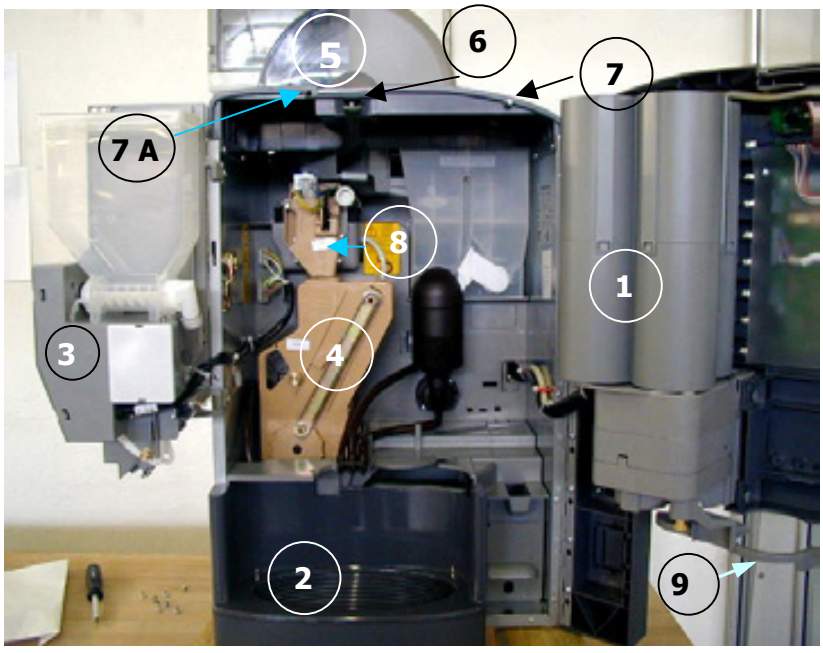
"COLIBRÌ"

BASIC TECHNICAL MANUAL

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

TABLE OF CONTENTS

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.

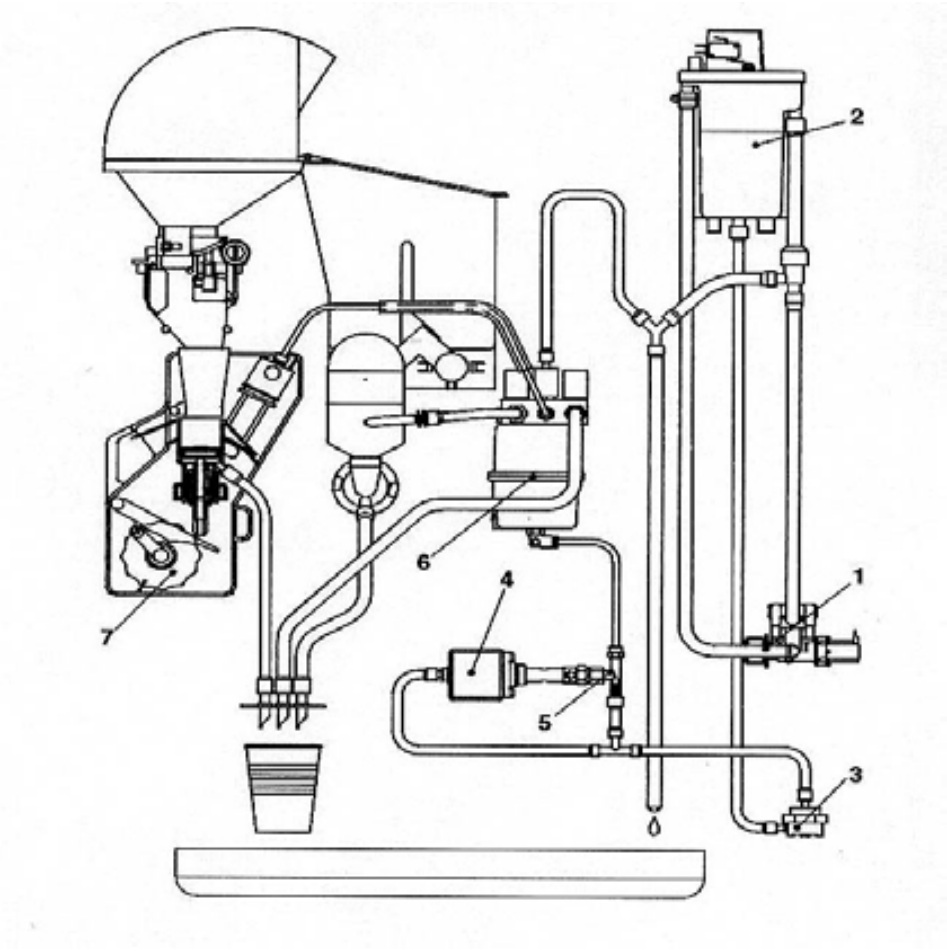


View of Colibrì with the door open

1 - Cup dispenser
2 - Liquid waste tray
3 - Sugar and stirrer release
4 - Brewer unit
5 - Coffee container
6 - Safety microswitch
7 - RH Auto mechanical safety pin
7A LH Auto mechanical safety pin
8 - Coffee doser and release unit
9 – cup support swinging arm

Note: The mechanical safety pins (7 + 7 A) have the function of preventing the opening of the upper container lids with the door closed.
In the espresso version only the right safety device is present
In the Instant version both left and right safety devices are present.

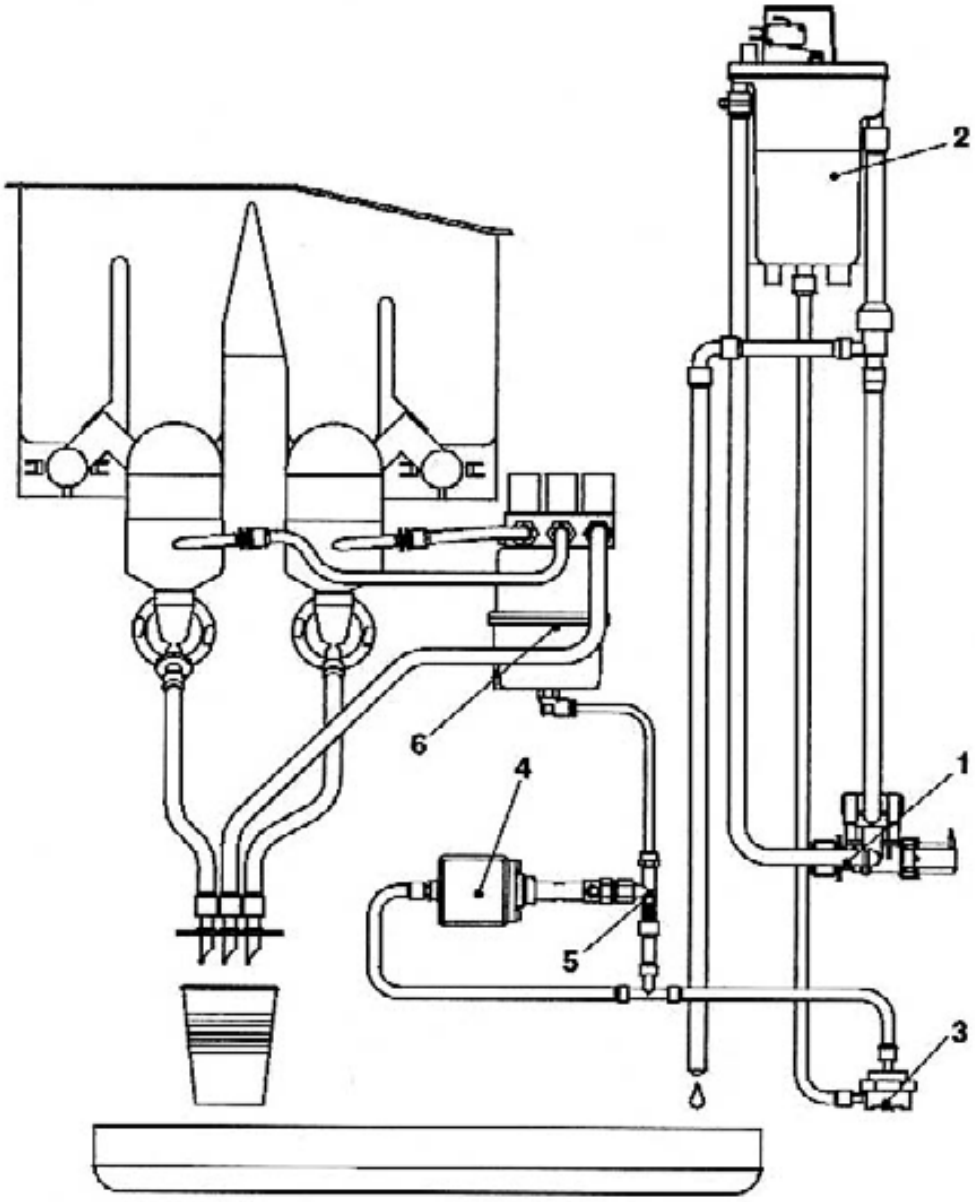
1 - HYDRAULIC LAYOUT



HYDRAULIC LAYOUT - "ESPRESSO" VERSION

List of hydraulic components

1) **Water inlet solenoid valve**
2) **Air-break**
3) **Volumetric counter**
4) **Pump**
5) **Pump by-pass (complete with check valve)**
6) **Pressure boiler (complete with solenoid valve)**
7) **Brewing unit**



HYDRAULIC LAYOUT "INSTANT" VERSION

List of hydraulic components

1) **Water inlet solenoid valve**
2) **Air-break**
3) **Volumetric counter**
4) **Pump**
5) **Pump by-pass (complete with check valve)**
6) **Pressure boiler (complete with solenoid valve)**

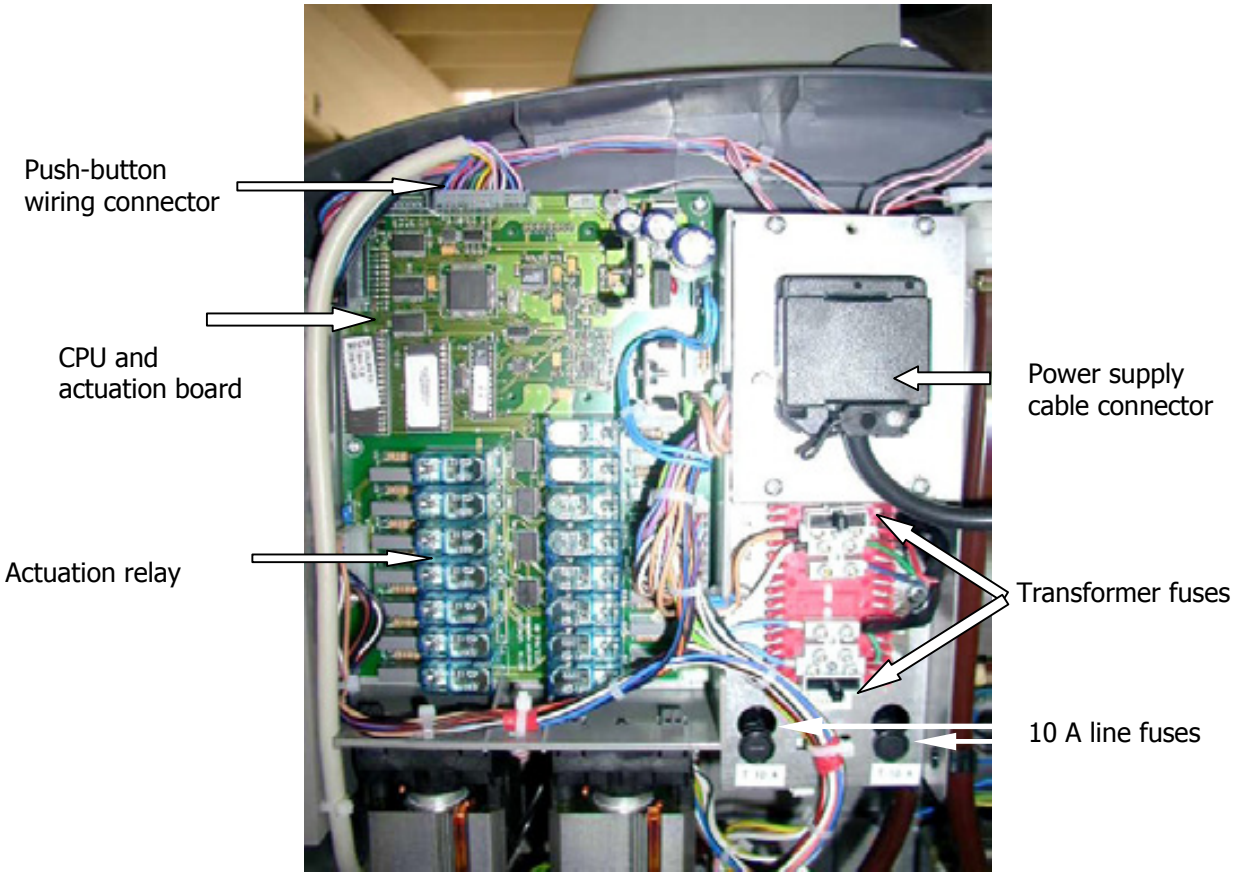
NOTE:
The same ESPRESSO boiler and pump are used in both the espresso and instant versions, but with a different solenoid valve assembly, composed of three 2-way valves, while the espresso boiler solenoid assembly is composed of two 2-way valves and one 3-way valve
The configuration is via Software. (See procedures in the software manual)
In both versions the dose of liquids is calculated by means of the volumetric counter

2 - ELECTRICAL SYSTEMS - CONNECTIONS - CONFIGURATIONS

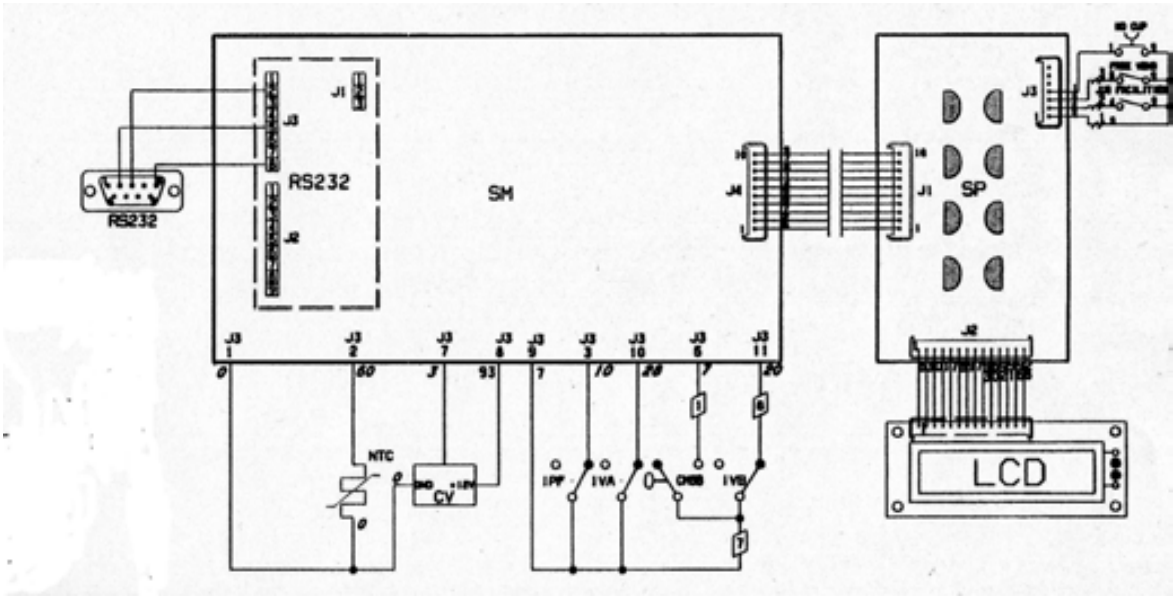
The machine is designed to operate under a single-phase voltage of 230 V AC (+5-10V)
It is protected with a main 10 A fuse on both phases.
With regard to the transformer:
The primary winding is protected with a 125 mA fuse
The secondary winding is protected with a 1.25 mA fuse
The machine is fitted with a door opening safety switch.
The power cable can be supplied as a standard feature and chosen among the following types:
HO5 RN – F copper with a 3 x 1.5 mm^2 section
HO5 V V – F ,, ,, ,, ,,
HO5 V V – F ,, ,, ,, ,,
Fitted with a fixed SCHUKO plug.
NOTE: For **UK** there is a specific plug conforming to the standards in force, which is adopted for that specific market.
In the event of replacement cables of exactly the same characteristics must be used.
Since the "Colibrì" 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.

2.1 - ELECTRONIC BOARDS CONNECTIONS

Electrical and board connections: Back view without protective casing



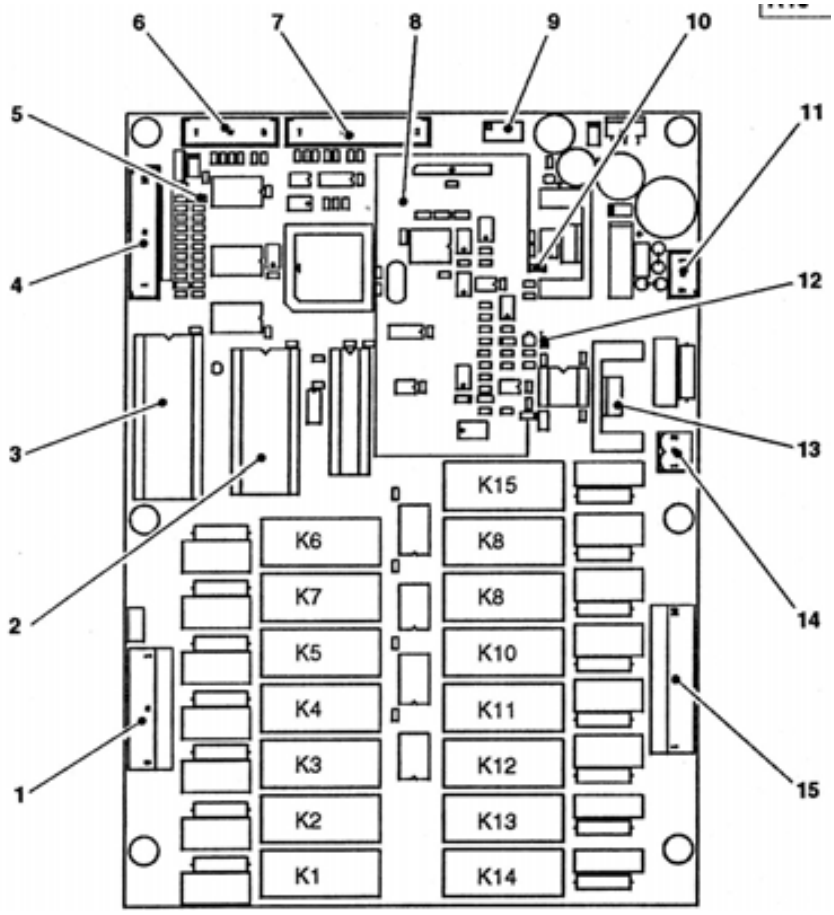
BOARD CONNECTION DIAGRAM



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
As standard feature the vending machine is factory fitted exclusively for the parallel communication payment systems (12 V front validators)

Code	Description
SM	Actuation and control board
LCD	LCD display card
NTC	Temperature control probe
CV	Volumetric counter
RS 232	Printer or data reading device port (only if the relevant optional board is installed)
SP	Push-button board
IVB	Cup sensor switch
IVA	Water sensor (level) switch (air-break)
IPF	Liquid waste overflow switch (previsions for a model with a support cabinet)
CMSB	Cup release motor cam

ACTUATION AND CPU CONTROL BOARD



Board components legend	
N.	**Description**
1	Connector for 230 V users
2	**RAM**
3	**EPROM**
4	Connector for input signals
5 (DL2)	**GREEN LED** (blinking during normal operation)
6	Connector not used
7	Connector for push-button board
8	Expansion boards for payment system protocols (optional); as standard feature the CPU board controls exclusively parallel-type payments systems
9	**Trimmer** for boiler temperature control The boiler temperature is factory adjusted for optimum operation and must not be changed. In the event of the probe being replaced, the temperature needs to be readjusted, keeping in mind that the temperature increases by tightening and decreases by loosening, and each complete turn corresponds to a change of 0.5 °C
10 (DL2)	**YELLOW LED** (Correct power supply to the board)
11	Board power supply connector
12 (DL2)	**RED LED -** When starting the machine it indicates that boiler heating element is working)
13	**TRIAC** - boiler heating element actuation
14	Boiler heating element connector
15	Connector for 230 V AC users
16	**Relay** for actuations (K1 - K15, see separate list page 8)

REFERENCE TO RELAY CODE AND ACTUATIONS - ESPRESSO / INSTANT VERSION

Espresso Configuration		Instant Configuration	
RELAY CODE	**Application**	**RELAY CODE**	**Application**
K 01	Three-way solenoid valve for Espresso coffee	**K 01**	Solenoid valve 3
K 02	Coffee release magnet	**K 02**	Doser device 3
K 03	Coffee grinder motor	**K 03**	Whipper 2
K 04	Pump	**K 04**	Pump
K 05	Coffee brewer motor	**K 05**	Doser device 4
K 06	Solenoid valve 2	**K 06**	Solenoid valve 2
K 07	Solenoid valve 1	**K 07**	Solenoid valve 1
K 08	Whipper 1	**K 08**	Whipper 1
K 09	Sugar doser device	**K 09**	Sugar doser device
K 10	Doser device 2	**K 10**	Doser device 2
K 11	Doser device 1	**K 11**	Doser device 1
K 12	Water inlet solenoid valve	**K 12**	Water inlet solenoid valve
K 13	Cup stacker shift ratiomotor	**K 13**	Cup stacker shift ratiomotor
K 14	Cup release ratiomotor	**K 14**	Cup release ratiomotor
K 15	Stirrer dispensing motor	**K 15**	Stirrer dispensing motor

The control board can be configured for the different machine versions only via software settings.
See Software and Programming chapter

MACHINE CONTROL BOARD CONFIGURATION

Three electronic boards are installed.

1) The CPU **control** board, located at the back of the machine, processes the information from the push-buttons, the payment system and from the sensors installed throughout the machine; it also controls the actuations and the push-button board. It is built on SMT technology.

NB: **SMT** = acronym for: **S**urface Mount Technology (some electronic components that are smaller than the standard which can be surface mounted, takes little space, works with precision and reduced problems from electromagnetic disturbance.

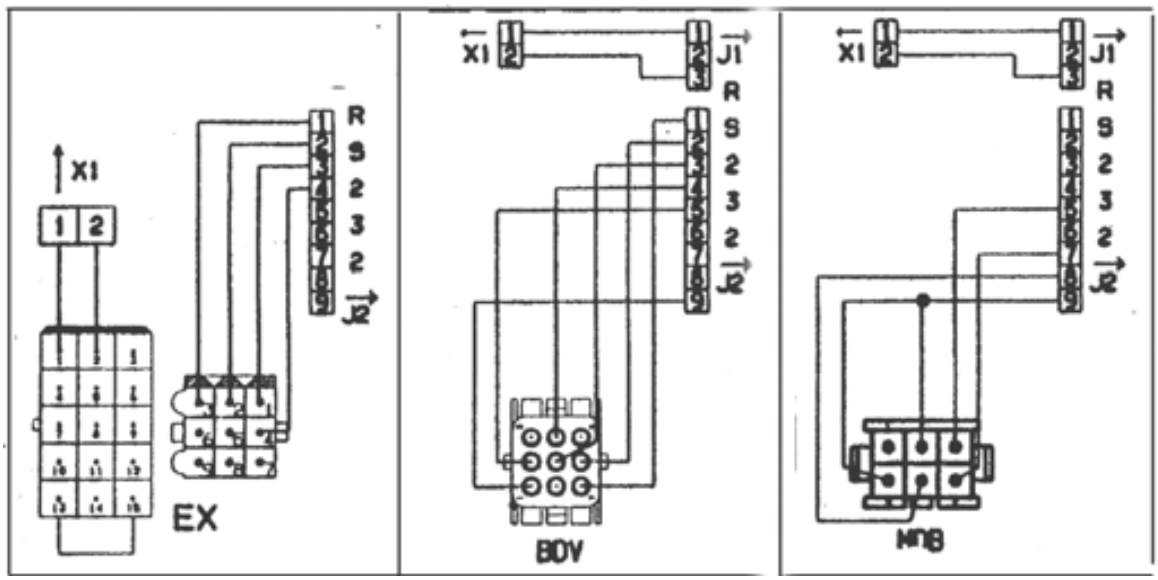
2) The **push-button** board, located on the inside of the door, controls the alphanumeric display and it processes the push-button commands; it also supports the coin mechanism connectors and the RS232 printer port.

3) The **display** board processes the information and converts it into readable signals.

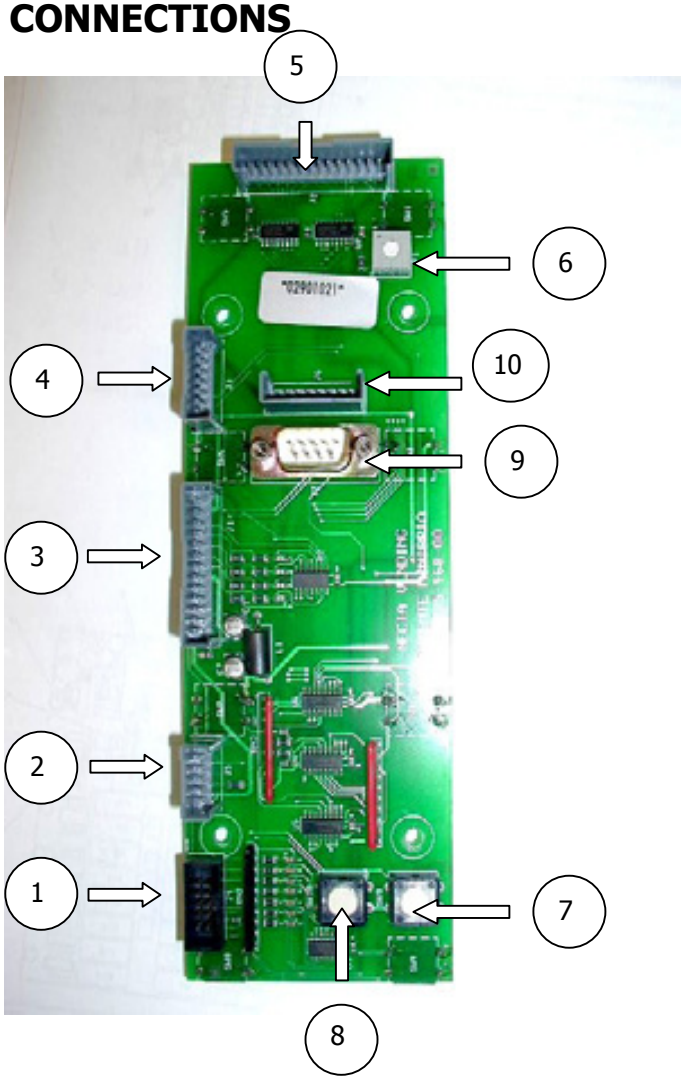
The board power (**15 VAC**) is supplied through the transformer, which is protected with two fuses:
125 mA T on the primary winding
1.25 mA T on the secondary winding
The CONTROL BOARD is also fitted with three coloured LEDs to indicate the different functions.
GREEN LED N. 5: it blinks during normal operation and indicates that the microprocessor functions correctly.
YELLOW LED N.10: it glows when there is a 12 V DC power supply to the board
RED LED N. 12: it glows when the boiler heating element starts

NOTE
The board also controls the payment system; however, as standard feature only a parallel type communication system is controlled.
Three separate cards to be inserted into connector N. 8 are available, controlling the payment system protocols, and namely: Executive - MDB - BDV
These cards are available as "optional" features, assuming that for the specific range of the Colibrì vending machine normally a parallel communication system with front validators is used.

Wiring connection diagram for payment systems with the different protocols



LAYOUT AND CONNECTIONS

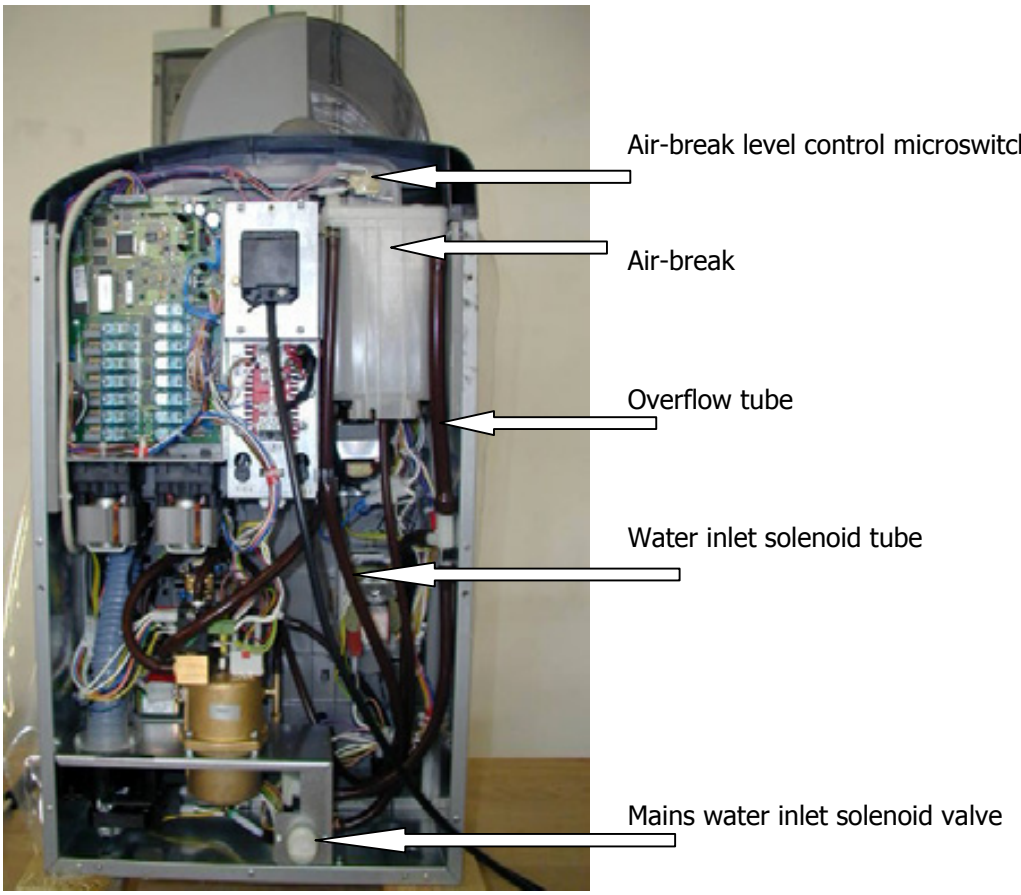


Push-button board viewed from the component side

Ref	Description
1	Front validator connector
2	Free connector (not used)
3	CPU control board connector
4	Service buttons connector
5	Display board connector
6	LCD contrast adjustment trimmer
7	Programming mode button
8	Washing cycle button
9	RS 232 port (Optional and only active if a serial card is installed)
10	Programmer device connector
11	Push-button board connector

3 - AIR-BREAK / BOILERS

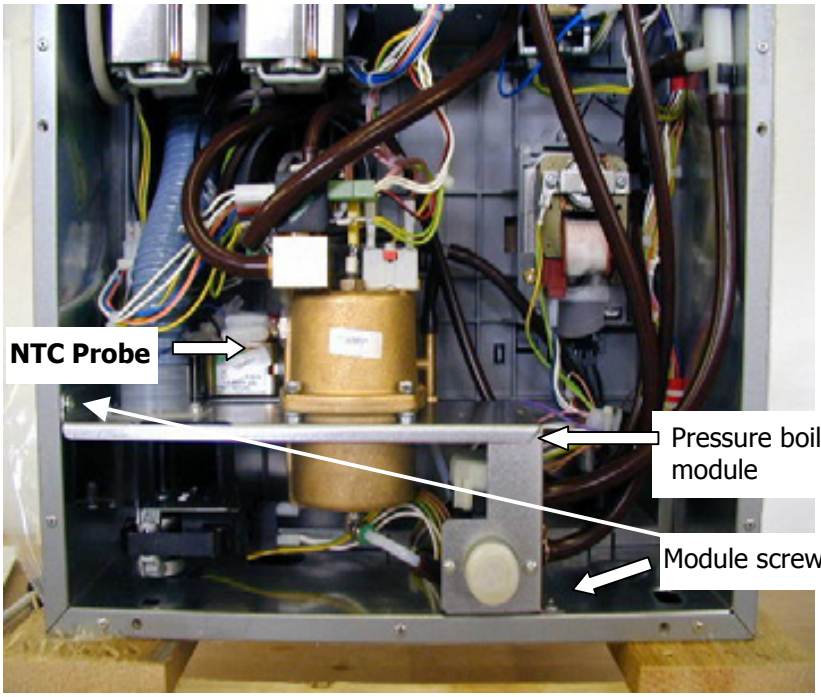
Its function is to keep the water level constant and to signal a water flow interruption from the mains; in the event of such water failure the current selection can be completed.
In addition, it serves the purpose of holding a reservoir of water at normal atmospheric pressure, so that the pump can draw 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.
The dose is measured by means of the volumetric counter.
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 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 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.



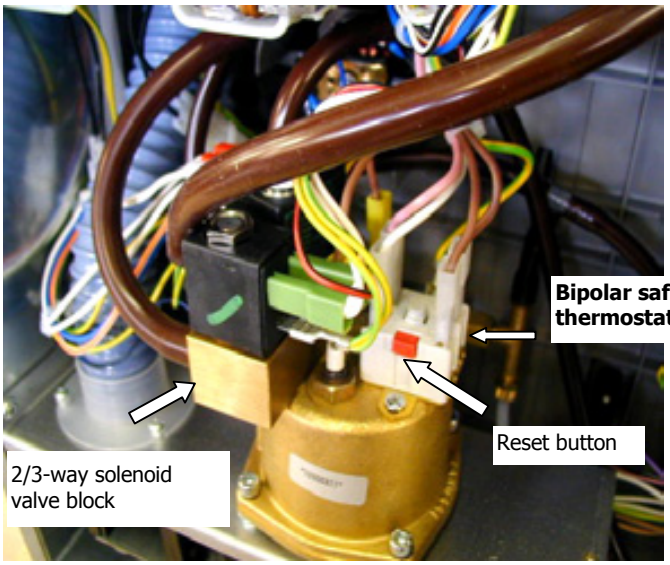
Back view without protective casing

3.1 - BOILERS

The **Colibri** model is fitted with only one boiler of the **pressure** type, used in both the **Espresso** (mixed solenoid valve assembly with two 2-way valves and one 3-way valve) and **Instant** versions**;** however this latter version is fitted with three 2-way valves.
The basic espresso boiler is the same used in the Brio, Venezia etc., but the application is different; it is pre-assembled as a functional unit on a support, complete with all functions and easily removable. For information on all other features refer to the functional unit manual.



Back view of boiler detail



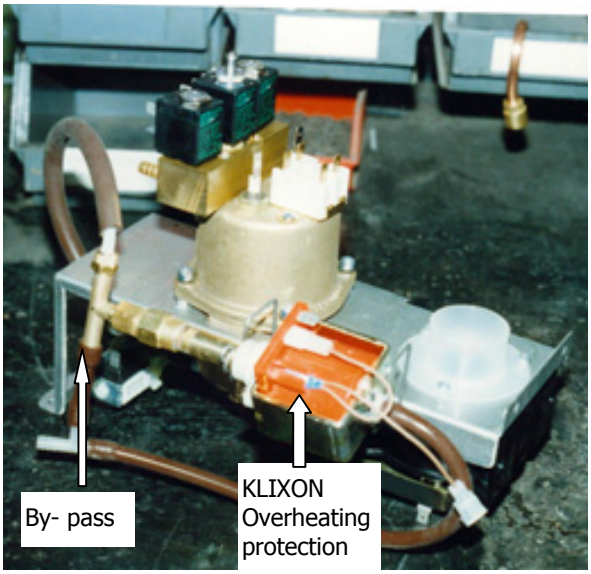
Instant version boiler
Using a complete block with three 2-way solenoid valves
1 - For hot water
2 - For instant prod. 1
3 - For instant prod. 2
NOTE:
The difference between 2-way and 3-way solenoid valves is:
1) **2-way:** when activated it connects inlet (first way) with outlet (second way).

2) **3-way:** when first activated it connects inlet (1) with outlet (2), when deactivated it closes the second way and opens the third way, connected to the second way.
3) Excess liquid from brewing is discharged through the third way.

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	Allowable tolerance
0	35875	+/-7 ohm
25	12000	+/-4 ohm
50	2900	„
85	1475	„
90	1260	„
100	963	„

4 - PUMPS AND BY-PASS



Detail boiler module - pump end

The same pump used in the Brio is used to supply the boiler.
The difference being in the application, as pump, boiler and connections are positioned on an easy-to-remove bracket (see photo); this way full access is ensured for maintenance and hygiene.
The pump has overheating protection in case of continuous or dry operation by means of a 90° C self-resetting klixon.
The by-pass is factory pre-set at 12 bars.
The pump is activated by **relay K 14**.

5 - 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 Colibrì characteristics.
The main differences between the coffee brewer and the standard Z 2000 unit are as follows:

1) No unit detection microswitch. This solution was adopted to make the wiring simpler and therefore eliminate the remote possibility of malfunctions due to false contacts.

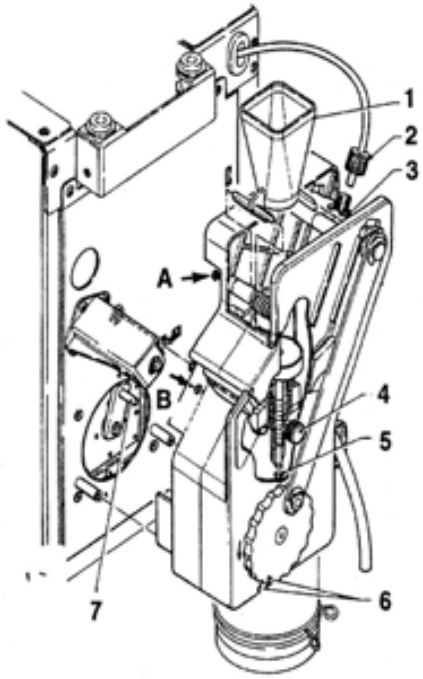
2) Using only one dead centre positioning microswitch. More specifically the upper dead centre position microswitch was eliminated (piston fully open) and such position is determined by the SW that calculates the time taken by the ratiomotor to reach the upper dead centre after triggering the lower dead centre microswitch (brewing position). Tests showed that the time to travel the distance is consistent and does not change much because of the type of motor used.

3) In the event of failure to the microswitch installed, a time-out device disables the motor.

4) As an optional feature a kit for heating the first selection coffee is available (see kit description).

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

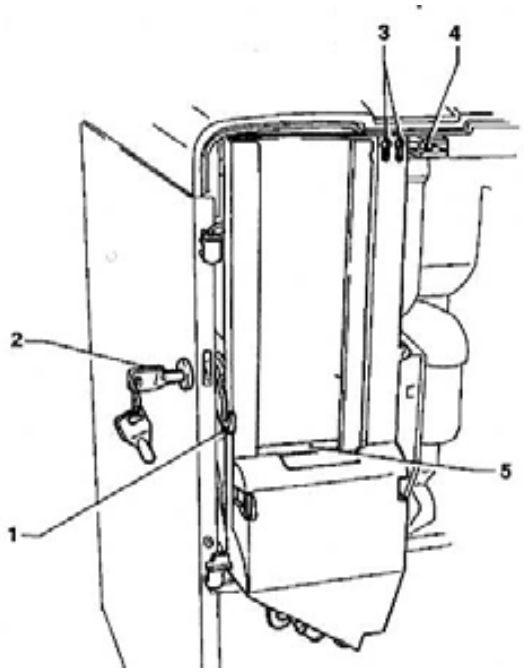
The unit is factory fitted for the installation of a first coffee heater kit, see drawing.



The unit is factory set to accommodate a patented first coffee KIT, based on the use of a very low power consumption heater of the NTC type and a built-in thermostat (see separate description).
After a long pause the first espresso coffee could be of a slightly lower temperature than the optimum one.
The Kit (ref. 7) ensures optimum temperature in the brewing chamber, without altering the taste as it happens in currently marketed systems (burnt taste).

6 - STIRRER DISPENSING UNIT

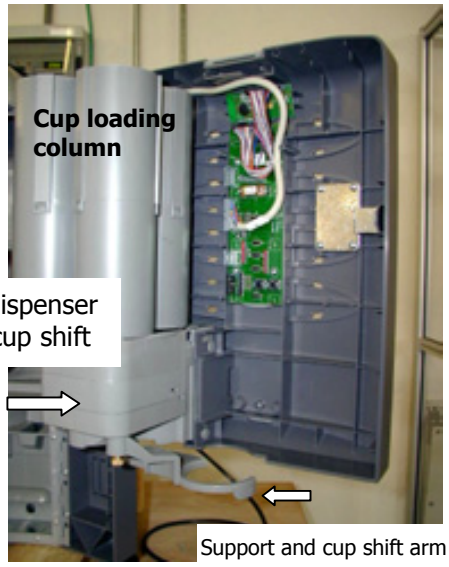
It is a functional unit developed from the one already used in the Brio but with considerable innovations.
The new feature consists in the option of using three different size stirrers:
95 mm - 105 mm - and 115 mm stirrers
With a total capacity of 170 stirrers.
To adjust to the desired length it is sufficient 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 24 and the sugar release spout is rotated at the same time as the stirrer release system is activated.



N.	Description
1	Stirrer dispensing unit fastener
2	Lock
3	Stirrer length adjustment slots
4	Door switch
5	Stirrer positioning weight

7 - CUP DISPENSER ASSEMBLY

It is a new functional unit, provided with the functions of containing, releasing and positioning the cups.
Such feature is exclusive and patented.
The unit is composed of a cup holder turret with four columns with a capacity of approximately 175 cups.
The turret is rotated by a 230 V 50 Hz synchronous ratiomotor positioned in the same unit and activated by **relay K 13.** To make cup loading easier the turret can be tilted and to achieve this it needs to be lifted slightly and then pulled forward.



Cup dispenser with cup shift

Support and cup shift arm

The system has an international patent.

The system operates as follows:
When a selection is made, relay K14 activates the cup release ratiomotor (14) that rotates cam (16) clockwise, also driving pinion (18) that connects the toothed rim of ring (22) by means of an idler wheel.
When rotating, the ring also rotates the four worm gears (24) which due to their special profile (snail) cause a cup to be released and hold the other cups above.
The cup falls into the holding and shifting (32).
When the cam (16) rotates driven by the motor, it controls the lever (36), as a consequence the fork (32) moves away from the idle (starting) position until it reaches the cup release position (Fig. 3).
It stays in such position long enough to receive the cup.
Then, completing the ratiomotor rotation, the fork brings the cup into drink dispensing position (Fig. 2).
It remains in this position until a new selection is made.
Such position is determined by the microswitch (40) that also gives the dispensing consent.
The fork is retained against the cam by a torsion spring, that also allows manual movement of the fork to place a jug in the dispensing compartment and an automatic return after the jug is removed.

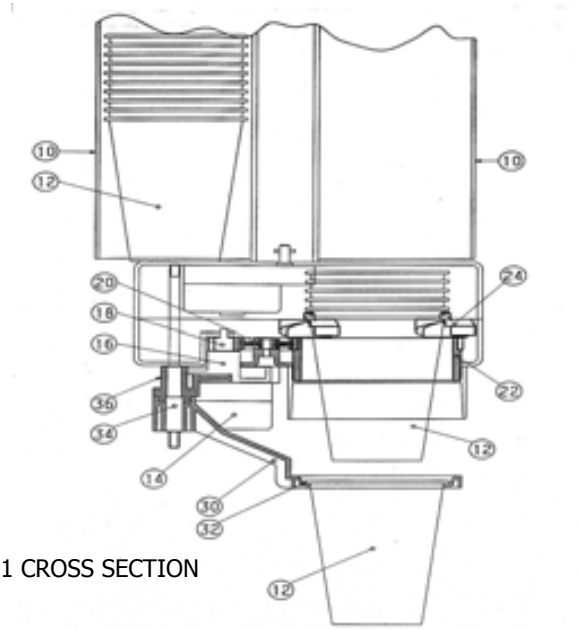


Fig. 1 CROSS SECTION

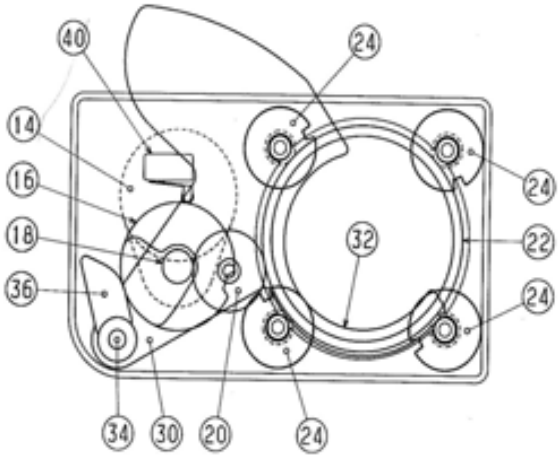


Fig. 3 in stand-by

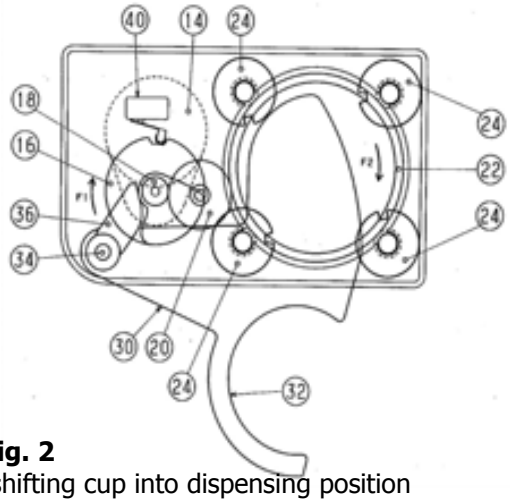
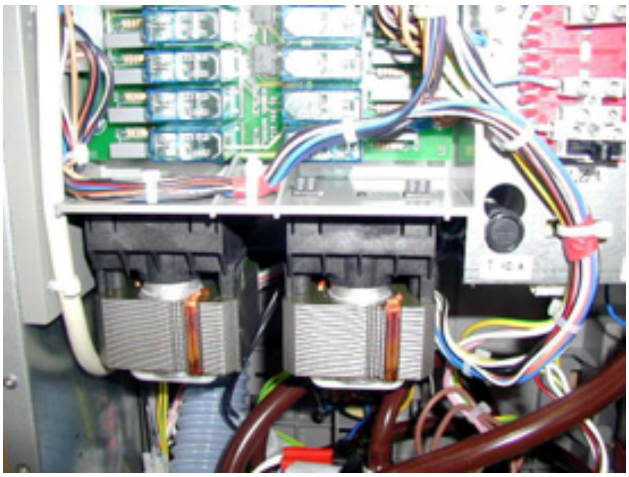


Fig. 2
shifting cup into dispensing position

8 - DOSER DEVICES AND POWDER PRODUCT CONTAINERS

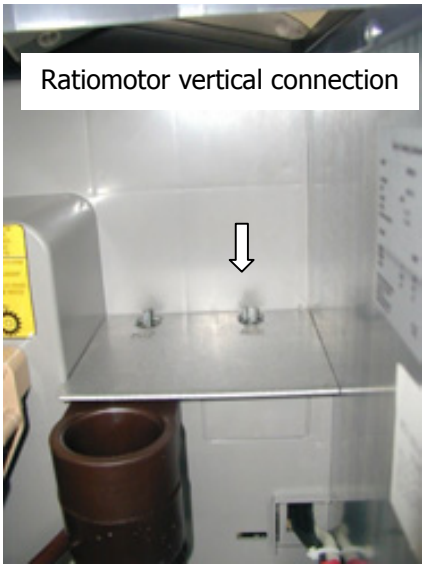
Due to the compact size of the Colibrì new powder ratiomotors needed to be designed, with quick fastening without any screws, to allow easy access for maintenance.



The powder and bean container module is a single unit comprising all containers needed for the machine (1 for coffee beans and 2 for soluble powders.
For removal, the front door must be opened, as for safety reasons a special auto mechanical safety pin prevents the unit from being opened with the door closed.
Connection with the ratiomotors, vertically, is automatic.
There are 4 containers in the instant version.
The ratiomotors are of the induction type (without brushes) powered with 230 V AC 80 W and protected from overheating by a an auto-reset klixon.
The ratiomotors are activated by relays **K10 and K11** (Espresso) and by relays **K01, K2, K3,K5** (Instant)

RH auto mechanical safety pin

Container unit being removed



Ratiomotor vertical connection

9 - MIXER UNIT

Apart from their application, the mixer is the usual excellent and reliable ones used in the entire Necta 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 motors are special high rotation speed commutator motors powered with 230 V AC and fitted with interference suppressors and reset-able overheat protections.
The motors are activated by relay **K 08** (Espresso version) **K 03** (Instant version)

10 - POWDER AND LIQUID DOSE TABLES

FACTORY "DEFAULT" SETTINGS

Selection	Notes	Coffee beans	Instant Coffee	Water c.c.	Powder g	Sugar g	Notes
Short coffee Espresso	Time Quantity	2 sec. 7 g	- -	35 sec. 60 **cdv** 40	- -	7.5 g	**CDV** = Flow-meter pulses
Long coffee	Time Quantity	2 sec. 7 g	- -	38 sec. 95 **cdv** 60	- -	7.5 g	
Coffee with milk	Time Quantity	2 sec. 7 g	- -	38 sec. 60 + 35 **cdv** 40+25 c.c.	- - 2.0 g of milk	7.5 g	
Cappuccino	Time Quantity	2 sec. 7 g	- -	45 sec. 60 + 72 **cdv** 40+55	6.0 g of milk	7.5 g	
Instant coffee (Instant version)	Time Quantity	--	1.3 g	22 sec. 55 **cdv** 40 c.c.	- -	7.5 g	
Instant coffee Long	Time Quantity	--	1.3 g	23 sec. 72 **cdv** 55 c.c.	- -	7.5 g	
Instant coffee with milk	Time Quantity	--	1.3 g	27 sec. 55 + 35 **cdv** 40 + 25 c.c.	2.0 g of milk	7.5 g	
Cappuccino Instant	Time Quantity	--	1.3 g	31 sec. 55 + 72 **cdv** 40-+55 c.c.	6.0 g of milk	7.5 g	
Chocolate Strong chocolate	Time Quantity	--	--	32 sec. 116 **cdv** 90 c.c.	23 g 27 g	--	
Instant tea (Optional)	Time Quantity	--	--	32 sec. 116 **cdv** 90 c.c.	12.5 g	--	
Milk	Time Quantity	- -	- -	32 sec. 116 **cdv** 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.

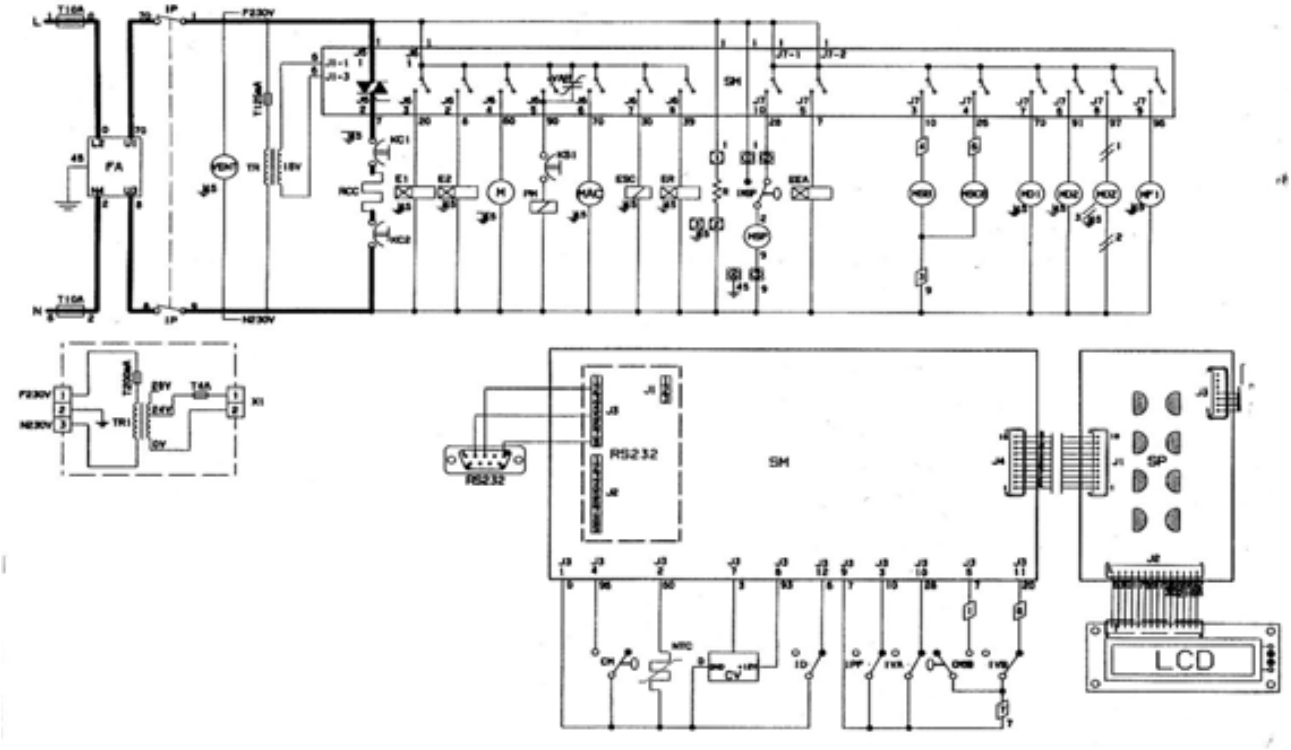
11 - TROUBLE-SHOOTING

Problem (And/or indication on the display)	**Possible cause**	**Solution**
The machine does not go into the boiler heating phase, remaining in the "installation" phase	No water flow from the mains or insufficient pressure (5-85 N/cm^2) (0,5-8,5 bar) 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 12
The display indicates the message "No coffee"	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 activated 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
The display indicates the message "Coffee release failure"	Failure to the release magnet Failure to the coffee dose microswitch<0} Failure to relay K 02	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 Colibrì, in the event of using a microswitch with different characteristics considerable discrepancies in the ground coffee doses may occur.
The display indicates the message "Boiler failure"	The boiler does not heat Dry operation protection system triggered.	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
The display indicates the message "No cups"	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 21 and K 23 must be checked.
The display indicates the message "Espresso unit"	The espresso unit failed to reposition. Failure to the lower dead centre positioning microswitch. Failure to relay K 03	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 EPROM (programming may be necessary).
The display indicates the message "Volumetric counter" (flow-meter)	The coffee dose is not reached within 60 sec. (The volumetric counter in the Colibrì Instant model is used to measure also the instant product doses).	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 a sensor that 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

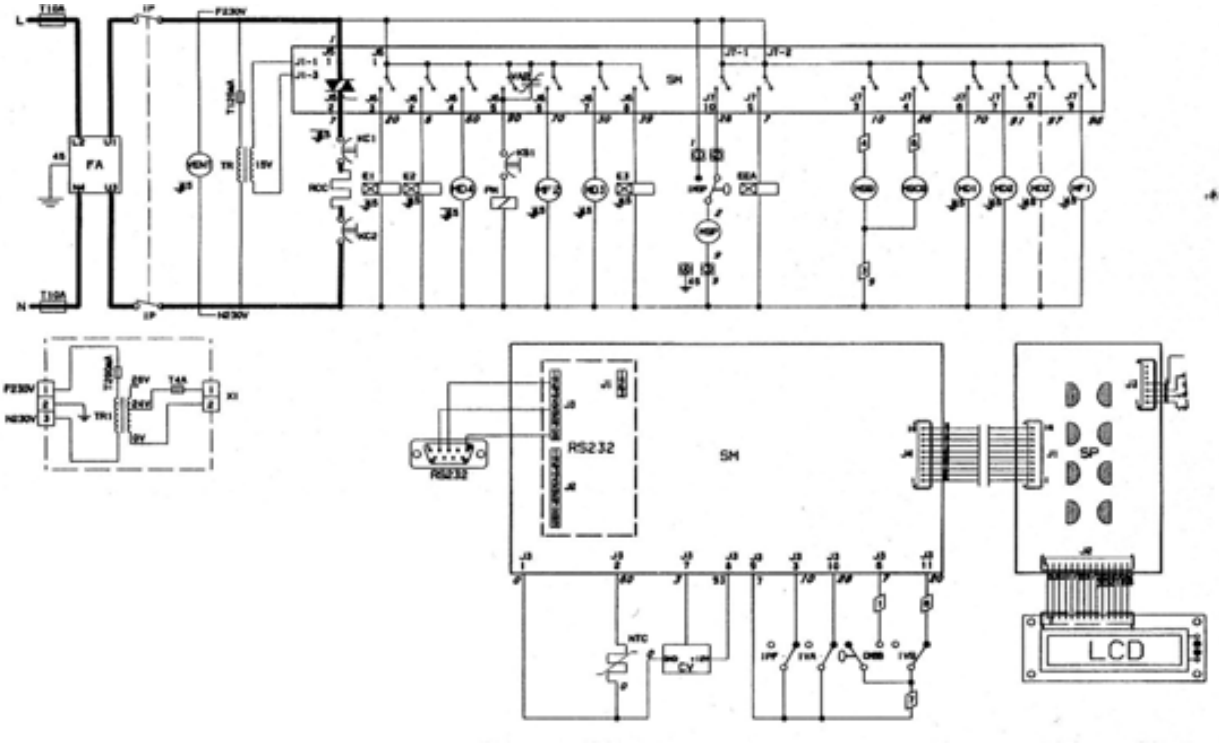
		is a problem: Check the correct operation of the volumetric counter: there must be 5 V AC on the terminals during the counter operation. Check that coffee is not ground too fine and the dose excessive. Check for clogging in the coffee filters.
The display indicates the message "Air-break failure"	No water from the mains. Faulty air-break microswitch Failure to the float actuation system.	If in the period it takes 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 float microswitch system. Replace the microswitch with one having the same characteristics, otherwise other malfunctions may occur.
The display indicates the message "RAM data"	Wrong RAM data, which must be retrieved by initialising the EPROM.	Enter into the installation procedure and initialise the software; if the failure persists replace the CPU.
The display indicates the message "Water failure"	Models with water supply from the mains: If the air-break microswitch is closed for more than a minute. Models with water supply from an internal tank: If the water level is less than 300 c.c.	Check the water inlet solenoid valve. Check the correct actuation of relay K 12. Check the air-break microswitch. Check the tank float microswitch.
The coffee is too weak and lacks cream and is dispensed too quickly	Excessively coarse grinding. Insufficient ground coffee dose.	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. Check the coffee dose, weighing it for at least 5 consecutive doses; the average weight must be between 6.5 and 7 grams.
Coffee is dispensed too slowly and it tastes burnt	Excessive coffee dose. Grinding too fine. Faulty pump by-pass. Clogged coffee filters.	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 for at least 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.
The mixers clog up	The whipper failed to rotate. Powder removal drawer full. Insufficient water to powder ratio.	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.
The display indicates the message "Coin mech. failure"	In the case of a serial communication kit, if there is no communication for more that 30 sec (with parallel communication systems this is not signalled).	Check for correct connections, correct insertion of the protocol card, and SW settings.
The display indicates the message "Water leak"	If water is drawn from the air-break without a selection being made (or wash cycle) the SW stops the mains inlet solenoid valve to avoid any flooding.	Such control serves the purpose of preventing water leaks in the hydraulic system that could quickly fill the liquid waste container; as there is no HW control of such situation, carefully check the hydraulic system to find any leaks.

12 - 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** (**H**azard **A**nalysis – **C**ritical – **C**ontrol - **P**oint).
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 the 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 products 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 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 hygiene 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 23, 24, 25)

- 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 3 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 (FIG 2)
Empty the grounds container and rinse it thoroughly
Remove the powder dispensing spouts and clean thoroughly using specific hygiene products (FIG 3)
If **necessary**, remove the containers, empty them completely and clean thoroughly
Remove the liquid collection container and the grounds container, empty and clean them
Remove the coffee unit, clean and rinse with a sponge damp with hot water. (FIG 4)
Remove the sugar dispensing spout and clean thoroughly (FIG. 6)
Remove and clean the cup shift (FIG. 5)
Remove and clean the dispensing spout assembly
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.
Note: After restarting the machine remember to reset the solid waste container by removing it and reinserting it again.

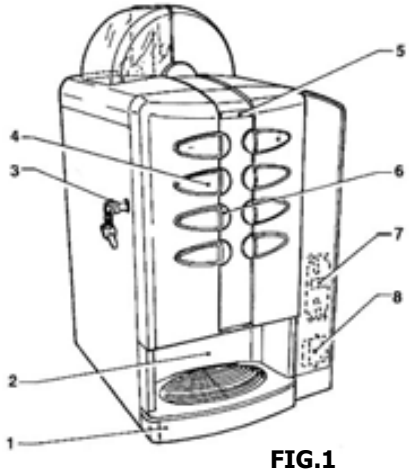


FIG.1

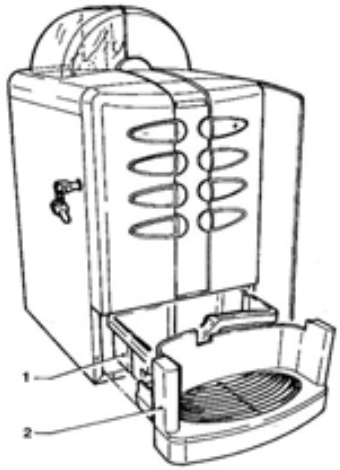


FIG. 2

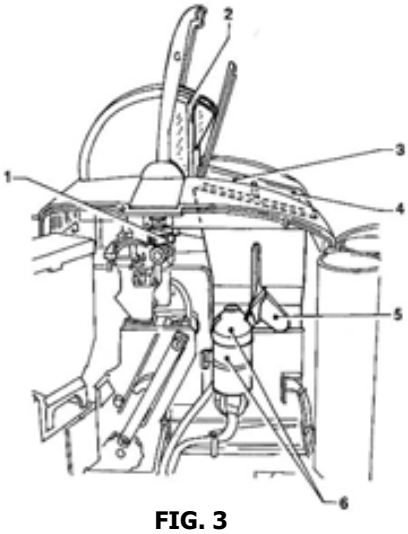


FIG. 3

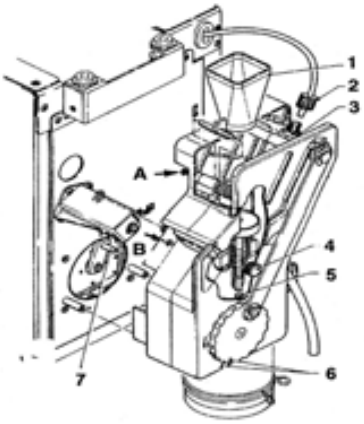


FIG. 4

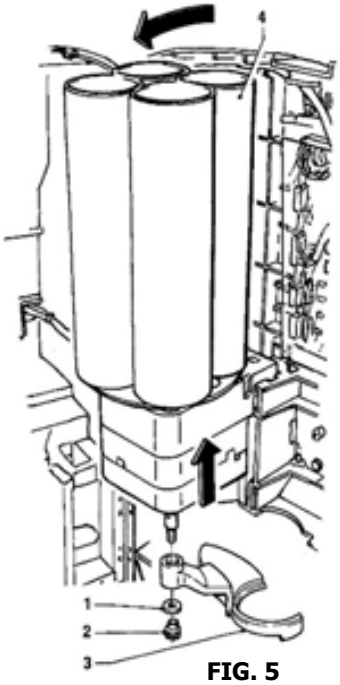


FIG. 5

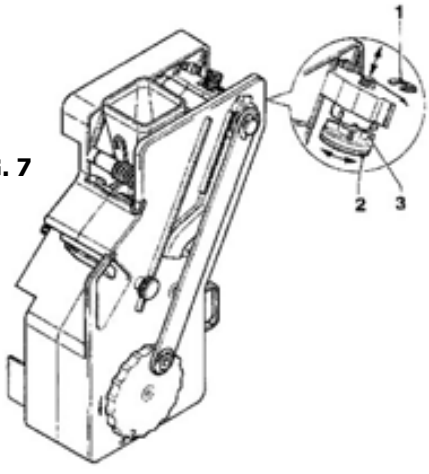
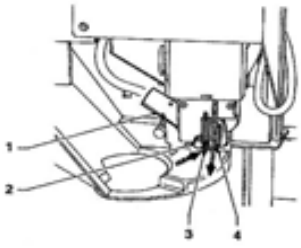


FIG. 7



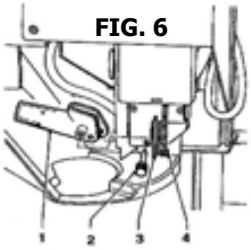


FIG. 6

WEEKLY CLEANING AND HYGIENE

(Expected time 6 min.)

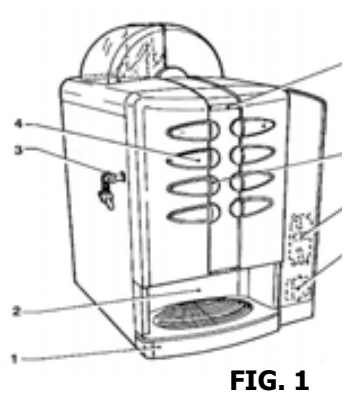


FIG. 1

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.2)
Remove the containers, empty them completely and clean thoroughly. (FIG 3)
Remove the liquid collection container and the grounds container, empty and clean them (FIG 4)
Empty any residue from the coffee grinder and doser assembly, clean thoroughly and rinse with a fresh clean sponge damped with hot water.
Remove the coffee dispensing assembly and clean thoroughly, and rinse with a fresh clean sponge damp with hot water. (FIG. 8)
Remove the sugar dispensing spout and clean thoroughly (FIG. 6)
Remove and clean the cup shift (FIG. 5)
Remove and clean the dispensing spout assembly
Disassemble completely the mixers and clean thoroughly (FIG. 7)
Empty the powder collection containers, located within the steam suction system, and disinfect. (FIG.2)
Reassemble all parts, taking care not to touch with your hands any parts that comes into contact with food.
Close the door and make a few test selections.
Carry out an automatic mixer wash cycle, according to the preset procedures. Enter the operations carried out on the log.

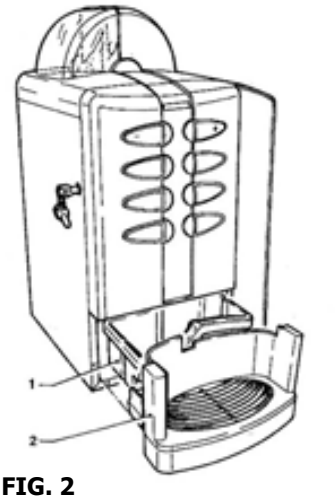


FIG. 2

FIG. 3

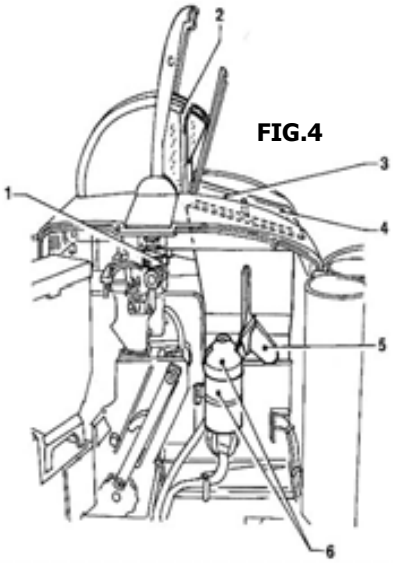


FIG.4

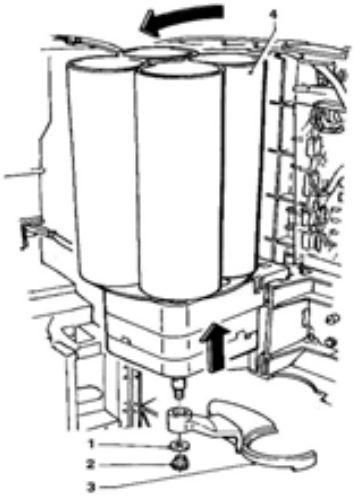


FIG.5

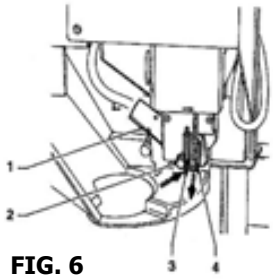


FIG. 6

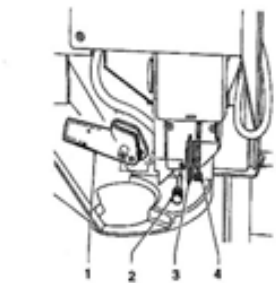


FIG. 7

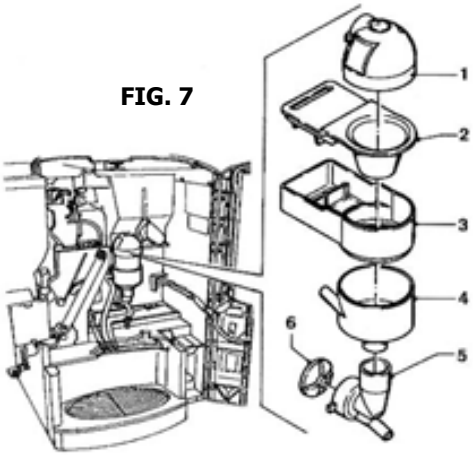
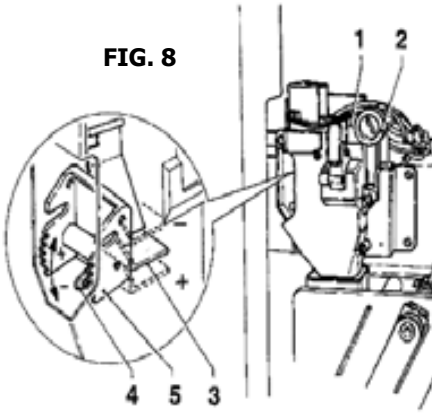


FIG. 8



MONTHLY CLEANING AND HYGIENE (OR EVERY 5000 SELECTIONS)

Expected time 14 min. (in addition to the time taken for regenerating the filter)

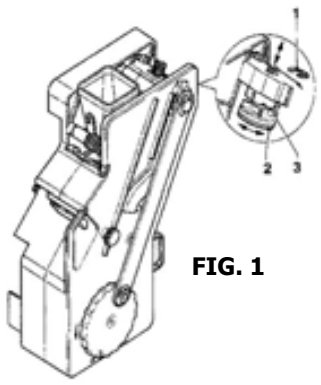


FIG. 1

In addition to the weekly operations, also the following must be carried out:
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. 1-2-3)
NB: Any filter replacement or disassembly operations must be carried out at the workshop, therefore it is advisable to replace the unit with one already serviced.
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 (Fig. 6), when reassembling do not touch with the bare hands (Fig. 5-6)

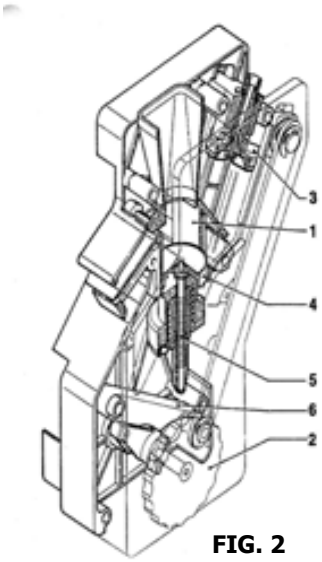


FIG. 2

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.

During regeneration, it is advisable to completely sanitise the hydraulic system and the water inlet solenoid valves.

Enter the operations carried out in the HACCP hygiene program log

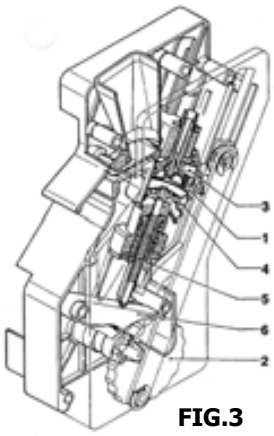


FIG.3

FIG. 4

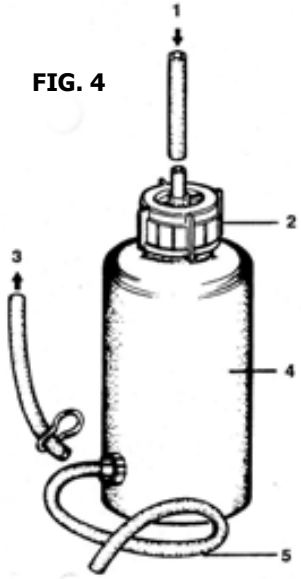
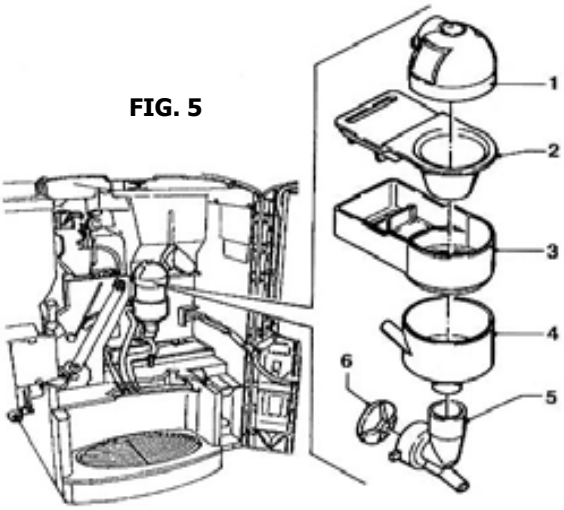
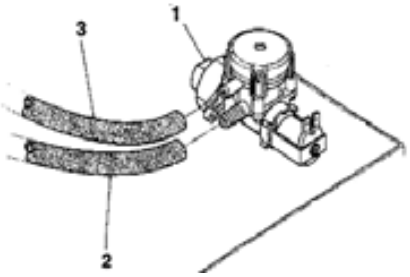


FIG. 7

FIG. 5





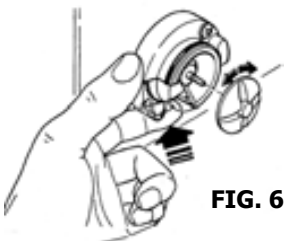


FIG. 6