SIENNA

■■ I N D E X ■■

1. INTRODUCTION

The automatic vending machines in the Sienna range are destined to the elaboration and sale of *espresso coffee* and instant beverages that consist of the mixture of hot water and soluble powder or granules. The product is served in a plastic cup.

> In the rest of this document the following elements will be called:
>
> The machines in the **Sienna** range, *machine* or *machines*. The espresso coffee infusion element, *infusion element*. The electro valve, *EV* or *EVs.*

1.1. DEFINITIONS

Espresso coffee: infusion of coffee elaborated according to the following conditions:

- 7 g of ground coffee.

- The temperature of the infusion water between 92° C and 96° C.

- The water pressure at 8 kg/cm².

- The infusion time of the coffee between 15 and 20 seconds.

- The volume of water in the infusion 40 ml.

Volume dosage: this dosage system measures the volume of water that is used for the espresso infusion.

Water pump: an electro magnetic system for pumping the infusion water and giving it the correct pressure.

Infusion: this is the name given to the process of passing hot water through the ground coffee to extract its oils and essences.

Volumetric infusion: when the process of infusion uses a constant volume of water.

Coffee tablet: the residual compressed coffee grounds after the infusion process.

Programming mode: when the *machine* is ready for any of its functions or parameters to be programmed.

Working mode: when the *machine* is in the working state and ready to prepare any of the services it offers.

MODELS

The **Sienna** range is made up of the **M,** and **L** series. Each one of the two series has models for elaborating espresso coffee and instant beverages.

- The models with **espresso** coffee elaborate espresso coffee and instant beverages.

- The **instant** models only elaborate instant beverages.

1.2.   PRINCIPLE TECHNICAL CHARACTERISTICS

↘   Super automatic function: the press of a button is sufficient to elaborate a magnificent *espresso coffee*.

↘   It grinds the coffee at the moment it is ordered.

↘   Products that each machine can elaborate:

Model	Coffee beans	Sugar	Instant coffee	Decaff. beans	Decaff. soluble	Milk	Chocolate	Tea
Sienna MI		Yes	Yes		Yes	Yes	Yes	Yes
Sienna ME	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Sienna ME 2 grinders	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Sienna LI		Yes	Yes		Yes	Yes	Yes	Yes
Sienna LE	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Sienna LE 2 grinders	Yes	Yes	Yes	Yes		Yes	Yes	Yes

↘   The water temperature is programmable.

↘   The ground coffee dose is programmable between 5 g and 8 g.

↘   The switching on and off of the *machine* is automatic and programmable.

↘   *Water pump* for water pressure incorporated in the *machine*.

↘   Volume dosage of water in the different *espresso coffee* services is programmable.

↘   The *infusion element* is thermo compensated.

↘   Electrical consumption:

SIENNA instant	Voltage	Power	Length
Mains voltage	230 Vac / 50 Hz		
Heating element	230 Vac / 50 Hz	2000 W	
Average daily consumption		3500 W	
Mains flex			3700 mm

SIENNA espresso	Voltage	Power	Length
Mains voltage	230 Vac / 50 Hz		
Heating element	230 Vac / 50 Hz	1500 W	
Average daily consumption		3000 W	
Mains flex			3700 mm

2. DESCRIPTION OF COMPONENTS

2.2. PRINCIPLE COMPONENTS
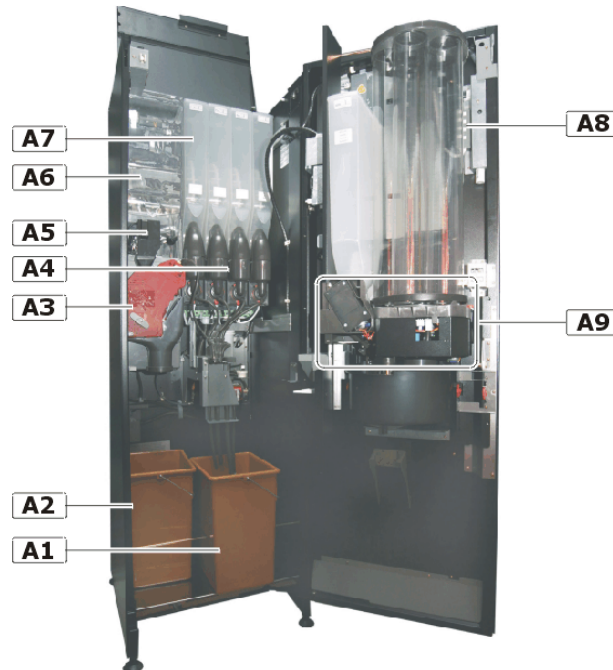
A1. Residue liquid bucket

It collects all the residue liquids that the machine generates. It has a capacity of 8 litres. When it reaches a determined level a float device is activated to put the machine out of order until it is emptied.

A2. Coffee residue bucket

It collects the solid residue that the machine generates. It has a capacity for the residue of 7500 grams of ground and elaborated coffee beans.

A3. Infusion element

Made of resin, it is the element that the *machine* uses to make the espresso coffee.

Between the *piston* and its support there is a spring and a espacer that, depending how it is placed, will vary the capacity of ground coffee the chamber will hold.
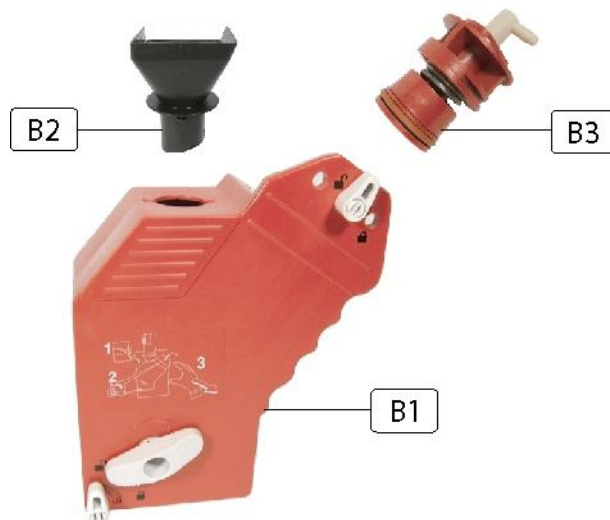
The spacer should be placed **between** the piston and its support when the dosage is set for 5 to 6.5 g of ground coffee. When the dosage is set for 7 to 8 g of ground coffee, the space should be placed **on** the piston support.
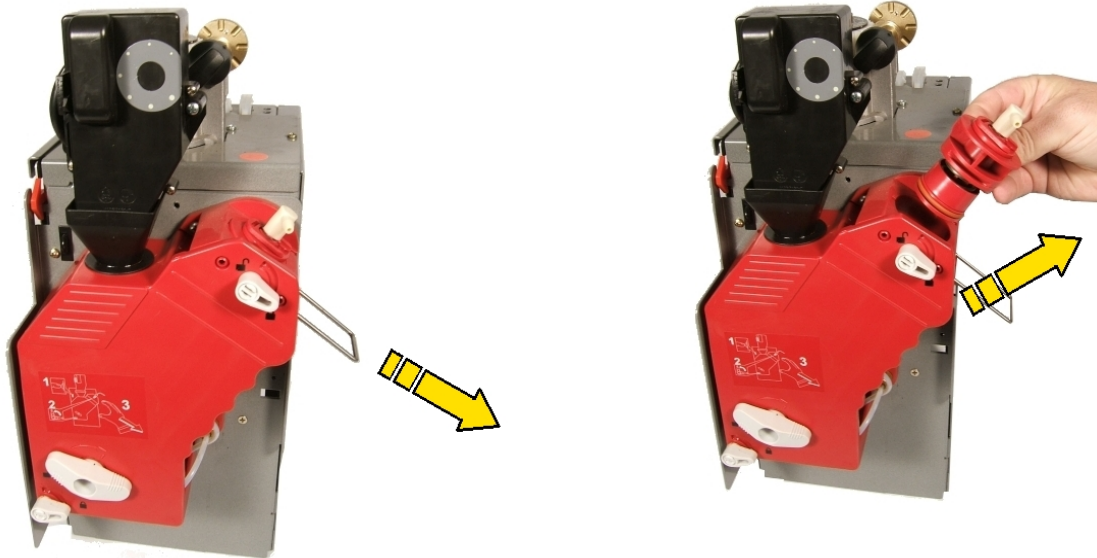
Pull out the clip   **Remove the piston**

B1. Infusion element inferior

B2. Loading funnel

B3. Piston

The possible regulation of the capacity of the *infusion element*, using the washer, and the position of the dosage handle are shown in the table below:

Dose	Piston washer position		Dosage position
5 g	Under		1
5.5 g	Under		2
6 g	Under		3
6.5 g	Under		4
7 g		Over	5
7.5 g		Over	6
8 g		Over	7

The *infusion element* has moving parts that are activated by a 24 Vdc motor that moves a crank which moves the *coffee* from the dosage element to the piston. At the same time it also moves a lever that activates a *micro switch*; this indicates the position of the *infusion element* to the control board.

At rest, the *infusion element* cannot move from its position as it is held by the piston. Before extracting the piston the black extraction button (C7) should be pressed (with the machine switched on). On pressing the extraction button the *infusion element* will position itself in the coffee loading position. After this the two levers that hold it can be turned and it can be removed with ease.

In the *infusion element* support there is another *micro switch* that deactivates when the *infusion element* is removed. This way, the control board knows whether the *infusion element* is correctly positioned or not.

To replace the *infusion element* into the machine it may be in any position and it does not matter if it moves while out of the machine. It only needs to be replaced and the two holding levers fixed. When the presence micro switch is activated, the *infusion element* motor will position it correctly.

C1. Piston

C2. Spring

C3. Washers

C4. Infusion element

C5. Lever

C6. Holding handle

C7. Extraction button

C8. Position micro switch

C9. Presence micro switch

C10. Infusion element
       movement handle

C11. Filter
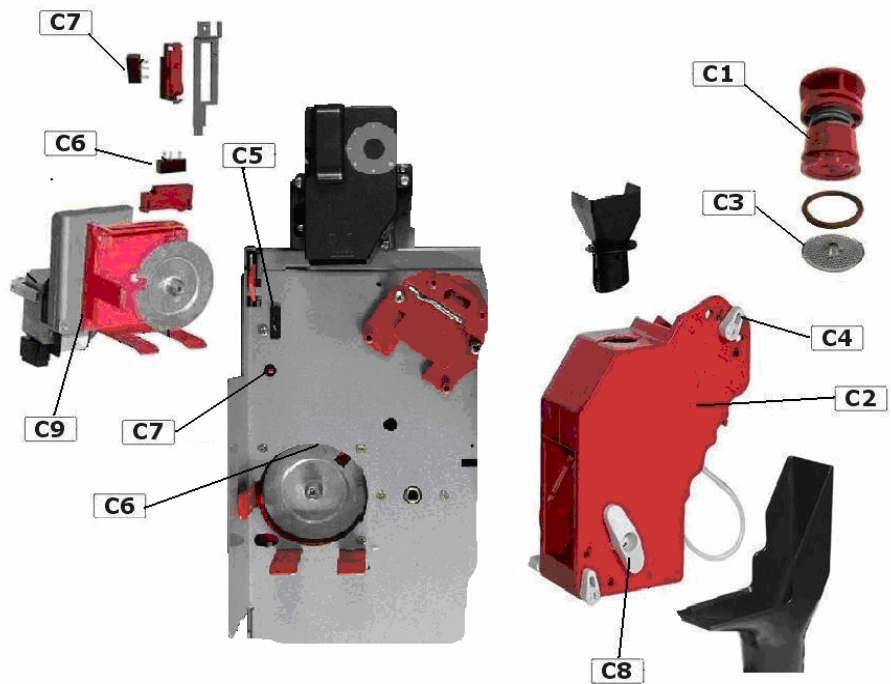
A4.   Beaters

The mixing of the products with hot water from the boiler is done with these elements.

Technical characteristics:

Make of motor	Mabuchi
Voltage	24 Vdc
Power	20 w
Speed	16.000 rpm

The EVs of the instant beverages are an important part of the beating process. They control the hot water from the boiler to the beaters for the elaboration of the instant beverages.

They are fitted to a thermo compensated brass support that provides a constant temperature by means of a tube through which hot water from the boiler flows. This circulation is produced by convention; the water cools in the brass support and drops while the hot water from the boiler enters at the top. This way, during the elaboration of the instant beverages, the hot water that goes to the beaters does not suffer excessive temperature losses.

The working voltage of the EVs is 24 Vdc

Maximum pressure they accept is 15 Kg/cm²

The EVs are positioned horizontally and correspond to the following products:

D1. Decaffeinated and instant coffee

D2. Milk

D3. Chocolate

D4. Tea
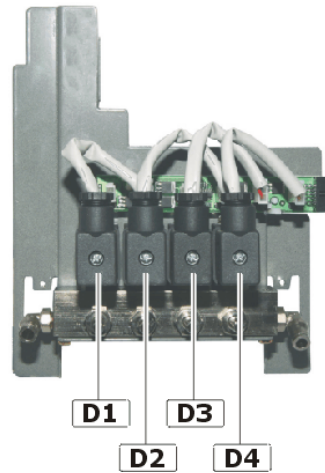
Order of the EVs looking from the exterior of the machine

A5.   Ground coffee dosage element

Situated on the side of the grinder, its function is to measure the quantity of ground coffee for each service, and later put a dose into the *infusion element*.

The principle function is based on a moving wall that the ground coffee moves and a micro switch that is activated by the moving wall. On activating the micro switch, the grinder stops and the EV drops the ground coffee into the *infusion element*.

Technical characteristics:

Voltage	24 Vdc
Regulation	Minimum 5g and maximum 8g
Regulation lever	7 points: Point 1 is 5 g / Point 7 is 8 g

E1. Micro switch

E2. Solenoid

E3. Micro activated flap

E4. Regulation lever
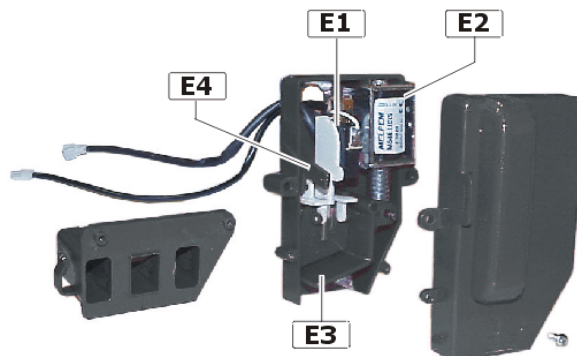
A6.   Coffee bean hopper

The capacity is:

Series ME	3.4 kg
Series LE	4.2 kg

A7.   Instant product hoppers

The capacities are:

Series ME and MI	4 litres
Series LE and LI	6 litres

The approximate weight of the product is:

Product	Capacity in grams			
	Series ME	Series MI	Series LE	Series LI
Instant coffee	1.000	1.000	1.500	1.500
Decaffeinated coffee	1.000	1.000	1.500	1.500
Milk	1.500	1.500	2.200	2.200
Chocolate	2.000	2.000	3.100	3.100
Tea	2.600	2.600	3.900	3.900
Soup	4.000	4.000	6.000	6.000
Sugar	3.500	3.500	5.300	5.300

A8.   Programming box

This element is used for programming the machine.

A9.   Extractor systems for cups, sugar and spoons

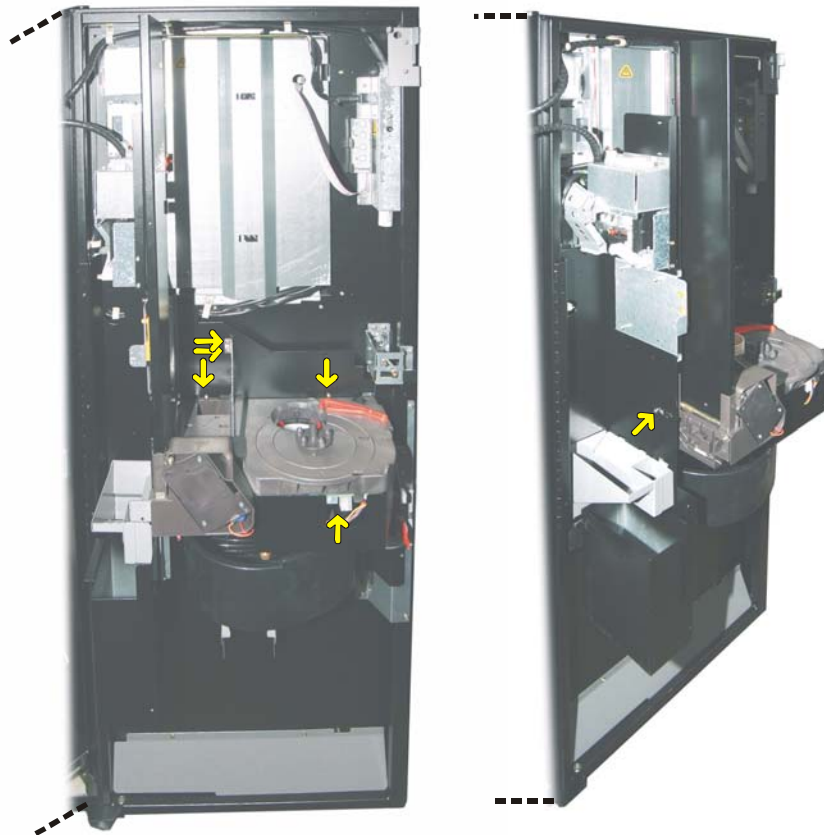The three systems are mounted in the one support.

The MI and LI series, standard, do not have a container for *spoons*

To remove the extractors from the machine, follow these steps:

1st   Disconnect the wiring loom from the cup extractor board.

2nd Unscrew the screws indicated in the photo.

3rd   Pull the extractors upwards until freeing them from the clips in the support.


Sienna door: indication of screws, securing plate and extraction system connector

First the wiring loom should be disconnected by removing the cover that protects the cup extractor. The sugar and *spoon* extractor can be separated from the cup extractor by freeing the clip indicated in the photo and pulling upwards.
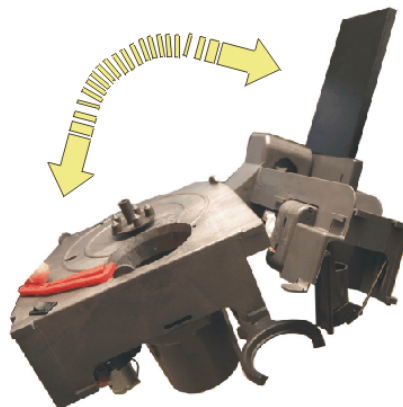
F1. Clip

F2. Sugar and spoon extractor motor

F3. Cup extractor motor

F4. Cup container movement motor

F5. Cup support arm

F6. Cup arm motor

F7. Control board

F8. Cup extraction button

F9. Cup presence photocells

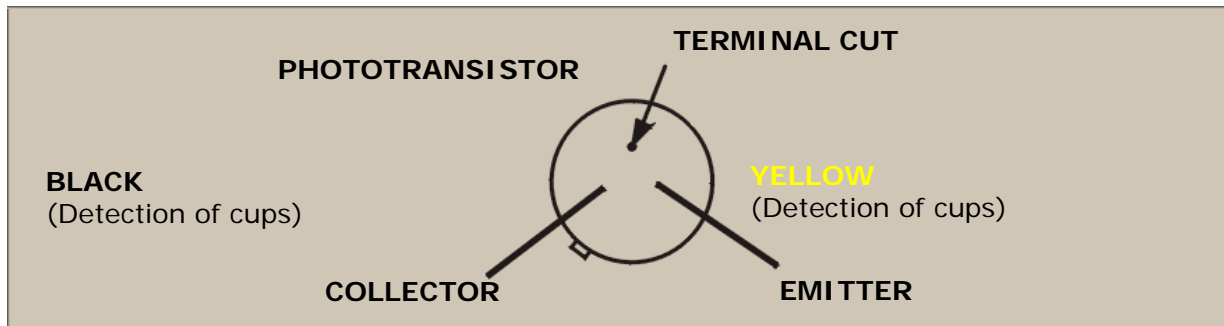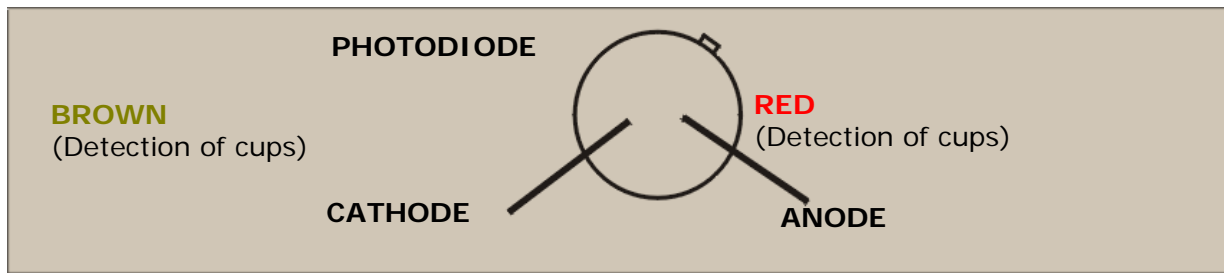F10. Hopper position micro

F11. Sugar and spoon extractor connector
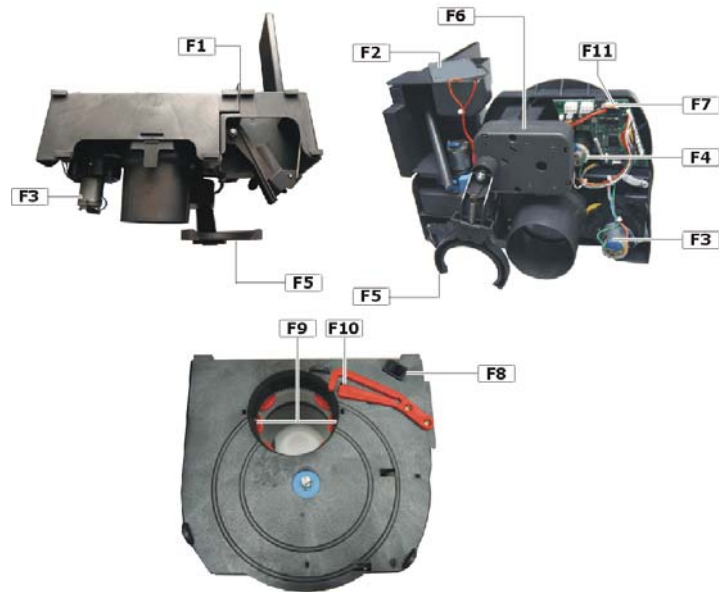
Cup extractor characteristics:

	Cup container	
	ME and MI Series	LE and LI Series
Quantity	500	700
Ø of cups	70 to 71 mm	70 to 71 mm
Voltage to motor	24 Vdc	24 Vdc

The cups should be opaque so the infrared detectors can detect them

- The cup container is divided into 5 separate columns. When one of them runs out of cups, the motor turns the container until the next column is situated over the extractor. After the motor turns for 6.5 seconds and the photocells do not detect a new column of cups, the machine will go out of order and the display will show "Out of cups".

- The cup container holder has a button to extract a cup when it is pressed.

- The electrical connections for the infrared photocell terminals that are used to detect the cups are:

PHOTODIODE

BROWN
(Detection of cups)

RED
(Detection of cups)

CATHODE

ANODE

PHOTOTRANSISTOR

TERMINAL CUT

BLACK
(Detection of cups)

YELLOW
(Detection of cups)

COLLECTOR

EMITTER

Spoon extractor characteristics:

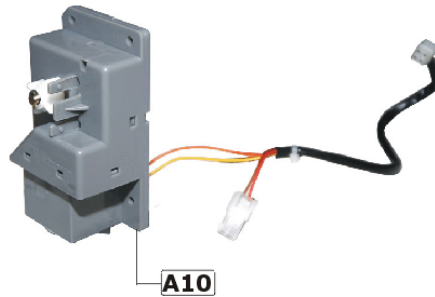|	Spoon container	
	ME and MI Series	LE and LI Series
Quantity	500	500
Standard spoon measurement	90 x 9 x 1.5 mm	90 x 9 x 1.5 mm
Motor voltage	24 Vdc	24 Vdc

i There is a Spoon extractor designed for spoons of 110 x 9 x 1.5 mm

Sugar extractor characteristics:

	Sugar extractor	
	ME and MI Series	LE and LI Series
Capacity	500	500
Motor voltage	24 Vdc	24 Vdc

A10. Product extractors

Technical characteristics:

Motor manufacturer	Mabuchi
Voltage	24 Vdc
Speed	40 rpm

A11. Coin system

All the models in the **Sienna** range use coin changers with **Executive** or **MDB** communication protocol.
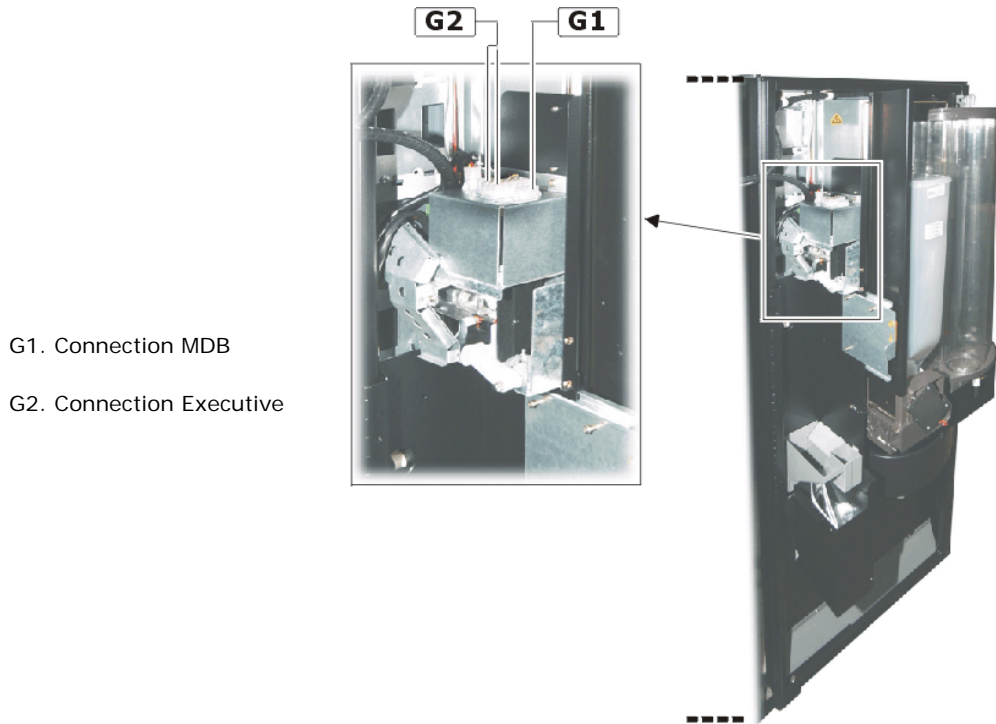
On the left of the door there is a space for the coin changer which is held with three screws. The connectors are situated on the upper part. When the machine is connected, it will automatically detect if it has a coin changer with **MDB** or **Executive** communication protocol.

Executive coin changer

MDB coin changer

G1. Connection MDB

G2. Connection Executive

A12. Coffee grinder

It's the M03 Azkoyen model.

Technical characteristics:

Voltage	230 Vac
Nominal power	400 w
Speed	1250 rpm
Diameter of the grinders	63 mm
Grind points	0.026 mm

Moving the handle anticlockwise gives a coarser grind and moving it clockwise gives a finer grind.

A13. Button panel and display

These machines are fitted with an innovative 5'' graphic screen to facilitate communication with the user or operator. It displays animations representing service progress and will be able to accommodate publicity messages in the future.

The selection buttons are chrome with translucent plastic frames backlit by blue LEDs. There are two cards with 9 buttons each.

The product labels are lit by white LEDs, meaning that opaque paper can be used as a support for these labels, making them easy to customise and print.

H1. Selection panel

H2. User interface card

H3. Coin insertion

H4. Recovery button

H5. Label sheet

H6. Product buttons and signs

H7. Key card

H8. Recovery box

H9. Cup collection door
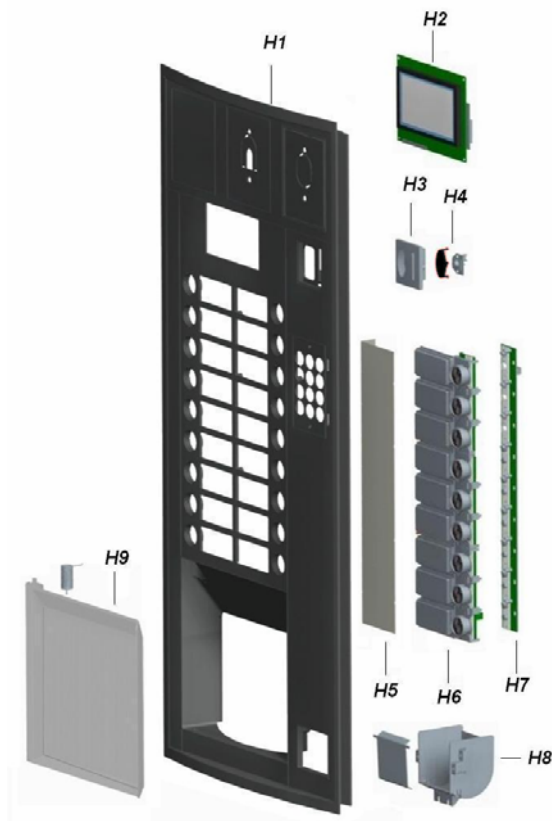
## A14.   Product door

Made of polycarbonate, its main purpose is to prevent the entry of insects into the machine. It can be removed by removing the holding plate on the interior of the machine.

A15.   Water inlet EV

It allows the entry of water from the mains to the cold water deposit. It works at 230 Vac. This EV is only fitted to machines that are connected to the mains water supply.


A15
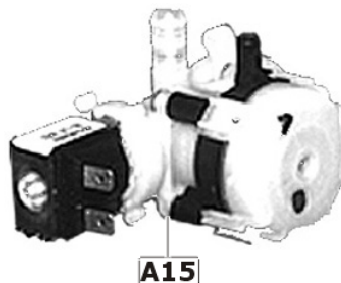
It has a security block system for cases where, for lime scale or any solids from the mains water supply, the EV does not close properly. This system activates when the level in the residue bucket is excessively high.

To unblock the EV, switch off the water pressure from the mains. If this is not possible, tap the EV with a blunt object, for example an Allen key, on the inside of the hole on the top part of the EV as shown in the photograph.

It you may also unblock the EV by tapping it with something like the handle of a screw driver.

A16.   Volumetric counter

Its function is to measure the quantity of water that is pumped for the elaboration of the espresso coffee.
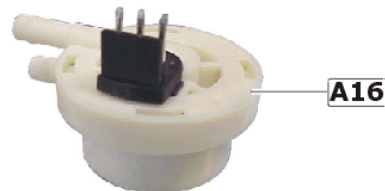
A17.   Water pump

This element has the job of pumping water from the cold water deposit to the hot water boiler; the cold water pushes the hot water towards the EVs for the instant products or towards the *infusion element* for making espresso coffee.

K1. By-pass

K2. Anti return valve
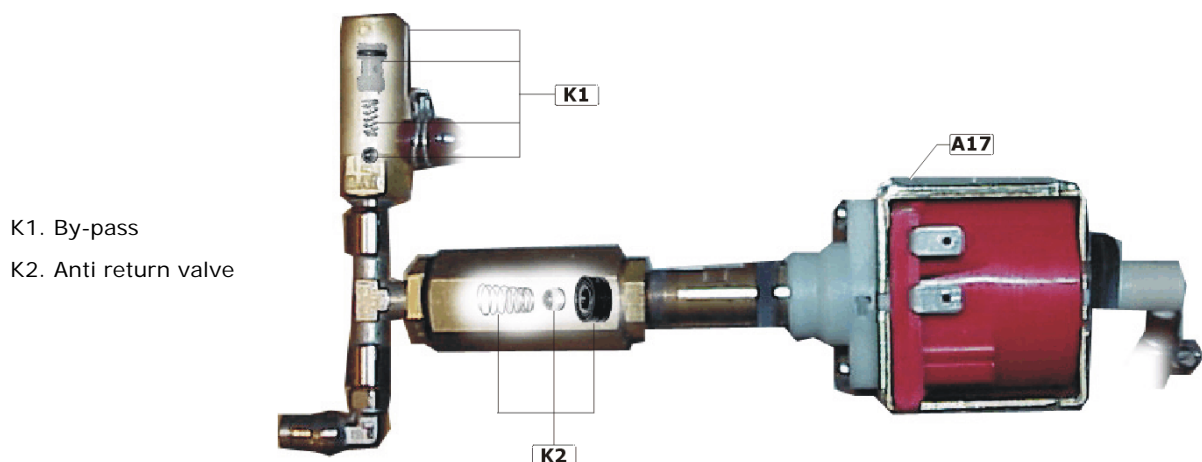
When an espresso coffee is elaborated, the water pressure needed is quite high to be able to pass through the compressed ground coffee in the *infusion element*. This resistance the coffee offers makes the water pressure in the boiler increase up to a pressure of 9 Kg/cm². At this pressure the by-pass (2) opens allowing a small amount of water to return; sufficient to prevent the water pressure from going over the 9 Kg/cm².

The by-pass is a small hole covered with a ball that is held in place by a spring. This spring will hold a pressure of 9 Kg/cm², but over this pressure it compresses and allows the water to pass.

The pressure of 9 Kg/cm² is considered the ideal for elaborating espresso coffee.

When the instant beverages are elaborated, there is no resistance offered and so during there elaboration the water pump works at lower pressures than when elaborating espresso coffees.

Technical characteristics:

Voltage	Pulsing 110 V
Power	70 w
Working pressure	8 Kg/cm²
Maximum pressure	12 Kg/cm²

The pump has an anti return valve that prevents the return of water from the boiler.

A18. Cold water deposit

Made of polypropylene, It has the Capacity of 500 cc. It is at atmospheric pressure and temperature. From this deposit is taken the water to elaborate the *espresso coffee* and instant beverages.

The water level in the deposit is controlled by a float that activates a magnetic switch.
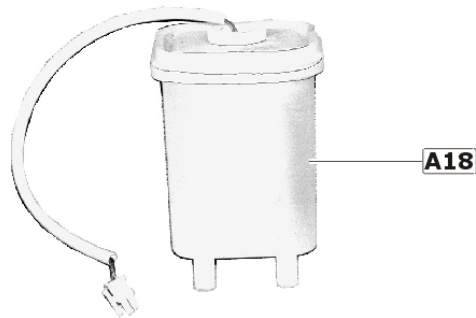
A19. Hot water boiler

The boiler works under pressure and has a Capacity of 0.5 litres of water. The water for elaborating espresso coffee and instant beverages is heated in this deposit.
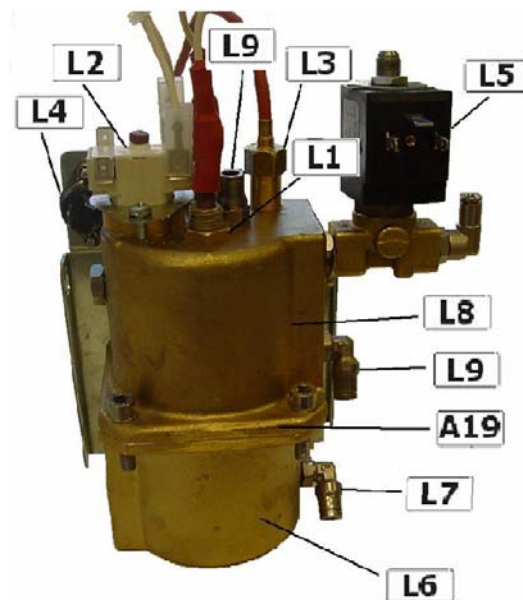
L1. 1500 W heating element

L2. Security thermostat 120° C

L3. Temperature sensor (PTC)

L4. Triac

L5. 3-way electro valve

L6. Lower cover

L7. Water inlet

L8. Upper cover

L9. Water outlet

The boiler is made of brass and does not need any device to control the level of water as the boiler fills automatically from the moment the machine is switched on. After this the water that is used is replaced with water from the cold deposit so the boiler is always full.

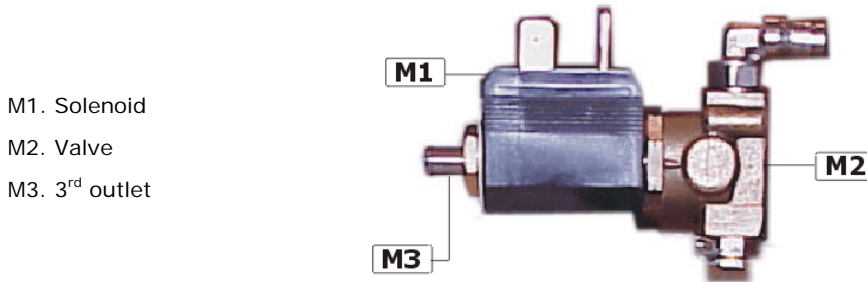There are three outlets; one through a 3-way *EV* for the elaboration of espresso coffee. This *EV* has an outlet from the boiler, another goes to the *infusion element*, and the third that, at rest, allows the *infusion element* to be at atmospheric pressure.

M1. Solenoid

M2. Valve

M3. 3rd outlet

When the machine is in the espresso coffee making process, the third is closed while the outlet from the boiler and the inlet to the *infusion element* are open to each other.
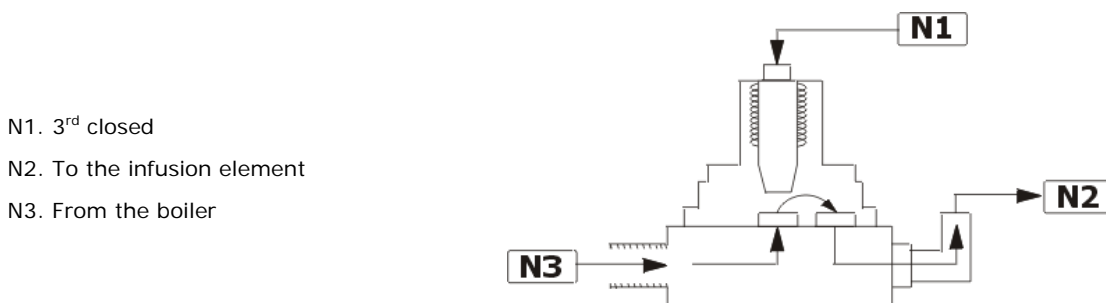
N1. 3rd closed

N2. To the infusion element

N3. From the boiler

When the machine finishes elaborating an espresso coffee, the *EV* goes to rest state and closes the outlet from the boiler leaving the *infusion element* open to the third outlet. In this way the water that did not pass through the coffee and was retained in the *infusion element* goes out through the third outlet to the residue bucket.

The water recedes back from the *infusion element* towards the third outlet because of the pressure it was submitted to by the pump in the infusion process.

P1. 3ª open

P2. Infusion element joined to atmospheric pressure

P3. Boiler water closed
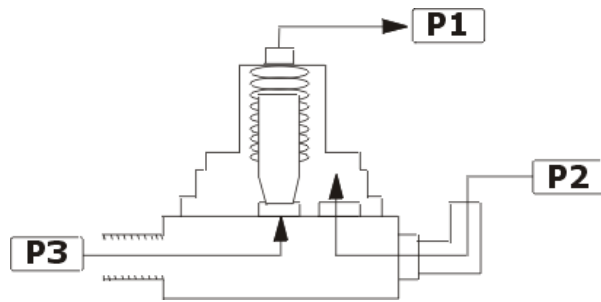
The other two outlets are connected to the instant beverage EV. When the machine is at rest, these outlets allow the circulation of water, through convection, between the boiler and the brass support of the instant beverage EV. This way the support is *thermo compensated* and the water that reaches the beaters is always at the correct temperature.

Technical characteristics:

Heating element voltage	230 Vac
Power	1.500 w
Temperature programming	40 a 99° C
Safety protection with manual reset	120° C
Voltage of 3-way EV	24 Vac
Power of 3-way EV	10 w
Maximum pressure of EV	15 Kg./cm²
Working temperature of EV	-10° C a 140° C

Control of the *heating element* is done with a *triac* that is situated on the boiler support.

Always respect the position of the connection cables.

Q1. White

Q2. Black

Q3. Brown
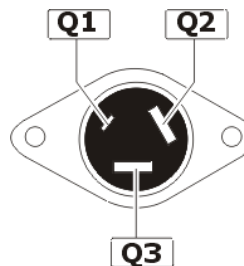
Temperature control of the water in the boiler is done with a PTC100. The following table shows the resistance values that the PT100 gives according to the temperature that it is submitted.

°C	0	1	2	3	4	5	6	7	8	9
0	100.00	100.39	100.78	101.17	101.56	101.95	102.34	102.73	103.12	103.51
10	103.90	104.29	104.68	105.07	105.46	105.85	106.24	106.63	107.02	107.40
20	107.79	108.18	108.57	108.96	109.35	109.73	110.12	110.51	110.90	111.28
30	111.67	112.06	112.45	112.83	113.22	113.61	113.99	114.38	114.77	115.15
40	115.54	115.93	116.31	116.70	117.08	117.47	117.85	118.24	118.62	119.01
50	119.40	119.78	120.16	120.55	120.93	121.32	121.70	122.09	122.47	122.86
60	123.24	123.62	124.01	124.39	124.77	125.16	125.54	125.92	126.31	126.69
70	127.07	127.45	127.84	128.22	128.60	128.98	129.37	129.75	130.13	130.51
80	130.89	131.27	131.66	132.04	132.42	132.80	133.18	133.56	133.94	134.32
90	134.70	135.08	135.46	135.84	136.22	136.60	136.98	137.36	137.74	138.12
100	138.50	138.88	139.26	139.64	140.02	140.39	140.77	141.15	141.53	141.91
110	142.29	142.66	143.04	143.42	143.80	144.17	144.55	144.93	145.31	145.68
120	146.06	146.44	146.81	147.19	147.57	147.94	148.32	148.70	149.07	149.45
130	149.82	150.20	150.57	150.95	151.33	151.70	152.08	152.45	152.83	153.20
140	153.58	153.95	154.32	154.70	155.07	155.45	155.82	156.19	156.57	156.94
150	157.31	157.69	158.06	158.43	158.81	159.18	159.55	159.93	160.30	160.67
160	161.04	161.42	161.79	162.16	162.53	162.90	163.27	163.65	164.02	164.39
170	164.76	165.13	165.50	165.87	166.24	166.61	166.98	167.35	167.72	168.09
180	168.46	168.83	169.20	169.57	169.94	170.31	170.68	171.05	171.42	171.79
190	172.16	172.53	172.90	173.26	173.63	174.00	174.37	174.74	175.10	175.47
200	175.84	176.21	176.57	176.94	177.31	177.68	178.04	178.41	178.78	179.14
210	179.51	179.88	180.24	180.61	180.97	181.34	181.71	182.07	182.44	182.80
220	183.17	183.53	183.90	184.26	184.63	184.99	185.36	185.72	186.09	186.45
230	186.82	187.18	187.54	187.91	188.27	188.63	189.00	189.36	189.72	190.09
240	190.45	190.81	191.18	191.54	191.90	192.26	192.63	192.99	193.35	193.70
250	194.07	194.44	194.80	195.16	195.52	195.88	196.24	196.60	196.96	197.33
260	197.69	198.05	198.41	198.77	199.13	199.49	199.85	200.21	200.57	200.93
270	201.29	201.65	202.01	202.36	202.72	203.08	203.44	203.80	204.16	204.52
280	204.88	205.23	205.59	205.95	206.31	206.67	207.02	207.38	207.74	208.10
290	208.45	208.81	209.17	209.52	209.88	210.24	210.59	210.95	211.31	211.66
300	212.02	212.37	212.73	213.09	213.44	213.80	214.15	214.51	214.86	215.22
310	215.57	215.93	216.28	216.64	216.99	217.35	217.70	218.05	218.41	218.76
320	219.12	219.47	219.82	220.18	220.53	220.88	221.24	221.59	221.94	222.29
330	222.65	223.00	223.35	223.70	224.06	224.41	224.74	225.11	225.46	225.81
340	226.17	226.52	226.87	227.22	227.57	227.92	228.27	228.62	228.97	229.32
350	229.67	230.02	230.37	230.72	231.07	231.42	231.77	232.12	232.47	232.82
360	233.17	233.52	233.87	234.22	234.56	234.91	235.26	235.60	235.96	236.31
370	236.65	237.00	237.35	237.70	238.04	238.39	238.74	239.09	239.43	239.78
380	240.13	240.47	240.82	241.17	241.51	241.86	242.20	242.55	242.90	243.24
390	243.59	243.93	244.28	244.62	244.97	246.69	245.31	245.66	246.00	246.35
400	247.04									

A20. Instant products hot water boiler

The hot water boiler on these machines for making only instant coffee (Sienna MI, LI, MzI and LzI) works at atmospheric pressure. The hot water reaches the beaters using gravity. This makes the need for a water pump or a cold water deposit, as in the *espresso coffee* machines, unnecessary.

In these machines the quantity of water necessary for the elaboration of the products is measured by the time the EV is open, so therefore a volumetric counter is also unnecessary.

Technical characteristics:

Boiler capacity	2 litres
Fill control	Switch activated float
Heating element voltage	230 Vac
Power of heating element	2000 w

The temperature control of the water is done with the same PT100 sensor that the espresso coffee models have.

T1. EV Tea

T2. EV Milk / Chocolate

T3. EV Decaffeinate / Coffee

T4. EV Soup

T5. Overflow

T6. Safety thermostat

T7. Temperature sensor

T8. Heating element

T9. Water inlet

T10. Triac

T11. Emptying tube

T12. Regulation screw

T13. Level indicator

T14. PCB
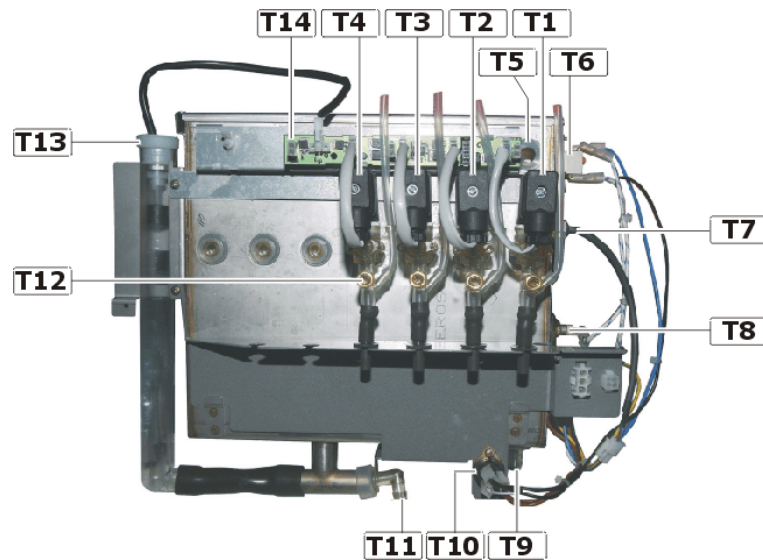
The boiler incorporates as many EVs as the beaters the machine has. All the EVs are powered by 24 Vdc.

A21. Extractor

The steam and vapour that is generated by the beaters can reach the product containers and if they become damp they form lumps in the powder. This consequently results in the irregular extraction of the product. To avoid this, the extractor is used to remove the steam and vapour from the interior of the machine. It works on 230 Vac.
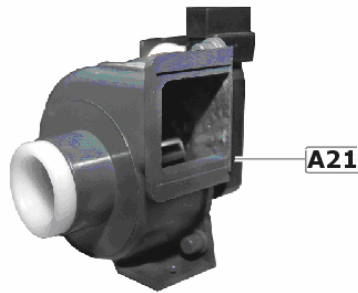

Extractor

A22. Transformer

Technical characteristics:

Primary	230 Vac
Secondary (blue-blue)	24 Vac
Secondary (black-black)	230 Vac
Power	96 w

A23. Circuit boards

All the models in the **Sienna** range have 5 *circuit boards*. The *main module* is the one that provides the power supply to the other boards and takes the decisions for the correct working of the machine. The other four boards control independently a determined number of elements in the machine.
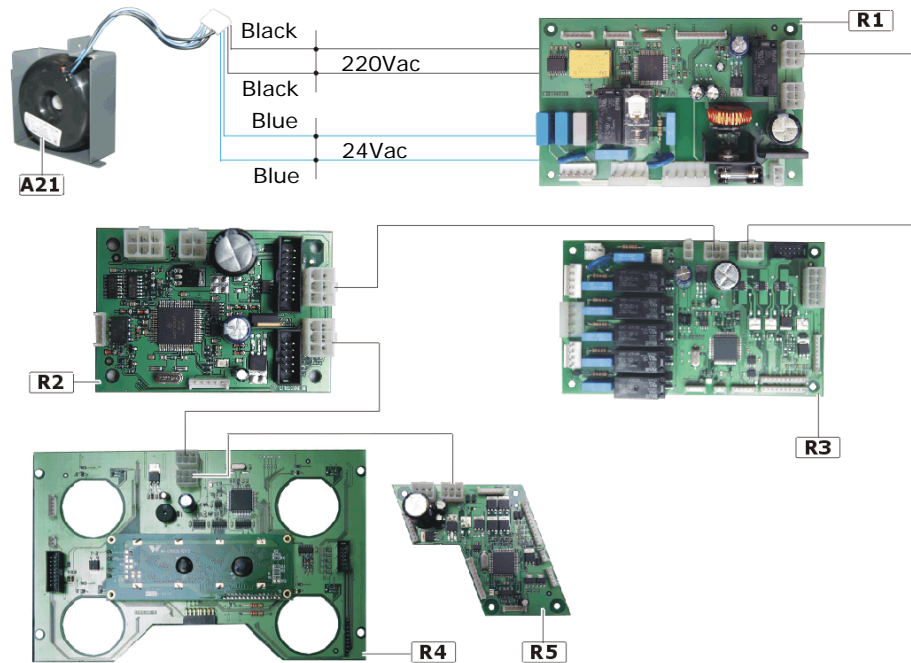
R1. Main module

R2. Payment module

R3. infusion module

R4. IDU module

R5. Cup module

The five boards are joined by one loom of 6 strands called a CAN bus. Two of these wires are used for the transmission of 34 volts, another two for 8 volts and the remaining two are used for the communication between boards. The colour and the function of each of the wires are the following:

PIN 1. Orange	Positive 34 volts
PIN 2. Grey	Negative 34 volts
PIN 3. Red	Positive 8 volts
PIN 4. Yellow	Communication
PIN 5. Green	Communication
PIN 6. Black	Negative 8 volts

2.2.   HYDRAULIC CIRCUIT OF THE ESPRESSO COFFEE

In the following diagram are represented all the elements of the machine that are needed to control and make the water reach the *infusion element* or the instant beverage beaters.

S1. Water inlet

S2. Inlet electro valve

S3. Cold water deposit

S4. Volumetric counter

S5. Water pump

S6. Pressure safety valve

S7. 3-way electro valve

S8. Hot water boiler
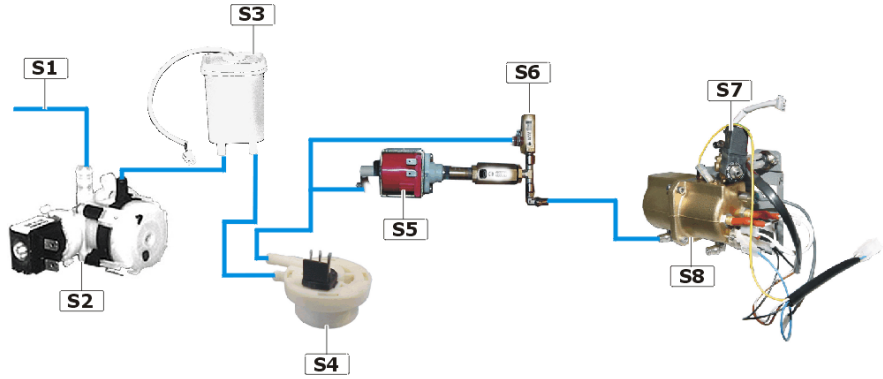
3.   INSTALLATION AND SWITCHING ON

3.1.   UNPACKING

The power supply of the machine requires a socket, or another system, that allows its disconnection. The method used must guarantee the complete disconnection of both poles.

Elemental safety requirements:

a)   Never touch any mechanisms with wet hands or feet.

b)   Never connect or use the machine barefoot.

c)   Never pull on the flex to unplug the machine.

d)   Never leave the machine exposed to the elements: sun, rain, snow, etc.

3.2.   SWITCHING ON

Site the *machine* in its place and level it using the regulating feet.

3.2.1. Water connection

The machine can be used connected to the mains or with an autonomous water deposit. To connect the machine to the mains use a **¾″ male** connection. The mains supply must provide drinking water at a minimum of 5 litres/minute and a pressure of between 0.5 and 10 kg/cm².
The connection hose for the mains is not supplied with the machine.
Following low voltage safety requirements, the water connection and the socket must be separated by at least **1 metre.**

U1. Water

U2. Socket distance minimum
1 metre
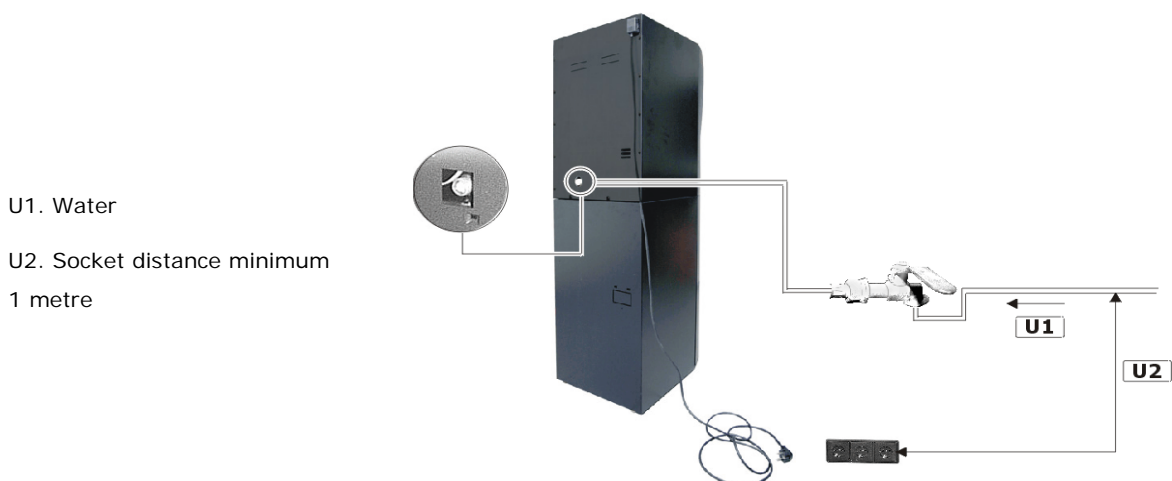
Depending on the quality of the water, hardness, chlorine, bleach, etc, the connection should be complemented with a filter.

If the machine is fitted with a filter, the minimum water pressure should be **1 Kg/cm².**

3.2.2. Electrical connection

The *machine* works with 230 Vac (50 Hz). The installation must have:

- An earthed socket

- A minimum power rating of 2500 w

- The installation site must have a breaker switch and a good earth connection

3.2.3. Installing the coin changer

The machine will accept any coin changer with MDB or Executive protocol. The housing is the same for all models. It is fixed to the housing with three screws.
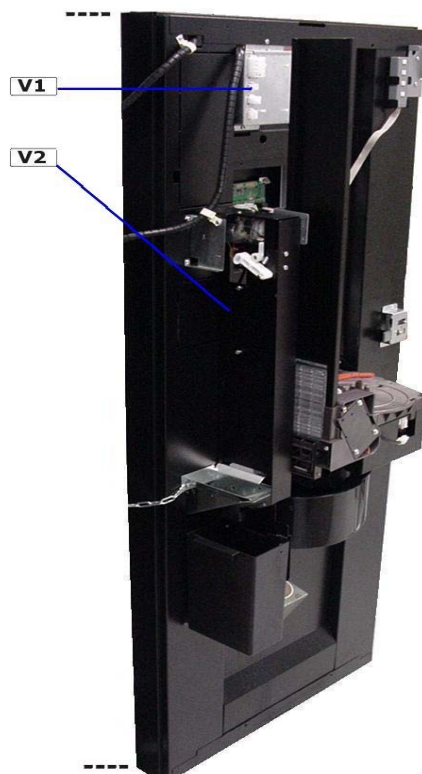
V1. Connections

V2. Coin changer housing

3.2.4. Filling the product containers
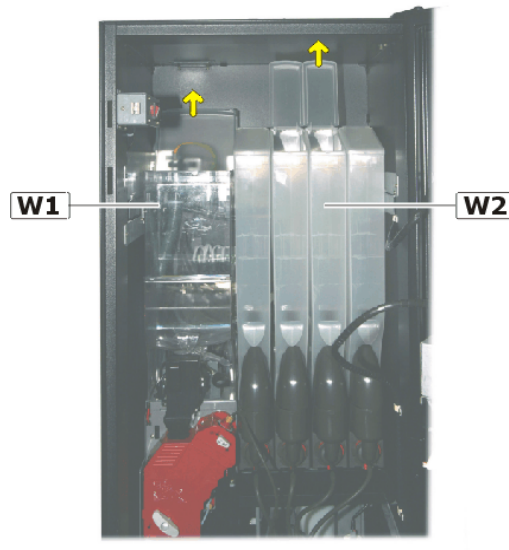
To put products in the containers, you should lift the cover of the machine. Otherwise it is necessary to remove the container from the machine.

> After filling the containers for instant beverages, it is advised to request a service of each as the first time it is used, only a small quantity of product is served

W1. Coffee beans

W2. Instant powder hoppers

Now the machine can be switched on.

3.2.5. Filling the hot water boiler

On connecting the machine the hot water boiler fills automatically.

In the espresso coffee machines the following process occur:

- The cold water deposit fills up, if it is empty.

- The volumetric counter is tested and the boiler is filled with the EVs closed. When the counter stops spinning, the boiler is full. Then the instant product EVs open to let out the air in the lines and boiler.

> If the counter does not spin for 10 seconds while filling the boiler the machine will go out of order as there is no water. To reset this state, just switch the machine off and then back on

3.2.6. Regulating the flow of the EVs

If the flow of water from the EVs is low, it may produce blockages in the beaters as there is insufficient water to carry all the powder out of the beater.

The flow is correctly regulated for the doses programmed in the factory. However, if the doses are modified in the programming or an EV is substituted, you should check that the flow is correct. The flow can be regulated with the screw on the EV. Anticlockwise increases the flow and clockwise reduces the flow.

> Although the flow is originally correctly regulated, with time it may need re regulating due to lime scale deposits in the EV

3.3.   ERROR MESSAGES SHOWN ON THE DISPLAY

The description of the incident, the corresponding message that the display shows and the codes that in each case will be transmitted when using VTM or EVADTS communication protocols are:

Notes:

►:   The machine is "out of order"

nn: number of the element that is faulty

Description		Message on the Display	VTM	EVADTS
Fault in a CHANGER, type of fault 1 **MDB: Sensor in tube defective**	nn	ERROR CHANGER	08	EAN1
Fault in a CHANGER, type of fault 2 **MDB: Jam in tube**	nn	ERROR CHANGER	09	EAN2
Fault in a CHANGER, type of fault 3	nn	ERROR CHANGER	0A	EAN3
Fault in a CHANGER, type of fault 4	nn	ERROR CHANGER	0B	EAN4
Fault in a CHANGER, type of fault 5	nn	ERROR CHANGER	0C	EAN5
Fault in the validator			0D	EAL
MDB: Validator disconnected	00	ERROR VALIDATOR		
MDB: Error of checksum ROM	01	ERROR VALIDATOR		
MDB: Jam of coins	02	ERROR VALIDATOR		
VALID: Error in signal of coins	03	ERROR VALIDATOR		
► **Fault in the module of recuperation**		**ERROR RECUPERATION**	0E	EAB
Fault communication with the changer			11	EAR
MDB: Reply incorrect of the changer	02	ERROR CHANGER		
MDB: Reply incorrect of the note reader	03	ERROR CHANGER		

Description		Message on the Display	VTM	EVADTS
MDB: Reply incorrect of the card reader	04	ERROR CHANGER		
MDB: Reply incorrect of the slave	05	ERROR CHANGER		
MDB: Err. Product out of date (slave)	81	ERROR CHANGER		
MDB: Err. Product sensor (slave)	82	ERROR CHANGER		
MDB: Err. Keyboard in the slave	83	ERROR CHANGER		
Fault button recuperation		**ERROR KEYBOARD**	12	EGK
Fault keyboard selection			13	EGK
Number of button	nn	ERROR KEYBOARD		
Fault cup extractor	EB	ERROR CUP		
Fault Infusion	EC	ERROR INFUSION		
Fault keyboard selection, no keyboard		**ERROR KEYBOARD**	14	EGK
Fault in the card reader			15	
MDB: Error in the circuit board	00	ERROR CARD READER.		
MDB: Circuit board not valid	01	ERROR CARD READER		
MDB: Tamper Error (Fraud?)	02	ERROR CARD READER		
MDB: Error defined by the manufacturer	03	ERROR CARD READER		
MDB: Error in communications	04	ERROR CARD READER		
MDB: Repair reader	05	ERROR CARD READER		
MDB: Not assigned	06	ERROR CARD READER		
MDB: Error defined by the manufacturer	07	ERROR CARD READER		
MDB: Error of the lector	08	ERROR CARD READER		
MDB: Error in communications	09	ERROR CARD READER		
MDB: Jam circuit board	0A	ERROR CARD READER		
MDB: Error defined by the manufacturer	0B	ERROR CARD READER		
MDB: Error refunding credit	0C	ERROR CARD READER		
Fault in the note reader				
MDB: Motor defective	00	ERROR NOTE READER		
MDB: Sensor defective	01	ERROR NOTE READER		
MDB: Error checksum ROM	02	ERROR NOTE READER		
MDB: Jam	03	ERROR NOTE READER		
MDB: Store / Stacker not present	04	ERROR NOTE READER		
MDB: Lector deactivated	05	ERROR NOTE READER		
▶ **Out of order because prices deprogrammed**		**PRICE NOT PROGRAMMED**	17	EAK
▶ **Out of order for all coins inhibited**		**COINS INHIBIT.**	18	EAC
Fault in extraction grid, type of ERROR 1			19	ELZ1
Fault in extraction grid, type of ERROR 2			1A	ELZ2
Fault in extraction grid, type of ERROR 3			1B	ELZ3
Fault detector product (fault type 1)		**FAULT IDETECT**	1C	
Fault in temperature			1D	EJJ
Fault in product out of date			1E	EJH
Fault detector product (fault type 2)		**FAULT IDETECT**	1F	
Switch on of the machine			20	OEZN
Switch off of the machine			21	OEZF
Activation of infra red reception			22	OEZI
Communication AZKOYEN protocol			23	OEZA

Description		Message on the Display	VTM	EVADTS
Communication EVADTS protocol			25	OEZE
Description		Message on Display	VTM	EVADTS
Communication VTM under SMS			26	OEZS
► Reset configuration		Machine NOT CFG[F401]	30	ECZC
Reset program. Channels ,prices, etc			31	ECZP
Reset program. Messages			32	ECZM
Reset of accounting			33	ECZO
► Error in EEPROM		ERROR EEPROM 'Module'	37	ECO
Power low		VOLTAGE LOW	38	ECA
Total memory erase order			39	ECN
Error clock			EA	ECL
Error temperature probe		FAULT SENSOR TEMPER	EB	EJK
Temperature probe open	01	OPEN SENSOR TEMP. AB		
Temperature probe short circuited	02	OPEN SENSOR TEMP. CC		
Error in system of door close		DELIVERY DOOR OPEN	3D	EGC
Gate closed	01	DELIVERY DOOR C		
Gate open	02	DELIVERY DOOR A		
Gate undefined position, both micros closed	03	DEL. DOOR P.D. MC		
Gate undefined position, both micros closed	04	DEL. DOOR P.D. MA		
Detected manipulation of collection hatch	05	DEL. DOOR MANIP.		
Product collection hatch open			41	EGC
Received module software by EVADTS			50	
Received module software by MDB			51	
► Fault in system heater		ERROR CALDERA	60	EDK
► Error in the temperature probe	01	ERROR PROBE TEMP.		
► Error in the heating element	02	ERROR HEATING ELEMENT		
► Fault in water entry		ERR. WATER LEVEL	61	EFL
► Volume meter faulty	02	ERR: NO WATER		
► Error in the water level (no water)	03	NO MAINS WATER		
Fault arm: not in out position			62	EBI1
► Fault arm: not reached position		ERROR ARM	63	EBI2
► Arm not reached cup position	01	ERROR ARM P. CUP		
► Arm not reached liquid position	02	ERROR ARM P. LIQ.		
► Arm not reached sugar position	03	ERROR ARM P. SUGAR		
► Arm not reached stirrer position	04	ERROR ARM P. STIR.		
► Fault arm 3 faults without reset			64	EBI3
Fault system extractor of cups		ERROR SYS. COPS	65	EBM
► Error in the mfc of the cup hopper	01	ERROR CUP HOPPER		
Cup hopper empty after 5 turns	02	NO CUPS		
► Error in the mfc of the extractor of cups	04	ERROR EXTRAC. CUPS		

Description		Message on the Display	VTM	EVADTS
▶ Cup arm turning	05	ARM HOP. TURNING		
▶ Cup extractor turning	06	CUP EXTR. H. TURNING		
Description		**Message on Display**	VTM	EVADTS
▶ Cup hopper turning	07	HOPPER V. TURNING		
Fault system extractor of stirrers		**ERROR STIRRERS**	66	EDF
Stirrer arm turning	01	ARM STIR. TURNING		
Fault in the espresso infusion group		**ERROR GRP. ESPRESSO**	67	EE
Error in the mfc of the doser	01	ERROR DOS.		
Error in the positioner of the group	02	ERR. POS. GROUP		
No coffee in grinder	03	NO GROUND COFFEE		
No infusion group	04	NO GROUP		
Infusion time too long	05	LONG INF. TIME.		
Retry of position of the group	06	RETRY. POS. GROUP		
Retry of priming water pump in mach with deposit	07	RETRY PUMP PRIME		
▶ **Fault in waste drawer**		**ERROR IN WASTE**	68	EDZ
▶ Waste drawer full	00	WASTE DRAWER FULL		
▶ No waste drawer fitted	01	WASTE DRAWER NOT PRES.		

3.4.   CONTROL POINTS

Heating element

It is measured on the **infusion board** on the connector J12

Between pins 1 and 2 (black and green) it will show 0 Vac when the heating element is working. (Keeping in mind the 10 Amp fuse is correct)

Between pins 1 and 2 it will show 220 Vac when the heating element is not heating.

Infusion pump

It is measured on the **infusion board** on the connector J14

Between pins 1 and 4 it will show 200 Vac when the pump is working.

Water inlet electro-valve

It is measured on the **infusion board** on the connector J14

Between pins 2 and 4 it will show 200 Vac when the pump is working.

Motor of the infusion group

It is measured on the **infusion board** on the connector J15

Between pins 1 and 3 it will show 220 Vac when the group is working.

Dosage element

It is measured on the **infusion board** on the connector J15

Between pins 1 and 4 it will show 220 Vac when the dosage element is active.

Grinder

It is measured on the **infusion board** on the connector J15

Between pins 1 and 5 it will show 220 Vac when the grinder is working.

Transformer

It is measured on the **PRI board** on the connector JP1

Pins 1 and 2 = 220 Vac (black wires).

Pins 4 and 5 = 24 Vac (blue wires)

Infusion electro-valve

It is measured on the **infusion board** on the connector J9

Between pins 7 and 8 it will show 25 Vdc when the electro-valve is activated.

Volume counter

It is measured on the **infusion board** on the connector J10.

The pin 3 corresponds to +, the pin 4 to ground and the pin 2 to signal.

When the counter spins, the reading will show 2.5 Vdc measuring between pins 2 and 4.

Water level buoy

It is measured on the **infusion board** on the connector J10.

Between pins 1 and 4 it will show 0 Vdc when the deposit is contains water.

Between pins 1 and 4 it will show 5 Vdc when the deposit is empty.

Micro-switch-switch for dosage element

It is measured on the **infusion board** on the connector J9.

Between pins 1 and 6 it will show 5 Vdc when the dosage element is full.

Between pins 1 and 6 it will show 0 Vdc when the dosage element is empty.

Micro-switch-switch for infusion group motor

It is measured on the **infusion board** on the connector J9.

Between pins 2 and 6 it will show 5 Vdc when the infusion group is in the coffee making position.

Between pins 2 and 6 it will show 0 Vdc when the dosage element is in the loading position.

Micro-switch-switch to detect infusion group presence

It is measured on the **infusion board** on the connector J9.

Between pins 3 and 6 it will show 0 Vdc when the infusion group is fitted in the machine.

Between pins 3 and 6 it will show 5 Vdc when the infusion group has been removed from the machine.

Micro-switch for waste bucket

It is measured on the **infusion board** on the connector J11.

Between pins 1 and 2 it will show 5 Vdc when the waste bucket is full.

Between pins 1 and 2 it will show 0 Vdc when the waste bucket is not full.

Cup extractor motor

It is measured on the **Cup Board** on the connector J5.

Between pins 9 and 11 it will show 0 Vdc when the motor is at rest.

Between pins 9 and 11 it will show 25 Vdc when the motor is working.

Motor for turning the cup container

It is measured on the **Cup Board** on the connector J5.

Between pins 7 and 10 it will show 30 Vdc when the motor is at rest.

Between pins 7 and 10 it will show 0 Vdc when the motor is working.

Motor for the sugar extractor

It is measured on the **Cup Board** on the connector J7.

Between pins 3 and 6 it will show 30 Vdc the motor is at rest.

Between pins 3 and 6 it will show 0 Vdc when the motor is working.

Motor for the stirrer extractor

It is measured on the **Cup Board** on the connector J7.

Between pins 3 and 5 it will show 30 Vdc the motor is at rest.

Between pins 3 and 5 it will show 0 Vdc when the motor is working.

Photocell for detecting cup presence

It is measured on the **Cup Board** on the connector J5.

Between pins 6 and 7 it will show 5 Vdc when there are cups between the photocells.

Between pins 6 and 7 it will show 0 Vdc when there are no cups.

Micro-switch of the cup container lever

It is measured on the **Cup Board** on the connector J5.

Between pins 3 and 7 it will show 5 Vdc when the lever is at rest.

Between pins 3 and 7 it will show 0 Vdc when the lever closes the micro-switch.

Micro-switch for the cup extractor motor

It is measured on the **Cup Board** on the connector J5.

Between pins 4 and 7 it will show 0 Vdc when the motor is at rest.

Between pins 4 and 7 it will show 5 Vdc when the motor turns to extract a cup.

Micro-switch sugar arm

It is measured on the **Cup Board** on the connector J7.

Between pins 2 and 3 it will show 5 Vdc when the arm is at rest.

Between pins 2 and 3 it will show 0 Vdc when the arm moves to deposit sugar in the cup, it returns to 5 Vdc when it returns to its original position.

Temperature probe

It is measured on the **infusion board** on the connector J2. It measures the resistance values (see the table for the PTC values).

4.   CLEANING AND AMINTENANCE

❑   **Daily**

    ↘   *Liquid residue bucket*. Empty the waste water and rinse with clean water.

    ↘   *Solid waste bucket*. Empty the coffee residues and rinse with clean water.

    ↘   *Liquid collector tray*. Clean with a water and dish washing liquid solution.

    ↘   *Beaters*. Carry out various auto-cleaning operations by pressing button "B" on the programming handset.

❑   **Weekly**

    ↘   *Infusion group*. Remove it from the machine and rinse it under a tap to remove coffee particles. Before replacing the group, dry it with a cloth.

    ↘   *Beaters*. Remove the beaters, the outlet tubes and the chamber from the machine, and clean everything with a water and dish washing liquid solution. If necessary, only use a soft cloth to clean so as not to scratch their surfaces.

    ↘   *Product collection cover*. Clean it with a water and dish washing liquid solution.

    ↘   *Cup support arm.* Remove and clean it with a water and dish washing liquid solution.

❑   **Three monthly**

    ↘   *Product hoppers*. Remove them from the machine and empty them. Clean them with a water and dish washing liquid solution. Dry them before replacing into the machine. Clean the supports where the hoppers are fitted.

    ↘   *Coffee bean hopper*. Carry out the same as with the product hoppers.
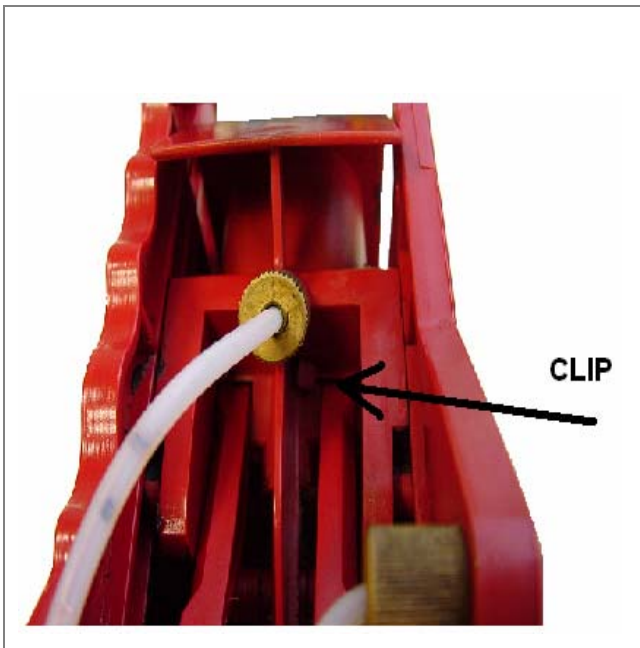
CLIP

Group seals

4.   Once replaced gaskets, reposting the lid and boards in the group

☐   **Maintenance tool**

The maintenance tool is used in machines off the **Sienna** series to carry out various advanced configuration and programming tasks.

The tool is micro-processor controlled and has a flash memory with a capacity to store at least 8 programme modules, 100 configurations or a combination of both.

The tool is connected directly to the machine to save or recuperate configurations. It can also be connected to a PC to modify configurations or manage the module update programming.
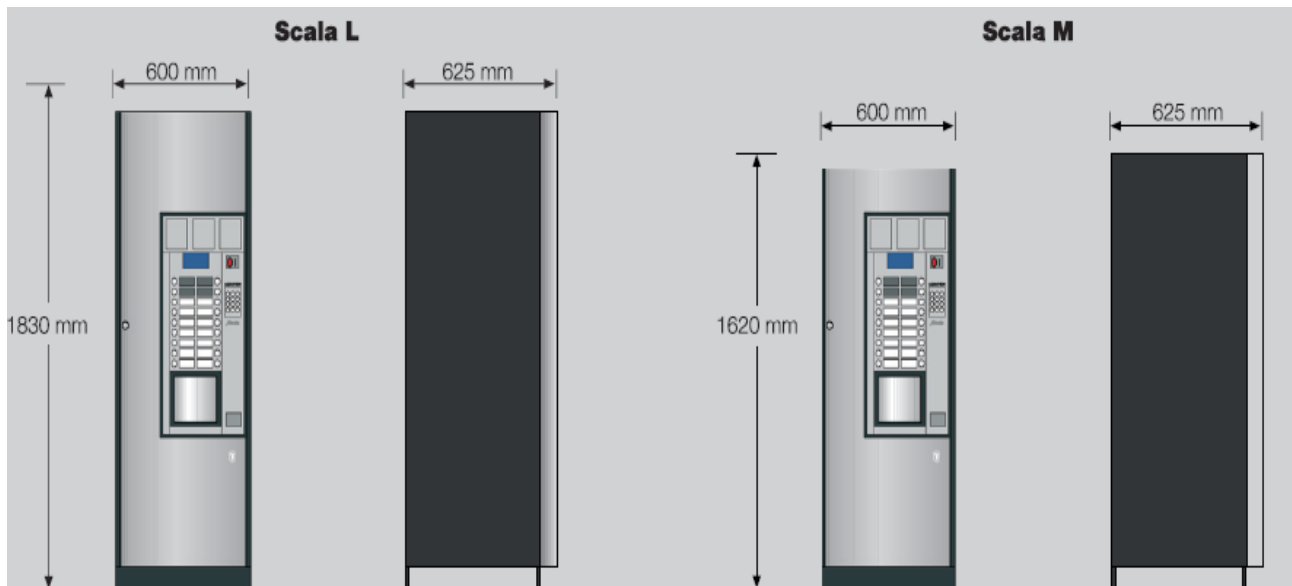
5. WORKING CONDITIONS AND NORMS

The optimum working conditions of this equipment is achieved by fulfilling the following requirements:

❏ Temperatures:

  ↘ Storage: -25 to + 70°C.

  ↘ Working: 0 to 50° C.

  ↘ Maximum relative humidity without condensation 85%

❏ Norms that are met:

  ↘ The coffee machines meet the following EU directives: Directive 73/23/CEE electrical safety and Directive 89/336/CEE electromagnetic compatibility.

  ↘ The mains connection cable has an earth wire as established in the electrical safety norm.

  ↘ The boiler has a temperature sensor that controls the connection and disconnection of the heating element automatically.

  ↘ The boiler has a temperature clixon that disconnects the heating element when it reaches 120° C.

  ↘ EN 60335-2-63:96

  ↘ EN 60 335-1(88) + A2(88) + A5(89) + A6(89) + A51(91) + A52(92) + A53(92) + A54(92) + A55(93)

  ↘ EN 55014-1

  ↘ EN 61000-3-2

  ↘ EN 61000-3-3

  ↘ EN 55014-2:98 (EN 61000-4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8 and 4-11)

  ↘ **CE**

❏ For the correct working of all the elements, the maximum inclination the machine should have on any of its axis should be ± **5°.**

6. DIMENSIONS

The measurements are in mm and the weights in Kg.

Model	Width X1	Height X2	Depth X3	Weight
Sienna ME	600	1620	625	165
Sienna MI	600	1620	625	150
Sienna ME 2 grinders	600	1620	625	175
Sienna LE	600	1830	625	180
Sienna LI	600	1830	625	165
Sienna LE 2 grinders	600	1830	625	190