AZKOYEN GROUP

Technical information

VITRO X1

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1. INTRODUCTION

The semiautomatic machines of the ***Vitro X1*** series are destined for the elaboration of espresso coffee and soluble drinks consisting of the mixing of warm water with product in powder or granulated.

In the rest of the book, and for major briefness, the elements that are indicated will be named like:

The machines of the series Vitro X1: machine or machines.

The coffee brewer or coffee group: group or brewer.

The electroválvulas: EV.

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 92º C and 96º C.
- The water pressure at 8 kg/cm²La presión del agua de *erogación* a 9 kg/cm².
- The infusion time of the coffee between 12 and 20 seconds.
- The volume of water in the infusion 50 ml.

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.

1.2 MODELS AND PRINCIPLE TECHNICAL CHARACTERISTICS

The purpose of the **Vitro X1** range is to make espresso coffee, which can be combinated with two soluble products. The machine can also produce soluble products independent of espresso coffee and has a direct outlet to the cup of hot water.

- To push a button is enough to elaborate any service; espresso or instant.
- It grinds the coffee when it is ordered.
- Products that the machine can dispense:

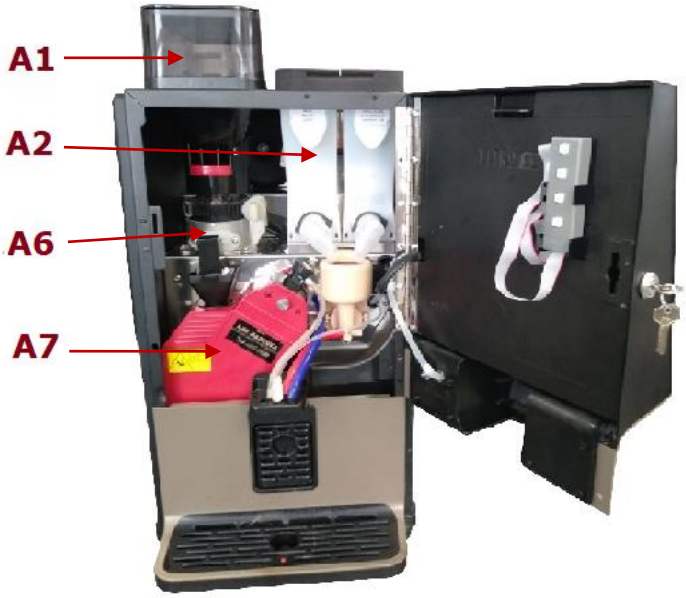
Model	Coffee beans	Chocolate	Milk	Hot water
X1 Espresso	Yes	Yes	Yes	Yes

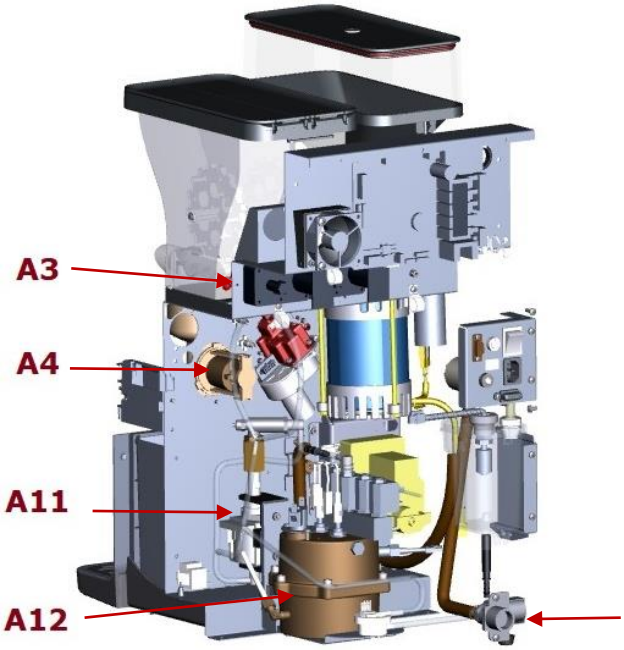
- The water temperature is programmable.
- The ground coffee dose is programmable between 5 g and 8 g.
- *Water pump* for water pressure incorporated in the *machine*.
- Volume dosage of water in the different *espresso coffee* services is programmable.
- Electrical consumption, voltage and frequency depend on the country.

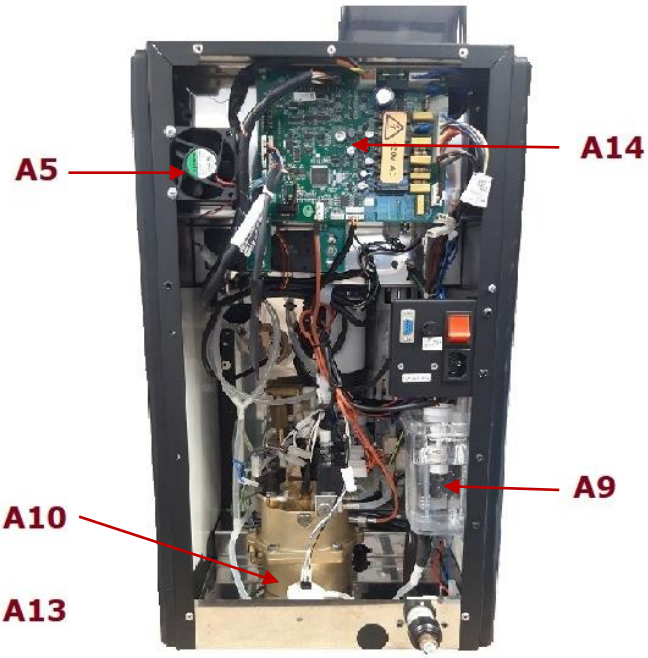
VITRO X1 espresso	Voltage	Power	Length
Mains voltage	110/230 Vca 50/60 Hz		
Heating element	110/230 Vca 50/60 Hz	1100 W	
Mains flex			1.800 mm

2. DESCRIPTION OF COMPONENTS

2.1. MAIN COMPONENTS







A1. Coffee beans hopper/canister

It has a capacity of 1,2 kilograms.

A manual lock allows the user to remove the canister without loosing any bean.

A2. Instant product hopper

With a capacity of 1,6 litres in each one of the hoppers of instant for instant products.

The approximate weight of the product is:

	Capacity in grams
Product	Vitro XE+2
Milk	600
Chocolate	800

A3. Product extractor

This motor will move the spindle inside the canister to move instant poder out to the mixing bowls. These motors are from Componenti.

Motor manufacturer: Componenti

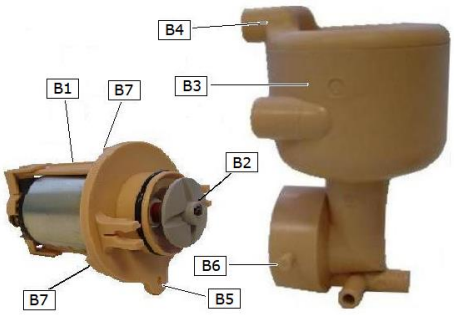
Voltage: 24 V cc

Speed: 140 rpm

A4. Beaters/Mixers/Whippers

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

B1. Assembly beater motor
B2. Mixer blade impellor
B3. Whipper chamber
B4. Stream hood
B5. Screw
B6. Mixer fixing pivots
B7. Mixing motor clips



A motor spins the mixing Blade. Motor technical data:

Motor manufacturer	Mabuchi
Voltage	34 Vcc
Power	20 w
Speed	15.000 rpm

Mixing assy can be removed by pulling untill free the clipping pivots. Then unscrew the fixing screw and twist the motor to the right to set free the clips.

In case of total dissambly; pay attention to the details shown in the pictures next to this text.

As shown in the pictures, grey inside base must be moved to the motor. If not, the base will be in friction provoking a break in the motor.

The tool reference 10040130 can be used as a help.

A5. Extractor

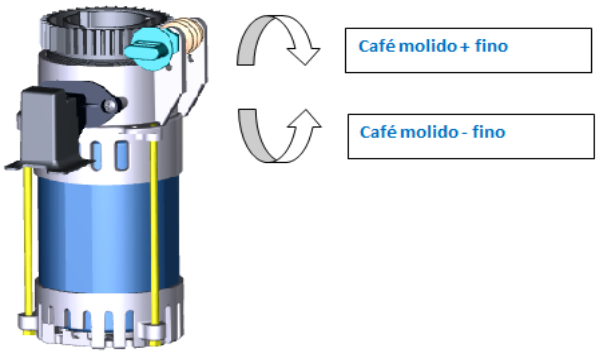
Extractor

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 24 Vdc

A6. Coffee grinder

It's the M03 Azkoyen model.

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



Turning the handle anticlockwise gives a coarser grind and moving it clockwise gives a finer grind. The grinder used in Vitro X1 is regulated by time. Grinder programming in function 315 (check details in programming manual)

To get the desired amount of coffee for your Service: first adjust the **"grinding point"** using the handle. After set a time for the grinder in the function 315 **"grinding time".** It is advised to scale the ground coffee in each Service. Last, adjust the piston washers in the best position (check in section A7. Coffee Group+Piston).

Turning the handle that adjusts the grinding point will have an effect on ground coffee granulometry, but also on ground coffee Flow. Remember that grinder is controlled by time: 3 seconds of coarse coffee will make more grams than 3 seconds of thin coffee.

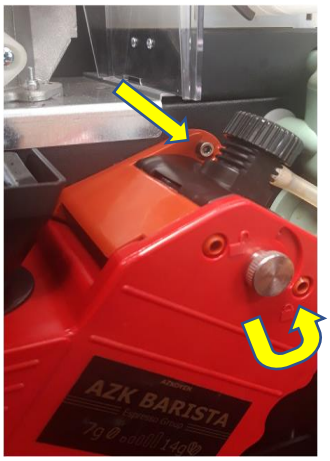
It can be said that turning right or left the grinding point handle will vary the amount of coffee ground for your Service. In that case, the grinding time set in function 315 must be modify as well to keep getting the desired amount of coffee for each Service.

A7. Espresso Group+Piston/Brewer

The Vitro X1 machine has the espresso group model V30. Made of resin, it is the element that the *machine* uses to make the espresso coffee.

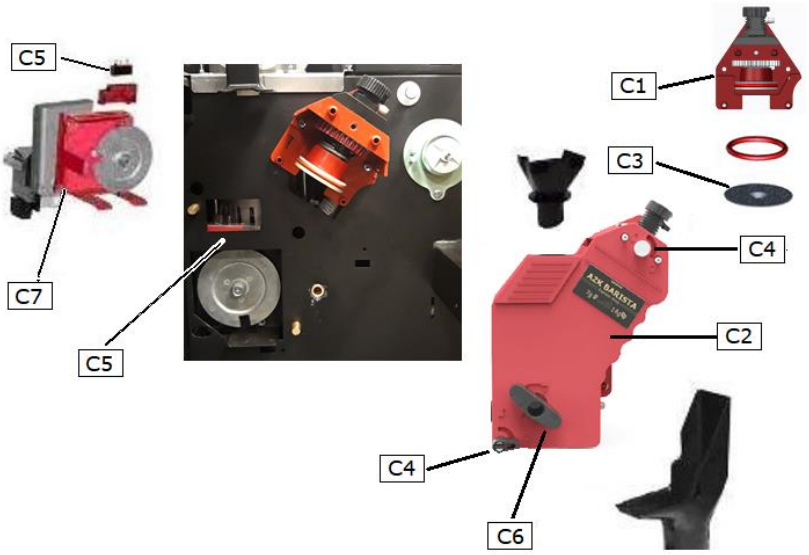
The *group* has moving parts that are activated by a 220 Vac motor that moves a crank which moves the *coffee* from the dosage element to the piston. At the same time it also moves a lever that activates a *micro switch*; this indicates the position of the *infusion element* to the control board.

To remove from its position of anchor, the lower lever must be turned and the two upper screws must be loosened, as indicated in the photographs. If the group was in brewing position, to remove it, it is necessary to acces programming function 30 and raise the piston.



To put the group back on the machine, it can be in any position and not matter that it has been turned out of the machine: Just put it in its place and fix its two anchor levers; the engine of the group will position it correctly.

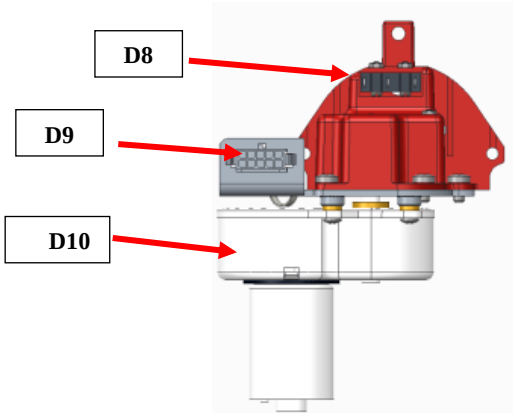
C1. Piston
C2. Group
C3. Filter
C4. Holding handle
C5. Position microswitch
C6. Group movement handle
C7. Group motor



AZK 30, variable coffee brewer

The AZK 30 group is variable and automatic positioning from 7 gr to 14 gr, thanks to a 24 VDC position control motor.

The variable group allows a more controlled and better pressed dosage because the positioning of the piston is done by the activation of a direct current motor, controlled by a pulse counter.

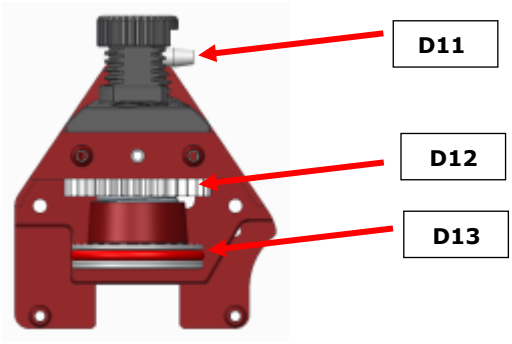


The motor assembly positions the piston and exerts appropiate pressur on the coffee tablet, according to the grinding time or grams settings that is made in the recipe.

D8. Micro switch positioning.
D9. Motor connector.
D10. Gear box motor

The apper piston assembly has a pinion that is coupled to the engine, to make the right compression to the coffee tablet according to its number of grams.

D11. Espresso spout
D12. Positioning pinion
D13. Upper piston seal



A8. Tray of liquid residues and coffee cakes deposit

Coffee cakes deposit collects "coffee cakes" coming from coffee group. It has capacity for 60 cakes. After 60 coffee services the display will show a message asking to empty the deposit. If the counter want to be disabled use your laptop and the Configurator app to modify the settings cmq file.

Tray of liquids collects all the liquid residues that the machine generates. It has capacity for 1 litre.

Both parts can be removed with the machine lock. Pull the tray to remove both parts.

A9. Water Deposit

It is made of copolyester (Tritan TX1001) and has a capacity for 500 cc of water. 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 this tank is controlled by a magentic switch activated by a float.

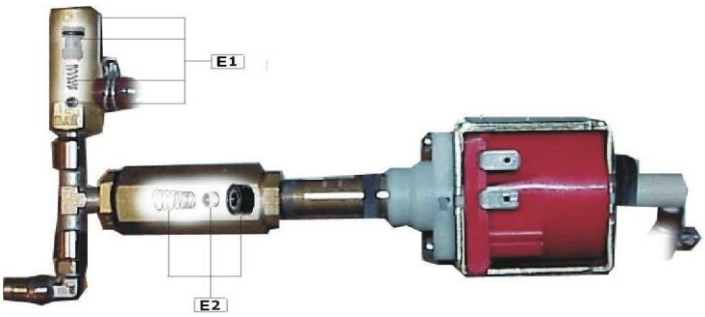
A10. Volumetric counter

Its function is to measure the quantity of water that is pumped for the elaboration of the espresso coffee

A blade inside it spins boosted by the water flow. Two magnets on the blades activate a terminal locate on the counter cap. The three terminals on the cap are positive, negative (5V cc) and the _Π_ (square signal symbol). If it is measured between negative and _Π_ when water is pumped through the counter it will be gotten the voltage difference 0V and 5V. In a digital tester it will be shown 2.5V which indicates that the counter is working well.

A11. Water pump

E1. By-pass
E2. Non return



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 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 coffee.

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

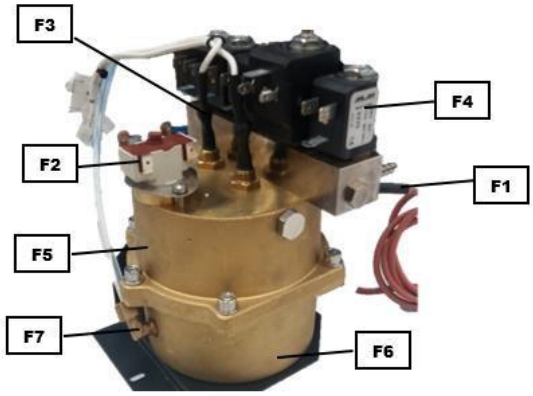
Technical characteristics:

Voltage	230 Vdc
Power	48 w
Working pressure	9 Kg/cm²

A12. Boiler

The boiler works under pressure and has a capacity of 700 cc. It warms up the water for the elaboration of the products, espresso coffee or soluble products.

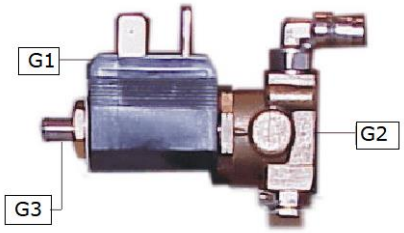
F1. Temperature sensor
F2. Clixon, rated at 120º C
F3. 1100 W heating element
F4. Electrovalves
F5. Upper cover
F6. lower cover
F7. Water inlet



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.

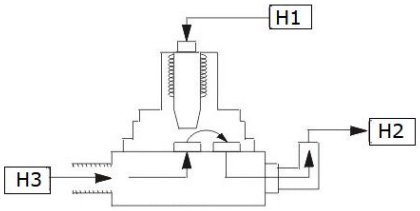
There are three outlets; one through a 3-way *EV* for the elaboration of espresso coffee. This *EV* has an outlet from the boiler, another goes to the *infusion element*, and the third that, at rest, allows the *infusion element* to be at atmospheric pressure.

G1. Solenoid
G2. Valve
G3. 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.

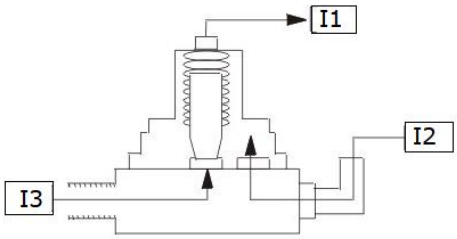
H1. 3rd outlet closed
H2. To the infusion group
H3. From the boiler



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.

I1. 3rd outlet open
I2. Infusion element joined to atmospheric pressure
I3. Boiler water closed



Technical Characteristics:

Heating element voltage	230 Vca
Power	1.100 w
Temperature programming	70ºC -94ºC
Safety protection with manual reset	120º C
Voltage of 3-way EV	24 Vcc
Power of 3-way EV	10 w
Maximum pressure of EV	14 Kg./cm²
Working temperature of EV	-10º C a 140º C

Temperature control of the water in the boiler is done with a PTC100. Default Temperature from factory is programmed to 85ºC, it can be programmed up to 96ºC.

It must be taken into account that, depending on the altitude at which the machine is installed, the water can boil at a temperature below 100ºC.

Altitud (meters) (above sea level)	**Boiling water temperature**	**Max. advised temp. in boiler (F461)**
1500	95ºC	92ºC
1800	94ºC	91ºC
2100	93ºC	90ºC
2400	92ºC	89ºC
2700	91ºC	88ºC

The following table shows the resistance values that the PT100 gives according to the temperature that it is submitted.

ºC	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									

A13. Water inlet solenoide valve

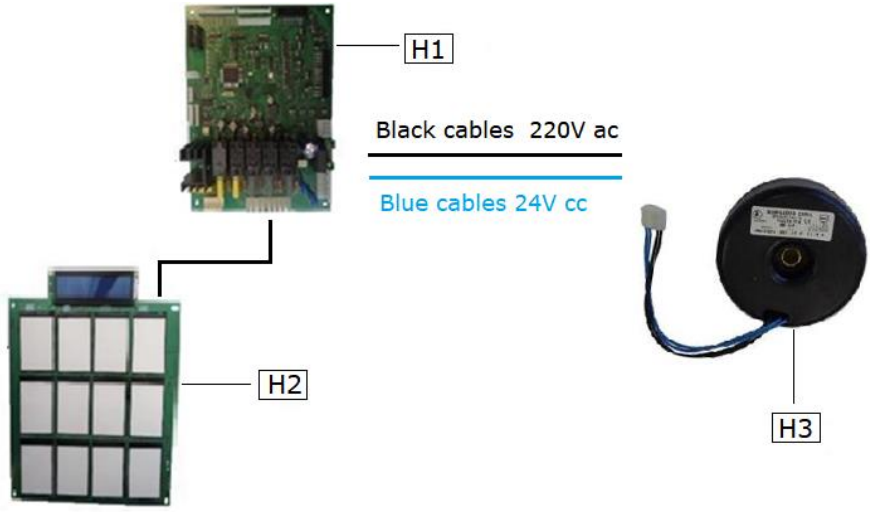
Allows water to pass from the hydraulic network to the cold-water tank. Works at 120/230 VAC.

It has a grid that retains solid elements from the hydraulic network, the normal closure of the EV cuts the passage of

water to the machine. It should be checkingthat the filter or grid is not hindered by debris.

A14. Control board and transformer

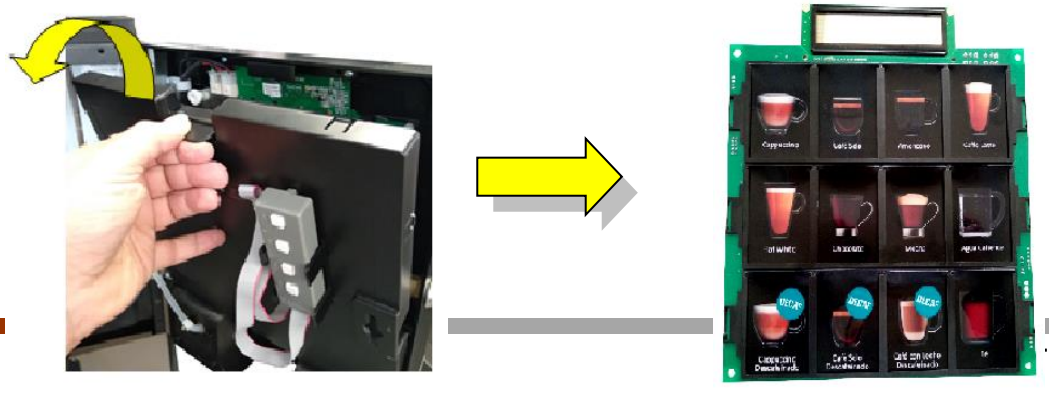
H1. Transformer (96 VA)
H2. Control pcb
H3. Display
H4. Push buttons board



Vitro X1 range machines have 2 electronic boards, a *Control board and a key board*. The control unit provides the supply voltages for the rest of the components and managing the machine. This board is the same of the Zen, Zintro and Vitro S5 models, but with a different firmware.

On the door and protected by a cover, there is the key board, wish has 8 direct products selections and 4 pre-selections . The activation of these selections and pre-selections is done by capacitive detectors; To order a product it is not necessary to press any pushbutton, just move your finger to the desired product and the machine supplies the service.

Each product label and pre-selection is backlit by a LED, when a product is ordered from the machine, the remaining labels are turned off, remaining illuminated only the requested one. When

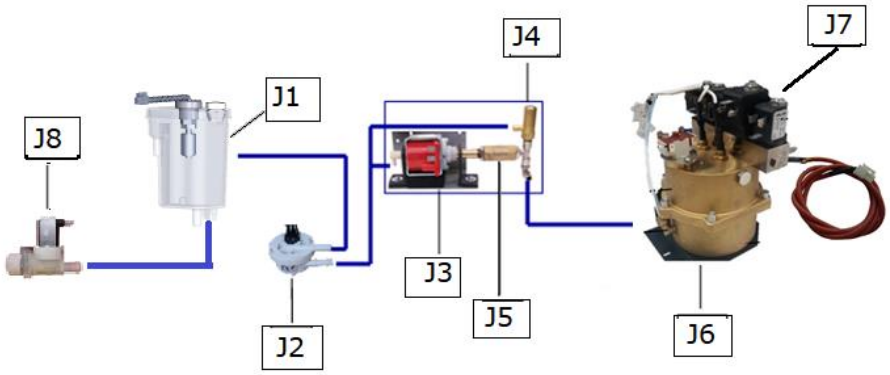


a pre-selection is pressed, only the product labels affected by that pre-selection are illuminated, the rest is turned off.
On the electronic pushbutton card, the *display* is connected, which is of the alphanumeric type with two lines of 16 characters each.
The pushbutton card is tied with 4 plastic nuts and protected by a plastic panel. The label holders are attached to the card by pressure. To access the card, the cup container must be removed.

2.2. Hydraulic circuit

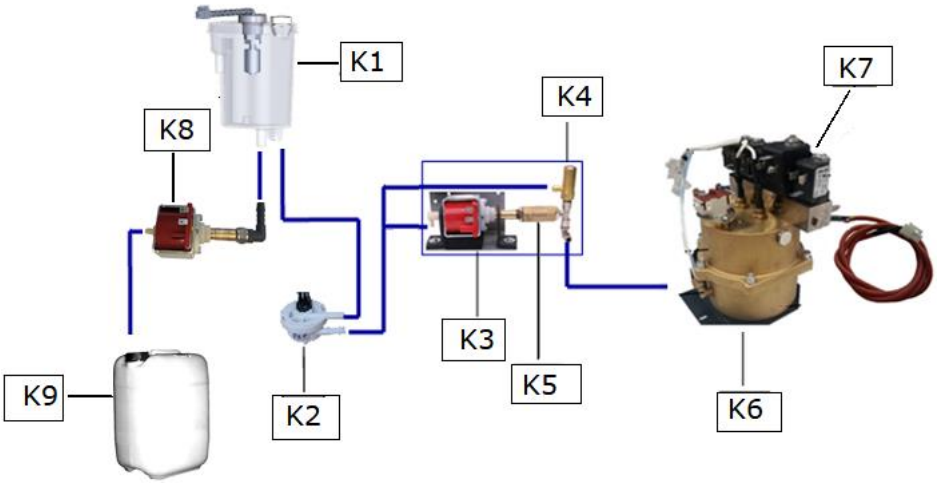
Conecction to water network

JI1. Water deposit
J2. Flowmeter
J3. Pressure pump
J4. Overpressure pump
J5. Non return
J6. Boiler
J7. Electrovalves
J8. Water inlet valve



Autonomy mode

I1. Water deposit
I2. Flowmeter
I3. Pressure pump
I4. Overpressure pump
I5. Non return
I6. Boiler
I7. Electrovalves
I8. Autonomy pump
I9. Plastic jerry



3. INSTALLATION AND SWITCHING ON

3.1. Installation

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.

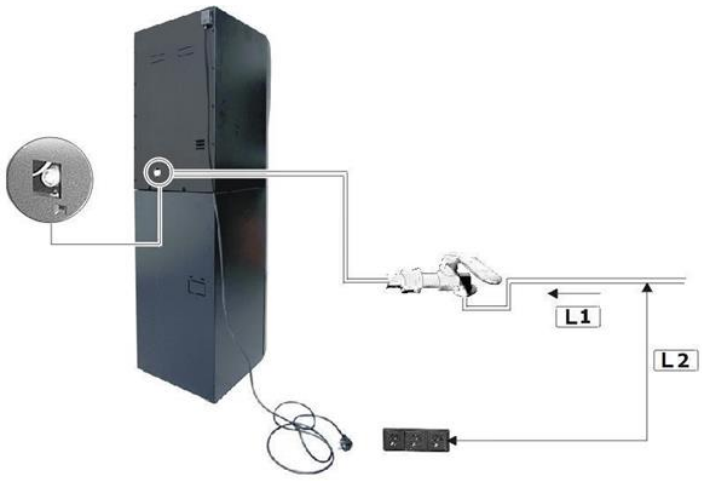
d) Never leave the machine exposed to the elements: sun, rain, snow, etc.

3.2 Water connection

The machine can operate connected to the hydraulic grid or with a battery unit. For connection to the hydraulic mains has a **3/4-inch male socket**. It shall be connected to a drinking water intake supplying a minimum flow rate of 5 liters/minute at a pressure between 0.5 and 10 kg/cm2.
The hydraulic mains connection hose is not supplied with the machine.

According to the low voltage regulation, the distance between the water intake and any electrical plug base will have a minimum of **1 meter.**

L1. Línea de agua
L2. Distancia minima 1 metro



Depending on water quality, degree of hardness; chlorine; bleach; etc., the installation should be complemented by a resin scrubber filter.
If the machine incorporates a scrubber filter or softener filter, the minimum network pressure must be **1 Kg/cm2.**

3.3 Electrical connection

The supply voltage of the machine is indicated in the characteristics plate, there is one inside the machine and another on the back. Depending on the machine code and the country, it can operate at 110 or 220 Vac, with a frequency of 50 or 60 Hz. The installation must have:

- An earthed socket
- A minimum power rating of 2000 w
- The installation site must have a breaker switch and a good ground connection
- It is convenient that the electrical power supply system of the machine incorporates a switch that allows the disconnection of the two phases

3.4 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.

1. Coffee beans hopper
2. Soluble product hoppers

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

3.5 Filling the hot water boiler

Start the machine and hot water boiler will be filled automatically.

In the espresso coffee machines, the following process occur:

- The volumetric counter is tested, and the boiler is filled with the EVs open.
- Subsecuently, the boiler is filled with the EVs closed, filling that is detected when the counter stops spinning. Then the instant product EVs open to let out the air in the lines and boiler.

4. ERROR MESSAGES

In the following table there are described the errors that the machine can detect.

LOW TEMPERATURE	The machine displays this warning for approx. 1 min. on being started up.
ERROR: NO WATER	Check the water supply. Fill the water tank
NO COFFEE BEANS	Load the hopper with coffee Check the position of the group outlet shutter
WASTE BIN FULL	Remove the waste tray, clean it and refit it
LONG DISTRIBUTION	Adjust the grinding time to coarser. Clean the group showers Check that there is voltage to the input solenoid.
RESIST. FAULTY	Element broken or disconnected
TEMP.SENSOR ERR.	Probe broken or disconnected
FAIL.WATER LEVEL	Check mains pressure. Input solenoid or level ball broken or disconnected.
DOSAGE ERROR.	Dosser broken or disconnected
F.ESPRSS.UNT.POS	The group motor does not work. The position detector does not work properly.
NO WASTE BIN	The tray is missing or not fitted properly.

5. CONTROL POINTS

Heatting element

Meassured in the **control board** in the conector jp11

Between pins 1 and 3, will be 220 Vca when heatting element is working. (if 10A fuse is fine)

Erogation pump

Meassured in the **control board** in the conector jp10

Between pins 1 and 7 will be 220 Vca when ulka pump is working.

Erogation group motor

Meassured in the **control board** in the conector jp10

Between pins 2 and 7 will be 220 Vca when the group is working.

Coffee doser

Meassured in the **control board** in the conector jp10

Between pins 3 and 7 will be 220 Vca when doser is activated.

Grinder

Meassured in the **control board** in the conector jp10

Between pins 4 and 7 will be 220 Vca when grinder is working.

Transformer

Meassured in the **control board** in the conector JP12

Pins 1 and 2 = 220 Vca (black looms).

Pins 4 and 5 = 24 Vca (blue looms).

Pressure electrovalve

Meassured in the **control board** in the conector jp8

Between pins 1 and 4 will be 25 Vcc when la electrovalve is activated.

Volumetric counter

Meassured in the **control board** in the conector jp1.

Pin 1 corresponds to +, pin 4 is ground and pin 12 is signal.

When volumetric is turning. The multimeter will show 2,5 Vcc meassuriing between pins 12 and 4.

Doser microswitch

Meassured in the **control board** in the conector jp1.

Between pins 4 and 11 will be 5 Vcc when doser is full.

Between pins 4 and 11 will be 0 Vcc when doser is empty.

Group motor microswitch

Meassured in the **control board** in the conector jp1.

Between pins 4 and 10will be 5 Vcc with group in erogation position.

Between pins 4 and 10will be 0 Vcc with group in charge position.

Residue tray microswitch

Meassured in the **control board** in the conector jp1.

Between pins 4 and 9 will be 0 Vcc when tray is in position.

Between pins 4 and 9 will be 5 Vcc when tray is not in its in position.

Floater microswitch(with hydraulic connection to the mains)

Meassured in the **control board** in the conector jp1.

Between pins 4 and 8 will be 5 Vcc when there is no water.

Between pins 4 and 8 will be 0 Vcc with full deposit.

Temperature sensor

Meassured in the **control board** in the conector jp16. values of resistance(ohms) should be meassured (see values in table of PTC).

6. CLEANING AND MAINTENANCE

❒ Daily

- *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.

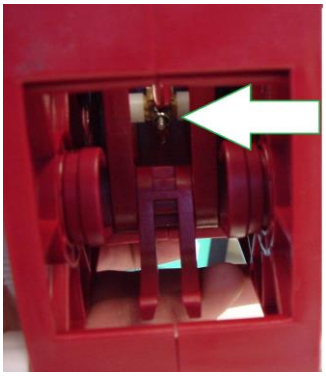
❒ three monthly

- *Product hoppers*. Remove them from the machine and empty them. Clean them with 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.

❒ Depending on the use of the machine

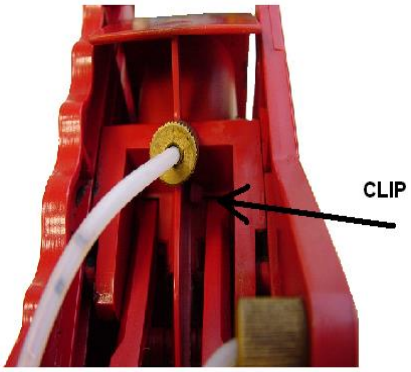
- *Piston filter*. Every 15,000 services, it is recommended to remove and clean it. If necessary, it can be cleaned with a non metallic brush. If the holes are blocked, do not introduce sharp objects into the holes to clean them. It is recommended to replace the filter with a new one when is becomes blocked.
- *Infusion group filter*. Clean the infusion group filter at the same time as you clean the piston filter. To remove the filter without damaging it, follow the guidelines below: Move the group to the coffee cake extraction position. Hold the group and the lever with one hand while loosening the filter screw with the other. On replacing the screw it is recommended to use Loctite 243 or a similar product to keep it tight.
- *Piston seal*. Replace every 30,000 services
- *Group seals*. Replace every 60,000 services. To get to these it is necessary to remove the group filter. They are reachable by following the explanation below.

1. Remove the nut that holds the spindle shaft at the bottom of the group, it is recommended to support with a screwdriver the shower filter at the same time.



2. Push the shaft from the bottom and remove the filter holder.

3. Press on the clips(one on each side) shown in the picture below to release the part where the o-ring gaskets.



4. Once replaced the gaskets, replace lids in the group.

7. WORKING CONDITIONS AND NORMS

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

- Temperatures:
  - Storage: -25 to + 70ºC.
  - Working: 0 to 50º 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 120º 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 ± **5º.**

8. VOLUMÉTRIC DIMENSIONS

Measurements in mm and weight in Kg.

Model	width	height	depth	weight
Vitro X1 Se+2	672 (X)	337 (Y)	505 (Z)	42 kg