

## VESUVIUS OWNERS MANUAL



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APPENDIX 1 - ELECTRICAL SCHEMATIC.....	<b>ERRORE. IL SEGNA LIBRO NON È DEFINITO.</b>

The details were correct at the time of writing, but the manufacturer reserves the right to change the technical specification of the packaging, machine and any accessories supplied (including quantity and type of accessories).

## Introduction

Congratulations on the purchase of the world's first prosumer, computer controlled pressure profiling Vesuvius using an E61 group. This advanced espresso machine uses true pressure profiling via the FG304 gear pump and speed controllable brushless motor. Currently there is no other prosumer machine available with these functions, so some of the techniques for using the Vesuvius are slightly different to other espresso machines.

The pump and pressure settings can be set up in many ways, so many, that the owners manual is just a starting point for your journey.

*Paolo Cortese (Designer, Director)*  
*Antonio Nurri (Director & Head of marketing)*

## Vesuvius Supplied Items.

- The Vesuvius Espresso machine
- Wooden Accessory Case
- 2 portafilter handles (with double and single baskets and blind filter basket)
- Small Accessories Bag (Various useful maintenance items)
- 4 Metal Feet, 2 small (front), 2 large (Rear)
- Drain hose
- Water supply hose
- Appropriate certifications, This manual and any additional notes

## Product Safety Notice

This manual is an integral and essential part of the product and is to be delivered to the user. Carefully read all warnings as they provide important information required to install, use and maintain the Vesuvius.

## Inspection and unpacking

After having removed the packaging, make certain that the Vesuvius is not damaged in any way. If you have any doubts, do not use the Vesuvius and contact a professionally qualified person or your dealer. Always keep all packaging including any plastic bags, internal packing screws, and rubber transit feet etc.). All packing materials should be kept out of reach of children and disposed of

responsibly in accordance with your country's recycling and disposal arrangements.

## General Installation precautions

Before switching on the Vesuvius make certain that the rating indicated on the label matches the available power supply. The serial number and rating label is located behind the drip tray.

Installation should be in line with the standards and laws within the country where it is being installed, following any manufacturer's specific instructions and checks.

Properly skilled personnel should install when connected to the rising main. The manufacturer cannot be held responsible for any damages incurred if the system is not electrically grounded, or by water leaks when connected to the rising main.

For electrical safety, this machine requires a ground or earth. If in any doubt contact a technically certified electrician who must check that the electrical outlet used has adequate capacity for the current draw of the machine and that it is properly grounded.

The use of extension leads, adaptors or any other equipment between the Vesuvius and the mains supply socket is not recommended. If for any reason this type of equipment must be used, you should consult a qualified electrician. **Different countries have different regulations for plumbed in machines. Before plumbing in the Vesuvius, you should consult with a qualified plumber and/or ensure all in country regulations are followed.**

## Always ensure the portafilter is locked in correctly

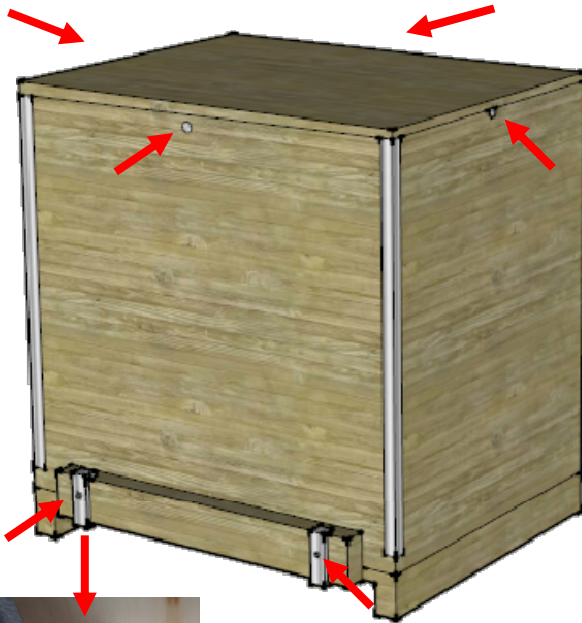
Failure to do this can result in the portafilter coming undone, with the risk of scalding or breaking any cups below. Please lock to the 6:00 position or further for safe operation.



## Unpacking the Vesuvius

The Vesuvius comes in a special protective wooden case, this item has been designed to not only protect the Vesuvius, but when disassembled folds flat to allow the Vesuvius to be repackaged for transportation at any time. To remove the Vesuvius from the case the following unpacking procedure should be used.

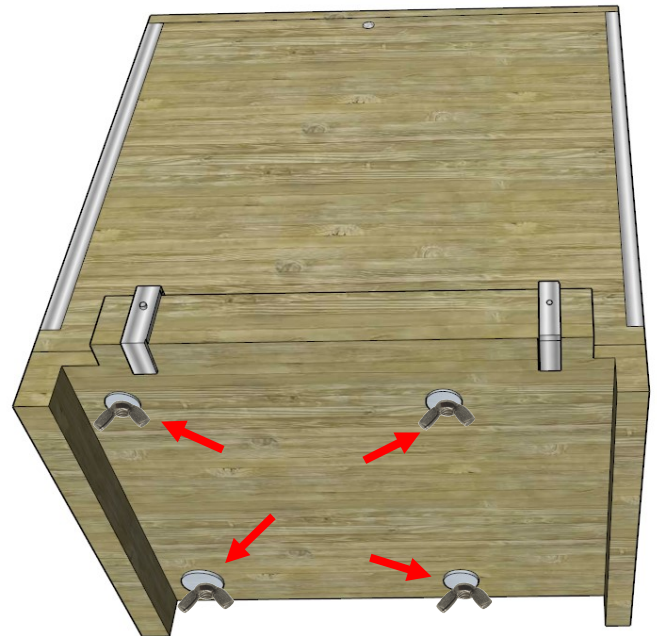
1. All 4 screws securing the lid should be removed. There are 1 on each side shown by the arrows, 4 in total. **Note: they are NOT on the top.**
2. The sides of the crate are secured by 4 metal clips, each held in place by a screw that should be removed.
3. Remove the clips



The sides of the case can now be lifted away from the base and the sides folded flat for storage.



The Vesuvius is secured to the base using rubber transit feet with bolts on the bottom that protrude through the case and are secured with 4 wing nuts, these must be undone. .

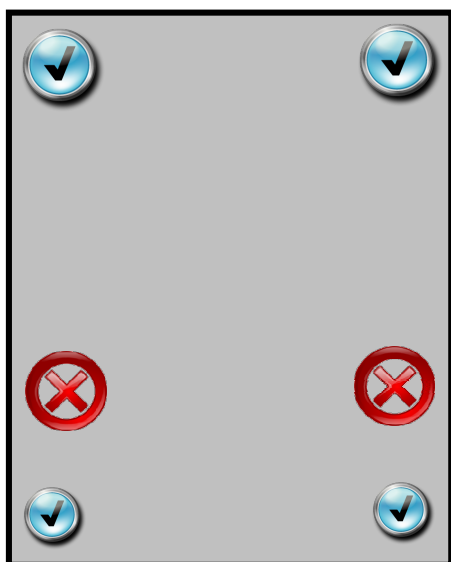


Once the wing nuts have been undone, the machine will lift away from the base and will have 4 soft rubber transit feet attached. These feet should be removed.



## Attaching the feet

Remove the 4 transit feet and store in the accessory case. The machine comes supplied with 4 feet in the accessory case. 2 small and 2 large. The large are placed on the rear mounting holes and the 2 small ones are placed in the very front mounting holes. The extra holes near the middle are only used for 2 of the 4 transit feet.



## The Accessory Tray

The machine comes with a wooden accessory tray, that has a lid. All supplied accessories will be in this tray. It also functions to store screws clips and transit feet, should the machine ever need to be repacked into it's protective shipping case.

## Mains Water Connection

The Vesuvius is supplied ready for a mains water connection or internal tanked operation. **As the Vesuvius only uses the mains water connection to fill it's internal tank and the pump always draws from the internal tank. A pressure reducer is not required when plumbing in.** Use the flexible hose provided with the machine, connect it to a connection hose 3/8" male with a shut off valve. The use of a water softer or filtration system, is advised. The drip tray can be plumbed to the waste or left unplumbed.

To plumb to the waste use the flexible hose provided and remove the rubber stopper in the pipe at the rear of the tray. The mains water connection is underneath the machine towards the back.

## The internal tank

The internal tank is accessed by opening the left side panel using the opening latch.



Remove the tank and wash in warm soapy water before first use. Ensure all tubes are replaced in the tank. The longer of the 2 tubes must reach all the way to the bottom of the tank (this is the pump inlet), make sure the small particulate filter is in place. The shorter tube is the vent tube from the safety release valve and need not reach the base of the tank. Routing the safety pressure release vent valve to the water tank, protects both you and the machines electronics if a fault causes any high pressure venting of steam from the safety valve.

## Electronic selection -Tanked or mains plumbed

There is a switch under the machine at the rear, after connecting to the water main, this needs to be switched on...the switch will light when in the on position.

## Operation with Internal Tank

If operating with the internal tank, ensure the mains water/tank switch underneath is off (not lit). Access and clean the internal tank as described in the mains water connection section. The only difference is the tank must be manually filled with water. Decalcified water, or water suitably treated for espresso machines should be used.

Even if the switch is accidentally placed in the mains plumbed position (illuminated), when running tanked. The Vesuvius will still work perfectly normally and not leak water, as a blanking cap is fitted to prevent water leaking from the mains inlet pipe. This of course needs to be removed if running plumbed.

## Preparing the Vesuvius for operation

The machine has been correctly installed as per the previous guidance and is ready to be filled for the very first time. You can think of this process as bringing your machine to life. Be watchful during this time for anything abnormal and to ensure everything is working correctly. The portafilter should not be locked into the group yet.

## Filling the Vesuvius for the first time

There are 2 boilers in the Vesuvius, the Service Boiler (Steam & Hot water) and the Brew boiler, for coffee brew water only. The Service boiler has a water level probe and will not switch on it's heating element until the water level reaches the probe. The brew boiler does not have this probe and does not know whether the water level is low or not. This makes some simple precautions important during the first time fill.

Usually the brew boiler will be full of water from factory testing, but if for any reason it has been emptied prior to shipping the following procedure is advised,

1. Open the side panel and observe the water level in the tank.
2. Switch on the machine at the mains and once the firmware has loaded, turn the machine on from the front panel. Within a few moments, the pump may start to run
3. **Lift the brew lever, always do this!**
4. the water level in the tank should fall and within a short time water should flow from the group within approx 90s. Lower the lever when water exits the group.
5. If the pump continues to run, **you should open the steam valve to aid the filling of the service boiler (only open this once the brew boiler is full, see 4 above)**. The level of water in the tank should continue to drop when the pump is running and the service boiler will stop filling automatically.

If water does not appear from the group within 90s and the tank level is not going down when the pump runs, check for a blockage, kinked pipe, or other obvious problem. Wait approximately 1 minute and try again.

If the service boiler continues to fill with the lever down, again check the level of water in the tank is reducing. If not, switch the machine off, check for a kinked hose or other blockage. Then switch on and try again.

If the service boiler is filling, the water level is dropping in the tank, **but the pump does not stop filling due to a fault**. You will notice water exiting from the steam wand (if open), this is a warning to switch the machine off.. Please contact your dealer for advice.

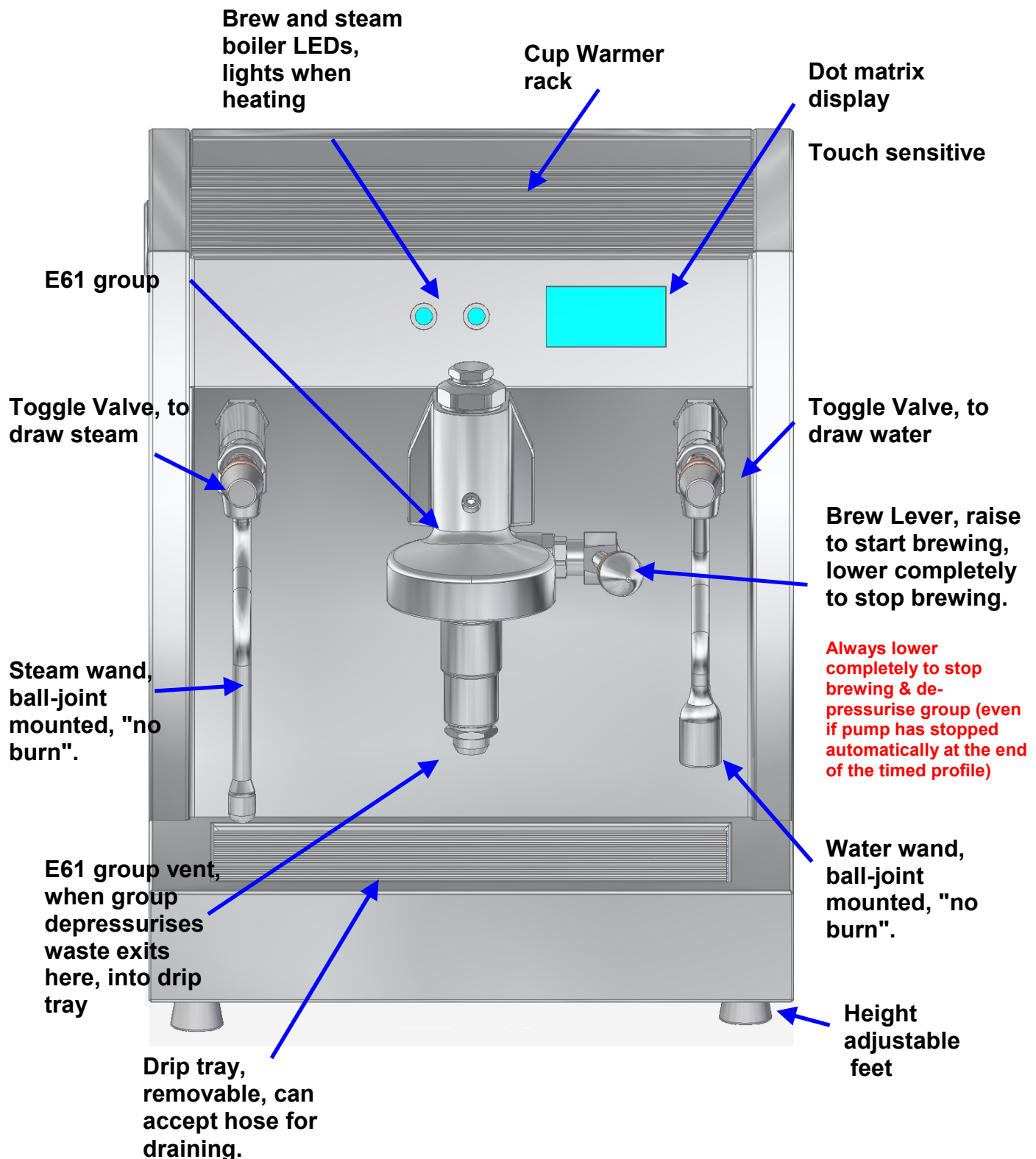
## Flushing the Vesuvius before using

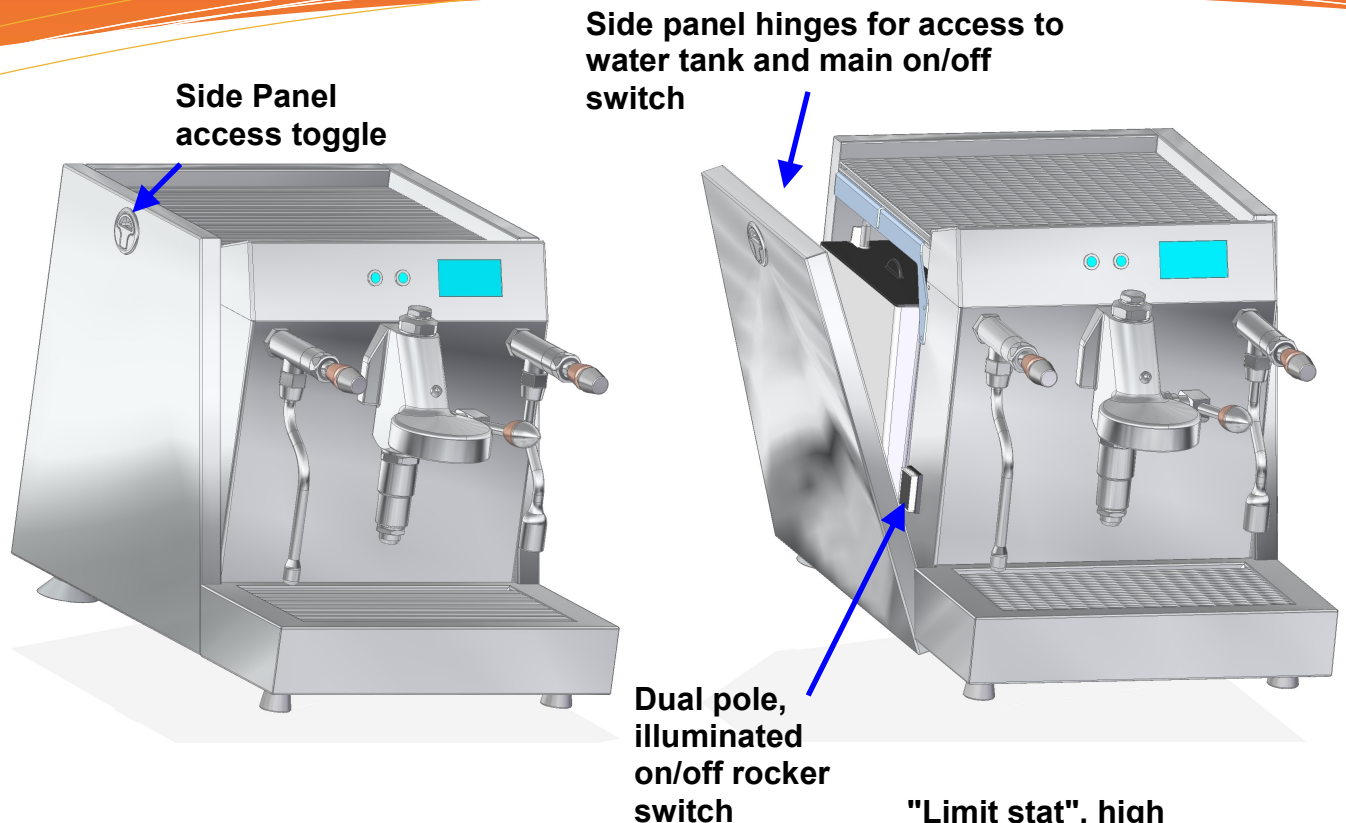
Although the machine is tested at the factory, we always advise that you flush before first use. This removes any stale water and manufacturing residues from the machine. The following procedure should be used.

1. Lift the lever and draw 1 litre through the group in 200ml amounts pausing for 15 seconds each time.
2. Switch on the steam boiler, under the eco option in the main menu (see page 10). Once the steam boiler has come up to temperature. Switch the steam boiler off, **then switch the machine off** and with a jug under the hot water tap, open the hot water tap and drain as much water off as possible. The pump should not run during this process. Switch the Vesuvius on, allow the service boiler to refill and repeat this process.

These procedures will remove any stale water and residues. Any "new machine" taste, will correct itself in a week or so.

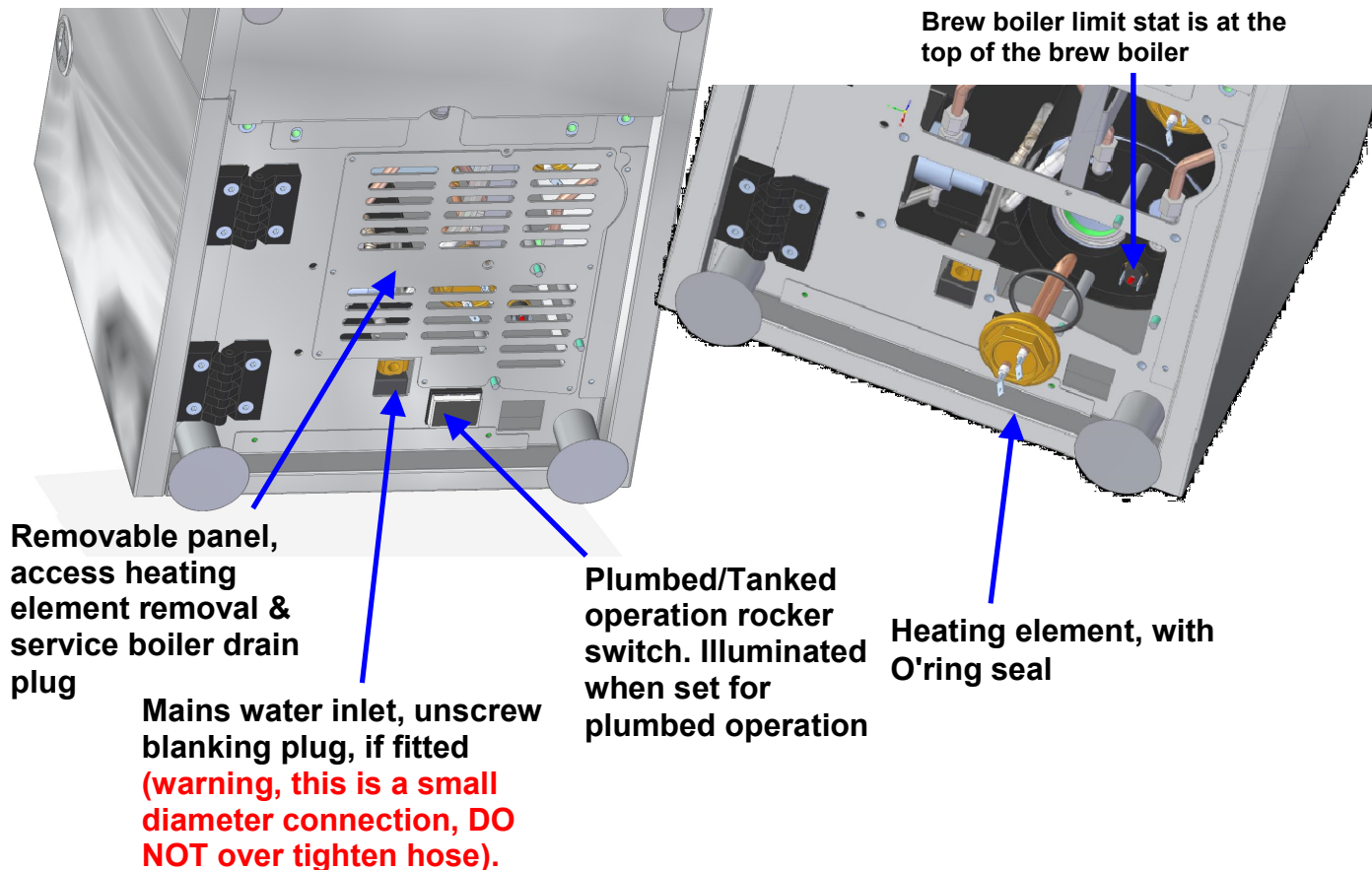
## *Description of the major controls of the Vesuvius*





"Limit stat", high temperature resettable breaker (service boiler).

Brew boiler limit stat is at the top of the brew boiler



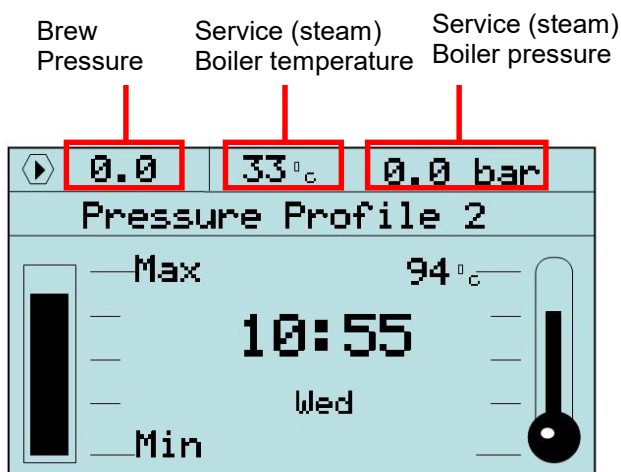


## Understanding the display & programming functions

The Vesuvius dot matrix display is capacitive sensing and **only has to be touched to elicit a response, no pressure is necessary**. The display may appear not to respond, because some functions have a programmed delay. In these cases the area should simply be touched for the appropriate time e.g. entering the advanced menu has a 10s delay, to reprogram a profile has a 5s delay.



The display above shows the Vesuvius on standby. Touching the area marked with a red circle, switches the machine on and the "home screen" is shown (below).



### Home Screen

The display is split into 3 Horizontal zones. The top zone shows brew pressure (when brew lever activated), Steam boiler temperature and pressure.

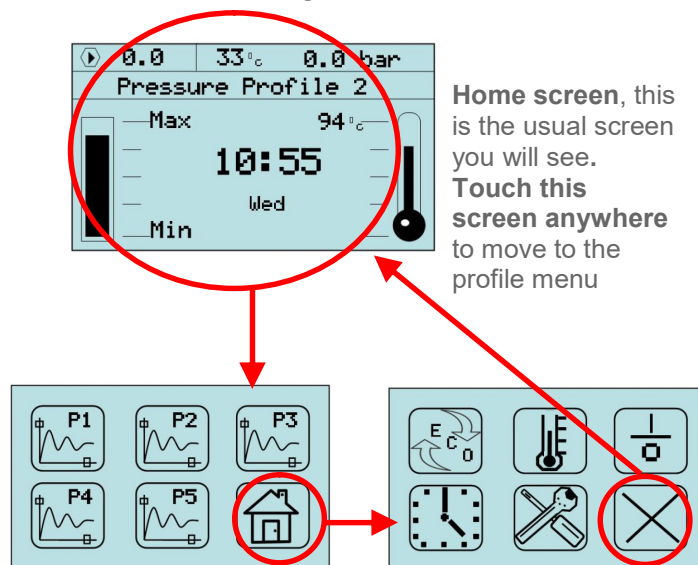
The next Zone shows what pressure profile is being used and this is a sideways scrolling display.

The third zone has a tank water level indicator, **which actually only shows full and empty**. The

time and day of the week and on the right the brew boiler temperature next to a thermometer graphic.

## Main Vesuvius Screens

Remember this triangle to move from one menu to



**Home screen**, this is the usual screen you will see. Touch this screen anywhere to move to the profile menu

**Profile menu** for viewing and changing profiles. Touch the "House" icon to move to the main menu

**Main menu** for accessing most commonly used settings. Touch the "X" icon to move to the home screen

another, after a few tries it becomes easy to use.

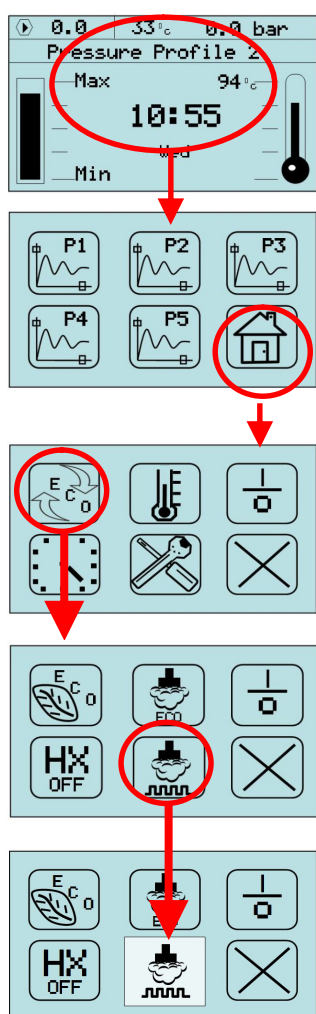
**Tip: It helps if you think about accessing the "main menu" as, two touches in the right hand lower corner of the screen**

*Note: Profile settings, as well as all other menu settings are maintained even if the machine is unplugged via a battery powered backup system*

## Turning the Steam (Service boiler on or off)

The service boiler provides both steam and hot water. The steam and hot water wands operate only when it is switched on. To switch the service boiler on, you enter the ECO menu by the following sequence

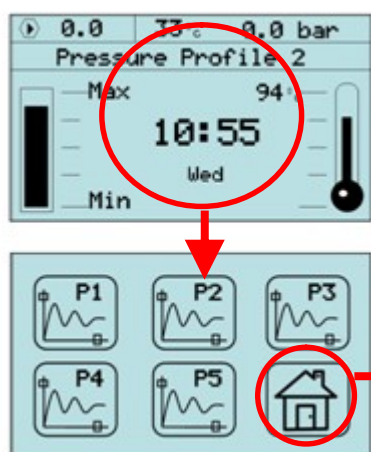
Eco Mode + Eco Steam can be left enabled to work automatically whenever you switch the steam boiler on (fast access main menu screen). You don't longer have to enter advanced menu to enable/disable Eco mode, unless you want to change the number of minutes before the machine enters Eco mode ("Time Economy" function page 12 and 20).



Please note that the steam on/off function is completely independent of ECO mode. So Eco Steam (above) might be highlighted, but if the steam function is not switched on, nothing happens and the steam boiler will not heat. **The Vesuvius will not enter ECO mode, as the "Eco Steam function" only operates when the steam boiler is on.**

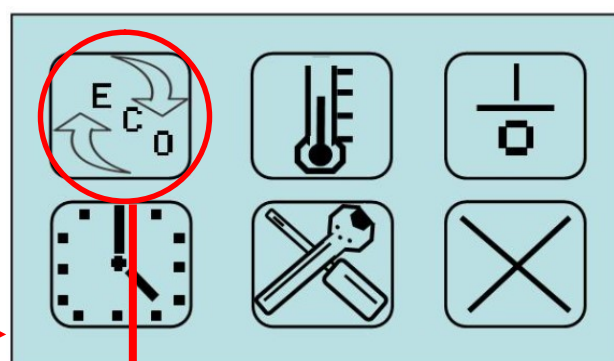
## Main Menu Screen

All the commonly used settings, entering this screen is done via the "profile menu" screen. The red circle denotes a "touch" zone action. The X Icon takes you back to the "Home screen"



1

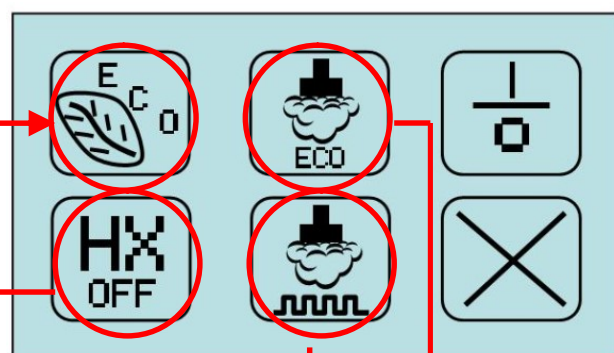
2



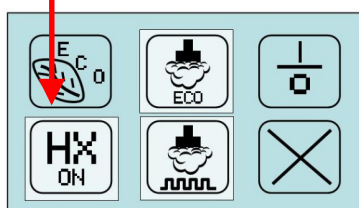
3

ECO menu

Touch to activate ECO mode immediately no wait time, the screen will turn green and you will immediately be returned to the Home screen. **Note** this only works if ECO mode is enabled via the "Time Economy" option (page 20), is set to a value other than 0

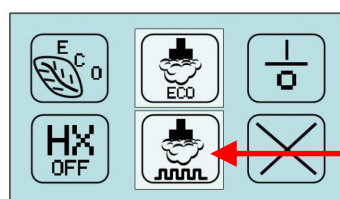


4



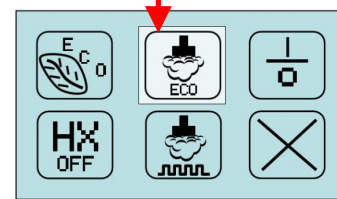
**Brew water preheat**, enabled/disabled. If using high steam temperatures above 127C, **OFF** prevents any possibility of brew water overheating. **Highlighted when ON**

Enabling, greatly increases capacity for a busy session and recommended if running "Eco steam mode"



**Steam boiler on/off**, highlighted when ON

Recommend, steam boiler is either off, or set to eco steam mode with a temperature of 60C



**"Eco Steam mode"** only affects steam boiler (recommended). **Highlighted when ON**

If OFF (not highlighted), eco mode affects both steam and brew boilers (not recommended for home use)

## Eco Mode Explained

Eco mode, reduces power consumption and temperatures inside the machine for longer component life. It does this by selectively reducing the temperature of the brew and/or steam boilers, based on the Eco time set ("**Time Economy**" function in the advanced menu).

The Internal Eco timer starts counting down to 0 when there are no operations of the touch screen, or anything causing the pump to run. Once it reaches 0, Eco mode is triggered. The Vesuvius immediately come out of ECO mode, if the brew lever is lifted, or the display screen is touched, if not yet in Eco mode, then the Eco countdown timer is reset.

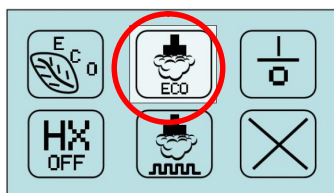
**ECO mode only operates if the "Time Economy" option on page 20 is set to a number of minutes greater than 0. This option is accessed via the advanced menu.**

**Eco mode reduces the temperature of the brew and/or steam boiler by the value set in the advanced menu option "Economy DT".** If a value of 80 is set, boiler temperatures will be reduced by a value of 80C from their set point. Values larger than 80 cannot be set.

If full ECO mode and not just the steam boiler (eco Steam) is selected, with a typical "Economy DT" of 67 the brew boiler might reduce from 94C, to a brew temperature of 27C. this would mean the boiler is effectively switched off. **Economy mode is of very little use on a brew boiler (home environment), as the group would cool down and require significant time to warm up again.**

*In full eco mode (both boilers), the display switches to green when it enters ECO mode*

**ECO setting is most useful when restricted to operate on the Steam boiler only. Touch to highlight "Eco Steam" as below.**



If the steam (service) boiler is set to 127 and in the **advanced menu**, "**Economy DT**" is set to 67, with an Economy time ("Time Economy" value) of 4. After 4 minutes of inactivity, the steam boiler temperature will reduce to 60C.

By setting the steam boiler to run this way, you can walk away after steaming, knowing that the temperature will automatically reduce after 4 minutes. This keeps the Vesuvius cooler and gives a very rapid warm up to full steaming temperature. 60C provides optimum energy efficiency and a warm up time reduced by 50%. **This would allow the boiler to be ready for steaming in under 3 minutes instead of nearly 6 minutes.**

*The Steam boiler will come out of ECO mode, when the brew lever is lifted, the pump runs, or the display is touched.*

**There is a further economy setting in the advanced menu called. "Time to off".** This setting will switch the machine to standby in whatever number of minutes has been set (max value 999), after the machine enters economy mode. This can be useful in a number of circumstances.

*If you don't use the daily on/off timers and want the machine to switch off if it's not being used*

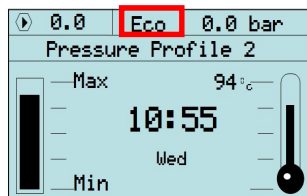
Or

*You wish the machine to be on before you get up and go to work, but your work pattern varies. You can for example, set the machine to come on at 7am with no off time and on again at 7pm and off at 11pm. You then might set a "Time to off" of 2 hours*

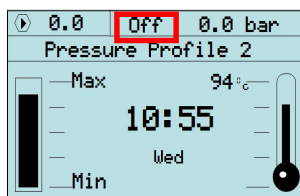
*If you are in all day and using the machine it will stay on. If you have to suddenly leave for a meeting, the machine will switch off after 2 hours and then switch on again in the evening at 7pm.*



## Eco Mode Explained (cont.)



If Eco mode is active **and only the steam boiler selected**. The home screen will show



If the steam boiler is switched off in the ECO menu, the display will show "Off" instead of steam temperature.

**Note:** Vesuvius will not enter ECO mode, when the "Eco Steam function" is selected unless the steam boiler is on, see page 10.

**Tip:** When in Eco steam mode, a touch on the Eco (leaf) symbol will immediately put you in ECO mode and take you back to the home screen.

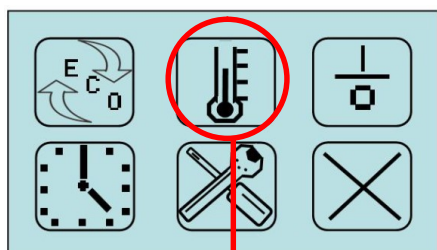
The tip above is for the times when you want to brew a coffee and not necessarily steam milk. Once you have finished, you may decide to put the Vesuvius straight back into Eco mode. Again if it helps think of this fairly quick procedure as:

- 2 touches on the lower right corner of the display, followed by 2 touches on the top left corner of the display.

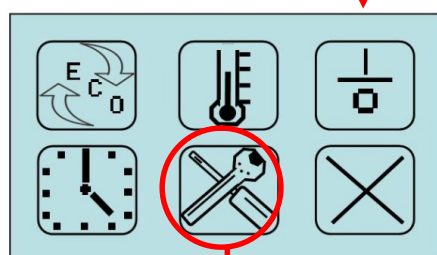
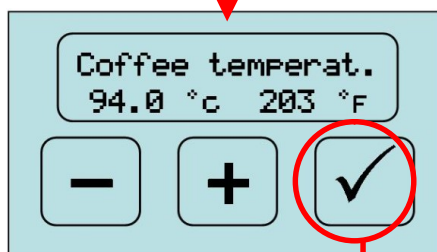
It's a little difficult to understand why it works until you try it and see that the options are positioned directly "underneath" each other on the various screens. When the Home screen is shown, you will see the word ECO on the display instead of a temperature.

This also works for full Eco mode (both boilers), but in this case the display will turn Green.

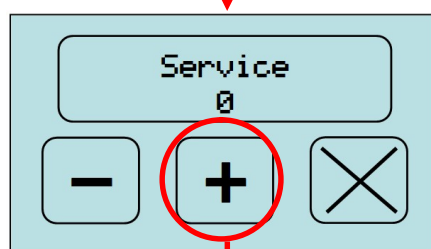
## Main menu screen (cont)



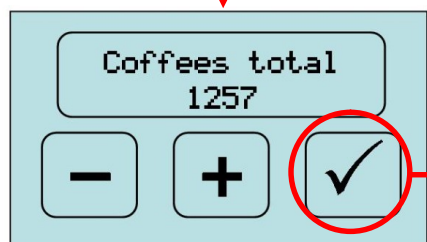
Touch to set coffee temperature



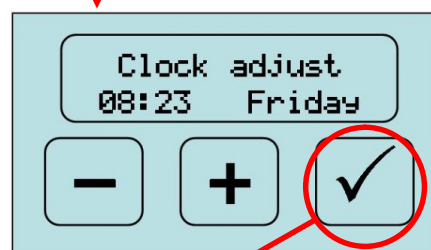
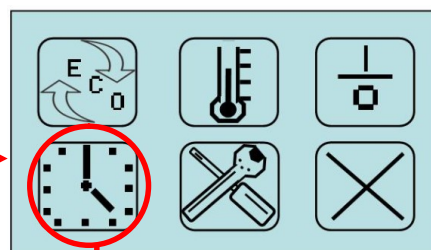
Touch to access service menu



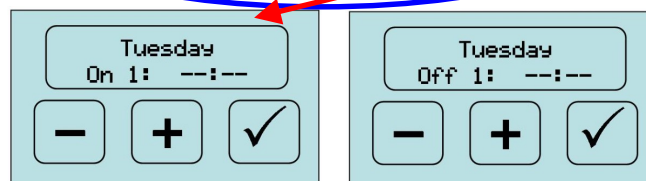
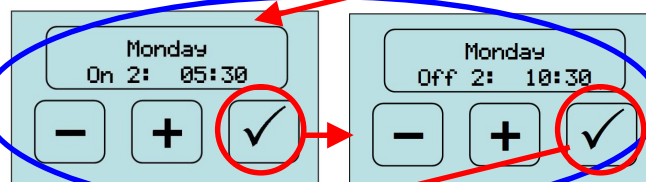
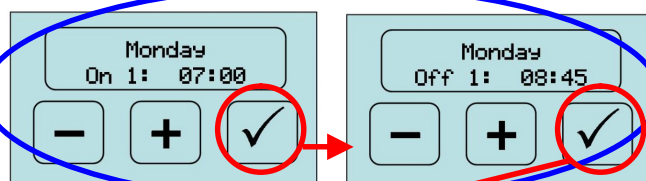
Does nothing, touch + to continue



This actually shows E61 group lever operations



Touch +/- to change time and day

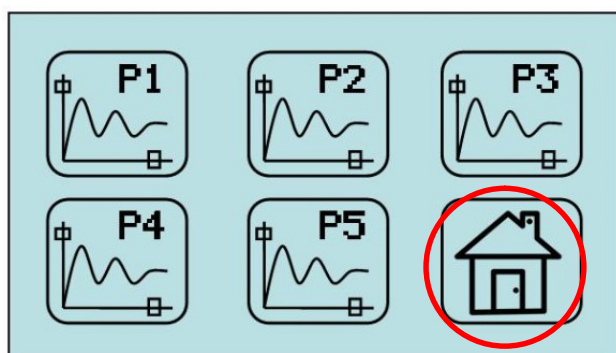


The Vesuvius has an internal On/Off timer, with 2 on/off times each day, 7 days per week. It can be ready in the morning, off during the day and back on again when you return from work.

If a timer has no value, it is ignored, in the example above the machine will not switch on or off for the first of Tuesdays timer settings

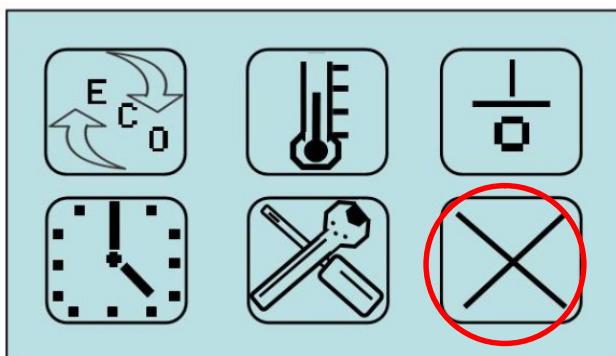
## The profile screen

The Vesuvius has 5 programmable pressure profiles each with up to 7 phases. Touching the "home screen" anywhere when the machine is not in stand by, brings up the profile screen below.



This screen shows the 5 profiles available and a home icon. To program or view a profile, simply touch one of the 5 profile icons for 5 seconds.

Touching the house icon returns you to the "main menu" screen below.

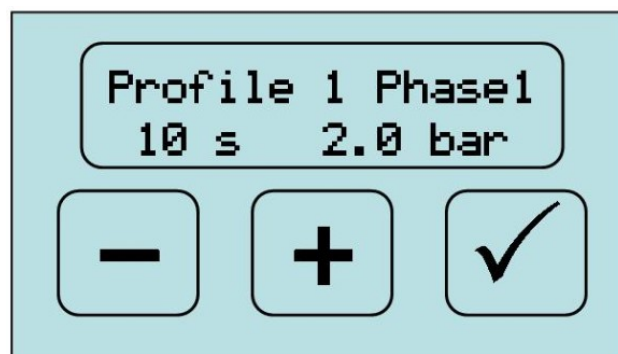


Touching the "X" icon returns you to the "home screen".

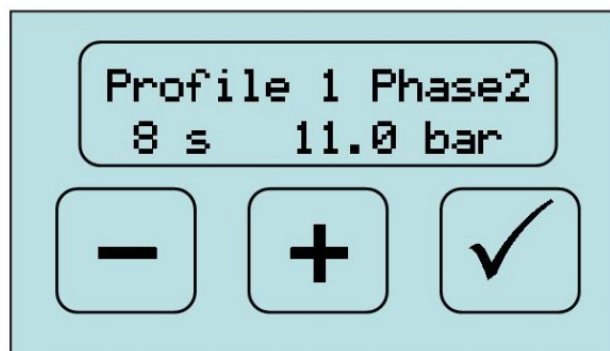


## Programming/examining pressure profiles

The profiling system is very easy to use and can achieve results as simple or complex as you care to program. After you touch and hold a profile icon (P1) for 5 seconds, you will enter this screen.



This screen tells us that for the 1st phase (of the 7 phases available), the Vesuvius will deliver a pressure of 2.0 bar for 10s. A global Pump acceleration parameter (page 20) affects how quickly the pump responds and will affect the speed at which any programmed pressure is reached.



- Touching the - or + icon will increase or decrease the seconds, touching the "tick" icon will, store the value in memory and move you to the pressure value.
- The - or + icon will increase or decrease pressure settings. touching the "tick" icon saves the settings and displays the next phase. The procedure is repeated to program the next phase.
- If no changes are desired, simply touch the "tick" icon twice to move to the next phase.

## Programming/examining pressure profiles (cont.)

Not all phases have to be used, enter a 0 time and that phase will not be used. The screens that follow show the rest of this example profile. **Phase 7 is unused shown by a value of 0 seconds.** It is not necessary to put 0.0 bar as well.

Profile 1 Phase3  
7 s 9.0 bar

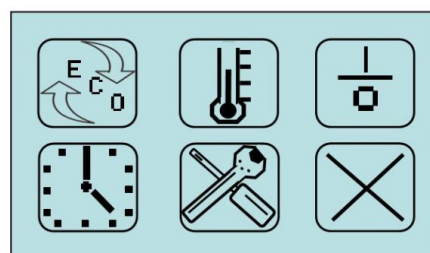
Profile 1 Phase4  
5 s 8.0 bar

Profile 1 Phase5  
6 s 6.0 bar

Profile 1 Phase6  
3 s 4.0 bar

Profile 1 Phase7  
0 s 0.0 bar

**One useful tip**, if just a small change is desired, after touching the "Tick" Icon to save the value, raising and lowering the brew lever returns you to the Main menu screen.



## Profile advice

The Vesuvius has advanced pressure profiling capabilities but everyone's taste is different, so some suggestions to get you started below **assuming a pump acceleration value of 400 (factory setting)**. Always remember, although you have 7 phases for each profile, you don't have to use them all.

### Phase 1 Preinfusion times for the first low pressure phase

You can choose to move straight to maximum pressure, but the Vesuvius benefits from a preinfusion phase. **Note: the preinfusion chamber within the E61 group has been disabled, as it's operation interferes with pressure profiling.**

Preinfusion, times shorter than 3 seconds will be ineffective as this will mainly be lost in filling the inactive preinfusion chamber in the E61 group and the space above the coffee puck. The filling of the redundant E61 preinfusion chamber also makes a pre-flush unnecessary prior to pulling a shot.

Preinfusion times of 6 - 14 seconds have given good results. With better grinders, even longer times may be of benefit. Preinfusion pressures can be anything you want, but not lower than 2 bar, testing has mainly been with 2 bar preinfusion pressures. Early testing did not show any benefits with pressure lower than 2 bar due to low flow rates from the pump.

One of the reasons the Vesuvius always supplies the pump from it's internal tank, is to allow preinfusion pressures lower than mains line pressure (usually much higher than 2 bar).



## Profile Advice (cont)

### Phase 2 and beyond - The maximum or rising pressure phases

You can reach maximum brew pressure any way you want. A rise in stages from 2 bar to 5 bar and from 5 bar to 10 bar, or a single rise to 10 bar. It is up to you to experiment.

You may want higher pump acceleration and a faster response, moderating the pressure rise by having two rising stages. Or you may keep the acceleration at the factory settings and use 2 stages for a very soft and gentle rise to full pressure. We have had good results with a single rise to maximum pressure, but a 2 phase rise may not give benefits for some coffees/temperatures.

Pressures over 11.5 bar are not recommended, as the results do not improve beyond this point. The E61 group has a maximum limit of pressure based on the Vent release valve spring tension. For most E61 groups this is around 12.5-13 bar.

*Note: the Vesuvius high pressure PTFE tubing and fittings are rated for 25 bar pressure, well beyond the capabilities of the pump.*

### Later phases after maximum pressure

Normally during the extraction process, the pour starts to blonde and often it loses integrity. We feel high pressure continually applied causes this and progressively lowering the pressure as the pour progresses will result in a better sweeter, more rounded shot with improved body. This is probably the reason for the good shots that many spring lever machines produce, but we have a level of repeatable control, well beyond that of any lever machine.

How much you lower the pressure and how fast is influenced by your taste, the coffee used and the grinder you have. You need to experiment and share information with other owners .

### How the Vesuvius Controls pressure

The Vesuvius uses pressure transducer, commercial valve system and PID algorithm to control pump pressure. Although not perfect, it is better than a

simple on off control, which would be unable to manage rapidly changing pressures.

You may notice brew pressures can overshoot the set point sometimes, this mainly happens with increasing pressures. High pump accelerations increase this tendency as do different coffees and grinds. **As dynamic pressures approach the static pressure potential in the system, pressure changes happen very rapidly.** The PID system reacts very fast, but has a finite reaction time. If PID settings are made very aggressive to damp this response it can cause hunting lower down the pressure ranges as the pressure falls.

These pressure overshoots are brief and have a minimal effect on the shot, as it's mainly static pressure showing rather than dynamic pressure. The higher the pressures you ramp to e.g. 11 or 12 bar, or the faster the pump acceleration, the more you might notice this.

You can fine tune the pump PID settings further, but it's recommended to use the factory settings until you become familiar with the machines operation.

## Grinders.

The Vesuvius is not a cheap machine and the temptation might be to use a grinder unsuitable for the machine. To get the **most benefit** from this advanced machine use a grinder costing from approximately 25-50% of the machines value. To give a real world example, **a grinder such as the Mazzer Super Jolly or similar class grinder would be the absolute minimum required** and better results will be obtained with more expensive grinders.

The Vesuvius is able to use a grind much finer than standard espresso machines and the less expensive grinders tend not to grind as well at the finer settings.

## Coffee

To do the Vesuvius any justice at all, coffee must be fresh. You should know the roast date of the coffee and only use quality coffee from good roasters. Ideally the coffee should rest for at least 5 days from the roast date before being used, Often even longer. Use the time recommended by your roaster for resting any specific coffee before use.

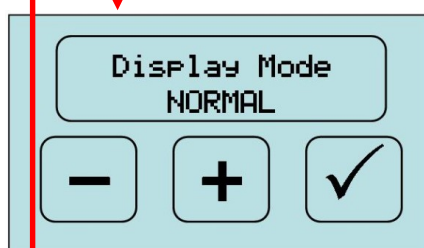
## ***Vesuvius Specifications***

<b>Weight</b>	approx 24kg
<b>Dimensions</b>	415H x 368W x 510D
<b>Brew boiler</b>	0.8l - 1000W AISI 316L low corrosion stainless steel 2mm thick (8mm end plates).
<b>Steam boiler</b>	1.5l - 1400W AISI 316L low corrosion stainless steel 2mm thick (8mm end plates).
<b>Max Pressure</b>	12.5 bar E61 brew group limitation
<b>Total Power Draw max</b>	2.5Kw, detachable mains cord, 1500W with brew boiler priority & sequential heating selected. Eco modes to reduce power consumption.
<b>Pump &amp; Motor</b>	FG304 gear pump motor unit, brushless, 24V DC (4mm gears)
<b>Water Tank Level Sensing</b>	<b>Capacitive (no magnets, sprung platforms or floats)</b>
<b>Water tank Capacity</b>	2.9l to brim, normal fill 2.7 litres
<b>Drip tray capacity</b>	1.7l (can be drained)
<b>Insulation</b>	Both boilers
<b>Useful Hot water draw</b>	1000ml +/- 200 ml (dead draw with machine switched off is 940ml)
<b>Low Voltage Transformer</b>	24V 110W, commercial unit.
<b>Low water alarm</b>	Visual only
<b>Feet</b>	Metal, height adjustable
<b>Steam and hot water wands</b>	Ball joint no burn. Steam on left, water on right
<b>Portafilters</b>	2, 1 single and 1 double spout
<b>Filter baskets</b>	1 single, 1 double, 1 blind
<b>Plumbed or tanked operation</b>	Pipes and drain hoses supplied, drip tray has drain facility. Electronic switch to change from mains to plumbed
<b>Pressure Profiling</b>	5 profiles, each with up to 7 stages. Battery backup of stored profiles and all system settings.
<b>Brew Boiler Isolation and selectable preheat</b>	The brew boiler is always mechanically isolated from the steam boiler HX unit, the water path only opens when brewing begins and closes when brewing finishes. Preheat of brew water can be switched on or off as desired, even if the steam boiler is on.
<b>PID control</b>	Independent PID algorithms for brew boiler, steam boiler & pump
<b>Timer</b>	7 day timer, with up to 2 on/off times each day.
<b>Wooden accessory case</b>	Containing various small spares, feet, 2 portafilters single & double basket, blind filter, all hoses required for plumbing.
<b>Pressure profiling</b>	5 profiles can be saved each with up to 7 stages.
<b>Last shot protection</b>	The Vesuvius will always complete the last shot, even if water is low

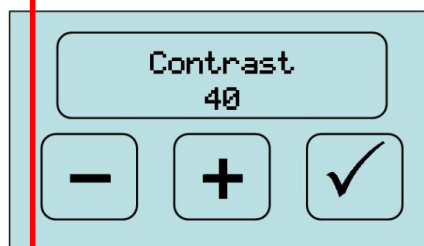
## The Advanced Menu

This is a menu you will not use very often, It allows customisation for how you use the machine. All parameters are changed in the same way as the other menus.

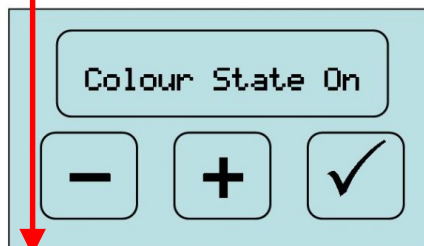
To enter the advanced menu touch the screen at the point indicated for 10 seconds. The options are shown in the order they appear



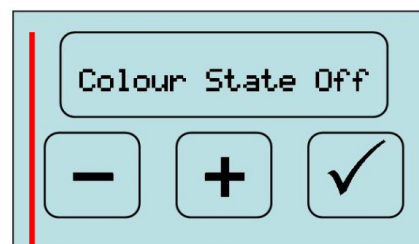
Set this to your preference, can be normal or reversed



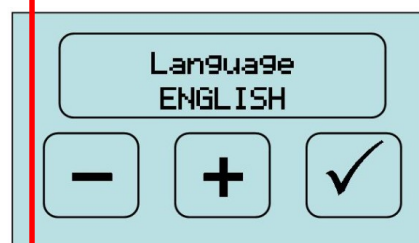
Increase or decrease to improve visibility for particular display setting



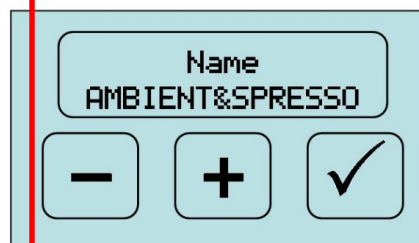
What colour you wish the display to be when the machine is on



What colour you wish the display to be when the machine is on standby



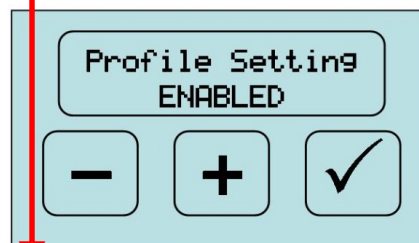
Select your Language. Spanish, French, German, Italian, English



Your dealer name, if input. One long press of "tick", moves to next screen



Your dealer phone number, if input. One long press of "tick", moves to next screen



Always leave enabled, if you wish to be able to view & change profiles

PWM kP kI kD  
10.5 0.24 90.0

− + ✓

Pump PID settings for controlling pressure, **recommend using these revised values until factory settings are updated**

PWM Max Accel.  
400

− + ✓

Pump acceleration, speed of response to change. Values above 700 have no effect. **Changing value may require change to pump PID settings**

Buzzer  
DISABLED

− + ✓

There is no Buzzer

ProbeSensitivity  
MID

− + ✓

Service boiler autofill probe.. affects fill level, **leave on Mid.** Low allows higher boiler water level, High is less

Sequent. Heating  
DISABLED

− + ✓

Both boilers heat at once or brew boiler priority, if enabled. Reduces max power consumption to 1500W approx

Service Cycles  
0000

− + ✓

Does nothing important

Temperature  
°C

− + ✓

Set to display temperatures in C or F. Note F temps omit decimal values and always round down

Boiler Temperat.  
127.0 °C 260 °F

− + ✓

Service (steam) boiler temperature. **I recommend a setting of 127 or 128 (factory use 130)**

kP kI kD  
8.0 0.15 10.0

− + ✓

PID settings for steam boiler

PID setting  
2.0°C 3°F

− + ✓

Temperature range around set point where PID operates. We want only a small range for service boiler

Economy DT  
67.0 °C 120 °F

− + ✓

The delta value for economy. E.g. this will drop any boiler temperature by 67C

Time Economy  
15 min

− + ✓

How many minutes before machine enters economy mode, if not used. **0 to disable. I also recommend using 4 or 5 minutes**



Time to OFF  
0 min

-

+

✓

How many minutes (max 999) after machine enters economy mode, before it switches to standby (if not used). **0 to disable**

Coffee temperatur.  
94.0 °C 201 °F

-

+

✓

Set the temperature of the brew boiler (also accessible from main menu). I personally use 93C

Offs.TSet Coffee  
13.0 °C 23 °F

-

+

✓

Allows for the drop in temperature of water as it passes from the brew boiler to the coffee. E.g. Brew Boiler water at 107 c, but 94 c is displayed

kP kI kD  
1.2 0.02 12.0

-

+

✓

Revised recommended PID Values for Brew Boiler. We do not recommend you change these

PID setting  
5.0°C 9°F

-

+

✓

Temperature range around set point where PID operates. We want a larger range for the brew boiler. Your machine may be set to 7C, I recommend you change this to 5C

FillingUp T-Out  
100

-

+

✓

This value is the number of seconds the machine will wait before

1. Closing the mains water solenoid, preventing flooding if a fault develops on a plumbed machine
2. Showing the red fill tank screen, when the water level is low
3. The length of time the pump will run when auto-filling the steam boiler

If you often walk away from the machine and miss the red low water warning on the display, you can reduce this value to 100 seconds.

## Maintenance

**Service the machine on an annual basis, please refer to your authorised dealer for advice.**

**Maintenance operations that you can perform are:**

- Changing the group gasket every 6-9 months, or as required.
- Washing the internal Water tank, weekly
- Removal and cleaning of shower screen
- backflushing with detergent (lubricate group afterwards)
- Check for leaks (weekly)
- Replace a heating element (with dealer guidance)

The Vesuvius should only be cleaned with non abrasive cleaners and a soft micro-fibre (recommended), cloth

**In the event of any abnormal operation or problem with the display or main computer:**

Switch the machine off and unplug it. Plug in and switch on again. If this does not fix the fault, check all the settings in the advanced menu, in case the main board firmware has been accidentally returned to the board manufacturers settings.

**If a boiler fails to heat, the machine has 2 resettable limit stats:**

Unplug machine and remove either upper or lower access panel to reset the relevant limit stat, by pressing the little red button in the centre. The brew boiler has this on the top, the steam boiler has one located underneath. If the problem recurs, contact your dealer for advice.

**Abnormal sounds or leaks:**

Contact your dealer for advice. Sometimes the repair may be very simple, e.g. a leaking high pressure PTFE pipe joint, and the dealer can talk you through quickly fixing it. At other times it may be more serious and require the machine to be returned for repair

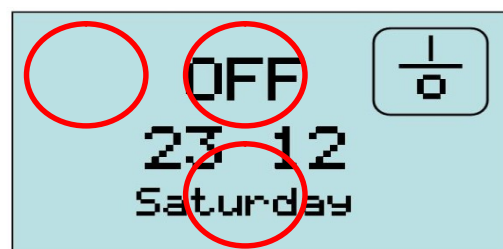
## Descaling.

Descaling can be successfully performed at home, but it is beyond the scope of this manual. Only water suitable for espresso machines should be used e.g. filtered or treated. Please contact your dealer for advice.

## Main Board Firmware - Manufacturer Reset

In the unlikely event of you having to perform a reset of the main board firmware, please use the following procedure. **Note this will revert the board to the board manufacturer settings, not factory settings**

Switch the power off at the wall socket. Then power the machine on an Touch the red zones above simultaneously until a reset message appears on screen.



## PID values Explained

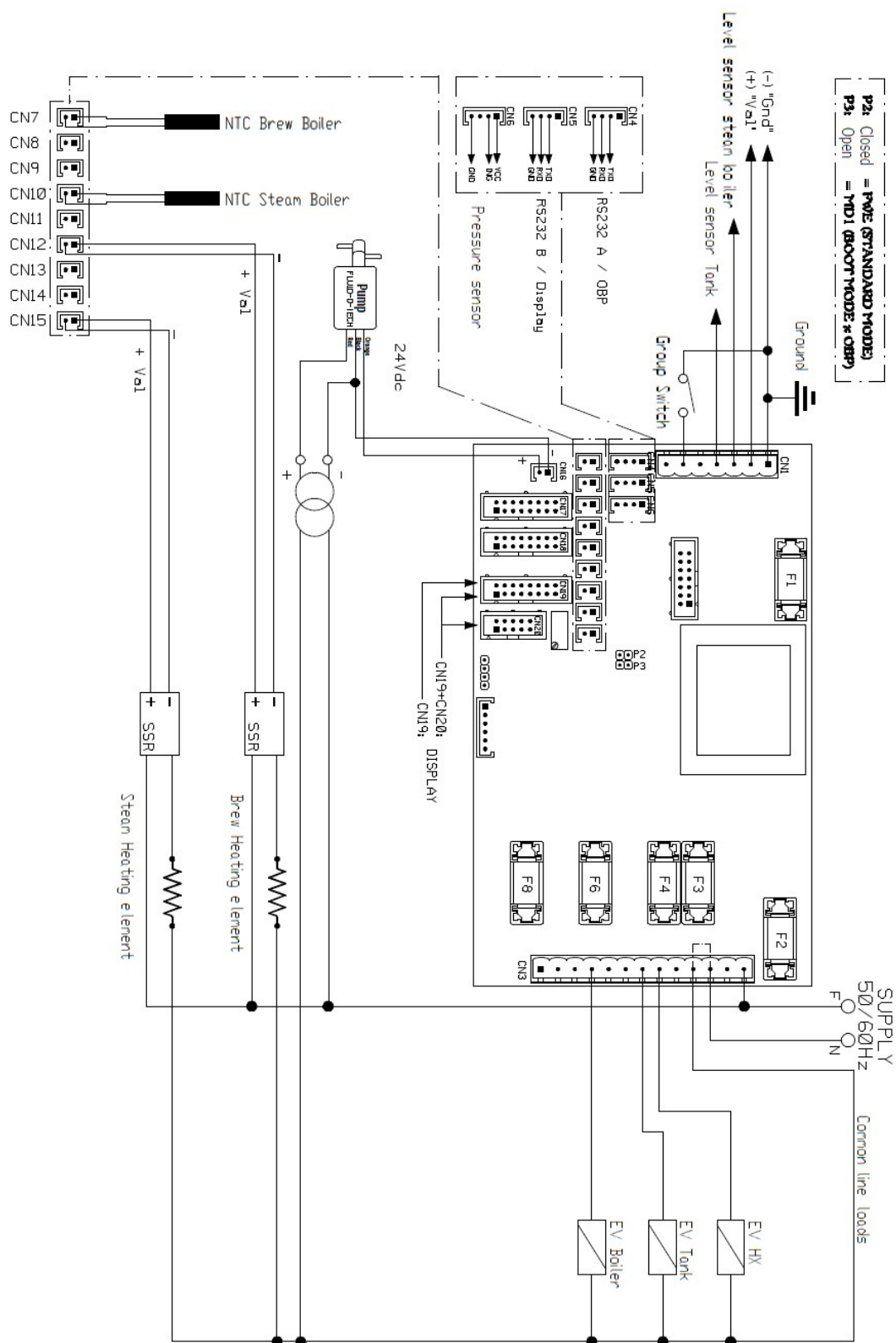
The values in the guide are recommended, but **with experience**, small changes may benefit the operation of your specific machine.

**The P gain stands for Proportional** - it will try to quickly restore the set point value. Too low, and response is sluggish, too high can cause overshoots.

**The I gain stands for Integral** - measures change over time and will add more to the proportional gain the longer we are not at the set point. Usually only small values of I are needed, try reducing it if overshoots/oscillations occur, or increasing I, if the set point is not reached.

**The D gain stands for Derivative** - Measures change over speed. It will reduce the effects of P and I more, the faster the set point is approached. It acts as a damping factor. Low values of D can cause overshoots, high values of D can make response sluggish.

## Appendix 1 - Electrical Schematic



## ***DICHIARAZIONE DI CONFORMITÀ CE - DECLARATION OF CE CONFORMITY***

## ***DÉCLARATION DE CONFORMITÉ CE - CE KONFORMITÄTSERKLÄRUNG - DECLARAÇÃO DE CONFORMIDADE CE***

## ***EG CONFORMITEITSVERKLARING - CE-OVERENSSTEMMELSESERKLÆRING***

### ***M & V S.r.l.***

Dichiara sotto la propria responsabilità che la macchina in seguito denominata, in base alla sua progettazione, costruzione e per l'utilizzo, è conforme alle disposizioni delle direttive CE in materia di sicurezza e salute.

Declares under its sole responsibility that the following appliance conforms to the CE directive health and safety provisions as regards design, construction and use thereof.

Déclare sous sa propre responsabilité que la machine ci-après spécifiée, sur la base de sa conception, construction et pour l'utilisation prévue est conforme aux dispositions des directives CE en matière de sécurité et de santé.

Erklärt unter eigener Verantwortung, dass die folgend genannte Maschine, in Hinsicht auf die Planung, den Bau und die Verwendung, mit den CE Vorschriften für Sicherheit und Gesundheit übereinstimmt.

Declara bajo su propia responsabilidad que la máquina que se indica más abajo, teniendo en cuenta cómo se ha proyectado, cómo se ha construido y para qué se usará, respeta las disposiciones de las directivas CE en materia de seguridad y salud.

Declara, sob a própria responsabilidade, que a máquina indicada a seguir, em base ao próprio projecto, fabricação e utilização, está em conformidade com as disposições das directivas da CE sobre a segurança e a saúde.

Verklaart onder eigen verantwoordelijkheid dat het volgende toestel, voor wat het ontwerp, de bouw en het gebruik betreft, conform de EG richtlijnen is voor veiligheid en gezondheid.

Erklærer at maskinen, som nævnt herunder, er tilpasset EU-direktiverne for sikkerhed og sundhed på design-, konstruktions- og anvendelsesområdet.



*Tipo di macchina - Machine type - Type de machine - Maschinenart - Tipo de máquina - Tipo de máquina -  
Type toestel - Maskintype*

## VESUVIUS

Direttive specifiche - Specific directives - Directives spécifiques - Besondere Vorschriften - Directivas específicas  
- Directivas específicas - Specifieke richtlijnen - Specifikke direktiver  
2002/95/CE (RoHS) 89/336/CEE - 2006/95/CE - 2002/96/CE (Raee)

Norme applicate - Applicable standards - Normes appliquées - Angewandte Vorschriften - Normas aplicadas -  
Normas aplicadas - Toegepaste normen - Anvendte standarder  
EN 61000-3-2 - EN 61000-3-3 - EN 55014-1+A1+A2 - EN 55014-2 + A1 - EN 50366 - EN 60335 -2-15 - EC  
1935/2004  
EN 61000-4-2+A1+A2 - EN 61000-4-4+A1+A2 - EN 61000-4-5+A1 - EN 61000-4-6+A1 - EN 61000-4-11+A1

.....  
Direzione Tecnica - Technical Management - Direction Technique - Technische Leitung  
Dirección Técnica - Direcção Técnica - Technische directie - Teknisk ledelse

La presente dichiarazione perde la sua validità se l'apparecchio viene modificato senza la nostra espressa  
autorizzazione

This declaration shall cease to be valid if the appliance is modified without out explicit authorisation

La présente déclaration perd sa validité si l'appareil est modifié sans notre autorisation expresse

Die folgende Erklärung ist nicht gültig, wenn die Maschine ohne ausdrückliche Genehmigung von illycaffè  
verändert wird

La presente declaración no tendrá validez si se modifica el aparato sin que nosotros lo hayamos autorizado  
expresamente

A presente declaração perde a sua validade se o aparelho for modificado sem uma nossa autorização expressa

Deze verklaring is niet meer geldig wanneer er wijzigingen worden uitgevoerd op de machine die niet  
geautoriseerd werden door

Denne erklæring ophører med at gælde, hvis maskinen ændres uden vores udtrykkelige accept

**M & V S.r.l.- Via L. Guerra, 9  
• 80040 Cercola (NA) Italy**