

# MINIMA OWNERS MANUAL



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).



<b>INTRODUCTION .....</b>	<b>3</b>
MINIMA SUPPLIED ITEMS.....	3
PRODUCT SAFETY NOTICE.....	3
<i>Inspection and unpacking .....</i>	<i>3</i>
<i>General Installation precautions .....</i>	<i>3</i>
<i>Always ensure the portafilter is locked in correctly.....</i>	<i>4</i>
UNPACKING THE MINIMA .....	4
<i>The Accessories.....</i>	<i>4</i>
<i>The internal tank.....</i>	<i>4</i>
MINIMA SPECIFICATIONS.....	5
<b>THE MAJOR CONTROLS OF THE MINIMA.....</b>	<b>6</b>
<b>IMPORTANT NOTE .....</b>	<b>7</b>
<b>PREPARING THE MINIMA FOR OPERATION.....</b>	<b>8</b>
FILLING THE MINIMA FOR THE FIRST TIME.....	8
FLUSHING THE MINIMA BEFORE USING.....	9
GRINDERS.....	9
COFFEE.....	9
<b>USING THE MINIMA.....</b>	<b>10</b>
SETTING BREW AND SERVICE BOILER TEMPERATURE.....	10
<b>ESPRESSO &amp; OTHER DRINKS.....</b>	<b>11</b>
<i>Espresso.....</i>	<i>11</i>
<i>Ristretto.....</i>	<i>11</i>
<i>Lungo.....</i>	<i>11</i>
<i>Americano.....</i>	<i>11</i>
<i>Cappuccino.....</i>	<i>12</i>
<i>Latte.....</i>	<i>12</i>
<i>Flat white.....</i>	<i>12</i>
<i>Macchiato.....</i>	<i>12</i>
<i>Cortado.....</i>	<i>12</i>
STEAMING MILK.....	13
<i>After steaming milk.....</i>	<i>13</i>
DRAWING HOT WATER TO WARM CUPS, FOR AMERICANOS, TEA AND OTHER HOT DRINKS .....	14
<b>CLEANING AND MAINTENANCE.....</b>	<b>15</b>
AFTER EVERY ESPRESSO OR GROUP OF ESPRESSOS.....	15
DAILY (AT THE END OF EACH DAY).....	15
MONTHLY.....	15
ANNUALLY .....	15
E61 GASKET REPLACEMENT.....	16
DESCALING.....	16
<i>Service Boiler Descaling.....</i>	<i>16</i>
<i>Brew Boiler Descaling.....</i>	<i>17</i>
OTHER PROBLEMS.....	18
<i>Display Error Codes .....</i>	<i>18</i>
PID VALUES EXPLAINED.....	20
APPENDIX 1 - ELECTRICAL SCHEMATIC (SIMPLIFIED).....	21

## Introduction

The Minima is a high quality prosumer grade dual boiler espresso machine that enables you to accurately control brew temperature and easily make gourmet coffee drinks, such as espresso, cappuccino, latte, draw hot water or Steam, all without any special preparation of the machine by having to switch it into different "modes" for steaming and brewing.

An all stainless steel construction with a professional solenoid vented E61 group (originally developed by Faema in 1961). Water circulates through the group head and the brew boiler, the metal of the group (8lbs of solid brass with chrome plating) acts as a heat sink to keep the water temperature stable as you make your espresso. The Minima is easy to use with simple controls.

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

### **Minima Supplied Items.**

- The Minima Espresso machine
- 2 portafilter handles
- Double and single portafilter body
- Double basket, single basket and blind filter (rubber disk)
- Spare group gasket
- 4 felt pads and 4 rubber pads
- Group cleaning brush
- Plastic Tamper
- Raised Cup stand (for espresso cups)
- Appropriate certifications, This manual and any additional notes



### **Product Safety Notice**

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

### **Inspection and unpacking**

After having removed the packaging, inspect the Minima for shipping damage. If you have any doubts, do not use the Minima and contact a professionally qualified person or your dealer. Always keep all packaging including any plastic bags. Keep packing materials out of reach of children and dispose of responsibly in accordance with your countries recycling and disposal arrangements.

### **General Installation precautions**

Before switching on the Minima make certain that the rating indicated by the label/specifications matches the available power supply. The serial number and rating label is located at the rear of the machine. Installation should be in line with the standards and laws within of the country where installed. We always recommend the installing the Minima on a circuit protected by an RCD.

For electrical safety, this machine requires a ground or earth and a properly grounded electrical outlet with adequate capacity for the current draw of the machine. If in any doubt, contact a certified electrician who can check that the electrical outlet. We do not recommend the use of extension leads, adaptors or any other equipment between the Minima and the mains supply socket (apart from a residual current device).



## 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 6:30 position or further for safe operation

## Unpacking the Minima

The Minima comes in a thick cardboard box with shaped packaging designed to protect it. Do not place the Minima onto a surface subject to scratching or damage before installing the felt or rubber protectors. The felt protectors allow the machine to easily slide on the counter top for filling. Use the rubber pads if you don't need to slide the machine.

Try not to damage the styrene packaging, as you may need it should you ever wish to transport/post the machine without damage.

## The Accessories

The machine comes with various accessories in padded plastic bags in the top section of packaging. Remove these first before removing this section of packaging.

## The internal tank

Access the internal tank for refilling removing the steel cover as shown and the internal plastic dust cover to refill the tank with water. To remove the tank, remove the both tubes and hold them to one side then simply withdraw the tank from the machine.

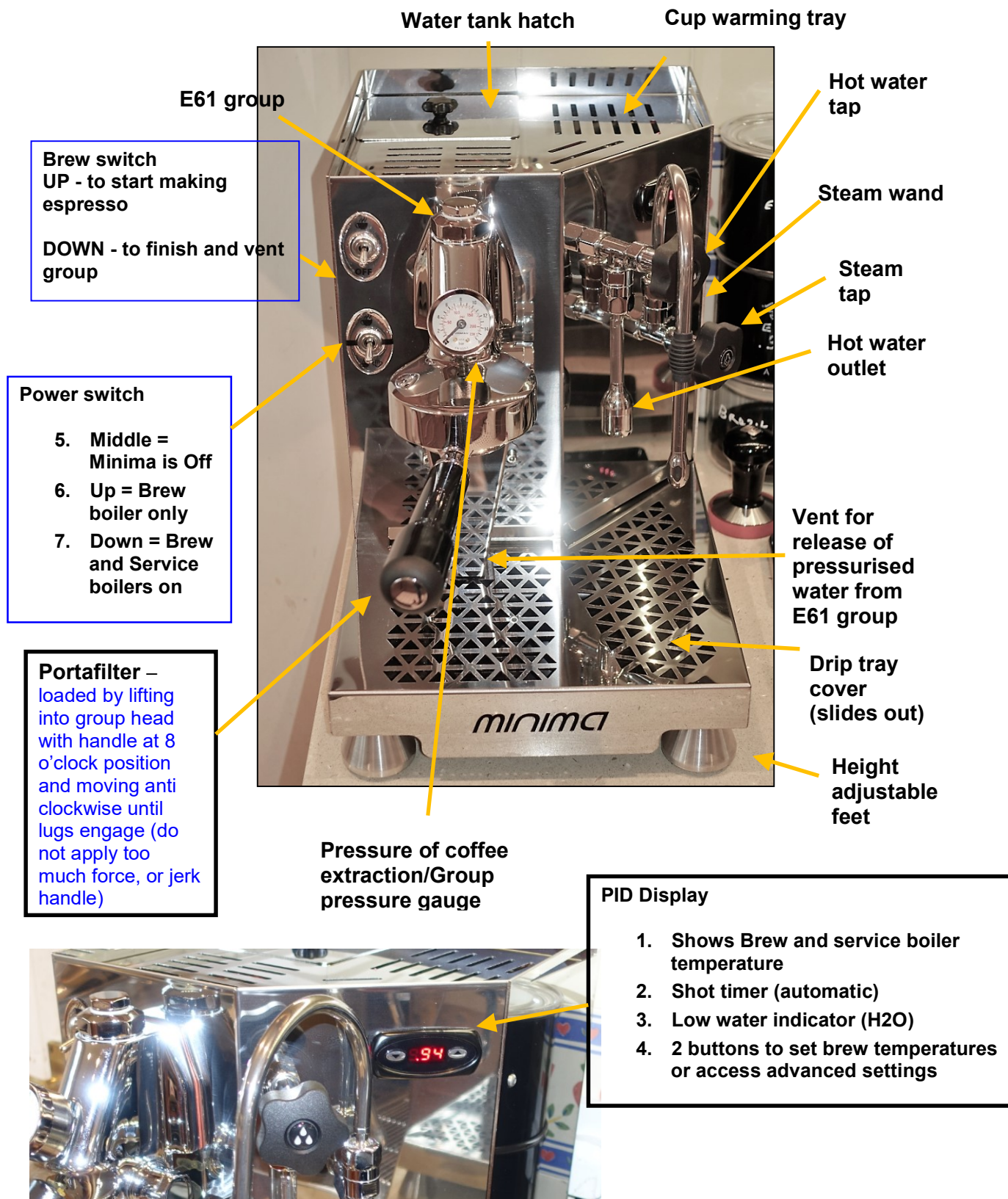
Remove the tank and wash in warm soapy water before first use. Replace both tubes in the tank. The longer of the two tubes must reach all the way to the bottom of the tank (this is the pump inlet), make sure the small particulate filter is in place. The shorter tube is the "expansion valve" vent tube and need not reach the base of the tank or be under water. It is normal for water to exit this tube during an espresso shot, when the machine is heating after a shot, or on initial warm up. Make sure both tubes are in the tank and not kinked, **do not place the inner lid on the tank, or replace the tank cover at this time.**



## Minima Specifications

<b>Dimensions: Height x Width, x Depth</b>	370 x 270 x 440 mm
<b>Weight:</b>	21 kg approx
<b>Voltage &amp; Power (Max):</b>	230 V-50Hz, 2480W (when used in simultaneous heating mode), 1480W when used in brew boiler priority mode (measured at UK Voltage).
<b>Water Tank:</b>	2.6 litres, removable with low water sensor. 2 litres usable (approx)
<b>Boilers:</b>	<p>Twin insulated boilers, AISI 316L Stainless Steel (surgical grade) 8mm end plates, 2mm thick walls. Incolloy 800 heating elements.</p> <p>Service boiler 2.3l (steam and hot water), 1200W</p> <p>Brew boiler 800ml and 1000W</p>
<b>Pump Pressure:</b>	15 bar max – regulated to 9 bar. (adjustable)
<b>Group Head:</b>	Single E61 solenoid group (58mm)
<b>Supplied Accessories</b>	<ul style="list-style-type: none"> <li>• 2 portafilter handles</li> <li>• Double and single portafilter body</li> <li>• Double basket, single basket and blind filter (rubber disk)</li> <li>• Spare group gasket</li> <li>• 4 felt pads and 4 rubber pads</li> <li>• Group cleaning brush</li> <li>• Plastic Tamper</li> <li>• Raised Cup stand (for espresso cups)</li> <li>• Appropriate certifications, This manual and any additional notes</li> <li>• Detachable country specific mains lead.</li> </ul>
<b>Construction:</b>	All stainless steel frame, body and boilers, removable drip tray, cup warmer. Metal feet (height adjustable).
<b>Water/Steam</b>	Hot water on demand. Steam on demand, wands on ball joint mounts. Steam Boiler can be switched On/Off as required
<b>Pressure Gauge</b>	Group mounted (direct measure at coffee).

## The major controls of the Minima





## Important Note

**If you don't read anything else, carefully read pages 8 and 9.** It contains important information to prevent damage to the Minima and correct setup and commissioning. There is a Video Playlist with various hints and tips. It can be found at the following link and may have new Videos added from time to time. Some videos may be of an earlier beta machine and have been left in where the process is identical.

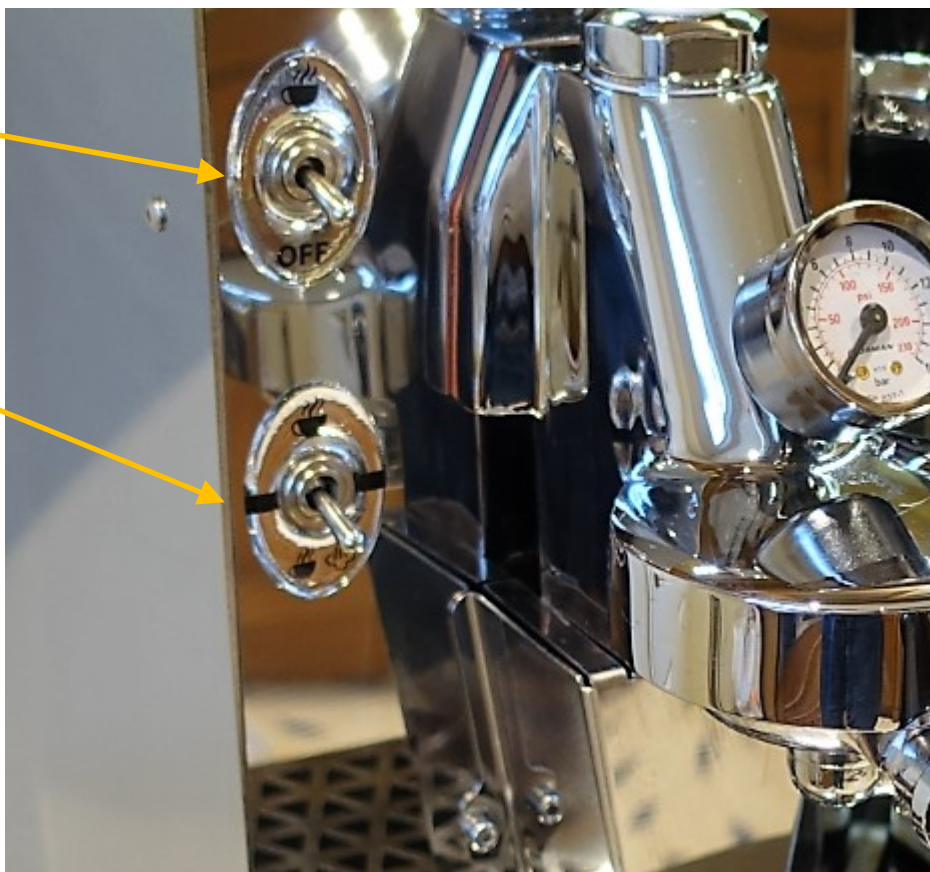
<https://tinyurl.com/Minima-User-Guide>

The Minima is a machine that is simple to use even though it is a dual boiler machine. The single LED display shows temperature, shot timer, low water visual indication and to access both temperature settings and advanced settings. Throughout the guide, I will reference the "Brew Switch" and the "Power Switch".

**The brew switch** has two positions, OFF (down) and Brew (up). When you lift the switch, the pump will run and water will flow from the E61 group. When you lower the switch, the pump will stop and the vent solenoid will activate and depressurise the group.

**The power switch** has three positions:

- **Middle is off** (the machine is off and the boilers do not heat).
- **Up is for the coffee brew boiler only** and with this setting the machine will use around 70W per hour, at current UK electricity prices that's less than 15p per day if the machine is on from 9 am to Midnight.
- **Down is for the coffee and service boiler** on together and the system will use more power. The service boiler needs to be on for hot water and steam production. We recommend that you switch on the service boiler only when you need it and not routinely run the machine with it switched on.



## Preparing the Minima for operation

You can think of this process as bringing your machine to life, be watchful during this time for anything abnormal and ensure everything works correctly. Do not lock a portafilter into the group yet.

### *Filling the Minima for the first time*

There are a few precautions when first commissioning any dual boiler and it is important to follow these procedures to avoid unnecessary stress or damage to the machine, **power on the Minima at step 3 and not before.**


1. Fill the water tank with clean water suitable for coffee machines (not high in lime scale forming minerals).
2. Place a container under the E61 group (no portafilter should be loaded at this time)
3. **Now move the Power Switch to the UP position** (coffee brew boiler only). Wait until the software revision has finished showing and the machine is fully booted up (about 5 seconds).
4. Press and hold the right hand display button for a few seconds until OFF shows in the display (this ensures the heating elements are off).
5. Switch the Brew Switch to the brew position (up),
6. Once water flows from the E61 group for 5 seconds **move the Brew Switch to the OFF position (down). Water will stop flowing from the group**
7. The pump may continue to run as it completes the fill of the service boiler.
8. Make sure the water tank water level is dropping and topped up as required.
9. Once the pump has stopped running, press the right hand display button once and Minima will now start heating the brew boiler.
10. **Move the Power Switch to the down position**, wait for both service and brew boiler to heat.
11. Set the service boiler and steam boiler temperatures.
  - a. Press the left hand button once T1 (Coffee Boiler) will show in the display, quickly press the right hand button and a temperature in C will show. Press the right (up) and left (down buttons) until you get 93C.
  - b. Wait a moment and then T1 will show in the display, press the down button and T2 (Service boiler) will display, quickly press the right hand button and a temperature in C will show. Press the right (up) and left (down buttons) until you get 125C
  - c. Wait until T2 shows, continue waiting and Minima automatically exits temperature setting mode.
    - i. *To go straight to the T2 setting, just press the left button twice.*
    - ii. *If at any time you wish to exit temperature setting mode, simply wait for about 3 or 4 seconds*

*The above sequence helps protect the heating elements, brew boilers in ALL dual boiler machines do not have level sensors and it is why you need to see water flow for 5 seconds from the E61 group. If the machine comes from a retailer, testing prior to shipping could mean, water flows immediately from the group and the pump may only run for a few seconds longer to fill the service boiler. The above procedure assumes a machine with empty boilers.*

*It is possible an A7 error will pop up once or twice during commissioning with empty boilers, if it does simply switch the machine off (wait 10 seconds) and switch on again.*

## Flushing the Minima before using

The manufacturing process and any subsequent testing will leave particles and tainted water within the machine. It is extremely important to ensure you flush the machine before using. You may do this immediately after successfully commissioning the machine. After the flushing process, you can choose to have the brew boiler or brew and service boilers on.

- 
1. Fill (or refill) the plastic water tank with Filtered water, or ensure boiler safe water is used.
  2. Power switch down (both boilers)
  3. Brew Switch up and draw brew water through E61 group for 40 sec, wait 1 minute and repeat. Do this step 5 or 6 times, smell and taste water to ensure it is clean.
  4. *Place a container under steam wand and open tap to draw steam for 5-10 seconds*
  5. **SWITCH MACHINE OFF**
  6. *Place a container under the hot water outlet and open tap to drain as much water as you can (you will get approx 1400 ml).*
  7. *Refill water tank then switch machine back on. **Power switch UP for Brew boiler heating only (just in case) and allow service boiler to refill (approximately 2 minutes), but after 1-minute power switch to Middle for 60 seconds to rest pump, then return to UP position again.** Ensure service boiler is filling and water level in storage tank drops.*
  8. **You may have to repeat steps 4 to 7 more than once if any taint or taste remains in the water.**
  9. Refill water tank, your ready to make coffee

**NB: Discard all water drawn from the machine during this flushing process. If the machine is unused for an extended period (you go on holiday for more than 2 weeks), it may be useful to repeat this process**

## Grinders

The temptation might be to use an inexpensive grinder unsuitable for the machine. To get the **most benefit** use a grinder costing from approximately 30-50% of the machines value. To give a real world example, **a grinder such as the Eureka Mignon, Mazzer Mini or better grinder would be an excellent choice** and better results obtained with grinders that are more expensive.

The Minima is able to use coffee ground a little finer than other machines and less expensive grinders tend not to grind as well at the finer settings.

## Coffee

To do the Minima 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 using, often even longer. Use the time recommended by your roaster for resting any specific coffee before use.

## Using the Minima

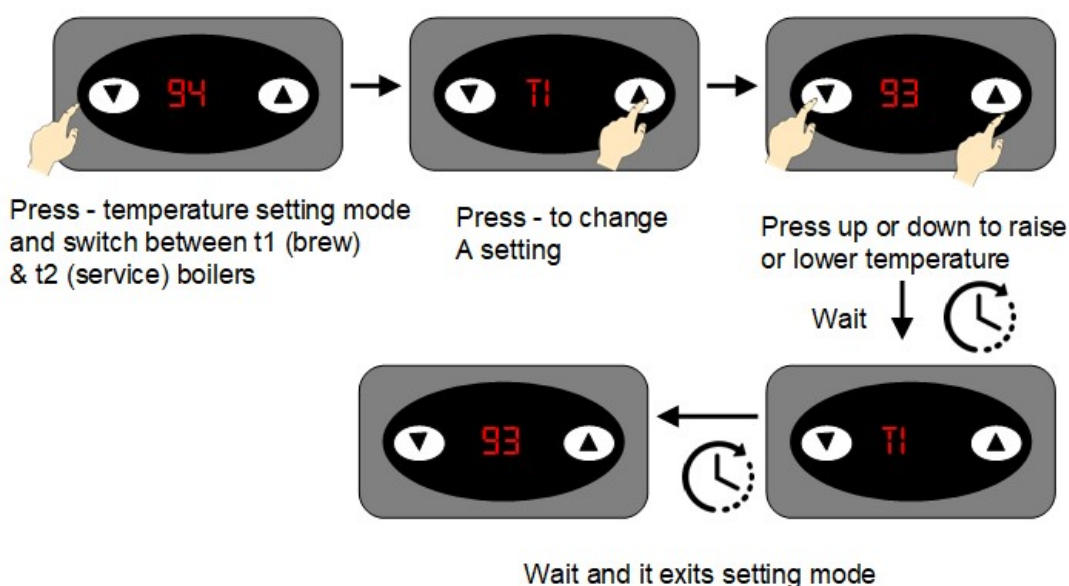
Before you turn the machine on using the on/off switch, ensure you have filled the water tank. Load the empty portafilter in the group (just so it warms up). Leave the portafilter in the group when the machine is on, it needs to stay hot. Check the steam and hot water valves are closed.

The LED display should light with NEU followed by the software code, before alternating between brew and service boiler temperatures. You may hear the pump adding water to the service boiler if it required water. After a few minutes the brew temperature displayed may have reached your preset value and the machine will seem up to temperature, indicating the machine is ready to make espresso. It is not, **the Minima needs approximately 30 minutes to warm the E61 group sufficiently to make espresso.**

**The service Boiler takes approximately 5 min to heat from cold** and when up to temperature is ready for hot water or steam. Please note: The pressure in the service boiler allows hot water to flow and steam generation, the pump plays no part in this. **If you do not need to steam milk, I advise routinely running with the service boiler off switching on the service boiler ONLY when you want to steam milk.** This prolongs the life of your machine and internal components. If you regularly need hot water, a kettle is a better (and more economical) option. Running just the brew boiler only consumes around 70W of power, I run my machine from 9 am in the morning to Midnight every day. At 2018 electricity prices, it costs less than 20p to run for 16 hours.

Because Minima uses a simple power switch rather than a soft switch. **A mains timer or WiFi smart plug device can control the machines On/Off times automatically. This is very convenient and saves having to remember to switch the machine off at night and on in the morning.** These devices are used at your own risk and do not remove the need for the usual safety precautions. We recommend that someone should be at home when these machines are on. You may read on the internet, that espresso machines may be left on 24 hours per day, this is not advisable and they should be switched off when you go to bed, leave the house or make your final coffee of the day.

## Setting brew and service boiler temperature





## Espresso & Other Drinks

The methods for making espresso have changed in recent years and a better beverage results from using the following methods and weights (rather than volumes). A double shot uses the double basket. Simply halve all the amounts and use the single basket if making single shots. Although I refer to 18g in the recipes, some coffees occupy more volume in the basket and you may find 17g is a better amount for the double basket supplied with the Minima

*It's important to have a routine, You might give Minima a 4 or 5 second stabilisation flush before pulling a shot after a long break between shots e.g. 10 minutes or more. I use this water to warm the cup. You can choose to do this or not. It doesn't matter as long as you are consistent.*

**Double Espresso is 18g of coffee in double basket and 36-40g total weight of Beverage extracted (produced) in around 30-45 seconds**

The 40g gives an average drink to aim at, but modern high-end espresso establishments are experimenting with everything from 18g out to 50g out. I would personally call 18g out more towards the extreme Ristretto end of the scale and 50+ grams in Lungo territory.

**To produce this, you have to weigh both the coffee you are using and the output produced, therefore a set of scales able to do this are required. Fortunately, they are readily available and there is plenty of room under the Minima group to accommodate most coffee scales and cups.** Should you not have scales yet, you can temporarily adopt a volume-based measure and aim for around 45-55ml of espresso for every 18g of coffee.

### Espresso

**A double espresso is approx 36-40g of extracted coffee, made by passing water at 90-96c, at a pressure of around 140 psi, through 18gm ground coffee in a time of 30 seconds (the slow pressure ramp of the Minima benefits a longer extraction.** The drink should have a crema layer that is dark and possibly reddish brown and may contain some darker flecks or striations (tiger striping/flecking). It should not be too bitter or too acidic (the signs of too high or too low a brew temperature). Or sometimes to short a shot. It should be extracted directly into a very hot espresso cup, preferably with thick walls and drunk immediately whilst still hot.

### Ristretto

A smaller espresso drink, with the grind adjusted slightly finer to, producing up to 50% less weight in the same 30+ sec extraction time. In practice, many bars will just cut the shot short which is incorrect. (Ristretto means "restricted").

### Lungo

A long espresso, which should have the grind adjusted (slightly coarser) resulting in 50 - 70% more weight within the same 30+ sec extraction time. **It should not be an over extracted espresso by using a longer extraction time.** A Café Crema is a variation of a lungo with more volume, 140ml of coffee in a standard cappuccino sized cup, extracted in the usual 30sec.

### Americano

A single or double shot of espresso pulled on top (or added to) of 5oz or so of hot water, making something similar to a filter coffee. This can be served with or without hot/cold milk. A Cafe Crema, is a different way of producing a longer drink, like the Americano, but by adjusting the grind (much coarser) in order to achieve a 4-5fl oz drink in the same 30 sec extraction time. I actually add hot water to my espresso to make an Americano, probably a sin, but it works OK for me. I think they call it something different, but it's the same thing really.

## Cappuccino

Equal thirds of espresso, steamed milk and foam. If you have successfully microfoamed milk (by 50% or more), this milk is simply tipped into the espresso base of the cappuccino. The micro foam will then separate out giving a 1/3 foam, and 2/3 coffee+micro foam liquid mix. The resulting drink has a silkier texture than a traditional cappuccino, using steamed milk and then foam on top. It is also the basis for all latte and cappuccino art (that of getting hearts, fern leaves, apples etc. shapes forming in the foam). If you pour micro foamed milk into the espresso base from one side of the cup and just before the end of the pour pull the stream back across the surface of the milk, you might get an apple. Sprinkling chocolate/cinnamon on the top is optional and adding a spoon of chocolate to the espresso and stirring in before adding the milk, makes a Mocha

## Latte

Although this means "Milk" this drink is meant to be, espresso 3/4 steamed milk and 1/4 foam on top. Alternatively, take your 20% stretched (increased in size). I always used to take my micro foamed milk and tip straight in for the type of "Latte" I preferred, I also liked a much higher volume of espresso to milk, it moved it from being a kid's milk drink to a proper coffee drink for me.

## Flat white

In recent years, something called the flat white surfaced. Definitions vary, but it is effectively micro foam only, poured into espresso, the volume of espresso being quite high. A double shot into a normal cappuccino cup (150-180ml) might be more normal for this type of drink. The milk is micro foamed to cream like consistency with no visible foam. It is actually my preferred method for "my own" Lattes.

## Macchiato

A shot of espresso "stained" with a drop of steamed milk on top (means "marked" in Italian). Or for me, a drop of double cream.

## Cortado

Another favourite of mine, equal quantities of espresso, mixed with steamed milk. It gives a very strong espresso, but the milk changes the taste of the shot quite dramatically. Another option (favoured by me) is to add a little double cream.

Every year a new drink is invented, the beauty of your own machine is that you can experiment and do them exactly how you like them. I never liked Lattes and without knowing it I was always making a "flat white", long before they were invented and there are a few different definitions of the flat white. The important thing is it does not matter, use these drinks as a guide, even the rules for espresso do not always apply for every type of coffee, some require a lower brew ratio than others. Do not be afraid to experiment and make coffee your way.

I always prefer full fat milk (whole milk), you will often see latte and flat white differences stated as flat whites always contain whole milk, but you use the milk you like. It is also OK to use cream (or butter) in coffee; in fact, I think this practice will become more common in the future, especially double cream or butter. Do not be afraid to experiment, **it is why you have a prosumer machine, to duplicate and then move beyond what you can get in the coffee shop.**

## Steaming Milk

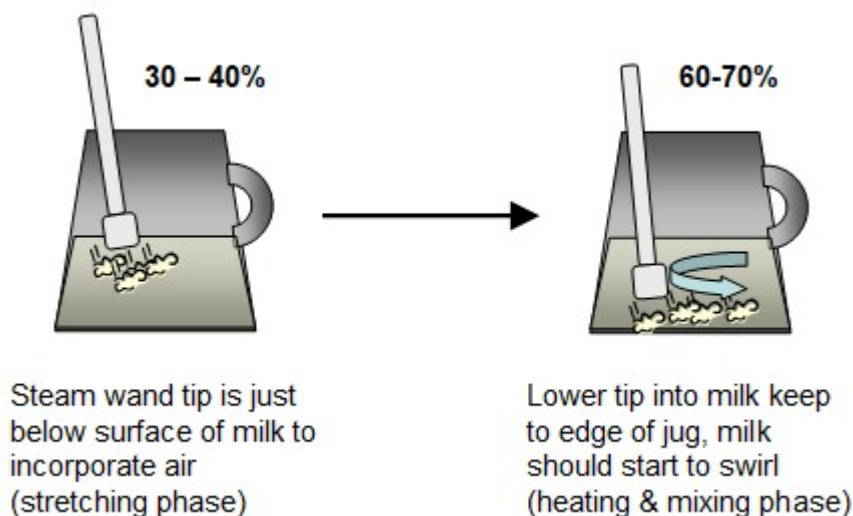
You can steam milk, or milk substitutes. The milk substitutes vary in their success usually in direct proportion to the amount and type of fat in them. You should experiment to find a product that performs well for you. I find full fat milk works best and it should be cold from the fridge. The milk jug should be one made for the purpose (e.g. steel with a spout) and not be overfilled (60%-70% full), use a larger jug for larger volumes of milk. Before steaming milk Purge the wand (open steam valve for a few seconds to heat the wand and remove excess water (do this into a container).

*Pro Tip: Open the steam valve "just before" placing the steam tip in milk (not after). This prevents a drop in pressure forcing cold milk back into the wand (purging makes the wand hot and can cause this as hot air contracts on cooling).*

It does require some practice to achieve that perfect "glossy micro foam". Steaming with the Minima is fast, so be careful not to steam too long. The steaming time for milk to use in a single Latte is only 20 seconds or so.

**Steaming is in two phases. The % time in each phase is shown below.**

The longer you remain in the stretching phase, the more foam you will produce (but less micro-foam), perhaps ideal for Cappuccinos but not so good for flat whites. The ideal consistency for latte art and the majority of drinks is that of pouring cream...with no visible bubbles.



## After steaming milk

Rinse the milk jug with clean water, submerge the steam wand fully and draw steam. This softens milk deposits). Then take a damp sponge with a little washing up liquid, hold around steam wand for 5 seconds twist and wipe a few times and the wand will come clean. Wipe with a clean damp cloth. *Do not use scouring pads, or leave the milk deposits to harden on the wand for any length of time. Sometimes the holes in the tip can block reducing steaming and many group head brushes have a small spike to clean out the holes.*

*A useful tip on keeping the holes and tip clean is in this Video: <https://tinyurl.com/Minima-steam-wand>*

## ***Drawing hot water to warm cups, for Americanos, Tea and other hot drinks***

Open the hot water tap by turning anticlockwise, when finished close the tap lightly by turning clockwise (close just enough to stop the water from dripping as this will preserve the life of the seals). Do not submerge the water outlet as there is some steam with the water and it may splash boiling water onto your hands.

There will be some steam, so be careful, as the area above the wand will get hot. If your machine has wooden knobs and the water knob gets excessively wet, we advise you quickly dry it after drawing water.

## Cleaning and Maintenance

### *After every espresso or group of espressos*



- Use a group head brush or similar tool to lightly brush the shower screen and gasket area in the group head (as shown by the arrows).
- Rinse the portafilter to remove old coffee.
- Use a Damp microfibre cloth to wipe away any bad splashes

### *Daily (at the end of each day)*

The same as after every espresso, but with a thorough wipe around the group seal, using a clean j cloth or sponge. Wash the drip tray with warm soapy water, as well as the grille. Water marks on the group head and face of the machine should be cleaned with a damp microfibre cloth followed by a soft dry microfibre cloth (do not rub too hard). Separate the portafilter and basket thoroughly clean both before replacing. A pure water backflush should be performed once or twice, this is the same as a cleaning backflush, but no cleaner is used.

Every 2 days I personally recommend removing the shower screen, clean the back of it and the inside of the group. The process is shown at 3m 47s of the video at <https://tinyurl.com/ACS-Minima-Cleaning>

*Note: get a small circular bottle brush for cleaning the spouts and hole in the centre of the portafilter holder*

### *Monthly*

Perform a more thorough cleaning including a backflush with cleaner and a wipe down of the machine and E61 group with a non-abrasive food safe stainless steel cleaner (not a cream). I use method stainless steel cleaner (a clear liquid). It's important the machine is cold when cleaning the exterior and E61 group.

The Video below covers cleaning especially backflushing with special backflush detergent cleaners e.g. Puly Caff. It also shows how to easily remove the E61 shower screen and gasket.

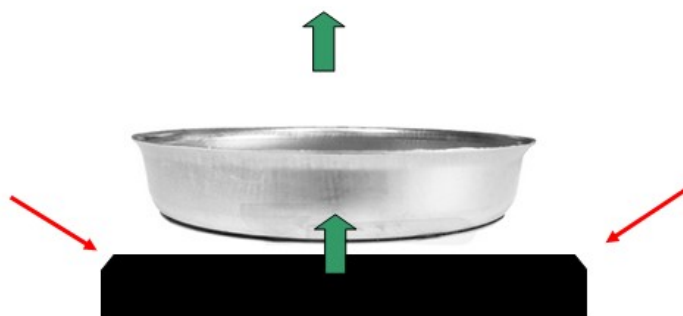
<https://tinyurl.com/ACS-Minima-Cleaning>

### *Annually*

Minima will benefit from an annual inspection; this can be a quick visual and auditory inspection for leaks or hissing sounds when both boilers are on. Should you discover any problems, consult your dealer for advice. The Visual part of the inspection is easily done using a torch and by removal of the top cover (cup warmer) of the machine It's held on by 5 hex head screws (3 at the top and 2 at the back). It is always advisable to consider getting the machine professionally serviced every few years.

## E61 gasket replacement

In the cleaning video you will see the black gasket detached from the shower screen. This requires replacing every 6-12 months depending on usage (machine on time). Over time, they harden and require more and more force on the portafilter handle to seal. They are inexpensive and easy to replace. It is a standard size (diameter) for an E61 group, but should be 8 mm thick, again **one** of the standard sizes available. The gasket first pushes onto the shower screen as shown by



the green arrow and then the entire assembly pushes into the E61 group. The red arrows show the correct orientation of the black gasket, which should be with the angled (chamfered) edge uppermost.

## Descaling

It is impossible to advise about the frequency of descaling as this is dependent on the water hardness (lime scale) and usage of the machine. Even if you use bottled water of a low mineral content or filters/filter jugs, eventually the machine will require descaling. The only system that completely removes the need for descaling is softening, or Reverse Osmosis with remineralisation using non scaling ions. Descaling should be performed by a qualified service agent, so we only give broad guidance for the procedure.

The Boilers are low corrosion AISI 316L stainless, so will not be damaged by descaling solution and the copper pipes feeding the group have such thick walls, it also won't be a problem.

### Service Boiler Descaling

**This is the easiest boiler to descale.** Switch on the service boiler; bring the machine up to full steam pressure (whatever you have set). Place a container under the water wand, **switch the machines power off** and in stages open the water tap and empty the service boiler. When you can draw no more water, the service boiler will be completely empty. You will get approximately 1400ml of water from the service boiler

Place a descaling solution in the cold water tank approx 50g - 100g citric acid (**always add acid to water**) to 1 litre of water, dissolve the citric acid in a little warm water before adding cold water to make up to the volume required. **Switch the Minima on with service boiler heating enabled. The service boiler should start refilling (do not touch the coffee brew switch unless you intend to descale the brew boiler as well).** Add more descaling solution to the cold-water tank as necessary. **Allow the service boiler to come up to full pressure and then switch off, leave the machine for 3 hours. Remove the water tank wash it out and refill with clean water and replace in the machine.**

**Switch the machine on**, once up to to full steam pressure (whatever you have set). Place a container under the water wand, **switch the machines power off** and in stages open the water tap and empty the service boiler. You will get approximately 1400ml of descaling solution and you should see evidence of descaling action. Be careful the solution will be hot and acidic, do not get any in your eyes (or wear safety goggles).

**Switch the machine on again and it should start to refill with clean water from the tank. Repeat this emptying and refilling process twice, or until no more taint of descaler remains.**

## Brew Boiler Descaling

You can use two methods, whatever you decide, it is important to prevent the service boiler from refilling unless you plan to descale that as well. So, don't use any water from the service boiler, make sure the service boiler is off and cool if you only want to do the brew boiler.

1. **Easy method** - Put a strong descaling solution in the cold-water tank (top up with new descaler as necessary) 100g per litre of citric acid, as before dissolve in a little warm water **(always add acid to water)** before adding cold to make up 1 litre. Run this solution into the brew boiler by operating the brew switch. 30 seconds on/30 seconds off. Do this about 6 or 8 times until the water coming from the group smells strongly of descaler. Do not have the portafilter loaded for this and use a container to catch the solution coming from the group.

Leave the machine on for a couple of hours, clean the water tank and replace the descaler with fresh water.

**Repeat the flushing of the group as before, but with fresh water until no taint of descaler remains.** Expect to have to flush through around 15 litres or more to achieve this.

2. **Hard method (only for experts, so no detailed description)** - Unplug machine and open top, remove temperature sensor without damaging wiring, it uses PTFE tape on the threads (so comes off easily). Use large syringe and tube to evacuate brew boiler of water. Use same syringe to fill brew boiler with descaling solution 50g -80g per litre (it will take around 800ml). Replace temperature sensor, bring brew boiler up to temperature and leave for 2 hours. Unplug machine, allow to cool remove temperature sensor and use syringe to remove all descaler. Fill with clean water and remove, repeat once more. Refill with clean water, replace temperature sensor. Taste water from group to ensure all descaler removed, otherwise flush a few times.

**This is a light descale, it's better to descale more often than do a much deeper descale with specialist chemicals. It is very important to use a damp microfibre cloth and wipe of all splashes of descaler from the stainless steel surface of the machine and group to avoid damage. Regularly rinse the cloth out.**



## Other problems

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

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. These are on the top of both boilers. 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 returning the machine for repair

### *Main Board Firmware - Accidental factory Reset*

This can happen by accident or you may be asked to reset it. The electronics manufacturer has a system that requires you to press and hold **both** buttons on the display then switch the Minima on to access advanced mode programming. Pressing just the right-hand button whilst switching the machine on will reset it to manufacturing defaults, so it's easy to do by accident!

If this happens simply work through the advanced menu on the next page and check everything is as described, change those value that are not the same as in the table.

## Display Error Codes

- "A1": Brew Boiler temperature probe not connected or short circuit
- "A2": Brew Boiler temperature probe circuit break
- "A3": Service Boiler temperature probe not connected or short circuit
- "A4": Service Boiler temperature probe circuit break
- "A7": filling time out

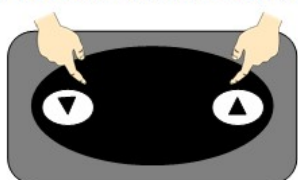
The A7 error is a protective feature to protect the pump, or against flooding and will stop the pump after a certain time. To reset this error, simply switch the machine off and on again. If it keeps happening, look for a kinked blocked feed hose or other problem. If it keeps happening even though the pump only runs briefly, contact your dealer for support.

*It is possible an A7 will pop up once or twice during a refill after draining the service boiler, if it does simply switch the machine off (wait 10 seconds) and switch on again.*

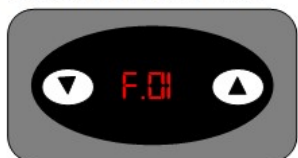
## Advanced Menu

To enter the advanced menu:

1. Press and hold these 2 buttons



2. Power the machine on, wait until F.01 shown  
Then release buttons



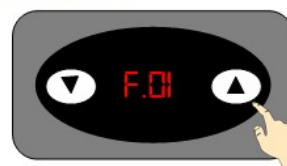
To leave the advanced menu at any time  
Power the machine off then on again



Press this button to scroll through  
The different parameters



Press this button to change  
a parameter



Press either button to change  
a parameters value



Wait a few seconds, it stores  
Value and returns  
to parameter choice



To set  
parameters

Parameter	Recommended Settings	Units	Comments
F01	C	C or F	Sets display of brew temperature to Centigrade or Fahrenheit
F02	6	Integer	Enables both boilers (4 sequential brew boiler priority, 5 is sequential steam boiler priority),
Cp	1.5 or 1.4	Integer	<b>Proportional - Brew Boiler (I prefer 1.5)</b>
Ci	0.04	Integer	<b>Integral - Brew Boiler</b>
Cd	7.5	Integer	<b>Derivative - Brew Boiler</b>
Sp	0.0	Integer	<b>Proportional - Service Boiler</b>
Si	0.00	Integer	<b>Integral - Service Boiler</b>
Sd	0.0	Integer	<b>Derivative - Service Boiler</b>
E1	17	Integer	Brew Boiler Offset - allows the display to show the actual brew temperature of the water leaving the group E.g. If brew temperature is set to 93C. An offset of 16, means the brew boiler is actually at 110C. <i>This allows for approximately 17C cooling when it reaches the coffee.</i>
E2	0	C	Service Boiler offset - Always set to 0

## ***PID Values Explained***

**Proportional control** applies power to the heating elements in proportion to how far you are from the set point. Its main drawback is that the closer you get to the set point, the power it applies (it's why we don't use it on the service boiler). Eventually it doesn't push hard enough to change the temperature and the brew boiler can run continuously close to the set-point temperature, but not quite there.

**Integral control** tries to even out the difference of the time spent above and below the set point brew temperature. If you've set 93C as your set point and spent a minute running at below it will try to push you over to 93C for similar amount of time. This action compensates for P's inability to make that last effort.

This would seem to be enough, but to allow the brew boiler to recover rapidly but not overshoot the set-point temperature excessively, welcome to the **derivative control**.

**Derivative as a brake or dampener** on how much power the **Proportional control** uses. The more it tries to change the value, the more it counteracts the effort...it's why it's sometimes called "**Rate**". Measures change over speed. It will reduce the effects of P and I more, the faster the set point is approached. Low values of D can cause overshoots; high values of D can make response sluggish.

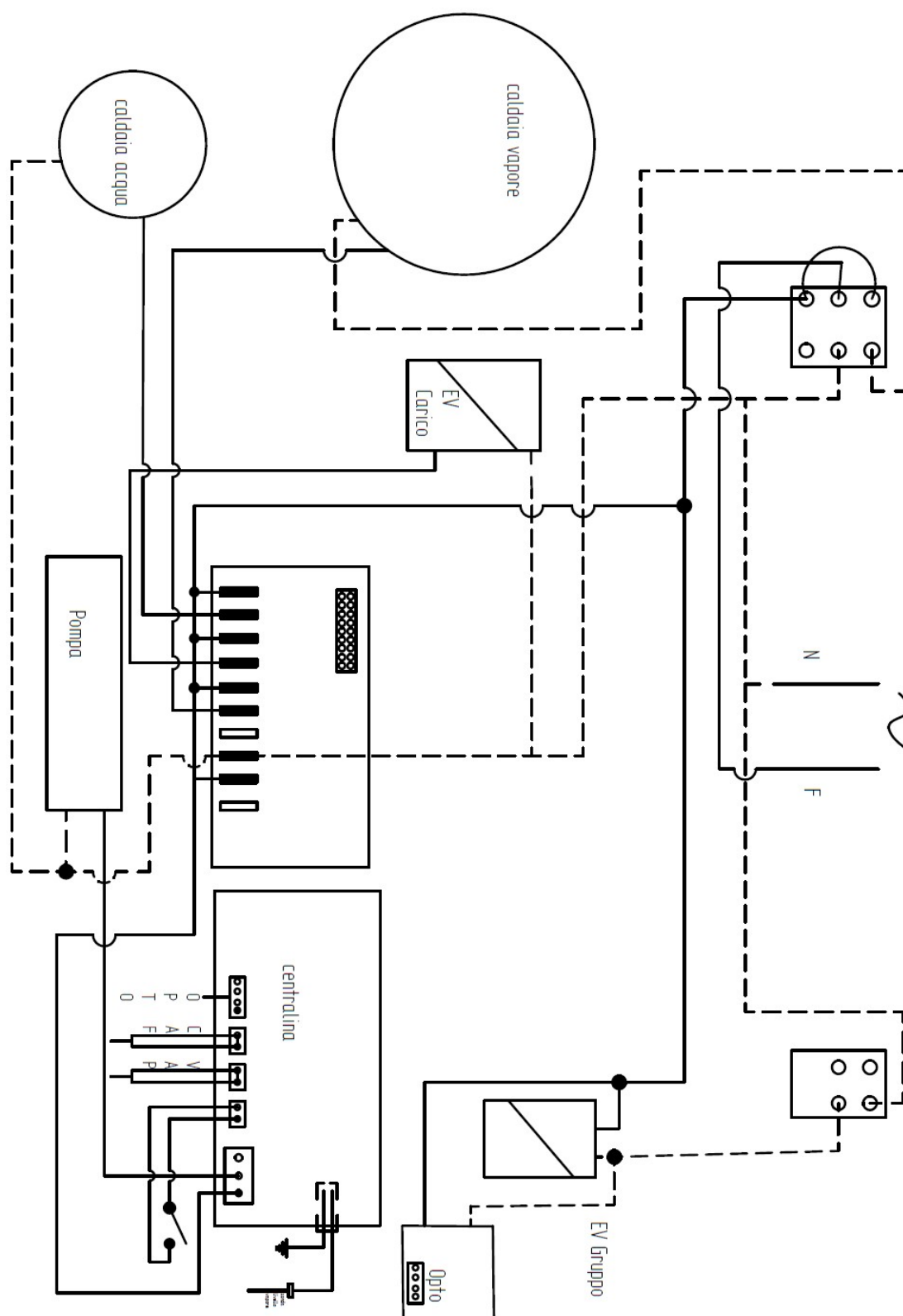
We recommend you use the values in the guide, but **with experience**, small changes may benefit the operation of the Minima in its specific environment because this may be hotter or cooler than the test environment.

***Warning, if you accidentally power on the machine whilst holding only the right hand button, this will reset the control system to Gicar factory settings and you may have to input the values in the previous table for the machine to work correctly***

*Please remember a PID is meant to control systems around a steady state. You may set a temperature of 93, but it's perfectly normal to see the PID moving from 92 – 93 – 94 and back again. The PID cannot show 0.5 of a C, so it's quite likely that this is in reality only 0.5C or less from the set point.*

*It's also important to mention that as soon as you use the machine, expect the displayed temperatures to vary a little after the espresso shot, this is perfectly normal. The boiler is quite large and will very quickly settle down regardless of any temporary slightly high or low temperature and the group itself is a very temperature stable (large) mass of metal.*

## Appendix 1 - Electrical Schematic (simplified)



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

## MINIMA

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 Malatesta, 39/B  
80049 Somma Vesuviana (NA) Italy**