The Perfect Espresso

There are four keys element in making a great espresso based coffee:

1. The grind
2. Extracting the coffee
3. The act of frothing the milk, and
4. The maintenance/cleaning of the espresso machine.

Coffee

To prepare an exceptional cup of coffee, two essential prerequisites are necessary:

• That the finest quality of green coffee beans are used; and,
• That these are fresh roasted.

Freshness is probably the most misunderstood factor about coffee. Roasted coffee is an item of food and as such it is an extremely perishable product. The date of the roast is the key to freshness because within two weeks of it being roasted, half of the flavour is lost.

Freshness cannot be preserved very long, regardless of how the coffee is packaged or stored or whether it is whole bean or ground. It is the roasting that sets the clock ticking on the shelf life of coffee and not the purchase date nor how it was packaged, stored or ground that determines its freshness. Exposure to air and moisture will accelerate the decomposition of the flavours, and unfortunately, the process will continue even in a complete vacuum. After six weeks the oils become rancid.

For best results use your coffee within 5 days of receiving it from the factory. Store your coffee in an airtight container. **Do not** store in refrigerator or freezer.

Milk

The other key ingredient is milk. Despite an urban myth to the contrary, all milk froths equally well. However, milk with a higher fat content produces a thicker and creamier texture than low fat varieties. Also the fat in milk has a mellowing effect on the coffee, smoothing out the acidity or harshness inherent in most espresso blends. The result is a richer and rounder brew.

Milk should be stored in the refrigerator and removed immediately before use.
The Grind.

Having the correct grind is decisive in the flavour of the coffee that is produced from the machine. What you are looking for here is to avoid under or over extracting the coffee. Start with the grinder set the way you usually have it, empty out yesterdays grounds and pull a double shot (approx 14gm) of freshly ground coffee into a double basket and firmly tamp them. Attach the filled handle to the group head on the espresso machine. Now remove the handle and check for signs that the shower screen was touching the grounds. If you can’t see it, the handle is under filled. Unless you get this right nothing else matters.

Return the full handle to the group head and start the pump. As soon as you see the coffee stream emerge pay particular attention to the thickness of the stream. Now recall the appearance of the stream from the espresso machine and note the crema in the cup. Compare your results with the following chart:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Under-Extraction</th>
<th>Perfect Extraction</th>
<th>Over-Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewing Time</td>
<td>&lt; 18 seconds</td>
<td>18-25 seconds</td>
<td>&gt; 25 seconds</td>
</tr>
<tr>
<td>Stream Appearance</td>
<td>Raging torrent</td>
<td>Thick as a rats tail</td>
<td>Breaks into droplets</td>
</tr>
<tr>
<td>Crema Colour</td>
<td>None to blond</td>
<td>Golden</td>
<td>Brown to burnt</td>
</tr>
<tr>
<td>Crema Thickness</td>
<td>None to thin</td>
<td>Thick (4mm)</td>
<td>Thin to none</td>
</tr>
<tr>
<td>Crema Fragility</td>
<td>Breaks apart easily</td>
<td>Heals quickly</td>
<td>Doesn’t heal</td>
</tr>
<tr>
<td>Aroma &amp; Taste</td>
<td>Soft, weak</td>
<td>Strong, complex</td>
<td>Acrid, burnt, bitter</td>
</tr>
</tbody>
</table>

If your results are the same as the middle column, congratulations, if not you need to empty the grinder, adjust the mill collars and repeat the test.

Adjusting the grinder

It is necessary to rotate the mill collar in order to increase or decrease the size of the coffee grounds. Some grinders rotate left while other rotate right so you need to look for some indication as to which way to turn the collar. Look for a + or – sign. Turning towards + will coarsen the grind (allowing the liquid to flow more quickly) while towards the – will fine it up. If these symbols are absent, look for an arrow with a point at one end and a fat tail at the other. Turning toward the point fines up the grind. Beware, you might find two arrows pointing in opposite directions. One is likely to have a - or the word Fin (fine) at the sharp end and the other a + or the word Grob (course) at the sharp end. You rotate the mill collar in the direction of the appropriate arrow to achieve what you want. Many grinders have a mill-collar locking device in the form of a push down button. This button needs to be depressed before the collar will move. Ensure the button returns fully to its locked position before starting the grinder.

Make only small adjustments - rotate the collar one “notch” at a time.

Adjust Grinder from Scratch

Periodically it will be necessary to completely remove the whole bean hopper and mill collar say for cleaning or removal of a foreign object thereby upsetting your perfect setting. Simply make sure the threads are perfectly clean and wind the mill collar down till it touches the lower grinding surface. Now wind it back a quarter turn and grind a little coffee until it is the size of table salt grinds (or sand). Adjust as previously described.

Tamping

Tamping the coffee in the handle helps impede the flow of water through the grounds and assists with the extraction process. It also greatly assists with the production of crema; the brown cream of aerated coffee oils in the cup. Choose a tamper with a flat bottom, press down on the coffee, rotate and then tap the side of the handle with the back of the tamper to dislodge loose grounds and retamp. Wipe the handle face before inserting in the group head. Tamping is one of the great ceremonies in the production of espresso coffee.
Frothing the Milk

Milk that is frothed correctly greatly enhances the appearance of the coffee and adds to the flavour by toning down some of the natural acidity of the bean. With the milk you aim to avoid two things. The first is not to scald the milk and the second is to avoid large air bubbles in the jug. Both are easily avoided with a little practice.

Take a half-filled stainless steel jug of cold milk, introduce the steam wand to the centre of the milk jug and turn on the steam. Withdraw the jug until the tip of the wand is just below the surface of the milk at which point you will hear a sucking sound. This is the best position since with the wand further in, the milk heats before it froths and further out you blow bubbles. Done correctly the froth will rise to the top of the jug. This is called stretching the milk and will only occur at lower temperatures – say below 35 degrees. You must stretch the milk before you heat it. Once heated, milk will scald before it stretches.

Pulling the Shot

There are only 4 rules to pulling the perfect shot of espresso:

1. **Temperature.** If the machine has been sitting for a while, draw off some water through the group head. This will remove the boiling water in the head and replace it with cooler water. Drawing off water will also wash the head of loose grounds. This is not necessary with the Expobar Barista Minore because it has a dedicated brew boiler.

2. **Fill the handle.** The coffee must pack the handle from the bottom of the filter basket to the shower screen in the group head. If not the water will move the coffee around and an inferior extraction will occur. Please note that the basket in the single shot handle may be more than half the volume of the basket in the double shot handle so setting up the drop of the grinder for two flicks to fill the double shot handle will underfill the single cup handle. However you solve this problem, the handle must be filled.

3. **Mouses tail.** The flow from the handle must be no thicker than a mouses tail. See adjusting the grinder to correct any errors.

4. **Only 30-40 ml per cup.** The first 15 ml of liquid is the strongest (as used in a ristretto), the next is less strong but very acceptable (total now 30 ml) but the next 15 ml is not acceptable. After 30 ml there is no further coffee oil to be dissolved and what remains is acidic, bitter and thoroughly unpleasant. This is definitely not coffee. Note that 30 ml from a double shot into a single cup is effectively two 15 ml ristretto’s in a single cup – simply the very best that can be provided.

After the perfect extraction the rest is just a menu item.
Machine Maintenance

Expobar espresso machines are remarkably robust pieces of equipment and will continue to give excellent service with the simplest of maintenance. The things to be avoided here are the blocking up of the group head and boiler contamination.

Every so often, say after 10 cups, the machine should be back-flushed. Back flushing involves the use of the blind filter in a handle. First though you need to brush under the group head to remove loose grounds of coffee, particularly those that have stuck to the neoprene seal. A buildup of grounds here will cause the handle to seal incorrectly and water will be forced over the top rather than through the pipes behind. Introduce the handle to the head and push the continuous pour button for a 10-second pour. Empty the contents and repeat until clear. Some Expobar machines are fitted with an automated function for this activity – refer to our web site www.expobar.co.nz for information on how to enable this function.

At the end of each day use a special detergent to backwash the group – we recommend Cafetto Espresso Clean. Simply follow the same procedure as back flushing but add the detergent to the blind filter. Thoroughly rinse the group with water before pouring the first coffee. The back-washing procedure is very important because it assists in dissolving coffee oils that accumulate in the group head and clog the fine filters.

At the end of each week (or sooner if necessary), soak the filter handles and their cups in back wash detergent to remove the black coffee stains.

You should periodically refresh the water in the boiler by pouring off a litre or two via the tea-making tap. This not only refreshes the water but is also a check on whether you have spore contamination in the boiler. Spore contamination will show either as black “crud” in the poured off water and or the water will have a white appearance and smell like sour milk. If the boiler is contaminated so is your coffee. These spores are a fungus growth caused by milk being siphoned into the boiler via the steam wand because the wand has been left in water. Boilers contaminated with spores can be cured but at considerable cost.

If steam wands must be soaked in water to remove caked on milk, blow out the holes by releasing some steam. Under no circumstances turn the machine off with the wand in water.

Grinder Maintenance

On a weekly basis remove all the beans from the hopper and wipe the hopper clean of oil residue. Clear any obstruction in the opening to the grinding discs. If grinder is fitted with a magnet then remove any object clinging to magnet. Do not use detergent on interior of grinder. Do not use water on interior of grinder.

On a monthly basis remove the bean hopper completely and remove the top grinding-burr by unscrewing the mill collar. Inspect the burrs and clean the chamber. Pay particular attention to cleaning the threads and reassemble. Replace the burrs every 400 kg of beans. Refer to page 7 for resetting the grind.
Trouble shooting

Symptom: **Water under machine.**  
Cause: Clogged waste.  
Remedy: Flush gully or empty waste bucket.

Symptom: **No steam from wand.**  
Cause: Nozzle blocked.  
Remedy: Remove nozzle and clear holes.

Symptom: **Excessive water in grounds.**  
Cause: Handle not full. Coffee ground too fine.  

Symptom: **Coffee pours too slowly.**  
Cause: Coffee stream should be as thick as a mouse's tail.  
Remedy: If thinner, coarsen up the grind. Use less force with the tamper.

Symptom: **Coffee pours too fast.**  
Cause: Coffee stream should be as thick as a rat's tail.  
Remedy: If thicker, fine up the grind. Try tamping more firmly. Is the handle completely full?

Symptom: **No crema on coffee.**  
Remedy: Revise 4 rules of extraction.

Symptom: **Crema thin and will not heal.**  
Cause: Over extracted.  
Remedy: Coarsen up the grind.

Symptom: **Coffee tastes bitter.**  
Cause: Water too hot. Over extracted.  
Remedy: Revise 4 rules of extraction.

Symptom: **Coffee tastes burnt.**  
Cause: Group head dirty/handle dirty.  
Remedy: Replace shower screen and shampoo handle.

Symptom: **Water runs over top of handle.**  
Cause: Head seal damaged.  
Remedy: Replace seal.

Symptom: **Slow water flow from group.**  
Cause: Shower screen clogged  
Remedy: Replace shower screen.

Symptom: **Pump lacks pressure.**  
Cause: Poor water supply. Pump defective.  
Remedy: Call technician.

Symptom: **Grinder suddenly stops.**  
Cause: Foreign matter in grinder. Check power supply.  
Remedy: Switch off power and clear obstruction.

Symptom: **Grinder runs no coffee grinding.**  
Cause: Obstruction in hopper.  
Remedy: Open shut-off plate. Agitate shut-off plate.