A BARISTA STARTER BOOK

EVERYBODY ESPRESSO!

Written and illustrated by
Dennis Hew

Decent Espresso edition

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Introduction

Before we jump into the main topic, you may have some doubts—like who is this Dennis Hew? What qualifies him to teach latte art and coffee?

Many people believe that a teacher should be a champion in the field or an award winner in order to qualify to teach.

I don't believe this is true, and I'll show you some examples. The famous chef Gordon Ramsay and the late Bruce Lee are both well known in their fields. One is a culinary arts celebrity who became a multiple restaurant owner, the other was a legendary martial artist who became a movie star.

Do they possess any championship titles? No, they do not. Nonetheless, they’re respected teachers, mentors or coaches. It’s because they're passionate about teaching and spreading their knowledge.

Gordon Ramsay spreads his knowledge through TV shows, inspiring millions to learn the culinary arts. Bruce Lee made movies to share his martial arts mastery. He changed the traditional Kung Fu film industry and inspired generations.

You may argue that these are rare or exceptional cases in history. Fine. How about your school teachers, then? Your science instructor or your English teacher? Did they get literature awards, Nobel Prizes, or other honors? Probably not. However, many of them are very skillful in teaching and full of patience, even though they’re not champions in their fields.

So, who is this Dennis Hew? I'm an entrepreneur who started a small, humble weekend coffee class at a café named RGB Café in Kuala Lumpur, Malaysia. My classes started in 2017, and my classes were always fully booked. Since then, I founded the Barista Experience Academy. I also host a podcast, "The Coffee and the Company." I'm certified by the Specialty Coffee Association (SCA) as an Intermediate Barista and a Professional Barista.

I've taught over 8,000 students (no webinar: it's in person). I've committed thousands of hours to teaching and providing face-to-face and hand-in-hand guidance.

How I started the classes harkens back to how I started as a weekend part-time barista.

In 2013, when interest in specialty coffee was booming in Kuala Lumpur, I had my first flat white with latte art on top. I'd never tasted such delicious coffee without sugar before, and I was intrigued. I asked for a weekend job there, and I was accepted.

Fast forward to 2017: I gained working experience with a few cafés, yet felt like I hadn't developed enough and couldn’t move on to the next stage of learning. I felt like I was teaching more than being taught, and I became demoralized by earning a minimal wage.

I was certain that my time was worth more than what I was earning. I thought of quitting my part-time gig at the café, but then the owner asked me to kickstart a coffee class. Her roasting room was vacant on weekends, and she had an extra espresso machine in the room that I could use for teaching.

So I started the class alone and from scratch – designing a post, creating a syllabus, handling digital marketing, scheduling bookings and so on.

As it happened, I enjoyed teaching so much that although my body ached from working all day on weekends, I didn’t feel like I was working at all.

Along the way, I've often received messages from followers in other countries who tell me that their country or their hometown has no coffee class.

Since I routinely write about coffee, sharing my knowledge with videos on Instagram (@sinnedhew, @baristaexperienceacademy and @thecoffeethecompany if you're curious), I got the idea to write a book to reach out to a global audience and those I can't teach personally.

Guess who illustrated this book

I did, from cover to cover. I started writing this book without knowing how to illustrate digitally. When I was a kid, I liked to draw and doodle with an old-school pen and paper. My drawing hadn't developed since then.

But I had many ideas I needed to show to you: my readers, my friends, my IG followers, my audience from all over the world. And so as my book progressed, I had to learn digital illustration skills. Simply because latte art requires more than just words – it needs visuals. I believe that we're all visual creatures.

One fine day, I received a new tablet from my day job and it came with an attached pen. This sparked an idea in my brain and changed my perspective on developing this book.

You might notice as you turn the pages that my illustration skills gradually improve from the first picture to the last. Many times, I drew and failed. I taught myself to make these illustrations better and better.

Nonetheless, I've found that I enjoy illustrating. It calms my mind, gives me purpose and trains my mindfulness. I'm not a skillful drawing artist, but from the bottom of my heart, I spent a lot of time learning from scratch.

At the end of the day, my goal is to pass on the knowledge of what I learned the hard way to you, my friends throughout the world, so that you have an easier (and less frustrating) way to learn.

How important is a shot of espresso in making latte art?

Very important. If you asked Ray Kroc (founder of McDonald's) if fries were important to his restaurant business, I'm sure he would have said they're important, too.

Let's imagine... in a burger combo, if the burger is delicious but the fries are uncooked or chewy, is the meal still delicious to you as a whole?

Same goes for a shot of espresso, or what I call "shot black." A good espresso shot allows you to make a nice contrast and makes it easier to land some latte art. Most importantly, it also makes café latte taste delicious.

Therefore, both calibration and milk-texturing skills are equally important.

WHEN YOU LEARN PIANO, DON'T PRACTICE WITH A VIOLIN

(Use the right tool)

When I first started to learn about coffee from coffee bars, I owned a small home espresso machine from a brand we'll call “K”. I have nothing against the brand, but I realised several years later that — metaphorically speaking — I was learning piano, but practicing at home with a violin.

Working as a barista, I used a commercial espresso machine, and it produced satisfactory quality shots and textured milk. But when I went home, my home espresso machine gave me the opposite quality.

I was such a fool to compare production quality from a tiny machine that cost USD150 with a commercial machine that cost USD4,000. It wasn’t just the price but the specifications, as well. For example, with the K-brand machine, the steam wand (which produces steam to heat up the milk) was a single big hole. And most commercial machines featured steam wands with 4 pin holes that produced better milk texturing.

When I realised this, I started saving and finally had enough to get my first decent home espresso machine called “Nuova Simonelli Oscar”. It cost USD880 back in 2013. And I was so in love with its milk texture quality.

Many of us have this dream to own a German-made sedan, but we're only willing to pay the price of a tiny Japanese compact car. A similar ‘dream’ exists when you buy an espresso machine for home use.

In order to produce decent latte art on a cup of coffee, the espresso machine and grinder (even at home) must meet a certain benchmark.

Opening & preparation in a café

Every morning, a café depends on baristas to make preparations before the café starts operating. This requires not just calibrating the taste of the coffee, but also making sure the café has enough inventory and supplies to serve beverages and pastries.

Being a barista means being an early bird.

And for the home barista? With my day job, I wake up a half hour earlier before I head out to work.

Making coffee, cleaning the espresso machine and enjoying the coffee takes 40 minutes. So for someone who wants to be skillful at this, it requires determination and waking up early every day to make coffee.

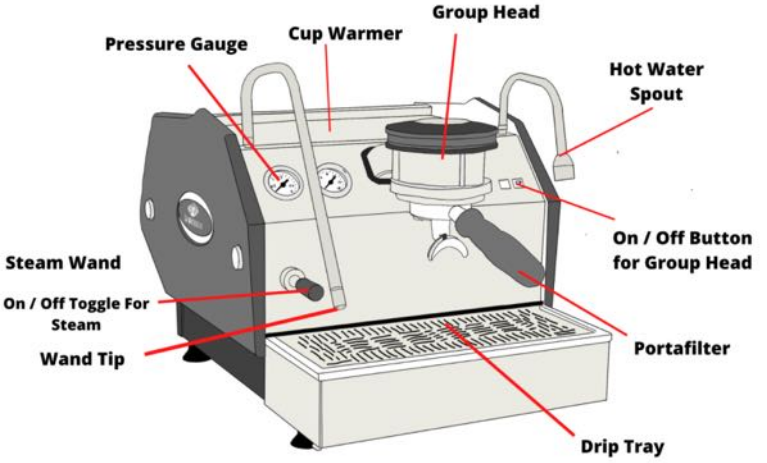
For me, having to be at the office early is no excuse. I always make my coffee at home before heading out.

In the next chapter, I'll talk about the different parts of the espresso machine, coffee grinder and some coffee accessories. This will give you a clear picture when I mention the names of machine parts.

ESPRESSO MACHINE ANATOMY

I'm not technically educated in the names of machinery parts, but below are the names baristas commonly use at coffee bars.

Please note that not all machines have similar mechanism switches. Some have levers, toggles or buttons, but most machines have a button to turn the group head on or off.



Definitions

Group head: Sends hot water from the espresso machine into the coffee basket.

On/Off button for group head: Turns on the group head, so that water and pressure can brew coffee.

Portafilter: A handle attached to a metal filter (basket) that holds coffee grounds. Portafilters come in different-sized diameters for various machines.

Drip tray: A water outlet tray that collects water that gets disposed. If the machine doesn't have a plumbing system, the drip tray must be manually emptied after it's full.

Steam wand tip: Where hot steam comes out.

Pressure gauge: Some machines have two pressure gauges: one for steam boiler pressure, and another for group head boiler pressure. Both function to monitor pressure during the coffee-making process.

On/Off toggle switch for steam: Turns on the steam wand.

Steam wand: Heats and steams milk by inserting it in the milk jug. The steam wand position can be adjusted. Hold the section with rubber on it to prevent yourself from getting burned.

Hot water spout: for adding water to a cup to make tea or Americano coffee drinks.

A Decent perspective

On a Decent Espresso machine: the group head on/off, steam on/off, hot water on/off, and pressure gauges are all on the tablet screen.

Types of home espresso machines

Super-automatic machine

This type of machine is meant for convenience. With just one button to operate, all you have to do is fill up the materials (whole coffee beans and milk), then press for your desired beverage. Usually, you'll see these machines at convention halls or hotel event spaces.

This type of machine allows very minimal control, hence the name ‘super-automatic machine.’

If you want to have more options and make latte art, this machine won’t serve your purpose.

The super-automatic coffee machine

Pros: Ease of use, mobile.

Cons: No control of manufacturer's built-in settings, so the taste of the coffee depends on some of the machine's parameters. No control of pressure or steaming milk quality and no latte art.

Single boiler

As its name suggests, this type of machine has a single boiler to serve both the steam wand and group head. As a whole, the unit size is a little bigger than a 2-litre milk carton. That said, the boiler is small.

When you extract an espresso from the single-boiler machine, you may need to turn on the steam function and patiently wait for steam pressure to build up. Some machines take up to one minute to build up.

Going through this procedure for self-consumption is fine, but if you have guests or a big family waiting for coffee, this can be very frustrating — especially when you're new or inexperienced with using your machine.

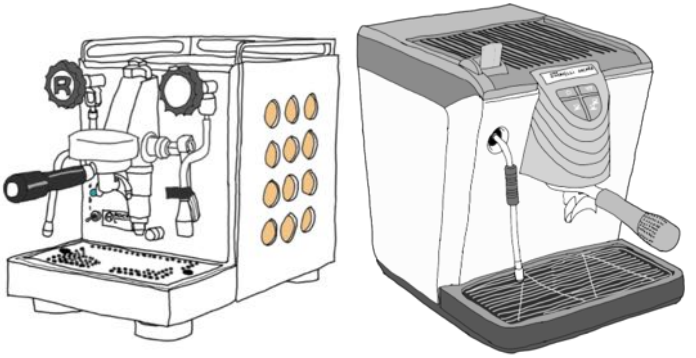
Also, the portafilter size is 49–52mm, and not many accessories are supported at this diameter size.

Suitable? Not for learning latte art, but if you have a minimal expectation of brew quality and you don't mind not having latte art, then this may be for you.

The single-boiler espresso machine

Pros: Budget-friendly, mobile.

Cons: Requires waiting time for steam pressure to build up, so it's troublesome to make a few cups of coffee in a row. Inconsistent coffee quality.



Single boiler with a heat exchanger

This type of machine is also a single boiler, but with additional technology that allows the boiler to produce steam for milk and heat pressure for the group head simultaneously.

While you're extracting espresso, you can simultaneously use the steam wand to texture the milk while you're waiting for the steam to build up enough pressure. There's no downtime. This heat-exchanger system allows the convenience of using both functions at the same time. But because it's a single boiler, you don't always get a consistent shot of espresso (especially on home espresso machines), and the textured-milk quality varies if you make multiple cups at a time.

The machine's boiler might not be able to cope with the quantity of water boiling in a short time. It's meant for home use, unlike a commercial heat-exchanger machine with a bigger boiler that can cope with a hectic workflow in a short period.

Also, before you buy a portafilter, please pay attention to the diameter size. Usually, commercial-sized portafilters (the size with most supported accessories) are 58mm.

The single-boiler with heat exchanger

Pros: Slightly budget-friendly, mobile, convenience of usage in terms of espresso and textured milk.

Cons: Acceptable brew quality, but inconsistent temperature control when you're making a few shots of espresso in a row. Bigger physical unit size.

2-in-1 (Espresso machine with grinder)

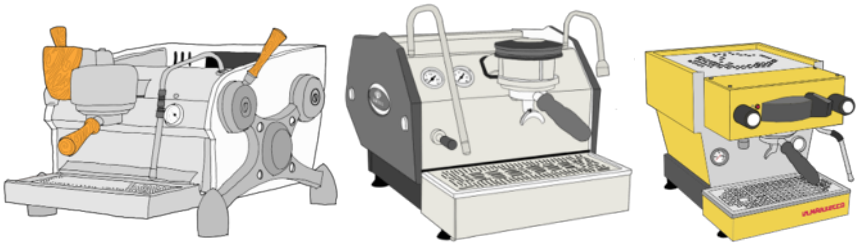
This type of machine depends on whether the manufacturer made it a single boiler or dual-boiler unit.

The 2-in-1 machine is popular with many consumers because it seems like a great deal. You'll save the cost of purchasing a separate grinder. But from my perspective, it has a few drawbacks.

Drawbacks of the grinder in a 2-in-1:

The grinder has minimal settings. I've seen some that have only 10-15 grind size settings compared with dedicated espresso grinders that have 40–60 settings, from coarse to fine. And there are grinders with infinite settings. Bear in mind, the espresso brewing method is hypersensitive about grind size.

When the machine is warmed up or hot, it will heat the grinder and its burrs as well. This will affect the burrs' grind size. Also, the heat can produce an oil buildup, because coffee beans are very heat sensitive. This oil buildup could also affect the bean flavor and grind size over time.



Dual boiler

This type of machine offers two boilers – one dedicated to boiling for steam and hot water, and another dedicated only to the group head, for making coffee.

The images above show mid- to high-end home espresso machines.

The specifications of these machines are suitable for small cafés and events. They're able to cope with making a larger quantity of coffee in a short period. And, depending on the model and brand, some have a very consistent, stable brew temperature. This is largely why espresso machine manufacturers invented dual-boiler machines.

Some have PID control (Proportional Integral Derivative), which means you can increase or decrease the brew temperature and you can also monitor the temperature.

Also, some machines have a pre-infusion function. They’re able to go up to 3–6 bars of pressure in the group head to penetrate the coffee puck for a desired time (in seconds). This will soak up the puck before hitting up to 9 bars for the full espresso extraction and a better, evenly extracted, tasty shot.

The dual-boiler espresso machine

Pros: Smooth operation (depending on the brand and model), stability of brew temperature with more controllable pressure and temperature.

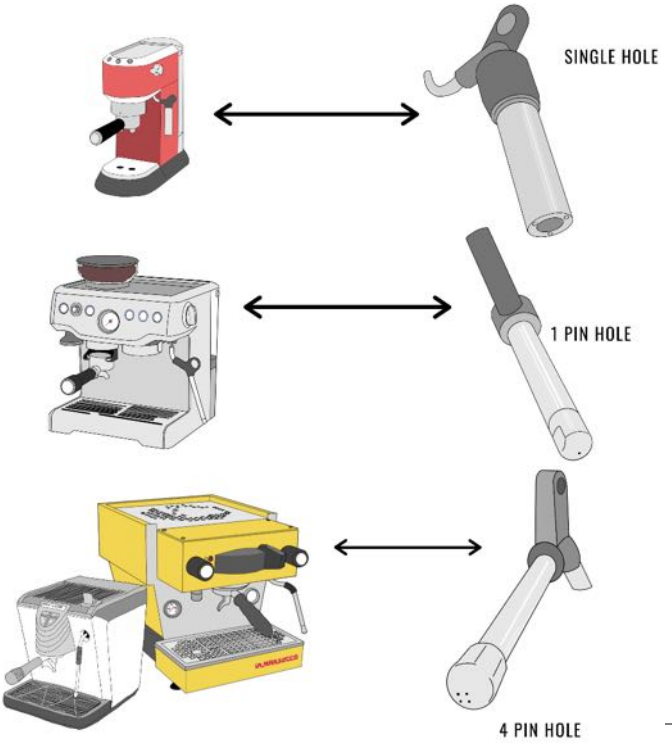
Cons: Not budget-friendly, heavy, not mobile, not so space-friendly.

A Decent perspective

The Decent Espresso machine uses two heaters, one for steam, to produce instant steam, and one for temperature accurate water for espresso. The advantage of this approach is a faster warmup time, and lower energy use. It doesn't have a boiler!

Espresso machine: which type of steam wand works best?

When we talk about the steam wand, we usually discuss two things: steam pressure and tip.



1. **Steam pressure.** Some espresso machines can adjust steam pressure from 0.5 bars up until 2 bars. Not all machines have this feature; most of the mid to low-end home machines usually provide 1 bar or less.

   Higher pressures will raise the temperature quicker. We don't measure milk texturing by time, but by temperature: ideally 55 °C – 60 °C. But if the pressure gets too low, it could create loads of bubbles in the milk. We need microfoam, not visible bubbles. It will also affect the taste of the milk.

   From my experience, the pressure should be 1 to 1.3 bars for 6oz of milk coffee. If you have a larger quantity of milk, it may require higher pressure to swirl and stretch the milk.

2. **Types of tip.** There are tips with 1, 2, 3, or 4 pinholes, but some machines are equipped with a single big hole. This won't work for microfoam unless some new technology is developed.

   I've tried all of these. The only type that doesn't work is the single, big-hole steam wand tip. The pinhole's diameter, ranging from 1mm to 1.5mm, also has an effect on the end result. Usually, an experienced barista chooses the smallest diameter because it's able to produce thinner steam, which leads to silkier textured milk.

A Decent perspective

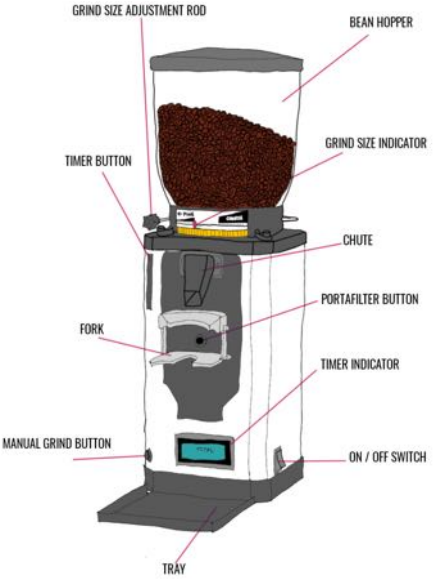
Decent uses either a single small hole (0.8mm) or 3 holes, depending on the model, and goes to higher pressures (typically 2 to 3 bar) than boilers do. We think the higher pressures create finer milk bubbles.

ESPRESSO GRINDER ANATOMY

Even Google couldn't help me find some of the names of the parts below. So again, I have to admit that I've made up some of these names. As baristas, we were never formally taught the names. We would usually call something "button".

I made up these names so that it's easier for you to understand when I mention them in this book.

Also, note that most of the grinders have either a toggle or digital adjustment for their grind-size adjustor, and for the next illustration, the model uses an adjustment rod.



Grind size adjustment rod: Rotate to adjust the grind size from coarse to fine.

Timer button: Tap to adjust the grinding time for dosage.

Fork: Holds the portafilter while waiting to grind.

Manual grind button: Tap and hold to grind manually. Let go to stop grinding.

Tray: Catches coffee grounds.

On/off switch: Turn the grinder on or off.

Timer indicator: Displays the timer setting and current configuration.

Portafilter button: After setting the timer, push and hold this button to initiate grinding.

Chute: Output of coffee grounds.

Grind size indicator: This indicates the grind setting when you adjust the grind size with the rod. Easy to remember and note down in your recipe book.

Bean hopper: The coffee bean container attached to the grinder.

Introduction to Espresso Grinders

Just like with espresso machines, the coffee-making world offers a variety of grinders. Some were designed for pour-over coffee methods like Hario V60, Syphon, Kalita Wave, Aeropress, etc. The pour-over brewing method uses hot water, but it doesn't use pressure to brew coffee — unlike the espresso brewing method, which requires both heat and pressure to extract coffee.

In the culinary world, different cooking pans are designed for different cooking methods. You're advised not to use a Chinese frying wok to sear a steak, for instance. Yes, you could do it, but it's not going to give you the best result.

Hence, there are types of grinders for:

- Pour-over coffee
- Espresso

Occasionally, I get pictures and questions from people who ask me if their spice grinder works for espresso. The short answer is “no,” because it's meant for spice grinding, not coffee (especially for espresso). It actually cuts, not grinds, coffee beans. The main reason it's not suitable is due to grind size: it’s not consistent and it’s not fine enough for espresso, which requires a grind size that's almost like flour.

What happens if the grind size is coarse like sand? The espresso will flow out like diarrhoea. The taste will be sour or tasteless, and you'll have difficulty making latte art with such watery espresso. Finding the right grind size for your beans is called “calibration,” which we’ll cover later.

Spice grinder

To make it clear, I have nothing against spice grinders. I simply want to advise you to use a spice grinder to grind spices, not coffee.

Hand grinder

Below is a hand grinder from a Japanese brand.

This can make delicious espresso, but the downside is that it consumes time and energy to grind (for example, 20g takes around 5 minutes). Espresso is very sensitive to correct grind size, so if it's incorrect, the espresso will flow out too quickly (tastes sour) or flow out too slowly (tastes bitter and burnt). Then you'll have to grind again. It can be demoralizing to spend so much time and energy on repetitive tasks.

You can find high-end hand grinders that are quicker and easier to use with a consistent grind size. I will agree that you won't feel that it takes a lot of energy when you only make one cup of coffee at a time. But if you have a number of guests to serve, you'll think otherwise.

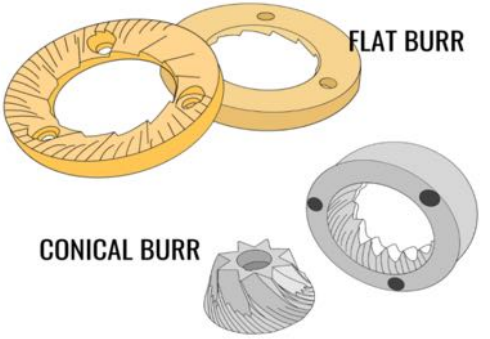
Feature differentiation in grinders

In general, there are two types of espresso grinders and within these two types there are:

- **Step adjustment**
- **Step-less adjustment**

And divided by,

- **Conical burr grinder**
- **Flat burr grinder**



What are “step” and “stepless" adjustment grinders?

What’s a step adjustment grinder?

Step is a traditional grinder with adjustments that are just like stairs. Each step takes you higher or lower. There’s no in-between.

I've experienced some frustration with step grinders when I try to calibrate the grind size. It was either too fine or too coarse.

What's a stepless adjustment grinder?

This enables you to adjust the grind size in-between two sizes. For example, you can make very minor tweaks in millimeters on some grinders.

Conical burr grinder (home use)

Everything has its benefits and drawbacks. It all depends on what suits you. There's no perfect grinder in the world that suits every barista.

I've illustrated some conical burr grinders for home use. The first conical grinder has very minimal coffee retention because there's no grinder chute in the design.

The conical burr grinder

Pros: Very fast grinding performance, light, easy to maintain.

Cons: Not designed for heavy-duty use because the conical burr design is thick, and it's in a conical shape, which tends to build up heat quickly.

Conical Home Grinder

Flat burr grinder (home use)

This is the most commonly used burr type grinder commercially, and even for some serious home users. This has more effective grinding capabilities and lower noise pollution, and some manufacturers claim that flat burrs have higher consistency.

There are usually two types of flat burr grinders:

- **On-demand grinder**
- **Doser grinder**

On-demand grinders

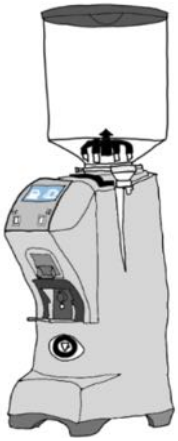
Below are various types of on-demand flat burr grinders. Fast, efficient and seamless, the 75mm burr size is meant for high-quantity commercial usage with a not-so-friendly price tag. The 64mm is considered fairly economical, and it's an entry-point model for a commercial flat burr grinder. The 55mm burr size is for home use – the most stripped down, basic and budget-friendly grinder.

On-demand grinder:

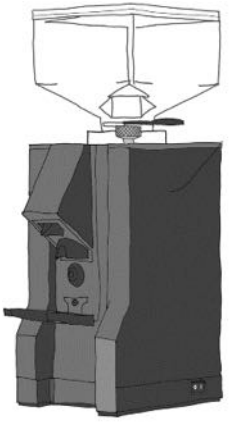
Pros: Quick cooling effect with the flat diameter and thin design compared with the conical burr grinder.

Cons: Slightly slower grinding compared to conical.

On-demand commercial grinder



On-demand home grinder



Doser grinder

In recent years, manufacturers have produced fewer doser-type grinders for their new releases.

Usually, this type of grinder is practical during high-traffic periods in the café. For newbie baristas (especially if you forgot to tare the weight of your portafilter), you can just dump your coffee grounds back into the doser box and weight tare, then restart the dose of coffee grounds back into your portafilter. You can even redo your uneven tamping.

Of course, you can perform the above actions with an on-demand grinder by pouring out the coffee grounds into a bowl or container and carefully spooning it back into the portafilter, but it takes patience and more time to transfer compared to the doser grinder.

Doser grinder:

Pros: Standby grind for your next pull of espresso shots.

Cons: Lower precision of dosage due to the many parts within the doser box that can trap coffee grounds.

Commercial doser grinder

Conclusion

Are you on a budget?

Get a conical burr grinder or a small diameter flat burr grinder.

Are consistent grind size and precision your concern?

Get a 64mm or 75mm flat burr grinder.

You can't afford either?

Get a hand grinder (not spice grinder) for making espresso, if you need it badly.

Items for coffee bar

Now that you have some idea of which machines to get, here are a few more accessories to have on your coffee bar.

1. **Espresso machine:** Makes espresso and steam milk.

2. **Espresso grinder:** Grinds coffee beans into coffee grounds.

3. **Dosing cup**: enables the barista to keep precisely measured grounds for each shot before putting them into the portafilter basket.

4. **Tamper:** Compresses the coffee grounds evenly in the portafilter. Tampers with a self-leveling feature are easier for new baristas to use.

5. **Tamping cradle (optional):** Prevents slipping during tamping procedure. I often use a cloth on my bar to tamp.

6. **Coffee scale:** Weighs the coffee dose to make a precise espresso recipe. Get a 0.1g accurate scale.

7. **Teaspoon:** Dose off extra coffee grounds (even if it's just an extra 0.1gm) and stir the shot before you taste it.

8. **Cloths:** For table cleaning, drying the portafilter and wiping milk stains off the steam wand. Each cloth should have a dedicated purpose.

9. **Coffee cup:** For making and drinking coffee.

10. **Milk pitcher:** Holds fresh milk to steam and pour to make latte art.

11. **Puck rake (optional):** Stirs and distributes the coffee grounds evenly before proceeding to tamp.

12. **Coffee beans and rubber sealed container:** A container with a rubber seal keeps coffee beans fresher for longer.

13. **Portafilter funnel**: Sits on top of your portafilter basket while you grind your beans, to prevent them from spilling.

14. **Digital milk thermometer:** Measures the temperature of your milk while you're frothing it with the steam wand.

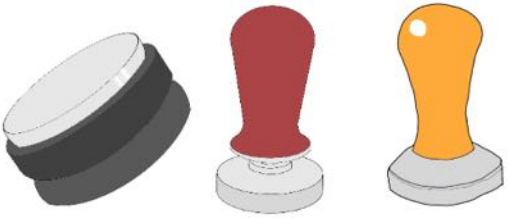
The choice is yours

As I mentioned earlier, I'm not writing this for personal gain, to promote products or brands, or to defame other products. The choice is entirely yours. As I write this book, many innovative manufacturers are producing awesome new grinders, new espresso machines or new instruments with new technologies to make coffee even better.

If I've missed out any new technologies or products, I do hope you understand.

Instruments you should know about

Tampers



Shown above are a few types of general tampers you'll see in the market. Please note there are a few different sizes of tampers, but the most commonly used in a commercial group head size would be 58mm.

Some home machines are 51–55mm. What I would recommend is around 58mm, as you'll be able to find accessories by third-party manufacturers that match this size. It's very important to have a well-fitting tamper for your basket, because this will affect your extraction result.

Handle-less tamper (left): easy to tamp and lower the risk of wrist ache.

Calibrated pressure tamper (middle): for newbies who prefer peace of mind for pressure-tamping issues.

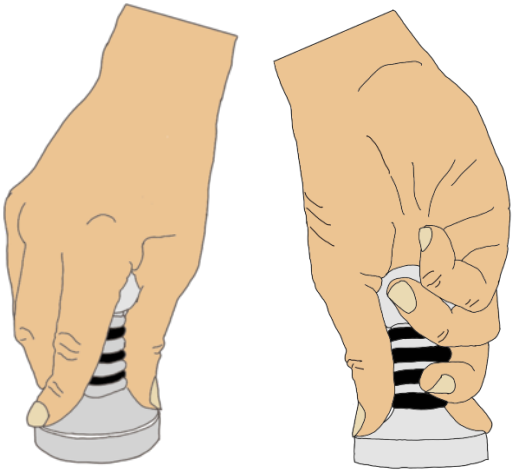
Traditional tamper (right): Old-school tamper. It's the most-commonly used and most preferred by overall users. For beginners, I strongly suggest that you start practicing your tamping techniques with this.

Because everyone has a different preference, you should try each one to see which type fits you. There's not a tamper that suits all users, nor should anyone use only a dedicated model. The fun in coffee making is in trying different tools or accessories to create different results.

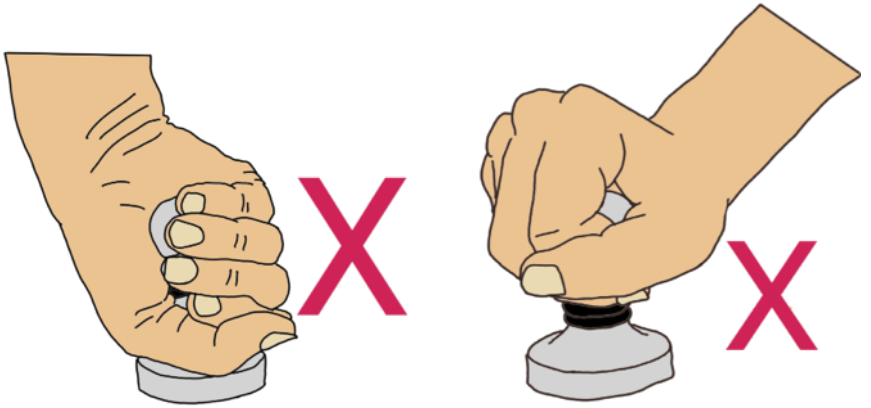
A Decent perspective

Decent Espresso produced a range of calibrated 58.5mm tampers with Wiedemann in Germany. Take a look at our wood-handled tampers.

How to hold a traditional tamper

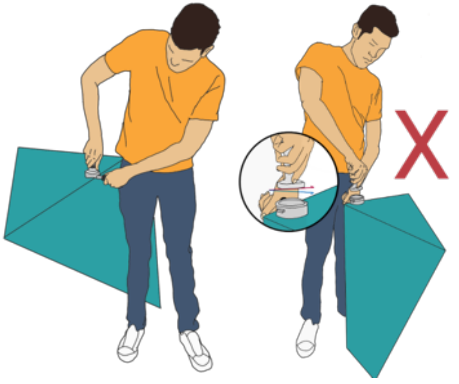


There are many ways to hold a tamper. One of them is shown above – the front view and back view of the same way of holding a tamper. Most importantly, your grip should be firm and comfortable, and you should keep your wrist straight.



Shown above are some *wrong* ways to hold a tamper. These will not create a straightened wrist. When you apply force, you'll bend your wrist and get wrist ache over time.

Tamping posture



Shown above are the correct posture and incorrect posture.

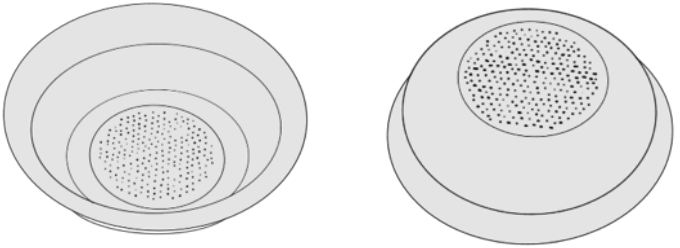
Correct posture (left): Notice that the wrist is straight. This will prevent you from getting wrist ache in the long run. Use the strength from your wrist and arm, but not from your whole body.

Incorrect posture (right): If you tamp facing forward, you'll bend your wrist and risk suffering wrist ache in the long run. Also, there's a higher chance of uneven tamping if your wrist isn't straight.

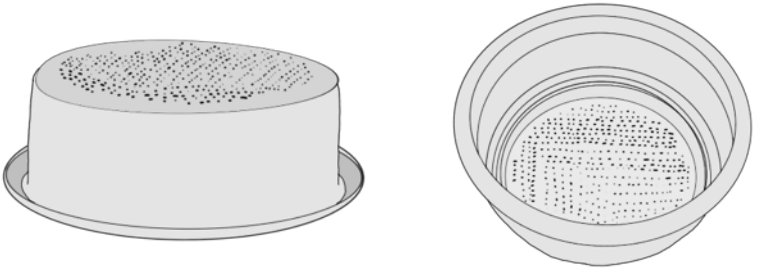
How much pressure is required to tamp?

"25-30 pounds? What?" I've found it very funny that when people ask me specifically how much pressure and I've answered "25 pounds." But in return, they give me a surprised look. The simple answer is to tamp enough with your wrist until your coffee puck won't tamp down any further. Some baristas might advise you to practice tamping on a bathroom scale to check on your tamping pressure. Or, use a calibrated tamper and it adjusts the pressure for you.

Baskets for portafilter



The picture above shows a **single-shot basket** (top and bottom view). Some manufacturers call this a 7g basket. But that doesn't mean this basket is limited to a maximum of 7g of grounds. I've tried 12g of coffee grounds and it's still able to fit; it depends on your grind size. Note that the shape is more tapered compared to other sizes, and the mesh is smaller. This makes it more challenging to tamp.



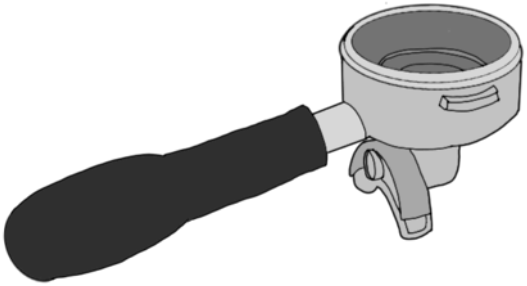
Above are illustrations of **double-shot baskets**. Some call them 14g and 18g baskets as well. This size is deeper and the mesh is wider in diameter. These baskets are easier to fit more grounds than their stated capacity (21g into an 18g basket, for example)

A Decent perspective

At Decent Espresso, we offer a range of waisted, ridged, and ridgeless baskets for different purposes. Learn more about the benefits of each one.

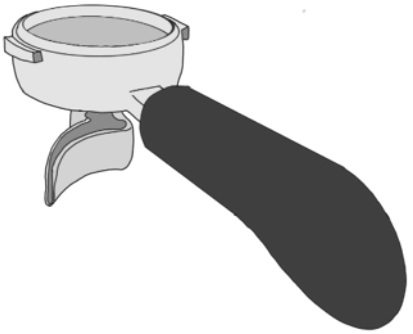
Portafilters

Portafilter types



Above is a **double-spout portafilter**. It's able to split the shot into two cups by placing the cups underneath it, side by side. But this type of portafilter doesn't let you watch the extraction process — the spout blocks the internal view. Every shot drips cleanly into your cup, even if there's any channelling during extraction.

Above is a **bottomless portafilter**, which some call a **naked portafilter**. You can view the extraction process as coffee flows out, and the barista can tell if he needs to redo the shot if it's channelling and spills everywhere. But this portafilter isn’t able to split the shot into two cups.



A **single-spout portafilter** doesn't mean it's only for a single shot. You can fit this with any basket. So for me, this single spout is special. I often use this with a blind filter or single-shot basket.

A Decent perspective

At Decent, you can design your own portafilter and customize the handle and spout for your own needs.

WHAT IS ESPRESSO?

Espresso 101

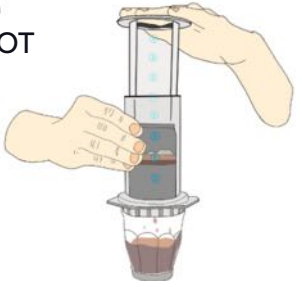
ESPRESSO

FRENCH PRESS

CHEMEX

MOKA POT

HARIO V60



AEROPRESS

When you're in Third Wave cafés, you'll see many brewing methods in their beverage menu. The previous illustrations are just a few examples of what I think are popular brewing methods.

Espresso is one of the ways baristas brew coffee. In layperson terms, it's one of the ways they *cook* the coffee. It's not about specific coffee beans, not about roasting profile, but it's about how you make your coffee. And concentrated coffee drinks like espresso also give you canvas to make latte art.

Espresso is traditionally brewed with an espresso machine, but recently, technology has enabled manufacturers to offer ways of making espresso without a machine. All the user has to do is to add hot water and manually press the hot water into the coffee puck to extract coffee that's very similar to an espresso.

Other notable brewing methods — which are not illustrated — are siphon (vacuum) coffee, percolator coffee, Kalita Wave paper filter coffee, cold brew and more.

I strongly advise you to explore further, so you can add to your experience and appreciation of coffee even more.

What is First, Second, and Third wave coffee?

First wave: When Italians brought espresso to the rest of the world

Second wave: When coffee chains (such as Starbucks) brought espresso drinks (especially American style milky drinks) to the world.

Third wave: When quality-oriented (and often fair-trade oriented) independent coffee shops brought espresso and stronger milky drinks to the world. Often associated with Australia, Nordic and American trends.

Barista jargon for recipes

Coffee dose: the coffee grounds in your portafilter basket.

Extraction Yield: the coffee liquid that ends up in your cup.

Extraction time: the time that water is flowing onto the coffee bed until you stop the extraction – that duration is the extraction time.

Brew ratio: the ratio between coffee grounds into the group head and output of coffee liquid. For example, if the brew ratio is 1:2, then it would be 18gm of coffee grounds and 36gm of coffee liquid, 20gm of coffee grounds and 40gm of coffee liquid or 10gm coffee ground and 20gm of coffee liquid. The ratio is an indication of the quantitative relation between the two amounts.

Single-origin coffee beans: coffee beans produced from one farm and one country; non-blended coffee beans.

Blended coffee beans: a mixture of coffee beans from a few farms or countries.

Channelling: When water finds gaps or weak spots in a coffee puck (which could be caused by uneven tamping) and then pours through those gaps instead of saturating the whole coffee puck, creating an uneven extraction that negatively impacts flavour.

Blind filter basket: A type of basket without any holes. It's used to clean the espresso group head.

Questions

How do I measure the yield output and dose input?

You need an accurate coffee scale that's accurate within 0.1 grams to weigh the input and output. Tare your empty portafilter and tare with your empty coffee cup on the scale first before you start to grind and weigh the dosage. Also, weigh your output with a cup on the scale during extraction.

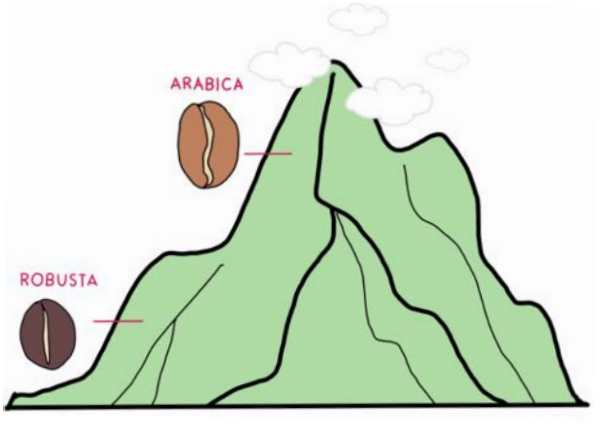
Why do you call it "black shot" instead of espresso or ristretto?

Black shot is the name I've used for both ristretto and espresso. Sometimes, you might see this name in a coffee menu, which means they serve both.

How do I get the right extraction time? The flow of my shot is always either too fast or too slow.

This is why calibration skills are important. Grind size plays a very important role in the taste of your espresso shot. Let's move on for my detailed explanation.

Arabica and Robusta



For this book, I use only Arabica coffee beans to make coffee, but many people don't know the difference between these types of beans. So allow me to explain.

First, let's summarise the differences between Arabica and Robusta:

	Arabica	Robusta
Country of origin	Ethiopia	Congo
Growing temperature	15°C-25°C	20°C-30°C
Growing altitude	900m-2000m above sea level (on mountain side)	0-900m (on flat ground)
Taste	sweet, aromatic, bright and many more tasting notes	harsh, bitter, nutty
Caffeine content	0.8%-1.5%	1.7-3.5%
Pest infestation	low resistance	high resistance
Consumption	cafes, instant coffee, restaurants	A majority of the production is for instant coffee, local traditional coffee shops, etc.

Not all arabica beans are superior quality

Arabica coffee beans — like many other products — range in quality from cheap to expensive. It's not all the same quality, just because it's Arabica. That's one reason why a certain fast-food chain starting with "M", a chain of coffee shops starting with "S" and famous indie cafés all serve Arabica coffee.

The coffee industry has Q-graders to conduct quality checks and give out scores for quality.

What are Q graders?

According to the Coffee Quality Institute, "Certified Q(uality) Graders are professionals skilled in sensory evaluation of green coffee, and are employed throughout the industry."

Some coffee farmers sell beans at a lower price range without placing much effort on quality to cater to low-end commercial markets

No matter how good the quality of coffee beans, it needs a good process, a skillful coffee roaster and a skillful barista to produce delicious coffee. From a barista's perspective, the term "Arabica" alone doesn't necessarily mean "good."

But to a coffee corporation, the words "premium" and "Arabica" are useful marketing terms to sell to a mass audience (patrons with minimal coffee knowledge) because most people perceive Arabica as "premium."

Can we make an espresso shot with Robusta beans?

Of course you can. But you might find that the taste of Robusta is harsh, burnt and bitter. General acceptance is low, because traditionally, Robusta gets roasted to a charcoal dark shade (beans covered with shiny grease). And the main reason for this roast is because Robusta has a grassy-tasting note if it's roasted into medium-dark and lighter colour shades.

Robusta is very effective at creating crema, which many people associate with freshness and quality. This is another reason why some people use Robusta.

That's why instant coffee sachets are usually packed with sugar (3-in-1 or 2-in-1 instant coffees), and local coffee (Malaysian Kopi O, Kopi Ais, Vietnamese drip coffee and more) also get paired with sugar or condensed milk – because of the bitter taste.

Also some dark-roasted Italian espresso blends mix a certain portion of Robusta beans (10% - 50%) with Arabica to boost up the bitterness.

Conclusion

Arabica has a range of quality from low to high, and that's why it's the most-used coffee bean worldwide. It’s used by a range of manufacturers, cafés, restaurants, hotels and homes.

In short, I prefer Arabica beans because they offer more varieties and varietals. Also, each origin and varietal has different-tasting notes compared with Robusta’s minimal choices, and I'm not limited by just bitterness or a charcoal taste.

Robusta is mostly used in traditional culture coffee and instant coffee. It’s consumed by a certain range of market, such as neighbourhood coffee shops, street stalls and carts (like in Vietnam and Indonesia), or home users in the form of pre-ground coffee and instant coffee.

Light Roast versus Dark Roast

Taste is a subjective matter. One person might like the acidity of a grapefruit while another will say it's "sour" because the acidity overwhelms their taste buds. Everyone is entitled to their preferences.

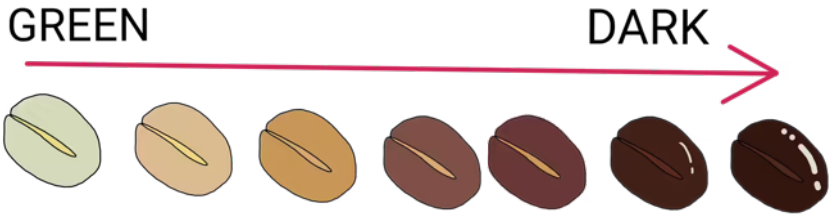
The best way to refine your taste is to cup (taste) coffee together with people who have experience cupping. That way you can taste what they taste and build associations to particular flavors and descriptions. A good roaster or café might run cupping or tasting events, which is a great starting point to learn and describe what you like or don't like.

Start using better-quality beans (fewer defects) and learn from industry professionals what makes a great or bad cup. To learn more about cupping, watch this video from **James Hoffman**.

The colour definition of a light roast up to a dark roast has a wide range of colour shades that qualify as light, medium or dark. Usually, roasters describe their beans by how much time passed between what's known as a "first crack" and a "second crack," before the coffee gets dropped into the cooling tray.

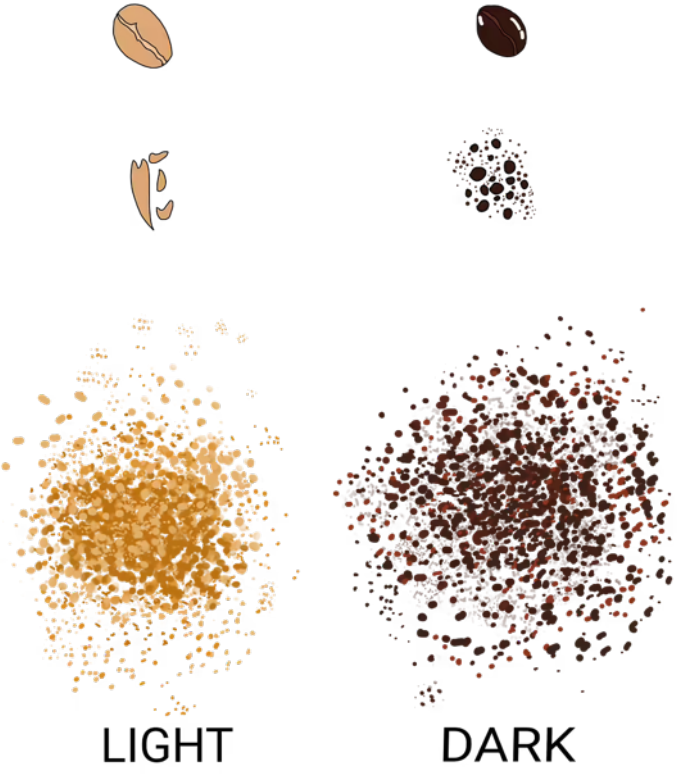
What's a crack? When the coffee beans get hot enough, the remaining water inside of them builds up enough pressure so that they expand rapidly. It's exactly like popcorn popping, and this is the "first crack."

If you continue roasting, the same thing happens again a few minutes later, except this time carbon dioxide escapes from the coffee beans. This is known as the "second crack." A roaster might describe a roast as having been dropped 45 seconds after the first crack starts, or 20 seconds after the second crack ends.In general, the roasting process has two cracks at specific temperatures. The first crack occurs at about 196 degrees Celsius (385 degrees Fahrenheit). If you want a light roast, you might stop roasting before the second crack. And the second crack occurs at about 224 degrees Celsius (435 degrees Fahrenheit). Of course, the longer the roast, the darker the bean.



For a coffee drinker who's not a coffee roaster, an easy comparison is from a darker roast (dark brown or charred brown) to a lighter roast (orangey or yellowish). However, external appearances can be deceiving: there are some roasters who claim they're able to roast a light-coloured outer layer, but after the beans are ground, they become a medium-roast coffee.

So be open-minded and curious, because there are many innovative roasters out there who roast their coffee beans differently.


LIGHT
DARK

The previous illustration shows three parts of a coffee bean's transition: whole roasted beans, cracked beans (assume they're hammered by a pestle), and ground coffee. Shown here is a light-roasted bean versus a darker one.

Notice that the darker roast — after it's ground — has more "fines" on the side in comparison with the light-roast coffee beans. This also means that with darker-roast coffee, it's easier to dissolve the solids because the roasting process is more developed. Therefore, a barista might choose ristretto (1:1 / 1:1.5) as a recipe for dark-roast coffee beans, with less water passing through the coffee puck.

What's a fine?

When some of your coffee comes out of the grinder finer than you intended.

On the left side, the light-roast coffee has fewer fines, because it's roasted for a shorter period of time. And coffee beans grown at a higher altitude will have a higher bean density, which is one of the reasons why roasters choose high-altitude grown coffee beans for a light roast. A lighter roast needs more water to dissolve (more water to flow through the coffee, also known as "extraction"). And usually, a higher brew ratio for light-roast coffee beans, such as an espresso (1:2) or allongé (1:5) shot.

The lighter the better?

There's a lot of hype about light-roast coffee beans, but does that mean lightly roasted coffee must be good? It's more of a personal preference. Metaphorically speaking, it's like steak: some prefer rare, medium, medium-rare or well done.

If you like your coffee to taste clean — with more notes from the coffee varietals — or a specific origin harvest, light roast could be the choice for you.

Traditionally, light-roast coffee beans are geared towards the pour-over brewing method. In recent years, some cafes serve espresso with light-roast coffee. If you like the taste, head to the counter and ask the barista or roaster for their espresso brew recipe (brew temperature, water flow, brew ratio and more), so you can mimic the taste back at home with your DE1.

Pour-over methods, or espresso long-brew ratio (as mentioned before), with a higher brew temperature are good options for a light roast. But there are many new brewing techniques, and new light-roasted coffee bean varietals that might surprise us, so stay curious —that's the key to learning coffee.

Light roast characteristics

Tasting notes: Acidic fruits, berries, florals, and low in the body.

Beans are lighter in color, dry, and high-density, due to its shorter roast development. They're also denser if grown in a higher altitude. Use a coarser grind size than you would for medium or dark-roast coffee.

Dark roast means inferior?

Yes, some dark-roast coffee beans might come from low-quality commercial coffee roasters. You might find some lower-quality, dark-roasted robusta-arabica blends in supermarkets. People who drink specialty coffee might think dark-roast coffees are inferior, but I've tasted a good café latte made from a dark-roast coffee. What a surprise!

Traditionally — in Italy —Italians drink espresso shots made from dark-roast coffee beans with added sugar. In a Third Wave café, the barista might serve a dark roast with milk (such as cappuccino, flat white or latte). This is because the roast often has notes of dark cocoa, licorice, or nuts, plus more body and an intense taste. So it's more likely to be accepted by milk coffee drinkers because this type of milk coffee resembles artisanal cocoa-like beverages. It's a personal preference, whether it's a white coffee or a dark roast espresso shot.

Dark roast characteristics

These roasts often have tasting notes like cocoa, brown spice, and nutty. They're usually low acidity, with a full-bodied taste. The beans are low density due to their longer roasting time.

I suggest making dark-roast coffee in short brew ratios. Now you might ask, “what if I use a longer brew ratio (1:2, 1:3) with dark roast coffee beans?” If the tasting notes are extracted well, this might produce a good coffee. But if over-extracted, the coffee might taste ashy, smoky, rubbery, or earthy.

Dark roasts are usually suitable to pair with milk, but if you like your black coffee as described in the above tasting notes, you should give this a try.

SINGLE ORIGIN
&
BLEND

(COFFEE BEANS)

Single-origin and blended coffee beans

When you walk into a coffee roaster café to buy a bag of coffee beans, the barista may ask you some questions to recommend suitable beans, like:

> "Single-origin or blend – which do you prefer?

And you might think, "What on earth is he talking about...?"

Let's discuss the difference between SINGLE-ORIGIN and BLEND in general, and the purpose of both.

Blended coffee beans

This is a combination of coffee beans from a few countries, a few regions, or a mixture of two types of beans (Arabica + Robusta). The illustration shows a combination of a few countries (100% Arabica).

What's the purpose of blended beans?

Blended coffee beans were invented by Italians. They were mainly designed for the espresso method, because blended beans were more consistent in producing a simple yet diverse taste for patrons. It's usually thick, intense and chocolatey, but I've tasted some bright and acidic blends as well.

The blended beans method also allowed some roasters to increase their margin by sneaking in lower-cost beans. While some roasters added a percentage of Robusta to cater to the budget market, other hearty roasters designed a blend for taste diversity as well.

Single-origin coffee beans

These are coffee beans from one farm, one country. Usually, single-origin coffee has a higher price tag, because roasters usually choose higher-quality coffee beans for single-origin. This is because single-origin coffee is like being totally naked in a taste perspective – sensitive taste buds can detect roasting errors in single-origin coffee.

Coffee enthusiasts mostly appreciate a good quality single-origin coffee in black (espresso/pour-over/long black and more). But I've also tried Bali Kintamani, Indonesian beans that pair well with milk. Therefore, an ethical coffee roaster would put much effort into roasting and choosing better quality beans.

Also, I tried a low-quality single-origin coffee that I bought for a low price. Needless to say, it was bad.

Conclusion

Single-origin or blend, this will depend on whether you choose a reputable coffee roaster and how you brew the beans. Let me summarise this.

Blend

Simple and common in general, mostly full-body, most blends designed for milk coffee (cappuccino/cafe latte/flat white, etc.) or if you like intense black coffee.

Single-origin

Single-origin beans have higher price tags compared to blends, due to their higher quality. Therefore most coffee enthusiasts would drink this black.

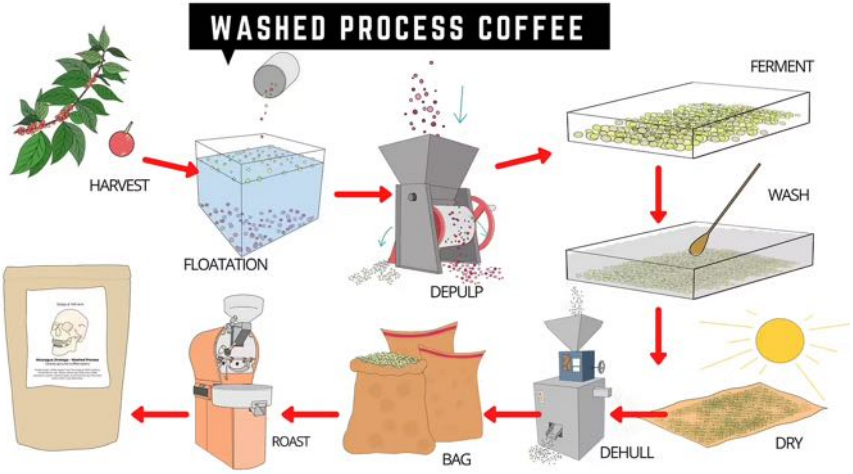
I learned what I shared here through my personal experience. However, the world is moving faster than we can adapt. So my advice is, stay curious and keep an open mind. There's always something unexpected that might surprise you.

Coffee Processing: Washed, Natural & Honey

When you pick up a bag of single-origin beans, usually the first thing you'll read is the roasting date on the label. Occasionally you'll also see a statement like "Washed process," "Natural process" or "Honey process."

So what does that mean? Natural, honey, or washed are the general methods of the coffee process. The word "process" does not necessarily mean chemically processed as in "processed food." In this context, it defines the methods of removing the coffee cherry fruits from the coffee seeds (coffee beans), and what happens between the harvest and packaging until it's ready to roast.

First, let me show you the typical "washed" process, although some farmers have slightly different practices in other regions or farms.



Washed process coffee

The washed process is the most-commonly used in the coffee-production industry. Some also refer to it as “wet process” or “fully washed,” because the beans go through floatation and washing processes.

Let me explain the steps.

Harvest:

The farmers pick and harvest the coffee beans, usually selecting ripe cherries: red or orange.

Floatation:

The farmer dumps all the harvested cherries into a pool of water. Those floating on top are considered defective or not ripe, and they're removed. Then the farmer collects those from the bottom for further processing.

Depulp (remove pulp):

The coffee cherries go into a depulping machine to remove the skin (pulp) before proceeding to fermentation.

Ferment:

After depulping, the seeds are sticky (with mucilage). Usually the seeds are left in an empty tank to ferment overnight, so the mucilage will be easier to wash off during the next stage.

It's worth mentioning that some farmers or producers ferment coffee beans in a water tank.

Wash (remove mucilage):

This is the main reason why the process is called “washed”, because farmers will agitate the seeds in water with a wooden tool to remove the mucilage. They usually wash them three times, then proceed to sort or remove out the defective seeds.

Dry:

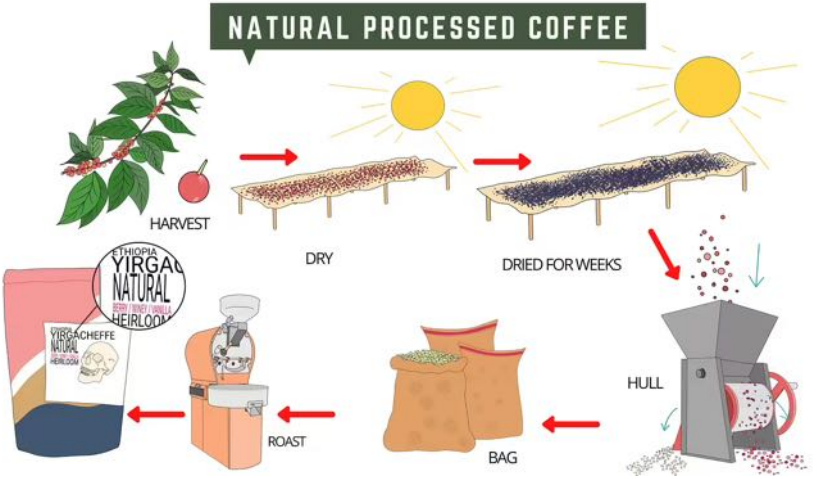
The seeds get spread on a flat, outdoor surface with a breathable mesh. Then farmers dry them in the sun for 1 – 2 weeks, until the moisture is around 11%.

Dehull (remove parchment):

The beans will go into a huller machine to remove the parchment before putting the seeds into coffee sacks.

Washed coffee taste characteristics:

Clarity, clean and bright. If you're looking for the taste of single origin, washed processed coffee is a great choice.



Natural processed coffee

This is also known as sun-dried or dry-processed coffee. The concept comes from nature itself, where the fruit drops from trees and dries itself. This processing method is the oldest way to process coffee.

This “natural” process is specific to suitable climates in countries like Ethiopia, Burundi, Panama and Costa Rica, which are sunny, warm, and dry. Otherwise, the cherries are at risk of molding. In some of these areas, farmers would have difficulty accessing water for processing.

Harvest:

Farmers pick the ripe cherries, then sort out the defective or not-ripe cherries.

Dry:

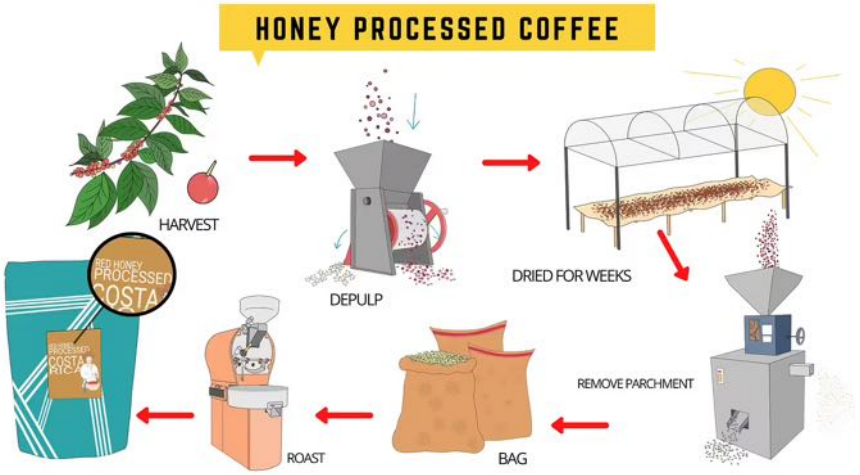
The coffee producers lay out the cherries on the a raised outdoor surface with breathable mesh. They need to pay constant attention to the drying bed and rake the cherries often to prevent the cherries from getting too wet (which would cause mold) or too dry (which will make them brittle). This process takes approximately 3 – 4 weeks, until the moisture is around 11%.

Hull (remove fruit and parchment):

The cherries get dumped into a hulling machine to remove fruit and parchment, before proceeding to bagging.

Natural processed coffee taste characteristics:

With the cherry infused taste in the seeds, it will have distinctive notes such as berries, nectarine, winey and boozy. In general, natural processed coffee has a fruitier and sweeter taste.



Honey processed coffee

No! Honey? It’s not what you think it is. “Honey” refers to the coffee beans' stickiness during the fermentation process, which is caused by the coffee cherry and mucilage.

Often, it’s labeled in different colors: white, yellow, red, and black honey. This process is popular in countries such as Costa Rica and El Salvador.

Also some farmers might name this honey process differently, such as "semi washed” or "pulped natural,” but in essence, the process is similar.

Let's go through the process.

Harvest

Depulp:

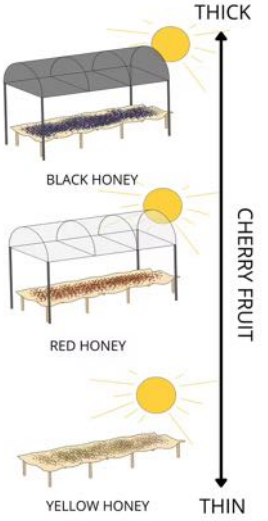
Usually, the cherries will get depulped within 8 – 12 hours after harvesting. After sorting out the defective or unripe cherries, the remainder gets depulped down to the mucilage layer.

Dry (with mucilage):

Usually, coffee beans with the yellow process will dry under the sun. It depends on the weather—it could take from 2 – 3 weeks to obtain 11% moisture.

For red honey, they'll dry in a greenhouse with less sunlight, and black will need even less sunlight.

The color is defined by the thickness of the coffee cherry (pulp) left on the coffee beans.



Remove parchment:

The producers remove the parchment from the coffee beans before putting them into coffee sacks and shipping them out to roasters.

Honey-processed coffee taste characteristics:

- Yellow is mild fruitiness.
- Red is syrupy, with fruitier tasting notes.
- Black is a winey and boozy, with a creamy texture.

Water Quality

The water you use to make espresso affects the taste of your coffee and the functioning of your machine. Therefore, it's really important to choose the right type of water to:

- Protect our machines from breakdowns and downtime caused by water
- Produce espresso with no "off" flavors.

The coffee industry has focused on using water that minimizes machine maintenance, for example, to minimize any scaling that can build up inside the boiler and internal pipes. This focus on water has come largely from the commercial sector.

The concentration of different substances in the water are usually indicated as parts per million (ppm) and as calcium carbonate (CaCO3) equivalents. These measurements are the best way to compare them and calculate their value. This is why the coffee industry and coffee aficionados will list every single element in their water as “ppm as CaCO3”.

The Specialty Coffee Association (SCA) produces guidelines for water, as follows

- Total alkalinity at or near 40 ppm as CaCO3
- Calcium, ideally at 68 ppm as CaCO3, or in the range of a minimum of 17 and a maximum of 85 ppm as CaCO3
- pH near 7, or between 6.5–7.5
- Sodium at or near 10 mg/L
- Total Dissolved Solids (TDS) at 150 mg/L, or between 75–250 mg/L

In recent years, some coffee aficionados have focused on water that enhances more of the sensory side. For example, increasing the amount of calcium, which enhances the body of the coffee with a creamy mouth feel, or increasing magnesium levels to increase sweetness.

In general, we'll look at the following parameters:

- **General hardness (GH)** is the sum of calcium and magnesium
- **Alkalinity (KH, or carbonate hardness),** which is the amount of carbonate (HCO_3^-) ions
- **TDS (Total Dissolved Solids)**
- **PH**

What most people do is remove the substances they don't want in their water using one of various filters listed below, which we'll explain more in-depth in the following chapters:

Type of Filter		Active Carbon	Ion Exchange	Reverse Osmosis	Remineralization
Removes/Reduces					
Total Suspended Solids (TTS)		✓	✗	✓	✗
Volatile Organic Compounds (VOC)		✓	✗	✓	✗
Heavy Metals		✓	✓	✓	✗
Chlorides (Cl)		✓	✗	✓	✗
Hardness		✗	✓	✓	✗

After filtering the unwanted substances from the water, they can add specific minerals back into the water again to achieve their ideal cup. These additives can be created from recipes mixed at home, or purchased from companies that offer pre-made mixes. The substances can be added both before or after the brew process. However, if you add them after you brew your coffee, it can enhance the mouthfeel of your coffee without negatively impacting your espresso machine.

Types of filtration systems

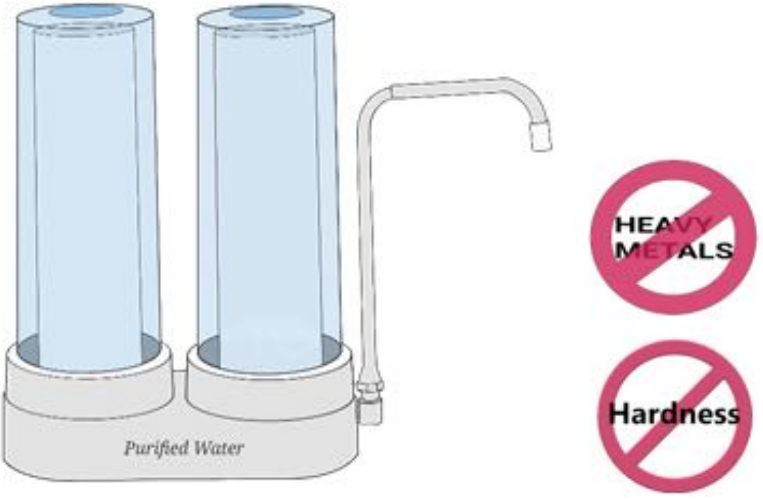
Active carbon filters

Active carbon filters only remove substances. They don't add anything.

Active carbon filters are widely available. They help to remove:

- Total suspended solids (TSS)
- Volatile Organic Compounds (VOCs)
- Heavy metals
- Chlorides

Ion exchange filter



Ion Exchange is a water "softening" process. An ion exchange filter removes hardness ions such as magnesium and calcium from the water, and replaces them with a positively charged ion like sodium that doesn't contribute towards hardness. Hence the name "ion exchange."

Different combinations can be customized to filter or add different elements, depending on your water at the premises.

Ion exchange:

- Reduces the hardness of water
- Selectively removes mineral ions like Calcium (Ca2+), Magnesium (Mg2+) or carbonate hardness (HCO3-)
- Removes heavy metals
- Can release trimethylamine (TMA) into the water, which has an unpleasant, fishy smell

Reverse Osmosis filter

Reverse Osmosis (RO) is filtration using pressure through a semi-permeable filter membrane. It's available for both commercial and home use, and it's the most common way that water is treated in commercial coffee applications. This process removes most of the mineral content from water to reduce its hardness.

Disadvantages of Reverse Osmosis:

It removes almost everything, including components that we may want in our water, like Mg and Ca.

It doesn't effectively remove all chlorides, and therefore needs to be used in conjunction with active carbon filters. These are sometimes built into the RO system itself or added on pre- or post-RO.

It's the most-expensive filtration system to implement and maintain.

It's the **slowest** of all the filtration systems.

After reverse osmosis, the water's TDS (Total Dissolved Solids) will be very close to zero, so you'll need to remineralize it. The ideal TDS is about 150mg/L.

Is your water too hard?

Water hardness can create issues with your espresso machine's performance. To minimize breakdowns and repairs caused by scale formation or corrosion inside the machine, you need to test your water for hardness with a test strip kit or a TDS meter, which you can buy online.

If the test results for your water show calcium levels at more than 68 ppm, you can try one of the recipes listed here to reduce the hardness and increase alkalinity, or buy water or additives that are optimized for espresso making. Of course, you can also remove the calcium using one of the filters.

Scaling will form in your espresso machine if you use water that's got a high level of hardness. The amount of scaling depends on the total hardness versus alkalinity.

Here's why you don't want scaling to build up in your espresso machine:

- Repairs from scaling are not only expensive, they can take time to get repaired or source parts.
- Scale builds up over time, so things may seem OK until the point at which scale buildup becomes severe enough to start affecting the efficiency of heat transfer or begins to clog the valves.

Corrosion is another issue that can affect your espresso machine. It can be caused or accelerated by:

- Low levels of alkalinity (below 40ppm)
- A pH<6 or >8
- High concentrations of chlorides, sulfates or nitrates.

Sensory matters

One thing to consider: how the chemical make-up of water affects the sensory qualities of the cup. For example, General Hardness (GH), or the sum of Calcium and Magnesium in the water, affects the perception of acidity and increases flavor notes in the coffee. Too much general hardness will lead to coffee that tastes "heavy," while too little leads to coffee that tastes "weak."

Furthermore, carbonate hardness (KH), or alkalinity, buffers the acidity in the coffee and helps achieve a balanced cup, which doesn't taste "sour". However, too much carbonate hardness will lead to a coffee that tastes "flat", while too little leads to a coffee that tastes "sharp".

Hence, getting the balance right is tantamount to a good coffee. In the same vein, however, hardness has the downside of leading to scale formation.

So should we maximize aroma and flavor at the cost of some scale formation? Nothing to worry about if we schedule regular descaling into our cleaning maintenance. This is typically done with a mixture of water and citric acid.

Because we'll eventually consume this water, we should also consider what to remove from it to keep it hygienic and to ensure we don't get unwanted flavors in our cup.

An example of this can be from tap water. Water supply companies will often add chlorine or chloramines to eliminate any pathogens in the water.

- Chloride compounds and other organic materials can be removed with an active carbon filter.
- Heavy metals like iron and other compounds like fluoride can be removed with an ion exchange filter or RO.
- These filters will often be used in various combinations to achieve suitable water for espresso.

Higher general hardness directly affects the extraction rate. It's been shown in lab testing (Hendon et al., 2014) to significantly impact the aroma and flavor. The acidity in the cup is influenced by the alkalinity — higher alkalinity will reduce acidity in the cup.

Pre-made mixes

If mixing your own water sounds like too much effort, there are some companies that supply premix powders that you just add to your distilled water. One of them is called "**Third Wave Water,**" and they offer a few options. I recommend getting the one designed for espresso. It's worth mentioning that this mix is rather potent, so that the majority of users prefer using it at half strength.

Another premix is a product called **"Aquacode."** It's more expensive, but it's made with natural products.

For more options, we recommend the following video by **James Hoffman,** in which he compares several different brands using light, medium and dark roasted coffee.

Choosing a water recipe to mix

We recommend that you buy mineral water that's low in calcium like Volvic, or use distilled or deionized water and mix in your own minerals.

There are many variations of water recipes that got updated over the years or which are more specialized towards brew coffee or espresso. This is why I recommend checking for the recipes on the respective sites on the internet. For example, Scott Rao and SCA provide two different and slightly similar recipes that changed slightly over time. Also, if you feel very confident making your own water recipes, you can check out the following **Google sheet** in which you can calculate the amounts you need of each substance to make your own concentrates.

I suggest that you use the SCA water guidelines as a reference for when you start to customize your water IF you feel you need to. This would involve buying testing kits to accurately read the composition of the formulated brew water and a period of trial and error while you experiment with what you like.

Note: When you mix from a recipe, start with bottled, distilled, or deionized water so that you don't need to filter it before re-mineralizing.

Ingredients needed for the following recipes

These are available from the supermarket, your local health store or online. Some supermarkets even have special Distilled/RO water dispensers, where you can fill your own containers. These stations are helpful because we can save on disposable plastic bottles and bring our own container. Just be sure to check if it's been re-mineralized or not.

Recipe: Mixing your own

Ingredients and tools:

- Water
- Bicarbonate Soda NaHCO3
- Epsom Salts, also known as Magnesium Sulphate (MgSO4)
- Distilled/ Deionized / RO Water
- Glass mason jars (>500ml)
- Scale measuring to 0.01g

Below are the mixtures for the concentrate solution that you will dilute to produce your brew water. They're based on some water recipes you can find on **Barista Hustle**.

In the first recipe, we'll make a total of **250ml of concentrate at 2000ppm**. Depending on how much brew water you use, you might only need to do this 1-2 times a month.

Buffer concentrate

- 0.84g of Bicarbonate soda
- 250ml of water

Magnesium concentrate

- 1.23g of Epsom salts
- 250ml of water

Please note that these are intended to be kept as two separate concentrates. To prevent them from spoiling or creating unwanted flavors, avoid using a metal or plastic container. Use glass mason jars, which you can store in a fridge.

Label the jars with the recipe and the date it was made.

When you add the minerals to the water:

- It will turn cloudy white.
- CO2 will be degassed from the solution (effervescence)
- You might see solid particles at the bottom.
- You can stir the solution with a sterile implement to quicken the process of degassing.
- Place a lid on the jar and store it in the fridge until needed.

If you smell a “damp” odor from your concentrate DON’T USE IT, because this damp flavor will carry over into your coffee. Make a new batch of concentrate.

> Tip: Remember to wash your hands and take the concentrate out with a sterile spoon/pipette/syringe to ensure that it stays fresh longer.

For any actual *recipe*, the amount of water is calculated by the following equation:

1000 - (Buffer concentrate + Mg concentrate) = water needed for recipe.

We highly recommend watching the following **DYI water for coffee guide** before you go out and make your own water mix.

With these recipes, you add concentrate to your brew water, meaning **before you brew**. The buffer concentrate increases alkalinity, so you use it if your coffees have a tendency to taste too sour. You use the magnesium concentrate for sweeter coffee with more mouthfeel. It increases the general hardness of the water. Note that you don't add the entire solution, you add **the concentrates in tablespoons** before you brew (and then taste).

Espresso water for pre-brew addition

You can use the concentrates created now and add them to your brew water. Depending on your roast and beans, different ratios work best.

All-purpose water for espresso, straight shots or milk drinks

(20ppm GH, 60ppm KH)

This water has more KH than GH, which helps to avoid the all-too-common sourness in espresso, and a moderate amount of GH, which helps the shot not be too heavy or overwhelming when drunk straight.

- 10g Magnesium concentrate
- 30g Buffer concentrate
- 960g water

Bold and punchy espresso water for darker roasts or milk drinks

(60ppm GH, 60ppm KH)

The relatively high buffer of this water still helps avoid sourness, but the increased GH makes for a punchier, more intense shot.

- 30g Magnesium concentrate
- 30g Buffer concentrate
- 940g water

Recipes for post-brew addition to coffee

There are also recipes for concentrates that you can add to your coffee **post-brew**. With these, you brew with distilled, deionized, or reverse osmosis water in the DE1, which is ideal for the health of the machine, and then add a certain number of drops of each concentrate to the coffee after it has been brewed.

We distinguish between GH concentrate, which increases hardness and will make your coffee **taste fuller and sweeter**. The other concentrate is the KH concentrate, which will **reduce acidity**.

GH Concentrate:

- 3g Magnesium sulphate (epsom salt)
- 90g distilled/deionized water

KH Concentrate:

- 2g Sodium bicarbonate (baking soda)
- 90g distilled/deionized water

You will need 100ml dropper bottles for these concentrates. And as before, you need to keep them separate. These drops will add different amounts (in ppm) of either GH or KH to your shot, *depending on the volume of your shot*. Since each drop adds a certain amount of each mineral, with larger shots, that amount of minerals is diluted by a greater amount, so each drop adds less ppm in larger shots.

Here is the ppm added per drop across a range of shot sizes:

To make the "Basic Espresso Water" recipe using these drops, you would use the following numbers of drops (for shots in between these sizes, please choose the one closest to your shot size, and adjust by taste as needed):

30g shot:

- 1 drop of GH concentrate
- 3 drops of KH concentrate

45g shot

- 1 drop of GH concentrate
- 4 drops of KH concentrate

60g shot

- 2 drops of GH concentrate
- 6 drops of KH concentrate

Shot size	ppm added per drop
30g	20ppm
45g	15ppm
60g	10ppm

To make the “Bold and Punchy Espresso Water” recipe this way, you would use the following numbers of drops:

30g shot:

- 3 drops of GH concentrate
- 3 drops of KH concentrate

45g shot:

- 4 drops of GH concentrate
- 4 drops of KH concentrate

60g shot:

- 6 drops of GH concentrate
- 6 drops of KH concentrate

Is your coffee still too sour? Add 1 drop of KH concentrate.

Do you need more mouthfeel or acidity? Add 1 drop of GH concentrate.

As you see, this enables us to experiment with the different concentrates and adapt our coffee to our own preferences.

We wish you lots of fun with experimenting!

What is a “shot of black”?

Some specialty cafes might use a name like “shot of black” or “black shot” in their beverage menu, because it consists of a few types of black coffee, espresso, ristretto, lungo or even somewhere in-between. With a generic name, baristas have the freedom to serve the suitable recipe from their coffee beans instead of serving just one of the recipes all the time.

Some cafes have ever-changing coffee beans, sourced from different roasters. So the idea is to serve the appropriate recipes for the coffee beans unless customers request their preference (espresso, ristretto, lungo) from the coffee bar.

In short, to avoid arguments or confusion with enthusiast customers, a “shot of black” could be ristretto, espresso or lungo, and baristas are free to choose suitable recipes for specific coffee beans.

If you’re not familiar with some of these names (espresso, ristretto or lungo), don’t fret. I’ll cover them in the next few pages.

Base for coffee or latte art

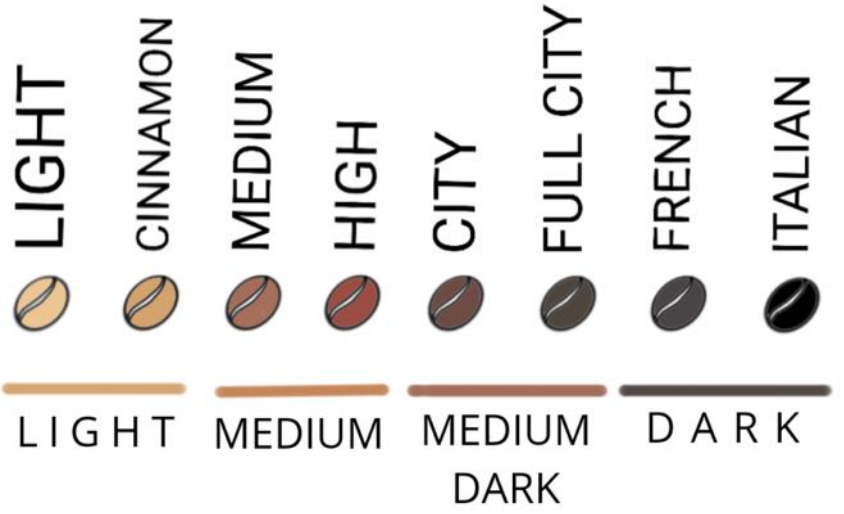
Recipes for espresso/ristretto

Pay attention to these three things during the calibration process, because any of them could directly affect the taste of your shot.

- Brew temperature
- Grind sizes
- Recipes (input, output & extraction time)
- Pressure/flow

I'll explain them step-by-step to give you a clearer picture.

Brew Temperature (1/3)



Brew temperature is the temperature of the water that goes through the coffee puck to brew the coffee.

In the market, beans have different roasted colour shades. The roasting process turns green coffee beans into a light colour all the way to a dark colour.

- If beans are roasted for a **shorter** period, the colour will be **lighter**.
- If beans are roasted for a **longer** period, the colour will be **darker**. Each colour shade is meant for different brewing preferences.

Most specialty cafés use medium-light to medium-dark roasted coffee beans, because the taste acceptance level is generally higher than dark roast or light roast.

A light roast has a higher risk of producing a grassy, vegetable taste if the coffee roaster isn't skillful.

Dark roast might be too bitter, wood-like, or earthy tasting.

So, choosing your coffee beans correctly is important as well. In general, our coffee brewing temperature ranges from 85 – 99° Celsius.

A Decent perspective

On the Decent Espresso machine, we measure the temperature directly at the coffee puck, so our temperatures don't "look" the same as on other espresso machines. User testing has found that on our machines, a given temperature setting is equivalent at the puck to a setting 5°C/9°F higher on many traditional espresso machines.

Brew temperatures, summarised:

Light roast coffee: 95 – 99°C (higher temperature)

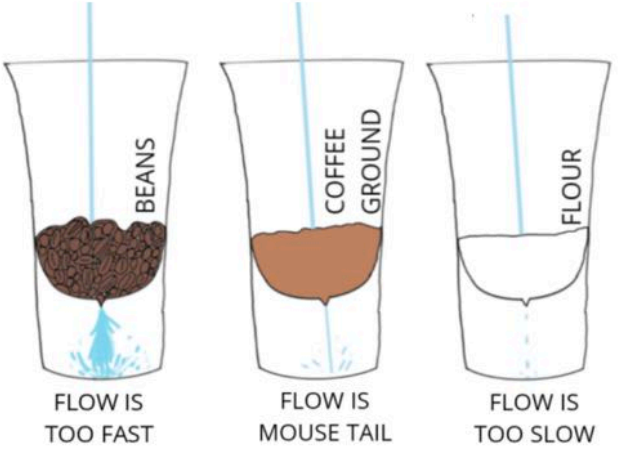
Medium or medium-dark roast coffee: 88 – 95°C (medium temperature).

Dark roast coffee: 82 – 90°C (lower temperature).

Above are general guidelines. Results may vary, so you can adjust to your taste preference.

Not all home espresso machines have a PID control (Proportional-Integral-Derivative). In particular, many entry-level coffee machines brew coffee at a default temperature of 95°C. If you want to be more in control of your brewing, you'll have to pay a higher price for this feature.

Grind size (2/3)



The Flow

The preceding illustration shows you what happens when the flow of an espresso shot goes too fast, too slow, or “mouse tails” (a nice flow).

A glass of coffee beans (left). This represents a coarse grind size. When you pour water over it, the water goes through the beans quickly. As a result, there's no time for the water to linger and brew the coffee. We call this “under extraction”.

A glass of coffee grounds (center). This represents the size in-between coarse and fine. This is the flow a barista is looking for, but it still doesn’t define the delicious taste of coffee. You have to take a sip to fine-tune the taste further during the calibration process.

A glass of flour (right)**.** This represents the finest grind size. When you grind the coffee too fine, water can't go through it. Therefore, the output flow becomes too slow or drippy. In coffee terms, this is called "over-extraction".

When you make coffee, there's no right or wrong. Arabica beans come in hundreds of different varieties from thousands of coffee roasters, so you have infinite outcomes. And that's why people like me and other coffee enthusiasts are so passionate – with a little tweak and different combinations, we can have endless possibilities.

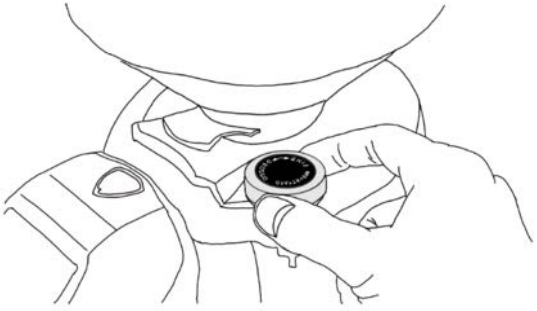
It's an adventure, and I suggest you keep exploring to find yourself a favourite recipe!

About calibration

Shot black is very sensitive to the correct grind size. If you're not skillful in calibration, you might waste a lot of coffee beans and time, making bad-tasting coffee.

As a barista, when you open a new bag of beans, you need to "adjust" the coffee taste to a certain preference (yours or your patrons). When adjusting the coffee taste, a barista has to calibrate the grind size, dose input, extraction time, and yield output. Each of these is an important building block of the taste.

I advise you to put your heart into learning about shot calibration.



Instruments needed for calibration

- Espresso machine
- Espresso grinder
- Coffee scale
- Coffee cup
- Teaspoon

Some countries call it “dialing in” a shot and some call it “calibration.” This is the step in adjusting your coffee grind and dose according to your taste preference. It’s the fundamental base of latte art. If you make this shot too watery or diluted, it will be a disaster to pour latte art into it, and it also makes tasteless coffee. If it’s too thick, it will be too bitter or have an unpleasant burning taste.

Next, I want to explain the difference between ristretto and espresso.

Recipes (3/3)

Espresso

Input: 18g for a double shot, or 9g for a single shot

Time: 25-30sec (if it's a single-shot, divide by two)

Output: 36g or 27g (single shot is 18g or 13.5g)

Brew ratio: 1:2 or 1:2.5

Characteristics: slightly watery because there's a little more water going through, which enables longer extraction and pulls out more flavours, especially single-origin. Great for black coffee. Some blended beans can also make flavourful espresso. My advice is to try different beans and be curious.

Ristretto

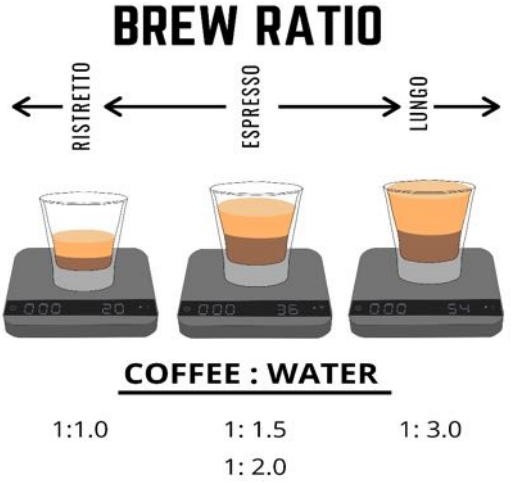
Input: 20g (for single shot, divide by two)

Time: 20-25sec (if single-shot, divide by two)

Output: 20g (single shot, divide by two)

Brew ratio: 1:1

Characteristics: thick and syrupy, due to less water dilution and a higher dose. Suitable for blended coffee beans, milk coffee and ice coffee, because ristretto has more intensity compared to an espresso.



Ristretto vs. espresso, what's the deal and why?

I understand you might be confused now. Why are there two similar drinks? When should I use ristretto and when should I use espresso?

Espresso pulls a longer shot with more water. The water passes through for a longer duration. It's ideal for medium-to-light roasting profiles and single-origin beans. You may try a brew ratio of 1:2.5, 1:1.5, or an even shorter 1:1.1. As I've mentioned before, coffee making has infinite possibilities. It depends on your taste preference.

Traditionally, I like to make espresso with a lighter medium roast, using single-origin coffee beans for a long black coffee, with a longer extraction time to extract more flavours and tasting notes.

What if I pull an espresso with blended and dark roast beans? It could be bitter with complicated tasting notes.

Ristretto has a shorter extraction duration and a higher dose. The texture is more concentrated and syrupy, and some people find drinking ristretto on its own too intense. It's ideal for a medium-dark or dark roast, using blended coffee beans with white coffee, and for ice drinks. Some even taste good with black coffee; this has more versatility. Ristretto is good for latte art because it has more concentration – milk flows like it’s gliding in the air with ristretto.

What if I pull a ristretto with a single-origin, light-medium roast? It could taste under-extracted, grassy with vegetable notes.

Barista jargon for shots

Single shot: 1 portion of coffee.

Double shot: 2 portions of coffee.

Dose: Coffee ground in grams (g).

Input: Coffee ground into the group head.

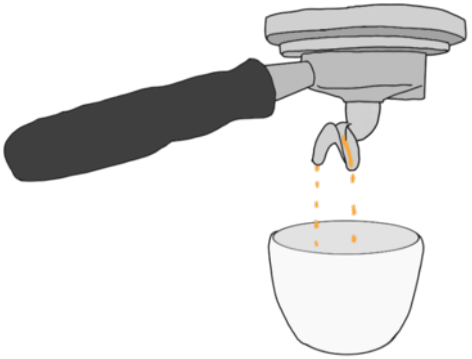
Output: Coffee flows out from the group head.

Brew ratio: The ratio between the amount of coffee grounds in the group head and the output of coffee liquid. For example, if the brew ratio is **1:2**, then 18g of coffee grounds will produce 36g of coffee liquid, 20g of coffee grounds makes 40g of coffee liquid, or 10g of coffee grounds produces 20g of coffee liquid. It's an indication of the quantitative relation between two amounts.

Extraction time: The duration when the espresso machine starts dispensing water and stops brewing. Not the duration of when the coffee starts and stops dripping.

Let's calibrate!

Below are examples that use the ristretto recipe, but the process is similar for espresso.

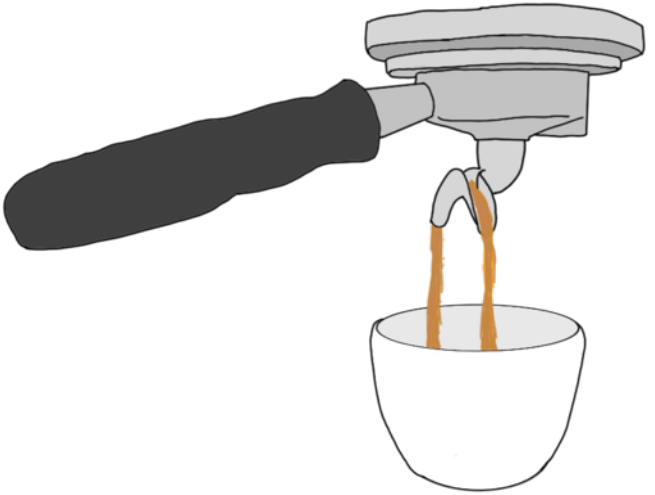


Looks like an over-extraction.

Input: 20g
Extraction time: 1min 30 sec
Output: 20g

The illustration shows a flow that's too slow, drippy and over-extracted. Usually, the taste will be burnt, woody and with earthy-tasting notes.

Solution: Adjust your grind size to be coarser. How coarse? You have to try until you get the result you want. There are thousands of different grinders in the world, and each one behaves differently.



Looks like an under-extraction.

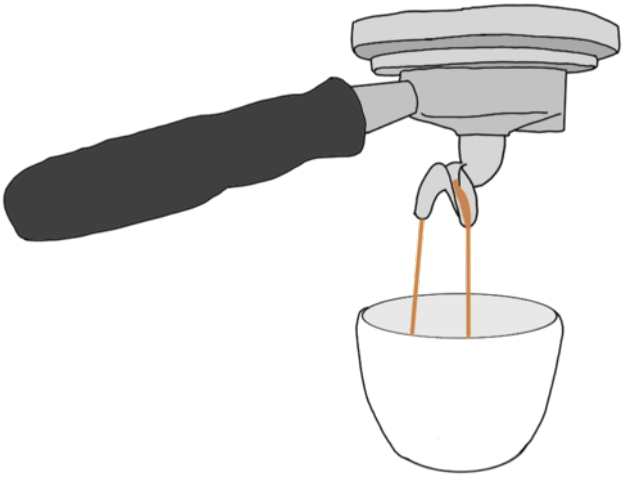
Input: 20g

Extraction time: 8 sec

Output: 20g

The illustration shows a very fast flow that's under-extracted. The taste is either too watery, diluted or very sour (not acidic) because the grind size is too coarse. Therefore, there’s too much space within the coffee puck, and the hot water passes through it too quickly.

Solution: Adjust your grind size to be finer.



Let’s take a sip!

Extraction time: 26 sec
Output: 20g

The illustration shows a “mouse-tail” flow, which is the flow we need, but this doesn’t guarantee a good, delicious coffee. This indicates that we’re ready to taste the shot.

Next action: Stir well, then take a sip. Is this the comfortable taste that you're looking for?

Too sour: Pull a longer shot, maybe from a 20g (input) 22g (output), then taste again. If the sourness persists, pull an even longer shot or try another brew ratio, 1:1.5 or 1:2.

Too bitter: Lower the dose very slightly. You may want to try to lower from 20g to 19.6g, for example. But you be the judge, because only you know your coffee beans and grinder.

Too milky: Increase the dose and adjust to a coarser grind size (I assume that you properly textured the milk). Or try it with other brew ratios.

The previous recipes are based on general preference, extraction time, dosage input, or yield output. The first priority is always the individual taste preference.

Why calibration is important

Imagine this: let's say you're comfortable using one type of beans for making coffee at home. One day, your friends visit you with their bag of coffee beans as a souvenir from vacation. By international café standards, a bag of coffee beans should weigh around 200g.

You should be able to make 10 double shots of ristretto for a café latte. But because you're too comfortable with your own beans with minimal adjustments, you have no idea how to calibrate new beans. You end up wasting a lot of coffee beans trying to figure it out. And finally, you're only able to serve your friends with two cups of coffee.

They’ll be surprised and wonder how you used up a big 200g bag of beans to make only two cups of coffee. You can avoid an incident like this if you're well equipped with calibration skills and knowledge.

I always advise newbies to be curious about coffee. Go buy coffee beans from various roasters and explore. With this process, you'll learn to troubleshoot issues with calibration.

> 200g of coffee beans should get you around 6-7 shots (each shot with 20g of beans) of double ristretto. What!? How do you calculate that, you ask?

There’s usually some retention in the grinder’s burrs (coffee grounds stuck in the burr). If you pour 20g into a bean hopper and grind it, a traditional grinder will output probably 18g or 19g of coffee. Where's the other 1–2g? Retention, my friend! A little bit of coffee grounds will get stuck in your grinder burr, chute or any part within the grinder chamber.

Happy dialing!

MAINTENANCE: A BARISTA'S DUTY

Well, it's a wrap! Time to get your hands dirty.

As a very hardworking barista or home barista, it's important to know how to make good coffee. But knowing how to keep your espresso machines hygienic and clean is also a barista's duty.

If your espresso machine isn't well maintained, it will have old coffee dirt in the group head or leftover milk stains on the wand tip. These will directly affect the quality of your next cup of coffee.

A home barista once told me something ridiculous. He said he washed his espresso machine "once in a blue moon" and he said it without guilt. The worst part is that he makes at least two cups of coffee a day at home.

I don't blame him, but I blame the lack of educational materials in this field.

So what happens if you don't wash your espresso machine, or if you only wash it once a week...or once in a blue moon? Let's use common sense by asking:

> **"Would you dare eat my food if you know I cooked with a pan that hadn't been washed for a few days?"**

I think you know the answer.

So let's get started by learning how to clean up your espresso machine in a general way. Since there are so many different machines, I'll stick with the old-school way of cleaning up.

Here are a few parts we need to maintain:

Group head (at the end of the day).

Steam wand (every time after use).

Drip tray (at the end of the day).

Portafilter, basket and etc (every time after use).

Grinder burrs (once a week, or once a month — depending on your usage frequency).

Items that you need to clean the group head

1. Espresso group brush

The longer the brush, the better. This comes with a mini scoop at the rear to scoop the espresso cleaner powder, and a brush for the group's track and shower screen. There are many shorter versions, but these will burn your hand because the water will travel to your fingers as you brush and flush. A longer brush will prevent this from happening.

2. Espresso group round brush (optional)

Insert this into the group's track and clean the dirt hidden in there. I strongly suggest using this brush as a long-term solution for easier cleaning.

3. Espresso cleaner solution (powder form)

This is meant to backflush the tubing internally and wash the group head, but it's not meant for descaling. There's a descaling solution (citric acid) for that purpose.

4. Blind filter

You need this basket to hold the espresso cleaner powder because a “blind” basket has no holes in it, and it’s meant for flushing the group head and backflushing the internal tubing.

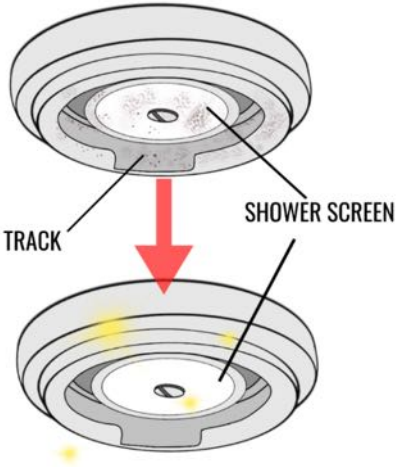
5. Portafilter

Any type of portafilter will work for this. Don’t worry about whether it’s a single spout or double — as long as the blind filter fits in it.

Group head cleaning

Wash this when you're done for the day, but not after every cup you've made.

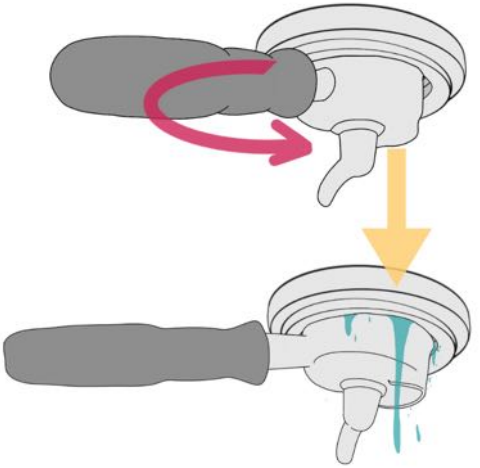
Below is the before-after result; our objective is to keep it shiny and clean.



The process is pretty simple. Before we use the portafilter, just use the group brush to remove the coffee dirt while simultaneously flushing water out of the group head. Then tuck a round brush into the track and brush off any dirt stuck to the track by rotating the brush (make sure the brush is wet), while also flushing water.

After the dirt is cleaned off, use the portafilter with a blind filter and fill it with water, as shown in the illustration below.

Mount the portafilter into the group head, lock it tight, press the start button, then wait for 10 seconds as shown in the illustration below.

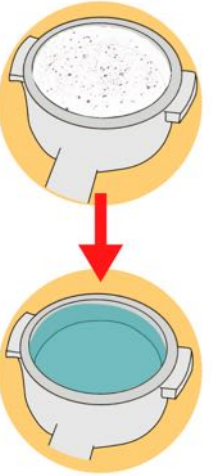


When 10 seconds have passed, take the portafilter out and check if the water is clean or dirty. If it has dirt, then repeat the process until it's clean and clear.

After the water cleaning is done, use the espresso cleaning solution.

Follow the instructions on the label of the espresso cleaner solution. Different brands require different amounts. Usually, it comes with a mini scoop. Shown in the previous illustration is the usual amount of powder to use in the blind filter.

Then mount the portafilter into the group head and repeat. This time, lots of foamy soap will come out.



Repeat the process of mounting into the group head and starting the group head for 10 seconds. Perform this step until the soap foam runs clear. Usually it takes 10 - 20 repetitions. Then your job is done for the group head.

For parts that wear and tear — like the shower screen and rubber gasket — I recommend that you change them once a year or once in two years, or if you find leaks when you pull shots. If it still leaks no matter how much you've tightened it, it's time to change both.

A Decent perspective

The Decent Espresso machines include a software setting for group head flushing with a blind filter. Just press the setting, and the machine will flush itself five times.

Steam wand cleaning

This is simple.

To clean the steam wand:

1. Use your big pitcher.
2. Add 70% tap water with espresso cleaning solution,
3. Turn on the steam.
4. Let it run until the water is simmering/boiling, then turn off the steam
5. Use a wet cloth to rub the steam tip and clean the milk stains.

When you're done with the espresso cleaning solution, you have to fill the pitcher with water two more times and boil it with the steam wand before you can let your machine rest.

Portafilter, basket, and drip tray cleaning

You should clean the portafilter, basket and drip tray with home dishwashing detergent and a sponge. Most importantly, you should rub off the coffee stains that are stuck on the drip tray, on the inside of the portafilter, and on the side of the basket.

If you haven’t washed the inside of the portafilter in a very long time, it could already be dark brown or worse, black coloured. In this case, you'll need a scrubber to do the job.

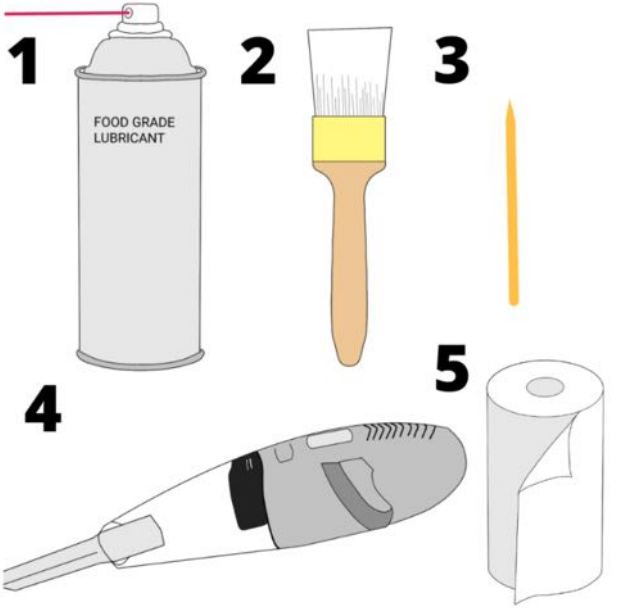
Grinder maintenance

How often do we need to perform this maintenance? Once a week, once a month, once in two months... it all depends on your grinding experience and volume. If you find your grind size to be inconsistent or it gets difficult to calibrate (producing a weird taste), then it's time to do grinder maintenance. But to be safe, I would suggest once a week — or at least once a month if you seldom use it or you're a busy person.

There are many different types of grinders, too many for us to explore. So you should read the instruction manual to do maintenance. But the main objective is to remove dirt from sticking to the burrs and the burr chamber, which causes grinding to be less efficient because the burrs are less sharp.

For a traditional grinder, you'll have to unscrew the burr from the top. After it's removed, your grind-size setting is off track, but some manufacturers were innovative enough to fix this problem. Their grind-size setting remains the same even when the top burr gets removed. So my advice is to check with your supplier or read the instruction manual before you start a cleaning procedure.

Items that you need to clean your grinder



1. Food grade lubricant

This is meant to lube the track of the burrs after they're clean. Remember to use food-grade, not ordinary lubricant.

2. Paint brush

Use a paint brush to brush off the dirt. The size of the brush depends on your burr diameter and thickness.

3. Wooden stick

To scratch dirt off the track. Anything sharp will do, like a toothpick or a thermometer — but try not to scratch your grinder.

4. Vacuum cleaner

To suck out the dirt from narrow spaces where your brush is too broad or a wooden stick is too thin to brush. You can also vacuum the chute and burr window. The horsepower doesn't matter, but it should at least have a sharp plastic tip (as shown in the illustration) to access the burr chamber.

5. Kitchen paper towel

To wipe stubborn coffee stains at the burr tracks.

Before we start, remember: **don't use soap or any inedible solution to clean your burr**. This is because we grind and drink from this.

1. **Unscrew and remove the burr** from the top. After it's removed, use a vacuum cleaner with a sharp plastic tip, tuck it into the burr chamber and vacuum out all the visible dirt.
2. **Scratch and remove dirt from burr tracks with a wooden stick**. Some stubborn dirt might resemble a chocolate-like paste. Use a piece of kitchen paper towel to wipe those stubborn pieces off.
3. **Clean the chute**. You need to brush, vacuum and keep it shiny.
4. **Lube the track.** Apply a bit of lubricant on a paper towel, then lube and wipe the tracks both at the top burr and chamber.
5. **Recheck** and make sure everything is shiny and clean before you reassemble.

6. **Adjust the grind size** and taste the difference when you make coffee with cleaned burrs.

> **“Clean as you come and clean as you go.”**
> We use this phrase a lot at a coffee bar or kitchen. It applies even to a home coffee bar.

What is it like to work in a café as a barista?

I'm writing this based on my working experience in Kuala Lumpur, Malaysia. I don't represent all baristas around the world, but if you never worked as a barista before, here are some of my experiences.

From a local cafe perspective, workers in the food and beverage industry are considered minimal-wage earners if you compare salary vs. job scope.

Let me explain a barista's duties at the coffee bar:

1. Make coffee with speed.
2. Quality check of coffee.
3. Be a cashier and take orders.
4. Keep the café clean and hygienic.
5. Clear the table after customers leave.

6. Sweep, mop the floor and wash the toilets at the opening and closing of the café.
7. Resolve wrong orders made by the kitchen.
8. Bring out and serve food from the kitchen.
9. Count and order stocks for everything sold at the coffee bar.
10. Explain and recommend coffee, cakes and food to customers.
11. Know everything on the menu.
12. Change light bulbs and fix utilities.
13. Cut cakes for customers, cut fruits for juices, make sugar syrups for beverages.
14. Wash cups, saucers, plates, forks and spoons.
15. Be friendly to everyone.
16. Decorate the café before festive seasons and remove decor post festivals.

Yup, it's a very tiring job as a barista running up and down the café. Many cafés don't post "barista" as a job title anymore; they call it "All-Rounder", which means you have to do everything and anything to help a café's business.

Is it worth it? Yes. I never regret being part of this industry and getting to know many people along the way. If I'd never asked for a part-time job at a café, I would not be here writing this book.

I'm grateful to get a practical learning opportunity. I think everyone deserves a good cup of coffee, and coffee education should be accessible and affordable everywhere.

How was this book conceived?

I enjoy teaching classes and coaching students from inexperienced to skillful. I feel proud cultivating them and watching them grow.

Often, I've received requests from my followers to guide them because their hometown or country doesn't have coffee classes available. Therefore I'm also eager to teach people outside of Malaysia, but I can't reach other countries and run my local classes simultaneously.

Some classes can't be conducted via Zoom webinars. You need an espresso machine for hand guidance or visual guidance. Then I thought that a book or an eBook could be a good idea for those in distant countries that I can't reach.

Acknowledgments

What I've learned from my years of experience at the coffee bar, home coffee bar, and teaching classes, I've passed on to you. If you read this book page-by-page and apply it to your daily practices as a home barista or at a café, this information will lead you to the next level.

I also have to acknowledge that there are many perspectives; I'm still a student, keeping my heart curious and open. I believe we can serve better coffee worldwide.

Though I can't teach you face-to-face, I hope this book has revealed and demystified espresso-making techniques and calibration skills. I struggled with these at first without any mentor to guide me through countless moments of frustration.

I would like to express gratitude to my friends, my followers, my supporters, my loved ones, my colleagues and family. Thanks for giving me space and time to write and for being emotionally supportive.

And also, thank you for purchasing this book from me. Please share it with whoever you think is in need of such information.

My learning philosophy is:

When you've learned something, you pass it on to others. This will double your improvement and benefit all.

If you want to move on to the next stage, give teaching a try. You'll understand the subject even deeper.

I believe in a win-win situation.

Feel free to visit or DM me via Instagram @sinnedhew (Dennis Hew) or visit my YouTube tutorial channel.

I would be glad to know how your improvement progresses and how you're able to inspire others to make coffee at home or at a coffee bar.

Stay healthy and see you again.