

Nu Skool Espresso Profiles User Guide.

Basic Overview

This profile is not designed to deliver high extractions in and of itself.

Rather, it relies on external factors to help optimise the extractability of a light roast coffee (*particularly the desirable elements*). This allows shots to be performed under gentler conditions (*lower temp, lower pressure, shorter times*) while still producing excellent levels of extraction from lightly roasted coffee.

**external factors include: flat burr grinders with high uniformity / unimodal burrs, specific prep tools & techniques, BPlus screen, etc.*

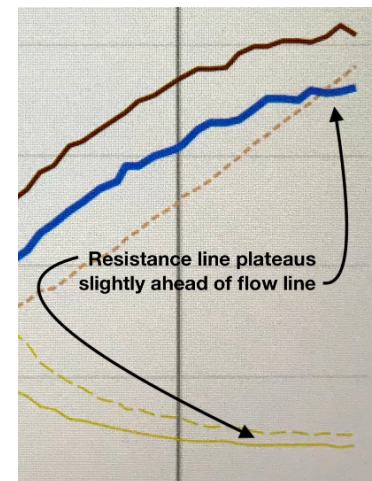
Preparing Shots

1. Dose according to basket/profile.
2. Grind at low speed (e.g. 100rpm) with a flat burr grinder using high uniformity / unimodal burrs directly into portafilter.
3. Perform thorough WDT from the base of the puck upwards to ensure the whole bed has been treated.
4. Perform ICM (*Inward Comb Mounding*) to **decrease** coffee mass at the **perimeter**, and **increase** coffee mass in the **centre**. Tap very gently on bench twice to close any gouging caused by ICM. **more about ICM is discussed later.*
5. Use Porcupress.
6. Tamp with a levelling tamper that provides consistent depth and pressure each time.
7. Spray top of puck lightly with water.
8. Place BPlus screen on top.

Manually Cutting Shots

There is no auto-stop feature programmed into this profile. **Shots need to be manually cut at the point where both resistance lines (yellow) and flow lines (blue) peak and plateau.** I recommend watching the zoomed flow/pressure graph as shots pour so you can clearly see the plateau occurring.

Tip: yellow lines plateau first, and thus offer a preparatory indication of when blue line will plateau.



Basic Targets

I generally start dialling a coffee by seeking a grind size that will produce a flow curve that peaks/plateaus ~3.5ml/s. I then look to adjust the lowest flow rate (*floor*) to be ~1.5ml/s. These are not necessarily the best flow rates for a given coffee or flavour preference, but I have found they do tend to be good averages, and therefore good starting points.

**There is more information about adjusting flow to achieve certain flavour profiles later.*

Versions

Nu Skool espresso now comes in 3 versions.

These are minimally adjusted to suit the 3 common VST basket sizes, and the corresponding dose:

- Nu Skool 15g
- Nu Skool 18g
- Nu Skool 22g

The main aspects of the profile are basically identical across all versions, with only small adjustments appearing in the fill and pre-infusion stages.

These adjustments are necessary to compensate for changes in mass that impact on and establish temperature stability during the first portion of each shot.

The other key components of the Nu Skool profile remain the same between all versions.

Which Version Should I Choose?

I believe there are noticeable differences in the cup between each basket and dose.

- **larger** doses/baskets/versions tend to produce **lower** ratios when you cut the shot at plateau.
- **smaller** doses/baskets/versions tend to produce **higher** ratios when you cut the shot at plateau.

It is not simply a case of higher doses resulting in more coffee. Longer ratios (*e.g. those produced by 15g dose/basket/version*) are usually less intense, while shorter ratios (*e.g. those produced by 22g dose/basket/version*) are usually more intense.

Some other common differences in outcome include:

- **larger** doses/baskets/profiles typically have **longer** pre-infusions and **longer** shot times
- **shorter** doses/baskets/profiles typically have **shorter** pre-infusions and **shorter** shot times.
- **larger** doses/baskets/profiles tend to have **narrower** flow spectrums*
- **smaller** doses/baskets/profiles tend to have **wider** flow spectrums*

**more on flow spectrum later.*

All these differences translate to different experiences in the cup.

I highly recommend exploring a coffee using all the different doses/baskets/profiles to better understand the changes, and to enjoy the coffee in many different ways.

**Please note, grind needs to be adjusted to suit different doses/baskets/profiles.*

Grind Adjustments Depending On Dose

I suggest always using the rated dose for each basket.

To achieve comparable flow rates and behaviour with a given coffee when exploring different doses/baskets/versions:

- 15g dose will require marginally finer grinds
- 22g dose will require marginally coarser grinds
- 18g dose will require something in the middle

ICM - Inward Comb Mounding

I believe ICM is a hugely beneficial part of a good prep routine, and I view it as a key component of this profile.

The concept of ICM is to provide more balanced levels of extraction radially across the bed of coffee, particularly at the perimeter which typically extracts less efficiently. ICM helps this by **reducing** mass at the perimeter while **increasing** mass at the centre. Improving extraction efficiency at the perimeter adds to the overall extraction levels, while increasing the mass in the centre helps create more resistance there, in turn better balancing the different extraction efficiency between centre and perimeter.

To perform ICM:

After thorough, full depth WDT is completed, use a WDT tool (*or a purpose built ICM tool*) to comb the grinds away from the perimeter and mound in the centre of the basket.

**I constructed a purpose-built ICM tool by cutting a guitar string (0.016 gauge - B string) into 6x 10mm lengths. I then stuck these into a wine cork, forming a straight row across the centre that very slightly fans out.*

Adjusting ICM to Suit Dose/Basket/Version

- **15g** doses/baskets/versions benefit from **greater mounding of grinds in the centre**
- **22g** doses/baskets/versions benefit from **more reduction of grinds from perimeter**, but **less mounding in the centre**

Assessing Spent Pucks

The base of the spent puck provides fantastic insight into the quality and effectiveness of the ICM you performed.

Dark patches are a sign of under extracted areas. Looking at where these dark patches are located on the base of a spent puck can inform adjustments to your ICM technique.

Dark patches around perimeter: shift more grinds from perimeter when performing ICM

Dark patch in centre: central mound is too high

Light patch in centre: central mound should be increased

Ways to Improve Consistency

Remove Shower Screen

BPlus screens are extremely beneficial in many ways, including improved and gentler water distribution across the top of the puck.

I believe that shower screens are no longer necessary when using a BPlus screen, and can therefore be removed. The BPlus screen is wider than the brass lower dispersion block and therefore cannot accidentally touch the protruding temperature probe.

I have found that removing shower screens eliminates varying levels of moisture that can be present above and within the shower screen from shot to shot. In my findings, this moisture retention impacts on both temperature consistency and stability at the beginning of a shot, as well as pre-infusion times from shot to shot.

Use Cold Portafilters & Baskets

I have found that it is easier to replicate shots using **cold** portafilters and baskets. If doing back to back shots, rinse PF and Basket under cold water until cold, and dry thoroughly between shots.

Use Frozen Beans

Grinding frozen beans seems to mitigate inconsistencies caused by varied ambient and coffee temperatures.

In particular, I have noticed it helps maintain consistency during the initial temperature drop and stability at the start of each shot. Freezing is also known to slow down the changes caused by ageing, so changes in shot behaviour are slower to occur.

Limit Adjustments

The Nu Skool profile is designed to be tweaked primarily using grind - not settings.

The only profile setting I currently adjust is the flow rate during preinfusion to help fine tune the flow curve (*more on that later*).

I suggest avoiding the temptation to tweak temperature, pressure and time as these are key aspects of this particular profile, and will change what it is designed to deliver.

In my experience, adjustments to flavour can successfully and reliably be achieved by adjusting the flow curve. This can be accomplished with grind and fill rate alone.

Analysing The Shot - Temperature

There are 3 key components to the way temperature is used in this profile:

- Stability (*particularly at the start of a shot*)
- Low temperature
- Declining temperature

Stability

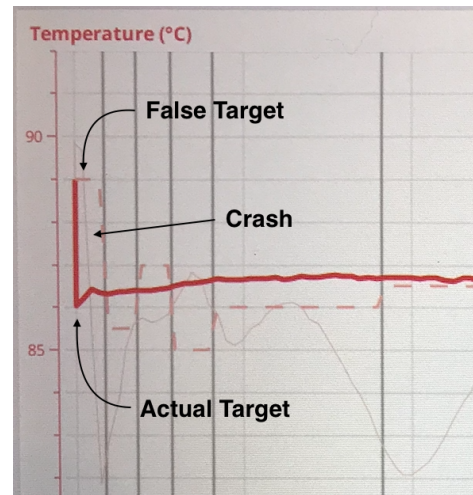
I have found the start of a shot will always crash below the target. The first step in the Nu Skool Profiles is designed to compensate for this crash, and the subsequent rebound.

Adjusting Fill 1

My machine consistently crashes by 3°C at the very start of a shot.

I want the shots to start at 86°C, so I made the first step have a false target of 89°C.

Your machine may differ. I recommend analysing the crash over several shots. When you know the consistent crash amount, adjust **Fill 1** so that the temp will **actually** land on 86° at the beginning of a shot.

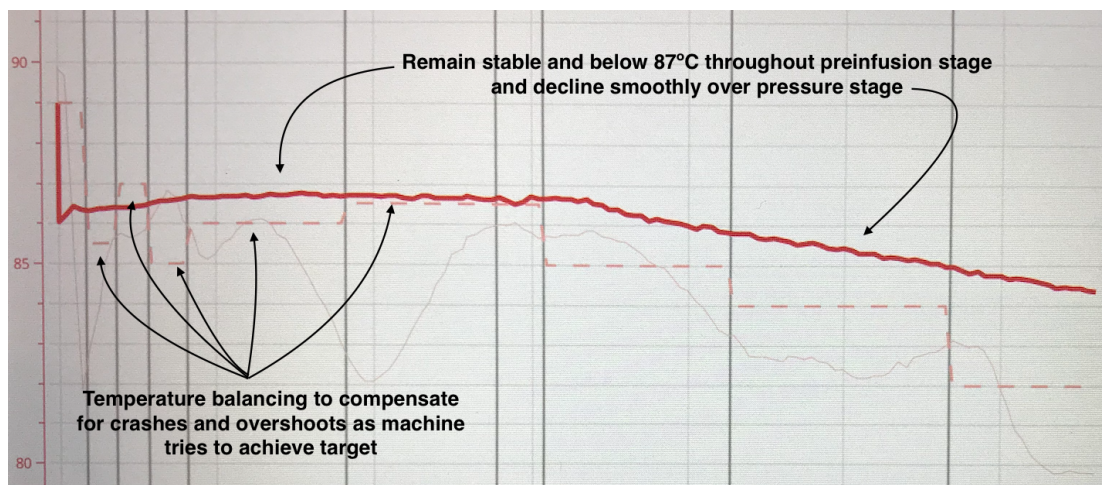


Level, Stable, Consistent, Low & Declining

I think level temperatures eliminate unknowns stemming from variability/inconsistency.

Temperature spikes, overshoots, dips and crashes all impact on flavour. They also impact on each other, and can therefore vary wildly from shot to shot, rarely consistently.

Keeping the temperate consistently level and stable eliminates these variations from shot to shot so impacts of *other* changes are easier to identify, understand and replicate.



Analysing The Shot - Flow Curve

When extraction levels are adequate, I choose to view flow curves like a multi band EQ.

Low Frequency Range

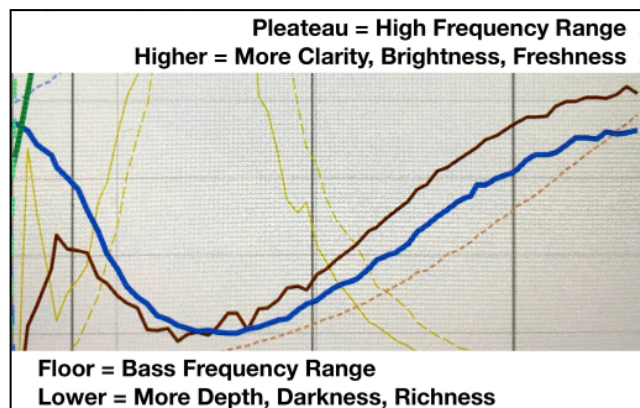
With this analogy, I view the **lowest flow rate** at the beginning of the curve (*we'll call it the **floor***) like the **bass frequency** range.

Lower floor rates tend to produce more 'bass': deeper, darker, richer flavours.

High Frequency Range

Conversely, I view the **peak flow rate** at the end of the curve (*where the flow plateaus*) like the **high frequency** range.

Higher rates at the plateau tend to produce clearer, brighter, fresher and open flavours.



'Reduced highs' can give a false *impression of* increased 'lows', but in the same way I can notice a distinct difference between increasing 'bass' and decreasing 'treble' in audio, I believe there is a difference here also.

Adjusting the Flow Curve

I use **Grind Size** as a macro-level adjustment tool.

Finer grinds will generally **lower** the entire curve, and **coarser** grinds will generally **lift** the entire curve.

I use **Preinfusion Flow Rate** (*generally ranging between 2.5ml/s and 4.5ml/s and **only** during the **FILL 2** stages of pre-infusion*) as a fine-tuning tool to adjust the floor.

Faster flow rates can **lower** the floor, and **slower** flow rates can **raise** the floor.

The 18g & 22g profiles have **two FILL 2 stages (A and B) to accomodate longer wetting times required by larger dose and bigger basket - both of these FILL 2 flow rates should be adjusted to match each other when making changes.*

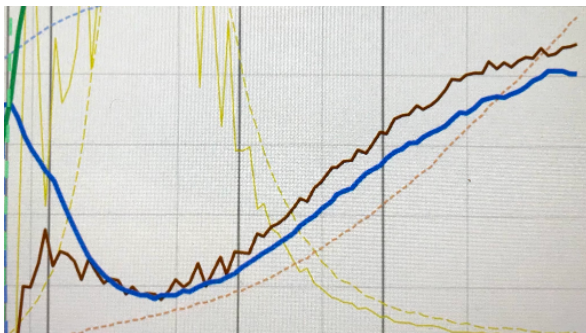
Analysing The Shot - Flow Spectrum

In keeping with the audio EQ theme, I find that the **width** of the flow spectrum seems to have an effect on the **openness** and **width** of the flavour profile.

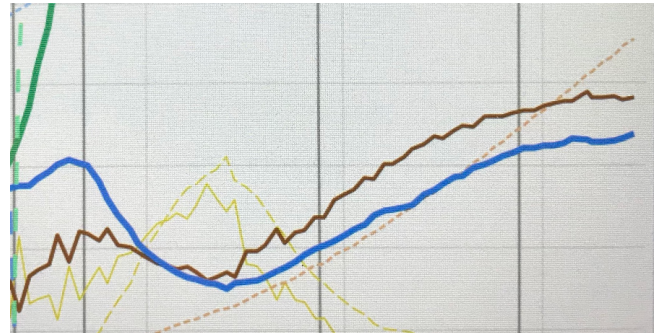
Flow curves that spread across a **wide spectrum** from floor to plateau tend to taste more 'open' and 'wide'. This has been great for coffees with excellent roasts and loads of nice flavours across the spectrum.

Conversely, **narrower** flow curves have helped bring separated flavours 'together' better, and have found they tend to suit coffees exhibiting an 'emptiness' in the mid-range of the flavour profile, or dominant flavour notes at each end of the spectrum (*such as bright/high acidity coupled with deep and dark chocolate notes*).

I've found narrowing flow spectrums can also help with other things, such as; drowning out defects (*by focussing on certain flavours in certain zones*), and/or enhancing certain qualities more effectively (*by keeping the flow curve within a particular frequency region*).



Wide flow spectrum



Narrow Flow Spectrum

Adjusting the Flow Spectrum

As for before, I use **Grind** as a macro-level adjustment tool.

Finer grinds will generally **lower** the **entire** curve, and **coarser** grinds will generally **lift** the **entire** curve.

Flow Rate during the **Fill 2** stages of pre-infusion can act as a fine-tuning tool to adjust the floor.

Ranging typically between 2.5ml/s and 4.5ml/s, **faster** flow rates during the Fill 2 stage(s) can **lower** the floor, and **slower** flow rates can **raise** the floor. This means PI flow rate can help to narrow or widen the spectrum.

Dose/Basket can also impact on the flow spectrum. **Larger** doses/baskets tend to **narrow** the flow spectrum, and **smaller** doses/baskets tend to **widen** the flow spectrum.

**Remember to match the dose with basket & profile.*

**I have found flow spectrums naturally vary from coffee to coffee. Not all coffees can be made to have the same spectrum. Once I understand how a coffee is naturally behaving, I can proceed to make intentional adjustments to the flow curve and spectrum within its natural boundaries to target/change the flavour outcome I'm seeking.*