Discussion on Pre-infusion

-- Whether the solenoid valve should be open or closed for pre-infusion.

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Here is our understanding of the "pre-infusion": the goal and the bottom line of pre-infusion is for preventing fast-flow channels formed during extraction. In terms of how to achieve this goal, there are many different approaches. Here are two most common approaches:
1) The mechanical approach by using pressure arrester to prevent the pressure increase too fast on dry coffee grounds.
2) The electronic approach by pumping a small amount of water to the puck to wet the coffee and let it soak for few seconds. This process will wet the coffee grounds first to form a tight and uniform matrix so that water flows through the coffee grounds evenly. We call this a few seconds of soaking coffee grounds “dwell time”.

In the second approach, which is commonly seen on home espresso machines, we found that some espresso machines on the market keep the valve closed during the “dwell time” but others leave the valve open. Does it make a difference? We spent several months trying to get a clear answer on which way is better. We asked several people who have a lot of experience in the coffee business. Some people said the valve should be closed but others said it should be open.

We could not get a clear answer on which way is better and why it is better. So, we conducted our own test. Here is a list of what we have found:
1) There is no detectable difference on the coffee extraction between letting the valve closed or open during the “dwell time”.
2) There is an obvious improvement in the coffee extraction with pre-infusion (no matter the valve is closed or opened) than without pre-infusion.

If we were to keep the valve closed, the cost of the kit would be increased substantially, and the installation would be much more complicated for the user. So, we decide to let the valve stays open.

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