Bullet R2 Operation Manual

The Aillio Bullet R2 and Aillio Bullet R2 Pro are high-performance electric coffee roasters with a maximum capacity of 1kg and 1.2kg, respectively. Throughout this manual:

1. “R2” will refer to the Bullet R2 + Pro
2. “R2 Pro” will refer to the Bullet R2 Pro

Please contact a certified Aillio representative by phone (+886) 2 2577 7220 or email: support@aillio.com for further inquiries.

IMPORTANT SAFEGUARDS

When using electrical appliances, basic safety precautions should always be followed, including the following:

1. Read all instructions carefully
2. The temperature of accessible surfaces may be high when the appliance is operating. Do not touch hot surfaces as indicated by the “Warning Hot Surface” sticker:  . Use handles or knobs instead to prevent burns. Always let the R2 cool down completely before moving or servicing it.
3. To prevent electrical shock, do not immerse the cord, plugs, or roaster in water or any other liquid.
4. Unplug the appliance when it’s not in use and before cleaning. Allow it to cool before attaching or removing parts.
5. Wait ten seconds before reconnecting the power after disconnecting it.
6. Do not use the appliance if the cord, plug, or appliance itself is damaged or malfunctions. Return it to the nearest authorized service center for examination, repair, or adjustment.
7. Using attachments not recommended by the manufacturer may cause injuries.
8. Do not use the appliance outdoors.
9. Ensure the cord does not hang over the edge of the table or counter, as it could be pulled or cause a tripping hazard. Also, keep the cord away from hot surfaces to prevent it from melting or getting damaged.
10. Keep the appliance away from hot gas or electric burners, and do not place it in a heated oven.
11. Do not point space heaters directly at the R2.
12. Always plug the cord into the appliance first, then into the wall outlet. To disconnect, turn all controls to "off," switch off the power, then unplug from the wall outlet.
13. Use the appliance only for its intended purpose.
14. The R2 operates at high temperatures and should be kept away from flammable materials such as chemicals, fabrics, and paper.
15. Place the R2 on a heat-resistant and non-slip surface. If unsure, use a silicone mat under each foot of the appliance.
16. Ensure there is at least 10 cm (4 inches) of space around the sides and front of the roaster.
17. Do not use the R2 inside a cabinet.
18. Use the R2 only on a flat, level surface. If unsure, use a level to check.
19. Never leave the R2 unattended during preheating and roasting. Additionally, stay with the roaster for at least 2 minutes after the cooling process starts to ensure there is no risk of fire.
20. Do not operate the R2 if the Front Plate is not properly attached.
21. There is a risk of coffee beans catching fire during roasting.

22. The R2 is not a toy and should not be used by or around children.
23. Store the R2 out of the reach of children.
24. Roasting coffee beans produces smoke and particulates that may be harmful to your health if inhaled regularly. Proper ventilation is essential to minimize exposure.
25. A consistent airflow or draft is necessary to effectively extract smoke that escapes from common leak points such as the roaster door, chaff collector, or exhaust.
26. Always roast in a well-ventilated space, such as near a window with a fan, or ideally with a dedicated ventilation system that pulls smoke directly outside.
27. This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge unless they are supervised or instructed on how to use the appliance safely by a person responsible for their safety.
28. Keep the appliance and its cord out of reach of children under 8 years. This appliance can be used by children over the age of 8 years old and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
29. Children should be supervised to ensure they do not play with the appliance.
30. Cleaning and maintenance should not be done by children without supervision.
31. The R2 is not designed to be operated with an external timer or a separate remote-control system.
32. This appliance is intended for use in households and similar environments such as light industry, micro-roasteries, coffee labs, staff kitchens in shops, offices, and other workplaces, farmhouses, hotels, motels, and bed and breakfast establishments.
33. Save these instructions for future reference.

Revisions

Version	Major changes
1.0	Initial release.
1.1	Refined instructions for maintenance.

Alterations Service & Accessories

- Do not modify the Bullet R2.
- Do not disassemble the R2. Only authorized service personnel should repair malfunctions.
- Use only accessories recommended by Aillio. Unauthorized accessories should not alter or interfere with the operation of the R2.
- Operate the R2 only when fully assembled, including the installation of the Chaff Collector.
- Do not use the R2 if it is damaged or you suspect a malfunction.
- Do not attempt to service the R2 yourself. Using unauthorized attachments may cause hazards and void your warranty.
- The fuses on the Induction PCB Module inside the chassis beneath the Drum are not replaceable. If the unit shuts down or fails to turn on, do not open the PCB enclosure for self-repair. Instead, contact authorized service for a complete check of the appliance.

Electrical

- To avoid electric shock, do not operate the R2 in a wet environment or near water. Clean only with a moist or dry cloth after the roaster has cooled down, and ensure the power cord is disconnected. Please refer to the cleaning section for more details.
- Arrange the power cord and USB cord to prevent tripping hazards and ensure they cannot pull the roaster off the table. Keep the cords away from the front part of the roaster, which may get very hot and melt the wires.
- The R2 requires a dedicated electrical circuit with ground (earth). Do not plug other appliances into this circuit.
- If an extension cord is necessary, ensure it meets the minimum power rating requirements and is fully grounded (earthed.) Do not connect other appliances to the extension cord.
- Always disconnect the power cord after the roaster has cooled down.
- If you need to restart the R2, wait ten seconds after disconnecting the power before turning it on again.

Mechanical

- Never touch moving parts, and do not place hands or fingers inside the Drum while the R2 is connected to the mains.
- The R2 is heavy, and care should be taken when moving the roaster. Only move the R2 when it is completely cooled down. Do not lift the R2 by the Legs, Door Handle, or cords.

Roasting

- When the coffee beans are dropped into the (Pro) Cooling Tray, they are extremely hot and should not be touched until they have completely cooled.
- The operating environment should be clean and free of dust and sand.
- The R2 is intended only for roasting coffee beans. Roasting other foods will void the warranty.
- After roasting, the R2 will enter Cooling mode to cool the drum. DO NOT disconnect the power until this cooling cycle has finished, as it may damage the electronics.
- The Chaff Collector must ALWAYS BE INSTALLED while roasting and should be emptied and the filter cleaned after each roast.
- After roasting 30 kg and only while the R2 is cool, remove the chaff from under the Drum. Refer to the cleaning instructions.

Venting

- During roasting, smoke is produced and should be vented to the outside or through a smoke suppression filter.
- If roasting in the kitchen, a powerful range hood can be used. Place the R2's air outlet directly under the range hood.

For fixed installations:

- A pipe (not included) can be connected to the R2 to vent the smoke outside or to a filter. We recommend using a metal pipe or flexible hose with a diameter of 75mm (3 inches) or larger.
- If the pipe or hose is directly attached to an adapter, its length should not exceed 2.5m.
- For longer pipes or hoses, a suction fan should be placed at the end to ensure adequate airflow.
- Be aware that the suction fan can affect the R2's performance by increasing the airflow, potentially removing too much heat.

Waste Disposal

- Do not dispose of electrical appliances or batteries as unsorted municipal waste; use separate collection facilities. Contact your local authority for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. Please contact your local or regional authority for more information on collection, reuse, and recycling programs.

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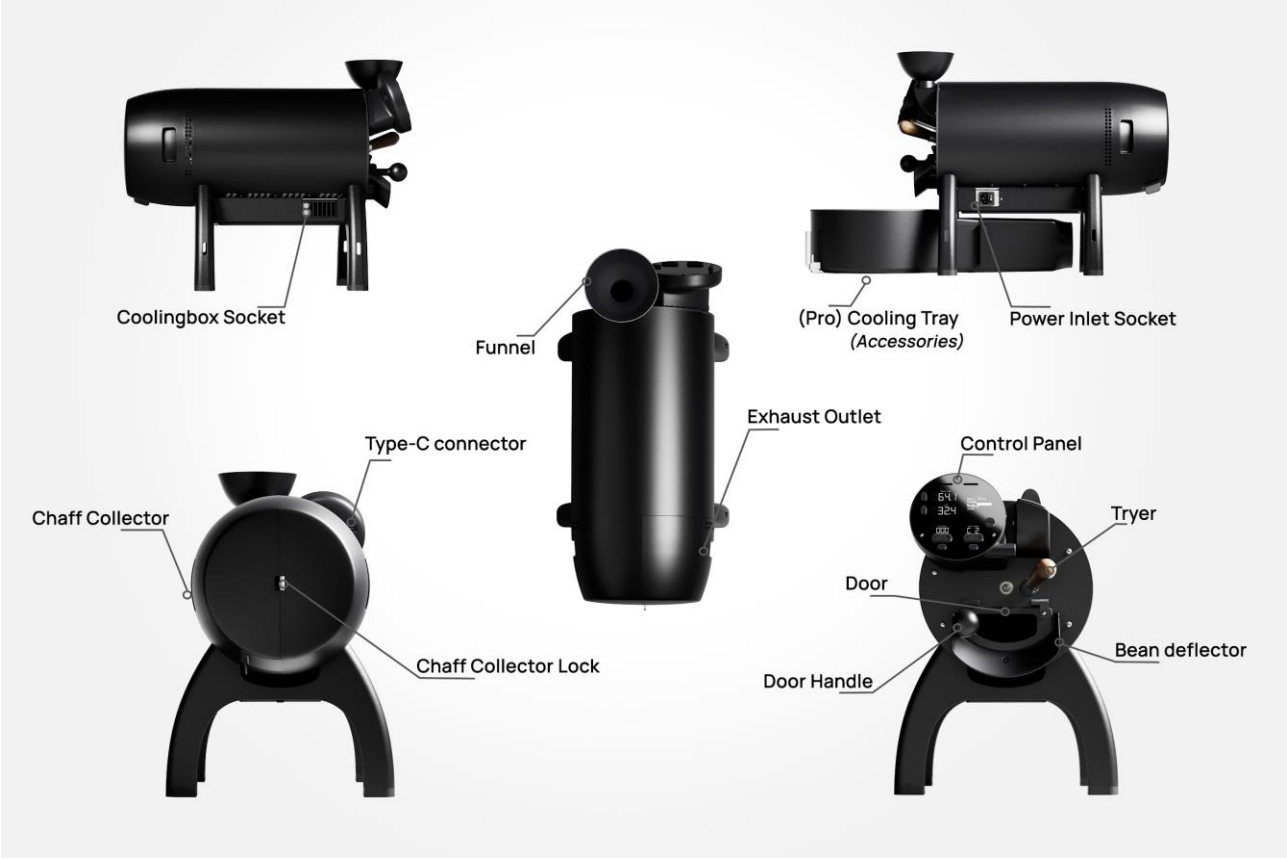
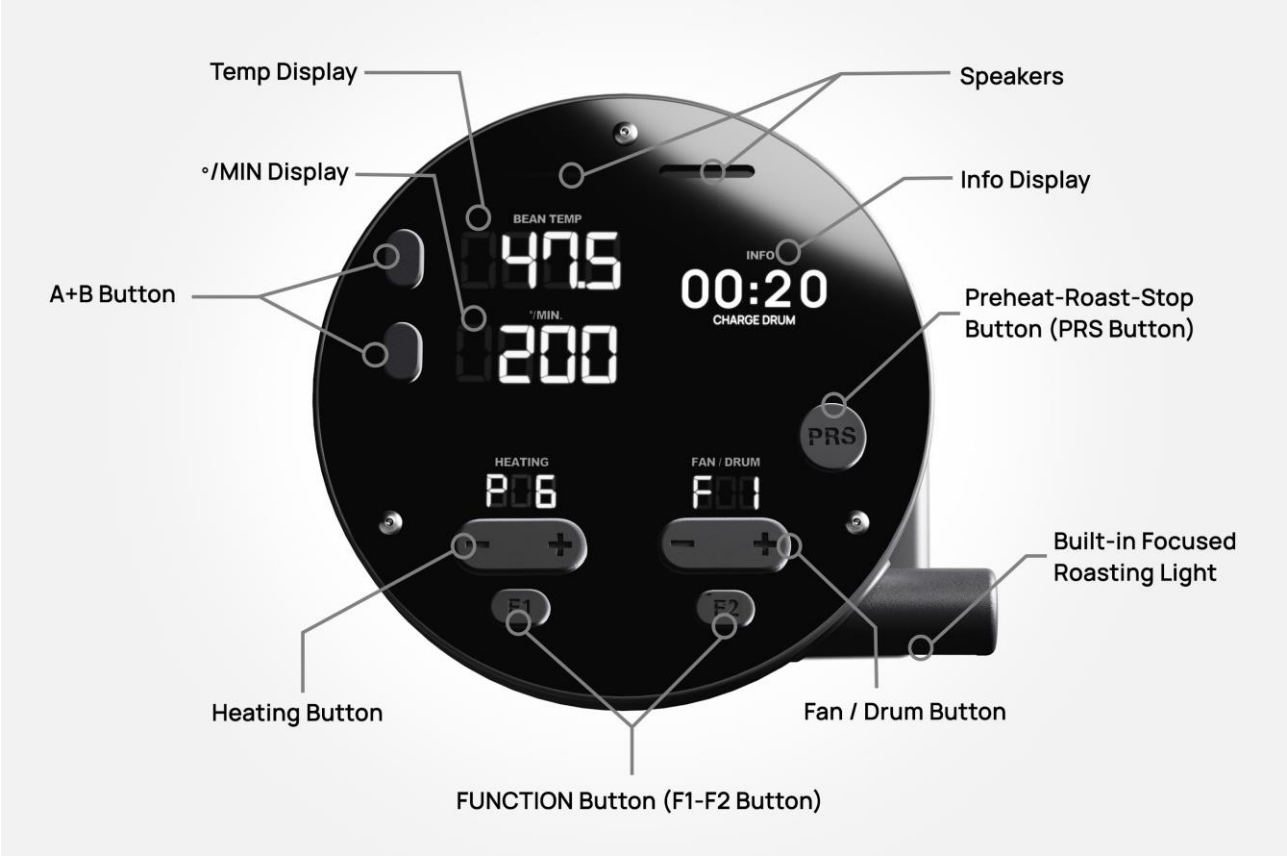
Getting Started

Roaster Overview



Control Panel Overview



Unpacking and Preparing the R2

Unboxing video guide

Mechanical Check

After receiving the R2, please inspect the packaging for any damage. If you are in doubt, please contact the shipping company and document the damage.

Drum Alignment and Pulley Installation

After shipping or moving the R2, it's important to perform a few checks before roasting. This ensures optimal performance by checking and adjusting the Drum-to-Front Plate clearance, Pulley clearance, and Belt tension.

Drum Alignment

1. **Level the R2:** Place the R2 on a level surface.
2. **Check Drum Position:** Push the Drum Shaft backward. It should spring back when released.
3. **Align the Drum:** Pull the drum to the most forward position through the Door.

Pulley Installation

1. **Remove the Chaff Collector:** Remove the Chaff Collector from the R2.
2. **Check Pulley Position:** Ensure the Pulley is correctly positioned between the Squirrel Cage and Body.
3. **Check Pulley Set Screw:** Gently spin the Drum clockwise to expose the Pulley Set Screw. You might see two Screw-Holes with one Set Screw. This is normal and does not affect the functionality. Gently pull on the Pulley to check if it's secure.

Power-On Test

Plug in and power up the R2. Press the **PRS Button** three times to enter *Roast Mode* and then set Power to P0. Listen for any obvious metal-against-metal scraping sounds.

Note on Rust

If you see rust on the Drum, do not be alarmed. It is normal for an unseasoned Drum to oxidize and this will disappear during seasoning.

Seasoning the Drum

Before you can roast your first batch of coffee for consumption, you'll need to season your R2's Drum through three initial roasts. This process involves roasting 400-500 grams of green coffee beans to help seal the Drum's steel surface, preventing rust and creating a smoother finish. While the Drum may not be fully seasoned until after 5-10 roasts, you can enjoy your coffee after the initial three. For these seasoning roasts, you can use standard, everyday beans; there's no need to use your premium coffees.

During seasoning, you can use a pot of water instead of the cooling tray. **Do not** put water directly into the cooling tray. Fill a pot or container that fits under the R2 with water, about halfway full. Once you're done roasting, drop them directly into the water and stir to cool them quickly. This method eliminates smoke and prevents the Cooling Tray from becoming sticky and oily.

1. **Preheat:** Set the Preheat Temperature to 230°C and press the **PRS Button** to start preheating.
2. **Start Roasting:** Once the Preheat Temperature stabilizes at 230°C, press the **PRS button** again to charge the R2. You'll hear the R2 announcing, "I am now ready to roast." Add 400-500 grams of green coffee beans to the Drum.
3. **Check Drum Speed:** Make sure the Drum Speed is set to D9 for the fastest rotation. You can adjust the Drum Speed by pressing **F2** to access the D settings and then using the **Fan/Drum Buttons**.
4. **Adjust Fan Speed**: Press **F2** to access the F settings and then press the **Fan/Drum Buttons** to change the Fan Speed. A recommended setting would be F3; if you feel that the moisture is building inside the Drum, you can set it to a higher F setting.
5. **Roasting Process:** Roast the coffee on power level P7 until you reach the second crack.
6. **Cooling the Beans:** Press the **PRS Button** to go to *Cooling Mode*, open the door, and dump the beans.
7. **Repeat:** Repeat this process at least three times to season the drum.

IMPORTANT NOTICE

- **Do not consume the beans from the seasoning roast! Machine oil does not taste good!**
- Avoid setting the Preheat Temperature higher than 230°C as the IBTS Module will give a different measurement for non-seasoned Drums.
- For the first 10 roasts, set the Drum Speed to D9. This higher speed helps prevent beans from sticking and potentially forcing the door open. After the initial seasoning period, you can lower the Drum Speed as the drum surface becomes smoother.

Operating your Bullet R2

Setting Up & Localization

While in *Ready Mode*, Press **F1** to access the Menu.

Press the **Heating +/- Buttons** to navigate to the different settings.
Press the **Heating - Button** to go back and exit.
Press the **Fan/Drum +/- Buttons** to change values.

1. Preheat — Starting Temperature for Preheating.
2. Heating — Initial Power setting.
3. Fan/Drum — Initial Fan and Drum speed settings.
4. Audio — Adjust the speaker volume.
5. Temperature Units — Toggle between Celsius and Fahrenheit.
6. Weight Units — Toggle between Kg and Lb.
7. Time Zone — TBD.
8. Spotlight — Adjust spotlight intensity.
9. USB Mode — USB RoasTime / SD Card, and Firmware Updates.

Updating the Firmware

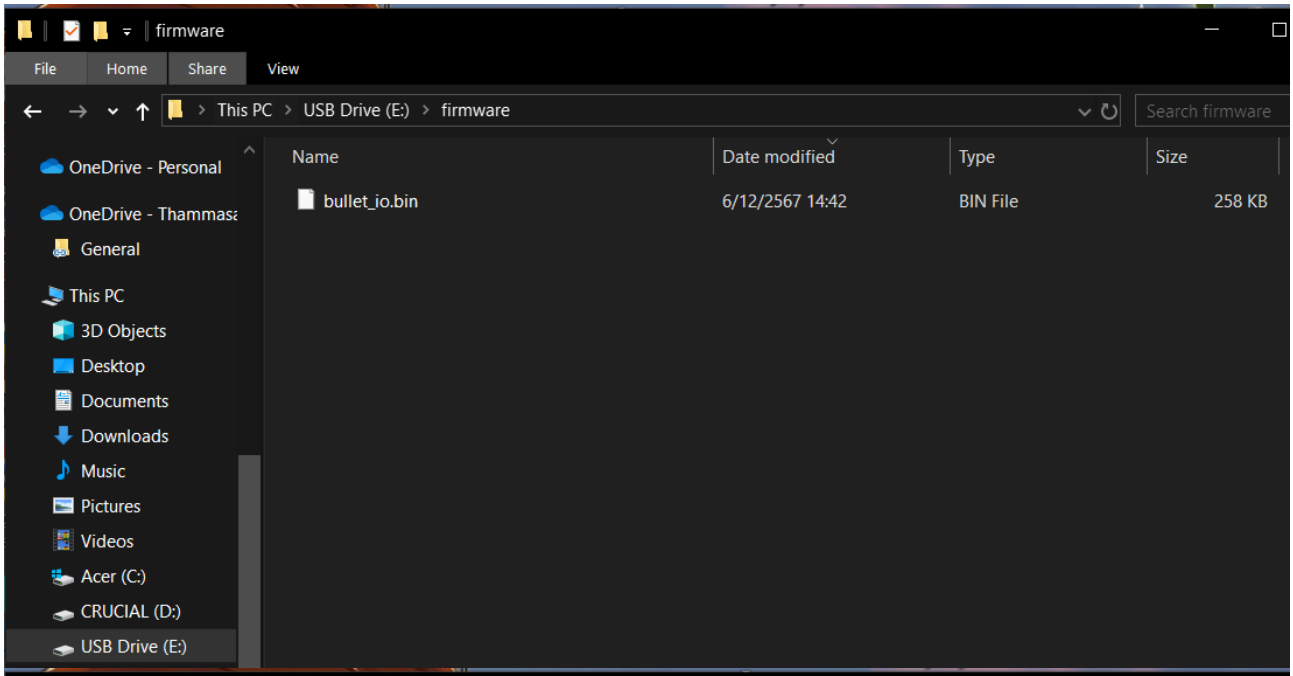
1. Find available versions here R2 firmware files.
2. Start the R2. Make sure the R2 is in *Ready Mode*.

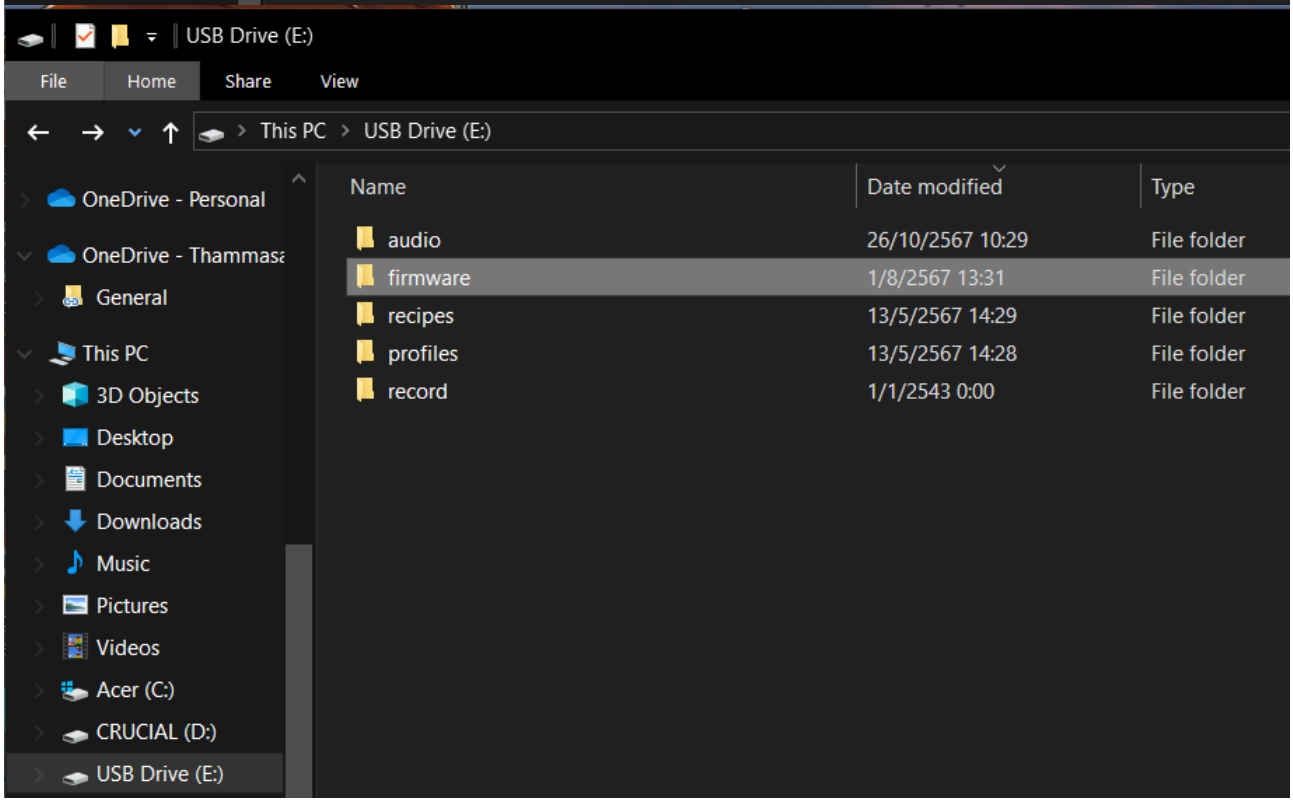
3. Press **F1** to access the Menu.

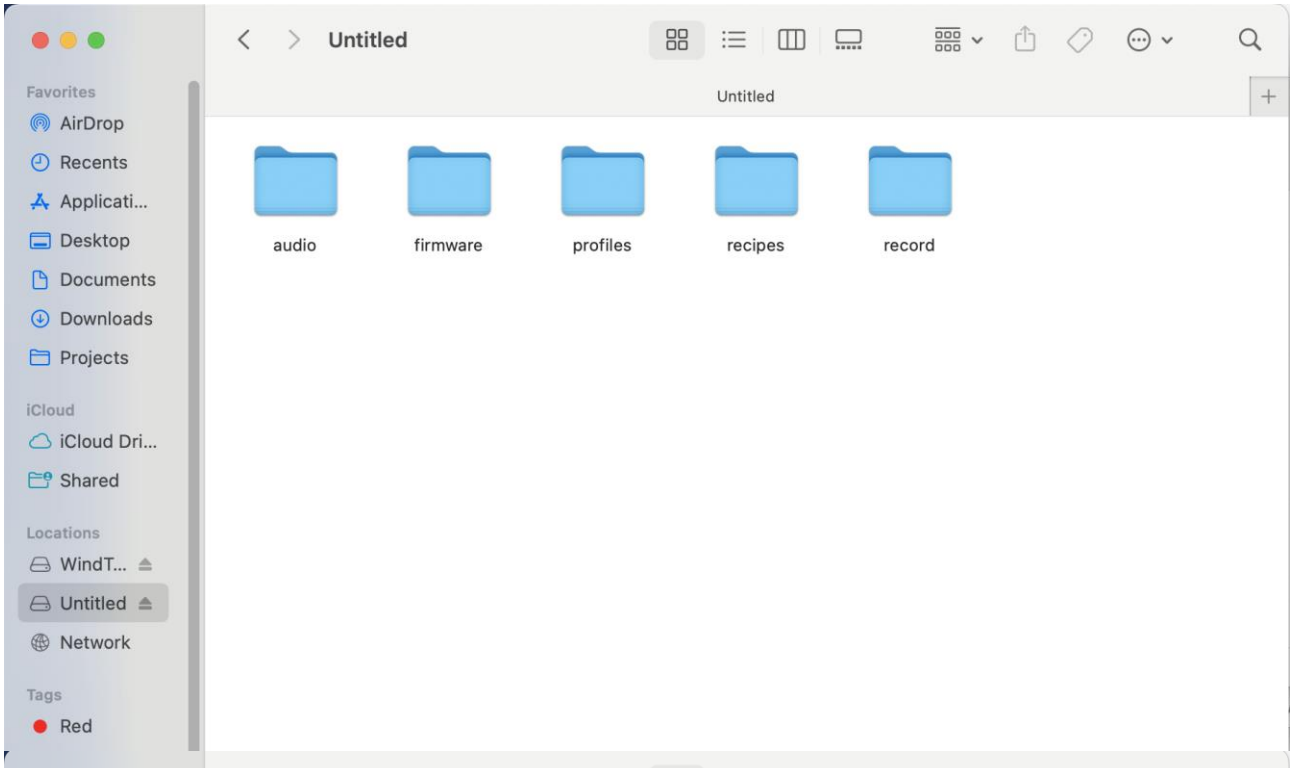
4. Press the **Heating +/- Buttons** to navigate to the 'USB Mode' tab. Press the **Fan/Drum + Button** to enter the USB Mode Settings.

5. On the 'USB for RoasTime' tab, press the **Fan/Drum + Button**. The text will change to 'USB for SD Card'.

6. Connect the R2 to the computer. The drive should show up in Windows Explorer / Finder. If the window does not appear, reconnect the USB Cable. Copy the file to the Firmware folder on the SD card drive and delete the old one.



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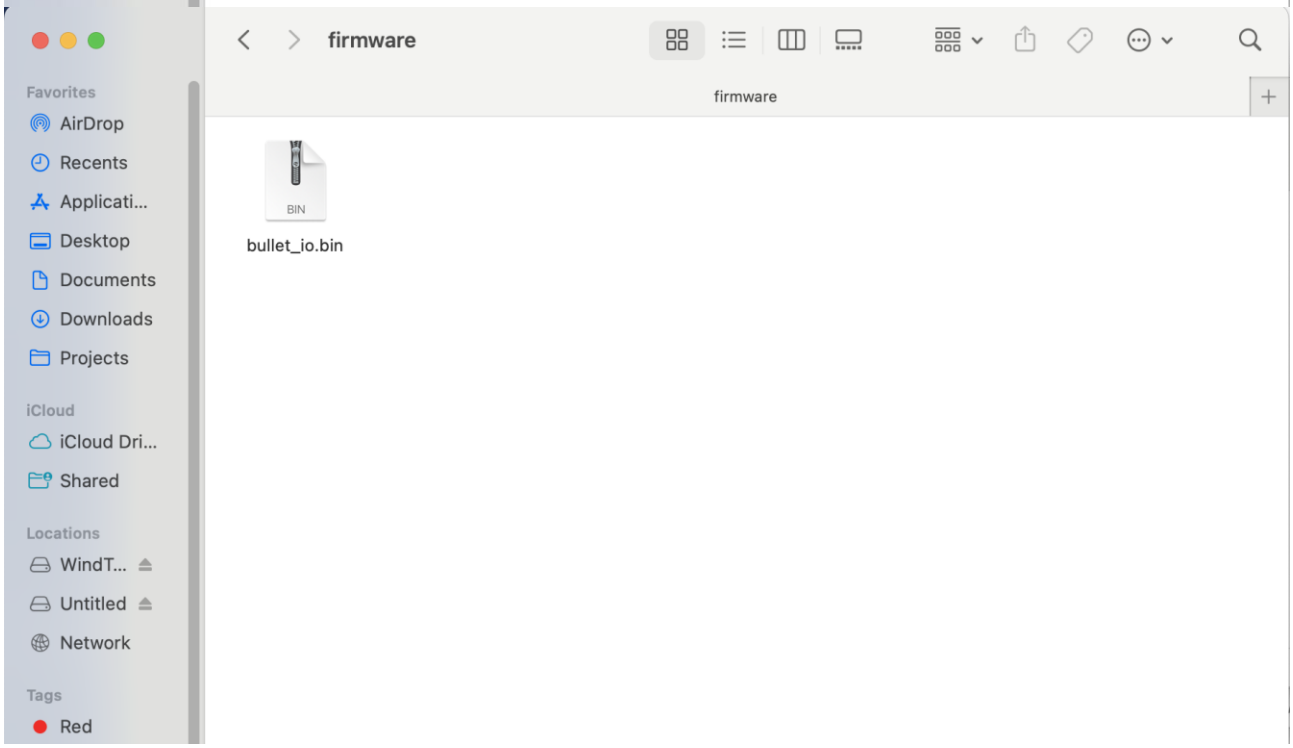
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7. Press the **Fan/Drum - Button** to set the USB Mode back to 'USB for RoasTime'.

8. Press the **Heating + Button** to navigate to the 'FW Update' tab. Press the **Fan/Drum + Button**. The screen will flash for a few seconds and then stop. The Firmware is now updated.

9. If the board does not restart, then turn off the R2 and turn it back on.

10. Press the **Button A** in *Ready Mode* to toggle different Info Display pages and check if the Firmware Version has changed.

Operating Modes

The **PRS Button** (Preheat / Roast / Stop) cycles through the different modes of the R2: Ready, Preheat, Charge, Roast, Cooling, Shut Down, and Back-to-back Roasting.

Ready Mode

In *Ready Mode*, the R2 is ready to begin preheating. You can use the **Heating +/- Buttons** to select your preheating temperature before pressing the **PRS Button** to move into the *Preheat Mode*.

If you have already completed a roast, the Drum may rotate in this mode. Cooling Fans are off, but pressing **F2** will start the Exhaust Fan to cool down the R2 if the Drum Temperature is higher than 80°C (176°F).

Pressing the **Button B** toggles the data presented in °/MIN Display in the following sequence:

1. Bean Temp
2. Chamber Pressure
3. Preheat Temp
4. IGBT
5. B-ROR

Preheat Mode

In *Preheat Mode*, the R2 will preheat the Drum to your designated IBTS Temp. The Info Display will show 'PREHEATING'. Once the B-ROR stabilizes (approximately 20 minutes), the R2 will automatically go to *Charge Mode*.

You can still change the Preheat Settings in *Preheat Mode* by pressing the **Heating +/- Buttons**.

You can also press the **PRS Button** while in *Preheat Mode* to manually prompt the R2 into *Charge Mode*.

Charge Mode

In *Charge Mode*, the R2 is ready to roast. The Info Display will blink and announce "I am ready to roast".

To begin roasting, simply pour green beans into the Drum through the Funnel. Once loaded, the R2 will automatically detect the beans and prompt to *Roast Mode*.

Roast Mode

Congratulations: You are roasting coffee! The Power, Fan, and Drum Settings can all be adjusted during the roasting process. Press the **Heating +/- Buttons** to adjust the Power and the **Fan/Drum +/- Buttons** to adjust the Fan and Drum Speed. You can toggle between Fan and Drum by pressing **F2**.

Pressing the **Button B** toggles the data presented in °/MIN Display in the following sequence:

1. Chamber Pressure
2. IGBT Temp
3. B-ROR
4. Bean Temp

Cooling Mode

Press the **PRS Button** while in *Roast Mode* to enter *Cooling Mode*. You should do this before you manually open the door to drop the beans into the (Pro) Cooling Tray. The Cooling Fan and Exhaust Fan will run at C5 and F5 respectively. The Drum Speed will be set to D1. The C, F, and D settings can be adjusted to your preference.

Pressing **F1** in this mode will prompt the R2 into the *Back-To-Back Roast Mode* so that you can continue cooling the beans while preheating the drum for the next roast.

Shut Down Mode

Press the **PRS Button** while in *Cooling Mode* to enter *Shut Down Mode*. The Cooling Fan will turn off and the R2 will start cooling down. Once the Drum Temperature is below 80°C (176°F), the R2 will go back to the *Ready Mode*. You can manually press the **PRS Button** to prompt the R2 into *Ready Mode*. The Drum will continue rotating if the Drum Temperature is above 120°C (248°F), but the Exhaust Fan will not run and cool down the R2.

Back-to-Back Roast Mode

Pressing **F1** in the *Cooling Mode* will prompt the R2 into the *Back-to-back Roast Mode*. The Cooling Fan will continue to run until the C Settings is set to C0. Select the new Preheat Temperature by pressing the **Heating +/- Buttons**. The R2 will Preheat to the previous Preheat Temperature if it's not adjusted.

Roasting Coffee

Preparing a Roast

1. Place the R2 on a suitable table and connect the (Pro) Cooling Tray.
2. If the R2 has been moved around, make sure the Drum is at the most forward position by opening the Door and pulling the Drum forward. Make sure the Drum is cool before doing so.
3. Ensure that the Bean Chute Plug is in place.
4. Connect the Power Cord to the R2 first, then into the wall socket. Turn on the power with the Power Switch.
5. The R2 is ready when the Info Display shows 'READY', indicating that it is now in *Ready Mode*.

Preheating The R2 Bullet

1. Set your designated Preheat Temperature by pressing the **Heating +/- Buttons**.
2. Press the **PRS Button** to go to *Preheat Mode*.

The R2 will now preheat the Drum to the designated IBTS Temp. Once reached, the R2 will maintain the IBTS Temp until the B-ROR stabilizes. The R2 will then go to *Charge Mode*.

Notice

Under some circumstances, the R2 will not automatically enter *Charge Mode*. This can be caused by a low ambient temperature, excessive airflow around the R2, or an external exhaust system affecting airflow within the Drum. You can manually press the **PRS Button** to enter *Charge Mode* in these cases. If the R2 has not entered *Charge Mode* after 35 minutes, it is necessary to manually press the **PRS Button** to enter *Charge Mode*.

Charging Beans

1. When the Display starts flashing, the R2 is ready to roast.
2. Remove the Bean Chute Plug and insert the Funnel into the Bean Chute. The slotted lip of the Funnel should face toward the back of the roaster, resting on top of the Bean Chute's bar to create a seal around the Exhaust Pipe to prevent beans from escaping.
3. Pour all of the green beans into the R2 at the same time.
4. The R2 will automatically detect the loaded beans, move to *Roast Mode*, and start the roast's timer.
5. After all the beans are loaded, pull out the Funnel and reseat the Bean Chute Plug.
6. Be careful not to press the **PRS Button** until the end of your roast.

Notice

If you are roasting very small batches, the R2 might not be able to detect that the beans have been loaded. In this case, you can move into *Roast Mode* manually by pressing the **PRS Button**.

Roasting

While roasting, you can adjust the Power, Fan Speed, and Drum Speed. Press the **Heating +/- Buttons** to adjust the Power. Press **F2** to toggle between the Fan Speed (F) and Drum Speed (D) Settings. Press the **Fan/Drum +/- Buttons** to adjust the Settings.

The °/MIN Display shows the rate of rise for the Bean Temp (B-ROR). The display value is °C/min (°F/min).

Notice

Fan Speeds 6 and above are strong enough to drastically drop the temperature inside the Drum and should be used with care.

The Drum Speed can influence Bean Temp readings. When roasting smaller batches, a higher Drum Speed can sometimes give a more precise IBTS Temp reading.

Cooling The Beans

1. When the beans have reached the preferred development, press the **PRS Button** and lift the Door Handle at the same time. Lift fast to avoid beans getting stuck inside the Air Inlet.
2. Press **F2** to toggle between the Exhaust Fan Speed (F), Cooling Fan Speed (C), and Drum Speed (D). Press the **Fan/Drum +/- Buttons** to adjust the Settings.
3. Press the **PRS Button** to enter the *Shut Down Mode* after the beans are cooled. In this mode, the Cooling Fan stops, while the Exhaust Fan continues to cool down the Drum until the IBTS Temp reads below 80°C (176°F). The R2 then goes back to *Ready Mode*.
4. Instead of shutting down, you can choose to continue with back-to-back roasts by pressing **F1** while in *Cooling Mode*. The R2 will then initiate *Back-to-back Roast Mode*. You can set the new Preheat Temperature by pressing the **Heating +/- Buttons**.

Turning Off The R2

Please note that it is important to allow the R2 to cool down after you are done roasting. Do not turn off the R2 until it shows 'READY', the Drum has stopped rotating, and the Drum Temperature is less than 80°C (176°F). The Exhaust Fan Setting can be increased to speed this up.

Before moving the R2, make sure to disconnect the (Pro) Cooling Tray, USB Cable, and power cord.

After every roast session, it is a good idea to empty the Chaff Collector and check if the Chaff Filter needs cleaning. Please also disconnect the Cooling Fan Cable, remove the (Pro) Cooling Tray Basket, and empty the chaff from the (Pro) Cooling Tray.

IMPORTANT NOTICE

Please keep the R2 connected to the outlet while it cools down. This will keep the fans running to cool the mechanical parts, electronics, and especially the IBTS Module. Unplugging the R2 before it has completely cooled will damage it.

In the event of a power outage, quickly drop the beans from the Drum and run a battery-powered fan pointing at the Induction PCB Module.

Venting The R2

An inadequate ventilation setup for the R2 could potentially damage the roaster and void the warranty. Please take care to make sure that your exhaust system is functioning properly.

Open Ventilation Setups

An open ventilation setup is easier to manage effectively, as there is no risk of interfering with the R2's internal airflow.

The example illustrated above is ideal. The ventilation tube is installed with a fan and is not susceptible to conditions outdoors. For ventilation tubes longer than 2.5 meters, an active fan is required to properly vent the R2. Most importantly, there is also a gap between the ventilation tube and the Exhaust Port, so that the R2's airflow remains unaffected.

Sealed Ventilation Setups

Whether active or passive, sealed venting solutions can sometimes create problems.

In the example above, the sealed, passive ventilation tube to the outdoors is susceptible to air drafts that could funnel air back into the R2. This will force the chaff, oil, and moisture to come out of the Front, potentially leading to inconsistent roasts,

frequently dirty IBTS Lens, condensation in the Control PCB Module, and overheating issues.

In the next example, the sealed, active (with a fan) ventilation setup may pull too much air out of the R2 when it is running. This, too, can affect the airflow within the R2 and lead to inconsistent roasts.

Another common way to vent the R2 with a sealed connection is using an oven hood. This solution works well for light roasts. Because it's not venting to the outside or pulling a lot of air, the seal does not cause issues. Please understand that this kind of setup will not work with long tubing -- keep it less than 2.5 meters.

Maintenance

Cleaning

The following cleaning procedures are necessary to keep the R2 in prime roasting condition. We've laid out how frequently you should maintain the Bullet:

- Routine Maintenance
  Once every roast session or 2-3 kg of roasts.
- Regular Maintenance
  Every 30 kg of roasts.
- Annual Maintenance
  Once every year.
- As-needed Maintenance
  Whenever a certain condition is met.

You might need to maintain the Bullet more frequently depending on how dark or how much you roast.

IMPORTANT

Only maintain the R2 when it has completely cooled down.

Routine Maintenance

Clean the Chaff Collector and Cooling Tray after every roast session or every 2-3 kg.

Chaff Collector

1. Grab the Pull Tab to release the Chaff Collector, while holding the Chaff Collector with the other hand.
2. Place the Chaff Collector over a trash bin and open the Chaff Collector Plug.
3. Gently knock the Chaff Collector to drop the chaff. Alternatively, you can vacuum the inside of the Chaff Collector.
4. Check if the Chaff Filter needs cleaning.

Chaff Filter

If the Chaff Filter appears to be black, brown, or covered in dust, the Chaff Filter needs cleaning.

1. Gently twist the Chaff Filter to remove it.
2. Soak the Chaff Filter in hot water mixed with baking soda or espresso backflush cleaner solution for a while.
3. Scrub and poke the mesh with a toothbrush until a stainless steel color is revealed on the Chaff Filter.
4. Rinse and dry before assembly.

Cooling Tray

1. Unplug the Cooling Fan Cable.
2. Lift the Cooling Tray Basket (stainless steel).
3. Vacuum or dump the chaff.
4. Take out and check the Cooling Tray Filter for cleaning.
5. Soak and scrub the Cooling Tray Filter in hot water and baking soda.
6. Rinse and dry before assembly.

Regular Maintenance

Clean the Impeller and Pro Cooling Tray, while vacuum the chaff underneath the Drum after every 30kg of roasts.

Impeller

1. Remove the Chaff Collector.
2. Locate the Impeller Set Screw and face it toward the Exhaust Port.
3. Loosen the Impeller Set Screw (H2) and remove the Impeller.
4. Soak and gently brush the Impeller.

Tip

The Impeller is made of aluminum, so it is prone to corrosion or oxidation when it's exposed to both strong basic and strong acidic solutions. Use a mild basic solution, such as baking soda, to clean the Impeller.

Additionally, avoid soaking for too long to prevent corrosion or discoloration. You can instead quickly cycle between soaking, scrubing, and rinsing to minimize the soaking time without compromising cleaning efficiency.

Pro Cooling Tray

Chaff Filter Box

1. Unplug the Pro Cooling Tray Cable.

2. Remove the Chaff Filter Box and dump the chaff.

3. Examine the Pro Cooling Tray Filter to see if the mesh is clogged.

4. Soak the Pro Cooling Tray Filter in hot water mixed with baking soda.

5. Brush and poke the gunk out of the mesh with a toothbrush.

6. Rinse and dry before reassembly.

Pro Cooling Tray Basket

1. Unplug the Pro Cooling Tray Cable.

2. Remove the Bean Stirrer.

3. Vacuum any chaff from the Pro Cooling Basket.

4. Wipe the pro Cooling Basket with a piece of cloth dipped in warm water if some gunk has built up inside the Pro Cooling Basket.

Drum

The Regular Maintenance is fairly simple: lift the Door and vacuum the space underneath the Drum.

Tip

Some beans can get caught up between the Air Inlet and the Mica Tube. Use a screwdriver or a spudger to carefully pick out the beans.

IMPORTANT

Do not use a compressed air gun or canned air to blow at the Front to avoid damaging the Mica Tube.

Annual Maintenance

Once every year, check and clean the Exhaust Pipe. Additionally, remove the Drum for full maintenance.

Exhaust Pipe

1. Remove the Front Plate and Chaff Collector.
2. Check inside the Exhaust Pipe for beans or chaff.
3. Use a long screwdriver or anything long, thin, and blunt to carefully pick out the beans.
4. Gently brush off the dust accumulated inside the Exhaust Pipe.

IMPORTANT

Do not remove the Exhaust Pipe to avoid damaging the heat insulation.

Drum

Taking out the Drum involves disassembling multiple parts. Check out Drum Removal and Cleaning for the instructions.

As-needed Maintenance

IBTS Lens

Clean the IBTS Lens whenever the IBTS First Crack Temps are drifting lower than 195°C (383°F).

1. Remove the Top Housing Screw (H2).
2. Press downward and pull to disengage the Magnet.
3. Gently brush off the dust inside the Control Housing.
4. Remove the Front Panel (H3).
5. Flip the Front Panel over to clean the IBTS Lens with a cotton swab dipped in isopropyl alcohol.
6. Reassemble everything.

Basic Troubleshooting

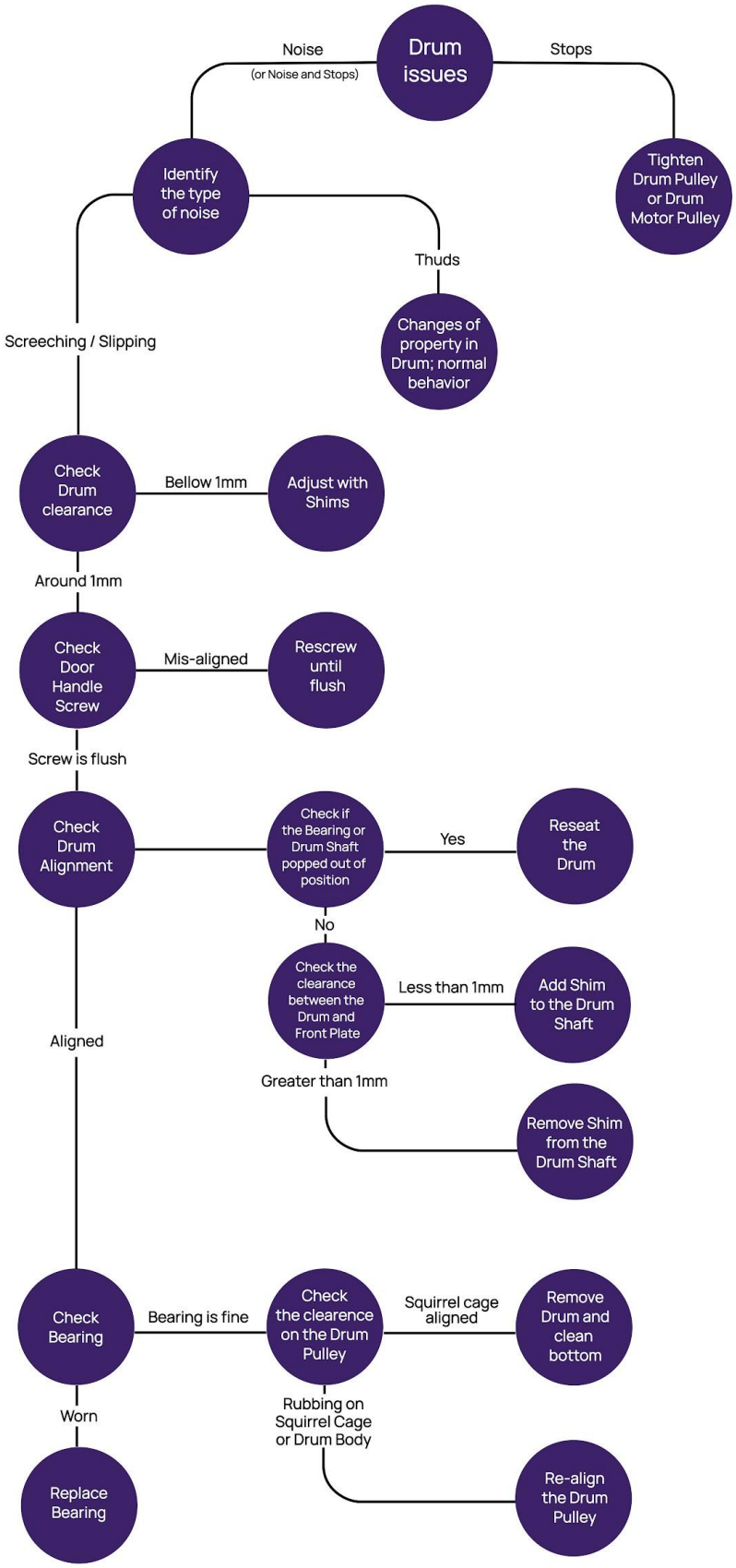
Some parts wear out over time and usage, while others may have issues when they are improperly installed. Please follow the guides below to run a basic troubleshooting. If the issue is not resolved, please contact support@aillio.com. Please note that all troubleshooting should be done when the Bullet has cooled down.

Drum Issues

When the Drum makes noises or stops during usage due to various reasons. Please follow the guide below to identify the cause.

1. Acknowledge if the Drum is making noise or just stops.
2. If the Drum is making noises, confirm if it's a periodic/constant high-pitched noise, a 'da-da-da-da' (Belt slipping) noise, or a periodic thudding noise.
3. Identify if the Drum stops after it's heated, loaded with beans, or right from the start of Preheating.
4. When the Drum is cooled, slowly spin it clockwise with one hand and check if it's stuck, smooth with a bit of force, or completely spinning freely.

Please follow the flow chart below to pinpoint and solve the issue:



Pulley Adjustment and realignment

Please follow these steps if the Drum stops during roasting or if the Drum Pulley is rubbing against the Squirrel Cage or Body.

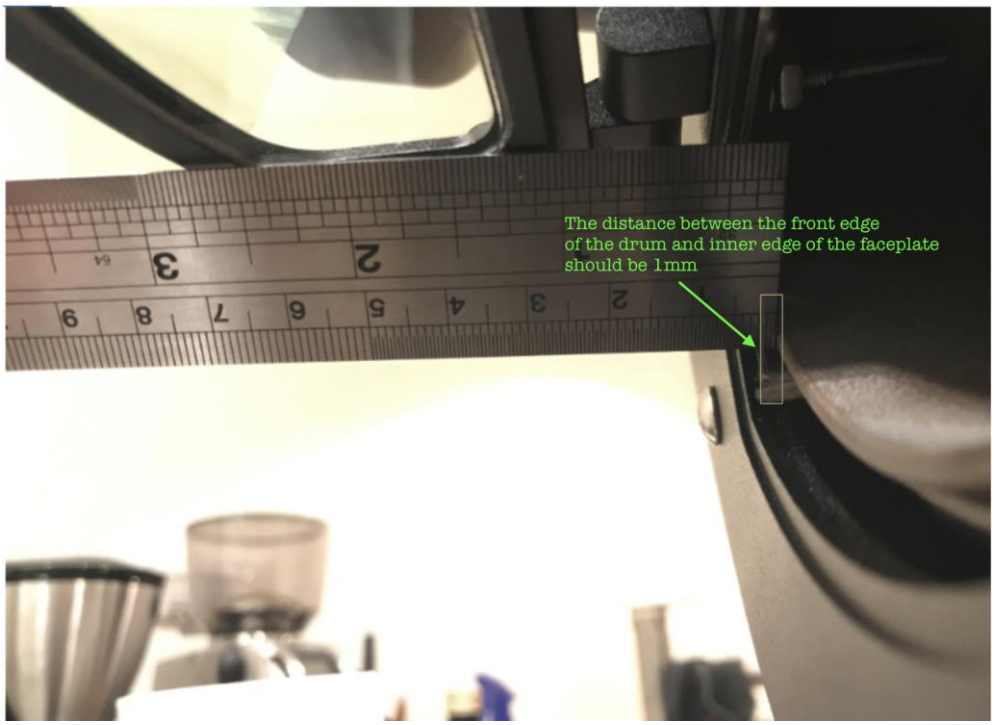
1. Take off the Chaff Collector.
2. Spin the Drum clockwise by hand and locate the Set Screw on the Drum Pulley.
3. Loosen, adjust, and retighten the Set Screw.

To solve the Drum stopping issue:

1. Remove the Back Cover.
2. Unplug the connections on the Back PCB and remove the Squirrel Cage.
3. Unscrew the Stepped Screws holding the Drum Motor Bracket.
4. Locate the flat side of the Drum Motor Shaft.
5. Align the Set Screw on the Drum Motor Pulley and retighten.
6. Re-install everything and test.

Drum to Front Plate Clearance

Check if the Drum to Front Plate Clearance is 1 mm. If the clearance is below 1 mm, please add Shims to the Drum Shaft to increase the clearance.



Drum Alignment

The Drum will stop spinning if it's misaligned. This usually happens when the Front Plate is installed without first checking if the Bearing is sitting in the Socket. To realign, take off and re-install the Front Plate.

Worn Bearing

After a certain amount of usage, the Bearing will get stuck and start making high-pitched noises or stop the Drum from spinning. To check if the Bearing is worn:

1. Remove the Front Plate and take off the Bearing.
2. Hold the inner ring in one hand and spin the outer ring with the other.
3. If the Bearing feels grainy or does not spin at all, the Bearing is worn and must be replaced.

Replacing the SD Card and Battery

The SD Card and Battery are located inside the Control Housing. Please follow the instructions below if either of the parts needs replacement:

1. Make sure the R2 is unplugged from the electrical outlet.
2. Remove the three screws (H2) on the Control Panel.
3. Set the Control Panel on top of the Control Housing.
4. Remove the four black screw (Philips) on the Control PCB Module.
5. Locate and replace the SD Card and Battery at the Back of the Control PCB Module.
6. Reverse the steps and reinstall everything.

Basic guide to roasting coffee.

(If you have never roasted coffee, then this is the guide for you)

The Basics of Coffee Roasting

The R2 is a classic solid drum roaster, which means it is the most common type of roaster used by professional coffee roasters.

Before beans can be added to a drum roaster, the Drum must be preheated. When the Drum is at the designated temperature, the beans can be loaded, and the roasting begins.

We can simplify the roasting process by looking at the three basic variables that have the biggest influence on how coffee is roasted: Preheat temperature, drum heating (how much heat is applied to the drum), and the exhaust fan suction. Together, these three variables will determine your roast profile. There is no “perfect” roast profile. Each roaster operator will treat beans differently and thus will have their own profile. To generalize, most roaster operators will aim for a roasting time of 7-15min.

In the table below, you can see examples of preheat temperatures for different amounts of coffee.

We have users roasting as little as 100g at a time. This is probably too little for useful bean probe data, but still quite doable. We also have many users roasting up to 1kg or more at a time with good results, while others prefer to drop down to 700g or even 500g or 350g.

There are a lot of factors influencing this, including such things as the density of the beans (500g of dense beans will behave differently than 500g of less dense beans). In fact, many of our users prefer different charge sizes based on the beans they happen to be roasting.

There is no real ‘sweet spot’ for the R2, but a 1.2kg charge of some beans may take longer to get to the first or second crack than you would like, or you may have more difficulty controlling the roast with less headroom, in which case we'd recommend dropping the charge weight down.

We also strongly advise you to pick a single batch size -- any size -- and stick with it for the vast majority of your roasts at the beginning. In this way, there will be one less

variable in your roasts and you will learn the nuances of individual beans and of the roaster settings a little more quickly.

These following setting suggestions are only meant as a starting point, and you are encouraged to experiment.

Recommended Preheat Temps and Power Settings (Celsius)

Weight [g]	IBTS Preheat Settings	Starting Power
350	220°C - 240°C	P5-P7
500	240°C - 260°C	P6-P8
750	260°C - 280°C	P8-P9
1000	280°C - 300°C	P9-P10
1200 (Pro)	300°C - 310°C	P12-P13

Recommended Preheat Temps and Power Settings (Fahrenheit)

Weight [g]	IBTS Preheat Settings	Starting Power
350	428°F - 464°F	P5-P7
500	446°F - 500°F	P6-P8
750	500°F - 536°F	P8-P9
1000	536°F - 572°F	P9-P10
1200 (Pro)	572°F - 590°F	P12-P13

R2 Pro Roast Recipe Example: 350g

The following roast should finish in about 7-9 minutes or less.

Roast Level: Light

Weight: 350 grams

Preheat: 230°C

Charge Settings: Power 7, Fan 2, Drum 9

Infrared Bean Temp@120°C: Power 6, Fan 3

Infrared Bean Temp@165° C: Power 5

Infrared Bean Temp@190° C: Power 4

Infrared Bean Temp@200° C: Fan 4

‹First Crack Begins@196-204°C›

45-90 seconds after First Crack: End the Roast

Button function in each mode

Buttons / Mode	PRS	F1	F2	Heating Up/Down	Fan/Drum Up/Down	A	B
Ready Mode	Start Preheat	Toggle through the settings menu	Start/stop exhaust fan (if Drum Temp is higher than 80c) Useful for cooling off the R2	Change Preheat Temp	Change Cooling Fan Speed (during back-to-back roasting)		
Preheat Mode	Go to Charge Mode- overriding automatic change to Charge Mode				Change Cooling Fan Speed (during back-to-back roasting)		Toggle DT display between DT and RoR
Charge Mode	Go to Roast Mode- overriding automatic change to Roast Mode				Change Cooling Fan Speed (during back-to-back roasting)	Toggle between IBTS and Bean Probe	Toggle DT display between DT and RoR
Roast Mode	Go to Cooling Mode	While connected to a PC, this will mark the first crack in RoasTime	Toggle between the Fan and Drum Speed	Change Power Setting	Change Fan Speed, Drum Speed, Cooling Fan Speed (during back-to-back roasting)	Toggle between IBTS and Bean Probe	
Cooling Mode	Go to Shut Down Mode	Start back-to-back roasting	Toggle between the Fan Speed, Drum Speed, and Cooling Fan Speed	Change the Cooling Fan Speed	Change Fan Speed, Drum Speed, Cooling Fan Speed (during back-to-back roasting))		
Shut Down Mode	Go to Ready Mode						

Specifications

Bullet R2 Pro Spec Overview
• **Roast Capacity:** Maximum 1200g, Minimum 200g • **Minimum Batch Time**:1 kg to first crack within 6 minutes • **Power Requirement:** 2300W • **Phase:** Single Phase • **Current:** 12A • **Input Voltage:** 200-240V / 50Hz-60Hz • **Bean Max Temp:** 245°C • **Max. Recommended Ambient Temperature:** 10-30°C • **Temperature Units**: °C or °F • **Computer Interface:** USB Type-C • **Drum:** Multi vane, 5.9L solid carbon steel drum • **Drum Heating:** 14 steps. Patented direct drum induction heating. • **Exhaust Fan:** 12 Steps • **Bean Loading:** Manual • **Bean Ejection:** Manual • **Bean Cooling Tray:** Detachable. Active Fan Cooling • **Chaff Collector:** Detachable • **Plug Type:** AU/EU/KR/US/JP/UK • **Dimensions:** L603.3mm 325.1mm H457.8mm (L872.8mm including Pro Cooling Tray and Coffee Bag Spout, H463.8mm including the Leg Support) • **Shipping Dimensions Roaster:** L630mm W 360mm H480mm • **Weight: Roaster:** 16 kg (Shipping weight 21 kg) • **Warranty:** 2 years • **Country of Origin:** Taiwan (Designed in Denmark)

Bullet R2 Spec Overview
• **Roast Capacity:** Maximum 1000g, Minimum 200g • **Minimum Batch Time:** 1 kg to first crack in 7-9 minutes • **Power Requirement:** 1700W • **Phase:** Single Phase • **Current:** 15A/120V, 8A/230V • **Input Voltage:** 110V-120V & 200V-240V / 50Hz-60Hz • **Bean Max Temp:** 245°C • **Max. Recommended Ambient Temperature:** 10-30°C • **Temperature Units**: °C or °F • **Computer Interface:** USB Type-C • **Drum:** Multi vane, 5.9L solid carbon steel drum • **Drum Heating:** 10 steps. Patented direct drum induction heating. • **Exhaust Fan:** 12 Steps • **Bean Loading:** Manual • **Bean Ejection:** Manual • **Bean Cooling Tray:** Detachable. Active Fan Cooling • **Chaff Collector:** Detachable • **Plug Type:** AU/EU/KR/US/JP/UK • **Dimensions:** L603.3mm W325.1mm H445.6mm (L750mm including Bean Cooling Tray) • **Shipping Dimension:** L630mm W360mm H480mm • **Weight: Roaster:** 16 kg (Shipping weight 21 kg) • **Warranty:** 2 years • **Country of Origin:** Taiwan (Designed in Denmark)