

# Mobile App User Manual

## Setting up the Flavor Fusion iPhone App

### *System Requirements*

1. Device Compatibility: iPhone running iOS version 17.0 or later.
2. Network: A stable internet connection (Wi-Fi or cellular data).

### *Installing an App from the App Store*

1. Open the App Store: Tap the App Store icon on your iPhone's home screen.
2. Search for the App: Tap the search bar and type in the app name (e.g., "Flavor Fusion").
3. Download the App: When you find the app in the search results, tap the Get button. You may be asked to authenticate using Face ID, Touch ID, or your Apple ID password.
4. Wait for Installation: The app will start downloading and automatically install on your device. You'll see a loading circle that fills as the app installs.
5. Open the App: Once installed, tap Open from the App Store, or locate the app icon on your home screen and tap the app icon.

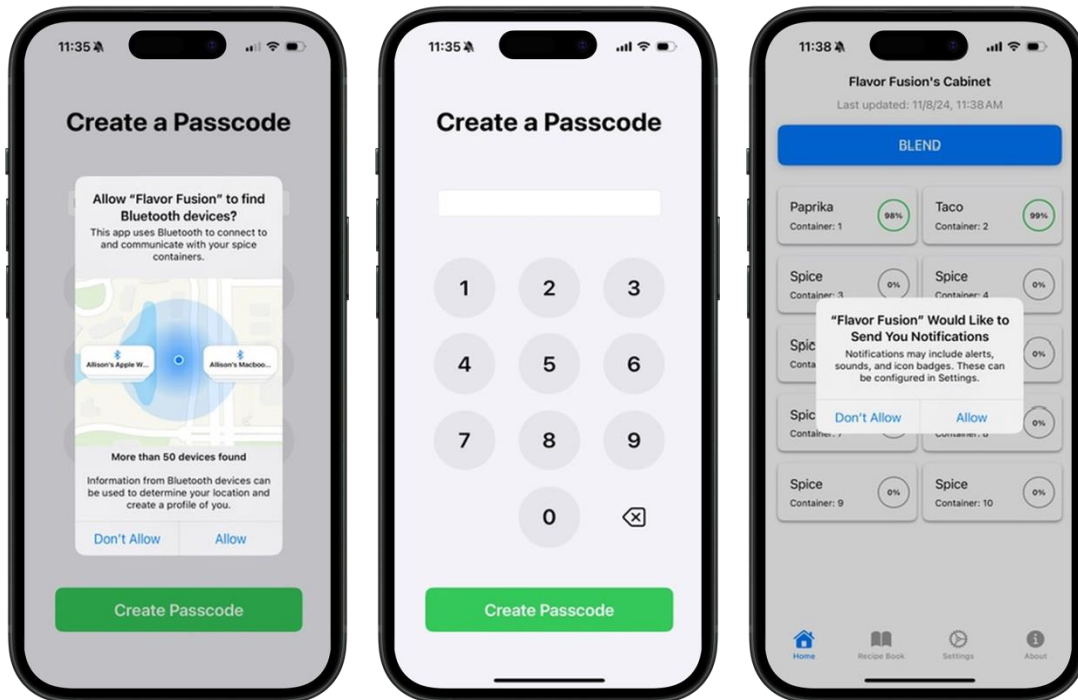
### *Installing from Test Flight (Public Beta Only)*

1. Download TestFlight: Download and install the app "Test Flight" using the "Installing an App from the App Store" instructions above.
2. Open the Invitation or use Public URL: If you receive an email invitation link, tap the link, which will open TestFlight. If you do not receive an email invitation link, navigate to the following URL: <https://testflight.apple.com/join/4ZzgWxdH>.
3. Accept the Invitation: Follow the prompts in TestFlight to accept the invitation.
4. Download the App: Once accepted, tap Install in TestFlight to download the app.

# Using the Flavor Fusion iPhone App

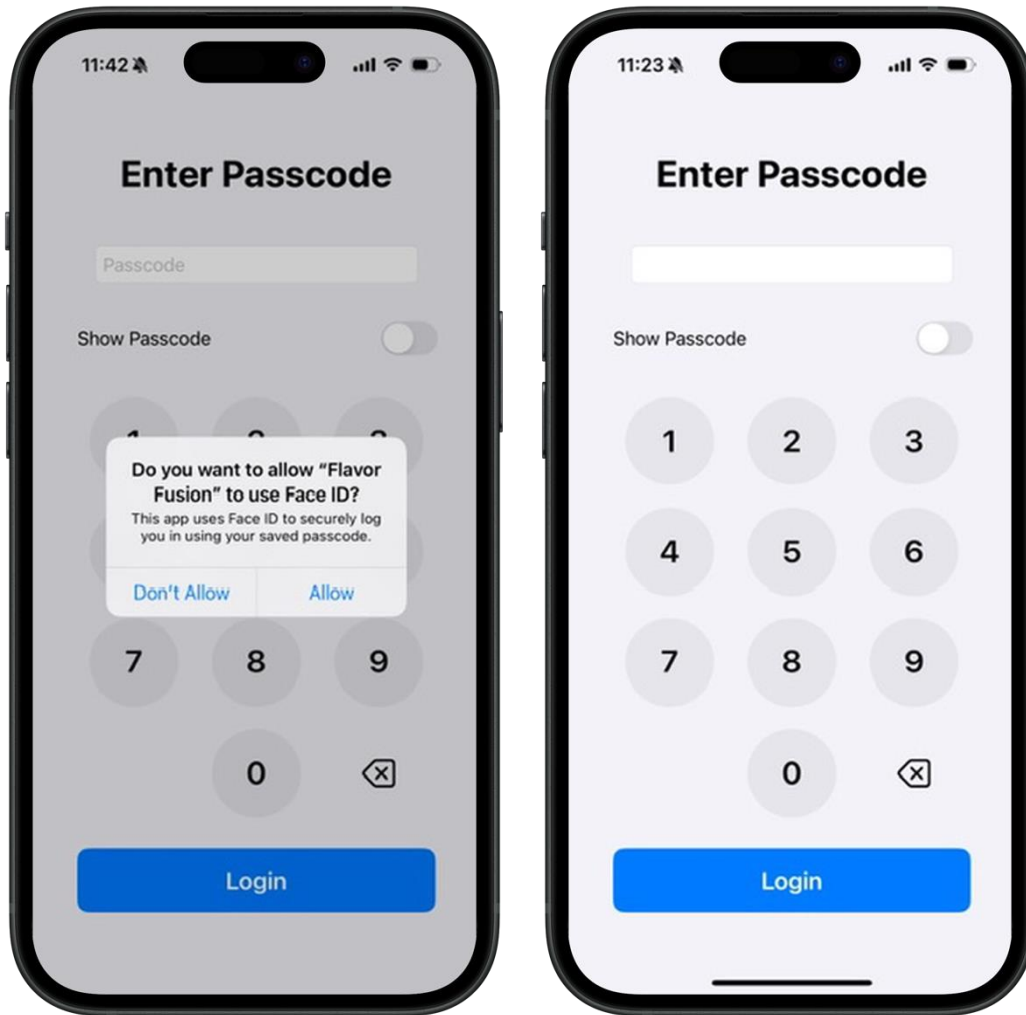
## First Launch

1. Enable Bluetooth: Upon first launch of the app, you will see the Alert “Allow ‘Flavor Fusion’ to find Bluetooth devices?” You will need to **Allow** this alert to use the app with the spice maker.
2. Create Passcode: On the **Create Passcode** screen, enter a passcode in the passcode field. Tap **Create Passcode** to create the passcode.
3. Allow Notifications: When you get to the **Home** screen you will see the Alert “‘Flavor Fusion’ Would like to Send You Notifications.” You will need to **Allow** this alert to receive notifications from the app when a container is running low or your blend is complete.



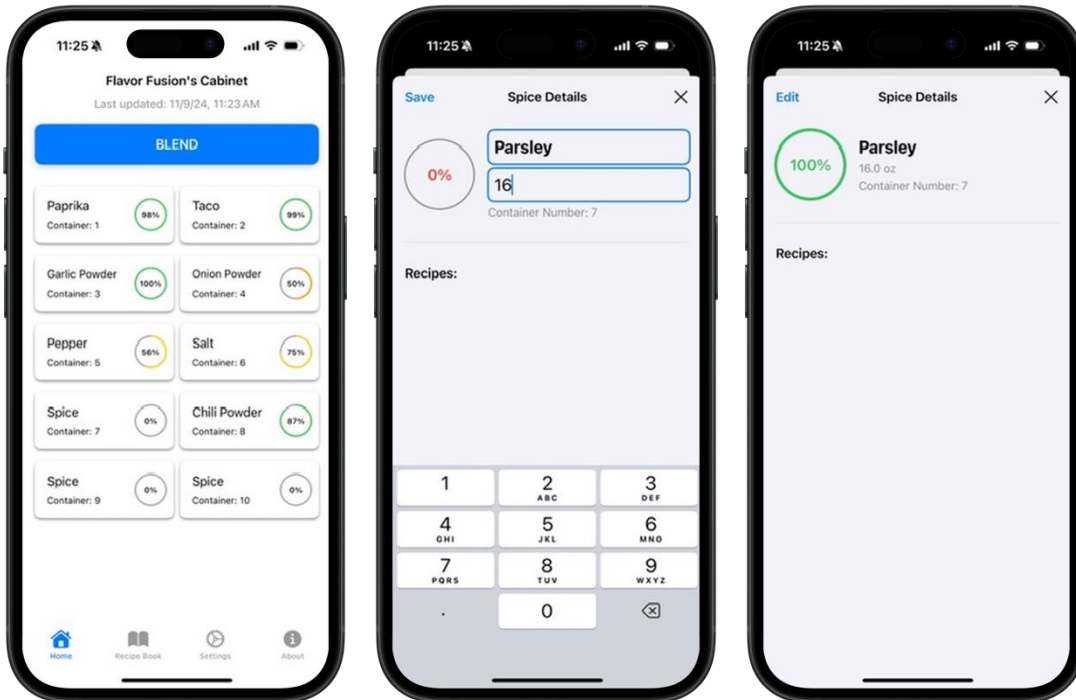
### *Login with Passcode/Face ID*

1. Login with Face ID: Upon launching the app, you will see the Alert “Do you want to allow ‘Flavor Fusion’ to use Face ID?’ You will need to **Allow** this alert to use Face ID to login to the app.
2. Login with Passcode: On the Create Passcode screen, enter your passcode in the passcode field. Tap **Login** to login to the app.



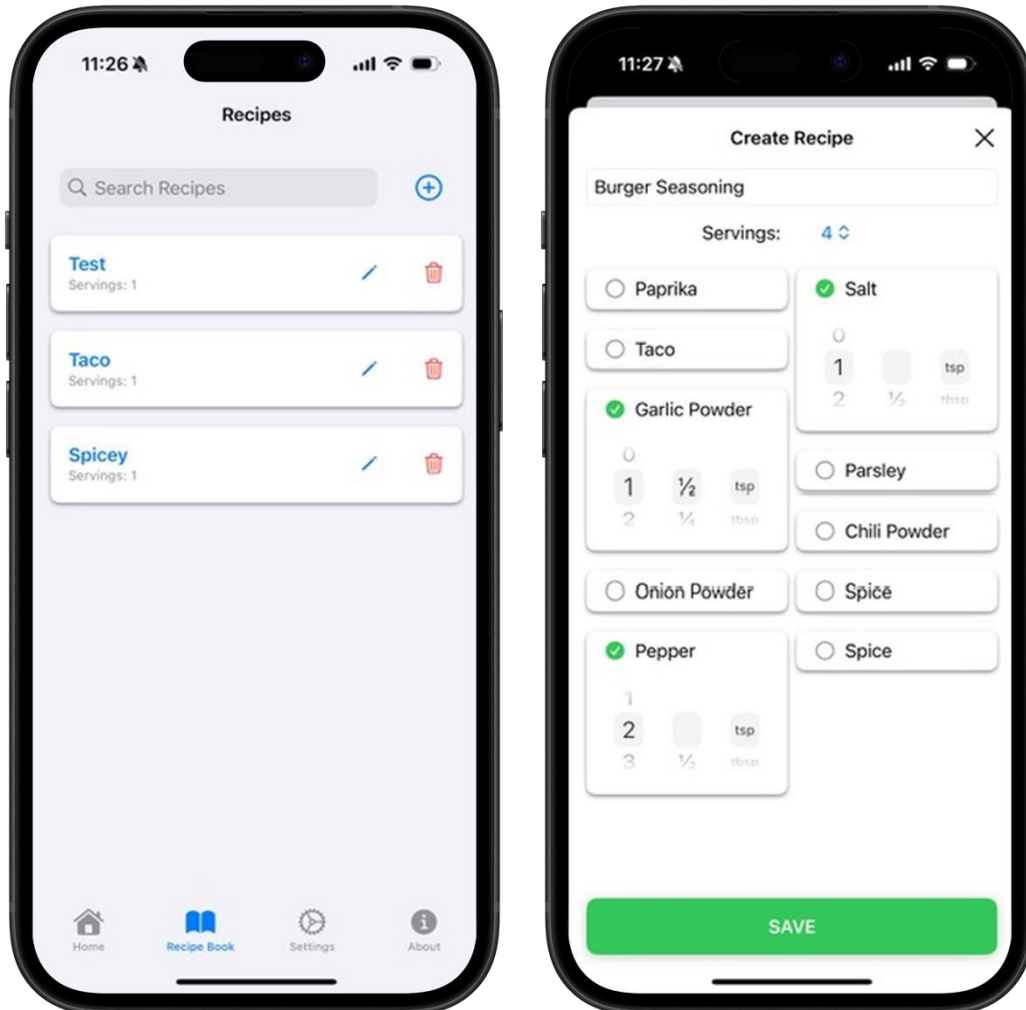
### *Adding a New Spice*

1. **Navigate to Home:** Open the app and go to the **Home** tab. Locate and tap on an empty container. This will open the **Spice Details** screen.
2. **Adding Spice Information:** On the **Spice Details** screen, tap the **Edit** button. In the text fields, type in the name of the spice and specify the amount currently in the container.
3. **Save Changes:** Once you've entered the spice details, tap the **Save** button to store the information. To close the **Spice Details** screen, either tap the 'X' or swipe down on the screen. This will return you to the Home tab.



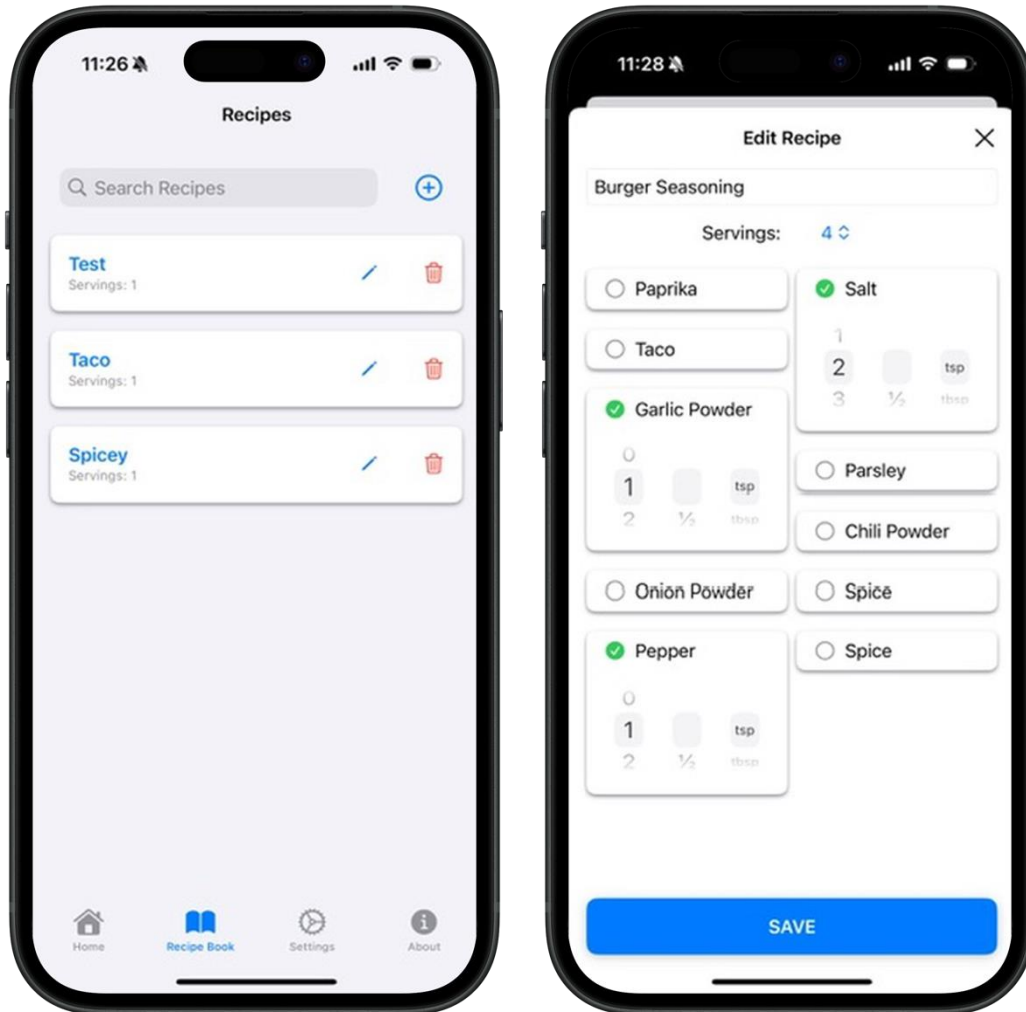
### *Creating a Recipe*

1. Navigate to Recipe Book: Open the app and go to the **Recipe Book** tab.
2. Create Recipe: Tap on the + button to bring up the **Create Recipe** screen. On the **Create Recipe** screen, choose the spices you want to include in the recipe and specify their amounts. Use the **Servings Picker** to set the desired number of servings for your recipe. Enter the recipe name in the **Recipe Name** text field.
3. Save Changes: Once you've entered the recipe details, tap the **Save** button to store the information. If you do not want to save your recipe, either tap the 'X' or swipe down on the screen. This will return you to the **Recipe Book** tab.



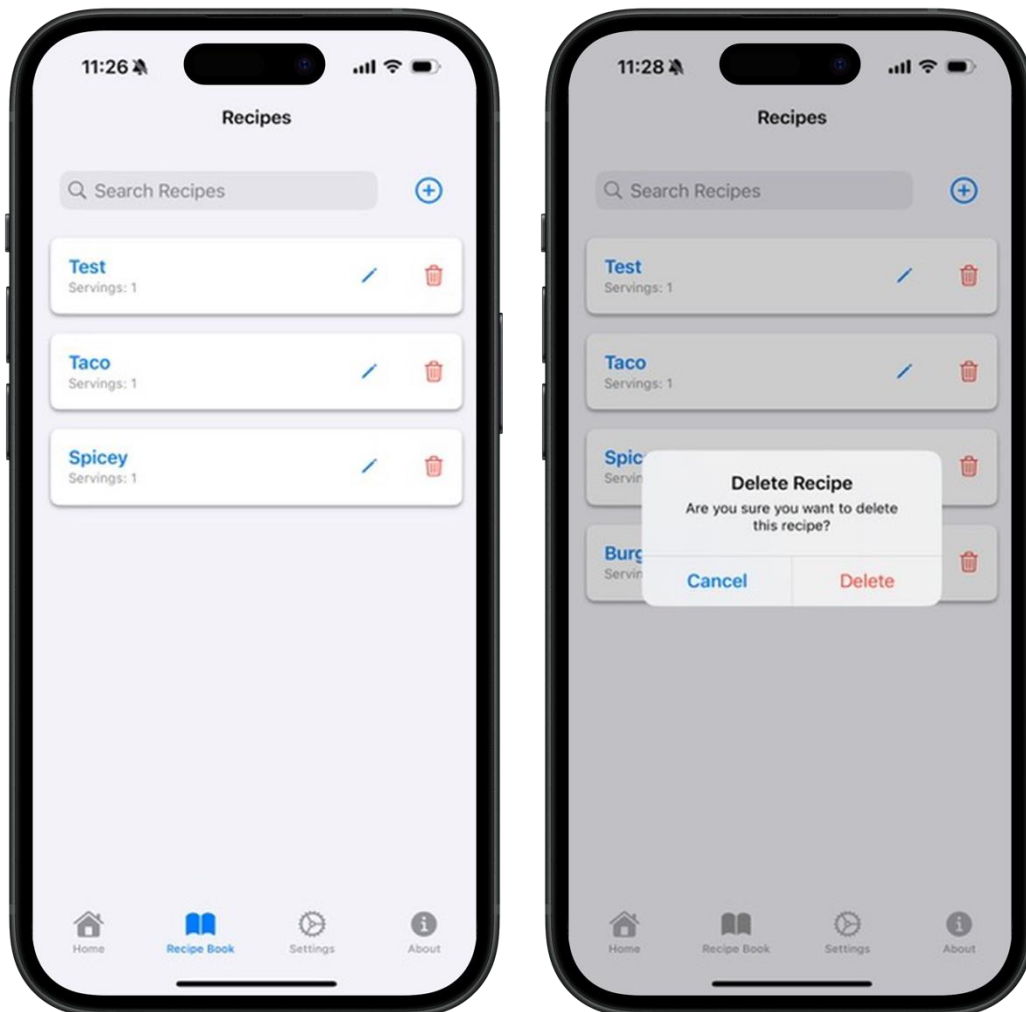
### *Editing a Recipe*

1. Navigate to Recipe Book: Open the app and go to the **Recipe Book** tab.
2. Edit Recipe: Tap on the **pencil** to bring up the **Edit Recipe** screen. On the **Edit Recipe** screen, choose the spices you want to edit in the recipe and specify their amounts. Use the **Servings Picker** to edit the desired number of servings for your recipe. Edit the recipe name in the text field.
3. Save Changes: Once you've entered the recipe details, tap the **Save** button to store the information. If you do not want to save your recipe, either tap the 'X' or swipe down on the screen. This will return you to the **Recipe Book** tab.



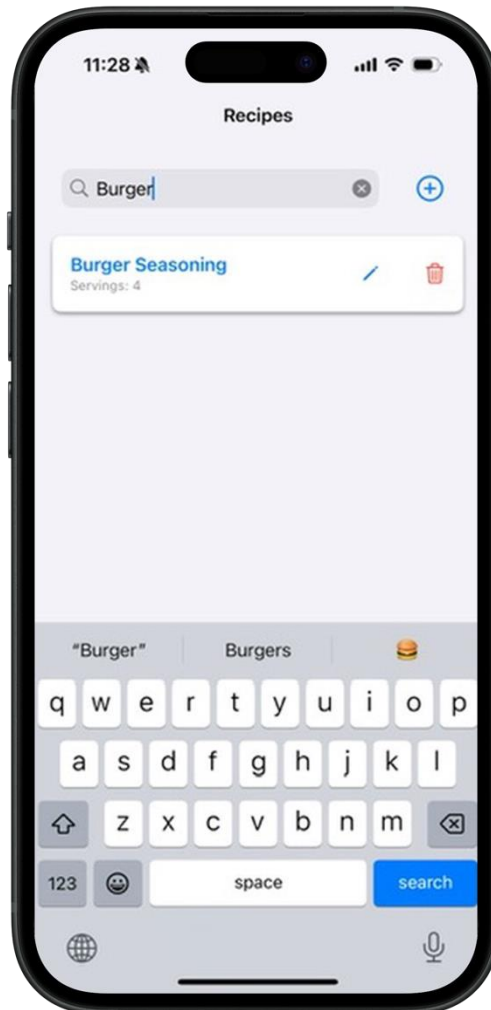
### *Deleting a Recipe*

1. Navigate to Recipe Book: Open the app and go to the **Recipe Book** tab.
2. Delete Recipe: Tap on the **trash can** to bring up **Delete Recipe Alert**. Tap **Cancel** to cancel the deletion or tap **Delete** to confirm the deletion.



### *Searching for a Recipe*

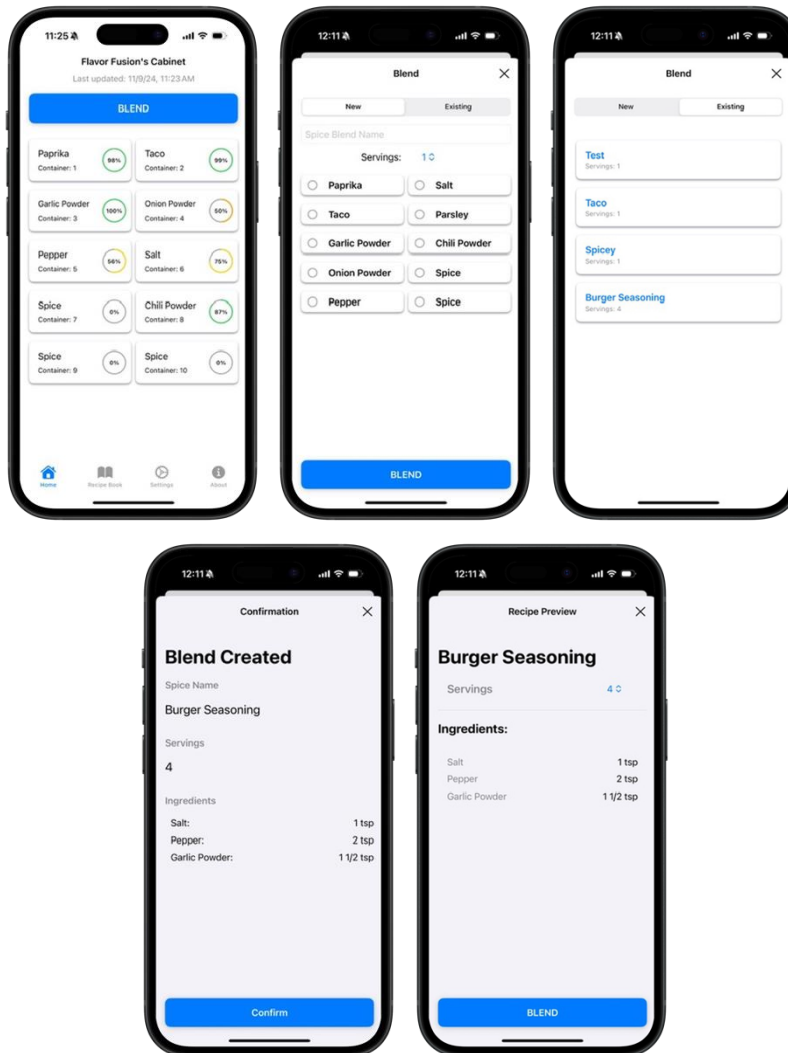
1. Navigate to Recipe Book: Open the app and go to the **Recipe Book** tab.
2. Search Recipe: At the top of the screen, tap the **Search Recipes** bar. Type in your search terms. You can search using exact names or partial keywords to find matching recipes.





## Blending a Recipe

1. Navigate to Home: Open the app and go to the **Home** tab, at the top of the screen, tap the **Blend** button.
2. Make Selection: Select either the **New** or **Existing** tab on the **Blend** Screen. The **New** tab lets you to blend a recipe from scratch and the **Existing** tab lets you blend a recipe from the **Recipe Book**.
3. Blending a New Blend: Choose the spices you want to include in the blend and specify their amounts. Use the **Servings Picker** to set the desired number of servings for your blend. If you wish to save the blend to your **Recipe Book** enter the name in the **Blend Name** text field. Tap on the **Blend** button and then confirm.
4. Blending an Existing Blend: Tap the recipe that you would like to blend and then confirm.



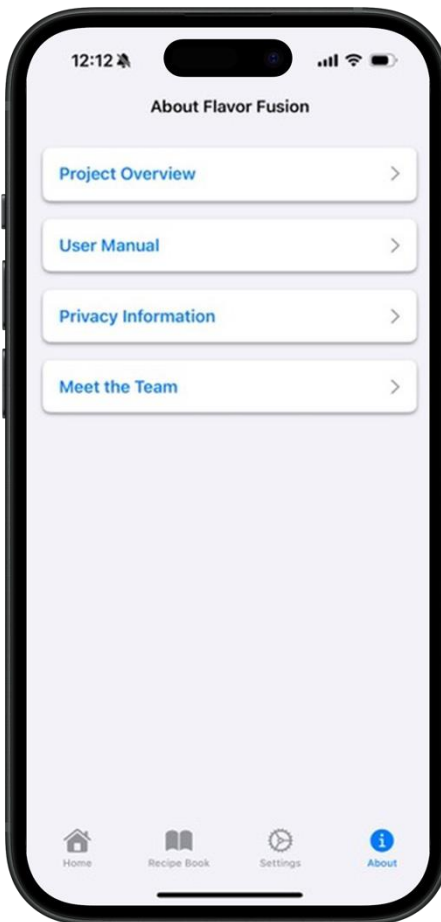
## Settings

1. Navigate to Settings: Open the app and go to the **Settings**.
2. Bluetooth Status: Displays **Connected** when your iPhone is connected to the spice maker. Displays **Not Connected** when your iPhone is not connected to the spice maker.
3. Change Passcode: Type in your current passcode, your new passcode, and your new passcode again in the text fields. Tap the **Change Passcode** button to save the new passcode.
4. Change Display Name: Type in your desired display name in the text field. This name will be displayed on the **Home** screen. Tap **Change Display Name** to save the new name.
5. Require Passcode at Startup: Toggle **Require Passcode** if you would like to enter your passcode each time you open the app.



## About

1. Navigate to About: Open the app and go to the **About**.
2. Project Overview: Tap **Project Overview** to view an overview of the app and spice maker. To navigate back to **About** tap the Back button in the top left corner of the screen.
3. User Manual: Tap **User Manual** to view the complete **User Manual** for both the app and the spice maker. To navigate back to **About** tap the Back button in the top left corner of the screen.
4. Privacy Information: Tap **Privacy Information** to view important privacy information for how the app utilizes Bluetooth to connect to your iPhone. To navigate back to **About** tap the Back button in the top left corner of the screen.
5. Meet the Team: Tap **Meet the Team** to view all the Flavor Fusion team members. Tap on each member's card to view a pop up with their contributions to the project. To close the pop up either tap the 'X' or swipe down on the screen. To navigate back to **About** tap the Ba button in the top left corner of the screen.



## Troubleshooting

1. Restart the App: Close the app fully by swiping up from the app switcher and reopening it. This often resolves temporary glitches.
2. Check for Updates: Ensure both the app and iOS are up-to-date. Updates often fix bugs and improve performance. Go to **Settings > General > Software Update** for iOS and **App Store > Updates** for the app.
3. Restart the iPhone: Power down your iPhone completely by holding the **Power** button (or **Power + Volume Down** on newer models) and turning it off. Restart and try using the app again.
4. Check Bluetooth Status: Go to **Settings > Bluetooth** and ensure Bluetooth is turned on.
5. Delete and Reinstall the App: Long-press the app icon and select **Delete App**, then reinstall it from the **App Store** (or Test Flight if using the Beta). This can resolve issues with corrupted files in the app.
6. Check App Permissions: Go to **Settings > Privacy** and ensure the app has the necessary permissions (e.g., access to the camera, microphone, location, or Bluetooth) if it relies on those features.
7. Contact App Support: If the above steps don't work, reach out to the app's support team.

# Device User Manual

## Tutorial for General Use

1. Carry the device using its side handles for safe transportation. Place on a secure, level surface.



2. Ensuring the power switch is turned off ("o" icon is depressed), plug the power cable into a standard American 3-prong power outlet (110-120 Volts, 60 Hz).



3. To fill or refill spice containers:

- a. begin by selecting the desired container according to its numbered label. Grab the top of the container and slide it out vertically from its compartment.



- b. Flip the container so its numbered label faces down before unscrewing the cap (counterclockwise rotation) and placing it aside.
4. Pour the desired spice into the container and screw the cap back on (clockwise rotation). Replace the container in the corresponding numbered compartment by sliding it down cap-first. The cap is designed to only fit in its compartment when it is aligned correctly, with the bearing facing the interior of the device.



5. After refilling, note the level of spice (measured in ounces) and update its amount in the mobile app by selecting the corresponding container number. Spice names can also be customized according to container, so please ensure that each spice is properly named according to the number it is stored in.
6. Place an order using the mobile app or by navigating the LCD screen on the device. The LCD screens can be navigated by clicking down on the blue and black wheel to proceed, turning it to scroll, and clicking the small black button within the hole to the left of the wheel to go back.
  - a. The setup screen will remain visible while the device waits for an order to be input. Press the wheel to proceed to the spice menu.



- b. The spice menu lists container numbers. Scroll to the desired spice by turning the wheel, then select it with a click. The LCD will continue to the amount selection menu.
- c. The amount selection menu features different selection parameters. Begin by turning the wheel to select the desired whole number of ounces, teaspoons, or tablespoons. Click to select, then repeat for fractions of the same unit. For example, to input 3  $\frac{1}{4}$  tablespoons, first select "3" from the whole number



amount, then “ $\frac{1}{4}$ ” as the fraction. After clicking on the desired fraction, a unit can be selected (oz for ounces, tsp for teaspoons, and Tbsp for tablespoons). Once the unit is selected, click the check mark to confirm. At any point in this process, the back button can be pressed to retreat to the previous selection (or to the spice selection menu) and reset the amount selected.

- d. After selecting a spice amount, the screen transitions back to the spice selection menu. A check mark will indicate any previously selected spices. Continue selecting desired spice amounts until the order is input, then scroll to the top of the spice selection menu and choose “Confirm order”.
  - e. To send an order from the mobile app after making selections on the device screen, please press the back button repeatedly until the setup screen is reached and the LCD reads “Waiting for order from Flavor Fusion mobile app”.
7. After an order has been placed, the device will request for the cup to be placed into the drop zone until it is fully inserted and a click is audible.





8. The device will dispense the requested spices, displaying its current task as it proceeds. Each time a task begins, it also shows the current interior temperature of the device. If the temperature becomes dangerously high (above 220°F), please turn off power to the device by flipping the power switch to off, or “o”.
9. After the order is complete, the LCD will provide a summary of the spices and amounts dispensed. The cursor can be scrolled by turning the wheel to navigate among the spices. The screen will return to the setup menu after 15 seconds of inactivity or by pressing either the wheel or the back button.



10. Remove the cup from the drop zone and pour the completed spice blend as desired. Until the cup is replaced and a click is audible, the mobile app will warn the user that the cup is still full.
11. Turn off the device by switching the power switch to off, or “o”.

## Housing Troubleshooting

### *Housing Disassembly*

1. Remove the top cover.



2. Lift using the black handle to remove the carriage from the device.



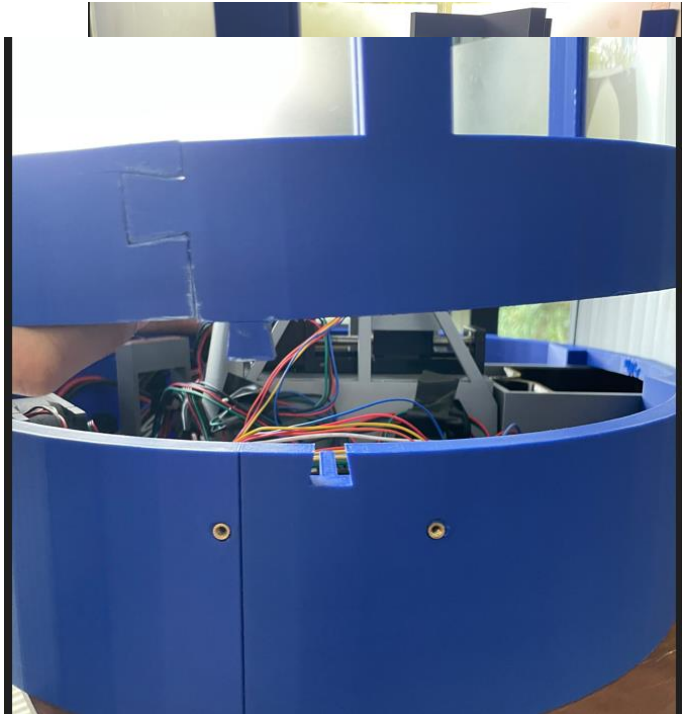
3. Remove one of the side handles by unscrewing both sides.



4. Remove the crown piece by sliding in the direction of the side handle that was removed in step 3.

*To Remove Drop Zone Area*

1. Remove the spice cup from the drop zone.



2. Remove the drop zone from the device by unscrewing the four screws along the front face.



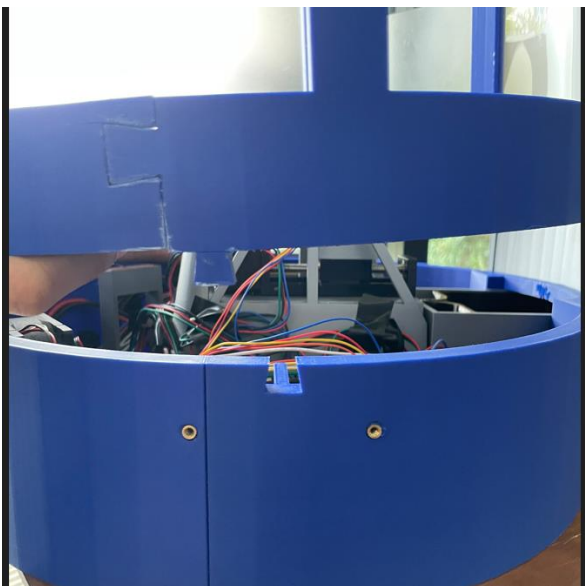


3. Gently slide the drop zone from the device housing.

#### *Housing Reassembly*

1. Place the crown piece on the device housing and align the dovetails to their respective slots in the device. Slide the dovetails into place.

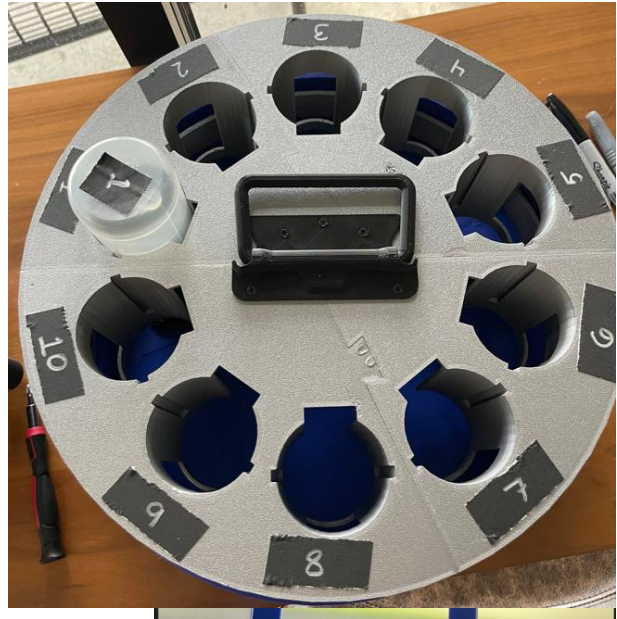




2. Screw in the side handle(s) to lock the crown piece in place.



3. Lower the carriage into the device by grabbing it from the top handle. It must be aligned on the cross-shaped mount in the center of the device. To facilitate this alignment, the handle lies along the long arm of the cross.



4. Align Top lid to the sheet of acrylic with the cut outs on the top piece

#### *To Reassemble Drop Zone*

1. Carefully slide the drop zone area into the device. Make sure all four screw holes are aligned.
2. Tighten all four screws. Alternate between screws while tightening to ensure alignment is maintained.







3. Replace the cup in the drop zone holding area.

## Electronics Troubleshooting

### *Processing and Motor Errors*

In the case of processing errors- which may result in an unresponsive LCD screen, failed Bluetooth connection, or repeated data in the spice order:

1. The microcontroller should be reset by using the switch to turn off power.
2. If the linear rail motor was moving when power was cut, it should be reset by removing the lid and crown piece and manually turning the rail until it reaches its minimum position.
3. If the microcontroller continues to malfunction, the Arduino sketch needs to be reuploaded via USB connection.

### *Wiring*

Disconnected or faulty wiring may result in parts or entire systems that malfunction or fail to even turn on. To double check wiring, consult the appendices for the TinkerCAD diagram, documentation of the RAMPS Shield for Arduino Mega, the HM-10 datasheet, and information on 3D printer electronics from RepRap. Note that alterations to the HM-10 will require perf board soldering. Cords from the power supply unit should be crimped and heat shrunk for protection.

### *LCD*

1. If the rotary encoder wheel is unresponsive or feels stuck, gently pull up on the wheel or press on the plastic cover beneath the encoder to free it.

2. Although a button debouncing system is in place, pressing LCD buttons in a prolonged or inconsistent manner may result in multiple registrations of a single button press. Try to press buttons quickly and consistently to avoid this issue.
3. When scrolling, turn the rotary encoder wheel consistently for the best results. Sudden acceleration, deceleration, or jolty motions may cause jittery scrolling.

### *Calibration*

1. The device carriage is calibration using a limit switch suspended in a tower behind the motors and by the power switch. Ensure the limit switch is properly inserted in this tower, with the switch arm facing up.
2. The limit switch is part of a shield board that contains an LED indicator. To verify the limit switch is properly functioning, it can be triggered while the device has power, and the LED may be observed to measure sensor status.

### *Bluetooth*

Bluetooth errors occur when the mobile application and device microcontroller do not properly communicate. This will often result in the device failing to receive an app-requested order or order dispensing status not updating within the app.

1. Reset the mobile application by closing it, reopening, and reattempting an order.
2. Remove the lid and carriage from the device then inspect the HM-10 Bluetooth module, located in the front of the device between the microcontroller and the drop zone, to confirm a red light on the HM-10's surface. A blinking light indicates the module is disconnected while a solid light means it is paired. This pairing status should coincide with the Bluetooth status indicator in the Flavor Fusion app.

### *Fan*

The fan should remain on, blowing air out of the device, whenever power is turned on. If this is not the case, the fan should be inspected.

1. The fan should be connected to a red wire and a separate black wire, leading to the corresponding colors in the fan's female connector.
2. The black and red wire should connect to the proper 5V and ground connections on the Ramps board.

### *Temperature*

Temperature readings are reported in Fahrenheit on the LCD during dispensing, since this is when motors contribute heat to the interior. If temperatures are not displayed, errors are displayed, or unlikely temperatures are displayed, then inspection is necessary.

1. Confirm the DHT11 sensor module is secured within the device interior. It is a black board with a blue cage-like attachment and 3 pins.
2. Verify that the pins are connected to the Ramps board in the proper order: signal, 5V, and ground.