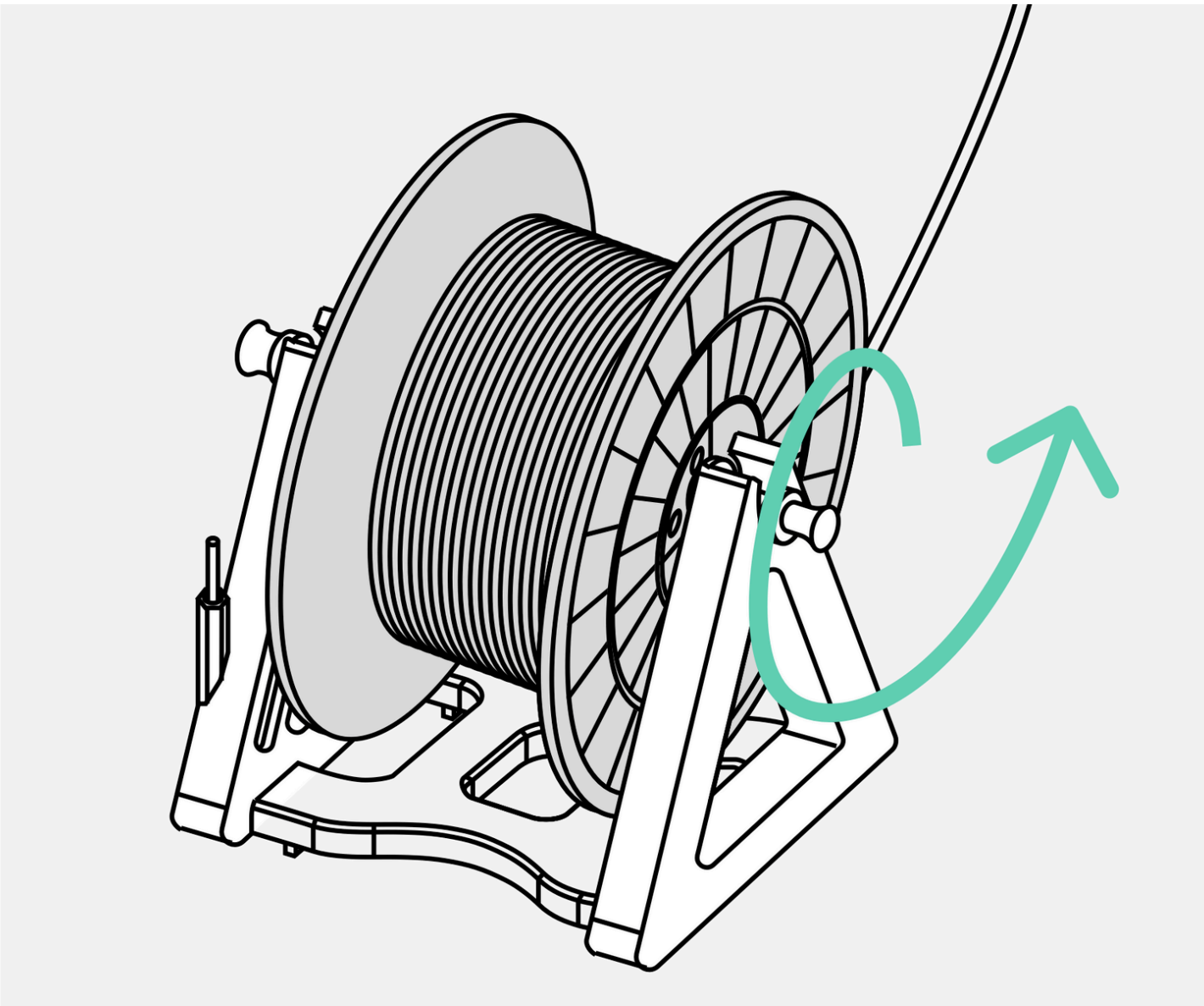
Loading and Unloading Filament

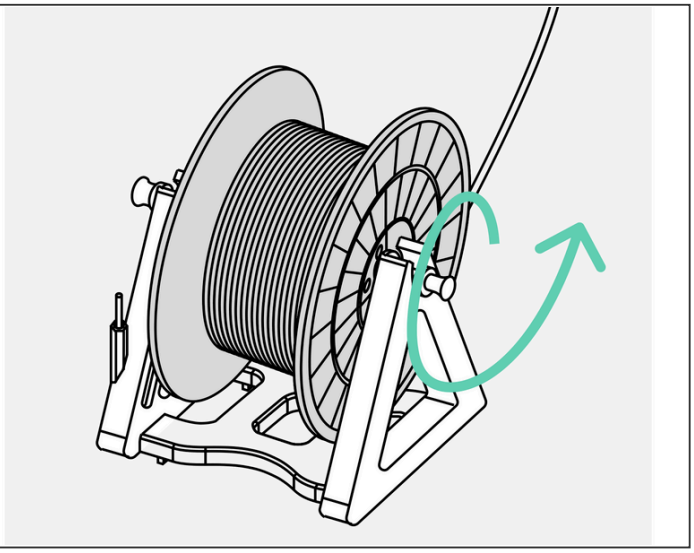
Standard operating procedure for safely unloading and loading filament spools on the Mosaic Orion 3D printer.

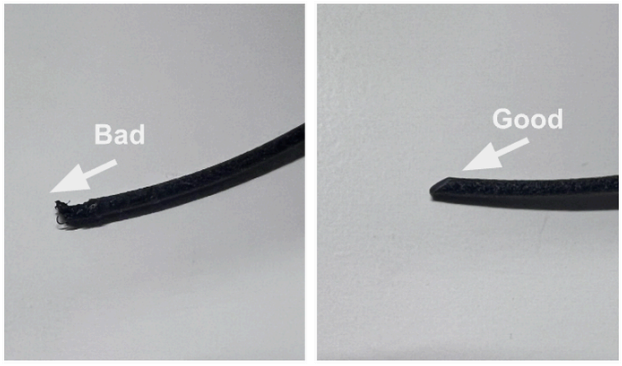
Written By: Mosaic Support



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Step 1 — Loading: Prepare Spool and Teflon Tube





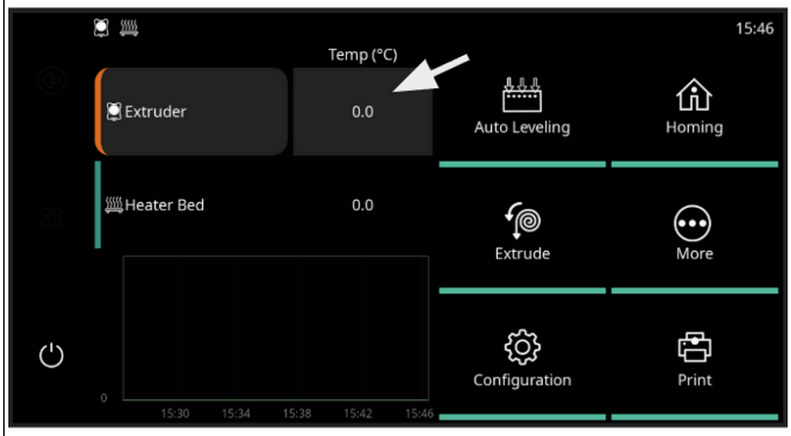
Comparison of Bad (Left) vs. Good (Right) Filament End

- Check that the teflon guide tube is securely attached to the fitting at the printhead.

⚠ Do not detach the Teflon tube from the printhead during filament loading.

- Mount the new filament spool onto the holder so the strand feeds smoothly from the bottom of the spool.
- Inspect the leading end of the new filament and confirm it is cut cleanly at a 45° angle.

Step 2 — Loading: Feed Filament and Preheat Nozzle

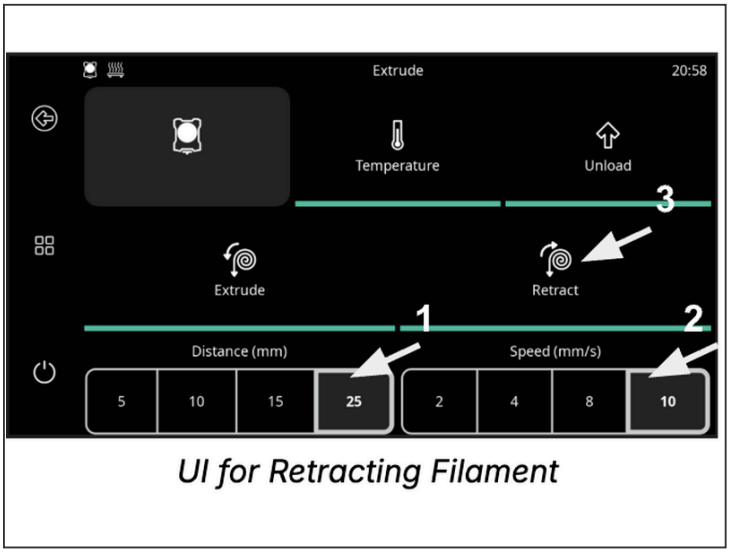


UI for Setting Extruder Temperature

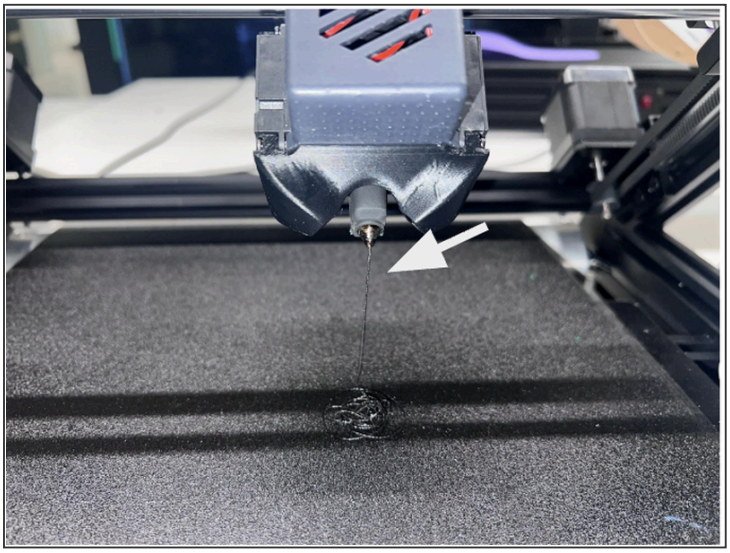
- Insert the filament into the Teflon tube from the spool end and push until it reaches the printhead entrance.
- Navigate to the Temperature screen and set the Extruder target temperature to 220°C.

ⓘ If necessary, manually translate the printhead away from the build plate to allow clearance for extrusion.

Step 3 — Loading: Extrude Filament and Purge Nozzle

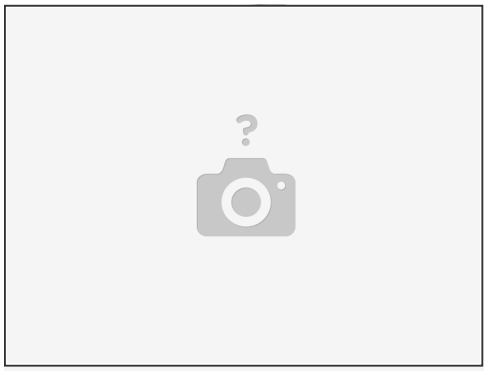


UI for Retracting Filament



- Navigate to the Extrude screen and set Distance to 15 mm and Speed to 2 mm/s.
- Tap Extrude 3 to 4 times while holding the filament with light forward pressure until the drive gears engage.
- Extrude approximately 1 cm of filament to verify consistent material flow through the nozzle tip.
- Clean the nozzle tip thoroughly using a wire brush.
  - Clear all residual extruded material from the build belt prior to starting the next print job.

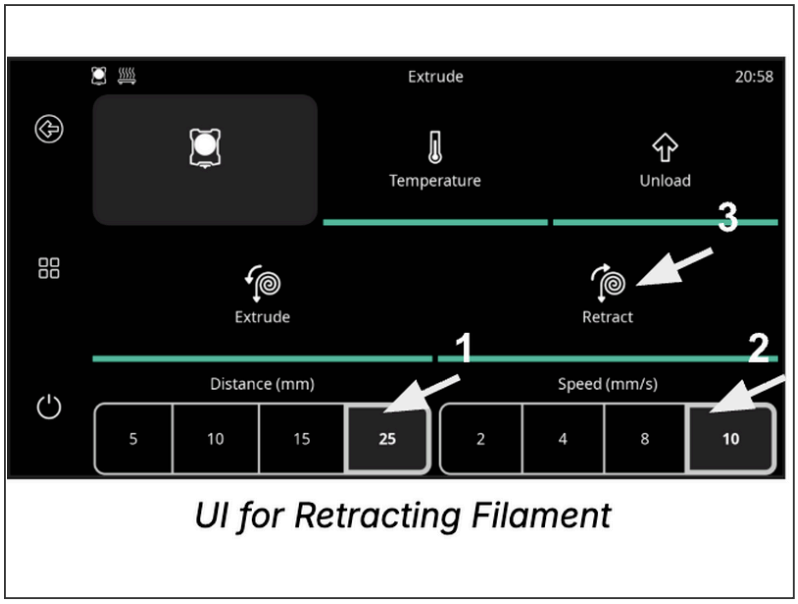
Step 4 — Unloading: Preheat the Extruder Nozzle



- Navigate to the Temperature settings screen on the UI.
- Select the Extruder temperature row and input a target preheat temperature of 240°C for Aero, 270°C for Align.

⚠ Ensure there are no active print jobs queued or running before initiating nozzle heating.

Step 5 — Unloading: Retract and Remove Filament

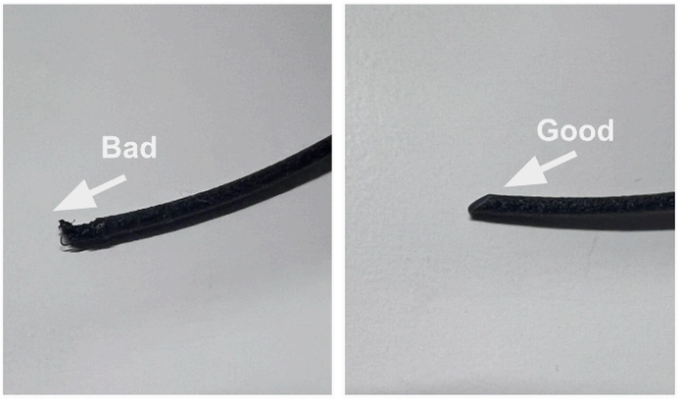


UI for Retracting Filament

- Navigate to the Extrude settings menu on the display.
- Set Distance to 25 mm and Speed to 10 mm/s.
- Tap Retract 3 to 4 times while applying gentle upward pulling pressure on the filament where it enters the path.
- Pull the filament completely out of the Teflon guide tube starting from the spool end.

⚠ Exercise caution near the printhead entry point as the hotend assembly remains at high temperature.

Step 6 — Unloading: Secure the Unloaded Spool



Comparison of Bad (Left) vs. Good (Right) Filament End

- Remove the spool from the spool holder and manually wind any loose filament back onto the spool.
- Snip the melted tip of the filament at a 45° angle using diagonal snips.
  - Trimming at a 45° angle prevents resistance and nozzle jams during future loading operations.

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