Where are the retraction settings in Cura?

Asked 3D Content Team
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Abstract. Print settings panel, Show Custom, Travel category. Most fields are hidden: search "retract". Cura's base Retraction Distance is 6.5 mm at 25 mm/s.

Keywords: retraction, slicer-settings

1 Where are the retraction settings in Cura?

In UltiMaker Cura 5.x, click the print settings panel at the top right, then Show Custom and open the Travel category. Cura's default Basic visibility shows only Enable Retraction and Z Hop When Retracted there. Type "retract" into Search settings to reveal Retraction Distance (6.5 mm in Cura's base profile) and the rest.

1.1 The number

Table 1. The number

Setting, as Cura labels it	Base default	Lowest visibility preset that shows it
Enable Retraction	On	Basic
Retract at Layer Change	Off	Advanced
Retraction Distance	6.5 mm	Advanced
Retraction Speed	25 mm/s	Advanced
Retraction Retract Speed, Retraction Prime Speed	Both follow Retraction Speed	Expert
Retraction Extra Prime Amount	0 mm³	Expert
Retraction Minimum Travel	Twice the line width: 0.8 mm with a 0.4 mm nozzle	Expert
Maximum Retraction Count	90	Expert
Minimum Extrusion Distance Window	Equal to Retraction Distance	Expert
Z Hop When Retracted	Off	Basic
Z Hop Only Over Printed Parts	Off	Advanced
Z Hop Height	1 mm	Advanced
Z Hop Speed (Speed category)	10 mm/s	None: search for it or pick All

Labels, defaults and formulas are from `fdmprinter.def.json` in UltiMaker Cura 5.13.0; the visibility column is from that release's Basic, Advanced and Expert preset files.

Table 2. Why does my printer show different values?

Printer profile in Cura 5.13.0	Retraction Distance	Retraction Speed	Z Hop Height	Set by
Creality Ender-3 / Ender-3 v2, Generic PLA or PETG 1.75 mm	5 mm	45 mm/s	0.2 mm, Z hop off	Material files; Creality base definition (hop)
Creality Ender-3 S1 (direct drive)	0.8 mm	40 mm/s	0.2 mm, Z hop off	Printer definition
UltiMaker S5 (Bowden), AA 0.4, Generic PLA	6.5 mm	45 mm/s, prime 45 mm/s	2 mm, only over printed parts; on only with two extruders enabled	Printer definition, quality profile
UltiMaker S5, AA 0.4, Generic PETG	8 mm	45 mm/s, prime 15 mm/s	As for PLA	Material file, printer definition

1.2 Why does my printer show different values?

Because the table is only Cura's base profile. Retraction pulls filament back before a travel move (what retraction is), and how far it must pull depends on the extruder. So each printer's definition, material files and quality profiles can replace the base values. Anything you type replaces them all.

The values come from Cura 5.13.0's printer definitions and quality profiles and the 5.13 material files; Creality and UltiMaker state the extruder types.

1.3 What retraction settings does Cura use for a direct drive?

0.8 mm at 40 mm/s, on Cura's profile for the direct-drive Creality Ender-3 S1, which also cuts Minimum Extrusion Distance Window to 1.5 mm. Cura takes values from the printer profile, not the extruder type, so a Bowden printer converted to direct drive keeps its Bowden distance until you lower Retraction Distance yourself (direct drive vs Bowden).

1.4 What are the best retraction settings in Cura?

The ones your printer profile loads, as the start of a test, not the end of one. Profiles change by printer and material, so copy no other machine's number: calibrate retraction distance on your own spool.

1.5 Where is Z hop in Cura, and what height does it use?

In the same Travel category. Z Hop Only Over Printed Parts and Z Hop Height appear only after you tick Z Hop When Retracted, and under Basic visibility only when you search "z hop". Z Hop Height is 1 mm in the base profile, 0.2 mm on Creality profiles and 2 mm on the UltiMaker S5 (choosing a height). Z Hop Speed sits in the Speed category.

Z Hop Only Over Printed Parts lifts the nozzle only when a travel cannot steer around a printed part. A travel across empty bed still retracts but stays at layer height. The option appears only while Avoid Printed Parts When Traveling is on, and it needs combing: with Combing Mode set to Off, every retracted travel lifts. Creality profiles switch Combing Mode to Off as soon as Z Hop When Retracted is ticked, so set it back to Not in Skin to get the selective lift.

1.6 How to check it on your own print

1. **Read what your profile loaded.** Open Travel and note Retraction Distance and Retraction Speed. A reset arrow beside a field means it holds your value, not the profile's; click it to restore the profile value.
2. **Keep the fields on screen.** Open the menu to the right of Search settings and pick Expert, which shows every Travel field above; All adds Z Hop Speed.
3. **Test one change at a time.** Under Extensions, Post Processing, Modify G-Code, click Add a script and choose ChangeAtZ. Tick Change Retraction and Change Retract Length, then set a Change Height and a new Retract Length; add one script per step. ChangeAtZ does not work with relative extrusion.
4. **Read the strings** at each height and keep the shortest distance that clears them (full calibration method).
5. **If Z hop lifts on every travel,** check Combing Mode: Off overrides Z Hop Only Over Printed Parts.
6. **If Retraction Distance never appears,** even under All, open the printer's Machine Settings and check G-code flavor. With Ultimaker 2 selected, Cura hides Retraction Distance and Retraction Speed and sends firmware retract commands (G10/G11) instead.

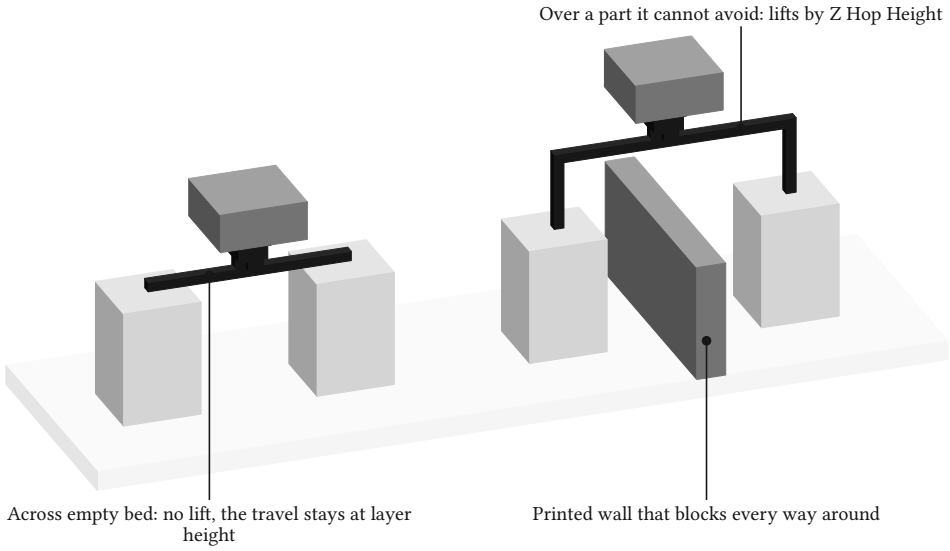


Figure 1. With Z Hop Only Over Printed Parts ticked, Cura lifts the nozzle only when a travel cannot avoid a printed part; a travel across empty bed still retracts but stays at layer height.

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