How do you do a cold pull on a Bambu Lab printer?

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Abstract. Bambu Lab's X1C and P1S guides load PLA at 220 to 230 °C and pull at 70 to 100 °C; the H2D, H2S and P2S run it from Toolbox > Nozzle Cold Pull Maintenance.

Keywords: pla, petg, tpu

Table 1. The number

Printer	Where Bambu documents it	Load or flush temperature	Pull temperature	What differs
X1C	Cold pull guide, manual	220 °C (PLA)	70 °C; 70 to 100 °C for PLA, 70 °C on a first try	Keep pressing extrude as it cools until the extruder skips, usually around 150 °C
P1S	Cold pull guide, manual	230 °C (PLA)	70 °C	Same steps as the X1C; only the screen differs
X1 and P1	Unclogging guide, manual	220 °C (PLA)	100 °C	Run after clearing the tip with the pin at 250 °C
A1, A1 mini	Unclogging guide, manual	220 °C, with a second color of the same filament	100 °C	First pull the hotend out at 100 °C and tug the old filament from its inlet with pliers
H2D	Toolbox > Nozzle Cold Pull Maintenance	Flush at 250, 290 or 320 °C, set by the hottest filament the nozzle has run	Preset per nozzle, 20 to 30 °C above the filament's glass transition; adjust in 5 °C steps	Either extruder; use PETG and the right extruder for an HF nozzle
H2S, P2S, H2C, X2D	Toolbox > Nozzle Cold Pull Maintenance	About 250, 290 or 320 °C on the H2S	Set automatically	Heat, purge, cool and pull run on their own; you lift the filament out when prompted
A2L	Settings > Maintenance > Nozzle Cold Pull Maintenance	Automatic purge	Set automatically	If the purge extrudes nothing, clear the tip with the pin first

1 How do you do a cold pull on a Bambu Lab printer?

On an X1C, P1S or A1, by hand: load PLA (polylactic acid) at 220 to 230 °C, set the nozzle to 70 to 100 °C, unhook the PTFE (polytetrafluoroethylene) tube, then retract while lifting the filament gently. The H2D, H2S and P2S automate it under Toolbox > Nozzle Cold Pull Maintenance. Repeat until the tip comes out clean.

1.1 The number

All rows come from Bambu Lab's own wiki guides, one per printer family, listed under Sources. Bambu's two X1 and P1 guides disagree on the pull temperature (70 °C against 100 °C). The X1C guide's 70 to 100 °C range for PLA covers both.

1.2 How do you do a cold pull on a P1S or X1C?

1. **Heat and load.** Set the nozzle to 220 °C on the X1C (230 °C in the P1S guide) and extrude PLA until it flows from the tip.
2. **Cool while pushing.** Set 70 °C. Below 200 °C, press extrude once every 2 to 3 seconds and stop when the extruder skips, around 150 °C for PLA. On the X1C a warning appears below 170 °C; select "Don't remind me" and carry on.
3. **Open the path.** While it cools, remove the toolhead front cover. Loosen (don't remove) the screws by the PTFE tube support, then push the support and lift the tube out.
4. **Pull.** At 70 °C, press retract a few times and lift the filament with light force. A good pull ends in a small cone shaped like the inside of the nozzle tip.
5. **Close up.** Push the PTFE tube back into the filament sensor, raise its support as high as it goes, then tighten.

The method for any printer is on how to do a cold pull.

1.3 How do you do a cold pull on an A1 or A1 mini?

Bambu's A1 guide adds a step. Heat the hotend to 100 °C, take it out wearing an oven glove and pull the leftover filament from its inlet with pliers. Refit it, set 220 °C and load a different color of the same filament. Once only the new color comes out, drop to 100 °C, do the pull and reconnect the PTFE tube.

1.4 How does the H2D cold pull function work?

Open Settings > Toolbox > Nozzle Cold Pull Maintenance. Pick the nozzle (left or right), the pull filament, the nozzle size and type, and the filament that was in it. In Bambu's tests PLA and PETG (glycol-modified polyethylene terephthalate)

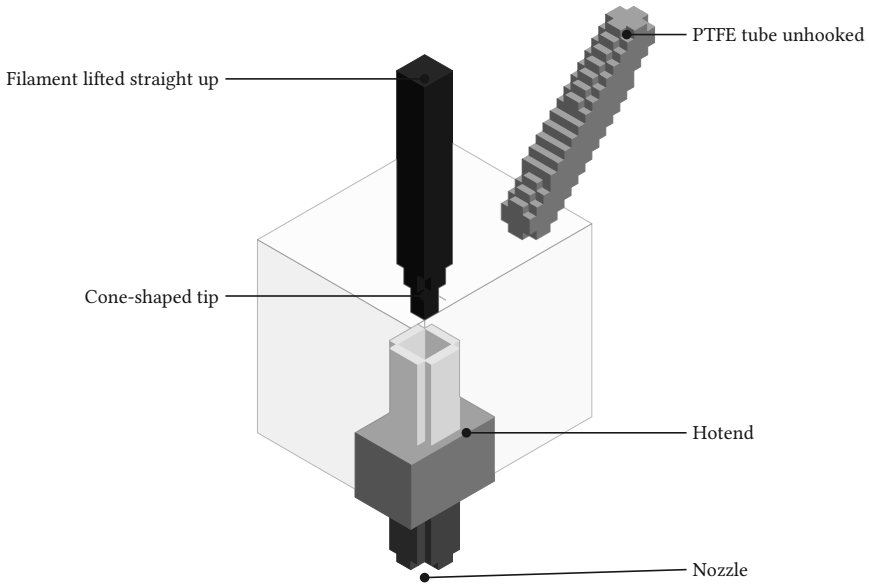


Figure 1. With the tube out of the way you lift the filament straight up and slowly, and a good pull ends in a small cone shaped like the inside of the nozzle tip.

worked best. Other filaments tore and left residue in the nozzle. For an HF (high flow) nozzle, use PETG on the right extruder, which Bambu says raises the success rate.

Unplug the PTFE tube when prompted, cut at least 30 cm of filament and feed it in. The printer flushes, refills and cools on its own. Keep the front and top covers closed meanwhile, since the high flush temperature can make smoke. When prompted, pull the filament straight up and slowly: a fast or angled pull can snap it.

1.5 Why is my P1S cold pull not working?

Table 2. Why is my P1S cold pull not working?

What happens	Bambu's fix
Nothing comes out when you load	The hotend is fully clogged, and "you might not be able to" cold pull yet. Clear the tip with the pin at 250 °C first (skip the pin on 0.2 mm nozzles)
Extruder skips or grinds the filament on retract	Help it by lifting the filament, without pulling hard against the gears
Filament snaps under heavy resistance	Raise the pull temperature, in 5 °C steps
Filament slides out too easily	Lower the pull temperature
Filament goes too soft and clogs the extruder	Start at 70 °C, the X1C guide's first-try setting
Tip has black specks or another color	Trim it and repeat until the tip comes out clean
H2D shows error code 07FE-A000-0002-0001 (07FF on the right nozzle)	The pull timed out: tap retry, then remove the filament
Still under-extrudes after several clean pulls	The nozzle may be damaged and need replacing

Bambu's A1 guide adds that the pin can't clear nozzles smaller than 0.4 mm, and a 0.2 mm nozzle can take several rounds. The full unclogging order is on unclogging a Bambu hotend.

1.6 Why the filament carries the debris out

Cooled to just above its glass transition, the filament is soft enough to grip debris but solid enough to come out in one piece. Bambu's H2D guide puts the pull 20 to 30 °C above the glass transition. Its H2S guide names the two misses: too cold and the filament snaps, too warm and it slides out without a grip.

Pushing filament in as the nozzle cools packs it against the residue, so the plug takes the residue with it. Bambu recommends a pull before switching to TPU (thermoplastic polyurethane), which is too flexible to push leftover filament out of the hotend. Details on cold pull before printing TPU.

1.7 How to check it on your own print

- **Read the tip.** A clean pull is a cone matching the nozzle tip in a single color, free of carbonized specks and grainy deposits. Repeat until you get one.
- **Test extrusion.** Reconnect the PTFE tube, reload and extrude from the screen. The strand should come out straight, not curled.
- **Run Bambu's clog test.** Heat to 250 °C and feed PLA or PETG. If nothing comes out, or far less than normal, the nozzle is fully clogged: unclog it before trying another cold pull.

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