Manual Filament Changes During Printing

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The AMS and AMS Lite are really useful add-ons for your Bambu Printer, but they are quite expensive. If you don't have one, you can still create multi-coloured prints by manually changing filament colour at specific layers. You can't do all the colour changes you can do with an AMS (e.g. part way through a layer), but you can get some great results.

Follow these instructions to get multi-colour prints without an AMS.

Note, the printer interactions vary a little based on which Bambu Lab printer you have, because the printers (A1 Mini/A1, P1P/P1S, and X1C) have different control panels on the printers. Specifically, these operations, while they can be found on all the printers, vary by printer, so you need to know how to perform these actions on your printer:

- Unload the filament
- Load filament
- Resume printing

I won't provide these details but provide some links below to some YouTube videos that show these details for the A1 printers and the P1 printers.

Overview

To create multicolour prints without an AMS you need to do these things:

1. In Bambu Studio (or another slicer), Add pauses, to the slicer instructions so that the printer will pause when you need to manual change filament colour.
2. At the printer, each time it pauses because of those pauses you added in the slicer, you need to manually unload the loaded filament and load the new filament.

Slicer: Adding Pauses to a print

This step is quite simple, if you know this key point:

- The pause added to layer N (e.g. layer 10) **occurs before that layer prints**, not after that layer prints.

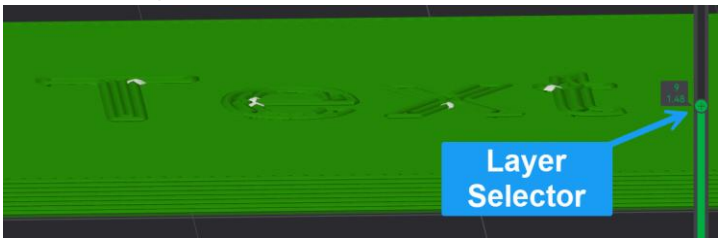
So, you find the first layer where you want the new colour and add the pause there (not at the last layer of the prior colour).

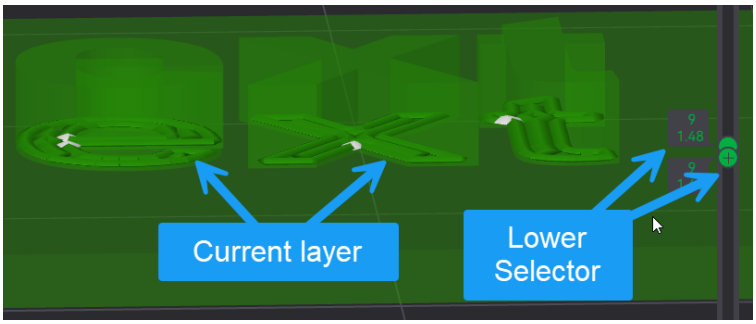
I'll illustrate this with a simple model that has some raised text that you want to print in a different colour. The same approach applies to all colour changes.



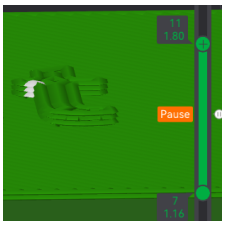
Follow these steps:

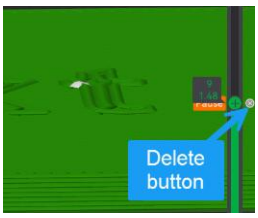
1. Slice the plate with the model.

2. In the Preview tab, use the slider on the right-hand side to move the upper round layer selector up and down until you find the first layer than needs to be in the new colour.
    a. It can be helpful to zoom in close on the model and look at it from the side, not from above.
    b. 

    c. If you are still not certain, slide the lower round layer selector button up to the upper one. This will cause just one layer to be emphasized in the main window.
    d. 

    e. You might not select the right layer the first time, because it's a bit tricksy, but you'll soon have it figured out.
3. Right click on the round layer selector button and select **Add Pause**
    a. 

    b. After that, the pause will be shown beside the slider
    c. 

4. You can click on Pause to confirm the layer selected for the pause.
5. Add other pauses if needed, for more colour changes. For this sample print, we just need the one pause, to change from the colour of the base to the colour of the text.
6. If you add a Pause at the wrong layer, select the Pause and then click the delete button that is shown:
    a. 

7. When you're done, load your first filament and start your print.

Printer: Manual Filament Change during a Pause

This is very much like changing your filament between prints, so you'll be familiar with doing that.

These instructions explain the process using the printers Unload and Load operations. But if you (like me) got frustrated with how slow those are, you've figured out how to the same operations faster using the printer control panel. However, since you are doing this in the middle of a print it's essential that you don't bang the printhead out of alignment. The Unload/Load operations avoid doing that (but you can too, if you are careful).

The process for each colour change is:

1. The printer will pause when it reaches a layer where you inserted a Pause in the slicer, and it will say so on the screen.
2. Using the controller on your printer (details vary by printer), find and activate the Unload operation.
3. Wait for Unload to complete and show instructions to you to physically unload the filament.
4. Remove the current filament from the printer.
5. Mount the new filament and feed it through all the way to the print head.
6. Using the printer controller, activate the Load operation.
7. During the Load operation, watch the nozzle over the poop area to be sure the new filament has been picked up and is flushing out of the nozzle. If it isn't flushing, apply some pressure to push the filament into the PTFE tube.
8. On the printer controller it will ask you if the filament is flushing or not. If so, tell the printer that. If not, follow the instructions (push the filament in firmly and tell the printer to retry).
9. Wait for the Load operation to complete and another message about resume is shown.
10. Find and activate the Resume action on the printer controller (the Play button).
11. It will do one more small purge/prime and resume printing with the new filament.

Notes:

1. Repeat at later pauses, being careful to always load the right next colour.
2. You should only swap in compatible filaments when doing this (e.g. PLA and PLA) because the slicer is using only the one print profile specified in the print. Experienced users might bend this rule, but that is not discussed here.
3. Here are videos from **3D Print Dood** that show printer controller details:
    a. A1 series: https://www.youtube.com/watch?v=EyzJqedfabo
    b. P1 series: https://www.youtube.com/watch?v=6WkvJJLVpEM
4. If you find those helpful, please click Like in YouTube to thank 3D Print Dood. And subscribe to his channel if you like.
5. These are great videos (and he has many more), but I strongly recommend that you do not let the end of your filament just flop around when you pull it out of the printer. **This can cause tangles that cause print failures**. Always keep a grip on the end of the filament and secure it with a clip or through holes on the side of the spool so that you never get tangles. Better safe than sorry.

A Personal Request

If you found these instructions helpful, then please thank me with a Like in MakerWorld and a Boost of this model if you have one. These are very helpful for model designers. Thanks!

Just Keep Printing! ***GC3D***