



# ENDER ALUMNI *WORKFLOW*

## *Two Color Prints*

March 2023

\* CODE PREPARATION

\* MACHINE OPERATION



# SLICE PART, NOTE TOTAL LAYERS

## TWO COLOR WORKFLOW 2023

The screenshot shows the Ultimaker Cura software interface. The main window displays a 3D model of a red and yellow 'RSPACE' part on a grid. The print settings panel is open on the right, showing the 'Standard Quality - 0.2mm' profile. An orange arrow points to the '80' layer count in the settings. The interface includes a top navigation bar with 'PREPARE', 'PREVIEW', and 'MONITOR' tabs, and a bottom status bar with a timer and a 'Save to Disk' button.

Object list

- CE3\_Fidget Cube2023
- 65.5 x 32.5 x 16.0 mm

Print settings

Profile: Standard Quality - 0.2mm

Search settings

Quality

Layer Height		mm
Initial Layer Height		mm
Line Width	0.4	mm
Wall Line Width	0.4	mm
Outer Wall Line Width	0.4	mm
Inner Wall(s) Line Width	0.4	mm
Top/Bottom Line Width	0.4	mm
Infill Line Width	0.4	mm

Recommended

2 hours 54 minutes

19g · 6.24m · \$ 0.37

Save to Disk



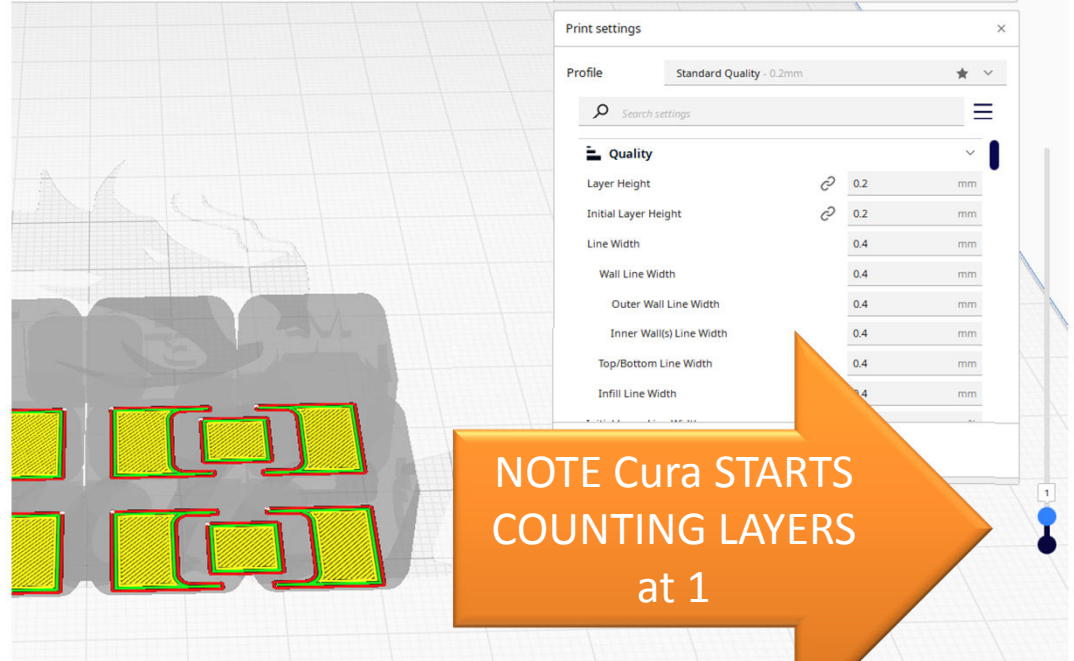
# PULL GCODE INTO TEXT EDITOR

## TWO COLOR WORKFLOW 2023

```

1 ;FLAVOR:Marlin
2 ;TIME:10472
3 ;Filament used: 6.2357m
4 ;Layer height: 0.2
5 ;MINX:84.086
6 ;MINY:100.585
7 ;MINZ:0.2
8 ;MAXX:150.914
9 ;MAXY:134.415
10 ;MAXZ:16
11 ;Generated with Cura_SteamEngine main
12 M140 S60
13 M105
14 M190 S60
15 M104 S210
16 M105
17 M109 S210
18 M82 ;absolute extrusion mode
19 ; Ender 3 Custom Start G-code
20 G92 E0 ; Reset Extruder
21 G28 ; Home all axes
22 G1 Z2.0 F3000 ; Move Z Axis up little to prevent scratching of Heat Bed
23 G1 X0.1 Y20 Z0.3 F5000.0 ; Move to start position
24 G1 X0.1 Y200.0 Z0.3 F1500.0 E15 ; Draw the first line
25 G1 X0.4 Y200.0 Z0.3 F5000.0 ; Move to side a little
26 G1 X0.4 Y20 Z0.3 F1500.0 E3 ; Draw the second line
27 G92 E0 ; Reset Extruder
28 G1 Z2.0 F3000 ; Move Z Axis up little to prevent scratching of Heat Bed
29 G1 X5 Y20 Z0.3 F5000.0 ; Move to start position
30 G92 E0
31 G92 E0
32 G1 F2700 E-5
33 ;LAYER_COUNT:0
34 ;LAYER:0
35 M107
36 ;MESH:Fidget Cube
37 G0 F6000 X94.599 Y104.412 Z0.4119
38 ;TYPE:WALL-INNER
39 G1 F2700 E0
40 G1 F1156.6 X94.943 Y114.322 E0.01188
41 G1 F1140.1 X94.525 Y114.322 E0.02732
42 G1 F1179.4 X94.174 Y114.101 E0.04147
43 G1 F1200 X93.84 Y113.769 E0.05113
44 G1 X93.582 Y113.24 E0.07671
45 G1 X93.52 Y112.817 E0.09093
46 G1 X93.522 Y105.613 E0.33053
47 G1 X93.602 Y105.196 E0.34465
48 G1 X93.801 Y104.793 E0.3596
49 G1 F1179.4 X94.138 Y104.412 E0.37682
50 G1 F1151.1 X94.37 Y104.274 E0.38618
51 G1 F1129.4 X94.602 Y104.136 E0.39572
52 G1 F1071.4 X94.796 Y104.049 E0.40364
53 G1 X94.575 Y104.03 E0.4119
54 G1 F1159.4 X94.148 Y104.015 E0.42661
55 G1 F1200 X87.516 Y104.015 E0.64719
56 G1 X87.516 Y114.484 E0.99539
57 G1 X89.877 Y114.484 E1.07392
    
```

NOTE GCODE  
STARTS COUNTING  
LAYERS at 0



NOTE Cura STARTS  
COUNTING LAYERS  
at 1



E3 Club



# Locate Layer to make filament change

## TWO COLOR WORKFLOW 2023

The screenshot shows a Notepad++ window with a G-code file open. A search dialog box is overlaid on the text, with the search term `!LAYER:39` entered. The search results show the following line in the G-code file:

```
101432 !LAYER:39
```

An orange arrow points from the search dialog box to this line. The search dialog box also shows the following options:

- Find what: !LAYER:39
- Find Next (checked)
- Count
- Find All in Current Document
- Find All in All Opened Documents
- Close
- Backward direction (unchecked)
- Match whole word only (unchecked)
- Match case (unchecked)
- Wrap around (checked)
- Search Mode: Normal (selected), Extended (y, Y, \n, \r), Regular expressions
- Transparency: On losing focus (selected), Always

The status bar at the bottom of the Notepad++ window shows the following information:

- length: 6,141,849 lines: 192,607
- Ln: 101,432 Col: 10 Sel: 9 | 1
- Windows (CR LF) UTF-8 INS





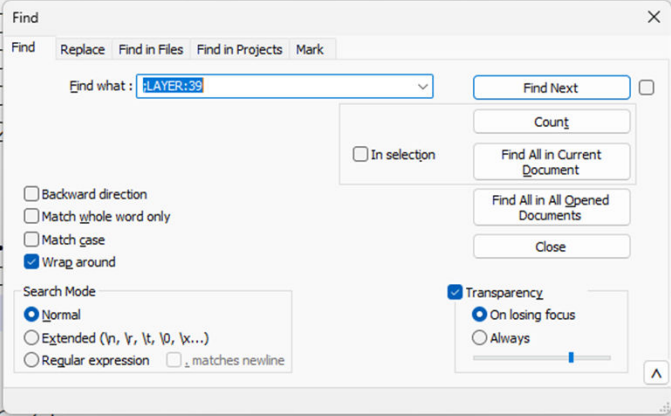
# Locate Layer to make filament change

## TWO COLOR WORKFLOW 2023

```

101417 G0 X112.155 Y104.141
101418 G0 X111.928 Y104.129
101419 G1 F3000 X114.368 Y104.129
101420 G0 F9000 X114.718 Y104.129
101421 G1 F3000 X115.962 Y104.129
101422 G0 F9000 X115.95 Y104.129
101423 G1 F2700 E3144.87524
101424 ;MESH:NONMESH
101425 G0 F300 X115.95 Y102.129
101426 G0 F9000 X112.365 Y102.129
101427 G0 X100.15 Y115.087
101428 G0 X98.154 Y116.353
101429 G1 F2700 E3149.87524
101430 G0 F9000 X98.234 Y116.65
101431 ;
101432 ;===== Insert Color Change Here =====
101433 ; -- ENDER ALUMNI CLINIC --
101434 ; Switch over filament move head a little up to have clearance
101435 M600 B3 Z25.4 ; Filament change, alert operator with 3 beeps, move one inch in Z for clearance
101436 ;
101437 ; ===== That's it!! =====
101438 ;
101439 ;
101440 ;TIME_ELAPSED:5300.954999
101441 ;LAYER:39
101442 ;TYPE:WALL-INNER
101443 ;MESH:Fidget Cube2023.stl
101444 G1 F1500 X98.518 Y116.494 E3149.88601
101445 G1 X98.75 Y116.332 F3149.89543

```



RESAVE and RUN Gcode Program



- M428: Home Offsets Here
- M430: Power Monitor
- M486: Cancel Objects
- M500: Save Settings
- M501: Restore Settings
- M502: Factory Reset
- M503: Report Settings
- M504: Validate EEPROM contents
- M510: Lock Machine
- M511: Unlock Machine
- M512: Set Passcode
- M524: Abort SD print
- M540: Endstops Abort SD
- M569: Set TMC stepping mode
- M575: Serial baud rate
- M593: Input Shaping
- M600: Filament Change**
- M603: Configure Filament Change
- M605: Multi Nozzle Mode
- M665: Delta Configuration
- M665: SCARA Configuration
- M666: Set Delta endstop adjustments
- M666: Set dual endstop offsets
- M672: Duet Smart Effector sensitivity
- M701: Load filament
- M702: Unload filament
- M710: Controller Fan settings
- M808: Repeat Marker
- M810-M819: G-code macros
- M851: XYZ Probe Offset
- M852: Bed Skew Compensation
- M860-M869: I2C Position Encoders
- M871: Probe temperature config
- M876: Handle Prompt Response
- M900: Linear Advance Factor
- M906: Stepper Motor Current
- M907: Set Motor Current
- M908: Set Trimpot Pins
- M909: DAC Print Values
- M910: Commit DAC to EEPROM
- M911: TMC OT Pre-Warn Condition
- M912: Clear TMC OT Pre-Warn
- M913: Set Hybrid Threshold Speed
- M914: TMC Bump Sensitivity
- M915: TMC Z axis calibration
- M916: I474 Thermal Warning Test

## M600 - Filament Change

1.1.0 filament Automatically change filament ADVANCED\_PAUSE\_FEATURE



### Description

The `M600` command initiates the filament change procedure. The basic procedure will move the print head away from the print, eject the filament, wait for new filament to be inserted and the user to confirm, load and prime the filament, and continue with the print. `M600` may be initiated automatically if a filament runout sensor is installed.

### Notes

Requires `ADVANCED_PAUSE_FEATURE`.

The settings for this command can be found in `Configuration_adv.h`. At this time `M600` requires an LCD controller.

### Usage

`M600 [B<beeps>] [E<pos>] [L<pos>] [R<temp>] [T<index>] [U<pos>] [X<pos>] [Y<pos>] [Z<pos>]`

### Parameters

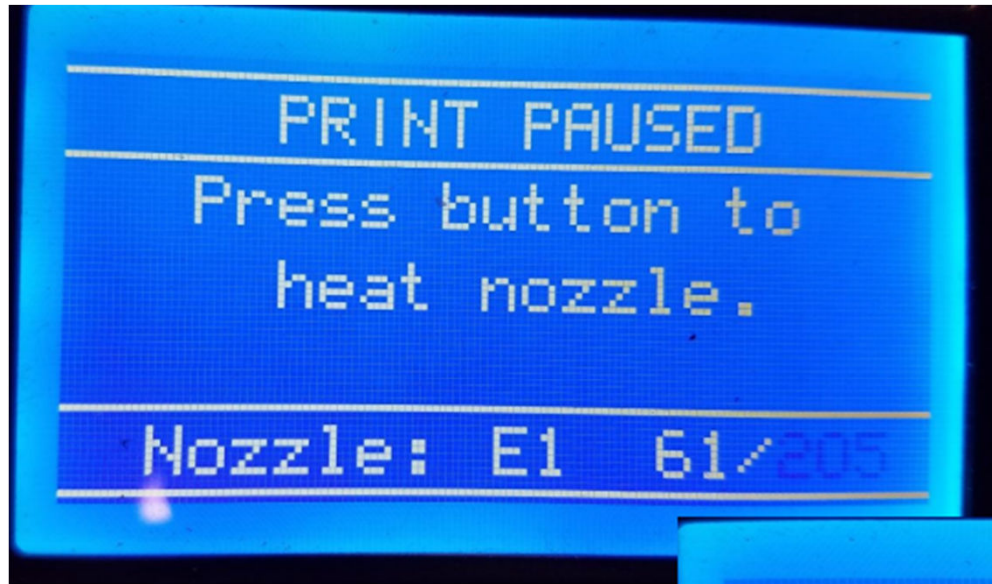
- `[B<beeps>]` Number of beeps to alert user of filament change (default: `FILAMENT_CHANGE_ALERT_BEEPS`)
- `[E<pos>]` Retract before moving to change position (negative, default: `PAUSE_PARK_RETRACT_LENGTH`)
- `[L<pos>]` Load length, longer for bowden (negative)
- `[R<temp>]` Resume temperature. (AUTOTEMP: the min auto-temperature.)
- `[T<index>]` Target extruder
- `[U<pos>]` Amount of retraction for unload (negative)
- `[X<pos>]` X position for filament change
- `[Y<pos>]` Y position for filament change
- `[Z<pos>]` Z relative lift for filament change position

### Examples



## Once M600 is executed...waits

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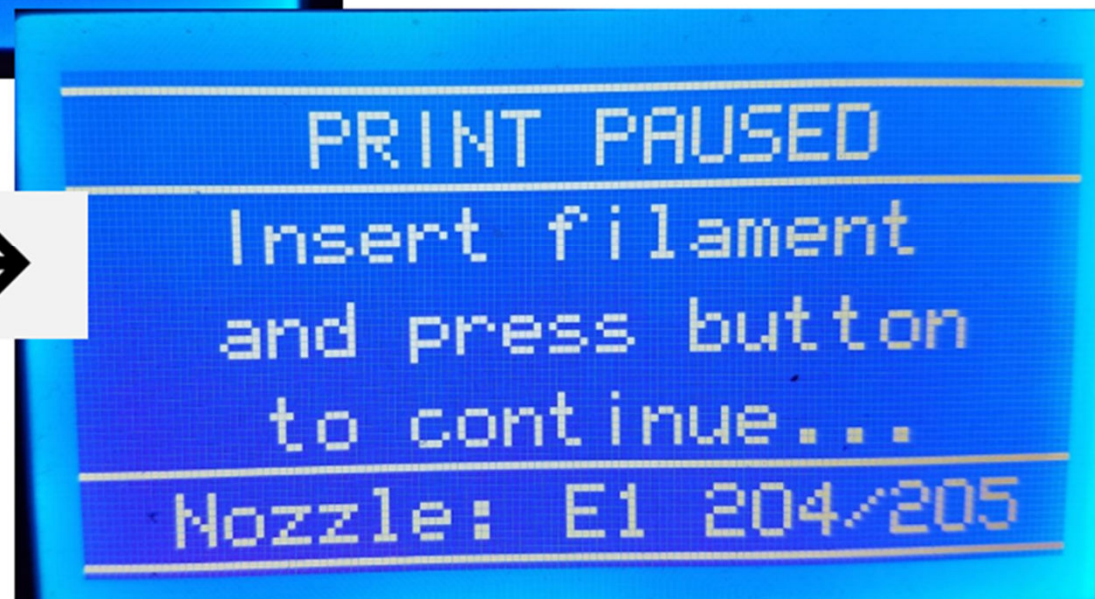


Wait for Extruder Heating

pull out filament

insert different color

**BEEPS here →**

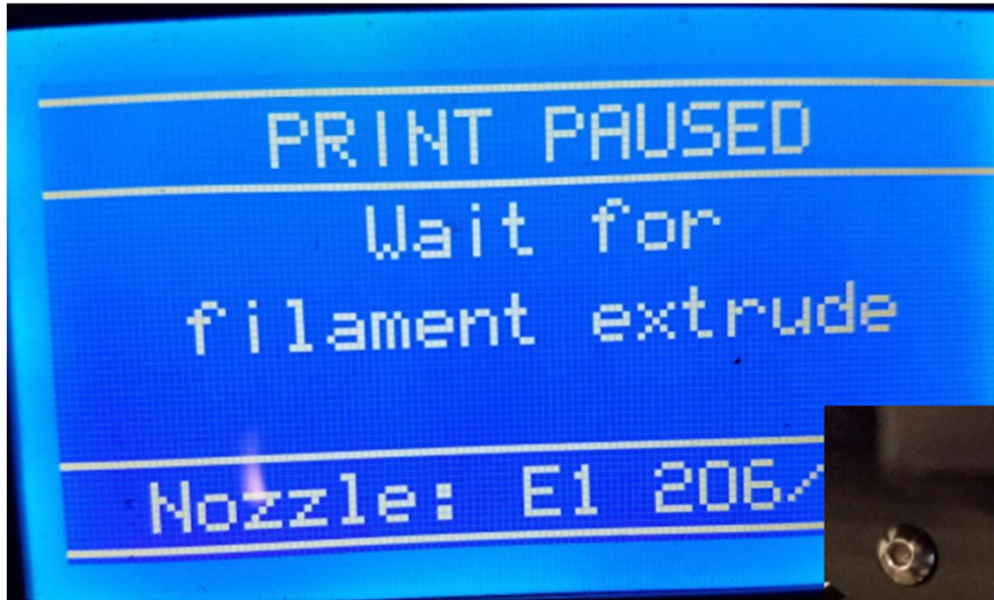




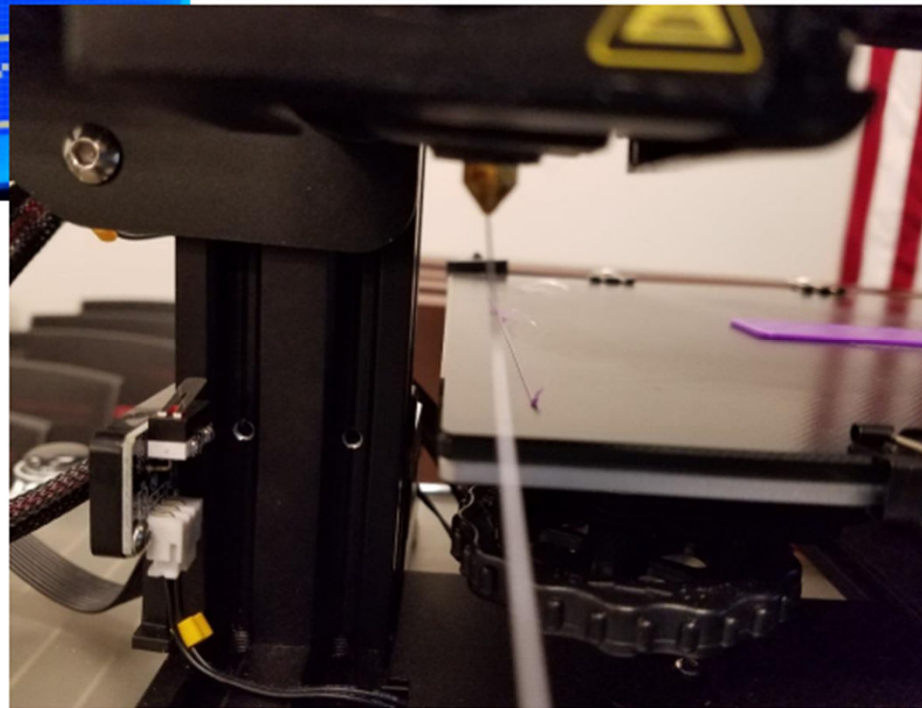


# Marlin Reference for M600

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Purge new color

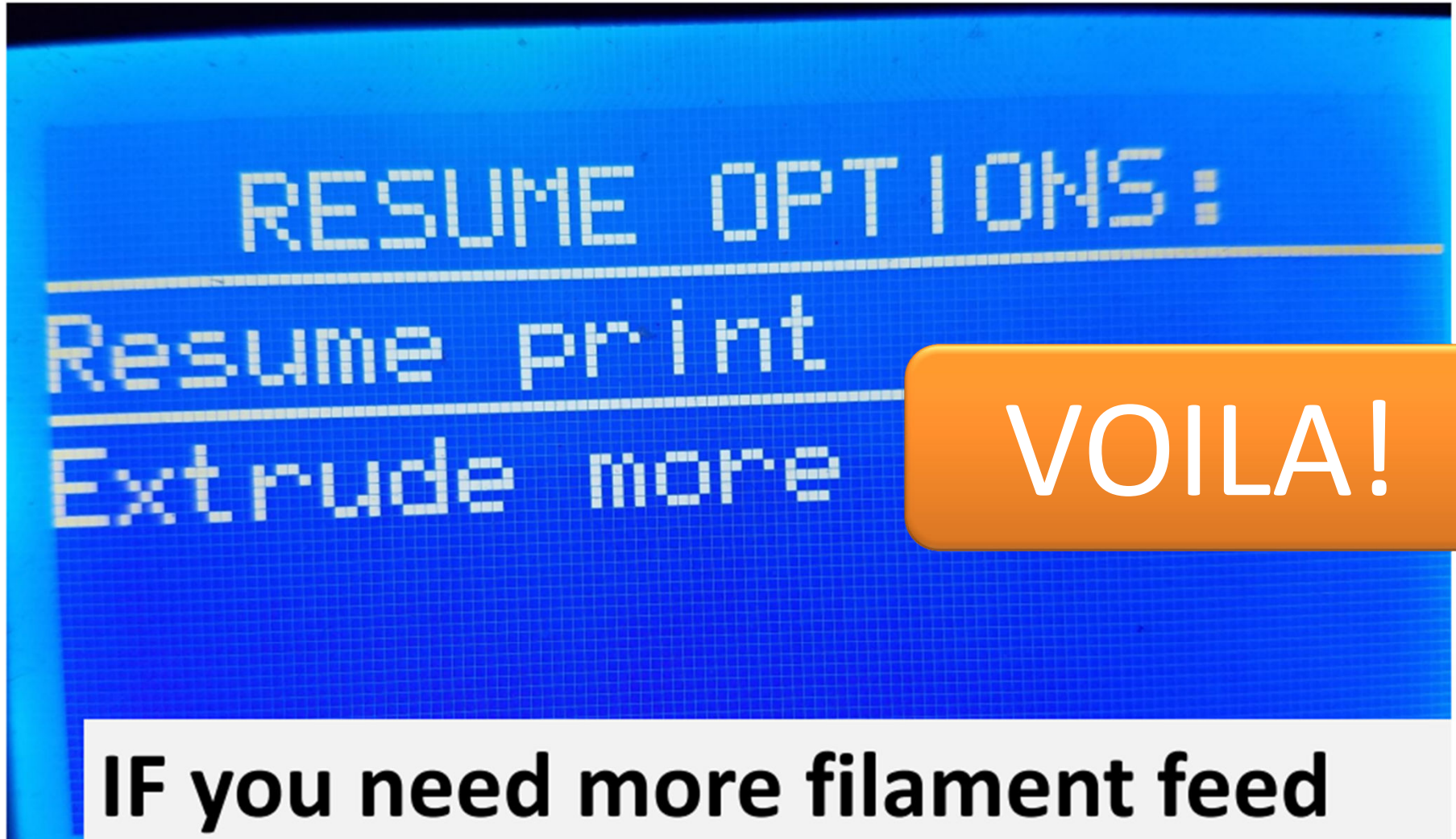






## Keep purging if needed, then resume

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**IF you need more filament feed  
you have the option!**