

LULZBOT MINI DEVELOPER'S GUIDE



LulzBot Mini Developer's Guide

by Aleph Objects, Inc.

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Introduction

Welcome Aboard

Audience

This is a developer's guide to hacking on the LulzBot Mini 3D Printer. It is meant for developers, not users, of the printer.

Open Source Hardware, Free Software

Aleph Objects, Inc. is a Loveland, Colorado, USA company that manufactures Open Source Hardware using Free Software.

For more info, visit <http://www.alephobjects.com>.

LulzBot Mini Developer Overview

1.1 LulzBot Mini

The LulzBot Mini is a 3D Printer currently under development. The abbreviated name is mini-dev.

The source files are available here:

<http://devel.lulzbot.com/mini/>

1.2 Versions

Each new version of the mini-dev has a new name, with the next letter in the alphabet.

- Azalea - First Prototype
- Begonia - Second Prototype, being built now
- Camellia - Third Prototype
- Daffodil - First Production batch

1.3 Begonia Photos

Figure 1.1: Begonia Front Photo

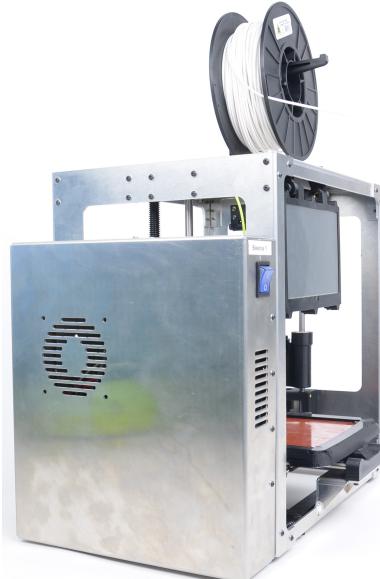


Figure 1.2: Begonia Left Photo

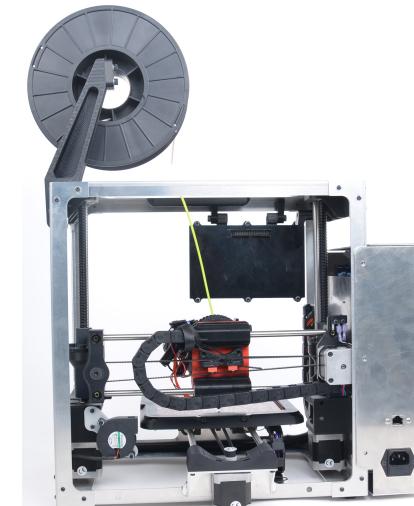


Figure 1.3: Begonia Back Photo



Figure 1.4: Begonia Right Photo

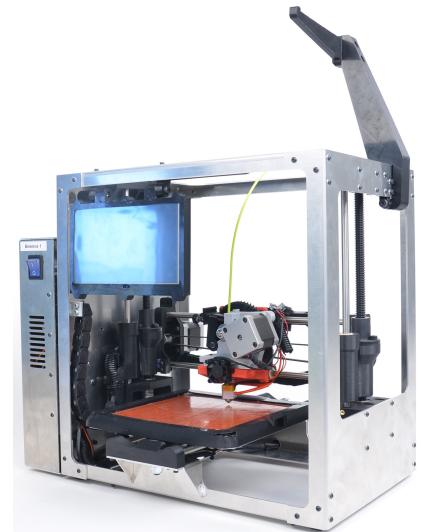


Figure 1.5: Begonia Spool Arm Up Photo



Figure 1.6: Begonia Spool Arm Down Photo



Figure 1.7: Begonia Green Color Scheme Photo



Figure 1.8: Begonia Black Green Color Scheme Photo

Specs

Specs
Specifications

2.1 Specifications**Printing**

- Print Surface: Heated Borosilicate glass bed covered with PEI film
- Print Area: 155mm x 155mm x 155mm (6.1in x 6.1in x 6.1in)
- Print Volume: 3.726cm³ (227.4 in³) of usable space
- Top Print Speed: 275mm/sec (10.8in/sec)
- Print Tolerance: 0.1mm (0.0039in) in X and Y axes. Z axis is dependent on layer thickness
- Layer Thickness: 0.075mm to 0.50mm (0.003in - 0.020in)
- Supported Materials: ABS, PLA, HIPS, PVA, wood filled filaments, Polyester (Tritan), PETT, filled PLA, Bronze and copper filled filaments, Polycarbonate, Nylon, PETG, Conductive PLA and ABS, UV luminescent filaments, PCTPE, PC-ABS, and more every day.
- Usable Filament Sizes: standard 3mm (0.1in)

Physical Dimensions

- Overall Dimensions: 435mm x 340mm x 385mm (17.1in x 13.4in x 15.2in)
- Weight: 8.55kg (18.85lbs)

Electrical

- Power Requirements: 100 - 240 VAC
- Power Supply: 24V 150W
- US, UK, and EU electrical plugs available

2.1. SPECIFICATIONS**Temperature**

- Temperature: Maximum operating temperature (Extruder), 300C (572F)
- Temperature: Maximum operating temperature (Heated Bed), 120C (248F)

The schedule is updated weekly. It is in Libre Office spreadsheet format. The latest version is available here:
http://devel.lulzbot.com/mini/program_management/

Mechanical Cartesian Bot in X, Y, Z

Mechanical hardening

<http://devel.lulzbot.com/mini/>

3.2 Dalton Bill of Materials

Daffodil is the first production run of units for retail

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Mechanica

3.3. BEGONIA REND

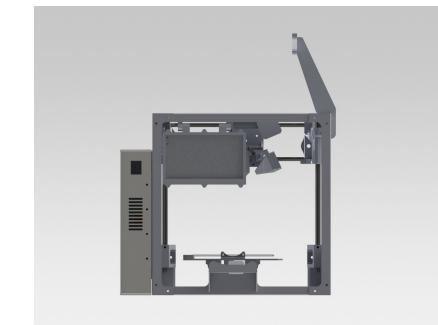


Figure 3.2: Begonia Front Render



Figure 3.3: Begonia ISO Render

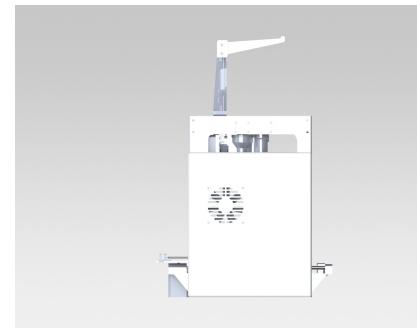


Figure 3.4: Begonia Left Render

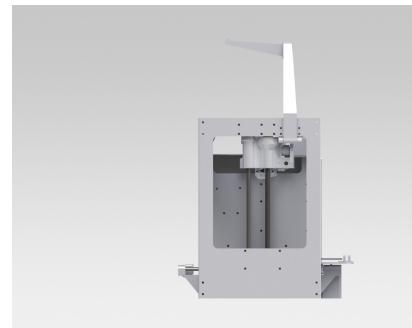


Figure 3.5: Begonia Right Render

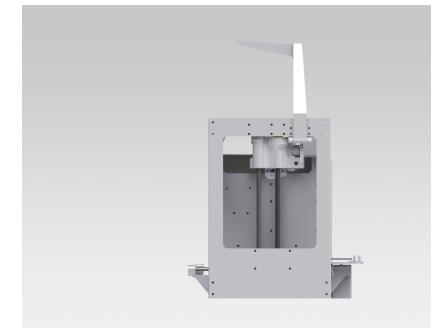


Figure 3.6: Begonia Right Render

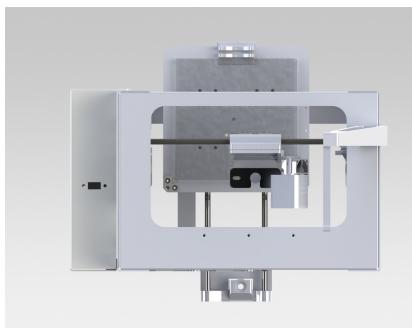


Figure 3.7: Begonia Top Render

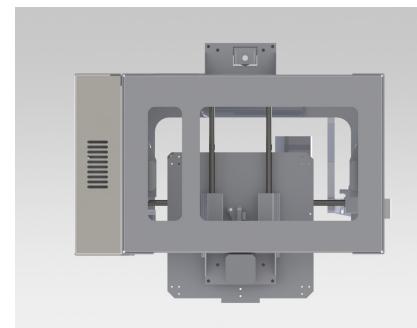


Figure 3.8: Begonia Bottom Render

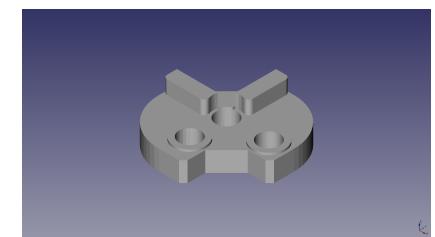


Figure 3.9: Begonia 3D Printed Bed Corner Render

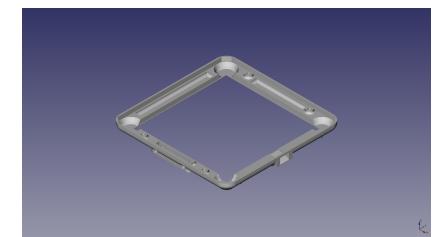


Figure 3.10: Begonia 3D Printed Bed Cover Render

3.6 Begonia Extruder



Figure 3.11: Begonia 3D Printed Bed Fan Mount Render

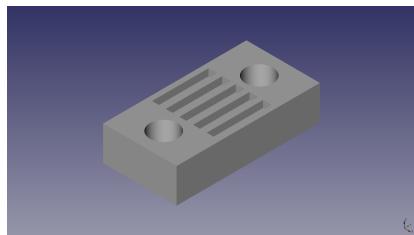


Figure 3.12: Begonia 3D Printed Belt Clamp Render

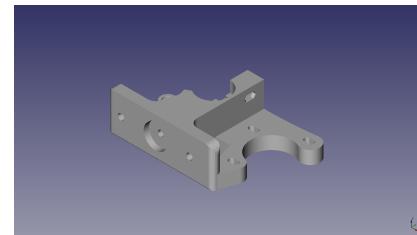


Figure 3.13: Begonia 3D Printed Extruder Body Hex Render



Figure 3.14: Begonia 3D Printed Extruder Mount Render

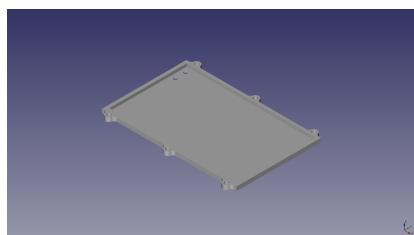


Figure 3.15: Begonia 3D Printed LCD Back Cover Render

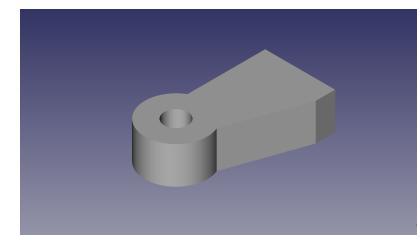


Figure 3.17: Begonia 3D Printed LCD Hinge Render

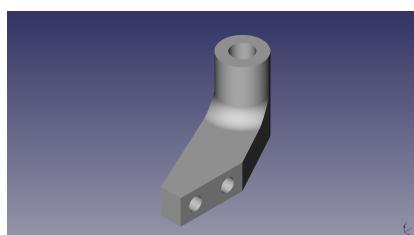


Figure 3.16: Begonia 3D Printed LCD Catch Render

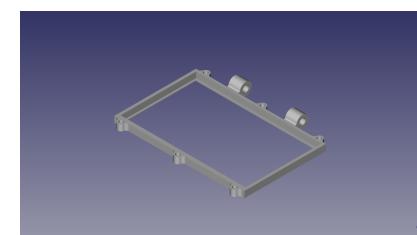


Figure 3.18: Begonia 3D Printed LCD Mount Render

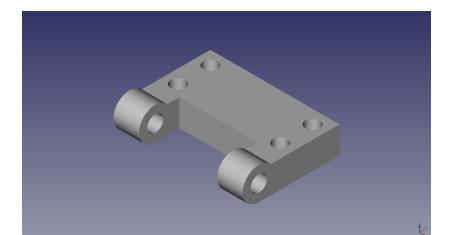


Figure 3.19: Begonia 3D Printed Spool Arm Render

Figure 3.20: Begonia 3D Printed Spool Hinge Render

3.9 Begonia X



Figure 3.21: Begonia 3D Printed Spool Mount Render

3.10 Begonia Y

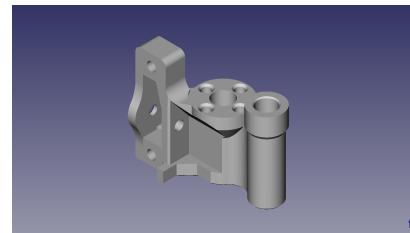


Figure 3.22: Begonia 3D Printed X End Idler Render

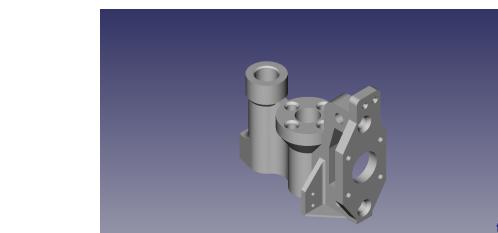


Figure 3.23: Begonia 3D Printed X End Motor Render

3.11 Begonia Z

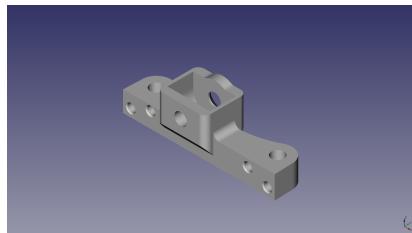


Figure 3.24: Begonia 3D Printed Y End Idler Render

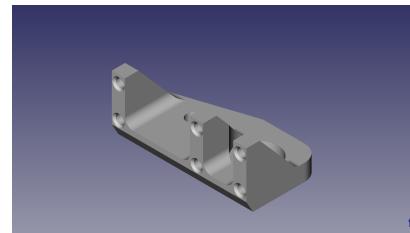


Figure 3.26: Begonia 3D Printed Upper Z Left Render

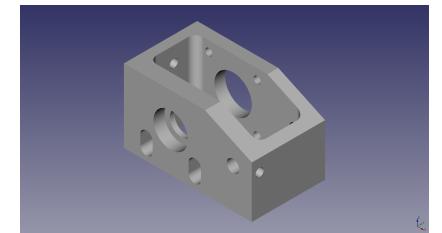


Figure 3.28: Begonia 3D Printed Lower Z Left Render

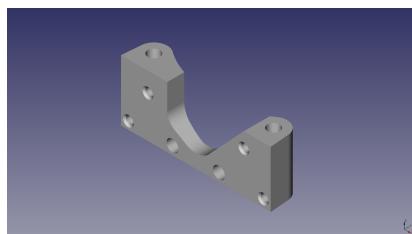


Figure 3.25: Begonia 3D Printed Y Rod Mount Render

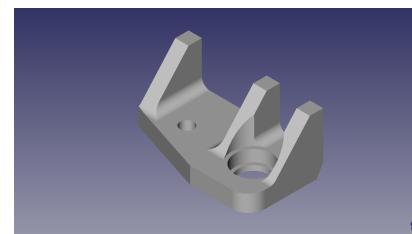


Figure 3.27: Begonia 3D Printed Upper Z Right Render

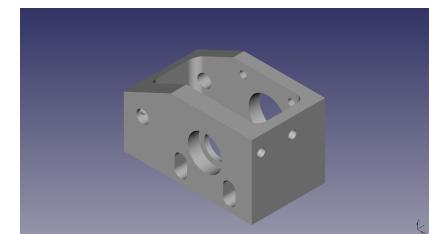


Figure 3.29: Begonia 3D Printed Lower Z Right Render

3.12 Begonia Misc



Figure 3.30: Begonia 3D Printed Double Bearing Holder Render

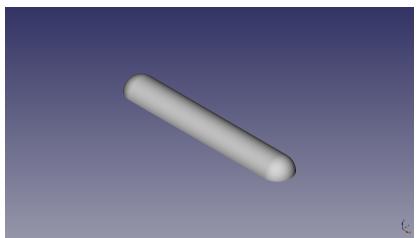


Figure 3.32: Begonia 3D Printed Handle Bar Render

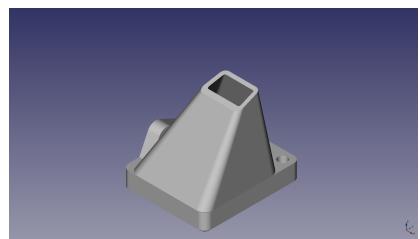


Figure 3.31: Begonia 3D Printed Fan Mount Render

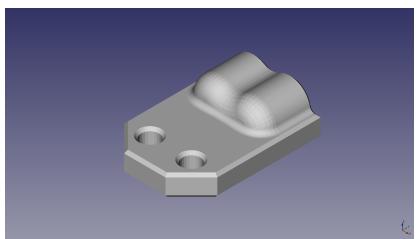


Figure 3.33: Begonia 3D Printed Cable Carrier Mount Render

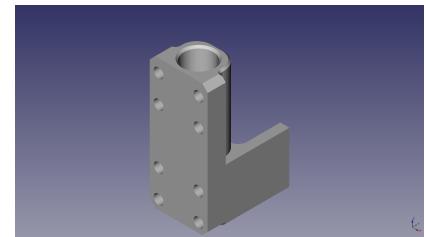


Figure 3.34: Begonia 3D Printed Extruder Mt Top Double Bearing Holder Render

3.13 Begonia Drawings

3.14 Camillia Drawings

4.1 Electrical Layout

4.2 Wire Harness List

Electrical
Power Supply, wiring

Camellia Wire List - V1.0	
Wire ID	Wire Description
W00000000000000000000000000000000	Power 12V
W00000000000000000000000000000001	Power 5V
W00000000000000000000000000000002	Power GND
W00000000000000000000000000000003	Power 12V
W00000000000000000000000000000004	Power 5V
W00000000000000000000000000000005	Power GND
W00000000000000000000000000000006	Power 12V
W00000000000000000000000000000007	Power 5V
W00000000000000000000000000000008	Power GND
W00000000000000000000000000000009	Power 12V
W0000000000000000000000000000000A	Power 5V
W0000000000000000000000000000000B	Power GND
W0000000000000000000000000000000C	Power 12V
W0000000000000000000000000000000D	Power 5V
W0000000000000000000000000000000E	Power GND
W0000000000000000000000000000000F	Power 12V
W0000000000000000000000000000000G	Power 5V
W0000000000000000000000000000000H	Power GND
W0000000000000000000000000000000I	Power 12V
W0000000000000000000000000000000J	Power 5V
W0000000000000000000000000000000K	Power GND
W0000000000000000000000000000000L	Power 12V
W0000000000000000000000000000000M	Power 5V
W0000000000000000000000000000000N	Power GND
W0000000000000000000000000000000O	Power 12V
W0000000000000000000000000000000P	Power 5V
W0000000000000000000000000000000Q	Power GND
W0000000000000000000000000000000R	Power 12V
W0000000000000000000000000000000S	Power 5V
W0000000000000000000000000000000T	Power GND
W0000000000000000000000000000000U	Power 12V
W0000000000000000000000000000000V	Power 5V
W0000000000000000000000000000000W	Power GND
W0000000000000000000000000000000X	Power 12V
W0000000000000000000000000000000Y	Power 5V
W0000000000000000000000000000000Z	Power GND
W00000000000000000000000000000000	Power 12V
W00000000000000000000000000000001	Power 5V
W00000000000000000000000000000002	Power GND
W00000000000000000000000000000003	Power 12V
W00000000000000000000000000000004	Power 5V
W00000000000000000000000000000005	Power GND
W00000000000000000000000000000006	Power 12V
W00000000000000000000000000000007	Power 5V
W00000000000000000000000000000008	Power GND
W00000000000000000000000000000009	Power 12V
W0000000000000000000000000000000A	Power 5V
W0000000000000000000000000000000B	Power GND
W0000000000000000000000000000000C	Power 12V
W0000000000000000000000000000000D	Power 5V
W0000000000000000000000000000000E	Power GND
W0000000000000000000000000000000F	Power 12V
W0000000000000000000000000000000G	Power 5V
W0000000000000000000000000000000H	Power GND
W0000000000000000000000000000000I	Power 12V
W0000000000000000000000000000000J	Power 5V
W0000000000000000000000000000000K	Power GND
W0000000000000000000000000000000L	Power 12V
W0000000000000000000000000000000M	Power 5V
W0000000000000000000000000000000N	Power GND
W0000000000000000000000000000000O	Power 12V
W0000000000000000000000000000000P	Power 5V
W0000000000000000000000000000000Q	Power GND
W0000000000000000000000000000000R	Power 12V
W0000000000000000000000000000000S	Power 5V
W0000000000000000000000000000000T	Power GND
W0000000000000000000000000000000U	Power 12V
W0000000000000000000000000000000V	Power 5V
W0000000000000000000000000000000W	Power GND
W0000000000000000000000000000000X	Power 12V
W0000000000000000000000000000000Y	Power 5V
W0000000000000000000000000000000Z	Power GND

5.1 Intro

The printer controller will be the RAMBo-Mini.

3D Printer Controller

Mini-RAMBo

Quality Assurance

6.1 Quality Assurance

7.1 Packing List

Pack it well.

Packing
If It Shakes It Breaks

Page 1 of 1

PACKING LIST



LulzBot Mini

Model: LulzBot Mini 1.0 3D Printer

Serial Number:

Printed On:

Compiled By:

Items to include:

Printer and Cables:

- LulzBot Mini 1.0 3D Printer
- 1x 12VAC Power Cord (7691) (if applicable)
- 6x 12VAC Extension Power Cord Cable (7692) (if applicable)
- USB - Cable

Shipping:

- UPS International Shipping
- Other carrier or carrier
- UPS FOB
- Domestic pack
- Freight
- Hand
- Air
- Sea
- By replacement shipping
- Pads

Print:

- Rockcops™ printed by this LulzBot Mini 3D Printer

Documentation:

- Owner's Guide
- Quick Start Guide
- Record document
- Packing List document

Contact**Phone, Email, Web, Location**

8.1 Support

Email: support@alephobjects.com
 Phone: +1-970-377-1111 x610
 LulzBot Forum
<http://forum.lulzbot.com>

8.2 Sales

Email: sales@alephobjects.com
 Phone: +1-970-377-1111 x600

8.3 Websites

Aleph Objects, Inc.
<http://www.alephobjects.com>
 LulzBot 3D Printers
<http://www.lulzbot.com>

Colophon

Created with 100% Free Software
GNU/Linux
 \LaTeX Memoir
