

LULZBOT MINI DEVELOPER'S GUIDE



LulzBot Mini Developer's Guide

by Aleph Objects, Inc.

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Introduction

Welcome Aboard

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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

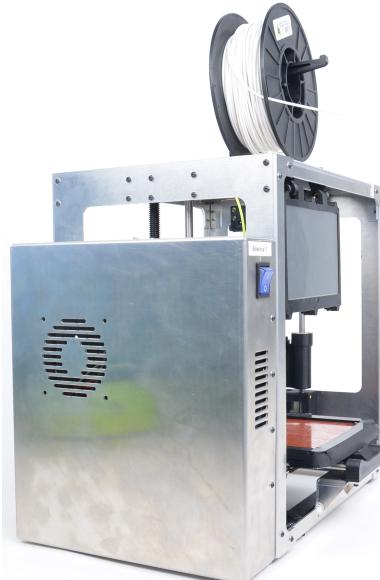


Figure 1.2: Begonia Left Photo

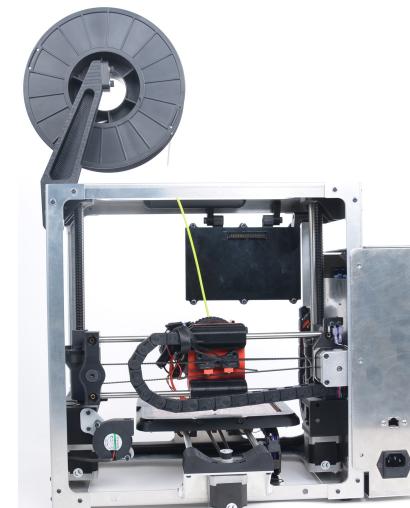


Figure 1.3: Begonia Back Photo

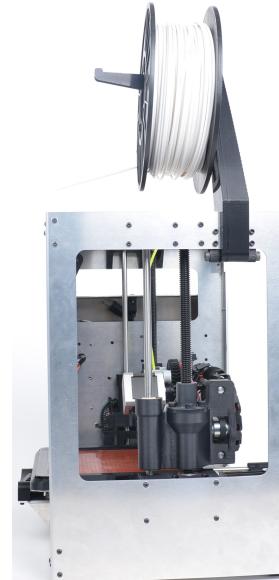


Figure 1.4: Begonia Right Photo

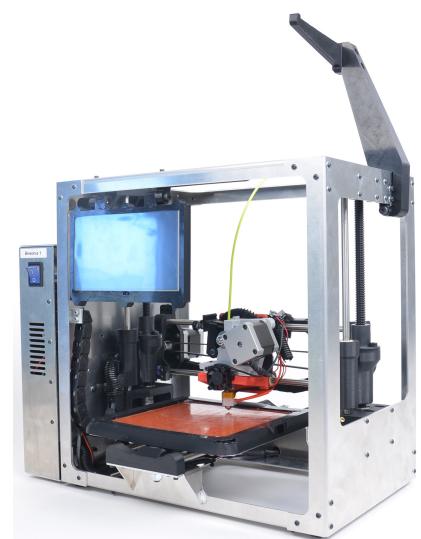


Figure 1.5: Begonia Spool Arm Up Photo



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

— 10 —

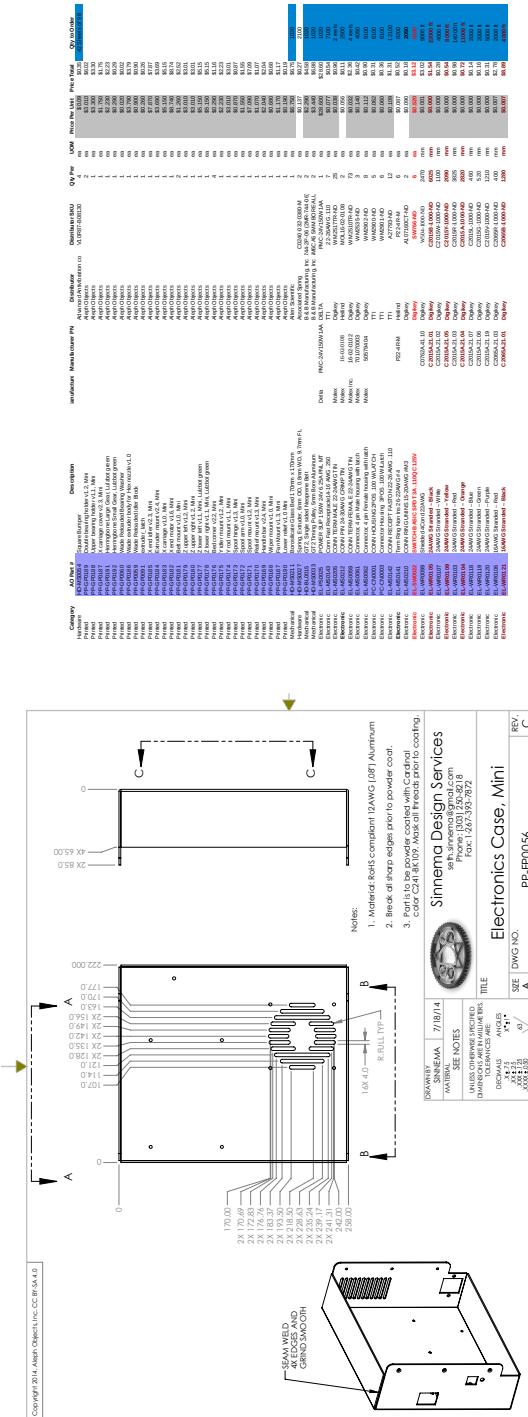
<http://devel.lulzbot.com/mini/>

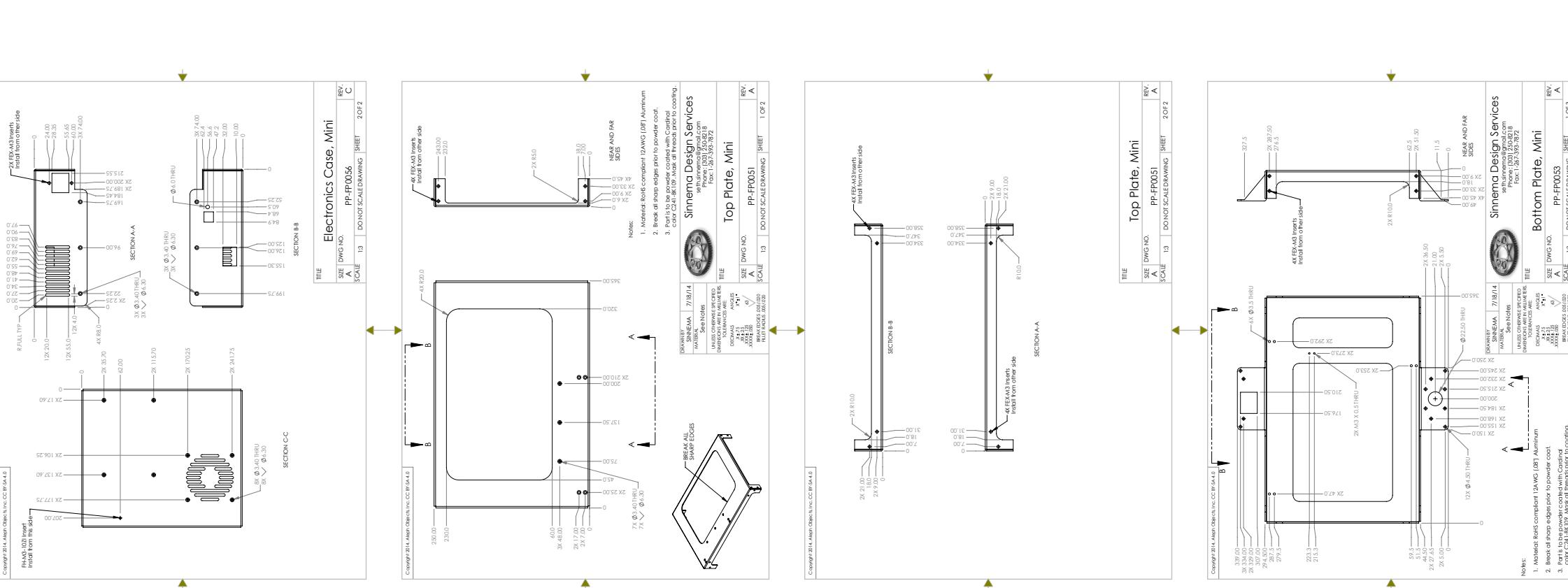
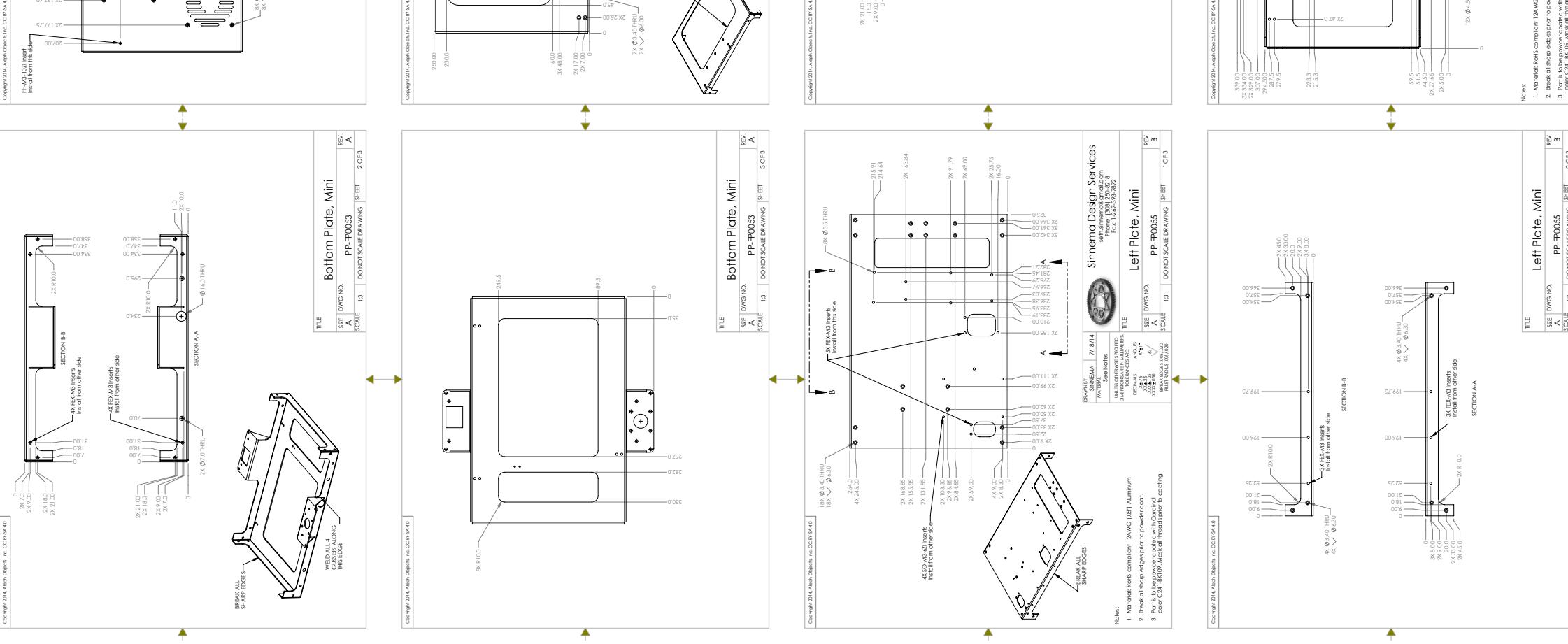
2 Bill of Materials

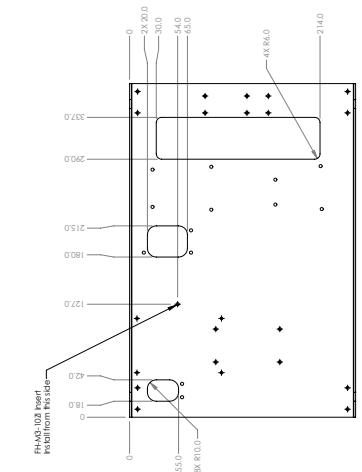
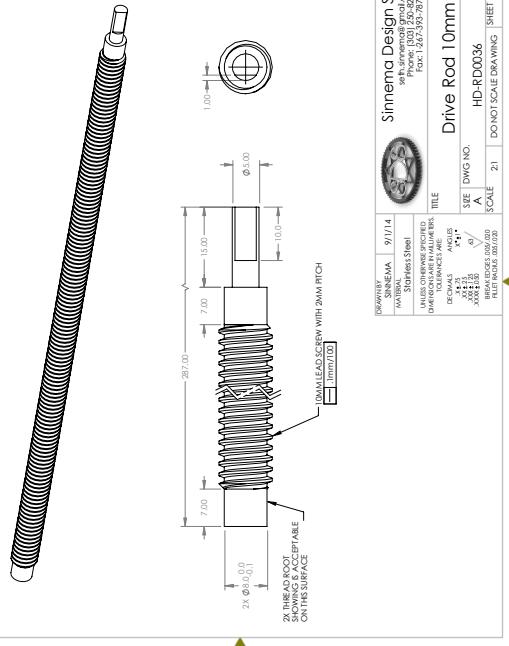
26

Mechanical

3 Drawings







3.4. BEGONIA RENDERS

3.4. Begonia Renders

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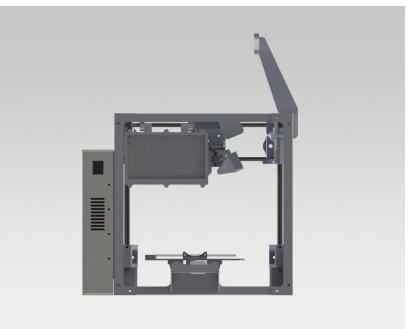


Figure 3.9: Begonia Front Render

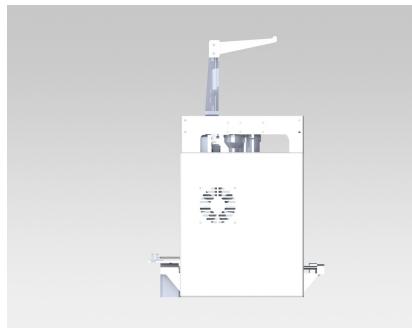


Figure 3.11: Begonia Left Render

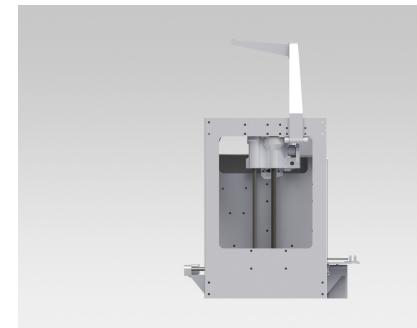


Figure 3.12: Begonia Right Render

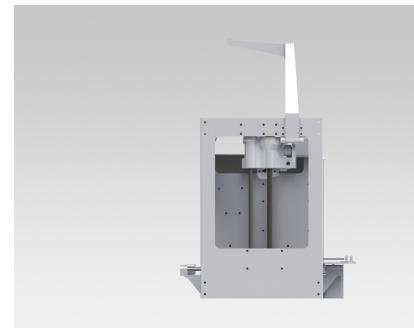


Figure 3.13: Begonia Right Render

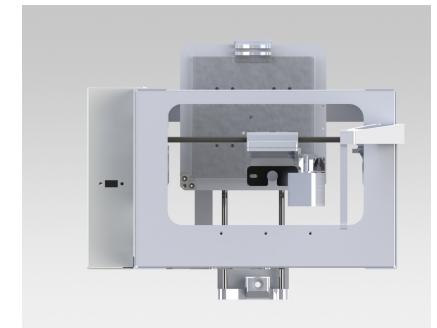


Figure 3.14: Begonia Top Render

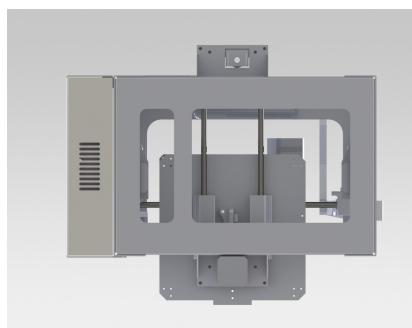


Figure 3.15: Begonia Bottom Render

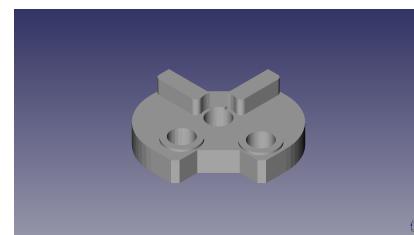


Figure 3.16: Begonia 3D Printed Bed Corner Render



Figure 3.18: Begonia 3D Printed Bed Fan Mount Render

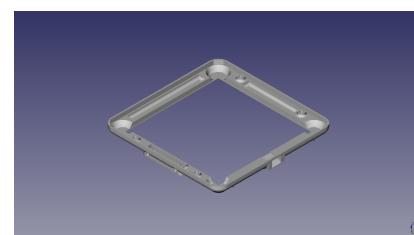


Figure 3.17: Begonia 3D Printed Bed Cover Render

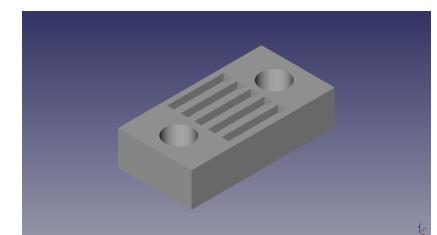


Figure 3.19: Begonia 3D Printed Belt Clamp Render

3.7 Begonia Extruder

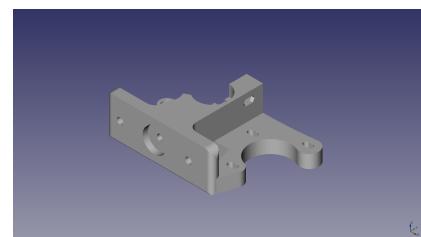


Figure 3.20: Begonia 3D Printed Extruder Body Hex Render

3.8 Begonia LCD

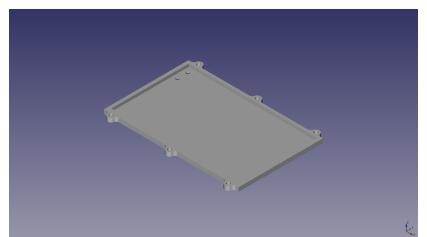


Figure 3.22: Begonia 3D Printed LCD Back Cover Render

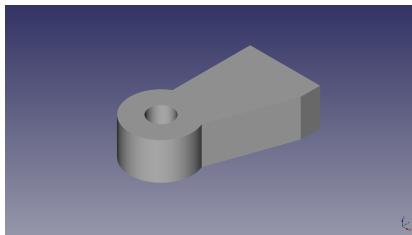


Figure 3.24: Begonia 3D Printed LCD Hinge Render

3.9 Begonia Spool

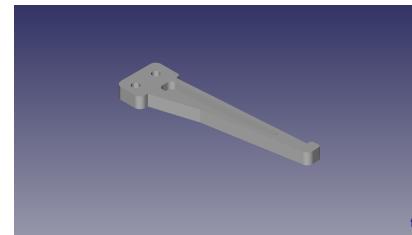


Figure 3.26: Begonia 3D Printed Spool Arm Render

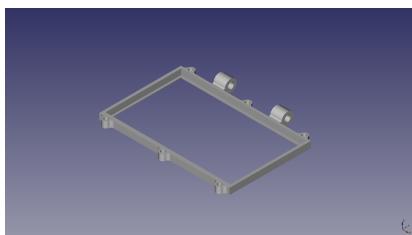


Figure 3.25: Begonia 3D Printed LCD Mount Render

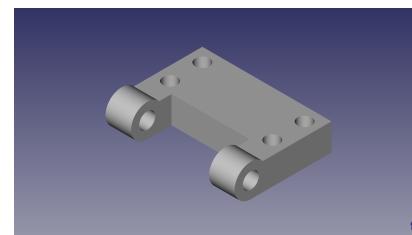


Figure 3.27: Begonia 3D Printed Spool Hinge Render

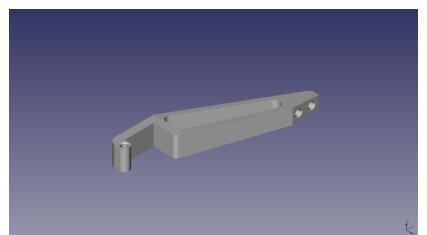


Figure 3.28: Begonia 3D Printed Spool Mount Render

3.10 Begonia X

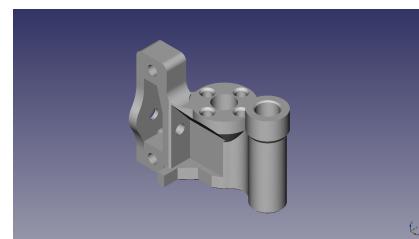


Figure 3.29: Begonia 3D Printed X End Idler Render

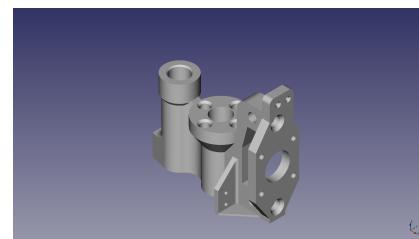


Figure 3.30: Begonia 3D Printed X End Motor Render

3.11 Begonia Y

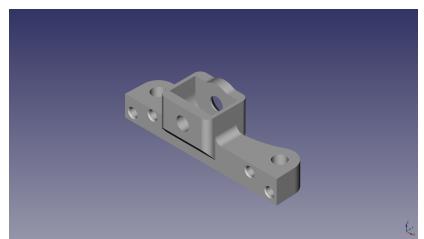


Figure 3.31: Begonia 3D Printed Y End Idler Render

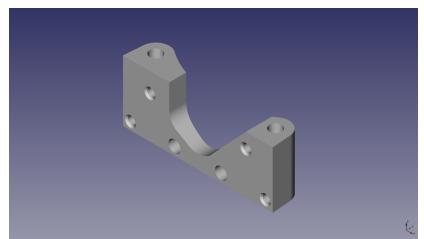


Figure 3.32: Begonia 3D Printed Y Rod Mount Render

3.12 Begonia Z

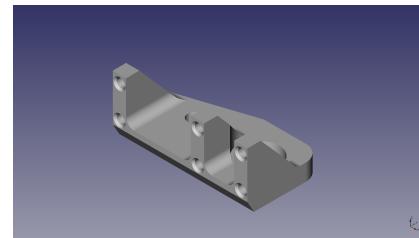


Figure 3.33: Begonia 3D Printed Upper Z Left Render

3.13 Begonia Misc

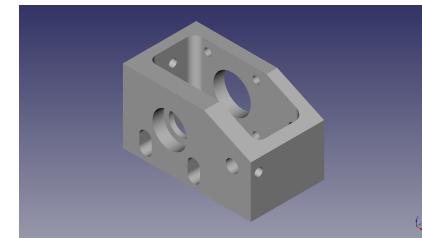


Figure 3.35: Begonia 3D Printed Lower Z Left Render

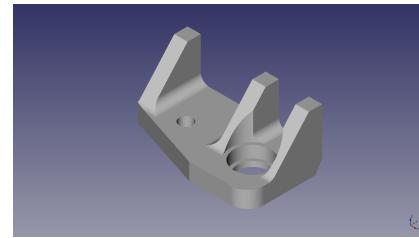


Figure 3.34: Begonia 3D Printed Upper Z Right Render

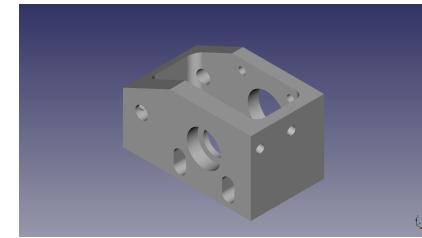


Figure 3.36: Begonia 3D Printed Lower Z Right Render

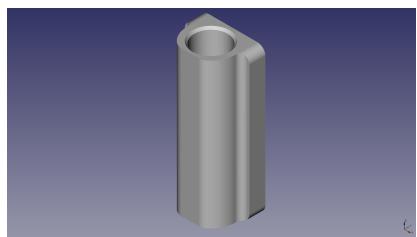


Figure 3.37: Begonia 3D Printed Double Bearing Holder Render

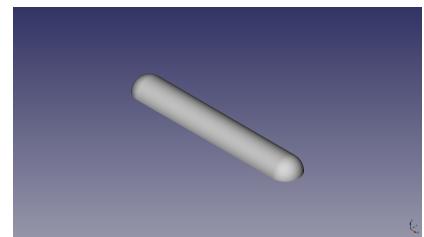


Figure 3.39: Begonia 3D Printed Handle Bar Render

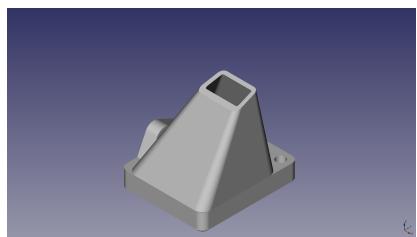


Figure 3.38: Begonia 3D Printed Fan Mount Render

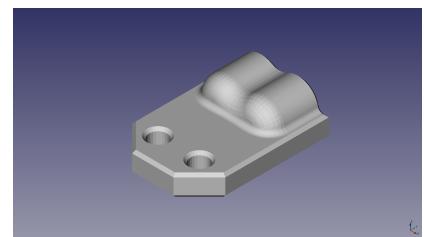


Figure 3.40: Begonia 3D Printed Cable Carrier Mount Render

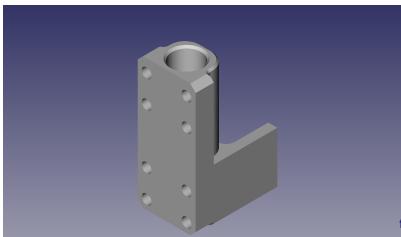


Figure 3.41: Begonia 3D Printed Extruder Mt Top Double Bearing Holder Render

4.1 Electrical Layout

4.2 Wire Harness List

Electrical
Power Supply, wiring

Camellia Wire List - V1.0	
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5.1 Intro

The printer controller will be the RAMBo-Mini.

3D Printer Controller

Mini-RAMBo

Quality Assurance

6.1 Quality Assurance

QUALITY ASSURANCE RECORD						
Page 1 of 3						
Model: LulzBot Mini 1.0 3D Printer						
Date: Complicated Day						
Configuration:						
Bechtle: Multi-300Wts 1.0a						
Printer: LulzBot Mini 1.0						
Software: Ultimaker Cura Version: 4.0.2 Settings: Default						
Stepover Motor	Stepover	Max Length	Microstep Mode	Digitstep		
X	10/15	15.5	16	175		
Y	10/15	15.5	16	175		
Z	10/15	15.5	16	175		
	80/100	N/A	N/A	155		
	100/120	N/A	N/A	155		

QUALITY ASSURANCE RECORD
Page 2 of 3

7.1 Packing List

Pack it well.

Packing
If It Shakes It Breaks



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Phone, Email, Web, Location

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<http://forum.lulzbot.com>

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8.3 Websites

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LulzBot 3D Printers
<http://www.lulzbot.com>

Colophon

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