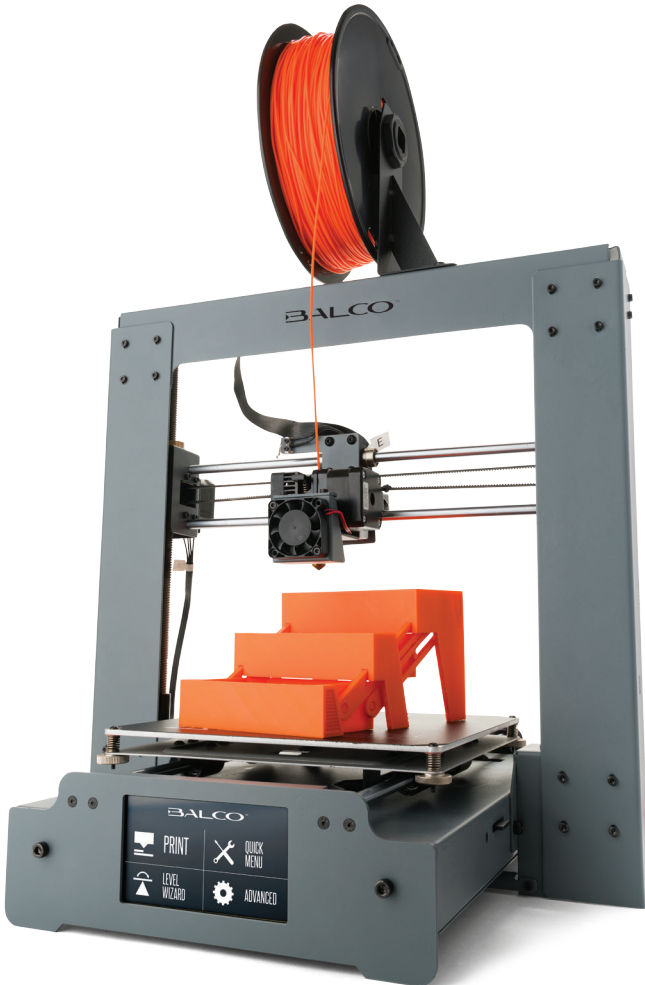


BALCO™

# 3DPRINTER TOUCH

## INSTRUCTION MANUAL



MODEL NUMBER: HE180021

VERSION 1  
ISSUED 10/08/17



# IMPORTANT

## Getting the most out of your 3D Printer Touch:



### **Read the manual carefully**

It will help you set up with ease



### **Visit [www.balcolifestyle.com](http://www.balcolifestyle.com)**

We have additional additional support videos and guides



### **Call After Sales Support - 0800 296 9698 (UK) 800-372-5715 (USA)**



### **Email [customercare@balcolifestyle.com](mailto:customercare@balcolifestyle.com)**

We're always happy to help

# WARRANTY NOTE

**If you experience any issues with this product, or its performance is not what you had expected, please contact us at Balco Lifestyle before returning the item to the store.**

**It is likely that we can resolve any problems for you via phone or email.**



# SAFETY INSTRUCTIONS

Before you get started, please read these important safety instructions.

**CAUTION:** The Balco 3D Printer Touch generates high temperatures and includes moving parts that can cause injury. Never reach inside of the Balco 3D Printer Touch while it is in operation, and allow time for the printer to cool down after operation.



Vapours/fumes may be irritating at operating temperatures. Always use the Balco 3D Printer Touch in an open, well ventilated area.



Do not leave the Balco 3D Printer Touch unattended during operation



Contact with extruded material may cause burns. Wait for printed objects to cool before removing them from the build platform.



Always take care when using the Scraper. Never direct the Scraper towards your fingers.



Only use the 3D Printer Touch in a clear working area

- The printer must not be exposed to water or rain, or damage will occur.
- The printer is designed to be used with ambient temperature ranging 15°C - 30°C, and humidity ranging 20% - 50%. Operating outside these limits may result in low quality models.
- In case of emergency, turn off the 3D Printer Touch at the power outlet.
- It is recommended that you use eye protection when cleaning/sanding printed models to avoid small particles contacting eyes.
- Please read and understand the contents of this installation and user manual carefully. Failure to read the manual may lead to personal injury, inferior results, or damage to the 3D Printer Touch. Always make sure that anyone who uses the 3D printer knows and understand the contents of the manual and makes the most out of the 3D Printer Touch.
- 3D Printer Touch is not intended for use by persons with reduced physical and/or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. Children should be under constant supervision when using the printer.
- Before installation, you should make sure that the 3D Printer Touch is unplugged from the power supply. Only using furniture that can safely support 3D Printer Touch.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.

3D Printer Touch has been tested according to the EN 60950, which falls under the low voltage directive. 3D Printer Touch must be used in conjunction with the original power cord. In combination, they guarantee safe use in relation to short-circuit, overload, over-voltage and over temperature. Always unplug the printer before doing maintenance or modifications.

# CONTENTS

---

<b>Safety Instructions</b>	<b>5</b>
<b>Parts List</b>	<b>8</b>
<b>Technical Specifications</b>	<b>9</b>
<b>Introduction</b>	<b>10</b>
1.1 What is 3D Printing?	10
1.2 From 3D Design to Printed 3D Object	10
1.3 Good 3D Printing Practices	12
<b>Product Overview</b>	<b>13</b>
2.1 Printer Front View	13
2.2 Printer Rear View	14
2.3 Print Bed	15
2.4 Control Panel	16
2.5 Touch Screen Control Panel	17
<b>Setup</b>	<b>20</b>
3.1 Unboxing and Assembly	20
3.2 Levelling the Bed	22
3.3 Filament	24
3.3.1 Filament Types	24
3.3.2 Inserting Filament	25
3.3.3 Removing Filament	25
3.3.4 Storage	25
3.4 Using the SD Card	26
3.4.1 Loading files from your Computer	26
3.4.2 Printing from the SD Card	26
3.5. Removing 3D Objects from the Bed	27
<b>Preparing To Print a File</b>	<b>28</b>
4.1 Creating a GCODE File	28
4.2 Cura Setup	28
4.3 Download the Latest Cura Profile	28

---

<b>Servicing</b>	<b>29</b>
5.1 Servicing your 3D Printer Touch	<b>29</b>
5.1.1 Replacing the Print Mat	<b>29</b>
5.1.2 Nozzle Cleaning	<b>29</b>
5.1.3 Extruder Cleaning	<b>30</b>
5.1.4 Routine Component Check	<b>30</b>
5.1.5 Storing	<b>30</b>
<b>Finishing</b>	<b>31</b>
6.1 Finishing Techniques	<b>31</b>
6.1.1 Useful Tools/Equipment	<b>31</b>
6.1.2 Removing Support Material	<b>31</b>
6.1.3 Sanding	<b>32</b>
6.1.4 Surface Coating	<b>32</b>
<b>Maintenance</b>	<b>33</b>
<b>Disposal of Packaging</b>	<b>33</b>
<b>Disposal of Product</b>	<b>33</b>
<b>Troubleshooting</b>	<b>34</b>
10.1 Troubleshooting	<b>34</b>
10.1.1 Printing Problems	<b>34</b>
10.1.2 Connectivity Problems	<b>35</b>
10.1.3 Other Problems	<b>36</b>
10.2 Useful Terms	<b>36</b>
<b>Appendix</b>	<b>38</b>
References	<b>38</b>

# PARTS LIST

---

1 x Balco 3D Printer Touch  
(Extruder Tower,  
Heated Print Bed)  
1 x Filament Spool Holder  
1 x Filament Spool Stand  
1 x Power Cable  
1 x SD Card Class 10  
1 x Scraper

1 x Replacement PTFE Tube  
1 x Hex Key Set  
6 x Hex Bolts  
2 x Cable Ties  
1 x 100m PLA Filament  
3 x Print Bed Mats  
(1 on Print Bed and 2 spare)  
1 x 0.4mm Drill Bit

1 x Extruder Cleaner  
6 x Rubber Feet  
1 x Levelling Card  
1 x Instruction Manual  
1 x Getting Started Guide  
1 x Warranty Card





# TECHNICAL SPECIFICATIONS



This device is noise-suppressed according to the applicable EU directives. This product fulfils the European directives 2011/65/EU, 2014/30/EU and 2014/35/EU.

## Printing

Print Technology:	Fused Filament Fabrication (FFF)
Build Volume:	200 x 200 x 180mm
Layer Resolution:	0.1 – 0.4mm
Positioning Accuracy:	X 0.012mm Y 0.012mm Z 0.004mm
Extruder Quantity:	Single Extruder
Extruder Diameter:	0.4mm
Print Speed:	10mm/s - 70mm/s
Travel Speed:	10mm/s - 70mm/s
Supported Print Materials:	Balco Branded PLA, ABS, PVA, HIPS, PLA Wood, PLA Flex, Conductive

## Temperature

Ambient Operating Temperature:	15°C – 30°C
Operational Extruder Temperature:	170°C - 260°C
Operational Print Bed Temperature:	30°C - 110°C

## Software

Slicer Software:	Cura
Cura Input Formats:	.STL, .OBJ, .DAE, .AMF
Cura Output Format:	.GCODE
Connectivity:	SD Card

## Electrical

Input Rating:	100-240V AC, 50-60Hz, 4A
---------------	--------------------------

## Physical Dimensions

Printer Frame Dimensions:	400 x 410 x 400mm
Weight:	10KG

# INTRODUCTION

---

## 1.1 What is 3D Printing?

3D Printing is a process whereby a real object is created from a 3D Design. Fused Filament Fabrication (FFF) is one of the most common technologies used by 3D Printers to achieve this. FFF works on an 'additive' principle by laying down material, such as PLA or ABS filament, in layers to create a 3D object.

## 1.2 From 3D Design to Printed 3D Object

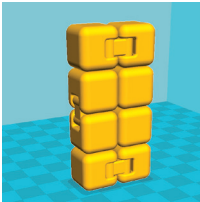
3D Design → Slice to GCODE → Setup 3D Printer Touch → 3D Printing Process → 3D Printed Object



### 3D Design

Having a 3D Design is the first step to creating a 3D Object. There are a number of free 3D Designs that can be downloaded and printed for personal use. Websites such as Thingiverse.com, Pinshape.com and YouMagine.com are a good place to start, but there are many more available!

Alternatively, you can create your own 3D Design using 3D Modelling Software. Programs such as SketchUp or Blender allow this, however this can take some practice before successfully modelling your 3D Design. After you've finished your 3D Design, you can export it as an .STL file, to be imported into a 'Slicer' program such as Cura.

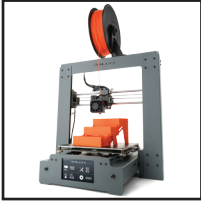


### Slice to GCODE

A 'Slicer' converts a 3D Design (usually in .STL or .AMF format) into individual layers. It then generates the machine code (such as GCODE) that the 3D Printer Touch will use for printing.

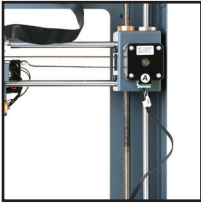
We recommend the program Cura as it uses a simple interface and includes a large amount of support material.

# INTRODUCTION



## Setup 3D Printer Touch



It's important to set up your printer before every print. We've included some steps on page 12 in section **1.3 Good 3D Printing Practices** for you to quickly refer to each time.



## 3D Printing Process

Now that you've loaded a GCODE file onto the printer, it will commence heating up the Extruder and Heated Print Bed, then start printing. While printing, the nozzle will move along the X and Y axis as each layer is printed. This can take some time, depending on the size of the 3D model, print speed of the 3D Printer Touch and resolution of each layer.

Here is an example of how size, infill, and resolution can affect printing time:

				
Dimensions:	62.5 x 25.75 x 67.75mm	70 x 70 x 140mm		
Infill:	20%	<b>0%</b>	20%	20%
Resolution:	2mm	2mm	2mm	<b>1mm</b>
Print Time:	53min	39min	6hr 40min	13hr 12min
Filament Used:	4m	2.54m	45m	45.67m

## 3D Printed Object

Once the printer has completed all the layers, you will have a 3D Printed Model.

The Balco 3D Printer Touch is compatible with a broad range of filament types and is capable of printing 3D models ranging from small and simple to complex objects with moving parts. What you print is limited only by your imagination.

# INTRODUCTION

## 1.3 Good 3D Printing Practices

Please refer to these steps during every print to ensure the best quality.

### Before Printing

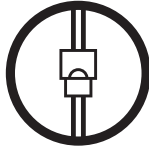
1. Ensure your GCODE file is correctly setup, filament diameter is set to 1.75mm and correct temperature settings for the material you are using (refer to table 3.3.1, page 24)
2. Check all cables and connectors are connected
3. Check that the Heated Print Bed is level and approximately 0.1mm from the nozzle
4. Check that the Heated Print Bed is clean, dust free and the nozzle does not have excess material



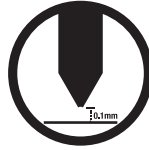
Always check GCODE file settings match filament and printer



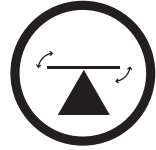
Always check Print Mat is clean and there is no residual plastic



Always check all cords are connected



Always check Extruder distance is 0.1mm from Print Mat



Always check Print Bed is level

stuck to it

### During Printing

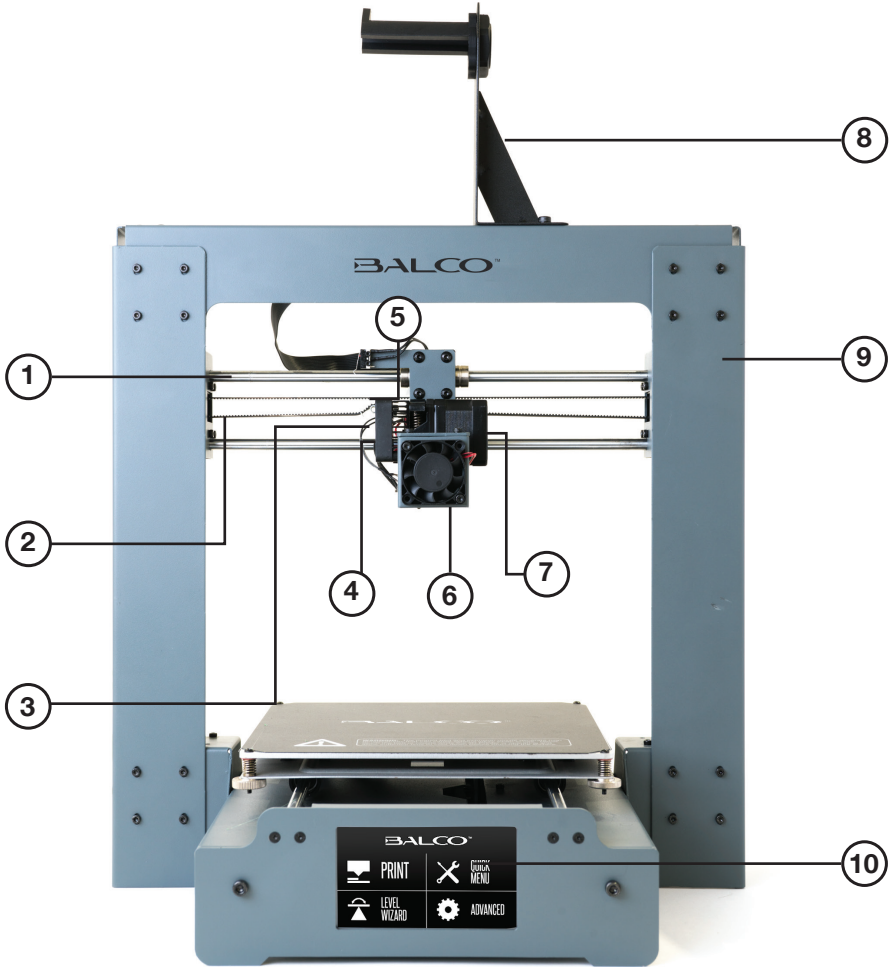
1. Closely monitor the first layer being printed – Most problems will occur in the first layer. If problems occur, stop the 3D Printer Touch at the power outlet
2. Do not leave the 3D Printer Touch unattended while in operation
3. Keep hands clear while machine is operating

### After Printing

1. Wait for the Heated Print Bed and Extruder to cool down
2. Carefully remove 3D Object using the supplied Scraper. Never use Scraper towards your body. Keep Scraper evenly flat when scraping to avoid damage to the Heated Print Bed. Damaged Heated Print Bed will affect adhesion for future prints
3. Store 3D Printer Touch in a clean, dry environment

# PRODUCT OVERVIEW

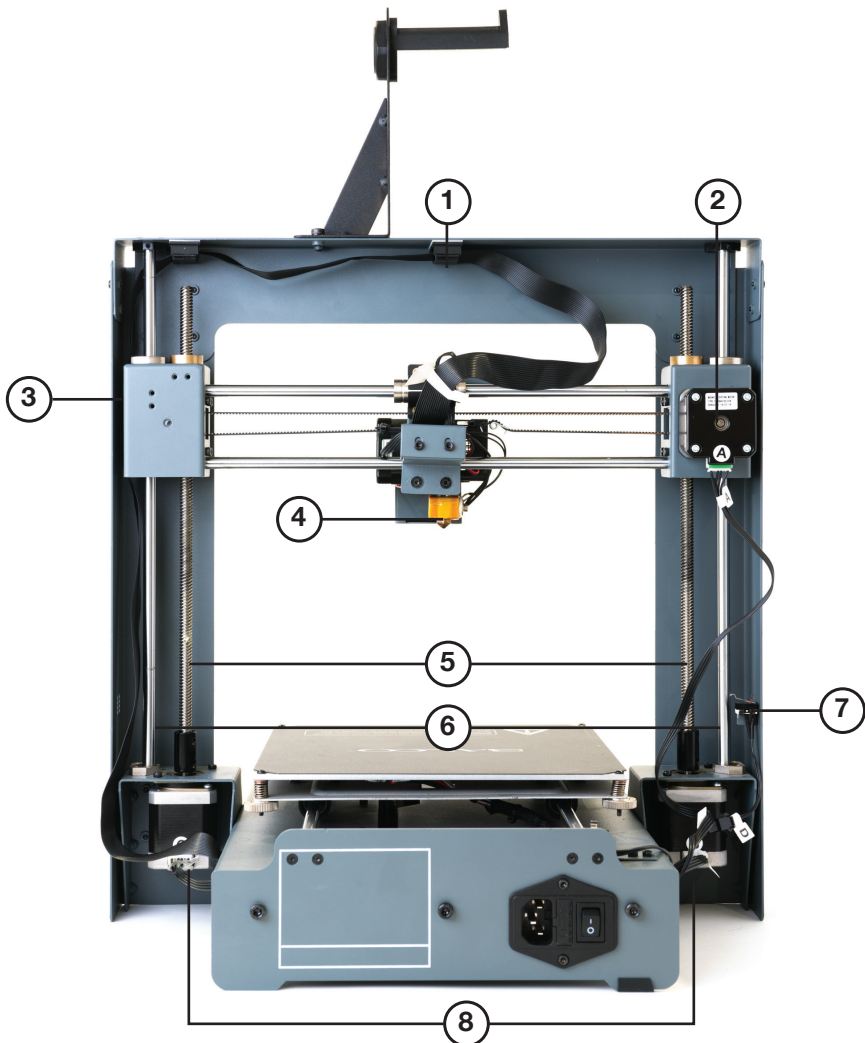
## 2.1 Printer Front View



- 1. X Rail
- 2. X Belt Drive
- 3. Extruder Spring Lever
- 4. Extruder Cooling Fan
- 5. X Stop (Micro Switch)
- 6. Filament Cooling Fan
- 7. Extruder Driving Motor
- 8. Filament Spool Holder Assembly
- 9. Tower Frame
- 10. Touch Screen

# PRODUCT OVERVIEW

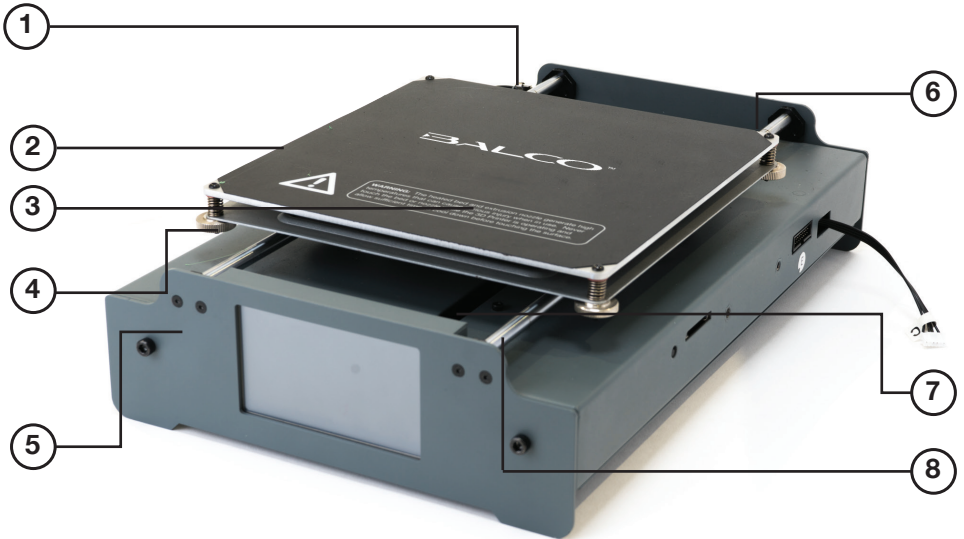
## 2.2 Printer Rear View



- |                         |                  |                          |
|-------------------------|------------------|--------------------------|
| 1. X Cable Track        | 4. Extruder      | 7. Z Stop (Micro Switch) |
| 2. X Axis Stepper Motor | 5. Z Drive Screw | 8. Z Axis Stepper Motor  |
| 3. Z Cable Track        | 6. Z Rod         |                          |

# PRODUCT OVERVIEW

## 2.3 Print Bed



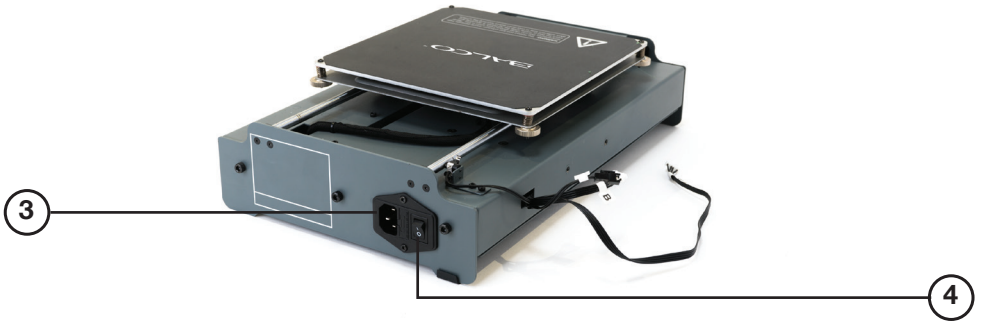
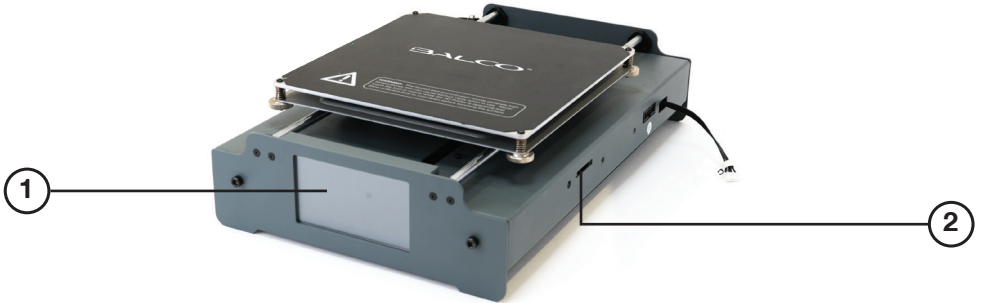
- 1. Y Stop (Micro Switch)
- 2. Heated Print Bed
- 3. Printing Mat

- 4. Levelling Thumb Screw
- 5. Print Bed Frame
- 6. Y Axis Stepper Motor

- 7. Y Belt Drive
- 8. Y Rail

# PRODUCT OVERVIEW

## 2.4 Control Panel



1. Touch Screen

2. SD Port

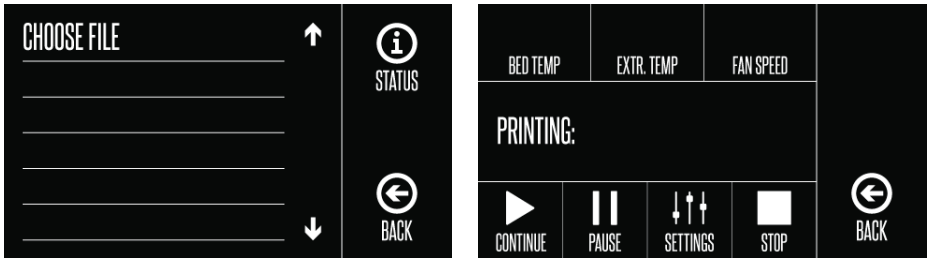
3. Power Socket

4. Power Switch



# PRODUCT OVERVIEW

## 2.5 Touch Screen Control Panel



### Print

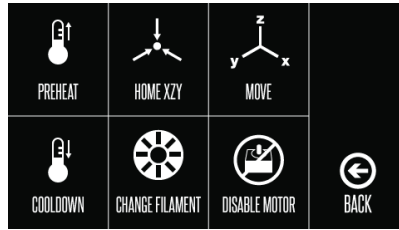
- **Choose File:** Shows files on SD card ready to print
- **Status:** Status of chosen print file
  - **Bed Temperature:** (0-125°C)
  - **Extruder Temperature:** (0-260°C)
  - **Fan Speed:** (0-100%)
  - **Continue:** Starts/resumes printing the selected file
  - **Pause:** Pauses the currently printing file
  - **Settings:** manually increase/decrease print speed (0-300%), extruder temperature, bed temperature and fan speed

**NOTE:** If you are making changes in **Settings**, ensure you select **Confirm** to proceed to update the changes made for your current print file

- **Stop:** Stops the current print job completely
- **Back:** Return to Main Menu

# PRODUCT OVERVIEW

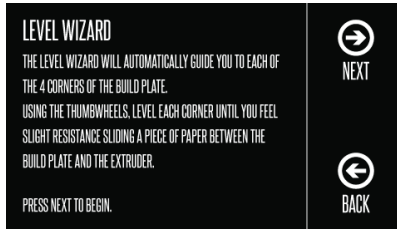
---



## Quick Menu

- **Preheat:** Preheat Extruder and Heat Bed Temperature for PLA or ABS filament
- **Home XYZ:** Automatically resets Extruder location to Home position
- **Move:**
  - **-X Axis+:** Move the Extruder along the X-Axis manually
  - **-Z Axis+:** Move the Extruder along the Z-Axis manually
  - **-Y Axis+:** Move the Extruder along the Y-Axis manually
  - **Extruder Flow:**
    - **In:** Pulls filament into the Extruder
    - **Out:** Ejects the filament out of the Extruder
  - **Disable Motor:** Unlocks Print Bed to be movable manually
  - **Home X:** Position the Extruder to the home position on the X-Axis
  - **Home Y:** Position the Extruder to the home position on the Y-Axis
  - **Home Z:** Position the Extruder to the home position on the Z-Axis
  - **Back:** Return to Quick Menu
- **Cool Down:** Select to begin cooling down your Printer's Print Bed and Extruder
- **Change Filament:**
  - **Add Filament:** Select from Touch Screen the type of filament you will be inserting.
  - **Remove Filament:** Select from Touch Screen the type of filament you will be removing. Your Printer will begin to heat up the Extruder and Print Bed to the correct temperature settings of selected filament type
  - **Raise Extruder:** Automatically raise the Extruder from the Print Bed
  - **Preheat PLA:** Select for printing with PLA Filament. Once selected, the Bed Temperature and Extruder Temperature status will be displayed on touch screen
  - **Preheat ABS:** Select for printing with ABS Filament. Once selected, the Bed Temperature and Extruder Temperature status will be displayed on touch screen
  - **Back:** Return to Change Filament Page
- **Disable Motor:** Unlocks Print Bed to be movable manually on x and y-axis only
- **Back:** Return to Main Menu

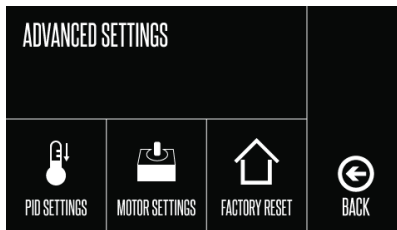
# PRODUCT OVERVIEW



## Level Wizard

Follow instructions on the touch screen for levelling the Print Bed

- **Back:** Return to Main Menu



## Advanced Settings

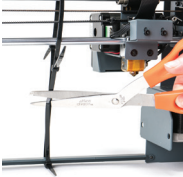
- **PID Settings:** (We recommend to leave setting as default if you are new to 3D Printing)
  - **PID-P:** Proportional Response
  - **PID-I:** Integral Response
  - **PID-D:** Derivative Response
  - **Confirm:** Select to update print settings
  - **Back:** Return to Advance Settings
- **Motor Settings:**
  - **X-Axis:**
  - **Y-Axis:**
  - **Z-Axis:**
  - **E-Axis:**
  - **Confirm:** Select to update print settings
  - **Back:** Return to Advance Settings
- **Factory Reset:** Resets 3D Printer to default Settings
- **Back:** Return to Main Menu

# SETUP

## 3.1 Unboxing and Assembly

Your Balco 3D Printer Touch is packed tightly and carefully - take your time unpacking it.

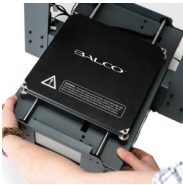
To view a step by step video of the Unboxing and Assembly, visit [balcolifestyle.com](http://balcolifestyle.com)



1. Carefully remove the Extruder Tower and Heated Print Bed from the box and place them on a clean, level work space. Slot the rubber feet onto all 4 corners of the Heated Print Bed Base, and one on both sides of the Extruder Tower Base. Carefully remove the cable tie that holds the Extruder in place



**NOTE:** Raise the Extruder by gently pulling the z-axis rod towards the top of the Extruder Tower and move the Extruder to one side prior to assembling the Printer



2. Insert the Heated Print Bed Controller carefully through the legs of the Extruder Tower and align the bolt holes on each side. Using the Hex Wrench, insert and tighten the two bolts on bottom of each Extruder Tower



3. Insert the long cable connector marked **A** into the motor connector of the Extruder Tower marked **A**



4. Insert the short cable connector marked **B** into the motor connector of the Extruder Tower marked **B**



5. Insert the white connector marked **C** into the motor connector of the Extruder Tower marked **C**

# SETUP

---



6. Insert the black connector marked **D** into the black connector of the Extruder Tower marked **D**



7. Insert one end of the black cable connector marked **E** into the black connector of the Extruder Tower marked **E**. Insert the other end to the black connector marked **E** into the black connector on the side of the Heated Print Bed marked **E**



8. Attach the upper arm of the filament spool holder by unscrewing the end cap, then reattaching. Position the Filament Spool Holder Stand on top of the Extruder Tower, then insert the bolts and tighten with the Hex Wrench



9. Ensure the power switch is in the **OFF** position, then insert the Power Supply Cable into the back of the 3D Printer Base. Insert the other end into a nearby mains power outlet. Turn on the power outlet, then turn on the power switch at the back of the 3D Printer Base



10. Wait for the printer to initialise, with the home screen shown on the Touch Screen.  
You have successfully setup your Balco 3D Printer Touch

# SETUP

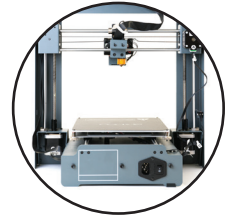
---

## 3.2 Levelling the Bed

**IMPORTANT NOTE:** *Levelling the bed is an extremely important step and if it is not done correctly every time, your prints will fail or be of poor quality*

### Before you begin to level the Heated Print Bed:

- Ensure the springs on all 4 corners of the Heated Print Bed are tightened all the way to the bottom by turning each thumbwheel anti-clockwise until you can no longer turn them. This reduces the distance between the 2 plates of the print bed to a minimum. Wipe the top of the Heated Print Bed with a clean, lint-free cloth to ensure no dust particles or other objects are on the Heated Print Bed
- Check the Z axis alignment. The X rail (holding the Extruder) should be parallel to the Heated Print Bed. If it is not, manually rotate individual z-axis stepper motors on the bottom of both shafts to adjust. Place a Hex Wrench on the z-axis rod and run it across the Heated Print Bed to check the z-axis is aligned horizontally



### Option 1 – Using Level Wizard to Level the Bed

1. Press **Level Wizard** on the touch screen panel and follow the steps as indicated

**NOTE:** *The **Level Wizard** will guide you through levelling each corner of your Print Bed. Once all 4 corners are checked, it is recommended that you press **Next** to thoroughly check once more and ensure your Bed is levelled.*

2. To return to Main Screen, press **Back**

# SETUP

---

## Option 2 – Manually Levelling the Bed

1. Select **Quick Menu** on the Main Screen and select **Home XYZ**

**NOTE:** The 3D printer extruder nozzle will move to the **Home** position in the front left corner of the Heated Print Bed. Turn off the 3D printer.

**NOTE:** Immediately turn off the machine if any of the motors are jamming or forcing against the chassis

2. Select Disable motor to manually move the Bed
3. Manually move the Bed so the Nozzle Head is at a corner of the Bed
4. Adjust the thumbwheels on the bottom of the Heated Print Bed so the distance between the Bed and the Nozzle head is approximately 0.1mm apart
5. Fine tune the gap distance by sliding the levelling card or using an A4 piece of paper. You should be able to feel a slight friction when sliding the paper between the Bed and the Nozzle Head
6. Repeat steps 4 to 6 for all other corners of the Bed
7. Move the Extruder to the centre of the Heated Print Bed and test the gap with the levelling card or a sheet of paper. Keep adjusting and testing until the gap is uniform on all points of the bed

# SETUP

## 3.3 Filament

The Balco 3D Printer Touch uses high quality PLA and ABS filaments. Only use quality Balco filaments as using generic filaments may damage your 3D Printer Touch, affect the print quality and may void your warranty. Extra filament including multiple colours and types are available from the online store at [balcolifestyle.com](http://balcolifestyle.com).

For beginners, we recommend using PLA materials as they are easy to print and does not produce fumes when printing. Before using other types of filaments, ensure you understand the advantages and disadvantages of other filaments and their proper usage.

### 3.3.1 Filament Types

Filament Type	PLA	ABS	PVA	HIPS
Extruder Temp:	215°C	240°C	175°C	240°C
Heat Bed Temp	60°C	90°C	50°C	60°C
Official Name:	Polyactic Acid	Acrylonitrile Butadiene Styrene	Polyvinyl Alcohol	High Impact Polystyrene
Printing Level:	Basic	Advanced	Advanced	Advanced
Advantages:	<ul style="list-style-type: none"><li>• Bioplastic</li><li>• Non-Toxic</li><li>• Less warping issues</li><li>• Hard or soft/flexible variants</li><li>• High print speed</li></ul>	<ul style="list-style-type: none"><li>• Smooth finish</li><li>• Durable</li><li>• Ideal for mechanical parts</li></ul>	<ul style="list-style-type: none"><li>• Water soluble</li><li>• Non-Toxic</li></ul>	<ul style="list-style-type: none"><li>• Lightweight</li><li>• Cost effective</li><li>• Dissolvable in Limonene</li></ul>
Disadvantages:	<ul style="list-style-type: none"><li>• Low heat resistance</li><li>• Easier to break than ABS</li><li>• Requires thicker walls than ABS</li></ul>	<ul style="list-style-type: none"><li>• Petroleum-based</li><li>• Non-biodegradable</li><li>• Heated Print Bed required</li><li>• Fumes when printing</li><li>• Sunlight deterioration</li></ul>	<ul style="list-style-type: none"><li>• Sensitive to high heat.</li></ul> <b>Do not heat over 190C</b>	<ul style="list-style-type: none"><li>• Only available in white</li></ul>
Finishing:	<ul style="list-style-type: none"><li>• Sanding possible</li><li>• Limited gluing</li></ul>	<ul style="list-style-type: none"><li>• Easy sanding</li><li>• Easily soluble in acetone</li></ul>	<ul style="list-style-type: none"><li>• Gluing Only</li></ul>	<ul style="list-style-type: none"><li>• Gluing Only</li></ul>

### Alternative types of PLA

These PLA Alternatives require advanced knowledge of the 3D Printer Touch. Please visit [balcolifestyle.com](http://balcolifestyle.com) for details of filament types and parameters.

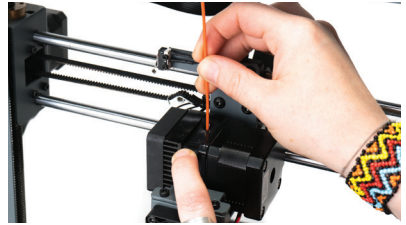


# SETUP

## 3.3.2 Inserting Filament

1. On the Main Screen, select **Quick Menu → Change Filament → Add Filament**
2. Select the desired type of Filament to be added. The Extruder will automatically be raised and your Printer will begin heating the Extruder to the correct temperature. When the temperatures are within a few degrees of the target, you are ready to insert the filament
3. Place the included filament onto the Spool holder. Carefully insert the end of the filament into the hole on the Extruder. The Extruder will begin to slowly pull the filament in. Once filament begins extruding, press **Back** to stop
4. Carefully remove the extruded filament from the Nozzle Head and ensure the Print Bed is clean

**WARNING:** Extruder and Heated Print Bed will still be hot



## 3.3.3 Removing Filament

1. On the Main Screen, select **Quick Menu → Change Filament → Remove Filament**
2. Select the desired type of Filament to be removed. The Extruder will automatically be raised and your Printer will begin heating the Extruder to the correct temperature
3. Once the Extruder reaches the correct temperature, the filament will begin retracting from the Extruder. Gently pull the filament up until it is released and press **Back** to stop

**NOTE:** Trim of the end of the retracted filament prior to reinserting into the Extruder to prevent clogging the Printer Nozzle.

## 3.3.4 Storage

Both PLA and ABS filaments are sensitive to moisture. If stored in a humid environment, the quality of the filament can deteriorate, with a tendency to bubble and spurt from the nozzle tip. This will affect print quality, so when storing PLA or ABS for an extended period of time, follow these tips.

- Store in a sealed, air tight bag/container. We recommend a vacuum seal bag
- Store with a silica gel (moisture absorber) pack. One is included with each filament spool

# SETUP

## 3.4 Using the SD Card

### 3.4.1 Loading files from your Computer

1. Insert your SD Card into a card reader or memory card slot and connect to your computer (refer to your computer manual for further instructions if required)
2. The SD Card will appear as a folder (refer to your computer manual for further instructions if required)
3. Copy your converted GCODE files to the SD card, then safely remove

### 3.4.2 Printing from the SD Card

1. Insert the included SD card into the slot on the right side of the 3D Printer, ensuring that the metal contacts are facing upwards
2. Select **Print** from the Main Menu and select your desired file to print
3. Once selected, your file will begin to load and your file status can be viewed on the touch screen. Your printer will automatically commence heating the Extruder and Print Bed to the correct printing range before commencing the print

**NOTE:** If your file is not printing correctly, press the **Stop** Button to discontinue the print. Ensure the extruder is raised prior to removing the print off the Bed

**NOTE:** Immediately turn off the machine if any of the motors are jamming or forcing against the chassis

**NOTE:** If you cannot access the Print menu, it is likely the SD Card is not mounted properly. Try removing and reinserting the SD Card.



# SETUP

---

## 3.5. Removing 3D Objects from the Bed

When the Balco 3D Printer Touch has completed printing your 3D printed object, it's time to remove the object from the bed.

1. Once the print is completed, the nozzle and Heated Print Bed will automatically commence cooling down. Wait until the Extruder and Heated Print Bed have cooled down to room temperature. This will allow the plastic to contract, making it easier to remove
2. Once cooled, turn off your 3D printer and carefully remove the 3D printed object using the supplied Scraper , carefully 'wedge' under one of the edges of the 3D object. Take care to keep the Scraper flat with the bed, as to not cause damage to the Print Mat
3. As one edge begins to lift, gently maneuver the Scraper forward to continue to 'wedge' between the 3D object and the Heated Print Bed
4. Once the part has fully separated from the bed, it is safe to remove

**NOTE:** Always take care when using the Scraper. Never use excessive force or scrape towards your hand.

**NOTE:** Always keep the Scraper as level as possible. Scraper can damage the print mat if not used correctly

**NOTE:** Removing a 3D object, particularly one with a large surface size, can be a long process. Never rush when removing a 3D printed object

**TIP:** If you are persistently having trouble removing 3D printed objects, try the following:

- Use a layer of blue masking tape (designed to not leave behind residue) on the Heated Print Bed. Be sure to remove and replace after each print
- Check if the printing mat is damaged and replace if needed

Replacement mats can be purchased at [balcolifestyle.com](http://balcolifestyle.com)

# PREPARING TO PRINT A FILE

## 4.1 Creating a GCODE File

The Balco 3D Printer Touch prints 3D files in GCODE format. GCODE files provide essential movement and printer settings required to print your object. To prepare and convert your 3D file to GCODE format, you must use a 'Slicer' program such as Cura. Cura is a free open source slicer available for Windows and Mac platforms. Cura can convert various 3D file formats, such as STL files, into GCODE. Follow the steps below to download and install Cura.

## 4.2 Cura Setup

Install the Cura software on the included SD card or download the latest version of Cura from the link below:

<https://ultimaker.com/en/products/cura-software/list>

You can learn how to install and use Cura from below link:

<https://ultimaker.com/en/resources/16579-installation>

After installing Cura, please add your Balco 3D Printer Touch to Cura:

1. On first launch, Cura will ask you to add a 3D Printer Touch from the list provided. Alternatively, you can add the 3D Printer Touch by selecting **Machine** → **Machine Settings** → **Add New Machine**
2. Select **Other**
3. Select **Custom...**
4. Enter Machine name as '**Balco 3D Printer Touch**', or your desired name
5. Input Machine width and depth as 200
6. Input Machine height as 180
7. Change Nozzle size to 0.4mm
8. Ensure Heated Print Bed is ticked
9. Select **Finish**

**Custom RepRap information**

RepRap machines can be vastly different, so here you can set your own settings. Be sure to review the default profile before running it on your machine. If you like a default profile for your machine added, then make an issue on github.

You will have to manually install Marlin or Sprinter firmware.

Machine name	Balco 3D Printer
Machine width X (mm)	200
Machine depth Y (mm)	200
Machine height Z (mm)	180
Nozzle size (mm)	0.4
Heated bed	<input checked="" type="checkbox"/>
Bed center is 0,0,0 (ReStock)	<input type="checkbox"/>

< Back Finish Cancel

## 4.3 Download the Latest Cura Profile

For optimal print settings, download the most up to date Balco 3D Printer Touch Cura Profile from [balcolifestyle.com](http://balcolifestyle.com) and import it into Cura. Note this is optimized for use with PLA.

# SERVICING

## 5.1 Servicing your 3D Printer Touch

### 5.1.1 Replacing the Print Mat

The Balco 3D Printer Touch includes 2 extra Print Mats. Additional Print Mats are available for purchase from [balcolifestyle.com](http://balcolifestyle.com)

1. Remove the current Print Mat by slowly peeling from one corner
2. Using rubbing alcohol and a microfibre towel, carefully remove any residual adhesive left on the Heated Print Bed
3. Peel the 3M backing from the new Print Mat
4. Gently place the new Print Mat onto the Heated Print Bed, making sure to align with each edge. It is recommended to start at a corner to ensure no bubbles become present
5. Use the Scraper to apply pressure on the new Print Mat, ensuring strong adhesion. Keep the Scraper level as it can damage the Print Mat

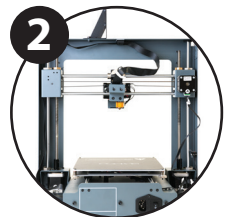
**TIP:** Warming the bed slightly may make removal easier. You can also use masking tape in lieu of a Print Mat. Blue painters tape is recommended.



### 5.1.2 Nozzle Cleaning

If your Extruder nozzle becomes blocked, follow these steps to clean the nozzle.

1. Remove the existing filament using steps from section **3.3.3 Removing Filament**
2. Using a clean 0.4mm drill bit, insert the drill bit into the nozzle by hand, twisting while inserting
3. Remove the drill bit from the nozzle, twisting while removing
4. Repeat steps **2** and **3** three times, then follow the steps in section **3.3.2 Inserting Filament** to re-insert the filament into the nozzle



# SERVICING

---

## 5.1.3 Extruder Cleaning

If your Extruder becomes blocked, follow these steps to unclog the Extruder.

1. Remove the existing filament using steps from section **3.3.3 Removing Filament**
2. Gently press down on the Extruder lever, and carefully insert the Extruder Cleaner into the filament hole. You will notice excess filament clogged in the Extruder being pushed through the nozzle.
3. Remove the Extruder Cleaner from the hole and repeat the step **2** until no more filament is exiting the nozzle.
4. Follow the steps in section **3.3.2 Inserting Filament** to re-insert the filament into the nozzle

## 5.1.4 Routine Component Check

### Motor Connectors

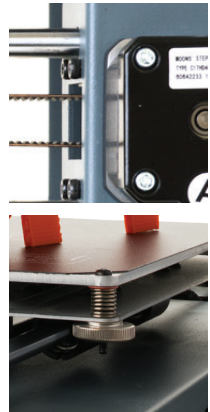
Loose motor connections could cause a 3D print to fail. It's a good habit to routinely check for any damage to the connectors or the black cables.

### Axis Lubrication

Regular lubrication of the X and Y Axis rods is important for the longevity and smooth running of your printer. The rods can be lubricated with machine oil or synthetic grease. We recommend using bearing grease, and to apply generously to both the X Axis and Y Axis rods.

### Nuts and Bolts

Loose nuts and bolts could affect the geometry of the 3D Printer Touch. Check that all nuts and bolts remain firmly tightened. If required, re-tighten using the hex wrench.



## 5.1.5 Storing

Always store your 3D Printer Touch in a cool, dry location that is free from dust.

# FINISHING

---

## 6.1 Finishing Techniques

### 6.1.1 Useful Tools/Equipment

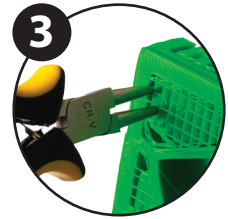
- Safety Goggles
- Mask
- Long-nose Pliers
- Wire cutters
- Sandpaper (100, 200, 300, 400, 500, 600 Grit)
- Medium, fine and extra fine sanding sponges
- Acrylic based primer spray paint
- Acrylic based spray paint (colour of your choice)
- Acrylic based varnish spray paint

**NOTE:** Different paint types are also compatible with PLA and ABS. Consult your local paint supplier for the best compatibility for your intended purpose.

### 6.1.2 Removing Support Material

Even after support material is removed by hand, residual material will remain.

1. Ensure that safety goggles and a mask are worn for protection
2. Remove most of the support material by hand, taking care not to damage the 3D object
3. Using the long-nose pliers, carefully grasp some of the remaining material, then twist to remove. Repeat until no more material can be removed.
4. Using the wire cutters, cut away any excess filament.



# FINISHING

---

## 6.1.3 Sanding

Though Fused Filament Fabrication (FFF) is capable of producing high quality objects straight out of the machine, the layer lines will be visible. Sanding will reduce these 'step' marks in the model.

1. Ensure that safety goggles and a mask are worn for protection
2. Starting with 100 grit sandpaper, carefully sand your 3D object using small, circular motions

**NOTE:** *PLA is less resistant to high temperatures caused by sanding. Take your time sanding your 3D object to avoid damage.*

3. Using the medium sanding sponge, sand difficult to reach areas of your 3D object
4. Gradually increase the sandpaper grid until the 3D print is smooth

**TIP:** *Spraying a primer filler will also help to reduce the layer lines on the 3D Object. This can then be sanded away and repeated, until the desired smoothness is achieved*

## 6.1.4 Surface Coating

Finally, to make your models more presentable, follow these steps;

1. Ensure that safety goggles and a mask are worn for protection
2. Ensure that your 3D object is clean and free from dust
3. Spray your model using an acrylic based primer, following the directions of your primer
4. Allow appropriate time to dry before applying additional coats
5. Spray your model using an acrylic based paint of your colour. Allow appropriate time to dry
6. Spray your model using an acrylic based varnish, following the directions of your varnish.  
Allow appropriate time to dry before applying additional coats.

**NOTE:** *Different paint types are also compatible with PLA and ABS. Consult your local paint supplier for the best compatibility for your intended purpose.*

Congratulations! Your 3D object now looks like a professionally finished product!



# MAINTENANCE

---

The maintenance of 3D Printer Touch should be conducted by skilled person only. Always unplug the printer before doing maintenance or modifications.

In order to have a smoothly working 3D Printer Touch it is important to maintain it correctly. Please follow the safety/deterioration checks during maintenance:

- Check condition of all rubber belts
- Oil the lead screens with light machine oil (sewing machine oil)
- Check the condition of the power cable. Make sure there are no cracks in the sheath
- Check the condition of the wiring on the printer to ensure nothing is pinched or damaged
- Check the fans are operational during print
- Check the chassis is secure. Tighten any screws if there is flex in the frame

# DISPOSAL OF PACKAGING

---



This product has been packaged to protect it against transportation damage. Unpack the appliance and keep the original packaging carton and materials in a safe place. It will help prevent any damage if the product needs to be transported in the future, and you can use it to store the appliance when it is not in use.

The packaging used for the appliance is made of recyclable materials. Please ensure that the packaging materials are disposed of as per the applicable local rules in order to include the materials in recycling process for environment protection.

# DISPOSAL OF PRODUCT

---



Compliance with the WEEE Directive and disposal of waste products. This product has been made from high-quality parts and materials which can be re-used and are suitable for recycling. Therefore, do not dispose of the product with normal household waste at the end of its service life. Take it to a collection point for the recycling of electrical and electronic equipment. This is indicated by this symbol on the product, in the operating manual and on the packaging. Please consult your local authorities to find out where the nearest collection point is. Help protect the environment by recycling used products.

# TROUBLESHOOTING

---

## 10.1 Troubleshooting

If having any troubles when using the 3D Printer Touch, please refer to the troubleshooting guide below, or call customer support on **0800 296 9698 (UK) or 800-372-5715 (USA)**.

You can also visit **balcolifestyle.com** for support videos and advanced tutorials.

### 10.1.1 Printing Problems

#### Clicking sound from one of the stepper motors

One of your stepper motors may not be connected properly. Check each connection and then inspect the cable routing for any faults

#### File not printing

Remove the SD Card and insert into your Computer. Open the GCODE file using a text editor (eg. Notepad), and inspect if GCODE is readable or not. If file consists of multiple 'ÿÿÿÿ' symbol, then file has been corrupted. Try reformatting your SD Card and reloading the GCODE file.

**NOTE:** *Reformatting will delete all files on your SD card*

#### Not extruding when starting to print

Ensure that the nozzle temperature has been set to match your material

#### Not sticking to the bed

- Ensure that the bed is clean and free from dust
- Check that the bed is level and set to a distance of approximately 0.1mm
- If there are defects / deep scratches in the printing mat, it may need to be changed. Change the mat or use blue painters masking tape
- Add a brim or raft to your file
- Check that the bed temperature matches your material
- Ensure nozzle to bed gap is not bigger than 0.1mm. Material will solidify if gap is large.

#### Models Warping/Curling

- Check that the bed temperature matches your material
- Check the infill % of your GCODE. The higher the infill, the more likely to warp
- Add a brim or raft to your file

# TROUBLESHOOTING

---

## **Model appears very 'stringy'**

- Ensure that the filament diameter is set to match your filament spool (1.75mm), then try creating a new GCODE before printing again
- Check you are using the correct temperature for the filament used

## **Print stopped halfway**

- Check that the GCODE file is complete and not corrupt
- Check the original model file

## **The motor does not stop at the end of axis**

Check that the stop micro switches are aligned with the motor mount and registering.

## **The print head/bed does not move**

- Check the part can be moved by hand when stepper motor is disabled. Clear anything that is blocking the path
- Check that the motor is turning (using position menu). If motor turns but belt does not, you will need to tighten the gear motor gear nut. Please visit [balcolifestyle.com](http://balcolifestyle.com) for further support.

## **10.1.2 Connectivity Problems**

### **My 3D Printer Touch isn't turning on**

Check that you have correctly inserted the power cable into the rear of the Control Box, the power cord is plugged into the mains outlet and that the Control Box power switch is on.

# TROUBLESHOOTING

---

## 10.1.3 Other Problems

### Filament stuck when removing

Please visit [balcolifestyle.com](http://balcolifestyle.com) for a video on how to clear the nozzle with stuck filament.

### Where can I buy more filament?

If you require more filament, visit our online store, [balcolifestyle.com](http://balcolifestyle.com) to purchase various colours and types.

### What brand of filament should I buy?

We recommend using only Balco branded filament. Lower quality generic filaments can damage your 3D Printer Touch and potentially void your warranty.

### What types of filament can my 3D Printer Touch Print?

The Balco 3D Printer Touch accepts various types of filaments including PLA, ABS, PVA, HIPS and specialty filaments such as wood, flexible, luminous and conductive. For our full range of filaments visit [balcolifestyle.com](http://balcolifestyle.com)

## 10.2 Useful Terms

### ABS Filament

Commonly used plastic filament with good strength and industrial properties

### Brim/Raft

Types of printed foundations that help models adhere to the print bed

### Display

Provides the main interface for operating the 3D Printer Touch

### Firmware

Software that is programmed into the electronic board

# TROUBLESHOOTING

---

## **GCODE**

Code that is produced using the slicing process. Describes the movements and temperature settings of your 3D Printer Touch

## **Heated Print Bed**

Surface that your 3D objects are printed onto

## **Nozzle**

Opening at the bottom of the print head where filament is pushed through

## **PLA Filament**

Commonly used plastic filament with low environmental impact

## **SD Card**

Secure Digital memory card. This is where your GCODE files can be stored and accessed by the 3D Printer Touch

## **Slicing**

Process that turns a 3D Design into a code that can be used by 3D Printer Touch

## **Spool**

Filaments of PLA and ABS are wrapped, creating a spool

## **Stepper Motor**

DC motors that move in discrete steps. This allows for precise positioning and/or speed control

## **.stl**

A common file format for 3D Designs/Models

# APPENDIX

---

## References

Some of the 3D Models used in this manual and other included materials were sourced from the below:

**Another Fidget Cube by mistertech**

Published on September 4, 2016  
[www.thingiverse.com/thing:1752508](http://www.thingiverse.com/thing:1752508)



Creative Commons - Attribution



**Twisted 6-sided Vase Basic by MaakMijnIdee**

Published on March 7, 2012  
[www.thingiverse.com/thing:18672](http://www.thingiverse.com/thing:18672)



Creative Commons - Attribution - Share Alike



**Unicorn Head by kellesabelle**

Published on February 5, 2012  
[www.thingiverse.com/thing:17090](http://www.thingiverse.com/thing:17090)



Creative Commons - Attribution - Share Alike



**Sliding Storage Drawers by Intentional3D**

Published on August 27, 2015  
[www.thingiverse.com/thing:987412](http://www.thingiverse.com/thing:987412)



Creative Commons - Attribution - Share Alike





**BALCO**™  
L I F E S T Y L E