

### LEVELING YOUR BED TIPS AND TRICKS

The hardest thing people seem to find to understand is what a “level bed” looks like. Most often they have the bed too low. We do not recommend the levelling technique prescribed by Makerbot, and DEFINATLY do not recommend using a business card, as recommended by them with the Replicator 1. Instead follow these tips and you should be level and printing perfectly every time.

1. LEVEL WITH “LEVEL BED” FEATURE THROUGH LED AS A QUICK GUIDE.
2. LEVEL PROPERLY ON THE FLY

Start your print. It will start by drawing shells (the outline) and then colouring-in if you like, between the outlines. Fig 1.1 shows the first 1 and 1/2 layers perfectly printed. Notice the “almost not there” appearance of the first layer. This is what you are aiming for! We recommend doing this “on-the-fly”, with a real print. It is much easier to “see the level” than to gauge it with paper. As the machine moves around printing the first layer watch what is happening and gently adjust the thumbscrew tiny amounts to compensate. Once you have it right you may need to re-start the print, depending on how far out you were to begin with.

#### The perfect first layer

The first layer should be just above the blue tape, so that you get a slight whitening of the tape and only a very very thin film of filament, almost impossible to see (see Fig 1.1). The second layer then starts to show clearly.

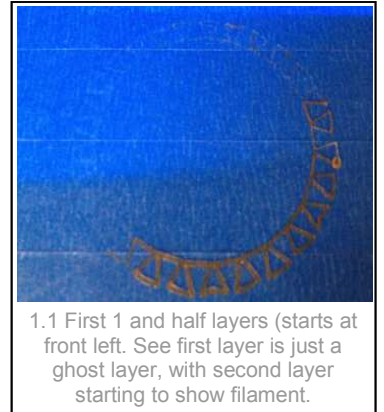
If you slide your fingernail across the bed after the second or third layer, so that it bumps into your print it should be tight on the bed and not budge (Fig 1.2) If you can move it you are too high off the bed.

#### If It Is Too Low

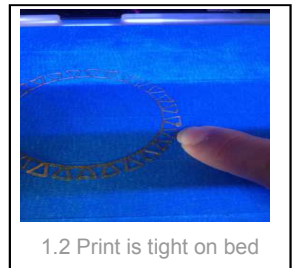
The first layer will be dark and may even be intermittent. When you slide your fingernail along and against it, it will easily lift

#### If the Bed Is Too High

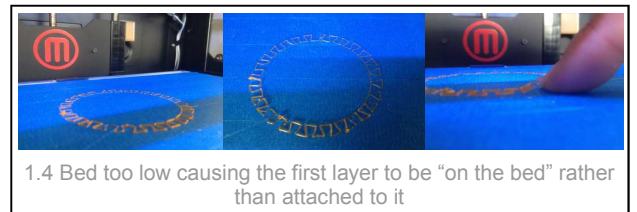
The first layer will scrape the tape and may even cut into it.



1.1 First 1 and half layers (starts at front left). See first layer is just a ghost layer, with second layer starting to show filament.



1.2 Print is tight on bed

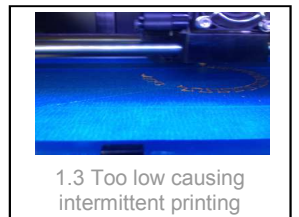


1.4 Bed too low causing the first layer to be “on the bed” rather than attached to it

### WHAT BAD LEVELLING LOOKS LIKE

It is common to see the print “lift” on the side that was not as tight on the bed on the first layer as the rest on the print.

You may also see the filament gathering up around the nozzle as it has stuck to the nozzle instead of the bed



1.3 Too low causing intermittent printing

On the other hand, may get a crumbly looking print when it starts to “colour in”. You are much better off with the see-through first layer than a partially printed one. Sacrifice the first layer for the sake of the whole print.

### ONCE LEVEL YOU SHOULD NOT NEED TO LEVEL BETWEEN PRINTS BUT :

Is your Perspex bed a tight fit to the clips? Some came from the factory with round foam pieces attached to the plastic black base that the Perspex sits on to keep it firm. If it is not form it can wobble and a .1mm Layer height needs .1mm precision—so we suggest putting something under the bed to make it tightly clip the holders, if it does not already. (a piece of cardboard for example, or craft foam sheet etc)

### STILL GOT PROBLEMS

Is the filament extruding from the nozzle sideways or on an angle when you load? You may have a partial blockage. Is the filament feeding fast and strong enough? (we have a video of this to compare too)

Are you sure the model was “on the bed” when you created the print file? Use our test prints to practice (these are for bots with Firmware 7 or 7.1 (NOT newer or older formware))

Still not sure—take a photo of the first and second layers from above and in front and start a support ticket.

*BilbyCNC hopes you found this helpful. Please visit [support.bilbycnc.com.au](http://support.bilbycnc.com.au) if you need further assistance*