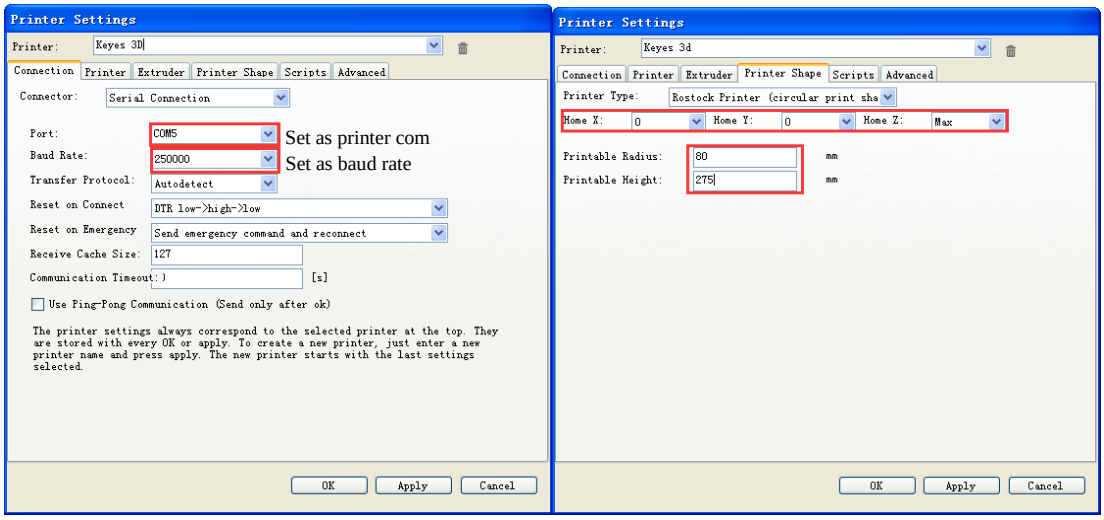
ROSTOK Manual Leveling

Set up Repetier-Host

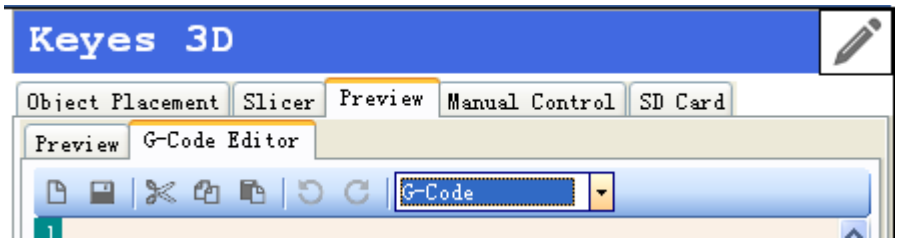
1. Open up Repetier-Host, then select configuration-printer settings and set up as below:

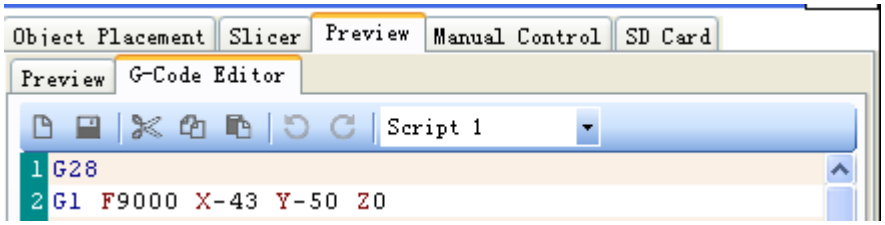


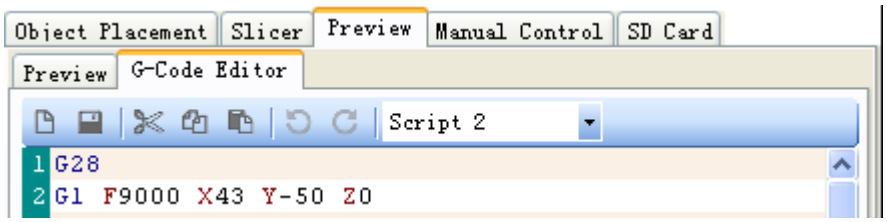
Note: Communication ports and baud rate should be set up based on actual circumstance; Initial position should be set up as shown above; Printable radius and printable height should also be set up according to actual circumstance.

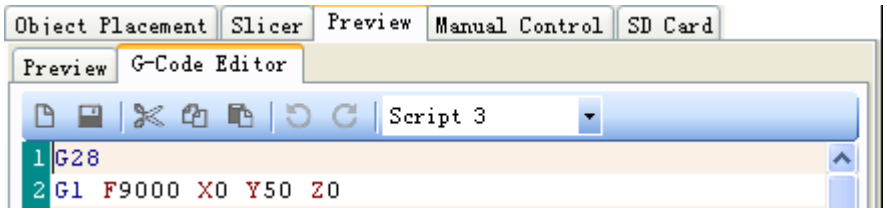
2. Script setup:

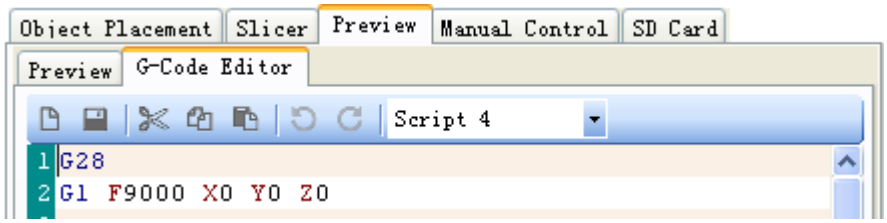
Select preview>Gcode edit>script











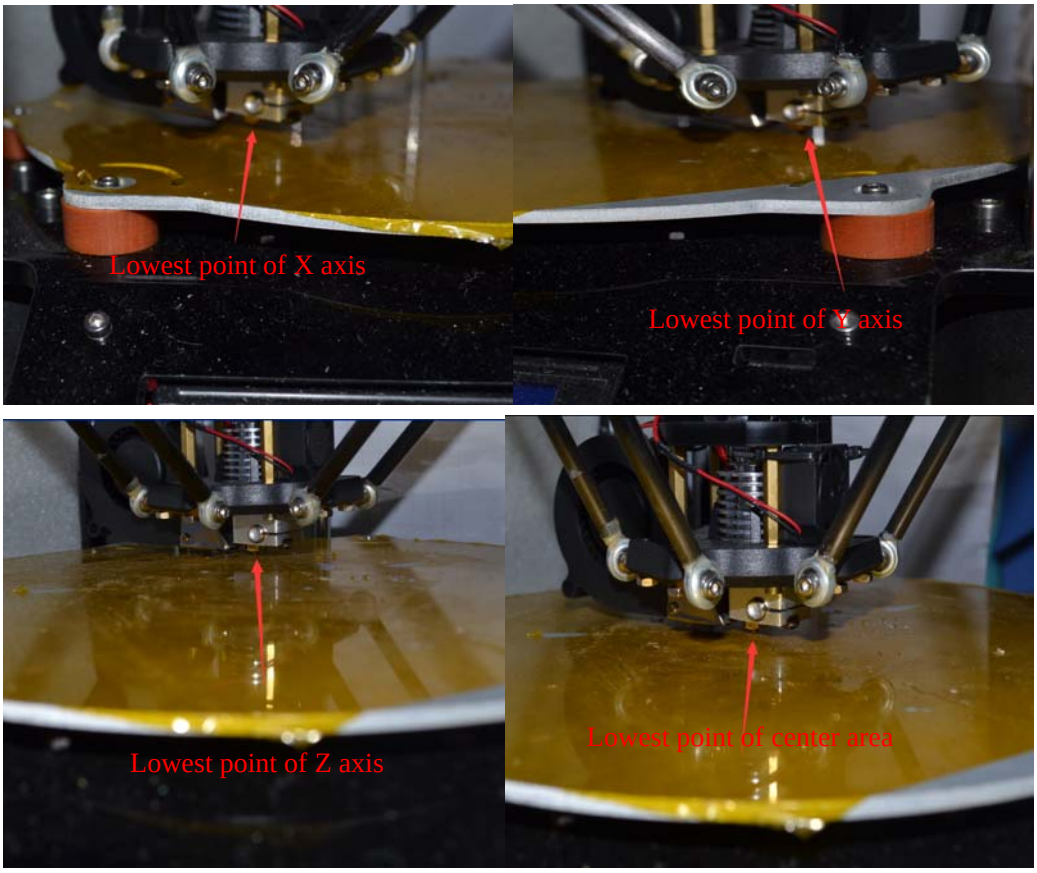
3. Balance adjustment:

Before balance adjustment, please make sure printer installation has finished and the machine is under normal operation. When step 1 and step 2 are finished, please double check and make sure nothing has been left out and the printer can operate normally. Then turn on power switch. PC and printer are properly connected , please prepare a piece of A4 paper. (If you have never done balance adjustment before, we suggest you read through tutorial course on leveling before adjustment in case the machine were damaged by any faulty operation.)

A: Locate the lowest point

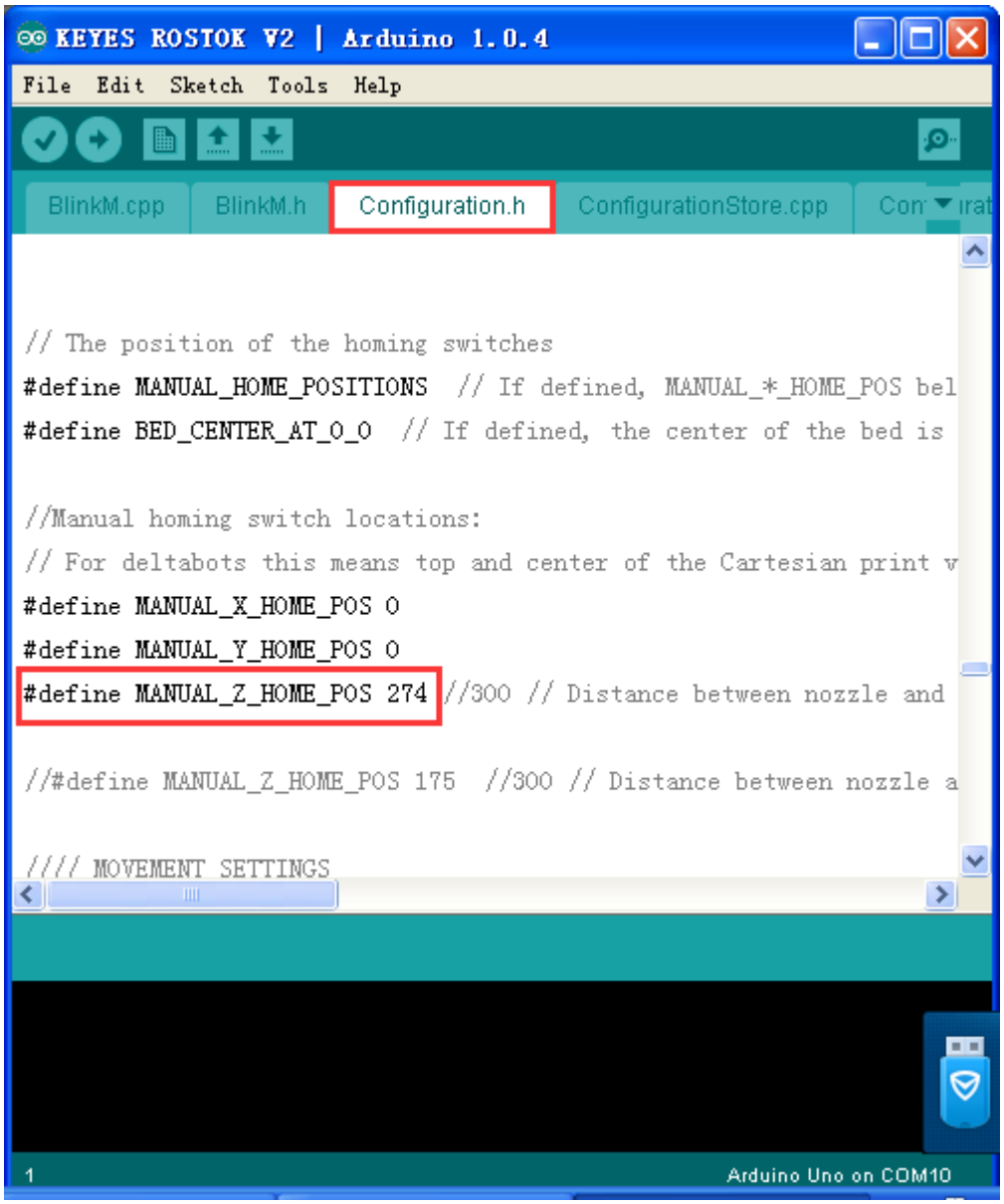
When the lowest point is located, please check the distance from nozzle to heatbed in case nozzle were damaged.

Send script 1 via shortcut key CTRL+ALT+1 to make printer nozzle drop to the lowest point of X axis. When the dropping process is finished, observe the distance between nozzle and glass panel. Then send script 2 and script 3 commands as well and observe the distance between nozzle and glass panel. (As shown below) locate the lowest axis, (below we take X axis as example).



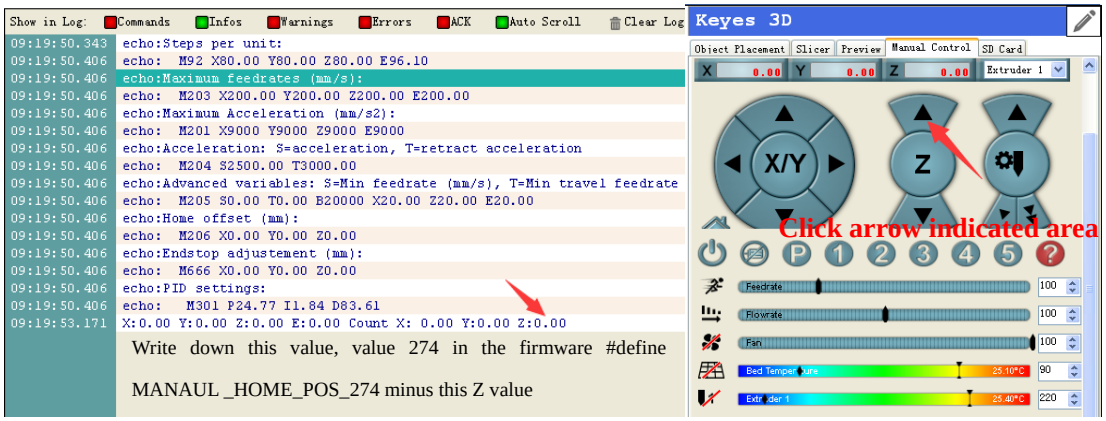
B: Adjust the height of the lowest point

If X axis is the lowest one among X, Y and Z axis and there is some distance between the lowest point and the glass, then we can estimate the length of such distance (like 5mm or the nozzle touches the heatbed) by visual inspection. Open up firmware and adjust values shown below(If the distance between nozzle and heatbed is about 274mm, you can set up as 274mm, but please note that this value shouldn’t be too large). Re-burn the firmware to printer motherboard after adjustment. When burning the firmware, please disconnect printer with Repetier-Hostr.



After adjusting the value of Z axis above, re-connect printer with PC via Repetier-Host and put A4 paper on the heatbed. Send script 1 command again via CTRL+ALT+1. If there is no contact between nozzle and heatbed at this time, then repeat adjusting height of Z axis as above until the nozzle touches the glass; If nozzle has touched glass panel already, then pull the paper softly, if the paper stays still, lift up the nozzle by clicking Z axis per 0.1mm per step until A4 paper can be pulled and a certain amount of resistance force generated from the press of nozzle can be felt. (Note: Resistance force here means the paper can be pulled by single hand with a certain amount of pressure being felt at the same time. If it is very hard to be pulled, it indicates that the resistance force is too strong. You can lift up nozzle height per 0.01mm per step until reaching above state). Now, enter M114 in G-code and click send, the left-bottom corner of the screen will display current coordinate value of nozzle, here we only need to know the height of Z axis, so note down current coordinate value of Z axis and subtract that value from current value of

Printable height 275 mm and #define MANUAL_Z_HOME_POS 274 (as shown by below picture). Then disconnect printer with PC and burn the modified firmware to main control board of printer. Re-connect printer with PC and send script 1 command via CTRL+ALT+1, now, if Z value reaches zero, the nozzle should be able to generate some resistance force when the paper is pulled, if it does, it means adjustment on X axis is temporally finished.

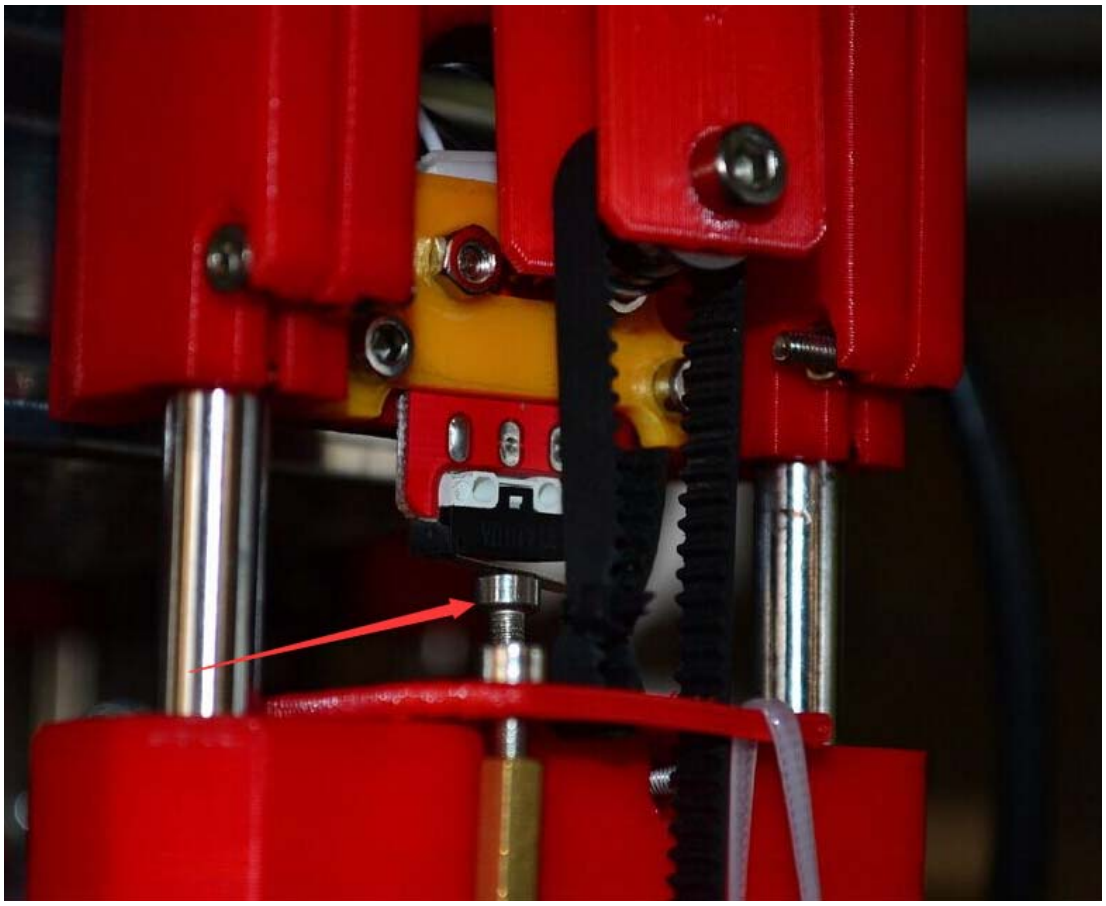


C. Height adjustment on the other two axes;

Let's adjust the height of Y axis and Z0 point of Z axis. But the height of Y axis and Z axis should be adjusted by regulating balancing screw on the sliding block rather than by modifying firmware.

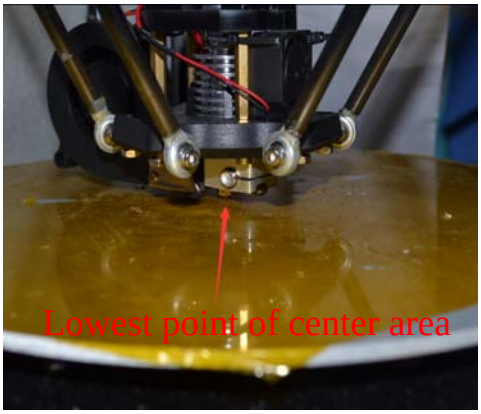
Send script command via CTRL+ALT+2 to make nozzle descend to the lowest point near Y axis. Observe the height between nozzle and glass(Since just now we take the lowest axis as our subject for adjustment, now there is some distance between the nozzle and glass). Then we adjust the screw above the sliding block of Y axis, the nozzle is now away from glass and we need to revolve the screw anticlockwise. For example, if the distance between nozzle and glass is 2mm, we'll need to revolve the screw anticlockwise for about 4 to 5 circles (the screw pitch is 0.5mm, which means the screw will be lift up 0.5mm per circle), then send script 2 command again and measure the distance between nozzle and glass by paper as well. As for resistance force, you can refer to above statement. If the pressure is too big, then turn the screw clockwise. Repeat above steps until reaching appropriate range, which means the resistance force felt during pulling the paper is the same with that of X axis. When adjustment on Y axis is finished, adjust Z axis in the same way. Please note that if the deviation between the three axes is excessive, then after initial adjustment on there axes, the value of other two axes will change again. Please don't worry if this happens, just re-adjust the not-okay axes by regulating the screw and repeat doing so until the height of drop point of these three

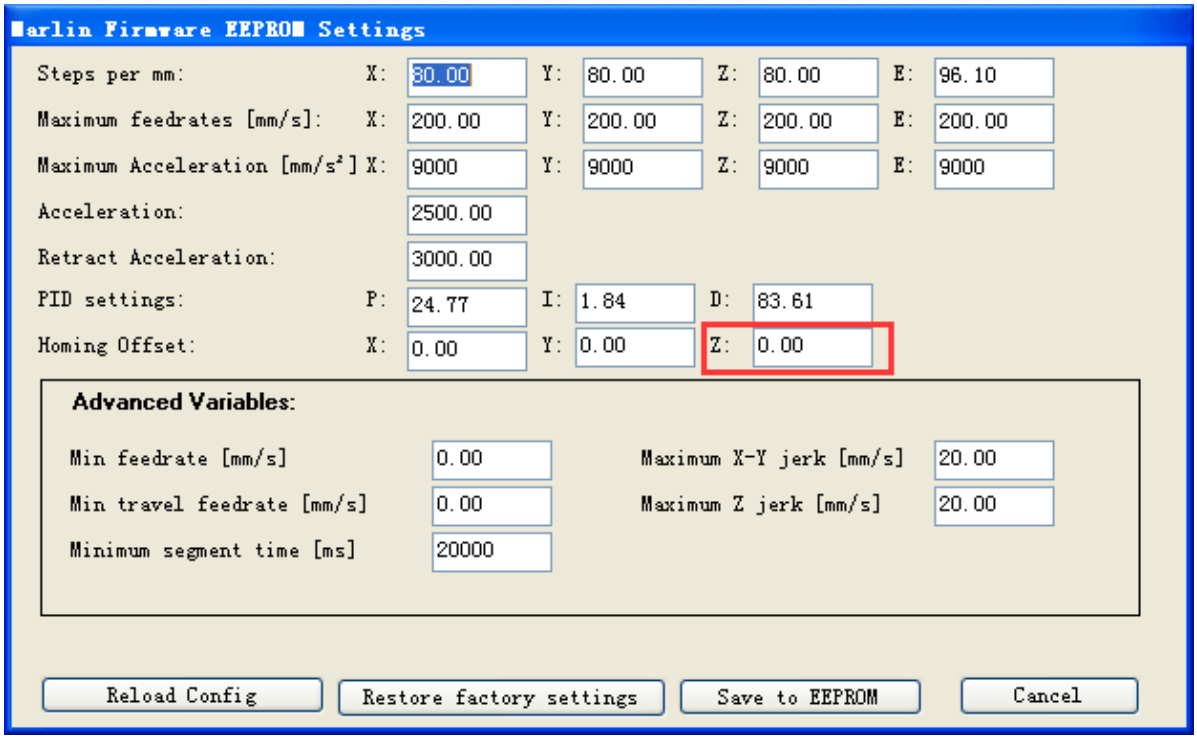
axes is the same. Now, manual leveling on three points is close to finish.



D: Adjust geometrical radius of the machine;

When position adjustment on three axes is finished, we send scrip 4 command to make nozzle move to the the middle of the glass. Similarly, we place a piece of paper underneath. If the paper is pressed down by nozzle and can't be moved at all, then decrease this value `#define MANUAL_Z_HOME_POS 274` in file Configuration.h, otherwise, increase this value. After saving firmware, make corresponding update on main control board until A4 paper can be pulled with a certain amount resistance force being felt; Or if the paper can't moved at all, you can change the value of Z (as pointed by red arrow in below picture) to a negative number(such as Z: -0.5) in firmware setup. After saving the changes, press CTRL+ALT+4 again until A4 can be pulled with a certain amount of resistance force being felt.





Now, press CTRL+ALT+1 again, if the nozzle near X axis point is so low that the paper is pressed down, it means that this value

`#define DELTA_SMOOTH_ROD_OFFSET 139.58` in firmware is too small and we need to increase it and update it to main control board. We don't have to adjust this value `#define MANUAL_Z_HOME_POS 274` or the screw above the sliding block any more. Repeat this step until A4 paper can be pulled with a certain amount of resistance force being felt. Now the whole manual leveling process is finished.

Conclusion: The ideal circumstance is that the distance between the nozzle and glass is always the same when script 1-4 commands are sent. That's to say, when pulling the paper, you should feel a certain amount of resistance force. The distance should be equal to the thickness of a piece of A4 paper.