



DOBOT

Dobot Magician User Manual

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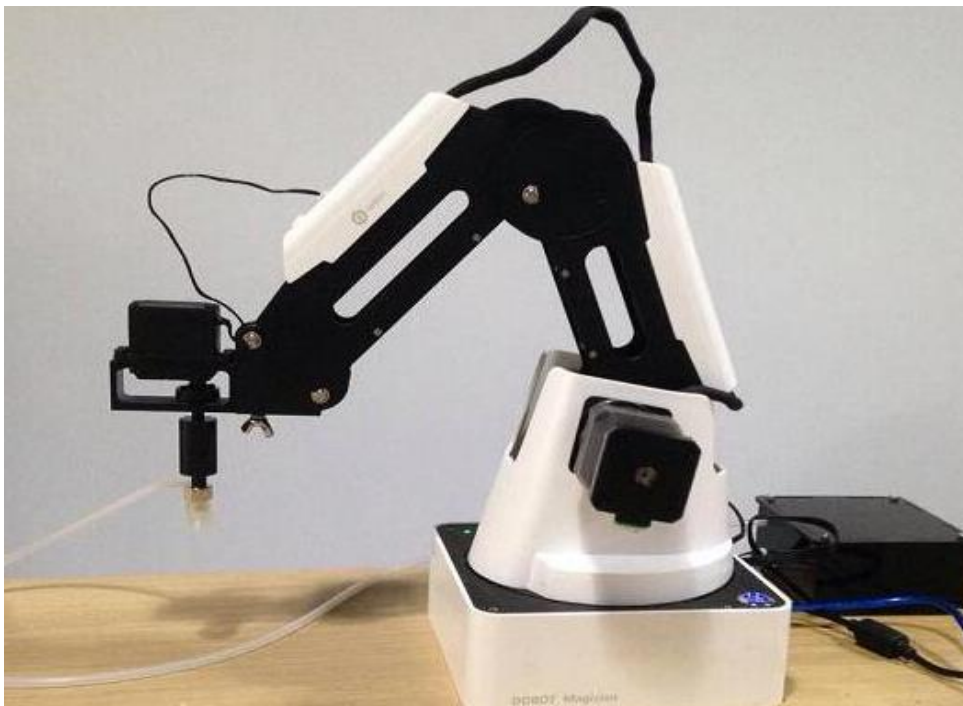
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Dobot Magician User Manual Instruction and Precautions

1. Please refer to Dobot Magician User Manual along with the box before using.
2. Power On/Off:
 - 1) Power On: Handhold Dobot to make the angles between the forearm and rear arm about 45° , power on, and then all the steppers will be locked. After about 10 seconds, there will be a short sound. It will work properly if the light at the bottom right on Dobot controller from yellow to green. Note that if the light is changed into red, it shows Dobot is at a limited position, so please make sure the forearm and rear arm are kept in normal range of movements.



- 2) Power Off: if the light at the bottom right on Dobot controller is changed into green, press 关机: on the power button to turn off Dobot. In this process, Dobot will move slowly to the specific position. **Note safety and beware of pinch!**
 - 3) If the point reading is abnormal, press Reset button behind the controller. Dobot will disconnect with upper computer and reset. Then you can reconnect it.
- 3. Important Safety Notice:**
- Small spare parts are included, so keep it away from children, in case mistakenly swallowed.
 - DO NOT let children play with it alone. The process needs to be monitored when it is running. After the process please turn off the equipment promptly.
 - In the usage of laser, please wear protective glasses. Avoid eye or skin exposure to direct radiation. It is forbidden to against the laser to any part of human body to avoid accidental injury.
 - In the usage of 3D printing, the heating rod will produce high temperature up to 250°C , please be careful!

- DON'T put hands into operating zone during Robot arm runtime, beware of bruising and pinch.

4. More Material

Follow us and get first-hand material about Dobot Magician:

The Tutorial: <http://dobot.cc/tutorial/>

Download Center: <http://dobot.cc/download-center/>

Should you have any further questions, feel free to email us at support@dobot.cc.

1. Dobot Magician Driver Installation Instruction

Normally, at the first time, connect Dobot with PC through USB, plug in and power on, and then the system will recognize corresponding hardware automatically, search the driver and install it. However, if failed to install, you can install again manually. The installation flow chart as follows:



1.1 Download CH340 driver package and install it

There are two versions of Dobot Magician based on Windows/Linux, so please choose corresponding version to download, the driver has been integrated into upper computer DobotStudio, and the download address:

<http://cn.dobot.cc/download-center/dobot-magician.html>

After downloading, unzip and install the driver, the driver file is in the file **attachment** of root directory:

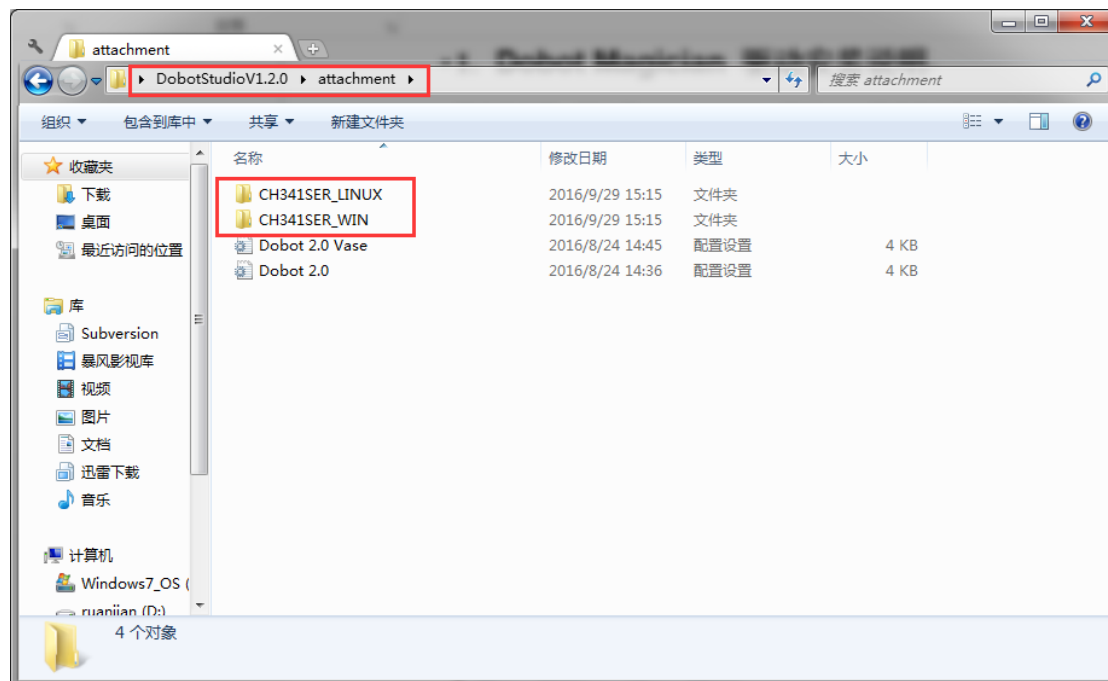


Figure 1.1 Driver file

Take Windows as an example, enter into subfolder **CH341SER** under the document folder of CH341SER_WIN, double click **SETUP.exe** and install it, as follows:

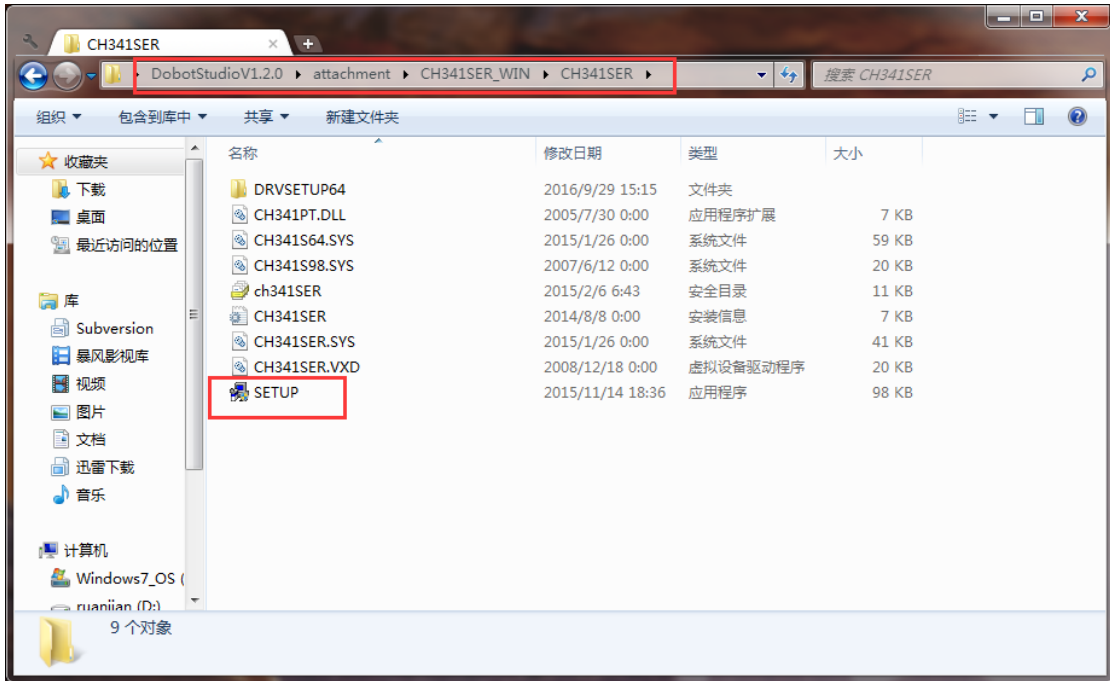


Figure 1.2 Install driver

Click Install:

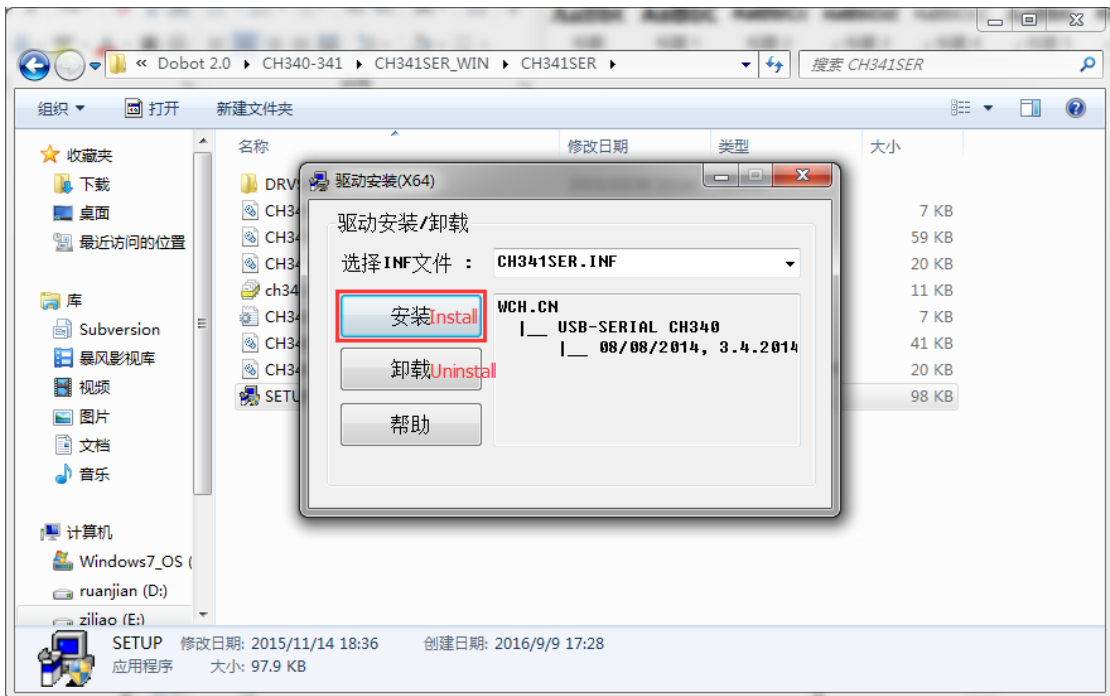


Figure 1.3 Click Install

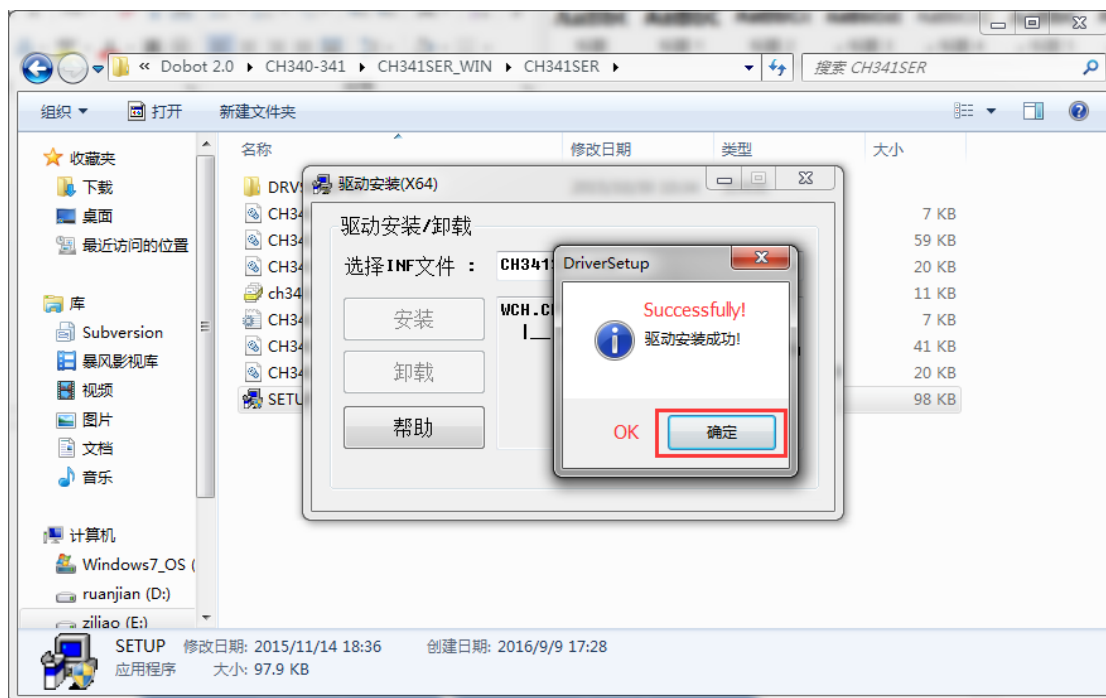


Figure 1.4 The driver installed successfully

1.2 Check if the equipment can work properly in the device management

1.2.1 Open the device management, if you can find the corresponding COM port of “USB-SERIAL CH340”, then it shows the driver is installed successfully. The figure as follows:

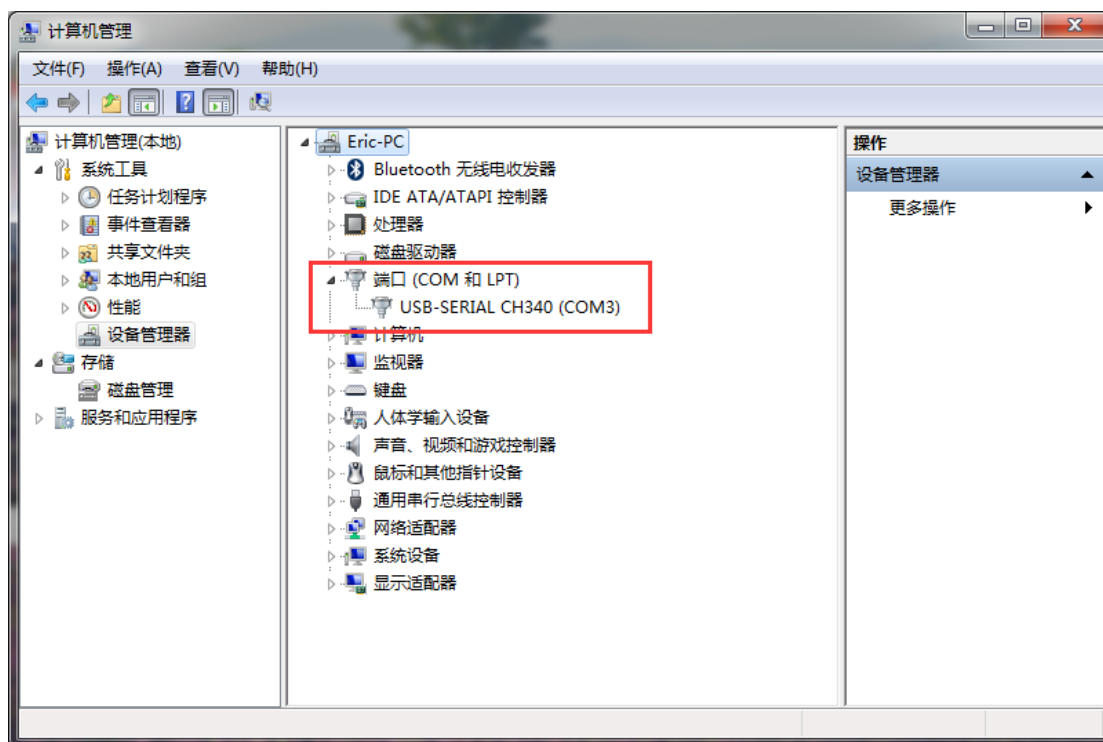


Figure 1.5 The COM port in the device management

2. Teaching & Playback

Here we are mainly to learn that how to suck up or grab simple objects using the function of teach&playback. Because we need to use air pump kit or gripper kit, we can introduce these two kits.

2.1 Air pump kit

The terminal default installation of Dobot Magician is suction cup. And the pump box and suction cup kit, shown as follows:

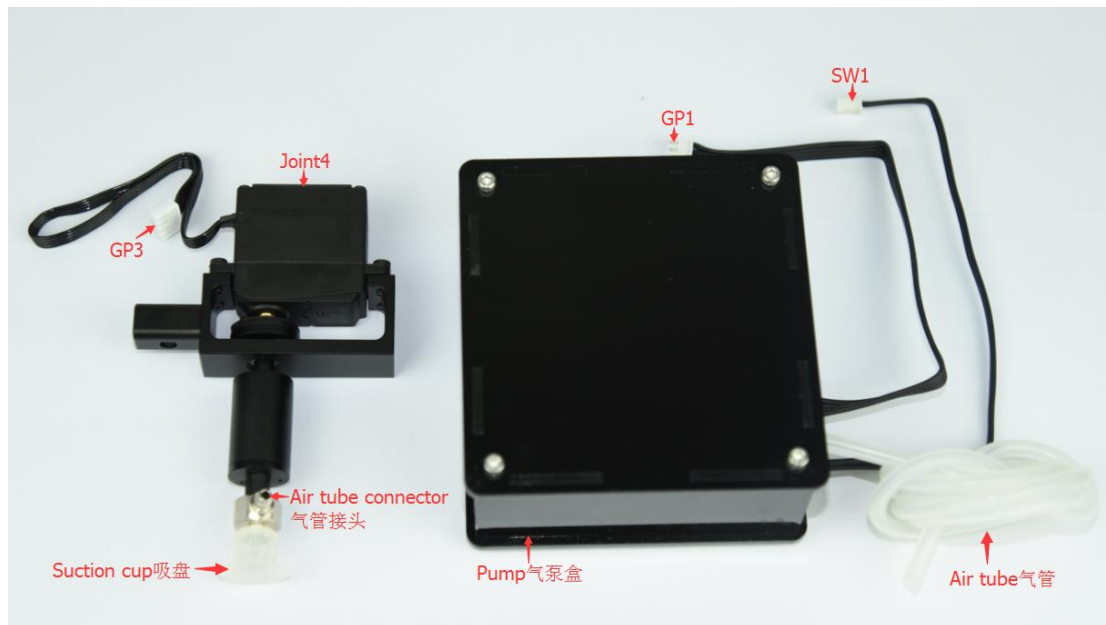


Figure 2.1 Air pump kit

The step of installation:

1. Connect power line SW1 on the pump box with interface SW1 on the controller box, connect signal line with interface GP1;
2. Tighten air pump kit into the end of the socket with butterfly nut;
3. Connect windpipe on the controller box with pipe connector on the pump box;
4. Connect GP3 of Joint4 servo line with forearm connector①GP3.

The installation effect as follows:

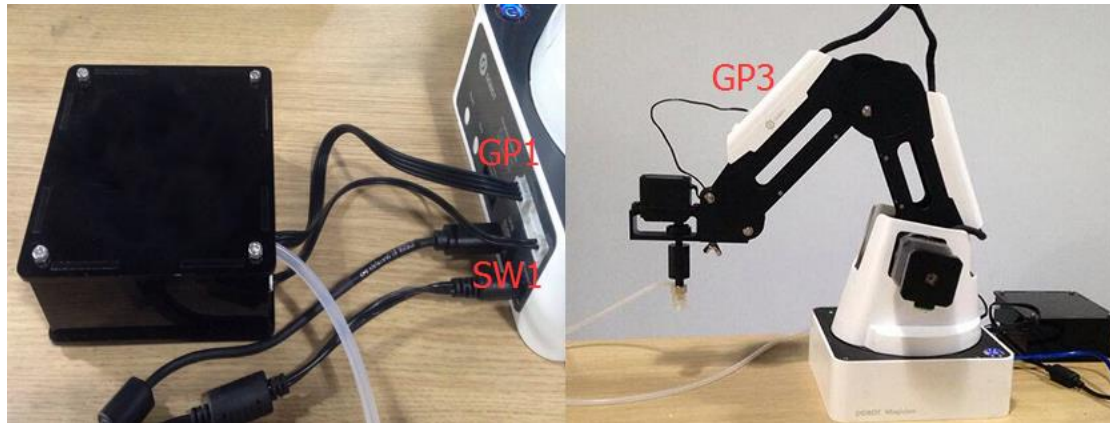


Figure 2.2 The installation effect of air pump kit

2.2 Pneumatic Gripper Kit

1. Pneumatic accessories shown in following picture:



Figure 2.3 Pneumatic Gripper Kit

2. Gripper kit needs to share together with air pump kit of suction cup. You can remove suction cup from Joint4: Unscrew the fixed jackscrew on the suction cup with hex wrench, shown in Figure 2.4:



Figure 2.4 Remove suction cup

3. Install the gripper kit on Joint4 with coupler, that is done! Shown in Figure 2.5:

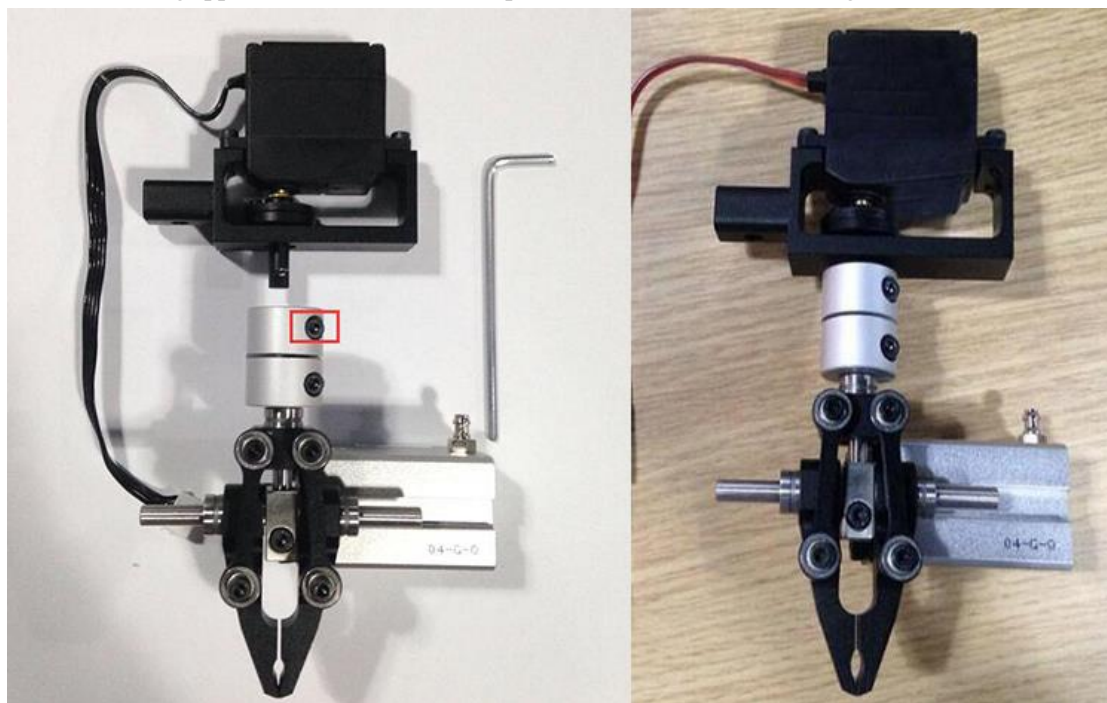


Figure 2.5 Gripper Installation

4. The connection method of gripper is the same with air pump kit, here you can refer to air pump kit method above.
5. The installation effect of gripper kit as follows:

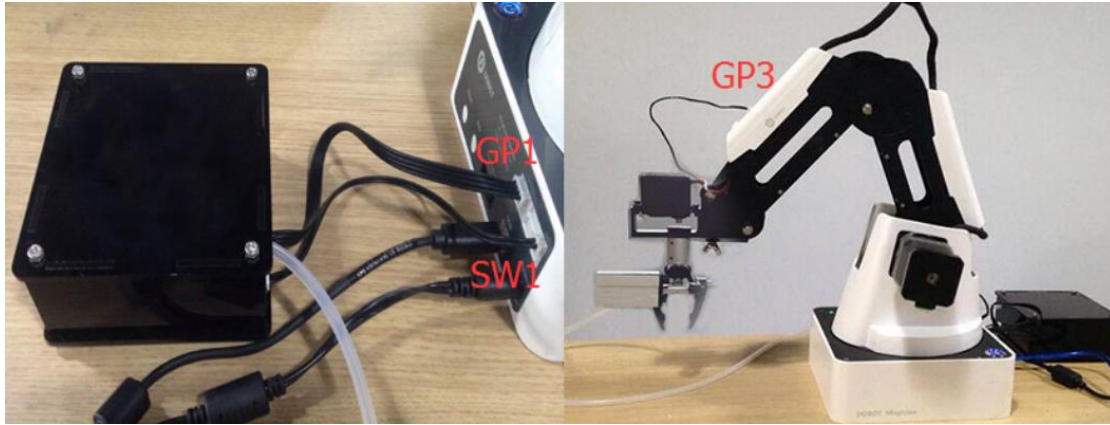


Figure 2.6 Gripper Installation

2.3 DobotStudio Operating Instruction

The software used by teach & playback is **DobotStudio**, and you can download the latest version from our official website:

<http://cn.dobot.cc/download-center/dobot-magician.html>

After download successfully, unzip and double click DobotStudio.exe, then open the software, the result as follows:

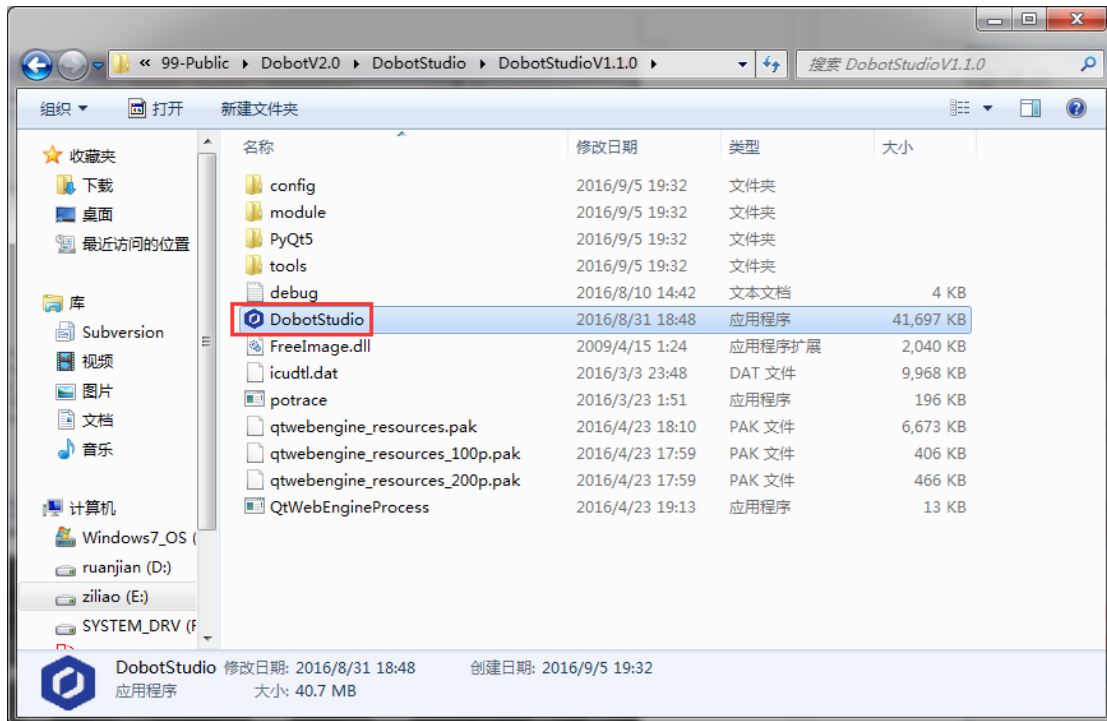


Figure 2.7 DobotStudio file

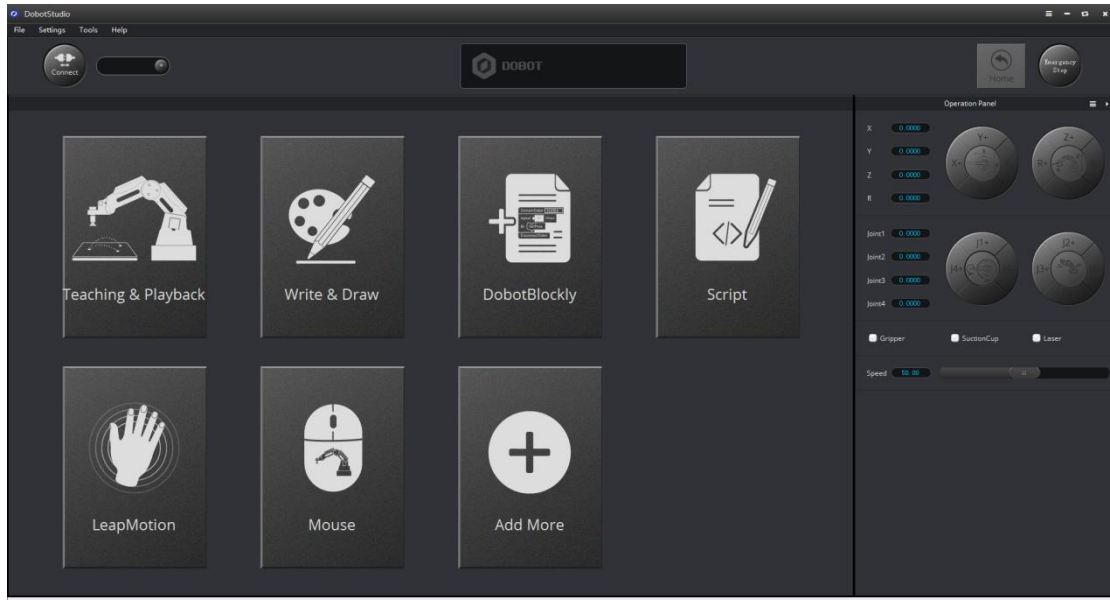


Figure 2.8 DobotStudio

1. Select Dobot corresponding serial port, the top left corner of DobotStudio, and click **Connect**, after successful connection, Disconnect will be shown, at the same time, the coordinate parameters will be updated on the right side of the interface.

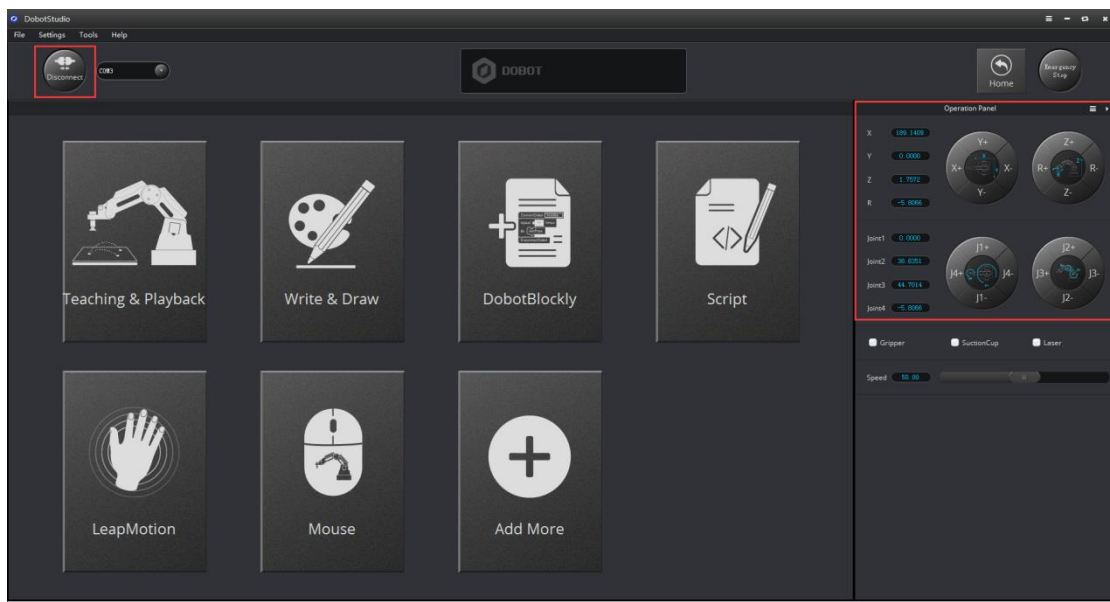


Figure 2.9 Connected successfully

There are six modules on the main software interface:

- (1) **Teaching & Playback:** A system to teach a robot a required trajectory. It enables Dobot to accomplish recorded movement repeatedly replacing human.
- (2) **Write & Draw:** Control Dobot to write, draw or laser engrave.
- (3) **DobotBlockly:** You can program by puzzle, intuitive and easy tounstand.
- (4) **Script:** Edit scripting language to control Dobot.
- (5) **LeapMotion:** Control Dobot by gesture.
- (6) **Mouse:** Control Dobot by mouse.

Here we will introduce teach&playback at first.

Click **Teaching & Playback**, the brief introduction of each area as follows:

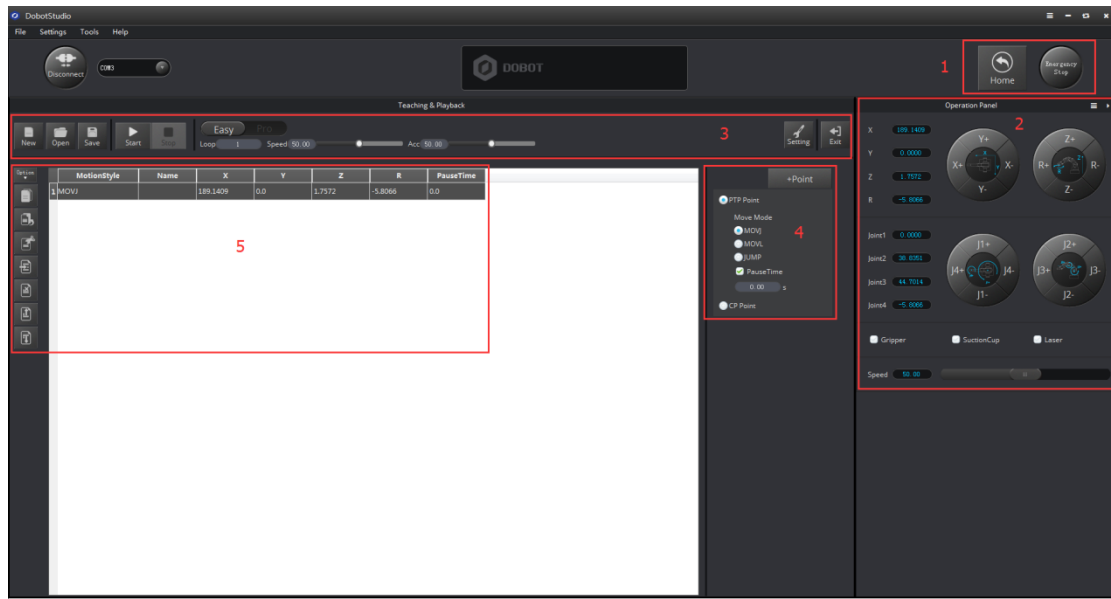
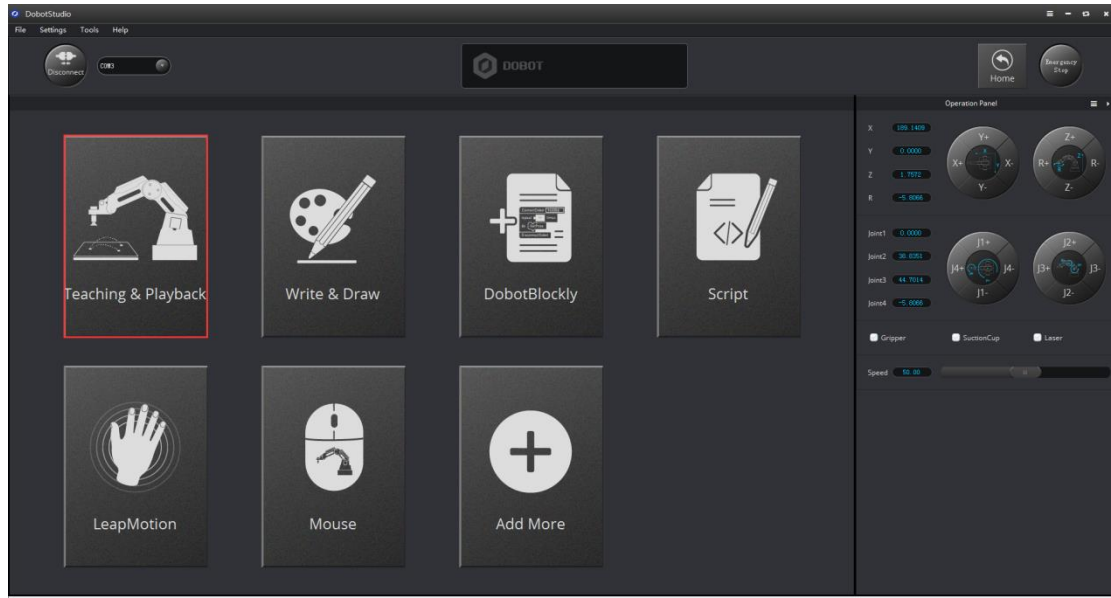


Figure 2.10 The main interface of teaching & playback

Area 1:

Here comes with Dobot movement area, liner mode and jog mode.

Linear mode: Based on the body axes coordinate system X, Y, Z with the origin at the center of three motors. X, Y, Z is the coordinate of the center of the end platform , and the direction of X is perpendicular to the base forward, Y is perpendicular to the base towards the left, and z is vertical upward. R indicates the rotation of the servo joint relative to the coordinate frame (counter-clockwise is the positive direction).

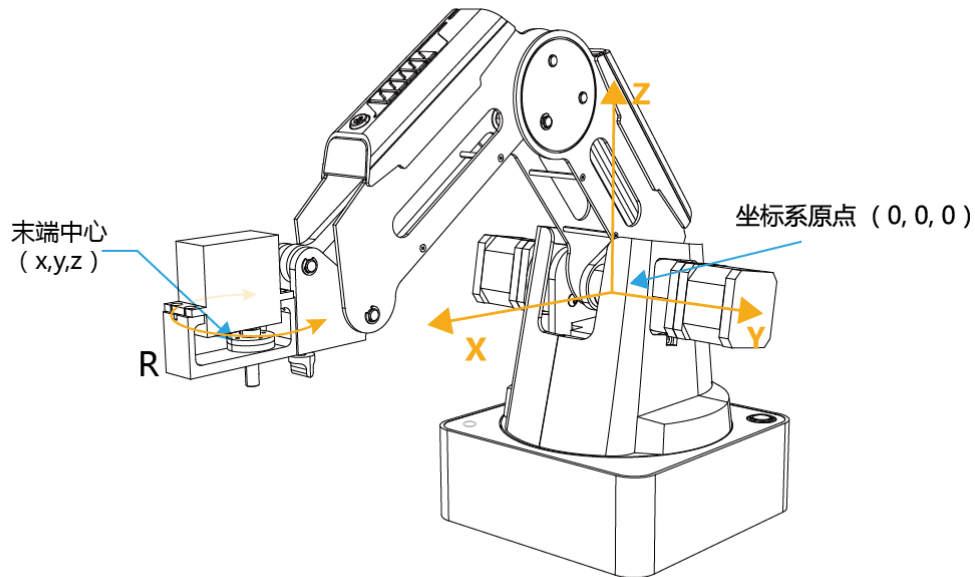


Figure 2.11 Coordinate system

- (1) Click X+,X- and Dobot will move along X in the negative or positive direction;
- (2) Click Y+,Y- and Dobot will move along Y in the negative or positive direction;
- (3) Click Z+,Z- and Dobot will move along Z in the negative or positive direction;
- (4) Click R+,R- and Dobot will move along R in the negative or positive direction.

Notice:

R-axis will move together with Y-axis during the movements, and make sure the terminal posture relative to the origin of coordinates keeps constant.

Jog mode: This movement is aimed at single axis. Long press the button, and the corresponding axis will move independently. Once loosened, it will stop moving. Each axis is defined at counterclockwise as positive direction. Joint1、2、3、4 refer to base, rear arm, forearm and servo respectively;

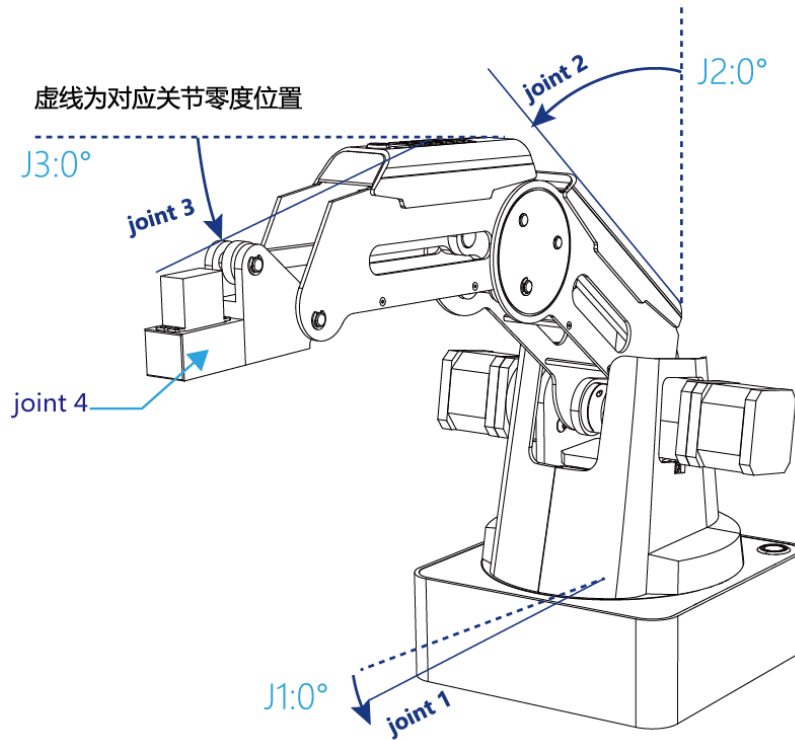


Figure 2.12 Single axis coordinate system

- (1) Click Joint1+、 Joint1- and control Dobot base motor to rotate in the negative or positive direction;
 - (2) Click Joint2+、 Joint2- and control rear arm motor to rotate in the negative or positive direction;
 - (3) Click Joint3+、 Joint3- and control forearm motor to rotate in the negative or positive direction;
 - (4) Click Joint4+、 Joint4- and control servo to rotate in the negative or positive direction;
- Among this, the rotation range of Joint4 is $\pm 150^\circ$.

Gripper/SuctionCup/Laser:

Through ticking the corresponding buttons, open gripper/suction cup/laser, and just click again ,you can close gripper/suction cup/laser. The terminal can be selected from **Setting-> EndEffector Settings:**

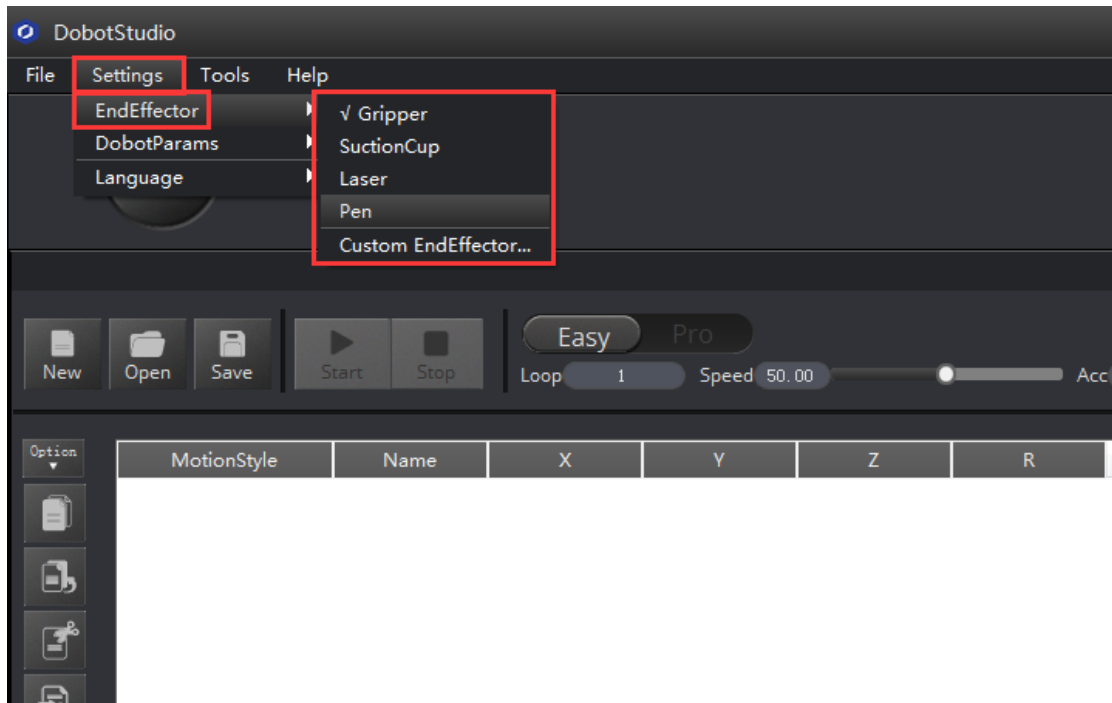


Figure 2.13 Select EndEffector

You can also custom **EndEffector Configure** according to relative to coordinate offset of terminal center.

The central terminal is shown as follows:

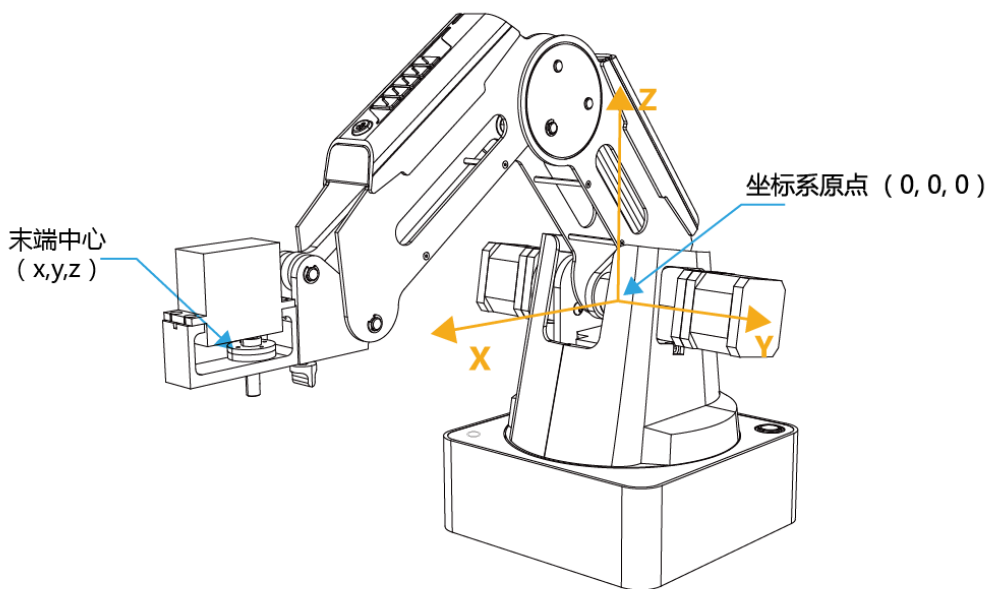


Figure 2.14 The central terminal

Speed: Adjust ratio bar to change the velocity ratio of jog control movement. The movement velocity is multiplying the corresponding percentage. Click **Settings** in area 3 to get a fast adjustment of parameters.

Area 2:

Home: Dobot auto reset. Click this button, Dobot can rotate left to the end and return to preset Home automatically. In this process, the point of **Home** can be self-defined, which will be explained in area 5.

EmergencyStop: Button of emergency stop.

Area 3:

New/ Open/Save: Create /Open/Save point list.

Start/stop/pause

Loop: Set loop numbers of playback.

Easy/Pro: Mode switch, including offline mode and I/O settings, and refer to the detailed tutorial: The tutorial of advanced functions.

Speed/Acc: Detailed Parameter Configuration of Playback Speed and acceleration.

Settings: Set movement parameters.

You can also set velocity and acceleration of single joint.

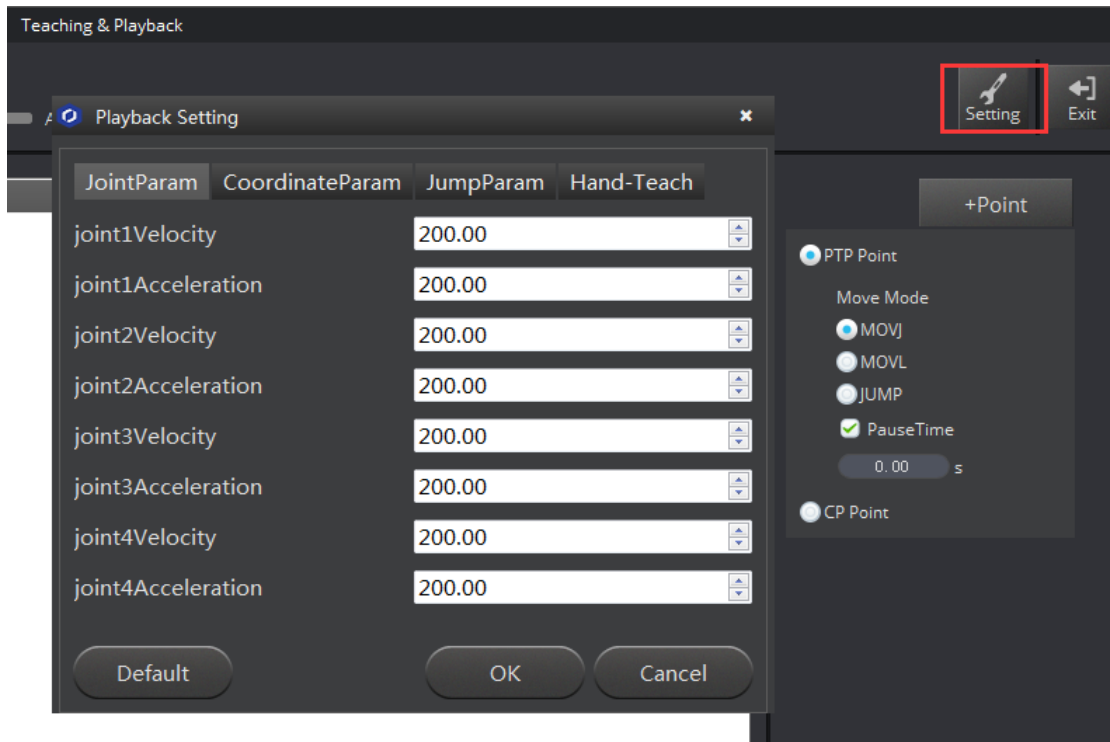


Figure 2.15 Parameters of single joint movement

Set velocity and acceleration of coordinates:

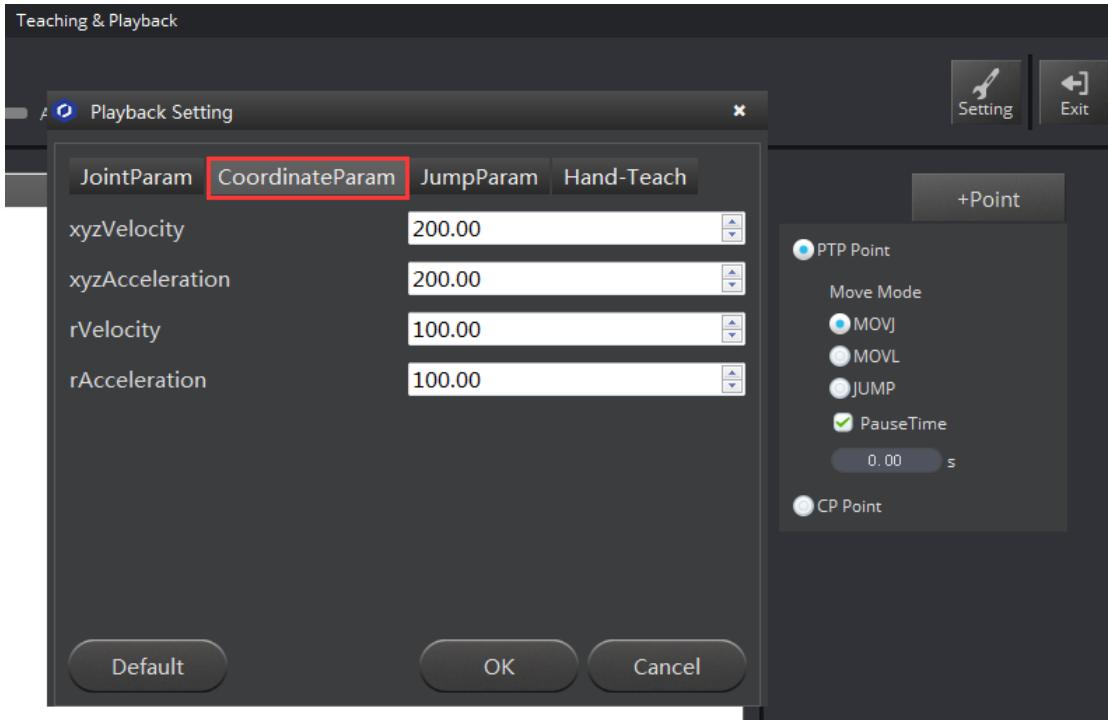


Figure 2.16 Parameter settings of coordinates

The height and Z limit of Jump mode:

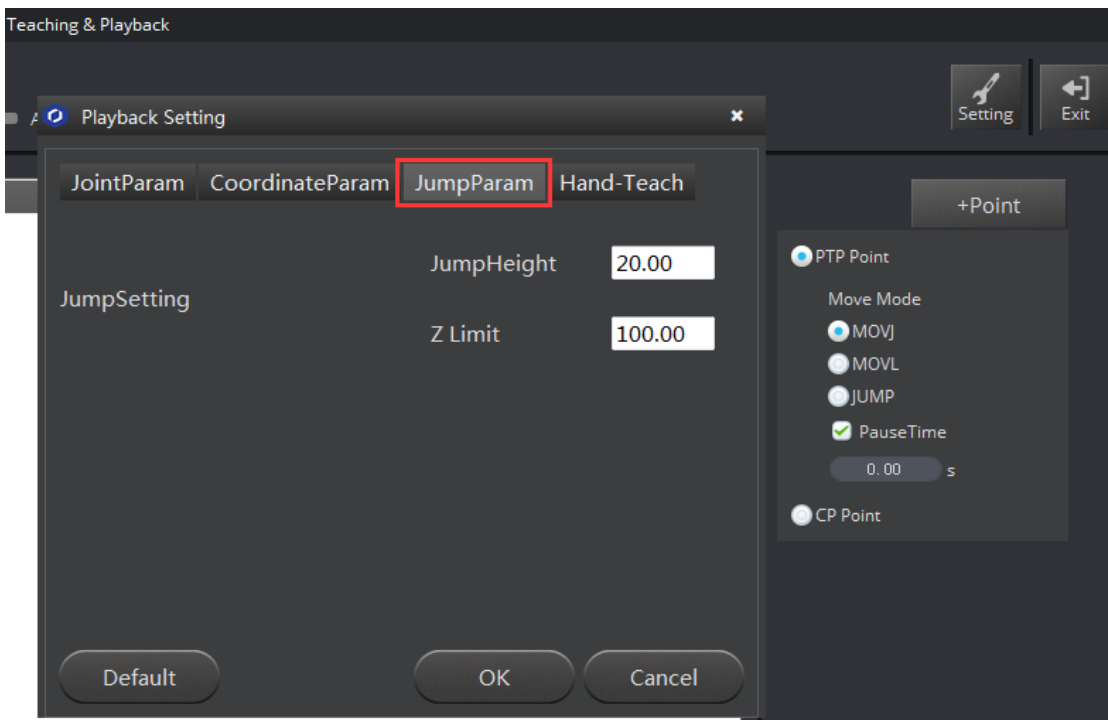


图 2.17 Jump 模式参数设置

Handhold teaching: Tick the function, press and hold down Unlock on the forearm, and drag Dobot to any other position, then you can save a point after loosening. Of course, you can save

points continuously. After all the points are recorded, Dobot can not only playback the programmed trajectory repeatedly.

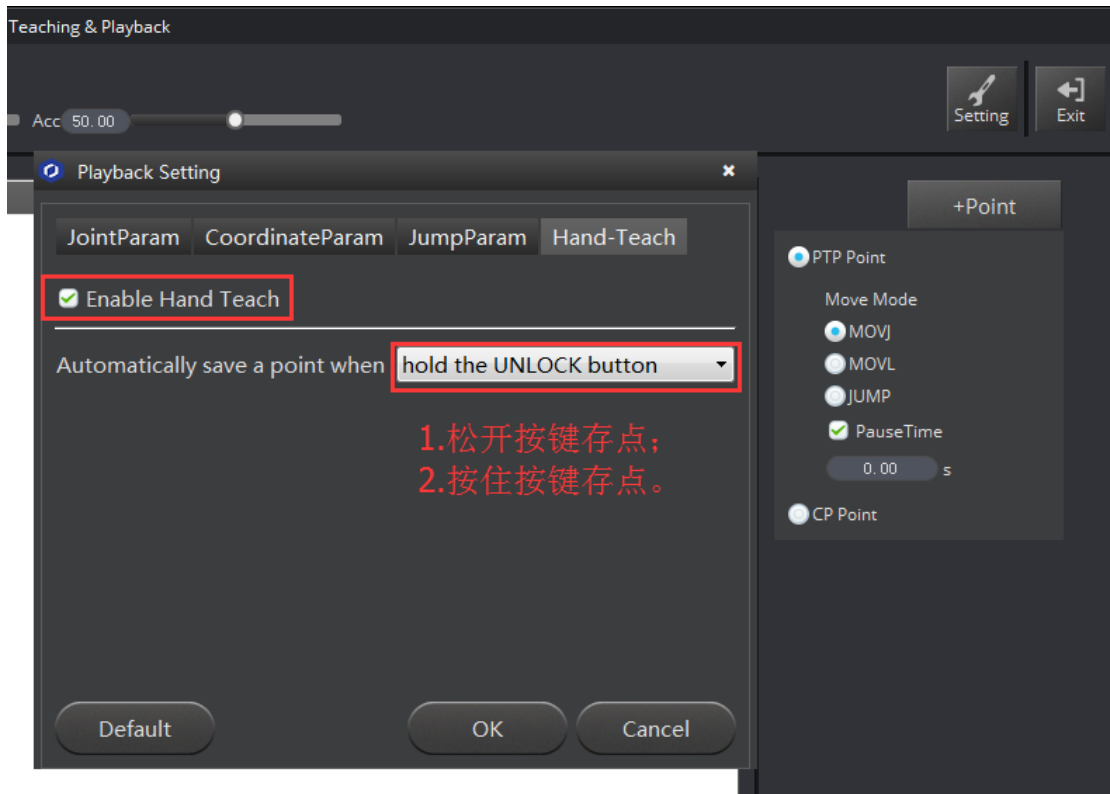


图 2.18 手持示教设置

Area 4: Select save mode.

1. Click **+Point**, you can save the current point information in area 5.
2. **PTP Point**: Point mode, and three modes between saved points, **JUMP**、**MOVJ**、**MOVL** respectively.

JUMP: From point A to point B, the trajectory is shown below, the end effector will lift upwards by amount of Height (in mm) and move horizontally to a point that is above B by Height and then move down to Point B.



Figure 2.19 JUMP Mode

MOVJ: Joint movements. From point A to point B, each joint will run from initial angle to its target angle, regardless of the trajectory. The motion time for all joints are the same which means all joints will start and finish at the same time.

MOVL: The joints will cooperate in order to perform a line trajectory from point A to point B.

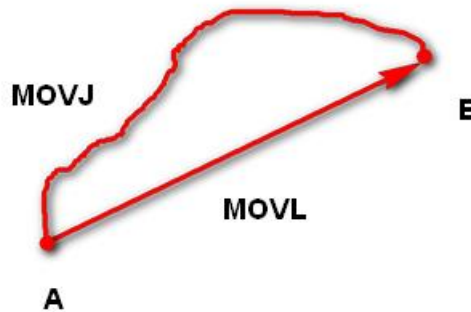


Figure 2.20 MOVL/MOVJ Mode

3. **PauseTime:** The pause unit of time is 1 second.
4. **CP Point:** Track points, saved points between velocity and acc transmits smoothly.

Area 5: Playback list that can be edited.

To show the current endeffector coordinates, move mode, pause time and any other parameters. You can double click to edit every single saved point coordinate, also, you can edit from sidebar on the left side or press right-hand button.:

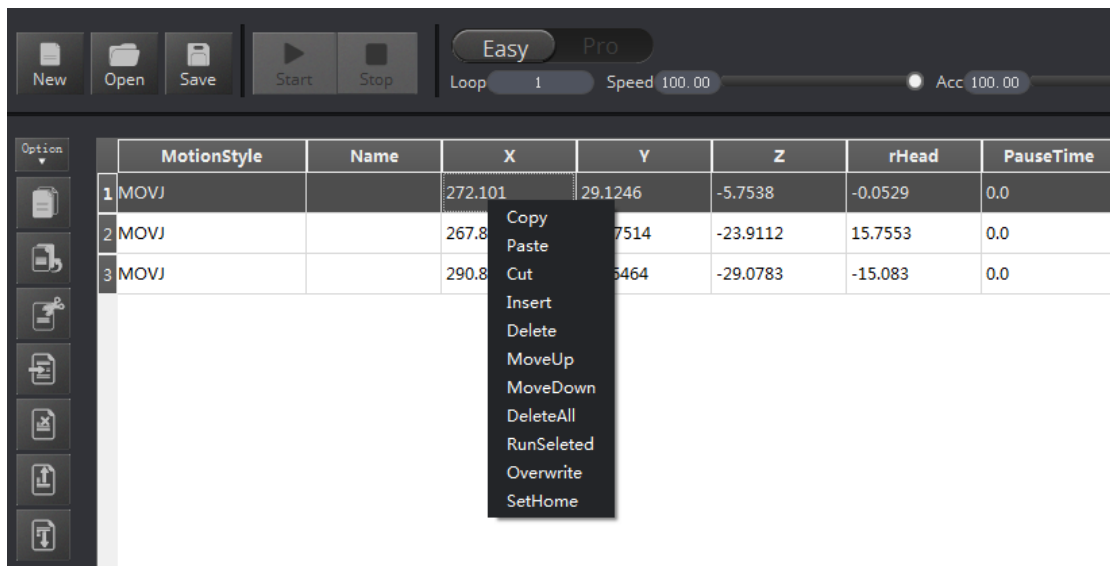


Figure 2.21 Right click options of the saved point list

1. **MotionStyle:** JUMP、MOVJ、MOVL、CP.
2. **X, Y, Z** is the coordinate of the center of the end platform.
3. **RHead** indicates the rotation of the servo joint relative to the coordinate frame (counter-clockwise is the positive direction).
4. **PauseTime.**

5. **Insert:** Insert a line of saved points.
6. **MoveUp/MoveDown:** Move up/Move down the line of saved point.
7. **Delete:** Delete selected saved points.
8. **DeleteAll:** Delete all the saved points.
9. **RunSeleted:** Execute selected points.
10. **Overwrite:** Overwrite current saved points.
11. **SetHome:**Set as Home point location

2.4 Demo of Teach & Playback

After learning about the software, now we can try to make Dobot Magician move. Through the function of teach & playback, make it mve a small object.

1. Select the terminal tool as **SuctionCup** on the software interface, select as **JUMP** mode.
2. Place a small object nearby Dobot, move Dobot above the small object through click **Area 1**, tick **SuctionCup** and open the pump, and then the small object will be sucked up;
3. Click **+Point** and save a point;
4. Click **Z+** to rise Dobot, move Dobot to another position, place the small object on the table, just uncheck **SuctionCup** and close the pump;
5. Click **+Point** and save one more point;

Put back the small object, click **Start**, task for moving the object from current location to another location is completed successfully.

Regarding to actual effect, welcome to visit our official animation.

4. Writing & Drawing Manual

The whole flow chart as follows:



4.1 Installation of writing accessories

Pen and pen holder included in the draw kit, the installation steps as follows:

1. Install the pen into the fixture;
2. Lock the fixture into the endeffector with butterfly nut.

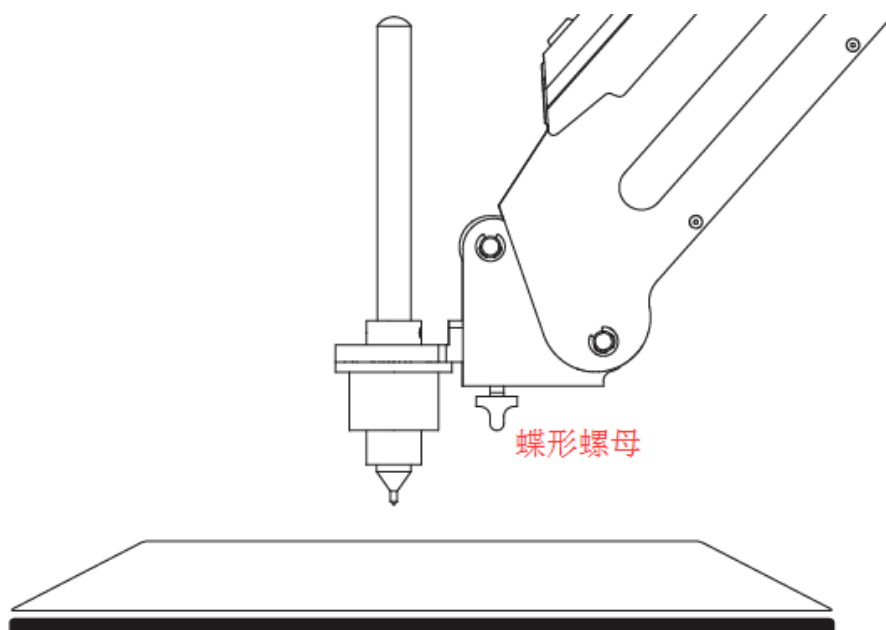


Figure 4.1 Installation of pen

If you want to switch the pen, just loosen four screws on the pen holder, that is done!

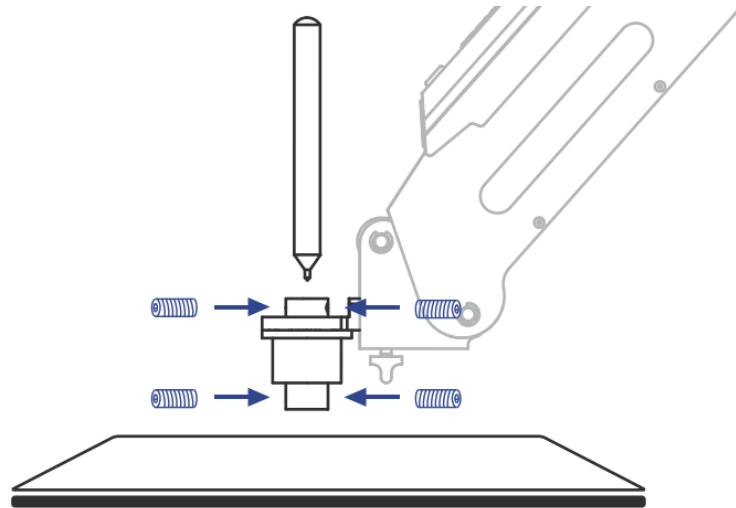
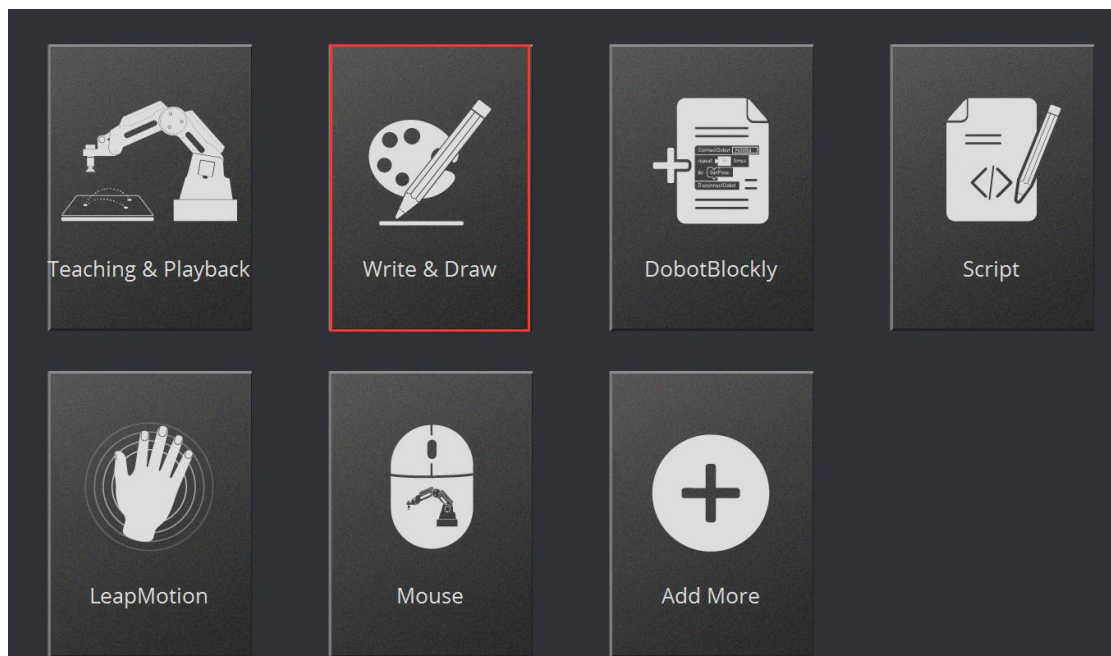


Figure 4.2 Pen installation

4.2 Connect DobotStudio

1. The software used by writing & drawing is DobotStudio, and the hardware itself is applicable for DobotStudio, so here you can connect directly. Open the software, click writing & drawing module, here comes the interface of writing & drawing as follows:



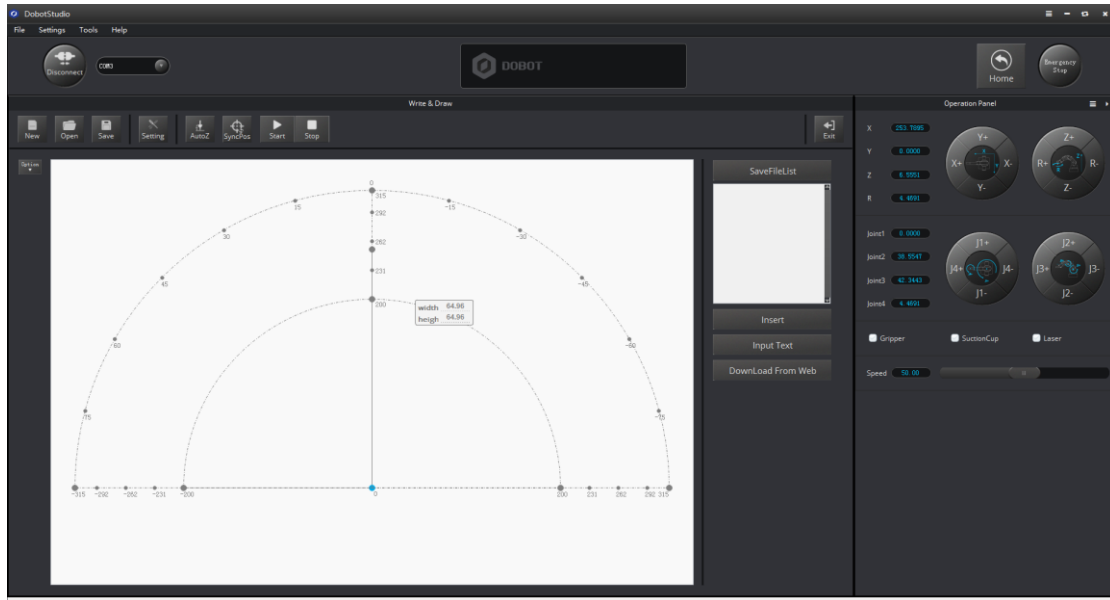


Figure 4.3 Writing & drawing interface

2. If the current hardware is not the hardware of writing & drawing itself, for example, the current firmware is for 3D printing, there will pop up a selected window, here we can choose DobotStudio in the drop-down box :

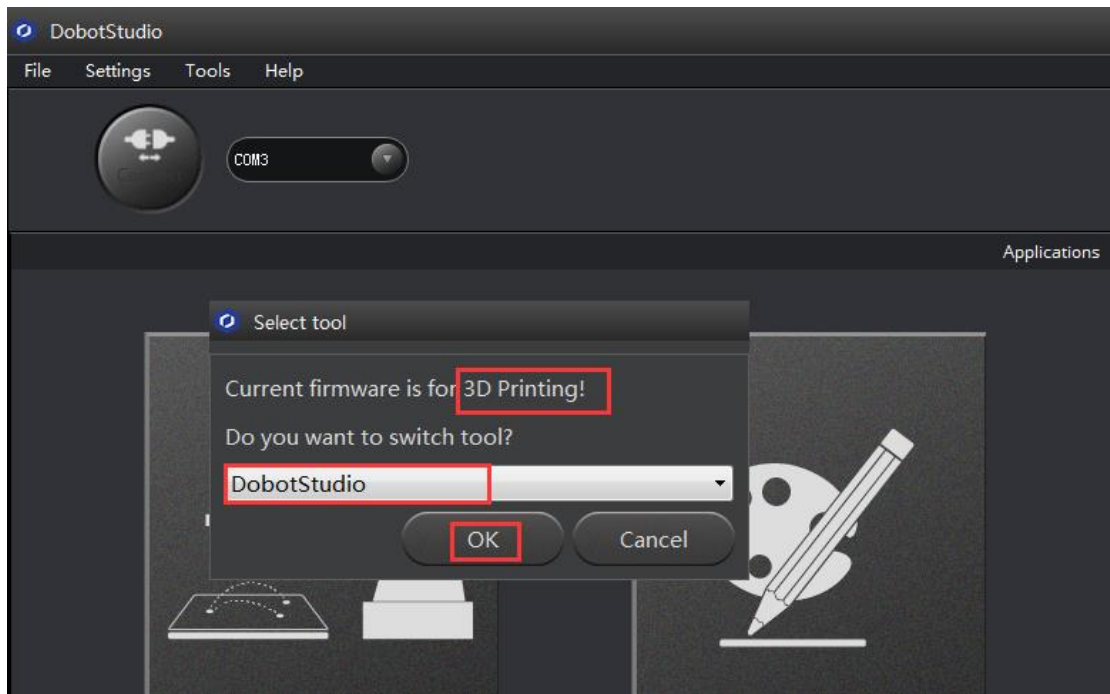
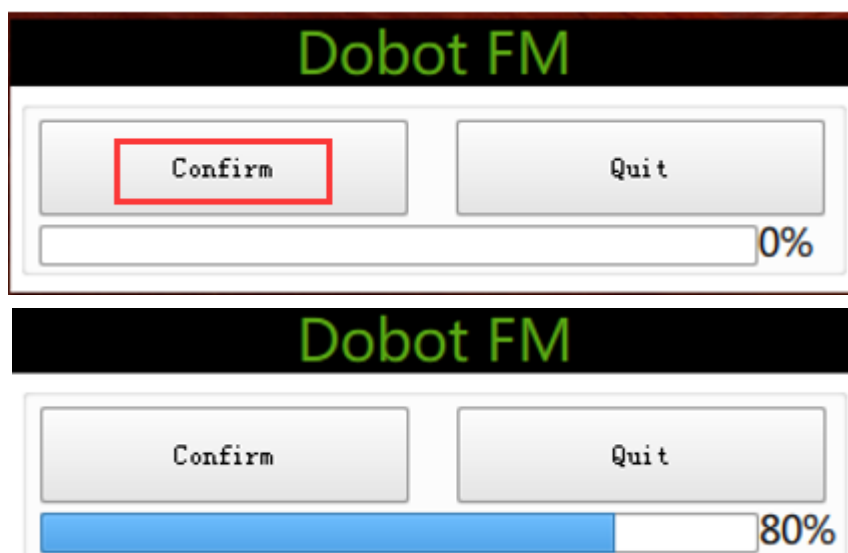


Figure 4.4 Select DobotStudio

Then click **OK**, and here will pop up burning hex window, and click **Confirm** to burn hex:



After burning, **DobotStudio** will be opened automatically, also, after about ten seconds, then you can hear a short sound from built-in buzzer, which shows a successful burning. At the same time, the light on the bottom right will turn into green. Thus, we can connect Dobot according to above operation.

4.3 Import pictures and set parameters

1. The imported picture should be put into the sector area of main interface, as Dobot will be at a limited position if beyond the standard range as a result of writing unnormally. Actually, there will be a warning of a red highlighting if beyond range.
- 1) Click **Open**, and import the ready PLT or SVG file:

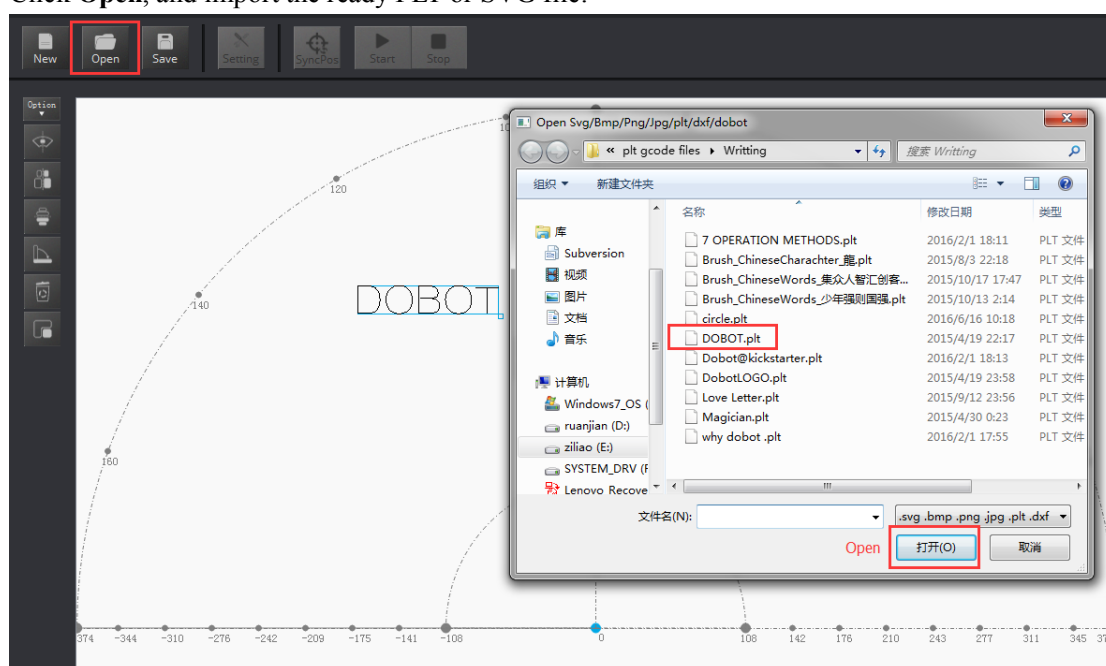


Figure 4.5 Open the file

- 2) Insert the included pictures of DobotStudio;

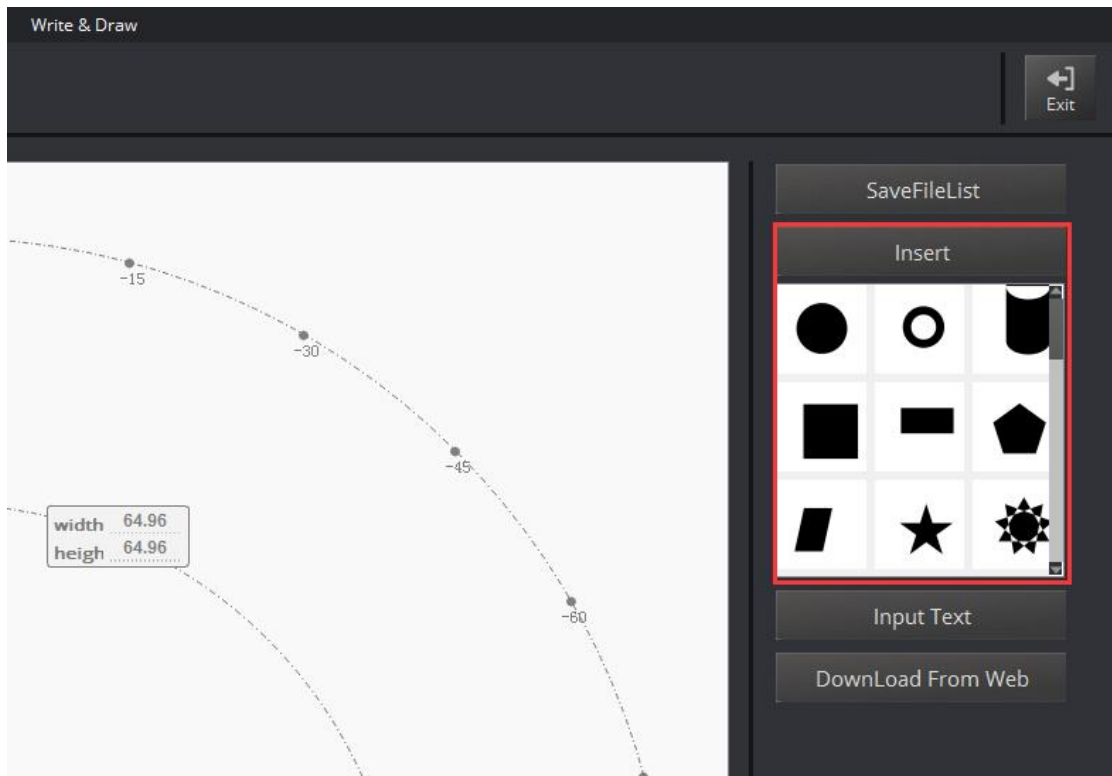


Figure 4.6 Insert the included file

3) Input text manually;

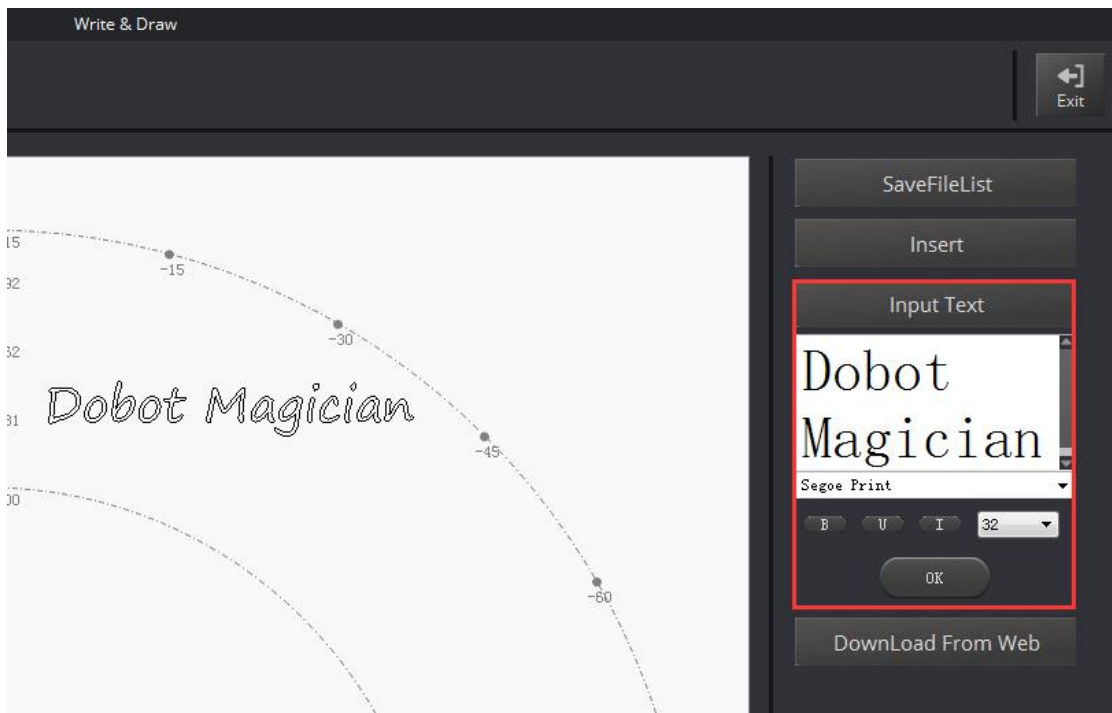


Figure 4.7 Input text manually

4) Also you can import pictures , convert these formats (BMP/JPEG/JPG/PNG and so on) into SVG recognized by Dobot, once took and once draw;

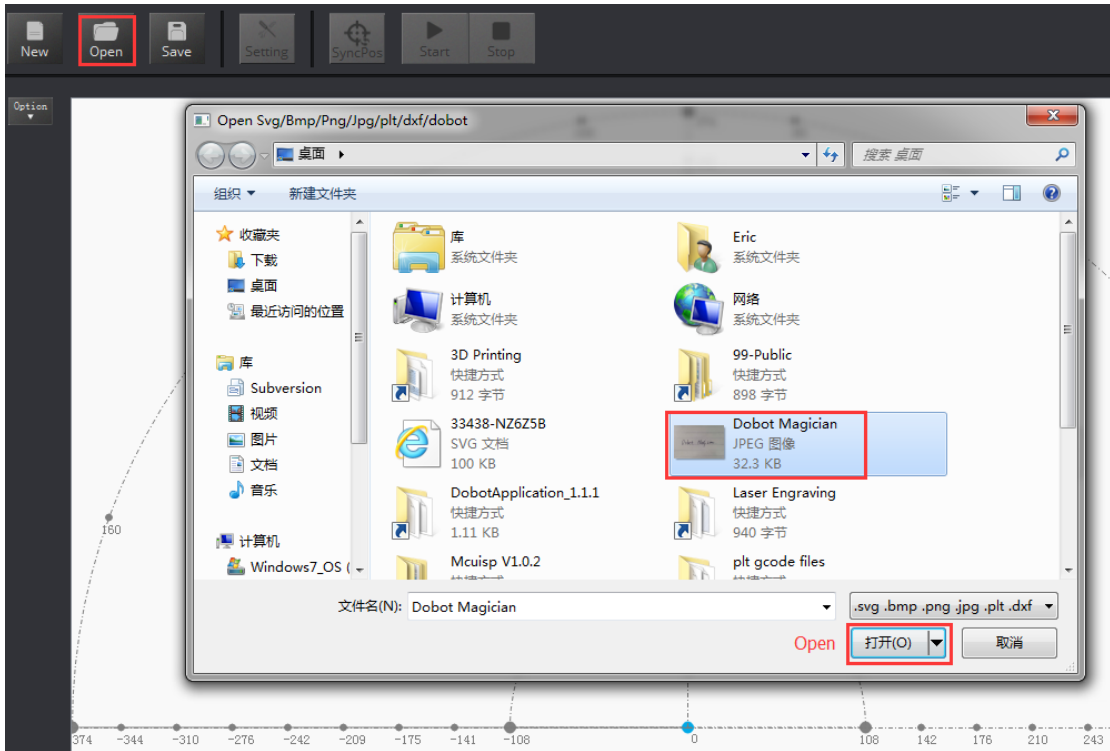


Figure 4.8 Import pictures

After opening the picture, set proper , click **Convert Bitmap**, then SVG path file will come out automatically, then click **Plot to Main Scene**, the ready trajectory can be loaded in writing main interface, show as follows:

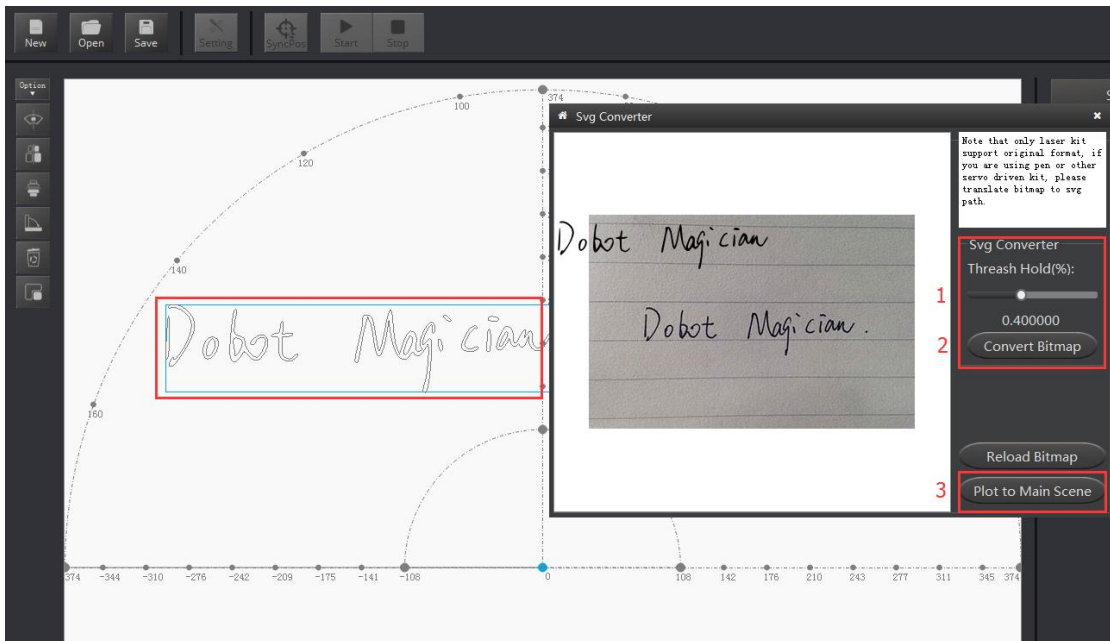


图 4.9 直接导入图片生成 SVG 文件

2. Set writing parameters: set velocity and acceleration(0~300mm/s) and PenUpOffset;

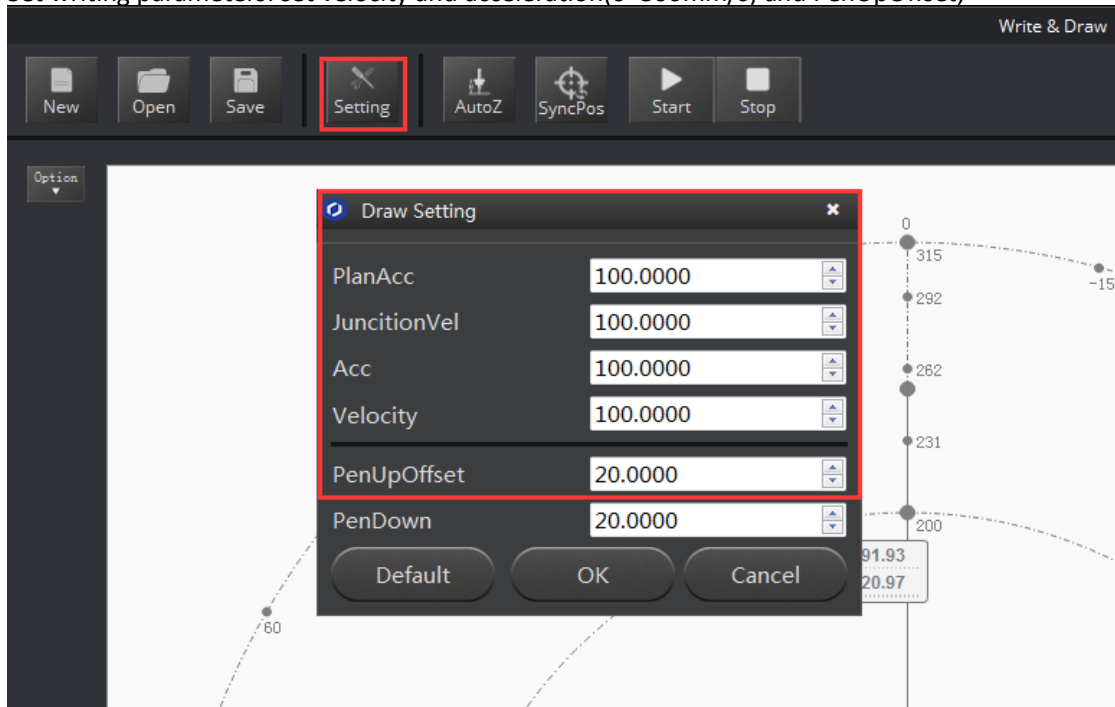


图 4.10 设置速度/加速度参数

4.4 Adjust the position and start writing

1. Set endeffector as Pen, here you can choose from **Settings**->EndEffector, shown as follows:

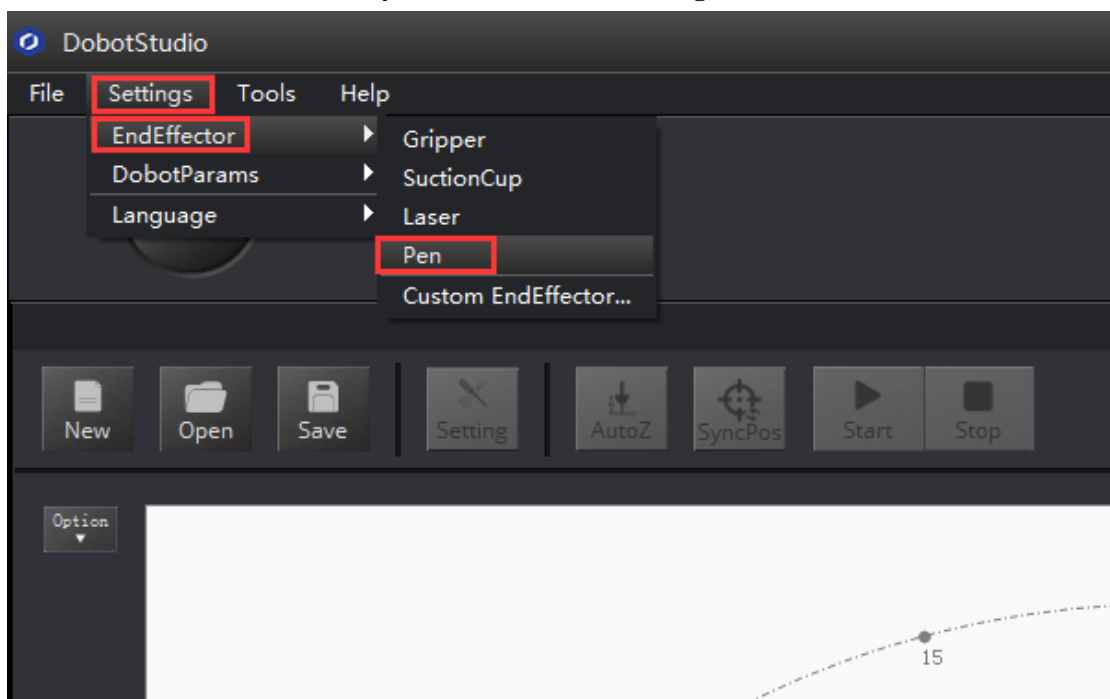


Figure 4.11 Set EndEffector

- Adjust the nib position: press and hold down **Unlock key on the forearm** and drag the forearm to make the nib contact to paper, also, you can control Z axis moving down to paper gradually, shown as follows:



Figure 4.12 Adjust the nib position

- Click **AutoZ** and get the current Z value, thus, you need not adjust the nib position when you write next time, here just comes with the steps: **import pictures-> SyncPos->Start**, then you enjoy

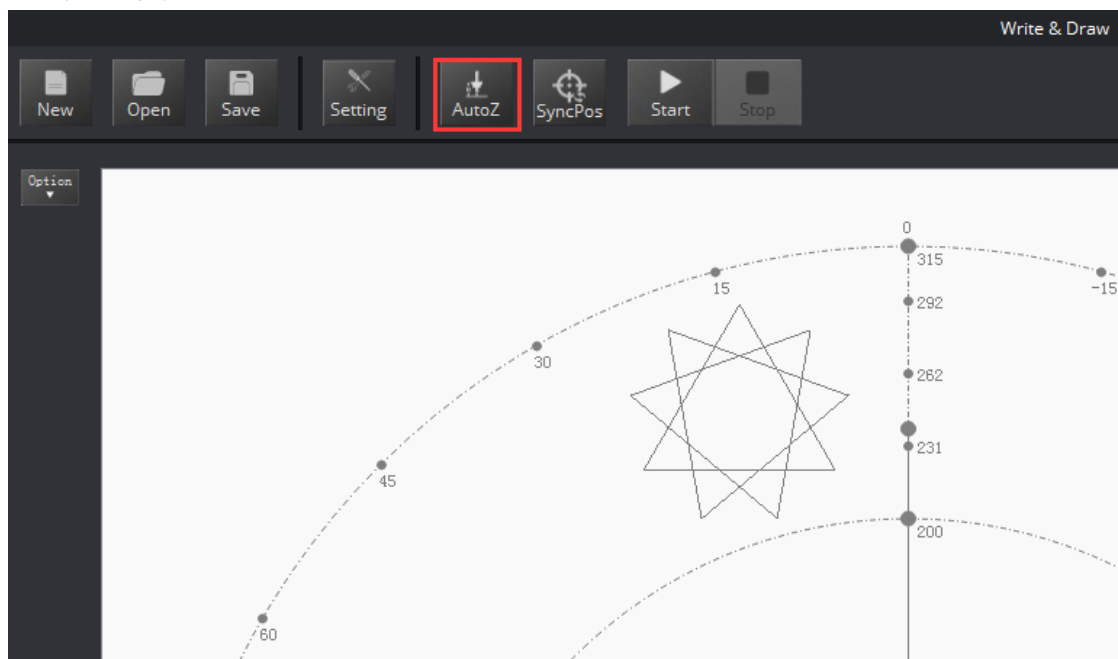


Figure 4.13 Lock writing height

You can check the **Pendown parameter** from here:

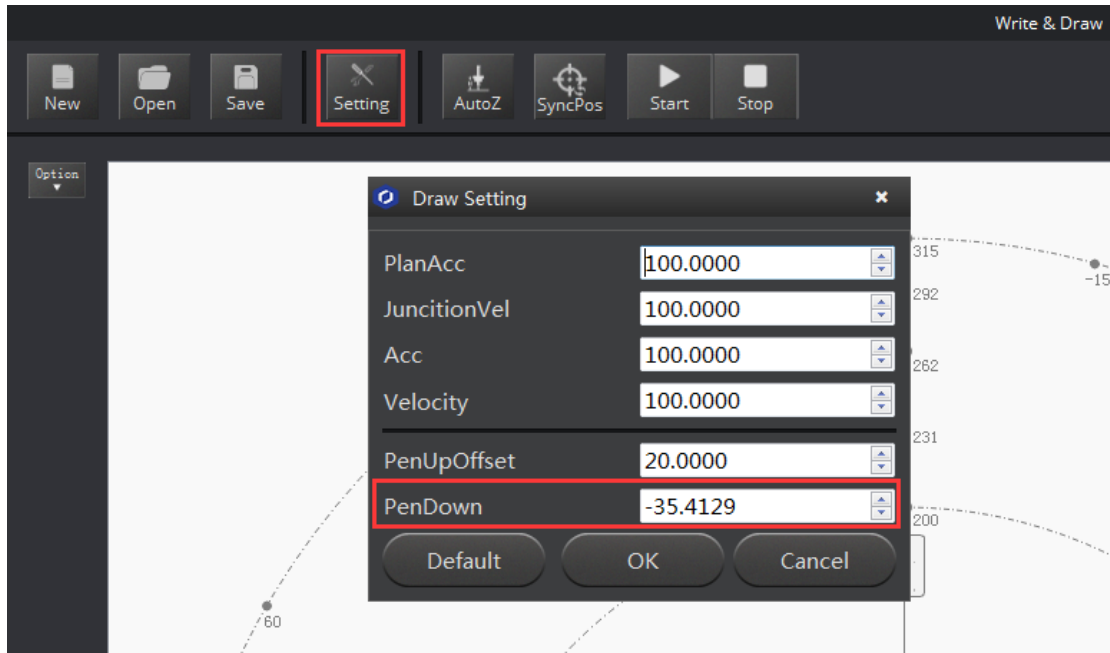


Figure 4.14 Pendown parameters

If the writing is not very well, the nib height need to be adjusted slightly, also you can revise the value of Pendown.

4. Click **SyncPos**, Dobot will move into the top position of writing starting point automatically.
5. Click **Start, Pause and Stop** to control Dobot.
6. The result as follows:

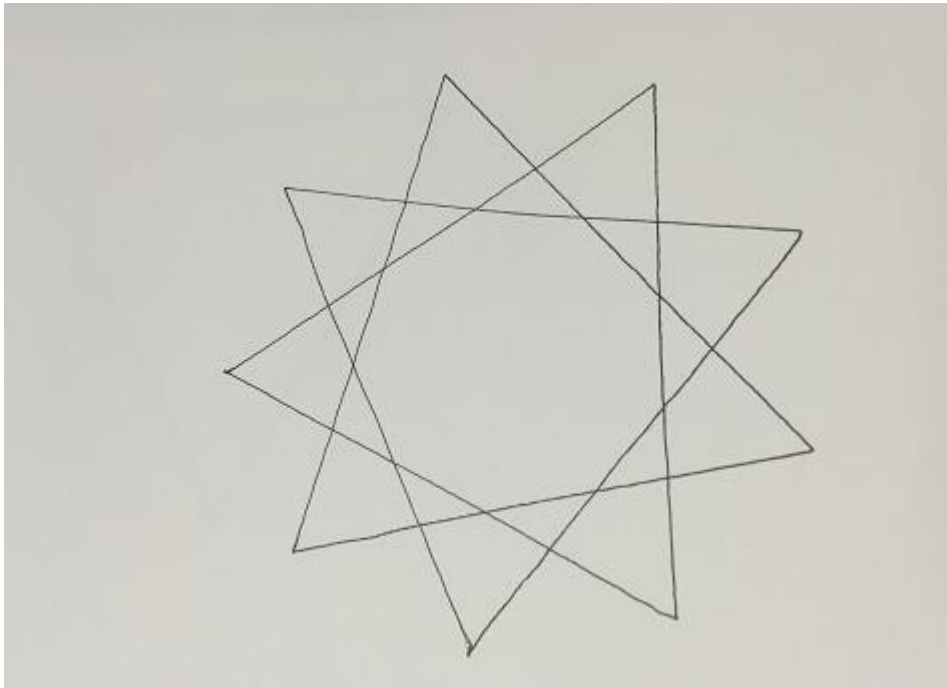


Figure 4.15 The effect of writing

7. The Tutorial of 3D Printing

The whole flow chart of 3D printing as shown below:



7.1 Installation of Accessories of 3D Printing

3D printing accessories: extruder, hotend, motor cable and filament, shown as follows :

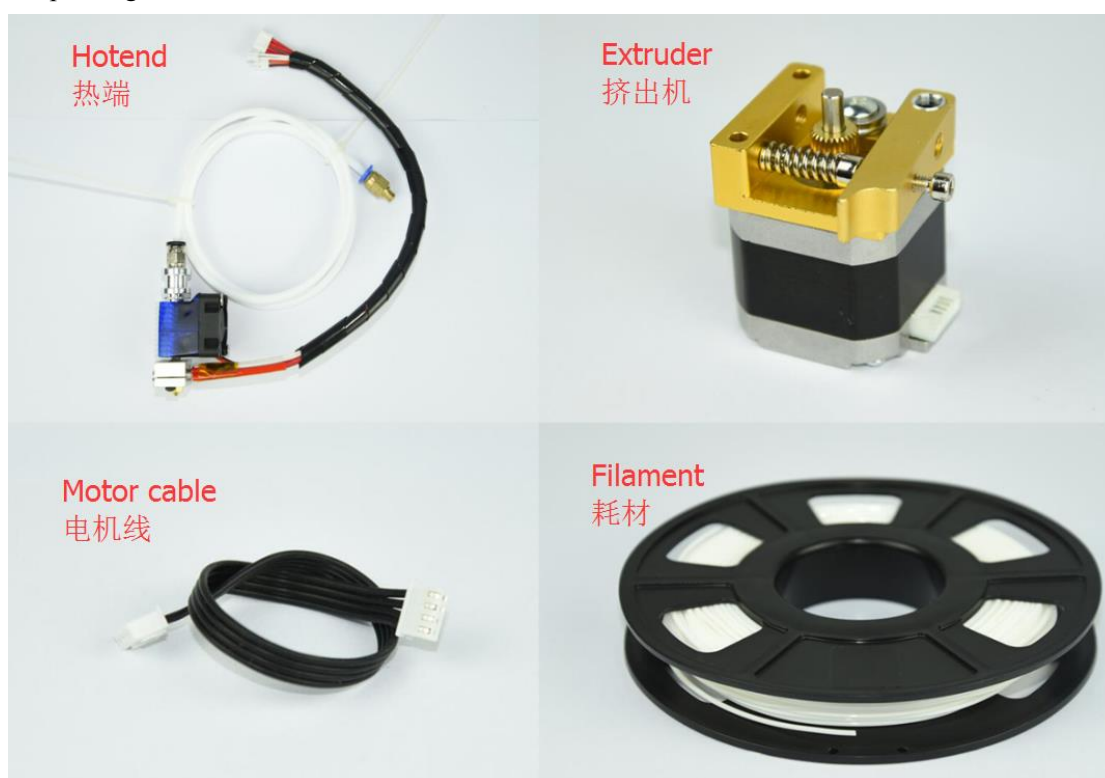


Figure 7.1 Accessories of 3D Printing

The steps as follows:

1. Press down the lever on the extruder by hand, and push down the filament to the bottom of the hole via the pulley;

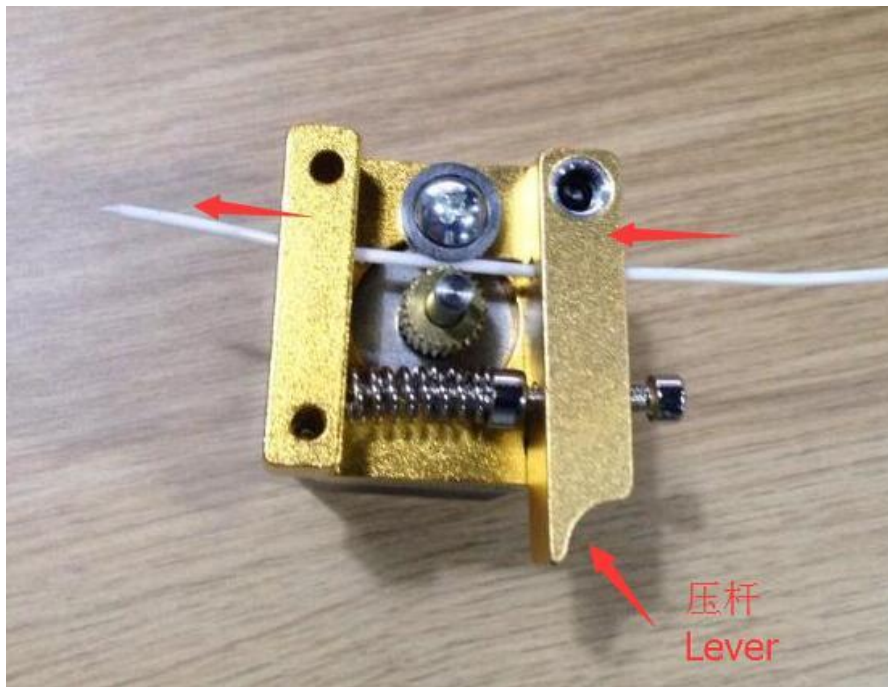


Figure 7.2 Insert filament

2. Insert the filament to PTFE Tube and push it down the bottom of the hotend, then tighten the Push-in fitting on the extruder. Notice: Make sure the PTFE Tube itself is push down to the hotend bottom, otherwise, it will cause abnormal discharge.

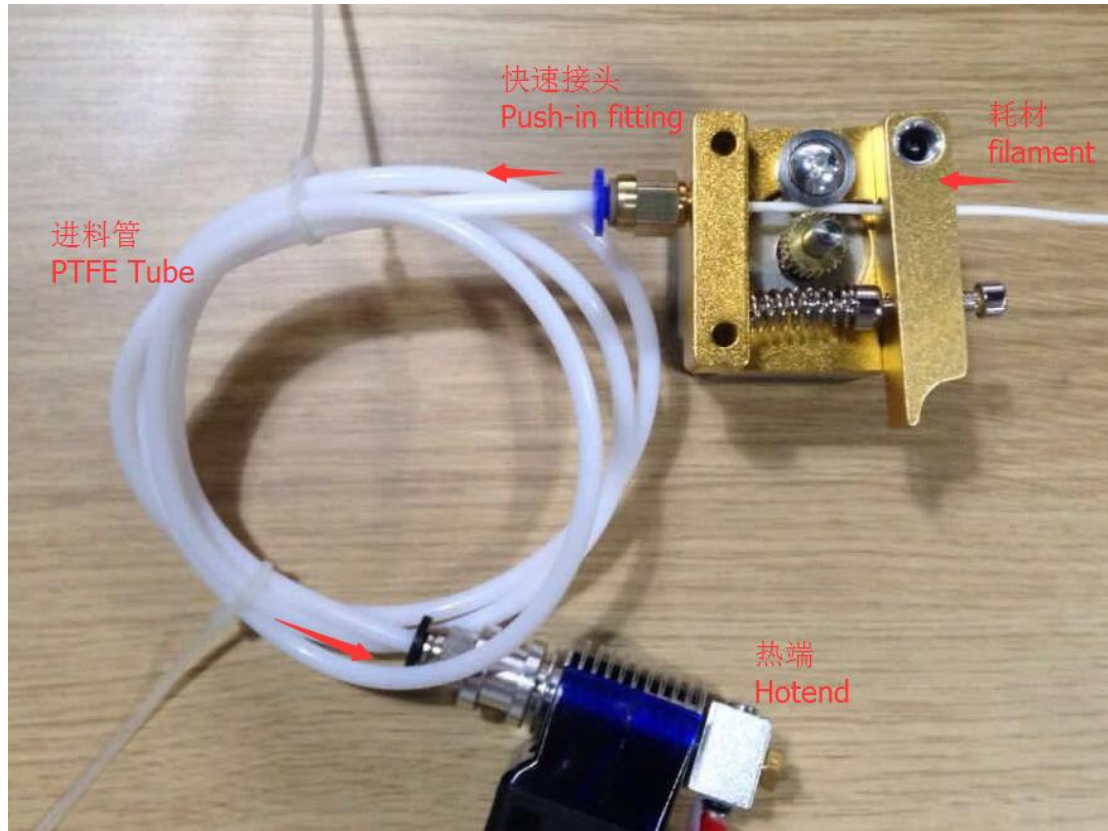


Figure 7.3 Connect extruder and hotend

3. Fasten hot end with butterfly nut;
4. Connect power line of heating cable with interface 4 of forearm, link power line of fan with interface 5, connect thermistor line with interface 6;

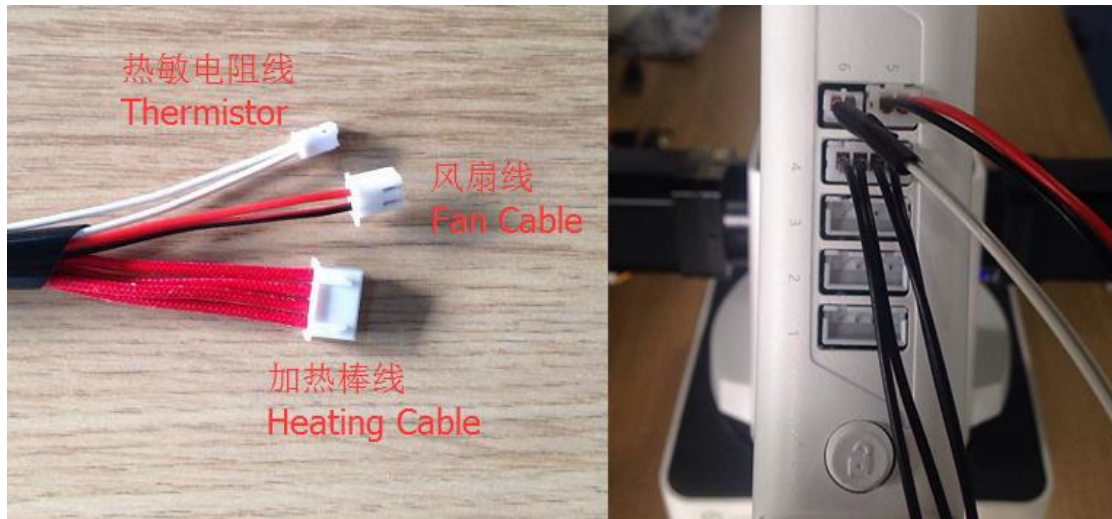


Figure 7.4 Connection of forearm

5. Connect extruder motor line with Stepper1 on the controller.



Figure 7.5 Connection of extruder

6. The whole kit shown as follows:

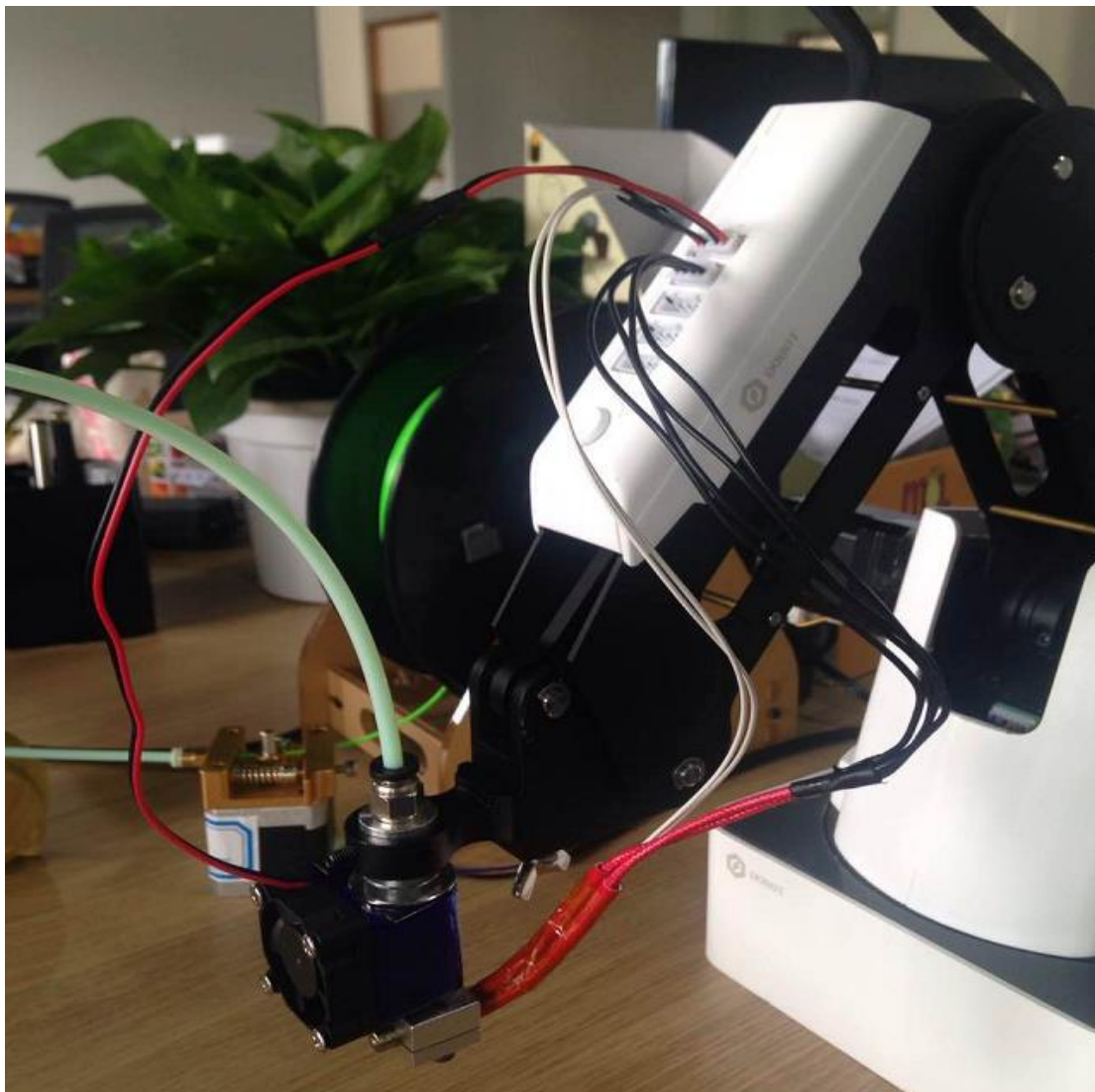
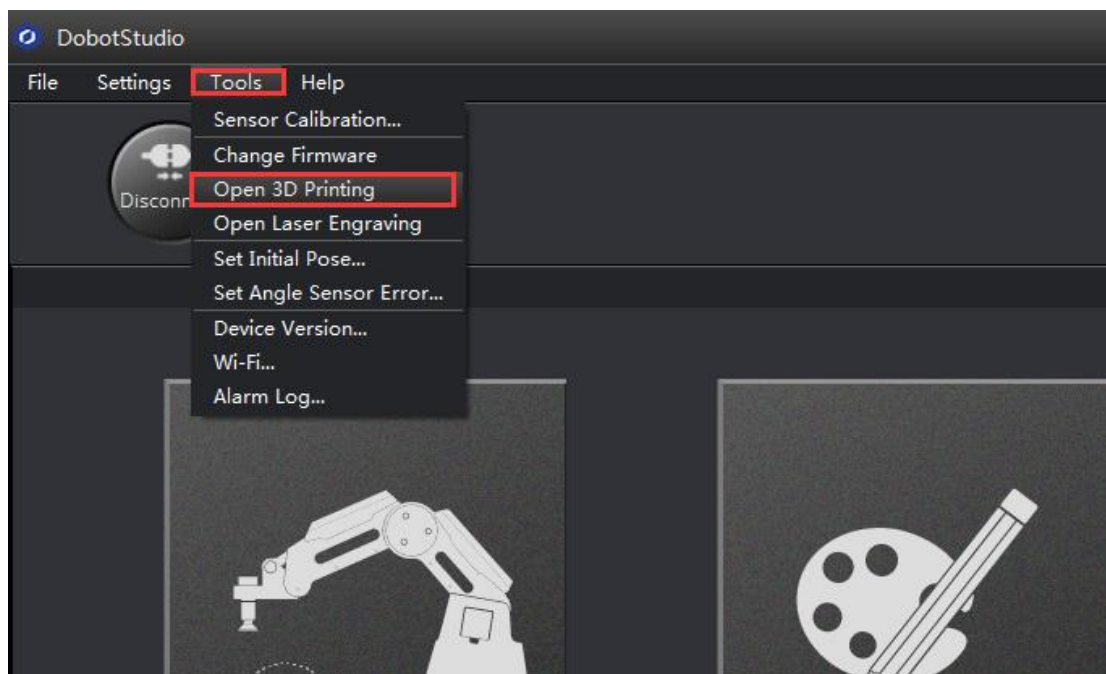


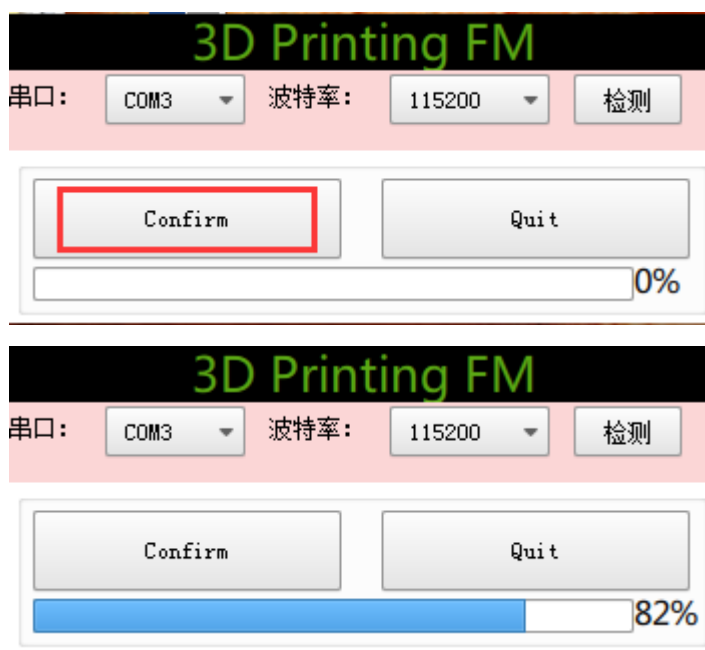
Figure 7.6 3D printing installation

7.2 Connect Repetier Host

7.2.1 The software used by 3D printing is Repetier host, free and open sourced , which has been built in DobotStudio. Open DobotStudio, click **Tools-> Open 3D Printing:**



Here will pop up a dialog of 3D printing burning firmware, click Confirm, and then will pop up software interface Repetier Host automatically, as follows::



The interface of Repetier Host:

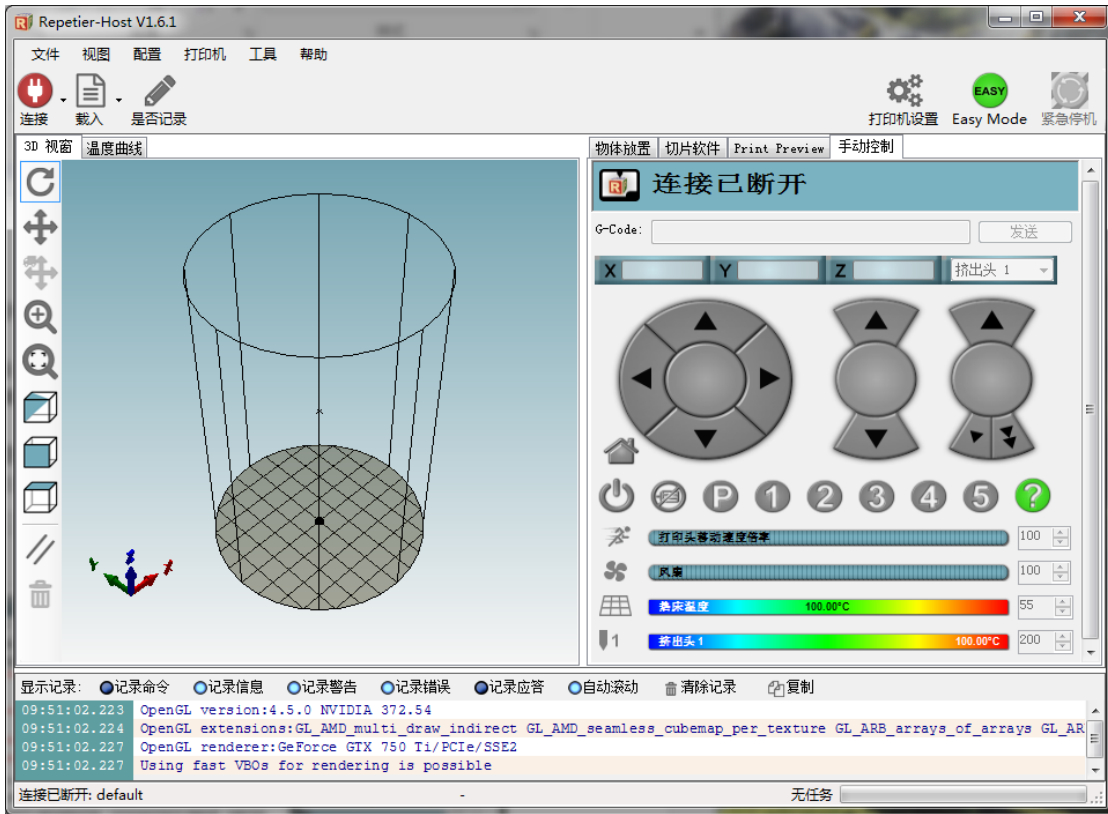


Figure 7.7 Repetier host

Note: If the current software has been 3D printing, you can open DobotStudio directly when you want to use next time. Click **Connect**, select **Ok**, and then you can switch to Repetier Host, as follows:

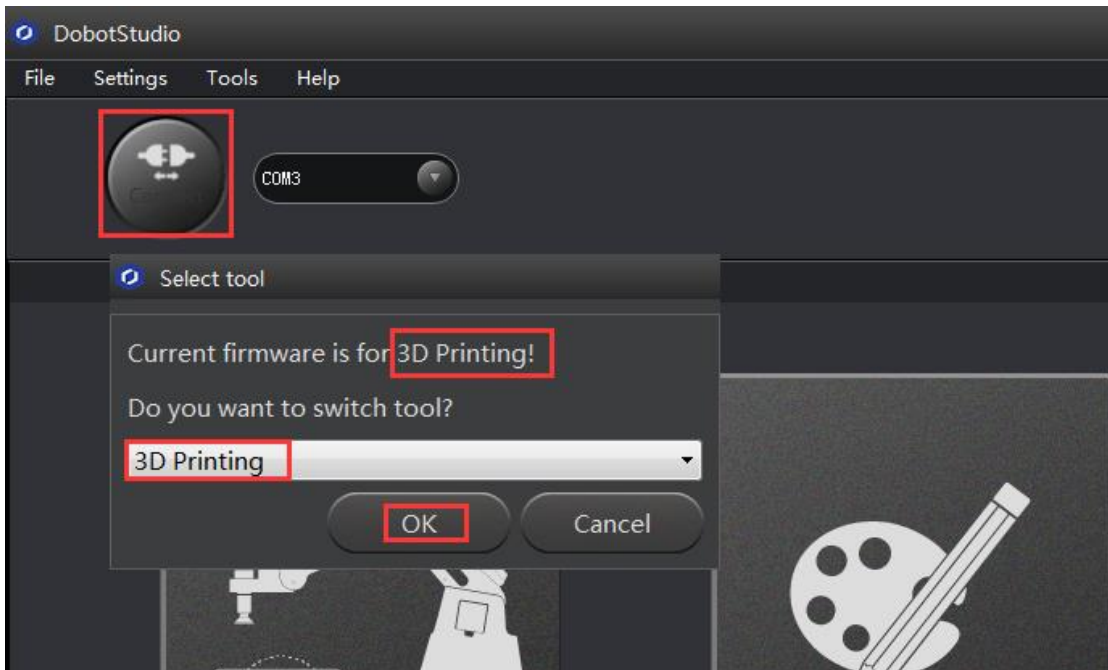


Figure 7.8 Switch into 3D printing automatically

7.2.2 Parameter Settings of 3D printing

Click **'Printer settings'** in the top right corner of the interface, and set related parameters in the pop up dialogue box:

(1)Connection : lable settings

Printer Name: Dobot (can be named by oneself)

Select Dobot Serial Port: Dobot serial port

Baud Rate: 115200

Reset on Emergency: Send emergency command+DTR high->low(If failed to connect, please try other options)

The rest keep the default settings, click **Apply** after setting.

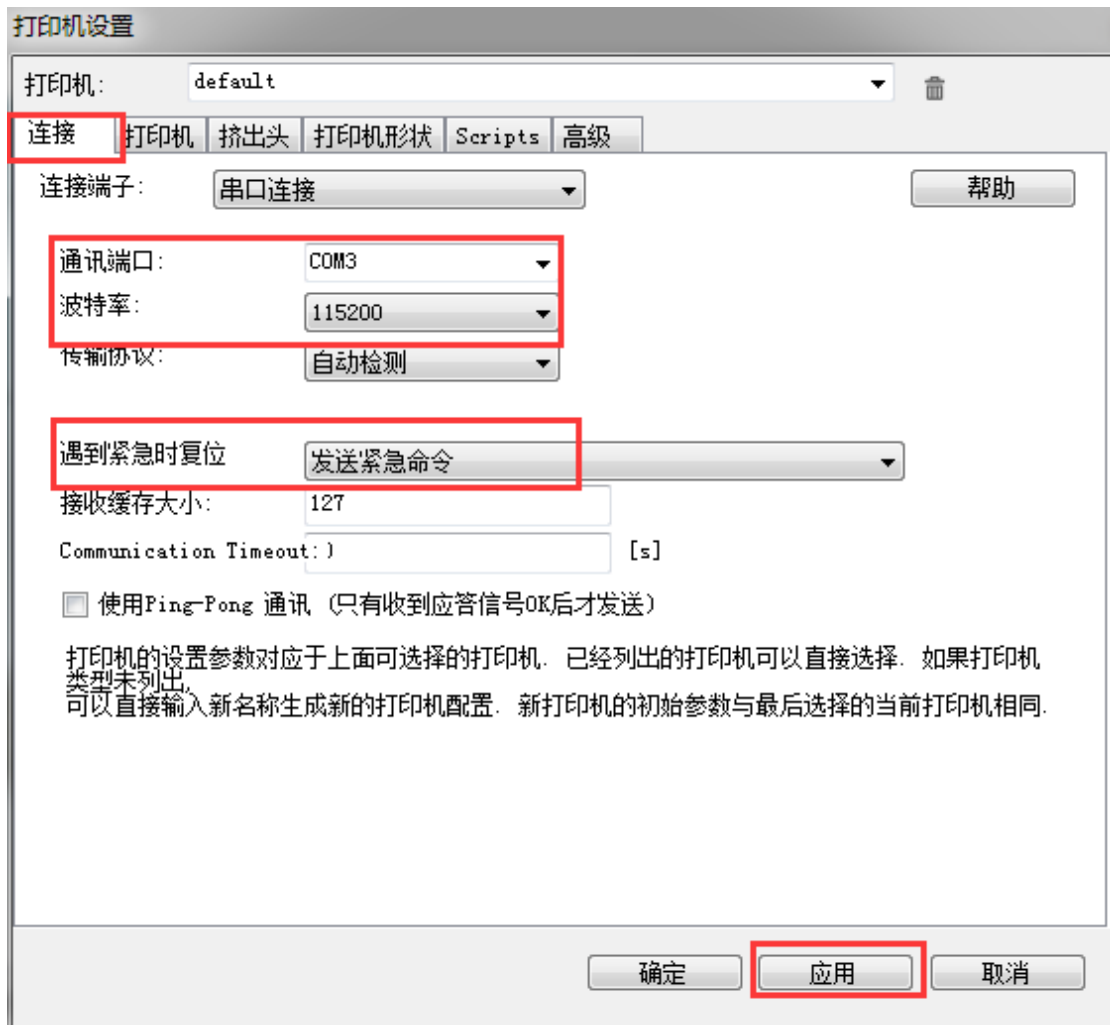


Figure 7.9 Connection Settings

(2) Connection Lable Settings

Delete the following three settings and keep the rest default:

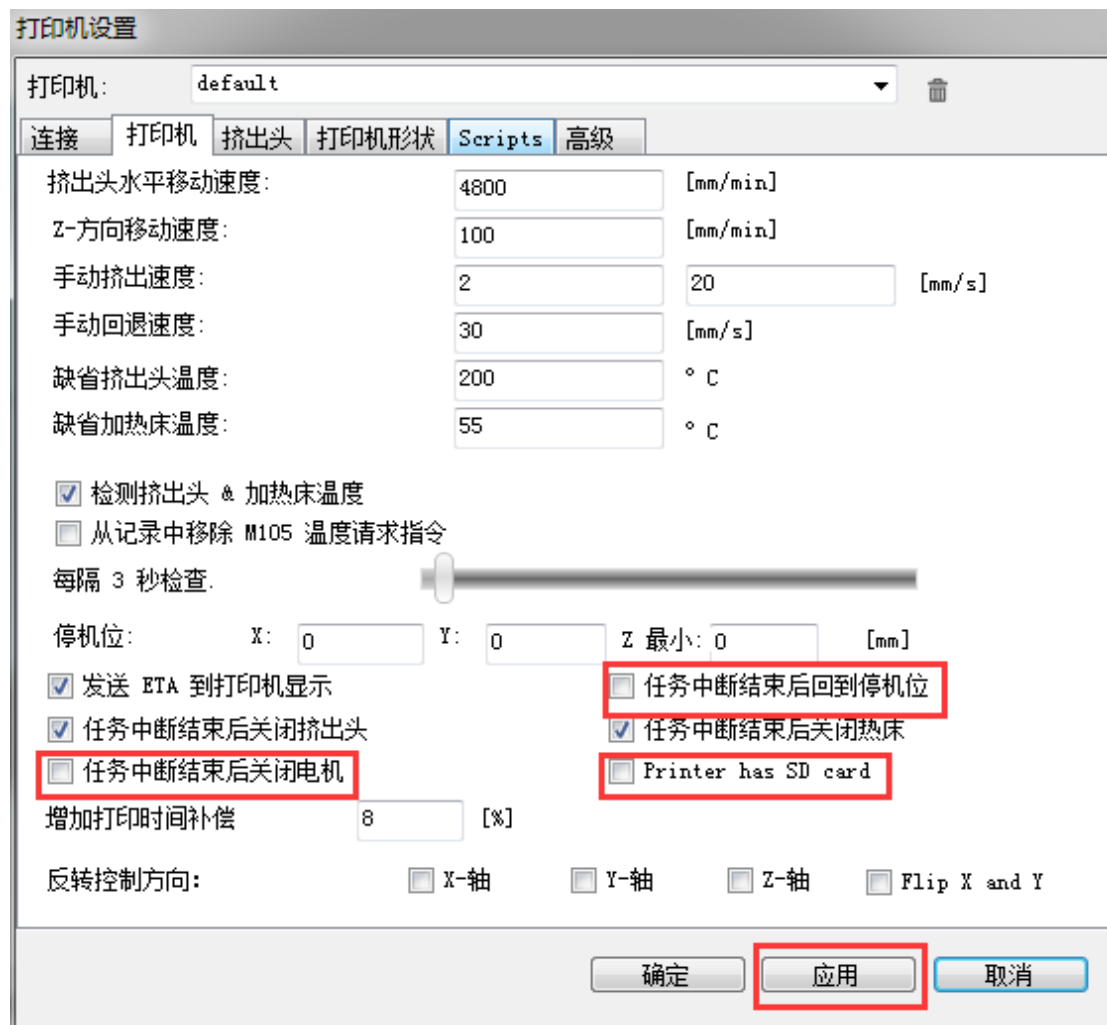


图 7.10 printer 设置

(3) Extruder Settings

The number of extruder setting: 1

The nozzle diameter: 0.4mm

Keep the rest default.

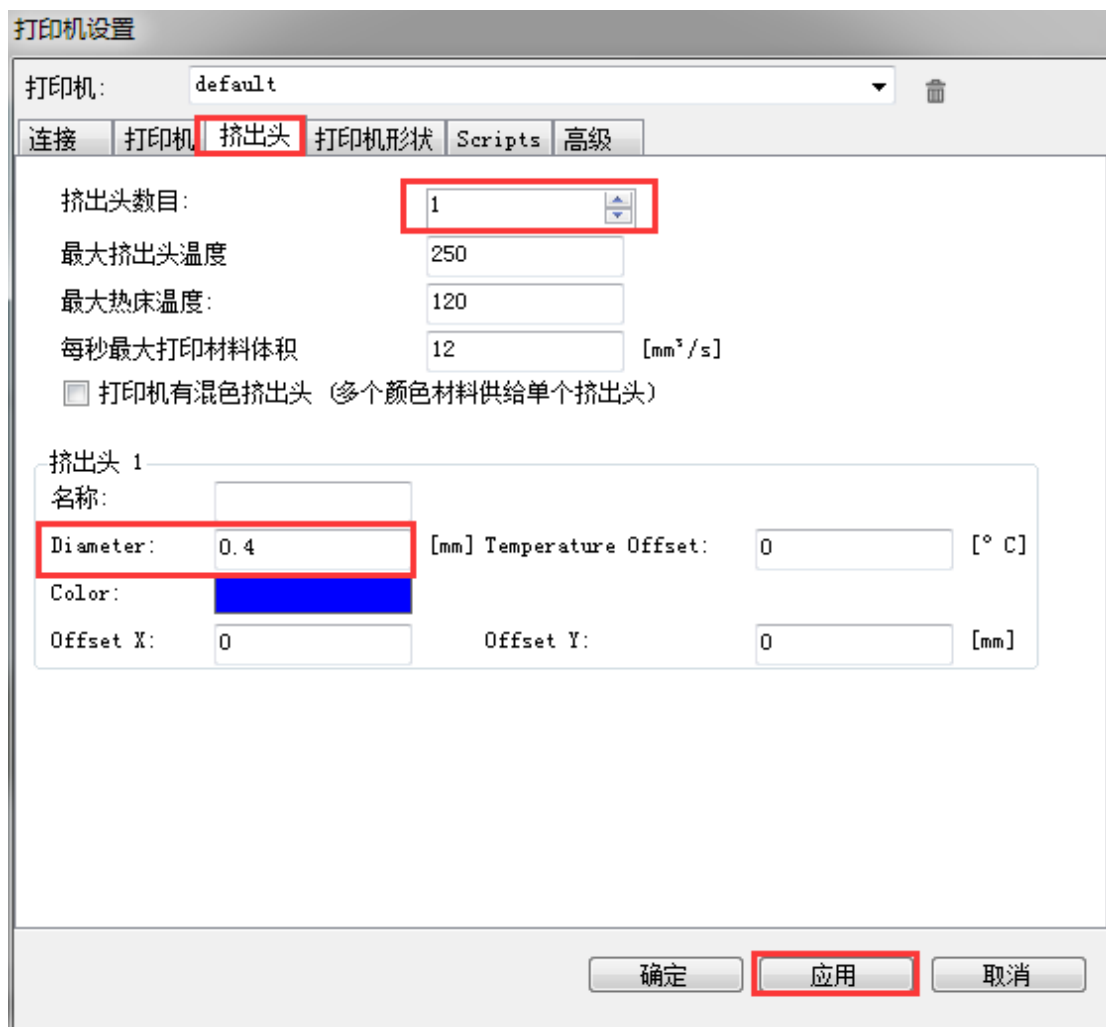


Figure 7.11 Extruder Settings

(4) Printer Shape Settings

Select circle printer and the detailed parameters as follows:

Home X: Min

Home Y: Min

Home Z: 0

Print area radius: 50mm

Print area height: 150mm

Click **Apply** after setting.

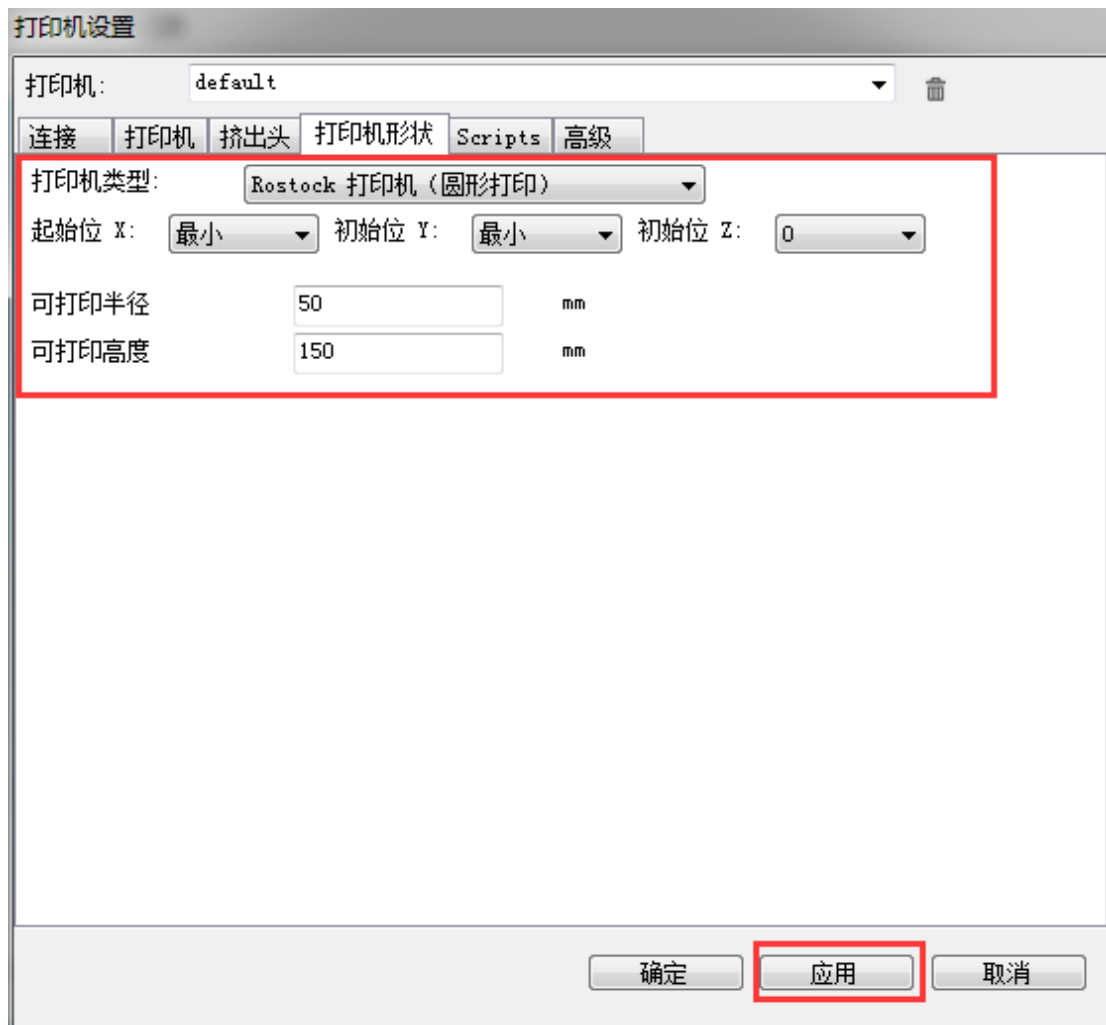


Figure 7.12 Printer Shape Settings

After setting parameters, return to main interface, open Dobot main power supply, insert USB, and click **Connection** at the top left corner of main interface, then we can connect Dobot. The led will turn out green and the temperature will be shown below the interface:

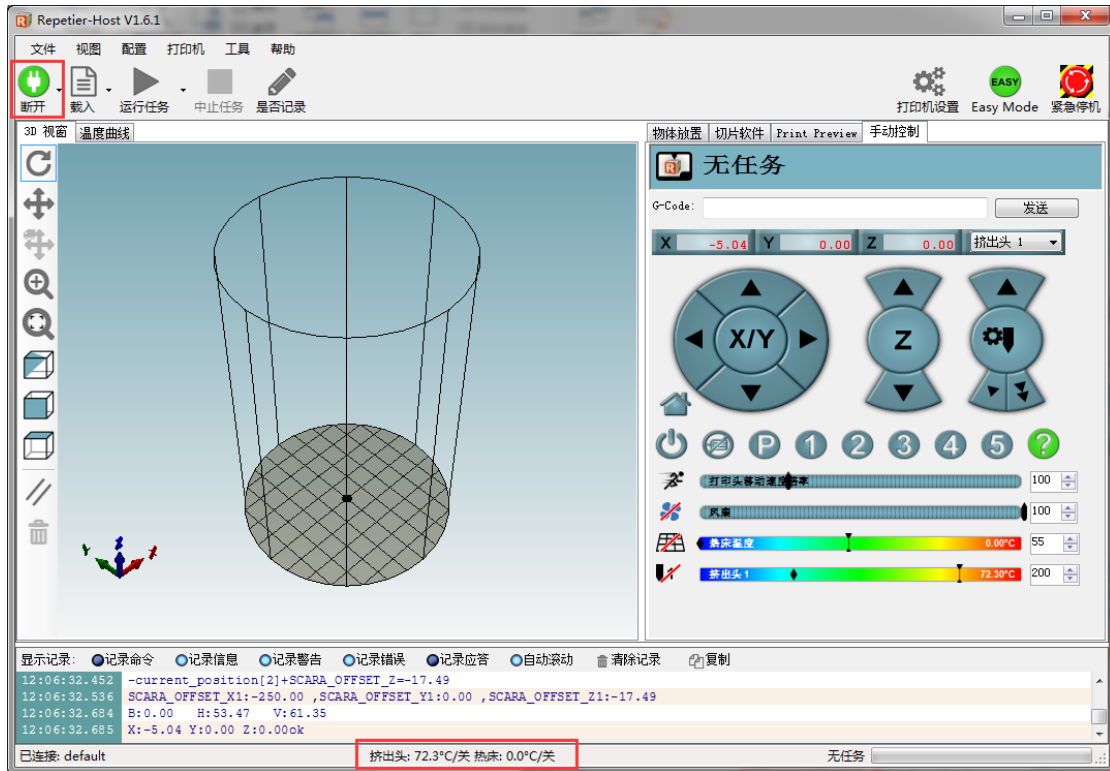


Figure 7.13 Connect Dobot

7.3 Preparation before Printing

7.3.1 Please have a test to the function of extruder.

It will work when the temperature of extruder reaches above 170°C and consumables are at melt state, so we should heat up extrusion head. Here set heating temperature to 200°C and

then click the **heating button**  on control pannel to heat it.

Notice:

The heating rod will produce high temperature up to 250°C, please be careful!

DO NOT let children play with it alone.

The process needs to be monitored when it is running.

After the process please turn off the equipment promptly.

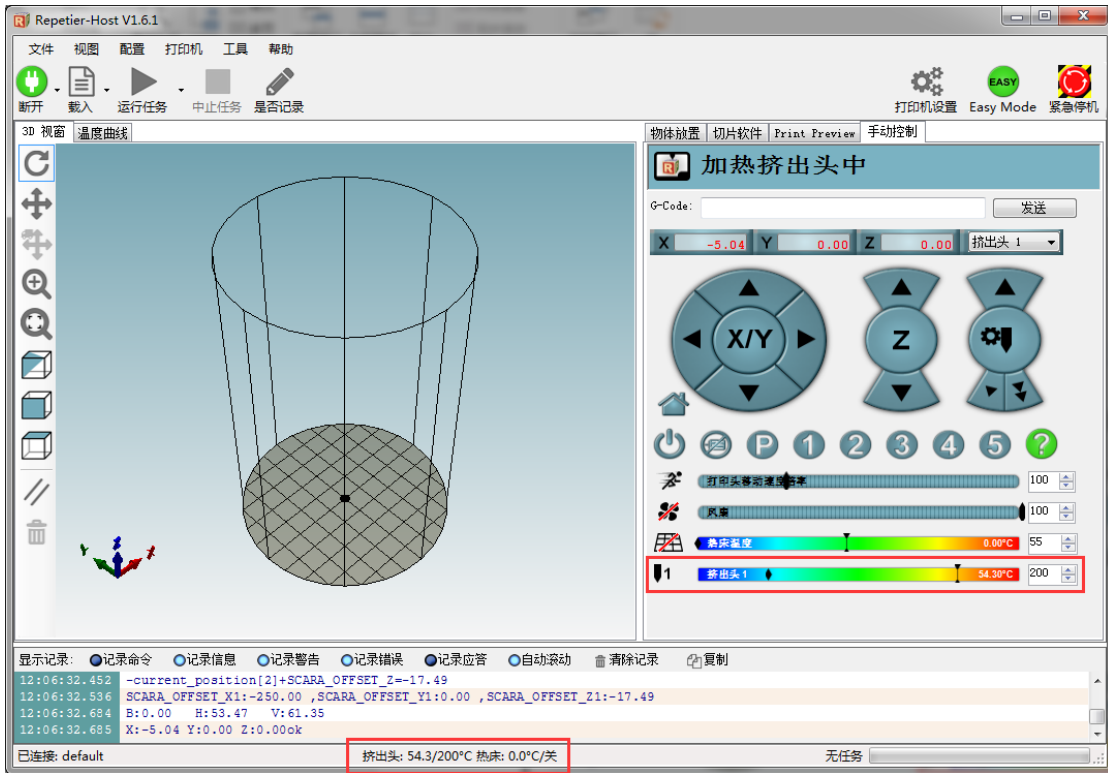


Figure 7.14 Heat the Extrusion Head

In the heating process, open the fan and adjust it to 100:

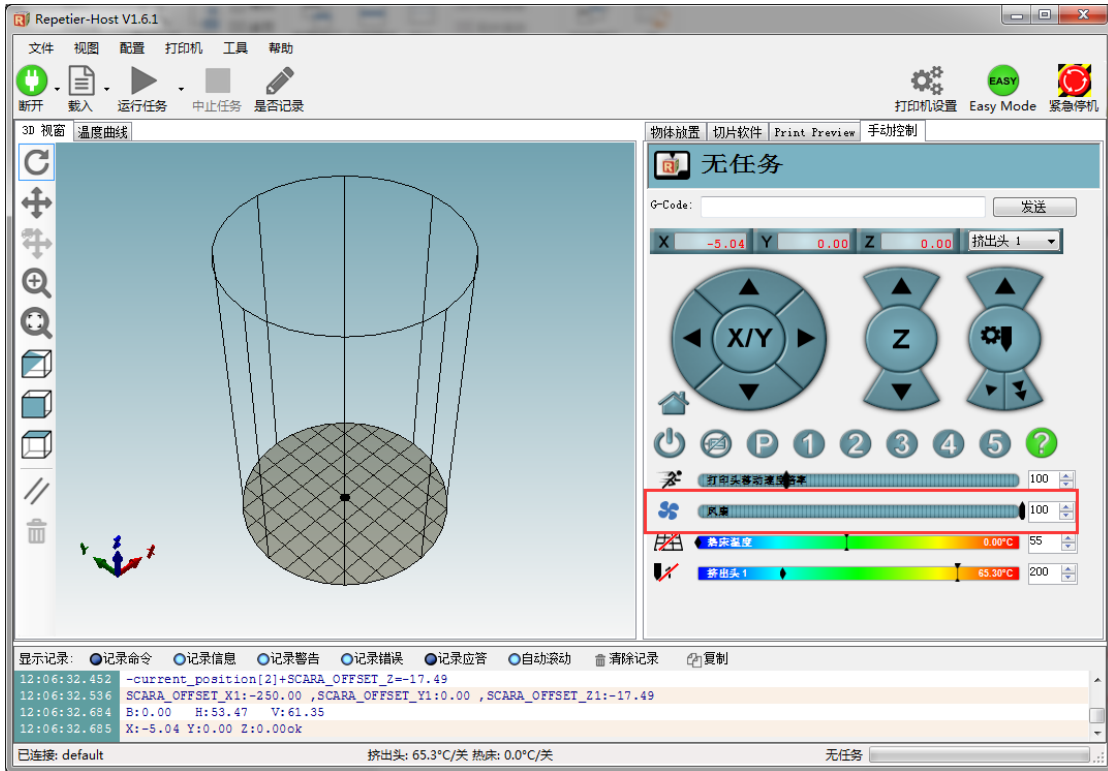


Figure 7.15 Open the fan

When the heating temperature is up to 200°C, click feedstock of extruder up to 10-30mm, as shown below:

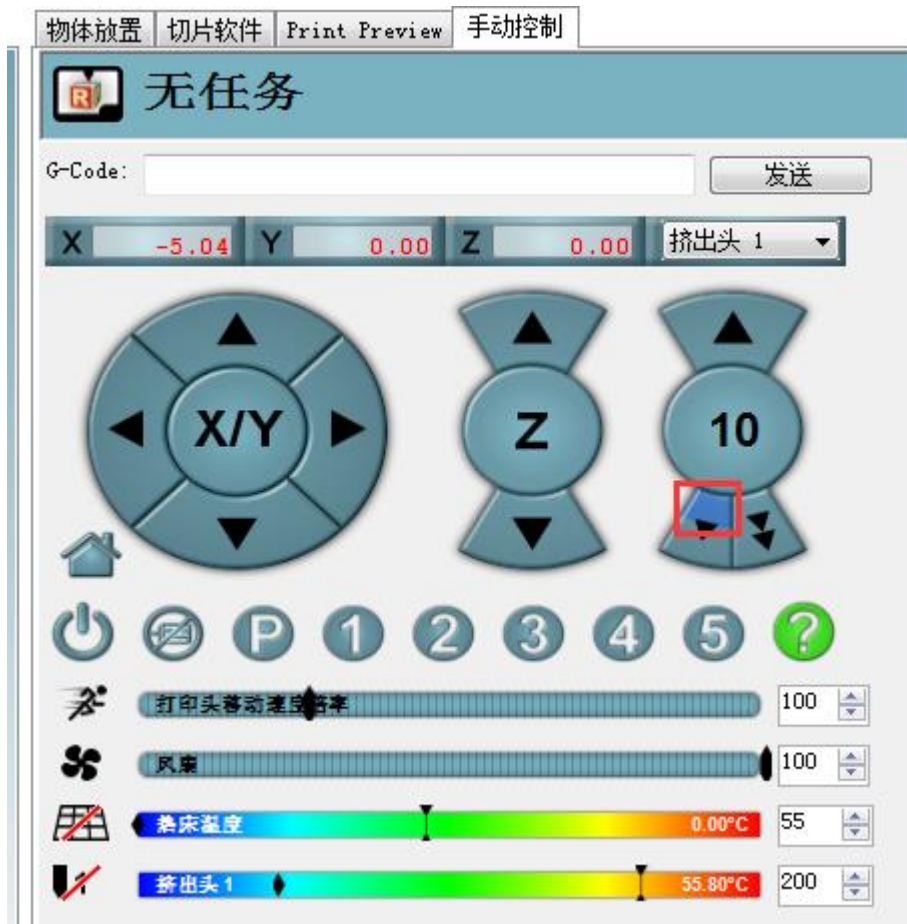


Figure 7.16 Extrude filaments

If melted materials flowed from nozzle of the extruder, then it means the extruder works properly:

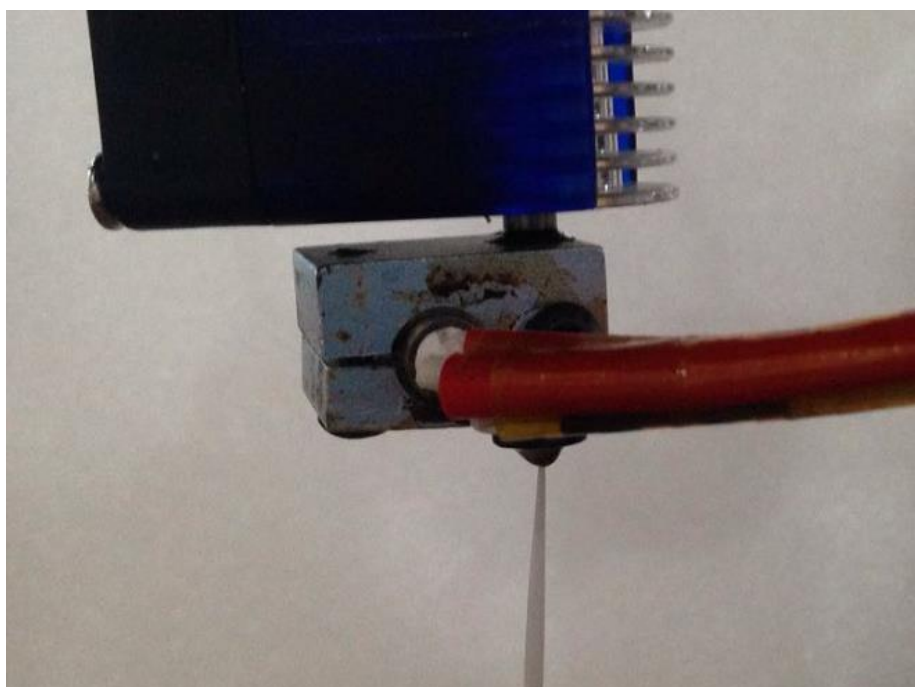


Figure 7.17 Filament Extrusion

Note: If the filament extrusion is in the opposite direction, for example, you can click feedstock, but it is discharging. Then you need pull out the filament totally from the extruder, turn the extruder to 180° , and insert the filament, now you can get the right direction.

2.3.1 Adjust the sapce between extrusion head and print bed.

During the printing, if the distance between the nozzle and print is too large to paste the print bed of the first layer; If the distance is too small, which will cause consumables block. So we need to adjust the proper distance for smooth printing. Generally, the thickness of a sheet of paper is OK. (If it is not proper height when printing the first layer, we can amend the parameters in the slice parameters. Details see Step7.3.5) At the same time, paste a layer of masking tape on the glass print bed in order to add its adhesive property of the first layer.

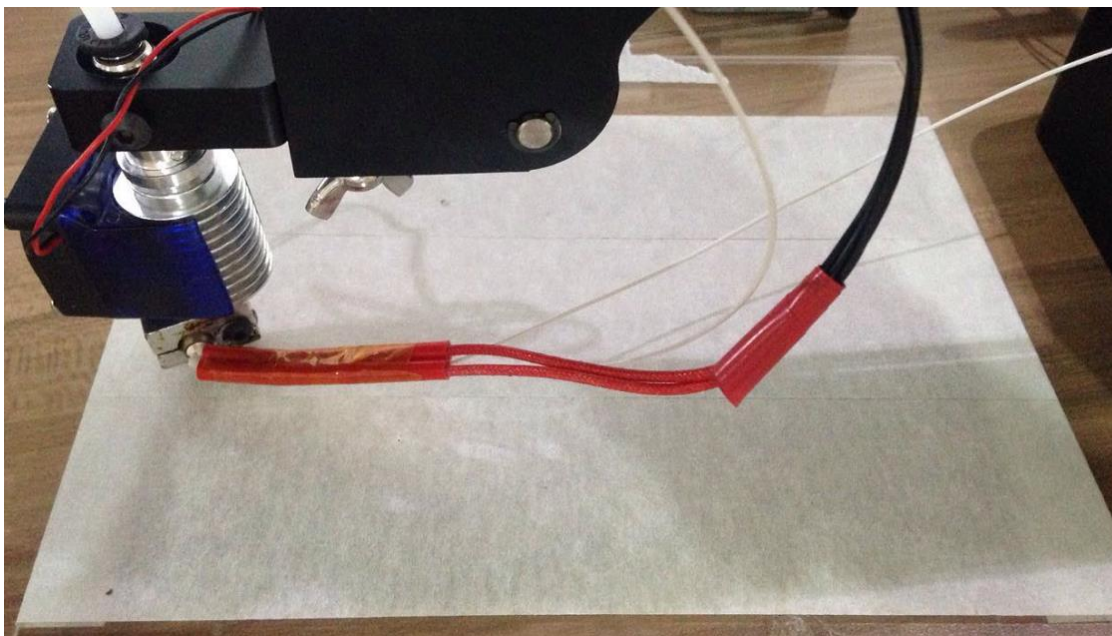


Figure 7.18 Masking tape

Adjustment process: Firstly, put print head ahead of Dobot base about 200mm, and the distance from print head to print bed is about 1-2mm. Then, control button of **Z-** to brush down at **-0.01mm**. Also, put a A4 paper between nozzle and print bed, move the paper back and forth. In this process, it will be the right distance when there is some slight distace.

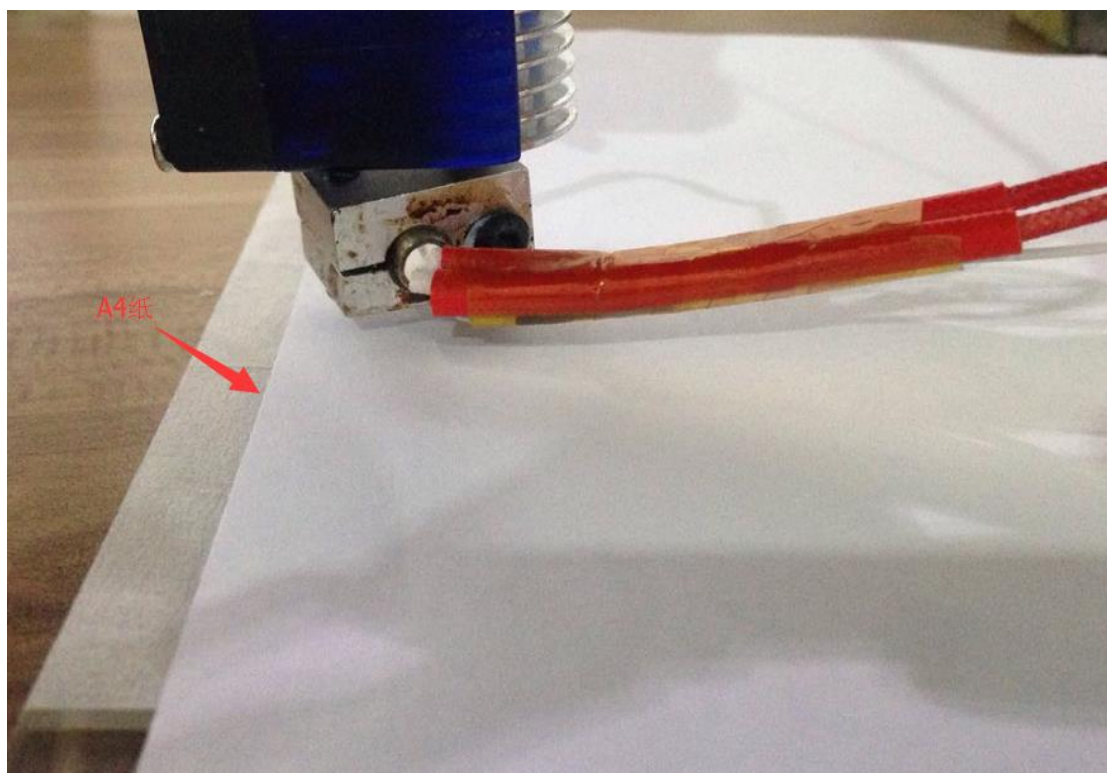
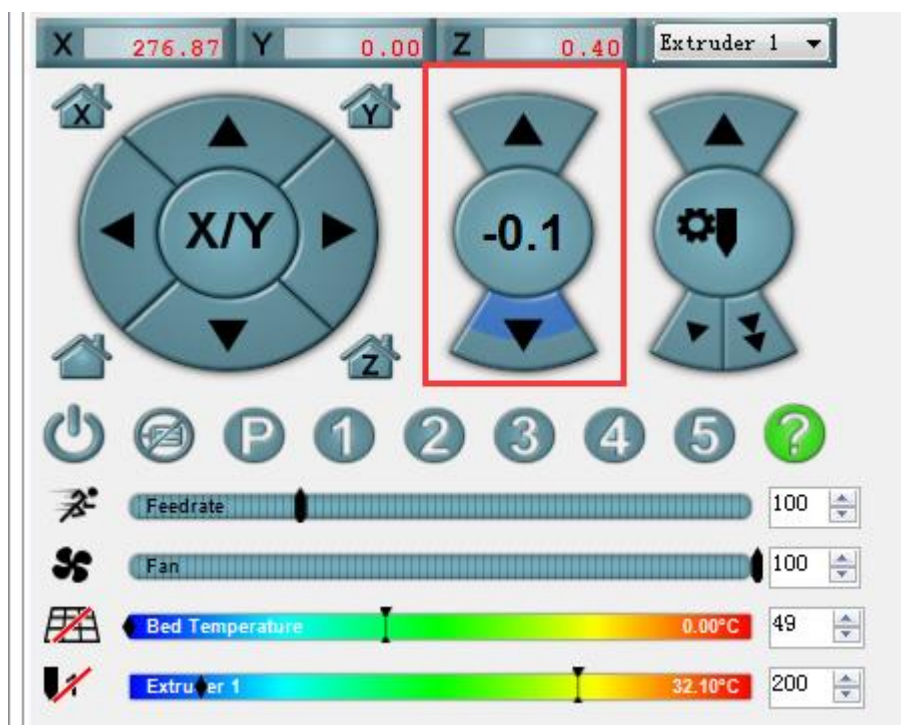


Figure 7.19 Distance Adjustment

7.4 Import Model and Start to Print

2.3.2 The file format of 3D printing is stl employed universally.

Users can build one's own 3D model and transfer it into stl file, also, one can search free models to import them directly. Click open, import 3D model file of stl format, the details as follows:

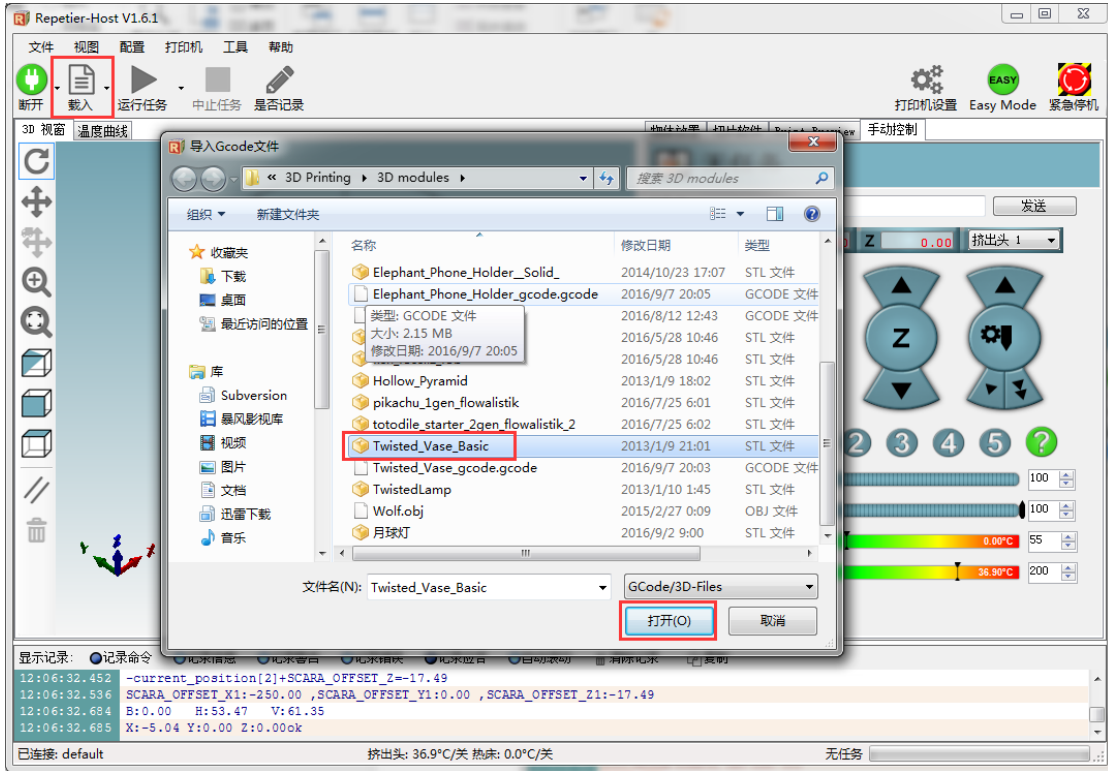


Figure 7.20 Import Models

2.3.3 Model Center/Scale

Users can operate the model to place in the middle, zoom or rotate and any other functions.

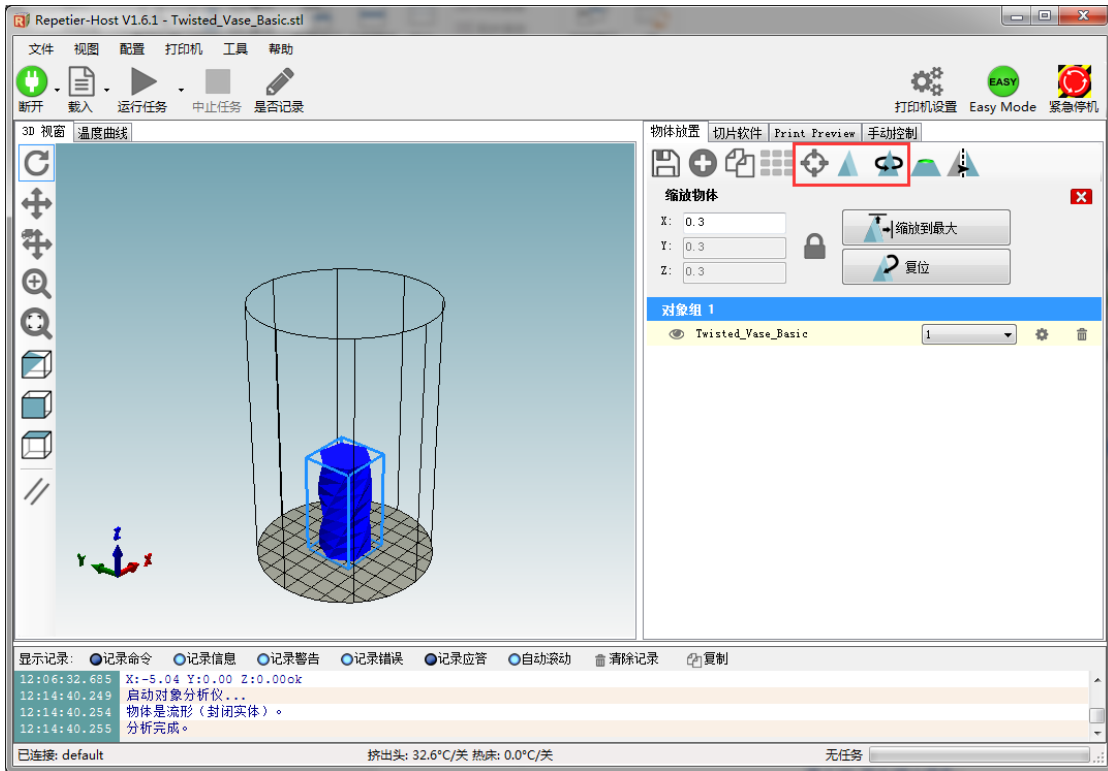


Figure 7.21 Model Center/Scale

2.3.4 Set slice parameters and start to slice up.

Select slice engine Slic3r and click Configuration to set slice parameters.

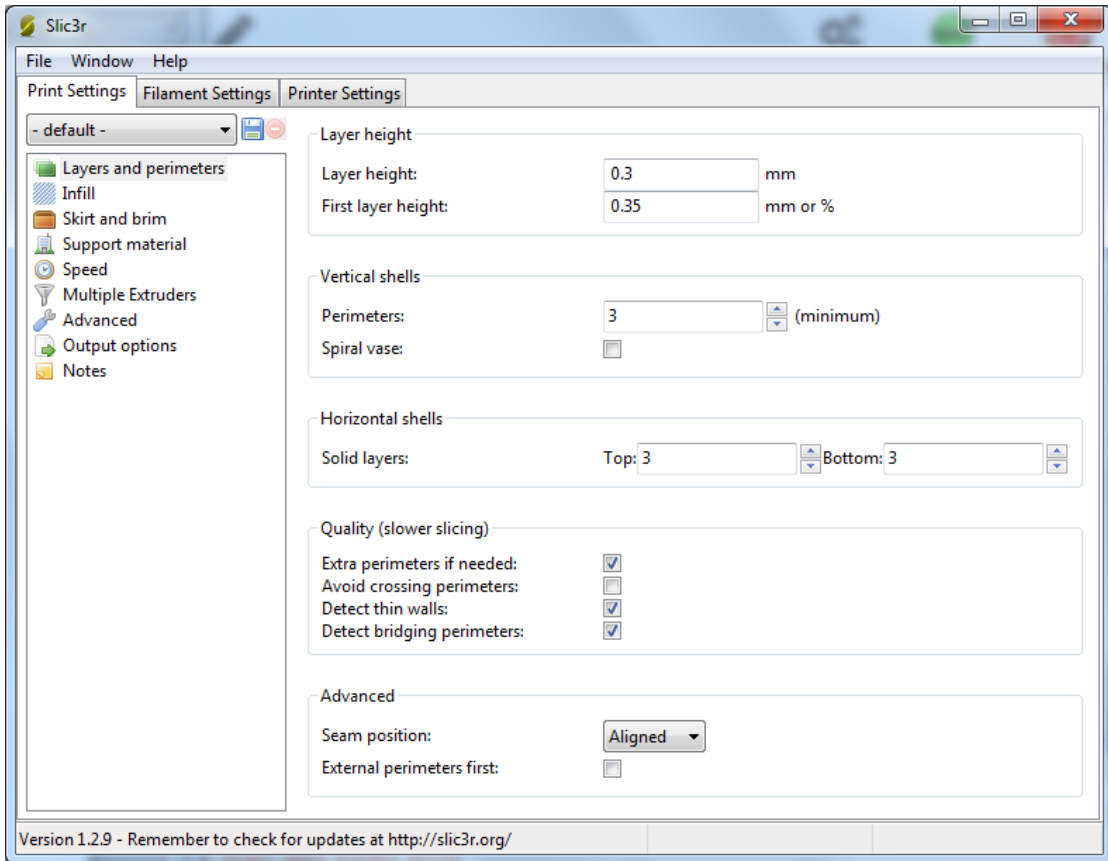
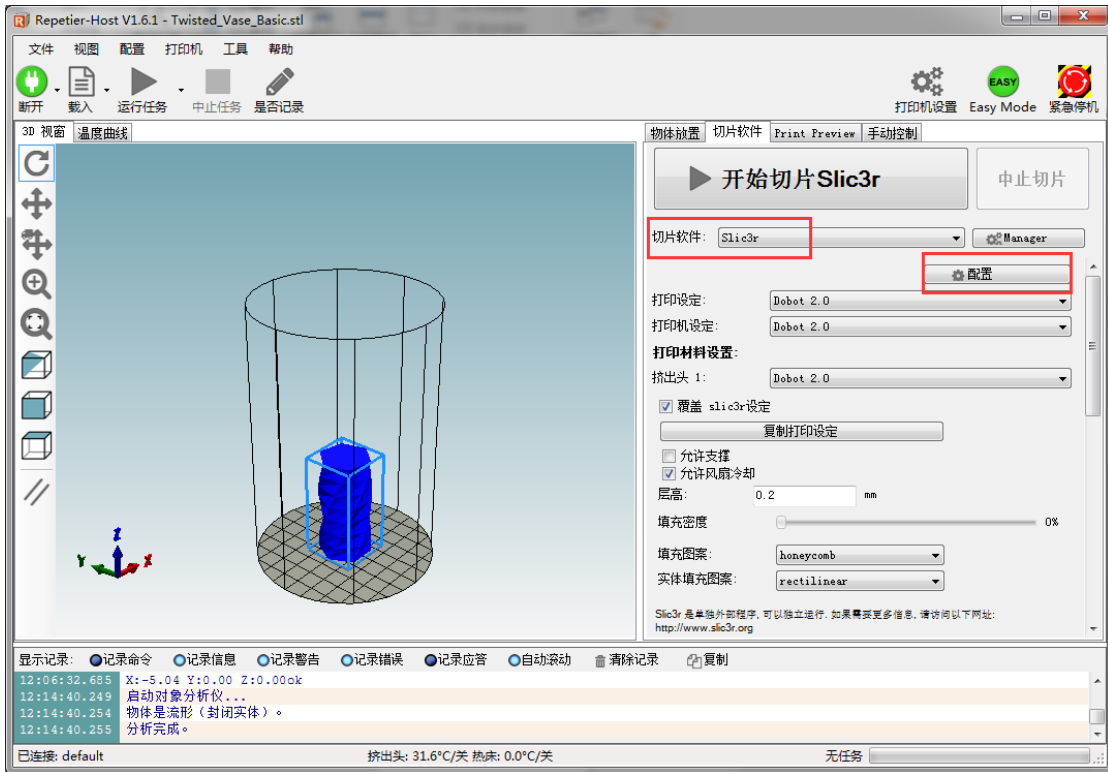


Figure 7.22 Main interface of parameter settings

It is vital to set slice parameters, in which users should get the best slice parameters according to printed models and tested performance of equipment. Here we suggest a configuration file that can be imported from attachment of DobotStudio:

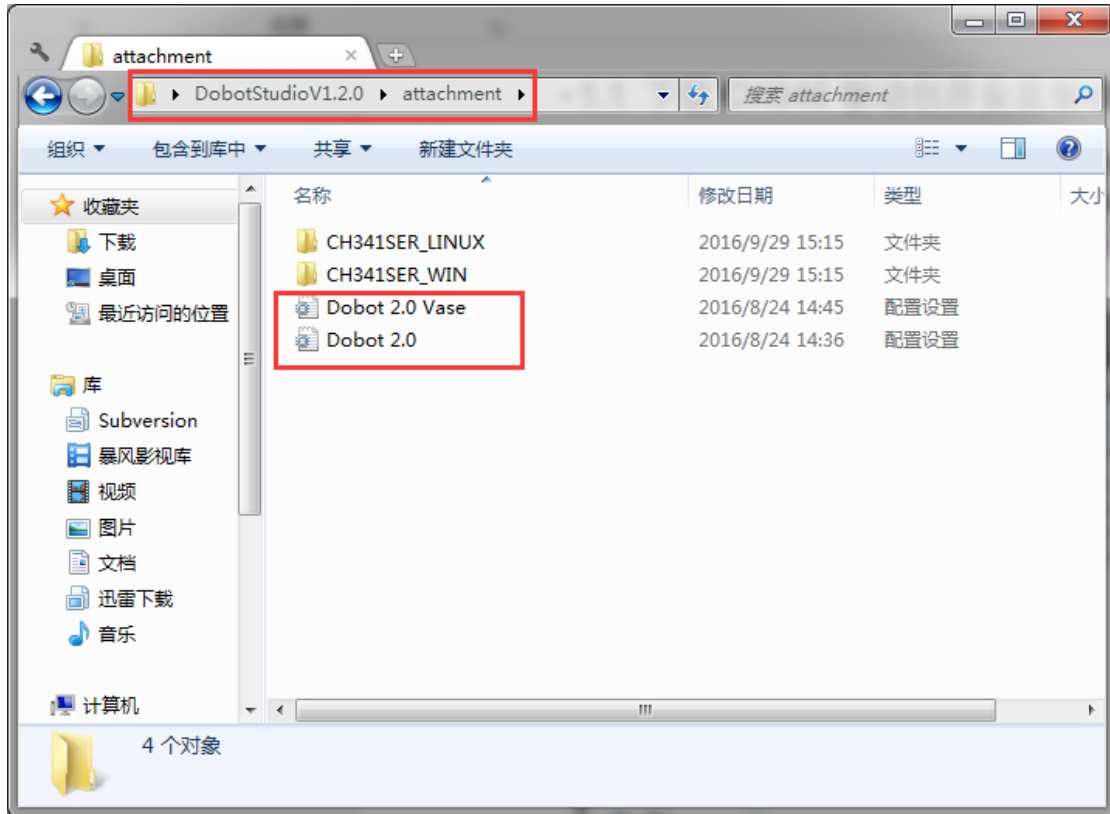


图 7.23 配置文件

其中 **Dobot-2.0-Vase.ini** is used for printing of thin-valled vase, while **Dobot-2.0.ini** is used for the filling of entity, the filling rate is 20%.

Import the file after downloading: Click **File->Load configto load.ini** file.

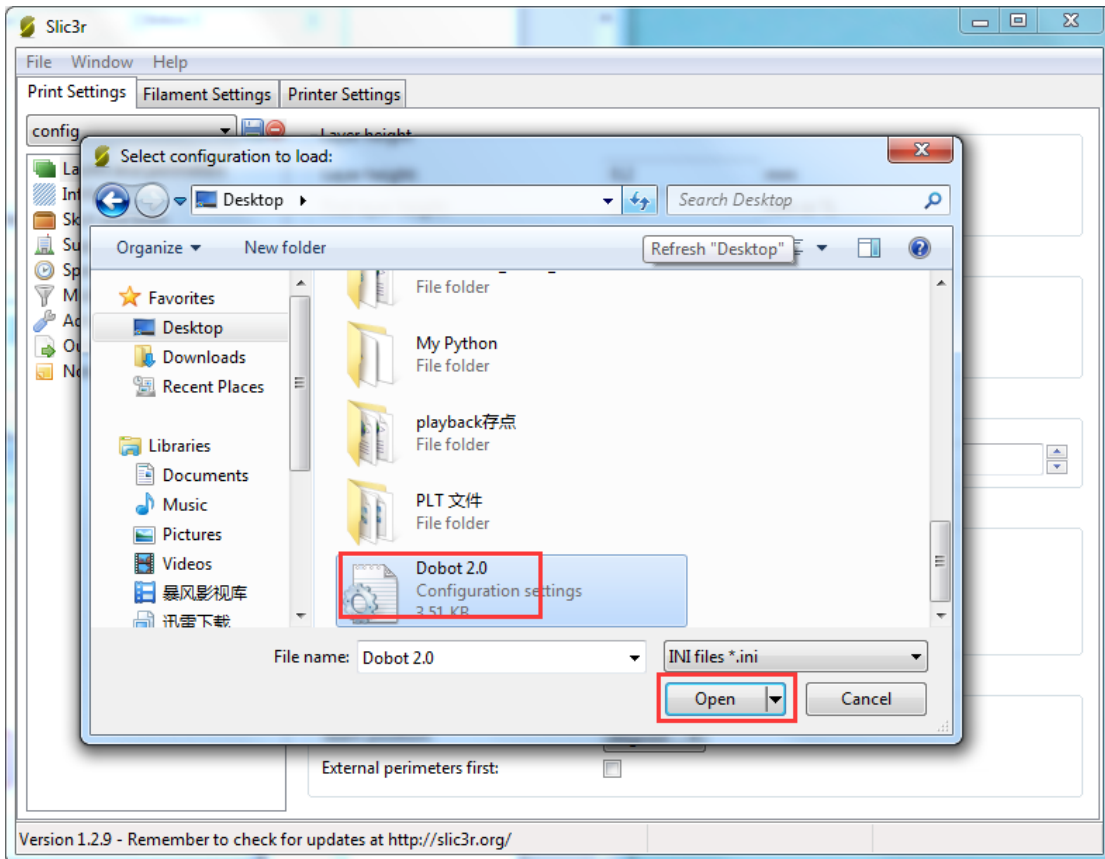
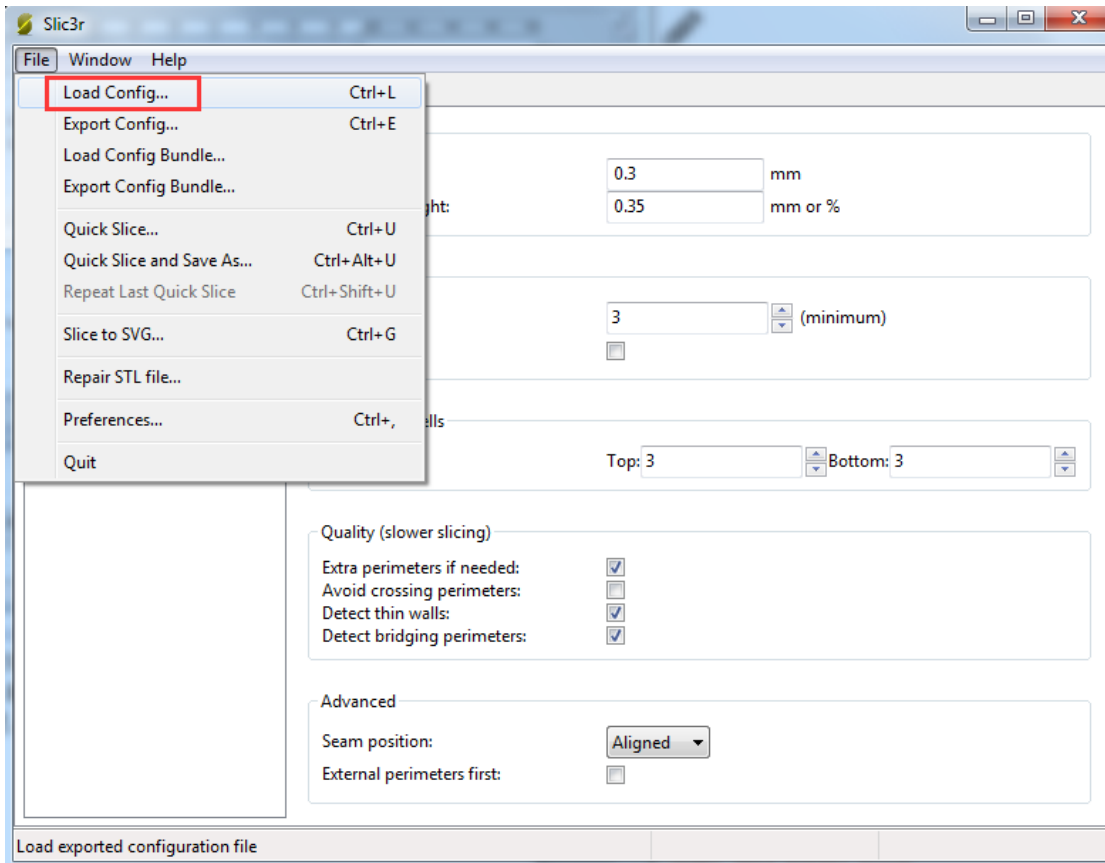


Figure 7.24 Import configuration file

After importing the file, users need to save the three labels: Print settings, Filament settings and Printer settings respectively, also, users can rename them, here we keep the default:

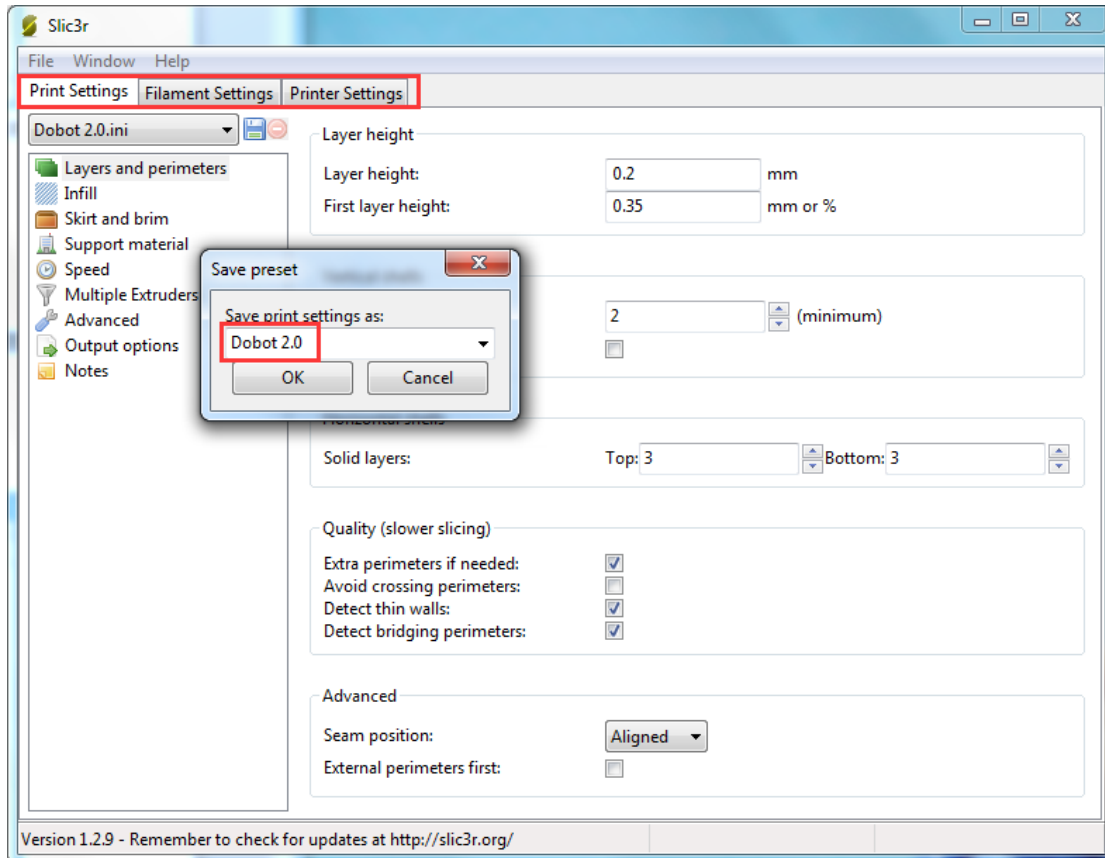
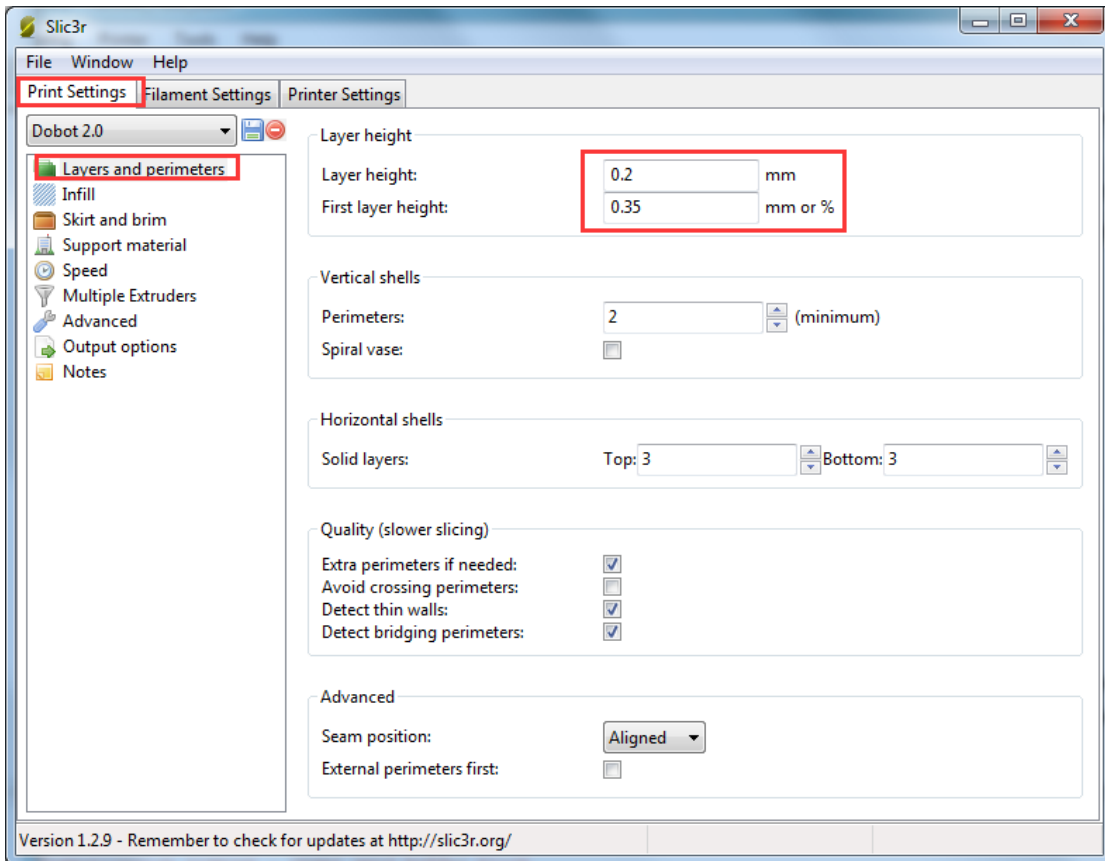


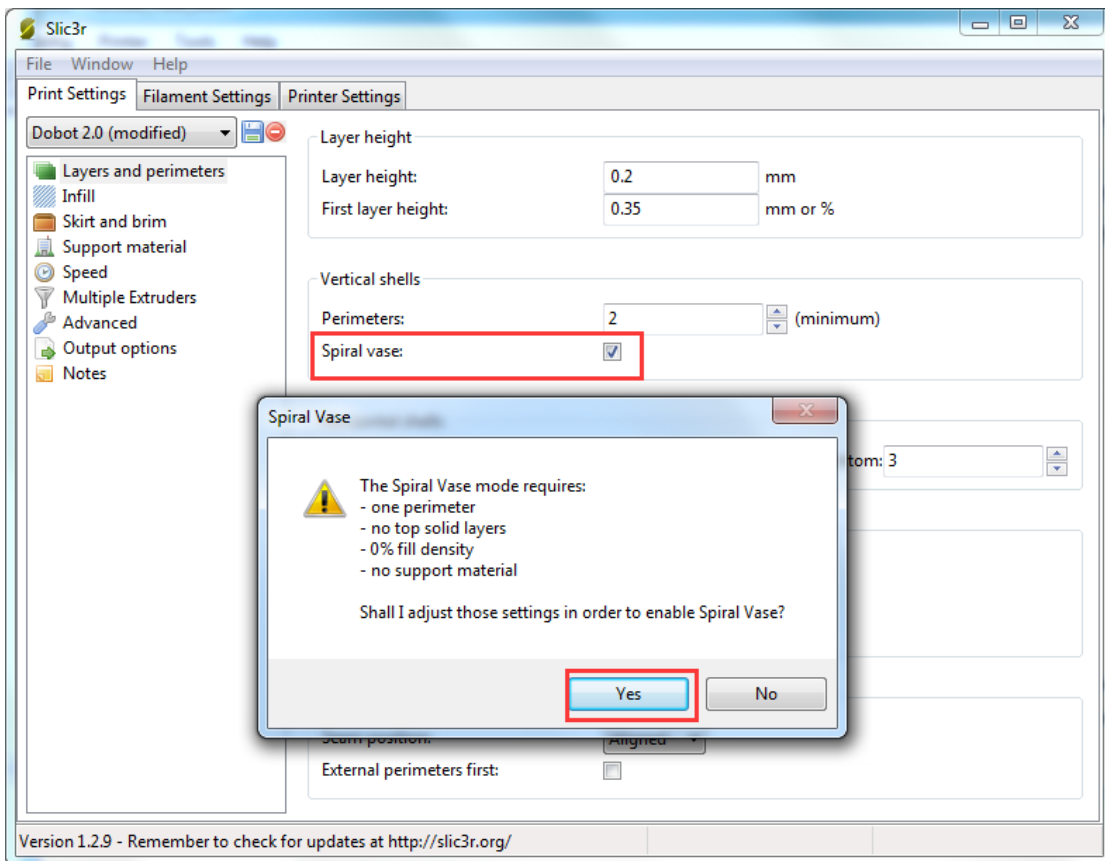
Figure 7.25 Save configuration file

Here we only introduce necessary parameter settings, and one can review the related links about the rest parameters: <http://manual.slic3r.org/>

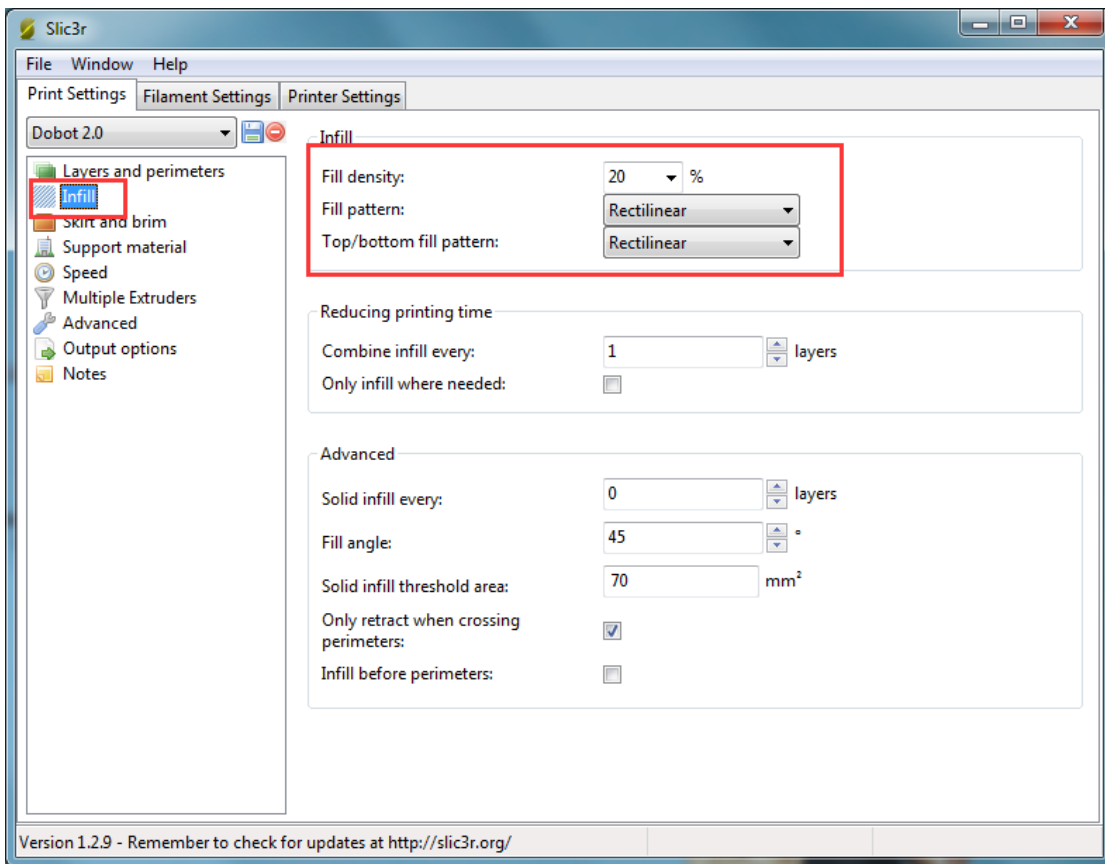
- (1) Printer settings
 - Set the height of print layer: 0.2mm;
 - The height of first layer: 0.35mm;



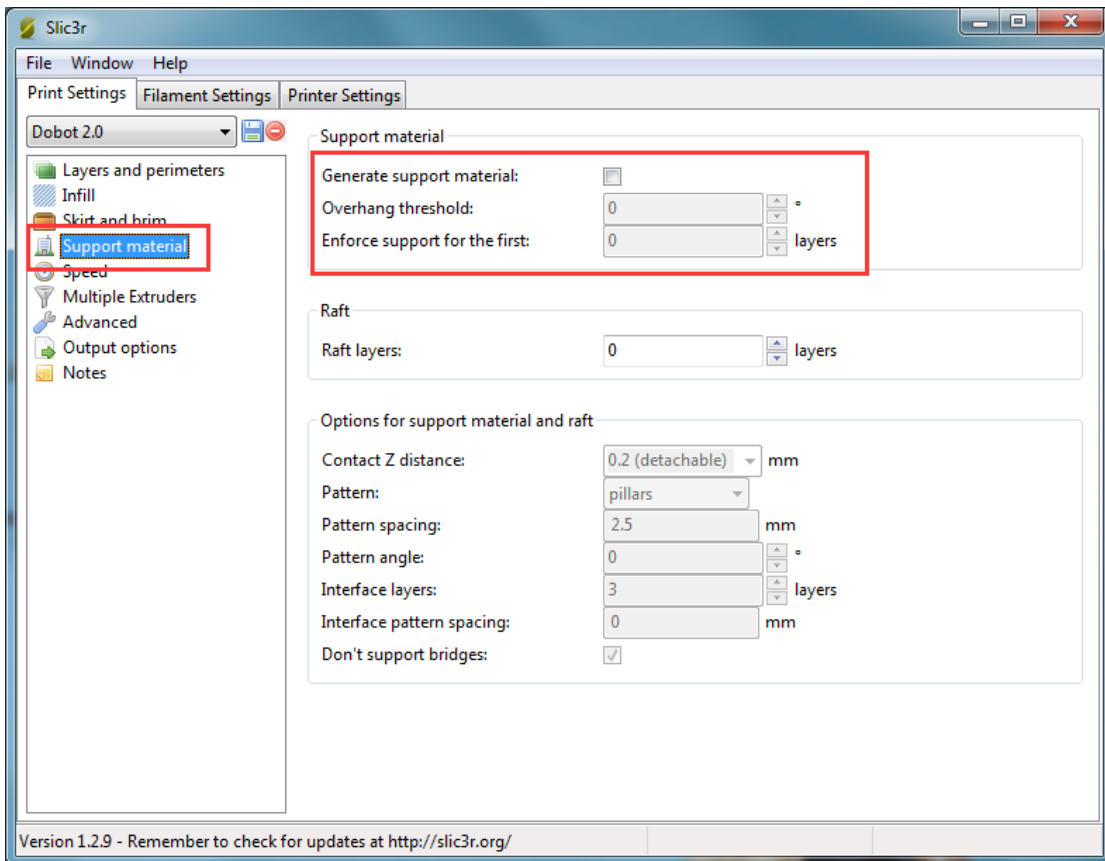
Spiral vase: Check this one and click OK, then we can print unfilled vase.



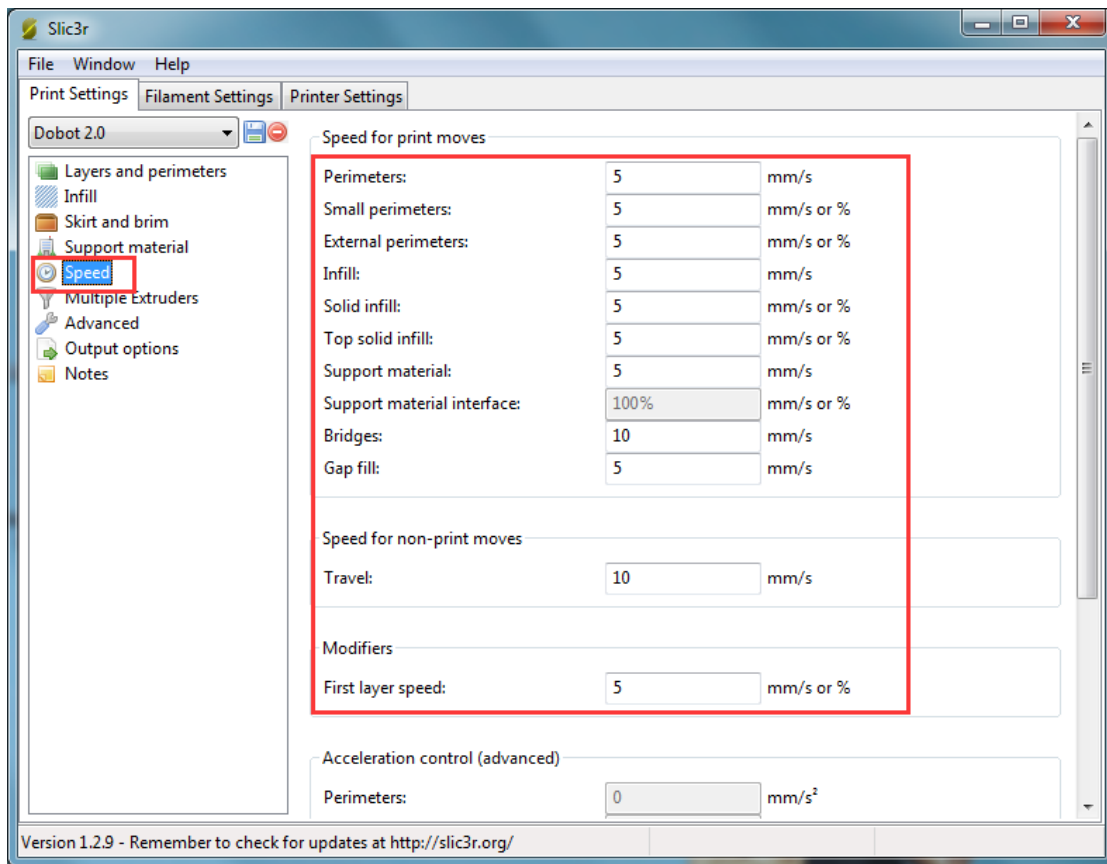
The fill rate settings:



If users need print support, please tick support material:



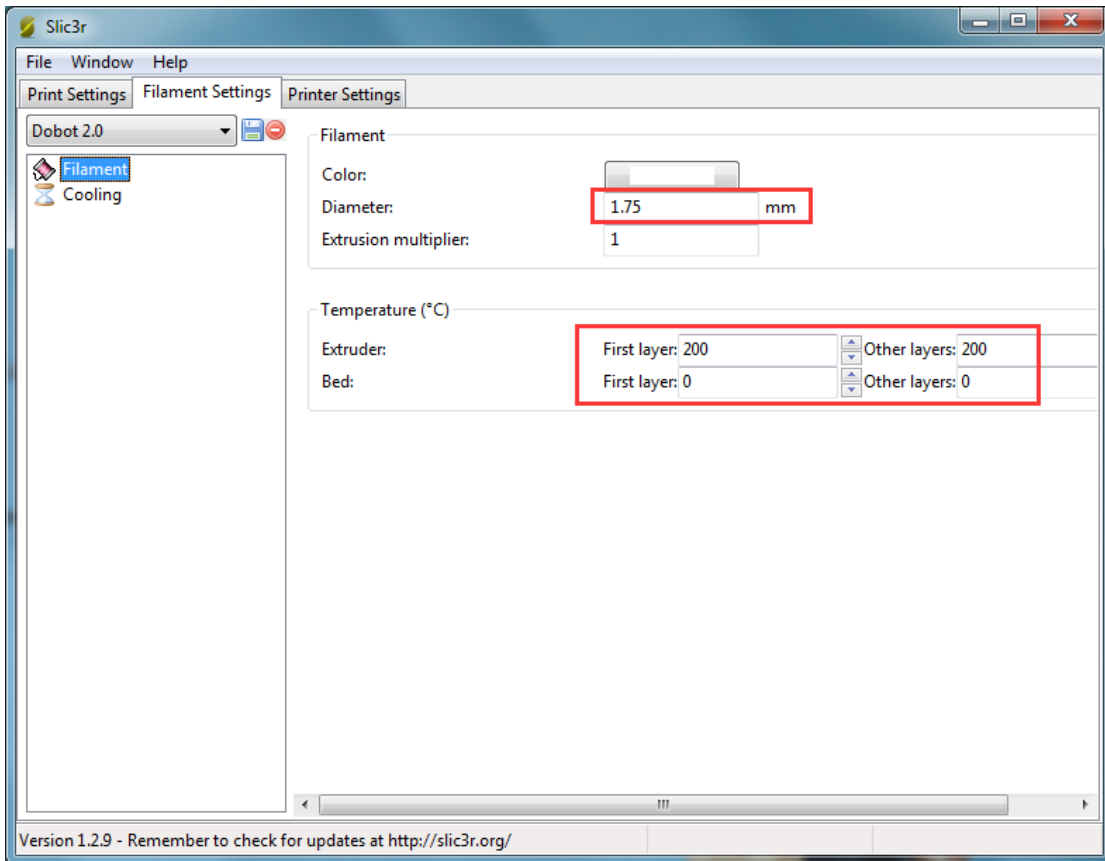
The speed settings:



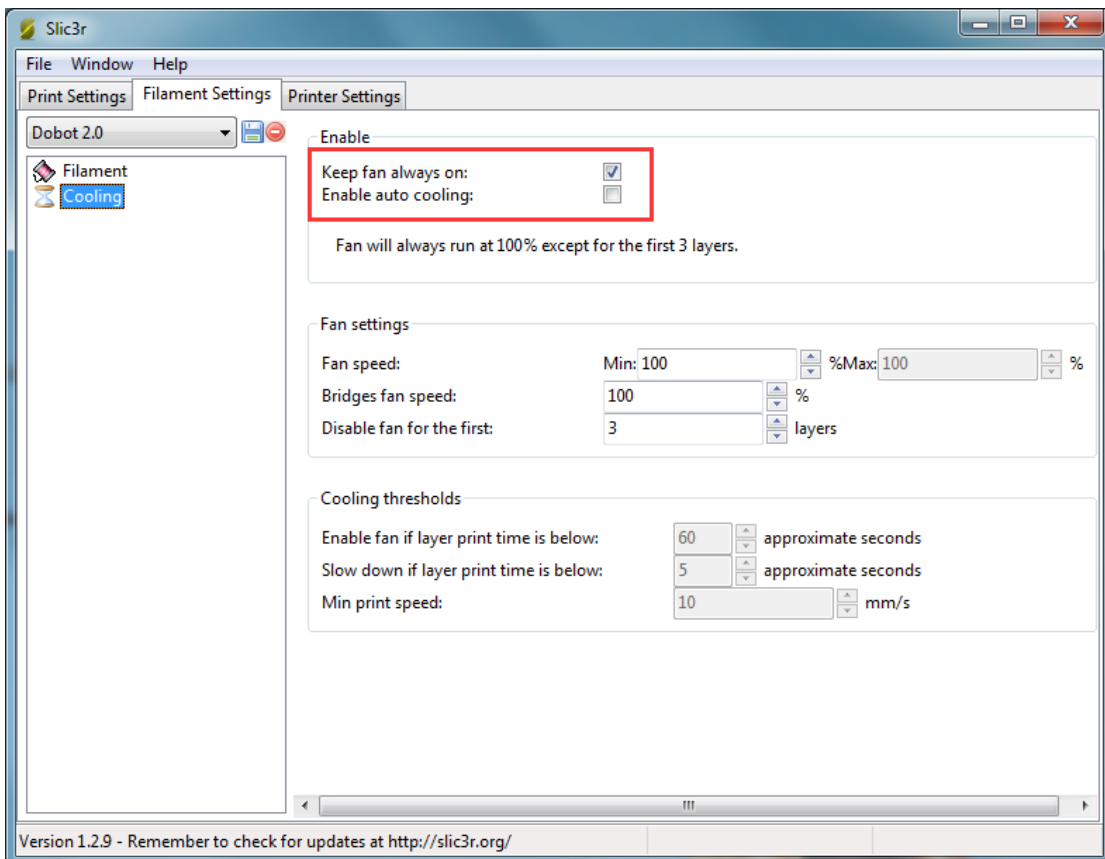
(2) Filament settings

Consumable diameter: 1.75mm

The temperature : 200°C



Open the fan:

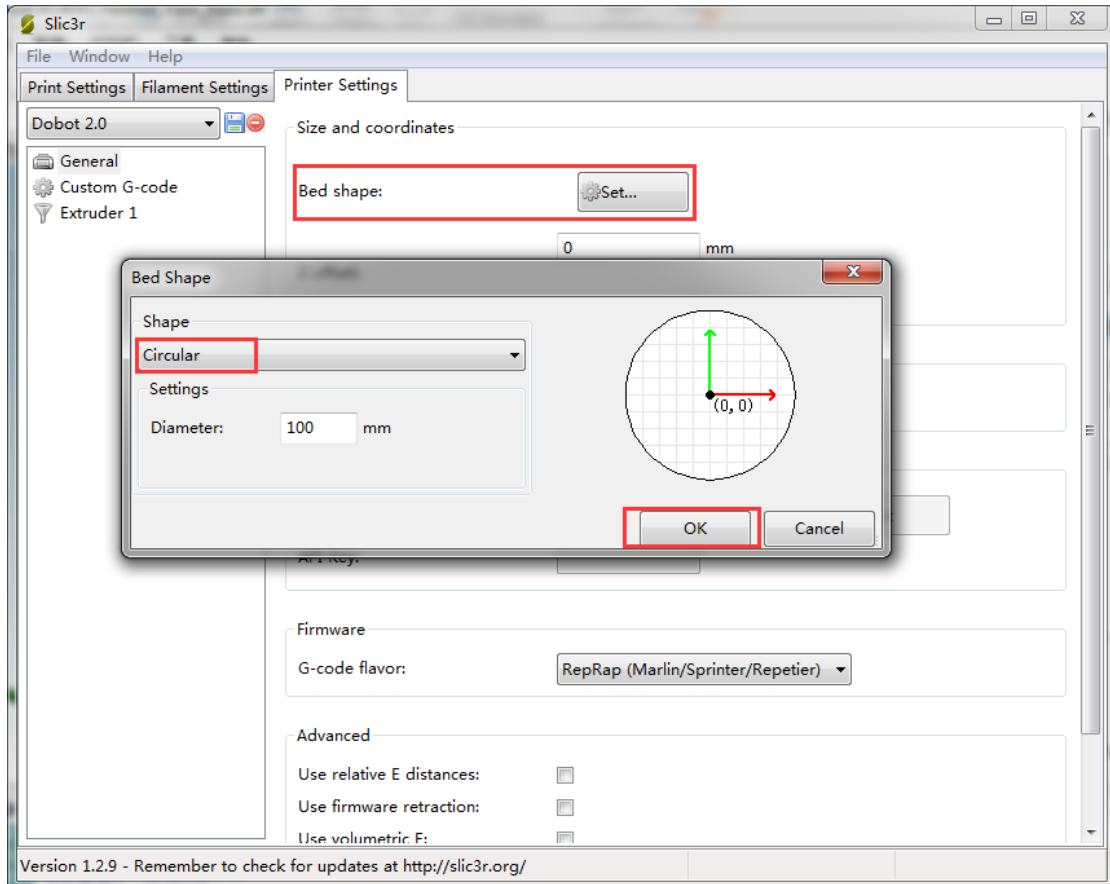


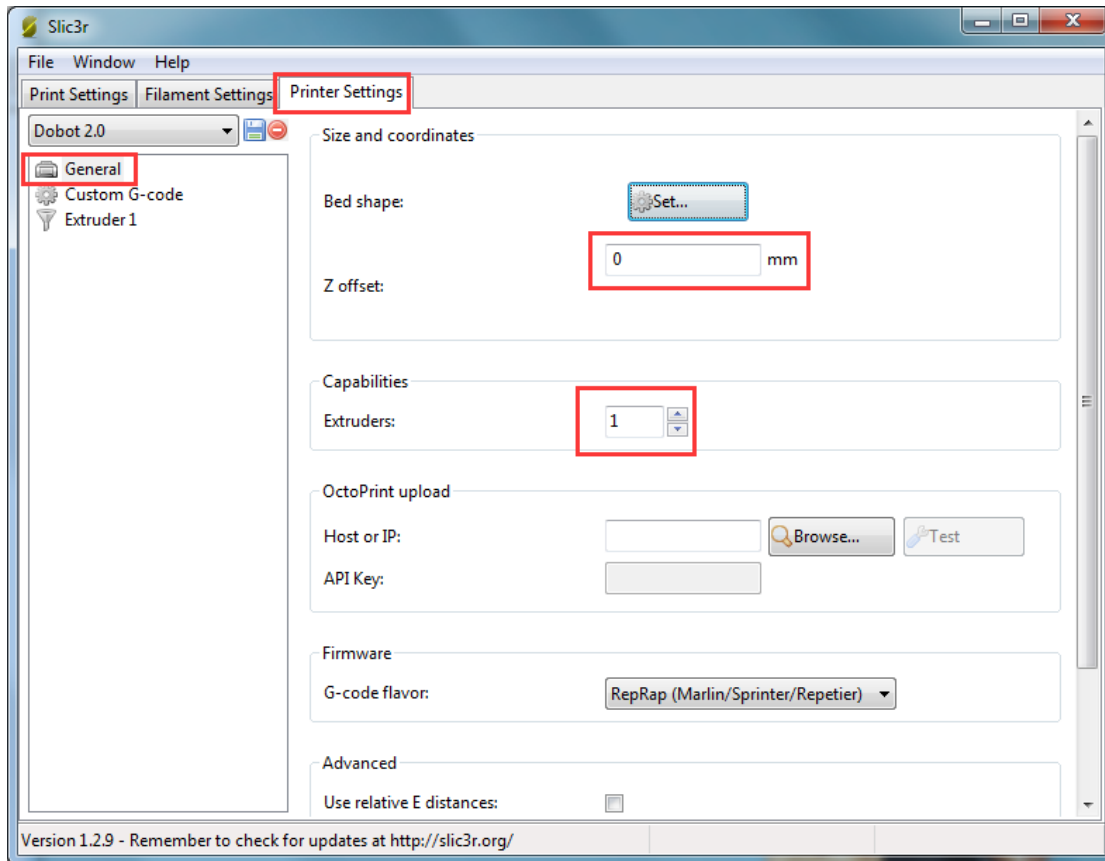
(3) Printer settings

The number of Extruder: 1

The nozzle Z offset of extruder: 0mm

Notice: If the height of nozzle is so large that consumables cannot paste print bed or so small that it cannot discharge when printing the first layer, users can amend the height from this interface, such as -0.01mm or +0.01mm, thus, one need not adjust the height again.





G-code Settings:

Start G-code: **M106**

End G-code:

M104 S0 ; turn off extruder

G91 ;relative positioning

G1 E-1 F300 ;retract the filament a bit before lifting the nozzle

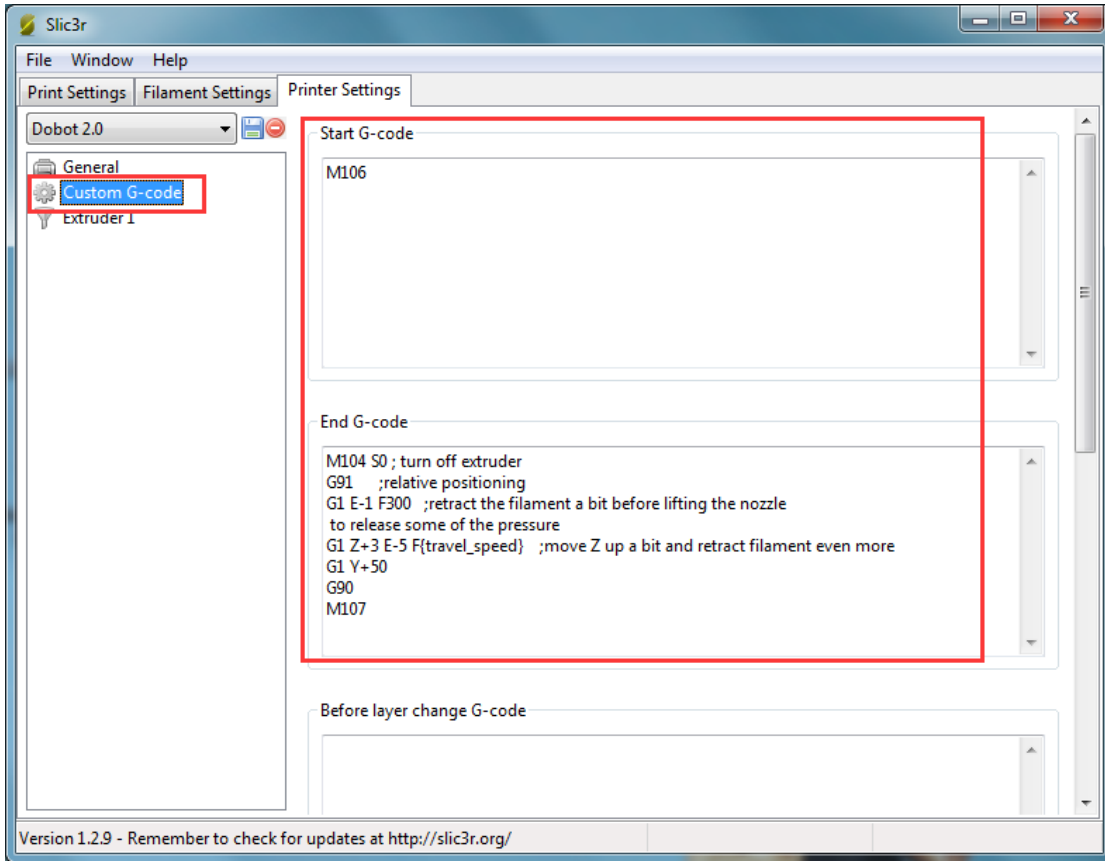
to release some of the pressure

G1 Z+3 E-5 F{travel_speed} ;move Z up a bit and retract filament even more

G1 Y+50

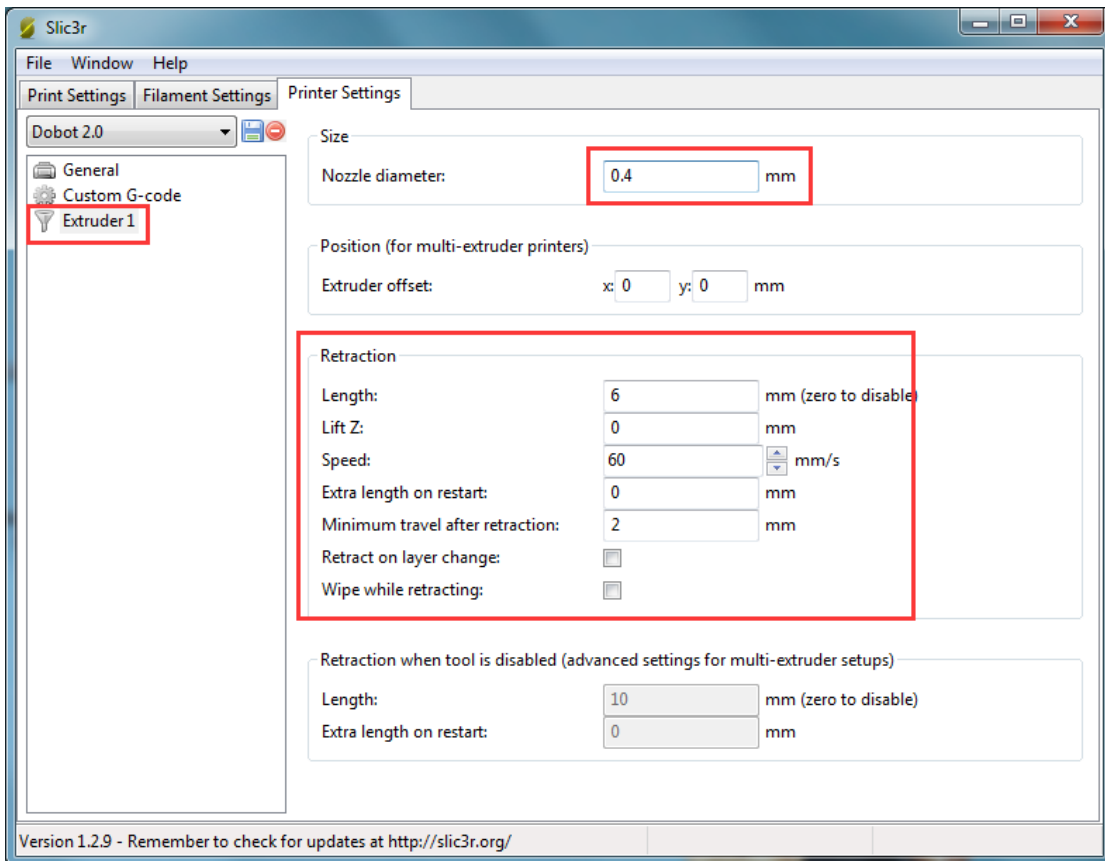
G90

M107



The nozzle diameter settings: 0.4mm;

The pump back speed settings: length=6 mm, speed=60 mm/s.



2.3.5 Slice

After finishing above settings, save the settings of each label, and return to main interface. Select slic3r of slice engine, import slice settings and click **Slice with Slic3r**.

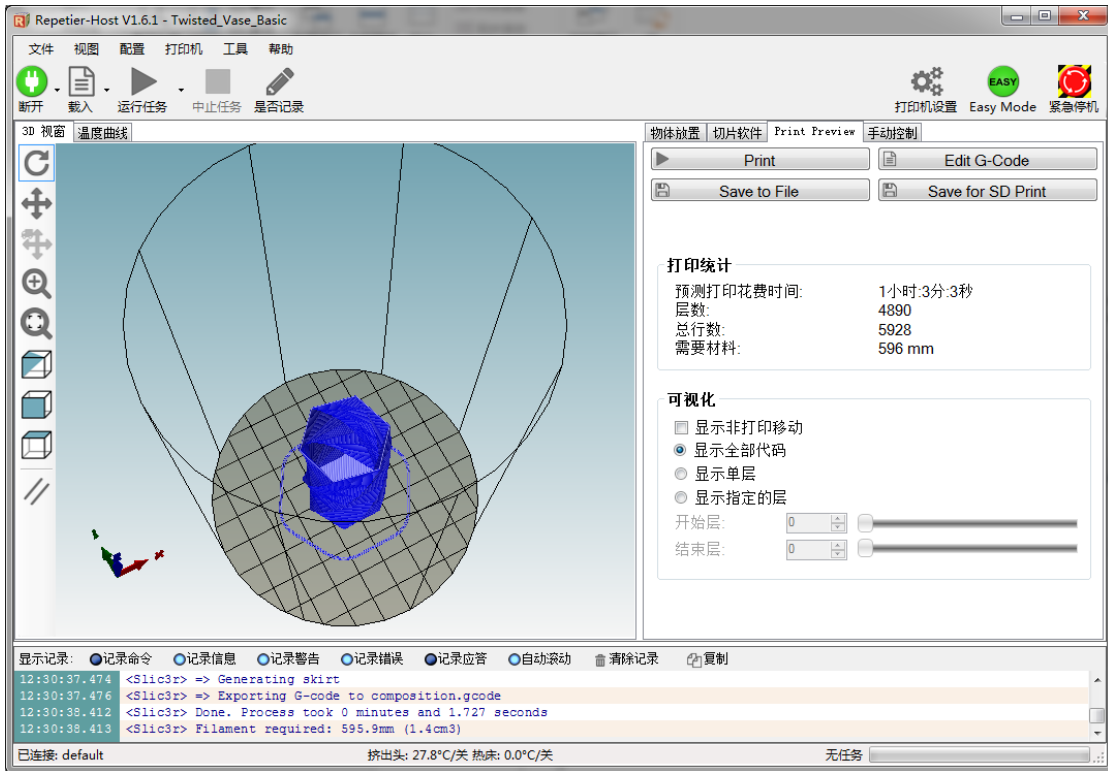
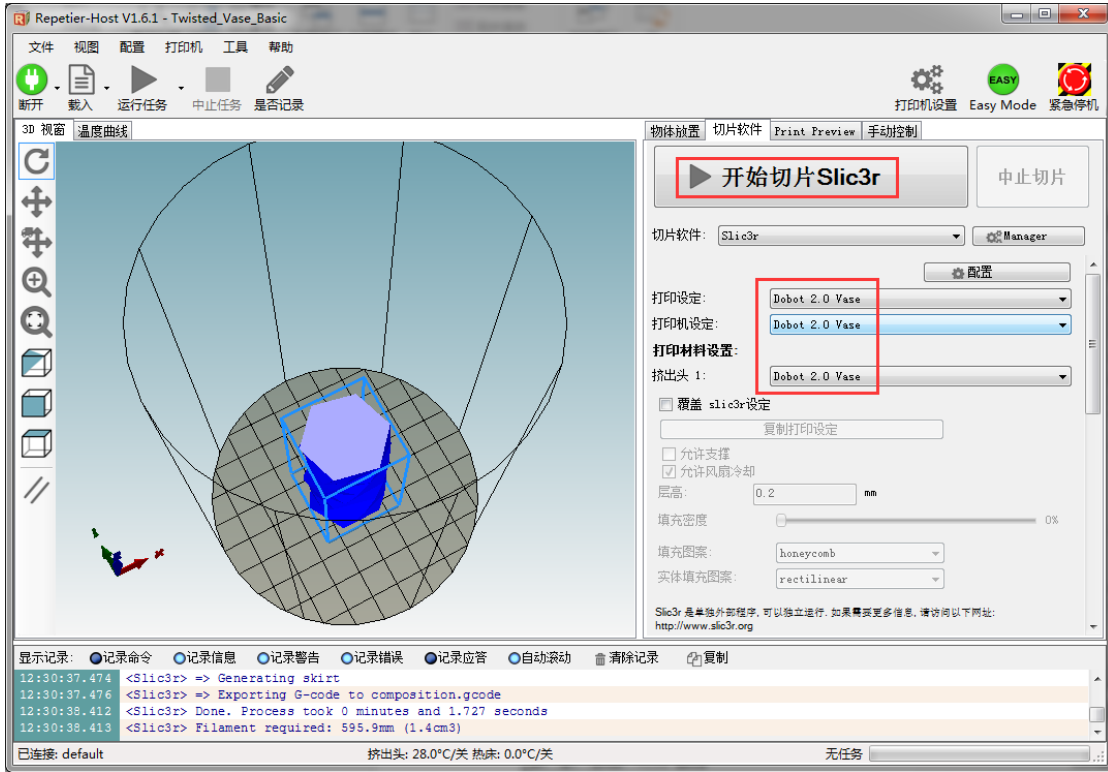
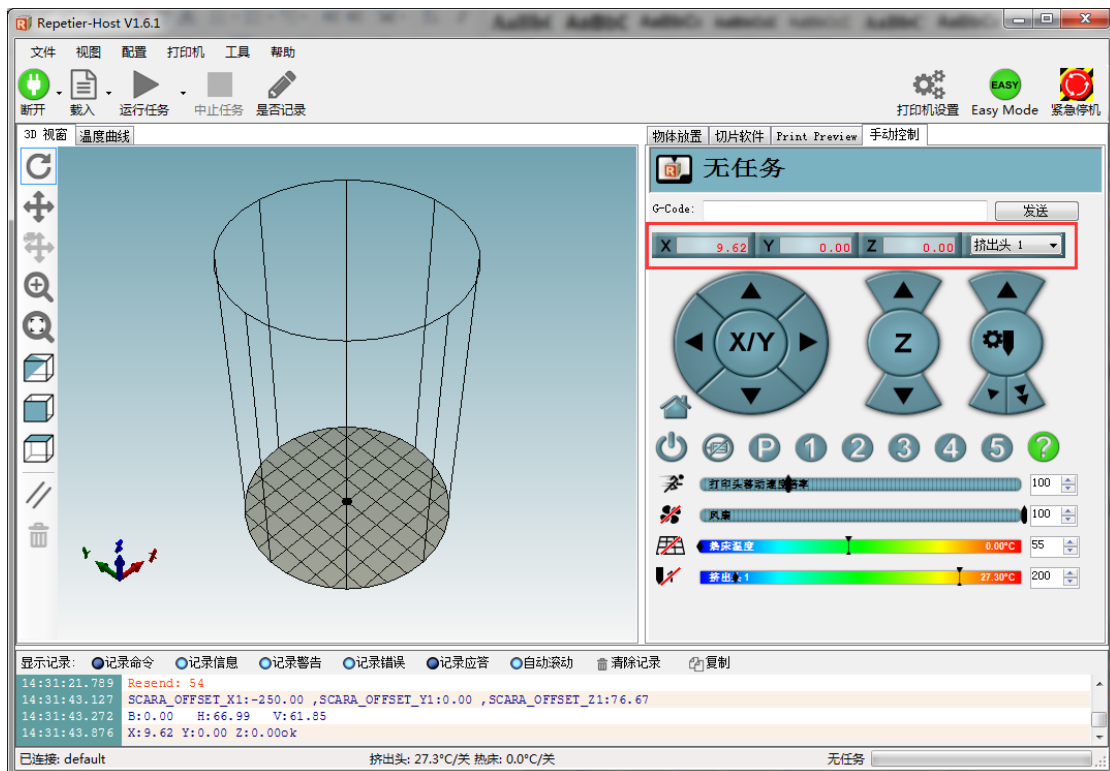
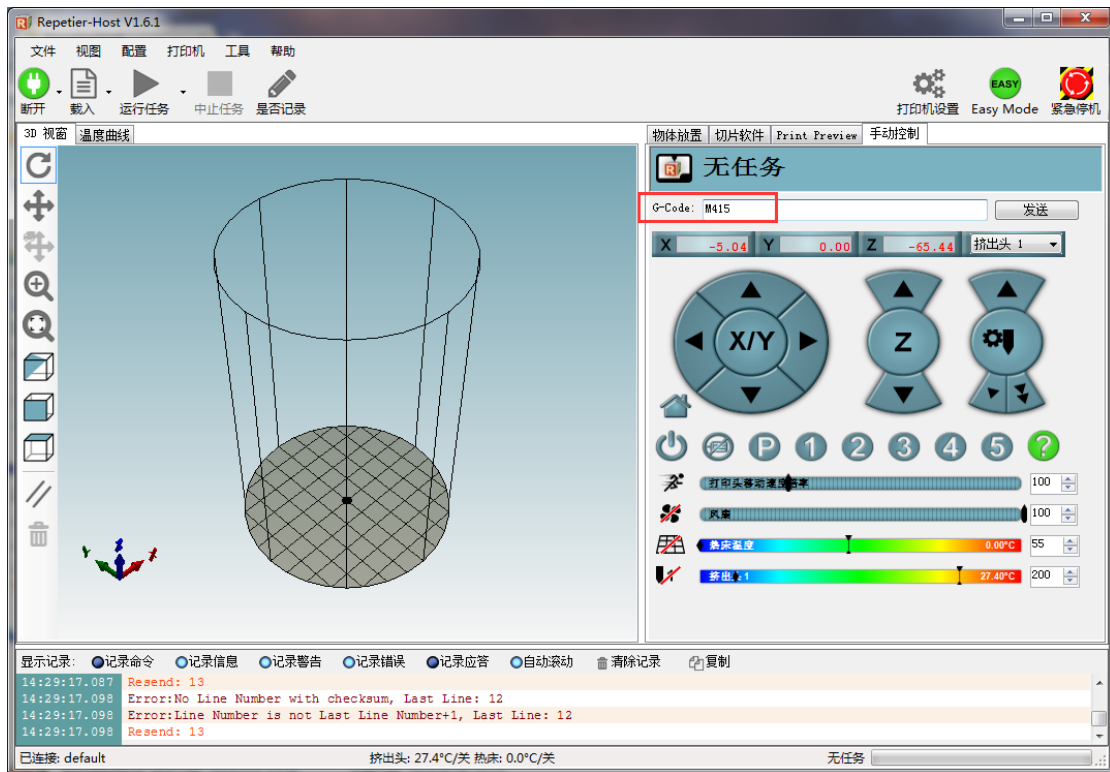


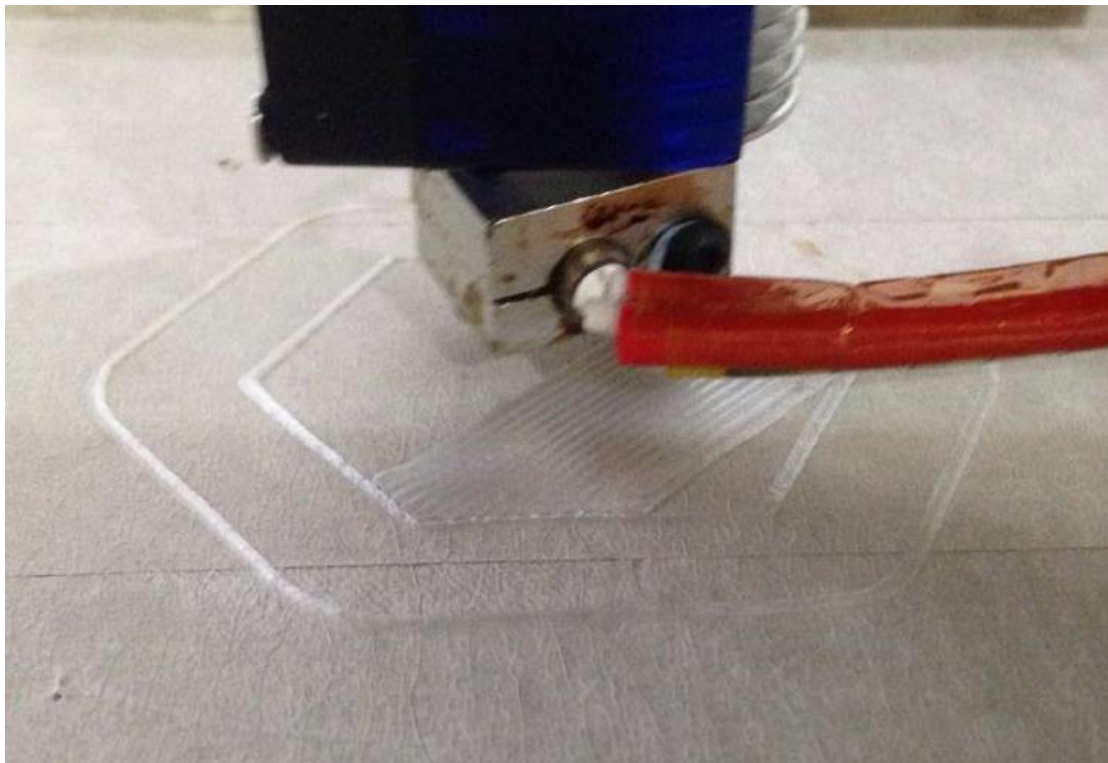
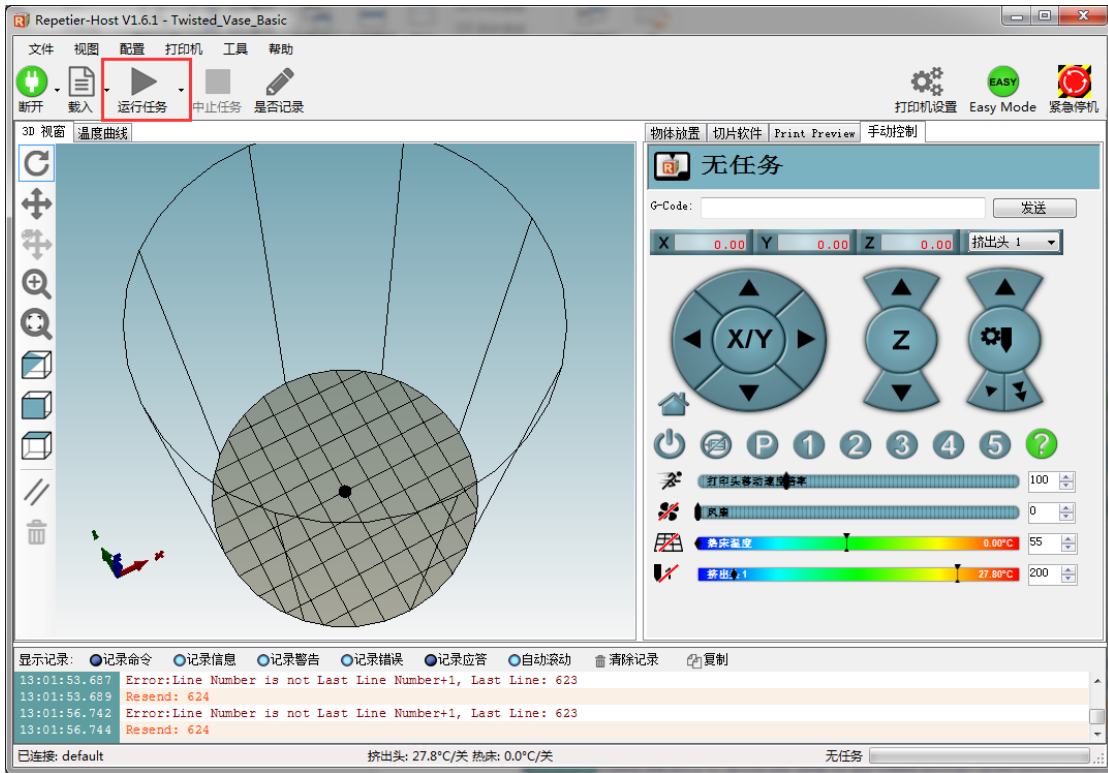
Figure 7.25 Finish slice

2.3.6 Start to Print.

- (1) The angle of forearm and rear arm is 45° in the default settings of current firmware, so we need to get current actual coordinates of Dobot, then we can print. Insert M415 and press Enter to get the position on the interface of command:



- (2) Now, click **Start print** at the top left corner of main interface or click **Print** below the interface of **Print review**, and then start to print:



Here we choose **vase mode**, and the effect after printing as follows:



Figure 7.26 The Effect of Printing



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