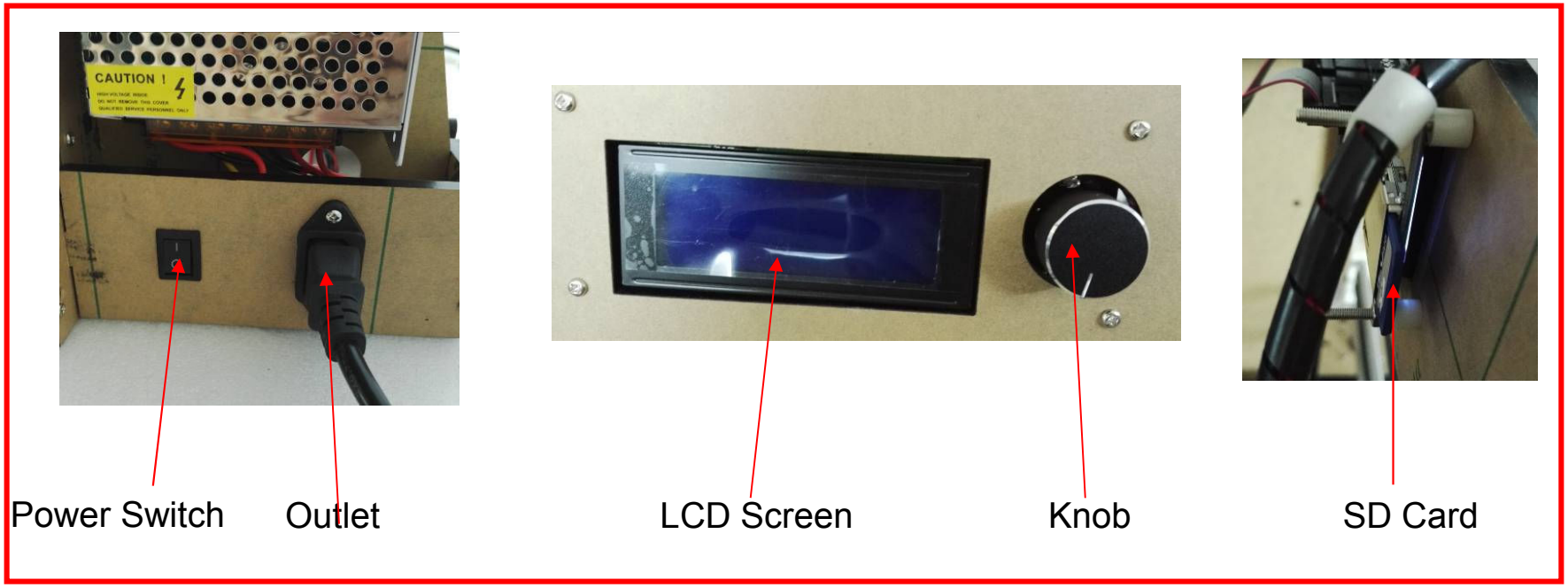
Operation Instruction for LCD Feature and Printing from the SD Card

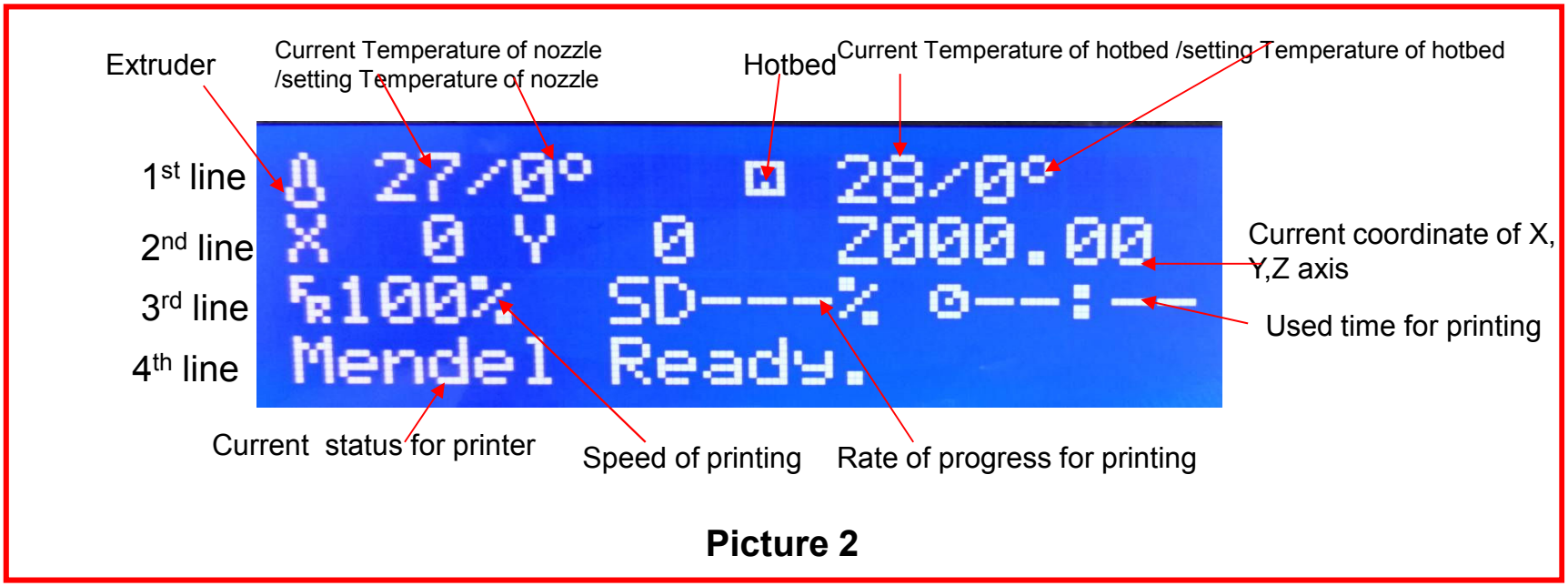
A. Instruction of Operation part for Off-line Printing



Picture1

Off-line printing operation for M505 3D printer constitute 5 parts as below(as shown above Picture 1):
the Power Switch, Outlet, LCD Screen, Spin Button, and SD Card
And you can control the knob easily and quickly by rotating and pressing.

B. The first Memo Interface



Picture 2

Plug the outlet and switch on, then access to the first memo interface(as shown on picture 2) which consist of the 4 parts as below: temperature, XYZ coordinate system, Printing status, Current situation of system

1. 1st line

It will show the temperature of nuzzle and hotbed, the two parts separated by "/" will show respectively before and after the current and setting temperature, Such as 72/180° 31/70° it shows that setting temperature for nuzzle is180° and the current is 72° , it shows that setting temperature for hotbed is 70° and the current is 31°

2. 2nd line

It will show the exact position of XYZ axis move onto in the printing.

3. 3rd line

It will show the speed and rate of progress of printing, and used time for printing. And it shows the multiple speed of printing which is set up in the slicing."100%" means the exact speed and 200% means that printing by the speed 2 times as the one setting in slicing

4. 4th line

It shows the current status of printer, such as Mendel Ready. Bed Heating. Printing...

c. The secondary memo interface

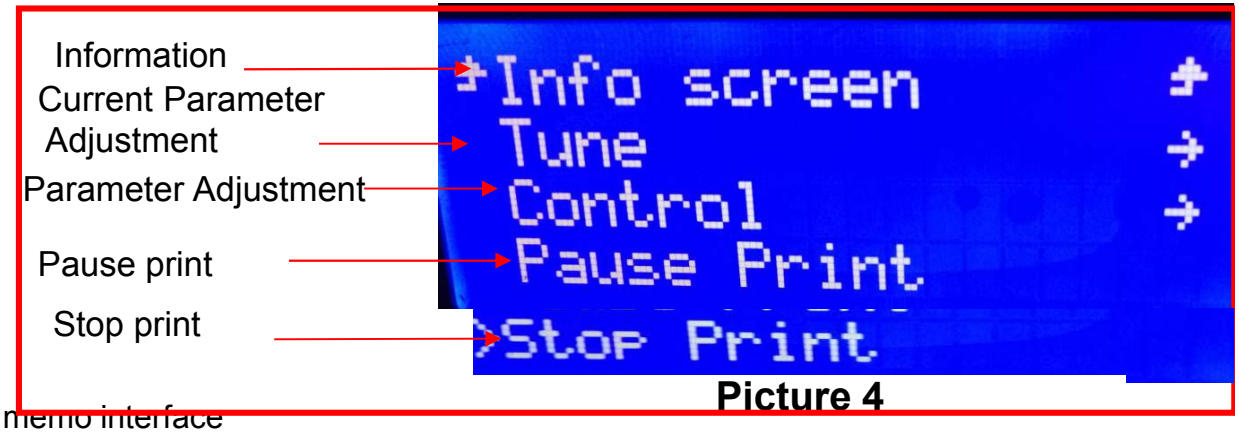
Press the knob and access to the 2nd memo interface, and it will show differently as below when the printer is working or not

3.1 The 2nd memo interface when not printing
（as shown on picture 3）

Picture 3

Click the (Info screen) and back the 1st page of memo interface
Click the (Prepare) and access to set up for printing prepare such as preheat the nozzle& hotbed, auto home, move the nozzle and hotbed
Click the (Control) and set up for the temperature of nozzle& hotbed, parameter of stepper motor, restoring the fail-safe, and storage memory etc.
Click the (Print from SD) and choose the printing file from the SD card, and it is sort of by copy time.

3.2 The 2nd memo interface when printing
（as shown on picture 4）



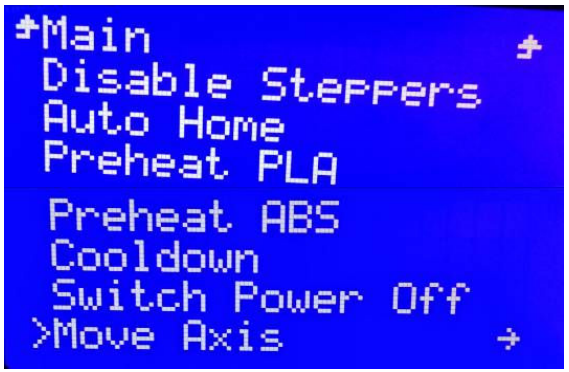
Picture 4

Click the (Info screen) and back the 1st page of memo interface
Click the(Tune) and adjust the temperature of nozzle& hotbed, speed of fan when printing
Click the (Control) and set up for the temperature of nozzle& hotbed, parameter of stepper motor, restoring the fail-safe, and storage memory etc.
Click the (Pause Print) and pause the printing
Rotate down the knob and click the (Stop Print) to stop printing

D. Prepare for printing（prepare)

4.1 When 3D printer not printing, rotate the knob and click “prepare” in the secondary memo interface （ Picture 5）and then access to the 3rd memo interface(Picture 6)

Picture **5**

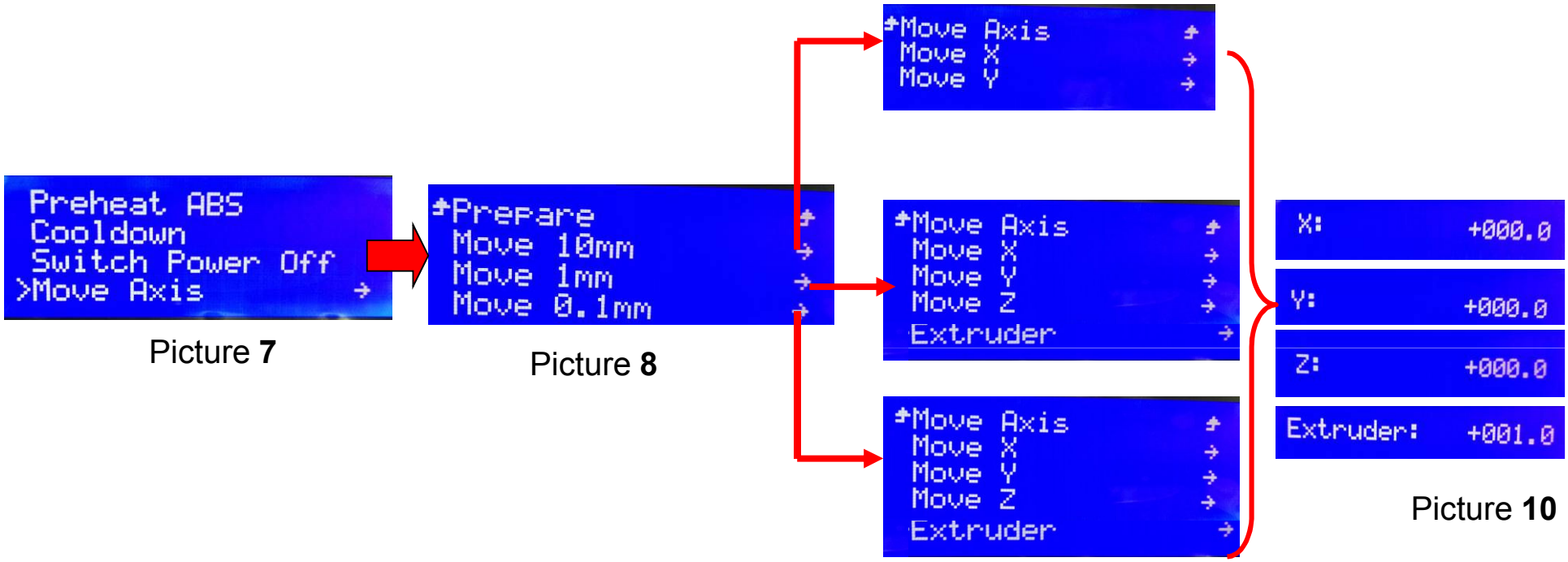


Picture **6**

(1) Unlock the disable stepper motor : click the (Disable Steppers) and then you can manual move the XYZ axis smoothly
(2)Click the (Auto Home) and the XYZ axis will move back to the origin
(3)Click the (Preheat PLA) and then the nozzle would be heating up to the same as the setting temperature for PLA, meanwhile, the LCD will also go back to the first memo interface.
(4) Click the (Preheat ABS) and then the nozzle would be heating up to the same as the setting temperature for ABS, meanwhile, the LCD will also go back to the first memo interface
(5)Click the (Cooldown), the temperature for nozzle and hotbed would be cool down to 0° automatically.
(6)Click the（switch power off) to turn off the power (it is not put into use at present)
(7) Click the (Move Axis) to control the move of XYZ, input& output the filament. And please don’t take the 10mm as unit for Z axis movement and input& output the filament(extruder).

4.2 Move the axis and input& output the filament （Move Axis）

Click the “Move Axis” and do as the guide to all parts , then you will access to the 4th （ Picture 8）， ,5th （ Picture 9），and 6th （ Picture 10） memo interface step by step. And the you could only take the 1mm& 0.1mm as unit for the Z axis movement and input& output filament(extruder).



Picture **7**

Picture **8**

Picture **9**

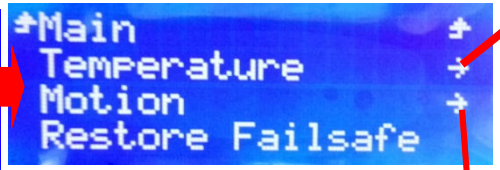
Picture **10**

PS: The axis movement is based on current coordinate and it can only move to the positive direction. The extruder could move to the positive& negative direction to input& output the filament.

E. The Parameter Adjustment when not printing（Control)

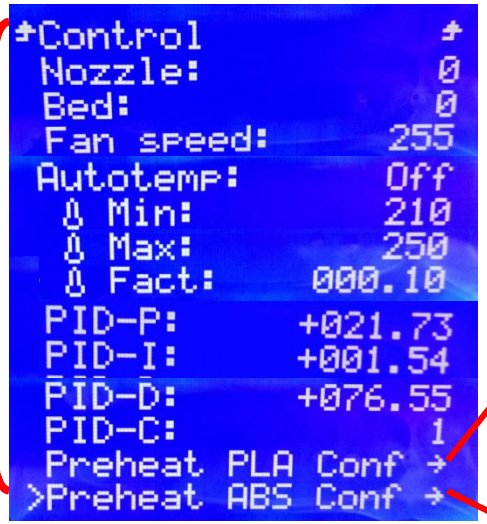
When not printing, you can rotate the knob and click the “Control” at the secondary memo interface (Picture 11), then you will access to the 3rd (Picture 12) ,4th (Picture 13,14) and 5th memo interface and make setting accordingly.

Picture **11**

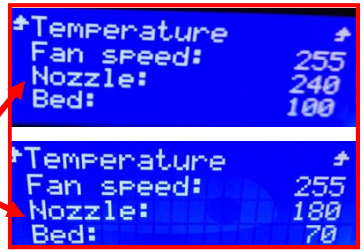


Picture **12**

Picture 12：Temperature（Temperature control）
Motion（control for stepper motor）
Restore Failsafe（restore failsafe）



Picture **13**



Picture **15**

Picture 13：

Nozzle: Temperature of nozzle
Bed: Temperature of hotbed
Fan speed ： adjust the speed of fan
Auto temp: automatic temperature
min : The minimum temperature of nozzle
max: The maximal temperature of nozzle
Fact: current temperature of nozzle
PID-P: The kp value of PID
PID-I:The ki value of PID
PID-D:The kd value of PID
PID-C:The ration of PID

The PID define the temperature adjustment. As usual, you needn't to manual adjust these three variable since there is instructions of automatic optimizing for PID.

Preheat PLA Conf (setting for preheat PLA）
Preheat ABS Conf (setting for preheat ABS）

Picture **14**

Picture 14

Z offset: Z axis offset

Accel: accel

Vxy-jerk: The speed variation of XY axis with no need acceleration

Vz-jerk: The speed variation of Z axis with no need acceleration

Ve-jerk: The speed variation of Extruder with no need acceleration

Vmax X: The maximal speed of X axis

Vmax Y: The maximal speed of Y axis

Vmax Z: The maximal speed of Z axis

Vmax E: The maximal speed of Extruder

Vmin:

VTrav min: The Maximal speed of quicken enablement

Amax X: The maximal acceleration speed of X axis

Amax Y: The maximal acceleration speed of Y axis

Amax Z: The maximal acceleration speed of Z axis

Amax E: The maximal acceleration speed of Extruder

A-retract: The acceleration at * mm/s

Xsteps/mm: The distance of each step for X axis motor

Ysteps/mm: The distance of each step for Y axis motor

Zsteps/mm: The distance of each step for Z axis motor

Esteps/mm: The distance of each step for Extruder motor

Picture 15

FAN Speed： adjust the speed of fan

Nozzle ： when not printing, you can set up the temperature of nozzle according to filament you used.

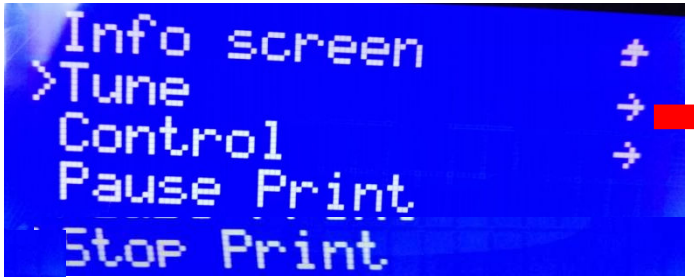
As usual, the temperature for PLA is up to 180-200° and for ABS is 230-250°

Bed： when not printing, you can set up the temperature of hotbed according to filament you used.

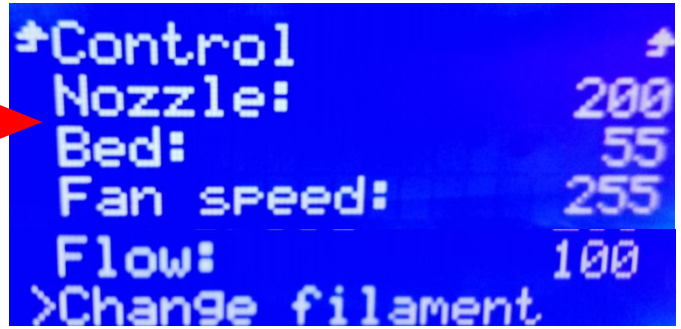
As usual, the temperature for PLA is up to 50-70° and for ABS is 90°

F. Realtime parameter adjustment （Tune）

6.1 Only when the 3D printer working, the secondary memo interface would be show as picture 16. And click the “Tune” to access to the 3rd memo interface(Picture 17), then you can adjust the parameter by rotating knob.



Picture **16**



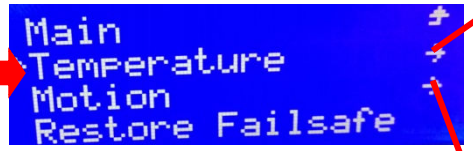
Picture **17**

Speed(speed of printing)：adjust the speed of printing by rotating the knob
You can also the speed of printing by rotating the knob directly at the first memo interface
Nozzle(the setting temperature of nozzle): You can adjust the temperature of nozzle when printing, then the nozzle would be heating up to the temperature as you set.
Bed（the setting temperature of hotbed）: when printing, you can adjust the temperature of hotbed if you find the setting temperature by slicing is too high or too low. Then the hotbed would be heating up to the temperature as you set.
Fan speed(speed of fan）： As usual, it is not necessary to adjust the speed of fan, but you can also set up it by your choice.
Flow（ measure of extrusion ）： The unit for flow is percentage and you can set up it to the proper quantity if you find out it is not enough or too much when printing
Change filament： click it and the nozzle would be back to origin, then the filament feed roll would rollback to output the filament automatically

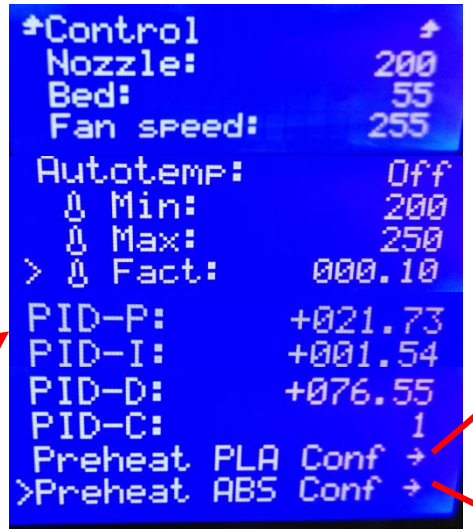
G. Parameter adjustment when printing（Control)

When 3D printer printing, the secondary memo interface would be shown as（Picture 18), click the “Control” to access to the 3rd （Picture 12), 4th （Picture 13,14), ,5th （Picture 15) memo interface

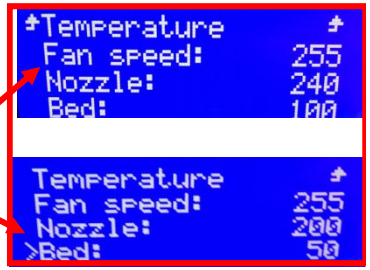
Picture 18



Picture 19



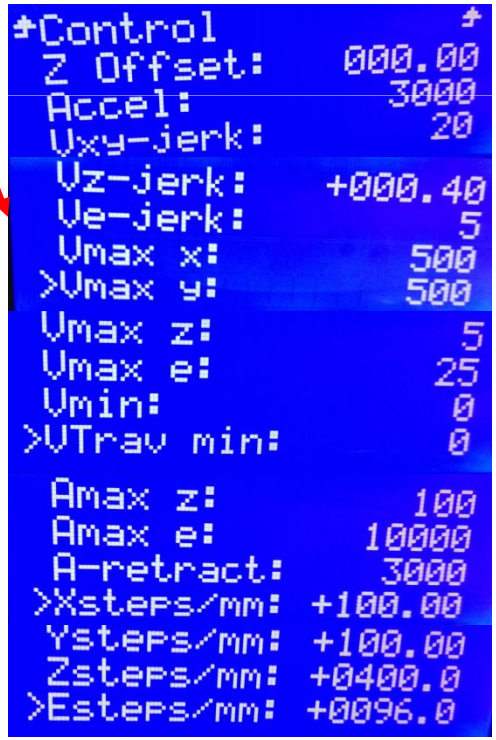
Picture **20**



Picture **22**

You needn’t to adjust it since all the setting on Picture 20，21& 22 is almost the same as the one on Picture 13，14& 15.

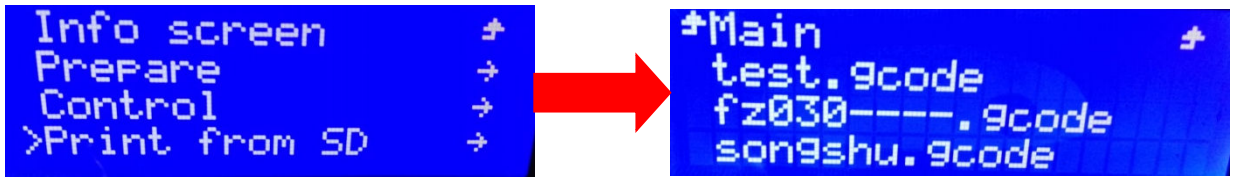
Ve-jerk: The speed variation of Extruder with no need acceleration



Picture **21**

H. Print from SD

When 3D printer not printing, click 3d “print from SD” and access to 3rd page of memo interface（Picture24）then start printing by choosing the “.gcode” file



Picture **23**

Picture **24**