

Alpha-600 Automatic Grinder-Polisher User Manual



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- **General information:**

- I. Introduction :**

Suzhou Trojan Industry Material Co Ltd is a professional manufacturer and service provider in metallographic analysis field. We have been focusing on the research and development, production and sales of metallographic equipments and consumables for over fourteen years and we have independently developed a series of metallographic equipment and material. TROJAN and its employees have many years of rich experience in metallography and materials science as well as in microstructure analysis of materials and we have done extensive pioneering works and accumulated rich professional knowledge in this area.

Alpha-600 / 660 is a compact automatic grinding and polishing machine designed for high quality grinding and polishing surfaces. The equipment is equipped with two types of working plates: Diameter of 250mm / 300mm (10-inch / 12-inch). The equipment adopts two ways of pressurization modes: Central Pressure Loading and individual Pressure Loading and 1-7 sets of peristaltic pumps dosing system can be selected. 21 sets of common grinding and polishing processes can be set and stored. The test results with high repeatability can be obtained conveniently and quickly.

Product Features:

- a) 5.6-inch touch screen control panel. User interface is easy to operate.
- b) Two ways of pressurization modes: Central Pressure Loading and individual

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Pressure Loading.

- c) Equipped with 4 sets of peristaltic pump dosing system, which can be expanded to 7 sets at most.
- d) 21 sets of common grinding and polishing process parameters are built in and user-defined parameters can also be stored.
- e) Large diameter side drainage system, not easy to block and drain quickly.
- f) Pluggable faucet design, convenient for cleaning and maintenance.
- g) Built in automatic temperature sensing cooling fan reduces failure rate and improves working life.

II. Important:

Please read this manual carefully before operating this equipment. For equipment damage caused by operation not in accordance with the instructions, it is not included in the company's warranty regulations. This manual is only for users who own the machine.

III. Usage Limitation

Alpha-600 is a grinding and polishing equipment for metallographic specimen preparation and it provides a variety of user-defined operations. Personnel without training or non-metallographic industry are not allowed to operate this equipment.

IV. Technical Parameter

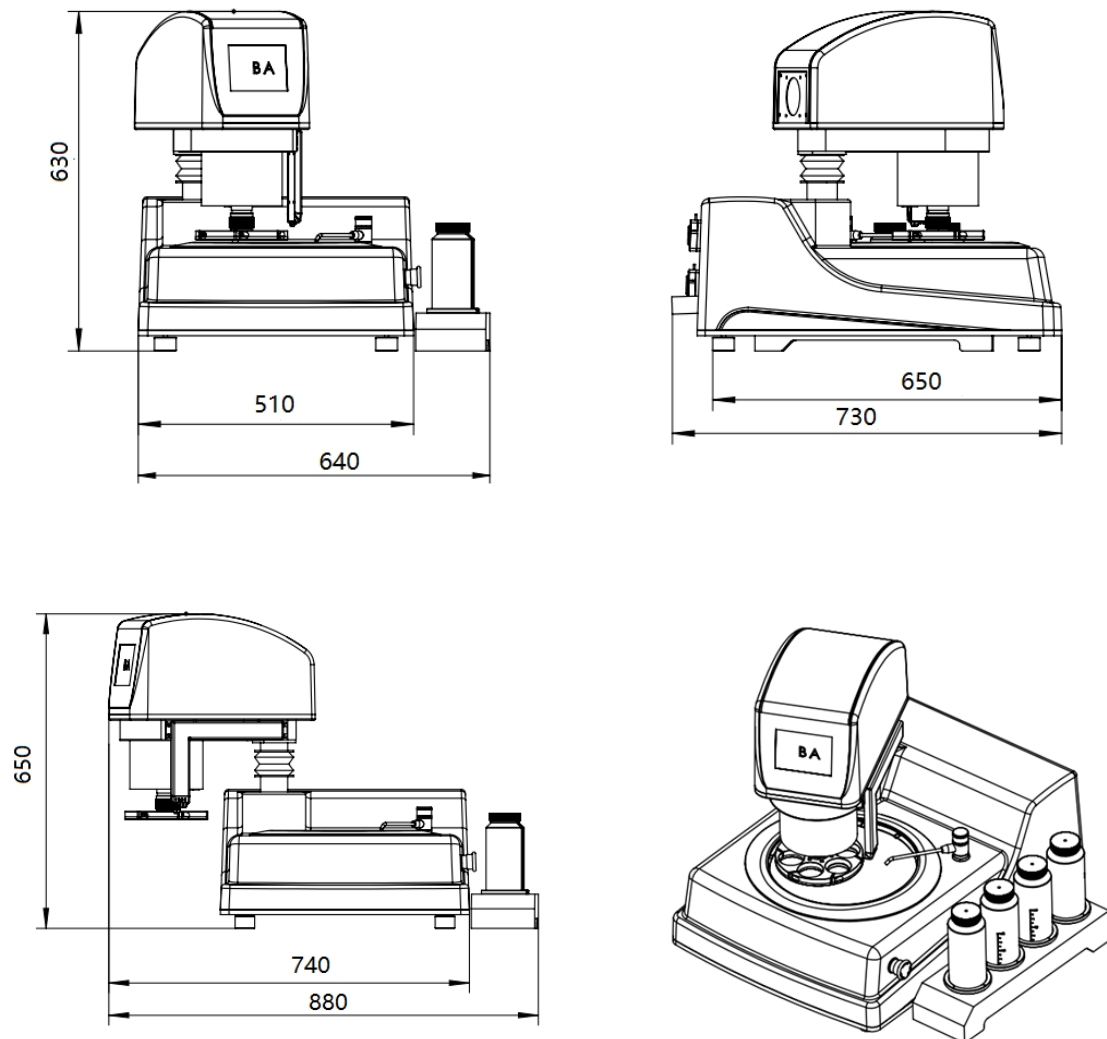
ALPHA-600 Automatic Grinder-Polisher		
Grinding Head	Pressure Loading Mode	Central Pressure Individual Pressure
	Central Pressure Force	80-500N
	Individual Pressure Force	20-100N
	Power , W	220V , 400W
	Speed , RPM	20 ~ 150
	Rotation Direction	Counterclockwise
Grinding Base	Power , W	220V , 800W
	Speed, rpm	50-750
	Disc Diameter, mm	200mm , 250mm/300mm
	Rotation Direction	Clockwise/Counterclockwise
Dosing System (Optional)	Pump Type	Peristaltic Pump , DC24V , 10W
	Pump Flow	< 34mL/Minute
	Pump Quantity	Standard Configuration 4 sets
Sample Clamping Plate	Individual Pressure	6x50mm
	Central Pressure	6x50mm , 8x40mm , 10x30mm (Customized)
Operating environment	Temperature	-20°C - 60°C
	Humidity	0-95%RH
Air & water supply	Air Supply: outsideΦ6mm pipe, pressure<0.6MPa; Water Supply: outsideΦ8mm pipe, pressure <0.3MPa; outsideΦ10mm pipe, pressure<0.3MPa;	

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V. Installation

For the installation of alpha-600, it is required to reserve at least 880mm x 640mm area and 650mm space in height.



Preparation Before Installation:

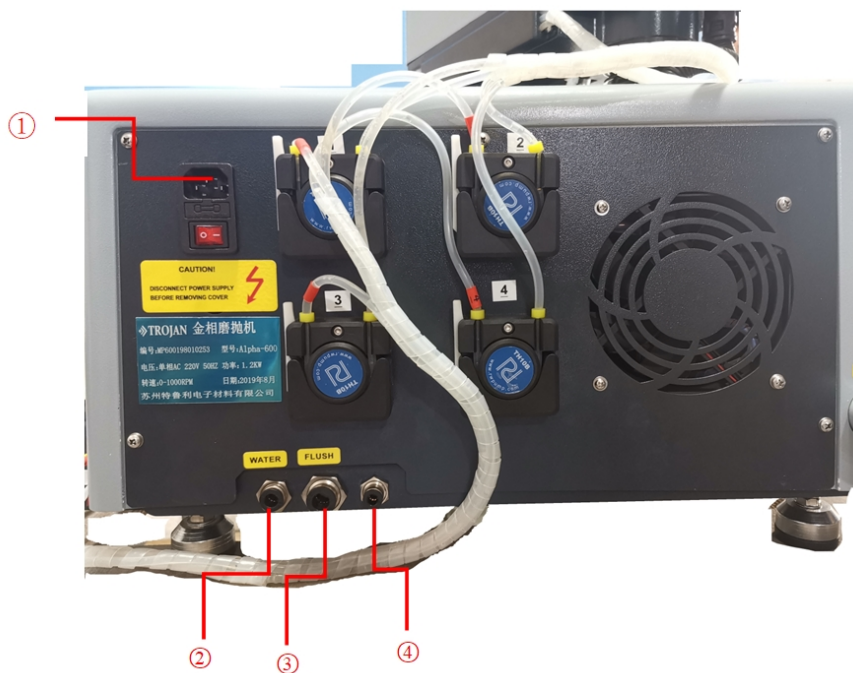
1. Power socket: 220V, power: 1.5kw, must be well grounded.
2. Cooling water (or pipe tap water), external diameter of equipment water inlet pipe: Φ 8mm and Φ 10mm. Equipped with a 13.3mm outer wire adapter. As long as there is a 13.3mm inner wire valve on the pipeline, it can be installed.

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3. Drain tank (or sewage recovery tank) with external diameter of Φ 32mm.
4. Compressed air, pressure less than 0.6MPa. The outer diameter of gas pipe is Φ 6mm. Compressed gas can only be connected to the equipment after being dried.

Rear Panel Connection:

1. 220V power supply, 1.5kw.
2. Φ 8mm outer diameter quick plug water pipe, pressure < 0.3MPa.
3. Φ 10mm outer diameter quick plug water pipe, and the pressure is less than 0.3 MPa; if the circulating water tank is not used, ②③ can be combined into one water inlet.
4. Φ 6mm outer diameter quick plug gas pipe, and the pressure is greater than 0.3MPa and less than 0.6MPa.

● Alpha-600 Operating Instructions

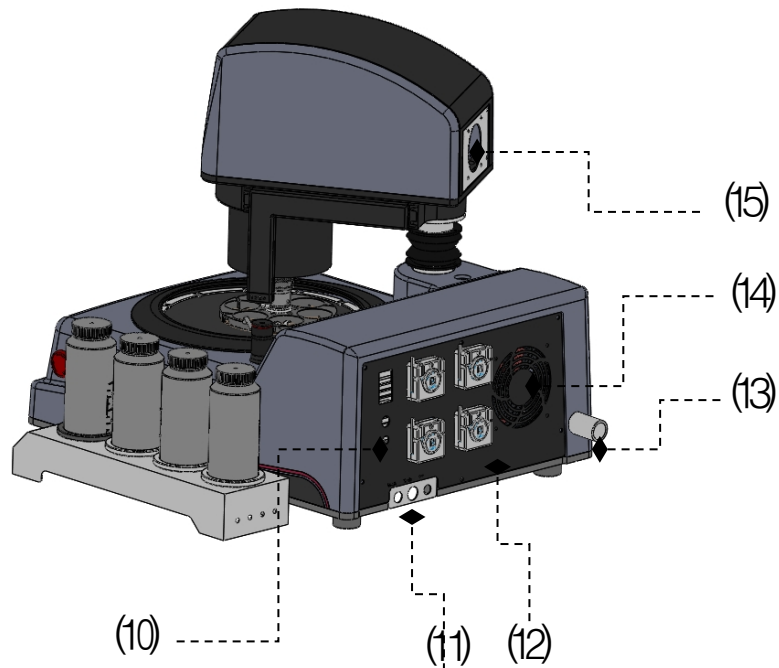
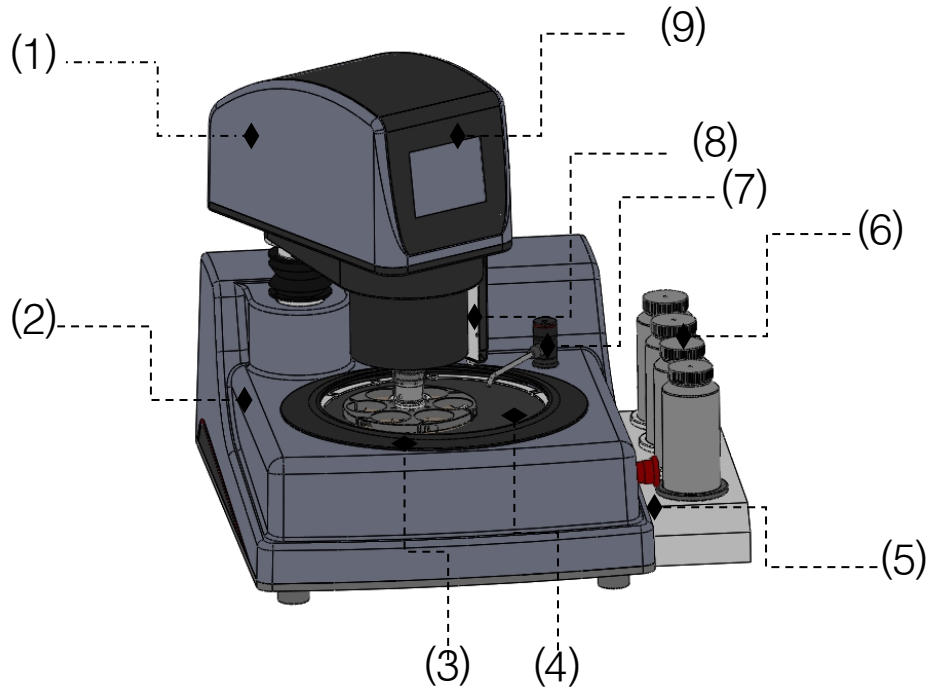
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A. Equipment Structure

Alpha-600 is a compact automatic grinding and polishing machine. 4 sets titration bottles and 5.6-inch touch screen are equipped as standard configuration. The machine can be installed maximum 300mm diameter working plate.



(1) Grinding Head

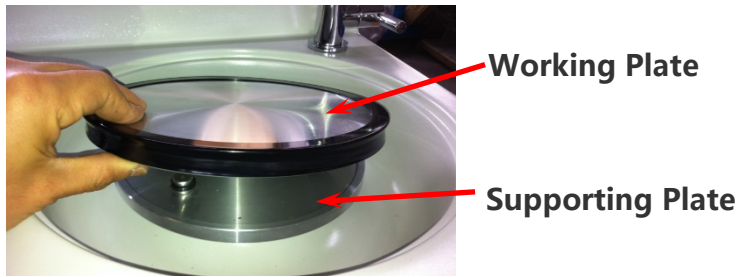
- (2) Grinding Base
- (3) Sample Clamping Plate
- (4) Grinding and Polishing Working Plate
- (5) Emergency stop switch
- (6) 500ml liquid drop bottle
- (7) Pluggable cooling water valve
- (8) Liquid drip nozzle
- (9) Touch screen control panel
- (10) Main power switch and fuse box
- (11) Quick plug inlet and gas inlet
- (12) Peristaltic pump
- (13) Drainage outlet
- (14) Automatic cooling fan
- (15) Exhaust fan of grinding head

1. Replacement And Installation Of Working Plate

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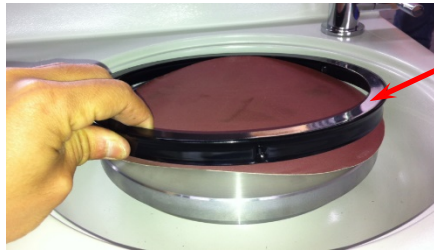


The working plate and supporting plate are fixed by 3 black O-rings on the circumference. Grasp the working plate with both hands and lift it upward, then the working plate and the supporting plate can be separated. The concave hole at the bottom of the working plate is facing the O-ring on the support plate and pressing down can fix the working plate.

During the initial installation of the working plate, there may be slight shaking when it rotates. This is because there is air in the concave hole, which causes the working plate and the supporting plate not to fixed completely. After a period time of using, the shaking phenomenon will disappear.

2. Fixation Of Abrasive Paper / Grinding Disc / Polishing Cloth

Press down the annular buckle ring



Annular Buckle Ring

The abrasive paper and polishing cloth are fixed on the working plate by the buckle ring. See the picture above. When the sandpaper and polishing cloth are installed for the first time, cooling water shall be applied to make them fully soaked to achieve good grinding and polishing effect.

Adsorption with magnetic rubber disc

Tear off the PSA on the back of the magnetic rubber disc and then paste the magnetic rubber disc on the aluminum working disc:



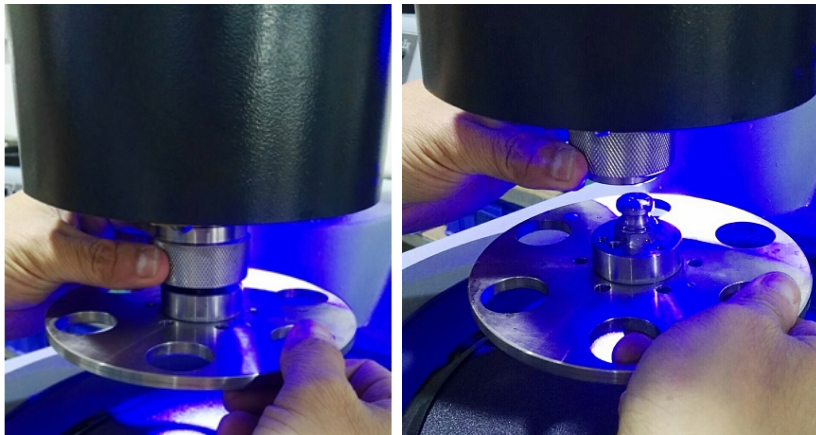
magnetic rubber disc

Place the anti-sticking disc or grinding disc on the magnetic rubber plate.



anti-sticking disc or grinding disc

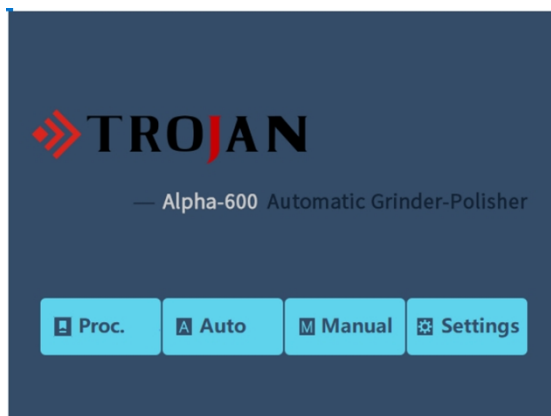
3. Installation / Remove Of Sample Clamping Plate



B. Equipment Operation

(1) Main Interface

The main interface and functions of each part are as follows:



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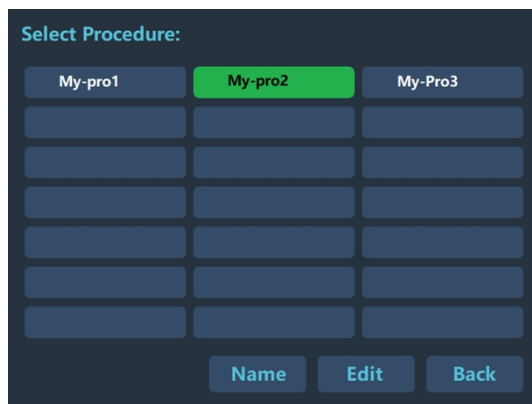
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It consists of four parts:

- a) **Proc.:** 21 sets of automatic grinding procedures can be edited and defined.
Each procedure consists of at most 8 steps. In each process, users can customize the rotation speed of the grinding disc, running time, sample loading force and the working frequency of the drop bottle.
- b) **Auto:** Automatically run single step program according to the parameters set in the process library.
- c) **Manual :** Click to enter the manual operation interface.
- d) **Settings:** Click to enter the parameter setting interface.

(2) Procedure Edit/Selected.



The selected procedure will be highlighted display and loaded in the AUTO mode.

Click "Name" to edit the name of the program. Click "Edit" to enter the following parameter editing interface.

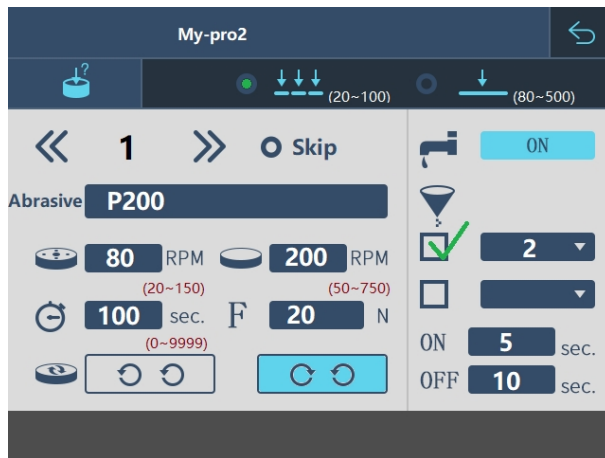
NOTE:

You need to input the password "808182" to get inside the Edit screen.

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At the top of the interface, the current procedure name is displayed.



Click to save and return to the previous page.



Choose the type of loading method.



: Individual Pressure Loading.



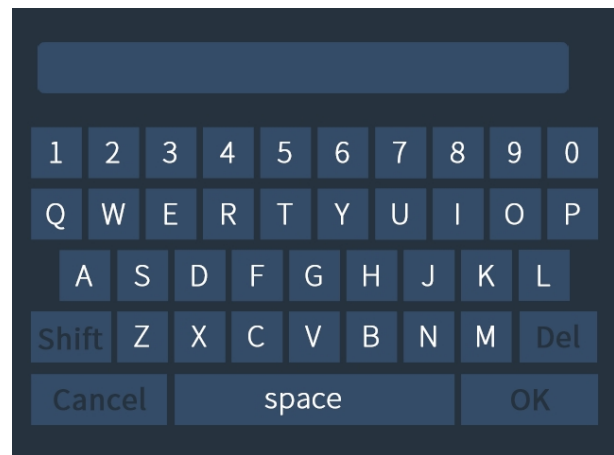
: Central Pressure Loading.



Click to view the previous or next step. To skip the current step, please click "Skip" .

Note: every step of the program is skipped by default.

In the consumables bar, the keypad on the right will pop up. Record the consumables used in the current step. Only numbers and letters can be entered.



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to set up the grinding head speed. Range: 20 ~ 150rpm.



to set up the grinding plate speed. Range: 50-750rpm.



to set the running time. Unit: second.



to set up the pressure loading force. (N)



The sample clamping plate and the grinding plate rotate in the same direction.



The sample clamping plate and grinding plate run in opposite direction.



The working mode of cooling water:

The display is "On" , indicating that the cooling water is in the closed state.

Click to switch to "Off" , indicating that the cooling water is in the open state.



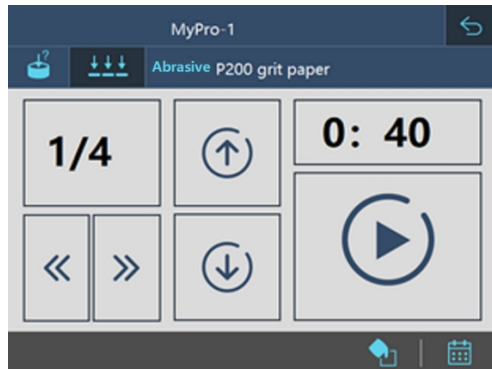
to set up operation parameters of liquid drop bottle.



Select the liquid drop bottle that needs to be used. At most two sets of liquid drop bottles can be operated at one time.






click to pop up the drop-down menu and select the liquid drop bottle number to run from the list. Set the corresponding on and off time to control the dropping frequency of the liquid drop bottle.


(3) Automatic Mode




  Click to select the step to run. As shown on the picture above "1 / 4". there are 4 steps in the current program and the step 1 is to be running.

  Click to raise or lower the grinding head. Use when changing abrasive paper, polishing cloth or sample clamping plate.

 Click Start / stop and start the countdown display. For example, "0:40" means the countdown of 40 seconds is over.

 Liquid drop pipe filling.

 Display / hide the grinding parameters of the current step, such as the grinding plate speed, running time, etc.

(4) Manual Mode



to set the operation time of the grinding disc, unit: Second.

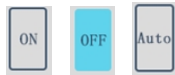


The display is "On" , indicating that the cooling water is in the closed state.

The display is "Off" , indicating that the cooling water is in the open state.



to set the running state and time of the liquid drop bottle. See the introduction of chapter "Process Library" for setting method.



There are three operation modes of the liquid drop bottle: "On" ,

"Off" and "Auto" (when the grinding plate is running, the liquid dripper is open; when the grinding plate stopped, the dripper is closed off automatically.



When the grinding head is running, the light is on.



When the

grinding plate is running, the light is on.



to set up the rotation speed of the grinding head / plate.



to set up the pressure loading force of grinding head. (N)



pressure loading force mode of grinding head.



rotation direction of grinding plate.



Click to fill up the liquid drop pipe.

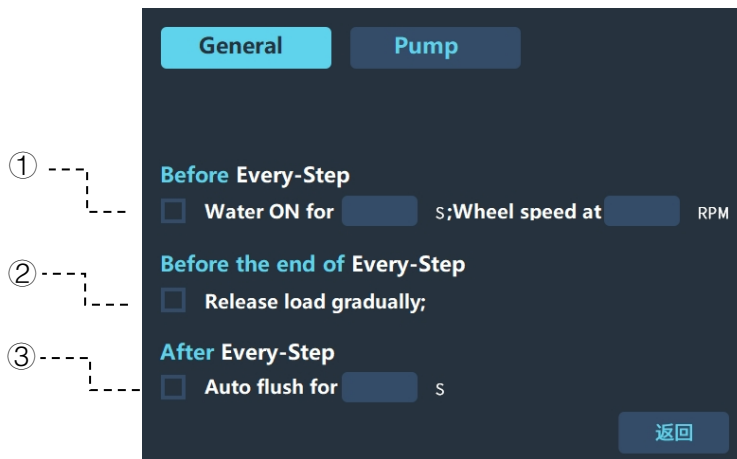


Click to open the flushing nozzle in the grinding plate and clean the debris in the plate.

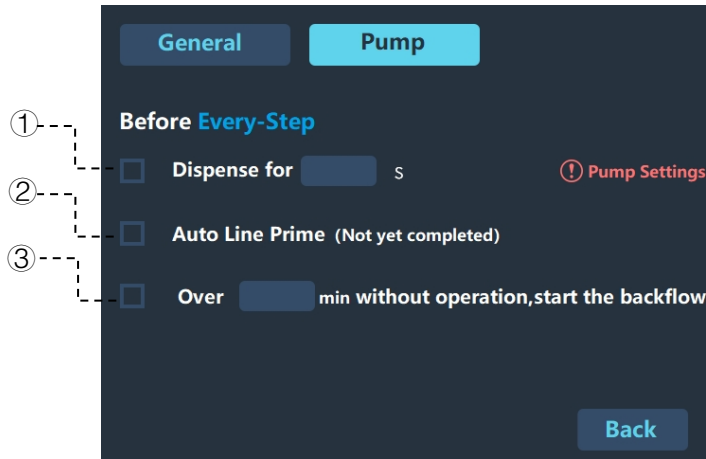


Run / stop button. Notice: only the light is "on" then the "grinding head" and "grinding disc" will start to work.

(5) Settings



- ① If click to select, which means before each step starts to run, the cooling water will automatically turn "On" and the grinding plate will automatically rotate. This will make the abrasive paper and polishing cloth soak rapidly.
- ② If click to select, which means after each step has been executed. The pressure loading force decreases gradually. This will prevent the sample from being scratched.
- ③ If click to select, which means after each step has been executed. The flushing nozzle in the grinding plate opens automatically and clean the debris in the plate.



- ① If click to select, which means before each step starts to run, which means spray a certain amount of abrasive fluid into the grinding disc in advance. The premise is that in the "Process Library", the serial number of the drop bottle to be operated is also checked in the corresponding steps.
- ② Fill up the liquid drop pipe automatically.
- ③ If click to select, if the touch screen does not operate after the set time, the abrasive liquid in the liquid drop pipe will return to the bottle.

Pump Settings							
ID	1	2	3	4	5	6	7
Flow Rate	20	20	30	30	0	0	0
ON/OFF	ON	ON	ON	ON	ON	ON	ON
Time(Sec)	30	30	40	50	0	0	0

NOTE: You need to input password "808182" to enter the Pump Settings screen.

Pump ID: the highlighted number indicates that the pump is in normal condition.

The light is "On" indicates that the pump is in normal condition.

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Flow Rate: set the flow speed of the corresponding pump.

ON/OFF: The Start / stop of the single pump of the motor, and the filling time column starts from "0" .

C. Shipping List

Sn	Specification Parameter	QTY	Remark
1	Alpha-600 Automatic Grinding and Polishing base machine	1 set	
2	4 liquid drop bottle holder	1 pcs	
3	500mL customized liquid drop bottle	4 pcs	
4	Working plate	1pcs	
5	Sample clamping plate	1set	
6	Abrasive paper buckle	1pcs	
7	Waterproof ring	1 pcs	
8	Φ8PU pipe	1.5 M	
9	Φ10PU pipe	1 M	
10	13.3mm outer wire adapter -Φ8 connector , Φ8, Φ10 connector , Φ8-Y-shape three way connector	1 set	
11	Outlet pipe , inner diameter Φ32mm hose , 及 clamping collar	1.5 米	
12	Power supply cord	1 pcs	
13	Oil water separator	1 pcs	
14	Instruction and warranty card	1 copies	
15	Abrasive paper , Polishing cloth 180#, 200mm 10 pcs 400#, 200mm 10 pcs 800#, 200mm 10 pcs 1200#, 200mm 10 pcs 2500#, 200mm 10 pcs ET-JP, 200mm 1 pcs YS-JP, 200mm 1 pcs AD-PB, 200mm 1 pcs	1 set	

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