

## Operation Manual of HMP-1B



### 1、 Product overview:

HMP-1B is a single disc automatic grinding and polishing machine which integrates pre grinding, grinding and polishing. It adopts single chip microcomputer technology to control through touch screen.

The grinding disc is driven by DC brushless motor and V-belt. The grinding head is driven by stepping motor and synchronous belt.

It has the characteristics of stable rotation, low noise, long service life, safety and reliability; According to the user's needs, the rotation speed of grinding head and grinding plate can be adjusted, the pressure and sample preparation time can be set to meet different needs;

With lighting system, it is convenient to take and place samples; With cooling device, the sample can be cooled during grinding to prevent the metallographic structure from being damaged due to overheating.

It is an ideal choice for metallographic sample preparation equipment in factories, scientific research institutions and laboratories of colleges and universities.

## 2、 Main functions and features:

- (1) The base is made of aluminum alloy, with good stability, light weight and anti-corrosion
- (2) The shell is made of ABS, which has novel appearance and anti-corrosion
- (3) The faucet adopts all copper chromium plating process, with good corrosion resistance
- (4) Using touch screen control and display, easy to operate, clear and intuitive
- (5) It has the functions of timing, speed and pressure, and automatic opening and closing of water system
- (6) With automatic cleaning function, it can automatically clean the sump to keep it clean
- (7) Support stepless speed regulation or four speed regulation mode, speed regulation is more convenient
- (8) Support single action and linkage start, start more flexible
- (9) It can store more than 10 groups of grinding and polishing process parameters, which is easy to call quickly
- (10) Magnetic disc design, support fast changing disc, change sandpaper and polish fabric more quickly
- (11) The half transmission design of the sample chuck, together with the inner lighting system, is convenient for taking and placing samples
- (12) Brushless DC motor and stepping motor, smooth rotation, low noise, long life
- (13) The emergency stop button can be convenient and fast to stop operation immediately, which is more safe.

## 3、 Technical parameters:

Product model	HMP-1B
Number of grinding plates	1
Diameter of grinding disc	254mm
Rotating speed of grinding disc	Stepless speed regulation: 100-1000r/min Four speed regulation:300 500 800 1000r/min
Rotation direction of grinding and throwing wheel	Clockwise or counterclockwise
Disc motor	BLDCM 1100W
Grinding head speed	20—120r/min
Rotation direction of grinding head	Clockwise
Grinding head motor	Stepper motor 200W
Timing adjustable time	0-99min
Pressurization mode	Single point pneumatic pressurization
Pressurization pressure	0-0.5Mpa(proposal:0.1-0.3Mpa)
Number of samples held	6
Sample holding specification	Φ40 (special specifications can be customized)
Power Supply	220V 50Hz
Dimensions	475*660*710mm
Weight	75kg

## **4、 Installation and use**

### **4.1.Installation**

- 1) Take the equipment out of the packing box, place it on a flat worktable, and remove the package.
- 2) Check whether all parts of the machine are complete and do a good job in cleaning.
- 3) Connect the inlet pipe and outlet pipe, pay attention to the height of the drainage should be lower than the drain.
- 4) Connect the air pipe, pay attention to the direction of insertion, and do not insert it reversely.
- 5) Before inserting the plug into the power socket, check whether the power supply voltage is consistent with the specified voltage of the machine, and check whether the line grounding is safe and reliable.

### **4.2. Precautions**








- 1) The water pressure of water source should be less than 6 bar. If the pressure is too high, the pressure reducing device should be connected. When the equipment is not in use, please turn off the external water source.
- 2) Use clean and oil-free compressed air with air pressure of 0.5-0.7mpa. The pressure of the filter pressure regulating valve at the back of the equipment is set at 0.5MPa, and the pressure of the pressure regulating valve at the right of the grinding head is designed according to the needs, which is generally set at 0.2-0.3mpa. When the equipment is not in use, please turn off the air supply.
- 3) Always wear eye protection to prevent eye injury caused by splashing debris and liquid.
- 4) Do not leave any loose parts on the running mill disc to prevent flying out and causing personal injury.
- 5) Do not reach close to the rotating parts to prevent physical injury.
- 6) Do not immerse the machine in water or pour any liquid on the machine cover.
- 7) Do not place or cover anything on the vent.
- 8) Do not operate the machine in an explosive atmosphere in case of explosion.
- 9) Any modification or modification is incorrect and may lead to dangerous situation.
- 10) If the parts are damaged or defective, they shall be replaced with the same spare parts immediately. Using unauthorized parts or not following the maintenance instructions may cause electric shock or injury.
- 11) Check and prevent shifting or binding of moving parts, damage of parts and other conditions that may affect the operation of the machine. If there is damage to the machine, repair it before use. The lack of maintenance of the machine will produce a lot of accidents.

### **4.3. Instructions**

- 1) Check the pressure of the filter pressure regulating valve after the equipment before use to see if it is within the range of requirements. If overpressure or undervoltage, the pressure should be adjusted to the required range.
- 2) First turn on the power switch at the top right behind the device, then turn on the emergency stop switch in front of the right side of the device. At this time, the equipment starts to start, and the LCD screen will be on and the main interface of operation will be displayed.

3) Replace the sample holder. When replacing the sample holder, the grinding head must be raised and turned to one side for easy operation. When removing the sample holder, lift the movable sleeve on the quick change joint upward to take the sample holder out of the lower part. When installing the sample holder, the movable sleeve on the quick change joint must be lifted up, and then the sample holder shall be aligned and pushed upward to install the sample holder. If the sample holder does not need to be replaced, this process can be omitted.













4) Replace sandpaper, polishing cloth or magnetic disc. When replacing sandpaper, polishing cloth or magnetic disc, the grinding head shall be raised and rotated to one side, and then the water retaining ring shall be removed for easy operation. When replacing sandpaper or polishing cloth, only remove the anti-adhesive plate from the magnetic disk, tear the sandpaper or polishing cloth off the anti-adhesive plate and replace with new sandpaper or polishing cloth. After the replacement of sandpaper or polishing cloth, put the anti-adhesive plate back on the magnetic disk and put it back to the water retaining ring. When the magnetic disc is damaged or demagnetization needs to be replaced, the whole disc shall be taken out, the anti-sticking disc shall be removed, and the magnetic disc shall be torn off the disc and replaced with a new magnetic disc. After the magnetic disc is replaced, put back the anti stick disc, then install the grinding disk again, and put it back to the water retaining ring.

5) The preparation process of the sample. After moving the grinding head to the right position, click to  lower the grinding head, then tighten the right hand of the magic head clockwise to lock the grinding head and put it into the sample. When setting out the products, it is necessary to place symmetrically to keep the force evenly. Set corresponding parameters as required, set linkage mode ( for grinding disc linkage and  for single disc operation), and the pressure of pressure regulating valve on the right side of grinding head is 0.2-0.3mpa. Click , the cylinder is lowered and pressed down, and then click to  start grinding and polishing until the grinding and polishing is finished, and the equipment will stop automatically. If you want to stop halfway, click to  stop magic throwing. To lighting, click . Reverse operation can take out sample.

When putting and taking out the sample, click to  make the sample holder rotate for half a turn for easy operation.

#### 4.4. LCD interface function description

##### 1) Main interface function description

LCD Interface Main Screen			
Linkage 	Disc Speed  300 RPM	Head Speed  120 RPM	Head 
Light 	Speed Mode  300 500 800	Time  2 : 30	Center 
 			

and are used to switch the main interface to the grinding plate interface and the parameter calling interface.

Used to set linkage mode For the grinding plate linkage, It is the single action of the grinding plate.

and are used to set the speed of the grinding plate arbitrarily and select the speed of the grinding plate quickly. The speed range of grinding plate is 100-1000r / min.

and are used for grinding head speed setting and time setting. The grinding head speed can be set in the range of 20-120r / min; The time can be set in the range of 0-99 hours.

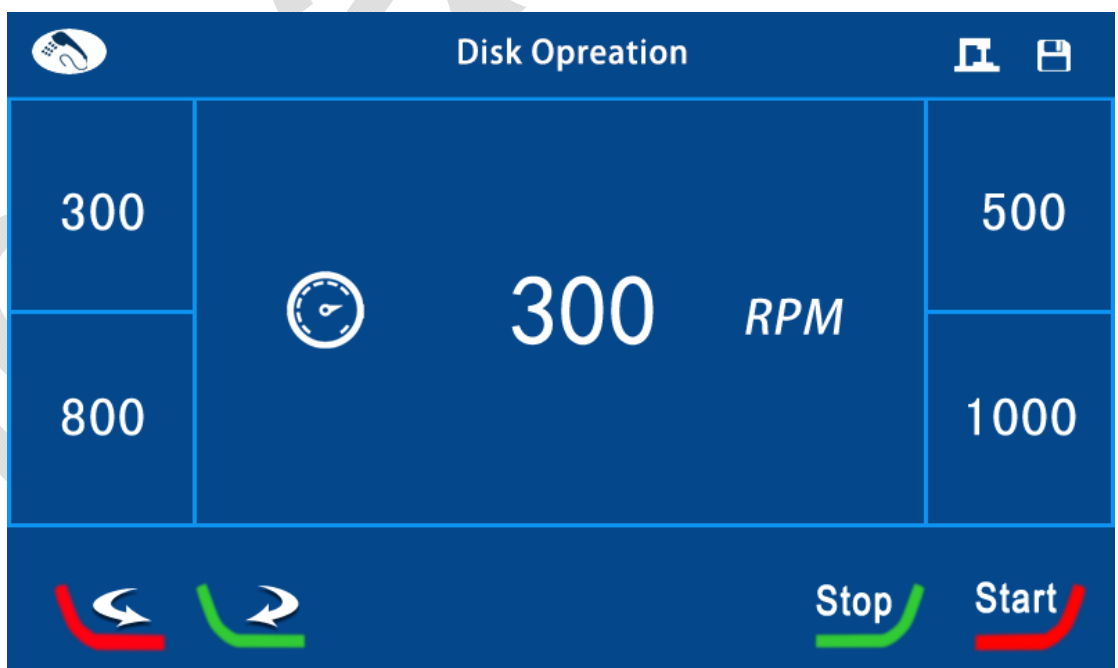
and are used to control the lifting of grinding head and pressure head.

It is used to control lighting switch.

and are used to control the linkage start and stop of grinding head and grinding disc.

It is used to make the sample holder rotate half a circle when putting in and taking out the sample, which is convenient for operation.

## 2) Function description of grinding disc interface



It is used to control the opening and closing of the nozzle of the sewage collection tank. When it is opened, the nozzle of the sewage collection tank will spray water to clean the sewage collection tank.

and are used to switch the grinding plate interface to the main interface and parameter calling interface.

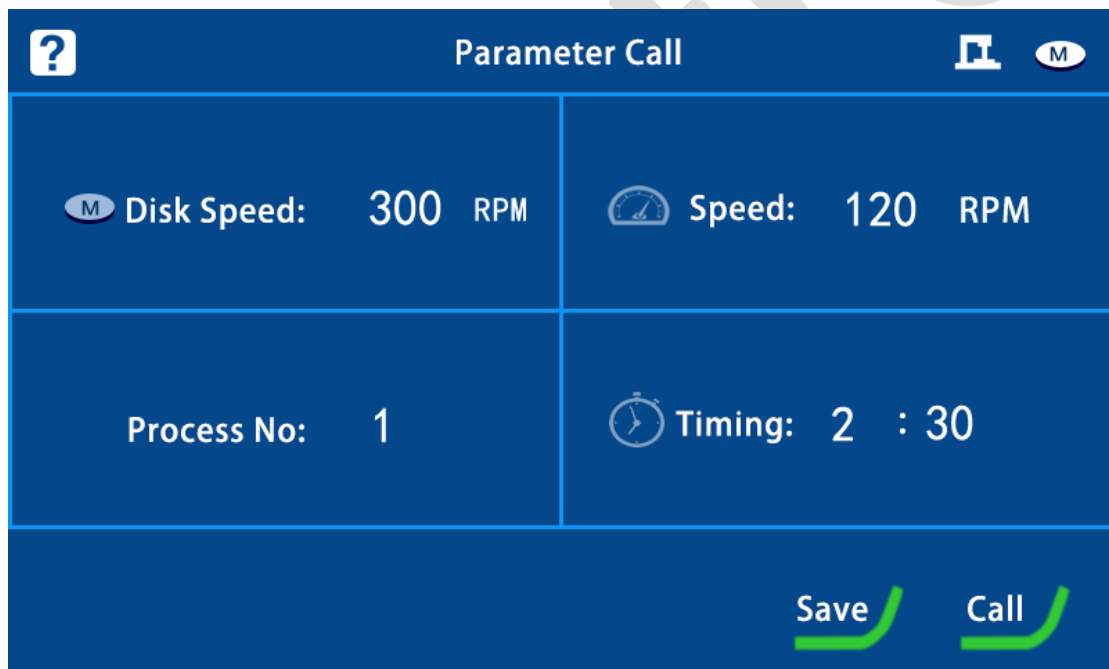
and are used to control the grinding disc to rotate counterclockwise and clockwise.

and are used to control the start and stop of the grinding plate. The grinding plate must be in the non linkage state, and the key can work.

, , and are used to quickly select the rotation speed of grinding plate. Click to set the disc speed to the corresponding speed

Used to display and set the rotation speed of grinding plate. When clicking, the keyboard input interface will pop up to input the required grinding disc speed, and the setting range can be 100-1000r / min

### 3) Function description of parameter interface

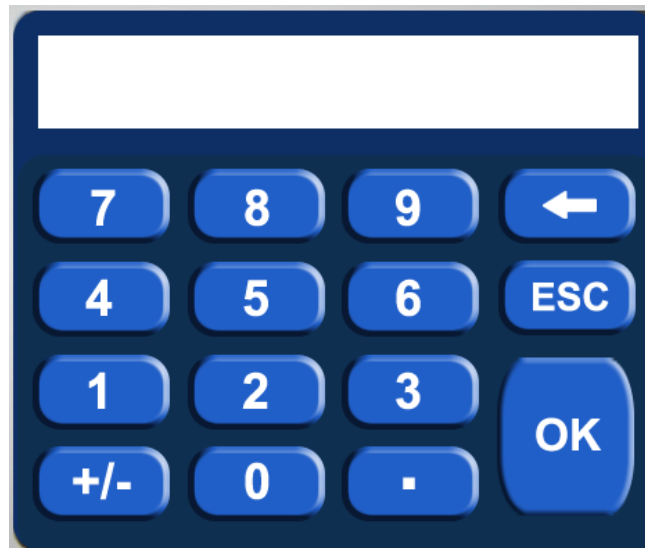


and are used to switch to the main interface and grinding plate interface.

It is used to select different operations. After the operation is selected, the parameters of this operation will be displayed.

and are used to save and call the process parameters. In the grinding process, the current process parameters can be saved, or the previously saved process parameters can be called directly.

#### 4) Function description of keyboard input interface



The keyboard input interface will pop up when setting parameters for parameter input



Backspace key: in the process of inputting parameters, when there is an input error, press this key to delete and input again.



Cancel key. In the process of inputting parameters, pressing this key means that the input is invalid.



Confirm key, input parameters, press this key to input the value is valid.

#### 5、 Equipment maintenance:

- 1) It is not allowed to put too much pressure on the sample during polishing to avoid damage caused by overload of motor.
- 2) It is forbidden to grind and polish damaged fabrics to avoid affecting polishing quality and causing accidents.
- 3) After use, the cleaning and maintenance work should be done in time every day, and the deposited dirt in the sewage collection tray and drainage pipe should be removed, so as to facilitate the smooth drainage.
- 4) The equipped air filter is a mechanical automatic drainage filter valve. Please place it correctly according to the manual and clean the filter element regularly to avoid component damage;

#### **Special notes:**

(1) When the motor is locked, turn off the power switch and power on the system again after one minute. Find out the cause of locked rotor. The motor will not rotate even if the brushless motor lacks phase or the hall switch is broken or loose.

(2) Do not connect the oil atomizer to the air inlet. The air pressure should be adjusted before power on. If the air source needs to be closed after the equipment is used, the output pressure should be adjusted to 0mpa first, then the power should be cut off, and finally the air source should be closed. Otherwise, there will be a "pa pa" sound, affecting the life of electrical components. The gas source shall not contain corrosive gas or other chemical components. If the gas source contains a large amount of condensed water, it will cause poor operation of the product. Facilities such as condenser, air dryer and condensed water collector shall be set. An



air filter with an accuracy of less than 5um shall be connected at the front end of the air inlet. The product is equipped with a 5um air filter valve, Special attention: do not connect the oil atomizer here). Adjust the valve to 0.5MPa before use.

(3) One section of the drainage pipe is connected to the equipment, and the other end is connected with the sewage processor or the sewer pipe. If there is a bend in the pipe, the sewer pipe shall be prevented from blocking, and the outlet shall be prevented from being higher than the reservoir of the grinder.

### Product certificate

Product name: Automatic grinding and polishing machine

Product model: HMP-1B

Inspection record:

1. The manufacturing and assembly quality meet the drawing requirements.
2. Smooth rotation and low noise.
3. The parts are complete and the appearance is clean and good.

This product has passed the inspection and is allowed to leave the factory

Quality inspector:

Head of quality inspection section:

Inspection date:



**Packing list**

Product model	Product name	Number
HMP-1B	Automatic grinding and polishing	1
Product accessories	Quantity	Note
Disk	1	
Magnetic disk	1	
Anti-sticking plate	1	
Sandpaper	2	Φ254mm
Polishing cloth	2	Φ254mm
Water pipe	2	
The technical documentation	1. One copy of product manual 2. One copy of product qualification certificate	