MPoli-1-250A
Metallographic Auto Grinder Polisher
Instruction Manual



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1. Introduction

This model is a single-chip microcomputer controlled grinding and polishing machine. The shell is formed with ABS material, which is beautiful in appearance, anti-corrosion and durable. The grinding head has individual pressure and central pressure two methods. This machine can effectively replace the manual grinding and polishing processes, which greatly saves labor and improves the quality of grinding and polishing and the efficiency of sample preparation. Therefore it is the ideal equipment for the metallographic sample preparation.

1.With high-definition LCD touch screen, the operation is easy and the display is clear and intuitive.

2.It is an automatic grinding and polishing system, the time and speed can be set and the water value is automatically controlled, which can effectively replace manual grinding and polishing.

3.With special self-adaptive design of grinding disc, it makes the sample and grinding disc fit perfectly, which effectively solve the multi-faceted phenomenon and ensures the consistency of grinding surface.

4.With the automatic locking function of the grinding head, the operation is safe and convenient.

5.With magnetic grinding disc design, it supports for fast disc replacing system. The disc surface is Teflon painted which makes no residue of changing abrasive paper and polishing cloth.

6.The motor is servo motor which has long service life and low noise and powerful motor brings strong power and efficient grinding and polishing experience.

7.Strong large support chassis design ensures the precision rotary balance. Spindle leak-proof design ensures the bearing without damage.

8.It can store ten kinds of grinding and polishing procedure, set different parameters for different samples.

9.With semi-rotating design of the grinding disc and the inner lighting system, it easy to take and place the samples.

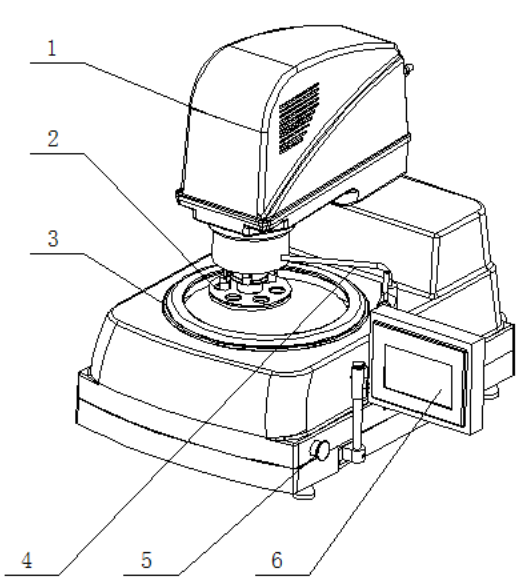
10.Built in two-path suspension automatic dosing system, can work by timing and quantification to realize fully automatic polishing.

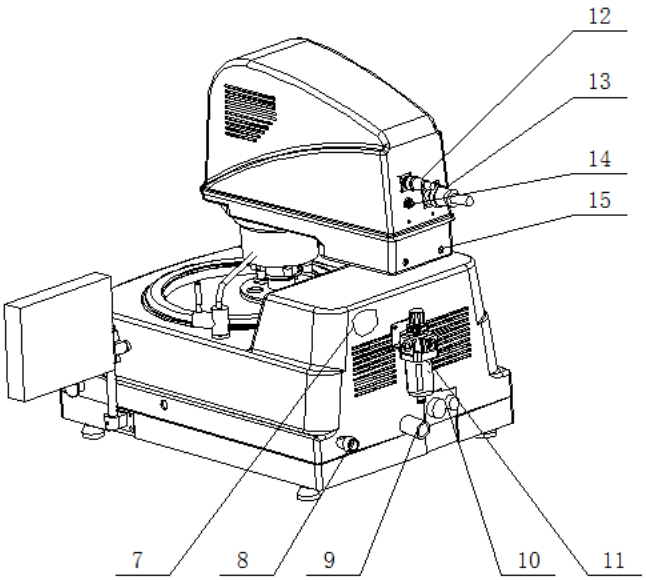
11.Equipped with plastic bowl, it can prevent dirt and debris accumulation, making it easy to replace and maintain.

2.Technical Parameters

Model	MPoli-1-250A
Disc Diameter	254mm
Abrasive Paper Diameter	250mm
Disc Speed	Stepless speed 50~1000r/min,and Four speed 250, 500, 750, 1000r/min
Disc Rotational Direction	Clockwise or Counterclockwise
Disc Electromotor	Servo motor, 220V, 1.5kW
Head Electromotor	Servo motor, 220V, 750W
Head Speed	Stepless speed 20~120r/min
Timing Set	0~99min
Sample Holding Qty.	6 pcs
Sample Holder Specification	Φ25mm, Φ30mm, Φ40mm (Choose one)or Customized specification
Pressure Method	Individual pressure or Central pressure
Individual Pressure Force	0~50N
Central Pressure Force	0~160N
Control and Display	7 inch LCD touch screen
Suspension Volume	500ml, 2 bottles
Power Supply	220V, 50Hz, 8A
Dimensions	800×800×760mm
Net Weight	96kg

3.Structure





1. Grinding head
2. Sample holder
3. Water retaining ring
4. Water valve
5. Emergency stop button
6. Touch screen
7. Power switch
8. Water inlet
9. Water outlet
10. Motor cable socket 1
11. Air pressure regulating filter
12. Motor cable socket 2
13. Control cable socket
14. Air inlet
15. Fasten screw hole

4.Unpacking and Installation

First. Unpacking

1.This machine is fixed on the bottom plate in case of the damage during the transportation. First cut off the iron belt and screw off the bottom edge screws with the cross screwdriver, pull out the case there will be the machine and the bottom plate, and then screw off the M10 bolt under the bottom plate with the spanner. Place the machine on the stable table.

2.Take out the grinding head by the same method above.

Second. Working Condition

1.The work table should be stable and higher than the drainage. The table size should be larger than 1.2×0.8M and the suggest height is 0.8M.

2.The power cable is about 1 meter long. Power supply should accord with general factory electricity use, 220V, 50Hz.

3.The water supply should be clean and free of impurities, water pressure is between 0.3-0.4MPa.

4.Air source should be no corrosive gas or other chemical components and larger than 0.7mPa. If the gas contains a large amount of condensed water, will cause the product adverse action phenomenon, should set the condenser, air dryer and a condensed water collector and other facilities. This product is equipped with a 5um air filter, adjust the valve to 0.55MPa before using.

Third. Installation

1.Installation of the touch screen

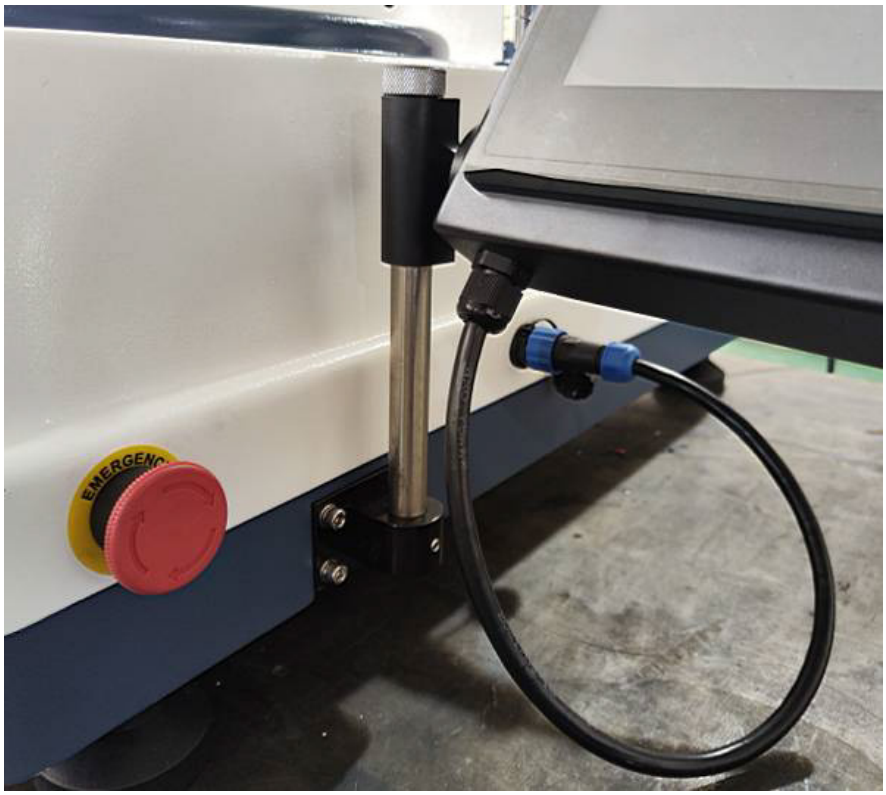
The touch screen is stored separately during transportation and needs to be installed before the use of the machine.

4.Unpacking and Installation

(1) Install the frame and the screen;

(2) Connect the aviation plug;

(3) Rotate the touch screen to the appropriate position.



2.Installation of the grinding head

Take out the grinding head which is packed in the other box in case of damage during transportation. It needs to be installed before the use of the machine.

(1)Place the grinding head into the vertical shaft;

(2)Connect the cables to the grinding head and the machine body;

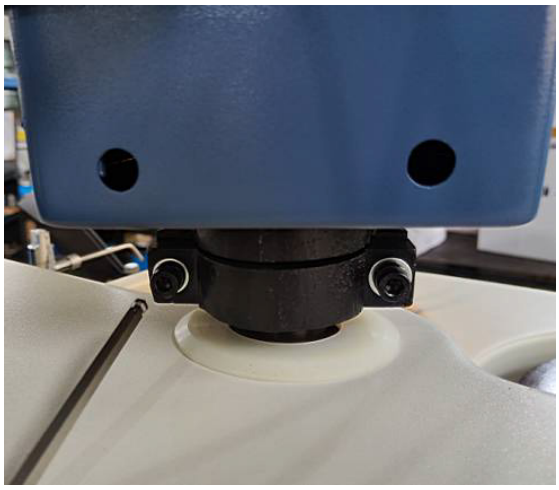
(3)Install the air filter and connect to the air compressor, connect "in"to air, "out"to the machine;

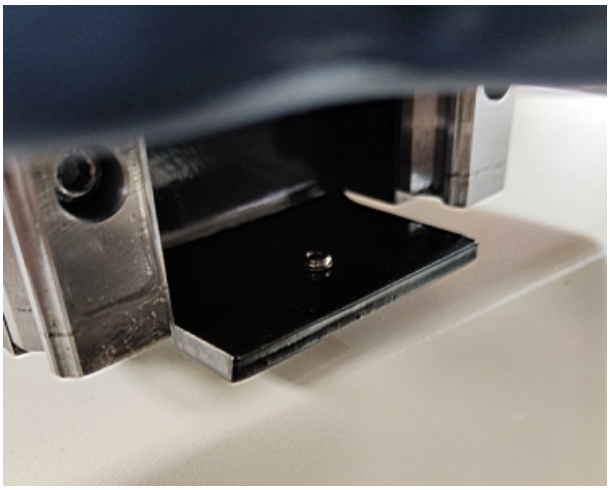
(4)Fasten the bolts on the grinding head (Besides disassembly and movement, don't unlock the bolts), this procedure can be done after turning on the machine to rise up the grinding head or after removing the two holes of the cover at the back of the grinding head;

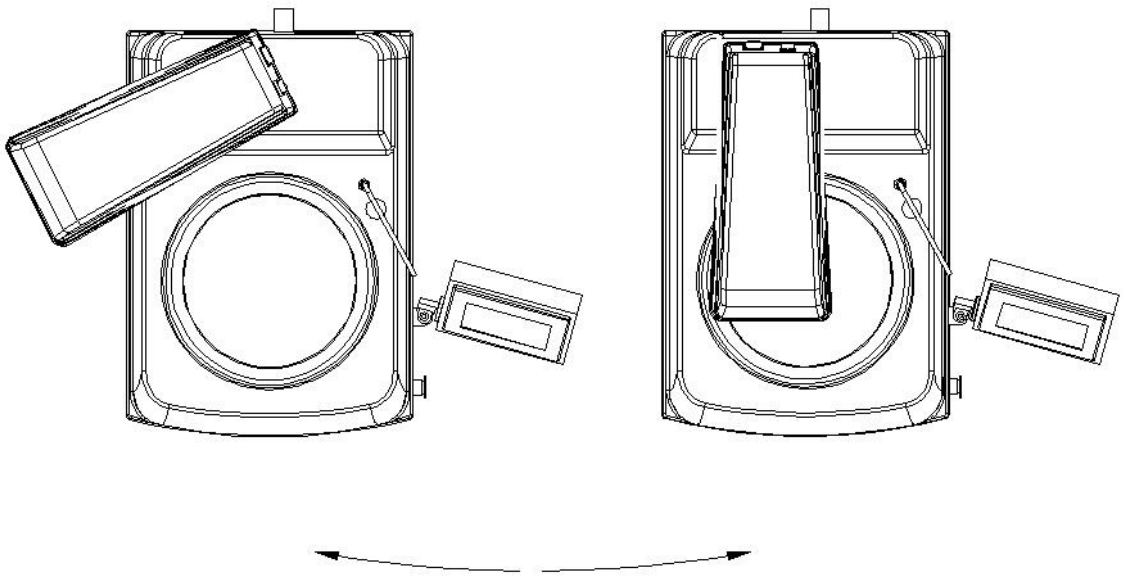
4.Unpacking and Installation

(5)The rotating of the grinding head has limits, for the first installation of the grinding head, please fasten the bolts slightly and raise up the head, manually rotate the grinding head left and right to confirm the limits, ensure that the grinding head could rotate freely above the disc, and then fasten the locking bolts.

(6)The height of the grinding head can be adjusted by the hexagon screw to ensure the clearance between the sample holder and the grinding disc.







Rotate the grinding head left and right to make the limit appropriate position and then fasten the locking bolts.

4.Unpacking and Installation

3.Installation of the water inlet and outlet pipe, power cable and air pipe

(1)Pay attention to assemble the water inlet filter screen before installing the water inlet pipe. The machine can run normally under 6 bar water pressure. When the machine is not in use, please close the external water source.

(2)Connect one end of the drain pipe to the machine, and the other end to the sewage processor or sewer pipeline. The outlet pipe should prevent pipe blocked if there is bending, and the outlet end should be lower than the end of machine.

(3)There is an automatic pressure regulating device in the machine, and the external gas pressure must be more than 0.5MPa. The inlet and outlet air cannot be connected reversely, and the pressure of the filter pressure valve behind the machine is adjusted to 0.55MPa. When the machine is not in use, please close the gas source.



Connections of cables and air lines.

4.Unpacking and Installation



The fuse is located between the socket and the switch.

4.Installation of the grinding disc

(1)Adjust the grinding head to the other side in case of collision.

(2)Remove the cover and the water retaining ring.

(3)Put on the grinding disc, and aim the three pins to the hole of the disc. (The grinding disc has been installed before leaving the factory, and the magnetic disc has been pasted on the grinding disc.)

(4)Attach the abrasive paper or polishing cloth on the metal plate, and then put the plate on the magnetic disc.

(5)Put back the water retaining ring and rotate back the grinding head.





5.Operation Panel

1.Main interface



Linkage On: After pressing, the grinding disc and grinding head will be effective in linkage, and run and stop at the same time. In the linkage state, the grinding disc cannot start and stop independently.

Linkage Off: After pressing, the grinding disc and the grinding head works independently.

Light: Press to turn the light on or off.

START: After pressing, the head will be locked automatically, the water valve will discharge water for 3 seconds, and then the linked grinding head and disc will run at the same time.

STOP: Press to stop the grinding head and disc running under the linkage state, it will stop automatically when the timing time is up.

Head Up / Head Down: Press to raise or descend the grinding head. The below cylinder operation is not valid in 6 seconds for safety protection.

Head Lock: Press to lock or unlock the grinding head to fix or unlock its left and right movement.

Cylinder Up / Cylinder Down: Press to control up or down of the cylinder.

5.Operation Panel

1/2 Circle: Press to rotate the sample holder for half a turn.

Central Force: Press to set the central force.

Individual Force: Press to set the individual force.

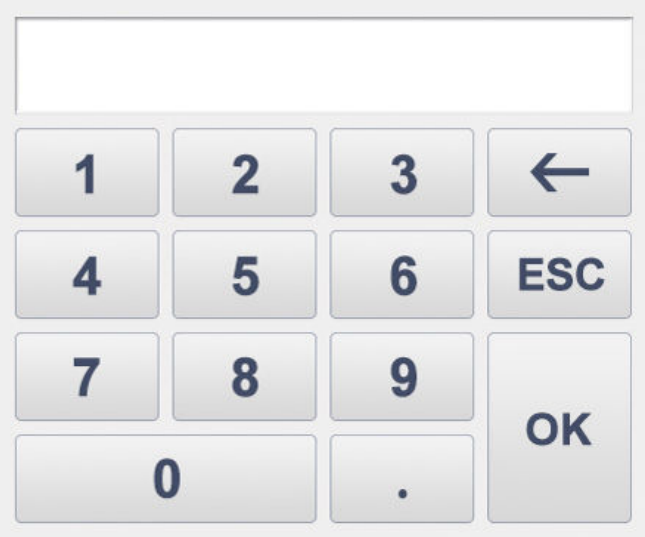
Speed: Press to set the rotating speed of the grinding head.

Timing: Press to set the timing. The grinding head and disc running under the linkage state will stop automatically after the countdown.

Grinding Disc: Press to enter the disc operation interface, and only the speed is showed in the main interface.

Save / Call: Can save the current setting scheme, press Call and select the scheme number to call the saved parameters. The factory default scheme is No. 0.

Press the figures to show the following keyboard.



Enter the values, press OK to confirm, the arrow is backspace, ESC is cancel and return.

5.Operation Panel

2. Disc operation interface



Clockwise / Anti-clockwise: Press to select the rotating direction of grinding disc.

START / STOP: Press to run or stop the grinding disc.

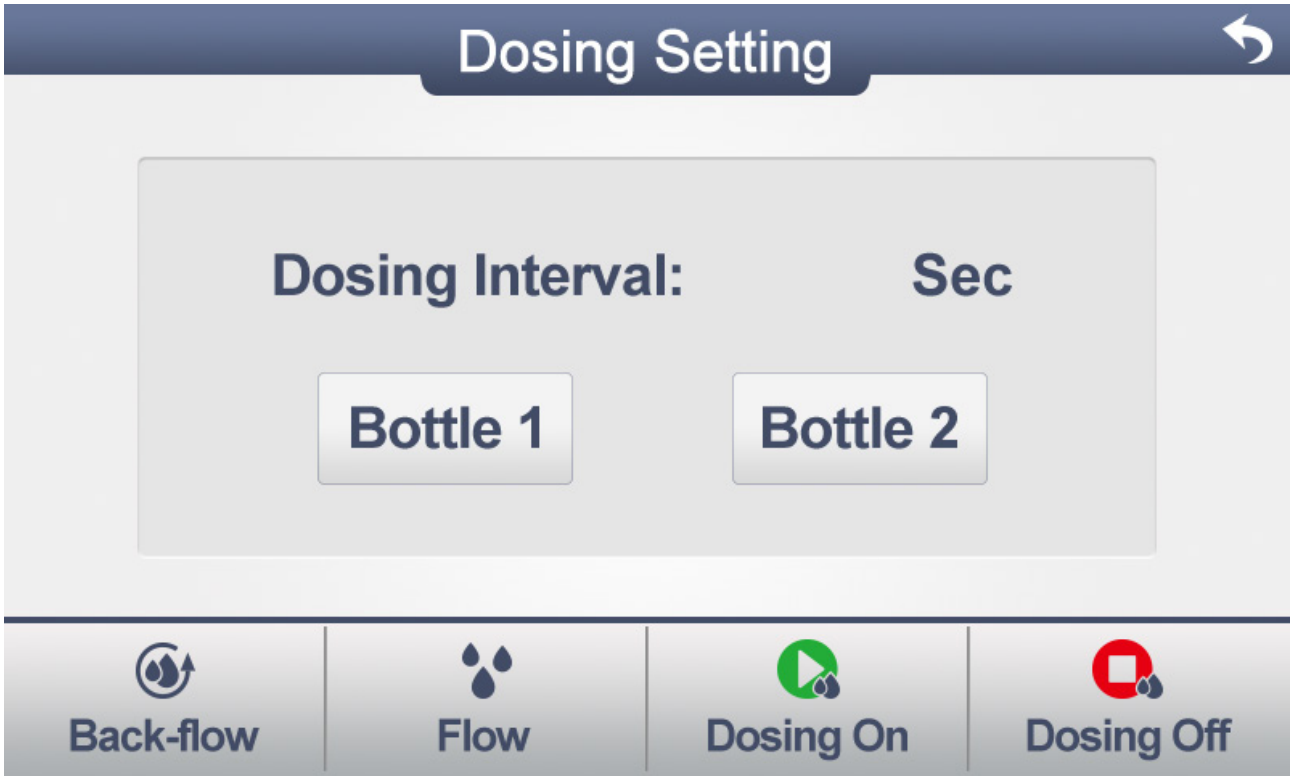
(In the linkage state, the grinding disc cannot be started or stopped, only the rotating direction and speed can be set.)

Speed: Press the figures to set the speed of the grinding disc, press - / + key to reduce / increase the speed, and press 250 / 500 / 750 / 1000 to quickly set the corresponding speed.

Press  to control the water discharging on or off, press  to return to the main interface.

5.Operation Panel

3. Dosing setting interface



Back-flow: Press to back-flow the suspension from the tube into the bottle.

Flow: Press to continuously flow the suspension from the bottle. Use for the first time performing auto-dosing or cleaning the tube with clean water.

Dosing On: Press to activate the auto-dosing status.

Dosing Off: Press to turn off the auto-dosing status.

Dosing Interval: Press to set the number of seconds between each drop.

Bottle 1/Bottle 2: Press to select the corresponding bottle for dosing.

6.Usage Instruction

1.Turn on the power supply and emergency stop button, confirm that the water inlet and air inlet are normal, and press the screen to enter the main interface.

2.Make sure that the sandpaper or polishing cloth has been pasted and placed on the grinding disc, and then start placing the sample.

(1) Individual pressure

A. Press Head Up and rotate the grinding head to the appropriate position, and press Head Lock;

B. Press Head Down and put 3 samples into the sample holder;

C. Press 1/2 Circle and put the rest 3 samples into the sample holder, and press Cylinder Down to complete the sample placing.

(The thickness of the sample shall be 15mm-20mm, the maximum thickness shall not be greater than 25mm, and the minimum thickness shall not be less than 10mm.)

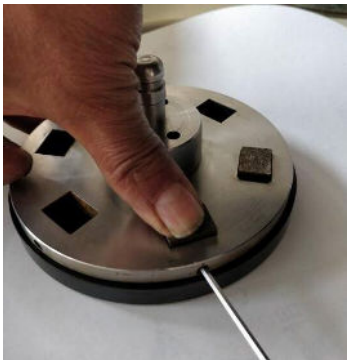
(2) Central pressure

A. Press Head Up and rotate the grinding head to the appropriate position, and press Head Lock;

B. Press the clamper and take down the sample holder;

C. Put the sample holder into the sample leveling plate, insert the sample, press tightly and then lock with an inner hexagon spanner;

D. Install back the sample holder with the sample installed, and press Head Down to complete the installation.





6.Usage Instruction

(After the sample is installed, the end face of the sample is leveled, and the central pressure sample is recommended to be greater than 15mm.)

(3) Sample holder installation and disassembly

Place the sample holder under the clamper, with three small round holes corresponding to three pins, press down the stainless steel pressure ring, and push the sample holder up with force. Loosen the pressure ring, the pressure ring returns to the position, and the sample holder is installed in place. If it cannot return to the position, remove it and then re-install it. During disassembly, press down the pressure ring and push down the sample holder, loosen the pressure ring and take down the sample holder.





3.After placing the sample, set the required parameters such as pressure, rotating speed and timing time on the screen, adjust the water valve to the half open position, and press START. In the state of Cylinder Down, the individual pressure is effective, and in the state of Cylinder Up, the central pressure is effective. The corresponding settings are made according to the grinding and polishing requirements.

4.After the timing, take out the sample reversely according to the above method. After the equipment is used, pay attention to descend the grinding head, and then close the water valve, external water source, air source and power supply.

7.Maintenance

1. After use, the machine shall be cleaned and maintained in time every day. The sample holder shall be cleaned to avoid affecting the grinding and polishing quality, and the deposited dirt in the bowl and drainage pipe shall be removed to facilitate the smooth drainage.

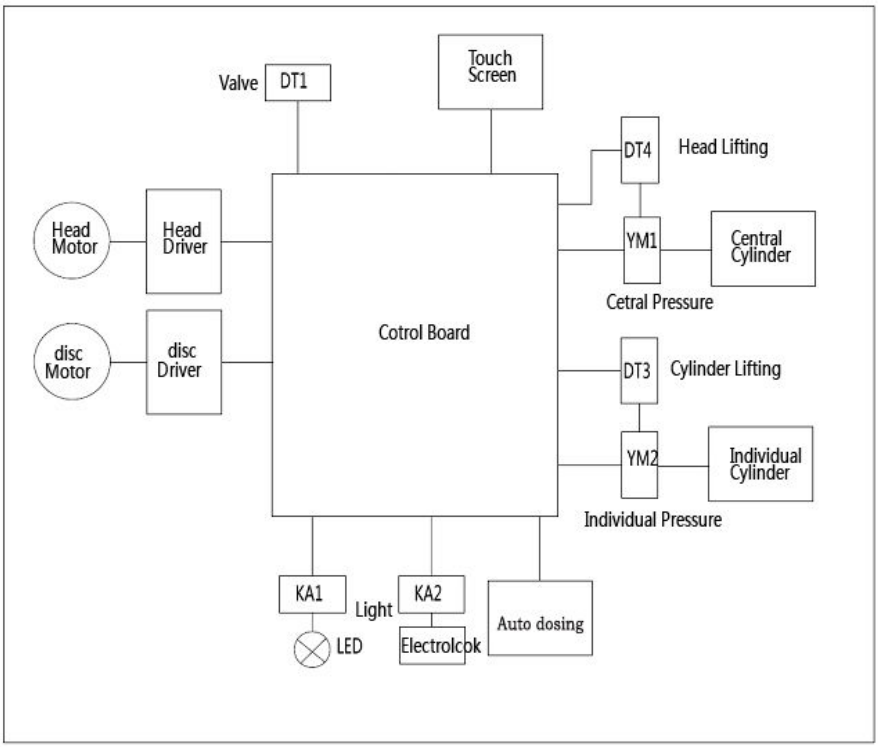
2. The plastic cover shall be covered in time to prevent sundries from leaking into the disc and affecting the grinding and polishing quality in the future.

3. Remove sundries or garbage on the water inlet filter screen every week to ensure normal water inflow.

4. After use, the water tap can be opened to clean the grinding disc with a brush. In particular, the magnetic disc must be kept clean to prevent magnetic degradation and insufficient suction.

5. The configured air filter shall be regularly checked for residual water and drained in time.

8.Electrical Diagram



9.Cautions

1.It is forbidden to turn off the power when the grinding head rises while the equipment is running.

2.It is forbidden to use damaged fabrics for polishing, so as not to affect the polishing quality and cause accidents.

3.It is not allowed to apply too much pressure on the sample during grinding and polishing to avoid damage caused by motor overload.

4.When the motor is locked or when the grinding disc is rotating, it suddenly does not rotate due to excessive resistance. At this time, turn off the power switch and restart it after one minute, and then find out the cause of locked rotation. The motor will not rotate due to lack of phase of brushless motor or disconnection of Hall switch.

5.The air source shall be no corrosive gas or other chemical components. If the gas contains a large amount of condensed water, will cause the product adverse action phenomenon. This product is equipped with a 5μm air filter, adjust the valve to 0.55MPa before using.

6.Connect one end of the drainage pipe to the equipment and the other end to the sewage processor or sewer pipe. The equipment end must be higher than the water outlet end to prevent backflow, and the drainage pipe shall not be bent to prevent blocking.

7.After the equipment is used, pay attention to descend the grinding head first and then turn off the water source, power supply and air source; In case of power failure or equipment restart, please restart after 10 seconds after shutdown.

8.When grinding, do not turn the water valve to the maximum, just ensure the water volume for normal operation.

9.Before each grinding and polishing, wash the sandpaper, polishing cloth and the sample surface to ensure the grinding and polishing quality.

10.When the equipment is running, the workpiece accidentally falls into the bowl, the machine needs to be shut down and the workpiece should be taken out in time, so as not to block the drainage outlet, resulting in abnormal noise caused by water entering the bearing and damage of electrical components in case of water.

10. Troubleshooting

Failure Phenomenon	Possible Cause	Solution
The grinding head or the cylinder cannot raise or descend.	1. The air source has water diversion, resulting in damage to the air solenoid valve. 2. Air pipe leakage.	1. Change the air solenoid valve. 2. Change the air pipe and tighten the connection.
The pressure cannot be adjusted.	The regulating valve or circuit board is damaged.	Change the regulating valve or the circuit board.
The grinding head cannot be locked.	The electromagnetic lock relay is damaged.	Change the electromagnetic lock relay.
Water valve leakage.	There are sundries in water solenoid valve.	Clean the sundries in water solenoid valve.
The screen does not light up.	The internal switching power supply is damaged or the fuse is burnt out.	Change the internal switching power supply or the fuse.
The display data is confused or the keys are invalid.	There is residual power in the controller after restart.	Restart after 10 seconds after shutdown.
Uneven grinding of workpiece.	1. The grinding disc is not installed smoothly. 2. There are sundries between the magnetic disc and the metal plate, resulting in uneven. 3. There are sundries under the sample holder.	1. When installing the grinding disc, knock several times with your fist at the center of the grinding disc. 2. Check and clean the sundries on the magnetic disc and sample holder before each grinding.
Many scratches on workpiece after polishing	1. Workpiece, polishing cloth and sample holder are not cleaned. 2. The polishing liquid is thrown out due to too fast rotating speed.	1. Check and clean the sundries on the workpiece, polishing cloth and sample holder before each polishing. 2. Adjust the speed of the grinding head and disc.
Dosing invalid.	1. The tube is blocked. 2. Peristaltic pump is damaged.	1. Change the tube. 2. Change the pump.

11. Packing List

Name	Specification	Qty
Machine Body		1 set
Grinding Head		1 pc
Sample Holder	Individual	1 pc
Grinding and Polishing Disc	254mm	1 pc
Magnetic Disc	250mm	1 pc
Metal Disc	250mm	4 pcs
Abrasive Paper	250mm	6 pcs
Polishing Cloth	250mm	2 pcs
Water Inlet Pipe		1 pc
Water Outlet Pipe	Φ32mm	2 pcs
Water Inlet Filter Screen		1 pc
Air Pipe	Φ6mm	1 pc
Suspension Pipe	Φ6mm	4 pcs
Suspension Bottle	500ml	2 pcs
Head Connection Cable		2 pcs
Air Filter		1 pc
Inner Hexagon Spanner	2mm,3mm,5mm,6mm	each 1 pc
Usage Instruction Manual		1 copy

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