



使用说明书

USER'S MANUAL
of
Six-head PC-oriented
Automatic Rhinestone Hot-fix Machine





杭州萧山富知源电器厂
Hangzhou Xiaoshan Fuzhiyuan Electric Apparatus Works

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1 工作环境 Working conditions

将设备摆放在合适的位置后，底部放置四块垫块，调节垫块使设备平稳，接上电源（AC220V 50/60Hz），气源（气压 $\geq 0.6\text{MPa}$ ）。★注意：气源必须经过除尘、除水、除油处理，否则会影响设备的正常使用。

Put the machine in an appropriate location and add four pads beneath its bottom. Then adjust the pads to make the machine on horizontal position, connect electric supply (AC 220V 50/60Hz) and compressed air source with a pressure of $\geq 0.6\text{MPa}$.

★ Attention should be make that the compressed air must be dirt free, water free and oil free. Otherwise, it will influence the normal operation of the machine.

2 操作步骤 Operation

2.1 调压、排水装置 Air pressure regulation and water draining device

2.1.1 调压柄：调整气压时使用，用户一般不需要调整。

Pressure regulation handle: Generally, there is no need for customer to regulate the handle.

2.1.2 排水装置：本装置为差压排水装置，在气压为零时，装置自动排水；在设备运行时，可以通过手动排水的方式(往上推)，见图一。

Water draining device: This is a kind of differential pressure water draining device. When the air pressure is zero, it will drain water automatically. In the operation, it is possible to drain water manually by pushing the rod upward as shown in Fig. 1

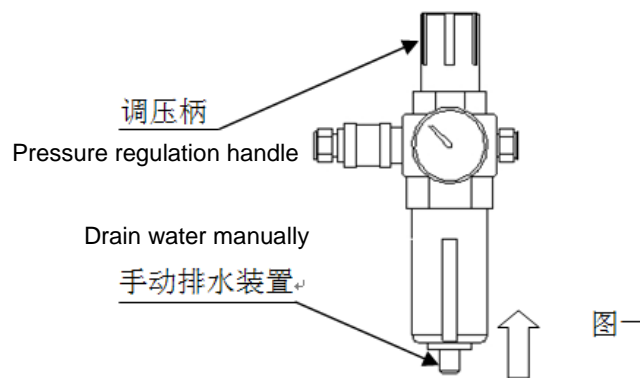


Fig. 1

2.2 机头结构（见图二） Structure of head as shown in Fig. 2

2.2.1 螺母 1 用于调节吸嘴与超声波的位置；

Nut 1 is used to regulate position between sucking mouth and ultrasonic wave;

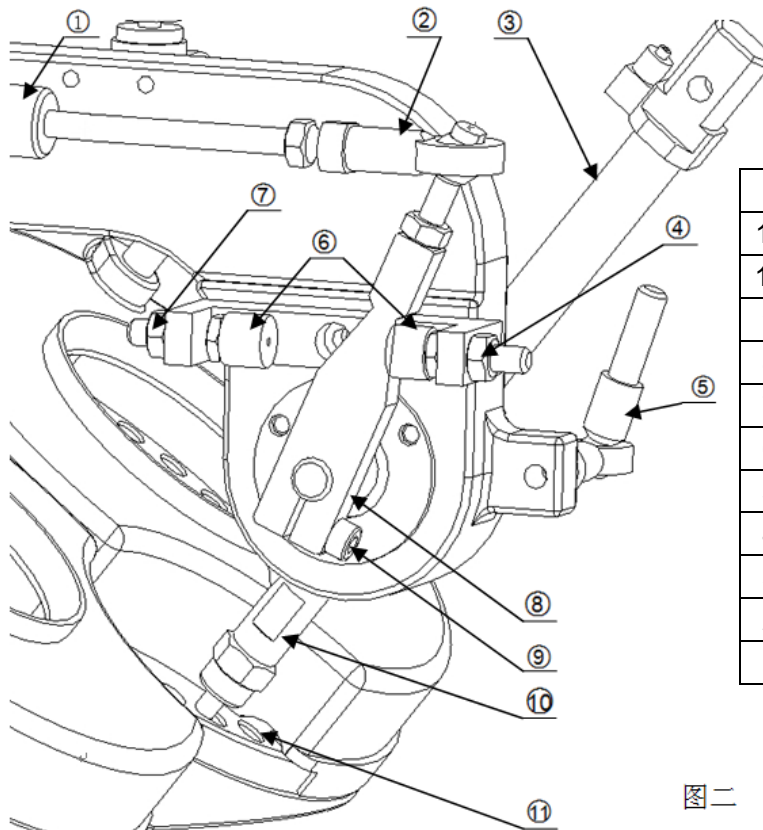
2.2.2 螺母 2 用于调节吸嘴与珠盘的角度及位置；

Nut 2 is used to regulate angle and position between sucking mouth and bead tray;



2.2.3 直线气缸 1、吸嘴连接件用于调节吸嘴与珠盘之间的高度。高度根据钻石的大小来调节，一般高度为 1~1.5mm，距离太远，钻石不容易吸上来；距离太近，容易踢钻。对于较大钻石之间的距离可适当增大。

Linear cylinder 1 and sucking mouth joint is used to regulate height between sucking mouth and bead tray. This height depends on size of artificial diamond, generally 1 ~ 1.5mm. It is difficult to suck the diamond if the height is too big whereas it tends to kick away the diamond if it is too near. For a bigger diamond, this height may be added suitably.



11	珠盘	Diamond tray
10	吸嘴连接件	Sucking mouth joint
9	固定螺杆	Fixing screw rod
8	限位摆动板	Swing limiting plate
7	螺母 2	Nut 2
6	缓冲件	Buffer piece
5	激光灯	Laser lamp
4	螺母 1	Nut 1
3	直线气缸 1	Linear cylinder 2
2	关节轴承	Joint bearing
1	直线气缸 2	Linear cylinder 2

图二

Fig. 2

2.3 拉杆操作 Operation of pulling rod

2.3.1 在“工作”模式下 Under "Working" mode

(1) 往右拉动一下，启动钉珠。

Pull the rod in right direction to start diamond fixation.

(2) 在运行状态下，往左拉动一下，停止钉珠；在暂停状态下，往左拉动一下，后退一步；一直向左拉住时，连续后退；再次往左拉动一下，后退停止。

Under operation mode, pull the rod in left direction to stop diamond fixation; Under pause status, pull the rod in left direction to withdraw a step. If you keep pulling in left direction, it will withdraw backwards continuously. If you pull the rod in left again, the withdraw will stop.



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2.3.2 在“空走”模式下 Under "Engaging free" mode

(1) 往右拉动一下，启动空走。

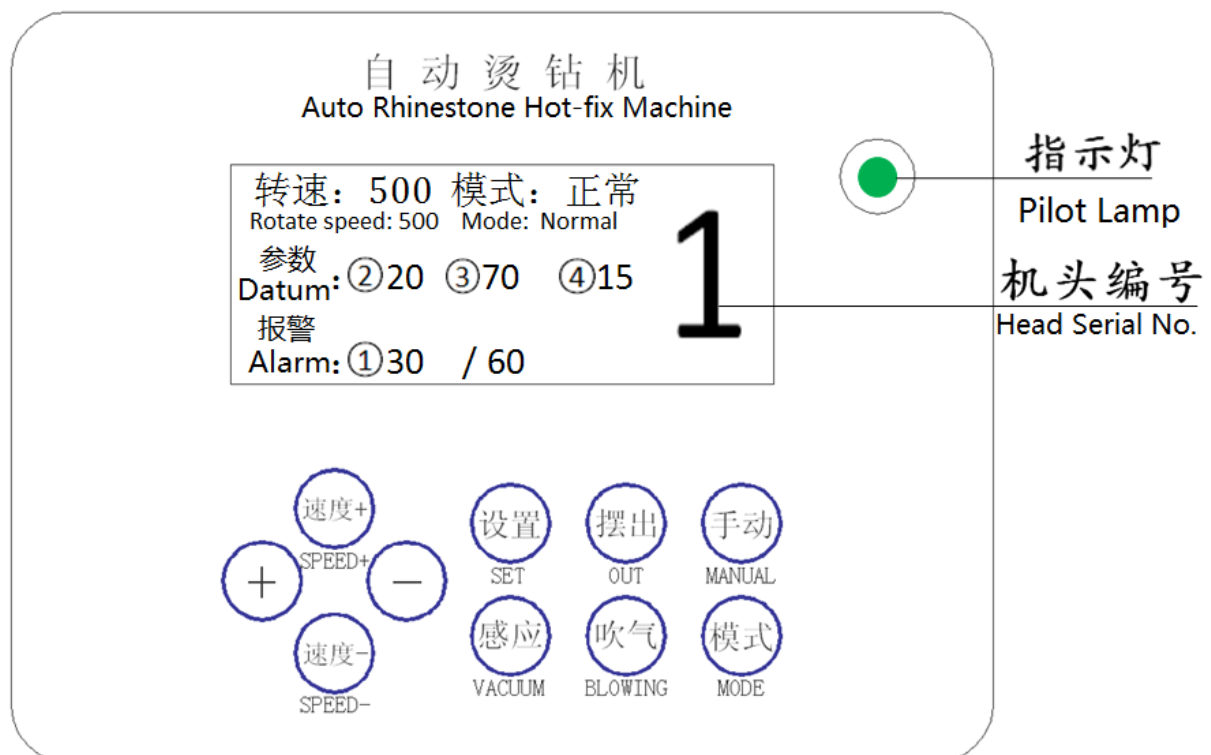
Pull the rod in right direction to start "Engaging free" mode.

(2) 在空走状态下，往左拉动一下，停止空走；在空走停止状态下，左拉动一下，后退一步；一直向左拉住时，框架连续后退；再次往左拉动一下，后退停止。

Under engaging free status, pull the rod in left direction to stop engaging free mode. At this, if you pull the rod in left direction, it will withdraw a step. If you keep pulling in left direction, the frame will withdraw backwards continuously.

3 功能键说明 Function keys

3.1 机头控制板 Head control panel





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“+” “-”：用于修改参数数值。

For modification of parameter

“速度+” “速度-”：按键是用来调节电机转速的快慢。当吸嘴只吸取部分钻石时，表示转速太快；当吸嘴要等一会才能吸取钻石时，表示转速太慢。

“SPEED+” “SPEED-”：For regulation of motor rotating speed. When the sucking mouth sucks a part of an artificial diamond, it means the rotating speed is too fast whereas the sucking mouth sucks a diamond after a while, it means the rotating speed is too slow.

“设置”：该按键用来选择功能参数。

"SET": This key is for selection of functional parameters.

参数 No.	参数范围 Scope	参考数值 Referential value	功 能 Function
1	0-999	30-80	*报警数值 Alarm value
2		>20	旋转与伸出间隔时间（下磕盘）Interval for rotation and protrusion of down tray.
3		>70	超声波加热时间（布越厚、钻石越大加热时间应越长） Heating time with ultrasonic wave (The thicker the clothing, the longer the time).
4	0-99	>15	缩回与旋转的间隔时间（上磕盘）Interval for rotation and protrusion of up tray.

*报警数值：举例 30 /60，30 表示设定值，60 表示系统感应值。设定值数值越高，表示灵敏度越高，但是可能会出现误报警；数值越低，表示灵敏度越低，会出现不报警；具体的数值根据实际情况调整。系统感应值小于设定值时，将会报警。

* Alarm value: For example, 30/60 meaning set value 30 and system perception value 60. The higher the set value, the more sensitivity it will be yet it tends to error alarm and the lower the set value, the less sensitivity it will be yet it will reluctant to alarm. Therefore, it all depends to actual conditions. When the system perception value is less than set value, it alarms.

“感应”：根据气压自动调节传感器。

"VACUUM": The sensor will be regulated automatically as per air pressure.

“摆出”：在更换吸嘴或疏通吸嘴时使用。

"OUT": It is used when the sucking mouth is replaced or dredged.

“吹气”：通过吹气将吸嘴中的杂物排除。

"BLOWING": Do away with foreign objects through air blowing.

“手动”：该按键的功能是用来手动钉珠。在正常工作和补钻操作中（显示绿灯红灯），按一下该键钉一颗珠；在关闭操作中（显示白灯），按一下该键连续钉珠。

"MANUAL": For fix the artificial diamond manually. In normal working and diamond supplement operation (greed and red lamps on), pressing down the key one time will fix one diamond. In shut down operation (white lamp on), pressing down the key one time will fix diamonds continuously.



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“模式”：该按键的功能是要来调整机头关闭、正常或补钻。（补钻说明：操作拉杆将框架回退到漏钻部位，把模式切换到红灯，进行补钻。）

"MODE": For head stop, operation or diamond supplement. (note for diamond supplement: operate the pulling rod to withdraw the frame back to diamond leaking position, and switchover the mode to red lamp for the purpose).

“指示灯”：指示灯分为3种：绿灯●正常工作、红灯●补钻、白灯○关闭。

"Pilot Lamp": Green lamp ● for normal operation, red lamp ● for diamond supplement and white lamp ○ for stop.

3.2 主控制板-1

Main control panel - 1

“定原点”：该按键用来确定花型原点的位置。

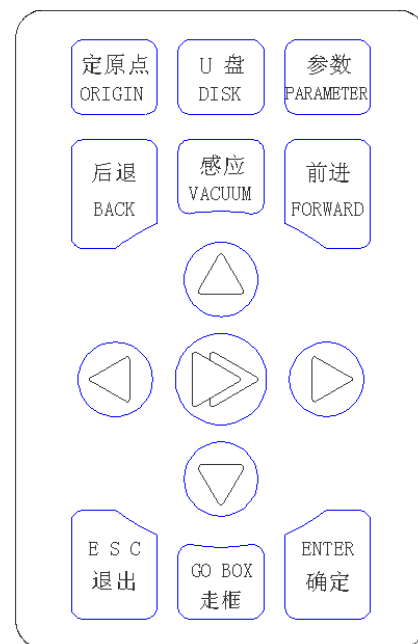
"ORIGIN": To determine the position of origin point of pattern.

“U 盘”：用来管理花型的输入、选择、删除。

"DISK" For input, selection and deletion management of pattern.

“参数”：参数功能说明，见下表。

"PARAMETER": Refer to the following table





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表 Table

序号 No.		功能项目 Function	范围 Scope	参考值 Referential value	备注 Remarks
第一页 P1	1	吸嘴堵塞感应时间（报警） Perception time of sucking mouth clog alarm	0-999	30-80	
	2	旋转与伸出的间隔时间（下磕盘） Interval between rotation and protrusion for down tray	0-999	>20	
	3	超声波加热时间 Heating time by ultrasonic wave	0-999	>60	
	4	缩回与旋转的间隔时间（上磕盘） Interval between rotation and protrusion for up tray	0-99	>15	
	5	收吸嘴与动框架间隔 Interval between sucking mouth withdraw and frame moving	0-999	30-50	
	6	激光灯亮度 Lightness of laser lamp	0-100	80	
	7	右转盘电机转速 Motor speed for right rotating disc	0-999		
	8	左转盘电机转速 Motor speed for left rotating disc	0-999		
	9	自动返回花型原点 Go back to pattern origin automatically	是或否 Y/N		按工作需要操作 Operation as per working requirement
	10	自动吸嘴下压布 Press cloth beneath sucking mouth automatically			
第二页 P2	1	真空感应灵敏度 Vacuum perception sensibility	0-200	102-115	
	2	框架电机速度 Speed of frame motor	0-50	4-10	
	3	语言切换 Language switchover	中英文 按客户要求可添加其他语言 Chinese and English. Other languages may be added as per customers' demands		
“△”“▽” 是用来选择功能项目，“◁”“▷”用来调整功能项目的数值。 For function choice For value adjustment in a selected function					

“后退”：该按键是在工作中，按一下框架后退一步。

"BACK": Press this key one time, the frame will withdraw a step.

“感应”：该按键是检测所有机头的传感器灵敏度。

"VACUUM": This key is used to detect sensitivity of the sensor on head.

“前进”：该按键是在工作中，按一下框架前进一步。

"FORWARD": Press this key one time, the frame will go forward a step.

“△” “▽” “◁” “▷”：该按键是用来前、后、左、右移动框架。

These keys are used to move the frame in forward, backward, left and right direction.

“◁▷”：该按键是用来切换慢速移动框架（▷）或快速移动框架（◁▷）。

This key switches over the frame from moving slow (▷) to moving fast (◁▷).



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“退出”：该按键是退出当前操作的界面，返回上一级界面的。

"ESC": Press this key to withdraw the current operating interface back to an upstream interface.

“走框”：该按键是用来检测花型的边框区域，避免在实际工作时碰到限位，从而导致这次工作的失败。（注：建议每次加工新花型时，走框模拟一次动作。）

"GO BOX": This key is to detect edge area of a pattern for purpose of avoiding meeting limit device in work and leading fail of this work.

“确定”：该按键的功能是确定当前的操作。

"ENTER": Press this key to confirm current operation.

3.3 主控制板-2

Main control panel - 2

“1” “2” “3” “4” “5” “6” “7” “8” “9” “0”：数字键是在参数页面中，对应参数序号快速选择功能项目。

These numerical keys are used to select function items quickly.



“速度+” “速度-”：统一调电机转速的快和慢。

“SPEED+” “SPEED-”：For regulation of motor rotating speed uniformly.

“吹气”：按该键统一吹气排物。

"BLOWING": Do away with foreign objects through air blowing uniformly.

“钉珠”：该按键一次，统一钉一颗珠。

"BEADING": Press this key once to attach one diamond uniformly.

“信息”：该按键查看当前工作花型的坐标和当前工作花型的总钉珠数、正在钉的珠数、钉珠的速度之间的互换。

"INFO": Press this key, you may check the coordinate of current working pattern, total number of diamonds fixed for current working pattern, number of fixing diamonds, and fixing speed.

“回停点”：该按键是在拉杆暂停，框架通过按键移动后（不碰到限位的情况），可以返回到停点。

"STOPOVERS": When the pulling rod pauses, press this key to move frame (limit device is not hit) backward to stop point.

“回原点”：该按键是回到原点。

"HOMING": Press this key to go back to the original point.



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“压布”：该按键是用直线气缸下压（加工大面料时使用，方便拼接图案）。

"PRESS": This key is to press down cloth with a linear cylinder. This function is used for a big fabric cloth for easy pattern splice.

“镜像”：该按键是在花型选好后，用来旋转、镜像花型。

"MIRROR": After the pattern is selected, this key is used to rotate and mirror the pattern.

“换盘”：该按键是左右珠盘切换。

"CHANGE": To switchover left and right diamond tray.

“模式”：该按键是用来切换工作模式和空走模式。

"MODE": To switchover working mode and engaging free mode.

“XY 清零”：X 和 Y 坐标清零。

"RESET": To reset X and Y coordinate to zero.

4. 常见故障及排除方法 Common faults and clearance

故障 1：人造钻石在布料上被压碎

Fault 1: Artificial diamond is broken on cloth

- 按顺时针方向调节节流阀 1(机械图 1)，从而可以减小吸嘴对人造钻石的压力。
Regulate the throttle valve 1 clockwise as shown in Mechanical Fig. 1 to decrease pressure on the artificial diamond by sucking mouth.
- 在超声波加热头上放上塑料片（高温胶）。
Put a plastic piece on ultrasonic heating head (high temperature glue) .
- 将超声波加热时间减小（将参数 3 的数值减小）。
Shorten ultrasonic heating time (decrease the value in Parameter 3).
- 吸嘴使用一段时间后,吸嘴磨损,需更换吸嘴。
The sucking mouth is worn out and needs to be replaced.
- 吸嘴直径太大，更换吸嘴。
The diameter of sucking mouth is too big. Replace the mouth with a smaller one.
- 减小超声波功率。
Reduce the power of ultrasonic wave.

故障 2：钻石焊在布料上不牢固

Fault 2: The artificial diamond is not fixed on cloth firmly

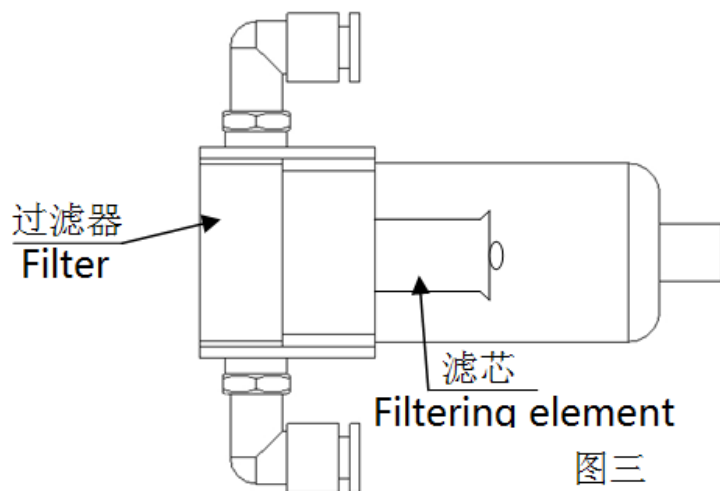
- 将超声波加热时间加大（将参数 3 的数值加大）。
Increase ultrasonic heating time (enlarge the value of Parameter 3)
- 增加直线气缸伸出的压力。
Increase the protrusion press of the linear cylinder.
- 增加超声波功率。
Increase the power of ultrasonic wave.
- 超声波出现故障，需要修理。
There is a fault in the ultrasonic wave generator and needs to be repaired.



故障 3: 吸嘴不能可靠吸住钻石

Fault 3: The sucking mouth cannot hold the artificial diamond reliably

- 调节吸嘴与珠盘之间的距离。
Adjust the distance between sucking mouth and bead tray.
- 吸嘴直径太小, 更换吸嘴。
The diameter of sucking mouth is too small and needs to be replaced.
- 吸盘上钻石的中心与吸嘴是否一致。
Enlighten the center of artificial diamond and sucking mouth.
- 气压不够。
The air pressure is not sufficient.
- 过滤器需要清理, 将透明罩拧开, 把脏物清理干净; 或更换过滤器中的滤芯(白色)。见图三
The filter needs to be cleaned. Loosen out the transparent cover and do away the dirty objects away entirely or replace the filtering element (white) of the filter with a new one as shown in Fig. 3.
- 真空发生器堵塞, 需要清洗。
There is a clog in vacuum generator and needs to be cleaned.





故障 4: 吸嘴没吸住钻石就焊接

Fault 4: The artificial diamond is ironed but not held on sucking mouth

- 吸嘴是否被堵住，按吹气键将吸嘴内的杂物排出，必要时用钢针疏通或将吸嘴拧下来清理。

Check whether the sucking mouth is clogged. Press down the blowing key to blow out the foreign objects inside. When necessary, dredge the mouth with a steel needle or remove the sucking mouth away for cleaning.

- 重新调整“感应”

Re-adjusted the "Vacuum" key.

故障 5: 磕盘现象（指吸嘴与珠盘发生磕碰的现象）

Fault 5: Hitting (Sucking mouth hits on bead tray).

- 吸嘴下来时与珠盘磕碰，调整方法是：将参数 2 的数值加大。

If the bead tray is hit by sucking mouth moving down, increase the value of Parameter 2.

- 吸嘴复位时与珠盘磕碰，调整方法是：将参数 4 的数值加大，或将节流阀 2(机械图 1)的气流关小。

If the bead tray is hit by sucking mouth resetting, increase the value of Parameter 4, or slow down the throttle valve 2 as shown in Mechanic Fig. 1)

5 超声波（机械图 5） Ultrasonic wave (Mechanic Fig. 5)

- 超声波是烫钻机的加热系统。在使用时要注意，加热头不能与桌面卡住，这样会影响加热效果。用户可以根据面料的厚度来调节超声波的功率，如网布、薄布可将功率减小，以免钻石碎掉。

The ultrasonic wave is the heating system of the Rhinestone hot-fix machine. Attention should be made the heating head should not stuck on table surface. Otherwise, the heating effect will be greatly influenced. Customers are supposed to regulate the power of ultrasonic wave as per thickness of fabric shell. If net cloth or thin cloth is used, reduce the power of the ultrasonic wave lest the artificial diamond be broken.

- 超声波系统由控制箱和振动子（安装在机架的圆柱体）配套组成，加热头的高度应比工作台面低 0.5MM。不能与其他超声波系统混用，修理时也应整套送本公司维修。

The ultrasonic wave system is composed of control box and vibrator (a column shape mounted on the machine frame. The height of heating head should be lower the working table surface by 0.5mm. It should not used with other kind of ultrasonic wave system. When the system needs to be repaired, bring it to the manufacturer as a whole.



6 保养与维护 Maintenance and reparation

- 保持设备的整洁。

The machine should be kept clean.

- 适时检查直线气缸及其他安装螺钉是否紧固；各气管、电源接头是否松动。

Check the firmness of linear cylinder and other fixing screws in right time. Check whether there is a loose in every air tube and power supply connectors regularly.

- 检查自动排水系统排水是否顺畅；

Check whether the automatic water draining system works or not.

- 当过滤器中的滤芯脏了,应及时予以清理或更换滤芯。滤芯的更换标准：当进、出气两端的压差超过 0.1 Mpa 时。

If there is dirty in filtering element, clean is or replace it in time. When pressure difference between incoming and outgoing air is over 0.1MPa, the filtering element should be replaced as a rule.

- 保持桌面及 X、Y 导轨上清洁。

Keep clean on table surface and XY guide tracks.

- 给直线气缸的导杆加油（每天一次），定期给电磁阀加油（二个月一次。油为本厂专用油，白色固体状）。

Give lubricating grease on guide rod of the linear cylinder every day and on a solenoid valve ones every other month. The lubricating grease is a kind of white solid specially offered by our factory.

- 其它：Miscellaneous

(1) 注意空压机（气泵）的工作环境，不得有灰尘及腐朽气体；

Make sure the working condition for air compressor. No dust and corrosive gases are allowed.

(2) 经常排放空压机、储气罐、过滤器内的积水、污物（否则将严重影响设备的使用，非常重要）。

Often drain out accumulated water and polluted objects in air compressor, air tank and filter. Otherwise, the operation of the machine will be greatly influenced. It is very important.

7 警告和提示 Warnings and prompts

- **警告:**在操作时,手不能放在超声波的头部上（吸嘴的下部）,以避免直线气缸可能对身体造成伤害。

Warning: When operation, your hands should not put on the head of ultrasonic wave system at the lower part of sucking mouth to avoid possible injury by the linear cylinder.

- **提示易耗品:** 过滤器滤芯、激光灯、吸嘴及其它零件可向本厂或经销部购买。

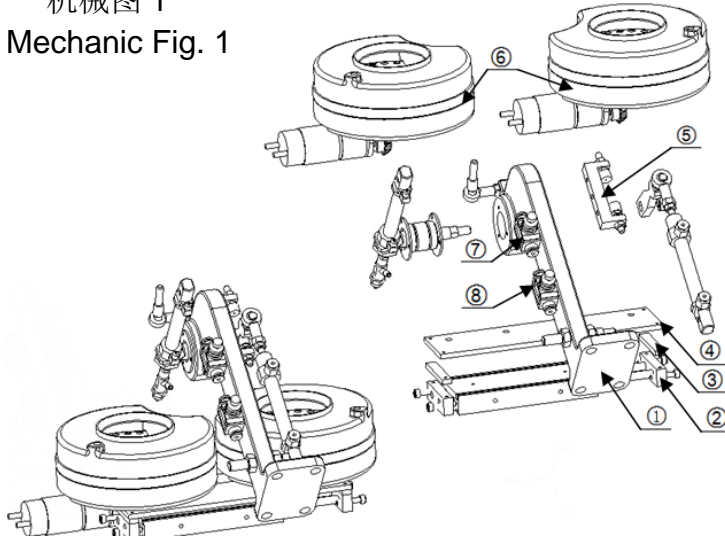
Easy worn out articles: Filtering element in the filter, laser lamp, sucking mouth and other relevant components may be purchased from our factory and our sales department.



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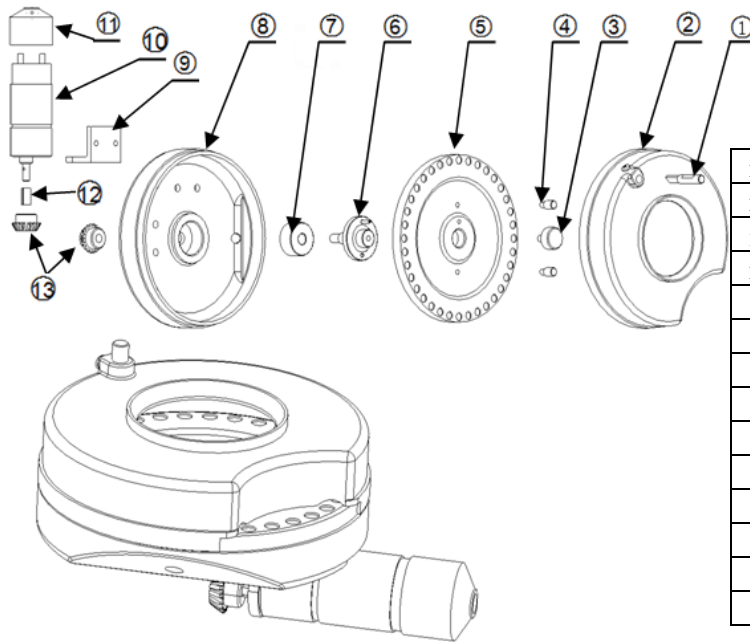
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机械图 1
Mechanic Fig. 1



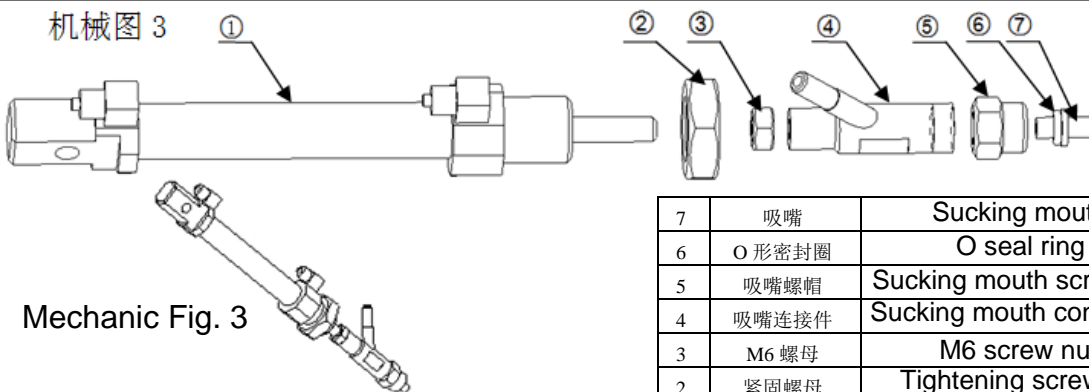
8	节流阀 2	Throttle valve 2
7	节流阀 1	Throttle valve 1
6	左右珠盘	Left and right bead tray
5	固定件	Fixing part
4	珠盘安装板	Fix plate for bead tray
3	垫块	Pad
2	滑动气缸	Sliding cylinder
1	支架	Support

机械图 2
Mechanic Fig. 2



13	齿轮	Bevel gear
12	电机套	Motor sheeth
11	电机罩	Motor cover
10	电机	Motor
9	电机安装板	Mounting plate for motor
8	珠盘座	Holder for bead tray
7	轴承	Bearing
6	轴	Shaft
5	珠盘	Bead tray
4	珠盘提升螺丝	Lifting screw for bead tray
3	珠盘压紧螺丝	Tightening screw for bead tray
2	珠盘罩	Bead tray cover
1	毛刷	Brush
珠盘组件 Parts of bead tray		

机械图 3



Mechanic Fig. 3

7	吸嘴	Sucking mouth
6	O 形密封圈	O seal ring
5	吸嘴螺帽	Sucking mouth screw cap
4	吸嘴连接件	Sucking mouth connector
3	M6 螺母	M6 screw nut
2	紧固螺母	Tightening screw nut
1	直线气缸 1	Linear cylinder 1

注：安装吸嘴时，O 形密封圈必须面朝上

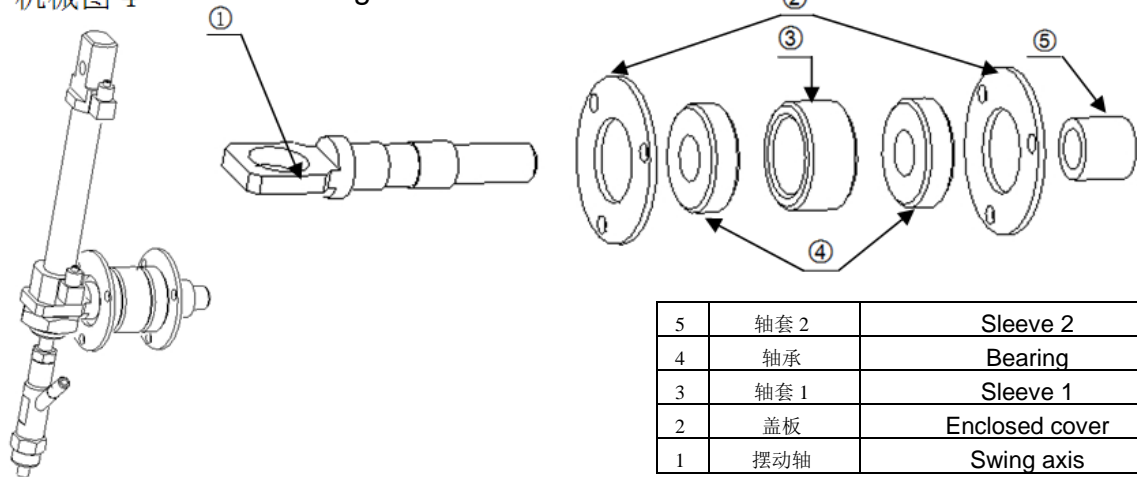
Note: When assembly sucking mouth, O seal ring must be faced up



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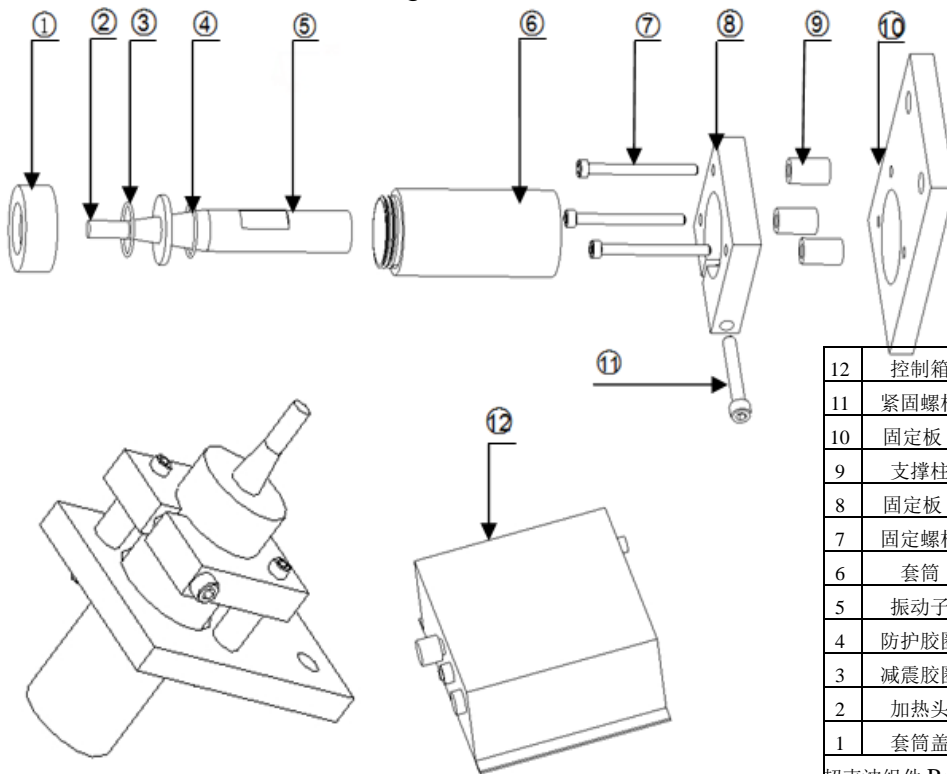
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机械图 4 Mechanic Fig. 4



5	轴套 2	Sleeve 2
4	轴承	Bearing
3	轴套 1	Sleeve 1
2	盖板	Enclosed cover
1	摆动轴	Swing axis

机械图 5 Mechanic Fig. 5



12	控制箱	Control box
11	紧固螺杆	Tightening screw rod
10	固定板 2	Fixing plate 2
9	支撑柱	Support column
8	固定板 1	Fixing plate 1
7	固定螺杆	Fixing screw rod
6	套筒	Sleeve
5	振动子	Vibrator
4	防护胶圈	Protective rubber ring
3	减震胶圈	Damping rubber ring
2	加热头	Heating head
1	套筒盖	Sleeve cover

超声波组件 Parts of ultrasonic wave system

将⑪紧固螺杆松开即可拆卸。

For dismantlement, loosen the fixing screw rod (11)



Pneumatic diagram





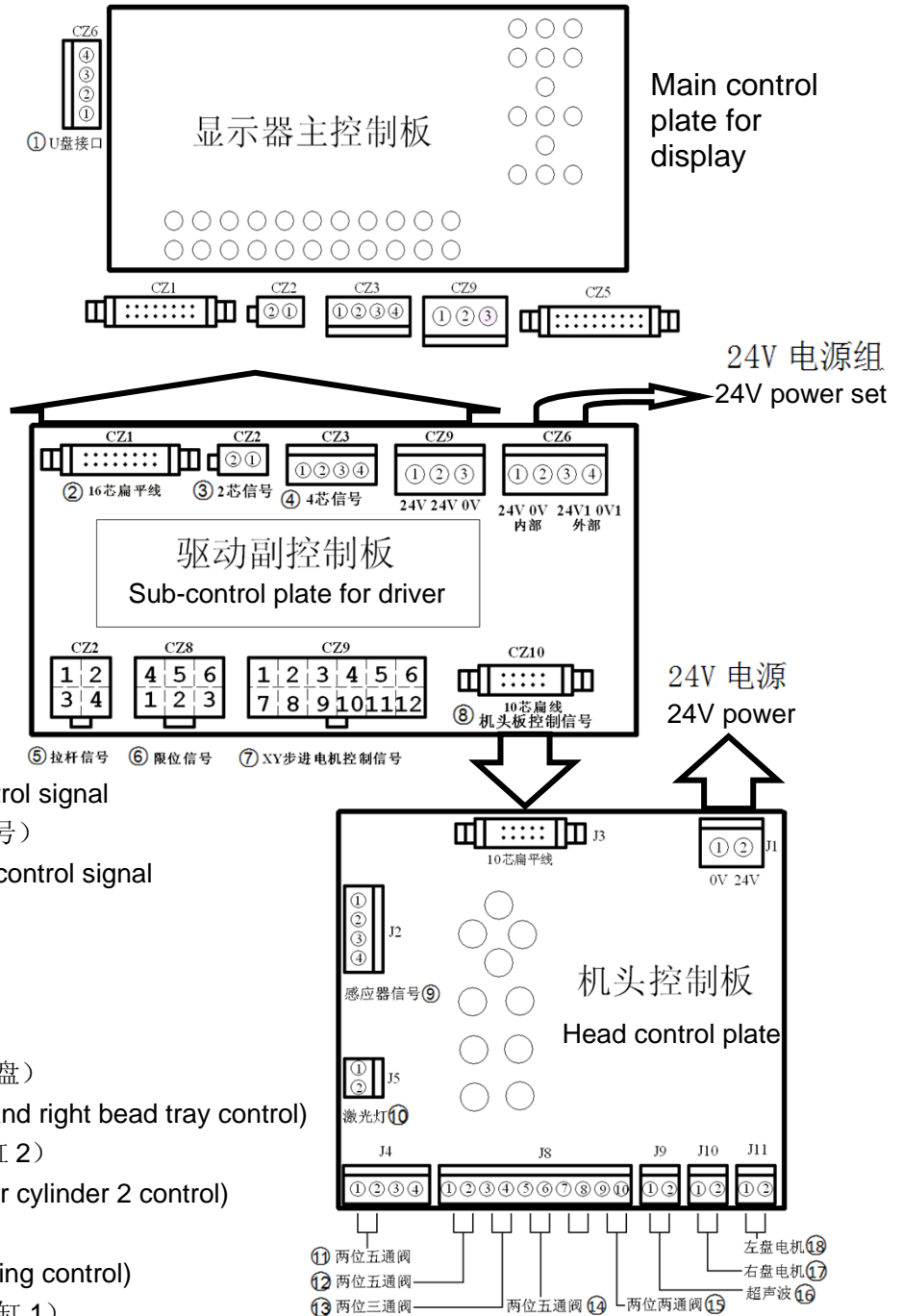
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系统接线图

Systematic wiring drawing

1. U 盘接口
USB interface
2. 16 芯扁平线
16-core flat wire
3. 2 芯信号
2-core signal
4. 4 芯信号
4-core signal
5. 拉杆信号
Pulling rod signal
6. 限位信号
Limiting signal
7. XY 步进电机控制信号
XY step forward motor control signal
8. 10 芯扁平线（机头控制信号）
10-core flat wire for head control signal
9. 感应器信号
Inducer signal
10. 激光灯
Laser lamp
11. 两位五通阀（控制左右珠盘）
Two 5-way valve (for left and right bead tray control)
12. 两位五通阀（控制直线气缸 2）
Two 5-way valve (for linear cylinder 2 control)
13. 两位三通阀（控制吹气）
Two 3-way valve (for blowing control)
14. 两位五通阀（控制直线气缸 1）
Two 5-way valve (for linear cylinder 1 control)
15. 两位两通阀（控制真空发生器）
Two 2-way valve (for vacuum generator control)
16. 超声波控制
Ultrasonic wave control
17. 右盘电机
Right tray motor
18. 左盘电机
Left tray motor





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