

目录/Contents

01 安全说明/Safety Instruction

02 产品介绍/Product Introduction

- 1 概述/Overview
- 2 组成/Components
- 3 性能及指标参数/Specifications
- 4 系统配套适用机型范围/Applications

05 下挂式安装与调试/Installation and Adjustment of Pensile Type System

- 1 针位传感器组件的安装/Installation of synchro
- 2 电机组件的安装/Installation of Motor Module
- 3 控制箱的安装/Installation of Control Box
- 4 脚踏板的安装/Installation of Pedal
- 5 系统电源联接/Connection of System Power
- 6 调试/Debug

10 操作面板使用说明/Operating Instruction of Control Panel

12 使用环境要求/Environment Requirements

13 维护及一般故障处理/Removal of General Faults

⚠ 注意/Caution

使用机器前请仔细阅读本用户手册及所配套的缝纫设备说明书，配合正确使用，由接受过专业培训的人员进行安装调试。

本产品仅适用于指定范围的缝纫设备，请勿移做其他用途。
Please read the operating instruction of our products and the coordinate equipment carefully before operate.

Our products are applicable to stated sewing equipments only, please don't use them in other place.

⚠ 安全说明/Safety Instruction

1. 安装和调试前，请认真阅读本手册。
1. Please read the operating instruction carefully before install and adjust;
2. 本产品须受过专业培训的人员来安装或操作。
2. This product should be installed and operated by professional trained person;
3. 严禁用户改动控制器任何部分的结构，否则，由此而产生的一切后果，由用户自己承担。
3. Forbidding users to change any part of the controller, or users should take all the consequences caused by the change themselves;
4. 确保电源安全接地并符合产品铭牌上标示的电压范围及技术要求。
4. Make sure the power is connected to ground safety, and conformed to the voltage and technical requirements on the nameplate;
5. 接通电源开关时，请把脚移离机器脚踏板。
5. Please move your feed away from the foot control pedal when turn power on or off;
6. 在进行以下操作时，必须先断开系统电源：
 6. Please cut the power when do the following operations:
 - A 安装机器时；
 - A Install the equipments;
 - B 在控制器上插拔任何连接插头时；
 - B Insert or pull our any plug on the control box;
 - C 穿针线、换机针及翻抬机头时；
 - C Thread needle, replace needle and rotate the machine head;
 - D 机器维修及机器休息不用时。
 - D Maintain the machine and the machine is idle;
7. 设置系统控制参数或进行保养维修工作应由受过相关培训的人员来完成。
7. Setting the control system and maintenance should be operated by trained person;
8. 每次关闭电源后再次启动，应在相隔5秒钟以后。
8. There should be an interval of at least 5 seconds when restart the power;
9. 系统必须可靠接地！
9. The system must be connected to the ground safety;

一. 产品介绍/Product Introduction

1. 概述/Overview

YGF系列工缝无刷节能电机，以高效节能、性能稳定、操作简单、性价比高为优良特点，可广泛应用于各种缝纫设备行业。是一款不可多得的可以对离合器电机更新换代的产品。该产品经国家缝纫机质量监督检验中心检测，同比离合器电机可节能在71.22%左右。

YGF series energy saving industrial sewing machine brushless motor has many advantages compared with traditional clutch motor: low friction, low noise & vibration, low temperature rise, longer working life, smaller & lighter. What's most important, YGF motor can save around 71% energy than clutch motors and can be used widely on various of industrial sewing machines to replace clutch motors perfectly.

2. 组成/Components

无刷节能电机由控制器和电机两部分组成：

A：控制器

控制器包括脚踏开关，见图1

The energy saving motor system is made up of two parts: controller and motor.

A: Controller.

Includes foot pedal (see picture 1)

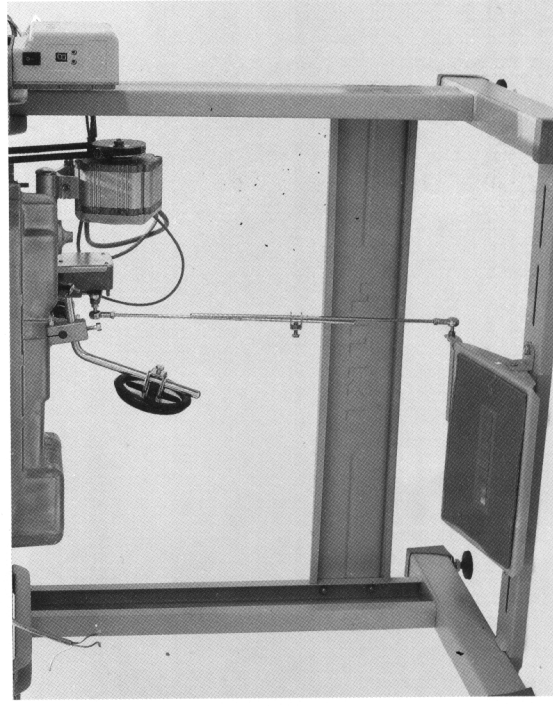


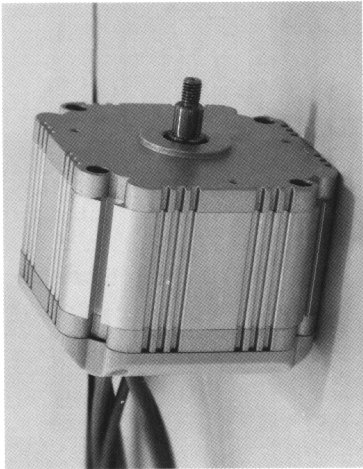
图1 (Picture 1)

B: 电机/Motor

属永磁无刷电机，转子采用稀土永磁材料制成，具有体积小、功率大、节能环保、稳定可靠等优点。

电机外型 (图2)

It is brushless permanent magnet motor, the rotor is made of neodymium magnet, which is the strongest magnet material at present, it makes the motor small volume, high power, energy saving, environmentally friendly, work steadily and reliably. (see picture 2)



下挂/Pensile 图2 (Picture 2)

C: 选用配件/Optional Accessory

传感器又称针位传感器、检测器等见图3，功能是为控制器提供上、下针位信号，适用于定针位的机型。

Needle positioner, called synchronized and detector as well (see picture 3), whose function is to provide signal of needle position to the controller, it is suitable for the sewing machine with needle position function.

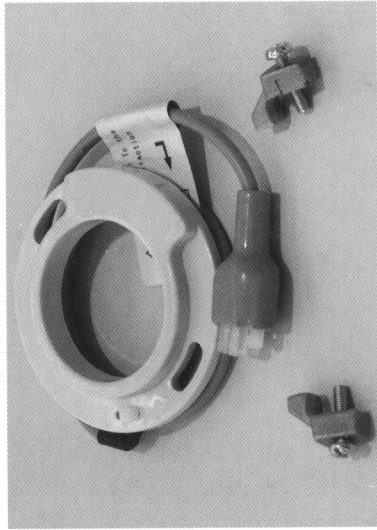


图3 (Picture 3)

3. 性能及指标参数/Specifications

YGF系列电机性能及指标参数表
YGF series specification sheet

控制型号/Model	YGF系列电机/Energy-Saving Servo Motor
电机类型/Motor Type	永磁无刷电机/Brushless Permanent Magnet Motor
电源电压/Voltage	AC 220±10%V 50 Hz
输出功率/Output Power	370W-550W-750W
电机出厂转速设定/Speed Setting	3575rpm(下挂式/pensile type)
电机最高转速/Max Speed	6000rpm(下挂式/pensile type)
最大扭矩/Max Torque	370W-2N/M; 550W /3N/M; 750W-4N/M
上下停针/Needle Up/Down	选配功能 (需另外购买传感器) Optional Function (Synchro Required)
过载保护/Overload Protection	有/Yes
包装/Accelerate Time	两套系统为一包装单位/Two Sets Per Carton
毛重/Package	10.8 KG
包装箱尺寸/Carton Size	560×360×250mm (2PCS) 350×290×260mm (1PC)
提速时间/Gross Weight Per Carton	0.3S±

4. 系统配套适用机型范围/Applications

A: 380W电机系统适用于普通的平缝机和包缝机及负载轻的缝制设备配套使用。

B: 550W电机系统适用于普通的厚料平缝机、双针平缝机、厚料包缝机和绷缝机使用。

C: 请用户根据自己使用设备的具体情况，选用适合功率的电机控制系统。

A: 380W motor applies to common lockstitch sewing machine, overlock sewing machine and other light-load sewing machines.

B: 550W motor applies to common heavy duty lockstitch sewing machine, double needle lockstitch sewing machine, heavy duty overlock sewing machine and interlock sewing machine.

C: Please chose corresponding motor according to yourselves' machine.



安装拆卸任何组件时必须先断开电源!
Do cut the power off at first when install or unload any parts!



图10 (Picture 10)

3. 控制箱的安装/Installation of Control Box

在台板右前下方,用 $\phi 3$ 钻头钻两个深1公分的孔,孔距195mm,然后用随机附带的木螺钉,将控制箱固定拧紧,将电机、引出线、针位传感器、脚踏开关的插头正确插入相应的插座,上好护套,并将电缆线扎好,固定在远离皮带位置的台板下。

见图11 图12

Drill two holes of 1cm deep, hole pitch 195mm, with a $\phi 3$ mm drill in the right front of the table, and fix the control box tightly with wooden screw. Insert the plug of motor, synchro and the plug of pedal switch into corresponding sockets, then fix the packed cables under the table where is far away from the belt (see picture 11 and 12).

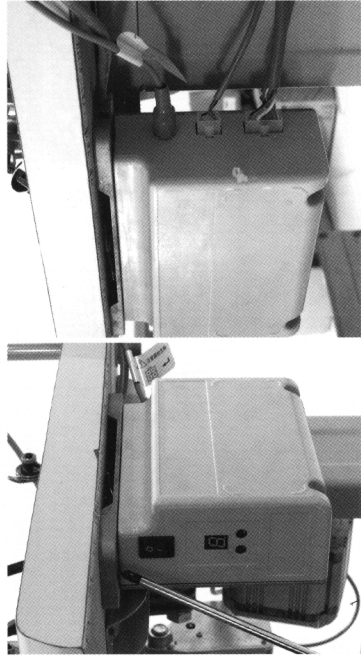


图11 (Picture 11)

图12 (Picture 12)

4. 脚踏板的安装/Installation of Pedal

安装脚踏开关拉杆应保证拉杆位置垂直于踏板。调整拉杆前后高低的角度,使踏板的倾斜角度相对于地平面15度为宜。(也可以工人的操作习惯调整)

见图13 图14

Keep the tension rod is vertical to the pedal. Adjust the angle of tension rod, make a 15 degree angle between the pedal and the ground (see picture 13 and 14).

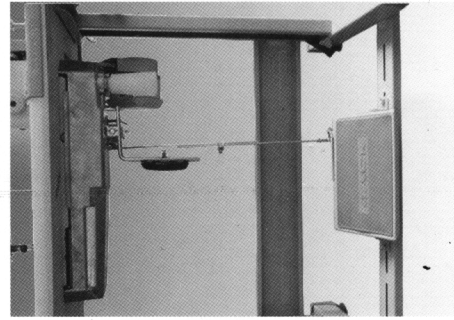


图13 (Picture 13)

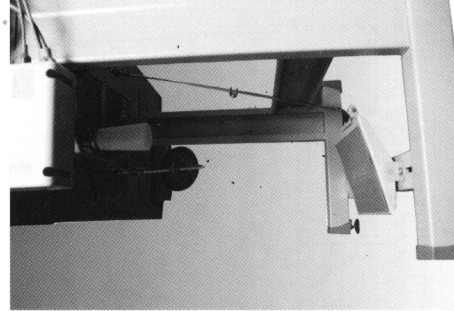


图14 (Picture 14)

5. 系统电源联接 (见图15)

Connection of System Power (see picture 15)

将控制器电源线接入单相220伏供电系统, 用户供电系统必须有独立的接地装置, 控制器箱体必须可靠接地! 将电机、脚踏开关、及针位传感器的各个插头, 平稳插入控制箱尾部对应的插座即可, 插好后, 请再检查一下插头插座接触是否可靠, 调整塑料护套的位置, 使塑料护套完全包裹住插头。

Connect the power cord of the controller with single phase 220V power supply system, which should have separate earthing device, and the control box must be connected to earth safely. Insert the plugs of motor, pedal and synchro into the corresponding sockets on the back of the control box. Finally, check all plugs again to make sure they are connected with sockets stably, adjust the position of the plastic sheath to cover the plugs totally.

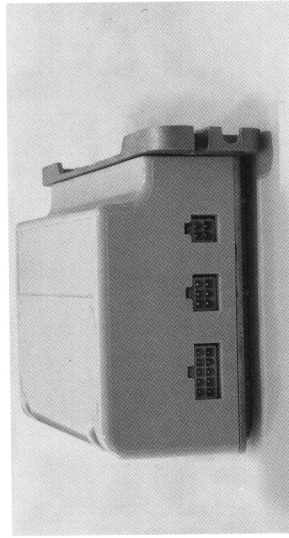


图15 (Picture 15)

控制箱尾部接口定义 (正视图):

Definition of the connectors on the back of the control box:

地 Earth	U	V	W		信号 signal	上 up	上 up
.5V	A	B	C	地 Earth	5V	地 Earth	5V Earth
电机引出线接口 Port of motor Leading-out wire	脚踏开关线接口 Port of pedal switching line			针位传感器接口 Port of synchroizer			

6. 调试/Debug

针位的调整 (无定针位机器, 此步骤省略)

接通电源, 打开控制器电源开关, 用手转动缝纫机主动轮, 在上针位时, 调整有红色标记的磁钢位置, 使针位传感器上的红色发光管亮, 然后再拧紧磁钢固定螺钉, 同理, 用手转动缝纫机主动轮, 在下针位时, 调整有蓝色标记的磁钢, 使针位传感器上的绿色发光管亮, 然后再拧紧磁钢固定螺钉, 至此, 针位传感器的针位信号已调整好。

Debug the needle position (non-positioning type can ignore this step):

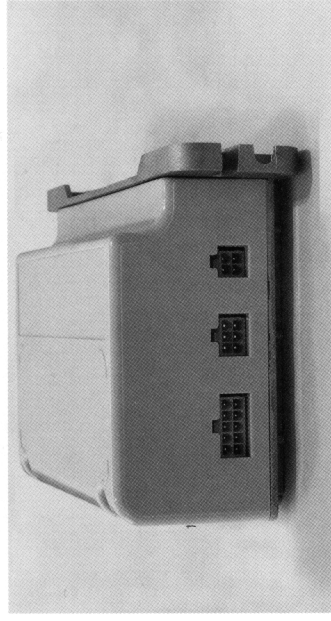
Connect the power, turn the main switch of the control box on.. Rotate the pulley of sewing machine by hand to make the needle at the up position, adjust the position of the red marked magnet till the red luminotron on the synchro light, then tighten the fixing screw of the magnet; In a similar way, rotate the pulley of sewing machine by hand to make the needle at the down position, adjust the position of the blue marked magnet till the green luminotron on the synchro light, hen tighten the fixing screw of the magnet.

四. 操作面板使用说明

Operating Instruction of Control Panel

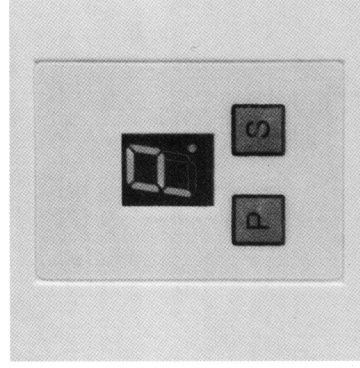
控制器正面照片/Control front view Picture:

图16 (Picture 16)



面板图/Panel Picture:

图17 (Picture 17)



P的右下角带点的适用于平缝机转向的。

P的右下角不带点的适用于包缝机同类转向的。

"P." (P with dot at the lower right corner) model is

suitable for lockstitch sewing machine.

"P" (P without dot at the lower right corner) model is

suitable for overlock sewing machine.

1 开机显示为用户工作界面, 数码管显示 "P" 或 "P." 两种。

2 按动P键左键, 数码管显示 "V" 为用户转速设置界面,

图18

1. Turn control box on, the nixietube shows "P" or "P.";

2. Press "P" to enter the speed setting interface (the nixietube shows "V", see picture 18)

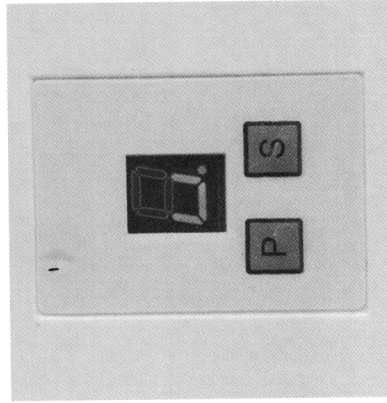


图18 (Picture 18)

再按“S”键，显示从1-9递增循环，对应于限速范围约为每档400转。确认转速后，按左键保存(详见4)

then press "S", you could adjust the speed in 1-9 level, it increases about 400rpm per level. Finally, press "P" to save setting;

3 再按动P键，数码管显示“b”为电机转向设置界面，图19

3. Press "P" again to enter the rotating direction setting interface (the nixietube shows "b", see picture 19).

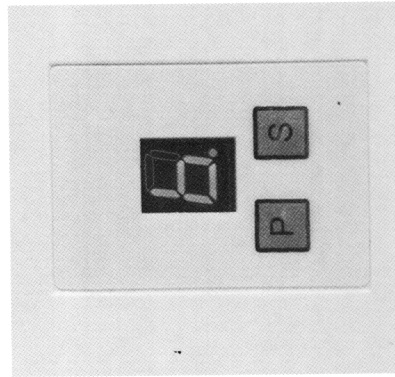


图19 (Picture 19)

再按S键：数码管显示0为正转（平缝机工作转向，数码管小数点点亮），数码管显示1为倒转（包缝机工作转向，数码管小数点熄灭）。

确认转向后，按左键保存。

Then press "S":

The nixietube shows "0" means positive rotation (this mode is suitable for lockstitch sewing machine, and the dot beside the number will be lightened);

The nixietube shows "1" means reverse rotation (this mode is suitable for overlock sewing machine, and the dot beside the number will go out);

Press "P" to save the setting finally;

4 数据的保存:

当参数设置好后，按下P键，数码管会分别显示“O”和“K”为数据保存成功，数码管显示“Er”为数据保存失败。若出现数据不能保存问题，请关闭控制电源，稍后再打开电源，按照步骤重新操作一遍。

5 一键恢复功能的使用:

当控制器因操作失误而引起无法正常使用时，在显示P字符界面，长时间按下S键（约5秒钟），直到数码管分别出现o和k字符，可使系统内部参数自动恢复到出厂设置，以保证系统的正常运行。

4. Saving the data

When finish all setting, press "P" to save the data, if the nixietube shows "O" and "K" separately, it means that save data successfully; If the nixietube shows "Er", it means that save data unsuccessfully, in this case, please turn the controller down and restart after minutes, then operate as step 1-4 again;

5. System recovery function

When the controller can't work regularly, press "S" on the showing "P" interface till the nixietube shows "O" and "K" separately, it means that the controller is recovered to the leave factory setting.

五. 使用环境要求/Environment Requirements

1: 使用本系统时，应远离强磁场或高辐射环境，以免受到干扰而发生误动作。

2: 请不要室内温度高于45℃和低于-10℃的环境使用。

3: 请不要在热源（暖气电热器）旁使用。

4: 请不要在潮湿环境使用。

5: 请不要在有腐蚀性、爆炸性物质的环境使用。

6: 控制器及电机附近不可堆放杂物以免阻塞空气流通，影响散热。

7: 用户供电电压应保持稳定。

8: 用户应具备合格的接地装置，以确保人身安全。

1. Keep this system away from high magnetic field and radiation environment to avoid malfunction;

2. The work environment temperature should be in the range of 5-45℃;

3. Don't use this product near to heat sources (such as radiator);

4. Don't use this product in a too humid environment;

5. Don't use this product near to corrosive liquids and explosive substance;

6. Keep ventilation for the controller and motor to ensure good heat output;

7. Keep the power-line voltage steady;

8. There must be reliable earthing device for the system;

六. 常见故障的排除/Removal of General Faults

机器发生故障，应由受过专业培训的人员维修和操作。

If the machine can't work well, maintenance and repairment should be operated by professional trained person.

1. 控制器开机无电无任何反应: 设置器指示灯不亮

1. Fault: There is no any reaction when controller is turned up, pilot lamp is not light.

请检查电源插头插座接插是否良好, 保险管是否烧断。若已烧断需更换保险管, 先打开控制器塑料罩壳, 找到保险管座的位置 (见图20), 打开保险管座的上盖, 取出烧坏的保险管, 请换用同样规格的保险管, 具体型号规格如下:

5A/250V $\Phi 5\text{mm} \times 20\text{mm}$

Solution: Please check whether the power plug is connected to the socket tightly, and whether the protective tube is broken. If it is broken, please replace the protective tube with a new same one, whose specification is 5A/250V $\Phi 5 \times 20\text{mm}$. About the position of the protective tube, please open the cover of the control box and check the picture 20.



图20 (Picture 20)

2. 控制器有电指示灯亮, 但踩踏板电机不转

Fault: The pilot lamp of the controller is light, but the motor does not work when press the pedal

请检查脚踏开关插头、电机插头、电机信号线插头与控制器的插座接触是否良好, 脚踏开关是否损坏。

Solution: Please check whether the connection of the plugs of pedal switch, motor, motor signal wire and controller is good, and whether the pedal switch is ok.

3. 电机转动时快时慢

Fault: The rotating speed of the motor is not steady

请检查皮带是否太松, 皮带盘是否打滑, 踏板及拉杆是否松动。同时也检查电源的电压是否稳定。脚踏开关的摇臂是否固定, 螺栓有无松动。

Solution: Please check whether the belt is too loose, the belt pulley is skidding, the pedal and tension rod are loose. Meanwhile, check the power voltage to see whether it is steady.

4. 电机在转动中自动停止

Fault: The motor stops running itself

首先请检查机器负荷是否太重, 是否存在机械故障, 其次检查电源插座、插头和电机引出线插座、插头、脚踏开关插座、插头接触是否良好。如上所述良好, 请检查控制器的设置器是否在轮流显示E.2或E.1, 如是为系统正常保护, 开关电源后可正常操作。

Solution: Please check whether the machine load is too heavy or there is some mechanical failure. Then check and make sure all plugs are connected well with sockets. If all the above is ok, please check whether the nixietube of the controller is showing "E.1" or "E.2" in turn, if so, this stop is system self-protection, just need to restart the power.

5. 控制器在开机后电机转动不停

5. The motor keeps running when the controller is turned on

A: 请首先检查F模式内是否设定在"0"模式, 若设定在其他模式而又未安装相位传感器, 系统在开机后, 电机转动不停, 此步骤需经培训专业人士检查。

B: 其次请检查脚踏开关中磁钢的位置是否有变化, 检查调整的方法如下:

打开调速器的塑料盖板, 松开塑料摆臂的固定螺丝, 仔细调整塑料摆臂的位置 (图21为工作状态下的摆臂位置), 使摆臂中的磁钢位于霍尔元件的正上方 (图22为停止状态下的摆臂位置), 一般情况机器转动可停止, 若机器继续转动, 可稍将摆臂即磁钢向顺时针方向调整。

Solution: Firstly, check whether the working model is set at "0" model, if not and there is no synchro installed in this machine, the motor will run without stop; Secondly, check whether the position of magnet in speed adjustor has been changed, do as follow: open the plastic cover of the speed adjustor, loose the fixed screws, then adjust the position of the swinging arm (picture 21 shows the position of swinging arm when working) to make the magnet in the swinging arm directly over the Hall element (picture 22 shows the position of the swinging arm when stop). If the motor still keep running, adjust the magnet position clockwise again.

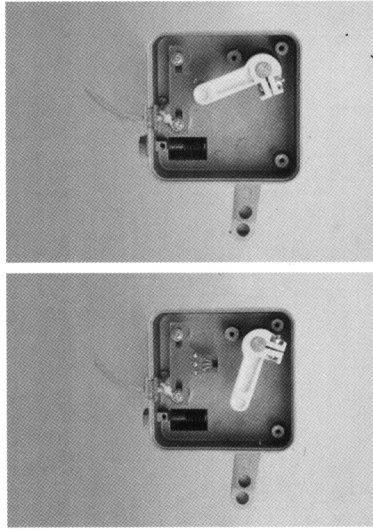


图21 (Picture 21)

图22 (Picture 22)

6. 数码管交替显示"E1"

6. The nixietube shows "E1" alternate

此种状况表明电机发生堵转故障, 请检查缝料是否太厚, 机器是否缺少润滑等机器负载变重的原因。

Solution: It means that the motor has operational failure, please check whether the sewing material is too heavy, whether the machine lack of lubrication, or some other reason that make the load heavier.

7. 数码管交替显示“E2”

Fault: The nixietube shows “E2” alternate

此种状况表明电机发生过流或欠压故障,请检查供电电压是否正常,正常供电电压应在200V至240V范围内。

Solution: It means that the motor is overcurrent or undervoltage, please check the power supply voltage and make sure it is in the range of 200-240V.

8. 数码管交替显示“E3”

Fault: The nixietube shows “E3” alternate

出现此种状况,需要关闭电源,稍后再打开电源开关即可。

Solution: You should cut the power off in this case, and restart it after minutes.

9. 开机即烧毁保险管

Fault: The protective tube is burnt as soon as turn the machine on

当换用同规格的保险管故障依然存在,发生此种故障时,请与当地经销商联系维修事宜。

Fault: The protective tube is burnt as soon as turn the machine on.

Solution: If the problem could not be solved by using new protective tube, please contact the local distributor.

10. 其他超出以上指示范围的故障

请与当地经销商联系维修事宜。

If there is some other fault that has not mentioned above, please contact the local distributor.

补充说明/Additional Remarks

1. 电机转向在平缝机模式下,数码管小数点会亮。
电机转向在包缝机模式下,数码管小数点熄灭。
2. 当控制器无法正常操作使用时,在显示P字符界面,按下S键直到数码管分别出现o和k字符,可使系统内部参数自动恢复到出厂设置,以保证系统的正常运行。

1. If the motor rotation direction is in the model of lockstitch sewing machine, the dot in the nixietube is light; If in the model of overlock sewing machine, the dot is extinct;
2. When the controller can't work regularly, press "S" on the showing "P" interface till the nixietube shows "O" and "K" separately, it means that the controller is recovered to the leave factory setting.