AC 伺服马达
AC Servo motor

使用说明书　V1.2
User Manual　V1.2

型　号 : WR509

使用前请详细阅读本使用说明书及所搭配的缝制机械说明书，配合正确使用，并须由接受过正确训练的人员来安装或操作。

Please read the manual carefully and the manual of sewing machinery accompanied before use. Installation and operation by trained professionals and correct use are required.

目　　录

1.安全上的注意事项

使用前请详细阅读本技术资料与所搭配的缝制机械说明书，配合正确使用，并必须有接受过正确训练的人员来安装或操作。

在使用或安装 EasyDriver（“易动”）型伺服马达系列控制箱驱动装置时，请注意以下事项。本驱动装置仅适用于指定的缝制机械，请勿移做其他用途。

1.1 作业环境的安全

(1)电源电压：

电源电压请遵照马达与控制箱铭牌所标之规格 200V—240V 范围操作。

(2)电磁波干扰：

请远离高频磁波机器或电波发射器等，以免所产生的电磁波干扰本驱动装置因而发生错误动作。

(3)温湿度：

a.请不要在室温 45℃以上或 5℃以下的场所操作。

b.请不要在日光直接照射的场所或室外运作。

c.请不要在暖气(电热器)旁运作。

d.请不要在相对湿度 30％以下或 95%以上或露水的场所运作。

(4)空气：

a.请不要在多灰尘或具有腐蚀性物质的场所操作。

b.请不要在有挥发性气体的场所操作。

1.2 安装的安全

(1)马达、控制箱：请遵照说明书正确装好。

(2)附属品：如要装配其它选购配件或附属品时，请先关闭电源并拔掉电源线插头。

(3)电源线：

a.请注意不要被外物压住或过度扭曲电源线。

b.装钉电源线时请不要靠近会转动的上轮，最少要离开 3 公分以上。

c.当连接电源线到电源插座时，应确定比供应电压必须符合标示在马达与控制箱铭牌上的指定电压 200V—240V 内。

(4)接地：

a.为防止杂讯干扰或漏电事故，请做好接地工程（包括缝纫机、马达、控制箱、定位器）。

b.电源线的接地线须以适当大小的导线和接头连接到生产工厂的系统地线，此连接必须被永久固定。

1.3 操作中的安全

(1)在第一次开电后，请先以低速操作缝纫机并检查转动方向是否正确。

(2)缝纫机运转时，请不要去触摸上轮、机针等会运动的部位。

(3)所有可运动的部分，必须以所提供的防护装置加以隔离，防止身体接触并请勿在装置内塞入其他物品。

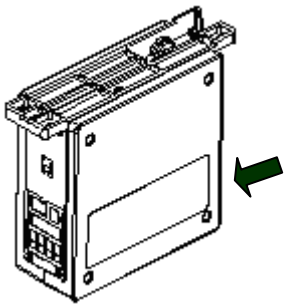
(4)请不要在拆下皮带护盖及其他安全装置下操作。

1.4 保养维修

在操作以下动作前，请先关闭掉电源：

(1)要拆卸马达或控制箱时，或在控制箱上插或拔任何连接插头时。

(2)控制箱里面有危险高压电，所以关闭电源后要等 1 分钟以上方可打开控制箱盖。



内部高压电危险

(3)翻抬车头时，与更换车针或梭子或穿线时。

(4)修理或作任何机械的调整时。

(5)机器休息不用时。

1.5 保养维修的规定

(1)修理及保养的作业，要请经过训练的技术人员执行。

(2)马达的通风口附近，请不要堆置杂物阻塞空气流通，尤其马达后风盖上更不可附著灰尘、纸屑、布屑等物，以免造成马达发烫。

(3)请不要用以下物体，如木槌、铁槌…等敲击本产品装置或马达（马达）心轴。

(4)所有维修用的零件，须由本公司提供或认可，方可使用。

1.6 危险标示、注意标示

这个标示符号表示机器安装时，如有错误恐会伤害到人体或机器会受到损坏，所以机器方面有危险性的地方会有此标志。

这个标志符号表示有高压电等，电气方面有危险性的地方会有此标志。

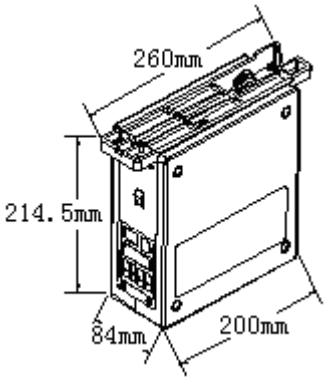
1.7 保质期限规定

本装置保证在正常工作情况且无人为失误的操作下，保证自出厂 12 个月内，无偿的为客户维修使能正常操作。

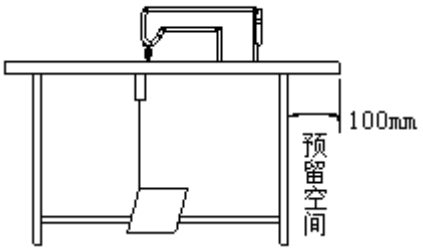
2.安装与调整

2.1 驱动器板的安装

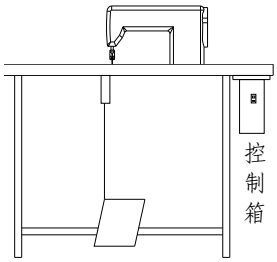
（a）控制箱尺寸图



（b）缝纫机桌板右侧必须预留 100mm 以上空间

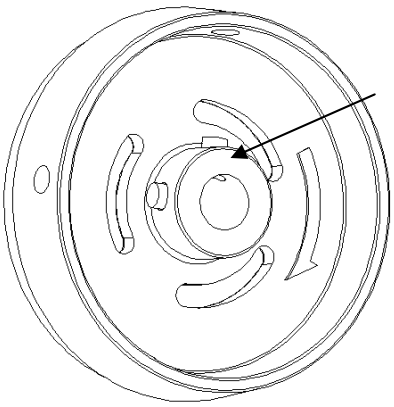


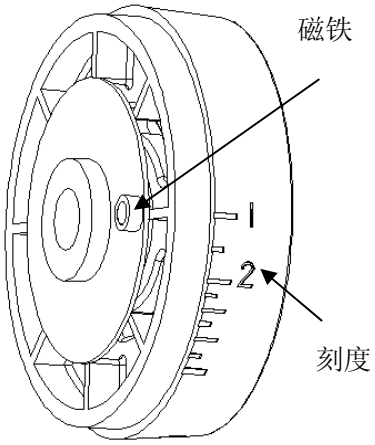
（c）控制箱安装后示意图



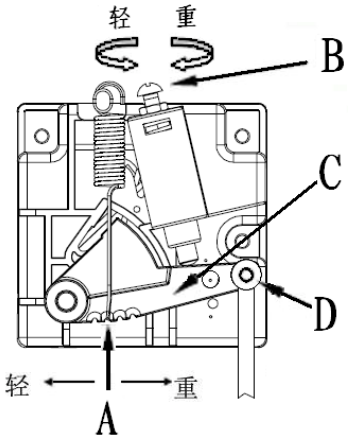
2.2 手轮的安装与调整

手轮安装时，使其运动方向上的第一个孔对上转轴上的切平面，并拧紧螺钉。调停针机片上的磁铁要和手轮上的刻度“1”对齐，如下图：





2.3 踏板的调整



踏板各部位名称：如左图所示

A、运行弹簧

B、后踏力量调整螺栓

C、踏板摇杆

D、球接连杆

表 2.1

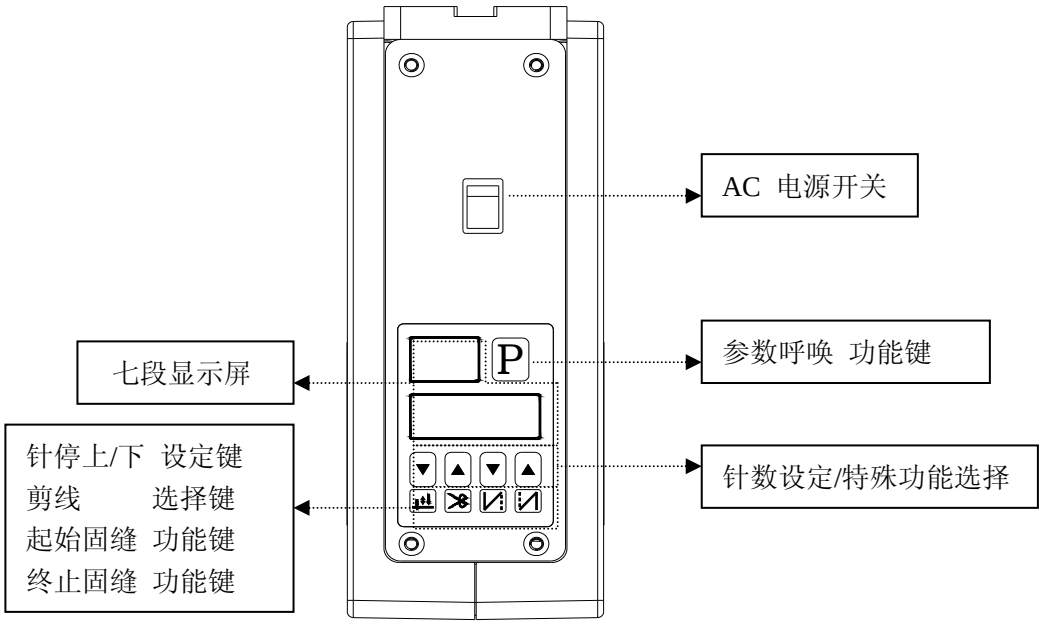
序号	调整需求	调整效果
1	踏板前踏力量调整	弹簧 A 向右侧勾时，前踏力量加重 弹簧 A 向左侧勾时，前踏力量减轻
2	踏板后踏力量调整	逆时针向上拧动螺栓，后踏力量减轻 顺时针向下拧动螺栓，后踏力量加重
3	踏板行程长短调整	球接连杆 D 选择右侧孔时，为长行程模式 球接连杆 D 选择左侧孔时，为短行程模式

3.接线与接地

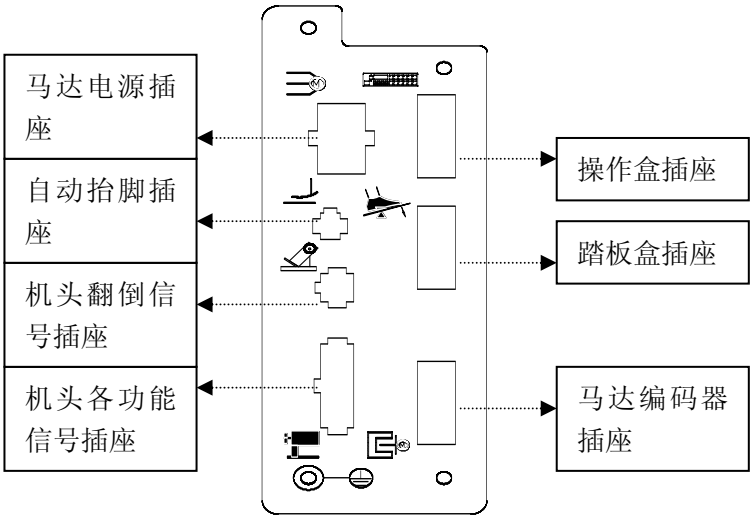
一定要做好系统的接地工程，请合格的电气工程人员予以施工。

4. 机箱各部位的名称

4. 1 机箱正面



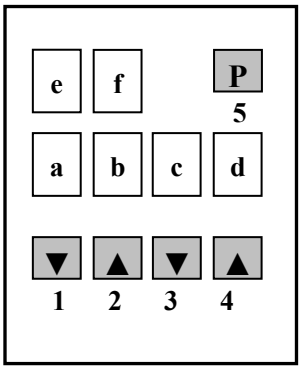
4.2 机箱背面：端子座面板



按端子座面板的指示插接各连接线，DB 插头要插牢后锁紧，其余的插头插紧后确定其锁扣已扣牢。

5．绷缝机操作面板使用说明

机箱操作面板布局如图所示，包括六个数码管 abcdef 和五个按键 12345。



5.1 缝纫功能设定

机箱操作面板的默认设定模式，通过按键 12 和数码管 ab 可以分别设定针位和剪线设定。

1：针位选择　　a：**0** 上针位；**1** 下针位

2：剪线选择　　b：**0** 不剪线；**1** 剪线

对于不同的工作模式及缝纫模式下，设定不一定有效。

1) 自由缝、定长缝：设定均有效。
2) 简易缝纫：设定均无效。
3) 自动测试模式：设定均有效。

   按下 P 键同时上电，系统进入自动测试模式，按 P 键后同时按下键 4 可启动、停止运行。

关于数码管 ef 的显示功能：

1） 数码管 e：显示剪刀安全开关的状态。

剪刀安全开关无效时不显示，剪刀安全开关有效时显示动画“|　”→“|- ”→ “ - ”→ “ -|”→“ |”，表示剪刀未归位，此时系统禁止运行。

2） 数码管 f：区分不同的缝纫模式。

简易缝纫时显示“**E**”，自动测试时显示“**A**”，其他模式无显示

5.2 功能参数设定

在缝纫功能设定模式即机箱操作面板的默认模式下，长按 P 键进入功能参数设定状态。数码管 abcd 显示参数值，通过按键 34 修改；数码管 ef 显示参数编号，通过按键 12 修改，同时保存上一参数的值。按 P 键退出参数设定模式，并保存当前参数值。

按键 1234 短按每次变更，长按可连续快速增减。

注：系统运行时无法进入参数设定模式；进入参数设定模式除非退出否则系统无法运行。具体的参数见系统参数表。

5.3 系统监控状态

机箱操作面板默认模式下，按 P 键后同时按下键 1 进入系统监控状态。数码管 abcd 显示监控值；数码管 ef 显示监控参数编号，通过按键 12 修改。

ef	abcd	单位
1	速度	spm
2	电流	A
3	电压	V
4	计件数	件

5.4 系统故障状态

当系统检测到有故障时，系统停止运转，同时机箱操作面板显示故障代码。数码管 abcd 显示故障编号。具体的故障见故障代码列表。

6. 系统参数表

No.	项目	内容	设定范围	默认值
1	自由缝纫最高速	设定机头的最高转速	300~4000(spm)	3500
2	软起动功能	始缝时软起动设置 0：无软起动功能 1~9：软起动针数	0~9	3
3	软起动速度 1	软起动第 1 针的速度	100~1000(spm)	400
4	软起动速度 2	软起动第 2 针的速度	100~1500(spm)	800
5	软起动速度 3	软起动第 3 针的速度	100~4000(spm)	1200
6	软起动速度 4	软起动第 4 针的速度	100~4000(spm)	1200
7	软起动速度 5	软起动第 5~9 针的速度	100~4000(spm)	1200
8	定针缝最高速	定针缝最高速度	300~5000(spm)	3000
9	缝纫模式	缝纫模式设定 0：自由缝纫 1：定针缝纫 2：简易缝纫	0~2	0
10	定针缝段数	定针缝段数及各段针数设定	1~2(段)	1
11	定针缝第 1 段针数		1~99(针)	15
12	定针缝第 2 段针数		1~99(针)	15
13	定针缝触发模式	定针缝触发功能设定 0：无触发功能 1：有触发功能	0/1	0
15	抬压脚控制模式	抬压脚功能模式设定 0：无抬压脚功能 1：踏板抬压脚功能 2：剪线后自动抬压脚 3：踏板抬压脚加剪线后自动抬压脚 4：停机加剪线后自动抬压脚 5：踏板抬压脚加停机加剪线后自动抬压脚	0~5	1
16	剪线后踏板命令模式	剪线后踏板命令模式设定 0：剪线命令不作抬压脚用 1：剪线命令用作抬压脚	0/1	1
20	上电定位	上电时机头自动运转至上针位功能设定 0：无上电定位功能 1：有上电定位功能	0/1	1

21	剪刀安全开关信号模式	剪刀安全开关信号模式设定 0：常开信号 1：常闭信号	0/1	1
23	计件功能	计件功能设定 0：无计件功能 1：有计件功能	0/1	1
24	计件显示	计件数显示	0~9999	0
27	低速速度	踏板最低速度	100~1000(spm)	200
28	踏板功能调整	踏板调速功能调整	10~100	60
30	剪线延迟时间	剪线延迟时间	0~200(ms)	0
31	剪线动作时间	剪线动作时间	0~1000(ms)	120
32	拨线延迟时间	拨线延迟时间	0~300(ms)	40
33	拨线动作时间	拨线动作时间	0~1000(ms)	30
34	抬压脚延迟时间	抬压脚延迟时间	0~1000(ms)	30
35	抬压脚全压输出时间	抬压脚全压输出时间	0~800(ms)	250
36	抬压脚输出占空比	抬压脚输出占空比	0~100	22
37	抬压脚保持时间	抬压脚保持时间后强制关断	1~60(s)	12
38	放压脚延迟缝纫时间	为确认压脚已放下的延时	0~800(ms)	200
40	下停针位	下停针位位置调整	120~240	180
49	特殊功能参数	特殊功能参数（维持 2s 有效） 5：恢复出厂参数	0~15	0

*带标记的项目是维修用的功能，如果更改了出厂时的初始设定，有可能出现损坏机器或使机器性能降低的危险。要更改时，需专业人员指导。但有时为了提高缝纫机的功能和性能，有可能随时变更功能设定值。

7.系统功能设置说明

7.1 缝纫速度调整功能（参数 No.1，4，27~28，50）

1） 自由缝纫的最高速（参数 No.1）

由缝纫时的踏板最高速设定，其最大设定值由参数 No.50 限制。

（注意）过高的缝纫速度可能降低缝纫机的使用寿命。

2） 定针缝速度设定（参数 No.4）

各种花样定针缝的速度设置参数。

3） 低速速度设定（参数 No.27）

踏板起动运行时的速度。调整到合适值，可以用踏板方便的作出补针操作。

4） 踏板调速性能调整（参数 No.28）

用户对踏板调速性能可进行定制，调大此参数踏板加速快，反之则慢。但调得过大，会影响缝纫的舒适度；调得过小，有可能无法运行至设定的高速。

若踏板无法运行至设定高速，可适当调大此参数。

7.2 软起动功能（参数 No.2~3）

若针距较短或机针较粗，始缝面线和底线可能结不起来，通过限制始缝时缝纫机的速度可以提高缝纫的可靠性。

No.2 软起动针数设定

0 软起动功能无效

1~9 软起动针数，即始缝时在一定针数内以限制速度缝纫

No.3 软起动速度设定

7.3 停机针位的设定（参数 No.40）

1） 上下针位的选择

机箱操作面板默认状态下，下排左数第 1 按键设置停机针位，上方对应数字显示设定值。

0 上针位

1 下针位

2） 下针位位置调整（参数 No.40）

设置下针位的位置，从上针位的偏移角度。

7.4 如何设定缝纫模式（参数 No. 5~13）

通过设置参数来实现特定花样缝纫的功能。

1） 缝纫模式的选择（参数 No.5）

0 自由缝纫：踩下踏板可连续运行，不计针数。

1 定针缝纫：缝纫至一定针数自动停机，可以设置缝纫的停机次数（参数 No.6）以及每次停机的针数（参数 No.7~12）。

2 简易缝纫：停针位置任意，不计针数，可自动抬压脚。 一般若机头同步器损坏可设置成此模式继续运行。

2） 定针缝段数及各段针数的设定（参数 No.6~12）

定针缝可设段数（参数 No.6）为 1~6 段，各段可设针数（参数 No.7~12）为 1~99 针。

3） 定针缝触发功能（参数 No.13）

设定定针缝时各段是否一次缝完的功能。此功能无效时可以在各段缝纫过程中停机。

4） 剪线功能设定

机箱操作面板默认状态下，下排左数第 2 按键设置剪线功能，上方对应数字显示设定值。

0 剪线功能无效

1 剪线功能有效

7.5 抬压脚模式设定（参数 No.15）

设定抬压脚电磁铁的操作模式。

0 无抬压脚电磁铁操作

1 只有踏板命令可以进行抬压脚操作

2 剪线后抬压脚自动操作

3 踏板操作，剪线后自动操作

4 停机后自动操作，剪线后自动操作

5 踏板操作，停机后自动操作，剪线后自动操作

（注意）若未选配抬压脚电磁铁请将参数 No.15 设为 0。

7.6 剪线后踏板命令设定（参数 No.16）

剪线结束后，踏板后踏至剪线状态，发出抬压脚命令的设定。

若参数 No.15 设为 1、3、5，则执行抬压脚操作。

该功能是为了剪线后方便脚踏抬压脚操作的处理。

7.7 上电时自动运转至上针位（参数 No.20）

上电时，机头自动运转至上针位，可以方便进行缝纫的功能。

若原本针位在上针位附近，则不做动作。

7.8 剪刀保护功能（参数 No.21）

剪刀未归位状态，为防止机器意外运转损坏剪刀，锁定机器的功能。参数 No.21 可设定翻转开关信号的类型。

机器锁定保护时，机箱操作面板上排左 1 的数码管会显示剪刀保护动画。

7.9 **缝纫计件功能（参数 No.23~24）**

每次剪线结束计数增加，计算缝纫工序完成数的功能。

No.23 设定为 1，计件功能有效；设定为 0，计件功能无效。

No.24 显示计件数，按键 4 则清零计件数，可重新计数。

监控界面的监控值 No.4 可以用来在线显示计件数。

7.10 电磁铁时序设定（参数 No.30~34）

调整停机后剪线、拨线（上剪线）、抬压脚的时序配合。

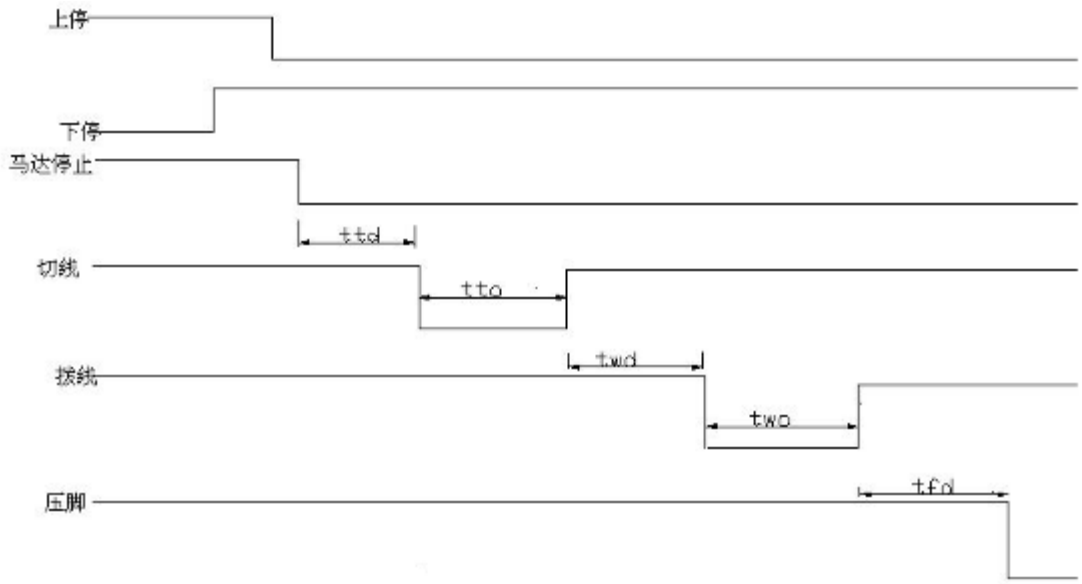
No.30 剪线延迟时间 ttd：　　停机后到下剪刀开始动作的时间

No.31 剪线动作时间 tto：　　下剪刀动作的时间

No.32 拨线延迟时间 twd：下剪刀动作结束到拨线（上剪刀）开始动作的时间

No.33 拨线延迟时间 two：拨线（上剪刀）动作的时间

No.34 抬压脚延迟时间 tfd：　　拨线（上剪刀）动作结束到抬压脚动作的时间



7.11 抬压脚保持时间设定（参数 No.37）

调整压脚抬起保持时间，电磁铁长时间吸合会降低使用寿命。

压脚抬起后，经过 No.37 设定的时间，自动关闭电磁铁放下压脚。

7.12 压脚放下延时缝纫功能（参数 No.38）

抬压脚电磁铁吸合时，踩踏板运行，由于电磁铁释放需要时间，压脚未压紧布料时缝纫机可能已运转，从而影响缝纫效果。通过设置此参数可以适当补偿抬压脚释放的时间。

8.故障代码表

故障显示	故障内容	故障可能原因	检查项目、处理
E011 E012 E013 E014	电机信号故障	电机位置传感器信号故障	电机插头是否接触良好 电机信号检测器件是否损坏 缝纫机手轮是否安装到位
E021 E022 E023	电机超负荷	电机堵转 电机超负荷	电机插头是否接触良好 机头或剪线机构是否卡死 是否缝制规格厚度以上布料 电流检测信号是否正常
E101	硬件驱动故障	电流检测非正常 驱动器件直通	系统电流检测回路是否工作正常 驱动器件是否损坏
E111 E112 E113	系统电压过高	实际电压偏高 制动回路故障 电压检测有误	系统进线电压是否过高 制动电阻是否工作正常 系统电压检测回路是否工作正常
E121 E122	系统电压过低	实际电压偏低 电压检测有误	系统进线电压是否过低 系统电压检测回路是否工作正常
E131	电流检测回路故障	电流检测非正常	系统电流检测回路是否工作正常
E141	系统数据读写故障	系统数据读写非正常	系统数据读写回路是否工作正常 数据芯片是否损坏
E151 E152	电磁铁故障	电磁铁回路过流 电磁铁非正常导通	机头电磁铁是否短路 电磁铁回路是否工作正常
E201	电机电流过大	电流检测非正常 电机运转非正常	系统电流检测回路是否工作正常 电机信号是否正常
E211 E212	电机运转非正常	电机运转非正常	电机插头是否接触良好 电机信号是否不匹配
P.oFF	掉电显示	电源关闭	等待电源重新开通
LED1 动画	剪线安全开关有效	信号未连接	剪刀是否回位 剪线安全开关信号插头是否插好

注：若以上故障按检查项目不能排除，请寻求技术支持。

Contents

1. Notes on safety

Please read carefully User's Guide and the manual of sewing machinery accompanied before use. Installation and operation by trained professionals and correct use are required.

Read carefully the following instructions for proper use. EasyDriver servomotor series can only be used for designated sewing machinery, with no exception.

1.1 Operating Environment Security

(1) Power Supply:

Please follow the200V—240V indicated on the nameplates of motor and control box.

(2) Electromagnetic wave interference:

Keep away from high frequency electromagnetic wave machines or electric wave emitter so as to avoid interference.

(3) Humidity and temperature:

a. Working environment: 5℃~ 45℃, room temperature

b. Keep away from sun light, indoor use only.

c. Keep away from (electric) heating appliances

d. Relative humidity: 30％~95%, keep away from dew.

(4) Air:

a. Keep away from dusty or corrosive environment.

b. Keep away from volatile substance.

1.2 Installation Security

(1) Motor, control box: follow the steps indicated in the manual

(2) Accessories: power off and unplug power cord before installing any optional accessories.

(3) Power cord:

a. Avoid pressure or over distortion.

b. Keep the power cord at least 3 cm away from upper roller.

c. Make sure that supply voltage is between 200V—240V.

(4) Earthing:

a. Handle earthing (including sewing machine, motor, control box, locator) correctly to avoid interference or creepage.

b. The earthing cord of power cord must be connected to user's system earthing cord with proper conducting wire and joint and fixed permanently.

1.3 Operation Security

(1) Operate at low speed to check if rotation direction is correct when the sewing machine is powered on for the first time.

(2) Do not touch the upper roller or needles when the sewing machine is running.

(3) All movable components must be isolated by protection apparatus provided to avoid unnecessary contact and nothing shall be put inside the machine.

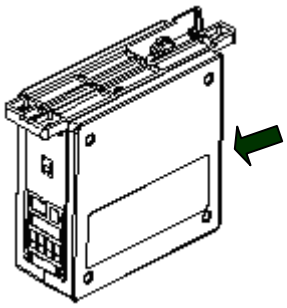
(4) No operation is allowed in the absence of belt guard and other security apparatus

1.4 Maintenance

Turn off power before conducting the following operations:

(1) Removing motor or control box, or plugging of unplugging any plugs from the control box.

(2) There is hazardous high voltage inside the control box. Do not open the control box until the power has been off for at least 1 minute.



HAZARDOUS
VOLTAGE INSIDE

(3) Moving machine head, replacing needles or shuttle or threading.

(4) Repairing or any mechanical adjustment.

(5) The machine is not running.

1.5 Regulations on Maintenance

(1) Repair and maintenance can only be performed by trained technicians.

(2) No irrelevant articles should be put near the motor's air vent, the back vent head, in particular, shall be kept free of dust, waster paper, broken fabric, etc to avoid overheating of the motor.

(3) Do not hammer this machine or motor (motor) spindle.

(4) No spare part shall be used for repair until provided or authorized by our company.

1.6 Warning Signs & Notices

Used where potential dangers exist.

Used where high voltage and electric danger exist.

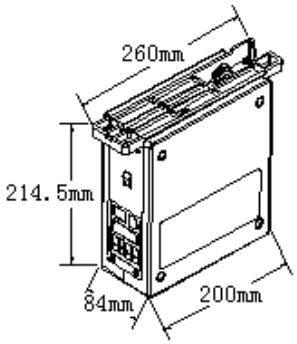
1.7 Regulations on Warranty period

Free repair service up to 12 months since leaving factory on condition that this machine is operated correctly and no human error occurs to it.

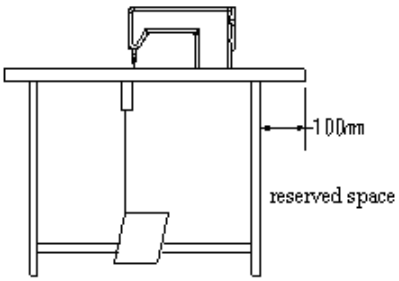
2. Installation and Adjustment

2.1 Installation of Drive Board

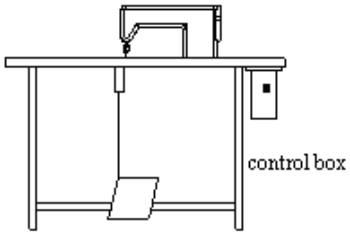
(a) Dimensions of control box



(b) At least 100mm shall be reserved for the right side of the sewing machine table.

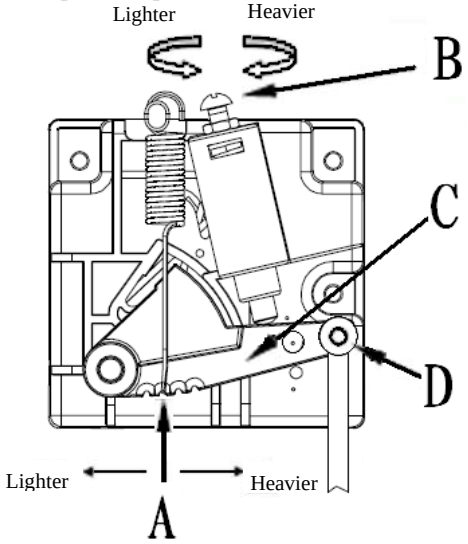


(c) After installation



2.3Adjustment of pedal

The parts of pedal are as shown in the left figure.



A. Operation spring

B. Bolt for heeling force adjustment

C. Pedal lever

D. Ball joint link

Table 2.1

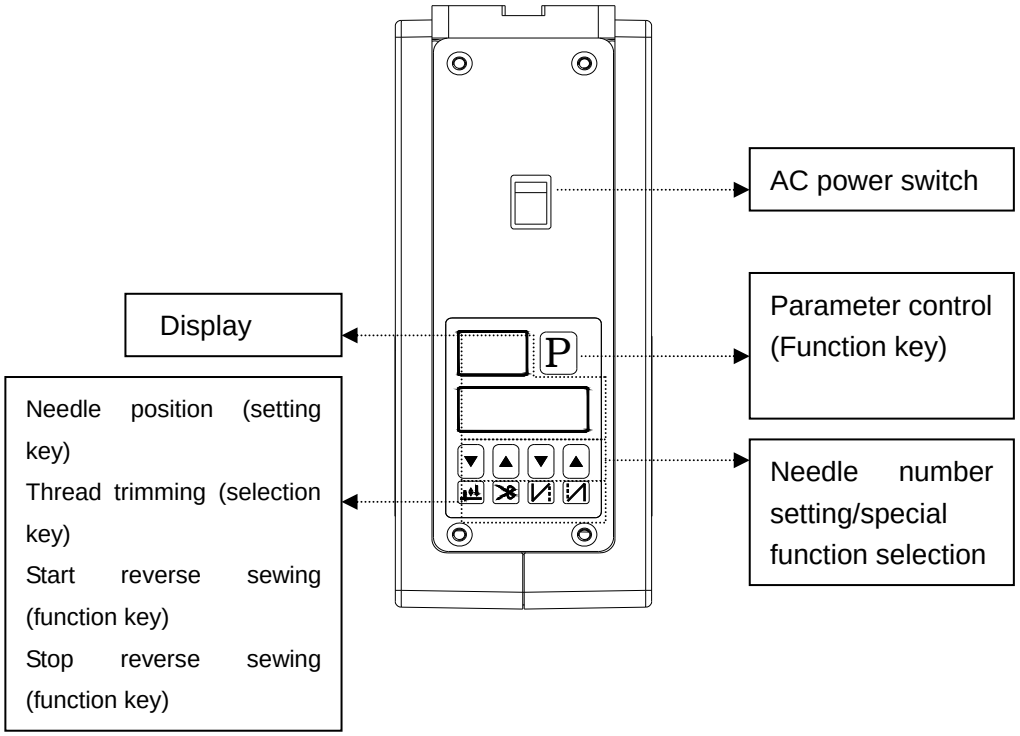
No.	Adjustment	Result
1	Adjustment of toeing force	Move spring A to the right to increase the toeing force. Move spring A to the left to reduce the toeing force.
2	Adjustment of heeling force	CCW turn the bolt to reduce the heeling force. CW turn the bolt to increase the heeling force.
3	Adjustment of pedal stroke	Secure D to the right hole to increase the pedal stroke. Secure D to the left hole to reduce the pedal stroke.

3. Connection & Earthing

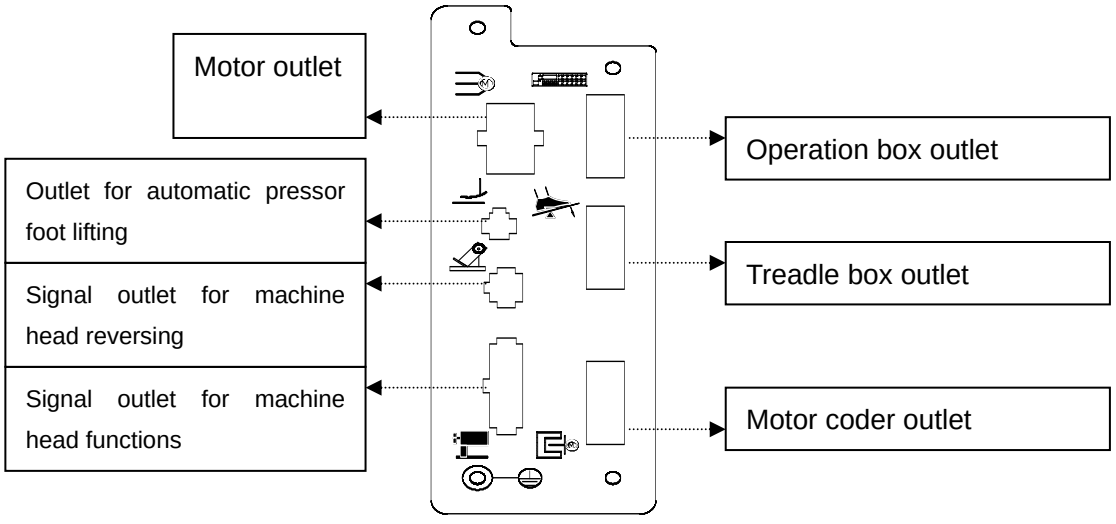
Qualified electric engineering professionals must be invited for system earthing.

4. Names of Chassis Components

4.1 Front Side



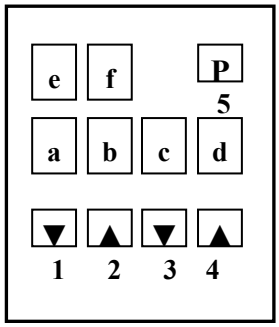
4.2 Back Side: connector



Plug wires in accordance with connector requirements;makes sure that all plugs,DB in Particular,have been fastened correctly.

5. Instructions for the Operation Panel of the Chassis

Layout of the operation box of chassis, 6 digital tubes (abcdef) and 5 keys (12345)



5.1 Setting of Sewing Functions

Press key 1234 and digital tube abcd to set needle position, thread-cutting,。

(1) Needle position a: **0** upper needle position; **1** lower needle position

(2) thread-cuttings b: **0** unavailable; **1** available

The four settings are not necessarily valid for different working mode and sewing mode.

1) free-style sewing, preset sewing are all valid.
2) none of the settings are all valid for plain sewing.
3) Automatic test mode: all settings are valid.

The system will enter automatic test mode if key P and power button are pressed at the same time, Press key P and 4 to start,stop running.

Display functions of digital tube ef:

(1) Digital tube e: indicate the status of scissors safety switch.

No display for invalid scissors safety switch, animated pictures for valid scissors switch, “| ”→ “|- ”→ “ - ”→ “ -|”→“ |” which means that scissors has been lifted and system running is forbidden.

(2) Digital tube f: distinguish different sewing modes

“E” for plain sewing, “A” for automatic test, no display for other modes

5.2 Setting of Parameters

Under setting mode for sewing functions, i.e. default mode of the operation box of chassis, keep pressing key P to enter setting mode for parameters. Digital tube abcd display parameter values which can be modified by pressing key 34; digital tube ef display parameter numbers which can be modified by pressing key 12, and previous parameters will be saved at the same time. Press key P to exit setting mode for parameters, and the current parameter values will be saved.

Press key 1234 short for change each time, long to keep increasing or decreasing rapidly.

Note: the setting mode for parameters can not be entered into when the system is running; exit to enter setting mode for parameters.

See the parameter list of system for details.

5.3 System monitoring status

Under the default mode of the HMI of chassis, press key p and key 1 at the same time to enter system monitoring status. Digital tubes abcd display monitoring values; digital tubes ef display monitoring parameter number, press key 12 for modification.

ef	abcd	unit
1	speed	spm
2	current	A
3	voltage	V
4	Piecework number	piece

5.4 Status of System Error

System will stop when an error is detected and error code will be displayed by the operation panel of chassis. Digital tube abcd display error number. See error code list for details.

6. Parameter list of system

No	Items	Contents	Settings range	Default
1	highest speed of free-style sewing	set the highest speed for machine head	300~4000spm	3500
2	Soft Start	soft start setting for starting sewing 0: no Soft Start 1~9: needle number of soft start	0~9	3
3	soft start speed 1	soft start speed for starting sewing 1	100~1000(spm)	400
4	soft start speed 2	soft start speed for starting sewing 2	100~1500(spm)	800
5	soft start speed 3	soft start speed for starting sewing 3	100~4000(spm)	1200
6	soft start speed 4	soft start speed for starting sewing 4	100~4000(spm)	1200
7	soft start speed 5	soft start speed for starting sewing 5~9	100~4000(spm)	1200
8	Highest speed for preset sewing	Highest speed for preset sewing	300~1500(spm)	3000
9	Sewing mode	Sewing mode setting(valid in the absence of operation box of the machine head) 0:free-style sewing 1:preset sewing 2:plain sewing	0~2	0
10	Number of preset sewing sections	Setting the number of preset sewing sections and the needle number of each section	1~2(sections)	1
11	needles of the 1th section of preset sewing		1~99(needles)	15
12	needles of the 2th section of preset sewing		1~99(needles)	15
13	trigger mode of preset sewing	setting of preset sewing trigger (valid in the absence of operation box of the machine head) 0: trigger function unavailable 1: trigger function available	0/1	0
15	control mode for pressor foot lifting	settings of pressor foot lifting mode 0: pressor foot lifting unavailable 1: treadle pressor foot lifting 2: automatic pressor foot lifting after	0~5	1

		thread-cutting 3: automatic pressor foot lifting after treadle pressor foot lifting and thread-cutting 4: automatic pressor foot lifting after machine stopping and thread-cutting 5: automatic pressor foot lifting after treadle pressor foot lifting, machine stopping and thread-cutting		
16	treadle command mode after thread-cutting	treadle command mode setting after thread-cutting 0: thread-cutting command unavailable for pressor foot lifting 1: thread-cutting command available for pressor foot lifting	0/1	1
20	Power on and positioning	Setting of machine head moving to upper needle position when powered on 0: unavailable 1: available	0/1	1
21	Signal mode for scissors safety switch	Setting of signal mode of scissors safety switch of machine head 0: always open 1: always close	0/1	1
23	piecework	Piecework setting 0: unavailable 1: available	0/1	1
24	piecework display	Piecework number	0~9999	0
27	low speed	lowest speed of treadle	100~1000(spm)	200
28	adjustment of treadle functions	Adjustment of the speed adjustment functions of treadle	10~100	60
30	thread-cutting delay time	thread-cutting delay time	0~200(ms)	0
31	thread-cutting action time	thread-cutting action time	0~1000(ms)	120
32	For the delay time line	For the delay time line	0~300(ms)	40
33	Time line for action	Time line for action	0~1000(ms)	30
34	pressor foot lifting delays sewing	pressor foot lifting delays sewing	0~1000(ms)	30
35	output time of total pressure of pressor foot lifting	output time of total pressure of pressor foot lifting	0~800(ms)	250

36	output duty cycle of pressor foot lifting	output duty cycle of pressor foot lifting	0~100	22
37	hold time of pressor foot lifting	forced shut-down after hold time of pressor foot lifting	1~60(s)	12
38	Output time of total pressure of reverse-sewing	Delay with pressor foot lowered	0~800(ms)	200
40	lower needle position	Adjustment of lower needle position	120~240	180
49	parameter of special functions	Parameter of special functions(valid after holding 2s) 5: return to factory-set parameter	0~15	0

* Marked Items are used for repair and maintenance, modification of factory-set value may do damage to the machine or lead to decline of performance. Professionals must be consulted if modification is necessary. However, set values may be modified anytime for improvement of the functions and performance of sewing machine.

7. Instructions for System Configuration

7.1 Adjustment of Sewing Speed (parameter No.1, 4, 27~28, 50)

1）Highest speed of free-style sewing (parameter No.1)

Setting of the highest speed of treadle under free-style sewing mode, the max value is subject to parameter No.50.

(Note) lifetime of the sewing machine may be reduced by unnecessary high speed

2）Setting of preset sewing speed (parameter No.4)

Parameters of various preset sewing speeds

3) Low speed setting (parameter No.27)

Treadle's starting and running speed. It will be easy to conduct needle compensation with treadle

4） Adjustment of the speed adjustment performance of treadle(parameter No.28)

User can customize speed adjustment performance of treadle, bigger parameter leads to higher acceleration of treadle, otherwise lower. Too big value may make working uncomfortable; too small may fail the highest speed set.

Increase the parameter if treadle is unable to reach the highest speed.

7.2 Soft Start (parameter No.2~3)

Top stitches and bottom stitches of starting sewing may be unable to link if needle distance is too short or needle is too thick, which can be improved by limiting the highest starting sewing speed.

No.2	setting of needle number of soft start
0	Soft Start invalid
1~9	needle number of soft start, i.e. limit speed with certain needle number under starting sewing mode
No.3	setting of soft start speed

7.3 Setting of Needle positioning (parameter No.40)

1）Selection of upper and lower needle position

By default, the 1st key on the lower left controls stopping needle position, corresponding upper figure display the value set

0 upper needle position

1 lower needle position

2) Adjustment of lower needle position(parameter No.40)

Setting of lower needle position, deviation angle relative to upper needle position

7.4 Sewing Mode setting (parameter No. 5~13)

Special pattern may be realized by setting parameters.

1） selection of sewing mode(parameter No.5)

Free-style sewing: Able to keep running after treadle has been pressed, no needle number will be counted.

a) Preset sewing: the machine automatically stop when reach certain needle number, stopping times (parameter No.6) and needle number (parameter No.7~12) of stopping can be set.

b) Plain sewing: stopping needle position is free, no needle number will be counted, reinforcing-sewing mode invalid, manual reverse-sewing and automatic pressor foot lifting is available. This mode will be useful if the synchronizer of machine head is damaged.

2） setting of number of preset sewing sections and needle of each section(parameter No.6~12)

Section number for preset sewing (parameter No.6): 1~7; needle number for each section (parameter No.7~12): 1~99.

3） trigger function of preset sewing (parameter No.13)

Decide whether sewing will be completed without stop at each section under preset sewing mode. Machine can be stopped at each section during running if this function is invalid.

4）setting of thread-cutting

By default, the 2nd key on the lower left control thread-cutting function, corresponding upper figure display the value set.

0 thread-cutting unavailable

1 thread-cutting available

7.5 Pressor Foot Lifting Mode setting (parameter No.15)

Set the operation mode of the magnet of pressor foot lifting.

0 magnet operation unavailable

1 Only treadle command can conduct pressor foot lifting

2 automatic pressor foot lifting after thread-cutting

3 treadle operation, automatic operation after thread-cutting

4 automatic operation after machine stopping and thread-cutting

5 treadle operation, automatic operation after machine stopping and thread-cutting

(Note) set parameter No.25 to 0 if the magnet of pressor foot lifting is unavailable

7.6 Treadle Setting after Thread-cutting (parameter No.16)

Move treadle to thread-cutting status after thread-cutting is completed to send pressor foot lifting command setting.

If parameter No.15 is set to 1, 3, 5, then pressor foot lifting will be executed.

This function is used to facilitate pressor foot lifting after thread-cutting.

7.7 Automatic Top Positioning When Powered-On (parameter No.20)

When powered on, the machine head will automatically move to upper needle position, which can facilitate sewing.

No action if needle position is around upper needle position.

7.8 Roll-over Protection (parameter No.21)

Lock machine's functions to prevent unexpected accident when scissors did not return. Parameter No.21 controls types of roller-over signals.

When machine Lock protection, the digital tube on the upper left 1 of the operation panel of chassis will display roller-over picture.

7.9 Sewing Piecework (parameter No.23~24)

Counts will increase when thread-cutting is over to calculate finished sewing working procedures.

If No.23 is set to 1, piecework is available; if set to 0, piecework is unavailable.

No.24 display piecework number, press parameter value to clear piecework number for recounting.

7.10 adjustment stands tread cutting for pressor foot lifting.(No. 30~34)

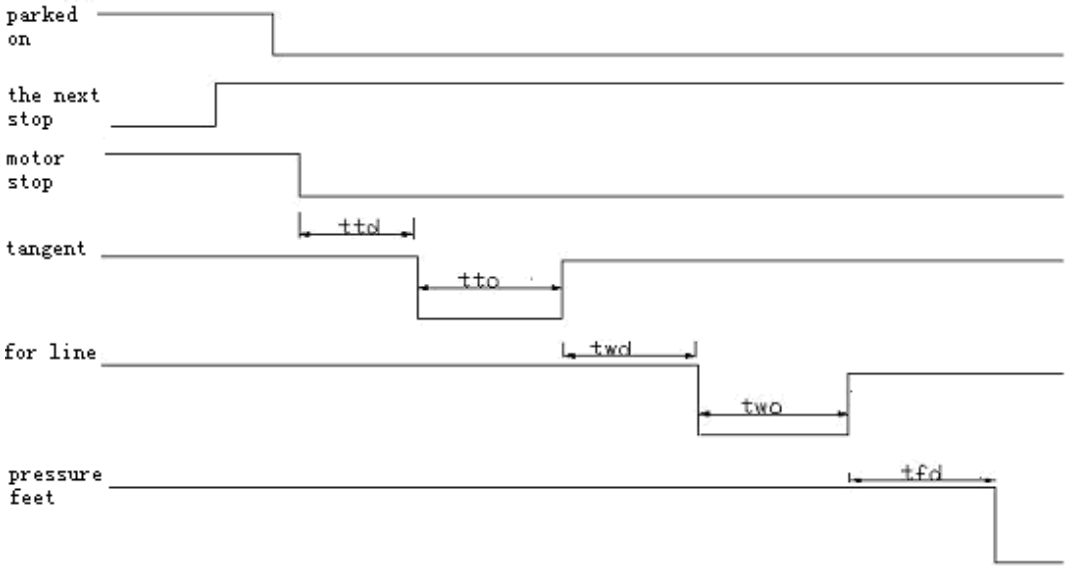
No.30 thread-cutting delay time ttd: After the shutdown began moves to the next scissors time

No.31 thread-cutting action time tto: Action under the scissors of time

No.32 f For the delay time line twd: Under the scissors for action to end the time-start movement

No.33 For the delay time line e two: Time line for action

No.34 pressor foot lifting delay time tfd: Action Line for the end of foot movements to raise the pressure of time



7.11 Pressor Foot Lifting Hold Time setting (parameter No.37)

Adjust the hold time of pressor foot, long time operating can reduce the lifetime of magnet.

After pressor foot is lifted, magnet will be automatically stopped to lower pressor foot after the time set by No.37.

7.12 Sewing with Delayed Pressor Foot (parameter No.38)

When the magnet of pressor foot lifting operates, press treadle. Since it takes time for magnet to release, sewing machine may have begun running before pressor foot press materials firmly, affecting sewing effects. Parameter can be used to compensate the time for pressor foot lifting to release.

8. Error Code Table

Error codes	Contents	Possible reasons for the failure	Checking and treatment
E011 E012 E013 E014	electric engine signal error	Motor position sensor signal failure	If electric engine plug is well contacted if electric engine signal detecting device has been broken if sewing machine handwheel correctly installed
E021 E022 E023	electric engine overload	motor stall electric engine overload	If electric engine plug is well contacted if machine head or thread-cutting mechanism has been blocked completely if materials are too thick Electrical signal detection signal whether the normal
E101	Hardware drivers fault	Current detection of non-normal Driving through the device	Current detection loop system is working properly Whether the damage to the device driver
E111 E112 E113	Voltage too high	High-voltage reality Brake failure loop Motor testing is wrong	If the voltage on the inlet wire is too high Braking resistance is the normal work Whether the system voltage detection circuit the normal work
E121 E122	Voltage too low	Actual low voltage Voltage detection is wrong	If the voltage on the inlet wire is too low Whether the system voltage detection circuit the normal work
E131	Circuit fault detection circuit	Current detection of non-normal	Current detection loop system is working properly
E141	Failure to read and write data system	Non-normal data systems to read and write	Current detection loop system is working properly Whether the data chip damage
E151 E152	magnet error	Electromagnet return flowElectromagnet non-normal conduction	If machine head magnet suffers short circuit Electromagnet circuit is working properly

E201	Motor current excessive	Current detection of non-normal The normal functioning of non-motor	Current detection loop system is working properly Electrical signal is normal
E211 E212	Abnormal electric engine operation	Abnormal electric engine operation	If electric engine plug is well contacted If electric engine signal is matched
P.oFF	Power-fail	Power-down	Wait for power supply to resume
LED1 Animation	Refill oil	Shear-effective safety switch	Scissors in the back

Note: consult technical support if errors still exist.