

# AC Servo motor

## UserManualV2.0

Model: WR50S&WR50T



### 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.

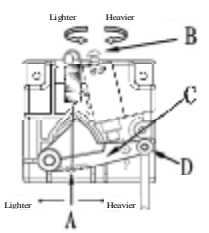
- 1.1 (1) Power Supply: Please follow the 200V—240V indicated on the nameplates of motor and control box.
  - (2) Electromagnetic wave interference: Keep away from high frequency electromagnetic wave machines or electric wave emitter so as to avoid interference.
  - (3) Humidity and temperature: a. Working environment: 5°C ~ 45°C, 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 (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 (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 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.
  - (3) Moving machine head, replacing needles or shuttle or threading.
  - (4) Repairing or any mechanical adjustment.
  - (5) The machine is not running.
- 1.5 (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, waste paper, broken fabric, etc to avoid overheating of the motor.
  - (3) Do not hammer this machine or motor (motor) spindle.
- 1.6 Used where potential dangers exist.
   
 Used where high voltage and electric danger exist.
- 1.7 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. Adjustment of pedal

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

- A. Operation spring
- B. Bolt for heeling adjustment
- C. Pedal lever
- D. Ball joint link

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 the ball joint link D to the right hole to increase the pedal stroke. Secure the ball joint link D to the left hole to reduce the pedal stroke.

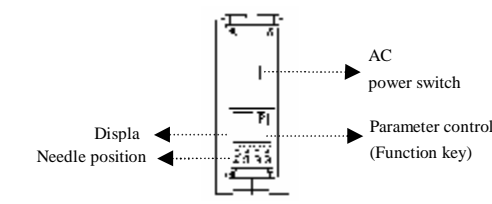


### 3. Connection & Earthing

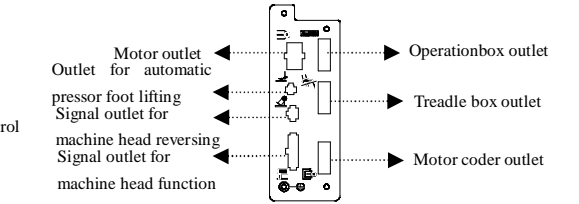
Qualified electric engineering professionals must be invited for system earthing.

### 4. Names of Chassis Components

#### 4.1 Front Side



#### 4.2 Back Side: connector



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

### 5. Instructions for the Operation Panel of the Chassis

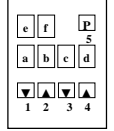
Layout of the operation box of chassis, 6 digital tubes (abcdef) and 5 keys (12345)

#### 5.1 Setting of Sewing Functions

Chassis operation panel of the default setting pattern, through the button 1 and digital tube a can set a needle a: 0 on a needle; Under a needle 1

About digital tube e display function:

Show the state of safety switch security switch failed don't show, safety switch that effective animation



#### 6. Operation box of instructions



#### 6.1 Description of Function of the Keys

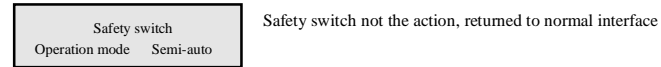
- : Sensor dust removal (reserved); : Adjustment of photoelectricity strength and sensitivity; : Front cutting/Back cutting;
- : Front air suction/Back air suction; : AUTO/SEMI-AUTO/MANUAL;
- : Mode (reserved); : Parameter setting; : Needle bar light indicator; : Parameter modulation and the "OK" button.

#### 6.2 指示灯说明:

AUTO: Automatic pre-running mode (for manufacturer) F-CHK: Front sensor receiving indicator SAFE: Safety switch indicator  
RUN: Motor running indicator B-CHK: Back sensor receiving indicator MODE: Mode running indicator (reserved)

#### 6.3 Notices:

- a. After connecting the power the six LED lights will be on, and then the self check will be performed. After the self check the machine enters the standby mode.
- b. Only when the whole sewing process is completed and the button is pressed can the user enter the operator parameter setting interface: buttons are for the modification of parameter sequence number, and buttons are for the modification of parameter value. Shortcut keys can be used for common parameters to enter the setting of corresponding parameters. Under this status, the user cannot use the pedal to run the machine, please press the OK button to return the standby interface.
- c. On the standby interface, the user can press the button to display the software version of the operation box, press the button to display the software version of the drive, and the OK button to return the default interface. The default interface will also display if no action is taken within 2 seconds.
- d. The buttons on the control panel are blocked when a sewing process is uncompleted.
- e. If the safety switch is turned on and is effective, the safe indicator will be on and the LC screen displays the following information:



### 7. Description of Parameters

#### 7.1 General parameters

Serial No.	Functional Parameter	Default	Range	Description
1	Operation modes	0	0-2	0: Semi-auto 1: Auto 2: Manual
2	Length of front cutting	46	0-50	0: Invalid front cutting
3	Length of back cutting	12	0-100	0: Invalid back cutting
4	Front air suction	1	0-1	0: No front air suction 1: Front air suction
5	Duration of back air suction	0.5 second	0-5s	0: without back air suction
6	Long air suction	0	0, 100, 150, 200, 250, 1 ( valid)	0: invalid long air suction 100-250: intervening air suction Valid: valid all the time
7	Strength of front photoelectricity	70	0-100	
8	Location of front Luminous intensity	Actual value	Actual range	Read-only parameter
9	Sensitivity of front photoelectricity	20	0-100	
10	Sensitivity of back photoelectricity	70	0-100	
11	Location of back Luminous intensity	Actual value	Actual range	Read-only parameter
12	Sensitivity of back photoelectricity	20	0-100	
13	Presser bar lifter	3	0-3	0: no presser bar lifter 1: front presser bar lifter 2: back presser bar lifter 3: front & back presser bar lifter
15	Brightness of needle bar light	3	0-5	0: dark 5: quite bright
16	Brightness of back light	3	0-5	0: dark 5: quite bright
17	Power indicator light of the operation box	0	0-1	0: on 1: off
19	The seam/termination of the speed	3500rpm	300-4500	
*20	Sewing speed	5000rpm	300-P50	
21	Recover parameter of leaving factory	0	0-2	0: Do not recover 1: Recover general parameters 2: Recover all parameters

#### 7.2 Description of Advanced Parameters

On the parameter interface, a long press over three second will turn on the setting interface of advanced parameters:

Then the user can change the setting value via the buttons and reset the password via the buttons. Enter the password (4 characters) and press the OK button. If the password is right, then  will display; if the password is wrong, then the user will be brought back to the password entering interface. The default password is 2010. Press the button P to exit the password interface and return the normal interface.

Password resetting mode: After entering the setting interface of advanced parameters, a long press of the button P will turn on the password resetting mode. The new password shall be entered twice to be effective.

#### 7.3 Advanced Parameters

Serial No.	Functional Parameter	Default	Range	Description
*50	MAX Maximum sewing speed	5000rpm	300-7000rpm	*The value of the parameter relates to the setting of the model (P55 parameter) When P55=0, the default range is 300-7000 When P55=1, the default range is 300-8000
51	Needle mark	3	1.0-4.0	
52	Needles between the front and back sensor	35	1-50	
53	Duration of the cutting line	100ms	10-1000ms	
54	Duration of the lifting of the presser bar	500ms	100-2000ms	
55	Model setting	0	0-1	0: 700 Serial head 1: 900 Serial head
59	Manual switch during operation	0	0-1	0: Invalid during operation 1: Valid during operation The function is only valid in manual mode (P1=2)
60	Safety Switch	1	0-1	0: Off 1: On
61	Language (Chinese/English)	0	0-1	0: Chinese 1: English

### 8 Status of System Error

Error codes	Contents	Checking and treatment	Error codes
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 E023	Electric engine overload	Motor stall electric engine overload	If electric engine plug is well contacted 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 low	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
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
E301	Poor operation box communication	The digital of operation box communication missing	if operation box plug is well contacted if operation box components are damaged
E401	Operation box store data errors	Operation box store data errors	Check the operation box memory chip for damage

### WR50S/WR50T ACCESSORY

NO.	Product name	Amount	Product specification	Confirm	Remarks
1	Ball section connecting rod	1			
2	Electric control box	1	WR50S/WR50T		
3	Operating box	1	EP-012		
4	pedal	1	PL-101		with bracket
5	Screw	3	M4×8		The supplied pan-head three combination
6	Screw	3	M5×30		Outside hex flange tapping screws
7	Screw	3	M5×23		Outside hex flange tapping screws
8	The instructions	1			
9	certificate	1			
10	cable ties	2	CV-160L		

# AC 伺服马达

## 使用说明书 V2.0

### 型号: WR50S&WR50T



#### 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 (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 (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.装订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(包括缝制机、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 (1)在第一次开机后，请先以低速操作缝制机并检查转动方向是否正确。
- (2)缝制机运转时，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 在操作以下动作前，请先关闭电源:
- (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。
- (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 (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，尤其马达后盖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 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 本装置保证在正常工作情况下且无人失误的操作下，保证自出厂 12 个月内，无偿的为客户维修使能正常操作。

#### 7.参数说明

##### 7.1 一般参数表:

序号	功能参数	默认值	范围	参数说明
1	操作模式选择	0	0~2	0: 半自动; 1: 全自动; 2: 手动
2	前切长度	46	0~50	0: 前切无效
3	后切长度	12	0~100	0: 后切无效
4	前吸风选择	1	0~1	0: 无前吸风 1: 有前吸风
5	后吸风维持时间	0.5 秒	0~5 秒	0: 无后吸风
6	长吸风选择	0	0,100,150,200,250,1(一直有效)	0: 长吸风无效; 100~250: 间隔吸风; 有效: 指一直有效
7	前光电强度	70	0~100	
8	前光强位置	实际值	实际范围	只读参数
9	前光电灵敏度	20	0~100	
10	后光电强度	70	0~100	
11	后光强位置	实际值	实际范围	只读参数
12	后光电灵敏度	20	0~100	
13	抬压脚选择	3	0~3	0: 无抬压脚功能; 1: 前抬压脚 2: 后抬压脚; 3: 前后抬压脚
15	针杆灯亮度	3	0~5	0: 不亮 5: 高亮
16	背光亮度	3	0~5	0: 不亮 5: 高亮
17	操作盒电源指示灯	0	0~1	0: 开启 1: 关闭
19	起缝终止速度	3500rpm	300~4500	
*20	缝纫速度	5000rpm	300~P50	
21	恢复出厂参数	0	0~2	0: 不恢复 1: 恢复普通参数 2: 恢复所有参数

##### 7.2 高级参数说明:

在参数界面下，长按 P 键 3 秒以上，进入到高级参数设置界面：，通过 键变更设定， 键修改密码值。4 位输入完毕，按 OK 键，若正确，则显示 ，若不正确，则返回到输入密码界面，默认密码为 2010。按 P 键退出密码模式显示界面，返回正常态。

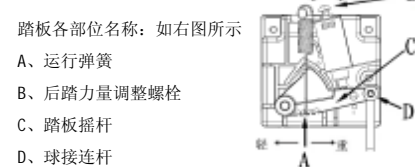
修改密码模式：一旦进入到高级参数后，长按 P 键后，进入到修改密码模式，新密码需要输入二次后才有效。

##### 7.3 高级参数:

序号	功能参数	默认值	范围	参数说明
*50	最高缝纫速度 MAX	5000rpm	300~7000rpm	*该参数与机型有关(P55 参数) P55=0, 默认范围 300~7000 P55=1, 默认范围 300~8000
51	针迹	3	1.0~4.0	
52	前后传感器间隔针数	35	1~50	
53	切线维持时间	100ms	10~1000ms	
54	压脚抬起维持时间	500ms	100~2000ms	
55	机型设定	0	0~1	0:700 系列机头 1:900 系列机头
59	运转手动开关动作	0	0~1	0: 运转中无效 1: 运转中有效 该功能仅在手动模式时有效(P1=2)。
60	安全开关选择	1	0~1	0: 关闭 1: 开启
61	中英文选择	0	0~1	0: 中文 1: 英文

#### 2.踏板的调整

踏板各部位名称: 如右图所示

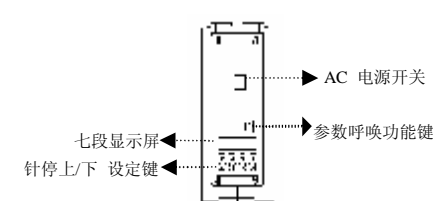


#### 3.接线与接地

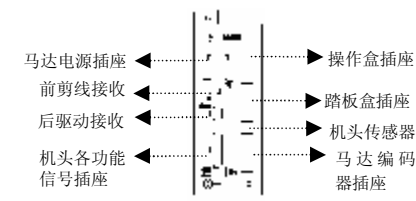
一定要做好系统的接地工程，请合格的电气工程师予以施工。

#### 4.机箱各部位名称

##### 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.机箱操作面板使用说明

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。

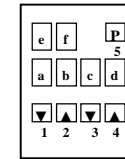
##### 5.1 缝纫功能设定

机箱操作面板的默认设定模式，通过按键 1 和数码管 a 可以设定针位。

a: 0 上针位; 1 下针位

关于数码管 e 的显示功能:

显示安全开关的状态。安全开关无效时不显示，安全开关有效时显示动画，此时系统禁止运行。



#### 6.操作盒使用说明



##### 6.1 按键功能说明:

: 传感器除尘(预留) : 光电强度及灵敏度调节 : 前后切线选择 : 前后吸风选择 : 全自动/半自动/手动选择 : 模式(预留) : 设定参数 : 针杆灯指示 : 参数调整及确定键。

##### 6.2 指示灯说明:

AUTO: 自动跑合模式(厂家使用) F-CHK: 前传感器接收指示 SAFE: 安全开关指示  
RUN: 电机运行指示 B-CHK: 后传感器接收指示 MODE: 模式运行指示(预留)

##### 6.3 注意事项:

- a. 上电，同时点亮 6 个 LED 灯，自检完毕，进入待机状态。
- b. 在整段缝纫工序完成的情况下，按 P 键，才可进入操作工参数设定， 键变更参数序号， 键变更参数值。常用参数可使用相应快捷键，直接进入相应参数。在此状态下，踩踏板不能运行，按 OK 键返回待机界面。
- c. 在待机界面下，按 键显示操作盒软件版本，按 键显示驱动器软件版本，按 OK 键或 2S 后自动返回缺省界面。
- d. 当一个缝纫工序未结束时，操作面板按键封锁。
- e. 当安全开关开启且有效时，safe 指示灯显示，另外，液晶显示如下：。安全开关不动作时，恢复正常界面。

#### 8.故障信息

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 缝制机手轮是否安装到位
E021 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 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
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 电机信号是否匹配
E301	操作盒通讯不良	机头操作盒通讯数据丢失	操作盒插头是否接触良好 操作盒器件是否损坏
E401	操作盒存储数据错误	操作盒存储数据出错	检查操作盒存储芯片是否损坏

#### WR50S/WR50T 随机附件

序号	产品名称	数量	规格	确认	备注
1	球接连杆	1			
2	电控箱	1	WR50S/WR50T		
3	操作盒	1	EP-012		
4	踏板	1	PL-101		含支架
5	操作盒固定螺钉	3	M4×8		十字、盘头、三组合
6	电控箱固定螺钉	3	M5×30		外六角法兰自攻螺钉
7	踏板固定螺钉	3	M5×23		外六角法兰自攻螺钉
8	使用说明书	1			
9	合格证	1			
10	扎带	2	CV-160L		