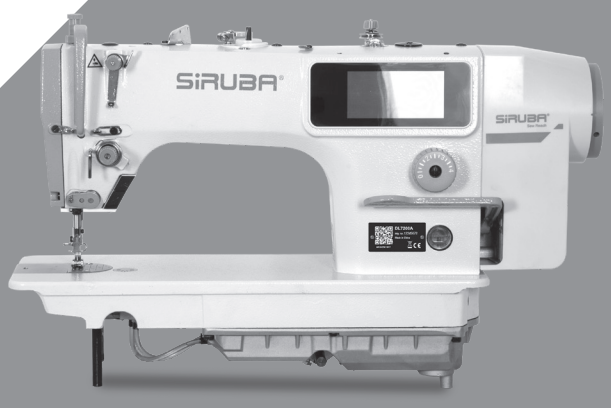
SIRUBA

電控參數說明書
ELECTRONIC CONTROL PARAMETER MANUAL

DL7200A



DL7200A 数控交流伺服系统
使用说明书

安全事项

- 在使用本产品之前，请先阅读《产品说明书》及所搭配的缝纫机机械说明书。
- 本产品必须由接受过专业培训的人员来安装或操作。
- 请尽量远离电弧焊接设备，以免产生的电磁波干扰本控制器而发生误动作。
- 请不要在室温 45° 以上或者 0° 以下的场所使用。
- 请不要在湿度 30%以下或者 95%以上或者有露水和酸雾的场所使用。
- 安装控制箱及其他部件时，请先关闭电源并拔掉电源插头。
- 为防止干扰或漏电事故，请做好接地工程，电源线的接地线必须以牢固的方式与大地有效连接。
- 所有维修用的零部件，须由本公司提供或认可，方可使用。
- 在进行任何保养维修动作前，必须关闭电源并拔掉电源插头。控制箱里有高压危险，必须关闭电源五分钟后方可打开控制箱。
- 本手册中标有 ⚠ 符号之处为安全注意点，必须注意并严格遵守，以免造成不必要的损害。

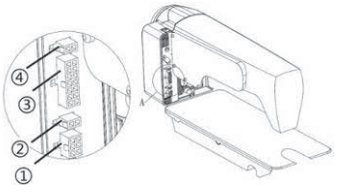
第 1 章　产品安装

1.1　产品规格

产品型号	DL7200A	电源电压	AC 220±20% V
电源频率	50Hz/60Hz	最大输出功率	550/750W

1.2　接口插头的连接

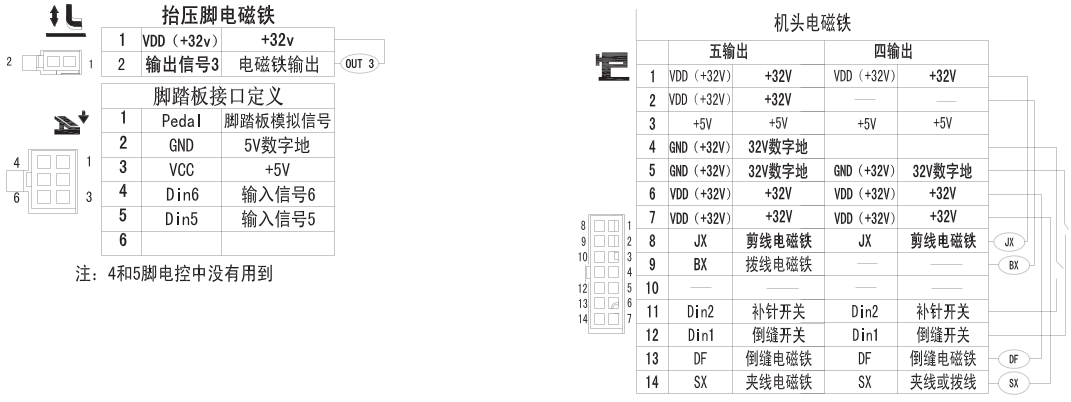
将脚踏板及机头的各连接插头安插到控制器后面对应的插座上如图 1-1 所示，各插座名称如图 1-2 所示。连接好，请检查插头是否插牢.



例图 1-1

①脚踏板插座；②抬压脚电磁铁插座；③自动电磁铁插座；④机头灯插座（黑色）

⚠: 使用正常的力量插不进去时，请检查插头与插座是否匹配，插入方向或针的方向是否正确！照明灯接口和抬压脚电磁铁接口都是 1*2 的接口，机头照明灯接口使用黑色接口，请注意区分。



抬压脚电磁铁

1	VDD（+32v）	+32v
2	输出信号3	电磁铁输出

脚踏板接口定义

1	Pedal	脚踏板模拟信号
2	GND	5V数字地
3	VCC	+5V
4	Din6	输入信号6
5	Din5	输入信号5
6		

注：4和5脚电控中没有用到

机头电磁铁

	五输出		四输出	
1	VDD（+32V）	+32V	VDD（+32V）	+32V
2	VDD（+32V）	+32V	——	——
3	+5V	+5V	+5V	+5V
4	GND（+32V）	32V数字地		
5	GND（+32V）	32V数字地	GND（+32V）	32V数字地
6	VDD（+32V）	+32V	VDD（+32V）	+32V
7	VDD（+32V）	+32V	VDD（+32V）	+32V
8	JX	剪线电磁铁	JX	剪线电磁铁
9	BX	拨线电磁铁	——	——
10	——	——	——	——
11	Din2	补针开关	Din2	补针开关
12	Din1	倒缝开关	Din1	倒缝开关
13	DF	倒缝电磁铁	DF	倒缝电磁铁
14	SX	夹线电磁铁	SX	夹线或拨线

图 1-2 控制器接口定义

1.3 接线与接地

必须要做好系统的接地工程，请合格的电气工程人员予以施工。产品通电及投入使用前，必须确保电源插座 AC 输入端已安全可靠的接地。系统的接地线为黄绿线，该地线请务必可靠连接至电网安全保护接地上，以保证安全使用，并可防止出现异常情况。

⚠: 所有电源线、信号线、接地线等接线时不要被其它物体压到或过度扭曲，以确保使用安全！

第 2 章　操作面板使用说明

2.1 操作面板的外观介绍

H25 点阵式操作面板外观如图 2-1 所示，操作面板由 14 个触摸按键和一块 128*64 分辨率的液晶屏组成。可完成花样显示、参数设置、语音播报、云端通信（开发中）、参数上/下传和恢复出厂等功能，具有操作方便，用户体验好、可扩展性强优势。

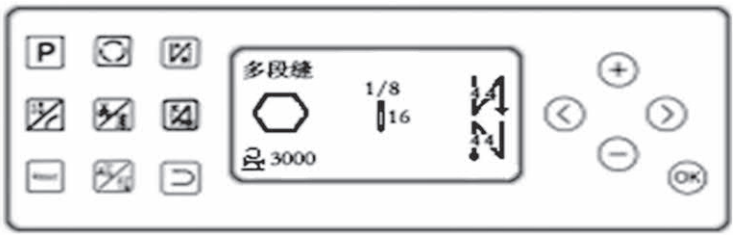


图 2-1　H-12 操作面板外观界面

表 2-1 按键功能介绍

序号	外观	名称	功能描述
1	P	菜单键	菜单功能键，长按P键，进入菜单列表，菜单列表中包括主要功能、参数设置、计数器设置、网络设置、维修保养和系统设置功能。
2		缝纫模式切换键	按下该键切换缝纫模式,依次按照自由缝、定针缝、四段缝、重叠缝和多段缝方式实现模式切换。
3		前加固缝键	亦称为起始倒针功能选择键，分短按和长按。短按，系统前固缝工作模式将按照无前固缝、前单固缝、前双固缝、前四固缝之间循环选择，点阵屏显示对应的图标，图标中的数字代表着加固的针数。长按，系统进入长加固设置界面。
4		停针位和软启复用键	停针位和软启复用键，分短按和长按。短按，系统进入停针位设置界面。长按，系统进入软启动设置设置界面。
5		自动剪线和夹线复用键	自动剪线和夹线复用键，分短按和长按。短按，系统进入自动剪线设置界面。长按，系统进入夹线设置界面。
6		后加固缝键	亦称为结束倒针功能选择键，分短按和长按。段按，系统后固缝工作模式将在无后固缝、后单固缝、后双固缝、后四固缝之间循环选择，点阵屏显示对应的图标，图标中的数字代表着加固的针数。长按，系统进入后加固设置界面。
7	Reset	Reset 键	系统重启键，长按，面板将出厂参数下传至主控。
8		抬压脚键	亦称剪线后自动抬压脚和缝纫中停车自动抬压脚复用键，分短按和长按。短按，系统进入剪线抬压脚设置界面。长按 2S，系统进入缝纫中停车自动抬压脚设置界面。
9		返回键	取消返回。
10	+ −	增减键	调整对应数值的增加键与减小键。
11	< >	左右切换键	切换选中对象，切换工作模式。
12	OK	确定键	确认保存。
1	P	菜单键	菜单功能键，长按P键，进入菜单列表，菜单列表中包括主要功能、参数设置、计数器设置、网络设置、维修保养和系统设置功能。

2.2 基本操作

2.2.1 基本运行模式的切换

单击红色虚线框内的缝纫模式切换键，即可实现自由缝->多段缝->W 缝->四段缝的循环切换，如图 2-2 所示。

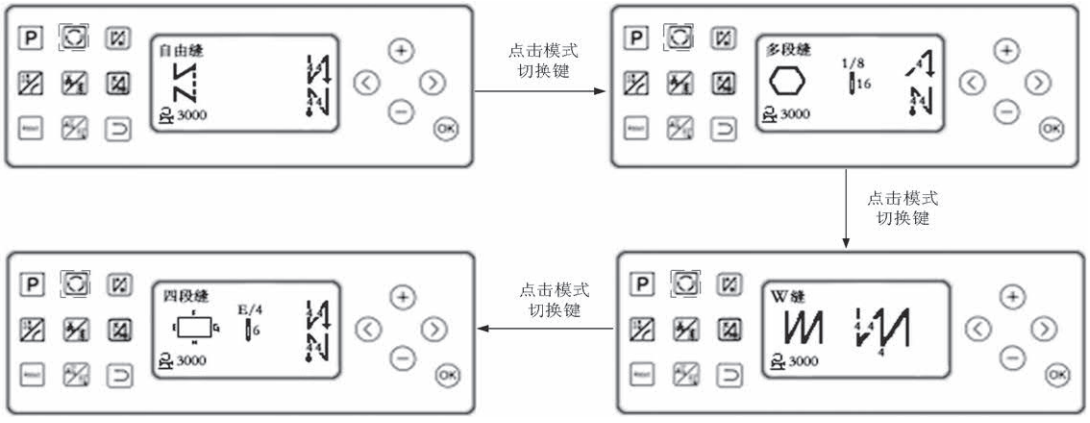


图 2-2 基本运行模式的切换

2.2.2 前固缝模式切换

单击红色虚线框内的前加固键键，即可实现前加固不加固->单段加固->两段加固->四段加固的循环切换，如图 2-2 所示。

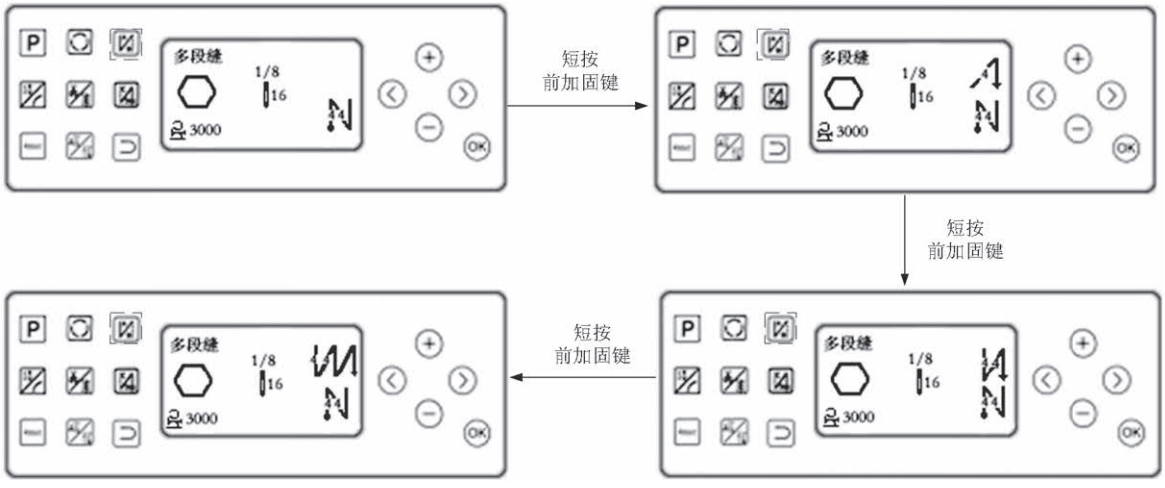


图 2-3 前加固模式切换

2.2.3 前固缝功能设置

长按红色虚线框内的前加固键，即可进入开始倒缝设置界面，开始倒缝设置界面下可调整开始倒缝的 A/B 段针数和开始倒缝速度，可通过⟨⟩键切换当前被选中的调整对象（选中后以一定频率闪烁），通过⊕⊖键调整当前选中对象的大小。设置完成点击OK键确认保存并返回缝纫主界面，点击⊃键，取消当前设置内容（不保存），返回缝纫主界面，前加固功能设置过程如图 2-2 所示。

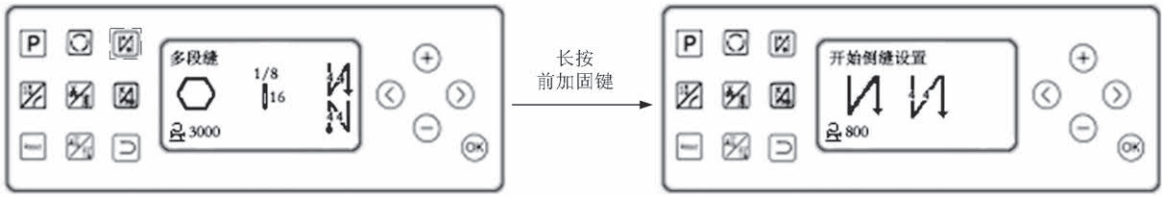


图 2-4 前加固功能设置

2.2.4 后固缝模式切换

单击红色虚线框内的前加固键键，即可实现后加固不加固->单段加固->两段加固->四段加固的循环切换，如图 2-5 所示。

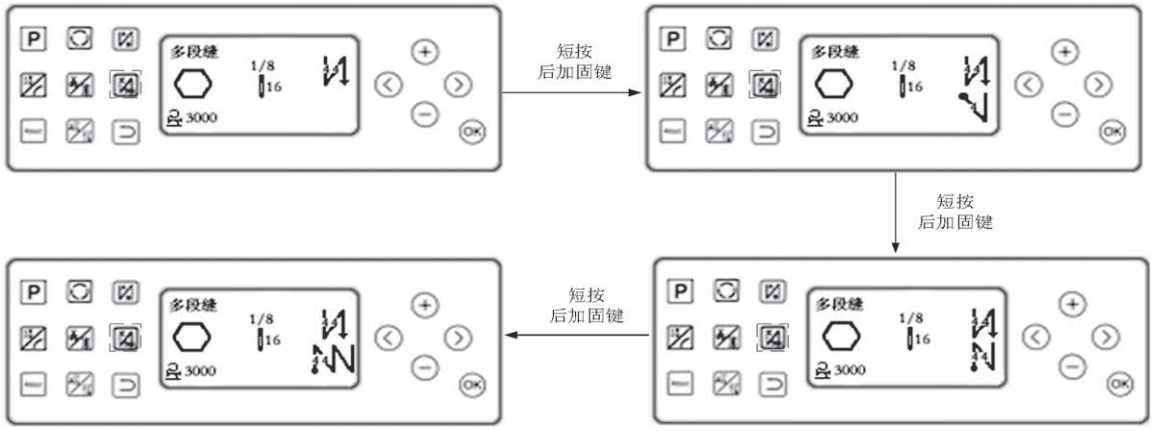


图 2-5 后加固模式切换

2.2.5 后固缝功能设置

长按红色虚线框内的后加固键，即可进入结束倒缝设置界面，结束倒缝设置界面下可调整结束倒缝的 C/D 段针数和结束倒缝速度，可通过⟨⟩键切换当前被选中的调整对象（选中后以一定频率闪烁），通过⊕⊖键调整当前选中对象的大小。设置完成点击OK键确认保存并返回缝纫主界面，点击⊃键，取消当前设置内容（不保存），返回缝纫主界面，前后固功能设置过程如图 2-6 所示。

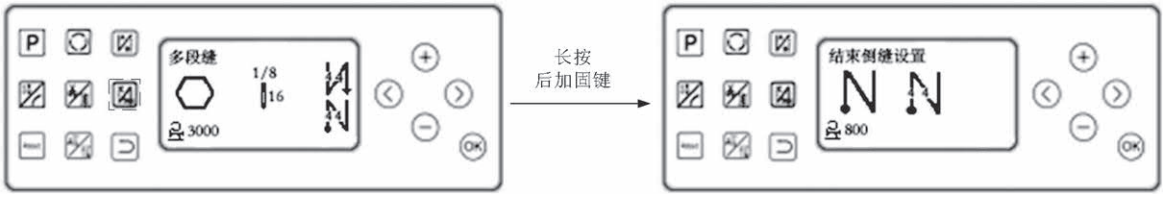


图 2-6 后加固功能设置

2.2.6 多段缝主线迹设置

多段缝模式下，长按OK键即可进入多段缝主线迹设置（多段缝设置）界面，多段缝主线迹设置界面下可调整多段缝总段数和每段针数，可通过⟨⟩键切换当前被选中的调整对象，通过⊕⊖键调整当前选中对象的大小。设置完成点击OK键确认保存并返回缝纫主界面，点击⊃键，取消当前设置内容（不保存），返回缝纫主界面，多段缝主线迹设置过程如图 2-7 所示。

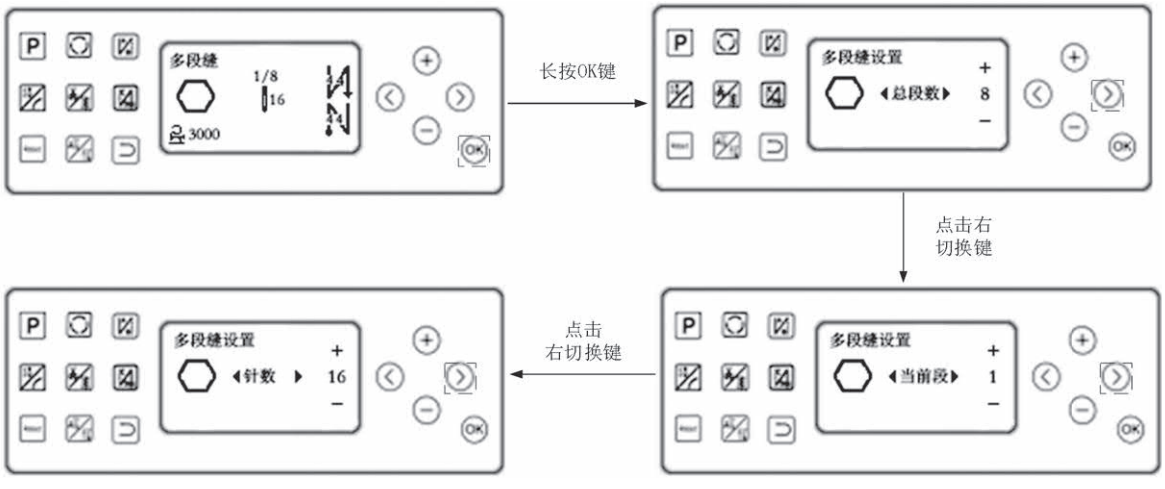


图 2-7 多段缝主线迹设置

2.2.7 W 缝主线迹设置

重叠缝模式下，长按OK键即可进入 W 缝主线迹设置（W 缝设置）界面，W 缝主线迹设置界面下可调整 W 缝的 A/B 段针数和总段数，可通过<>键切换当前被选中的调整对象，通过+-键调整当前选中对象的大小。设置完成点击OK键确认保存并返回缝纫主界面，点击⊃键，取消当前设置内容（不保存），返回缝纫主界面，W 缝主线迹设置过程如图 2-8 所示。

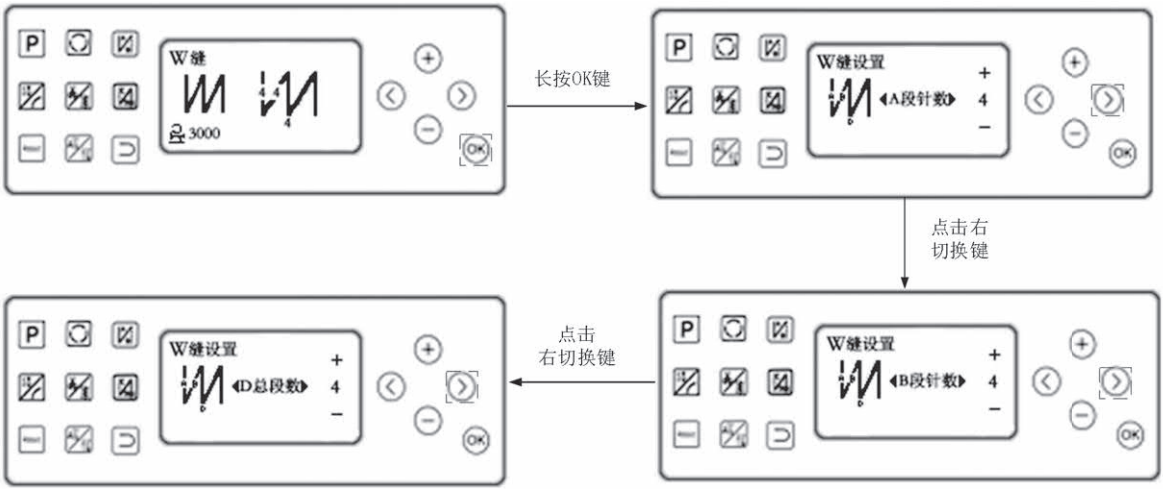


图 2-8 多段缝主线迹设置

2.2.7 四段缝主线迹设置

四段缝模式下，长按OK键即可进入四段缝主线迹设置（四段缝设置）界面，四段缝主线迹设置界面下可调整四段缝 E、F、G、H 每段针数，可通过<>键切换当前被选中的调整对象，通过+-键调整当前选中对象的大小。设置完成点击OK键确认保存并返回缝纫主界面，点击⊃键，取消当前设置内容（不保存），返回缝纫主界面，四段缝主线迹设置过程如图 2-9 所示。

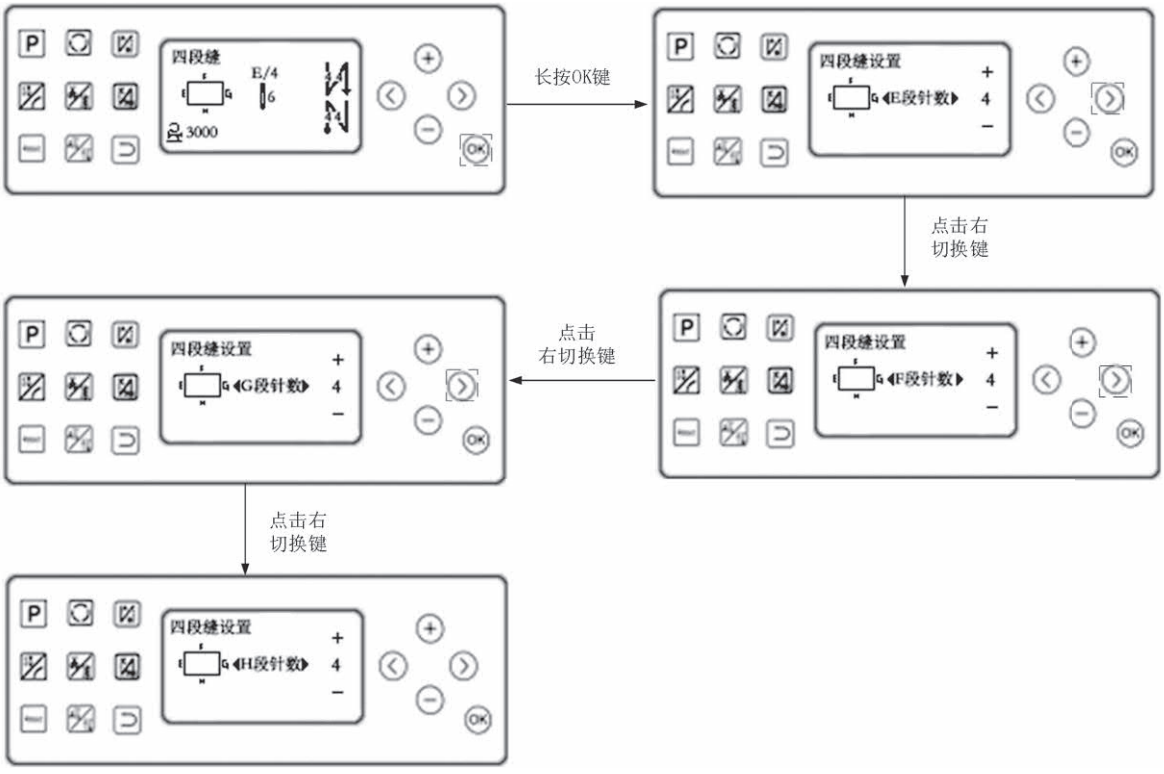


图 2-9 四段缝主线迹设置

2.2.8 主线迹速度设置

缝纫主界面，点击⊕⊖键可以设置主线迹速度。主线迹速度的上限值可通过参数设置，自由缝、多段缝和四段缝的主线迹速度相同，W 缝速度区别与前三种，主线迹速度设置过程如图 2-10 所示。

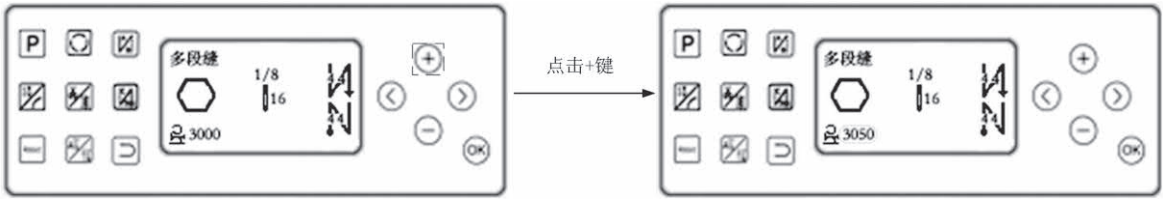


图 2-10 主线迹速度设置

2.2.9 缝纫辅助功能设置

系统有效的辅助功能对应的图标有、、、、、；它们的作用如下：

：中间停止针位选择；设置为下停针位时，表示当前线迹在未走完时，停针位处于下针位，设置为上停针位时，表示当前线迹在未走完时，停针位处于上针位。

：软启动选择；设置为有效时，表示开启软启动功能，踩下踏板后先以较低速开始缝纫并逐渐恢复正常，设置为无效时，表示关闭软启动功能，踩下踏板后直接以正常速度缝纫。软启动属性设置还包括软启动针数和软启动速度，可通过⊲⊳键切换当前被选中的设定对象，通过⊕⊖键调整当前选中设定对象的属性。

：自动剪线选择；设置为有效时，表示当前线迹在走完时，在线迹结尾处进行剪线，设置为无效时，表示当前线迹在未走完时，不执行剪线动作，仅将针停于上针位。自动剪线属性设定还包括自动剪线速度属性，可通过⊲⊳键切换当前被选中的设定对象，通过⊕⊖键调整当前选中设定对象的属性。

：夹线选择；设置为有效时，表示开启夹线电磁铁，缝纫机起缝时有防脱线作用，设置为无效时，表示关闭夹线功能，电控关闭夹线电磁铁辅助功能。

：剪线后抬压脚选择；设置为有效时，表示当前线迹在剪线后，踏板位于中立位置时抬压脚自动抬起，设置为无效时，表示当前线迹在剪线后，踏板位于中立位置时抬压脚不自动抬起。

：中间停针抬压脚选择；设置为有效时，表示当前线迹在未走完时停针，踏板位于中立位置时抬压脚自动抬起，设置为无效时，表示当前线迹在未走完时停针，踏板位于中立位置时抬压脚不自动抬起。

以剪线和夹线功能为例说明辅助功能设置过程。剪线功能设置过程如图过程 2-10 所示，在缝纫主界面短按键进入剪线设定界面，剪线设定包括剪线功能和剪线速度属性设定，可通过⊲⊳键切换当前被选中的设定对象，通过⊕⊖键调整当前选中设定对象的属性。

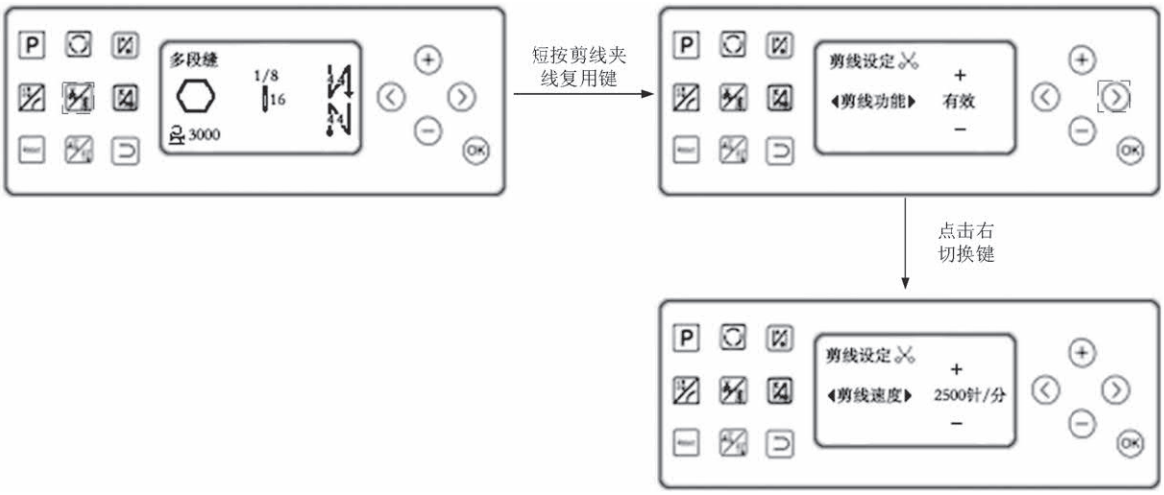


图 2-11 剪线功能设置

夹线功能设置过程如图过程 2-12 所示，在缝纫主界面长按键进入夹线设定界面，通过⊕⊖键调整夹线的功能的开和关。

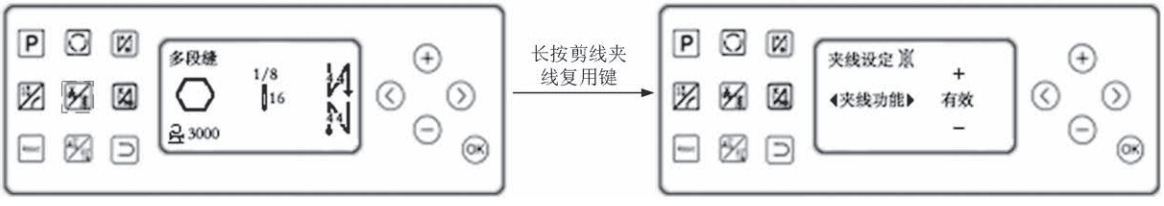


图 2-12 剪线功能设置

第三章　系统设置

3.1 系统设置界面进入

如图 3-1 所示，在缝纫主界面长按键，进入系统设置界面，系统设置界面包括主要功能、参数设置、计数器设置、网络设置、维修保养、系统设置功能。

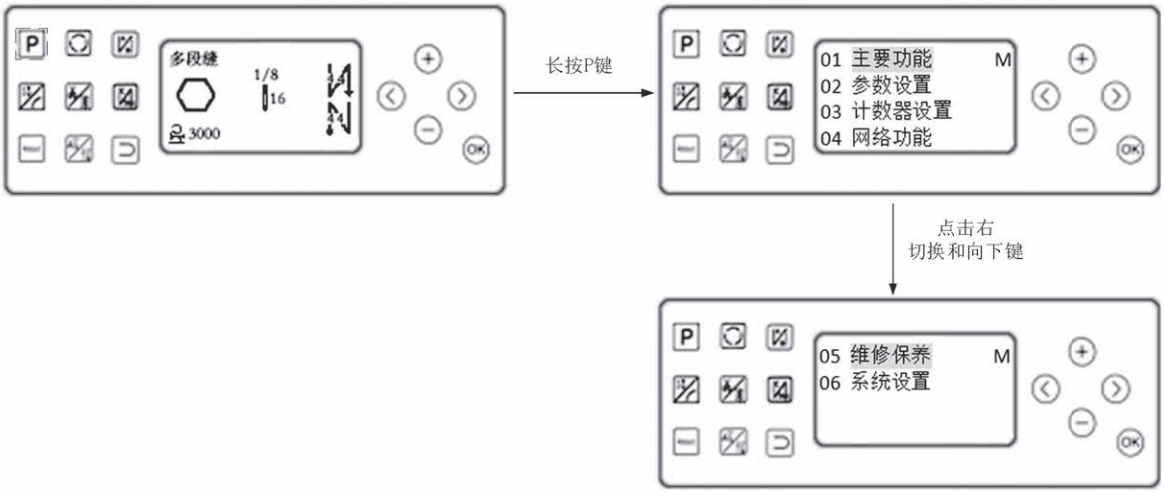


图 3-1 系统设置界面进入

3.2 主要功能

主要功能主要包括停针位设定、软启动设定、剪线设定、夹线设定、抬压脚设定、少鸟巢、针距调整、送料轨迹和踏板参数。在缝纫主界面长按Ⓟ键进入系统设置界面（进入过程如图 3-1），通过〈〉键和⊕⊖键切换至停针位设定（选中后呈黑底），短按OK键进入主要功能设定界面，进入过程如图 3-2 所示。主要功能设定的部分功能也可直接通过面板按键进入。

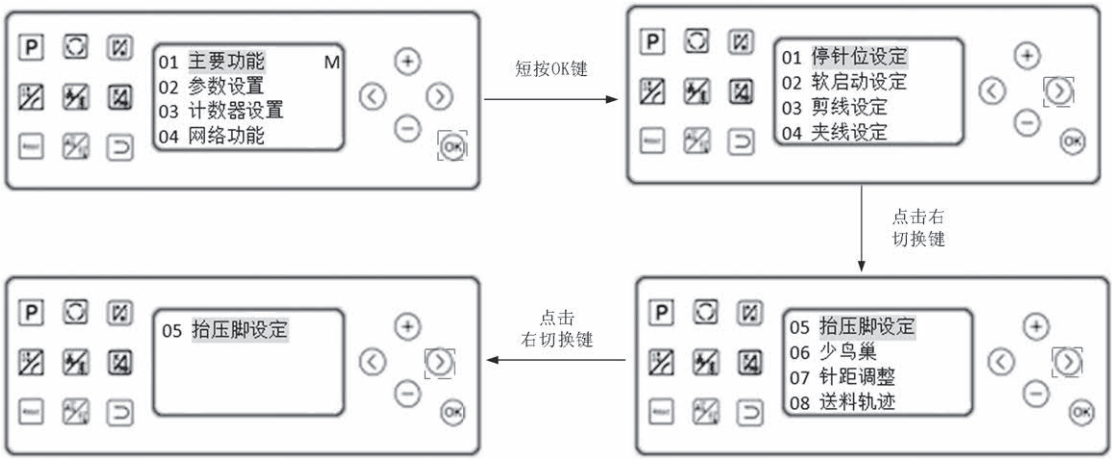


图 3-2 主要功能设定

3.2 参数设置

3.2.1 参数设置界面进入

参数设置主要包括基本参数、高级参数、厂家保留参数、恢复参数和参数管理。在缝纫主界面长按Ⓟ键进入系统设置界面（进入过程如图 3-1），通过⊖键切换至参数设置（选中后呈黑底），短按OK键进入参数设置界面。基本参数参数主要是速度、加固参数和习惯设定；高级参数和厂家参数为机修工使用的参数，设置有密码，需要输入正确密码之后才能进入；恢复参数是指将面板中的参数下传至主控，面板出厂后含有多套参数以及用户保存的自定义参数，还原时通过不同的参数类型进行还原；参数管理包括了参数下传、参数上传、保存自定义参数功能。参数菜单进入过程如图 3-3 所示。

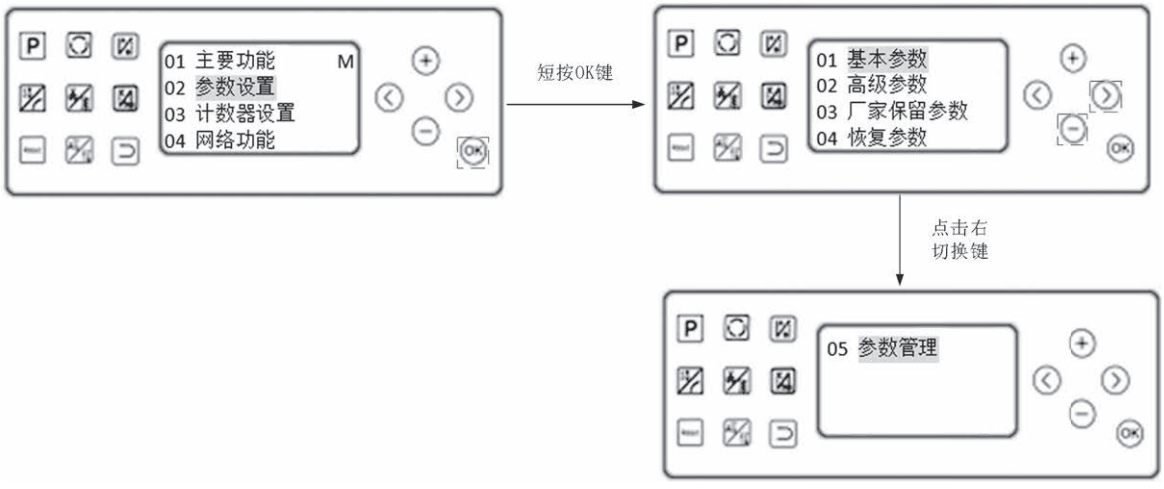


图 3-3 参数设置

3.2.2 参数设置

在缝纫主界面长按P键进入菜单主界面，选择参数设置，短按OK进入参数设置二级菜单，参数菜单界面选择基本参数（选中后呈黑底），短按OK键进入参数设置界面。

参数设置界面下，可通过<>键切换当前参数号索引，通过+-键调整当前参数的大小，<>键和+-键都有短按和长按（连续响应）的区别，短按的步进值为 1，<>键长按步进值为 16，+-键长按步进值和参数属性有关。参数设置界面左下角为参数说明，参数值有上下限，调整时请参看对应参数表。高级参数和厂家参数的设置过程相同，但在设置前需要输入密码（高级参数初始密码 1234、厂家保留参数初始密码 3333），参数设置过程如图 3-4 所示。

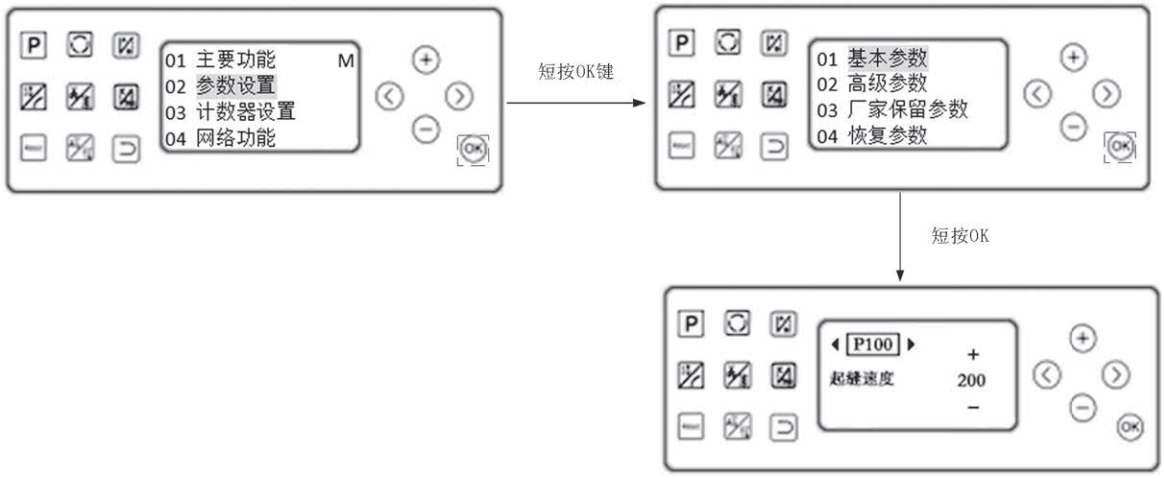


图 3-4 参数设置

3.2.3 恢复参数

在缝纫主界面长按P键进入菜单主界面，选择参数设置，短按OK进入参数设置二级菜单，选择恢复参数，参数菜单界面选择恢复参数（选中后呈黑底），短按OK键进入恢复参数设置界面。

参数恢复设置界面通过+-键切换参数类型，参数类型包括厂家参数（数字索引）和用户自定义参数（参数 1、参数 2），选择机头对应的参数类型长按OK进入参数下载界面，面板液晶屏显示“参数下载中”，下载完成液晶屏显示“下载完成”。恢复参数设置界面如图 3-5 所示。

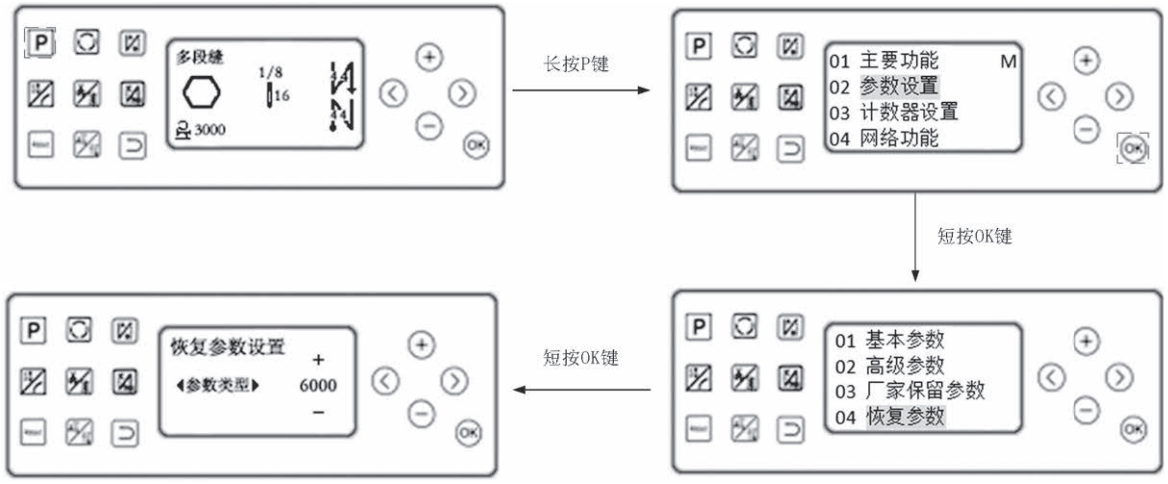


图 3-5 恢复参数

3.2.4 参数管理

在缝纫主界面长按P键进入菜单主界面，选择参数设置，短按OK进入参数设置二级菜单，参数菜单界面选择参数管理（选中后呈黑底），短按OK键进入参数管理界面，参数管理包括下传参数、上传参数、保存用户自定义参数 1 和保存用户自定义参数 2。参数管理进入界面如图 3-6 所示。

下传参数：将面板中当前参数下传至主控。在参数管理界面，选择下传参数，短按长按OK开始下载参数，面板显示“参数下载中”，下载完成回到参数管理界面。

上传参数：将主控中当前参数上传至面板。在参数管理界面，选择上传参数，短按长按OK开始上传参数，面板显示“参数上传中”，下载完成回到参数管理界面。

保存用户自定义参数 1：将面板中当前参数保存至 FLASH，主要用于修改参数前备份当前参数，可通过恢复参数中参数 1 重新恢复。在参数管理界面，选择保存用户自定义参数 1，长按短按OK开始保存参数，保存完成，屏幕显示“参数保存完成”，回到参数管理界面。

保存用户自定义参数 2：同保存用户自定义参数 2 相同。

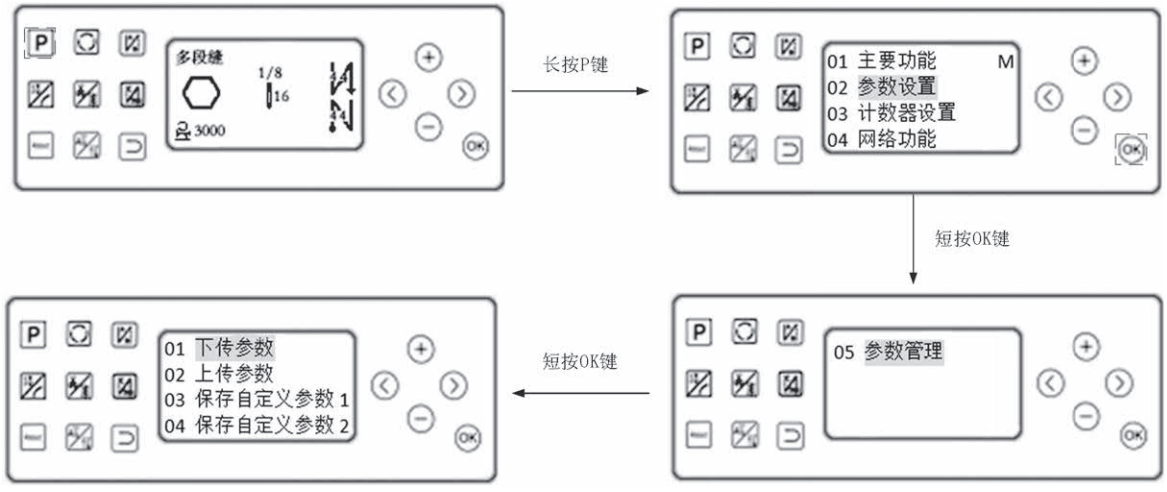


图 3-6 参数管理

3.3 计数器设置

3.2.1 产品计数器

计数器设置包括剪线计数器和底线计数器。在缝纫主界面长按P键进入系统设置界面，通过−键切换至计数器设置（选中后呈黑底），短按OK键进入计数器选择界面，在计时器选择界面选择剪线计数器，短按OK进入剪线计数器设定界面，剪线计数器设置界面进入过程如图 3-7 所示。

剪线计数器设定界面右下角斜杠上下分别是剪线计数器当前值和目标值，可通过<>键切换当前被选中的设定对象（选中对象以一定频率闪烁），通过+−键调整当前选中设定对象的大小，长按键产品计数器复位，当前值清零，目标值恢复 9999。

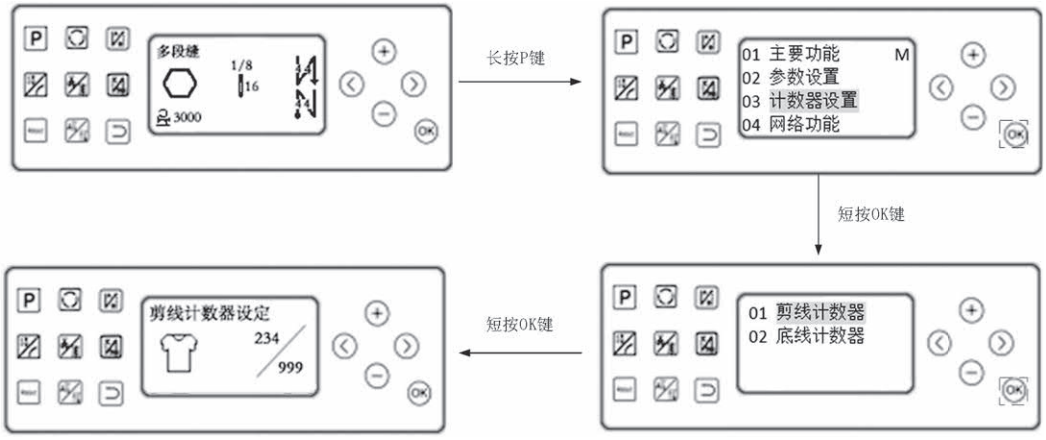


图 3-7 剪线计数器设置

3.2.2 底线计数器

在缝纫主界面长按Ⓟ键进入系统设置界面，通过⊖键切换至计数器设置（选中后呈黑底），短按Ⓞ键进入计数器选择界面，在计时器选择界面选择底线计数器，短按Ⓞ进入剪线底数器设定界面，底线计数器设置界面进入过程如图 3-8 所示。

底线计数器设定界面右下角斜杠上下分别是底线计数器当前值和目标值，底线计数器的当前值无法修改，目标值可通过⊕⊖键调整大小，长按▣键底线计数器复位，当前值清零，目标值恢复 9999。

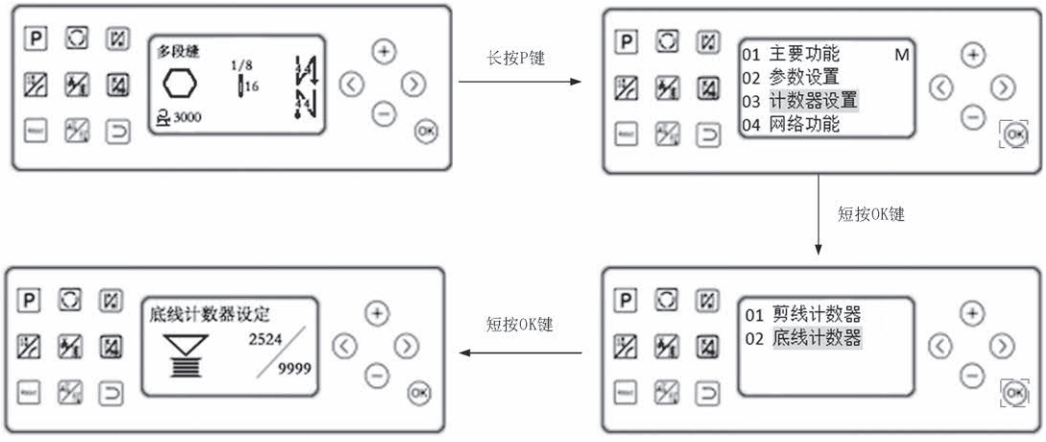


图 3-8 底线计数器设置

3.4 网络功能

网络功能可实现缝纫机远程数据对接，上传实时数据值云服务器，接收来自云端的控制指令。目前该功能尚在开发中。

3.4 维修保养

3.4.1 监控参数

在缝纫主界面长按Ⓟ键进入系统设置界面，通过⊖键或⊙键切换至维修保养（选中后呈黑底），短按Ⓞ键进入维修保养界面，在维修保养界面选择监控参数，短按Ⓞ进入监控参数界面，监控参数设置界面进入过程如图 3-9 所示。

监控参数设置页面可通过⊙⊙键切换当前监控参数文字索引，参数索引下方是参数值。

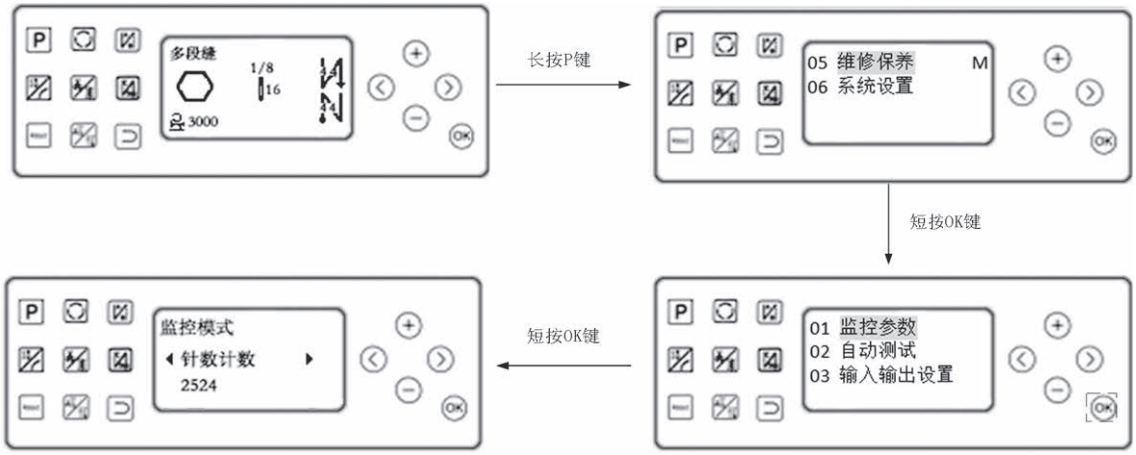


图 3-9 监控参数

3.4.2 自动测试

在缝纫主界面长按P键进入系统设置界面，通过−键或›键切换至维修保养（选中后呈黑底），短按OK键进入维修保养界面，在维修保养界面选择自动测试，短按OK进入自动测试界面，自动测试界面进入过程如图 3-10 所示。

自动测试页面可通过‹›键依次切换运行时间、停止时间和总时间，通过+−键调整对应的时间长短，设置完成短按OK键进入自动测试模式，轻踩踏板开启自动测试。总时间设置为 0 时，自动测试不限时长运转，测试完成可通过长按OK键或者⊃键结束自动测试。

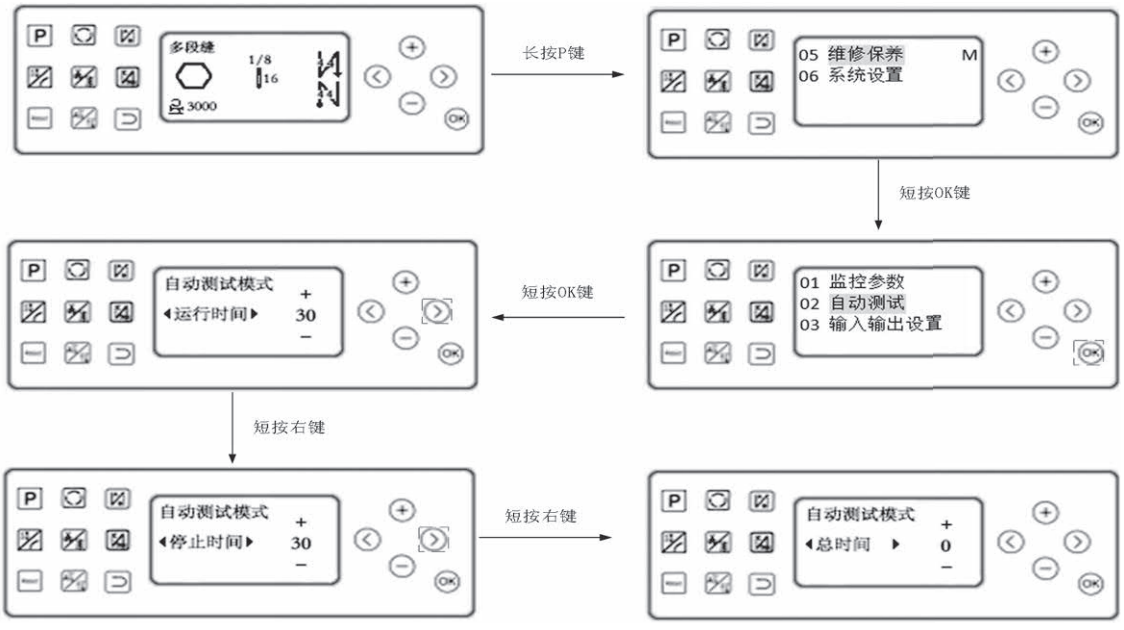


图 3-10 自动测试

3.4.3 输入数出测试设置

用于监控主控输入输出端子信号量，此功能正在开发中。

3.5 系统设置

3.5.1 密码设置

密码设置是指设置高级参数和厂家预参数密码。

3.5.2 版本信息

版本信息包括面板版本号、主控版本号和参数版本号。

3.5.3 背光亮度

调整液晶屏显示亮度。

3.5.3 语言设置

多国语言设置，目前支持中文和英文显示。

第四章 附件

4.1 机修工参数表

参数编号	参数范围	典型值	参数描述	备注
100	100~800	200	起缝速度	速度
101	200~5000	3500	自由缝最高速（全局最高限速）	
102	200~5000	3000	多段缝最高速	
104	200~5000	3000	补针速度	
105	100~500	250	剪线速度	
106	0/1	0	慢启动模式	
107	1~9	2	慢速起缝针数	
108	100~800	200	慢速起缝速度	
110	200~2200	1800	前固缝速度	加固缝参数
111	200~2200	1800	后固缝速度	
112	200~2200	1800	连续回缝速度（W 缝）	
113	1~70	32	前固(及 W)缝针迹补偿 1（吸合补偿，数值增大表示加快吸合）	
114	1~70	21	前固(及 W)缝针迹补偿 2（释放补偿，数值增大表示释放加快）	
115	1~70	35	后固缝针迹补偿 1（吸合补偿，数值增大表示加快吸合）	
116	1~70	21	后固缝针迹补偿 2（释放补偿，数值增大表示释放加快）	
140	0 / 1	1	上电自动找上针位： 0：不找；1：找	习惯设定
141	0 / 1	1	自动加固功能选择：（无自动加固功能的机头，最好禁止此功能） 0：禁止固缝； 1：允许固缝	
142	0 / 1	0	手按回缝时功能模式选择 0：Juki 模式。在缝纫中途或中途停止时均有动作。 1：Brother 模式。仅在缝纫中途有动作。	

4.2 高级参数表

参数编号	参数范围	典型值	参数描述		备注
103	200~500	3000	手动倒缝最高限速		速度
109	1~20	20	加速灵敏度		
10A	1~20	20	减速灵敏度		
117	1~100	90	针迹速度补偿（P107-A 段针数=1）		加固缝参数
118	1~100	30	针迹速度补偿（P107=A 段针数）		
11B	0-4	0	前后加固模式类型。(CD 与 AB 类似) 0：B->AB->ABAB->无。 1：B->无。 2：B->AB->无。 3：AB->无。 4：AB->ABAB->无.		
11C	0~9999	0	ABCD 各段的十位数(按位分配)		
11D	0~9999		EFGH 各段的十位数(按位分配)		
11E	0~9999		ABD 各段的十位数(按位分配)		
11F	0~359	0	手动倒缝角度控制		
130	0／1／2／3	2	脚踏板曲线模式： 0：自动线性斜率（根据最高速自动计算） 1：两段斜率； 2：幂次曲线； 3: S 型曲线		踏板参数
131	200~4000	3000	两段斜率：中段速度 RPM（两段斜率的转折点速度）		
132	0~1024	800	两段斜率：中段踏板模拟量（需在 138 到 139 参数之间）		
133	1／2	1	幂次曲线： 1：平方曲线；2：开方曲线；		
134	0~1024	90	踏板剪线位置	具体设置方法见图 4-1 所示。	
135	0~1024	300	踏板抬压脚位置		
136	0~1024	460	踏板回中位置		
137	0~1024	480	踏板前踩运行位置		
138	0~1024	580	踏板低速运行位置（上限）		
139	0~1024	962	踏板模拟量最大值		
13A	0~800	100	踏板抬压脚确认时间		
143	0／1／2／3	0	特殊运行模式： 0：操作工选择（正常） 1：简易缝模式 2：测电机初始角（不需要取下皮带） 3：计算传动比模式（需要有停针传感器，且不能取下皮带）		习惯设定
144	0~31	0	电机低速加力功能开关： 0：正常功能； 1~31：低速加力过厚能力档位		
148	0／1／2	0	按钮补针模式: 0:由按下时间控制； 1：补半针； 2：补一针		
149	0~10	0	缓放压脚斩波开通时间(100us 单位)		
14C	1~9999	40	缓放压脚斩波关断时间(100us 单位)		
150	1—100	1	计针数功能比例值设定		
151	1—9999	1	计针数上限设定值		计数模式
152	0—6	0	计针数模式选择： 0：不计数 1：依针数递增计数，计数满后自动重新计数 2：依针数递减计数，计数满后自动重新计数 3：依针数递增计数，计数满后马达自动停止，须由复位按钮设定或面板上的 P 键来启动重新计数。 4：依针数递减计数，计数满后马达自动停止，须由复位按钮设定或面板上的 P 键来启动重新计数。 5：依针数递增计数，计数满后发出报警，剪线后马达锁住 6：依针数递减计数，计数满后发出报警，剪线后马达锁住		
153	1—100	1	计件数功能比例值设定		
154	1—9999	1	计件数上限设定值		
155	0—4	0	计件数模式选择： 0：不计数 1：计件数递增计数，计数满后自动重新计数		

			2：计件数递减计数，计数满后自动重新计数 3：计件数递增计数，计数满后马达自动停止，须由复位按钮设定或面板上的 P 键来启动重新计数。 4：计件数递减计数，计数满后马达自动停止，须由复位按钮设定或面板上的 P 键来启动重新计数。	
156	0—9999	0	对应 1/2/3/4 号电磁铁斩波占空比时间选择（0 以 ms 为单位，1 以 0.1ms 为单位）	
157	0—9999	0	对应 5/6/7/8 号电磁铁斩波占空比时间选择（0 以 ms 为单位，1 以 0.1ms 为单位）	
158	0—1	0	计数可调开关（计针数和计件数）（0 可调，1 不可调）	
161	0 / 1 / 2		参数传输：0：无动作；1：下传参数；2：上传参数	操作类
162	1, 2		恢复出厂参数	
163	1, 2		保存当前参数为用户自定义机修参数（可恢复）	
164	-		密码	
200	0 / 1 / 2	0	剪线电机运行模式选择：0：平车式；1：绷缝式（普通绷缝剪线：停到上针位后剪线）；2：包缝式:手动剪线	剪线模式
201	0—359	0	剪线结束时机械角度	
203	5-359	10	剪线开始角度 TS（相对于下针位角度）	
204	10-359	120	剪线结束角度 TE（相对于下针位角度，需大于 TS）	
20A	10-60	20	剪线加力系数(电机加力)	
20B	0/1	1	锁线功能开关	
211	5-359	25	松线电磁铁启动角度 LS（相对于下针位角度）	
212	10-359	350	松线电磁铁结束角度 LE（相对于下针位角度，需大于 LS）	
213	1-999	1	松线电磁铁启动延迟时间 L1（ms）	
214	1—999	10	松线电磁铁上针位后延迟时间 L2（ms）	
215	0 / 1	1	扫线功能选择：0：关闭；1：打开	
216	1—999	10	拨线 / 扫线延迟时间 ms	
217	1—9999	70	拨线 / 扫线持续时间 ms	
219	0 / 1	0	夹线功能选择：0：关闭；1：打开	
21A	10-359	120	夹线开始角度	
21B	11-359	318	夹线结束角度	
21E	11-359	160	夹线时压脚抬起后的下放角度	
220	200—360	360	剪线后停止位置（可实现剪线回拉功能）	模式选择
231	0 / 1	0	自动测试模式选择：（前面两位数所表示的测试模式设置）0：定针数；1：定时间（×100ms）	
232	0—1000	300	安全开关报警确认时间 ms（直驱翻台开关和绷缝剪刀保护开关均同样处理）	
234	0 / 1	0	电机转向：1：反转；0：正转	
240	0—9999	1000	电机/机头传动比：X0.001 （如果自动计算过传动比，控制器内的该参数可能与 HMI 上的不同）	机头相关参数
242	0—359	0	上停针位调整角度（相对于上针位传感器的位置偏移）	
243	0—359	175	下停针位机械角度	
244	0~800	200	放压脚延迟时间（ms）	
247	230-800	270	电磁铁吸合角度	
248	40-70	45	电磁铁开通时间	
249	15—30	26	电磁铁占空比	

4.3 监控参数表

参数编号	参数描述	参数编号	参数描述	参数编号	参数描述
010	针数计数	**022**	相电流	**027**	电机累计运行时间（Hour）
011	计件数	**023**	初始角度	**028**	机头交互量电压采样值
013	霍尔状态	**024**	机械角度	**029**	DSP 软件版本号
020	母线电压	**025**	踏板电压采样值	**030-037**	历史故障代码
021	机头速度	**026**	机头传动比实际值		

4.4 安全报警表

报警代码	代码含义	解决措施
Warm：01	加油提醒	按 P 键可暂时取消报警。请及时加油并运行时间复位操作
Warm：02	计针数报警	表示计针数已达所设上限，按 P 键可取消报警并重新计数
Warm：03	计件数报警	表示计件数已达所设上限，按 P 键可取消报警并重新计数
Warm：04	紧急停车	再按下紧急停车按钮，可消除紧急停车状态
Warm：05	提针锁定	再按下提针锁定按钮，可消除提针锁定状态
Warm：06	断电提醒	请等候 30 秒再重新打开电源开关
Warm：07	翻台开关报警	摆正机头，确保翻台开关复原

4.5 故障代码表

若系统出现报错或报警，请首先检查如下项：

1、先确认机器的连接线是否连接完好；2、确认电控和机头是否匹配；3、确认恢复出厂是否准确。

故障代码	代码含义	解决措施
Error:01	硬件过流	关闭系统电源，30 秒后重新接通电源，控制器若仍不能正常工作，请更换控制器并通知厂方。
Error:02	软件过流	
Error:03	系统欠压	断开控制器电源，检查输入电源电压是否偏低（低于 176V）。若电源电压偏低，请在电压恢复正常后重新启动控制器。若电压恢复正常后，启动控制器仍不能正常工作，请更换控制器并通知厂方。
Error:04	停机时过压	断开控制器电源，检查输入电源电压是否偏高（高于 264V）。若电源电压偏高，请在电压恢复正常后重新启动控制器。若电压恢复正常后，启动控制器仍不能正常工作，请更换控制器并通知厂方。
Error:05	运行时过压	
Error:06	电磁铁 回路故障	关闭系统电源，检查电磁铁连线是否正确，是否有松动、破损等现象。若有则及时更换。确认无误后重启系统，若仍不能工作，请更换控制器并通知厂方。
Error:07	电流检测 回路故障	关闭系统电源，30 秒后重新接通电源观察是否能正常工作。重试几次，若该故障频繁出现，请更换控制器并通知厂方。
Error:-08	电机堵转	断开控制器电源，检查电机电源输入插头是否脱落、松动、破损，是否有异物缠绕在机头上。排除后重启系统仍不能正常工作，请更换控制器并通知厂方。
Error:09	制动回路故障	关闭系统电源，检查电源板上白色的制动电阻接头是否松动或脱落，将其插紧后重启系统。若仍不能正常工作，请更换控制器并通知厂方。
Error:-10	HMI 通讯故障	检查控制面板与控制器的连线是否脱落、松动、断裂，将其恢复正常后重启系统。若仍不能正常工作，请更换控制器并通知厂方。
Error:11	机头停针 信号故障	检查机头同步信号装置与控制器的连线是否松动，将其恢复正常后重启系统。若仍不能正常工作，请更换控制器并通知厂方。
Error:12	电机初始角度检测故障	请断电后再尝试 2-3 次，若仍报故障，请更换控制器并通知厂方。
Error:-13	电机 HALL 故障	关闭系统电源，检查电机传感器接头是否松动或脱落，将其恢复正常后重启系统。若仍不能正常工作，请更换控制器并通知厂方。
Error:-14	DSP 读写 EEPROM 故障	关闭系统电源，30 秒后重启系统，若仍不能正常工作，请更换控制器并通知厂方。
Error:-15	电机超速保护	

Error:16	电机反转	
Error:-17	HMI 读写 EEPROM 故障	
Error:18	电机过载	
Error:-23	电机堵转扇区错误	断开控制器电源，检查电机电源输入插头是否脱落、松动、破损，是否有异物缠绕在机头上。排除后重启系统仍不能正常工作，请更换控制器并通知厂方。

4.6 脚踏板灵敏度调整

脚踏板动作由初始位置①（136 号参数）开始，缓慢向前踩至②（137 号参数）开始低速缝纫，继续前踩至③（138 号参数）开始加速，再深踩至④（139 号参数）达到最高速度。②③段之间维持起缝速度，③④段之间为无级调速过程；

1、当脚踏板由初始位置①（136 号参数）开始，缓慢后踩至⑤（135 号参数）时抬压脚自动抬起；2、当脚踏板由初始位置①（136 号参数）开始，缓慢后踩至⑥（134 号参数）时自动完成剪线动作。3、各参数数值设置需保证（134 号参数）<（135 号参数）<（136 号参数）<（137 号参数）<（138 号参数）<（139 号参数）4、可通过监控模式下 025 号参数实时监测,不同位置下的踏板采样数值作为各参数的参考值。调整对应参数，抬压脚和前踩或后踩的动作位置也随之改变。如前踩很大距离机器还没有运转，可适当减小 137 参数（不能小于回中位置参数 136），即可提高前踩的灵敏度；若机器过于灵敏，轻触踏板机器就开始运行，可适当加大 137 参数；若不容易补针，稍微前踩，速度就迅速提高造成前冲多针，可适当增大 138 参数或减小 137 参数（即增大脚踏板低速范围），也可以适当降低初始起缝速度（100）。

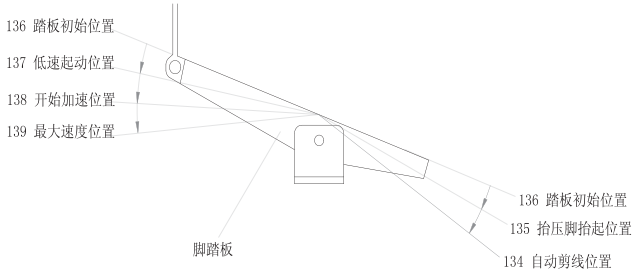


图 4-1　踏板动作各位置参数示意图

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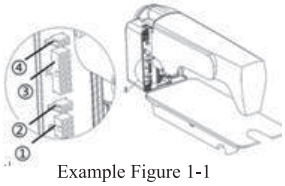
Safety Instructions

- Read the Product Specification and the attached sewing machine specification prior to using this product.
- This product shall be installed or operated by the people who have been trained professionally.
- Please stay away from the arc welding equipment, so as to avoid misoperation caused by the interference with this controller by the generated electromagnetic waves.
- Please do not use this product in the places with ambient temperature above 45°C or below 0°C.
- Please do not use this product in the places with humidity below 30% or above 95% or having dew or acid mist.
- Please turn off the power and pull the plug first prior to the installation of control cabinet and other components.
- In order to prevent interference or electric leakage, please the grounding shall be performed well. The grounding wire of the power line shall be connected to the earth firmly and effectively.
- All the parts for maintenance shall be provided or recognized by our Company.
- The power shall be turned off and the plug be pulled out prior to any maintenance. Only after the power is turned off for five minutes can the control cabinet be opened as the high voltage in it is dangerous.
- The clauses marked with ⚠ in this manual are about safety precautions, which shall be noted and strictly abided by, so as to avoid unnecessary damage.

Section 1 Product Installation

1.1 Product Specifications

Product Model	DL7200A	Power Voltage	AC 220±20% V
Power Frequency	50Hz/60Hz	Maximum Power Output	550/750W



Example Figure 1-1

1.2 Interface Plug Connection

Insert the pedal and head connector plugs into the corresponding sockets on the back of the controller as shown in Figure 1-1. The names of the outlets are shown in Figure 1-2. After connection, please check if the plug is inserted firmly.
① Pedal socket; ② Lifter electromagnet socket; ③ Automatic electromagnet socket; ④ Head light socket (black)

⚠: In case of failure to plug in using normal force, please check if the plug and the socket match, and whether the insertion direction or the direction of needle is correct! The interfaces of the lamp and lifter electromagnet are both 1*2 interfaces. Back interface is adopted for the headlight interface. Please note the difference.

Lifter electromagnet

1	VDD (+32V)	+32V
2	Output signal 3	Electromagnet output

OUT 3

Pedal interface definition

1	Pedal	Pedal analog signal
2	GND	5V digital ground
3	VCC	+5V
4	Din6	Input signal 6
5	Din5	Input signal 5
6		

Note: 4 and 5 pin electronic control not used

Head electromagnet

	Five outputs		Four outputs	
1	VDD (+32V)	+32V	VDD (+32V)	+32V
2	VDD (-32V)	+32V	—	—
3	-5V	-5V	+5V	+5V
4	GND (+32V)	32V digital ground		
5	GND (+32V)	32V digital ground	GND (+32V)	32V digital ground
6	VDD (+32V)	+32V	VDD (+32V)	+32V
7	VDD (+32V)	+32V	VDD (+32V)	+32V
8	JX	Trimming electromagnet	JX	Trimming electromagnet
9	BX	Thread wiping electromagnet	—	—
10	—	—	—	—
11	Din2	Needle compensate switch	Din2	Needle compensate switch
12	Din1	Backstitch switch	Din1	Backstitch switch
13	DF	Backstitch electromagnet	DF	Backstitch electromagnet
14	SX	Tension electromagnet	SX	Tension electromagnet

JX BX DF SX

Figure 1-2 Controller Interface Definition

1.3 Wiring and Grounding

The systematic grounding engineering shall be done and constructed by qualified electrical engineer. Prior to the product is energized and put into use, the AC input terminal of power outlet shall be ensured to be grounded in a safe and reliable way. The grounding wire of the system is yellow-green line, which shall be connected to the power grid security grounding, so as to ensure safe use and prevent abnormal conditions.

Protect the power cords, signal cables, ground wires, etc. from being pressed by other objects or over-twisted during wiring to ensure safety in use!

Section 2 Operation Panel Usage Instructions

2.2 Introduction to the Appearance of Operation Panel

The appearance of H25 dot matrix operation panel is shown in Figure 2-1. The operation panel consists of 14 touch keys and a 128*64 resolution LCD screen. It can complete functions such as pattern display, parameter setting, voice broadcast, cloud communication (under development), parameter upload/upload and factory restoration. It has the advantages of convenient operation, good user experience and strong scalability.

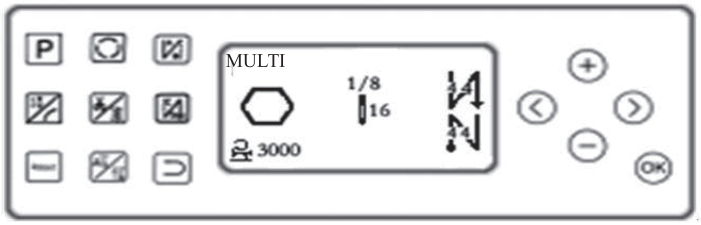


Figure 2-1 Appearance of H-12 Operation Panel

Table 2-1 Key Function Introduction

No.	Appearance	Name	Function Description
1		Menu key	Menu function key, long press the P key to enter the menu list, which includes the main function, parameter setting, counter setting, network setting, maintenance and system setting functions.
2		Sewing mode switch key	Press the key to switch the sewing mode among the free sewing, fixed stitch sewing, four-segment sewing, overlapping sewing and multi-segment sewing modes.
3		Start back tacking key	Also known as the start back stitch function selection key, including short press and long press. After short press, the system start back tacking work modes switch among no start back tack, start back single tack, start back double tack, start back four tack in loop. The corresponding icons will be displayed on the dot matrix screen. The number in the icon indicates the number of tacking stitches. After long press, the system enters the long tacking setting interface.
4		Needle position and soft start reuse key	Needle position and soft start reuse keys include short press and long press. After short press, the system enters the needle position setting interface. After long press, the system enters the soft start setting interface.
5		Automatic thread trimmer and tension reuse key	Automatic thread trimming and tension reuse keys include short press and long press. After short press, the system enters the automatic trimming setting interface. After long press, the system enters the tension setting screen.
6		End back tacking key	Also known as the end backstitch function selection key, including short press and long press. After short press, the system end back tacking work modes switch among no end back tacking, end back single tack, end back double tack, and end back four tack in loop. The corresponding icons will be displayed on the dot matrix screen. The number in the icon indicates the number of tacking stitches. After long press, the system enters the long tacking setting interface.
7		Reset key	System reset key, after long press, the panel downloads the factory parameter to the master control
8		Lifter key	Also known as automatic lifter after trimming and automatic lifter reuse key in suspension during sewing, including short press and long press. After short press, the system enters trimming lifter setting interface. After long press 2S, the system enters the automatic lifter setting interface.
9		Return key	Cancel and return

10	⊕ ⊖	Increase/decrease key	Adjust the increase/decrease key for the corresponding value
11	‹ ›	Left/right switch key	Switch the selected object and switch the operation mode
12	OK	Enter key	Confirm saving
1	P	Menu key	Menu function key, long press the P key to enter the menu list. The menu list includes the main function, parameter setting, counter setting, network setting, maintenance and system setting functions.

2.2 Basic Operation

2.2.1 Switch of the basic operation mode

Click the sewing mode switch key in the box marked with red-dotted lines to switch among free sewing->multi-segment sewing->W-sewing->four-segment sewing in loop, as shown in Figure 2-2.

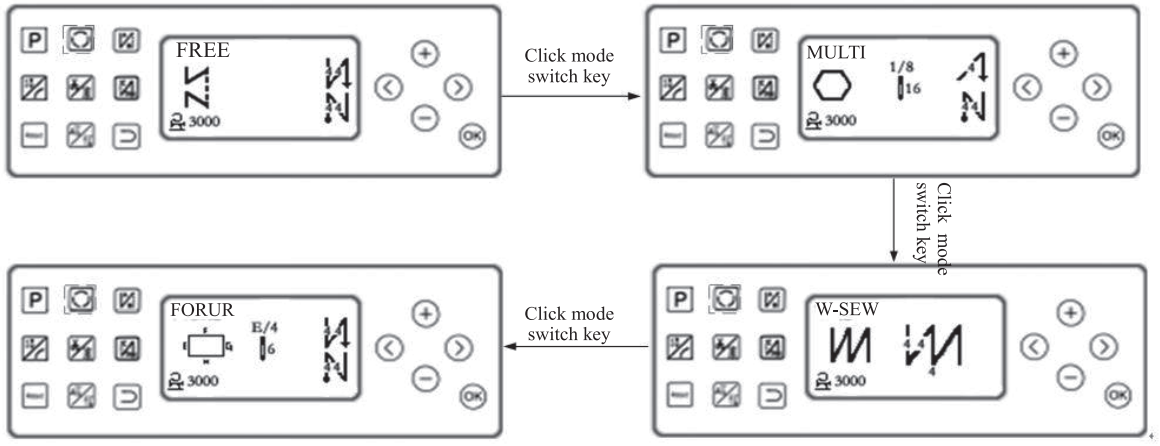


Figure 2-2 Switch of basic operation modes

2.2.2 Switch of start back tacking mode

Click the start back tacking key in the box marked with red-dotted lines to switch among the start back tacking->single-segment tacking->double-segment tacking->four-segment tacking in loop, as shown in Figure 2-2.

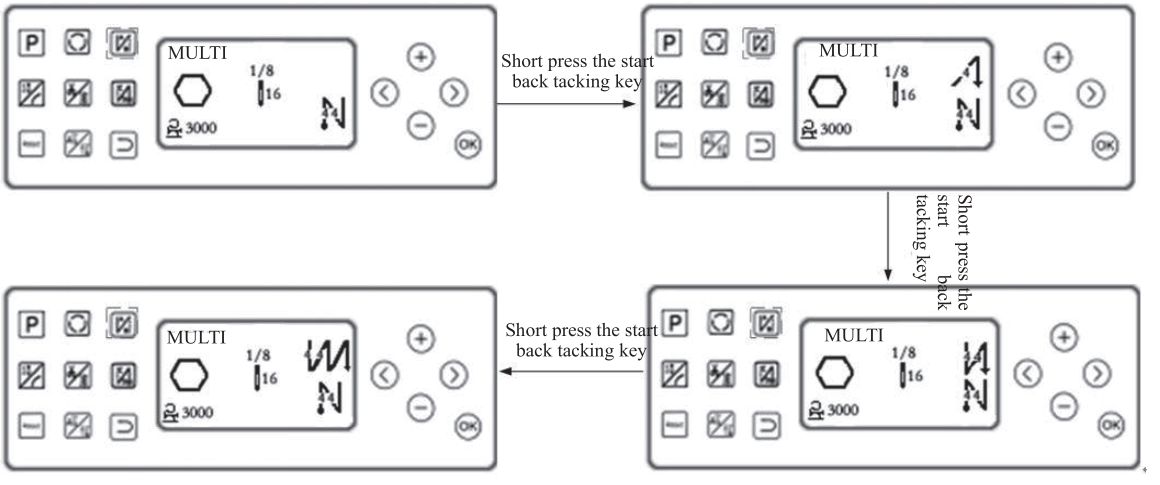


Figure 2-3 Switch of Start Back Tacking Mode

2.2.3 Start Back Tacking Function Setting

Long press the start back tacking key in the box marked with red-dotted lines to enter the start back tacking setting interface, where the number of A/B segment stitches for start back tacking and start back tacking speed can be set. Switch the adjustment object currently selected by ⟨⟩ key (flashed at certain frequency after being selected). Adjust the size of the currently selected object by ⊕⊖ key. After the setting is complete, click the OK key to confirm saving and return to the sewing main interface. Click the ⊃ key to cancel the current setting (without saving) and return to the sewing main interface. The start back tacking setting process is shown in Figure 2-2.

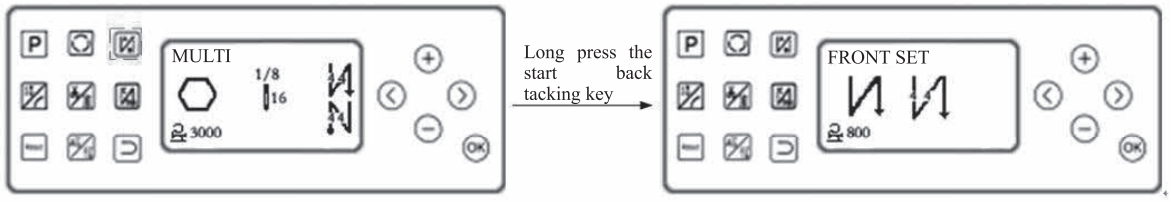


Figure 2-4 Start Back Tacking Function Setting

2.2.4 Switch of End Back Tacking Mode

Click the start back tacking key in the box marked with red-dotted lines to switch among end tacking without tacking -> single-segment tacking -> double-segment tacking -> four-segment tacking, as shown in Figure 2-5.

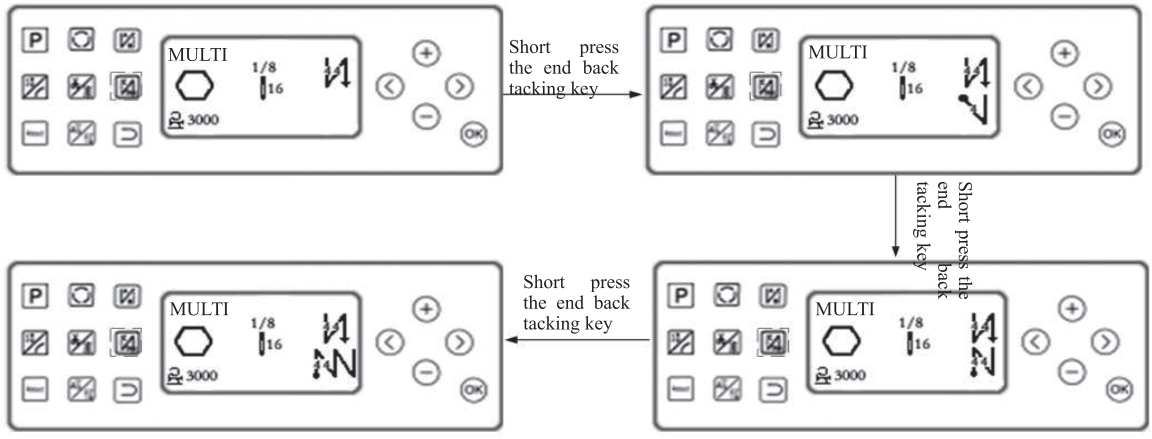


Figure 2-5 Switch of End Back Tacking Mode

2.2.5 End Back Tacking Function Setting

Long press the end back tacking key in the box marked with red-dotted lines to enter the end back tacking setting interface, where the number of C/D segment stitches for end back tacking and end back tacking speed can be set. Switch the adjustment object currently selected by ⟨⟩ key (flashed at certain frequency after being selected). Adjust the size of the currently selected object by ⊕⊖ key. After the setting is complete, click the OK key to confirm saving and return to the sewing main interface. Click the ⊃ key to cancel the current setting (without saving) and return to the sewing main interface. The end back tacking setting process is shown in Figure 2-6.

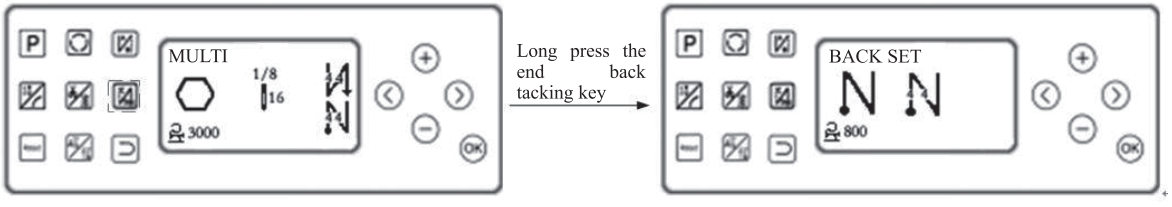


Figure 2-6 End Back Tacking Function Setting

2.2.6 Multi-segment Sewing Main Stitch Setting

In the multi-segment mode, long press the OK key to enter the multi-segment main stitch trajectory setting (multi-segment stitch setting) interface, where the total number of segments and the number of stitches in each segment are adjustable. Use the ⟨⟩ key to switch the currently selected object. Use the ⊕⊖ key to adjust the size of the currently selected object. Click OK key to confirm saving after the completion of setting and return to the sewing main interface. Click the ⊃ key to cancel the current setting content (not saved). Return to the sewing main interface. The multi-segment main stitch trajectory setting process is shown in Figure 2-7.

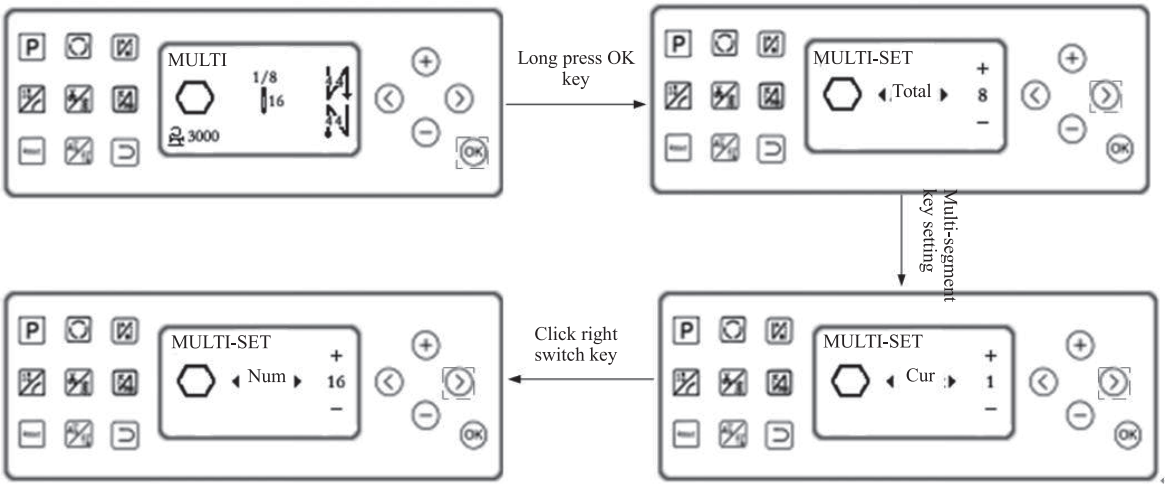


Figure 2-7 Multi-segment Sewing Main Stitch Setting

2.2.7 W-sewing Main Stitch Setting

In the overlap sewing mode, long press the OK key to enter the W-sewing main stitch trajectory setting (W-sewing setting) interface. The number of stitches in the A/B segment and the total number of stitches can be adjusted in the W-sewing main stitch trajectory setting interface. Use the ◁▷ key to switch the selected adjustment object. Use the ⊕⊖ key to adjust the size of the currently selected object. After the setting is complete, click the OK key to confirm saving and return to the sewing main interface. Click the ⊃ key to cancel the current setting (without saving) and return to the sewing main interface. The W-sewing main stitch trajectory setting process is shown in Figure 2-8.

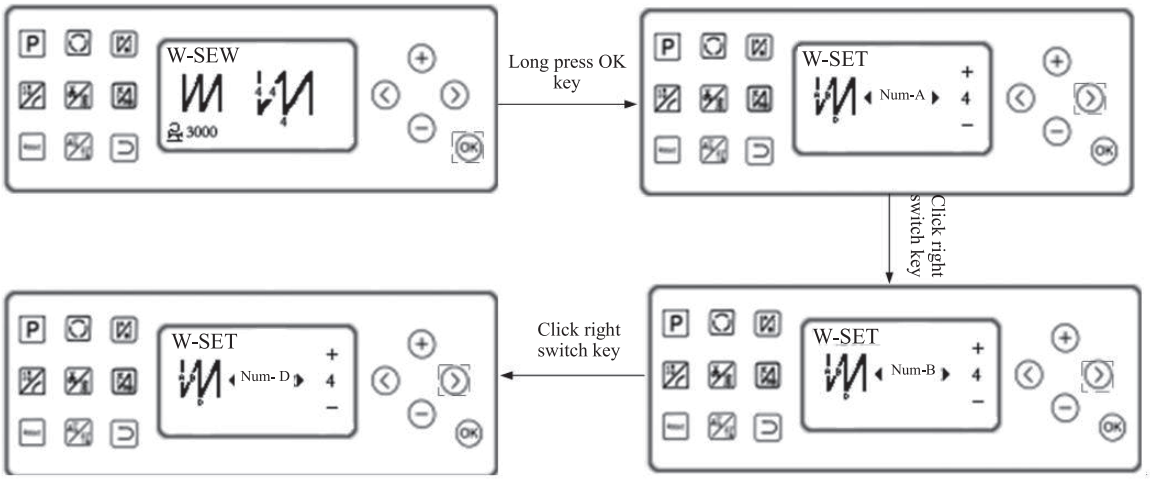


Figure 2-8 Multi-segment Main Stitch Setting

2.2.7 Four-segment Main Stitch Setting

In the four-segment sewing mode, long press the OK key to enter the four-segment sewing main stitch trajectory setting (Four-segment sewing setting) interface. The number of stitches in the E, F, G and H segment and the number of stitches in each segment can be adjusted in the four-segment sewing main stitch trajectory setting interface. Use the ◁▷ key to switch the selected adjustment object. Use the ⊕⊖ key to adjust the size of the currently selected object. After the setting is complete, click the OK key to confirm saving and return to the sewing main interface. Click the ⊃ key to cancel the current setting (without saving) and return to the sewing main interface. The four-segment sewing main stitch trajectory setting process is shown in Figure 2-9.

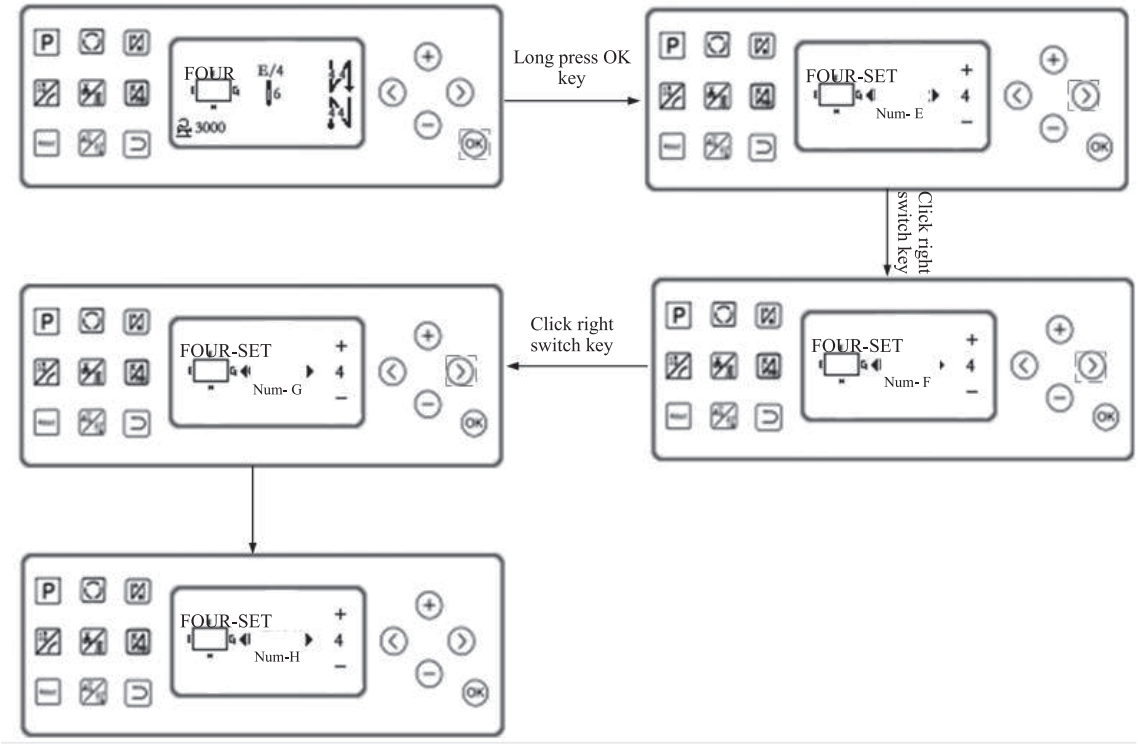


Figure 2-9 Four-segment Sewing Main Stitch Setting

2.2.8 Main Stitch Speed Setting

In the main sewing interface, click the ⊕⊖ key to set the main stitch speed. The upper limit of the main stitch speed can be set by parameter. The main stitch speeds of the free sewing, multi-segment and four-segment sewing are the same. The speed of W-sewing is different from the above three. The main stitch speed setting process is shown in Figure 2-10.

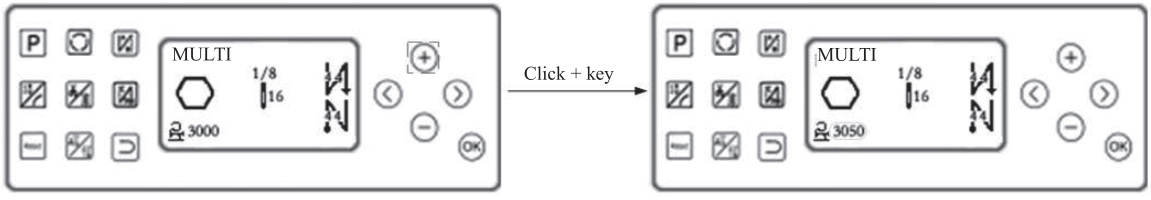


Figure 2-10 Main Stitch Speed Setting

2.2.9 Sewing Auxiliary Function Setting

The corresponding icons for the system valid auxiliary functions include , , , , and ; and their functions are as follows:

: Middle stop position selection; when it is set to the lower stop position, it indicates that the stop position is in the lower position when the current stitch is not completed; and the top position is in the upper position when the current stitch is not completed.

Soft start selection; when it is set to be valid, it indicates that the soft start function is enabled. After the pedal is pressed, the sewing starts at a lower speed and gradually returns to normal. When it is set to be invalid, it indicates that the soft start function is turned off, and the sewing is performed at a normal speed after the pedal is pressed. The soft start property setting also includes the number of soft start stitches and the soft start speed. Use the ⟨⟩ key to switch the setting object selected currently. Use the ⊕⊖ key to adjust the attributes of the setting object selected currently.

Automatic trimming selection; when it is set to be valid, it indicates that the thread trimming is performed at the end of trajectory when the current stitching is completed. When it is set to be invalid, it indicates that the thread trimming action will not be executed when the current stitching is not completed and the needle stops at the upper position. The automatic thread trimming property setting also includes the automatic thread trimming speed property. Use the ⟨⟩ key to switch the setting object selected currently. Use the ⊕⊖ key to adjust the attributes of the setting object selected currently.

Tension selection; when it is set to be valid, it indicates that the tension magnetic is on, with the function of preventing thread off when initializing stitches. When it is set to be invalid, it indicates the tension function is off, with the function of electromagnet auxiliary tension function.

: Lifter selection after trimming; when it is set to be valid, it indicates that the lifter automatically lifts when the pedal is in the neutral position after the current stitch is trimmed. When t it is set to invalid, it indicates that the lifter does not automatically lift when the pedal is in the neutral position after the current stitch is trimmed.

: Middle stop lifter selection; when it is set to be valid, it indicates that the lifter automatically lifts when the pedal is in the neutral position if the needle stops before the stitch is completed. When it is set to be invalid, it indicates that the lifter does not automatically lift when the pedal is in the neutral position if the needle stops before the stitch is completed.

Trimming and tension functions are taken as an example to illustrate the auxiliary function setting process. The trimming function setting process is shown in Figure 2-10. Short press the key in the sewing main interface to enter the trimming setting interface. The trimming setting includes the trimming function and trimming speed property setting. Use the key to switch the setting object selected currently. Use the key to adjust setting object selected currently.

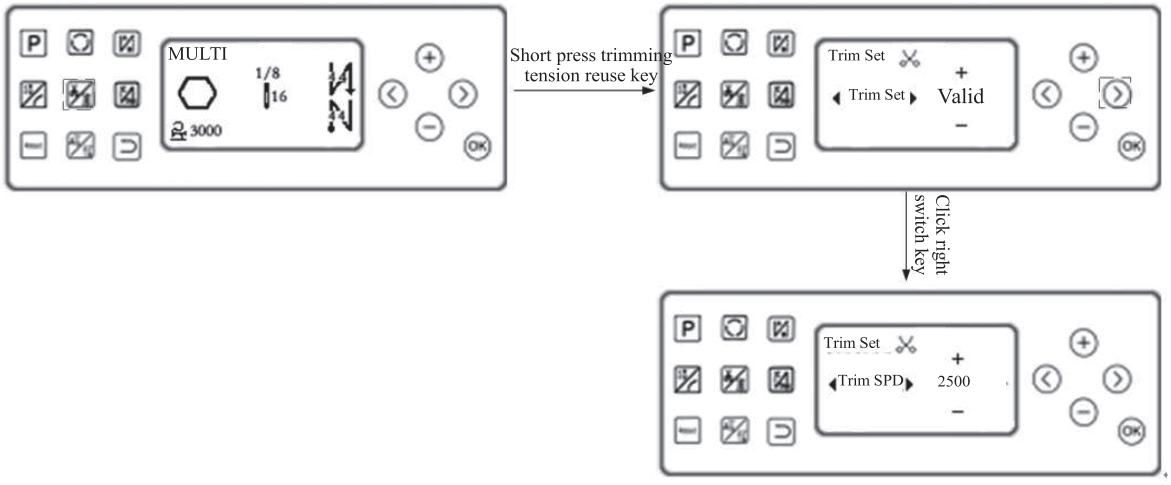


Figure 2-11 Trimming Function Setting

The tension function setting process is shown in Figure 2-12. Long press the key at the sewing main interface to enter the tension setting interface. Use key to adjust the On/Off of the tension function.

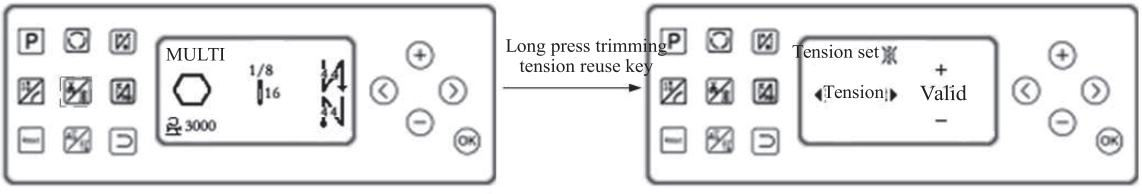


Figure 2-12 Trimming Function Setting

Section 3 System Setting

3.1 Enter System Setting Interface

As shown in Figure 3-1, long press the key in the sewing main interface to enter the system setting interface, which includes the main function, parameter setting, counter setting, network setting, maintenance and system setting functions.

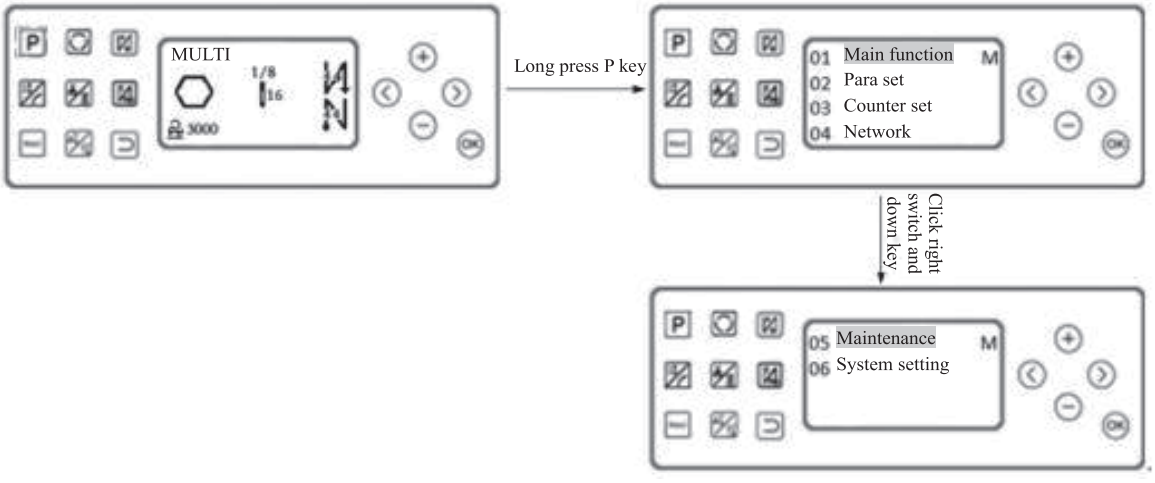


Figure 3-1 Enter System Setting Interface

3.2 Main Function

The main function mainly includes needle position setting, soft start setting, trimming setting, tension setting, lifter setting, bird's nest prevention, needle gauge adjustment, feeding trajectory and pedal parameters. In the sewing main interface, long press the P key to enter the system setting interface (entry process shown in figure 3-1). Use the ⟨⟩ key and ⊕⊖ key to switch to the needle position setting (black background after being selected). Short press the OK key to enter the main function setting interface, and the entry process is shown in Figure 3-2. Some functions in the main function setting can also be accessed directly via the panel keys.

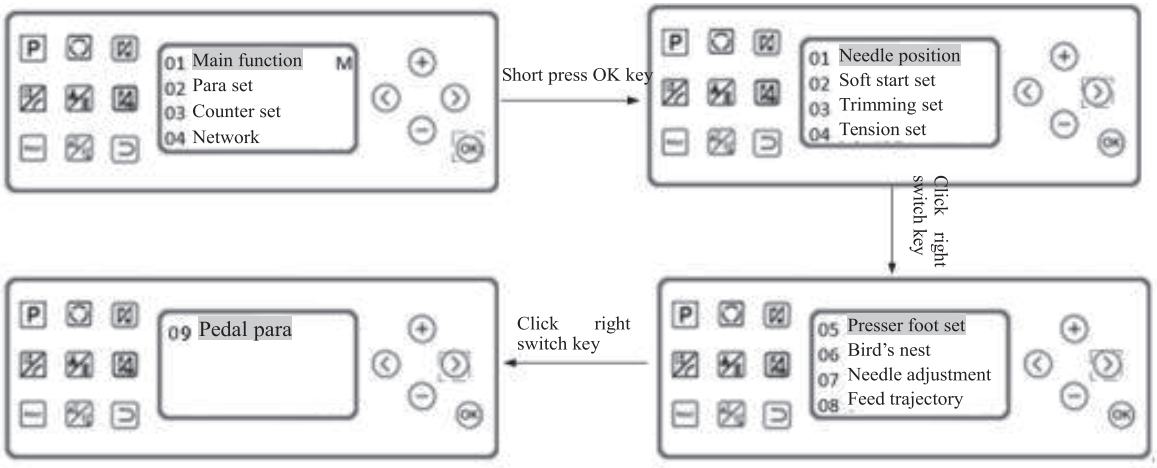


Figure 3-2 Main Function Setting

3.2 Parameter Setting

3.2.1 Enter the Parameter Setting Interface

The parameter setting mainly includes basic parameters, advanced parameters, factory retention parameters, restoration parameters, and parameter management. Long press the P key in the sewing main interface to enter the system setting interface (entry process shown in Figure 3-1). Use the ⊖ key to switch to the parameter setting (black background after being selected). Short press the OK key to enter the parameter setting interface. The basic parameter parameters mainly include speed, tacking parameter and custom setting. The advanced parameters and factory parameters are parameters used by the mechanic. If password is set, correct password entry is required for access. The restoration parameter is to download the parameters in the panel to the master control. After factory delivery, the panel contains multiple sets of parameters and user defined custom parameters. The restoration is performed through different parameter types during restoration. Parameter management includes parameter download, parameter upload and custom parameter saving functions. The parameter menu entry process is shown in Figure 3-3.

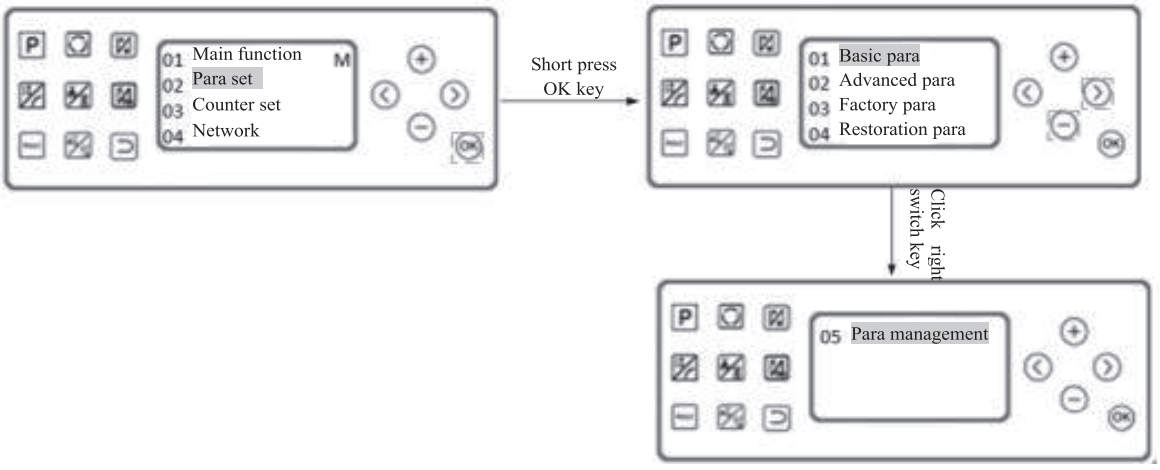


Figure 3-3 Parameter Setting

3.2.2 Parameter Setting

In the sewing main interface, long press the P key to enter the menu main interface. Select the parameter setting, short press OK to enter the parameter setting secondary menu. Select the basic parameter in the parameter menu interface (back background after selection). short press OK to enter the parameter setting interface.

In the parameter setting interface, use the ⟨⟩ key to switch the current parameter number index. Use the ⊕⊖ key to adjust the current parameter size. Long/short press can be performed on both ⟨⟩ and ⊕⊖ keys (continuous response). The step value of short press is 1, the long step value of ⟨⟩ key is 16, and long step value of ⊕⊖ key is related to

parameter attribute. The lower left corner of parameter setting interface shows parameter description. There are upper and lower limits on the parameter value. Please refer to the corresponding parameter table in the adjustment. The setting procedure for advanced parameters and factory parameters is the same. However, password entry is required before the setting (Advanced parameter initial password 1234, factory retention parameter initial password 3333). And the parameter setting process is shown in Figure 3-4.

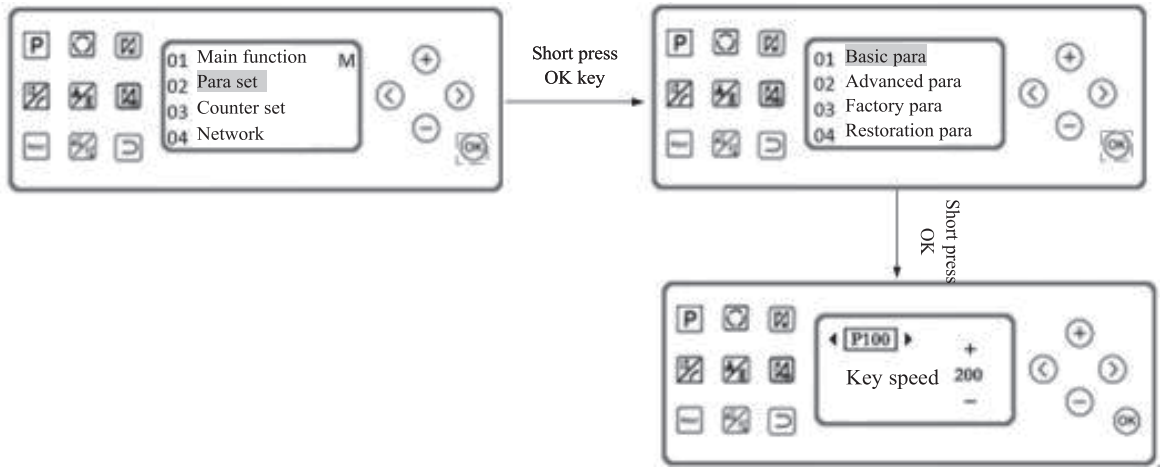


Figure 3-4 Parameter Setting

3.2.3 Restoration Parameter

In the sewing main interface, long press the [P] key to enter the menu main interface and select parameter setting. Short press the (OK) key to enter the parameter setting secondary menu and select restore parameter. Select the restoration parameter in the parameter menu interface (black background after being selected). Short press the (OK) key to enter the restoration parameter setting interface.

Use the (+)(−) key to switch the parameter type in the parameter restoration setting interface. The parameter type includes the factory parameter (numeric index) and the user defined parameter (parameter 1 and parameter 2). Select the parameter type corresponding to the head and long press the (OK) key to enter the parameter download interface. The LCD screen of the panel displays "Parameter downloading", and "Download completed" after the download is completed. The restoration parameter setting interface is shown in Figure 3-5.

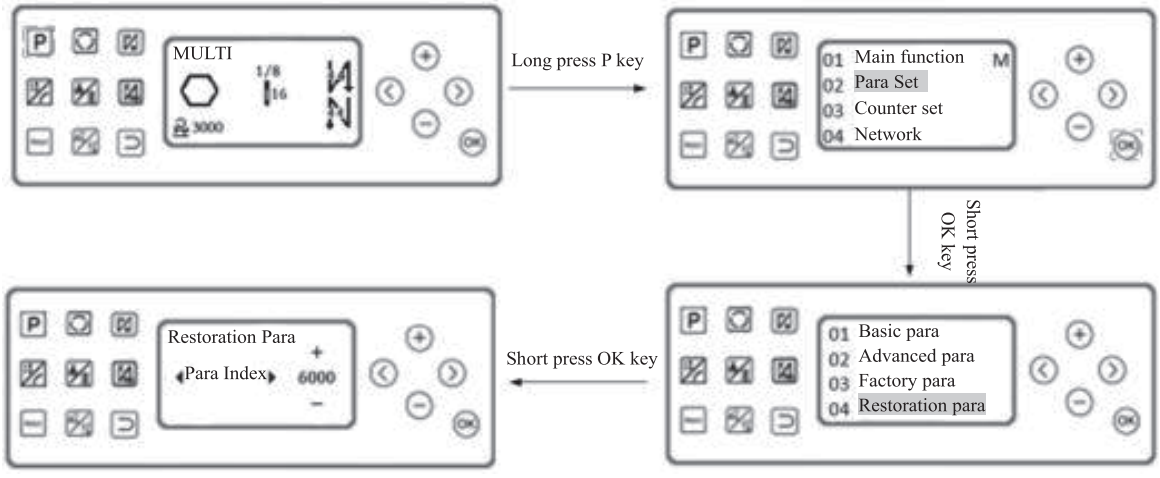


Figure 3-5 Restoration Parameter

3.2.4 Parameter Management

In the sewing main interface, long press the [P] key to enter the menu main interface and select the parameter setting. Short press (OK) to enter the parameter setting secondary menu and select the parameter management (black background after being selected). Short press the (OK) key to enter the parameter management interface. The parameter management includes download parameter, upload parameter, save user-defined parameter 1 and user-defined parameters 2. The parameter management interface is shown in Figure 3-6.

Download parameter: Download the current parameters in the panel to the master control. In the parameter management interface, select the download parameter. Short/long press the (OK) key to start downloading the parameter. The panel displays “Parameter downloading” and returns to the parameter management interface after the download is completed.

Upload parameter: Upload the current parameter in the master to the panel. In the parameter management interface and select upload parameter. Long press the OK key to start uploading the parameter. The panel displays “Parameter uploading” and returns to the parameter management interface after the download is completed.

Save user-defined parameter 1: Save the current parameter in the panel to FLASH, which is mainly used to backup the current parameter before modifying the parameters and can be restored by restoring parameter 1 in the restoration parameters. In the parameter management interface, select saving the user-defined parameter 1. Long/short press the OK to start saving the parameter, and the save is completed. The screen displays “Parameter saving completed” and returns to the parameter management interface.

Save user-defined parameter 2: Same as save user-defined parameter 1.

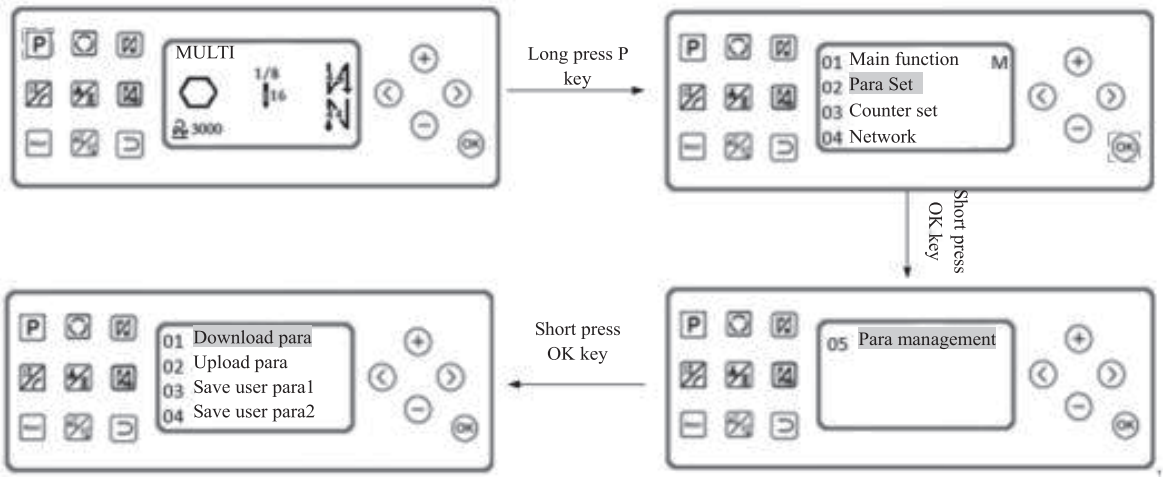


Figure 3-6 Parameter Management

3.3 Counter Setting

3.2.1 Product Counter

Counter setting includes trim counter and bottom line counter. In the sewing main interface, long press the P key to enter the system setting interface. Use the − key to switch to the counter setting (black background after being selected). Short press the OK key to enter the counter selection interface and select the thread trimming counter in the timer selection interface. Short press the OK key to enter the trimming counter setting. The trimming counter setting interface entry process is shown in Figure 3-7.

Current value and target value of the trimmer counter are shown above/below the slash at the lower right corner of the trimmer counter setting interface. Use the ◁▷ key to switch the setting object selected currently (the selected object flashes at a certain frequency). Use the +− key to adjust the size of the setting object selected currently. Long press the ↻ key for counter reset, the current value is cleared, and the target value is restored to 9999.

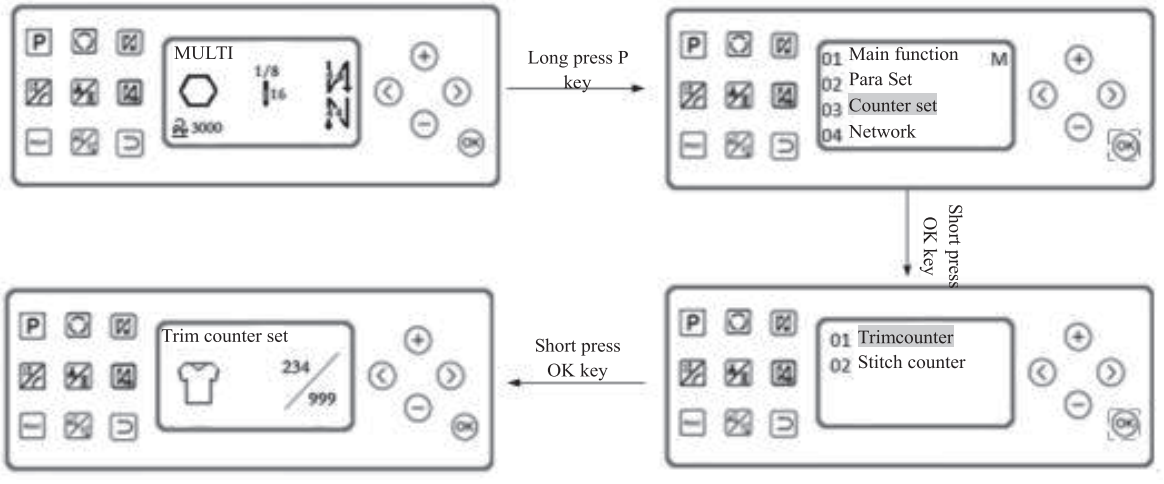


Figure 3-7 Trimming Counter Setting

3.2.2 Bottom Line Counter

In the sewing main interface, long press the P key to enter the system setting interface. Use the − key to switch to the counter setting (black background after being selected). Short press the OK key to enter the counter selection interface and select the bottom line counter in the timer selection interface. Short press the OK to enter the thread trimmer setting interface. The bottom line counter setting interface entry process is shown in Figure 3-8.

Current value and target value of the bottom line counter are shown above/below the slash at the lower right corner of the trimmer counter setting interface. Use the ⊕⊖ key to adjust the size of the setting object selected currently. Long press the ⟲ key for bottom line counter reset, the current value is cleared, and the target value is restored to 9999.

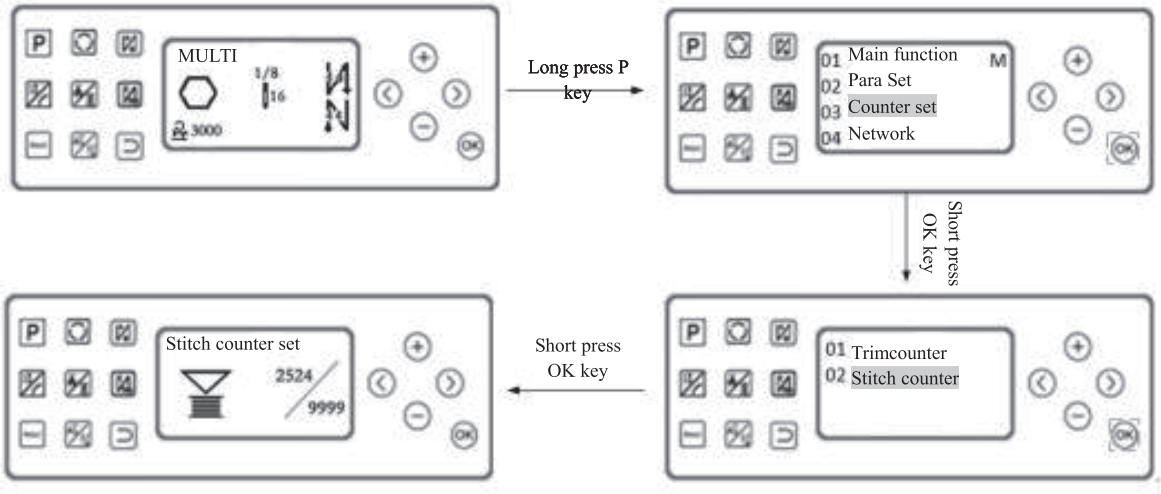


Figure 3-8 Bottom Line Counter Setting

3.4 Network Function

The network function can implement remote data docking of sewing machine, uploading real-time data to cloud server, and receiving the control instruction from the cloud. This function is still under development currently.

3.4 Maintenance

3.4.1 Monitoring Parameter

Long press the P key to enter the system setting interface in the sewing main interface. Use the ⊖ or ⊙ key to switch to maintenance interface (black background when selected). Short press the OK key to enter the maintenance interface, where the monitoring parameter is selected. Short press the OK key to enter the monitoring parameter interface. The test interface entry process for the monitoring parameter is shown in Figure 3-9.

Use the ⊙⊙ key to switch the current monitoring parameter text index in the monitoring parameter setting page. Parameter value is below the parameter index.

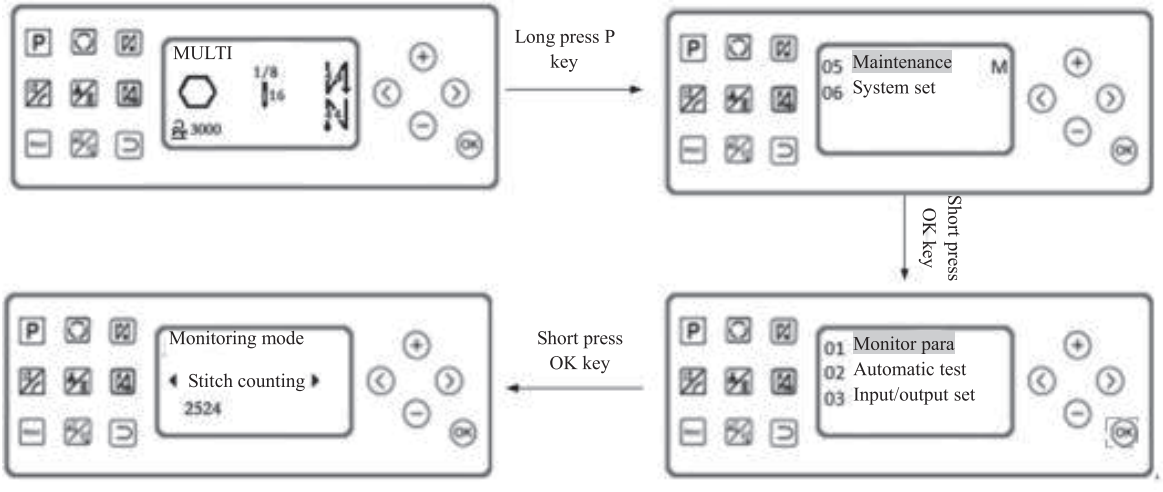


Figure 3-9 Monitoring Parameter

3.4.2 Automatic Testing

Long press the P key in the sewing main interface to enter the system setting interface. Use the ⊖ or ⊙ key to switch to maintenance (black background when selected). Short press the OK key to enter the maintenance interface, where automatic test is selected. Short press the OK key to enter the automatic test interface. The test interface entry process is shown in Figure 3-10.

Use the ⊙⊙ key in the automatic test page switch among the running time, stop time and total time in sequence. Use the ⊕⊖ key to adjust the corresponding time. After the setting is completed, short press the OK key to enter the automatic test mode. Press the pedal gently to start automatic test. When the total time is set to 0, the automatic test runs for an unlimited period of time. After the test is completed, long press the OK key or ⊐ key to end automatic test.

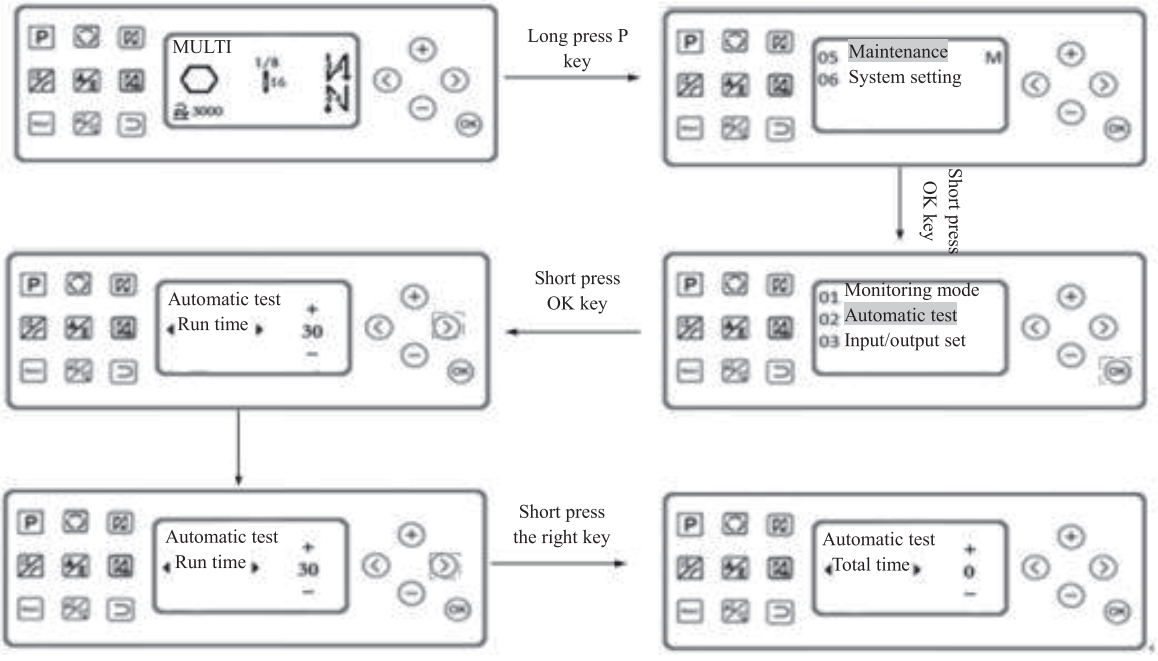


Figure 3-10 Automatic Testing

3.4.3 Enter Output Test Setting

It is used to monitor the master control input/output terminal semaphore. This function is under development currently.

3.5 System Setting

3.5.1 Password Setting

Password setting refers to setting advanced parameters and factory pre-set parameter passwords.The password setting process is shown in Figure 3-11.

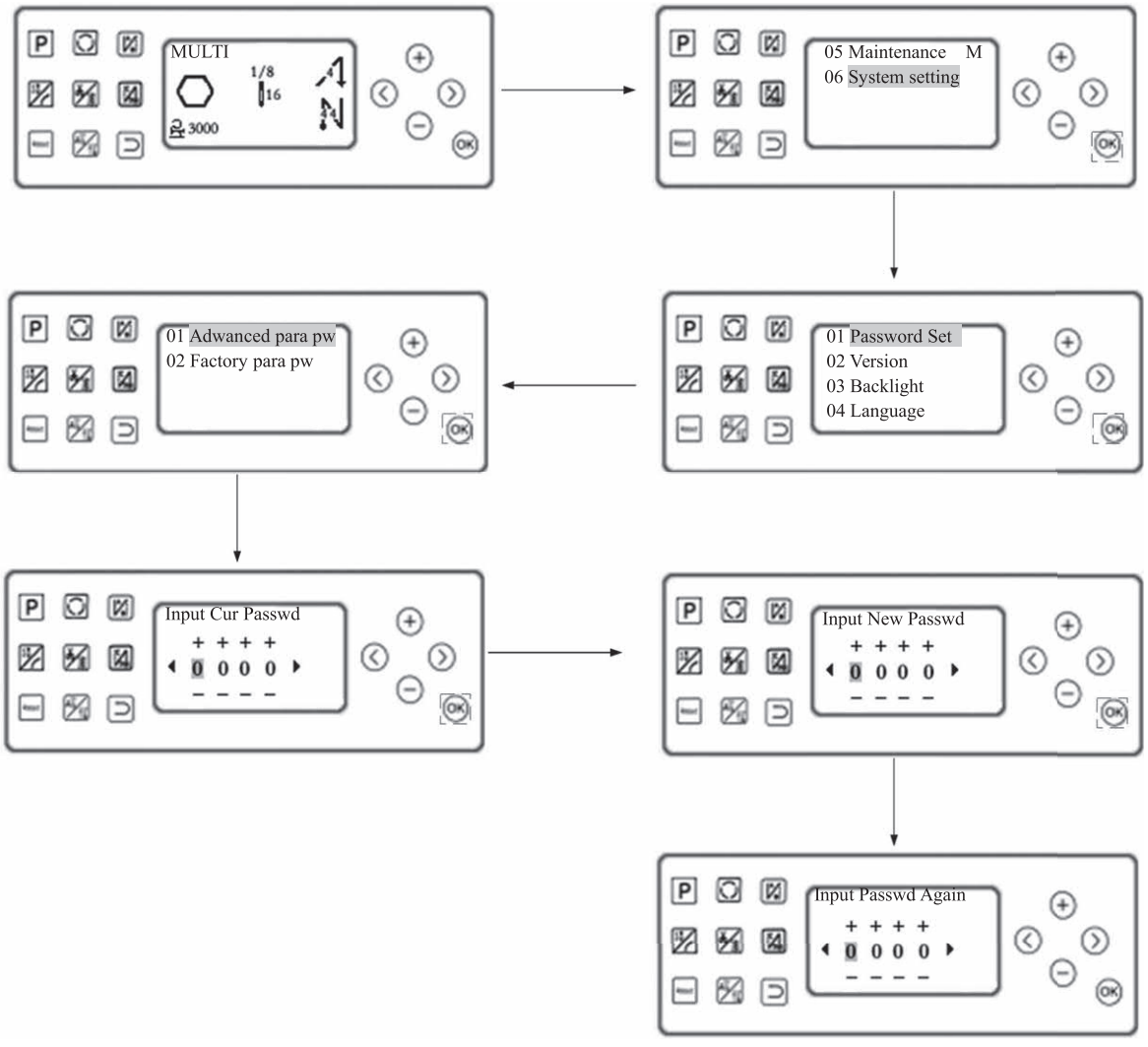


Figure 3-11 Password Seting

3.5.2 Version Information

Version information includes panel version number, master version number and parameter version number.The version information process is shown in Figure 3-12.

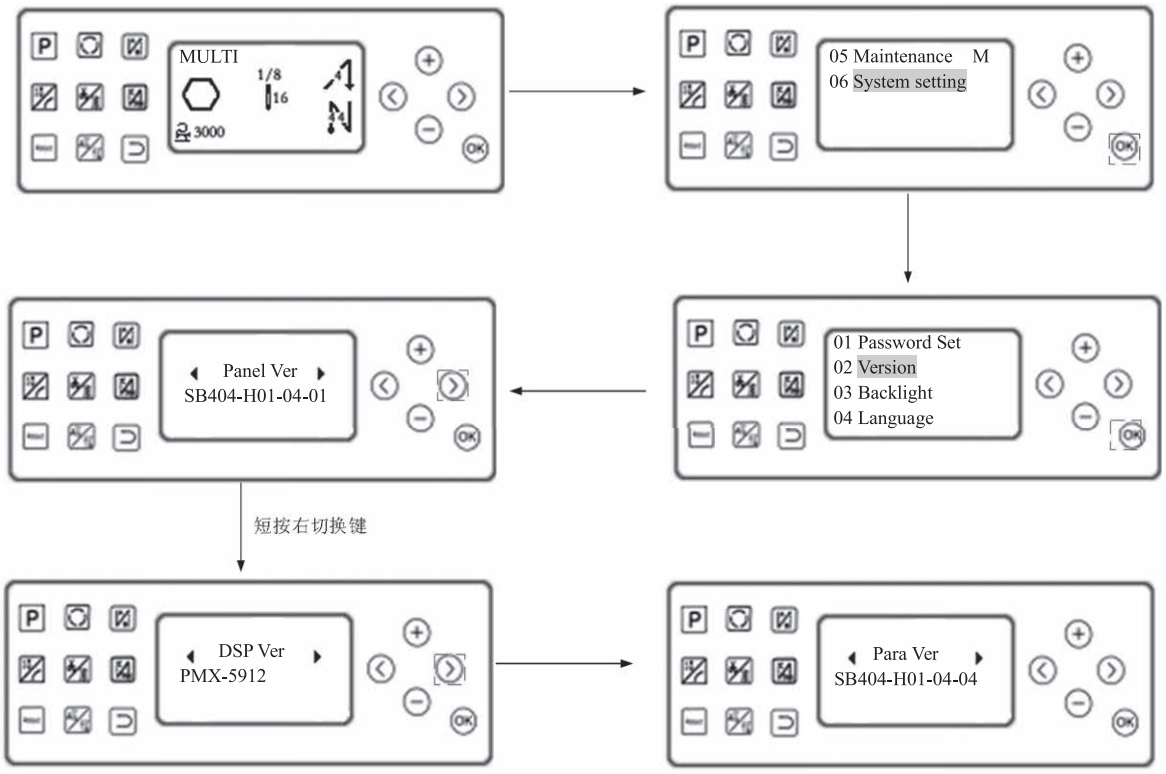


Figure 3-12 Version information Seting

3.5.3 Backlight brightness

Adjust the LCD display brightness.The Backlight brightness setting process is shown in Figure 3-13.

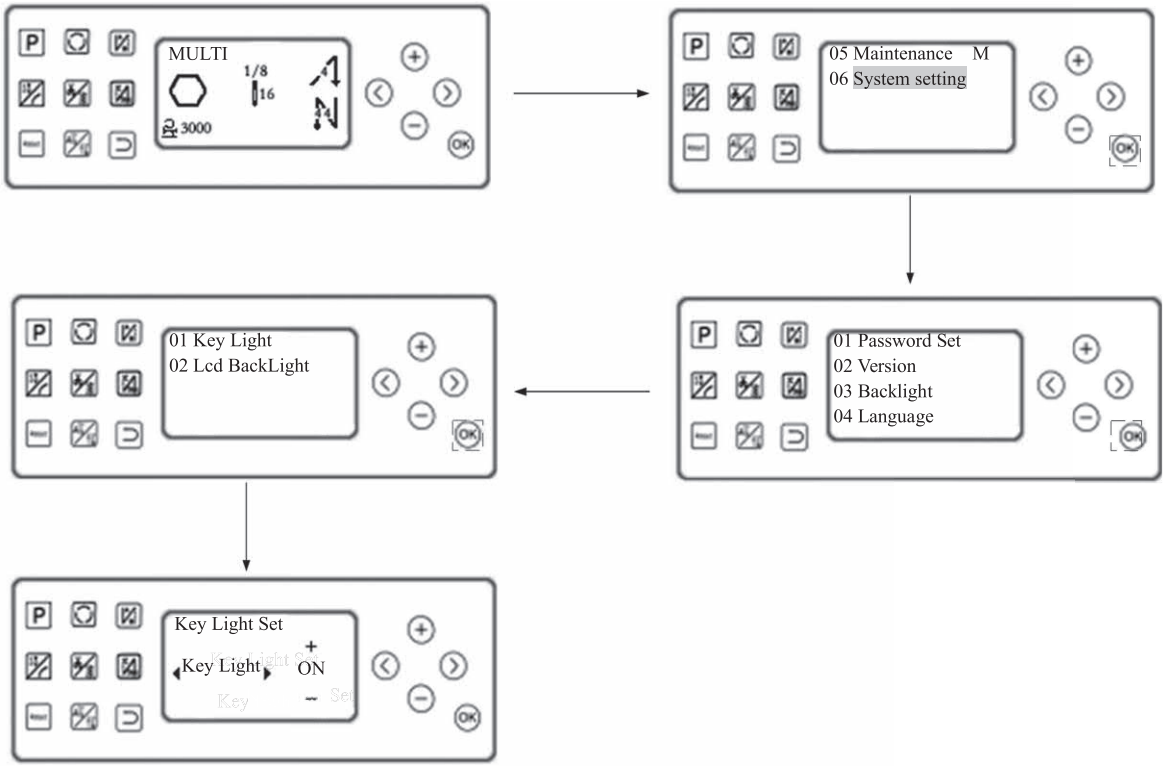


Figure 3-13 BackLight Seting

3.5.3 Language Setting

Multi-language setting, currently support Chinese and English display.The Language Setting setting process is shown in Figure 3-14.

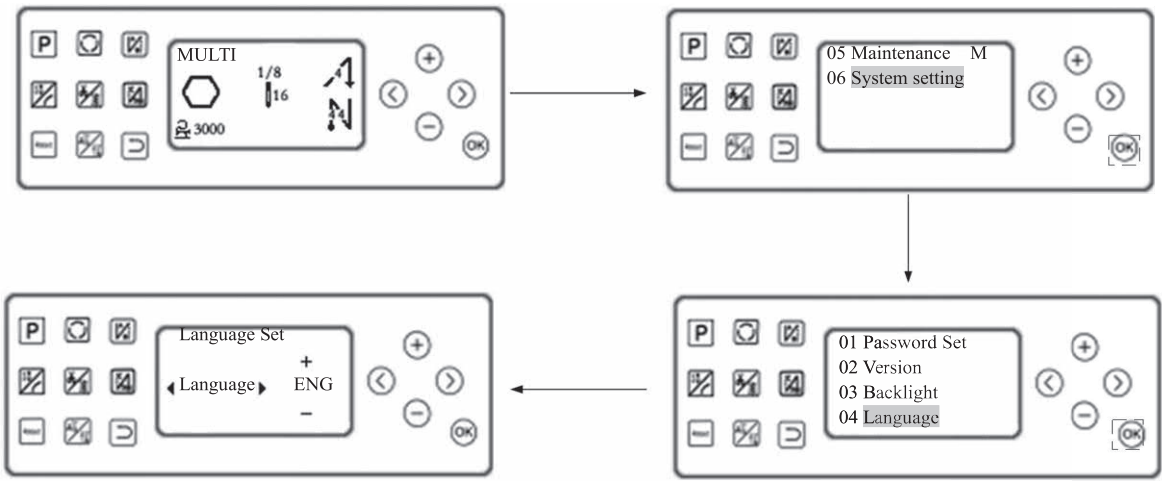


Figure 3-14 Language Seting

Section 4 Accessories

4.1 Mechanic Parameter Table

Parameter Number	Parameter Range	Typical Value	Parameter Description	Remark
100	100~800	200	Initial stitching speed	Speed
101	200~5000	3500	Maximum free sewing speed (global maximum speed limit)	
102	200~5000	3000	Maximum multi-segment sewing speed	
104	200~5000	3000	Stitch compensate speed	
105	100~500	250	Trimming speed	
106	0/1	0	Slow start mode	
107	1~9	2	Number of slow initial stitches	
108	100~800	200	Slow sewing speed	
110	200~2200	1800	Start back tacking speed	Tacking parameter
111	200~2200	1800	End back tacking speed	
112	200~2200	1800	Continuous stitching speed (W-sewing)	
113	1~70	32	Start back tacking (and W) stitch trajectory compensate 1 (Absorption compensation, increased numerical value means accelerated absorption)	
114	1~70	21	Start back tacking (and W) stitch trajectory compensate 2 (Release compensation, increased numerical value means accelerated release)	
115	1~70	35	End back tacking stitch trajectory compensate 1 (Absorption compensation, increased numerical value means accelerated absorption)	
116	1~70	21	End back tacking stitch trajectory compensate 2 (Release compensation, increased numerical value means accelerated release)	
140	0 / 1	1	Power on automatic needle position search: 0: not searching; 1: searching	Custom setting
141	0 / 1	1	Automatic tacking function selection: (head without automatic tacking function, disabling the function is recommended) 0: Fixing prohibited; 1: Fixing allowed	
142	0 / 1	0	Manual press backstitch function selection 0: Juki mode. It operates when it stops in the middle of sewing or halfway. 1: Brother mode. It only operates during sewing.	

4.2 Advanced Parameter Table

Parameter Number	Parameter Range	Typical Value	Parameter Description	Remark
103	200~500	3000	Manual backstitch maximum speed limit	Speed
109	1~20	20	Accelerate sensitivity	
10A	1~20	20	Decelerate sensitivity	
117	1~100	90	Stitch speed compensation (P107-A segment stitch number = 1)	Tacking parameter
118	1~100	30	Stitch speed compensation (P107-A segment stitch number = 1)	
11B	0-4	0	Start and end back tacking mode type. (CD is similar to AB) 0: B->AB->ABAB->None. 1: B->Nothing. 2: B->AB->None. 3:AB->None. 4: AB->ABAB->None.	

11C	0~9999	0	Ten digits of ABCD segments (allocations by bit)	
11D	0~9999		Ten digits of EFGH segments (allocations by bit)	
11E	0~9999		Ten digits of ABD segments (allocations by bit)	
11F	0~359	0	Manual backstitch angle control	
130	0 / 1 / 2 / 3	2	Pedal curve mode: 0: Automatic linear slope (automatic calculation according to the maximum speed) 1: two slopes; 2: power curve; 3: S curve	Pedal parameter
131	200~4000	3000	Two slopes: Mid-speed RPM (turning point speed for two slopes)	
132	0~1024	800	Two slopes: Mid-range pedal simulation (between parameter 138 and 139)	
133	1 / 2	1	Power curve: 1: Square curve; 2: Square root curve;	
134	0~1024	90	Pedal trimming position	
135	0~1024	300	Pedal lifter position	
136	0~1024	460	Pedal back position	
137	0~1024	480	Stepped forward stepping operation position	The specific setting method is shown in Figure 4-1.
138	0~1024	580	Pedal low speed operation position (upper limit)	
139	0~1024	962	Pedal simulation maximum value	
13A	0~800	100	Pedal lifter confirmation time	
143	0 / 1 / 2 / 3	0	Special operation mode: 0: Operator selection (normal) 1: Simple sewing mode 2: Measure the initial angle of motor (no need to remove the belt) 3: Calculate gear ratio mode (needle stop sensor is required, and the belt cannot be removed)	Custom setting
144	0~31	0	Motor low-speed booster function switch: 0: Normal function; 1~31: Low-speed booster over-thickness gear position	
148	0 / 1 / 2	0	Key complement mode: 0: press to control time; 1: compensate for half stitch; 2: compensate for one stitch	
149	0~10	0	Slow release presser pedal opening time (100us units)	
14C	1~9999	40	Slow release presser pedal closing time (100us units)	
150	1～100	1	Stitch counting function ratio setting	
151	1～9999	1	Stitch counting upper limit setting value	Count mode
152	0～6	0	Counting mode selection: 0: No count 1: Count up by the number of stitches, re-count automatically after the counter is full 2: Count down by the number of stitches, re-count automatically after the counter is full 3: Count up by the number of stitches. After the counter is full, the motor stops automatically. Start recount by reset key setting or e P key on the panel 4: Count down by the number of stitches. After the counter is full, the motor stops automatically. Start recount by reset key setting or e P key on the panel 5: Count up by the number of stitches. When the counter is full, an alarm is issued. And the motor locks after trimming 6: Count down by the number of stitches. When the counter is full, an alarm is issued. And the motor locks after trimming.	
153	1～100	1	Piece count function ratio value setting	
154	1～9999	1	Piece count upper limit setting	
155	0～4	0	Piece count mode selection: 0: No count 1: Count up the number of piece count and automatically re-count after the counter is full 2: Count down the number of piece count and automatically re-count after the counter is full 3: Count up by the number of stitches. After the counter is full, the motor stops automatically. Start recount by reset key setting or e P key on the panel 4: Count down by the number of stitches. After the counter is full, the motor stops automatically. Start recount by reset key setting or e P key on the panel	
156	0～9999	0	Corresponding to 1/2/3/4 solenoid chop duty cycle time selection (0 in ms, 1 in 0.1ms)	
157	0～9999	0	Corresponding to 5/6/7/8 solenoid chop duty cycle time selection (0 in ms, 1 in 0.1ms)	
158	0～1	0	Count adjustable switch (stitch count number and piece count number) (0 adjustable, 1 not adjustable)	

161	0 / 1 / 2		Parameter transmission: 0: No action; 1: Down parameter; 2: Upload parameter	Operation type
162	1, 2		Restore factory parameter	
163	1, 2		Save current parameters as user-defined machine repair parameters (recoverable)	
164	-		Password	
200	0 / 1 / 2	0	Trimming motor operation mode selection: 0: Flat type; 1: Stretch type (normal stretch trim: trimming at needle position); 2: Overedge: Manual trimming	Trimming mode
201	0～359	0	Mechanical angle at the end of trimming	
203	5-359	10	Trimming start angle TS (relative to lower needle angle)	
204	10-359	120	Trimming end angle TE (relative to the lower needle angle, greater than TS)	
20A	10-60	20	Trimming boost coefficient (motor boost)	
20B	0/1	1	Lock line function switch	
211	5-359	25	Release electromagnet start angle LS (relative to lower position angle)	
212	10-359	350	Release electromagnet end angle LE (relative to lower needle angle, greater than LS)	
213	1-999	1	Release electromagnet start delay time L1(ms)	
214	1～999	10	Release electromagnet delay time L2 (ms) at needle position	
215	0 / 1	1	Sweep function selection: 0: off; 1: on	
216	1～999	10	Wiping/sweep delay ms	
217	1～9999	70	Wiping/sweep duration ms	
219	0 / 1	0	Tension function selection: 0: off; 1: on	
21A	10-359	120	Tension start angle	
21B	11-359	318	Tension end angle	
21E	11-359	160	Lowering angle after lifting the presser in stitching	
220	200～360	360	Stop position after trimming (trimming pullback function)	Mode selection
231	0 / 1	0	Automatic test mode selection: (Test mode setting represented by the previous two digits) 0: e number of fixing stitches; 1: fixing time (×100ms)	
232	0～1000	300	Safety switch alarm confirmation time ms (direct drive switch and stretch sewing protection switch can be processed in the same way)	
234	0 / 1	0	Motor steering: 1: reverse; 0: forward	
240	0～9999	1000	Motor/head ratio: X0.001 (If gear ratio is calculated automatically, the parameter in the controller may be different from HMI)	Head related parameter
242	0～359	0	Upper needle stop position adjustment angle (relative to position offset of upper needle position sensor)	
243	0～359	175	Lower needle stop position mechanical angle	
244	0~800	200	Presser delay (ms)	
247	230～800	270	Electromagnet suction angle	
248	40～70	45	Time of electromagnet opening	
249	15～30	26	Duty ratio of electromagnet	

4.3 Monitoring Parameter Table

Parameter Number	Parameter Range	Typical Value	Parameter Description	Remark	Parameter Description
010	Number of stitches	**022**	Phase current	**027**	Accumulated motor running time (Hour)
011	Number of pieces	**023**	Initial angle	**028**	Head interaction voltage sampling value
013	Hall state	**024**	Mechanical angle	**029**	DSP software version number
020	Busbar voltage	**025**	Pedal voltage sampling value	**030-037**	Historical error code
021	Head speed	**026**	Actual value of head drive ratio		

4.4 Safety Alarm Table

Alarm Code	Code Definition	Solutions
Warm：01	Refuel reminder	Press P key to cancel the alarm temporarily. Please refuel and perform time reset operation timely
Warm:02	Stitch count alarm	Indicate that the number of stitches has reached the upper limit. Press P key to cancel the alarm and count again
Warm:03	Piece count alarm	Indicate that the number of pieces has reached the upper limit. Press P key to cancel the alarm and count again

Warm:04	Emergency stop	Press the emergency stop key again to cancel the emergency stop state
Warm:05	Needle lifting lock	Press the needle lifting lock key again to cancel the needle lifting lock status
Warm:06	Power off reminder	Please wait for 30 seconds before turning the power back on
Warm:07	Rockover switch alarm	Straighten the head to ensure the rockover switch restoration

4.5 Error Code Table

If the system shows error or alarm, please check the following items first:

1. Make sure the machine is properly wired; 2. Check if the electronic control and the machine head match; 3. Check if the factory restoration is correct.

Error Code	Code Definition	Solutions
Error:01	Hardware over-current	Turn off the system power. Turn on the power again after 30 seconds. If the controller still does not work, replace the controller and inform the factory.
Error:02	Software over-current	
Error:03	System under-voltage	Disconnect the controller power and check if the input supply voltage is too low (lower than 176V). If the power supply voltage is too low, restart the controller after the voltage returns to normal. If the voltage is restored to normal but the system still does not work after starting the controller, please replace the controller and inform the factory
Error:04	Over-voltage at shutdown	Disconnect the controller power and check if the input supply voltage is too high (above 264V). If the power supply voltage is too high, restart the controller after the voltage has returned to normal. If the voltage is restored to normal but the system still does not work after starting the controller, please replace the controller and inform the factory
Error:05	Over-voltage at operation	
Error:06	Electromagnet circuit failure	Turn off the system power and check if the solenoid wiring is correct, loose or damaged. Replace if necessary. After confirming the error, restart the system. If it still does not work, replace the controller and inform the factory.
Error:07	Current detection circuit failure	Turn off the system power. Turn on the power again after 30 seconds and observe whether it can work normally. Retry several times. If the fault occurs frequently, replace the controller and inform the factory.
Error:-08	Motor stalled	Disconnect the controller power and check if the motor power input plug is loose or damaged, and if any foreign objects are wrapped around the machine head. After eliminating the issue and restarting the system. If it still does not work normally, please replace the controller and inform the factory.
Error:09	Brake circuit failure	Turn off the system power and check if the white brake resistor connector on the power board is loose or off. After plugging it in tightly, restart the system. If it still does not work, replace the controller and inform the factory.
Error:-10	HMI communication failure	Check if the connection between the control panel and the controller is detached, loose or broken, it is restored to normal and the system is restarted. If it still does not work, replace the controller and inform the factory.
Error:11	Head needle stop signal failure	Check if the connection between the head synchronization signal device and the controller is loose, and restart the system after returning it to normal, but the system still does not work, replace the controller and inform the factory.
Error:12	Motor initial angle detection failure	Please try again 2-3 times after power off. If the fault is still reported, please replace the controller and inform the factory.
Error:-13	Motor HALL failure	Turn off the system power and check if the motor sensor connector is loose or detached. Return it to normal and restart the system. If it still does not work, replace the controller and inform the factory.
Error:-14	DSP read and write EEPROM failure	Turn off the system power. Restart the system after 30 seconds. If the system still does not work, replace the controller and notify the factory.
Error:-15	Motor over-speed protection	
Error:16	Motor reversal	
Error:-17	HMI read and write EEPROM failure	
Error:18	Motor overload	
Error:-23	Motor stalled sector error	Disconnect the power from the controller and check if the motor power input plug is detached, loose or damaged, and if any foreign objects are wrapped around the machine head. After restarting and the system still cannot work normally, please replace the controller and inform the factory.

4.6 Pedal Sensitivity Adjustment

Pedal action starts from the initial position ① (Parameter 136), slowly steps forward to ② (Parameter 137) to start sewing at a low speed, continue to step forward to ③ (Parameter 138) to start acceleration, and then step deeper to ④ (Parameter 139) to reach the maximum speed. The speed of initial sewing is maintained between segment ②and ③, with stepless speed regulation process between segment ③and ④.

1.When the pedal starts from the initial position ① (Parameter 136), step slowly to ⑤(Parameter 135) and the lifter automatically lifts; 2. When the pedal starts from the initial position ① (Parameter 136), step slowly to ⑥(Parameter 134) and the trimming is completed automatically. 3. Each parameter value setting shall be guaranteed (Parameter 134) < (Parameter 135) < (Parameter 136) < (Parameter 137) < (Parameter 138) < (Parameter 139) 4. Perform real time monitoring through Parameter 025 in the monitor mode, and the pedal sampling values in different positions are used as reference values for various parameters. Adjust the corresponding parameters, the lifter and the action position of stepping forward/backward also changes accordingly. If the machine is not running after stepping for a large distance, Parameter 137 can be properly reduced (no less than the central position parameter 136), and the sensitivity of forward stepping can be improved; if the machine is too sensitive, tap the pedal to

run the machine. Parameter 137 can be properly increased. If stitch compensate is not easy, step slightly forward, the speed will increase rapidly and lead to multiple forward stitches. Parameter 138 can be properly increase, or parameter 137 decreased appropriately (that is, increase the pedal low speed range). The initial sewing speed can also be properly reduced (100).

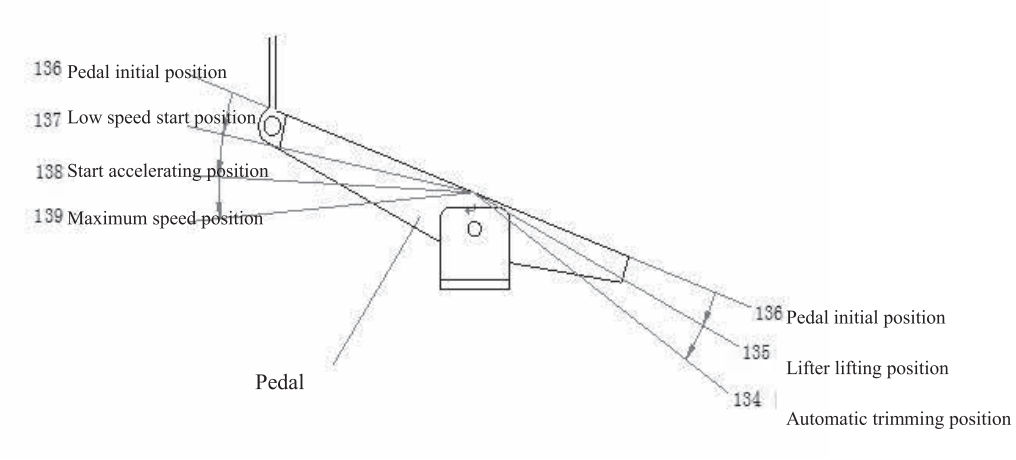


Figure 4-1 Parameter Diagram of Pedal Movement Position

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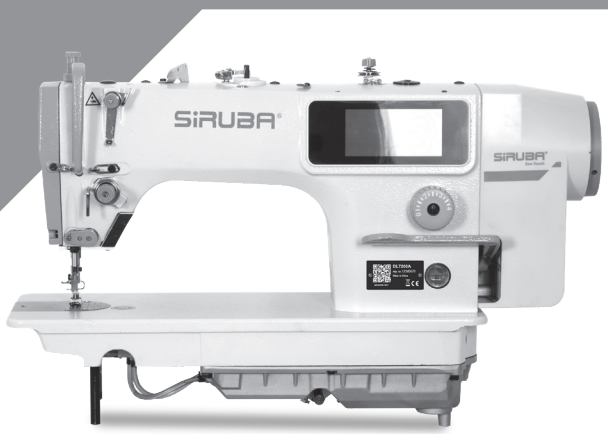

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The specification and/or appearances of the equipment described in this parts list are subject to change because of modification which will without previous notice.
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