
ZB-H2 电控使用说明书

ZB-H2 electric control box manual

安全事项

- 在使用本产品之前，请先阅读《使用说明书》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牢固的与大地有效连接。
- 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。
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Safety Precautions

- Before using this product, please read the User's Guide and the manual of the machine attached with it.
- This product must be installed or operated by professionally trained personnel.
- Please keep away from the arc welding equipment to avoid the electromagnetic wave from interfering with the controller.
- Please do not use it at room temperature above 45° or below 0°.
- Please do not use it in places with humidity below 30% or above 95% or where there is dew and acid mist.
- When installing the control box and other parts, turn off the power and unplug the power plug.
- To prevent interference or electric leakage accidents, make a good grounding work. The grounding wire of the power cord must be firmly connected to the earth.
- All parts for maintenance must be supplied or approved by the Company before they can be used.
- The power must be turned off and the plug unplugged before any maintenance action is performed. There is a high-voltage danger in the control box. You must shut down the power for 5 minutes before opening the control box.
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1 产品安装 Product installation

1.1 产品规格 Product specification

产品型号 product model	H2	电源电压 supply voltage	AC 220±20% V
电源频率 supply frequency	50Hz/60Hz	最大输出功率 Maximum power output	750W

1.2 接口插头的连接 Connection of interface plug

将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，各插座名称如下图 1-1 所示。连接好，请检查插头是否插牢。

Plug the pedals and heads into the corresponding receptacle behind the controller, as shown in figure 1-1. After connection, check that the plug is plugged in.

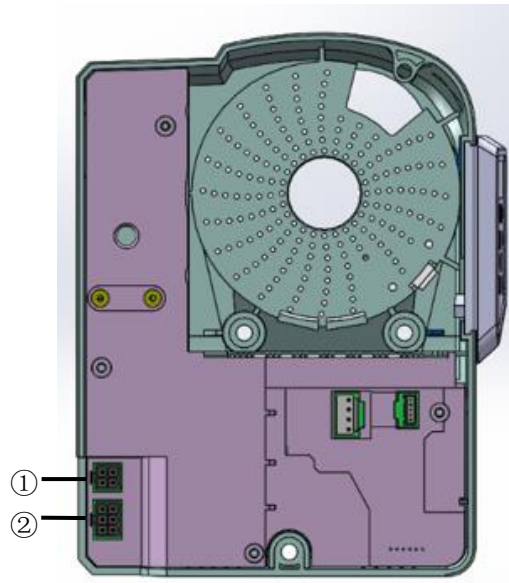


图 1-1 H2 系列控制器图
(controller drawing)

①LED 灯及机头按钮插座；②脚踏板&升级插座。

Figure 1-1 H2 controller diagram

①LED lamp and head button socket; ②Foot plate &Upgraded socket.

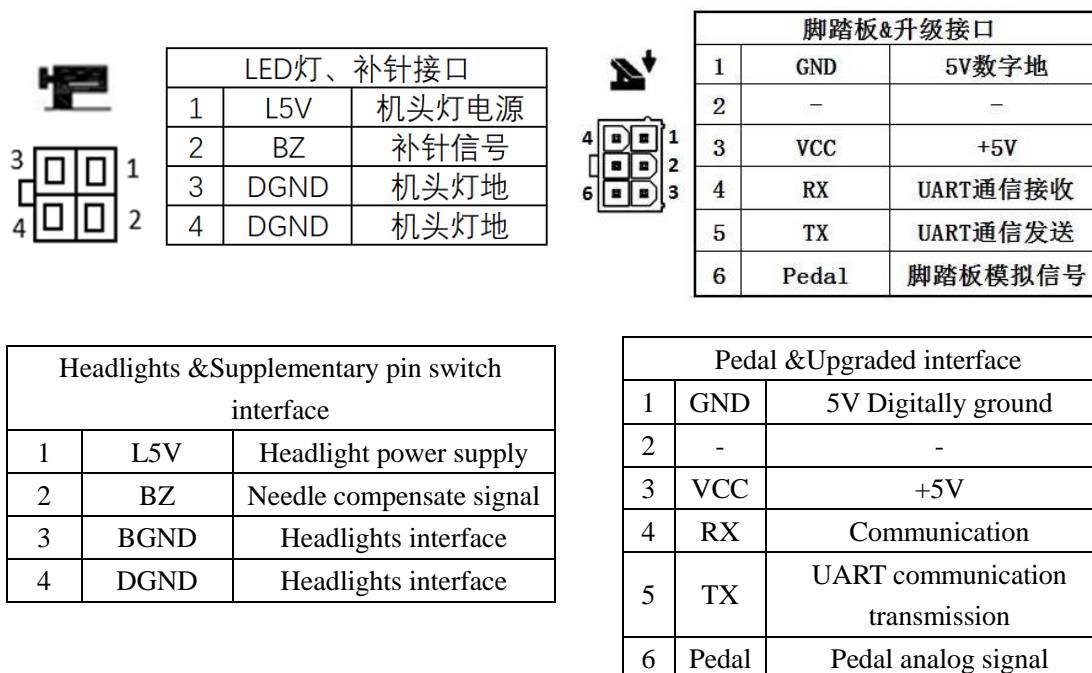


图 1-2 控制器接口定义

Figure 1-2 Controller Interface definition

注：使用正常力量插不进去时，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！

Note: when you can't plug in with normal force, please check if the plug and socket match, the direction of insertion or needle is correct!

1.3 接线与接地 Wiring and grounding

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。

It is necessary to do well the grounding project of the system and employ qualified electrical engineers to carry out the construction. Before the product is energized and put into use, it is necessary to ensure the safe and reliable grounding of the input terminal of the power outlet AC. The ground wire of the system is yellowish-green wire. The ground wire must be reliably connected to the grounding of power grid safety protection to ensure safe use and to prevent abnormal conditions.

注：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。

Note: all power lines, signal wires, ground wires, etc., are not subject to pressure or excessive distortion by other objects to ensure safe use.

2 操作面板使用说明 Operation panel usage instructions

2.1 操作面板说明 Display instructions for the operations panel

根据系统工作状态，操作面板的数码管将显示当前的缝纫状态（包含停针位指示）。操作面板外观如下所示。

According to the operating state of the system, the digital tube of the operation panel will display the current sewing state (including stop-needle position indication). The action panel looks like this.



图 2-1 操作面板外观界面

Figure 2-1 Operator panel appearance interface










2.2 按键各键功能说明 Button function description










序号 No	外观 icon	名称 Description	功能描述 Remark
1		进入参数区功能键 Customer parameter settings	参数功能进入键 Customer parameter settings
2		参数查看保存键 View and save the parameter number	对所选参数号内容进行查看和保存 View and save the parameter number
3		参数加键（速度加）Up button	在进入参数功能参数号/值加，初始待机下速度加 Speed increase
4		参数减键（速度减）down button	在进入参数功能参数号/值减，初始待机下速度减 Speed increase
5		左移键 Left button	参数设定中，向左选择参数范围 In the parameter setting, select the parameter range to the left
6		右移键 Right button	参数设定中，向右选择参数范围 In the parameter setting, select the parameter range to the left
7		恢复出厂设置键 Factory reset button	长按 3S 后恢复出厂设置 Long press 3S reset the factory
8		停针位选择键 Stop needle position selection button	上/下停针位选择键 Up/down stop needle position selection button 最右边数码管上横亮表示上针位 The upper horizontal light indicates the up needle position 最右边数码管下横亮表示下针位 The lower horizontal light indicates the down needle position 最右边数码管上下横都不亮表示无停针位模式 No light indicates the no needle position mode
9		停止键 Stop button	停止/正常运行选择键 Stop/normal operation selection button 第三位数码管上横亮表示停止模式

			<p>The upper horizontal light indicates stop mode 第三位数码管上横亮表示正常缝纫模式</p> <p>The upper horizontal light indicates the normal sewing mode</p>
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3 参数调节 Change user parameter



3.1 进入用户参数模式及保存 Enter the user parameter mode and save

空闲模式下，长按  键进入操作员参数号，再短按  键进入参数值。按  或  键选择数据位，相应位数值闪烁，再按  或  修改该位数值。在参数值界面如果参数未修改，按  键返回参数号显示界面；如果参数已经修改，按  键保存参数并显示 ok 后返回参数号显示界面。如果按  键则退出参数模式。



long press  and machine will enter the user parameter adjustment mode , and short press  enter into the parameter value . press  or  Select the location of the data , The corresponding value flashes , press  or  change the number . On the parameter value interface if the parameter is not modified , press  Return parameter number display interface ; if the parameter is modified , press  Save parameters , display ok and return to parameter display interface . If press  back to the Parameter mode .



3.2 进入技术员参数模式及保存 Enter into the technician parameter mode and save

长按  +  键开机进入技术员参数模式。参数调节方式同操作员参数调节方式。

Long press  +  Enter into the technician parameter mode. The method is same as parameter mode.


3.3 速度调节 Speed adjustment

在空闲模式下，按  或  键增加或减小速度。每按一次调整数值 100，可以连续按。










Press  or  Increase or decrease speed. Each time press adjustment value 100, can press it continuously.










3.4 恢复出厂设置 reset

长按  恢复出厂设置键，作为恢复出厂设置的快捷方式。

Long press  Restore factory settings. as a shortcut to restore factory settings.

3.5 进入监控模式 Enter monitoring mode

在空闲模式下长按  +  键显示监控参数号，按  或  键选择数据位，相应位数值闪烁，再按  或  增加或减小监控参数号显示，按  键进入监控参数项对应的参数值，再次按下  键返回监控参数号显示。短按  键退出监控模式。

press  +  to display the monitoring parameter number, press  or  to select the location of the date , the number flashes, and then press  or  to increase or decrease the monitoring parameter number display, press  to enter into the parameter value, press  again return to monitoring parameter number display。Short press  the key to exit the monitoring mode。

3.6 参数表 Parameters

3.6.1 操作员参数表 (开机后长按 P 键进入) operators parameter (press P for a long time after start)

参数项 parameter	中文说明 illustrations	初始值 Initial value	范围 Range	内容值名称说明与备注 Remarks
P01	最高转速(r/min) Highest speed(r/min)	2000	200-2200	车缝时的最高转速设定 Highest speed during sewing
P03	针停定位选择 Needle position	DN	UP-DN-OFF	UP: 上停针 up needle position DN: 下停针 down needle position OFF: 停针功能关闭 needle position function is off
P07	慢速起缝速度(r/min) Slow start sewing speed(r/min)	400	200-2000	慢速起缝时的速度设定 Slow start sewing speed setting
P08	慢速起缝针数 Slow starting sewing stitches	2	1-9	慢速起缝时的针数设定 Slow starting sewing stitches setting
P09	慢速起缝开关 Slow starting switch	ON	ON-OFF	ON: 开启 on OFF: 关闭 off

参数项 parameter	中文说明 illustrations	初始值 Initial value	范围 Range	内容值名称说明与备注 Remarks
P15	补针功能 Adding stitch way	0	0-3	0: 按时间补针 1: 补半针 2: 补一针 3: 关闭 0: adding stitch by time 1: half stitch 2: one stitch 3: off
P24	脚踏板全后踏电压值 Voltage value after foot pedal is down	150	0-4095	倒踩回针脚踏电压值 Foot pedal voltage value when back stitch
P30	过厚加力功能开关 Over thickness force function switch	ON	ON-OFF	OFF: 关闭 ON: 开启

3.6.2 技术员参数表（按 P+S 开机键进入） Technician parameters (press P+S and start)

参数项 parameter	中文说明 Illustrations	初始值 Initial value	范围 range	内容值名称说明与备注 Remarks
P55	休眠时间 Sleep time	0	0-60	单位: min 设置 0 则关闭休 眠功能 Unit: min Set 0 to turn off the sleep function
P56	开机后自动找上定位 Automatic up position when power on	ON	ON-OFF	OFF: 不找 ON: 找
P61	老化运行时间 Aging running time(s)	3	1-255	运行时间 单位: s Runtime Unit: s
P62	特殊运行模式 Running mode	0	0-3	0: 正常 1: 老化 (众邦车间 用) 2: 保留 3: 自动测试模 式 0:normal 1: Aging (for Zowbow workshop) 2: retain 3:automatic test mode
P63	老化停止时间(s) Aging stopping time(s)	2	1-255	停止时间 单位: s Stop time Unit: s
P64	用户参数 User parameters	0	0-2	0: 无操作 1: 保存当前参数为 用户参数 2: 恢复用户参数 0: No operation 1: Save the current parameter as user parameter 2: Restore user parameter

参数项 parameter	中文说明 Illustrations	初始值 Initial value	范围 range	内容值名称说明与备注 Remarks
P65	恢复出厂设置 Factory setting	0	0-1	0: 无操作 1: 恢复出厂设置参数 注: 开机后最多只能恢复 3 次, 关机重启后又可以恢复 3 次。 0: No operation 1: Factory reset parameters Note: It can be restored at most 3 times after startup, and 3 times after shutdown and restart.
P66	安全开关 Machine head protection test	ON	ON-OFF	OFF: 关 ON: 开
P68	最高限速(r/min) Highest speed(r/min)	2200	200-2800	机头最高运行速度限制 Highest speed limitations during operation
P72	踏板前踩运行开始位置 Original position when the pedal goes front	350	0-4095	相对于回中位置 Relative to the center position
P73	踏板低速运行结束位置 Finishing place when the pedal is end in low operation speed	650	0-4095	相对于回中位置 Relative to the center position
P74	踏板模拟量最大值 Maximum monitoring value for the pedal	3600	0-4095	
P75	踏板回中位置设定 Back place setting of the pedal	1450	0-4095	
P96	欠压报警参数 Undervoltage alarm parameters	0	0、10-15	0:关闭 10:100VAC 15:150VAC
P97	过压报警参数 Overvoltage alarm parameters	27	0、26-30	0:关闭 26:264VAC 30:305VAC

3.6.3 监控参数表 (开机后长按 P+停针位键进入) monitoring parameters (Standby mode, press P + stop position and then enters into monitoring mode)

参数项 Parameters	中文说明 Illustration	内容值名称说明与备注 Remarks
M17	老化 15 分钟标志 15 minute aging sign	显示 1 表示 15 分钟老化完成，显示 0 表示 15 分钟老化未完成 1: Aging complete 0: Aging is not complete
M18	控制器软件版本号 Control box version	显示控制器软件版本号 Control box version
M20	母线电压 Bus voltage	显示实时母线电压 Real-time bus voltage value display
M21	机头速度 Machine head speed	显示实时速度 Current speed
M25	踏板前踩模拟量最大值 Monitoring maximum value when press the pedal ahead	显示踏板前踩 AD 最大值 AD maximum value when pedal is ahead
M26	踏板回中模拟量采样值 Monitoring sample value when the pedal is back to the middle place	显示踏板回中 AD 值 AD value when the pedal is back
M27	电控累积运行时间 Electronically controlled cumulative runtime	显示电控累计运行时间(小时) Display of the cumulative operating time of the electrical control (hours)
M28	踏板倒踩模拟量采样值 Monitoring sample value when the pedal is back	显示踏板倒踩 AD 最小值 AD minimum value when the pedal is back
M30-M37	历史故障代码监控 History error code	显示历史故障代码（倾倒错误 E7 不做记录，只显示最新的 8 个，无故障代码时显示 E-00） History error code (it will show the latest 8 error code except E7, and it will show E-00 when no any history error code)
M38	功率监控 Power monitoring	显示运行状态下的实时功率 Displays real-time power in operation
M39	历史最高电压 Historical maximum voltage	显示历史输入最高电压 Display historical input maximum voltage
M40	上下停针信号 Up and down needle position signal	个位显示：0：低电平 1：高电平 Display: 0: low 1: high

4 错误代码 ERROR CODE

4.1 故障代码表 Error code sheet

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。

Please check following items if have any errors

1 check whether wires connected well or not; 2 check whether control box and machine head matched or not; 3 check factory reset function.

故障代码 Error code	代码含义 Meaning	解决措施 Solutions
Err-01	硬件过流 Hard ware over current	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。
Err-02	软件过流 Soft ware over current	Turn off and restart after 30S. Please replace control box and inform the supplier if it can't work.
Err-03	系统欠压 System low voltage	断开控制器电源，检查输入电源电压是否偏低（低于 154V）。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。 Power off and check input voltage is lower than 15V or not. Please restart when voltage is normal if the input voltage is lower than normal one. Please replace control box and inform the supplier if it can't work.
Err-04	系统过压 System overvoltage	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。 Power off and check input voltage is higher than 264V or not. Please restart when voltage is normal if the input voltage is higher than normal one. Please replace control box and inform the supplier if it can't work.
Err-07	电流检测回路故障 Circuit problem	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。 Power off and then restart after 30S. Please replace control box and inform the supplier if it can't work after restart for a few times.
Err-08	电机堵转 Motor stuck	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。 Power off and check if input plug is loose, broken or winded by stuff or not. Please replace control box and inform the supplier if it can't work.
Err-13	电机霍尔信号异常 Abnormal motor Hall signal	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。 Turn off the system power supply, check whether the motor sensor connector is loose or falling off, and restart the system after it returns to normal. If it still cannot work normally, please replace the controller and notify the manufacturer.
Err-19	定位器信号异常 Abnormal	请检查编码器/定位器插头连接是否可靠后关电重新上电，如果还不能消除报警，可能是电机定位器霍尔异常请联系维修人员。

	positioner signal	<p>Please check whether the encoder / positioner plug connection is reliable, and then turn off and power on again. If the alarm cannot be eliminated, it may be that the motor positioner hall is abnormal. Please contact the maintenance personnel.</p> <p>(如果定位器损坏或者不需要定位功能时，当报 E-19 后，长按 S 键约 3s 可清除该报错同时关闭定位功能)。</p> <p>(If the positioner is damaged or the positioning function is not required, when E-19 is reported, long press the s key for about 3S to clear the error and close the positioning function).</p>
Err-20	调速器未插 Governor is not plugged in	<p>关闭系统电源，检查调速器接头是否松动或脱落，脚踏板是否被倒踩或者被踩下，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。</p> <p>Turn off the system power supply, check whether the governor connector is loose or falling off, and whether the foot pedal is stepped down or stepped down. Restart the system after it returns to normal. If it still cannot work normally, please replace the controller and notify the manufacturer.</p>

4.2 安全报警表 SAFETY ALARM SHEET

报警代码 Alarm code	代码含义 Meaning	解决措施 solutions
OFF	断电关机/供电电压过低 Power off / low supply voltage	<p>请检查供电电压</p> <p>Please check the supply voltage</p>
OF	电机休眠 Motor sleep	<p>机器待机约 55 分钟未运行，进入休眠状态，显示 OF.，最后一位数码管的小数点闪烁，按任意键唤醒机器</p> <p>The machine has not been running for about 55 minutes after standby. It enters the sleep state and displays of, The decimal point of the last digit of the nixie tube flashes. Press any key to wake up the machine</p>
A-UP	翻抬开关报警 Turn over switch alarm	<p>摆正机头，确保翻抬开关复原，长按 S 键可清除该报警同时关闭倾倒检测功能</p> <p>Straighten the machine head and ensure that the tilting switch is restored. Long press the s key to clear the alarm and close the tilting detection function</p>
A-01	补针信号异常 Abnormal compensate needle signal	<p>请检查机头补针按钮能否正常闭合以及弹开，如一直处于闭合状态，请更换机头补针按钮。</p> <p>(该报警会自动关闭补针功能，但不会影响电机运行，30s 后报警会自动清除或者手动短按 P 键也可清除)</p> <p>Please check whether the compensate needle button of the machine head can be closed and opened normally. If it is always closed, please replace the needle patching button of the machine head.</p>

		(the alarm will automatically close the compensate needle function, but will not affect the motor operation. The alarm will be cleared automatically after 30s or it can be cleared by manually pressing the p key for a short time.)
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注：如果根据错误处理对策仍然不能消除错误报警，请及时联系厂家处理。
 Note: if the error alarm cannot be eliminated according to the error handling measures, please contact the manufacturer in time.

5 脚踏灵敏度调整 **adjustment of pedal sensitivity**

1) 脚踏板动作由初始位置①（75 号参数）开始，缓慢向前踩至②（72+75 号参数）开始低速缝纫，继续前踩至③（75+73 号参数）开始加速，再深踩至④（74 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；

Press the pedal from initial position ① (P75) and to ② (P72+75) slowly and start to low speed sewing, and press ③ (P75+73) continuously to accelerate and then to ④ (P74) thus can get maximum speed. It maintains starting speed between ②③, and ③④ is for speed adjustment duration.

2) 当脚踏板由初始位置①（75 号参数）开始，缓慢后踩至⑥（24 号参数）时自动完成回到上停针动作；

The machine will finish up position action when the pedal starts from ① (P75) to ⑥ (P24) slowly

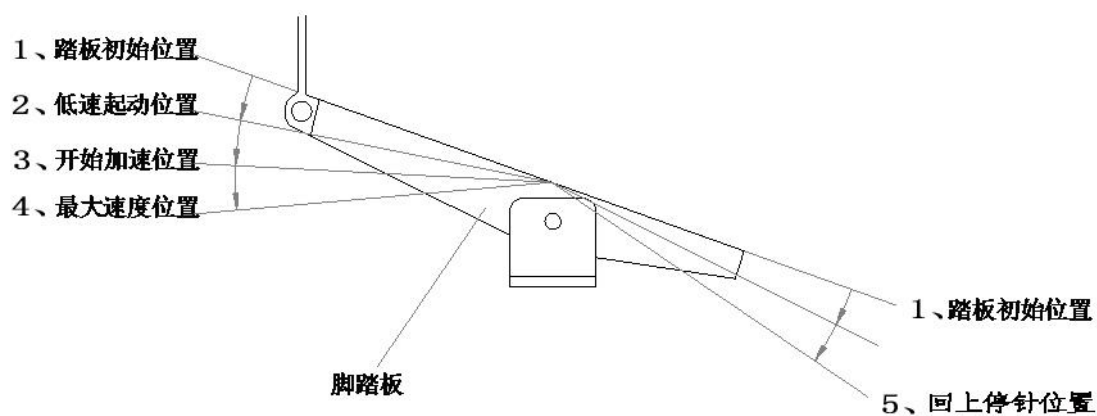
3) 各参数数值设置需保证（24 号参数）<（75 号参数）<（75+72 号参数）<（75+73 号参数）<（74 号参数）；

Make sure the value should be like this (P24) < (P75) < (P75+72) < (P75+73) < (P74) ;

4) 可通过监控模式下 025、026、028 号参数实时监测踏板模拟量最大值、踏板回中电压采样值、踏板倒踩电压采样值，操作方式同上停针位置设置方式，不同位置下的踏板采样数值作为各参数的参考值。如前踩很大距离机器还没有运转，可适当减小 72 参数（72+75 号参数应大于回中位置参数 75），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 72 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 73 参数或减小 72 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（00 号参数）。

We can use P025、P026、P028 to check timely maximum monitoring value, voltage sample value when the pedal is in half back position, voltage sample value when the pedal is back under monitoring mode. Operation is the same as setting up needle position, and sample value can be a referenced value in different place. If we press the pedal for a long distance but the machine does not work, then we can decrease value of P72($P72+75 > P75$) which can improve sensitivity. In contrary, we can increase P72 value. If its not easy to add stitch and when we slightly press front, then the speed up sharply, we can increase P73 or decrease P72 or lower the starting speed (P00)



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