

Button Attaching Machine

Instruction Manual

Safety Instruction

- Please read this manual carefully, also with related manual for the machinery before use the controller.
- For installing and operating the controller properly and safely, qualified personnel are required.
- Please try to stay away from arc welding equipment, in order to avoid electromagnetic interference and malfunction of the controller.
- Keep in room below 45° and above 0°
- Do not humidity below 30% or above 95% or dew and mist of places.
- Install the control box and other components, turn off the power and unplug the power cord.
- To prevent interference or leakage accidents, please do the ground work, the power cord ground wire must be securely connected to an effective way to earth..
- All parts for the repair, provided by the Company or approved before use.
- performing any maintenance action, you must turn off the power and unplug the power cord. There are dangerous high voltage control box, you must turn the power off after one minute before opening the control box.
- This manual marked with the symbol of the Department of Safety Precautions must be aware of and strictly adhered to, so as not to cause unnecessary damage.

1 Installation Instructions

1.1 Product specifications

Table 1-1 Basic parameters

Controller Type	AHD58-55
Max. Sewing Speed	5000 r/min
Voltage Range	AC (220±44) V
Output Power	50Hz/60Hz
Max. Torque	550W
Environment	3Nm
The motor way of transmission	Direct drive

1.2 Direct Drive Installation

First, the pedal **1**, the controller **2** is lifted on the plate **3** bottom right by tapping screw, (then the direct motor **4** are installed in the sewing machine head **5**), finally the two ends of the pedal connecting rod **6** are connected with the pedals **1** and the bottom pedal **7**. HMI **3** is on the plate **3**.

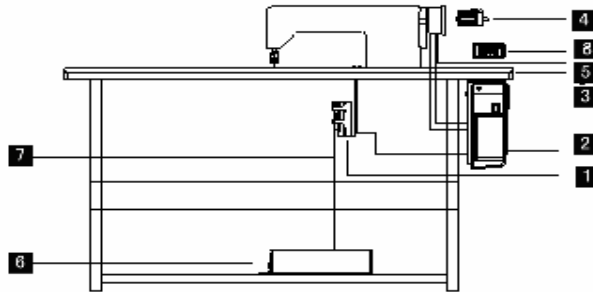


Fig.1-2 Flat seam direct drive controller installation diagram

1.3 Operation Panel Installation

1.3.1 Operation Panel Installation

The bracket **1** is installed in the rear panel of the machine head, you can use the rear cover screws **2** fixed. Then adjust the position of the operator panel **3** with screws on the bracket.

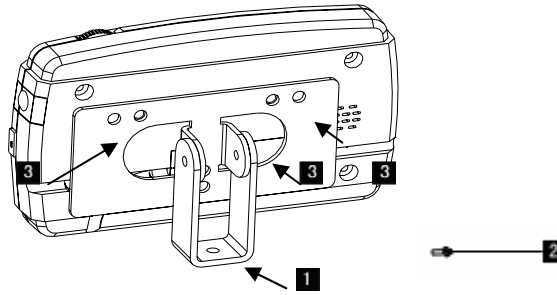


Fig.1-3 Operation panel installation diagram

1.3.2 Interface plug connections

The operator panel, pedals and the head of the connector plug mounted to the corresponding socket on the back of the controller, the name of the socket shown in Figure 1-4. Connected, please check if the plug is inserted firmly.

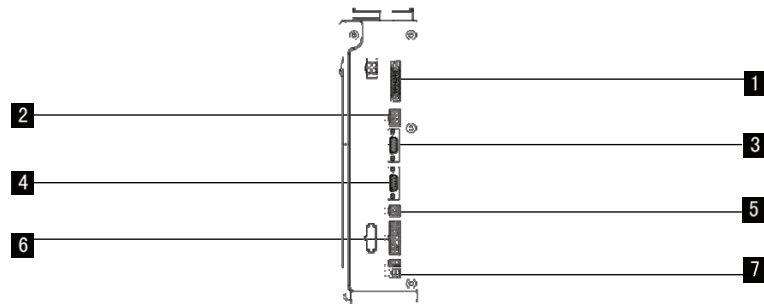



Fig.1-4 Controller Interface Schematic

Note: **1** Electric Power; **2** Pedals; **3** Motor encoder; **4** Operation panel; **5** Machine head safety switch;ety switch; **6** Machine head solenoid wire connector; **7** Machine head Light socket

 Using the normal force is not inserted into, check the plug and socket matches, needle insertion direction or the direction is correct!

1.4 Wiring and Grounding

Must prepare the system grounding project, please be a qualified electrical engineer construction. Product is powered and ready for use, you must ensure that the AC input is securely grounded (Figure 1-5). System grounding wire is yellow and green lines, make sure the ground wire

securely connected to the machine head (shown connected to the head of the screw), in order to ensure the safe use, and prevent abnormal situation.

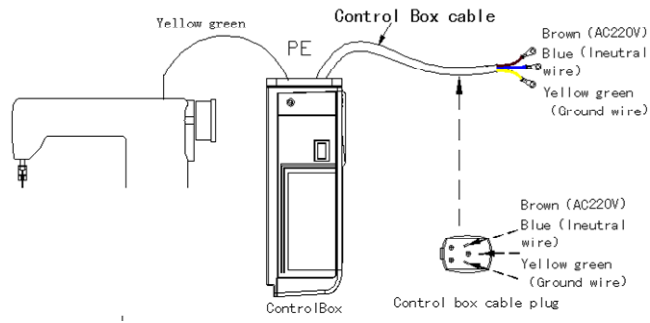



Fig.1-5 Controller ground connections icon

: All power lines, signal lines, ground lines, wiring not to be pressed into other objects or excessive distortion, to ensure safe use!

2 Operation Panel Instruction

2.1 Operation Panel Display Instruction

2.1.1 Operation Panel Composition

Operation panel has two main components: LCD display **1** and keys operation **2** (Imaginary box are keys)。

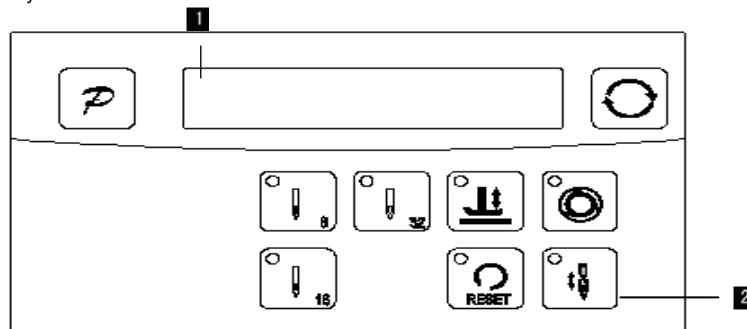


Fig. 2-1 Operation Panel

2.1.2 Digital screen display of content

Digital display for current controller working condition. System power control panel will automatically conduct a self-test, then the LCD area all digital segments will flash once, and then only shows the current setting, the other did not choose the function is no longer displayed. As shown, the picture is display all the icons are displayed state. LCD screen is used displaying the current operating state of the controller. System power control panel will automatically conduct a self-test, then the LCD area all the icons will flash once, and then only shows the current setting, the other did not choose the functions they represent the icon will not be illuminated. As shown, 8.8.8.8.8.8.8. The picture is display all the icons are displayed state.

2.2 Operation Plane keys instruction

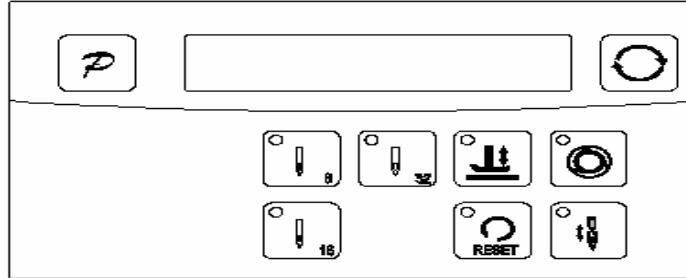



Fig. 2-3 Operator panel keys Icon

Table 2-2 Key Functions instruction


No.	Appearance	Description
1		Function key: Major operation to determine and confirm working, and work with other key to set a higher level of the parameter.
2		Cycle Key: Change parameter position when configuration;
3		8-pin key: Set 8-pin operation mode;
4		16-pin key: Set 16-pin operation mode;
5		32-pin key: Set 32-pin operation mode;
6		Foot Lifting Key: The light is lit that indicates automatic presser foot lift after sewing. The key is switched, the key is switched in the stop mode that the current foot lifter of up, down state;
7		Reset key: Let the motor is running, automatically to start sewing again find clinch;
8		Stitch Compensation Key: Compensation function is on when you press the key in the stop mode.

9		Trigger key: used to select or deselect trigger mode, the button is only working in a multi-segment slit mode active when you select the trigger mode, inching pedal once to complete a certain period of multi-seam sewing needles; selection LCD screen will be displayed above the trigger mode identification, for details see "Trigger feature set."
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3 System Parameter Setting Description


3.1 Operator Mode


In this mode, various sewing modes are available after technical parameters settings. As the default setting, the system enters this mode when it starts. Under this mode, such basic functions as normal sewing work and modes change can be realized but no change inside parameters and setting.


: During working, if long time without press button, HMI will change to idle status automatically, and will cancel the operation before.

3.1.1 Sewing Mode Setup


Technician mode is used for sewing speed and pedal speed control such as the use of performance adjustments.



8 stitch mode: In standby mode,  key, the LED on the key lights up, then you enter the 8 stitch pattern.

16 stitch mode: In standby mode,  key, the LED on the key lights up, then you enter the 16 stitch patterns.

32 stitch mode: In standby mode,  key, the LED on the key lights up, then you enter the 32 stitch patterns.





3.1.2 Press foot lifting key :

Use  keys to select the presser foot is set, there are two kinds of presser foot lift setting:

 key does not light is no automatic presser foot lift, In standby mode, press  key, the presser foot is switch between the presser foot and no the presser foot .

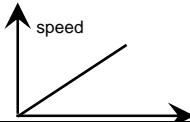
3.2 How to enter the technician mode

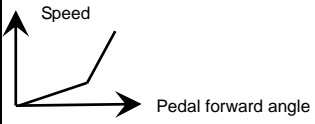
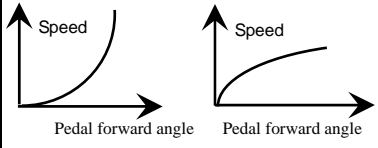
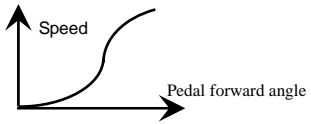
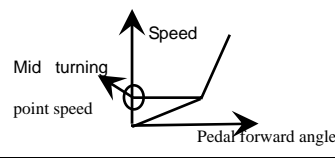
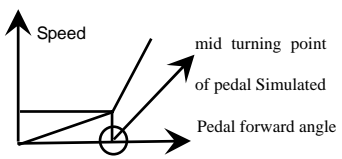
In this mode, technical parameters corresponding to various functions can be adjusted or reset according to practical needs so that the system may run in the best condition. Parameters setting under technician mode:

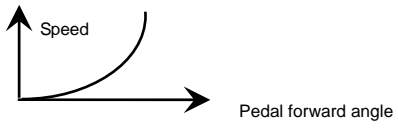
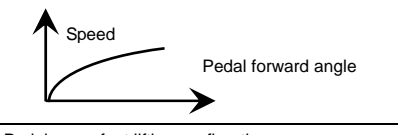
- ❶: Under operator mode, press  key and  key, the LCD will display PD-0000, and then set the password by administrator.
- ❷: Use the trackwheel to directly modify the position of the decimal point flashing value, use the button  to cycle through the flashing decimal point position to achieve the role of switching parameter position
- ❸: Press the button , you can modify parameters.

Technician parameter table 3-1:

Table3-1:Technician mode parameter

Mode	Parameter	Default	Rang	Comment
speed	00	200	100~800	Minimum sewing speed
	01	3500	200~5000	Maximum sewing speed
	02	3000	200~5000	Maximum constant sewing speed
	03	3000	200~5000	Maximum manual back tacking speed
	04	200	100~800	Stitch compensation speed
	05	250	100~500	Trimming speed
	06	0	0 / 1	Soft start Mode setup: 0: Soft start only after trimming 1: Soft start after both trimming and stop
	07	2	1~9	Soft start stitch number
	08	200	100~800	Soft start speed
	30	0	0/1/2/3	Pedal Curve mode setup: 0: Auto Calculated liner Curve (According to the highest speed automatic computation) 

Mode	Parameter	Default	Rang	Comment
Pedal				<p>1: Twosegment liner Curve.(You shall be free to set slow start after fast or fast start after slow,the parameters "31"and"32"cooperate with use)</p> 
				<p>2: Arithmetic Curve (the parameters [33] cooperate with use)</p> 
				<p>3: S curve (the operate control is very well, slow start after fast)</p> 
	31	3000	200 ~4000	<p>Two segment controls the speed slope : mid turning point speed RPM (two segment of turning point speed) , the parameter[30] set to 1 effective.</p> 
	32	800	0 ~ 1024	<p>Two segment controls the speed slope : mid turning point of pedal Simulated value, the parameter[30] set to 1 effective, the value is between[38]and[39].</p> 

Mode	Parameter	Default	Rang	Comment
	33	2	1/2	<p>Arithmetic Curve supplementary parameter : the parameter[30] set to 2 effective.</p> <p>1: Square (the low speed control is very well, slow start after fast) ;</p>  <p>2: Square root (Responding speed is fast, fast start after slow) ;</p> 
	3R	100	0~800	Pedal press foot lifting confirm time
custom setup	40	1	0 / 1	<p>Run to up needle position after Power on:</p> <p>0: no action</p> <p>1: action</p>
	43	0	0 / 1 / 2 / 3	<p>Special Running Mode setup:</p> <p>0: operator select</p> <p>1: simple sewing mode</p> <p>2: calculate initial angle of motor (do not uninstall strap)</p> <p>3: calculate motor/machine head run rate mode (synchronizer, do not uninstall strap)</p>
	44	0	0~31	<p>Torque boost up at low speed :</p> <p>0: no action</p> <p>1~31: 31 levels Torque boost up</p>

Mode	Parameter	Default	Rang	Comment
Operati on	61	0	0 / 1 / 2	Translating Parameter 0: no action 1: Download parameters(the panel will parameter from panel to controller) 2: Upload parameters (the panel will parameter from controller to panel)
	62	3003	1, 2, XXXX	Restore storage parameter(Only restore parameters to operators, and vendors and maintenance) Belt flat 1000/ Direct drive flat 2000
	63	0	1, 2	Backup current parameter as user parameter for restore (restore)
Note: Above such "6x "parameter to operate is not saved.				

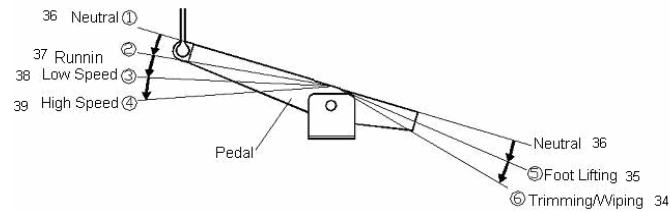


Fig.3-1 Pedal action parameter the position of the diagram

3.3 How to entre administrator mode












- ❶: Under operator mode, press  key and  key, the LCD will display PD-0000, and then set the password by administrator.
- ❷: Use the trackwheel to directly modify the position of the decimal point flashing value, use the button  to cycle through the flashing decimal point position to achieve the role of switching parameter positiont
- ❸: Press the button , you can modify parameters.



Table 3-2 : Administrator mode parameter

Mode	Parameter	Default	Rang	Comment
Stop mode	20	0	0~359	The automatic test mode selection : 0: order stitches 1: order time
	21	0	0~359	The safety SW alarm confirm time ms(the same way does not distinguish between direct-drive safety SW and flat lock trim of protection SW)
	31	0	1	The safety SW restore confirm time ms
	34	0	0 / 1	Motor rotation direction setup: 1: Forward 0: Reverse
Machine head paramete	40	1000	0 - 9999	motor/machine head run rate: 0.001
				(if automatic calculation of motor/machine head run rate has done, the Parameter value in control box maybe different with that in HMI)
	42	0	0 - 359	Up needle position adjusted angle (compare to up position sensor position excursion)
	43	175	0 - 359	Down needle position mechanical angle
44	200	0 - 800	Press down delay time(ms)	


3.4 Automatic test mode

If you use a combination of keys:  key +  (16-pin) key to enter the automatic test



parameter setting interface, digital display, in this interface, the  key can be used to switch the automatic test parameter index (automatic test parameters: automatic test running time, automatic test stop time, automatic test total running time), you can toggle the trackwheel positive or reverse, modify parameter values. Setting parameters can be  key to exit the auto-test parameters to modify the interface, or the re-use combination keys:  key +  (16-pin) button to turn on the automatic test by the pedal before the start. Start the automatic test, enter into automated test interface, digital display . In the automatic test mode, only use combination of

keys:  key +  (16-pin) button to exit the automatic test and return to automatic test parameter setting interface. (Automatic test pattern must start sewing in the current process is completed - is complete after trimming)

3.5 Temporary speed mode

When the HMI is idle state Idle, positive or anti toggle dial, you can enter into a temporary speed mode, the digital display . If not within the specified time toggle dial, automatic exit to the HMI idle state. Temporary speed value is not saved in the HMI, but has been saved in the controller.

3.6 Monitor mode

When the HMI is idle state, first hold down the key , then  key to enter monitor mode.


Need to watch with a dial can switch parameters. Specific monitoring parameters on the contents, please refer to the attached table shows the parameters, if you do not press within the specified time, or toggle button will automatically dial out to the HMI idle state.

Monitor mode parameter table 3-3

Table 3-3 monitor mode parameter

Name	Parameter	unit	comment
Monitor status	10		Counter stitches
	11		Counter trimming
	20	V	DC Bus Voltage
	21	RPM	Motor speed
	22	0.01A	One phase current
	23	degree	Initial angle
	24	degree	Mechanical angle
	25		Sampling value of pedal voltage
	26	0.001	motor/machine head run ratio
	27		Motor total run time
	28		Sampling value of potentiometer at machine head
	30-37		8 Historical fault codes

3.7 Wrong warning mode

If the HMI detects something wrong from controller, it will jump automatically to warning mode, and show error code by 8-segment. see . During wrong warning mode, the user can set technician parameter change, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode. It will return normal status after fixing error and resetting power.

4 Operation after control system installation:

- 1, The control system is installed, should be done before using a "automatically calculate the transmission ratio" (because the machining accuracy reasons, different manufacturers of the effective radius of the nose of the hand wheel is not the same, even if the direct drive system is not necessarily 1: 1 transmission ratio). Entering Technician 43 parameter sets the parameter value is 3. Tap the pedal, and the system in both rotation speed of about 10 revolutions stop, the calculated results directly stored in the machine. Then 43 parameters to 0.
- 2, The controller 8 solenoid drive outputs, using the new software and hardware design; each driver output can freely define its function. Make sure the system before using the parameters set in the member 6x output function setting of each drive interface to connect with the electromagnet is consistent; need to confirm the system who 7x, 8x parameters, otherwise there might be insufficient output electromagnet. (Default parameters according to most manufacturers solenoid connection definition set)

Note:

- 1, Only after power downstream HMI operator mode parameters will not take the initiative and systems downstream technician who parameters. If you are sure you want to pass a full set next parameter, you can pass parameters 61 technicians active in all downstream HMI currently active parameters.
- 2, If you want to restore HMI saved other parameters required parameters 62 through technician activated as the currently active parameters and active downstream.
- 3, A single parameter modifications, HMI acknowledge the value of this parameter is modified and modify different from the previous, before the next pass this parameter.

5 Recovery processing and maintenance

Table 4: Fault Codes and Solutions

error code	meaning	solution
01	hardware overflow	Turn off the system power, restart after 30 seconds, if the controller still does not work, please replace it and inform the manufacturer.
02	software overflow	
03	system under-voltage	Disconnect the controller power and check if the input voltage is too low (lower than 176V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
04	over-voltage when the machine is off	Disconnect the controller power and check if the input voltage is too high (higher than 264V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
05	over-voltage in operation	
06	solenoid circuit failure	Turn off the system power, check if the solenoid is connected correctly and if it is loose or damaged. If yes, replace it in time. Restart the system upon making sure everything is in good order. If it still does not work, seek technical support.
07	electrical current checking circuit failure	Turn off the system power, restart after 30 seconds to see if it works well. If not, try several more times. If such failure happens frequently, seek technical support.
08	locked motor roller	Disconnect the controller power, check if the motor input plug is off, loose or damaged, or if there is something twined on the machine head. After checking and correction, if the system still does not work, please replace the controller and inform the manufacturer.
09	brake circuit failure	Turn off the system power, check if the white brake resistance plug on the power board is loose or dropped off, fasten it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
10	HMI communication failure	Check if the connecting line between control panel and controller is off, loose or broken, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
11	machine head needle positioning failure	Check if the connection line between machine head synchronizer and controller is loose or not, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
12	motor original angle checking failure	Please try 2 to 3 more times after power down, if it still does not work, please replace the controller and inform the manufacturer.
13	Motor HALL failure	Turn off the system power, check if the motor sensor plug is loose or dropped off, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
14	DSP Read/Write EEPROM failure	Try another time after power down, if it still does not work, please replace the controller and inform the manufacturer.
15	Motor over-speed protection	Turn off the system power, turn on again in 30 seconds to see if it works. If not, try several more times, if such failure happens frequently, please change the controller and inform the manufacturer.
16	Motor reversion	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.

17	HMI51 Read/Write EEPROM failure	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.
18	Motor overload	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.
20	Lack of oil alarm	Add oil to the needle rod, and set the P22 parameter at 4000, resume the working time after the last oil adding; or you can press button P to close the alarm and continue to use.
21	Counter Sensor error	Mechanical failure or 16-pin counting sensor installation failures. Ensure 16-pin connector is connected counting sensor controller, restart the system after 30 seconds, if still does not work, replace the controller and inform the manufacturer.

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