Operation Panel

Setting Instruction Manual

1 Operation Panel Instruction

Operation Panel is divided with two areas（See Fig1-1）：LCD display areas and key words area.

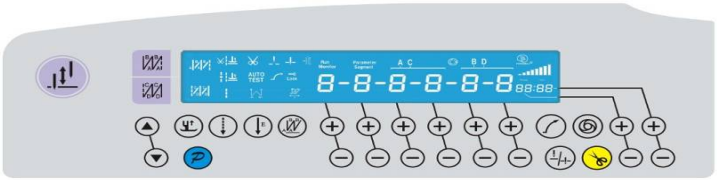


Fig.1-1

The LCD display areas are position in upper left of the whole operation panel. It including pattern, sewing mode, start/end back tacking, and foot lifter, stop-needles and trimming, and slow start operation set. The operation system automatically power on that HMI will a self-test, then all icons will flash once in the LCD display areas and only display the current settings of the system, the other did not choose that the icon will not be lighted, see figure 1-2.

Fig.1-2

Operator panel for each key explanation see the table 1.

Table 1: Following form is the instruction of each key：

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		**start back tacking key**：Every effective press the key once; round with single start back tacking, double start back tacking, four start back tacking and close start back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
3		**end back tacking key**：Every effective press the key once; round with single end back tacking, double end back tacking, four end back tacking and close end back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
4		**Free sewing mode key**：Every effective pushed the key once; the system selects free sewing mode. The free sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."
5		**Multi-segment sewing mode key:** Every effective pushed the key once; the system selects multi-segment sewing mode, pressed **P** key into the number of the needled setting. The multi-segment sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."

No	Appearance	Description
6		**W sewing mode key**：Every effective pushed the key once; the system selects W sewing mode. The **W** sewing status is displayed below LCD screen. Detailed see "2.1.1 model sets of sewing."
7		**Soft start key:** Select soft start function. It will show soft start status on top of LCD screen.
8		**Press foot lifting key:** Every effective pushed the key once; round with trimming after press foot lifting, sewing end press foot lifting and manual press foot lifting. The current status is displayed on top of LCD screen. Detailed see "2.1.4 press foot lifting set.
9		**Trimming key**：Select/Cancel automatic trimming. The trimming status is displayed on top of LCD screen. Detailed see "2.1.5 trimming set.
10		**One-Shot-Sewing key**：Select/Cancel one-Shot-Sewing, it is effective only into multi-segment sewing mode, when chose one-shot sewing, one-shot foot pedal can complete one needle of multi-segment sewing；The one-shot-sewing status is displayed on top of LCD screen. Detailed see "2.1.6 trigger set.
11		**Stop position key**：Select up/down stop position. The up/down stop position is displayed on top of LCD screen. Detailed see "2.1.7 stop position set. [Note: automatic trimming back, the system is always on the up of needle position.]
12		**Stitch compensation key**：Start stitch compensation if press, stop stitch compensation if loose.
13		**Temporary accelerate speed key**：Press the button to temporary increased sewing speed.
14		**Temporary deceleration speed key:** Press the button to temporary reduced sewing speed.
15		**Parameter/Index accelerate key:** Press the button to increased parameter value/index.
16		**Parameter/Index decelerate accelerate key:** Press the button to reduced parameter value/index

2 Optional User Mode

2.1 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.

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

2.1.1 Sewing Mode Setup：

Free sewing mode: Press  key, free sewing mode icon is lightened in LCD area. LCD indicates free sewing mode has been selected; it is ready just step the pedal for operation.

Multi-segment sewing mode: Press key, constant-stitch sewing icon is lightened in LCD area. LCD is multi-segment sewing status。Use the last and key to choice the N segment, and press key to entry multi-segment sewing stitch number of each segment setup status. You may use the third and the fourth and to choice the need to modify number of segment, use the fifth and sixth and to modify number of needle in multi-segment sewing stitch setup status.

W sewing mode: Press key, constant-stitch sewing icon is lightened in LCD area. LCD is W sewing setup status. You may use the third and the fourth and to choice needle in A area and set rang 1-99 stitches; use the fifth and sixth and to choice needle in B area and set rang 1-99 stitches. Press key, can be used to choice A B D segment, LCD, use the fifth and sixth and to choice needle in B area and set rang 1-99 stitches.

2.1.2 start/end back tacking setup:

Step 1: Press key

Start back tacking has following four modes:

- None start back tacking
- Single start back tacking
- Double start back tacking
- Four start back tacking

Step 2: Stop pressing to confirm, then this back tacking mode has been selected.

Step 3: Change the corresponding parameters (A and B values) by using and key, the value range is 1-99 stitches. It set pin number to be completed before star back tacking.

Note: End back tacking setting method is similar with start back tacking setting method basically, except the key.

2.1.3 Soft start setup:

Press key, entry into soft start status. If choice soft starts, the icon is lightened in LCD areas. Press this key again to exit soft start status, the icon will off.

2.1.4 Press foot lifting key：

Press key, entry into foot lifting status, total four different status, no automatic foot lifting、automatic foot lifting after trimming（）、automatic foot lifting if stop during sewing（）、automatic foot lifting if trimming and stop during sewing. Use key to choice foot lifting setup status and stop press key to confirm. Foot lifting had compiled.

2.1.5 Trimming key：

If press key entry into press trimming status, select/non-select trimming. Press key repeat, the icon is lightened/ disappeared in LCD area. Whether it choice trimming that the icon is lightened or disappeared.

2.1.6 One-Shot-Sewing key

Use key: select/non-select one-shot-sewing statues. The icon will light if select one-shot-sewing in LCD areas, press will disappear.

2.1.7 Stop position key

Use key: select up/down stop position. Press key repeat, between up /down stop position to switch. Choose need to stop position and stop press key to confirm. Stop position had compiled.

2.1.8 Trimming or Needle counting function set

When you choose it, The lower right corner of digital tube display counts. Using and key to modify the count value, press key to confirm the count value.If you long time no operation, the system is automatic return to the idle state, value will not be saved.

2.2 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:

Step 1: Under operator mode, press key and key, the LCD will display Pd-0000, and then set the password by administrator.

Step 2: Use the last four keys and keys to input the password, and then press key. If the password is correct then enter technician mode, otherwise, it will return to operator mode.

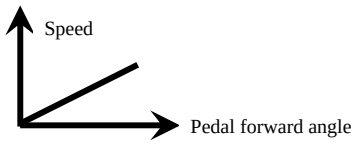
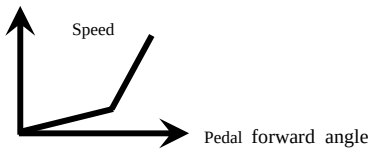
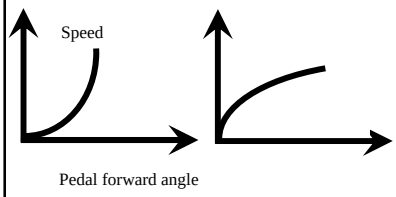
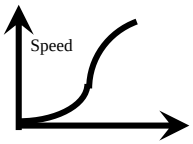
Step 3: Change technician parameters by the second and the third key and keys. The parameters are shown in table 2.

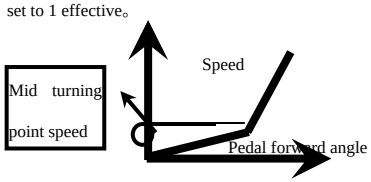
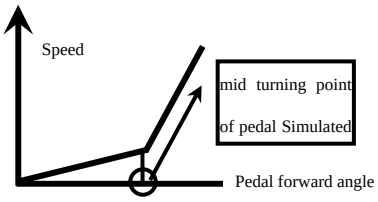
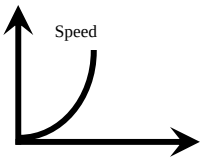
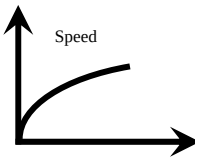
Step 4: Parameters values can be changed by the last four keys and keys.

Step 5: Under technician mode, press key, the panel will return to operator mode.

Table 2: Technician mode parameter：

	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
	09	20	1~20	System accelerate sensitivity （Direct drive transmission can be set up to a large value ； belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical）
	0A	20	1~20	System decelerate sensitivity （Direct drive transmission can be set up to a large value ； belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical ）
Back tacking setup	10	1800	200~2200	Start back tacking speed
	11	1800	200~2200	End back tacking speed
	12	1800	200~2200	Continuous back tacking speed
	13	24	0~70	Start back tacking stitch compensation 1
	14	20	0~70	Start back tacking stitch compensation 2
	15	24	0~70	End back tracking stitch compensation 1
	16	20	0~70	End back tracking stitch compensation 2

	Parameter	Default	Rang	Comment
Pedal	30	0	0/1/2/3	Pedal Curve mode setup: 0：Auto Calculated liner Curve（According to the highest speed automatic computation）  1：Two segment 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 ）  2：Arithmetic Curve（ the parameters [33] cooperate with use）  3：S curve（the operate control is very well, slow start after fast ） 

	Parameter	Default	Rang	Comment
	31	3000	200~4000	Two segment controls the speed slope: mid turning point speed RPM (two segment of turning point speed), the parameter[30] set to 1 effective。 
	32	800	0~1024	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]. 
	33	2	1/2	Arithmetic Curve supplementary parameter: the parameter[30] set to 2 effective, 1: Square (the low speed control is very well, slow start after fast); 
				2: Square root (Responding speed is fast, fast start after slow); 
	34	90	0~1024	Pedal trimming position set, See 2-1. (the value is not higher than the parameter [30])
	35	300	0~1024	Press foot lifting, See 2-1. (the value is between[34]and[36].)

	Parameter	Default	Rang	Comment
	36	419	0~1024	Pedal back mid position，see 2-1. （the value is between[35]and[37].）
	37	510	0~1024	Pedal step upon running position， see 2-1. （the value is between[36]and[38]）
	38	578	0~1024	Pedal low speed running position（upper）,see 2-1 （the value is between[37]and[39]）
	39	962	0~1024	Pedal simulation the largest of value, see 2-1 （the value is not lower than the parameter [38]）
	3A	100	0~800	Pedal press foot lifting confirm time
custom setup	40	1	0/1	Run to up needle position after Power on： 0: no action 1: action
	41	1	0/1	Automatically reinforcing functions chose ： （the machine head is not automatically reinforcing functions, the best way is prohibit） 0：prohibit 1：allow
	42	0	0/1	Back to sewing by hand when the function mode selection: 0：Juki mode. In sewing or in the end of the action 1：Brother mode. It acts only in sewing.
	43	0	0/1/2/3	Special Running Mode setup： 0：operator select 1：simple sewing mode 2：calculate initial angle of motor (do not uninstall strap) 3：calculate motor/machine head run rate mode (synchronizer, do not uninstall strap)
	44	0	0—31	Torque boost up at low speed : 0：no action 1~31：31 levels Torque boost up
	45	1	0/1	Stop pin mode: 0：Constant speed tackle mode (in the belt transmission, Parking is not precision) 1：back pull mode（PMX）

	Parameter	Default	Rang	Comment
	46	100	0~800	Command button to fill half-needle time
	47	150	0~800	Command button to fill a needle time
Counter mode	50	1	1～100	stitch counting ratio value setup
	51	1	1～9999	stitch counting value setup
	52	0	0～4	stitch counter mode selection 0：not count 1：count up，reset after meeting counting value. 2：count down，reset after meeting zero. 3：count up，stop after meeting counting value. Must manual reset counting value. 4：count down，stop after meeting counting value. Must manual reset counting value.
	53	1	1～100	Trimming counting ratio value setup
	54	1	1～9999	Trimming counting value setup
	55	0	0～4	Trimming counter setup： 0：not count 1：count up，reset after meeting counting value. 2：count down，reset after meeting zero. 3：count up，stop after meeting counting value. Must manual reset counting value. 4：count down，stop after meeting counting value. Must manual reset counting value.
Operation	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	0	1, 2, XXXX	Restore storage parameter(Only restore parameters to operators, and vendors and maintenance) Belt flat 1000/ Direct drive flat 2000

	Parameter	Default	Rang	Comment
	63	0	1,2	Backup current parameter as user parameter for restore (restore)
	Note: Above such "6x "parameter to operate is not saved.			

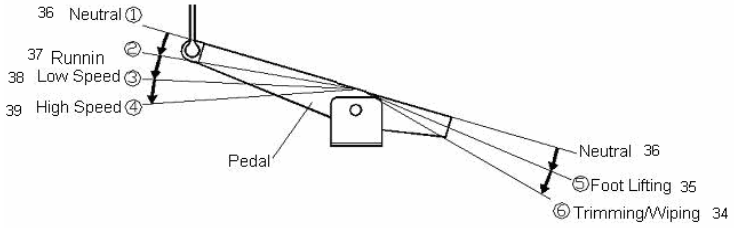


Fig2-1 Pedal action parameter the position of the diagram

2.3 Administrator Mode

In this mode, various solenoid parameters set can be regulated according to the practical need so that the servo system can normally run on every sewing machine. Parameters setting under technician mode:

Step 1: Under operator mode, press P and ◎ keys to enter administrator mode in LCD Pd 0000.

Step 2: The password is entered using the last four ⊕ keys and ⊖ keys, then press P key. If the password is correct, enter into the administrator mode, or return to the operator mode.

Step 3: Change administrator parameters index by the second and the third ⊕ key and ⊖ key under administrator mode. The details of administrator parameters are shown in table3.

Step 4: Parameters values can be changed by the last four ⊕ keys and ⊖ keys.

Step 5: Under administrator mode, press P key, the panel will return to operator mode.

Table 3: Administrator mode parameter：

	Parameter	Default	Rang	Comment
Trimming mode	02	1	0/1/2/3	Mode selection for trimming sequence. 0: According to the parameters【03】set angles is trimming, until up position delayed【06】time off. 1: According to the parameters【03】set angles is trimming, until【04】set angles off. 2: According to the parameters【03】set angles is trimming, it delayed 【06】off. 3: Down position signal delayed the parameter【05】set angles is trimming, it delayed 【06】off.

	Parameter	Default	Rang	Comment
	03	10	5-359	The start angles of trimming (relative down position of angle)
	04	120	10-359	The end angles of trimming (relative down position of angle, Need to greater than the system of parameters【03】)
	05	10	1-999	Trimming start delay time T1 (ms)
	06	60	1-999	Trimming end delay time T2 (ms)
Tension release 、Wiper and Clamp mode	10	0	0/1/2/3/4	Mode selection for tension-release sequence: 0: According to the parameters [11] set angles is tension release, until up position delayed [14] time off. 1: According to the parameters【11】set angles is tension release, until【12】set angles off. 2: According to the parameters【11】set angles is tension release, it delayed 【14】off. 3: Down position signal delayed the parameter【13】set angles is trimming, it delayed 【14】off. 4: Up position signal delayed the parameter【13】set angles is trimming, it delayed 【14】off.
	11	25	5-359	The start angles of tension release(relative down position of angle)
	12	350	10-359	The end angles of tension release (relative down position of angle, Need to greater than the system of parameters【11】)
	13	1	1-999	Tension release solenoid start delay timeT1 (ms)
	14	10	1-999	Tension release solenoid up position delay time T2 (ms)
	15	1	0/1	selection for Wiper function 0: off 1: on
	16	10	1-999	Clamp /Wiper delay time ms
	17	70	1-9999	Clamp /Wiper holding time ms
	18	50	1-999	Clamp /Wiper revert time ms
	19	0	0/1	Thread Clamp function: 0: off 1: on

	Parameter	Default	Rang	Comment
	18	70	0-359	Clamp start angle
	16	140	0-359	Clamp end angle
Stop mode	31	0	0/1	The automatic test mode selection ： 0: order stitches 1: order time
	32	300	0~1000	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)
	33	50	0~1000	The safety SW restore confirm time ms
	34	0	0/1	Motor rotation direction setup： 1：Forward 0：Reverse
Machine head parameter	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)

2.4 Monitor mode

During HMI idle, Press key, then press key, entry monitor mode. Use the first and second （and） key to switch to watch the parameters. About the monitor parameter, please refer the sheet 4, HMI will back to idle if no wheel or no press the key in regulates time.

Table 4: monitor mode parameter

	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		hour	Motor total run time
	28		——	Sampling value of potentiometer at machine head
	3	0-7	——	History Error Code Recorder 8

2.5 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.

2.6 Safety switch warning mode

If HMI test safety switch warning, it will jump automatically to safety switch warning mode, see  . During wrong safety switch warning mode, the user can set technician parameter, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode.（AH58 reunification with the switch input, does not distinguish between safety switch, scissors protection switch）

3 Operation after control system installation：

1、after control system installation, one ‘automatic calculate **motor/machine head run rate**’ need work. (because of machining precision, different plant have different effective radius of engine hand-wheel, even direct drive do not have 1:1**“motor/machine head run rate”**）。Entry **technician** parameter No.43, setup this parameter as 3. Press pedal forward, system work with middle speed about 10cycles and stop, the result of calculation save in control box. Then restore technician parameter No.43 to 0.

If can confirmation the value of **“motor/machine head run rate”**，can setup **administration** parameter No.40 directly. Real **“motor/machine head run rate”** in control box can read by **monitor** parameter No.26.

2、New control system in the needle position stop no longer rely on sensor signal to determine the down-stop needle, but by **administration** parameter No.43, this parameter confirms the mechanical angle from down needle position to up needle position. Current mechanical angle can read by **monitor** parameter No.24, mechanical angle of up needle position is 0.（**After power on , control system will**

work at least one time by up needle position to revise mechanical angle, for example: Round to up needle position. Value of "motor/machine head run rate" will effect the calculation of mechanical angle. Suggest adjust down needle position after confirm right "motor/machine head run rate".

3、New control design used to 5 solenoid drive output. Each drive output can setup its function freely. **Before use please confirm if the administrator 6x parameter setup the function of each driver output same as the connection with solenoid; and confirm administrator 7x 8x parameter, otherwise perhaps happen solenoid power not enough.** （the default parameter is according to normal solenoid connection）

4 Control system restores storage parameter

4.1 Restore storage parameter for factory of control

Step 1: Under operator mode, press and keys, LCD Pd 0000; user type the passport.

Step 2: The password is entered using the last four keys and keys, then press key. If the password is correct, enter into the technician mode, or return to the operator mode.

Step 3: Change technician parameters index to【62】by the first and the second key and key under technician mode. Restore storage parameter for factory of control can be changed by the last four keys and keys, Usually it's four bit.

Step 4: the parameter confirms correct, press key until the red light of HMI are bright or buzz produces a long loud, release key, HMI and the whole system restore storage parameter.

4.2 Restore default user's own parameter

The parameter【63】of HMI can be used to set the customer's own parameters, following methods of operation ：

Step 1: Under operator mode, press and keys, LCD Pd 0000; you require to type the passport.

Step 2: The password is entered using the last four keys and keys, then press key. If the password is correct, enter into the technician mode, or return to the operator mode.

Step 3: Change technician parameters index to【62】by the first and the second key and key under technician mode. The value is changed 1or 2 by the last keys and keys.

Note: when it set 1, the follow-up to the user to customize the parameter is used 1; when it set 2, the follow-up to the user to customize the parameter is used 2.

Step 4: Press key keep 5 second, HMI and the whole system will the current parameter set restore the user to customize storage parameter.

When the parameter cause to the control system error, the user can restore the custom of the parameters, the methods of operation as “4.1 Restore storage parameter for factory of control” .The parameter【62】 is changed 1or 2, Press  key keep 5 second again, the system will restore the user to customize storage parameter.

Note：

1、 After power on, HMI 50 only download **operator mode** parameter, but not **technician** and **administrator** parameter. If all parameter is needed, **technician** parameter 61 can used to download all current working parameter of HMI 50.

2、 If restore other parameter of HMI50 storage, **technician** 62 can be used to make it current working parameter, and download initiative.

3、 After single parameter modification, HMI will download the value that is different with old value of parameter.

4、 Recover default parameters, the system the best in the clear once again.

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