

The Operation Panel Instruction Manual

1 Operation Panel Instruction

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

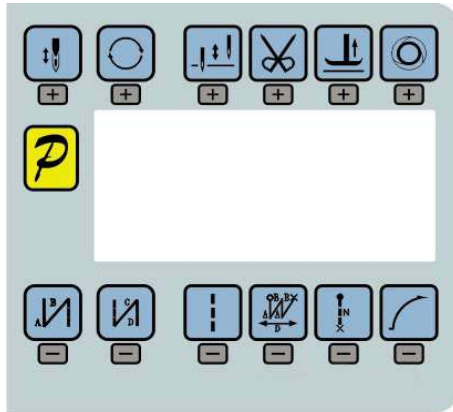


Fig.1-1

The LCD display areas are position in middle 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.

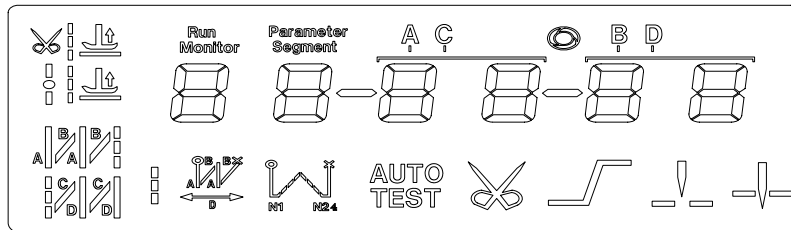















Fig.1-2

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.

No	Appearance	Description
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		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."
6		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 needed setting. The multi-segment sewing status is displayed below LCD. 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		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.]
9		Cycle key: Switch parameter position when change parameter;
10		Stitch compensation key: Start stitch compensation if press, stop stitch compensation if loose.
11		Trimming key: Select/Cancel automatic trimming. The trimming status is displayed on top of LCD screen. Detailed see "2.1.5 trimming set."
12		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."
13		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."




2 Optional User Mode


















2.1 Operator Mode



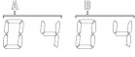














In this mode, various sewing modes are available after technical parameters settings. As the default setting, the system enters this mode when it starts. Under this mode, such basic functions as normal sewing work and modes change can be realized but no change inside parameters and setting.

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   keys and   keys to choice the N segment, and press  key to entry multi-segment sewing stitch number of each segment setup status . You may use   keys and   keys to choice the need to modify number of segment, use   keys and   keys 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   keys and   keys to choice needle in A area and set rang 1-99 stitches; use   keys and   keys 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   keys and   keys 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 values by using   keys and   keys and B values by using   keys and   keys. 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 statuses. 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 Stitch compensation key

Use  key: press this key to start stitch compensation. Compensation half needle or a half needle due to the press time. If you keep press that compensation needle always until release button.

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 P_d 0000, and then set the password 0000 to enter technician mode.

Step 2: Use keys and keys to input the password, and then press key. If the password is correct then enter technician mode, the LCD will display 00 0200 .otherwise, it will return to operator mode.

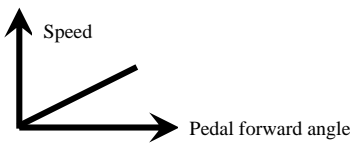
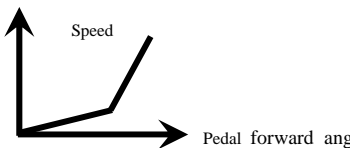
Step 3: Change technician parameters by keys and keys. The parameters are shown in table 2.

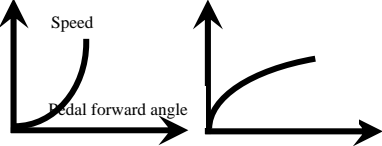
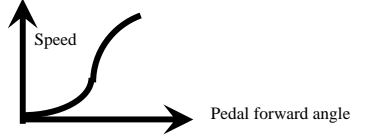
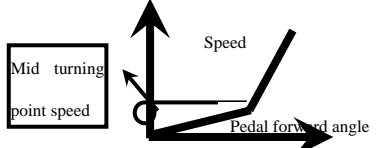
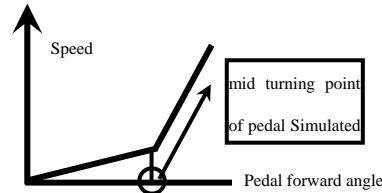
Step 4: Parameters values can be changed by keys and keys

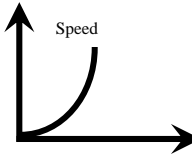
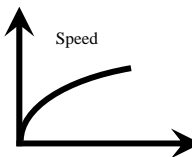
Step 5: Under technician mode, press key, the panel will return to operator mode.

Table 2: Technician mode parameter:

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
speed	0	0	200	100 ~800	Minimum sewing speed
		1	3500	200 ~5000	Maximum sewing speed
		2	3000	200 ~5000	Maximum constant sewing speed
		3	3000	200 ~5000	Maximum manual back tacking speed
		4	200	100 ~800	Stitch compensation speed
		5	250	100 ~500	Trimming speed
		6	0	0 / 1	Soft start Mode setup: 0: Soft start only after trimming 1: Soft start after both trimming and stop
		7	2	1~9	Soft start stitch number
		8	200	100 ~800	Soft start speed
		9	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)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		A	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	1	0	1800	200 ~2200	Start back tacking speed
		1	1800	200 ~2200	End back tacking speed
		2	1800	200 ~2200	Continuous back tacking speed
		3	24	0~70	Start back tacking stitch compensation 1
		4	20	0~70	Start back tacking stitch compensation 2
		5	24	0~70	End back tracking stitch compensation 1
		6	20	0~70	End back tracking stitch compensation 2
					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) 

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Pedal	3	0	0	0/1/2/3	<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> 
		1	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> 
	2	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> 	

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		3	2	1/2	<p>Arithmetic Curve supplementary parameter : the parameter[30] set to 2 effective, 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> 
		4	90	0 ~ 1024	Pedal trimming position set, See 2-1. (the value is not higher than the parameter [30])
		5	300	0 ~ 1024	Press foot lifting, See 2-1. (the value is between[34]and[36].)
		6	419	0 ~ 1024	Pedal back mid position, see 2-1. (the value is between[35]and[37].)
		7	510	0 ~ 1024	Pedal step upon running position, see 2-1. (the value is between[36]and[38])
		8	578	0 ~ 1024	Pedal low speed running position (upper) ,see 2-1 (the value is between[37]and[39])
		9	962	0 ~ 1024	Pedal simulation the largest of value, see 2-1 (the value is not lower than the parameter [38])
		A	100	0 ~ 800	Pedal press foot lifting confirm time
		0	1	0 / 1	Run to up needle position after Power on: 0: no action 1: action

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
custom setup	4	1	1	0 / 1	Automatically reinforcing functions chose : (the machine head is not automatically reinforcing functions, the best way is prohibit) 0: prohibit 1: allow
		2	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.
		3	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)
		4	0	0-31	Torque boost up at low speed : 0: no action 1-31: 31 levels Torque boost up
		5	1	0 / 1	Stop pin mode : 0: Constant speed tackle mode (in the belt transmission, Parking is not precision) 1: back pull mode (PMX)
		6	100	0-800	Command button to fill half-needle time
		7	150	0-800	Command button to fill a needle time
Operation	6	1	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)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2	0	1, 2, XXXX	Restore storage parameter(Only restore parameters to operators, and vendors and maintenance) Belt flat 1000/ Direct drive flat 2000
		3	0	1, 2	Backup current parameter as user parameter for restore (restore)
Note: Above such "6x "parameter to operate is not saved.					

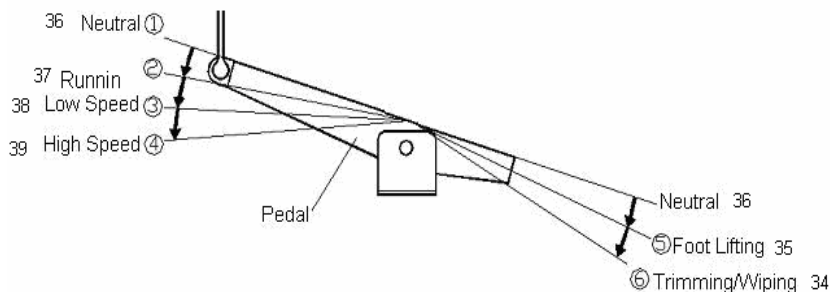


Fig2-1 Pedal action parameter the position of the diagram

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  and  keys to enter administrator mode in LCD Pd 0000, and then set the password 0000 to enter administrator mode.
- Step 2: The password is entered using     keys and     keys, then press  key. If the password is correct then enter administrator mode, the LCD will display 00 0000, or return to the operator mode.
- Step 3: Change administrator parameters index by t   keys and   keys under administrator mode. The details of administrator parameters are shown in table3.
- Step 4: Parameters values can be changed by     keys and     keys.
- Step 5: Under administrator mode, press  key, the panel will return to operator mode.

Table 3: Administrator mode parameter:

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Trimming mode	0	2	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.
					The start angles of trimming (relative down position of angle)
		3	10	5-359	The end angles of trimming (relative down position of angle, Need to greater than the system of parameters 【03】)
		4	120	10-359	Trimming start delay time T1 (ms)
		5	10	1-999	Trimming end delay time T2 (ms)
		6	60	1-999	
Tension release、 Wiper and Clamp mode	1	0	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.
					The start angles of tension release(relative down position of angle)
		1	25	5-359	

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2	350	10-359	The end angles of tension release (relative down position of angle, Need to greater than the system of parameters 【11】)
		3	1	1-999	Tension release solenoid start delay timeT1 (ms)
		4	10	1-999	Tension release solenoid up position delay time T2 (ms)
		5	1	0/1	selection for Wiper function 0: off 1: on
		6	10	1-999	Clamp /Wiper delay time ms
		7	70	1-9999	Clamp /Wiper holding time ms
		8	50	1-999	Clamp /Wiper revert time ms
		9	0	0/1	Thread Clamp function : 0: off 1: on
		A	70	0-359	Clamp start angle
		b	140	0-359	Clamp end angle
Stop mode	3	1	0	0/1	The automatic test mode selection : 0: order stitches 1: order time
		2	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)
		3	50	0 ~1000	The safety SW restore confirm time ms
		4	0	0/1	Motor rotation direction setup: 1: Forward 0: Reverse
Machine head parameter	4				motor/machine head run rate: 0.001
		0	1000	0-9999	(if automatic calculation of motor/machine head run rate has done, the Parameter value in control box maybe different with that in HMI)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2	0	0-359	Up needle position adjusted angle (compare to up position sensor position excursion)
		3	175	0-359	Down needle position mechanical angle
		4	200	0-800	Press down delay time(ms)

2.4 Monitor mode






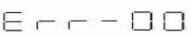
During HMI idle, Press  key, then press  key, entry monitor mode. Use   keys and  keys to switch to watch the parameters. About the monitor parameter, please refer the sheet 4, HMI will back to idle if no wheel or no press the key in regulates time.

Table 4: monitor mode parameter

	Parameter High byte	Parameter Low byte	unit	comment
Monitor status	1	0		Counter stitches
		1		Counter trimming
	2	0	V	DC Bus Voltage
		1	RPM	Motor speed
		2	0.01A	One phase current
		3	degree	Initial angle
		4	degree	Mechanical angle
		5	—	Sampling value of pedal voltage
		6	0.001	motor/machine head run ratio
		7	hour	Motor total run time
	8	—	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

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. 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.

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、 When control system installation, users must make a needle mechanical angle correction , as follows:

When the operation panel is the idle state, press  key and  key, the panel display 24-0000, then rotate the handwheel is ideal location of needle position, The panel will display a mechanical angle deviation value. Finally, press  key, then press  key , panel display 24-0000, the needle position mechanical angle set successfully.



3、 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”.**










4、 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; and then set the password 0000 to enter technician mode.


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










Step 3: Change technician parameters index to 【62】 by   keys and   keys under technician mode. Restore storage parameter for factory of control can be changed by     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; and then set the password 0000 to enter operation mode.


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

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

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: 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.

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 1 or 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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