Operation Panel（HMI）Instruction

1 Operation Panel Instruction

Operation Panel（See Fig1-1）is divided into two area：LCD display area and keys operation area.

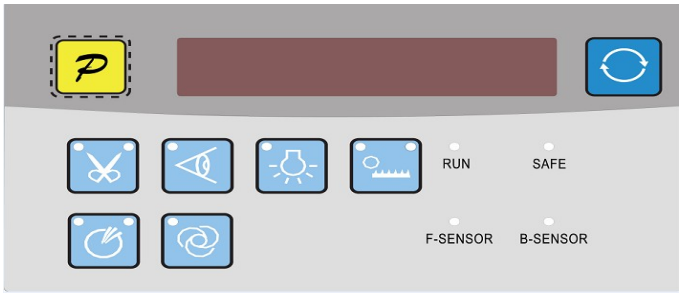


Fig.1-1

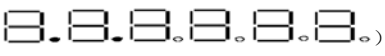
Digital display area is composed of 6 digital tubes, used to each parameter setting. There are 8 keys that used to display the key function open or not. Parts of keys have LED light. Table 1 shows function of each key.

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

No	Appearance	Description
1		**Function key**：Confirm working, or work with other key.
2		**Cycle key**：Switch parameter position when change parameter；
3		**Trimming key**
4		**suck key**：
5		**sensor key**：
6		**sewing mode key**：
7		**Lamp key**
8		**Edge mode key:**

2 Optional User Mode

2.1 Operator Mode

This mode is default mode of operation panel, operation panel enter this mode after it starts. Under this mode, the two connection decimal points will be lit from left to right in orderly during running,（LED show as  ） that means HMI is idle state.

Before performing any operation, if the long time does not press the key words, HMI will automatically switch to the idle state; the previous operations will not be executed.

2.1.1 Full automatic/ Semi automatic/ Manual mode setting:

Full automatic: Press 5  key，then press 6  key，tow keys are not order。The 5  key and the 6  key are lit。

Semi automatic: The 5  key is lit , the 6  key is off.

Manual mode: The 5  key is off , the 6  key is off.

2.1.2 Trimming key：

- When two LED on 3  key switch off, it means no trimming;
- When LED on top left of 3  key is on, and on top right off, it means before trimming;
- When LED on top left of 3  key is off, and on top right light, it means back trimming;
- When the two LED on 3  key are all lit, it means before and back are trimming;

2.1.3 Suck key setup：

- When two LED on 4  key switch off, it means no suck;
- When LED on top left of 4  key is on, and on top right off, it means before suck;
- When LED on top left of 4  key is off, and on top right light, it means back suck;

- When the two LED on 4  key are all lit, it means before and back are suck;

2.1.4 Lamp key：

When press 7  key ,the LED on top left of 7  is lit, the machine lamp is lit. When press s 7  key again, the LED on top left of 7  is off, the machine lamp is off.

2.1.5 Edge mode：

- When two LED on 8  key switch off, it means no spreading;
- When LED on top left of 8  key is on, and on top right off, it means before spreading;
- When LED on top left of 8  key is off, and on top right light, it means back spreading;
- When the two LED on 8  key are all lit, it means before and back are spreading;

2.2 Technician Mode

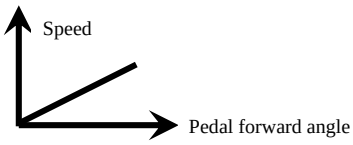
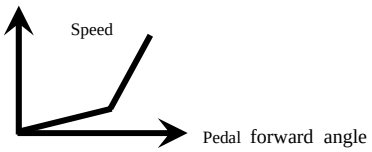
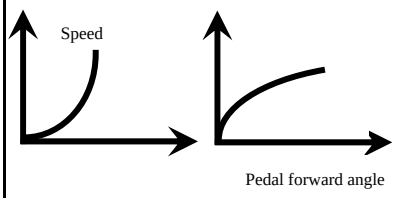
In this mode, technical parameters corresponding to various functions can be adjusted or reset according to practical needs so that the system may run in the best condition. Parameters setting under technician mode:

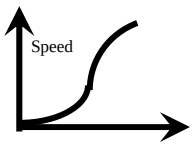
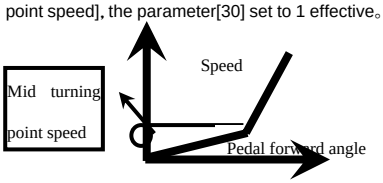
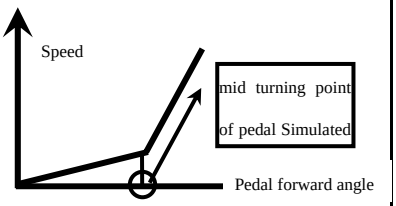
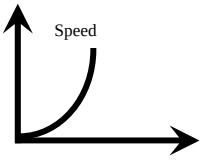
Under operator mode, press  key and  key, the LCD will display Pd 0000, and then set the password by technician. The default password is 0000, and LCD display as  . The Wheel on the top left side can be used to change the value of the decimal position which is flash, and  key used to change the flash position of the decimal, then change the parameter as you want. After confirmation of the change, you can choice to change other parameter, or use  key to confirmation the change. HMI back to idle if no wheel, no press the key after regulate time.

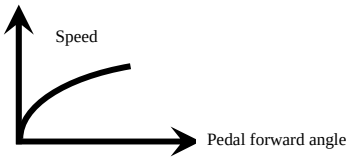
Table 2: Technician mode parameter：

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
speed	0	0	3	0~3	Auto foot lifter setup: 0 off ; 1 Before foot lifter; 2 Back foot lifter; 3 Before and Back foot lifter
		1	0	0 / 1	Speed mode: 0 automatic; 1 pedal control speed
		2	0	0 / 1	The needle stop position: 0 up needle position; 1 down needle position
		3	0	0 / 1	Foot lifter setup when the needle stop in the middle position: 0 off; 1 automatic foot lifter
		4	1	0 / 1	Manaul stitch suck mode: 0 off；1 on
		5	3500	100~4200	Automatic sewing speed
		6	5500	200~6500	Maximum sewing speed
		7	0	0 / 1	Semi automatic continuous sewing: 1 Tread the pedal for sewing
		8	1	0 / 1	Semi automatic constant speed: 0 Full constant speed; 1 The pedal control it when the two sensor is effectively at the same time; 2 Full pedal control
		9	200	100~800	Minimum speed
		A	300	100~800	Treading needle speed
Automatic function setup	1	0	0	0	Retain
		1	20	1~50	Number of needle between the two sensors (front sensor signal disappeared, after the sensor is sensed to continue sewing needle;
		2	4	1~50	The before Trimming delay needle (FB = 11 signal start count needle)
		3	12	1~50	The back Trimming delay needle (FB = 00 signal start count needle)
		4	10	1~50	The before suction start needle (FB = 10 signal start count needle)
		5	200	100~5000	The before suck delay time (ms)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		6	10	1~50	The back suction start needle (FB = □□ signal start count needle)
		7	200	100~5000	The back suck off delay time(ms)
		8	8	0～1	Suck mode: 0 Befor and back suck; 1 When it is running suction
		9	200	1～5000	When it is running suction of delay time
		A	10	1～50	Retain
		b	100	10～5000	Start sewing delay time
		C	10	1～99	Stop delay pins (rear sensor signal disappeared after continued sewing needle number)
Automatic function setup	2	0	10	1～ 1000	The before sensor response time
		1	30	12～50	The before sensor sensitivity（HIKARI is using analog sampling to adjust the sensitivity of F sensor）
		2	30	12～50	The back sensor sensitivity（HIKARI is using analog sampling to adjust the sensitivity of B sensor）
		3	100	10～2000	The before foot lifter retention time
		4	0	1～2000	The back foot lifter start up delay time
		5	1	1～ 1200	Foot lifter protection time 100ms
		6	200	20～800	Press down delay time(ms)
		7	0	0 / 1	Continuous feeding trimming suction: 0 The before trimming is not executed when the back trimming is not executed before
		8	0	0 / 1	It is running manual trimming: 0 off; 1 on
		9	1	0 / 1	Safety switch: 0 off; 1 on
		A	35	1～ 1000	Trimming keep time
		b	20	1~20	Acceleration sensitivity (direct drive head can be set to a larger value; belt drive can not be set too

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		C	20	1~20	Deceleration sensitivity (The direct drive head can be set to a larger value; The belt drive can not be set too big, otherwise vibration, noise is big. The parameter does not affect the motor output)
		d	800	200~ 1200	The medium speed value (RPM)
		E	50	25~200	The low speed value (RPM)
		F	200	20~600	Full manual mode foot lifter delay time
Pedal	3	0	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

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
pedal	3				start after fast ） 
		1	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。 
		2	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]. 
		3	1	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）； 

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
					2：Square root（Responding speed is fast, fast start after slow）； 
		4	90	0~1024	Pedal trimming position set, See 2-1. (the value is not higher than the parameter [35])
		5	300	0~1024	Press foot lifting, See 2-1. (the value is between[34]and[36].)
		6	460	0~1024	Pedal back mid position，see 2-1. (the value is between[35]and[37].)
		7	480	0~1024	Pedal step upon running position，see 2-1. (the value is between[36]and[38])
		8	680	0~1024	Pedal low speed running position(upper),see 2-1 (the value is between[37]and[39])
		9	960	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
		b	1	0/1	Run to up needle position after Power on： 0: no action 1: action
		C	0	0/1/2/3	Automatically reinforcing functions chose ： （the machine head is not automatically reinforcing functions, the best way is prohibit） 0：prohibit 1：allow
		d	0	0~31	Torque boost up at low speed : 0：no action 1~31：31 levels Torque boost up

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		E	1	0／1	Stop pin mode： 0：Constant speed tackle mode (in the belt transmission, Parking is not precision) 1：back pull mode（PMX）
Operation	b	0	0		It is running time reset
		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)
		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)

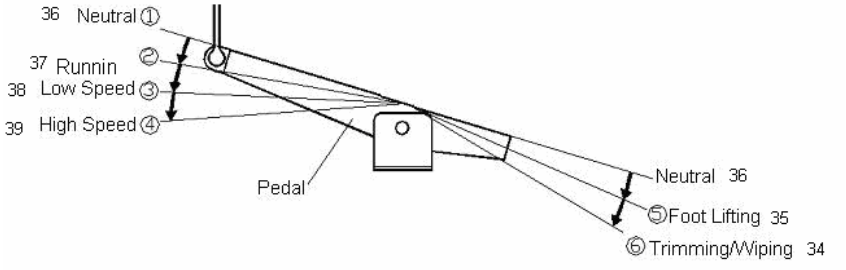


Fig2-1 Pedal action parameter the position of the diagram

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:

During HMI idle, press key and key, the LCD will display Pd 0000, and then set the password by technician. The default password is 0000, and LCD display as 0.1001.1. The Wheel

on the top left side can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, then change the parameter as you want. After confirmation of the change, you can choice to change other parameter, or use key to confirmation the change. HMI back to idle if no wheel, no press the key after regulate time.

Table 3: Administrator mode parameter：

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Machine head parameter	0	0	0	0 / 1	Stop needle D-axis current lock select
		1	300	1~3000	Stop needle D-axis current lock time
		2	0	0 / 1	Automatic test mode: 0: count stitch number 1: count time
		3	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)
		4	50	0 ~ 1000	Safe switch restore confirm time. ms
		5	0	0 / 1	Motor rotation direction setup： 1：Forward 0：Reverse
		6	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)
		8	0	0~359	Up needle position adjusted angle （compare to up position sensor position excursion）
		9	175	0~359	Down needle position adjusted angle
		A	9	0~359	Thick material boost up start angle
		b	57	0~359	Thick material boost up end angle

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Auxiliary function	3	0	1	0/1	0: before and back is used public 1:before and back is used alone
		1	1	0/1	0: single sensor; 1: dual sensor
		2	10	0～9999	The first phase of needle
		3	10	0～9999	The second phase of needle
		4	10	0～9999	The third phase of needle
		5	10	0～9999	The fourth phase of needle
		6	100	0～9999	The length of the platen
		7	2	0～9999	Per revolution length
Input function setup	5	0	1	0: forbidden; 1: manual back tacking; 2: safety switc; 3: manual trimming; 4; edge sensing; 5: pedal trimming input; 6: pedal press foot input; 7: stitch compensation; 8: Reversal of before and after reinforcement; 9: foot lifter interactive press; 10: tight seam; 11: counter reset; 12: OP input; 13: foot liter alternating input 1; 14:foot liter alternating input 2	Input 1 function setup
		1	1		Input 1 active Level setup(0/1)
		2	0		Input 2 function setup
		3	0		Input 2 active Level setup(0/1)
		4	2		Input 3 function setup
		5	0		Input 3 active Level setup(0/1)
		6	0		Input 4 function setup
		7	0		Input 4 active Level setup(0/1)
		8	0		Input 5 function setup
		9	0		Input 5 active Level setup(0/1)
		A	0		Input 6 function setup
		b	0		Input 6 active Level setup(0/1)
	6	0	1	0:output forbidden 1:trimming; 2: Wipin； 3:back tacking； 4:foot	No.1 solenoid drive function setup
		1	3		No.2 solenoid drive function setup

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Solenoid output function setup		2	4	lifter; 5:loose；6:clamp；7: Suction; 8 :blow; 9:needle cooled; 10: foot lifter interactive press; 11:tight seam;12: reinforcement reversal suspension statue; 13:interactive amount lifter statue;14:tight seam statue;15:OP output	No.3 solenoid drive function setup
		3	5		No.4 solenoid drive function setup
		4	2		No.5 solenoid drive function setup
		5	6		No.6 solenoid drive function setup
		6	7		No.7 solenoid drive function setup
		7	8		No.8 solenoid drive function setup
Solenoid 1	7	0	50	1～500	No.1 solenoid fule power output time ms
		1	1	1～10	No.1 solenoid Chopping open time ms(Reserved)
		2	1	1～10	No.1 solenoid Chopping close time ms(Reserved)
		3	0	0～600	No.1 solenoid protect time 100ms
		4	70	1～500	No.2 solenoid fule power output time ms
		5	1	1～10	No.2 solenoid Chopping open time ms(Reserved)
		6	1	1～10	No.2 solenoid Chopping close time ms(Reserved)
		7	0	0～600	No.2 solenoid protect time 100ms
		8	150	1～500	No.3 solenoid fule power output time ms
		9	1	1～10	No.3 solenoid Chopping open time ms(Reserved)
		A	1	1～10	No.3 solenoid Chopping close time ms(Reserved)
		b	0	0～600	No.3 solenoid protect time 100ms

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		C	100	1～500	No.4 solenoid fule power output time ms
		d	1	1～ 10	No.4 solenoid Chopping open time ms(Reserved)
		E	1	1～ 10	No.4 solenoid Chopping close time ms(Reserved)
		F	0	0～600	No.4 solenoid protect time 100ms
Solenoid 2	8	0	40	1～500	No.5 solenoid fule power output time ms
		1	0	1～ 10	No.5 solenoid Chopping open time ms(Reserved)
		2	0	1～ 10	No.5 solenoid Chopping close time ms(Reserved)
		3	0	0～600	No.5 solenoid protect time 100ms
		4	100	1～500	No.6 solenoid fule power output time ms
		5	0	1～ 10	No.6 solenoid Chopping open time ms(Reserved)
		6	0	1～ 10	No.6 solenoid Chopping close time ms(Reserved)
		7	0	0～600	No.6 solenoid protect time 100ms
		8	100	1～500	No.7 solenoid fule power output time ms
		9	0	1～ 10	No.7 solenoid Chopping open time ms(Reserved)
		A	0	1～ 10	No.7 solenoid Chopping close time ms(Reserved)
		b	0	0～600	No.7 solenoid protect time 100ms
		C	100	1～500	No.8 solenoid fule power output time ms
		d	0	1～ 10	No.8 solenoid Chopping open time ms(Reserved)
		E	0	1～ 10	No.8 solenoid Chopping close time ms(Reserved)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		F	0	0～600	No.8 solenoid protect time 100ms

2.4 Monitor mode

During HMI idle, Press key, then press key, entry monitor mode. Use the wheel is monitor the parameters. About the monitor parameter, please refer the sheet 5, HMI will back to idle if no operation after regulates time.

Table 5: monitor mode parameter

	Parameter High byte	Parameter Low byte	comment
Monitor status	1	0	Counter stitches
		1	Counter trimming
	2	0	DC Bus Voltage
		1	Motor speed
		2	One phase current
		3	Initial angle
		4	Mechanical angle
		5	Sampling value of pedal voltage
		6	motor/machine head run ratio
		7	Motor total run time
		8	Sampling value of potentiometer at machine head
		9	DSP Software version number
	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 see E.r.r.-.0.0.. 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.

3 Control system restores storage parameter

3.1 Restore storage parameter for factory of control

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

Step 2: The Wheel can be used to change the value of the decimal position which is flash, and  key used to change the flash position of the decimal, enter to the parameter【62】.

Step 3: The Wheel can be used to change the value of the decimal position which is flash, and  key used to change the flash position of the decimal, to restore the values of the parameters.

Step 4: the parameter confirms correct, press  key until the LED start flashing, release  key, HMI and the whole system restore storage parameter.

3.2 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; user require to type the passport.

Step 2: The Wheel can be used to change the value of the decimal position which is flash, and  key used to change the flash position of the decimal, enter to the parameter 【63】.

Step 3: The Wheel can be used to change the value of the decimal position which is flash, and  key used to change the flash position of the decimal, to restore the values of the parameters.

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 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 HMI 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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