



Computerized Control System for Embroidery
Machine

BECS-D19



USER'S MANUAL



Contents

Chapter 1 General Information	1
1.1 Warnings and Cautions	1
1.2 Main Features	3
1.3 Technical Specifications	5
Chapter 2 Operation Guide	6
2.1 Configuration and Direction of Control Panel	6
2.2 Instructions of Control Panel	7
2.3 Instructions of Main Screen.....	8
2.4 Notes on Menu Item Status.....	14
2.5 How to Input Number, Letter and Symbol	14
2.6 How to Move Cursor	14
2.7 Basic Embroidery Procedure	15
2.8 Normal Embroidery, Returning and Patch Embroidery	22
2.9 Relationship between Normal Embroidery, Idling and Positioning Idling .	22
2.10 Embroidery Operation Bar and Turn Shaft Button.....	23
2.11 Thread Breakage Detection and Patch Embroidery Switch	23
2.12 Working Status	24
Chapter 3 Disk Management	25
3.1 Disk Selection.....	25
3.2 Pattern Preview	27



3.3 Single/Multiple Selection	29
3.4 Pattern Input	31
3.5 Pattern Output.....	32
3.6 Directory Operation.....	33
3.7 Delete Disk File (Including Pattern File and Directory).....	33
3.8 Disk Formatting.....	34
Chapter 4 Memory Pattern Management	36
4.1 Memory Pattern Management Interface and Other Instructions.....	36
4.2 Select One or Several Patterns	40
4.3 Select Pattern for Embroidery	40
4.4 Pattern Preview.....	40
4.5 Copy Memory Pattern	42
4.6 Delete Memory Pattern	44
4.7 Applique Pattern Setting.....	46
4.8 Satin Stitch Compensation	48
4.9 Edit Combined Pattern	49
4.10 Devide Pattern	51
4.11 Integrate Patterns	52
4.12 Generate High-speed Pattern.....	53
4.13 Compile Combined Pattern	53
4.14 Generate Pattern by Parameters	54



4.15 Generate Pattern by Frame-moving.....	55
4.16 Generate Outline Pattern from Normal Pattern	56
4.17 Copy Pattern of Varied Stitch Length.....	57
4.18 Set Common Parameters.....	57
Chapter 5 Machine Parameter Management.....	59
5.1 Common Parameter Setting.....	59
5.1.1 Pattern Direction.....	60
5.1.2 Rotating Angle.....	60
5.1.3 Scaling	60
5.1.4 Repetition Priority	61
5.1.5 Repetition Mode	62
5.1.6 X-Y Repetitions	62
5.1.7 X-Y Repetition Interval	62
5.1.8 Priority Mode.....	62
5.2 Setting of Other Embroidery Parameters.....	62
5.2.1 Setting Procedure for Other Parameters	63
5.2.2 More Functions for Setting Other Parameters.....	65
5.3 Initialize Machine Parameters	66
5.4 Machine Authorization Management	66
5.4.1 Unlock/Change Administrator Password	67
5.4.2 Administrator Unlocks the Machine.....	68



5.4.3 Administrator Saves and Recovers Optimized Parameters.....	69
5.4.4 Change Manufacturer Password	69
5.4.5 Unlock Manufacturer Password.....	69
5.4.6 Manufacturer Saves and Recovers Optimized Parameters	69
5.5 Initialize Machine Parameters	70
5.6 Save Machine Parameters to Disk.....	70
5.7 Read Machine Parameters from Disk.....	70
5.8 Adjust XY Parameters of Servo Frame	70
5.8.1 Set Parameters	71
5.8.2 Inquire Driver Status	71
5.8.3 Save Driver Parameters.....	72
5.8.4 Recover Default Driver Parameters	72
Chapter 6 Assistant Functions	73
6.1 Assistant Embroidery Operation	73
6.1.1 Resume Pattern Origin	73
6.1.2 Save Pattern Origin	74
6.1.3 Pattern Origin Auto Search	75
6.1.4 Needle Stops Down	75
6.1.5 Set another Start	77
6.1.6 Set B Point.....	77
6.1.7 Operation of Air Frame, Sequin and Coiling Devices	79



6.1.8 Upper Thread Holding Operation.....	79
6.2 Other Assistant Management Operation.....	79
6.2.1 Check Embroidery Parameter.....	80
6.2.2 Check Statistic Data.....	81
6.2.3 Frame Protection Setting/Frame Origin Setting.....	82
6.2.4 Frame Recovery.....	83
6.2.5 Set Embroidery Scope in Software.....	83
6.2.6 Set System Clock.....	86
6.2.7 Select Language.....	87
6.2.8 Machine Software Information.....	88
6.2.9 Help.....	89
6.2.10 Machine Test.....	89
Chapter 7 Other Operations	91
7.1 Color-changing Order Operation.....	91
7.1.1 Input and Repeat Color-changing Order	91
7.1.2 Modify Color-changing Order.....	92
7.1.3 Replace Color-changing Needle Position.....	93
7.1.4 Set Pattern Display Color	94
7.2 Pattern Border Operation.....	95
7.2.1 Check the Pattern Border Range	96
7.2.2 Move the Frame along the Pattern Border	96



7.2.3 Generate Pattern from Pattern Outline	97
7.2.4 Generate Patch Position by Frame-moving, then Embroider	98
7.2.5 Embroider a Cross at Current Position	99
7.2.6 Embroider a Line from Frame-moving End to Start.....	100
7.2.7 Embroider Along Outline of Current Pattern.....	101
7.2.8 Embroider Real Outline of Current Pattern	102
7.3 Positioning Idling	103
7.3.1 Positioning Idling by Forward Stitches.....	104
7.3.2 Positioning Idling by Backward Stitches	105
7.3.3 Positioning Idling by Next Color-changing Code.....	105
7.4 Clear XY Displacements	106
Chapter 8 Pattern Edit	108
8.1 Start Pattern Edit.....	108
8.2 Pattern Editing Operation.....	109
8.2.1 Overview	109
8.2.2 Document and View Operation.....	110
8.2.3 Stitch Positioning and Editing Function	110
Chapter 9 Letter Pattern Operation	112
9.1 Start Letter Pattern Operation.....	112
9.2 Input Letter String and Basic Parameters.....	112
9.3 Save Letter Pattern	117



Chapter 10 JF Type Sequin Embroidery	119
10.1 Sequin Embroidery Introduction	119
10.2 Embroider Sequin	119
10.3 Input Sequin Pattern	119
10.4 Sequin Embroidery Parameter Setting	120
10.5 Manual Operation of Sequin Embroidery	122
10.6 Sequin Applique.....	123
Chapter 11 Instructions on Coiling, Taping and Zigzag Embroidery	124
11.1 Function Introduction	124
11.2 Main Technical Specifications.....	124
11.3 Parameters and Settings	125
11.4 Related Operations of Special Embroidery	127
11.4.1 Shift between Flat Embroidery and Special Embroidery	127
11.4.2 M-axis Operation of Special Embroidery.....	129
11.4.3 Presser Foot Operation	130
11.5 Special Embroidery Debugging.....	130
11.6 Special Embroidery Procedure	131
11.7 Mechanical Device Category and Drive Mode of Special Embroidery ..	131
Chapter 12 Instructions on Loop Embroidery	134
12.1 Function Introduction	134



12.2 Switch between Loop Embroidery Head and Flat Embroidery Head.....	134
12.2.1 Head Switch	134
12.2.2 Loop Embroidery Main Interface Introduction.....	136
12.3 Loop Embroidery Procedure	138
12.4 Parameters and Settings.....	139
12.5 Machine Debugging	140
12.5.1 Thread Loosing Position Adjustment.....	140
12.5.2 Needle Height Adjustment	141
12.5.3 Color-changing Position Adjustment	142
12.5.4 Test D-axis Motor.....	143
12.5.5 Text H-axis Motor	143
12.5.6 Test Main Shaft of Chained Embroidery.....	144
12.5.7 Test Main Shaft Encoder of Chained Embroidery	144
12.5.8 Test Trimming Motor of Chained Embroidery	144
12.5.9 Test Thread Breakage Detection	145
12.6 Manual Operation.....	147
12.7 Change Color-changing Order	147
12.8 Manual Switch of Loop Embroidery Head	150
12.9 Mechanical Device and Drive Mode of Loop Embroidery.....	151
Appendix 1 Parameter Setting List	153
Appendix 2 U Disk Operation Specification	163



Appendix 3 Error List	163
Appendix 4 Loop Embroidery Parameter List	167
Appendix 5 Loop Embroidery Error List	171
Appendix 6 Network Connection Instructions	172

Note: changes of specifications will not be informed separately!



Chapter 1 General Information

Thanks for using the Computerized Embroidery Control System produced by Beijing Dahao Technology Corp., Ltd. User are recommended to read this manual carefully, so as to operate the machine correctly and effectively. Besides, user should keep at hand this manual for future use.

1.1 Warnings and Cautions

In order to reduce the danger of occurrence of fire, electronic shock and personal injury at using this product, user shall strictly follow the basic security prevention measures at below:

Matters for Attention at Usage	
 Danger	During the operation, do not try to open the machine box. The high voltage contained in some parts can be deadly. Rotating parts may cause serious injury.
 Forbidden	Don't expose the machine to humidity, dust, corrosive gas either at work or in storage, in order to prevent electric shock or fire.
 Forbidden	Don't store or operate the machine in vibrating area, which may cause trouble to the machine.
 Caution	Please abide by all the warnings and safety requirements to ensure the security of person and property
 Caution	LCD is fragile item. Do not use hard materials to press on the screen.
 Caution	Before plugging in, user has to pay attention to the direction of the floppy disk and the U disk. Don't insert with force when the direction is wrong, or it may cause damage to floppy drive, disk, U disk and USB port. When the indicator on floppy driver is on, please don't insert or pull out the disk.
 Caution	We will add appendix if necessary, and if there is any difference between the manual and its appendix, the appendix will prevail.
Transportation and Carriage	
 Caution	Don't hold the cable when moving.



Chapter 1 General Information

 Caution	Please abide by all the warnings and safety requirements to ensure the security of person and property
 Compulsory	Overloading may cause collapse. Please load according to the instruction on the box.
Installation	
 Caution	Don't block the vent on the device, nor plug up the machine, or it may cause fire or electronic shock.
 Caution	Make sure the installation direction is correct.
 Caution	Don't expose the machine to humidity, corrosive gas and inflammables.
Cable Connection	
 Forbidden	Don't test the insulation of the circuit loop.
 Forbidden	Never try to connect overloading electronic device to the connector or the power socket used by the control box.
 Caution	Make sure the insulation cover of each cable is fine.
 Caution	Communication cable and power cable should be separated.
 Caution	All the cables should be well fixed. Don't put any strength on cables. Make sure the turning point of cable is well protected. Add pipes to increase insulating capability.
 Caution	Machine should be grounded. The resistance should be no larger than 10 Ω .
Operating	
 Danger	Don't operate the machine when there is any damage on the protection shell.
 Forbidden	When machine is running, do not touch any running part.
 Caution	Make sure the configuration of power supply in normal. Use stabilized voltage power supply when the voltage rebound is between -10%~10%.
 Caution	In case of warning, please check out the problem. Operation can only be carried out again when problem is solved.
 Caution	The power supply has over-current protection function. There is a 3 minutes time lag before the function can be used again.
Maintenance and Inspection	
 Warning	If you need to open the machine cover, cut out the power supply first. Due to the capacitance after power off, operator must wait for one minute before opening the machine cover.



 Caution	Circuit boards can be damaged by static. Non-professional technician can not disassemble circuit boards.
 Caution	If machine is inactive for a while, users must power on the machine regularly (once in 2 or 3 days, more than an hour for each time).
 Caution	If machine is inactive for a long time, users should have the machine checked before power on.
Rejection	
 Caution	Rejection should obey the rules and regulations set by national industrial electronic standards.

1.2 Main Features

1. LCD Displayer

It's easy to learn and its beautiful screen makes work a joy.

2. Timing Turn-off of LCD Displayer

LCD will turn off automatically in case of no operation in 15 minutes (the time can be changed in parameter setting). A touch of the screen or any key will reboot the LCD.

3. Super-large Memory Capacity

The memory space reaches 2M and up to 800 patterns can be stored, which can satisfy the demands of various users for memory space.

4. Max. 2 Million Stitches for Single Pattern

Currently, the maximum number of stitches for single pattern is 2 million, with 1000 times of automatic color-changing.

5. Multi-task Operation and Free Task Shift

During embroidering, user can input&output patterns, change and prepare the patterns to be embroidered, and modify certain parameters at anytime. At the same time, user can shift among tasks freely just by pressing the task-shifting key.

6. Separate Storage of Each Pattern's Frequently Used Parameters and Color-changing Order

Frequently used parameters, color-changing (needle bar) order and needle bar colors of each pattern can be stored separately. Work settings of each pattern will be recorded and user can set and change the subsequent patterns while the previous pattern is under embroidering, which will save time and improve work efficiency. What's more important, this function is the basis for the realization of centralized management via network.

7. Grouping Management of Parameters

Parameters can be divided into groups based on their functions and embroidery types. The system can also save and recover the parameters used by technicians at end-user and the parameters used by the machine manufacturer. And for the machine with encryption function, user can set password on the machine.

8. Pattern Input&Output via USB Disk

Except DOS, FDR and ZSK format floppy disk, users can use USB disk for data transfer. USB disk supports DIR operation, which is easy for pattern management. For each directory, system supports the storage of 400 patterns or the sub-directory operations. There is no



limitation on directory levels. Pattern formats like DSB, DST, ZSK and FDR can be loaded.

9. Input of Multiple Patterns

Both floppy and USB disks support input of multiple patterns under one directory.

10. Input of Pattern, Color-changing Order, etc. via Network

The system can be connected to network and user can input pattern, color-changing order, applique, etc. via network.

11. Machine Network Function

A surveillance LAN can be built with connectors and linked to the factory LAN, which can help realize network management, improve production efficiency and reduce possible mistakes. It's the best choice for enterprises to realize modern enterprise management. For details, please refer to appendix 5.

12. Patch Embroidery (Applique)

This function can set as patch position the color-changing code or stop code, and when the machine embroiders to the patch position, it will halt and move out of frame for patching. Then, user can pull the operation bar to return and continue embroidering.

13. Brake Adjustment

According to different characteristics of machines from different manufacturers, user can adjust the parameter for brake process to have the main shaft to stop at the right position.

14. Embroidery Starting Point Memory

Each pattern's embroidery starting point will be saved, and user need not search embroidery starting point for the same pattern every time, which saves a lot of work.

15. Maintenance & Debugging Functions

These functions include: optical-electricity testing, main shaft rotation speed testing, main shaft stop at any position and components testing. These functions can make it more convenient to debug the machine or determine the faults at repairment.

16. Languages

The system supports Chinese, English, Spanish, Turkish and other languages.

17. Pattern Output

Pattern can be outputted and saved into floppy disk or USB disk. Adoption of TAJIMA's binary system enables user to enjoy the advantage of data transmitting through the World Wide Web (other formats may not be transmitted directly).

18. Repetition Embroidery

The embroidery productivity of the machine can be increased by repetition embroidery, which can also be used with cyclic embroidery.

19. Cyclic Embroidery

When cyclic embroidery function is activated, the machine automatically returns to the origin point and starts the same embroidery again after finishing one time. together with special pattern-designing or repetition embroidery, work efficiency can be greatly improved.

20. Pattern Compiling

(1) Create new pattern by editing parameters of selected pattern

User can edit the scaling up/down rate, rotation angle, embroidery methods like normal repetition or partial repetition in order to create a new pattern. Such new pattern can be used for



embroidery, output or other operations.

(2) Edit combination pattern

User can edit an existing combination pattern to create a new one and the new pattern can be used for embroidery, output or other operations.

21. Letter Pattern

The system has 28 letter libraries. User can combine letters by various arrangements as needed to generate letter patterns, which is very simple and easy.

22. Pattern Edit

By this function, user may insert, modify or delete certain stitch at certain point. New patterns can be created by this function too.

23. Speed Adjustment

The highest speed for embroidery can be set in advance. During embroidery, speed will change automatically when the needle interval changes.

24. Thread Trimming

Thread trimming can be manually controlled or operates automatically at the end of embroidery process or color changing.

25. Thread Breakage Detection

In case of thread breakage or run-out of bobbin thread, machine stops and warning lights start to blink.

26. Color Changing

At the color-changing position, either it can be manually operated, or the system will operate color-changing automatically according to the pre-set order.

27. Special Embroidery

BECS-C16 has special embroidery functions (coiling, taping and Zigzag embroidery) which can enrich the embroidery patterns.

1.3 Technical Specifications

1. Maximum Number of Patterns Saved in Memory: 800
2. Memory Capacity: 2M
3. Screen Resolution: 800*600
4. Network Port Speed: 10Mbps
5. Data Transfer Method: floppy disk, USB disk, network
6. Control Precision: minimum stitch interval under control is 0.1mm
7. Needle Range: 0.1mm~12.7mm



Chapter 2 Operation Guide

2.1 Configuration and Direction of Control Panel

A. Configuration of Control Panel



1. LCD

D19 adopts high-luminance LCD.

2. USB Interface

USB disk can be plugged in for data input/output. External floppy drive can also be connected to the USB interface.

B. How to Use Floppy Disk

Floppy disk is external device and connected to the control panel via USB interface. Please pay attention to the plug-in direction and don't plug in with force. Otherwise, it may cause damage to the floppy drive.

C. How to Use USB Disk

Please pay close attention to electrostatic phenomenon. Don't forget to discharge the metal structure or frame by hand before plugging in/out the USB disk.

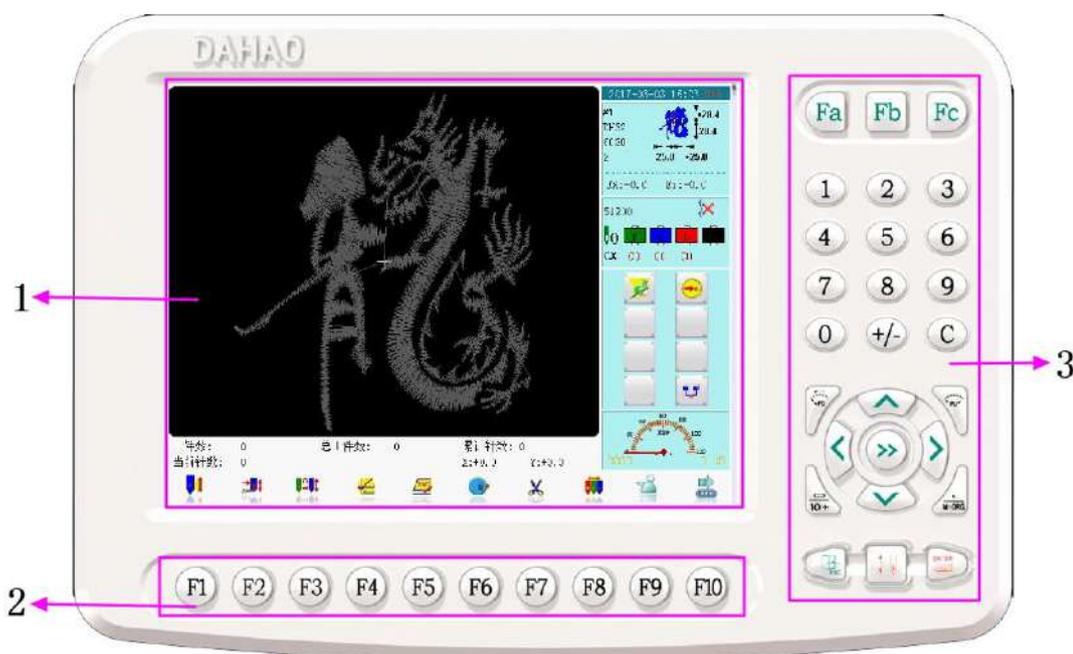
USB disk features plug-in direction. Users should avoid plugging out during writing or

loading data, because it may result in loss of data. We highly recommend users to check the data integrity on the computer before use.

Note: During the formatting process of USB disk, sudden power lost or plugging out may damage the USB disk.

2.2 Instructions of Control Panel

The keys on the keyboard can be used along with LCD. If you want to operate any menu item on the LCD, just press corresponding function key on the keyboard. The status of that key will be shown on the screen.



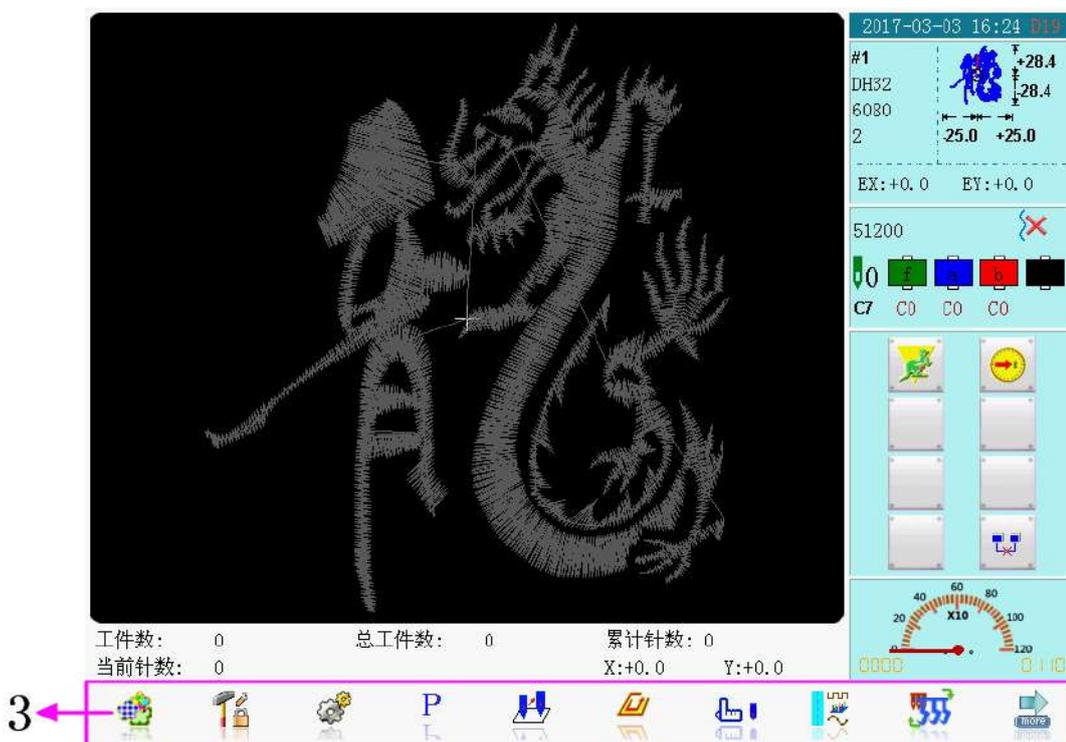
No.	Name	Description
1	LCD	This area displays the operation interface.
2	Function Selection	Press the function keys within this area to select functions. (Note: If you press the key twice without interruption by any other operation, the system will enter or exit the corresponding function in the main screen area, except the page key.)
3	+/- Shift	Select negative or positive number.
3	Assistant Operations	Include such operations like pattern origin, needle stop at down position, start elsewhere, sequin, quilting, special embroidery
3	Task Shift	If user opens several interfaces, use this key to shift among these interfaces in order.
3	Speed Adjustment	Press  /  to reduce or increase the current embroidering speed respectively.



No.	Name	Description
3	Manual Frame Movement	Operate by pressing direction keys. Combination of direction keys is permitted during manual movement (press the nearby keys to move the frame along 45 degree of the included angle between two directions).
3	Manual Frame-moving Speed Shift	Press this key to shift between high speed () and low speed ()
3	Confirm	Press this key to confirm certain operation.
3	Confirm/Release Embroidery	Under ready status, user can make various preparations, such as selecting pattern for embroidery, setting pattern parameters, etc. before confirmation. Then press this key to change from ready status () into confirmation status (). Or, under confirmation status, user can pull the bar at any time to start embroidery. When machine stops, press this key to releast the confirmation status and the system changes from confirmation status () into ready status ().
3	Exit	Press this key to exit the current operation.
3	Page	Press this key to turn pages.
3	Number Keys	Used to select menu item or set parameters.

2.3 Instructions of Main Screen

Note: press  to shift between the following two pages.



No.	Display	Name	Description	Reference
1		Real Time Tracking	Stitch forms or patterns are displayed in this area.	
2		Current Stitch Information	The current stitch information is displayed.	
4		Pattern Information	Information related to the embroidered pattern is displayed.	

No.	Display	Name	Description	Reference
5		Color-changing Order and Current Needle Position		
6		Machine Status Information (in the order of left to right, top to bottom)	Frame-moving speed (low speed  , high speed  ; press  to make shift)	
			Main shaft status (running  , stop in position  , not stop in position )	
			Embroidery status (thread breakage  , end of embroidery  , color-changing  , jump  , pull bar to stop )	
			Cyclic embroidery  , none cyclic embroidery (blank)	
			Assistant embroidery status/flat embroidery/special embroidery (flat embroidery  , sequin  , etc.)	
			Start elsewhere 	
			Assistant embroidery mode 	
			Network status (disconnected  , connected  , successful register )	
7		Main Shaft Rotation Speed	The set rotation speed and the actual rotation speed of the main shaft is displayed.	
3		Main shaft manual adjustment	If the main shaft fails to stop in position after machine stops  , press this key and the main shaft will arrive in	

No.	Display	Name	Description	Reference
			position  .	
3		Go to stop point	When the machine stops, press the key “Manual Frame-moving” to move the frame (e.g. in case of patching). Then press this key and the frame will automatically return to the stop point of the current design.	
3		Go to start point	When the machine stops, press it to have the frame automatically return to the start point of the current design.	Chapter 6
3		Machine parameter management	Press this key to enter into the interface for machine parameter setting and operations.	Chapter 5
3		Disk management	Press this key to enter disk management interface, for operations of floppy disk and USB.	Chapter 3
3		Pattern management	Press this key to enter into pattern management interface, to select pattern for embroidery, input pattern to memory, display pattern, generate pattern, operate letter pattern, etc.	Chapter 4
3		Assistant embroidery operations	Operations like pattern origin, needle stop at down position, start elsewhere, sequin, quilting, special embroidery, etc.	
3		Set color changing order	When main shaft stops in position  , press this key; after that, system goes to the color-changing order menu, press relative number to act color-changing.	Chapter 7
3		Thread trimming	After machine stops, user can press this key to select trimming upper thread or trimming bobbin thread.	



Chapter 2 Operation Guide

No.	Display	Name	Description	Reference
3		Manual color-changing manual start	In this status, press related needle position key to select a position. Pull bar to start embroidering. When meeting the color-changing code, system stops the machine automatically and displays  . Then you should act manual color-changing. Input the position you need, pull bar to start embroidering (manual start).	
		Auto color-changing manual start	If you set machine to auto color-changing, you should first set needle color-changing order (press  in the main screen). During embroidery, no matter where the current needle locates, system will act color-changing according to this order. When you meet color-changing code, machine will stop automatically and change to the needle position that already has been set. If you set auto start, machine will start automatically; if you set to manual start, pull bar to start.	
		Auto color-changing auto start		
3		Normal embroidery	System is now in normal embroidery status. When you pull bar to start embroidery, the main shaft rotates and frame moves along the pattern trace. Pull bar to go back, and machine will idle back at low speed. When machine stops, press this key to shift to low speed idling  .	

No.	Display	Name	Description	Reference
		Low-speed Idling	System is now in high speed idling status. When you pull bar to start embroidery, main shaft will not rotate and the frame will move along the pattern trace. When you pull bar to go back, main shaft will not rotate and the frame will move back along the pattern trace. When machine stops, press this key to change to high-speed idling status  .	
		High speed idling	System is now in high speed idling status. Pull bar but main shaft and frame don't move and stitch number increases; pull bar to stop, the frame goes to the real position of the current stitch. Pull bar to back, main shaft and frame don't move. Stitch number decreases as well. Pull bar to stop, the frame goes back to the real position of current stitch. When machine stops, press this key to change to Embroidery Status  .	
3		Embroidery preparation status	In embroidery preparation status, you can make various preparations, such as to select pattern, set parameter, etc. Press this key and confirm, then machine status is changed from preparation status  to confirmation status  .	
		Embroidery confirmation status (embroidery can be cancelled)	In embroidery confirmation status, you can pull bar to embroider. When machine stops, press this key to confirm to cancel confirmation status  and return to preparation status  .	
3		Change machine head	Press this key to enter interface for manually changing machine head and color-changing.	

No.	Display	Name	Description	Reference
3		Special embroidery mode	Press this key to enter interface for manually shifting special embroidery.	
3		Other assistant management	Press this key to enter other auxilliary management interfaces, like clock setting and help.	Chapter 6
3		Positioning idling	Press this key to enter operation interface of positioning idling.	Chapter 7
3		Pattern border operation	Press this key to enter pattern border operation interface.	Chapter 7
3		Change design direction	Press this key to shift the pattern direction.	

2.4 Notes on Menu Item Status

If one menu item is labeled with the mark “” or “”, this menu item can not be accessed and modified. On the contrary, if one menu item is labeled with the mark “” or “”, this menu item can be accessed and modified. If there is a “”, then this menu item can be modified only if the user relieves the password first.

2.5 How to Input Number, Letter and Symbol

For some menu items, press the key “” to enter setting interface (optional), press “” to shift options, press “” to confirm.

At inputting number, press “” to input radix point, press “+/-” to enter negative number. If there are several digits or letters on one key, you can press the key continuously until you get the number or letter you want. For example, press ghi3 trice, then you can get letter “I”. “” is used for shifting capital letters and small letters. “” is used for deleting the last letter you typed in.

2.6 How to Move Cursor

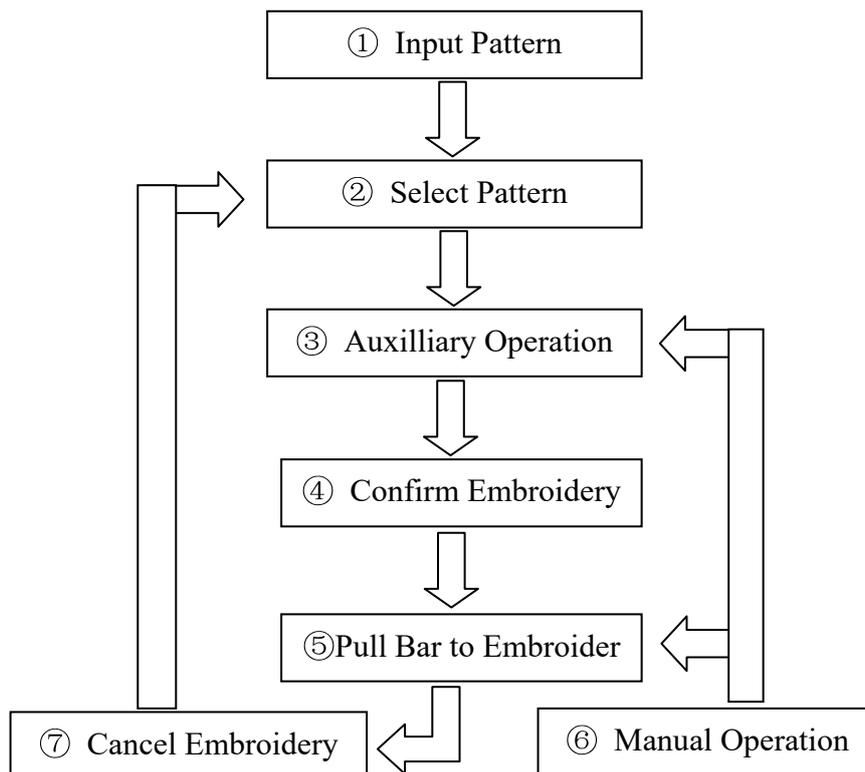
The cursor of this controller is displayed as “”. You can press “” or



corresponding number keys to move the cursor to the intended item. Press “↑” or “↓” for a while, the cursor will move consecutively among each item of the present operation interface.

2.7 Basic Embroidery Procedure

The machine embroiders based on the patterns in its memory. The following is the basic procedure of embroidery.



A. Input Pattern

User can input pattern through network, floppy disk or USB disk. Only under  status, can user transmit patterns by PC via network. For USB disk operation (including floppy disk), press  in the main screen to enter the “USB disk management” interface. You can also input patterns by pressing “” under the pattern management interface.

B. Select Pattern

If the pattern management interface is not opened, press  in the main interface to enter it. If the interface is opened but the current interface is about another function, press the blue task shift key on the panel to enter the pattern management interface. Only under the status of “”, can user choose pattern for embroidery.



Chapter 2 Operation Guide

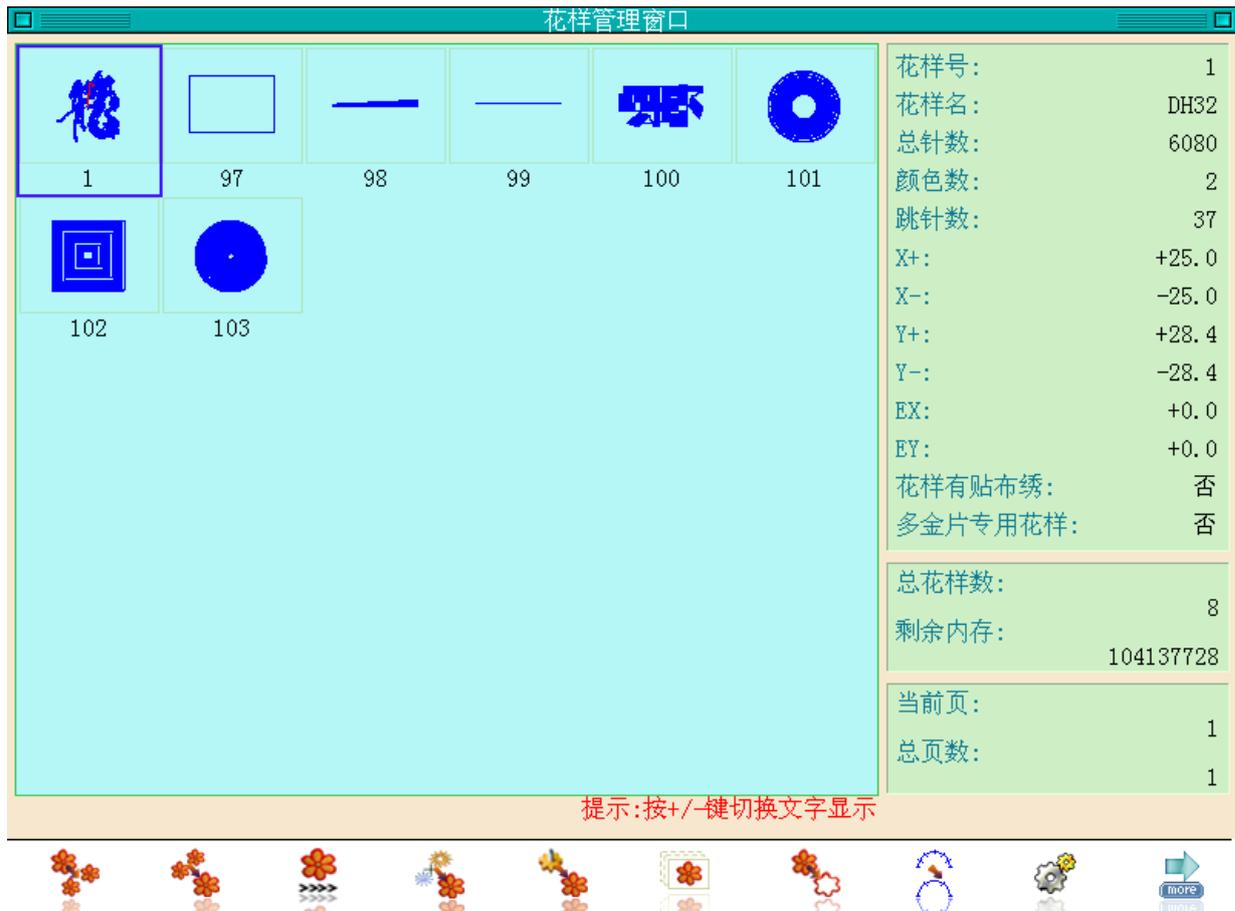
1. After entering pattern management interface, press “ ” to select the intended pattern for embroidery and then press (or).

花样管理窗口

1	97	98	99	100	101
102	103				

花样号:	1
花样名:	DH32
总针数:	6080
颜色数:	2
跳针数:	37
X+:	+25.0
X-:	-25.0
Y+:	+28.4
Y-:	-28.4
EX:	+0.0
EY:	+0.0
花样有贴布绣:	否
多金片专用花样:	否
总花样数:	8
剩余内存:	104137728
当前页:	1
总页数:	1

提示:按+/-键切换文字显示



2. If the pattern's starting point has been saved, the hint "Move frame to start point" will display after entering the main screen. Press "" and the frame will automatically return to the start point.

C. Assistant Operation

After selecting the pattern for embroidery, the system will enter the main interface, where user can make the assistant operation as needed before embroidery.

1. Set repetition, rotation, scaling and color-changing – press in order   to enter the operation interface of pattern parameter and color-changing order.
2. Set applique embroidery -  to enter pattern management interface, where user can press  to set applique following the hints.
3. Check the border, move freely along the border, embroider along the boarder, embroider a cross, embroider a line, embroider the pattern outline – press  to enter pattern border interface.
4. Automatically search pattern origin – press  to enter assistant embroidery



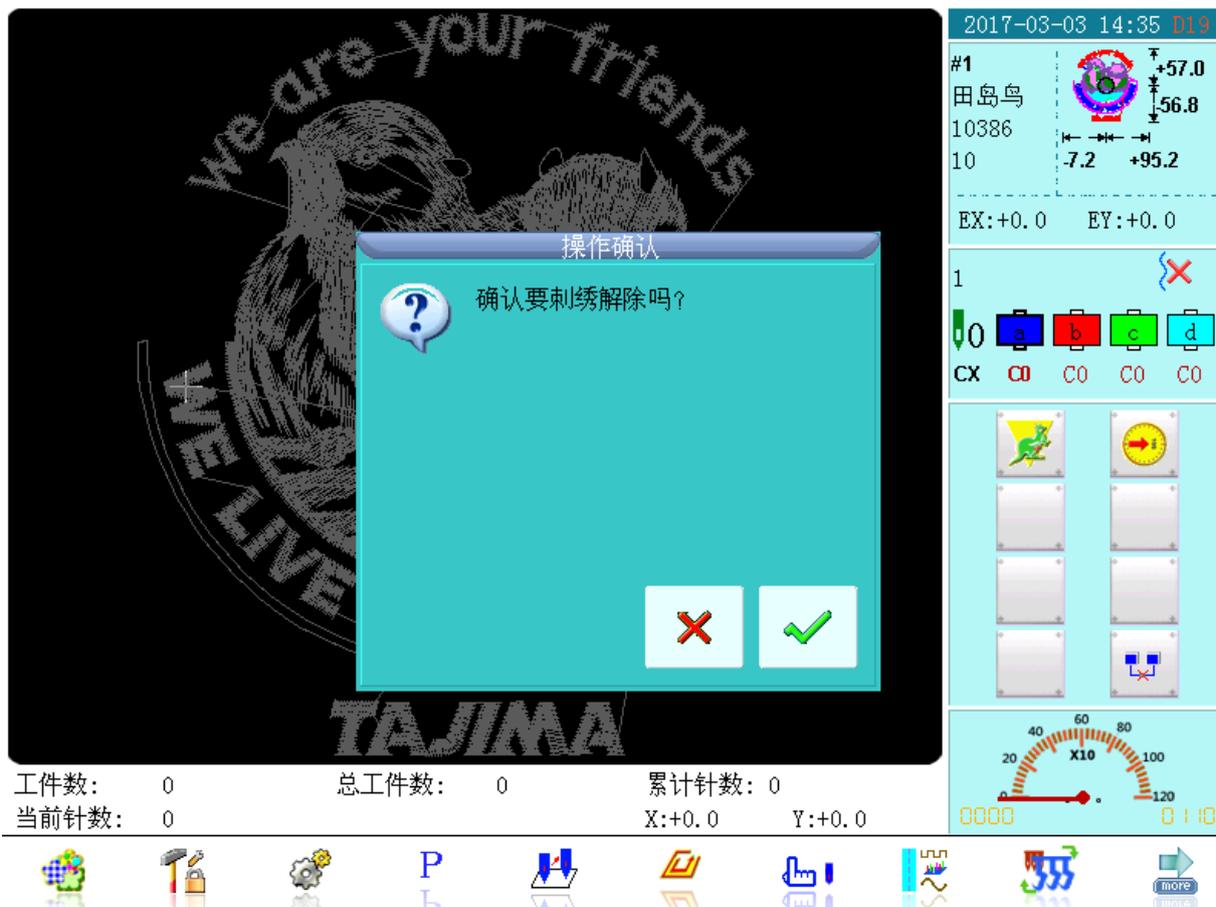
interface. Please note: this function is to locate the pattern in the center of the frame as preset by soft limit. To set soft limit area, press  to enter other assistant management operation.

5. Save pattern origin – in embroidery confirmation status, press  to enter assistant embroidery interface. Please note: before using this function, user need preset the origin of the frame. To set the frame origin, press  to enter other assistant management operation.

6. Set cyclic embroidery – press  to enter system parameter management interface. Move the cursor to “Assistant Embroidery Parameter” and select parameter B02 for parameter setting of cyclic embroidery.

D. Embroidery Confirmation

1. Press  after finishing assistant operation. Then press “” at the appearance of the following hint window. Then  (embroidery release) will change into  (embroidery confirmation), which indicates that the system has enter embroidery confirmation status.



If user press “  ”, the system will remain in the embroidery release status. At this time, even though user pulls the bar, the machine will not work and the system will display the hint for user to confirm the embroidery.

2. Start elsewhere

After confirmation of embroidery, if needed, press  to set another start point following the hint. (Note: when embroidery starts, this setting is invalid.)

3. Set color-changing and starting method

Under the main interface, press the position where the icon  (or , ) locates to shift among  (auto color-changing, auto start),  (auto color-changing, manual start),  (manual color-changing, manual start).

4. Set normal embroidery or idling

Under the main interface, press the position where the icon  (or ) locates to shift among  (normal embroidery),  (low-speed idling) and .



(high-speed idling).

E. Pull the Bar to Embroider

Operation bar (embroidery bar) is under the table.

1. Stop Status:

Pull the bar to right to start embroidery (including low-speed idling and high-speed idling)

Pull the bar to left to return (including low-speed idling and high-speed idling)

2. Running Status

At normal embroidery, pulling the bar to the right end is to embroider slowly and releasing the bar will resume the normal speed.

Pulling the bar to left is to stop embroidery (including low-speed idling and high-speed idling).

F. Manual Operation

1. Manual trimming

When the machine stops, press  in the main screen. Follow the prompt and select a trimming mode (“trim upper & bobbin” or “trim bobbin”). Then press “” to trim, or press “” to exit trimming operation.

2. Manual frame-moving

When the machine stops, press the keys (“” is the speed key for manual frame-moving, to shift between  (high speed) and  (low speed).

3. Clear the frame coordinates

When the machine stops, press “” then press “” to clear the XY displacements displayed in the main screen. The function can be used with manual frame-moving.

4. Manual color-changing

When the machine stops, you may type in needle position number in the main screen. Then the head will move to the corresponding needle position automatically.

5. Turn the Main Shaft to 100° Manually

Usually the main shaft is needed to stop at 100° at color-changing, frame-moving and beginning embroidery. The user can manually turn the main shaft to 100° when it doesn't reach there. Press “” in the main screen and then choose “” in the followed prompt to carry out the function.

After the operation, the icon  (main shaft not in the right position) will be replaced by  (main shaft in the right position).

6. Return to start point

In the main screen press  and choose “” in the followed prompt. Then the frame will return to the start point.

7. Return to stop point

Press  in the main screen and choose “” in the followed prompt. Then the frame will return to the stop point.

8. Positioning idling

Use this function after embroidery confirmation. Positioning idling enables the machine to move to the designated position according to the user's need without embroidery. Press  in the main screen then the user can set the needle number, color-changing code, idling direction and stop code for forward or backward positioning idling.

9. Needle stops at down position

This function is intended to quilt embroidering at replacing the fabric. Press  in the main screen and then the option “needle stops down”. When pressing “”, the needle will prick into the embroidery cloth and a prompt will appear. After releasing the cloth (cloth has to be separated from the frame), move the frame to the designated position and press “”. After this operation, the needle is still down. When the cloth is placed on the frame again, press  to turn the main shaft to 100° manually.

10. Manual operation of pneumatic frame, sequin and special embroidery

This function is functional for the machines that are equipped with pneumatic frame, sequin and special embroidery devices. For such machines, press  and then select the corresponding function item to enter the operation menu.

G. Embroidery Release

When the machine stops, press  to display the hint window. Choose “” to change  (embroidery confirmation) into  (embroidery release).



2.8 Normal Embroidery, Returning and Patch Embroidery

In embroidery confirmation status (the icon  appears), push the switch of machine head (which need perform normal embroidery) to the normal embroidery mode, and push the switch of machine head that needn't embroider to the down position, and then pull the operation bar to right and release it to let the machine start normal embroidery. (When you pull the bar to the right end and don't release it, the machine will embroider at low speed.) During the embroidery, pull the bar to left, the machine will stop.

After the machine stops, pull the operation bar to left and the frame will return to its last position along original path. Pull the bar one time, the frame returns one stitch. Pull the bar continuously and the frame will return one stitch after another continuously. After the frame returns 10 stitches continuously, the frame can return continuously even when you release the bar. (This may be different for different machine types). When the frame returns continuously, pull the bar to left again, the frame will stop returning.

The aim for returning is usually to perform patch embroidery. After the returning stops, push the switch on machine head that need perform patch embroidery to go to the patch mode, and then pull the operation bar to right and the machine head will start patch embroidery while other heads remain inactive. When the frame goes to the point from which the frame returns, other heads whose switches are in normal embroidering mode will start to embroider.

2.9 Relationship between Normal Embroidery, Idling and Positioning

Idling

Functions like idling, returning, etc. are intended for the convenience of patching. Low-speed idling, high-speed idling or positioning idling can be used as needed in embroidery. In the status of idling, the returning function also has low-speed idling returning, high-speed idling returning or positioning idling returning.

In the main screen, you may press “” (or “”, “”) to shift among “” (normal embroidery), “” (low-speed idling) and “” (high-speed idling).

After user sets low-speed idling , the main shaft remains inactive when user pulls the bar for normal embroidery, but the frame runs forward along the stitch trace. When user pulls bar for returning, the main shaft keeps inactive, but the frame returns along the stitch trace.

After user sets high-speed idling , the main shaft and frame remain inactive, the stitch number increases. After user pulls the bar for halting, the frame moves directly to the actual position of the current stitch number. When user pulls bar for returning, the main shaft and frame keep inactive, but the stitch number decreases. After user pulls the bar for halting, the frame returns directly to the actual position of the current stitch number.



The positioning idling can move the frame directly forward (or backward) to a designated position, or to the latest color-change position, or even to the latest stop-code position. In the main screen press  and the user can select forward/backward positioning idling by stitche number, color change code or stop code. After the system returns to the main screen, user can pull the bar forward /backward to complete the positioning idling.

2.10 Embroidery Operation Bar and Turn Shaft Button

A. Embroidery operation bar (embroidery bar or operation bar, under the table)

Stop Status:

Pull the bar to right to start embroidery (including low-speed idling and high-speed idling)

Pull the bar to left to return (including low-speed idling and high-speed idling)

Running Status:

Pulling the bar to the right end is to embroider slowly and releasing the bar will resume the normal speed.

Pulling the bar to left is to stop embroidery.

B. Turn shaft button (on the operation bar case, at right side under the table)

Press the button to make the main shaft rotate one circle and stop at $100 \pm 2.5^\circ$.

2.11 Thread Breakage Detection and Patch Embroidery Switch

Based on different working principles, thread-breakage detection devices are divided into three types: thread take-up spring type, thread winding wheel (chopper wheel) type and mixed type.

For thread take-up spring type, it warns thread-breakage by detecting connection of take-up spring and contact point. When thread breaks, the spring will close to the contact point. In normal condition, this detection device reacts sensitively to upper thread breakage, but can hardly detect bobbin thread run-out. In case you change the embroidery thread, or thread tension changes, you need to adjust spring pressure between the take-up spring and contact point. When the spring pressure is too large, there will be False Positive; when the spring pressure is too small, there will be False Negative.

For thread winding wheel type, it judges thread-breakage by checking the winding wheel angle. It reacts very sensitively in case of upper thread breakage; in most cases of bobbin thread run-out, the consumption of upper thread will reduce, as a result, system will judge by statistic method and send out warning. Though it can almost avoid False Negative, it is not as sensitive as the spring-type.

For the mixed type method, these two detection methods can complement each other with their advantages, which results in sensitive and stabilized detecting effect.

No matter which method you use, there is one switch and one status light on each machine head. There are three positions to switch but only two positions can be locked. When you switch to the down position, status light does not shine, which means the head stops



embroidering. When you switch to the middle, status light is green, which means the head is now in normal embroidery. In case of thread-breakage, machine stops and status light on that particular head turns red. System automatically changes to patching mode on that head. If you want to set a single head to patching mode manually, you can switch to the upper position, which can not be locked. When you release the switch, it returns to the middle. Meanwhile, status light on this head will turn red to indicate that patching mode is available on this head.

2.12 Working Status

The machine has three working statuses:

1. Preparation status  - preset parameters; choose embroidery patterns and perform other preparation works;
2. Embroidery confirmation status  - confirm the parameter settings to enter the quasi-running status;
3. Embroidery running status - embroider the pattern.

How to shift among the above working statuses?

In preparation status ( is displayed), after selecting embroidery pattern from the memory and setting the parameters, user needs press “” and “” to enter embroidery confirmation status ( is displayed). User should pull the embroidery bar to right to embroider, which means the machine is in embroidery running status ( is displayed).

In embroidery running status ( is displayed), pull the bar to left to stop, and now the machine is in embroidery confirmation status (pull the bar to right again and the machine goes into embroidery running status).

In embroidery confirmation status ( is displayed), first press “” and then press “” to release embroidery confirmation status. Now the machine enters preparation status ( is displayed).



Chapter 3 Disk Management

In disk management interface, users can input the pattern data from disk to machine, and vice versa; meanwhile, users can conduct some common disk managing actions, like erasing file or catalogue, formatting disk, etc. Floppy disk (external device) and USB disk are both supported. Users can save pattern data based on different types. The system recognizes formats like DOS, FDR and ZSK. However, FDR and ZSK files are read only and cannot be deleted, formatted and outputted. Pattern formats like DSB, DST and DSZ can be read. For data output, pattern data will be saved as DSB format.

3.1 Disk Selection

Since the system supports more than one storage device, please choose the target disk.

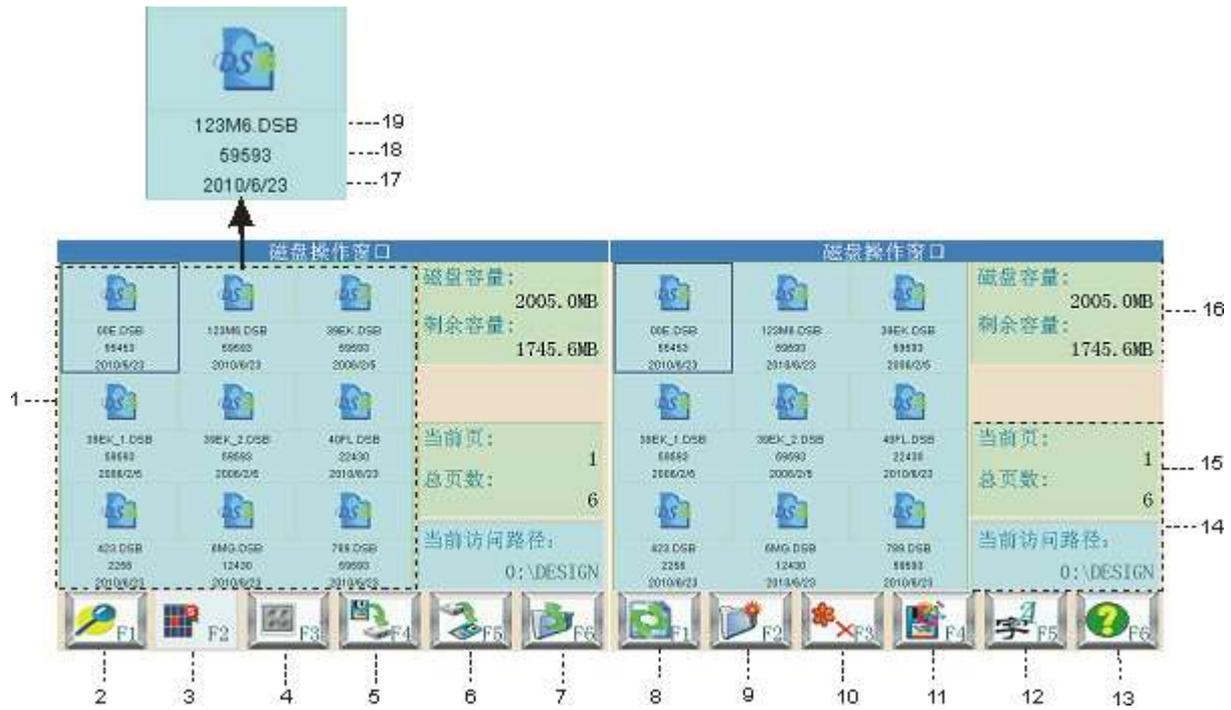
A. Press  in the main screen

B. System will display current disks. Press the icon of the intended disk and press “ ” or  to quit.



In this selection window, all the storage devices will be displayed. Their information includes the icons, words and numbers. The icon is the device type.  means USB disk and  means floppy disk. Words mean volume label (if there is no volume label, default words will be used) and the numbers within the brackets mean the digital ID of the disk.

C. Enter Disk Management Interface



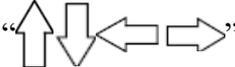
Press to turn page; press to turn the page of patterns.

No.	Icon	Name	Description
1		File List	Display the pattern files and folders of the disk in icons. It's used to select files
2		Pattern Preview	Display the shape of selected pattern and its information.
3		Single/Multiple Selection	Shift between single-selection and multiple-selection.
4		Select All	Select all items with the current directory (only available under multiple-selection mode).
5		Pattern Input	Copy pattern from disk to memory
6		Pattern Output	Copy pattern from memory to disk
7		Previous Directory	Return to the previous directory
8		Refresh Disk	Refresh current disk directory
9		Create New Directory	Create new directory within the disk
10		File Deletion	Delete the seleted file



No.	Icon	Name	Description
11		Disk Formatting	Format current disk
12		Letter Embroidery	Conduct letter embroidery
13		Help	Display the online help at the disk management interface.
14		Current Browse Path	
15		Page Information	Display the current page and total page number
16		Memory Capacity	Display the memory capacity and the remaining space
17		Pattern Date	Only pattern file can be displayed
18		Pattern Stitch Number	Display the stitich number (only available for pattern file)
19		Object Name	Pattern file name or directory name
20		Object Icon	Icon represents the file type:  : directory  : DSB pattern  : DST pattern

3.2 Pattern Preview

1. In the disk management interface, press “” to select the pattern for preview.



Pattern files and folders are shown by icon in the list. Each page contains 20 objects. If the objects are more than 20 in current directory, please turn to another page to look for other patterns. You can also use   to find pattern in other pages. The selected object has a blue frame.

2. Press  to display as follows:



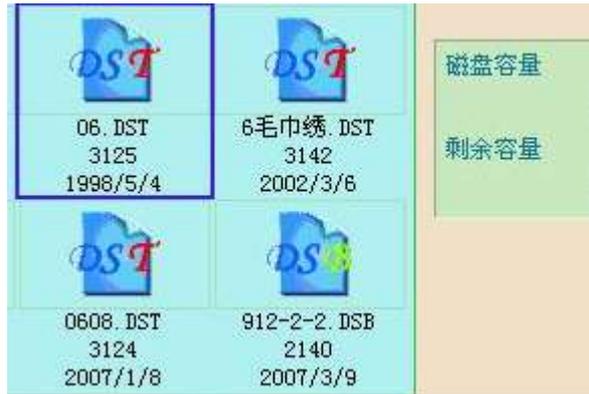
The system loads the data from the disk and displays the pattern's image according to a certain ratio. At the same time the pattern's peripheral information and color-changing number will be displayed.

Note: User can select more than one pattern for preview. For selecting more than one pattern, please refer to chapter 3.3.

3.3 Single/Multiple Selection

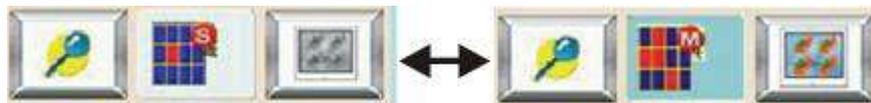
Before preview, input and deletion of patterns, the target pattern has to be selected first. The user can select one object or several objects at one time to improve efficiency.

1. Press “   ” to select objects



By default setting, the first object in the page is selected while others are not selected. Press “” to select, and then the icon and word information of the selected pattern will be showed within the blue square.

2. Single/multiple selection switch



When user selects the objects, the system is in single or multi-selection mode. In single-selection mode, only one object can be selected and selecting another object will automatically cancel the last selection. Press the switch key to shift between the two modes. In multi-selection mode, user can select several objects. In the single selection mode the switch key displays as , while in the multi-selection mode it displays as .

3. Select several objects for operation in order

In multiple-selection mode, user can press “” to select the object and then press “” to confirm the selection, and repeat the same operation to make multiple selections. If user need cancel any selection, move to the selected object and press “” again to cancel.



4. Press  to select all

The key is effective only in the multi-selection mode, where pressing this key will have all the objects within the directory selected.

3.4 Pattern Input

To input pattern data from disk to the machine's memory, the user has to select files from one or more disks first, and then input the pattern number and name for the file to be saved.

1. Select one or more files in the disk;

2. Press  and the system will require user to input the pattern number and name in the memory;

3. Input the pattern number and name in the memory.



The system provides the minimum available pattern number as the default value, when user enters the interface for inputting the pattern number and name in the memory. User can use the keyboard to change the value. When several patterns are inputted at one time, the user can only input the number of the first pattern.

At modifying the pattern number and name, the system will first change the pattern number. After the modification, press “” and the system will automatically enter the item for changing pattern name. Please input the name following the hints.

4. Press “” and the system will save the pattern data in memory.

3.5 Pattern Output

User can output pattern data from memory to the current disk.

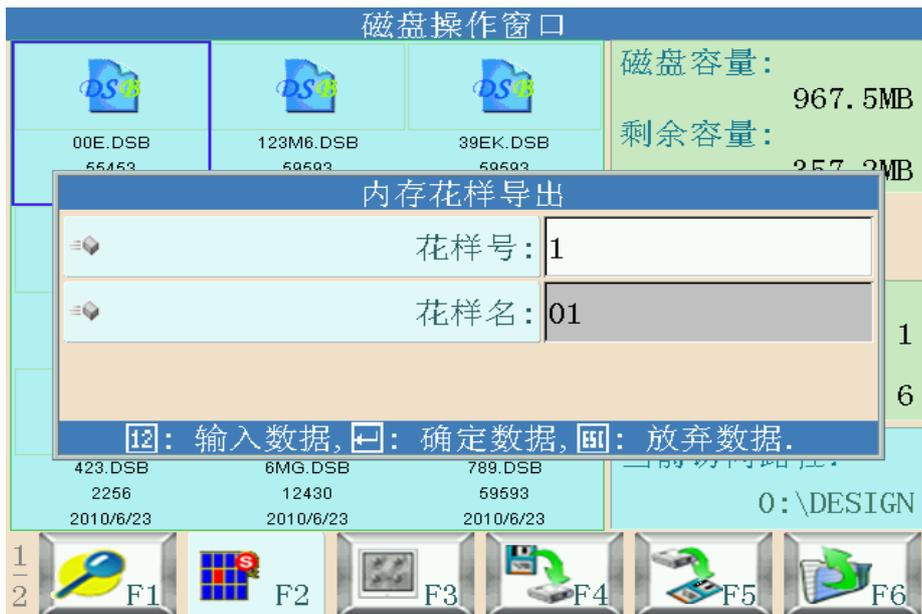
1. Press

2. Select the pattern for output



The system displays the list of patterns saved in memory. User can select patterns for output, and then press “”.

3. Input pattern number and name in the disk



System uses the pattern name in memory as the default name in disk. User can use the keyboard to change the corresponding value.



The method of modification is the same as that in “Pattern Input”. User need press “” to save the modification.

4. System will return to disk management interface and refresh the file list of the current directory. At any previous step, user can press “” to quit.

3.6 Directory Operation

1. Enter the directory

Select the directory and press “”. System reads the item list of the directory and refreshes the interface.

2. Return to previous directory

Press “” and system will return to previous directory and refresh the interface.

3. Create new directory

Press “” and system will display a dialogue box for user to input the name for the new directory. Press “” to create the new directory and system will refresh the current directory list.

3.7 Delete Disk File (Including Pattern File and Directory)

1. Select one or several objects for deletion (See 3.3)

2. Press 

3. System will remind you to confirm the deletion



4. Press “” to delete and press “” to quit.

Note: If user chooses to select the directory for deletion, system will delete all the files and sub-directory in this directory. If a file has the property of “only read” or “disk write-protection”, the file will not be deleted.

3.8 Disk Formatting

1. Select the disk to be formatted (See 3.1)
2. Press “”



System will display the disk formatting box, where will be displayed the storage information of the current disk, warning information for disk formatting and formatting process bar as well as Start and Return button.

3. Press “”

System will begin to format the disk and show the speed with a process bar. After formatting, the system will display a hint to show formatting success. Press the Return key to return to the disk management interface.

Note: system will format the disk in DOS format.

Chapter 4 Memory Pattern Management

Memory pattern management includes embroidery pattern selecting, settings and transfer and creation.

4.1 Memory Pattern Management Interface and Other Instructions

Press  in the main interface to enter the memory pattern management interface.

The memory pattern management interface includes: pattern display area, information area and function menu area. The pattern image display area can show 9 patterns at most; beyond that, more pages will be needed. The function menu area is used for preview and order setting.





花样管理窗口

			#1 SA7212~1 总针数: 19981 颜色数: 6 跳针数: 12 X+: +169.7 X-: -143.7 Y+: +147.3 Y-: -150.9 EX: +154.8 EY: -103.7 花样有贴布绣: 否 多金片专用花样: 是 总花样数: 11 剩余内存: 16269312				
1	2	3					
4	5	6					
9	10	11					
Pages: 1/2							
2 4							
	11	12		13	14	15	16

花样管理窗口

			#1 SA7212~1 总针数: 19981 颜色数: 6 跳针数: 12 X+: +169.7 X-: -143.7 Y+: +147.3 Y-: -150.9 EX: +154.8 EY: -103.7 花样有贴布绣: 否 多金片专用花样: 是 总花样数: 11 剩余内存: 16269312				
1	2	3					
4	5	6					
9	10	11					
Pages: 1/2							
3 4							
	17	18		19	20	21	22



Press to shift among pages; press to shift page of patterns.

No.	Icon	Name	Description
1		Pattern Amount and Memory Information	Display the total number of patterns and the memory information
2		Pattern Information Display	Display the related information of selected pattern
3		Browse Pattern	Display pattern files in the memory in icon, mainly for the purpose of selection
4		Page Information	Display the current page number and total number of pages
5		Select Pattern	In embroidery preparation status, press this key to enter modification interface of pattern parameters and the pattern will be used for embroidery after confirming such modifications
6		Pattern Preview	This key is used to view the details of the pattern, and to scale up/down, move or analog display the pattern
7		Disk Operation	More disk operation, please see chapter 3
8		Copy Pattern	Press this key to enter pattern copying interface
9		Edit Pattern	See chapter 8, how to edit selected or new pattern



No.	Icon	Name	Description
10		Delete Pattern	Press this key to delete selected pattern
11		Appliqué Pattern Setting	Press this key to enter appliqué pattern setting
12		Satin Stitch Compensation	Set the satin stitch compensation of the memory pattern
13		Edit Combined Pattern	Press this key to enter edit interface of combined pattern
14		Devide Pattern	Separate one pattern into two patterns
15		Integrate Patterns	Combine two patterns into one pattern
16		Generate High-speed Pattern	Press this key to enter interface for generating high-speed pattern
17		Generate Standard Pattern from Combined Pattern	This function is used to generate standard pattern from combined pattern
18		Generate Pattern by Parameters	To generate pattern by embroidery parameters
19		Generate Pattern by Frame-moving	Press this key to enter the interface for generating pattern by frame-moving
20		Generate Outline Pattern from Normal Pattern	Press this key to enter the interface for generating outline pattern from normal pattern
21		Copy Pattern with Varied Stitch Length	Copy pattern according to the set stitch length
22		Pattern Parameter Operation	Press this key to enter pattern parameter operation
23		Input Pattern from PC	Press this key to input pattern from PC
24		Letter Embroidery	Press this key to enter letter embroidery operation (See chapter 9)
25		Help	Display the online help for pattern management interface
26		Clear All Patterns	Press this key to clear all selected patterns from memory

See the following specifications for each operation. Press the key “” to return to the memory pattern management menu.



4.2 Select One or Several Patterns

Before any operation on patterns, you must select the target patterns. You can select one pattern or select several patterns at a time to improve efficiency.

1. Press “” to select targets

By default, the first item in the page is the selected one. Press “” key or directly use the pattern number key to select others. The icon and words of the selected target appears within the blue squares.

During selection, if system is in multi-selection mode, user can select several objects.

2. Select several patterns in order

In multiple-selection mode, user can press “” or the pattern number key to select target item and press “” to confirm selection. Repeat the process to select more. Or you can press “” to cancel the selection.

4.3 Select Pattern for Embroidery

1. Select a new pattern for embroidery and make sure system is in preparation status .
2. In the main interface, press  to enter memory pattern management interface.
3. Select the pattern for operation in the pattern image area of the memory pattern management interface.
4. Press “” to enter modification interface of memory pattern parameter setting.

There are 30 parameters relating to the pattern, some of them can only be modified after the administrator password is released. The setting method of it is the same as other parameter setting procedure. Please refer to 5.2 for details.

5. After changing the pattern parameter, press “” to confirm the pattern for embroidery. If the operation is completed, system will close the memory pattern screen to return to the main screen.

4.4 Pattern Preview

The selected pattern can be previewed in the memory pattern preview interface according to the preset way, to check details of the pattern.



No.	Icon	Name	Description
1		Pattern Preview Area	Display the selected pattern on the patterned way and speed.
2		Pattern Information	Display the pattern information.
3		Help	Display the help menu.
4		Redraw	Display the selected pattern again.
5		Single Step Display	Draw the pattern by single steps.
6		Draw/Pause Switch	is for switching between drawing

No.	Icon	Name	Description
			pattern and pausing the drawing.
7		Speed Down	Decelerate the display.
8		Speed Up	Accelerate the display.
9		Window Display	Display the pattern to the full size in the pattern preview area.
10		Real Size Display	Display the pattern in its actual size in the pattern preview area.
11		Scale Down	Scale down the pattern picture in the pattern preview area.
12		Scale Up	Scale up the pattern picture in the pattern preview area.

1. Press in the main interface to enter the memory pattern management interface.
2. Select a pattern in the pattern image area of the memory pattern management screen.
3. Press in the memory pattern interface to open pattern preview interface.
4. Press in the pattern preview area to control the pattern size and press “” to control the pattern display position. Press to locate the pattern to the center. Press to control the pattern display speed. Press to control the pattern display and pause. Press to automatically switch to halt for single step pattern display. And press to resume normal display. Press to re-display the selected pattern.

4.5 Copy Memory Pattern

1. Press in the main menu to enter the memory pattern management interface.
2. Select intended pattern in the pattern image area of the memory pattern management interface.
3. In the memory pattern management interface, press “” to enter the operation interface for copying memory pattern. At this time, system will automatically provide the available smallest pattern number and default pattern name. If the user doesn't want to change them, go to step 6 directly.



4. If new pattern number is needed, input the new pattern number, and press “” to confirm the change.



5. System will automatically enter pattern name modification area. If user wants to change it, input the new pattern name.



- Press “” to confirm the change and conduct the copying operation, or press “” to cancel the copying operation, system will return to the pattern operation selection interface.

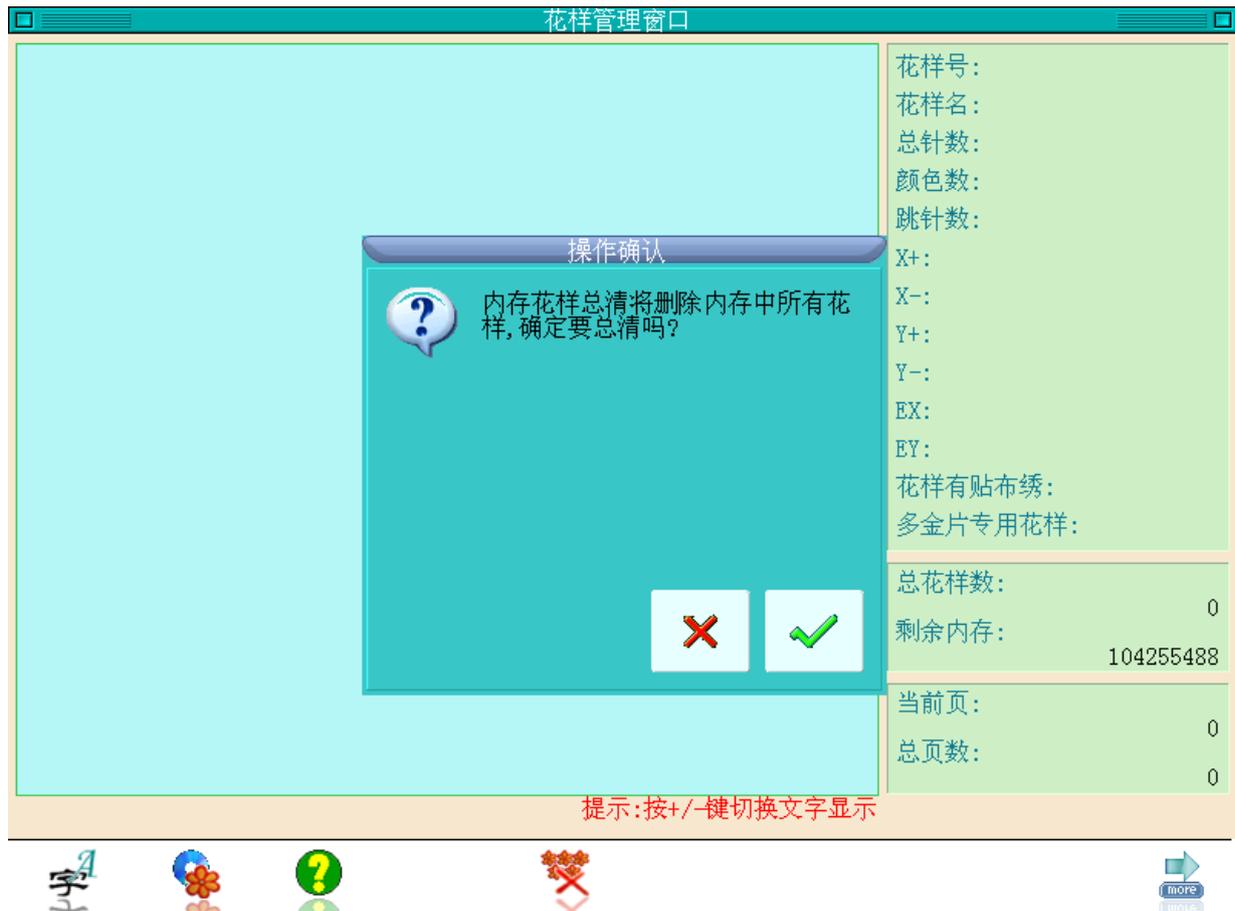
4.6 Delete Memory Pattern

This operation is to delete one or several pattern from the machine.

- Press  in the main interface to enter memory pattern management interface.
- Select patterns for deletion. User can select one or several patterns.
- Press  to enter the operation interface for deleting memory pattern.



If you want to clear all the memory patterns, press  to enter the operation interface for clearing all memory patterns.



4. Press “” to delete pattern or press “” to give up pattern deleting operation, system will return to the pattern operation selection interface.

4.7 Applique Pattern Setting

System has two ways for appliqué embroidery: manual moving frame out and automatic moving frame out.

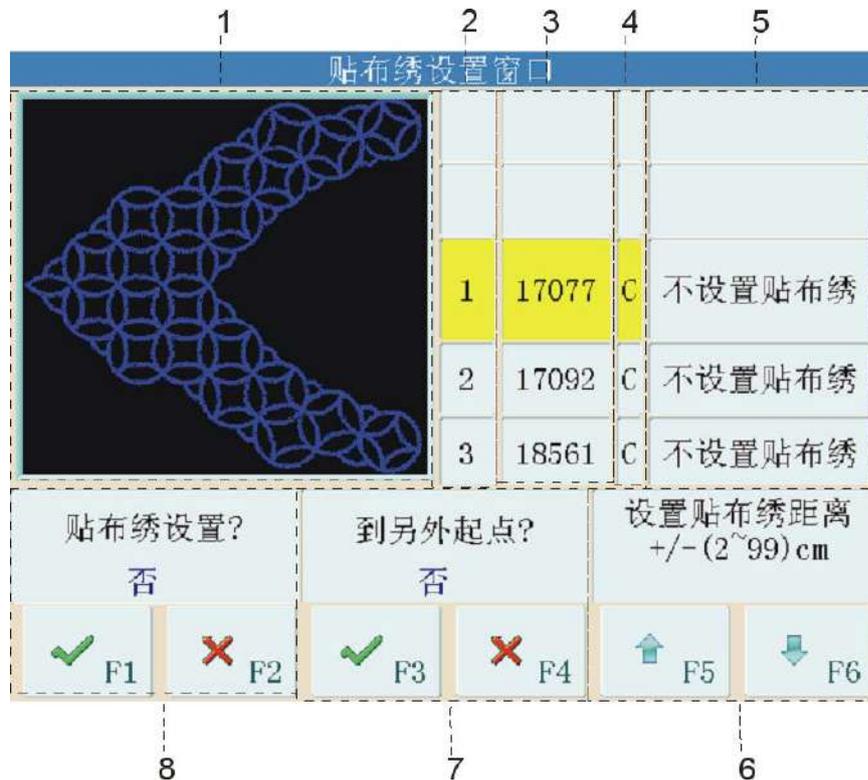
Manual moving frame out: when meeting the stop code, the machine will stop automatically. User needs move the frame to the proper position for appliqué with the manual frame-moving button. Then you may press  and “” to return to the stop point. At last pull the bar for embroidery.

Automatic moving frame out has two ways: by moving frame to the offset point or by setting the moving distance. The operation is as follows: firstly, set appliqué embroidery function for the pattern. Then, when reaching the appliqué point, the machine moves to the offset point (which has to be set) or move out according to the set distance. After appliqué, pull the bar and the machine will automatically return to the stop point to continue embroidery.

The following is how to set appliqué for the pattern:



1. Press  in the main interface, to enter memory pattern management interface.
2. Select the target pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter the operation interface for setting appliqué for the pattern as below:



No.	Icon	Name	Description
1		Pattern display area	Real-time display of the pattern when machine embroiders to the appliqué point
2		Sequence number list	Show the sequence number of the position to set appliqué point.
3		Stitch number list	Display the stitch number at that position.
4		Type list	The stitch code type C: color-changing code S: stop code
5		Option list	Type of appliqué at this position: 1. No appliqué 2. Set offset position 3. Appliqué distance
6		Frame-out distance	Select the appliqué distance (frame-out): (2cm to 99cm) or (-2cm to -99cm)
7		Whether to go to the	Choose whether to set the offset position



No.	Icon	Name	Description
		offset position	
8		Appliqué embroidery selecting list	Choose whether to set appliqué embroidery.

The pattern display area shows the pattern which is being set with appliqué. After user sets the appliqué position, the pattern will be refreshed and the result will appear directly.

4. Press  to move the list to the position for applique, and then press  in the dialog box, hinting “Set applique?”

5. If user chooses to move the frame out to the offset position, press  in the dialog box, hinting “To Offset position?”. If the frame-out is at the fixed distance, firstly press  in the dialog box, hinting “To Offset position?”, and then press   to set the moving-out distance: (2cm to 99cm) or (-2cm to -99cm).

6. Repeat steps 4 & 5, to set all the appliqué positions of the pattern.

7. Press “” to save the appliqué information or press “” to cancel operation, system will return to the pattern operation selection interface.

4.8 Satin Stitch Compensation

This operation is to adjust the satin stitch width in the pattern according to need.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select the target pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter satin stitch width adjustment interface.



- If user doesn't want to use the default value, press “” to change it with keyboard.
- Input the value of “satin stitch X (Y) compensation” and press “” to confirm.
- Press “” to adjust the satin width and save it as a new pattern or press “” to cancel the adjustment operation, system will return to the pattern operation selection interface.

4.9 Edit Combined Pattern

The combined pattern means a combined group of certain memory patterns (less than 99) after user sets their parameters. The combined pattern is set as automatic continuous embroidery. In the memory pattern management interface, the icon of the combined pattern is

displayed as . To embroider a combined pattern, user needs return to the memory

pattern management interface after creating or editing the combined pattern. If it's already in the embroidery preparation status, user should select the pattern and the system will automatically return to the main interface. Then after embroidery confirmation, user can pull the bar for embroidery. User can also compile the combined pattern into normal pattern by using the edit function, so as to check and embroider the pattern.

- Press  in the main interface, to enter memory pattern management interface.
- To edit the saved combined pattern, user need select that combined pattern first. To create a combined pattern, user need carry out the following operations.
- Press “” to enter operation interface for editing combined pattern.

The serial number indicates how many patterns to form the combined pattern and the



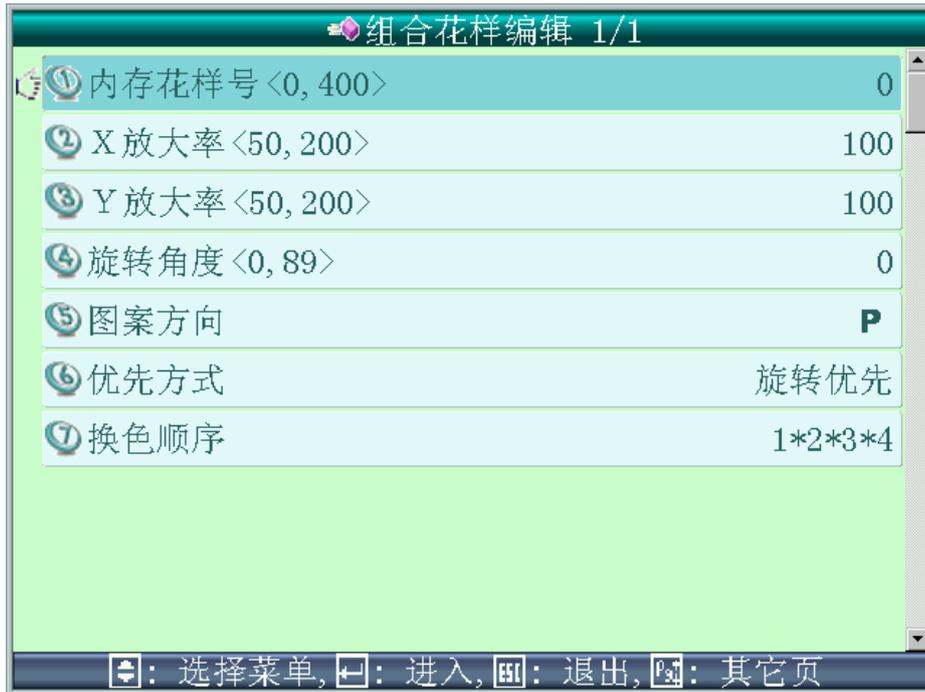
number of currently operated pattern.

4. Set the parameters of the first pattern, including pattern number, scaling ratio, rotating angle, pattern direction and priority mode as well as color-changing order.

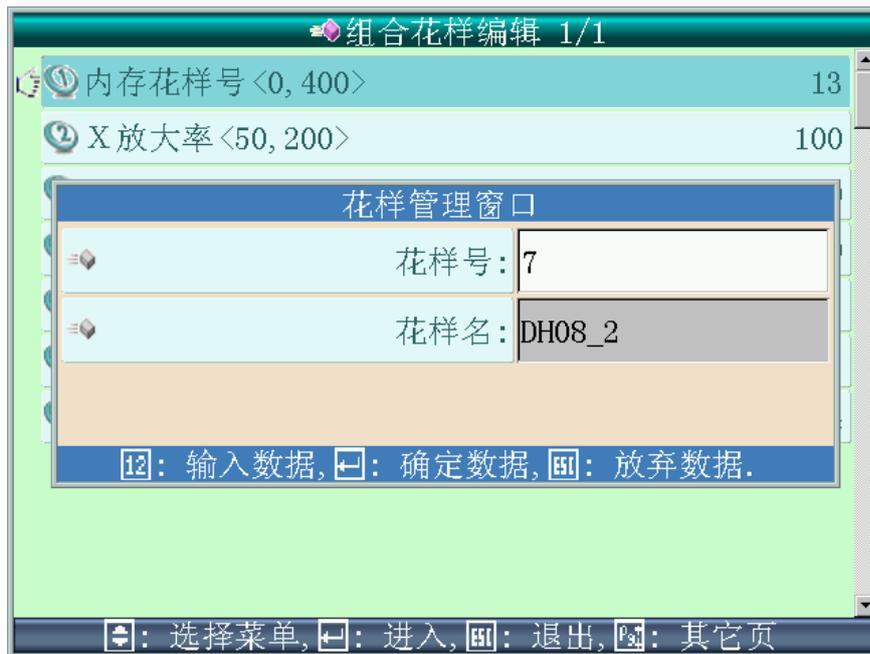
5. Press  to set many patterns to be combined, and press  to return to the

parameter setting of each pattern to be combined.

If the current pattern is not the first pattern in the combined pattern, user should set the interval between it and the first pattern.



6. Press “ ” to save the combined pattern.



7. Input the pattern number and name and press “

4.10 Devide Pattern

This operation is to devide one pattern into two patterns at a pointed stitch.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select the target pattern in the pattern image area of the memory pattern management interface.
3. Press  to enter the interface for deviding pattern.
4. If you do not use the default value, please input the pattern number, pattern name, division stitch number by the keyboard, then press “BECS-D19 User's Manual



5. Press “” to divide the pattern into two new patterns or press “” to cancel the operation, system will return to the pattern operation selection interface.

4.11 Integrate Patterns

This function is to combine two patterns into a new one. The interval between the two patterns is the distance from the end point of the first pattern to the start point of the second pattern.

1. Press  in the main interface, to enter memory pattern management interface.
2. Choose two patterns in pattern selecting area, and press “” to enter the operation interface for integrating patterns. If More than two patterns are selected, there will be a prompt to tell you to reselect.
3. If you don't use the default value, you can use keyboard to change the pattern number, pattern name and X (Y) interval, and then press “” to confirm.



4. Press “” to integrate the patterns or press “” to quit the operation, and system will return to the pattern operation selection interface.

4.12 Generate High-speed Pattern

The function can cut the long stitch form into short ones, which keeps embroidery in consistent high speed.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select the target pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter the operation interface for generating high-speed pattern.
4. If user doesn't use the default value, press “” and change the value by keyboard.
5. Press “” to generate high-speed pattern or press “” to cancel the operation, system will return to the pattern operation selection interface.

4.13 Compile Combined Pattern

This operation is used to generate a normal pattern from a combined pattern.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select a saved combined pattern.
3. Press “” to enter the operation interface for generating a standard pattern from a

combined pattern.



Input the new pattern number and name as required.

4. Press “” to save the pattern or press “” to quit saving, system will return to the pattern operation selection interface.

4.14 Generate Pattern by Parameters

This operation is to change the setting of color-changing order and normal parameters such as scaling and repetition, which is attached to a specific pattern, so as to create a new pattern.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter the operation interface for generating pattern by parameters.



4. Press “” to input new pattern number and name.

5. Press “” to generate pattern by parameters or press “” to quit the operation, system will return to the pattern operation management interface.

4.15 Generate Pattern by Frame-moving

The user often wants to embroider the boundary of a pattern before embroidering it, so as to provide convenience to the later appliqué operation. This function can create such a pattern, and you can select the new pattern to embroider the boundary for the purpose of pattern positioning.

1. In embroidery preparation status, move the frame to the point where the generated pattern starts.

2. Press  in the main interface, to enter memory pattern management interface.

3. Press “” to enter the operation interface for generating pattern by frame-moving.



4. Press to switch between satin stitch and jump stitch. Press the manual frame-moving key to move the frame along the desired route, and press at every turning point to confirm the route.
5. Press and “” in order after editing, and system will hint user to input new pattern number and name.
6. Following the hints, user can input new pattern number (system will automatically provides a default number) and pattern name, and then press “” to confirm for generation.
7. Press “” to quit the operation and return to previous interface.

4.16 Generate Outline Pattern from Normal Pattern

This function is to create a new pattern according to the outline of the selected pattern.

1. Press in the main interface, to enter memory pattern management interface.
2. Select pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter the operation interface for generating outline pattern.
4. If user doesn't want to use the default value, press “” to change by keyboard.
5. Press “” to generate the outline pattern or press “” to quit the operation, and

then return to the pattern management selection interface.

4.17 Copy Pattern of Varied Stitch Length

This function is used to create pattern with the same shape but different stitch length.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select pattern in the pattern image area of the memory pattern management interface.
3. Press “” to enter the operation interface for copying pattern of varied stitch length.



If user doesn't want to use the default value, press “” to change by keyboard.

4. Press “” to generate a new pattern with different stitch length or press “” to quit the operation, system will return to the pattern operation selection interface.

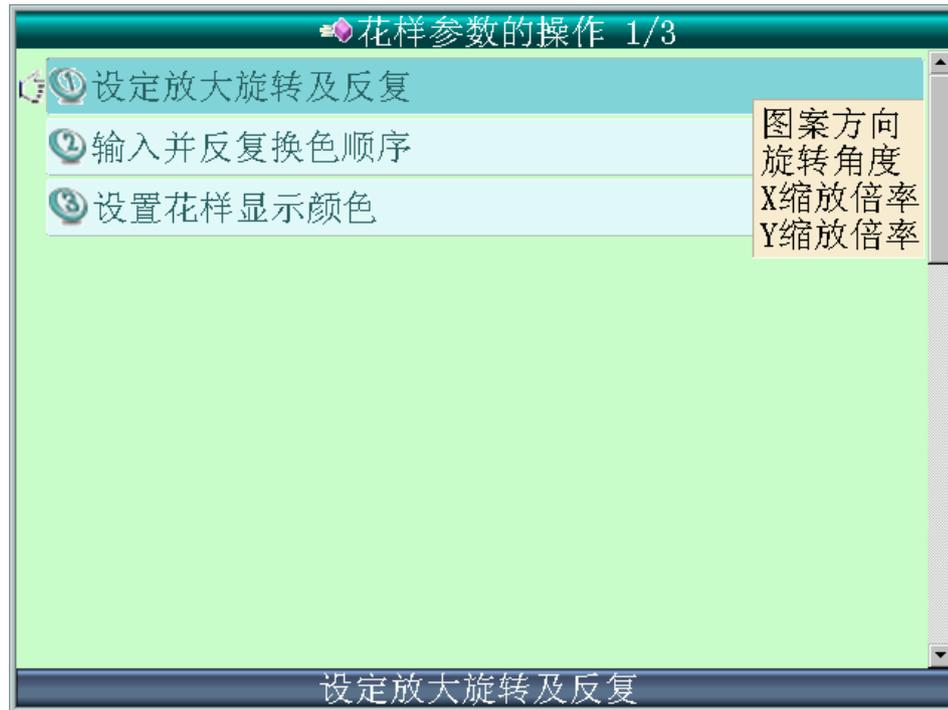
4.18 Set Common Parameters

Each pattern is attached with its color-changing order and normal parameters such as scaling, repetition and so on, which can be checked and set here.

1. Press  in the main interface, to enter memory pattern management interface.
2. Select pattern in the pattern image area of the memory pattern management interface.
3. Press “” to display the embroidery parameter setting interface, if the selected pattern is the pattern under embroidery. See chapter 5 for details.



If the selected pattern is not the pattern under embroidery, the non-embroidery parameter setting interface will be displayed.



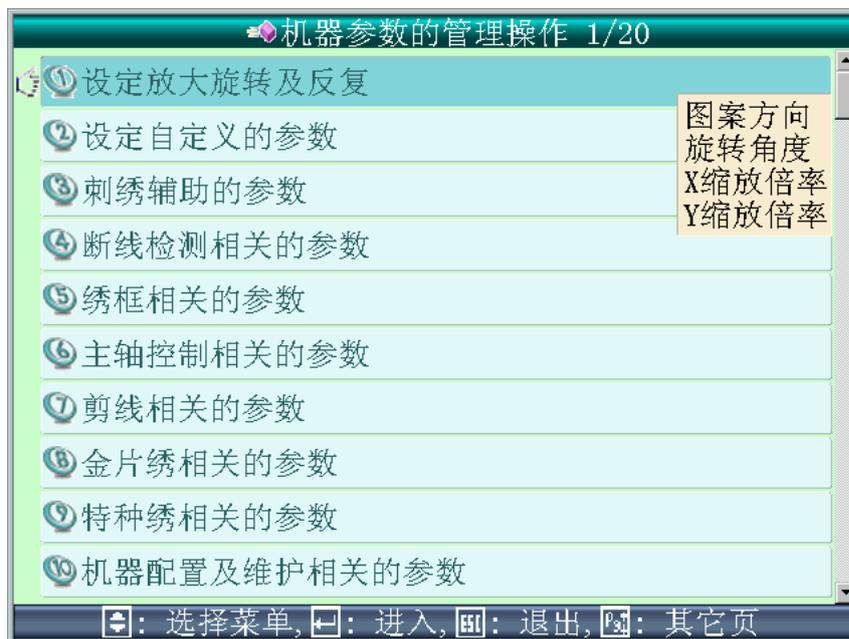
For setting parameters, please refer to 5.1 and 7.1. After setting, press the key “” to save the parameters with the pattern for future use. Press “” to quit saving, system will return to the pattern operation selection interface.

Chapter 5 Machine Parameter Management

In this system each pattern has its own settings of the normal parameters (like scaling and repetition) and color-changing order. When a new pattern is selected, the corresponding normal parameters and color-changing order that are saved with the pattern will become effective.

This system supports multi-tasks at the same time. So it's possible to set or change the normal parameters and color-changing order of patterns not under current embroidery. The entrance for the operation of those patterns is at the corresponding operation interface under the memory pattern management interface (See Chapter 4).

Press  in the main interface to enter the following interface:



As the picture shows, when you move the icon to certain parameter, system will show some parameters (4 at most), and press “” to enter the interface for setting that parameter.

5.1 Common Parameter Setting

Common parameters include: “X&Y Scaling”, “Rotating Angle”, “Direction”, “Priority Mode”, “Repetition Mode”, “Repetition Priority”, “X&Y Repetition” and “X&Y Interval”. User can control the final embroidery results by adjusting these parameters. That's why these parameters are often adjusted when a pattern is selected.

In the embroidery preparation status “”, press  in the main interface and then “” to enter the common parameter setting interface.



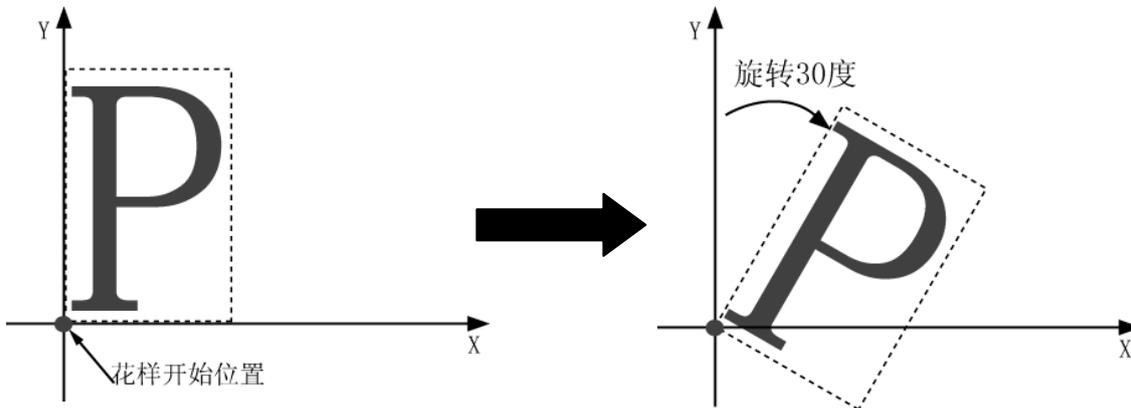
The ways to set parameters are similar. This chapter will explain how to set the “X Scales” as an example and give the definitions of other parameters (Read 5.1.3 as reference).

5.1.1 Pattern Direction

图案方向	P	Q	d	σ	q	σ	b	σ	P
刺绣结果	F	⌌	⌌	⌌	⌌	⌌	⌌	⌌	F

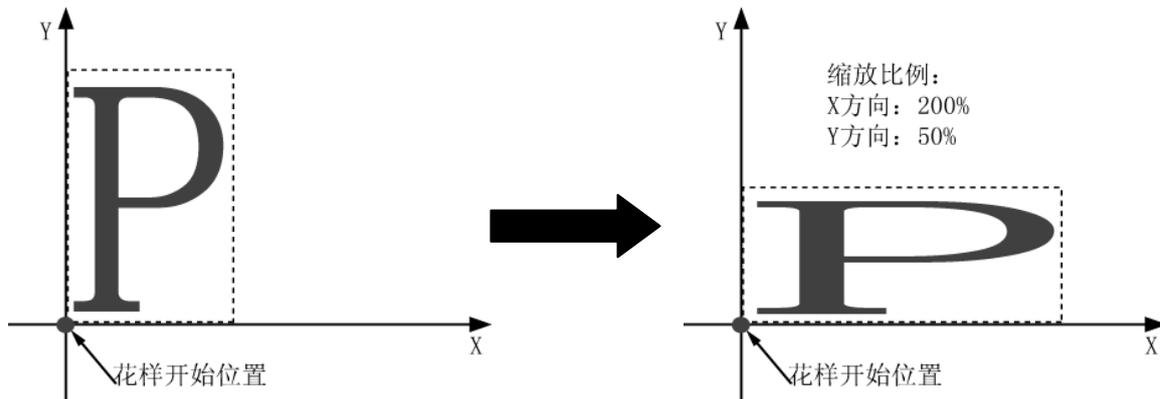
5.1.2 Rotating Angle

This parameter can be used to make the pattern rotate in a certain angle.



5.1.3 Scaling

This parameter controls the scaling rate in horizontal (X) direction, in order to scale up/down the pattern.



1. Press the function item “X Scaling”



Press “X Scaling” in the common parameter interface, and the interface will display the parameter-setting window.

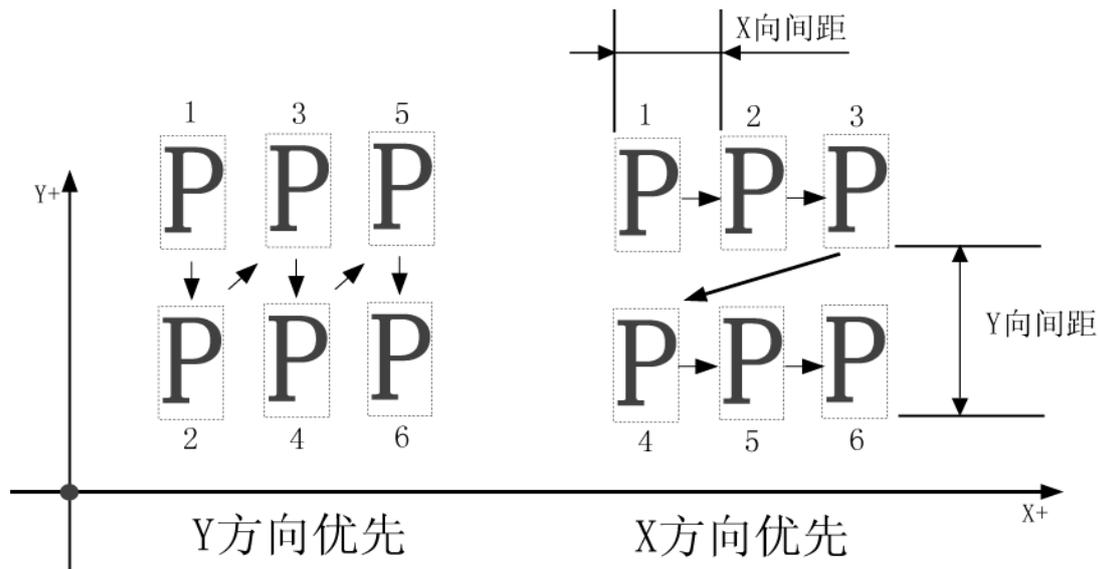
2. Modify the value of “X Scaling”

Press the number keys in the parameter-setting window to change the scaling in X direction. User can press  to cancel the last input digit. Note: some parameter value is input by pressing .

3. Press “” to save the modification or press “” to quit without saving.

5.1.4 Repetition Priority

There are two modes: X priority and Y priority.



5.1.5 Repetition Mode

Currently, system supports normal repetition and part repetition. Normal repetition means: after embroidering a pattern, system will embroider the same pattern again; part repetition is based on color, system will move to next color after finishing embroidering one color in all the patterns.

5.1.6 X-Y Repetitions

X Repetitions set the number of rows in repetition, and Y Repetitions set the number of columns in repetition. The above diagram shows that X Repetitions is 3 and Y Repetitions is 2. The largest set value is 99*99.

5.1.7 X-Y Repetition Interval

The above diagram also explains the meaning of this parameter.

5.1.8 Priority Mode

There are two modes: rotating priority and scaling priority. When user has selected the “Rotating Priority”, the pattern will rotate first and then scale up/down according to the set parameters. Otherwise it will scale up/down first and then rotate.

5.2 Setting of Other Embroidery Parameters

Other parameters include 8 groups: embroidery assistant parameters, thread-breakage detection parameters, frame parameters, main shaft parameters, thread-trimming parameters, sequin parameters, special embroidery parameters and machine configuration & maintenance parameters. For machines with encryption function, some parameters can be attached with administrator password or factory password. For setting the administrator passwords and the factory password, as well as initialization of parameters, please press  to enter the

“machine authority management” interface. (See 5.3)

Refer to Appendix 1 for details of each parameter.

1. Press  in the main interface.

2. System enters the parameter setting interface, where user move cursor to the target parameter and press “” to select and set the parameter.



Note:

1. The number, name and current value of each parameter are displayed in the parameter list window.

2. For the machine with attached passwords, parameters marked with  can't be changed unless the administrator password is unlocked; parameters marked with  can't be changed unless the factory password is unlocked. When a parameter is labeled by a number, then it can be changed by pressing “”.

5.2.1 Setting Procedure for Other Parameters

The setting procedure is similar for all parameters. User can set them according to the description in this section.

1. Select the parameter group.

Move the cursor to the parameter group to be changed, press “” to enter the parameter setting interface. Move the cursor to the parameter and press “” to change.

Make sure the parameter is unlocked if the machine has encryption function (See Chapter 5.3)

For instance, if you want to modify machine stitch count parameter, which is located in the first item “D01 Needles <1, 15>” of “machine configuration & maintenance parameter”.

2. Press  in the main interface, move the cursor to “machine configuration &



maintenance parameter”, press “”:



3. Select the parameter to be changed “F21 Cyclic Embroidery Head Shuttle Rebounding Number <1, 9>” and press “” to display the following interface:



4. Input the needle number according to machine type, and press “” to save the setting or press “” to quit, system will return to the interface of “machine configuration & maintenance parameter”

Note: Some parameters can not be inputted, you can only use  to select.



5.2.2 More Functions for Setting Other Parameters

There are brief introduction of parameters in the Appendix 1. Here are some functions used in embroidery.

1. Cyclic Embroidery

This function can increase the embroidery efficiency.

When the parameter “To Do Cyclic Embroidery” is set as “Yes”, the cyclic embroidery function is activated and the icon  will appear in the main interface. When this function is valid, after completing the embroidery of a selected pattern, the machine will automatically embroider it again without pulling the bar.

Usually, cyclic embroidery accompanies repetition embroidery or specially-designed patterns, and the parameter “Back to Origin after End” should be also set as “Yes”. Thus when the machine is embroidering the following cloth-piece, the previous one can be replaced by user. After embroidering the selected pattern, the frame will automatically return to the start point and the machine will automatically embroider the previous cloth-piece again and at this time it’s possible to replace the following one.

2. Save Manual Color-changing

In embroidery confirmation status, user can choose whether to save the manual color-changing’s needle position into the color-changing order unit. Its purposes are as follows: 1) if mistakes are found at the automatic color-changing order during embroidery, the color-changing order can be modified with manual color-changing; 2) when a new pattern is embroidered with manual color-changing once, the color-changing order is set for the pattern.

To use this function, user should set the parameter “Save Manual Color-changing” as “Yes”. Note: the parameter value will automatically change into “No” at the end of embroidery of one pattern.

3. Brake Adjustment (A Must for New Machine)

This function is to adjust the control parameters for braking, to adapt to machines with different mechanical characteristics, which may also change along machine running. Thus this function can help the machine to work better with the computer. The function depends on two parameters “Stop Position Compensation” and “Main Motor Parameter”.

To adjust the parameter “Stop Position Compensation” is to adjust the stop position of the main shaft. When the main shaft often stops at less than 100 degree, user can increase the parameter value. When the main shaft often stops at more than 100 degree, user can decrease the parameter value. Thus user can adjust the value to let the main shaft stop close to 100 degree. The value range is between 0 and 30.

To adjust the parameter “Main Motor Parameter” is to adjust cooperation between main shaft motor and mechanical parts. The parameter value can be set between 0 and 30, and set as 0 in most situations. If during braking the main shaft vibrates without moving or rotates in the reverse direction, or looks like lacking of brake strength, user can increase the parameter value.

After adjusting these parameters, user can press the task swift key on the panel to return to the main interface. Press the key  and “”, to check the effects of the parameter



adjustment. If user is not satisfied with the effects, he can press the swift key on the panel to return to the parameter setting interface, where he can adjust the parameter again. Close the parameter setting interface in the end.

4. Forbid Pattern Output

The function is to forbid unauthorized copy of patterns from memory (into the disk). If the machine administrator set “No Output Pattern” as “Yes”, other persons are unable to output the patterns to the disk. If user needs to output, he has to release the setting of “No Output Pattern” first.

5.3 Initialize Machine Parameters

This function can initialize the general embroidery parameters of the machine. System saves a group of default parameter values. The manufacturer and embroidery factory administrator can save their parameter settings. This operation need follow the rules at below:

1. When the manufacturer password and embroidery factory administrator password are not set or the machine has no encryption function, all general embroidery parameters are initialized to their default values.

2. When that manufacturer password has been set and unlocked, all general embroidery parameters are initialized to their default values.

3. When that manufacturer password has been set and still locked but administrator password has not been set or has been released, all manufacturer-authorized machine parameters are recovered to the values saved by the manufacturer and other parameters are initialized to the default values.

4. When both manufacturer password and administrator password have been set and still locked, all manufacturer-authorized machine parameters are recovered to the values saved by the manufacturer, all administrator-authorized machine application parameters are recovered to the values set by administrator, and other parameters are initialized to their default values.

5. When that manufacturer password has not been set and administrator password has been set but unlocked, all general embroidery parameters are initialized to their default values.

6. When that manufacturer password has not been set and administrator password has been set but still locked, all administrator-authorized machine application parameters are recovered to the values saved by administrator and other parameters are initialized to the default values.

5.4 Machine Authorization Management

Note: *This operation is fit for the machine with encryption function only.*

For the convenient management of machine, general user can't modify all parameters; users are divided into three groups: general user, machine administrator and manufacturer user. General user, having the lowest authorization, can only modify the embroidery parameters of the machine, while machine administrator can also modify managing parameters, but only the manufacturer user can modify all parameters.

Press “Machine Authorization Management” to enter the following interface.



If the password is set and the machine administrator or the manufacturer user need modify the parameter, he must input the password before making any change. They can also change password, save or restore parameters.

5.4.1 Unlock/Change Administrator Password

When the machine is sold by manufacturer, it's without password, namely user can change all parameters. After password setting, general user can't modify the machine application parameters. The administrator has to input the right password before modification.

1. Press  in the main interface to enter machine parameter management interface, move the cursor to “unlock/change administrator password”, and press “” to enter.





2. Move the cursor to “unlock/change password by administrator”, and press “” to input the old password and a new one.



The administrator needs to input the old password and new password one by one. The machine manufacturer will inform the administrator of the default password which is of 4-9 digits. To prevent the user's wrong operation, the new password must be input two times.

5.4.2 Administrator Unlocks the Machine

After machine administrator modifies the password, the machine is locked. General user can't modify the machine application parameters. To modify these parameters, the administrator must input the administrator password or the manufacturer password. The machine will be locked after power-on at each time.

1. Press  in the main interface to enter machine parameter management interface, move the cursor to “machine parameter authorization management”, and press “” to enter.
2. Move the cursor to “unlock/change password by administrator”, and press “”.



System displays password input interface.

3. Administrator inputs password

After inputting the password, system becomes unlocked; user can modify related machine parameters.

5.4.3 Administrator Saves and Recovers Optimized Parameters

Administrator can save and recover related machine parameters. If user wants to save the currently set parameters, press the key of “administrator saves optimized parameters” to save. For system can only save one set of parameters, every time optimized parameters are saved, the previously saved parameters will be covered. If user wants to recover the previously saved optimized parameters, press the key of “administrator recovers optimized parameters” and system will hint the operation. User can follow the hint and confirm the operation to recover the previously saved parameter values.

5.4.4 Change Manufacturer Password

The machine manufacturer can modify all parameters. When the machine is sold, the machine is unlocked. After password setting, the machine is locked. To change the machine parameters, you have to input password first. But after you repower the machine, the machine will be locked again. The details of it are similar to the “Unlock/Change Administrator Password”.

5.4.5 Unlock Manufacturer Password

The method is similar to that of unlocking administrator password.

5.4.6 Manufacturer Saves and Recovers Optimized Parameters

The method is similar to that by which administrator saves and recovers parameters.



5.5 Initialize Machine Parameters

This function can initialize the general embroidery parameters of the machine. System saves a group of default parameter values. The manufacturer and embroidery factory administrator can save their parameter settings. This operation need follow the rules at below:

1. When the manufacturer password and embroidery factory administrator password are not set or the machine has no encryption function, all general embroidery parameters are initialized to their default values.

2. When that manufacturer password has been set and unlocked, all general embroidery parameters are initialized to their default values.

3. When that manufacturer password has been set and still locked but administrator password has not been set or has been released, all manufacturer-authorized machine parameters are recovered to the values saved by the manufacturer and other parameters are initialized to the default values.

4. When both manufacturer password and administrator password have been set and still locked, all manufacturer-authorized machine parameters are recovered to the values saved by the manufacturer, all administrator-authorized machine application parameters are recovered to the values set by administrator, and other parameters are initialized to their default values.

5. When that manufacturer password has not been set and administrator password has been set but unlocked, all general embroidery parameters are initialized to their default values.

6. When that manufacturer password has not been set and administrator password has been set but still locked, all administrator-authorized machine application parameters are recovered to the values saved by administrator and other parameters are initialized to the default values.

5.6 Save Machine Parameters to Disk

This function is to save the current software information and machine parameters to disk for future inquiry or use.

5.7 Read Machine Parameters from Disk

This function is to read data from disk to machine, in order to make use of saved parameters at any time necessary without resetting them.

5.8 Adjust XY Parameters of Servo Frame

This type of parameters is used for the machine whose main shaft uses Dahao servo motor and driver. Only the manufacturer can modify these parameters. For machine with encryption function, you must input the manufacturer password before adjusting the parameters or performing the corresponding operation to the machine. The operation process is as follows:

1. Press  in the main interface.

2. System will enter the machine parameter management interface. Move the cursor to “Adjust XY Parameters of Servo Frame” and press “” to enter the interface of “Parameters of X Servo Drivers”.



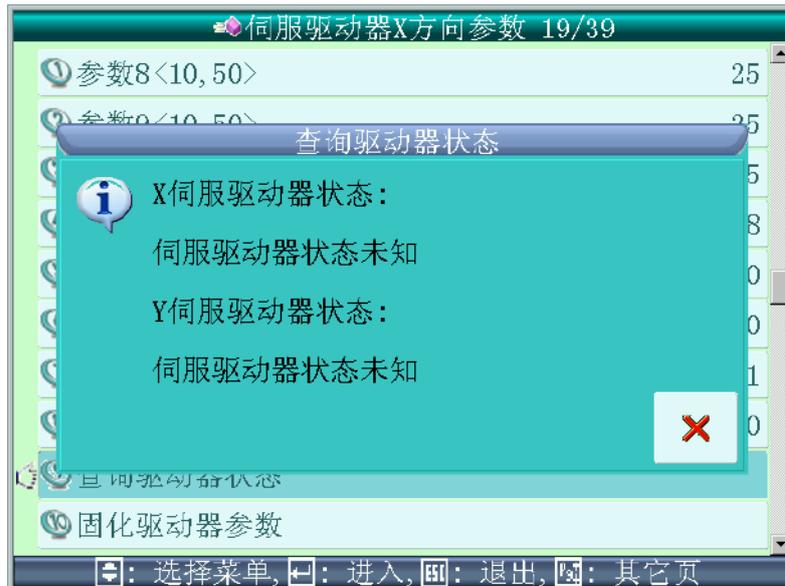
3. Input manufacturer password, move the cursor to corresponding item and press “” to do the corresponding operation.

5.8.1 Set Parameters

The setting is similar to that of other normal parameters, please refer to Appendix 1.

5.8.2 Inquire Driver Status

This operation can inquire the Dahao servo driver status. System will display the windows of X/Y servo driver status after user carries out this operation. User should turn off power and adjust Dahao servo driver if the following interface appears.



5.8.3 Save Driver Parameters

The current settings of parameters for X/Y servo drivers in the controller will be saved and applied to the servo driver after user performs the operation. And the parameters can be saved even power is off.

5.8.4 Recover Default Driver Parameters

The X/Y parameters of servo driver in the controller will be restored to their default values if you operate this function.

Chapter 6 Assistant Functions

6.1 Assistant Embroidery Operation

Press  in the main interface to enter assistant embroidery operation interface.



If the frame origin has been set (see 6.2.3), in the embroidery confirmation status, user can set pattern start point.

6.1.1 Resume Pattern Origin

If the current pattern has start point, user can use this function to move the frame to the start point saved before.

1. Follow the above instruction and enter assistant embroidery operation interface.

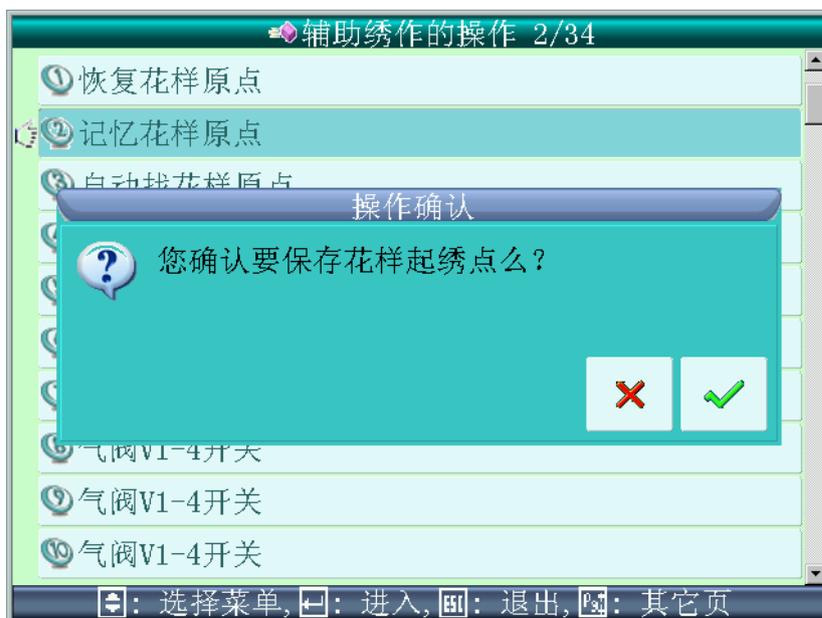
2. Move the cursor to “Resume pattern origin” and press .



3. Press “” to resume start point, then system will move the frame to the start position that has already been saved before; press “” to cancel the operation.

6.1.2 Save Pattern Origin

1. Move the frame to the embroidery pattern origin.
2. Follow the above instruction and enter assistant embroidery operation interface.
3. Move the cursor to “Save pattern origin” and press  to display the hint window.

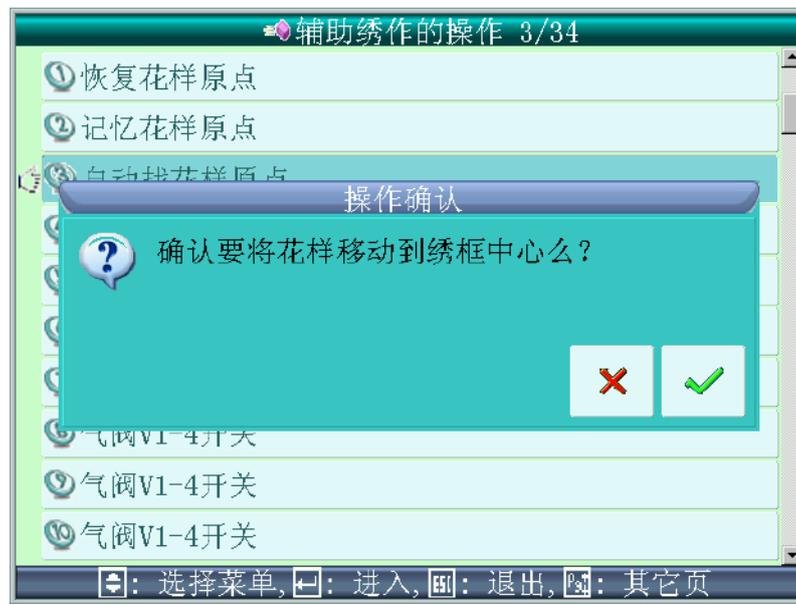


4. Press the key “” to save the current frame position as the origin; press “” to cancel the operation.

6.1.3 Pattern Origin Auto Search

This function is used for locating pattern center to the frame software center set by the system (see 6.2.5) so that you can embroider the pattern at the center of the frame.

1. Follow the above instruction and enter assistant embroidery operation interface.
2. Move the cursor to “Pattern origin auto search” and press .



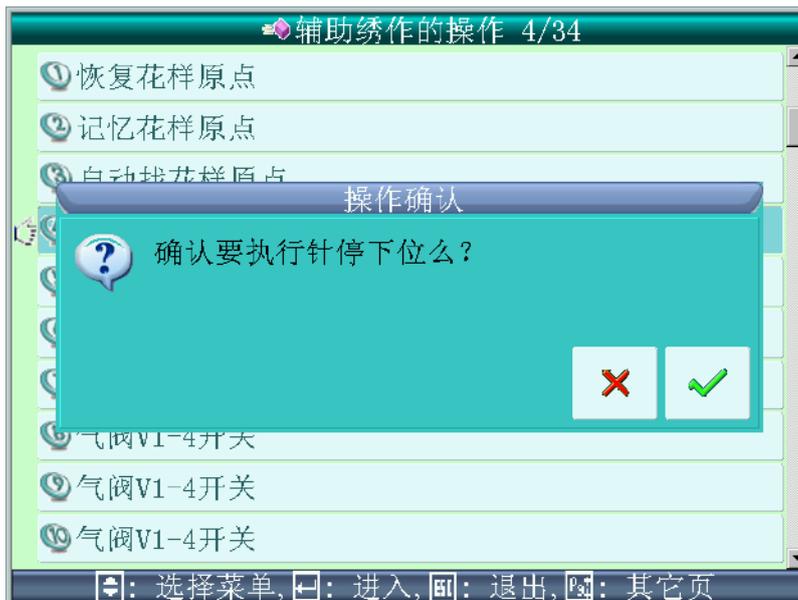
Press “” to confirm, then system will search the centre of frame and move to that position; press “” to cancel the operation.

3. System returns to the main interface.

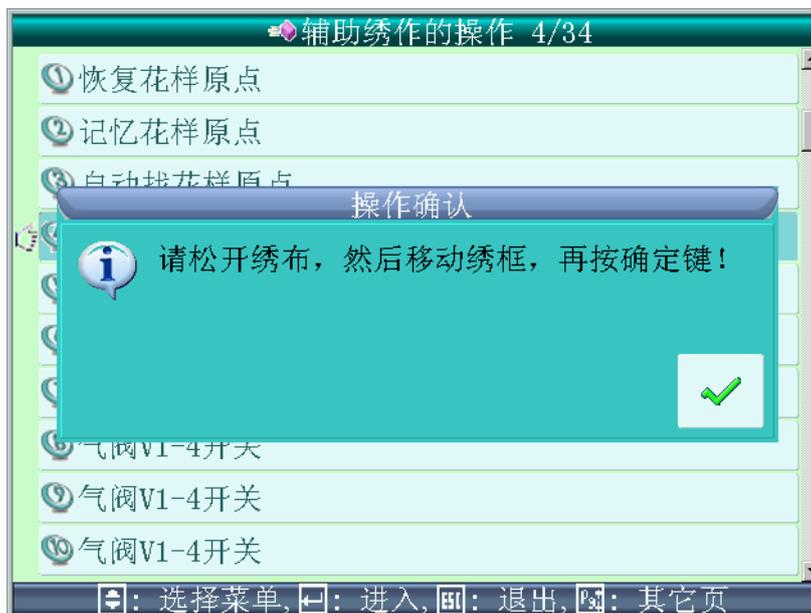
6.1.4 Needle Stops Down

This function is used for the embroidery of the entire fabric. The needle will stop and prick into the embroidery cloth to fix it when the machine finishes a part of the embroidery. After releasing the cloth, user can move the frame to an appointed position. When the cloth is fixed on the frame again, it is ready for the next operation. This function is only available in embroidery confirmation status.

1. Follow the above instruction and enter assistant embroidery operation interface.
2. Move the cursor to “Needle stops down” and press .



3. Press “” to confirm operation, system lets needle goes down to hold the cloth; press “” to cancel the operation.
4. Release the cloth, move frame and confirm the operation.



- After releasing the cloth, user need move frame to appointed position and press “” to confirm. If you press “”, the operation will be cancelled.

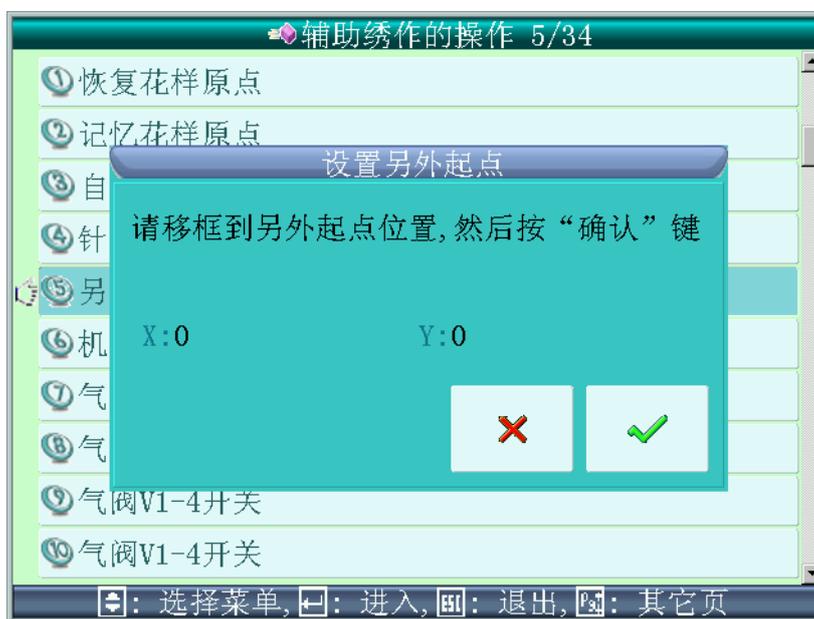
5. System returns to the main interface.

User can fix the embroidery fabric, operate the main shaft to 100° and then pull bar to continue embroidering.

6.1.5 Set another Start

Another start point can be set at any point other than the start point. After setting it and starting embroidery, the frame will firstly move from the other start to the start position automatically, and then the machine will start normal embroidery. After embroidery, the frame will move back to the other start. Moreover the other start is also the reference for the frame to move out when appliqué. This function can only be used under the embroidery confirmation status and before embroidery.

1. Follow the above instruction and enter assistant embroidery operation interface.
2. Move the cursor to “Set another start” and press .
3. Move the frame to the other start.



The system will ask the user to move the frame to the other start and display the coordinates of X and Y. User need press the frame-moving key to move the frame to the other start and press “” to confirm it, or press “” to cancel the operation.

4. System will save the position of the other start and return to the main interface.

6.1.6 Set B Point

This function is optional and the user has to book it advance.

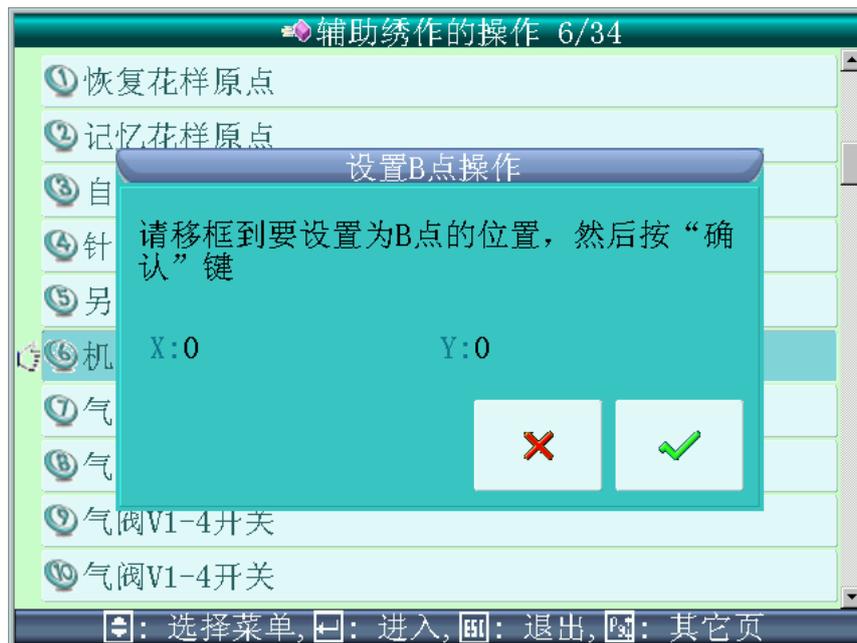
This function is developed to solve the problem of threading inconvenience when thread-breakage appears on machine with large-scale frame.

When thread breaks, user need press the slow switch to let the machine trim first. Then the frame will move to the point B. After threading, pull bar to right to let the frame return to the stop point. Then the embroidery can go on.

A. Setting Procedure

1. Set the absolute origin, see 6.2.3 for details.
2. Follow the above instruction and enter assistant embroidery operation interface.

3. Move the cursor to “Set B Point” and press .



4. Press the manual frame-moving key to move the frame to a proper position.

5. Press “” to save B point.

B. Notes

1. When frame returns to the B point, there is only action on Y direction.

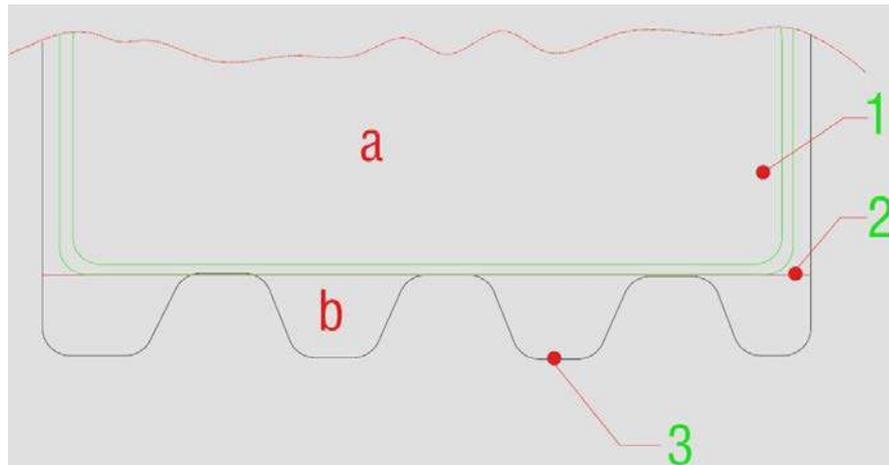
2. Frame will not move to the B point everytime when thread breaks at some position and user presses the slow motion switch.

If the B point is set as in the following picture and the frame only moves above B point (a zone, that is within the inner edge of the table), the machine will only have the trimming action instead of moving frame to B point when you press slow motion button after thread-breakage; only when frame is moving under B point (b zone, that is outside the inner edge of the table), can the frame move to the B point after you press slow motion switch at thread-breakage. In case of no action of the frame, please check the machine.

3. The position of the B point should be set as in the following picture, at the upper edge of table notch, provided that it will not affect the threading operation. The reasons are as follows:

(1) If B point is above the line, the frame will return to B point after pressing slow moving key. There will be a long distance to go to the stop point after threading.

(2) If B point is under the line, threading will be greatly influenced.



1. Frame 2. Best Line for B Point Setting 3. Edge of the Table

6.1.7 Operation of Air Frame, Sequin and Coiling Devices

For the machine equipped with air frame, sequin or coiling devices, user can set that device via the controller:

1. Follow the above instruction and enter assistant embroidery operation interface.
2. Follow the hints to press corresponding keys.

Note: switch of air valves (V1~V4) are for quilt embroidery. Other sequin and special embroidery operations are detailed in different chapters.

6.1.8 Upper Thread Holding Operation

The operation is used for the machine having upper thread-holding function. User can activate or deactivate this function by this operation.

6.2 Other Assistant Management Operation

These operations include machine maintenance, statistic information inquiry and other system settings.

Press  in the main interface to enter the interface for other assistant management operation, where user can press corresponding keys to realize certain functions.



The interface structure is similar to that of assistant embroidery function. The words on the keys can help explain their functions.

6.2.1 Check Embroidery Parameter

User can check the current pattern's parameters and some machine conditions.

1. Press  in the main interface to enter the interface of other assistant manangement operation.
2. Move the cursor to “check embroidery parameter” and press “”.
3. System will display parameters of current pattern.



These parameters include: pattern number, total embroidery stitch, free memory, cyclic embroidery, frame origin, soft frame limit and another start point. Press  to clear total embroidery stitch. After viewing parameters, press “  ” to return.

6.2.2 Check Statistic Data

1. Press  in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “check statistic data” and press “  ”.

3. System displays the statistic data interface.

查看统计数据								
机器开机次数:				16				
刺绣完成的工件总数:				0				
总的断线次数:				0				
一次断线的平均用时:				00:00:00				
当前花样的预计单件用时:				0h 0m				
序号	花样号	花样ID	花样名	针数	工件数	总工作时间	单件最小用时	单件最大工时
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

In the above interface, the statistic data is displayed in chart. User can press  to clear the value and press “” to return.

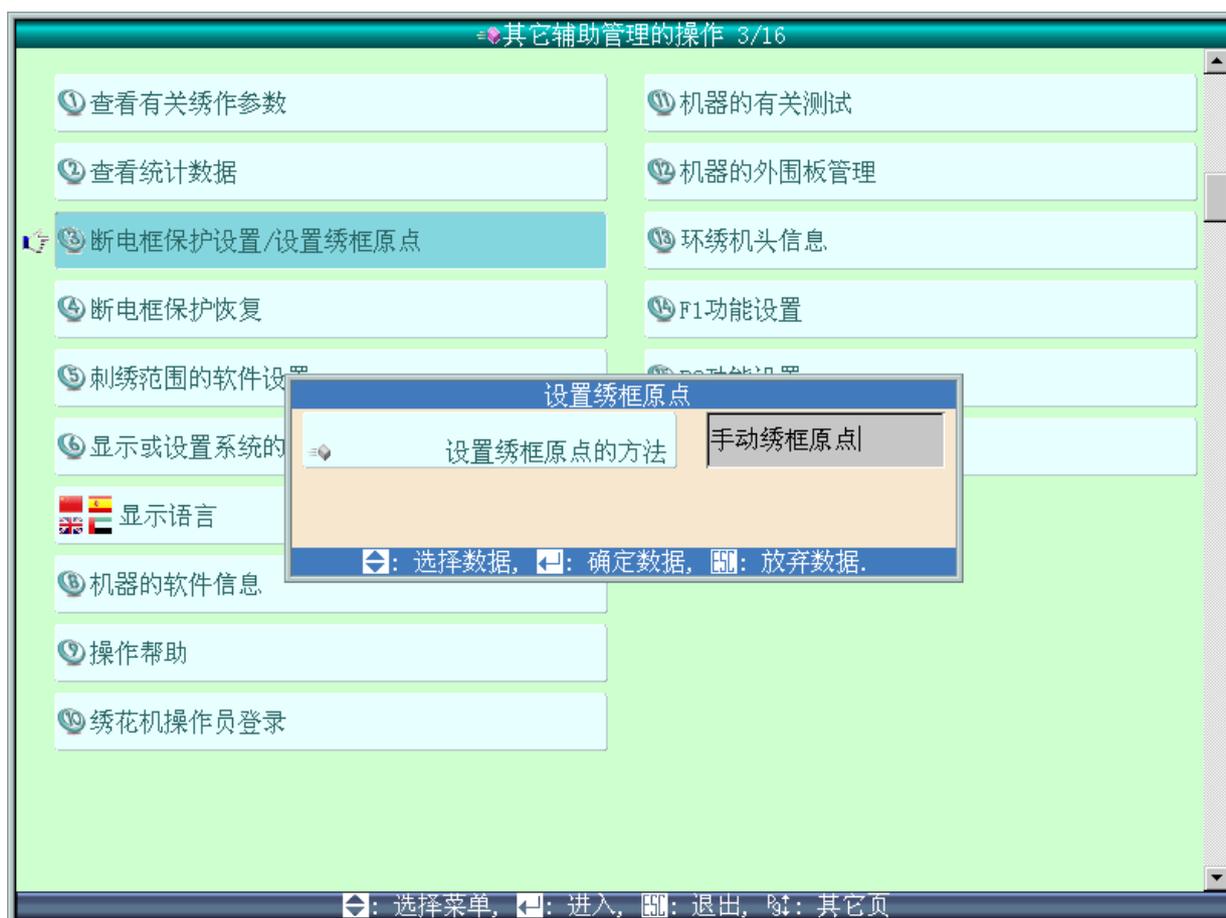
6.2.3 Frame Protection Setting/Frame Origin Setting

Setting the frame origin is the premise for saving the pattern origin and setting frame protection at power-off. So after machine installation or maintenance, it's necessary to set the frame origin.

1. Press  in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “check statistic data” and press “”.

3. Press  to select “manual frame origin” or “auto frame origin”.



4. Press “” to confirm or press “” to return.

Before setting auto frame origin, user need move the frame to the desired origin position and press “manual frame origin”. Then system will save the current frame position as the origin.



In case of emergency stop due to malfunctions or something unusual like unexpected power off, the machine will cancel saving the origin to avoid mistakes caused by the inaccuracy of “manual frame origin”. If the frame has been moved or the machine has been maintained after power off, user should set “manual frame origin” again.

If you hope the system automatically set the frame origin, press “auto frame origin”, and the system will move the frame automatically and set the origin according to the limit switch. So please ensure that the effective limit switch has been installed into the machine.

6.2.4 Frame Recovery

In case that frame has been moved after power off, this operation can be used to restore frame position before the power-off. The proper performance of this operation is based on the “frame protection setting/frame origin setting”. In addition, if the power is off in the process of embroidery and the frame has not been moved, user can directly pull the operation bar to continue embroidery when power is on again.

1. Press  in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “frame resume” and press “”.

3. Press “” to confirm or press “” to return.

If “auto frame origin” is set in “frame origin setting”, the frame will automatically move to the frame origin and then back to embroidering position before power-off. It will be invalid if the “frame origin setting” is set as “manual frame origin”.

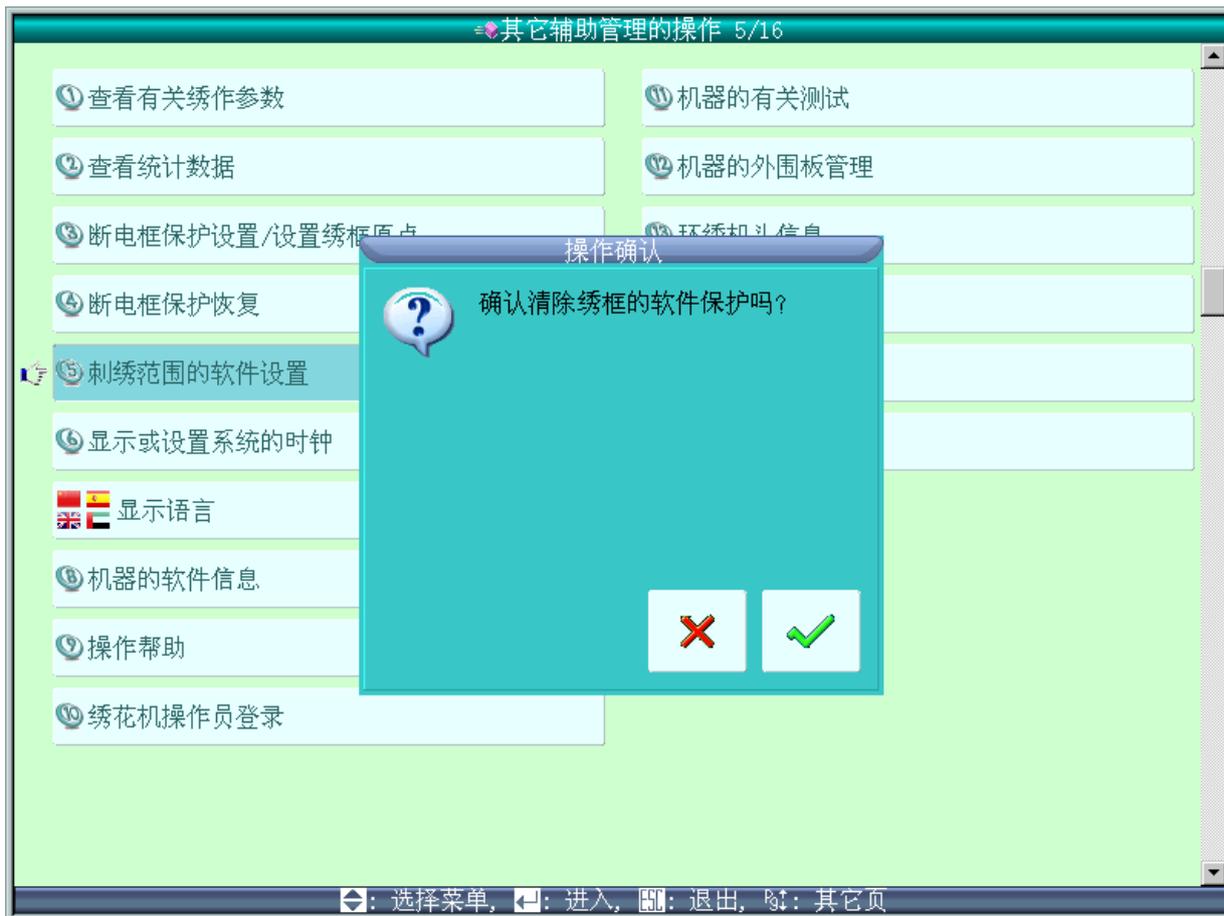
6.2.5 Set Embroidery Scope in Software

This function is to set embroidery scope in software and make system embroider pattern in the set range. It’s the basis to locate pattern in the central place of the frame.

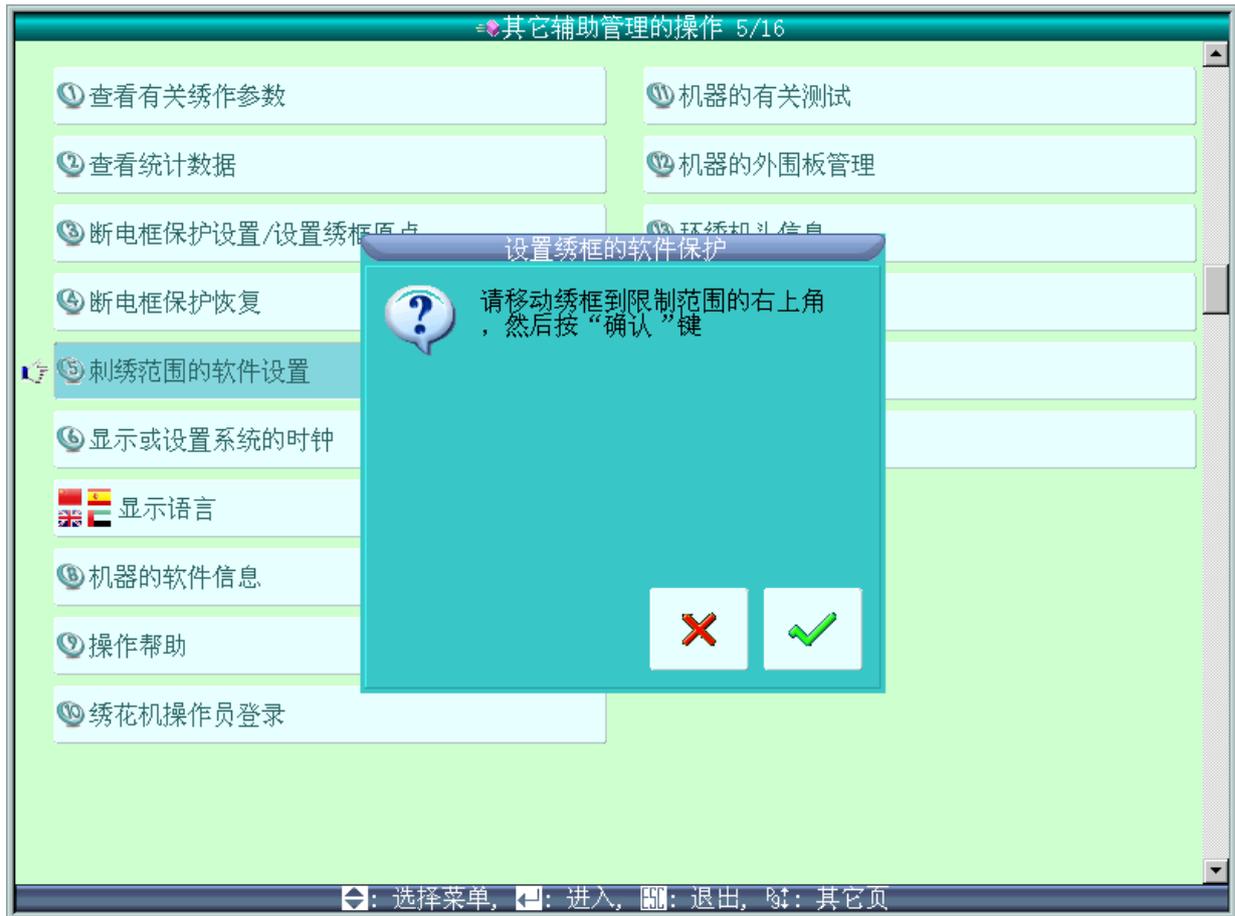
1. Press  in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “set embroidery scope in software” and press “”.

3. If software protection has been set, system will ask user to clear original settings.

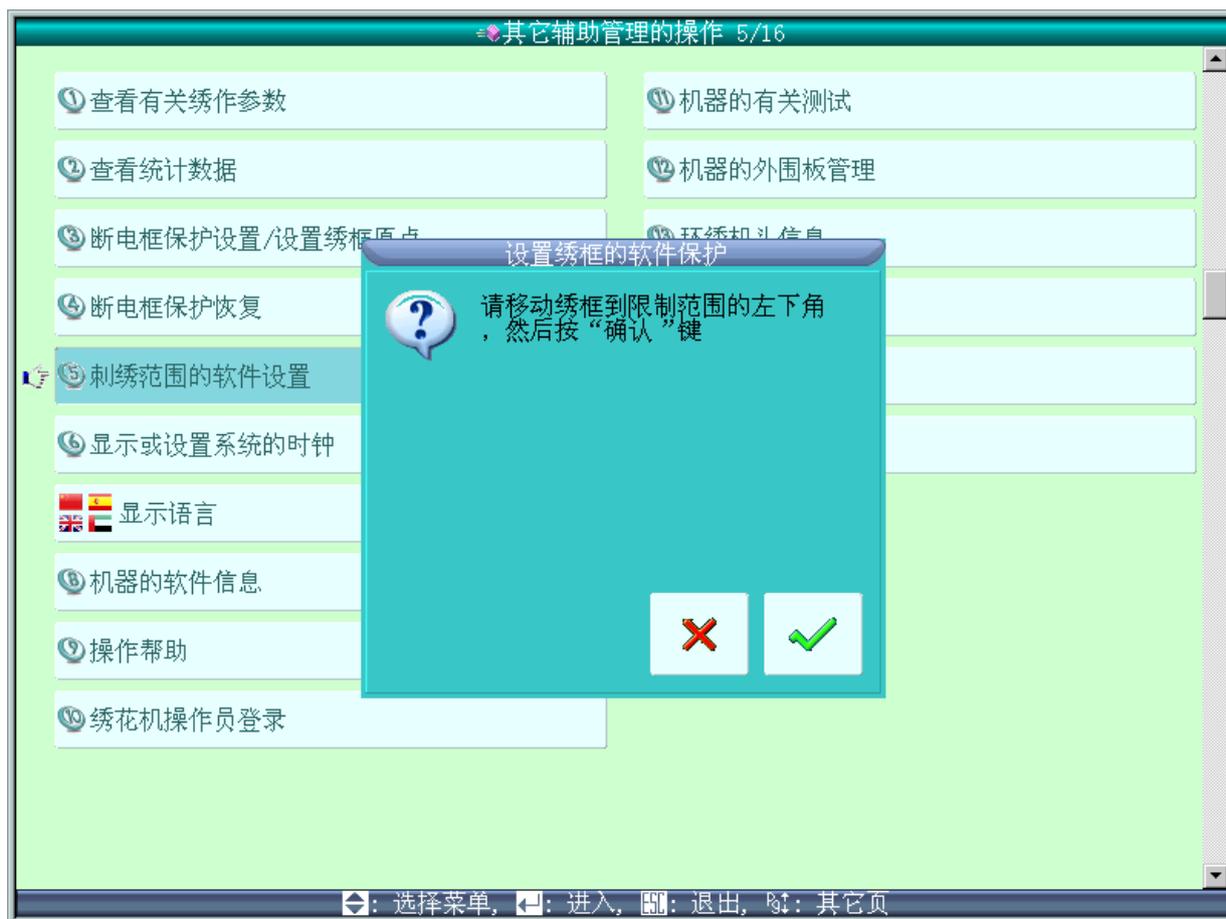


4. Press “” to set the coordinates of top-right corner.



Use frame-moving key to move the frame, after you confirm the top-right corner of soft limit, press “” to confirm.

5. Move frame and input the coordinates of bottom-left corner.



Use frame-moving key to move the frame, after you confirm the bottom-left corner of soft limit, press “” to confirm.

5. System will save the frame software protection.

6.2.6 Set System Clock

In date and time interface, user can check and modify the current date and time.

1. Press  in the main interface to enter the interface of other assistant manangement operation.

2. Move the cursor to “display or set system clock” and press “”.



3. Use number keys to input number or press to select the number to be inputted; press to select option.

4. Press “” to confirm or press “” to return without saving.

6.2.7 Select Language

System supports Chinese, English, Spanish, Turkish and various other languages.

1. Press in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “display language” and press “”.

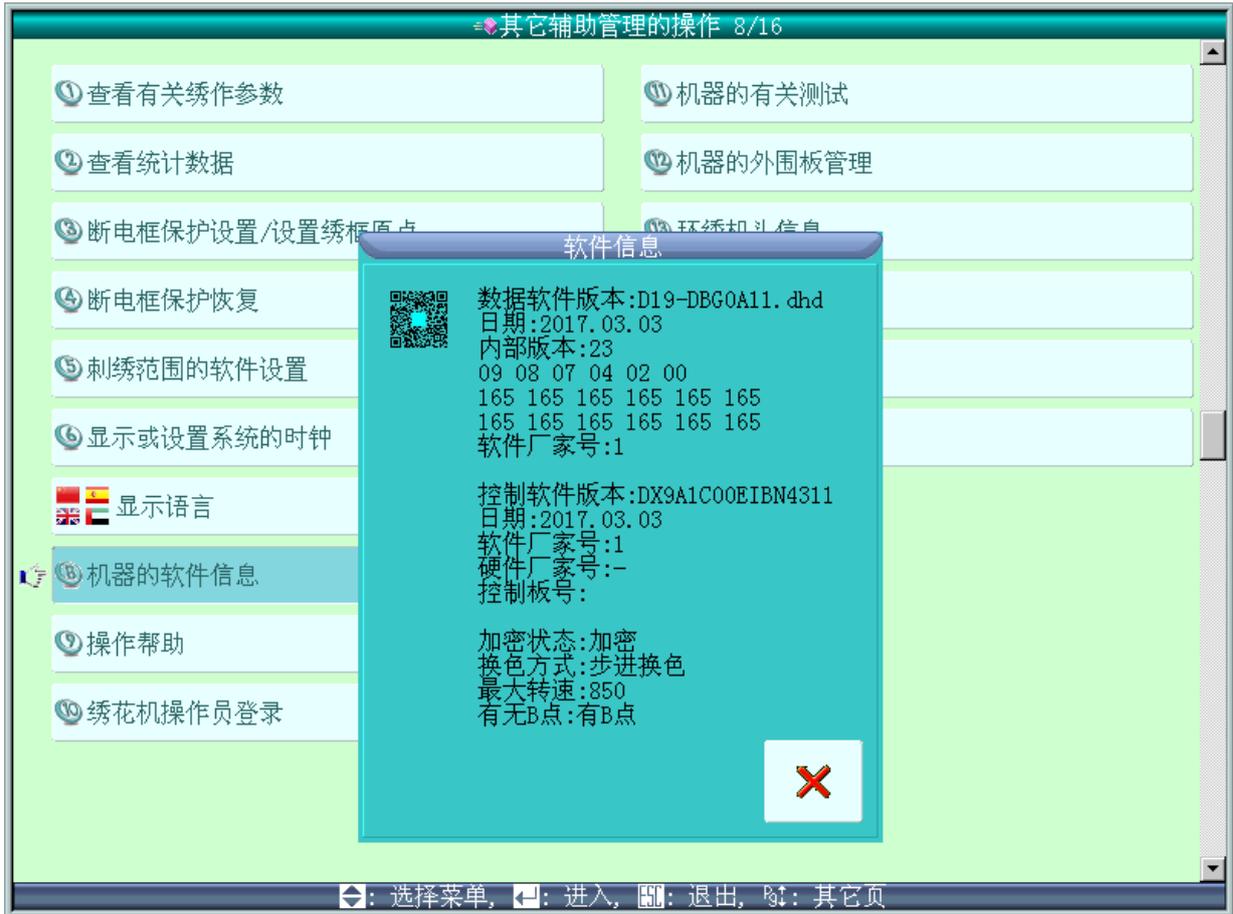


3. Move the cursor to the intended language, press “” to confirm or press “” to quit.

6.2.8 Machine Software Information

1. Press  in the main interface to enter the interface of other assistant manangement operation.

2. Move the cursor to “machine software information” and press “”.



This function is used for checking the software and hardware information of upper and lower computer, press “” to quit.

6.2.9 Help

This function is to display the help information of the interface.

1. Press  in the main interface to enter the interface of other assistant management operation.

2. Move the cursor to “machine software information” and press “”.

System will display the help information of the interface, press “” or press

 to turn page.

6.2.10 Machine Test

 *This operation is limited to maintenance engineers only. Embroidery workers are*



prohibited to use this operation. This operation contains some mechanical work. Please pay attention to personal and equipment safety.

This function is mainly used for machine test, maintenance and problem diagnosis, including:

- Test optical encoder
- Main shaft auto test
- Rotate main shaft to fixed angle (from 100°)
- Test the pull-bar
- Test the limit switches
- Test the head solenoids
- Test trimming solenoid/ motor
- Test holding solenoid
- Test hook solenoid/motor
- Test catching solenoid/motor
- Splay Scissor's Angle
- Trimming motor to search origin
- Test thread breakage
- Thread Breakage Statistics
- Count of Roller Thread Breakage Device
- Test sequin device on/off
- Sway Zig Rod to 100°
- Test lift of taping presser foot
- Test upper thread holding function
- Thread loosening position adjustment
- Needle height position adjustment
- Cyclic embroidery color-changing position adjustment
- Test D-axis motor
- Test H-axis motor
- Test chained main shaft rotation speed
- Test chained main shaft encoder
- Test chained trimming motor
- Test chained loosening motor
- Detect thread breakage of cyclic embroidery test

Chapter 7 Other Operations

7.1 Color-changing Order Operation

The pattern's color-changing order will be saved along with the pattern.

Press  in the main interface, to enter color-changing order interface, where user can make the color-changing order operation.



7.1.1 Input and Repeat Color-changing Order

1. In the color-changing order operation interface, move the cursor to “input and repeat color-changing order” and press “” to enter the interface.



2. Press number keys on the keyboard (note: the number you input shall not be larger than the needle number) and input the color-changing position. The color-changing position and their relative order will be displayed in the interface.

If it is a special embroidery position or sequin embroidery position, the system will enter the selection window of sequin and special embroidery. For details, please refer to operations in related chapters.

Press “” to save the color-changing order or press “” to exit without saving.

7.1.2 Modify Color-changing Order

1. In the color-changing order operation interface, move the cursor to “modify color-changing order” and press “” to enter the interface.

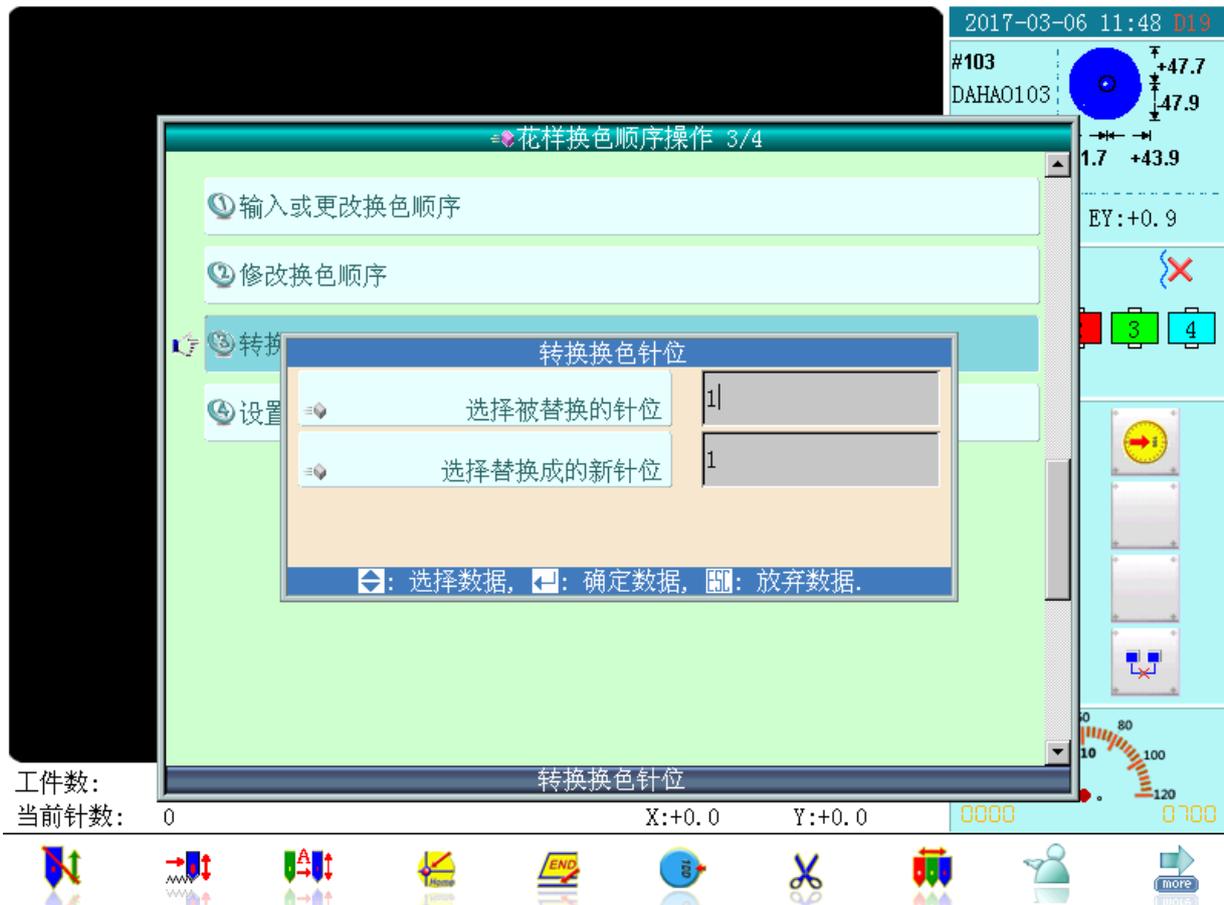


2. Press the key “

If you want to modify the next color, you can repeat step “2”. Press “

7.1.3 Replace Color-changing Needle Position

1. In the color-changing order operation interface, move the cursor to “replace color-changing position” and press “BECS-D19 User's Manual



2. Press number keys on the keyboard to input “the needle position to be replaced” and press “” to confirm and enter the item “new needle position to be replaced by”. Then, press number keys and “” to save the input or press “” to quit without saving.

7.1.4 Set Pattern Display Color

In order to make the display effect close to the real embroidery pattern, the system supports setting of each needle bar color. The needle bar color can be saved with the color-changing order.

1. In the color-changing order operation interface, move the cursor to “set pattern display color” and press “” to enter the interface.

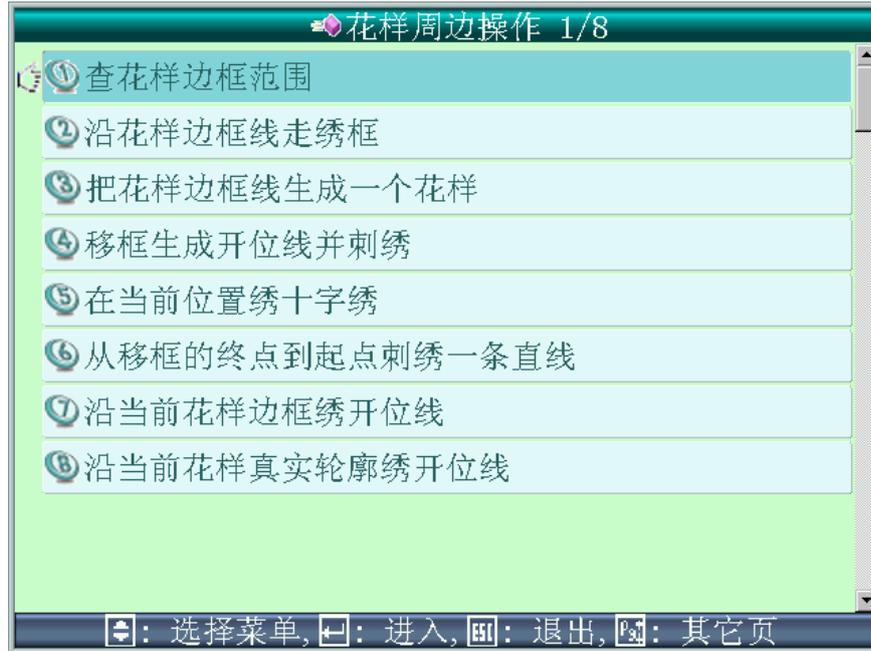


There are altogether 40 different default colors for you to choose.

2. First you should press  to select the needle bar to be set, then press “” to select the desired color and press “” to confirm. After setting, the corresponding color will be displayed at the needle button.
3. After setting, press “” to save the needle bar color setting and return, or press the key “” to return without saving.

7.2 Pattern Border Operation

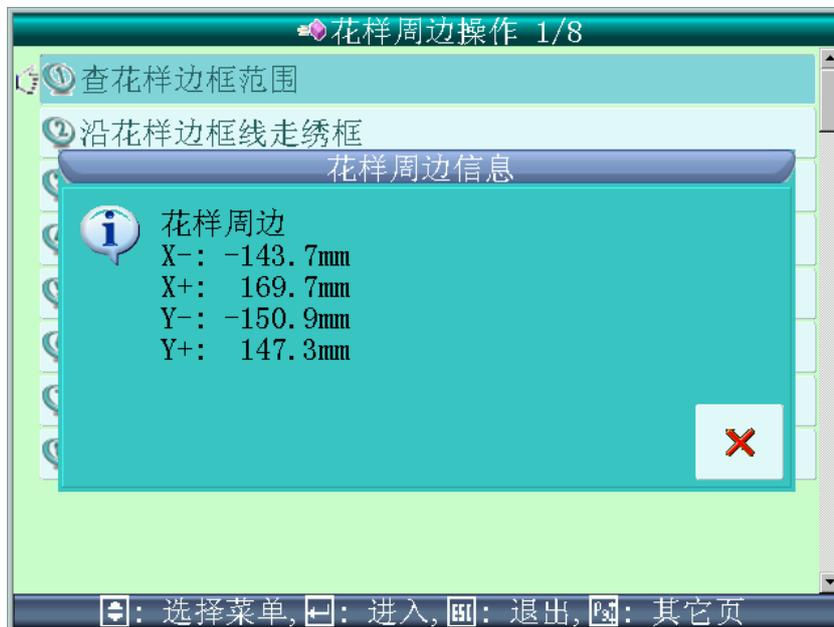
Press  in the main interface, to enter pattern border operation interface.



7.2.1 Check the Pattern Border Range

This function is to check and display the border range of the current embroidery pattern.

1. Move the cursor to “check the pattern border” and press “”. System will display the border information of the pattern in window:



2. Press “” or “” to close the window.

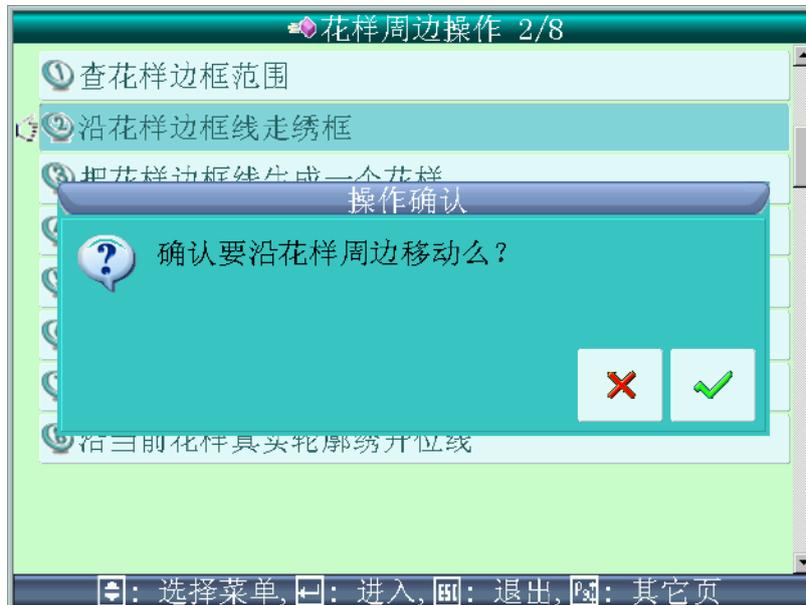
7.2.2 Move the Frame along the Pattern Border

This function can drive the frame move along the border. If it touches any limit, system

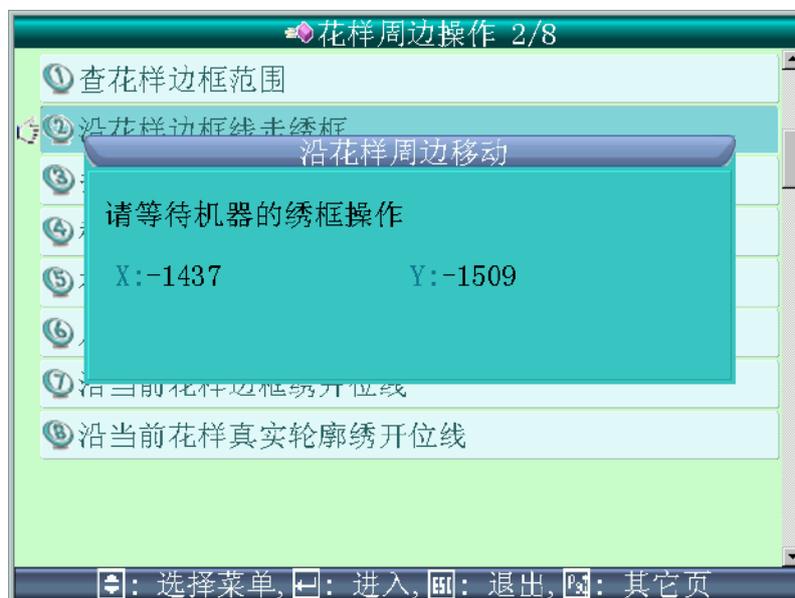
will make automatic correction to avoid collapse with frame during embroidery.

1. Move the cursor to “move the frame along the pattern border” and press “”.

System will hint confirmation box.



2. Press “” to confirm and move the frame along the pattern border and the interface will display the movement information. Press “” to cancel.

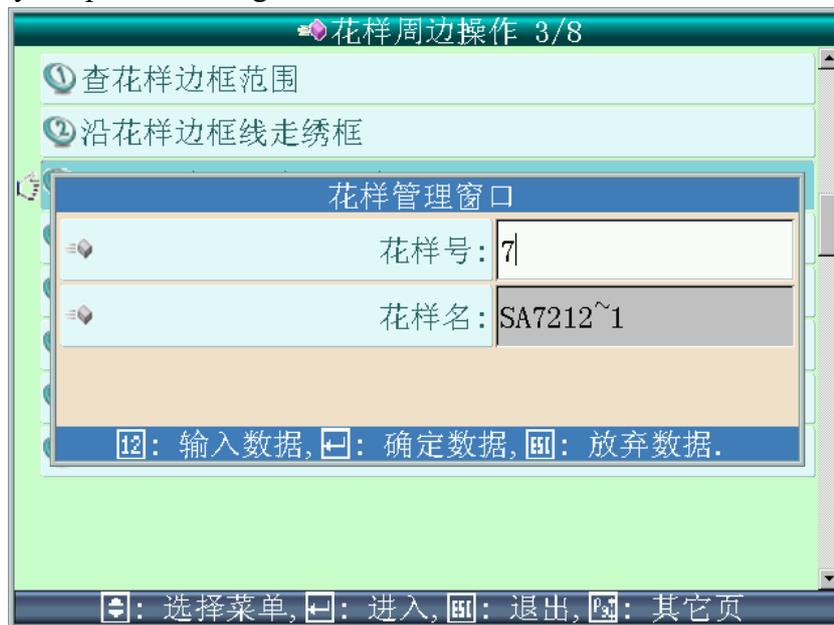


3. After finishing the movement, system will return to the pattern border operation interface.

7.2.3 Generate Pattern from Pattern Outline

This operation can generate a new pattern from the outline of the current pattern.

1. Move the cursor to “generate pattern from pattern outline” and press “” to display the pattern management window.



2. Input the pattern number and name for the newly generated pattern.
3. Press “” to save the outline pattern or press “” to cancel the operation.

7.2.4 Generate Patch Position by Frame-moving, then Embroider

Before embroidering a pattern, user may wish to embroider a sign for positioning appliqué. This function can help user create that kind of pattern, and then use this pattern as positioning reference.

1. In preparation status, move the cursor to “generate patch position by frame-moving, then embroider” and press “” to enter the interface.

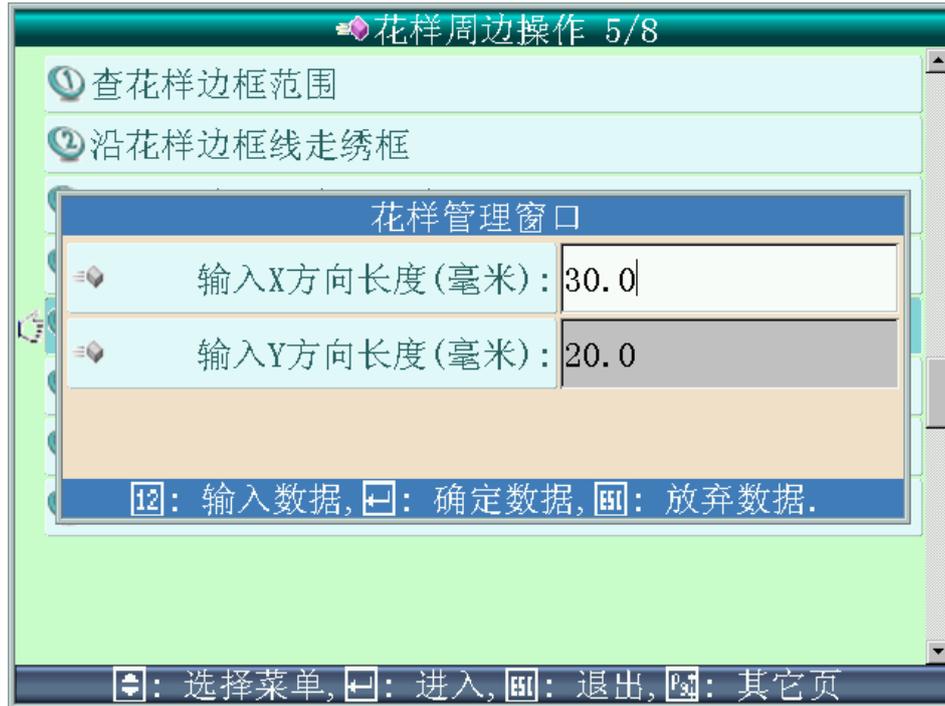


2. Press   to shift between flat stitch and jump stitch. Press manual frame-moving key to move the frame along the desired route and press  at each turning point to confirm the route.
3. After editing, press  and “” in order, and system will hint new pattern name, number, etc.
4. Following the hints, input new pattern number (system will automatically provide a number) and name, and press “” to confirm and generate the pattern.
5. Press “ ” to cancel the current operation and return to previous interface.

7.2.5 Embroider a Cross at Current Position

System can embroider a cross at current position. The size of the cross can be adjusted.

1. In pattern border operation interface, move the cursor to “embroider a cross at current position” and press “”. The system will enter the following interface, where user can set the length of the cross at X and Y directions:

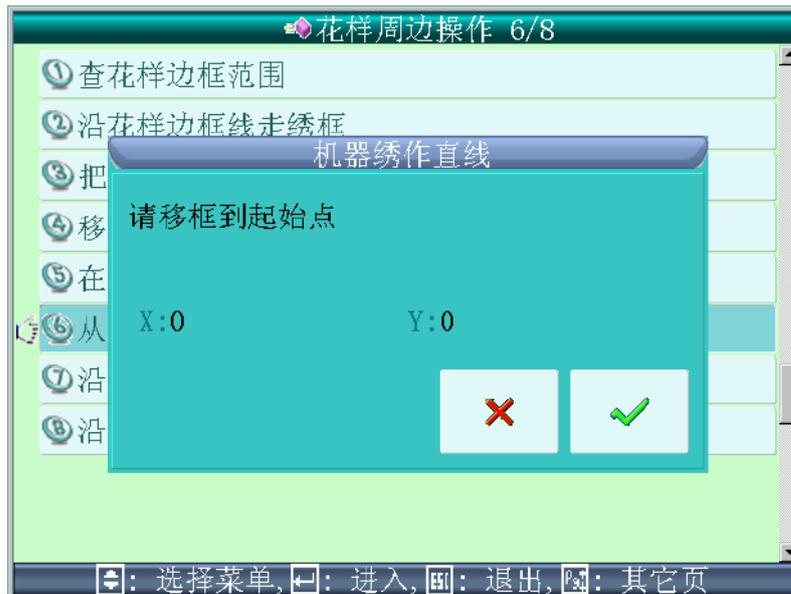


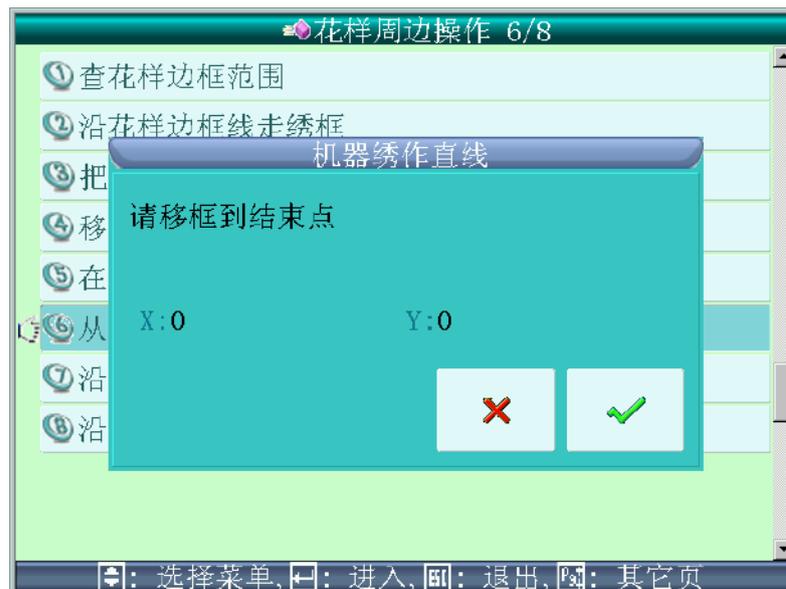
2. Input the modified length at Y or Y direction, and press “”.

System will generate a temporary data of the cross and return to the main interface. Now the label  is displayed. User can pull bar to embroider a cross. After the embroidery, system will return to the embroidery preparation status.

7.2.6 Embroider a Line from Frame-moving End to Start

1. In pattern border operation interface, move the cursor to “embroider a line from frame-moving end to start” and press “”. System will display the start point of the frame-moving.



2. Move the frame to the start point of the line, press “


This screenshot is similar to the previous one, showing the same software window and menu. The dialog box now displays the text "请移框到结束点" (Please move the frame to the end point). The "X:0" and "Y:0" input fields and the confirm/cancel buttons remain the same. The status bar at the bottom is also visible.

Move to the end point and press the “

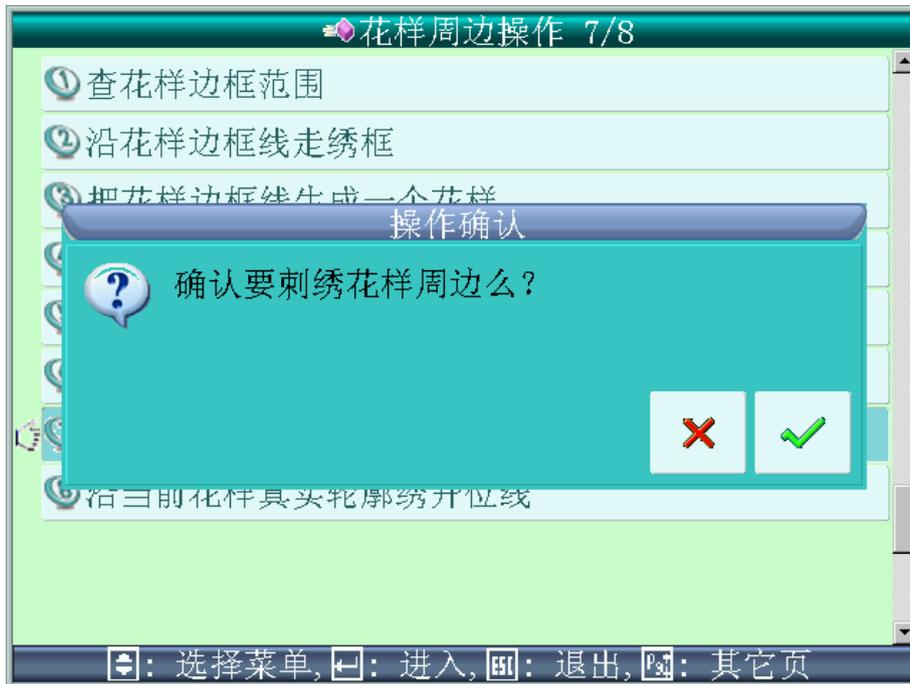
3. System will generate temporary data of the line and return to the main interface.

Now system displays  on the main interface. Pull bar to embroider the line, and after that, system will return to the embroidery preparation status.

7.2.7 Embroider Along Outline of Current Pattern

The function can measure pattern border data and generate a temporary data for users. This function should be performed in embroidery preparation status.

1. In pattern border operation interface, move the cursor to “embroider the outline of the current pattern” and press “” to enter confirmation interface.



Press “” again to confirm or press “” to cancel the operation.

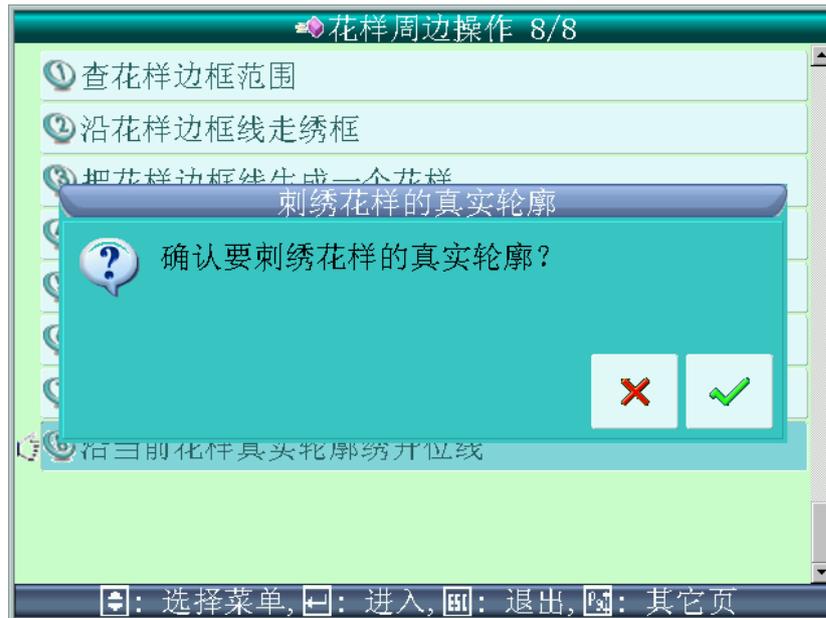
2. System will generate temporary information of the pattern border and return to the main interface after user confirms the operation.

Now system displays  on the main interface. Pull bar to embroider the border, and after that, system returns to the embroidery preparation status.

7.2.8 Embroider Real Outline of Current Pattern

System will generate temporary outline data according to the current pattern. Pull bar to embroider.

1. In pattern border operation inrerface, move the cursor to “embroider real outline of current pattern” and press “” to enter confirmation interface:



System will generate a temporary data according to the border data of current pattern and ask user to confirm. User can press “” to cancel the operation.

2. Press “” to confirm the operation, and system will return to the main interface and enter embroidery confirmation status.

At this time, system displays  on the main interface. Pull bar to embroider the outline, and after that, system returns to the embroidery preparation status.

7.3 Positioning Idling

This function is only available in embroidery confirmation status “”.

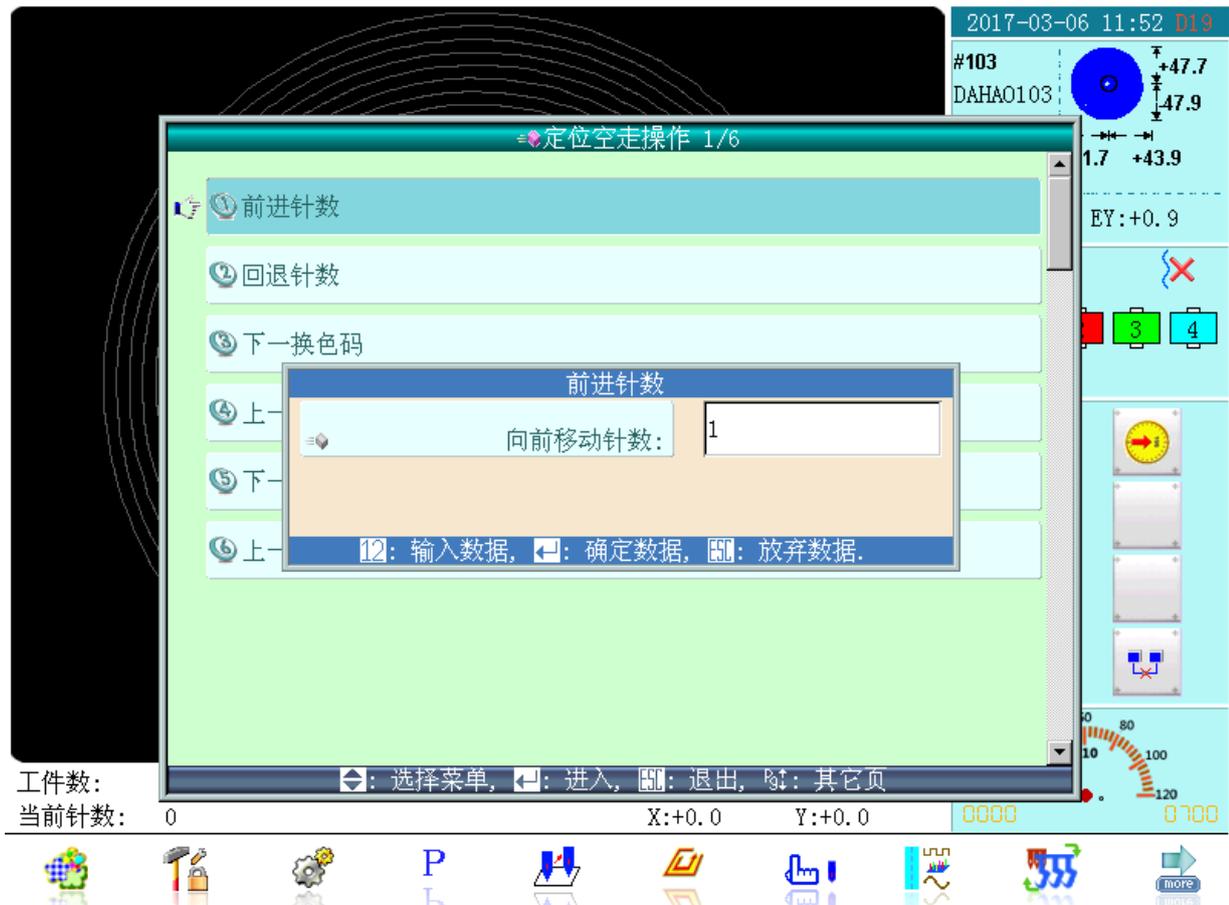
According to the user’s needs, this function enables the machine to move the frame to the appointed position without embroidering. User can set the forward/backward positioning idling by stitch number, color code and stop code.

Press  in the main interface to enter the positioning idling interface, where there is a list of function keys. You can press these keys to perform different idling functions.



7.3.1 Positioning Idling by Forward Stitches

1. Move the cursor to “forward stitches”, and press “”.



2. Input the number of “forward stitches”.

System enters the interface of “forward stitches”. User can press “” to confirm or press “” to cancel.

3. System returns to the main interface, where user pull bar to right to idle by set stitches.

7.3.2 Positioning Idling by Backward Stitches

The same operation with 7.3.1, but user need pull bar to left to make the idling.

7.3.3 Positioning Idling by Next Color-changing Code

1. Move the cursor to “next color-changing code” and press “”.



2. Press “” again to confirm and system returns to the main interface, where user pulls bar to right to idle to the next color-changing code.

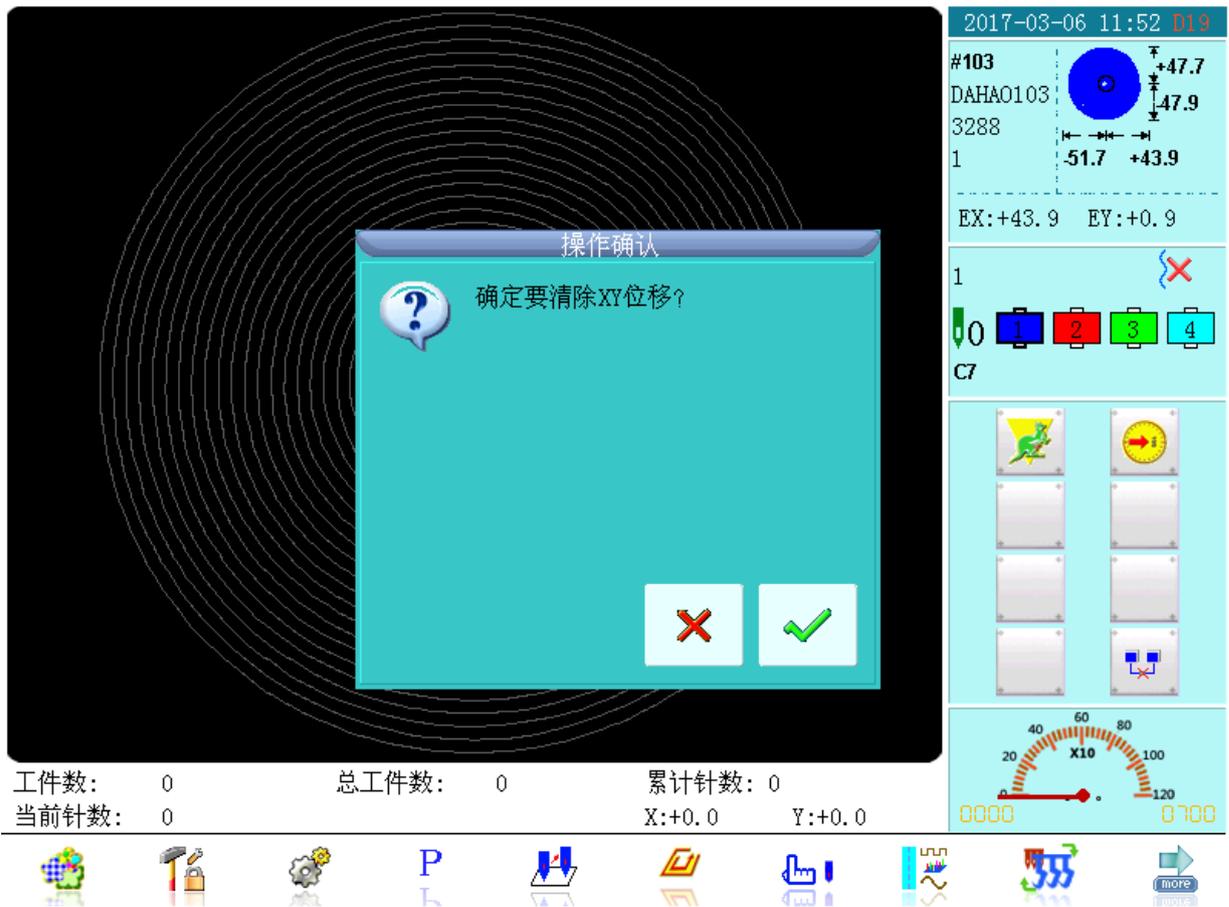
User can press “” to cancel the operation.

The other three positioning idling functions have the similar operation method.

7.4 Clear XY Displacements

This function is to clear current value of X/Y displacements.

Press “” on the keyboard and system will display the confirmation window.



Press “” to clear the value to 0 or press “” to cancel the operation.

User can check the value in the main interface.



Chapter 8 Pattern Edit

This function can be used to edit patterns in memory or create a new pattern.

8.1 Start Pattern Edit

Press  in the main interface to enter memory pattern management interface. Select the pattern for edit and press  to display the following window.

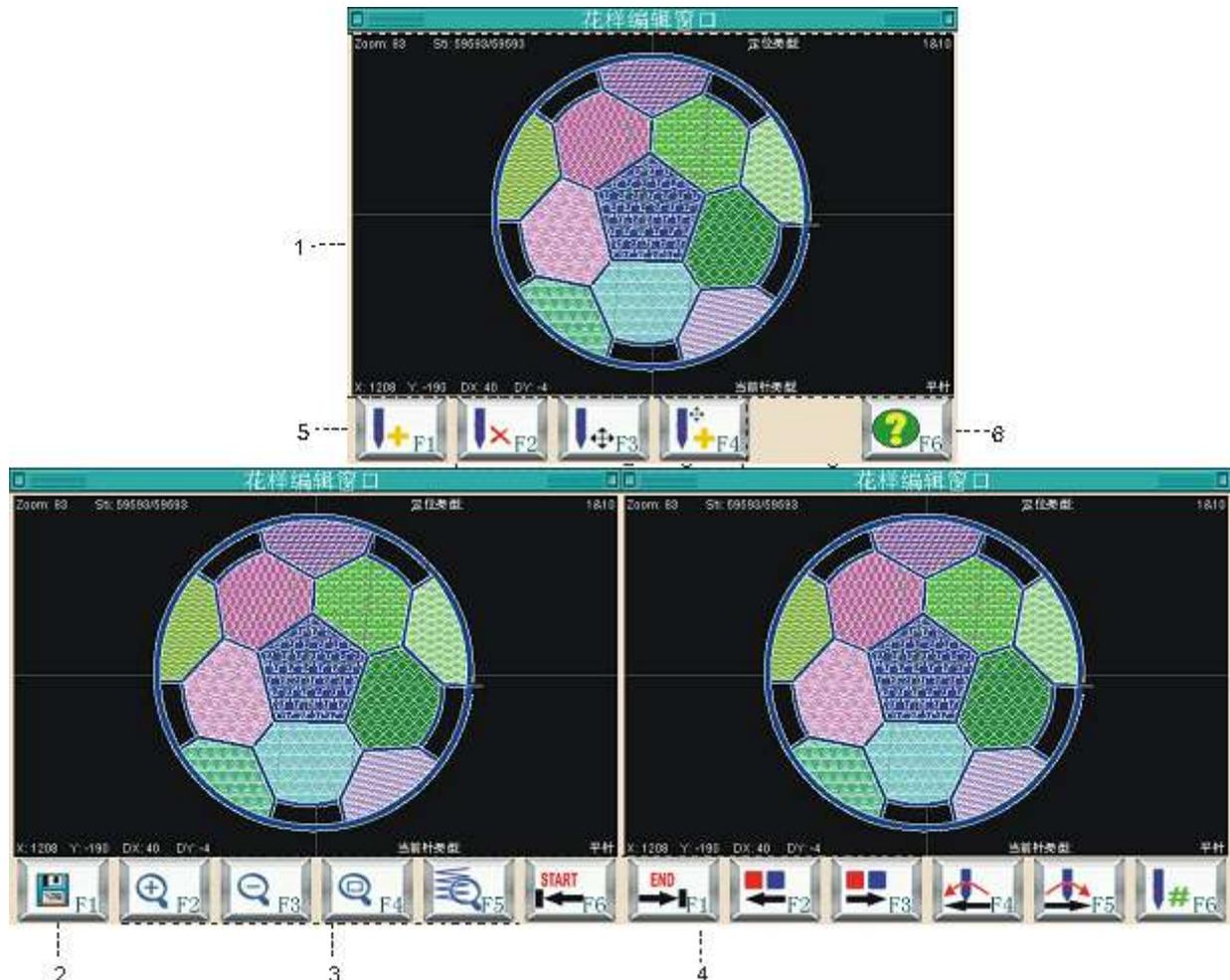


Press “” to edit the current pattern or press “” to edit a new pattern.

Note: no combined pattern can be selected, or the system will report error.

8.2 Pattern Editing Operation

8.2.1 Overview



Pattern preview window: used to preview pattern. In view, use “+” to mark the position of current needle. The needle trace of current stitch is highlighted in white. The scaling information is displayed on the top-left while the positioning stitch type on the top-right (use



to shift) and the detailed stitch information at the bottom of the interface.

1. Pattern editing interface
2. Document operation: to save pattern
3. View operation: to scale up/down pattern
4. Stitch positioning: to position the current stitch (to be checked and edited)
5. Stitch editing function: used to switch stitch code, insert stitch, delete stitch and move stitch position.
6. Help: press this key to display the instruction window for each key.



8.2.2 Document and View Operation



: to save the current pattern as a new file.



: to scale up/down view, by 150% each time.



: to reduce the size of pattern to view the whole pattern. If the actual size is smaller than the display range of the screen, the pattern will be displayed in actual size.



: to enlarge the pattern to 450% in order to view the details of the stitches. The “current stitch” will move automatically to the center of the screen.



: to check online help.

8.2.3 Stitch Positioning and Editing Function

Move the current stitch to a certain stitch. At the same time, use “+” to mark the position of “current stitch” in the pattern preview window. If the “current stitch” is not within view, system will automatically renew the view to display the “current stitch” in the centre.

1. Stitch Positioning



: positioned to the pattern start;



: positioned to the pattern end;



: positioned to last color-changing code;



: positioned to next color-changing code;



: positioned to last jump stitch code;



: positioned to next jump stitch code;

Press “” to move the current stitch position in high speed according to the positioning type, press “” to move the current stitch position in high speed according to the positioning type, and press “” to shift among the positioning types of “1&10, 100&1000, satin, stop, color-changing, jump, and sequin”.

2. Stitch Editing



: to insert one stitch of appointed type at current position, press “” to change the stitch type, then press “” to confirm the addition or press “” to cancel.



: to delete the current stitch.

: to move the current stitch by pressing the direction keys on the panel, and press “” to change the moving speed among “low speed, intermediate speed, and high speed”.

: to add satin stitch at the pattern end continuously.

Move coordinate index to proper position by pressing direction keys. Press “” to add a stitch at present position; move coordinate index to add more stitches.

Press “” to switch coordinate index speed among high speed, intermediate speed and low speed.

After editing, click “” and input pattern name and number. Press “” to confirm or “” to cancel.

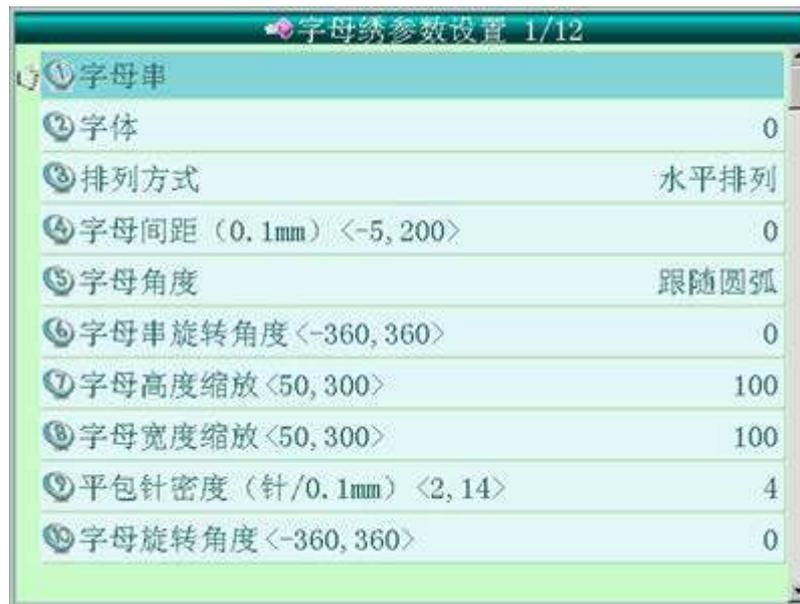


Chapter 9 Letter Pattern Operation

User can create letter pattern by the font library saved in the system.

9.1 Start Letter Pattern Operation

Press  in the main interface to enter memory pattern management interface, where user can press “” “” in order to enter letter pattern operation interface.

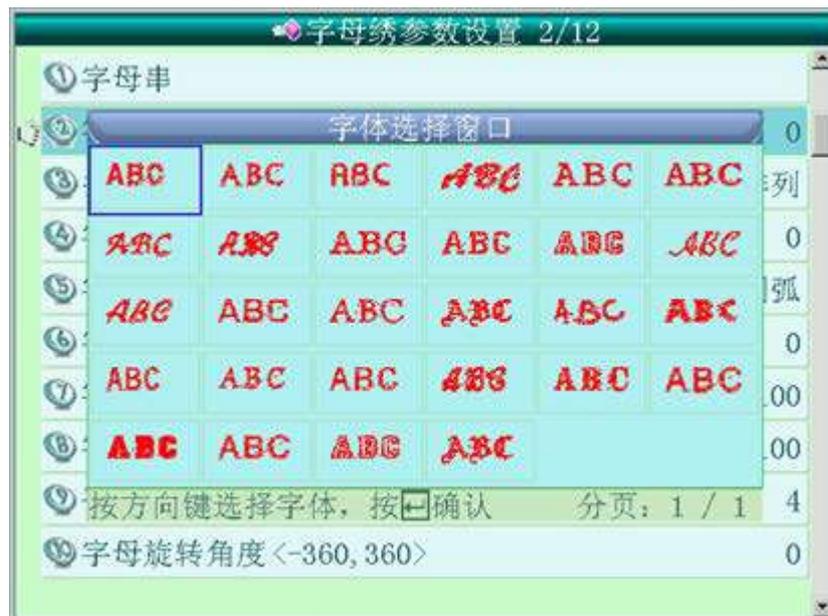


9.2 Input Letter String and Basic Parameters

After entering parameter inputting interface, move the cursor to certain parameter and press “” to make corresponding setting. After setting the value, user need press “” to save it. The following picture is the letter string inputting interface.



1. “Letter String”: the letter list to be embroidered.
2. “Font”: the style of the embroidery letter. This selection will be applied to all letters. (For the font setting of single letter, please refer to interface to “generate letter pattern”.)



Press “” to move cursor to intended font and press “” to confirm.

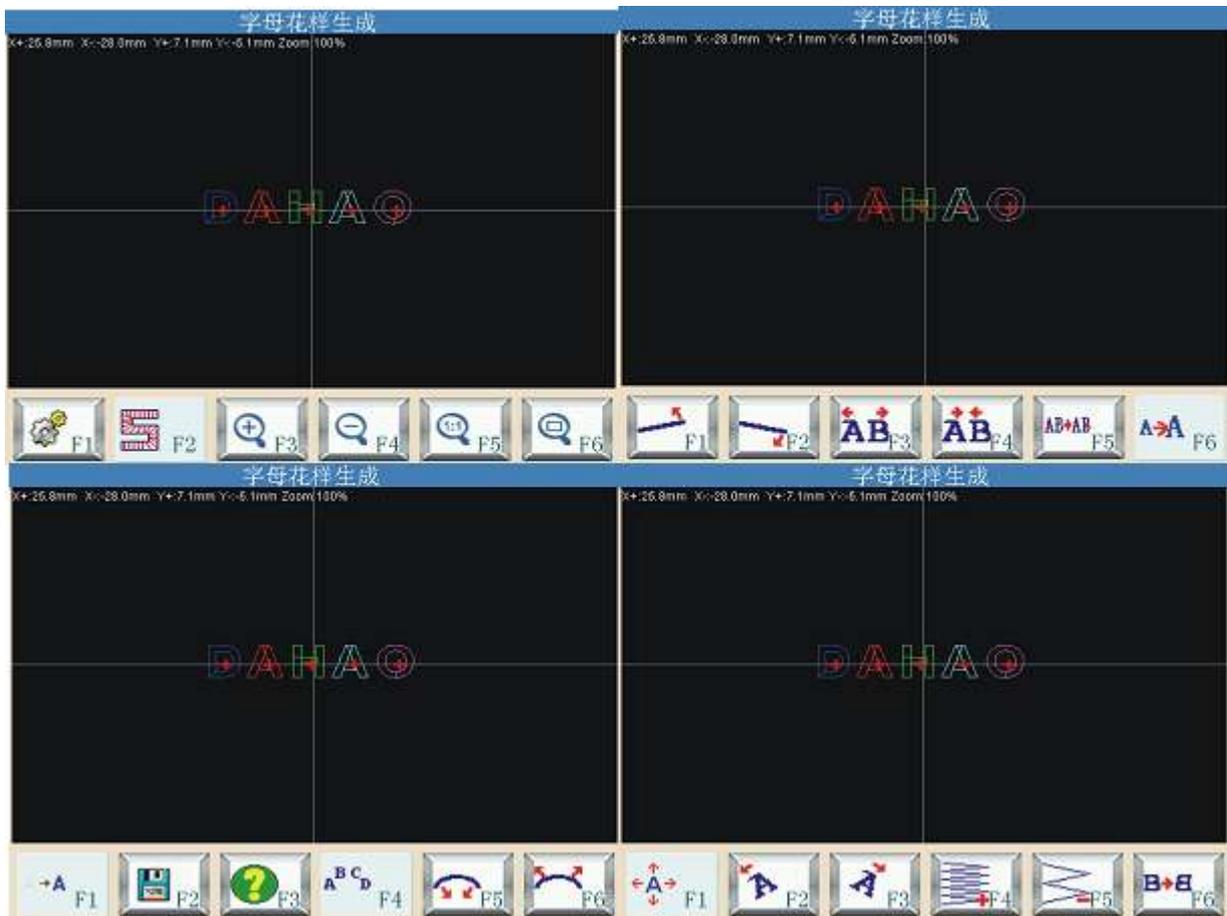
3. “Arrangement”: arrangement of letters. Four types of arrangement are available: “straight”, “vertical”, “up arc” and “down arc”.
4. “Letter Interval”: interval between letters by increment of 0.1mm.
5. “Letter Angle”: in case of arc arrangement, whether each letter changes its angle according to its position at the arc.
6. “Letter String Rotation Angle”: the rotation angle of the whole letter string.
7. “Letter Height Adjustment”: increase or decrease the letter height.

8. “Letter Width Adjustment”: increase or decrease the letter width.
9. “Stitch Density”: the stitch interval of the generated letter pattern. The smaller the value, the higher the density.
10. “Letter Rotation Angle”: the rotation angle of each letter opposite to its own center.
11. “Auto Color-changing”: whether to add color-changing code before each letter.
12. “Display Hint Window”: used to set whether to display hint information during the letter pattern adjustment.

After setting letter pattern parameters, user need press “ ” to enter the interface to “generate letter pattern”, in order to adjust letter pattern.

A. The Interface to “Generate Letter Pattern”

As shown below, user can press  to shift among these three interfaces.



Usually, user need first set parameters such as arrangement, rotating angle, letter interval and so on. And then, select one letter to adjust its arrangement parameter (by buttons at right side of the screen).

Letter pattern display area: the central cross means coordinate, and the intersection is origin (0, 0). The letters will arrange around the origin automatically.

B. View and Document Operation



 : used to set basic parameters of the letter string.



“Stitch”: display/conceal stitch form, to conceal it can increase computation speed.



 “Scale Up”: enlarge the display window to check the details of letter pattern.

 “Scale Down”: reduce the display window of letter pattern.

 “Actual Size”: display the letter pattern in actual size. At this time, the size of the pattern displayed into the screen is equal to the actual size of the embroidery.

 “Check All”: scale down the view to check the whole pattern.



“Window Movement”: press this key to display in dark, press

“   ” to move window and letter pattern will move along the window.



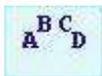
“Save”: used to save the letter pattern being edited. Press this key to display the interface to input pattern number and name. Modify pattern name and number as needed (usually pattern number is not to be changed), and press “” to save or press “” to quit.



“Help”: the online help of the interface.

C. Adjustment of Arrangement Parameters

If you edit individual letter and then adjust the whole arrangement parameter, the editing of the individual letter will be probably covered.

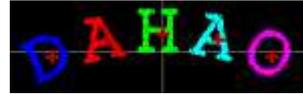


“Fixed Letter Direction”: when letter string is arranged in arc, the letter angle will not change along with the arc rather remain at fixed angle, e.g. .



“Angle Follow”: when letter string is arranged in arc, the letter angle will change

according to its position at the arc (vertical to the arc) e.g.



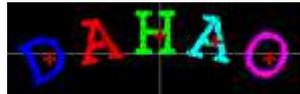
“Radian Increase”: when letter string is arranged in arc, this key is used to

increase the radian of the arc, e.g.



“Radian Decrease”: when letter string is arranged in arc, this key is used to

decrease the radian of the arc, e.g.



“Wholistic Anti-clockwise Rotation”: anti-clockwise rotation of the whole letter

string, e.g.



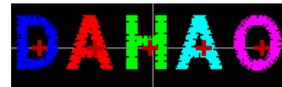
“Wholistic Clockwise Rotation”: clockwise rotation of the whole letter string, e.g.



“Increase Letter Interval”: increase letter interval, e.g.



“Reduce Letter Interval”: reduce letter interval, e.g.



D. Adjustment of Selected Letter



“Selection Switch”: switch the selected letter. User has to pick up a certain letter

and then he can carry out the edit. When there is a red “+” in the center of letter, it means the letter is selected, such as: . As default, system will select all letters. After user clicks

“selection switch” key, system selects the first letter, then the next one by another click. After user selects the last letter, clicking “selection switch” key will select all letters again.

Repeat clicking this key to make the same selection circulation.



“Enlarge Letter”: used to adjust the size of the selected letter. Pres “” to

increase height, press “” to decrease height, press “” to increase width and press



“←” to decrease width.

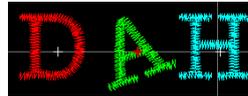


“Move Letter”: press this key, and then press “↑↓←→” to move the selected letter at corresponding direction.



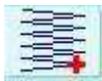
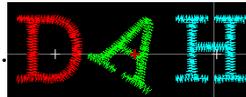
“Anti-clockwise Rotation”: make anti-clockwise rotation of the selection letter

based on its own center (marked by “+”), e.g.



“Clockwise Rotation”: make clockwise rotation of the selection letter based on

its own center (marked by “+”), e.g.



“Increase Density”: increase the satin stitch density of the generated letter pattern,

e.g.



“Decrease Density”: decrease the satin stitch density of the generated letter

pattern, e.g.



“Flip Horizontal”: flip horizontal of selected letter.



“Flip Vertical”: flip vertical of selected letter.



“Color-changing Switch”: set or cancel color-changing before the selected letter.



“Change Font”: change the font of the selected letter. Press this key to display

font selection dialogue box, where user can select a desired font and confirm.

Press “ ” to return to letter pattern parameter input interface. If user need change the letter string for embroidery, press this key to return to the previous interface to make the modification. In this case, all adjustments made for each letter in this interface will be canceled.

9.3 Save Letter Pattern

After finishing letter pattern edit, press  and then press “” at the pop-up



window; input the pattern number and name, and then press “” to save.



Press “” to confirm the saving and in case of no more editing, press “” to quit.



Chapter 10 JF Type Sequin Embroidery

10.1 Sequin Embroidery Introduction

Sequin embroidery is formed by sequins and stitch forms. We need choose those hard materials with smooth surfaces as the sequins. With the sequin in different color, size and shape, embroidery will be shining and have amazing effect. Pattern with Sequin codes has its own format.

A. Application Scope

This control system of sequin embroidery combines normal embroidery head, special embroidery head and sequin-feeding mechanism.

B. Function Features

1. Two ways of sequin feeding: Roller Type and Lever Type;

Roller: the core part in the whole mechanism is a wheel-like device. Its operating principle is to rotate continuously in one direction so as to feed sequins into position.

Lever: the core part is lever type device. Its operating principle is to use the retrieval movement of the linkage to feed sequins into position.

2. Separate action of sequin appliqué and sequin feeding device;
3. Manual separation of heads or collective sequin-feeding at one time;
4. Separate display of sequin embroidery work status;
5. Sequin feeding mode and angle can be modified via control panel.

C. Specifications

1. Sequin diameter range: 3mm, 4mm, 5mm, 6.75mm, 9mm;
2. Max. rotation speed: 850rpm

10.2 Embroider Sequin

User can make sequin embroidery by the following procedures:

1. Input pattern with sequin code, See 10.3;
2. Set sequin embroidery parameters according to the following instructions, See 10.4
3. Check and adjust sequin feeding device, See 10.5, to ensure the normal work status;
4. Return to the main interface and confirm the embroidery;
5. Pull bar to embroider.

Note: do not touch air valve switch during embroidery, or it may cause damage to the sequin feeding device.

10.3 Input Sequin Pattern

Press  in the main interface, to enter the “disk selection” interface, where user need select the target disk and target pattern, and press  to enter the “pattern input” interface,



as shown below.



Setting Method: to input the pattern number and name in the dialogue box and then press



to confirm. In the column of “whether to input new multi-sequin pattern”, use  or 

to select inputting method. Choosing “Yes” is to save all the multi-sequin patterns (whether normal or special) as the special sequin pattern. For the normal sequin pattern, the changed sequin pattern will save all the multi-sequin as “A” type sequin. If you choose “No”, normal sequin pattern remains as normal sequin pattern, while special multi-sequin patterns will be recognized and saved as special multi-sequin pattern automatically.

10.4 Sequin Embroidery Parameter Setting

This section is about how to debug sequin embroidery device and set related parameters in case of multi-sequin embroidery.



Press  in the main interface, to enter machine parameter management interface, and then select “sequin embroidery parameter” to enter the setting interface.



金片绣相关的参数 61/102		
C31	右金片的限定速度 <300, 1000>	400
C32	左金片的限定速度 <300, 1000>	400
D25	右金片送片角度调整 <-15, 15>	0
D26	左金片送片角度调整 <-15, 15>	0
C33	金片刺绣是否自动启动	否
D27	金片装置下落时间 <0, 15>	2
C34	断线后金片装置自动升起	否
C56	金片装置是否独立起落	否
B17	跳跃不剪线时是否抬气阀	是
D70	右电机切换行程基数 <6, 40>	6

←: 选择菜单, →: 进入, ⏪: 退出, ⏩: 其它页

(1) Speed Limit for Left (Right) Sequin

The speed limit is determined by the sequin size. However, due to different mechanical structures, even for sequin with the same size, the motor rotation angle will be different, which is directly related to the maximum speed of sequin embroidery.

Note: the max. rotation speed of flat embroidery should be higher than that of sequin embroidery.

Setting method: move the cursor to this parameter and press  to enter, and then press

 or  to modify its value and press  to confirm.

(2) Left (Right) Sequin Feeding Angle Adjustment (range: -15~+15)

It is used to adjust the sequin feeding angle opposite to the main shaft. The higher the value, the later the feeding time is.

(3) Sequin Embroidery Auto Start

When set as “Yes”, system will start sequin embroidery automatically; when set as “No”, in case of sequin embroidery, user need pull bar to start.

(4) Sequin Device Lowering Time

This parameter is used to set the time from sequin device lowering to sequin embroidery start (range: 0-15, default: 2). In case of air valve drive, default value is ok, but, for motor drive, user should set as 4-5.

(5) Auto Lift after Thread Breakage

When set as “Yes”, sequin presser foot will automatically lift in case of thread breakage, when set as “No”, manual operation is needed to lift the sequin presser foot after thread breakage.

(6) Independent Action of Sequin Device



When set as “Yes”, sequin device may act independently; when set as “No”, sequin devices will act collectively.

(7) Motor Number for Left/Right Sequin Device

This parameter is to be set according to the actual installation of first/last needle sequin device (range: 1 or none). With sequin device, set it as 1; without sequin device, set it as none.

(8-1) Left/Right Sequin Device 3mm Setting

According to actual situation, this parameter can be set as single (or dual) direction, with angle range being 5.4-62.2 degree.

(8-2) Left/Right Sequin Device 4mm Setting

According to actual situation, this parameter can be set as single (or dual) direction, with angle range being 5.4-62.2 degree.

(8-3) Left/Right Sequin Device 5mm Setting

According to actual situation, this parameter can be set as single (or dual) direction, with angle range being 5.4-62.2 degree.

(8-4) Left/Right Sequin Device 7mm Setting

According to actual situation, this parameter can be set as single (or dual) direction, with angle range being 5.4-62.2 degree.

(8-5) Left/Right Sequin Device 9mm Setting

According to actual situation, this parameter can be set as single (or dual) direction, with angle range being 5.4-62.2 degree.

(8-6) Left/Right Sequin Device A Size&Color

According to actual situation, the size can be set as 3MM/4MM/5MM/7MM/9MM, while the color can be set as silver, cyan, yellow, purple, blue, gold, green, red, etc.

The above parameters from (8-1) to (8-6) are used for setting sequin feeding motor angle. Principally, (8-1) to (8-5) are mechanical parameters, only to be set by manufacturers. The settings of the manufacturers usually need no changing. Parameter (8-6) is for user to operate and set according to the actual size of the embroidery pattern.

(9) Air Valve Lift when Jump without Trimming

When set as “Yes”, air valve will auto lift in case of jump code set as without trimming; when set as “No”, air valve will not lift.

10.5 Manual Operation of Sequin Embroidery

There are two kinds of manual operation: collective and separate.

1. Collective Manual Operation:

This operation can be divided into three parts: “sequin start”, “sequin end” and “sequin feed”.

(1) Press  in the main interface, move the cursor to “sequin start” and press “” to confirm; at this time, all presser feet will go down;

(2) Press  in the main interface, move the cursor to “sequin feed” and press “”



once to make all working heads to feed one sequin (with presser foot down);

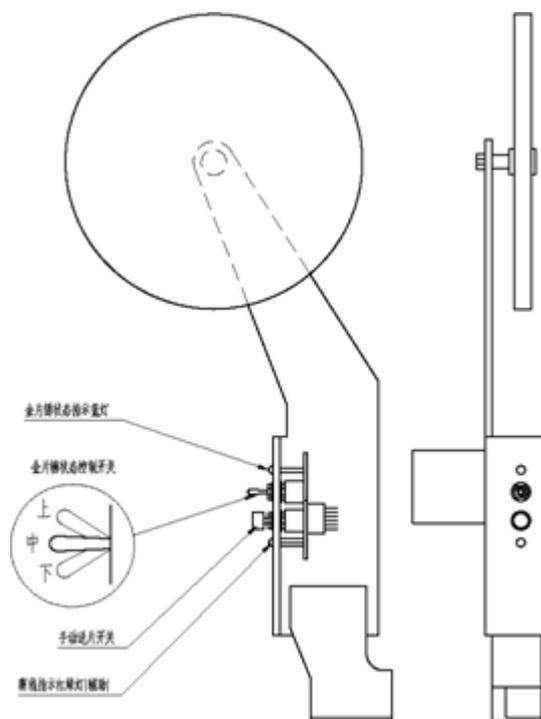
(3) Press  in the main interface, move the cursor to “sequin end” and press “” to confirm; at this time, all presser feet will go up.

2. Separate Manual Operation:

- Thread-breakage switch is embroidery switch. When it is at the down position, neither flat embroidery nor sequin embroidery is available.

- Thread-breakage warning lamp is mounted on the sequin sending device, which is convenient for the operator to monitor.

Note: when the manual control switch of air valve is in the middle, blue lamp is on, which indicates a normal condition of sequin embroidery.



Installation Position of Sequin Switch Board

10.6 Sequin Applique

After thread breaks or user manually turns on the red lamp, pulling bar will have the machine return to sequin applique status. All the sequin devices will go up; machine stops when it backs to the patch point. User can pull bar again to let the patch sequin device go down for applique. When it reaches the thread-breakage point, machine stops, then other sequin devices will go down to continue normal embroidery. “Patch stitch number” in machine parameter setting is ineffective in sequin applique.



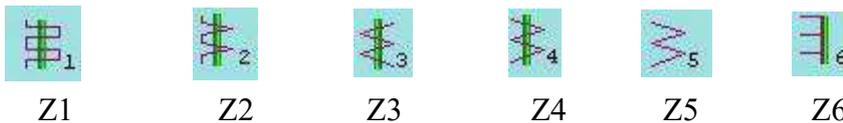
Chapter 11 Instructions on Coiling, Taping and Zigzag Embroidery

11.1 Function Introduction

1. Coiling function: This function is to wind core thread in a form of coiling. Left Coiling  (clockwise) and Right Coiling  (anti-clockwise) are both available in coiling function, which is decided by the setting of parameters.

2. Taping function: this function makes use of rope or tape as embroidery material. It includes taping 1  and taping 2  (blind embroidery).

3. Zigzag function: this function is to sew the core thread in the specialized stitch form on the fabric. There are six stitches form saved in system: Z1, Z2, Z3, Z4, Z5 and Z6. Their icons are as follows.



For convenience, Coiling, Taping and Zigzag embroidery are all called special embroidery at below.

4. Flat embroidery head and special embroidery head can be switched automatically or manually.

5. Coiling, Taping and Zigzag functions can be switched at will.

6. The presser foot of special embroidery can go up and down automatically or manually. (This function is only for the machines installed with relevant apparatus.)

7. The speed limit of flat embroidery head and special embroidery head can be set respectively.

8. Auto-saving of the M axis stop point at power-off: The machine can continue the work from the stop point when the power recovers.

9. The trimming function of the special embroidery head (no trim\trim bobbin thread\trim both the upper and bobbin threads)

10. The presser foot of special embroidery head can go up automatically before manual frame-moving and go down before embroidery.

11. Zigzag embroidery lever can be tested manually.

11.2 Main Technical Specifications

1. The sequence of needle positions on flat embroidery head and special embroidery head: this control system deems the first one as the special embroidery needle position, and the needle position for flat/sequin embroidery are from the second needle to the end.

2. Speed of special Embroidery: 300~600rpm, by increment of 10r/m.

3. Manual rotating angle of M-axis: 18° /step.

11.3 Parameters and Settings

Press  in the main interface, to enter parameter setting interface, where user moves the cursor to “special embroidery parameter” and then presses “” to enter the interface.

Press   to shift page.



Move cursor to the corresponding parameter and press “” to input or select the value.



Press “” to save the setting or “” to cancel it. For the related information of each parameter, please refer to Appendix 1.

The remarks of these parameters are as below:

1. D28 Special Head Interval:

Range: 0~300, Default Value: 150, 162, 166, 185, 200, 216, 225, 230, 240, 250, 270, 290, and 300

If you input the default value, there will be a “*” before the value

2. D30 Presser Foot Work Height: 0~90

This parameter is to adjust the lifting height of presser foot at each stitch.

3. D40 Presser Foot Height Limit Adjustment: 0~250

This parameter is to set the maximum lifting height of the presser foot.

4. D31 ZIG Rod Origin: Left/ Right

This parameter determines the position of swing rod when M axis is in origin and must be set in accordance with actual mechanical position.

5. C38 Frame Swing at ZIG (-10.0~-0.2, +0.2~+10.0)

The parameter is for Z5 embroidery and applies to thick cords. For thick cord embroidery, at Z5 embroidery, the system moves the frame to compensate the swinging scope of the lever. The parameter's absolute value should be set according to the cord width. And the “+/-” is decided by the mechanical structure. The moving directions of the lever and frame should be the same. Otherwise please change the “+/-” setting.

6. D42 Angle Compensation of M-axis: 0~10

The M axis of special embroidery head has mechanical clearance, so it will generate the mechanical difference after M axis changes rotating direction repeatedly. At embroidering the flat tapes, if the shape of tape is curve and the M axis has no angle compensation, the needle will fall at the edge of the tape instead of the center of tape, which may influence the embroidery effect.

During machine debugging, parameter value should be “0” when needle falls in the center of tape. If not, please repeat the adjustment to realize the best effect.

Generally, this parameter should be managed by professional experts before leaving factory.

7. D44 M-axis Work OFF Angle: 0, 90

In normal or sequin embroidery, if this parameter is set at 0, the M axis will stop at the horizontal position; if it is set at 90, the M axis will stop at the vertical position. When the distance between the normal embroidery head and special embroidery head is small, this parameter must be set as 90° to avoid clashing between M axis mechanical structure and flat embroidery head.

8. D39 Z-axis Control Shift Angle: 0~180

When the rotating angle is larger than the set value, the Z axis will swing faster.

9. D41 Swing Rod Starting Angle Adjustment: 1~3

It is the starting angle of the rod, which indicates the relative position of the needle bar and tape. It is used for adjusting the embroidery quality. “1” means the swing starts at an early



angle; “2” means the swing postpones certain angle; “3” indicates the swing postpones certain angle again and starts.

10. C36 Ratio of Left and Right Coiling: “1~4 Sti./L”

The parameter can change the coiling density; e.g. the set value 2 means one coiling every two stitches.

11.4 Related Operations of Special Embroidery

11.4.1 Shift between Flat Embroidery and Special Embroidery

(1) Manual Shift

Press  in the main interface, to enter color-changing interface.



Move the cursor to the icon of corresponding special embroidery, press “” to save selected special embroidery, or press “” to quit.

Definition of icons:

 : normal (lock-stitch);  : right coiling;  : left coiling;

 : taping 1;  : taping 2;

 : Z1 embroidery, lever swings once at every two stitches.

 : Z2 embroidery, lever swinging once at every stitch and lever swinging once at every two stitches take place alternately.

 : Z3 embroidery, lever swings once at every stitch.

 : Z4 embroidery, lever swings once at every stitch but its swing direction is opposite to the one of Z3.

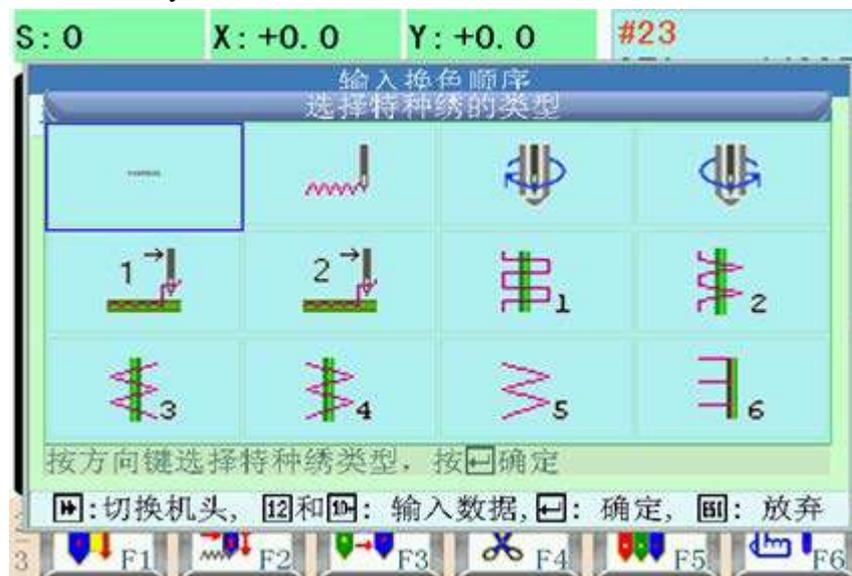
: Z5 embroidery, the same as Z4 and it's suitable for embroidering the thick cords.

: Z6 embroidery, machine embroiders three stitches at one point and lever swings at every stitch.

(2) Auto Shift

During setting of color-changing sequence before embroidery, auto shift can be achieved through the setting of color-changing position.

In the main interface, press  to enter the interface for adjusting color-changing order, move cursor to “input and repeat color-changing order” or “modify color-changing order” and press “” to enter the interface for inputting color-changing order. Input “1” (special head) to change special embroidery mode:



Press corresponding icon to select corresponding embroidery mode you need, and press “” to save the change, or press “” to exit. After saving the change, system will display the following interface:



Note: Icon with “MANUAL” means that system goes into manual shift status. Icon is still in effect when system is in automatic shift status.

During the embroidery, when the special head finishes the work, the machine will stop at the end point. At this moment, the system will display “embroidery pause, pull bar for start” and wait for the operation of the tape. After that, user need pull bar to continue. Then, the machine will automatically shift to the flat embroidery head and work according to the functions of flat embroidery. When user shift the flat embroidery head to special embroidery head, the machine will stop automatically and wait for the preparation of tapes after needle position 1 (special embroidery head) is shifted. Then user can pull the bar to continue the embroidery.

11.4.2 M-axis Operation of Special Embroidery

M-axis operation mainly includes: “M-axis Back to Working Position”, “M-axis Back to Zero Position” and “M-axis Manual Operation”.

(1) M-axis Back to Working Position

Press in the main interface and move cursor to “M-axis back to working position”. Then click “” display the dialogue window and press “” again to let the M axis back to the working position, or press “” to exit.

(2) M-axis Back to Zero Position

Press in the main interface and move cursor to “M-axis back to zero position”. Then press “” to display the dialogue window and press “” to rotate M axis back to zero position, or press “” to exit.



(3) M-axis Manual Operation

Press  in the main interface and move cursor to “M-axis manual operation”. Then press “” to display the dialogue window, where user need move cursor to “M-axis left rotation” and press “” once to rotate to left by 18 degree and 20 times to rotate one circle back to origin. The operation of “M-axis right rotation” is the same. Pressing “” is to exit.

11.4.3 Presser Foot Operation

Press  in the main interface and move cursor to “pressor foot up”. Then press “” to display the dialogue window, where user can press “” to lift the presser foot or press “” to quit the operation.

Press  in the main interface and move cursor to “pressor foot down”. Then press “” to display the dialogue window, where user can press “” to lower the presser foot or press “” to quit the operation.

11.5 Special Embroidery Debugging

Debugging special embroidery mainly includes Zigzag swing to its origin and test of presser foot action. Press  in the main interface, then move cursor to “Machine Test” and press “” to enter the management interface of machine test.

1. Zigzag Swing Rod to 100°

Move cursor to “zigzag swing rod to 100° ” and press “”. Following the hint in the dialogue window, user can pull bar switch to swing once or press “” to quit the operation.

2. Taping Presser Foot Action

Move cursor to “taping presser foot action” and press “” to display the dialogue window. Following the hint, user can pull bar switch to lift/lower the presser foot or pull it again to lower/lift the presser foot, or press “” to quit the operation.



11.6 Special Embroidery Procedure

- (1) Input pattern: select, change or edit pattern according to need;
- (2) Modify parameters, and select color-changing order and special embroidery mode;
- (3) Check special embroidery head: ensure its normal work status;
- (4) Pull bar to embroider.

11.7 Mechanical Device Category and Drive Mode of Special Embroidery

Taping embroidery machines have three sets of the motion parts mechanically: M axis, E axis and presser foot axis. M axis rotates by a certain degree at every stitch to trace the stitch, which ensures cords or tapes always in front of needle movement. E axis swings once at every one or two stitch to make the Zigzag embroidery. Presser foot axis is used for lifting and lowering the presser foot.

1. M Axis

The mechanical part of M axis can be divided to two types. One is with clutch device, whose action is controlled by electric valve or by hand. Its advantage is that only the M axis of the patching embroidery heads is moving and non-patching embroidery heads stay still. This will enhance the quality and efficiency of applique. The other type is without clutch device. Both of the two types are driven by servomotor and the origin of M axis is positioned by proximity switch.

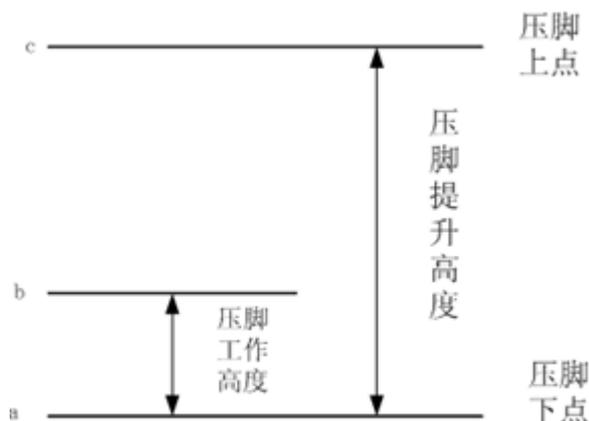
2. E Axis

According to the difference in motor and the need of proximity switch for positioning the origin, E axis devices can be divided to the following types:

- (1) Driven by stepping motor separately, without proximity switch;
- (2) Driven by stepping motor collectively, with proximity switch;
- (3) Driven by stepping motor collectively, without proximity switch;
- (4) Driven by servo drive, with proximity switch.

3. Presser Foot Axis

The working progress of the special embroidery presser foot is shown at below: (The presser foot working height is the distance of the foot's movement at every stitch. The presser foot rising height is the foot's moving distance from the bottom to the upper point at non-embroidery mode, also called the presser foot height limit.)



压脚提升示意图

According to the difference in motor and transmission mechanism, as well as the need of proximity switch for positioning origin, the presser foot axis can be divided to the following types:

(1) Manual lift of presser foot

In this mode, the presser foot working height relies on the rotation of the cam and the presser foot is raised to the limited height by hand.

(2) Transmitted by 2-phase stepping motor separately, without holding force and proximity switch

It uses a small 2-phase stepping motor for driving every special embroidery head and controlling its working height and limited height. There is no holding force when the presser foot stays at the upper point or bottom point at power-off. No proximity switch is needed for positioning. As default setting, the controller sets the foot at the bottom position when user turns on the machine.

(3) Transmitted by 2-phase stepping motor separately, with holding force but without proximity switch

It uses a small 2-phase stepping motor for driving every special embroidery head and controlling its working height and limited height. At power-off, there is holding force when the presser foot stays at the upper point, but not at the bottom point. No proximity switch is needed for positioning. As default setting, the controller sets the foot at the bottom position when user turns on the machine.

(4) Transmitted collectively by mono-phase AC motor, with 2 proximity switches

In this mode, the presser foot working height relies on the rotation of the cam and the presser foot is raised to the limited height by one mono-phase AC motor driving the presser foot axis. At both the upper and bottom points, a proximity switch is installed to adjust the presser foot rising height. The motor at neither upper nor bottom point has holding force.

(5) Transmitted collectively by stepping motor (2-phase or 3-phase), with 1 proximity switch

In this mode, the presser foot working height relies on the rotation of the cam and the presser foot is raised to the limited height by the stepping motor that drives the presser foot axis. At the upper point, a proximity switch is installed for positioning. The bottom point is



controlled by parameters. The motors at both the upper and bottom points have holding force.

(6) Transmitted by pneumatic motor separately, without proximity switch

In this mode, the presser foot working height relies on the rotation of the cam and the presser foot is raised to the limited height by pneumatic motor that drives the heads separately.



Chapter 12 Instructions on Loop Embroidery

12.1 Function Introduction

- ◇ Looping embroidery function: looping embroidery is a new kind of embroidery and its stitch form consists of independent thread loops, producing 3D and beautiful effect.
- ◇ Chained embroidery function: chained embroidery is to closely interlock thread loops to form chained stitch form.
- ◇ Thread breakage detection, auto patch and head lock functions.
- ◇ Flat embroidery head and loop embroidery head auto/manual switch.
- ◇ Looping embroidery and chained embroidery auto switch.
- ◇ Needle of loop embroidery head automatic action.
- ◇ Automatic thread trimming function.
- ◇ Needle automatically goes up before manual frame-moving, and needle goes down before embroidery.
- ◇ Automatic switch among shuttles to realize color-changing.
- ◇ Manual function of mechanical parts.

12.2 Switch between Loop Embroidery Head and Flat Embroidery

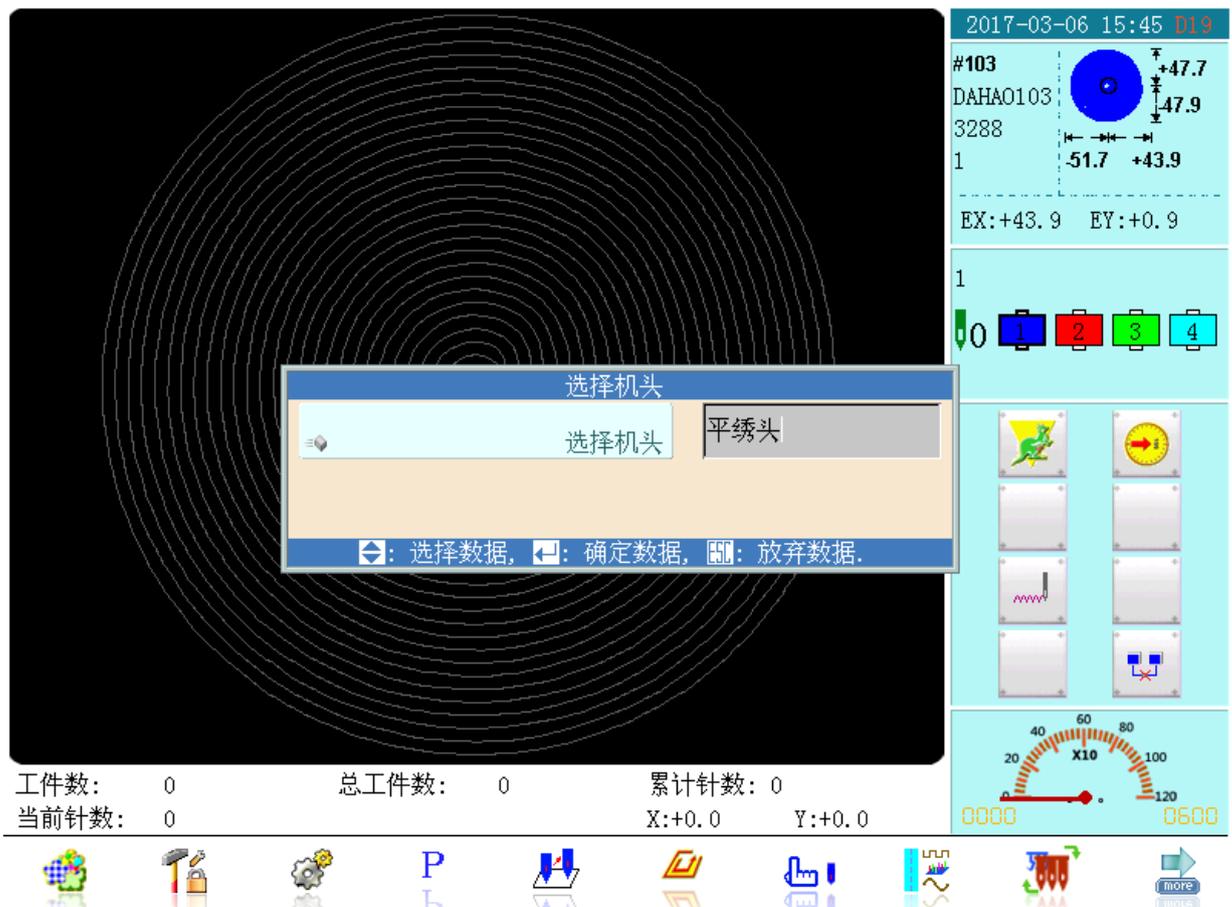
Head

12.2.1 Head Switch

As required by the embroidery work, user can switch between loop embroidery head and flat embroidery head freely, and then make various operations.

◆ Operation Procedure:

- (1) When machine stops, press  (current head is loop embroidery head) or  (current head is flat embroidery head) in the main interface, to enter the following interface for manual head switch and color-changing:

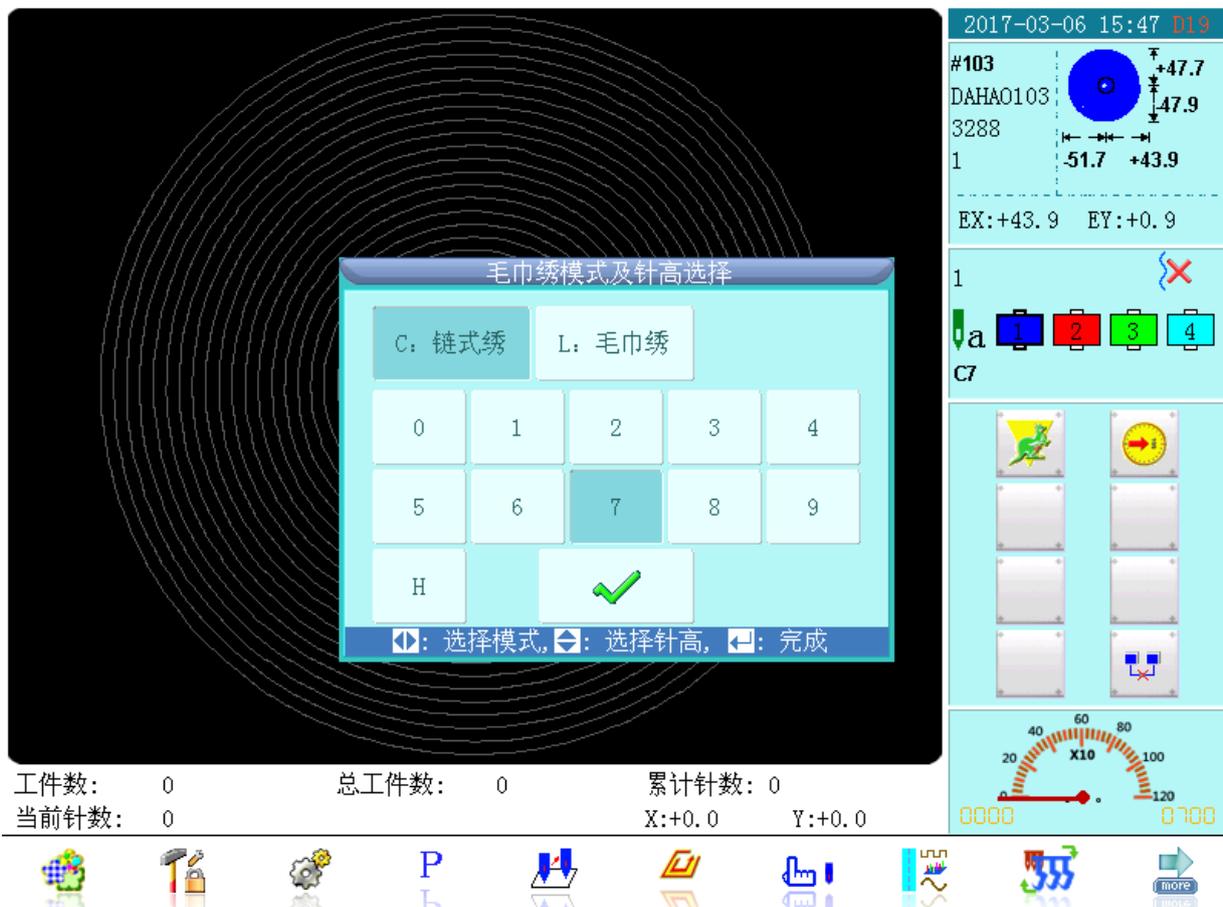


According to the current head type, system will hint to switch from flat embroider head to looping embroidery head or vice versa.

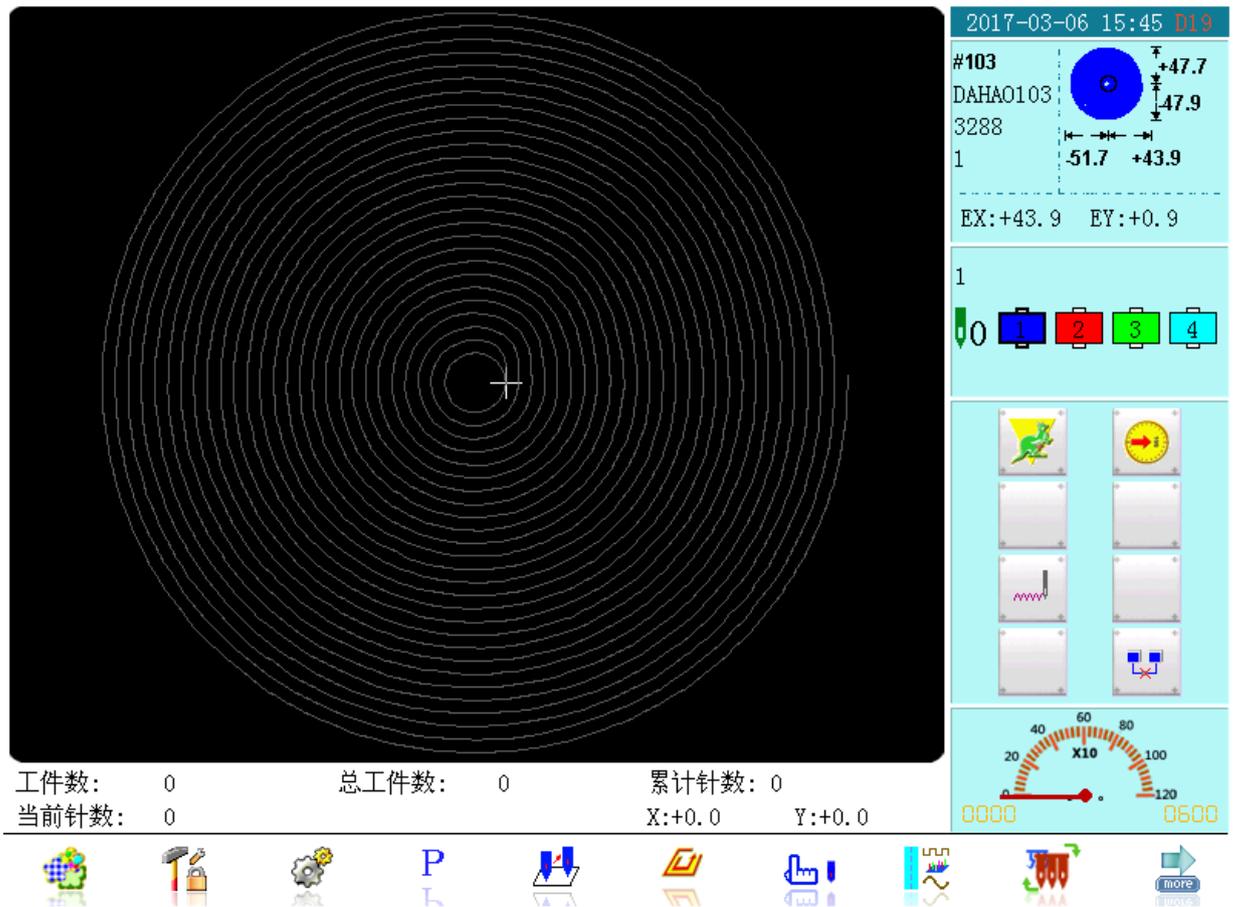
- (2) Press “Enter” key to execute the switch. If in the main interface the head switch key is displayed as  and the indicator of loop embroidery head is on, the head has changed into looping embroidery head. If  is displayed, it is flat embroidery head.
- (3) Press number keys to carry out manual color-changing function. If current head is looping embroidery head, “1” means shuttle position a, “2” position b, “3” position c, and so on.
- (4) When current head is looping embroidery head, press number keys to display the window of “looping embroidery mode and needle bar height selection”. Use the right or left direction keys on the keyboard to switch between looping embroidery stitch and chained embroidery stitch. Use the up or down keys on the keyboard to change the needle height and improve the embroidery effect. 0, 1, 2,, 9 represents different needle height, and H represents off position, which can be used to shut all heads automatically.
- (5) Press “Back” to exit. Embroidery machine will make corresponding changes



according to the set value of shuttle position, stitch type and looping needle height and display the final results.



12.2.2 Loop Embroidery Main Interface Introduction



The above picture is the main interface after switch to flat embroidery head.



The above picture is the main interface after switch to loop embroidery head.

The above two main interfaces have the following differences:

- (1)  indicates the shuttle position, a represents the current position;
- (2)  represents thread loosening position, 0 means thread tightening at down position of shuttle, and as for the meaning of number, please see “thread loosening position adjustment” of “manual adjustment”;
- (3)  represents stitch type, L means looping, 0 indicates the needle height level;
- (4)  is the color-changing order list, each group consisting of three items: shuttle position: b; stitch type: C; needle height: 0.

12.3 Loop Embroidery Procedure

- (1) Input loop embroidery pattern: select, change and edit pattern according to need;
- (2) Modify parameters: select color-changing order, stitch type and needle height; in case of manual color-changing, select shuttle position, stitch type (looping or chained) and needle height manually;



- (3) Check loop embroidery head: to ensure normal work status;
- (4) Pull bar to embroider.

12.4 Parameters and Settings

Press  in the main interface and press the icons at the low-right corner to select paramter. When  选择参数类型  环绣参数 is displayed at low-right corner, user can set loop embroidery parameters.

- (1) F21 Loop embroidery head shuttle number: select shuttle number for each head according to mechanical configuration, shuttle position is represented by a, b, c, d.....
- (2) F01 jump and trimming: setting range: No, 1~7. When set as “No”, in case of jump code, needle will jump, that means auto stop, thread loosing, frame moving and then auto start; when set as “Yes”, if the jump needle number of the pattern is smaller than the set value, the needle will jump without trimming, otherwise, jump code will be treated as over frame, that is auto stop, trimming, frame moving and then auto start.
- (3) F08 Looping fixing stitch number: 0~7, which means the last stitches of looping embroidery will be changed into chained stitches, in order to prevent thread falling out. This parameter is used to set the switch stitch number.
- (4) F07 Thread treatment after trimming: simple treatment, fabric front, fabric back; “fabric front” can prevent thread falling out.
- (5) Thread loosing mode: md02, 2003, E937; user can select according to different thread loosing drive.
- (6) Thread treatment after trimming and color-changing: this parameter is used together with “thread treatment after trimming”, with the same effect when set as “Yes”.
- (7) F48 Flat embroidery head and loop embroidery head interval: -600~600 mm; this parameter shall be set according to the actual mechanical interval, “-” means loop embroidery head is on the left side of flat embroidery head, “+” means on the right side.
- (8) F19 Stop position compensation: the main shaft for loop embroidery is independent from that of flat embroidery, stop position at 35 degree. The adjustment of stop position compensation can adjust the stop position of the main shaft, to present stop not in position caused by mechanical inertia. To increase the value is to move backward the stop angle. The setting range is 0~6, and 0 means the earliest stop position.
- (9) F25 Loop embroidery trimming: manual, auto, off; in case of color-changing, over frame or other operations during embroidery or at embroidery end, machine will execute the trimming mode set by the user.

◆ **Note: for more parameters and settings, please see Appendix 4**

12.5 Machine Debugging

Press  (current head is loop embroidery head) or  (current head is flat embroidery head) in the main interface, to enter head switch interface and change the head into loop embroidery head. Then return to the main interface, press  to enter “other assistant management” and press “machine tests”, to display the manual debugging menu of loop embroidery, shown as below:



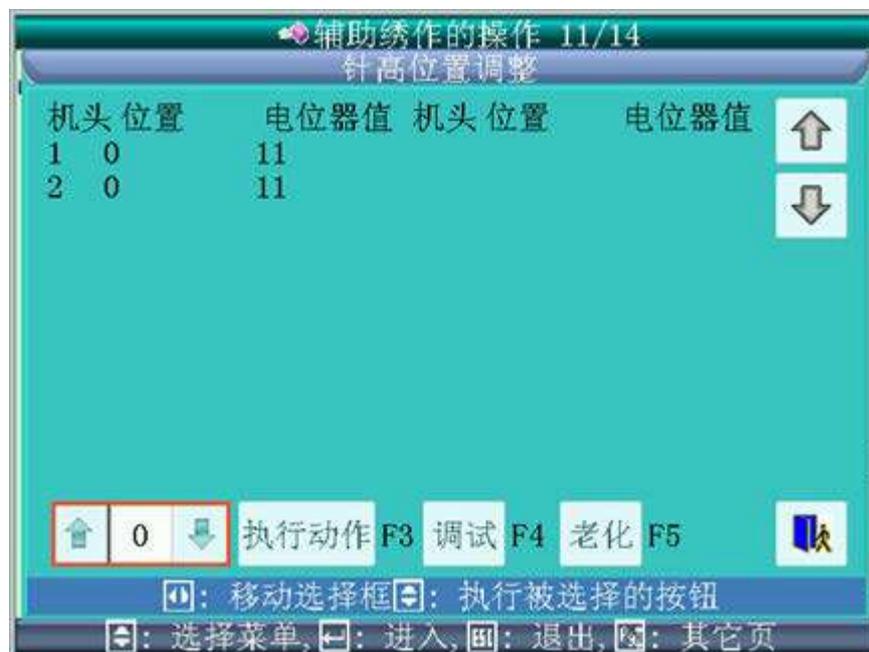
12.5.1 Thread Loosing Position Adjustment

Enter this item to manually adjust the loosing motor position and loosing speed. In case of abnormal loosing position, press left or right direction keys on the keyboard to move the red selection box, and when  is selected, user can use up or down keys to adjust the motor to satisfy the system requirement. The loosing position is determined by the value change of the resistance of single-circle precision potentiometer. To adjust the value of potentiometer can locate the motor at proper position.



Loosing position has four levels: 0, 1, 2, 3, corresponding to down position tightening, down position loosing, up position tightening, and up position loosing respectively. 3 for looping embroidery, 2 for chained embroidery, 1 for trimming action, 0 for trimming knife return, 0 or 1 for color-changing.

12.5.2 Needle Height Adjustment



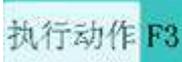
This function allows user to adjust needle height to improve embroidery quality and also allows repairer to conduct aging treatment to the needle action device.

◆ Operation:

(1) Use left or right direction keys on the keyboard to move the red box to select



“ ” at the low-right corner, then user up or down keys to select desired

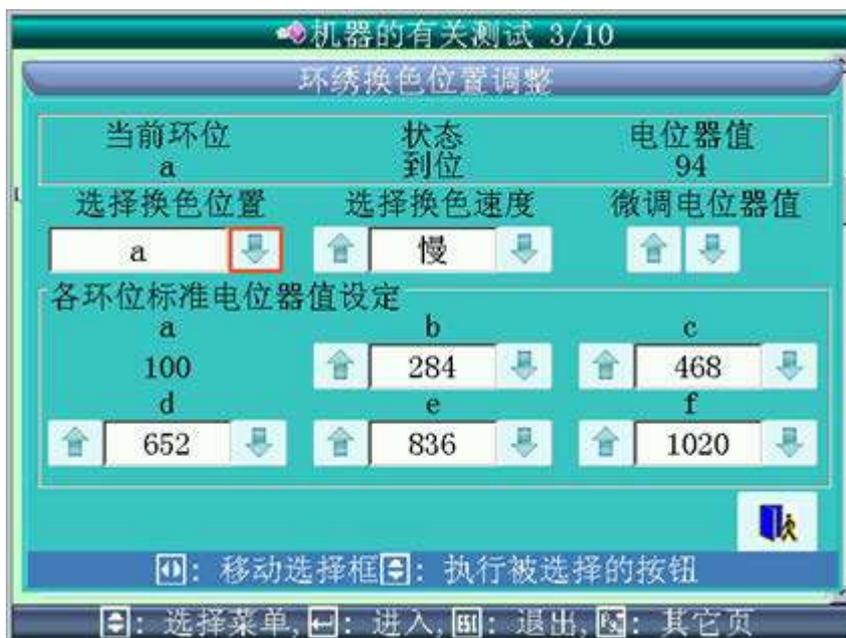
needle height and press  to execute this operation.

- (2) Equipment repairer can use “” to activate aging treatment of needle action device or press “ESC” to exit.

12.5.3 Color-changing Position Adjustment

The color-changing position is determined by the value change of the resistance of single-circle precision potentiometer. User can use left or right direction keys on the keyboard to move the red box to select “” and then use up or down keys to make the following adjustments:

- (1) Select the shuttle position from the drop-down list of “select color-changing position”, to realize manual color-changing;
- (2) Adjust color-changing speed;
- (3) Adjust value of potentiometer to return from the abnormal position to normal position;
- (4) Adjust value of potentiometer for different shuttle position.



12.5.4 Test D-axis Motor



◆ Operation:

- (1) Use left or right direction keys on the keyboard to move the red box to select



and then press up or down keys to select direction, angle, curve and rotation speed. Pull bar to start test;

- (2) Press  to return to origin;
- (3) Press “ESC” to exit.

12.5.5 Test H-axis Motor





Operation:

Use left or right direction keys on the keyboard to move the red box to select  and then press up or down keys to select direction, angle, curve and rotation speed. Pull bar to start test;

Press  to return to origin and press  to let H axis return to threading point;

Press “ESC” to exit.

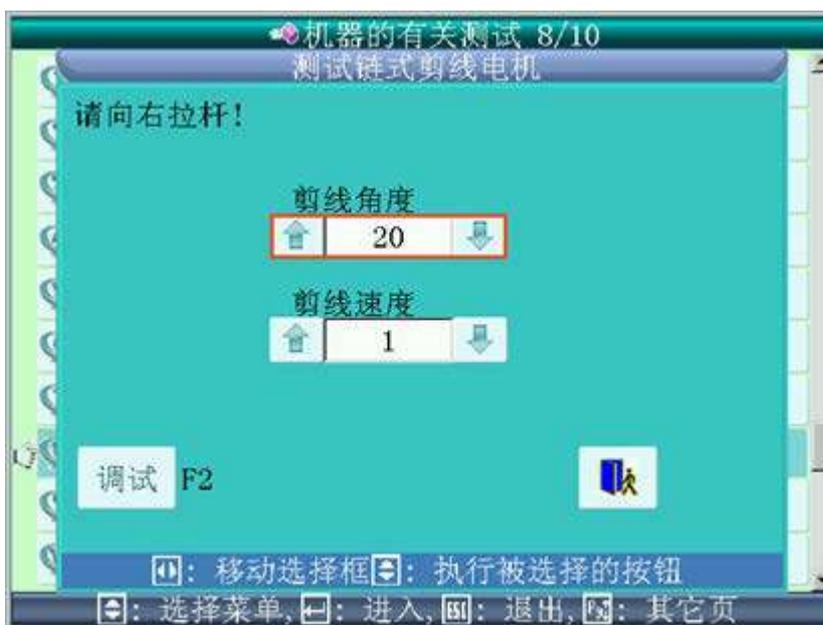
12.5.6 Test Main Shaft of Chained Embroidery

The operation is the same with that of flat embroidery.

12.5.7 Test Main Shaft Encoder of Chained Embroidery

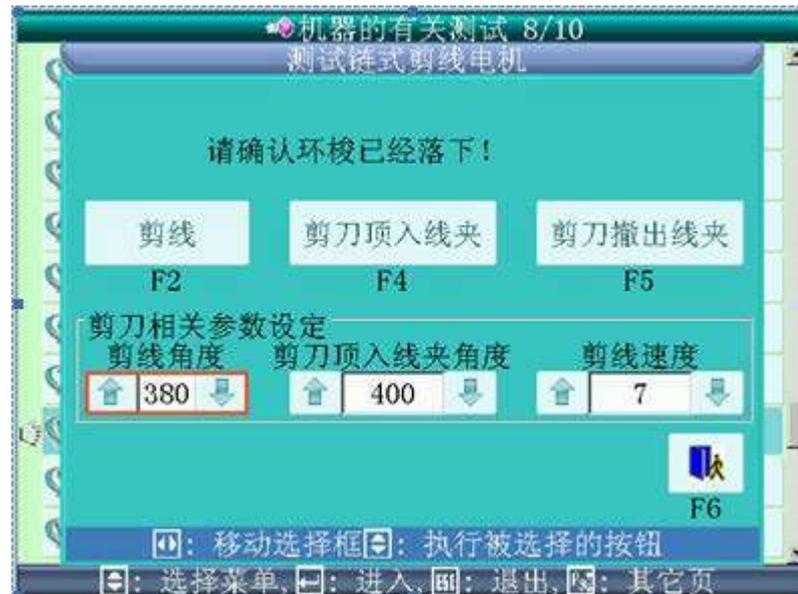
The operation is the same with that of flat embroidery.

12.5.8 Test Trimming Motor of Chained Embroidery



Operation: Use left or right direction keys on the keyboard to move the red box to select  and then press up or down keys to adjust the trimming angle and speed for test. Pull bar to execute trimming.

Press  to display the following interface:



Operation:

Put shuttle at down position;

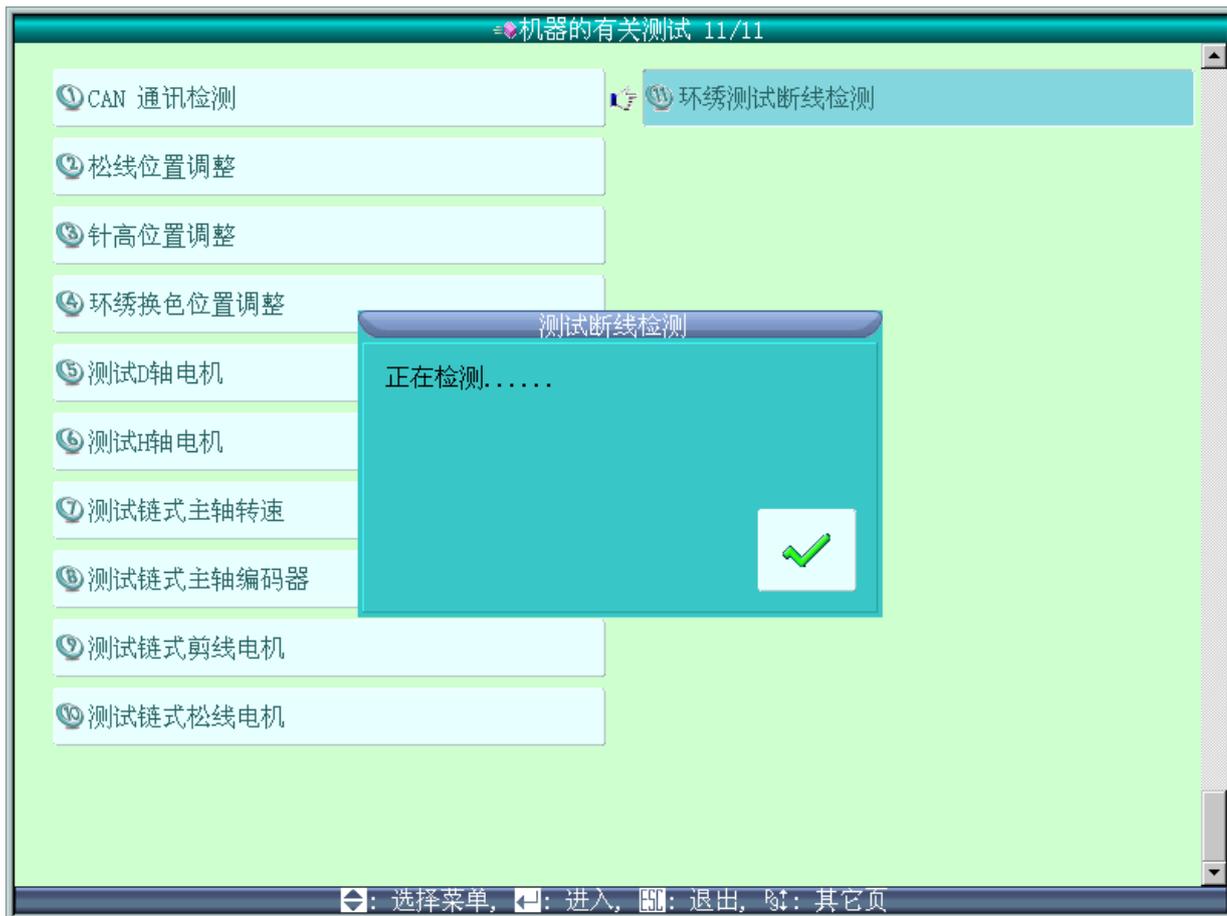
Press corresponding icon to execute the test of trimming, knife into thread clamp, knife out of thread clamp;

Use left or right direction keys on the keyboard to move the red box to select 

and then press up or down keys to adjust the trimming angle, knife angle into the thread clamp and trimming speed.

12.5.9 Test Thread Breakage Detection

This function is used to test the installation and sensibility of the thread breakage detection device.

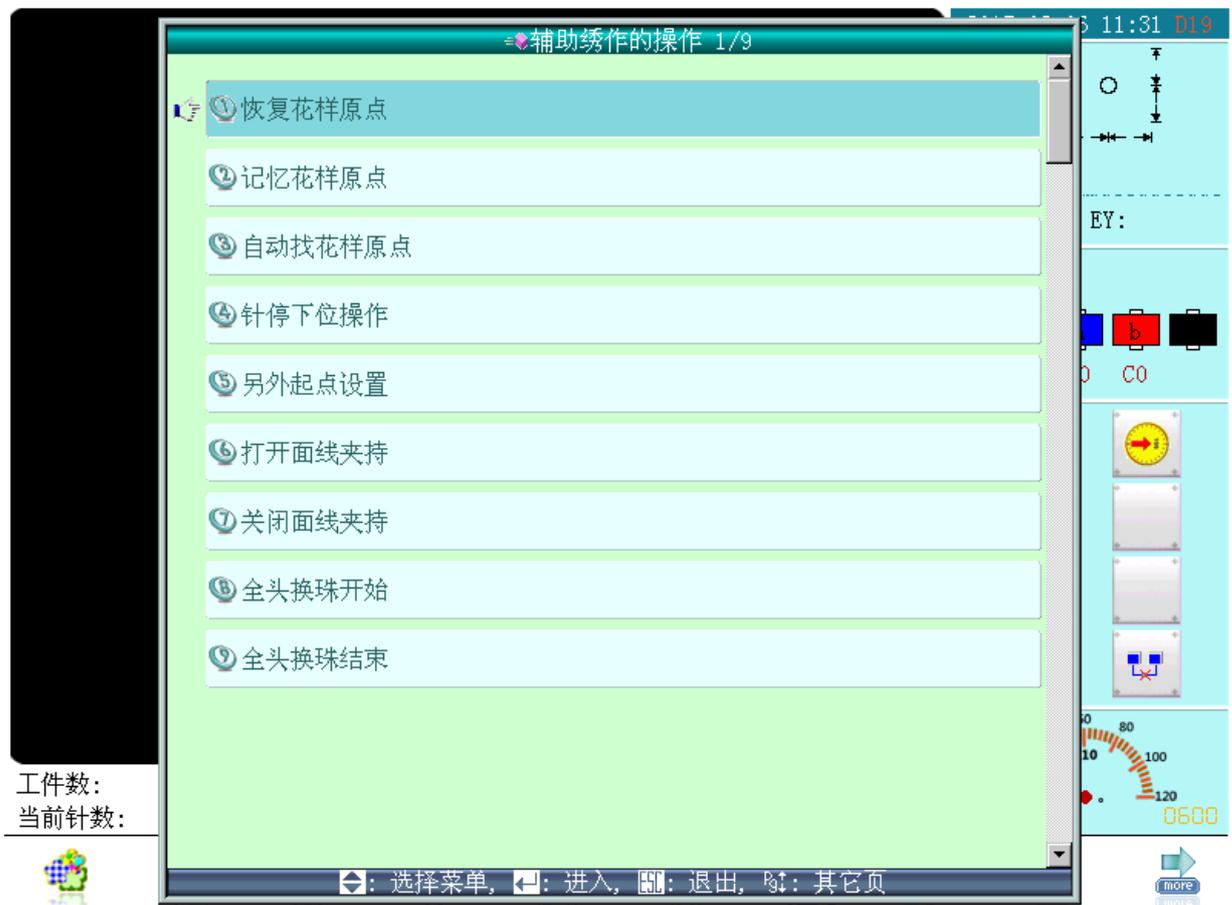


Operation:

In the manual operation interface, press “ 环绣测试断线检测” to display the above test interface.

At this time, looping embroidery head indicator will flash regularly between red light and green light. Otherwise, the installation of proximity switch and spring for head thread breakage is incorrect and need adjusting.

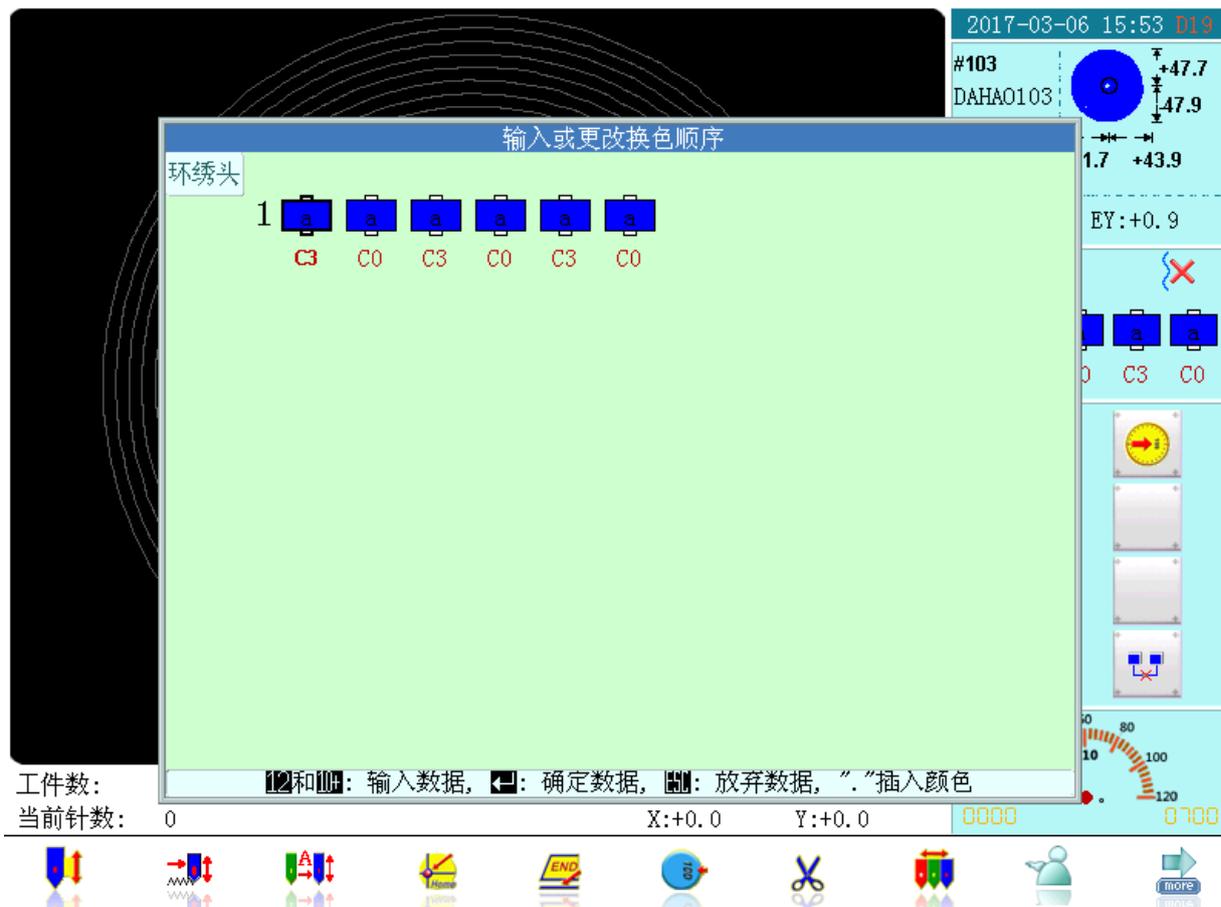
12.6 Manual Operation



When current head is looping embroidery head, that is  is displayed in the main interface, press  to display the window of “assistant embroidery operation” and select corresponding item to execute manual operation, in order to adjust the mechanical position of the head and shut all problem heads.

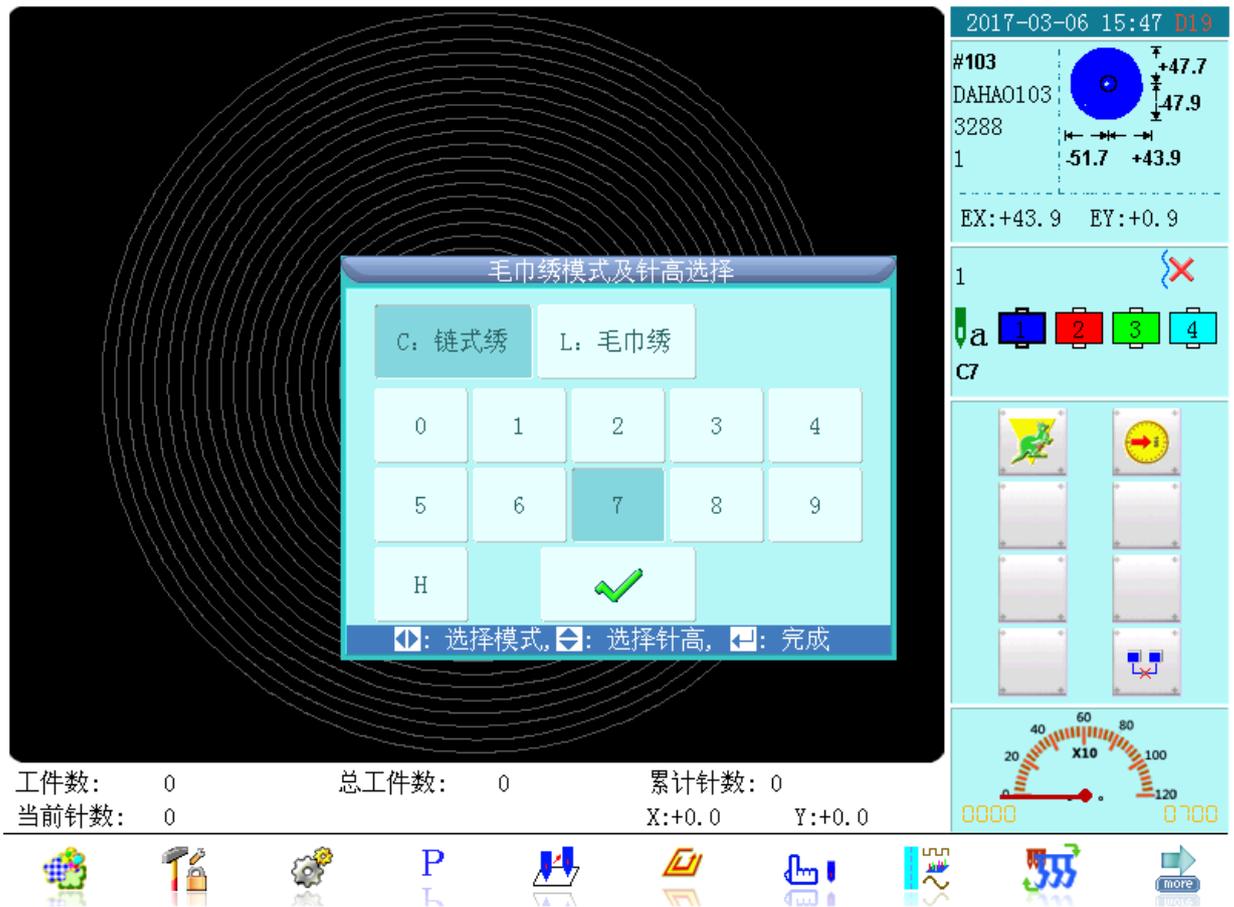
12.7 Change Color-changing Order

When setting color-changing order before embroidery, user can set the color-changing needle position to realize auto shift during embroidery. Press  in the main interface, and select “input and repeat color-changing order” or “change color-changing order”, to enter the interface for inputting color-changing order:

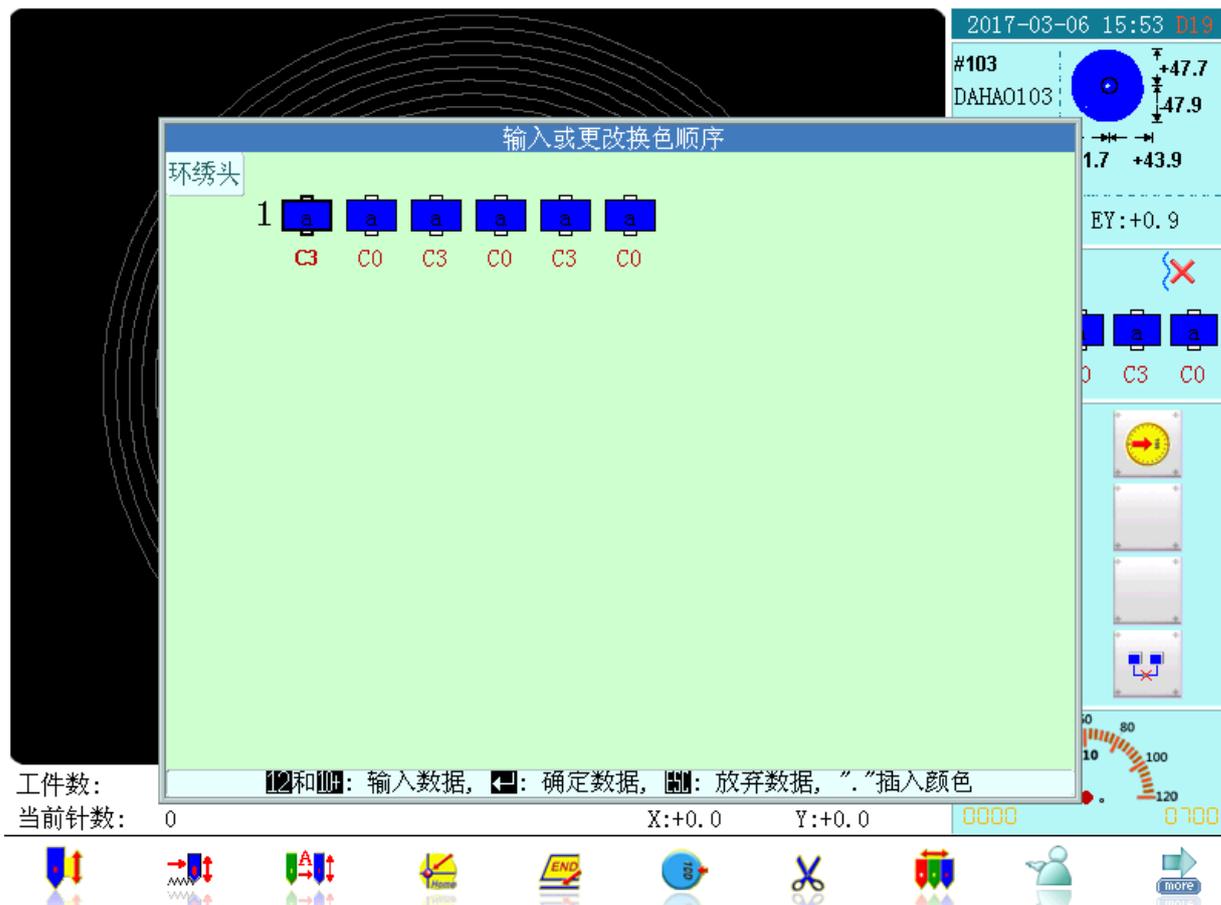


Use “frame-moving speed” key on the keyboard to shift the corresponding relationship between current needle with flat embroidery head and loop embroidery head. When set as flat embroidery head, the color-changing setting is the same as that of normal flat embroidery machine. When set as loop embroidery head, “1” on the keyboard represents shuttle position a, “2” position b, “3” position c, etc.

After setting the shuttle position, the window of “looping embroidery mode and needle height selection” is displayed, in order to select stitch type and needle height to realize ideal effect. After setting, press “OK” on the keyboard to finish the color-changing setting.



After setting the embroidery mode and color-changing order, the following interface will be displayed:



Auto color-changing for loop embroidery consists of three items: letter a represents shuttle position; letter C represents chained embroidery, and letter L represents looping embroidery, they are stitch type; the last number represents needle height.

During embroidery, machine will switch between flat embroidery head and loop embroidery head according to the color-changing order setting. At switch, machine will automatically execute head moving interval operation and switch to the desired head to continue the embroidery.

12.8 Manual Switch of Loop Embroidery Head

◆ Manual operation of loop embroidery head:

- (1) Put head switch in middle position, head light on; at this time, loop embroidery head is in normal embroidery status;
- (2) Put head switch in down position, head light off; needle lifts to off position and loop embroidery head is shut down;
- (3) Put head switch in up position, red head light on; at this time, loop embroidery head is in patching status.

After thread breakage or manually turning the thread breakage detection light into red, pull bar to enter patching status; loop embroidery devices on all heads go up and return to patching point and stop; pull bar to let the loop embroidery devices go down first, and then



start to embroider until the tread breakage point, and stop again; other non-patching heads automatically go down and enter normal embroidery status. The return stitch number can be set in the loop embroidery parameter setting menu.

12.9 Mechanical Device and Drive Mode of Loop Embroidery

Apart from the motor for main shaft and frame control, loop embroidery system also consists of various different mechanical devices, in order to jointly complete the loop embroidery, such as Z-axis motor for needle height control, trimming motor, H-axis motor for looping, D-axis motor for hook direction control, and motor for thread loosing position control.

As for all-independent machine type, apart from the thread loosing motor which is controlled by pinboard, other devices are independently controlled by loop embroidery drive board. The setting method of drive board EF297 is as follows:

Definitions of DIP switch of drive board EF297:

Table 1:

DIP1~DIP4	No effect on loop embroidery position, put at Off position
DIP9~DIP5	Set by binary system, set value = 00001~11111, control address: 2N-1, 2N for two loop embroidery heads. OFF: high level 1, ON: low level 0

Table 2:

DIP10	Divided as up/down head board
OFF	Up head board: to control needle height, D-axis motor, head light and switch control
ON	Down head board: to control trimming motor, H-axis motor and thread breakage detection

Semi-independent machine type has two kinds:

1. Apart from H-axis motor and trimming knife motor which are controlled by pinboard, D-axis and needle height control device are independently controlled by drive board, and the setting of drive board EF297A is shown in the above table.

2. Apart from H-axis motor which are controlled by pinboard, D-axis and needle height control device are independently controlled by drive board, and the setting of drive board EF297A is as described in the above table; trimming knife is independently controlled by drive board EF298 whose setting is as follows:

Table 1:

DIP1~DIP4	No effect on loop embroidery position, put at Off position
DIP9~DIP5	Set by binary system, set value = 00001~11111, control address: 2N-1, 2N for two loop embroidery heads. OFF: high level 1, ON: low level 0

Table 2:



Chapter 12 Instructions on Loop Embroidery

DIP10	Divided as up/down head board
OFF	Up head board: to control needle height, head light and switch control
ON	Down head board: to control trimming motor and thread breakage detection



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
Scaling, Rotation & Repetition				
A03	Pattern Direction	P	<input type="checkbox"/> P <input type="checkbox"/> d <input type="checkbox"/> r <input type="checkbox"/> q <input type="checkbox"/> s <input type="checkbox"/> b <input type="checkbox"/> a <input type="checkbox"/> P	
A02	Rotation Angle	0	0~89	Control the rotating angle of the pattern.
A01	X-Y Scaling Rate	100/100	50%~200%	Control the scaling rate of the patter at X-Y direction.
A06	Repetition Priority	X Prior	X Prior, Y Prior	
A05	Repetition Mode	Normal	Normal, Partial	Temporarily unavailable
A07	X-Y Repetition Times	1/1	1~99	
A08	X-Y Repetition Interval	0.0/0.0	-999.9~+999.9	
A04	Priority Mode	Rotation First	Rotation First, Scaling First	
Self-defined Parameters (Set according to Needs)				
Assistant Parameters				
B01	Return to Origin	Yes	No, Yes	
B02	Whether to make cyclic embroidery?	No	No, Yes	Whether to automatically repeat embroidery at end. It often coordinates with repetition or special pattern.
B04	Whether to display stitch number?	Yes	No, Yes	
C02	Whether to skip empty stitch?	No	No, Yes	If "Yes", the machine will skip the empty stitches (needle moving without embroidering). If "No", the empty stitches won't be skipped.
B13	Auto selection in case of same color	Yes	No, Yes	Whether to start in the manner of color-changing when the later needle position is the same with the former one in color-changing order.
C04	Save manual color-changing	No	No, Yes	If "Yes", manual color changing is saved in the color-changing order. After embroidery, the setting will automatically change to "No".
D15	Slow stitches after patching	0	0~500	
D16	Speed of slow stitches after patching	Max.	80~Max.	
C03	Stop to Color when loading pattern	No	No, Yes	Change stop codes into color-changing codes at loading



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
				patterns from disk, only available for certain countries/regions.
B15	Whether to display pattern background color before embroidery?	Yes	No, Yes	
B18	Whether to display pattern in 3D form?	No	No, Yes	
C77	Whether to skip short stitch?	No	No, Yes	It is fit for high-speed machine using dahao servo-motor driver. It only gets effective after user reconfirm the embroidery.
C78	Length of skipped short stitch	0.2mm	0.1 mm~0.6mm	The same as above
C79	Auto jump for long stitch	No	No, Yes	The same as above
C80	Stitch length of auto jump	8.0mm	6.0mm~12.0mm	The same as above
Thread Breakage Detection Parameters				
B05	Breakage detection	Yes	No, Yes	
B11	Stitch number without detection at start	8 stitches	0~15 stitches	
B06	Stop after detection	Yes	No, Yes	
B07	Pull bar after detection	No	No, Yes	
B08	Back stitches after breakage	0	0~7 stitches	It is unavailable to some machine types. (This parameter will not be performed for sequin.)
B09	Patch stitches	1 stitch	1~10 stitches	How many stitches to patch before the thread breakage point
B10	Action after patch	Stop	Same speed, lower speed, stop	
B14	Patch setting for all heads	No	No, Yes	If “Yes”, all unclosed heads do patching when patching.
B12	Detection when jump	No	No, Yes	
C27	Detection method	Spring	Spring, wheel	
C28	Debouncing stitch number for detection	3 stitches	1~6 stitches	
C67	Detection sensitivity of upper thread	6	1~15	
C68	Detection sensitivity of bobbin thread	6	1~15	



No.	Parameter Name	Default	Range	Note
C69	Debouncing stitch number for upper thread detection	6 stitches	1~6 stitches	
C70	Debouncing stitch number for bobbin thread detection	6 stitches	1~6 stitches	
Frame Parameters				
C06	Frame curve	F6	F1~F6	The high-speed all-servo machine doesn't have this parameter.
C06	Frame-moving angle	230	230~290	
B03	Over frame by step	No	No, Yes	
C15	High frame-moving speed	16	1~30	
C16	Low frame-moving speed	15	1~30	
D13	Over frame speed	16	0,1,2,...,30	
D19	Use of pneumatic frame	Yes	No, Yes	
D20	Action interval of pneumatic frame	3	0~15	
C74	X direction frame-moving angle A	245	230~280	Applicable for all-servo high-speed machine
C75	X direction frame-moving angle B	250	230~280	The same as above
C76	Y direction frame-moving angle A	245	230~280	The same as above
C85	Y direction frame-moving angle B	250	230~280	The same as above
C72	Embroidery mode	Tubular	Tubular, flat, apparel	
C73	Frame weight	1	0~20	
Main Shaft Control Parameters				
C07	Max. speed	700~850	250, 300, 350 ... 1000	
C09	Min. speed	400	250, 300, 350 ... 600	
C08	Shift stitch length (mm)		1.0~10.0 (normal type machine), 3.0~6.0 (all-servo high-speed)	When the stitch length is longer than the set value, the machine will lower the speed.



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
			machine)	
C10	Jump speed limit	500	400~ 750(normal type machine), 400~1100 (all-servo high-speed machine)	Set the rotation speed for jump stitch.
C13	Start stitch rotation speed	80	80,90,...,150	
C12	Low stitches at start	1	1~9 stitches	Set the number of slow stitches before speed acceleration.
D02	Accelerated speed at start	12	1,2,3,...,30	Increase the value to bring a quicker speedup after pulling the bar.
C25	Stop position compensation	0	0~30	Range: 0~30. When the main shaft motor is an electromagnetic motor, the value is usually set as 9. When it is a servomotor, the parameter is usually set as 5-7.
C24	Main shaft motor parameter	1	0~30	The parameter is invalid when it's a servomotor. When it's an electromagnetic motor, increase this parameter value to avoid main shaft vibration during braking. Usually it's set as 1.
C14	Main shaft rotation speed at slow action	400	80 (rpm), the value of the minimum speed	
D14	Stop in position before pulling bar	Yes	No, Yes	
D10	Frequency conversion transmission ratio adjustment	0	-15% ~ +15%	The parameter is used when the main shaft uses variable frequency motor. If the value is incorrect, the set rotation speed will be different from the virtual speed.
C05	Thick cloth embroidery compensation	0	0~3	
C26	Needle stop at down position adjustment	0	0~30	
D53	Lock shaft at stop	Yes	Yes, No	
Thread Trimming Parameters				
C01	Jump trimming	3 stitches	No trimming,	



No.	Parameter Name	Default	Range	Note
			1~7 stitches	
C18	Trimming length	3	1~8	1 is shortest, 8 is longest
D05	Speed at trimming	80	80,90,100,...,250	
C20	Lock stitch at trimming	Yes	No, Yes	
D04	Start speed after trimming	Common : 60~150 Out: 80 No trimming : 80	60,70,80,...,150	This parameter is to set the rotation speed at locking stitch.
C11	Slow stitches after trimming	2 stitches	1~7 stitches	
C21	Length of locking stitch	0.6	0.3~1.5	
C19	Lock stitches after trimming	2	0~3	This parameter is to set the lock stitch number when pulling bar to embroider after trimming.
D06	Rotation after trimming before stop	1	1,2	2 for most machines, 1 for mini type or machines with servo motor.
C23	Action after trimming	Y direction frame moving	X direction frame moving, Y direction frame moving, needle moving	
C22	Frame moving after trimming	No	No, Yes	
D03	Thread holding angle compensation at start	0	0~3	
D07	Trimming detection	No	No, Yes	
D08	Hook angle adjustment	0	-100~+100	Set the angle for centralized thread catching. Increase the value, the hook angle will go backwards.
D09	Hook motor drive ratio adjustment	1:12	1:9,1:10,1:12, 1:15,1:18,1:20	
C17	Trimming off temporarily	No	No, Yes	
D32	Trimming availability	No	No, Yes	
D48	Locked stitch length before trimming	1.0	0.3~2.0	
D49	Locked stitch number before trimming	0	0~2	
C81	Trimming angle	3	0~20	For trimming by stepping motor



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
C82	Return angle of trimming knife	4	0~30	The same as above
C83	Return angle of retainer at trimming	5	0~99	The same as above
C84	Voltage of thread holding solenoid	1	1~3	The same as above
Sequin Embroidery Parameters (JF Type)				
C31	Speed limit for right sequin	400	300,310,...,Max .	
C32	Speed limit for left sequin	400	300,310,...,Max .	
D25	Right sequin feeding angle	0	-15~15	
D26	Left sequin feeding angle	0	-15~15	
C33	Sequin auto start	No	No, Yes	
D27	Sequin device lowering time	3	0~15	Range: 0~15. For the machine using air valve to control presser foot: 2~3; for the machine with stepping motor to control presser foot: 4~5.
C34	Sequin device auto lift after thread breakage	No	No, Yes	It is used to control the position of the sequin device after the thread-breakage.
C56	Sequin device acts independently	No	No, Yes	
B17	Air valve up at jump without trimming	Yes	No, Yes	
D54	Motor number for right sequin device		None, 1	Set according to sequin device, and 1 means sequin sequin device driven by 1 motor
D55	Set 3MM of R Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D56	Set 4MM of R Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D57	Set 5MM of R Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	



No.	Parameter Name	Default	Range	Note
D58	Set 6.75MM of R Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D59	Set 9MM of R Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
C57	Size&Color of R Sequin Device A	5mm yellow	3/4/5/6.75/9mm Yellow/Purple/B lue/Green/ Red/ Golden/ Silver/Cyan	
D61	Motor Number of L Sequin		None, 1	Set the parameter base on sequin device. 1 mean number of sequin device driven by one motor
D62	Set 3MM of L Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D63	Set 4MM of L Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D64	Set 5MM of L Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D65	Set 6.75MM of L Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
D66	Set 9MM of L Sequin		Single-way 6~40 steps; Dual-way 6~40 steps	
C61	Size&Color of L Sequin Device A	5mm yellow	3/4/5/6.75/9mm Yellow/Purple/B lue/Green/ Red/ Golden/ Silver/Cyan	
Special Embroidery Parameters				



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
C55	M-axis Back to Origin when Stop at Thread Breakage	Yes	Yes, No	
C54	M-axis Rotates when Pull Bar to Return	Yes	Yes, No	
C37	M-axis Back to Origin when Pull Bar to Stop	Yes	Yes, No	
D28	Head Interval	10	1~400	
D30	Presser Foot Work Height	0	0~90	
D40	Presser Foot Height Limit	170	0~250	
B16	Presser Foot Lowest Point	0	0~255	
D31	Zigzag Rod Origin	Left	Left, Right	
D29	Zigzag Limit Swing	90	0~90	
C38	Zigzag Frame Swing	0.2	-10.0~ -0.2,+0.2~+10	
D50	Zigzag Swing Adjustment	0	0~5	
D42	M-axis Angle Compensation	0	0~10	
D44	M-axis Withdrawal Angle	0	0,90	
C39	Trimming Mode	No	No, Upper, Bobbin, Upper/bobbin	
C35	Max. Speed Limit	400	300~700	
C51	Min. Speed Limit	250	250~400	
C52	Speed Shift Angle	30	1~180	
C53	Speed Reduction Ratio	1	1~4	
D39	Z-axis Shift Angle	0	0~180	
D41	Rod Start Angle	3	1,2,3	
C36	Ratio of L/R Coiling	1 Sti./L	1~4 Sti./L	
D47	Speed Down at Coiling	Yes	Yes, No	
Machine Configuration and Maintenance Parameters				
D01	Needle Number	6	1,2,...,MAXNE EDLE	Set the value according to the machine situation. E.g. the value should be 9 for 9-needle machine. If the value is different from the machine needles, the color-changing

Appendix 1 Parameter Setting List



No.	Parameter Name	Default	Range	Note
				will be abnormal.
C29	Needle of Carving	No	No, 1~ N	N means needle number
C30	Displacement of Carving	0	0mm,12mm	
D17	Needle of Cording	No	No, 1, N	N means needle number
D18	Speed Limit of Cording	400	300,310,320,..., 600	
D11	Head Solenoid Voltage	0	0,1,2,...,30	
D12	Stepping Color-changing Speed	3	0~30	It's valid only when the color-changing motor is stepping motor. The larger the value, the faster the color changes.
D43	Back Light Time	15 Mins	Never, 2mins, 5mins, 10mins, 15mins	
C40	Pattern Output Prohibited	No	No, Yes	
C71	Upper Thread Holding Solenoid Voltage	6	1~10	
C41	Server Port Number	1600	1~65535	It is used for setting sever port when it is connected to PC.
C42	MAC Address	0011223 34455	00111111111 ~00999999999	It is used for setting the MAC address of embroidery machine network card. The address is different at different machines.
C43	IP Address of Machine			It is used for setting machine address when machine connects to PC. It is different among different machines.
C44	IP Address of Server			It is used for setting the IP address of sever when machine connects to PC.
C45	Subnet Mask			It is used for setting the subnet mask of machine IP address when it connects to PC.
C46	Gateway			It is used for setting the gateway of machine when machine connects to PC.
D45	X Quilt Gap Compensation	0.2	0~1.0	
D46	Y Quilt Gap Compensation	0.3	0~1.0	
C47	Time for one lubricating (sec)	10	1~10	



Appendix 1 Parameter Setting List

No.	Parameter Name	Default	Range	Note
C48	Stitches between two lubrications	10 million	1~10 million	
C49	X compensation for mechanical gap	0.5	-0.5~+0.5	
C50	Y compensation for mechanical gap	0.5	-0.5~+0.5	
D68	Head Number	20	1~80	
E1	DIP1	3	0~255	
E2	DIP2	3	0~255	
E3	DIP3	3	0~255	
E4	DIP4	3	0~255	
X/Y Parameter for Servo Frame Adjustment (X parameter, available for all-servo high-speed machine)				
	Embroidery Parameter	300	93~650	
	Frame-moving Parameter 1	260	93~650	
	Frame-moving Parameter 2	13	6~50	
	Parameter 1	30	10~50	
	Parameter 2	30	10~50	
	Parameter 3	30	10~50	
	Parameter 4	30	10~50	
	Parameter 5	30	10~50	
	Parameter 6	30	10~50	
	Parameter 7	30	10~50	
	Parameter 8	30	10~50	
	Parameter 9	30	10~50	
	Parameter 10	30	10~50	
	Parameter 11	30	10~50	
	Mechanical Return Difference Compensation	20	0~50	
	Gear Ratio Numerator	50	0~100	
	Gear Ratio Denominator	1	0~255	
X/Y Parameter for Servo Frame Adjustment (Y Parameter, Same as X Parameter)				



Appendix 2 U Disk Operation Specification

No.	Operation	Specification	Remark
1	Read & Write U Disk	Same as floppy disk	
2	Priority (U disk or floppy disk)	USB	
3	Supporting formats	FAT16 and FAT32	
4	Long filename	Support but no display	
5	Filename display	DOS 8.3 format (8 digits of prefix is viewable, suffix is 3 digits)	For instance: “清明上河图.DST” will be displayed as “清明上~1.DST”
6	Filename displayed in Chinese	Support	
7	Sub-directory operation	Support	
8	Sub-directory limit	No limit	
9	File account in one sub-directory	400	
10	Reading & writing error/change U disk	Back to disk management or pattern management menu, plug in the disk again.	
11	Multi-logical disks in one U disk	Support	
12	Formatting U disk	Support	
13	Installing letter library	Not support	
14	Software update	Support	
15	Special character in filename	Support, except “\$”	

Appendix 3 Error List

Note: For the error in the list, user needs press clear key, check the corresponding part and perform the hinted operation. The machine with no password function has no items about password.

No.	Error Content
Upper Computer Error Description	
01	Operation Fail
02	Operation Break
03	Machine Communication Error
06	Frame origin not set
07	Fail to set frame origin
08	Pattern start point not saved
09	Frame software range not set
10	Wrong Password!



Appendix 3 Error List

No.	Error Content
11	New passwords not same
12	Embroidery pattern not exist
13	Pattern already existed
14	Pattern not exist
15	Fail to open pattern
16	Combination pattern format error
17	Fail to open FLASH media
18	Pattern has been created!
19	No enough memory
20	Directory is invalid.
21	FLASH media write-protect
22	Pattern file not exist
23	Pattern name is invalid
24	Pattern file damaged
25	Fail to read/write pattern
26	Not open pattern file
27	FLASH media read/write error
28	Device not existed
29	No floppy disk
30	Invalid disk type
31	Disk sector error
32	File not found
33	Not a file
34	File damaged
35	Disk write-protect
36	Invalid directory
37	File existed!
38	Directory is full in memory.
39	Not enough space
40	Not open media
41	Pattern data error
42	Invalid pattern type
43	Not normal pattern
44	Not combination pattern
45	Pattern operation at backstage, please wait!
46	Cannot delete embroidery pattern
47	Pattern separation stitch too large
48	Stitch number too large



No.	Error Content
49	Pattern error, or communication failure
51	Pattern read error
52	Edit Forbid after embroidery confirmation
53	Design is too big. Can't process.
54	Can not format the disk
55	Unsupported operation
56	Disk Error
Lower Computer Error Description	
EC05	Hooking is not in position
EC07	Hooking is overtime
EC08	Pull bar when embroidery confirmation light is off
EC09	Already back end
EC10	Already back end
EC11	Pattern not exist
EC12	Not stop in position
EC13	Frame over limit
EC14	Main control board memory lost
EC16	Stepping motor error
EC17	Color changing overtime
EC18	Color-changing half return error
EC19	Needle position error
EC20	Main shaft motor overtime
EC21	Color changing over-limit
EC22	Main shaft motor reverse
EC23	Cannot embroider
EC24	Cannot go back
EC26	Trimming not in position
EC36	Sequin at down position
EC37	Bar switch error
EC38	Special embroidery head action overtime
EC41	File not exist
EC42	File directory full
EC43	Memory is full
EC44	File fat error
EC45	File directory error
EC46	Physical sector damaged
EC95	Thread is broken, press continue key



Appendix 3 Error List

No.	Error Content
EC101	Transfer CRC Error



Appendix 4 Loop Embroidery Parameter List

Embroidery Assistant Parameters				
F08	Looping Fixed Stitch Number	3	0~7 stitches	Change the last stitches of looping into chained stitches to prevent thread falling out. This parameter is to set the stitch number of such change.
F11	Long Stitch Division	0	0~11 stitches	If stitch is too long, main shaft rotation speed will slow down. The longer, the slower. Long stitch division will divide stitch longer than set value into two or more stitches.
F12	Return to Origin at Stop	Yes	Yes, No	This parameter is to set whether shuttle returns to origin when pull bar to stop.
F24	Looping Angle at High Speed	3	0~9	Adjust action order, which will influence product quality.
F34	Outline Embroidery Mode	No	Yes, No	This function is to generate outline pattern for normal pattern. User can embroider it. When this function is valid, system will not make thread breakage detection. (This function is set by upper computer.)
F43	Looping Angle at Low Speed	0	0~9	Adjust product quality at low speed.
F49	D-axis Start Angle	7	0~15	Set the start angle of D axis.
F50	H-axis Start Deviation Angle	50	0~90	Adjust start angle of looping.
F60	Shaking Loop Angle	2	0~5	Adjust shaking loop angle.
F61	Shaking Loop Speed	5	0~10	During color-changing process, H-axis will swing a little bit to ensure the lowering of shuttle. This parameter determines the swing range.
Thread Breakage Detection and Related Applications				
F02	Thread Breakage Detection	Yes	No, Yes	When set as "Yes", embroidery head will auto detect thread breakage; in case of breakage, head light will be on and machine stops automatically.
F03	Go Back	Yes	No, Yes	When set as "No", "return stitch number at thread breakage" is invalid, that is, there is no going back.
F04	Return Stitch Number at Thread Breakage	0	0~8 stitches	Convenient for patching
F05	Patching at All Heads	No	No, Yes	When set as "No", only head with thread breakage will do patching; when set as "Yes", all working heads will do patching.
F06	Patching Stitch	0	0~7 stitches	Only appointed head will do patching. After



Appendix 4 Loop Embroidery Parameter List

	Number			patching to the set stitch before thread breakage, all heads will start embroidery, in order to ensure product quality.
F09	Back to Threading Position at Thread Breakage	Yes	No, Yes	Threading position is set for re-threading. This parameter is to quickly complete threading by pointing threading point of shuttle to that of the needle.
F15	Stitch Number before Thread Breakage Detection	3	0~15 stitches	This parameter is to set the stitch number before the thread breakage detection is activated after embroidery start.
F41	Thread Breakage Detection Mode	U	Upper head board (U), lower head board (L), EF196, Ef102	Set thread breakage detection mode.
Frame Related Parameters				
F14	Over Frame at Start	No	No, pull all, bar, after	Adjust loop embroidery stitch and flat embroidery stitch.
F23	Chained Embroidery Frame-moving Angle	6	0~10	Adjust action order, which will influence product quality.
F80	Looping Embroidery Frame-moving Angle	6	0~10	Adjust this parameter to improve looping quality.
F47	Loop Embroidery Frame-moving Curve	0	0、1、2	Select loop embroidery frame-moving curve.
Main Shaft Related Parameters				
F17	Slow Stitches at Start	3	1~9 stitches	Set the slow stitches at embroidery start by "main shaft slow speed".
F18	Max. Rotation Speed	650 rpm	500~650 rpm	Set the maximum rotation speed of embroidery, by increment of 50 rpm.
F19	Stop Compensation	0	0~30	When set as 0, it is the earliest stop position, and to adjust this parameter is to adjust the stop position of main shaft so as to solve the problem of not stop in position due to mechanical inertia. The larger the value, the more backwards the stop angle moves. Setting range: 0~6.
F20	Rotation Speed Compensation	0%	-15%~15%	Adjust this parameter by software can make actual rotation speed comply with set rotation



				speed. Only effective for Dahao servo driver.
F35	Main Shaft Slow Speed	80	80~150	Set the rotation speed of slow action of main shaft when pull bar, by increment of 10 rpm.
F39	Velocity at Start	5	1~10	The larger the value, the faster the speed of main shaft accelerates after start.
F40	Main Shaft Motor Parameter	0	0~30	Whenever value increases by 1, brake more by 50ms.
F42	Pre-brake Angle	0	0~150	Applied to machine with servo at common position. When speed down before stop, default value of main shaft angle is 0, corresponding angle is 335°; each time the value increases by 1, the pre-brake angle returns by 0.18°. The smaller the angle, the more reliable the stop, but the lower efficiency.
F62	H-axis Looping Angle Compensation	2	0~10	Larger value can improve stitch quality, but may increase the probability of motor over-load.
F63	H-axis Looping Action Angle	5	0~10	
F64	H-axis Looping Thread Returning Compensation	5	0~10	
F65	Speed Down at Turning	2	1~9, No	
Trimming Related Parameters				
F01	Jump and Trimming	7	1~7 stitches trimming, no trimming	No: jump at jump code, auto stop, losing thread, moving frame, and auto start again; Yes: when jump stitch number is smaller than set value, jump without trimming, otherwise, over frame at jump code, that is, auto stop, trimming, moving frame, and auto start again.
F07	Thread Treatment after Trimming	Front	Front, Back, Simple	Thread residue is at fabric front, which can prevent thread falling out.
F13	Thread Treatment at Color-changing and Trimming	Yes	No, Yes	This parameter is used together with “thread treatment after trimming”. When set as “Yes”, same effect with F07.
F25	Trimming	Auto	Auto, Manual, Shut	In case of color-changing or over-frame and at embroidery end, machine will trim according to user’s setting.
Sequin Parameters (Chained Sequin for Reserve)				
F79	Sequin Mode	Roller, lever	Roller single sequin,	Select chained sequin mode.



Appendix 4 Loop Embroidery Parameter List

			lever single sequin	
F80	Sequin Start Auto	No	Yes, No	Select auto start of sequin.
F81	Sequin Angle	13.5	5.4~36°	Select chained sequin feeding angle.
Machine Configuration 1				
F21	Shuttle Number	6	1~12	Set the shuttle number for each head according to mechanical configuration.
F22	Head Number	10	1~24	Set head number according to mechanical configuration.
F26	Chained Embroidery Head Board	XXX 1	XXX1, XXX2	
F36	Head Adjustment Value	100	0~250	This parameter is to set the reference value to determine the needle height, used for installing and debugging machine.
F37	Head Position Off	138	138~250	Set the off position of head.
F38	Thread Loosing Method	Md02	Md02, e937	It is related to the requirement of drive input signal. BBQ2003 is dual-impulse input, while E937 is single-impulse input.
F48	Loop Embroidery to Flat Embroidery Head Interval	-330.0	-600.0~600.0	This parameter determines the frame moving distance when switch between flat embroidery head and loop embroidery head. It is up to the machine condition.
F90	DIP1			Reserved
F91	DIP2			Reserved
F92	DIP3			Reserved
Machine Configuration 2				
F93	DIP4			Reserved
F94	Main Shaft Lock	Yes	Yes, No	Set whether to lock main shaft at stop (for servo main shaft).
F95	AC Color-changing Box Position	Left	Left, Right	Set the position of AC color-changing box for looping embroidery.
Blowing Parameters				
F66	Stop Loops	3	1~6	
F67	Blowing Interval of Looping Valve	15	0~200	
F68	Blowing Time of Looping Valve	15	1~50	



Appendix 5 Loop Embroidery Error List

Error Code	Content
501	D-axis motor over-time
502	D-axis motor cover-current
503	H-axis motor over-time
504	H-axis motor cover-current
505	Trimming motor over-time
506	Needle height motor over-time
507	Needle position error
508	Knift not in position
541	No feedback of D-axis action
542	No feedback of H-axis action
543	No feedback of trimming motor
544	No feedback of thread loosing motor
545	No feedback of color-changing motor
546	No feedback of needle bar action
547	No feedback of upper head board
548	No feedback of lower head board
549	No feedback of shaking loop
551	Color-changing potentiometer inquiry over-time
552	Thread loosing potentiometer inquiry over-time
553	Needle height potentiometer inquiry over-time
554	Knife back to origin over-time
555	Color-changing position abnormal
556	Thread loosing position abnormal
557	Needle height disconformity
558	AC color-changing motor over-time (for AC color-changing machine)
559	Semi-return rotation abnormal (for AC color-changing machine)
600	Non-loop embroidery position

Appendix 6 Network Connection Instructions

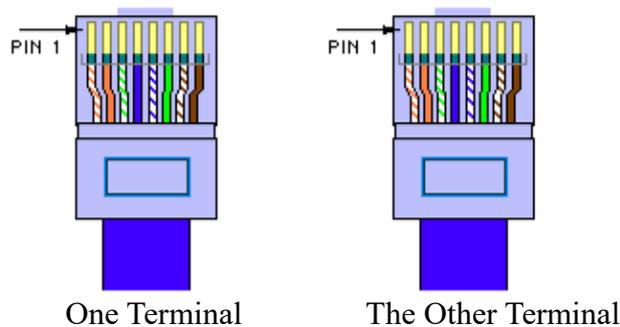
I. Making Ethernet Cable

1. Making Straight-through Cable

The pins in the two terminals of twisted-pair cable have to be in one-to-one correspondence. If the first pin of one terminal is green, the first pin of the other terminal must be green as well. The twisted-pair cable made in this way is usually called as “straight-through cable”.

Pin Number	1	2	3	4	5	6	7	8
Pin Color	orange white	orange	green white	blue	blue white	green	brown white	brown

Shown as below:



Usage: a. Link switch or HUB to router

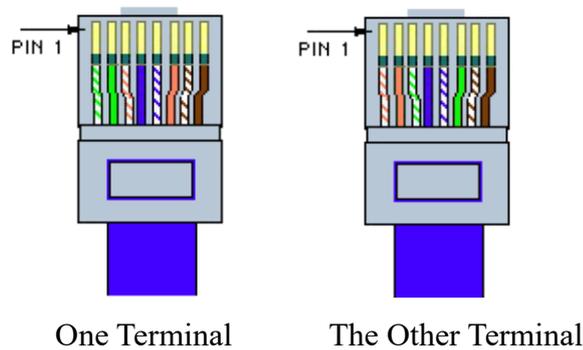
b. Link computer (including server and workstation) to switch or HUB.

2. Making Crossover Cable

1-3, 2-6 crossover connection: Twisted-pair cable has 4 pairs of pins (8 pins). Only 4 pins are actually used in network connection, namely the first, second and third, sixth pins, for the purpose of receiving and sending signals. The connection rule is: the first pin of one terminal is connected to the third pin of the other terminal, and the second to the sixth. Other pins are connected to the corresponding pins. Cable made in this way is called “crossover cable”.

Pin Number	1	2	3	4	5	6	7	8
Corresponding Pin Number	3	6	1	4	5	2	7	8
Pin Color	white green	green	white orange	blue	white blue	orange	white brown	brown

Shown as below:



Usage:

- a. Connection between switches through UPLINKS interface
- b. Connection between HUB and switch
- c. Connection between HUB and HUB
- d. Direct connection between 2 PCs (NIC to NIC)
- e. Connection between ports of Routers
- f. Connection between ADSL Modem (Ethernet port) and NIC of PC

ii. Notes for Network Setting Parameters

1. MAC Address

In physical transmission at network bottom level, the computers are recognized by physical address (MAC). So it's necessary to keep the uniqueness of MAC address. When the first two digits of MAC address are not zero, some network equipments regards it as illegal MAC address, thus the equipment can't be linked to the network. So the first two digits of MAC address must be zero.

2. IP Address

1) Definition of IP Address

IP address, also called Internet address, is the sole logic address for computers in the internet. Every computer in the internet relies on IP address to mark itself. It's like we find the phone by the phone number in the phone book. In one network the IP address must be unique.

2) Form of IP Address

One IP address includes 4 decimal integers partitioned by decimal points. Each integer is in fact composed of 8 binary numbers. So the maximum of each integer is 255 and the minimum is 0.

3) Structure and Classification of IP

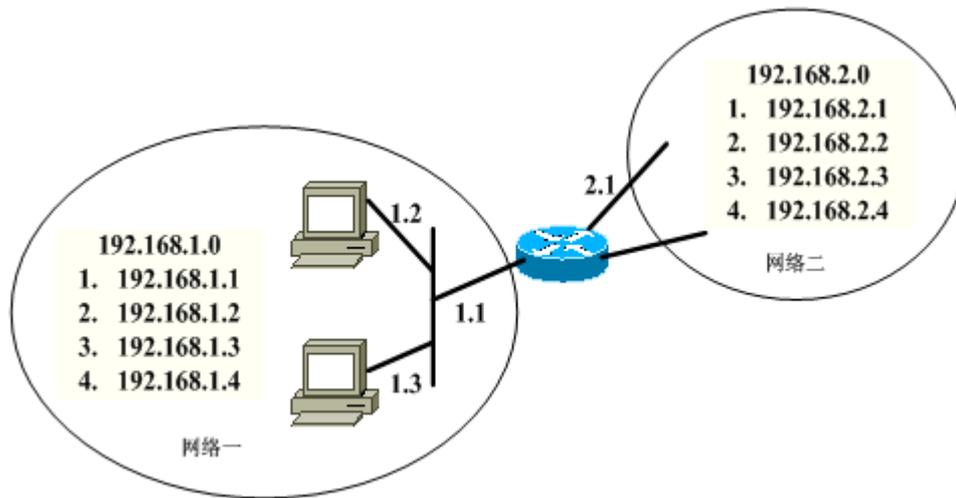
The four parts of IP address can be divided into 2 groups. One is network number for marking the network. The other is computer number for marking the specific machine in one network. IP addresses are divided into 3 kinds: A, B and C.

A: the first number represents network and the following 3 numbers represent computer.

B: the first two numbers represent network and the following 2 numbers represent computer.

C: the first three numbers represent network and the last one represents computer.

The following example will explain the network number and computer number of C type.



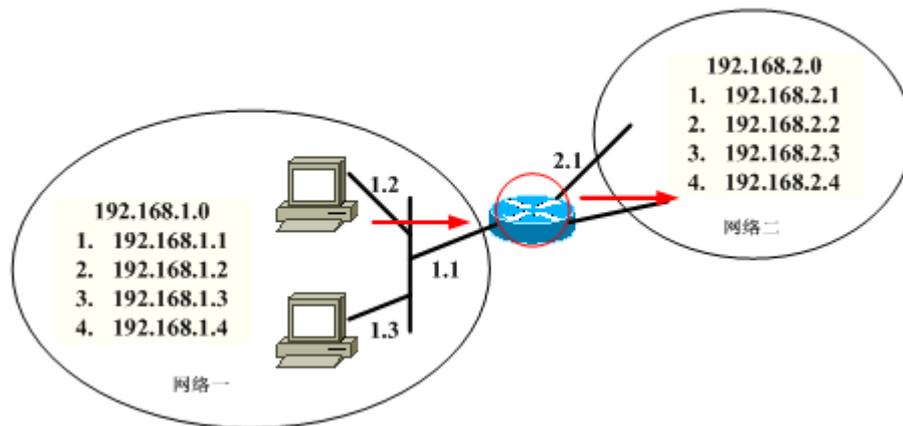
Network	Network Number	Computer Number
1	192.168.1	.1
1	192.168.1	.2
1	192.168.1	.3
1	192.168.1	.4
2	192.168.2	.1
2	192.168.2	.2
2	192.168.2	.3
2	192.168.2	.4

3. Subnet Mask

To ensure how the network number and computer number are divided, subnet mask is used to tell in one IP address which part is for network and which part is for computer. It's regulated that "1" is for network part and "0" is for computer part. IP address and subnet mask combine to tell in which network the computer is. So the subnet mask is very important. If it's wrong, it will get the wrong network address. Therefore the same network number must be set with the same subnet mask.

4. Gateway

It's the IP address of the router which is in the same subnet of the computer. As in the followed picture, if one data packet is to be transmitted to a computer in network 2, this data packet has to be sent to the router linked to us. It's like in sending by post that you only need to deliver a letter to postman instead of delivering by yourself. So when the computers are not in the same network segment, the gateway also has to be set properly in setting computers. Otherwise computers don't know where to deliver the data packet.



iii. Ways of Constructing Network

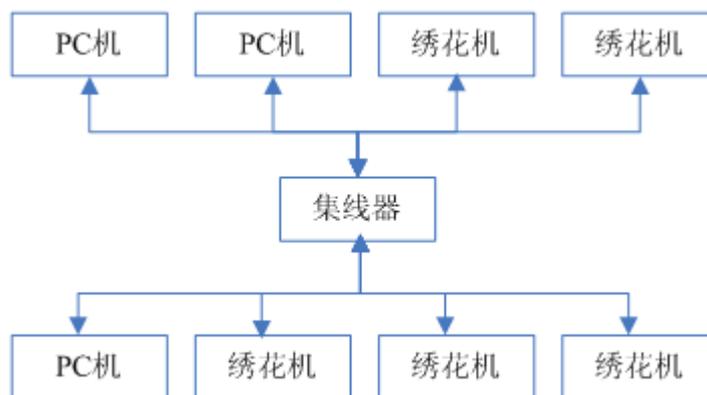
1. One PC Directly Connected to One Embroidery Machine

In this situation, crossover cable is needed to link the network interface of PC to the network interface of embroidery machine.



2. PC Connected to Embroidery Machine via HUB

In this situation, straight-through cable is needed to link PC or embroidery machine with HUB.



3. Connect the two networks in “2” through HUB.

iv. Setting Network Parameters of Embroidery Machine

1. MAC Address of Embroidery Machine

Set MAC address of NIC of embroidery machine. Each embroidery machine has its sole address. The range of this parameter is 000000000000~00FFFFFFFF.

2. IP Address of Server

This parameter has to be set as the IP address of the PC installed with EmbNetServer. This address can be found in the interface of EmbNetServer.

For the usage and installation of EmbNetServer, please refer to the CD with embroidery machine.

3. Server Port Number

This parameter value has to be the port number used by EmbNetServer. The number can be found in the interface of EmbNetServer.

4. IP Address of Embroidery Machine

It is the IP address of embroidery machine when it's linked with PC. The IP addresses of embroidery machines can't be repeated. The network numbers of embroidery machines and PCs within one sub-network have to be the same. And their computer numbers have to be different.

5. Subnet Mask

It is the subnet mask of IP address of embroidery machine when it's linked with PC. Within one sub-network, the subnet masks of embroidery machines and PCs have to be the same.

6. Gateway Address

If embroidery machines are from two different sub-networks, the gateway address has to be set. Otherwise there's no need to set it.