Computerized Controller for Embroidery Machine

RN-series USER'S MANUAL

〔**Version: V1.0** for Touch Screen〕

〔英文版：**RN**系列刺绣机电控操作手册〕

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Contents

The specifications are subject to change without notice!

Chapter 1   Overview

1-1   Precautions on Product Use

> Welcome to use Raynen computerized embroidery machine control system. Please read and understand this manual carefully before using the product to ensure you use and operate the computerized embroidery machine correctly. Please keep this operation manual in a safe place for reference at any time.

⚠️ 🚫 This system is a mechatronics product. In order to reduce the risk of accidental fire, electric shock and personal injury that may occur during use, the following basic safety precautions should be observed.

∨ Please carry out electrical installation and wiring according to the technical requirements, try to make the strong and weak electricity separate wiring, not tied together.

∨ All kinds of installation and connection cables should be well insulated, and the jacket and plastic skin should be free from damage. The connector should not expose the stripped copper wire to avoid short circuit and wire contact during pulling.

∨ For the parts with radiators, keep the radiator and exhaust port ventilated smoothly and do not block.

∨ Before powering on for the first time, be sure to confirm that the external power supply specifications meet the specifications.

∨ If you need to power on immediately after power off, please keep the power off for at least 30 seconds and then power on.

∨ At the start of power-on for 30 seconds, it is the initialization process of the power-on system, and try not to operate.

∨ The LCD screen and touch screen on the operation box are fragile items. Do not use sharp and hard objects for operation and click to ensure the normal function of the LCD screen and touch screen and prolong the service life.

∨ When inputting or outputting the pattern via USB disk, please pay attention to the insertion direction of the USB disk. Do not squeeze hard when the insertion direction is wrong. When reading or writing a USB flash drive, do not dial the USB flash drive to avoid damaging the USB flash drive and data.

∨ Do not open the cover of the electronic control cabinet during the power-on of the product. The chassis may contain fatal high voltage, which may cause accidental personal injury.

∨ If you really need to open the chassis for some tuning or inspection, you should turn on the power supply after the power socket is turned off or the power is turned off for 3 minutes to

avoid some internal energy storage capacitors still exist dangerous high voltage, which may cause electric shock and personal injury.

∨ Do not touch the moving parts on the machine while the machine is running, otherwise it may cause personal injury.

∨ The product is forbidden to be placed in places with moisture, dust, corrosive gas, flammable or explosive gas, otherwise it may easily cause accidental fire, electric shock and personal injury.

∨ When using this product, in order to prevent fire, electric shock and personal injury, the following basic safety precautions shall be observed at all times.

⚠ **Note:** Some operations are only for professional maintenance. General embroidery operators should use them with caution. Part of the operations may involve the action of some mechanical parts, so you need to pay attention to personal safety and equipment safety when using it.

1-2 Technical Specifications

(1) UI-Display Screen：10-inch touch screen or 15-inch touch screen

(2) Stepping Precision: Minimum stitch 0.1mm.

(3) Stitch range：0.1mm～12.7mm.

(4) Pattern input & output: USB, Network.

(5) Total memory （stitches） 100,000,000

(6) Maximum number of stitches in a single pattern （stitches）4,000,000

(7) Color-changing times: 4000

(8) Maximum speed 1200 Rpm

(9) Servo spindle, stepping frame shift with stepper-motor or servo-motor.

(10) Various combinations of driver for color change, thread-trimming, etc.

(11) Highly reliability connectors are used to ensure the reliability of the system connection.

(12) Special embroidery support: Yes.

(13) Lock Encryption: Yes.

(14) Multi-Language Support：Chinese, English (optional: German, Spanish, Turkish, Portuguese, Arabic and Thai)

(15) The system Can be connected to the cloud platform to achieve networked management of embroidery operation and production.

1-3 Electronic Control Operation Box and **Product Combination**

10-inch electronic control panel   **15-inch electronic control panel**
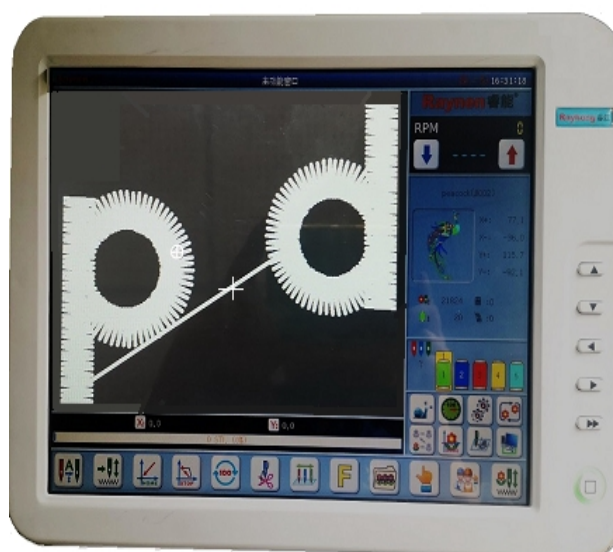
❙   **Touch Screen**

This machine adopts high-brightness LCD display and touch screen as the operation interface, which is easy and convenient for learning and using.

❙   **USB Data Transmission Interface**

This machine adopts universal USB data interface, which is convenient for inputting and outputting patterns and stored data via USB interface.

> ⚠ The LCD screen and touch screen on the operation box are fragile items. Do not use sharp and hard objects for operation and click to ensure the normal function of the LCD screen and touch screen and prolong the service life.
>
> ⚠ When inputting or outputting the pattern via USB disk, please pay attention to the insertion direction of the USB disk. Do not squeeze hard when the insertion direction is wrong. When reading or writing a USB flash drive, do not dial the USB flash drive to avoid damaging the USB flash drive and data.

∨ Schematic Diagram of Product Combination

RN series computerized embroidery control system consists of main operation box, main control box, and series of peripheral modules: XY driver, color-change, thread trimming, etc.

The system is shown in the following figure:
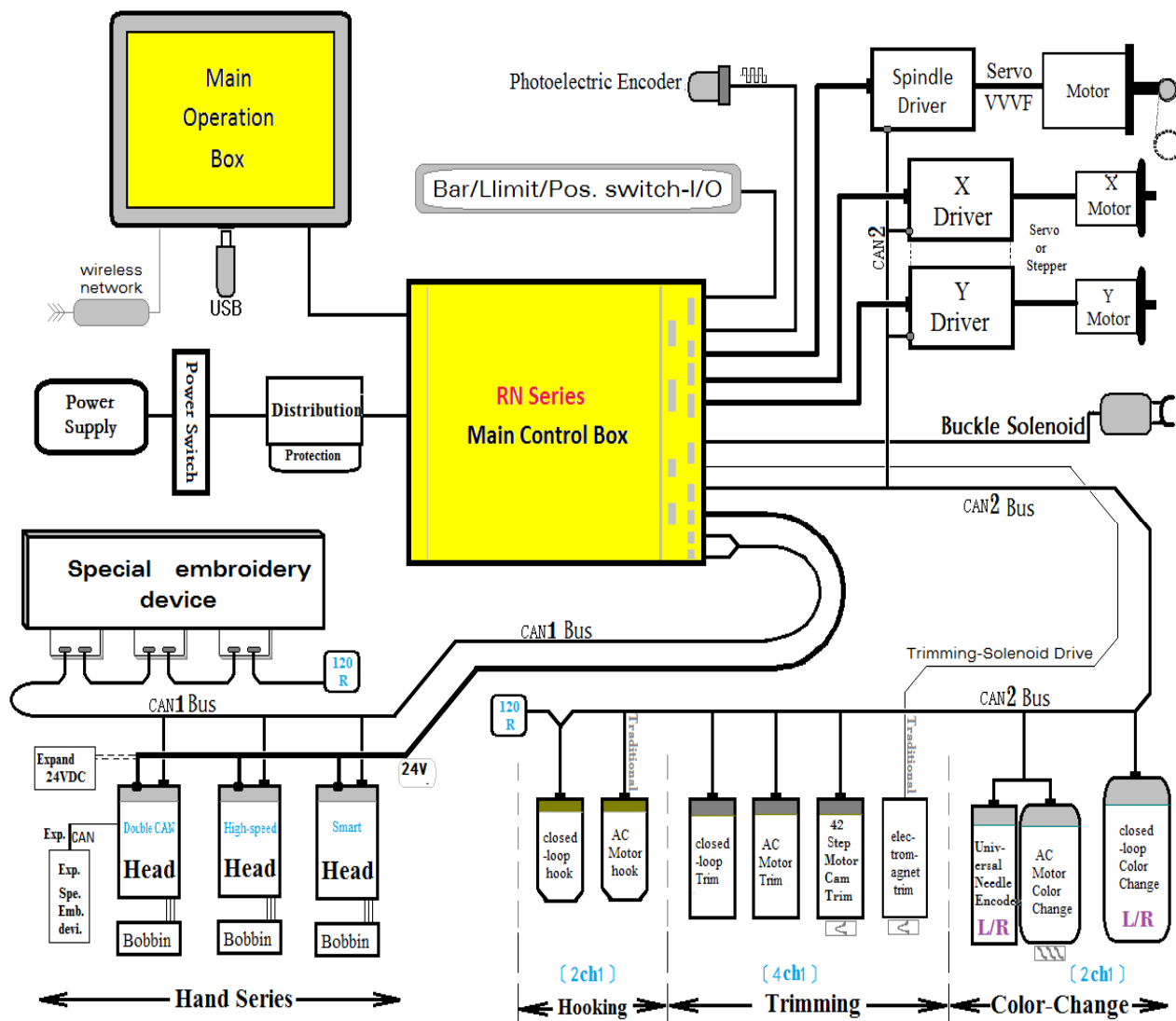
1-4 Introduction to Main Functions

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Pattern input & output	1) This machine can connect to the USB disk. It can read the patterns of Tajima binary, Tajima ternary, Belinda FDR format (including binary, ternary and Z-ary) and ZSK disk into the memory of the embroidery system. 2) This system can be connected to a USB flash drive via a USB interface, and the patterns stored in the system can be output in the Tajima binary format or Raynen format and stored in the USB flash drive.
Multiple embroidery process options	This system can choose to use different embroidery techniques such as "repetition embroidery", "combination embroidery", "letter embroidery" and "photo embroidery" etc.
Powerful pattern compilation function	This machine can compile the parameters of the "Repetition Embroidery" pattern or "Combine Embroidery" pattern to generate a new pattern, and store it in the memory.
Plenty assistant embroidery functions	This system can "automatically find the origin of embroidery patterns" and add functions such as "applique embroidery", "border embroidery", "cross embroidery" and "along the pattern range embroidery". Enriched the function of pattern embroidery, greatly improved the embroidery process and efficiency.
Powerful parameter memory function	This system can associate the selected embroidery parameters such as the starting point of the pattern, the color changing order, the pattern direction, the rotation angle, and the number of repetitions with the embroidery pattern, and save this set of parameters. When embroidering this pattern again, you can call this group of parameters without resetting, which improves the embroidery efficiency.
Powerful special embroidery extension function	This system can be connected to a variety of special embroidery devices such as "bead embroidery", "dibbling embroidery", and "thermal cutting" to meet the special needs of users for present and future application.
Convenient maintenance and debugging functions	This system includes: machine self-test, encoder self-test, Main shaft motor speed self-test, machine components test functions. The use of these functions makes the debugging, maintenance and fault judgment of the embroidery machine more convenient.
System software upgrade	Using an external USB, this system can upgrade the system software or perform online software upgrades for peripheral boards and special embroidery boards to meet the continuous function improvement requirements of users.
Muti-Language support	The system supports to display in Chinese, English, Spanish and Turkish, French and Portuguese. It is convenient for operators from different countries to operate, and the operation keys are represented by vivid icons, which effectively eliminates language restrictions

Chapter 2   Function Parameter Summary Table

2-1 Main Interface and Auxiliary Buttons

I   The main interface display of embroidery operation:：
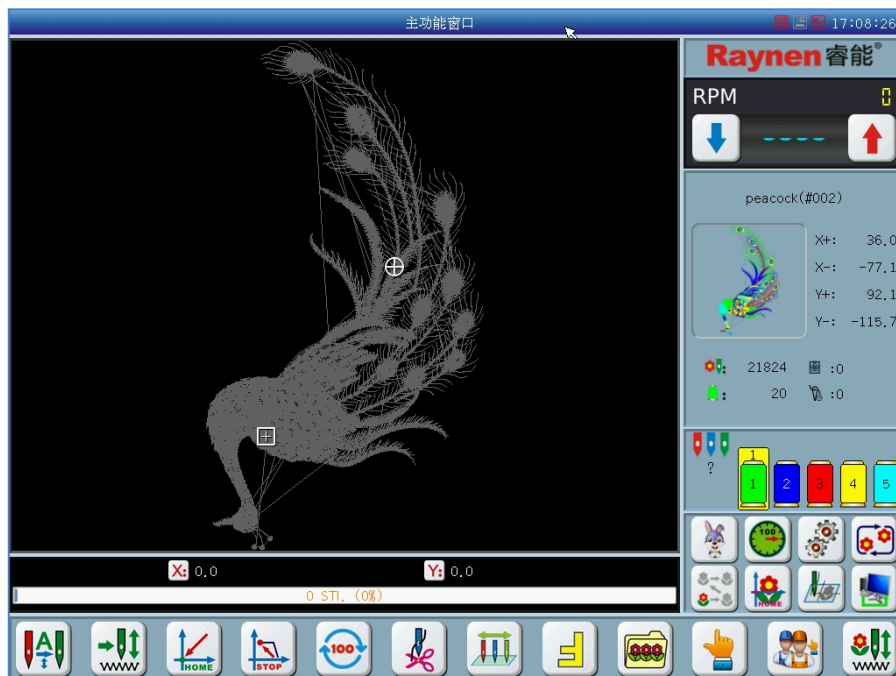
I   Function description of the mechanical buttons on the auxiliary panel of the system:：

Key symbol	Key name	Key Function
◀▶	Left and right keys	① During menu operation, this key is used to switch menu items. ②When embroidery stops, it is used as the operation key for manual frame moving.
◆	Up and down keys	① During menu operation, this key is used to switch menu items. ②When setting parameters, change the values or selection of each item. ③When embroidery stops, it is used as a manual frame moving operation key.
▶▶/ (ENTER)	Confirm key (Enter key)	① During menu operation, this key is used to confirm entering some menu item or confirm an operation, or confirm the entered value. ②When embroidery stops, this key is used to switch the frame moving at high or low speed.

（See the figure below for the key position）

2-2 Index Number of the Main Interface

On the main interface of the control box, the layout of different size displays is as follows:
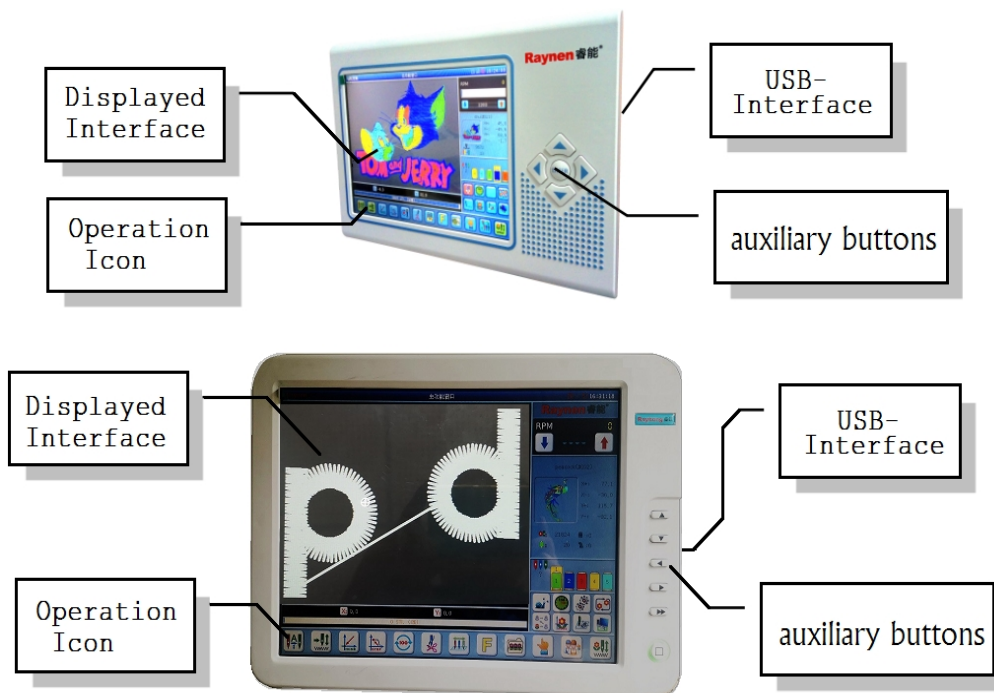
In this manual, for the convenience of concise description, the corresponding "code/Index" of icons is:
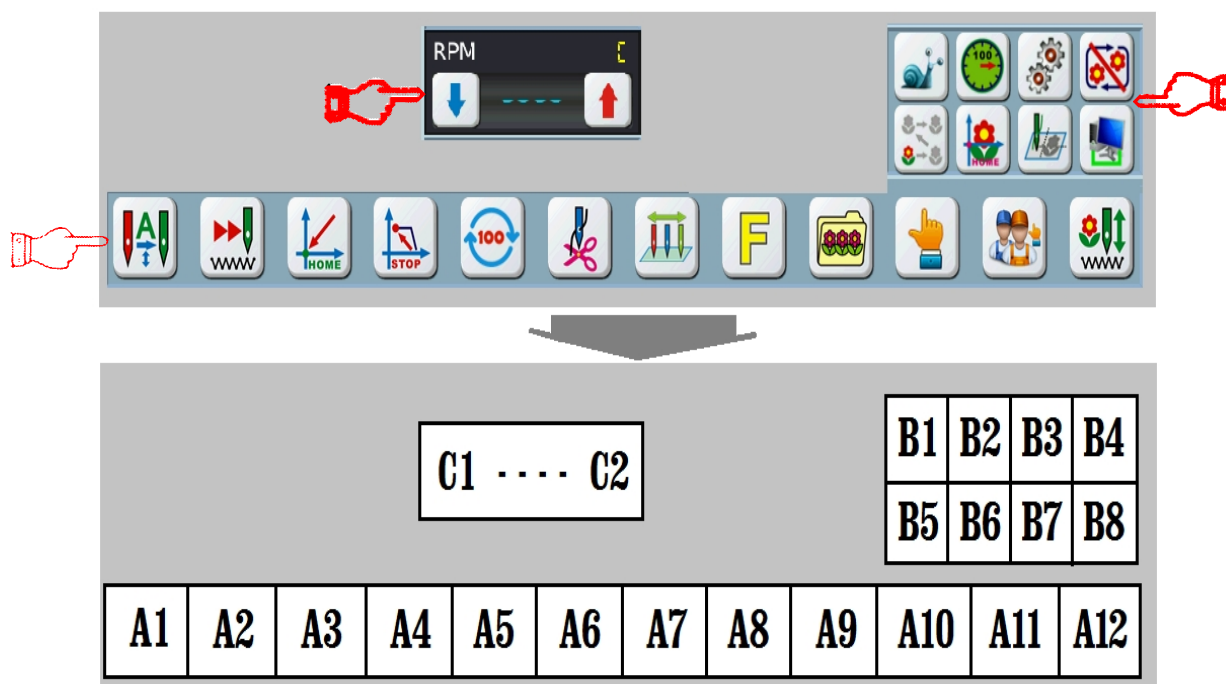
Number description：E.g **A10-P6-U2** : It means that after clicking A10 "**Parameter Setting**", then click to enter the fourth P6 "**Machine parameters**", and then click the parameter to enter the second U2 "**Frame Para.**" for operation. You can change internal moving frame series parameter.
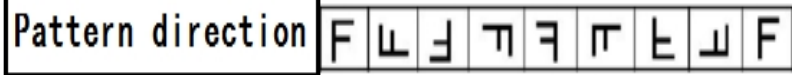
2-3 Layered Hierarchical Structure of UI

Index description：A/B/C is the index number of main interface [A is the bottom row icon, B/C is the auxiliary icon], P is the second-level index number; U is the third-level index number.

Index	Main- interface	The second-level menu	The third-level menu	Specific operation instructions	
A1-P1--	A1 Color Change Mode	P1 Auto Color Changing & Manual Start	—————→	▼Automatic Color Changing/ Manual Start: The machine automatically switches to the designated needle position according to the preset "Color-Changing Order" and stops, waiting for manual operation before starting embroidery.	
A1-P2--		P2 Auto Color Changing & Auto Start	—————→	▼Automatic Color Changing/ Automatic Start: The machine automatically switches to the designated needle position according to the preset "Color-Changing Order" and stops, and automatically starts to continue embroidery.	
A1-P3--		P3 Manual Color Changing & Start	—————→	▼Manual Color Changing/ Manual Start: When changing color during embroidery, the machine will automatically stop. At this time, the color needle number should be selected, and then start the embroidery manually.	
A2-P1--	A2 Idling and Position Idling	P1 Normal Emb.	—————→	Click the icon to switch three state.When the icon appears, it means to enter the "Normal Emb." state.	
A2-P2--		P2 high-speed idling	—————→	In order to fast forward and retreat during the embroidery process to realize mending Emb., you can select this option. When the control Bar is pulled, the main shaft does not rotate, and the emb. frame does not move, and the needle count increases or decreases. After the control Bar stops, the emb. frame moves directly to the required stop needle. In the parameter table of A10-P6-U3, "High-speed idling speed" can change the speed of high-speed idling to be faster or slower.	
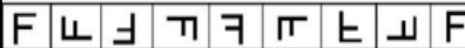
Index	Main- interface	The second-level menu	The third-level menu	Specific operation instructions	
A2-P3--	**A2** Idling and Position Idling	P3 low-speed idling	— — — — — — —→	In order to fast forward and retreat during the embroidery process to realize mending Emb., you can select this option. When the control Bar is pulled, the main shaft does not rotate, but the emb. frame move, increases or decreases with the needle count. After the control Bar stops, the emb.frame stops immediately. In the A10-P6-U3 parameter table, "low-speed idling speed" can change the low-speed idling speed is faster or slower.	
Index	**Main- interface**	**The second-level menu**	**The third-level menu**	**Specific operation instructions**	
A3-P1--	**A3** **Return to Origin**	P1：Return to Origin	— — — — — — —→	Operate and view according to the graphic prompt: Return to Origin	
A3-P2--		P2：Return To Offset Point	— — — — — — —→	Operate and view according to the graphic prompt: Back to another starting point	
A3-P3--		P3：Trace Immediate	— — — — — — —→	Operate and view according to the graphic prompt: Move Frame Along outline	
A3-P4--		P4：Auto-Find the Origin	— — — — — — —→	Operate and view according to the graphic prompt: Auto-Find the Origin	
A4-P1--	**A4** Return to Stitch point	P1：Return Frame to Last Stitch	— — — — — — —→	Operate and view according to the graphic prompt: Return Frame to Last Stitch	
A4-P2--		P2：Change the Last Stitch Point	— — — — — — —→	Operate and view according to the graphic prompt: Change the Last Stitch Point	

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Index	Main- interface	The second-level menu	The third-level menu	Specific operation instructions	
A5-P1--	**A5**	**P1**：Main Shaft Up	——————→	Check the embroidery machine, perform a slow motion or require automatic rotation to 100°.	
A5-P2--	Main Shaft Inching	**P2**：Main Shaft Down	——————→	This function is used to change the cloth for large format batch embroidery. The main shaft down below the cloth surface and stops and the position of the embroidery cloth will be fixed. So that they can continue to embroider unfinished patterns from the current position.	
A6-P1--	**A6**	**P1**：Trim two thread	——————→	The action of cutting line from up to down.	
A6-P2--	Trimming Operation	**P2**：Trim Bobbin thread Only	——————→	Trim Bobbin thread only.	
Index	**Main- interface**	**The second-level menu**	**The third-level menu**	**Specific operation instructions**	
A7----	**A7** Color Change Operation	P1: Set All Colors P2: Set One Colors P3: Replace Color P4: Overlapping Type	——————→	▼Follow the graphic prompts ▼As the machine stops, you need to change the color manually: select the desired color-changing pin number and press it. ▼In the embroidery confirmation state, when you select the manual color change operation, you can choose whether to automatically record the needle position in the color change sequence unit. A new pattern is embroidered by manual	

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				color-changing once and saved, then the next time the machine can change colors as the saved order for embroidery directly and automatically. Click "Save Manual Color Changes" to change it to "Yes".	
A8---	**A8** **Pattern Direction**	》》》	– – – – – – – –→	In the "Release Emb." state, click the icon to change the direction of the embroidery pattern cyclically.	
A9-P0-U1	**A9** Pattern Management	**P0:** 〔Right ..shortcut menu〕	U1、Pattern Sort...	You can specify the memory to be sorted in the following sequence:Pattern number, Pattern name, Color number, Total number of needles, X width, Y width	
A9-P0-U2			U2、Sort Type	Select the sorting method, click to switch: ascending ←→ descending	
A9-P0-U3			U3、Duplicate Pattern	Follow the prompts, and selection or import " Input pat for saving" of duplicate pattern.	
A9-P0-U4			U4、Merge Pattern	Follow the prompts and import contact. Select two Patterns, entering XY interval etc..	
A9-P0-U5			U5、Paste Setting	Follow the prompts,for ▼or▲ locating the number of pins and insert the "out of frame" mark and distance. Add patch point ● Restore last time C Clear patch point	
A9-P0-U6			U6、Other Function...	Follow the prompts to select and operate, you can proceed separately: W1: Stitch Editor W2: Split Pattern W3: Create Combination Pattern W4: Clear All W5: Covert to High-speed (Jumps)	

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A9-P0-U6	**A9** Pattern Management	**P0**: 〔Right ..shortcut menu〕	U6、Other Function...	W6: Compile Combined Patterns W7: Compile Embroidery Patterns W8: Create Outline from Pattern W9: Create Rough Boundary from Patterns W10: Create Pattern from Frame W11: Satin Compensation
A9-P0-U7			U7、Pattern Output	Follow the prompts to output the selected pattern to USB; Also: Disk Format, New directory,etc.
A9-P0-U8			U8、**Pattern Set to EMB**	In the "Release Emb." state,　you can specify this operation to call the selected pattern as the subsequent "current embroidery pattern".
A9-P1-		**P1** Prev. Page	————————→	The screen display returns to the "previous page", if there is no previous page, the first page is displayed
A9-P2--		**P2** Next Page	————————→	The screen display goes to the "next page", if there is no next page, the last page is displayed
A9-P3--		**P3** View pattern details	————————→	After selecting the pattern, you can view it by pressing the icon: zoom in and zoom out, move left and right, track playback, 3D display, etc., such as: view stitch

A9-P4- -		**P4** S/M selection	– – – – – – –→	Click icon to switch the memory pattern in "single selection S " or "multiple selection M " For operations like "pattern combination", the operation should be in the "multiple selection M" state	
A9-P5- -		**P5** Pattern Parameters	– – – – – – –→	After selecting the pattern, click to enter and follow the prompts to modify the parameters one by one: X/Y Scale, Rotation Angle, Rotate or Scale first, X/Y Compensation, Repeat Mode, Repeat Prior, X/Y Repeats, X/Y Offset etc..	
A9-P6- -	**A9** Pattern Management	**P6** **Set** Color-Order	– – – – – – –→	The automatic color-changing sequence is carried out according to the preset color-Order, which should be set before embroidering. Click to enter and edit the color sequence from beginning to end according to the graphic prompts, After editing, choose ✓ to accept the edited data and then exit	
A9-P7- -		**P7** USB input	– – – – – – –→	Press the icon to input the pattern from the USB: Disk Format , New Directory, Upper Directory, Single selection, Multiple selection, Read all or one pattern, View patterns, Delete patterns, etc.	
A9-P8- -		**P8** Pattern Delete	– – – – – – –→	Follow the graphic prompts: select the pattern, click to "delete" it	
A9-P9- -		**P9** Internet Download	– – – – – – –→	Download patterns from the Internet	

Index	Main- interface	The second-level menu	The third-level menu	Specific operation instructions	
A9-P10-	**A9** Pattern Management	**P10** **Pattern typesetting**	– – – – – – – →	Proceed according to the graphic prompt: optional movement distance, zoom in, zoom out, and use the "mechanical button" for positioning After selecting the relative zero origin, click to confirm	
A9-P11-		**P11** **Help Inf.**	– – – – – – – →	Provide display "help" information	
A9-P12-		**P12** **Exit**	– – – – – – – →	Exit the menu and return to other interfaces	
Index	**Main- interface**	**The second-level menu**	**The third-level menu**	**Specific operation instructions**	
A10-P1-U1	**A10** **Auxiliary** 〔**Para.** **Settings** 〕	**P1** Pattern Parameters	**U1**、 X Scale	This parameter controls the zoom ratio of the pattern in X (horizontal) directions.	
A10-P1-U2			**U2**、 Y Scale	This parameter controls the zoom ratio of the pattern in Y (vertical) directions.	
A10-P1-U3			**U3**、 Rotation Angle	The rotation angle refers to the counterclockwise angle of the embroidered pattern with respect to the pattern direction.	
A10-P1-U4			**U4**、 Direction	This parameter sets the direction of the pattern design. 〔Including 90 degree rotation, mirroring etc.〕 Pattern direction F ⌐ ⌐ ⊓ ⊓ ⊓ ⊢ ⊔ F	
A10-P1-U5			**U5**、 Rotate or Scale first	When X and Y both has rotation while X is different from the Y on magnification. Different settings of the two priority modes will embroider different embroidery effects: if the	

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	A10	P1		
			rotation priority is set, the pattern will be rotated first and then scaled, and if the zoom priority is set, the pattern will be scaled and then rotated.	
A10-P1-U6			U6、 Repeat Mode	Divided into Normal repetition/Part repetition/mirror repetition. See operating instructions below	
A10-P1-U7			U7、 Repeat Prior	X priority/Y priority: Indicate which direction is executed first during repetition.See operating instructions below	
A10-P1-U8	**A10**		U8、 X Repeats	Set the number of repetition embroidery patterns in rows.	
A10-P1-U9			U9、 Y Repeats	Set the number of repetition embroidery patterns in columns.	
A10-P1-U10	**Auxiliary** 〔**para.Sett ings**〕	**P1** Pattern Parameters	U10、 Repeat Offset Type	There are two types:①Origin Offset and ②Frame Offset. Origin spacing means repetition based on the distance from the origin of the pattern; Border spacing means repetition based on the space between two borders that are adjacent in a pattern.	
A10-P1-U11			U11、 X Offset	X represents repetition distance between two adjacent lateral patterns	
A10-P1-U12			U12、 Y Offset	Y represents repetition distance between two adjacent longitudinal patterns.	
A10-P1-U13			U13、 **Packed Heads**	For combination head embroidery.　Optional [0, 8], Normal situation is 1 [EMB do not use combined header]	
A10-P1-U14			U14、 **Batch Needle Add**	Stitch number accumulation for combination head embroidery. Optional according to needs [Yes, No]	
A10-P1-U15			U15、 **HP Move**	Whether to move the frame when switching the head group. Optional according to needs [Yes, No]	

A10-P2-U1			U1、Trace Immediate	Move the embroidery frame around the pattern.Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P2-U2			U2、Sew Rough Boundary Now	Emb. opening line around the Frame. Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P2-U3			U3、Sewoutline Now	Embroidery pattern outline. Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P2-U4	A10 Auxiliary 〔para.Settings 〕	P2 Trace Menu	U4、Sew Cross Pattern	Cross stitch at the current position. Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P2-U5			U5、SewRight Angle Pattern	Embroider the right angle line at the current position. Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P2-U6			U6、Sew Line Pattern	Embroider a straight line from the end of the frame to the starting point. Proceed according to the graphic prompts: click "confirm" and then perform the corresponding operations,.Pay attention to the mechanical movement!	
A10-P3-U1		P3 Float Move	U1、Forward STI	Follow the graphic prompts: After inputting the "number of needles", click "confirm" and perform the corresponding operations.Pay attention to the mechanical movement!	
A10-P3-U2			U2、Backward STI	Follow the graphic prompts: After inputting the "number of needles", click "confirm" and perform the corresponding operations.Pay attention to the mechanical movement!	
A10-P3-U3			U3、Find Next Color	Advance to the next color change code.Proceed according to the graphic prompts: pull the BAR for corresponding operations. Pay attention to the mechanical movement!	

A10-P3-U4		P3 Float Move	U4、Find Prev. Color	Go back to the last color change code.Proceed according to the graphic prompts: pull the BAR for corresponding operations. Pay attention to the mechanical movement!	
A10-P3-U5			U5、Next Stop	Advance to the next stop code. Proceed according to the graphic prompts: pull the BAR for corresponding operations. Pay attention to the mechanical movement!	
A10-P3-U6			U6、Previous Stop	Go back to the previous stop code.Proceed according to the graphic prompts: pull the BAR for corresponding operations.Pay attention to the mechanical movement!	
A10-P3-U7	A10 Auxiliary 〔para.Settings〕		U7、Back to Start	Back to the starting needle.Proceed according to the graphic prompts: pull the BAR for corresponding operations.Pay attention to the mechanical movement!	
A10-P4-		P4 Frame Origin Setting	– – – – – – –→	The Power-off frame position protection setting must be set in the pattern release state. Before the current embroidery frame position is memorized, the user can enter and use the effective limit switch that must be installed on the embroidery machine to memorize the current position.　Pay attention to the frame moving back and forth during execution!	
A10-P5-		P5 Frame Origin Resume	– – – – – – –→	Based on the previous implementation of "Power-off Frame Protection Setting", using the current position memorized by the effective limit switch that must be installed on the embroidery machine, the current position of the embroidery frame　is automatically restored under the electronic control tracking memory.　Pay attention to the frame moving back and forth during execution!	
A10-P6-U1		P6 Machine parameters	U1、Head T.B.Detect parameter	**Enter according to the graphic prompt:** Upper Thread Check, T.B. Check Device, T.B. Detect Surface Sensitivity, T.B. Detect Bobbin Sensitivity, T.B. Detect Surface STI.、 T.B. Detect Bobbin STI., T.B.back Stitches, Patch Counts, T.B. Detection Skip Count, T.B. Detect Skip STL. After Jump. Head Motor Act Angle.	

A10-P6-U2	**A10** **Auxiliary** 〔**para. Sett ings** 〕	**P6** **Machine parameters**	**U2、 Frame para.**	Enter according to the graphic prompt: X direction Frame Angle A, X direction Frame Angle B,　Y direction Frame Angle A, Y direction Frame Angle B,　X frame End adj,　Y frame End adj, X adjust, Y adjust, Frame Speed(high), Frame Speed (low), Over Frame Speed, Combine Jumping,　MoveInterval　When　Head　Change,　Sequin emb.frame　angle　compensation　value,　　Loose　bead emb.default moving frame angle com,　Frame Table
A10-P6-U3			**U3、 Speed Parameters**	Enter according to the graphic prompt: Max RPM, Min RPM, Startup RPM,　Rev. At Slow Motion., Startup Stitches, Startup Acceleration,　Jump RPM Limit, Chenille Rev Limit, Float HI Speed, Float HI Speed, Float LO Speed,　Needle Down Adjust, Efficient Mode,　Slow RPM if Stitch Longer Than,　Motor Scale Adjust,　Thick Stuff Adjust, Main shaft 100 degree Adj, Main shaft Braking Adj
A10-P6-U4			**U4、TrimParameters**	Enter according to the graphic prompt: 1,Trimming Type, Trim on jumps, catch Angle By Motor, Trimming Length,　SPEED 1 PRE TRIM,　SPEED 2 PRE TRIM,　Trimming RPM, Speed after trimming, Lock Stitchs Of Trim, Whipstitch Length (Long Tail),　Step Cutter Distance, Lock Stitchs After Trim, Lock Length After Trim，Action after trimming, Spin Main Shaft After Trim, Slow STI.after trimming, Startup Hold Adjust, Surface Clamp Patch, Action of upper thread clip during thread trimming, Movement mode of upper thread clip during thread emb. 2, Hook Hum, Trim Over Length, Angle of trimming start, Angle of trimming Back, Hook pause time, Hook pause

				position, Cut Keep return angle, Step cutter speed, Moving frame method when cutting thread Frameless, Stepping trimmer return angle, Lock angle by Motor, Lock thread action angle adjust.	
A10-P6-U5	**A10** **Auxiliary** 〔**para.Sett ings**〕	**P6** **Machine parameters**	**U5、 Sewing para.**	Enter according to the graphic prompt: 1,Return to Start Point, Display Pattern Stitches, Show Preview in Drive Mode, Embroidery pattern 3D,　START/STOP Switch, TRACE STYLE, TRACE SPEED,　Patch End Mode, CC. Same Color Operation, Auto Start When Same Color, Save Manual Color Changes, Remove Empty　Stitches,　Convert Stop Code To Color, Whether to prompt flat needle compesation, Emb.Key anti-touch, Combination Head alarm display mode, compatibility mode. 2, Simulate Emb.,　Lurex Thread Needle NO., Boring Needle NO., Chenille Needle NO.,　Stitch Length For Auto Jump, Tiny Filter, Clear the needle halfway back to the origin,　End Clear Drawing, Number of BUzzer sounds,　DIP1、DIP2、DIP3、DIP4、DIP5、DIP6、DIP7、DIP8、DIP9	
A10-P6-U6			**U6、 Modal config.**	After the password is entered correctly, 　　enter the parameters according to the graphic prompts: 1，Head Number,　Needle Number,　X Breadth, Y Breadth, Multi Head Interval, Trimming Duty Cycle, Trimming leectromagnet excitation,　Holding Duty cycle, Holding electromagnet excitation time, Open loop stepping trimmer 1 current, Open loop stepping trimmer 2 current, Frame pulse duty cycle, Frame pulse width, X axis shift frame delay time, Y axis shift frame delay time, T.B.,Surface Clamp Clamp Solenoid Voltage Adjust, Head Solenoid Voltage,　Single needle head working needle position,　single needle head broke detection channel, Save current para.as default para.	

			2, Non-Self-retaining thread lock's PWM duty cycle, Jump motor current, Hook motor stroke, Hook motor current, X-axis motor working current, Y-axis motor working current, X-axis motor holding current, Y-axis motor holding current	
A10-P6-U7			U7、Step Color Para	Enter according to the graphic prompt: 　　W1、Color Motor Regress 　　W2、CC.Stepper Speed 　　W3、Step Color Adj
A10-P6-U8	**A10** **Auxiliary** 〔**para. Sett ings**〕	**P6** **Machine parameters**	U8、Set the scope of Embroidery	Enter according to the graphic prompt: 　　　Set the working range of embroidery
A10-P6-U9			U9、Set the scope of Specil Emb.	Enter according to the graphic prompt: 　　　Set the working scope of special embroidery
A10-P6-U10			U10、Sequin Parameters	Enter according to the graphic prompt: Auto Starte Sequin, Sequin Lift Alone, Sequin Lift Time, Lift Up when T.B., Lift Up when JUMP(NO TRIM), Air valve time, Overlap feeding step by step, Custom Overlapping mode, Right Sequin Setting, Left Sequin Setting, Third Sequin Setting, Fourth Sequin Setting, Fives Sequin Setting. *[With the development of special embroidery devices, the above parameter settings may change]*
A10-P6-U11			U11、Bead Parameters	Enter according to the graphic prompt: Delicacy, CHANGING GLASS NUM, BACK GET ANGLE, LOOP NUM of PASS GLASS, Right bead Para., Left bead Para., Multi-bead Para. *[With the development of special embroidery devices, the above parameter settings may change]*

A10-P6-U2			U2、Cord Para.	Similar to sequin embroidery parameters, input appropriate values according to graphic prompts and device types	
A10-P6-U3			U3、Hotdrill Para.	Similar to sequin embroidery parameters, input appropriate values according to graphic prompts and device types	
A10-P6-U4			U4、Laser Para.	Similar to sequin embroidery parameters, input appropriate values according to graphic prompts and device types	
A10-P6-U5			U5、A-loop Para.	Similar to sequin embroidery parameters, input appropriate values according to graphic prompts and device types	
A10-P6-U6	A10		U6、Boring Para.	Similar to sequin embroidery parameters, input appropriate values according to graphic prompts and device types	
A10-P6-U7	Auxiliary 〔para.Settings〕	P6 Machine parameters	U7、Multi-shaft Debug	After entering, you can modify the control parameters of each motor driver: **1: Y shaft Debug** ▨X EMB.SPD LOOP Gain ,X Frame SPD LOOP Gain, X-Frame POS LOOP Gain, X-direction embroidery position loop gain 1,　X-direction embroidery position loop gain 2,　X-direction embroidery position loop gain 3,　X-direction embroidery position loop gain 4,　X-direction embroidery position loop gain 5,　X-direction embroidery position loop gain 6,　X-direction embroidery position loop gain 7, X-direction embroidery position loop gain 8,　X-direction embroidery position loop gain 9,　X-direction embroidery position loop gain 10,　X-direction embroidery Position loop gain 11,　X direction embroidery position loop gain 12 ,　X Hysteresis Adjust, Servo Gear Ratio Numerator 1,　Servo Gear Ratio Denominator, X-overload protection torque,　X-overload protection time, ▨X- EMB.SPD LOOP Int_Gain , X-Frame SPD LOOP Int_Gain,　X current embroidery switching Gain value , X feedforward gain,　X parking position loop feedforward filtering time constant , X speed loop feedforward gain , X speed loop feedforward filter time constant,　X current loop ratio,　X current loop integral value,　X Id reference value setting , X shaft overload factor 1,　X overload factor 2,　X speed loop filter value, X One command pulse, X Instruction filtering level,　X	

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| A10 ⬆️ Auxiliary 〔para.Sett ings 〕 | P6 Machine parameters | U17、Multi-shaft Debug | over-emperature alarm threshold, X motor model, ▓X Backlash Adjust 1, X Backlash Adjust 2, X Backlash Adjust 3, X Backlash Adjust 4, X Backlash Adjust 5, X Backlash Adjust 6, X Backlash Adjust 7, X Backlash Adjust 8, X Backlash Adjust 9, X Backlash Adjust 10, X Backlash Adjust 11, X Backlash Adjust 12 **2: Y shaft Debug** ▓Y EMB.SPD LOOP Gain , Y Frame SPD LOOP Gain , Y-Frame POS LOOP Gain , Y-direction embroidery position loop gain 1, Y-direction embroidery position loop gain 2, Y-direction embroidery position loop gain 3. Y-direction embroidery position loop gain 4, Y-direction embroidery position loop gain 5, Y-direction embroidery position loop gain 6, Y-direction embroidery position loop gain 7, Y-direction embroidery position loop gain 8, Y-direction embroidery position loop gain 9, Y-direction embroidery position loop gain 10, Y-direction embroidery Position loop gain 11, Y direction embroidery position loop gain 12 , Y Hysteresis Adjust, Servo Gear Ratio Numerator 2, Servo Gear Ratio Denominator, Y-overload protection torque, Y-overload protection time, ▓Y- EMB.SPD LOOP Int_Gain, Y-Frame SPD LOOP Int_Gain, Y current embroidery switching Gain value, Y feedforward gain, Y parking position loop feedforward filtering time constant, Y speed loop feedforward gain, Y speed loop feedforward filter time constant, Y current loop ratio, Y current loop integral value, Y Id reference value setting , Y shaft overload factor 1 , Y overload factor 2, Y speed loop filter value, Y One command pulse, Y Instruction filtering level, Y over-emperature alarm threshold, Y motor model ▓Y Backlash Adjust 1, Y Backlash Adjust 2, Y Backlash Adjust 3, Y Backlash Adjust 4, Y Backlash Adjust 5, Y Backlash Adjust 6, Y Backlash Adjust 7, Y Backlash Adjust 8, Y Backlash Adjust 9, Y Backlash Adjust 10, Y Backlash Adjust 11, Y Backlash Adjust 12 **3:Main-shaft Debug** ▓Servo Gear Ratio Numerator, Servo Gear Ratio Denominator, Brake speed loop proportional gain, Brake speed loop integral gain, embroidery rising speed slope , embroidery deceleration slope, Emb Velo Rat.Gain, Emb Velo Intg.Gain, Parking |

		P6 Machine parameters	U17、Multi-shaft Debug	position loop proportional gain, parking position loop feedforward gain , parking position loop feedforward filter time constant, Stop Velo Rat.Gain, Stop Velo Intg.Gain, Servo motor Rot.Dir, Locking Motor At stop, overload factor 1, Overload factor 2, Overload protection torque, overload protection time, one command pulse Instruction filtering level, Position gain, Driver temperature, Motor temperature, Over-temperature alarm threshold, Driver voltage, motor model, speed loop feedforward filter time constant	
A10-P7-U1			U1、Start Stop Buttons	Test according to the graphic prompts: you can view the screen prompts while simulating pressing the control bar	
A10-P7-U2			U2、Limit Switch	Test according to the graphic prompts: you can check the screen prompts when simulating pressing the limit switch	
A10-P7-U3			U3、Jump Solenoid	Test according to the graphic prompts: through the control bar action for the action inspection of head electromagnet	
A10-P7-U4	A10	P7 Test Machine Parts	U4、Tread Break Sensor	Test according to the graphic prompts: through the control bar action for the action inspection of thread break detection	
A10-P7-U5			U5、Frame Movement Test	Test according to the graphic prompts: After setting the position , check the movement of the frame	
A10-P7-U6	Auxiliary 〔para.Settings〕		U6、Trimming Solenoid	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U7			U7、Test holding solenoids	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U8			U8、Test hook solenoids/motor	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U9			U9、Thread lock test	Test according to the graphic prompts: through the control bar action for the action inspection of thread break detection	
A10-P7-U10			U10、Control Panel test	You can enter the selection, follow the graphic prompts for the corresponding self-check: W1, Keyboard W2, Monitor W3, Encoder zero Adjustment	

	A10				
A10-P7-U1		P7 Test Machine Parts	U11、 Test Encoder	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U2			U12、 Test RPM	Perform self-inspection according to the graphic prompts: you can press the ↑speed up or ↓speed down key to view the actions of the main shaft	
A10-P7-U3			U13、 Turn Main Shaft To Angle	Test according to graphic prompts: After entering some angle, check the movement of the main shaft	
A10-P7-U4			U14、 Trim Immediate	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U5			U15、 Z Swing	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U6	A10		U16、 Nipple Test	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P7-U7			U17、 M Shaft Test	Test according to the graphic prompts: you can press the bar to check the movement of the components	
A10-P8-	Auxiliary 〔para. Settings 〕	P8 Disply EMB Info.	— — — — — — — →	Display various working statistics of the machine: Power-on time, Emb.Period, Stop Period, T.B. rate, Number of workpieces, Accumulated stitches, Pattern stitches, etc.	
A10-P9-		P9 语言选择 〔LanguPge〕	— — — — — — — →	Select a display language according to the graphic item: Chinese, English, Turkish, etc.	
A10-P10-		P10 System Information	— — — — — — — →	Follow the graphic prompts to view: system configuration, special embroidery configuration, installment payment status, main controller, sub-controller, driver and other software versions...	
A10-P11-		P11 AD info.	— — — — — — — →	View the AD value, voltage value or current value of each power supply	
A10-P12-U1		P12 System Management	U1、Upgrade System Software	Operate according to the graphic prompts: select the corresponding system software "file", then click "system software upgrade". You can also carry out: format the disk, create a directory, etc.	
A10-P12-U2			U2、Upgrade Special Driver Software	Operate according to the graphic prompts: select the corresponding peripheral software "file", and then click "peripheral board software upgrade". You can also carry out: format the disk, create a directory, etc.	
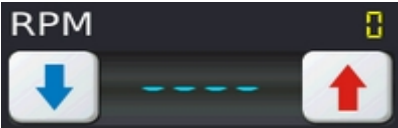
A10-P12-U3	**A10** **Auxiliary** 〔**para. Sett ings** 〕	**P12** **System** **Management**	U3、Installment	Operate according to graphic prompts: select the corresponding installment "file", and then click "installation".　You can also carry out USB management: format the disk, create a directory, etc.	
A10-P12-U4			U4、Head In-system operation	After entering, you can proceed separately: 　　W1, Head Addres 　　W2, Head Query All 　　W3, Head Query Single 　　W4, Head Custom Mode 　　W5, Head Auto Addres 　　W6, Check Single head board Version 　　W7, Check all head board Version	
A10-P12-U5			U5、Update boot LOGO	Follow the graphic prompts: select the corresponding "LOG file", and then click "update boot LOGO"	
A10-P12-U6			U6、Lock Saving patterns to USB	Operate according to graphic prompts: password can be added	
A10-P12-U7			U7、Lock para. Menu	Operate according to graphic prompts: password can be added	
A10-P12-U8			U8、Input User parameter From USB Disk	Follow the graphic prompts: select the corresponding "file", and then click "parameter input"	
A10-P12-U9			U9、Output Parameter to USB Disk	Operate according to graphic prompts: click "output memory parameters to USB flash drive" to store accordingly	
A10-P12-U10			U10、Revert to previous version of the software	Follow the graphic prompts to "confirm" operation	
A10-P12-U11			U11、Initialize System	Follow the graphic prompts to "confirm" operation	
A10-P12-U12			U12、LAN settings	After entering, you can do: IP address setting, open Telnet	

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Index	Main- interface	The second-level menu	The third-level menu	Specific operation instructions	
A10-P12-U3	**A10** **Auxiliary** 〔**para. Settings**〕	**P12** **System** **Management**	U13、Adjust Clock	Enter according to graphic prompts: year, month, day, hour, minute, second	
A10-P12-U4			U14、Backlight	Follow the graphic prompts for "brighter" or "darker" operations	
A10-P12-U5			U15、screen saver setting	Enter according to the graphic prompt: whether to turn on the screen saver, the screen saver time [minutes]	
A10-P12-U6			U16、Log View	Display logs that can be traced: InFo log, Error log, Export log	
A10-P12-U7			U17、Factory Management	Operate after pressing the password: the manufacturer can only set it, involving system files, kernel upgrades, machine information, professional parameters, etc.	
Index	**Main- interface**	**The second-level menu**	**The third-level menu**	**Specific operation instructions**	
A11-P1-	**A11** **Auxiliary Enb. Func.**	**P1、Restore Origin**	— — — — — — →	If the embroidering starting point corresponding to the frame is saved before the current embroidery pattern, this function can make the embroidery frame automatically return to the previously saved embroidering starting point position, which facilitates the origin alignment operation of the embroidery frame when embroidering the same pattern again. Pay attention to personal safety when the frame moves during execution.	
A11-P2-		**P2、Save Origin**	— — — — — — →	To realize the "memory the origin of the pattern", first perform the "power-off frame protection setting", this function will save the current embroidery frame position as the starting point of the current embroidery pattern.	
A11-P3-		**P3、Offset Point Setting**	— — — — — — →	The additional starting point must be set in the "embroidery confirmation state"and it can be any point outside the starting point of the pattern.　According to the "direction key" , select the X, Y position of another starting point	

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A11-P4-	**A11** **Auxiliary Emb. Func.**	**P4、 B point setting**	– – – – – – – –→	According to the "arrow keys", select the X, Y position of point "B"	
A11-P5-		**P5、 Thread Clamp Act**	– – – – – – – –→	Graphical prompts for operation: "open" and "close" switch, so that you can view the component action	
A11-P6-		**P6、 Head ON/OFF**	– – – – – – – –→	Graphical prompts for operation: switch between "on" and "off" in order to view the movement of components	
A11-P7-		**P7、 special operation**	– – – – – – – –→	Specify "on/off" of V1/V2/V3/V4 and "lift/lower" of presser foot	
A11-P8-		**P8、 Clear Emb Total Stitches**	– – – – – – – –→	"Click" to switch between "Yes"←→"No"	
A11-P9-		**P9、 Patched All Heads**	– – – – – – – –→	"Click" to switch between "Yes"←→"No"	
A11-P10-		**P10、 Cyclic EMB Enable**	– – – – – – – –→	"Click" to switch between "Yes"←→"No"	
A11-P11-		**P11、 Enable Batch Setting**	– – – – – – – –→	"Click" to switch between "Yes"←→"No"	
A12-P1-	**A12** Embroidery Confirmation	**P1** "Confirm Emb."	– – – – – – – –→	l Anytime you need to embroidery, you must confirm embroidery to start. l Before embroidering: "pattern selection", "embroidery parameter", "color-changing order", "frame origin" and other operations should be operate.	
A12-P2-		**P2** "Release Emb."	– – – – – – – –→	n When the embroidery is finished, if you want to change other patterns or modify the embroidery parameters, you need to release embroidery first.	

Index	Main- interface	State description	------→	Detailed description of specific status	
B1	B1 Manual frame shift	High-speed shift low-speed shift	------→	Manual high-speed frame moving state, manual low-speed frame moving state. Click the "icon" to rotate the two, or press the operation key to rotate the two.	
B2	B2 Parking in place	Parking in place Parking misplaced	------→	Parking in place, Parking misplaced Click the icon and confirm that the jog operation can be performed to make parking in place	
B3	B3 System Config.	*Click the icon* *Enter query*	------→	：View system configuration and system software version. Click this icon to view system configuration information and system software version.	
B4	B4 Cycle Emb.	Cycle Emb. Non-circular Emb.	------→	Indicates cycle embroidery; non-cycle embroidery In "Embroidery Auxiliary Parameters", you can set whether to cycle embroidery or not.	

B5	B5 Repeated state	No repeat state Repeated state	— — — — — — →	means that the embroidery pattern is set to repeat in X or Y direction; means that the embroidery pattern is not set to repeat in X or Y direction. Set the X and Y repetition times in the embroidery parameters. If both X and Y repetition times are 1 (default value), the pattern will not be embroidered repeatedly;	
B6	B6 Origin state	Another Origin point No other origin	— — — — — — →	indicates that another starting point has been set; indicates without another starting point In embroidery confirmation mode, another starting point can be set in the auxiliary function	
B7	B7 Emb.status indication	Emb.status indication pattern-Side operation	— — — — — — →	When the system performs "pattern side operations", it enters the "assisted embroidery state", the icon displays: When the pattern side operation are completed,the icon will switch to:	
B8	B8 Cable connection status	Cable connection status Abnormal cable connection	— — — — — — →	Indicates the connection status indicator icon of the control cable (that is, the network cable connecting the main control box to the operation box) : Indicates that the control cable is connected normally; : Indicates that the control cable is not connected or the contact is abnormal.	

Index	Main- interface	- - - - - - →	- - - - - - →	Detailed description of speed setting	
C1	C1 ⬇ Slowdown icon	- - - - - - →	- - - - - - →	Can **reduce** the speed of the embroidery spindle	
- - -	▬▬▬▬ Set speed	- - - - - - →	- - - - - - →	RPM 0 ⬇ ---- ⬆ Set embroidery speed [middle], and display actual embroidery speed [upper right corner]	
C2	C2 ⬆ Acceleration icon	- - - - - - →	- - - - - - →	Can **increase** the speed of the embroidery spindle	

Index description： A/B/C is the index number of main interface [A is the bottom row icon,   B/C is the auxiliary icon], P is the second-level index number;   U is the third-level index number.

⚠ Note: Some operations are only for professional maintenance. General embroidery operators should use them with caution. Part of the operations may involve the action of some mechanical parts, so you need to pay attention to personal safety and equipment safety when using it.

Number description： e.g A10-P6-U2： It means that after clicking A10"Parameter Setting", then click to enter the fourth P6 "Machine parameters", and then click the parameter to enter the second U2 "Frame Para." for operation. You can change internal moving frame series parameter.

Chapter 3   Getting Started with Basic Operations

3-1 Three Working States of Embroidery

The software interface be provided with the following three operating states:

①Embroidery Preparation State è

è ②Embroidery Confirmation State è

è ③Embroidery Running State è
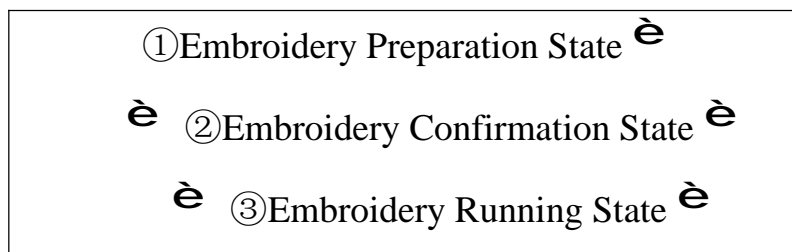
①**Embroidery Preparation State** -- For embroidery work ， the process of preparing the input or selection of embroidery patterns and setting various embroidery control parameters and embro in advance. When the machine stops, " ▨ " icon will be displayed in the lower right corner of the main function screen. In this state, the "Start" or "Stop" operation is invalid.

②**Embroidery Confirmation State--**Select the "embroidery pattern" in the computer, and set various embroidery control parameters and embroidery parameters, then press " ▨ " to confirm the embroidery before the machine enters the embroidery operation mode. When the embroidery is confirmed, the" ▨ " is displayed in the lower right corner of the main function screen. Press the "Start" icon in this state and the frame start embroidering with the current position as the origin.

③ **Embroidery Running State--**When the " ▨ " is displayed in the lower right corner of the main function screen, press the "Start" icon and the machine enters the running state. After embroidering is finished and don't want to embroider again. press the " ▨ " icon to cancel the embroidery confirmation state. After " ▨ " appears, other non-embroidering tasks can be performed.

④**Basic Embroidery Operation Processes**

-- As shown in the right figure.

（ Operation Index: A12 ）

①Input Pattern↵

⇩

②Select Pattern↵

⇩

③Set Pattern Design Parameters or Auxiliary

⇩

④Confirm Embroidery↵

⇩

⑤Start Embroidering↵

⇩

⑥Stop Embroidering↵
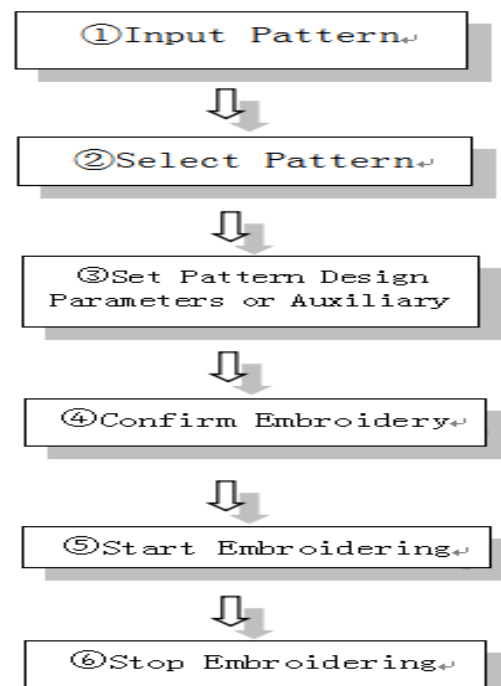
3-2 Setting Method of Embroidery Parameters

The embroidery parameter can be modified by the embroidery controller automatically asking whether to modify the "color-changing sequence" and "pattern Emb. parameters" after selecting "new pattern". It can also be set or modified at any time in the non-embroidery confirmation state of the pattern

From section "**2-3 Layered hierarchical structure of this User Interface**", you can use the operation number of embroidery parameter setting is A9-P5-, that is: in the state of non-embroidery confirmation, first press the 9th icon A9 at the bottom iron of the main interface , Enter the "Pattern Management" and then select the fifth icon P5 on the bottom row to enter the "Embroidery parameter setting" interface, you can edit or modify each required embroidery parameter one by one.

You can also enter the pattern embroidery parameter setting from operation A10-P1-.

Please refer to the specific meaning of each parameter See: "**Chapter 5 Detailed Embroidery Parameters**"。   （Operation Index: A9-P5、 A10-P1）
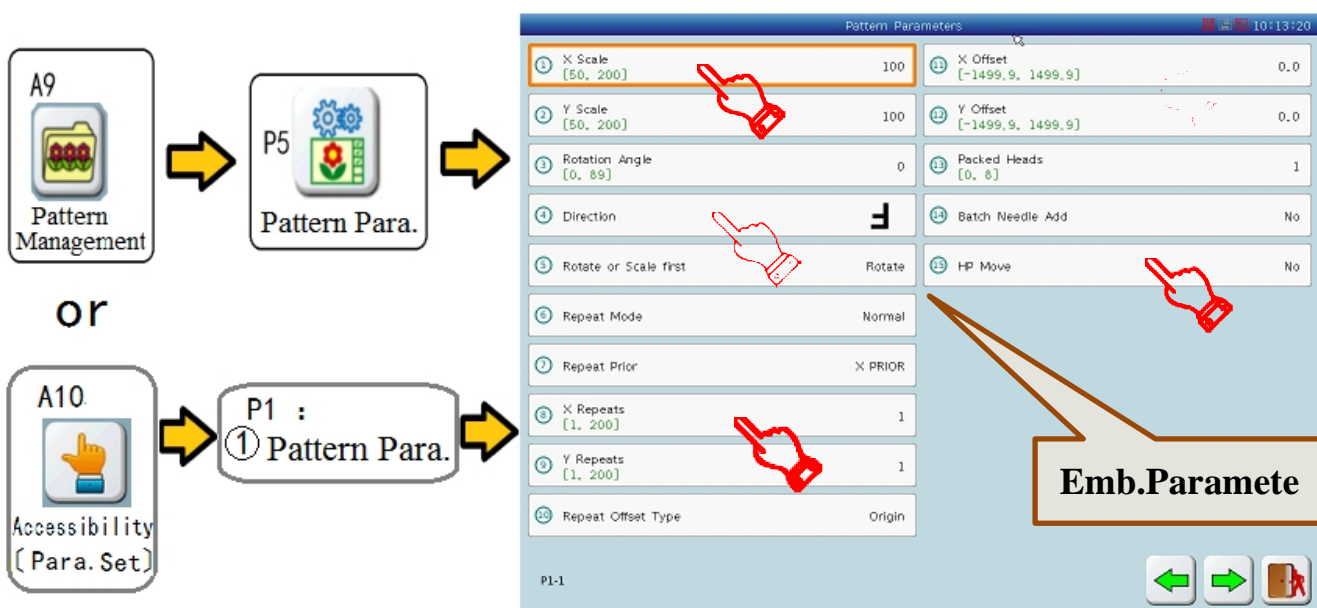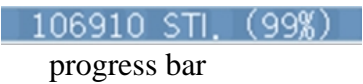
3-3 Icon Description on the Interface

The main function screen of the system

for embroidering confirmation is shown below:

No.	Icon and status	Description
1	Release Emb. Status Emb. **Confirm** Status	Click the icons " " and " Enter " to switch embroidery status.
2	Temporary Emb. Status	In the process of trace operation, machine automatically enters the temporary embroidery mode. When the embroidery operation is completed around the pattern and click the icon " " again, the system performs a normal embroidery confirmation operation.
3	Auxiliary Emb. Function	Click this icon to enter the " Auxiliary Embroidery Function" interface.
4	Auxiliary Function (Para.Management)	Click this icon to enter the "Auxiliary" interface. That is: "Parameter Management"
5	：Pattern Memory Management Function	Click this icon to enter the " Pattern Memory Management" interface.
6	8 icons indicate the 8 pattern directions of the embroidery pattern	In the embroidering cancel state, click the icon " " to change the direction of the embroidery pattern.
7	：Manual color changing or color order setting	click this icon to enter the "manual color-changing" or "Color order setting" interface .
8	：Manual thread trimming operation	Click this icon to perform "manual thread trimming" operation.
9	：Inching Operation	Click this icon to perform " Inching " operation.
10	：Return Frame to Last Stitch	Click this icon to perform the " Return Frame to Last Stitch " operation.
11	：Return to Origin	Click this icon to perform the "return to origin" operation.
12	Normal embroidery state High speed idling state Low speed idling state	Click any icon to switch the idling state.
13	Automatic Color Changing and Automatic Start; Automatic Color Changing and Manual Start; Manual Color Changing and Manual Start	Click any icon to switch the color-changing mode.
14	Manual High Speed Frame-Moving Status Manual Low Speed Frame-Moving Status	Click the icon " " or click the " or ▶▶" key on the operation panel on the main function screen to switch the frame moving status.

15	Machine stopping in place Machine stopping not in place	Click the icon " "and" " to perform inching operations to stop in place.
16	： system configuration and system software version	Click this icon to view system configuration information and system software version.
17	Display the status of the machine Embing	means that it is ready to embroider; means that the machine normally pulls the bar to stop; means machine thread break ; means that the machine has embroidered a pattern; means that the system is performing a color change; means that the system is performing stitch jumping.
18	means cyclic embroidery is set; means cyclic embroidery is canceled	In "Embroidery Assistant Parameters", you can set whether to enable cyclic Embroidery
19	means that the Emb. pattern is set in X or Y direction repeatedly; means that the Embroidery pattern is not set to X or Y to repeat.	Set X and Y repetition times in the embroidery parameters. If both X and Y repetition times are 1 (default value), this pattern will not be embroidered repeatedly.
20	means that Offset Point has been set; means that no Offset Point has been set	Embroidery confirmation statu, offset point can be set in the auxiliary function.
21	： Embroidery status indication	In the process of trace operation, enters the "auxiliary embroidery" state, and the icon displays: ,after completing trace operation ,the icon will switch to:
22	/ Control Cable Connection Status	： The control cable is connected properly; ： The control cable is not connected or the contact is abnormal.
23	Speed of Main Shaft in Actual Emb. Click this area to query the "Emb. statistics" of the machine.	indicates that the highest main shaft sewing speed is 1178r/min. During the actual embroidery process, the sewing speed will be automatically switched according to the different needle length of the pattern. Click the red box area to query the "embroidery statistics" of this machine,click" " to clear the above information.
24	Speed Setting	Click the icon " "or" " to change the value of the speed.

25	财神到2(#048) X+: 120.3 X-: -129.0 Y+: 259.9 Y-: -250.3 106963 图 :162 75 :805245	Display the current embroidered pattern information, including the pattern number, the pattern name, total number of color-changing, and total number of needles, etc. and the coordinate information of the pattern; Click the pattern thumbnail to display the embroidery parameter information of the current pattern.
26	The front of the color order table means that the machine head is currently at the No.5 needle position. If the machine head is not in position, it is displayed as .	When color-changing is incorrect, click icon to enter the manual color-changing interface, click the number icon at the bottom of the interface to make the machine head in position.
27	The upper value indicates the current color number, and the lower value indicates the color order when the auto color-changing state.	indicates that the current embroidery is to the 74th color, This value increases with the number of color changes. Click the icon " " or color changing order icon to enter and select "Set All Color" item, which can set the color order of the pattern embroidery.
28	means the Z5 embroidery mode of special embroidery where the machine head is currently located.	The machine equipped with special embroidery device will display the system special embroidery mode when embroidering special embroidery.
29	X: 80.4 Y: 209.5 Display the displacement of X, Y relative to the origin of the pattern in millimeters (mm)	After machine stops，click the icon " X: "和" Y: " to clear the X, Y displacement value，And re-evaluate with the current position as the origin.
30	106910 STI. (99%) progress bar	This icon shows the number of stitches currently embroidered and the work progress.
31	USB USB Disk status	When the icon is on, it means that the USB Disk is in normal contact. When the icon is gray, it means that the USB Disk is not inserted or connected inproperly.
32	Network connection status	When the icon is on, the network connection is normal; when the icon is gray, it means there is no network connection or connection is abnormal.
33	09:31:39 The Current System Time	The time can be set in the "Calibration clock" menu of "Machine self-check" under "Machine component self-check" of " auxiliary function ".

3-4 Basic Operations on the Main Interface

After booting or exiting from other operations, the following main interface will appear:

There is a row of 12 main icons at the bottom of the main operation interface, click to enter the secondary menu as follows:

A1 click to switch: setting of **Color-Changing Mode**

I   execute "Auto Color Changing & Auto Start"

I   execute "Auto Color Changing & Manual Start"

I   execute "Manual Color Changing & Start"

A2 click to switch: setting of **Idling and Position Idling**

I   execute "Normal Emb."

I   execute "high-speed idling"

I   execute "low-speed idling"

A3 Can carry out related operations of pattern: **Returning to origin**;

l P1：Return to Origin

l P2：Return To Offset Point

l P3：Trace Immediate

l P4：Auto-Find the Origin

① Return To Origin
② Return To Offset Poin
③ Trace Immediate
④ Find Origin
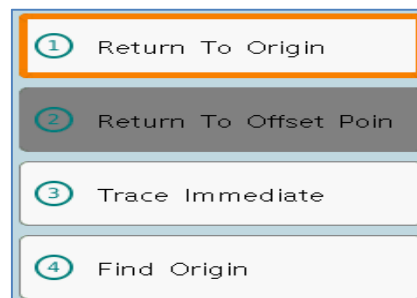
A4 Can carry out related operations of pattern: **Return to Stitch point**;

l **P1**：Return Frame to Last Stitch

l **P2**：Change the Last Stitch Point

① Return Frame To last Stitch
② Change the last Stitch Point
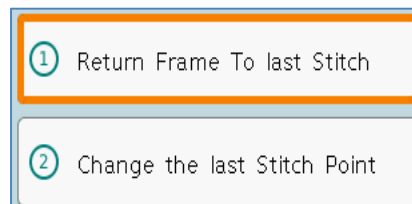
A5 Can carry out related operations of **Main Shaft Inching**;

l **P1**：Main Shaft Up

l **P2**：Main Shaft Down

① Main Shaft Up
② Main Shaft Down
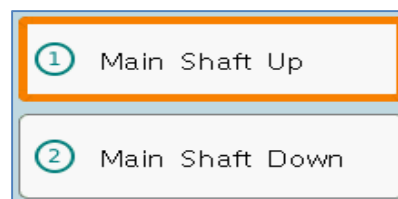
A6 Can carry out related operations of **Trimming Operation**;

l **P1**：Trim two thread

l **P2**：Trim Bobbin thread Only

① Trim Immediate
② Trim Bobbin Only
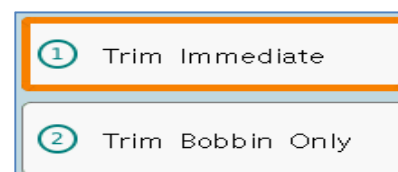
A7 perform the operation of editing the **Color SequenceTable**;

l P1: Set All Colors

l P2: Set One Colors

l P3: Replace Color

l P4: Overlapping Type

Set All Colors
Set One Color
Replace Color
Overlapping Type

9 8 7 6 5 4 3 2 1

A8 click to switch the embroidery **Pattern Direction** (under "Release Emb." state);

F 》》》 ⅃

A9 perform the related operation of **Pattern Management**;

> The secondary icons PO on the left below indicate::
> l U1、Pattern Sort...
> l U2、Sort Type
> l U3、Duplicate Pattern
> l U4、Merge Pattern
> l U5、Paste Setting
> l U6、Other Function...
> l U7、Pattern Output
> l U8、**Pattern Set to EMB**

There are shortcut icons on the bottom row to enter::

rev.Page	Next Page	View pattern	S/M selection	Pattern Para.	Color-Order	USB input	Pattern Delete	Internet Download	Pattern typesetting	Help Inf.	Exit

A10 Can carry out related operations of **Para.Settings**;

> l P1:Pattern Parameters
> l P2:Trace Menu
> l P3:Float Move
> l P4:Frame Origin Setting
> l P5:Frame Origin Resume
> l P6:Machine parameters
> l P7:Test Machine Parts
> l P8:Disply EMB.Info.
> l P9:LanguPge
> l P10:System Information
> l P11:ADinfo.
> l P12:System Management

①	Pattern Parameters	
②	Trace Menu	
③	Float Move	
④	Frame Origin Setting	Set
⑤	Frame Origin Resume	
⑥	Machine Parameters	
⑦	Test Machine Parts	
⑧	Display Embroidery Information	
⑨	语言选择(Language)	
⑩	System Information	
⑪	AD info	
⑫	System Management	
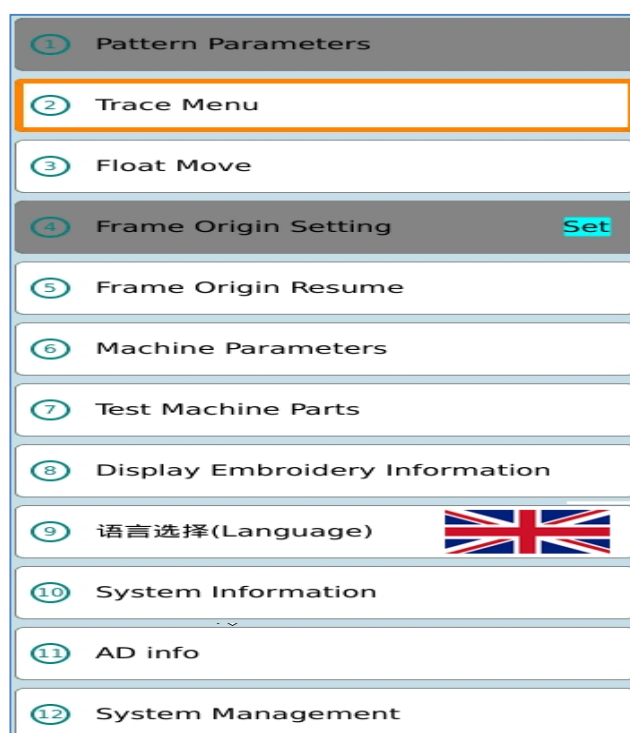
A11 Can carry out related operations of **Auxiliary Emb. Function**;

- l   P1、Restore Origin
- l   P2、Save Origin
- l   P3、Offset Point Setting
- l   P4、B point setting
- l   P5、Thread Clamp Act
- l   P6、Head ON/OFF
- l   P7、special operation
- l   P8、Clear Emb Total Stitches
- l   P9、Patched All Heads
- l   P10、Cyclic EMB.Enable
- l   P11、Enable Batch Setting

①	Restore Origin	
②	Save Origin	
③	Offset Point setting	Not Set
④	B Point setting	Not Set
⑤	Thread Clamp Act	
⑥	Head ON/OFF	
⑦	Special Operate	
⑧	Clear Emb Total Stitches	
⑨	Patch All Heads (Multi head)	No
⑩	Cyclic Embroidery Enable	Yes
⑪	Enable Batch Setting	No

A12 can enter the switch setting of **Emb. confirm** state

- l   Switch between "Confirm Embroidery" and "Release Embroidery"

The above is an architectural description of common operations

For detailed operation method, please refer to section 2-3
"Layered hierarchical structure of this User Interface"

Chapter 4   Basic Operation before Embroidering

4-1 How to Input and Choose a Pattern

Import patterns into memory from USB   （Operation Index: A9-P7）

1、 Insert USB flash drive with patterns into the right side of the operating box.

2、 Click the " 🎮 " to enter the "Pattern Memory Menu" interface, and click the " ✏️ ". The system will read the pattern information under the root directory of USB flash drive, select the pattern which needs to be inputted and then click " **Pattern Input** "

3 、 If the pattern is stored in other directories of the USB flash drive, click on the stored directory icon to enter and select the pattern to be input, then click " **Pattern Input** ". If you need to return to the previous directory, click " **Upper Dir** " to go back； If you need to return to the "Pattern Memory Menu" interface, click the " ← " icon in the lower right corner.

step1：After clicking" **Pattern Input** ", the "Enter Pattern Number" interface pops up, use the number icon on the right to input the wanted number,if click" **Enter** "directly, system enters the pattern number arranged by default.

step2：Click" **Enter** " ,and the system will pop up the "Apply stain compensation now?" dialog box. if no compensation is needed, click" ❌ ".（The default is not compensated）

step 3：After confirming " stain compensation ", The system enters the pattern input state and waits for the pattern input to be completed.

step 4：After the pattern input is completed, the screen stays in the USB operation window. If you choose to continue pattern input, repeat the above three steps.
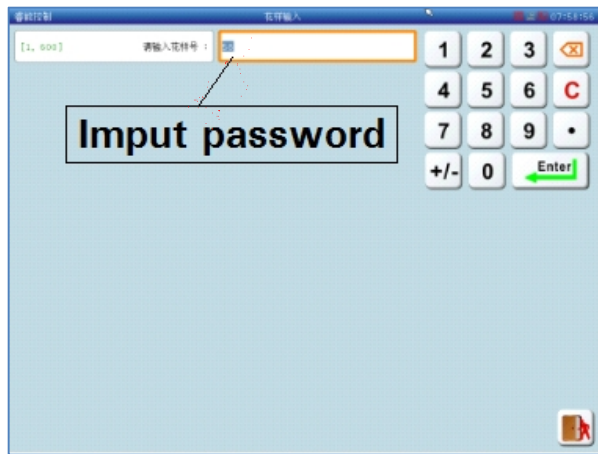
step1	step 2
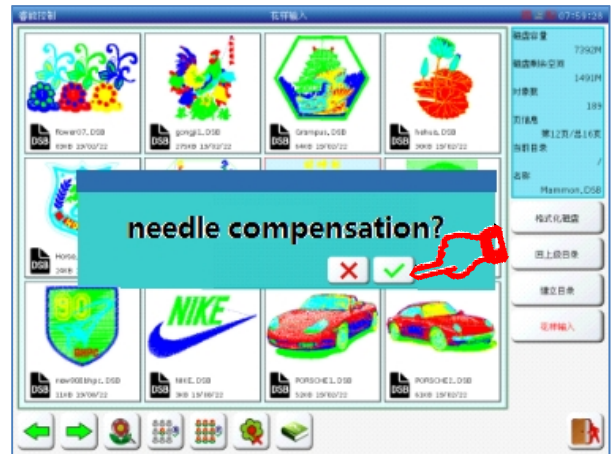
step 3	step 4

∪ **Patterns Selection**   （Operation Index: A9-P0-U8）

1、Click the " " icon to enter the "Pattern Memory Menu" interface, click on the pattern

pattern to be embroidered, and click the " Pattern Set to EMB " icon.

Pattern Set to EMB   **Pattern Parameters**
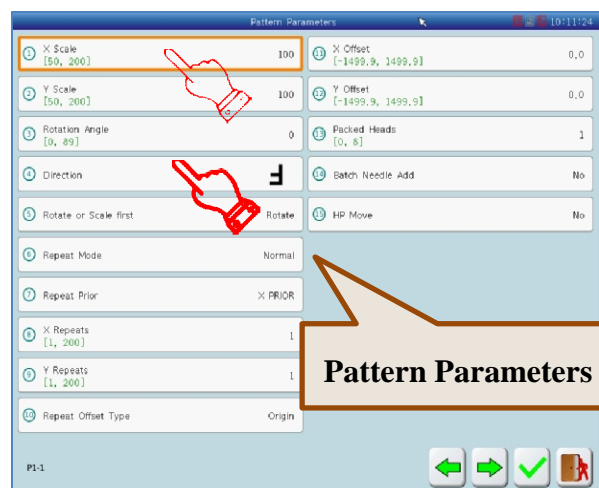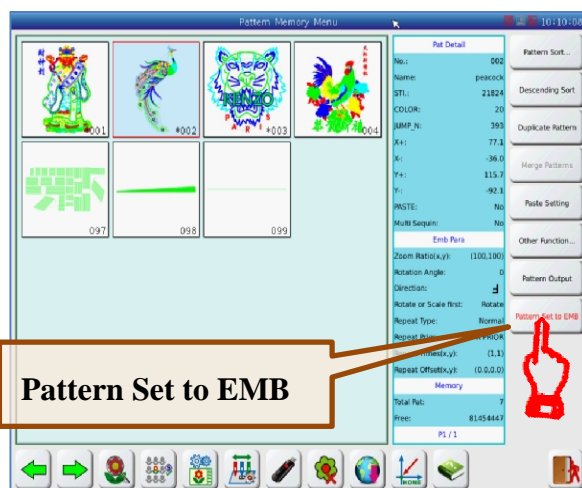
1) The window of "Pattern Parameters Setting" interface pops out, if you embroider according to the default parameters, click " ✓ "to confirm. (In general, embroider according to the default parameters.) To modify, click on the item directly. After all the parameters that need to be modified have been modified, click the" ✓ "icon and the system will save the current parameters automatically and return to the main function screen. At this moment, the pattern information bar displays the selected pattern number, pattern name, color change number, total number of stitches, and displays the border range value of the pattern. Embroidery confirmation must be performed to start embroidering. (After the setting of "Frame Origin Setting" in the pattern, if it is the first time to embroider or change the origin position of the embroidery, the system will prompt "Save pattern origin to file").

4-2 Setting of Color-Changing Mode and Order

⊔ Setting of Color-Changing Mode （Operation Index: A1-P1/2/3）

Click " 📲 " in the main function screen to enter the color-changing screen.

Mode 1： 📲 Manual Color-changing and Manual Start；Before the embroidery starts, click the " 🧮 " icon to enter the manual color change window, click the number icon at the bottom of the screen to input the needle numbers and pull the bar to begin embroidery. When color-changing occurs, the machine stops automatically. Click " 🧮 " to change a needle number in the color-changing order, the user can choose the new needle number at the bottom of the screen and then pull the bar to start embroidery again.

Mode 2： 📲 Automatic Color-changing and Manual Start; the color-changing order should be set first if the machine is on automatic color-changing mode, then pull the cotrol bar to start embroidery. The machine changes colors before the embroidery work according to the needle numbers set in the color-changing order. If color-changing occurs during embroidery, the machine will automatically change to the specified needle number according to the set order, and stop to wait for operator to pull the cotrol bar.

Mode 3： 📲 Automatic Color-changing and Automatic Start; when color-changing occurs during embroidery work, the machine will automatically shift to specified needle according to the set order and start embroidery work again. If the machine is set to change color automatically, the color-changing order should be set and operator should do the embroidery confirmation before the embroidery work begins. While the operator pull the cotrol bar to start embroidery, no matter where the current needle bar stops, the needle will be changed according to the needle number set in the automatic color-changing order (Note: except when the current needle number is the same as the needle number set by order), and then start the embroidery again.

∪ Setting of Color-Changing Order　　　　　　　　（Operation Index: A7-）

　　Automatic color-changing order is to provide preset list when the machine is set to automatic color-change mode. The maximum number of color changes is 3000 times. The steps are as follows:

1、In the non-confirmation state, click " " to enter the "Manual Color Changing" window.

2、click"Set All Color"icon，then enter "Set All Color" window to set the color order of the pattern embroidery. Use the number icon below to input the required color-changing needle number by order then click " " to confirm.And then click" "to back to main function screen. if you input "1, 2, 3" and click the " "icon, the color-changing　order is repeated by: 1, 2, 3, 1, 2, 3, 1, 2, 3...as set, and the system automatically saves the current color order.

3、If you want to modify the set color order,click"Change"icon to enter the "Edit" interface, Click the color order icon directly to modify the color order,or click" "and" " to find and slect the needle position icon that need to be modified, then click" "to confirm，and the system will save the currently modified color order.

4、If you want to uniformly replace a certain needle position in the primary color order,click"Replace Color" to enter the "Change Color Change Needle Position" interface, and you can uniformly replace the needle positions in the set color change sequence. For example: original needle position: No.3 new needle position: No.5,click" Enter " to confirm the change, the original color change order: 1，2，3，1，2，3，1，2，3…,the color change order after replacement is:1，2，5，1，2，5，1，2，5…and the system will automatically save the currently color order.

4-3 Setting Pattern Start Point

　　　As Operation Index: A7-, click the arrow key " " icon to move the frame and select

the appropriate starting origin point.Click" ⬚ "icon， and a origin menu appears， then click"Trace Immediate"，this operation is to detect whether the periphery of the pattern exceeds the embroidery range of the embroidery frame. If the pattern range exceeds scope of the embroidery frame, the computer will automatically prompt the "Frame limit over". The position of the embroidery point must be reset to ensure that the pattern does not exceed the embroidery range of the frame.
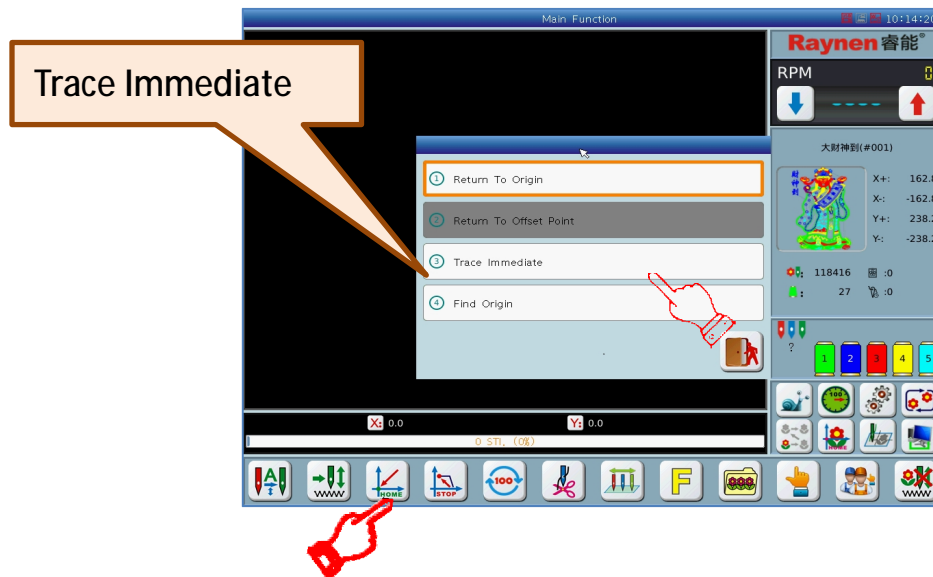
4-4 Confirm Eembroidery to the Selected Pattern

Operation Index: A12. After the setting operation of pattern selection, embroidery parameter, color-changing order, frame origin, operator should clickthe " ⬚ " icon at the embroidery preparation state, the screen prompts: "Change to DRIVE mode?" click" ✓ " to confirm the embroidery (the embroidery status icon is green " ⬚ ") then pull the control bar to run the machine.

Note: If the system does not save the origin of pattern, or the current position is not the saved origin of the pattern (the frame origin protection is set).the system will prompt: "Save pattern origin to file?", click " ✓ " icon (Saved by default),or " ✗ " icon to give up saving.
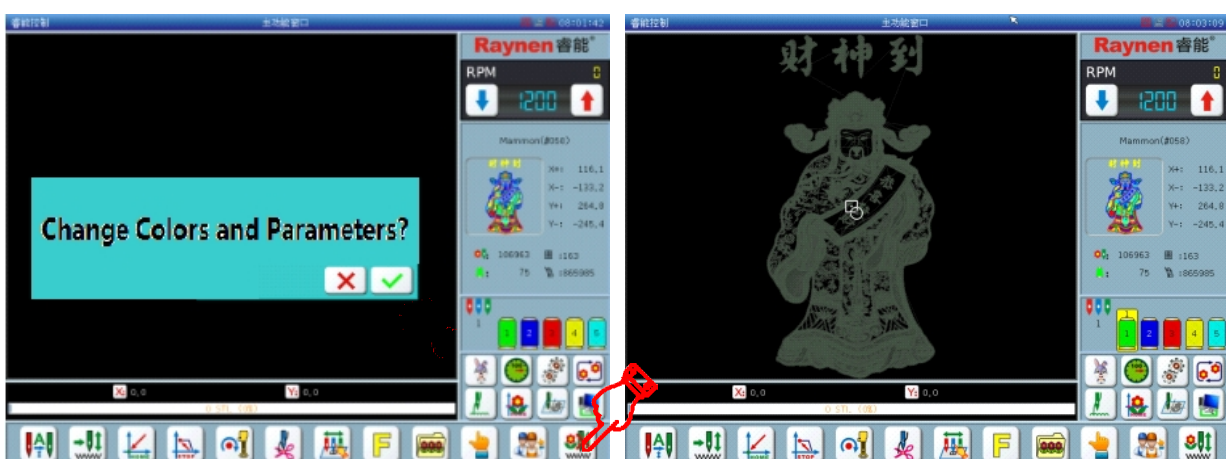
4-5 Nose Thread Break ,Stitch Returning and Patching

ᴗ   Head Plate Control

In embroidery confirmation status, the machine head ,the one needs normal embroidery should push the patching switch to the normal embroidering mode (the head light is green), the free one should push the patching switch to the lower position (the head light is off), At this time, pull the bar to the right and release it (the system defaults to start embroidery with the right pull bar), and the embroidery machine can start normal embroidery. (If the pull bar is continuously held to the right, the embroidery machine embroiders at a low speed, and the speed is subject to the set "Rev. At Slow Motion")

ᴗ   Thread Break Detect

In case of thread break, machine stops, status light on that particular head turns on red and the number of the thread-broken head will be displayed. At this time, the machine won't start embroidery again until operator wear the broken wire head and pull bar to the right.

ᴗ   Stitch Returning

In the process of embroidering, due to thread break or no bobbin thread, it may cause leaky embroidery. The machine needs to return to the missing point to make it complete. Under these circumstances the operator should pull bar to left to stop the machine first, lower the clicker foot to see where the missing stitches are aligned. Pull bar to left again and the frame will roll back. Pull once to go back a stitch, pull bar and hold to return several stitches then release the pull bar, the machine will roll back automatically and continuously, keep observing until the frame reach the leaky point then pull bar to left to stop rolling back.

ᴗ   Stitch Patching

(Stitch Patching mode：Manual patching mode. Automatic patching mode)

Manual Mending Mode：If observing the leakage embroidery, operator pull bar to stop the machine, and the machine head indicator light would turn green, at this time, the machine head will not lower the needle for embroidering operation unless the embroidery button on the motor head is manually pushed up and the machine head indicator light would turn red. After the frame rolling back in place, operator should pull bar to the right again, and the machine would start patching while other machine heads do not drop needles. When the mending embroidery reaches the "Return to origin", other machine heads will automatically drop needles for embroidery.

Automatic Mending Mode：During the embroidery process, the machine head automatically detects the thread break, the machine head will turn red and start roll back according to the number of stitches set by the system (It can also be manually rolled back as needed). Pull bar,then the machine head will automatically start patching,when light on the machine head turn green from red, the machine will continue embroidery work.

4-6 Release Embroidery

In the following cases, the embroidery needs to be released first: Need to replace other patterns when last pattern's embroidery work is finished, need to modify the magnification, rotation angle and direction of the pattern, need to reset repetition embroidery, need to do some machine self-test operations or need to edit the patterns in memory etc. Operation method: Click" ![icon] " icon at the main function screen, the screen will pop up a dialog prompt: "Change to EDIT mode?", click " ![icon] " icon to confirm the embroidery release. (At this time the embroidery status icon turns red " ![icon] " and the system is in the embroidery cancel state.)

See Operation Index: A12 .
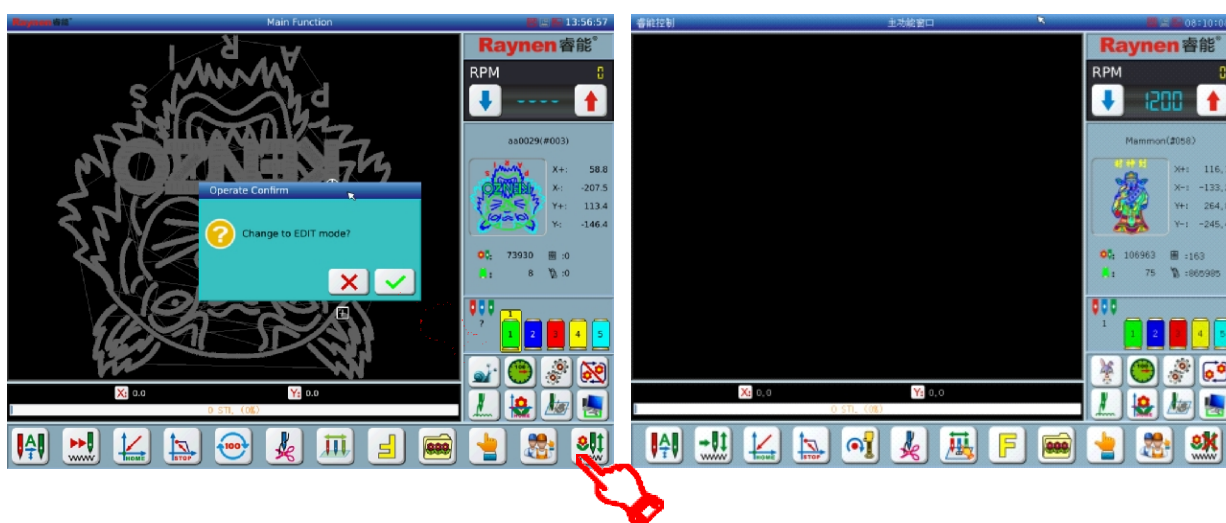
Chapter 5 Detailed Embroidery Parameters

The embroidery parameter setting interface is as follows:　　（Operation Index: A9-P5 、 A10-P1 ）
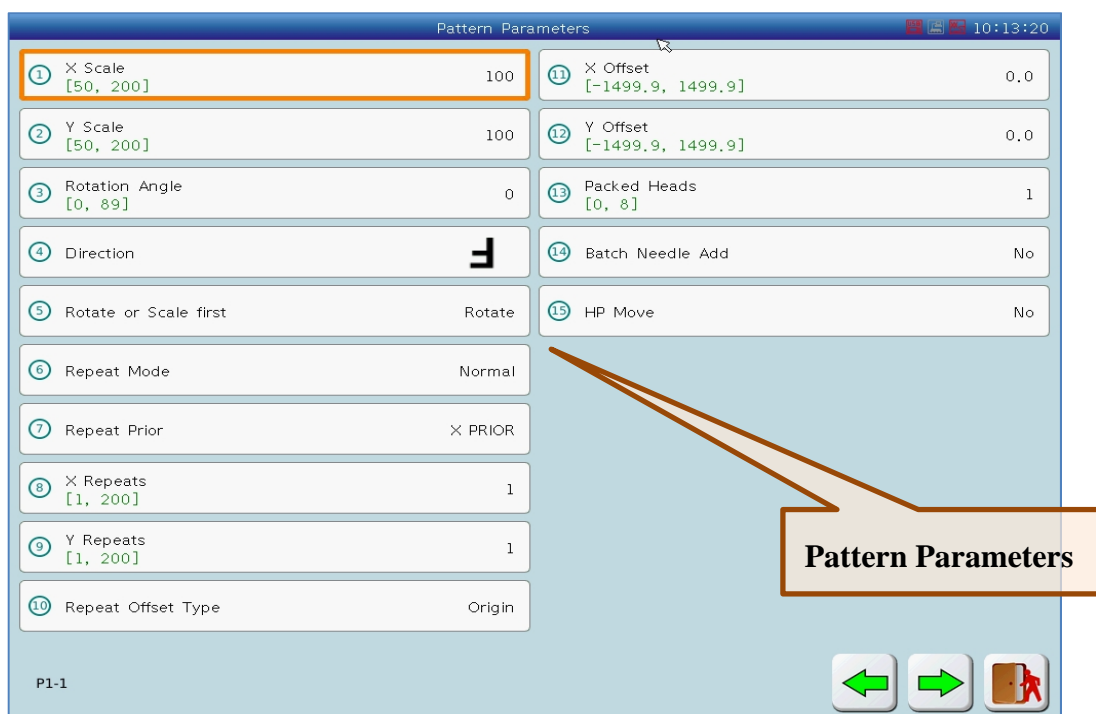
Next, the meaning of each parameter in "embroidery parameter setting" will be explained:

(1)/(2) X Y Scales：This parameter controls the zoom ratio of the pattern in X (horizontal) and Y (vertical) directions, and it can scale up/down the pattern by a percentage.
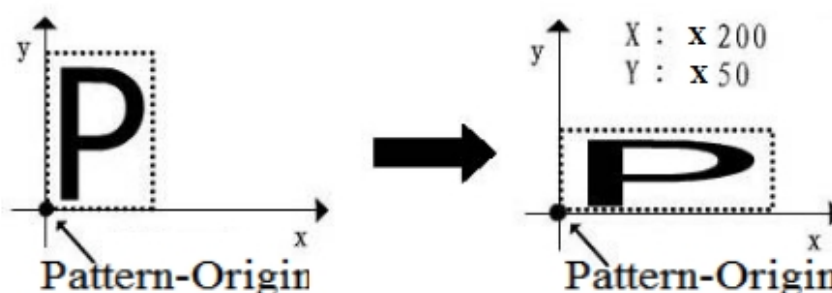
(3) Rotation Angles：The rotation angle refers to the counterclockwise angle of the embroidered pattern with respect to the selected pattern direction.
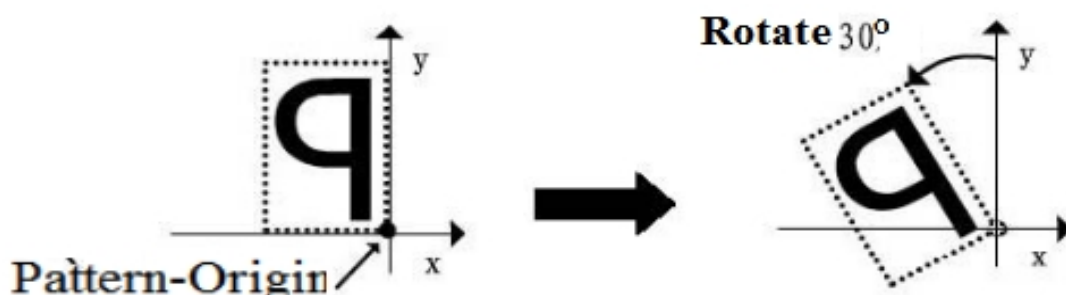
⑷ **Direction**：This parameter sets the direction of the pattern pattern. Take the letter "P" as an

example to illustrate the relationship between pattern and pattern direction:

Direction	F	⌶	⌐	⊓	⊣	⌶⌶	⊨	⊥	F
Result	p	⌐	d	⊓	q	⊓	b	⌐	p

⑸ **Rotate or Scale first**：When X and Y both has rotation while X is different from the Y on magnification. Different settings of the two priority modes will embroider different embroidery effects: if the rotation priority is set, the pattern will be rotated first and then scaled, and if the zoom priority is set, the pattern will be scaled and then rotated.

(6) **Repeat Mode**

Normal Repetition：During repetition embroidery, after finishing a complete pattern, frame moves to next set position to embroider the same pattern again.
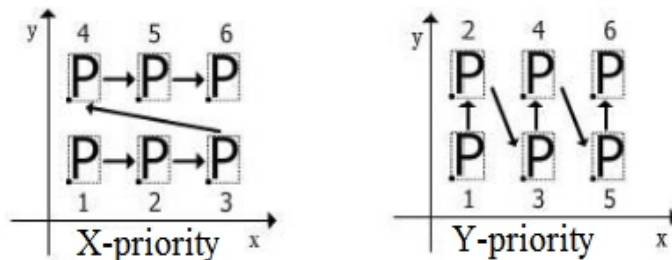
Part Repetition：During repetition embroidery, after embroidering a certain color of the pattern, frame moves to the corresponding position of the next repeating pattern and then embroider the same color of the pattern until the embroidery of this color finished, the system would then change to the next color and repeat until the stitches of each color are repeated.
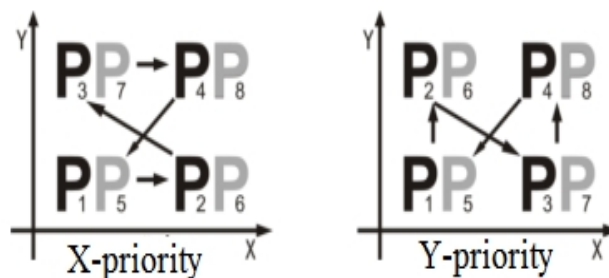
Mirror Repetition: The mirror repetition is performed only when the pattern is repeated an even number of times in one direction of X or Y.　If the number of repetitions in both directions is even, the direction set in the repeated order takes precedence.
（There are four types in mirror repetition）
①When the number of repetitions X and Y are even times, the mirror repetition is performed according to the priority direction set in the repeated order;
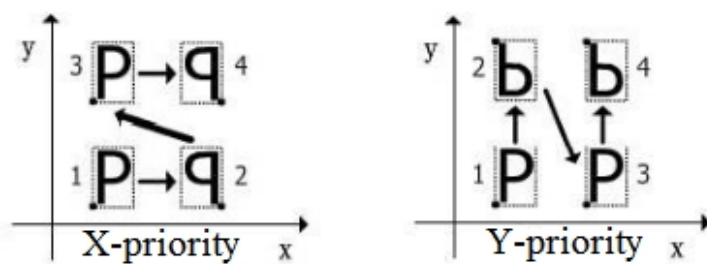
②When the number of repetitions X is an even number of times and Y is an odd number of times, mirror repetition is performed on the X direction;
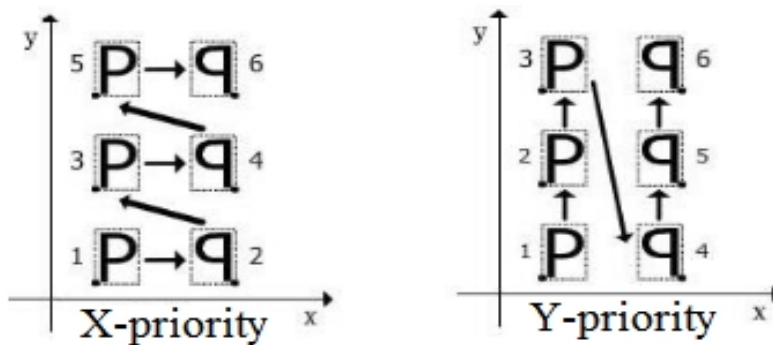
③When the number of repetitions X is an odd number of times and Y is an even number of times, a mirroring repetition is performed in the Y direction；
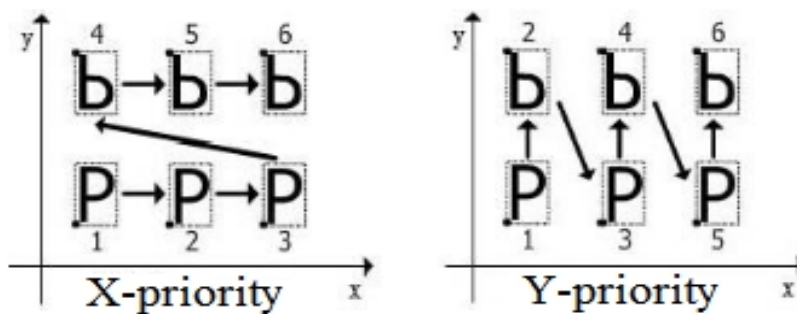
④When the number of repetitions X and Y are odd times, the mirror repetition is not performed, and normal repetition is performed.
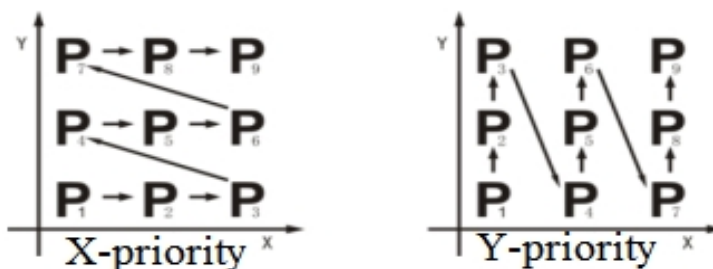
Part+ Mirror Repetition： During repetition embroidery, after embroidering a certain color of the pattern, frame moves to the corresponding position of the next repeating pattern and then embroider the same color of the pattern until the embroidery of this color finished, the system would then change to the next color and repeat until the stitches of each color are repeated. The mirror repetition is performed only when the pattern is repeated by an even number of times in one direction of X or Y.   If the

number of repetitions in both directions is even, the direction set in the repeated order takes precedence. That is, the pattern is repeated according to the color blocks, and the sequence of repetition is performed according to the above four scenarios of mirror repetition.

(7) **Repeat Prior**:

X priority：Repetition embroidery is done line by line, and mirror repetition is preferred horizontally.

Y priority：Repetition embroidery is repeated column by column, and mirror repetition is preferred longitudinally.

The above charts show the meaning of X priority and Y priority.

(8) **/(9)** X/Y Repeats ： X Reps of this parameter sets the number of repetition embroiderypatterns in rows, and Y Reps of it sets the number of repetition embroidery patterns in columns.

(10) Repeat Offset Type： There are two types:①Origin Offset and ②Frame Offset. Origin spacing means repetition based on the distance from the origin of the pattern; Border spacing means repetition based on the space between two borders that are adjacent in a pattern.

(11)/(12) X、Y Offset: X represents repetition distance between two adjacent lateral patterns; Y represents repetition distance between two adjacent longitudinal patterns. The following figure shows the meaning of the repetition distance type:
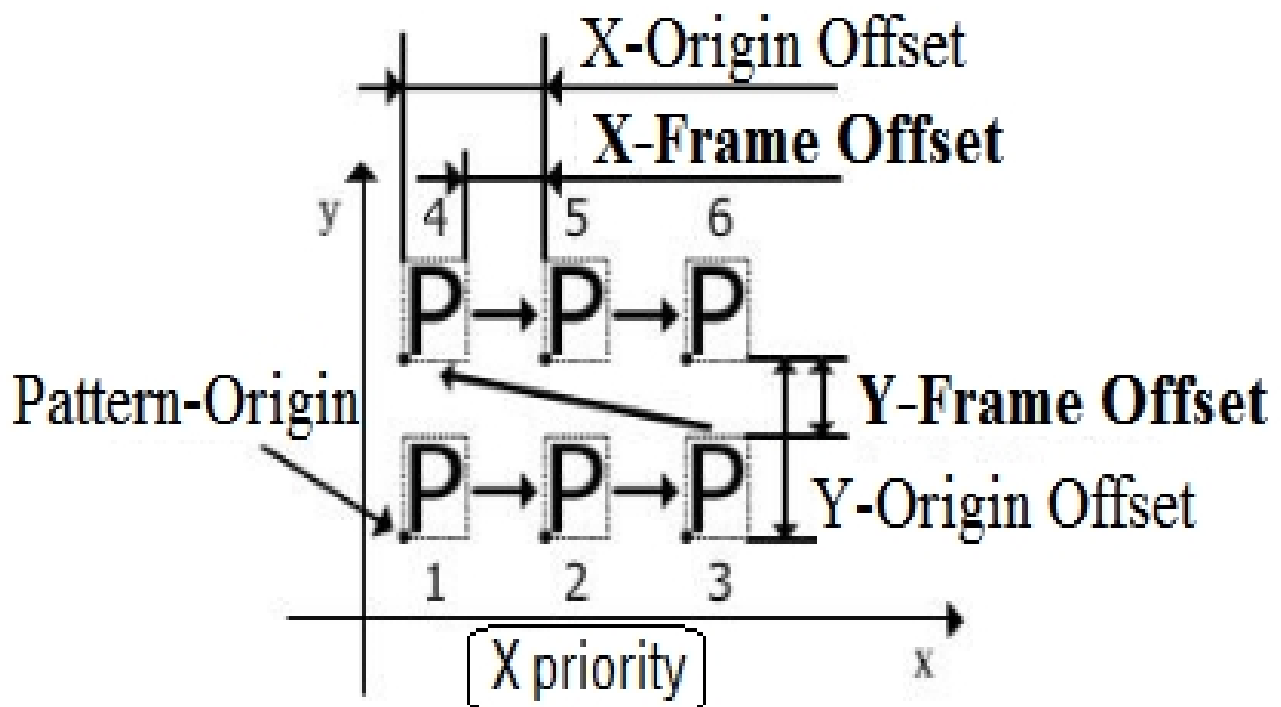
(13) Packed Heads: used for stitching embroidery. The number of combined heads is set to "1" for embroidery without stitching, "2" for two-headed stitching, and "3" for three-headed stitching, and so on.

(14) **Batch Needle Add:** Stitch number accumulation for combination head embroidery. Optional according to needs [Yes, No]

(15) **HP Move**: Whether to move the frame when switching the head group.   Optional according to needs [Yes, No]

	Pattern Parameters		10:13:20
① X Scale [50, 200]	100	⑪ X Offset [-1499.9, 1499.9]	0.0
② Y Scale [50, 200]	100	⑫ Y Offset [-1499.9, 1499.9]	0.0
③ Rotation Angle [0, 89]	0	⑬ Packed Heads [0, 8]	1
④ Direction	⅃	⑭ Batch Needle Add	No
⑤ Rotate or Scale first	Rotate	⑮ HP Move	No
⑥ Repeat Mode	Normal		
⑦ Repeat Prior	X PRIOR		
⑧ X Repeats [1, 200]	1		
⑨ Y Repeats [1, 200]	1		
⑩ Repeat Offset Type	Origin		

P1-1
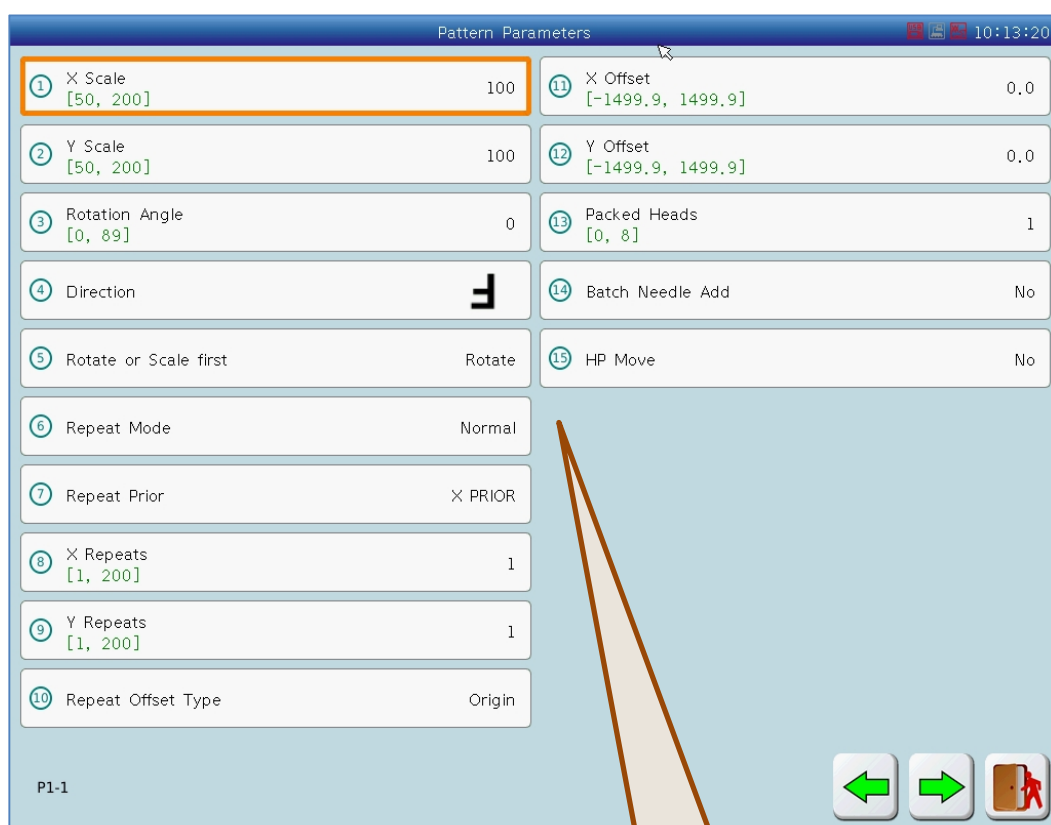
Pattern Parameters

Chapter 6 Adding Applique Function to Patterns

When the pattern needs the appliqué function, the system has two operation methods: manual frame out and automatic frame out

Manual frame-out operation method: During the embroidery process, the machine will stop automatically when it encounters the parking code. At this time, manually move frame to a suitable position, and then add applique. After adding applique, click the " 🔄 " icon to enter the operation menu of Return Frame to Last Stitch , click " Return Frame to Last Stitch ", the frame will return to the Last Stitch, and finally pull the bar to continue embroidering.

Operation method of automatic frame-out: set the function of adding "paste embroidery" to the pattern, and then select the pattern to embroider. When the "applied embroidery" function is encountered during embroidery, the machine will automatically exit the frame to another starting point or the set application point, and then add applique . After the application is completed, Pull the bar to right and the frame will automatically return to the point before frame-out to continue embroidery. The specific operations are as follows:

1、As Operation Index: A9-P0-U5 , click" 🎰 "icon to enter the Pattern Memory Menu window，and select the pattern to be set for appliqué embroidery.

2、Click the "Paste setting" item to enter the " Adding Applique Function to Patterns " interface as shown in the figure below.

3、The system automatically lists all the color change code and stop codes of the pattern. Click the " 🔺 " and " 🔻 " icons to select the point to be set for appliqué embroidery, and then click the " 📋 " icon to set the applique point and moving value, and finally click " Enter " Icon to confirm.
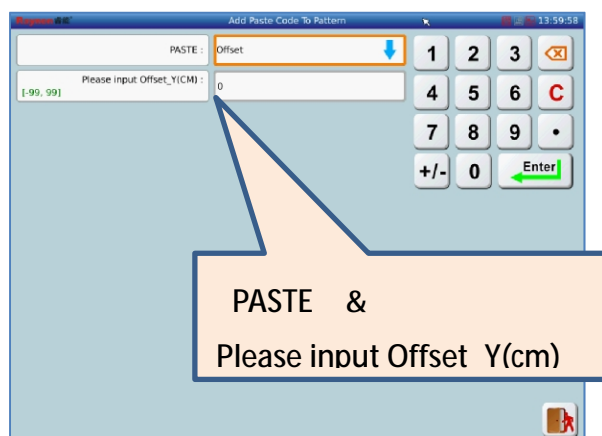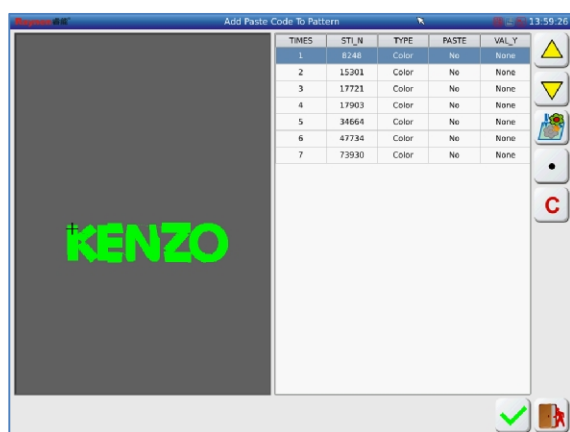
4、Click the " +/- " icon to switch the direction of moving the frame in the Y direction. If moving

the frame forward, "-" must set before number. The number icon sets the moving frame value of the point in the Y direction. Click the " Enter " icon to set the point as a paste point, or click the " 🔲 " icon to cancel the paste point.

5、After all the settings are complete, click the " ✔ " icon, and the system will automatically save the appliqué data and return to the " Pattern Memory Menu " window. If you want to select and set the appliqué embroidery pattern for embroidery, click the "Set as Embroidery Pattern" item to embroider. If not, click the " 🔲 " icon to exit.

※ If a Paste point and another starting point are set , you can choose to unify the frame to another starting point when it encounters the Paste point, or you can choose to out frame according to the set moving frame value.

※ Add the "Applique Embroidery" function to the pattern. If you don't want to frame out after that, you should enter the "Applied Applique Function to Pattern" to cancel the appliqué point.

※ If beyond the frame in the process of frame-out, just need to manually click the " 🔲 " icon after adding paste, and select the "Return Frame to Last Stitch" item to return to the Last Stitch, and then pull the bar to embroider normally.

Chapter 7 Normal Embroidery and Idling

7-1 Relations of Normal Embroidery and Idling

Functions as idling, returning, etc. are intended for the convenience of darning. Low-speed idling, high-speed idling or positioning idling can be used as needed in embroidery. In the status of idling, the returning can be low-speed idling returning, high-speed idling returning or positioning idling returning. （Operation Index: A2-P1/2/3）

7-2 Low Speed Idling

Operation: Click the " ⬛ "icon when embroidery stops, then the icon shifts to the Low Speed Idling icon " ⬛ ". After setting low speed idling, operators can pull the bar to start embroidery, the main shaft won't rotate, the frame moves along the pattern stitch path. When pull the bar to return, the main shaft does not rotate, and the frame is retracted along the pattern stitching.

7-3 High Speed Idling

Operation: Click the " ⬛ " icon when embroidery stops until the icon shifts to the High Speed Idling icon " ⬛ ".After setting High Speed Idling ,the main shaft won't rotate, the frame won't move and stitch-count increase when operator pull the bar.After pulling bar to stop, the frame moves directly to the actual position of the current stitch number. When pull the bar to return the main shaft won't rotate, the frame won't move, stitch-count decrease. Pull the bar to stop and the frame moves directly to the actual position of current stitch number.

7-4 Position Idling

The position idling can move the frame directly forwards (or backwards) to a designated position, or to a latest color-change position, or even to a latest stop-code position. Operation:

1、Click A4 icon" ⬛ " when the embroidery stops, until the icon shifts to " ⬛ "status. At this time, A10-P3 interface "Float Move" will display the following menu:

2、Click the icon to choose different kinds position idling, and click " Enter "icon to confirm to complete the operation. For example, click the "Backward STI" item, then the number of input box will appear (default 10 stitches). Users can use the number icon to change the

number of back stitches. Click " Enter " icon to confirm when input completed, the system will go back to main function screen automatically, the frame roll back directly to the position of set stitches. If the position need to be mend，operator should click " ↠ " icon first until the normal embroidery icon " ↓ " appears, then the machine is in embroidery running status.
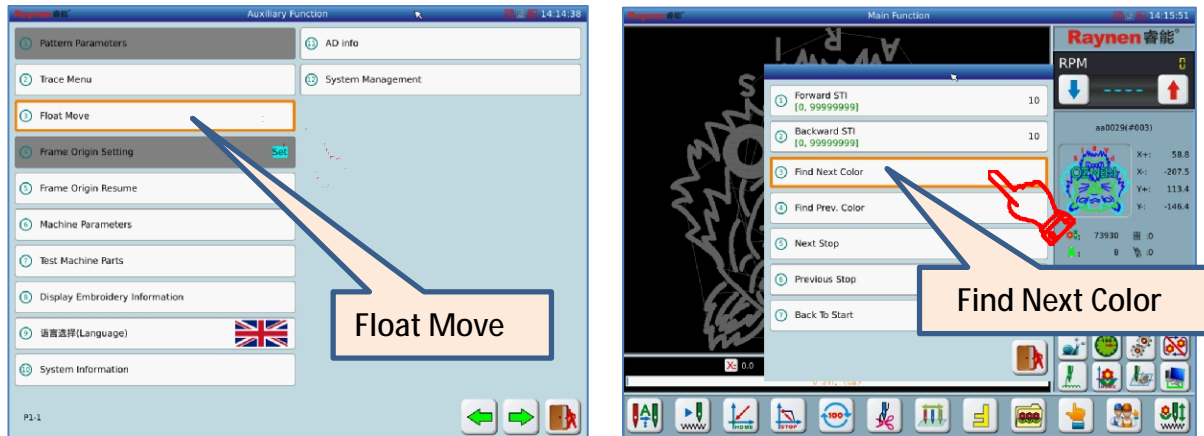
7-5 Release of Fast/Slow Moving

Operation: When the machine stops, click " ↓ " icon during low speed idling;click " ↠ " icon during high speed idling,until it shifts to the icon " ↓ ", then the machine is running in normal embroidery status.

Chapter 8 Color-Changing Operation

8-1 Manual Color-Changing

As the machine stops, if you need to change the color manually, click the " 🎨 " icon to enter the manual color-changing window, select the desired color-changing pin number according to the number icon displayed at the bottom of the screen and click it. （Operation Index: A7- ）

8-2 Setting of Color-Changing Order

Refer to 4.2.1 （Operation Index: A1-P1/2/3 ）

8-3 Setting Auto-Color-Changing Order

Refer to 4.2.2 （Operation Index: A7- ）

8-4 Store Manual Color-Changing Record

In the embroidery confirmation state, when you select the manual color change operation, you can choose whether to automatically record the needle position in the color change sequence unit. This operation has the following two functions: First, if the staff finds that the color-changing order of the automatic color-changing is set incorrectly during the embroidery process, then the color-changing order can be modified while manually changing the needle. Second, a new pattern is embroidered by manual color-changing once and saved, then the next time the machine can change colors as the saved order for embroidery directly and automatically.

The specific operations are as following:

1. Press the operation Index number A10-P6-U5 to enter the "Embroidery Auxiliary Parameters" .

2. Move the cursor to (11) item and click "Save Manual Color Changes" to switch to "Yes".
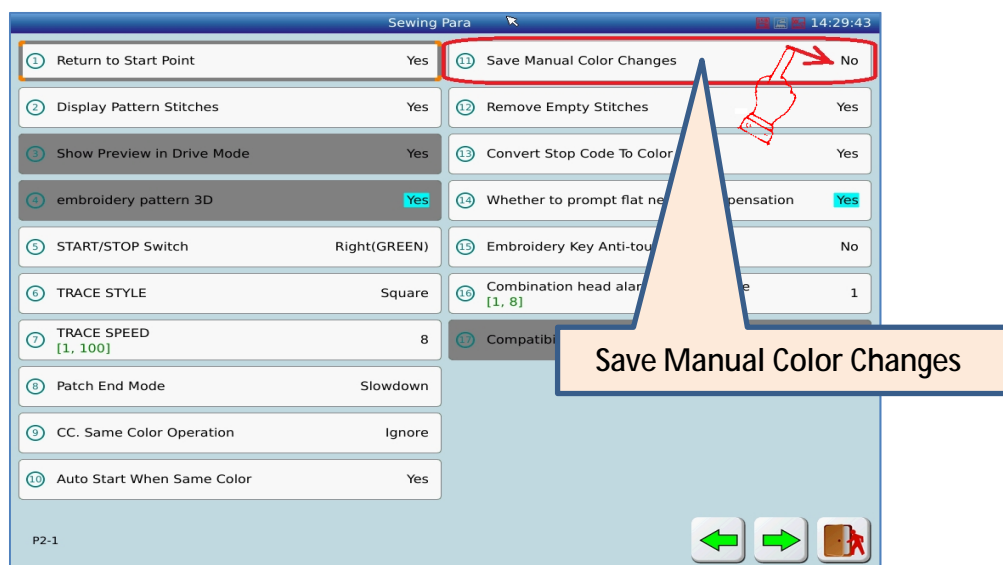
Chapter 9 Frame-Moving Operation
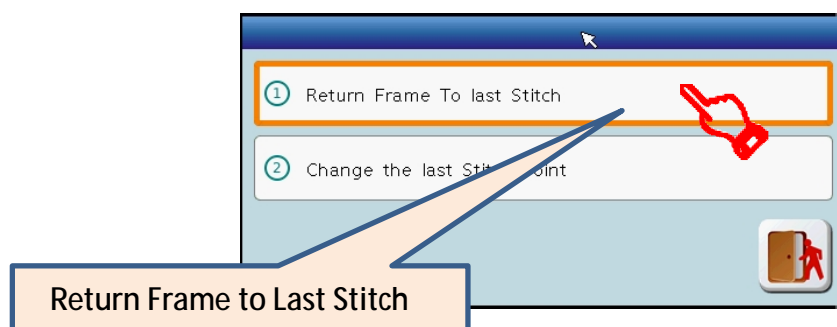
9-1 Manual Frame-Moving

Click the arrow keys " " to move the frame along 4 different directions when the machine stops. The key " "or " " in the middle of the four direction keys is used to control the speed of the frame-moving. It is divided into two modes, high speed and low speed. Each time you click the key, the mode is switched.

9-2 Return Frame to Last Stitch

During the embroidery process, the staff often need to stop embroidering and manually move frame for other operations such as applique. After these operations are completed, the staff needs to return the frame to its original position, that's when they need to use this Return Frame to Last Stitch operation.

The specific operations are as follows：   （Operation Index: A4- ）

（1）After machine stops, click the manual frame-moving button to move the frame out. (e.g. in case of applique)

（2） After finishing the applique work, click" " icon, and the "Return Frame To last Stitch" prompt will appear.

（3） Click the "Return Frame to Last Stitch" item and the frame returns to the stop point automatically and waits for embroidery to continue. （If you click the " " icon then the operation will be cancelled.）

9-3 Return to Origin

If the frame is moved manually during the process of embroidery or doesn't return to the origin when embroidery finishes, this operation can make the frame return to the origin of the pattern. The specific operations are as follows: （Operation Index: A3- ）

（1）Click " " icon and a back-to-origin menu appears as shown in the figure:

（2）Click "back-to-origin" icon and the frame return to origin automatically, if you want to quit this operation then just click " " icon.
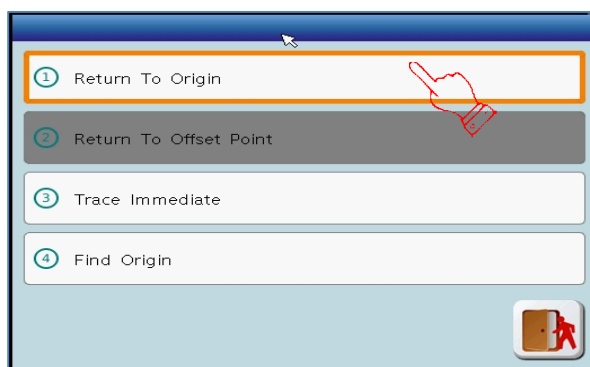
9-4 Restore Origin Setting

If you have saved the start position of current pattern, you can use this function to locate that point. It is convenient to align the origin of the frame when embroidering the same pattern again.

The specific operation are as follows：

1、As Operation Index: A11-P1,   Click" ⬛ "icon，the" auxiliary Embroidery Function" menu shows up.
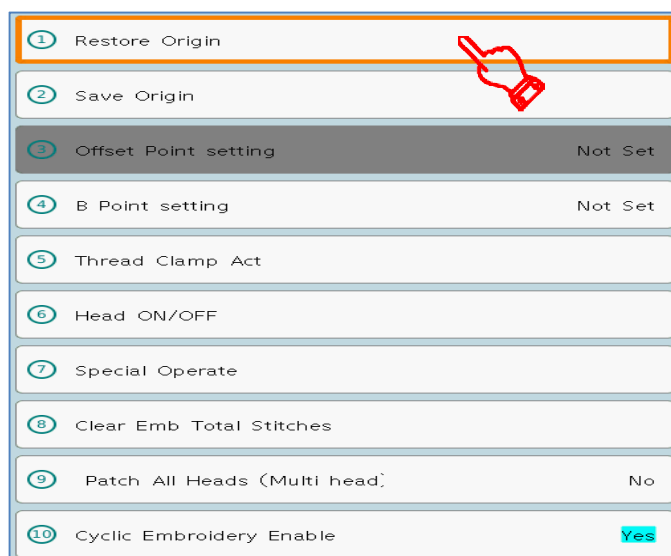
2、Click "Restore Origin Setting" icon and the system will move the frame automatically to the position that was previously memorized. And " ⬛ " icon is to cancel this operation.

9-5 Save Origin Setting

Frame Origin Setting (Reference: 11-11) is the premise for Saving Origin Setting, this function saves the current frame position as the starting point of the current pattern.The specific operations are as follows:

1、 As Operation Index: A11-P2,   Click" ⬛ " icon，the" auxiliaryEmbroidery Function" menu shows up.

2、Click the "Save Origin Setting" icon and the system will automatically save the current frame position as the starting point of the current pattern. And " ⬛ " icon is to cancel this operation.

Note: If the starting point of a pattern does not change, you only need to do the Save Origin Setting once, then you can do the Restore Origin Setting for multiple times at any time.

9-6 Moving Frame along the Pattern Border

   After the selection of patterns and before the formal embroidery, this function is to move the frame along the pattern range to check whether the limits are exceeded. The specific operations are as follows:

（1） As Operation Index: A3-P3,   click " ⬈ " icon and a back-to-origin menu shows up.
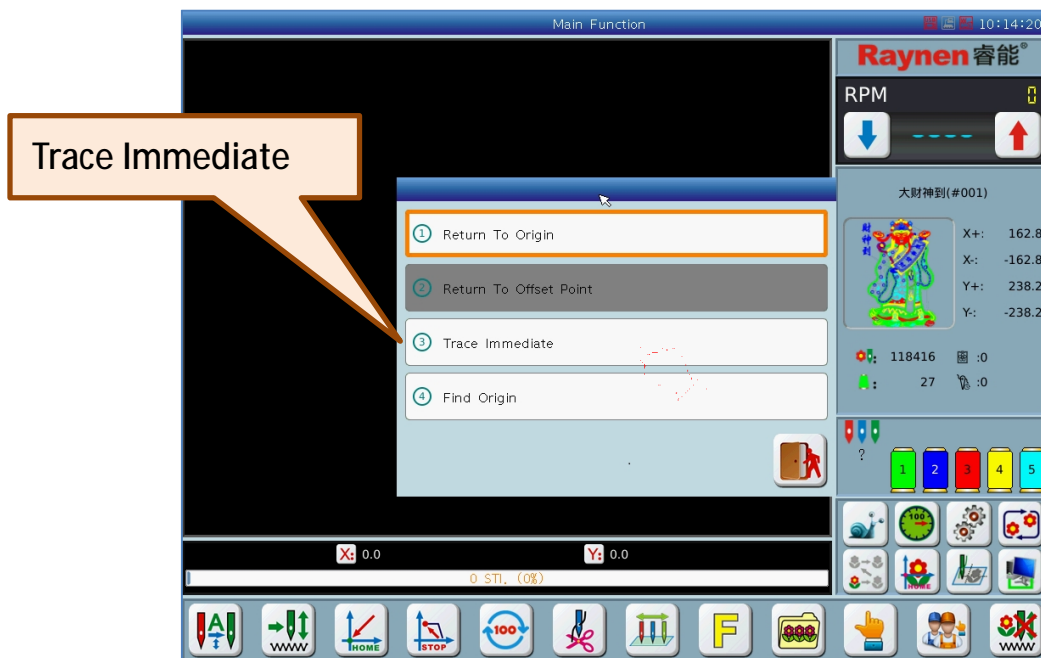
（3）Click the "Trace Immdediate" icon and the system will automatically move the frame along the pattern range with the current position as the origin, and check whether the pattern exceeds the limits. If the current pattern origin causes the frame to exceed the limits, the system will automatically prompt, users should re-adjust the origin position and do this operation again. If the frame is in the range, users can pull the bar to start embroidery. The " ⬅ " icon is to cancel this operation.

9-7 Automatically Find the Origin

   This function is used to automatically find a suitable starting point for the pattern to be embroidered, so that the pattern is located in the center of the embroidery frame range. The premise of this operation is that the machine has been set to "Frame Origin Setting" (Reference: 11-11).The specific operations are as follows:

（1）As Operation Index: A3-P4,   click " ⬈ " icon and a back-to-origin menu shows up.

（2）Click "find origin" icon and the system will calculate the center of the embroidery frame range, and move the frame to locate the start point. Click " ⬅ " icon to cancel this operation.

Chapter 10 Speed Parameters

In the process of embroidery, the speed of embroidery is automatically adjusted by computer at any time according to the needle length of pattern. The low speed is used when embroidering the long needle, and the high speed is used when the short needle is embroidered. However, the maximum speed of machine is set by the user, that is, the main shaft "highest speed" is set. In the set range of the maximum speed of the machine, the speed-up and speed-down keys can be used to control the maximum speed of the current embroidery. The maximum speed of the machine is set in the range of 600-1200 rpm（Some models may have changes, such as the 1000-rpm model), which can be selected by the user according to their needs. Choose the highest speed without leaving margin. If the 900-rpm embroidery is used normally, the highest speed is recommended to be set to 900-rpm.

10-1 Max RPM/Min RPM

Function: This setting is used to determine the maximum upper limit speed and the minimum lower limit speed of the machine.

1、Operate A10-P6-U3:　Click the "👆" icon to enter the "Machine Parameters" window,then click "Speed Parameters"item to enter the "Speed Parameters" window.

2、Click "Max RPM" or "Min RPM" item according to user needs to set specific speed.

Specific Operation: Click "Max RPM" item and click "Modify All": Set it to "Yes", the maximum speed of all needles can be set uniformly. Input the rotating speed using the number icon and click the "Enter" icon to confirm modification; click "Modify All": Set it to "No", the maximum speed of the needle number can be individually modified according to the needs of the user. Input the rotating speed using the number icon and click the "Enter" icon to confirm modification. Click "Min RPM" item you can only set the minimum speed of all the machine heads uniformly. After inputting the speed with the number icon, click "Enter" icon to confirm modification, click the "🚶" icon to exit after setting.
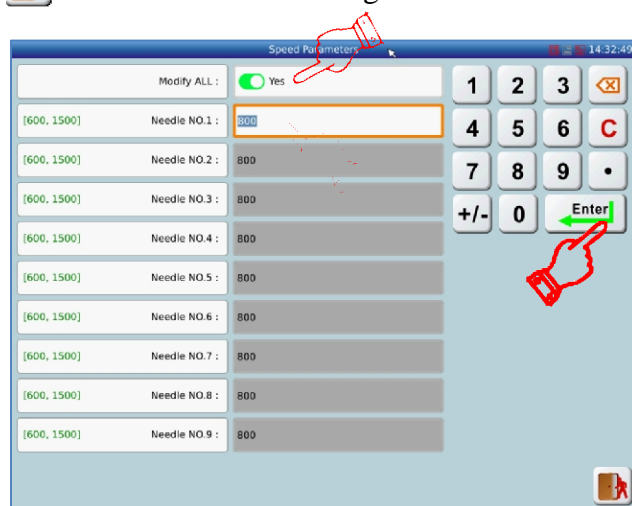
Note: For the maximum speed setting, it is recommended to use the factory setting.

10-2 Set RPM

Function: Set the running speed during embroidery.Operation:　（Operation Index: C1/C2 ）

（1）Click" ↑ "icon，every time click this icon the rotating speed would increase 10rpm，when clicked for a long time, the speed will rise rapidly, and it will not increase when it reaches the set maximum speed.

（2）Click" ↓ "icon, every time click this icon the rotating speed would decrease 10rpm, when clicked for a long time, the speed will decrease until it reaches the set minimum speed.

10-3 Related Parameters of Main Shaft

No.	Name	Description
1	**Max RPM**	Set the highest speed of machine embroidery.
2	**Min RPM**	Set the minimum speed of machine embroidery.
3	**Start-up RPM**	The speed of main shaft when starting embroidery is 100 rpm by default, ranging from 80 to 150 rpm.
4	**Rev.At Slow Motion**	The speed of main shaft is running slowly when the bar is pulled and held, the default is 200 rpm, the range is 150~400.
5	**Startup Stitches**	When starting the embroidery, start-up stitches of main shaft defaults to 1 stitch.　According to different elastic embroidery threads and different lengths of trimming, Start-up stitches can be appropriately adjusted to avoid stitches are easy to drop the upper thread.
6	**Starting acceleration**	Range: 1～30. It refers to the acceleration when the embroidering speed rises to the control speed. Increasing this parameter can make the machine speed up faster after pulling the bar. When the main sharft uses an inverter, because the inverter has a limit on the acceleration, a larger value may have no effect. When the main sharft uses a servo, the effect is obvious, but it is not recommended to set it too large, otherwise the frame acceleration may not keep up with the speed of lifting and causing a shift.
7	**Jump RPM Limit**	Set the rotation speed for jump stitch. 500 rpm by default, range from 300 to 900 rpm.
8	**Chenille Rev Limit**	The rotation speed of the main shaft when performing rope embroidery. 800 rpm by default, range from 250 to 900 rpm.
9	**Float-HI Speed**	The larger the value, the faster the high-speed idling. The default is 50, ranging from 1 to 64.

10	**Float-LO Speed**	The larger the value, the faster the low-speed idling. The default is 20, ranging from 1 to 64.
11	**Needle Down Adjust**	Range: -30～30. The default value is 0. This parameter is used to adjust the position when the needle stops. The negative to the higher needle stop,　the positive to the lower needle stop.
12	**Efficient mode**	Range: 0～5. The default is 0, and when it is "1", when the system encounters different needle lengths, the speed will decrease be than that of the non-efficient mode, which improves the efficiency of embroidery, but it should be set according to the configuration of the frame, otherwise the frame speed may not follow Up and cause out of step.
13	**Slow RPM if Stitch Longer Than**	Range: 2.0～9.0. When the needle length is greater than this value, the machine automatically reduces the running speed. It also affects the maximum speed of the machine. When the default value is 5.0 and the needle length is shorter than 5.0, it will embroider at the set speed; if it exceeds 5.0, the machine will automatically slow down. At the same time, the maximum speed allowed is 950 rpm (even if the system is set to 1100 rpm, the actual embroidery can only reach 950 rpm).
14	**Motor Scale Adjust**	It is used when the spindle is a variable frequency motor. Improper setting of this value will cause the set speed to be inconsistent with the actual speed.
15	**Thick Stuff Adjust**	Set according to needs
16	**Main Shaft 100 Degree Adj**	Fine-tune the spindle parking position. The range is from 0 to 40, about 8 values are adjusted by 1 degree. The larger the value, the more rearward the parking position is.
17	**Main Shaft Breaking Adj**	The range is 0～100. This parameter adjusts the speed before stopping. Generally, this parameter is set to 20.

Chapter 11 Auxiliary Functions: Para. Modification

11-1 Trace Menu

No.	Parameter	Description
1	**Trace Immdediate**	This function is to move the frame along the pattern range to check if the pattern exceeds the limits.
2	**Sew Rough Boundary Now**	After selecting the embroidery pattern (before the embroidery is confirmed), this function can make the computer automatically generate the square frame of the current pattern and return to the main screen. The user can directly embroider by pulling the bar, and the machine will embroider the square frame line at the current position , and automatically return to the "preparation mode" of the machine.
3	**Sew Outline Now**	After selecting the embroidery pattern (before the embroidery is confirmed), this function can make the computer automatically generate the approximate actual outline of the current pattern and return to the main screen; the user can directly embroider by pulling the bar, and the machine will embroider the pattern at the current position Contour line and automatically return to the machine's "preparation mode".
4	**Sew Cross Pattern**	In the embroidery preparation state, this function can input the length of the cross line in X and Y directions (in millimeters), and the system will automatically return to the main screen. The user can directly pull the bar to embroider, the machine will embroider a cross with the current position as the origin, and automatically return to the machine's "preparation mode".
5	**Sew Right Angle Pattern**	In the embroidery preparation state, this function can input the length of the X and Y right angle lines (in millimeters), and the system will automatically return to the main screen. The user can directly pull the bar to embroider, the machine will embroider a right-angled line with the current position as the origin, and automatically return to the machine's "preparation mode".
6	**Sew Line Pattern**	In the embroidery preparation state, this function can input a needle length value, and use the " ⬦ ⬦ " key to move the embroidery frame to the starting point and confirm, then move the embroidery frame to the end point and confirm, so that the system will connect the end point and the starting point into a straight line and automatically return to the main screen.The user can directly pull the bar to embroider this line, after embroidering the line, the machine automatically returns to the "preparation mode".

11-2 Head T.B. Detect Parameter

No.	Parameter	Description	Defaults
1	**Upper Thread Check**	Whether the system performs thread break detect on machine head.	**Yes**
2	**TB. Check Device**	Set the type of broken thread detection, divided into: spring + wheel (ie: upper thread detection + bottom thread detection); pure spring type (ie: only detect the upper thread); pure wheel type (ie: only detect the bottom thread).	**spring + wheel**
3	**T.B.Detect Surface Sensitivity**	This parameter is used to adjust the sensitivity of the upper thread detection. The lower the value, the more sensitive the detection. Parameter range: 1 to 15.	**1**
4	**T.B.Detect Bobbin Sensitivity**	This parameter is used to adjust the sensitivity of the under thread detection. The lower the value, the more sensitive the detection. Parameter range: 1 to 15.	**1**
5	**T.B.Detect STI.**	The larger the parameter, the less sensitive the thread break detection is and the less likely it is to be misjudged. The smaller this parameter is, the more sensitive the thread break detection is and the more likely it is to be misjudged.	**3 Stitches**
6	**T.B.Detect STI.**	The larger the parameter, the less sensitive the thread break detection is and the less likely it is to be misjudged. The smaller this parameter is, the more sensitive the thread break detection is and the more likely it is to be misjudged.	**3 Stitches**
7	**T.B.Back Stitches**	The number of stitches that the machine automatically retracts when the thread is broken, facilitating the mending embroidery of the broken thread. When the thread is broken, the machine will not automatically return as the value set to 0.Generally set to 3 stitches, which can be modified according to needs.	**3 Stitches**
8	**Patch Counts**	This parameter is the number of needles for mending when the thread is broken. Range: 0 to 16 stitches. If the number of stitches for automatic thread retraction is set to 3 and the number of back stitches is set to 1, the needle is retracted by 3 stitches and 2 stitches are mended to the needle of thread break of machine head, then the needle of all machine heads are mended with 1 stitch.	**1 Stitches**
9	**T.B.Detection Skip Count**	When the user starts the embroidering, the first few stitches is set without thread break detection. This parameter is generally set to 3. If the needle is easy to	**3 Stitches**

		misjudge, the machine needs to adjust the parameter appropriately.	
10	**T.B.Detect Skip STI. After Jump**	This parameter is used to set the number of stitches that are not broken after the jump is over. Because the upper thread is pulled longer after the machine jumps, the first few stitches will easily cause misjudgment of the thread. The system defaults to 3 stitches. If it is easy to cause misjudgment after jumping, you can increase the number of stitches that are not detected. Parameter range: 1 to 10.	**3 Stitches**
11	**Head Motor Act Angle**	This parameter is used in conjunction with the intelligent headboard of the motor jumping to set the swing amplitude of the jumping motor.	**0**
12	**T.B.Surface Clamp Solenoid Voltage Adjust**	This parameter is used to adjust the pull-in voltage of the Surface Clamp Solenoid. The greater the value, the greater the strength of the solenoid, and the higher the temperature generated. Under normal circumstances, the clamping solenoid can clamp the upper thread, and the upper thread will not be thrown during the needle start and embroidery process, so there is no need to adjust this parameter.	**1**
13	**Head Solenoid Voltage**	This parameter is used to adjust the suction voltage of the head solenoid. The larger the value, the greater the strength of the solenoid and the higher the temperature. Under normal circumstances, the machine can lock the clicker foot, so there is no need to adjust this parameter. Parameter range: 0～10. When the head is a jumping motor, this parameter is used to adjust the stroke of the jumping motor. The larger the value, the greater the stroke of the jumping motor. Parameter range: 0～10.	**4**
14	**Patch All Heads**	"No"：Only the machine heads with broken threads are used to patch; "Yes": under any circumstances ,when back to patch, all the machine heads will embroider with stitches.	**No**
15	**Batch Needle Add**	When the two machine heads are combined, whether the needle numbers of the two machine heads are accumulated. Example: Two 6-needle machine heads will be combined into a 12-needle machine head after the needle numbers are accumulated.	**Yes**

11-3 Frame Para.

No	Parameter	Description	Defaults
1	**X direction Frame Angle A**	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	**260**
2	**X direction Frame Angle B**	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	**260**
3	Y direction Frame Angle A	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	260
4	Y direction Frame Angle B	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	260
5	X Frame End Adj	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	0
6	Y Frame End Adj	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	0
7	X adjust	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	0
8	Y adjust	The internal parameters are for debugging personnel and are effective for high-speed machine servo frame shifting. Embroidery manufacturers do not adjust, so as not to affect the embroidery!	0
9	Frame Speed(high)	Range: 1 to 30. The default value is 16. This parameter sets the speed coefficient when moving the frame at high speed. The larger the value is set, the faster the high-speed frame shifting speed	16
10	Frame Speed(low)	Range: 1 to 30. The default value is 12This parameter sets the speed coefficient when moving the frame at low speed. The larger the value is set, the faster the frame speed is.	12

11	Over frame Speed	This parameter indicates the speed of moving frame at which back to the original， the jump stitch or the color change frame during the embroidering process. Generally set by default. Excessively high setting values may cause some frame drive to move out of the frame.	16
12	Combine Jumping	In the case of a long pattern jump, whether to use a step-by-step frame to move the jump stitch.	No
13	Move Interval When Head Change	In the Batch embroidery mode, when switching between different heads, whether to move the frame to eliminate the head interval.	Yes
14	Frame pulse duty cycle	Range: 10～50. The default is 50.	50
15	Frame pulse width	Range: 5～60. The default is 50.	15
16	X axis shift frame delay time	Range: 0～20. The default is 8.	8
17	Y axis shift frame delay time	Range: 0～20. The default is1 8.	18

11-4 Trim Parameters

No	Parameter	Description	Defaults
1	Trimming Type	The trimming thread has three ways: "Surface", "Bobbin" and "None". The user can also independently set the way of trimming the thread for different needle positions.	Surface
2	Trim on jumps	The parameter range is 1-12.When the user has selected "Always Jump", the machine performs the jump stitch without trimming. It is also possible to set more than one stitch jumper according to the requirements of the embroidery, and then trim the thread to reduce the number of jumper on the cloth surface. The system can also set different parameters for different needle positions.	Always Jump

3	Catch Angle By Motor	Parameter range (-128-200), this parameter is used to set the time for the tool to be hooked when the system is trimming. The default value is 45. The smaller the value, the earlier the time for the tool to be hooked, and the larger the value, the tool to be hooked. The later you hook it. The system can also set different thread hook angle parameters for different needle positions.	45
4	Trimming Length	Parameter range 1-8, the higher the value, the longer the thread length.	3
5	SPEED 1 PRE TRIM	Parameter range (60-600), the speed of the first lock stitch before thread trimming.	400
6	SPEED 2 PRE TRIM	Parameter range (50-600), the speed of the second lock stitch before thread trimming.	80
7	Trimming rpm	Parameter range (60-200), the lower the thread trimming speed, the longer the noodle thread will be cut, the default is 80 revolutions.	80
8	Speed After Trimming	Parameter range (60-150)	80
9	Lock Stitches Of Trim	The parameter range is 0-2, which is the number of lock stitches before the thread is trimmed. The default is 1 stitch to prevent the thread from falling off. If it is set to "0", the stitch is not locked before the thread is trimmed.	1
10	Whipstitch Length (Long Tail)	The parameter range is 0.3-2.0mm.When the trimming stitch is set to "Yes", the length of the lock stitch is set, and the default is 0.7mm.	0.7
11	Step Cutter Distance	Parameter range (40-100), the larger the stepping thread trimming stroke, the larger the corresponding opening angle during thread trimming.	60
12	Lock Stitches After Trim	The parameter range is 0-4, which is the number of lock stitches when embroidery starts after thread trimming. The default is 1 stitch to prevent the thread from falling off. If it is set to "0" and the bar is pulled, embroidery is starting again after thread trimming. The machine does not lock the stitch.	1
13	Lock Length After Trim	The parameter range is 0.3-2.0mm. When the embroidery is starting again after thread trimming, the default stitch length is 0.7mm to prevent the thread from falling off. The higher the value, the longer the lock stitch.	0.7

14	Action After Trimming	After trimming the thread, the system can choose "No action", "X-direction moving frame", "Y-direction moving frame", and "oblique moving frame".	Y-direction moving frame
15	Spin Main Shaft After Trim	Parameter range (1-3)	1
16	Slow STI. After Trimming	Parameter range (0-8), the number of slow-moving stitches of the main shaft when the needle is pulled up again after thread trimming.	3
17	Startup Hold Adjust	Parameter range (-8-8), the length of thread threading time when the needle is pulled up again after thread trimming, the default value is 1, the larger the value, the longer the thread threading time.	1
18	Surface Clamp Patch	When the machine head is in the mending state, whether the upper thread clamps of the whole machine head are all open, set to "Yes" to open all the upper thread clamps of the machine head, and set to "No" to only the Surface Clamp of mending machine head is open.	No
19	Times of upper thread clip actions during thread trimming	Parameter range (0-2), the times of upper thread clip actions during thread trimming, the default is 1 time.	1
20	Times of Upper thread clip actions during emb.start	Parameter range (0-2), the times of face clip action when embroidering starts, the default is 0 times, and the upper thread clamping will not work when it is set to "0".	0
21	Hook Step Num	The parameter range (0-180) is used to adjust the stroke of the stepping hook. The larger the value, the greater the hook stroke.	0
22	Trim Over Length	The parameter range (0-200) is used to adjust the amplitude of the frame in X or Y direction after thread trimming. The larger the value, the larger the moving frame amplitude.	0
23	Angel Of Trimming Start	The parameter range (1-30) is used to adjust the thread trimming angle of the stepping motor. The larger the value, the later the thread trimming will be released.	15
24	Angel Of Trimming Back	The parameter range (1-30) is used to adjust the trimming angle of the stepper motor trimming back. The larger the value, the later the angle of thread trimming and knife return.	15

25	Hook Pause Time	Parameter range (0-60), the length of the pause after hooking the tool to the line, the default value is "0", which means that the tool will not pause, and the tool will return directly. The larger the value, the longer the tool pause time.	0
26	Hook Pause Position	The parameter range (1-60), the setting of the stop position after the hook is hooked to the line, the default value is "20", the larger the value, the closer the stop position is.	20
27	Cut Keep Return Angle	The parameter range (0-99), that is, the adjustment of the release action angle of thread buckle during thread trimming. The larger the value, the later the release action of thread buckle.	0
28	Step Cutter Speed	Parameter range (0-4), the cutting speed of the scissors during stepping trimming. The larger the value, the slower the cutting speed.	0
29	Trimming Duty Cycle	Parameter range (0-100)	
30	Trimming Electromagnet Excitation Time	Parameter range (0-750),	
31	Holding Duty Cycle	Parameter range (0-100),	
32	Holding Electromagnet Excitation Time	Parameter range (0-1500),	
33	Open Loop Stepping Trimmer 1 Current	Parameter range (1-20),	
34	Lock Angle By Motor	Parameter range (-50-50),	

11-5 Sewing Parameter

No.	Parameter	Description	Defaults
1	Return to Start Point	Whether the frame will automatically return to origin after the pattern is finished.	Yes
2	Repetition Embroidery	Set whether to do repetition embroidery.	No

	Enable		
3	HP Move	In the combined head embroidery process, when switching from one head to another combined head, whether to move the frame according to the set spacing between the combined heads.	No
4	Display pattern stitches	Whether to display the total number of stitches and embroidery progress of the pattern.	Yes
5	Show preview in drive mode	When confirming embroidery, whether the embroidery pattern is displayed in advance.	Yes
6	START/STOP Switch	Mainly to adapt to different operating habits. The normal setting is "right pull bar" to start embroidery, if you want the left pull bar to start embroidery, set it to "left pull bar".	Right
7	**TRACE Style**	This parameter is used to set the Square frame walking mode of the frame when the pattern is operated around. When it is set to " Square ", the frame is moved at a right angle, and when it is set to " Fillet ", the frame is rounded.	Square
8	**TRACE SPEED**	This parameter is used to set the frame moving speed when the pattern border operation is set. Parameter range: 1 to 16. The higher the value, the faster the frame is moved.	8
9	Patch end mode	The operating mode of the machine after the pattern mending is finished. This value is only valid when "Whether all machine heads are patched" is set to "No". No change: After mending embroidery, the machine will continue to embroider at the original speed. Decrease speed: the machine will reduce the speed before the mending embroidery is finished. After the mending embroidery is finished, the machine will embroider 3 stitches at a lower speed and then increase the speed. Stop: The machine will stop automatically when the	Slowdown

		mending embroidery is over, waiting for the drawbar embroidery. If it is set to stop and there is no machine head with a red light after returning, all the machine heads will be patched together.	
10	CC.Same Color Operation	When the same color-changing stitch appears in the order, the machine can be set to continue embroidery without cutting thread, or first cut thread and then continue embroidery.	Ignored
11	Auto start when same color	When the same color-changing needle bar appears in the color sequence, set whether to automatically start embroidery. Set "No" to stop the system automatically when encountering the same color-changing needle bar, waiting for processing or pulling the bar again for embroidery.	Yes
12	Save Manual Color Changes	"Yes"：Manual color-changing values are recorded in the color change order and saved. "No"：Manual color-changing values are not recorded in the color change order. If "Yes", manual color-changing is stored in the color-changing order. After embroidery, the setting will automatically change into "No".	No
13	**Remove Empty Stitches**	If "Yes", the machine will omit the empty stitches (needle moving without embroidering). If "No", the empty stitches will not be omitted. Empty needles generally refer to empty stain stitch (3, 0, 0) and empty jump stitch (4, 0, 0). The empty stain stitch behind the jump stitch is not omitted. The start-up stain stitches are all omitted.	Yes
14	Convert Stop Code TO Color	When the setting pattern is input into the memory, the stop code is changed to the color change code. This parameter defaults to "Yes". When the pattern is input, all stop codes (8, 0, 0) are converted into color change codes, including the stop code of the last stitch. It does not convert the end code to a color change code.	Yes

11-6 Step Color Para

No.	Parameter	Description	Default
1	Color Motor Regress	Whether to automatically find the zero position of the needle position when the Color motor regress, this function can prevent color change is not in place when embroidering is started ,which is caused by that the machine head from abnormally moving the position of the machine head after power off.	No
2	Cc． Stepper Speed	Parameter range: 1～10. This parameter is used to set the speed of stepping color change, the higher the value, the faster the color change speed. The user should reasonably adjust the color changing speed value according to the number of heads of the embroidery machine and the resistance of the color changing mechanism. Too high a setting value may cause color changing out of step.	3
3	Step Color Adj.	Parameter range: -50～100. This parameter is used to fine-tune the relative position of the needle in the needle plate hole after the color change. The ideal state is that the needle is in the center of the needle plate hole.	0

11-7 Head ON/OFF

After the system addresses the machine head correctly, you can open or close any machine head through software settings, as A11-P6 ,click the " 🖼 " icon to enter the " Auxiliary Embroidery Function " interface, and click the " head ON/OFF " menu to Quickly define the opening or closing of the machine head according to the number icon.

Click "1.All" to turn ON/OFF all heads. Click "2.Odd" to turn on/off the odd-numbered head. Click "3.Even" to turn on/off the even-numbered head.

You can also directly click the icon corresponding to the machine head number to open or close the machine head. When the machine head is on, the background color of the machine head is "beige", and when the machine head is off, the background color of the machine head is "gray black". The premise of turning on/off the machine head is to perform the machine head addressing operation first, otherwise this operation is invalid.
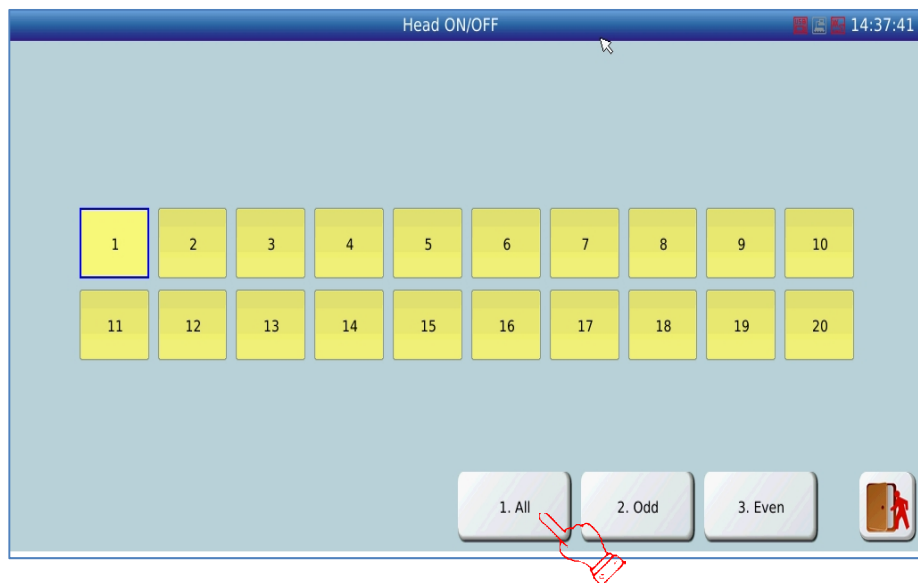
11-8 Language(语言选择)

Click the " 👆 " icon to enter the " Auxiliary Function " menu, click the "Language（语言选择）" menu, and directly click the language to be switched, the system will automatically return to the main interface, and the interface will display information in the selected language. To cancel the operation, click the " 🚶 " icon to exit.
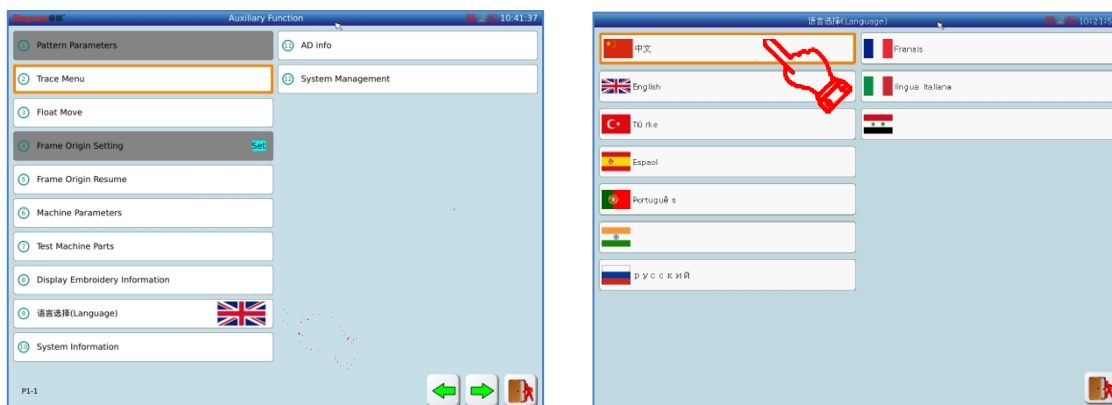
（Operation Index: A10-P9 ）

11-9 Update Customer LOG

Before updating the customer icon, you should save the prepared customer icon to the USB disk. The picture format is a 24-bit "BMP" file with a resolution of 1024×768. (Other format file system can not recognize).

As Opetate Index No: A10-P12-U5,   click the "Update Customer LOG" menu, the system will automatically read the picture information in the USB flash drive, the user selects the picture file to be loaded, click the " Updata Boot Logo " icon, the system will automatically update the original icon to the selected icon, restart Effective later.

Updata Boot Logo
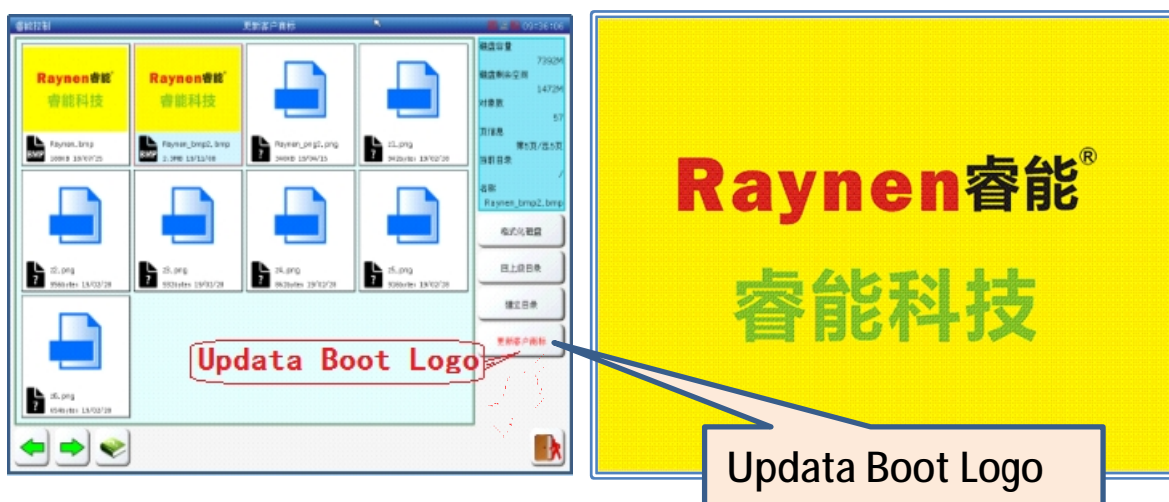
11-10 Frame Origin Setting

The Frame Origin Setting can only be set when the pattern is released. Before memorizing the current frame position, user can first use the frame-moving button on the panel to move the frame to the desired origin position, and then use the "Frame Origin Setting "to remember the location of this point. The specific operations are as follows:

1、 As Operation Index: A10-P4-, click the " 👆 " icon, the " Auxiliary Function " menu appears, click to enter the operation interface.

2、Click "Frame Origin Setting" item and the system prompts out the dialog box "Set Frame Origin Now?".

3、If you do this, click the " ✓ " icon directly, the frame will move automatically in X and Y directions until X and Y are crossed, the system will remember the coordinates of the current position. Therefore, when using the "Frame Origin Setting", the embroidery machine must install an effective limit switch, otherwise it will cause frame collision or memory errors. If you click the " 🏃 " icon, you exit the operation.

Frame Origin Setting
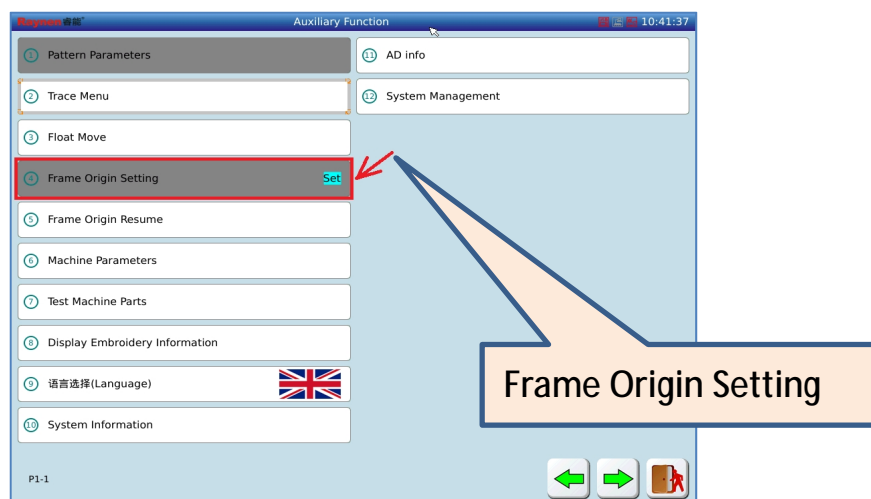
4、When the system remembers the current position coordinates, the "Frame Origin Setting" will

display "Set". When meeting emergency stop because of malfunctions or something unusual such as power off unexpectedly or the frame has been shifted etc. The coordinate data of the frame protected before the power failure can be utilized to restore the position of the frame.

11-11 Frame Origin Resume

After power off, if the frame is moved, this operation can be used to restore the frame position when power resumes. The proper performance of this operation is based on Frame Origin has been set.

The specific operations are as follows:

1、Make sure the main shaft stops at 100 degrees.

2、 As Operation Index: A10-P5-, click the " 👍 " icon, the " Auxiliary Function " menu appears. Click the " Frame Origin Resume " item, the system prompts "Please confirm the Frame Origin Resume!".

3、If you do this, click the " ✔ " , and the frame will automatically move toward the X and Y directions until the X and Y directions touch the limit switch. The system restores the frame position according to the coordinate position stored before the power failure. Therefore, when using "Frame Origin Resume" function, the embroidery machine must be installed with a valid limit switch, otherwise it will cause frame damage or recovery error. If you click the " ✖ " the operation will be exited.

Frame Origin Resume
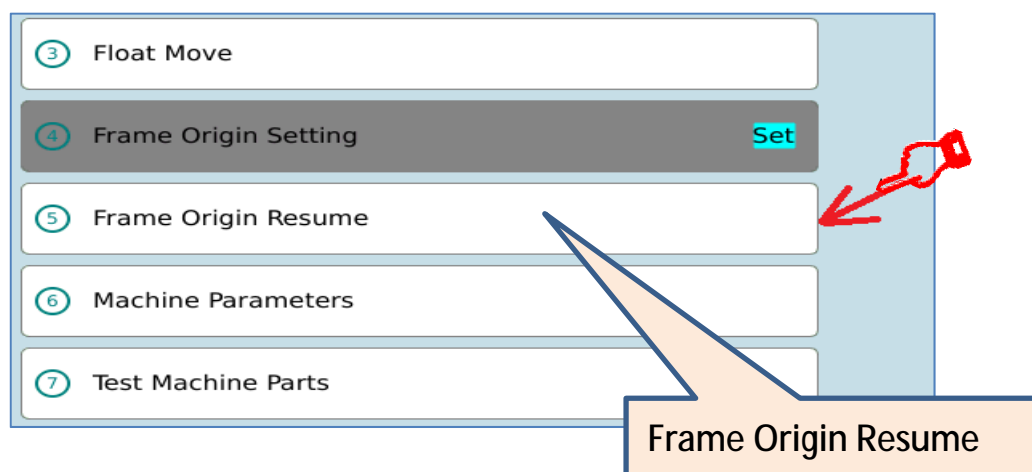
11-12 Offset Point Setting

Offset point must be set under embroidery confirmation status, it can be any point except the origin of pattern.As shown below:

a: starting point   b: another starting point
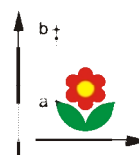
When the system performs "embroidery confirmation", it will automatically clear the offset point of the last setting. Therefore, the setting method for offset point is:

1. Select the embroidery pattern and perform "embroidery confirmation"

2. As Operation Index: A11-P3, click the " 👥 " icon, the "Auxiliary Embroidery Function" menu will appear, click the " Offset Point Setting " item, the system will pop up a prompt box, " Please move the frame to the offset point of the pattern " and click the " ✔ " icon to confirm.

3、use the 4 arrow keys" ◁▷ "" ◇ " to move the frame to the offset point of the pattern and click " ✔ " icon to confirm, at this time, the offset point is set.
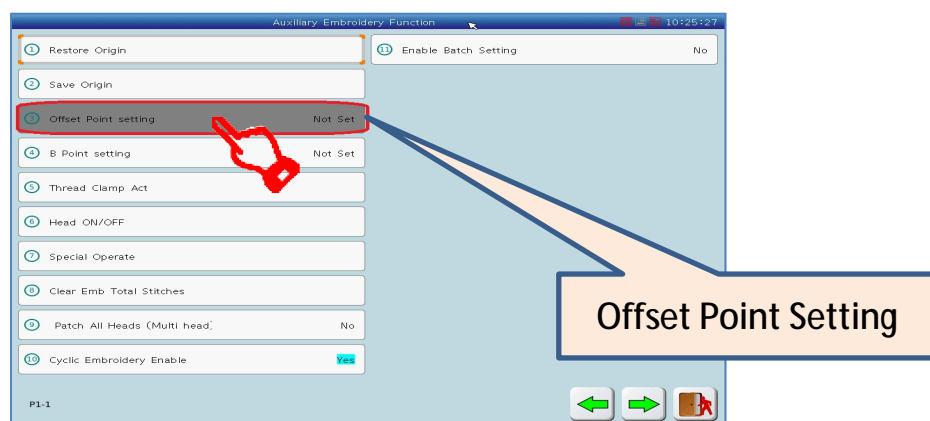
4、After the offset point is set,, the system returns to the main embroidery interface, if now pull the bar to start embroidery, the frame will move from the offset point to the pattern starting point automatically, and then the normal embroidery will start. In addition, the Offset Point is also the point where the frame is automatically out during applique embroidery.

11-13   Other Auxiliary Functions

No.	Parameter	Description	Default
1	Main Shaft lock When Stopping	For some machines with lighter main shaft resistance, in order to make the main shaft stop stably on the parking space without being affected by inertia after high-speed stop, the main shaft lock operation needs to be performed. At this time, the parking lock main shaft function should be turned on.	No
2	Screen saver on off	This function is used to view the error information log file saved by the system, which is convenient for system administrators to find the cause of the failure.	

Chapter 12 Pattern Memory Management

12-1 Pattern Selection

This function is used to select patterns in the system memory for embroidery. After entering the interface, you can preview the pattern image for convenient searching and selection. For details, please refer to Section 4-1 （Operation Index: A9-P0-U8 ）

12-2 View Pattern in Memory

This function can display Pattern in the system memory, and the display style is divided into 2 kinds: Pattern image display and full screen Pattern display.The specific operations are as follows: （ Operation Index: A9-P3 ）

1、 Click" 🔢 " icon to enter the Pattern Memory Menu window.

2、 The left part of the screen displays the thumbnail of the memory pattern, and the right part displays the pattern number, name, coordinate size and other basic information. If the memory Pattern directory is more than one page, you can click " ⬅ " and " ➡ " to view it.

3、 Click " 🌸 " icon, then enter the "full screen display" interface of the current Pattern. The left part displays the pattern number, name, coordinate size and other basic information. The customer can display the Pattern in different ways according to the icons at the bottom of the interface. It is convenient for the customer to carefully check the Pattern, local details, color-changing and understand the specific stitch.

4、 Click " 📕 "icon to exit the display.
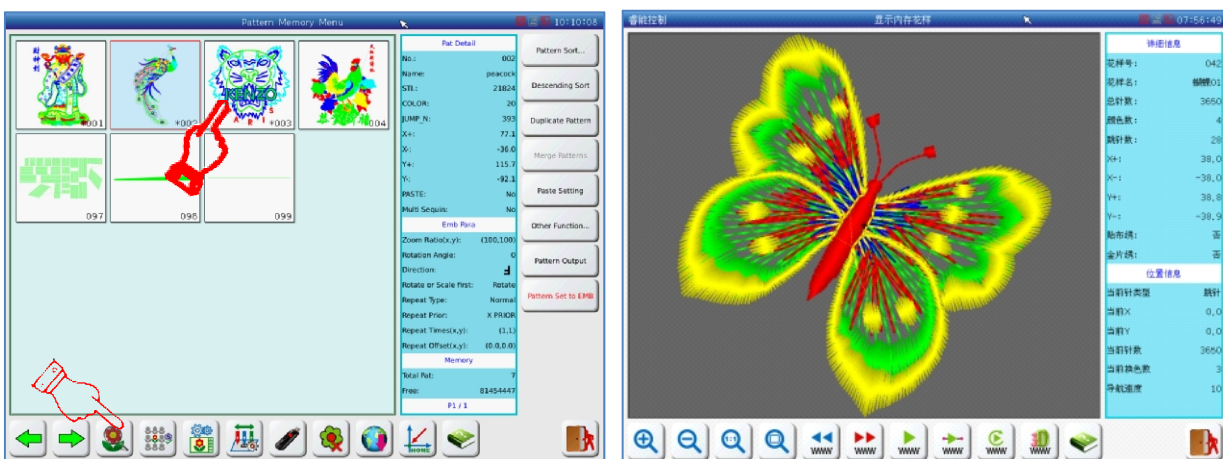
12-3 Duplicate Pattern

The specific operations are as follows: （Operation Index: A9-P0-U3 ）

1、 Enter the "Pattern Memory Menu" screen, Use the " ⬅ ➡ " page turning icon and the " ◈ "

key to select the pattern to be copied or manually click to select the pattern to be copied, and click the " Duplicate Pattern " icon to enter the next step.（If you need to cancel operation just click " 🚶 " icon to go back to Pattern Memory Menu）

2、 Then, system would automatically provide the minimum available Pattern number and the same Pattern name. If you do not need to modify it, you can click the " Enter " and the system will save the newly duplicate Pattern with this Pattern number and the same Pattern name. To enter another new Pattern number (in digital format only) or a new Pattern name (in English or numeric format), click the digital number icon to enter. After the input is completed, click the " Enter " to confirm the modification, and the system will save the newly duplicate Pattern with the new Pattern number and the new Pattern name.
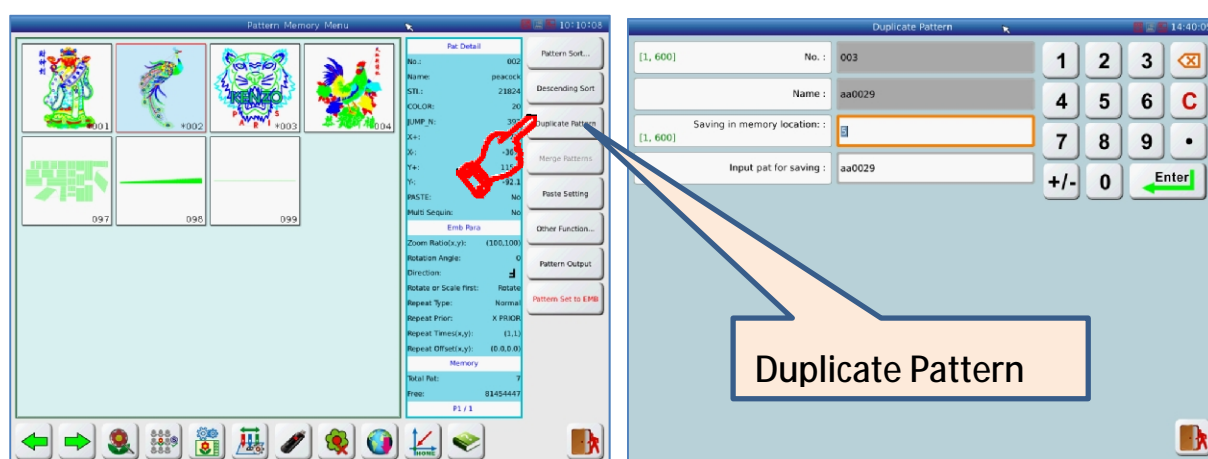
3、 If the new Pattern number used is the same as the Pattern number already in the memory, the system will ask "Overwrite the Pattern?" If you do, click the " ✓ ". If you do not,clickthe " ✗ " to return to the "Saving in memory location" interface. Enter a non-repeating Pattern number to copy.

4、 After copying, the system will automatically jump to the Pattern number that has just been copied, and display the Pattern image. To exit the "Duplicate Pattern" interface, click the " 🚶 " to exit.

12-4 Pattern Editor

Please refer to Chapter 13 "Memory Pattern Editing" for related instructions.

（Operation Index: A9-P0-U6-W1 ）

12-5 Delete Pattern

This is to delete one Patterns in the machine memory. The specific operations are as follows:

1、 As Operation Index: A9-P8, click" 🔢 " icon to enter the "Pattern Memory Menu" interface, Use the " ⬅ ➡ " page turning icon and the " ◈ " key to select the pattern to be deleted or manually click to select the pattern to be deleted, then click " 🍎 "icon ， system will pop up the "Confirm deletion?" window.

2、 Click the " ✓ " to delete the current Pattern. To cancel, click the " ✗ " to cancel the Pattern deletion operation and return to the Pattern Memory Menu" interface.

3. When the pattern is deleted, the system will remain in the " Delete Pattern " interface and point to the next pattern to be deleted. If you no longer need to delete the pattern, click the " 🚪 " icon to exit. If you continue to delete, please re-select the pattern you want to delete according to step 1 above.

12-6 Split Pattern

By operating this function, one Pattern can be split into two Patterns at a Patternated point and keep the original Pattern of memory.The specific operations are as follows:

1、 As Operation Index: A9-P0-U6-W2, click" Other Function... " icon to enter the "Pattern Memory Menu" interface, Use the " ⬅ ➡ " page turning icon and the " ◈ " key to select the pattern to be deleted or manually click to select the pattern to be deleted, and click"Split Pattern" item, the system will pop up the "Split Pattern" window.

2、 Use the numeric icons to enter stitch number of split number, and the Pattern name of the first Pattern to be divided and the number of the second Pattern, and click the " Enter " to confirm. (Note: The system will automatically provide the minimum available Pattern number and the same Pattern name for the two Patterns. If you don't modify it, just click the

" <u>Enter</u> " to confirm.)

Input name.......
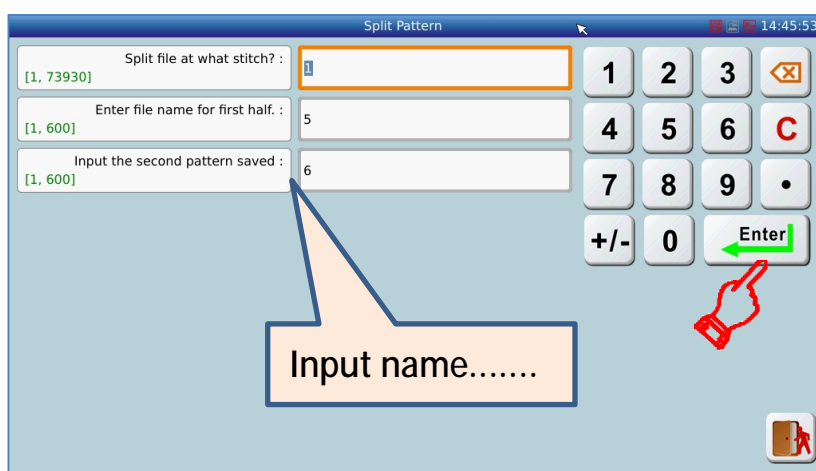
3、After clicking the " Enter " the system divides the Pattern into two new Patterns and save them. To exit the Pattern divide operation, click the " " to exit.

12-7 Merge 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. (Unit: mm) The specific operations are as follows:

1、As Operation Index: A9-P0-U4, click " " to enter the Pattern Memory Menu screen, first click the " " multi-select icon, and then use the " " page turning icon to manually select the two patterns to be merged, and click the "Merge Patterns" icon to enter the Merge Patterns interface.

2、Then the system pops up the dialog box of "Please enter the Pattern number", "Please enter the name of the Pattern to be saved", "Relative distance to the first Pattern" and "Relative distance to the first Pattern". The user can modify the above parameters according to actual needs, use the numeric keys to enter the "pattern number", "Pattern name", and "relative to the first Pattern X spacing" and "relative to the first Pattern Y spacing" (unit: mm mm), or directly click " Enter " icon and the system will save the newly stitched Pattern according to the smallest available Pattern number, the same Pattern name, and the default spacing value (0 spacing).
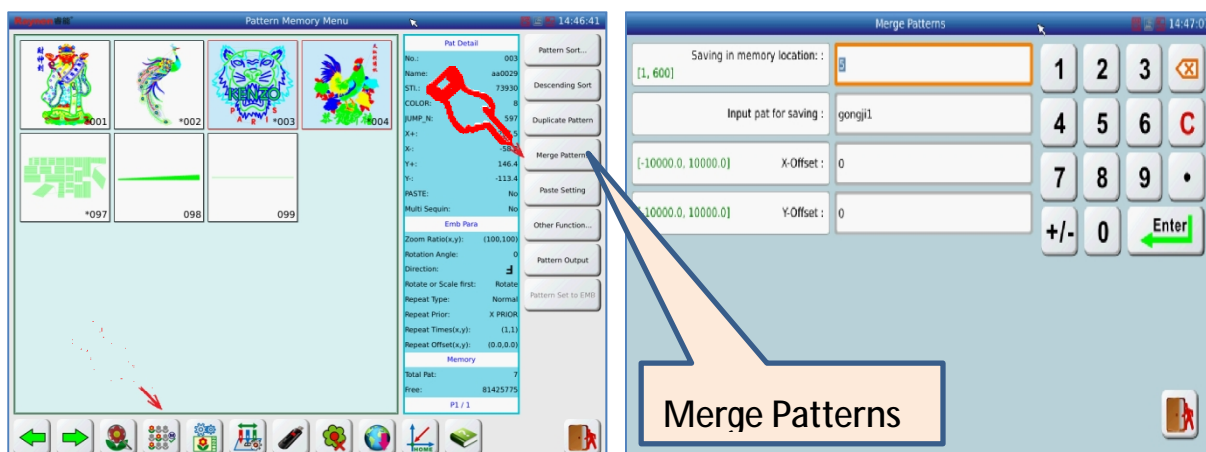
Merge Patterns

3、 After the modification is confirmed, click the " Enter " icon, the system will save and run, then it prompts "Please wait".
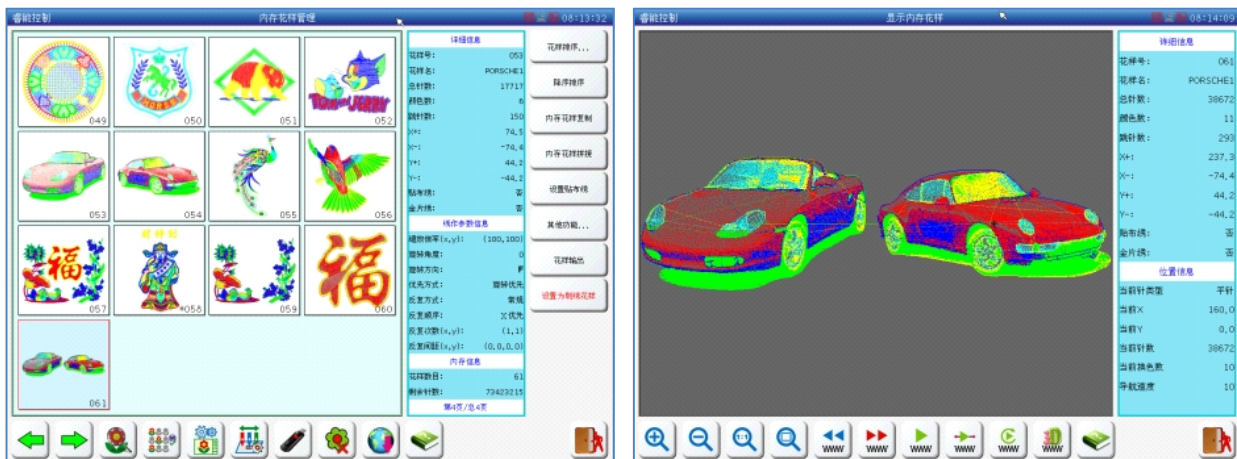
4、 After the Merge Patterns is saved, the system automatically returns to the "Pattern Memory Menu" interface. Click the " " to exit the operation or to cancel the Pattern combining in the middle of the operation.

12-8 Create Combination Pattern

The combination pattern means a pattern group combined from a certain (less than 99) memory patterns after setting their parameters. The combination pattern is set as automatic continuous embroidery. In the Pattern Memory Menu, the pattern named "P-BATCH" is a combination pattern. System returns to the pattern memory menu screen after creating or editing the combination pattern. Then click the Pattern and "Pattern Set To EMB", system will automatically return to the main function screen. Then after embroidery confirmation, pull the bar for embroidery. The user can also edit the combination pattern by the "Compile Combined Pattern" function, so as to preview and embroider the Pattern. The specific operations are as follows:

1、 As Operation Index: A9-P0-U3-W3, click " " to enter the "Pattern Memory Menu" interface, then click " Other Function... " icon and select "Create Combination Pattern "item. The system will pop up the "If create new pat?" window, select " ✓ ", the system will automatically provide a minimum available pattern number to save the combination pattern, if you do not need to modify this Pattern number, you can click " Enter " ,the system will save pattern number and name it "P-BATCH".

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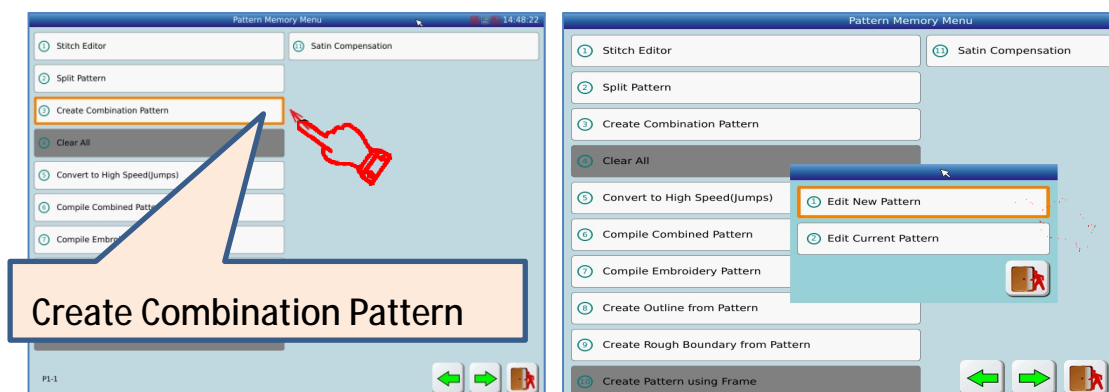
2、 Then the system prompts "Please enter the pattern number", the user should enter the first pattern number to be combined, and set the pattern's magnification, rotation direction, rotation angle, priority mode and other parameters. After setting, click " ➡ " icon to edit the second combination pattern.
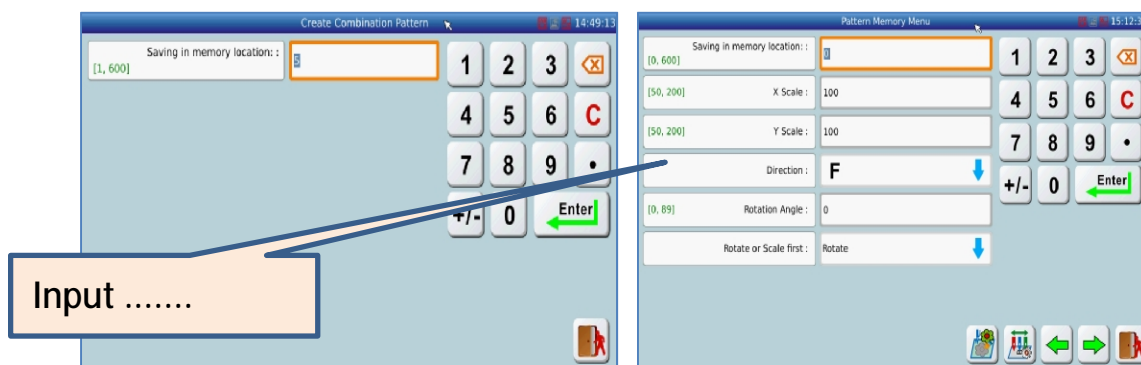
3、 Enter the second combined pattern editing interface. The user first enters the second pattern number to be combined, and sets the pattern's magnification, rotation direction, rotation angle, priority mode and other parameters. By analogy, the user can select multiple pattern combinations. If the pattern being modified is not the first pattern in the combination pattern, the distance (unit: mm) of the pattern relative to the first pattern should be set according to actual needs.

4、After all the embroidery parameters of the combination pattern have been modified, click " 🚶 " or " Enter " to exit the modification. At this time, the system will pop up the "Save & Exit" dialog box. If you save, click " ✔ " to Save & Exit. If you give up, click " ✖ " to exit the combination pattern editing.

5、 After the combination pattern editing is saved, you can enter the "Pattern Memory Menu" interface to see that the pattern has been saved in the memory, but this pattern cannot be pre-displayed. You must select this pattern and confirm embroidery then it will be displayed by the system.
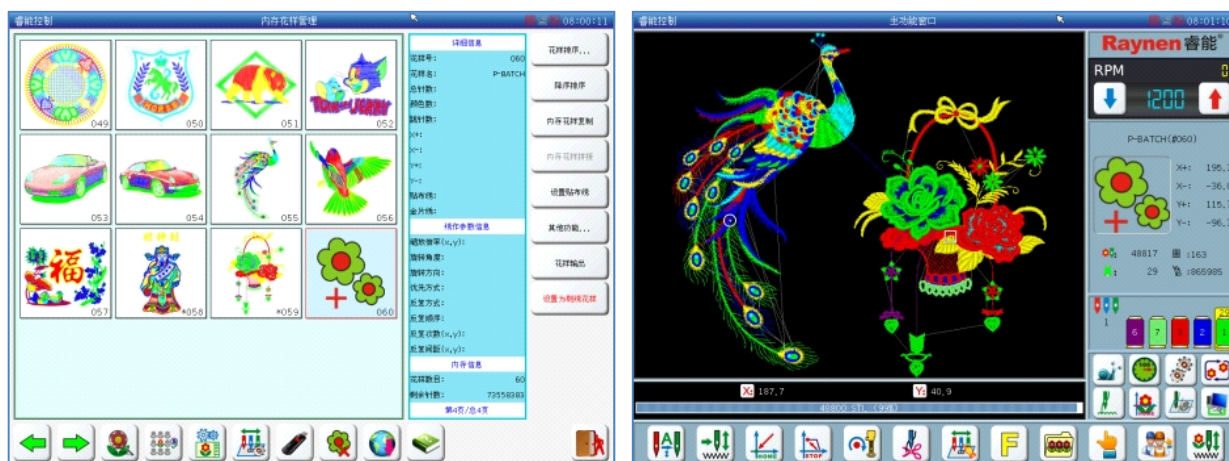
12-9 Clear All

⚠ Note：**This function is to clear all patterns in the memory. Be cautious to use it.The specific operations are as follows:**

1、 As Operation Index: A9-P0-U3-W3, click " 🎰 " to enter the Pattern Memory Menu ,then click "Clear All" menu.

2、 The system pops up "Erase all patterns in memory?" window.

3、 If you confirm to clear all memory patterns, click " ✓ " icon and all patterns in memory been cleared. Click " ✗ " icon to cancel the operation and return.

12-10 Read Patterns from USB

This operation is to store the Pattern from USB to system memory. Refer to the specific operation: 4.2.1 Input the USB pattern into the memory （Operation Index: A9-P7 ）

12-11 Save Pattern to USB

This operation is to output the patterns in the embroidery system memory to the USB flash drive. The premise of this operation is that the system does not set the password for "Lock Saving Patterns to USB" or know the password for the "Pattern prohibit output".The specific operations are as follows: （Operation Index: A9-P0-U7 ）

1、 Insert the USB flash drive, click the " 🎰 " to enter the "Pattern Memory Menu".

2、 The system lists the patterns in the memory and displays them. The user can use the page-turning icon " ⬅ ➡ "、 key " ⇳ " or click directly manually to select the patterns that need to be output. After clicking the " Pattern Output " menu. The interface display the directory of the USB, select the directory you want to save (if you choose to store it in the root directory, you must click on any pattern file in the root directory).

3、 Click the " Pattern Output " , the system will pop up the "Input filename" dialog box, and display the corresponding letter and number keys of the keyboard on the screen. If you need to modify it, enter a new Pattern file name on the keyboard, then click " Enter ", system will save the Pattern to the USB flash drive with this file name. If no modification is

required, click " Enter " the system stores the Pattern to the USB flash drive using the same file name in the pattern memory. If you need to quit, click the " 🚶 " to exit.

4、After the output file name is confirmed, the system pop up the directory to store on the USB, and the customer can choose to store it in the root directory or any other directory as needed.
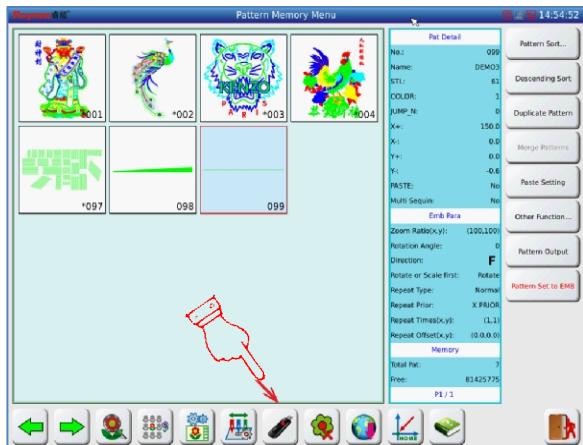
Step：1
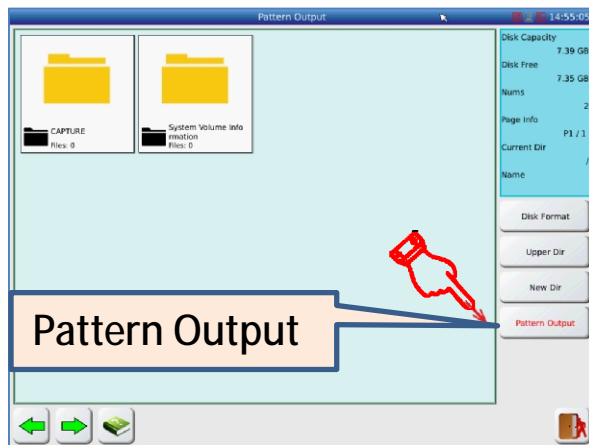
Step：2
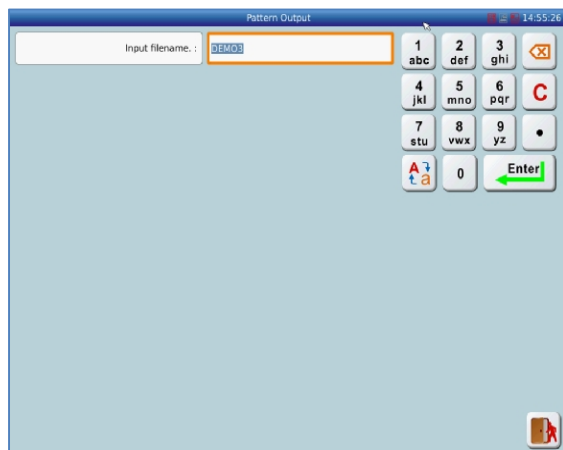
Step：3
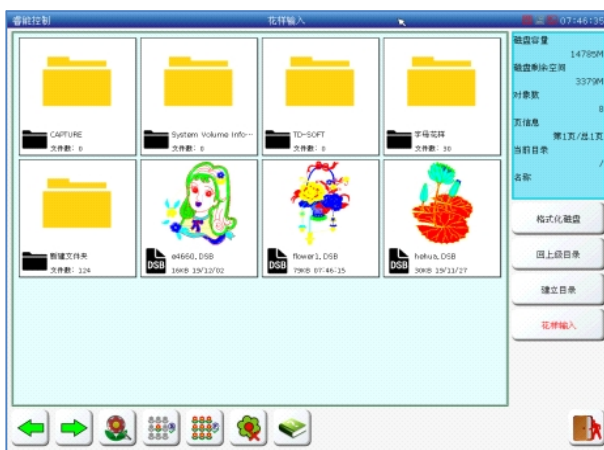
Save Pattern completed

Chapter13 Pattern Memory editing

In order to meet the needs of customers, this embroidery system provides the function of simply editing the common patterns in the memory. This function can either simply edit the patterns in the memory or create a new pattern.

13-1 Edit a New Pattern

1、 As Operation Index: A9-P0-U6-W1 , click the " " icon to enter the " Pattern Memory Menu " interface.After clicking the " Other Function... " icon, click " Pattern Memory editing ", the system pops out the "Whether to create a new pattern" dialog box, if you want to edit a new pattern, you can directly Click the " ✓ " icon to enter the " Pattern Memory editing " interface.
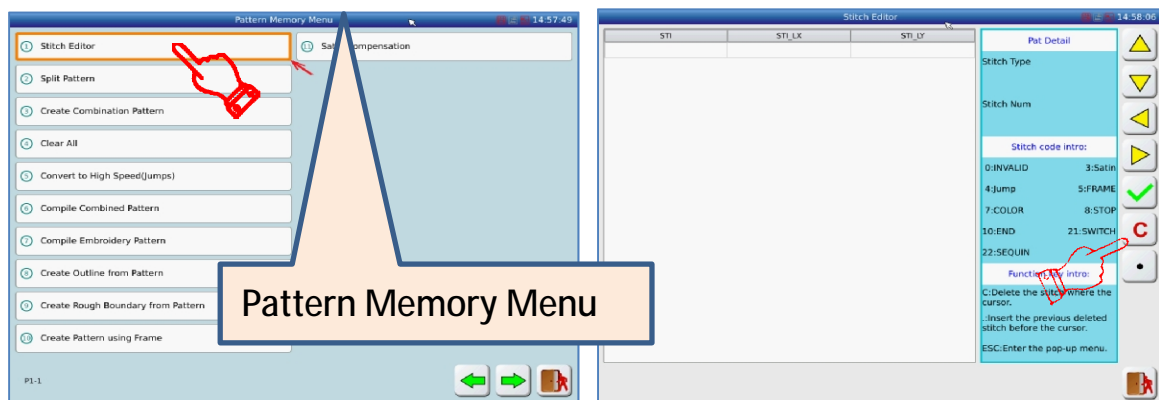
2、 Enter the pattern editing interface, the "function code description" on the right interface introduces the meaning of each function code, and the "function key description" introduces the commonly used shortcut function keys. At this time, you can click the " • " icon to quickly insert the flat stitch code, (or click the " " icon to switch to the function menu and click "Insert 1 stitch" to insert a "flat stitch code 03" at the current position) or click the " ⌫ " icon to quickly delete Flat stitch code, the user can insert the multi-needle flat stitch code as needed. Then use the " △ ▽ ◁ ▷ " icon or click the " ◁▷ ⬥ " key to move the cursor to the value to be modified, and click " ✓ " to modify the function code of the current stitch and X / Y displacement coordinate values
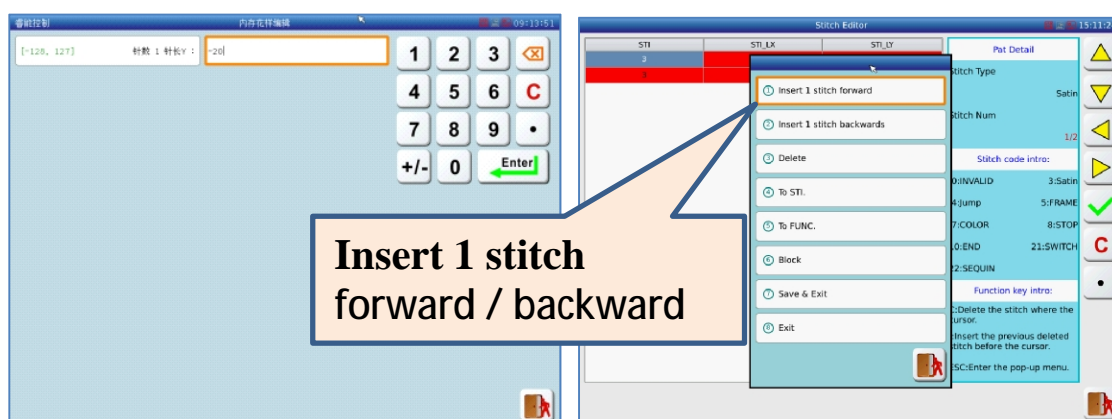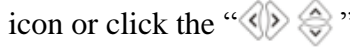
3、 After completing modification, click the " " icon to switch to the function menu, then click "Save and Exit", the system will pop out the "Please enter the pattern number" dialog box, and automatically provides the smallest available pattern number and "P-EDIT"Pattern name, if you do not need to modify the pattern number, you can click the " Enter " icon directly, and the system will save the newly edited pattern with this pattern number and the system default "P-EDIT" pattern name. This function is suitable for editing some simple Open positioning lines, but not for editing complex patterns.

13-2 Edit Existing Patterns in Memory

1、 Enter the " Pattern Memory Menu " interface, select the pattern you want to edit, click "Other Functions" and then click the " Pattern Memory editing " item, the system pops out the "Whether to create a new pattern" dialog box. Click the " ✕ " icon to edit the selected memory pattern.   (Operation Index: A9-P0-U6-W1)
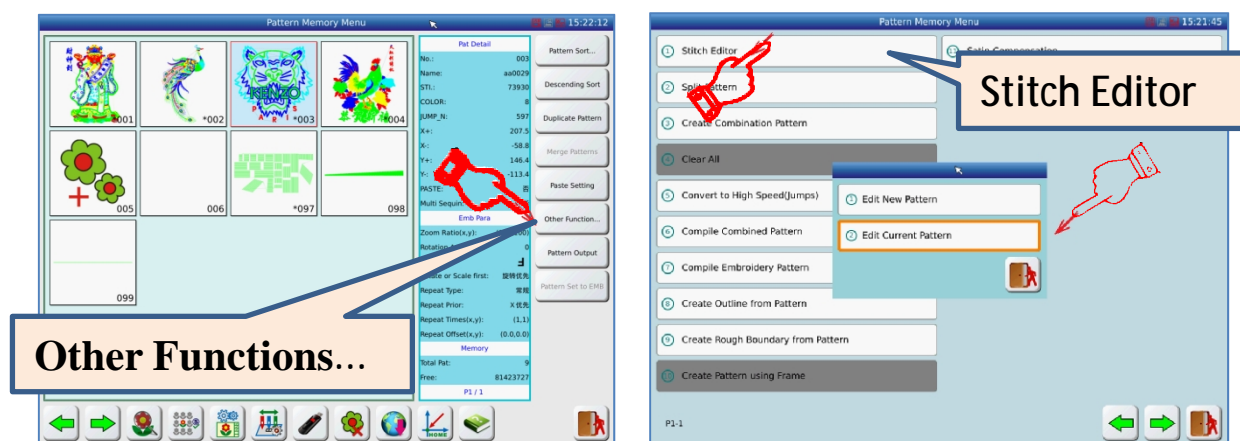
2、 After entering the editing interface, use the " △ ▽ ◁ ▷ " icon or click the " ⟨|⟩ ⟨|⟩ " key to move the cursor to the value to be edited, and click the " ✓ " icon to modify the relevant function code or X / Y coordinates. After completing modification, click the " " icon to switch to the function menu, then click "Save and Exit" so that you can complete a editing and modification to the original pattern. This function is suitable for deleting redundant stitches or stitch codes of the original pattern, adding and modifying some stitches or stitch

codes, and adding color-changing codes.
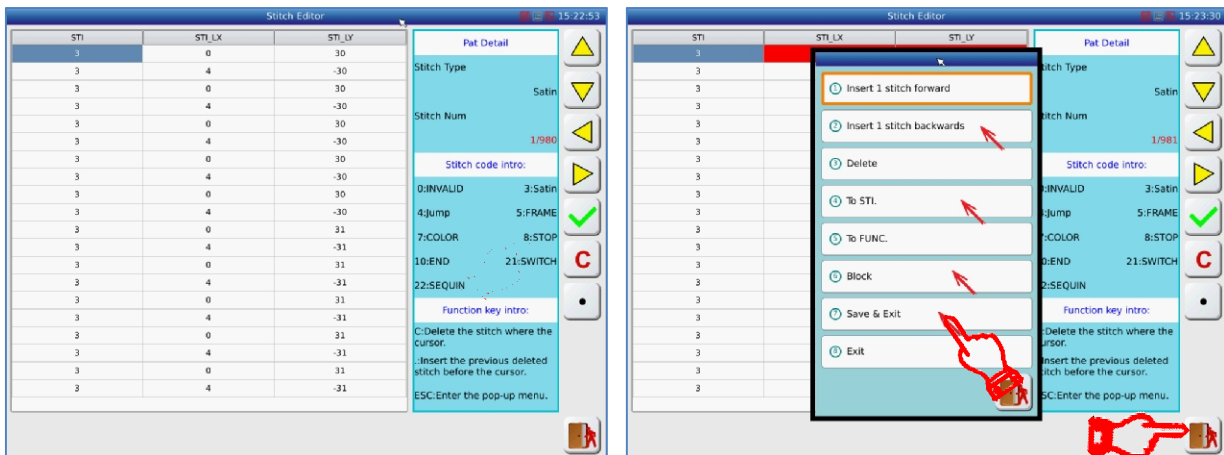
3、If you want to abandon the editing without saving the pattern during editing, you should click the " " icon to switch to the function menu, and click the "Exit" icon to abandon the editing without saving the pattern.

Note: If the selected editing pattern is "combined pattern", the combined pattern in the memory cannot be found in the editing interface. You must first convert the combined pattern to a basic pattern before you can edit this combined pattern. You need to enter the "Other Functions" under " Pattern Memory Menu " and then click "Generate Basic Pattern from Combined Pattern" menu for switching .

13-3 Positioning Needle and Block Operation

1、In pattern editing, we can use the function menu to quickly find a stitch. When you want to edit a certain stitch, you can click the " " icon to switch to the function menu, and click "To Which Stitch" to input the specific stitch number, then you can locate this stitch for editing. You can also use "Find the next function code" to quickly locate a function code.
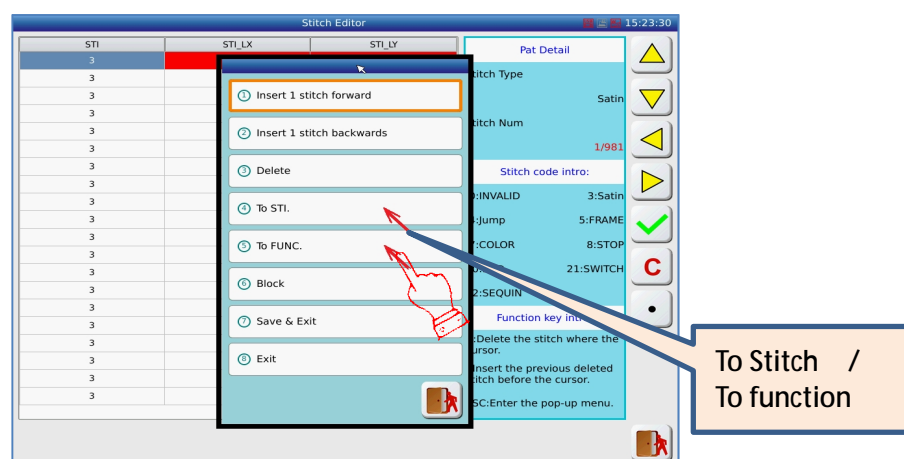
2、We can also use the "Block Operation" menu in the function menu to define a block of a pattern, and to copy, delete and move the entire block. The specific method is: first move the cursor to the first needle of the block to be defined, click the " " icon to switch to the function menu, click "Block Operation", and then click "Block Header Definition", the block head is now defined , And the first needle position of the block has a yellow shading. Then find the end needle of the block, enter the "block operation" menu, click "end of block

definition", the end of the block is also defined, so that the entire block is defined, and the entire block has a yellow shading.
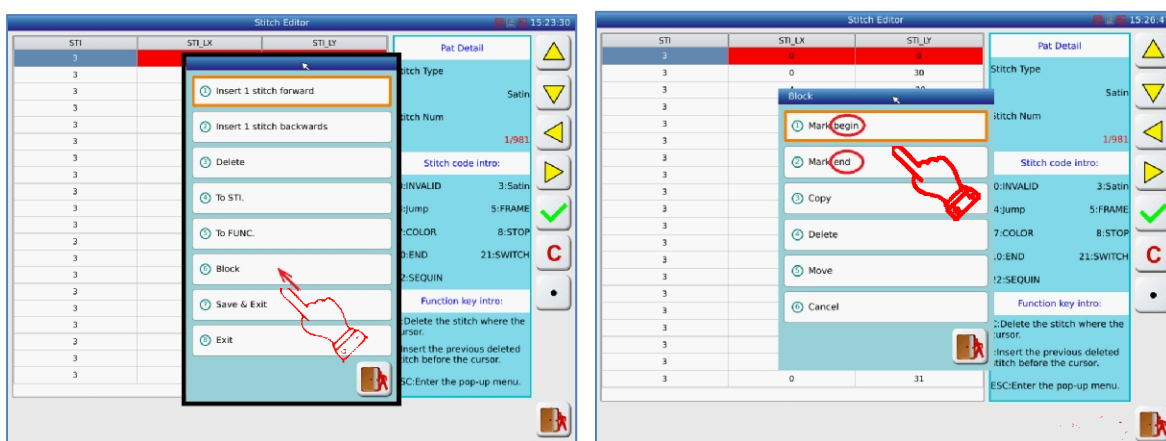
3、After the block is defined, you can enter the "Block Operation" menu and click "Block Delete" to delete the block directly. You can also move or copy this block to the back of a certain needle position. First, move the cursor to the position of the needle to be copied or moved, and then enter the "Block Operation" menu, and click "Block Copy" or " block move" to finish operation .   (Operation Index: A9-P0-U6-W1)

Note: After any operation of pattern memory editing is completed, you must click the " " icon to switch to the function menu, and click "Save and Exit". Only in this way can the previous edits or modifications be saved.

Save and Exit
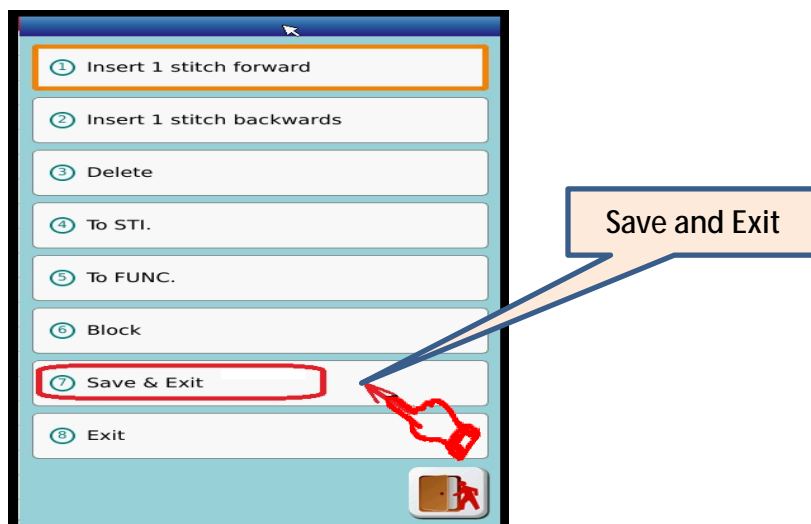
Chapter 14 Operation of Special Patterns

14-1 Convert to High Speed Pattern

With this function, those long stitch length forms greater than 5mm (system default) can be cut to short ones, which will keep the embroidery speed at a high level. The specific operations are as follows:
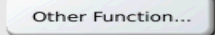
As Operation Index: A9-P0-U6-W5 , click the " 🎨 " to enter the "Pattern Memory Menu", then select the high-speed pattern to be generated by using the " ⬅️➡️ " icon or" ⬙ "key or click directly. Click the " Other Function... " icon, and click the "Convert to High Speed" item, then the system will pop up the "Please enter the pattern number" dialog box, and automatically provides the smallest available pattern number and the pattern name "P-HSPEED", if no modification is required, click the " Enter " icon directly and the system will save this high-speed pattern with this pattern number and system default "P-HSPEED" pattern name.

⚠️ (**Note:** The customer should perform high-speed pattern generation operations according to the actual craftwork requirements of the embroidery. Please operate carefully with patterns that do not meet the craftwork requirements. Performing this operation at will may affect the embroidery process and cause losses.)

14-2 Compile Combined Pattern

As can be seen from the introduction of "Combined Pattern Editing" in Section 11-8 in the previous section, the "combined pattern" generated by this system is just a set of multi-pattern and multi-parameter combination information files, which can only be embroidered through the analysis of this system. If you want to transfer embroidery on other brands of machines, you must generate a readable standard basic pattern. This function is to provide the operation of generating basic patterns from combined patterns. The specific operations are as follows:
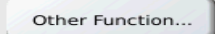
1、As Operation Index: A9-P0-U6-W6 , click the " 🎨 " to enter the "Pattern Memory Menu", then select the combination pattern to be generated by using the " ⬅️➡️ " icon or" ⬙ "key or click directly. (Note: The combination pattern cannot be displayed in advance. To select a combination pattern, you must remember the pattern number of the combination pattern

embroidered previously) Then click " [Other Function...] " icon to choose the "Compile Combined Pattern" menu, and the system pops out the "Please enter the pattern number" dialog box and automatically provides the smallest available pattern number and the pattern name named "P-NORMAL". If no modification is required, click " [Enter] " icon directly, the system will save this combination basic pattern with this pattern number and the system default "P-NORMAL" pattern name. After saving, the system will automatically jump to the "Memory Pattern Management" interface.

2、If you want to continue to generate the basic pattern, re-select a new combination pattern. If you want to quit, click " [icon] " to exit.

3、After the basic pattern is generated from the combination pattern, we can enter the "Memory Pattern Management" screen to see the basic pattern in the memory.

14-3 Compile Embroidery Pattern

This operation is to generate a pattern with related embroidery parameters stored in the system memory into a basic pattern with changes such as enlargement, rotation, and repetition. Therefore, this operation is only generated when the amount of changes such as enlargement, rotation, and repetition is set. The pattern is different from the original pattern, so it has practical significance. The specific operations are as follows:

1、As Operation Index: A9-P0-U6-W7 , click the " [icon] " to enter the "Pattern Memory Menu", then select the pattern to be operated by using the " [←][→] " icon or" [icon] "key or click directly. After clicking the " [Other Function...] " icon, select the "Compile Embroidery Pattern" menu and the system pops out the "Please enter the pattern number" dialog box and automatically provides the smallest available pattern number and the pattern name named "P-PARAME". If no modification is required, click " [Enter] " directly to confirm and the system pops up the "embroidery parameter setting" interface. The user needs to check the previously set embroidery parameters. If no modification is required, click " [✓] " icon, the system saves the current parameters by default. If you need to modify, click " [icon] "key or click the relevant parameters to modify, click " [✓] " icon to confirm after modification. The system automatically saves the current setting parameters and jumps back to the " Pattern Memory Menu " interface.
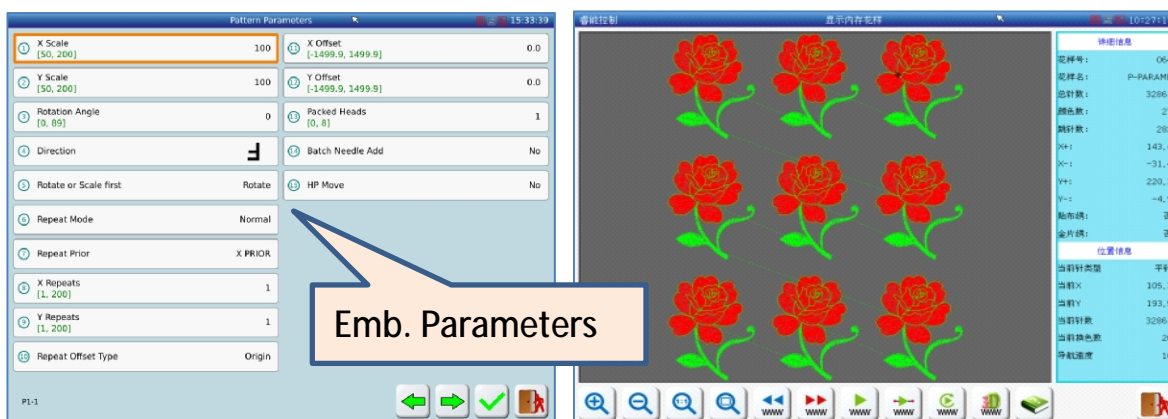
Emb. Parameters

2、The system will save the basic pattern generated by the embroidery parameters with this pattern number and the system default "P-PARAME" pattern name. If you continue to generate the basic pattern, repeat the above operation, if you want to exit, click the " 🔖 " icon.

14-4 Create Outline from Pattern

This function is to create a new pattern according to the outline of the patternated pattern. If the original pattern is enlarged, rotated and repeated, the outline pattern is also enlarged, rotated and repeated accordingly. The specific operations are as follows:

1、As Operation Index: A9-P0-U6-W8 , click the " 🔢 " to enter the "Pattern Memory Menu", then find the pattern that need to generate outline by using the " ⬅️➡️ " icon or" ⬦ "key or click directly. Click the " Other Function... " icon and click "Create outline from Pattern" item, the system will pop up the "Saving in memory location" and automatically provide a default pattern number and a default pattern name called "P-OUTLIN". If no modification is required, click " Enter " icon to confirm and the system pops up the "embroidery parameter setting" interface, and user needs to check the embroidery parameters that have been set previously. If any modification is required, click " ⬦ "key or click the relevant parameters directly to modify, if not, click " ✓ " to confirm. The system automatically saves the current setting parameters and jumps back to the " Pattern Memory Menu " interface.

2、The system will save the basic pattern outline generated by the embroidery parameters with this pattern number and the system default "P-OUTLIN" pattern name. If you continue to generate the pattern outline, repeat the above operation, if you want to exit, click the " 🔖 " icon.

"Create outline from Pattern" & its result.
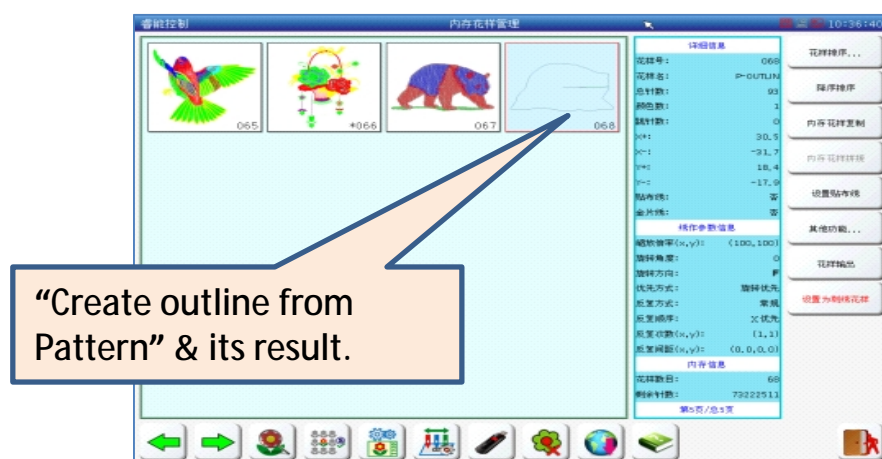
14-5 Create Rough Boundary from Pattern

This function is to create a rough boundary with a start-up point and a cross line according to the outline of the patternated pattern. If the pattern is enlarged, rotated and repeated, the new pattern is enlarged, rotated and repeated accordingly. The specific operations are as follows:

1、As Operation Index: A9-P0-U6-W9 , click the " 🔢 " to enter the "Pattern Memory Menu",

then find the pattern to be bordered by using the " ⬅ ➡ " icon or " ⬦ " key or click directly. Click " Other Function... " icon and select the "Create Rough Boundary From Pattern" menu, the system pops out the "Please enter the pattern number" dialog box, and automatically provides the smallest available pattern number and the pattern name named "P-BOUND", if no modification is required, click " Enter " icon directly.

Other Function...

Getin "Create Rough Boundary From Pattern" menu, & Input dialog

2、Then the system jumps out the "Pattern Parameters" screen to check the previously set embroidery parameters. If you need to modify it, click " ⬦ " key or click the related parameter to do the modification. If you do not need to modify, click " ✓ " to confirm. The system automatically saves the current setting parameters and jumps back to the " Pattern Memory Menu " interface. And the system will save the pattern border with this pattern number and the system default "P-BOUND" pattern name. If you continue to generate a rough boundary, repeat the above operation. If you want to exit, click the " 🚪 " icon.

"Create Rough Boundary from Pattern" & its result.

（**Note:** If the original pattern is a repetition pattern or a combination pattern, the generated pattern border will generate the corresponding multiple rough boundaries based on the border of a single pattern.）

Chapter 15 Initializing System Parameters

During the embroidery process, if the embroidery machine is strongly interfered by the power grid and peripheral equipment, that may causing some data or embroidery parameters stored in the system shifting into an illegal state, and the system program may also enter an illegal interlock state, at this time the program cannot operate correctly and reliably, and this situation cannot be removed after power off and restart. At this time, the interlocking state can be released by manual intervention, and the solution is to initialize system.

⚠ **Note**: After the system parameters are initialized, "Thread break detect of machine head", "frame parameter", "main shaft related parameter", "trim parameter", "embroidery assistant parameter", "closed-loop color change parameter", "frame origin setting for sudden power-off" , "sequin Parameters" and "Special Embroidery Parameters" will be restored to the default factory settings, so the relevant parameters should be recorded before initialization. Please reset it after initialization, otherwise it may cause some functions lost or embroidery process not meeting requirements.

The operation of "Initialize System" is to restore a series of embroidery-related parameters in the embroidery system to the factory default values, and must be operated in the embroidery released state. The specific operations are as follows:

1、As Index A10-P12-U11, Click the "👍" icon to enter the auxiliary function menu, Get into Initialize System menu and the system prompts out a dialog window asking "Return Parameters and Memory to Factory Setting?", click "✔" to confirm. The system will enter the initialization state at this time. When the initialization is completed, the system jumps out the "Operate Successfully, please restart!" prompt. Then the whole machine should be powered off and powered on again.
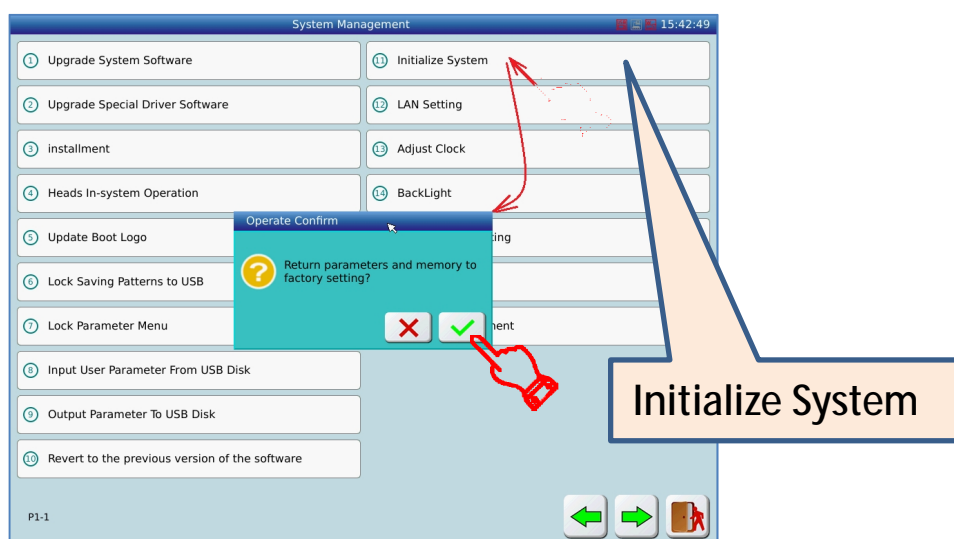
Chapter16 Jogging Operation of Main Shaft

⚠ Warning: This operation involves the rotation of the machine shaft. Pay attention to the safety!

16-1 Main Shaft Jogging Operation

The embroidery machine sometimes needs to make a slow motion or require automatic rotation to 100°.Main shaft up operation can be used to meet these requirements. The specific operations are as follows: （Operation Index: A5-P1）
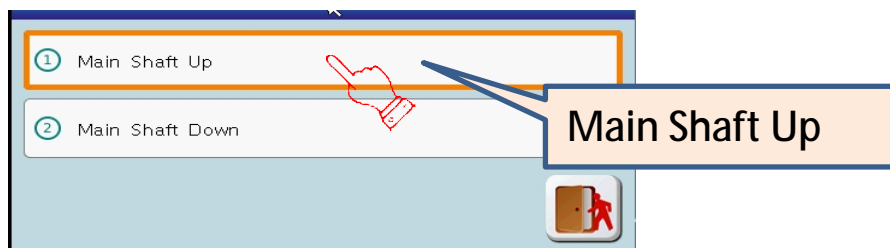
Click the " [100] " icon, the system jumps out the inching operation menu, as shown below:

Click" ① Main Shaft Up" icon at this time and the main shaft will move slowly one turn and stop at the 100°

16-2 Main Shaft Down Operation

This function is used to change the cloth for large format batch embroidery. It slows down the main shaft, the main shaft down below the cloth surface and stops and the position of the embroidery cloth will be fixed. Once the cloth is fixed, staff can remove the embroidery bead, and then move the frame back to the appropriate position to re-fix the embroidery, so that they can continue to embroider unfinished patterns from the current position. The specific operations are as follows: （Operation Index: A5-P2）

1、Click the " [100] " icon to enter the Main Shaft Up operation menu, click the " ⬦ " key to move the cursor to the " Main Shaft Down Operation " item or click the item manually.At this time the main shaft moves slowly, and the needle is inserted downward into the embroidery. (Please pay attention to personnel safety) After the needle stops, the system returns to the main function screen;

2、When main shaft down, the embroidery bead can be released. At this time, the frame move key is open for use. Click the " ◁▷ ⬦ " icon to move the frame, once the frame reaches proper position, the embroidery cloth can be re-tightened.

3、After the main shaft down, the system returns to the main function screen, and the needle is still in the down position. If you want to resume main shaft stop at 100°, use the "Main Shaft Up" function to retract the needle and return the main shaft to 100° (see: 16-1 Operation).

Chapter 17 Moving Frames to Generate Patterns

In the embroidery of clothing, shoes and hats, typesetting is according to the shape of the piece. When the customer arranges the piece, he hopes to embroider an outline mark along the shape of the piece to facilitate the positioning of the cloth during embroidery. The function of moving frame to generate pattern can generate such a pattern along the outer frame of the piece, and then select this pattern to embroider at the position of typesetting to facilitate the positioning of the piece and pattern during embroidery. The specific operations are as follows:

1、In the embroidery released state, move the embroidery frame to the starting point of the piece layout, that is, generate the starting point of the pattern.

2、As Operation Index: A9-P0-U6-W10 , clickClick the " 🔲 " to enter the "Pattern Memory Menu", then click " Other Function... "icon and next click "Create Pattern Using Frames" menu to enter Moving Frames to Generate Patterns editing interface。

3、According to the function prompt at the bottom of the interface, click the " Satin " icon to switch the needle properties (select stain stitch or jump stitch).Click the " 🖼 " icon, use the number icon to modify the needle length value and click the " Enter " icon to confirm, then click " ◁▷ ◈ " key to make the embroidery frame advance along the path of the outer shape of the piece; and at each inflection point, click the " 🗒 " icon to confirm the track. (Note: This frame-shifting pattern is only suitable for the flower shape with a straight frame. To generate an arc, it is time-consuming and cumbersome, because multiple small straight lines that change the path are used to splice into an arc) .To delete track,click " ⊠ " icon.

4、After editing is complete, click the " 🚶 " icon to exit, then the system will pop up the "Saving in memory location" and automatically provide a default pattern number and a default pattern name called "P-MOVING". If no modification is required, click " Enter " icon , the system will save this pattern with this pattern number and system default "P-MOVING" pattern name and jumps back to the " Pattern Memory Menu " interface.

5、During the operation, click the " 🚶 " icon to abandon the current operation and return to the superior window.

Create Pattern using Frame

Pattern using Frame
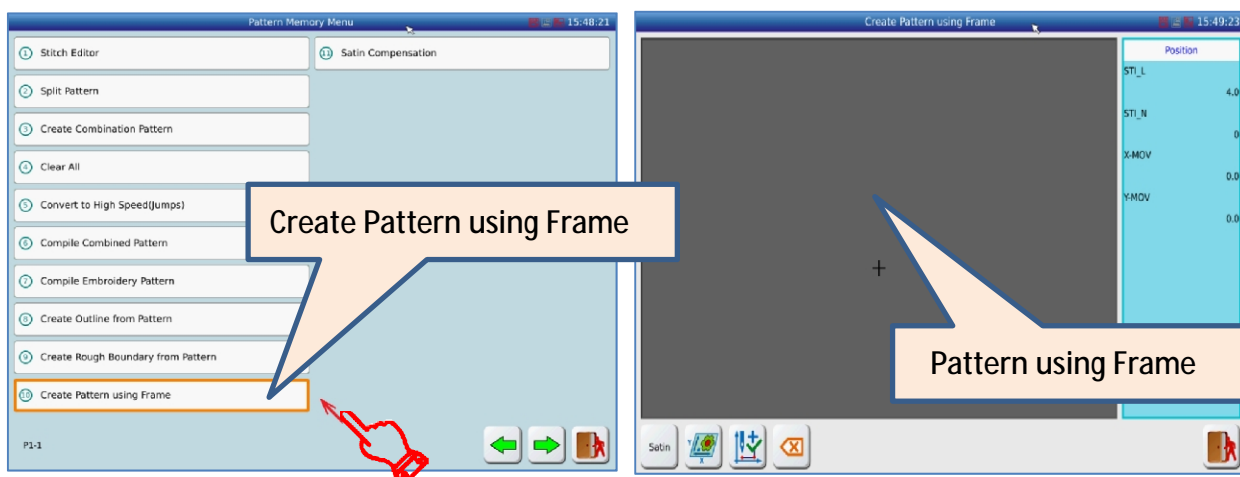
Chapter 18 Cyclic Embroidery Setting

When cyclic embroidery is enabled, after completing the patternated pattern the machine will automatically go back to the start point of the pattern and embroider it again without pulling the bar manually. During the actual embroidery work, cyclic embroidery operation is often used in conjunction with "repetition embroidery" to embroider front and back versions, so that embroiders can collect and spread embroidered fabric without stopping, which greatly improves the efficiency of embroidery

The specific operations are as follows: （Operation Index: A11-P10 ）

1、When the cyclic embroidery is not set, click " " icon to enter the Auxiliary Embroidery Function menu, and click the "Cyclic Embroidery Enable" item and choose "Yes".

2、The system goes back to the main function screen, the machine is set on cyclic embroidery status, at this time the cyclic embroidery icon below the main function screen shows " "

3、When the cyclic embroidery is set, and the user want to shut it down, just go to the Auxiliary Embroidery Function item, and select the "Repeat Embroidery Enable" item and choose "No". In this way, the system closes the cyclic embroidery function and returns to the main interface of embroidery. The cyclic embroidery mark icon below the main interface is displayed as " ".

4、Another shortcut is that in the state of pattern releasing the user click the " " icon at the main function screen directly and shift it to " " icon, this means cyclic embroidery is set, if the user need to cancel cyclic embroidery status, click the " " to shift it into " " icon.

Chapter 19 Lock Saving Patterns to USB

19-1 Set Lock Saving Patterns to USB

This function is to protect the intellectual property of factory embroidery and prevent others from illegally copying the patterns in the system memory. (Stored on the USB flash drive) Once the administrator of the embroidery machine sets the password for the "Lock Saving Patterns to USB" (8-digit password), other people will not be able to perform the operation of "Save to USB" without obtaining the password.The specific operations are as follows:

1、 If "Lock Saving Patterns to USB" is not set, click " 👆 " icon to enter auxiliary function menu then select "Lock Saving Patterns to USB" menu. At this time, the system will pop up "Enter a new password" window. Then use the number keys to set an 8-digit password, and click the " Enter "to confirm.   （ Operation Index.: A10-P12-U6 ｜)

2、 After the first password is confirmed, the system will pop up the "Verify the password" dialog box. At this time, enter the same password as the first input, and click " Enter " to confirm. If the password is set successfully, "Lock Saving Patterns to USB" item displays "Set".

3、 If the password entered for the second time is different from the first input, the system will pop up the dialog box "Passwords do not match. Try again?". If you need to re-enter the password then click " ✓ " and enter the correct password twice again. If you want to give up the input, click the " 🚶 " to exit.

4、 After the password is set, the management personnel should properly keep the password so that it can be used when it is released. If the password is lost or forgotten, it must be handled by the customer service, which will cause inconvenience to the customer.
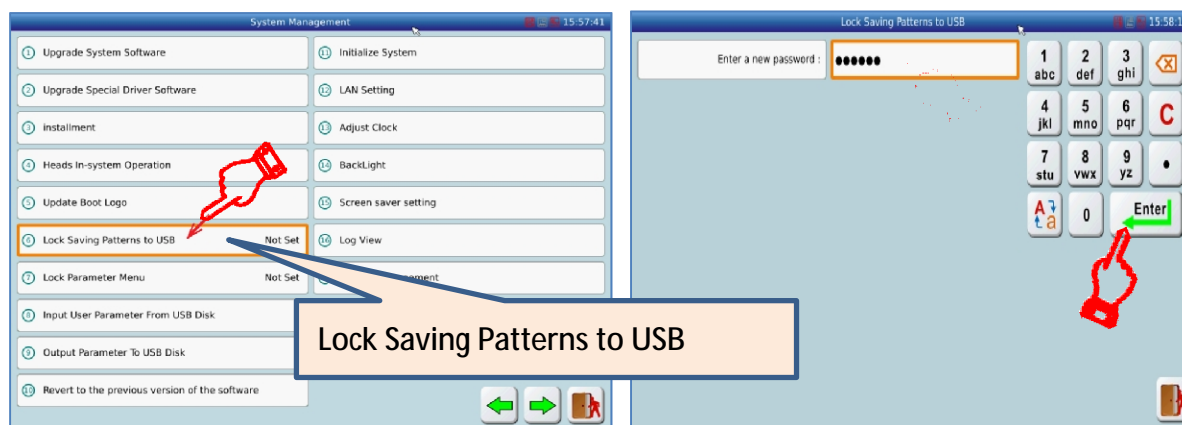
19-2 Release Forbid Pattern Output

If the customer wants to save pattern to USB, the manager must first release the "Forbid Pattern Output" function. After setting the password for "Forbid Pattern Output", repeat the operation of 19-1, input the password that was set last time, click " 🚶 " to exit, and then the prohibition pattern output is cancelled.   （ Operation Index.: A10-P12-U6 ｜)

Chapter 20 Machine Parts Self-Test

⚠ **Note**: This part of the operation is only for professional maintenance personnel. Generally, the embroidery personnel are not involved. This part of the operation involves some mechanical work, so you need to pay attention to personal and equipment safety.

20-1 Test Encoder

This test is to rotate the main shaft one turn by code, and measure the zero pulse (0PL), phase A continuous pulse (APL) and phase B continuous pulse (BPL) of the photoelectric encoder, and display the measured value. （Operation Index: A10-P7-U11 ）
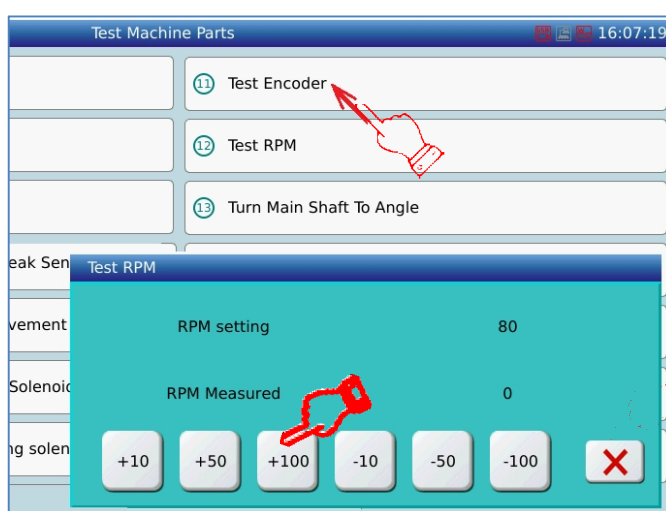
20-2 Test RPM

This test is to make the main shaft rotate according to the set speed, and compare the set speed with the actual measured main shaft speed to facilitate the main shaft debugging. After entering the test RPM, click the " [+10] [+50] [+100] [-10] [-50] [-100] " to decelerate and accelerate the operation of the main shaft. The correctness and stability of the main shaft operation are judged by comparing the set speed displayed on the interface with the measured speed. To exit the test, click the "⬑". （Operation Index: A10-P7-U12 ）

20-3 Test Machine Parts

The component testing of the project includes: Limit Switch, Jump Solenoid, Thread Break Sensor， Frame Movement Test, Trimming Solenoid, Picker, Motor Stop Timing and Thread Lock Test. The test also includes Z swing、 nipple test、 M shaft test of the cord embroidery and Cut Work boring embroidery. （Operation Index: A10-P7--- ）
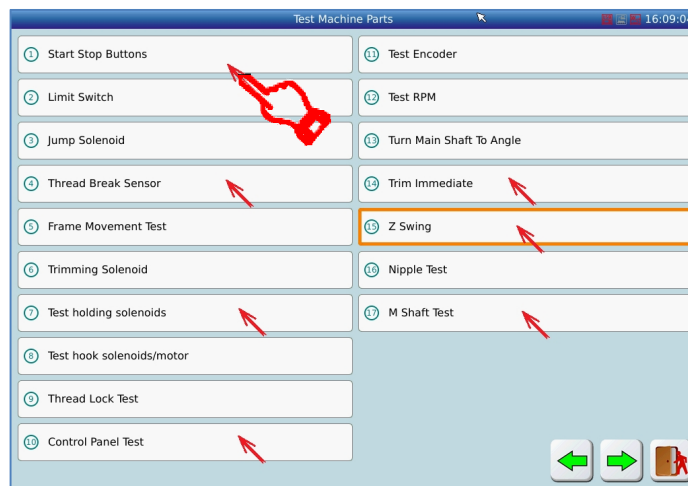
20-4 Turn Main Shaft to Angle

This operation can be used to rotate the main shaft from 100° to any angle by instruction to facilitate the maintenance and commissioning of the machine. After entering the menu, the system prompts "Enter angle in degrees". Use the numeric keys to enter the angle you want to rotate. After clicking the " Enter " the main shaft will rotate to this angle to stop. If you continue to enter other required angles, click the numeric icons to enter the confirmation. To exit the operation, click the " ". （Operation Index: A10-P7-U13）
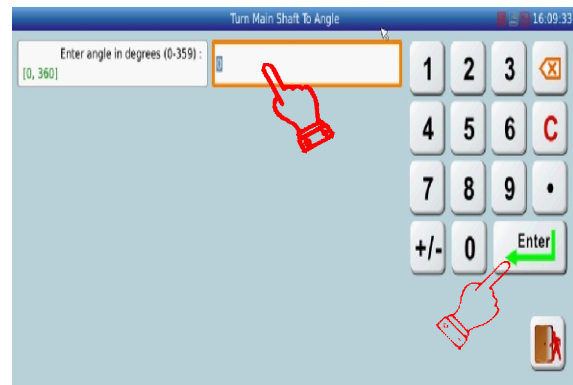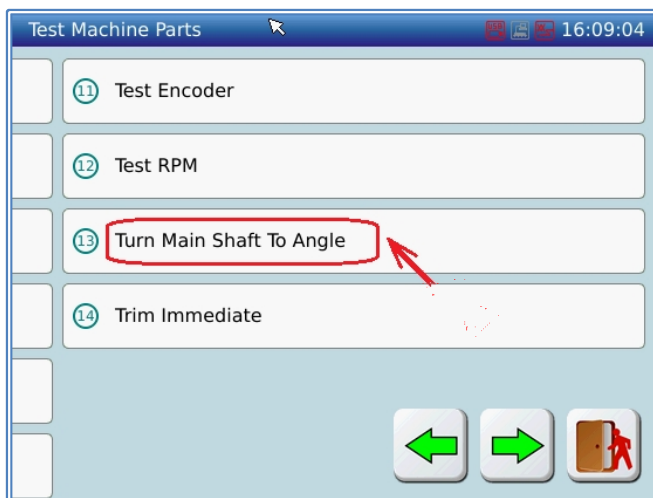
Chapter 21 Sequin Embroidery Operations

The function introduction in this chapter is for the machine that supports and is equipped with sequin embroidery device. In view of the particularity of sequin embroidery operation, please read and understand this chapter carefully before operating sequin embroidery.

21-1 Sequin Parameters Setting

No.	parameter	Description	Default
1	**Auto Start Sequin**	When it is set to "Yes", it will automatically lower the sequin device for sequin embroidery when it encounters sequin embroidery during embroidery; if it is set to "No", it will stop when it encounters sequin embroidery and wait for pulling bar to perform Sequin lift.	**Yes**
2	**Sequin Lift Alone**	Set whether the sequin device of each head is controlled by the same air valve or separate air valves. Set to "Yes" to automatically stop when the mending embroidery ends, then lower the un-mending head device, and then start embroidery; Set to "No" to end the mending embroidery as flat embroidery stop.	**Yes**
3	**Sequin Lift Time**	Set the lifting time of the sequin mechanism. The larger the value, the longer the allowable lifting time. Range 1-400. 400 means waiting about 8 seconds. The machine that the valve lifts is generally set to 35. The machine lifted and lowered by the motor should increase the value of this parameter so that the machine just starts embroidery after the motor is completely lowered.	**35**
4	**Lift Up When T.B.**	Set whether the sequin embroidery device automatically lifts when the thread is broken or the bar is pulled to stop.	**No**
5	**Lift Up When Jump（No Trim）**	When jumpping without trimming, whether the sequin device automatically lifts. It is valid only when the jumpping thread trimming needle is set to " jump（no trim）".	**No**
6	**Air Valve Time**	Set the time before and after the overlapping of the air valve, if it is set to 0, the overlapping air valve will not operate.	**0**

7	Overlap Feeding Step By Step	At present, the embroidery is usually sent in steps.	Yes
8	Customize Overlapping Mode	When "No" is set, the overlapping mode setting will not pop up, and the overlapping mode of the original pattern will be fed during embroidering. When "Yes" is set, it is required to select the overlapping mode when inputting the overlapping needle position, and the overlapping mode is set by the user in the machine for embroidering.	No
9	Needle position of right sequin	Set the stitch position of the right sequin embroidery.	1
10	Right sequin speed limit	The range is 250-1100, which sets the maximum embroidery speed that can be achieved by right sequin embroidery. Note: The maximum speed of flat embroidery should be greater than or equal to the limited speed of sequin embroidery.	400
11	Right sequin angle adjustment	Range -60-60, adjust the feeding angle of the right sequin embroidery, the positive Set Value delaye the action, and the negative Set Value is advance the action.	2
12	Right sequin length A	Range 1-90, set the length of right sequin embroidery A, that is, the swing amplitude of the feed motor.	2
Note: Due to the continuous development of special embroidery devices, the mechanical mechanism will undergo different changes, leading to great changes in control parameters. The above parameters are only for reference. Further attention should be paid to supporting technical specifications			

21-2 Manual Operation of Sequin Embroidery

This operation is only applicable to machines equipped with sequin embroidery device, and the operation is effective only when the current needle position is at the sequin needle position. These manual sequin operations include: "sequin start", "sequin end", and "sequin sent".The specific operations are as follows:

1、Click the " 🧑 " icon to enter the auxiliary embroidery function, and then enter the corresponding menu of "special embroidery operation"

2、After clicking the "Start Sequin Embroidery" item, all the sequin embroidery devices will fall.

3、Click the "Send Sequin" item again, a piece of sequin will be sent out, every time you click on the "Send Sequin" item, all the devices with opened machine head will send out a piece of sequin (the device with closed machine head does not send the sequin) if to exit, click the "![icon]" icon to exit.

4、Click the item "end of sequin", and then click to confirm, all sequin embroidery devices will be lifted, and sequin embroidery will end.

21-3 Sequin Embroidery Length Setting

When selecting sequins with different lengths, the sequin embroidery device should set the length of the sequins correctly, otherwise it may cause the sequins not to be sent out or flying out. The embroiderer should make necessary adjustments after changing the sequins. When adjusting, first ensure that the device is on the sequin needle position. The adjustment method is: manually click the sequin sent button key on the device, and each time you click to send one piece, observe whether the middle hole of the film is consistent with the needle point after the sequin is sent, or whether the center of the two pieces is at the position of the cutter. (You can manually click the cutter to observe whether the cut sequin is normal. If the sequin is not fed in place or the sequin cannot be sent out, you can increase the film length value appropriately. If the sequin is sent too far, you must appropriately reduce the film length value until The film feeding position is normal.

21-4 Patching of Sequin Embroidery

When the sequin embroidery thread breaks, (or when the headlight is artificially turned to red and the bar is retracted to enter the patching state), the sequin embroidery devices of all the machine heads are lifted; after returning to the patching point, pull bar to stop , When the bar is pulled again, the sequin embroidery device of the mending embroidery head will be falled first, and the sequin patching embroidery will start. When the patching embroidery reaches the thread break point, it will stop, and the other sequin embroidery devices with non-patching embroidery heads will automatically fall and enter normal embroidery. the number of stitches for retreating patching embroidery in the machine parameter setting does not work in the patching of sequin embroidery.

Note:	Due to the continuous development of special embroidery devices, the mechanical mechanism will undergo different changes, leading to great changes in control parameters and their operation
	Further attention should be paid to supporting technical specifications

Chapter 22 Cord Embroidery

22-1 Features

1、Cord embroidery (ZIG embroidery) function: This function is to embroider the cord(thread) on the base material according to a specific stitch to form a pattern embroidery. There are two specific stitches pre-stored in the computer, Z4 embroidery and Z5 embroidery. The embroidery icons are as follows:

Z4 embroidery

Z5 embroidery

The characteristic of Z4 embroidery is that the swing bar swings once for each stitch. Z5 embroidery has the same characteristics as Z4 and is suitable for thick rope embroidery. (Used with the parameter " Z frame swing adjust ")

2、The needle position speed limit for flat embroidery and cord embroidery can be set separately.

3、The thread trimming function for cord embroidery (only the bottom thread is trimmed).

4、The taping device automatically lifts the nipple（clicker foot）before moving frame manually, and automatically lowers the nipple（clicker foot）before embroidering.

22-2 Main Specifications

1、The limited range of cord embroidery speed: 400～1000 rpm.

2、M shaft manual/rotation angle: 18°/step.

22-3 Steps of Cord Embroidery

（1）Input the tape embroidery pattern, select, change and edit the pattern as required;

（2）Modify the relevant parameters, select the color-changing order, and choose the cord embroidery method;

（3）Check the needle position of cord embroidery to make sure it is in normal working condition;

（4）After confirming the pattern embroidery, pull the bar for embroidery.

22-4 Related Parameters and Setting Methods

For the machine equipped with cord embroidery device, firstly set the function type of cord embroidery 1 or cord embroidery 2 under "Model Configuration Parameters". If the wrong function type is selected, the cord embroidery device will not work.

The specific settings are as follows:

(1) Click the " " icon to enter the auxiliary function menu, click the "Model Configuration Parameters" item, and then click "System Settings", the system pops out the "Please enter the password" dialog box,.Use the number icon to enter the factory password, and click " "Icon to confirm to enter the "System Settings" interface.

(2) After entering the "System Settings" interface, according to the type of cord embroidery actually installed on the machine, click "cord Embroidery 1 Function Type" or "cord Embroidery 2 Function Type" to select the type of cord embroidery.

(3) " cord embroidery 1 function type" represents the type of the first tape embroidery device, which can be installed on either the first stitch or the last stitch.

(4) "cord embroidery 2 function type" represents the type of the second tape embroidery device, which can also be installed on the first stitch or the last stitch.

(5) Z embroidery swing bar swing: 40 (default value), this value is the coordinate angle of the tape embroidery when the wheel turns. If the line is thrown, reducing this value to adjust. Generally, it is recommended Not less than 80.

(6) Speciality rev max.:600 (default value). The maximum speed can be set to 1000 rpm, which should be set according to the actual capacity of the machine.

(7) **Z pole swing:** the embroidery frame can be adjusted to compensate for the scope of embroidery (recommended for advanced users) .

(8) **Z pole position**: the default value is "right". That is, the first needle position .It also can also be set to the "left" end needle position, which is set according to the actual device installation.

(9) **Z start angle**: The default value is "0". It refers to the setting value of the angle between the direction of the mechanical origin of the cord embroidery device and the threading point. Angle value=parameter value*0.9, for example, the parameter value is 30, the angle value=30*0.9=27°.

22-5 Some Related Operations of Cord Embroidery

∩　　　　Switching between flat embroidery needle positions and tape embroidery needle positions

（1）、**Manual switch**

In the manual color-changing state, (Note: when the color-changing state icon displays: , in the non-manual color-changing state, the switching operation is invalid) Click the needle number corresponding to the special embroidery head, and the system will pop up "Flat embroidery head and special embroidery head "Switch between" interface, as shown below:

In the pop-up dialog box, click on a certain method "Flat Embroidery" or "Special Embroidery" to easily switch between "Flat Embroidery" or "Special Embroidery". If you don't switch, click the " " icon to exit.

（2）、**Automatic switching**

When setting the color-changingorder before embroidery confirmation, by setting the color-changing needle position and selecting the corresponding flat embroidery or special embroidery method, the automatic switching between "flat embroidery" or "special embroidery" can be realized. The specific operations are as follows:

Click the " " icon in the main embroidery interface to enter the "manual color change" setting interface, click "Set All Color" to enter the color change color order setting interface, when we select "special embroidery head stitch number" (example: 1# Needle or 9# needle), in the pop-up dialog box, click on a certain method "flat embroidery" or "special embroidery", and you can easily switch between "flat embroidery" or "special embroidery". If you don't switch, click the " " icon to exit. After confirming the setting of the special embroidery mode, the system returns to the "Set All Color" interface. After setting the color order, click the " " icon to confirm, the system will automatically save the settings and return to the main interface as shown in the figure below. If you abandon the modification before confirming, click the " " icon to exit.

Note: If the "manual color change" mode is selected for the special embroidery needle position, it means that the operator should manually switch between "flat embroidery head" and "special embroidery head" when embroidering the color order, so it is used for setting The setting of manual color change during the automatic switching state is still valid.

After confirming the special embroidery mode and setting the color-changing order, the system will be in embroidery. According to the setting of the color-changing order, there will be a switch between flat embroidery head to special embroidery head. When switching from a special embroidery head to a flat embroidery head, when the embroidery of the special embroidery head is finished, the machine will automatically stop at the end point, and the system will prompt the special embroidery pause dialog box. After waiting for the tape cutting process to be completed, the user pulls the bar Or click "any key" to close the special embroidery pause window, and the machine will automatically switch to the flat embroidery head, and continue working according to the functions of flat embroidery.

When switching from the flat embroidery head to the special embroidery head, after automatically switching to the 1# needle position (special embroidery head), the machine will automatically stop and wait for the tape to be ready before pulling the bar to continue embroidery.

∩ M Shaft Operation of cord Embroidery

The M shaft operation of cord embroidery mainly includes "M shaft jogging", "M shaft manual", "M shaft back to working point ",.Click the " 🧑‍🦽 " icon to enter the "auxiliary embroidery function" menu, and then click "special embroidery operation" "Menu, the operation interface is as shown in the figure below, which includes the menus of "M shaft jog", "M shaft manual", "M shaft back to working point ".

(1) M shaft jogging

Click the menu " M shaft jogging ", the M shaft will rotate and stop at the "zero position" of the M shaft, and click the " 🔲 " icon to exit the operation.

(2) M shaft manual

Click the "M shaft manual" menu, the system pops out the "M shaft manual" dialog box, then click the " ⬙ " key to rotate the M shaft to the left.Click once to rotate the M shaft 18 degrees to the left, and click 20 times to make the M shaft turn around to the origin; click the " ◁▷ " key, the M shaft will rotate to the right, and each click will rotate 18 degrees to the right, and 20 times the M shaft turn around to the origin; click the " ✕ " and " ▯ " icons to exit the operation.

(3) M shaft back to working point

Click the menu item "M shaft back to working point", the M shaft will rotate to return to the working point, and click the " ▯ " icon to exit the operation.

> **Note:** **Due to the continuous development of special embroidery devices, the mechanical mechanism will undergo different changes, leading to great changes in control parameters and their operation**
>
> **Further attention should be paid to supporting technical specifications**

Chapter 23 Further Special Embroidery

> **Note: Due to the continuous development of special embroidery devices, the mechanical mechanism will undergo different changes, leading to great changes in control parameters and their operation**
>
> **Further attention should be paid to supporting technical specifications**

23-1 Introduction to Several Functions

Special embroidery described here includes: winding embroidery, cord embroidery, and zigzag embroidery. For the convenience of description, the following will collectively refer to winding embroidery, cord embroidery, and zigzag embroidery as special embroidery.

1、 Winding embroidery function: This function is to embroider the pattern material after wrapping the thread around the cord thread. The winding embroidery function is divided into two directions: left winding embroidery (clockwise winding) and right winding embroidery (counterclockwise winding). The winding direction can be selected by machine parameters.

2、 cord embroidery function: This function uses rope, belt, etc. as pattern materials for embroidery. It includes cord embroidery 1 and cord embroidery 2 (blind embroidery).

3、Zigzag embroidery (ZIG embroidery) function: This function is to embroider the core thread on the base material according to a specific stitch to form a pattern embroidery. There are six specific stitches pre-stored in the computer, Z1 embroidery, Z2 embroidery, Z3 embroidery, Z4 embroidery, Z5 embroidery, and Z6 embroidery. The embroidery icons are as follows:

Z1 绣   Z2 绣   Z3 绣   Z4 绣   Z5 绣   Z6 绣

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

5、 The winding embroidery function, cord embroidery function and zigzag embroidery function can be switched at will.

6、 The special head clicker foot is automatically lifted and lowered (this function is only applicable to machines equipped with supporting mechanical devices)

7、The speed limit of flat embroidery head and that of special head can be set separately.

8、 Memory of M-shaft stop point in case of power failure: M shaft automatically returns to the working point after power-on.

9、Special head thread trimming function (no trimming\cutting the lower thread\cutting the lower thread and higher threading).

10、The special head automatically lift the clicker foot before manually moving the frame, and the clicker foot is automatically lowered before the special head embroiders.

11、Manual test function of zigzag embroidery swing bar.

23-2 Some Main Technical Specifications

1、Needle position order of flat embroidery head and special embroidery head: This electronic control defaults that the first needle position is the special embroidery, and the needle positions from the second needle position to the back are all flat embroidery .

2、The limited speed range of special embroidery: 300～600 rpm, the unit is 10 rpm.

3、M shaft manual/rotation angle: 18°/step.

23-3 Special Embroidery Working Steps

（1）Input special embroidery patterns, select, change and edit patterns according to needs.

（2）Modify the relevant parameters, select the color-changing order, and choose the special embroidery mode;

（3）Check the special embroidery machine head to make sure it is in normal working condition;

（4）pull the bar for embroidery.

23-4 Related Parameters Setting for Special Embroidery

Click the " 👆 " icon to enter the auxiliary function menu ,Click"special embroidery parameters" icon under P2-1 to enter the "special embroidery parameters" setting interface, and then click ① related parameters of cord embroidery 1 or ② related parameters of cord embroidery 2 to set, the specific instructions are as follows:

No.	Parameter	Description	Default
1	**Cording needle NO.**	Set the needle position for cord embroidery. When it is set to 0, it is invalid, that is, there is no cord embroidery function.	**0**
2	**Speciality head interval**	Set the distance between the special embroidery head and the flat embroidery head, and set it according to the actual machine situation. (Unit: mm).	**250**

3	**Speciality work mode**	Choose special embroidery methods, including: flat embroidery; folding embroidery; Z6 embroidery; Z5 embroidery; Z4 embroidery; Z3 embroidery; Z2 embroidery; Z1 embroidery; belt embroidery 1; belt embroidery 2; left coil embroidery; right coil embroidery .Select according to the actual device situation and process.	**flat embroidery**
4	**Speciality rev min.**	The range is 200-400, and it sets the minimum speed of the M shaft when the speed drops.	**250**
5	**Speciality rev max.**	Range 600-1000, set the maximum speed allowed for special embroidery, default value: 600, the maximum speed can be set to 1000 rpm, the manufacturer sets it according to the actual operating capacity of the machine.	**600**
6	**Speciality rev fall proportion**	The range is 1-10. This parameter is used to set the speed of main shaft's speed reduction when the M shaft rotation angle is greater than the set switching angle. The larger the value, the faster the speed reduction.	**2**
7	**Speciality rev switch angle**	The range is 1-180. This parameter sets the minimum rotation angle of M-axis to be decelerated.	**170**
8	**Speciality trimming type**	Set the thread trimming method for special embroidery. (There are three ways: cut the bottom thread; cut the upper thread; do not cut the thread)	**cut the bottom thread**
9	**Coil proportion**	Range 1-4, This parameter can change the density of coil embroidery; It refers to the number of stitches wound in one circle	**1**
10	**Speciality M shaft angle adj.**	Range 0-90, there is a mechanical backlash in the M shaft of special heads. When embroidering flat belts, if the belt is twisted, the angle of the M shaft is not compensated at this time, then at the turning point ,the needle is tied on the side, rather than tied in the middle of the belt, which affect the effect of embroidery. When debugging the machine, the needle bar is tied in the middle of the sling, so this parameter should be set to "0"; when the needle bar is tied to the side of the flat belts, this parameter should be adjusted repeatedly until the embroidery effect is the best. This parameter is generally debugged and used by specialized technicians when the machine leaves the factory.	**0**

11	Speciality M shaft retreat angle	Range 0-180, set the position of M shaft when switching to flat embroidery, if this parameter is set to 0°, the M shaft stops at the horizontal position; if this parameter is set to 90°, the M shaft stops at the vertical position. When the distance between the flat embroidery head and the special head is relatively small, this parameter must be set to 90°to prevent the M shaft machine from colliding with the flat embroidery head.	0
12	M shaft rotate after back	Set whether the M shaft will follow the rotation when the bar is retracted.	Yes
13	M shaft return after stop	Set whether the M shaft returns to the origin after the bar is pulled to stop.	Yes
14	M shaft return after T.B. stop	Set whether the M shaft returns to the origin after the tread broken stop.	Yes
15	M shaft return after coloring	Set whether the M axis returns to the origin after the disconnection and color change.	Yes
16	Cord auto start	Whether to automatically start embroidery when switching to cord embroidery.	No
17	Z clicker bar height	The range is 0-100. The working height of the clicker foot refers to the height of the clicker foot for each stitch.	10
18	Z height limit	The range is 0-250. The limit height of the clicker foot refers to the maximum height that the clicker foot can lift.	100
19	Z pole swing	The range is 0-160. The larger the value, the greater the swing amplitude, which should be within the mechanical limit, otherwise the motor will lose step.	40
20	Z frame swing adjust	Range 0-9, this parameter is used for Z5 embroidery mode, suitable for thick rope; for thick rope embroidery, Z5 embroidery mode compensates for the lack of swing bar's swing by the swing of the frame.	1.0
21	Z pole position	The origin position of the pole refers to whether the pole is at the left or right side of the machine head when the M shaft is at the origin. The setting of this parameter must be consistent with the mechanical position.	right
22	Z start angle	Range -359-359, the angle of the swing bar when Z embroidery is started.	0

23	Z switch angle	The range is 0-359.	0

23-5 Some Related Operations for Special Embroidery

∨ Switching between flat embroidery head and special embroidery head

（1）、Manual switch

In the manual color-changing state, (Note: when the color-changing state icon displays: 📧, in the non-manual color-changing state, the switching operation is invalid) Click the needle number corresponding to the special embroidery head, and the system will pop up "Flat embroidery head and special embroidery head "Switch between" interface, as shown below:
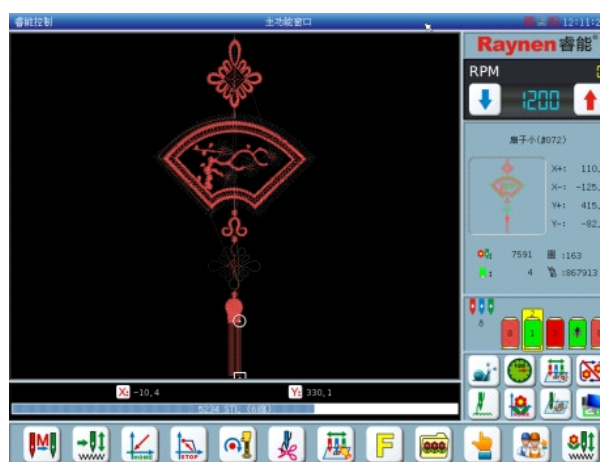
In the pop-up dialog box, click on a certain method "Flat Embroidery" or "Special Embroidery" to easily switch between "Flat Embroidery" or "Special Embroidery". If you don't switch, click the " 📕 " icon to exit.

The icons are defined as follows:

Left coil emb. 🔧 (clockwise winding)、 Right coil emb. 🔧 (counterclockwise winding)、

Cord emb. 1 🔧 、 Cord emb. 2 🔧

🔧1	🔧2	🔧3	🔧4	🔧5	🔧6
Z1 emb.	Z2 emb.	Z3 emb.	Z4 emb.	Z5 emb.	Z6 emb.

（2）、Automatic switching

When setting the color-changingorder before embroidery confirmation, by setting the color-changing needle position and selecting the corresponding flat embroidery or special embroidery method, the automatic switching between "flat embroidery" or "special embroidery" can be realized. The specific operations are as follows:

Click the " " icon in the main embroidery interface to enter the "manual color change" setting interface, click "Set All Color" to enter the color change color order setting interface, when we select "special embroidery head stitch number" (example: 1# Needle or 9# needle), in the pop-up dialog box, click on a certain method "flat embroidery" or "special embroidery", and you can easily switch between "flat embroidery" or "special embroidery". If you don't switch, click the " " icon to exit. After confirming the setting of the special embroidery mode, the system returns to the "Set All Color" interface. After setting the color order, click the " " icon to confirm, the system will automatically save the settings and return to the main interface as shown in the figure below. If you abandon the modification before confirming, click the " " icon to exit.

Note: If the "manual color change" mode is selected for the special embroidery needle position, it means that the operator should manually switch between "flat embroidery head" and "special embroidery head" when embroidering the color order, so it is used for setting The setting of manual color change during the automatic switching state is still valid.

After confirming the special embroidery mode and setting the color-changing order, the system will be in embroidery. According to the setting of the color-changing order, there will be a switch between flat embroidery head to special embroidery head. When swi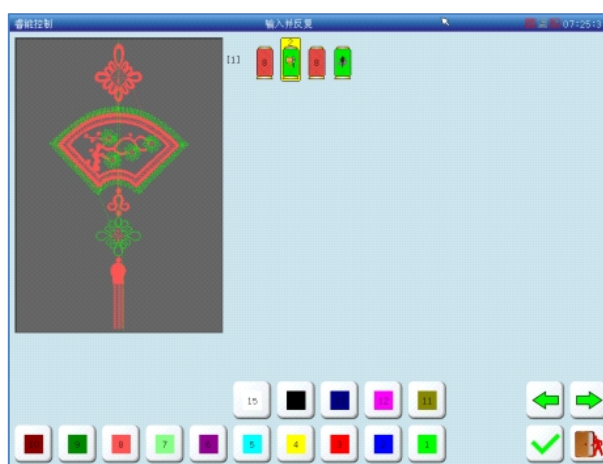tching from a special embroidery head to a flat embroidery head, when the embroidery of the special embroidery head is finished, the machine will automatically stop at the end point, and the system will prompt the special embroidery pause dialog box. After waiting for the tape cutting process to be completed, the user pulls the bar Or click "any key" to close the special embroidery pause window, and the machine will automatically switch to the flat embroidery head, and continue working according to the functions of flat embroidery.

When switching from the flat embroidery head to the special embroidery head, after automatically switching to the 1# needle position (special embroidery head), the machine will automatically stop and wait for the tape to be ready before pulling the bar to continue embroidery.

∨ M shaft operation of cord embroidery

The M shaft operation of cord embroidery mainly includes "M shaft jogging", "M shaft manual", "M shaft back to working point ",.Click the " " icon to enter the "auxiliary embroidery function" menu, and then click "special embroidery operation" "Menu, the operation interface is as shown in the figure below, which includes the menus of "M shaft jog", "M shaft manual", "M shaft back to working point ".

(1) M shaft jogging

Click the menu " M shaft jogging ", the M shaft will rotate and stop at the "zero position" of the M shaft, and click the " " icon to exit the operation.

(2) M shaft manual

Click the "M shaft manual" menu, the system pops out the "M shaft manual" dialog box, then click the " " key to rotate the M shaft to the left.Click once to rotate the M shaft 18 degrees to the left, and click 20 times to make the M shaft turn around to the origin; click the " " key, the M shaft will rotate to the right, and each click will rotate 18 degrees to the right, and 20 times the M shaft turn around to the origin; click the " " and " " icons to exit the operation.

(3) M shaft back to working point

Click the menu item "M shaft back to working point", the M shaft will rotate to return to the working point, and click the " " icon to exit the operation.

∨ **Special head clicker foot operation**

Also in the "Special Embroidery Operation" menu, click the "Clicker Foot Lift" menu item, and the system will issue a command to lift the clicker foot of cord embroidery. Click the "Clicker Foot Down" menu item, and the system will issue a command to down the clicker foot of cord embroidery. Click the " " icon to exit the operation.

23-6 About Cord Emb. Parts Testing

The component tests of special embroidery mainly include "Z pole swing test", "cord clicker foot test" and "cord M shaft test". Click the " " icon, the "Auxiliary Function" menu appears, and click "Machine Parts Self-Check" Menu to enter the "Machine Parts Self-inspection" interface, and click the corresponding special embroidery self-inspection item to test the special embroidery parts. The specific operations are as follows:

1、**Z pole swing test**

Click the "Z pole swing test" menu, the system pops up a dialog box, pull the bar according to the prompt, the pole will swing once, click the " " icon to exit the operation; the user can use this parameter to adjust the swing of the pole.

2、**cord clicker   foot test**

Click the "cord Clicker Foot Test" menu, and the system will pop up a dialog box. Pull the bar as prompted to lower/lift the clicker foot, and pull it again to lift/lower it. Click the " " icon to exit this operation.

3、**cord M shaft test**

Click the " **cord M shaft test** " menu, the system pops up a dialog box, follow the prompt to pull bar to the right once to continuously rotate the M shaft left and right, pull it to left to stop the M shaft and return to the zero position. Click the " " icon to exit this operation.

23-7 Classification of Cord Mmachine

From the mechanical aspect, the cord embroidery machine mainly includes three sets of action mechanisms. We define them as M shaft, E shaft and clicker foot shaft. Among them, the M shaft is that each needle rotates a certain angle to track the needle trajectory, so that the rope or belt is always in the front position of the needle movement when embroidering; the E shaft is that each needle or two needles swing back and forth once to make the pattern be a zigzag shape; the clicker foot shaft is used to lift and lower the clicker foot.

1、**M shaft**

The mechanical execution structure of the M shaft can be classified as two types: one is

with a clutch device, the clutch action can be automatically controlled or manually operated by an electric valve. The biggest advantage of this model is that only the M shaft of the patching head is in motion during patching, and the other heads don't work, which helps to improve the quality and efficiency of patching. The another one is without a clutch device. At present, these two types of M shaft mechanisms are driven by servo motors, and the origin of the M shaft is positioned by a proximity switch.

2、E shaft

The E shaft is classified according to the different motors used and whether a proximity switch is needed to locate the origin position, and is classified as the following types:

（1）Using stepper motor to drive separately, no proximity switch is needed to locate the origin position.

（2）Using stepping motor to drive centrally, it needs proximity switch to locate the origin position .

（3）Using stepping motor to drive centrally, no proximity switch is needed to locate the origin position .

（4）Driven by a servo motor, it needs proximity switch to locate the origin position .

3、Clicker foot shaft

The working process diagram of the special head clicking foot is as follows: (The working height of the clicker foot refers to the height that the clicker foot lifts and falls following the movement of the main shaft during the embroidery movement of each stitch;The movement height of the clicker foot from its lower point to the upper point in the non-embroidering state,which is also called the clicker foot limit height) .
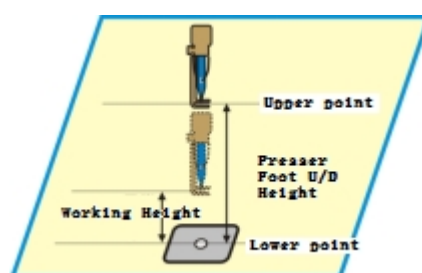
The clicker foot shafts are classified according to the different motors and transmission mechanisms used and whether proximity switches are needed for positioning. They are divided into the following types:

1、 Manually lift the clicker foot.

With this method, the working height of the clicker foot is realized by the rotation of the mechanical cam, and the lifting of the clicker foot to the limit height is realized manually.

2、 Two-phase small stepping motors transmit separately, without holding force and proximity switch.

With this method,each special machine head adopts a two-phase small stepping motor to lift the clicker foot. The working height of the clicker foot and the lifting of the clicker foot to the limit height are realized by the small stepper motor. At the upper and lower positions of the clicker foot, the motor loses power and has no holding force. No proximity switch is needed to locate the upper and lower points. When the machine is powered on, the clicker foot is at the lower point by default.

3、 Two-phase small stepping motors are driven separately, with holding force and no proximity switch.

With this method,each special machine head adopts a two-phase small stepping motor to lift the clicker foot. The working height of the clicker foot and the lifting of the clicker foot to the limit height are realized by the small stepper motor. The clicker foot at the upper point position does not lose power and the motor has holding force, but at the lower point position the motor loses power without holding force. No proximity switch is needed to locate the upper and lower points. When the machine is powered on, the clicker foot is at the lower point by default.

4、 Centralized transmission of single-phase AC motor, two proximity switches.

With this method, the working height of the clicker foot is realized by the rotation of the mechanical cam, and the lifting of the clicker foot to the limit height is realized by a single-phase AC motor driving the clicker foot shaft. Install a proximity switch at the upper and lower position of the clicker foot to adjust the lifting height of the clicker foot. The motor has no holding force at the upper and lower positions.

5、 stepper motor centralized transmission (two-phase or three-phase stepper motor), one proximity switch.

With this method, the working height of the clicker foot is realized by the rotation of the mechanical cam, and the lifting of the clicker foot to the limit height is realized by the stepping motor driving the clicker foot shaft. Install a proximity switch at a point on the clicker foot to locate . The lower point position is realized by setting parameters. The motor has holding force at the upper and lower positions.

6、 Pneumatic transmit separately, without proximity switch.

With this method, the working height of the clicker foot is realized by the rotation of the mechanical cam, and the lifting of the clicker foot to the limit height is realized by an air valve transmitting separately.

Note: Due to the continuous development of special embroidery devices, the mechanical mechanism will undergo different changes, leading to great changes in control parameters and their operation

Further attention should be paid to supporting technical specifications


Appendix-1: Upgrade System Software

In order to continuously improve the functions of the system and improve the user's operating experience, the company will upgrade the system software of different models from time to time, the upgrade process is simple and convenient, and the reliability is high. The correct system upgrade does not affect the original parameter values in the system, and does not affect the current embroidery pattern.

The specific operations are as follows: （Operation Index: A10-P12-U1 ）

1、Insert the USB flash drive with the system software. Click " 👆 " icon to enter auxiliary function menu, then click " ➡ "icon to select the① "Upgrade System Software" item.

2、System enters the "Upgrade System Software" interface, and automatically read the contents of the USB. Use the " ⬦ "key or" ⬅ ➡ " icon to select the system software to be upgraded. (If a file is system software, "Raysita_2019XXXX.X.X" will appear in the right prompt of the interface)

3、As Operation Index: A10-P12-U1 , Click " Upgrade System Software " icon and the system will drip a short sound, the interface prompts "Update package verification...". After verification, the system pops out the "Update Information Confirmation" dialog box, click the " ✔ " icon and the system enters the software upgrade process. After the upgrade is completed, the system prompts "System Update Success!", the software upgrade is completed. The system must be powered off and then powered on before it can take effect.

4、After the system software is upgraded, the user can click " ⚙ " icon on the right side of the main function screen and click the " ➡ " icon to page P3-3 to check whether the primary controller Software Version "2019XXXX.XX"has updated to the corresponding version.

Note: The system software update process is forbidden to power off, otherwise the system may crash and cannot be started.
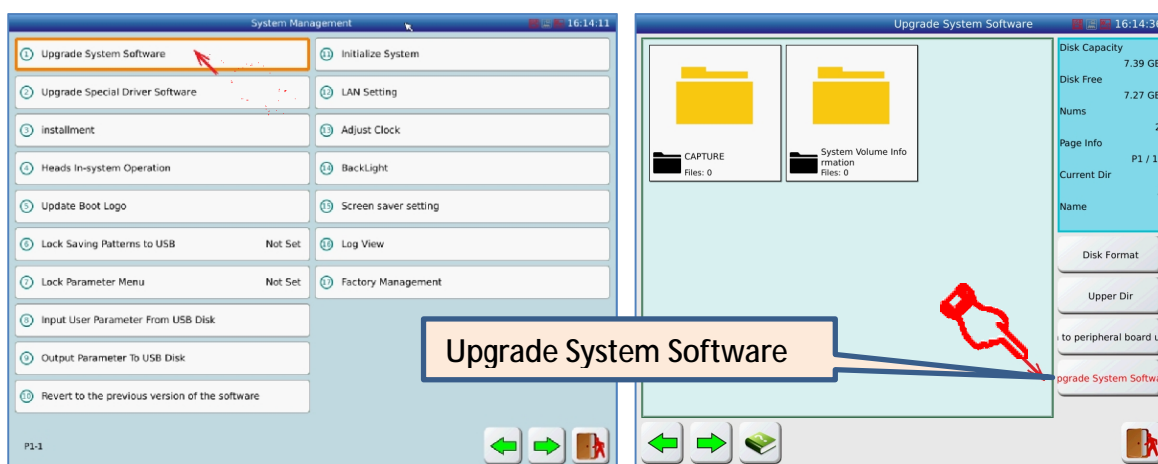
Appendix-2: Upgrade Sub Controller Software

In order to continuously improve the embroidery control function, the company will carry out irregular upgrades of the secondary controller software of different models, and the upgrade process is simple and convenient, and has high reliability.

The specific operations are as follows: （Operation Index: A10-P12-U2 ）

1、Insert the USB flash drive with the secondary controller software into the "USB" interface of the operating head. Click " " icon to enter auxiliary function menu, then click " "icon to select the " Upgrade Special Driver Software " item.

2、System enters the "Upgrade Special Driver Software" interface, and automatically read the contents of the USB flash drive. Use the " "key or" " icon to select the secondary controller software to be upgraded and click "Upgrade ..."icon.(If a file is a vice controller software, "Raynen_xhj_m4_cXXXXXXX.rnupd" will be displayed in the right prompt box of the interface.)

2、System pops up "Software Updating? It may take a while!" dialog box, click " ", the system prompts "Update package verification...". After verification, the system pops out the "Update Information Confirmation" dialog box, click the " " icon and the system enters the secondary controller software upgrade process. After the upgrade is completed, the system prompts "execute successfully, please restart!". At this time, the software upgrade is completed, and the system should be powered off and restarted.

3、After the system software is upgraded, the user can click " " icon on the right side of the main function screen and click the " " icon to page P3-3 to check whether the secondary controller Software Version " C019XXXX "has updated to the corresponding version.

Note: The secondary controller software update process is forbidden to power off, otherwise the system may crash and cannot be started.
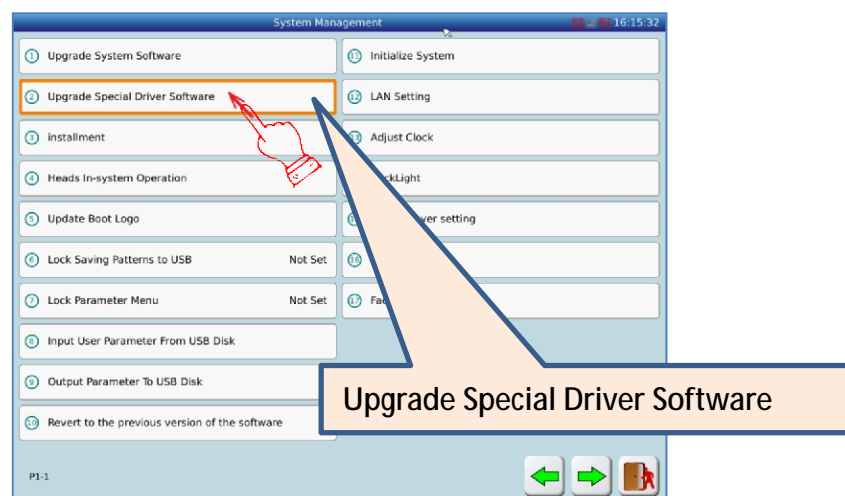
Appendix-3: Update Machine Head Software

In order to continuously improve the embroidery control functions of the machine head and adapt to the new functions that are continuously introduced on the market, our company continuously improves the overall performance of the machine head and meets the demand for continuous updates through irregular head software upgrades. The specific operations are as follows: （Operation Index: A10-P12-U2 ）

1、 Before the machine head software is upgraded, all the machine head switches to be upgraded should be turned on, or the machine head will not be upgraded. Insert the USB with the head software into the "USB" interface of the operating head. Click " ⚡ " to enter the auxiliary function menu, and click the " Upgrade Special Driver Software " menu under P2-2.

2、 System enters the "Upgrade Special Driver Software" interface, and automatically read the contents of the USB. If the update software is stored in the root directory, use the " ⬦ " key or the " ⬅➡ " page turning icon to select the upgraded head software（The head software is identified as: raynen_xhj_head_uppacxxxxxxxx.rnupd）If the update software is stored in another directory, double-click to enter this directory, and then use the " ⬦ " key or " ⬅➡ " to select it.

3、 After selecting the machine head software, click the " Upgrade Special Driver Software " icon, the system will pop up the "Software Updating? It may take a while!" dialog box, click " ✔ " and the system prompts "update information",.Click the "CAN1" icon to enter the machine head software programming process.At this time, the open head first turns from a green light to a red light, then the red light flashes, and a progress bar of "Please wait..." is displayed. When the progress bar shows 100%, the software upgrade is completed, and the system pops out the prompt box of "Update successful!" If you want to exit the programming, click the " 🚪 " icon to exit.

4、 After upgrading the software of the machine head, the lights of the machine heads will flash alternately with red and green. At this time, turn off the system power supply and then power on again, so that the machine head can return to normal instructions.

Note: The machine head software update process is forbidden to power off, otherwise the system may crash and cannot be started.

The steps are as follows: