# Automatic Sewing Control System
# Operation Instruction
# (Human Machine Interface)

October 2014, Version V3.1

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# Chapter I Introduction to Control System

## 1.1 Overview

Thank you very much for using the automatic template sewing machine control system of our company!

This system can match with the various types of template machine, satisfying different sewing requirements with satisfactory sewing effect for all sorts of cloth!

Before using, please read the Instruction carefully to ensure the correct use of this system. Please keep the instruction appropriately in order to check at any time.

In case of discrepancies between actual machine and this Instruction due to different machine configurations and software update, the operating functions shall prevail.

## 1.2 Functional Description

(1) One machine with multi-purpose, simple operation

- Full automatic template sewing machine can replace many kinds of special machinery such as traditional flat sewing machine, long arm sewing machine, bartack sewing machine, embroidery machine, etc. in certain circumstances to achieve multi-usage
- After placing the template well, the operating personnel only needs to press the start key, automatic processing can be completed, the operation is quite simple
- With standardized operation; the machine can work out amazing effects for a variety of stitches and a variety of fabric!

(2) The man-machine interface is friendly and easy to use

- 7 inches color LCD touch screen, with clear display, easy to touch
- Support display in both Chinese and English
- Up to 256M (or 128M) file storage space, to store and process many files
- Convenient file Collection (template making), modification, management functions

(3) Precise motion control technology with efficient sewing

- Using international advanced DSP chip, fast system run speed, high hardware integration, stable performance
- Support step-by-step, closed loop step-by-step, brushless DC, servo drive, using smooth curve for speed governing, smooth operation
- Compact mechanical structure, good rigidity, high sewing position precision, low noise

(4) The upper computer graphics editing software is easy to use

- Such files in dxf, dst, dsb, ai, plt, edi, tzf format that are generated by software such as Autocad, Coredraw are easily converted into processing files
- The software has comprehensive graphics editing functions, supports layer editing and adding various kinds of special sewing stitch lines
- With common control instruction set, customizable control instruction (functional code), high dexterity of action
- For each layer, each graphic, each stitch point, a variety of mechanical control commands can be inserted into, to meet the diversified and precise automatic sewing requirement

(5) Rich user parameter settings, comprehensive auxiliary functions

- Detail settings can be carried out for various mechanical actions
- Point position, painting line, automatic mold slot opening function of some equipment can be extended
- Support automatic identification of template, U Disk system updates, broken threads detection, continue sewing in power down, processing statistics, forecast for lack of bobbin thread, system self-test, parameter backup and recovery, encryption lock machine...

# 1.3 Notes

## 1.3.1 Safety Instruction

In order to avoid the possible risk and prevent damage to the device, please observe the following safety matters:

Note:

- Please don't carry out maintenance and debugging to electric system by non-specialists, this will reduce the safety performance of equipment, enlarge the fault, and even cause harm to the personnel and property losses.
- Some parts inside the case have high pressure; after the system is powered on, please do not open the case cover, in order to avoid accidental injury.
- Please do not pile up sundry around the control box, and in the process of using; remove dust on the surface of control box and the filter regularly, so as to keep good ventilation for the system, which is good for heat dissipation.
- Without authorization of the company, please do not make any change to the product arbitrarily, and the company shall not hold any responsibility for the consequences!

**Warning:**

- **If it really needs to open the case cover, it must be carried out5 minutes after cutting off power and guided by professionals to contact components inside the electrical cabinet!**

**Danger:**

- **When the machine is at work, it is forbidden to contact with any moving part or open the control equipment, plug or pull out motor interface, otherwise it may cause personal injury or the machine not to work!**
- **It is forbidden for electrical equipment to work in places with humidity, dust, corrosive gas, flammable and explosive gas, otherwise it may cause electric shock or fire!**

## 1.3.2 Work Environment

- Solid, level ground installation
- Good ventilation, healthy environment, less dust
- Temperature in work space: 5 to 40 ℃
- Relative humidity in work space: 30% to 90% without condensation

## 1.3.3 Power Supply Requirement

- Single-phase AC220V/50 to 60 HZ
- It needs to be equipped with the voltage regulation equipment when the power grid voltage fluctuation is more than 10%
- Equipment power is between 1.0 to 2.0KW according to different machine configuration

## 1.3.4 Grounding Requirement

- In order to prevent electric shock or fire accident of electrical equipment due to causes such as electric leakage, over voltage, insulation, etc., please make sure the electronic control with reliable grounding
- The grounding resistance should be less than 100 ohms, conductor length within 20 meters, conductor cross-sectional area greater than 1.0 square millimeters

# Chapter II Main Interface Specification

## 2.1 System Powered on

After the system is powered on, the man-machine interface will display the boot interface, spindle will carry out rotational detection automatically, and then reset other parts. The specific reset actions are related to the settings of power on reset parameters.

## 2.2 Processing Main Interface

### 2.2.1 Display Specification of Processing Main Interface

After boot LOGO is displayed, the processing main interface will be entered automatically. Processing main interface is shown as below.

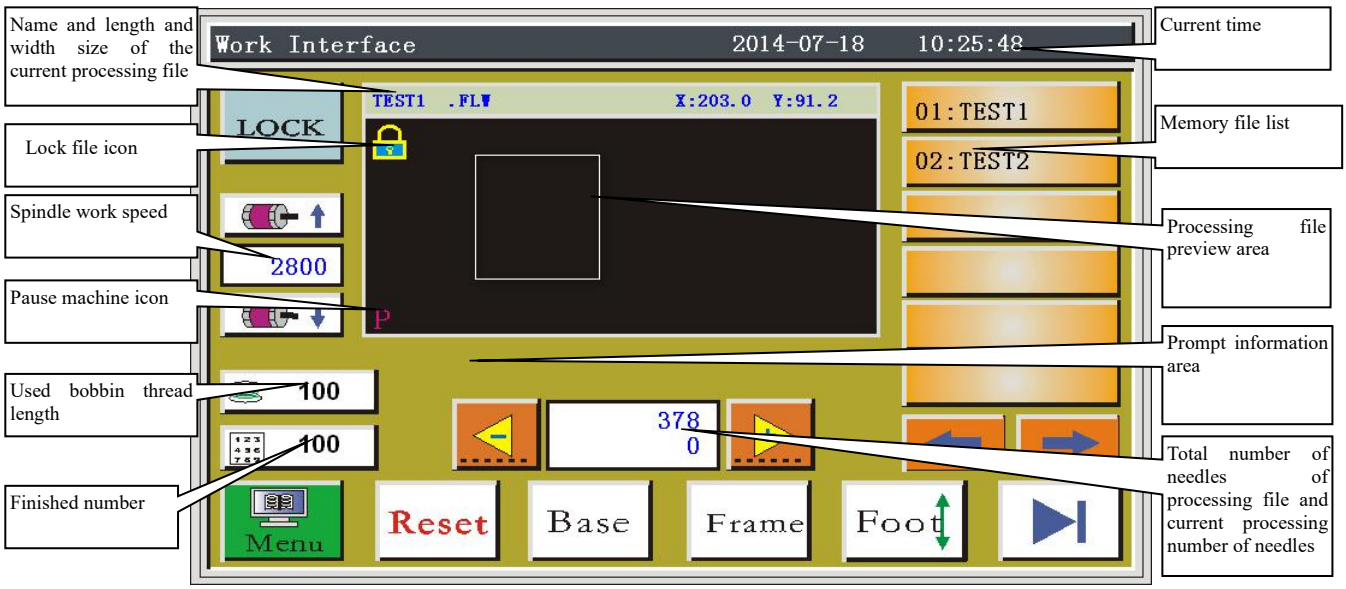



Figure 2-1 Processing Main Interface

Functions of keys on processing main interface are introduced as follows:

Processing file preview area: displays the currently selected graphical file, when clicked, switches between "Full Figure" (zoom to best display) and "In Proportion" (actual proportion with processing range) modes.

Memory file list: displays the memory file list, when clicked, selects different processing

files. If the automatic identification function of template identifies the template number before processing, file with this number will be taken as the current processing file automatically.

Lock file key: locks the current processing file to prevent wrong operation, other processing files can't be chosen after the lock, and  icon will appear in preview area. Click it once to lock, and click it again to unlock.

Note: only in the locking condition of "Lock file", the automatic template identification function will work. After identification of the template, it will display on the "Prompt information area" and the "Current time" interface, and selects the file with corresponding number automatically.


Acceleration key: rises spindle speed at 100 r/min ascending, increases continuously if long press (press and hold), until the set maximum speed. It sews one stitch by one round of the spindle. It can be prohibited to modify rotational speed arbitrarily through setting a password.


Slow down key: reduces the spindle speed at 100 r/min decreasing, reduces continuously if long press, until the set minimum speed. It can be prohibited to modify rotational speed arbitrarily through setting a password.

Bobbin thread statistics key: shows the used length of the current bobbin thread, press the key to enter the processing statistics interface.

Processing statistics key: displays the number of current completed processing, press the key to enter the processing statistics interface.

Main menu: press the key to enter the main menu interface.


Manual empty retreat key: press the key to start single step empty retreat backwards, long press for continuous empty retreat. Empty retreat is that the spindle is fixed, and XY axis move only, which can be used to preview the position of specified processing needle, or to start processing from the position of specified needle.


Manual empty advance key: press the key to start single step empty advance

forward, long press for continuous empty advance.

Processing number of needle setting key: number on the upper line is the total number of needle of processing files, number on the lower line is the current processing number of needle. Press the key to pop up "Move to the Specified Needle" setting window.

Note: the "Move to the Specified Needle" window shows: 

... 

: the set value by digital input; 

: the set value returns to zero;


: add 1 to the set value; 
: minus 1 to the set value; 
: restore to the set value before modifying; 

: cancel the current modification; 

confirm the current modification.


Left page key: turn to the left page to check memory file.


Right page key: turn to the right page to check memory file.

Reset key: press the key to make each axis return to the absolute origin.

Base key: press the key to enter setting page of XY axis base point.

Manual presser frame rise/fall key: every press to switch the presser frame between rise and fall.

Manual presser foot rise/fall key: every press to switch the presser foot between rise and fall.


Next interface key: press the key to enter the processing auxiliary interface.

### 2.2.2 Display Specification of Processing Auxiliary Interface

In the processing auxiliary interface, the bobbin thread winding and other manual operations can be undertaken.

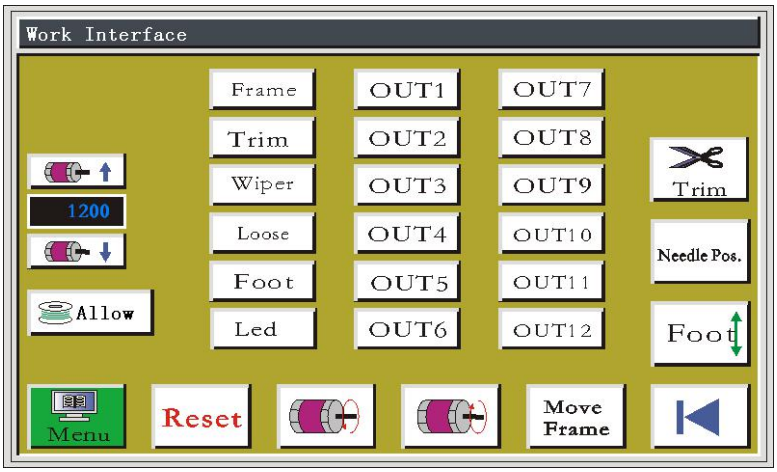



Figure 2-2 Processing Auxiliary Interface

Functions of keys on auxiliary interface are introduced as follows:


Bobbin thread winding switch: every press to switch between "Allow" and "Forbid". Press the start running switch after "Allow", winding operation can be performed, and the spindle will start winding at the set speed of this page. Press the start running switch again or  , 

or winding duration is over, winding will stop. "Forbid" shows that winding is prohibited.

: shows the spindle winding speed.


Spindle inversion key: press the key then the spindle starts inversion and slow moving.


Spindle corotation key: press the key then the spindle starts corotation and slow moving.

Needle bar up/down key: every press to switch needle bar between upper positioning (highest point of needle) and lower positioning (lowest point of needle); press this key for more than 1 second, the spindle starts corotation and slow moving (same as the function of spindle corotation key).

Trim key: press the key then the machine takes sewing once, to achieve full trimming action.

Trim , Wiper , Loose : press the keys then the corresponding electromagnetic valve open once and close again.

Frame , Foot , Led , OUT1 … OUT12 : press the keys then the corresponding IO output function is always on, press again then the output is closed.

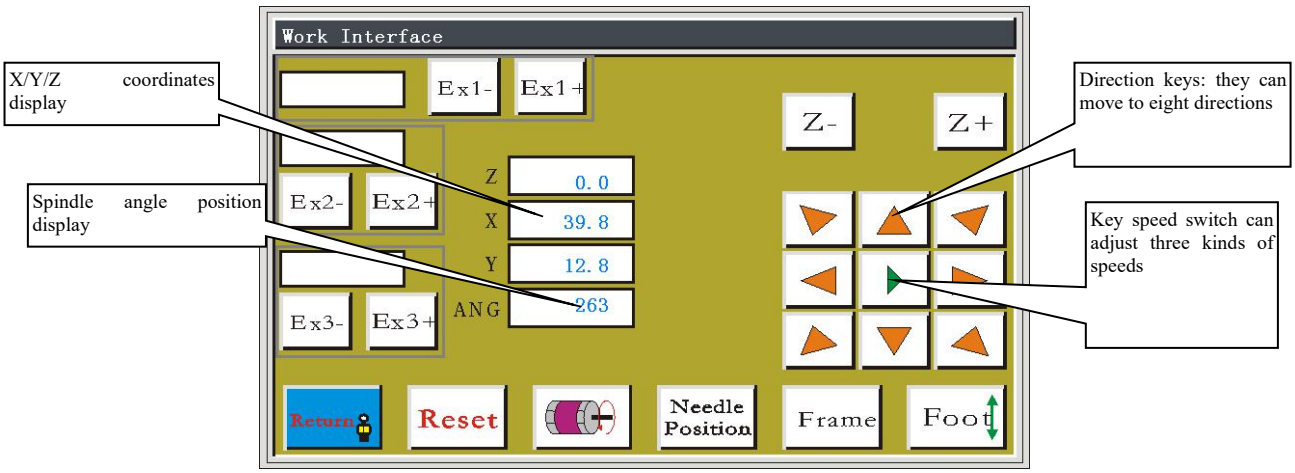
Note: please do not hold the solenoid valve control keys such as Trim key for a long time without loosening, otherwise it may lead to damage of the electromagnetic valve connected on this output due to overheat!

Last interface key: press the key to return to processing main interface.

Move Frame Manual frame moving key: press the key to enter manual frame moving operation interface.

### 2.2.3 Display Specification of Manual Frame Moving Interface

In the processing main interface, click , and then click Move Frame, it can enter the manual frame moving interface. In the manual frame moving interface, operations such as manual frame moving, controlling the rotation of each axis and so on can be undertaken.




Functions of keys on manual frame moving interface are introduced as follows:

, , Frame moving speed switch key: click them to switch among low,

medium, high speed. Correspond to the pattern making speed 1, 2, 3 in "User Parameters".

Eight direction keys such as  : move in the X, Y axis direction.

"Z+", "Z-", "Axis 1+"... "Axis 3-": manually turns the corresponding axis, some axis is invalid to parts of the machine.

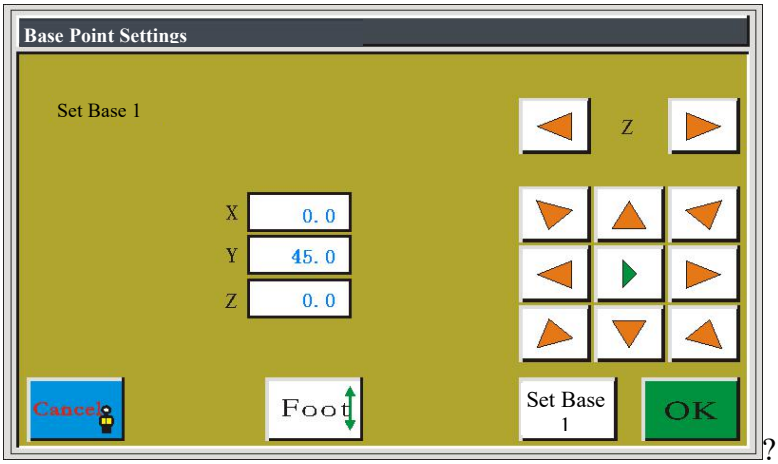
Return key: press the key to return to the previous operation interface.

## 2.2.4 Display Specification of Base Settings Interface

In the processing main interface, click 

to enter the base point settings interface.

In this interface, template base point can be set up.



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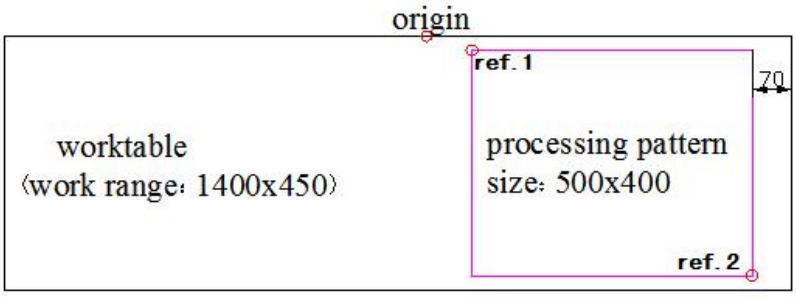
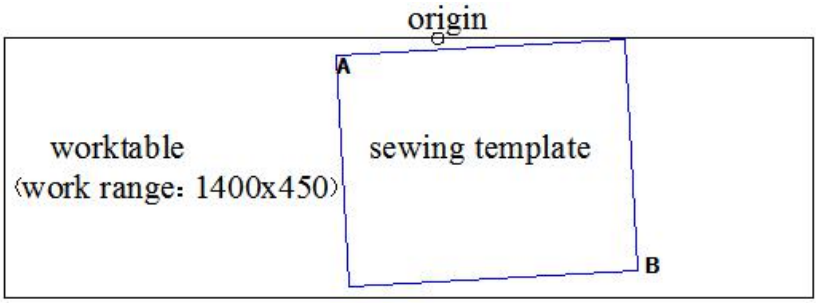
Reasons of base point settings:

As to the processing files edited and generated using upper computer software, in the import into memory and preview show for the first time, the system will place this file at the right middle position within the scope of processing (visible when clicking on the "Processing File Preview Area" to switch display mode), specific as follows: center of Y axis direction of file is center of Y axis direction of processing range axis; The rightest side of X axis direction of file is 70 mm apart from the rightest side of processing range. The system will write the position information into the processing file. As shown in the figure below




While position of the template actually made on the workbench may be as follow:




So align base point 1 and A, base 2 and B, and adjust the position of processing pattern in the system to correspond to the position of template slotting.

Detailed steps are as follows:

1) Select the file which needs to be aligned with the base point in the processing main interface, and place the corresponding template. Click Base to enter the base point settings interface, the system will move the frame to the base point 1 position automatically.

2) If upper computer editing software has set double base points, “Set the First Base Point” will be prompted the top left of the interface; check whether base point 1 is in template slot position A at this time; if there is any deviation, click the direction keys to move for overlap.

3) Click on OK, and complete base point 1 setting. The system will move the frame to the base point 2 position automatically, and “Set the Second Base Point” will be prompted the top left of the interface; click the direction keys to make the positions of base point 2 and template B overlapping. If it needs to return to reset base point 1, click Ref1 Set to switch to the base point 1 setting.

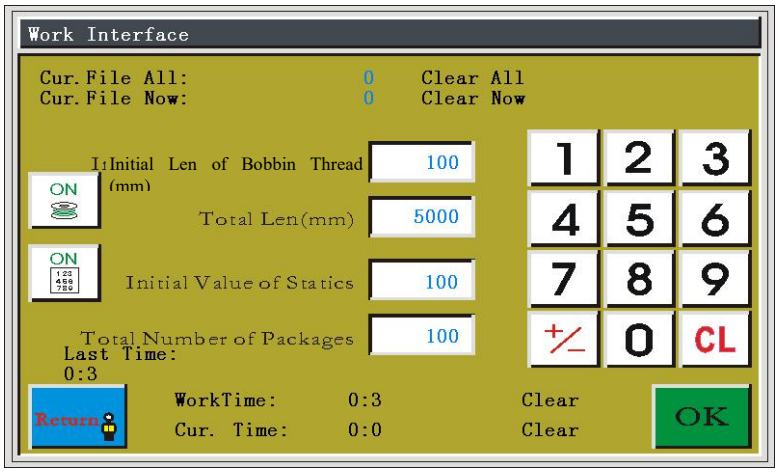
4) Click on OK, complete base point 2 settings, and return to main interface automatically. System will write this position into processing file, and the processing preview area pattern will adjust to the corresponding template position.

After aligning to the base point, as long as it doesn't modify the file and the template, there is no need to align to base again. If the upper computer software does not set double base points to file, it tacitly approves the sewing start point as the base point 1, and will return to processing main interface after aligning to the base point 1.

At the same time, through setting system parameters, there is no need to align to base when used for the first time. Please consult the manufacturer for the detail settings.

## 2.2.5 Display Specification of Processing Statistics Interface

In the processing main interface, click 100 or 100 to enter processing statistics interface. In this interface, you can check information such as processing quantity, time, and bobbin thread length.




Interface specification is as follows:

ON: "ON" is to enable the processing statistics, press it again then "OFF" closed. When "User Parameter" - "Statistics Settings" - "Count Work Time: Yes", it will enable processing always, this key can't be used to close.

"Cur. File All": refers to the total completed number of current processing files all the time. Click on "Clear All" for zero clearing.

"Cur. File Now": refers to the total completed number of current processing files on the same day. Click on "Clear Now" for zero clearing.

"Initial Value of Statistics": refers to the total number of completed processing files. No matter what kind of the file is, as long as finishing processing once, this value will add 1 automatically.

"Total Number of Packages": refers to the total number of preprocessing of all kinds of files.

Note: if you enable processing statistics, and "User Parameters" - "Statistics Settings" - "Continue to Work after the Counter Achieves: No", when the "Initial Value of Statistics" achieves "Total Number of Packages", restart the processing, "Full Counting" will be prompted.

: Press the key to enable the bobbin thread statistics: press it again then shut down. If "User Parameters" - "Count Setting" - "Counter Setting Valid: Yes", it will enable the bobbin thread statistics always, this key can't be used to close.

"Initial Len of Bobbin Thread (mm)": refers to the bobbin thread length which has been used up; when a file is finished processing, it will reduce the corresponding length of the bobbin thread.

"Total Len (mm)": refers to the initial bobbin thread length in the rotating shuttle. It can be estimated during winding to be: total length = average circumference of rotating shuttle x revolving speed x winding time,

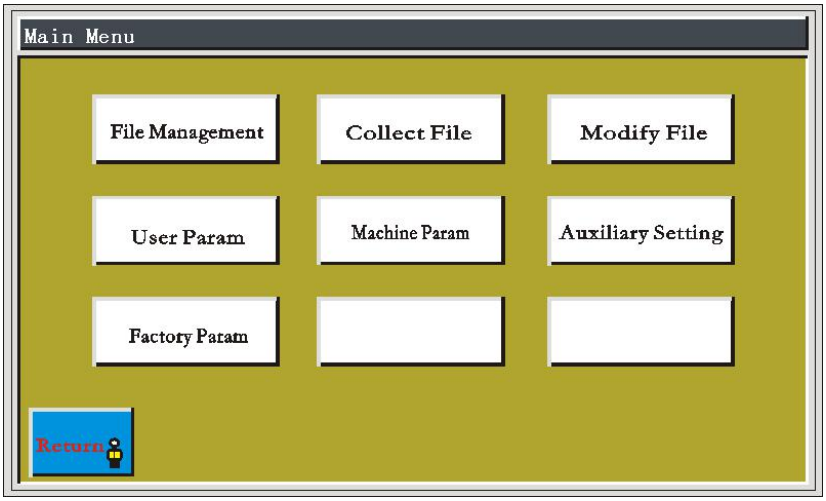
Note: if you enable the bobbin thread statistics, the system will calculate the length required by the bobbin thread of preprocess files before processing; when the length is greater than (total length - the initial length of bobbin thread), "bobbin thread is used up" will be prompted to prevent changing bobbin thread in the processing midway. After popping up, press "OK" for zero clearing of the initial length.

"Work Time": sum total of the processing time for all time.

## 2.3 Main Menu Interface

In the processing main interface, press 

key to enter the main menu interface, as shown in the figure:




File management: manages memory files and the U Disk files, carries out input/output file operations.

Collect File: generates processing files through track collection (pattern making).

Modify File: modifies the currently selected processing file.

User Param: sets the parameters need to be adjusted in the user processing.

Machine Param: only for the use by machine assembly personnel.

Auxiliary Setting: used for processing auxiliary setting and testing, etc.

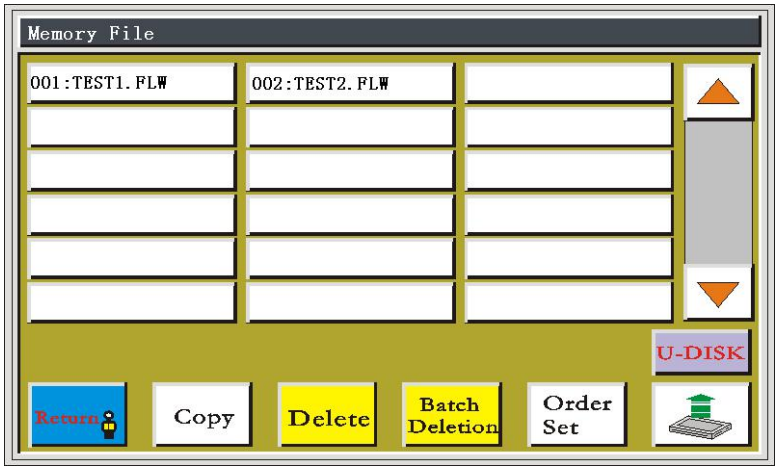
Factory Param: manages parameters set by factory.

# Chapter III File Management

File management is used for operations such as input, output, and deletion for U Disk and memory files. System identifies processing files with .FLW and .HLW suffix only. Processing files are created by attached PC graphics editing software, or generated using the file collection function.

## 3.1 Memory File Management

In the main menu interface, press the File Management key to enter the file management interface, into memory file management by default, as shown in figure:




The memory can store 999 processing files at most, the total size of no more than 256 M (or 128 M) total storage space. It supports Chinese and English names display. It uses 8.3 naming rules, that is, the primary file name cannot be more than eight characters (not more than four Chinese characters if Chinese characters); If more than that, it will take the first 6 characters of the file name plus ~1 (if the first 6 characters are the same, use ~2, ~3... in turn) for display.

Click to select file, the selected file name will be changed into red, carry out operations for the selected file according to the need.

Keys descriptions: Copy copy file: copies the currently selected file or the last file of

multiple selected files and rename it.

Delete the selected file: deletes the currently selected file or the last file of multiple selected files.

Batches delete selected files: deletes the currently selected multiple files.

Move files: moves the currently selected file or the last file of multiple selected files to the specified position. For example, select "002:TEST2.FLW", click on 

, in the pop-up dialog box, amend the current sequence number "2" to be "1", click on "Confirm". It will change to be "001:TEST2.FLW".

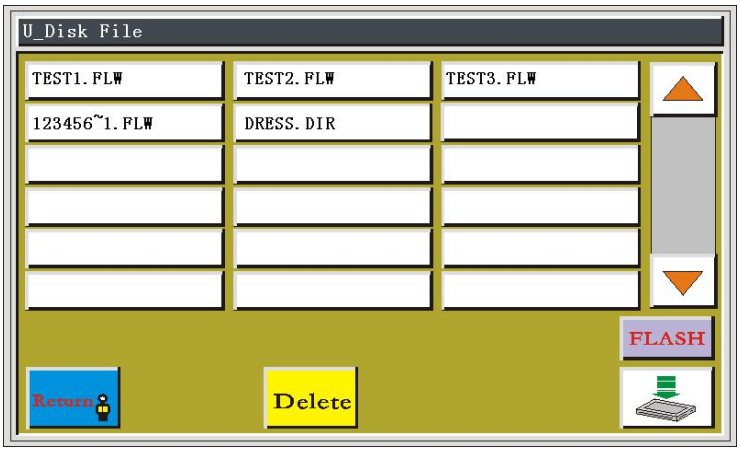

Output file: copies selected single or multiple files from memory files to the root directory of U Disk. If there is any file of the same name in U Disk, it will be replaced.

Memory, U Disk switch: press the key once switch between memory and U Disk.

## 3.2 U Disk File Management

After inserting U Disk, in the memory management interface, press 

key to switch to the U Disk file management interface, as shown in figure:




U Disk file management uses 8.3 rules for naming display, displays .FLW format files and subfolder names in U Disk root directory by default, and .DIR suffix means that this is a folder. It supports multistage folder operation, and it is suggested to adopt the way of subfolders for classification management when there are a lot of files.

Click to select file, the selected file name will be changed into red, carry out operations for the selected file according to the need.

Keys descriptions:  input file: copies the selected single or multiple files from U Disk to memory space, files with the same names will be replaced.

 Return key: back to the main menu interface or the parent folder.

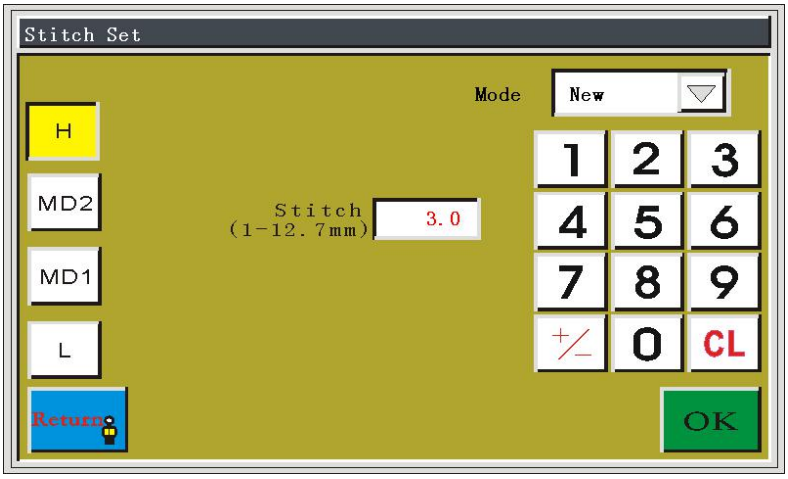
Note: if processing files in .HLW format can't be identified, please update control system version, see Section 7.9.

# Chapter IV File Collection

File collection (template making) is used to create new processing files, or add sewing path to the existing processing files, etc. If you need to create complex and precise graphics, it is recommended to use the attached sewing control software, the effect will be better.

## 4.1 Main Interface of File Collection

In the main menu interface, press the Collect File key and enter the collect file needle stitch setting interface, as shown in figure:




- "H", "MD2," "MD1", "L": sets the sewing speed of the section to collect, corresponding to "High Rate", "Middle High Rate", "Middle Low Rate", "Low Rate" in parameter settings page. The default is "H".
- "Stitch": sets the distance between each needle in sewing, the default is 3.0 mm.
- "Mode:New", "Mode:File": click the choice box to switch between the two. "New" to create a new collect file. "File" for adding collection for selected files in processing main interface. The default is "New".

Press the "OK" key to enter file collection main interface and presser frame returns to the absolute origin position automatically. Any stitch combinations can be used for continuous collection when collecting.

Collection main interface is as shown in the figure below, including:

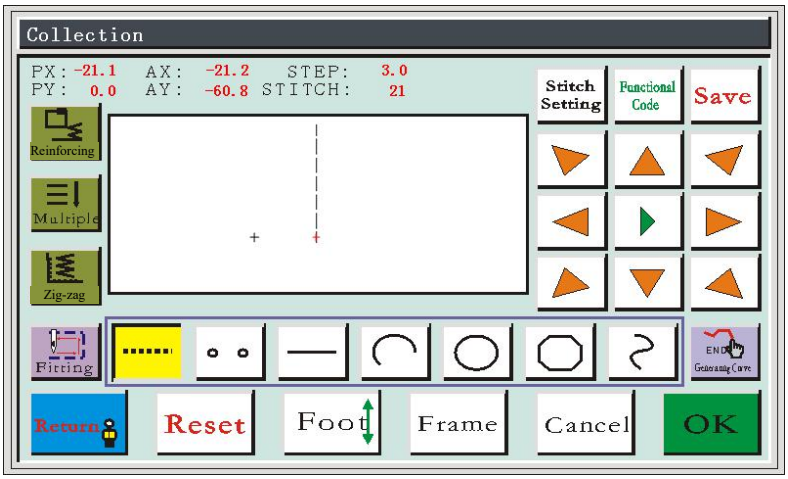
"PX", "PY": refer to X and Y coordinates of the current cursor point relative to previous

collection point

"AX", "AY": refer to coordinates of the current cursor point relative to the absolute origin (without empty sending section) or end point of previous empty sending section (with empty sending section)

"STEP": refers to the stitch length of current collection section

"STITCH": refers to the total number of stitches of collected files




Functions of keys are introduced as follows:

 Empty sending collection key: press the key once; when the background becomes yellow, the current collection section is empty sending. Display in a dotted line.

 Single needle collection key: press the key once; when the background becomes yellow, the current collection section is single needle; the longest stitch of single needle collection is 12.7 MM, and the current collection will be invalid after exceeding the length.

 Press the key once; when the background becomes yellow, the current collection section is a straight line.

 Press the key once; when the background becomes yellow, the current collection section is an arc (3 points generate an arc).

 Press the key once; when the background becomes yellow, the current collection section is a round (3 points generate a round).

 Press the key once; when the background becomes yellow, the current collection

section is multiple line segments.

 Press the key once; when the background becomes yellow, the current collection section is a curve (more than 3 points generate a curve).

 Curve generating key: when collection for multiple line segments and curve, press the key to complete the current section collection.

 Speed functional key: press the key to set the collection speed and stitch of current and subsequent section.

 Insert functional key: press the key to enter into insert functional code operation.

 Save file key: press the key to save the current file.

 Reinforcing functional key: press the key to enter into reinforcing sewing settings.

 Multiple and complementary functional key: press the key to enter into multiple and complementary sewing settings.

 Zig-zag functional key: press the key to enter into the zig-zag sewing (bartack) setting interface.

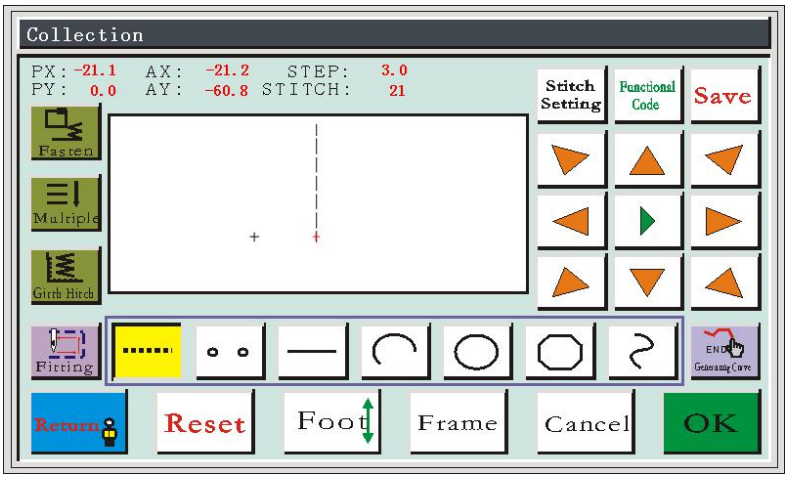
 Preview collection key: press the key to enter into the preview current collect file interface.

 Cancel collection key: press once, cancel the latest collection.

 Confirm key: press the key to confirm the current cursor position, or to complete collection of the current section. If part of the graphics area to be generated exceeds processing range, it is unable to be generated.

## 4.2 Empty Sending Collection

In file collection main interface, press the ····· key, the key background becomes yellow (it will be empty sending mode automatically for the first time entering into the collection interface), which shows that the current section collection is empty sending mode (empty sending: move the frame only, the spindle is not sewing), as shown in figure:



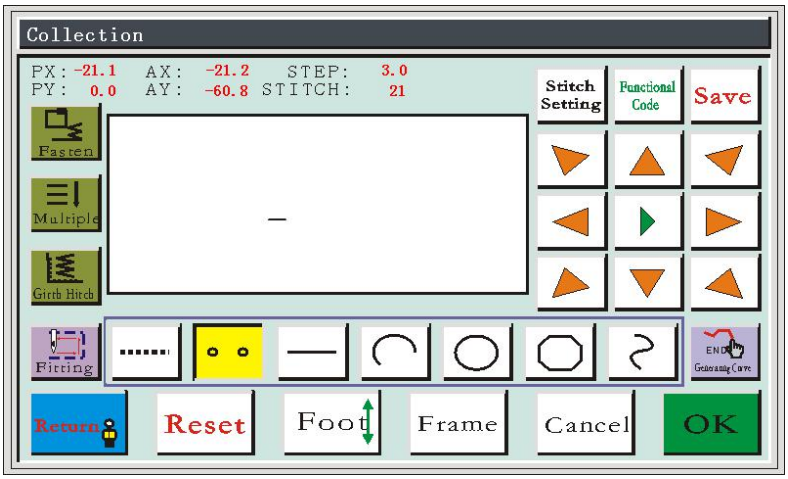

In empty sending collection, two points generate a section of empty sending.

Absolute origin or the end point of previous collection section is the first point of empty sending collection, displayed by red cursor. Press keys to move the black cursor to the needed position, press the OK key to generate empty sending section.

If it needs to insert the functional code at the end of the section, please refer to functional code setting operations. This operation may be done at any time before the graphics generation.

## 4.3 Single Needle Collection

In file collection main interface, press the ∘ ∘ key, the key background becomes yellow, shows that the current section of collection is single needle mode, as shown in figure:



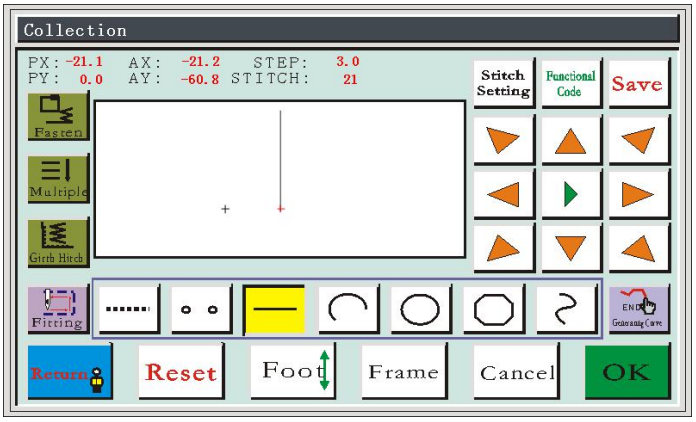

In single needle collection, two points generate a stitch.

Absolute origin or the end point of previous collection section is the first point of single needle collection. Press keys to move the cursor to the needed position, press the OK key to generate single needle. When single needle moving distance is greater than 12.7 MM, collection of the section is invalid and it will return to the starting point of collection automatically.

If it needs to insert the functional code at the end of the section, please refer to functional code setting operations. This operation may be done at any time before the graphics generation.

## 4.4 Straight Line Collection

In file collection main interface, press the — key, the key background becomes yellow, shows that the current section of collection is straight line mode, as shown in figure:



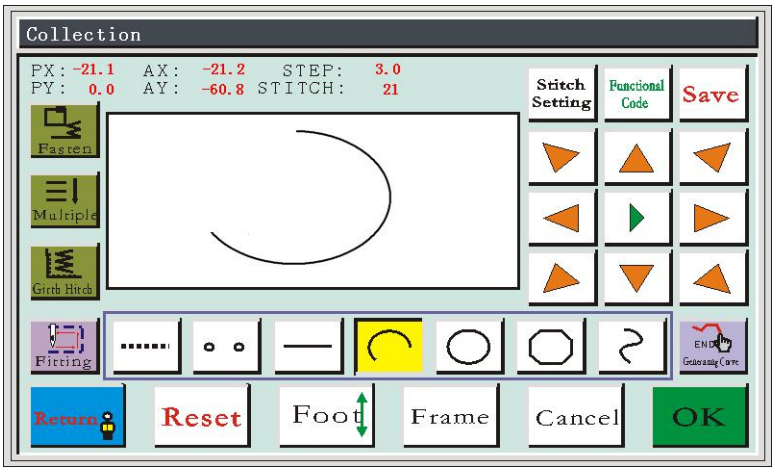
In straight line collection, two points generate a section of straight line.

Absolute origin or the end point of previous collection section is the first point of straight line collection, displayed by red cursor. Press keys to move the cursor to the needed position, press the OK key to generate a straight line.

If it needs to adjust the stitch, speed, fastening, complementary sewing, zig-zag sewing and insert functional code at the end of this section, please refer to relevant setting operations. This operation may be done at any time before the graphics generation.

## 4.5 Arc Collection

In file collection main interface, press the key, the key background becomes yellow, shows that the current section of collection is arc mode, as shown in figure:




In arc collection, any 3 points collections which are not on the same straight line generate a circular arc, the first point as the starting point of the arc, the second point as the height reference point of the arc, and the third point as the end of the arc.

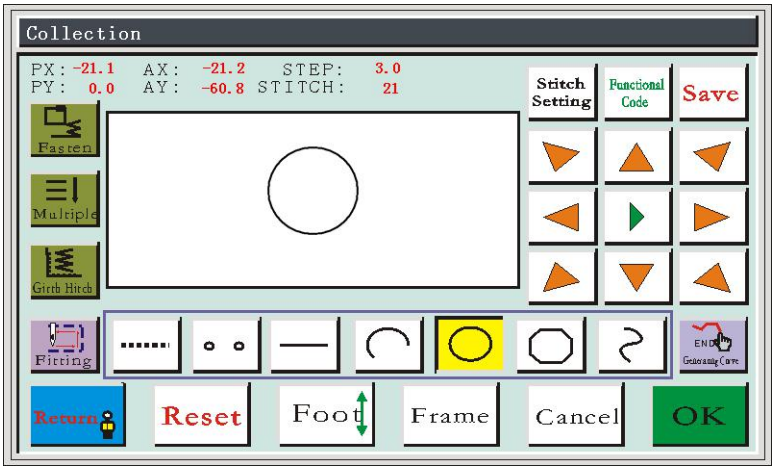
Absolute origin or the end point of previous collection section is the first point of arc collection, displayed by red cursor. Press keys to move the cursor to the needed position, press the OK key to determine height reference point of the arc; press keys again to move to the needed position, press the OK key to determine end point of the arc and generate the arc.

If it needs to draw accurate arc, refer to coordinate point, to make the height reference point on the midperpendicular of connection line between start point and end point.

If it needs to adjust the stitch, speed, fastening, complementary sewing, zig-zag sewing and insert functional code at the end of this section, please refer to relevant setting operations. This operation may be done at any time before the graphics generation.

## 4.6 Round Collection

In file collection main interface, press the  key, the key background becomes yellow, shows that the current section of collection is round mode, as shown in figure:




In round collection, any 3 points collections which are not on the same straight line generate a round. Processing order: the first point (starting point) > the second point > the third point > the first point (end point).

Absolute origin or the end point of previous collection section is the first point of round collection (Start point and end point of the round). Press keys to move the cursor to the needed position, press the 

key to determine the second reference point; Press keys again to move to the needed position, press the 

key to determine the third reference point, a round will be generated automatically. The presser frame will move to the starting point position of the round at the same time.

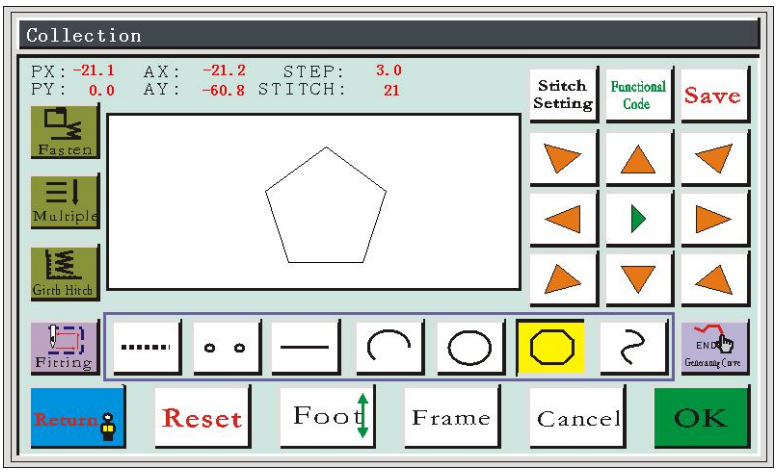
If it needs a precise round, it is suggested to make the distance between the first and the second points as the diameter of the round; the third point is on the midperpendicular of the

diameter line constituted by the first and the second points, and distance from the diameter line is the radius of the round.

If it needs to adjust the stitch, speed, fastening, complementary sewing, zig-zag sewing and insert functional code at the end of this section, please refer to relevant setting operations. This operation may be done at any time before the graphics generation.

## 4.7 Multi-Segment Collection

In file collection main interface, press the  key, the key background becomes yellow, shows that the current section of collection is multi-segment mode, as shown in figure:




In multi-segment collection, it can collect 127 points continuously at most, to generate line segments by the way of two points a straight line.

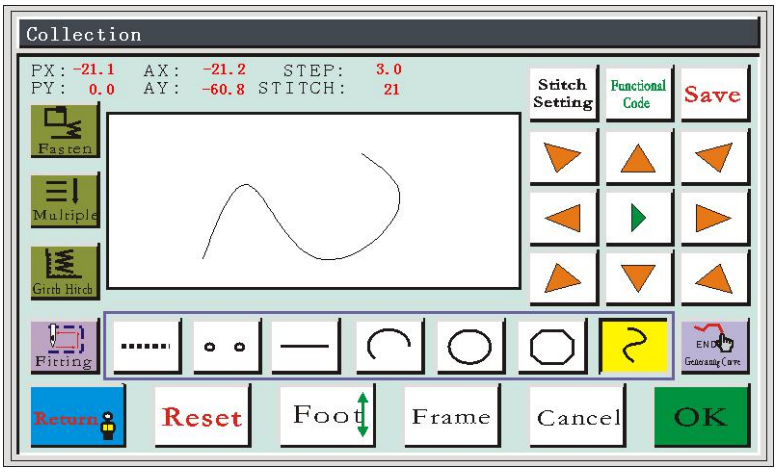
Absolute origin or the end point of previous collection section is the first point of multi-segment collection. Press keys to move the cursor to the needed position, press the  key to determine the collection point; move for many times and determine the collection point; after completing, press the  key to generate the multi-segment connecting each point.

If it needs to adjust the stitch, speed, fastening, complementary sewing, zig-zag sewing and insert functional code at the end of this section, please refer to relevant setting operations.

This operation may be done at any time before the graphics generation.

## 4.8 Curve Collection

In file collection main interface, press the  key, the key background becomes yellow, shows that the current section of collection is curve mode, as shown in figure:




In curve collection, it can collect 127 points continuously at most, to generate a curve by the radian way of adjacent 4 points. The curve effect can be better if the collection points are intensive as far as possible on corners. Less than three points of collection can't generate a curve.

Absolute origin or the end point of previous collection section is the first point of curve collection. Press keys to move the black cursor to the needed position, press the 

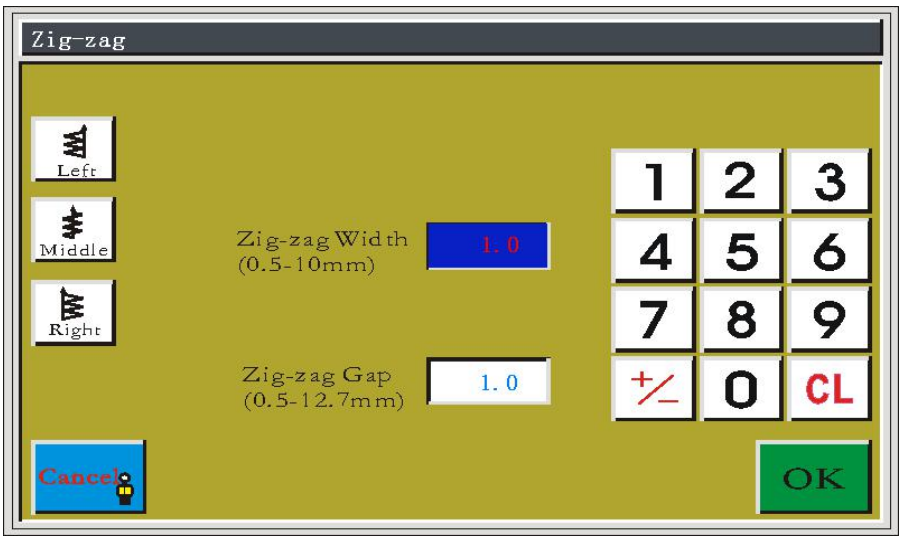
key to determine the collection point; move for many times and determine the collection point; after completing, press the  key to generate a curve.

If it needs to adjust the stitch, speed, fastening, complementary sewing, zig-zag sewing and insert functional code at the end of this section, please refer to relevant setting operations. This operation may be done at any time before the graphics generation.

## 4.9 Zig-zag Sewing (Bartack)

In file collection, if the current collection section needs zig-zag sewing, press the 

key to enter zig-zag setting interface, as shown in figure:




There are 3 kinds of zig-zag ways: 

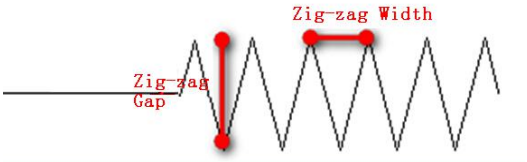
is zig-zag sewing along the left side of the collection direction;

is zig-zag sewing along the center line of the collection direction;

is zig-zag sewing along the right side of the collection direction.

Choose zig-zag ways according to need, the key background becomes yellow when selected; set the width and gap of zig-zag, click "OK" to return to collect file main interface; the bartack background becomes red 

at the moment, which shows that bartack will be used for each subsequent collection section. Effect of the using bartack is as shown in the figure below:



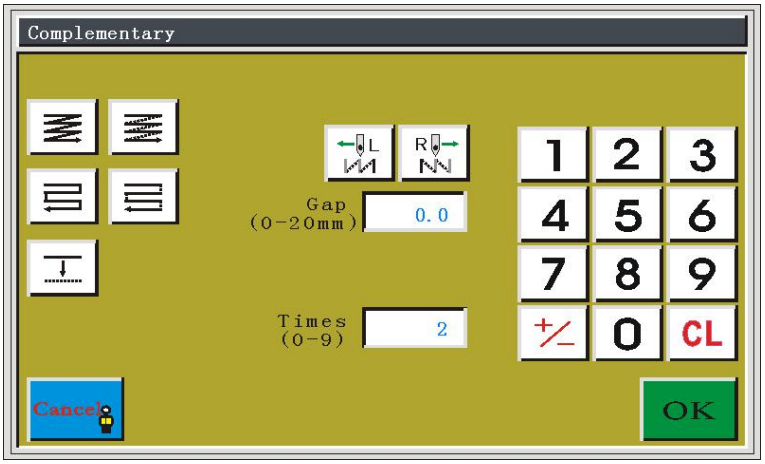
If you want to cancel the bartack, click 

to enter zig-zag setting page; click on the zig-zag sewing icon with yellow background to make it become white, click "OK" to return to collection.

## 4.10 Multiple Sewing and Complementary Sewing

In file collection, if the current collection section needs multiple sewing or complementary sewing, press the 

key to enter complementary setting interface, as shown in figure:




There are 5 kinds of multiple sewing ways, as shown below:

 Homodromous multiple sewing - sewing: does not trim thread after sewing of the first thread, and sews continuously to the sewing start point of the second thread to carry out homodromous continuous sewing.

 Homodromous multiple sewing - empty sending: after trimming thread of sewing of the first thread, empty sending to the sewing start point of the second thread to carry out homodromous sewing.

 Reverse multiple sewing - sewing: does not trim thread after sewing of the first thread, and sews continuously to the sewing start point of the second thread to carry out reverse continuous sewing.

 Reverse multiple sewing - after trimming thread of sewing of the first thread,

empty sending to the sewing start point of the second thread to carry out reverse sewing.

 Complementary Sewing: used for the zoom copy with specified number of times and spacing to collected circular arc, round, polygon, curve. The effect is shown in figure 

 : Means to add multiple sewing to the left of the input stitching direction. It is to zoom in copy the collection thread in case of complementary sewing.

 : Means to add multiple sewing to the right of the input stitching direction. It is to zoom out copy the collection thread in case of complementary sewing.

 : Means the distance between each stitch, input range of 0.0~20.0 mm.

 : Means the number of each stitch to increase, input range is: 0~9. 0 means no increase.

Select multiple sewing way and direction according to the need, and make background of both icons to become yellow, set up thread distance and the number of times of sewing. After the setting is completed, press the  key to save the current settings, and press  or  key once again to return to the collect file main interface. Then the background of multiple sewing becomes red  , which shows that multiple sewing will be used for each subsequent collection section (except empty sending).

If you want to cancel multiple sewing, click  to enter complementary settings page; click on the icon with yellow background to make it to become white, click "OK" to return to collection, the multiple sewing icon will become green  .

## 4.11 Reinforcing Sewing

In file collection, if the current collection section needs forward and backward or closed reinforcing sewing, press the  key to enter reinforcing setting interface, as shown in

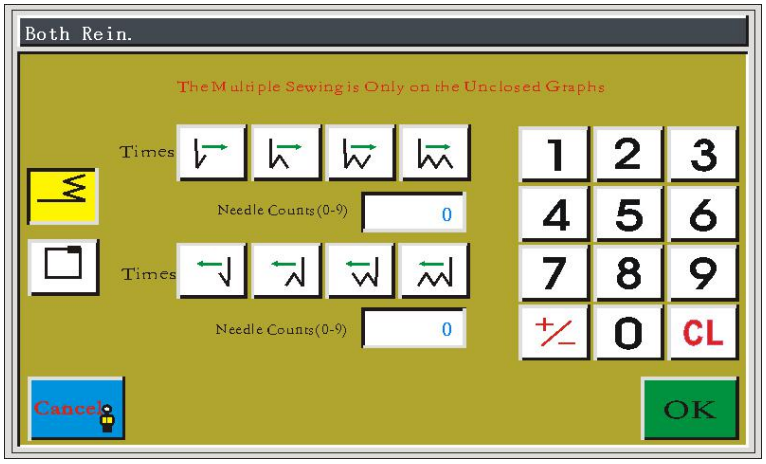
figure:


Choose forward and backward reinforcing or closed reinforcing way according to the need.

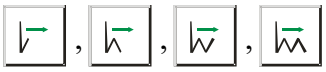
### 4.11.1 Forward and Backward Reinforcing

Forward and backward reinforcing is only applicable to the unclosed graph. Forward and backward reinforcing is the reverse stitching of the head and the tail.

In reinforcing setting interface, press the key to enter the forward and backward reinforcing setting interface, key background will become yellow. As shown in figure:




There are four kinds of ways for beginning reinforcing, , , , : means to carry out reverse stitching to the beginning for 1, 2, 3, 4 times respectively before starting normal sewing, as shown on the icon.

There are four ways for end reinforcing:  : means to carry out reverse stitching to the end for 1, 2, 3, 4 times respectively after normal sewing, as shown on the icon.

The beginning and the end reinforcing can be set at the same time or any end only.

Set number of times and number of stitches to reverse stitching according to the need. After the setting is completed, press the 

key to save the current settings. Press 

or 

key once again to return to the collect file main interface. Then the background of reinforcing becomes red 

, which shows that reinforcing will be used for each subsequent collection section. The display line width of reinforcing segment area becomes thick.

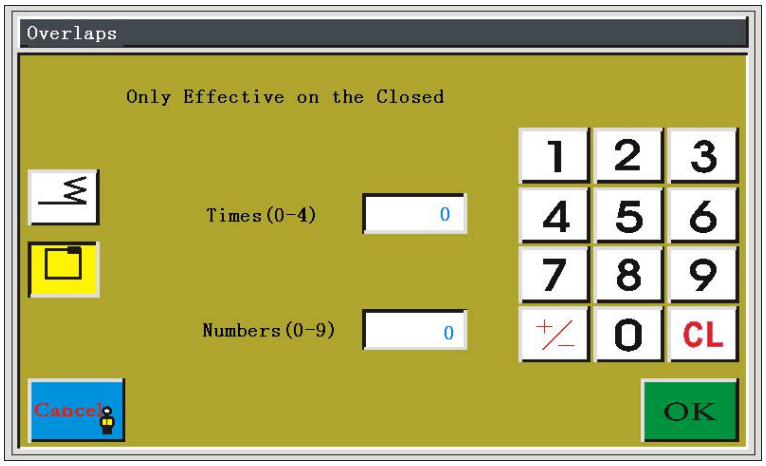
If you want to cancel the reinforcing, click 

to enter reinforcing setting page; click on the  icon with yellow background to make it become white, click "OK" to return to collection.

## 4.11.2 Closed Reinforcing

Closed reinforcing is only applicable to closed graphs (a. closed graphs or round generated by polygons; b. end point of the last graph and sewing start point of empty sending section end (or absolute origin) overlap). Closed reinforcing is to continue sewing specified number of threads forward after sewing to the end point (that is, the needle starting point), and then return to the needle starting point, carrying out overlap reinforce between the two points.

In reinforcing setting interface, press the  key to enter the closed reinforcing setting interface, key background will become yellow. As shown in figure:

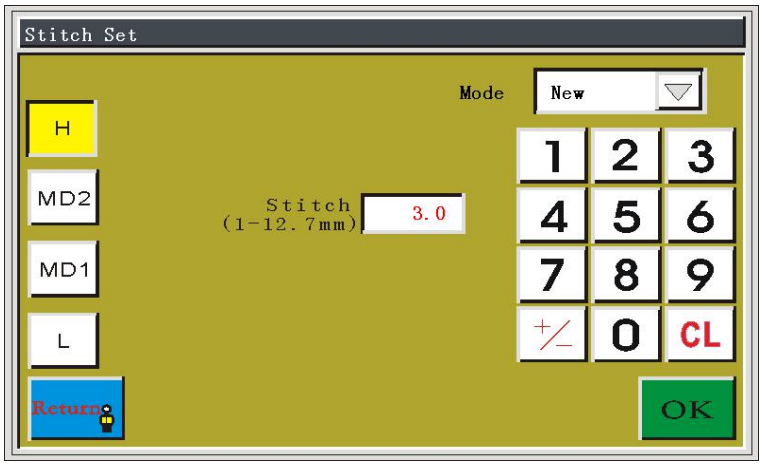



Set number of times and number of stitches to overlap according to the need, 0 means invalid. After the setting is completed, press the OK key to save the current settings. Press OK or Cancel key once again to return to the collect file main interface. Then the background of reinforcing becomes red Fasten, which shows that reinforcing will be used for each subsequent collection section. The display line width of reinforcing segment area becomes thick.

If you want to cancel the reinforcing, click Fasten to enter reinforcing setting page; click on the icon with yellow background to make it become white, click "OK" to return to collection.

## 4.12 Collection Speed and Stitch

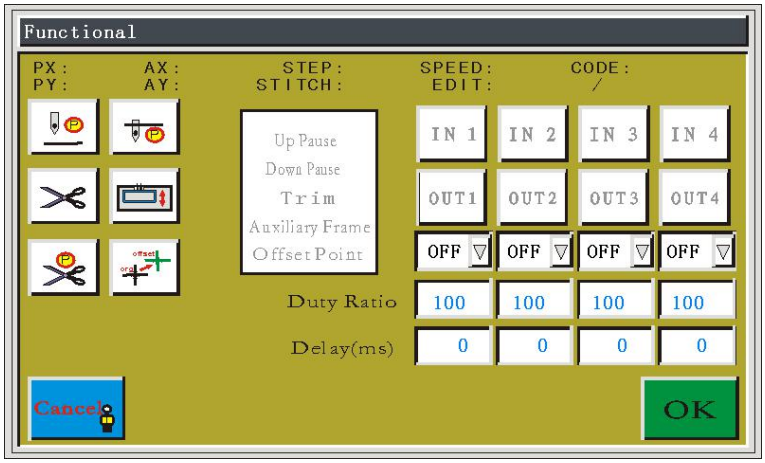
In file collection, if the current and subsequent collection section need to change the sewing speed or stitch, press Stitch Setting key to enter the speed function setting interface, as shown in figure:




Set new sewing speed or stitch according to the need. After the setting is completed, press the OK key to save the current settings. Press OK or Cancel key once again to return to the collection interface, to continue collection operation of current section.

## 4.13 Insert Functional Code

In file collection, if you need to add functional code after the end point of last completed collection section, press the Functional Code key to enter functional code setting interface, as shown in figure:




There are six kinds of functional codes: Up Pause functional code, the spindle stops at the Up Pause needle position when meeting the functional code.

Down Pause functional code, the spindle stops at the Down Pause needle position when meeting the functional code.

 Trim functional code, trim thread when meeting the functional code, the spindle does not stop.

 Auxiliary Frame functional code, the frame rises when meeting the functional code, the spindle upper stops.

 Trim and Up Pause functional code, trim thread when meeting the functional code, the spindle upper stops.

 Offset Point (secondary origin) functional code, the spindle returns to this point automatically after processing the file.

Note: Offset Point functional code will work only when the following conditions are met: a. it must be added at the end point of the empty sending section; b. there isn't any sewing start point before the empty sending section.

Press keys to add functional code according to need, the characters of selected functional code will be red; after the setting is completed, press the 

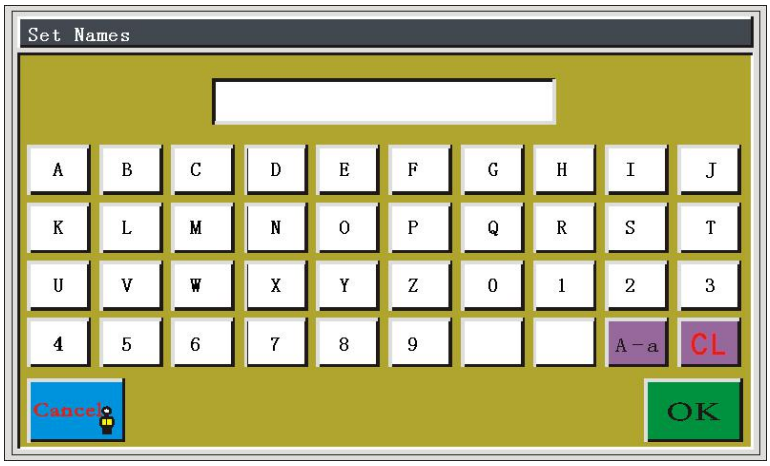
key to complete a functional code adding, and return to the collection interface automatically. You can carry on the follow-up collection operations.

Attached sewing control software can provide more flexible functional code operations.

## 4.14 Save File

After completion of file collection, if you need to save the collected files, press 

key to enter the save interface, as shown in figure:



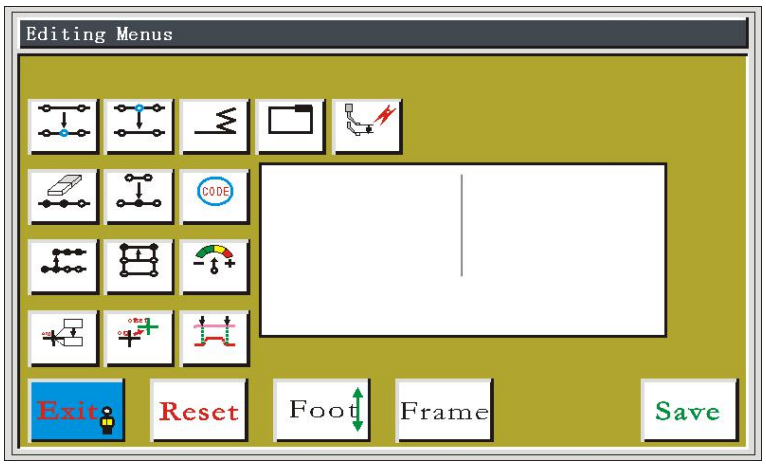

Press the alphanumeric key to input file name, press the OK key to save the file. The system will select the currently saved file automatically as processing file and jump to work interface for processing.

# Chapter V Modify File

If a certain part or a point of the currently selected files need to be modified, it can be finished through "Edit File", or through "Collect File" for adding collection. It is effective for the graphic edit generated by "Collect File", and graphs converted by attached software may be not able to be edited due to too many sewing points.

## 5.1 Main Interface of Modify File

In the main menu interface, press the Modify File key to enter edit file interface, as shown in figure:




Select the way needed to modify to edit, after the completion, press the Save key to return to the processing main interface.

Functions of keys are introduced as follows:

Add needle point key: used to add a needle point between the needle point of the current cursor and the next point, graphics unchanged. Stitch length of the adding point is from 0.1 to (current adding stitch length -0.1) MM; if the length is beyond this range, it will fail to add.

Delete needle point key: used to delete the stitch point at current cursor position, graphics unchanged. After removing the current needle point, if the line length combined by

the original forward and backward 2 needles is greater than 12.7 MM, it will fail to remove.

 Forward and backward strengthening key: applicable to the unclosed graph. Forward and backward reinforcing is the reverse stitching of the head and the tail.

 Closed reinforcing key: suitable for closed graph. Closed reinforcing is the overlap reinforcing to the needle starting direction after reaching the end.

 Delete multiple needle key: used to delete multiple stitches after the current cursor position, graphics changed.

 Append needle point key: used to append one (stitch length within 12.7 MM) or more stitches after the cursor, graphics changed.

 Modify functional code key: used to insert a functional code at the current cursor position.

 Needle position modify key: used to modify the needle point position at current cursor position, graphics unchanged, or to modify all stitches after current needle point, graphics changed. If the straight line length of forward and backward 2 needles of modification is greater than 12.7 MM, it fails to modify.

 Section offset key: used to modify the stitch way of the currently selected section, graphics changed.

 Section speed modification key: used to modify the processing speed of the currently selected section.

 Overall offset key: used to modify the sewing start position of the currently selected file, graphics changed.

 Secondary origin modify key: used to modify the secondary origin position of the currently selected file, graphics changed.

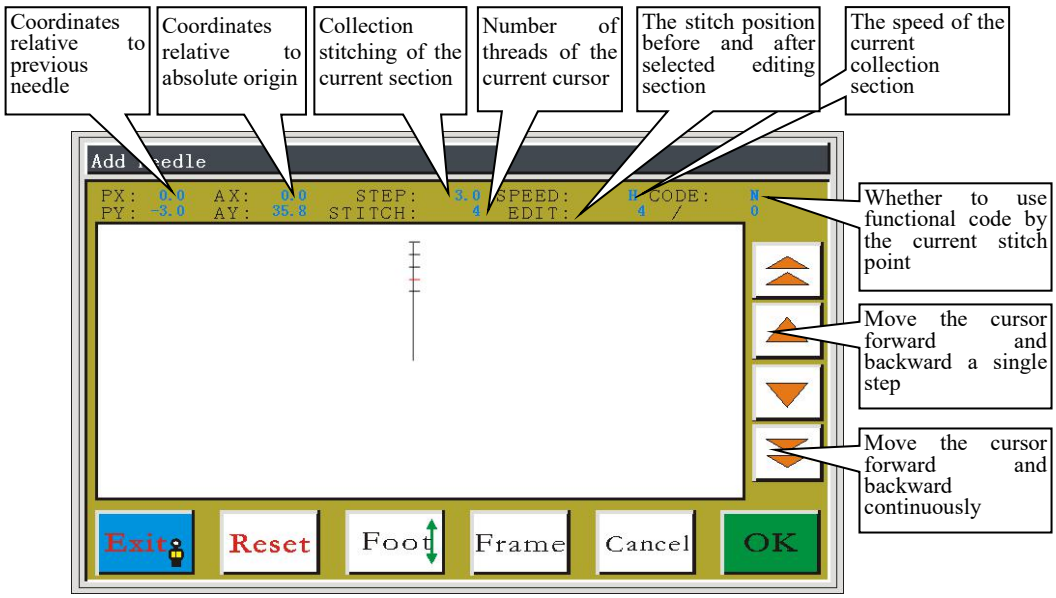
 Section modify key: used to modify the position of the currently selected section,

graphics changed.

 Presser foot tension setting key: used to set the intensity of yarn trapper and height of presser foot.

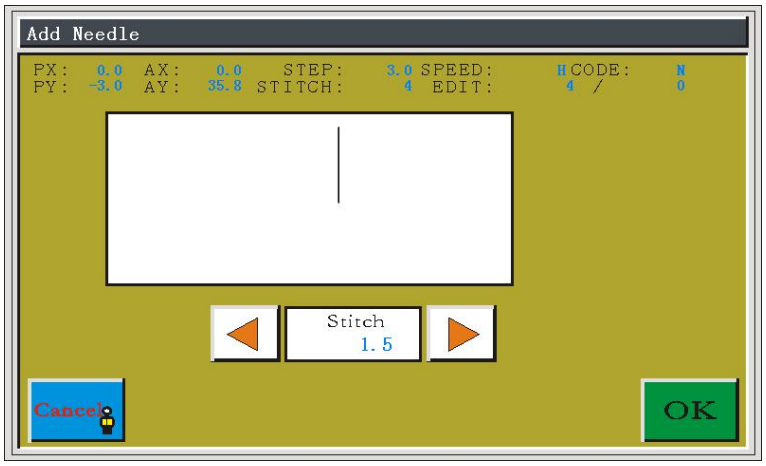
## 5.2 Add Needle Point

In the edit file main interface, press the  button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the position where it needs to add the needle point. If you need to add a stitch between the 4th, 5th threads and 1.5 mm from the 4th thread, move the cursor to the 4th thread. Press the 

key to enter the stitch setting interface, as shown in figure:

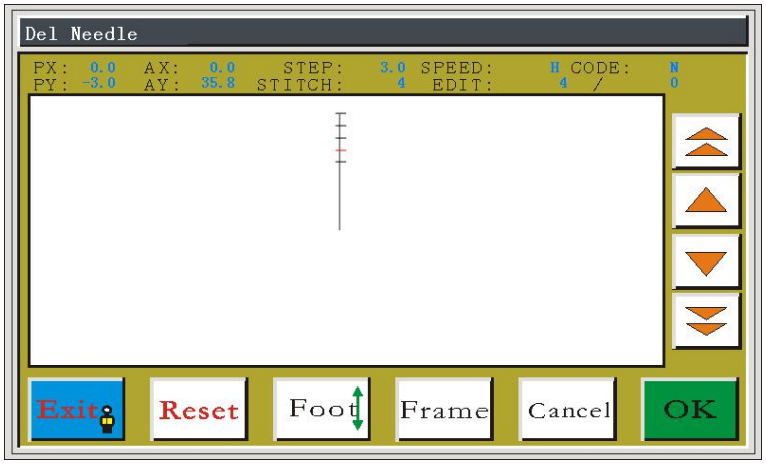



Press the left-right direction keys to adjust distance from the needle point to add to the currently selected needle point, and the distance cannot be more than the distance from the currently selected needle point to the originally next needle point, otherwise it will be invalid. It is set to be 1.5 mm here. Press the OK key to confirm adding.

Return to the select stitch interface automatically, you can continue to add or press the Exit button to save changes and return to the edit file main interface.

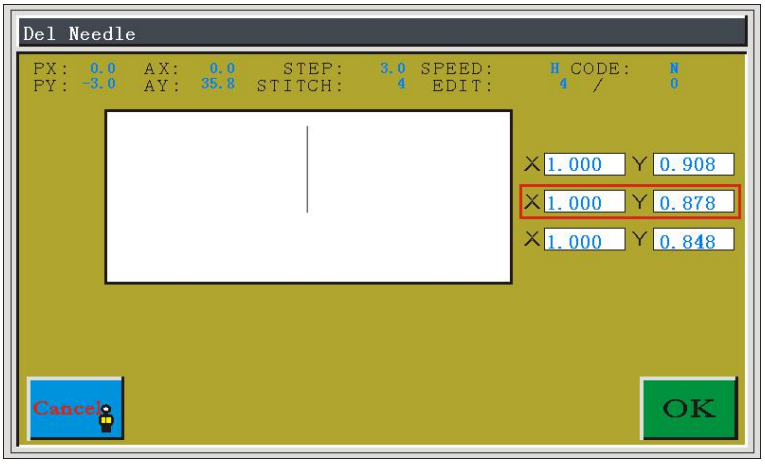
## 5.3 Delete Needle Point

In the edit file main interface, press the button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the position where it needs to delete the needle point. Press the OK key to enter the edit

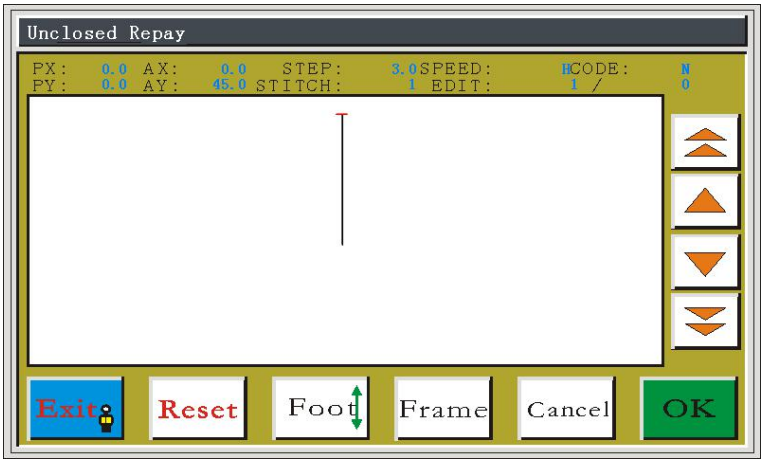
operation interface, as shown in figure:



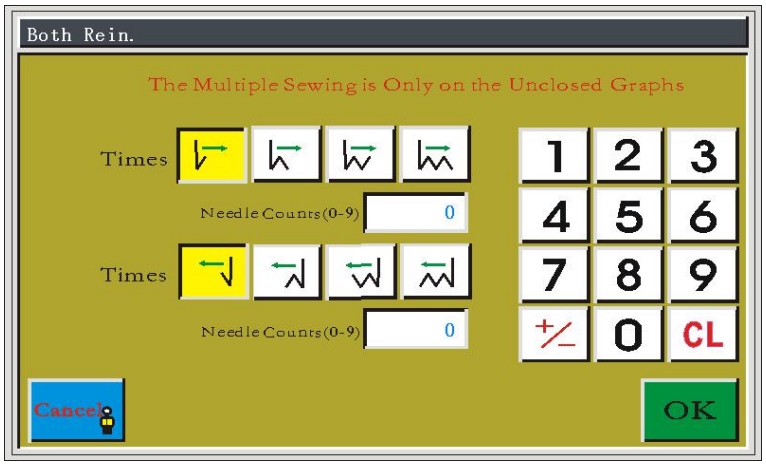

Press the OK key to confirm deleting selected needle point. It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

## 5.4 Forward and Backward Reinforcing

In the edit file main interface, press the button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the needed position. Press the OK key to enter the edit operation interface, as shown in figure:



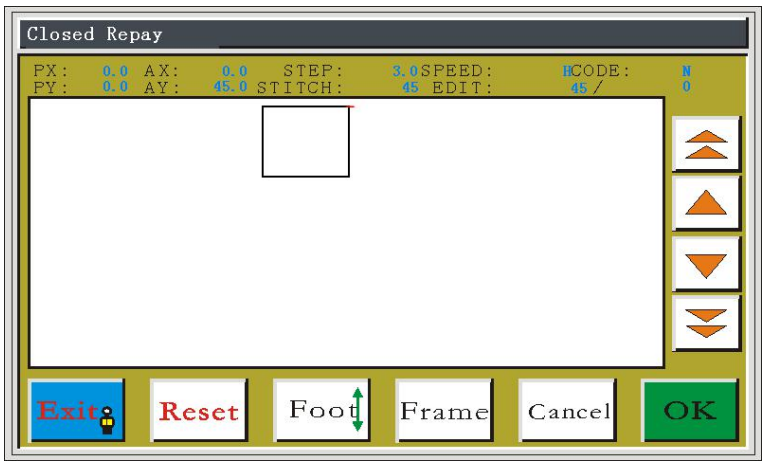

"Reverse stitching backwards from the beginning" is beginning reinforcing, "Reverse stitching forward from the end" is end reinforcing, which can be set at the same time, or either.

Set number of times and number of stitches to reverse stitching according to the need. After the setting is completed, press the OK key to save the current settings.

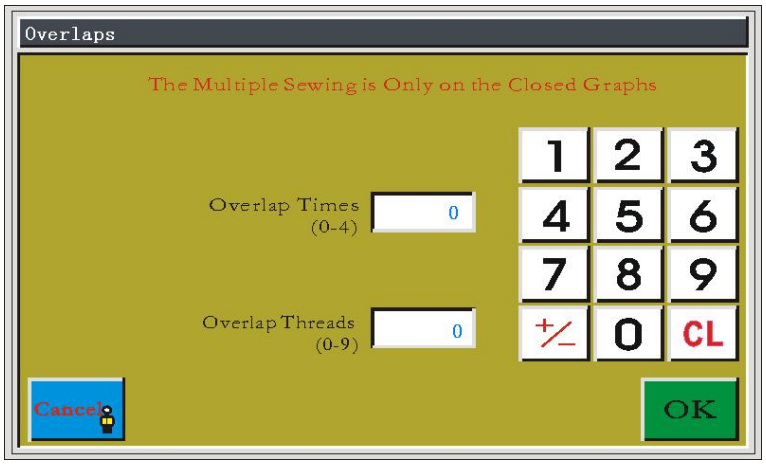
Return to the select stitch interface automatically, reinforcing part will become thick. You can continue to edit or click Exit button to save the changes and return to the edit file main interface.

## 5.5 Closed Reinforcing

In the edit file main interface, press the button to enter select stitch interface, as shown in figure:



Press the Single Step or Continue key to move the cursor forward and backward to the end point of the closed graph, press the OK key to enter the edit operation interface, as shown in figure:

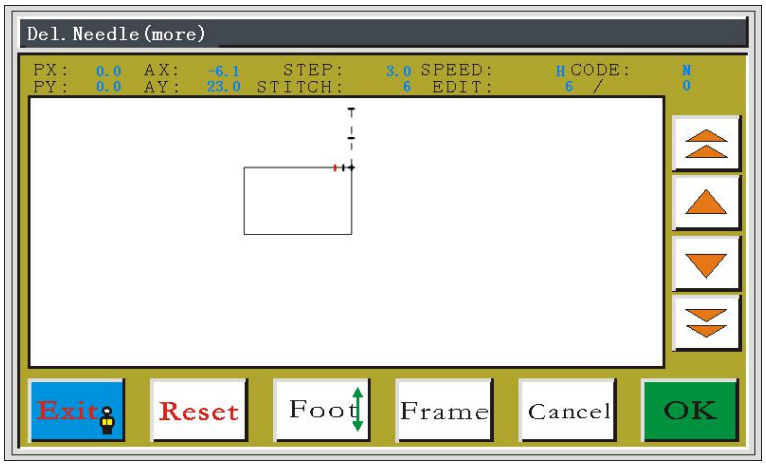



Closed reinforcing is effective for the end point of closed graphs (a. closed graphs or round generated by polygons; b. end point of the last graph and sewing start point of empty sending section end (or absolute origin) overlap); for other positions, it will prompt "This point is an unclosed intersection".

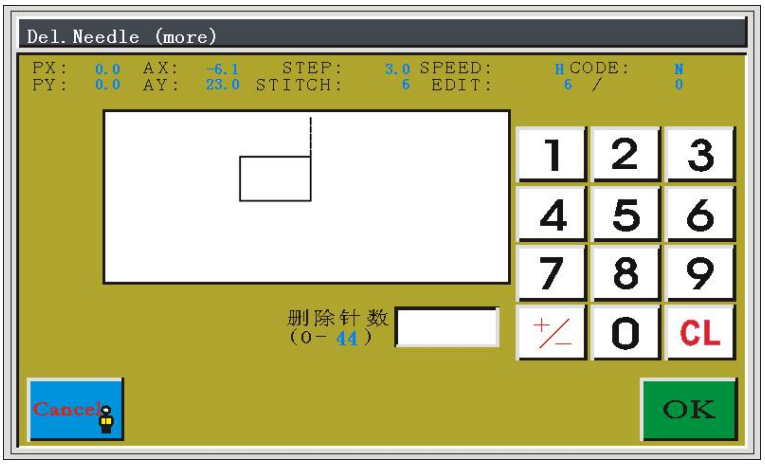
Set number of times and number of stitches to overlap according to the need. After the setting is completed, press the OK key to save the current settings. Return to the select stitch interface automatically, reinforcing part will become thick. You can continue to edit or click Exit button to save the changes and return to the edit file main interface.

## 5.6 Delete Multi-Needle

In the edit file main interface, press the button to enter select stitch interface, as shown in figure:



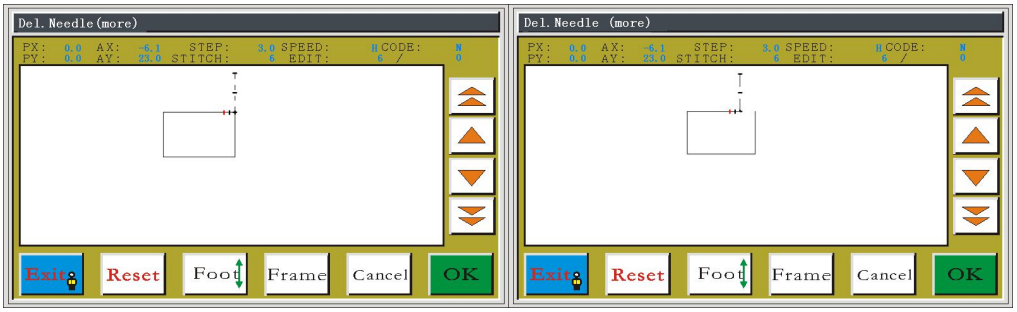

Press the Single Step or Continue key to move the cursor forward and backward to the needed position. Press the OK key to enter the edit operation interface, as shown in figure:




Press numeric keys to input the number of threads needed to delete, press the OK button to delete specified number of threads after the cursor point. If the deleted stitches are more than the remaining stitches, all the subsequent stitches will be deleted.

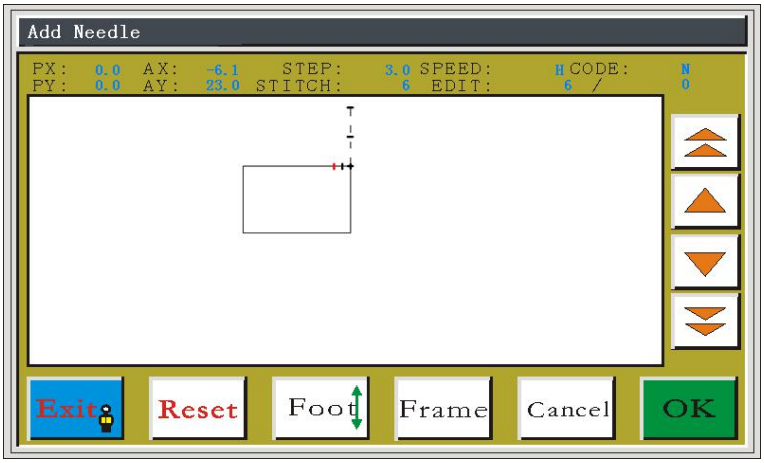
It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

The following is the before and after contrast figures of deleting 3 threads at the 6th needle position. After deleting, subsequent stitches will move as a whole.




## 5.7 Append Needle Point

In the edit file main interface, press the  button to enter select stitch interface, as shown in figure:



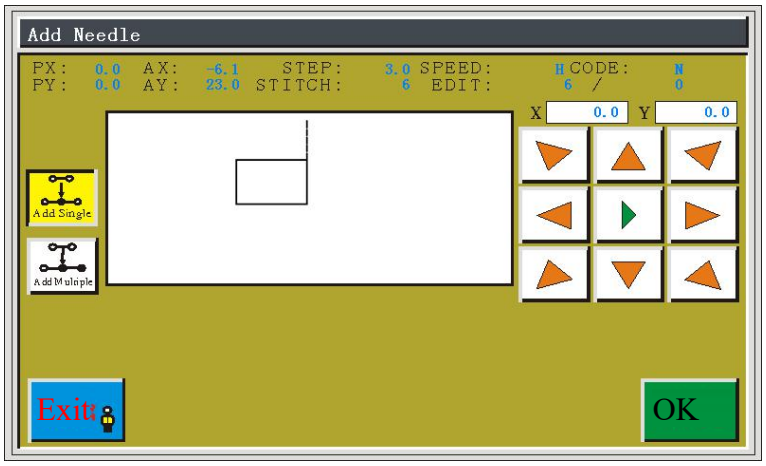

Press the Single Step or Continue key to move the cursor forward and backward to the needed position; press the  key to enter append single needle operation interface by default. After the completion of appending, subsequent stitches will move as a whole.

There are two ways to append stitch:  Append one stitch;

 Append multiple stitches.

### 5.7.1 Append Single Needle

In the append stitch interface, press the  button to enter append single needle operation interface, and the icon background will become yellow. As shown in figure:

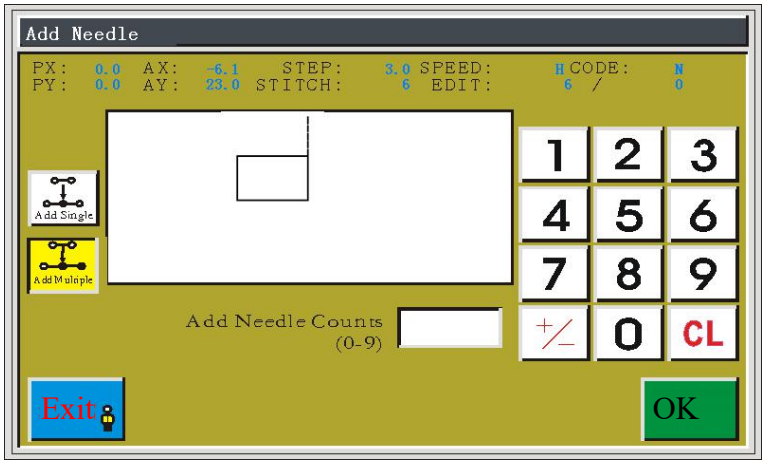



Press the direction keys to move to the position where it needs to append stitch, the X, Y positions above direction keys display the relative coordinates of cursor with the selected point; move the cursor for not more than 12.7 MM, and press the OK key to complete appending.

It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

## 5.7.2 Append Multi-Needle

In the append stitch interface, press the Add Multiple button to enter append multi-needle operation interface, and the icon background will become yellow. As shown in figure:

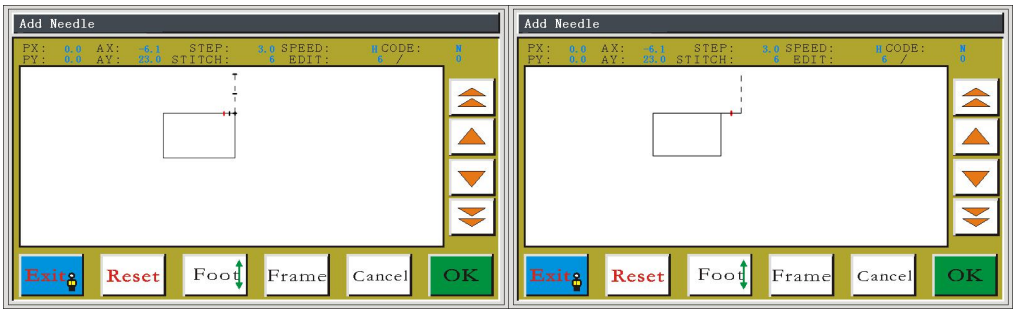



Press numeric keys to input the number of threads needed to append, the appended stitch is the direction and stitch length of the needle before the append point, and press the OK

key to complete appending.

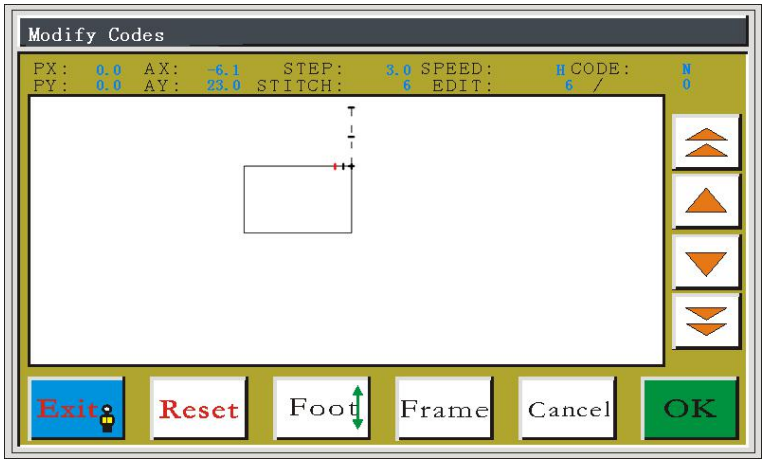
It will return to the select stitch interface automatically, and you can continue to edit or click  button to save the changes and return to the edit file main interface.

The following is the before and after contrast figures of appending 4 needles at the 6th needle position.

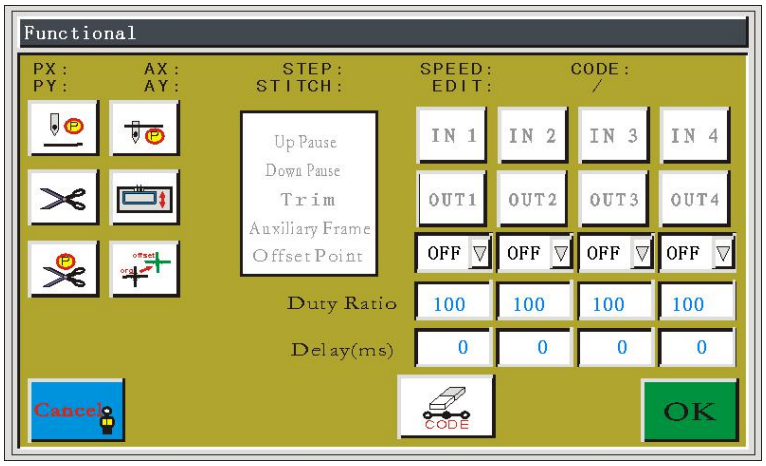



## 5.8 Modify Functional Code

In the edit file main interface, press the  button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the needed position, check "CODE: Y/N" to judge whether the current point has functional code. Press the  key to enter the edit operation interface, as shown in figure:




Press keys to modify or insert functional code according to need, the text will become red when the functional code is selected; press the functional code key again or press the 

button to cancel the current setting, and the text becomes gray. After the setting is completed, press the 

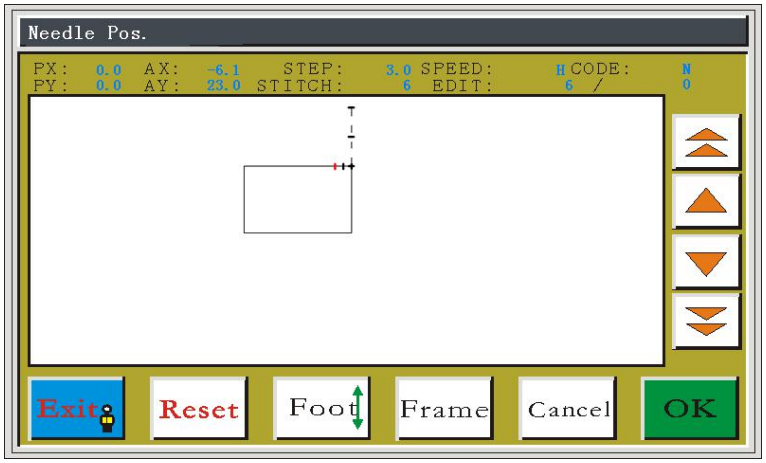
key to save the current settings.

It will return to the select stitch interface automatically, and you can continue to edit or click 

button to save the changes and return to the edit file main interface.

## 5.9 Modify Needle Position

In the edit file main interface, press the 
button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the

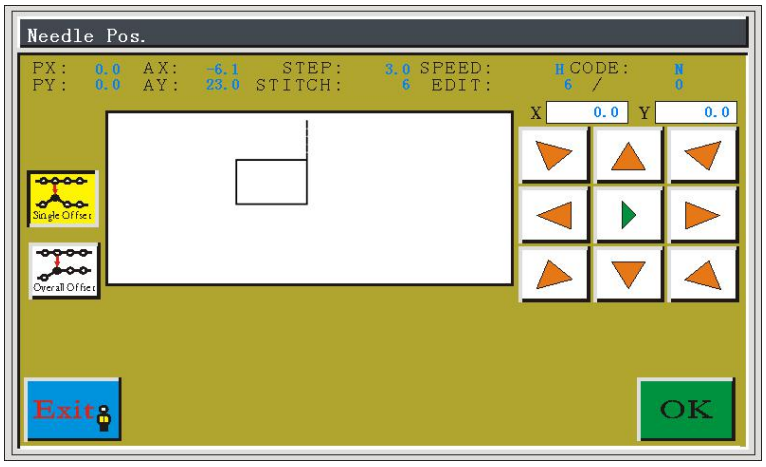
needed position. Press the OK key to enter the single needle offset operation interface by default.

There are two ways for needle position modification: Single Offset Modify the needle position of the current point, with no influence to other stitches after the modification.

Overall Offset Modify all needle positions after the current point, the subsequent stitches will offset as a whole after the modification.

## 5.9.1 Modify Current Point Needle Position

In the modify needle position interface, press the Single Offset button to enter to modify the current point needle operation interface, the icon background becomes yellow. As shown in figure:

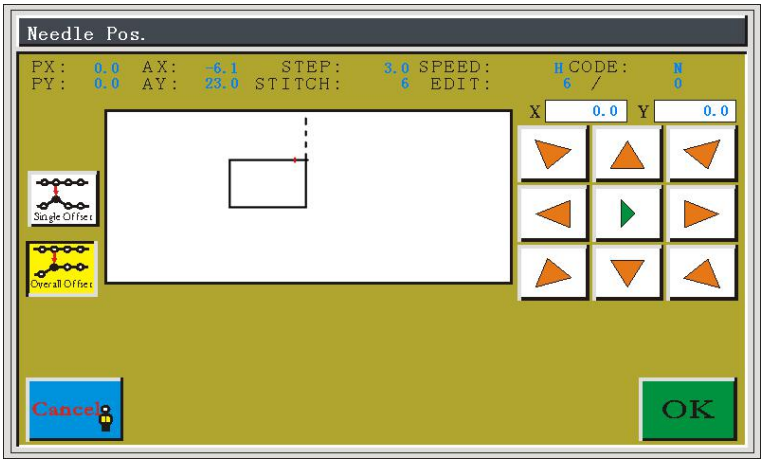



Press the direction keys to move the cursor to the position where it needs to modify the stitch point, and the moved distance should be not greater than 12.7 MM, press the OK key to complete modification.

It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit main interface.

## 5.9.2 Modify All Needle Positions after Current Point

In the modify needle position interface, press the  button to enter to modify all needle positions after current point interface, the icon background becomes yellow. As shown in figure:

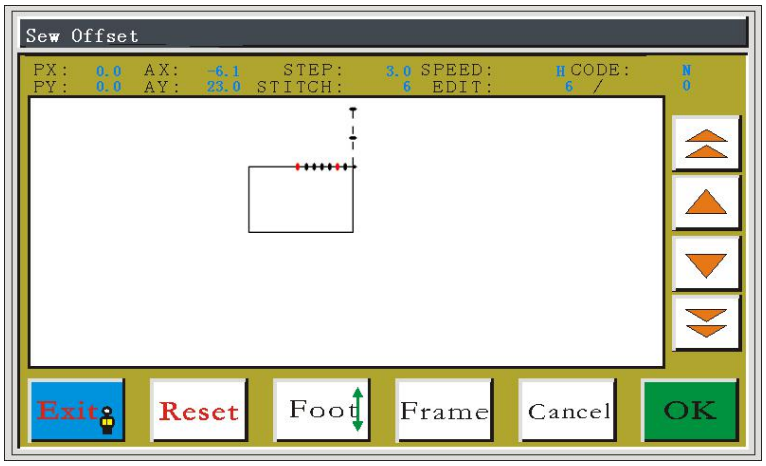



Press the direction keys to move the cursor to the position where it needs to modify the stitch point, and the moved distance should be not greater than 12.7 MM, press the  key to complete modification. The subsequent stitches will offset as a whole after the modification.

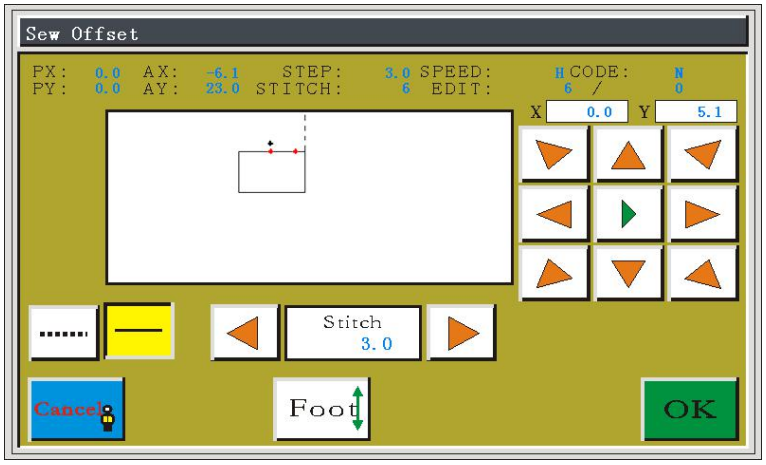
It will return to the select stitch interface automatically, and you can continue to edit or click  button to save the changes and return to the edit file main interface.

## 5.10 Section Offset

In the edit file main interface, press the  button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the starting point of section offset, and press the OK key, mark with red cursor; press the Single Step or Continue key to move the cursor forward and backward to the final position of section offset again, and press the OK key to enter the modify setting interface, as shown in figure:

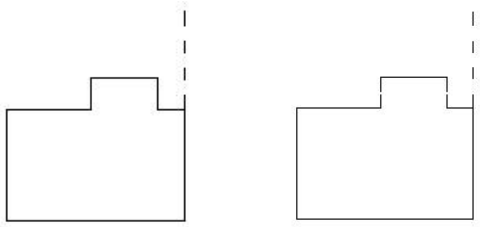



Section offset will shift the area between the above two selected red cursors overall towards the location of the movement of direction keys, other parts of the original graphics unchanged, and ways of ····· or —— can be used for line segment to connect offset area and the original figure. If —— way is used, the line segment will be processed according to specified stitch in the right side. Press the OK key to complete modification.

It will return to the select stitch interface automatically, and you can continue to edit or

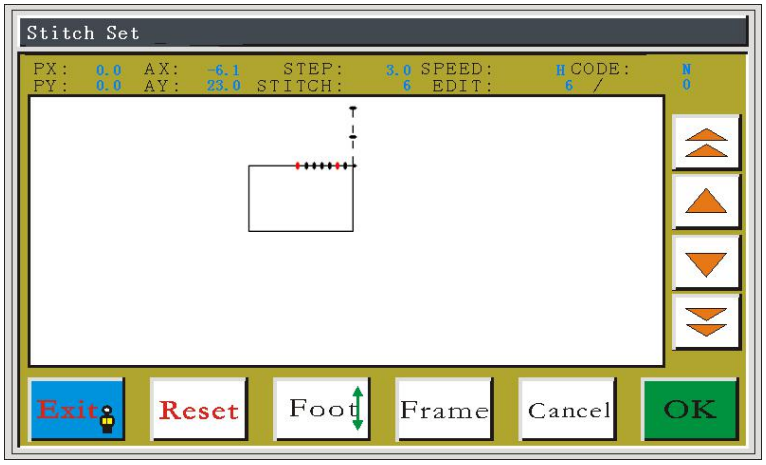
click Exit button to save the changes and return to the edit file main interface.

In section offset, selecting lines and empty offset way effect is as shown below:



## 5.11 Section Speed Modification

In the edit file main interface, press the button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the starting point of sewing speed modification, and press the OK key, mark with red cursor; press the Single Step or Continue key to move the cursor forward and backward to the final position of speed modification again, and press the OK key to enter the modify setting interface, as shown in figure:

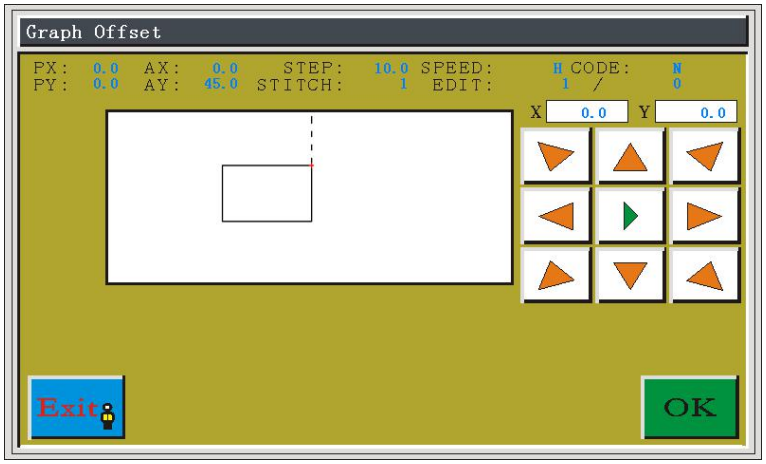

Press keys to choose the required speed ratio, and the background becomes yellow. Press the OK key to complete modification.

It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

Section speed modification will not change graphics, and you can see the processing speed of corresponding point at "SPEED" position in the select stitch interface.

## 5.12 Overall Offset

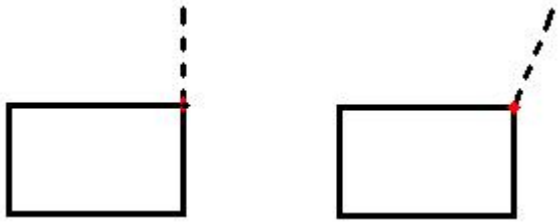
In the edit file main interface, press key to enter graphics offset interface, as shown in figure:




Press the direction keys to move the cursor to the starting position where it needs to modify, and press the OK key to complete modification.

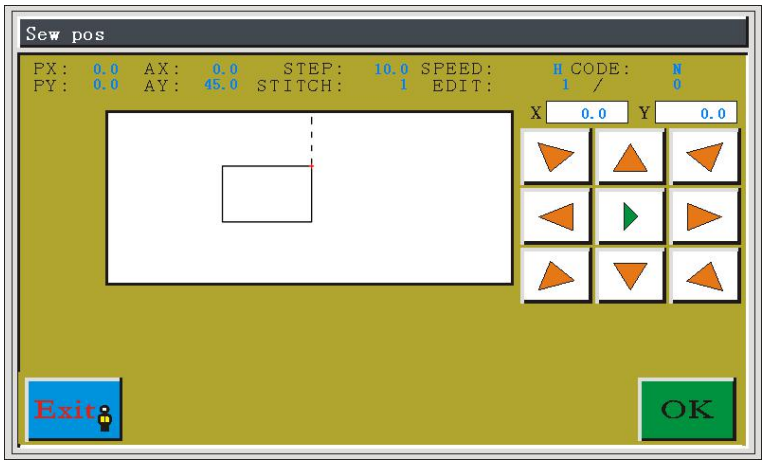
It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

In the graph offset interface, set offset for “X: 0.0 Y: 9.0” and contrast of effect before and after the modification is as follows:



## 5.13 Secondary Origin Modification

In the edit file main interface, press the Modify Secondary Origin button; if there is no secondary origin in the graphic, it will prompt "No secondary origin found, please return!" directly; if yes, it will enter the modify secondary origin (offset point) interface, as shown in figure:



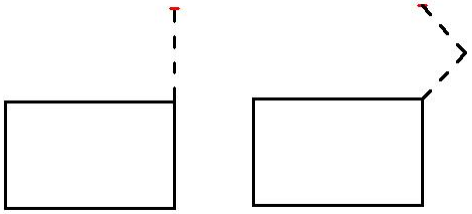

Press the direction keys to move the cursor to the starting position where it needs to modify, and press the OK key to complete modification.

It will return to the select stitch interface automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

Secondary origin (offset point) only exists in the empty offset section between the graphics connection absolute origin and the point of first start sewing. Refer to the "Collect

File" - “Add Functional Code" part for secondary origin adding. It is used to return to the secondary origin and no need to return to absolute origin after processing a file.

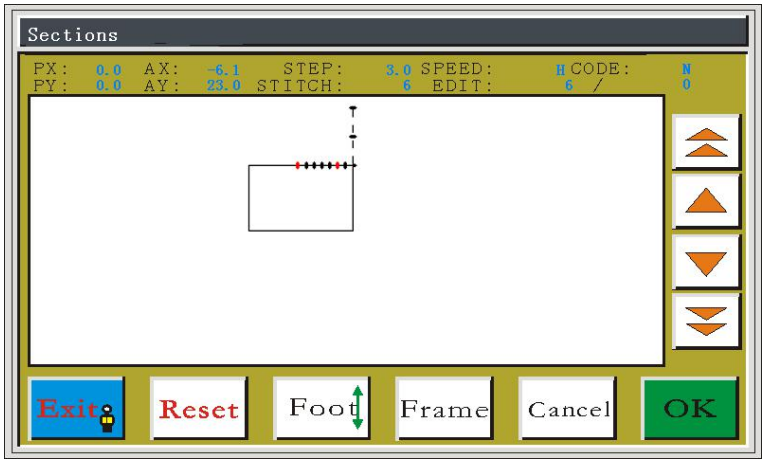
Secondary origin modification affects the empty offset section only, and will not affect other sewing areas. Cases before and after the modification are as shown below



## 5.14 Section Modification

Section modification can modify the selected stitch section to be tracing lines such as empty sending, straight line, round, curve, multiple sewing, etc.

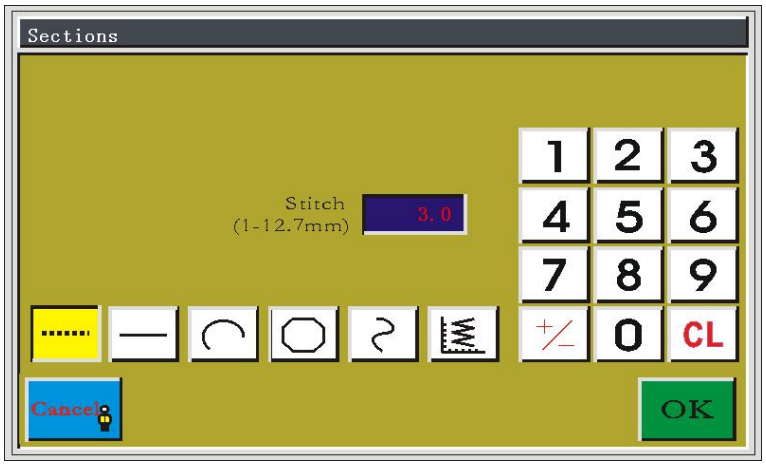
In the edit file main interface, press the  button to enter select stitch interface, as shown in figure:




Press the Single Step or Continue key to move the cursor forward and backward to the starting point of sewing speed modification, and press the 

key, mark with red cursor; press the Single Step or Continue key to move the cursor forward and backward to the final position of speed modification again, and press the 

key to enter the modify setting interface, as shown in figure:




Press keys to choose the stitch way needed to modify sections, and the background becomes yellow; choose the stitch to use; Press OK key to enter the corresponding interface. If you choose , , it will be done directly; if you choose , , , it will enter the graphics collection interface; if you choose , it will enter multiple sewing setting interface.

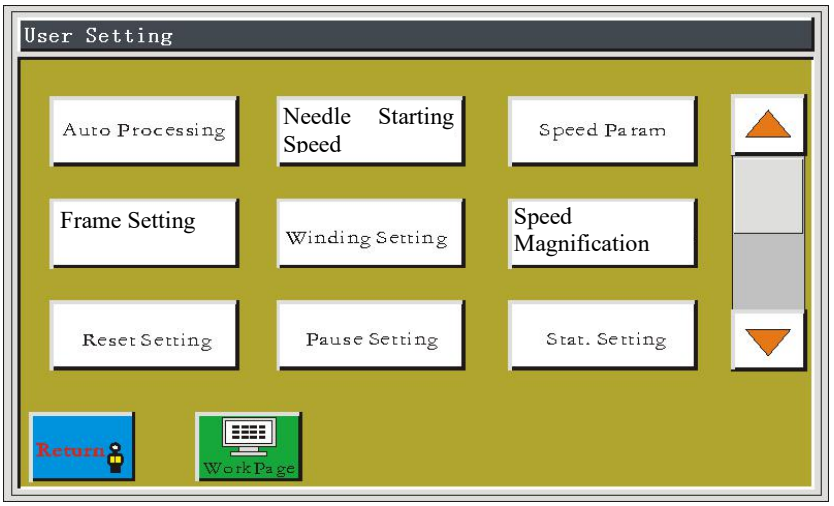
It will return to the select stitch interface after modification automatically, and you can continue to edit or click Exit button to save the changes and return to the edit file main interface.

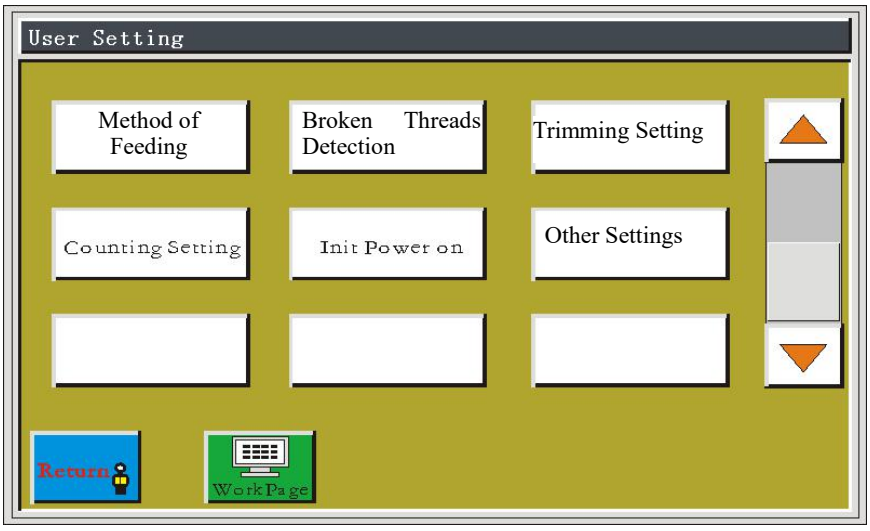
# Chapter VI User Settings

Users Settings is mainly that in use, according to their processing requirements, users adjust parameters to meet the convenient processing requirements and improve processing efficiency.

## 6.1 User Settings Interface

In the main menu interface, press User Param button to enter the user setting interface; there are two pages of the user setting totally, as shown in figure:




**Parameters classification declaration:**

Auto Processing: Set up parameters needed by automatic processing.

Needle Starting Speed: Set the speed of the first several needles before starting up.

Speed Param: Set the running speed of spindle and XY axis.

Frame Setting: Set related parameters of pressure plate.

Winding Setting: Set the parameters of the winding work.

Speed Magnification: Set the processing speed proportion of spindle in specified section in collection file.

Reset Setting: Set the parameters related to the origin.

Pause Setting: Set the parameters used in pause.

Stat. Setting: Set related parameters of statistical processing.

Method of Feeding: Set related parameters needed by feeding.

Broken Threads Detection: Set related parameters of broken threads detection.

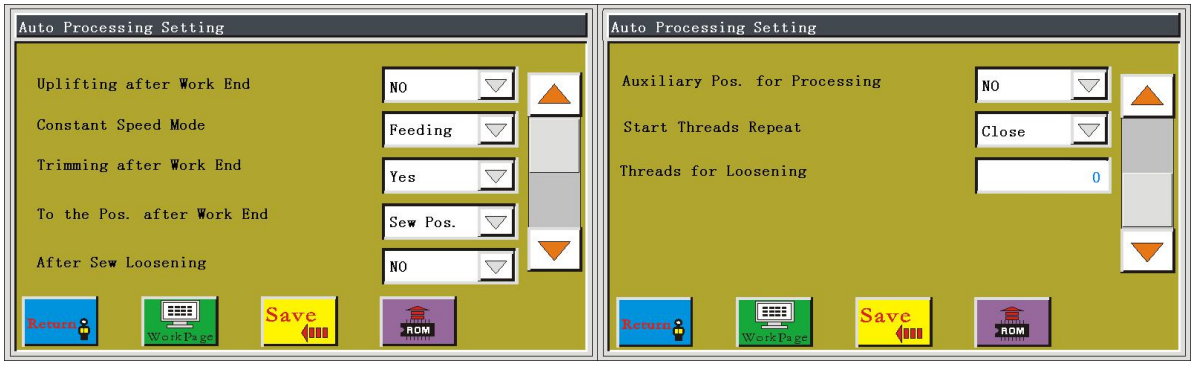
Trimming Setting: Set related parameters of trimming.

Counting Setting: Set related parameters of the baseline statistics.

Init Power on: Set parameters needed by initialization in machine electrifying.

Other Settings: Set the parameters related to circulation processing and interface display.

Take Auto Processing for example, the interfaces are as follows:



## 6.2 User Settings Parameters Introduction

| Parameter Classification | Parameter Name | Scope | Default Value | Parameter Meaning and Note |
|---|---|---|---|---|
| Auto Processing Setting | Uplifting after Work End | Yes/NO | NO | |
| | Constant Speed Mode | Main Axis/Feeding | Feeding | (Fixed) |
| | Trimming after Work End | Yes/NO | Yes | |
| | To the Pos. after Work End | Original Pos./Sew Pos. | Sew Pos. | "Origin" is the origin of the absolute coordinates;<br>"Secondary origin" is the secondary origin (offset point) adding to file |
| | After Sew Loosening | Yes/NO | NO | (Fixed) Whether always loosing threads in sewing empty offset |
| | Auxiliary Pos. for Processing | Yes/NO | NO | |
| | Start Threads Repeat | Close/1/2 | Close | "1", "2" mean at the beginning of sewing, sew the first needle position repeatedly for once or twice and then sew the next needle position.<br>"Off" is not repeat sewing. |
| | Threads for Loosening | 0~255 | 0 | |
| Needle Starting Speed | Speed of the First Stitch | 100-3000 | 300 | (Adjust on-demand)<br>Accelerate from stationary to maximum sewing speed, which can be divided into 5 stages of acceleration process at most.<br>Increasing speed too quickly may result in stitches of the first few needles becoming smaller. |
| | Speed of the Second Stitch | 100-3000 | 600 | |
| | Speed of the Third Stitch | 100-3000 | 1000 | |
| | Speed of the Forth Stitch | 100-3000 | 1600 | |
| | Speed of the Fifth Stitch | 100-3000 | 2000 | |
| | Normal/Slow | | Normal | Slow: It means the constant increases, the above acceleration setting is invalid |
| Speed Setting | Max_Speed of the Main (rpm) | 100-3000 | 2800 | Restrict maximum operating rotate speed of the processing main interface. |
| | Space Moving Speed (mm/min) | 100~50000 | 15000 | Movement speed of the presser frame in empty sending section during normal |

| | | | | |
|---|---|---|---|---|
| | | | | sewing time |
| | Inching Speed (mm/min) | 100-20000 | 5000 | Preview stitch presser frame movement speed when collecting or modifying the file |
| | Patterning Speed 1 | 100-20000 | 500 | When moving frame manually or collecting file, the speed corresponding to the ▶ icon of the eight direction keys. |
| | Patterning Speed 2 | 100-20000 | 1200 | The speed corresponding to the ▶▶ icon of the eight direction keys. |
| | Patterning Speed 13 | 100-20000 | 2600 | The speed corresponding to the ▶▶▶ icon of the eight direction keys. |
| | Smooth Feeding Mode | Switchover/ Smoothness /Normal | Normal | |
| | Saving the Current Speed | Yes/NO | Yes | (Fixed) |
| Frame Setting | Prohibit Sewing When Uplifted | Yes/NO | Yes | |
| | Pedal Operation Sequence | Normal/ Special | Normal | |
| | Pedal Plate Operation Sequence | 1ST/2ST/3ST… | 2ST | The pedal switch for different mechanical structures (with self-locking/without self-locking, etc.), with different ways of operation. |
| | Reserve 1 Pressing Plate | 1ST/2ST/3ST | 1ST | |
| | Reserve 2 Pressing Plate | 1ST/2ST/3ST | 1ST | |
| | Delayed of the Single Pedal | 0.1~12 | 0.6 | |
| | Ignored for Uplifting the Frame | 0~255 | 0 | |
| Winding Setting | Operation of the Winder | Allow/ Disable | Disable | Set processing auxiliary interface  允许 default state<br>允许：Allow |
| | Winding Speed (rpm) | 100-3000 | 1200 | Set processing auxiliary interface default winding speed |
| | Timing of the Winder | 1~63000 | 70 | Set processing auxiliary interface time of winding from start to automatic stop |
| Speed Magnific | High Speed Magnification (%) | 1-100 | 100 | Speed corresponding to the "H" icon in collect file interface. |
| | M-High-Speed Magnification (%) | 1-100 | 90 | Speed corresponding to the "MD2" icon in collect file interface. If the spindle speed |

| | | | | |
|---|---|---|---|---|
| ation Setting | | | | is 2800, it will be 2800 * 90% = 2520 |
| | Medium Speed Magnification (%) | 1-100 | 70 | 对应于采集文件界面“MD1”图标速度。Speed corresponding to the "MD1" icon in collect file interface. |
| | Low Speed Magnification (%) | 1-100 | 60 | Speed corresponding to the "L" icon in collect file interface. |
| Reset Setting | Down the Plate before Reset | Yes/NO | Yes | |
| | Motion Conditions for Reset | Yes/ Random | Random | (Fixed)? |
| | Methods of Reset | XY /X /Y | XY | "XY Simultaneously" means to begin to return to the origin simultaneously: “X first" means X axis returns to the origin first, and then Y axis returns to the origin. |
| | Speed of Reset（mm/min） | 100-20000 100~8000 | 8000 | |
| Pause Setting | Trimming Threads in Pause | Yes/NO | Yes | "Yes”: automatic trimming threads. "No" : without automatic trimming threads |
| | Needle Position in Pause | Up Pos./ Down Pos. | Up Pos. | |
| | Pause Two-stage Motions | Yes/NO | Yes | Two-stage motions: press to pause first, and then loosen for automatic trimming threads, |
| | Delayed Pause Op. | 0.1-12 | 0.8 | |
| | Uplifting the Plate in Pause | Yes/NO | Yes | |
| | Pause Switch Type | S_locked/ Nor. | S_locked | "S_locked" is not to pop-up automatically after pressing the switch;<br>“普通”为按下后可以自动弹起。<br>"Nor." is to pop-up automatically after pressing the switch. |
| Stat. Setting | Timing of Working Time | Yes/NO | Yes | If "Yes", it will enable processing time statistics function always.  is invalid. |
| | Stati.Clearing in Turn on | Yes/NO | Yes | "Yes" is to empty all processing time statistical records when electrifying. |
| | Keeping On After the Counter | Yes/NO | Yes | "Yes": when "statistics initial value" reaches "total number", stop processing; "No": "initial value" will continue to increase. |
| | Effective of the Counter | Yes/NO | Yes | |

| | | | | |
|---|---|---|---|---|
| Method of Feeding | Sewing Thickness Type | Thick/1/2… | Thick | |
| | Light-Material Thickness | Thick/1/2… | Thick | |
| | Middle-Material Thickness | Thick/1/2… | Thick | |
| | heavy-Material Thickness | Thick/1/2… | Thick | |
| Broken Threads Detection | Broken Threads Detection | Yes/NO | Yes | Whether to enable Broken Threads Detection function |
| | Cutting for the Broken Threads | Yes/NO | Yes | Automatic cutting for the broken threads |
| | Ignored Threads When Sewing | 1-255 | 3 | Without broken threads detection for the first set number of threads |
| | Check Threads of the Broken | 1-255 | 2 | To confirm broken threads after detecting the set number of threads continuously |
| | Delay When Broken Threads | 0.01-255.00 | 0.20 | Delay setting time and then carry out broken threads processing after confirming broken threads |
| Trimming Setting | Speed of Trimming(rpm) | 10-2000 | 260 | |
| | Starting Delay of Trimming | 0.01-6.55 | 0.12 | |
| | Duration of Drawing Threads | 0.01-6.55 | 0.12 | |
| | Drawing Threads the Delay(s) | 0.01-6.55 | 0.12 | |
| | Delay for Loosening Threads | 0.01-6.55 | 0.00 | |
| | If Trims Threads After Sewing | Yes/NO | Yes | |
| | If Open the Wiper | Yes/NO | Yes | |
| | Reserve | Yes/NO | Yes | |
| Counting Setting | Stat. Clearing in turn on | Yes/NO | Yes | Whether to carry out zero clearing to "Initial Len of Bobbin Thread" in processing statistics page when electrifying |
| | Stop After the Counter Reaches | Yes/NO | Yes | Whether to stop processing when the "Initial Len of Bobbin Thread" is equal to "Total Len" |
| | Effective Setting of the Counter | Yes/NO | NO | "Yes" will enable the bobbin thread statistical function always<br>"No" is to control the bobbin thread statistical function by  |
| Init | Needles to the UP Pos. | Yes/NO | Yes | |

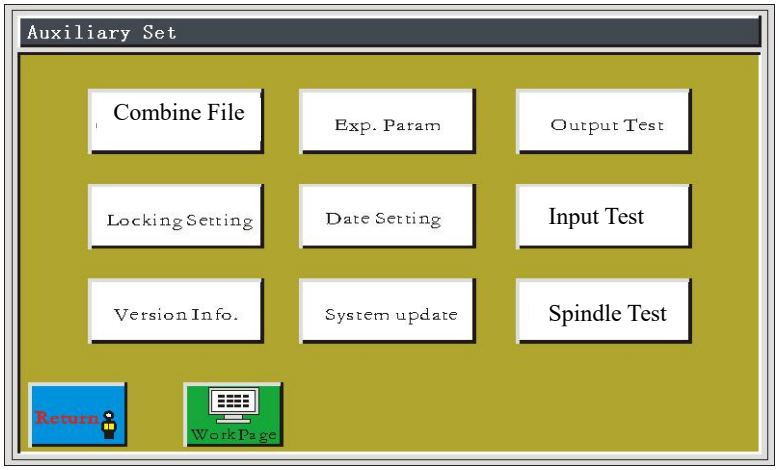
| | | | | |
|---|---|---|---|---|
| Power on Setting | Reset When Powered on | Yes/NO | NO | |
| | Reserve | Yes/NO | Yes | ? |
| | Reserve | Yes/NO | Yes | ? |
| Other Settings | If Auto.Alarms | Yes/NO | NO | |
| | If Circular Processing | Yes/NO | Yes | Whether to enable circulation processing to the same file |
| | Scr.Saver Time | ON/OFF | ON | (Unused) |
| | Screen Type | 1/2/3/4/5 | 5 | (Unused) |
| | ScreenSavers | 0 | 0 | (Unused) |
| | Circular Work Time(M) | 1-1440 | 1440 | Total circulation processing time, stop circulation processing when time out |
| | Circular Work Gap(S) | 0-20 | 3 | Interval from processing finish to start of the next processing |
| | Graphical Preview | All/Common | All | Set the default display mode of file preview in the processing main interface<br>Full Figure: scale to display in the best shape of processing files<br>In Proportion: actual proportion of file in the scope of processing |
| | WorkEnd Pos | Origin/Right/Start Sew/Default | Origin | Return to zero: point which both XY coordinates are zero<br>Right: the rightmost side of the processing scope<br>Sewing start position: the first sewing point of processing file |

# Chapter VII Auxiliary Operation

Auxiliary operation is mainly composed by Combine File, Test for External Components of Equipment, User Management, System Update, etc.

## 7.1 Auxiliary Operation Interface

In the main menu interface, press the Auxiliary Setting button to enter auxiliary operation interface, as shown in figure:




Functions of keys are introduced as follows:

Combine File: combines multiple (up to 8) files into one file for processing.

Exp. Param: exports all parameters of the system to save in U disk.

Output Test: tests whether the output control is normal.

Locking Setting: sets management password, use time limit, export password, etc.

Date Setting: sets the system time.

Input Test: tests whether the input control is normal.

Version Info.: displays the version information of system.

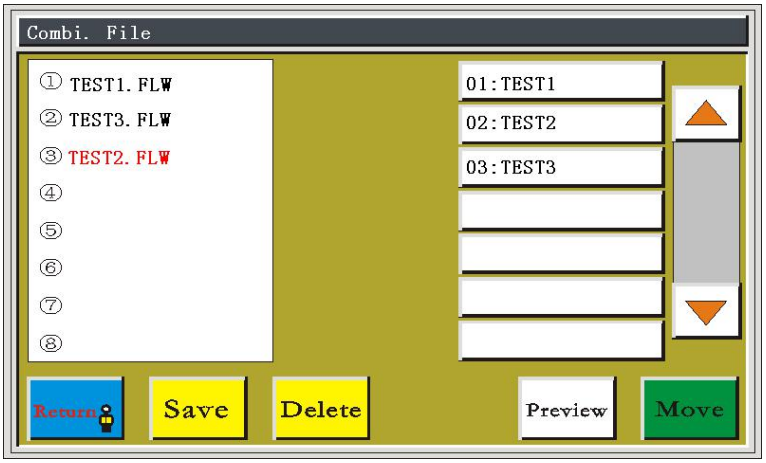
System Update: used to update the firmware version of system.

Spindle Test: used to test the spindle operation. Part of the versions does not support it.

## 7.2 Combine File

In file processing, if you need to combine few graphics into one graphics for processing, you can do it through the following operations. Combination can be undertaken to up to eight selected files.

In auxiliary operation interface, press the Composition File button to enter combine file interface, as shown in figure:




Select the files needed to combine on the right, after clicking to select, the selected files will be added to the left, and the same file can be selected for many times to combine. Related functional specifications are as follows:

Delete: click the file name on the left side, the text will be red, click on this icon will delete the selected file.

Move: choose the file name on the left side, click this icon to enter "Offset Setting" interface, the selected file can be combined after overall offset.

Preview: click this icon to enter the "Edit Menu" interface, the composition file on the left side can be processing previewed.

Save: click this icon, it will prompt to set file name to save composition file on the left side.

## 7.3 Export Parameters

It is used to export all set parameters of the system to the U disk as a backup, it can be imported to use from the "Ex-Factory Parameters" interface of main menu interface. It is suggested to export system parameters to the U disk for backup in use for the first time.

The effect of parameters file exported from the machine is best for the same machine; Due to the nuances of the machine, if it is used for other machine of the same model, it can be used but may not be able to achieve the best effect of the work. Do not mix parameters of different models.

The detailed steps to export parameters are as follows:

a) Insert U disk;

b) Enter the "Aided Design" interface, click "Export Parameters"

c) In the pop-up "Machine Type" dialog box, enter the number as file name of the exported parameters, click "OK"

d) Wait for several seconds until the pop-up prompts "Export parameters successfully, please return", click "Exit". It means that parameters are exported successfully, and .XHP parameter file will be generated in root directory of the U disk. After that you can remove the U disk.

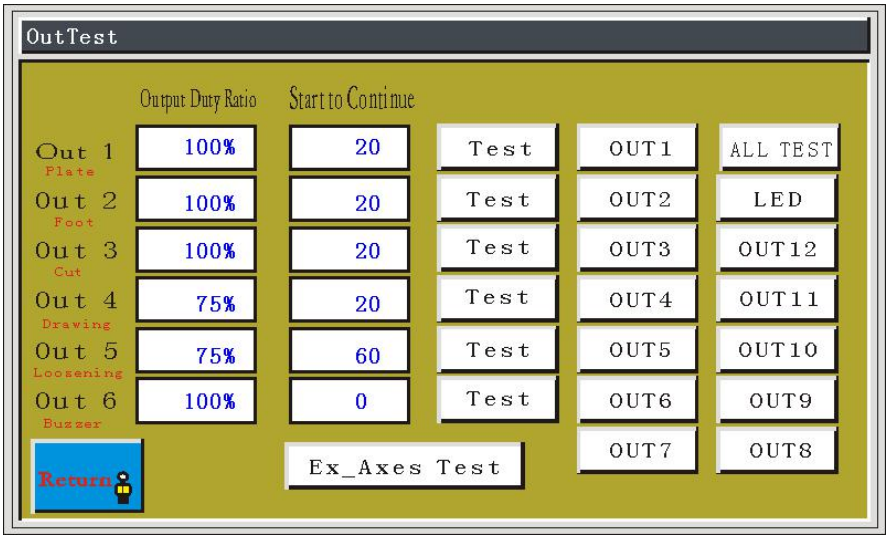
Note: please do not remove the U disk during the prompt popping up after clicking on "Export Parameters"! Otherwise it may cause damage to the U disk file.

## 7.4 Output Detection

It is used to test whether the output control is normal.

In auxiliary operation interface, press the 

button to enter the output test interface, as shown in figure:




Test the corresponding output control according to the need.

For output of trimming threads, pulling threads, loosing threads electromagnetic valve, click once, the device electromagnetic valve will switch once, and long press to turn it on always. Too long time of long press may lead to heat damages to electromagnetic valve.

For the output of presser frame and presser foot, click it once for cylinder movement once, and click it again to return the original state.

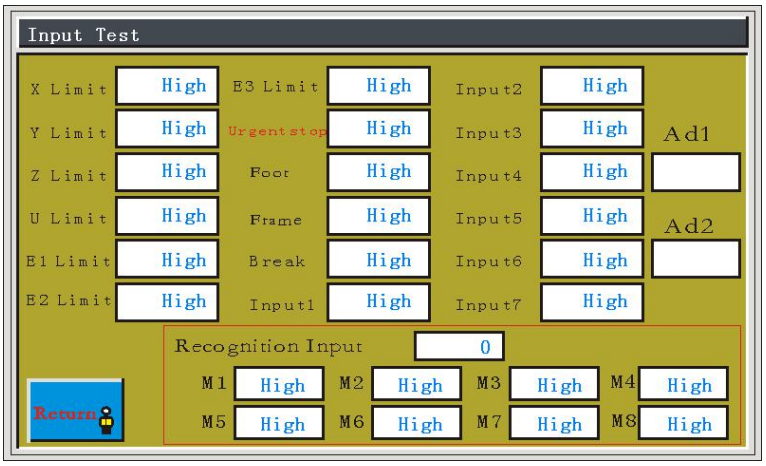
For the OUT1 and OUT2... functions are depending on the specific equipment load, part of the output is not used.

If clicking on the ALL TEST, the icon will become ALL TEST, which means that it is in a total output test, and the icon will return upspring status after the test.

## 7.5 Input Detection

It is used to detect whether the external input circuit is normal..

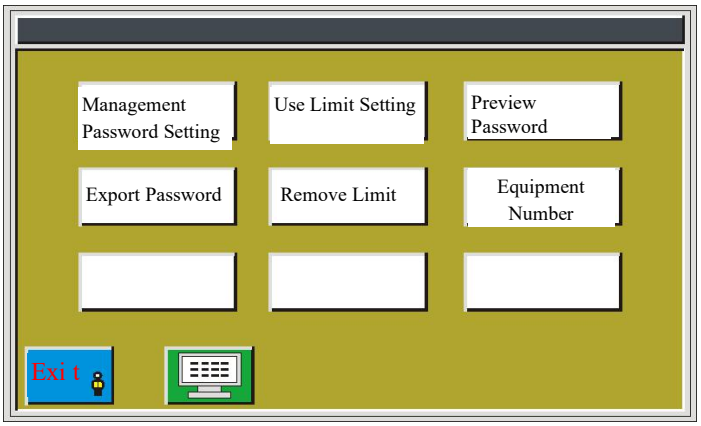
In auxiliary operation interface, press the Input Setting button to enter the input test interface, as shown in figure:




You can trigger related sensor manually to check whether the input state is changed, in order to detect whether the circuit part is normal.

## 7.6 Lock Machine Settings

In auxiliary operation interface, press the Lock Machine Setting button and enter the super password (different from ordinary password) to enter the lock machine setting interface, as shown in figure:




This interface is used to set whether to carry out timing lock machine, management lock machine password and other related operations. Limited-time use such as installment payment function can be realized.

If the use limit is set for the equipment, upon reaching the setting time, the processing main interface will pop up dialog box to prompt for entering a specific unlock password to remove the lock. Clicking on the "Remove Limit" can also be used to unlock in advance. If the use limit is not set, there will be no response when clicking on the "Remove Limit".

Note: this function is only limited for manufacturers' use, not for customers. Incorrect use of this feature may lead to lock of the machine.

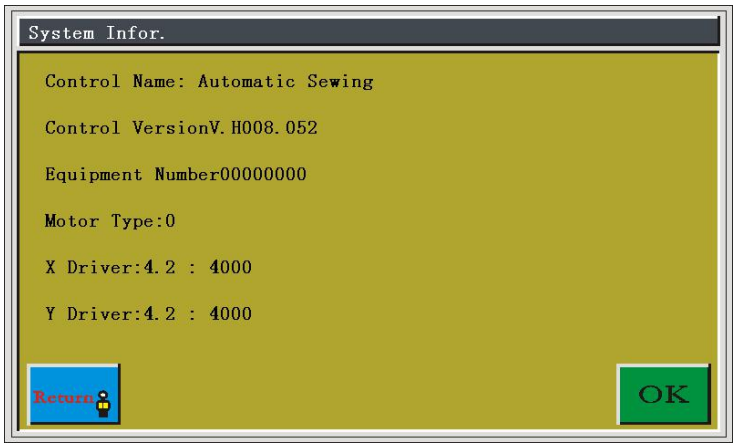
## 7.7 Date Settings

It is used to set system time displayed on the upper right corner of the screen, such as year, month, date, hour, and minute.

Super password is needed to enter.

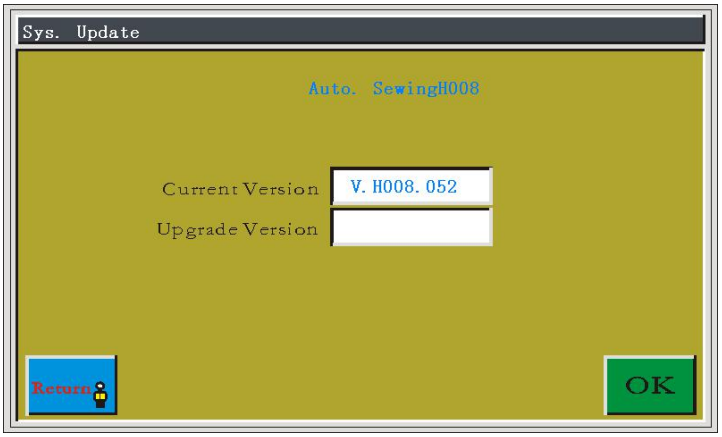
## 7.8 Version Information

It displays system relevant information, including name of the electronic control, system version, driver version, etc. System information interface is as follows.




## 7.9 System Update

In auxiliary operation interface, press the System update button to enter system update interface, as shown in figure:




"V.H008.035": "V.H008" means the major version number, unchanged after updating; "035" is the branch version number, which can be changed by updating to higher or lower version.

Updating steps to system in the figure are as follows:

1) Acquire corresponding update file from suppliers, the file named TZD_H008.TFL (the file name is different for different major version number), place it under root directory of U disk
2) Inserted U disk, enter the page of "System Update"
3) Click "OK". Prompt "System update?" pops up , and click "OK"
4) **Prompt "Updating, please do not power off" pops up. At this point, make sure not to power off, otherwise you may need to return to the factory to solve.**
5) Wait for about 1 minute, the system will restart; the buzzer beeps once, which suggests the update is successful. Or it will suggest other error message and exit the update automatically.

Introductions to relevant error messages:

1. "No update function"

Reason: it means you did not insert U disk or U disk damage.

Solution: insert U disk or reinsert U disk or replace U disk.

2. "File error"

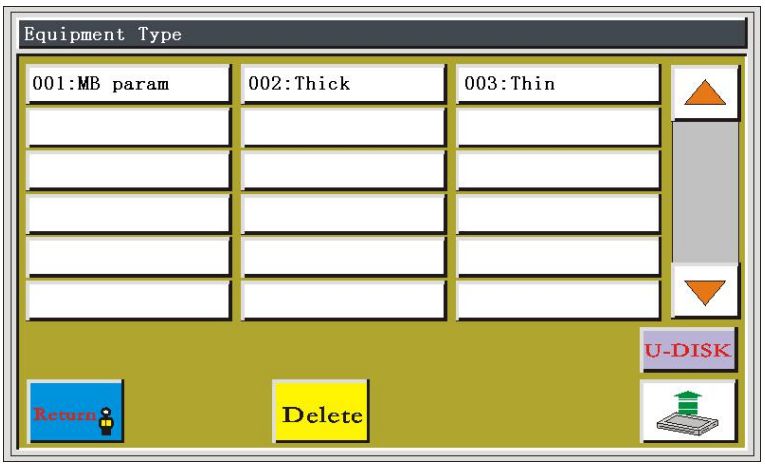
Reason: it means update file named TZD_H008.TFL can't be found under root directory of U disk or the update file is not suitable for this system or file data error.

Solution: reinsert U disk, or place the right update file into the root directory.

# Chapter VIII Ex-Factory Parameters

Ex-Factory parameters are used to import backup system parameter file from U disk into memory space, and you can choose one of the parameters in the memory to be used as a system parameter actually.

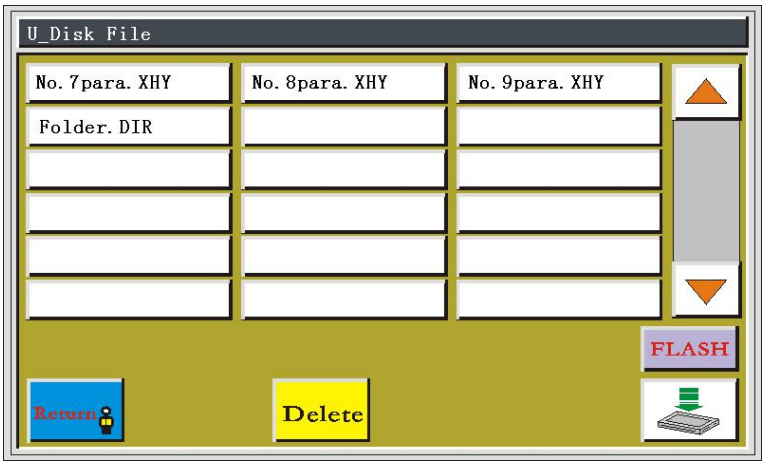
In the main menu interface, press the Factory Param key to enter the factory parameter setting interface, as shown.



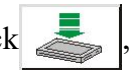
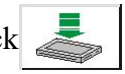

The interface will display the parameter files which has been stored in system, click on the file name to make it to become red, and then click  ; it will pop up tip "File saved, exit!" which means that the selected parameters has been effective. Set values and other hidden parameters within "User Parameters", "Mechanical Parameters" can be modified by this parameter file.

Click Delete and enter the correct password in the pop-up dialog box, to delete the selected parameter file

Insert U disk and click U-DISK to enter the U disk file interface, as shown




System will list files with .XHY suffix and folders under root directory, folders are displayed with .DIR suffix. It supports multistage folders operation.

Select parameter file name needed to import the machine (limited to the backup exported by the machine before), click  , and this file will be copied into the memory space. And select the file again, and click  to make the parameters take effect.

Note: parameter files are different for different devices. The same type of equipment may also have different optimum ex-factory parameter configuration due to nuances of mechanical structure. Therefore it is suggested to export ex-factory parameters for each set of machine referring to the "Auxiliary Setting" "Export Parameters" after buying machine, and save as a different file name standby.

# Appendix I: Description and Solution of Information Tips

## 1、 “Frame is up”

Reason: it is detected the presser box didn't put down before resetting, processing, collecting file, and modifying file

Solution: click 

to put it down.

## 2、 “Please Reset!”

Solution: click 

.

## 3、 “Extern Link Error”

Reason: a. Machine head plate failure

b. Machine head plate interface is loose

Solution: a. Restart the machine

b. Power off and reinsert machine head plate interface

## 4、 “Prompt: Using Up Line!”

Reason: the bobbin threads required by preprocessing file is more than the remaining bobbin threads (the total length in processing statistics interface - the initial length of bobbin threads)

Solution: a. Use the bobbin threads statistical functions, replace the bobbin threads and modify the related length information;

b. If you don't use the bobbin threads statistical function, you can click 

to close the bobbin threads statistical functions. See Section 2.2.5 and User Setting section.

## 5、 “Prompt : Full Counting”

Reason: in statistical processing interface, when " Statistics Initial Value" increases to be

equal to "Total Number"

Solution: a. if you use processing statistics function, modify "Statistics Initial Value" or "Total Number", to make "Statistics Initial Value" less than "Total Number".

b. If you don't use processing statistics function, you can click  to close the processing statistics function directly. See Section 2.2.5 and User Setting section.

## 6、 “Prompt : No U-Disk is detected”

Reason: U disk not inserted or U disk damaged

Solution: insert / reinsert U disk, or use an undamaged U disk

## 7、 “Prompt: Fail to store files, quit?”

Reason: when copying files from U disk to memory, an error occurs, such as U disk was pulled out

Solution: when U disk is transferring, please do not pull out U disk

## 8、 “Prompt : A file is deleted by error”

Reason: when copying files from memory to U disk, an error occurs, such as U disk not inserted or U disk damaged

Solution: insert U disk or replace an undamaged U disk

## 9、 “Prompt : Out range, Please Restting”

Reason: a. Length and width dimension of processing file is too big exceeding the scope of processing

b. Though the length and width dimension of processing file does not exceed the scope of processing, the absolute coordinates exceed scope of processing (For example, imported from a machine with large processing range first, files are written to the absolute coordinates, and then exported to a machine with small processing range)

Solution: a. Decrease the dimension of processing files

b. Use the processing file generated by upper computer software directly to import.

See Section 2.2.4.

## 10、 “Prompt: Errors on Offset!”

Reason: when entering the Base Settings page, it is found that the base coordinate exceeds the scope of processing

Solution: decrease the size of processing file, use the processing file generated by upper computer software directly,

## 11、 “Prompt : No Limit Signal！”

Reason: a. X, Y motor direction error;

b. X, Y motor position sensor failure;

c. load of X, Y motor direction is too heavy to move

Solution: a. enter the manually move frame interface to test XY motor rotation;

b. enter the “Input Test” interface, trigger position input signal manually to check whether it can be detected

c. power off, pull the frame manually to check whether the load is too big or stuck.

## 12、 “Prompt : Error Servo！”

Reason: a. the set spindle speed is too fast, which cannot adapt to the current processing files.

b. system overload operation leads to alarm because of the spindle stuck, or thread winding.

Solution: a. if the sewing speed is used for the first time, try to lower the spindle speed of processing

b. if it occurs occasionally in many times of normal operation, please check the mechanical state, to eliminate the factors which may cause system overload running

## 13. “Prompt: Spindle direction Error!”

Reason: the spindle rotation direction error

Solution: use parameter modify software to correct the spindle direction of motion

# Appendix II: Introduction to Quick Start

(1) Start the machine

After installing the equipment, plug in. Rotate or press the power switch, start the machine. After showing the logo, it will enter the processing main interface, as described in Section 2.2.1. If the bobbin threads are needed to be winded, refer to Section 2.2.2.

(2) Set the processing files

Copy the processing files in .HLW (or .FLW) format generated by PC sewing editing software to the U disk; insert U disk into the USB interface of equipment; In processing main interface, click 

- > File Management - > U-DISK to enter "U Disk File" interface, click the file names to be processed to make them to become red, and then click  to copy to memory. Click Return - > Return to return to the processing main interface. Select files to be processed on the left side, the processing pattern will be previewed in central interface.

If you use "File Collection" function to generate processing file, see Chapter 4.

(3) Put in the template

Put cloth to be processed into the produced template, click Reset, click Frame again to make presser frame in the rising state. Put the template under the presser frame, click Frame to make presser frame to decrease and press the template

(4) Align at base

See Section 2.2.4

(5) Start processing

In the processing main interface, press the start button and the machine starts processing automatically according to the drawing. After the processing, it will return to the reset origin or other set point automatically.

Note:

1. If it is not the processing for the first time (has been copied to the memory to align at base, and used the template automatic recognition function), there are just two steps: put in the template - > start processing
2. If there is other information prompt, see Appendix I.
3. In case of repeated processing after the processing, click the other button after just completing a processing, and enter the parameter setting interface to cancel the circulation processing.