

USER'S MANUAL

Operating Manual

- Windows OP Series_V2.0
- KS - Series
- SB7 - Series
- SV - Series
- MAS - 12
- ES
- ESC
- Dual Model
- Special Model(Tuft)
- KE - Series
- KX - Series



SunStar CO. LTD.

1. THIS IS AN INSTRUCTION FOR SAFE USE OF **SMF**® AUTOMATIC EMBROIDERY MACHINES. READ THOROUGHLY BEFORE USE.
2. CONTENTS IN THIS INSTRUCTION MAY CHANGE, WITHOUT PRIOR NOTICE, FOR IMPROVEMENT OF MACHINE QUALITY AND THUS MAY NOT CORRESPOND TO THE MACHINE YOU PURCHASED. CONTACT YOUR SALES AGENT FOR INQUIRIES.
3. THIS IS DESIGNED AND MANUFACTURED AS AN INDUSTRIAL MACHINE. IT SHOULD NOT BE USED FOR OTHER THAN INDUSTRIAL PURPOSE.

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1. Operating Program Install

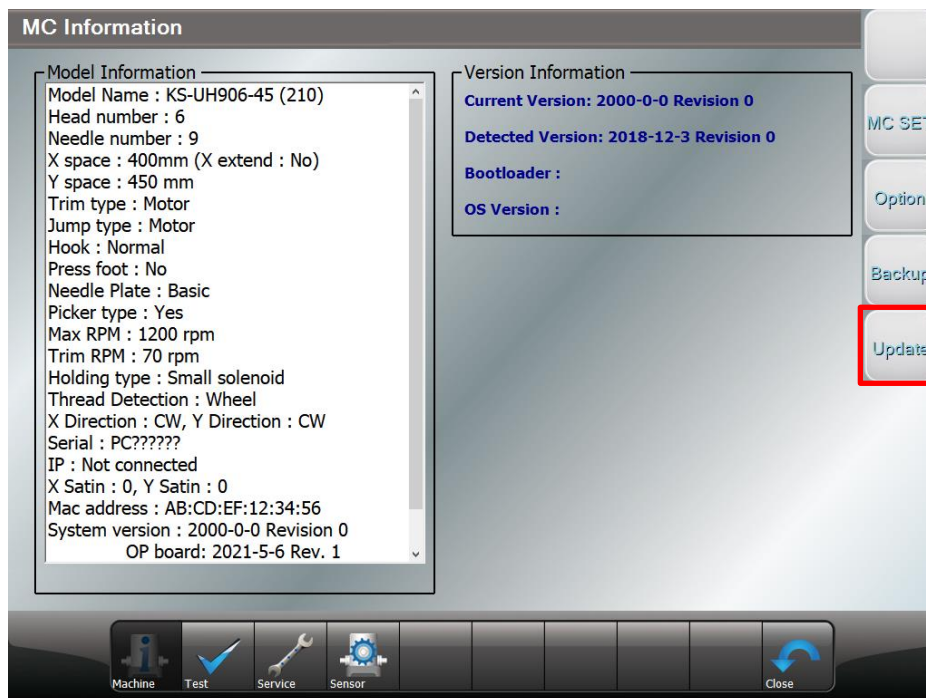
When the machine is shipped out, the operating program is pre-installed and pre-set. However, when the program was damaged or the settings need to be changed or upgraded, the installation of the program is required. In this case, the program can be re-installed or the set values can be initialized.

[Caution]

- ※ If users re-installs, updates, and initializes the operating program, it may cause malfunction or physical damage of the machine.
(If you are unfamiliar with the function, please contact our distributor and A / S center for assistance.)
- ※ When reinstalling or updating the operating program, never turn it off randomly.
If the power is turned off during the update process, stop using the machine and contact your nearest dealer or service center.

1.1 Installation

Installation is to install the operation program and necessary data file of the embroidery machine through the input device (USB) into OP Box.



[Fig. 1.1]


You can install operating program and design by using USB input device.

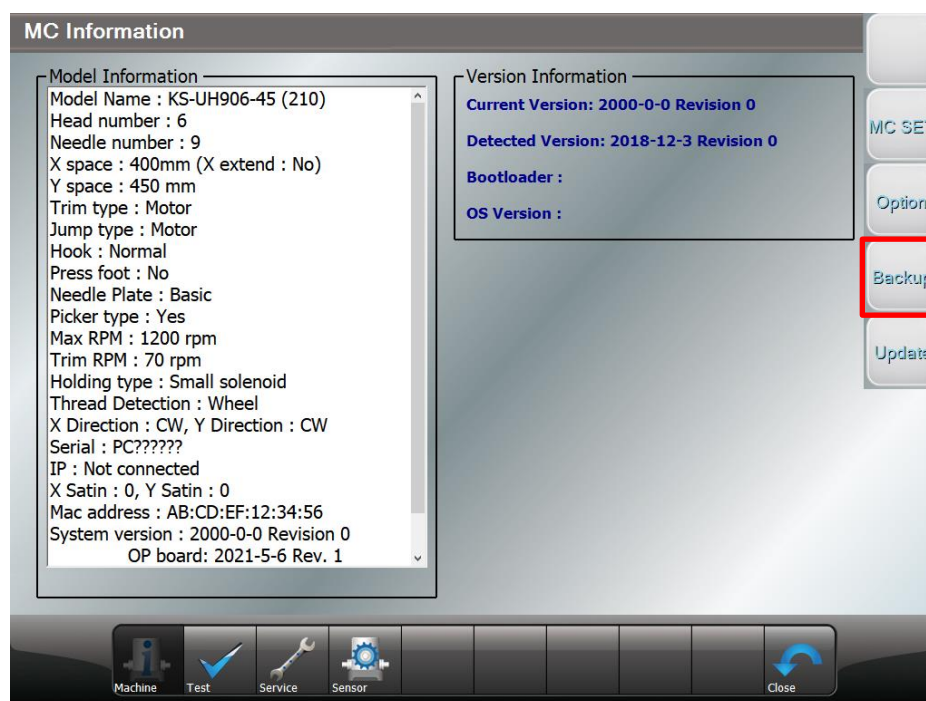
[Reference]

When the machine boots up, if the USB containing the machine program is connected, the machine automatically recognizes it and you can select whether to update or not.

1.2 Backup

Backup is conducted in the opposite direction from installation. For possible loss of data, the operating program and the data files should be saved in a flash memory(USB). If there are no operating program and data files or if the memory has been formatted, the backup function cannot be used..

If you select  icon in the [Fig.1-1], the machine information screens shows up like [Fig 1.2]

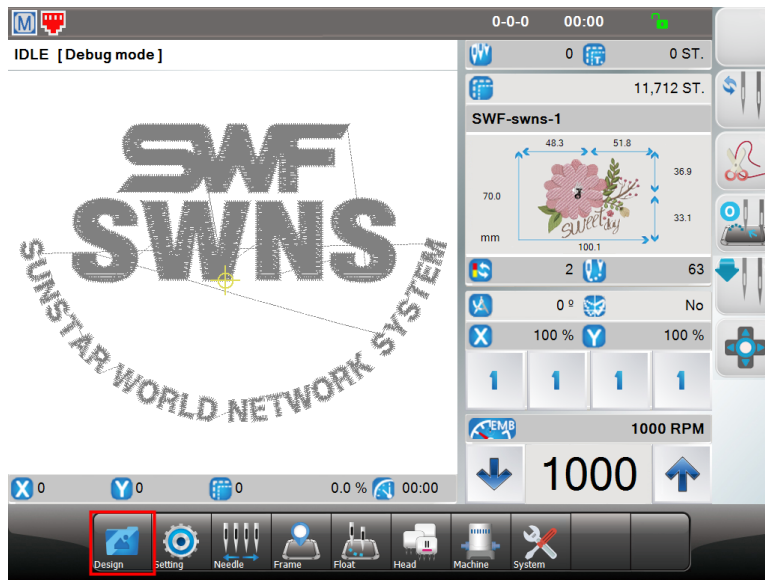


[Fig 1.2]

2. Design





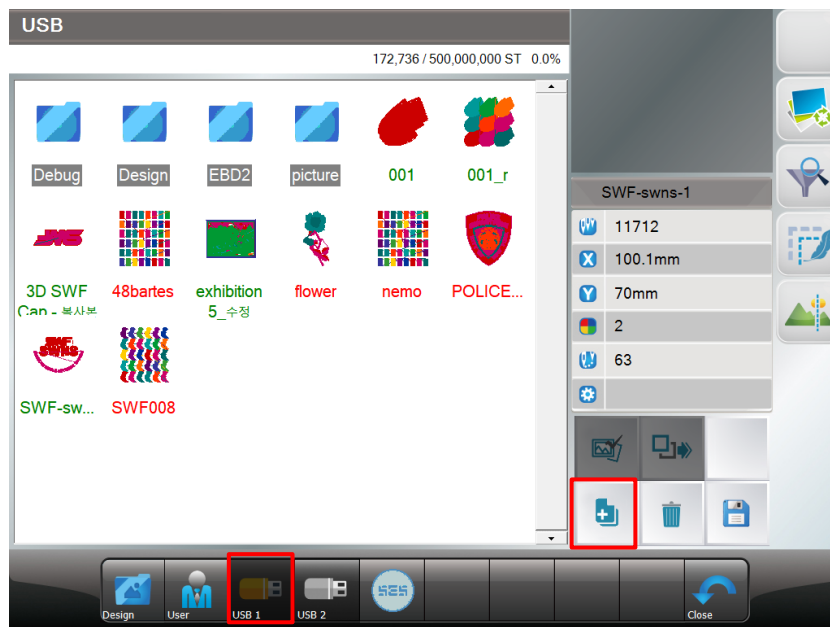
- The design menu consists of inputting, calling, copying, deleting, and exporting from or to the external device, the design which is going to be embroidered.



[Fig 2.1]


2.1 USB(Design Input)



- Insert the USB memory into the USB port and select  icon shown in [Fig. 2.2] to show the design file in USB. To work by copying the file to OP, select the design file and select  icon.

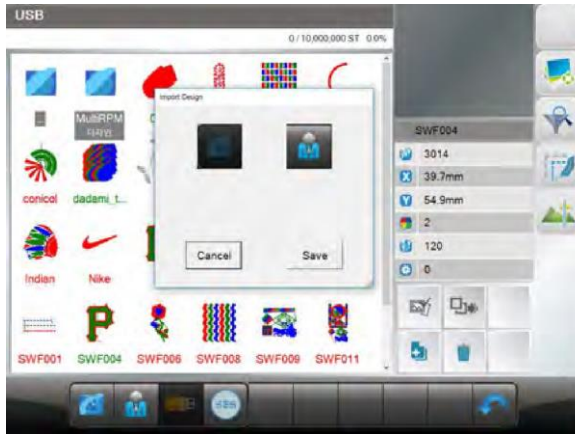


[Fig 2.2]

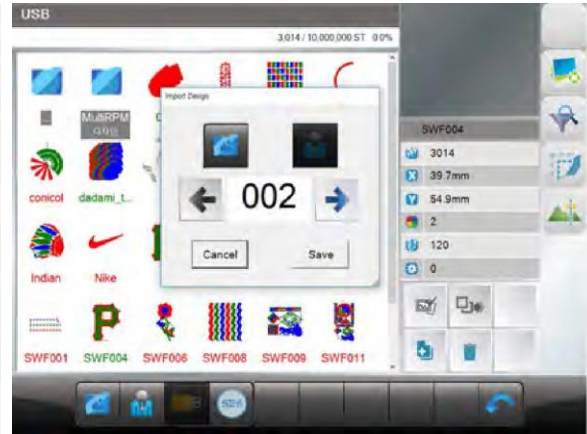
2.2 Memory Copy

- You can select the design to be copied and use  icon to copy it.

- ① There are two storages to save.   Choose the one where you want to save.

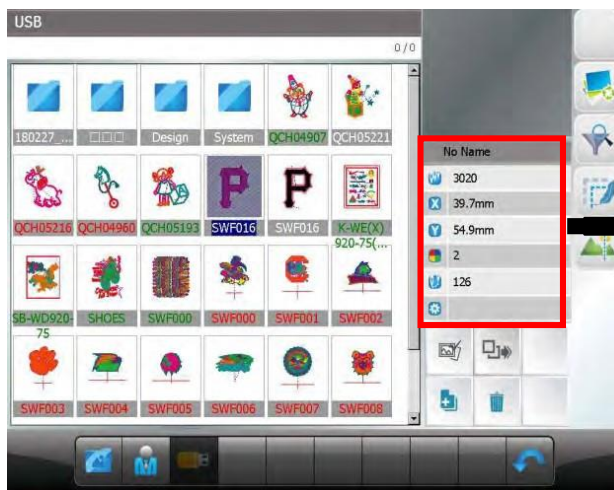


[Fig 2.4]



[Fig 2.5]

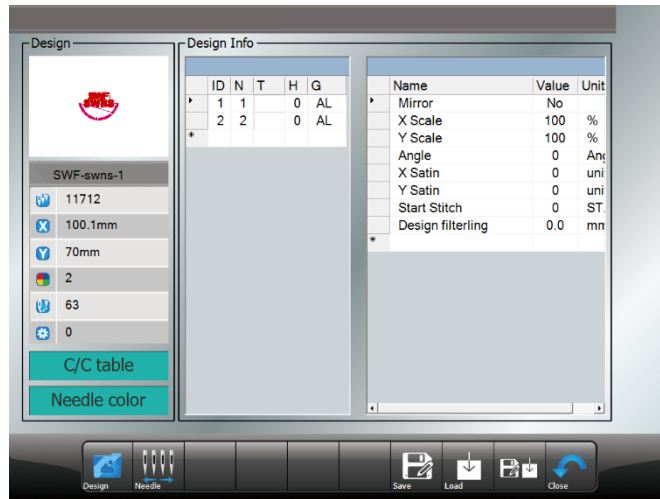
- ② If you select the specific design file, you can check the design information from the right side of the screen shown in the [Fig 2.6].




[Fig 2.6]

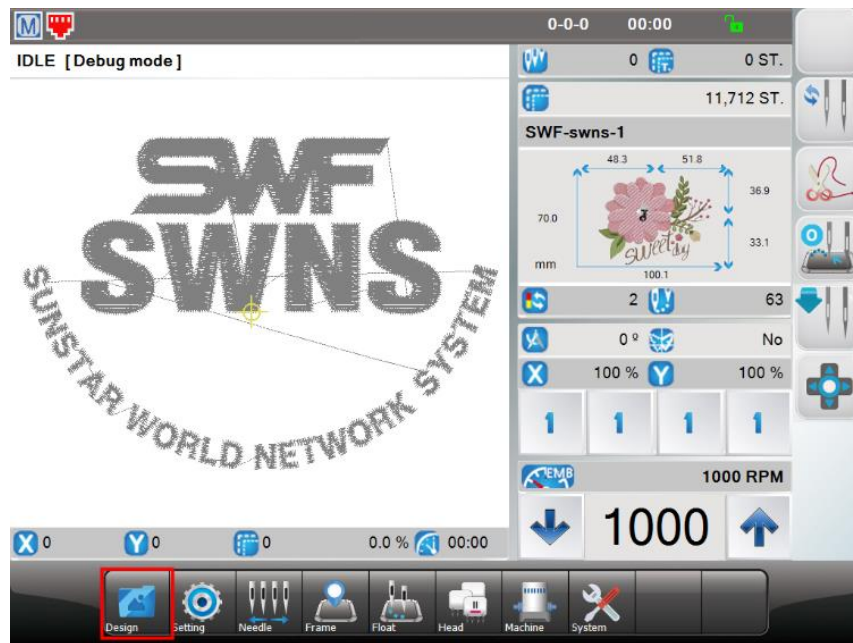
2.3 Design Call (Import the design file you want to work on)

- ① If you have copied a design, the last copied design is automatically called.

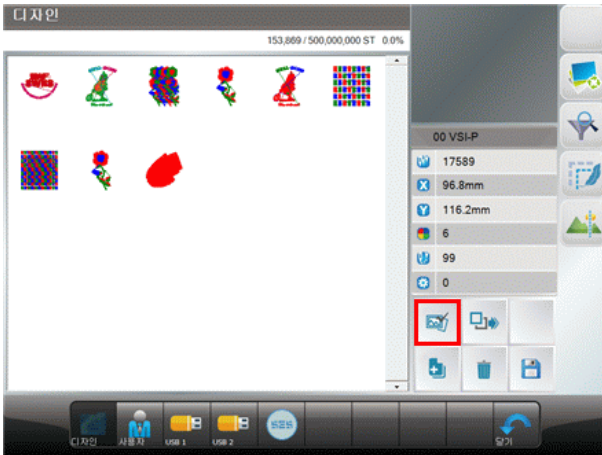


[Fig 2.7]

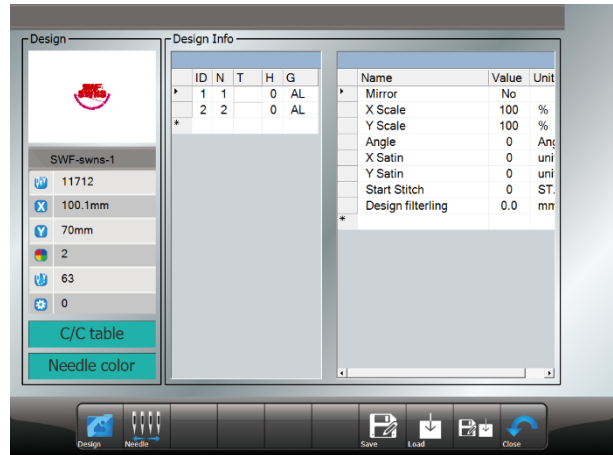
- ② The way to call back the embroidery designs saved in the memory is to press the  icon in [Fig 2.1] Then, embroidery designs stored in the memory appear as in [Fig 2.8].







[Fig 2.1]



[Fig 2.8]

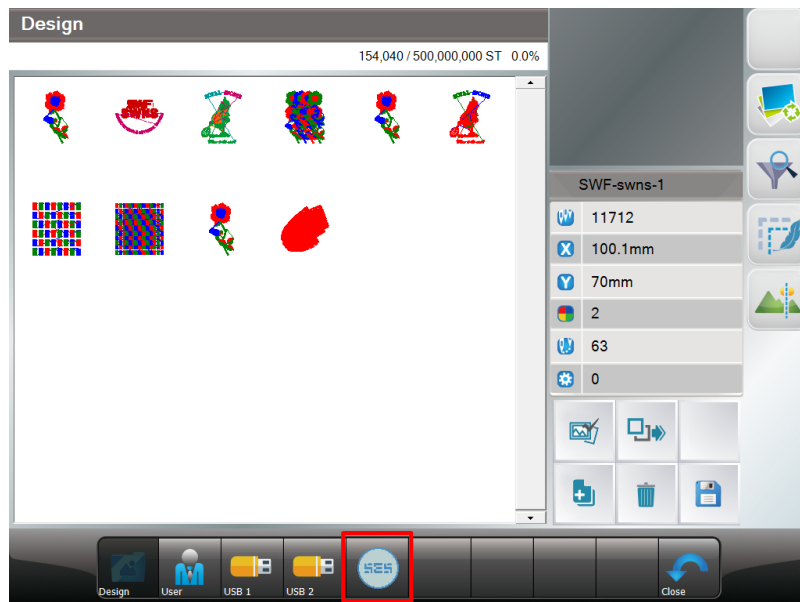


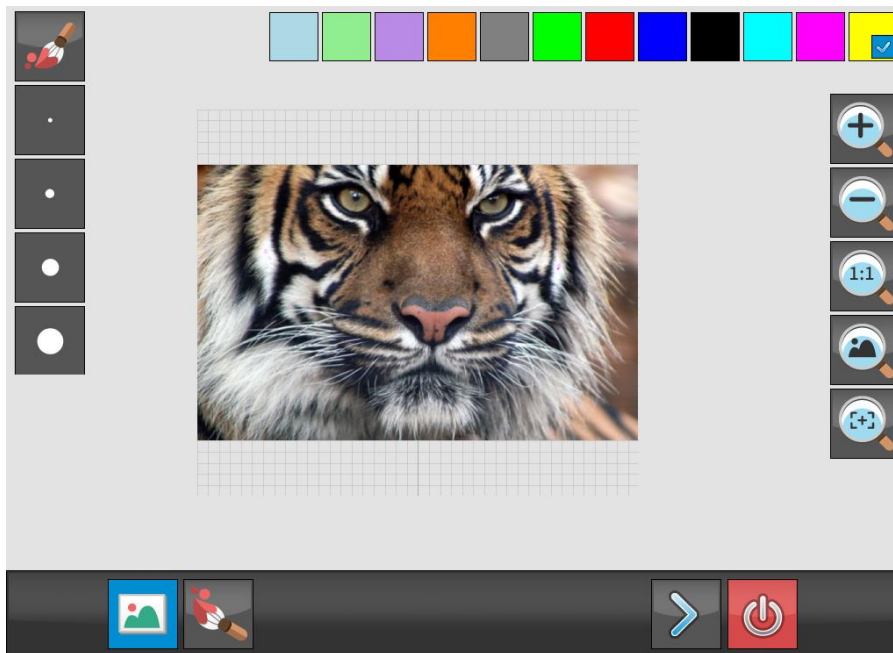
[Fig 2.9]








- ③ Select a design and press  icon. Ready to embroidery [Fig 2.9].
- ④ Select a design and press  icon. You can export the design to USB.
- ⑤ Select a design and press  icon. You can delete the design.
- ⑥ You can save the current design settings using  icon.
(design settings and needle bar settings and needle bar color)

2.4 S.E.S. (Smart Embroidery System)

- This is a function that converts photos on USB or freely drawn pictures into embroidery designs.
You can also convert a combination of photos or pictures.






	Loading Picture Files in USB Memory
	Free hand Stitches
	Color Mode (CMYK, GRAY, 12 Colors, Machine)
	Thickness setting of pen
	Move back
	Convert (apply)
	Exit

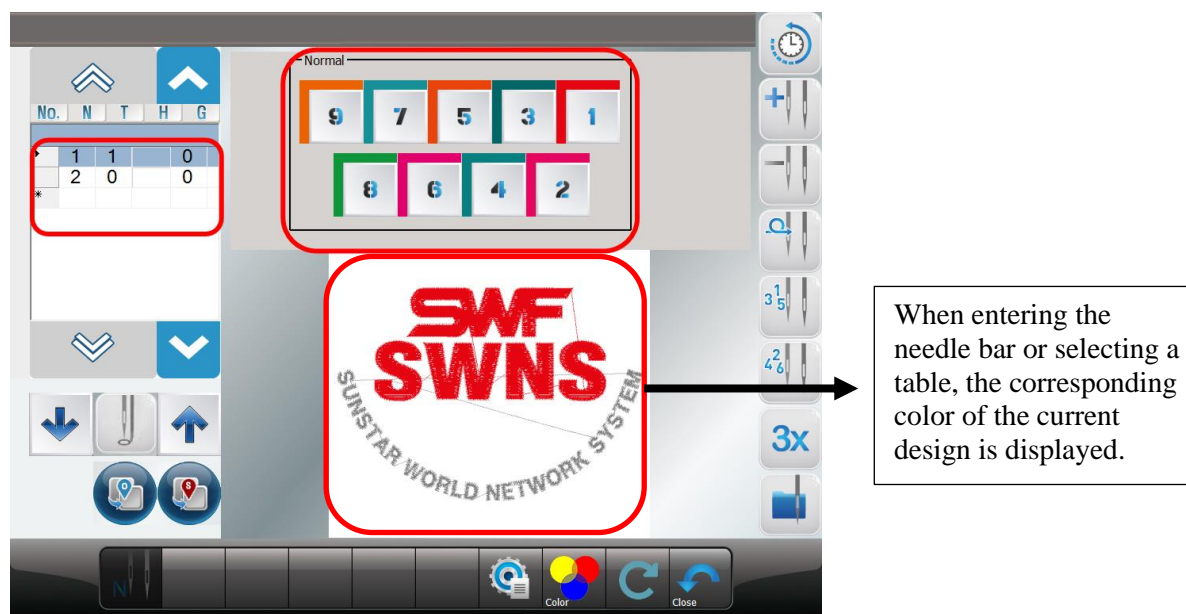
[Note]
You can load and click a photo to adjust its size, contrast, brightness, and rotation.

3. Needle (Selects or changes the needle bar)

This function is to enable automatic change of needle bars when the thread color change code appears. It is also able to change the colors of the embroidery design displayed on the screen.

3.1 Needle Select

Press  icon and go into the menu like [Fig3.1]. The table number window is displayed for the number of changeable colors which is selected.



[Fig. 3.1]

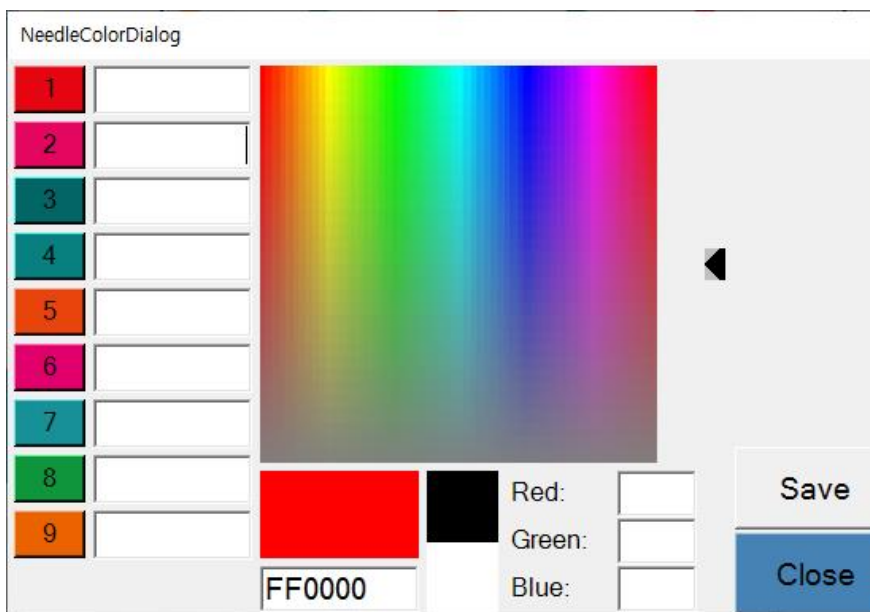
[Note]

Once the needle bar setting is completed, the set values become default and remain preserved even after the power is turned off. When other embroidery design is called, the needle bar setting values are unchanged. As such, when the design is changed or other setting is desired, the needle bar setting shall be adjusted again

3.2 Needle Color



This function is to easily show the needle bar (color) change-related information on the design by marking colors on each needle bar.



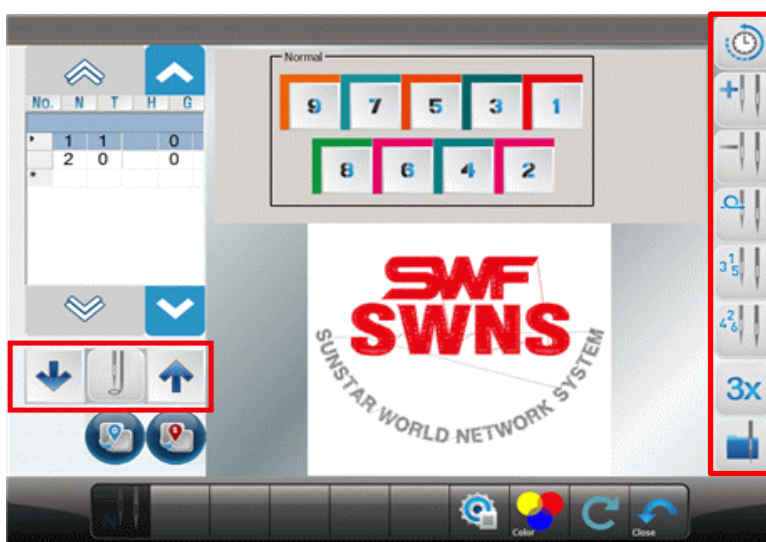
[Fig 3.2]

After selecting the desired color from the palette, you can change the color of the needle bar by selecting the needle bar (numbers 1 to 9)

3.3 Presser foot height setting

This function sets the height of presser foot of each needle bar.

When the needle bar is changed on embroidery, it automatically changes the height of the presser foot to the value which was set.



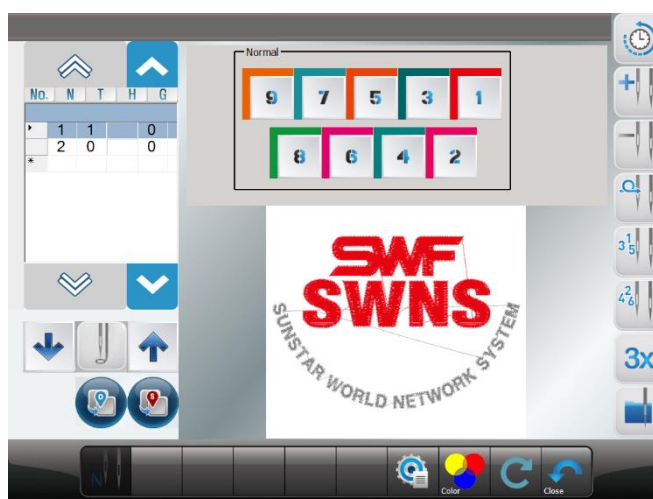
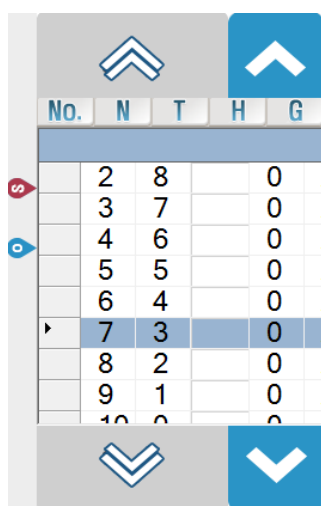
[Fig 3.3]

[Note] You can adjust the height from the step 0 to 7. (Step 7 is the highest setting)
Only for models with motor type presser foot.

Insert		This is used to insert the number of a needle bar in between the figures of needle bar entered.
Delete		This is used to delete the number of a needle bar chosen from the already entered needle bar numbers.
Group		This is used to set the head to be used or not to be used automatically when the color change code is encountered.
Default		To initialize the settings to default values.
Restore		This is used to restore the previous needle bar settings.

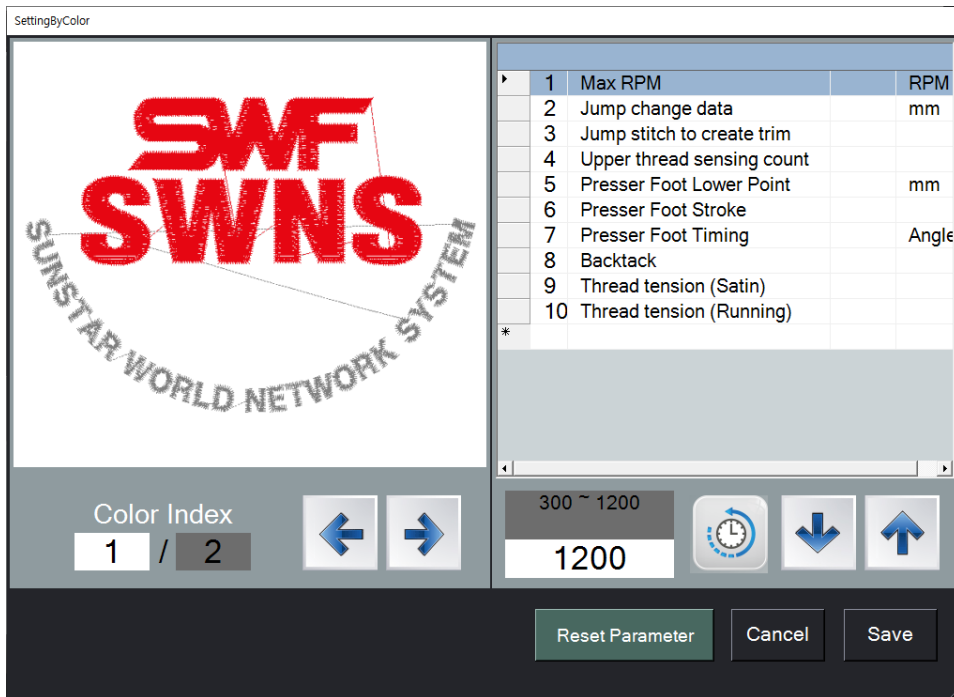
3.4 Offset Needle Bar Setting




You can set the offset using icon at the desired position on the needle bar table. In addition, the machine can be stopped after changing color during embroidery by using icon.



3.5 Setting by each color

You can set the setting values for each color.



	It is used to select the color to be set.
	It is used to change the parameter setting value.
	It is used to change the parameter setting value to the default value.
Reset Parameter	It is used to change the overall color settings to the default values.
Cancel	It is used to cancel without saving the parameter setting value.
Save	It is used to save parameter setting values.

(1) Max RPM

Set the maximum working speed.

(2) Jump change data

It sets the length to change the normal code to the jump code.

(3) Jump stitch to create trim

This is a function to move the frame after trimming stops when performing a continuous jump over the set value in a continuous jump.

(4) Upper thread sensing count

Set the upper thread detection stitch number during embroidery. If the thread is not detected more than the set number of stitches, the machine judges that the thread is broken and stops the machine. If set to "0", thread detection is not performed.

(5) Presser foot lowest point

Set the height of the lowest point of the presser foot.

(6) Presser foot stroke

Set the presser foot movement amount.

(7) Presser foot timing

Set the presser foot movement timing.

(8) Back-tack

Back-tack function to prevent thread loosening when starting embroidery and trimming

(9) Thread tension (Satin)

Set the tension for the satin stitch.

(10) Thread tension (Running)

Set the tension for the running stitch.

[Reference]

This parameter setting is applied only to the corresponding color section and takes precedence over the general parameter (9. Setting). The parameters related to the presser foot are limited to the supported models.

4. Frame

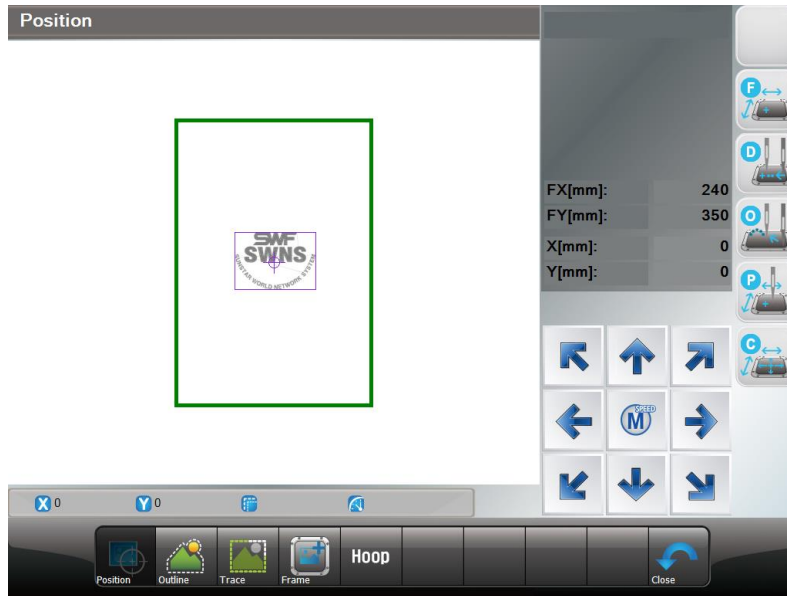


This function is to check whether the machine is prepared to conduct embroidery before actual work. There are five functions including work position, Trace, Exclude, Offset position and Hoops.

4.1 Position



It shows whether the called design contacts the X, Y limits without actually carrying out embroidery work.



[Caution]

When the main power is off, and the frame is pushed by hand, the frame's origin will change. Likewise, when the frame's origin is changed, the work position function does not properly perform.

4.2 Outline



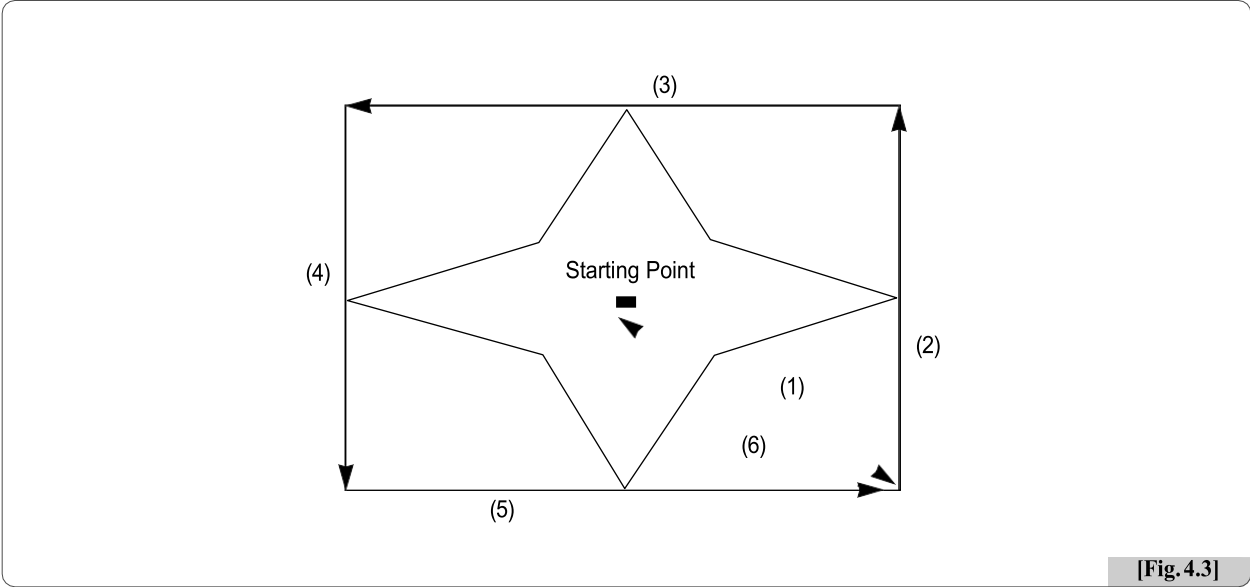
This function allows you to save the outline of the called embroidery design as a design or move the frame according to the outline. You can adjust the spacing between the design and the outline.



4.3 Trace



This function is to briefly check whether the design size goes beyond the X, Y limits, if the embroidery of chosen design begins from the current frame position.



[Fig. 4.3]

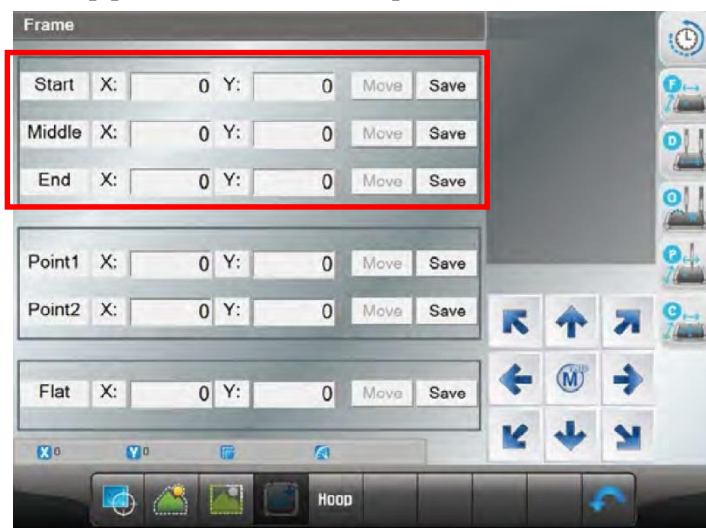
The arrow marks in [Fig. 4.3] show the feed route of the frame. While the frame moves fast between the maximum X, Y range and the minimum X, Y range, the function checks whether the design goes beyond the frame limits. If so, the frame operation will be stopped, and the message “Frame Limit Error” will appear on the screen.



[Fig 4.4]

4.4 Frame Offset Setting

The function is to decide the starting position of the embroidery design, the offset position, and the stop position after work completion to ensure more convenient embroidery work.



[Fig 4.5]

[Note]

Frame offset setting configurable buttons are enabled to use when check the frame origin only before selecting frame offset setting.

(Design Start Point):

It decides the frame's start position for the called design. When the starting position is pre-determined, regardless of the current frame locations, the frame automatically moves to the start position when the embroidery work begins.

(Offset Middle Point):

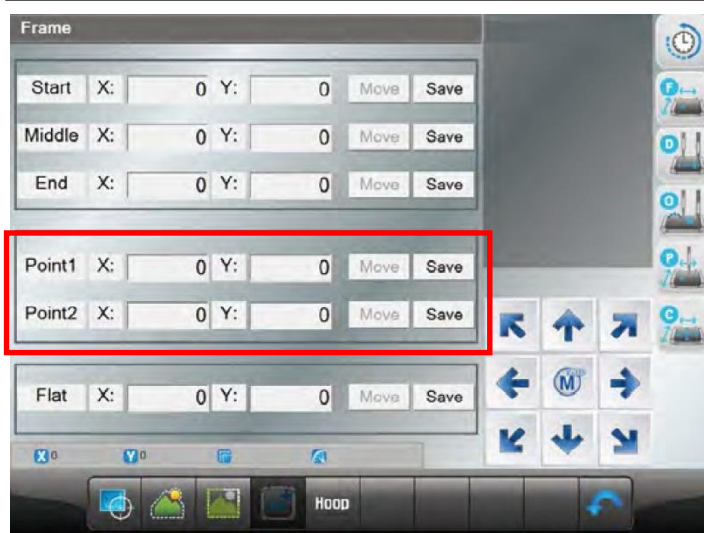
It decides the middle position between the design starting position and the stop position when the design is completed to prevent the needle bar from contacting the embroidery materials. If this function is unnecessary, the same value can be entered for the design starting position and the stop position after design is completed. It does not adversely affect the machine operation.

(Design Offset Point):

It decides the frame position where design is completed or the offset frame position. This function is useful for applique work and the replacement of hoop.

[Caution]

If the frame coordinates setting (offset) is not set as “Yes” in the basic setting, the setting of the frame coordinates is not applied during embroidery.



[Fig 4.6]


[Fig 4.6] Point 1, 2: This function is to set whether to use the virtual frame limit setting function.

[Fig 4.7] Select Flat (FRAME CENTER): This function is to check the frame origin and move the frame center.



[Fig 4.7]

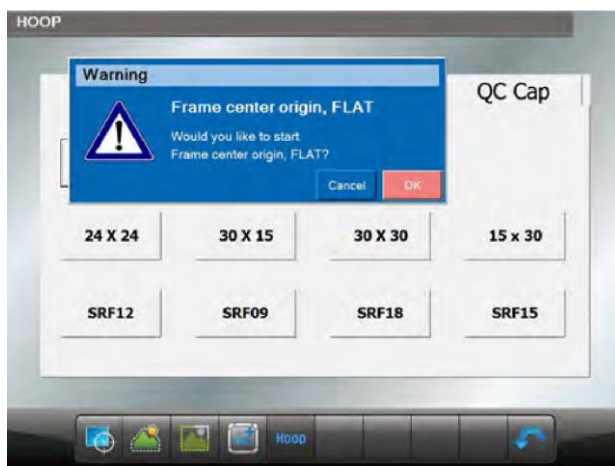
4.5 Hoop

This function is to select the hoop of desired size. If you press  icon from the [Fig 4.1], [Fig 4.8] screen will appear.



[Fig 4.8]

If you click on the size of the hoop, the message box appears whether you want to move to the center of the hoop. If you click "OK", the hoop will automatically search for the origin and check the X and Y hoop limit as much as the offset position. After finding all, it will move to the center of the frame. After selection is completed as shown in [Fig 4.9], it displays the selected size as [Fig 4.10].



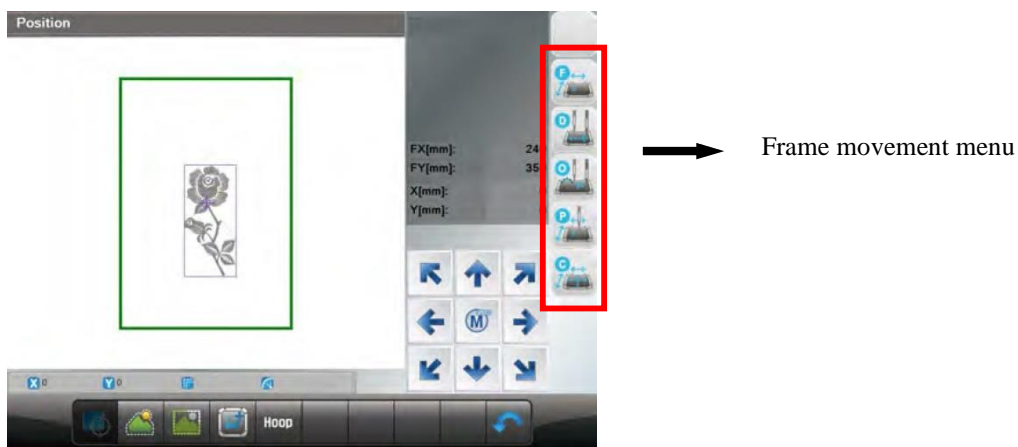
[Fig 4.9]



[Fig 4.10]

[Warning]

In some models, when selecting the QC CAP, the QC CAP device must be removed before proceeding with the origin function. (Model: KS UK Series, Dual UK Series, KE Series)



[Fig 4.11]



Frame Origin : This function is to re-check and set the frame origin.



Data Origin : It remembers the stop position of the frame when it is paused during embroidery work. Therefore, when the user desires to move the frame by using the frame move buttons or resumes embroidery after conducting other jobs, the frame could return to the last stop position.



Power Origin : It remembers the last stop position although the power is out during embroidery work. Therefore, when the power is on, and the return to origin after blackout function is pressed, the frame moves to the last stop position. However, before embroidery work starts, the frame origin shall be accurately set.



Design Origin : It makes the frame return to the embroidery starting position.

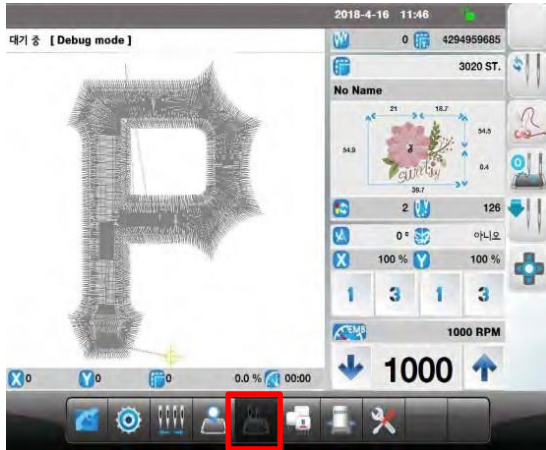


Frame Center : This function is to move the frame to the frame center . After resetting the origin, the frame moves to preset or saved center position.

5. Float



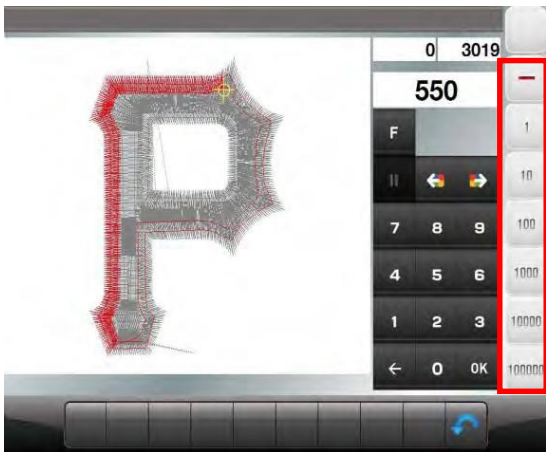
This function is to conduct the embroidery work while skipping the embroidery for the desired part of the design.



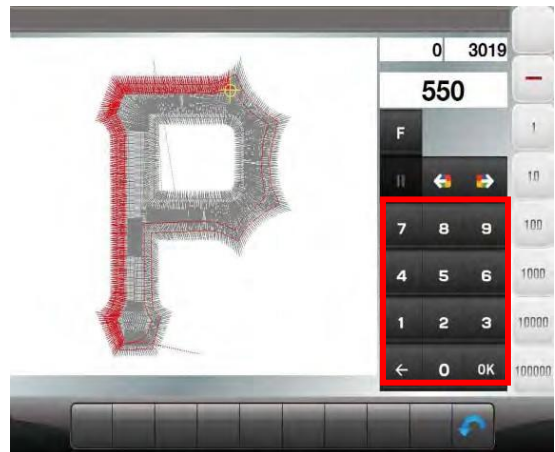
[Fig 5.1]



[Fig 5.2]



[Fig 5.3]



[Fig 5.4]

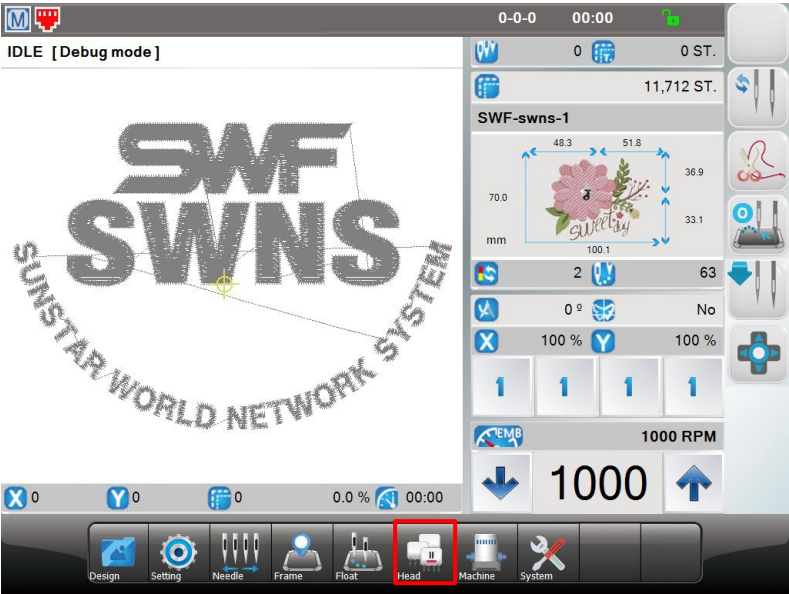
As in [Fig 5.3], non-stitching operation can be set using the set number of stitches such as ± 1 , ± 100 , ± 1000 , ± 10000 or the $\pm \text{COLOR}$ button.

As in [Fig. 5.4], values can be directly entered by using number buttons and “OK”

※ If the user press start, stop button in non-stitching operation, design position will be moved as the same value of +1, -1 buttons.

6. Head Setting

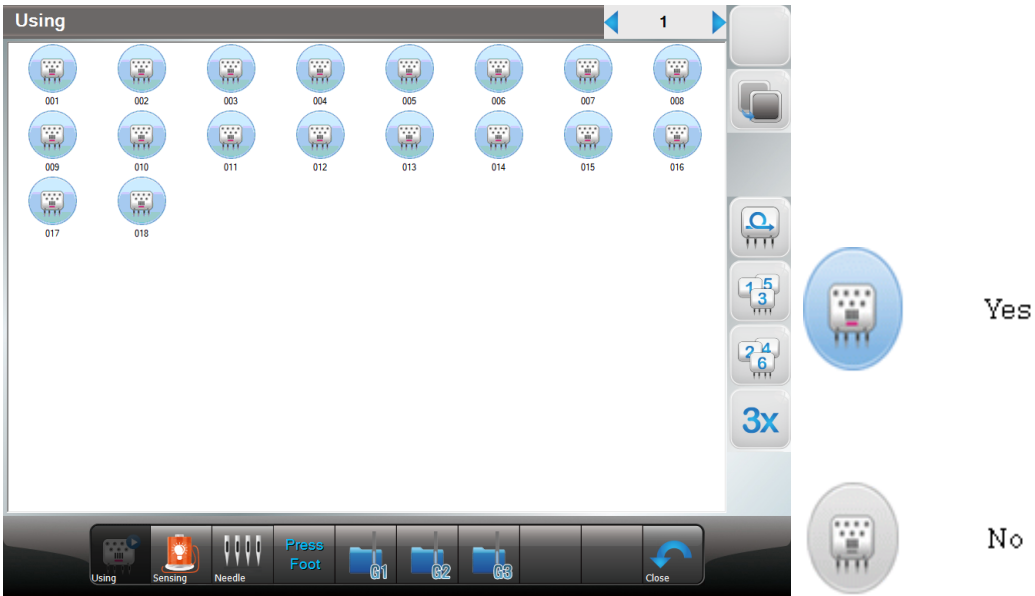
You can set the function for each head.



[Fig 6.1]

6.1 Using Head Select

You can set whether to use each head.

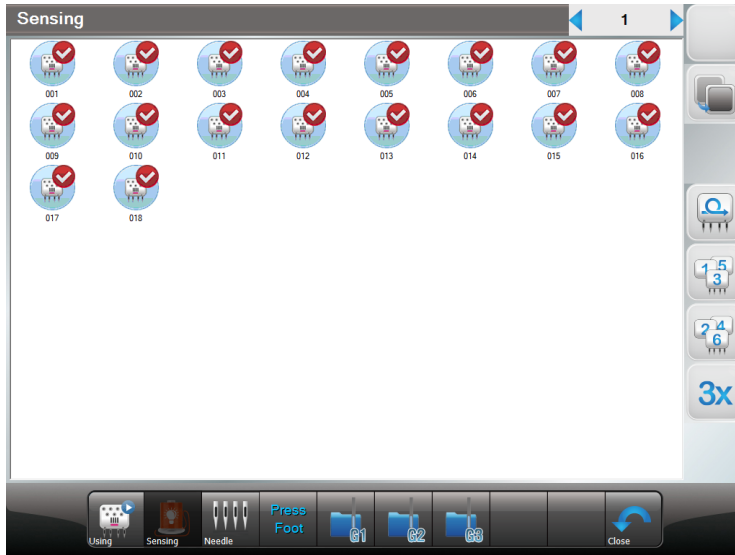


[Fig 6.2]

6.2 Sensing Head Set



This is a function of sensing(Thread break) head set as shown in [Fig 6.3]



Yes



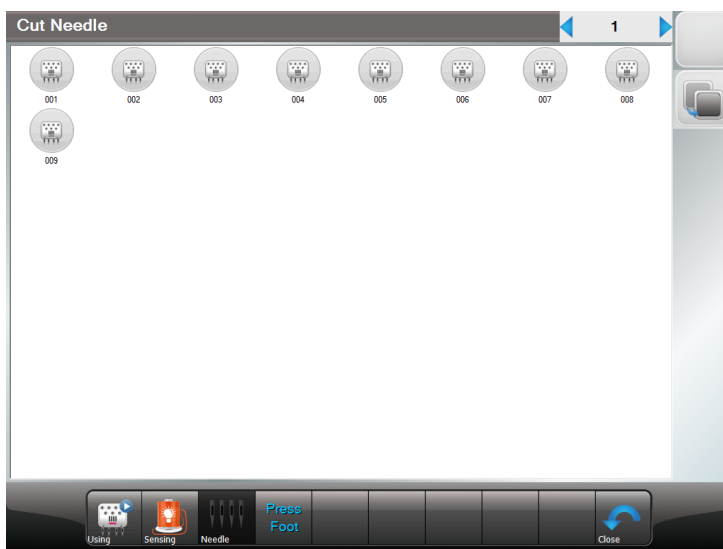
No

[Fig 6.3]

6.3 Cutting Needle Bar



This is the function to set the cutting needle bar.



Yes

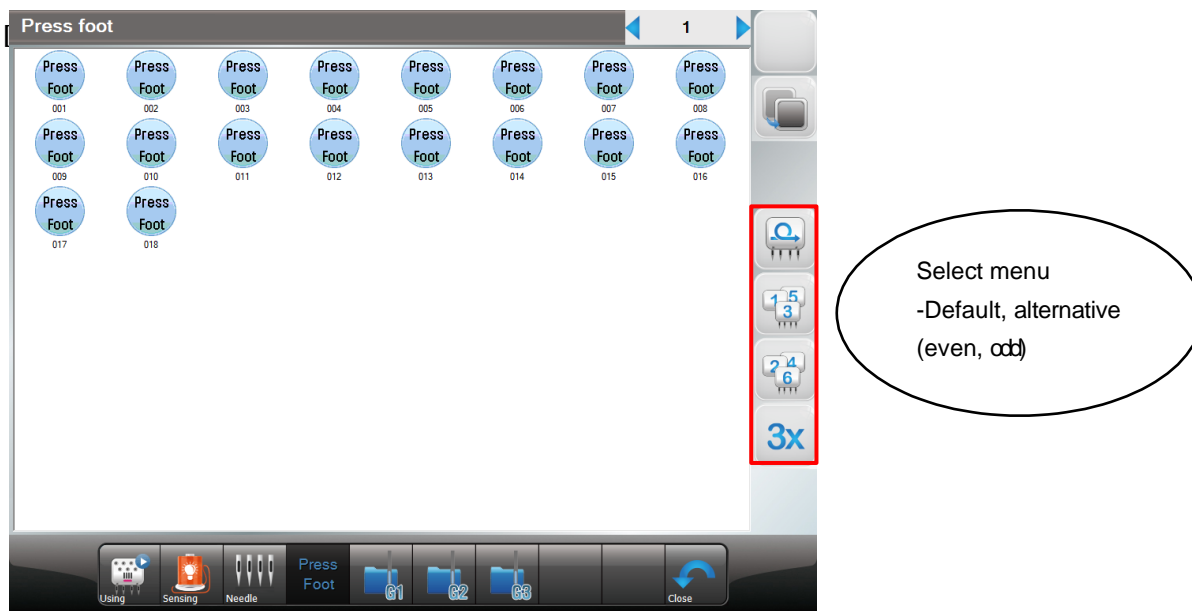


No

6.4 Presser Foot Sensor

Selection of presser foot sensor. User can select 'Yes or No'

Press "Press Foot" icon in [Fig 6.2], and the screen [Fig 6.4] will follow up next.



[Fig 6.4]

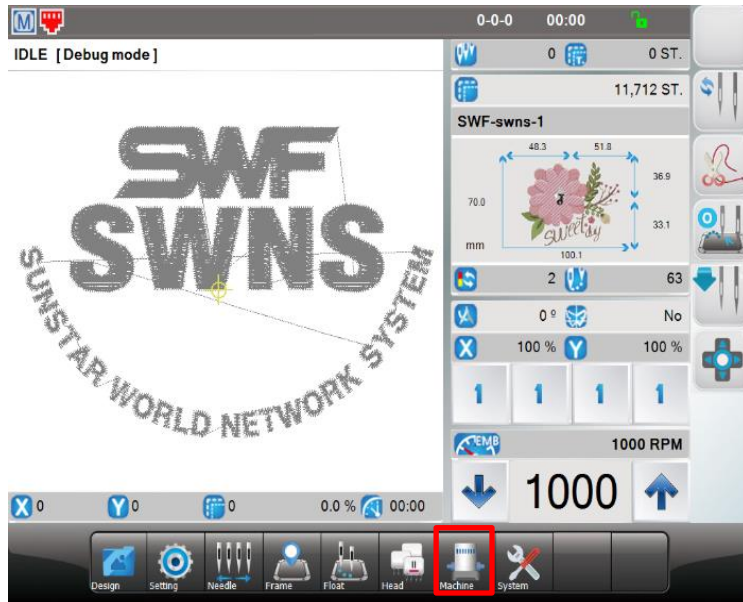
[Caution]

Only for models with motor type presser foot.

7. Machine



This function is to show the embroidery machine's mechanical information when initially setting up the embroidery operating program. User can change the machine setting as well in this screen.

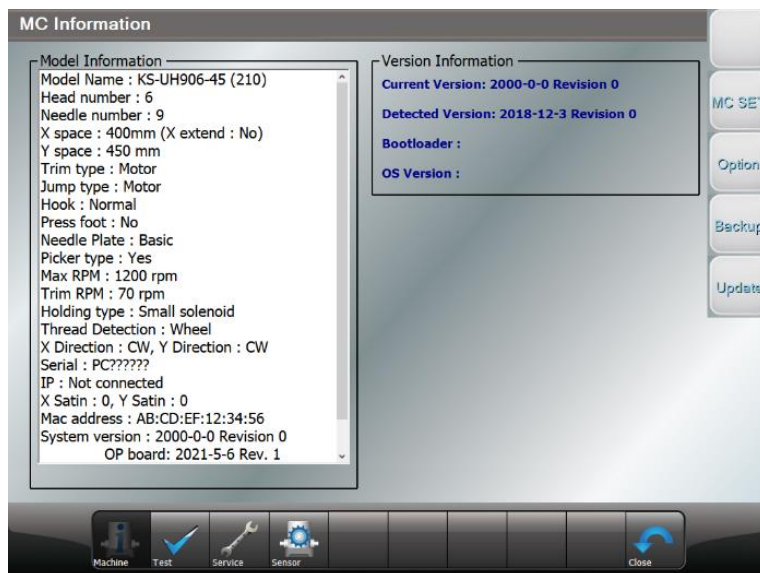


[Fig 7.1]

7.1 Machine information



It shows Model, Quantity of Heads & Needle Bars, XY Space, Trim Type, Jump Type, Hook Type, Presser Foot, Max RPM, Trim RPM, Holding Type, Wheel Type, IP Address, System version date, OP Board, IO Board, Lock Day and so on. Machine parameter setting is on “MC SET” in [Fig 7.2]



[Fig 7.2]

[Warning]

When the machine setting is wrong, it may cause problem to the machine. Unless there is clear information, please refrain from changing the default setting.

7.2 Option Device Setting



If you press icon from the [Fig 7.2], You can set the parameters in <Fig 7.2.1> according to the devices (sequin, zigzag, etc.) mounted on the left and right of the machine head. Boring needle bar can be set as shown in <Fig 7.2.2>.

[Fig 7.2.1]

[Fig 7.2.2]

7.3 Machine Test



This function is to test whether the embroidery machine is properly operating by part.

[Fig 7.3]

Jump	Checks the operation of the jump motor or solenoid.
Wiper	Checks the operation of the wiper.

Picker	Checks the operation of the picker solenoid.
Trim	Checks the operation of the trimming motor or solenoid.
Holding	Checks the operation of the holding solenoid.
Thread Sensing	Checks the operation of the upper thread sensor.
1 Turn M. Axis	Checks the fixed position after one rotation of the main axis.
M. Axis Run	The function for test run.(Test run after cleaning and oiling)
Option_AB	The function to test option motor.
Lift	The function to test up/down lift.
Opcion C	The function to test option motor.
ZZ Origin	The function to set up and check the origin of zigzag device.
PF Up down	The function to test presser foot motor.

7.4 Machine Service



This is a function that helps you to reset the settings correctly with checking wrong machine settings.

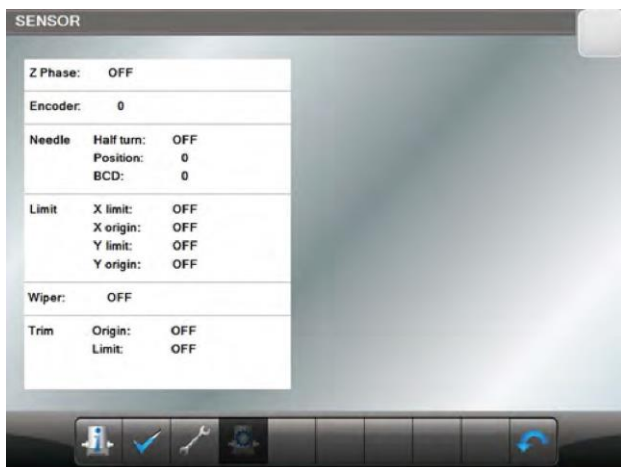


[Fig 7.4]

7.5 Sensor



This function is to show the information of the embroider machine sensors.



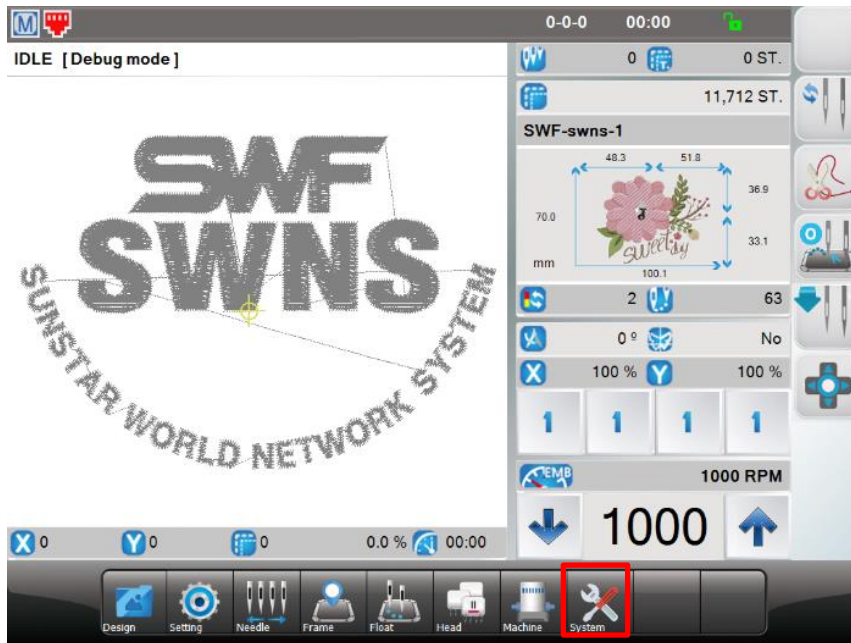
[Fig 7.5]

- 1) Z Phase : It shows the status of the embroidery Z axis fixed position sensor.
- 2) Encoder : It shows the current position value of the Z signal with numbers.
- 3) Needle Bar Position Sensor : It shows the needle bar position, and the status of half turn sensor.
- 4) Limit : It shows the ON/OFF status of the XY limit sensors.
- 5) Wiper Sensor : It shows the status of upper thread wiper sensor.
- 6) Trim : It shows the status of “Trim Origin” and “Trim Limit” sensor.

8. System



This is a setup menu for preparation before actual embroidery. This is the menu for Language & Time setting, setting initialization, initializing work information, initializing design 1&2, re-entry of Lock key.



[Fig 8.1]

8.1 Language

User can choose Korean, English, Spanish, Russian and Chinese.

※ Other languages will be added in upgraded version in the future.




Tooltip text setting: When this function is on, text is displayed when an icon without text is clicked.

[Fig 8.2]

8.2 Lock Setting

The embroidery machine operating program has the lock function. When the lock function is set, the operating program can be used without problem for the set period of time. But when the set time frame passes, the operating program will be unable to use and user needs to extend the period or unlock to use the machine.

If the lock function is enable, press  icon in [Fig 8.2], then the screen [Fig8.3] will show up. Operating program can be used without problem for the remaining period(days) in [Fig 8.1] but when the set time frame passes, the operating program is unable to use. So, it is required to receive new key from the sales agent or distributor and enter it to the system.

The screenshot shows a 'LockDialog' window. At the top, it displays 'MC S/N' followed by a text box containing '12345'. Below this, there are two columns: 'Old Code' and 'New Code'. The 'Old Code' column contains four rows of hexadecimal codes: '8A44 31A4', 'B1F6 2EE4', 'FB2F 40D1', and '5525 C741'. The 'New Code' column contains a 4x6 grid of empty input boxes. At the bottom, there is a numeric keypad (0-9) and an alphanumeric keypad (A-F). On the right side, there are three buttons: '뒤로' (Back), '초기화' (Reset), and '확인' (Confirm).


[Fig 8.3]

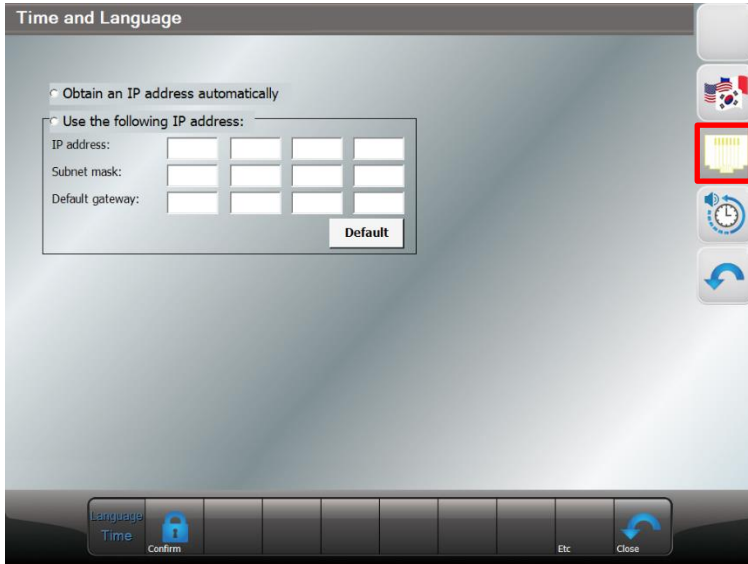
[Caution]

There are two types of a lock key: limited and unlimited use. For more inquiries on the lock key, contact the distributor's shop.

8.3 IP Setting




To set IP address, press  icon in [Fig 8.2]. The screen [Fig 8.4] will show up. Enter the value for each item using the keypad buttons below and press OK to complete the setting.

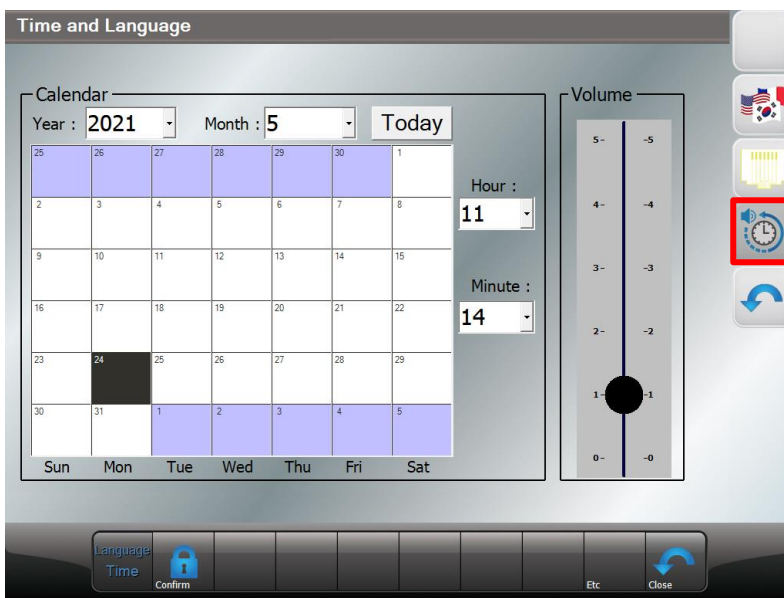


[Fig 8.4]

8.4 Date and Time & Volume Setting



To change time or date displayed at the right top of the screen, press  in the screen [Fig8.2], The screen [Fig8.5] will show up. Enter the value for each item using the keypad buttons below and press OK to complete the setting.



[Fig 8.5]

[Note]
If the lock is set up, it is unable to set and change the date and time.

8.5 Initialization (Memory Initial)



Setting initialization, initializing work information, initializing design 1 & 2.

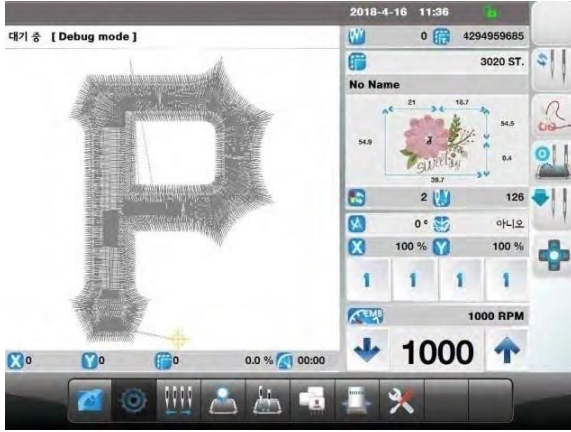


[Fig 8.6]

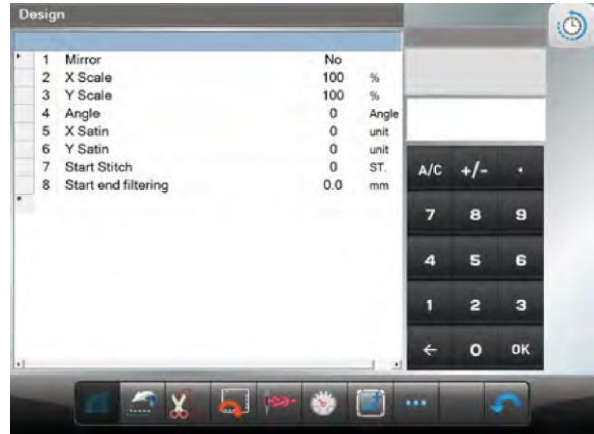
9. Setting



On the setting menu, overall setups regarding embroidery can be made. There are 8 sub-menus under the setting menu, which include design, back stitch, trim, jump, back-tack, speed, frame and other setting.



[Fig 9.1]



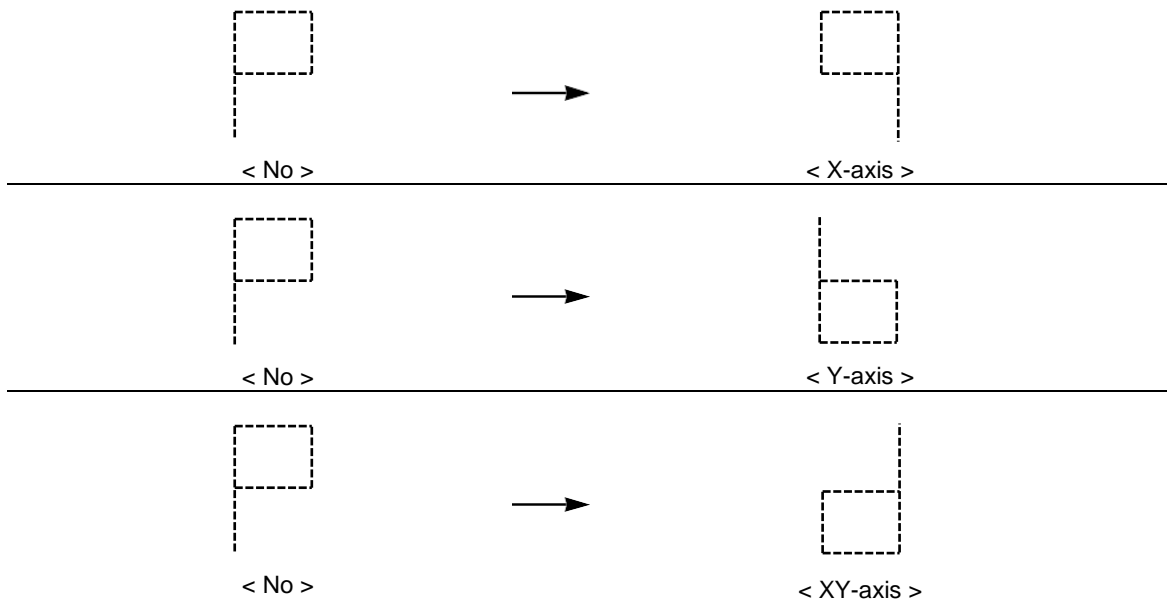
[Fig 9.2]

9.1 Design



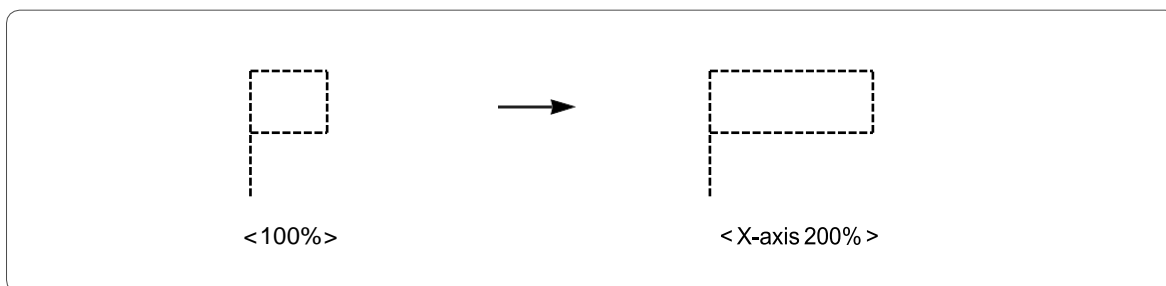
(1) Mirror

Reverses a design based on X, Y, or X+Y axis.



(2) X Scale

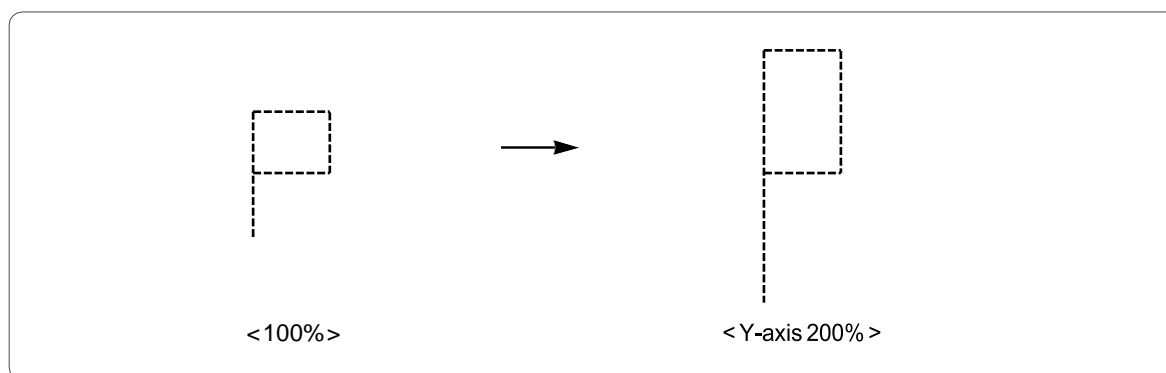
Enlarges or reduces a design in the X-axis direction.



The default is 100%, and the value can be adjusted from 50% to 200% by the unit of 1%.

(3) Y Scale

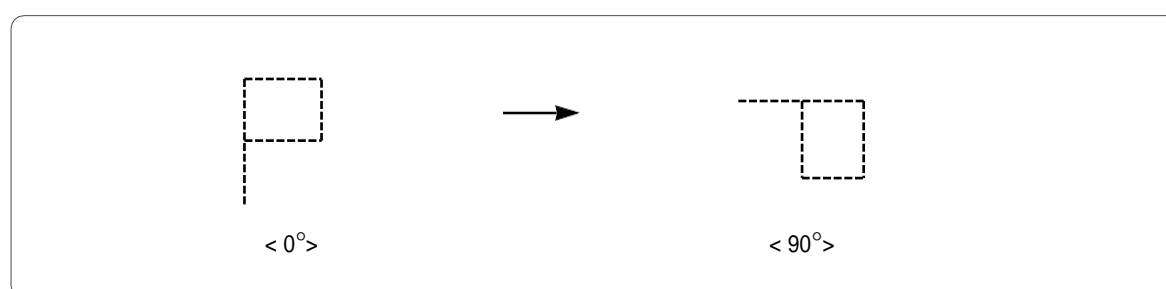
Enlarges or reduces a design in the Y-axis direction.



The default is 100%, and the value can be adjusted from 50% to 200% by the unit of 1%.

(4) Angle

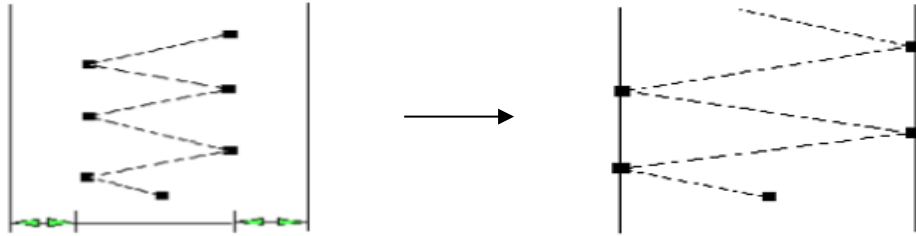
Turns around the embroidery design according to the rotation angle value set.



The default is 0°, and the value can be adjusted from 0° to 359° by the unit of 1°.

(5) X Satin

In case where the embroidery design is a satin stitch, this function can set the satin width.



This function determines the satin stitch length in the X-axis direction. The value of relative size to default can be Increased or decreased in range from -5 to 5.

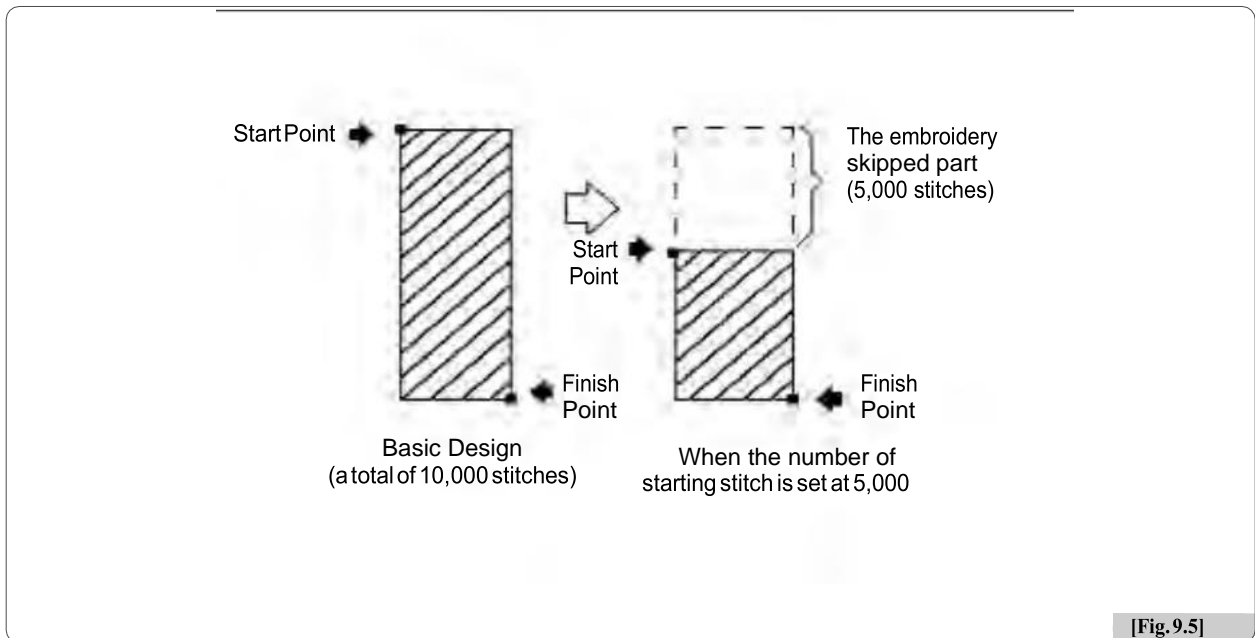
(6) Y Satin

This function sets the Y-axis satin width.

(7) Start Stitch

This function sets the starting stitch number for the embroidery design to be worked. It enables skipping as many as stitches desired for embroidery work.

For instance, there is a design with a total of 10,000 stitches below. The design on the left side has entire stitches embroidered. On the right side, the design has only 5,000 stitches since the starting stitch number was set at 5,000.



[Fig. 9.5]

(8) Design Filtering

If the distance from one stitch to the other stitch is too short (0.1~0.5mm), the thread might break very often during embroidery work.

This function is to put together short stitches which are under the set value for optimization and enhance the entire number of stitches above the set value, so that it can prevent thread break

**9.2 Back stitch****(1) Auto back stitch**

When thread break is sensed, this function sets the number of backward stitches.

(2) Auto start after frame back stitch

The function is to determine whether the machine is automatically started when the frame reaches “(4) Auto start before.”

(3) Work head after back stitch

The function is to decide whether the heads with broken thread are operated only or whether the needle bars of all heads are operated in case where the frame is moved backward from the machine stop point, and the embroidery work is begun with the bar switch.

(4) Auto start before

When all or multiple needle bars are simultaneously in operation and the machine is stopped due to the detection of a problem (thread break) affecting one needle bar, it is possible to conduct the back-stitching for the concerned needle bar with the problem to correct the part where stitching did not occur. After that, if all the needle bars are operated from the point which is located before the problem area, the embroidery will be overlapped on the problem area, making correction.

(5) Back stitch number

This function is to set the number of stitches to move by the one-time operation of the stop switch when the frame is moved backward with the stop switch.

9.3 Trimming



(1) Auto trim

This function is to enable the automatic trimming function

(2) Auto start after trim

The function sets up whether embroidery automatically begins after jump code and trimming or trimming by suspension code.

(3) Jump stitch to create trim

This function is to move the frame after trimming, in the case where repeat jumps take place and they occur more than the set value. For instance, let's assume that the set value is 5. Then, the machine conducts jump stitches without trimming until 4 stitches. If the repeat jump with over 5 stitches is found, conduct trimming first and move 5 stitches back and start embroidery again. The default is 3 stitches and the value can be adjusted from 0 to 10 by the unit of 1 stitch.

(4) Trim by continues jump length

If the total stitch length of the repeat jump code is above the set value, trimming is primarily performed before carrying out the next work. This function can set the maximum jump stitch length.

(5) Trim picker off angle

This function is to set the trim picker use after off angle offset.
length of the remaining upper thread at the needle when automatic trimming is conducted.

(6) Trim knife start angle offset

This function is to set trim knife start angle offset when auto trimming.

(7) Trim knife return angle offset

This function is to set trim knife return start angle offset when auto trimming.

(8) Auto wiper

This function is to set wiper using selection when auto trimming.

(9) Frame moving after trim

This is to shake the frame left/right or back/forward to separate the thread from embroidery materials after trimming.

(10) Inching stitch after trimming

This function is to set the number of stitches to be made during slow start operation after trimming.

(11) Start picker off angle

This function is to set up the start picker off turn and angle when trim after inching.
Ex) "2105" means, second time falling needle & 105 degree pulling out picker.

(12) Auto color change

This function is to enable the automatic color change function according to the needle bar change setting procedure.

(13) Wiper start angle after trim

This function is to set up the start angle of wiper when trimming.

- Increase Angle : Late the wiper start angle.
- Decrease Angle : Faster the wiper start angle

[Note]

For SV-Series, the wiper motor specification is 50[Hz]. Therefore, during the initial installation, it is recommended that the wiper start angle is adjusted to match the voltage specification of the initial installation area.

(14) Trim start, upper thread holding mode

This function is to set select upper thread holding use mode

- A : Open upper thread holding when first needle goes down.
- B : Open -> Close -> Open, upper thread holding when first needle goes down.
- C : Open upper thread holding when second needle goes down.
- D : Open -> Close -> Open, upper thread holding when second needle goes down.

9.4 Jump



(1) Jump stitch to create trim

This function is to move the frame after trimming, in the case where repeat jumps take place and they occur more than the set value.

For instance, let's assume that the set value is 5. Then, the machine conducts jump stitches without trimming until 4 stitches. If the repeat jump with over 5 stitches is found, conduct trimming first and move 5 stitches back and start embroidery again. The default is 3 stitches and the value can be adjusted from 0 to 10 by the unit of 1 stitch.

(2) Trim by continues jump length

If the total stitch length of the repeat jump code is above the set value, trimming is primarily performed before carrying out the next work. This function can set the maximum jump stitch length

(3) Jump change data

This function sets the needle width to change the regular code to the jump code.

(4) Jump RPM

This function sets the range of the jump stitch speed, which is characterized by frame move without sewing.

9.5 Backtack



(1) Backtack

Decide whether to perform the backtack(thread loosening prevention) function for forming stitch when starting the embroidery.

(2) Backtack length

This function is to set the backtack length.

(3) EndBacktack holding motion

This function is to set whether to use holding motion at the EndBackTack.

9.6 Speed



(1) Max RPM

This function sets the maximum embroidery speed.

(2) EMB. RPM

This function sets the embroidery speed.

(3) Min. RPM

This function sets the minimum embroidery speed.

(4) Jump RPM

This function sets the range of the jump stitch speed, which is characterized by frame move without sewing.

(5) Inching RPM

This function sets the starting speed for embroidery work.

(6) Slow area RPM

This function sets the embroidery speed during slow operation.

(7) Speed acceleration

This function is to set the time taken for the machine to reach the embroidery speed after the machine started operating at the inching speed.

(8) Speed data

When the stitch value becomes higher than the set value, the embroidery speed is slowed down. It sets the width of a stitch.

9.7 Frame



(1) Applique

This function is used to set up the needle bar. If the needle bar is repeatedly entered for needle bar setting, and applique is “Stop or Trim+Stop”, the machine automatically stops without trimming when the needle bars overlap.

(2) Start point return

This function makes the frame return to the origin after embroidery work is completed.

(3) Frame limit check

This function is to set whether to use the virtual frame limit setting function.

(4) Frame speed

This is to set the frame move speed during frame feeding, such as automatic return to origin and offset move.

(5) Power on auto origin

This function is to message pop-up, find the origin after the power is on.

(6) X Frame start angle

This function sets the rotation angle of the main shaft when the frame starts move.

(7) Y Frame start angle

This function sets the rotation angle of the main shaft when the frame starts move.

(8) Offset move

This function determines whether to use the automatically designated off-set function or not.

(9) Thread breakage move

This is a function to move the frame in the Y direction by the set length when thread breakage.

(10) Needle bottom stop

This function is to enable the needle bar to stop at the lowest point when the embroidery work is completed.

(11) Default outline of gauge

This function is set to create gauge line default gap distance.

(12) Move to frame center

This function is to set whether to use the function to move to the center of the frame when the machine is turned on and not during work.

9.8 Etc



(1) Thread tension (Satin)

This function is to set the tension for the satin stitch.

(2) Thread tension (Running)

This function is to set the tension for the running stitch.

(3) Material type

This function is to select appropriate fabrics by conditions.

(4) Upper thread sensing count

If the sensor detects the repeat breaks of the upper thread at the set length, the machine will stop its operation.

(5) Inching stitch

When starting embroidery, the machine starts operation at the inching speed. This function is to set the number of stitches to be made during inching operation.

(6) Auto head

When the set to auto move head interval.

(7) Needle sequence

This function is to set whether to use the information stored in the design file.

(8) Laser pointer

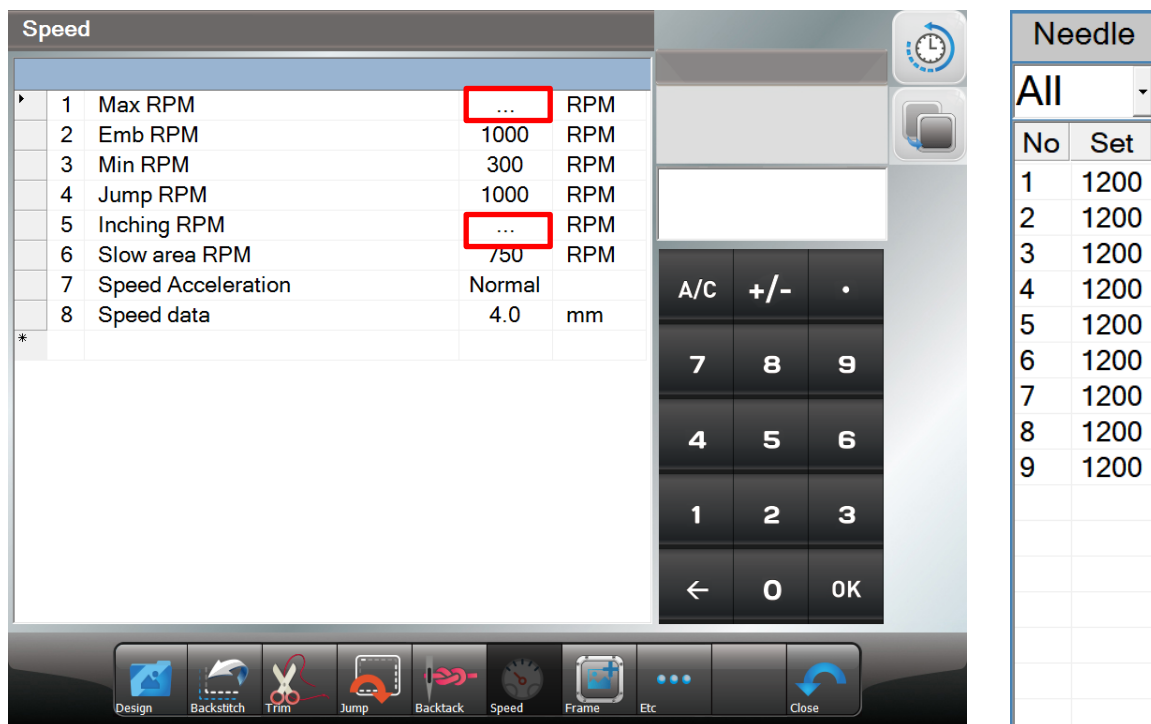
This function is to set whether to use the laser pointer.

(9) Color change speed

This function is to set the color change speed.

[Reference]

The parameters that can be set for each needle bar are indicated by ellipsis, and when the corresponding parameter is selected, it is indicated as [fig 9.2]. The setting method is the same as other parameter setting methods and can be set individually or as a whole.

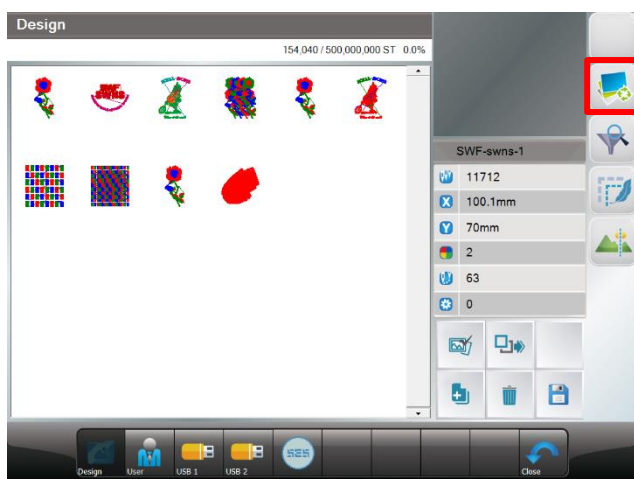


[Fig 9.2]

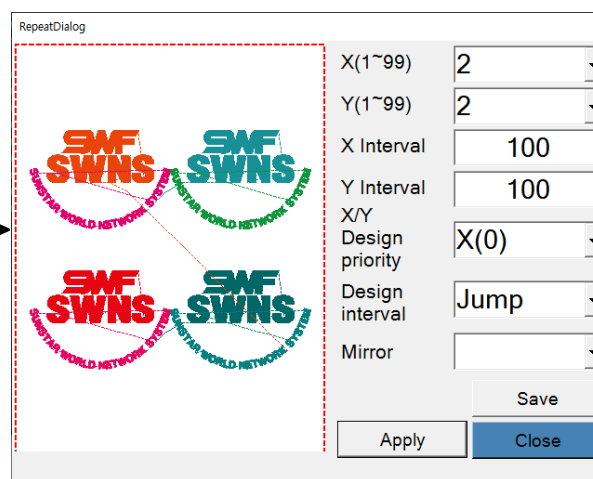
10. Repeat



This function is to embroider a single or various designs within one frame repeatedly at the same time. It can embroider a single design called repeatedly up to 99 times horizontally and vertically.



[Fig 10.1]



[Fig 10.2]

10.1 Design Repeat

Press icon in the screen [Fig10.1], then the screen [Fig 10.2] will appear to enable repeat function.

(1) X

Sets the number of repetitions along the X axis. The range of repetition settings is from 1 to 99.

(2) Y

Sets the number of repetitions along the Y axis. The range of repetition settings is from 1 to 99.

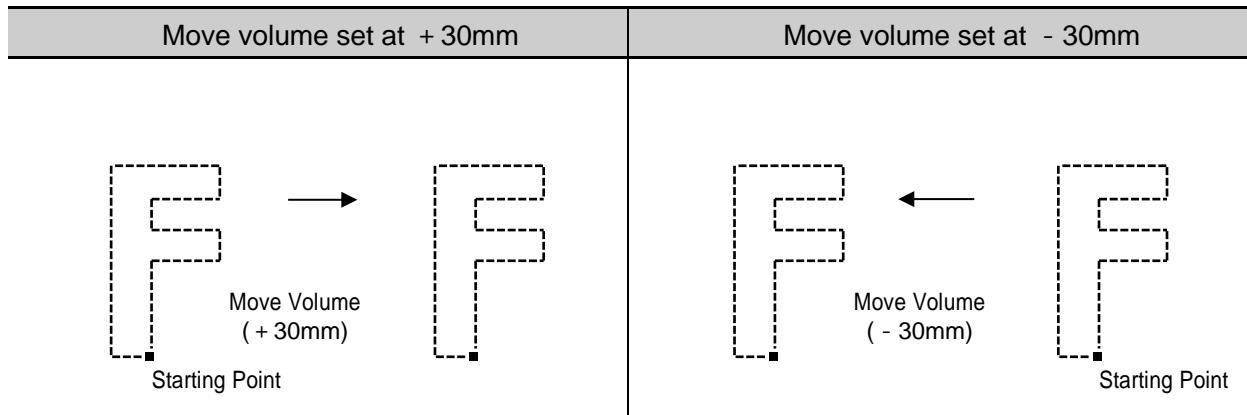
[Note]

The range of repetition setting [(X repetition frequency) X (Y repetition frequency)] shall be smaller than 99.

(3) X Interval

It sets the distances between the starting points of the repeated design along the X axis. The signs of move(+ / -) determines the direction of repetition.

- + : Repeat in the right direction
- : Repeat in the left direction

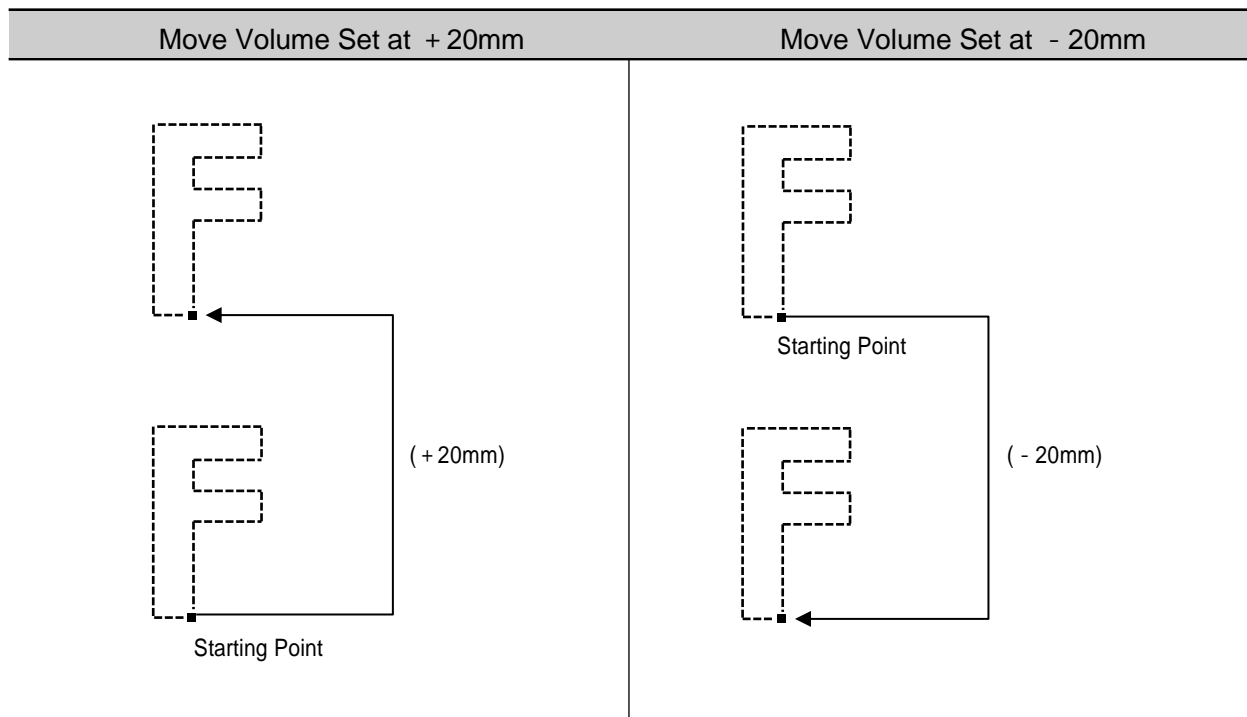


(4) Y Interval

It sets the distances between the starting points of the repeated design along the Y axis.

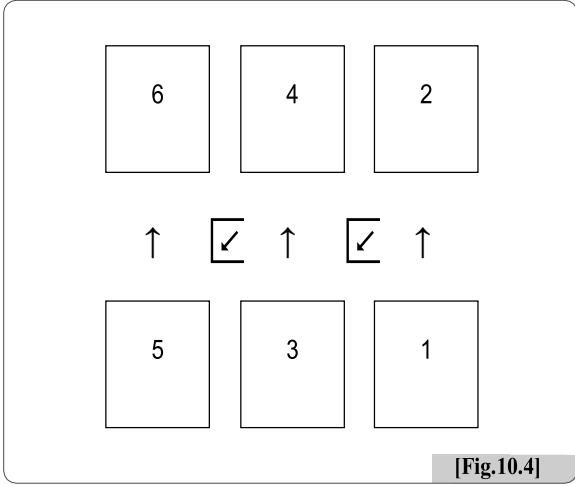
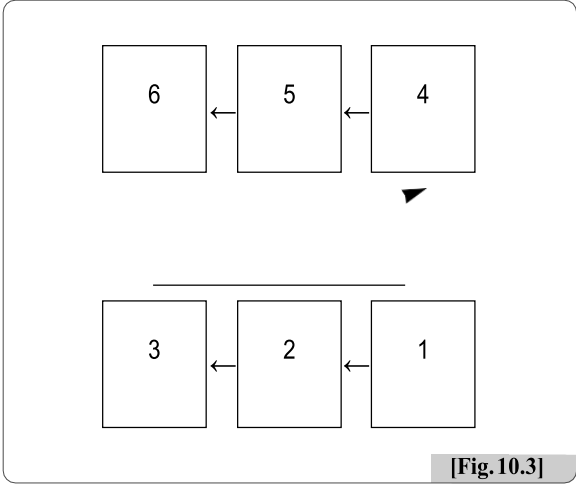
The signs of move(+ / -) determines the direction of repetition.

- + : Repeat in the right direction
- : Repeat in the left direction



(5) X/Y Design Priority

It determines the priority in the X or Y direction. In [Fig 10.3], the X direction is a priority. In [Fig 10.4], the Y direction is a priority.



(6) Design Interval

This function is to set the moving methods between repeated designs. To move a design, Stop and Jump can be used.

- Stop : It moves to the position of the next design and stops.
- Jump : It moves to the position of the next design and automatically begins work.

(7) Mirror

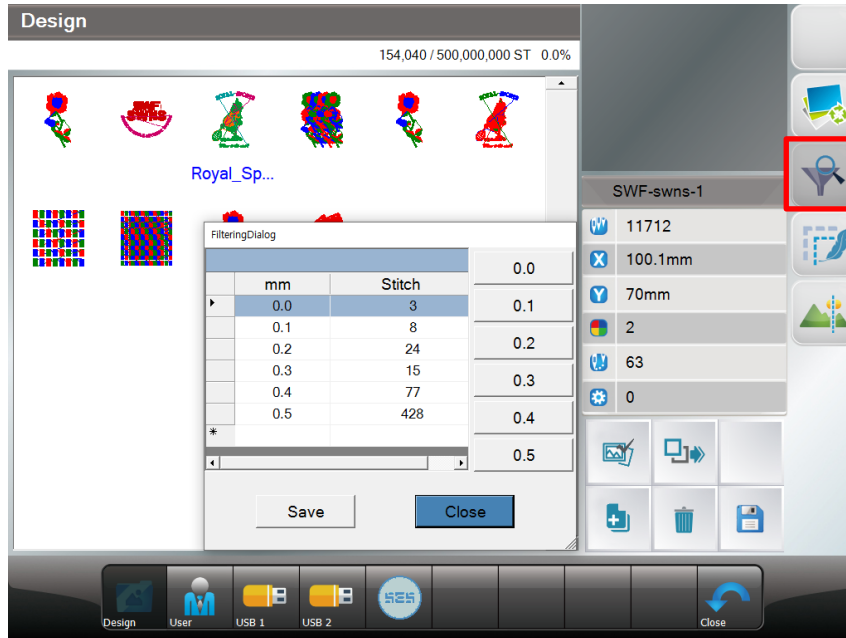
This function is to set the design to look like the one reflected on the mirror.

NO	X
Y	XY

10.2 Design Filtering



If the distance from one stitch to the other stitch is too short (0.1-0.5mm), the thread might break very often during embroidery work. This function is to put together short stitches which are under the set value for optimization and enhance the entire number of stitches above the set value, so that it can prevent thread break. Please refer [Fig. 10.6]



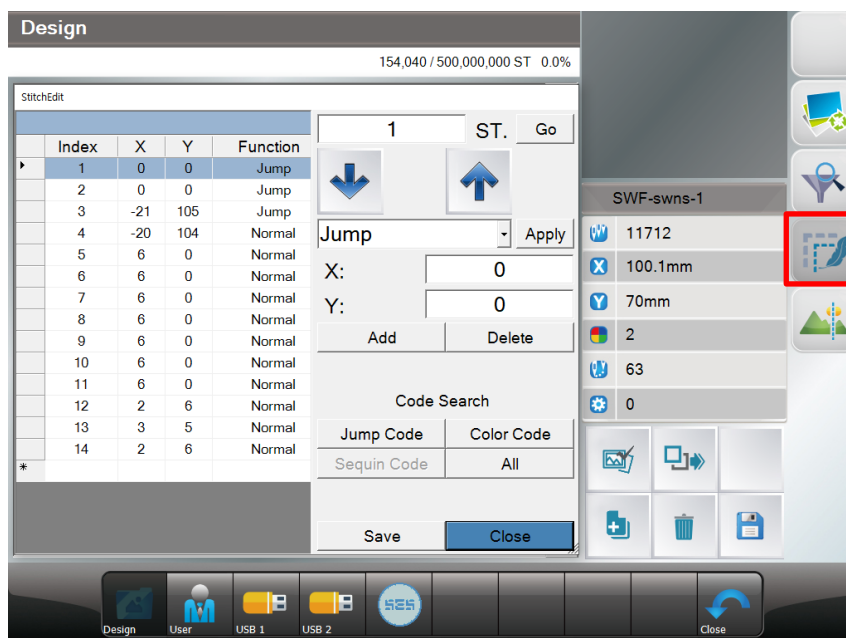
[Fig 10.6]

10.3 Stitch Edit



This function is to change codes and stitch count by needle based on the called design data.

[Fig. 10.7] is the first screen for Stitch Edit.

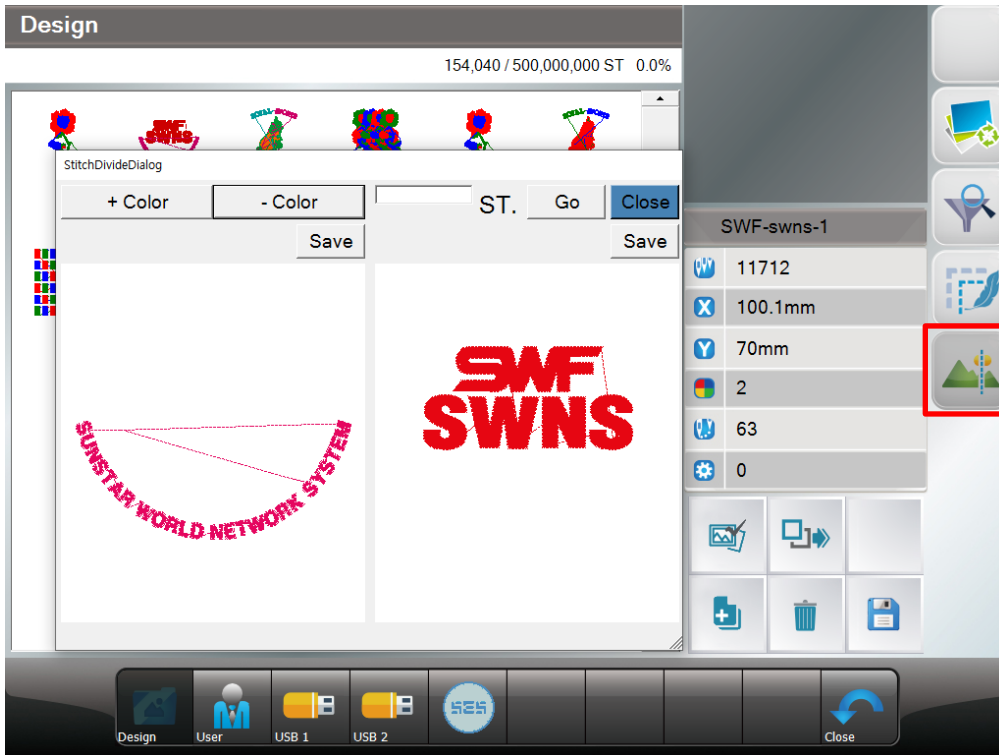


[Fig 10.7]

10.4 Design Divide



This function is to save two different designs of the desired part of the design chosen. The designs can be divided by color or stitch number.



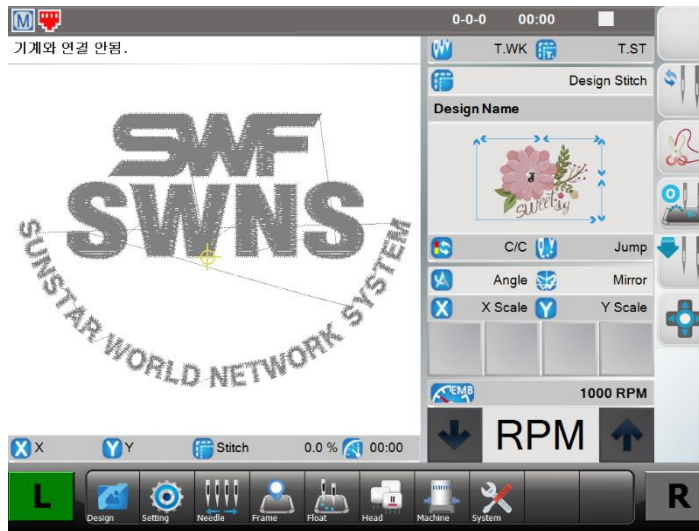
[Fig 10.8]

11. Dual Model

It is a machine that can perform different work (design) at the same time with one OP

11.1 Screen Layout

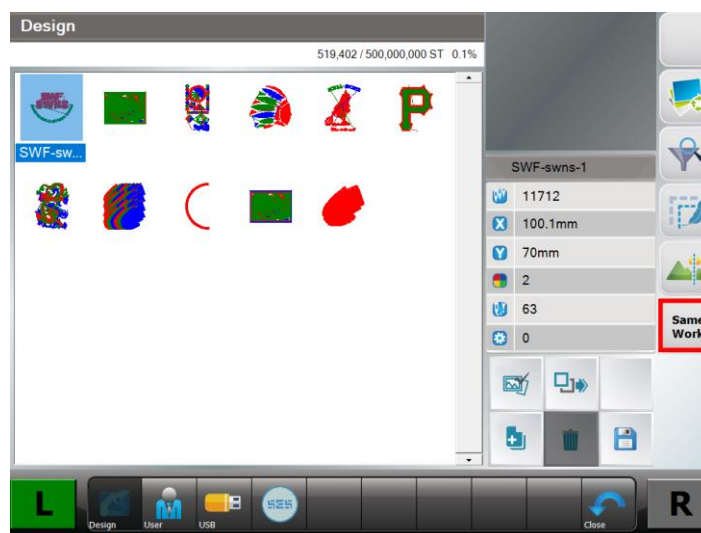
The screen can be switched by using the, buttons at the bottom left **L** and bottom right **R** of each screen. Basic screen configuration is the same as general model.



[Fig 11.1]

11.2 Samework

This function allows you to do the same thing on both sides. After all settings are made on one side, the Samework function keys allow the other side to be embroidered in the same design, settings and position.



[Fig 11.1]

12. Special Model (Tuft)

This part is explanation about the Tuft Embroidery Machine.

For details other than those described below, refer to the general embroidery manual.

12.1 Needle Setting (Color)

The needle setting of the Tuft Embroidery Machine is divided into the “General” and “Tuft” needle bars.

[Note]



For the basic explanation, please refer to the general embroidery machine manual (3. Needle Setting).

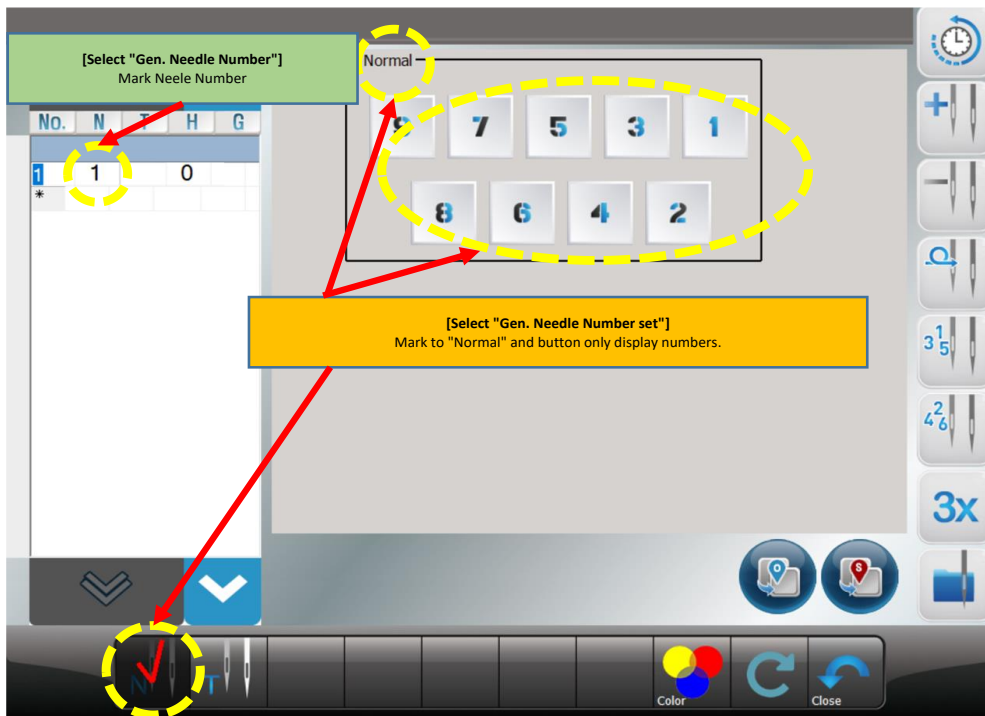
[Note]

Once the needle bar setting is completed, the set values become default and remain preserved even after the power is turned off. When other embroidery design is called, the needle bar setting values are unchanged. As such, when the design is changed or other setting is desired, the needle bar setting shall be adjusted again


The needle setting of the Tuft Embroidery Machine is divided into the “Normal” and “Tuft” needle bars

12.1.1 General(Normal) Head Needle Setting



If you press “General needle setting selection button ” at the bottom left of the needle bar setting screen, the button changes to  and the screen changes to the general needle bar setting as shown in <Fig. 12.1> below.

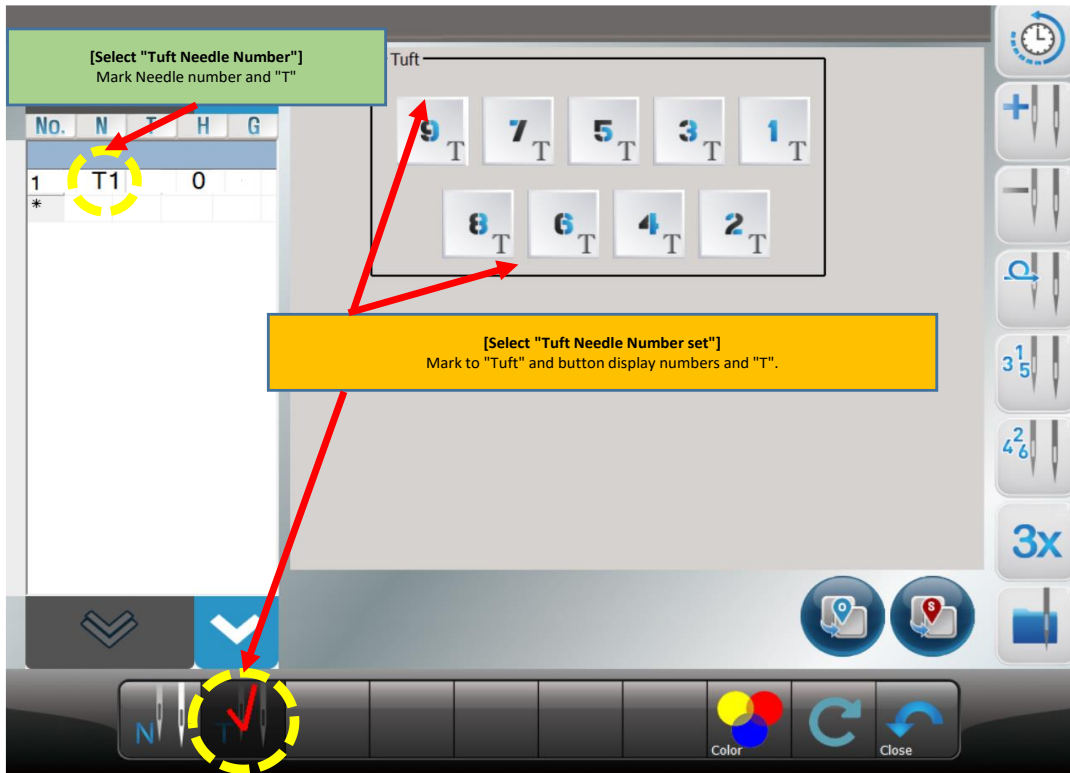


<Fig..12.1>


By pressing the “Needle number setting button ” on the screen above, you can change the needle bar of the desired part of the color table.

12.1.2 Tuft Head Needle Setting

If you press the “Tuft needle bar setting selection button ” on the lower left of the needle bar setting screen, the button changes to  and the screen changes to the screen where you can set the grass needle bar as shown in <Fig. 12.2>.



<Fig.12.2>

You can change the needle bar of the desired part of the color table by pressing the “Tuft needle number setting button ” on the screen above.

12.2 Needle Color

[Note]
For the basic explanation, please refer to the general embroidery machine manual (3.2 Needle Color).

12.3 Offset Needle bar setting

[Note]
For the basic explanation, please refer to the general embroidery machine manual (3.4 Offset needle bar setting).

[Note]

For the basic explanation, please refer to the general embroidery machine manual (4. Frame).

12.2 Frame

12.2.1 Position

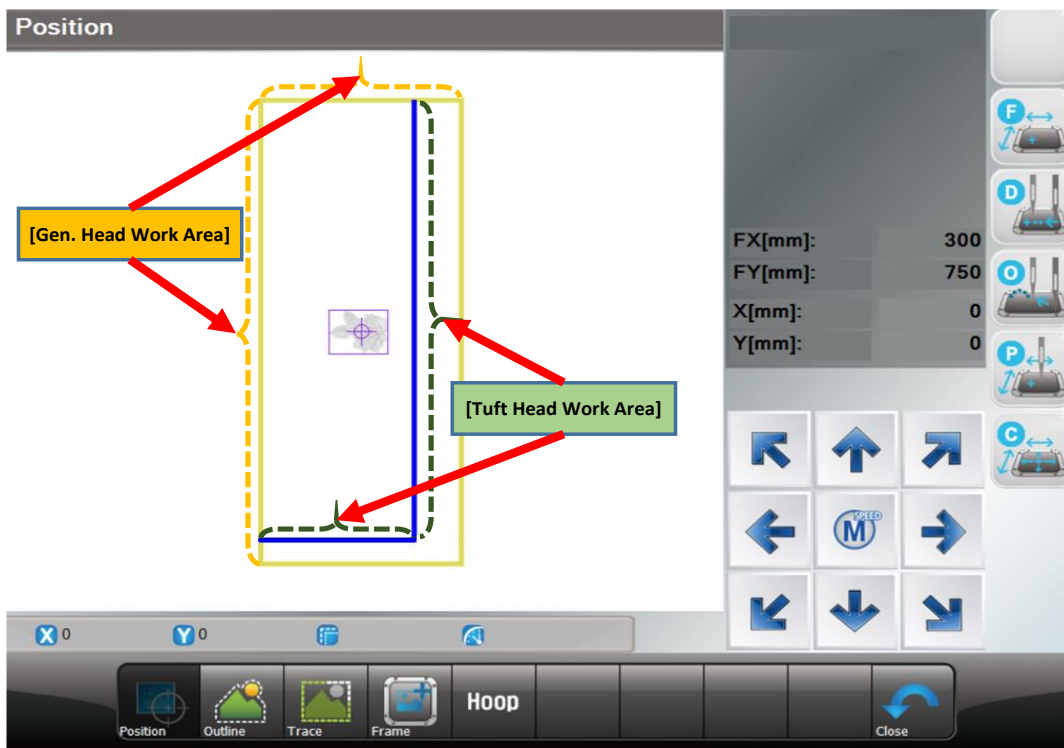
[Note]

For the basic explanation, please refer to the general embroidery machine manual (4.1 Position).

[Caution]

When the main power is off, and the frame is pushed by hand, the frame's origin will change. Likewise, when the frame's origin is changed, the work position function does not properly perform

Work area of General / Tuft compound embroidery machine is divided into "General" and "Tuft" head work area.



<Fig. 12.3>

12.2.2 Exclude

[Note]

For the basic explanation, please refer to the general embroidery machine manual (4.2 Exclude).

12.2.3 Trace

[Note]

For the basic explanation, please refer to the general embroidery machine manual (4.3 Trace).

12.2.4 Frame Offset Setting

[Note]

For the basic explanation, please refer to the general embroidery machine manual (4.4 Frame Offset Setting).

[Note]

For the basic explanation, please refer to the general embroidery machine manual (6. Head Setting).


12.3 Using Head Setting

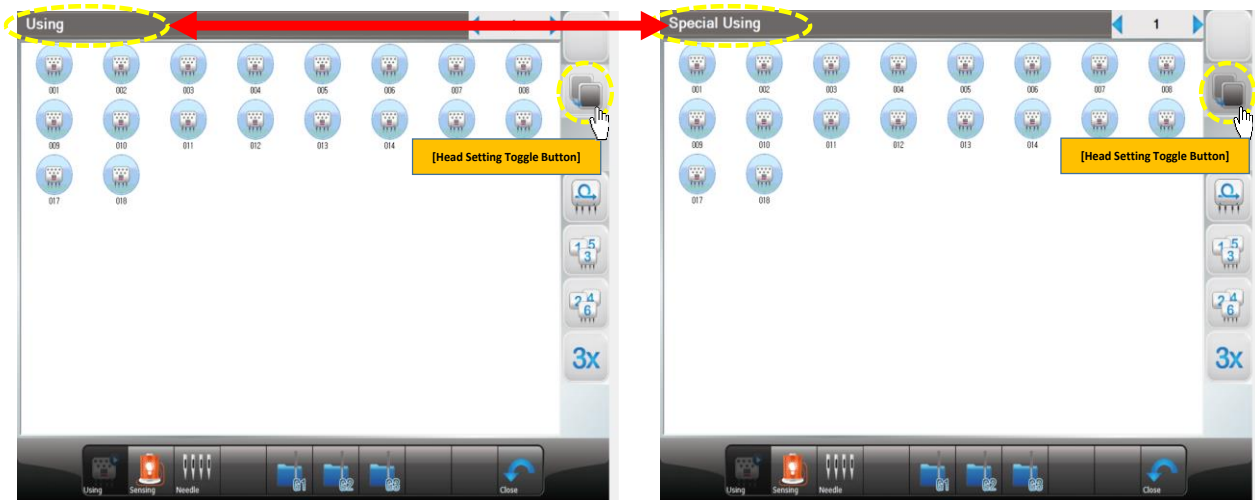
General-Tuft Mixed embroidery machines are divided into heads through the “General(Normal)” and “Tuft” toggle buttons. Please change the screen for each head (General(;Normal) or Turf).

[Caution]

Before using “Using Head Setting”, please check whether it is general or turf setting screen at the top left of the screen.

12.3.1 Switch between General(Normal)-Tuft Using Head and Sensor Set

To switch between the used and thread sensing settings of the General-Tuft Mixed embroidery machine, use the “Head setting switch button ” on the upper right of the “Head setting screen”. See Figure 12.4.



<Fig.12.4>

12.3.2 Head Select

[Note]

For the basic explanation, please refer to the general embroidery machine manual (6.1 Using Head Select).

12.3.3 Sensing Head Set

[Note]

For the basic explanation, please refer to the general embroidery machine manual (6.2 Sensing Head Set).

12.4 Machine

This function is to show the embroidery machine's mechanical information when initially setting up the embroidery operating program. User can change the machine setting as well in this screen.

[Note]

For the basic explanation, please refer to the general embroidery machine manual (7. Machine).

12.4.1 Machine Information

[Note]

For the basic explanation, please refer to the general embroidery machine manual (7.1 Machine Information).

[Warning]

When the machine setting is wrong, it may cause problem to the machine. Unless there is clear information, please refrain from changing the default setting.

12.4.2 Machine Test

[Note]

For the basic explanation, please refer to the general embroidery machine manual (7.3 Machine Test).



Jump	Checks the operation of the jump motor or solenoid for Tuft Head.
Wiper	Checks the operation of the wiper solenoid for Tuft Head.
Picker	-
Trim	-.
Holding	-
Thread Sensing	Checks the operation of the upper thread sensor for Tuft Head.

1 Turn M. Axis	Checks the fixed position after one rotation of the Tuft main axis.
M. Axis Run	The function for Tuft Main Axis test run. (Test run after cleaning and oiling)
Option AB	-
Lift	The function to test the Tuft Device up/down lift.
Option C	The function to test execute the Tuft Device 1-cycle.
ZZ Origin	-
PF Up down	-

12.4.3 Machine Service

[Note]

For the basic explanation, please refer to the general embroidery machine manual (7.4 Machine Service).

12.4.4 Sensor


[Note]

For the basic explanation, please refer to the general embroidery machine manual (7.5 Sensor).

12.5 Setting


[Note]

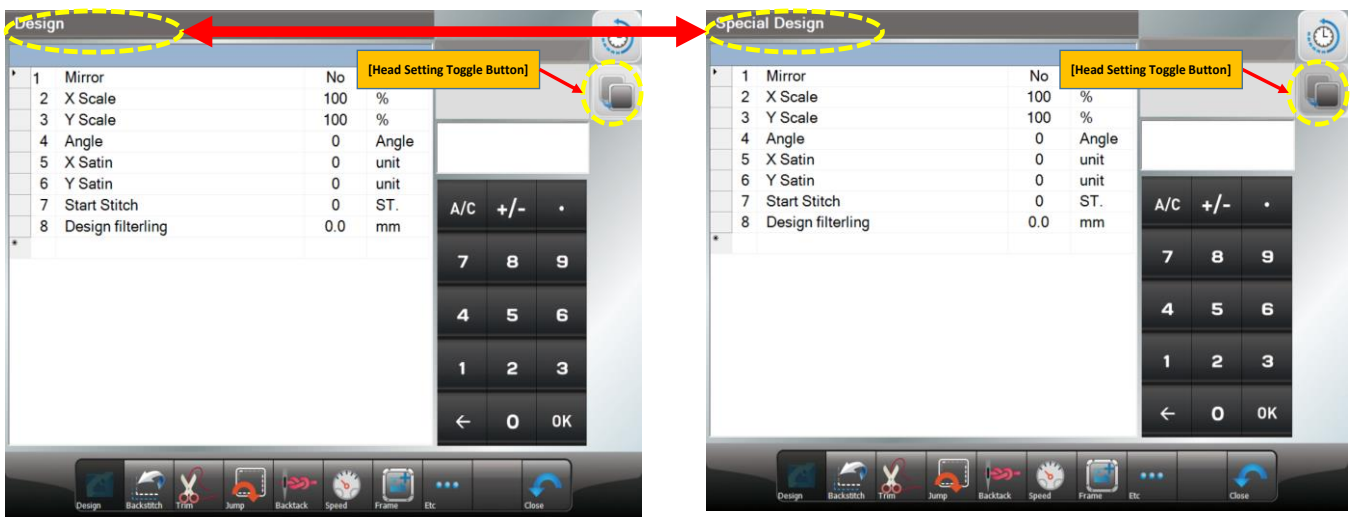
For the basic explanation, please refer to the general embroidery machine manual (9. Setting).

Press the Setup button  in the main screen to enter the screen for setting each parameter.

[Warning]

If you change the setting value of parameter details as you like, it may cause the failure or physical damage of the machine.

To switch between the used and thread sensing settings of the General-Tuft Mixed embroidery machine, use the “Head setting switch button ” on the upper right of the “Parameter setting screen”.



12.5.1 Setting

[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.1 Setting).

12.5.2 Frame Back

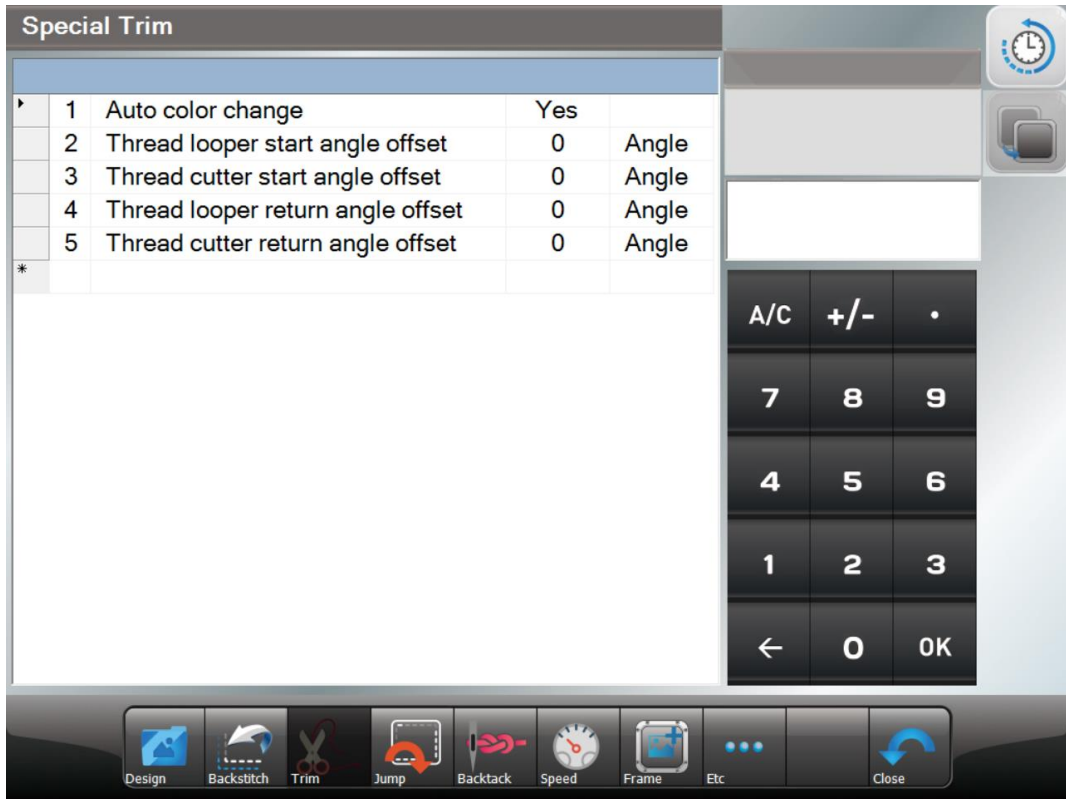
[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.2 Frame Back).

12.5.3 Trimming

[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.3 Trimming).



Auto color change	This function is to enable the automatic color change function according to the needle bar change setting procedure.
Thread looper start angle offset	This function is to adjust the looper start angle of the tuft device.
Thread cutter start angle offset	This function is to adjust the cutter start angle of the tuft device.
Thread looper return angle offset	This function is to adjust the looper return angle of the tuft device.
Thread cutter return angle offset	This function is to adjust the cutter return angle of the tuft device.

12.5.4 Jump

[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.4 Jump).

12.5.5 Backtack

[Note]

Tuft heads do not use Backtack parameters.

12.5.6 Speed

[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.6 Speed).

12.5.7 Frame

[Note]

Tuft heads do not use Frame parameters.

12.5.8 Others

[Note]

For the basic explanation, please refer to the general embroidery machine manual (9.8 Others).

13. Caution Messages and Handling

13.1 Main Shaft Motor and Others

No.	Name	Description	Handling
100	Main shaft not fix position	The main shaft's angle is not 100°	Use the lever to set the main shaft's angle at 100°
101	Main shaft motor driver detect illegal signal.	Main shaft motor driver develops an illegal.	Turn off and on the main switch, Main shaft motor drive check.
102	Main shaft overload detect	When a thread tangles the hook, when the needle bar's control body is bad, and when the thread becomes tangled during trimming, the error occurs.	Check the hook of the front head, and turn off and on the main switch.
103	Trimming system recovery illegal.	When the trimming sensor is not recovered upon trimming.	Check and respond to the abnormality of the trimming system.
104	Detect to start switch pressed.	When the power is on, the start button is pressed.	Check whether the start button contacts the connector.
105	Detect to stop switch pressed.	When the power is on, the stop button is pressed.	Check whether the stop button contacts the connector.
108	Detect to low air pressure.	When the air pressure is below the standard (Sequin)	Check air in pressure.
110	Second main shaft not fix position.	When it is stopped, the main shaft's angle is not 100°	Use the lever to set the main shaft's angle at 100°
111	Second main shaft motor driver detect illegal signal.	Main shaft motor driver develops an error.	Turn off and on the main switch, Main shaft motor drive check.
112	Second main shaft overload detect	When a thread tangles the hook, when the needle bar's control body is bad, and when the thread becomes tangled during trimming, the error occurs.	Check the hook of the front head, and turn off and on the main switch.

13.2 X, Y Motor-related

No.	Name	Description	Handling
200	(+X) frame limit detection	The frame move system reaches the +X limit.	Move the frame in the -X direction.
201	(-X) frame limit detection	The frame move system reaches the -X limit.	Move the frame in the +X direction.

202	(+Y) frame limit detection	The frame move system reaches the +Y limit.	Move the frame in the -Y direction.
203	(-Y) frame limit detection	The frame move system reaches the -Y limit.	Move the frame in the +Y direction.
204	X-axis driver illegal signal detect.	Problems occur in the X-axis driver.	Turn off and on the main switch.
205	Y-axis driver illegal signal detect.	Problems occur in the Y-axis driver.	Turn off and on the main switch.
206	Wiper return fail	Wiper does not return or return position sensor wrong.	Repairs the wiper mechanism.
207	Trimmer driver illegal signal detect.	Problem occur in the Trim driver.	Turn off and on the main switch.

13.3 Color Change

No.	Name	Description	Handling
300	Wrong needle bar stop position	When replacing the needle bar, the needle bar fails to reach the proper position.	Manually turns the needle bar to check the load of the needle bar, and properly place the needle bar. Check condition to motor, potencio meter, plate sensor.
301	Color change system abnormal status	When replacing the needle bar, the don't detecting needle bar moving condition.	Check condition to motor, potencio meter, plate sensor, power source
310	Wrong second needle bar stop position	When replacing the needle bar, the needle bar fails to reach the proper position.	Manually turns the needle bar to check the load of the needle bar, and properly place the needle bar. Check condition to motor, potencio meter, plate sensor.
311	Second color change system abnormal status	When replacing the needle bar, the don't detecting needle bar moving condition.	Check condition to motor, potencio meter, plate sensor, power source

13.4 Encoder

No.	Name	Description	Handling
400	Non detecting to main shaft rotate.	Problems in signaling occurred in the main shaft's encoder A. Non detecting to main shaft rotate	Check the connection of the encoder cable, Motor condition and try to turn off and then on the main switch.
401	Error in the main shaft encoder Z	Problems in signaling occurred in the main shaft's encoder Z.	Check the encoder's cable connection, and try to turn off and again the main switch.

410	Non detecting to second main shaft rotate.	Problems in signaling occurred in the main shaft's encoder A. Non detecting to main shaft rotate	Check the connection of the encoder cable, Motor condition and try to turn off and then on the main switch.
411	Error in the second main shaft encoder Z	Problems in signaling occurred in the main shaft's encoder Z.	Check the encoder's cable connection, and try to turn off and again the main switch.

13.5 USB

No.	Name	Description	Handling
650	USB read failure.	Detect wrong signal to USB reading process.	Check whether the system of USB.

13.6 Memory

No.	Name	Description	Handling
700	No embroidery data found in the memory	The embroidery data does not exist in the memory.	Use a USB to save embroidery data.
701	Insufficient memory capacity	The data desired to copy in the memory failed to be copied due to the lack of memory capacity.	Delete unnecessary data.
702	memory rooms are full.	The memory rooms are all saved with designs.	Delete unnecessary data.
703	Error in memory system	occurred during copying or deleting data between memory devices.	Press Reset or turn off and on the main switch.
704	Detect to memory caution signal	The status of saving the number of stitches and the x, y position information is unstable.	If this error frequently occurs, need to check the CPU board.
705	Lock system wrong	Detect to lock system check illegal.	Press Reset or turn off and on the main switch. If this error frequently occurs, need to check the CPU board.
706	Wrong design transmit	When transferring to design data PC to MC, detect to problem	Retry transfer design data. If this error frequently occurs, need to check communication line.

707	CRC different store space	Detect to caution store space signal When install new version make one time this caution.	Press Reset or turn off and on the main switch. If this error frequently occurs, need to check the CPU board.
801	System version is wrong	System version check fail.	Retry version install. If this error frequently occurs, need to check the CPU board.

13.7 Communication

No.	Name	Description	Handling
900	Time out OP to IO communication	In the wrong status to OP to IO communication.	Press Reset or turn off and on the main switch. If this error frequently occurs, need to check the CPU board or IO board.
909	Bad condition to inner communication A	Detect to bad communication inner channel A	Press Reset or turn off and on the main switch. If this error frequently occurs, need to check the CPU board or IO board and communication line A
910	Bad condition to inner communication B	Detect to bad communication inner channel B	Press Reset or turn off and on the main switch. If this error frequently occurs, need to check the CPU board or IO board and communication line B