SWF

USER'S MANUAL

Operating Manual

- SB Series
- Multi-Heads E-Series
- DM Series
- K Series

SunStar CO., LTD.

MEE-090929

1. THIS IS AN INSTRUCTION FOR SAFE USE OF SWF® 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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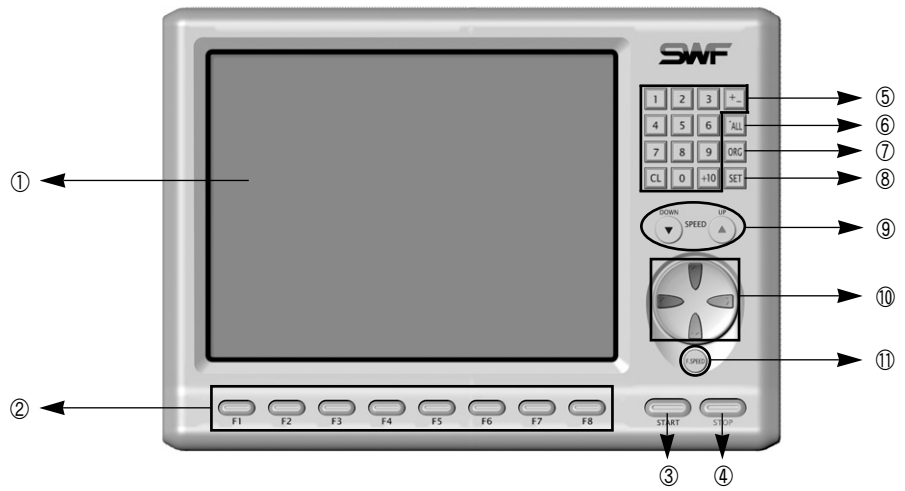
1 Operation Box

1.1 Part Name and Function

The OP Box is an LCD-type monitor as shown in <Fig. 1.1-1>.
Cables and ports are located on the right, rear, and bottom sides.

▶Front



[Fig. 1.1-1]

① LCD Screen

It is a 6.4-inch LCD monitor. It displays all information necessary for embroidery work.

② Function Keys

They are used to select the functions displayed on the screen.

③ Start Button

It starts the embroidery work.

④ Stop Button

It stops the embroidery work under execution.

⑤ Number Keys

They are used to enter numbers upon parameter setting and to manually move the needle bar.

⑥ Laser Pointer Key

It turns on or turns out the laser pointer in case where the laser pointer is equipped.

⑦ ORG

This is used to return the frame to the origin.

⑧ SET

This is used to confirm the selection in case of setting or on the menu.

⑨ Main Shaft Speed Keys

They are used to adjust the main shaft speed in the middle of embroidery work. Use 'UP' to speed up. Use ‘DOWN’ to speed down.

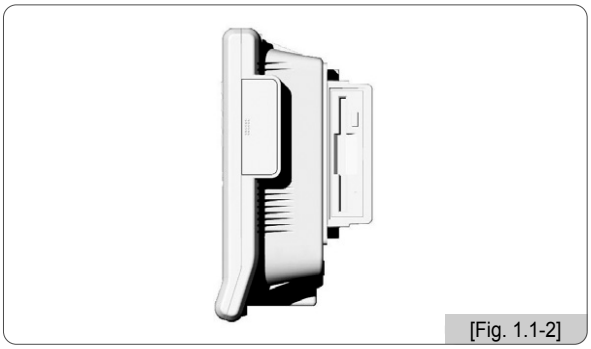
⑩ Frame Move Keys

They are used to move the frame in the four directions including Up, Down, Left, and Right. They are also used to move around the menu on the screen.

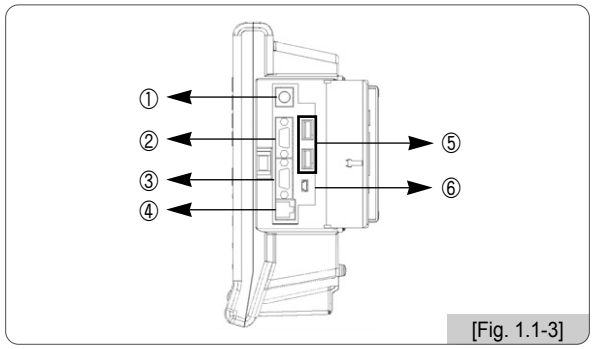
⑪ Frame Speed Key

It is used to adjust the speed in three steps including high, medium, and low when moving the frame.

▶Right



[Fig. 1.1-2]



[Fig. 1.1-3]

The right side is protected by the connector cover against foreign materials including dust. Press the cover once to open.

① Keyboard Port

② VGA Port

③ Serial Port

This is used for serial communications.

④ LAN Port for Networking

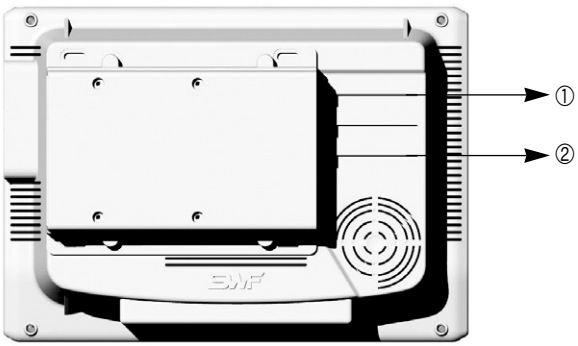
⑤ USB Port

It is used to save and call designs in and out of the embroidery machine by using a USB memory.

⑥ USB Port (slave)

This is a reserve port for the USB-based communication with PC.

▶Rear



[Fig. 1.1-4]

① Cable Connection for FDD

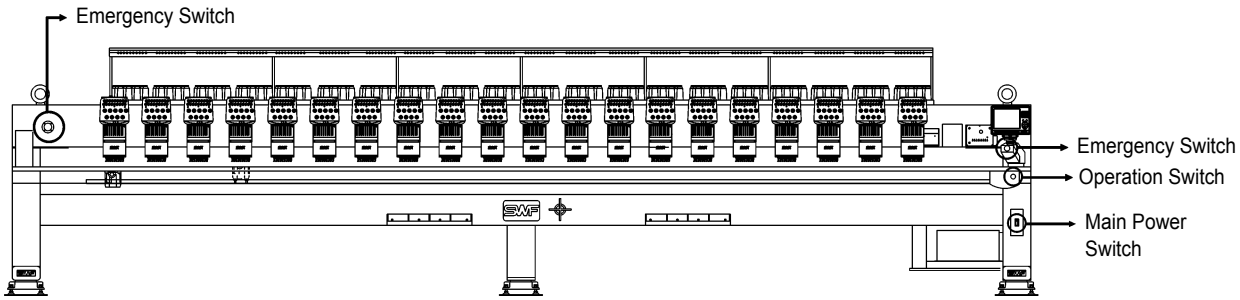
It is used to make connection to the external FDD using a cable.

② Cable Connection for Power Supply and Signal Transmission

2 Basic Steps Before Starting Embroidery

2.1 Embroidery Machine Power-On

※ SB, Multi-Head E-Series Embroidery Machine



[Fig 2.1-1]

① Insert the power plug of the embroidery machine into the outlet

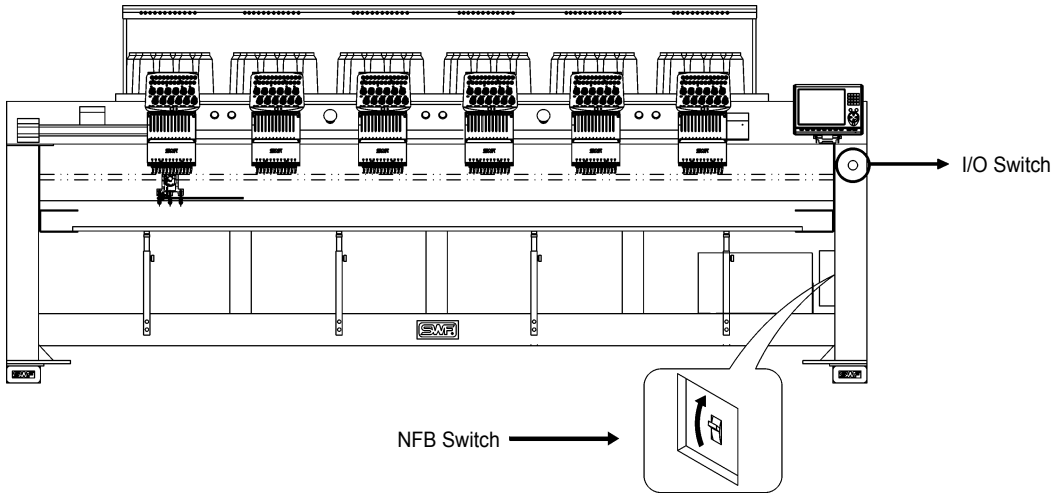
② Turn on the main power switch (‘ON’)

③ Turn on the operation switch, and then the LCD screen of the OP Box is turned on and the operating program is displayed on the screen.

④ Use the frame move keys to check the appropriateness of the frame motion. Check the basic motions by referring to ‘5.8.3 Motion Test’.

[Warning]
Make sure to pull off the power plug before A/S service activities begin.

※ DM Series Small-Head Embroidery Machine



[Fig 2.1-2]

① Insert the power plug into the outlet.

② Check the NFB switch location as in <Fig. 2.1-2> and lift the NFB switch (make it 'ON').

③ Check the I/O switch location and press the I/O switch.

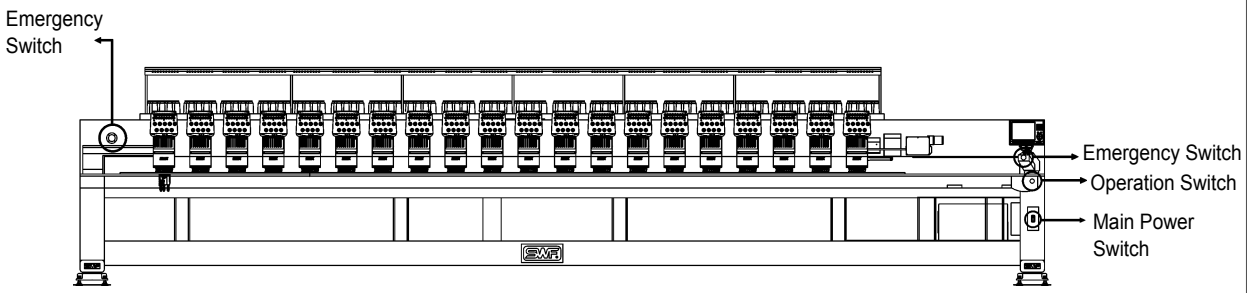
④ The LCD screen is on, and the embroidery operation program is displayed on the screen.

⑤ Use the frame move keys to check the normal operation of the frame. See '5.8.3 Operation Test' to check the basic operations.

[Warning]
Make sure to turn OFF the power or the NFB switch when repairing the machine.

■ SWF/DM-WD920-55

※ DM Series Multi-Head Embroidery Machine



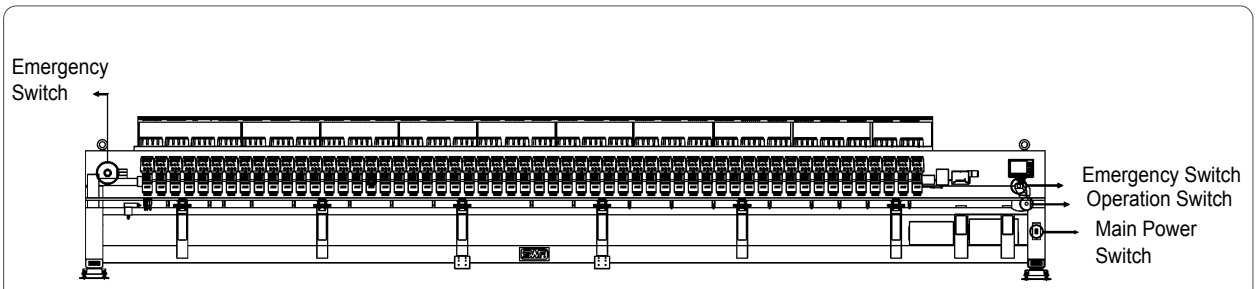
[Fig 2.1-3]

① Insert the power plug of the embroidery machine into the outlet
② Turn on the main power switch (‘ON’)
③ Turn on the operation switch, and then the LCD screen of the OP Box is turned on and the operating program is displayed on the screen.
④ Use the frame move keys to check the appropriateness of the frame motion. Check the basic motions by referring to ‘5.8.3 Motion Test’.

[Warning]
Make sure to turn OFF the power or the NFB switch when repairing the machine.

■ SWF/DM-WU(2X)656-150

※ DM 56 Embroidery Machine

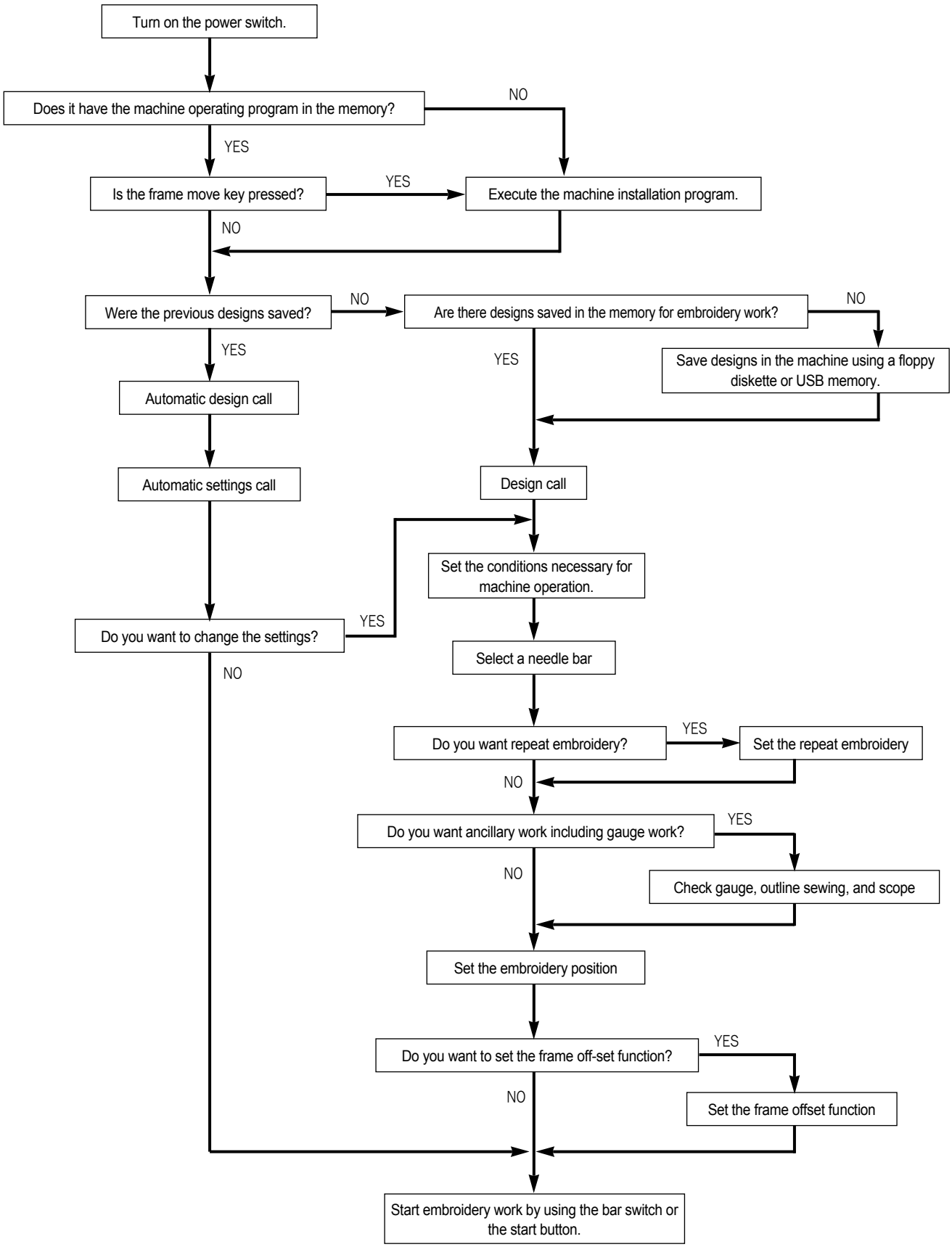


[Fig 2.1-4]

① Insert the power plug of the embroidery machine into the outlet
② Turn on the main power switch (‘ON’)
③ Turn on the operation switch, and then the LCD screen of the OP Box is turned on and the operating program is displayed on the screen.
④ Use the frame move keys to check the appropriateness of the frame motion. Check the basic motions by referring to ‘5.8.3 Motion Test’.

[Warning]
Make sure to turn OFF the power or the NFB switch when repairing the machine.

2.2 Basic Steps



3 Operating Program Install

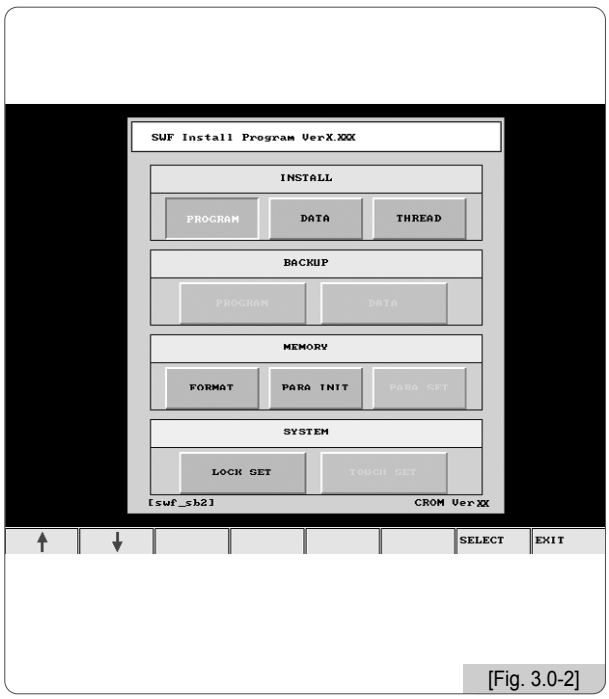
When the machine is shipped out, the operating program is pre-installed and pre-set. However, when the program was damaged or the settings need to be changed or upgraded, the installation of the program is required. In this case, the program can be re-installed or the set values can be initialized.

■ Use the SWF Install Program

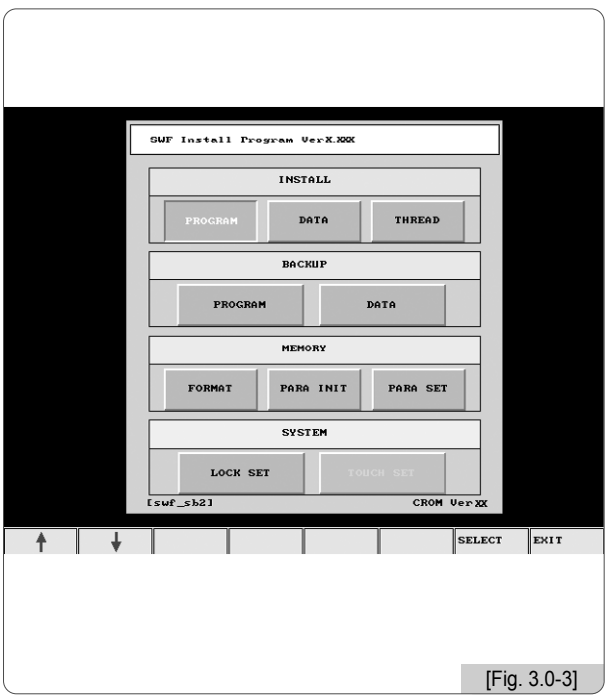
1. If the machine operating program was not installed, the automatic link to the install menu is conducted as in <Fig. 3.0-2>.
2. Upon booting, the logo appears on the screen for two seconds as in <Fig. 3.0-1>. In case of pressing the frame left and right move keys together when the logo appears on the screen, the install screen appears next. <Fig. 3.0-3>.

Frame Move Key	Status of Frame Move Keys On the Logo Screen	Motion
	When the left and right keys are pressed together	Moving to the SWF Install Program

[Fig. 3.0-1]



[Fig. 3.0-2]



[Fig. 3.0-3]

3.1.0 SWF Install Program

As in <Fig. 3.0-3>, SWF Install Program can conduct installation, backup, memory management, and system setting.

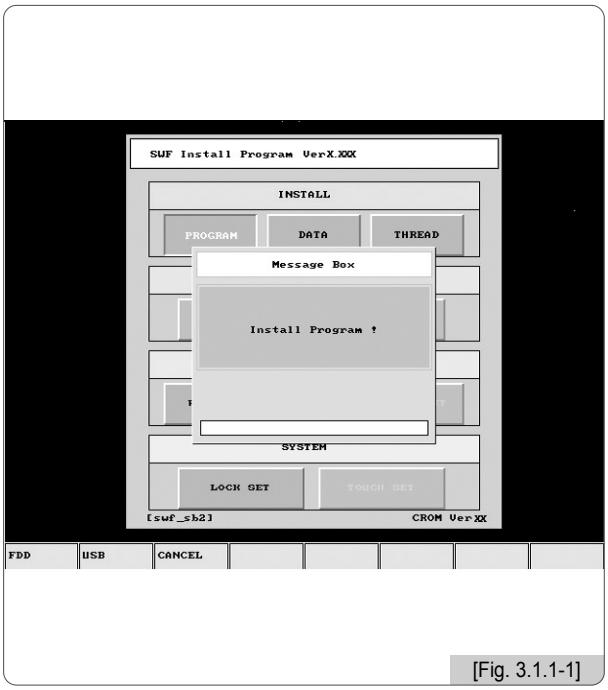
3.1.1 Install

The machine operating program and the necessary data files can be installed in the OP Box using the input devices (floppy diskette, USB).

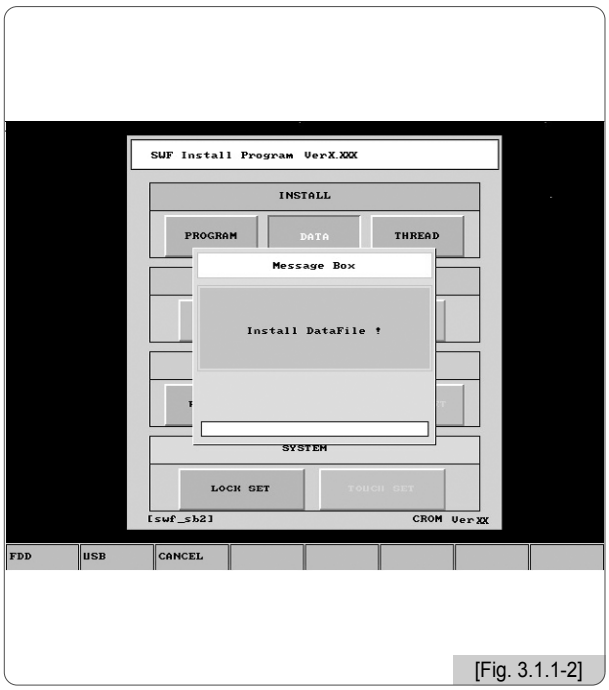
1) Program : Embroidery Operating Program

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'PROGRAM'. Press F7 SELECT , and then the screen appears as in <Fig. 3.1.1-1>.

To use a floppy diskette for installation, insert the floppy diskette containing the operating program and then press F1 FDD . To use a USB memory for installation, insert the USB memory into the USB port, and then press F2 USB . To cancel installation, press F3 CANCEL .



[Fig. 3.1.1-1]



[Fig. 3.1.1-2]

2) Data : It is needed by the embroidery operating program.

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'DATA' and press F7 SELECT . Then <Fig. 3.1.1-2> appears.

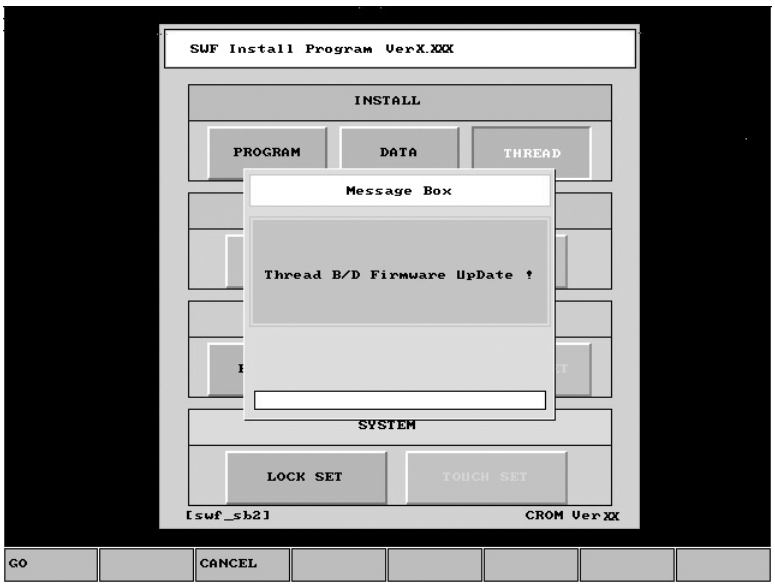
To use a floppy diskette for installation, insert the floppy diskette containing the operating program and then press F1 FDD . To use a USB memory for installation, insert the USB memory into the USB port, and then press . F2 USB To cancel installation, press F3 CANCEL .

[Caution]
USB memory's file system should be FAT 16. If it is FAT 32, it cannot be used.

3) Program : Thread Sensing Board Program

<Fig. 3.1.1-3> automatically appears when the operating program and data is installed either via FDD or USB. This screen can be viewed when selecting 'THREAD' in <Fig. 3.0-3>.

To upgrade the thread sensing board program, press F1 GO . Press F3 CANCEL to cancel.



[Fig. 3.1.1-3]

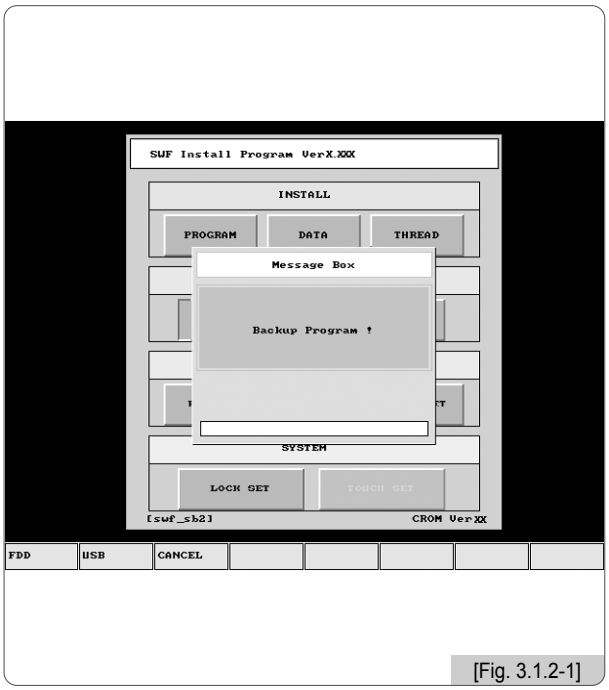
3.1.2 Backup

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 floppy diskette. If there are no operating program and data files or if the memory has been formatted, the backup function cannot be used.

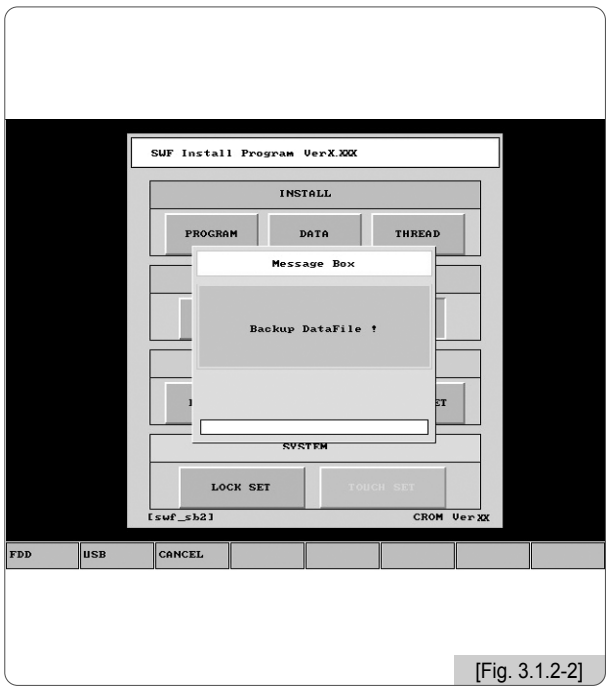
1) Program

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'PROGRAM' on the backup menu, and press F7 SELECT . Then <Fig. 3.1.2-1> appears.

To use a floppy diskette for backup, insert an empty floppy diskette and then press F1 FDD . To use a USB memory for backup, insert the USB memory into the USB port, and then press F2 USB . To cancel backup, press F3 CANCEL .



[Fig. 3.1.2-1]



[Fig. 3.1.2-2]

2) Data

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'DATA' on the backup menu, and press F7 SELECT . Then <Fig. 3.1.2-2> appears.

To use a floppy diskette for backup, insert an empty floppy diskette and then press F1 FDD . To use a USB memory for backup, insert the USB memory into the USB port, and then press F2 USB . To cancel the backup, press F3 CANCEL .

[Caution]
USB memory's file system should be FAT 16. If it is FAT 32, it cannot be used.

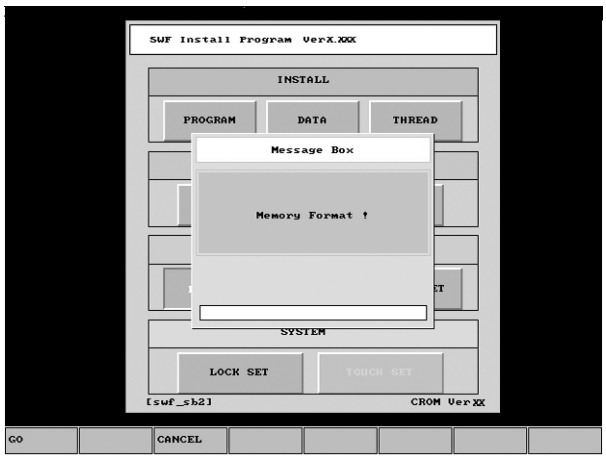
3.1.3 Memory

It has such functions as memory format and memory setting initialization.

1) Format

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'FORMAT' on the memory menu, and press F7 SELECT . Then <Fig. 3.1.3-1> appears.

When pressing F1 GO , the memory will be formatted, and all programs and data will be deleted. To cancel the backup, press F3 CANCEL .

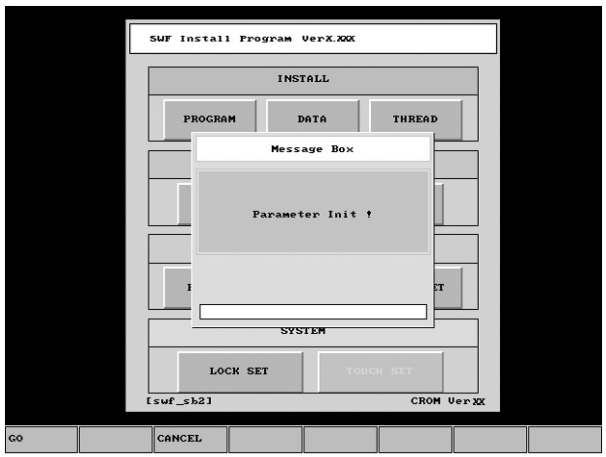


[Fig. 3.1.3-1]

2) Setting Initialization

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'PARA INIT' on the memory menu, and press F7 SELECT . Then <Fig. 3.1.3-2> appears.

When pressing F1 GO , all settings made in the operating program will be initialized. To cancel the initialization, press F3 CANCEL .

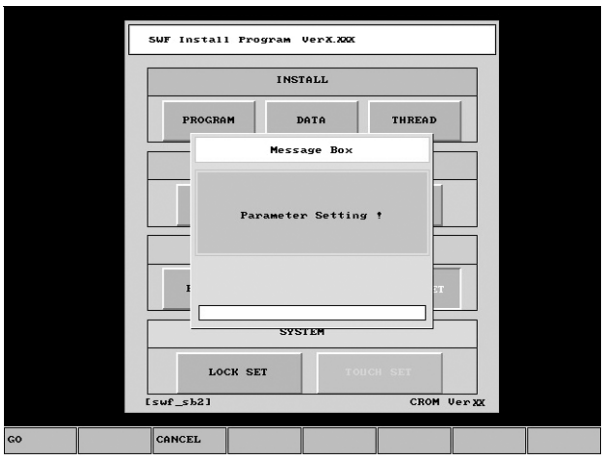


[Fig. 3.1.3-2]

3) Machine Setting Initialization

Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'PARA SET' on the memory menu, and press F7 SELECT . Then <Fig. 3.1.3-3> appears.

When pressing F1 GO , the machine setting will be initialized, and the screen for machine setting appears. To cancel, press F3 CANCEL .



[Fig. 3.1.3-3]

3.1.4 System

The function of entering the lock key is supported.

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 lapse will occur when opening the operating program. This intentionally causes inconvenience when the program is used after the set time frame.

If the lock function is enabled, the logo will be displayed as in <Fig. 3.1.4-1>, not as <Fig. 3.0-1>. In case of <Fig. 3.1.4-1>, the operating program can be used without problem for 10 days, and the logo screen will stay for only 2 seconds. However, after 10 days, as in <Fig. 3.1.4-2>, lapse will occur before running the operating program. Time lapse will also occur when conducting the second batch of embroidery after finishing the first batch of embroidery work. Likewise after the set time frame, inconvenience occurs when using the operating program.

To resolve the inconvenience, it is required to receive new lock key from the sales agent and enter it to the system. Otherwise, the time lapse will get lengthened further over the passage of time.

[Fig. 3.1.4-1]

[Fig. 3.1.4-2]

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

[Example] Re-entry of Lock Key

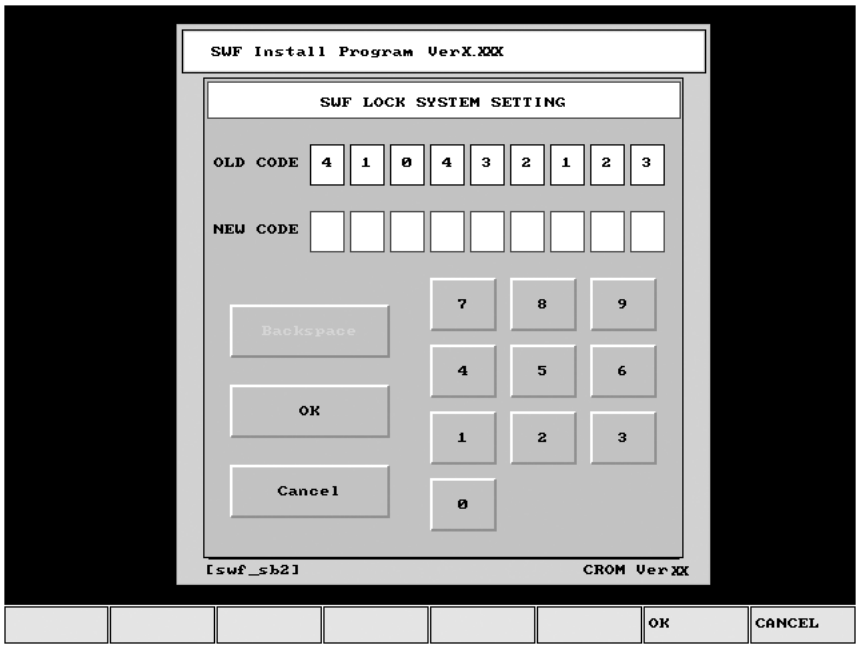
1. Press the start switch as in <Fig. 3.1.4-2>.
   Then <Fig. 3.0-3> appears.

2. Use the direction keys F1 ⬆ , F2 ⬇ as in <Fig. 3.0-3> to move to 'Lock Set' on the system menu.
   Press F7 SELECT and then <Fig. 3.1.4-3> appears.

3. Call the distributor's shop and give it the old code displayed on the user screen as in <Fig. 3.1.4.3>.
   (ex : 4 1 0 4 3 2 1 2 3).
   The distributor's shop will give a new lock code.

4. Use the key pad to enter the new lock code.

5. Select F7 OK and press the set key.



[Fig. 3.1.4-3]

3.2.0 Machine Setting Change

The machine setting is the function to conduct the basic specifications setup and adjust the machine settings.

<Fig. 3.2.0-1> appears in either one of the following cases:

1. Memory formatting was conducted and a system was newly installed.

2. Initialization was conducted using the SWF install program (See '3.1.3 Memory').

In the above cases, when the main power switch is turned on, the first screen which appears is <Fig. 3.2.0-1>. On <Fig. 3.2.0-1>, 12 parameters can be set. When 'SETTING' is selected, the screen for selecting the encoder signal appears.

On <Fig. 3.2.0-1>, to make settings for each item, press the buttons on the right side.

[Fig. 3.2.0-1]

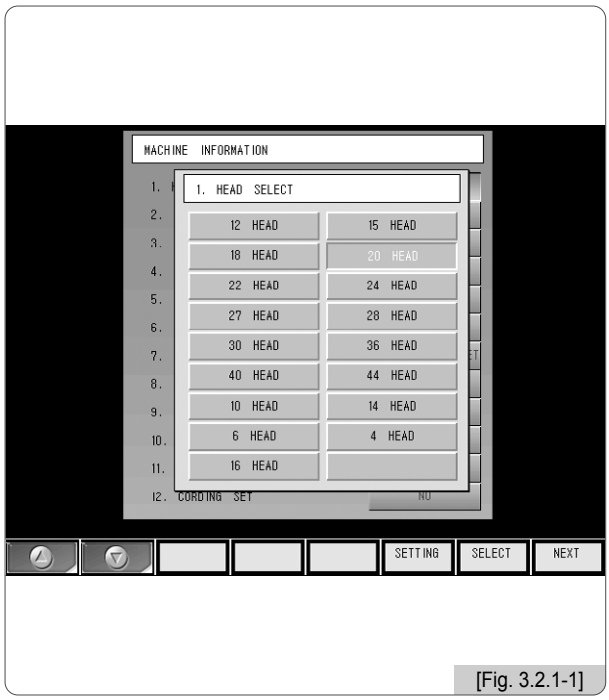
[Fig. 3.2.0-2]

Use F1 , F2 to move to a desired item and press F7 SELECT . Then the screen like 'Fig. 3.2.1 Embroidery Machine Specifications Setting' appears where the setting of each item is possible. When the setting is completed for all items, press F7 NEXT . <Fig. 3.2.0-2> appears to check the set specifications.

3.2.1 Embroidery Machine Specifications Setting

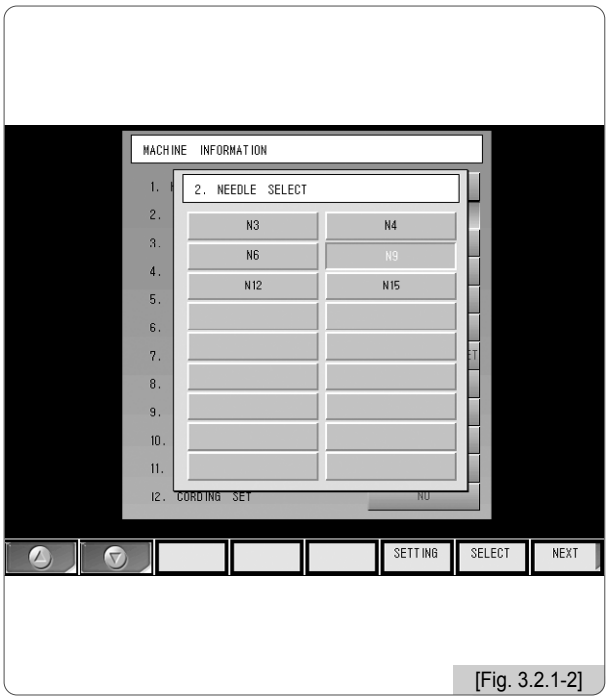
10 specifications can be set.

① Head Setting



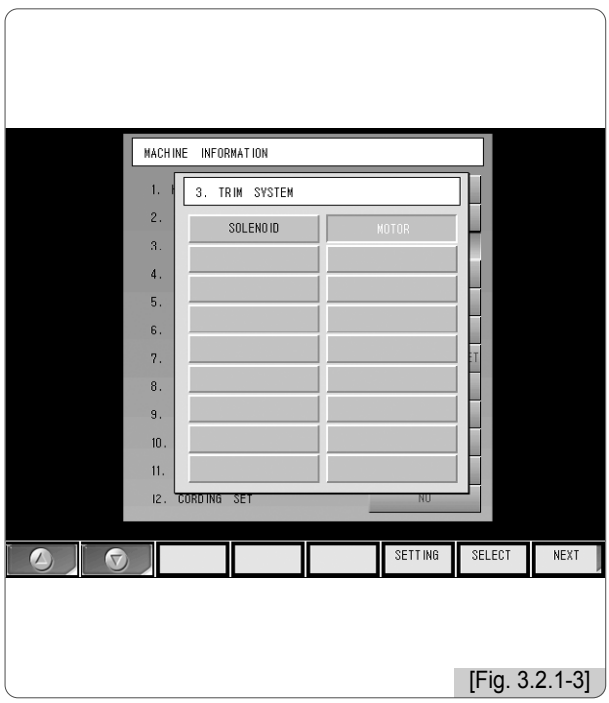
[Fig. 3.2.1-1]

② Color Count Setting



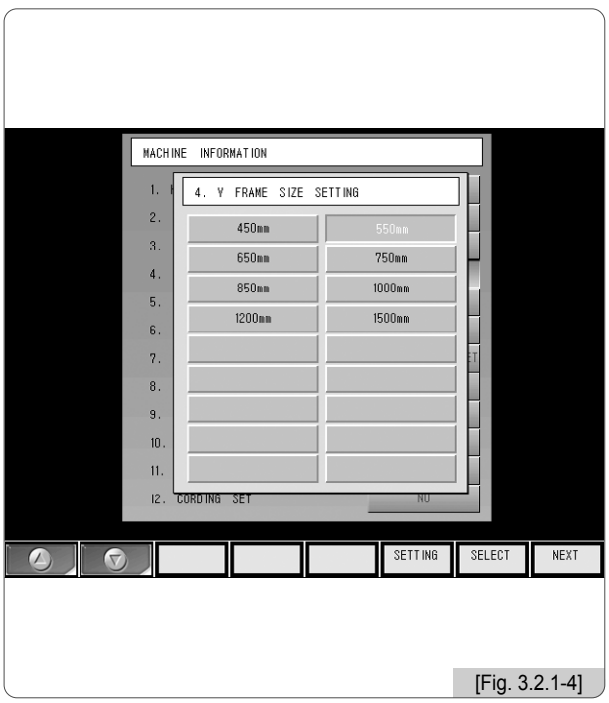
[Fig. 3.2.1-2]

③ Trimming Method Setting



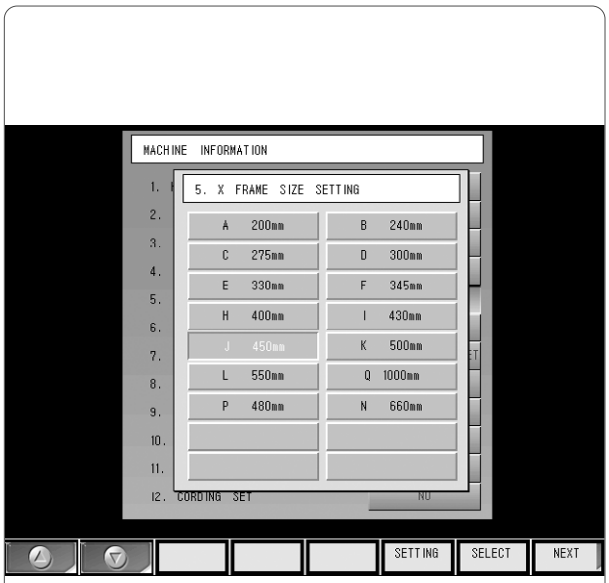
[Fig. 3.2.1-3]

④ Y-frame Size Setting



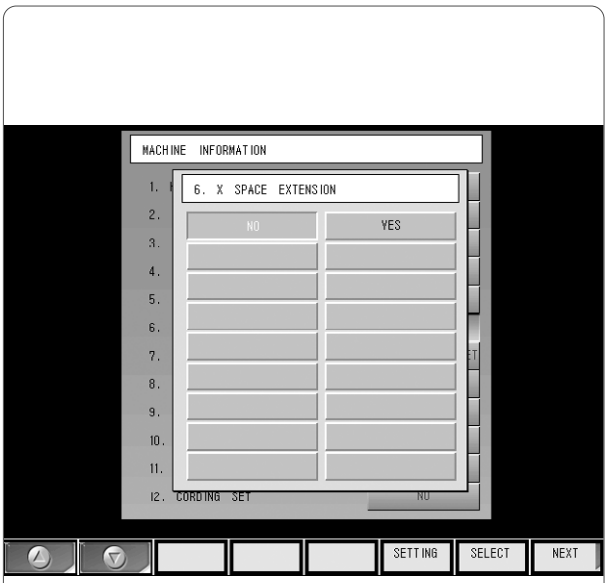
[Fig. 3.2.1-4]

⑤ X-frame Size Setting



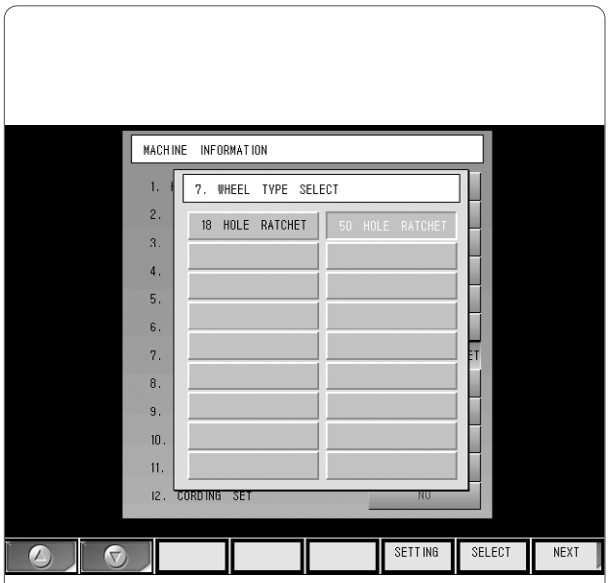
[Fig. 3.2.1-5]

⑥ X-space Extension



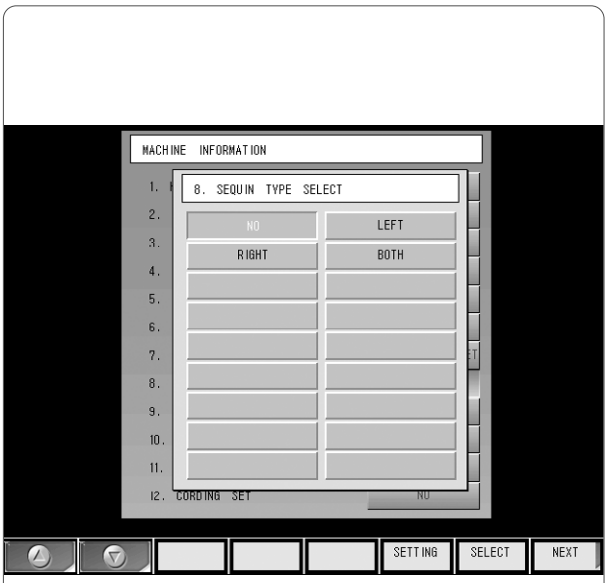
[Fig. 3.2.1-6]

⑦ Wheel Type Select



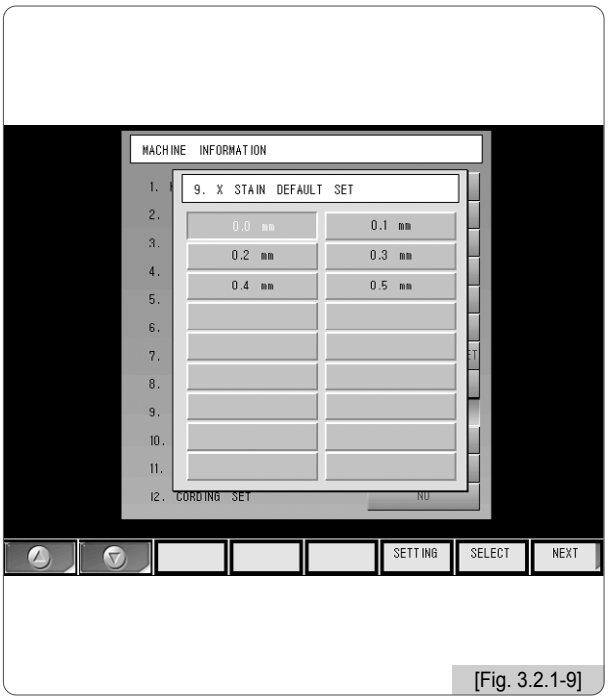
[Fig. 3.2.1-7]

⑧ Sequin Type Select



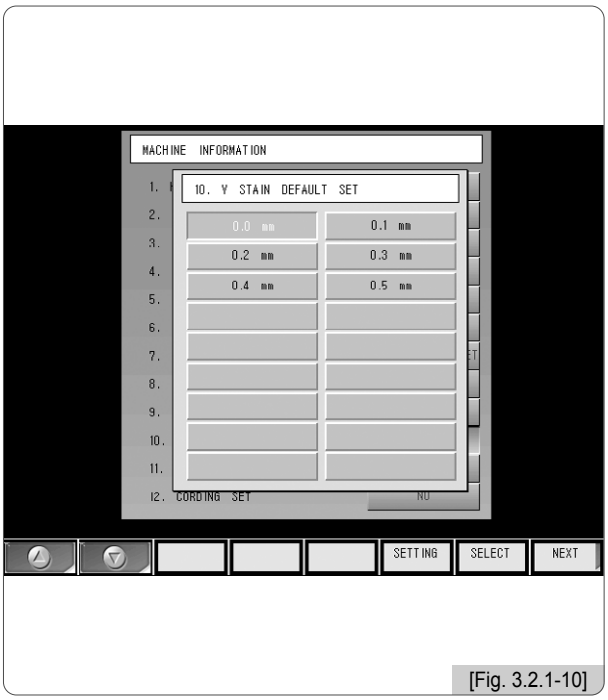
[Fig. 3.2.1-8]

⑨ X Satin Default Setting



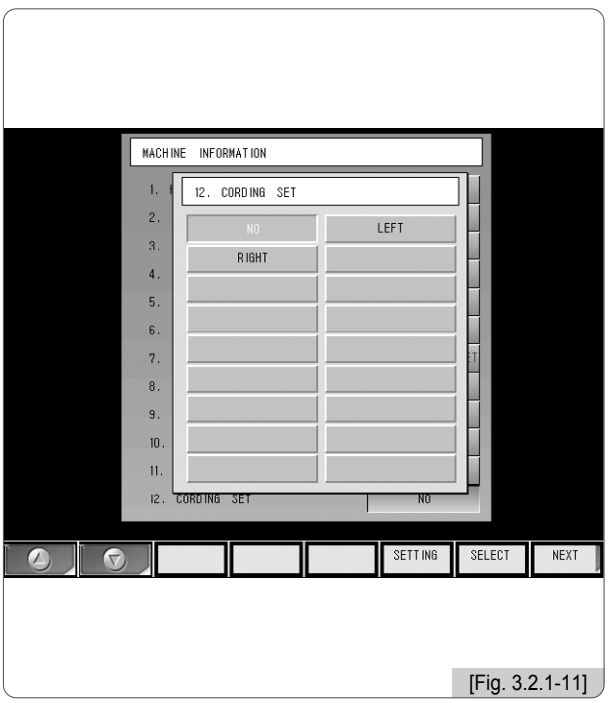
[Fig. 3.2.1-9]

⑩ Y Satin Default Setting



[Fig. 3.2.1-10]

⑪ Cording Setting



[Fig. 3.2.1-11]

3.2.2 Machine and Signal Setting

Press F6 SETTING in <Fig. 3.2.0-1>, and then <Fig. 3.2.2-1> appears.

1) Main Shaft Encoder Signal Setting

Press the select button and set the machine at 100°. While adjusting the encoder, fix the machine when the beep sound is issued, and 'On' is displayed on the screen. Press the select button to conclude the setting.

2) Needle Bar Position Setting

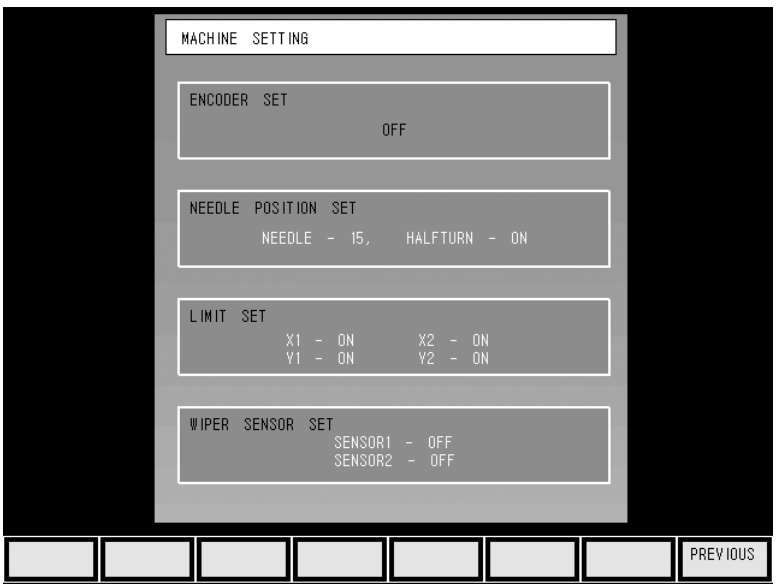
Press the select button and move to the highest number needle bar (ex: 9 color → No. 9). Adjust the potentio meter, and when the beep sound is issued and 'On' is displayed, fix the machine. Press the start button and then the select button again to conclude the setting.

3) X, Y Limit Setting

Press the select button and manually move the X, Y frame. Check the On/Off status of the sensor and press the select button to conclude the setting.

4) Wiper Signal Setting

Press the select button and manually move the wiper. When the beep sound is issued, check the abnormality of the sensor and press the select button again to conclude the setting.

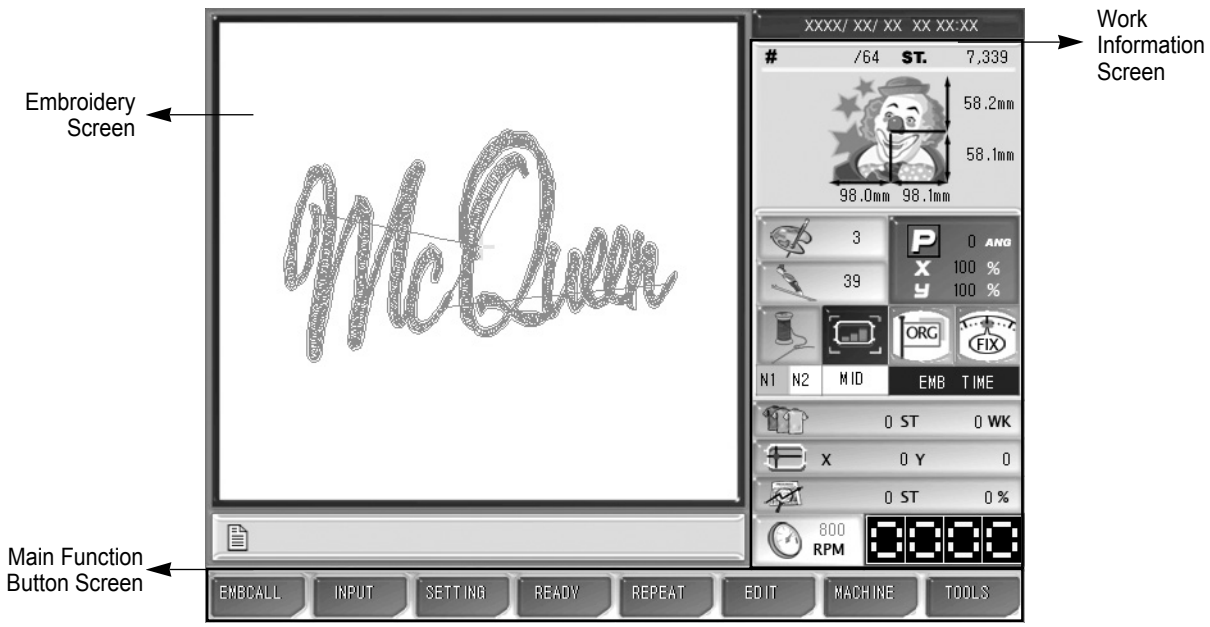


[Fig. 3.2.2-1]

[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.

4 Operating Program Screen Layout

<Fig. 4.0-1> is the initial screen of the machine operating program. The screen is composed of (1) embroidery screen, (2) work information screen, and (3) main function button screen.



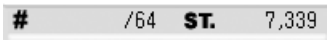
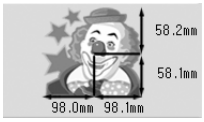
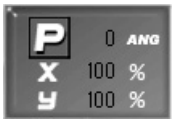
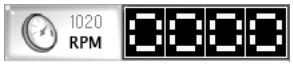
[Fig. 4.0-1] Initial Screen of SWF Machine Operating Programa

4.1 Embroidery Screen

This shows the called embroidery design. When the machine operating program is first installed or when there is no design called, the SWF logo appears on this screen.

4.2 Work Information Screen

This shows all information related to the currently called design.

Information	Description	Remarks
	– # : Design name/memory saving number – ST. : Total number of stitches of a selected design	
	– X, Y length from the design starting position (central line) – X, Y length of the selected design (unit: mm)	
	– Number of colors used for the selected design	
	– Number of jumps for the selected design	
	– P: reverse effect (X, Y, XY reverse) – 0 ANG: rotation shape according to the angle of the selected design – X 100%: value for X enlargement – Y 100%: value for Y enlargement	
	– Current needle bar / next needle bar	
	– Frame moving speed : low / mid / high	
	– Frame's return to the origin ※ As in '5.4.2 EMB Parameter Setting', when '3) Auto Origin Return' is selected, it is green. When 'No' is selected, it is gray.	
	– shaft's stop position. Either in the middle of embroidery or when it is not 100˚, its color gets gray. ※ [Warning] When changing the needle bar, its angle must be 100˚.	
	– Time taken so far for embroidery (hh:mm)	
	– ST : Accumulative number of stitches made so far – WK : Number of work finished. Whenever a work is finished, the figure increases by one.	
	– X : Current X-shaft position – Y : Current Y-shaft position	
	– ST: Number of stitches made so far – %: Progress of stitching in %	
	– Set embroidery speed – Current embroidery speed	

4.3 Function Menu Button Screen

There are eight menus related to embroidery work. When each button is pressed, related sub-menu appears. Depending on whether the machine is in operation, there are two types of menu buttons including 'Function menus before embroidery begins' as in <Fig. 4.3-1> and the 'Function menus during the pause of embroidery work' as in <Fig. 4.3-2>. More details will be dealt with in the section of each button.

[Fig. 4.3-1]

[Fig. 4.3-2]

◆ Frequently Used Buttons on Menu (the number assigned to a key could be different on each screen)

F1 , F2 : When selecting a menu, they are used to move to the desired menu for selection.

F3 〈〈 , F4 〉〉 : If there are more menus which cannot be displayed in one screen, they are used to move to the previous or next screens.

F7 SELECT : It is used to select a menu or execute a command.

F8 PREVIOUS : The command which is going to be executed can be closed.
The window where the command was executed can be closed.
The command can be cancelled.
The move to the prior execution screen is possible.

4.4.0 Work Progress Message and Clock

There are the message window at the bottom of <Fig. 4.4.0-1> and the clock window at the right top of the screen. The message window displays the embroidery information in progress. The clock window displays the time.

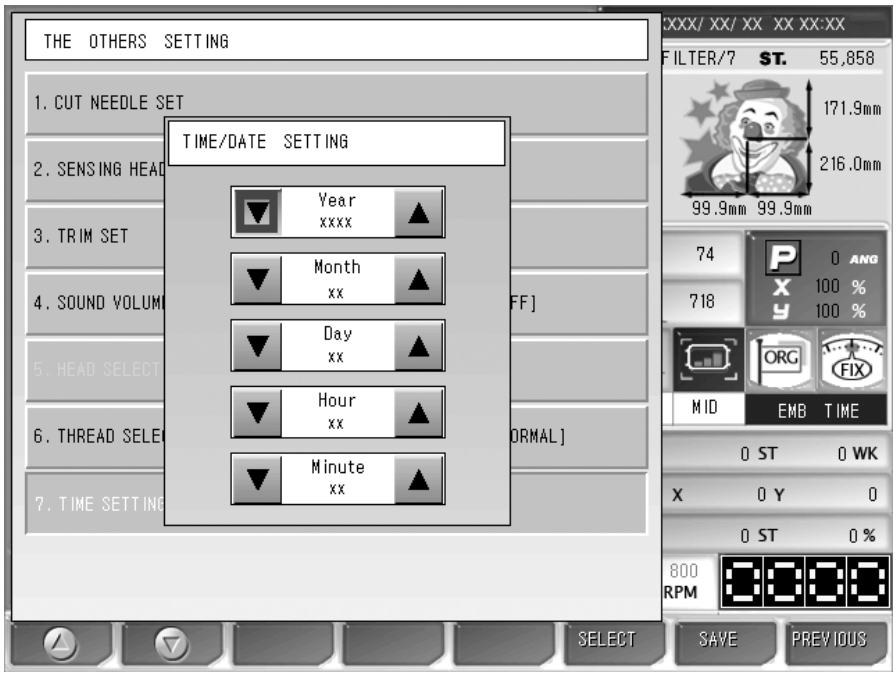
[Fig. 4.4.0-1]

4.4.1 Work Progress Messages

Message	Situation
“Stop by the stop switch”	When the stop switch is pressed
“Stop by detecting the upper thread break”	When the machine is stopped after the thread break is sensed
“Stop due to color code and stop code”	When the machine is stopped due to the stop code
“Stop due to the detection of the frame outside the limit”	When the frame moves beyond the set motion limit
“Design close”	When the embroidery work is finished
“Stop by the back stitch”	When the machine is stopped after the back stitch
“Frame feed under way”	When the frame is in motion
“Stop the frame feed”	When the frame is stopped in the middle of feeding
“Offset position stop”	When the machine is stopped at the offset position
“Needle bar replacement”	When the needle bar is replaced
“Choice of the feed unit during the non-stitching operation”	When the non-stitching operation is conducted
“Start switch → machine operation”	When a test is conducted in the test mode
“Design data loading under way”	When embroidery designs are called

4.4.2 Date and Time Change

Press F3 SETTING to change time or date displayed at the right top of the screen, and select '7. TIME SETTING'.
When the menu is selected, the date and time setting is possible as in <Fig. 4.4.2-1>.



[Fig. 4.4.2-1]

When the cursor is located at ▼, press F6 SELECT to reduce the figures for date and time.

When the cursor is located at ▲, press F6 SELECT to increase the figures for date and time.

Use F1 , F2 to move around the menu.

When the date and time setting is completed, press F6 SAVE for application.

To cancel, press F8 PREVIOUS .

[Note]
If the lock is set up, the date and time setting cannot be made.

5 Function Menu Before Embroidery Begins

Prior to embroidery work, various settings should be made. In particular, when the machine operating program is installed, various parameters should be set including design call. Of course, there is no problem in conducting embroidery in default setting. Nevertheless, it would be better for you to learn more about the functions of the program to produce better quality embroidery.

Basically, use F1 ~ F8 on the OP Box to use functions. Press each key corresponding to each function menu.

F1 EMBCALL

F2 INPUT

F3 SETTING

F4 READY

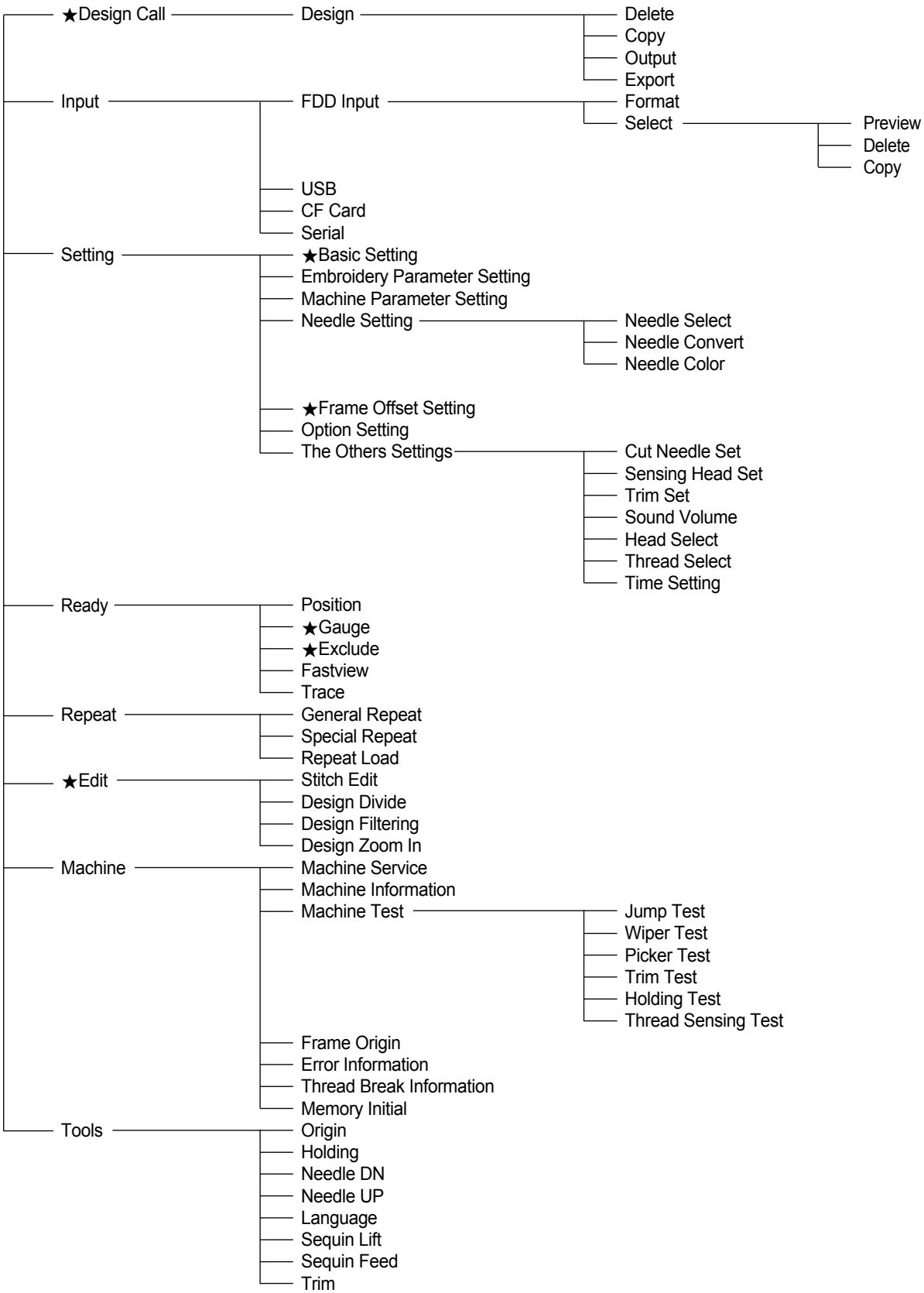
F5 REPEAT

F6 EDIT

F7 MACHINE

F1 ⬆ F1

5.1 Structure of the Menu Before Embroidery Begins

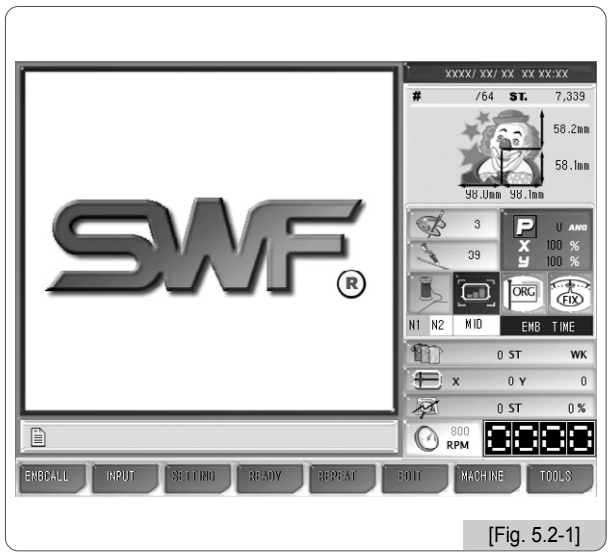


※ [Caution] : The functions marked with '★' cannot be used during the repeat work.

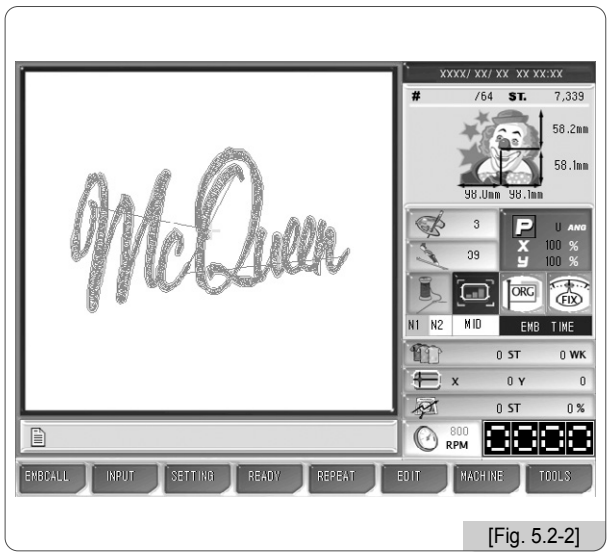
5.2 Design Call

– This function is to call back the embroidery designs saved in the memory. The function can be used to copy and delete designs or export them to the external devices.

<Fig. 5.2-1> is the screen where no designs are stored in the memory or there is no design called out. If there is a design called out previously, the previous work's design is displayed as in <Fig. 5.2-2>.



[Fig. 5.2-1]



[Fig. 5.2-2]

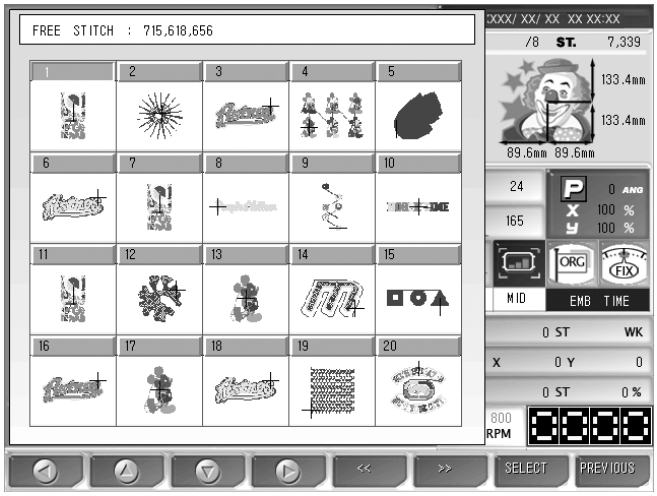
If there are no designs called as in <Fig. 5.2-1>, several function buttons cannot be used. The buttons whose letters are pale cannot be used until the designs are called later.

If F1 EMBCALL is pressed on the screen as in <Fig. 5.2-2>, embroidery designs stored in the memory appear as in <Fig. 5.2-3>. Up to 100 designs can be stored in the memory. Up to 20 designs can be displayed on one screen. Let's get to know more about embroidery design call through [Exercise 5.2-1].

[Exercise 5.2-1] Call the design from #35 Room.

1 Press F1 EMBCALL .

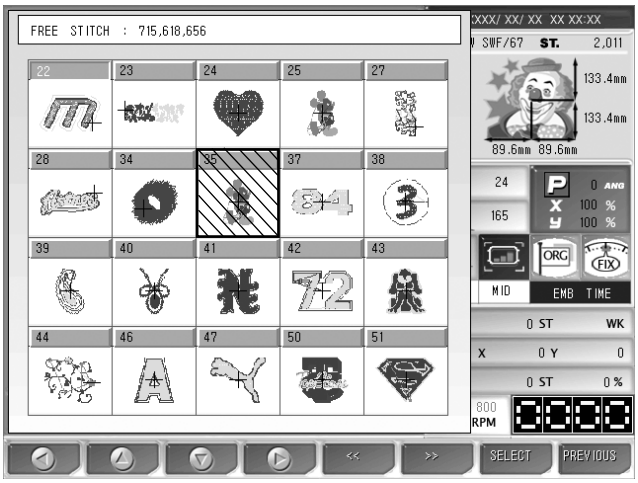
When the design call button is pressed, the designs stored at each room are displayed as in <Fig. 5.2-3>. The screen displays the room numbers and embroidery designs. Each screen shows up to 20 designs. The design we would like to call is located at the #35 room, so we have to move to the next screen. Press F6 〉〉 to move to the next screen.



[Fig. 5.2-3]

2 Use F1 , F2 , F2 , F2 to move to the screen where #35 room is displayed.

As in <Fig. 5.2-4> below, 20 designs are displayed.

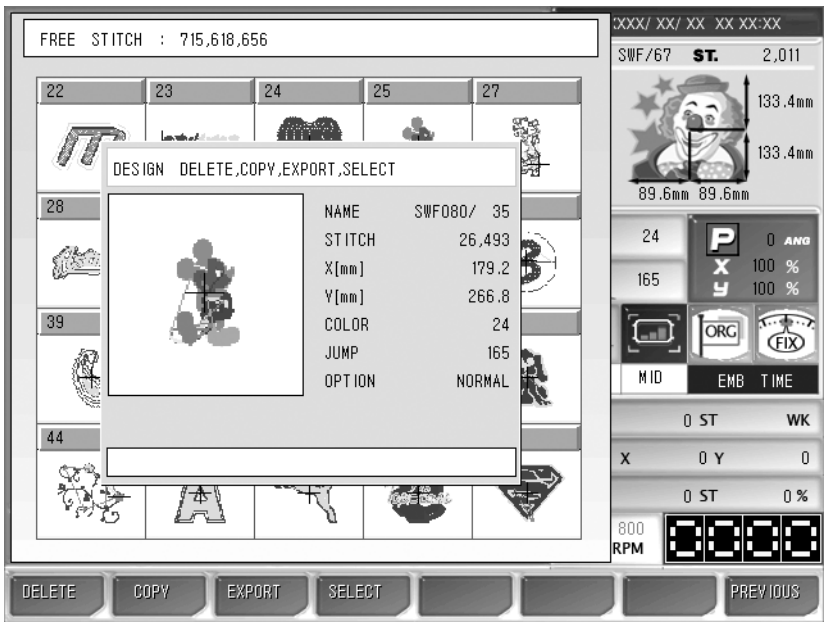


[Fig. 5.2-4]

[Note]
The number of stitches unused indicates the memory space currently unused.

3 Go to # 35 room in <Fig. 5.2-4> and press F7 SELECT . (the square room with slashes)

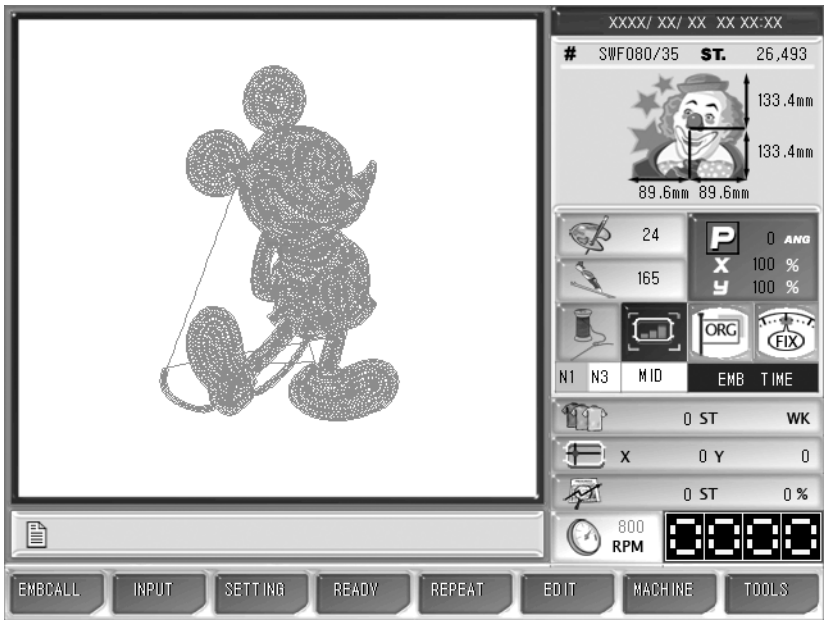
Then a new window appears as in <Fig. 5.2-5>. On the left-hand side, the chosen design is displayed. On the right-hand side of the screen, the information on the design is displayed. On the screen, such buttons as F1 DELETE , F2 COPY , F3 EXPORT , F4 SELECT are enabled.



[Fig. 5.2-5]

4 Press F4 SELECT .

The selected embroidery design will be called and displayed on the initial screen as in <Fig. 5.2-6>.



[Fig. 5.2-6]

[Note]

On the embroidery information section, "OPTION NORMAL" might be seen. "Normal" refers to common embroidery data. Sometimes, "Sequin" might be displayed. It means that it is the embroidery design including the sequin code.

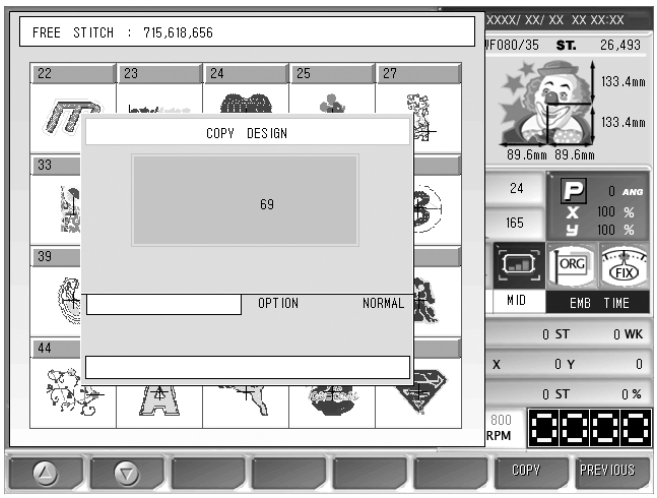
[Exercise 5.2-2] Copy the design from #35 Room to #69 Room.

1. Repeat 1 ~ 3 of [Exercise 5.2-1] from "Call the design" from #35 Room.

2. Press F2 COPY in <Fig. 5.2-5>.

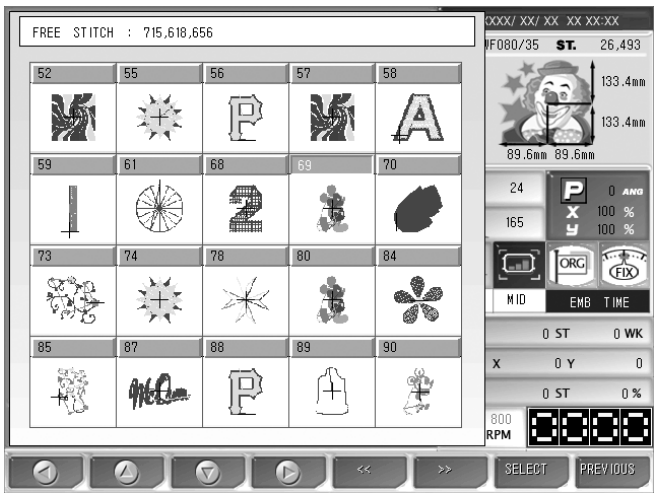
   As in <Fig. 5.2-7>, message windows will appear, and the empty room numbers and the up/down, copy, and cancel buttons are displayed. Empty rooms are the space where new embroidery data can be saved. It is possible to move to the target room number by using F1 , F2 .

3. Use F1 , F2 to move to #69 Room and press F7 COPY .



[Fig. 5.2-7]

4. The embroidery data in #35 Room was copied in #69 Room. As in <Fig. 5.2-8>, the design was moved to #69 Room.



[Fig. 5.2-8]

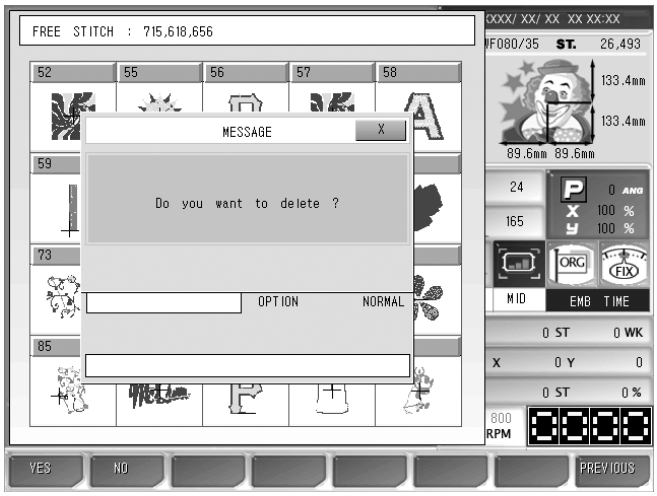
[Note]
If it is desired to cancel the copy, press F8 PREVIOUS .

[Exercise 5.2-3] Delete the design in #69 Room.

1. Repeat 1~3 of [Exercise 5.2-1] "Call the design from #35 Room".

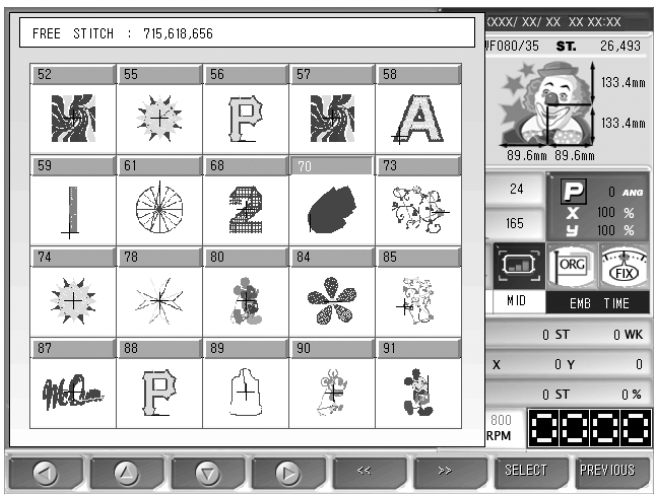
2. Use the direction keys to go to #69 Room and press F7 SELECT.

3. Press F1 DELETE in <Fig. 5.2-5>.
   As in <Fig. 5.2-9>, the message window appears asking "Do you want to delete?"



[Fig. 5.2-9]

4. Press F1 YES.
   When compared with <Fig. 5.2-8>, the design in #69 Room was deleted as in <Fig. 5.2-10>. #69 Room becomes available for design storage.



[Fig. 5.2-10]

[Note]
If you do not want to delete it, press F8 PREVIOUS.

[Exercise 5.2-4] Copy the design of #35 Room using floppy diskette or USB.

1 Repeat ①~③ of [Exercise 5.2-1] "Call the design from #35 Room."

2 Insert a floppy diskette into the floppy drive or a USB memory into the USB port.

[Caution]
If a floppy diskette is removed from the disk drive while being used, the data in the diskette might be deleted or the diskette itself can be damaged.

[Caution]
The file system of the USB memory shall be FAT16, not FAT32.

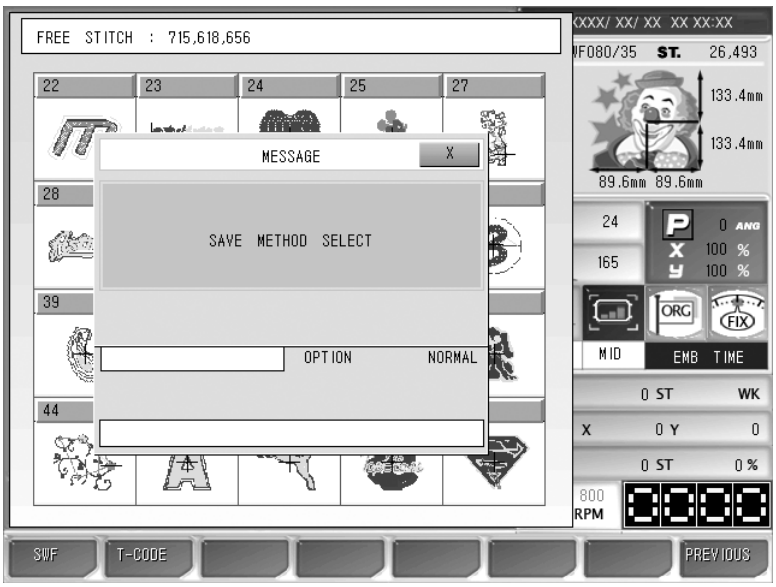
3 Press F3 EXPORT in <Fig. 5.2-5>.

As in <Fig. 5.2-11>, the message window appears asking for selecting the output device. If F1 FDD is pressed, the design will be saved in the floppy diskette. If F2 USB is pressed, the design will be saved in the USB memory.

[Fig. 5.2-11]

④ Press F1 FDD or F2 USB .

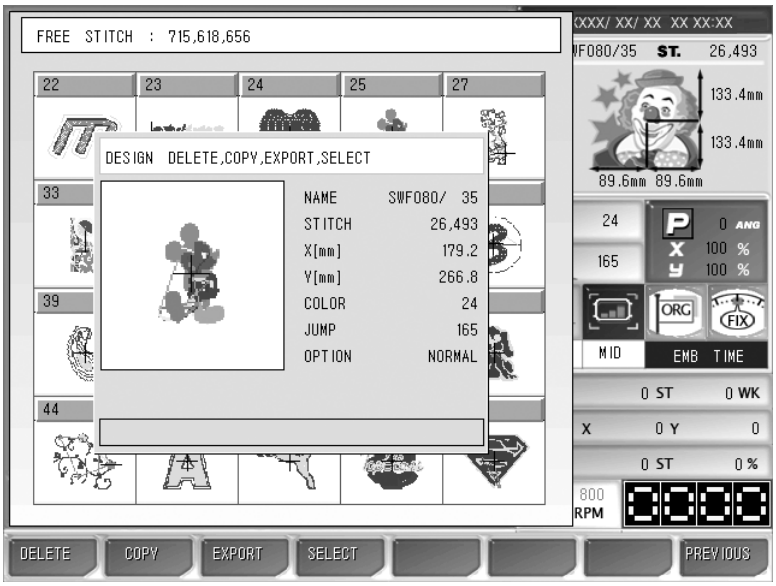
The message asking for the saving method appears as in <Fig. 5.2-12>. If F1 SWF is pressed, it is saved in the floppy diskette in the SWF method. If F2 T—CODE is pressed, it is saved in the Tajima method.



[Fig. 5.2-12]

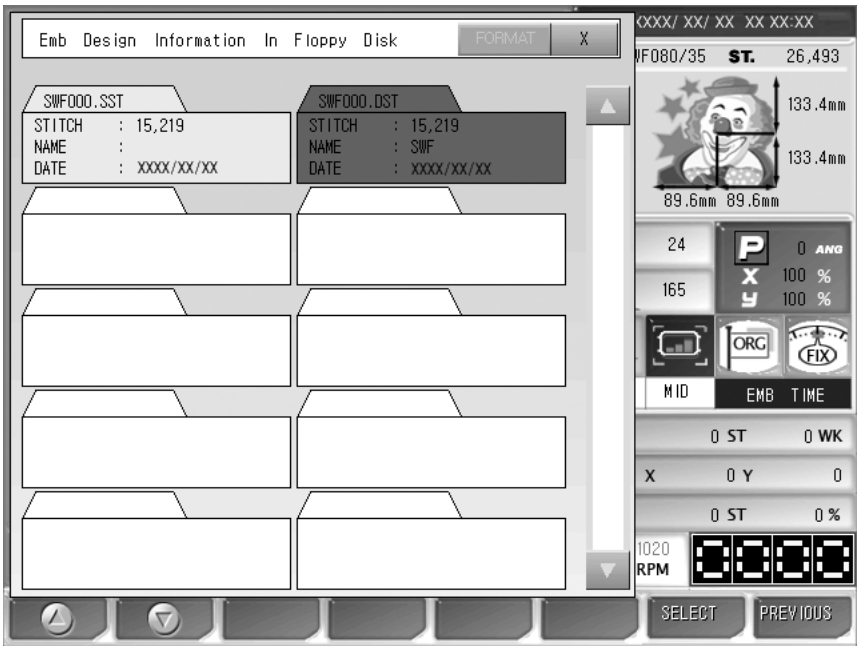
⑤ Press F1 SWF .

The green bar at the bottom of the message shows the progress as in <Fig. 5.2-13>. When the copy is completed, the entire bar becomes green.



[Fig. 5.2-13]

<Fig. 5.2-14> shows the status of the floppy diskette where the design was copied.
To check the status, see 5.3.0) Input - "FDD Input". When saving designs in a floppy diskette, the file is saved as SWF000.SST. The names of files copied to a floppy diskette include SWF000.SST, SWF001.SST. or SWF000.DST, SWF001.DST, etc.

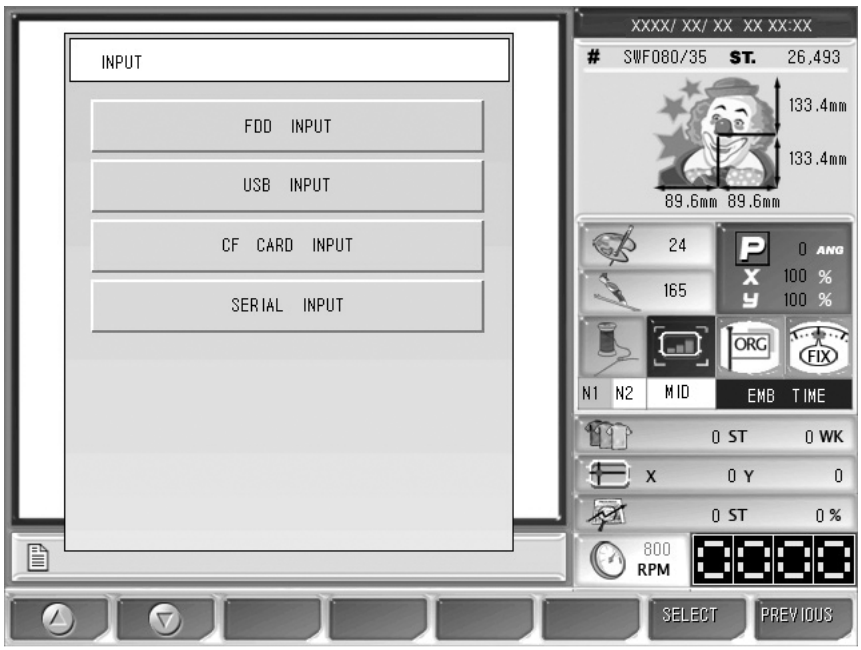


[Fig. 5.2-14]

5.3.0 Input/Output

– This function is to enter designs from external devices to the OP Box. The designs can be copied from such external devices as a floppy diskette, USB memory, CF (Compact Flash) card, and serial communications.

On the initial screen, press F2 INPUT and the sub-menu appears as in <Fig. 5.3.0-1>. The sub-menu buttons include Floppy Diskette, USB, CF Card, and Serial.



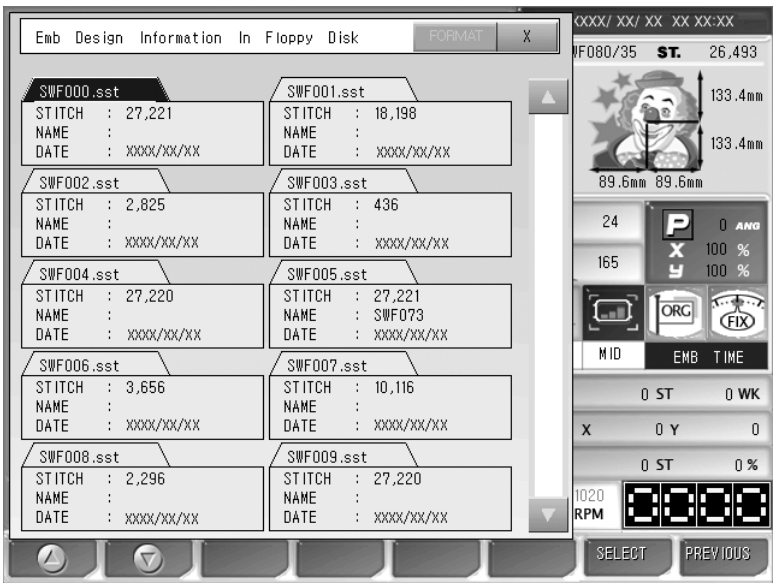
[Fig. 5.3.0-1]

5.3.1 FDD Input

When the Floppy Diskette button is pressed, the brief information on the designs saved in the floppy diskette is displayed. Diskette formatting, design preview, design input, and design deletion can be performed.

Insert the floppy diskette containing embroidery design files into FDD.

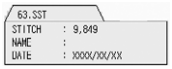
Select "Floppy" in <Fig. 5.3.0-1>, and <Fig. 5.3.1-1> appears on the screen.



[Fig. 5.3.1-1]

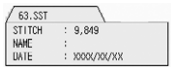
[Caution]
If a floppy diskette is removed from the disk drive while being used, the data in the diskette might be deleted or the diskette itself can be damaged.

Up to 10 designs can be displayed on one screen. If the total number of designs saved is over 10, scroll bar and scroll up/down buttons can be used to see next screens. Such information as file name, total # of stitches, and creation date is displayed for each design. As in <Fig. 5.3.1-1>, use F1 , F2 and select #63 Room



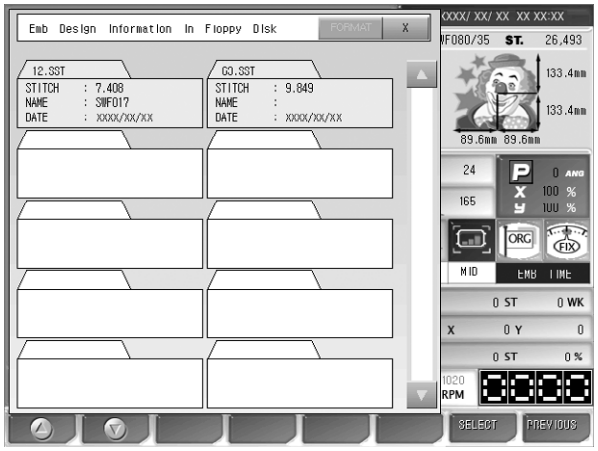
and press F7 SELECT . Then <Fig. 5.3.1-3> appears, and such functions as preview, delete, and copy can be performed.

[Exercise 5.3.1-1] Conduct the design preview for "63.SST" saved in the floppy diskette and copy it in #12 Room.

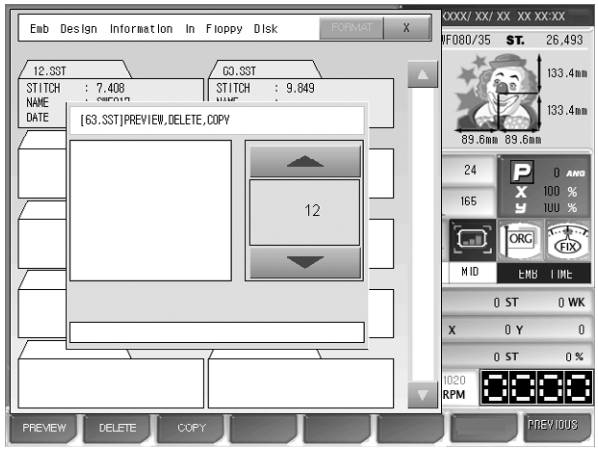
1. In <Fig. 5.3.1-2>, select 

and press F7 SELECT.

   Then, the window appears as in <Fig. 5.3.1-3>.



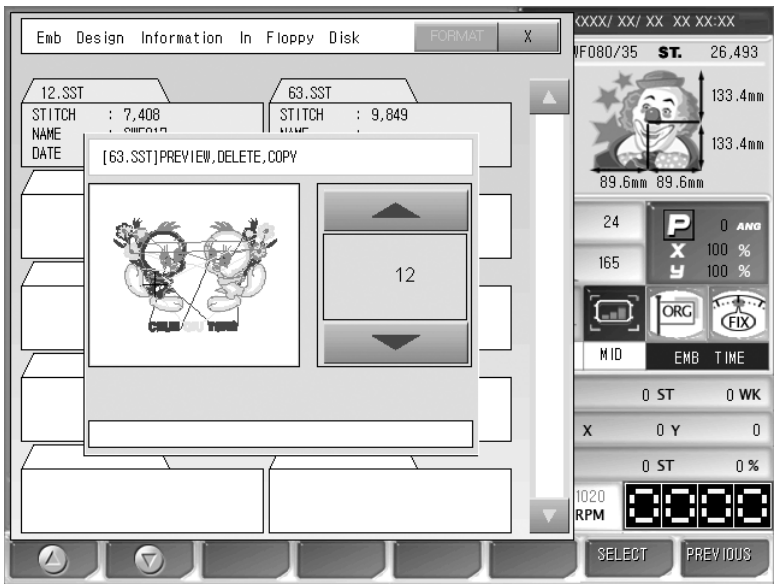
[Fig. 5.3.1-2]



[Fig. 5.3.1-3]

2. Press F1 PREVIEW.

   As in <Fig. 5.3.1-4>, the design is displayed on the pre-view window.



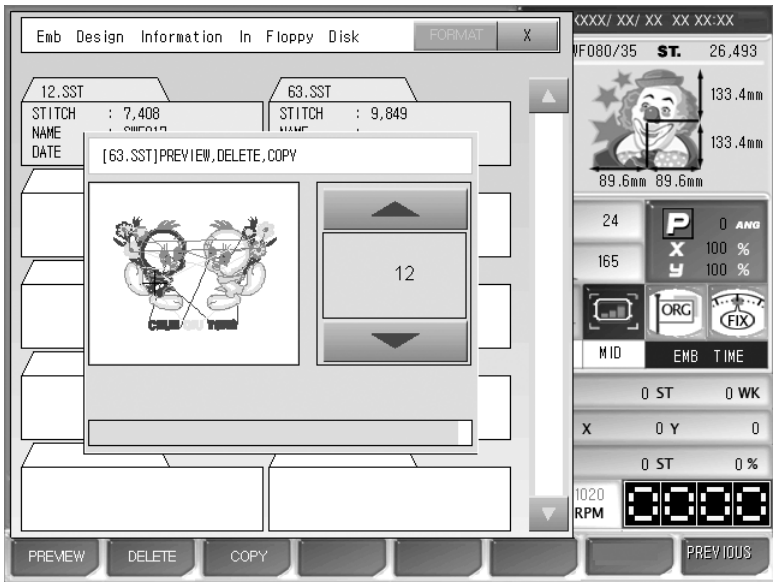
[Fig. 5.3.1-4]

3. Select the room number.

   Use the Room Up/Down buttons F1 ▲, F2 ▼ to select the room number. When the buttons are pressed, the empty rooms are displayed in order. Select #12 Room.

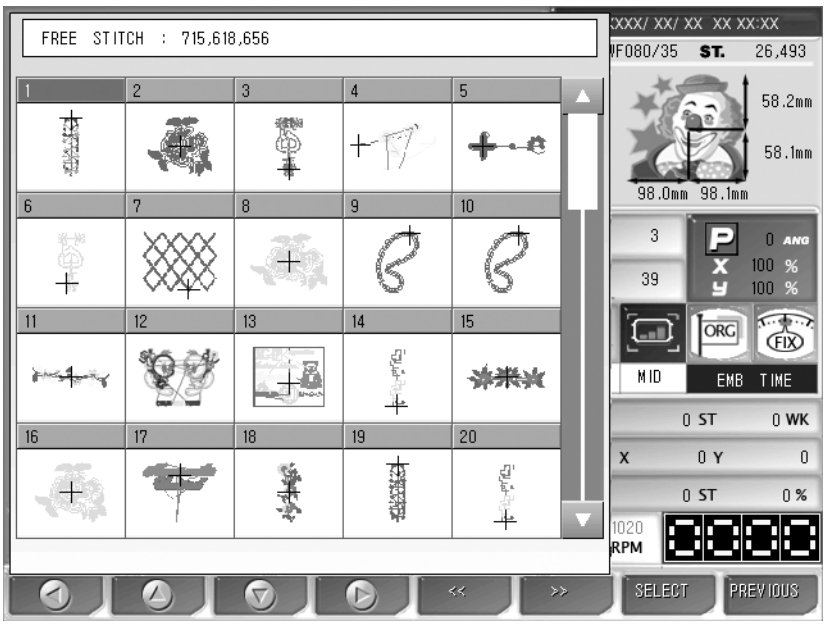
4 Press F3 COPY .

As in <Fig. 5.3.1-5>, the status bar at the bottom of the window turns green, showing the copying progress. When the bar is completely green, it means that copy is finished, and the window disappears.



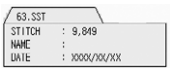
[Fig. 5.3.1-5]

As in <Fig. 5.3.1-6>, the design copied in #12 Room can be checked. To check the design copied, see "5.2 Design Call".



[Fig. 5.3.1-6]

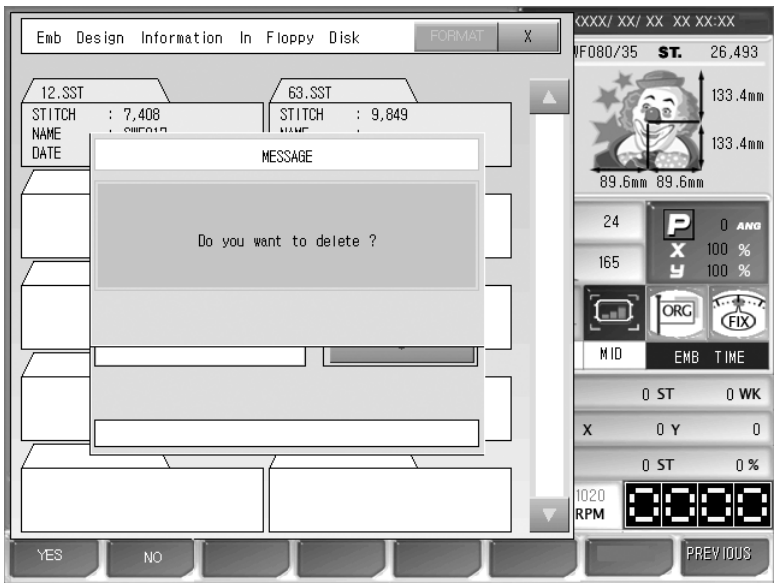
[Exercise 5.3.1-2] Delete "63.SST" in a floppy diskette.

1 Select 

as in <Fig. 5.3.1-2> and press F7 SELECT .

2 Press F2 DELETE .

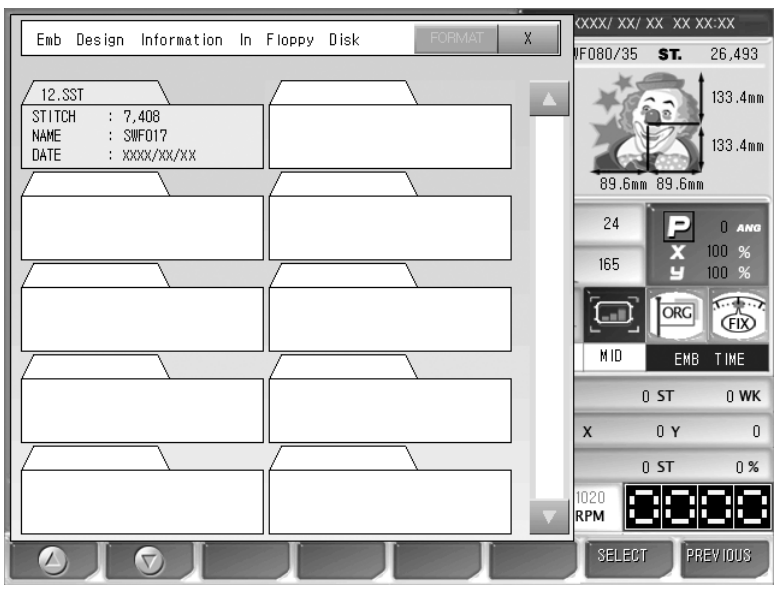
Then, <Fig. 5.3.1-7> appears. The message asking "Do you want to delete?" appears on the screen. If you want to delete it, press F1 YES . If you do not want to delete it, press F2 NO .



[Fig. 5.3.1-7]

3 Press F1 YES .

As in <Fig. 5.3.1-8>, the files are deleted.



[Fig. 5.3.1-8]

[Exercise 5.3.1-3] Floppy Diskette Format

1. Press the format button as in <Fig. 5.3.1-1>.

[Caution]
If a floppy diskette is removed from the disk drive while being used, the data in the diskette might be deleted or the diskette itself can be damaged.

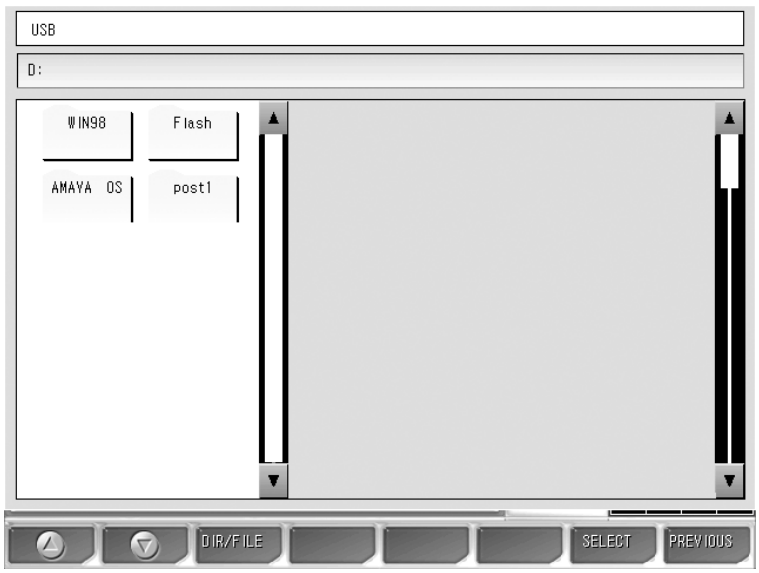
5.3.2 USB Input

This function is to enter embroidery designs saved in the USB memory to the OP Box.

Insert the USB memory containing embroidery design files into the USB port.

> [Caution]
> The file system of the USB memory shall be FAT16, not FAT32.

When "USB" is selected in <Fig. 5.3.0-1>, <Fig. 5.3.2-1> appears.

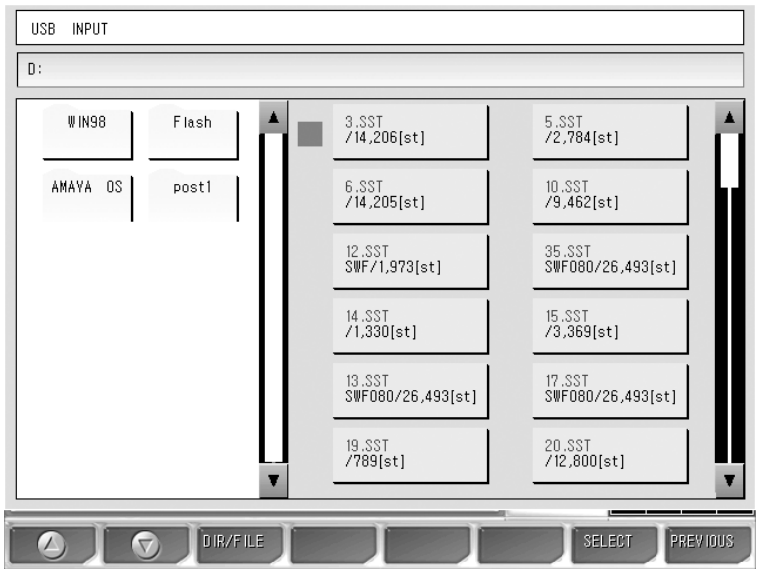


[Fig. 5.3.2-1]

You can move to the embroidery design folder by pressing F1 , F2 as in <Fig. 5.3.2-1>.

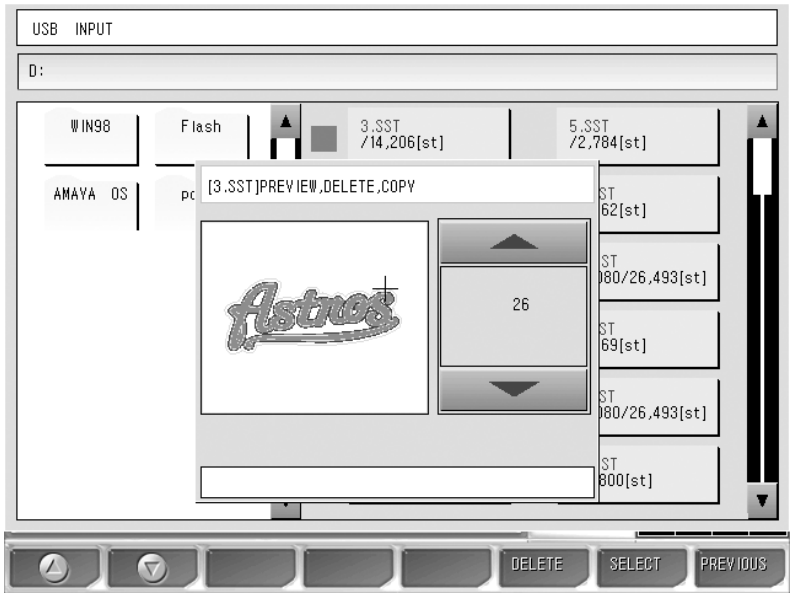
When pressing F3 DIR/FILE , as in <Fig. 5.3.2-2>, the design files contained in the chosen folder are displayed.

To move to the upper-level folder, press the " .. " folder on the left-hand side.



[Fig. 5.3.2-2]

When a design is selected in <Fig. 5.3.2-2>, <Fig. 5.3.2-3> appears.



[Fig. 5.3.2-3]

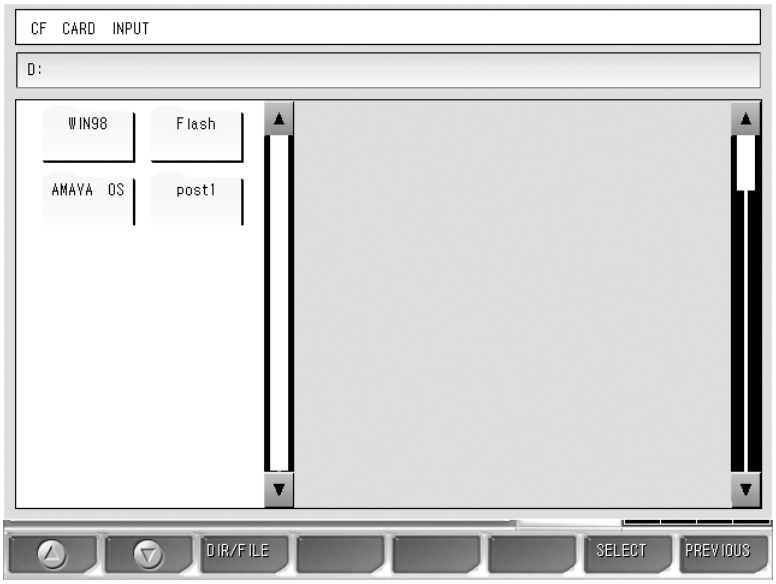
When a USB memory is used, the preview function is directly performed. Input and Delete function keys appear at the bottom. Preview, Delete, and Copy function can be used in the same way as in "5.3.1 FDD Input".

5.3.3 CF Card Input

This function is to import the embroidery design files saved in the C/F card to the OP Box.

Connect a C/F card containing embroidery design files to the C/F card reader and insert the USB plug of the C/F card reader into the USB port of the OP Box.

When "C/F Card" is chosen in <Fig. 5.3.0-1>, <Fig. 5.3.3-1> appears.

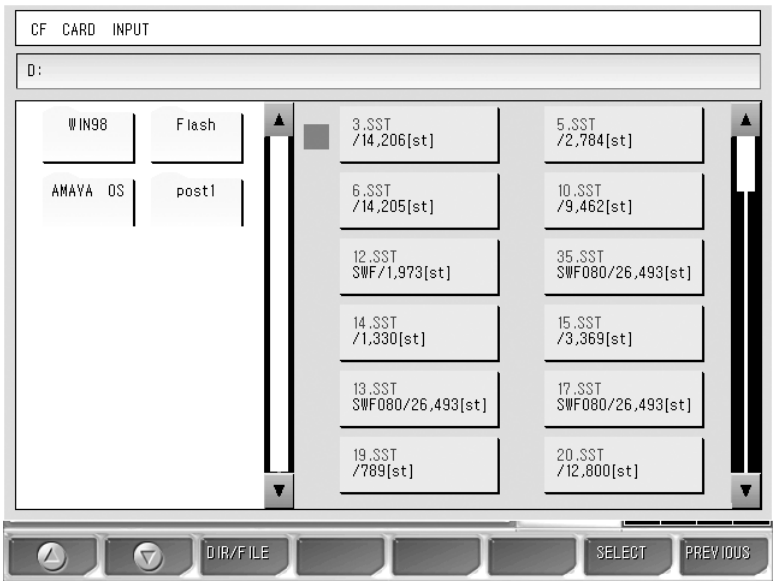


[Fig. 5.3.3-1]

Use F1 , F2 in <Fig. 5.3.3-1> to move to the folder which has embroidery designs.

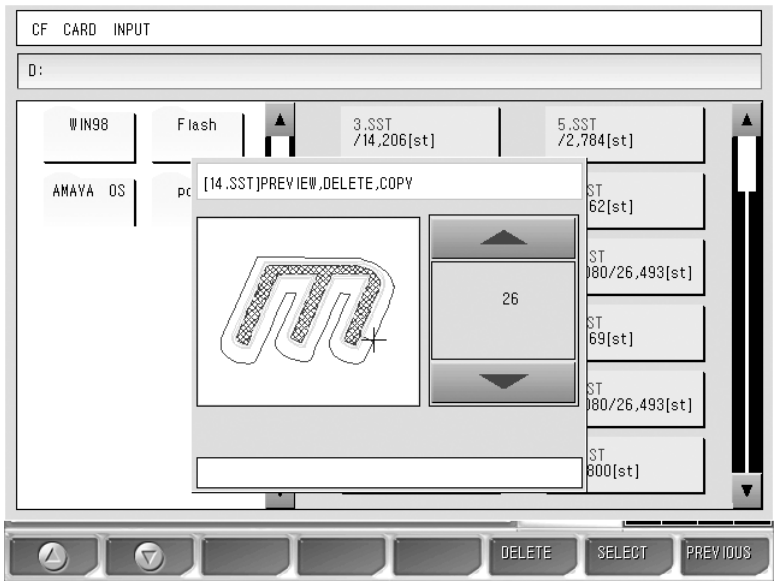
When F3 DIR/FILE is pressed, the design files in the chosen folder are displayed as in <Fig. 5.3.3-2>.

To move to the upper-level folder, select the " .. " folder on the left-hand side.



[Fig. 5.3.3-2]

When a design is chosen in <Fig. 5.3.3-2>, <Fig. 5.3.3-3> appears.



[Fig. 5.3.3-3]

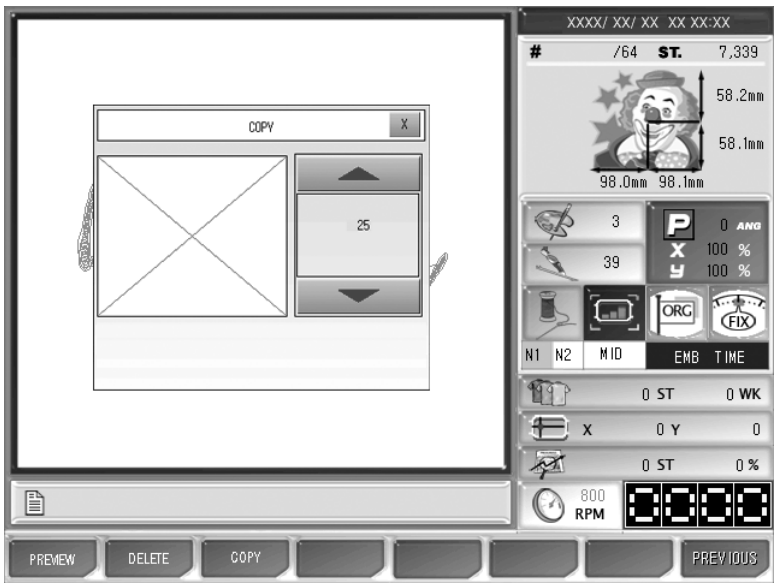
In the USB memory, the preview function can be directly performed. Copy and Delete buttons also exist at the bottom. Preview, Delete, and Copy functions can be used in the same way as explained in "5.3.1 FDD Input".

5.3.4 Serial Input

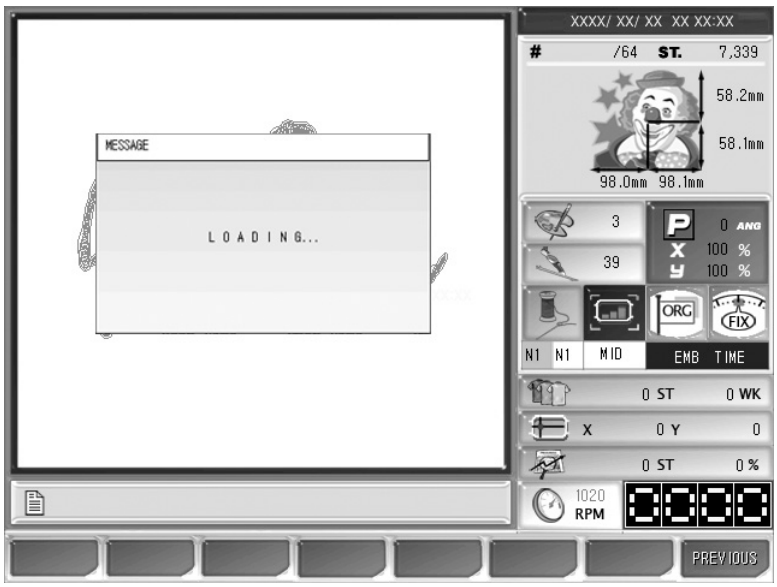
This function is to import embroidery designs from embroidery design program Wings to the OP Box.

Use the serial cable to connect to the OP Box. Call embroidery designs from Wings after establishing the connection. When the screen appears, press "File" on the menu and select "Export" on the file menu. When selecting "Other" on the export menu, the Export Output window appears. If driver has not been installed, press "Add Driver." When the "Add Wings I/O Driver" window appears, open the Sunstar.wio file, the Sunstar-dedicated driver. Select the driver newly added to the Design Output window and press OK. Select the desired format and press OK.

While designs are exported from the Wings program, select "Serial" in <Fig. 5.3.0-1> and then <Fig. 5.3.4-1> appears. Preview and Delete functions cannot be used. Select a room number by using F1, F2 and press F3 COPY. Then <Fig. 5.3.4-2> appears.



[Fig. 5.3.4-1]



[Fig. 5.3.4-2]

To check the designs copied after design loading, see "5.2 Design Call".

5.4.0 Setting

– On the setting menu, overall setups regarding embroidery can be made. There are seven sub-menus under the setting menu, which include basic setting, embroidery parameter, machine parameter, needle bar, prime offset, options, and other settings.

On the initial screen, press F3 SETTING among main function buttons, and <Fig. 5.4.0-1> appears.

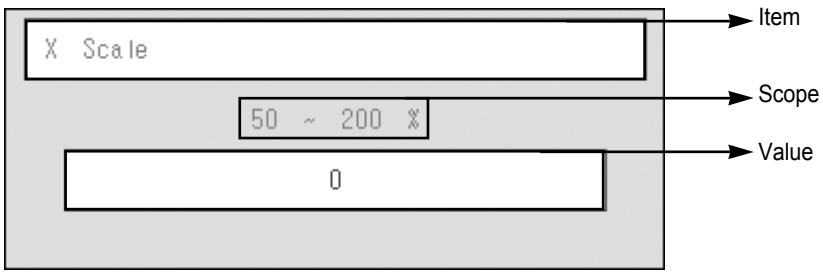
[Fig. 5.4.0-1]

- **Basic setting** : Sets zoom-out, zoom-in, and angle.
- **EMB parameter setting** : Sets parameters related to embroidery.
- **M/C parameter setting** : Sets parameters related to machine.
- **Needle setting** : Selects or changes the needle bar.
- **Frame offset setting** : Designates the off-set point on designs.
- **Options setting** : Sets option devices such as coding and boring.
- **The Others Settings** : Determine needle type and set thread sensing.

※ Setting Tips

To conduct basic, embroidery parameter, machine parameter, frame off-set, and options setting, press each button, and? <Fig. 5.4.0-2> appears to enter values for setting.

- <Fig. 5.4.0-2> is the screen where X scale can be set using the basic setting.
- On the very top, there is title "X Scale" and the line below displays the setting scope of X Scale in red print.
- The next line is the space to enter a desired value.
- Use the number buttons to enter a desired value
- Press ORG to correct the entered value.
- Press SET to apply the entered value.
- Press F8 PREVIOUS to cancel the entered value.



[Fig. 5.4.0-2]

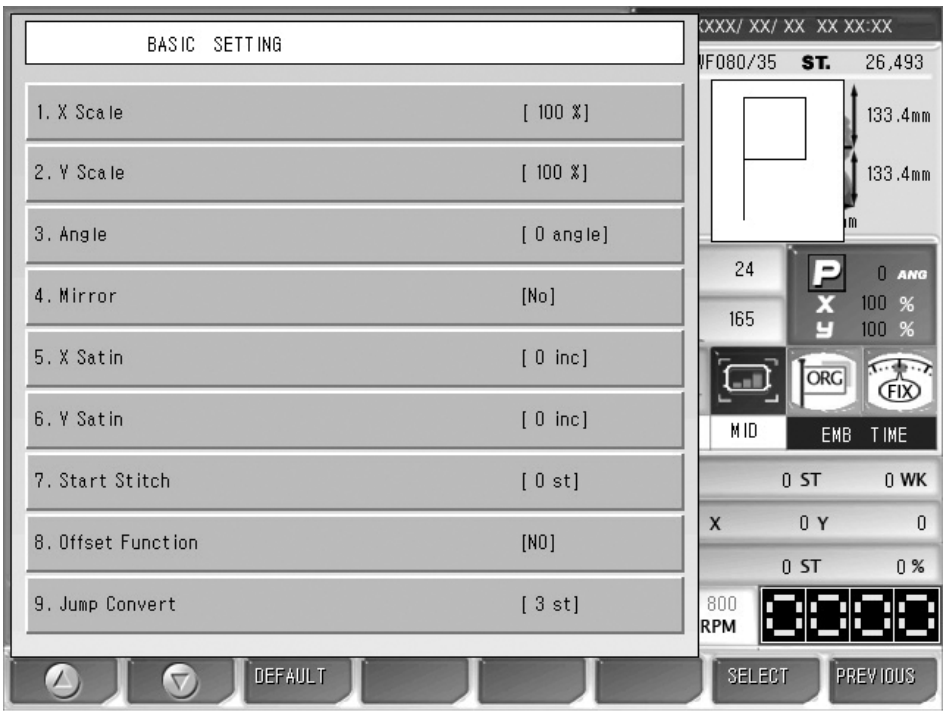
5.4.1 Basic Setting

Press the basic setting button in <Fig. 5.4.0-1>, and the nine basic settings appear on the screen as in <Fig. 5.4.1-1>.

Press F1 , F2 to see the next menu.

When F3 DEFAULT is pressed, the existing setting becomes initialized.

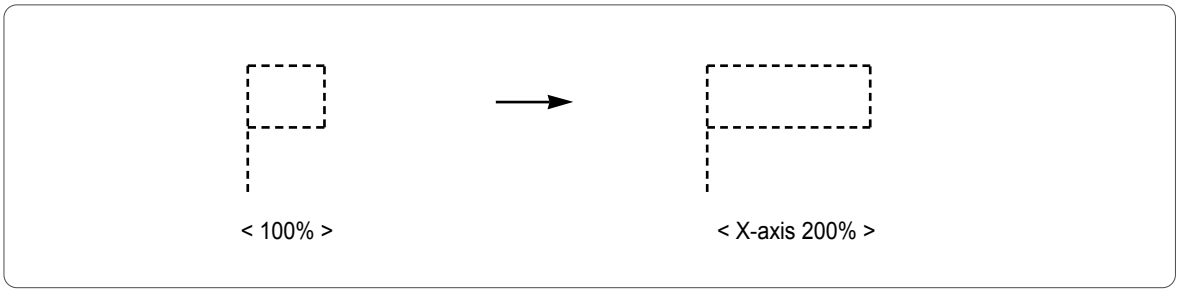
Press F7 SELECT to select a menu. If the setting exit is desired, press F8 PREVIOUS .



[Fig. 5.4.1-1]

① X Scale

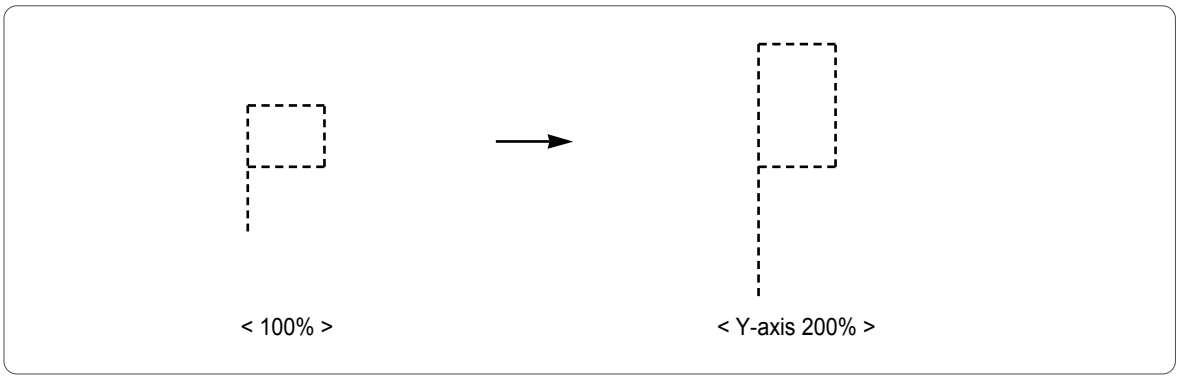
Enlarges or reduces a design in the X-axis direction.



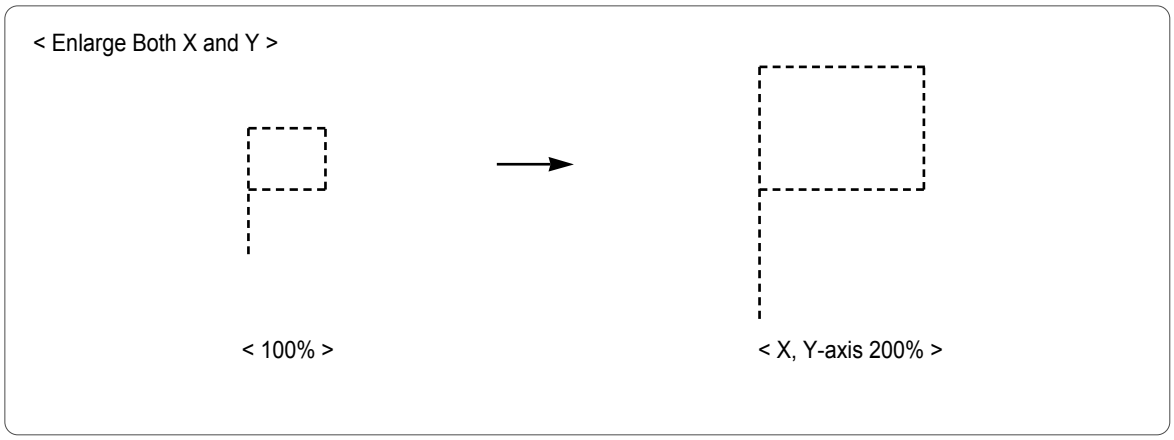
The default is 100%, and the value can be adjusted from 50% to 200% by the unit of 1% .

② Y Scale

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

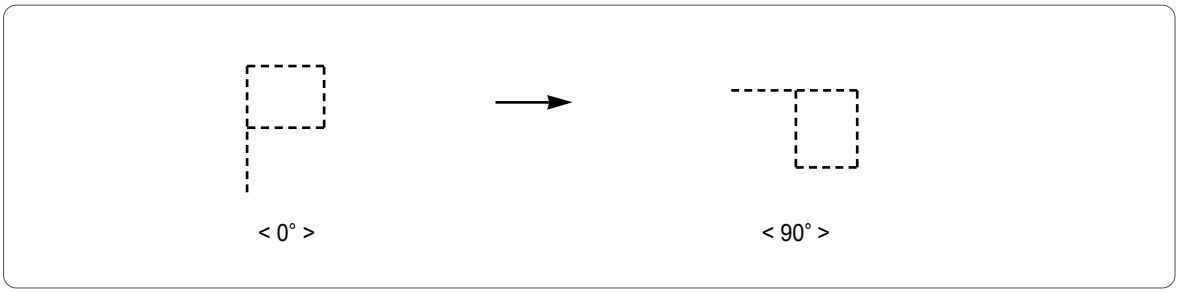


The default is 100%, and the value can be adjusted from 50% to 200% by the unit of 1% .



③ Angle

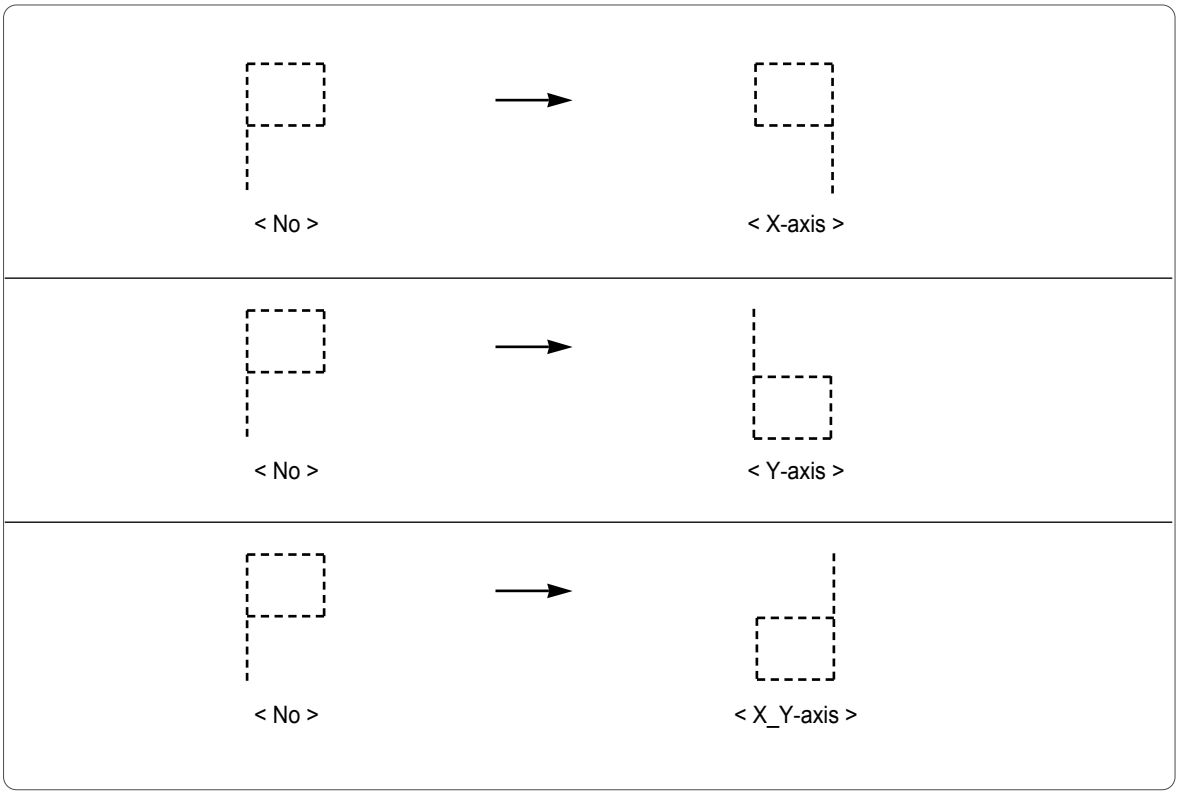
Turns around the embroidery design according to the rotation angle value set.



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

④ Mirror

Reverses a design based on X, Y, or X,Y axes.

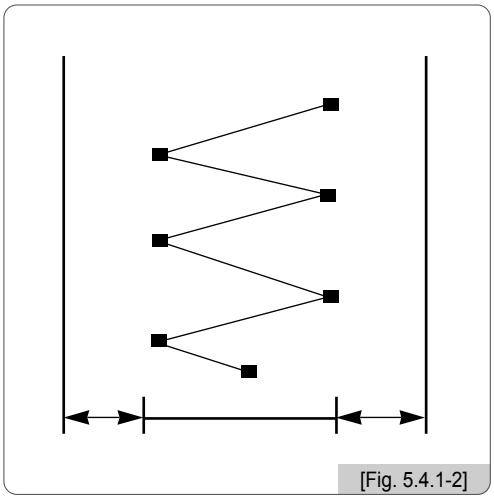


The default is “0” or “normal work”.

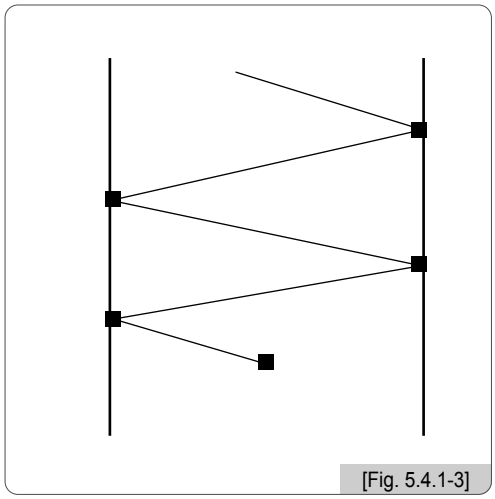
Value	Description
0	Basic Setting
1	X-axis reverse
2	Y-axis reverse
3	X, Y-axis reverse

⑤ X Satin

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



[Fig. 5.4.1-2]



[Fig. 5.4.1-3]

This function determines the satin stitch length in the X-axis direction. The value can be increased by the unit of 0.1mm.

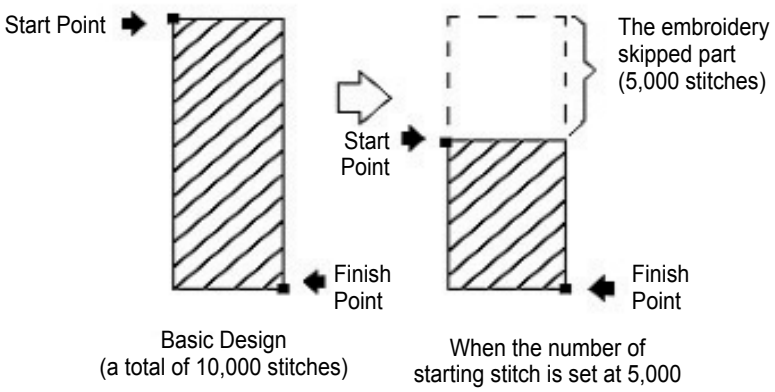
⑥ Y Satin

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.

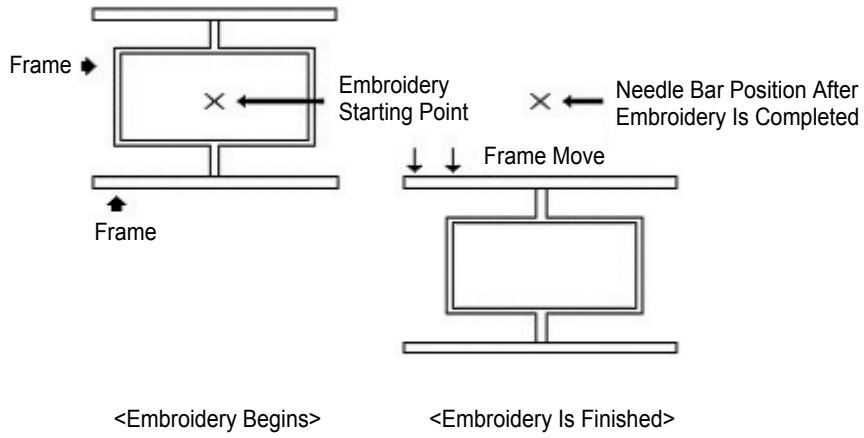
For instance, there is a design with a total of 10,000 stitches below. The design on the left side has entire stitches embroidered. On the right side, the design has only 5,000 stitches since the starting stitch number was set at 5,000.



[Fig. 5.4.1-4]

⑧ Offset Function

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



[Fig. 5.4.1-5]

★ Setting Tips to Use Frame Offset Work Function

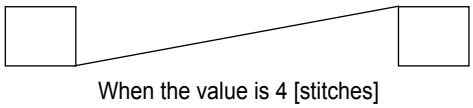
1. Select "Yes" for the question asking the frame coordinates setting in the basic setting situation.?
2. Go to "Setting" → "Frame Offset Setting" and determine the starting position, the offset middle position, and the stop position after design completion (offset) (5.4.5 Frame Offset Setting)
3. To use the offset function during embroidery work, go to "Main Function Menu" → "Setting" → "5.4.5 Frame Offset Setting," and enter the desired value to "Frame Offset Position".

※ The above three settings shall be made to carry out the frame offset work.

⑨ Jump Convert

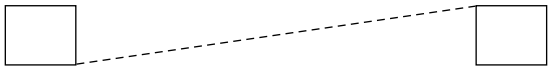
This function is to move the frame after trimming, in the case where repeat jumps take place and they occur more than the set value.

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.



When the value is 4 [stitches]

(The thread is linked to the next design without trimming)



When the value is 5 [stitches]

(The thread moves to the next design after trimming)

[Fig. 5.4.1-6] "Trimming by Jump Frequency" When Value is 5

[Caution]

If '0[st]' is chosen, when repeat jump takes place, there will be no trimming regardless of the number of stitches for the number of repeat jump.

5.4.2 EMB Parameter Setting

<Fig. 5.4.2-1>, <Fig. 5.4.2-2>, and <Fig. 5.4.2-3> are the screens showing the parameter setting. For setting, use the number keys to enter the desired values within the scope same as the basic setting.?

Press F1 , F2 to view the next menu.

F3 DEFAULT turns back the set values to default values of the operating program.

When F4 NEXT is pressed, the next menu is displayed.

<Fig. 5.4.2-1>, the initial screen, shows eight setting menus. When F4 NEXT is pressed first, the following eight setting menus appear as in <Fig. 5.4.2-2>. Press F4 NEXT again and the last embroidery parameter setting menus appear as in <Fig. 5.4.2-3>. When F4 NEXT is pressed once again, the initial screen returns as in <Fig. 5.4.2-1>.

F7 SELECT is used to select menu. Press F8 PREVIOUS to exit from setting.

[Fig. 5.4.2-1]

[Fig. 5.4.2-2]

[Fig. 5.4.2-3]

① Total Stitch Clean

"  ST" as in "4.2.0 Work Information Screen" is the function to accumulate the total number of stitches worked so far from the beginning of machine use or from the information initialization. This function initializes the total stitch number into zero.

② Total Work Clear

"  WK" as in "4.2.0 Work Information Screen" is the function to accumulate the total number of embroidery works produced so far from the beginning of machine use or from the information initialization. This function initializes the total work number into zero.
(When initialization is desired, press "0" and then press [SET]. If initialization is not desired, press [ORG].)

③ Auto Origin Return

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

- The default is "Yes (1)". If the return to the origin is not desired, enter "No (0)".

④ Jump Change Data

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

- The default is 8.0 mm, and the scope of adjustment is from 5.0 to 12.7 mm and it can be set by the unit of 0.1 mm. For instance, if the distance between two needles is longer than the set value when the frame moves from one needle to the other needle, it becomes a jump stitch.

⑤ Auto Backtack

The function sets the bartack performance to create stitch for embroidery beginning (thread release prevention).

- The default is "EndBack" It can be changed to "No(0"), "Start Bartack(1)", "End Bartack(2)", and "All(3)".

⑥ Jump Convert (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.

- The default is "No." The scope of adjustment is from 1mm to 50mm by the unit of 1mm.

⑦ Applique

This function is used to set up the needle bar. If the needle bar is repeatly entered for needle bar setting, and applique is "Yes", the machine automatically stops without trimming when the needle bars overlap.

- The default is "Yes."

⑧ Auto Back Stitch

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

- The default is 0 and the scope of adjustment is from 0 to 5 by the unit of 1 stitch.

⑨ Auto Start After Trimming

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

- The default is “Yes.” If automatic start is not desired, enter “0” to choose “No.”

⑩ Auto Start After Frame Back

The function is to determine whether the machine is automatically started when the frame reaches “⑫ All Needle Bars’ Starting Position After Back Stitching.”

- The default is “Yes.” If automatic start is not desired, enter “0” to choose “No.”

⑪ All Head Swing After Stitch Back

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.

- The default is “single.” To operate the needle bars of all heads, press “0” to select “All.”

⑫ All Head Startpoint After F.B

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. The function is to set the relative position of the entire needle bar motion, and the value can be set at the range from 1 to 20[st]. The default is 2[st].

⑬ Frame Forward / Back Moving Unit

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

- The default is 1[st]. It can be set at the range of 1 to 10[st] by the unit of 1[st].

⑭ Optimize Method

The part where embroidery is conducted in the form of running stitch in a certain distance away from the outline is called a gauge. This function is to set the distance between gauge and outline.

- The default is 10[mm], and the setting range is from 1 to 30[mm].

⑮ Software Limit Setting

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

- The default is “No.”

⑯ Thread Break Moving

This function is to set the length of automatic backward movement of the frame in case where the machine is stopped due to the sensing of thread break in order to make the upper thread placement much easier.

- The default is 0[mm], and the setting range is from 0 to 50mm. The value can be set by the unit of 1[mm].

⑰ Lock Stitch

This function is to set the execution of multiple backtacks to prevent thread release upon trimming.

- The default value is 1 stitch, and the value can be set at the odd number within the range of 1 to 5 stitches.

⑱ Auto Start After Color Change

When the thread color change code appears during embroidery, change the needle bar according to the needle bar setting. This function is to determine whether embroidery is automatically started after the needle bar change.

- The default value is “Yes (1).”

5.4.3 M/C Parameter Setting

<Fig. 5.4.3-1>, <Fig. 5.4.3-2> and <Fig. 5.4.3-3> are the screens showing machine parameter setting. As with the basic setting, use the number buttons and enter the desired value within the permissible range.

Press F1 , F2 to view the next menu.

F3 DEFAULT changes the saved settings to default values.

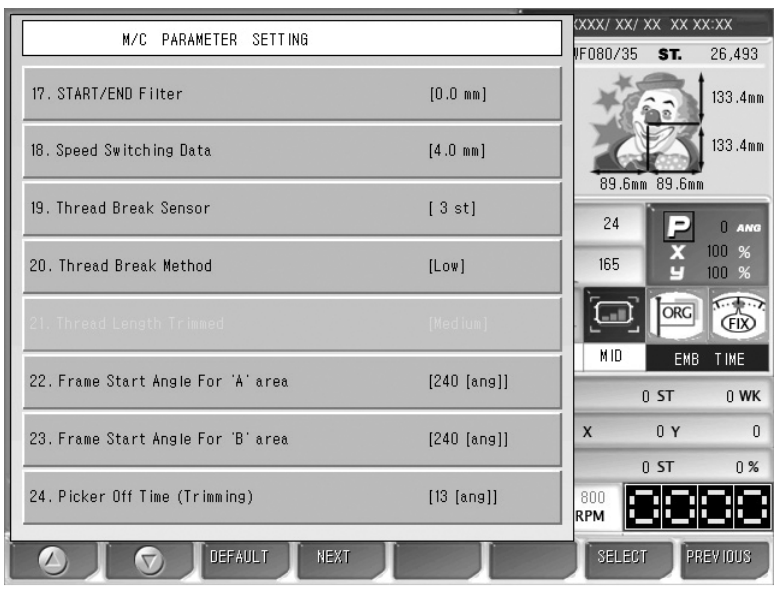
Press F4 NEXT to move to the next page.

<Fig. 5.4.3-1> shows eight setting menus on the first screen. When F4 NEXT is pressed, as in <Fig. 5.4.3-2>, the next eight setting menus appear. When F4 NEXT is pressed again, as in <Fig. 5.4.3-3>, the last setting menu appears. When F4 NEXT is pressed, as in <Fig.5.4.3-1>, the initial screen appears.

Press F7 SELECT to select menus and press F8 PREVIOUS to exit from setting.

[Fig. 5.4.3-1]

[Fig. 5.4.3-2]



[Fig. 5.4.3-3]

① Max. speed

This function sets the maximum embroidery speed.

- SB Series Embroidery Machine: The default value is 1200[rpm], and the speed can be adjusted from the minimum speed to 1200[rpm] by 10[rpm] each time.
- Multi-head E-Series Embroidery Machine: The default is 900[rpm], and the speed can be adjusted from the minimum speed to 1200[rpm] by 10[rpm] each time.
- DM Series Embroidery Machine: The default is 1500[rpm], and the speed can be adjusted from the minimum speed to 1500[rpm] by 10[rpm] each time.

② Min. speed

This function sets the minimum embroidery speed.

- The default is 300[rpm], and the value can be adjusted at the range from 300 [rpm] to the maximum speed by the unit of 10[rpm].

③ EMB speed

This function sets the embroidery speed.

- The default is 800[rpm], and the value can be adjusted at the range from the maximum speed to the minimum speed by the unit of 10[rpm].

④ Inching speed

This function sets the starting speed for embroidery work.

- The default is 100[rpm], and the value can be adjusted at the range from 50[rpm] to 200[rpm] by the unit of 10[rpm].

⑤ Jump speed

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

- The default is 1000[rpm], and the value can be adjusted at the range from 300[rpm] to 1000[rpm] by the unit of 10[rpm].

⑥ Slow Speed

This function sets the embroidery speed during slow operation.

- The default is 650[rpm], and the value can be adjusted at the range from the minimum speed to the maximum speed by the range of 10[rpm].

⑦ After Trimming Inching Stitch

When the color change signal is issued or when embroidery work for one design is completed, the closing is conducted. At this time, the function sets the number of stitches to be made during slow operation.

- The default is 3 stitches, and the value can be adjusted at the range from 2 to 10 stitches by the unit of 1.

⑧ Auto Trimming

This function is to enable the automatic trimming function.

- The default is “Yes”, and to turn off the automatic trimming function, choose “No”.

⑨ Auto Color Change

This function is to enable the automatic color change function.

- The default is “Yes”, and to turn off the automatic color change function, choose “No.”

⑩ Bottom Dead Point Stop

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

- The default is “No,” and select “Yes (1)” to make the needle bar stop at the lowest stop position.

⑪ Frame Setting

This is to set the types of embroidery frame.

⑫ Frame Speed Setting

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

- The default is “High Speed(1)”. To set the low speed, enter “Low Speed (0)”.

⑬ Frame Move Method (Trimming)

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

- The default is X(1). To set the move direction along the Y-axis direction, select Y(2). If no direction is selected, choose “NO(0)”.

⑭ 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.

- The default is 2 stitches, and the value can be adjusted at the range from 2 to 10 stitches by the unit of 1 stitch.

⑮ Needle Move Function (Offset)

This function is to lift the needle bar by activating the jump motor when it moves to the offset position.

- The default is Yes(1), and when the function is unnecessary, select No(0).

⑯ Power On Auto Origin

This function is to automatically find the origin after the power is on.

- The default is “No”. If “Yes” is chosen, but the origin setting is wrong or the machine develops problems, all settings shall be initialized. For setting initialization, see “2) Program setting Initialization of 3.1.3 Memory”.

⑰ Start / End Filter

This function is to prevent thread break by conducting automatic filtering for the stitch of 0.5mm or shorter, when starting or closing embroidery.

- The default is 0.0[mm], and the value can be adjusted from 0.0[mm] to 0.5[mm] by the unit of 0.1[mm].

⑱ Speed Switching Data

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

- The default is 4.0[mm]. The value can be set at the range of 3.0[mm] ~6.0[mm] by the unit of 1.0[mm].

⑲ Thread Break Sensor

If the sensor detects the repeat breaks of the upper thread at the set length, the machine will stop its operation. This is to prevent false detection associated with sensor' s malfunction.

- The default is 3[st], and under this setting, the thread sensor does not work. The value can be adjusted from 0 to 10[st] by the unit of 1[st].

⑳ Thread Break Method

This function is to set the sensitivity of the sensor when it detects thread.

- The default is Low(0), and the other options to choose include High(2) and Medium(1).

㉑ Thread Length Trimmed

㉒ Frame Start Angle For “A” Area

When the embroidery width is 1.9mm or below, this function sets the rotation angle of the main shaft when the frame starts moving.

- The default is 240°, and the value can be adjusted from 230° to 250° by the unit of 1°.

㉓ Frame Start Angle For “B” Area

When the embroidery width is 2.0mm or above, this function sets the rotation angle of the main shaft when the frame starts moving.

- The default is 240°, and the value can be adjusted from 230° to 250° by the unit of 1°.

㉔ Picker Off Time (Trimming)

This function is to set the length of the remaining upper thread at the needle when automatic trimming is conducted.

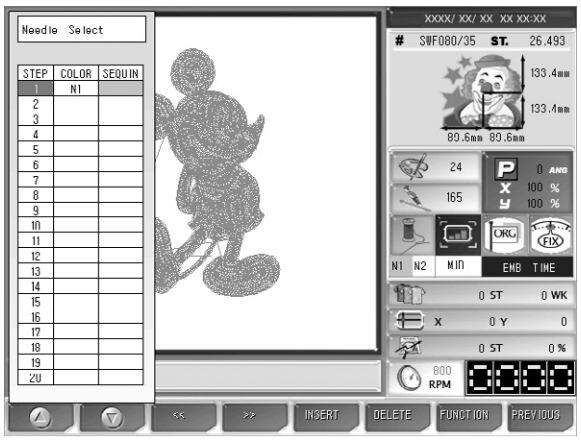
- The default is 13[ang]. If the value set is smaller than the default, the remaining upper thread will be short, and vice versa. The value can be adjusted from 0 to 60[ang] by the unit of 1[ang].

5.4.4 Needle setting (color)

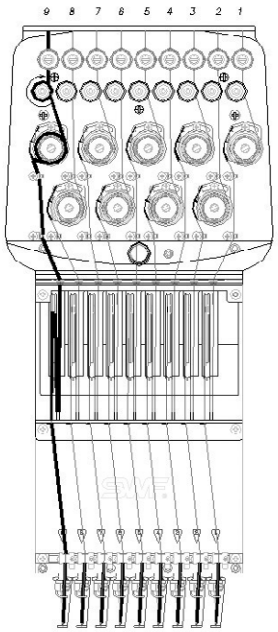
This function is to enable automatic change of needle bars when the thread color change code appears. It is also able to change the colors of the embroidery design displayed on the screen.

<Fig. 5.4.4-1> and <Fig. 5.4.0-1> appears when the needle bar setting button is pressed to set the needle bars. The needle bar setting can be divided into three steps including needle bar selection, change, and color change.

- **Select**: This is the menu where the order of changing needle bars is set when the color change code appears during embroidery. Up to 300 color change codes can be applied.
- **Change**: This enables the user to change the 1 or 1 match between the needle bar table and the needle bar at the his/her discretion.
- **Color change**: This function is to change the colors of each needle bar.



[Fig. 5.4.4-1]



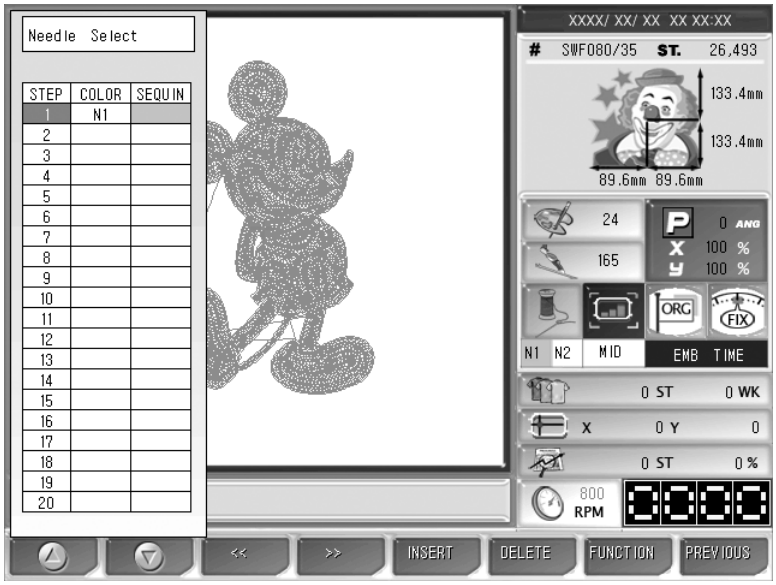
[Fig. 5.4.4-2]

■ To understand the above, let's look at the head section of the SWF multi-head embroidery machine as in <Fig. 5.4.4-2>.

As in <Fig. 5.4.4-2>, the multi-head embroidery machine has needle bars for each of which unique number is designated. Each number is matched one or one to the standard needle bar on the "Needle Bar Number Change Menu" as in <Fig. 5.4.4-1>. If the standard needle bar and the changed needle bar are same, the needle bar with a unique number on the head section as in <Fig. 5.4.4-2> will operate. The unique numbers can be virtually changed by pressing the change button. Here is an example for clearer understanding.

(1) Needle select

This function is to determine the changing order of needle bars when the color change signal appears during embroidery. Press “Needle Bar Select” in <Fig. 5.4.4-1>, and the necessary buttons for needle bar choice are enabled as in <Fig. 5.4.4-3>. Let’s take an example to explain how to use the function.



[Fig. 5.4.4-3]

■ **Keys Used for Needle Bar Selection**

F1 F2 : They are used to move to the desired needle bar.

F3 < < F4 > > : They are used to see the previous or next screens.

F5 INSERT : This is used to insert the number of a needle bar in between the figures of needle bar entered.

F6 DELETE : This is used to delete the number of a needle bar chosen from the already entered needle bar numbers.

F7 FUNCTION : This is used to conduct the simulation expression function, the needle bar change function, and the needle bar color change.

F8 PREVIOUS : This is used to apply the setting or move back to the previous step.

[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.

[Exercise 5.4.4-1] Needle Select

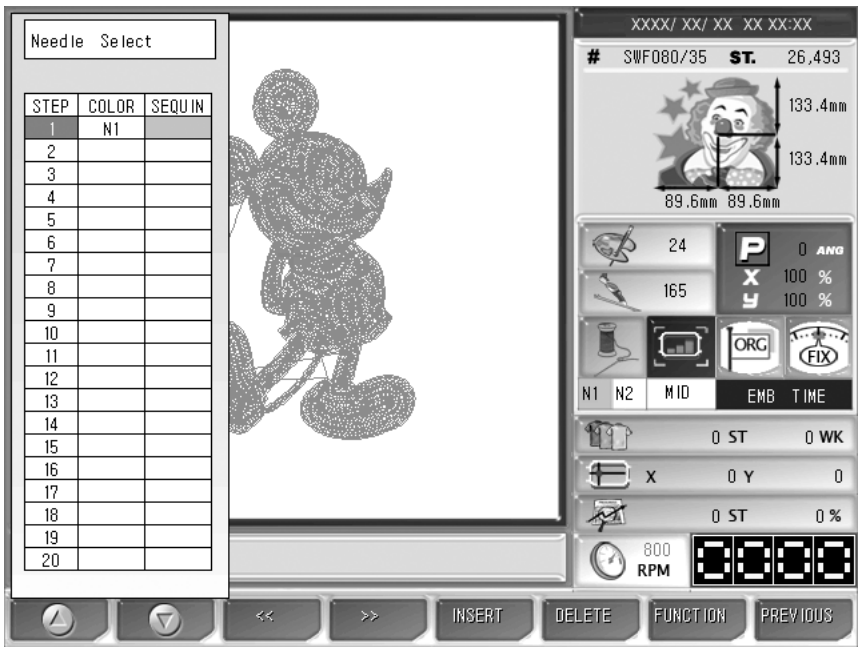
Call the design in #37 Room and set the order of needle bars like 7-3-5-1-6-4-2-1.

1. Call the design in #35 Room as in <Fig. 5.2-6>.
   (For design call, see “5.2 Design Call”.)

2. Press F3 SETTING .

3. Use the up/down buttons on the setting menu to move to “Needle Bar Parameter setting” and press F7 SELECT .

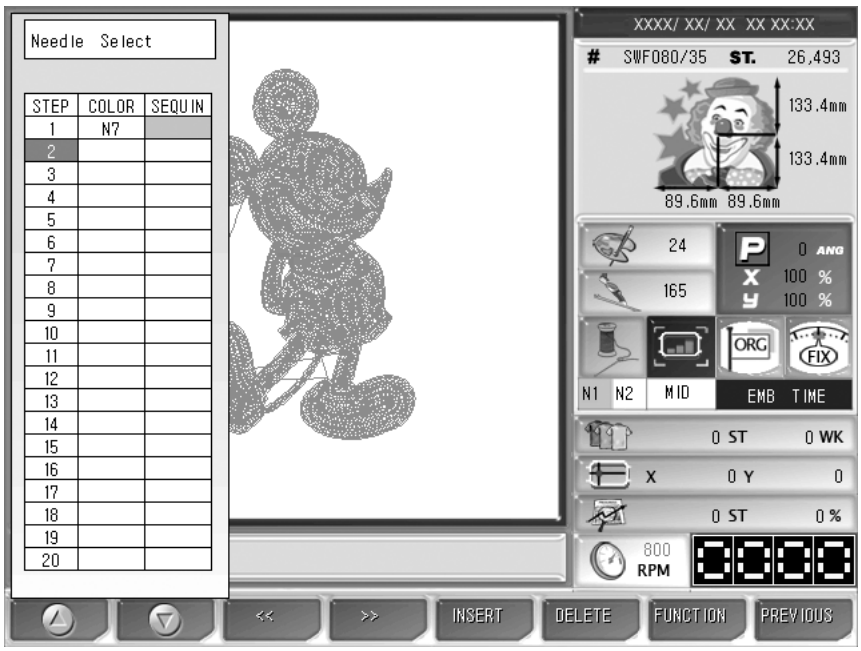
4. Move to the needle bar choice menu.
   As in <Fig. 5.4.4-4>, Add, Delete, Function, and Previous keys become enabled. The cursor is located on No. 1 for order choice.



[Fig. 5.4.4-4]

⑤ Use the number buttons and enter 7.

As in <Fig. 5.4.4-5>, 7 is entered in No. 1, and the cursor moves to No. 2 for entry.



[Fig. 5.4.4-5]

⑥ Repeat the above method and enter 3, 5, 1, 6, 4, 2, 1 in order by using the number buttons.

⑦ Make sure of the accurate setting and press F8 PREVIOUS .

[Exercise 5.4.4-2] Add, Delete needle bars

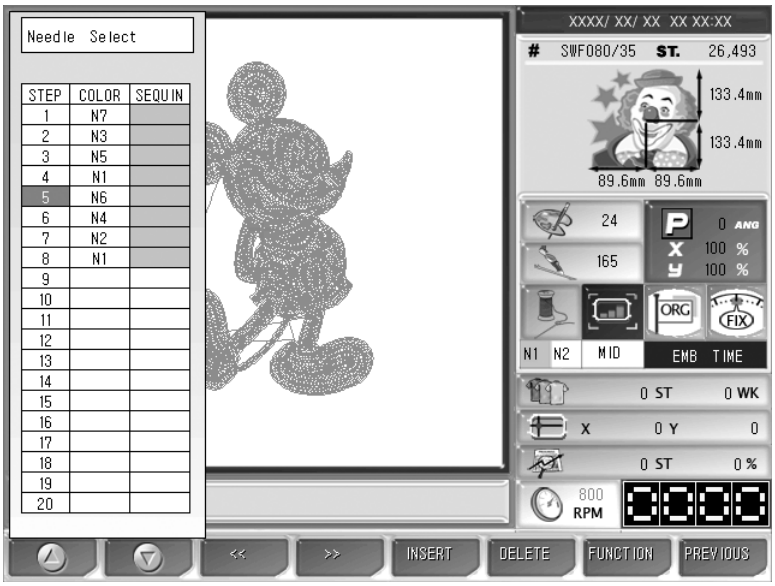
The order of needle bar is 7-3-5-1-6-4-2-1. Insert #7 needle bar (between #1 and #6) and delete #4 needle bar.

The precondition of this exercise is that [Exercise 5.4.4-1] shall be conducted first.

1. Move to the needle bar choice menu.

2. Use the direction buttons to move to #5 needle bar position.

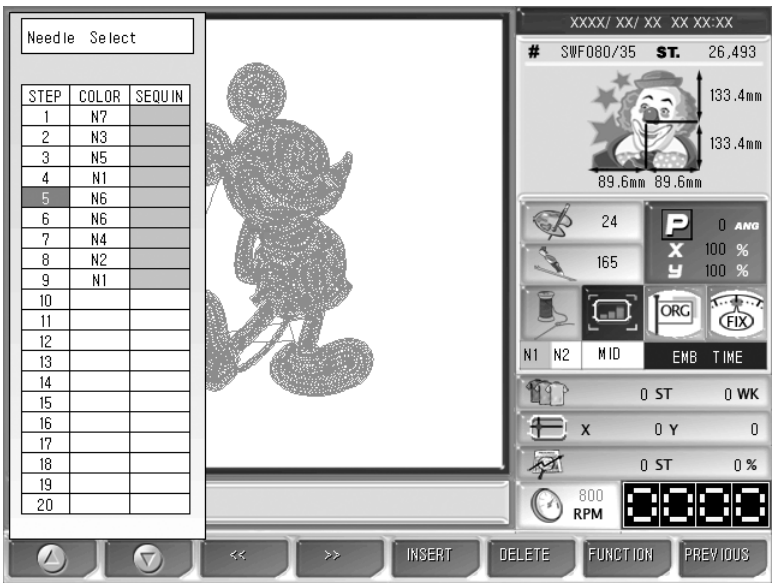
   As in <Fig. 5.4.4-6>, the cursor is located at the place which is taken by “6”.



[Fig. 5.4.4-6]

3. Press F5 INSERT .

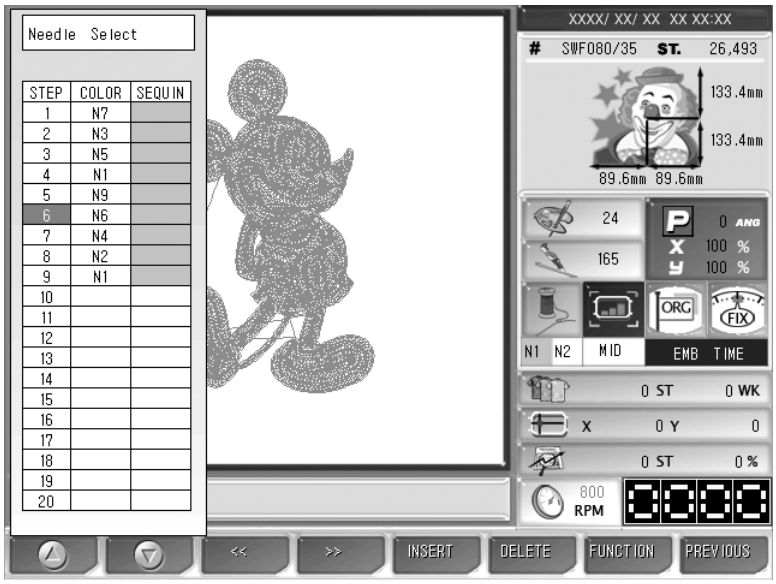
   As in <Fig. 5.4.4-7>, “6” is copied, and the needle bars increase by one.



[Fig. 5.4.4-7]

4 Press the number button “9”.

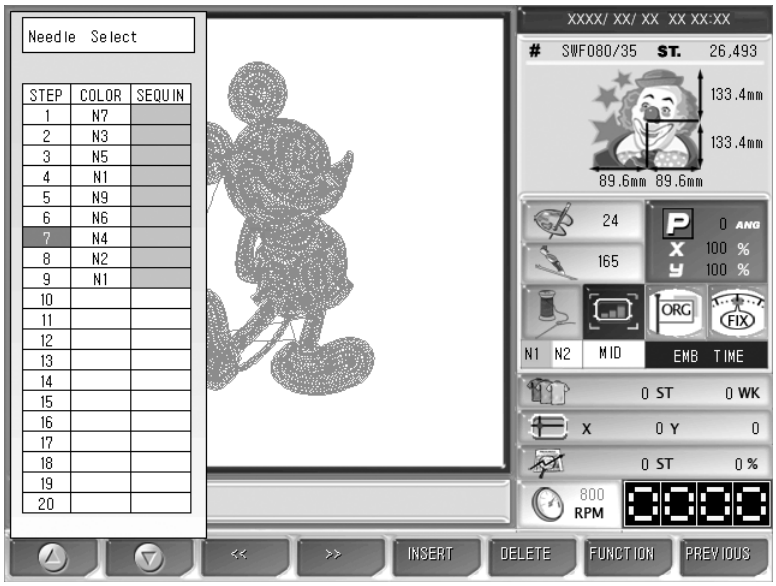
As in <Fig. 5.4.4-8>, “9” is inserted.



[Fig. 5.4.4-8]

5 Use the direction buttons and move the cursor to “4” under #7 needle bar.

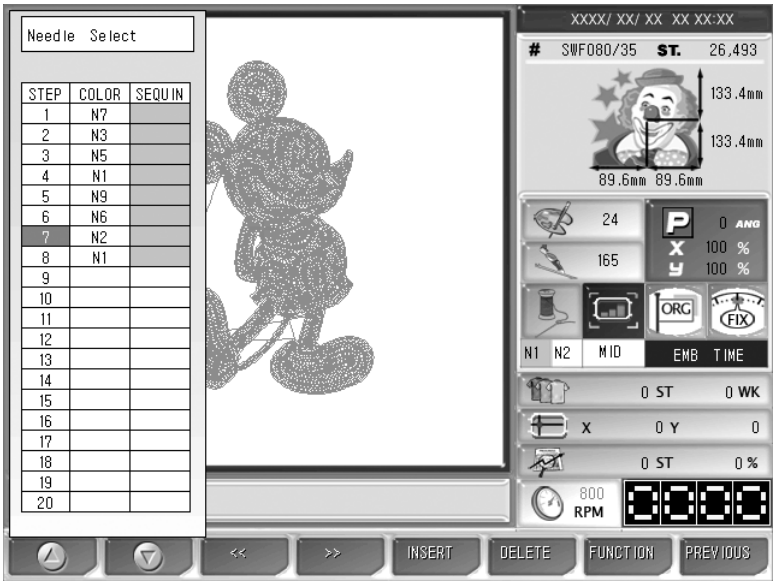
As in <Fig. 5.4.4-9>, the cursor will move to the “4” position.



[Fig. 5.4.4-9]

6 Press F6 DELETE .

As in <Fig. 5.4.4-10>, number “4” is deleted, and number “2” is placed under #7 needle bar.



[Fig. 5.4.4-10]

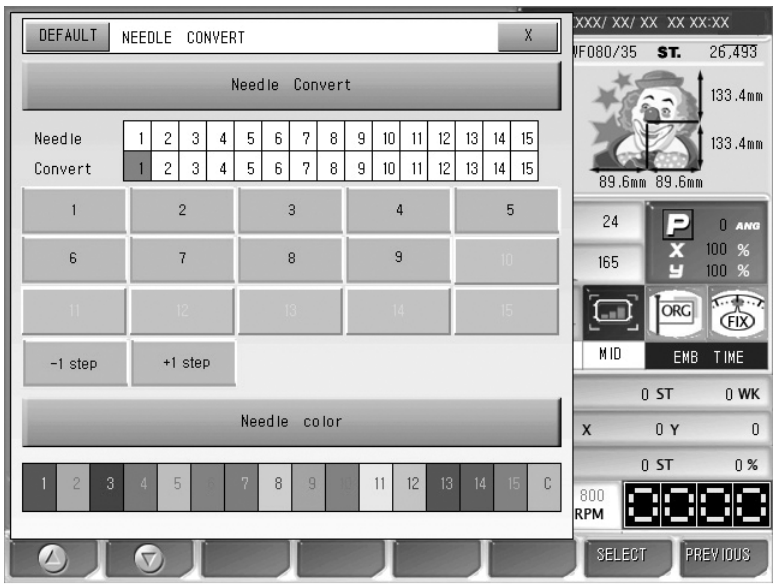
7 Press F8 PREVIOUS to apply the setting.

(2) Needle convert

This function is to virtually change the needle bar numbers fixed as in <Fig. 5.4.4-2>.

Let's assume that the needle bar numbers are set as 1, 2, 1, 2, 1, 2, 1, 2, 1, 2 according to the order of color change. If it is desired to change the needle bars designated as No. 2 into No. 1, this function enables making the change all at once. Press the needle bar change button, and change No. 2 to No. 1. Then, with one-time operation, all needle bar colors can be changed.

<Fig. 5.4.4-11> shows the screen when the needle bar change button is pressed. Let's get to know more about how to use the function via an exercise.

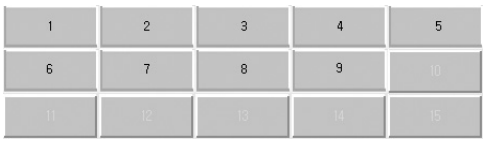


[Fig. 5.4.4-11]

■ **Buttons and Keys Used for Needle Bar and Color Change**

Needle convert

Needle color



Number keypad: Enter the needle bar number.

- 1 decrease: Select the needle bar position by decreasing the needle bar order

+1 increase: Select the needle bar position by increasing the needle bar order

Color select button by needle bar

They are used to move to the needle bar desired for selection.

It is used to select the menu.

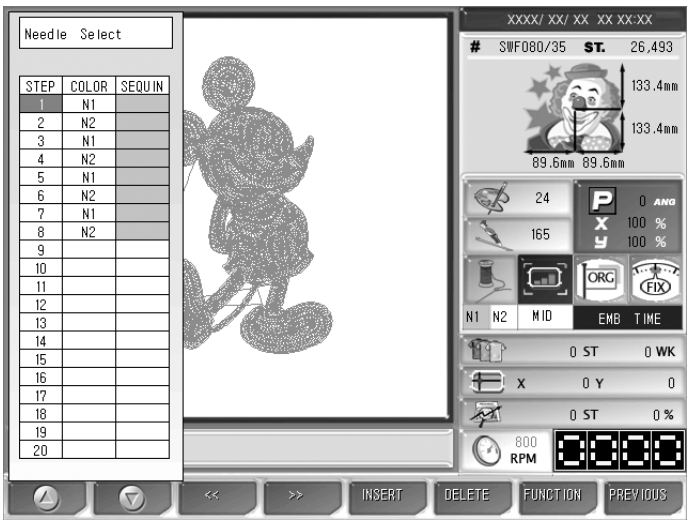
It is used to apply the settings or move to the previous stage.

[Exercise 5.4.4-3] Needle bar change

No. 1 needle has brown thread, and No. 2 needle has blue thread. The order of color is 1-2-1-2-1-2-1-2-1-2. It is needed to change all embroidery colors to brown by using the needle bar change function.

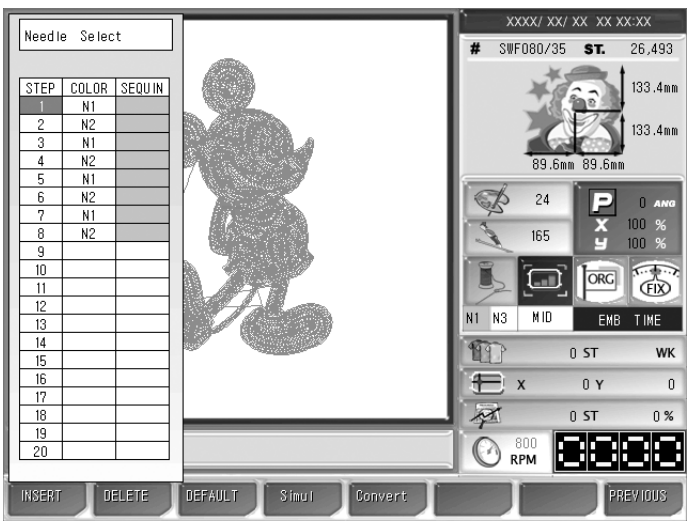
1. First of all, call a design.
   (For design call, see “5.2 Design Call”.)

2. Use the select buttons as in <Fig. 5.4.4-1> to set the order of colors as 1-2-1-2-1-2-1-2-1-2.
   Make the setting as in <Fig. 5.4.4-12>.



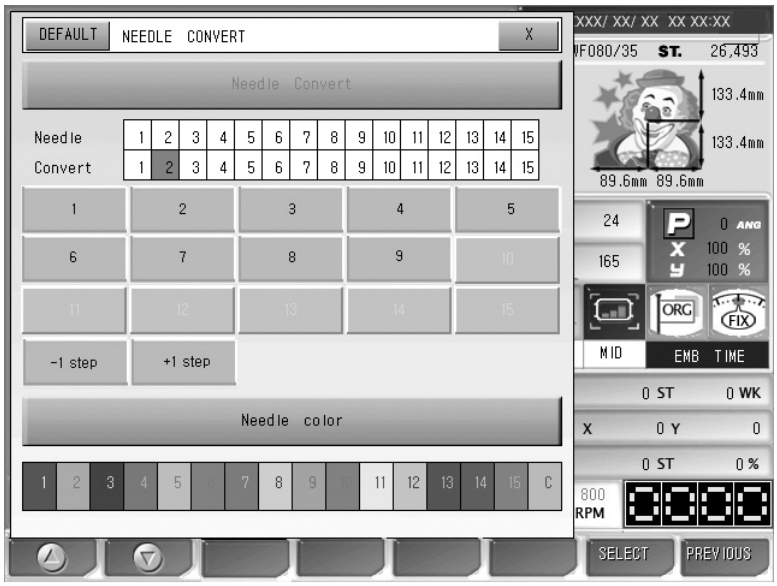
[Fig. 5.4.4-12]

3. When F7 FUNCTION is pressed on the needle bar select screen as in <Fig. 5.4.4-12>, the screen appears as in <Fig. 5.4.4-13>. Press F5 CONVERT.



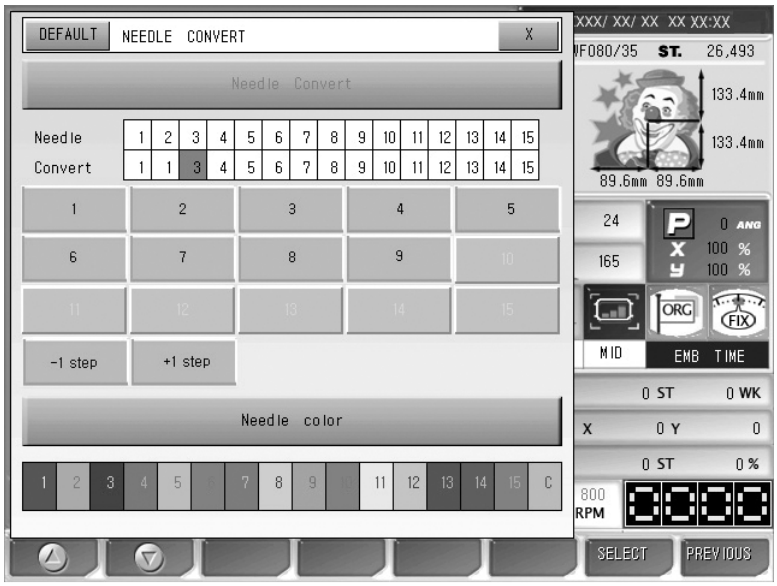
[Fig. 5.4.4-13]

4 The screen like <Fig. 5.4.4-11> appears. Move to No. 2 needle bar.



[Fig. 5.4.4-14]

5 Press 1 on the number key pad, and press F7 SELECT .
In <Fig. 5.4.4-15>, confirm that the needle bar is changed at No. 2 position.



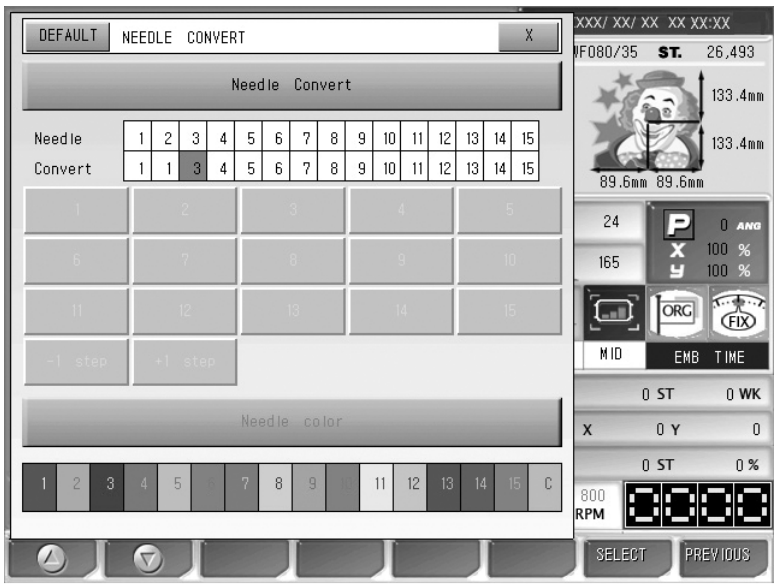
[Fig. 5.4.4-15]

6 Press F8 PREVIOUS .

(3) Needle color

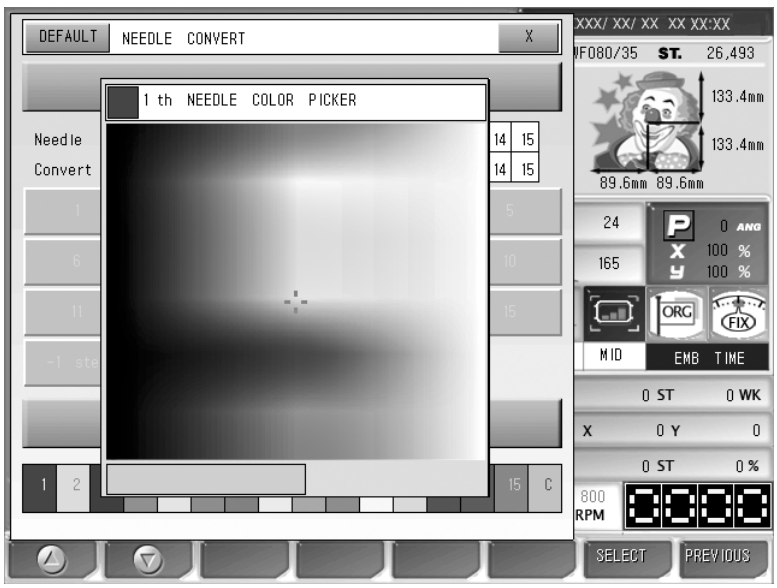
This function is to easily show the needle bar (color) change-related information on the design by marking colors on each needle bar. It does not affect the actual embroidery work.

<Fig. 5.4.4-16> appears when the needle bar color is pressed.



[Fig. 5.4.4-16]

Use the number buttons to select the desired needle bar, and then <Fig. 5.4.4-17> appears where colors can be chosen. Press the desired color for selecting it, and then the color confirmation section is changed with the color chosen. If the color is what you wanted, press F7 SELECT .



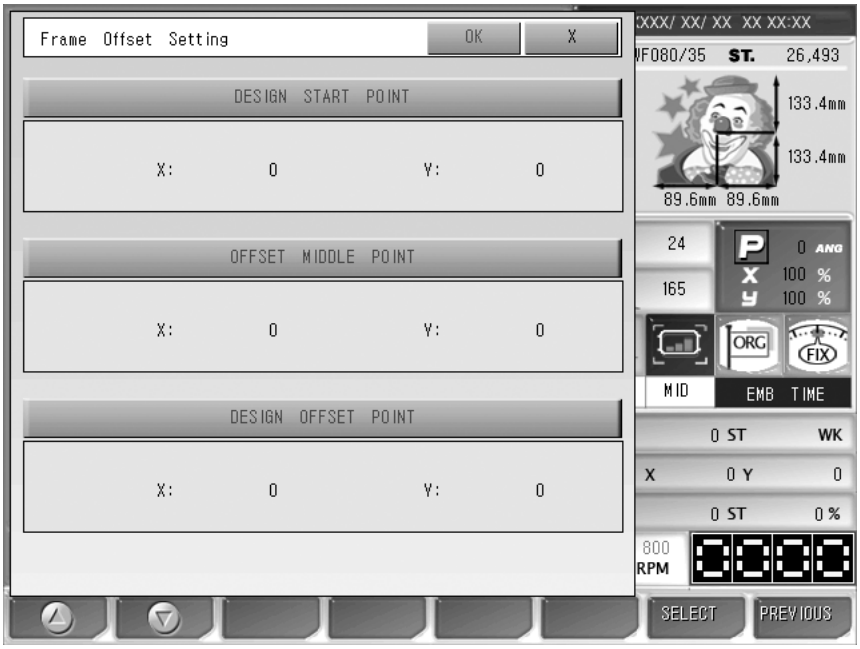
[Fig. 5.4.4-17]

On the color change window in <Fig. 5.4.4-17>, use the frame speed key to adjust the cursor move speed.

5.4.5 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.5.4.5-1> appears when selecting “Frame Offset Setting” on the F3 SETTING menu.



[Fig. 5.4.5-1]

The sub-menus for frame coordinates are as below:

F1 START **(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.

F2 MIDDLE **(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 the 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.

F3 OFFSET **(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]

1. 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.
2. If the frame origin is incorrect, it is difficult to find the frame coordinates.

[Exercise 5.4.5-1] Design start position - X : 500, Y : 300
Offset middle position - X : 1000, Y : 1000
Stop position after design completion (offset) - X : 1500, Y : 1700
Make the above settings.

1. Press “Frame Offset Setting” on the setting menu.
   Then <Fig. 5.4.5-1> appears.

2. Use F1 , F2 to move to “Design Start Point” and press F7 SELECT .
   It will enable the design start point.

3. Set the X, Y values for the frame location by using the frame move buttons.

4. Use F1 , F2 to move to the “Offset Middle Point” and select F7 SELECT . Then the offset mid-position will be enabled.

5. Set the X, Y values for the frame location by using the frame move buttons.

6. Press F1 , F2 to move to “Design Offset Point” and then press F7 SELECT .
   Then, the stop position becomes enabled after the embroidery work is completed.

7. Set the X, Y values for the frame location by using the frame move buttons.

8. Press SET .

5.4.6 Options Setting

This function is to set the options for the embroidery machine. Among the options, there are cording, sequin and boring. <Fig. 5.4.6-1> shows the screen for option setting.
No.3, No.5, No.6 and No.7 menus can be activated when No.2 and No. 4 menus are enabled.

There are 20 menus under Option Setting. Press F4 NEXT to move to the next screen for checkout.

Press F1 , F2 to move around the menu.

Press F3 DEFAULT to initialize the settings to default values.

Press F4 NEXT to see the next menu.

Press F7 SELECT to select the menu. Press F8 PREVIOUS to exit from setting.

[Fig. 5.4.6-1]

(1) Cording setting

① Press F3 SETTING from the main function menu.

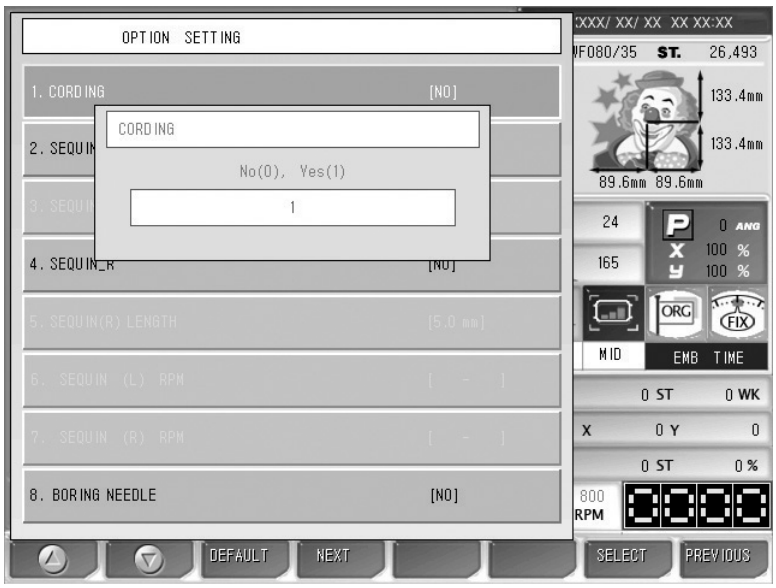
② Select Options Setting and press F7 SELECT .

③ Select “1. CORDING” and press F7 SELECT . <Fig. 5.4.6-2> appears for setup.

[Fig. 5.4.6-2]

④ Use the number buttons and press “1(Yes)”. (<Fig. 5.4.6-3>)

To correct the entered data, press ORG. To cancel, press F8 PREVIOUS .



[Fig. 5.4.6-3]

⑤ Press [SET].

Cording setting has been completed.

⑥ Press “9. CORDING RPM.”

<Fig. 5.4.6-4> is the screen for speed setting.

[Fig. 5.4.6-4]

⑦ Enter the desired speed using the number keypad within the speed range from the maximum to the minimum speed.

⑧ Press [SET].

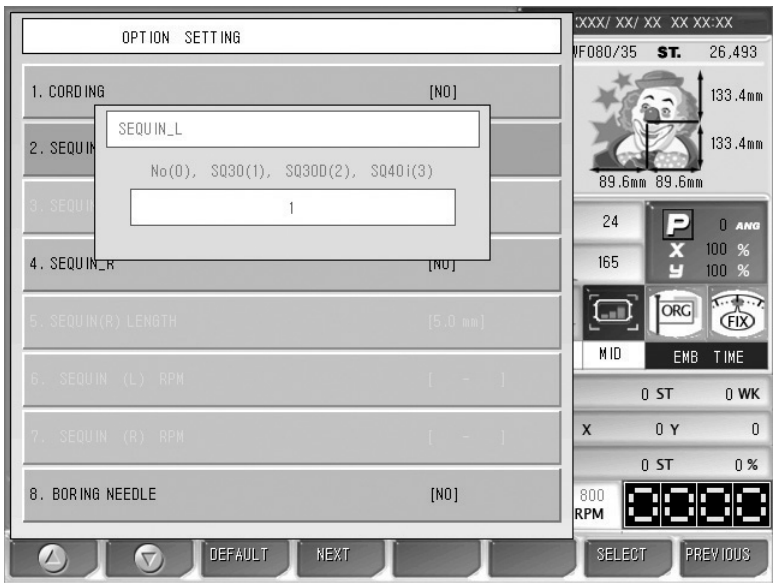
Cording setting has been completed.

(2) Sequin setting (In case of single type sequin)

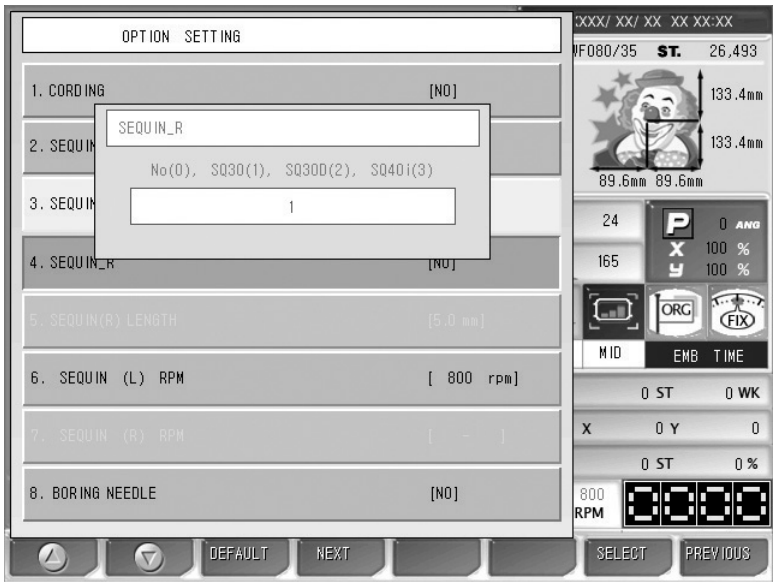
① Press F3 SETTING on the main function menu.

② Select Options Setting on the setting screen and press F7 SELECT.

③ Press either “2. Sequin L” or “4. Sequin R.” As in <Fig. 5.4.6-5>, the Sequin L has the setting screen like <Fig. 5.4.6-5>, while Sequin R has the setting screen like <Fig. 5.4.6-6>.



[Fig. 5.4.6-5]



[Fig. 5.4.6-6]

※ Three types of sequin setting can be performed.

No(0) ---------- Sequin disabled

SQ30(1) ---------- Single type enabled

SQ30D(2) ---------- Double type enabled

SQ40i(3) ---------- Individual sequin type enabled

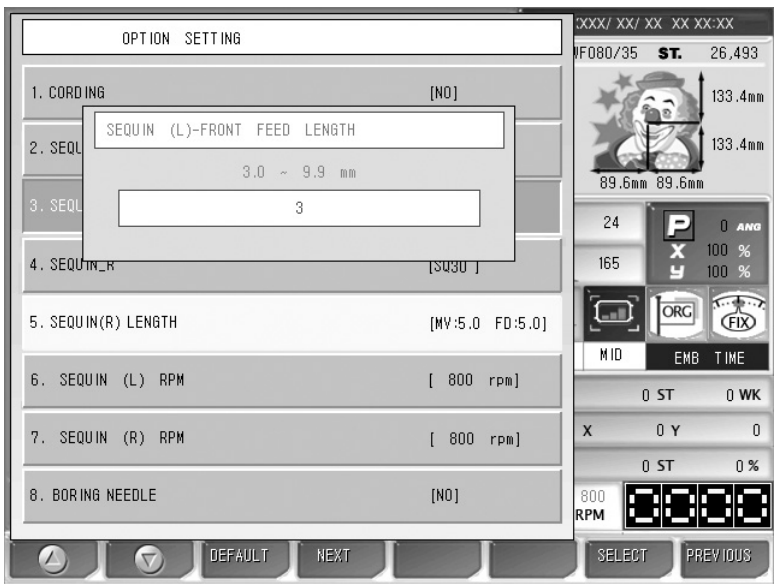
④ Press No.1 (SQ30) on the number keypad. To correct, press [ORG] To cancel, press [F8] PREVIOUS.

⑤ Press [SET].

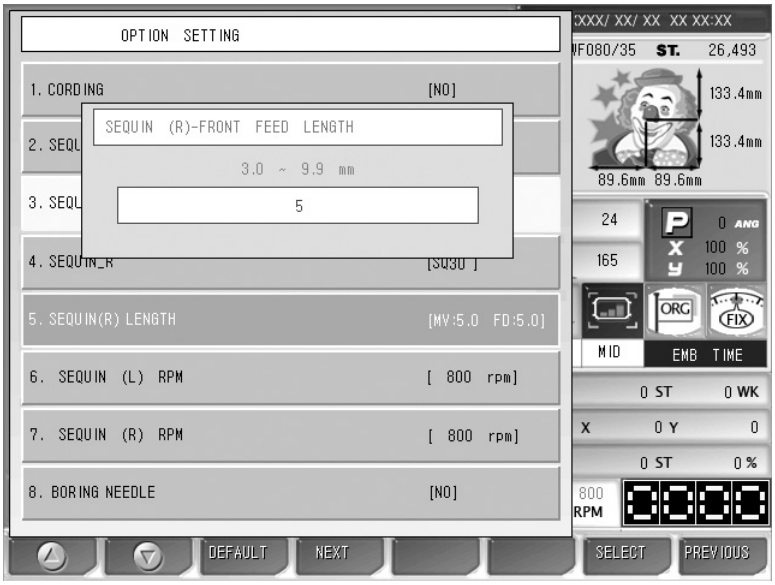
⑥ After setting the sequin type, set the sequin length.

Press “3. Sequin (L) Length” or “5. Sequin (R) Length”

Then, the screens <Fig. 5.4.6-7> and <Fig. 5.4.6-8> appear respectively for the sequin(L), (R) length.



[Fig. 5.4.6-7]



[Fig. 5.4.6-8]

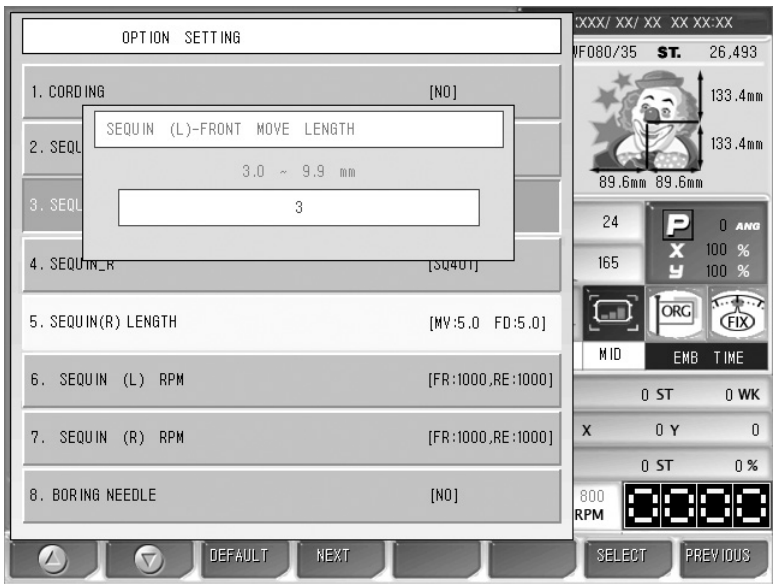
⑦ Enter a desired figure within the setting range of 3.0mm~9.9mm using the number keypad.

⑧ Press [SET].

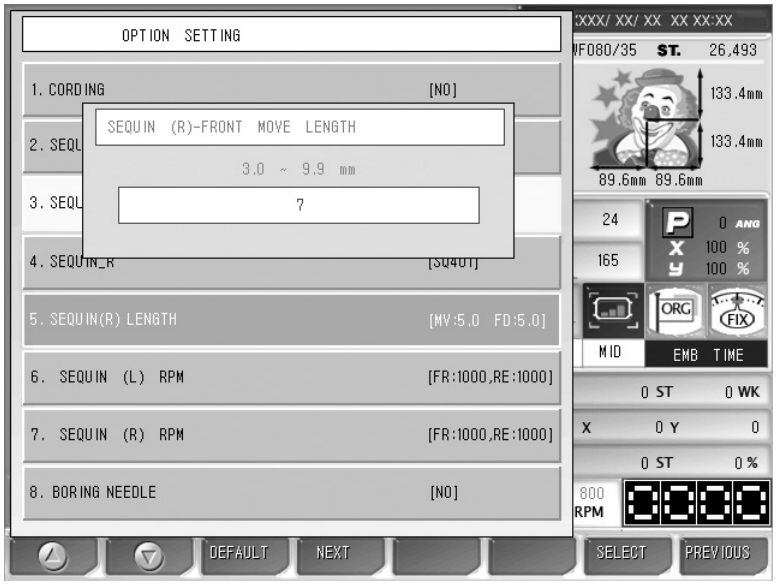
※ SQ40i Setting

IIf SQ40i is chosen as sequin type in '2) Sequin Setting', first of all, the menu for setting the motion range of the needle motor appears as in <Fig. 5.4.6-7> and <Fig.5.4.6-8>,and the menu comes up before the menu for setting sequin (L)(R) length spears as in<Fig. 5.4.6-9> and <Fig. 5.4.6-10>.
Enter a figure within the setting range of 3mm to 15mm.

[Example] When using 3mm spangles, press '3' using the number keypad to set it at 3mm.
When using 7mm spangles, press '7' using the number keypad to set it at 7mm.

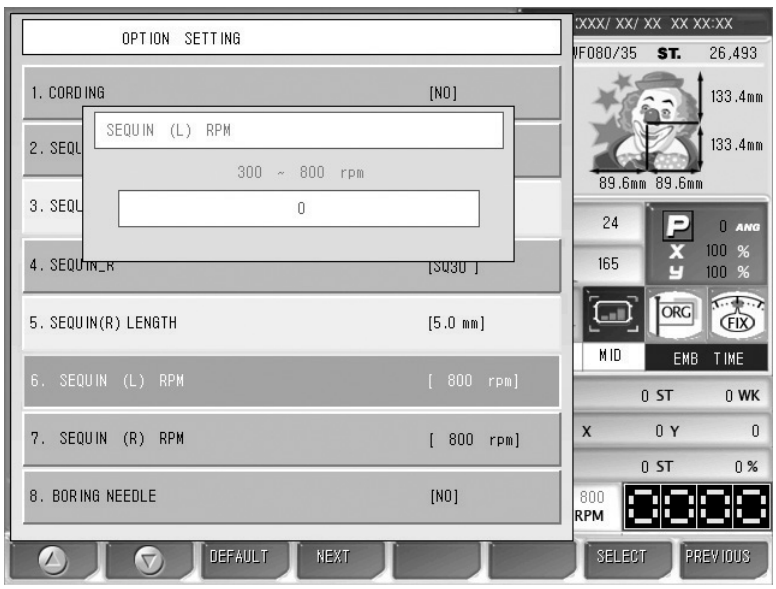


[Fig. 5.4.6-9]



[Fig. 5.4.6-10]

⑨ Press “6. Sequin RPM.” (To set the right sequin speed, press No.7.)
<Fig. 5.4.6-11> is the speed for speed setting.



[Fig. 5.4.6-11]

⑩ Enter a desired figure within the setting range of 300rpm~800rpm using the keypad.

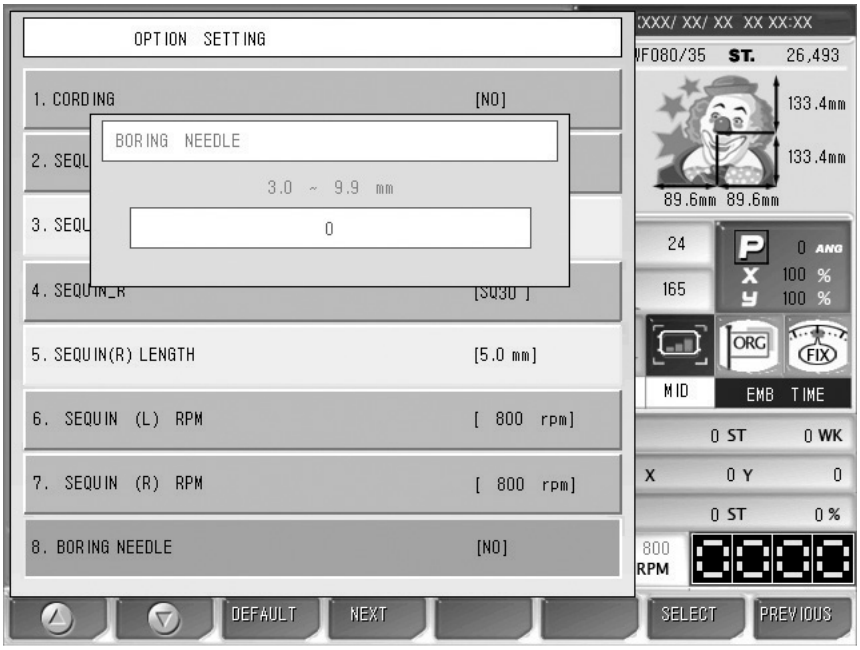
⑪ Press [SET].
The sequin setting has been completed.

(3) Boring setting

① Press F3 SETTING on the main function menu.

② Select Options Setting on the setting screen and press F7 SELECT.

③ Select “8. Boring Needle” and press F7 SELECT.
<Fig. 5.4.6-12> appears for setup.



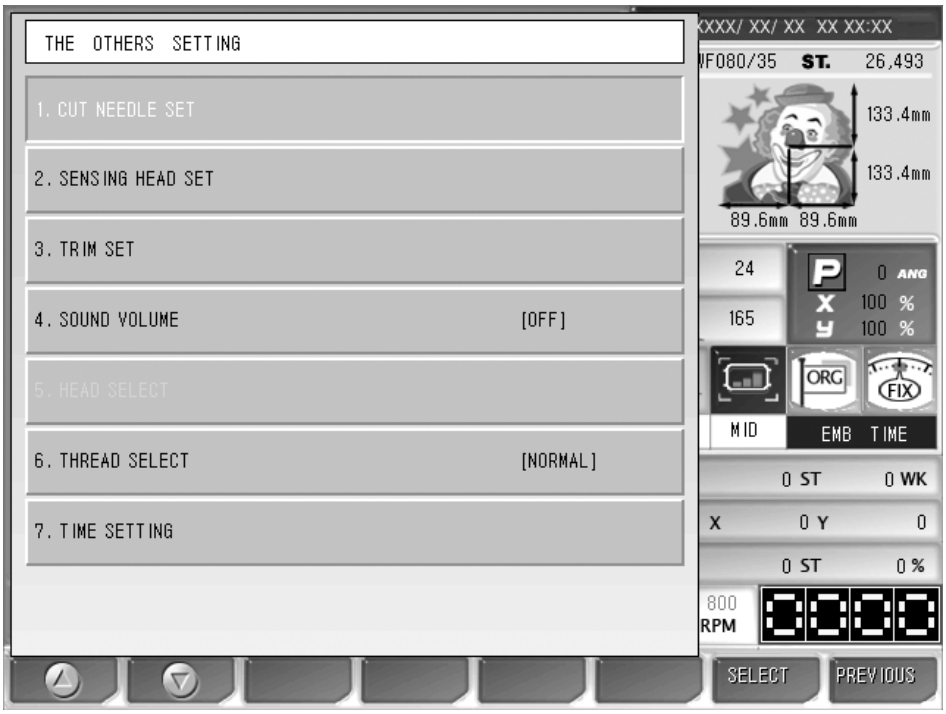
[Fig. 5.4.6-12]

④ Enter the number of the needle bar equipped with the boring within the range of permissible values.
To correct the entered data, press ORG. To cancel, press F8 PREVIOUS.

⑤ Press SET.
This completes the boring setting.

5.4.7 The Others Settings

Press Other Settings on the setting menu, and then <Fig. 5.4.7-1> will appear. There are six setting menus including the cutting needle bar setting, the thread sensing function by head, the trimming-related setting, the sound volume setting, the thread condition setting, and the date/time setting under the other settings menu.

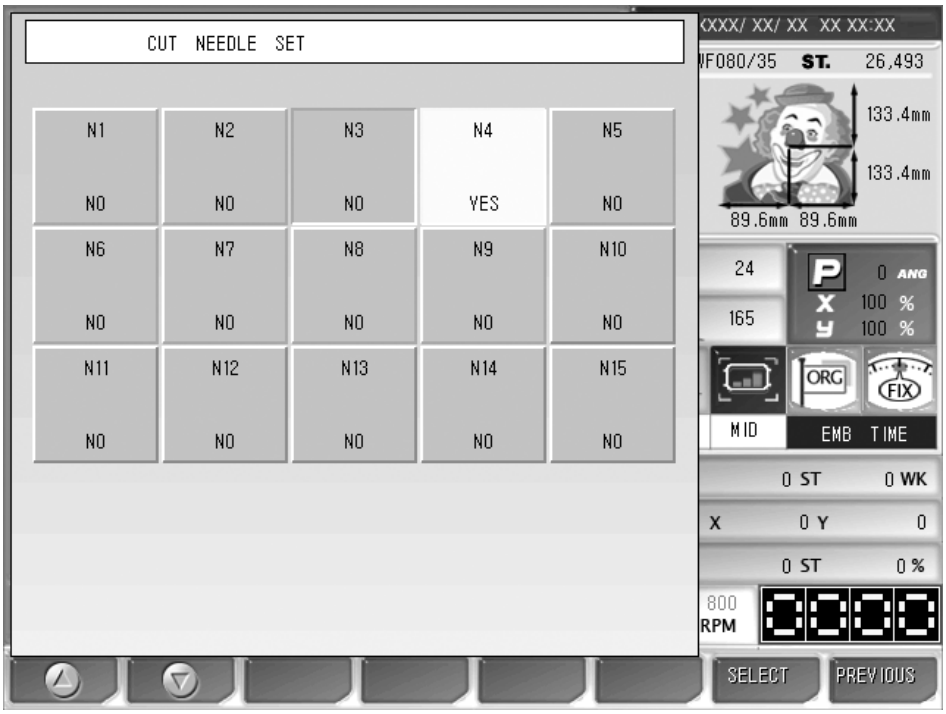


[Fig. 5.4.7-1]

(1) Cut Needle Set

This function is to set the needle bar equipped with the specially designed cutting needle to cut the embroidery fabric in the desired shape. To use this function, during embroidery, thread detection and trimming functions shall be suspended. The cutting needle bar setting is the function to automatically suspend the unnecessary functions, when the cutting function is used. <Fig. 5.4.7-2> is the screen where the “Cut Needle Set” is pressed in <Fig. 5.4.7-1>. Pink means that the concerned needle bars were chosen for embroidery, and bright yellow means that the needle bars were set for cutting.

<Fig. 5.4.7-2> shows that No. 4 Head is set as the cutting needle bar.



[Fig. 5.4.7-2]

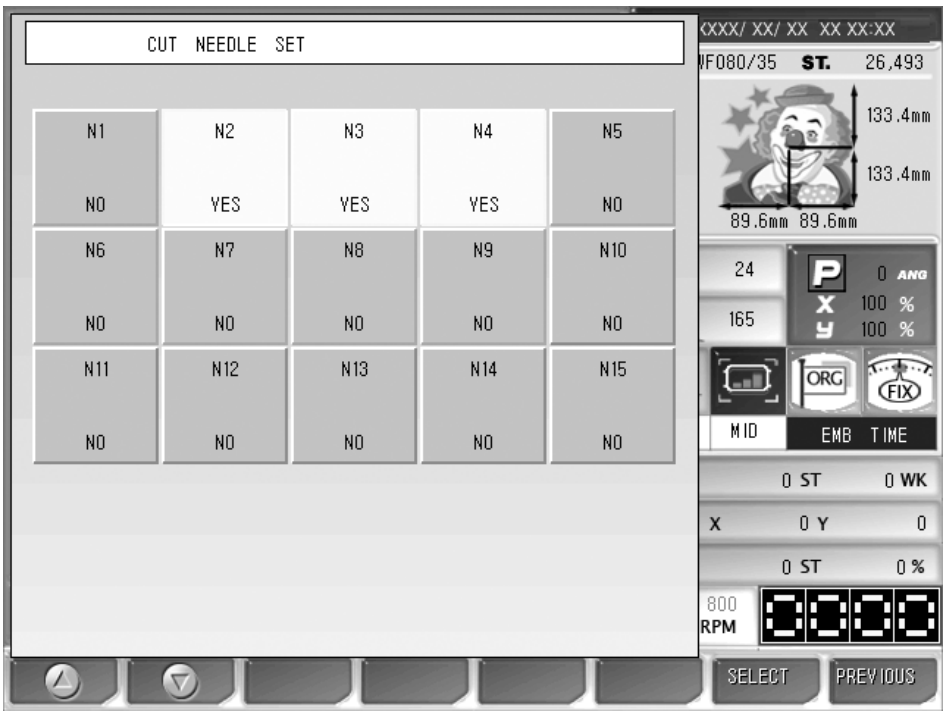
[Exercise 5.4.7-1] Converting No. 2, 3, 4 Needle Bar to Cutting Function

1. Press F3 SETTING on the main menu.

2. Select “The Others Setting” on the setting screen.
   <Fig. 5.4.7-1> appears.

3. Select “1. Cut Needle Set.”
   <Fig. 5.4.7-2> appears.

4. Use F1 , F2 to move to No. 2, 3, 4 needle bars, and press F7 SELECT .
   As in <Fig. 5.4.7-3>, if No. 2, 3, 4 heads are displayed in yellow, they have been converted into cutting function successfully.



[Fig. 5.4.7-3]

(2) Sensing Head Set

This function is to turn on or off the thread sensor of each head. <Fig. 5.4.7-4> shows that the operating program support up to 49 heads, and currently 20 heads have been selected for this function. The bright yellow mark means that the thread sensor for the concerned head is in operation.

[Fig. 5.4.7-4]

Exercise 5.4.7-2] Disabling the thread sensors of No. 2, 10, 13 heads

1. Press F3 SETTING on the main screen.

2. Select “2. Sening Head Set” on the Other Settings.
   Then <Fig. 5.4.7-4> appears.

3. Move to No. 2, 10, 13 heads and press F7 SELECT .
   As in <Fig. 5.4.7-5>, if No. 2, 10, 13 heads are marked in pink, it means that their thread sensors are disabled.

[Fig. 5.4.7-5]

(3) Trim Set

There are three trimming-related settings: Trimming start angle setting, main-shaft start acceleration speed setting, and bartack length setting for trimming.

[Fig. 5.4.7-6]

① Trim Angle Setting

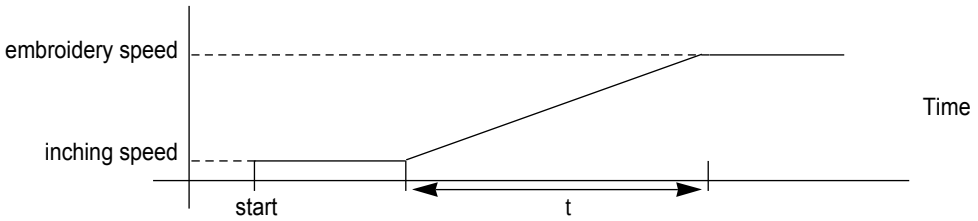
This function is to change the main shaft angle when the trimming motor feed begins.

- The default is 0°, and the value can be adjusted from -5° to 5° by the unit of 1°.

② Accelation

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.

- The default is Normal. Either Normal(0) or Slow(1) can be chosen.



③ Start or End B / T Length

This function is to set the length of a stitch while bartack is performed. .

For thin or wool fabric, set the value at 0.8[mm], and the first stitch plaiting and trimming can be effectively performed.

- The default is 0.8[mm], and the value can be adjusted from 0.6 to 0.8[mm] by the unit of 0.1[mm].

(4) Sound volume

The function is to set the volume of the sound issued when the power is turned on/off or when a menu is selected.

- The default is OFF (0), and the value can be set at the range of 1 to 10.

(5) Head select

This function is to select the heads you desire to use.

It is not available in this type of machine.

(6) Thread Select

This function is to select appropriate threads by conditions.

- The default is Normal(0). For wool, select Wool(1).

(7) Time Setting

This function is to change the date and time displayed on the upper right side of the screen.

On the Other Settings menu, select No. 7, and the screen where date and time can be set appears as in <Fig. 5.4.7-4>.

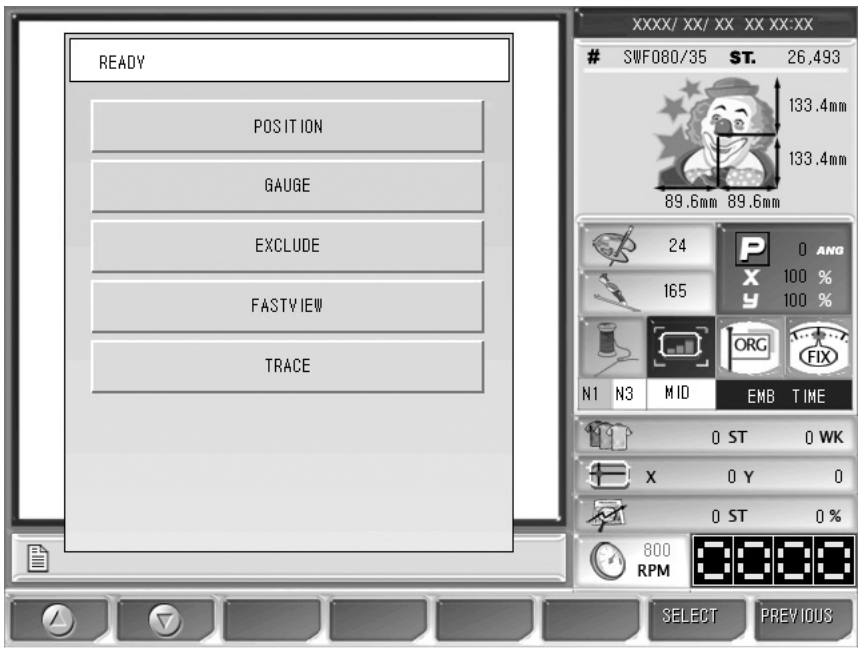
Use the menu move buttons F1 , F2 , and F6 SELECT , F7 SAVE for setting.

For date and time setting, see “4.4.2 Date/Time Change”.

5.5.0 Ready

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

Press F4 READY on the main menu and then sub-menus will appear as in <Fig. 5.5.0-1>.



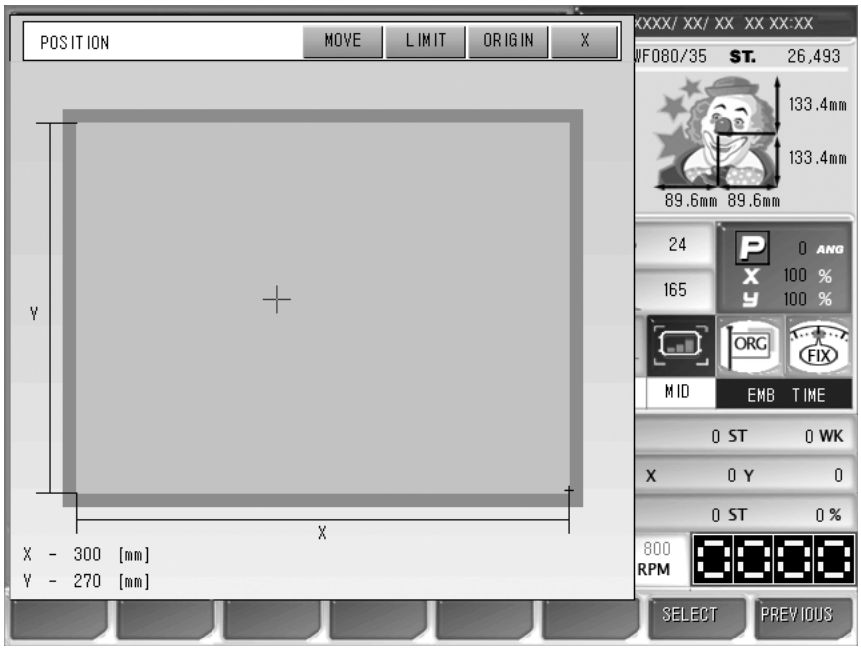
[Fig. 5.5.0-1]

- **Position** : It shows whether the called design contacts the X, Y limits without actually carrying out embroidery work.
- **Gauge** : It automatically generates gauges for the embroidery outline in accordance with the values set in "14. Optimize Method" under "Embroidery parameter setting."
- **Exclude** : It is used to embroider the outline of the called design.
- **Fastview** : It virtually shows the embroidery work for each stitch to display the progressing direction of the design or the stage of color changes.
- **Trace** : It briefly checks whether the frame moves beyond the X, Y limits, if the embroidery work begins from the current position of the frame.

5.5.1 Position

This function is to set the desired position to begin embroidery.

① Select the work position in <Fig. 5.5.0-1>, and then <Fig. 5.5.1-1> will appear.



[Fig. 5.5.1-1]

② The dotted lines within the frame in <Fig. 5.5.1-1> is the maximum horizontal and vertical sizes. The plus (+) mark within the dotted lines indicates the starting point of embroidery and the position of the frame where the current needle bar will begin embroidery.

③ When the desired position within the frame is pressed, the embroidery design will move to the desired position. If there is a red part in the dotted lines, which indicate a design, errors will occur in the X, Y limits during embroidery. Therefore, make sure to select a position where the entire dotted lines are positioned within the frame.

If "Move" is selected after position setting, the frame will move to locate the embroidery design at the desired position.

[Caution]

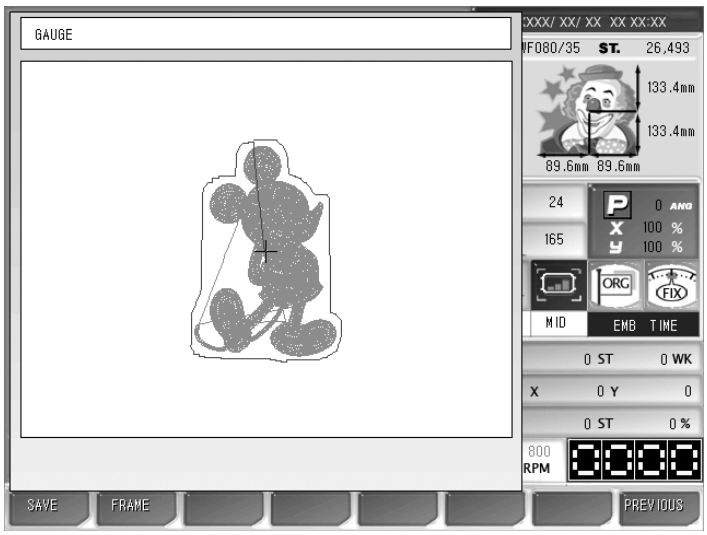
When the main power is off, and the frame is pushed by hand, the frame's origin will change. Likewise, when the frame's origin is changed, the work position function does not properly perform.

(For frame's origin, see "5.8.4 Frame Origin.")

5.5.2 Gauge

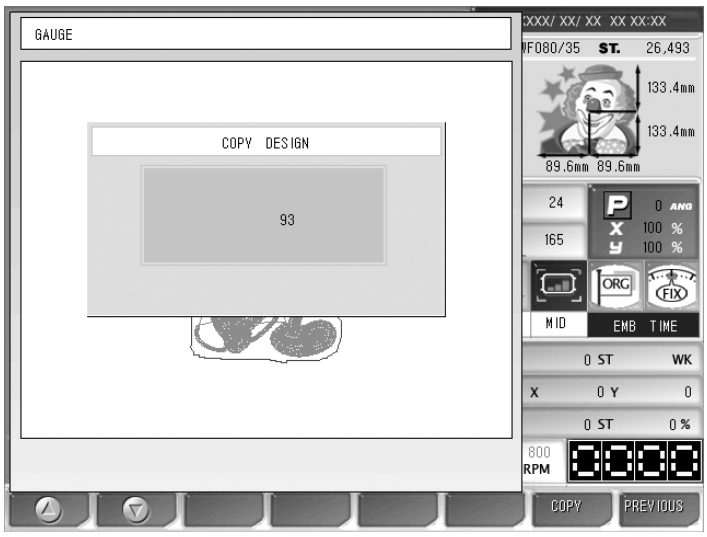
This function is to automatically create the gauge of the design outline.

① Use the menu move buttons in <Fig. 5.5.0-1>, select gauge, and press F7 SELECT. And then <Fig. 5.5.2-1> will appear.



[Fig. 5.5.2-1]

② Press F1 SAVE in <Fig. 5.5.2-1>, and as in <Fig. 5.5.2-2>, the menu for design saving will appear. Select the room to save the design and press F7 COPY, and the design will be saved in the memory. To cancel the saving, press F8 PREVIOUS.



[Fig. 5.5.2-2]

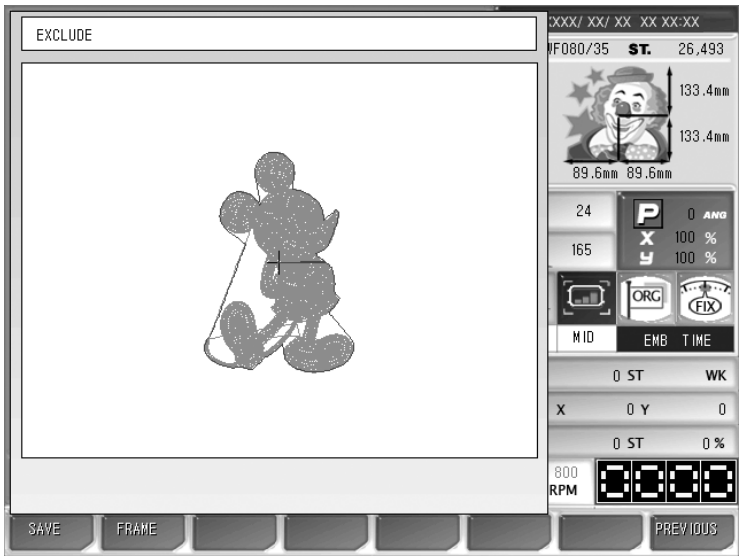
[Note]
The distance between the called design and the gauge line can be set in "14. Optimize Method" of "5.4.2 EMB Parameter Setting."

In <Fig. 5.5.2-1>, F2 FRAME is the function to check whether the gauge line moves beyond the frame by moving the frame along the gauge line.

5.5.3 Exclude

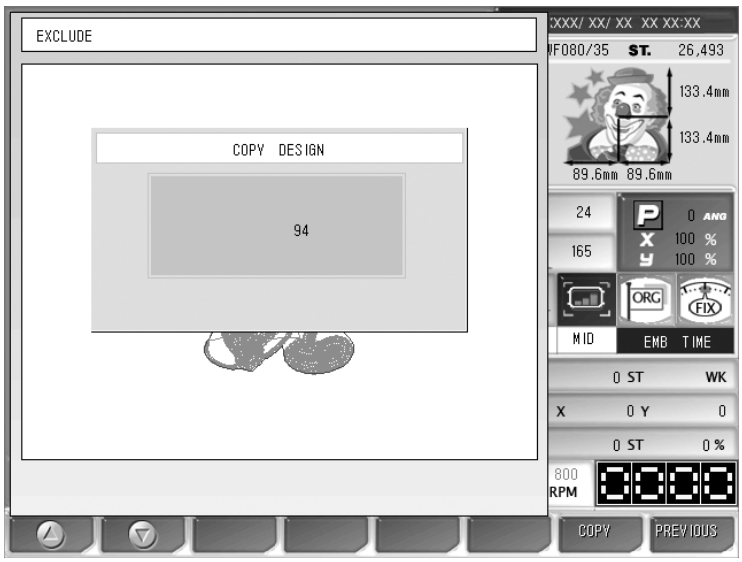
This function is to embroider the outline of the called design.

① Use the menu move buttons in <Fig. 5.5.0-1> to select Outline and press F7 SELECT. And <Fig. 5.5.3-1> will appear.



[Fig. 5.5.3-1]

② Press F1 SAVE in <Fig. 5.5.3-1>, and then the menu for design saving will appear as in <Fig. 5.5.3-2>. Select the room for design saving and press F7 COPY. Then the design will be saved in the memory. To cancel the saving, press F8 PREVIOUS.



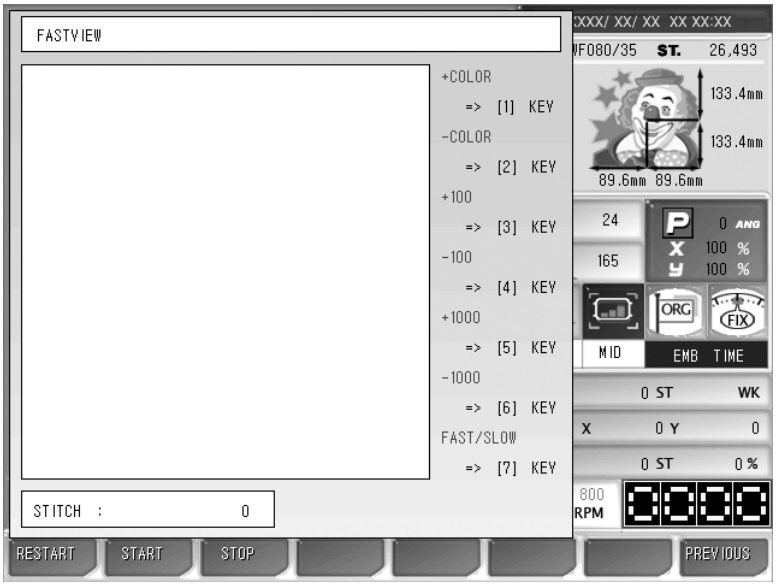
[Fig. 5.5.3-2]

In <Fig. 5.5.3-1>, F2 FRAME is the function aimed to check whether the frame moves beyond the outline by moving the frame along the outline.

5.5.4 Fastview

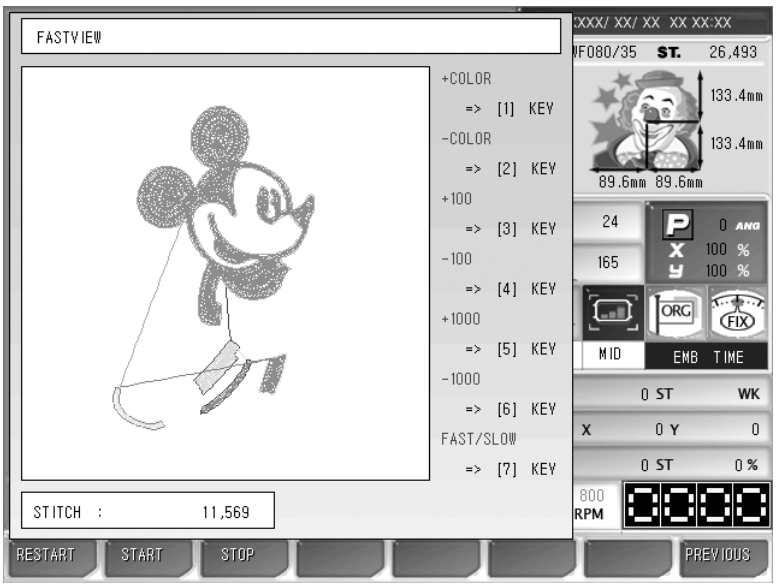
This function is to show the virtual embroidery work for the chosen design. There are such sub-menus such as color, 100 stitches, 1000 stitches, slow view, and fast view.

<Fig. 5.5.4-1> is the screen when "Route Check" is pressed in <Fig. 5.5.0-1>.



[Fig. 5.5.4-1]

As in <Fig. 5.5.4-2>, the embroidery work for the chosen design is displayed one stitch at a time. This shows the procedures of producing the entire design.



[Fig. 5.5.4-2]

■ The following is the description for each button.

Color + (Number key "1") : Shows the increase of stitches until the next color.

Color − (Number key "2") : Shows the decrease of stitches until the previous color.

+100 (Number key "3") : Shows the design after adding 100 stitches each time .

−100 (Number key "4") : Shows the design after subtracting 100 stitches each time.

+1000 (Number key "5") : Shows the design after adding 1000 stitches each time.

−1000 (Number key "6") : Shows the design after subtracting 1000 stitches.

Fast/Slow (Number key "7") : Chooses to display the design on the screen fast or slow. "Fast" means low speed. To set it as the fast speed, press the button again, and then "Slow" appears. This is the setting for high speed. At this stage, when the button is pressed again, the setting returns to the original setting of low speed.

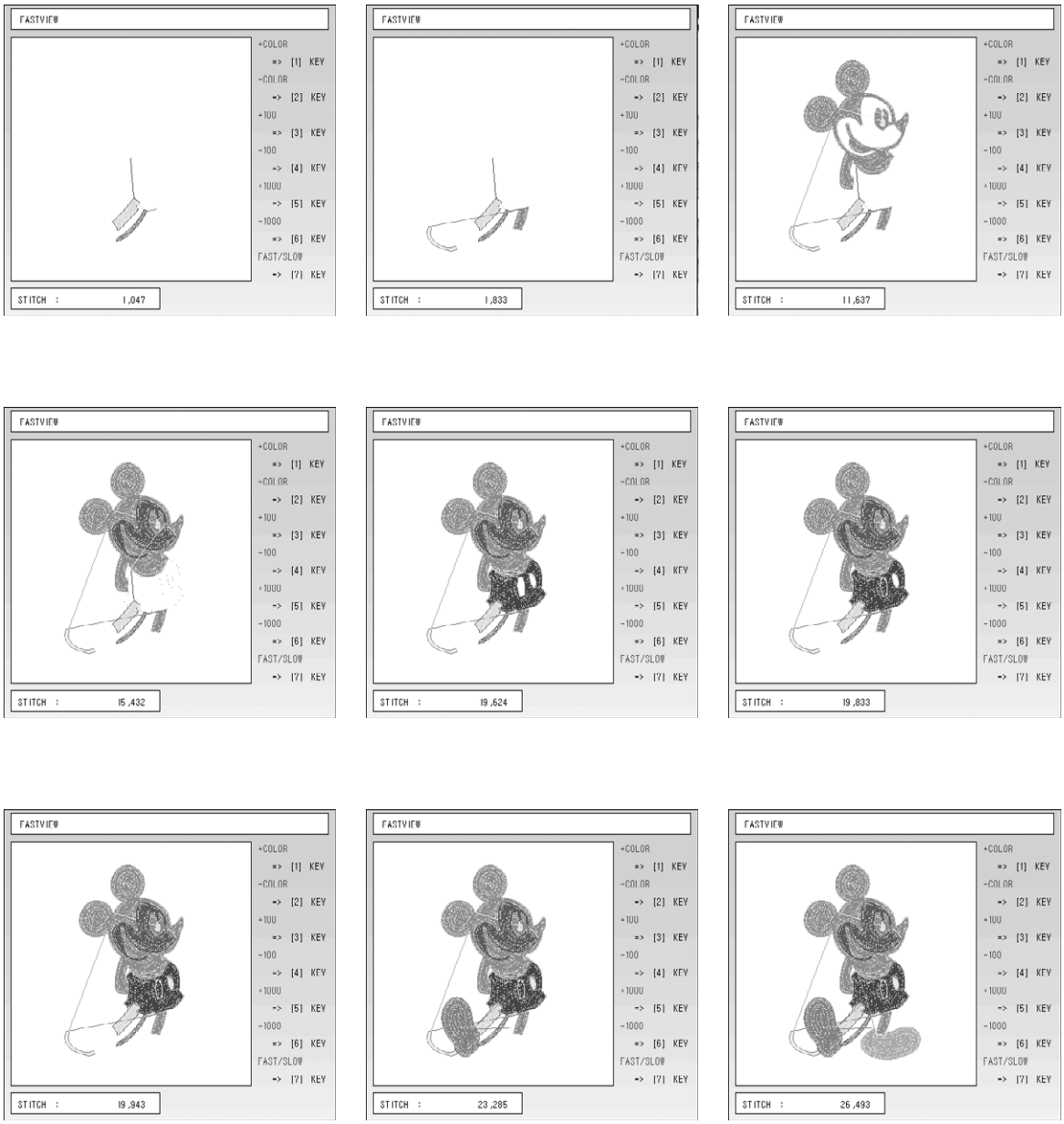
F1 RESTART : Initializes the screen where virtual embroidery is being conducted.

F2 START : After setting the speed, press this button. Then, the design drawing on the screen begins.

F3 STOP : When it is pressed after the start button is pressed, the drawing is paused.

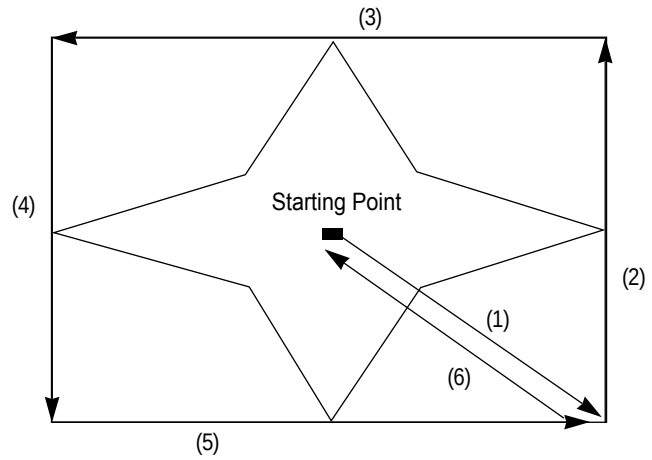
F8 PREVIOUS : Exits from Route Check.

The following screens show the embroidery by color after pressing Color + (Number key "1") for #35 Room.
This design has 24 color change codes.
The following screens show 9 steps of embroidery work.



5.5.5 Trace

① 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.



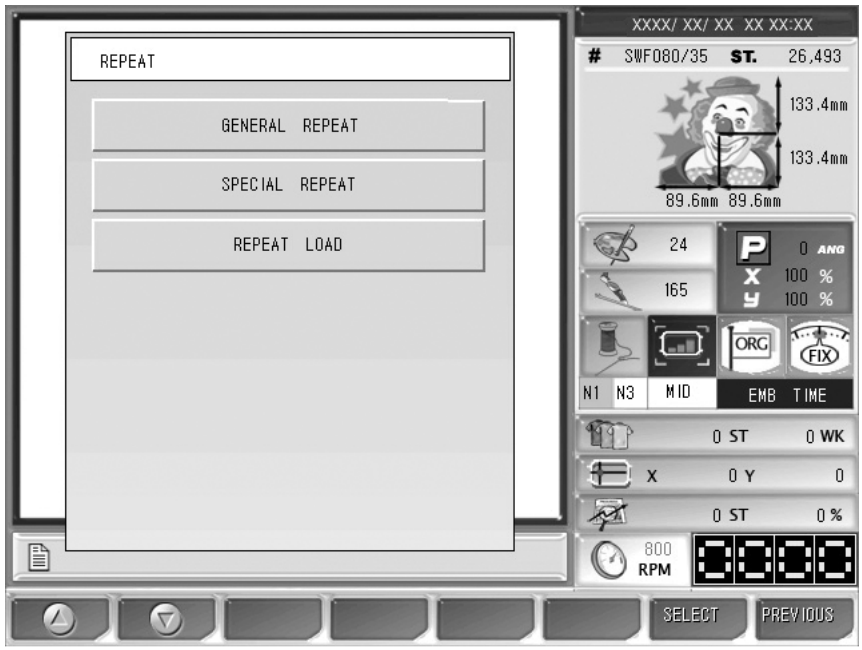
[Fig. 5.5.5-1]

② The arrow marks in <Fig. 5.5.5-1> 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.

5.6.0 Repeat

– This function is to embroider a single or various designs within one frame repeatly at the same time.

<Fig. 5.6.0-1> appears when F5 REPEAT is selected in <Fig. 5.6.0-1>.

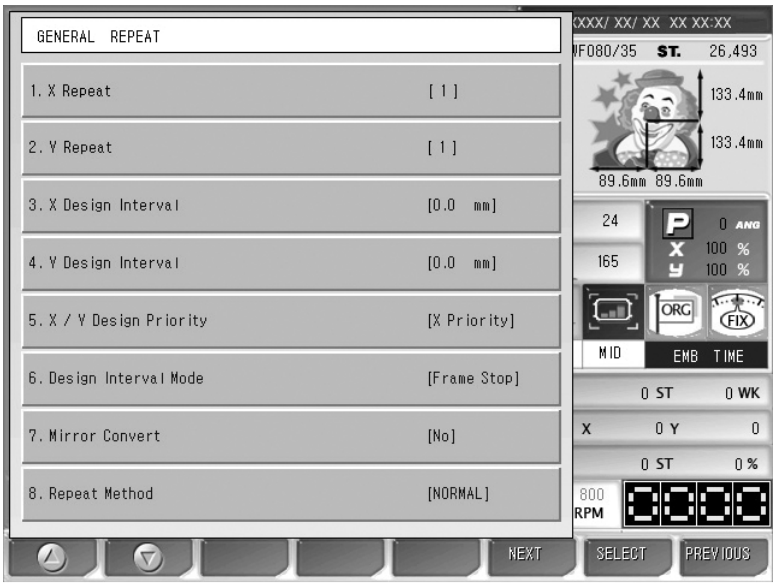


[Fig. 5.6.0-1]

- **General Repeat** : It can embroider a single design called repeatly up to 99 times horizontally and vertically.
- **Special Repeat** : It calls various designs saved in the memory and supports up to 64 times of repeat work. Angle, X-axis reverse, enlargement, reduction and other various editing can be freely made.
- **Repeat Load** : It calls out the repeat work saved in the memory.

5.6.1 General Repeat

This function is to embroider one design repeatedly along the X and Y axes.
<Fig. 5.6.1-1> will appear when General Repeat is selected in <Fig. 5.6.0-1>.



[Fig. 5.6.1-1]

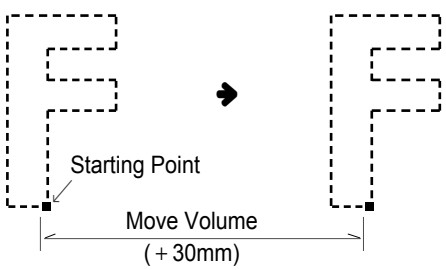
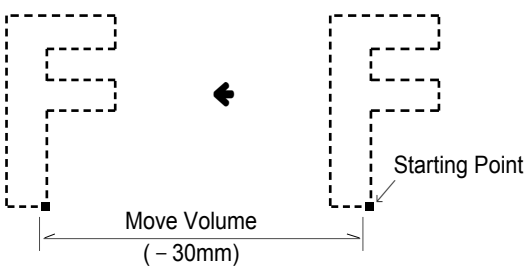
① X Repeat : Sets the number of repetitions along the X axis. The range of repetition settings is from 1 to 99.

② Y Repeat : Sets the number of repetition along the Y axis. The range of repetition settings is from 1 to 99.

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

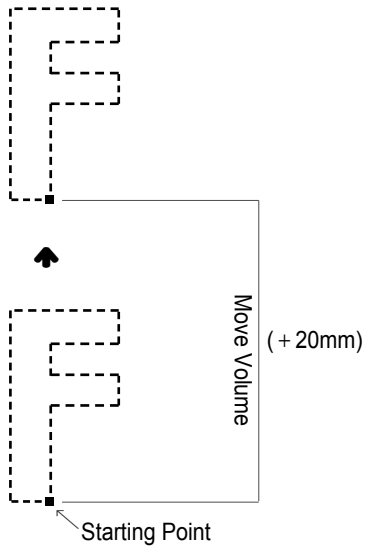
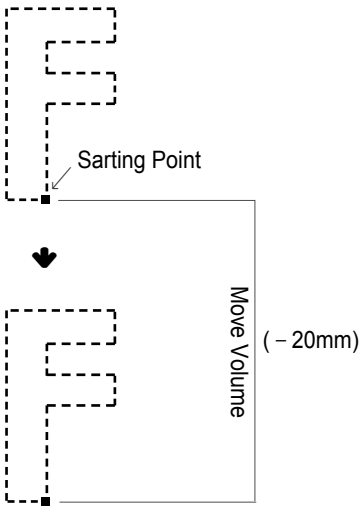
③ X Design Interval : It sets the distances between the starting points of the repeated design along the X axis.
The signs of move(+ / −) determines the direction of repetition.

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

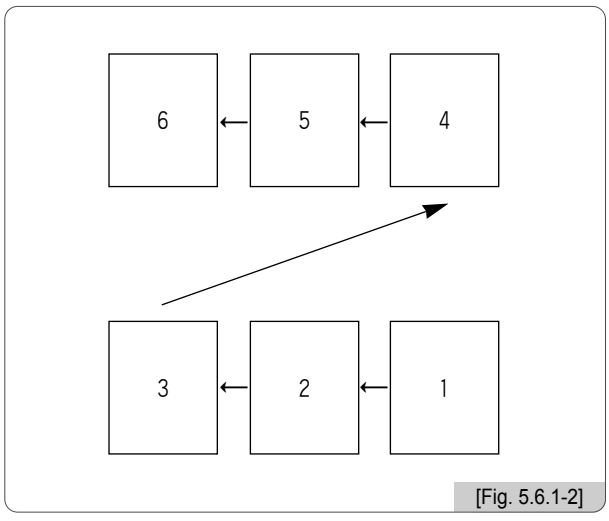
Move volume set at + 30mm	Move volume set at − 30mm
	

④ Y Design 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.

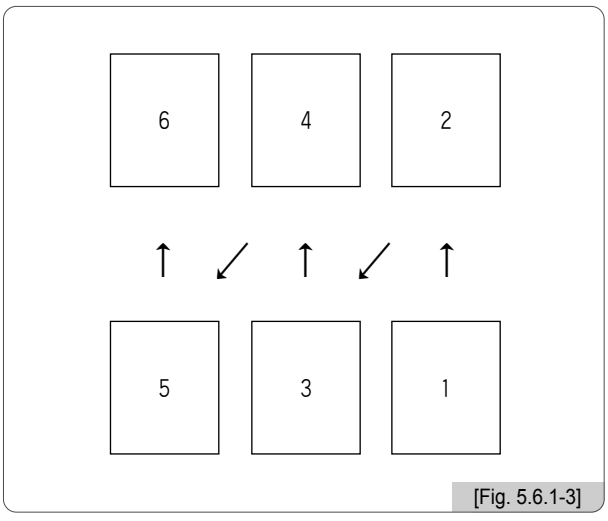
- + : Repeat in the right direction
- − : Repeat in the left direction

Move Volume Set at + 20mm	Move Volume Set at − 20mm
	

⑤ X/Y Design Priority : It determines the priority in the X or Y direction.
In <Fig. 5.6.1-2>, the X direction is a priority. In <Fig. 5.6.1-3>, the Y direction is a priority.



[Fig. 5.6.1-2]

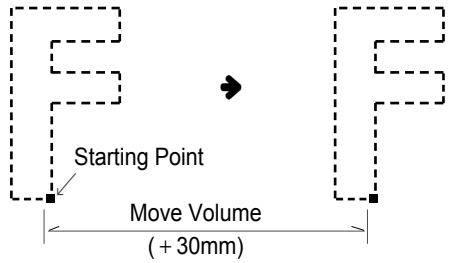
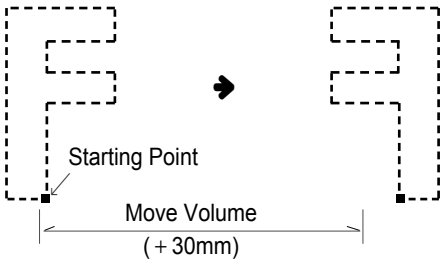
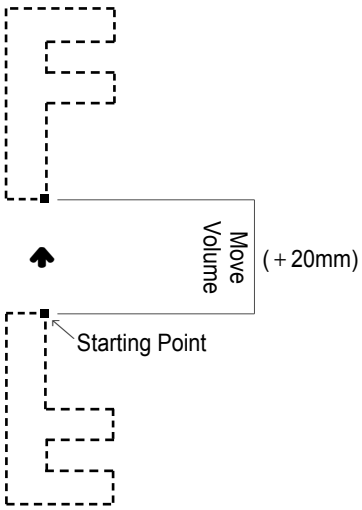
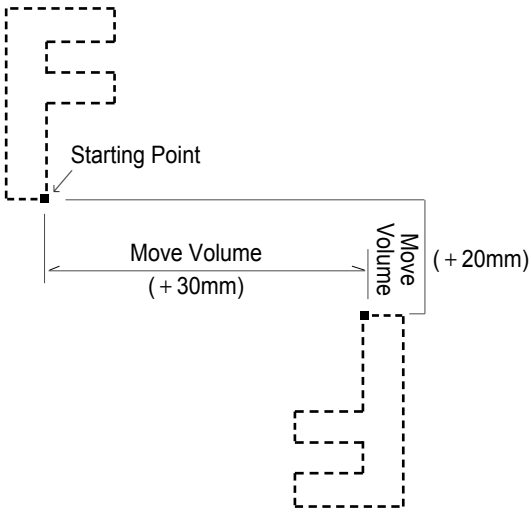


[Fig. 5.6.1-3]

⑥ Design Interval Mode : This function is to set the moving methods between repeated designs. To move a design, Stop Code and Jump Code can be used.

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

⑦ Mirror Convert : This function is to set the design to look like the one reflected on the mirror.

NO	X
	
Y	**X Y**
	

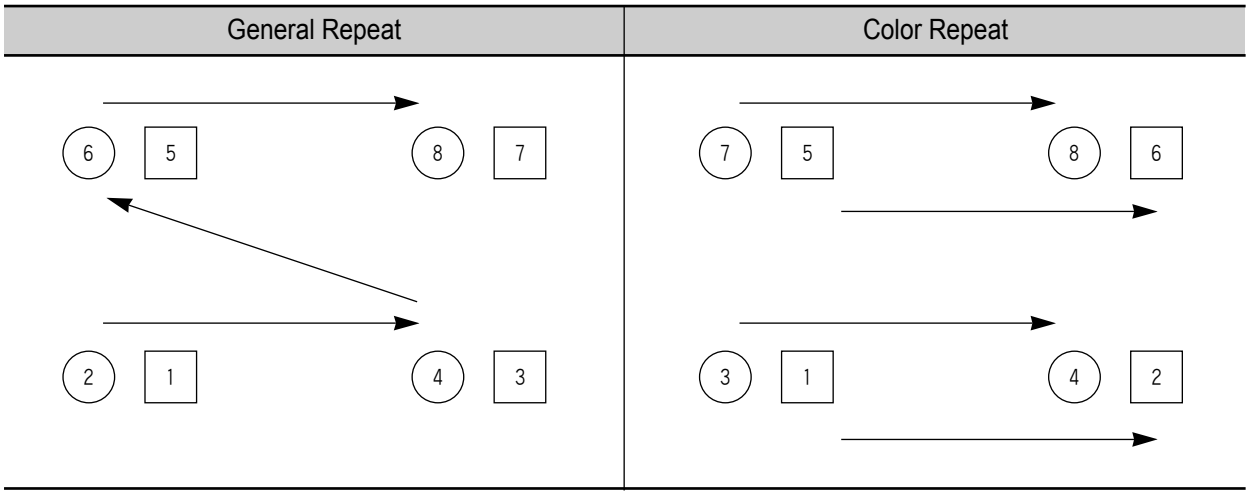
When entering the values as below, the following settings will be made.

Value	Setting
0	NO
1	X
2	Y
3	X_Y

⑧ Repeat Method

There are two types of repeat including general and color repeat. Color repeat is to conduct same color embroidery repetitively to save the embroidery time. The following explains how to set each type of repeat work.

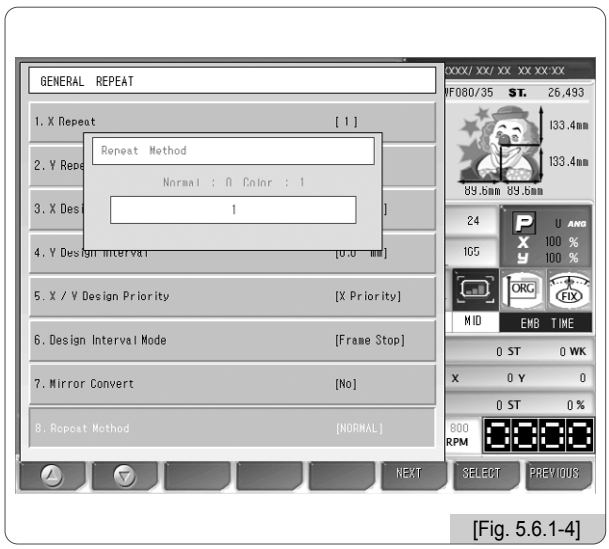
◯ : Red, □ : Blue / x = 2, Y = 2 / Priority : X priority / Jump Code



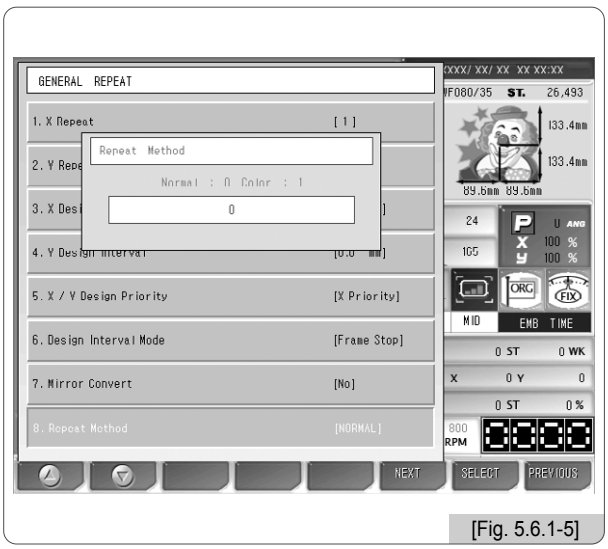
General Repeat Order : 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 ⇒ 8 colors
Color Repeat Order : 1,2 - 3,4 - 5,6 - 7,8 ⇒ 4 colors

Ⓐ Press "8. Repeat Method" as in <Fig. 5.6.1-1> and the screen for selecting a repeat method appears.

Ⓑ For color repeat, press "1" as in <Fig. 5.6.1-4> and then press [SET]. For general repeat, press "0" as in <Fig. 5.6.1-5> and then press [SET].



[Fig. 5.6.1-4]



[Fig. 5.6.1-5]

© If the repeat type is COLOR(1), “7. Mirror Convert” cannot be used. If the repeat type is NORMAL(0), the function can be used.

[Fig. 5.6.1-6]

[Exercise 5.6.1-1] Call No. 35 design, conduct the following repeat work, and save it.

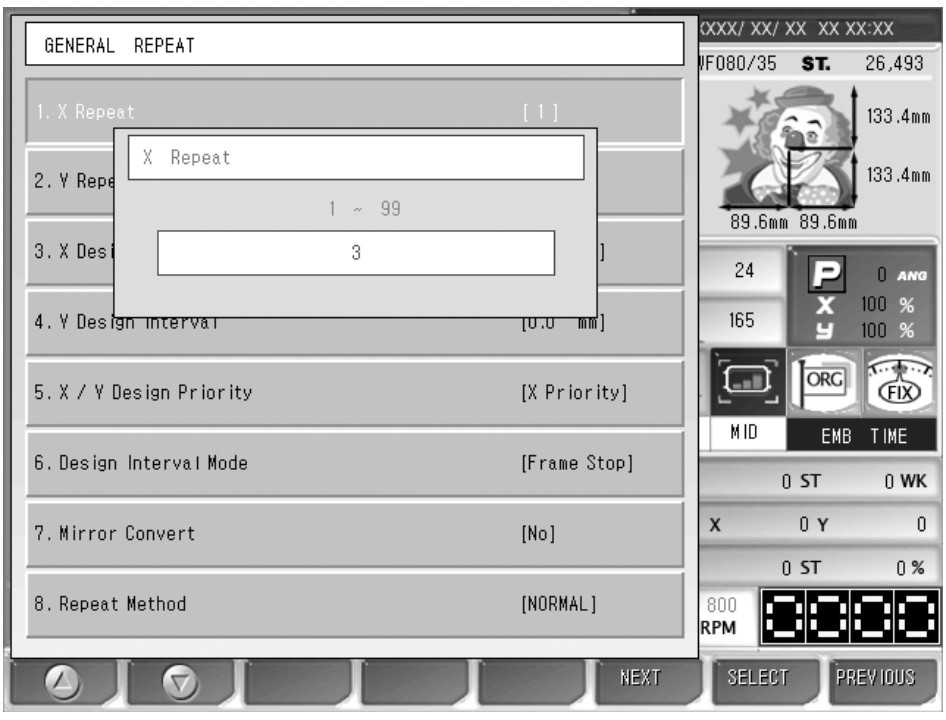
- X-axis repetition : 3
- Y-axis repetition : 3
- X-axis design gap : 300 mm
- Y-axis design gap : -300 mm
- X/Y design priority : Y first
- Design move method : Jump code
- Mirror Convert : Normal
- Save method : Data saving
- Repeat method : general repeat

1. Call No. 35 design.
   (For design call, refer to "5.2 Design Call".)

2. Press F5 REPEAT on the main function menu and select Repeat. Then <Fig. 5.6.0-1> appears.
   If General Repeat is selected, <Fig. 5.6.1-1> will appear.

3. Press "1. X Repeat"
   <Fig. 5.6.1-7> will appear for setting.

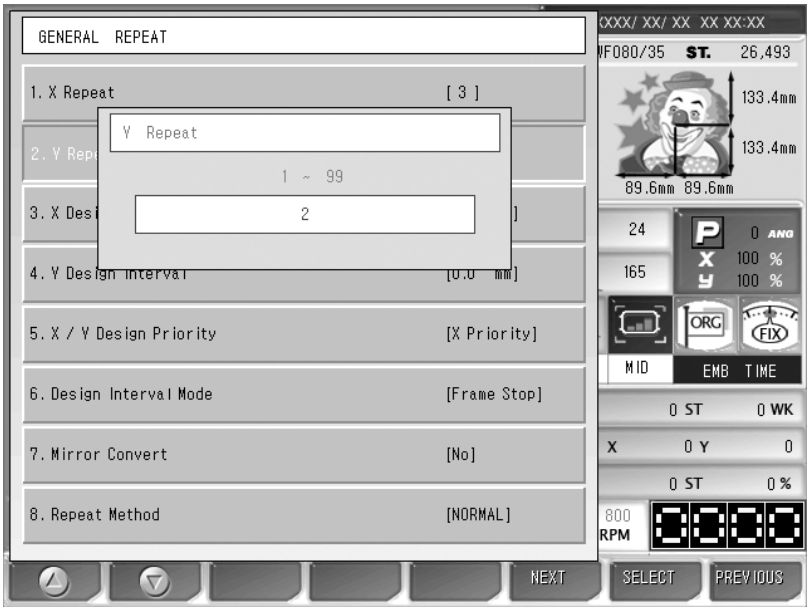
4. Use the number button to press 3 and then press SET.



[Fig. 5.6.1-7]

5 Press “2. Y Repeat”.
<Fig. 5.6.1-8> will appear for setting.

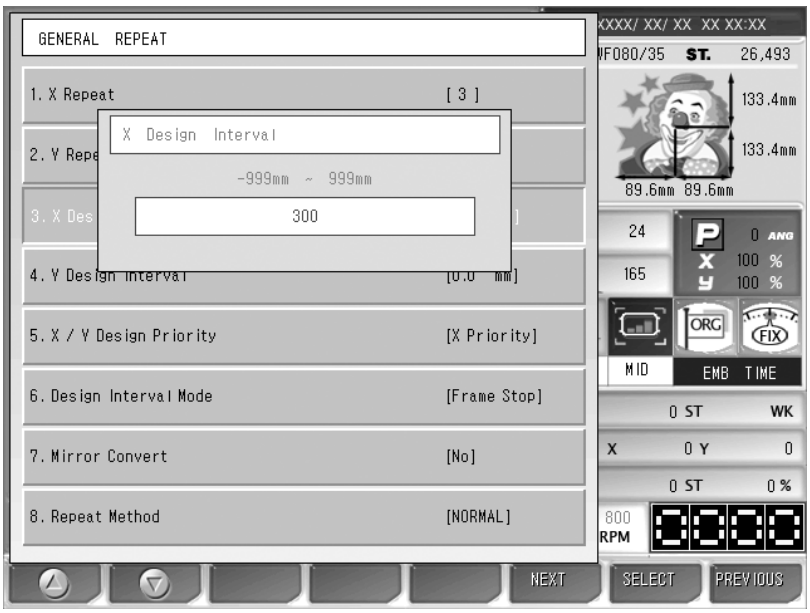
6 Use the number button to press 2 and then press [SET].



[Fig. 5.6.1-8]

7 “3. X Design Interval”.
<Fig. 5.6.1-9> appears for setting.

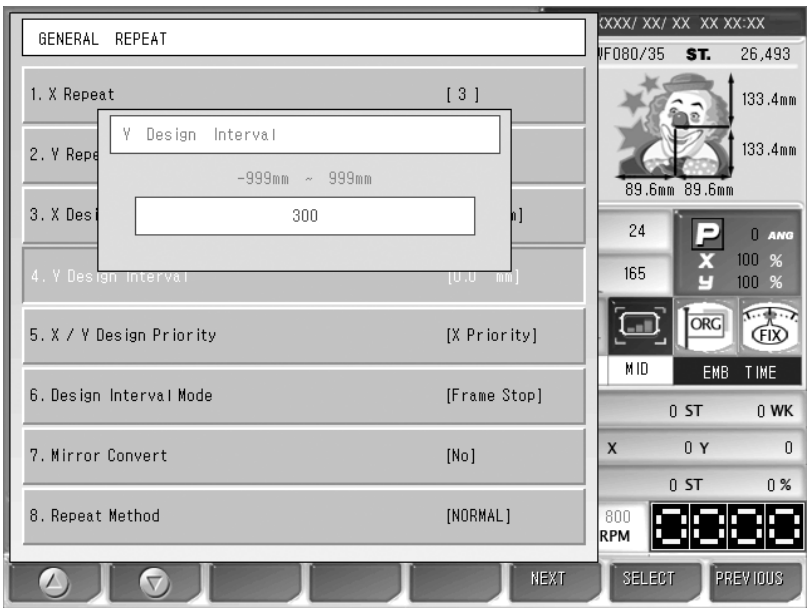
8 Press 300 by using the number buttons, and press [SET].



[Fig. 5.6.1-9]

⑨ Press “4. Y Design Interval”.
<Fig. 5.6.1-10> will appear for setting.

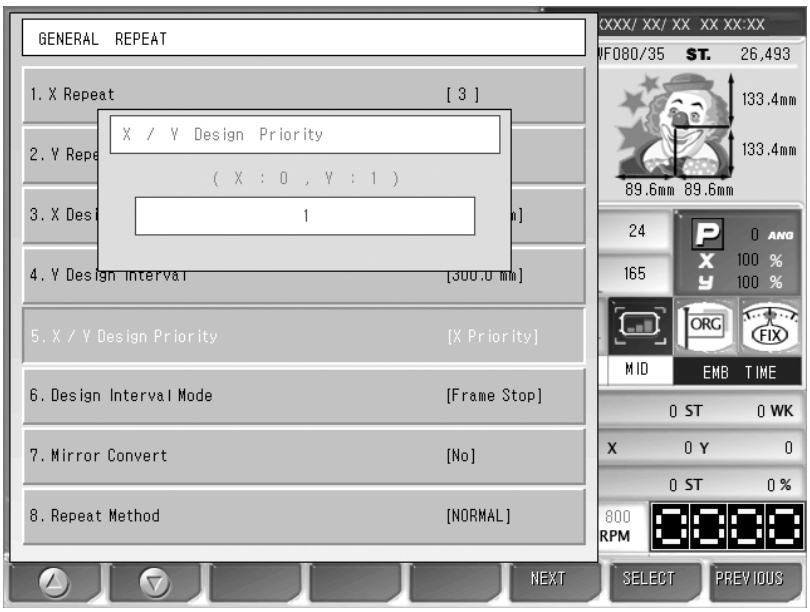
⑩ Use the number buttons to enter 300 and press [SET].



[Fig. 5.6.1-10]

⑪ Press “5. X/Y Design Priority”.
<Fig. 5.6.1-11> will appear for setting.

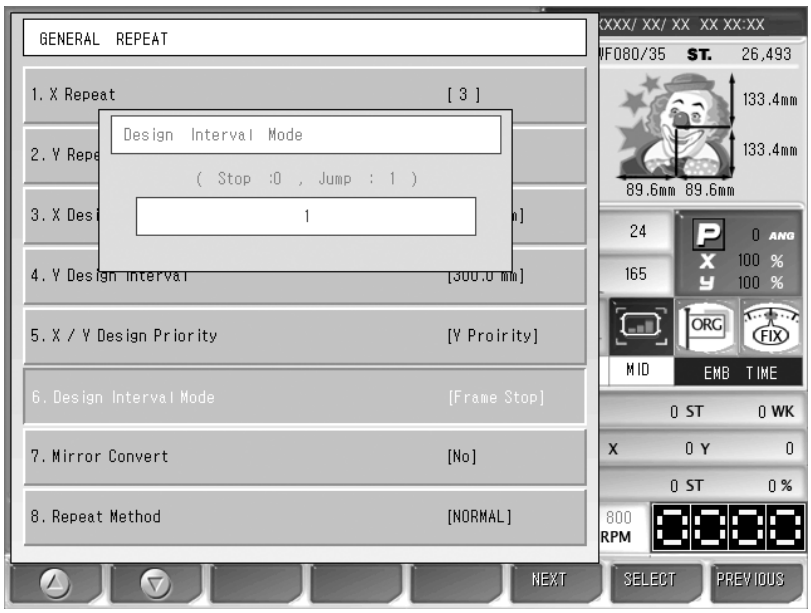
⑫ Press 1 by using number buttons, and then press [SET].



[Fig. 5.6.1-11]

⓭ Press “6. Design Interval Mode”.
<Fig. 5.6.1-12> will appear for setting.

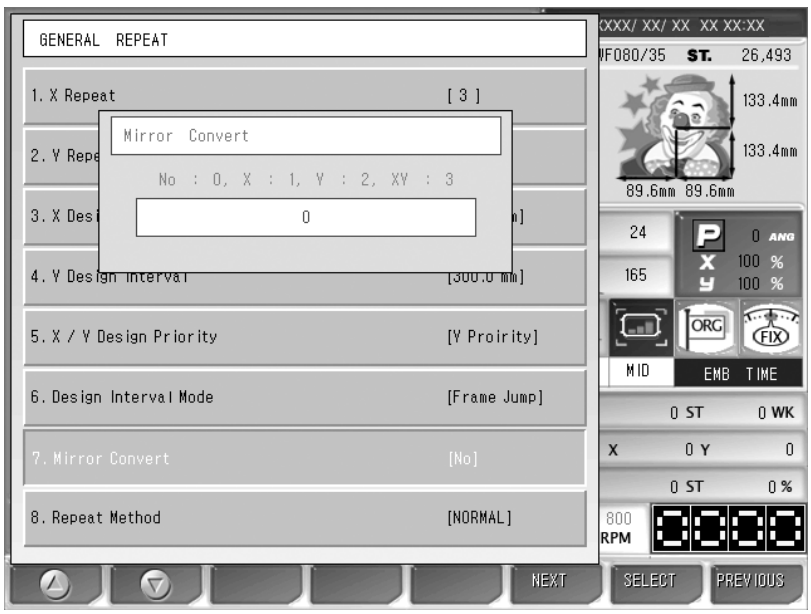
⓮ Press 1 by using number buttons, and then press [SET].



[Fig. 5.6.1-12]

⓯ Press “7. Mirror Convert”.
<Fig. 5.6.1-13> will appear for setting.

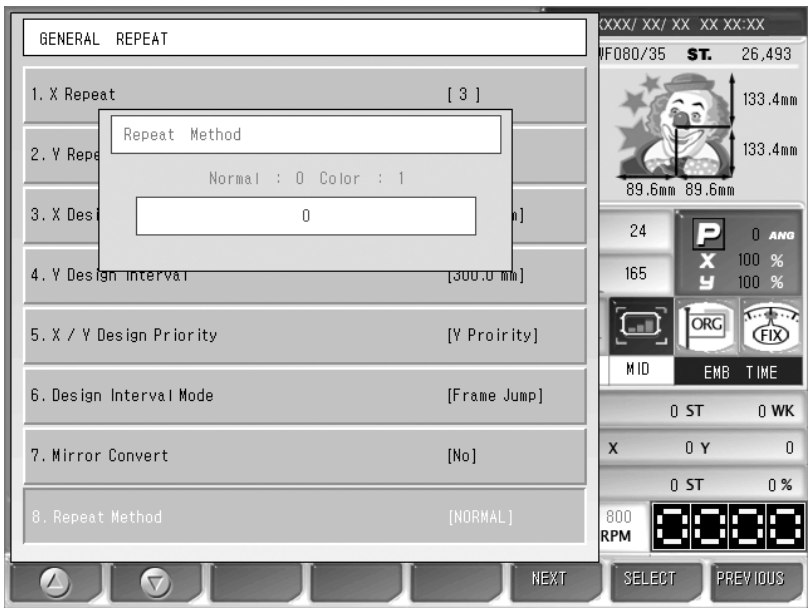
⓰ Press 0 by using the number buttons, and then press [SET].
(The default of ⓯, ⓰ is normal repeat, so that it is unnecessary to handle them in this exercise. However, it was described just for the purpose of showing an example.)



[Fig. 5.6.1-13]

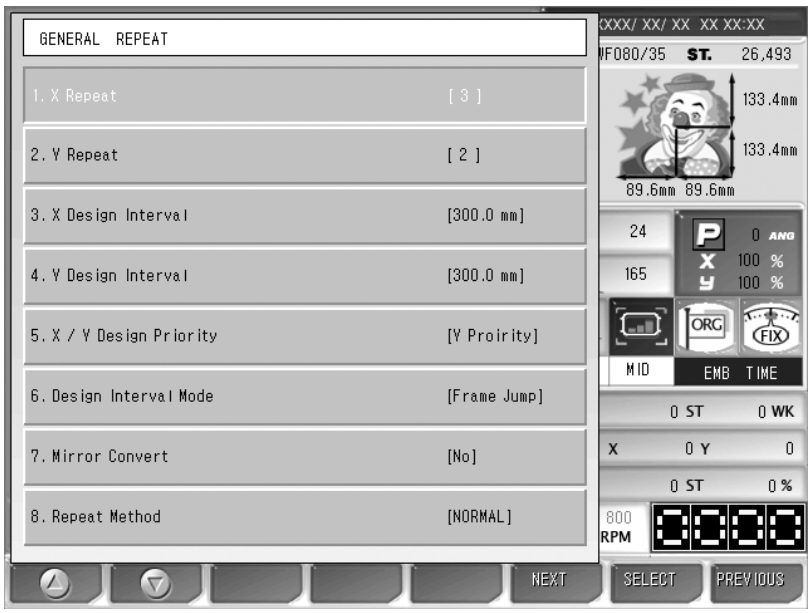
⑰ Press “8. Repeat Method”.
<Fig. 5.6.1-14> appears for setting.

⑱ Press 0 by using the number buttons and press [SET].
(The default of ⑰, ⑱ is normal repeat, so that it is necessary to handle them in this exercise. However, they were covered for the purpose of showing an example.)



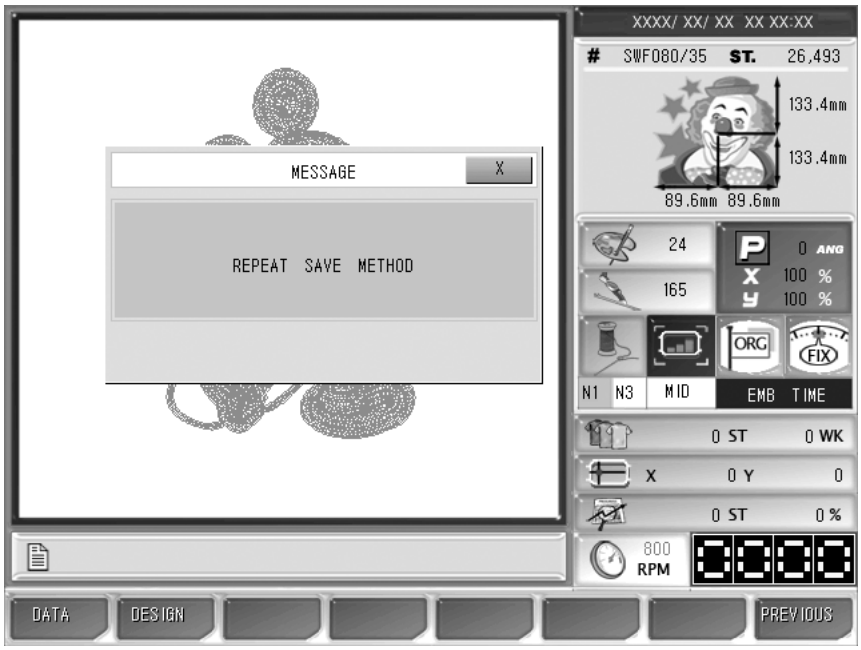
[Fig. 5.6.1-14]

⑲ After checking all settings are proper, press [F6 NEXT].
<Fig. 5.6.1-15> shows the screen where all settings are done.



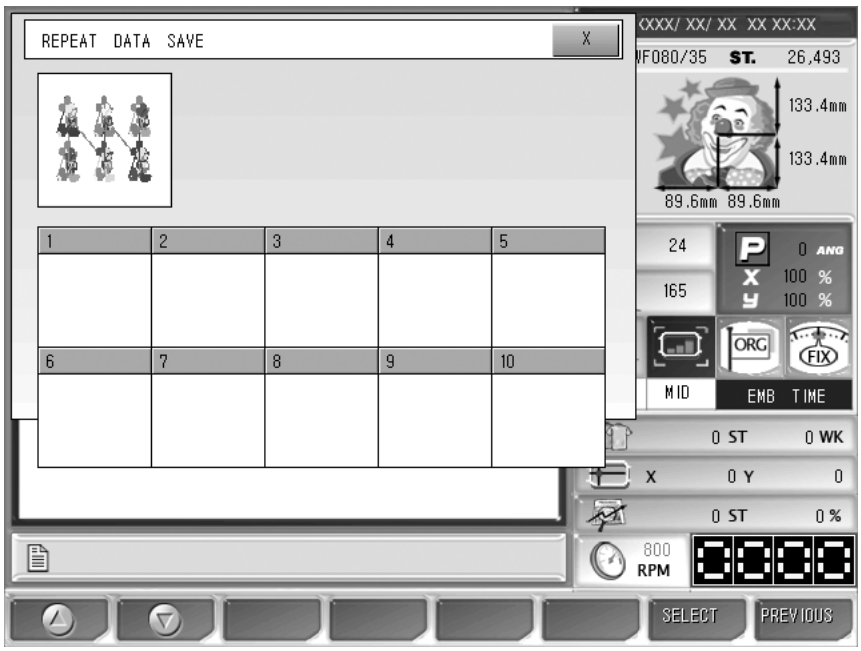
[Fig. 5.6.1-15]

<Fig.5.6.1-16> is the screen choosing which repeat method to be saved.



[Fig. 5.7.1-16]

20 Press F1 DATA .

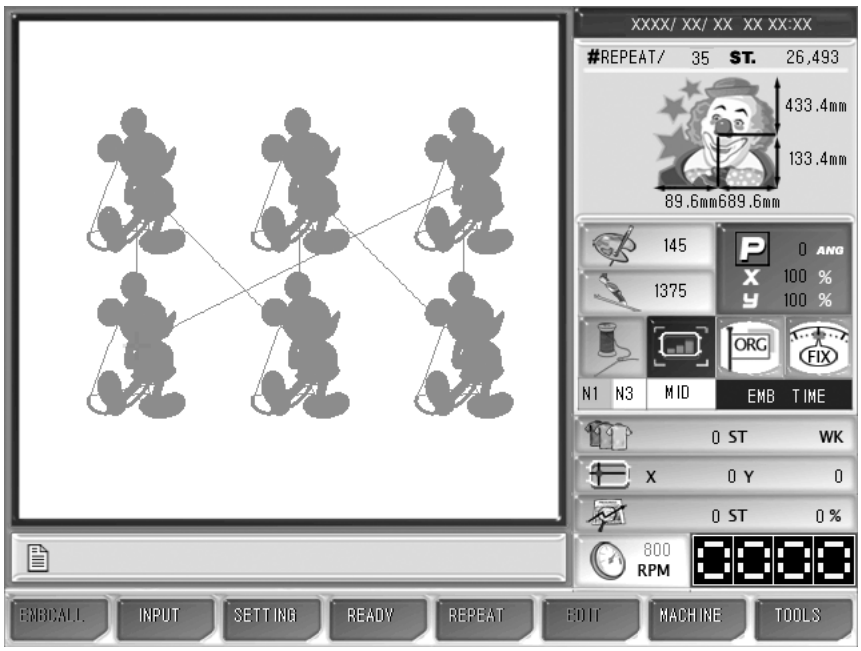


[Fig. 5.7.1-17]

<Fig. 5.6.1-17> is the screen where the room number for saving is selected.
Currently, all ten rooms are empty.

㉑ Press “Section 1”.

As in <Fig. 5.6.1-18>, Repeat is seen on the screen. If Repeat is selected, EMB call and edit functions cannot be used. The design button color will be changed to blue.



[Fig. 5.6.1-18]

[Note]
During repeat work, the EMB call and input/output functions cannot be used.

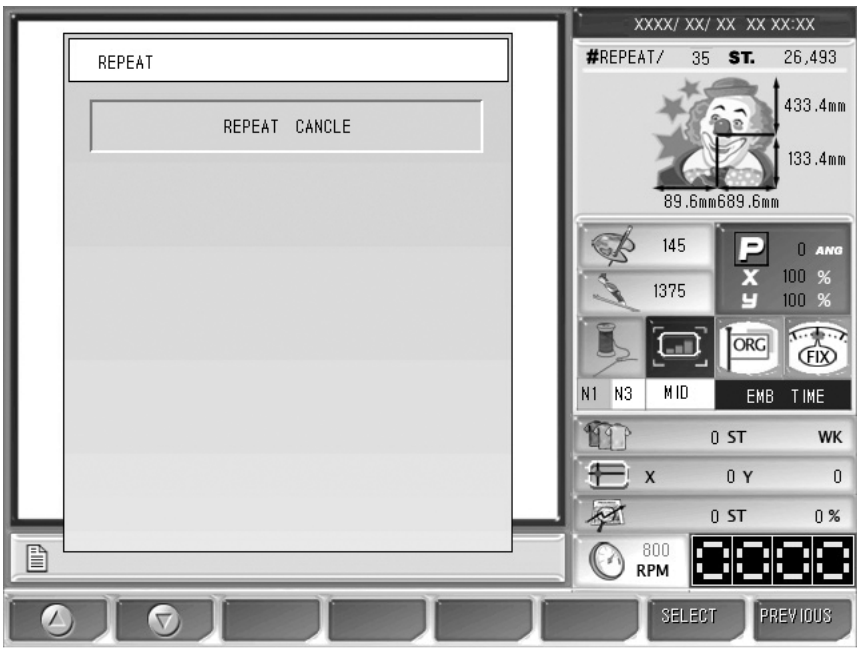
[Note]
When repeat work is saved, it overwrites the existing repeat work. Therefore, repeat work is unnecessary to be deleted.

[Exercise 5.6.1-2] Cancel the repeat setting

(Caution: This function is applicable only when the repeat function was previously set.)

1. Press F5 REPEAT which is marked in blue on the main function menu.

2. When <Fig. 5.6.1-19> appears, press SET. This will cancel the repeat setting.



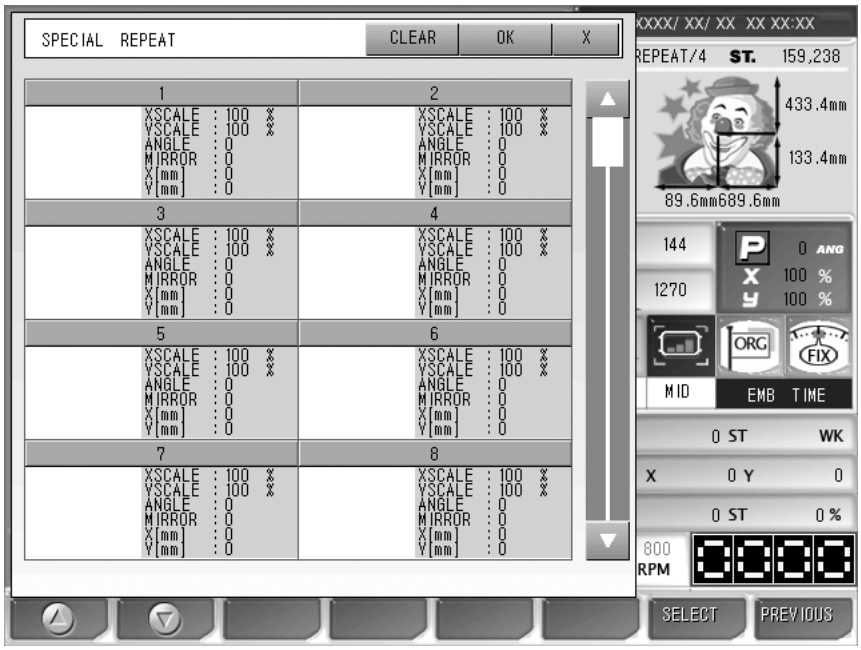
[Fig. 5.6.1-19]

5.6.2 Special Repeat

This function is to synthesize designs. It can synthesize various designs saved in the memory and produce 64 types of design.

<Fig. 5.6.2-1> will appear when Special Repeat is pressed as in <Fig. 5.6.0-1>.

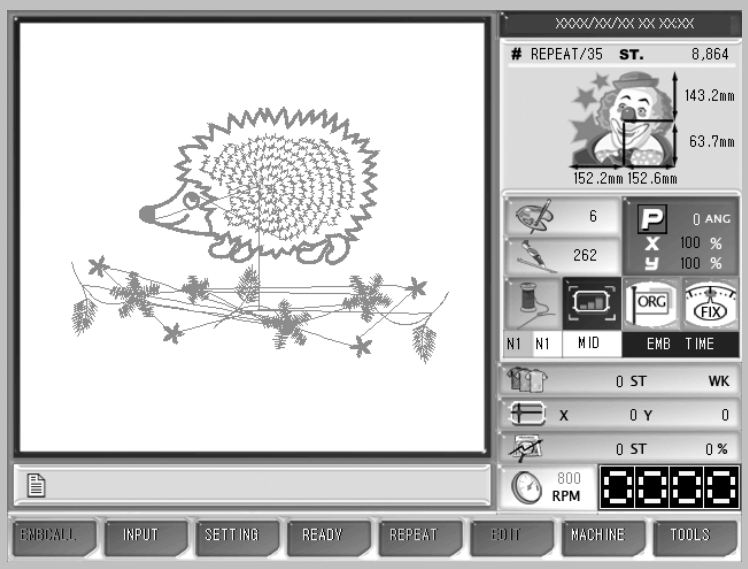
Eight designs can be set on one screen. To synthesize more designs, use the menu move key to go to the next screen.



[Fig. 5.6.2-1]

[Exercise 5.6.2-1] Synthesize No. 51, No. 81 designs as in <Fig. 5.6.2-2> by using Special Repeat function.

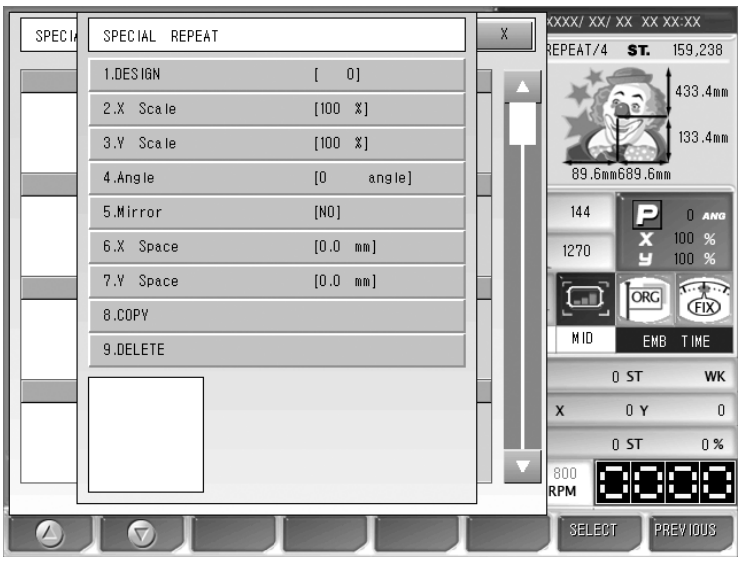
No. 46 design: X_Scale 150%, Y_Scale 150%
No. 81 design: X_Scale 200%, Y_Scale 200%



[Fig. 5.6.2-2]

1. Press Special Repeat in <Fig. 5.6.0-1>.
   Then, <Fig. 5.6.2-1> will appear.

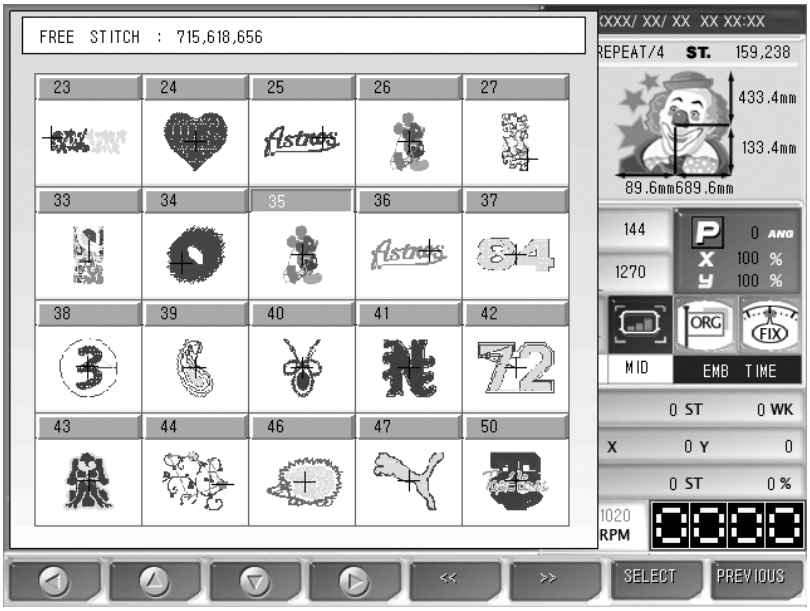
2. Use the menu move key in <Fig. 5.6.2-1>, select No. 1 section, and press F7 SELECT .
   <Fig. 5.6.2-3> will appear for setting.



[Fig. 5.6.2-3]

3. Select "1. Design" in <Fig. 5.6.2-3>, and press F7 SELECT .
   The design call screen will appear.

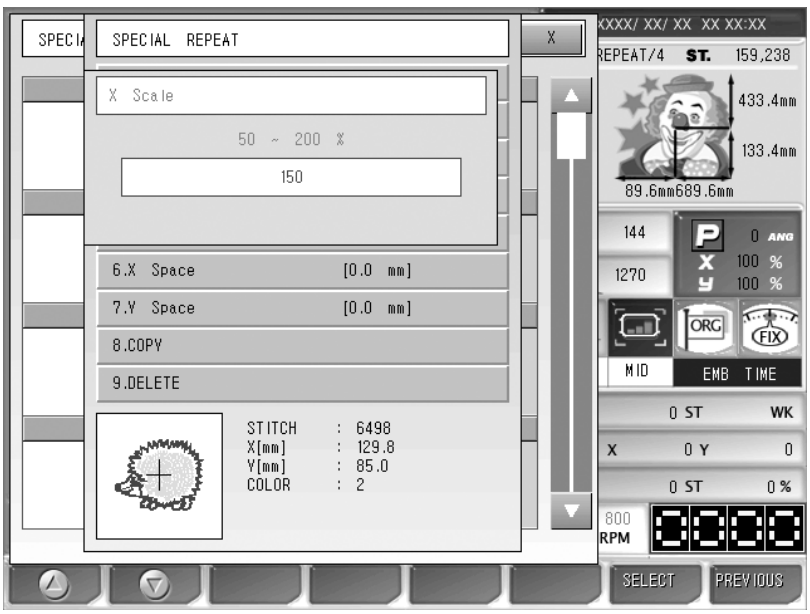
④ Use the menu move key to move to No. 46 design.
Then, <Fig. 5.6.2-4> will appear.



[Fig. 5.6.2-4]

⑤ Use the menu move buttons in <Fig. 5.6.2-4> to go to No. 46 design, and press F7 SELECT .

⑥ In <Fig. 5.6.2-3>, press "2. X Scale".
Then, <Fig. 5.6.2-5> will appear.
Enter 150 by using the number buttons and press SET .



[Fig. 5.6.2-5]

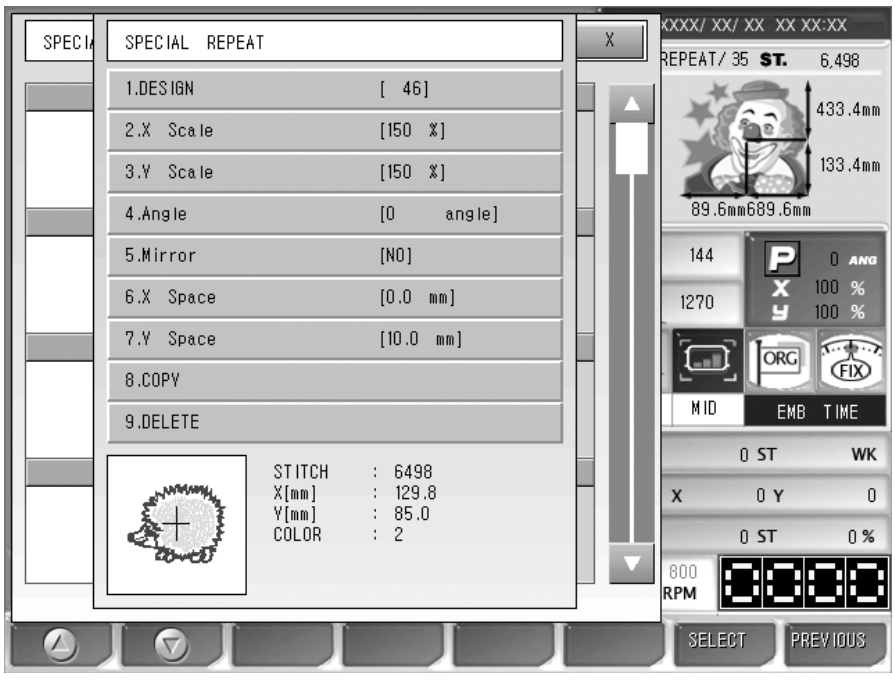
⑦ Select “3. Y Scale” and enter 150.
(For “4. Angle”, “5. Mirror”, their settings shall be left as default.)

⑧ For “6. X Space”, set the value at 0.
For “7. Y Space”, set the value at 10.

[Note]
For the first design to be synthesized, do not make settings for “6. X Space” and “7. Y Space”. Based on the first design, the positions of the second design’s X Space and Y Space will be changed. It is difficult to set X Space and Y Space of the second design at the same time. To find appropriate positions, the position setting shall be conducted several times.

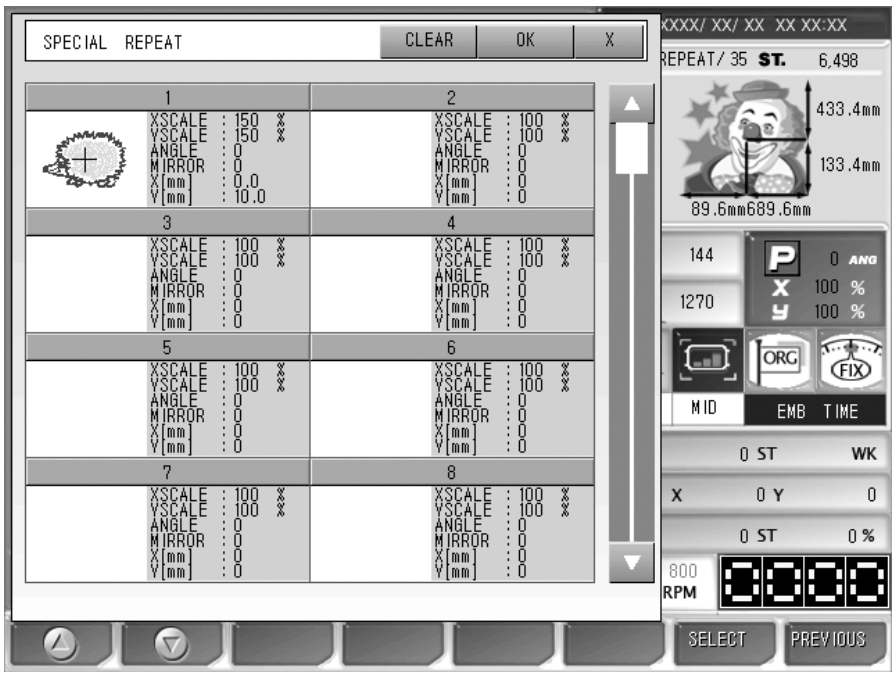
The first design was set as in <Fig. 5.6.2-6>.

⑨ Press F8 PREVIOUS after making setting in <Fig. 5.6.2-6>.



[Fig. 5.6.2-6]

As in <Fig. 5.6.2-7>, the first design setting has been completed.



[Fig. 5.6.2-7]

⑩ Use the menu move buttons in <Fig. 5.6.2-7> and move to No. 2 item, and then press F7 SELECT .
As in <Fig. 5.6.2-3>, the screen for setting appears.

⑪ In "1. Design", select No. 11 design.

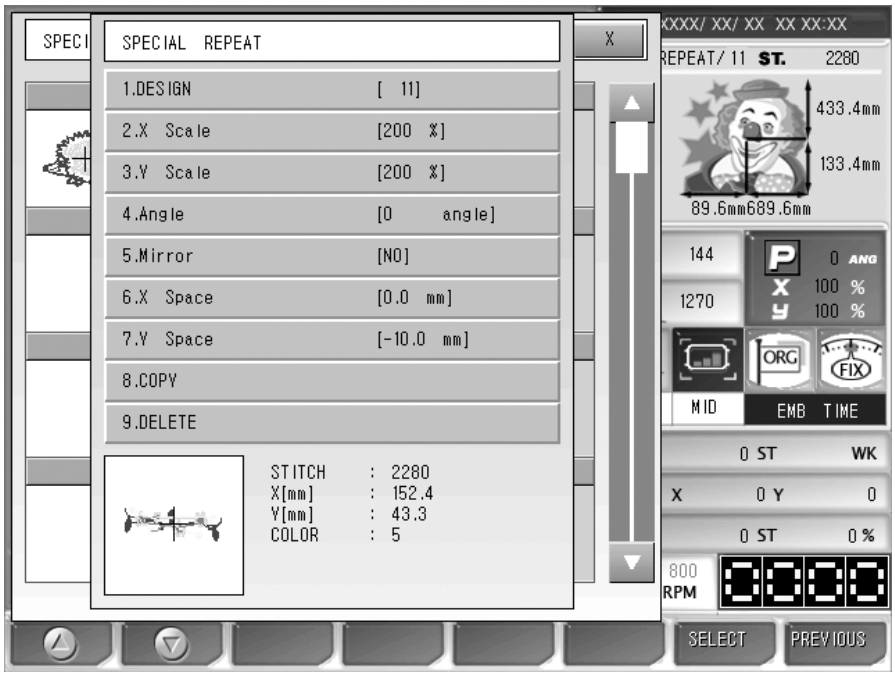
⑫ Enter 200 for "2. X Scale."

⑬ Enter 200 for "3. Y Scale."
(For "4. Angle", "5. Mirror", leave their setting as default.)

⑭ Enter 0 for "6. X Space".
Enter -10 for "7. Y Space".

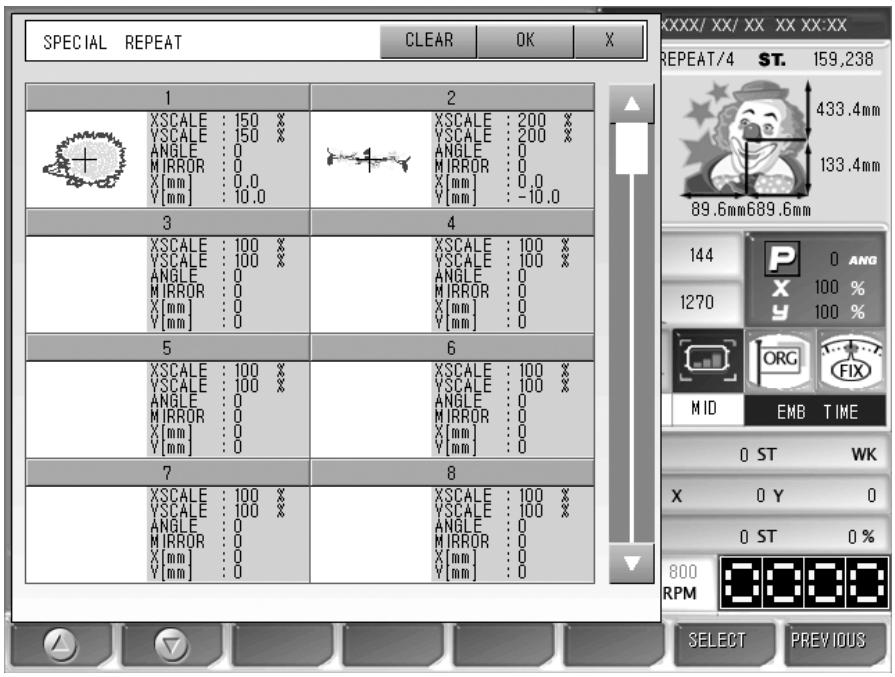
The second design was set as in <Fig. 5.6.2-8>.

⑮ Make the setting as in <Fig. 5.6.2-8> and press F8 PREVIOUS .



[Fig. 5.6.2-8]

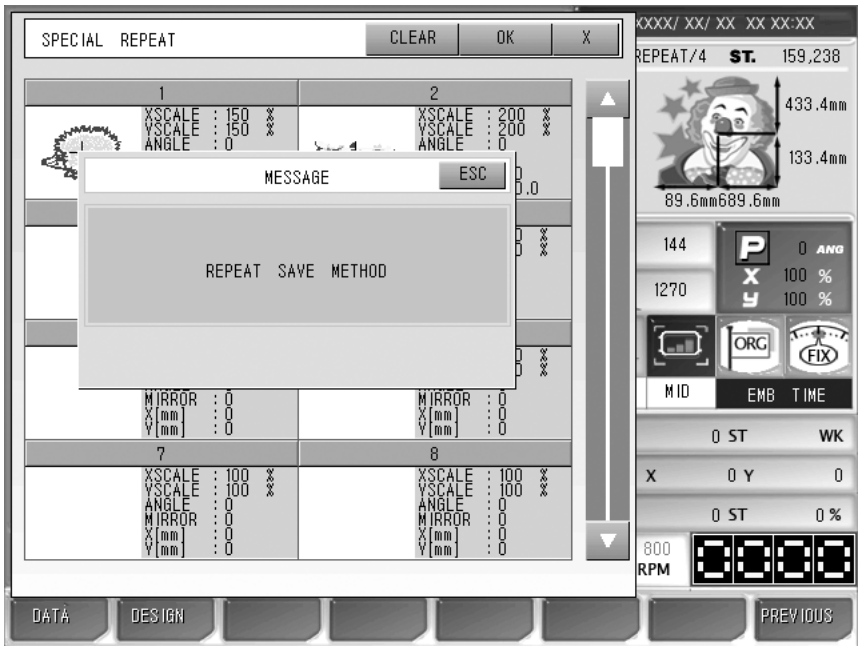
As in <Fig. 5.6.2-9>, the setting has been completed.



[Fig. 5.6.2-9]

⑯ Press F8 PREVIOUS on the upper side of the screen in <Fig. 5.6.2-9>.

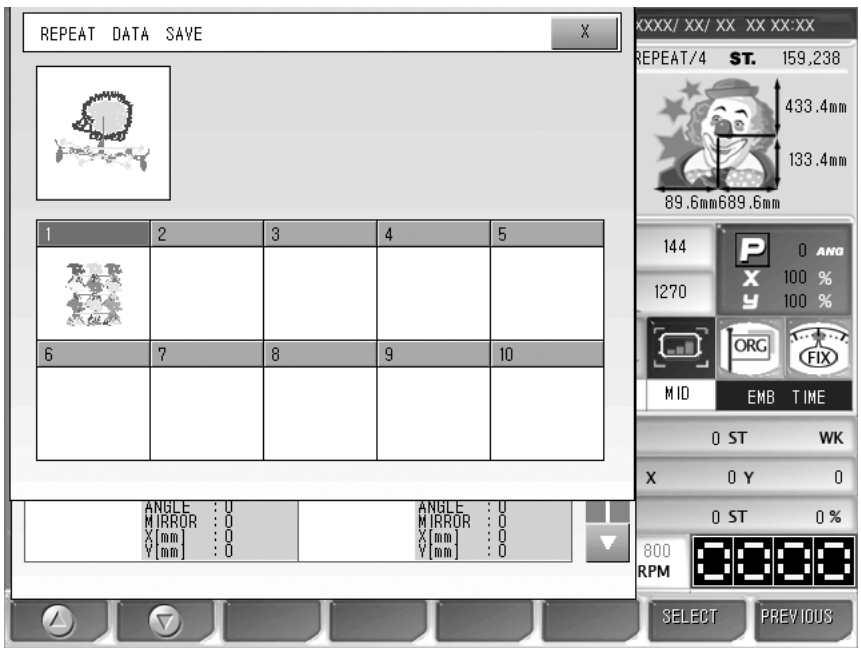
As in <Fig. 5.6.2-10>, the screen asking for the saving method will appear.



[Fig. 5.6.2-10]

⑰ Press F1 DATA .

As in <Fig. 5.6.2-11>, Room1 is occupied by the general repeat design which was created in [Exercise 5.7.1-1].



[Fig. 5.6.2-11]

⑱ In <Fig. 5.6.2-11>, select Room 2 and press F7 SELECT .

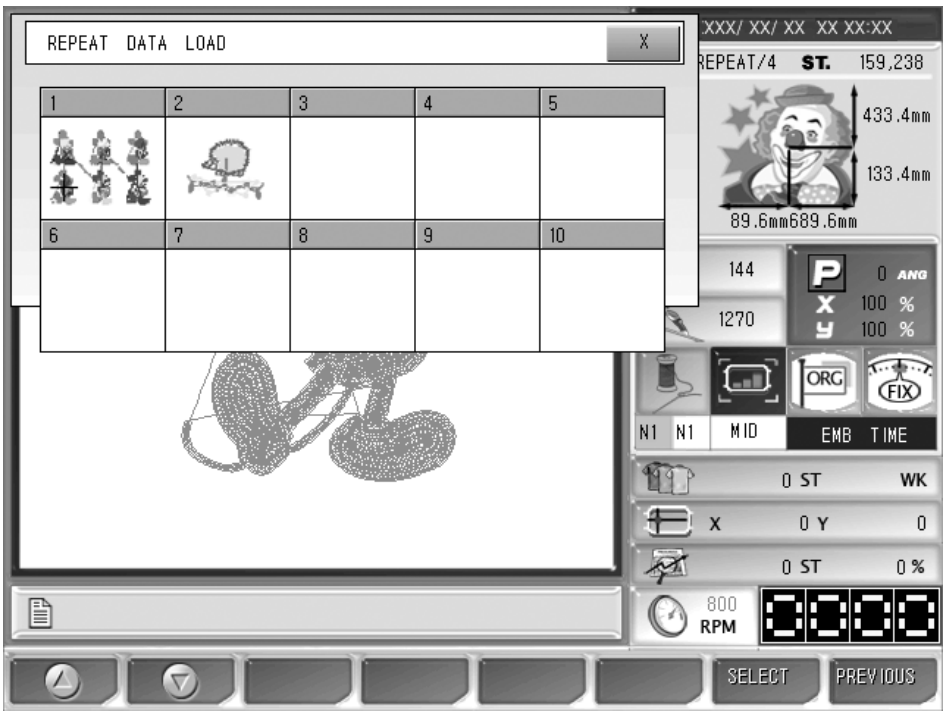
As in <Fig. 5.6.2-2>, the special repeat setting screen appears.

5.6.3 Repeat Data Load

This function is to call the designs which contain the repeat work.

In <Fig. 5.6.0-1>, press Repeat Call, and then <Fig. 5.6.3-1> will appear.

<Fig. 5.6.3-1> has two repeat works saved. Use the menu move buttons to select a desired repeat work and then press F7 SELECT for design call.

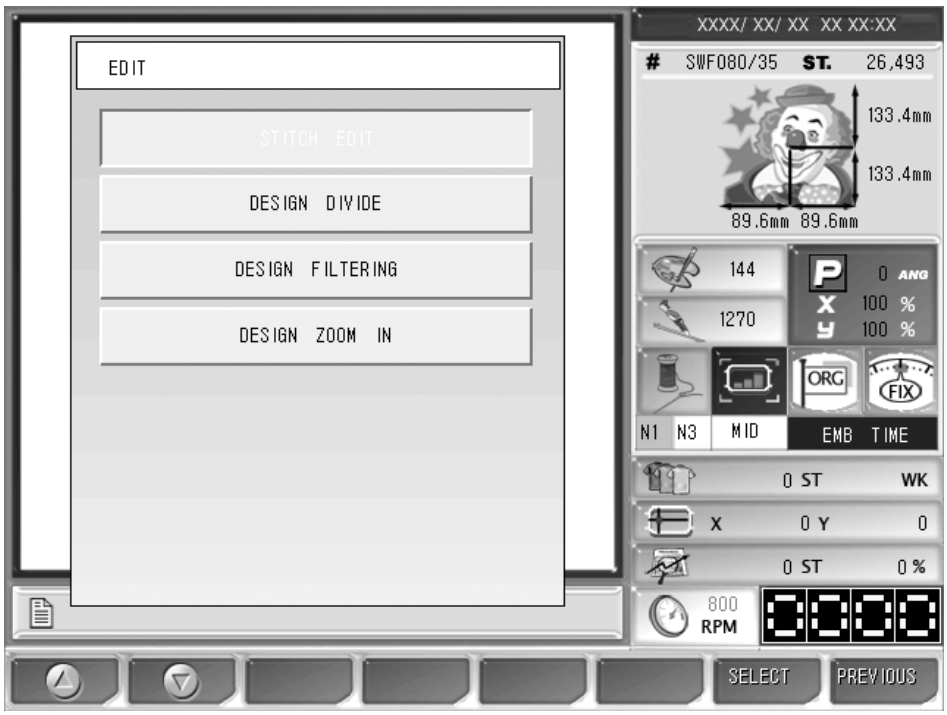


[Fig. 5.6.3-1]

5.7.0 Edit

– This function is to edit designs.

<Fig. 5.7.0-1> is the screen, which appears when F6 EDIT is chosen on the main function menu.



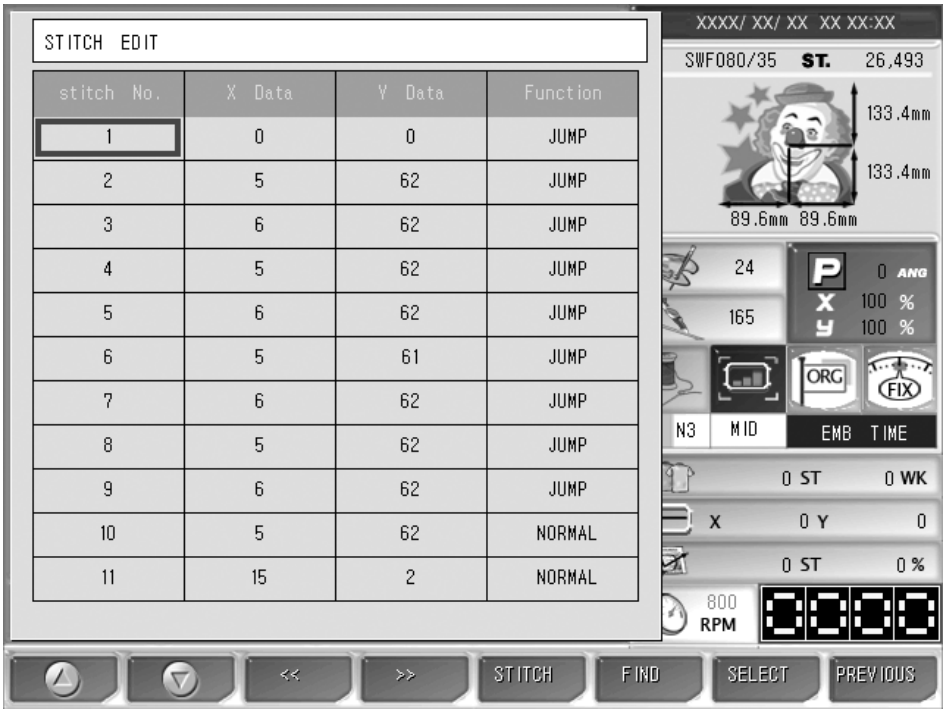
[Fig. 5.7.0-1]

- **Stitch Edit** : It shows needle data of the called design, and based on those, code change for each needle and needle number change can be conducted.
- **Design Divide** : It saves two different designs for the selected part of the design.
- **Design Filtering** : It automatically deletes unnecessary needle data during design creation.
- **Design Zoom In** : It enlarges the chosen part of the design, and checks the needle gap.

5.7.1 Stitch Edit

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

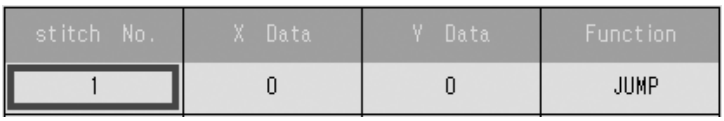
<Fig. 5.7.1-1> is the first screen for needle edit in <Fig. 5.7.0-1>.



[Fig. 5.7.1-1]

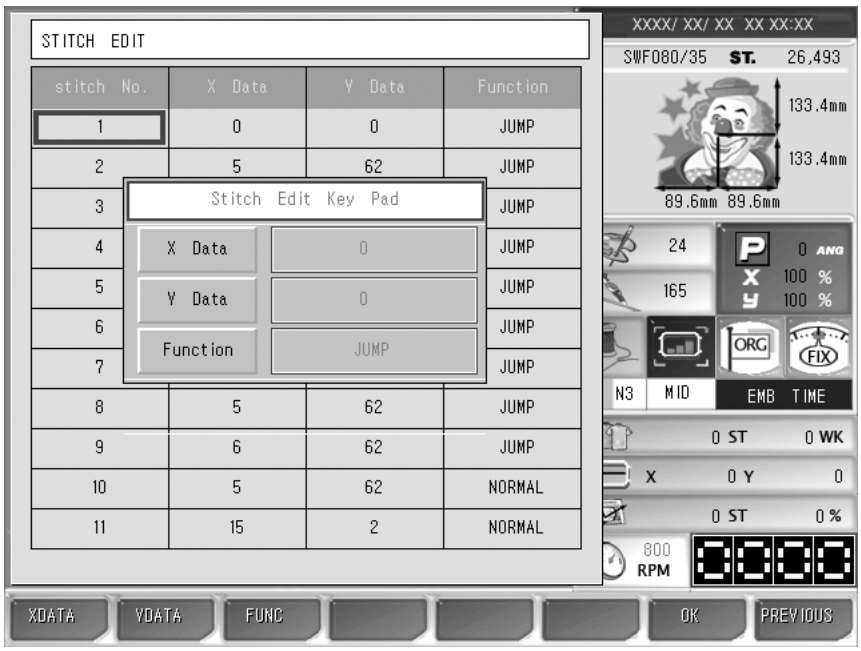
<Fig. 5.7.1-1> is the screen where needle numbers can be edited.

For instance, to edit No. 1 needle, as in <Fig. 5.7.1-2>, select Needle No. and press F7 SELECT. Then <Fig. 5.7.1-3> appears for editing.



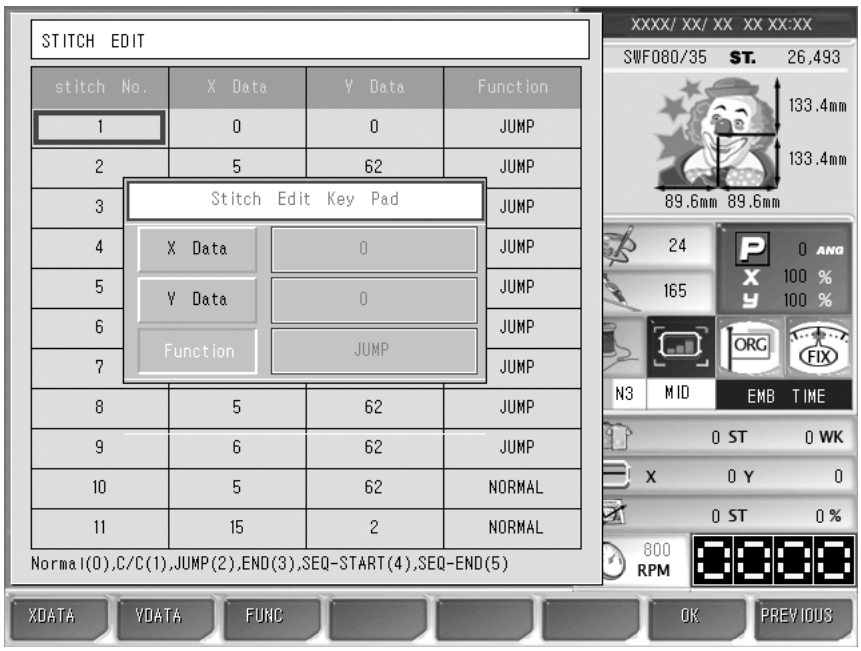
[Fig. 5.7.1-2]

Press F1 X DATA , F2 Y DATA . And as in <Fig. 5.7.1-3>, it is possible to correct X, Y data. Use the number keys to enter values.



[Fig. 5.7.1-3]

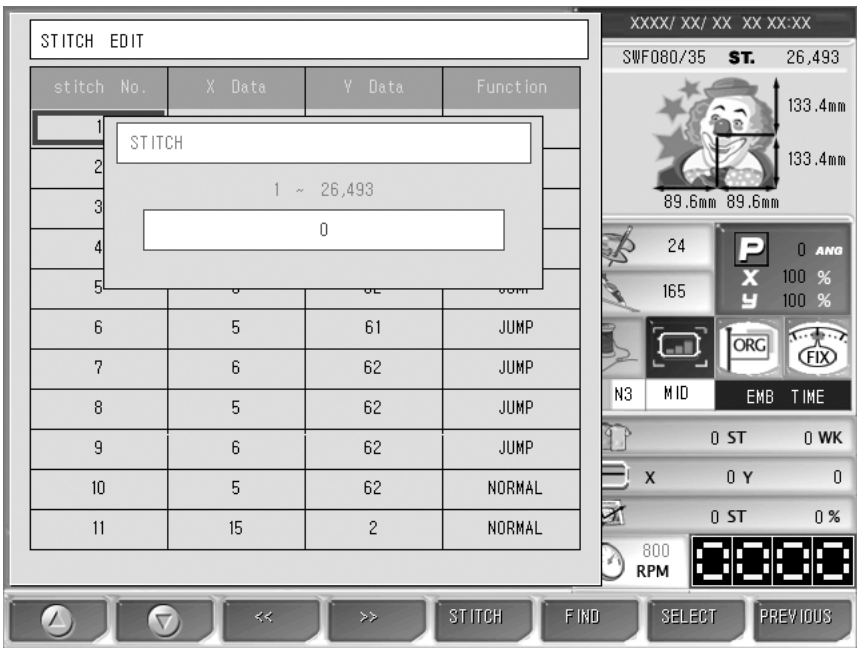
Press F3 FUNC , and as in <Fig. 5.7.1-4>, the menu for setting function codes is enabled.
Use Normal (0) ~ SEQ-END(5) to make changes. There are six codes and use the number keys for setting.



[Fig. 5.7.1-4]

Press F5 STITCH as in <Fig. 5.7.1-1>.

Then as in <Fig. 5.7.1-5>, the screen for finding stitch data appears.



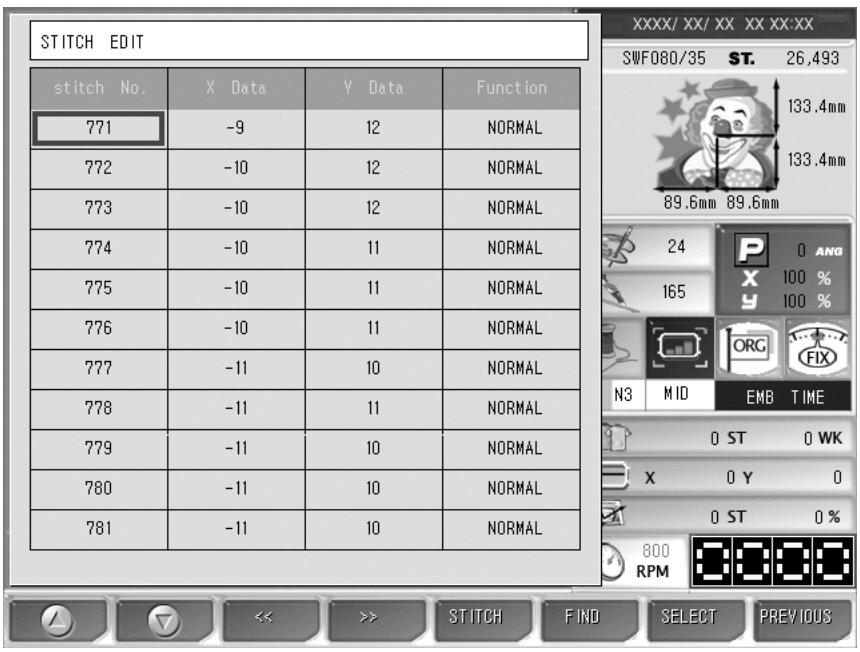
[Fig. 5.7.1-5]

Enter the desired stitch number within the set range.

If No. 777 stitch is desired to be found, enter "777" and press F6 FIND .

Then, you will be moved to the screen which contains No. 777 stitch as in <Fig. 5.7.1-6>.

To cancel, press F8 PREVIOUS .



[Fig. 5.7.1-6]

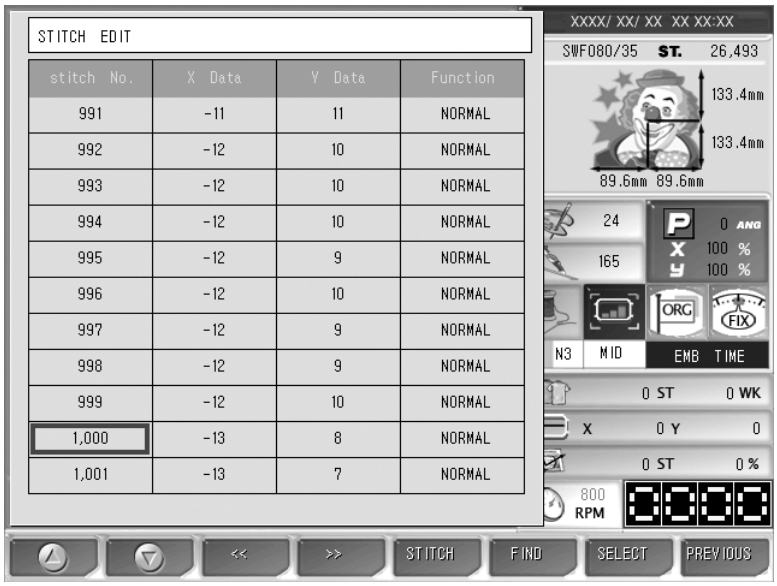
[Exercise 5.7.1-1] Call the design in Room #35 and conduct the editing as below.

Edit No. 1000 stitch data to be X:2mm, Y:-5mm, Func Code: Jump Code.

1. Use F1 , F2 , F3 << , F4 >> to move to the 1000th stitch

   (The stitch number find function can be used).

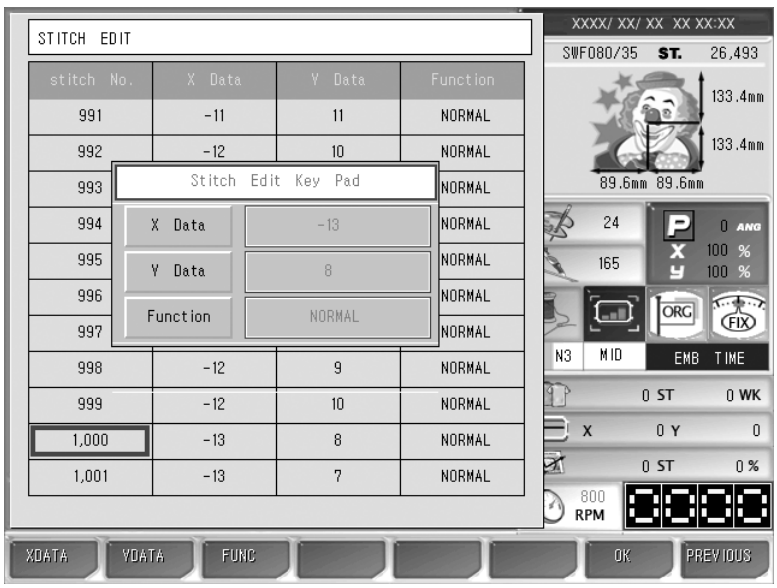
   Then <Fig. 5.7.1-7> will appear.



[Fig. 5.7.1-7]

2. Select the 1000th line and press F7 SELECT .

   Then the editing screen will appear as in <Fig. 5.7.1-8>.



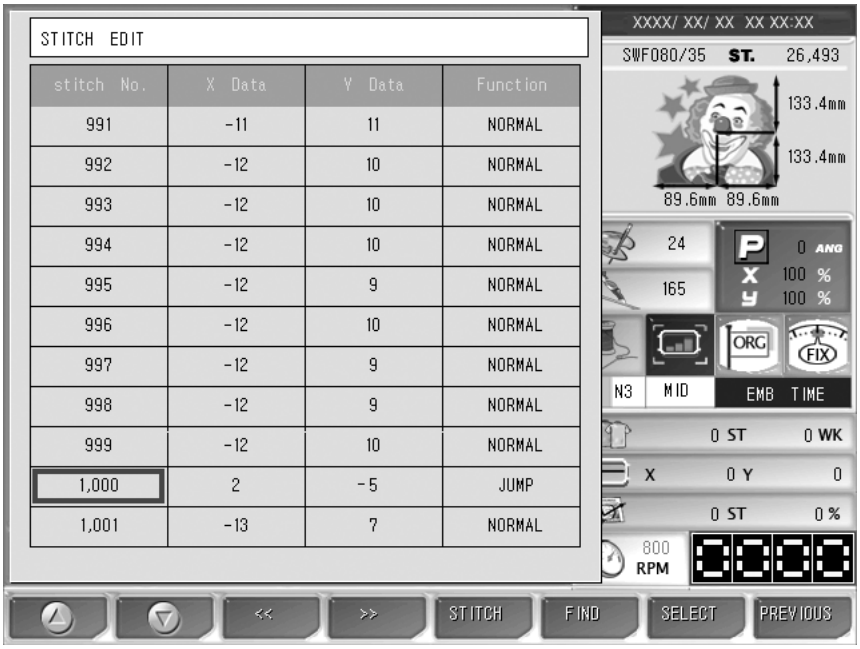
[Fig. 5.7.1-8]

3. Enter 2 in the X data field.

   Enter − 5 in the Y data field.

4 Select JUMP(2) for the function code.

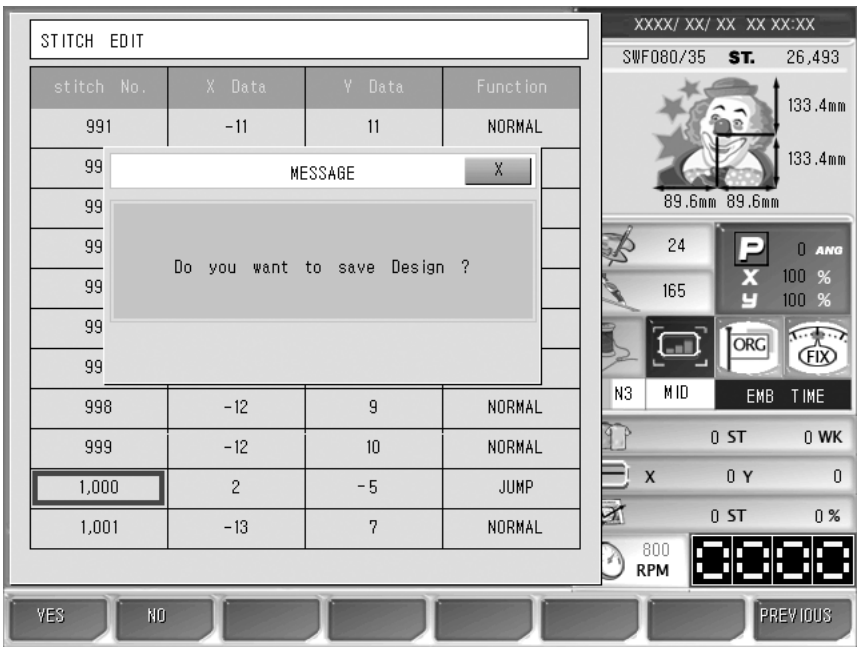
5 As in <Fig. 5.7.1-9>, the values are set.



[Fig. 5.7.1-9]

6 Press F8 PREVIOUS , and <Fig. 5.7.1-10> will appear.

Press F1 YES . Then the entered value will be saved in the 1000th line.

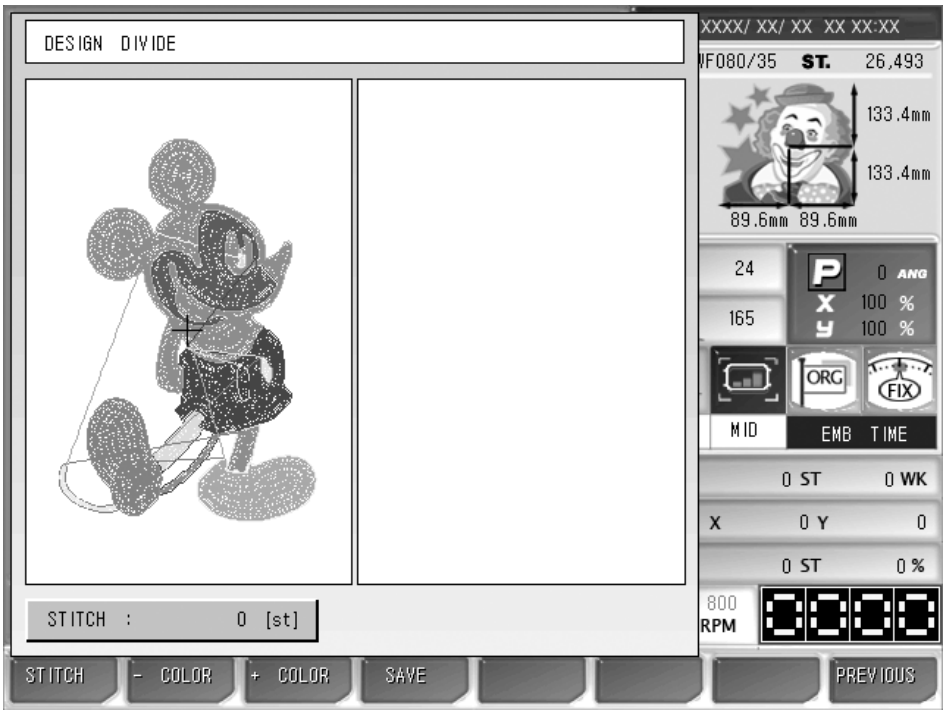


[Fig. 5.7.1-10]

5.7.2 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 needle number.

<Fig. 5.7.2-1> will appear when Stitch Separation is pressed in <Fig. 5.7.0-1>. The design on the left side is the design chosen during design call. The screen on the right is to show the remaining part of the design, which was separated from the chosen design.



[Fig. 5.7.2-1]

F1 STITCH : It sets the number of stitches to be separated from the design.

F2 - COLOR : This button can be used after the + color button is pressed, and has the opposite function of the + color button. When this button is pressed, color is added to the original design (Same function as "Color − (Number key "1") in "5.5.4 Fastview").

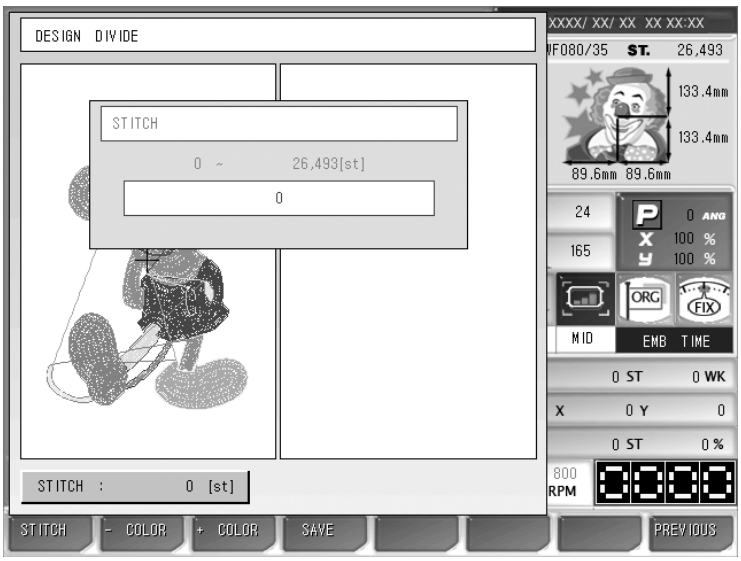
F3 + COLOR : When this button is pressed, only one color is left on the left, and all colors are moved to the right side. (Same function as "Color + (Number key "2") as in "5.5.4 Fastview".)

F4 SAVE : The separate two designs are saved in the memory.

[Exercise 5.7.2-1] Separate the called design based on the 5000th stitch, and separately save the remaining part

1. Press F6 EDIT, and select "Design Divide" in the sub edit menu.

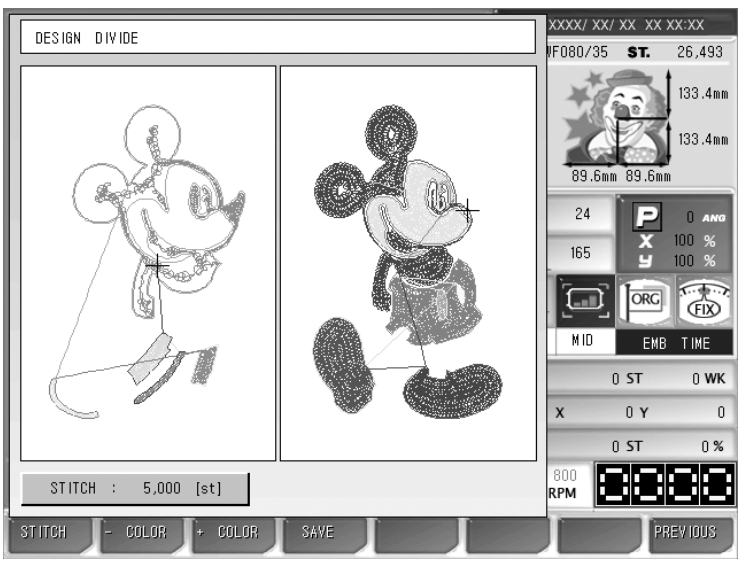
2. Press F1 STITCH in <Fig. 5.7.2-1>.
   Then <Fig. 5.7.2-2> appears for setting.



[Fig. 5.7.2-2]

3. Press 5000 by using the number buttons.

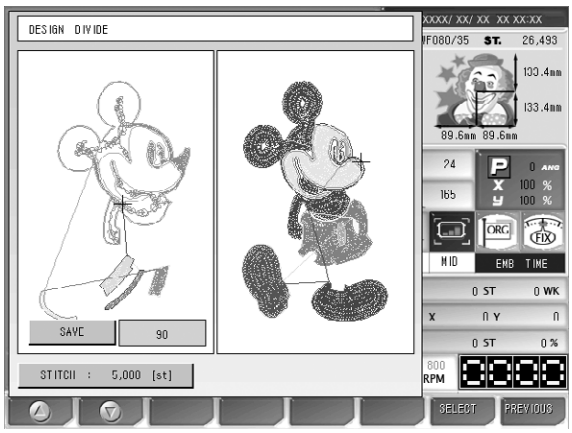
4. Press SET.
   As in <Fig. 5.7.2-3>, 5000th stitch was set as the divide line, and the design was divided into two.



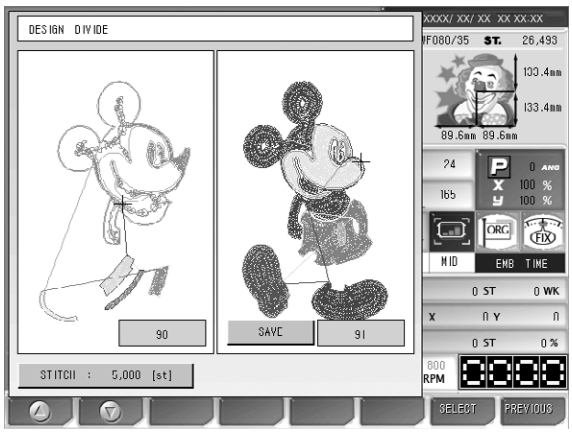
[Fig. 5.7.2-3]

5 Press F4 SAVE .

<Fig. 5.7.2-4> and <Fig. 5.7.2-5> will appear.



[Fig. 5.7.2-4]

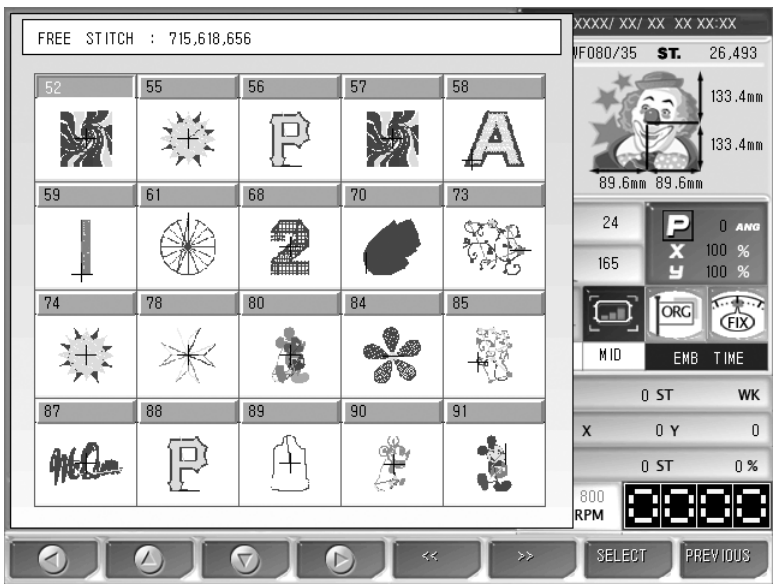


[Fig. 5.7.2-5]

6 Use F1 , F2 to select the room numbers and press F7 SELECT to save.

Room 90 and Room 91 have been chosen.

7 <Fig. 5.7.2-6> shows that the designs are separately saved in Room 90, 91.
(See "Design Call".)

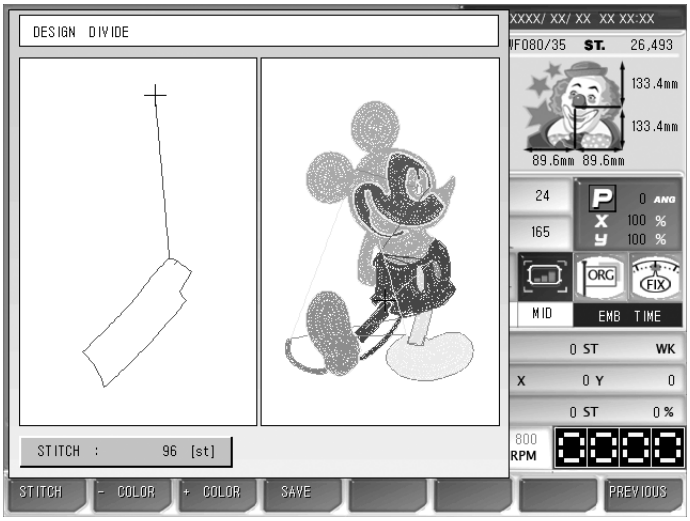


[Fig. 5.7.2-6]

Exercise 5.7.2-2] Extract one color of the called design, and separately save the remaining part

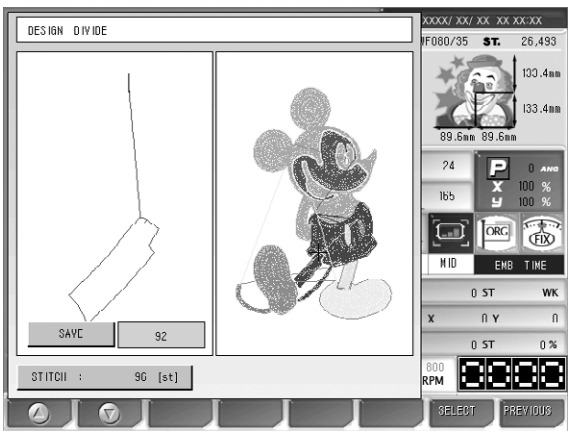
1. Press F6 EDIT and select "Design Divide" on the sub-edit menus.

2. Press F3 + COLOR once in <Fig. 5.7.2-1>.
   When it is pressed once, only one color is left as in <Fig. 5.7.2-7>, and the rest colors are moved to the right side, conducting color separation.

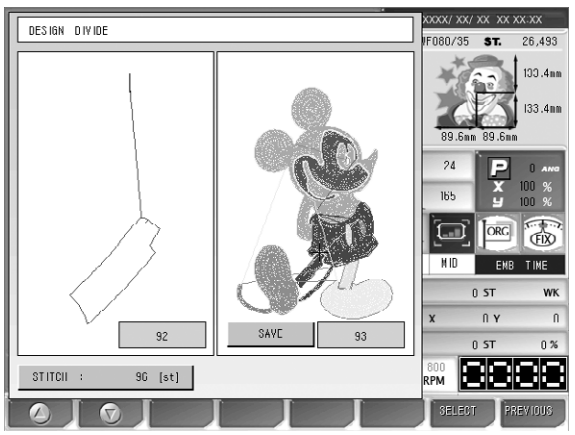


[Fig. 5.7.2-7]

3. Press F4 SAVE .
   <Fig. 5.7.2-8> and <Fig. 5.7.2-9> will appear.



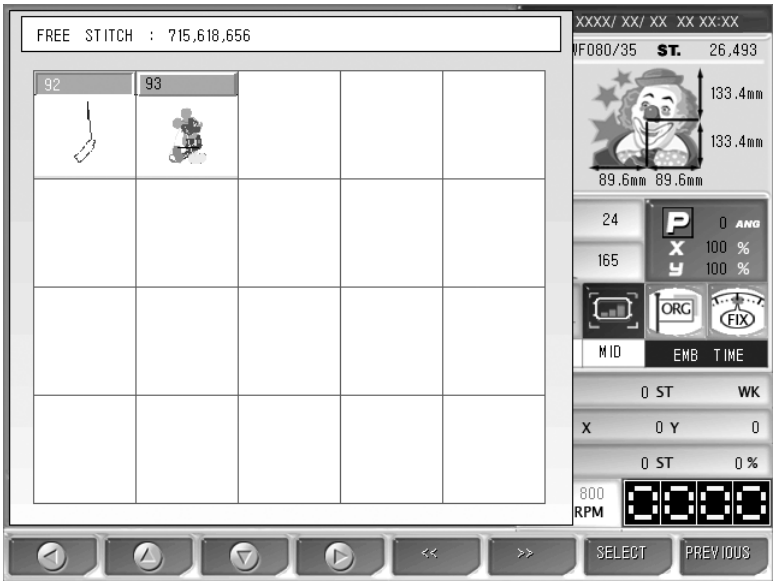
[Fig. 5.7.2-8]



[Fig. 5.7.2-9]

4. Press F1 ▲ , F2 ▽ to select the room numbers for saving and press F7 SELECT .
   Design saving is made in Room 92 and 93.

5 As in <Fig. 5.7.2-10>, the two divided designs are separately saved.
(See "Design Call").



[Fig. 5.7.2-10]

5.7.3 Design Filtering

If the distance from one stitch to the other stitch is too short (0.1～0.3mm), 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.

The below screen <Fig. 5.7.3-1> appears when Optimize is pressed.

[Fig. 5.7.3-1]

[Fig. 5.7.3-2]

[Exercise 5.7.3-1] If there are stitches of 0.4mm or below in the called design, set the machine to embroider the stitches above the length of 0.4mm.

1. Press F6 EDIT on the main function menu.
2. Select Optimize on the edit menu and press F7 SELECT .
3. Check whether there are stitches of 0.4mm or below.
4. If so, press F4 0.4mm for stitch optimization.
5. Check the room number for saving and press F7 SELECT .
   <Fig. 5.7.3-2> is the screen for confirming optimization after calling the optimized design.

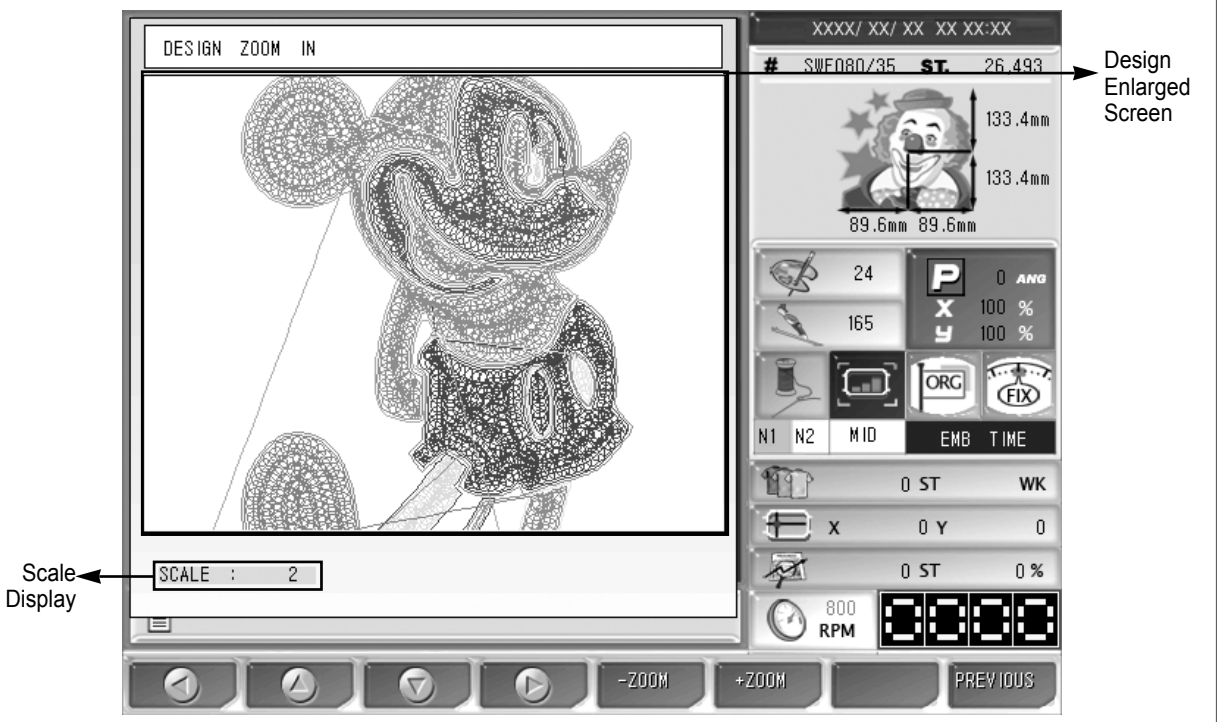
[Note]
In <Fig. 5.7.3-2>, not all stitches were optimized. Likewise, all stitches cannot be optimized.

5.7.4 Design Zoom In

When Design Enlarge is pressed, <Fig. 5.7.4-1> appears.

The screen is divided into the design enlarge section and the location adjust section. The enlarge section magnifies the design, and if the desired part is pressed on the location adjust section, the chosen part will be enlarged. The location adjust buttons can be used to set the desired location as well.

Whenever pressed, the magnification increases 1 times. The maximum magnification is 100 times.

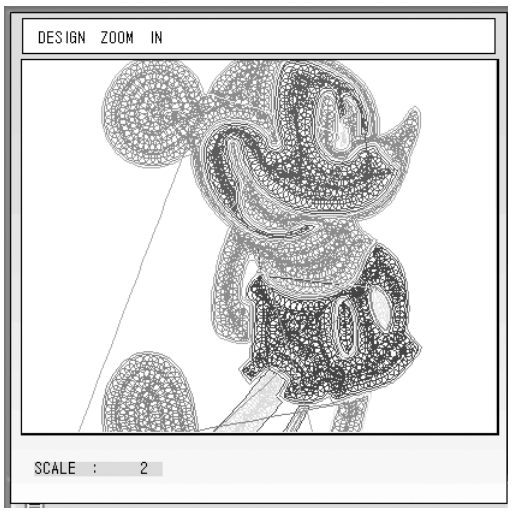


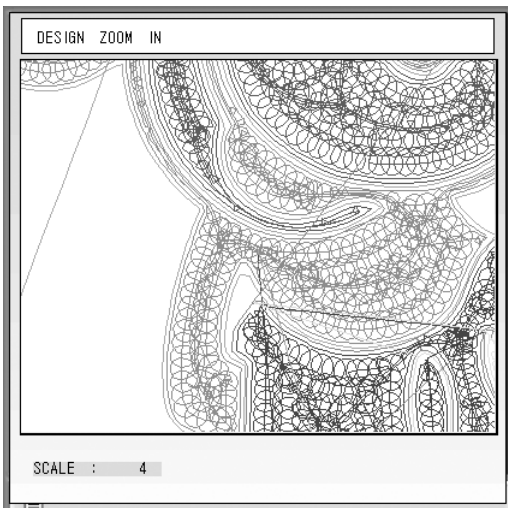
[Fig. 5.7.4-1]

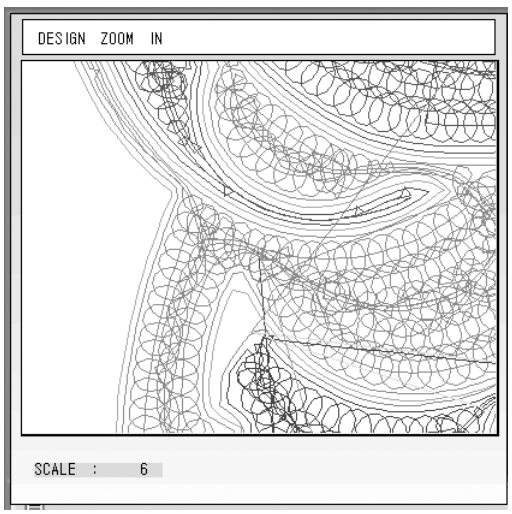
The figures on the next page are the 2x, 4x, 6x, 10x, 20x, 50x enlarged images of the design in <Fig. 5.7.4-1>.

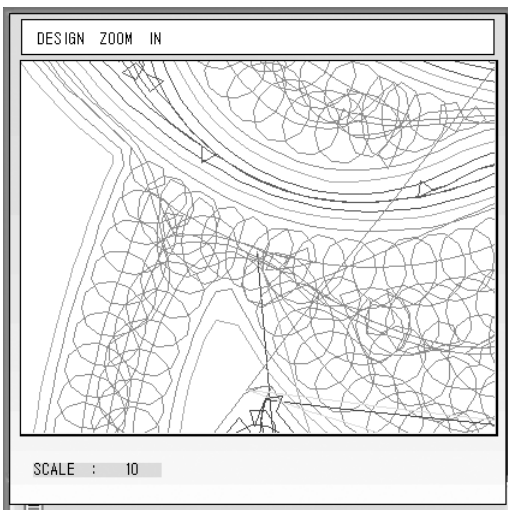
Use F1 , F2 , F3 , F4 to choose the desired part for enlargement.

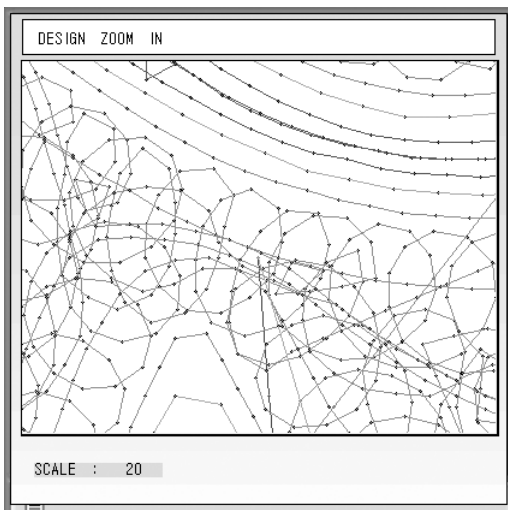
Use F5 -ZOOM , F6 +ZOOM to decide the magnification increase or decrease.

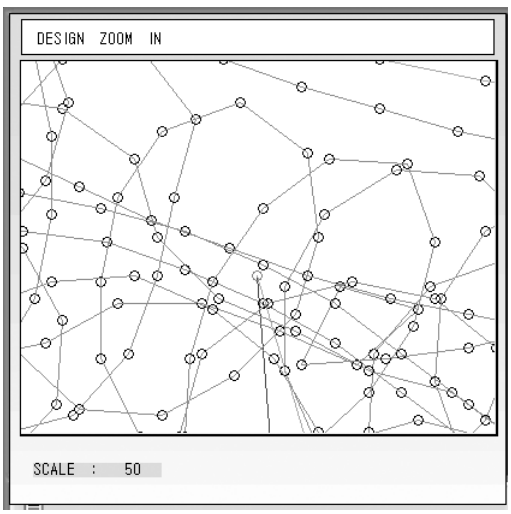

DESIGN ZOOM IN
SCALE : 2


DESIGN ZOOM IN
SCALE : 4


DESIGN ZOOM IN
SCALE : 6


DESIGN ZOOM IN
SCALE : 10

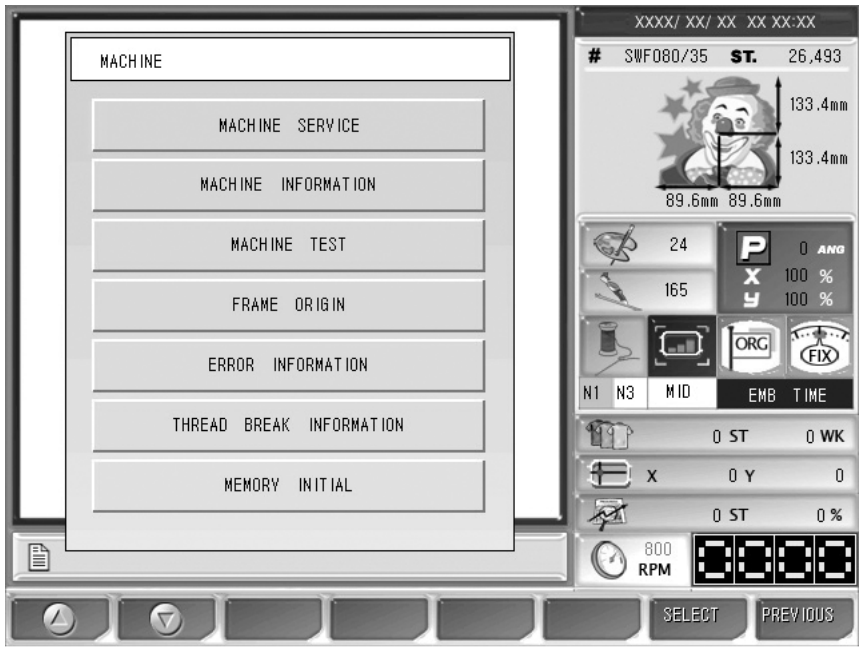

DESIGN ZOOM IN
SCALE : 20


DESIGN ZOOM IN
SCALE : 50

5.8.0 Machine

- Machine Maintenance has seven sub-menus including machine service, machine information, machine test, frame origin, error Information, Thread Break Information, and memory initial.

Select F7 MACHINE and press F7 SELECT. Then the sub-menus of machine maintenance appear as in <Fig. 5.8.0-1>.



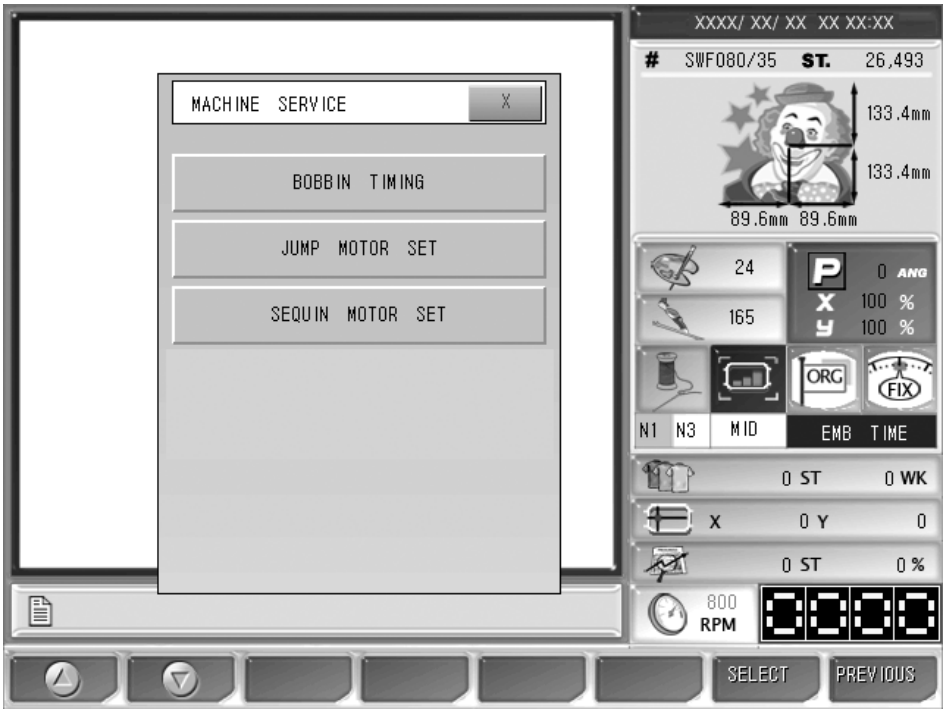
[Fig. 5.8.0-1]

- **Machine Service**: It conducts the initial setting for jump motor and sequin motor.
- **Machine Information**: It lists up the SWF machine information.
- **Machine Test**: It checks normal operation of all solenoids, thread sensors, etc.
- **Frame Origin**: It finds the frame origin.
- **Error Information**: It saves and displays the recently occurred errors by up to ten.
- **Thread Break Information**: It shows thread break information by head.
- **Memory Initial**: It erases all designs.

5.8.1 Machine Service

This function is to check wrong machine settings and help create right settings.

When the machine service menu is selected on <Fig. 5.8.0-1>, <Fig. 5.8.1-1> appears



[Fig. 5.8.1-1]

① Bobbin Timing

It helps set the hook.

② Jump Motor Set

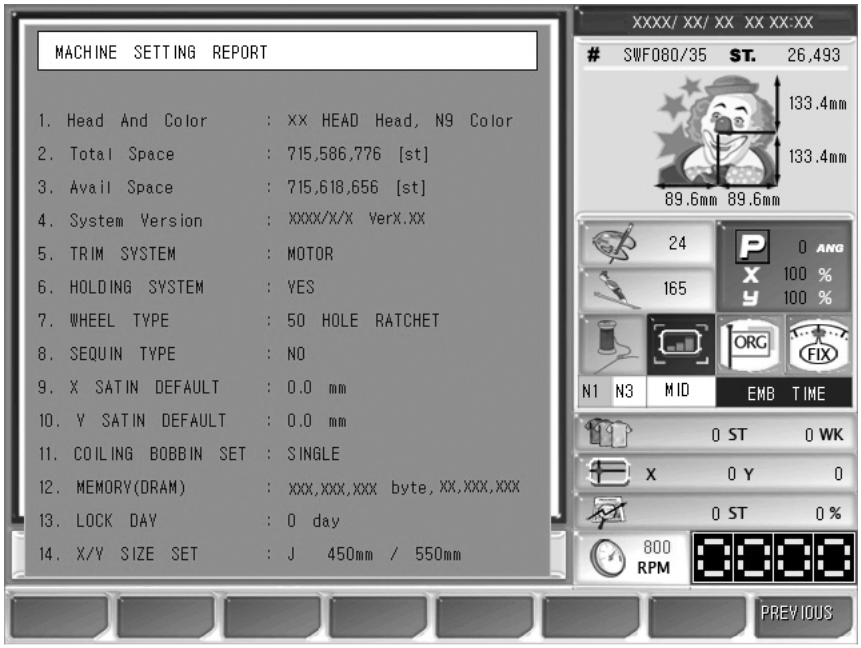
When the Jump Motor Set is selected, and then embroidery start button is pressed, the jump motor shall not move. If there is any jump motor motion, the setting is wrong, and the re-setting is required. After conducting the re-setting, press Jump Motor Set and then embroidery start button to check whether the jump motor moves.

③ Sequin Motor Set

The sequin device should be selected on the sequin device setting and the option setting to enable the sequin motor set. This function is used to assemble the machine first. Press the sequin motor set button and then the embroidery start button. Then the motor will pause for five seconds at the designated position, and during the pause, the screw should be fastened.

5.8.2 Machine Information

This function is to show the embroidery machine's mechanical information when initially setting up the embroidery operating program (For initial setting methods, see “3.2 Machine Setting Change”.)

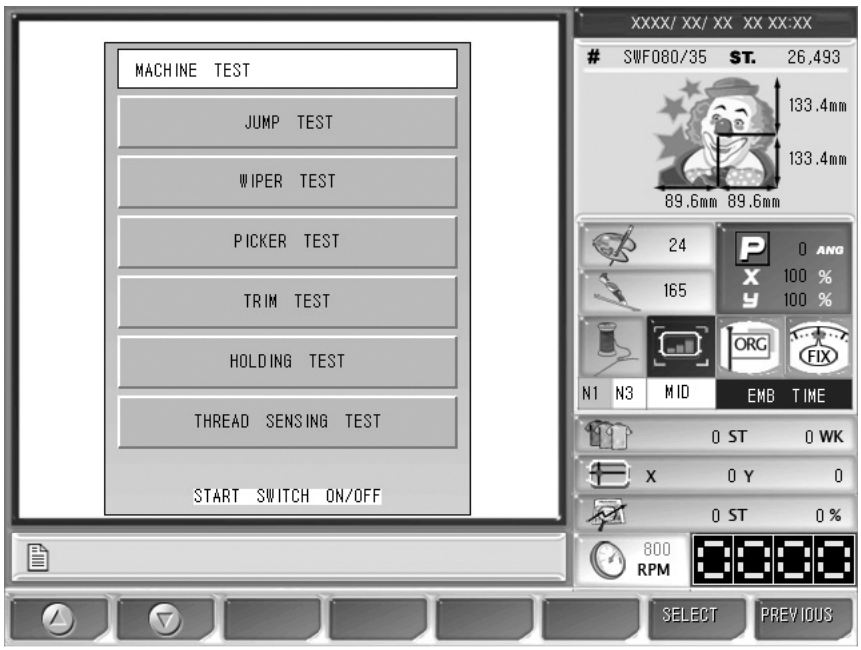


[Fig. 5.8.2-1]

5.8.3 Machine Test

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

<Fig. 5.8.3-1> will appear when the operation test button is pressed in <Fig. 5.8.0-1>.



[Fig. 5.8.3-1]

- **Jump Test**: Checks the operation of the jump solenoid.
- **Wiper Test**: Checks the operation of the wiper solenoid.
- **Picker Test** : Checks the operation of the picker solenoid.
- **Trimming Test**: Checks the operation of the trimming solenoid.
- **Holding Test**: Checks the operation of the holding solenoid.
- **Upper Thread Sensor Test**: Checks the operation of the upper thread sensor.

① Jump test

Use the menu move buttons in <Fig. 5.8.3-1> to select Jump Test and press F7 SELECT. Then, the jump solenoid attached to each head will operate for some 0.5 seconds.

② Wiper Test

Use the menu move buttons in <Fig. 5.8.3-1>, select Wiper Test, and press F7 SELECT. While the head switch is on, the head's wiper solenoid will operate for some 0.5 seconds.

③ Picker Test

Use the menu move buttons in <Fig. 5.8.3-1>, select Picker Test, and press F7 SELECT. Then the picker solenoid attached to the hook for some 0.5 seconds.

④ Trim Test

Use the menu move buttons in <Fig. 5.8.3-1>, select Trimming Test, and press F7 SELECT. Then the holding solenoid attached to the main shaft for correcting the pause motion will operate for some 0.5 seconds.

⑤ Holding Test

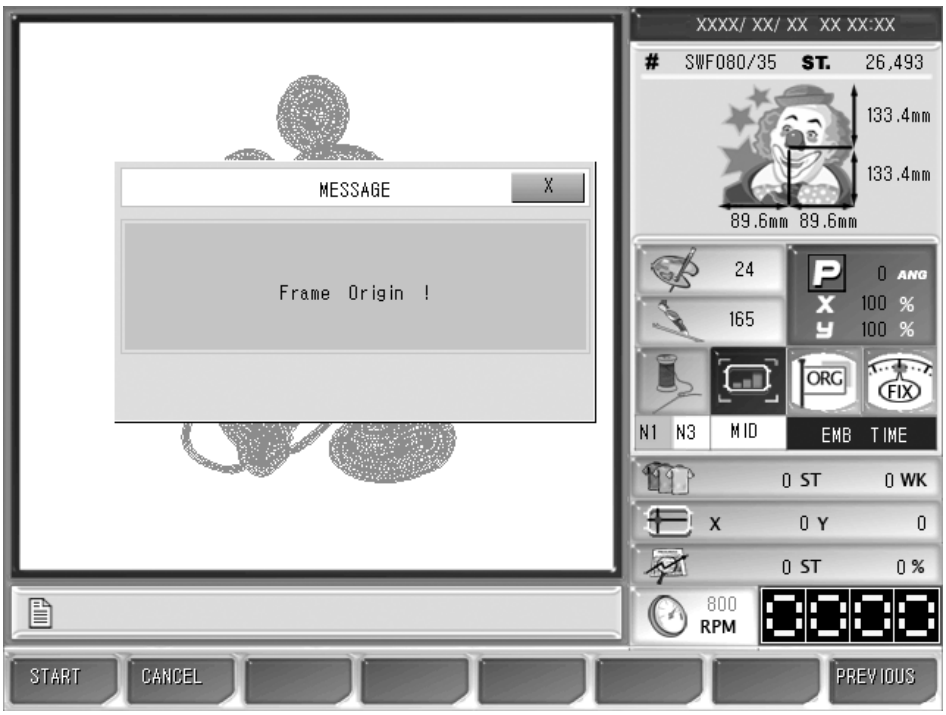
Use the menu move buttons in <Fig. 5.8.3-1>, select Holding Test, and press F7 SELECT. Then, the trimming solenoid attached to the trimming cam will operate for some 0.5 seconds.

⑥ Thread sensing Test

Use the menu move buttons in <Fig. 5.8.3-1>, select the thread sensing test, and press F7 SELECT. Then, while the head switch is on, the thread break sensor on the head thread tension adjusting plate will operate. The lamp of the head where the thread sensing plate and the thread sensing spring are contacted will blink, and the lamp of the head where the thread sensing plate and the thread sensing spring are not contacted, the lamp will be off.

5.8.4 Frame Origin

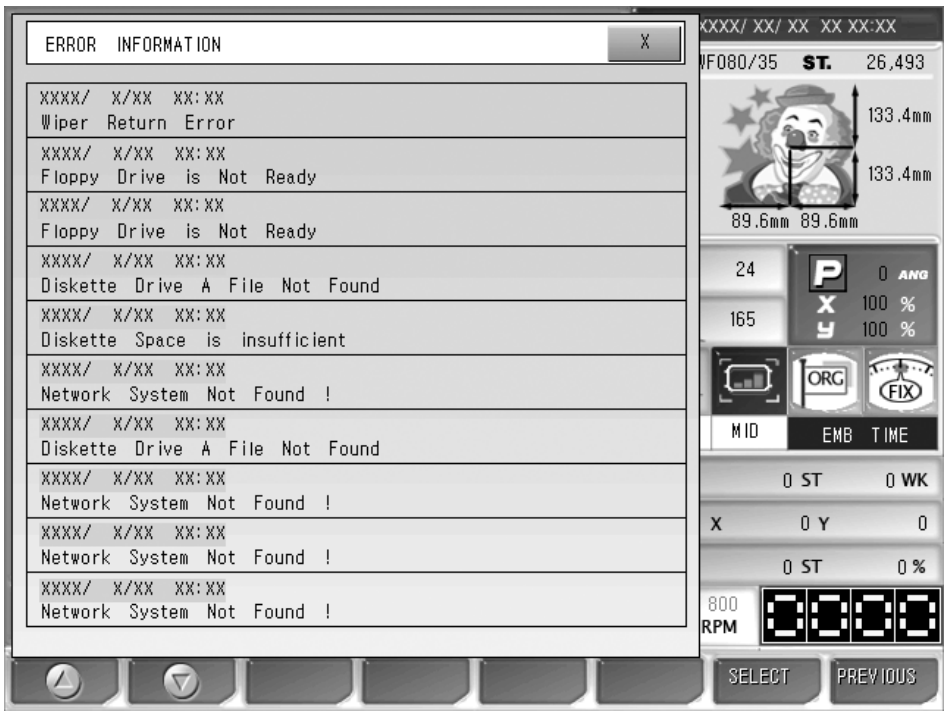
When the frame origin button is pressed in <Fig. 5.8.0-1>, the frame will automatically move to the origin. In other words, when seeing the embroidery machine from the front, the frame will move to the most left and most front place to find the origin and then move to the opposite position to find the X,Y limits. When all the positions are found, the frame will be brought to the place when the function is activated. While the function is performed, if F8 PREVIOUS is pressed, the message box appears asking whether to stop the frame move as in <Fig. 5.8.4-1>. If you desire to stop the frame move, press F2 CANCEL .



[Fig. 5.8.4-1]

[Caution]
Since the frame moves to the X,Y limits, the frame might strike them if some objects are placed on the table and it might damage the frame. Therefore, make sure that you do not place any objects on the table during embroidery.

5.8.5 Error Information



[Fig. 5.8.5-1]

SWF system can save up to 10 error messages for the errors which occurred during operation. This function displays the details of the errors saved in the memory. By reading the details of errors, the causes of problems can be easily found.

5.8.6 Thread Break Information

This function is to show the number of thread breaks detected. .

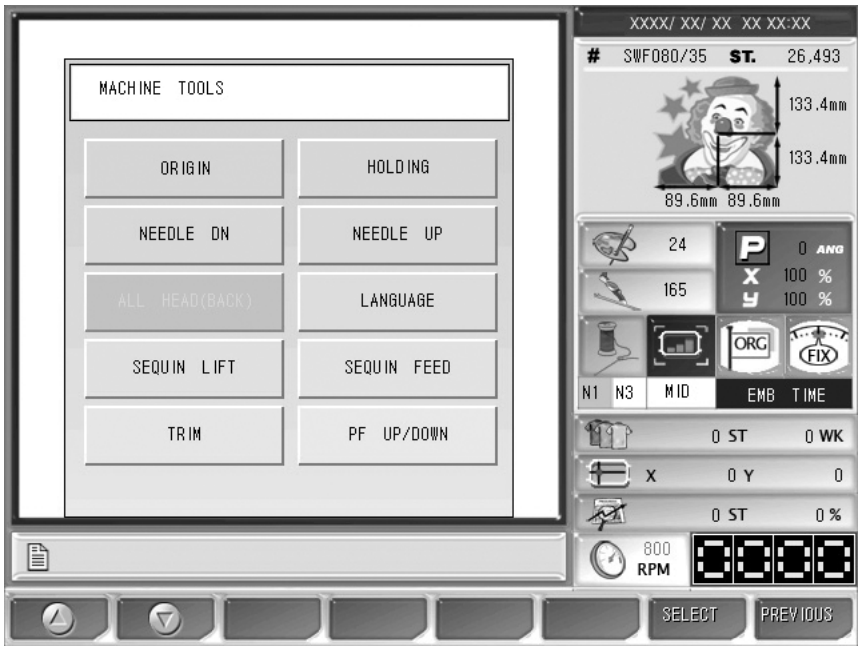
5.8.7 Memory Initial

This function is to initialize the embroidery designs stored.

5.9.0 TOOLS

- This is the menu for pre-embroidery preparations. There are nine sub-menus including embroidery origin, holding device, needle bar up, needle bar down, language, sequin lift, sequin operation, trimming, and presser foot up/down.

On the main screen, press F8 TOOLS, and the sub-menus appear as in <Fig. 5.9.0-1>



[Fig. 5.9.0-1]

- **Origin**: It is used to return the needle bar back to the origin.
- **Holding**: It is to operate the holding solenoid.
- **Needle DN/UP**: It is to accurately set the first stitch position before embroidery work begins.
- **Language**: It selects one of the nine languages for user's convenience.
- **Sequin Lift/Sequin Feed** : It tests the sequin device when the sequin device is equipped.
- **Trim**: It enables the manual trimming by the user.
- **PF UP/DOWN**: This moves the presser foot upward or downward.

5.9.1 Origin

Origin is the function which can be used during the pause of the embroidery work. This has the same function as "Return to Origin" as in FRAME and moves the needle bar to the origin of the design. Press F7 SELECT to activate the function.

5.9.2 Holding

This function is to operate the holding solenoid. Press F7 SELECT to activate it.

5.9.3 Needle DN/UP

In order to lower the needle bar and set the accurate position of the first stitch, press the needle bar descend button. And then use the frame move key to set the accurate position. Press the needle bar ascend button to put back the needle bar.

5.9.4 Language

This function is to enable users to choose a language among nine languages including Korean, English, Spanish, Germany, Danish, Italian, Indonesian, Chinese, and Turkish for easier understanding.
Select a desired language.

5.9.5 Sequin Lift / Sequin Feed

This function is to test the sequin device when it is equipped. The sequin lift lowers the sequin device closer to the needle plate or raises it for testing. The sequin operation function is to test whether the sequin device supplies the sequin one by one when it is located closer to the needle plate.

5.9.6 Trim

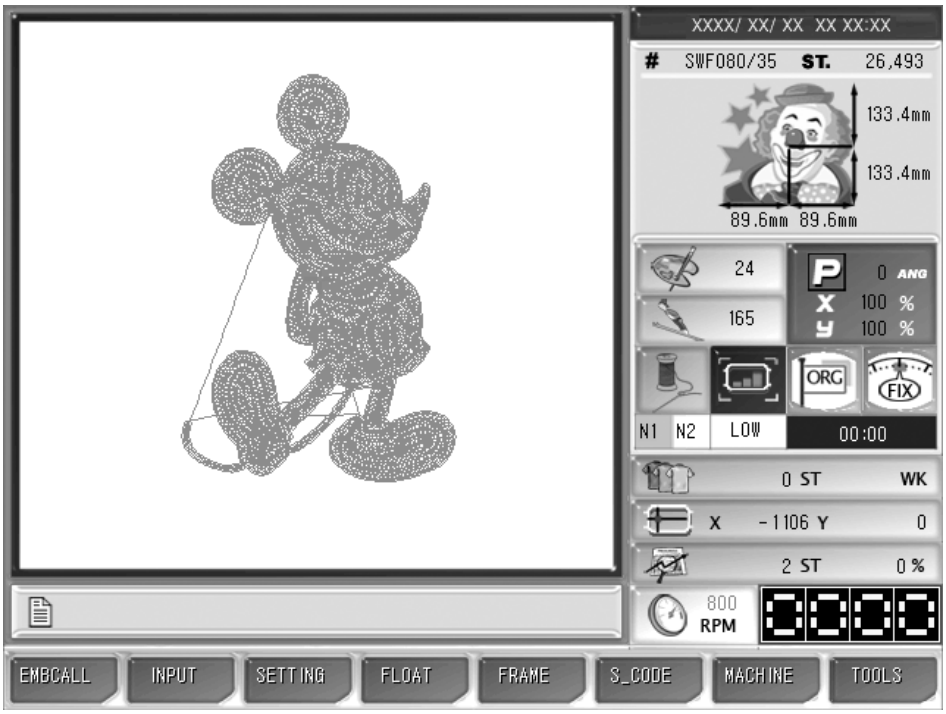
This function is to enable the user to conduct manual trimming when it is necessary beyond the design code-driven automatic trimming. It should be chosen for manual trimming.

5.9.7 PF UP/DOWN

The PF Up/Down function is used to manually check or set the presser foot. Select the function and press the start key. Then the function is in operation.

6 Function Menu During Embroidery Pause

<Fig. 6.0-1> is the screen which appears when embroidery work is paused. Basically, the screen has the similar layout to the screen before embroidery begins. However, “Ready”, “Repeat”, and “Tools” were removed from the main function menu. Instead, they were replaced with “Float”, “Frame”, and “S_Code”. In addition, in the settings, some menus are disabled. Before embroidery begins, various settings might be made, but the setting change might be necessary during embroidery for better results. In preparation for the situation, let's find more about the functions during embroidery is paused.



[Fig. 6.0-1]

In this section, the explanation will focus on the different part of the menu compared with the menu before embroidery begins, such as “EMBCall”, “Setting”, “Float”, “Frame”, and “S_Code”.

[Note]
To conduct the operation without needle by using the Pause Menu During Embroidery, press the pause switch, and the screen shows the “Pause Menu during Embroidery”.

※ Changes in the main function menu

F1 EMBCALL (Slightly different from the pre-embroidery function menu)

F2 INPUT (Same to the pre-embroidery function menu)

F3 SETTING (Same to the pre-embroidery function menu except for “Basic Setting” and “Options Setting”)

F4 FLOAT (Change in the menu)

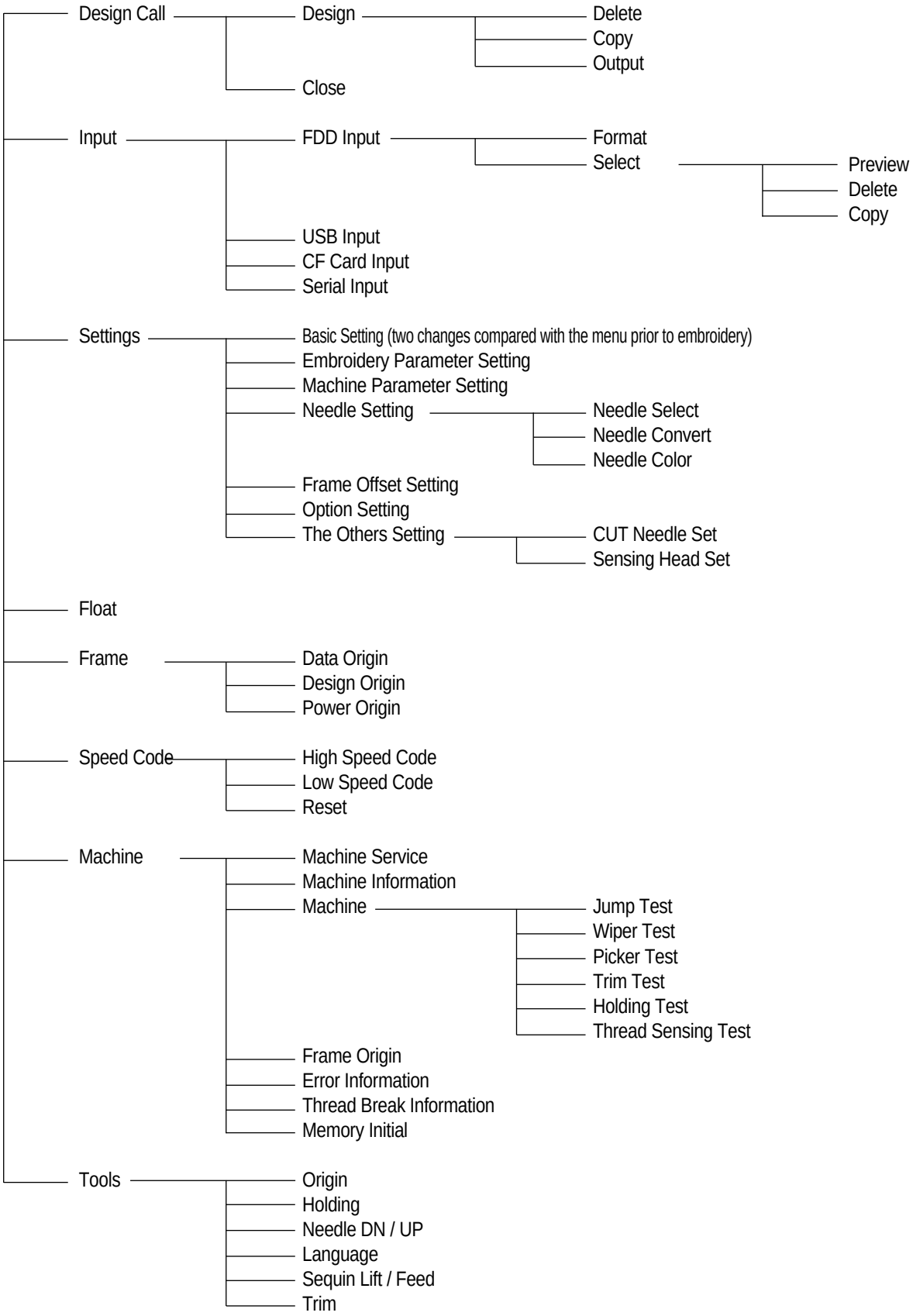
F5 FRAME (Change in the menu)

F6 S_CODE (Change in the menu)

F7 MACHINE (Same to the pre-embroidery function menu)

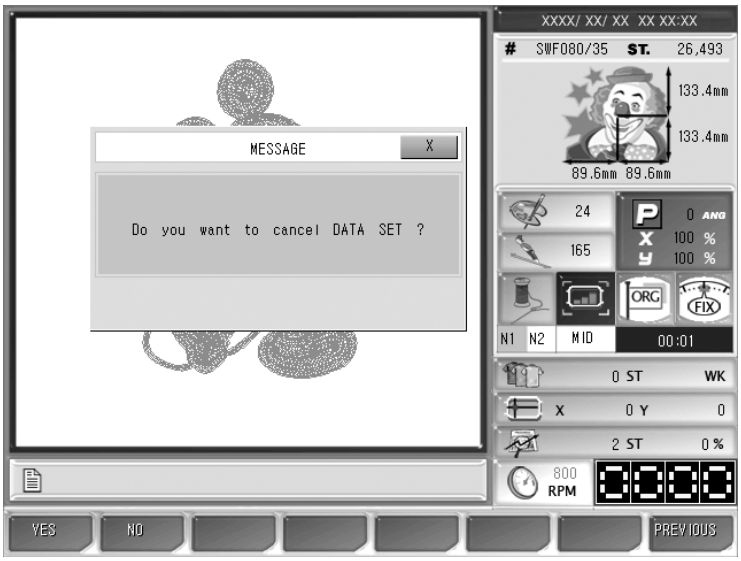
F8 TOOLS (Same to the pre-embroidery function menu)

6.1 Structure of Function Menus

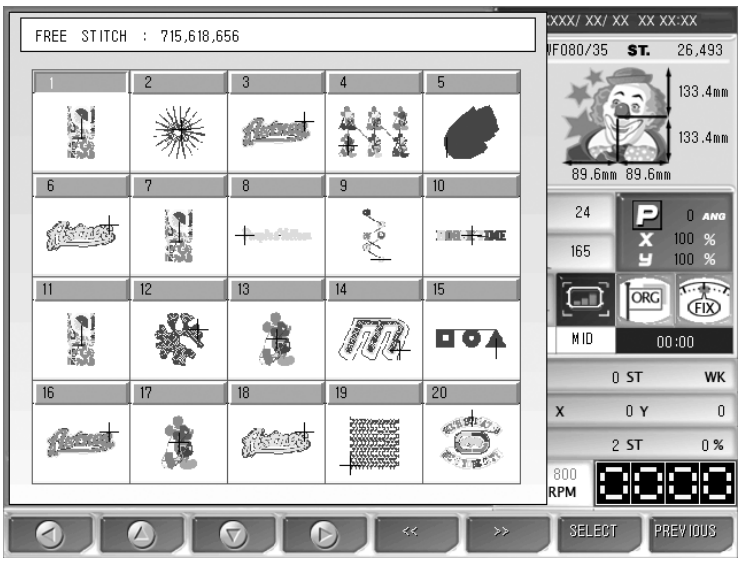


6.2 Design Call

During the pause of embroidery work, when F1 EMBCALL is pressed, the message asking “Do you want to cancel the work?” appears as in <Fig. 6.2-1>. If F1 YES is pressed, the embroidery work will be stopped, and the main function menu will be changed to the main function menu before embroidery begins. If F2 NO is pressed, the embroidery work will not be stopped, and as in <Fig.6.2-2>, the Design Call before embroidery begins appear. Although the delete and select function of the currently called design are limited, and the select function for the remaining designs are limited, it is possible that the designs can be displayed. Previously, to copy a design while embroidery is in progress, the embroidery work had to be completed. However, thanks to this function, now it is possible to copy designs in the middle of embroidery.



[Fig. 6.2-1]



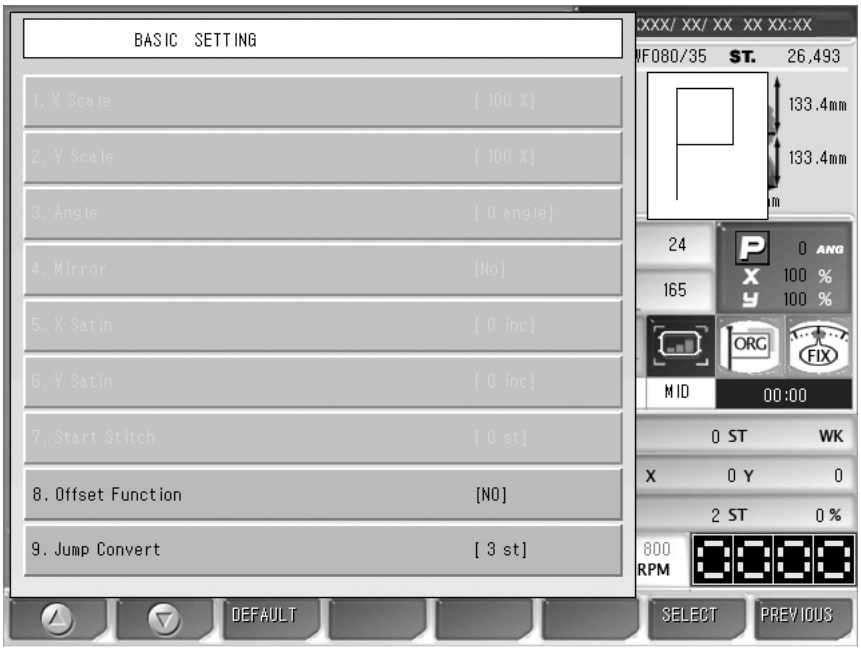
[Fig. 6.2-2]

The usage method is same to that for the menu before embroidery begins.

6.3 Setting

1) Basic Setting

While embroidery work is paused, if “Setting” and then “Basic Setting” are pressed in order, <Fig. 6.3-1> appears. Except for “8. Offset Function” and “9. Jump Convert”, all setting functions are limitedly applied. The limited functions cannot be used. But the two enabled functions can be used in the same way before embroidery begins.



[Fig. 6.3-1]

2) Options Setting

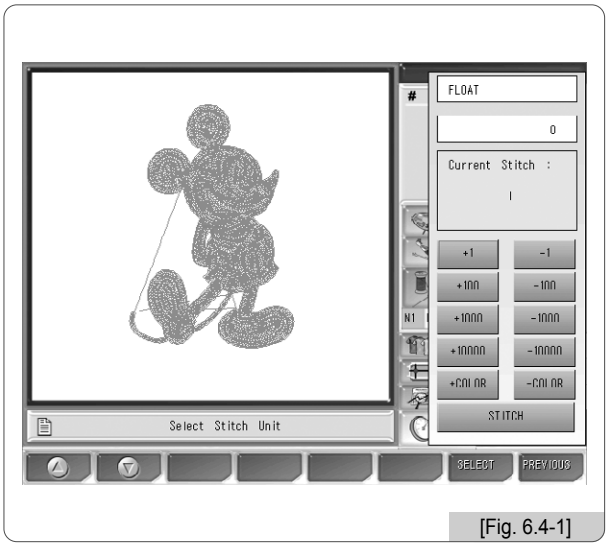
The Options Setting function cannot be used during embroidery work.

6.4 Float

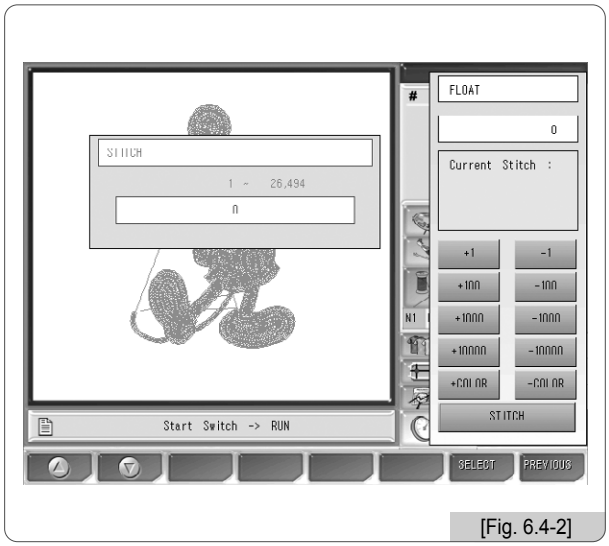
This function is to conduct the embroidery work without making stitches for the desired part of the design.

<Fig. 6.4-1> is the screen for non-stitch operation, and it appears when F4 FLOAT is pressed <Fig. 6.0-1>.

As in <Fig. 6.4-1>, Stitch Skip can be set using the set number of stitches such as ±1, ±100, ±1000, ±10000 or the ±COLOR button. As in <Fig. 6.4-2>, values can be directly entered by using number buttons. To enter numbers, press the direction keys in <Fig. 6.4-1> to move to the stitch button. When F7 SELECT is pressed, the setting screen appears. Use the number buttons to enter values and press SET.



[Fig. 6.4-1]



[Fig. 6.4-2]

※ Tips for Non-stitch Operation

① Press F4 FLOAT.

② Check current stitch and set the desired number of stitches.

③ Press the start button on the OP Box for operation.
Then the stitch skip embroidery will be conducted according to the set value.
To cancel, press F8 PREVIOUS.

6.5 Frame

This function is to remember the position of the frame when embroidery work is stopped in the middle of embroidery work (stop switch, thread break sensing, etc.), and make the frame move to the last position when the frame moves to other positions or when the power is turned off.

<Fig. 6.5-1> appears when F5 FRAME is pressed and the frame move button is pressed.

[Fig. 6.5-1]

① 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.

② Design Origin

It makes the frame return to the embroidery starting position.

③ Power Origin

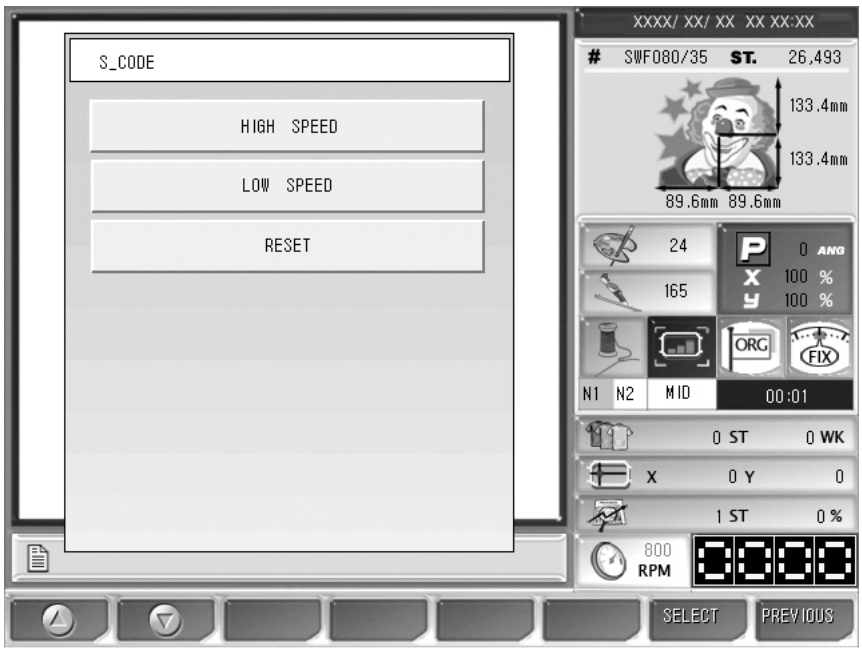
It remembers the last stop position although the power is out during embroidery work. Therefore, when the power is on, and the return to origin after blackout function is pressed, the frame moves to the last stop position. However, before embroidery work starts, the frame origin shall be accurately set.

Press the desired function buttons, and then the frame automatically returns to the desired position.

6.6 Speed Code

This function is to change the embroidery speed from high speed to low speed for a particular part of embroidery work. When conducting embroidery of the same design from the beginning, the speed change will occur at the embroidery part where the speed change was previously set.

<Fig. 6.5-1> appears when F6 S_CODE of the menu during embroidery pause is pressed and the speed code menu is selected.



[Fig. 6.6-1]

① Low Speed Code

This function is to change the embroidery speed from high speed to low speed.

Pause the high-speed embroidery work and select “Low Speed” and press “Set”. Then when embroidery work is resumed, its speed becomes slow.

② High Speed Code

This function is to change the embroidery speed from low speed to high speed. Pause the low-speed embroidery work and select “High Speed” and press “Set”. When the start button is pressed, the embroidery speed becomes fast.

③ Reset

This function is to initialize the speeds set for particular sections to default speed.

7 Troubleshooting

7.1.0 Error Messages and Handling

7.1.1 Main Shaft Motor and Others

No.	Error Name	Error Description	Handling
100	Main shaft motor stop position error	When it is stopped, 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 error	Main shaft motor driver develops an error.	Turn off and on the main switch.
102	Main shaft motor overload error	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	No trimming system recovery	When the trimming sensor is not recovered upon trimming.	Check and respond to the abnormality of the trimming system.
104	Start switch error	When the power is on, the start button is pressed.	Check whether the start button contacts the connector.
105	Stop switch error	When the power is on, the stop button is pressed.	Check whether the stop button contacts the connector.
107	Valve error	When the valve is opened.	
108	Air pressure error	When the air pressure is below the standard (Sequin)	
109	Pulley ratio error	When the set pulley ratio is wrong	Change the driver setting after checking the main shaft pulley ratio.
110	AC Line error	When a problem occurs on the joint board.	Replace the joint board

7.1.2 X, Y Motor-related Errors

No.	Error Name	Error 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 error	Problems occur in the X-axis driver.	Turn off and on the main switch.
205	Y-axis driver error	Problems occur in the Y-axis driver.	Turn off and on the main switch.
206	Wiper return error	Wiper solenoid does not return.	Repairs the wiper mechanism.
207	Trimmer return error	Trimmer motor does not return.	Repair the trimmer mechanism.

7.1.3 Color Change

No.	Error Name	Error Description	Handling
300	Needle bar stop position error	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.

7.1.4 Encoder

No.	Error Name	Error Description	Handling
400	Error in the main shaft encoder A	Problems in signaling occurred in the main shaft's encoder A.	Check the connection of the encoder cable, and 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 turn off and again the main switch.

7.1.5 Repeat Work

No.	Error Name	Error Description	Handling
501	Error in repeat work setting	As in (X-axis number) × (Y-axis number) > 99, the limit of repeat work was passed.	Make sure that repeat work should be set as (X-axis number) × (Y-axis number) < 99.

7.1.6 Floppy Diskette and Communications

No.	Error Name	Error Description	Handling
600	No diskette.	There is no diskette inside the FDD.	Insert a diskette into the FDD.
601	No sectors on the diskette	A floppy diskette is not formatted or the format is different.	Format a diskette or replace it with other diskette.
602	No design data in the diskette	There is no embroidery design saved in a floppy diskette.	Replace the diskette.
603	Remove the write protect tap.	When copying embroidery designs, the diskette write protect tap is enabled.	Disable the write protect tap.
604	Diskette damaged	A floppy diskette is damaged.	Format a diskette or replace it.
605	Insufficient memory capacity	There is unoccupied space for copying in a floppy diskette.	Replace the diskette with a new one.
606	Diskette removed from FDD	A floppy diskette is removed in the middle of FDD operation.	Insert the diskette and start are work again.
607	Bad sector error during floppy reading	The floppy diskette's sector is bad.	Format the diskette or replace it.
608	Bad sector error during floppy writing	The floppy diskette's sector is bad.	Format the diskette or replace it.
609	Diskette error whose cause is unknown	Errors are developed whose cause is unknown while the floppy diskette is in operation.	Format the diskette or replace it with another one.
610	Diskette error	Errors are developed whose cause is unknown, while the floppy diskette is in operation.	Format the diskette or replace it with another one.
611	ZSK design error		
612	BARUDAN design error		
613	Bad sector error		
614	Operating program install error	The operating program is installed, the operating program file name does not match or does not exist.	
630	Error found in the read data	The data read through the tape reader develops errors.	Enter data through the tape reader again.
640	Network device error	The network devices are not connected.	Check the status of the network devices.
650	USB error	The USB driver is not ready	Check whether the memory system of the USB memory is FAT16.

7.1.7 Memory

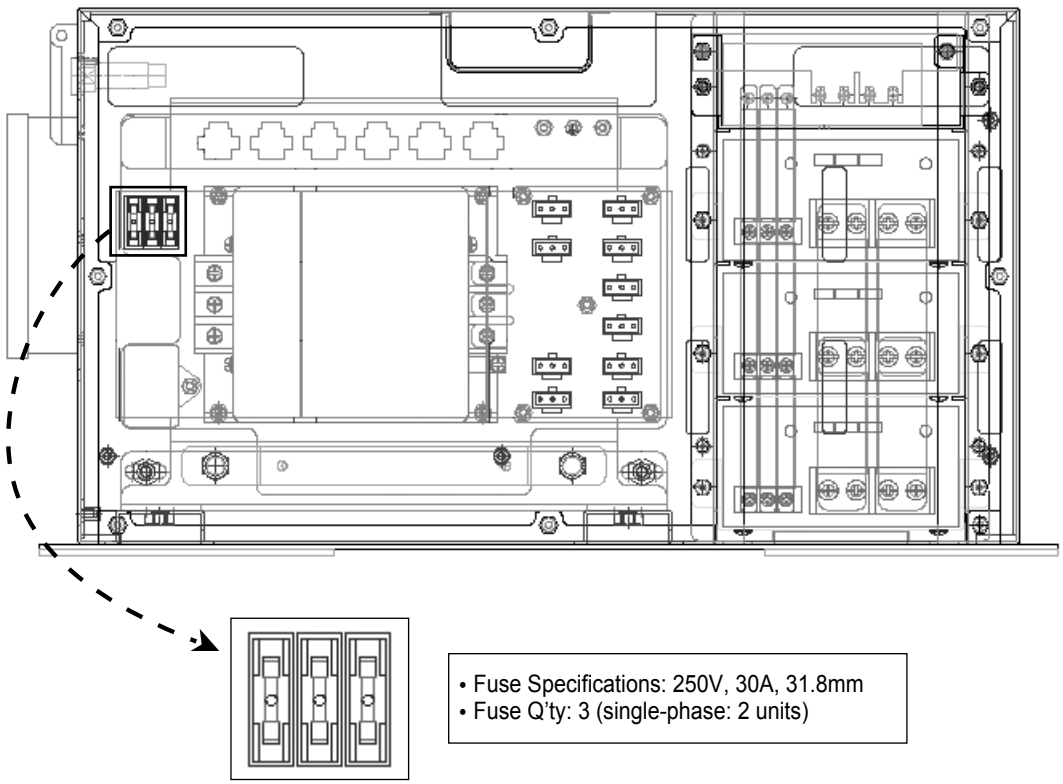
No.	Error Name	Error Description	Handling
700	No embroidery data found in the memory	The embroidery data does not exist in the memory.	Use a floppy diskette or a USB to save embroidery data.
701	Insufficient memory capacity	The data desired to copy in the memory failed to be copied due to the lack of memory capacity.	Delete unnecessary data.
702	100 memory rooms are full.	The 100 memory rooms are all saved with designs.	Delete unnecessary data.
703	Error in design memory system	Errors have occurred during copying or deleting data between memory devices.	Press Reset or turn off and on the main switch.
704	Bad memory battery	The battery is exhausted when the power is off. The status of saving the number of stitches and the x, y position information is unstable.	Call the A/S center at the nearest to your place and replace the battery. If this error frequently occurs, need to replace the CPU board.
801	Sequin design error	There is an error in the sequin design.	Amend the design.
901	MC1 communications error	The CAN communications do not regularly occur.	Check the cable and turn off and on the power.
902	MC2 communications error	When the CAN communications do not regularly occur.	Check the cable and turn off and on the power.

7.2 Fuse Install and Replace

Insert the power plug of the embroidery machine. If power remains off when pressing the power switch, take actions following the below direction. Check the fuse location as in <Fig. 7.2.2-1> and replace the fuse with a new one.

1) Power Fuse (3-phase)

<Control Box Front>

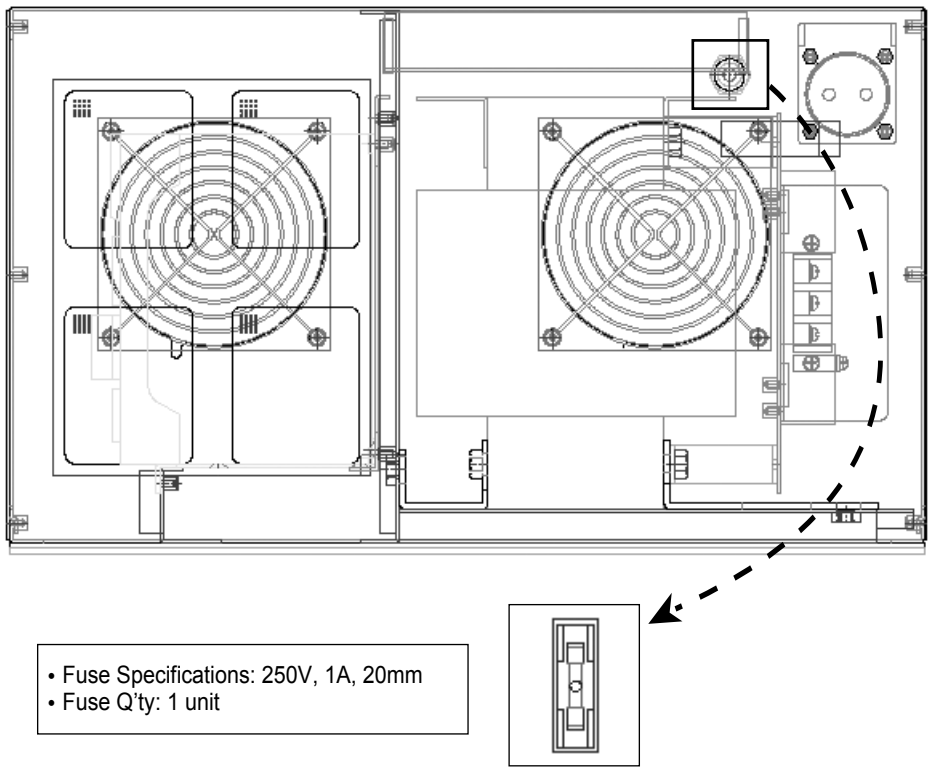


• Fuse Specifications: 250V, 30A, 31.8mm
• Fuse Q'ty: 3 (single-phase: 2 units)

[Fig. 7.2-1]

2) Outlet Fuse

<Control Box Side>



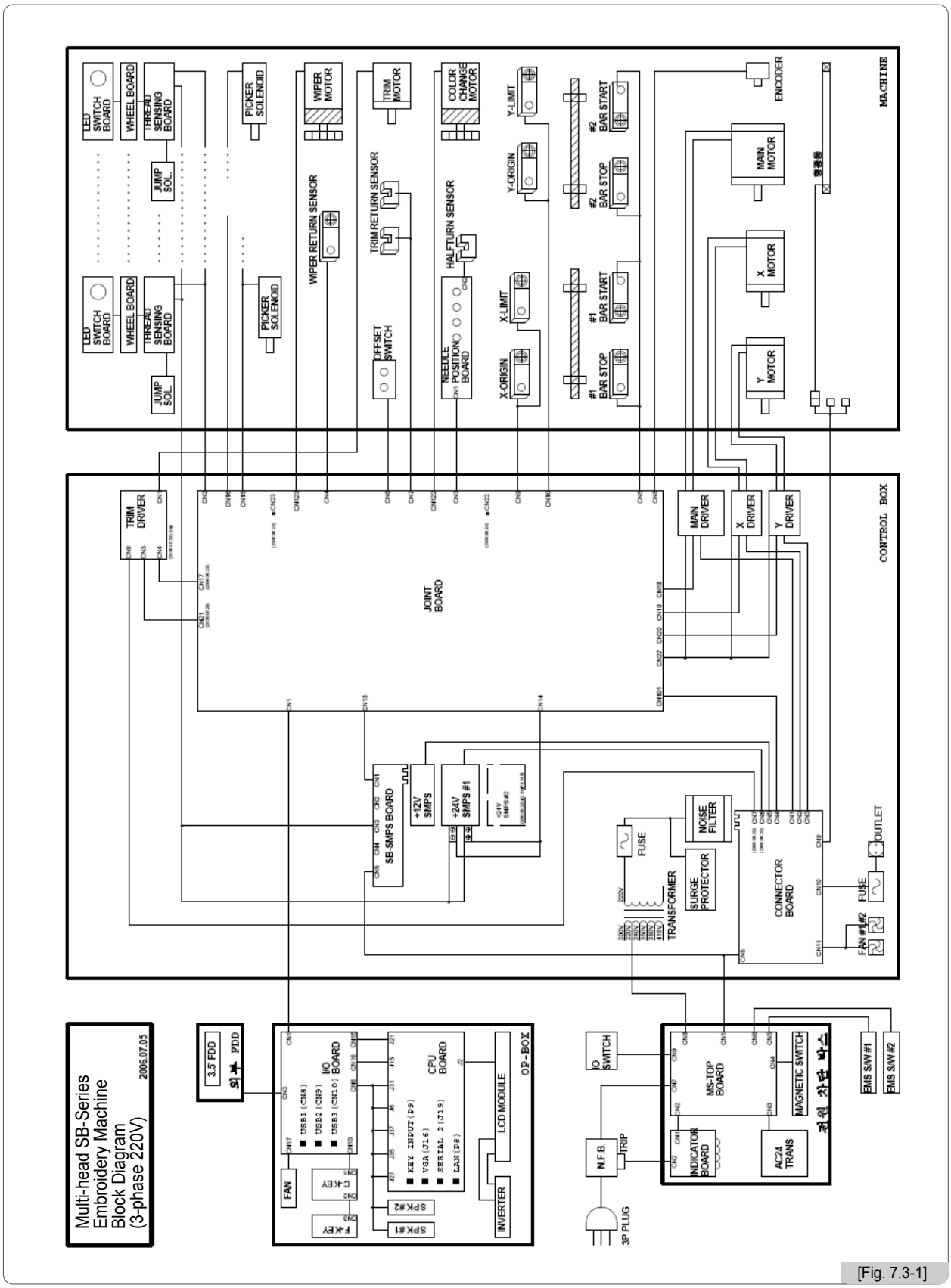
• Fuse Specifications: 250V, 1A, 20mm
• Fuse Q'ty: 1 unit

[Fig. 7.2-2]

Even after the power switch is turned off, make sure to pull off the power plug before conducting A/S activities or board replacement to prevent the risk of electric shock.

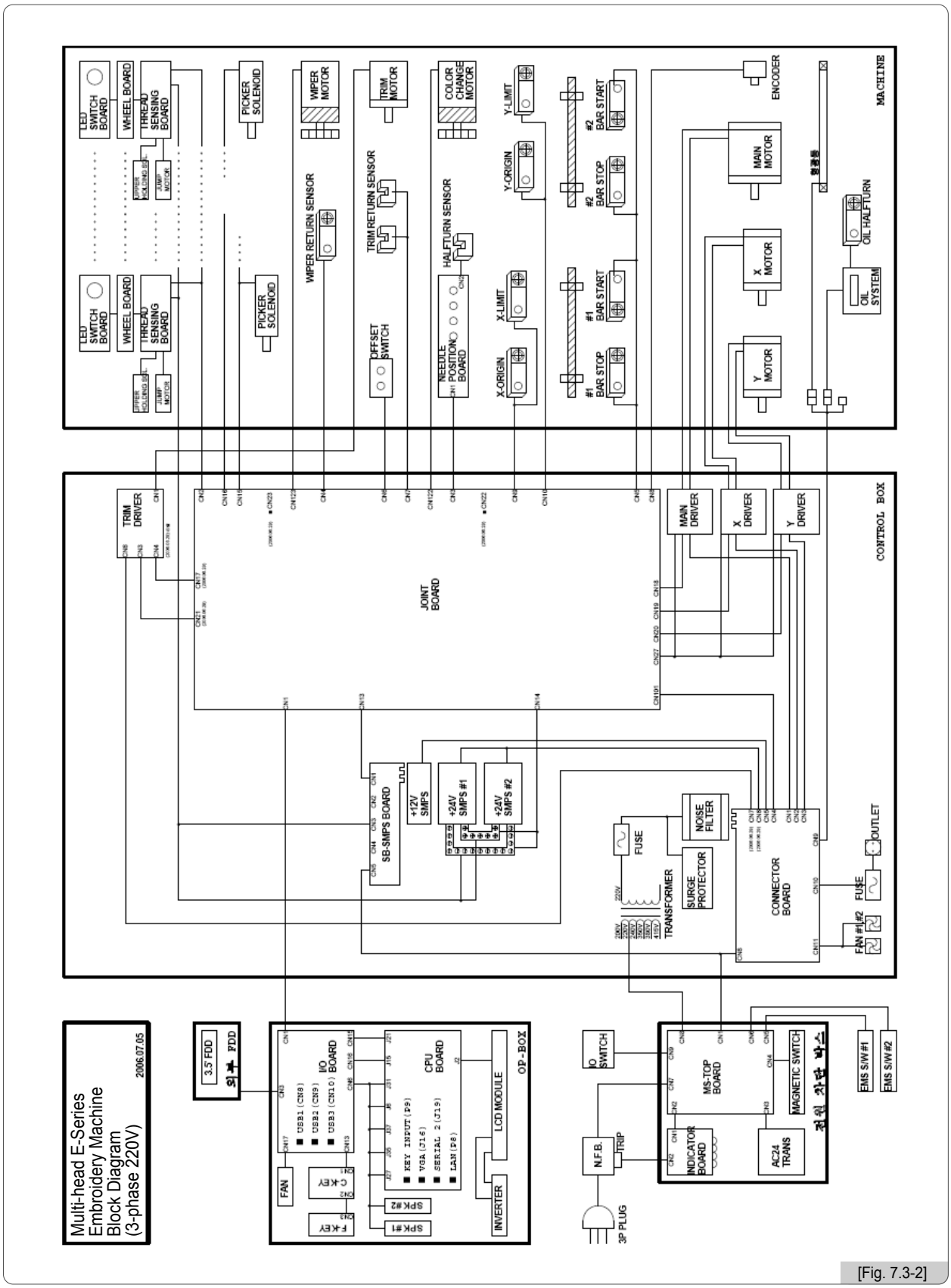
7.3 Block Diagram

※ SB Series Embroidery Machine



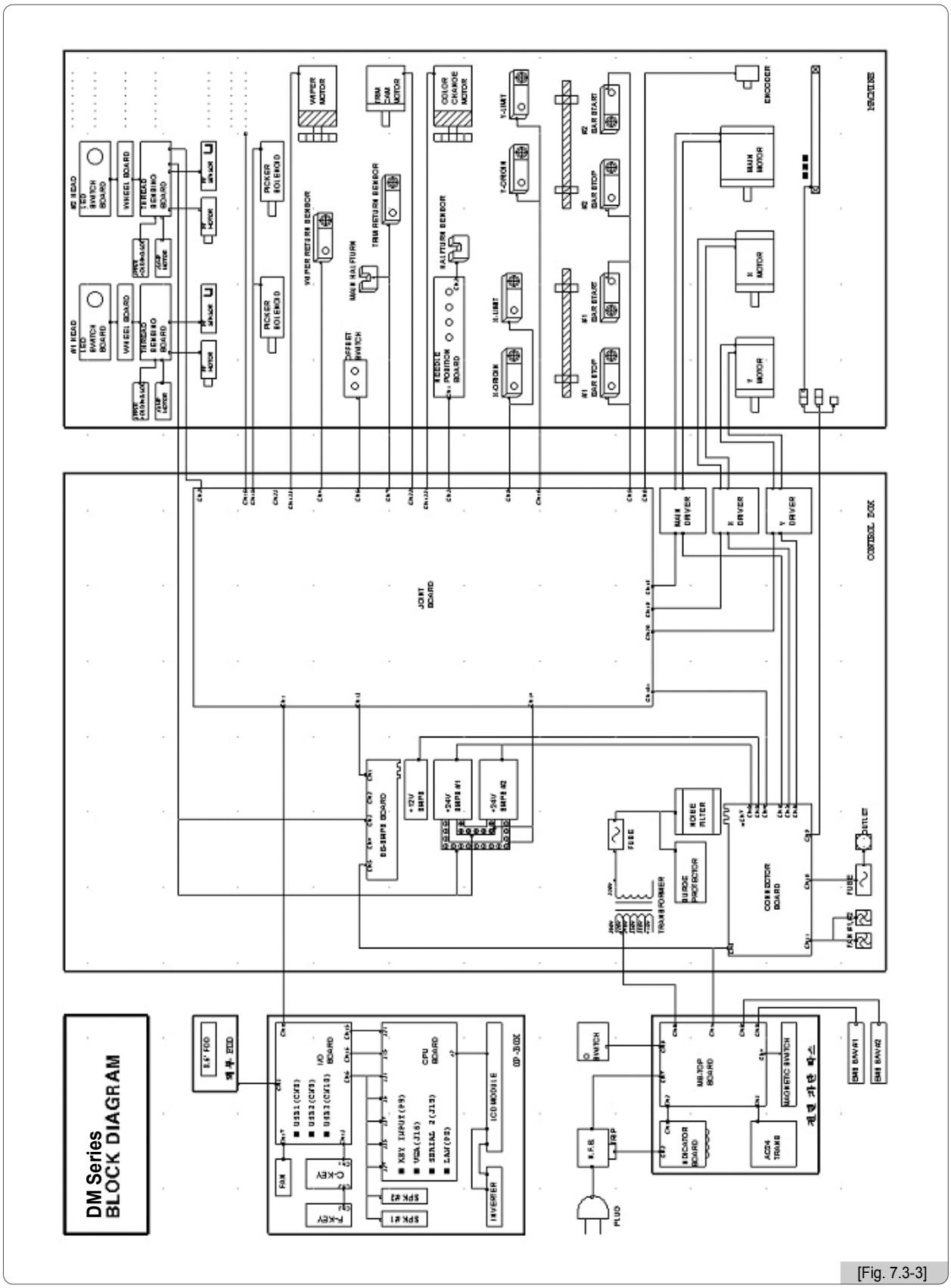
[Fig. 7.3-1]

※ Multi-head E-Series Embroidery Machine



[Fig. 7.3-2]

※ DM Series Embroidery Machine



[Fig. 7.3-3]