EC Declaration of Conformity

The company/manufacturer: HAPPY Industrial Corporation / Head Office
9-16, 5-chome, Miyamachi,
Yamagata-city 990-0057 JAPAN

Herewith declares conformity of the product

Designation: EMBROIDERY MACHINE Series / ( Sewing Machine)
Type/Serial Number, etc: HCG- type

With applicable regulations below


Machinery Directive 89/392/EEC amended by:
91/368/EEC, 93/44/EEC, 93/68/EEC and 98/373/EC

Harmonized European Standards applied:

EN 60204-1:1997; EN 60204-3-1: 1990; EN 292-1 and EN 292-2; EN 418;

Importer Distributor in EU: Happy Industrial GmbH, Am Kuemmerling, 10-12,
D-55294 Bodenheim / Mainz

Division: Happy Industrial Co., Ltd / Mechatronics dept.
A. Takanashi / Director

Yamagata, 2003-10-02
Place and Date

Name/Signature/Position

Note: This Declaration certifies conformity with the above-mentioned Directives, but gives no
assurance of properties within the meaning of the Law concerning Product Liability.
It becomes invalid if any technical or other modifications are carried out without
manufacturers consent.
1. Terminology

In accordance with all supplied operating and repair manuals and the warnings on the machines and devices themselves.

2. Operation

Encompasses the installation, commissioning (preparation for use) and controls by the operator (actuation, switching ON and OFF, etc.).

3. Servicing

Encompasses the testing and preventive maintenance (inspections and overhauls), maintenance, corrective maintenance (troubleshooting with repair).
WARNING Notices

**DANGER** means that death, grievous injury or extensive damage to property will occur if the appropriate precautions are not taken.

**WARNING** means that death, grievous injury or extensive damage to property may occur if the appropriate precaution are not taken.

**CAUTION** means that minor injury or damage to property may occur if this mark is ignored.

**NOTE:** means that particular attention is drawn to the interaction of technical processes because they may not be obvious even to qualified personnel.

**ATTENTION:**

*Qualified personnel* are persons who, due to their training, experience and instruction and their knowledge of pertinent standards, specifications, accident prevention regulations and operating conditions, have been authorized by the party responsible for the safety of the system to carry out the activities necessary in each case and are capable of recognizing and avoiding possible inherent dangers in doing so. Among other skills, a knowledge of first aid is required.
Basic Information about Safety

Due to their function-related electrical and mechanical properties, the machines can cause extremely serious damage to health and property if they are not used, operated and serviced as intended or if they are tampered with. It is therefore assumed that planning and execution of all mechanical and electrical facilities and transport, operation and servicing will be executed and supervised by responsible, qualified personnel. **Attention, such personnel is in most cases never the operator!**

When electric machines or devices are running some of their components are conducting dangerous electricity and/or are subjected to mechanical stress. The persons working on the machine must be appropriately qualified. Correct, safe use of this machine and the device requires proper transport, proper storage, operation as intended and careful servicing. All notes and information on the machines or devices must be observed.

### 4. Mandatory Manufacturer Advice for Enduser

It is mandatory to install the machine on a safe floor and fix it with the anti-vibration pads.

It is mandatory for all persons to wear ear protection, because depend on operating condition and machine type/ numbers of heads used and speed, the maximum A-rated noise level measured at 1.6 m high and 1 m in front was between 78 dB to 82 dB(A) according to Appendix B clause 1.7.4. f).

In case you do not have a personal ear protection, please contact our local service station, they will be glad to assist and instruct you.

It is under no circumstances acceptable that unskilled person carry out electrical work.

You are not allowed to open and maintain the electrical power cabinet, if you feel it is necessary please contact our local service, which has specially trained engineers for set up and maintenance. =>> Risk of fire and/or electrical shock.

Before any maintenance is carried out you must switch OFF and pull out the plug.

To avoid any kind of accident we would like to recommend that each person who operates this machines has read and understood the manuals provided and confirmed this by signature.

The machine was inspected according to EN 60204-1 and EN 292-1; 292-2; 418 at present an EMC-evaluation is carried out.
Warning marks, Labels, Meanings and Location

1. ON / OFF switch for Main Power
   Location: right side on frame;
   Attention: in case emergency button is pushed this switch will automatically switch OFF;

2. CAUTION sticker for trapping hazard EN 292,
   Please read carefully the instructions on this sticker
   (the sticker may vary for production reason)

3. Start Button colored white

4. Stop Button colored black

5. Thread Cut Button colored blue

6. Forward Button colored yellow

7. Safety Instruction Sticker for servicing, operating and maintaining

8. Caution Sticker for hot surface
   ( on all pulse motors, the motors may reach a certain temperature after long time running, which can reach up to 60°C )

9. Indication Sticker on Head
   ( please read manual )

10. Warning sticker for maintenance to pull plug out, before supplying oil

11. Caution sticker for sliding heads
    Attention: location and numbers varies from machine types, please make sure before you use the machine;

12. Risk of serious finger and hand injury
    Please make sure this cover is always closed and fixed via screw, only for necessary action you are allowed to open it, never leave it open while machine is running.
13. Risk of trapping hazard

14. Power Supply Voltage sticker
Risk of electrical shock or fire if this mark and the selected power to be provided is ignored!
Please always make sure that the external power supply via main plug meets exactly the specified Machine power.
- AC 220 V +/- 10% single phase  - AC 240 V +/- 10% single phase
  (L = brown; N = light blue; PE = green/yellow)
Remarks: For shielded cable the color green or gray is used.
Please make sure all PE connections and for EMC reason all shielded cables are connected, for qualified personnel only.
All works on electrical power cabinet must be carried out by authorized and qualified Personnel!

15. Labels: Stitching hazard on all needles;

16. Electrical hazard on all electrical components;

17. Trapping hazard whereas this label can be found;

18. Trapping hazard on all moving heads,
due to avoid additional stress for operator we did not cover this area, because for each time the string is broken it would necessary to remove it;
Please consult our local sales department and we will seek a solution.
19. All grooves are minimized to 8 mm, so that fingers may not enter, however it depends on various circumstances, the manufacturer cannot foresee.

20. Risk of electrical shock
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In order for you operate this machine properly, please be sure to read this instruction manual. Please keep it with care after reading and make good use as guidance when you want see how to use the machine.

This instruction book mainly contents as mentioned below.

**Note when handling the machine**

**Major function**

**Sequence to operation 1**

**Sequence to operation 2-1**

**Sequence to operation 2-2**

**Sequence to operation 3**

**Maintenance**

**Trouble and Measures**

※ Function and Specification are subject to change without notice.
Switch over for power supply and voltage

1. Open cover for the main unit at rear side on the right side of the machine to check that input tap (PRI.) on power transformers T1 and T2 fit power source voltage.

2. Connect power source cord to power source. (PE cord shall be connected to the ground.)

3. Turn power on and confirm that voltage of output tap (SEC.) of power transformer is set to 90～110V.

4. If voltage is not 90～110V, switch input tap of power transformer. At this moment, input tap of power transformer T1 should be same as power transformer T2.

Finish

How to remove the stopper

1. Remove stopper for needle bar selection on the rear side of the machine.

※Stoppers are installed at factory to prevent sliding part from moving during transportation.

Finish
In order to protect upper Y carriage and X carriage, set screws that join these carriages are taken off when the embroidery machine is shipped from the factory.

Please be sure to join upper Y carriage and X carriage with set screws contained in accessories before you operate the machine.

⚠️ Never lift the machine from under with forklift etc. with upper Y carriage and X carriage being joined.
There is a case that these carriages are broken as excessive power is inflicted on these carriages.
When you need to lift the machine from under, please be sure to remove set screws.

1. Fix square washer by 3 set screws as shown in the above picture.

2. Remove PP bands put under X carriage.

※ In order to maintain gap between X carriage and table, please be sure to remove PP bands after you joined upper Y carriage and X carriage.

End
MACHINE INSTALLATION

※ Do not run the machine before setting it properly.
Make sure of taking the following steps to set the machine.

1. Remove pipe covers at 4 corners, place block base and rubber mount under bolts and adjust bolts so that the machine becomes level. At this moment, get caster slightly risen from the floor. (Block bases and rubber mounts are included in accessories)
(As shown in Fig. 1, levelers should be placed on both sides of head bed with upper cover removed.)

2. Remove needle plates and bobbin cases from all the heads.

3. Lower the needle holder by pressing down with fingers on Fig. 2.

4. Turn grip in direction shown with arrow mark on Fig. 3 and set the angle of adjusting disc as shown in Fig. 4.
5
Confirm needle height of all heads.
Pull white plastic ø17 measuring gauge in and out of rotary hook in fig. 5. If height gauge has a light hit against rotary hook, needle height is correct. However if not, loosen needle bar block screw to adjust, then tighten it after adjustment.
(Remove the gauge when finished).

Note: Height gauge is contained in tool box.

6
Turn main shaft slightly in direction shown with an arrow mark.
Then set the angle of adjusting disc as shown in Fig. 6.
Seeing the space or timing between needle and tip of rotary hook as shown Fig. 7, 8. If the space is too open or too close, loosen 3 screws of shuttle to adjust. Make sure to tighten 3 screws after adjusted the space.
(The timing is set exactly at the factory. However, there is some case that the timing is changed by impact of transportation.)

7
Turn main shaft in direction and set to C point.
Place the bobbin and bobbin case in the hook and replace the needle plate and tighten.

8
Machine is now ready for sewing.
It will be helpful for you to understand pattern data. Pattern data will be classified in the following 3 different status.

**Tape pattern**
Pattern data are punched on paper tape. A roll of paper tape can store 35,000 stitches only in maximum. Reading takes time and tapes must be wound after reading. Paper tapes are apt to stain and tear. This will cause error when reading.

**Disk pattern**
Pattern data are stored in data disk. Memory capacity of data disk is far bigger than paper tape and capable of storing up to about 220,000～440,000 stitches per disk. It is easy to store a big amount of data in a small space and change data disk to other data disk. Also data disk can read pattern data in a short time.

**Memory pattern**
Pattern are stored in memory of the embroidery machine. From these stored pattern, a pattern is selected and embroidered. The machine has capacity of 244,000 stitches as standard.
You can use any floppy disk if it is new or initialized and 3.5" in size. Please use following 2 different floppy disks.

1. MF 2 DD (3.5"
2. MF 2 HD (3.5"

You will be able to use floppy disk repeatedly by repetition of writing and erasure. But it doesn't mean that loaded pattern data last forever. In course of frequent use of data disk, error may occur or data disk may be destroyed by careless handling.
Unlike paper tape, pattern data in destroyed data disk will not be reinstated. Therefore you need to pay attention when handling data disk.

※ Keep off data disk from magnetic materials. There are some cases that loaded data is washed out.

※ Don't apply heat to data disk nor keep in a place of high temperature and high humidity.

※ Don't open the shutter of data disk and touch magnetic part inside. If touched, it may not read and write data.

※ Switch write protect tab on the loaded data disk. You will be able to prevent pattern data from erasing by mistake.

※ Don't keep data disk in the disk drive unit for a long time. When you don't use the disk drive unit, take out data disk from it.
FEATURES

EASY OPERATION WITH COLOR MONITOR
Adopting TFT COLOR MONITOR and Menu selection realized the Operation visible and easier.

Correspond to various disk format
Possible to read/write Happy disk format and also possible to read other various disk format.

Display in icon
As data are partly displayed in icon and operation keys have icon on top, you will be able to easily recognize contents displayed and functions.

Go to
This function enables to embroider at middle of the Pattern by making designator of number of stitch and color number. At that time, position of Frame will be placed at right point from the start point.

Measure to power failure
Even if power suspended in course of embroidery, this function will enable you to recover position of the frame and memory pattern to state immediate before power failure and also to start point of that pattern.

Automatic recognition of tape format
This function will automatically recognizes binary and ternary tape format, and read them.

Memory function
This machine will be able to store pattern data up to 244,000 stitches (Max. 768,000 stitches) and 99 patterns. Patterns once stored will be retained even if power is cut off.

Combination of patterns
This function enables to combine plural number of patterns and store them in one pattern.

Offset
This function will enable you to set *start point of the frame by pattern. Using this function, you can start the frame from position to do easy manual work and move the frame to position to do embroidery. This function is convenient to exchange hoops etc.

Frame out
By setting move distance of the frame to *color number of pattern, this function will enable you to move the frame to any position automatically after having embroidered that color number. This function is convenient to trim threads while embroidering and also to make applique.

Frame registration
As this function will enable you to register start point by pattern, you can set position of start point automatically after having changed pattern. Or if you move the frame carelessly in course of embroidery, you can recover the frame to its previous position.

Conversion
This function will enable you to rotate pattern in reverse (mirror) view and also in every 90° by simple operation.
Rotation
This function will enable you to rotate pattern in every 1° within scope of -359° ~ +359°.

Scaling
This function will enable you to reduce or enlarge pattern in every 1% within scope of 50 ~ 200%. Also this function will enable you to set magnification length-wise and side-wise independently.

Adjustment of width
This function will enable you to adjust width within scope of -1.0 ~ +1.0 mm designated by pattern, in every 0.1 mm. You will be able to make fine tuning according to properties of fabrics and threads.

Repeat embroidery
This function will enable you to automatically produce pattern in designated quantities in any interval length-wise and side-wise.

Batch sewing
By designating Batch driving mode, enables to embroider any stored pattern in any order, up to 30 pieces in succession. While you are carrying out various settings set to each pattern, you can embroider and this makes combined pattern easily.

Data editing
This function will enable you to edit pattern data in every one stitch. Also you can set the function like jump, color change, thread cut, frame out, embroidery speed etc. and also insert or delete the stitch, change of stitch length is possible so that you can make amendment easily.

Memory pattern displayed by color
You can see all the memory pattern in the color monitor with the designated color of needle and background.

Active pattern display
This function enables to see the actual embroider position.

Zoom indication
This function enables to the thread shape of the designated needle position by designated magnification.

Various setting display
This function enables to understand the state of various setting (scale, angle, offset, etc.) without seeing each items.

Indication of pattern data information List
With this Pattern data list, you can confirm, Name of the pattern, Number of stitch, pattern size, start point.

Guide indication on operation switch
If there is any necessity of special Operation for each function. The explanation will be indicated so that you can operate without reading a manual.
1 Control box
2 Needle bar selection unit
3 X carriage
4 Y carriage
5 Thread cone stand
6 Head
7 Thread tension unit, Thread break detecting unit
8 Operation panel
9 Upper minor tension
10 Minor tension
11 Stand for under thread cone
12 Bobbin winder
13 Bobbin stand
14 Main shaft handle
15 Main unit
16 Main switch
17 Head bed
18 Table stay
19 Caster
20 Adjuster
21 Removable table
## Specifications and Options

### Specification

<table>
<thead>
<tr>
<th>Model</th>
<th>Needle</th>
<th>Head distance</th>
<th>Needle Embroidery area (Y × X)</th>
<th>Maximum dimension</th>
<th>Weight</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-stretch model</td>
<td></td>
<td></td>
<td>Tubular frame</td>
<td>Normal</td>
<td>Width × Depth × Height</td>
<td>kg</td>
</tr>
<tr>
<td>1002B-4STTC 10</td>
<td>2</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>1,840 × 1,270 × 1,703</td>
<td>490</td>
</tr>
<tr>
<td>1202B-4STTC 12</td>
<td>2</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>1,840 × 1,270 × 1,703</td>
<td>490</td>
</tr>
<tr>
<td>1502B-4STTC 15</td>
<td>2</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>1,840 × 1,270 × 1,703</td>
<td>490</td>
</tr>
<tr>
<td>1004B-4STTC 10</td>
<td>2</td>
<td>360</td>
<td>320 × 320</td>
<td>450 × 500</td>
<td>2,170 × 1,270 × 1,703</td>
<td>530</td>
</tr>
<tr>
<td>1204B-4STTC 12</td>
<td>2</td>
<td>360</td>
<td>320 × 320</td>
<td>450 × 500</td>
<td>2,170 × 1,270 × 1,703</td>
<td>530</td>
</tr>
<tr>
<td>1X004B-4STTC 10</td>
<td>4</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>2,840 × 1,270 × 1,703</td>
<td>690</td>
</tr>
<tr>
<td>1X120B-4STTC 12</td>
<td>4</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>2,840 × 1,270 × 1,703</td>
<td>690</td>
</tr>
<tr>
<td>1X06B-4STTC 10</td>
<td>4</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>2,840 × 1,270 × 1,703</td>
<td>690</td>
</tr>
<tr>
<td>1X08B-4STTC 12</td>
<td>6</td>
<td>360</td>
<td>320 × 320</td>
<td>450 × 500</td>
<td>2,890 × 1,270 × 1,703</td>
<td>730</td>
</tr>
<tr>
<td>1X150B-4STTC 15</td>
<td>6</td>
<td>500</td>
<td>420 × 440</td>
<td>450 × 500</td>
<td>3,940 × 1,270 × 1,703</td>
<td>960</td>
</tr>
<tr>
<td>1208B-4STTC 12</td>
<td>8</td>
<td>360</td>
<td>320 × 320</td>
<td>450 × 500</td>
<td>3,940 × 1,270 × 1,703</td>
<td>1030</td>
</tr>
</tbody>
</table>

#### Power source
1 phase 200~240V ±10% 50/60Hz

#### Electricity consumption
1.0 kwh

#### Environmental condition
- Temperature: 0~40°C
- Moisture: 45~85%

※ Sewing area mentioned above shows maximum frame movement, but actual sewing area may be limited by frame to be used.
※ Maximum machine speed may change by sewing condition, such as pattern, material and etc.

### Memory device

<table>
<thead>
<tr>
<th>Memory</th>
<th>Capacity</th>
<th>Registered pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>About 244,000 stitches</td>
<td>99 pat.</td>
</tr>
<tr>
<td></td>
<td>About 768,000 stitches (maximum increase)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data disk</th>
<th>Capacity</th>
<th>Registered pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>About 220,000 stitches (MF2DD)</td>
<td>About 55 pat.</td>
<td></td>
</tr>
<tr>
<td>About 370,000 stitches (MF2HD 1.2MB)</td>
<td>About 95 pat.</td>
<td></td>
</tr>
<tr>
<td>About 440,000 stitches (MF2HD 1.44MB)</td>
<td>About 110 pat.</td>
<td></td>
</tr>
</tbody>
</table>

※ Specification are subject to change without notice.

### Options

- Semi-wide cap frame [Embroidery area (mm) : 70×180]  [Holder frame ass'y [PHA-45]]
- Wide cap frame [Embroidery area (mm) : 75×360] [One-touch frame [PEA-33295]]
- Socks frame
The main switch & the brake switches at the right from front beneath the machine table.

**Main switch**

When this switch turns on (1), every power on the machine turns on.

※ The machine automatically preserves all necessary pattern data when you turn off power with POWER OFF SWITCH on control panel.

If you turn off power with MAIN SWITCH, error of power failure shows on control panel when you turn on power next time. (Refer to "ERRORS AND MEASURES" to cancel the power failure.)

**Brake switch**

This switch will change brake switch on the main shaft motor to ON and OFF. Normally run the machine with brake switch turned ON.

When the machine is in stop, brake switch on the main shaft motor will turn on, and you can't turn the main shaft by a hand. When you need to turn the main shaft by a hand in order to clean thread cut blade etc., turn brake switch OFF.

※ You will be able to run the machine with brake switch turned OFF, but error (error code No. 50) may frequently come out because of deteriorating of stop accuracy of the main shaft.
Thread break detecting switch

This switch by its position will make the machine as follows:

<table>
<thead>
<tr>
<th>Position of switch</th>
<th>Action of the machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper &quot;ON&quot;</td>
<td>Thread break detection</td>
</tr>
<tr>
<td>Middle &quot;OFF&quot;</td>
<td>Function of thread break detection doesn't work.</td>
</tr>
<tr>
<td>Lower Individual jump</td>
<td>Head with its switch lowered becomes jump and the machine doesn't embroider.</td>
</tr>
</tbody>
</table>

Mending switch

When you press this switch with the machine in non-operation (including automatic stop by thread break detection), the machine becomes same state as it stops by thread trouble regardless of actual trouble or not, and thread break lamp lights.

With thread break lamp being lit, return the frame with *trace back to position where you want to mend. When you press this switch and start the machine, it will mend portion not embroidered.

※ When you stop the machine manually, there is a case that thread break lamp doesn't light even if you press this switch, however mending is conducted.

Thread break lamp

When threads break, lamp blinks.
Please mend with instruction below.

- Mending switch
- Thread break lamp

1. Move back the frame to any position you want to made with trace back.

2. Press the switch for head you want to mend.

3. Start the machine.
   Start mending. The machine will mend head only where thread break jump lights or blinks. All heads will start to sew 2 stitches before mending finishes. When mending finishes, the machine will go on normal sewing.

*trace back: This is to move only the frame and memory pattern toward reverse direction of sewing with stop button or bar switch.

⚠️ Possibility of injury
After mending all heads start working immediately. Keep hands away from the needles.

※ In course of mending, when you press this switch for head not conducting mending, the machine will mend from this point.

※ In case thread cut takes place by color change etc. while doing mend sewing, head not doing mend sewing doesn't activate thread cut because its needle doesn't come down.
**How to pass upper threads**

Pass upper threads in following order according to Fig. 1.

1. Minor thread tension upper
2. Minor thread tension
3. Roller thread guide
   (For rotary type thread break detecting device)
4. Detecting roller
   (For rotary type thread break detecting device)
5. Rotary tension disc
   Wind upper threads one time around rotary tension disc clock-wise as illustrated in Fig. 1.
6. Check spring
7. Upper thread guide
8. Lower thread guide
9. Thread guide plate upper
10. Thread guide plate middle
11. Take-up lever
12. Thread guide plate middle
13. Thread guide plate lower
14. Needle bar thread guide
15. Needle
16. Pressure foot

※ When you passed threads, pull upper threads from needle and check if detecting roller moves smoothly.

**Thread holding rubber**

When you use the machine in alternate heads or run the machine in individual head sewing, thread take up levers for unused heads move and upper threads come off from thread catch holder or thread holding spring. Therefore in order to keep upper threads in place, put thread holding rubber against front panel of unused heads as shown in Fig. 2. By doing this way, you will be able to prevent upper threads from coming off.

※ When you embroider, please be sure to take out thread holding rubber.
※ Stick removed thread holding rubbers to the machine and keep them.
BOBBIN WINDING

Wind lower thread on to bobbin in the following sequence as illustrated.

1. Place lower thread cone on lower thread stand.

2. Pass lower thread from upper thread guide through to minor thread tension as illustrated.

3. Place bobbin on bobbin winder spindle.

4. Wind lower thread several times on to bobbin clockwise.

5. Turn lever toward an arrow mark.

When the machine is running, bobbin will start to turn and wind lower thread. When the machine finishes winding of lower thread, lever will return to its place and bobbin stops turning.

When you continue lower thread winding, repeat steps 3 - 5.

<END>
**Power cut switch**

The power will turn off when you press this switch. Usually, when you cut power off, please be sure to use this switch.

※ When you cut power off with main switch on the main unit, the machine will become same state as power failure. When you turn power on again, the machine will display error indicating that power suspended.

※ When you turn power off with the main switch in course of embroidering, pattern deformity may occur.

※ When noise interference and trouble etc. prevent you from cutting power off with this switch, please cut power off with the main switch.

※ When power on with main switch. Refer to the next page. Refer to page of "MAIN SWITCH, BRAKE SWITCH".

---

**Operation key**

This key conducts various operations and settings.

**Speed control knob**

This knob adjust machinespeed from low to high without step
Parallel port
This will connect outer devices such as pattern editing machine etc. and conduct input of pattern data.

Contrast adjusting VR
This adjusts brightness of display.

VR for adjustment
※ These VR are already adjusted in proper value. No other persons than trained and experienced maintenance man should adjust VR.
Alteration of value will cause mal-function of the machine.

Button to take out disk
Press this button and take out data disk.

Serial port (RS232)
This will connect outer devices such as pattern editing machine etc. and conduct input of pattern data.

Disk access lamp
When lamp is lit, the data disk is being read or written.
※ When this lamp is being lit, never take out data disk. When you take out data disk while lamp is on, data disk and disk reading unit of the machine may be destroyed.

Disk insertion slit
Insert floppy disk (Data disk).
It shows status driving and setting when lighting.

**Status**
This displays state of operation and settings etc.

**Auto external reading**
This displays that machine reads pattern data by Auto external reading.

**Cap frame**
This displays that use of cap frame is set. This sets frame out to selected pattern.

**Frame out**
This displays that frame out is under way.

**Batch**
This indicates that batch sewing is set.

**Top**
This displays that the machine is ready to start embroidery from top of memory pattern.

**Drive**
This indicates that the machine embroiders selected pattern in memory.
**Operation key**

Operation keys are located as follows:
Needle move key at left above, frame move key at left down, drive related keys in center and designation related keys at right.

- **Display change**
  This changes contents of display.

- **Forward**
  The drive frame advances one stitch when pressed once. If you keep pressing, the frame goes forward continuously. The key has the same function as the forward button on operation panel. Refer to page of "OPERATION PANEL".

- **Frame Move**
  The frame moves toward direction of an arrow mark on pressed key.

- **Fast**
  When you press this key while pressing frame move key, speed to move the frame gets fast.

- **Position**
  Even if you move the frame with frame move key during or after embroidery, the frame returns to position before move.

- **Original point return**
  The frame returns to original point of pattern, and position to start sewing returns to top of pattern data. After you returned the frame to original point with this key, the frame will return to position before you press original point return key if you press this key again.

  *Original point : This is point where the frame makes the first move when the machine starts embroidery.*

- **Top key**
  When this key is pushed, part of pattern where sewing starts returns to top of pattern data and status of lights.
Setting key (DESIGNATION)

- **Escape**: This switches to "Drive" mode from other menu. Conducts finish and stop of setting.
- **Clear**: This deletes figures and characters being input and releases error.
- **Cursor**: This moves cursor to sideways and selects the letters or setting items.
- **Program menu change**: This changes program menu.
- **Function menu change**: This changes function menu.
- **Up**: This key moves and selects menu and cursor to upward.
- **Down**: This key moves and selects menu and cursor to downward.
- **Set**: This puts menu and setting items in practice.
- **Shift**: When you press this key while pressing other key, function of that key changes.
- **Plus minus**: This changes input numbers to plus and minus.
- **0 ~ 9 Number**: This inputs numbers.
Operation screen

Area of pattern display

- ID No.
- State of Convert
- Name of pattern
- Scale, Angle, Width, Repeat
- Auto origin, Off set, Outline trace

Happy Embroidery Machine

Needle: 2
Repeat: 5
Stitch: 1
X: 0.0
Y: 0.0

Needle number of machine
Needle number and color set into the pattern data
Actual number is showed bigger and the following is showed smaller
Remaining number of repeat
Number of stitch
Distance of move
Operation panel is placed between thread tension units.

<table>
<thead>
<tr>
<th>STATUS of the Machine</th>
<th>Button Operation</th>
<th>Button Operation</th>
<th>Stop</th>
<th>Running</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency button</td>
<td>Push</td>
<td>Pressing this button will put power source off compulsorily. Machine stops compulsorily. Button will be locked after press it once.</td>
<td>Pressing this button will put power source off compulsorily. Machine stops compulsorily. Button will be locked after press it once.</td>
<td>Please use this button only for emergency. If you press this button and turn power off while sewing, you may not be able to continue from exact position of embroidery.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn the button right to cancel the lock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread cut button</td>
<td>Push</td>
<td>When you press the thread cut button, the main shaft will make automatic turn and needles drop one time. Please pay care to this point.</td>
<td></td>
<td></td>
<td>When the machine is in state of jump by the thread break detecting switch, even if let the machine cut under threads, the machine will cut under threads, but will not cut and catch upper threads.</td>
</tr>
<tr>
<td>STOP Button</td>
<td>Push</td>
<td>The frame move back one stitch. <em>(Trace back)</em></td>
<td>Stop running</td>
<td><em>Trace back : This is to move only the frame and memory pattern forward reverse direction of sewing.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing</td>
<td>The frame keeps moving back. <em>(Trace back)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing more than 10 stitches</td>
<td>Function of button is locked. The frame goes back by one stitch in succession when hand is off. When you stop it, push again.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing more than 20 stitches</td>
<td>Function of button is locked. The frame goes back by 10 stitches in succession when hand is off. When you stop it, push again.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing</td>
<td>The machine starts on slow speed.</td>
<td>Revolution is reduced to</td>
<td>*Slow driving.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing for a while</td>
<td>The machine starts on slow speed until detach the hand from button.</td>
<td>Revolution is reduced until detach the hand from button.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward Button</td>
<td>Push</td>
<td>The frame moves forward one stitch. <em>(Trace forward)</em></td>
<td></td>
<td></td>
<td>*Trace forward : This is to move only the frame and memory pattern forward sewing direction.</td>
</tr>
<tr>
<td></td>
<td>Keep pushing</td>
<td>The frame keep moving forward. <em>(Trace forward)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing for a while</td>
<td>Button is locked. The frame keeps moving forward even if you release button. When you stop it, push stop button.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep pushing for more than a while</td>
<td>Button is locked. The frame keeps moving forward by 10 stitches in succession, even if you release button. When you stop it, push stop button.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Disk insertion slit**
Insert floppy disk (Data disk).

**Button to take out disk**
Press this button and take out data disk.

**Floppy disk (Data disk)**
Please Insert the Floppy disk gently until hear the little noise "tic"

**Disk access lamp**
When lamp is lit, the data disk is being read or written.
* When this lamp is being lit, never take out data disk. When you take out data disk while lamp is on, data disk and disk reading unit of the machine may be destroyed.
<table>
<thead>
<tr>
<th>SETTING ITEM</th>
<th>SETTING CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Keep null (CHG.)</td>
<td>Yes</td>
</tr>
<tr>
<td>2 Skip null stitch</td>
<td>No</td>
</tr>
<tr>
<td>3 Combine jump</td>
<td>No</td>
</tr>
<tr>
<td>4 TRD. break back</td>
<td>Yes</td>
</tr>
<tr>
<td>5 All head mending</td>
<td>No</td>
</tr>
<tr>
<td>6 Width data limit</td>
<td>13</td>
</tr>
<tr>
<td>7 Wide cap mode</td>
<td>No</td>
</tr>
<tr>
<td>8 Quick start mode</td>
<td>Yes</td>
</tr>
<tr>
<td>9 Auto thread cut</td>
<td>Yes</td>
</tr>
<tr>
<td>10 Cut at jump data</td>
<td>3</td>
</tr>
<tr>
<td>11 Cut at null jump</td>
<td>Yes</td>
</tr>
<tr>
<td>12 CHG. always cut</td>
<td>Yes</td>
</tr>
<tr>
<td>13 Stitch sweeper</td>
<td>No</td>
</tr>
<tr>
<td>14 Sweep length</td>
<td>4</td>
</tr>
<tr>
<td>15 Full length cut</td>
<td>No</td>
</tr>
<tr>
<td>16 Thread back long</td>
<td>No</td>
</tr>
<tr>
<td>17 All pattern disp</td>
<td>No</td>
</tr>
<tr>
<td>18 Data format</td>
<td>Auto</td>
</tr>
<tr>
<td>19 Write various setting</td>
<td>No</td>
</tr>
<tr>
<td>20 Read various setting</td>
<td>No</td>
</tr>
<tr>
<td>21 Speed down when cancell the mending</td>
<td>Yes</td>
</tr>
<tr>
<td>22 Trace mode</td>
<td>No</td>
</tr>
<tr>
<td>23 Trace data make</td>
<td>No</td>
</tr>
<tr>
<td>24 Trace Type</td>
<td>Area</td>
</tr>
<tr>
<td>25 Insert lock stitch at the beggining of embroider</td>
<td>Yes</td>
</tr>
<tr>
<td>26 Width data all</td>
<td>0.0</td>
</tr>
<tr>
<td>27 Preview data make</td>
<td>Yes</td>
</tr>
<tr>
<td>SETTING ITEM</td>
<td>SETTING CONTENTS</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>&lt;RS232C&gt; Input setting</td>
<td>OFF</td>
</tr>
<tr>
<td>&lt;RS232C&gt; Input setting</td>
<td>9600 bps</td>
</tr>
<tr>
<td>&lt;Setting&gt; Scale</td>
<td>Scale X 100%</td>
</tr>
<tr>
<td></td>
<td>Scale Y 100%</td>
</tr>
<tr>
<td>&lt;Setting&gt; Angle</td>
<td>0°</td>
</tr>
<tr>
<td>&lt;Setting&gt; Width</td>
<td>0.0mm</td>
</tr>
<tr>
<td>&lt;Setting&gt; Repeat</td>
<td>Quantity X 1</td>
</tr>
<tr>
<td></td>
<td>Quantity Y 1</td>
</tr>
<tr>
<td></td>
<td>Distance X 0.0</td>
</tr>
<tr>
<td></td>
<td>Distance Y 0.0</td>
</tr>
<tr>
<td></td>
<td>Priority X</td>
</tr>
<tr>
<td>&lt;Setting&gt; Convert</td>
<td>P</td>
</tr>
<tr>
<td>&lt;Setting&gt; Auto origin</td>
<td>ON</td>
</tr>
</tbody>
</table>

*Initialization of each setting item/Standard setting*
MONITOR DISPLAY/Displaying the pattern 10.2

State as top

- Area of pattern display
- Pattern number
- State of Convert
- Name of pattern
- Scale, Angle, Width, Repeat
  - Auto origin, Off set, Outline trace
  - It will be displayed as green when it settled. When it is not settled displayed as grey.
- Current selected needle number
- Needle number and color
  - Actual number is showed bigger and the following is showed smaller
- Number of repeat which remain
- Number of stitch
- Distance of move

During embroidering

+cursor indicates the position of actual stitch point.

The embroidered part and the next embroidering part will be colored.

- Drawing of next 13 stitch will be done.

The part which has not embroidered will be shown in outline.

- If the needle number is not set to the color number, the regular color to be assigned automatically.
- Embroider will start after displaying all the pattern in outline, when you start with "Top".
- +cursor indicates the position of actual stitch point.
  - The pattern will be colored by the progress of embroider.
MONITOR DISPLAY / Not displaying the pattern 10.3

State as top

- No pattern display.
- Pattern number
- State of Convert
- Name of pattern
- Scale, Angle, Width, Repeat
- Auto origin, Off set, Outline trace
  - It will be displayed as green when it settled.
  - When it is not settled displayed as grey.
- Current selected needle number
- Needle number and color
  - Actual number is showed bigger and the following is showed smaller
- Number of repeat which remain
- Number of stitch
- Distance of move

During embroidering

- No pattern display.
- Shift to left when color change.
- Stitch speed

1030-CDA601-25
How to read the instruction

Explanation on operation of the machine is made under the following manner:

Displays on the control box are shown at the right side of this page and order of operation at the right side.

Normally, displays on control box at the right correspond to status immediate after each operation.

1. Order of Operation
   - Operation key and switch
   - This indicates operation of keys and switches of the machine
   - ☑️ This indicates efficient order of Operation

2. When this mark is displayed, it indicates that you press any key while pressing shift key
   
   Supplement of operation: This indicates supplementary explanation or operation or action of the machine against operation.

3. When there are 2 or 3 displays at one key operation, indicates change of state in continue at on

It shows the explanation of operation procedure to be continued the next page.
How to read the instruction

Operation key

In the order of operation, this indicates transformation of display by pushing the left key

This indicates important subject or contents of which you should do in its subject
This machine has "Function menu" to read pattern data etc. and "Program menu" to select patterns and set various settings. Each menu has various items.

**Change to function menu**

Press \[\text{function}\] while lamp for \[\text{drive}\] of status is on.

The mode changes to "Function menu".

**Change to program menu**

Press \[\text{program}\] while lamp for \[\text{drive}\] of status is on.

The mode changes to "Program menu".

**Change of items on each menu**

Press \[\downarrow\uparrow\].

Items on menu changes from left to right or from up to down.

**Returning to "Drive" from each menu**

Press \[\text{escape}\].

Display returns to "Drive" from other item. \[\text{drive}\] of status lights.
Operation order for embroidering

Order of basic operation

- Function menu
- Program menu

Create

Other

Disk reading
- External reading
- Tape • RS232C

Memory pattern
- Select • Rename • Delete • Confirm

Thread color • Cloth color

Needle bar selection
- Color number • Color change stop

- Adjust • Repeat • Convert • Auto origin

- Position confirmation • Selection of the frame • Monitor display

Frame move key

- Locate (Entry • Return • Repair)
- Position (Stitch • Change • Piece)

- Offset (Teach • Alter)
- Frame out (Set • Teach • Alter)
- Batch sewing (Alter • Set • Reset)

Drive

Data edit

Finish

- Floppy disk (Write • Erase • Initial)
### Features of supplemental function / Function menu

This explains supplemental function on Function mode simply.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SUB MENU</th>
<th>Setting item etc.</th>
<th>Setting contents</th>
<th>Feature of supplemental Function</th>
<th>Explanation of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DISK</strong></td>
<td>Disk reading</td>
<td></td>
<td></td>
<td>This reads pattern data disk and writes in memory</td>
<td>21.00</td>
</tr>
<tr>
<td></td>
<td>(Disk format selection)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TJM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PDR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MELexp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZSK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading</td>
<td></td>
<td></td>
<td>This reads pattern data disk and writes in memory continuously</td>
<td>21.04</td>
</tr>
<tr>
<td></td>
<td>Join</td>
<td></td>
<td></td>
<td>This connects 2 patterns and writes in memory as 1 pattern</td>
<td>21.10</td>
</tr>
<tr>
<td><strong>TAPE</strong></td>
<td>TAPE Reading External reading</td>
<td></td>
<td></td>
<td>This reads pattern data from tape reader or external device and writes in memory</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>(TAPE format selection)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auto</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brd·Zak</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Join</td>
<td></td>
<td></td>
<td>This connects 2 patterns and writes in memory as 1 pattern</td>
<td>22.00</td>
</tr>
<tr>
<td><strong>CREATE</strong></td>
<td>Function setting</td>
<td>※ another sheet</td>
<td></td>
<td>This sets basic function of this machine</td>
<td>24.00</td>
</tr>
<tr>
<td><strong>Locate</strong></td>
<td>Frame position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Registratio n</td>
<td></td>
<td></td>
<td>This registers start position of pattern</td>
<td>25.01</td>
</tr>
<tr>
<td></td>
<td>Registratio n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Registered position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Registered position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Repair</td>
<td></td>
<td></td>
<td>When position of the frame change by power suspension, these function will restore the frame to the registered start point</td>
<td>25.03</td>
</tr>
<tr>
<td></td>
<td>Repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>POSITION</strong></td>
<td>Position This is to set position of frame and data or designated point</td>
<td>Stitch</td>
<td></td>
<td>This moves the frame to desired number of stitch</td>
<td>26.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td></td>
<td>This moves the frame to first position of desired color number of pattern</td>
<td>26.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peace</td>
<td></td>
<td>This moves the frame to first position of the number of desired repetition</td>
<td>25.06</td>
</tr>
<tr>
<td><strong>RS-232C</strong></td>
<td>Setting of RS-232C</td>
<td>RS232 Mode</td>
<td>No·Yes</td>
<td>Serial port is used</td>
<td>27.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RS232 Speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>38400</td>
<td></td>
<td>Comunication speed (Baud rate) of serial point is selected</td>
<td>27.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FLOPPY</strong></td>
<td>Floppy disk</td>
<td>Write</td>
<td></td>
<td>This writes memory pattern in data disk</td>
<td>28.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erase</td>
<td></td>
<td>This deletes any pattern in data disk</td>
<td>28.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initialize</td>
<td></td>
<td>This initializes floppy disk 2DD and 2HD on the market and makes data disk on TAP type</td>
<td>28.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2DD(720K)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2HD(1.25M)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2HD(1.44M)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OTHER</strong></td>
<td>Other</td>
<td>All clear</td>
<td>Clear all the memory pattern</td>
<td>All patterns registered in memory are erased all at once</td>
<td>29.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Counter</td>
<td>Reset the stitch counter</td>
<td>This resets cumulative total stitches</td>
<td>29.02</td>
</tr>
</tbody>
</table>
Features of each setting item / Program menu

This explains each setting item on program mode simply.

<table>
<thead>
<tr>
<th>MAIN MENU</th>
<th>SUB MENU</th>
<th>Setting item</th>
<th>Setting Area</th>
<th>Feature of setting</th>
<th>Explanation of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PATTERN</td>
<td>Memory pattern</td>
<td>Select</td>
<td></td>
<td>This selects pattern stored in memory</td>
<td>30.00</td>
</tr>
<tr>
<td></td>
<td>Memory pattern</td>
<td>Delete</td>
<td></td>
<td>This deletes pattern stored in memory</td>
<td>30.05</td>
</tr>
<tr>
<td></td>
<td>Memory pattern</td>
<td>Display</td>
<td></td>
<td>This displays pattern stored in memory</td>
<td>30.08</td>
</tr>
<tr>
<td></td>
<td>Memory pattern</td>
<td>Rename</td>
<td></td>
<td>This changes pattern name of a pattern in memory</td>
<td>30.02</td>
</tr>
<tr>
<td>SETTING</td>
<td>Setting of pattern</td>
<td>Adjust</td>
<td>Pattern adjustment</td>
<td>Scale X.Y 50～200(%)</td>
<td>This sets magnification in any proportion</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Angle</td>
<td></td>
<td>-359° ～ +359°</td>
<td>This sets rotation of a pattern at any angle</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Width</td>
<td></td>
<td>1.0～ +1.0(mm)</td>
<td>This sets any width adjustment to width of a pattern</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Repeat</td>
<td>Repeat</td>
<td>Peace X.Y 1～30</td>
<td>This sets production quantity when you perform repeat</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Repeat</td>
<td>Repeat</td>
<td>Space X.Y -999.9～+999.9 (mm)</td>
<td>This sets distance between start point of each pattern when you perform repeat</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Priority</td>
<td>X(Sidewise) Y(lengthwise)</td>
<td>When you set more than 2 pieces for repeat lengthwise and sidewise, This selects direction to embroider 2nd piece.</td>
<td>34.15</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Convert</td>
<td>Cordinat e conversion</td>
<td></td>
<td>This selects angle for corindate.</td>
</tr>
<tr>
<td></td>
<td>Setting of pattern</td>
<td>Auto Origin</td>
<td>Return to Auto Origin</td>
<td>on-off</td>
<td>This switches to make Automatic original point return or not.</td>
</tr>
<tr>
<td>NEEDLE</td>
<td>Needle bar selection</td>
<td>Needle bar selection</td>
<td>Needle, Color Number</td>
<td>Needle number are set to each color number of memory pattern</td>
<td>35.01</td>
</tr>
<tr>
<td></td>
<td>Needle bar selection</td>
<td>Needle bar selection</td>
<td>Color change stop</td>
<td>Color change stop are set to each color number of memory pattern</td>
<td>35.03</td>
</tr>
<tr>
<td>OFFSET</td>
<td>Teach</td>
<td>Input teaching</td>
<td></td>
<td>This moves the frame with frame move key to set offset</td>
<td>36.01</td>
</tr>
<tr>
<td></td>
<td>Alter</td>
<td>Alter</td>
<td>0～999.9 (mm)</td>
<td>This moves distance of offset directly by key input</td>
<td>36.04</td>
</tr>
<tr>
<td>FRAME OUT</td>
<td>Teach</td>
<td>Input teaching</td>
<td></td>
<td>This moves the frame with frame move key to set frame out</td>
<td>38.01</td>
</tr>
<tr>
<td></td>
<td>Alter</td>
<td>Alter</td>
<td>0～999.9 (mm)</td>
<td>This move distance of offset directly by key input</td>
<td>38.05</td>
</tr>
<tr>
<td>EDIT</td>
<td>Data edit</td>
<td></td>
<td></td>
<td>This conducts data editing such as addition of stitches, erasures, move, addition of function code, change to selected memory pattern</td>
<td>41.00</td>
</tr>
<tr>
<td>BATCH</td>
<td>Batch Sewing</td>
<td>Alter</td>
<td>Alter</td>
<td>30 pieces</td>
<td>This conducts registration of patterns to be batch treated in order</td>
</tr>
<tr>
<td></td>
<td>Batch Sewing</td>
<td>Set</td>
<td>Setting</td>
<td>This sets to execute of batch operation</td>
<td>46.05</td>
</tr>
<tr>
<td></td>
<td>Batch Sewing</td>
<td>Reset</td>
<td>Reset</td>
<td>This cancels to execute of batch operation</td>
<td>46.07</td>
</tr>
<tr>
<td>COLOR</td>
<td>Setting of color to be displayed</td>
<td></td>
<td>128 colors</td>
<td>This sets to each color of pattern to be displayed</td>
<td>47.00</td>
</tr>
<tr>
<td>CLOTH</td>
<td>Setting of background color to be displayed</td>
<td></td>
<td>128 colors</td>
<td>This sets to back ground color for the pattern to be displayed</td>
<td>48.00</td>
</tr>
<tr>
<td>FRAME</td>
<td>Protection of frame hit</td>
<td>Select</td>
<td>Selection of frame</td>
<td>round frame, square frame, Tubuler round frame, Tubuler square frame, Cap frame, Registered frame by user</td>
<td>This selects frame to be used</td>
</tr>
<tr>
<td></td>
<td>Protection of frame hit</td>
<td>Display</td>
<td>Position of frame is displayed</td>
<td>This displays the position of frame and needle drop point of pattern</td>
<td>48.03</td>
</tr>
</tbody>
</table>
This machine has function of manual needle bar change and automatic needle bar change for changing needle bar.

**Manual needle bar change**

When you begin to operate the machine without setting mode of "Drive" or "Color change" after reading pattern in memory, the machine makes automatic stop at the start of each *color number, and you can select desired needle bar manually.

※ Once you embroider with mode of manual needle bar change, "color change" is set and needle bar is set to each color number and you can embroider with mode of automatic needle bar change from 2nd time.

1. Read pattern from data disc etc. Or select pattern not in use or select pattern with "color change" not set.
   Refer to page of "DISK READING", "MEMORY PATTERN".

2. Press [ ] to light [drive] of status is on.

3. Set the frame with [ ] (frame move) to position where to start embroidery.

4. Select any needle bar with [ ] (Needle bar change key).

5. Push start button.
   When you start the machine and finish sewing one color number, the machine display right message and stops.

6. When there is color number after 2nd color, repeat 4 and 5 and embroider to the last color number.
   When the machine finishes the last color number, it stops and drive information [ ] (top) lights.

Finish

※ When you stop the machine with pattern data being top or in midway of color number and resumed operation by switching to other needle bar with [ ], the switched needle bar is set to that color number.
Automatic needle bar change
For pattern once used by mode of "manual needle bar change" or for pattern to which color change is set, the machine embroiders by automatically changing needles when you start to run it.

1 Select pattern for which needle bar is set to each color number by "Change" etc.
   Refer to page of "MEMORY PATTERN", "CHANGE".
2 Press $\text{Esc}$ (escape) to light $\text{Drive}$ (drive) of status is on.
3 Set the frame with $\rightarrow$ (frame move) to position where to start embroidery.
4 Push start button.
   The machine embroiders by automatically changing needle bar according to setting of "Change". When you finish sewing to the last of pattern, the machine stops and status $\text{Stop}$ (top) lights.

Finish

※ When you stop the machine with pattern data being top or in midway of color number and resumed operation by switching to other needle bar with $\text{Nin}$, the switched needle bar is set to that color number.
Guide indication on operation key

If there is any necessity of special operation for each function, The explanation will be indicated so that you can operate without reading a manual.

### Function Mode

<table>
<thead>
<tr>
<th>Main menu</th>
<th>Sub menu</th>
<th>Setting item</th>
<th>Guide indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjust</td>
<td>Item</td>
<td>※ Another sheet</td>
<td>○</td>
</tr>
<tr>
<td>RS232</td>
<td>Input mode</td>
<td>Speed (baud rate)</td>
<td>○</td>
</tr>
<tr>
<td>Other</td>
<td>Memory pattern</td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

### Program Mode

<table>
<thead>
<tr>
<th>Main menu</th>
<th>Sub menu</th>
<th>Setting item</th>
<th>Guide indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Item</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern</td>
<td>Select</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Rename</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Adjust (Pattern adjustment)</td>
<td>Repeat</td>
<td>Piece X,Y</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Space X,Y</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Priority X,Y</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Auto Origin</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Needle select</td>
<td>Needle number</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Stop color change</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Frame out</td>
<td>Active needle</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Edit</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Batch</td>
<td>Registration</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Material</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Scale</td>
<td></td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

**Ex. How to see the guide indication of pattern adjustment**

1. Press the key "Program".
2. Press the "Up Key" and scroll to the selection "Pattern".
3. Press the "Set Key"

---

**Pattern Selection**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Id: 01</th>
<th>Name: FLOWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 FLOWER</td>
<td>Stitches: 89785</td>
<td></td>
</tr>
<tr>
<td>02 MOON</td>
<td>Changes: 12</td>
<td></td>
</tr>
<tr>
<td>03 BIRD</td>
<td>Width: 676.1</td>
<td></td>
</tr>
<tr>
<td>04 FANTASY</td>
<td>Height: 589.3</td>
<td></td>
</tr>
<tr>
<td>05 CHILD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 DOG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 HOUSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08 TREE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09 SUN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 CAT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

To erase the selected design hold the "Shift Key" and press the "Display change Key".

---

You can use the function, when this mark appears.
This reads pattern data from data disk and writes in memory. When the HAPPY format pattern data with various function setting is read in memory, various functions such as needle bar selection, pattern data adjustment and etc. to be set automatically.

※ When you write pattern data in memory, you will consume memory of hundreds of stitches besides number of stitches of the pattern. Before reading, check that free memory has more capacity than the number of stitches to be read and hundreds of stitches put together.

※ There is a case that data disk of Happy or Tajima has pattern in data format of Barudan or ZSK. In case you can't read pattern properly from these data disks, change data format according to "Data format" in "Data disk" and read again.

End : This stores pattern already read in memory.
Read : This is to read the Pattern and Memorize in to Memory.
Join : This is to connect various pattern in to one and can memorize.

Insert the diskette into the disk drive on the right side of the control panel.

1

2

Press the "Function Key".

3

Press the "Up Key" and select "Disk".

If you hold the "Shift Key" while pressing the "Up Key" you can select Disk easily.
4 Press the "Set Key".

5 Use the "Up and Down Keys" to select the disks format from the sub menu.

   By holding (shift) and pressing ( ) and ( ) keys you can move quickly to the selection.

6 Press the "Set Key".

Format menu is shown.

As a example we have selected the Happy format

Prohibit to takeout the floppy disk

A message is shown.

A menu show the design stored on the diskette.
Use the "Up and Down Keys" to select the design you wish to work with.

By holding (shift) and pressing ▲ and ▼ keys you can move quickly to the selection.

Press the "Set Key".
9

Press the "Set Key".

- If you press the "Function Key" at step 7 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.

Return to Drive Mode.
After storing patterns that are read, keep reading other patterns.

1. Insert the diskette into the disk drive on the right side of the control panel.

2. Press the "Function Key".

3. Press the "Up Key" and select "Disk".

*If you hold the "Shift Key" while pressing the "Up Key", you can select Disk easily.*
4 Press the "Set Key".

5 Use the "Up and Down Keys" to select the disks format from the sub menu.
   - By holding (shift) and pressing ↑ and ↓ keys you can move quickly to the selection.

6 Press the "Set Key". 

--- Search pattern ---

A message is shown.

A menu shows the design stored on the diskette.
7 Use the "Up and Down Keys" to select the design you wish to work with.

💡 By holding [shift] and pressing ▲ and ▼ keys you can move quickly to the selection.

8 Press the "Set Key".

--- Reading disk ---

A message is shown.

Sitch : 142768

A message is shown.
9. After you finish step 8 you will see the screen as shown.

10. Press the "Down Key" and select "Read".

11. Insert the floppy diskette you wish to read from.
Press the "Set Key".

A message is shown.

A menu shows the design stored on the diskette.

Use the "Up and Down Keys" to select the design you wish to work with.

By holding (shift) and pressing ▲ and ▼ keys you can move quickly to the selection.

The designs new ID number in the machines memory

Shows the machines free memory

As an example we select the design Bird
Press the "Set Key".

Return to Drive Mode.

- If you press the "Function Key" at step 7 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This is used for joining 2 patterns and memorize as one pattern data.

1. Insert the diskette into the disk drive on the right side of the control panel.

2. Press the "Function Key".

3. Press the "Up Key" and select "Disk".

If you hold the "Shift Key" while pressing the "Up Key" you can select Disk easily.
4
Press the "Set Key".

5
Use the "Up and Down Keys" to select the disks format from the sub menu.

By holding [shift] and pressing [▲] and [▼] keys you can move quickly to the selection.

6
Press the "Set Key".
**DISK READING/Join**

7. Use the "Up and Down Keys" to select the design you wish to work with.

   - By holding (shift) and pressing ► and ◄ keys you can move quickly to the selection.

8. Press the "Set Key".

   - As an example, we have selected the flower design.
   - A message is shown.
   - A message is shown.

2112-CDA01-14
9 After step 8 in the read design section use the Down key and select Join.

10 Press the "Down Key" and select "Join".

11 Insert the floppy diskette you wish to read from.
12
Press the "Set Key".

13
Press the "Set Key".

14
Use the "Up and Down Key" and select the designs name you wish to Join.

By holding (shift) and pressing ↑ and ↓ keys you can move quickly to the selection.
Press the "Set Key".

A message is shown.

Press the "Set Key".

Return to Drive Mode.

- If you press the "Function Key" at step 7 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Using this function you can read data from a *PC using a serial cross cable.

* PC : This device is to take out pattern data from pattern editing machine and tape reader etc.

When you write pattern data in memory, you will consume memory of hundreds of stitches besides number of stitches of the pattern. Before reading, check that free memory has more capacity than the number of stitches to be read and hundreds of stitches put together.

**Before reading the design**

1. Connect a RS-232C Serial cross cable from the right side of the control panel to the com port in the PC.

   Note: contact your software vendor for details concerning the direct connection. Some software makers do not offer this feature.

2. In the create menu change the RS232C setting to ON.

3. Make sure the machine and PC's com port speeds match.

Refer to page 26.00 and read the RS232C connection information.

Press the "Function Key".

---

FUNCTION MENU

- DISK
- TAPE
- CREATE
- LOCATE
- POSITION
- FLOPPY
- OTHER

Settings menu is shown.
2. Use the "Up and Down Key" and choose "Tape".

3. Press the "Set Key".

4. Use the "Up and Down Key" and select the format.

If you choose Auto for your format the machine will judge the format.

Note: because of the wide variety of machine format it is possible that the automatic format function will not work in all cases. In case of reading error select the specific format.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>Automatic Selection</td>
</tr>
<tr>
<td>Happy</td>
<td>Happy, Tajima</td>
</tr>
<tr>
<td>Brd</td>
<td>Barudan</td>
</tr>
<tr>
<td>Zsk</td>
<td>Zsk</td>
</tr>
</tbody>
</table>
5  Press the "Set Key".

6  Press the "Set Key".

7  Follow your PC software instructions for sending data.
   Note: contact your software vendor for details concerning the direct
   connection. Some software makers do not offer this feature.

   Send the data to the machine.

   Status message / reading the design.

   Stitches read are shown.

   After reading confirm by selecting END.
8  Press the "Set Key".

※ Number of stitch will be registered as a pattern data at first, If you change pattern name please see the ref. at "Memory pattern".

9  Press the "Display Change Key".

Finish

- If you press the Function Key at step 5 you will go back to step 4.
- If you press the Function Key at step 7 you will cancel and return to the Drive Menu.
- If you press the Function Key at any other step you will return to the Function Menu.

- If you wish to cancel the settings at steps 7 press the "Clear Key" you will go back to step 5.
This is used for joining 2 patterns and memorize as one pattern data.

1. Refer to page 22.00 and follow steps 1 to 6.

2. Press the "Down Key" and select Join.

3. Press the "Set Key".

Press the "Set Key".

Status Message / Ready to Read.
Send design data from PC.

Status / Reading Design.

After displaying drawing on the right, displays drawing on the right bottom.

Press the "Set Key".

※ In case you change pattern name, refer to page of "MEMORY PATTERN".

Press the "Display Change Key".

Finish
EXTERNAL READING (Parallel Port) 22.06

Using this connection you can read in designs from a *pattern data output device. This is device to take out pattern data from pattern editing machine and tape reader etc.

Before reading the design

1. Connect the peripheral to the parallel port.

   Note: contact your software vendor for details concerning the direct connection. Some software makers do not offer this feature.

2. In the Function Menu change the RS232 setting to NO.

   Refer to page 26.00 and read the RS232C connection information.

Press the "Function Key".
2 Use the "Up and Down Key" and choose "Tape".

3 Press the "Set Key".

4 Use the "Up and Down Key" and select the format.

If you choose Auto for your format the machine will judge the format.
Note: because of the wide variety of machine format it is possible that the automatic format function will not work in all cases.
In case of reading error select the specific format.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>Automatic Selection</td>
</tr>
</tbody>
</table>
5

Press the "Set Key".

6

Follow your PC software instructions for sending data.
Note: contact your software vendor for details concerning the direct connection. Some software makers do not offer this feature.

Send the data to the machine.

Status message / reading the design.
After displaying drawing on the right, displays drawing on the right bottom.

Stitches read are shown.

After reading confirm by selecting END.
Press the "Set Key".

Press the "Display Change Key".

Finish

- If you press the Function Key at step 5 you will go back to step 4.
- If you press the Function Key at step 6 you will cancel and return to the Drive Menu.
- If you press the Function Key at any other step you will return to the Function Menu.

- If you wish to cancel the settings at steps 6 press the "Clear Key" you will go back to step 5.
EXTERNAL READING/Paralel Port/Join

This is used for joining 2 patterns and memorize as one pattern data.

1

Refer to page 22.06 and follow steps 1 to 6.

2

Press the "Down Key".

3

Press the "Set Key".
4
Send design data from Tape Reader, etc.

Status / Reading Design.

After displaying drawing on the right, displays drawing on the right bottom.

5
Press the "Set Key".

※ In case you change pattern name, refer to page of "MEMORY PATTERN".

6
Press the "Display Change Key".

Finish
When pattern data are taken out from *pattern data output device which is connected to serial port (RS232), the embroidery machine starts to read automatically and writes in memory.
This function enables the machine to easily read pattern data from pastern managing unit and store them in memory without operating the machine.

※ When you write pattern data in memory, you will consume memory of hundreds of stitches besides number of stitches of the pattern. Before reading, check that free memory has more capacity than the number of stitches to be read and hundreds of stitches put together.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "RS-232C".

3. Press the "Set Key".

4. Press the "Plus minus Key" and change the setting to ON.

*pattern data output device : This is device to take out pattern data from pattern editing machine and tape reader etc.
5 Press the Down Key.

6 Use the Keypad and select the speed that matches your PC's setting.

When you use the RS232 connection if you select a baud rate of less than 9600. You can begin sewing after 1000 stitches have been read into the machine. Please refer to page of "Auto external reading / Read and Drive".

<table>
<thead>
<tr>
<th>Key number</th>
<th>Baud Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>38400 bps</td>
</tr>
<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
<td>4800 bps</td>
</tr>
<tr>
<td>4</td>
<td>2400 bps</td>
</tr>
</tbody>
</table>

7 Press the "Escape Key".
8

Connect a RS-232C Serial cross cable from the right side of the control panel to the com port in the PC.

※ Contact your software vendor for details concerning the direct connection Some software makers do not offer this feature.
※ Please set same baud rate both machine and output device of pattern data.

9

Output the design data from the PC.
If the speed is set less than 9600 bps, the lamp put on after reading 1000 stitches of the pattern data.

※ At first, number of stitches of pattern data is registered as pattern name. In case you change pattern name, refer to page of "MEMORY PATTERN".

※ After reading the data, please do the necessary setting, such as needle bar selection and etc. by the same procedures as reading from the disk.

If you push "Clear" key during reading the pattern, you can stop reading.
With "AUTO EXTERNAL READING", if *communication speed of serial port is set at 9600bps or less, you can start to embroider in while reading pattern data. By using of this function, it is not necessary to wait till finish of reading all pattern data, specially large pattern data.

※ There are following restrictions in case of embroidering with using AUTO EXTERNAL READING.
  · If communication error happens during transmitting data, embroidery in progress can not be continued.
  · Max. speed of machine to be limited to 1000 rpm during transmitting data.
  · PROGRAM MENU and CREATE can not be used.
※ You must stop the machine when letting it read pattern data with function of external automatic can do with either on top or in midway. However, if Auto External Reading is executed during embroidering, embroidery in progress can not be restarted. In this case, pattern data read by Auto External reading has priority.
※ At first, number of stitches of pattern data is registered as pattern name. In case you change pattern name, refer to page of "MEMORY PATTERN".

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "RS-232C".

3. Press the "Set Key".

*communication speed : (Baud rate)
Communication speed between machine and pattern data output device, they are connected with serial port. If communication speed value becomes bigger, speed becomes faster, however in this case communication error could be happened easily. If you have communication error often, decrease value of communication speed.
4. Press the "Plus minus Key" and change the setting to ON.

5. Press the "Down Key".

6. Use the Keypad and select the speed that matches your PC's setting.

When you use the RS232 connection if you select a baud rate of less than 9600. You can begin sewing after 1000 stitches have been read into the machine.

7. Press the "Escape Key".
8 Connect a RS-232C Serial cross cable from the right side of the control panel to the com port in the PC.

※ Contact your software vendor for details concerning the direct connection Some software makers do not offer this feature.

※ Please set same baud rate both machine and output device of pattern data.

9 Output the design data from the PC.

Indicates status of reading.

Will be indicated after memorizing more than 1000 stitches.

Indicates receiving design data.

Indicates you can begin sewing. Indicates finished reading the design.
10 Use the Needle Move Keys and select the first color.

11 Press the Start Button to begin sewing.

After the frame movement, You can operate frame forward as it is normal driving.

12 Machine automatically stops after finish sewing the first color.

Requests next color selection.

Needle Selection.

※ You can enter the color one by one as each color finishes sewing.
Press the Start Button to begin sewing.

STOP, TRACE BACK AND MENDING can be operated same as normal procedure.

Finish

※ At first, number of stitches of pattern data is registered as pattern name. In case you change pattern name, refer to page of "MEMORY PATTERN".
In this menu we can set the machines overall settings.

<table>
<thead>
<tr>
<th>SETTING ITEM</th>
<th>SETTING RANGE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Keep null (CHG.)</td>
<td>No:Yes</td>
<td>This function lets the machine read zero stitches as they are before color change when reading pattern data.</td>
</tr>
<tr>
<td>2 Skip null stitch</td>
<td>No:Yes</td>
<td>This reads pattern data by ignoring all the null stitches.</td>
</tr>
<tr>
<td>3 Combine jump</td>
<td>No:Yes</td>
<td>In case there are plural continuous jump stitches when reading pattern data, this combines the continuous jump stitches up to maximum of 12.7 mm and reads.</td>
</tr>
<tr>
<td>4 TRD. break back</td>
<td>Yes:No</td>
<td>When threads break, the drive frame goes back a few stitches and the machine stops.</td>
</tr>
<tr>
<td>5 All head mending</td>
<td>No</td>
<td>The machine mends threads for head, only threads of which broke.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>The machine mends threads for all heads irrespective of thread break.</td>
</tr>
<tr>
<td>6 Width data limit</td>
<td>1～13 (1～12.7mm)</td>
<td>When stitch width exceeds this length, the machine divides it by jump and embroiders. Width data limit becomes 12.7 mm only when setting value is set to 13.</td>
</tr>
<tr>
<td>7 Wide cap mode</td>
<td>No:Yes</td>
<td>Wide cap frame is used for cap frame.</td>
</tr>
<tr>
<td>8 Quick start mode</td>
<td>Yes</td>
<td>The machine saws up to 3 stitches of slow start after thread cut.</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>The machine saws up to 5 stitches of slow start after thread cut.</td>
</tr>
<tr>
<td>9 Auto thread cut</td>
<td>Yes:No</td>
<td>This performs automatic thread cut after color change and stop.</td>
</tr>
<tr>
<td>10 Cut at jump data</td>
<td>1～8</td>
<td>When set number of continuous jumps exists in pattern data, the machine cuts threads before jump.</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>The machine doesn’t cut threads before jump.</td>
</tr>
<tr>
<td>11 Cut at null jump</td>
<td>Yes:No</td>
<td>When there are one stitch of zero jump in pattern data and more than one stitch of jump thereafter, this performs thread cut before zero jump.</td>
</tr>
<tr>
<td>12 CHG. always cut</td>
<td>No</td>
<td>When pattern data is in color change or stop from jump, this gives priority to jump designated by pattern data and doesn’t drop needle.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>When pattern data is in color change or stop from jump, this gives priority to color change designated by pattern data, drops needle and cut threads.</td>
</tr>
<tr>
<td>13 Stitch sweeper</td>
<td>No:Yes</td>
<td>This function eliminates extremely short stitch for stitch width when reading pattern data.</td>
</tr>
<tr>
<td>14 Sweep length</td>
<td>0～8 (0～0.8mm)</td>
<td>This function sweeps data wheel stitch width is less than this length.</td>
</tr>
<tr>
<td>15 Full length cut</td>
<td>No:Yes</td>
<td>The machine cuts upper threads in longer length.</td>
</tr>
<tr>
<td>16 Thread back long</td>
<td>No</td>
<td>At time of thread cut=0.8mm, At time of start=1.2mm</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>At time of thread cut=1.2mm, At time of start=1.6mm</td>
</tr>
<tr>
<td>17 All pattern disp</td>
<td>No:Yes</td>
<td>When you read pattern data from HAPPY’s data disk (type TAP) with &quot;DISK READING&quot;, pattern data other than HAPPY is also displayed. Usually, select &quot;No&quot;.</td>
</tr>
<tr>
<td>18 Data format</td>
<td>0～Auto (Automatic) HAPPY 1～Tajima Barudan 3～Zsk</td>
<td>Turn data format for reading patterns from data disk of HAPPY or Tajima with &quot;DISK READING&quot;. Usually, set it to Automatic switch (0).</td>
</tr>
<tr>
<td>19 etc.func write</td>
<td>No:Yes</td>
<td>This function writes various function setting which are set in pattern data in memory to data disk. (type TAP).</td>
</tr>
<tr>
<td>20 etc.func read</td>
<td>No:Yes</td>
<td>This function reads various function setting which are set in pattern data together with pattern data (type TAP).</td>
</tr>
<tr>
<td>21 Slow (mend out)</td>
<td>Yes:No</td>
<td>When mending finishes and all heads start to embroider again, machine speed to be decelerated for safety purpose.</td>
</tr>
<tr>
<td>22 Trace data use</td>
<td>No:Yes</td>
<td>The frame moves jump data continues from &quot;Top&quot;</td>
</tr>
<tr>
<td>23 Trace data make</td>
<td>No:Yes</td>
<td>Make the trace data (jump data) during inputting pattern.</td>
</tr>
<tr>
<td>24 Trace type</td>
<td>Area:Out line</td>
<td>The type of trace data which is made during inputting pattern.</td>
</tr>
<tr>
<td>25 STR. Lock stitch</td>
<td>Yes:No</td>
<td>When start driving automatically put lock stitch.</td>
</tr>
<tr>
<td>28 Width data all</td>
<td>-1.0～1.0mm</td>
<td>This is to do the width adjustment for all the pattern data in the memory.</td>
</tr>
<tr>
<td>27 Preview data make</td>
<td>Yes:No</td>
<td>Make the preview data (small drawing) during inputting pattern.</td>
</tr>
</tbody>
</table>

※ Under lined setting item will be explained more precisely next section.
※ ★ marked setting item has to turn off the power and turn on it again to make this setting available.
7 Wide cap mode
When "Yes" is set, [Cap frame] on status lights and the machine runs with low speed suitable for wide cap frame sewing. Further adjustment is needed by patterns or fabrics (caps).
※ If you use wide cap frame with setting not to set to "Yes", you might have malfunction such as off registration or needle break etc.

13 Stitch sweeper
This function removes stitches having extremely narrow width when reading pattern data with "DISK READING", "EXTERNAL READING" and writing in memory of the machine.
Stitches having extremely narrow width in pattern data will cause thread break.
In case thread break occurs often times with a pattern at the same position, there may be stitches with extremely narrow width.
In such a case, please use stitch sweeper function by reading pattern after setting this function to "Yes".
※ By pattern data, there is a chance that thread break still remains at the same place even after using this function. In such a case, more than twice use of this function in the following manner will produce lessened thread break. However, if you use this function many times, there is a chance that portion of narrow stitch width will lose its shape.

1 Write swept pattern data in data disk, which was read in memory of the embroidery machine.

2 Conduct stitch sweeping of swept pattern written in data disk and read it in memory of the embroidery machine again.
End

18 Data format
In case the machine doesn't read patterns from data disk of HAPPY or Tajima properly, change *data format and read again.

*data format : This is situation that tape format is converted into pattern data for writing in disk or for data communication.
19  etc.func write (Writing various function setting)
In writing the pattern data in memory into data disk, *various function setting exists in pattern data in memory, such as Needle bar selection, Offset and etc. are also transmitted to data disk.
※ Data disk must be HAPPY type disk (type TAP) only.

20  etc.func read (Reading various function setting)
In reading pattern data from data disk, *various function setting are also transmitted together into pattern data, some as "Writing" By using this function, reads not only the pattern data, but also various function setting at same time.
In case of changing some function setting on pattern data and if you wish to return to original setting, easily read it again from data disk.
※ Data disk must be HAPPY type disk (type TAP) only.
※ When reading various function setting is executed data of various setting must be existing into data disk.

22  Trace mode
This function enables to check pattern fit in the frame by frame move along maximum embroidery area of pattern data or out line data.

24  Trace making mode
The frame movement will be under below

Area

Outline

※Start point

26  Width data all
*Width adjustment to be done for all the pattern data in the memory, however if the width adjustment has already been set through "Pattern adjustment" function on the particular pattern data, in case "Width data all" has not been affected on it.

*Width : Refer to page of the "Pattern adjustment".

The icon of width changes into blue.
27 Preview data make

When you read the pattern data from floppy disk or external reading or etc., the preview data will be made automatically into the memory, when you select "Yes" at create menu.

Preview data is shown as small drawing and can confirm the figure of the pattern data easily just selecting the memory pattern.

※ If you use this function, 780 stitches of memory to be used to make one preview data.
1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Create".

3. Press the "Set Key".

4. Use the "Up and Down Key" to select the function you wish to change.

   ![Diagram](image-url)
Use the "Plus minus Key" to change settings from Yes / No and etc.

Or

Use Keypad to input Data.

If you change an item's setting differently than the factory setting it will become green.

Press the "Escape Key".

Finish

- At step 5 use the "Clear Key" to clear the setting, the number 0 is shown then reinput the data.

- If you press the "Function Key" before completing this setting you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
LOCATE

By function of "LOCATE", you can conduct the following by setting "Entry" in memory pattern.

- Even if you move position of *original point erroneously or change a pattern, you can automatically return the frame to registered original point. (Return)
- Even if you move the frame erroneously when power is turned off while embroidering, you can restore the frame to position before moving it. (Repair)
- Even if power suspends while embroidering, you can restore position of the frame and pattern data to state immediate before power failure. (Repair)

⚠️ Do not operate function of "LOCATE" if the machine is equipped with cap frame or tubular frame.
Machine or Frame might get damaged due to the frame movement goes over its sewing field limit.

⚠️ When you carry out "LOCATE", please keep yourself or things from the frame or table. It is dangerous as the frame makes a sudden move to fore side at the left. Never carry it out with needle bar and presser foot lowered. Needle bar and presser foot may hit the frame and break.

*original point : Frame position where the machine embroders pattern from the beginning is automatically registered in the machine as original point. Or you can register it by pressing number key of "0" while pressing shift key.

Entry
To register the start point of the selected Memory pattern.

Return (Registered position)
When position of the frame changes by power suspension, this function will restore the frame to the registered point.

Repair
When position of the frame changes by power suspension, this function will restore the frame to the previous position.
This is to register the original point at selected memory pattern.

1. Use the "Frame Move Keys" and move the frame to the new origin point.

2. Press the "Function Key".

3. Use the "Up and Down Key" and choose "Locate".

4. Press the "Set Key".
5. Press the "Up Key" and select "Entry".

6. Press the "Set Key".

7. Press the Start Button.

Warning: The machine will start immediately so be sure before pressing start that everything is out of the way and cannot be caught in the machine. Also never move the frame if the pressure foot or needle is in the down position.

Finish

Frame is returned to the original position and you return to the Drive Mode Menu.

- If you press the "Function Key" at step 5 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
LOCATE/Return

In case of power failure you can return to the original point you registered.

1. Make sure the main is set to the point marked C if not move it to this point by hand.

2. Now press the thread trim button and make a trim.

3. Press the "Function Key".

FUNCTION MENU

<table>
<thead>
<tr>
<th>DISK</th>
<th>TAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE</td>
<td>LOCATE</td>
</tr>
<tr>
<td>POSITION</td>
<td>RS-232C</td>
</tr>
<tr>
<td>FLOPPY</td>
<td>OTHER</td>
</tr>
</tbody>
</table>

Settings menu is shown.
Use the "Up and Down Key" and choose "Locate".

Press the "Set Key".

Use the "Up and Down Keys" to select Return in the sub menu.
7. Press the "Set Key".

8. Press the Start button.

⚠ Warning the machine will start immediately so be sure before pressing start that everything is out of the way and cannot be caught in the machine.

The frame returns to the Origin point you registered.

- If you press the "Function Key" at step 6 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
In case of power failure you can return to the last stitch sewn if you registered the origin.

1. Make sure the main is set to the point marked C if not move it to this point by hand.

2. Now press the thread trim button and make a trim.

3. Press the "Function Key".

FUNCTION MENU

- DISK
- TAPE
- LOCATE
- POSITION
- RS-232C
- FLOPPY
- OTHER

Settings menu is shown.
4 Use the "Up and Down Key" and choose "Locate".

5 Press the "Set Key".

6 Use the "Up and Down Keys" to select Repair in the sub menu.
7 Press the "Set Key".

8 Press the Start button.

⚠️ Warning the machine will start immediately so be sure before pressing start that everything is out of the way and cannot be caught in the machine.

The Frame returns to the last stitch sewn.

The Screen shows the last stitch sewn.

- If you press the "Function Key" at step 6 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This function makes direct designation of number of stitches and color number, and set the frame position and data position in to the designated sewing position.

⚠️ When you use GO TO function, the frame will have a sudden move. Execute this function after carefully confirming safety.

*color number: Color number is obtained by dividing pattern data by color change function and is part to comprise pattern data. Needle number (thread color) to be sewn can be set to color number. For example, in case pattern is divided by color change function at 2 places, 3 color numbers exists in the pattern. When needle number is set to respective color number, this pattern is embroidered in 3 colors.

**Stitch (Number of stitches)**
This moves the frame to any stitches at will.

+ : Any stitches

**Change (Color position)**
This moves the frame to the beginning of any color number at will beginning of color.

☐ : Beginning of any color number

**Piece**
In case "Repeat" is set, this moves the frame to the beginning of any piece at will beginning of any piece.

💡 You can designate order of pattern, order of stitch and order of piece by inputting Input "Number of Stitches", "Changing Position" and "Number of Piece".
POSITION / Go direct to Stitch

Use this function to move directly to any stitch in the design.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Position".

3. Press the "Set Key".

Indicator

This indicates the current selected position.
Press the "Up Key" and select Stitch.

Use the Keypad and input the desired stitch number.

As an example, we input stitch 3500.

Press the "Set Key".

⚠️ Warning: The machine will start immediately so be sure before pressing enter that everything is out of the way and cannot be caught in the machine.

Finish

After moving the Screen returns to Drive Mode.
• If you press the "Function Key" before completing this setting you will return to the Function Menu.

• If you press the "Escape Key" before completing this setting you will return to Drive Mode.

• If you press the Clear Key at step 5 you will cancel the setting.
POSITION/Move to Color change

Use this function to move directly to a color change in the design.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Position".

3. Press the "Set Key".

Indicates position information.
Use the "Up and Down Key" and choose "Change".

Use the Keypad input the desired color change number.

Press the "Set Key".

Warning the machine will start immediately so be sure before pressing enter that everything is out of the way and cannot be caught in the machine.

Finish
· If you press the "Function Key" before completing this setting you will return to the Function Menu.

· If you press the "Escape Key" before completing this setting you will return to Drive Mode.

· If you press the Clear Key at step 5 you will cancel the setting.
In the event you are using the repeat or batch function you must specify which piece you wish to move to.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Position".

3. Press the "Set Key".
Press the "Down Key" and select "Piece".

Use the Keypad and input the piece number you wish to move too.

Press the "Set Key".

⚠️ Warning the machine will start immediately so be sure before pressing enter that everything is out of the way and cannot be caught in the machine.

Finish

After moving the Screen returns to Drive Mods.
- If you press the "Function Key" before completing this setting you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.

- If you press the Clear Key at step 5 you will cancel the setting.
RS-232C/Mode

Use this function to set up the serial port to receive data. This enables to use serial port at "External reading". This is to select serial port or parallel port at data input.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "RS-232C".

3. Press the "Set Key".

4. Press the "Plus minus Key" to change the setting from On and Off.

As a example we changed the mode to ON
5

Press the "Escape Key".

Finish

- If you press the Clear Key at step 4 you will return to "Off".

- If you press the "Function Key" before completing this setting you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
RS-232C / Speed (baud rate)

Setting the *communication speed (baud rate).

*communication speed: (Baud rate)
Communication speed between machine and pattern data output device, they are connected with serial port. If communication speed value becomes bigger, speed becomes faster, however in this case communication error could be happened easily.

1. Press the "Function Key".

   ![FUNCTION MENU]
   Settings menu is shown.
   - DISK
   - TAPE
   - CREATE
   - LOCATE
   - POSITION
   - RS-232C
   - FLOPPY
   - OTHER

2. Use the "Up and Down Key" and choose "RS-232C".

   ![FUNCTION MENU]
   - DISK
   - TAPE
   - CREATE
   - LOCATE
   - POSITION
   - RS-232C
   - FLOPPY
   - OTHER

3. Press the "Set Key".

   ![Indicator]
   - Mode: ON
   - Speed: 38400

4. Press the "Down Key".

   ![Indicator]
   - Mode: ON
   - Speed: 38400
5 Use the Keypad and select the speed that matches your PC's setting.

<table>
<thead>
<tr>
<th>Key number</th>
<th>Baud Rate</th>
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<td>4800 bps</td>
</tr>
<tr>
<td>4</td>
<td>2400 bps</td>
</tr>
</tbody>
</table>

As an example, we selected 19200 Baud Rate.

6 Press the "Escape Key".

Finish

- If you press the clear, the setting will return to the default setting.

- If you press the "Function Key" before completing this setting, you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting, you will return to Drive Mode.
FLOPPY DISK/Writing

You can write out of machine memory to a floppy disk in Happy format.

1. Insert the diskette into the disk drive on the right side of the control panel.

※ You can choose if you wish to include the designs settings or not when writing to the floppy with a option in the create menu.

2. Press the "Function Key".

3. Use the "Up and Down Key" and choose "Floppy".
4  Press the "Set Key".

5  Press the "Up Key" and select "Write".

6  Press the "Set Key".

※ Before writing check that remaining space has more capacity than the number of stitches to be written. If the stitch number is bigger than remaining space, you need to erase the data in the disk to get sufficient space or write into the new data disk.

※ When you write pattern data disk, you will consume memory of hundreds of stitches besides number of stitches of pattern. Before writing, check that free area has more capacity than the number of stitches to be read and hundreds of stitches put together.
7. Press the "Set Key".

8. Use the "Up and Down Keys" and select the design to write to floppy.
   - By holding [shift] and pressing [↑] and [↓] keys you can move quickly to the selection.

9. Press the "Set Key".

※ Normally the same design will be used except in the event a design with the same name already exists on the floppy, in this event the design will be named P001.
1. Use the "Cursor Key" and move the cursor to the design you desire.

* You can use up to 8 characters for the designs name.

2. Use the "Up and Down Key" to select the characters.

☆ If you press the Clear Key you can delete the character. If you hold shift pressing the Up Key or Down Key you will move quickly.

10. Press the "Set Key".
If you wish to write another design to disk repeat steps 7 to 10.

11  Press the "Escape Key".

Finish

- If you press the "Function Key" at step 8 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
You can erase design from the floppy disk by using the feature.

1. Insert the diskette into the disk drive on the right side of the control panel.

2. Press the "Function Key".

3. Use the "Up and Down Key" and choose "Floppy".
4 Press the "Set Key".

5 Use the "Up and Down Keys" to select Erase in the sub menu.

6 Press the "Set Key".
7 Use the "Up and Down Key" and select the design you wish to erase.

💡 By holding [Shift] and pressing ⬆️ and ⬇️ keys you can move quickly to the selection.

As an example we selected Bird

8 Press the "Set Key".

9 Press the "Set Key".
If you wish to erase another design on the floppy repeat steps 7 to 9.

Press the "Escape Key".

Finish

- If you press the "Function Key" at step 8 you will return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Normally new disks are formatted DOS which the machine can use but we recommend.
you use this feature and format the disks in Happy format, either double density or high density.

1. Insert the diskette into the disk drive on the right side of the control panel.

2. Press the "Function Key".

3. Use the "Up and Down Key" and choose "Floppy".
4. Press the "Set Key".

5. Press the "Down Key" and select "Initial".

6. Press the "Set Key".

7. Use the "Up or Down Key" and select your type of disk.

As an example we selected high density.
8

Press the "Set Key".

9

Press the "Set Key".
Press the "Set Key".

Press the "Escape Key".

Finish

- If you press the "Function Key" at step 8 you will return to the Function Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
If you want to format another floppy disk press the Down Key after step 9 and select other.

1  Press the "Down Key" and select "Other".

2  Press the "Set Key".

3  Exchange the disk.

※ By default the setting is the last used.
4  Press the "Set Key".

5  Press the "Set Key".

6  Return to step 10.
OTHER/Memory all clear

You can erase all the designs in memory at one time using this feature.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Other".

3. Press the "Set Key".

4. Press the "Up Key".
5. Press the "Set Key".

6. Hold the "Shift Key" while pressing "Clear Key".

Finish

- If you press the Function Key at step 4 you will return to the sub menu in step 3.
- At any other step you return to the function menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
OTHER/Counter clear

The machine keeps a running total of sewn stitches, use this feature to reset the counter.

1. Press the "Function Key".

2. Use the "Up and Down Key" and choose "Other".

3. Press the "Set Key".

4. Press the "Down Key".
5. Press the "Set Key".

6. Press the "Clear Key".

7. Press the "Escape Key".

Finish

- If you press the Function Key at step 5 and 6 you will return to step 4, at any other step you return to the Function Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Press the key "Program".

Press the "Up Key" and scroll to the selection "Pattern".

By holding Ctrl(shift) and pressing the  keys you can move quickly to the selection.

Press the "Set Key".

By using the up and down keys choose the design you wish to sew by moving the indicator beside the design number you want.

By holding Ctrl(shift) and pressing  and  keys you can move quickly to the selection.
5 Press the "Set Key".

The designated pattern to be chosen.

6 Press the "Display Change Key".

Describe the pattern while Embroidering.

Finish

- By pressing the "Program Key" you can return to the program menu. This is a shortcut additional program menu items.

- By pressing the "Escape Key" you can return to Drive Mode.
- If you press "Escape" before refreshing the display the you can return to drive but the display will not show the designs progress.
Press the key "Program".

Use the "Up Key" to move to the selection "Pattern".

By holding [shift] and pressing the [ ] keys you can move quickly to the selection.

Press the "Set Key".

Using the "Up and Down Keys" choose the design you wish to rename.

By holding [shift] and pressing [ ] and [ ] keys you can move quickly to the selection.
5 Press the "Cursor Key".

By pressing the "Right Key" you can move the cursor under the letter or number of the design name we wish to change.

The maximum number of characters in a design name is eight letters or numbers.

When the cursor is under the character you wish to change use the "Up and Down Keys" to change the character.

If you press [C] you can clear the character.

By holding [Shift] and pressing the [A] and [D] keys you can move quickly to the selection.

Press the "Set Key".

The design name after change will be highlighted black.
Press the "Escape Key".

Finish

Return to Drive Mode.

- If you press the "Program Key" before pressing "Enter". This cancels the operation.

- If you press the "Escape Key" before pressing "Enter" you can cancel your setting and return to the Drive Mode Screen.
Erasing a Design in Memory.

1. Press the "Program Key".

2. Use the "Up Key" to choose the selection "Pattern".
   - By holding [shift] and pressing the ▲ keys you can move quickly to the selection.

3. Press the "Set Key" and the menu opens.

4. By using the up and down keys choose the design you wish to erase by moving the indicator beside the design number.
   - By holding [shift] and pressing the ▲ and ▼ keys you can move quickly to the selection.

By example we selected design number 3 named Bird.
5  

To erase the selected design hold the "Shift Key" and press the "Clear Key".

```
<table>
<thead>
<tr>
<th>Id</th>
<th>Name</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>FLOWER</td>
<td>Stitches: 98765</td>
</tr>
<tr>
<td>02</td>
<td>MOON</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>BIRD</td>
<td>Changes: 12</td>
</tr>
<tr>
<td>04</td>
<td>FANTASY</td>
<td>Width: 678.1</td>
</tr>
<tr>
<td>05</td>
<td>CHILD</td>
<td>Height: 569.3</td>
</tr>
<tr>
<td>06</td>
<td>DOG</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>HOUSE</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>TREE</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>SUN</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>CAT</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>CAR</td>
<td></td>
</tr>
</tbody>
</table>
```

Erasure status.

```
This memory location is now free.
```

6

Press the "Display Change Key".

Finish
If you erase all designs in memory you will see the message Data not found. And then the screen will be blank.

- IF you press the "Program Key" before clearing the designs you can return to the Program Menu.

- IF you press the "Program Key" before clearing the designs you can return to the Program Menu.

- If you press the "Escape Key" before pressing "Clear" you can cancel your action and return to the Drive Mode Screen.

If you have Cleared the designs and used the "Escape Key". Press the "Change Display Key" to refresh the screen.
This is function will allow you to view the Designs stored in memory.

1. Press the "Program Key".

2. Press the "Up Key" and select "Pattern".

   By holding [shift] and pressing the cursor keys you can move quickly to the selection.

3. Press the "Set Key".

4. Use the "Up and Down Key" to choose the Design you wish to display.

   By holding [shift] and pressing cursor keys you can move quickly to the selection.

   The selected design number is shown.

   By example we selected design number 3 named Bird
5 Press the "Display Change Key".

After viewing the selected design, the screen returns to drive mode.

You will now see the design you selected on the screen.

6 Press the "Escape Key".

💡 You can repeat this sequence to view additional designs.

7 Press the "Escape Key".

The original design is shown in the screen in drive mode.
Various settings such as scaling and angle are set to the selected pattern.

※ Various settings are executed in assortment.
※ In case "Width" (Width adjustment) is set and embroidery is made, there is a case that error occurs at end point. In such a case, please return setting figure of stitch width to "0.0".
※ When reading pattern with various function setting from HAPPY data disk, "PATTERN ADJUSTMENT" is set automatically accordingly with various function setting. (Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)

Scale
The machine scales up and down in X and Y directions in every 1%
respectively.
Setting example
● : Start point of pattern

Normal
X 100 %, Y 150 %
Default : X, Y 100%

Angle
With start point of pattern as pivot, the machine changes angle in every 1
clockwise.
Setting example
● : Start point of pattern

Normal
30°
Default : 0°

Width
The machine adjusts stitch width (L) in pattern with in range of -1.0 ～ +1.0mm in every 0.1mm.

0.4 mm
Default : 0 mm
This is to adjust the scale of selected memory pattern (from 50% to 200%).

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Setting".

3. Press the "Set Key".

4. Press the "Up Key" and select "Adjust".
5 Press the "Set Key".

6 Use the "Up and Down Key" and choose either the "X" or "Y" direction.

7 Use the "Key pad" to input the new value or size.

※ Remember the range of adjustment is 50% to 200%.

As a example we choose the Y direction to be scaled.

As a example we input 150%.
Press the "Escape Key".

Finish

In the Drive Mode screen a icon will show that design scaling is in use.

- At step 7 you can clear your entry by pressing the "Clear Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This is to adjust the angle of selected memory pattern.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Settingt".

3. Press the "Set Key".

4. Press the "Up Key" and select "Adjust".
Press the "Set Key".

Use the "Up and Down Key" and choose "Angle".

Use the "Keypad" to input the number of degrees you wish the design rotate.

※ The range of setting is -359 degrees to 359 degrees.

As an example we rotated the design 30 degrees.
8

[Setting a negative value]

Press the "Plus minus Key".

※ By pressing this key you can alternate between positive and negative settings.

9

Press the "Escape Key".

Finish

- If you wish to cancel the settings at steps 7 and 8 press the "Clear Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This is to adjust the width of selected memory pattern.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Setting".

3. Press the "Set Key".

4. Press the "Up Key" and select "Adjust".
5 Press the "Set Key".

6 Use the "Up and Down Key" and choose "Width".

7 Use the "Keypad" and input the adjustment amount.

※ The range of setting is -1.0 mm to 1.0 mm in 0.1 mm increments.

As an example, we input 0.3 mm.
8

[Setting a negative value]

Press the "Plus minus Key".

* By pressing this key you can alternate between positive and negative settings.

As an example we set a negative value

Indicates a negative amount.

9

Press the "Escape Key".

Finish

- If you wish to cancel the settings at steps 7 and 8 press the "Clear Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
**REPEAT**

The machine automatically embroiders the selected memory pattern only in specified number of pieces in X and Y directions.

※ If you move frame while you are doing repeat sewing, the machine will not continue repeat sewing. Please push [ ] and start again.

※ When reading pattern with various function setting from HAPPY data disk, "REPEAT" is set automatically accordingly with various function setting. (Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)

**Setting example**

![Diagram showing the repeat setting example with annotations for start and end points.]

- **Piece X**: 2
- **Piece Y**: 3
- **Space X**: -30.0
- **Space Y**: 32.0
- **Priority**: Y

![Diagram showing the calculated space X and space Y with start and end points.]

- Space X: [Diagram showing calculated space X with start and end points.]
- Space Y: [Diagram showing calculated space Y with start and end points.]

- **This is the case that "Priority" in the left list is set to X.**

---

**Setting Item** | **Setting Range** | **Default** |
---|---|---|
Piece X | 1 ~ 30 | 1

This sets number of pieces side wise and length wise when you perform repeat. The number of pieces to be embroidered is product obtained by multiplying numbers in X and Y.

Piece Y | 1 ~ 30 | 1

Space X | -999.9 ~ 999.9 mm | 0

This sets side wise distance between start point of each pattern when you perform repeat. When plus number is input, the machine makes repeat toward right. In case of minus number, toward left.

Space Y | -999.9 ~ 999.9 mm | 0

This sets length wise distance between start point of each pattern when you perform repeat. When plus number is input, the machine makes repeat upward. In case of minus number, downward.

Priority | X(Side) · Y(Length) | X

When you set more than 2 pieces for repeat length wise and side wise, this selects direction to embroider 2nd piece.
SETTING / Repeat sewing

It is possible to repeat sew the design by using this setting.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Setting".

3. Press the "Set Key".

4. Using the "Up and Down Key" select Repeat from the sub menu.
5

Press the "Set Key".

6

Use the "Up and Down Key" to select the X or Y.

7

Using the "Keypad: input the number of designs you wish to sew in that direction.

* The range of setting is 1 to 30 pieces.

8

Use the Up and Down key and select spacing X or Y.
Using the "Keypad" input the amount of spacing between each design sewn.

※ the range of setting is from 0.1mm to 999.9mm in increments of 0.1mm.

As an example we input a 50.0mm spacing in the Y direction.

[Setting a negative value]

Press the "Plus minus Key".

※ By pressing this key you can alternate between positive and negative settings.

As an example we set a negative value. Indicates a negative amount.

[We now must set the direction or Priority of sewing]

Use the "Down Key" to select Priority.

Move the cursor.
12 [+/-]

Press the "Plus minus Key".

※ By pressing this key you can alternate between X and Y settings.

13 [←]

Press the "Escape Key".

Finish

• You can clear your entry by pressing the "Clear Key".

• If you press the "Program Key" before completing this setting you will return to the Program Menu.

• If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Set conversion to the present pattern.

※ When reading pattern with various function setting from HAPPY data disk, "CONVERT" is set automatically accordingly with various function setting.
(Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)

Setting example

- : Start point of pattern

With start point of pattern as pivot, the machine changes angle in every 90 to reverse in mirror image.

1  Press the "Program Key".

2  Use the "Up and Down Key" and choose "Setting".
3 Press the "Set Key".

4 Use the Up and Down Keys and select Convert from the sub menu.

5 Press the "Set Key".

6 Use the right Arrow, Up and Down Keys to select the condition you desire.

If you press key the normal condition is selected key the mirrored condition is selected.

As an example we selected to Mirror the Design and rotate it 90 degrees
7 Press the "Set Key".

8 Press the "Escape Key".

Finish

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
The pattern which has different start and end point, returns the frame automatically to original point up on finishing embroidery.

1. Press the "Program Key"

2. Use the "Up and Down Key" and choose "Setting".

3. Press the "Set Key".

Settings menu is shown.

Indicates a sub-menu.

The cursor moves to the sub-menu.
4  Press the "Down Key" and select "Auto org".

💡 By holding (shift) and pressing the keys you can move quickly to the selection.

5  Press the "Set Key".

6  Press the "Plus minus Key".

※ By pressing key you can alternate between settings.

7  Press the "Escape Key".

Finish

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Setting of needle number
Needle number is set to *color number from selected Memory pattern.
When needle number is set, the machine embroiders by automatically changing needle bar.

Color change stop function
*Color change stop is set to color number from selected memory pattern.
When color change stop is set to color number, the machine embroiders the set color number and stops by displaying following message.

Auto setting
Change all the designated needle number into the other needle number at a time.

Color change data registration, Color change data read
Input the color change data from the memorized pattern data then register it. Export the registered data to the selected pattern data then use it.

*color number : Color number is obtained by dividing pattern data by color change function and is part to comprise pattern data. Needle number (thread color) to be sewn can be set to color number. For example, in case pattern is divided by color change function at 2 places, 3 color numbers exists in the pattern. When needle number is set to respective color number, this pattern is embroidered in 3 colors.

*Color change stop : When color change stop is set to color number, the machine embroiders the set color number and stops.

**When reading the pattern data together with *various function setting, function of needle bar selection is set automatically. (Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)
When reading the pattern data with color change function, needle bar selection is set according by color change function. (Excluding first color number.)
Function of needle bar selection on various function setting has priority than it on color change function of needle bar selection.

Pattern data with color change on top (4 color)

<table>
<thead>
<tr>
<th>Change:Needle</th>
<th>1:</th>
<th>2:</th>
<th>3:</th>
<th>4:</th>
<th>5:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color number 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*color number 1 is only displayed and turns to color number 2 even if needle bar is set and gets started.

Pattern data with color change (stop) on top.

<table>
<thead>
<tr>
<th>chg</th>
<th>dat</th>
<th>...</th>
<th>dat</th>
<th>chg</th>
<th>dat</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color number 1</td>
<td>Color number 2</td>
<td>Color number 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pattern data with zero stitch (zero jump) and color change (stop) on top.

<table>
<thead>
<tr>
<th>chg</th>
<th>dat</th>
<th>...</th>
<th>dat</th>
<th>chg</th>
<th>dat</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color number 1</td>
<td>Color number 2</td>
<td>Color number 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*various function setting : A general term for Needle bar selection, Convert, Pattern adjustment, Repeat, Offset and frame out which are set in the pattern data.

*When stored pattern data starts with color change (stop) function or zero stitch (zero jump) and color change function following it, the machine stores that pattern data in memory as one color number which has no move data (not conducting embroidery).
For example, when top of pattern with 4 colors reads such pattern data and you select "NEEDLE BAR SELECTION", color numbers add to 5 as under. Also cursor skips color number 1 having no move data and the machine stays with color number 2 being selected.
Please set needle bar selection from color number 2 that is actually color number 1. (Color number 1 doesn't function, but please set needle bar same as color number 2 just in case.)
Color change function on top pattern data can be cleared with "DATA EDIT". For details, please refer to "Function code" in "DATA EDIT".

3500-CDA901-50
Using this function you can change the colors shown in the design on screen.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Needle".

3. Press the "Set Key".

4. Use the "Up and Down Key" and choose needle number you that you wish to change the color of.

*By holding (shift) and pressing ▲ and ▼ keys you can move quickly to the selection.*
You the keypad to input the number of the needle you want to change.

If you want to select another needle to be changed, go back to step number 4.

Press the "Escape Key".

Finish

- If you make a mistake inputing the needle number in step 5 press the "Clear Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Needle".

3. Press the "Set Key".

4. Use the "Up and Down Key" to choose the color you wish to insert the stop after.

Tips: By holding (shift) and pressing (up) and (down) keys you can move quickly to the selection.
5 Press the "Plus minus Key".

💡 If you press the "Plus minus Key" again you can cancel this setting.
If you want to insert another stop command for another needle go back to step 4.

6 Press the "Escape Key".

Finish

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
NEEDLE BAR SELECTION / Auto setting

This is to change all the designated needle number in the pattern data which needle bar selection has been set, into the other needle number at a time.
For example, if you want to change all the needle number of "10" into "6", just select one of the color number in which needle number "10" is set, then execute all the color number to be changed into "6".

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Needle".

3. Press the "Set Key".

4. Use the "Up and Down Key" and choose needle number you that you wish to change the color of.

   In this case you can choose color number 2, 4 or 6.

   By holding (shift) and pressing (up) and (down) keys you can move quickly to the selection.

   We selected the number 2 color change
5. You the keypad to input the number of the needle you want to change then press  

If you want to select another needle to be changed, go back to step number 4.

6. Press the "Set Key".

7. Press the "Escape Key".

Finish

- If you make a mistake inputting the needle number in step 5 press the "Clear Key".
- If you press the "Program Key" before completing this setting you will return to the Program Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
NEEDLE BAR SELECTION/Color change data registration

You can import and register the color change data from the memorized pattern data. (Including color change stop.)
By using this function you can set the same color change data to the other pattern data easily.
※ The color change data to be registered is limited to one data and the color number to be registered up to 250.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Needle".

3. Press the "Set Key".

4. Hold the "Shift Key" and Press the "Plus minus Key".

PROGRAM MENU

Settings menu is shown.

PROGRAM MENU

[ NEEDLE ]

Id: 03 Name: BIRD

Needle number

Color Change number

3507-CDAA01-57
5. Use the "Up and Down Key" and choose "Entry".

6. Press the "Set Key".
   Color change data will be registered into the memory.

7. Press the "Escape Key".

Finish

- If you press the "Program Key" before completing this setting you will return to the Program Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
You can export the registered color change data to the selected pattern data.

* If the color number of the selected pattern data is more than the registered data's, "0" (No needle number) to be set to the later color number of the pattern data.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Needle".

3. Press the "Set Key".

4. Hold the "Shift Key" and Press the "Plus minus Key".
5 Use the "Up and Down Key" and choose "Load".

6 Press the "Set Key".

Needle number to be set subject to the color change data exported.

7 Press the "Escape Key".

Finish

• If you press the "Program Key" before completing this setting you will return to the Program Menu.

• If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Set start point of the frame to the selected memory pattern. When the machine embroiders on offset, the frame moves from offset point to start point of pattern and the machine begins to embroider. When *auto origin (automatic original point return) is set together, the frame returns to offset point automatically upon finishing of embroidery. (Fig.1)
By setting offset, you can start the frame from place easy to handle it. This is convenient for replacing hoops.

*auto origin: This returns the frame automatically to original point upon finishing embroidery. Refer to latter page for how to set.

![Possibility of injury](image)

The frame moves hastily when OFFSET drives. Keep hands away from the frame.

![Fig.1](image)

![Fig.2](image)

※ When you press (Original point return) on control box or execute *auto origin with pattern set with offset, the frame returns to offset point.

※ Please make sure to put Auto origin "ON", when you use the offset function repeatedly on same pattern

※ When reading pattern with various function setting from HAPPY data disk, "OFFSET" is set automatically accordingly with various function setting. (Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)

Teaching input
Set frame to the offset position with "Frame move key".
The move distance to start point of pattern with offset point as pivot is input.

Alter
Set distance of side wise move and length wise move by inputting the numerical key. Also change position of offset set by "Teaching input"
Input the move distance to original point with offset as pivot.
OFFSET/Teaching input

You can set the offset starting position by showing the machine where to start. Move the frame with frame move key and set the distance as an offset distance.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Offset".

3. Press the "Set Key".

4. Press the "Up Key" to select "Teach".
5. Press the "Set Key".

6. Use the "Frame Move Keys" to move the Pantograph to the desired Offset Starting. The Origin is the design starting position.

7. Press the "Set Key".

8. Use the "Frame Move Keys" to move the Pantograph to the desired Offset Starting.
9  Press the "Set Key".

A message of Complete on the screen confirms the setting.

10  Press the "Escape Key".

Finish

- By pressing the "Program Key" you can return to the program menu.

- By pressing the "Escape Key" you can return to Drive Mode.
OFFSET/Direct input (alter)

By key inputting, you can set moving distance of offset (X, Y) directly and change offset position is set with "teaching input".

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Offset".

3. Press the "Set Key".

4. Press the "Down Key" and select "Alter".
5 Press the "Set Key".

6 By using the "Up and Down Keys" choose the direction you wish to alter.

7 Use the" Key pad" to input the new offset distance in millimeters.

※ The maximum offset distance is 999.9 millimeters.
Press the "Plus minus Key".

※ By pressing key you can alternate between positive and negative settings.

Press "the Escape Key".

Finish

- If you wish to cancel the settings at steps 7 and 8 press the "Clear Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Set frame out to selected memory pattern. By setting frameout to *color number in memory pattern, you can move the frame to desired position automatically and stop it after finishing sewing of that color number. When you resume operation, the frame has an automatic return to previous position and you can continue sewing. (Fig.1) This function will be convenient for trimming threads while embroidering or for sewing applique etc.

※ When reading pattern with various function setting from HAPPY data disk, "FRAME OUT" is set automatically accordingly with various function setting. (Refer to the explanation of "etc. func write" and "etc. func read" on "CREATE" page.)

**Execution of color number**
Set color number to execute frameout.

※ When you select "Off" (with no display of option) of frame out for color number to which *color change stop is set, color change stop is released.
※ When you turn frameout "On" without setting the move distance of frameout, the machine has same action as color change stop.

**Teaching input**
Set position of frame out with "Frame move key" and the distance of movement will be the frame out distance. Usually move distance to frame out point is input, with original point as pivot.(Fig.1) In case offset is set, the move distance is input with offset point as pivot.(Fig.2)

※ You can set number of stitches or color number to make frame out in plural, but frame out point is limited to one place. The point set finally becomes good for making frame out. The point set finally becomes good for making frame out.

**Alter**
Set position of frame out directly by inputting by number key. Also change position of frame out set by "Teaching input". Usually input the move distance to frameout point with original point as pivot. (Fig.1) In case offset is set, input the move distance to frameout position with offset point as pivot. (Fig.2)
Move the frame with frame move key of selected memory pattern and distance of movement will be set as a frame out distance.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Frame out".

3. Press the "Set Key".

4. Press the "Up Key" and select "Set".
5
Press the "Set Key".

6
Use the "Up and Down Key" and select the color change you want the frame out after.

7
Press the "Plus minus Key".

※ If you press Key you can alternate between on and off.

💡 If you wish set another frame out at another color change go back to step 6.
8 Press the "Program Key".

9 Use the "Up and Down Keys" to select Teach in the sub menu.

10 Press the "Set Key".

11 Use the "Frame Move Keys" to move the frame to the frame out position.
12

Press the "Set Key" after confirming safety.

Frame out point is stored and the frame returns to where was.

Possibility of injury
The frame has a sudden move when executing "Teaching input".
Keep hands away from the frame.

13

Press the "Escape Key".

In the Drive Mode screen a Icon will show that Frame Out is in use.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
FRAME OUT / Alter and Change 38.05

You can alter the position of your frame out by using this function. By key inputting, you can set moving distance of frame out position directory and can change frame out position which is set with "Teaching input".

1  [If you did not teach the frame out position in earlier steps use this function to set it.]

We will set the frame out distance for the color you desire.
(goa back to steps Teaching a Frame out steps 1 to 7.)

2  Press the "Program Key".

3  Using the "Up and Down Keys" select "Frmout" from the menu.

4  Press the "Set Key".
5 Use the "Down Key" and select Alter in the sub menu.

6 Press the "Set Key".

7 Use the "Up and Down Keys" and select X or Y in the menu.

8 You can change or input frame out distances by using the "Keypad".
   ※ The range of setting is from 0.1mm to 999.9mm in increments of 0.1mm.

As a example we selected the Y direction.

As a example we have set a 100mm frame out in the Y direction.
9 [Setting a negative value] Press the "Plus minus Key".

※ By pressing +/- key you can alternate between positive and negative settings.

[ FRAMOUT ]

[ ALTER ]

Set-point
X: 0.0
Y: -100.0

As an example we set a negative value

10 Press the "Escape Key".

Finish

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
DATA EDIT/Stitch selection

Select *stitch (number of stitches) to do data editing. There are three ways for stitch selection:
- Direct selection: Input the stitch number you want to edit directly then go to the particular stitch number.
- Manual selection: Search the stitch number you want to edit by moving forward or backward by one stitch.
- Function selection: Search the only stitch including the function code such as jump, color change and etc.

*stitches: This is minimum unit of pattern data. We have different stitches. "Stitches" to command sequence to embroider, "Function" to command functions such as jump, thread cut etc., "Sidewise move distance", and "lengthwise move distance" to command the move distance of the frame.

Direct selection

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Edit".

3. Press the "Set Key".

Settings menu is shown.
Using the Keypad and enter the stitch number you wish edit.

The stitch has been selected. You can edit "Function code", "Insert stitch" and etc. with this status. Please refer to clause for each editing procedure.

<At step number 4>

By holding the Shift Key and pressing the Down Key you advance to the next stitch.

By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Manual selection

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Edit".

3. Press the "Set Key".

   If the display shows "Manual selection" screen, go to procedure 5.

   If the display does not shows "Manual selection" screen, go to procedure 4.
4: Push (shift) + 0 (number).

The screen comes to "Manual selection".

5: With ♣ + ▲▼ you can move the stitch to forward or backward to select the desired stitch.

The stitch has been selected. You can edit "Function code", "Insert stitch" and etc. with this status. Please refer to clause for each editing procedure.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Function selection

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Edit".

3. Press the "Set Key".

   The function you want to search is shown on the display, go to procedure 5.

   If the display shows "Manual selection" screen, or the function you want to search is not shown on the display, go to procedure 4.
4. **Push** (shift) + 1 (number) till the designated function comes.

<table>
<thead>
<tr>
<th>FUNCTION TO BE SEARCHED</th>
<th>DISPLAY</th>
<th>ACTION OF THE MACHINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.Stitch (Zero stitch)</td>
<td>F: X:0.0 Y:0.0</td>
<td>Needle drops at same position (stitch).</td>
</tr>
<tr>
<td>N.Jump (Zero jump)</td>
<td>F:A X:0.0 Y:0.0</td>
<td>Needle jumps at same position (stitch).</td>
</tr>
<tr>
<td>Jump</td>
<td>F:A</td>
<td>The machine jumps with needle not coming down</td>
</tr>
<tr>
<td>Change (Color change)</td>
<td>F:chrg</td>
<td>Change needle bar to thread color you want to use</td>
</tr>
<tr>
<td>Speed (Speed limit)</td>
<td>F:sp, sp1, sp2, spm</td>
<td>To cancel or execute the various speed limit. (Refer to page of &quot;DATA EDIT / Function code&quot;)</td>
</tr>
<tr>
<td>Cut (Thread cut)</td>
<td>F:cut</td>
<td>Cut threads</td>
</tr>
<tr>
<td>Stop</td>
<td>F:stop</td>
<td>Cut threads and stop</td>
</tr>
<tr>
<td>End</td>
<td>F:end</td>
<td>Come to an end.</td>
</tr>
</tbody>
</table>

If you push (shift) + 3 (number) during the procedure 4 ~ 5. You can see the total number of the desired function in the pattern data. Push (clear) to cancel.

5. **With** (shift) + ▲ ▼ you can search the stitch includes the desired function.

If the stitch includes desired function is not found, "Not found function" to be displayed.

The stitch has been selected. You can edit "Function code", "Insert stitch" and etc. with this status. Please refer to clause for each editing procedure.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
DATA EDIT/Function code

This is function code to conduct addition, change and erasure on desired stitch.

**Before editing**
When add the jump and speed limit.

**Ex. 1 after editing**
When add the jump function.

**Ex. 2 after editing**
When add the color change.

---

**FUNCTION CODE**

<table>
<thead>
<tr>
<th>MATCHING KEY</th>
<th>ACTION OF THE MACHINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 0</td>
<td>Normal</td>
</tr>
<tr>
<td>sph 1</td>
<td>Speed limit</td>
</tr>
<tr>
<td>sp1 2</td>
<td>Speed limit</td>
</tr>
<tr>
<td>sp2 3</td>
<td>Speed limit</td>
</tr>
<tr>
<td>spm 4</td>
<td>Speed limit</td>
</tr>
<tr>
<td>cut 5</td>
<td>Thread cut</td>
</tr>
<tr>
<td>stp 6</td>
<td>Stop</td>
</tr>
<tr>
<td>chg 8</td>
<td>Color change</td>
</tr>
<tr>
<td>Jump +/-</td>
<td>The machine jumps with needle not coming down</td>
</tr>
</tbody>
</table>

**Speed limit rpm**

<table>
<thead>
<tr>
<th>Model</th>
<th>Low</th>
<th>Middle (Cap)</th>
<th>High (Cap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCA</td>
<td>300</td>
<td>590 (490)</td>
<td>650 (520)</td>
</tr>
<tr>
<td>HCG</td>
<td>↑</td>
<td>680 (490)</td>
<td>750 (520)</td>
</tr>
<tr>
<td>HCM</td>
<td>↑</td>
<td>650 (490)</td>
<td>720 (520)</td>
</tr>
<tr>
<td>HMF</td>
<td>↑</td>
<td>650</td>
<td>750</td>
</tr>
<tr>
<td>HMG</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
</tr>
</tbody>
</table>

*Figures in bracket means cap frame use.*

**When you add color change function (chg),** zero stitch with color change function (chg) is added after selected stitch. Refer to the above figure. (Ex. 2 after editing)

**Except for color change function (chg), you can join Jump function (**
with all other function codes. When you input Jump function (*) in color change set stitch, display appears, but you can't execute this setting.

**You can't edit color change (chg) and End (end) at the last of pattern data.** In midway of embroidery, when you get back the frame with *trace back or thread brake back etc. for portion where speed limit is applicable by function code of speed limit, and resume embroidery, speed limit is applicable for that portion.

In case you need to execute speed limit for this portion definitely, set new speed limit behind stitch you resume embroidery or reduce speed with speed adjustment knob.

**When "Stop (stp)" is set, the machine displays following message and stops.**

>> Stop Function

---

**In case thread cut is added in the middle of pattern as below, there is lack of seams because needle comes down from next stitch of stitch on which thread cut is conducted as illustrated (Ex. 3 after editing). If you need seams definitely, add one "zero stitch" behind thread cut as illustrated (Ex. 4 after editing). By this operation, needle comes down on thread cut added stitches with zero stitches and there is no seams. Regarding addition of zero stitches, refer to page of "Insert stitch, Erase stitch" in "DATA EDIT".

**Before editing**

**Ex. 3 after editing**
When add the thread cut function.

**Ex. 4 after editing**
When add the 1 stitch of zero stitch after the thread cut.

---

4105-CDB821-84
1  By "Stitch selection" in the preceding page, the machine displays either of intended stitch function code.

2  Press the "Down Key".

3  Using the Keypad select the function cod.

<table>
<thead>
<tr>
<th>Keypad Number</th>
<th>Function code</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No</td>
<td>No stitch</td>
</tr>
<tr>
<td>1</td>
<td>sph</td>
<td>Speed control normal</td>
</tr>
<tr>
<td>2</td>
<td>sp1</td>
<td>Speed control 1</td>
</tr>
<tr>
<td>3</td>
<td>sp2</td>
<td>Speed control 2</td>
</tr>
<tr>
<td>4</td>
<td>sp3</td>
<td>Speed control 3</td>
</tr>
<tr>
<td>5</td>
<td>cut</td>
<td>Thread trim</td>
</tr>
<tr>
<td>6</td>
<td>stp</td>
<td>Stop command</td>
</tr>
<tr>
<td>7</td>
<td>chg</td>
<td>Color change</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Jump</td>
</tr>
</tbody>
</table>

As a example we selected cut

※ Each speed limit is different by model.
※ If you add a color change the machine inserts a empty stitch after the command.
※ You can combine a Jump command with any other command except a color change. If you combine a color change and a jump command it will show in the menu but.
※ You can not edit or insert a command on the last stitch of a design.
Press the "Set Key".

Returns to edit stitch menu.

Finish

If you wish to cancel press the Clear Key.

<At step number 1>

By holding the Shift Key and pressing the Down Key you advance to the next stitch.

By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Add *zero stitch to selected *stitch or erase the selected stitch.

* In case you erase stitch having move data, all hind stitches move by the erased move data as illustrated. Don't erase stitch having move data except for special case.

**Before editing**

- S:1232 S:1234 S:1236
- X: 0.8 X: 0.8 X: 0.8
- Y: 6.4 Y: 6.4 Y: 6.4

**Insert**

- Insert zero stitch at stitch No.1233.

- S:1232 S:1235 S:1237
- X: 0.8 X: 0.8 X: 0.8
- Y: 6.4 Y: 6.4 Y: 6.4

**Erase**

- Erase stitch No. 1234.

- S:1232
- X: 0.8
- Y: 6.4

---

"zero stitch": This is stitch that the move distance of both sidewise and lengthwise is "0" and needle lands in the same position.

"stitch": This is minimum unit of pattern data. We have different stitches. "Stitches" to command sequence to embroider, "Function" to command functions such as jump, thread cut etc., "Sidewise move distance", and "lengthwise move distance" to command the move distance of the frame.

S : Number of stitches
X : Move data of sidewise
Y : Move data of lengthwise

† red shows selected stitch.
You can insert an empty stitch before the selected stitch.

1. By "Stitch selection" in the preceding page, the machine displays either of intended stitch function code.

2. Hold the "Shift Key" and Press the "Plus minus Key".
   The Screen changes to and is ready input new data.

3. By necessity, Do the step 6~10 of "DATA EDIT / Change of moving data" to input the Data.
   By necessity, Do the step 2~4 of "DATA EDIT / Function code" to input the Function.

Finish
By "Stitch selection" in the preceding page, the machine displays either of intended stitch function code.

Press the "Shift and Clear Key" to erase the selected stitch after the stitch is erase the screen changes to show the corrected design data.

Warning: If you delete a stitch with moving data the balance of the design will shift. It is not advised to erase stitches, a unexpected result may occur.

Finish
If you wish to cancel press the Clear Key.

<At step number 1>

- By holding the Shift Key and pressing the Down Key you advance to the next stitch.
- By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This is to change move data of desired stitch.

※ When you move stitch, all stitches after the moved stitch move as illustrated. Don't move stitch except for special occasion.

※ Even if you change move data of stitch to which function code of color change(chg) or stop(stp) is set to other than "0.0", this change is ignored when the machine runs, and has no relation to the frame move.

**Before editing**

- S: 1232
- X: 0.8
- Y: 6.4

- S: 1233
- X: 0.8
- Y: -6.4

**After editing**

When changing the movement data.

- S: 1232
- X: 1.2
- Y: 6.4

- S: 1233
- X: 0.8
- Y: -6.4

S: Number of stitches
X: Move data of sidewise
Y: Move data of lengthwise

+ shows selected stitch.
You can change the location of a selected stitch.

1. By "Stitch selection" in the preceding page, the machine displays either of intended stitch function code.

2. Press the "Down Key".

3. Use the Keypad to input the new location of the stitch.

As an example we changed the stitches location to from positive 1.2 to positive 2.0.
DATA EDIT/Change of moving data

4.

Press the "Down Key".

5.

Use the Keypad to input the new location of the stitch.

Warning

If you delete a stitch with moving data the balance of the design will shift.

It is not advised to erase stitches, an unexpected result may occur.

As an example we changed the stitches location from negative 1.3 to negative 3.0

6.

Press the "Set Key".

A confirmation will be given on the screen.

Finish
If you wish to cancel press the Clear Key.

<At step number 1>

- By holding the Shift Key and pressing the Down Key you advance to the next stitch.
- By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
By "Stitch selection" in the preceding page, the machine displays either of intended stitch function code.

Press the "Display change Key".

Use the "Up and Down Key" and, select any zooming rate.

800%
400%
200%
100%

By changing the zooming rate, the displayed area to be changed.
Press the "Display change Key".

When you use the zooming, the functions used in the pattern to be displayed as the function mark.

You can change the zooming rate by using the \( \uparrow \downarrow \) (up, down) key from this screen too.

Function mark
- \( \times \): Stitch (Normal)
- \( \bigcirc \): Jump
- \( \triangle \): Color change
- \( \# \): Speed limit
- \( \times \): Thread cut
- \( \# \): Stop
- \( \bullet \): Start point
- \( \square \): End point

If you wish to cancel press the Clear Key.

<At step number 2>

If you press the Display change Key you will return to step 4.

By holding the Shift Key and pressing the Down Key you advance to the next stitch.

By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

<At step number 4>

If you press the Display change Key you will return to step 2.

By holding the Shift Key and pressing the Down Key you advance to the next stitch.

By holding the Shift Key and pressing the Up Key you retreat to the previous stitch.

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This enables to embroider any memory pattern in any sequence up to 30 pieces in succession. At this moment, the machine embroiders by executing various settings set to each pattern.

※ In case you embroider pattern to batch register laid out like Fig.1, you need to set offset with original point (Start point of the first pattern) as pivot to each pattern in advance. In case offset is set to the first pattern like Fig. 2, you need to set setoff point of the first pattern with offset of other pattern as pivot. Refer to page of "OFFSET".

※ In case automatic original point return is set to the last portion that was batch registered, the machine returns to original point and finishes. In case automatic original point return is not set, embroidery finishes at end point of the last pattern.

*Fig.1*

![Diagram showing offsets and points](image)

*Fig.2*

![Diagram showing offsets and points](image)

**Alter**

This conducts registration of patterns to be batch treated in order.

**Set**

This sets to execute of batch sewing.

**Cancel**

This cancels to execute of batch sewing.
This function will allow you to sew any combination of designs in sequence.

1. Press the "Program Key".

2. Use the "Up and Down Key" and select Batch from the menu.

3. Press the "Set Key".

4. Press the "Up Key" and select "Alter".
5  
Press the "Set Key".

6  
Use the Up and Down Keys to select ID #1.

By holding (shift) and pressing ▲ and ▼ keys you can move quickly to the selection.

7  
Press the "Cursor Key".

By pressing ▼ key you will go back to the previous menu.

As a example we selected ID #1

The designs name is shown in right hand side of the screen.
Use the Up and Down Key to select the design you wish.

By pressing the key you will go back to the previous menu.
By holding (shift) and pressing and keys you can move quickly to the selection.

<table>
<thead>
<tr>
<th>[ BATCH ]</th>
<th>[ ALTER ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 FLOWER</td>
<td>01 FLOWER</td>
</tr>
<tr>
<td>02 MOON</td>
<td>02 MOON</td>
</tr>
<tr>
<td>03 BIRD</td>
<td>03 BIRD</td>
</tr>
<tr>
<td>04 FANTASY</td>
<td>04 FANTASY</td>
</tr>
<tr>
<td>05 CHILD</td>
<td>05 CHILD</td>
</tr>
<tr>
<td>06 DOG</td>
<td>06 DOG</td>
</tr>
<tr>
<td>07 HOUSE</td>
<td>07 HOUSE</td>
</tr>
<tr>
<td>08 TREE</td>
<td>08 TREE</td>
</tr>
<tr>
<td>09 SUN</td>
<td>09 SUN</td>
</tr>
<tr>
<td>10 CAT</td>
<td>10 CAT</td>
</tr>
</tbody>
</table>

As a example we have selected design number 8 which is Tree.

Press the "Set Key".

This selected design is shown beside it order number.

To add additional design into the batch order go back to steps 6 to 9.

Pressing the "Down Key" will select the next available number of the sewing order.
12  
Press the "Plus minus Key".

13  
Press the "Escape Key".

Finish

- If you wish to cancel an item in this menu press the "Clear Key" but, step 8 will be invalidity.

- If you press the "Program Key" at steps you will return the Program menu.
  however if you are at steps 7 or 8 you will return to the last menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Use this function to turn on the batch sewing you have already programed.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Batch".

3. Press the "Set Key".

4. Use the "Up and Down Key" and select Set in the sub menu.
5  
Press the "Set Key".

PROGRAM MENU

5  
In the Drive Mode screen a icon will show that Batch Operation is in use.

6  
Press the "Escape Key".

If you press the "Program Key" before completing this setting you will return to the Program Menu.

If you press the "Escape Key" before completing this setting you will return to Drive Mode.
By using the reset command we will turn off the batch operation.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Batch".

3. Press the "Set Key".

4. Press the "Down Key" and select Reset in the sub menu.
5

Press the "Set Key".

6

Press the "Escape Key".

- If you press the "Program Key" before completing this setting you will return to the Program Menu.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
This sets the color of pattern by needle number to be displayed.
This enables to set the color of pattern to be displayed by setting the color
of needle number.
By adjusting between actual thread color displayed color of pattern, you
can confirm Embroidered pattern image. (128 colors)

※ The pattern will be displayed by the color which are set each needle bar.
※ The color will be changed by selection of colors and light and darkness.
※ You will find difficulty to see the pattern if you set same color on both
  pattern and background.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Color".
3 Press the "Set Key".

4 Use the "Up and Down Keys" to select the needle you wish to assign a color to.

   By holding \texttt{Shift} and pressing \texttt{Up} and \texttt{Down} keys you can move quickly to the selection.

5 Press the "Set Key".

6 Use "Cursor Key" move the cursor across the color palette.

   \textbullet \ If you hold "Shift" and press the "Cursor Key" \textbullet you can move to the left in the color palette.
[Adjusting for lighter or darker shades]

7

- Use the "Up Key" to lighten the color shade.
- Use the "Down Key" to darken the color shade.

As you change the colors shade it will be shown in this window.

8

- Press the "Set Key".

 Indicates the selected color.

9

- Press the "Escape Key".

Finish

Design is shown with the users selected color palette.

- If you wish to cancel the settings at steps 6 and 7 press the "Clear Key".
- If you press the "Program Key" at steps 6 and 7 it cancels your setting and returns you to step 4.
- If you press the "Escape Key" at steps 6 and 7 it cancels your setting and returns you to Drive Mode.
CLOTH COLOR

With this function it is possible to set the background to a color similar to the fabric color. (128 colors)

※ The pattern will be displayed by the color which are set each needle bar.
※ Note be sure to set the colors differently to show contrast.

1 Press the "Program Key".

2 Use the "Up and Down Key" and choose "Cloth".

3 Press the "Set Key".

This menu shows the current newly selected color
4 Use "Cursor Key" move the cursor across the color palette.

💡 If you hold "Shift" and press the "Cursor Key" you can move to the left in the color palette.

5 [Adjusting for lighter or darker shades]

Use the "Up Key" to lighten the color shade.
Use the "Down Key" to darken the color shade.

6 Press the "Set Key".

7 Press the "Escape Key".

Finish
· If you wish to cancel the settings at steps 4 and 5 press the "Clear Key".

· If you press the "Program Key" at steps 4 and 5 it cancels your setting and returns you to step 2.

· If you press the "Escape Key" at steps 4 and 5 it cancels your setting and returns you to Drive Mode.
After selecting the frame you are going to use by "Registration number selection", register the *standard point of the frame sets on the machine. By setting the standard point, the start point of the pattern to be adjusted automatically by the machine and the selected pattern comes to the center of the frame.

This will enable you to check whether the selected memory pattern fits the embroidery area or not at the same time.

The pattern will be centered of the each selected frame (round, square, cap).

This function enables to confirm positioning between embroidery are and pattern.

And if you change frame position by frame move key, display will be changed and you can confirm the positioning.

⚠️ The "Monitor display" is the function to check whether the pattern fits the embroidery area of the frame you are going to use or not before starting the operation.

This is not the safety device to prevent the crash due to the pattern's excess of the embroidery area after starting the operation.

After having done the "Monitor display" do not move the frame, if you do so the machine may be damaged due to the crash of the needle or pressure foot to the frame.

⚠️ Make sure to do "Registration number selection" again when you change the frames. If you do not do this the machine may be damaged due to the crash of the needle or pressure foot to the frame.

※ This function can be used with the function of scale, convert, mirror, width, offset, frame out and repeat setting.

※ This function cannot be used with the function of batch drive setting.

※ This function is not limit function or out line trace function.

Frame hit can be happened If you move the frame and start driving after position confirmation.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Frame".

3. Press the "Set Key".
Press the "Down Key" and select "Display".

When you do the procedure 4 without selecting the 1st needle, the left caution message to be displayed, then press the 1st needle selected automatically and return to the message display of procedure 6.

Possibility of injury
Moving head can be moved suddenly.
When operating "Monitor display".
Keep hands away from the moving heads.

Press the "Set Key".

Message of drawing on the right hand will be displayed.

This is to register standard point of frame.

Adjust standard point correctly by using "Frame move key".

When the frame is set to the standard point, the widthwise sets to the left inside of the inner frame and the lengthwise sets to the mark of the left inside of the inner frame. If there is no mark on the frame, the lengthwise sets to the center of frame in the vertical line.

In case of the frame which has a bracket, such as tubular frames, set to the inside of the inner frame not to the inside of the bracket.

When the frame sets to the mark on the Y carriage, the mark occasionally cannot see from the right above by the interference of the cover.
In this occasions, set the frame accurately by seeing the mark from the right side of the machine.
Press the "Set Key".

Frame moves and do the centering of pattern.

⚠️ Possibility of injury
The frame has a sudden move when operating "Monitor display". Keep hands away from the frame.

⚠️ If the frame is not set accurately to the standard point, the machine may be damaged due to the crash of the needle or pressure foot to the frame.

When not changing frame select

Press the "Set Key".

After displaying drawing on the right, displays drawing on the right bottom.

Frame moves and do the centering of pattern.
9  

Press the "Escape Key".

Return to Drive Mode.
At step 8

By pushing the "Frame move key", you can make movement of the Maximum Embroidery area of pattern.

- Shape of frame (Black) ex. Round frame
- Maximum embroidery area of pattern (Blue)
- Embroidery area of frame (Red)

By pushing the "Left Frame move key" and "Fast key".

By pushing the "Right Frame move key" and "Fast key".

By pushing the "Up Frame move key" and "Fast key".

By pushing the "Down Frame move key" and "Fast key".

Slant movement also can be done.
This function will enable you to protect the frames such as round frame, square frame and cap frame from the crash when the pattern is embroidered.
Select the frame you are going to use according to "Selection of the frame". This function will adjust the frame position automatically to fit the pattern into the center of the embroidery area by "Monitor display".

※ FRAME CHECK is not available for the patterns combined by ★BATCH SEWING.

★BATCH SEWING: This enables to embroider any memory pattern in any sequence in succession.

RSelection of the frame
To make the machine recognize the embroidery area of the frame you are going to use, select the same size frame you are going to use from the display frame menu memorized into the machine.
Unrecognized frame can be memorized into the machine as a user's frame.
This function will enable you to check automatically whether the pattern fits the embroidery area of the frame or not.
1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Frame".

3. Press the "Set Key".

4. Press the "Up Key" and select "Select".

*Regular round frame, Regular square frame, Tubular round frame, Tubular square frame
Selection of the frame (Normal Round frame, Square frame, Tubular Round frame, Tubular Square frame).
The embroidery area of each registered frame is set inside from the frame edge for the clearance of the pressure foot. (Fig. 1)

*Regular round frame, Regular square frame: The frames made by HAPPY and for flat sewing. They are used with the holder frames or with the brackets and the fittings connecting to the drive frame.

*Tubular round frame, Tubular square frame: The frames made by HAPPY and used for cylinder sewing, such as T-shirts, bags and etc. The frame has bracket at both sides.
5

Press the "Set Key".

6

Use the "Up and Down Key" and choose "T-Square".

7

Press the "Set Key".

8

Use the "Up and Down Key" and choose "No 90 320x320".

By holding (shift) and pressing ▲ and ▼ keys you can move quickly to the selection.
9

Press the "Set Key".

10

Press the "Set Key".

When you do the procedure 4 without selecting the 1st needle, the left caution message to be displayed, then press the 1st needle selected automatically and return to the message display of procedure 6.

Possibility of injury
Moving head can be moved suddenly. When operating "Selection of the frame". Keep hands away from the moving heads.

11

Press the "Set Key".

Message of drawing on the right hand will be Displayed.

12

This is to register standard point of frame. Adjust standard point correctly by using "Frame move key".

13

Press the "Set Key".

The frame moves to the center automatically.

- Goes back to previous section by pushing "Program Key" once.
- When you go to display of frame position from the display 9. If you push "Program Key" twice, go back to display 4.
- About display of frame position, please refer the way of operation on page 48.03.
- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
Cap frame
Selection of the cap frame.
The embroidery area of HAPPY made semi-wide and wide cap frame are memorized into the machine.
The lengthwise of the embroidery area can be adjusted to the variety of caps. (Fig. 1)

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Frame".

3. Press the "Set Key".

4. Press the "Up Key" and select "Select".
5. Press the "Set Key".

6. Use the "Up and Down Key" and choose "Cap".

7. Press the "Set Key".

8. Use the "Up and Down Key" and choose "W-Cap".

As a example we set a No.112 46x360
Press the "Set Key".

Input the Embroidery area on Y direction with "Number Key".

Semi-width 1~70mm
Width 1~80mm

Press the "Set Key".
Press the "Set Key".

When you do the procedure 4 without selecting the 1st needle, the left caution message to be displayed, then press the 1st needle selected automatically and return to the message display of procedure 6.

Possibility of injury
Moving head can be moved suddenly.
When operating "Selection of the frame". Keep hands away from the moving heads.

Press the "Set Key".

Message of drawing on the right hand will be Displayed.

This is to register standard point of frame.
Adjust standard point correctly by using "Frame move key".

Press the "Set Key".

The frame moves to the center automatically.

- Goes back to previous section by pushing "Program Key" once.
- When you go to display of frame position from the display 11. If you push "Program Key" twice, go back to display 4.

※ About display of frame position, please refer the way of operation on page 48.03.

- If you press the "Escape Key" before completing this setting you will return to Drive Mode.
User’s frame registration
The frame which is not registered, you can register as user frame up to 5 frame.
Then you can select the frame which you want to use.
The both inner size, lengthwise and sidewise of square frame, and the diameter of round frame can be registered.
The embroidery area of each registered frame is set inside from the frame edge for
the clearance of the pressure foot. (Fig. 1, 2)

⚠️ The shape of the embroidery area set the inside of square frame will be a right angle. When you use the square frame like showing in fig.3, there may be a possibility of the crash at the corner if the embroidery area overlaps the frame.

1. Press the "Program Key".

2. Use the "Up and Down Key" and choose "Frame".

3. Press the "Set Key".
4. Press the "Up Key" and select "Select".

5. Press the "Set Key".

6. Use the "Up and Down Key" and choose "User".

7. Press the "Set Key".

8. Use the "Up and Down Key" and choose "No 133 Custom3".
9  Press the "Set Key".

10  Push "2" from "Number Keys".

    7  8  9  1  2  3

    4  5  6

Class1 : Round frame
Class2 : Square frame

11  Press the "Set Key".

12  Input Embroidery area on Y direction with "Number Keys".
    (Size of Embroidery area frame)

    7  8  9  1  2  3

    4  5  6

Ex. Input 300 from "Number Keys"
13 Press the "Down Key" and select the "Size X".

14 Input Embroidery area on X direction with "Number Keys".
   (Size of Embroidery area frame)

Ex. Select the "Size X"

Ex. input 200 from "Number Keys"
When select the Round frame at step 10

15

7 8 9

Push 2 from "Number Keys".

4 5 6

Class1: Round frame
Class2: Square frame

1 2 3

0

16

Press the "Down Key" and select "Size L".

17

7 8 9

Press the "Number Keys".
(Size of Embroidery area frame)

4 5 6

1 2 3

0

Ex. Select the Class1: Round frame

Ex. Input 200 from "Number Keys"
18 ➔ Press the “Set Key”.

19 ➔ Press the “Set Key”.

When you do the procedure 4 without selecting the 1st needle, the left caution message to be displayed, then press the 1st needle selected automatically and return to the message display of procedure 6.

Possibility of injury
Moving head can be moved suddenly.
When operating “Selection of the frame”. Keep hands away from the moving heads.

20 ➔ Press the “Set Key”.

Message of drawing on the right hand will be Displayed.

21 ➔ This is to register standard point of frame.

Adjust standard point correctly by using “Frame move key”.

22 ➔ Press the “Set Key”.

The frame moves to the center automatically.

- Goes back to previous section by pushing “Program Key” once
- When you go to display of frame position from the display 18. If you push “Program Key” twice, go back to display 4.
- About display of frame position, please refer the way of operation on page 48.03
- If you press the “Escape Key” before completing this setting you will return to Drive Mode
Using this feature you can confirm the size and position of the design by moving the pantograph and tracing the outside area of the design. This feature will save time and damaged goods by confirming the setup is right before sewing.

**Direction of frame movement**
Direction of frame movement will be moved to downward at first. Secondly moves to side direction (clockwise · counter clockwise) and finally return to start point of trace. Judgement between clockwise and counter clockwise are made by pattern data.

**Clockwise**
If the right side of the Embroidery area is bigger, concerning of centering around the start point of pattern.

**Counter clockwise**
If the left side of the Embroidery area is bigger, concerning of centering around the start point of pattern.

※ This function can be used with scale, convert, mirror, offset, Frame out function but can not be used with repeat, Batch, automatic external reading · For example, if you drive with repeat or batch function with setting of No.22 is “Yes”, the movement will be the frame jump movement.

※ If you are sewing direct from PC output the trace feature is disabled. (Direct sewing mode)
Before select to embroider, this enables to confirm where the pattern will be embroidered by the movement of frame which displays the Maximum embroidery area of pattern.

1. Use the "Up and Down Key" and choose "22 Trace data use".

2. Press the "Plus minus Key" and select "Yes".

3. Press the "Down Key" and select "23 Trace data make".

4. Press the "Plus minus Key" and select "Yes".
5 Press the "Down Key" and select "24 Trace type".

6 Press the "Plus minus Key" and select "Area".

7 Press the "Escape Key".

Finish

Reading pattern.

Refer the way of operation on page 21.00.

The status will be pattern "Top".

Refer the way of operation on page 9.00.
9 START
Press the "Start button".

Needle bar moves to the first stitch of pattern. The frame continuously moves direction of 1 ~ 7 from the start point.

※ Even setting is needle bar selection, needle bar moves to the first stitch.

10
Displaying drawing on the right.

11 START
Press the "Start button".

Indicates status "Top" is not in use.
OUTLINE TRACE FUNCTION/Outline 48.27

Before select to embroider, this enables to confirm where the pattern will be embroidered by the movement of frame which displays the Outline trace embroidery area of pattern.

1. Use the "Up and Down Key" and choose "22 Trace data use".

2. Press the "Plus minus Key" and select "Yes".

3. Press the "Down Key" and select "23 Trace data make".

4. Press the "Plus minus Key" and select "Yes".
5 Use the "Up and Down Key" and choose "24 Trace type".

6 Press the "Plus minus Key" and select "O-Line".

7 Press the "Escape Key".

Finish

8 Reading pattern.

Refer the way of operation on page 21.00.

The status will be pattern "Top".

Refer the way of operation on page 9.00.
9  START

Press the "Start button".

Needle bar moves to the first stitch of pattern. The frame continuously moves direction of 1 ~ 10 from the start point.

※ Even setting is needle bar selection, needle bar moves to the first stitch.

10

Displaying drawing on the right.

11  START

Press the "Start button".

Indicates status "Top" is not in use.
At step 10 (During tracing)

- When pushing "Stop button", The message drawing on the right will be shown and you can stop trace function.

- When pushing "Forward button", The trace forward will be made stitch by stitch.

- When pushing "Stop button", The trace back will be made stitch by stitch.

- When pushing "Auto origin key", The frame will be return to start position of trace movement.

- If you do not want to do the trace or want to stop the trace in the midst, keep pushing the start button till the buzzer sound comes.
BASIC OPERATION ORDER

This explains basically order for operation of read pattern and Embroider.

1. Read the pattern data.
   - Disk reading
   - External reading

2. Select the pattern.
   - Memory pattern - selecting

3. Set needle bar to be used.
   - Needle bar selection

4. Adjust the frame to start point.
   - Frame move key - operate

5. Start embroidering.
   - Push start button

6. It will finish when complete sewing.
ORDER OPERATION USING SETTING ITEM

1. Setting of convert and repeat

1. Read the pattern data.
   - Disk reading
   - External reading

2. Select the pattern.
   - Memory pattern - selecting

3. Set needle bar to be used.
   - Needle bar selection

4. Set convert.
   - Setting - convert

5. Set repeat.
   - Setting - repeat

6. Adjust the frame to start point.
   - Frame move key - operate

7. Start embroidering.
   - Push start button

8. It will finish when complete sewing.
ORDER OPERATION USING SETTING ITEM

2. Setting of Scale and Offset

1. Select the pattern.
   - Memory pattern - selecting

2. Set needle bar to be used.
   - Needle bar selection

3. Set offset.
   - Offset - teaching input

4. Set scale.
   - Setting - scale design

5. Start embroidering.
   - Push start button

6. It will finish when complete sewing.
ORDER OPERATION USING SETTING ITEM

3. Example of practical use

1. Set basic function of the machine.
   - Function setting

2. Read the pattern data.
   - Disk reading
   - External reading

3. Select the pattern.
   - Memory pattern - selecting

4. Set needle bar to be used.
   - Needle bar selection

5. Set auto origin.
   - Setting - auto origin

6. Register frame position.
   - Locate - entry

7. Start embroidering.
   - Push start button

8. It will finish when complete sewing.
### Parts to maintain

<table>
<thead>
<tr>
<th>Parts to maintain</th>
<th>Requirements</th>
<th>Method</th>
</tr>
</thead>
</table>
| Thread cutter           | Once every three days                             | 1. Please turn main shaft toward an arrow mark as shown in Fig. 1 and set to 10° further from "C" on the adjusting disc.  
                          |                                                   | Fig. 1                                                                 |
|                         |                                                   | 2. Please remove the solenoid cover on the left side under the machine table.  
                          |                                                   | Fig. 2                                                                 |
|                         |                                                   | 3. Please raise the plunger with hand from hole in the center of solenoid stopper and insert bobbin between the plunger and the stopper.  
                          |                                                   | Fig. 3                                                                 |
|                         |                                                   | 4. Remove the needle plate.                                           |
|                         |                                                   | 5. Please turn the main shaft toward an arrow mark and open cutting knife as shown in Fig. 4.  
                          |                                                   | Fig. 1, Fig. 4                                                         |
|                         |                                                   | 6. Please clean lints from thread cut knife with brush etc.            |
|                         |                                                   | 7. Please turn main shaft toward an arrow mark as shown in Fig. 1 and set to 10° further from "C" on the adjusting disc.  
                          |                                                   | Fig. 1                                                                 |
|                         |                                                   | 8. Please remove the bobbin from the solenoid.                         |
|                         |                                                   | 9. Please place the solenoid cover and the needle plate where they were. |
|                         |                                                   | 10. Please turn main shaft toward an arrow mark and set to "C" on the adjusting disc. |
| Air filter for main unit| Once a week                                       | Please clean dust on air filter.  
                          | (Every, it's very dusty)                                             | (When you remove air filter, please remove filter case.)              |
|                         |                                                   | Fig. 5                                                                 |
| Rotary hook             | Everyday before use                               | Stop the machine and clean thread wastes and dusts stuck to rotary hook with a small brush. |
Please lubricate specified oil periodically according to instruction stated below.
If the machine keeps running without oiling, it will cause increased noise and wear, and will produce burning. Waste of fabrics and lints will gather in and around rotary hooks. Rotary hooks will have scratches that cause threads break. Please clean lints with brush and run the machine idly for 2~3 minutes.

<table>
<thead>
<tr>
<th>No</th>
<th>Place to oil</th>
<th>Time to oil</th>
<th>Specified oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rotary hook</td>
<td>Once a days</td>
<td>Sewing machine oil</td>
</tr>
<tr>
<td></td>
<td>(Lubricate oil slightly with a small brush between outer and inner rotary hooks.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Rotary hook shaft bushing</td>
<td>Once a week</td>
<td>Sewing machine oil</td>
</tr>
<tr>
<td>3</td>
<td>Slide shaft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Needle bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cam lever</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

◆ In case of oiling slide shaft and cam lever, please move moving head to the left and set needle No. to 1.

※ Too much oil may stain fabrics and threads.
In case something wrong happened in the machine when running it, please refer to the following table for measures. Press [C] (clear) on the control box to release an error and fix according to the list below. When errors occur frequently, contact dealer.

<table>
<thead>
<tr>
<th>Code</th>
<th>Error</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Circuit board : Abnormality was detected in control circuit board.</td>
<td>Turn off power source once and turn on again.</td>
</tr>
<tr>
<td>002</td>
<td>Power source : Power failure or lowered voltage</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>System memory : System memory is out of order</td>
<td></td>
</tr>
<tr>
<td>015</td>
<td>Inverter trip : Over-load on main shaft motor, short circuit, trouble of main shaft drive unit, main shaft motor related abnormality</td>
<td>Cut power and turn main shaft with hand. If no abnormality is found, turn on again.</td>
</tr>
<tr>
<td>016</td>
<td>Alarm X unit : X axis motor related trouble Over-load on X carriage motor, short circuit, trouble of motor drive unit</td>
<td>Turn power off, move drive frame and drive motor with a hand. If no abnormality is found, turn power on again.</td>
</tr>
<tr>
<td>017</td>
<td>Alarm Y unit : Y axis motor related trouble Over-load on Y carriage motor, short circuit, trouble of motor drive unit</td>
<td></td>
</tr>
<tr>
<td>018</td>
<td>Main shaft : Main shaft doesn’t turn</td>
<td>Make sure if main shaft or drives are normal.</td>
</tr>
<tr>
<td>020</td>
<td>Needle detect : Needle position is not detected. Needle bar selection unit is off its stop position. Trouble of position detecting circuit board</td>
<td>Turn needle bar selection unit by spanner so that the unit comes within moving range. Be careful to needle position. At this time, set unit to where indication lamp of needle position center lights. Fig. 1</td>
</tr>
<tr>
<td>021</td>
<td>Needle move : Motor for needle bar selection unit stopped halfway. No movement owing to malfunction of thread take-up lever or trouble of position detecting circuit board.</td>
<td>After fixing malfunction of needle and thread take-up lever, turn needle bar selection unit by spanner so that the unit comes within moving range. At this time, set unit to where indication lamp of needle position center lights. Fig. 1</td>
</tr>
<tr>
<td>022</td>
<td></td>
<td></td>
</tr>
<tr>
<td>024</td>
<td>Needle center : Needle bar stop position is off center Needle bar stop position is out of place. Needle over : Needle number not existing in the machine was specified. Needle differ : Needle number at time of finish and start of operation differs. It was changed to correct one.</td>
<td>Turn needle bar selection unit by spanner and set to where indication lamp of needle position center lights.</td>
</tr>
<tr>
<td>025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>030</td>
<td>Slow mismatch : Improper speed adjustment at low speed. Speed doesn’t decrease below 100rpm at low speed.</td>
<td>Necessary to adjust or exchange speed control VR on CPU circuit board. Contact dealer.</td>
</tr>
<tr>
<td>050</td>
<td>C point : Stop position of main shaft is out of its place</td>
<td>Turn grip on main shaft upward one time and set to C point mark. Fig. 2</td>
</tr>
<tr>
<td>051</td>
<td>L sensor : Trouble of timing detecting board, stain of photo sensor [PH1],[L.P.] Malfunction of “Lowest needle position” sensor on detecting circuit board. Improper adjustment of slit plate.</td>
<td>Check if photo sensor is stained or the slit plate contacts sensor.</td>
</tr>
<tr>
<td>052</td>
<td>C sensor : Trouble of timing detecting board, stain of photo sensor [PH2],[C.P.] Malfunction of “Color change position” sensor on timing detecting circuit board.</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>X limit : Frame moved beyond sewing area side-wise</td>
<td>Return frame within sewing area by frame move key. Check pattern size and contents of setting.</td>
</tr>
<tr>
<td>061</td>
<td>Y limit : Frame moved beyond sewing area length-wise</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of needle bar selection unit](Fig. 1)

![Diagram of C point](Fig. 2)
<table>
<thead>
<tr>
<th>Code</th>
<th>Error</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>070</td>
<td>Safety sensor: Safety sensor activated by concerning danger.</td>
<td>Be confirmed of nothing is put around the safety sensor. Confirm the safety of embroidery area.</td>
</tr>
<tr>
<td>090</td>
<td>Miss reception: Error occurred during communication of data.</td>
<td>Read pattern data again from the first.</td>
</tr>
<tr>
<td>091</td>
<td>No send: Data don't get in for over 10 seconds.</td>
<td>Read tape again from the first.</td>
</tr>
<tr>
<td>102</td>
<td>Tape set: While in reading, tape holder get out of place.</td>
<td>Read tape again from the first.</td>
</tr>
<tr>
<td>103</td>
<td>Tape format: The machine can't judge format of pattern data.</td>
<td>Check tape format of tape or data format of pattern data. In relation to setting of pattern data reading, set tape format or data format properly.</td>
</tr>
<tr>
<td>104</td>
<td>Miss function: Timing to read tape doesn't conform.</td>
<td>Read tape again from the first.</td>
</tr>
<tr>
<td>105</td>
<td>Dual function: One stitch data on tape has more than 2 functions.</td>
<td>Check if tape is OK or not. Read tape again from the first.</td>
</tr>
<tr>
<td>106</td>
<td>No function: Distance between start point of reading and start point of pattern is too long when reading.</td>
<td>Leave length of less than 1 m between reading unit of tape reader and first part of tape data.</td>
</tr>
<tr>
<td>108</td>
<td>Improper read: While reading pattern data, there accured error in internal processing.</td>
<td>Read pattern data again from the first.</td>
</tr>
<tr>
<td>110</td>
<td>Memory full: While reading tape, memory exceeded its capacity.</td>
<td>Delete unnecessary patterns and read from the outset.</td>
</tr>
<tr>
<td>111</td>
<td>Change over: While reading pattern data, the frequency of color change (color No.) exceeded 250 times.</td>
<td>Divide pattern data and reduce frequency of color change of one pattern to less than 250 times.</td>
</tr>
<tr>
<td>112</td>
<td>Data error: Pattern data of pattern to be embroidered is damaged.</td>
<td>Read pattern data again from the first.</td>
</tr>
<tr>
<td>114</td>
<td>Id over: The number of Pattern in memory has reached maximum of 99.</td>
<td>Delete unnecessary patterns and read.</td>
</tr>
<tr>
<td>116</td>
<td>Not found Id: Specified pattern doesn't exist.</td>
<td>Check setting.</td>
</tr>
<tr>
<td>118</td>
<td>Trace data over: The stitch number counts over 1024 stitches during preparing Trace data.</td>
<td>Set Embroidery area of pattern data within 2m(length wise) X 2m (side wise)</td>
</tr>
<tr>
<td>120</td>
<td>Memory error: It became impossible to retain contents of memory.</td>
<td>If this condition occurs frequently, CPU circuit board is out of order.</td>
</tr>
<tr>
<td>130</td>
<td>Disk error: Incapable of disposing of data disk continuously.</td>
<td>Turn off power source once and turn it on again. If not reinstated, it will be trouble of disk drive unit.</td>
</tr>
<tr>
<td>131</td>
<td>Disk no ready: Disk is not set.</td>
<td>Check if data disk is properly set.</td>
</tr>
<tr>
<td>132</td>
<td>Write protect: Disk write protect.</td>
<td>Make write protect tab in data disk &quot;Writing possible&quot;.</td>
</tr>
<tr>
<td>133</td>
<td>Bad disk: Data disk is not proper or broken.</td>
<td>Data disk that disk drive unit can't read or broken data disk or data disk not initialized is set.</td>
</tr>
<tr>
<td>134</td>
<td>Disk unit: Trouble in disk drive unit.</td>
<td>Turn off power source once and turn it on again. If not recovered, it will be trouble in disk drive unit.</td>
</tr>
<tr>
<td>140</td>
<td>Entry over: Capacity is full for registering patterns.(refer to page of &quot;SPECIFICATIONS&quot;)</td>
<td>Clear unnecessary patterns. Or use other data disk.</td>
</tr>
<tr>
<td>141</td>
<td>Not found name: Designated pattern is not found.</td>
<td>Data disk is not correct.</td>
</tr>
<tr>
<td>142</td>
<td>Disk full: Capacity is full for storing. (refer to page of &quot;SPECIFICATIONS&quot;)</td>
<td>Clear unnecessary patterns. Or use other data disk.</td>
</tr>
<tr>
<td>143</td>
<td>Multi name: if there is multi name of data when writing.</td>
<td>Change name, write in another disk. (Over write)</td>
</tr>
</tbody>
</table>
## Errors and Measures

<table>
<thead>
<tr>
<th>Code</th>
<th>Error</th>
<th>Measures</th>
</tr>
</thead>
</table>
| 190  | Cut blade: Thread cut knife is not at stop position                                            | Please check if the stop position limit switch on the thread cut actuation unit on the left side under the machine table contacts the dog.  
When the stop position limit switch doesn’t contact the dog, please return stop position to where it was, in the following manner.  
1. Please remove the solenoid cover on the left side under the machine table. (2 screws) Fig. 2  
2. While raising the plunger from a hole in the center of the solenoid stopper, turn the main shaft toward an arrow mark.  
Please turn the main shaft to where there appears a gap for bobbin to get in between plunger and stopper. Fig. 1, Fig. 3  
3. Please insert the bobbin between the plunger and the stopper. Fig. 3  
4. Please turn the main shaft toward an arrow mark and set to 10° further from "C" on the adjusting disc. At this moment, when you turn the main shaft and feel abnormally heavy, please remove the needle plate and check the thread cut knife. Fig. 1  
5. Please remove the bobbin from the solenoid.  
6. Please place the solenoid cover and the needle plate where they were.  
7. Please turn the main shaft toward an arrow mark and set to "C" on the adjusting disc. |
| 193  | Catcher: Thread catch hook is off its position  
Limit switch to detect position is not "OFF"                                                   | 1. Check if there is a head that does not cut thread. If thread is not cut, cut it and return thread catch hook.  
2. If threads are all cut, check if thread catch hook on each head has returned to its position completely. |
| 200  | Font data: Found the something wrong of the data during reading user language from disk        | Examine the disk use the normal data disk.                                                                                                                                                      |
| 201  | Transmit font: It failed to send the user language data to LCD unit                            | If it happens often, please contact agent                                                                                                                                                     |
| 202  | Install font: It failed to send the user language data to Flash ROM on LCD unit                 | If it happens often, please contact agent                                                                                                                                                     |

![Fig. 1](image1.png)  
![Fig. 2](image2.png)  
![Fig. 3](image3.png)  
![Fig. 4](image4.png)
If you embroider patterns dense in stitches like wappen to the brim of border frame, front part of border frame is pulled inside by shrinkage of fabric and there is a chance that front part of border frame bends as shown in Fig.1.
If front part of border frame bends, it causes off registration.
If you embroider under such condition, please fix center support in the center of border frame. (Except model HCGB-1*02, 1*04)

△ If you fix center support in border frame, neighboring area is reduced by 35mm as shown.
If you misplace pattern, needle and presser foot hit border frame and cause breakage. Please pay care in this respect.

How to fix

1 Spread fabric in border frame and hold it with clips.

2 As shown in Fig. 3, fix center support in the center of border frame with set screws. At this moment, long fixing hole should face toward you.
Removing

When fixing the tubular frame and the cap frame, please take off the removable table in the following manner.

1. Make sure that power source of the machine is off.
2. Make sure that all rotary hook covers are shut.
   ✴ If rotary hook cover is not shut, the table will hit rotary hook and damage it.
3. Remove set screw indicated in arrow mark on back of the border frame and take out border frame slowly toward you as shown in Fig. 1.
4. Loosen all of the knob bolts on the reverse side of the table slightly, pull the table holder till it hits stopper as shown in Fig. 2.
5. Open all clumps indicated by an arrow mark as shown in Fig. 3.
6. Unscrew set screws on table stay in order of center, left and right, then pull out removable table slowly toward you.
   △ To prevent the table from falling down, be sure to take off set screws immediately before pulling out the table.
7. Remove middle set screw on table stay, shrink table stay as illustrated in Fig. 4 and insert middle set screw.
8. As shown in Fig. 5, insert removable table under table support in order of left, right and center and slide it deep inside. Fix set screws on each table.
   △ To prevent removable table from falling down, fix screws immediately.
9. As shown in Fig. 6, tighten middle set screw, shut all clamps, insert table stay and tighten knob bolts.

Fixing

Please fix in reverse order of removing.

✴ Insert set screw lightly as shown in Fig. 1 for mounting border frame and tighten set screw pulling border frame toward an arrow mark (to your side).
1 According to page of "REMOVING OF REMOVABLE TABLE", take off the removable table.

2 Move X carriage to a position similar to Fig. 1.

3 Fix tubular frame base ass'y under base bracket of X carriage with set screw as shown in Fig. 1.

4 Place each of tubular frame in tubular frame holder as shown in Fig. 2 and confirm that there is no malfunction.

End
Fulcrum shaft is adjusted together with cap drive frame as a set when the machine leaves the factory. When you mount cap drive frame, skip this page and proceed to "Mounting of cap drive frame" on the next pages. However if you moved fulcrum shaft for some reason or if you exchanged fulcrum shaft or cap drive frame, adjust fulcrum shaft in the following manner.

※ When you hold cap drive frame assembly, be sure to hold part of rotary cylinder. If you hold rail bracket, fingers will be pout between rail bracket and rotary cylinder or rail bracket will get out of place.

1. As shown in Fig. 1, insert cap drive frame assembly with head number sticker labeled for respective head in fulcrum shaft and guile shaft.

2. As shown in Fig. 1, place cap drive frame assembly with set screw for base so that upper inside of rotary cylinder hits needle plate without producing gap.

3. As shown in Fig. 2, move fulcrum shaft up and down with hand and adjust so that gap between upper inside of rotary cylinder and needle plate comes to gap shown in Fig. and fix with set screw for fulcrum shaft.

※ Move rotary cylinder back and forth to confirm that gap in front and back of needle plate is same.

4. As shown in Fig. 3, move rotary cylinder back and forth with hand within limit of length of fulcrum shaft to confirm smooth movement. If it doesn't have smooth move, loosen set screw for guide shaft on guide shaft slightly to adjust, then fix after adjustment.

5. When you finished adjustment of fulcrum shaft by each head, remove cap drive frame assembly from fulcrum shaft. After you finished adjustment of fulcrum shaft an all heads, proceed to "Mounting of cap drive frame" on the next page.
After you finished adjustment of fulcrum shaft, mount cap drive frame assembly in the following manner.

1. According to page of "REMOVING OF REMOVABLE TABLE", take off the removable table.

2. Move X carriage to a position similar to Fig. 1.

3. Fix cap frame base under base bracket of X carriage with set screw as shown in Fig. 1.

4. Move X carriage back and forth with hand and remember weight before mounting cap drive frame assembly.

5. Move X carriage to a position shown in Fig. 3.

6. As shown in Fig. 2, insert cap drive frame assembly with head number sticker labeled for respective head in fulcrum shaft and guille shaft. This work requires firstly to insert drive frame assembly for even numbered heads and secondly insert cap drive frame assembly for odd numbered heads.

   ※ When you hold cap drive frame assembly, be sure to hold part of rotary cylinder.
   If you hold rail bracket, fingers will be put out between rail bracket and rotary cylinder or rail bracket will get out of place.

   ※ For machines with needle distance of 360mm, if you insert cap drive frame assembly for odd numbered heads firstly, you can’t insert cap drive frame assembly for even numbered heads.

7. Move drive frame assembly toward X carriage to place it on cap frame bracket, then tighten with set screw lightly and fix. This work also requires firstly to insert even numbered leads, then go to odd numbered heads.
8. As shown in Fig. 4, move rail bracket left and right with hand to get center of rail bracket came to about center of bed. Confirm that rails of rail bracket are in grooves in front and back of rotary cylinder.

9. As shown in Fig. 5, move rail bracket fully to the right side or left side to confirm that all rails are in grooves in front and back of rotary cylinder.

10. Tighten set screw on cap drive frame assembly firmly, which was once lightly tightened in 7. above. At this moment, move rail bracket toward X carriage as shown in Fig. 6, then tighten fixing screw proving rail bracket further toward right.

11. As shown in Fig. 6, move X carriage back and forth and confirm if you feel X carriage extremely heavy or if it doesn't get caught, comparing it before you placed cap drive frame assembly. If you have some problem, repeat this work from the outset.

<END>
Adjustment
When you fix cap to cap hold frame, please adjust in the following manner:

1 Adjust position of clamp support by height of cap. (Fig. 1)
   Adjust position by removing inner screws at left and right.
   △ If you adjust position of clamp support and shorten distance H, embroidery area will be reduced in Y direction (depth).

2 Set position of clamp to clamp support to adjust. (Fig. 2)
   Loosen wing nuts at left and right to adjust.

3 Adjust up and down position of hook according to thickness of cap to adjust clamp tension. At this moment, hook should open and close without feeling heavy.
   (For adjustment, proceed to operation 5 according to "Setting of caps" on later page).
   Use wing nuts for adjustment. (Fig. 3)
   △ If you feel hook extremely heavy in opening and closing, there is a case that cap hold frame will lose its shape or damage.

4 Fix cap hold frame without cap to cap drive frame on the machine.
   (Please refer to operation 8 "Setting of caps" on later page for setting).
   At this moment, adjust so that guide on cap drive frame doesn't strike clamp support and gap is reduced as small as possible.
   Remove screws at left and right to adjust. (Fig. 4)
Setting of caps

1. Place cap stretcher securely on sturdy work bench.
   ※ You can use cap stretcher for wide cap hold frame, but use of semi-wide cap hold frame that is more workability is recommendable.

2. As shown in Fig. 5, hold cap hold frame with both hands and place on cap stretcher. By pushing hold lever at 2 places in arrow marks with fingers, place cap hold frame so that center guide of cap stretcher gets in concave of upper cap hold frame.
   ※ Confirm that cap holder frame is securely placed on cap stretcher without gap.

3. As shown in Fig. 6, remove cramp and keep open to the right.

4. Extend fore half of liner inside cap to place on cap stretcher. At this moment, place it so that tip of liner contacts flange of cap hold frame.
   ※ Please place 2 sheets of nonwoven fabric (backing) of standard thickness under fabric for better sewing finish.

5. As shown in Fig. 7, pull hind part of cap and get it caught on hook by smoothing out creases on cap. At this moment, set center of cap to center mark on cap hold frame so that notched portion of clamp gets into seam of visor.

6. Close hook so as for cap not to get creased.
   ※ If you can't get rid of creases on cap, adjust cap hold frame again according to "Adjustment" on previous page.
7 Remove cap hold frame with cap on from cap stretcher.

8 As shown in Fig. 8, place cap frame holder with cap on cap drive frame assembly of embroidery machine. By pushing holder lever at 2 places in arrow marks with fingers, place cap hold frame with cap on so that center guide of drive frame assembly gets in concave of upper cap hold frame.

※ Confirm that cap holder frame is firmly plated on cap drive frame assembly without gap. In case there is gap between cap hold frame and cap drive frame of hold lever doesn’t go into hole on cap hold frame, loosen set screw on hold lever to adjust.

End
**Adjustment**

When you fix cap to cap hold frame, please adjust in the following manner:

⚠️ Make sure to do the adjustment of the cap hold frame. If it is not adjusted properly, it may cause the deformity, damage of the cap, damage of the cap hold frame and break of the cap grip.

After adjusting the cap hold frame, make sure the cap to be set properly.

1. Adjust the length of the cap grip to suit the thickness of the fabric. At this moment, hook should open and close without feeling heavy.
   (For the adjustment follow the next page "WIDE CAP HOLD FRAME" item 1 to 5.)
   The adjustment to be done by three adjusting screws. (Fig. 1)

   - If the cap grip is loose, even after hooked the cap is not fixed tightly and the cap is moving. (Fig. 2)

   - If the cap grip is too tight, you feel heavy when it is hooked and the grip bites into the cap too much. (Fig. 3)

   ⚠️ If you feel hook extremely heavy in opening and closing, there is a case that cap hold frame will lose its shape or damage.

2. Adjust the guide position to suit the height of the cap.
   Remove screws at left and right to adjust. (Fig. 4)
Setting of caps

1 Place cap stretcher securely on sturdy work bench.

2 As shown in Fig. 1, hold cap hold frame with both hands and place on cap stretcher. By pushing hold lever at 3 places in arrow marks with fingers, place cap hold frame so that center guide of cap stretcher gets in concave of upper cap hold frame.

※ Confirm that cap holder frame is securely placed on cap stretcher without gap.

3 As shown in Fig. 2, remove cap grip and keep open to the left.

4 Extend fore half of liner inside cap to place on cap stretcher. At this moment, place it so that tip of liner contacts flange of cap hold frame.

5 As shown in Fig. 3, place hook so as to have visor of cap get in gap between cap grips. At this moment, set center of cap to center mark on cap hold frame so that notched portion of clamp gets into seam of visor. Close hook.
6 As shown in Fig. 4, lift cap stretcher to tip forward. Hold cap with clips at two places in back by stretching crease toward arrow marked direction from front of the cap.

※ Get lever for clip facing toward inside.

7 Remove cap hold frame with cap on from cap stretcher.

8 As shown in Fig. 5, place cap frame holder with cap on cap drive frame assembly of embroidery machine. By pushing holder lever at 3 places in arrow marks with fingers, place cap hold frame with cap on so that center guide of drive frame assembly gets in concave of upper cap hold frame.

※ Confirm that cap holder frame is firmly plated on cap drive frame assembly without gap. In case there is gap between cap hold frame and cap drive frame of hold lever doesn't go into hole on cap hold frame, loosen set screw on hold lever to adjust.

End
<table>
<thead>
<tr>
<th>Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine No.</td>
<td></td>
</tr>
</tbody>
</table>

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