



# USER'S MANUAL

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## SPS/D-BH-6000

Direct Drive, Electronically  
Controlled Lock Stitch  
Button Hole Sewing Machine  
(Electronic Control Part)

- 1) FOR AT MOST USE WITH EASNESS,  
PLEASE CERTAINLY READ THIS MANUAL  
BEFORE STARTING USE.
- 2) KEEP THIS MANUAL IN SAFE PLACE  
FOR REFERENCE WHEN THE MACHINE  
BREAKS DOWN.



1. Thank you for purchasing our product. Based on the rich expertise and experience accumulated in industrial sewing machine production, SUNSTAR will manufacture industrial sewing machines, which deliver more diverse functions, high performance, powerful operation, enhanced durability, and more sophisticated design to meet a number of user's needs.
2. Please read this user's manual thoroughly before using the machine. Make sure to properly use the machine to enjoy its full performance.
3. The specifications of the machine are subject to change, aimed to enhance product performance, without prior notice.
4. This product is designed, manufactured, and sold as an industrial sewing machine. It should not be used for other than industrial purpose.



**SunStar CO., LTD.**

## Eyelet Button Hole Sewing Machine Model

**SPS / D - B H 6 0 0 0 -**

① Sunstar  
Pattern  
System

② Series

③ Eyelet Button Hole  
Mode Name

④ Sub-type  
01: Long thread trimming  
02: Short thread trimming

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# Machine Safety Regulations

Safety instructions in this manual are defined as Danger, Warning and Caution.  
If you do not follow the instructions, physical injuries or machine damage might occur.

**Danger** : This mark must be observed. Otherwise, danger could result during installation, transportation and operation of the machine.

**Warning** : When you keep this indication, injuries caused by the machine can be prevented.

**Caution** : When you keep this indication, machine errors could be prevented.

<p><b>1-1) Transportation</b></p>  <p>Danger</p>	<p>Those who fully understand the safety regulations should transport the machine. The following instructions must be followed.</p> <ul style="list-style-type: none"> <li>Ⓐ At least two people should move the machine.</li> <li>Ⓑ To prevent occurrence of accidents during transportation, thoroughly wipe off the oil put on the surface of the machine.</li> </ul>
<p><b>1-2) Installation</b></p>  <p>Warning</p>	<p>The machine may not work properly or break down depending on where it is installed. The right place of installation should meet the following conditions.</p> <ul style="list-style-type: none"> <li>Ⓐ Remove the package and wrappings from the top in order. Take a special notice of the nails on the wooden box.</li> <li>Ⓑ Dust and moisture stains and rusts the machine. Install air-conditioners and clean the machine regularly.</li> <li>Ⓒ Keep the machine away from direct sunlight.</li> <li>Ⓓ Leave the space of at least 50cm between the wall and the left, right and rear sides of the machine for repairing.</li> <li>Ⓔ Explosion Do not use the machine in the atmospheres exposed to the danger of explosion. To avoid explosion, do not operate this machine in a place where a large quantity of aerosol products is used or where oxygen is stored, unless there are specific facilities installed to prevent explosion.</li> <li>Ⓕ The machine doesn't provide lightings. End users should install them at their workplace.</li> </ul>
<p><b>1-3) Repair</b></p>  <p>Caution</p>	<p>When the machine needs to be repaired, only the designated A/S engineers, who were educated by Sunstar, should repair the machine.</p> <ul style="list-style-type: none"> <li>Ⓐ Before cleaning or repairing the machine, turn off the machine and wait for 5 minutes till the machine is completely discharged.</li> <li>Ⓑ The machine specifications or parts should not be altered without prior consultation with the company. This may pose a danger to operation.</li> <li>Ⓒ When repairing, only the original spare parts produced by the company should be used for replacement.</li> <li>Ⓓ Put all the safety covers back on the machine after repairing is complete.</li> </ul>

## 1-4) Operation



SPS/D-BH6000 Series is an industrial sewing machine designed to conduct pattern sewing using fabrics and other similar materials. During operation, the following instructions should be kept in mind.

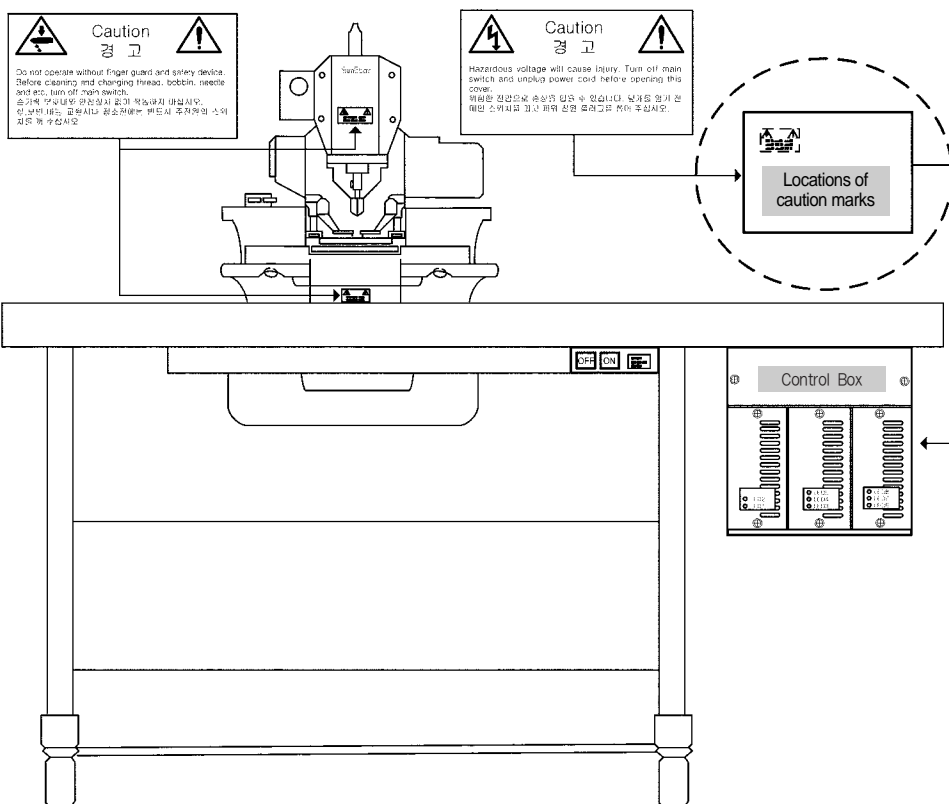
- Ⓐ Read through this manual carefully and completely before operating the machine.
- Ⓑ Wear the proper clothes for safety.
- Ⓒ Keep hands or other parts of the body away from the machine's operating section (needle, hook, thread take-up, and pulley, etc.), when the machine is operation.
- Ⓓ Do not remove safety plates and various covers while the machine is operating.
- Ⓔ Be sure to connect the grounding conductor.
- Ⓕ Turn off the machine before opening the electric boxes including control box. Make sure that the power switch is "OFF".
- Ⓖ Stop the machine when placing the thread or when checking the sewing materials.
- Ⓗ Do not turn on the machine while stepping on the pedal.
- Ⓘ Do not operate the machine when the cooling fan is clogged. The air filter in the control box should be cleaned once every week.
- ⓵ If possible, install the machine away from the place where powerful electromagnetic waves are generated such as high-frequency welding machine.



Make sure of closing the covers during operation. Otherwise, fingers or hands could be broken or get amputated by the belt. When checking or adjusting the machine, please switch off the machine.

## 1-5) Locations of caution marks

**Caution mark is attached on the machine for safety.**  
**When operating the machine, please read the instructions on the mark.**  
**Locations of caution marks(see the front)**



## 1-6) Message

### Caution

1)



Caution  
경 고



Do not operate without finger guard and safety devices. Before cleaning and changing thread, bobbin, needle and etc, turn off main switch.

손가락 보호대와 안전장치 없이 작동하지 마십시오. 실, 보빈, 바늘 교환이나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.

2)



Caution  
경 고



Hazardous voltage will cause injury. Turn off main switch and unplug power cord before opening this cover.

위험한 전압으로 손상을 입을 수 있습니다. 덮개를 열기 전 메인 스위치를 끄고 파워 전원 플러그를 뽑아 주십시오.



# 2

## Specifications

Classification		SPS/D-BH6000-01	SPS/D-BH6000-02	
Usage		Men's clothes and ladies's clothes	Jeans and work clothes	
Max. sewing speed		Max. 2,200spm		
Button hole area	Width	1.5 ~ 3.2mm		
	Length	10 ~ 38mm	A	14[mm] ~ 18[mm]
			B	18[mm] ~ 22[mm]
			C	22[mm] ~ 26[mm]
			D	26[mm] ~ 30[mm]
			E	28[mm] ~ 32[mm]
			F	32[mm] ~ 36[mm]
			G	36[mm] ~ 40[mm]
Needle		Dox558Nm80 ~ Nm120(Nm90)		
Lift of clamp		Max. 16mm		
Drive type of X,Y, $\theta$		5-phase stepping pulse motor		
Drive type of the cutter		Air solenoid		
Safety device		Emergency stop in the middle of sewing, detection of open head		
No. of patterns		Max. 99 patterns (standard: 4 patterns)		
No. of stitches		300(stitches)/1 pattern		
Memory		EEPROM		
Motor used		Direct Drive AC Servo motor		
Power consumption		600VA		
Air pressure		0.5Mpa(5kgf/cm <sup>2</sup> )		
Proper range of operating temp.		5℃ ~ 40℃		
Proper range of humidity		20% ~ 80%		
Voltage		1-phase: 100 ~ 240V , 3-phase : 200 ~ 415V, 50/60Hz		
Lubrication		Automatic		

# 3

## Power Voltage Connection

### 3-1) Power Voltage and Power Cord

#### 1) Voltage Specifications


The voltage information is displayed as below on the tag attached to the power cord.

이 기계의 전기 사양은 공장 출고 시 아래의 ☒ V 표기대로 결선되어 있습니다.

The Electric Specification of This Machine is Connected Under ☒ V Marked.

☒ V 단상 (1 Phase) ☐ 삼상 (3 Phase)  
☐ 110V ☐ 120V ☒ 220V ☐ 240V ☐ 220V ☐ 240V

- 1. Do not use if the voltage specification is different.
- 2. If voltage change is necessary, see "How to Change Power Voltage."
  - 1-phae connection (100V, 110V, 120V, 200V, 220V, 240V)
  - 3-phase connection (200V, 220V, 240V, 380V)




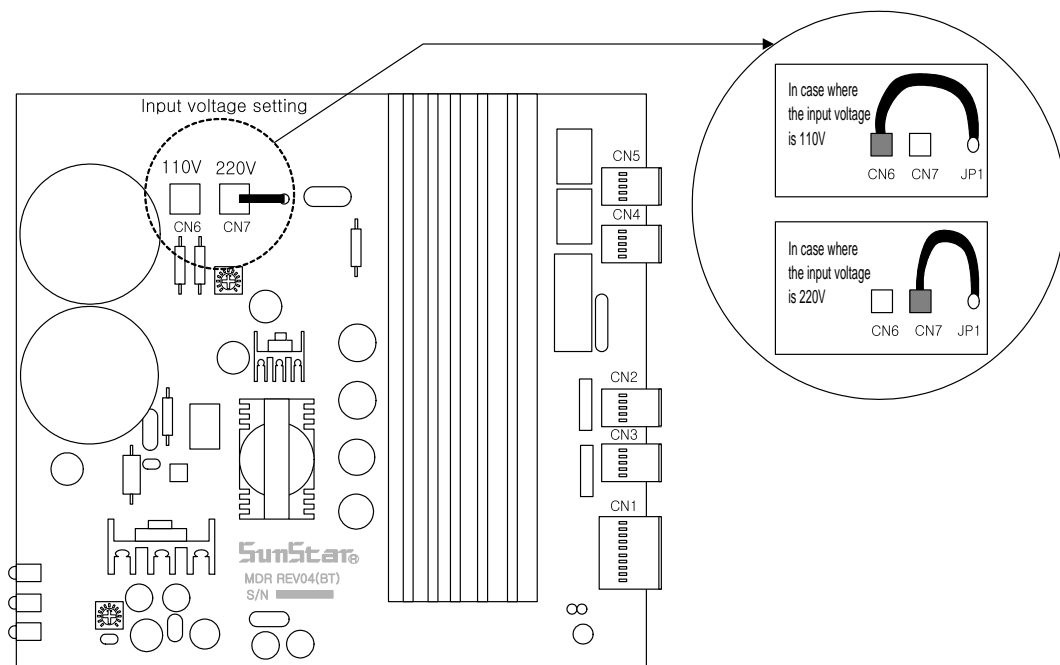
Notice

· In case of 3-phase 380V, a separate transformer box shall be installed on the table. (Please check it out when placing an order.)

### 3-2) How to Change Power Voltage

- Use SMPS to maintain constant voltage, while the input voltage is changed.
- Since free voltage is used, according to the input voltage, the switch connector shall be used to change the voltage of the main board between 110V and 220V.

 <b>Notice</b>	<p>• If the setting of the voltage switch connector is wrong, it may cause damage to the control box.</p>
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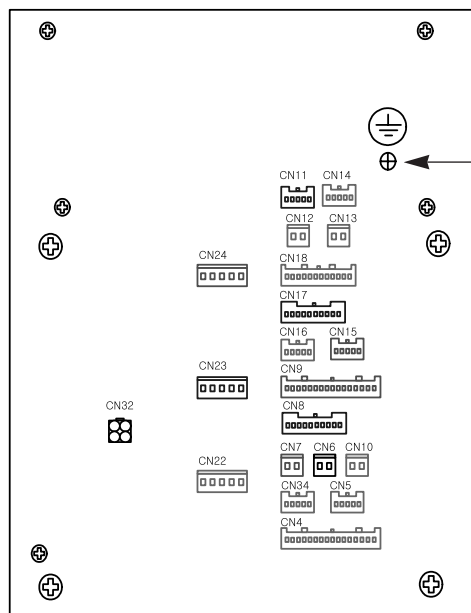


# 4

## Cable Connection to Control Box

### 4-1) Internal wiring of the control box

※ Wiring Diagram of Control Box



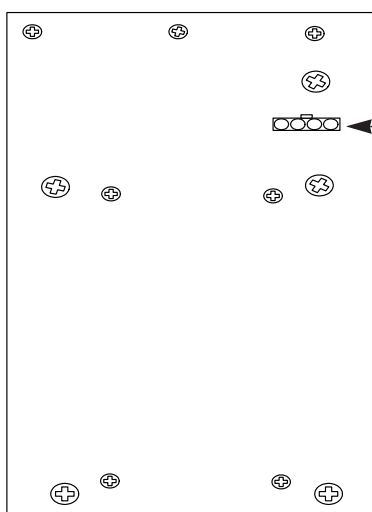
[Rear Cover of Control Box]

Cable Name	Machine	Control Box
Connection to the medium section of the step motor	②	CN22, CN23, CN24
Knife position sensor cable	⑤	CN10
Stop/head safety switch cable	⑥	CN15
Auto switch cable	⑦	CN5
Air pressure sensor cable	⑨	CN17
Sensor cable for special lapel cutting device	⑭	CN9
BH6000 Grounding Cable		
Switch cable for fly indexer	⑮	CN16
Pneumatic cable for fly indexer	⑯	CN11
Automatic switch cable for fly indexer	⑰	CN6
Pneumatic cable for Upper nipper device	⑱	CN14

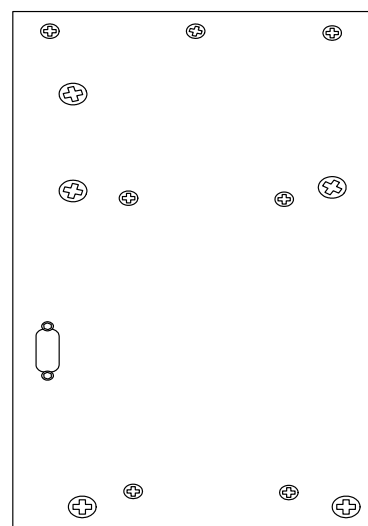


When you open the front cover with force to see the inside of the control box, the fan connection cable can be cut off since the cooling fan is attached to the front cover. Please take an extra caution.

### 4-2) External wiring of the control box



[Left Side Cover of Control Box]



[Right Side Cover of Control Box]

Cable Name	Machine	Control Box
Power Input Cable	②	-

Cable Name	Machine	Control Box
Main Shaft Encoder (Sanyo) Input Cable	⑮	CN26

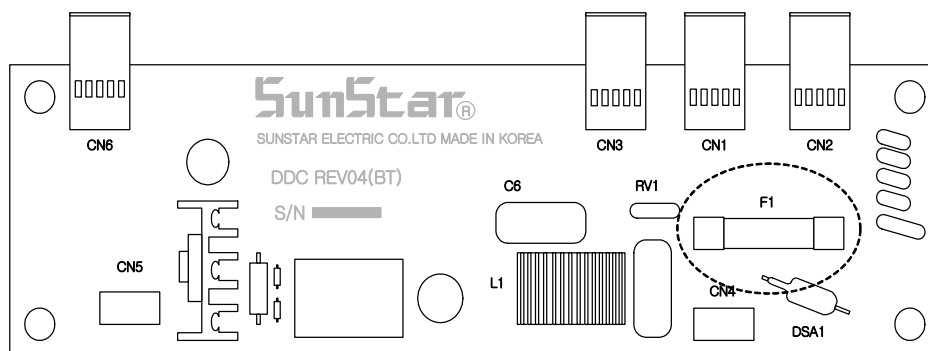
# 5

## Fuse Exchange



**Caution**

- Open the cover 5 minutes after turning off the power in order to prevent electric shock.
- Turn off the power and open the cover of the control box.  
Then exchange the existing one with the fuse of designated capacity.



- 7 fuses are used.

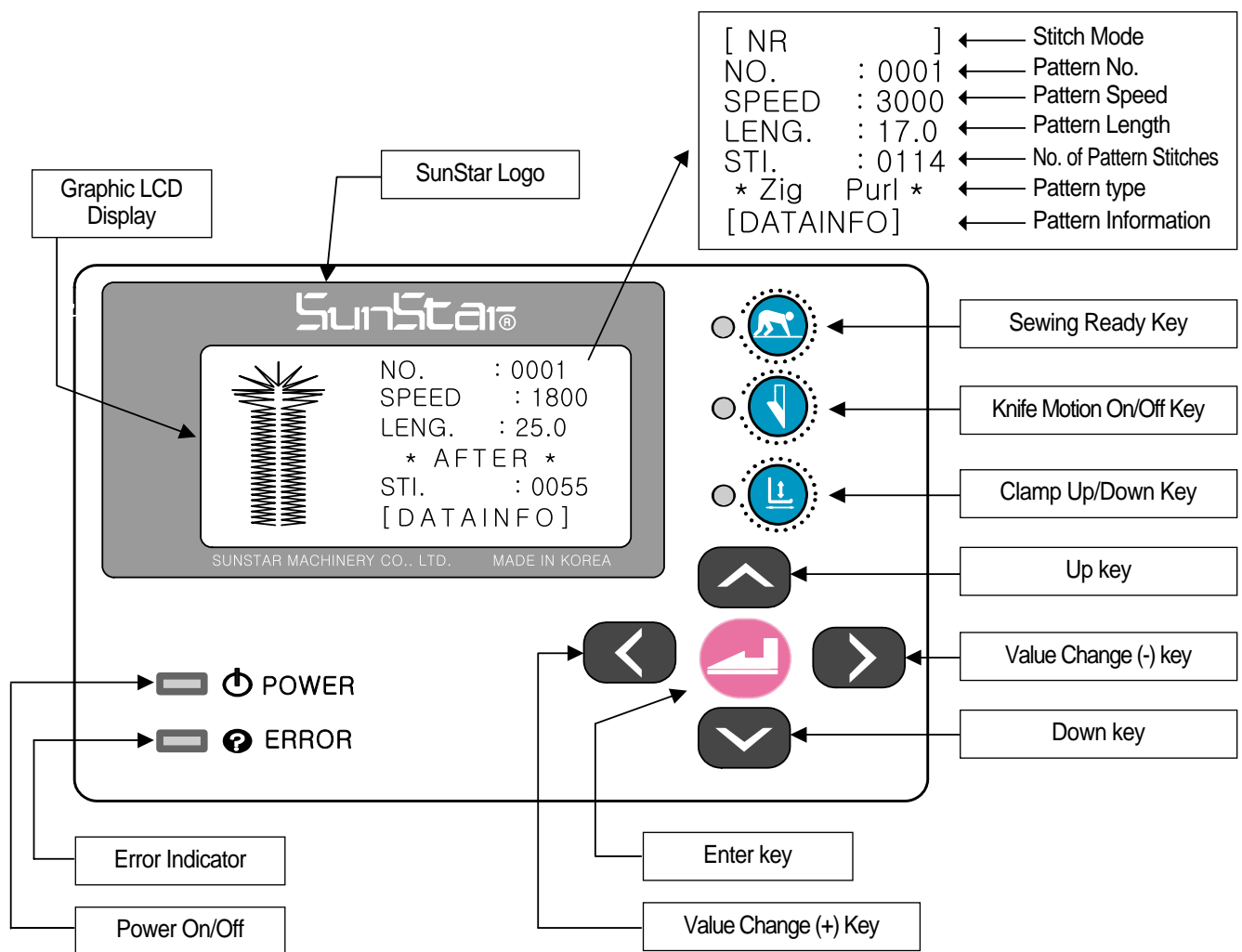
No.	Capacity	Usage
F1	15A	Protect the main power

# 6

## Use the Operational Panel and Perform Sewing

### 6-1) Operational panel and keys

#### 1) Operational panel



※ The change of the operational panel settings is possible only when the sewing Ready lamp is off.

## 2) Initial display

- In case of 『BH6000-01』, the following logos are displayed on the screen when the power is turned on.

- First line : Company name
- Second line : Machine Type
- Third line : Version

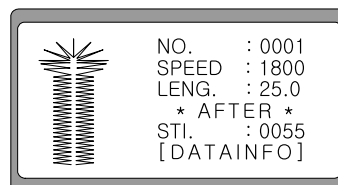
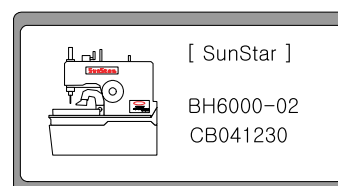
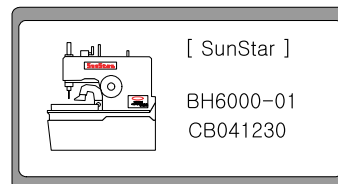
### ◀Note▶

If “P” is attached after the machine type, it means that the knife motion sensor is a photo-sensor type (If there is no “P”, it means that the knife motion sensor is a contact sensor type).

Ex) BH6000-01P

- In case of 『BH6000-02』, the following logos are displayed on the screen when the power is turned on.

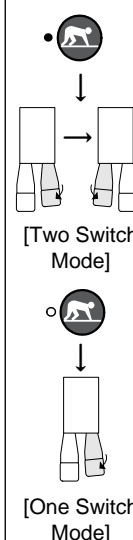
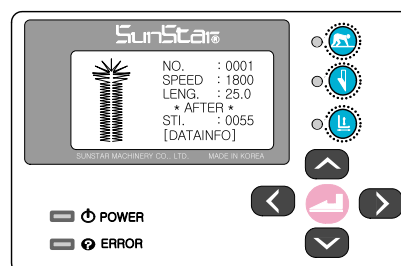
- Press the right hand switch to change to the sewing mode.



When the needle bar is not rightly positioned, an alarm is issued, and error message is shown on the screen. Use the hand pulley to compensate the needle position, and then the error message is automatically gone and the logo is displayed.

## 3) Sewing mode

1. When pushing the ‘Ready’ key, the lamp is lit.
2. When the right-hand side switch is pressed, the clamp descends. The clamp up/down lamp is turned on.
3. When the left-hand side switch is pressed, the feed base moves to the sewing ready position, and the fabric opening device opens. When the feed base completely moves to the sewing ready position, the sewing begins.

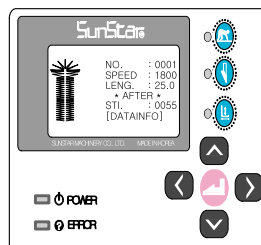


- When the sewing READY lamp is on, the knife motion On/Off key is deactivated.
- In case of changing Parameter Group A-22 to “One Switch” mode, the presser foot descent and sewing can be simultaneously performed using the left-side hand switch.

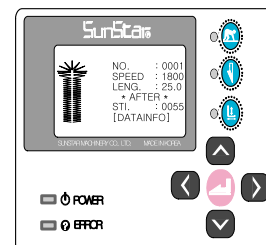
#### 4) Knife operation

When the sewing **READY** lamp is off, the knife on/off key is activated. When pressed, the lamp is on or off.

- Lamp on : The knife can operate.
- Lamp off : The knife can not operate.




[The knife can operate]



[The knife can not operate]

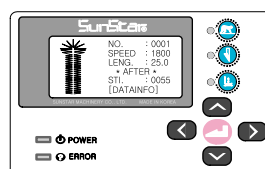
#### 5) Clamp operation

When the **READY** lamp is off, and either Clamp Up/Down (  ) or the right hand switch is pressed, the clamp starts operation.

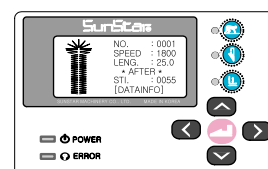
- Lamp on, right hand switch pressed: clamp down
- Lamp off, right hand switch pressed: clamp up

##### ◀Note▶

In the “One Switch” mode, the presser foot descent and sewing can be simultaneously performed with the left-side hand switch. As such, the presser foot does not descend nor ascend.



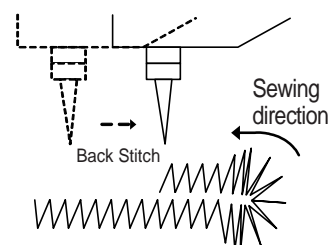
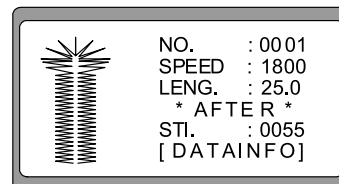
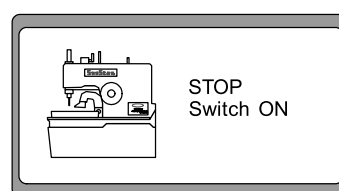
(Clamp down)



(Clamp up)

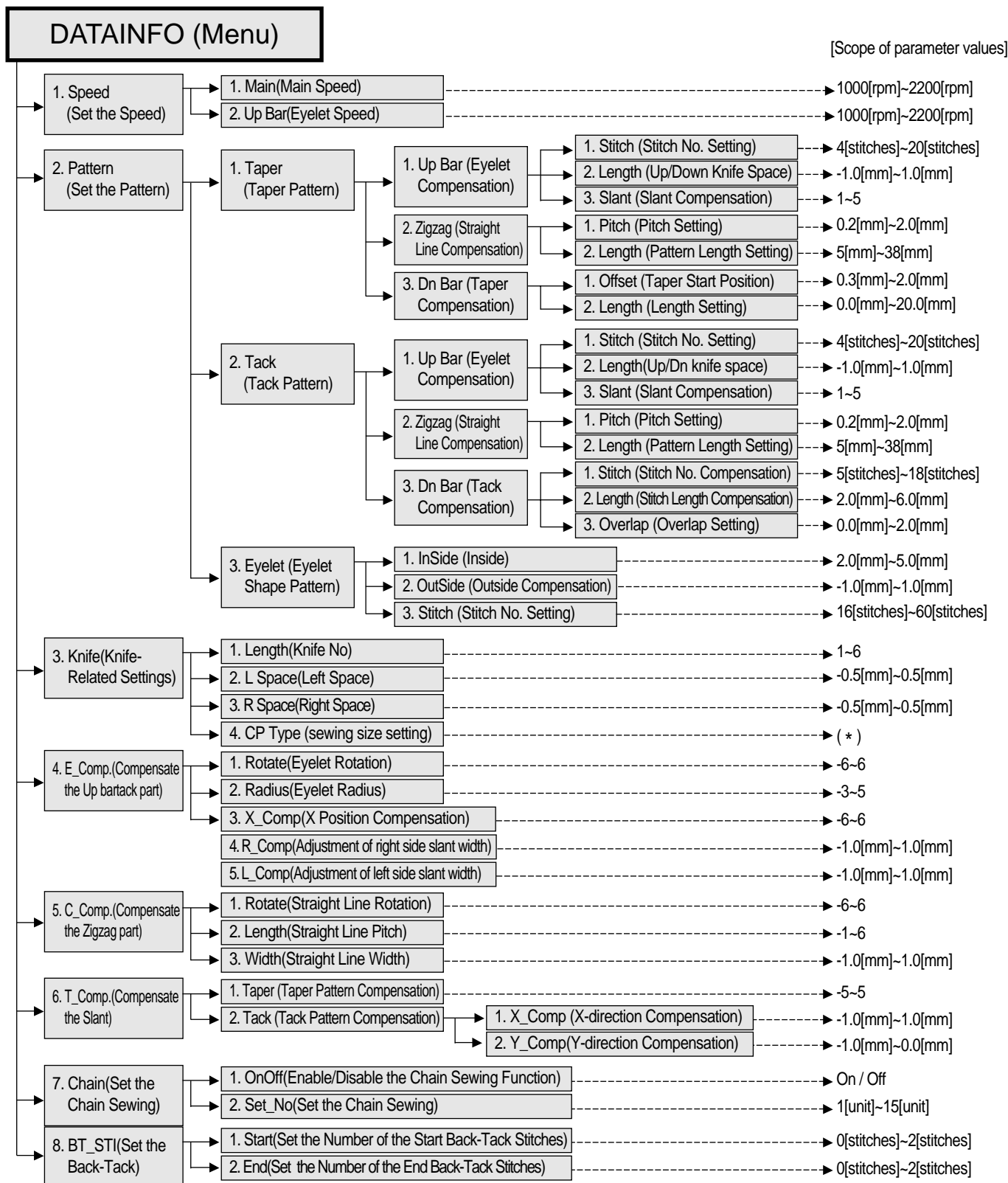
#### 6) Needle bar forward/backward adjustment after sewing suspension

- ① When the **suspension switch** is pressed in the middle of sewing, sewing is stopped, and a new screen appears.
- ② If the **suspension switch** is turned counter-clockwise and returned to the original position, the screen goes back to the initial sewing screen.
- ③ Press “Up” or “Down” key to make the needle bar move forward or backward. Likewise, the needle bar could be relocated to a desired position by using the Up or Down key.
- ④ When the start button is pressed, sewing resumes from the newly set needle bar position.





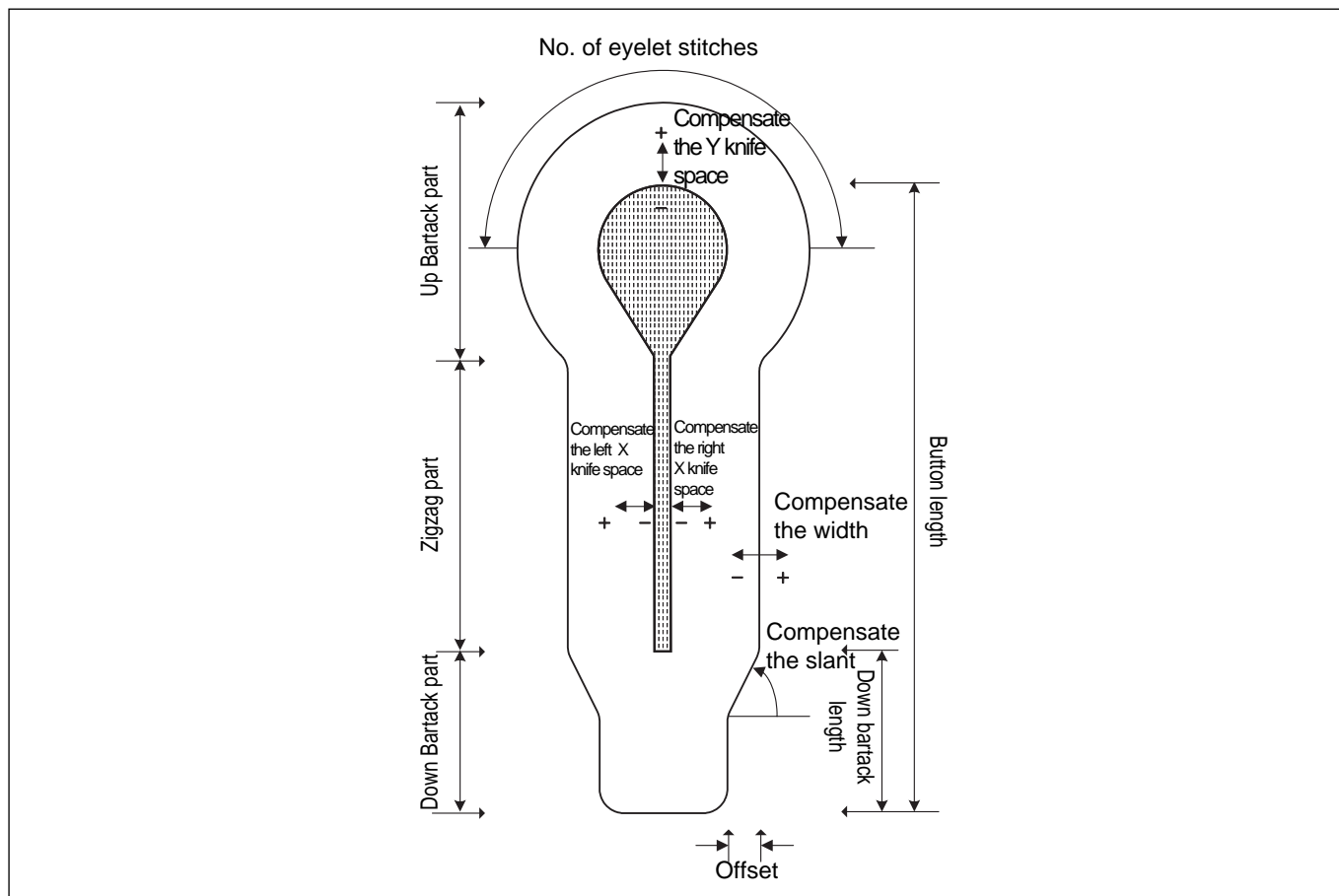
## 7) Menu overview



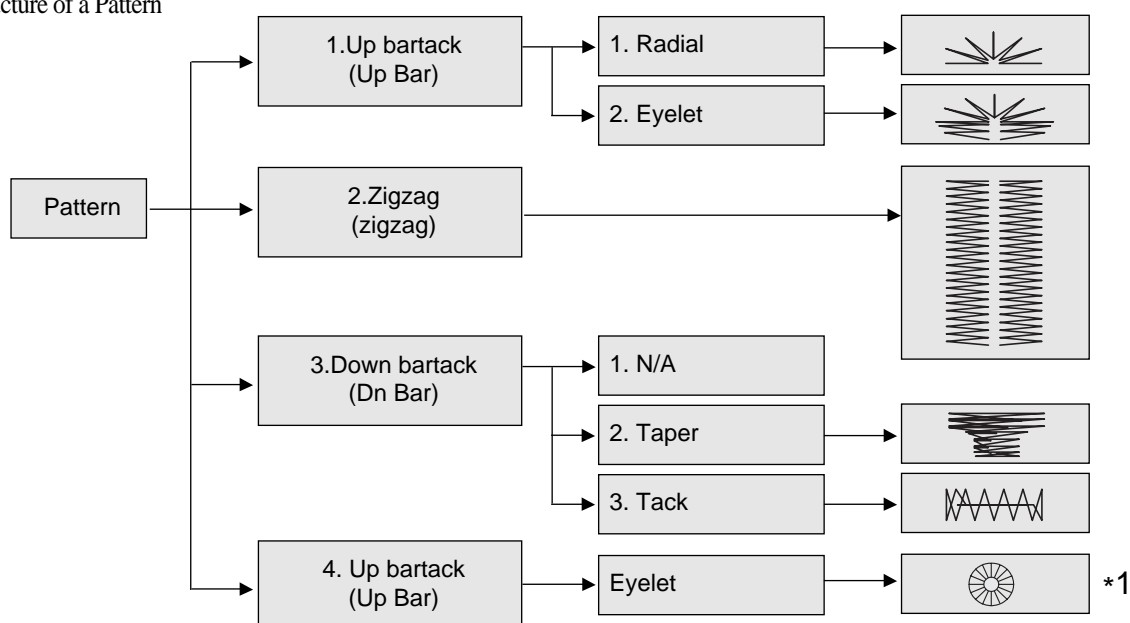
- 1) The symbol ( \* ) is used to determine the clamp type (sewing size) for BH6000-02.
- 2) There are seven clamp type options from A to G.
- 3) For more information on how to set the clamp type, see "6-4) Knife-related Parameter Setting".

## 8) A button hole structure

A button hole is largely composed of the up bartack part(head), the down bartack part(tail) and the zigzag (body).



※ Structure of a Pattern



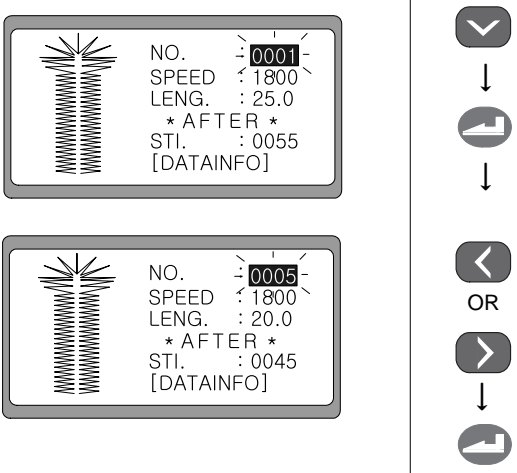
- 1) When shipped out from the factory, the up bartack part is set at eyelet shape pattern, while the down bartack part is set at N/A.
- 2) In order to use “\*1 Eyelet”, the parameter group A-16 should be changed to “1”.
- 3) Install the eyelet-dedicated needle plate, clamp, cutter and hammer before sewing the eyelet pattern. Otherwise, it might cause damage to the sewing machine.

## 9) Change the pattern number

① When the **READY lamp is off**, and the DOWN key is pressed, NO. on the LCD is flickering.

② Use ◀(+) or ▶(-) to choose the desired pattern number.  
(ex: Pattern No. 5)




③ Confirm the selection by pressing ENTER and the chosen pattern is automatically generated.





When the DOWN key is pressed, the blinking section moves down on the LCD and vice versa. When ENTER is pressed, the blinking section disappears from the screen and the chosen value is stored.

## 10) Function Keys

Classification	Function Keys	Description
WRITER		[DATAINFO] When this key is pressed within the routine, patterns are immediately created, and the initial screen appears.
HOME(ESC)		[DATAINFO] When this key is pressed within the routine, the changed parameter values are not saved, and the initial screen appears.
RETURN		[DATAINFO] When this key is pressed within the routine, the screen returns to the previous stage.



- Function keys are used within the [DATAINFO] routine.
- Press READY at the basic pattern routine to generate basic patterns. Then the display returns to the initial screen.
- When creating patterns composed of multiple patterns, press READY at the parameter routine by sector. If only one parameter is changed and READY is pressed, the remaining parameters of the new pattern are same as before.

## 6-2) Change the pattern data information

### 1) Change the pattern data information and the initial screen

① Select DATAINFO by pressing the DOWN key five times, while the **READY lamp is off**.

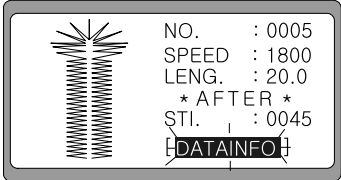
② Press ENTER and it moves to the initial screen for changing parameter information.

◀Note▶  
When the screen is shifted, No. 1 flickers.

③ Press the UP, DOWN keys, and choose [HOME] or [RETURN] to return to the initial display.

◀Note▶  
When the knife on/off key is pressed, the initial screen appears.

④ Press ENTER and it moves back to the initial display.



1: Speed

2: Pattern

3: Knife

4: E\_Comp.

5: L\_Comp.

6: T\_Comp.

7: Chain

8: BT\_STI

[ HOME ]

[ RETURN ]

1: Speed

2: Pattern

3: Knife

4: E\_Comp.

5: L\_Comp.

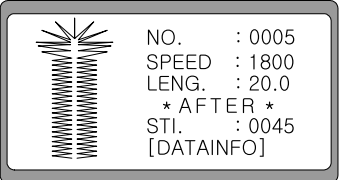
6: T\_Comp.

7: Chain

8: BT\_STI

[ HOME ]

[ RETURN ]



▼

↓

↵

↓

▲

OR

▼

↓

↵

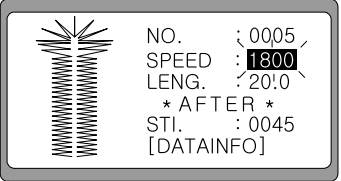
### 2) Change the speed

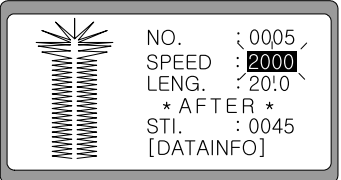
#### a. Change the speed on the initial display

① Check that the **READY lamp is off**, and press the DOWN key to select SPEED.

② Set the desired speed by using ◀(+) and ▶(-).  
(ex : 2000rpm)

③ Press ENTER to store the chosen value.





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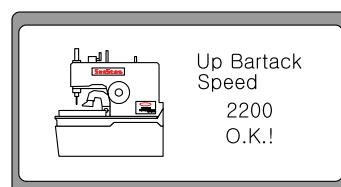
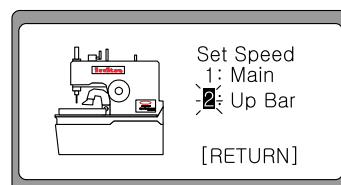
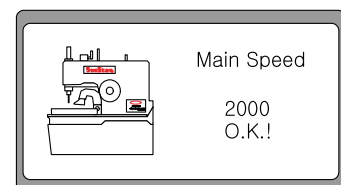
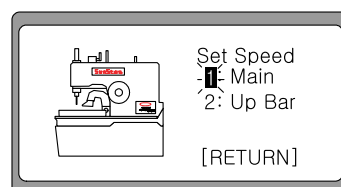
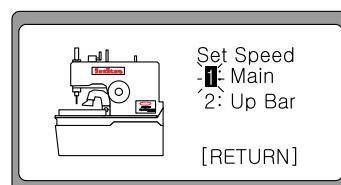
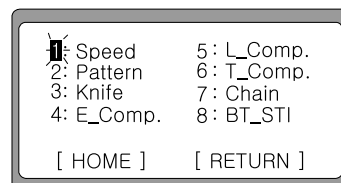
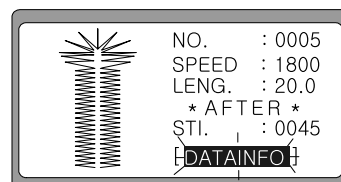
OR

▶

20

## b. Change the speed from the pattern data information

- ① Check that the **READY lamp is off**, and press the DOWN key to choose DATAINFO.
- ② Press ENTER and the first screen for changing parameter information is displayed. No. 1 is flickering.
- ③ Press ENTER, and it moves to the screen where speed can be altered. No. 1 is blinking.
  1. Main : Set the main speed
  2. Up Bar : Set the sewing speed at the up bartack
- ④ In order to set the main speed, choose '1' by using the UP, DOWN keys and press ENTER.
- ⑤ When the screen is shifted to the screen for changing speed, use ◀(+) and ▶(-) to set the speed and press ENTER. Then O.K.! message is displayed.  
( default : 1800rpm )
- ⑥ The screen will return to the initial speed setting display in one second.  
In order to set the sewing speed at the up bartack part, choose '2' by using the UP, DOWN keys and press ENTER.
- ⑦ When the display changes, ◀(+) and ▶(-) to set the speed and then press ENTER. Then O.K.! message is displayed.  
( default : 1800rpm )



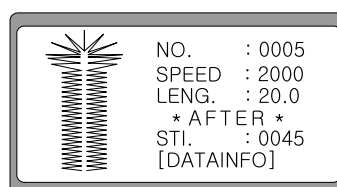
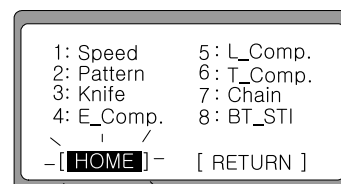
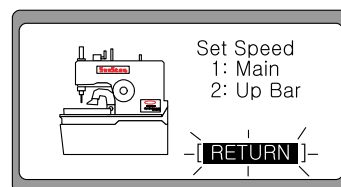
⑧ In order to end the sewing speed setting, choose [RETURN] by using the DOWN key and press ENTER.

⑨ Then the screen moves to the initial display for parameter information change. Press the UP, DOWN keys to choose either [HOME] or [RETURN] and then press ENTER.

⑩ The screen shifts to the initial display.

◀Note▶

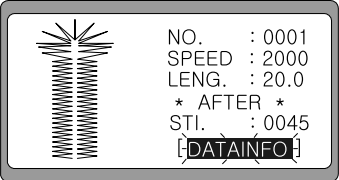
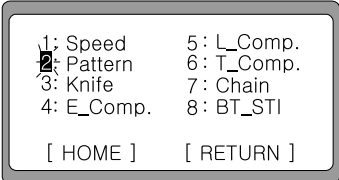
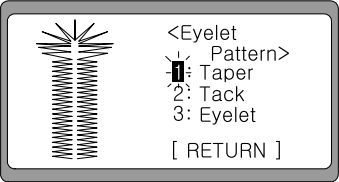


When READY is pressed at Step ⑧, changed parameter values are saved in the memory, and the initial screen appears.



If set at higher than the main sewing speed, the sewing speed for up bartack part will be equal to the main speed. However, as long as the up bartack part speed is lower than the main speed, it can be set as you wish.

## 6-3) Create the basic pattern shapes

### 6-3-1) Taper pattern

<p>① Make sure that <b>the sewing READY lamp is off</b>, and press the DOWN key to choose DATAINFO. Press ENTER and it moves to the initial display for parameter information change.</p> <p>② Press the UP, DOWN keys, and choose '2: Pattern'.</p> <p>③ Press ENTER and the screen of choosing button shapes appears. Select the desired pattern using Up or Down and press ENTER (ex: Taper shape pattern).  1 : Taper (Taper Pattern)  2 : Tack (Square Bartack Pattern)  3 : Eyelet (Eyelet Pattern)</p> <p>④ The screen for pattern creation pops up.  To create a pattern, up and down bartacks and the zigzag part should be set.  1 : Up Bar (Up bartack part)  2 : Zigzag (Zigzag part)  3 : Dn Bar (Down bartack part)</p>	   	
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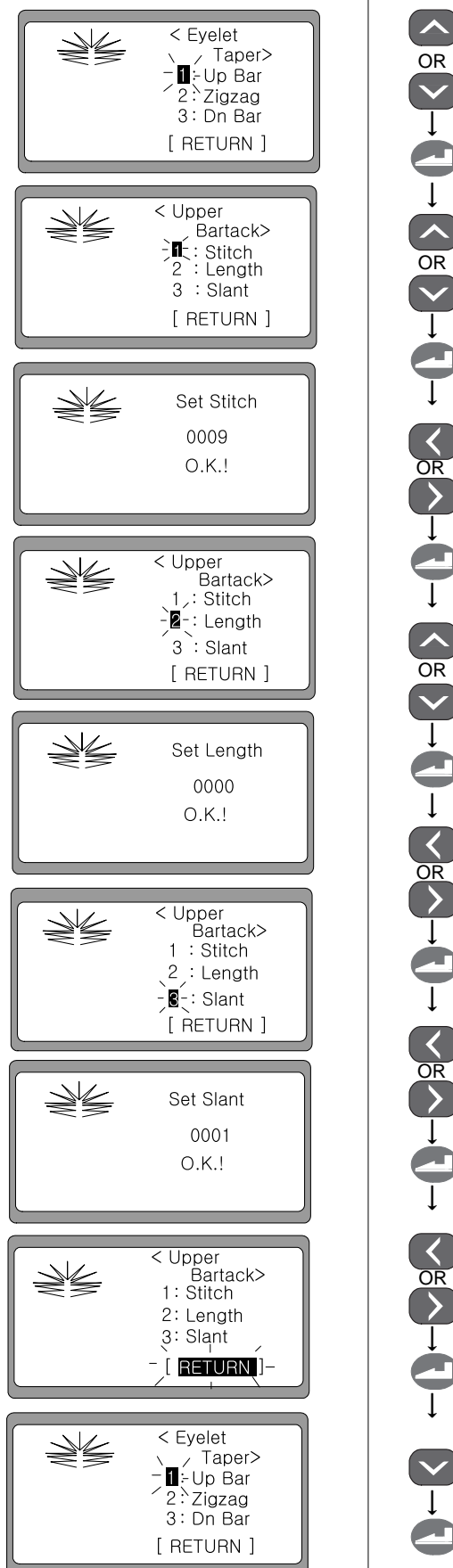
※ Repeat the ①, ②, ③ procedures to set the up bartack part, the zigzag part and the down bartack part.



- When you desire to generate patterns with default values, press READY at the step ④.
- "3:Eyelet" is displayed only when A-16 of the Parameter Group is changed to "1:enabled". When "3:Eyelet" is displayed, it is possible to produce the eyelet pattern.

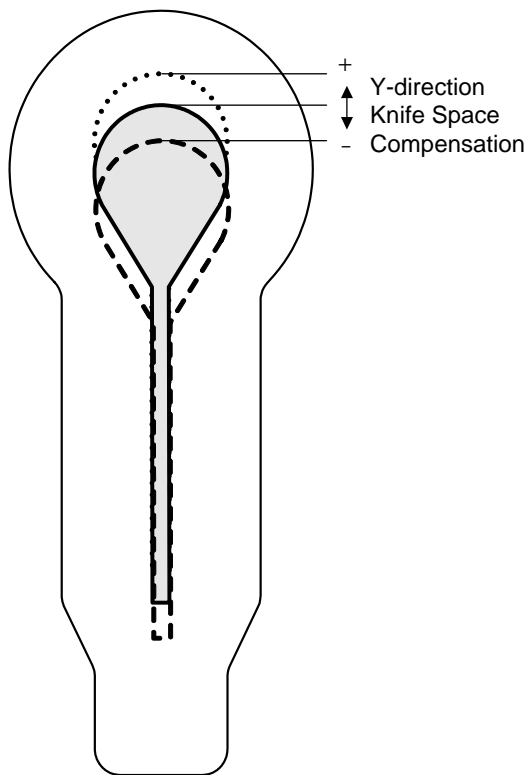
1) Create the up bartack shape

- ⑤ Choose '1' using the UP, DOWN keys and press ENTER.  
ex) 1: Up Bar
  - ⑥ The creation of the up bartack shape requires the entry of the number of eyelet stitches, the knife space in the Y direction and the knife space in the X direction. First of all, press ENTER to change the number of eyelet stitches.
  - ⑦ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then O.K.! message pops up on the screen.  
(ex : 0009)
  - ⑧ The screen automatically returns to the previous screen in one second. Use the DOWN key to set the knife space in the Y direction. Select '2' and press ENTER.
  - ⑧ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then O.K.! message pops up on the screen.  
(ex : 0000)
  - ⑩ The screen automatically returns to the previous screen in one second. In order to set the knife space in the X direction, use the DOWN key, choose '3' and press ENTER.
  - ⑪ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then O.K.! message pops up on the screen.  
(ex : 1)
  - ⑫ The screen automatically returns to the previous screen in one second. Use the DOWN key to choose [RETURN] and press ENTER.
- ◀Note▶  
When READY is pressed, all changed parameter values are saved in the memory. The initial sewing screen appears.
- ⑬ The screen for creating the up bartack, the down bartack and the zigzag pattern appears.



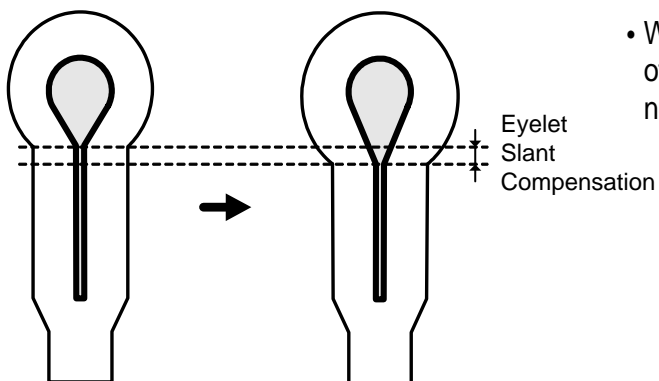


◀Note▶ Things to consider when setting 「Length」 for eyelet



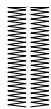
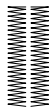

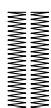







- + value setting: The Y-direction knife space is moved upward by the set value.
- - value setting: The Y-direction knife space is moved downward by the set value.

◀Note▶ Example of eyelet slant compensation



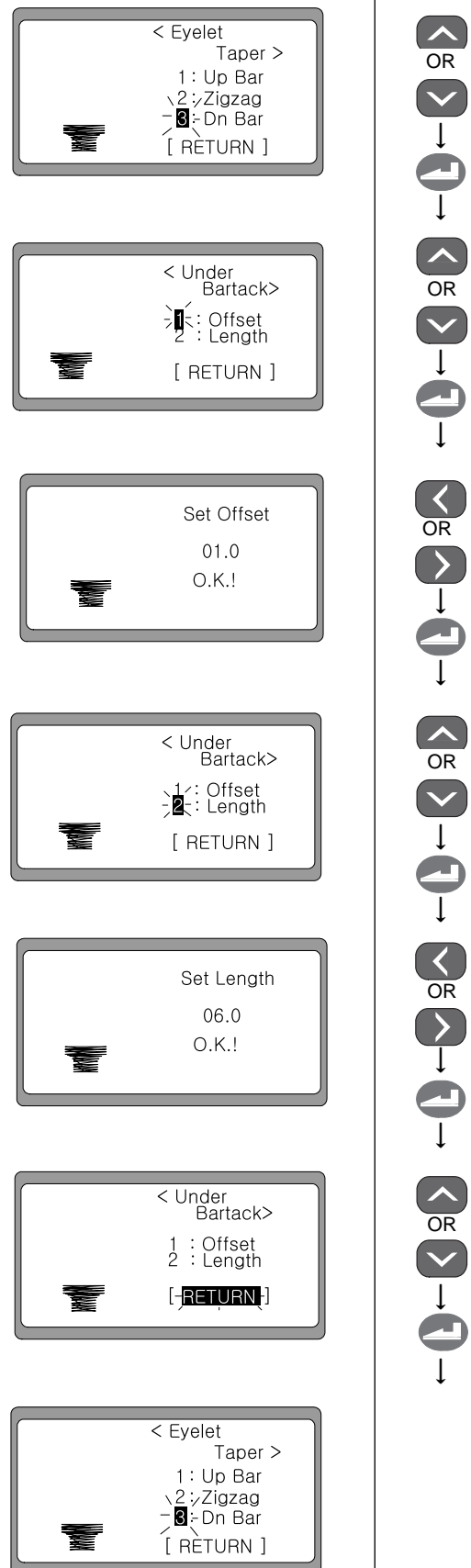
- When the eyelet slant compensation is set at 1, the number of stitches at the eyelet's slant increases by 1, while the number of stitches at the straight line decreases by 1.

2) Create the zigzag shape

<p>① Select '2' using the UP, DOWN keys and press ENTER. ex) 2: Zigzag</p> <p>② Set the values of pitch and length . ex) Pitch = 0.10 Length = 25.0</p> <p>③ Use the DOWN key to choose [RETURN] and press ENTER.</p> <p>④ Then the screen returns to the initial display for creating the up bartack part, the down bartack part and the zigzag shapes.</p>	<div><div>&lt; Eyelet Taper&gt; 1: Up Bar 2: Zigzag 3: Dn Bar [ RETURN ]</div></div> <div><div>&lt; Zigzag &gt; 1: Pitch 2: Length [ RETURN ]</div></div> <div><div>&lt; Zigzag &gt; 1: Pitch 2: Length -[ RETURN ]-</div></div> <div><div>&lt; Eyelet Taper&gt; 1: Up Bar 2: Zigzag 3: Dn Bar [ RETURN ]</div></div>	<div><div>OR</div><div>↓</div><div>↓</div><div>OR</div><div>↓</div><div>↓</div><div>↓</div></div>
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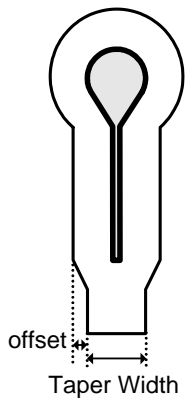
### 3) Create the down bartack shape

- ⑤ Select '3' using the UP, DOWN keys and press ENTER.  
ex) 3: Dn Bar
  - ⑥ The values of pitch and length should be entered to create the down bartack. Select '1' using the UP or DOWN key and press ENTER.
  - ⑦ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then O.K.! message is displayed.  
(ex : 01.0)
  - ⑧ In one second, the screen returns. Select '2' by using the UP or DOWN key and press ENTER.
  - ⑨ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then O.K.! message is displayed.  
(ex : 06.0)
  - ⑩ The screen returns in one second. Select [RETURN] by pressing the DOWN key and then press ENTER.
  - ⑪ The screen moves back to the initial screen for creating the up bartack, the down bartack and the zigzag shapes.
- ◀Note▶  
When READY is pressed, all changed parameter values are saved in the memory. The initial sewing screen appears.



◀Note▶ Shape of Pattern with Taper

When the Offset value increases, the taper gets narrower. When the Offset value decreases, the taper gets wider.



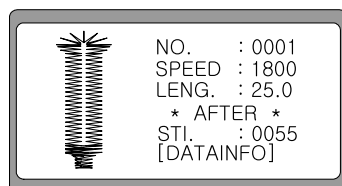
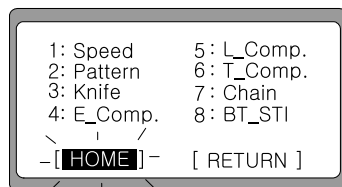
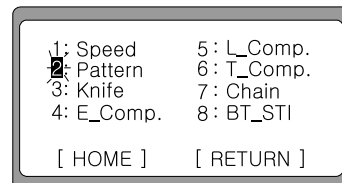
4) Create the pattern data

① Press ENTER, and the initial display for parameter information setting appears.

② Select [HOME] or [RETURN] by using the UP or DOWN key.

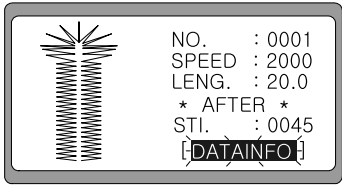
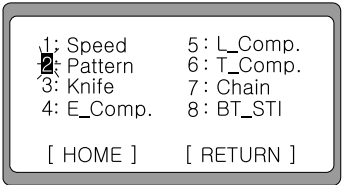
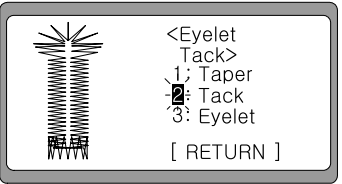
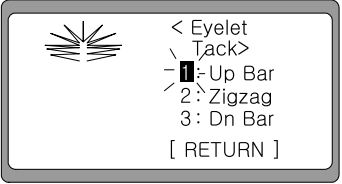

③ Press ENTER, and a pattern is created based on the changed parameter information.

④ When the pattern creation is completed, it automatically returns to the initial display.



- Function keys can be used only in the [DATAINFO] routine.
- When creating patterns, press READY within the basic pattern creation routine. Then basic pattern is generated, and the screen moves back to the initial display.

## 6-3-2) Square bartack pattern








<p>① Check that <b>the Ready lamp is off</b>, and Press DOWN to select DATAINFO. Press ENTER and the initial screen for parameter setting appears.</p> <p>② Press UP or Down on the initial parameter setting screen and select '2. Pattern'.</p> <p>③ Press ENTER and you will see a screen for selecting button shapes. Press UP or DOWN to select the desired pattern and press ENTER.</p> <p>1 : Taper (Taper Pattern) 2 : Tack (Square Bartack Pattern) 3 : Eyelet (Eyelet Pattern)</p> <p>④ The screen for creating new patterns appears. The values for up, down, bartack and zigzag parts shall be set respectively to create a pattern.</p> <p>1 : Up Bar (Up Bartack) 2 : Zigzag (Zigzag) 3 : Dn Bar (Down bartack)</p>	   	
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※ After setting the common parts of ①, ②, ③, set the individual values for the up bartack part, zigzag and down bartack part respectively.



- To create patterns with default values, press READY at the step ④.
- "3:Eyelet" is displayed only when A-16 of the Parameter Group is changed to "1:enabled". When "3:Eyelet" is displayed, it is possible to produce the eyelet pattern.

## 1) Create the up bartack shape

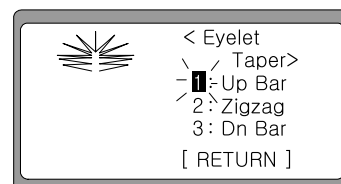
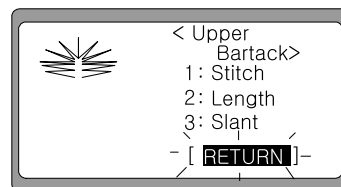
<p>⑤ Press UP or DOWN to select '1' and press ENTER. ex) Select '1: Up Bar'</p> <p>⑥ To create the up bartack shape, it is necessary to enter the number of eyelet stitches and the values for the X,Y-direction knife space. The number of eyelet stitches can be changed by pressing ENTER.</p> <p>⑦ Set the desired value using ◀(+) and ▶(-) and press ENTER. Then the O.K.! message is displayed. (ex: 0009)</p> <p>⑧ In one second, the screen automatically moves to the previous screen. Select '2' by pressing DOWN to set the Y-direction knife space of the eyelet, and press ENTER.</p> <p>⑨ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then the O.K.! message is displayed. (ex : 0000)</p> <p>⑩ In one second, the screen automatically moves to the previous screen. Select '3' by pressing DOWN to compensate the eyelet slant, and press ENTER.</p> <p>⑪ Set the desired value using ◀(+) and ▶(-), and press ENTER. Then the O.K.! message is displayed. (ex: 0001)</p>	<div data-bbox="932 342 1273 524">  <div> <div>&lt; Eyelet Tack&gt;</div> <div>1 : Up Bar</div> <div>2 : Zigzag</div> <div>3 : Dn Bar</div> <div>[ RETURN ]</div> </div> </div> <div data-bbox="932 595 1273 777">  <div> <div>&lt; Upper Bartack&gt;</div> <div>1 : Stitch</div> <div>2 : Length</div> <div>3 : Slant</div> <div>[ RETURN ]</div> </div> </div> <div data-bbox="932 857 1273 1039">  <div> <div>Set Stitch</div> <div>0009</div> <div>O.K.!</div> </div> </div> <div data-bbox="932 1111 1273 1292">  <div> <div>&lt; Upper Bartack&gt;</div> <div>1 : Stitch</div> <div>2 : Length</div> <div>3 : Slant</div> <div>[ RETURN ]</div> </div> </div> <div data-bbox="932 1350 1273 1532">  <div> <div>Set Length</div> <div>0000</div> <div>O.K.!</div> </div> </div> <div data-bbox="932 1603 1273 1785">  <div> <div>&lt; Upper Bartack&gt;</div> <div>1 : Stitch</div> <div>2 : Length</div> <div>3 : Slant</div> <div>[ RETURN ]</div> </div> </div> <div data-bbox="932 1856 1273 2038">  <div> <div>Set Slant</div> <div>0001</div> <div>O.K.!</div> </div> </div>	<div data-bbox="1369 342 1433 2038"> <div> <div>↑</div> <div>OR</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>↑</div> <div>OR</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>←</div> <div>OR</div> <div>→</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>↑</div> <div>OR</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>←</div> <div>OR</div> <div>→</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>←</div> <div>OR</div> <div>→</div> <div>↓</div> <div>↙</div> <div>↓</div> <div>←</div> <div>OR</div> <div>→</div> <div>↓</div> <div>↙</div> </div> </div>
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- ⑫ In one second, the screen automatically moves to the previous screen. Select [RETURN] by pressing DOWN and then press ENTER.

### ◀Note▶

When READY is pressed, the changed parameter values are saved in the memory, and the initial sewing screen appears.

- ⑬ The screen moves to the screen for creating the up, down bartack and zigzag shape.



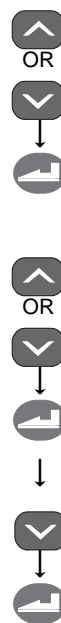
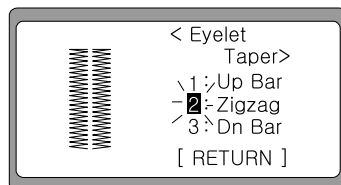
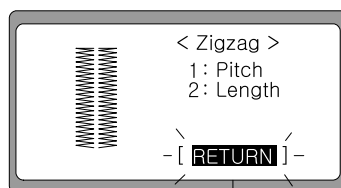
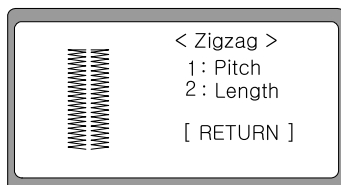
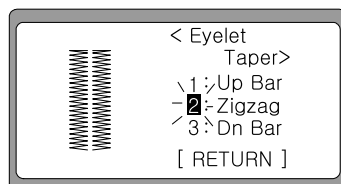
## 2) Create the zigzag shape

- ⑤ Select '2' using UP or DOWN and press ENTER.  
ex) Select '2: Zigzag'

- ⑥ Set pitch and length.  
ex) Pitch = 01.0  
Length = 24.0

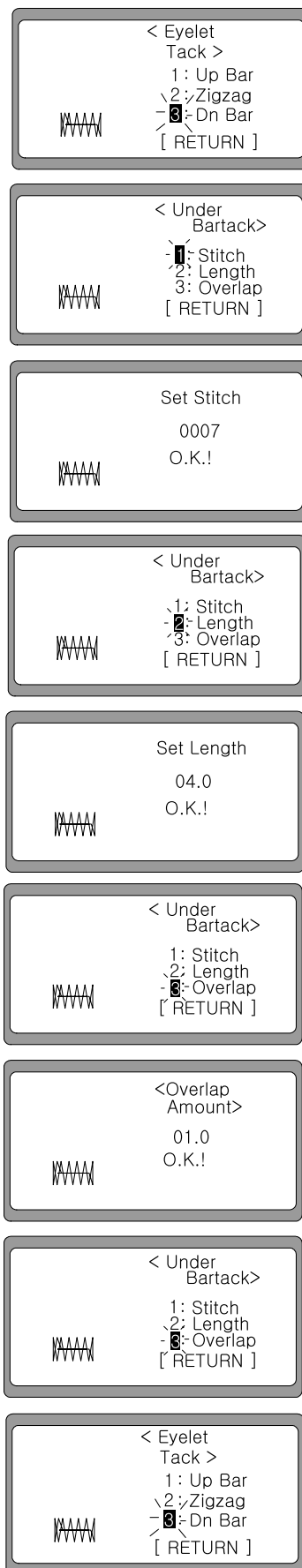
- ⑦ In one second, the screen automatically returns to the previous screen. Select [RETURN] by pressing DOWN and then press ENTER.

- ⑧ The screen moves to the screen of creating the up/down bartack and zigzag shape.



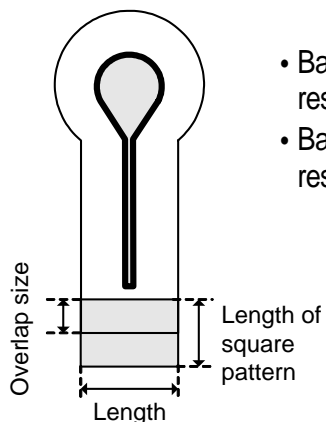
### 3) Create the down bartack shape

- ⑤ Select '3' by pressing UP or DOWN and press ENTER.  
ex) Select '3: Dn Bar'
  - ⑥ To create the down bartack, it is necessary to enter the number of stitches, length and overlap value. Select '1' using UP or DOWN to change the number of stitches, and press ENTER.
  - ⑦ Set the desired value using ◀(+) and ▶(-) and press ENTER.  
Then the O.K.! message is displayed.  
(ex: 0007)
  - ⑧ In one second, the display automatically moves to the previous screen. Select '2' using UP or DOWN to set the length and press ENTER.
  - ⑨ Set the desired value using ◀(+) and ▶(-) and press ENTER.  
Then the O.K.! message is displayed.  
(ex: 04.0)
  - ⑩ In one second, the display automatically moves to the previous screen. Select '3' by pressing UP or DOWN to set the overlap amount, and press ENTER.
  - ⑪ Set the desired value using ◀(+) and ▶(-) and press ENTER.  
Then the O.K.! message is displayed (ex: 01.0)
  - ⑫ In one second, the display automatically returns to the previous screen. Select [RETURN] by pressing DOWN and then press ENTER.
  - ⑬ The screen moves back to the initial screen for creating the up/down bartack and zigzag shapes.
- ◀Note▶  
When READY is pressed, the changed parameter values are stored in the memory, and the display returns to the initial sewing screen.





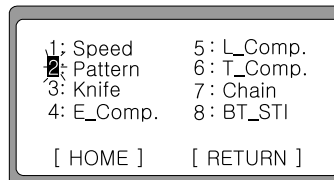
## ◀Note▶ Shape of pattern with square bartack



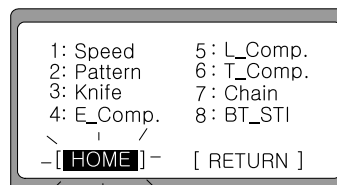
- Based on the assumption that the left and right width of square bartack is 2.0[mm] respectively, the length of square bartack is set at 4.0[mm] as default.
- Based on the assumption that the left and right width of square bartack is 2.0[mm] respectively, the overlap value is set at 1.0[mm] as default.

## 4) Create the pattern data

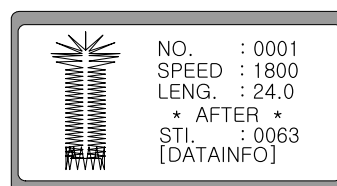
① Press ENTER and the initial parameter setting screen appears.



② Select [HOME] or [RETURN] by pressing UP or DOWN.



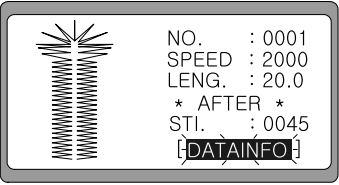
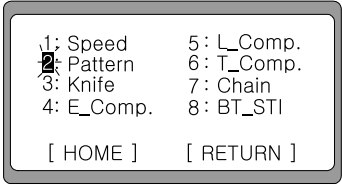
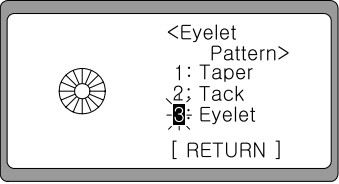
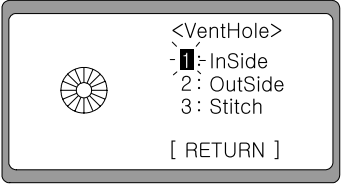


③ When ENTER is pressed, a pattern is created with changed parameter data.




④ When a pattern creation is complete, the display automatically returns to the initial screen.



6-3-3) Eyelet shape pattern

<p>① When <b>the READY lamp is off</b>, press DOWN to select DATAINFO. Press ENTER, and the initial parameter setting screen appears.</p> <p>② Select '2:Pattern' on the initial parameter setting screen by pressing UP or DOWN.</p> <p>③ When ENTER is pressed, the screen for selecting a button shape appears. Use UP or DOWN to select a desired pattern and press ENTER.</p> <p>1 : Taper (Taper Pattern) 2 : Tack (Square Bartack Pattern) 3 : Eyelet (Eyelet Pattern)</p> <p>④ The screen for creating patterns appears.</p> <p>It is necessary to make settings for the inside and outside compensation and the number of stitches to create patterns.</p> <p>1 : InSide (Inside Compensation) 2 : OutSide (Outside Compensation) 3 : Stitch (No. of Stitches)</p>	<div></div> <div></div> <div></div> <div></div>	<div></div> <div></div>
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※ After making the common adjustment for ①,②,③, make the specific setting for the inside/outside compensation and the number of stitches respectively.

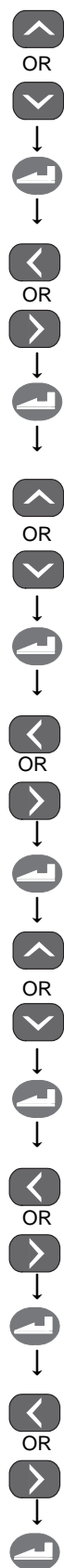
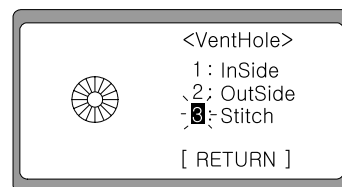
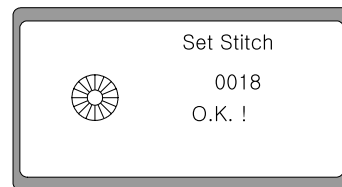
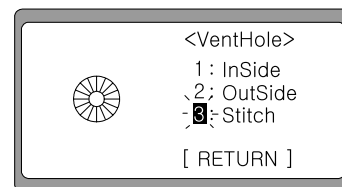
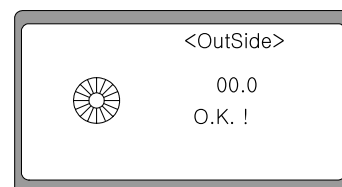
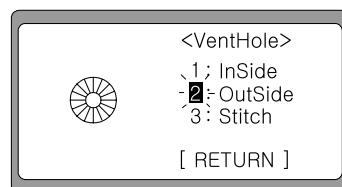
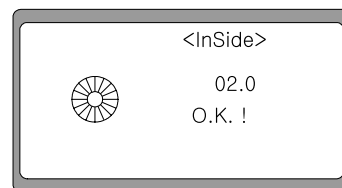
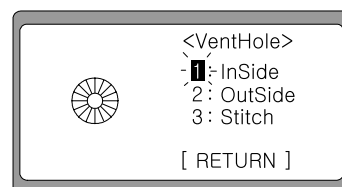
 <p><b>Caution</b></p>	<ul style="list-style-type: none"><li>• To create patterns with default values, press READY at the step ④.</li><li>• “3:Eyelet” is displayed only when A-16 of the Parameter Group is changed to “1:enabled”. When “3:Eyelet” is displayed, it is possible to produce the eyelet pattern.</li></ul>
---	---

1) Create the up bartack shape

- ⑤ Select '1' using UP or DOWN to make the setting for the inside, and press ENTER.  
ex) Select '1: InSide'
- ⑥ Select the desired value using ◀(+) and ▶(-) and press ENTER.  
The O.K.! message is displayed.  
(ex: 02.0)
- ⑦ Select '2' using UP or DOWN to make the setting for the outside, and press ENTER.  
ex) Select '2: OutSide'
- ⑧ Select the desired value using ◀(+) and ▶(-) and press ENTER.  
The O.K.! message is displayed.  
(ex: 00.0)
- ⑨ Select '3' using UP or DOWN to set the number of stitches, and press ENTER.  
ex) Select '3: Stitch'
- ⑩ Select the desired value using ◀(+) and ▶(-) and press ENTER.  
Then the O.K.! message is displayed.  
(ex: 0018)
- ⑪ In one second, the screen automatically returns to the previous screen. Select [RETURN] using DOWN and press ENTER.

◀Note▶

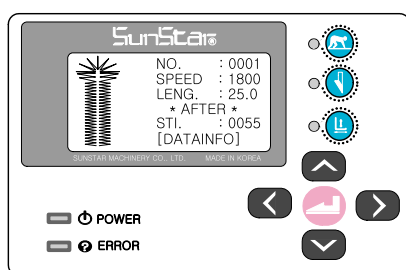
When READY is pressed, the changed memory parameter values are stored in the memory. The initial sewing screen appears.



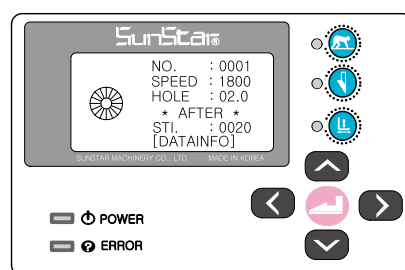
## 2) Create the pattern data

<p>① Press ENTER and the initial parameter setting screen appears.</p> <p>② Select [HOME] or [RETURN] using UP or DOWN.</p> <p>③ Press ENTER to create patterns using changed parameter data.</p> <p>④ When a new pattern creation is complete, the display automatically returns to the initial screen.</p>		
--	--	--

<p><b>Caution</b></p>	<ul style="list-style-type: none"> <li>• In case of eyelet shape pattern, the inside radius information (HOLE) is displayed instead of the length information (LENG.). When making changes, take this into consideration.</li> <li>• When making eyelet shape pattern, install dedicated hammer, cutter, needle plate and clamp for sewing. Otherwise, some interruption might occur, damaging needles and instruments.</li> </ul>
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[Display in case of other patterns (except for eyelet)]



[Display in case of eyelet shape pattern]

## 6-4) Set the knife-related parameters

### 1) Set the number of knives

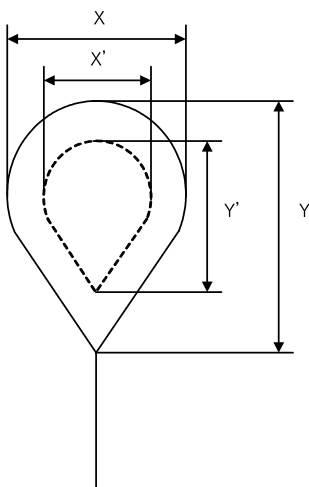
① Make sure that **the READY lamp is off**, and press the DOWN key five times. Then DATAINFO flickers. Press ENTER, and the initial screen for parameter setting appears.

② Select '3' by pressing the UP or DOWN key.

③ Press ENTER. A new screen pops up and '1' blinks. Select '1' using the UP or DOWN key and press ENTER to set the eyelet shape.

④ Set the desired value using ◀(+) and ▶(-), and enter ENTER. Then O.K.! message is displayed.  
(default : 0002)

◀Note▶ Cutting space according to knife number



Knife no.	When cutting before sewing (X × Y)	Cutting Space (X' × Y')	When cutting after sewing (X × Y)
1	1.7 × 2.7	2.1 × 3.2	2.5 × 3.8
2	2.4 × 3.8	2.8 × 4.3	3.2 × 4.9
3	2.6 × 4.1	3.0 × 4.6	3.4 × 5.2
4	2.8 × 4.9	3.2 × 5.4	3.6 × 6.0
5	Straight	Straight	Straight
6	3.4 × 3.8	3.8 × 4.3	4.2 × 4.9

## 2) Set the left/right space for knife

① Select '3' using the UP or DOWN key on the initial parameter setting display.

② Press ENTER, and the knife setting screen appears.  
Select '2' by using the UP or DOWN key to set the knife space on the left and then press ENTER.

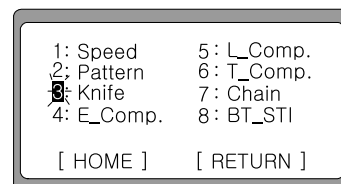
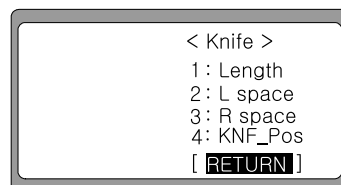
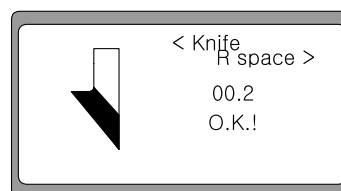
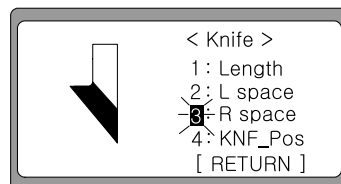
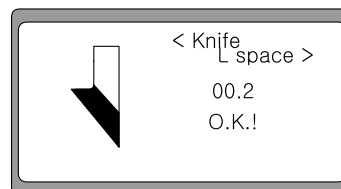
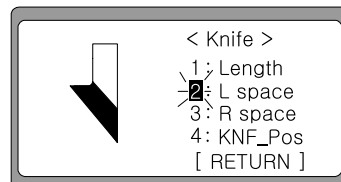
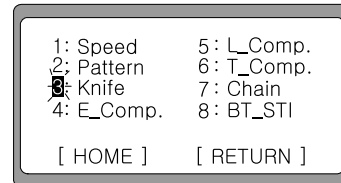
③ Set the desired value using ◀(+) and ▶(-) and press ENTER.  
The O.K.! message is displayed on the screen.  
(ex: knife space on the left → 00.2 )

④ To set the space for the right knife, select '3' by pressing UP or DOWN and press ENTER.

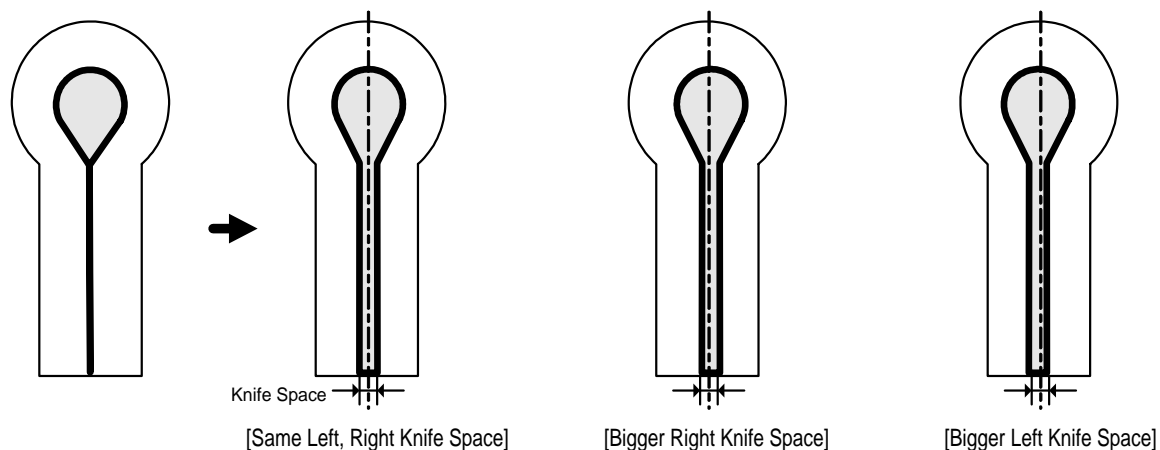
⑤ Set the desired value using ◀(+) and ▶(-), and press ENTER.  
The O.K.! message is displayed on the screen.  
(ex: Knife space on the right → 00.2 )

⑥ The screen returns to the knife parameter setting screen in one second. Select [RETURN] by using the DOWN key and press ENTER.

⑦ When the knife-related parameters setting is complete, the initial parameter setting screen pops up.



## ◀Note▶ Example of knife space setting



## 3) Set the knife position

- ① Select '3' using the UP or DOWN key on the initial parameter setting display.
- ② Press ENTER, and the knife setting screen appears.  
Select '4' by using the UP, DOWN keys to set the right space and then press ENTER.
- ③ Set the desired value using ◀(+) and ▶(-), and press ENTER.  
Then the O.K.! message is displayed on the screen.  
(ex : knife position → 0019)
- ④ In one second, it moves to the knife parameter setting screen.  
Select [RETURN] using the DOWN key and press ENTER.
- ⑤ When knife-related parameter setting is completed, the initial parameter setting display appears.

1: Speed      5: L\_Comp.  
2: Pattern      6: T\_Comp.  
3: Knife      7: Chain  
4: E\_Comp.      8: BT\_STI  
[ HOME ]      [ RETURN ]

< Knife >  
1: Length  
2: L space  
3: R space  
4: KNF\_Pos  
[ RETURN ]

< Knife  
Position >  
0019  
O.K.!

< Knife >  
1: Length  
2: L space  
3: R space  
4: KNF\_Pos  
[ RETURN ]

1: Speed      5: L\_Comp.  
2: Pattern      6: T\_Comp.  
3: Knife      7: Chain  
4: E\_Comp.      8: BT\_STI  
[ HOME ]      [ RETURN ]



When changing the value for knife location, 'Error 5' occurs if it is beyond the valid location range. In other words, the number of the holes on the sensor plate is 19, and an error will occur when the value for holes is set at 20 in the operation box.

#### 4) Clamp type (sewing size) setting

- ① Press UP or DOWN key on the initial parameter screen and select "3".

- ② Press ENTER, and a new screen appears.  
Press UP or DOWN key to set the right knife space. When the space is determined, select "4", and press ENTER.

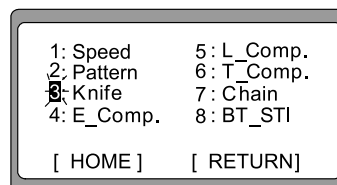
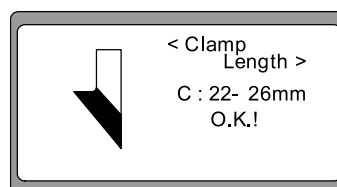
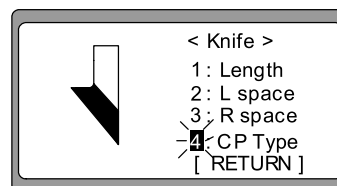
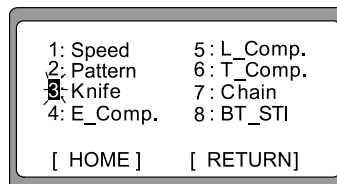
◀Note▶

"4 : CP Type" is displayed only when the sewing machine is BH6000-02.

- ③ Press ◀(+) or ▶(-) to set a desired value, and press ENTER.  
O.K. message is displayed on the screen  
(Ex : Clamp type → C : 22~26mm)

Type	Clamp size (sewing scope)
A	14[mm] ~ 18[mm]
B	18[mm] ~ 22[mm]
C	22[mm] ~ 26[mm]
D	26[mm] ~ 30[mm]
E	28[mm] ~ 32[mm]
F	32[mm] ~ 36[mm]
G	36[mm] ~ 40[mm]

- ④ A new screen appears in one second. Press DOWN key to select [RETURN] and then press ENTER. The screen returns to the original setup screen.

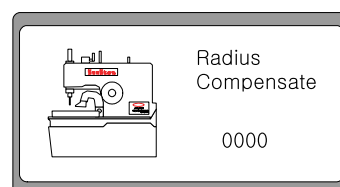
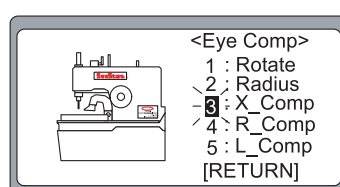
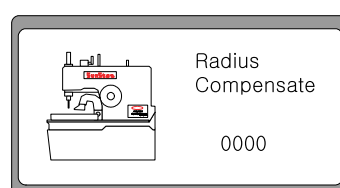
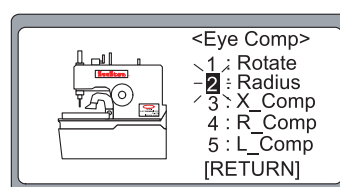
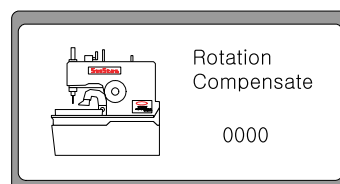
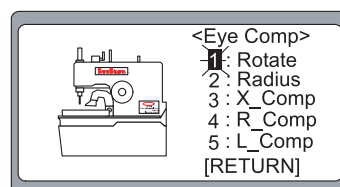
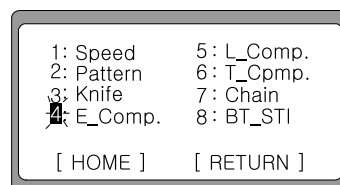
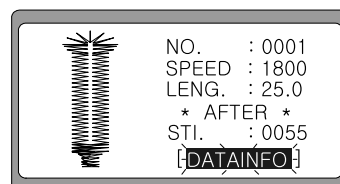


- 1) According to pattern number, a clamp with different size should be selected.
- 2) If the clamp device is not changed in line with clamp type, operation errors and damage to machine might occur.
- 3) When initializing a BH6000-02 type machine, the clamp size should be "C : 22-26mm".  
If the clamp device is not C type is used, make sure of selecting "4 : CP Type".



## 6-5) Compensation of the eyelet part

- ① Check that the **READY lamp is off**, and press the DOWN key five times. Then DATAINFO flickers. Press ENTER and the initial parameter setting screen appears.
- ② Select '4: E\_Comp.' by using the UP or DOWN key and press ENTER.
- ③ A new screen pops up, and '1' blinks. Select '1' by using the UP or DOWN key to compensate rotation value and press ENTER.
- ④ When a new screen shows up, set the desired value by using ◀(+) and ▶(-), and press ENTER. Then the O.K.! message is displayed on the screen.  
+ direction: The eyelet angle increases by the set value.  
- direction: The eyelet angle decreases by the set value.
- ⑤ The screen returns to the previous screen and '1' blinks. Select '2' by using the UP or DOWN key to compensate the radius value, and press ENTER.
- ⑥ When a new screen appears, set the desired value using ◀(+) and ▶(-), and press ENTER. Then the O.K.! message is displayed on the screen.  
+ direction: The radius of eyelet increases by the set value.  
- direction: The radius of eyelet decrease by the set value.
- ⑦ On a new screen, '2' blinks. Select '3' using UP or DOWN to compensate the X-direction location, and press ENTER.
- ⑧ When the value setting screen appears, select the desired value using ◀(+) and ▶(-) and press ENTER. The O.K.! message is displayed.  
+ direction : The X-direction location of eyelet is moved to the right side.  
- direction : The X-direction location of eyelet is moved to the left side.



⑨ When a new screen opens, '3' blinks. To set the adjustment value for the eyelet's position in the X direction, use the UP and Down keys to select '4' and press the Enter key.

⑩ When a new screen opens, use ◀(+) or ▶(-) to set a desired value and press the Enter key. Then O.K. is displayed on the screen.

+ direction : The right-side slant width of eyelet grows larger.

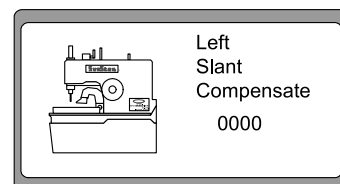
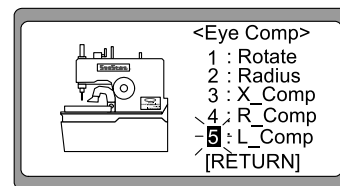
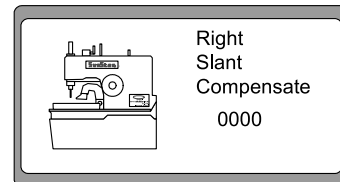
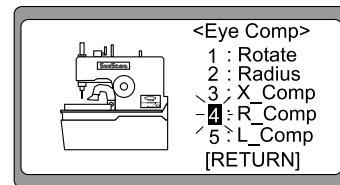
- direction: The right-side slant width of eyelet grows smaller.

⑪ A new screen appears, and '4' blinks. Use the UP or DOWN keys to set the adjustment value for eyelet in the X direction. Select '5' and press the Enter key.

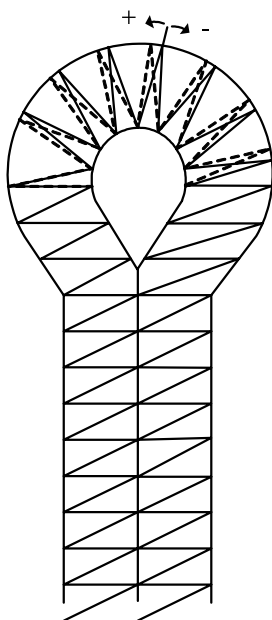
⑫ When a new screen appears, use ◀(+) or ▶(-) to set a desired value. Press the Enter key and O.K. is displayed on the screen.

+ direction : The right-side slant width of eyelet grows larger.

- direction: The left-side slant width of eyelet grows smaller.

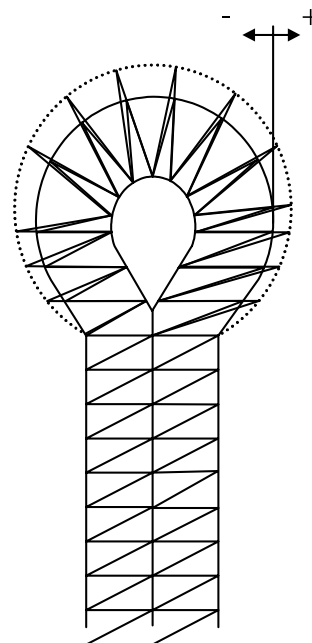


### ◀Example▶



[Rotation Adjustment]

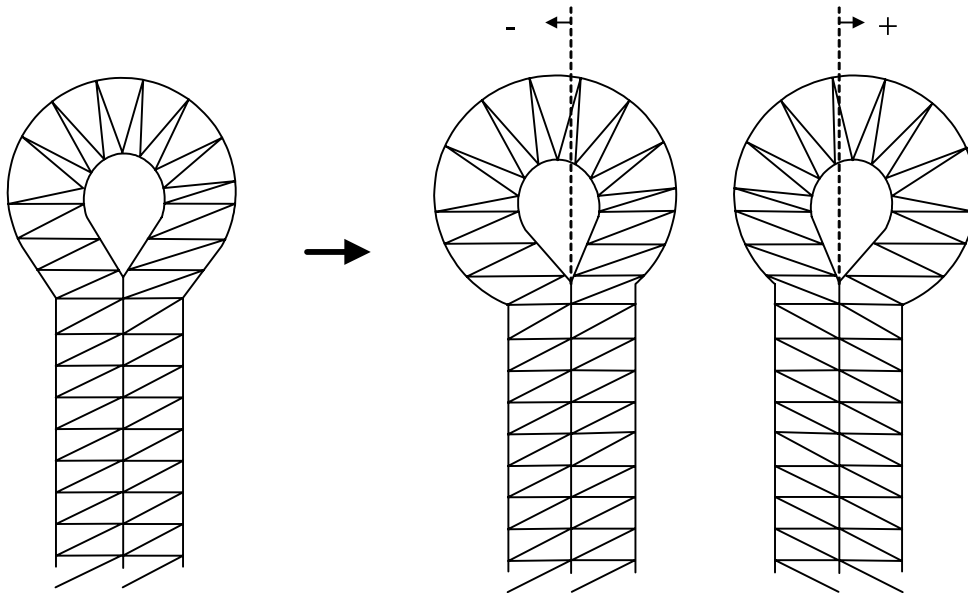
- + direction: The angle of eyelet increases by the set value
- - direction: The angle of eyelet decreases by the set value



[Radius Adjustment]

- + direction: The radius of eyelet increases by the set value
- - direction: The radius of eyelet decreases by the set value

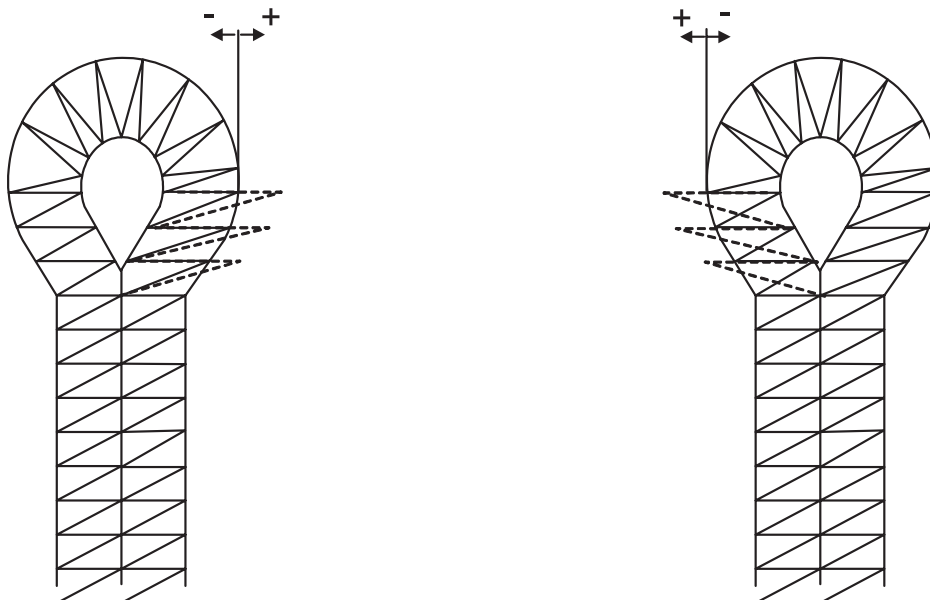
## ◀Example▶



### [X\_Comp Adjustment]

- + direction : The X-direction of eyelet is moved to the right side.
- - direction: The X-direction of eyelet is moved to the left side.

## ◀Example▶



### [R\_Comp Adjustment]

- + direction: The right-side slant width of eyelet grows larger.
- - direction: The right-side slant width of eyelet grows smaller.

### [L\_Comp Adjustment]

- + direction: The left-side slant width of eyelet grows larger.
- - direction: The left-side slant width of eyelet grows smaller.

## 6-6) Compensation of the zigzag part

① Make sure that **the READY lamp is off**, and press the DOWN key five times. It makes DATAINFO blink. Press ENTER and the initial parameter setting display appears.

② Select '5: L\_Comp.' using the UP or DOWN key on the screen and press ENTER.

③ A new screen pops up and '1' blinks. Select '1' by using the UP or DOWN key and press ENTER to compensate the rotation value.

④ On the value setting screen, set the desired value using ◀(+) and ▶(-), and press ENTER. Then the O.K.! message appears.

⑤ A new screen appears and '1' blinks. To compensate the zigzag part, select '2' using UP or DOWN and press ENTER.

⑥ Set the desired value using ◀(+) and ▶(-) and press ENTER. The O.K.! message is displayed.

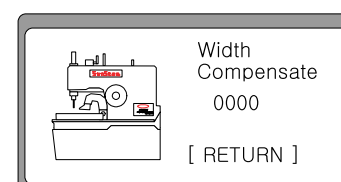
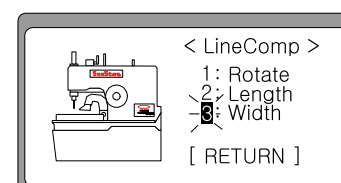
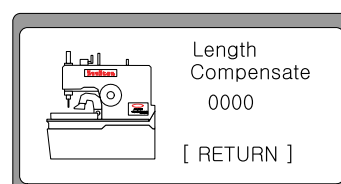
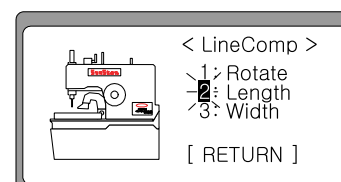
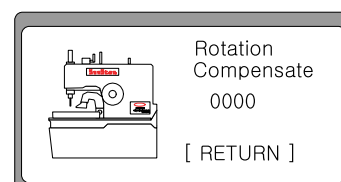
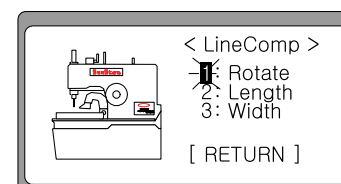
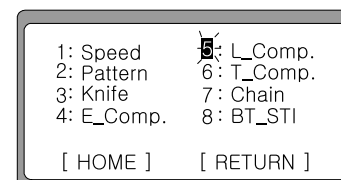
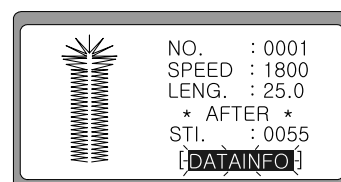
### ◀Note▶

Around the zigzag part, the pitches are different.

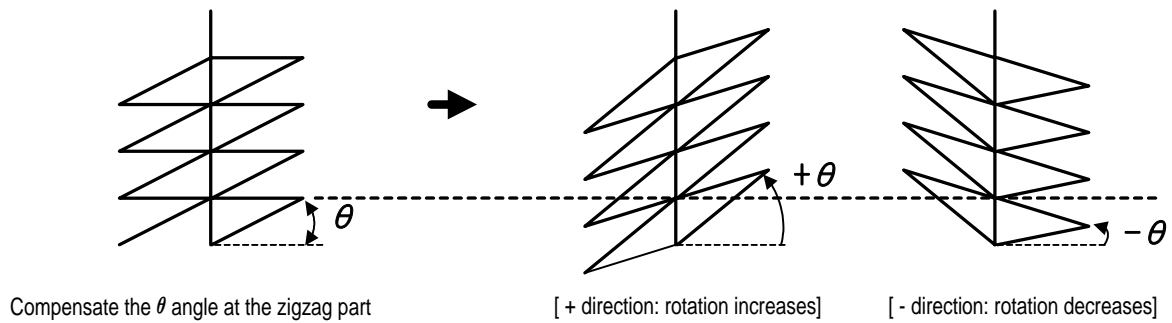
⑦ The menu screen appears, and '2' blinks. Select '3' using UP or DOWN to compensate the width of the pattern, and press ENTER.

⑧ When a new screen appears, select the desired value pressing ◀(+) and ▶(-), and press ENTER. The O.K.! message is displayed.

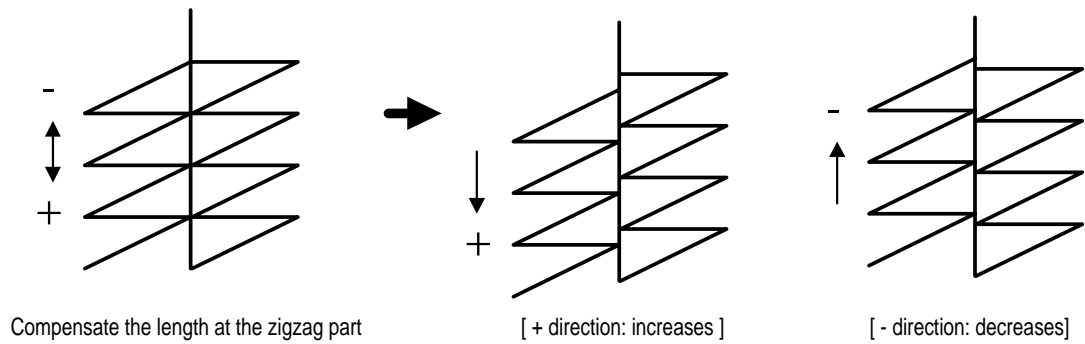
- + direction: Pattern width increases.
- direction: Pattern width decreases.



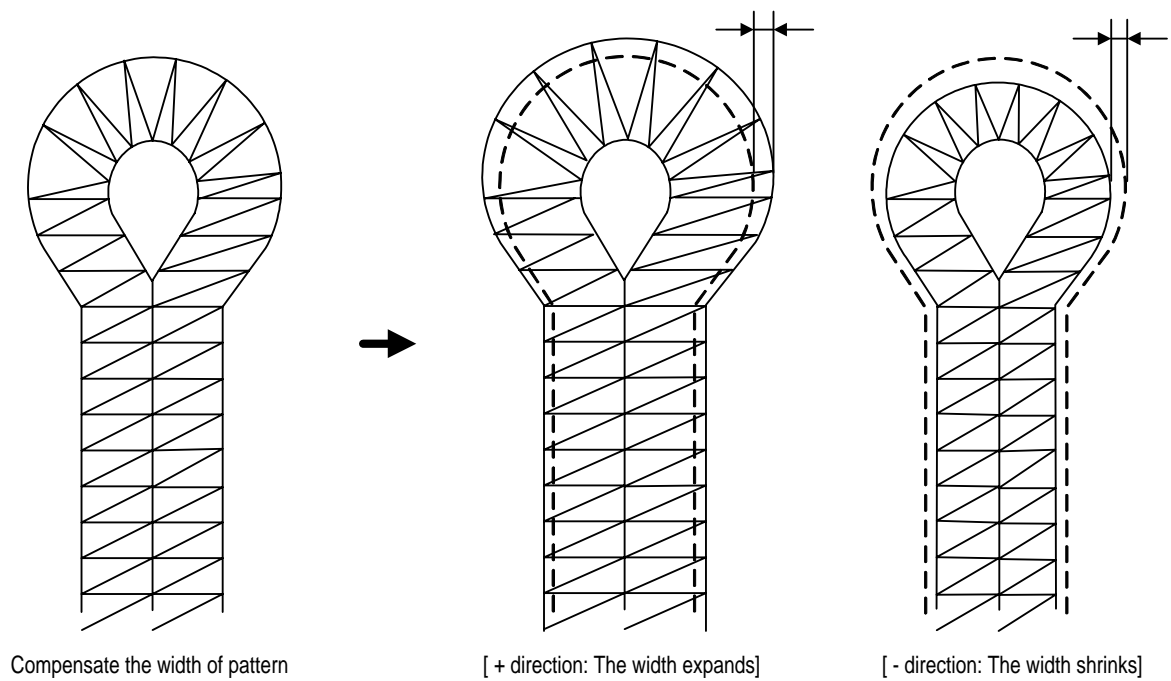
◀Note▶ Example of compensating rotation at the zigzag part



◀Note▶ Example of compensating length at the zigzag part

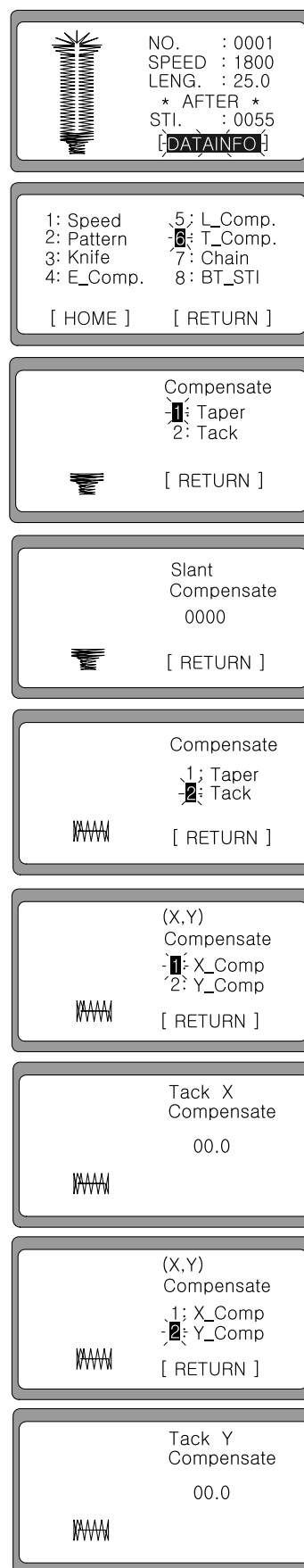


◀Note▶ Example of compensating the pattern width

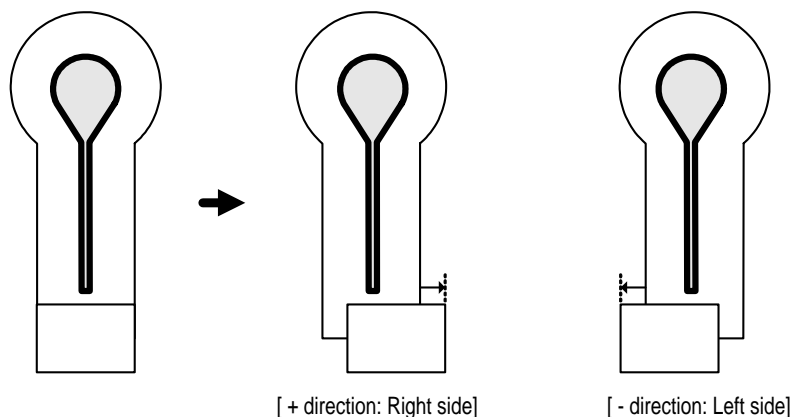


### 6-7) Compensation of the slant at the down bartack

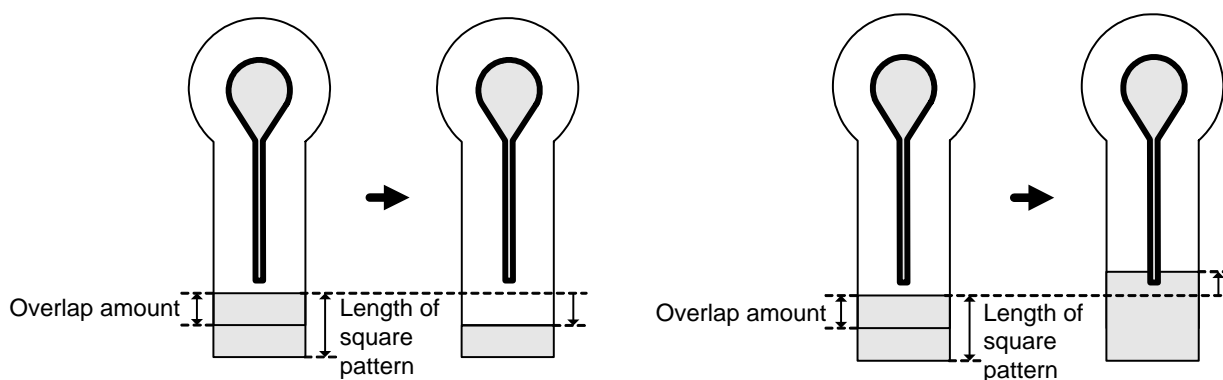
- ① Make sure that **the READY lamp is off** and press the DOWN key six times. It makes DATAINFO blink. Press ENTER and the initial parameter screen appears.
- ② Select '6' by using the UP or DOWN key.
- ③ The display moves to the previous screen and '1' blinks on the screen. Select '1' using UP or DOWN to compensate the slant value of taper and press ENTER.
- ④ The screen goes back to the previous one. Select [RETURN] and press ENTER to end the slant-related setting.
- ⑤ The display moves to the previous screen and '1' blinks on the screen. Select '2' using UP or DOWN to compensate the slant value of the square bartack and press ENTER.
- ⑥ The display moves to the previous screen and '1' blinks on the screen. Select '1' using UP or DOWN to compensate the X-direction value of the square bartack and press ENTER.
- ⑦ When a new screen appears, select the desired value using ◀ (+) and ▶ (-) and press ENTER. Then the O.K.! message is displayed.
  - + direction :The square bartack pattern moves to the right side.
  - direction: The square bartack pattern moves to the left side.
- ⑧ The display moves to the previous screen and '2' blinks on the display. Select '2' using UP or DOWN to compensate the Y-direction value of the square bartack and press ENTER.
- ⑨ When a new screen appears, select the desired value using ◀ (+) and ▶ (-) and press ENTER. Then the O.K.! message is displayed.
  - direction: The pattern gets narrower.



◀Note▶ Example of the X direction compensation in the square bartack



◀Note▶ Example of the Y direction compensation in the square bartack



- When the Y-direction compensation takes place in case where the overlap amount is no bigger than 2.0[mm],  
the length of square pattern equals  
= basic width + overlap amount - Y-direction compensation value  
Therefore, take a caution during setting since the overlap amount could be reduced.

- When the Y-direction compensation takes place in case where the overlap amount is 2.0[mm],  
the length of square pattern equals  
= basic width + overlap amount + Y-direction compensation value  
Therefore, the square pattern might get longer. Take a caution when cutting since the square pattern can be cut off.

## 6-8) Set the chain sewing-related parameters

### 1) Enable the chain sewing function

① Check the **READY lamp is off** and press the DOWN key five times. It makes DATAINFO blink. Press ENTER and the initial parameter setting display appears.

② Select '7:Chain' by using the UP or DOWN key on the screen.

③ Press ENTER. A new screen appears and '1: OnOff' blinks on the screen. To activate or deactivate the chain sewing function, select '1' using the UP or DOWN key and press ENTER.

④ It is possible to switch between 'On' and 'Off' by using ◀(+) and ▶(-). Set the desired value and press ENTER. Then the O.K.! message is displayed on the screen.  
On : Activate the chain sewing function  
Off : Deactivate the chain function (default)

⑤ The screen moves back to the previous screen in one second. Select '2: Set\_No' to set details of the chain sewing function, and press ENTER.

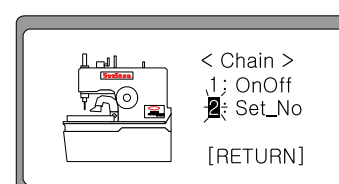
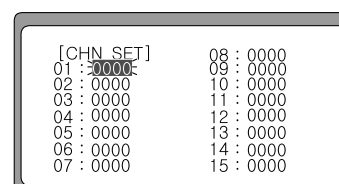
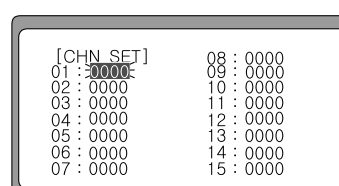
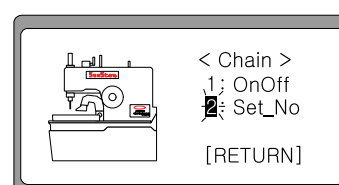
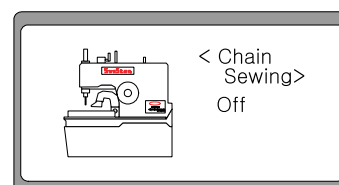
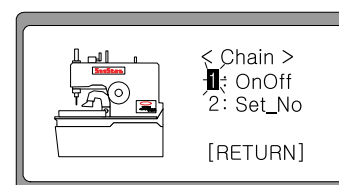
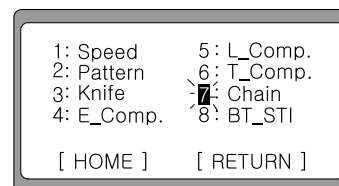
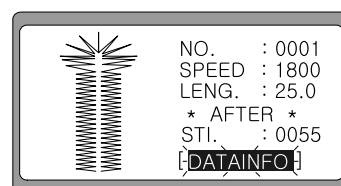
⑥ When a new screen appears, the details of the chain sewing function can be set.

⑦ Use the UP or DOWN key to select from 01 to 15. Use ◀(+) and ▶(-) to insert the already made pattern numbers.

⑧ When the chain sewing setting is completed, press ENTER and it goes back to the initial sewing setting display.

#### ◀Note▶

To set the chain sewing, parameters should be set up in advance for the concerned patterns.





<p>⑨ Select [RETURN] by pressing the DOWN key and press ENTER. The initial parameter setting display pops up.</p> <p>⑩ Select [RETURN] by pressing the DOWN key and press ENTER. The screen changes to the chain sewing display, and the information of the first pattern is shown on the screen.</p>	<div data-bbox="927 293 1267 479"> <p>1: Speed      5: L_Comp. 2: Pattern    6: T_Comp. 3: Knife      7: Chain 4: E_Comp.   8: BT_STI</p> <p>[ HOME ]    [ <del>RETURN</del> ]</p> </div> <div data-bbox="927 533 1267 714"> <p>[ CHN_SEW ] NO. : 0001 SPEED : 1800 LENG. : 25.0 * AFTER * STI. : 0055 [DATAINFO]</p> </div>	<p>↑ OR ↓ ↩</p>
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## 2) Use the set chain sewing function

<p>① After the chain sewing setting is completed, make sure that <b>the READY lamp is on</b> before performing chain sewing. Press the left hand switch to conduct the first pattern chain sewing. When the sewing is complete, the screen automatically shows the information of the second pattern.</p> <p>ex) '0001' of the chain sewing setting is set as the taper pattern in '0003'</p> <p>② When the last pattern sewing is finished, it automatically moves back to the first pattern information of the chain sewing. The cycle of sewing continues.</p> <p>③ When trying to correct the defined pattern in the middle of chain pattern sewing, press the READY key. When <b>the READY lamp is off</b>, use the DOWN key to select SPEED. The value of speed can be adjusted by using ◀(+) and ▶(-).</p> <p>④ Use the DOWN key to select [DATAINFO]. By going through the processes from 6-2)~6-9), the change to the desired pattern is possible.</p> <p>◀Note▶</p> <ul style="list-style-type: none"> <li>• If the parameters of the pattern are changed, the changed pattern will be applicable from the next operation.</li> <li>• When it is returned to the initial display, the chain number will be automatically changed to the next number.</li> </ul>	<div data-bbox="916 882 1259 1066"> <p>[ CHN_SEW ] NO. : 0001 SPEED : 1800 LENG. : 25.0 * AFTER * STI. : 0055 [DATAINFO]</p> </div> <div data-bbox="916 1205 1259 1388"> <p>[ CHN_SEW ] NO. : 0001 SPEED : 1800 LENG. : 25.0 * AFTER * STI. : 0055 [DATAINFO]</p> </div> <div data-bbox="916 1442 1259 1626"> <p>[ CHN_SEW ] NO. : 0003 SPEED : 1800 LENG. : 25.0 * AFTER * STI. : 0055 [DATAINFO]</p> </div> <div data-bbox="916 1680 1259 1863"> <p>[ CHN_SEW ] NO. : 0001 SPEED : 1800 LENG. : 25.0 * AFTER * STI. : 0055 [DATAINFO]</p> </div> <div data-bbox="916 1890 1259 2074"> <p>1: Speed      5: L_Comp. 2: Pattern    6: T_Comp. 3: Knife      7: Chain 4: E_Comp.   8: BT_STI</p> <p>[ HOME ]    [ RETURN ]</p> </div>	<p>🐾 ↓ 📄 🐾 ↓ ↑ OR ↓ ↩ ↓ ↩</p>
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### 3) Disable the chain sewing function

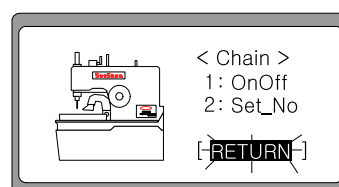
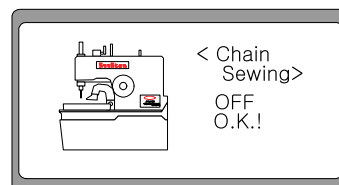
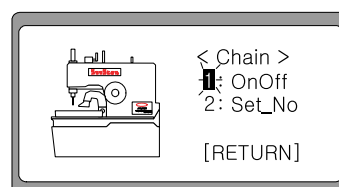
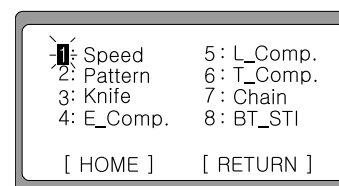
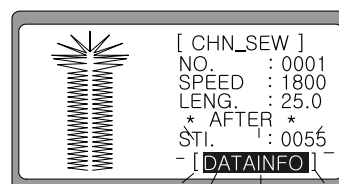
① To disable the chain sewing function, press the sewing READY key. When **the READY lamp is off**, select [DATAINFO] by using the DOWN key and press ENTER.

② The parameter screen appears and '1' blinks. Use the UP or DOWN key to select '7: Chain'.

③ Press ENTER, and it displays the initial chain sewing setup screen. Select '1:OnOff' by using the UP or DOWN key and press ENTER.

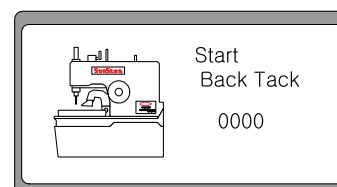
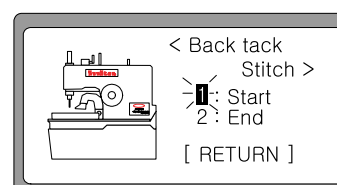
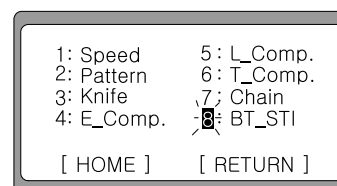
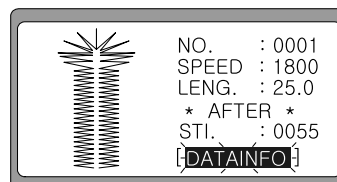
④ When a new screen appears, use ◀(+) and ▶(-) to convert the value from On to Off and press ENTER. Then the O.K.! message is displayed.

⑤ The screen automatically moves back to the previous screen in one second. Select [RETURN] by using the DOWN key and press ENTER. Then the initial chain sewing setup screen appears.



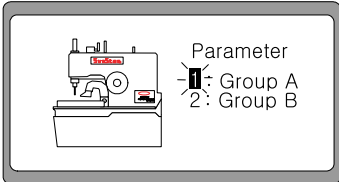
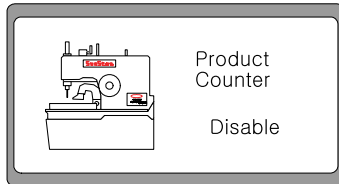
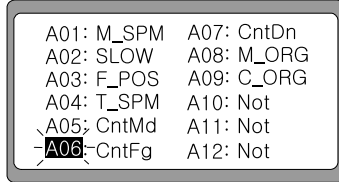

## 6-9) Set the Back-Tack function

- ① Check that **the sewing READY lamp is off**, and press the DOWN key five times. It makes DATAINFO blink. Press ENTER and then the initial parameter setup screen appears.
- ② On the initial parameter setup screen, use the UP or DOWN key and select '8:BT\_STI'. Press ENTER.
- ③ A new screen pops up and '1' blinks. Use the UP or DOWN key to select '1' and press ENTER to set the starting back-tack value.
- ④ Use ◀(+) and ▶(-) to select the desired value and press ENTER. Then the O.K.! message is displayed on the screen. (setting range: 0 ~ 2)
- ⑤ The screen moves back to the previous one and '1' blinks again. Select '2' and follow the same process as above to set the ending back-tack value.
- ⑥ When trying to end the back-tack setting, use the DOWN key to select [RETURN] and press ENTER.



## 6-10) Set the production counter

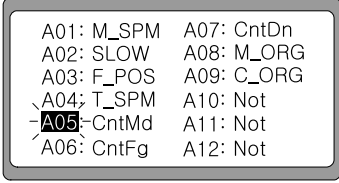
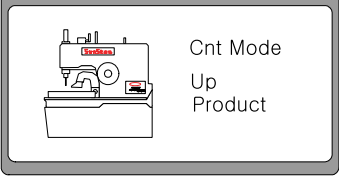
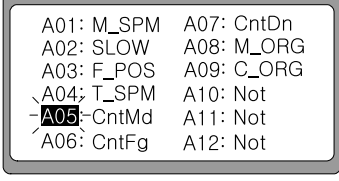
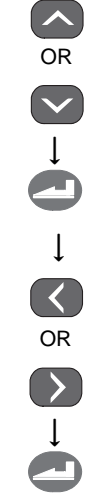
### 1) Enable/Disable the production counter

<p>① Turn on the power by pressing the Left key and the UP/DOWN key of the clamp, and then '1' flickers on the screen. To set the production counter, select '1: Group A' and press ENTER.</p> <p>② When a new screen shows up, use the DOWN key to select 'A06 : CntFg', and press ENTER.</p> <p>③ Use ◀(+) and ▶(-) to enable/disable the production counter.</p> <ul style="list-style-type: none"> <li>• Turn on the function : Enable</li> <li>• Turn off the function : Disable</li> </ul> <p>④ When ENTER is pressed, an alarm is issued indicating that the setting is complete. The screen moves to the parameter Group A screen.</p>	  	
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- The default value of the production counter is Up Counter. To change it to Down Counter, the setting should be changed in 'A05 : CntMd' (see ②)
- To store changed parameter, turn off the power.

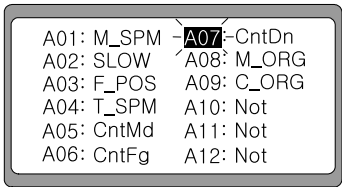
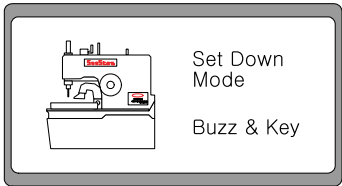
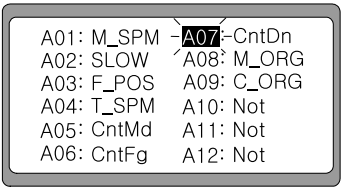
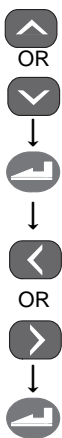
### 2) Select the production counter (Up or Down Counter)

<p>① When selecting the type of production counter, go to '1: Group A' and choose 'A05 : CntMd'. Press ENTER.</p> <p>② When a new screen appears, use ◀(+) and ▶(-) to choose between Up and Down Counter.</p> <p>③ Press ENTER, and an alarm goes off indicating the completion of the setup. The screen moves to the Group A setting screen.</p>	  	
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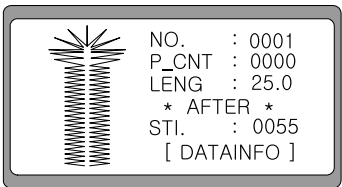
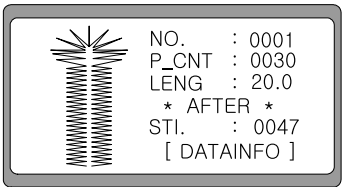



When the production counter is set at Down Counter, additional sub-setting should be made at 'A07 : CntDn'. The default value of A07 is 'Buzz & Key' (see ③)

## 3) Make sub-setting for Down Counter

<p>① For sub-setting of Down Counter, choose Group A and then 'A07 : CntDn'. Press ENTER.</p> <p>② When a new screen comes up, use ◀(+) and ▶(-) to make detailed setting for Down Counter.</p> <ul style="list-style-type: none"> <li>• Buzz &amp; Key : When the counting is completed, a buzzer goes off and stand by. When ENTER is pressed, the counter is reset.</li> <li>• Key : When the counting is completed, it stands by until ENTER is pressed. When ENTER is pressed, Down Counter is reset.</li> <li>• Buzz : When the counting is completed, a buzzer goes off and the Down Counter is automatically reset.</li> </ul> <p>③ Press ENTER. A buzzer goes off indicating the completion of the setup. The screen switches to the parameter Group A screen.</p>	  	
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## 4) The initial screen for production counter setting

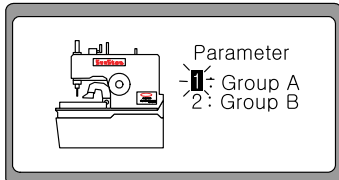
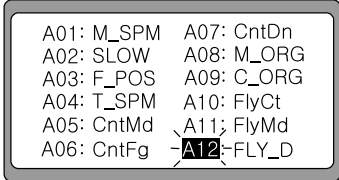
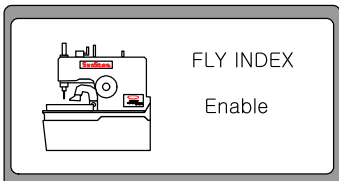
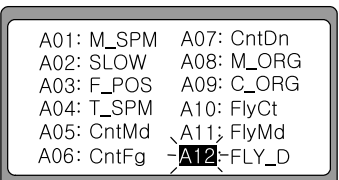

<p>① After the production counter setting is completed, the production counter screen appears. In case where the Up Counter is set, the value of P_CNT increases for each sewing.</p> <p>② In case where the Down Counter is set, press the DOWN key to choose P_CNT and set the counter value by using ◀(+) and ▶(-) keys. For each sewing, the number will be counted down.</p>	 	
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When the production counter is set, turn off the power and turn it on again to apply the setting before using the counter setting.

## 6-11) Use of fly indexer (optional)

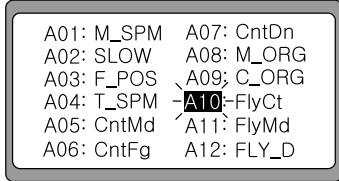
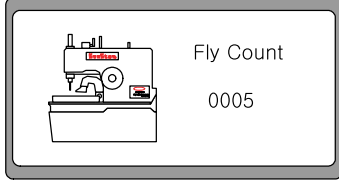
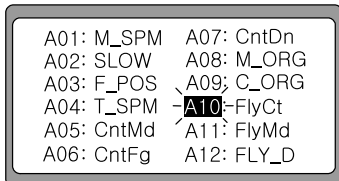
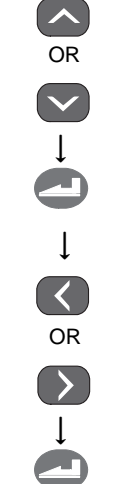
### 1) Fly index setting

<p>① Turn the power on while pressing the LEFT key and the Clamp Up/Down key simultaneously. Then you can see '1' blink on the screen. Select Group A and press ENTER to use the fly indexer.</p> <p>② When a new screen appears, use the DOWN key to select "A12 : FLY_D" and press ENTER.</p> <p>③ When a new screen appears, use ◀(+) and ▶(-) to select or cancel the fly indexer.</p> <ul style="list-style-type: none"> <li>• Select : Enable</li> <li>• Cancel: Disable</li> </ul> <p>④ Press ENTER and you can hear a "beep" sound, which indicates the completion of the setting. The screen moves to the Parameter Group A Screen.</p>	 <p>Parameter 1: Group A 2: Group B</p>  <table border="1"> <tr><td>A01: M_SPM</td><td>A07: CntDn</td></tr> <tr><td>A02: SLOW</td><td>A08: M_ORG</td></tr> <tr><td>A03: F_POS</td><td>A09: C_ORG</td></tr> <tr><td>A04: T_SPM</td><td>A10: FlyCt</td></tr> <tr><td>A05: CntMd</td><td>A11: FlyMd</td></tr> <tr><td>A06: CntFg</td><td>A12: FLY_D</td></tr> </table>  <p>FLY INDEX Enable</p>  <table border="1"> <tr><td>A01: M_SPM</td><td>A07: CntDn</td></tr> <tr><td>A02: SLOW</td><td>A08: M_ORG</td></tr> <tr><td>A03: F_POS</td><td>A09: C_ORG</td></tr> <tr><td>A04: T_SPM</td><td>A10: FlyCt</td></tr> <tr><td>A05: CntMd</td><td>A11: FlyMd</td></tr> <tr><td>A06: CntFg</td><td>A12: FLY_D</td></tr> </table>	A01: M_SPM	A07: CntDn	A02: SLOW	A08: M_ORG	A03: F_POS	A09: C_ORG	A04: T_SPM	A10: FlyCt	A05: CntMd	A11: FlyMd	A06: CntFg	A12: FLY_D	A01: M_SPM	A07: CntDn	A02: SLOW	A08: M_ORG	A03: F_POS	A09: C_ORG	A04: T_SPM	A10: FlyCt	A05: CntMd	A11: FlyMd	A06: CntFg	A12: FLY_D	
A01: M_SPM	A07: CntDn																									
A02: SLOW	A08: M_ORG																									
A03: F_POS	A09: C_ORG																									
A04: T_SPM	A10: FlyCt																									
A05: CntMd	A11: FlyMd																									
A06: CntFg	A12: FLY_D																									
A01: M_SPM	A07: CntDn																									
A02: SLOW	A08: M_ORG																									
A03: F_POS	A09: C_ORG																									
A04: T_SPM	A10: FlyCt																									
A05: CntMd	A11: FlyMd																									
A06: CntFg	A12: FLY_D																									



- The fly indexer can be used only with BH6000-02.
- The details of the parameter group menu are different to some degree by machine type.  
ex) In case of BH6000-01, A10 ~ A12 in the menu are marked with "Not".

### 2) Repeat frequency setting

<p>① Select 'A10 : FlyCt' in Parameter Group A and press ENTER to set the frequency of flying.</p> <p>② When a new screen appears, use ◀(+) and ▶(-) to set the repeat frequency. ex) 0005</p> <p>③ Press ENTER and you can hear a "beep" sound, which indicates the completion of the setting. The screen returns to the Parameter Group A Setting Screen.</p>	 <table border="1"> <tr><td>A01: M_SPM</td><td>A07: CntDn</td></tr> <tr><td>A02: SLOW</td><td>A08: M_ORG</td></tr> <tr><td>A03: F_POS</td><td>A09: C_ORG</td></tr> <tr><td>A04: T_SPM</td><td>A10: FlyCt</td></tr> <tr><td>A05: CntMd</td><td>A11: FlyMd</td></tr> <tr><td>A06: CntFg</td><td>A12: FLY_D</td></tr> </table>  <p>Fly Count 0005</p>  <table border="1"> <tr><td>A01: M_SPM</td><td>A07: CntDn</td></tr> <tr><td>A02: SLOW</td><td>A08: M_ORG</td></tr> <tr><td>A03: F_POS</td><td>A09: C_ORG</td></tr> <tr><td>A04: T_SPM</td><td>A10: FlyCt</td></tr> <tr><td>A05: CntMd</td><td>A11: FlyMd</td></tr> <tr><td>A06: CntFg</td><td>A12: FLY_D</td></tr> </table>	A01: M_SPM	A07: CntDn	A02: SLOW	A08: M_ORG	A03: F_POS	A09: C_ORG	A04: T_SPM	A10: FlyCt	A05: CntMd	A11: FlyMd	A06: CntFg	A12: FLY_D	A01: M_SPM	A07: CntDn	A02: SLOW	A08: M_ORG	A03: F_POS	A09: C_ORG	A04: T_SPM	A10: FlyCt	A05: CntMd	A11: FlyMd	A06: CntFg	A12: FLY_D	
A01: M_SPM	A07: CntDn																									
A02: SLOW	A08: M_ORG																									
A03: F_POS	A09: C_ORG																									
A04: T_SPM	A10: FlyCt																									
A05: CntMd	A11: FlyMd																									
A06: CntFg	A12: FLY_D																									
A01: M_SPM	A07: CntDn																									
A02: SLOW	A08: M_ORG																									
A03: F_POS	A09: C_ORG																									
A04: T_SPM	A10: FlyCt																									
A05: CntMd	A11: FlyMd																									
A06: CntFg	A12: FLY_D																									

### 3) Determining the fly indexer action mode

<p>① Select “A11:FlyMd” in the Parameter Group A and press ENTER to set the fly indexer action mode.</p> <p>② When a new screen appears, you can use ◀(+) and ▶(-) to set the action mode.</p> <ul style="list-style-type: none"> <li>• One Way (one-way mode) The fly indexer moves from left to right by the set frequency. When the action is completed, the fly indexer automatically moves from right to left, returning to the origin.</li> <li>• A Round (two-way mode) The fly indexer moves from left to right as many as the set frequency. When completed, it stops motion. When sewing is started again, the fly indexer moves from right to left by the set frequency and stops motion when completing the set frequency.</li> </ul> <p>③ Press ENTER and you can hear a “beep” sound, which indicates the completion of the setting. The screen returns to the Parameter Group A screen.</p>	  	
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### 6-12) Use of upper thread nipper device (optional)

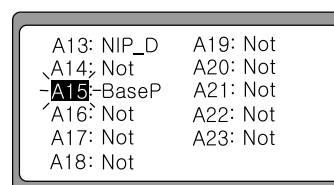
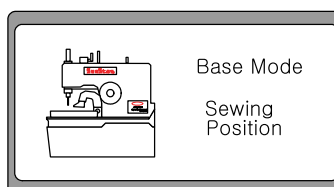
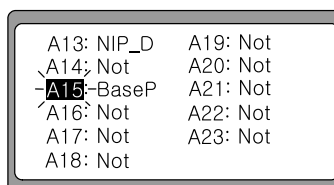
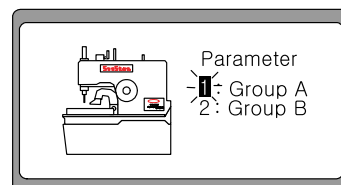
<p>① Turn on the power while pressing the LEFT key and the clamp Up/Down key simultaneously. You can see ‘1’ blink on the screen. Select Group A and press ENTER to use the upper thread nipper device.</p> <p>② When a new screen appears, use the DOWN key to select ‘A13 : NIP_D’ and press ENTER.</p> <p>③ When a new screen appears, use ◀(+) and ▶(-) to select or cancel the upper thread nipper device.</p> <ul style="list-style-type: none"> <li>• Select : Enable</li> <li>• Cancel: Disable</li> </ul> <p>④ Press ENTER and you can hear a “beep” sound, which indicates the completion of the setting. The screen returns to the Parameter A Group screen.</p>	   	
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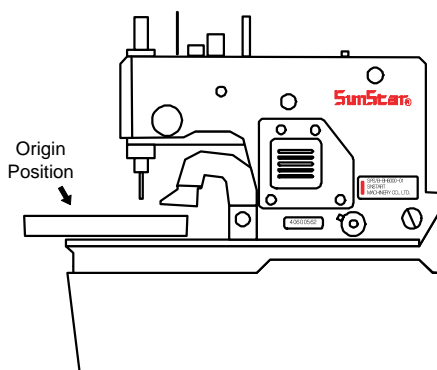
• The upper thread nipper device can be used with all BH6000 series.

## 6-13) Changing the sewing start position

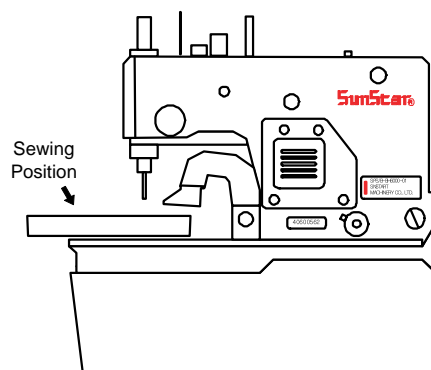
- ① Turn the power on while pressing the LEFT key and the clamp Up/Down key simultaneously. You can see '1' blink on the screen. Select Group A and press ENTER to change the sewing start position.
- ② When a new screen appears, use the DOWN key to select 'A15:BaseP' and press ENTER.
- ③ When a new screen appears, use ◀(+) and ▶(-) to change the sewing start position.
  - Origin Position: The feeding base always returns to the origin when sewing is completed.
  - Sewing Position: The feeding base moves to the sewing start position when sewing is completed.
- ④ Press ENTER and you can hear a “beep” sound, which indicates the completion of the setting. The screen returns to the Parameter Group A screen.



[Origin Position]

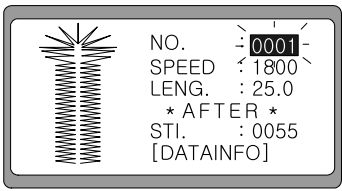
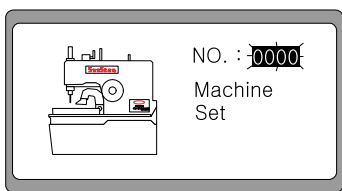
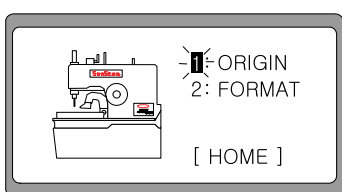
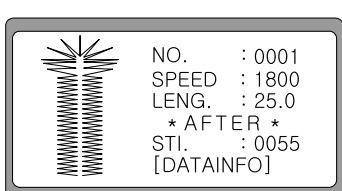


[Sewing Position]

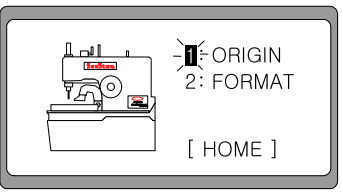
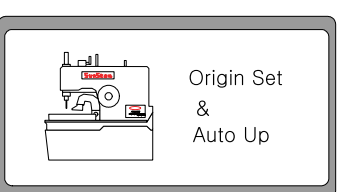
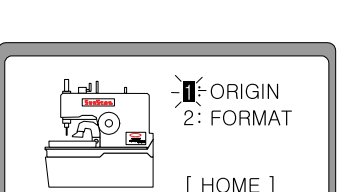




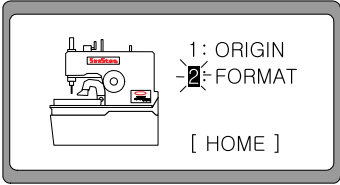
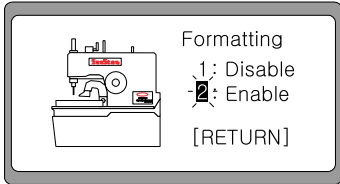
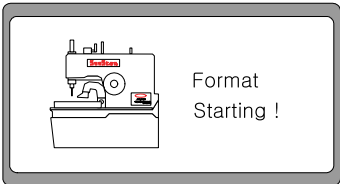
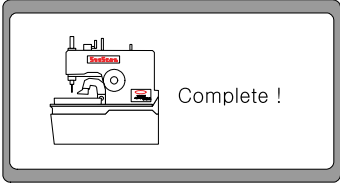
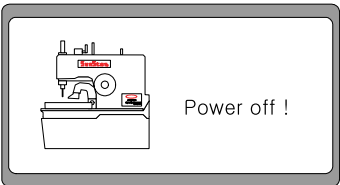


## 6-14) Set the pattern number '0'

<p>① Make sure that <b>the sewing READY lamp is off</b>, and use the UP or DOWN key to select No.</p> <p>② Use ►(-) key to set the desired pattern number at '0000'. Then the screen automatically moves to the next one.</p> <p>③ Press ENTER and the setup menu appears.</p> <p>1. ORIGIN : Set the original point and the automatic highest stop position.</p> <p>2. FORMAT : Reset the parameter default values related to pattern.</p> <p>④ Use the DOWN key to select 'HOME' and press ENTER. The screen switches to the initial sewing mode.</p> <p>◀Note▶ Pay attention to the fact that the pattern number always changes to '0001'.</p>	   	<p>↑ OR ↓</p> <p>↩</p> <p>↓</p> <p>→</p> <p>↓</p> <p>↩</p> <p>↓</p> <p>↩</p> <p>↓</p>
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### 1) Origin setting

<p>① To set the original point and the automatic highest stop position, use the UP or DOWN key to select '1' on the menu, and press ENTER.</p> <p>② When a new screen appears, the original point and the automatic highest stop position can be set.</p> <p>③ When the sewing machine take actions following the setting, the screen moves back to the initial menu.</p>	  	<p>↑ OR ↓</p> <p>↩</p>
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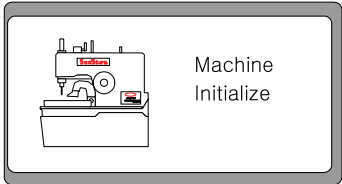
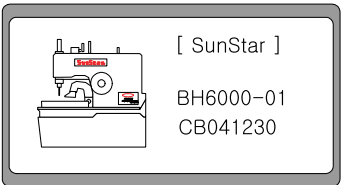
## 2) Initialize the pattern-related parameter defaults

<p>① Select '2' on the menu using UP or DOWN to initiate pattern-related parameter values to default values and press ENTER.</p> <p>② The display moves to the previous screen and '1' blinks. Select '2' using UP or DOWN to format the extended memory and press ENTER.</p> <p>③ The display changes to the previous screen, and the extended memory of the sewing machine undergoes automatic formatting.</p> <p>④ When the formatting of the extended memory is finished, the turn-off message is displayed on the screen.</p>	    	 
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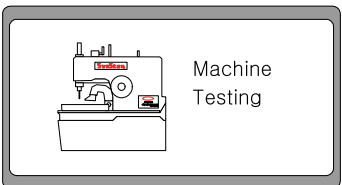
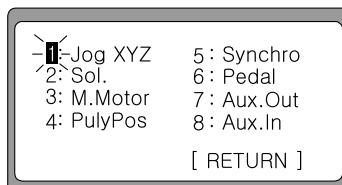


- If Format is conducted, all parameter values defined by users will be initialized to default values.
- In case where the power is cut off in the middle of Format execution, Format will be automatically reactivated when the power is supplied again.
- In case where the power is turned on after the extension memory (28C256) on the digital board is replaced, Format is automatically conducted.






## 6-15) Initialization

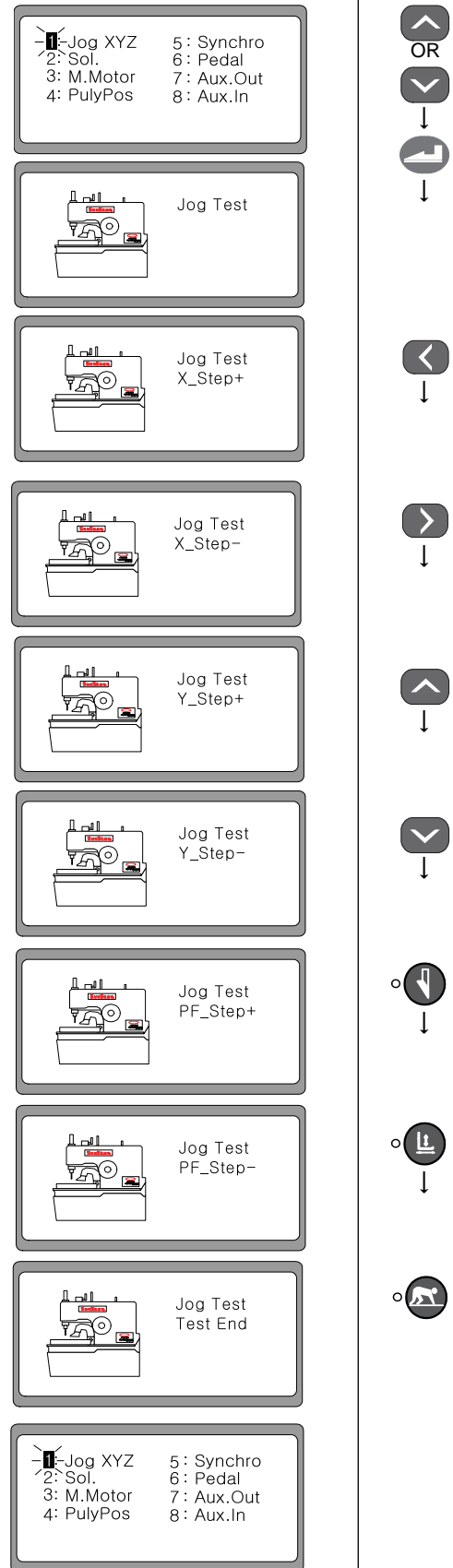
<p>① Turn the power on, while <b>pressing the LEFT key and the READY key simultaneously</b>. Then the initialization message shows up on the screen, while the sewing and motor-related parameters are initialized to default values.</p> <p>② When the initiation is completed, the initial logo is displayed on the screen (in case of BH6000-01).</p>	 	<p>◀ (hold on) + ▶ (hold on) + "Power ON"</p>
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



## 6-16) Machine testing functions

<p>① Turn the power on, while <b>pressing the LEFT key and the RIGHT key simultaneously</b>. The machine moves to the original point, and the buzzer goes off. The testing message shows up on the screen.</p> <p>② In a second, the screen automatically switches to the test menu. '1' flickers on the screen.</p> <ol style="list-style-type: none"> <li>1. Jog XYZ : Step motor test</li> <li>2. Sol. : Solenoid test</li> <li>3. M.Motor : Main motor test</li> <li>4. PulyPos : Pulley position test</li> <li>5. Synchro : Synchro test</li> <li>6. Pedal : Pedal input test</li> <li>7. Aux.Out : Auxiliary output test</li> <li>8. Aux.In : Auxiliary input test</li> </ol>	 	<p>◀ (hold on) + ▶ (hold on) + "Power ON"</p>
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## 1) Step motor test(Jog X, Y, Z Test)

- ① Use the UP or DOWN key and select '1' on the initial test screen. Press ENTER.
- ② When a new screen appears, use the ◀(+) and ▶(-) keys to test the X Step motor. Use the ▲(Up) and ▼(Down) keys to test the Y Step motor. Use the knife On/Off key ( ◯ ) and the clamp Up/Down key ( ◯ ) to test the PF Step motor.
- ③ When the ◀(+) key is pressed, the X step motor test screen appears.
- ④ When the ▶(-) key is pressed, a new screen appears and the X Step motor can be tested.
- ⑤ When the ▲(Up) key is pressed, a new screen appears and the Y Step motor can be tested.
- ⑥ When the ▼(Down) key is pressed, a new screen appears and the Y Step motor can be tested.
- ⑦ When the knife On/Off key ( ◯ ) is pressed, a new screen appears and the PF Step motor can be tested (clamp up direction).
- ⑧ When the clamp Up/Down key ( ◯ ) is pressed, a new screen appears and the PF Step motor can be tested (clamp down direction).
- ⑨ When the READY( ◯ ) key is pressed, the testing is over, and the machine moves to the original position. The screen switches to the initial testing screen.





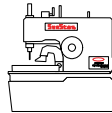





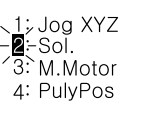



- ※ When the X step motor is being tested by using the ◀(+) and ▶(-) keys, if the original point is passed, the ◯ is turned on.
- ※ When the Y step motor is being tested by using the ▲(Up) and ▼(Down) keys, if the original point is passed, the ◯ is turned on.
- ※ When the PF motor is being tested by using the ◯ and ◯ keys, if the original point is passed, the ◯ is turned on.

## 2) Solenoid Test(Sol Test)

### ◀Note▶












**Completely push the upper thread trimming lever backward** before operating the solenoid. Otherwise, it could damage the sewing machine.

<p>① On the initial test screen, use the Up or Down keys to select '2' and press ENTER. (Y is automatically fed, and the upper thread trimming lever moves backward.)</p> <p>② When a new screen pops up, each item can be tested by using direction and function keys.</p> <p>③ When ◀(+) is pressed, a new screen appears and the thread release can be tested. When ▶(-) is pressed, a new screen appears and the lower thread trimming can be tested.</p> <p>④ When ▲(Up) is pressed, a new screen appears and the base opening can be tested. When ▼(Down) is pressed, a new screen appears and the upper thread trimming can be tested.</p> <p>⑤ When ◯ is pressed, the clamp can be tested.</p> <p>⑥ When ◯ is pressed, the knife motion can be tested.</p> <p>⑦ When the READY(◯) key is pressed, testing comes to a close. The machine automatically moves to the original point and the initial test screen pops up.</p>	<div data-bbox="933 448 1284 638">  <div> 1: Jog XYZ  2: Sol.  3: M.Motor  4: PulyPos  5: Synchro  6: Pedal  7: Aux.Out  8: Aux.In </div> </div> <div data-bbox="933 660 1284 840">  Sol Test </div> <div data-bbox="933 862 1284 1041">  Sol Test TR ON </div> <div data-bbox="933 1064 1284 1243">  Sol Test BASE Open </div> <div data-bbox="933 1265 1284 1444">  Sol Test CLMP ON </div> <div data-bbox="933 1467 1284 1646">  Sol Test KNF ON </div> <div data-bbox="933 1668 1284 1848">  Sol Test Test End </div> <div data-bbox="933 1870 1284 2072">  <div> 1: Jog XYZ  2: Sol.  3: M.Motor  4: PulyPos  5: Synchro  6: Pedal  7: Aux.Out  8: Aux.In </div> </div>	<div data-bbox="1364 448 1436 672"> ◀ OR ▶ ↓ ◀ </div> <div data-bbox="1364 840 1436 918"> ◀ ↓ </div> <div data-bbox="1364 1064 1436 1142"> ▶ ↓ </div> <div data-bbox="1364 1265 1436 1344"> ◀ ↓ </div> <div data-bbox="1364 1467 1436 1545"> ▶ ↓ </div> <div data-bbox="1364 1668 1436 1713"> ◯ </div>
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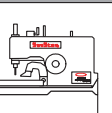







### 3) Main motor test(M Motor Test)

#### ◀Note▶


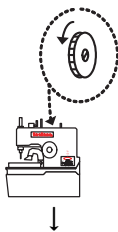

Make sure that **the upper thread cutter lever is completely pushed back and that the needle bar smoothly moves up and down, when the hand pulley is rotated** before executing the main motor test. Otherwise, the sewing machine can be damaged.

<p>① Use the UP or DOWN key to select '3' on the initial test screen, and press ENTER.</p> <p>② When a new screen appears, it is possible to adjust the motor speed by using the ▲(Up) and ▼(Down) keys. Pressing ENTER once will start the motor. Pressing Enter again can stop the motor.</p> <p>ex) The screen shows that the motor speed is moved up to 1,000 by using ▲(Up).</p> <p>③ Press READY(  ), and it ends the test. The machine automatically moves to the original point and the screen moves back to the initial test menu.</p>	<div data-bbox="954 436 1284 604"> 1: Jog XYZ    5: Synchro  2: Sol.       6: Pedal  3: M.Motor    7: Aux.Out  4: PulyPos    8: Aux.In </div> <div data-bbox="954 616 1284 779">  Motor Test 0100 </div> <div data-bbox="954 790 1284 954">  Motor Test 1000 </div> <div data-bbox="954 965 1284 1128">  Motor Test Test End </div> <div data-bbox="954 1140 1284 1303"> 1: Jog XYZ    5: Synchro  2: Sol.       6: Pedal  3: M.Motor    7: Aux.Out  4: PulyPos    8: Aux.In </div>	<div data-bbox="1364 436 1444 571">  OR   </div> <div data-bbox="1364 616 1444 728">  </div> <div data-bbox="1364 728 1444 1019">        </div>
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### 4) Encoder test






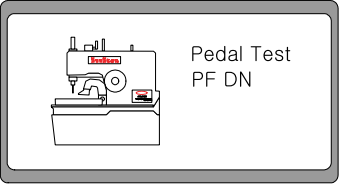
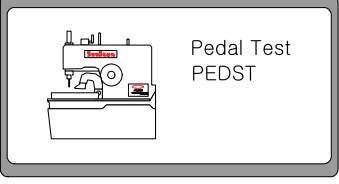
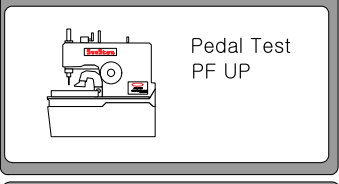
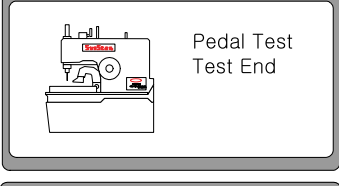
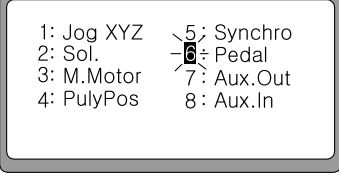
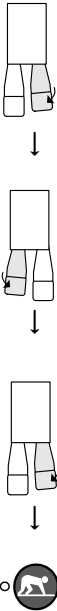
<p>① Use the UP or DOWN key to select '4' on the initial test screen. Press ENTER.</p> <p>② When the test screen appears, check how the value is changing while turing the pulley by hand.</p> <p>③ Press READY(  ) and it ends the test. The machine moves to the original position and the screen moves back to the initial test screen.</p>	<div data-bbox="954 1402 1284 1570"> 1: Jog XYZ    5: Synchro  2: Sol.       6: Pedal  3: M.Motor    7: Aux.Out  4: PulyPos    8: Aux.In </div> <div data-bbox="954 1581 1284 1744">  Puly Test 0114 </div> <div data-bbox="954 1756 1284 1919">  Puly Test Test End </div> <div data-bbox="954 1930 1284 2094"> 1: Jog XYZ    5: Synchro  2: Sol.       6: Pedal  3: M.Motor    7: Aux.Out  4: PulyPos    8: Aux.In </div>	<div data-bbox="1364 1402 1444 1536">  OR   </div> <div data-bbox="1364 1536 1444 1603">  </div> <div data-bbox="1364 1603 1444 1895">      </div>
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## 5) Synchro Test




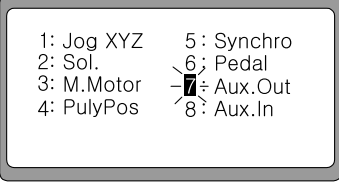
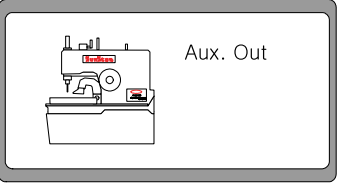
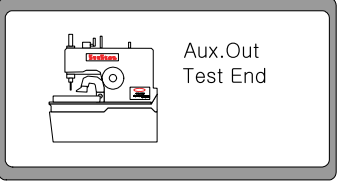
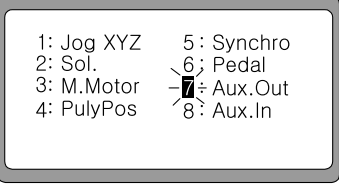

<p>① Use the UP or DOWN key and select '5' on the initial test screen. Press ENTER.</p> <p>② When the test screen appears, check whether the value is changing, while spinning the hand pulley by hand. The one spinning of the hand pulley increase the value by 1.</p> <p>ex) When the hand pulley is spined once, 0000 becomes → 0001.</p> <p>③ Press READY(  ), and the test end message appears on the screen. The machine automatically moves back to the original position and the screen switches back to the initial test screen.</p>	<div data-bbox="935 353 1281 539"> <p>1: Jog XYZ    5: Synchro 2: Sol.       6: Pedal 3: M.Motor   7: Aux.Out 4: PulyPos   8: Aux.In</p> </div> <div data-bbox="935 577 1281 763"> <p>Snyc Test 0000</p> </div> <div data-bbox="935 775 1281 960"> <p>Snyc Test 0001</p> </div> <div data-bbox="935 972 1281 1158"> <p>Snyc Test Test End</p> </div> <div data-bbox="935 1169 1281 1355"> <p>1: Jog XYZ    5: Synchro 2: Sol.       6: Pedal 3: M.Motor   7: Aux.Out 4: PulyPos   8: Aux.In</p> </div>	<div data-bbox="1369 338 1430 524"> <p>↑ OR ↓</p> </div> <div data-bbox="1347 577 1465 808">  </div> <div data-bbox="1362 952 1430 1003">  </div>
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## 6) Hand switch input test

<p>① Use the UP, DOWN keys to select '6' on the initial test screen. Press ENTER.</p> <p>② When the test screen appears, the screen message will change depending on pedal input.</p>	<div data-bbox="935 1543 1281 1729"> <p>1: Jog XYZ    5: Synchro 2: Sol.       6: Pedal 3: M.Motor   7: Aux.Out 4: PulyPos   8: Aux.In</p> </div> <div data-bbox="935 1762 1281 1948"> <p>Pedal Test</p> </div>	<div data-bbox="1369 1529 1430 1715"> <p>↑ OR ↓</p> </div> <div data-bbox="1369 1671 1430 1749">  </div>
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<p>③ When pressing the right hand switch, the new screen appears, and the lamp of the clamp Up/Down(  ) key is turned on.</p> <p>④ When pressing the left hand switch, a different screen appears and the lamp of the READY (  ) key is turned on.</p> <p>⑤ When pressing the left hand switch, a new screen pops up. The lamp of the READY (  ) key and the lamp of Knife On/Off(  ) key are turned on together.</p> <p>⑥ When pressing the READY(  ) key, the test end message appears on the screen. The machine moves back to the original position, and the screen changes back to the initial test screen.</p>	    	
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## 7) Auxiliary output test (Aux. Out Test)

<p>① Use the UP or DOWN key to select '7' on the initial test screen. Press ENTER.</p> <p>② When the test screen appears, press ENTER and it will turn on the lamp of the READY (  ) key. Pressing ENTER again turns off the lamp of the READY(  ) key.</p> <p>③ Press the READY(  ) key, and the test end message is displayed on the screen. The machine automatically moves back to the original position, and the screen changes back to the initial test screen.</p>	   	
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## 8) Auxiliary input test(Aux. In Test)

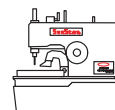
① Use the UP or DOWN key to select '8' on the initial test screen. Press ENTER.

② When the test screen appears, press ENTER to execute the auxiliary input test.

- When pressing the emergency switch, the ON/OFF lamp is turned on. When pressing it again, the On/OFF lamp is turned off.
- When pulling the thread sensor spring forward, the error lamp is turned off. When the thread sensor spring is put back to the original position, the error lamp is turned on.

③ Press the READY(  ) key, and the testing end message appears on the screen. The machine automatically moves back to the original position, and the initial test screen pops up.

1: Jog XYZ    5: Synchro  
2: Sol.       6: Pedal  
3: M.Motor   7: Aux.Out  
4: PulyPos   8: Aux.In



Aux. In Test



Aux.In Test  
Test End

1: Jog XYZ    5: Synchro  
2: Sol.       6: Pedal  
3: M.Motor   7: Aux.Out  
4: PulyPos   8: Aux.In



OR

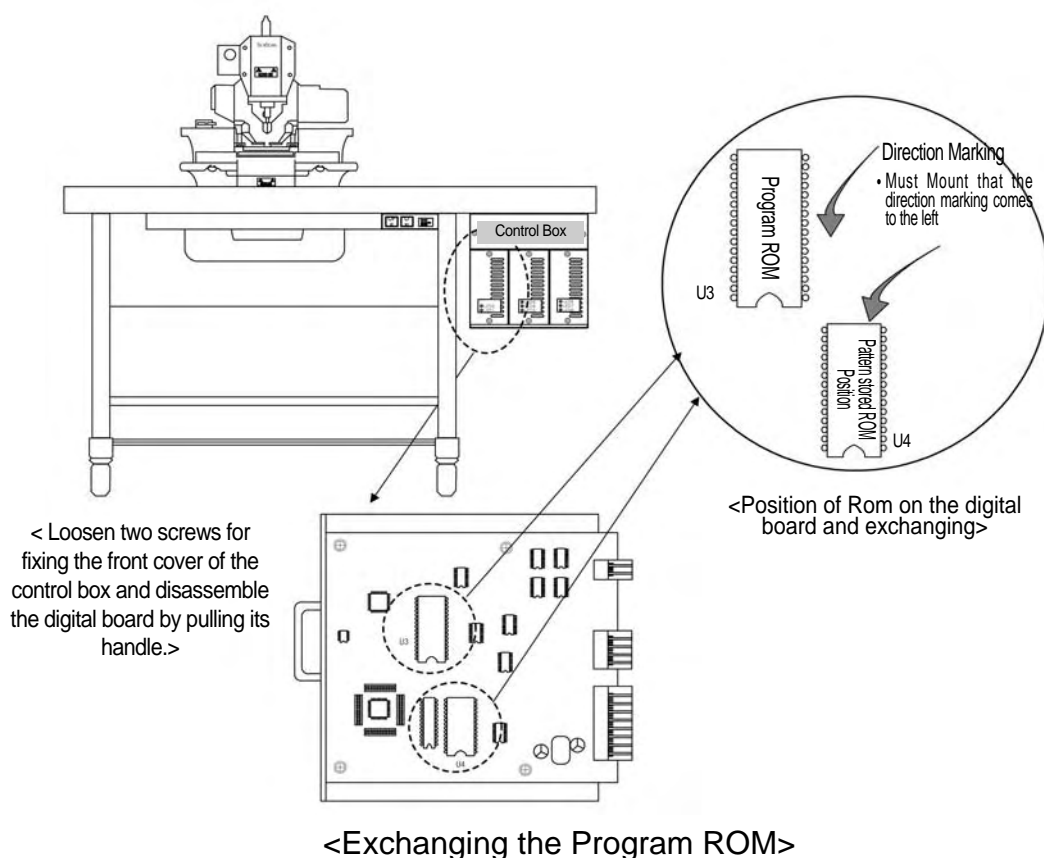


# 7

## Exchanging the Program ROM

### 7-1) Program ROM Mounting Exchanging

- ① Wait a 5 minutes after a power shutting off in order to prevent an electric shock.
- ② Open the cover of SPS/D-BH6000 control box.
- ③ Mount the separately supplied program ROM at the location of "U3" on the digital board that the ROM pins enter into the socket correctly matched with the direction indication at the board(that the direction marking comes to the left)
- ④ Press the program ROM tightly with fingers that it can enter into the socket.
- ⑤ Basically, Program ROM is installed when Control Box is shipped out of factory. Do not replace Program ROM without any special reason.



Kind of ROM	Indication of digital board	ROM Type	Number of Pin
Pattern stored ROM	U4 (Upside Socket)	AT28C256	28 Pin
Program ROM	U3 (Downside Socket)	27C010	32 Pin

### <Kind of ROM and Installing Position>



If you mount the direction making incorrectly, ROM might be damaged. Must mount that location of pin meet with socket correctly.

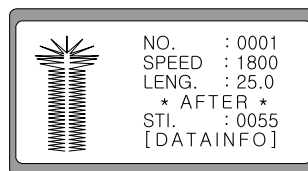
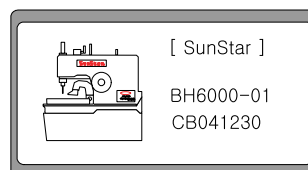
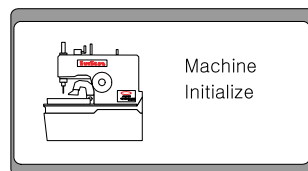
## 7-2) Exactly necessary operation after exchanged the program ROM

### 1) The first things execute the initialize.

- ① Please turn on the electric power while pressing the key and the READY key. And then the parameters related to the sewer and the motor will be initialized to the default values while it will display a message on the screen.

- ② It will display the initial logo on the screen while transforming after that it will have completed to initialize. (Case of 『BH6000-01』)

※ To shift to the sewing mode, press the right-side hand switch.



### 2) And then execute the format

- ① Make sure that **the sewing READY lamp is off**, and use the UP or DOWN key to select No.

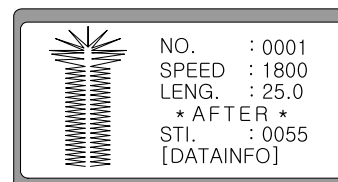
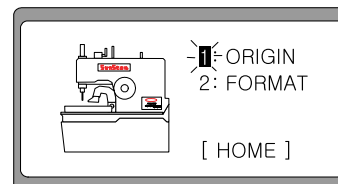
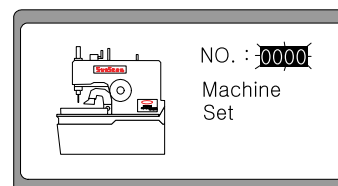
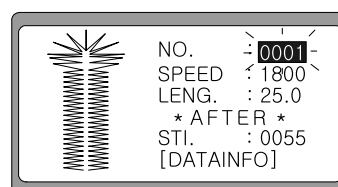
- ② Use ►(-) key to set the desired pattern number at '0000'. Then the screen automatically moves to the next one.

- ③ Press ENTER and the setup menu appears.
1. ORIGIN : Set the original point and the automatic highest stop position.
  2. FORMAT : Reset the parameter default values related to pattern.

- ④ Use the DOWN key to select 'HOME' and press ENTER. The screen switches to the initial sewing mode.

#### ◀Note▶

Pay attention to the fact that the pattern number always changes to '0001'.

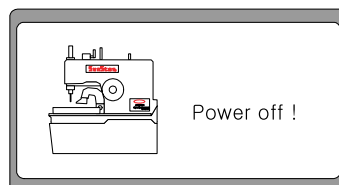
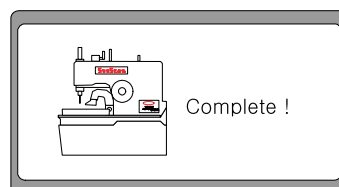
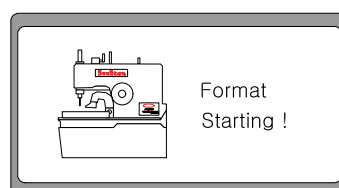
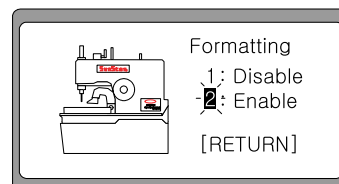
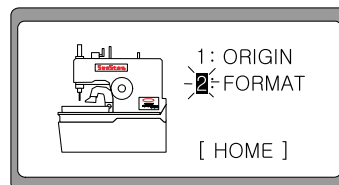


⑤ Select '2' on the menu using UP or DOWN to initiate pattern-related parameter values to default values and press ENTER.

⑥ The display moves to the previous screen and '1' blinks. Select '2' using UP or DOWN to format the extended memory and press ENTER.

⑦ The display changes to the previous screen, and the extended memory of the sewing machine undergoes automatic formatting.

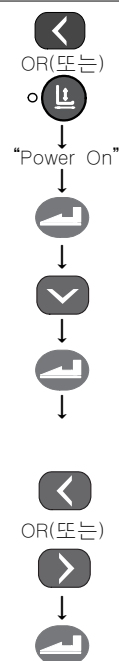
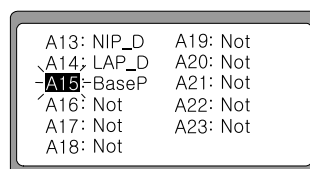
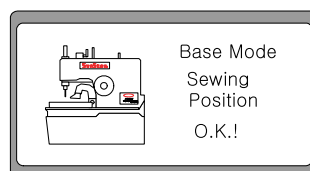
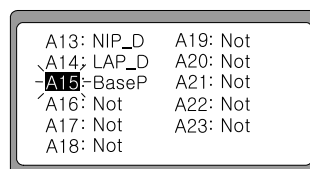
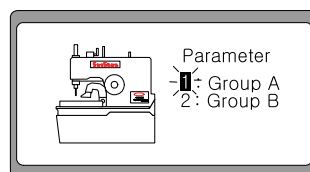
⑧ When the formatting of the extended memory is finished, the turn-off message is displayed on the screen.



- If the program ROM has been exchanged, 1) initialization and 2) memory formatting must be done in the right order. Otherwise, the parameter values may change to wrong values.
- If Format is conducted, all parameter values defined by users will be initialized to default values.
- In case where the power is cut off in the middle of Format execution, Format will be automatically reactivated when the power is supplied again.
- In case where the power is turned on after the extension memory (28C256) on the digital board is replaced, Format is automatically conducted.

### 3) Deciding the sewing start position

- ① Turn the power on, while pressing the Left and the Pressure foot Up/Down keys. The No. 1 lamp will flicker. Select group A and press the Enter key.
- ② When the screen is changed, select "A15:BaseP", by pressing the Down key and press the Enter key.
- ③ When a new screen appears, use ◀(+) and ▶(-) to set the sewing start position.
  - Origin : Origin Position
  - Patten Start Position : Sewing Position
- ④ Complete the setup by pressing the Enter key. A buzzer will go off and the screen will switch to the parameter group A screen.



**Caution**

#### – Origin

When sewing is done, the feed base returns to origin. When the sewing start button is pressed, the feed base moves to the pattern start position to start sewing.

#### – Pattern Start

When the ready button is pressed, the feed base moves to the pattern start position. When the start button is pressed, sewing will start from there.

## Error Messages and Troubleshooting

error code	Description	Cause and Troubleshooting
<b>3</b>	Error in the needle bar's highest stop position (Either after the sewing is finished or when the hand pulley is spined by hand, the needle bar is not located in the right position (the highest point of the needle bar))	<ul style="list-style-type: none"> <li>• Rotate the hand pulley and place the thread take-up to the highest position.</li> </ul>
<b>4</b>	Limit error (In case where the pattern size goes out of the size range of X, Y)	<ul style="list-style-type: none"> <li>• Create the pattern again.</li> </ul>
<b>5</b>	Knife motion error	<ul style="list-style-type: none"> <li>• Check the solenoid and the air pressure.</li> <li>• Check the sensor and the sensor plate.</li> </ul>
<b>6</b>	X's original point error	<ul style="list-style-type: none"> <li>• Check the X Sensor.</li> <li>• Check the X Sensor connector.</li> </ul>
<b>8</b>	Chain sewing error (When the chain sewing setting is wrong)	<ul style="list-style-type: none"> <li>• Without setting the pattern number in Set-No, set the connection sewing at 'On'.</li> </ul>
<b>9</b>	Exceed the total number of stitches (If the total stitch number goes beyond 300.)	<ul style="list-style-type: none"> <li>• Create the pattern again.</li> </ul>
<b>10</b>	Fly indexer auto sensor signal error	<ul style="list-style-type: none"> <li>• Auto sensor position check</li> <li>• Pneumatic solenoid motion check</li> </ul>
<b>14</b>	Bad SPMS fan operation	<ul style="list-style-type: none"> <li>• Fan checking</li> </ul>
<b>15</b>	Failure in properly recognizing the main motor type	<ul style="list-style-type: none"> <li>• Encoder cable and main shaft motor check</li> </ul>
<b>16</b>	Y's original point error	<ul style="list-style-type: none"> <li>• Check the Y Sensor.</li> <li>• Check the Y Sensor connector.</li> </ul>
<b>26</b>	$\theta$ 's original point error	<ul style="list-style-type: none"> <li>• Check the <math>\theta</math> Sensor.</li> <li>• Check the <math>\theta</math> Sensor connector.</li> </ul>
<b>50</b>	Knife return error	<ul style="list-style-type: none"> <li>• Check the solenoid and the air pressure.</li> <li>• Check interruption by other tools.</li> </ul>
<b>60, 61</b>	Synchronizer contact error	
<b>126</b>	Wrong sequence in main shaft motor operation	
<b>127</b>	Encoder AB error	
<b>128</b>	Encoder off line error	<ul style="list-style-type: none"> <li>• Check the bad connector connection.</li> <li>• Check the encoder cable.</li> </ul>
<b>129</b>	Main shaft motor overload	<ul style="list-style-type: none"> <li>• Check the main shaft motor cable.</li> <li>• Check the overload.</li> </ul>
<b>130</b>	Synchronizer signal error	<ul style="list-style-type: none"> <li>• Check the synchro signals.</li> </ul>
<b>133</b>	Over current error	<ul style="list-style-type: none"> <li>• Check the main shaft board.</li> </ul>
<b>9999</b>	Main shaft motor type error	

## Parameter Changing Methods and Classification

### 9-1) Parameter numbers related to general sewing (Group A)

- ★ Turn on the power, while pressing the left key and the presser UP/DOWN key at the same time, and then '1' flickers on the screen. Press ENTER, and the screen shows the item list of parameter Group A. Use the DOWN key to select the desired number and press ENTER. Then, the parameter setting screen appears. Use the + and - key to change the parameter values. Press ENTER to save the changed values.

No	Function and Description	Name of Function	Setting Range	Default	Unit
A-01	Maximum sewing speed	m spm	2200 spm	2200 spm	100spm
A-02	Set the sewing starting speed for 1st~5th needle (set the soft start)	Slow	1st needle :100~900 2nd needle :100~2200 3rd needle: 100~2200 4th needle:100~2200 5th needle: 100~2200	900spm 1600spm 2200spm 2200spm 2200spm	100spm
A-03	Set the X-Y transfer position	F pos	-100 ~+100	0	1
A-04	Set the thread trimming speed	T spm	400 ~ 1000 spm	600 spm	100spm
A-05	Set the UP/DOWN production counter	CntMd	0:Down counter 1:Up counter	1	1
A-06	Set the production counter	CntFg	• Enable: On • Disable: Off	Disable	
A-07	Set the down mode	CntDn	• Buzz & Key • Key • Buzz	Buzz & Key	
A-08	Origin check mode setting	M_ORG	0:Setting counter 1:AUTO	0	1
A-09	Origin check counter setting	C_ORG	0~256	20	1
A-10	Repeat frequency setting for fly indexer (02 type only)	FlyCt	1~9	1	1
A-11	Mode setting for fly indexer (02 type only)	FlyMd	One_Way A Round	One_Way	
A-12	Enable/Disable of fly indexer (02 type only)	FLY_D	Enable Disable	Disable	
A-13	Enable/Disable of upper thread nipper device	NIP_D	Enable Disable	Disable	
A-14	—	—	—	—	—
A-15	Feeding base position setting	BaseP	Origin Position Sewing Position	Origin Position	
A-16	Deciding the use of the vent_hole pattern	HOLE	0 : Disabled 1 : Enabled	0	1
A-17	Lower trimmer sensor enable/disable setting	LTrim	0 : Disabled 1 : Enabled	0	1
A-18	AC Off time setting	ACOff	4 ~60ms	20ms	4ms
A-19	Overvoltage check time setting	OverL	4 ~1020ms	20ms	4ms
A-20	Time setting before trimming after thread release	TR_TM	4 ~100ms	12ms	4ms
A-21	When moving the feed base to the sewing position to set the second origin, set the operation of the fabric opening device.	OPEN	Enable Disable	Disable	
A-22	Hand switch mode setting	PMode	one switch dual switch	dual switch	
A-23	Setting the time taken from presser foot descent to beginning of sewing	PF_TM	4 ~ 1020ms	100ms	4
A-24	Feed base speed adjustment (speed reduction)	YFeed	4 ~ 1020us	16us	4us



1. When the change is made, turn off the power and turn it on again to reflect the change.
2. If you consider changing A-16 of the Parameter Group to "1: Enabled", please install the vent\_hole-dedicated parts. Otherwise, it might cause damage to the sewing machine.

## 9-2) Function numbers related to servo motor control (Group B)

- ★ Turn on the power, while pressing the left key and the presser UP/DOWN key at the same time, and then '1' flickers on the screen. Use the Down key to select '2' and press ENTER. Then the screen shows the item list of parameter Group B. Use the DOWN key to select desired number and press ENTER. Then, the parameter setting screen appears. Use the + and - key to change the parameter values. Press ENTER again to save the changed values.

NO.	Function and Description	Name of Function	Setup Range	Initial State		Unit, Remarks
				Forturn IV	Sanyo	
B-01	Position sensing speed to stop	pos_spd	2~510	220	220	2spt
B-02	Speed right before stop	end spd2	0~255	100	50	1spt
B-03	Delay time to place rightly at stop position	StopDelay	4~1020	100	52	4ms
B-04	Sensing distance of the 1st position	DIST1	0~255	25	30	1Pulse
B-05	Speed P-Gain	KC1A	0~1000	20	30	1
B-06	Not in use	-	-	-	-	-
B-07	Speed D-Gain	KC1C	0~1000	15	0	1
B-08	Not in use	-	-	-	-	-
B-09	Position P-Gain	KF1A	0~1000	200	150	1
B-10	Not in use	-	-	-	-	-
B-11	Position D-Gain	KF1C	0~5000	1800	700	1
B-12	Speed	spd_unit	1~255	100rpm		1rpm
B-13	Power when pulley is fixed	KH1	10~100	40		1
B-14	Repairing distance when pulley is fixed	KH2	10~100	20		1
B-15	Reduce rate from stop signal to position sensing speed	accelA	2~100	60	35	2
B-16	Speed increase rate(Larger Rate Faster Increase)	accelB	10~100	70	25	1
B-17	Speed decrease rate(Larger Rate Faster decrease)	accelC	10~100	50	15	1
B-18	Reduce rate from position sensing speed to stop	accelD	2~100	5	5	1
B-19	Inertia value of sewing machine	Inertia	0~255	0		Inertia tuning
B-20	Not in use	SPMUPPER	-	-		-
B-21	Highest position of UDC	UPPosition	0~8000	720	4000	1
B-22	Not in use	IND_REFM	-	-		-
B-23	P-Gain 2nd Location	KF2A	0~1000	700	250	1
B-24	D-Gain 2nd Location	KF2C	0~5000	3750	1000	1
B-25	Sewing machine pulley size	PULY_SIZE	0~8000	1440	8000	1
B-26	Lowest stop position	CutStartM	0~358	70		1
B-27	Highest stop position	CutEndM	0~358	0	0	Fortuna III has fixed values
B-28	Synchronizer sensor sensing time	SLockTmM	5~1275	40 × 0.1		0.5s
B-29	Overload sensing time	OvLoadM	5~1275	30 × 0.1		0.5s
B-30	Motor fixture during pause possible/impossible	HOLD_FG	0: Disable 1: Enable	0: Disable		1
B-31	Servo motor rotary direction	DIR_MODE	0: Reverse 1: Forward	1: Clockwise		1
B-32	Sensing Time of Origin Sensor	Orgtm	4 ~ 1020ms	500ms		4ms



Please turn off the electric power and then turn it on again when you will have completed to change.