



# USER'S MANUAL

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## SC 8100J

High Speed 4-Needle  
Double Chain Sewing  
Machine  
(For Jeans Waist Band)

- 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.**

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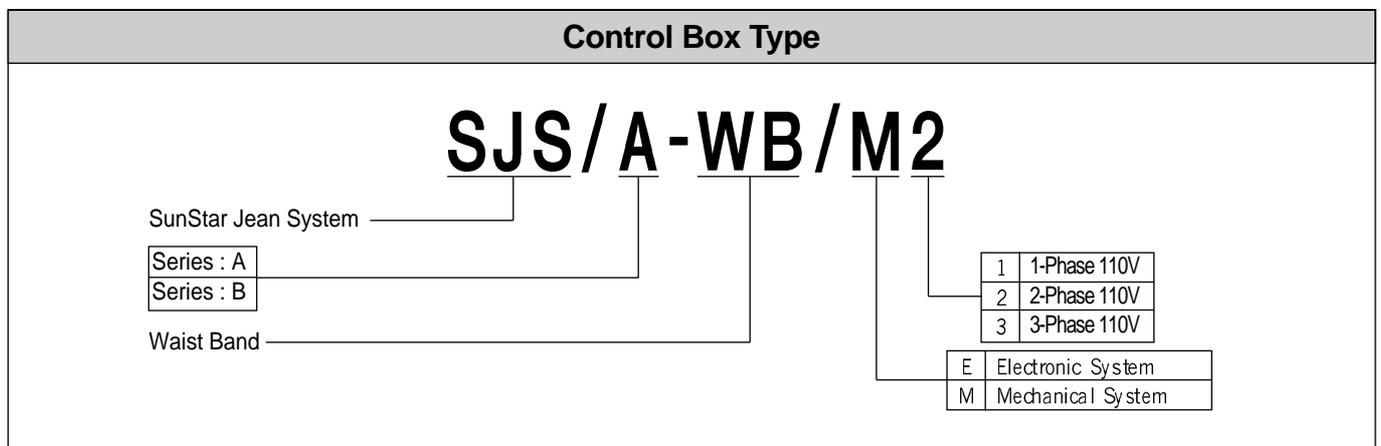
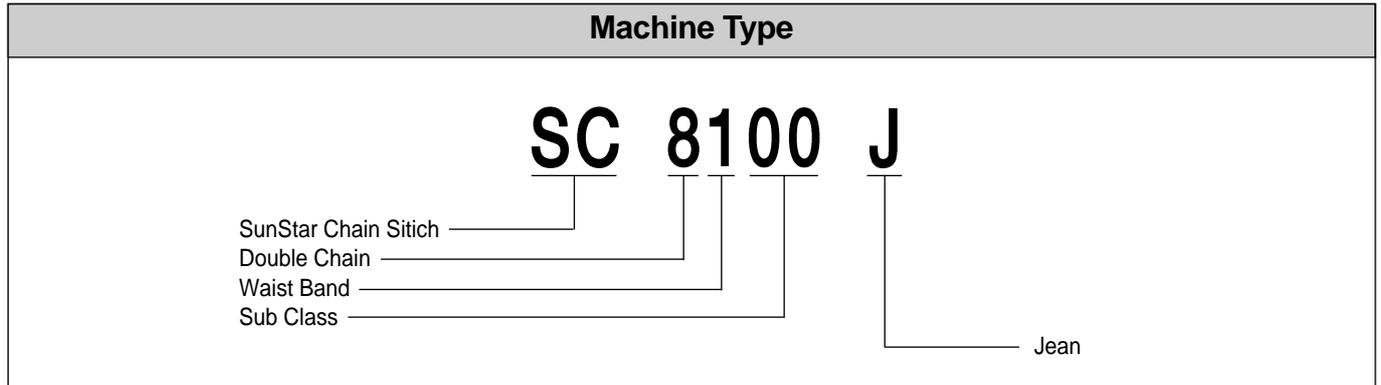
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# 1

## Machine Type and Specifications



### © Specifications

	SC 8100J-ES	SC 8100J-EF	SC 8100J-MS	SC 8100J-MF
<b>Use</b>	Jeans waist band sewing			
<b>Lubrication</b>	Automatic lubrication			
<b>Ordinary Speed(Maximum Speed)</b>	3500spm(4000spm)			
<b>Stitch Length</b>	2.8mm~6.4mm			
<b>Needle Bar Stroke</b>	32mm			
<b>Needle Gauge</b>	4-Needle 1/4" -1" -1/4"			
<b>Needle</b>	DV × 57			
<b>Automatic Presser Foot Lift (Pneumatic)</b>	8mm			
<b>Process Automation Device (cutter, grip, skip)</b>	×	○	×	○
<b>Puller Driving System</b>	Driven by Stepping Pulse Motor			
<b>Needle Bar Oscillation System</b>	Driven by Stepping Pulse Motor		Link Driven by Eccentric Cam	
<b>Pneumatic</b>	0.6MPa			
<b>Motor</b>	550W Direct Drive AC Servo Motor			

# 2

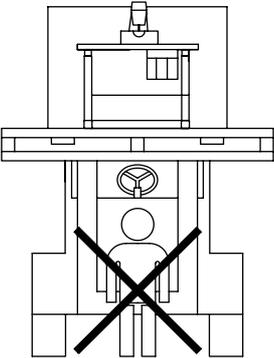
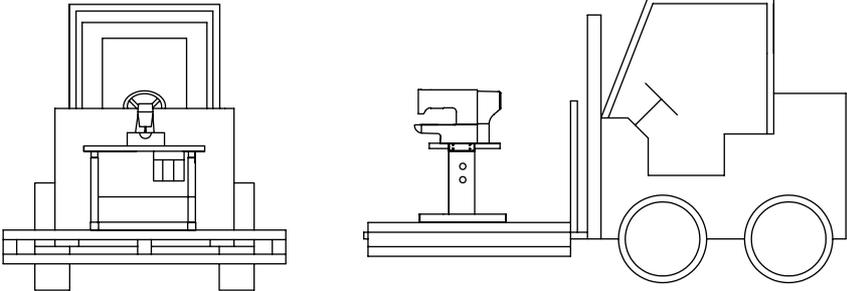
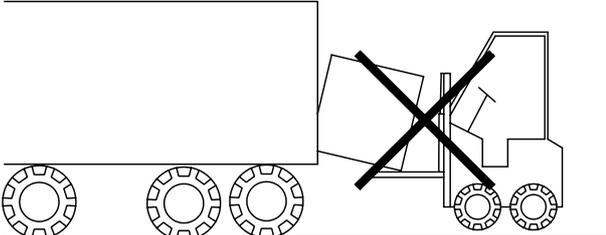
## Safety Rules

### 2.1) Safety Stickers

The safety stickers in this user's manual are divided into **Caution**, **Danger**, and **Warning**. They indicate that if the safety rules are not kept, injury or damage to machine might occur as a result.

No.	Name	Description
	Caution	If the machine is not properly handled, it may cause injury to users or physical damage to the machine.
	Warning	If the machine is not properly handled, it may cause death or severe injury to users.
	Danger	If the machine is not properly handled, it may cause death or severe injury to users, and the urgency of the danger is very high.

## 2.2) Machine Delivery

Mark	Description
<div data-bbox="188 539 347 725" style="text-align: center;">   <span style="background-color: #cccccc; padding: 2px;">Danger</span> </div> <div data-bbox="129 748 403 1106" style="text-align: center;">  </div> <p data-bbox="161 1122 368 1223">Keep people from passing under the machine and remove nearby obstacles</p>	<p data-bbox="456 434 1417 506">Make sure skilled persons who have the knowledge of safety guidelines and rules deliver the machine. The following safety rules must be observed.</p> <p data-bbox="456 562 756 591"><b>2.2.1) Personal delivery</b></p> <p data-bbox="496 607 1445 674">When the machine is hand-delivered, make sure that the delivering persons wear safety shoes and the machine is tightly held at the left and right sides.</p> <p data-bbox="456 712 815 741"><b>2.2.2) Forklift-based delivery</b></p> <ol data-bbox="496 763 1465 931" style="list-style-type: none"> <li>1) Forklift should be sturdy enough to stand the weight of the machine and big enough to deliver the machine.</li> <li>2) When lifting the machine, a pallet should be used. Place the gravity center of the machine at the fork-arm (left and right centers of the machine) and carefully lift the machine.</li> </ol> <div data-bbox="531 1048 1378 1339" style="text-align: center;">  </div> <div data-bbox="456 1429 1445 1574" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <div data-bbox="467 1442 571 1563" style="float: left; text-align: center;">   <span style="background-color: #cccccc; padding: 2px;">Warning</span> </div> <div data-bbox="603 1451 1410 1552" style="float: right;"> <p><b>When unloading a machine using a forklift and crane, the balance of the machine must be maintained to prevent deformation of the machine and delivering persons' exposure to danger.</b></p> </div> </div> <div data-bbox="635 1686 1241 1921" style="text-align: center; margin-top: 20px;">  </div>

### 2.3) Work Environment

	<ol style="list-style-type: none"> <li>1) Voltage <ul style="list-style-type: none"> <li>• The voltage should be within the 10% change rate of the constant voltage.</li> <li>• The power frequency should be within the 1% change rate of the constant current frequency (50/60Hz).</li> <li>• With the two conditions ready, the rated voltage capacity of the servo motor is displayed.</li> </ul> </li> <li>2) Electromagnetic Wave Noise <ul style="list-style-type: none"> <li>• Use a separate power supply from the products with strong magnetic field or those with high frequency. Do not place the machine near those products.</li> </ul> </li> <li>3) Temperature and Humidity <ul style="list-style-type: none"> <li>• The operating temperature should be 5°C ~40°C.</li> <li>• Do not use the machine outdoors and do not expose the machine to direct sunlight.</li> <li>• Place the machine away from hot objects such as heaters.</li> <li>• The humidity should be 30%~95%.</li> </ul> </li> <li>4) Do not use the machine near a gas facility or explosives.</li> <li>5) Do not use the machine at the place higher than 1,000 m above the sea level.</li> <li>6) When unused, store the machine at the temperature of -25°C ~55°C.</li> </ol>
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### 2.4) Machine Installation

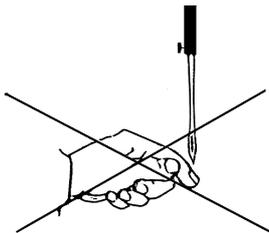
	<p>Depending on installation environment, the following conditions should be met. Otherwise, machine could be dysfunctional and physical damage might occur.</p> <ol style="list-style-type: none"> <li>1) The work table and desk where the machine is installed should be sturdy enough to stand the weight of the machine (see the plate).</li> <li>2) Dust and humidity is the cause of pollution and erosion of the machine. Therefore install an air conditioner and conduct regular maintenance.</li> <li>3) Install the machine in the place where it is not exposed to direct sunlight (The long-term exposure to direct sunlight could cause de-coloration and deformation of the machine.)</li> <li>4) Secure enough space around the machine for maintenance activity. Place the machine at least 50 cm away from the left, right, and rear wall.</li> <li>5) Risk of explosion: To prevent explosion, when there is inflammable substance in the air, immediately stop the machine operation.</li> <li>6) Light: Lights are not supplied. User needs to install lights necessary for machine operation.</li> <li>7) Risk of turnover: Do not install the machine on an unstable stand or table. If the machine falls, it may cause severe damage to user and the machine. During the transfer of the machine, the unexpected stop or external impact might cause the turnover of the machine.</li> </ol>
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## 2.5) Control Box Installation



- 1) Make sure that the power plug is removed from the outlet when installing the control box.
- 2) Fix the cables and make sure that they do not interfere with moving parts such as belt (Keep them at least 25mm away from the moving parts).
- 3) Ground wire should be connected to the control box and sewing machine.
- 4) Make sure that the control box's voltage specifications are proper before turning on the power.

## 2.6) Machine Operation



On the dangerous parts of the machine, “Caution” and “Warning” labels are attached to stress the observation of safety directions. Make sure to comply with the following during the machine operation.

- 1) Read thoroughly the user' s manual before operating the machine and have a complete understanding of the operational details.
- 2) Be properly dressed for safe operation. Long hair, necklace, wristlet and wide sleeves might be rolled into the machine during operation. The shoes should not be slippery.
- 3) Check the operating scope of the machine to check if the machine is under pressure.
- 4) Keep hands and head away from the machine' s moving parts (needle, hook, tread take-up, pulley, etc.) during operation to prevent the risk of accidents.
- 5) Do not remove the safety covers of the pulley or the shaft during operation to ensure the user' s safety.
- 6) Cut off the power supply before disassembling electric boxes such as the control box and check that the switch is turned off.
- 7) Make sure that the power switch is turned off when the upper shaft is manually spun.
- 8) Stop the machine when placing thread to the needle or during post-work checking.
- 9) Please observe the following directions during operation. Otherwise, physical damage such as functional error or breakdown might occur.
  - Do not put any objects on the sewing machine table.
  - Avoid using the curved needle or the needle with damaged tip.
  - Use the presser bar in line with the work conditions.

## 2.7) Repair and Maintenance

 <p data-bbox="183 638 343 683">Danger</p>	<p>When repair is needed, properly trained SunStar A/S engineers should be called to conduct the repair.</p> <ol style="list-style-type: none"> <li>1) Cut off the main power before machine cleaning and repair. Wait for four minutes until the machine is completely discharged.</li> </ol> <div data-bbox="454 548 1436 694" style="border: 1px solid black; padding: 5px;">  <p data-bbox="470 649 566 683">Caution</p> <p data-bbox="598 582 1372 660"><b>For cleaning or repairing the main shaft motor and the X/Y drive box, wait for ten minutes for complete discharge after the power is cut off.</b></p> </div> <ol style="list-style-type: none"> <li>2) Do not change the machine specifications or parts without substantial consultation with SunStar because this may cause safety issues during machine operation.</li> <li>3) Use SunStar original parts for repair or part replacement during A/S activity.</li> <li>4) Put back all safety covers which are removed for repair activities after repair is completed.</li> <li>5) Make sure that skilled engineers conduct repair activities.</li> <li>6) Do not operate the machine while the motor or the controller is opened.</li> <li>7) Turn off the power and remove feet from the pedal during thread placement or machine checking.</li> </ol>
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## 2.8) Other Safety Rules

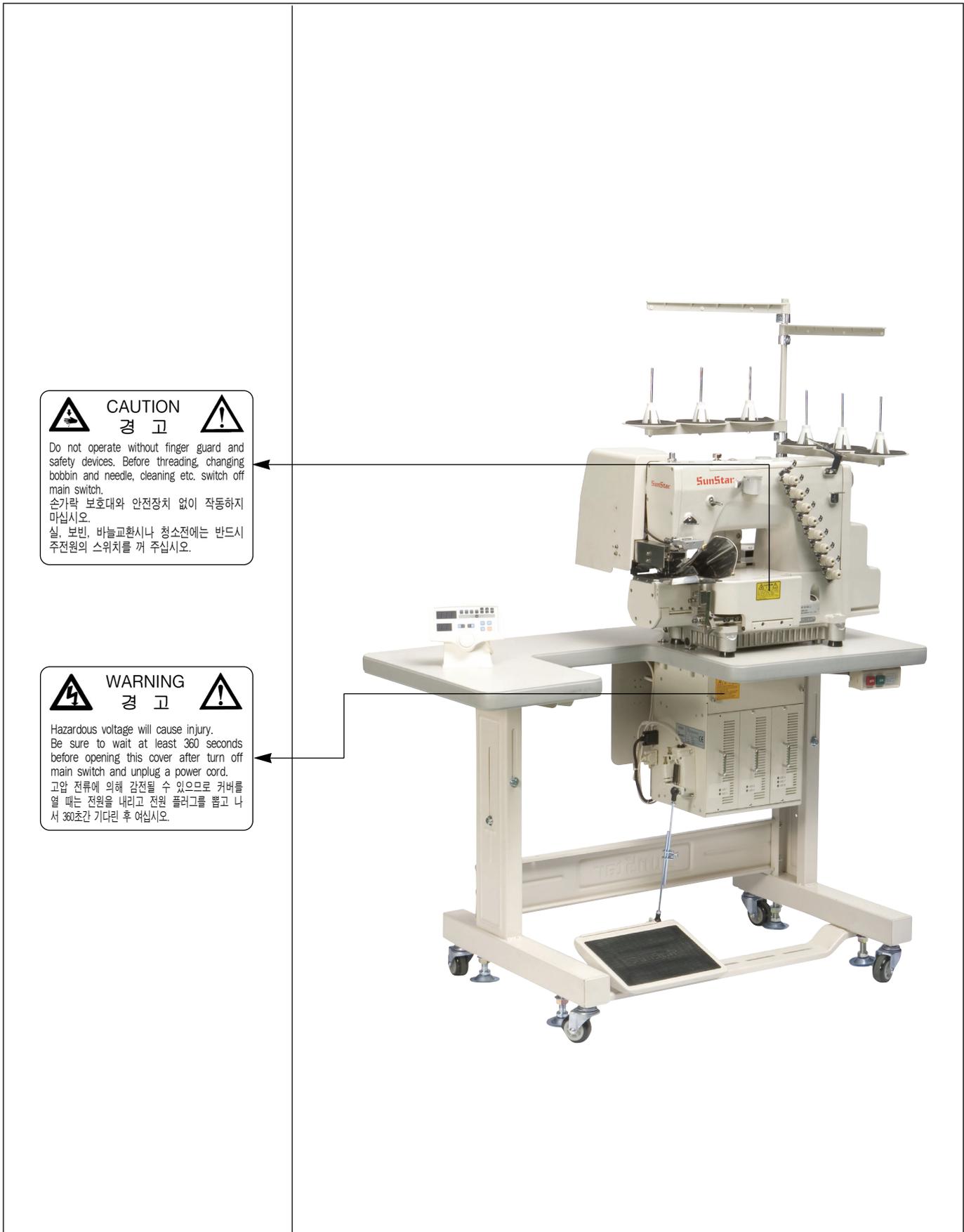
 <p data-bbox="183 1400 343 1444">Caution</p>	<ol style="list-style-type: none"> <li>1) Keep fingers away from the belt and the moving parts.</li> <li>2) Avoid taking discretionary measures when altering the machine or attaching additional devices. The safety standards must be observed.</li> <li>3) Do not operate the machine while safety devices are removed.</li> <li>4) Do not spill water or coffee into the control box and the motor.</li> <li>5) Do not drop the control box and the motor.</li> </ol>
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## 2.9) Safety Label

<div data-bbox="212 367 515 613">  <p><b>CAUTION</b> 경고</p> <p>Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch. 손가락 보호대와 안전장치 없이 작동하지 마십시오. 실, 보빈, 바늘교환시나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.</p> </div>	<p>Do not operate without finger guard and safety devices installed. Before replacing thread, bobbin, and needle or cleaning, turn off the main power switch.</p>
<div data-bbox="212 674 515 909">  <p><b>WARNING</b> 경고</p> <p>Hazardous voltage will cause injury. Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord. 고압 전류에 의해 감전될 수 있으므로 커버를 열 때는 전원을 내리고 전원 플러그를 뽑고 나서 360초간 기다린 후 여십시오.</p> </div>	<p>Electric shock might be caused due to high-voltage electric current. When opening the cover, turn off the power and remove the power plug. Wait for 360 seconds before opening the cover.</p>

※ The above directions are aiming safe and proper operation of the sewing machine. If they are ignored, machine breakdown or physical damage might occur. User should keep in mind and observe them for safe use.

## 2.10) Safety Label Location



**CAUTION**  
경고

Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch.  
손가락 보호대와 안전장치 없이 작동하지 마십시오.  
실, 보빈, 바늘교환시나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.

**WARNING**  
경고

Hazardous voltage will cause injury. Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord.  
고압 전류에 의해 감전될 수 있으므로 커버를 열 때는 전원을 내리고 전원 플러그를 뽑고 나서 360초간 기다린 후 여십시오.

# 3

## Operating Methods

### 3.1) Needle and Thread

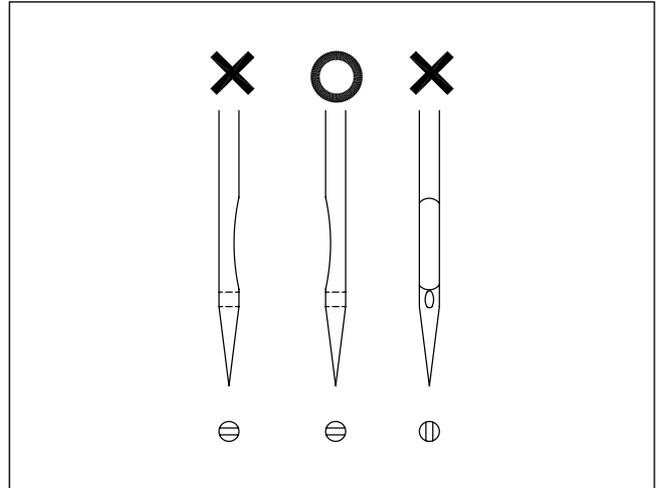
#### 3.1.1) Needle

Choose proper DV X 57 needle (Schmetz or Organ) depending on fabric and thread (standard: #21).

Schmets DV × 57	Nm90~Nm200
Organ Dv × 57	#14~#25

#### 3.1.2) Needle Replacement

When replacing a needle, make sure with great care that the needle scarf is headed to the left.



Caution

When replacing a needle, turn off the power and make sure that the machine is completely stopped.

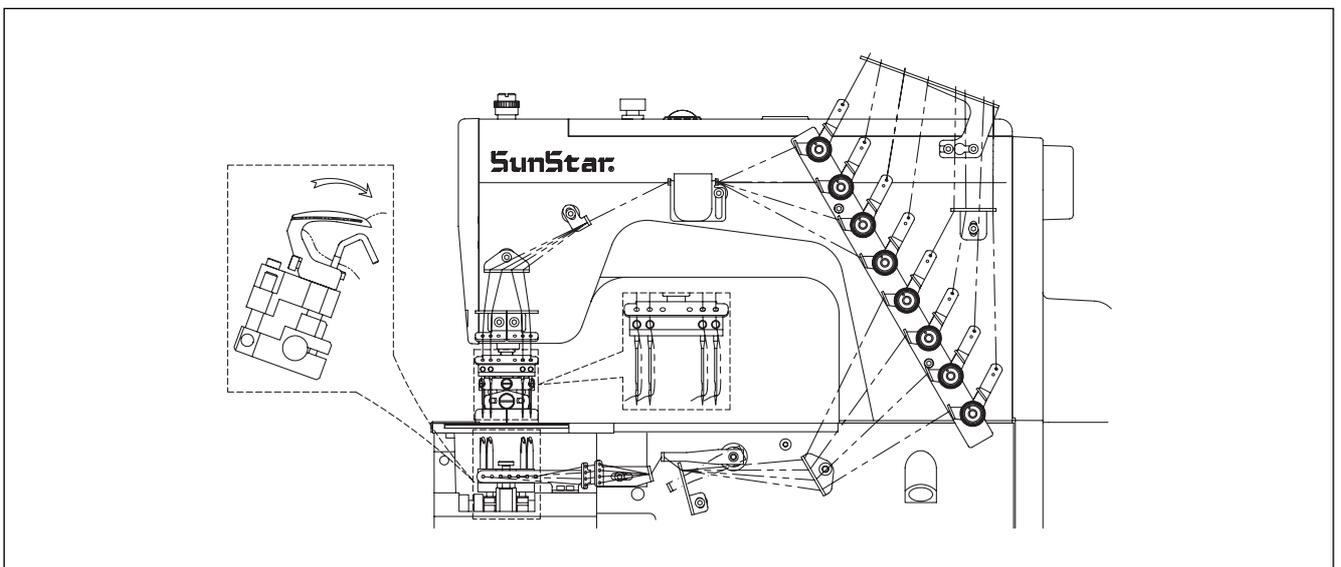
#### 3.1.3) Thread Placement

See the following figure for proper thread placement.

When the thread placement is improper, stitch skipping and thread break might occur or sewing result is improper.

When placing the looper thread, adjust the slant of the thread to place the looper in front of the sewing machine.

When the **F3** key is pressed on the program operating panel, the looper descends, making threading to the needle easier.

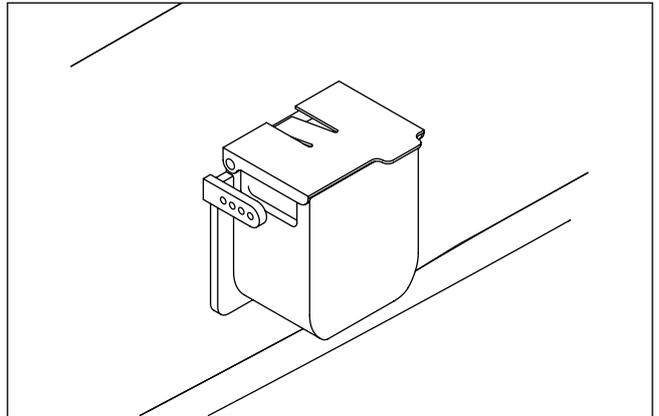


Caution

The power switch must be turned off before adjusting the sewing machine.

### 3.1.4) Needle and Thread Cooling Device

During high-speed sewing, heat is generated due to the friction between the needle and the sewing fabric. This may cause thread break or stitch skipping. When a synthetic thread or a synthetic fabric is used, the stitch hole might get larger. To remove such problems, the sewing machine is installed with the needle cooling device and the lubrication device for needle and thread. Silicon-contained oil is the most effective lubricant.



**The air volume of the needle cooler could be controlled with the speed controller. If the needle cooler is not needed considering the sewing conditions, remove the felt to stop the dry thread from passing through the cooler felt.**

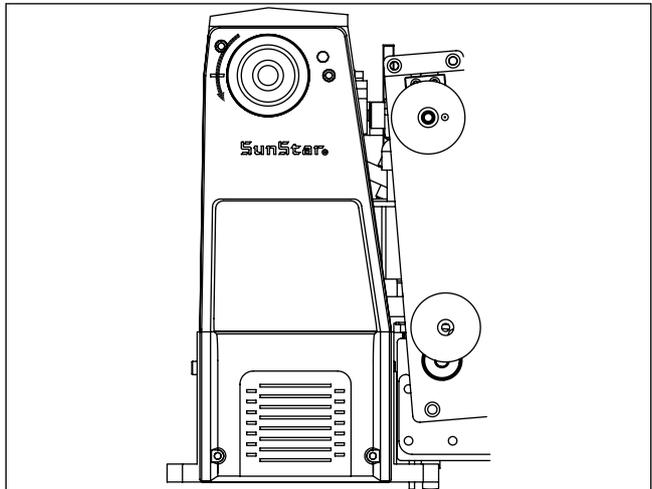
## 3.2) Sewing Speed

### 3.2.1) Sewing Speed and Pulley's Driving Direction

See the table below for the standard and maximum speeds.  
 To lengthen the lifespan of the sewing machine, reduce the speed by some 15~20% from the standard speed for the first 200 hours (some 1 month).  
 Or operate the sewing machine at the standard speed.  
 The direction of the hand pulley is counterclockwise as in the figure.

Speed	Max. Speed	Standard Speed
RPM	4000	3500

(The sewing machine can be run at the maximum speed when the stitch length is 4.5 or below.)



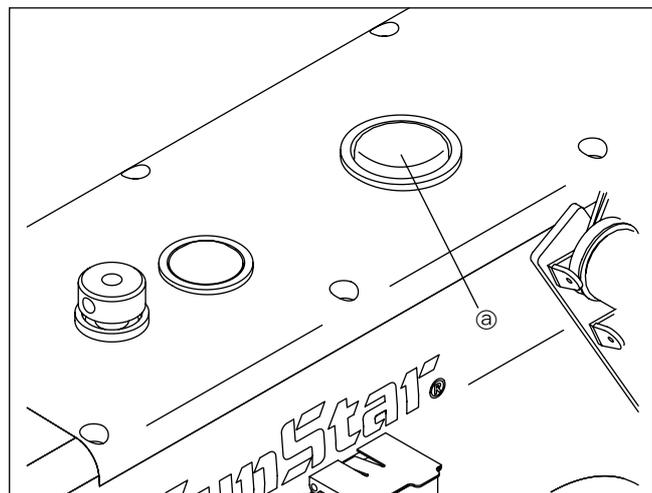
## 3.3) Oil Supply

### 3.3.1) Oil Used

Use the oil supplied by SunStar.

### 3.3.2) Oil Supply

Oil is completely removed from the machine before machine shipment. Therefore oil should be supplied before sewing starts. Open the rubber plug ① and supply oil until it reaches the upper line of the oil gauge.



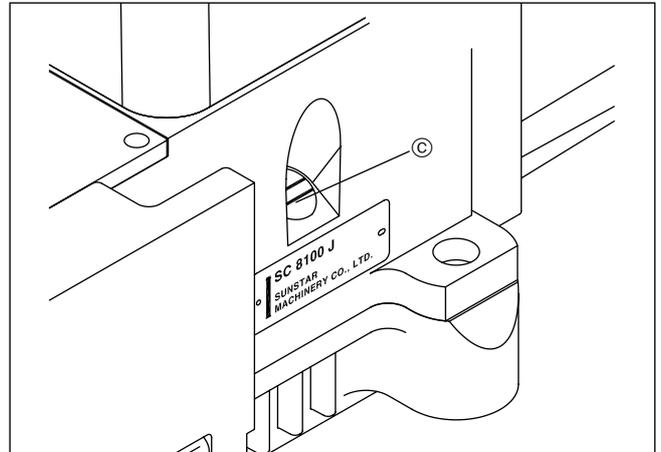
**The power switch must be turned off before adjusting the sewing machine.**

### 3.3.3) Oil Gauge and Oil Window

Check the oil gauge ③ every day before starting sewing and supply more oil if the oil is not filled until the line.

During operation, check whether lubricant is oozed from the nozzle under the oil window.

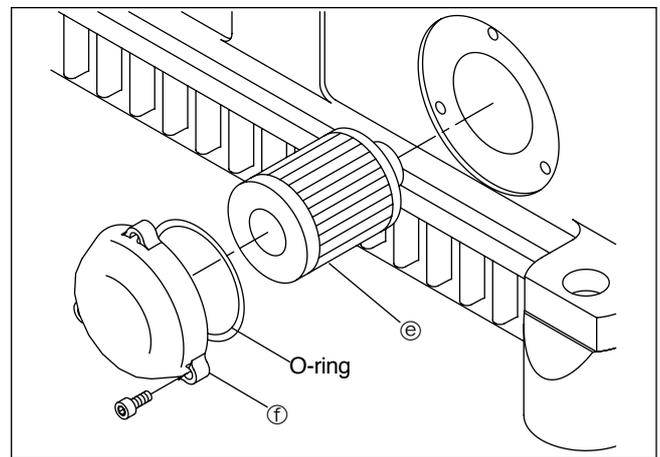
To lengthen the lifespan of the sewing machine, the oil must be replaced after 250 hours of sewing.



### 3.3.4) Oil Filter Checking and Replacement

When the oil filter ④ is clogged with dust, normal lubrication cannot be made. The oil filter should be checked every six months. If the oil is sufficient in the tank, but the oil does not come out from the nozzle B or the oil volume is small, check the filter.

To check the oil filter, remove the oil filter cap ⑥ first. If it is found that the oil filter is clogged, replace it with a new one.



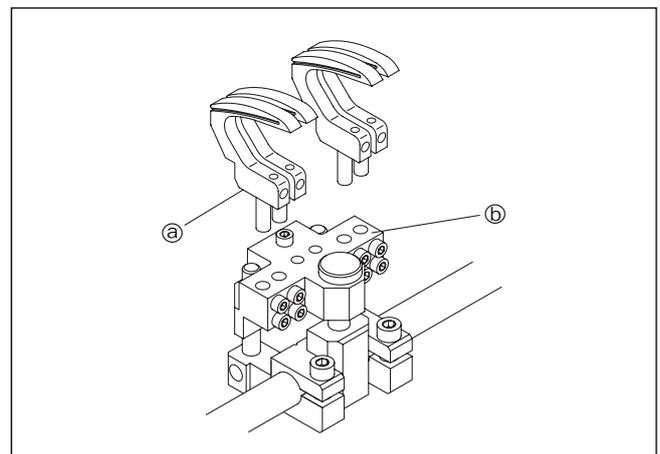
Caution

When removing the oil filter cap (f), ensure that the remaining oil in the filter does not drop to the floor.

## 3.4) Adjustment of Loper and Needle

### 3.4.1) Loper's Location and Angle Adjustment

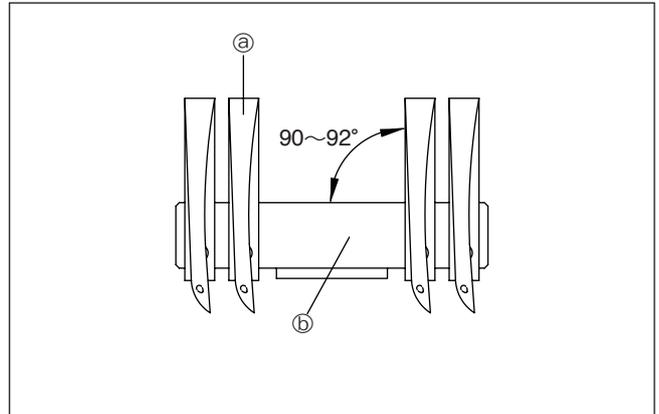
Fully insert the looper base ① into the looper supporting block and fasten the fixing screws.



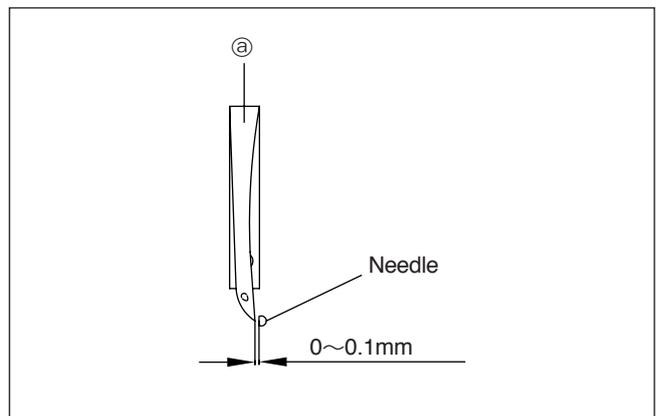
Caution

The power switch must be turned off before adjusting the sewing machine.

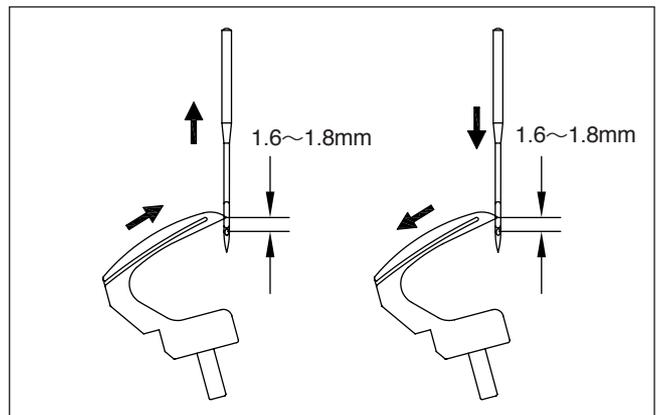
- As in the right figure, adjust the angle between the looper supporting block (b) and the looper at 90~92°.



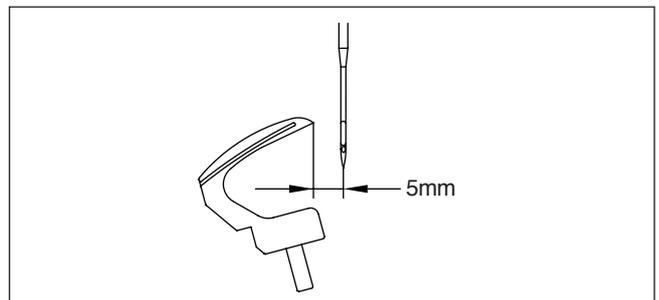
- When the looper tip passes the needle groove, the distance between the looper and the needle should be 0~0.1mm.



- Turn the hand pulley to set the stitch length at 3mm (see Page 22). When the needle bar is at the lowest position, and the looper tip moves between the left and right side of the needle center, check if the distance between the needle hole and the looper is 1.6~1.8mm.



- When the needle bar is at the lowest position, the distance between the looper tip and the needle center should be some 5mm.

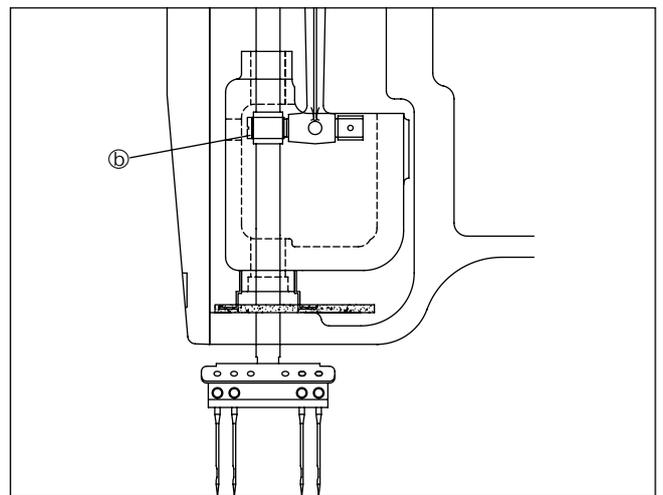
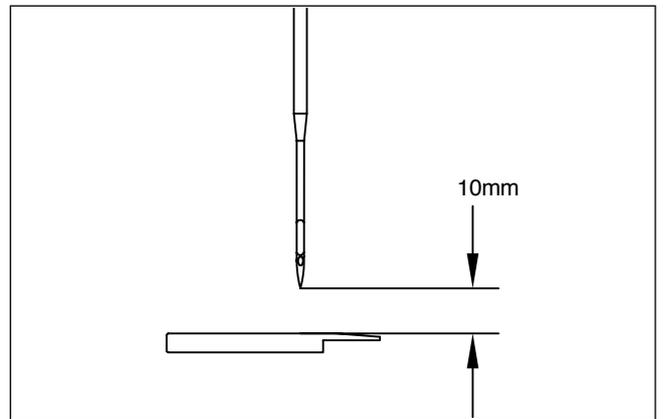


Caution

The power switch must be turned off before adjusting the sewing machine.

### 3.4.2) Needle Height Adjustment

When the needle bar is at the highest position, the distance between the needle plate face and the needle tip should be some 10mm. The height adjustment can be made with the adjusting screw ⑥. When the adjustment is complete, make sure that the needle is accurately inserted into the needle hole on the needle plate.

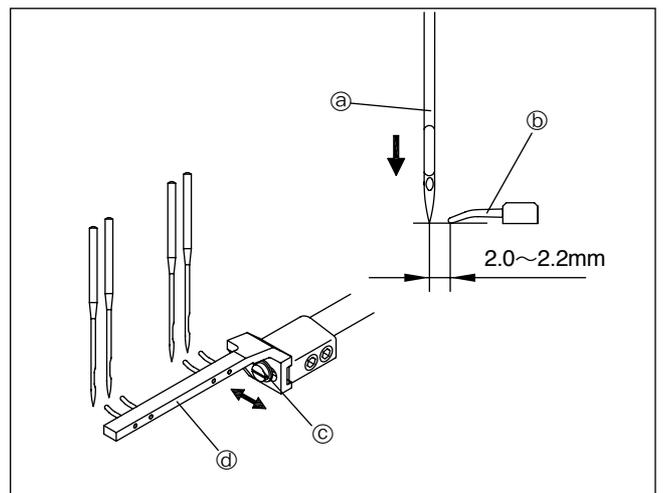


### 3.5) Adjustment of Retainer Looper

#### 3.5.1) Front and Rear Adjustment of Retainer Looper

Turn the hand pulley to set the stitch length at 3mm (see Page 22). When the needle bar moves to the lowest position, and the needle tip ① and the retainer looper ② tip are at the same height, make sure that the distance between the needle tip and the retainer looper tip is 2.0~2.2mm.

For adjustment, loosen the screw ③ of the retainer looper ④ and make the front and back adjustments.



- When the stitch length changes widely, the distance might change, requiring adjustment.

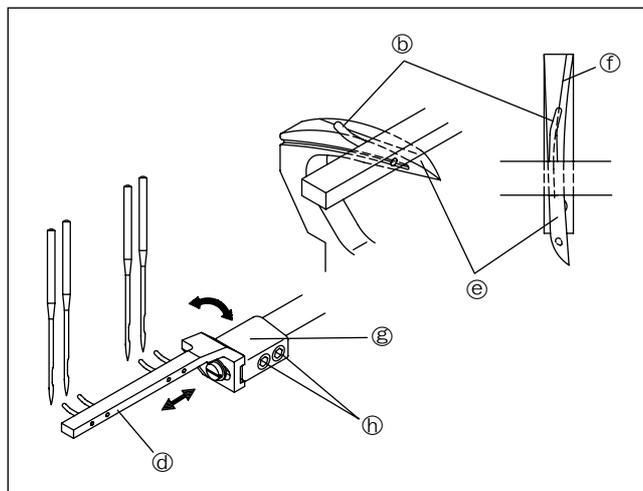


Caution

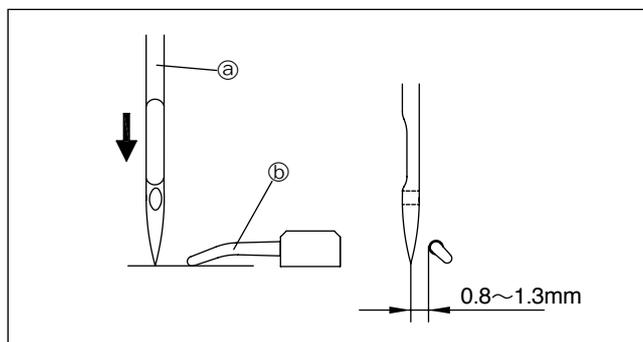
The power switch must be turned off before adjusting the sewing machine.

### 3.5.2) Adjustment of Retainer Looper's Left, Right Position

When the looper ⑤ is located the most forward, the retainer looper tip should be at the line ⑥ of the looper ⑤. For adjustment, loosen the screw ④ on the retainer looper body ③ and make the left and right adjustment.

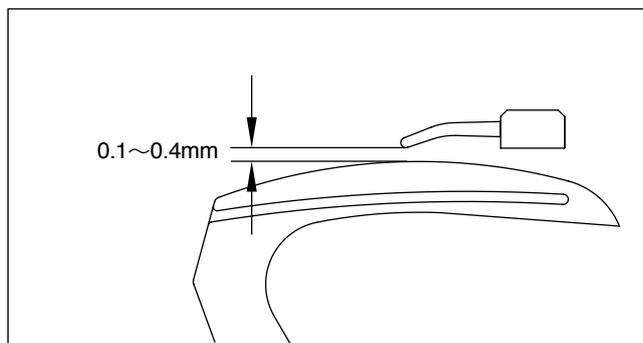


- When the needle bar descends from the highest to the lowest position, the tip of the needle ① should be at the same height of the tip of the looper ②, and the distance between the needle ① and the retainer looper ② should be 0.8~1.3mm on the left side.



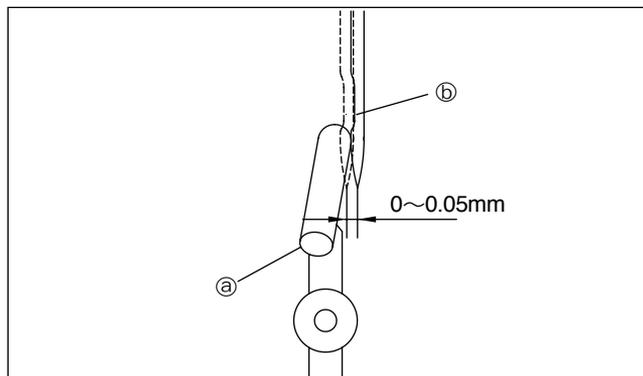
### 3.5.3) Adjustment of the Retainer Looper Height

The retainer looper should be above the highest position of the looper ⑤, and the distance between the retainer looper ③ and the highest position of the looper ⑤ should be 0.1~0.4mm. For adjustment, loosen the screw ④ on the retainer looper ③.



### 3.6) Adjustment of Distance Between Needle and Needle Guide

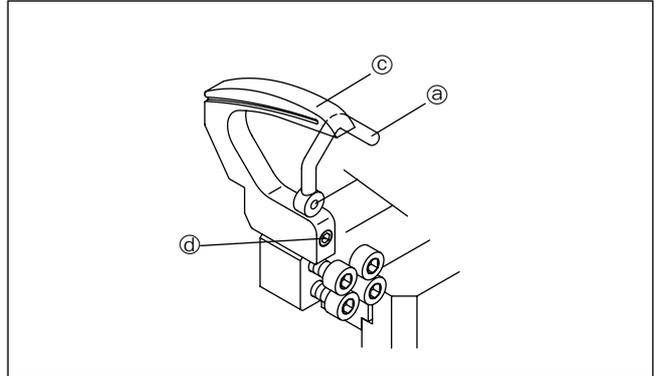
The needle guide ① should be adjusted to push the needle ② by 0~0.05mm.



Caution

The power switch must be turned off before adjusting the sewing machine.

For adjustment, loosen the screw ④ and spin the needle guide ③.

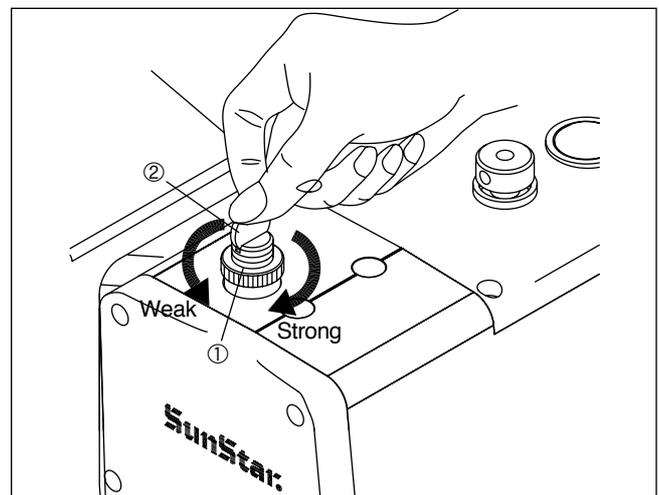


### 3.7) Adjustment of Presser Foot

#### 3.7.1) Presser Foot's Pressure

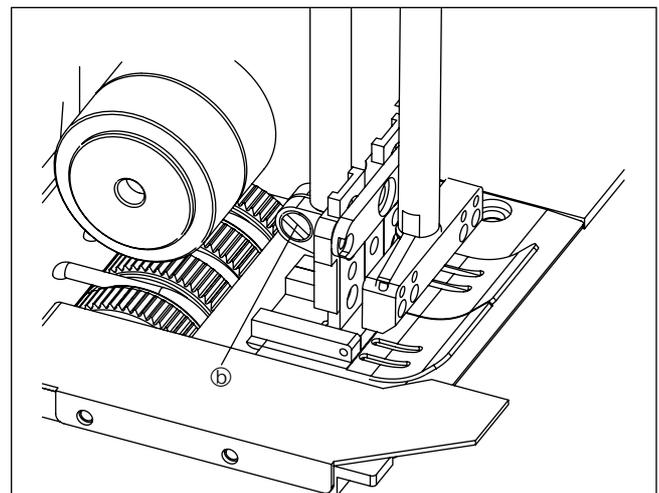
The pressure of the presser foot should be low enough to feed the fabric and create stitches. Loosen the pressure adjusting screw's nut ① on the presser bar and turn the presser bar pressure adjusting screw ② using a coin. When the adjustment is complete, fix the nut ①.

When the screw ② is turned clockwise, the pressure gets stronger. When the screw is turned counter-clockwise, the pressure gets weaker.



#### 3.7.2) Location of Presser Foot

Fix the presser foot to the presser bar to ensure that the needle accurately passes through the center of the needle hole on the presser foot. Loosen the screw ⑥ for adjustment.



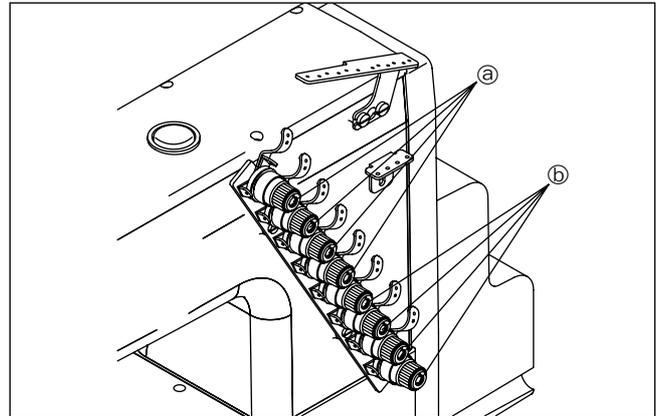
Caution

The power switch must be turned off before adjusting the sewing machine.

### 3.8) Thread Adjustment

#### 3.8.1) Adjustment of Thread Tension

Thread tension varies depending on sewing conditions such as fabric and thread used and stitch length. Thread tension is adjusted by using the nut ①, and the tension of the looper thread can be adjusted using the nut ②. To increase tension, turn the nut clockwise.

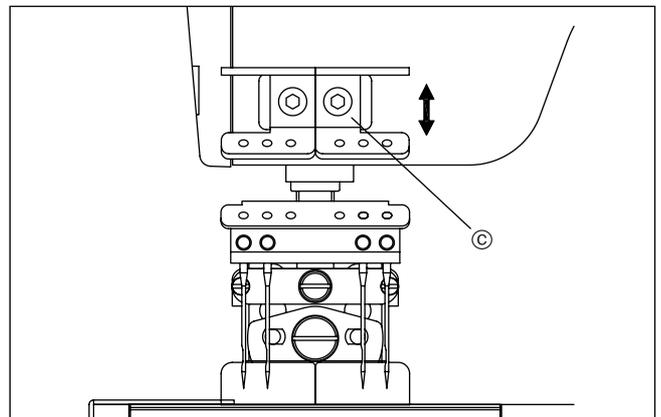


Caution

Tension should be light enough to create stitches.

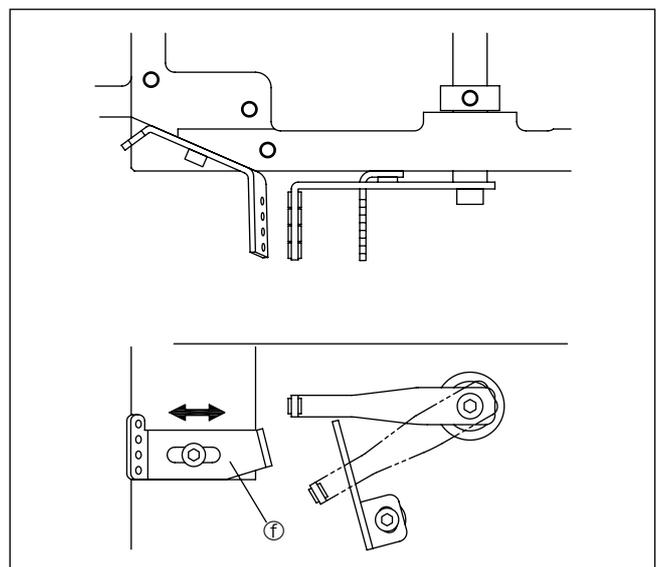
#### 3.8.2) Location of Needle Thread Eyelet

The location of the needle thread eyelet ③ can be slightly adjusted up or down. To loosen the needle thread, adjust the eyelet upward. If it is adjusted downward, the needle thread gets tense.



#### 3.8.3) Location of Looper Thread Take-up Lever

The location of the looper thread eyelet ④ can be slightly adjusted left or right. To loosen the looper thread, adjust the eyelet to the left. If it is moved to the right, the looper thread gets tense.



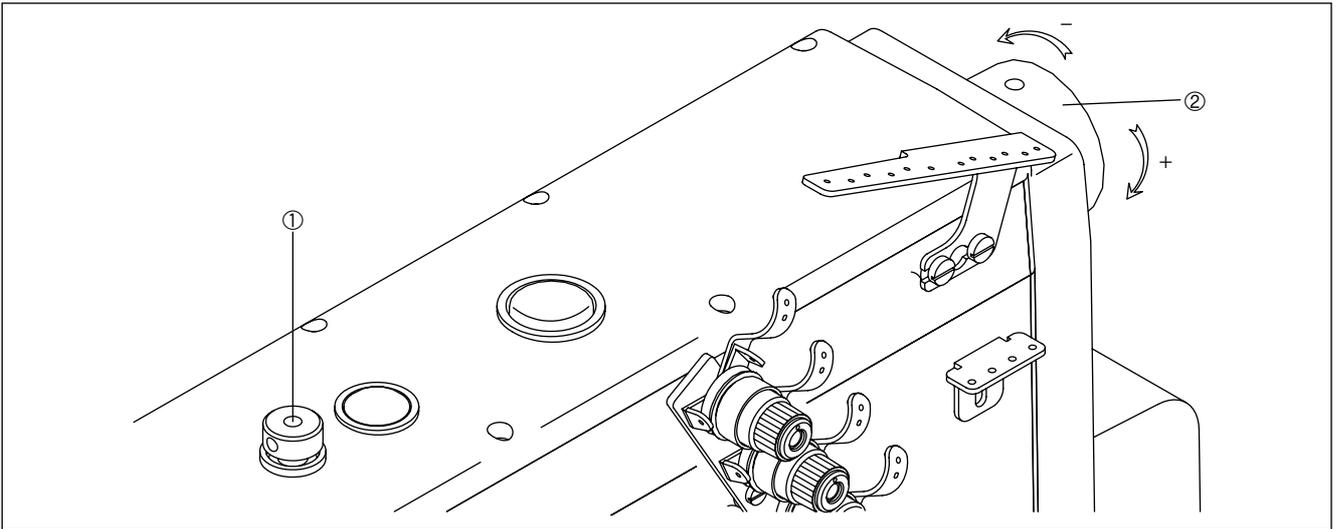
Caution

The power switch must be turned off before adjusting the sewing machine.

### 3.9) Adjustment of Stitch Number

To adjust the stitch number, slightly press the stitch number adjusting button ① with the left hand to make its tip contact the inner part. While the button is pressed, turn the upper shaft pulley ② with the right hand to make the button inserted deeper. At this moment, while the button ① is strongly pressed, turn the upper shaft pulley to change the stitch length. When the upper shaft pulley ② is turned counter-clockwise, the stitch length gets longer. Otherwise, the stitch length gets shorter.

Although the notch is same, the actual stitch length might be different depending on fabric type and fabric length. In this regard, adjust the upper shaft pulley again.



- For adjusting the step motor-based stitch length, see the electric part of the manual.

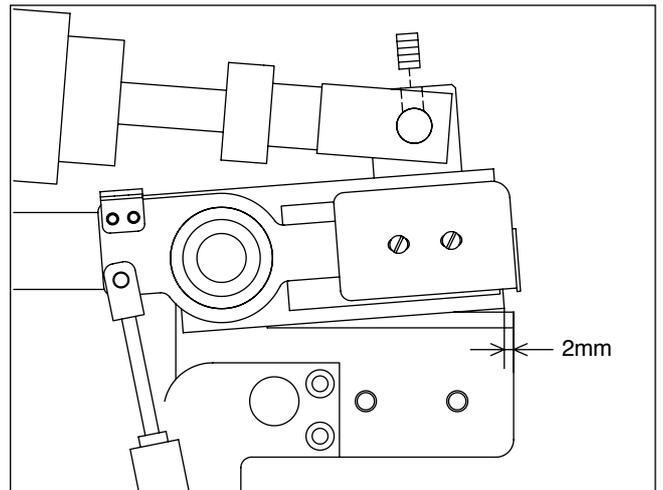
### 3.10) Description of Automatic Parts

#### 3.10.1) Cutter Device

##### 3.10.1-1) Adjustment of Moving Blade

While the cutting cylinder is fully operating, loosen the moving blade supporting base screw to adjust the position of the moving blade.

Make sure that the tip of the moving blade is 2mm away from the fixed blade.



Caution

The power switch must be turned off before adjusting the sewing machine.

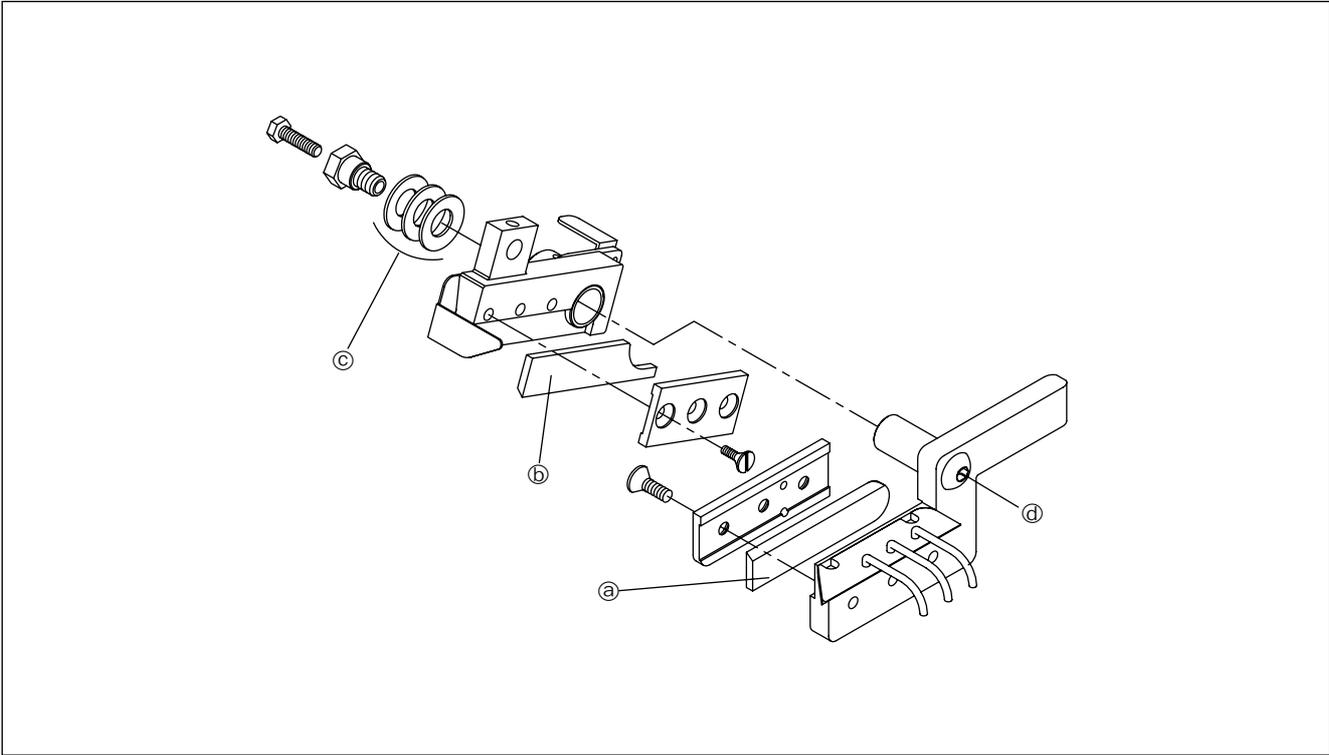
### 3.10.1-2) Adjustment of Blade Pressure

The pressure of the moving blade could be changed. Use the blade pressure adjusting truss screw (d) to adjust the pressure of the moving blade. At the stop position of the moving blade (when the moving blade is fully open), the pressure washers (c) of the moving blade (3EA) should be slightly rubbed against each other.

### 3.10.1-3) Replacement of Moving, Fixing Blades

Since blades are supplies, they require replacement from time to time. To replace moving and fixed blades, remove the fixing plate first. To remove the fixing plate, loosen the screw on the dish head. When replacing the blades (a) and (b), clean the supporting base.

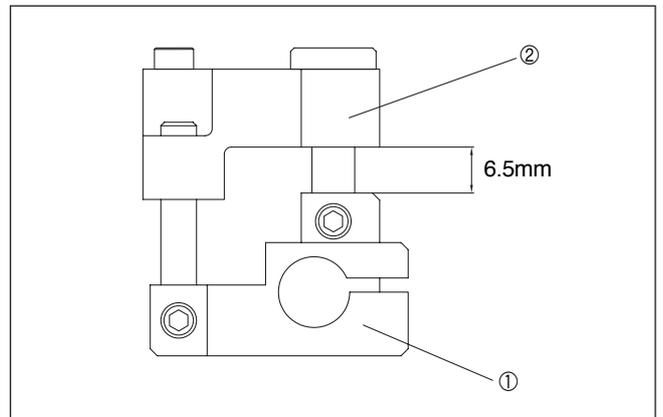
 Caution	<b>To avoid mistaken cutter operation, replace a pair of blades, not only one blade, upon replacement.</b>
--	--



 Caution	<b>The power switch must be turned off before adjusting the sewing machine.</b>
--	---

### 3.10.2) Skip Device

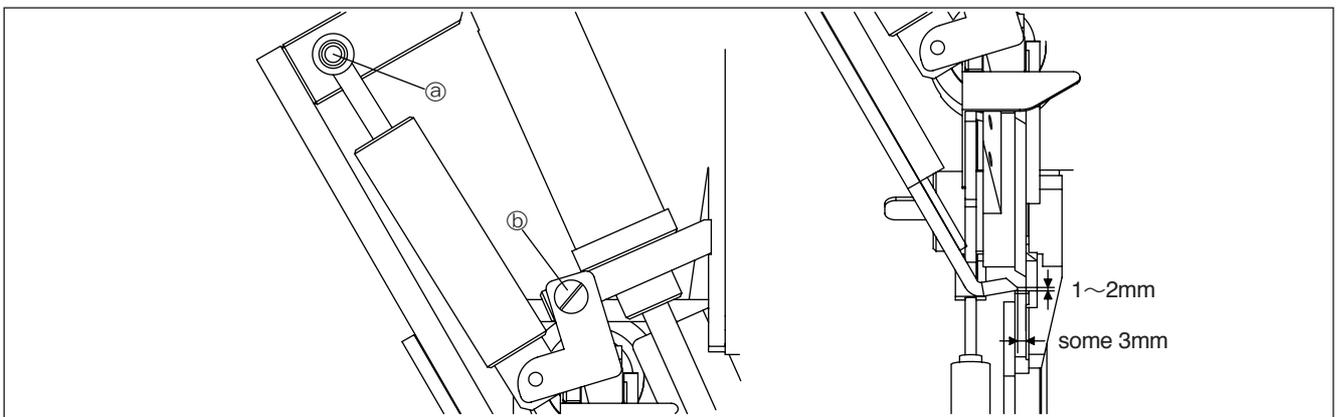
Maintain the distance<sup>Ⓐ</sup> between the looper driving block<sup>①</sup> and the looper supporting block<sup>②</sup> at 6.5mm. The skip function is managed by air pressure.



### 3.10.3) Grip Device

#### 3.10.3-1) Adjustment of Grip Device Front/Rear Position

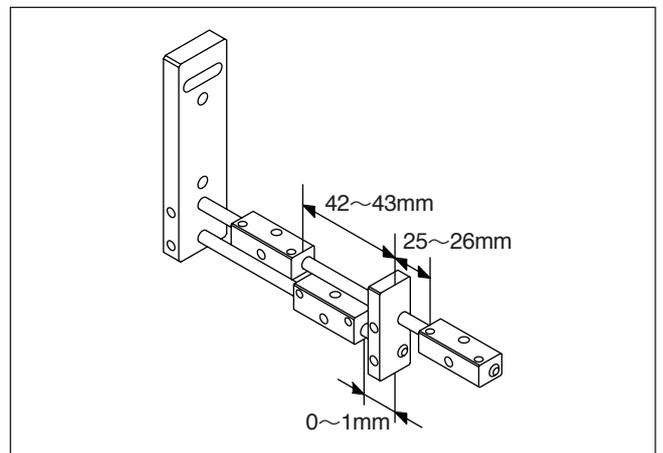
Before operation, the initial front/rear position of the grip device could be set by adjusting the grip piston supporting bracket <sup>Ⓑ</sup> and the knuckle <sup>Ⓐ</sup> of the grip cylinder. Make sure that the distance between the fixed grip's lower face and the fixed blade fixing plate's upper face is some 1~2mm and that the distance between the tip of the fixed grip device and the fixed blade is some 3mm.



### 3.10.4) Sensor Position

#### 3.10.4-1) Adjustment of Photo Sensor Position

The photo sensor position can be adjusted using the sensor-attached bracket. The default setting is as in the figure.

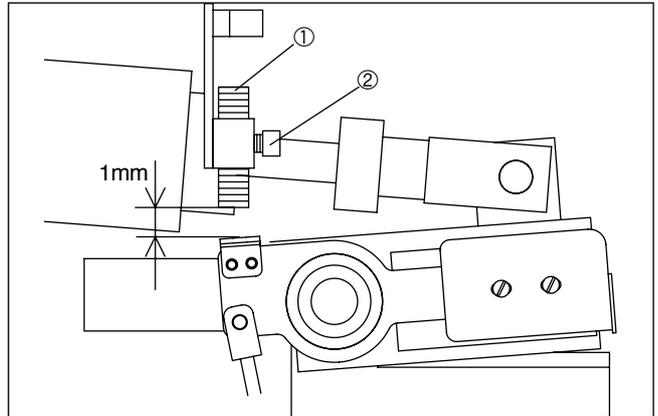


Caution

The power switch must be turned off before adjusting the sewing machine.

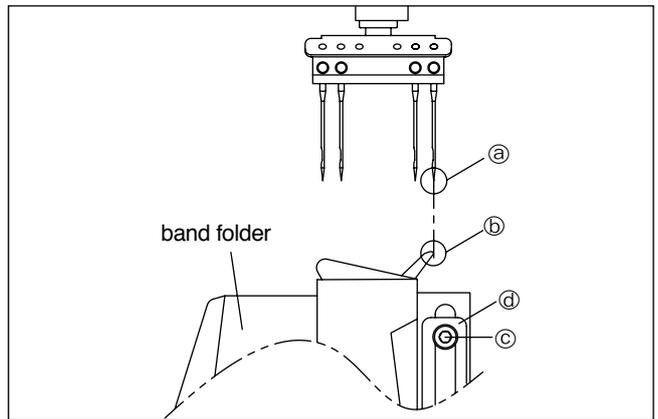
### 3.10.4-2) Adjustment of Detection Sensor Position

The detection sensor position should be adjusted to be some 1mm away from the safety cover sensor plate. Loosen the screw ② to move the detection sensor ①.



### 3.10.5) Attachment of Band Folder

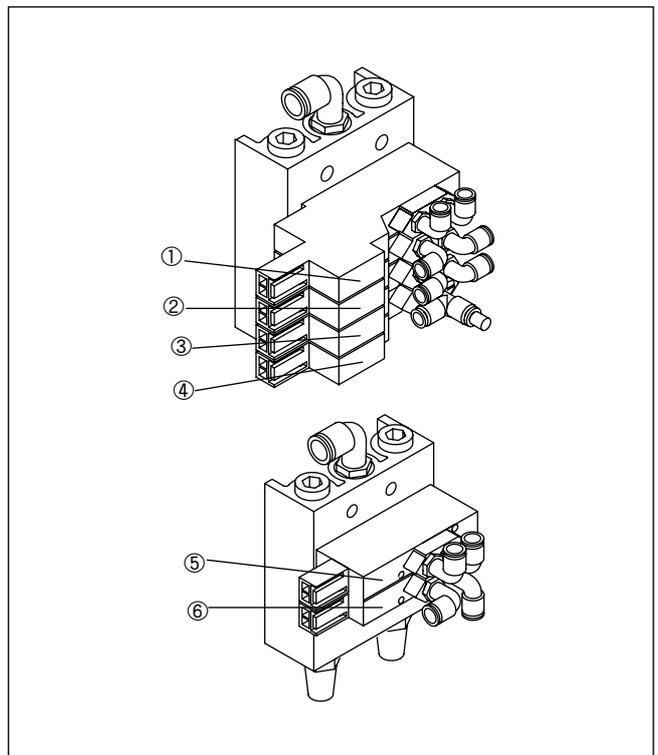
Adjust the tip of the band folder ⑥ to be at the center of the needle ③ and fix the band folder using the washer ④ and the screw ⑤.



## 3.11) Pneumatic Unit Connection

To properly operate the automatic devices, connect signal terminals and solenoid valves in the following order.

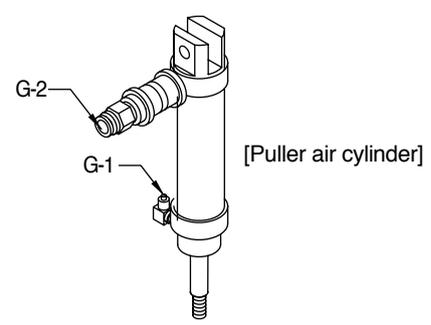
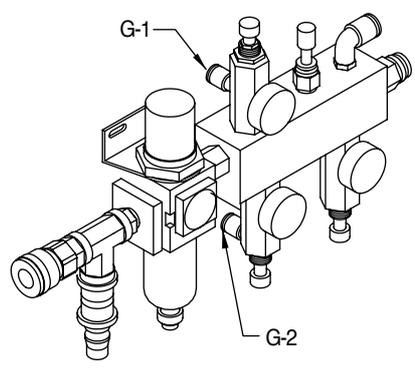
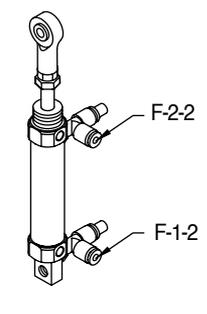
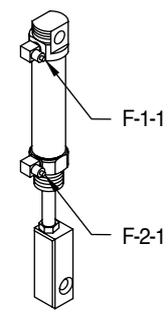
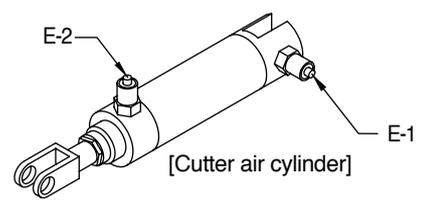
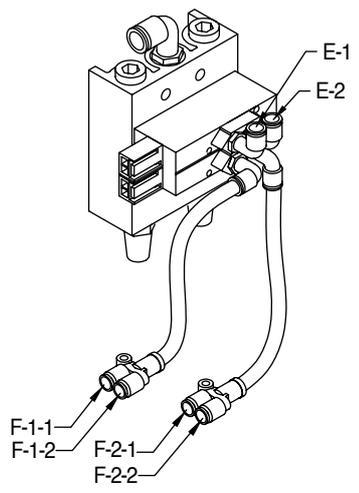
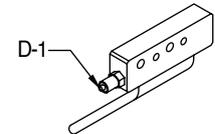
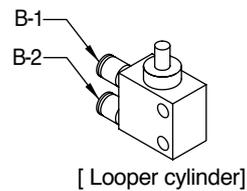
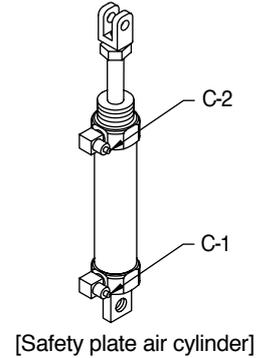
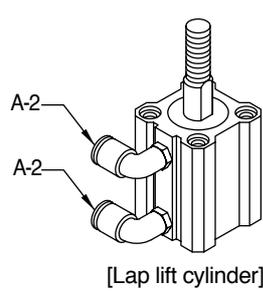
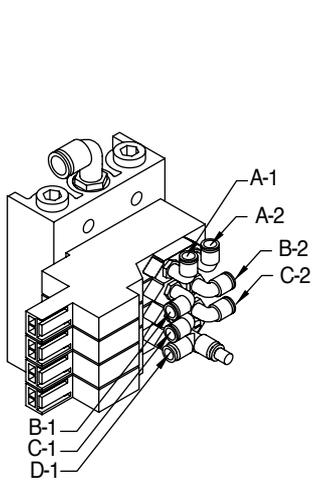
1	Presser Foot
2	Skip Stitch
3	Safety Cover
4	Cooler
5	Cutter
6	Grip



Caution

The power switch must be turned off before adjusting the sewing machine.

► Pneumatic hose connection diagram



## 4

## Power Voltage and Control Box Cable Connection

### 4.1) Power Voltage and Power Cord Connection

#### 1) Voltage

The tag to the power cord describes voltage specifications as below.

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

The Electric Specification of This Machine is Connected Under  Marked.

단상 (1 Phase)

삼상 (3 Phase)

110V  120V  220V  240V  220V  240V

(1) Do not use the machine if the voltage is different from the specifications.

(2) To change the voltage in use, see "How to change power voltage."

- 1-phase connection (100V, 110V, 120V, 200V, 220V, 240V)
- 3-phase connection (200V, 220V, 240V, 380V)



Caution

In case of 3-phase 380V, a separate transformer box should be installed on the table (please check this out when ordering).

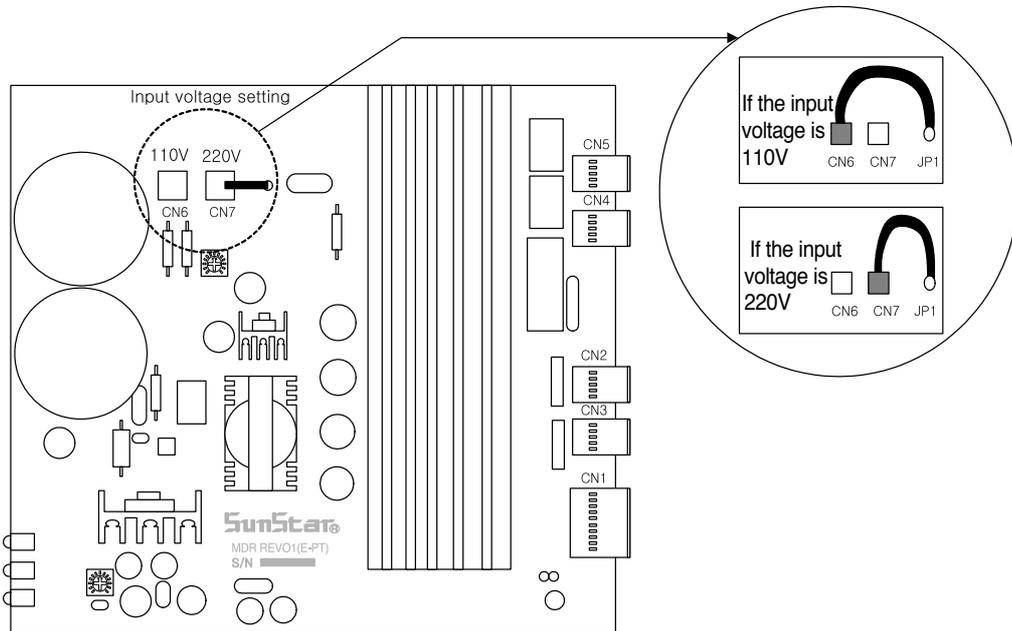
## 2) How to Change Power Voltage

- Since SMPS is used, the constant voltage can be maintained even with the input voltage change.
- Since free voltage is used, the switch connector should be used to change the main shaft board voltage between 110V and 220V.



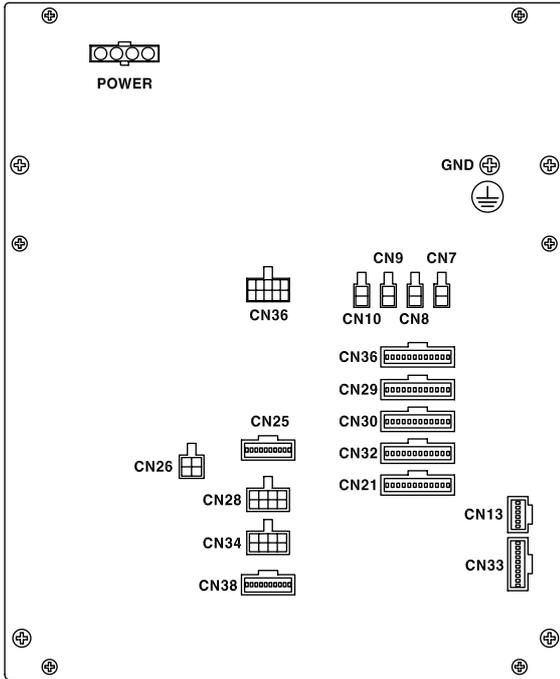
Caution

If the voltage switch connector setting is wrong, it may damage the control box.

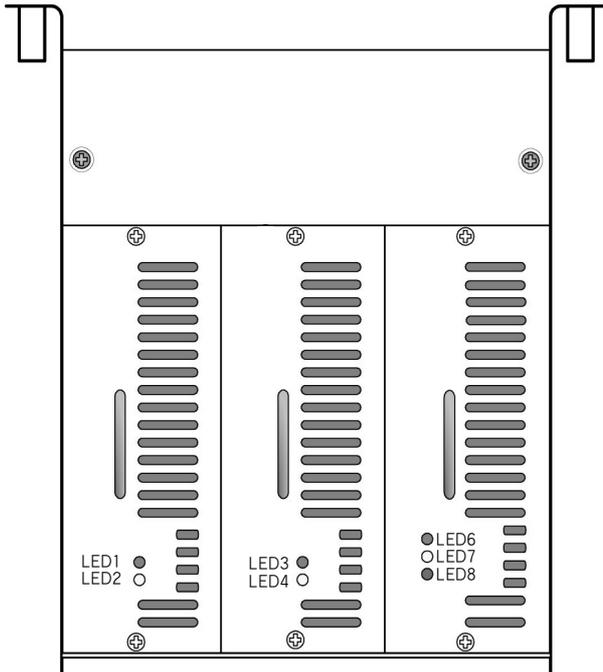


# 5

## Control Box Cable Connection



[Rear cover of control box]

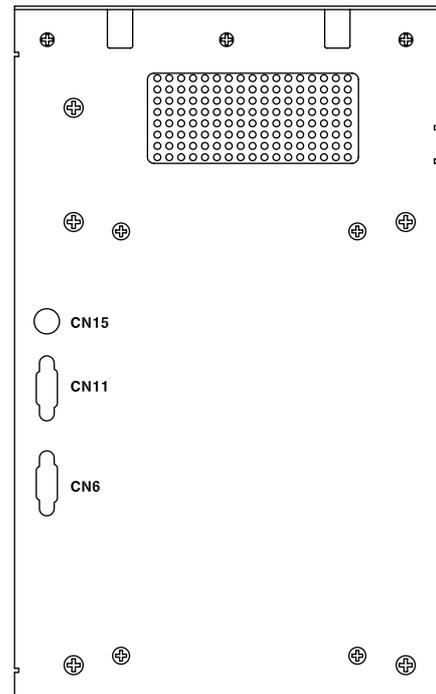


[Front cover of control box]

No.	Cable Name	Control Box Connector
1	Electronic solenoid/pneumatic output cable connection	CN7, CN8, CN9, CN10
	Pneumatic output cable connection	CN14
2	Safety switch cable	CN29
	Lap switch cable	
3	Photo sensor connection cable	CN30
4	Detection sensor cable	CN32
	Needle bar original sensor cable	
5	Pedal input cable	CN33
6	P-shaft step motor connection	CN36
7	X-shaft step motor connection	CN25
	X-shaft step motor encoder cable	
8	Y-shaft step motor connection	CN34
	Y-shaft step motor encoder cable	
9	Grounding cable	Connection to GND
10	External power input cable	Connection to power

※ Connector specifications for auxiliary input/output

No.	Cable Name	Control Box Connector
1	Signal input connector	CN21
2	Potential meter input connector	CN13



[Side cover of control box]

No.	Cable Name	Control Box Connector
-	OP Unit cable	CN15
-	Embedded synchro cable	CN6
-	Main shaft motor encoder cable	

# 6

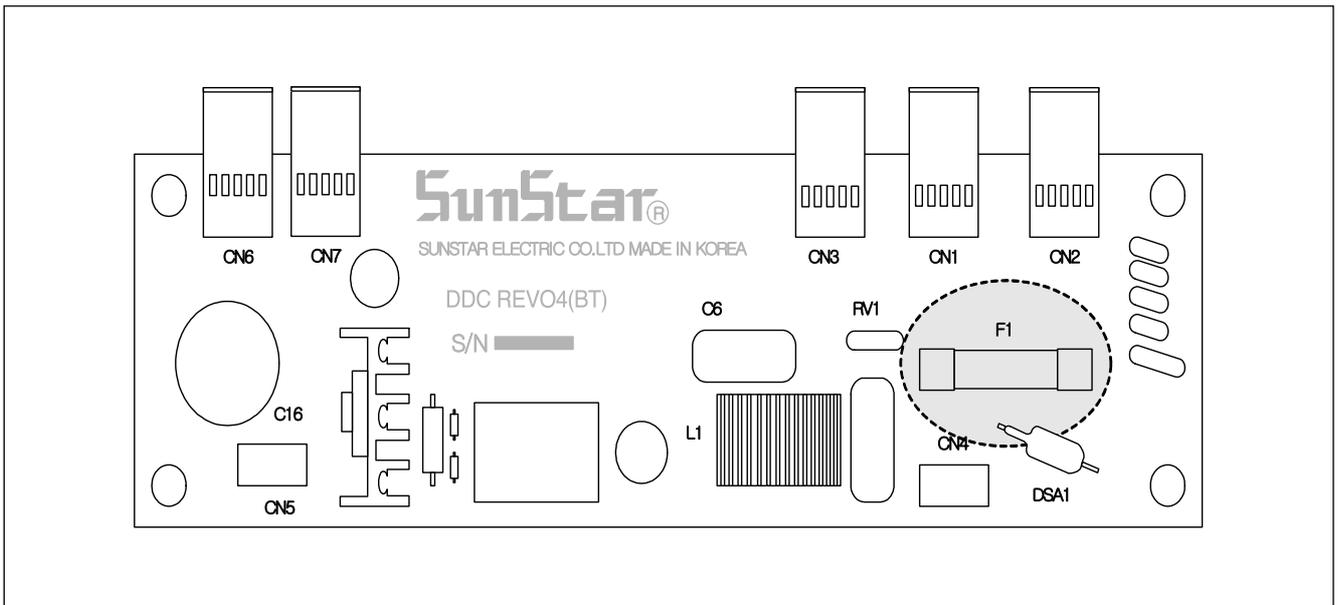
## Fuse Replacement



Caution

- To prevent electric shock, wait 5 minutes before opening the cover after the power is turned off.
- Turn off the power before opening the control box cover and then replace with the fuse of proper capacity.

1) The shaded part is for the fuse connection.



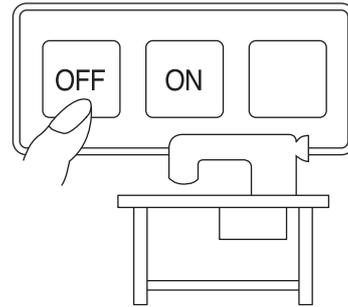
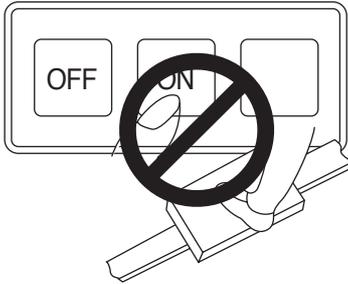
2) Fuse Capacity and Use

No.	Capacity	Use
F1	15A	Protection of main power

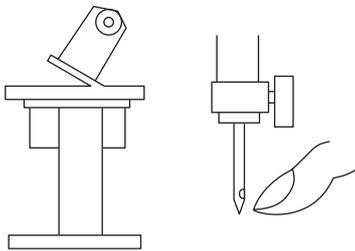
# 7

## Checkpoints Before Use

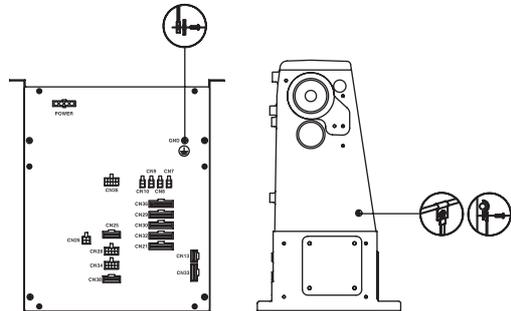
1. Do not turn on the power while the pedal is being stepped.
2. Turn off the power when user leaves the workplace.



3. Turn off the power for machine repair or needle replacement.



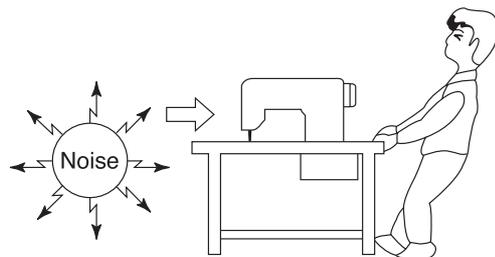
4. Connect the ground wire.



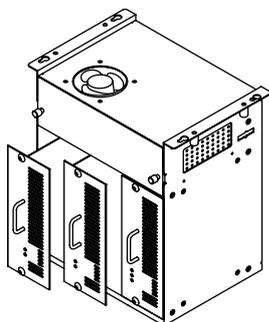
5. Do not use various motors from one electric outlet.



6. Install the machine as much as away from the place where noise is generated such as high-frequency welder.



7. When the control box is disassembled, be alert to the high voltage (make the disassembly at least 6 minutes after the power-off).



8. When error occurs, check the error number. Turn off the power and turn it on again to use the machine (if the same error recurs, contact the sales shop for inquiry).



# 8

## Location Detector (Synchronizer) Adjustment

### 8.1) Location Detector (Synchronizer) Adjusting Methods

1) The synchronizer is attached to the sewing machine.

Therefore when the machine is shipped out, the synchronizer is attached as default.

2) Needle bar upper/lower stop position setting with the program unit

When the sewing machine is purchased, step on the pedal and operate the motor for 5 seconds before actual sewing. Then the pulley size and the upper/lower stop position of the needle bar are automatically memorized.

3) Needle bar upper/lower stop position setting with the program unit

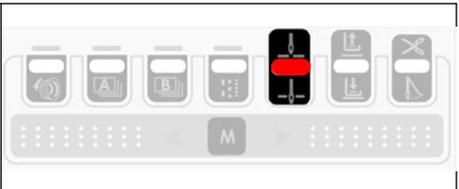
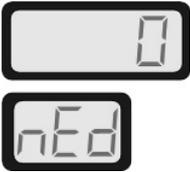
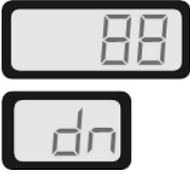
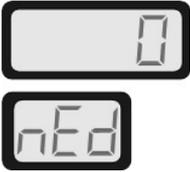
(1) The controller of the sewing machine enables the convenient setting of the needle bar upper/lower stop position using the program unit without changing the synchronizer's setting.

(2) Needle bar upper/lower stop position setting with the program unit

① Needle bar upper stop position setting

<p>(a) Press the <b>M</b> button, and then light is on in .</p>	
<p>(b) Use the <b>+</b>, <b>-</b> buttons (left and right buttons of the dial) to move to the needle bar upper stop position mode.</p>	
<p>(c) When the  button is pressed for longer than 3 seconds, the numerical number appears on the 4-digit display with the beep sound as in the right figure indicating the current position. The 3-digit display shows UP (meaning upper stop position).</p>	
<p>(d) User should turn the pulley in the forward direction manually to locate the needle bar at the desired upper stop position. Then 4-digit display shows the changed needle bar position.</p>	
<p>(e) When the needle bar moves to the desired position, press the <b>M</b> button to save the location. Then the screen returns to the needle bar upper/lower stop position setting mode with the beep sound.</p>	

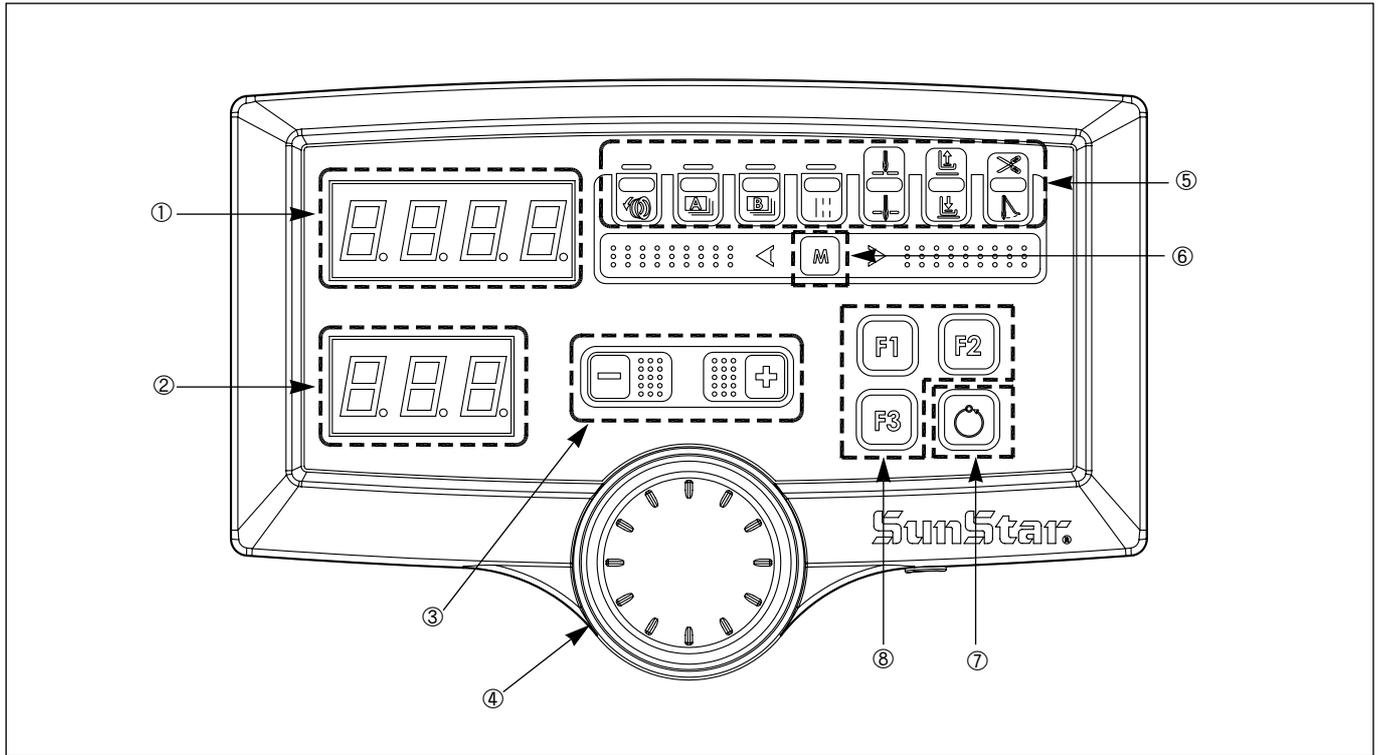
② Needle bar lower stop position setting

<p>(a) Press the <b>M</b> button, and then light is on in .</p>	
<p>(b) Use the <b>+</b>, <b>-</b> buttons (left and right buttons of the dial) to move to the needle bar lower stop position mode.</p>	
<p>(c) When the  button is pressed for longer than 3 seconds, the numerical number appears on the 4-digit display with the beep sound as in the right figure indicating the current position. The 3-digit display shows dn (meaning lower stop position).</p>	
<p>(d) User should turn the pulley in the forward direction manually to locate the needle bar at the desired lower stop position. Then 4-digit display shows the changed needle bar position.</p>	
<p>(e) When the needle bar moves to the desired position, press the <b>M</b> button to save the location. Then the screen returns to the needle bar upper/lower stop position setting mode with the beep sound.</p>	

# 9

## Parts and Use of Program Unit

### 9.1) Parts Name of Parameter Unit



- ① 4-digit display
- ② 3-digit display
- ③ Increase/decrease buttons
- ④ Increase/decrease dial
- ⑤ Mode select lamps
- ⑥ Mode select button
- ⑦ Parameter entry/exit button
- ⑧ Function select buttons

## 9.2) Function Description of Program Unit Parts

Part Name	Image	Function
① 4-digit display		They are the displays where current information and status of the sewing machine appears.
② 3-digit display		
③ Increase/decrease buttons		They increase or decrease the values of each mode and parameter.
④ Increase/decrease dial		It increases or decreases the number of each mode and parameter.
⑤ Mode select lamps		They show the mode selected which is necessary for sewing machine setting.
⑥ Mode select button		It selects the mode necessary for sewing machine setting and saves parameter values.
⑦ Function select buttons		They are used to enter each parameter group and use hot keys. ※ Hot keys F1: Fine feed adjustment F2: Auto Process select
⑧ Parameter entry/exit button		It is used to enter or exit each parameter together with the function select buttons and to save the set values of each hot key.

### 9.3) How to Use the Program Unit

#### (1) Function and Use of 4-Digit and 3-Digit Displays

<p>① When the power is on, the screens appear initially as in the right figure. The 4-digit display shows the sewing speed, and the 3-digit display shows the current stitch length. This is the situation where all select lamps are off.</p>	 <p>&lt;Initial Display&gt;</p>
<p>② In addition, the 4-digit display shows concerned error numbers for the errors detected. It shows set values when setting detailed parameters. In addition, the 3-digit display shows the name of the message displayed on the 4-digit display or the detailed parameter setting number.</p>	 <p>&lt;Examples of errors detected&gt;</p>  <p>&lt;Example of A group display&gt;</p>

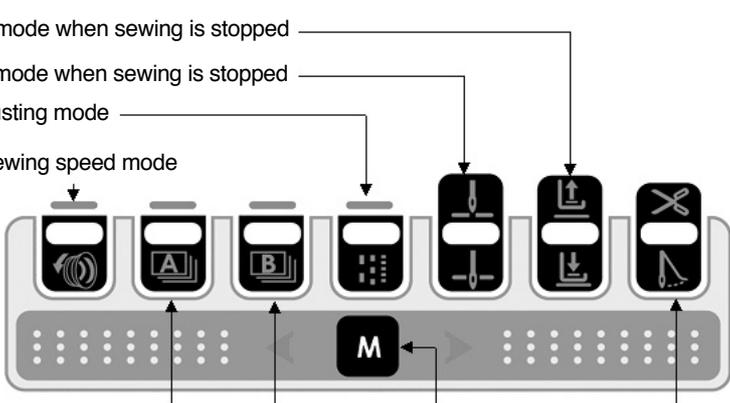


Caution

Along with the 4-digit and 3-digit displays, various lamps indicate the current status of the sewing machine. Therefore, user needs to check them out before machine operation.

#### (2) Using the Mode Select Button

##### ① Name of Select Modes



Needle bar position setting mode when sewing is stopped

Presser foot position setting mode when sewing is stopped

Feed adjusting mode

Sewing speed mode

Counter A   Counter B   Mode select button

Trimming and wiper setting mode  
 ※ This is not used in the SC8100J series.

※ Whenever **M** is pressed, the mode is switched from left to right.  
 However, if the automatic waist band production function (Auto) is set at "0 (Disable)", Counter A and Counter B modes are disabled.



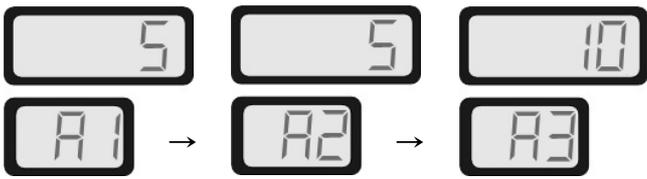
Caution

- Sewing mode cannot be adjusted in the middle of sewing. To change the mode, make sure to step the pedal backward.
- After moving to the most far right-side mode, all select lamps are turned off. And the current sewing speed value appears on the 4-digit display, while the current feed value appears on the 3-digit display.

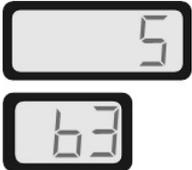
### ② Sewing mode setting

<p>(a) Press <b>M</b>. When light is on in , speed can be set.</p>	
<p>(b) The current speed appears on the 4-digit display, and SPd (speed: abbreviation of speed) appears on the 3-digit display.          ※ Speed change unit: 20[spm]</p>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

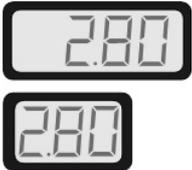
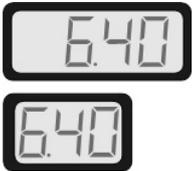
### ③ Counter A Mode Setting (Automated function mode)

<p>(a) Press <b>M</b>. When light is on in , Counter A can be set.</p>	
<p>(b) Whenever pressing <b>M</b>, the stitch number appears on the 4-digit display, and the counter number appears on the 3-digit display.          ※ After Counter A3, Counter B1 follows.          ※ For detailed methods of using Counter A, see "Roles of each counter when using the automatic waist band production process."</p>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

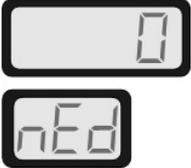
#### ④ Counter B Mode Setting (Automated function mode)

<p>(a) Press <b>M</b>. When light is on in <b>B</b>, Counter B can be set.</p>	
<p>(b) Whenever pressing <b>M</b>, the stitch number of each counter appears on the 4-digit display, and the counter number appears on the 3-digit display.</p> <ul style="list-style-type: none"> <li>※ After Counter B3, each counter number appears.</li> <li>※ For detailed methods of using Counter B, see “Roles of each counter when using the automatic waist band production process.”</li> </ul>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

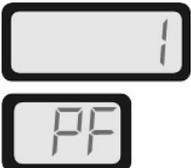
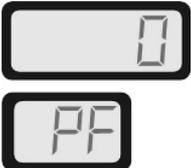
#### ⑤ Feed Adjusting Mode Setting

<p>(a) Press <b>M</b>. When light is on in <b>B</b>, feed can be adjusted.</p>	
<p>(b) The both 4-digit and 3-digit displays show the current feed.</p> <ul style="list-style-type: none"> <li>※ Feed range: 2.8[mm] ~ 6.40[mm]</li> <li>Feed adjustment range: 0.25[mm]</li> </ul>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

### ⑥ Needle Bar Position Setting When Sewing Is Stopped

<p>(a) Press <b>M</b>. When light is on in , stitch length can be set.</p>	
<p>(b) The 4-digit display shows the current needle bar mode. The 3-digit display shows nEd (meaning needle bar: abbreviation of needle bar).          ※ Needle bar mode on the 4-digit display          1: upper stop          2: lower stop</p>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

### ⑦ Presser Foot Position Setting When Sewing Is Stopped

<p>(a) Press <b>M</b>. When light is on in , stitch length can be set.</p>	
<p>(b) The 4-digit display shows the current needle bar mode. The 3-digit display shows PF (meaning presser foot: abbreviation of presser foot lift).          ※ Presser foot mode on the 4-digit display          1: upper stop          2: lower stop</p>	
<p>(c) Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value.</p>	

### ⑧ Trimmer and Wiper Setting

※ This function is not applicable to the SC8100J series.

# 10

## Settings

### 10.1) Feed setting

#### (1) Fine feed adjustment

<p>① When it is necessary to adjust the feed in a more detailed manner than the feed adjusted in the feed adjustment mode , use the following method.</p>	
<p>② Press the  button for at least three seconds to move to the fine feed adjustment mode and set the feed.</p> <p>※ Fine feed adjustment range : -1.0[mm] ~ +1.0[mm] Adjustment unit : 0.1[mm] each time</p>	
<p>③ Press  after the setting is complete to save the set value.</p>	

#### (2) Feeding Start Position Setting

<p>① Press  to go to the needle bar position select mode.</p>		
<p>② Press  for a while, and the current needle bar angle is displayed.</p>		
<p>③ Manually turn the hand pulley forward. Check the angle value "A" when the needle enters the needle plate and the angle value "B" when the needle escapes the needle plate.</p>	 <p>&lt;Angle value "A" when the needle enters the needle plate&gt;</p>	 <p>&lt;Angle value "B" when the needle escapes the needle plate&gt;</p>
<p>④ Press  to exit the needle bar angle display mode.</p>		

<p>⑤ Enter “A” into Parameter A-47 and press <b>M</b> to save the value.</p>	 
<p>⑥ Enter “B” into Parameter A-48 and press <b>M</b> to save the value.</p>	 
<p>⑦ Press  to exit the parameter mode.</p>	 

 <b>Caution</b>	<p>After a value is entered into Parameter A-47 (or Parameter 48), the value is not saved if <b>M</b> is not pressed.</p>
---	---

## 10.2) Auto Waist Band Production Process

(1) Ensure that the basic sewing motion is normal before using the automatic production process.

 <b>Caution</b>	<p>If the automatic production process is used without checking proper motion of the sewing machine, physical damage might occur.</p>
---	---

(2) How to Use

<p>&lt;Hot Key&gt;</p> <p>① Press <b>F2</b> for three seconds or longer. With beep sound, “AUTO” appears on the 4-digit display, and “0” appears on the 3-digit display respectively.</p>	 										
<p>② Use <b>+</b> (increase) and <b>-</b> (decrease) (or the left and right buttons of the dial) to set a desired value. Then press <b>F2</b> to save the value.</p> <table border="1" data-bbox="172 1868 1141 2049"> <thead> <tr> <th>Mode</th> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="3">AUTO</td> <td>0</td> <td>Basic sewing mode</td> </tr> <tr> <td>1</td> <td>Automated process mode 1 (possible individual work)</td> </tr> <tr> <td>2</td> <td>Automated process mode 2 (repeated work function)</td> </tr> </tbody> </table>	Mode	Value	Description	AUTO	0	Basic sewing mode	1	Automated process mode 1 (possible individual work)	2	Automated process mode 2 (repeated work function)	  <p>or</p>  
Mode	Value	Description									
AUTO	0	Basic sewing mode									
	1	Automated process mode 1 (possible individual work)									
	2	Automated process mode 2 (repeated work function)									

<Parameter>

When Parameter #A-56 is set at 1 or 2, the automated process mode becomes selected.

Parameter	Value	Description
A-56	0	Basic sewing mode
	1	Automated process mode 1 (possible individual work)
	2	Automated process mode 2 (repeated work function)



Press the set value at Parameter No. A-56. Make sure to press the **M** button to save.



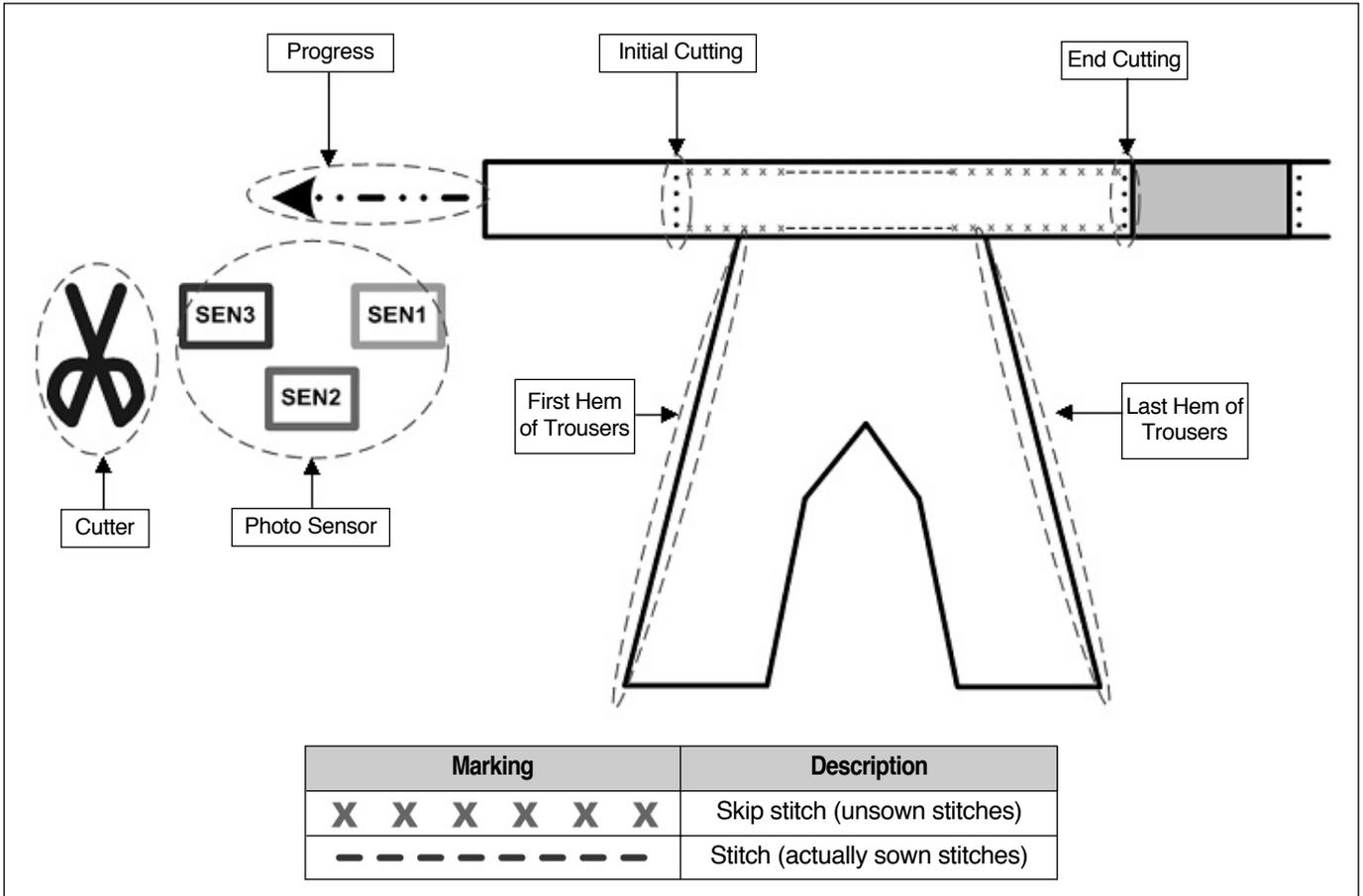
When the auto process mode is in use, the cutter motion could be very dangerous. If it is necessary to place a hand behind the needle bar or near the feed device to adjust the cutter or the sensor, the power and pneumatic pressure should be turned off.

### (3) Roles of Each Counter Upon Auto Process

Counter	Basic Stitch Number	Description
A1 (Start Skip Stitch)	5	It sets a value for stitch skip on the inner side of the first hem of trousers (When the photo sensor 1 detects the first hem of trousers, stitches are created as many as the set value at Counter A1).
A2 (End Skip Stitch)	5	It sets a value for stitch skip on the inner side of the last hem of trousers (When the photo sensor 3 detects the last hem of trousers, stitches are created as many as the set value at Counter A2).
A3 (Grip Motion)	10	It pulls backward the fabric before the end cutter operates. If the fabric is not properly pulled back when the end cutter operates, reduce the value (When the photo sensor 2 detects the last hem of trousers, stitches are created as many as the set value at Counter A3 and then grip starts operating).
B1 (Initial cutting Length)	3	It sets the value for the initial cutting timing (When the photo sensor 3 detects the first hem of trousers, stitches are created as many as the set value at Counter B1 at a certain speed (2000[rpm]) and the cutter starts operating).
B2 (Not used)	Not used	Not used
B3 (End Cutting Length)	15	It sets the value for the end cutting operating timing (When the photo sensor passes the last hem of trousers, stitches are created as many as the set value at Counter B3 at a certain speed (2000[rpm]) and the cutter starts operating).

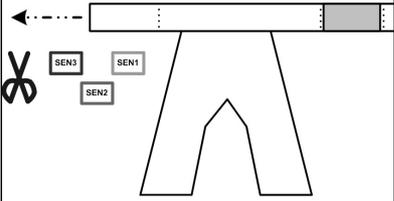
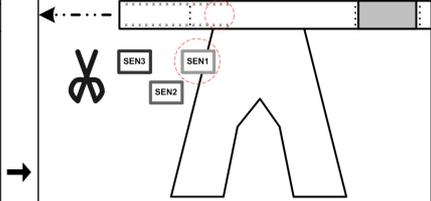
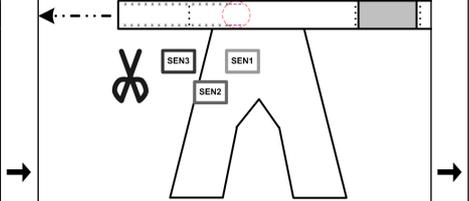
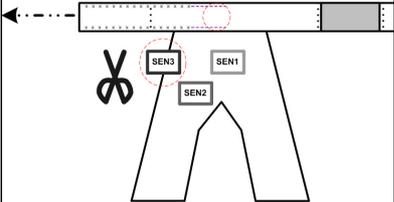
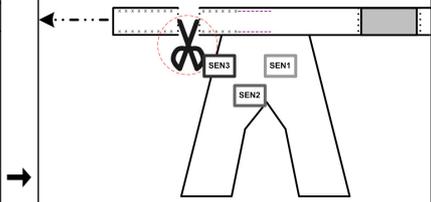
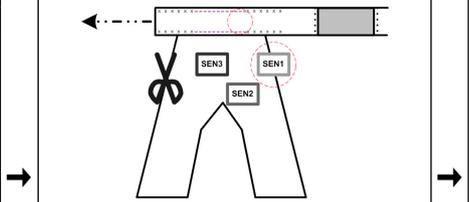
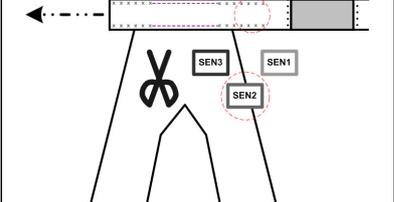
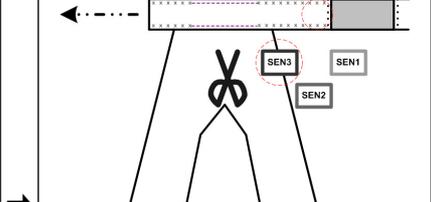
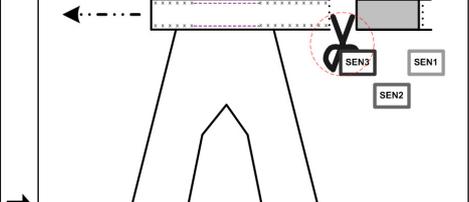
(4) Auto Process Workflow

① Terms and Names



 **Caution** When the Auto Process mode is in use, the cutter motion could be very dangerous. If it is necessary to place a hand behind the needle bar or near the feed device to adjust the cutter or the sensor, the power and pneumatic pressure should be turned off.

② Workflow for automated process mode 1 (possible individual work)

Process Sequence			
M/C Operation	<p>① Press the pedal to start sewing.            ※ When the pedal is pressed, the retainer looper escapes. Until Counter A1 is finished, skip stitches are created.</p>	<p>② When Photo Sensor 1 detects the first hem of trousers, Counter A1 starts counting.            ③ Skip stitches are created as many as the set value at Counter A1.</p>	<p>④ When Counter A1 is finished, the retainer looper is inserted and sewing begins.</p>
Process Sequence			
M/C Operation	<p>⑤ When Photo Sensor 3 detects trousers, Counter B1 starts counting.            ⑥ Stitches are created as many as the set value at Counter B1 at the speed of 2000[rpm].</p>	<p>⑦ When Counter B1 is finished, the initial cutting is performed by the cutter.            ※ Until Photo Sensor 1 detects the final hem of trousers after cutting, actual stitches are created.</p>	<p>⑧ When Photo Sensor 1 detects the final hem of trousers, Counter A2 starts counting.            ⑨ Stitches are created as many as the set value at Counter A2.            ※ After performing the sewing as set at the A2 counter, the retainer looper slips away, and the skip stitching is conducted.</p>
Process Sequence			
M/C Operation	<p>⑩ When Photo Sensor 2 detects the final hem of trousers, Counter A3 starts counting.            ⑪ After performing the sewing as set at the A3 counter, the figure comes to operate.</p>	<p>⑫ When Photo Sensor 3 detects the final hem of trousers, Counter B3 starts counting.            ⑬ Stitches are created as many as the set value at Counter B3 at the speed of 2000[rpm].</p>	<p>⑭ End cutting is performed.            ※ After the end cutting is performed until user removes feet from the pedal and presses the pedal again, all M/C functions are suspended.</p>

③ Workflow of automated process mode 2 (repeated work function)

Process Sequence			
M/C Operation	<p>① Press the pedal to start sewing.            ※ When the pedal is pressed, the retainer looper escapes. Until Counter A1 is finished, skip stitches are created.</p>	<p>② When Photo Sensor 1 detects the first hem of trousers, Counter A1 starts counting.            ③ Skip stitches are created as many as the set value at Counter A1.</p>	<p>④ When Counter A1 is finished, the retainer looper is inserted and sewing begins.</p>
Process Sequence			
M/C Operation	<p>⑤ When Photo Sensor 3 detects trousers, Counter B1 starts counting.            ⑥ Stitches are created as many as the set value at Counter B1 at the speed of 2000[rpm].</p>	<p>⑦ When Counter B1 is finished, the initial cutting is performed by the cutter.            ※ Until Photo Sensor 1 detects the final hem of trousers after cutting, actual stitches are created.</p>	<p>⑧ When Photo Sensor 1 detects the final hem of trousers, Counter A2 starts counting.            ⑨ Stitches are created as many as the set value at Counter A2.            ※ After performing the sewing as set at the A2 counter, the retainer looper is released, and the skip stitching is conducted.</p>
Process Sequence			
M/C Operation	<p>⑩ When the photo sensor 2 detects the hem of trousers, sewing is suspended for a while to insert another sewing material.            ⑪ After inserting another sewing material, move the pedal forward at the neutral position. And then the A3 counter starts counting again.            ⑫ After performing the sewing as set at the A3 counter, the grip comes to operate.</p>	<p>⑬ When Photo Sensor 3 detects the final hem of trousers, Counter B3 starts counting.            ⑭ Stitches are created as many as the set value at Counter B3 at the speed of 2000[rpm].            ⑮ If the photo sensor 1 detects anything during the operation of the A3 counter, the work process returns to No. 2 and starts the process all over again.</p>	<p>⑯ End cutting is performed.</p>

# 11

## Using Parameters

### 11.1) Initialization

While **F1** is pressed, turn on the power.

**F1** + "Power On"

Return to default values

Init

-0



Caution

- When initialization is performed, all user defined values are returned to default values set when the machine is shipped out from factory. Therefore do not use the initialization function unless it is necessary.
- After initialization, the rotary operation should be conducted at the speed of 1000[rpm] or above in order to memorize the position detector's location.

### 11.2) Checking or Altering Detailed Parameter Values

① While  is pressed, immediately press **F1**. Then the machine is in the mode of checking or altering the set values of Group A parameters. (Group A: **F1**, Group **F2** : , Group C: **F3** )

Pr 1

00

② Use **F1** (increase) and **F3** (decrease) to move to desired parameters. The 2-digit display shows parameter number, while the 4-digit display shows set parameter value (i.e. Max. sewing speed set at Group A, Parameter 2).

3500

02

③ Use **+** (increase) and **-** (decrease) (or Dial CW/CCW) to set a desired value and press **M** to save. (i.e. Change the maximum speed from 3500PRM to 2000RPM).

2000

02

④ When the value is saved, press  to return to the initial screen.

2000

SPD

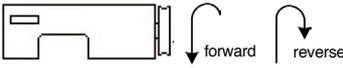


Caution

- If **M** is not pressed, changed parameter values will not be saved.
- If the detailed parameter values are changed at the discretion of user, it may cause machine breakdown or physical damage. To avoid undesired situations, user should have a full understanding of parameters before altering parameter groups.

### 11.3) Parameter Details

(1) Group A Parameters: They are related to general sewing machine functions

No	Function	Default Value	Range	Step	Remarks
1	Minimum pedal speed (minimum sewing speed limit)	200	20~510	2[spm]	
2	Maximum pedal speed (maximum sewing speed limit)	3500	20~9960	20[spm]	
3	Not Used				
4	Waiting time to next motion after cutting (delay time until the next motion is performed after cutting)	4	4~1020	2[spm]	
5	Cutter safety guide operating time	40	10~2000	10[ms]	
6	Not Used				
7	Cutter operating time	300	100~3000	100[ms]	
8	Post trimming reverse spin select	0	0/1	0 : Forward spinning 1 : Reserve spinning	
9	Reverse spinning distance if post trimming reverse spin is selected	20	0~250	1[degree]	
10	Pulley fixed when stopped	0	0/1	1: Pulley fixed when stopped	
11	Fixing force when the pulley is fixed at A10	40	10~100	1	
12	Recovery distance upon forced spinning when the pulley is fixed at A10	20	10~100	1[degree]	
13	Motor spinning direction select (forward, reverse) 	1	0/1	0: reverse 1: forward	
14~	Not Used				
46	Not Used				
47	Fitting motor driving angle setting 1 (Needle bar's needle plate entry angle setting)	80	0~359	1[degree]	
48	Fitting motor driving angle setting 2 (Needle bar's needle plate entry angle setting)	280	0~359	1[degree]	
49	Fitting motor spinning type setting	2	0/1/2	※ See the footnote	
50	Photo sensor 1 on delay time	0	0~250	1[ms]	
51	Photo sensor 1 off delay time	0	0~250	1[ms]	
52	Photo sensor 2 on delay time	0	0~250	1[ms]	
53	Photo sensor 2 off delay time	0	0~250	1[ms]	
54	Photo sensor 3 on delay time	0	0~250	1[ms]	
55	Photo sensor 3 off delay time	0	0~250	1[ms]	
56	SC8100J auto process mode select	0	0/1	0: normal mode 1: auto process mode	

※ Footnote:

A-49 mode

0: Fitting motor will spin when the needle is below the needle plate during sewing.

1: Fitting motor will spin regardless of needle location during sewing.

2: Fitting motor will spin at the "0" mode at the low speed, while it will spin at the "1" mode at the high speed.

(2) Group B Parameters: They check input/output motions.

No	Function	Default Value	Range	Step	Remarks
1	Cutter guide solenoid test	※ Set the solenoid number desired to test. Press <b>M</b> on PU and check the motion status. → "ON" or "OFF" is displayed.			
2	Skip solenoid test				
3	Cutter solenoid test				
4	Grip solenoid test				
5	Presser foot solenoid test				
6	Air cooler solenoid test				
7~	Not used				
29	Not used				
30	Pedal test			Pedal forward: Ft Pedal neutral: nt Pedal backward: PF	
31	Photo sensor 1 test	※ "ON" or "OFF" is displayed when there is an input.			
32	Photo sensor 2 test				
33	Photo sensor 3 test				
34	Detection sensor test				
35	Safety switch test				
36	Main motor synchro test				
37	Step motor synchro test				
38	Pedal analog output checking		0~64		
39	Synchro signal checking			Increase at each time of sewing operation	
40	Encoder A/B signal checking			1) Increase during the forward spinning 2) Decrease during the reverse spinning	
41	Encoder R/S/T signal checking			1) During forward spinning Displayed as 101→100→110→101→011→001→101 2) During reverse spinning Displayed as 101→001→011→010→110→100→101	
42~	Not Used				
49	Not Used				
50	Allowing the cutter guide solenoid operation	1	0/1	0:Disable 1:Enable	
51	Allowing the slip solenoid operation	1	0/1	0:Disable 1:Enable	
52	Allowing the cutter solenoid operation	1	0/1	0:Disable 1:Enable	
53	Allowing the grip solenoid operation	1	0/1	0:Disable 1:Enable	
54	Allowing the presser foot solenoid operation	1	0/1	0:Disable 1:Enable	
55	Allowing the air cooler solenoid operation	1	0/1	0:Disable 1:Enable	
56	Allowing the step motor operation	1	0/1	0:Disable 1:Enable	
57~	Not Used				
59	Not Used				
60	Allowing the safety switch operation	1	0/1	0:Disable 1:Enable	

(3) Group C Parameters: They set various gains relating to pedal speed acceleration/reduction curve and motor control.

No	Function	Default Value	Range	Step	Remarks
1	Pedal forward phase 1 section	17	0~64	1	
2	Pedal forward phase 2 section	22	0~64	1	
3	Pedal forward phase 3 section	38	0~64	1	
4	Pedal forward phase 4 section	47	0~64	1	
5	Pedal forward phase 5 section	59	0~64	1	
6	Sewing speed value at pedal advance phase 1	440	40~9960	40[spm]	
7	Sewing speed value at pedal advance phase 2	920	40~9960	40[spm]	
8	Sewing speed value at pedal advance phase 3	4000	40~9960	40[spm]	
9	Sewing speed value at pedal advance phase 4	5480	40~9960	40[spm]	
10	Sewing speed value at pedal advance phase 5	9960	40~9960	40[spm]	
11	Maximum motor speed limit	4000	20~5000	20[spm]	
12	Synchro sensor spinning detection time	40 x 0.1	5~1275	0.5[sec]	
13	Overload detection time	30 x 0.1	5~1275	0.5[sec]	
14	Power off detection time	52	4~1020	4[ms]	
15~	Not used				
40	Not used				
41	Speed P-gain	20	0~30	1	
42	Speed D-gain	20	0~300	1	
43	Location P-gain	170	0~500	1	
44	Location D-gain	2000	0~3000	1	
45	Acceleration A accel A	40	1~50	1	
46	Acceleration B accel B	70	1~50	1	
47	Acceleration C accel C	40	1~50	1	
48	Acceleration D accel D	8	1~50	1	
49	Sewing machine inertia value Inertia	40	0~255	1	
50	Positioning speed Wpos	220	100~500	2[rpm]	
51	Stop speed Wstop	75	0~500	2[rpm]	
52	Waiting time for complete stop StopDelay	80	4~1020	4[ms]	
53	Positioning distance DIST1	80	0~255	1[degree]	
54	High-level speed instruction unit Spd_unit	100	1~100	1[spm]	
55	Positioning P-gain Kpp2	400	0~500	1	
56	Positioning D-gain Kpd2	4000	0~5000	1	
57	Positioning P-gain Kpp3	100	0~500	1	
58	Positioning D-gain Kpd3	1800	0~5000	1	

# 12

## Digital Board ROM Replacement



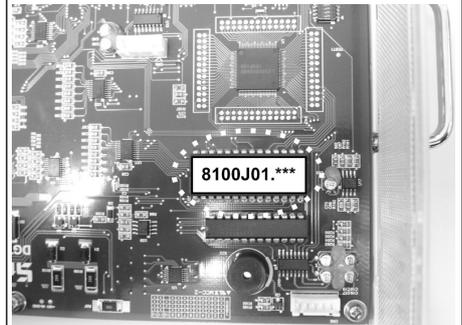
Caution

Professional A/S engineers should perform the replacement. General user is not allowed to perform the replacement.

① Find the sticker on the digital board ROM to check the version.

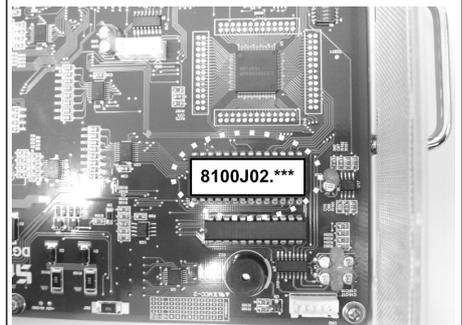
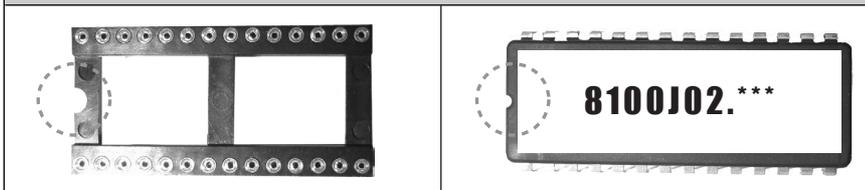
<ROM version reading from the sticker>

Sticker-based ROM version discerning	Version specifications discerning method
	<p>8100J01.000 : General specifications            8100J01.001 or above : User-defined specifications</p>

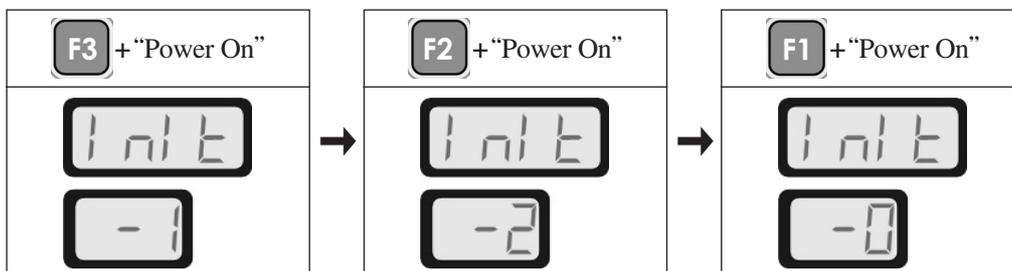


② Prepare a new ROM and perform the replacement.  
 Make sure that ROM is properly placed upon replacement.

The groove of the socket and the groove of ROM should be in the same direction.



③ After ROM replacement, follow the three steps below for initialization.



Caution

- ROM replacement should be performed by professional A/S engineers.
- If ROM replacement is performed by general user, not professional A/S engineer, machine breakdown or physical damage might result.

## Errors and Troubleshooting

※ When the working conditions become abnormal due to unexpected changes in the sewing machine, error messages appear on the program unit as below thanks to the self-diagnostic function. With the display of an error message, the machine stops operation and the alert sound is issued.

Take proper actions according to the error number displayed and resume operation.

If the error remains unresolved, please contact a SunStar sales shop.

No	Error Message	Definition	Troubleshooting
1	OPEN Err	Safety switch error	• Check the safety switch cable and connector
2	PU26 Err	Improper connection of the program unit	• Check the program unit cable and connector
3	FAN Err	FAN error	• Check the proper operation of the fan and the connector
4	STEP Err	Step motor error	• Check the step motor connector and the motor
5	60 Err	The location detector was connected while the power is on.	• Turn off the power and then turn it on again
6	61 Err	The location detector was removed while the power is on.	• Turn off the power and then turn it on again
7	126 Err	The electric current directions of the motor' s revolving magnet and the fixed coil do not match.	• Check the motor' s revolving magnet status
8	127 Err	The direction of the encoder R/S/T does not match the direction of A/B.	• Check the encoder cable and connector
9	128 Err	No encoder R/S/T signals.	• Check the encoder cable and connector
10	129 Err	Overloaded motor	• Manually spin the machine to check the overload level
11	130 Err	No signals from the location detector	• Check the location detector cable and connector
12	131 Err	Excessive electric current running the motor and connector error	• Check the motor cable and connector
13	133 Err	IPM' s excessive electric current cut	• Turn off the power and then turn it on again
14	SF 22	Cutter guide error	• Adjust the cutter guide and the approaching sensor after turning off the power. When adjustment is complete, turn on the power again.

