



USER'S MANUAL

SJS/A-BA2

Direct-Drive, Automatic
2-Needle Belt Loop Sewing
Machine
(Electric · Electronic Part)

- 1) FOR AT MOST USE WITH EASINESS
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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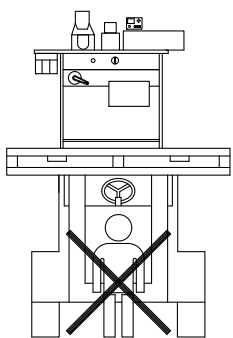
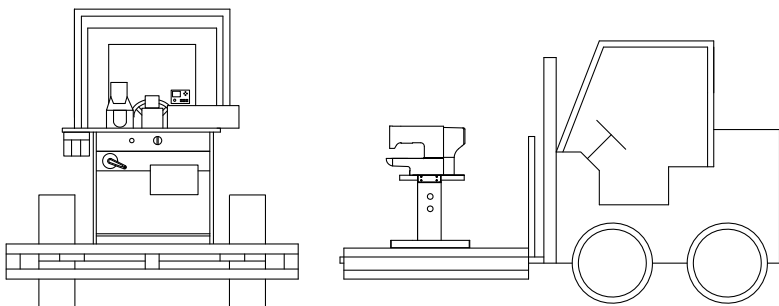

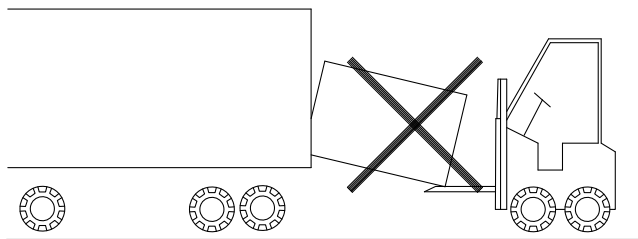
Safety Rules

1.1) 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.


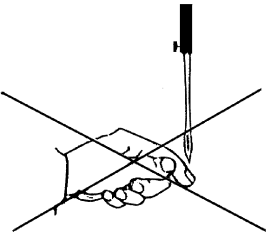
1.2) Machine Delivery

Mark	Description
<div data-bbox="146 533 306 725">  <p>Danger</p> </div> <div data-bbox="108 757 341 1093">  <p>Ban people from standing under the machine and remove obstacles near the machine.</p> </div>	<p>The machine delivery shall be conducted by the persons who are knowledgeable about the safety instructions and rules. The following safety rules must be observed:</p> <p>1.2.1) Manual delivery</p> <p>When the machine is delivered by persons, they shall wear special shoes and tightly hold the machine on the left and right sides.</p> <p>1.2.2) Forklift delivery</p> <ol style="list-style-type: none"> 1) A forklift shall be big enough to endure the weight of the sewing machine and carry the machine. 2) Use the palette when lifting the machine. Set the center of gravity of the machine (center of the left and right sides) at the fork arm of the forklift and carefully lift the machine. <div data-bbox="523 1030 1305 1335">  </div> <div data-bbox="443 1438 545 1563">  <p>Warning</p> </div> <p>Make sure to maintain the balance of the machine when unloading the machine by using a forklift or crane to prevent the deformation of the machine or to prevent people from being exposed to danger.</p> <div data-bbox="587 1675 1228 1912">  </div>



1.3) Machine Installation

	<p>Depending on the installation environment, function errors, breakdown, or other physical damage might result. Make sure to meet the following conditions for machine installation:</p> <ol style="list-style-type: none">1) The workbench or table where the machine is installed should be durable enough to endure the weight of the machine (see the name plate).2) Dust and humidity are the cause of machine pollution and erosion. Please install an air conditioner and conduct regular maintenance of the machine.3) Install the machine at the place where it is not exposed to direct sunlight (if the machine is exposed to direct sunlight for a long time, it may cause discoloration or deformation).4) Secure the space around the machine. Place the machine at least 50cm away from the left, right, and rear walls to secure sufficient space for maintenance activities.5) Explosion risk : To prevent possible explosion, immediately stop the machine operation if there are inflammable materials in the air.6) Lighting : The machine does not offer lighting devices. When necessary, install needed lighting.7) Overturn risk : Do not install the machine on the unstable stand or table. If the machine drops, it may cause injury or severe impact on the machine. If the machine is suddenly stopped or the external impact is imposed, the machine might be capsized.
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1.4) Machine Operation

 	<p>SJS/A-BA2 was designed to conduct sewing on fabric or similar materials. Caution and Warning labels are attached to the machine body to stress the observation of safety directions. Make sure to comply with the followings during the machine operation.</p> <ol style="list-style-type: none">1) Before turning on the power, read this manual thoroughly and have a full understanding of machine operation.2) Get properly dressed. Long hair, necklace, bracelet, or wide sleeve might be fed into the machine during operation. Wear slip-free shoes to prevent slipping on the floor.3) Check the moving scope of machine before its operation to find out whether the scope is proper.4) Keep hands and head away from the machine parts where accidents might occur (needle, hook, thread take-up lever, pulley, etc.) during operation.5) Do not remove the safety cover which protects pulley and shaft during machine operation for user's safety.6) Cut the power supply before disassembling the electric box such as the control box, and double-check that the power switch is "Off."7) Make sure that the power switch is "Off" when the upper shaft is manually rotated.8) Stop the machine when the needle is replaced or when inspecting the machine after sewing work is done.9) Make sure to follow the cautions below. Otherwise, physical damage to the machine such as malfunction and breakdown might result:<ul style="list-style-type: none">– Do not put articles on the S/M table.– Avoid using a crooked needle or the needle with damaged tip.– Use the presser foot appropriate to working conditions.
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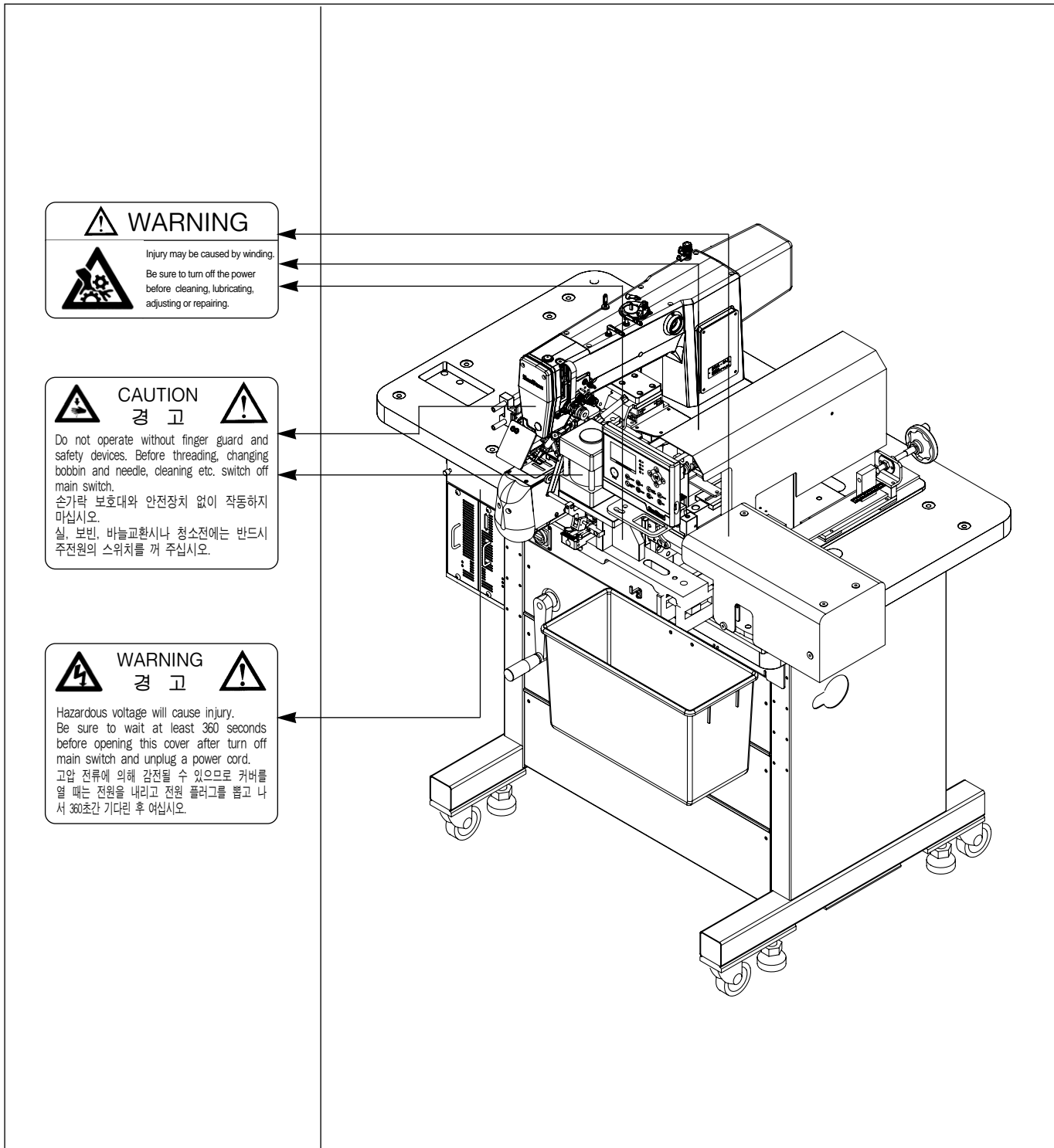
1.5) Repair and Maintenance

 <p>Danger</p>	<p>When machine repair is needed, it shall be conducted by SunStar A/S engineers only who have finished the due training course.</p> <ol style="list-style-type: none"> 1) For cleaning and repair, cut the main power supply. Wait for 4 minutes before starting maintenance to make the machine completely discharged. <div data-bbox="413 582 1402 725">  <p>Caution</p> <p>For main shaft motor and X,Y drive box, it takes 10 minutes before they are completely discharged after the main power supply is cut.</p> </div> <ol style="list-style-type: none"> 2) Do not modify the machine specifications or parts without substantial consultations with SunStar. Otherwise, it may threaten safety during machine operation. 3) Use the parts manufactured by SunStar to repair or replace the machine parts during A/S service. 4) When repairing is completed, re-install all the removed safety covers.
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1.6) Type of Safety Labels

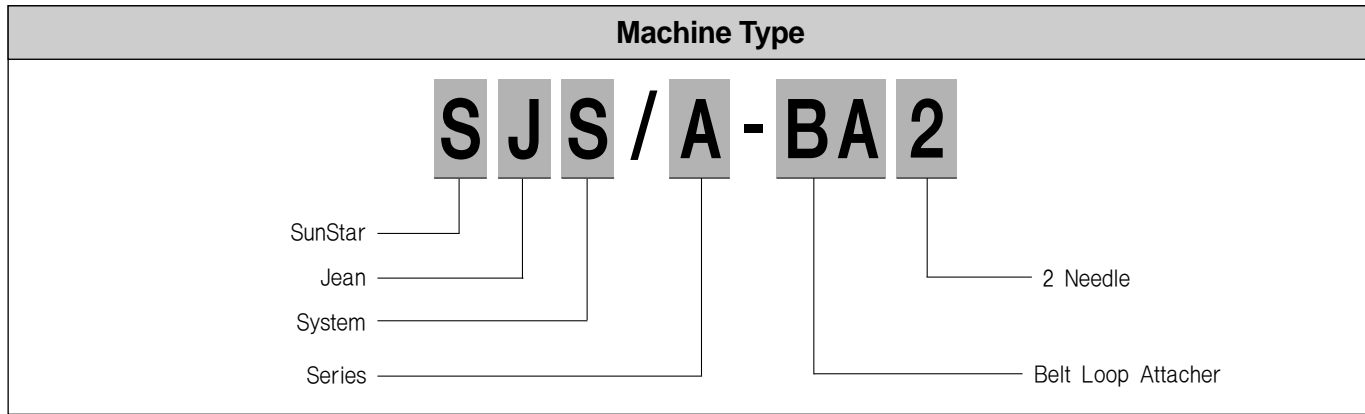
 <p>CAUTION 경고</p> <p>Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch. 손가락 보호대와 안전장치 없이 작동하지 마십시오. 실, 보빈, 바늘교환시나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.</p>	<p>Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, and cleaning, turn off the main switch.</p>
 <p>WARNING 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>	<p>High voltage will cause injury. Be sure to wait for at least 360 seconds after turning off the main switch and unplugging a power cord if the cover needs to be opened.</p>
 <p>WARNING</p> <p>Injury may be caused by winding. Be sure to turn off the power before cleaning, lubricating, adjusting or repairing.</p>	<p>Injury may be caused by winding. Be sure to turn off the power before cleaning, lubricating, adjusting or repairing.</p>

1.7) Location of Safety Labels



Machine Type and Specifications

2.1) Machine Type



2.2) Specifications

Model Type	SJS/A-BA2
Sewing Speed	100~2,800RPM
Belt Loop Length	30~85mm
Belt Loop Width	8~22mm
Sewing Range (X, Y)	X: 22mm Y: 3.2mm
Max. Sewing Speed	Up to 2,800spm
Stitch Length	0.1~10mm
Needle in Use	MR4.0, 4.5
Hook in Use	All-direction revolving vertical large hook (2x)
Presser Foot Lift	Up to 21mm
Average Production	1,900 units (8 hrs 5 loops)
Sensor	10
Solenoid	18 (14 for supplying devices + 4 for sewing machine)
Memory	P-ROM
Table Height Adjustment	300mm
No. of Input Patterns	Up to 99 patterns
Motor Specifications	550W AC Servo Motor
Power consumption	600VA
Feed System	Pulse motor
Operating Temperature	5° C ~ 40° C
Operating Humidity	20%~80%
Pneumatic Pressure in Use	0.5Mpa (5kgf/cm ²)
Power Supply	1-Phase : 100~240V, 3-Phase : 200~440V, 50/60Hz

3

Preparation Before Use

3.1) Power Cord Plugging

■ Voltage Specifications

Voltage is described in the power cord tag as below.

이 기계의 전기 사양은 공장 출고 시 아래의 ☐ V 표기되로 결선되어 있습니다.

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

☐ V 단상 (1 Phase)

☐ V 삼상 (3 Phase)

☐ 110V

☒ 120V


☐ 220V

☐ 240V

☐ 220V

☐ 240V

1. Do not use the machine if the voltage supplied is different from the specifications.
2. See “Voltage Changing Method” to change the voltage used.
 - 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 (check it out when placing a purchase order).

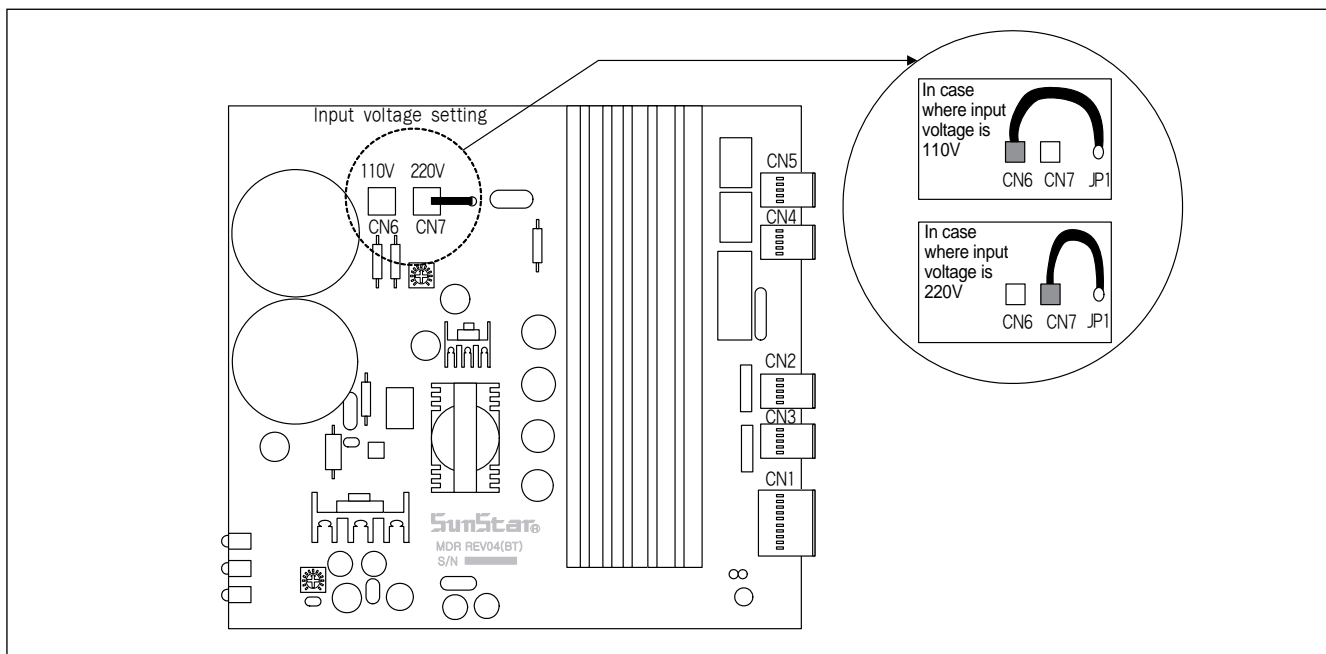
3.2) Voltage Changing Method

- Due to the adoption of SMPS, the voltage remains constant despite change in input voltage.
- Due to the use of free voltage, depending on input voltage, a switch connector should be used to change the main shaft board voltage between 110V and 220V.



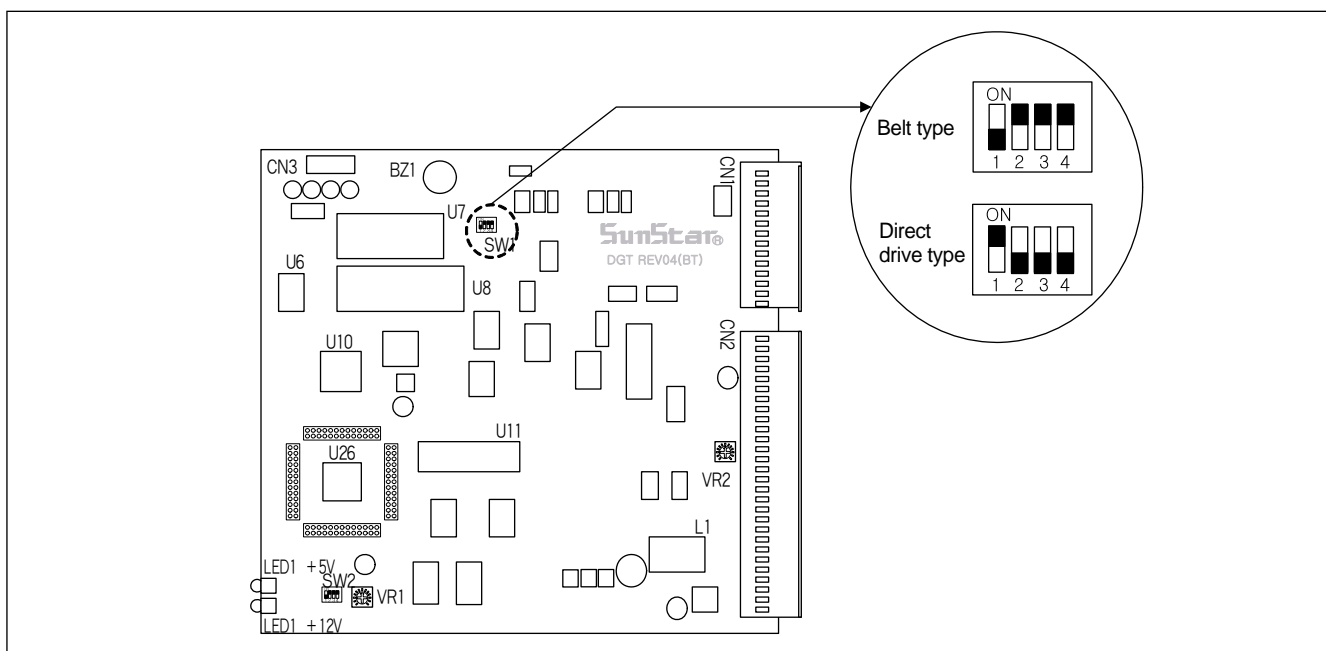
Caution

If the voltage switch connector has a wrong setting, the control box may get damaged.



3.3) Main Shaft Motor Type Setting

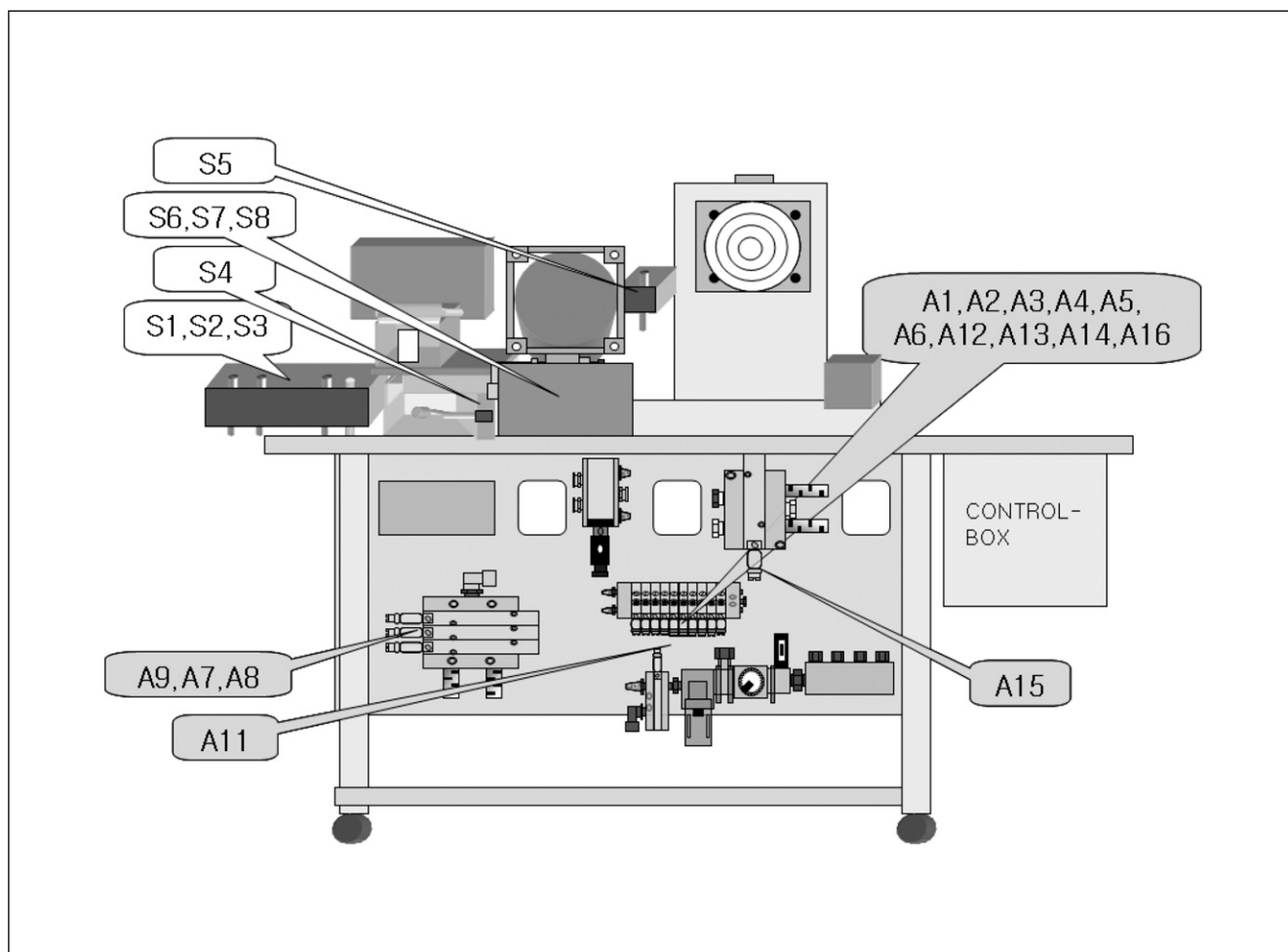
- Use the dip switch for the digital board depending on the main shaft motor type.

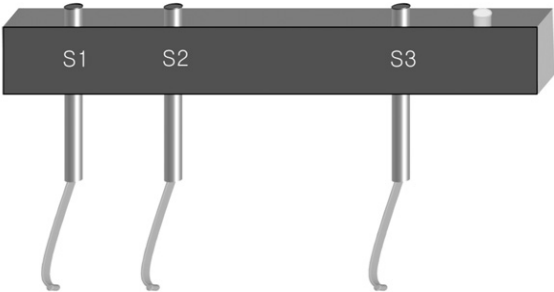
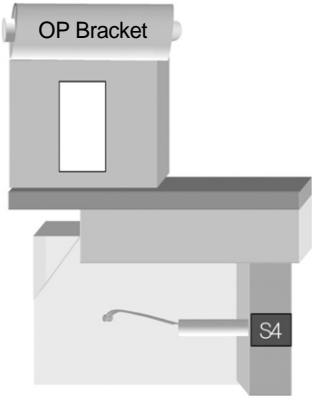
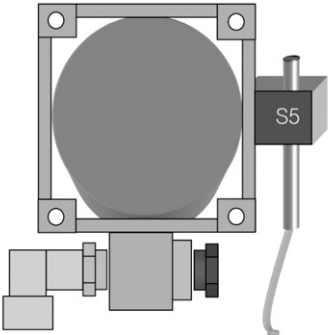
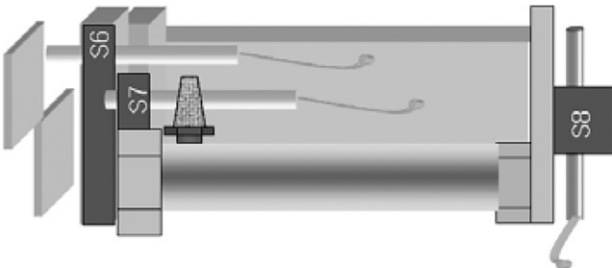


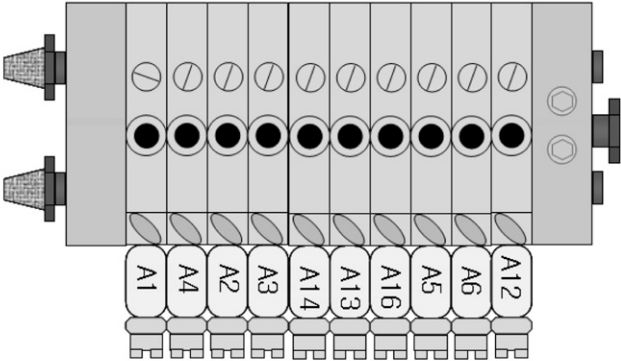
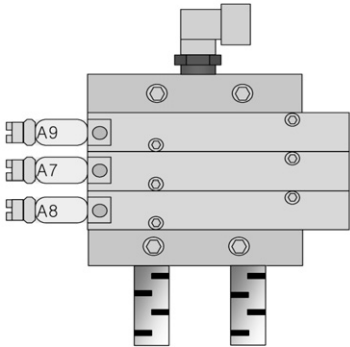
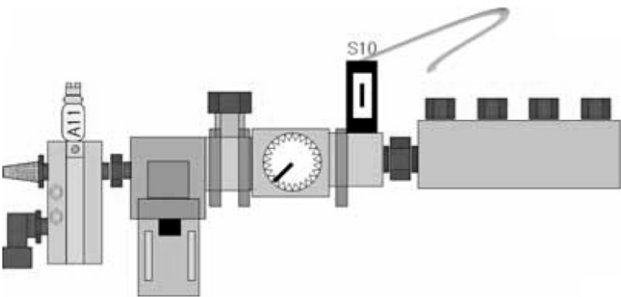
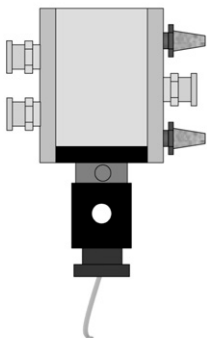
3.4) Power Cord Plugging

- Sensor Wiring Diagram

The sensor wiring diagram is as follows:




Wiring No.	OP Box No.	Figure
S1 S2 S3	Sensor 1 Sensor 4 Sensor 8	
S4	Sensor 5	
S5	Sensor 7	
S6 S7 S8	Sensor 3 Sensor 6 Sensor 2	

Wiring No.	OP Box No.	Figure
A1 A2 A3 A4 A5 A6 A12 A14 A13 A16	Sol 5 Sol 6 Sol 8 Sol 11 Sol 13 Sol 4 Wiper Sol 9 Thread Release	
A9 A7 A8	Sol 1 Sol 2 Sol 3	
A11 S10	Sol 12 Sensor 10	
	Sol 7	

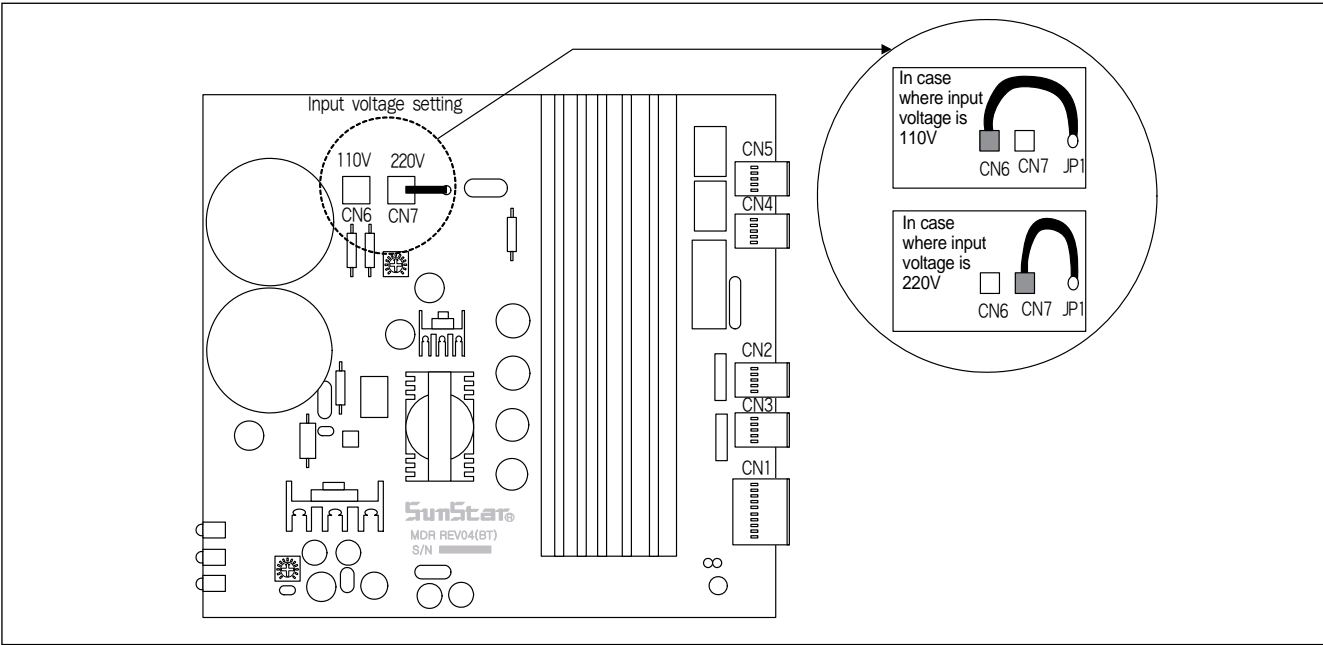
3.5) Voltage Changing Method

- Due to the adoption of SMPS, the voltage remains constant despite change in input voltage.
- Due to the use of free voltage, depending on input voltage, a switch connector should be used to change the main shaft board voltage between 110V and 220V.



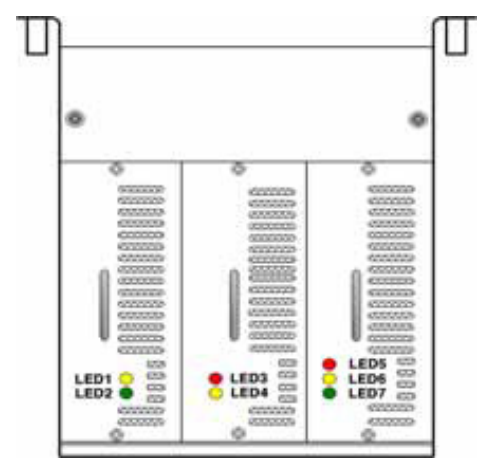
Caution

If the voltage switch connector has a wrong setting, the control box may get damaged.




3.6) Control Box LED Checking

- LED indicates power supply status to each board. It enables easy detection of problem areas when abnormal operation occurs.



LED	Power Supply Status	LED	Power Supply Status
LED1	Digital board +5V input	LED5	Main shaft board 220V input
LED2	Digital board +12V input	LED6	Main shaft board +5V input
LED3	Step board + 5V input	LED7	Main shaft board +12V input
LED4	Step board + 48V input		

3.7) Control Box Cleaning



Caution

Power should be turned off to prevent accidents caused by wrong operation of the machine.



[Inside Control Box]




[Control Box Structure]

The inside of the cooling fan and the control box should be cleaned every week.

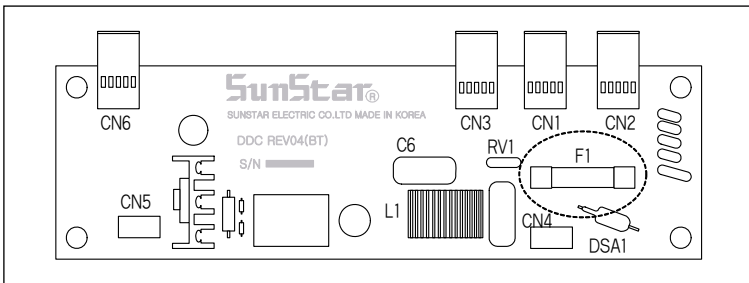
No.	Use
1	Power Board
2	Digital Board
3	Step Board
4	Main Shaft Board

3.8) Fuse Replacement



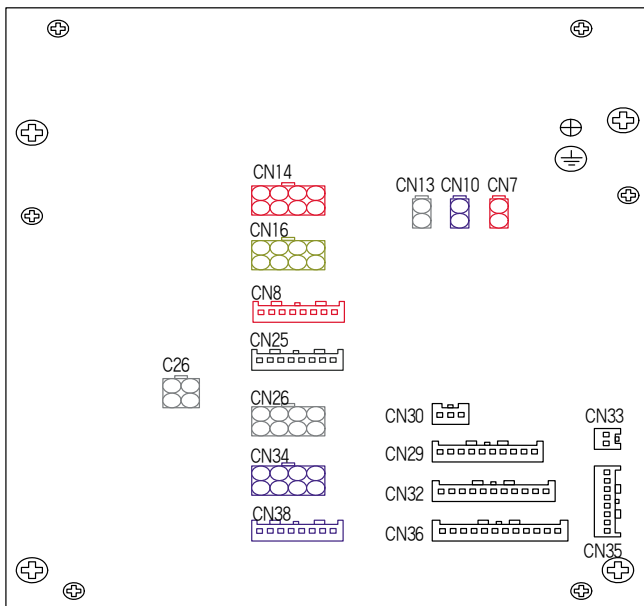
Caution

- Open the cover 5 minutes after the power is turned off to prevent electric shock.
- Turn off the power before opening the control box cover. Use the fuse of defined capacity for replacement.



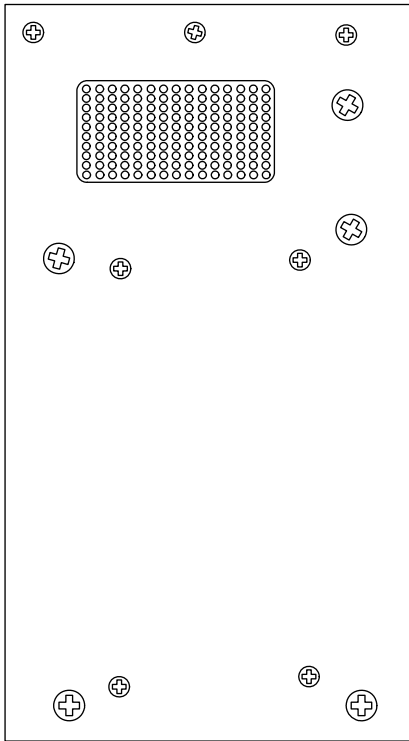
A total of 7 fuses are used.

No	Capacity	Use
F1	15A	Main power protection

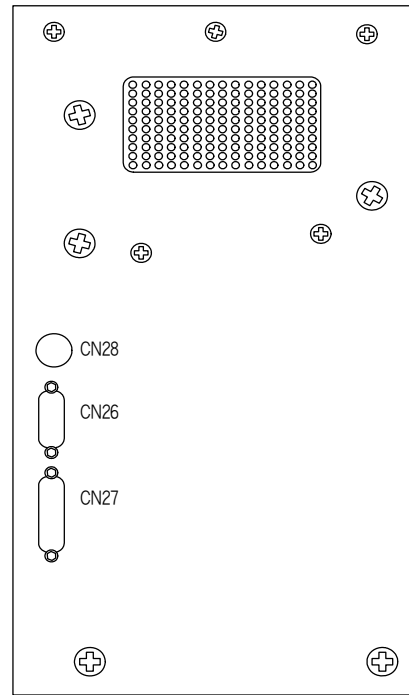


[Control Box Rear Cover]

Cable Name	Machine	Control Box
Presser plate solenoid cable	Unused	CN17
Trimmer solenoid cable	Unused	CN18
Wiper solenoid cable	Unused	CN19
Main shaft motor (Sanyo) mid-connection cable	⑩	CN7
X-shaft step motor mid-connection cable	⑧	CN25
Y-shaft step motor mid-connection cable	⑨	CN36
When laser pointer is used	—	CN22
Foot pedal jumper cable	⑭	CN23
Pedal switch input cable	⑬	CN24
Head safety switch cable	⑫	CN25
Pneumatic output and auxiliary input cable	⑪	CN29
XY origin sensor cable	⑩	CN30
External power input cable	②	—



[Control Box Left Side Cover]

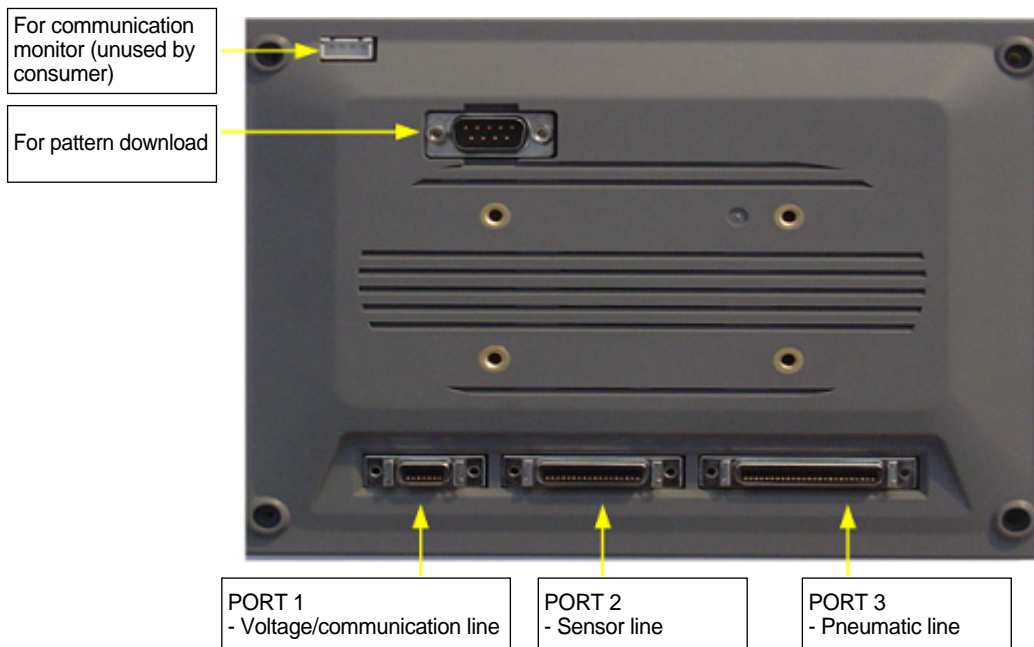
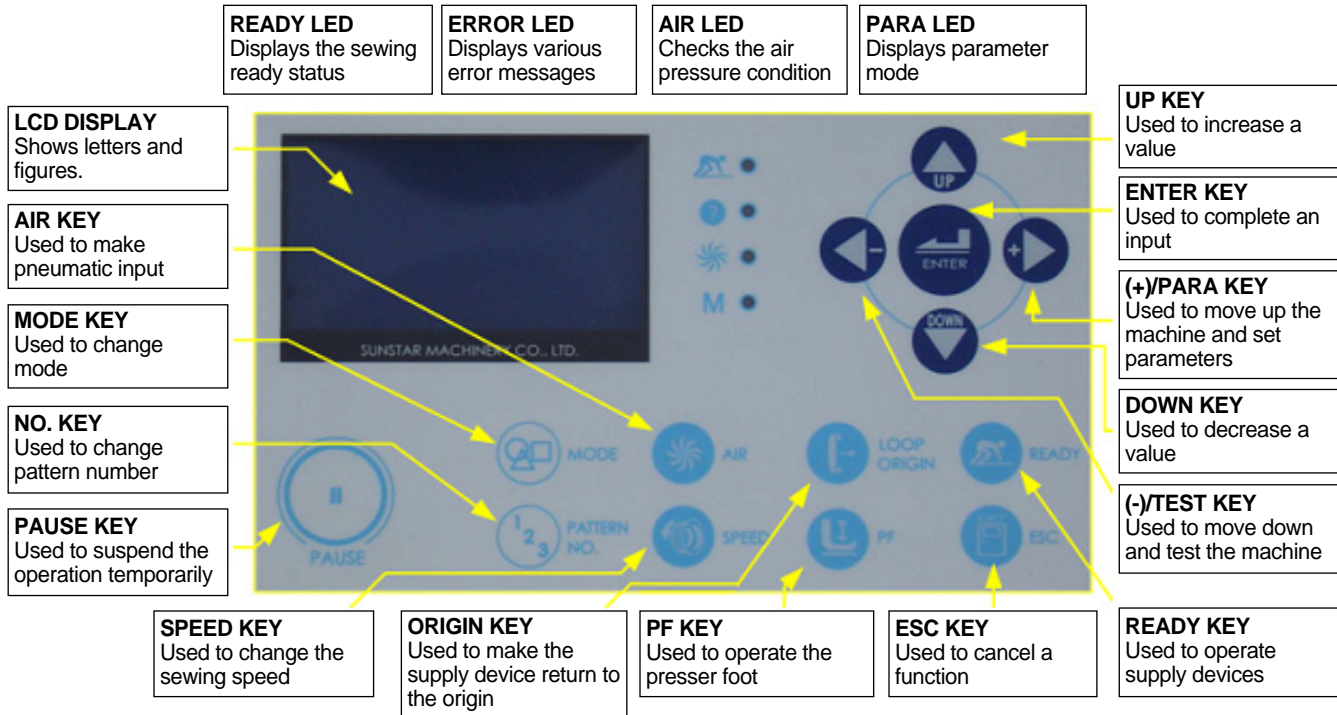


[Control Box Right Side Cover]

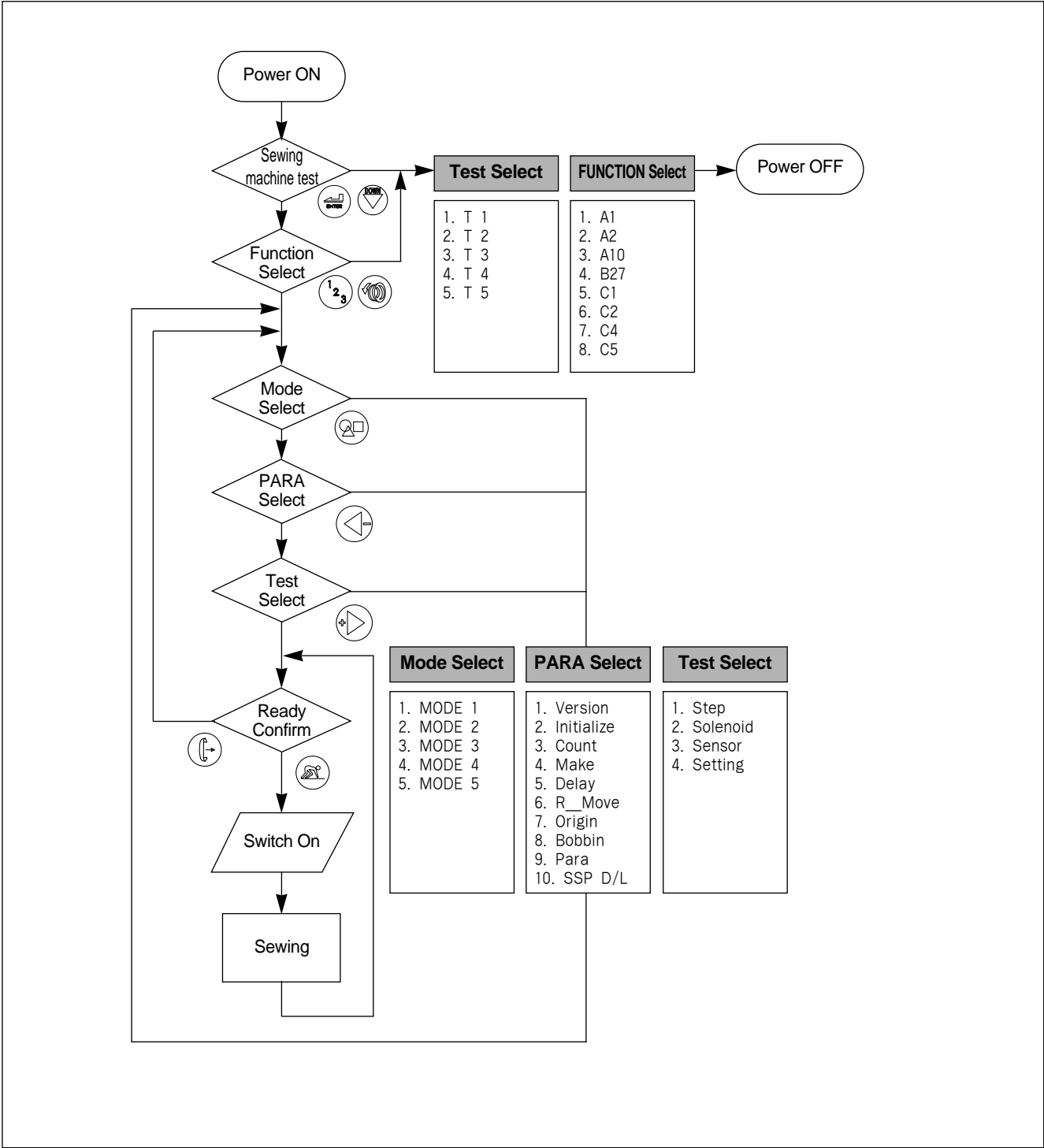
Cable Name	Machine	Control Box
Main shaft encoder input cable	⑮	CN26
OP unit connection cable	Unused	CN27
OP power input cable	—	CN28

Operation of Belt Loop Sewing Machine

4.1) OP Box and Key Names



4.2) Operational Workflow



4.3) Power On











- ※ When the power switch is turned to the right, power is supplied. When the power switch is turned to the left, the power supply is cut off.



Caution

After turning off the power, wait for 3 seconds before turning it on again.

4.4) Initial Setting

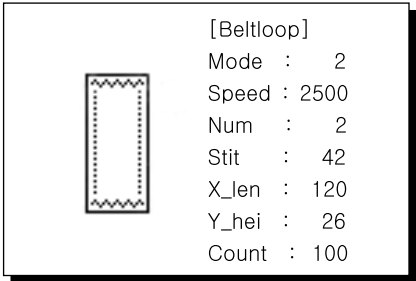
- ① Check the initial position of the supply device
 -  (air supplied) : Move to the initial position.
 - In case of wrong sensor position : Error occurs (setting required)
- ② Test the supply device
 - Go to  (18 times) in  + Step Move : Operate the supply device
 - Press  two times : Return to the initial screen
- ③ Create patterns and conduct test sewing
 - Select  +  and press  two times
 -  : Basic pattern length : 120, width : 26, zsti : 15+(Enter)
 -  : Initial screen
 -  + Start Switch : Operate the supply device and start sewing

4.5) Initial Design of SUNSTAR Beltloop



<Initial Screen>

- ※ When the power is turned on, the image as in the figure appears on the screen.

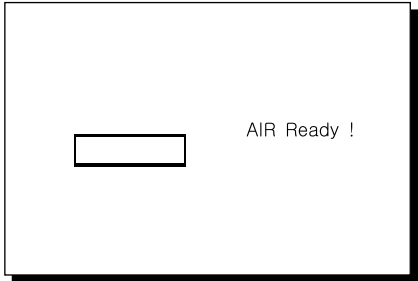




<p>※ If the upper stop position of the needle bar is incorrect, error message appears. In this time, turn the hand pulley manually and adjust the upper stop position. Then the error message automatically disappears, and the screen returns to the previous one.</p>	
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4.6) OP Box Operation

Press  to save set values and press  to return to the previous screen without value saving.

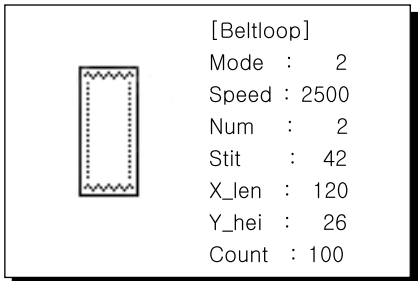

4.6.1) Air Supply


<p>① Supplies air to the machine</p>		
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	<p>When the air key is pressed, the supply device is returned to the original position.</p>
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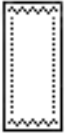

1. When air is supplied, the air supply device moves to the original position. Otherwise, error message pops up (Error 41 ~ Error 49).
2. Check the sensor if error message appears.
Check the sensor check function and the sensor wiring diagram in the sensor test.
3. Check whether the sensor's red LED is on or off to find out the proper position of the sensor.

4.6.2) Operation of READY and Supply Device

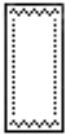

<p>① When READY LED is off, press READY and then READY LED is on. Then the supply device is operated, and READY LED is on.</p> <ul style="list-style-type: none"> • Mode 1/2/4/5 <ul style="list-style-type: none"> – Ready LED on + Operate the supply device • Mode 3 <ul style="list-style-type: none"> – Ready LED on 		
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	<p>Be mindful that the supply device is operated right after READY is pressed.</p>
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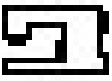



4.6.3) Origin of Supply Device

<p>① Press LOOP ORIGIN while READY LED is on, and then READY LED is off.</p> <p>Then the supply device returns to the origin, and READY LED is off.</p> <ul style="list-style-type: none"> • Mode 1/2/4/5 <ul style="list-style-type: none"> – READY LED off + Supply device's return to origin • Mode 3 <ul style="list-style-type: none"> – READY LED off 	 <div data-bbox="1050 347 1197 600"> <p>[Beltloop]</p> <p>Mode : 2</p> <p>Speed : 2500</p> <p>Num : 2</p> <p>Stit : 42</p> <p>X_len : 120</p> <p>Y_hei : 26</p> <p>Count : 100</p> </div>	 <p>LOOP ORIGIN</p>
--	--	--

4.6.4) Sewing


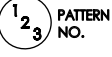
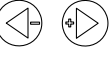

<p>① Press READY to supply belt fabric to the supply device (READY LED: on).</p> <p>② Sewing begins when Start Switch is pressed (Operate the left, right S/W at the same time)</p>	 <div data-bbox="1050 784 1197 1037"> <p>[Beltloop]</p> <p>Mode : 2</p> <p>Speed : 2500</p> <p>Num : 2</p> <p>Stit : 42</p> <p>X_len : 120</p> <p>Y_hei : 26</p> <p>Count : 100</p> </div>	 <p>READY</p> <p>+</p> <p>Start switch</p>
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4.6.5) Mode Change

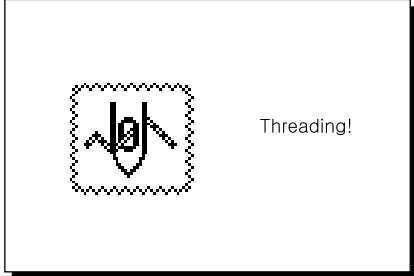

<p>① Select MODE while READY LED is off.</p> <p>② Use UP/DOWN keys to move around items.</p> <p>③ Press ENTER to enter and press ECS to return to the previous screen without saving.</p>	 <div data-bbox="1082 1249 1197 1422"> <p>Mode Select</p> <p>► Mode 1</p> <p>Mode 2</p> <p>Mode 3</p> <p>Mode 4</p> <p>Mode 5</p> </div>	 <p>MODE</p> <p>+</p>  <p>+</p>  <p>ENTER</p>
---	--	--

- Mode 1: Supply device standby at the back
- Mode 2: Supply device standby at the front
- Mode 3: Sewing machine operation only
- Mode 4: Supply device operation only
- Mode 5: Location setting (Adjust the sewing position of beltloop fabric)

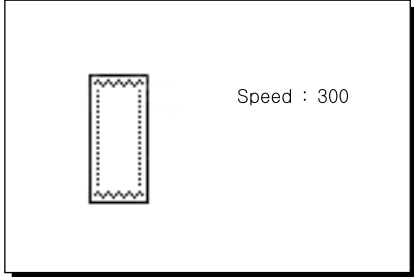
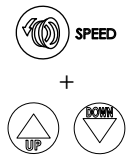
4.6.6) Pattern Number Change

<p>① Press number keys while READY LED is off, and the information of the current pattern number appears.</p> <p>② Select a pattern number using +/- keys.</p> <p>③ Press ENTER to select the current pattern number. Press ESC to return to the previous screen without value saving.</p>	 <div data-bbox="1058 1776 1204 1993"> <p>Number</p> <p>patt : 1</p> <p>desi : 1</p> <p>X_len : 120</p> <p>Y_hei : 26</p> <p>x_sti : 3</p> <p>stit : 15</p> </div>	 <p>PATTERN NO.</p> <p>+</p>  <p>+</p>  <p>ENTER</p>
--	---	---

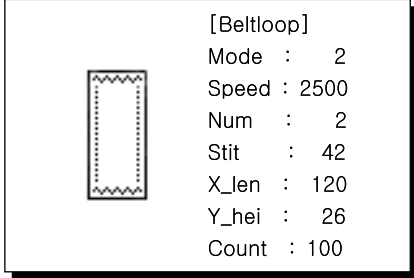
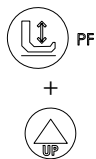
4.6.7) Presser Foot Operation (for threading)


<p>① Press PF while READY LED is off, and the presser foot repeatedly ascends/descends.</p>		
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4.6.8) Speed Change

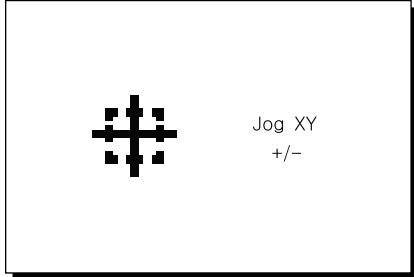
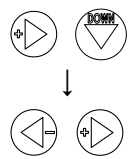
<p>① Press SPEED and then the current speed is displayed. ② Use UP/DOWN keys to set a speed. ③ Press ENTER to save a set value. Press ESC to return to the previous screen without saving.</p>		
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4.6.9) CUT function

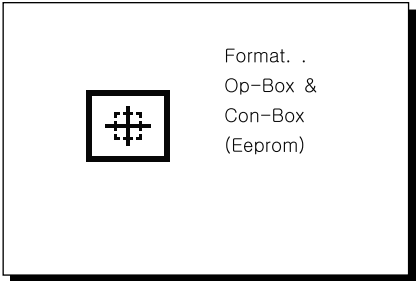

<p>① Set C2 of Para No.11 at "On". ② When (PF and UP) are pressed at the same time, CUT starts operating.</p>		
--	--	---

 <p>Caution</p>	<p>Be careful while the machine is in cutting motion.</p>
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4.6.10) Jog function

<p>(In the ready mode: When Ready LED is on)</p> <p>① Select the (Right) key and the (Down) key at the same time. ② When the (Right)/(Left) key is pressed, needle forward/backward is selected. ③ When the (ESC) key is pressed, the screen returns to the main menu.</p>		
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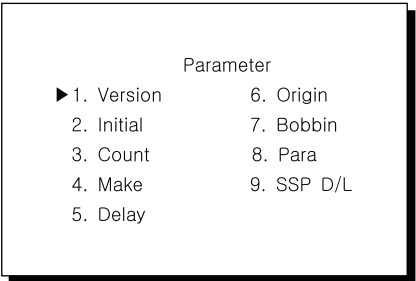
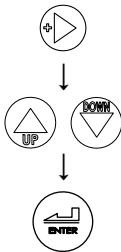
4.6.11) Format (sewing data initialization)

<div>① Press the PF key and the ESC key at the same time.</div> <div>② In a few seconds, the sewing machine and the OP box sewing data are initialized.</div> <div>③ Upon formatting 28C010(sewing data), it takes over 10 seconds. When formatting is completed, the screen returns to the previous screen. (28C010 : sewing data)</div>	<div></div>	<div></div>
---	---	--

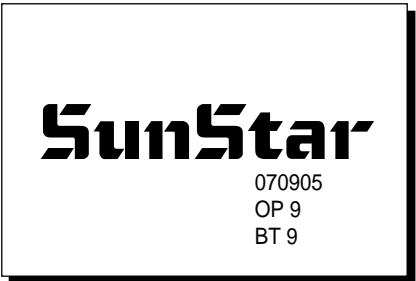
4.7) Parameter Function

Press  to save a set value. Press  to return to the previous screen without saving.

4.7.1) Initial Screen

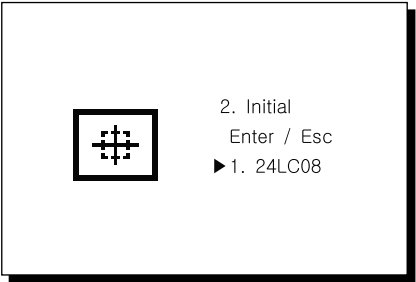
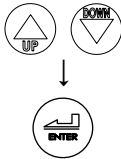
<div>① Press the RIGHT key and then ENTER. Parameter Menu appears.</div> <div>② Press UP/DOWN keys to select an item and press ENTER.</div>	<div></div>	<div></div>
---	--	---

4.7.2) Version

<div>① The program version appears.</div> <div><ul style="list-style-type: none">• BT : Sewing Machine Con-Box Version• OP : OP-Box Version</div>	<div></div>	
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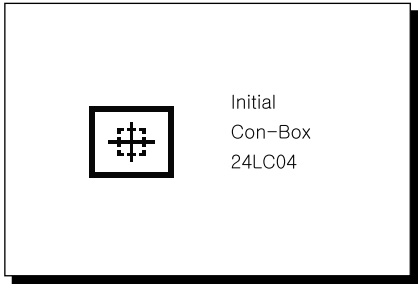
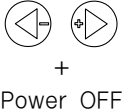
4.7.3) Initial

■ OP-Box

<div>① Press ENTER to initialize the OP BOX parameters.</div> <div>② When completed, turn the power off.</div> <div><ul style="list-style-type: none">• 24LC08 : OP-Box parameter initialization</div>	<div></div>	<div></div>
--	---	--

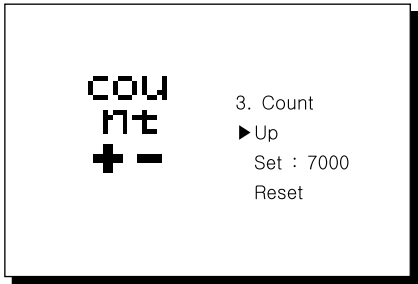
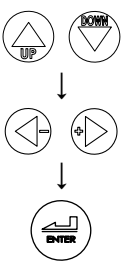
■ Sewing machine Con-Box initialization

The sewing machine Con-Box initialization is conducted with button operations right after power supply.

<p>① With the power off, select the (+) and (-) keys at the same time and turn on the power.</p> <p>② When the sewing machine parameter initialization is completed, turn off the power.</p> <ul style="list-style-type: none"> 24C04 : Sewing machine parameter initialization 		
--	--	---

※ OP-Box and Con-Box initialization should be separately conducted.

4.7.4) Count

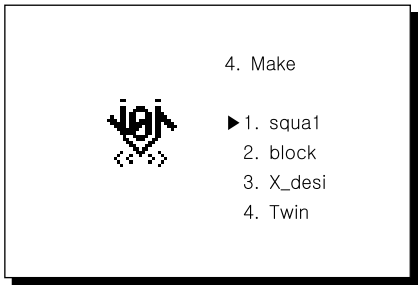

<p>① Use UP/DOWN keys to select Up/Down, Set, and Reset, and press +/- keys to set a value.</p> <p>② Press ENTER to enter a value.</p> <ul style="list-style-type: none"> Up/Down: Count value up/down Set: Down count set value <ul style="list-style-type: none"> Range (100 ~ 9900) Reset: Count value initialization 		
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

4.7.5) Make







When using the patterns expanded both in the X, Y directions, set parameter L2 at On.

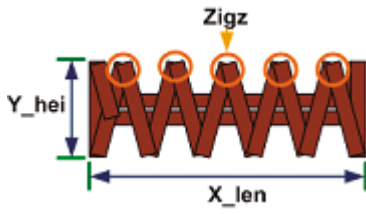
Category		X Range	Y Range	Note
Basic Pattern		6~22mm	Max 8mm	The Y-directional expansion can be used for X pattern and twin pattern.
Extended Pattern	Twin pattern	6~30mm	Max 14mm	
	X Pattern	6~27mm	Max 10mm	









■ Square Pattern



<p>① Select ENTER.</p> <ul style="list-style-type: none"> squa1: Start position of square pattern (2nd origin) block : Block pattern X-desi: X-shape pattern Twin : Twin pattern 		
--	--	---

① Press READY and basic patterns are displayed.	<div> squa_make <div> ▶patt : 1 X_len : 120 Y_hei : 24 Zigz : 15 X_bar : 4 Bar : Bar move : 0 x_pit : 8 </div>  </div>	 READY
---	---	---

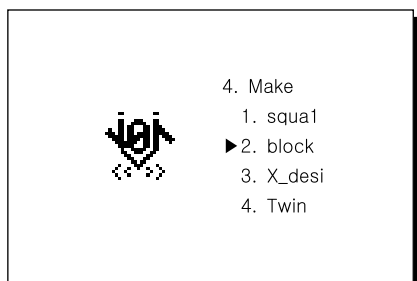

① Use UP/DOWN keys to select among patt, X_len, Y_hei, Zigz, X-bar, Bar, move and x-pit, and set a value pressing +/- keys. ② Press ENTER to create a pattern.	<div> squa_make <div> ▶patt : 1 X_len : 120 Y_hei : 24 Zigz : 15 X_bar : 4 Bar : Bar move : 0 x_pit : 8 </div>  </div>	<div>   ↓   ↓  </div>
---	---	--

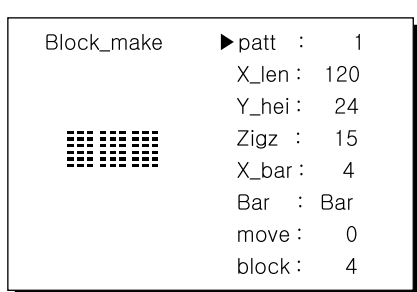

	<ul style="list-style-type: none"> • patt : Pattern number • X_len(length) : Basic (6~22 mm) / Extended (6~30 mm) • Y_hei(height) : 1~3.2 mm • Zigz(No. of zigzag) : 6~35 • X_bar : Number of stitches in the straight line at the beginning (2~10) • BAR : Zigzag for all straight lines <ul style="list-style-type: none"> - Bar(Start from Origin #2), Ori(Start from Origin) - One(No. 1 at the left end from the center), No(no Bar) • move : Offset function (-2~2mm) • x_pit : Length of pitch (automatic calculation)
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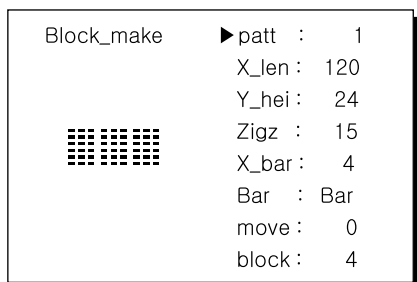
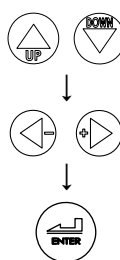
Stay stitch type	<div> Start point <div> ▪ Bar  ▪ Ori  ▪ No  </div> </div> <div> Start Point <div>     </div> </div> <div> Start Point <div> ▪ Mid  </div> </div>
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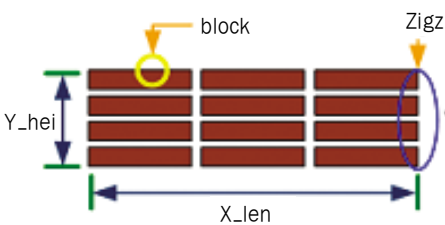
① If a value entered is beyond the range, ERR22 appears on the screen. ERR53 : Length (X_len), ERR54 : Height (Y_hei) ERR55 : Pitch (pit), ERR56 : bar ② Press ESC and enter a new value again.	<div>  <div> ERR 53 X_len size! </div> </div>	 ESC
--	---	---

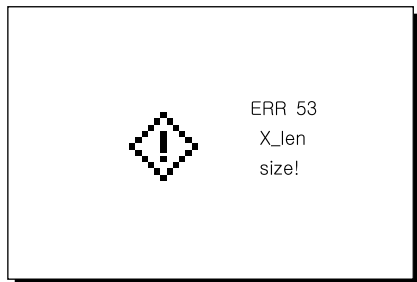

■ Block pattern

<p>① Select the (ENTER) key.</p> <ul style="list-style-type: none"> • squa1 : Square pattern • block : Block pattern • X_desi : X-shape pattern • Twin : Twin pattern 		
---	--	---

<p>① When the READY key is pressed, basic patterns appear.</p>		
--	--	---

<p>① Use the Up/Down keys to select among patt, X_len, Y_hei, Zigz, X_bar, Bar, move, block. Use +/- to set the value.</p> <p>② When the (ENTER) key is pressed, a pattern is created.</p>		
--	--	---

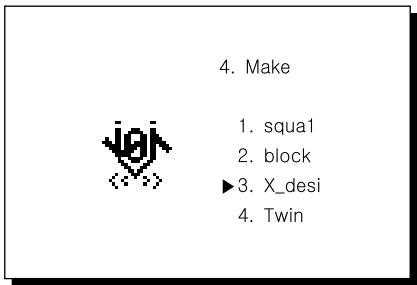
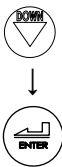
	<ul style="list-style-type: none"> • patt : Pattern number • X_len(length) : Basic (6~22 mm) / Extended (6~30 mm) • Y_hei(height) : 1~3.2 mm • Zigz(No. of zigzag) : 6~35 • X_bar : No. of stitches in the straight line at the beginning(2~10) • BAR : Select the straight line before zigzag <ul style="list-style-type: none"> - Bar(Start from Origin #2), Ori(Start from Origin) - One(No. 1 at the left end from the center), No(no Bar) • move : offset function(-2~2mm) • block : # of blocks
---	--

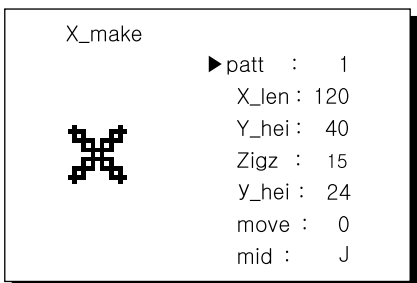

<p>① When the value is not within the range, error (ERR) occurs.</p> <ul style="list-style-type: none"> - ERR53 : Length (X_len), ERR54 : Height (Y_hei) - ERR55 : Pitch (pit), ERR56 : bar <p>② Press the (ESC) key and enter a value again.</p>		
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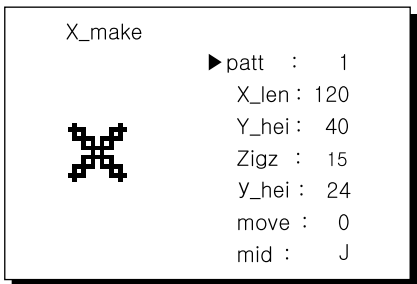
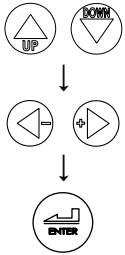
■ X Pattern

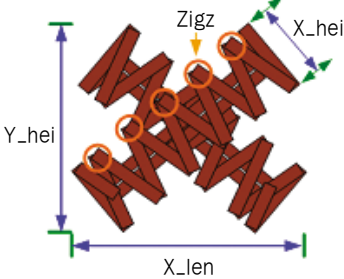
※ Note

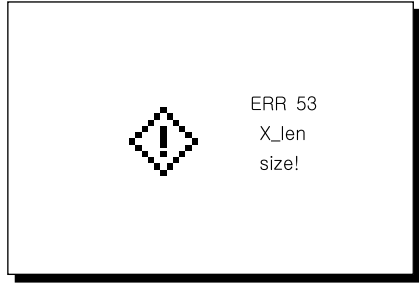

- Replace the presser foot before sewing work begins.
- Set No. 7 item of Parameter No. 9 to be on (X_p: On).

<p>① Select ENTER.</p> <ul style="list-style-type: none"> squa1 : square pattern block : Block pattern X_desi : X-shape pattern Twin : Twin pattern 		
---	--	---

<p>① Press READY and basic patterns appear on the screen.</p> <p>※ Setting desi No. 2 means creating an X_pattern.</p>		
--	---	---

<p>① Use Up/Down keys to select among patt, desi, X_len, Y_hei, zsti, and y_hei. Press +/- keys to set a value.</p> <p>② Press ENTER to create a pattern.</p>		
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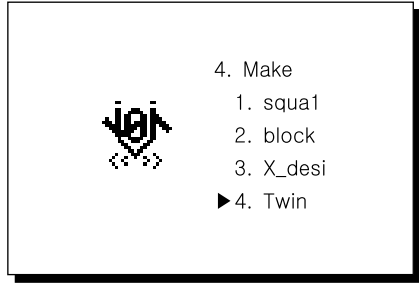

	<ul style="list-style-type: none"> patt : Pattern number X_wid(width) : Basic (6~22 mm) / Extended (6~27 mm) Y_hei(height) : Basic (2~6 mm) / Extended (8~10 mm) Zigz(No. of zigzag) : 6~35 y_hei(height of pattern) : 1~3.2 mm move : offset function (-2~2mm) mid : Choose between first zigzag and second zigzag - J: Trimming + Jump, L : Line
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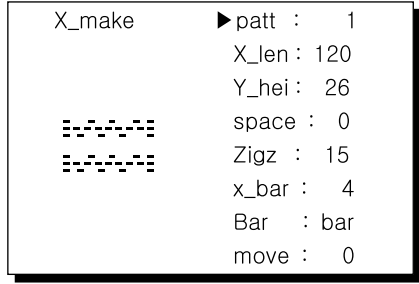

<p>① If a value entered is beyond the range, ERR22 appears on the screen. ERR53 : Length (X_len), ERR54 : Height (Y_hei) ERR55 : Pitch (pit)</p> <p>② Press ESC and enter a new value again.</p>		
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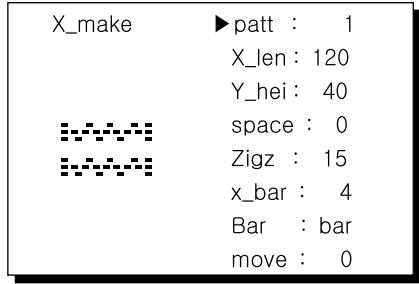
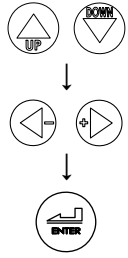
■ Twin pattern

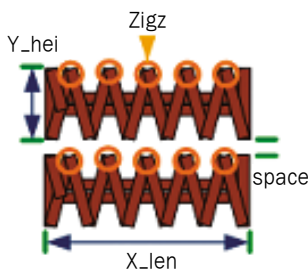
※ Notice

- A. Replace the presser foot before sewing.
- B. Set No. 7 item of Parameter No. 9 at On. (X_p : On)

<p>① Press the (ENTER) key.</p> <ul style="list-style-type: none"> • squal : Square pattern • block : Block pattern • X_desi : X-shape pattern • Twin : Twin pattern 		
--	---	--

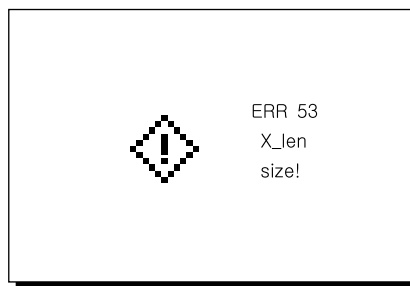
<p>① When the READY key is pressed, basic patterns appear.</p>		
--	--	---

<p>① Use the Up/Down keys to select among patt, X_len, Y_hei, Space, Zigz, x_bar, Bar, move. Use the +/- keys to set a value.</p> <p>② When the (ENTER) key is pressed, a pattern is created.</p>		
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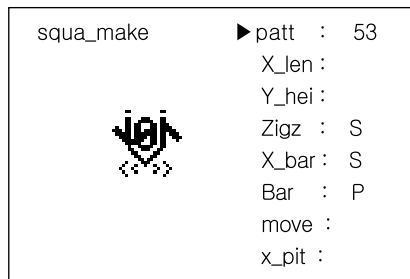
- patt : Pattern number
- X_len(length): Basic (6~22 mm) / Extended (6~30 mm)
- Y_hei(height): 1~3.2 mm
- space(space) : space between two patterns (automatically adjusted by the height (Y_hei))
- Zigz(No. of zigzag) : 6~35
- X_bar : No. of stitches in the straight line at the beginning (2~10)
- BAR : Select the straight line section before zigzag
 - Bar(Start from Origin #2), Ori(Start from Origin)
 - One(No. 1 at the left end from the center), No(no Bar)
- move : offset function (-2~2mm)

- ① If the entered value is out of the range, error (ERR) occurs.
 ERR53 : Length (X_len), ERR54 : Height (Y_hei)
 ERR55 : Pitch (pit), ERR56 : bar
 ERR57 : space
- ② Press the (ESC) key and enter a value again.

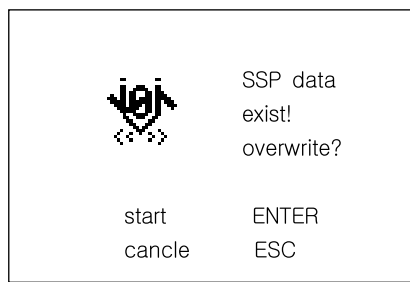


■ In the case of creating patterns in the pattern number where SSP download occurs

- ① Select a pattern number using +/- keys.
- ② When starting the downloaded pattern through SSP, the screen in the right figure appears.

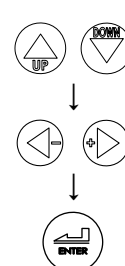
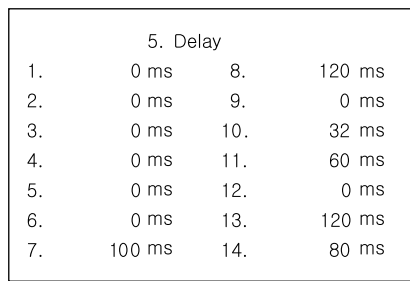


- ① Select "READY."
- ② When "ENTER" is pressed, it launches the pattern creation process. When "ESC" is pressed, it returns to the previous screen.



4.7.6) Delay

- ① Press Up/Down keys to select a delay number. Press +/- keys to set a value.
- ② Press ENTER to save.

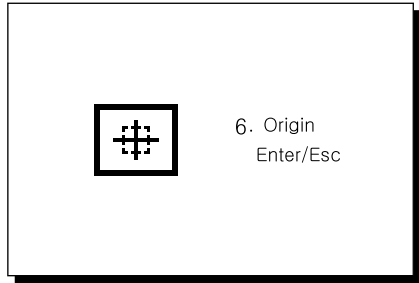



■ Description of Delay

No	Function and Description	Setting Range	Default	Unit
delay 1	Delay before S/W and the supply device move forward	0~1000ms	0ms	4ms
delay 2	Delay before the supply device moves forward and descends	0~1000ms	0ms	4ms
delay 3	Delay before the presser foot is pressed	0~1000ms	0ms	4ms
delay 4	Delay before the clamp moves forward	0~1000ms	0ms	4ms
delay 5	Delay before the clamp moves forward	0~1000ms	0ms	4ms
delay 6	Delay before Mode 2 stops in the middle	0~1000ms	0ms	4ms
delay 7	Delay between wire down and cutting	0~1000ms	100ms	4ms
delay 8	Delay between the first and second V cut	0~1000ms	120ms	4ms
delay 9	Unused	0~1000ms	0ms	4ms
delay 10	Oil spray time	0~1000ms	32ms	4ms
delay 11	Delay before the pin spins during loop origin	0~200ms	60ms	2ms
delay 12	Delay of the shock-absorbing solenoid when the supply device moves backward	0~500ms	0ms	2ms
delay 13	Delay before Mode 2 stops in the middle	0~500ms	120ms	2ms
delay 14	Delay when Mode 2 stops in the middle and moves forward	0~500ms	80ms	2ms

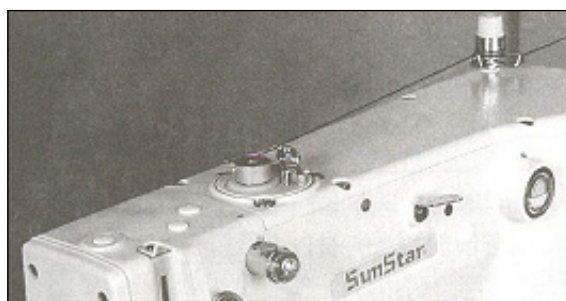
※ The sum of delay 1 · 2 · 3 should not be higher than 1.5 seconds (otherwise, Err24 occurs).

4.7.7) Origin

<p>① Press ENTER and the sewing machine moves to the origin.</p> <p>② Press ESC to return to the previous screen.</p>		
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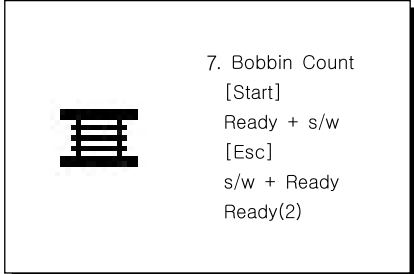

4.7.8) Lower Thread Winding (Bobbin)


A. If sewing and lower thread winding are conducted at the same time



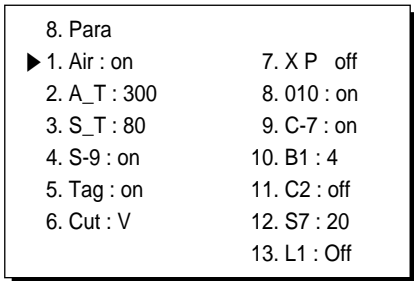
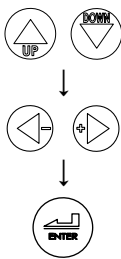
As in the figure, place the thread and conduct the lower thread winding.

B. If lower thread winding is conducted only

<p>① Press READY and S/W. Then the bobbin winder starts operating. When S/W is pressed again, the operation of the bobbin winder stops. Press READY to return to the previous screen.</p> <ul style="list-style-type: none"> READY : Ready_led On It operates when S/W operates in Ready_led On. READY : Return to Ready_led Off and previous screen 		 READY + S/W
--	--	---

 Caution	<p>While lower thread winding is conducted, the feed plate does not move, but the needle is moving. Make sure to keep fingers or any objects away from the needle.</p>
--	--

4.7.9) Para

<p>① Use Up/Down keys to select and press +/- keys to set a value.</p> <p>② Press ENTER to save. Press ESC to return to the previous screen.</p>		
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■ Description of Para

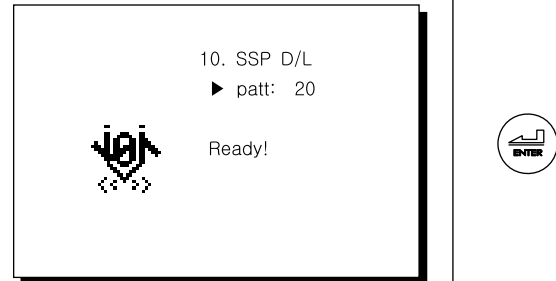
Item	Function and Description	Setting Range	Default	Unit
Air	Air pressure checking	On/Off	On	
A_T	Duration of maintaining the air pressure input value	20~800ms	300ms	4ms
S_T	Duration of maintaining the sensor input value	20~800ms	80ms	4ms
S-9	Use of the sewing bar support sensor	On/Off	On	
Tag	Use of the belt fabric seam detection function	On/Off	On	
Cut	Cutting method (V_cut, - _ cut)	V/-	V	
X_p	Use of x_pattern	On/Off	Off	
010	Checking the OP Box EEPROM	On/Off	On	
C-7	Checking the pneumatic cable	On/Off	On	
B1	Use of repeats when the belt seam is detected	1~20	4	
C2	Using CUT on the OP Box	On/Off	Off	
S7	Time taken to detect belt fabric seam	1~800ms	20ms	
L1	XY range extension (X:30mm, Y:16mm)	On / Off	Off	

※ 7. X_p : To use X_pattern, replace with the PF supporting X_pattern and twin pattern first.

4.7.10) SSP Download

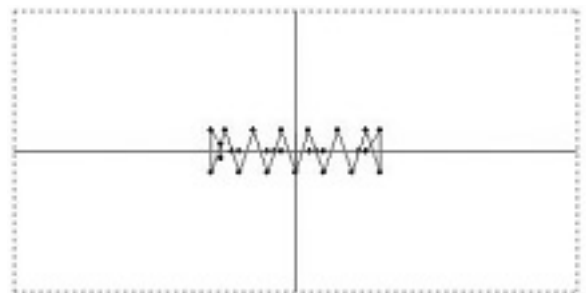
The following is how to download design data from SSP.

- ① When SSP D/L is selected in the parameter mode, the screen on the right hand side appears.
- ② Use the +/– keys to select a pattern number.

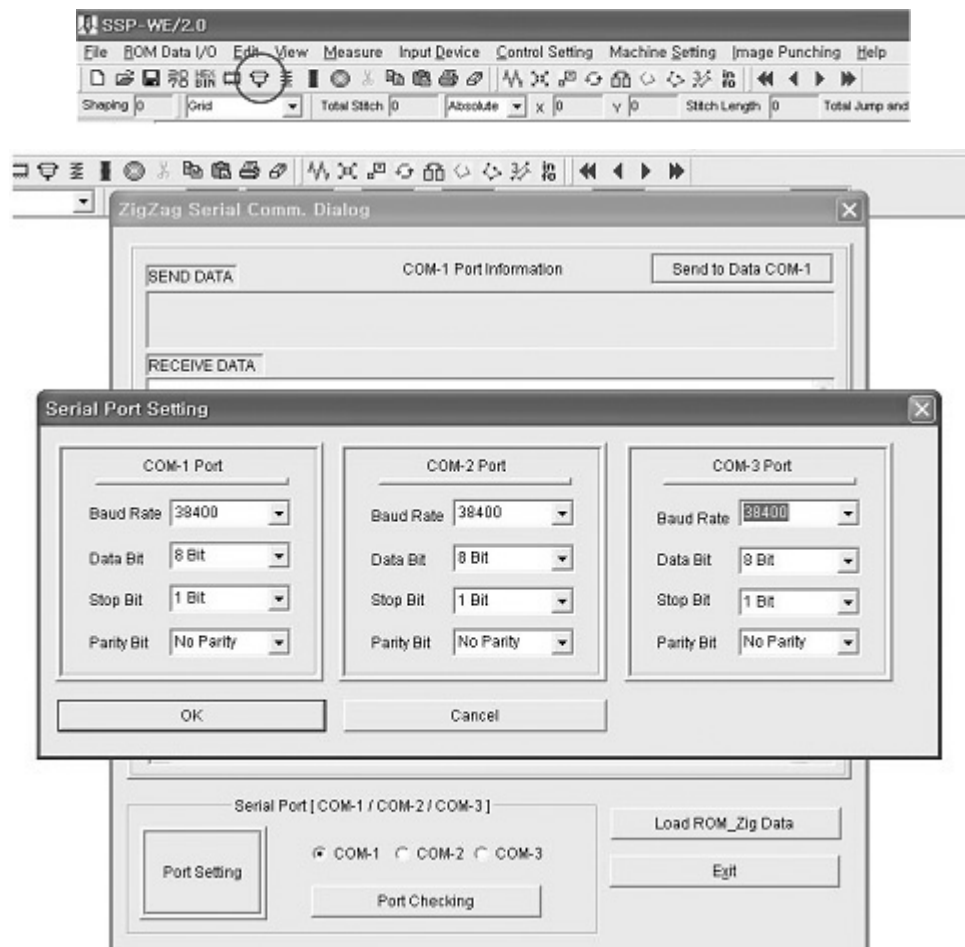


■ SSP Program

- ① Produce a design using the SSP program.



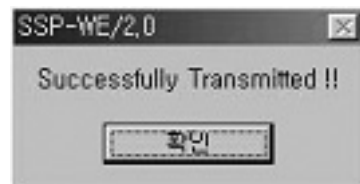
- ② Select the serial communication icon and set the baud rate at 38400 for the selected port.



- ③ Select the icon transfer.




- ④ When the transfer is performed without problem, the dialog box as below appears.



- ① When the data transfer from SSP is complete, the message asking for selecting ENTER or ECS appears.
② Press the ENTER key to save. Press the ESC button to cancel.

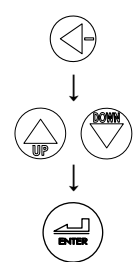
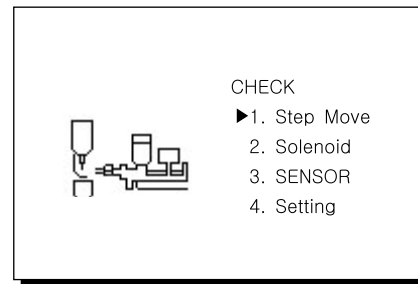


4.8) Check Function

Press  to return to the previous screen.


4.8.1) Initial Screen

- ① While READY is off, press the Left key. Check menu appears.
② Use Up/Down keys to select an item and press ENTER.





4.8.2) Step Move (operation by step)


- ① Press Up/Down keys to select Step or Continue.
- ② Press ENTER, and the machine is in motion.
(Step: step-by-step motion, Continue: continuous motion)
- ③ When Step is selected, each step motion begins whenever pressing ENTER.



Step Move
Enter / Esc
► Step
continue
1. 2. 3.

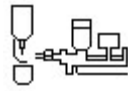
↓





■ When each step motion is selected and ENTER is pressed, the following motions take place by step.

Step	Description	Step	Description	Step	Description	Step	Description
1	Clamp moves forward	2	Pin spins	3	Fabric is held	4	Clamp moves to the middle
5	Clamp moves back to the middle	6	Supply device moves to the middle	7	Middle part pressing increases	8	Cutter descends
9	Clamp pressure increases	10	Cutter ascends	11	Clamp fully moves back	12	Pin spins
13	Supply device moves forward	14	Supply device descends	15	Middle part pressing decreases	16	Presser foot descends.
17	Supply device moves back	18	Presser foot ascends				


- ① Select Continue and press ENTER. Then continuous motion is set.
- ② Press ESC to return to the previous screen.



Step Move
Enter / Esc
Step
► continue
1. 2. 3. 4. 5
6. 7. 8. 9. 0.
1. 2. 3. 4. 5.
6. 7. 8.

↓





4.8.3) Solenoid Test


- ① Use Up/Down keys to select an item. When ENTER is pressed, the solenoid operates.
(On: Operate / OFF: Return)

SOL TEST

► 1. ON	6. ON	11. ON
2. ON	7. ON	12. ON
3. ON	8. ON	13. ON
4. ON	9. ON	14. ON
5. ON	10. ON	15. ON
		16. ON

↓



■ Solenoid Number

No	Description	No	Description	No	Description
SOL1	(Supply device) moves forward	SOL2	Pin spins	SOL3	(Clamp) moves forward
SOL4	(Clamp) moves to the middle	SOL5	(Supply device) moves to the middle	SOL6	Wire descends
SOL7	Cutter descends	SOL8	Supply device ascends	SOL9	Presser foot descends
SOL10	(Supply device) stops in the middle	SOL11	Clean	SOL12	Air tank operates
SOL13	(Middle clamp) is pressed	SOL14	(Supply device) stops in the middle	SOL15	Oil is sprayed
SOL16	Left/right cutter movement				



Caution

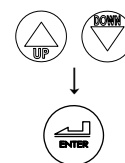
Be careful of the supply device in operation.

4.8.4) Sensor Test

- ① The sensor operation status is displayed on the sensor test screen.

– Sensed: 1, Not Sensed: 0

Sensor TEST		
1. 1	6. 0	11. 0
2. 0	7. 1	12. 0
3. 1	8. 0	13. 0
4. 0	9. 1	14. 0
5. 1	10. 0	15. 0
		16. 0



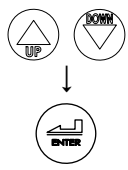
■ Sensor Number

No	Description	No	Description
Sensor 1	(Supply device) return check	Sensor 2	(Clamp) forward movement check
Sensor 3	(Clamp) belt-length backward movement check	Sensor 4	(Supply device) Movement to the middle check
Sensor 5	(Cutter) lift position check	Sensor 6	(Clamp) belt-length return check
Sensor 7	Seam detection	Sensor 8	(Supply device) forward movement check
Sensor 9	2nd hook detection	Sensor 10	Air detection

4.8.5) Setting function

The test item setting enables the measuring of the time taken for forward and backward movement of the feeding and clamp parts.

[set] on the left is a default value and [time] on the right is the current time. If the difference between [set] and [time] is significant, the speed can be adjusted with the pneumatic valve.

<p>※ AIR should be "ON."</p> <p>① When (ENTER) is pressed, it moves forward. When (ENTER) is pressed again, it moves backward.</p> <p>② Whenever (ENTER) is pressed, feeding time appears.</p> <p>③ Press the UP/DOWN key to select items from No. 1 to No. 4.</p>	<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 200px;"> <p style="margin: 0;">motion test</p> <p>▶ 1. 180ms 180ms</p> <p>2. 90ms 100/130</p> <p>3. 60/100</p> <p>4. 1400ms 2200ms</p> </div>	
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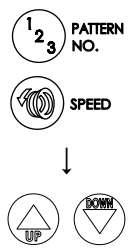
■ Setting Details


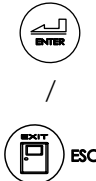
No	Operation 1	Operation 2
1	Forward time of supplier	Backward time of supplier
2	Forward time of clamp	Short backward and return time of clamp
3	Short forward time	Return time
4	Ready motion time	1Cycle motion time

4.9) Function

Function is used to change parameter values.

4.9.1) Function

<p>① While the power is off, press the (No) key and the (Speed) key at the same time and turn on the power.</p> <p>② Use the UP/DOWN keys to select an item and press the (ENTER) key. The value is automatically filled. When the (ESC) key is pressed, the value is not automatically filled.</p>	<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 250px;"> <p style="margin: 0;">Function</p> <p>▶ A1 : 2800 C4 : nouse</p> <p>A2 : Enter 500</p> <p>A10: -24de C5 : 215 de</p> <p>B27: 350de C7 : 0</p> <p>C1 : 30 ms C8 : 30</p> <p>C2 : 180 ms C9 : 60ms</p> </div>	
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<p>(When the Enter or ESC key is pressed, the screen below appears.)</p> <p>③ Turn off the power.</p>	<div style="border: 1px solid black; padding: 20px; margin: 10px auto; width: 200px;">  <p style="margin: 0;">Power Off!</p> </div>	
---	--	---

■ Description of Function

No.	Description	Setting Scope	Default	Unit
A1	Set the sewing speed ceiling (spm).	100~2800	2800	100
A2	Set the start speed for first 1 to 5 stitches (spm)	1st stitch: 100~900 2nd stitch: 100~2800 3rd stitch: 100~2800 4th stitch: 100~2800 5th stitch: 100~2800	300 500 900 1500 2800	100
A10	XY feed starting angle setting	-99° ~ 99°	-24°	1°
B-27	Upper stop position setting	0 ~ 358°	350°	1°
C1	Delay from upper stop to wiper operation	0 ~ 100ms	30ms	1ms
C2	Delay from switch operation to sewing start	0 ~ 900ms	180ms	4ms
C4	Last stitch speed setting	use/no use	no use	
	Final stitch speed setting (spm)	100 ~ 1000	500	100
C5	Feed start angle	0° ~ 250°	215°	1°
C7	Start point setting	0/1	0	
C8	The number of times moving to the origin when C7 is set at 1.	1~50	30	1
C9	Delay until sewing begins after wiper return (applicable when trimming takes place twice or above)	4~900ms	60ms	1

※ C7(start point setting) : 0 (stand by at the origin), 1(move to the second origin and stand by).

C8 : Set the number of sewing actions for origin checkout (When C7 is set at 1)

(Example) When it is set at 30, the origin is checked out every 30 sewing actions.

<p>(Select No. 2 on the function screen and press the Enter key. And the slowstart screen appears.)</p> <p>① Select the speed from 1st to 5th stitch and press the (Enter) key to save or the (ESC) key to exit.</p> <ul style="list-style-type: none"> – 1st stitch: 100 ~ 900 RPM – 2nd to 5th stitch: 100 ~ 2800 RPM 		
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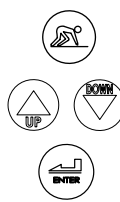
4.9.2) Sewing machine testing

<p>① With the power off, press the Enter key and the Down key at the same time and turn on the power.</p> <p>② se the UP/DOWN keys for item selection.</p> <p>③ When the (ESC) key is pressed twice, the Power off screen appears.</p>		
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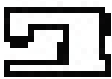
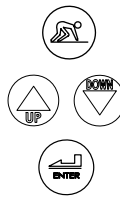
■ XY Motor Test

<p>① The (Ready) key is selected.</p> <p>② When the (Up), (Down), (Left), or (Right) key is selected, the XY motor moves in the up, down, left, or right direction.</p> <p>③ When the (ESC) key is pressed, the screen returns to the test screen.</p>		
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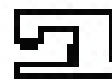
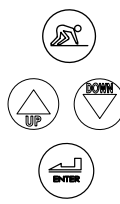
■ Sewing machine pneumatic test

<ol style="list-style-type: none"> ① Select the (Ready) key. ② Use the (Up), (Down) keys to select a number and press the (Enter) key for turning on/off the function. <ul style="list-style-type: none"> – 1: trimmer 2: wiper 3: thread release ③ When the (ESC) key is pressed, the screen returns to the test screen. 	<div style="text-align: center;">SOL TEST</div> <div style="display: flex; justify-content: space-between;"> <div> ▶ 1. OFF 2. OFF 3. OFF 4. OFF 5. OFF </div> <div> 6. OFF 7. OFF 8. OFF 9. OFF 10.OFF </div> </div>	
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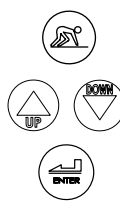
■ Main Motor Test

<ol style="list-style-type: none"> ① Press the (Air) key and enter the air pressure value. Select the (Ready) key. ② When the (Enter) key is pressed, the main motor is in operation. ③ The (Right)/(Left) keys change the speed. 	<div style="text-align: center;">Motor TEST</div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;">Speed : 100</div> </div>	
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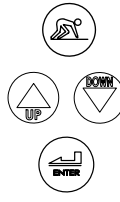
■ encoder Test

<ol style="list-style-type: none"> ① Press the (Ready) key. ② When the sewing machine pulley is turned, the angle appears. ③ When the (ESC) key is pressed, the screen returns to the test screen. 	<div style="text-align: center;">Encoder TEST</div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> Start Ready Cancle ESC 0 </div> </div>	
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■ Syncro Test

<ol style="list-style-type: none"> ① Select the (Ready) key. ② Whenever the pulley is turned around, the counter appears. ③ Pressing the (ESC) key makes the screen return to the test screen. 	<div style="text-align: center;">Syncror TEST</div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> Start Ready Cancle ESC 0 </div> </div>	
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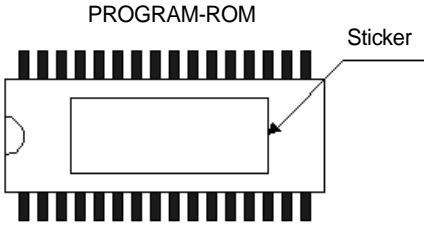
■ Switch Test

<ol style="list-style-type: none"> ① Select the (Ready) key. ② When the key is pressed, it is turned on. ③ When the (ESC) key is pressed, TEST screen appears. 	<div style="text-align: center;">Switch TEST</div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> Start Ready Cancle ESC 1. OFF 2. OFF </div> </div>	
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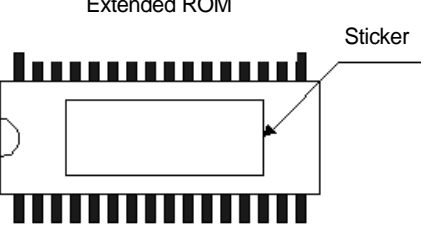
4.10) ROM Installation and Replacement

4.10.1) ROM Type and Distinction

- ① Program ROM: A ROM saved with the programs necessary for sewing machine and OB Box operation. When a sewing machine is shipped out of factory, the ROM is basically mounted. To add or change functions, replace the existing ROM with new version ROM.

 <p>PROGRAM-ROM</p> <p>Sticker</p>	<ul style="list-style-type: none"> ■ Sticker: Marked as below in 8 digits. <ul style="list-style-type: none"> • OP Box i.e.)OP070223... • Sewing Machine Control Box i.e.)BL070223...
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- ② Extended Pattern ROM (AT28C010): A ROM saved with sewing pattern data customized for user demand


 <p>Extended ROM</p> <p>Sticker</p>	<ul style="list-style-type: none"> ■ Sticker : <ul style="list-style-type: none"> • A sticker is not attached to the extended pattern room.
---	--

■ ROM Type and Installation Position

Name	OP Box Name	Sewing Machine Digital Board Name	Pin No.
Program ROM	27C010	27C010	32 pins
Extended Pattern ROM	24LC1025	AT28C010	8pins/32 pins

4.10.2) Checkpoints for ROM Installation and Installation Position

 <p>Caution</p>	<ol style="list-style-type: none"> 1) To install or replace ROM, power must be turned off. Check if the operating unit screen is completely off before conducting installation or replacement. 2) If direction marking is wrongly installed, ROM might be damaged. 3) The pins and sockets should be accurately matched. 4) To remove the existing ROM, use an IC remover or a small (-) screwdriver. Take caution not to cause damage to the board and carefully remove the ROM. 5) After ROM replacement, please conduct the initialization and formatting for the OP box.
--	---

 <p>Danger</p>	<p>Be mindful if ROM is not installed or damaged or wrongly installed, the supply device might not operate.</p>
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■ Error List

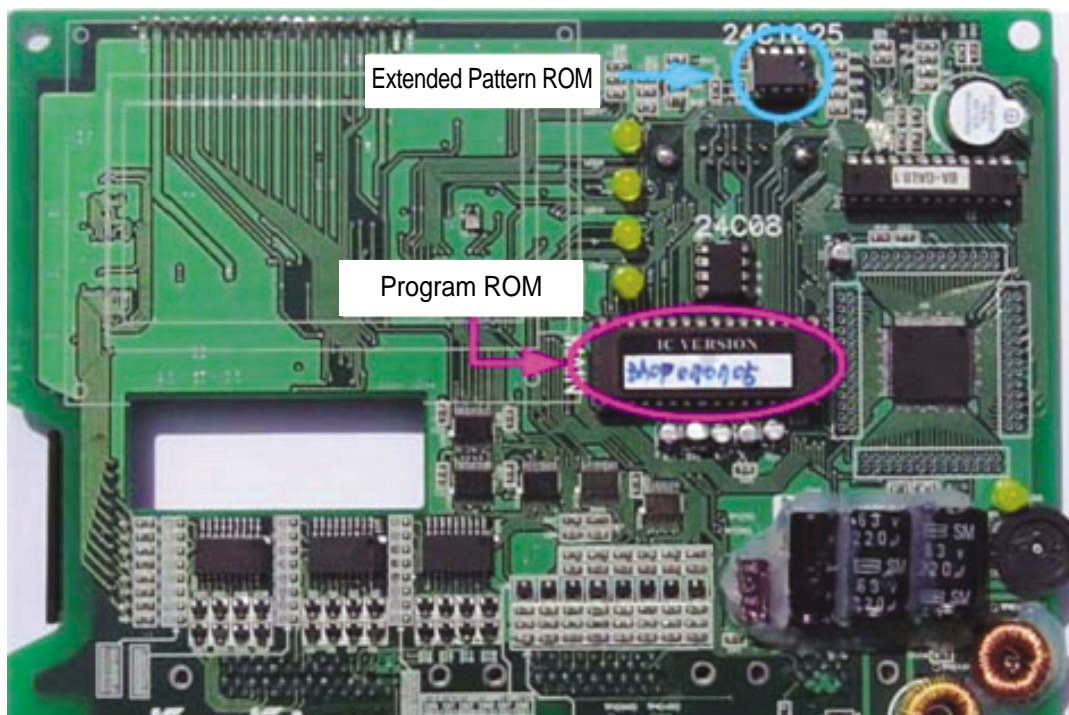
No.	Error Message		Description	Alarm	Pin No.
1	ERR1	Not read!	Pattern cannot be called	○	Sewing machine in general
2	ERR2	scale err!	Zoom-in/out error	○	Sewing machine in general
3	ERR3	needle POS!	Needle bar position error	×	Sewing machine in general
4	ERR4	limit err!	Feed limit error	○	Sewing machine in general
5	ERR5	clamp err!	Clamp position error	○	Sewing machine in general
6	ERR6	X org err!	Failure to move to X-origin within given time	○	Sewing machine in general
7	ERR8	ROM err!	ROM version error, not compatible with new digital version	○	Sewing machine in general
8	ERR10	count:0	Counter is set at “0”	○	Sewing machine in general
9	ERR11	pin hole!	Pin hole does not move up or down.	○	Sewing machine in general
10	ERR12	ROM err!	Extended ROM is not mounted or faulty.	○	Sewing machine in general
11	ERR13	Format!	Formatting is not completed.	○	Sewing machine in general
12	ERR14	SMPS err!	SMPS fan operation is faulty.	○	Sewing machine in general
13	ERR15	motor type	Failure in sensing the main motor type	○	Sewing machine in general
14	ERR16	Y org err!	Failure to return to Y-origin within given time	○	Sewing machine in general
15	ERR17	E_switch	Emergency switch is pressed.	○	Sewing machine in general
16	ERR18	Com LRC	Sewing data transmission error (during pattern creation)	○	Sewing machine in general
17	ERR19	over voltage!	Excessive voltage	○	Sewing machine motor
18	ERR20	low voltage!	Low voltage	○	Sewing machine motor
19	ERR21	Start err	The supply device's advance time to sewing machine exceeds the set time.	○	Sewing machine in general
20	ERR22	No Patt!	Range value was not entered for pattern generation.	○	OP Box
21	ERR23	Pause Key!	Pause key is pressed	○	OP Box
22	ERR30	belt!	Sensor setting error in case of thick sewing material	○	Sewing machine in general
23	ERR31	OP-eepr24LC08	OP's 24LC08 error	○	Supply device
24	ERR32	OP-eepr28C010	OP's AT28C010 error	○	Supply device
25	ERR33	Air low!	Air pressure below required level	○	Supply device
26	ERR34	Power off!	Input voltage is unstable or power is turned off	×	Supply device
27	ERR35	OP cable	Pneumatic cable is not attached.	○	Supply device
28	ERR36	ORG err!	Origin cable is separated or XY origin sensor is faulty.	○	Sewing machine in general
29	ERR41	sensor1	Supply device's initial position sensor check (S1).	○	Supply device
30	ERR42	sensor2	Clamp rear sensor check (S8)	○	Supply device
31	ERR43	sensor3	Clamp front sensor check (S6)	○	Supply device
32	ERR44	sensor4	Supply device's middle sensor check (S2)	○	Supply device
33	ERR45	sensor5	Cutter device lower sensor check (S4)	○	Supply device

No.	Error Message		Description	Alarm	Pin No.
34	ERR46	sensor6	Clamp front sensor check (S7)	○	Supply device
35	ERR47	sensor7	Cutting device upper sensor check (S5)	○	Supply device
36	ERR48	sensor8	Supply device initial position sensor check (S3)	○	Supply device
37	ERR49	sensor9	Hook sensor check	○	Supply device
38	ERR51	Format!	Request for OP-Box EEPROM format	○	Supply device
39	ERR53	X_len size!	The set value is out of the X_len range.	×	Supply device
40	ERR54	Y_hei size!	The set value is out of the Y_hei range.	×	Supply device
41	ERR55	Zigz count!	The set value is out of the Zigz range.	×	Supply device
42	ERR56	bar count!	The set value is out of the bar range.	×	Supply device
43	ERR57	Space size!	The set value is out of the Space range.	×	Supply device
44	ERR58	LRC error!	Incorrect LRC value upon SSP download.	○	Supply device
45	ERR59	over stitch!	Excessive stitch volume upon SSP download.	○	Supply device
46	ERR60	Syncro!	Error in synchronizer contact	○	Sewing machine motor
47	ERR70	X Motor	Error in the X Servo motor	○	Sewing machine in general
48	ERR71	Y Motor	Error in the Y Servo motor	○	Sewing machine in general
49	ERR80	con-box Digit B/D check!	Error in the sewing machine digital board	○	Sewing machine in general
50	ERR81	Sensor cable check!	Error in the input signal from the sensor	○	Supply device
51	ERR82	CPU com error!	Communication error in the sewing machine digital board CPU	○	Sewing machine motor
52	ERR83	Version not same error!	Mismatch in ROM version between OP Box and digital board	○	Supply device
53	ERR9999	motor type!	Incorrect main shaft motor type	○	Sewing machine motor
54	ERR126	motor err!	Error in the main shaft motor sequence	○	Sewing machine motor
55	ERR127	encoder AB err!	Error in the encoder AB	○	Sewing machine motor
56	ERR128	encoder RST err!	Error in the encoder RST	○	Sewing machine motor
57	ERR129	motor over load!	Overload on the main shaft motor	○	Sewing machine motor
58	ERR130	Syncro signal!	Error in the synchronizer signal	○	Sewing machine motor
59	ERR131	motor over current!	Overcurrent in the sewing machine motor	○	Sewing machine motor
60	ERR132	Logic error!	Error in logic	○	Sewing machine motor
61	ERR133	MDR B/D IPM	Error in IPM	○	Sewing machine motor

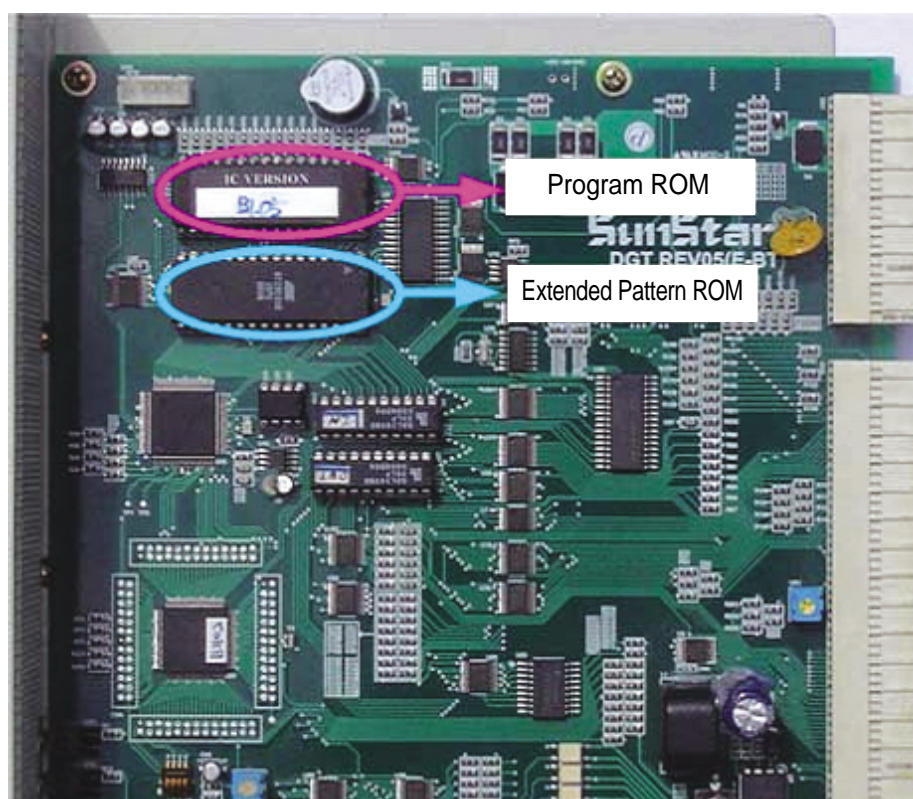
■ Troubleshooting

No	Error Message	Corrective Action	Remarks
1	ERR6	Check the X cable and sensor. Check the XY step board.	
2	ERR16	Check the Y-cable and sensor. Check the XY step board.	
3	ERR36	Check if a cable is separated or check the XY origin sensor.	
4	ERR8	Check if extended ROM is equipped and conduct initialization.	
5	ERR13	Conduct formatting (Press PF, ESC, and Power-On at the same time)	
6	ERR18	Sewing data transmission value error. Regenerate patterns.	
7	ERR21	Check if the supply device enters into the sewing machine within two seconds.	
8	ERR30	Check the S5 wiring sensor that detects sewing fabric seams (mechanical part resetting). - The error occurs when the belt fabric connection part is detected three times in a row.	
9	ERR31	Initialize OP Box parameters and check OP Box's 24LC08.	
10	ERR32	① Check if AT28C010 is installed at the OP Box. ② Conduct initialization (Press PF, ESC, and Power-On at the same time). ※ Generate patterns after initialization.	
11	ERR33	① Check the air pressure. ② Check the pneumatic sensor on the rear side of the sewing machine. ③ Press (-) key and change Para No. 9 value. ④ Parameter change: Press (-) key and set Parameter No. 9 Air at off.	
12	ERR34	Check if input voltage is unstable or power is turned off.	
13	ERR35	Check if the pneumatic cable is separated or not properly attached to the rear side of the OB Box	
14	ERR41	Check if the supply device's return is detected by the sensor (S1).	
15	ERR42	Check if the clamp's advance is detected by the sensor (S8).	
16	ERR43	Check if the clamp's return is detected by the sensor (S2).	
17	ERR44	Check if the supply device's advance to the middle is detected by the sensor (S7).	
18	ERR45	Check if the cutting part's advance (S4) is detected by the sensor.	
19	ERR46	Check if the clamp pulling is detected by the sensor (S7).	
20	ERR47	Check if the clamp's fabric seam is detected by the sensor (S5).	
21	ERR48	Check if the supply device's advance is detected by the sensor (S3).	
22	ERR49	Check the sensor below the hook (S1).	
23	ERR129	Check if any load on the motor is found. - Turn the pulley and check any load	

■ Belt loop OP-box board and control box digital board



[Belt loop OP-Box board]



[Control box digital board]

■ Belt Loop Cable Block Diagram

