

ENGLISH

**IP-110 TYPE F
INSTRUCTION MANUAL**

* "CompactFlash(TM)" is the registered trademark of SanDisk Corporation, U.S.A.

CONTENTS

| | |
|---|----|
| 1. INSTALLING THE OPERATION PANEL..... | 1 |
| 2. CONNECTING THE CORD | 1 |
| 3. MACHINE HEAD SETTINGS | 2 |
| 4. ADJUSTING THE MACHINE HEAD ANGLE (DIRECT-DRIVE MOTOR TYPE SEWING MACHINE ONLY)..... | 3 |
| 5. EXPLANATION OF THE OPERATION PANEL..... | 4 |
| 5-1. Names and functions of each components..... | 4 |
| 5-2. Adjusting the contrast of the operation panel screen..... | 6 |
| 5-3. Connection of the production support switch | 6 |
| 5-4. Basic screen | 7 |
| 5-5. How to operate the operation panel for sewing stitching patterns..... | 9 |
| (1) Reverse stitching pattern..... | 9 |
| (2) Overlapped stitching pattern | 11 |
| (3) Programmed stitching pattern..... | 12 |
| (4) Cycle sewing pattern | 16 |
| 6. BOBBIN COUNTER | 18 |
| 7. NO. OF PCS. COUNTER..... | 19 |
| 8. RE-SEWING SWITCH | 19 |
| 9. NEEDLE UP/DOWN COMPENSATION SWITCH..... | 20 |
| 10. ON/OFF SWITCH ④ OF THE MATERIAL EDGE SENSOR | 20 |
| 11. AUTOMATIC THREAD TRIMMING SWITCH ⑧ | 20 |
| 12. ONE-SHOT AUTOMATIC STITCHING SWITCH ⑩ | 20 |
| 13. THREAD TRIMMING PROHIBITION SWITCH ⑪ | 21 |
| 14. SIMPLIFIED FUNCTION SETTING | 22 |
| 15. KEY-LOCK FUNCTION SETTING | 23 |
| 16. FUNCTION SETTING | 24 |
| 17. OPTIONAL INPUT/OUTPUT SETTINGS | 29 |
| 18. AUTOMATIC COMPENSATION OF NEUTRAL POINT OF THE PEDAL SENSOR | 30 |
| 19. INITIALIZATION OF THE SETTING DATA | 31 |
| 20. INFORMATION | 32 |
| (1) Maintenance management function..... | 32 |
| (2) Working measurement function | 36 |
| 21. EXTERNAL INTERFACE | 38 |
| 22. ERROR DISPLAY | 38 |
| 22-1. Error code list (Error display in panel)..... | 39 |



WARNING :

This Instruction Manual describes the operation panel IP-110F.

Be sure to use this operation panel after having read to fully understand the "Safety precautions" in the Instruction Manual for the SC-920 (control box).

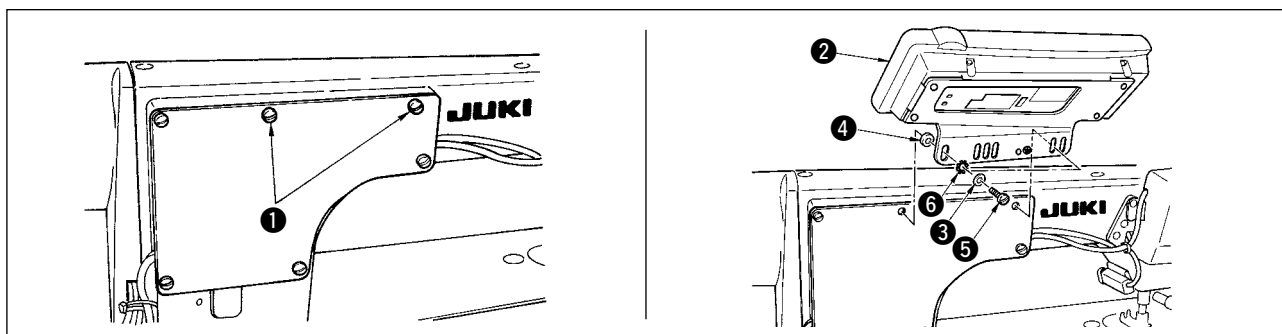
In addition, be careful not to splash water or oil on it, or shock such as dropping and the like since this product is a precision instrument.

1. INSTALLING THE OPERATION PANEL



WARNING :

To prevent personal injury caused by abrupt start of the sewing machine, carry out the work after turning OFF the power switch and ascertaining that the motor has completely stopped.



- 1) Remove side plate setscrews ① from the side plate.
- 2) Install operation panel ② on the machine head using screws ⑤, plain washer ③, toothed washer ⑥ and rubber seat ④ supplied with the panel.



1. DDL-9000B (Not provided with AK) is given as an example of installing procedure.

2. Screw to install the panel changes according to the machine head used. Refer to Table 1 and confirm the kind of screw.

< The relation between the respective machine heads and the positions of installing hole of the bracket are as described in the table. >

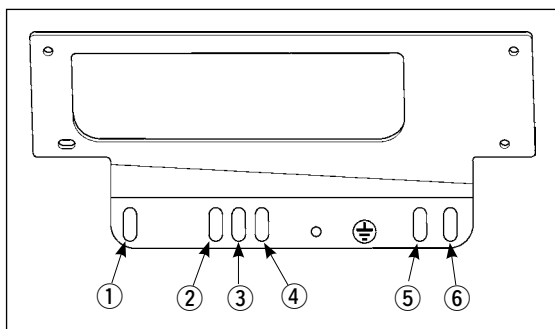
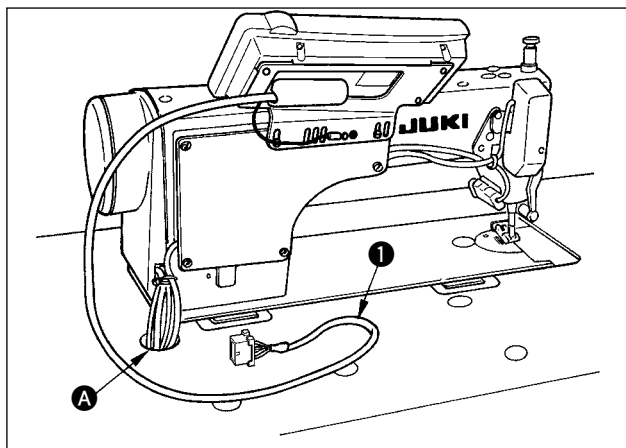


Table 1

| | Installing hole | Screw | |
|-----------|-----------------|--------------|--|
| DDL-9000A | ① - ⑤ | M5 X 12 | Screw supplied with panel as accessories |
| DDL-9000B | ① - ⑤ | M5 X 16 | Screw supplied with panel as accessories |
| DLN-9010 | ② - ⑤ | 3/16-28 L=14 | Screw supplied with panel as accessories |
| LH-3500A | ② - ⑤ | M5 X 14 | Side plate setscrew |

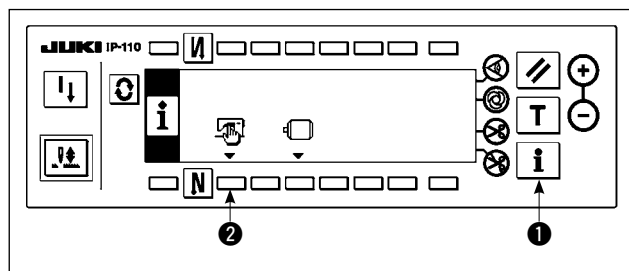
2. CONNECTING THE CORD



- 1) Route cord ① of the operation panel through hole A in the table toward the underside of the table.
- 2) Refer to the Instruction Manual for the SC-920 for how to connect the connector.

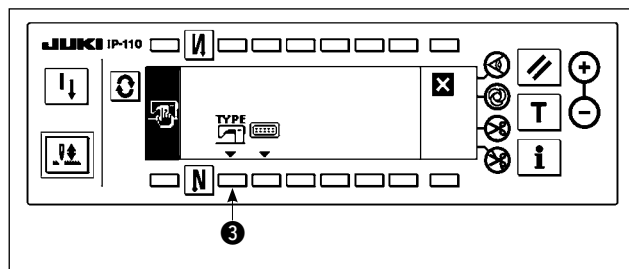
3. MACHINE HEAD SETTINGS

[Function settings list screen]



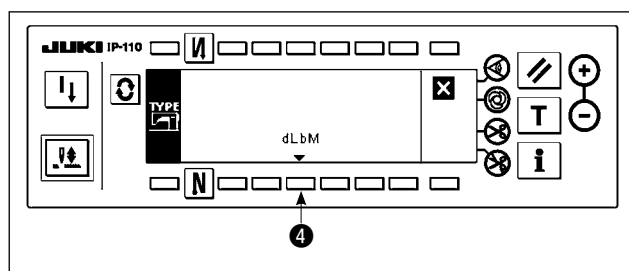
- 1) Keeping switch **1** held pressed, turn the power ON. Then the screen is changed over to the function settings list screen.
When you press switch **2**, the screen is changed over to the sewing common data screen.

[Sewing common data screen]



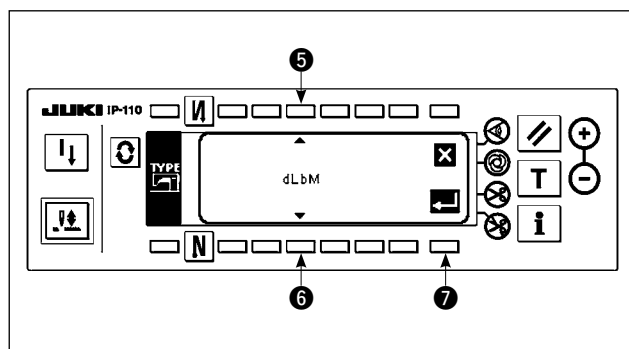
- 2) When you press switch **3**, the screen is changed over to the machine head type display screen.

[Machine head type display screen]



- 3) The displayed machine head type is the machine head you have selected. When you press switch **4**, the screen is changed over to the machine head type setting popup screen.

[Machine head type setting popup screen]



- 4) You may selected the machine head as desired by pressing switches **5** and **6**.
* Refer to the separate sheet of "Sewing machine setup precaution" or the "Machine head list" given on the separate sheet for the machine head types.
- 5) Once you have determined the machine head type, press switch **7**. The screen is changed over to the "machine head type display screen" to display the machine head type you have selected. Turn the power switch OFF to exit from the machine head setting.

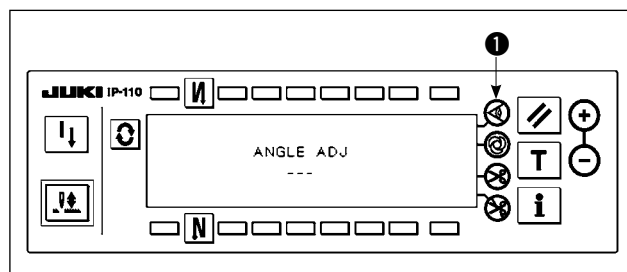
4. ADJUSTING THE MACHINE HEAD ANGLE (DIRECT-DRIVE MOTOR TYPE SEWING MACHINE ONLY)



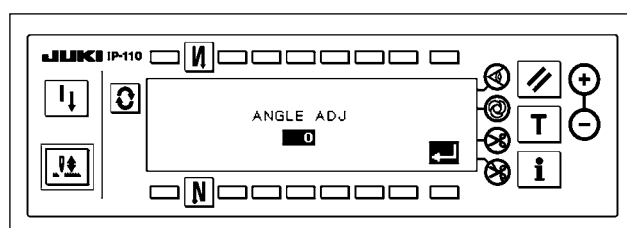
WARNING :

Be sure to perform the angle adjustment of the machine head by the operation below before using the machine head.

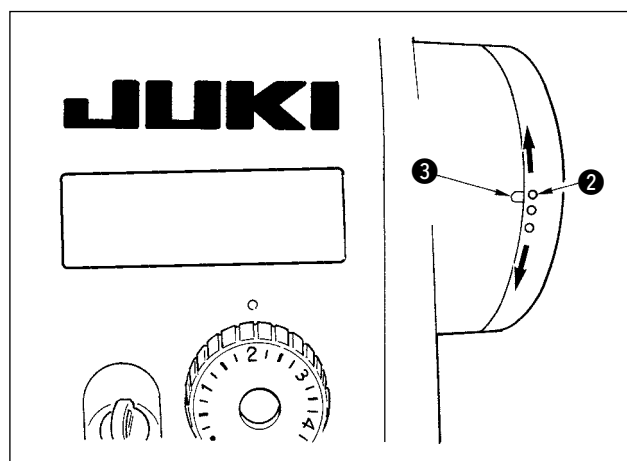
[Machine head angle adjusting screen]



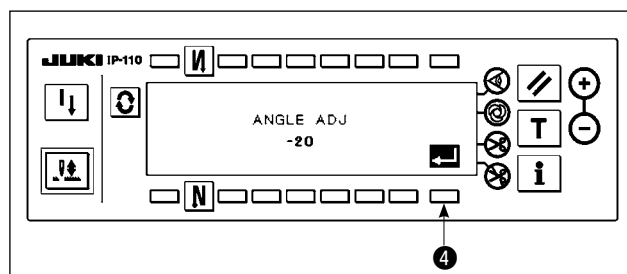
- 1) Keeping switch ❶ held pressed, turn the power ON. Then the screen is changed over to the machine head angle adjusting screen.



- 2) Turn the machine head pulley by hand until the main shaft reference signal is detected. Then, the angle transmitted by the main shaft reference signal is displayed in reverse video. (The value shown in the figure is a value for reference.)



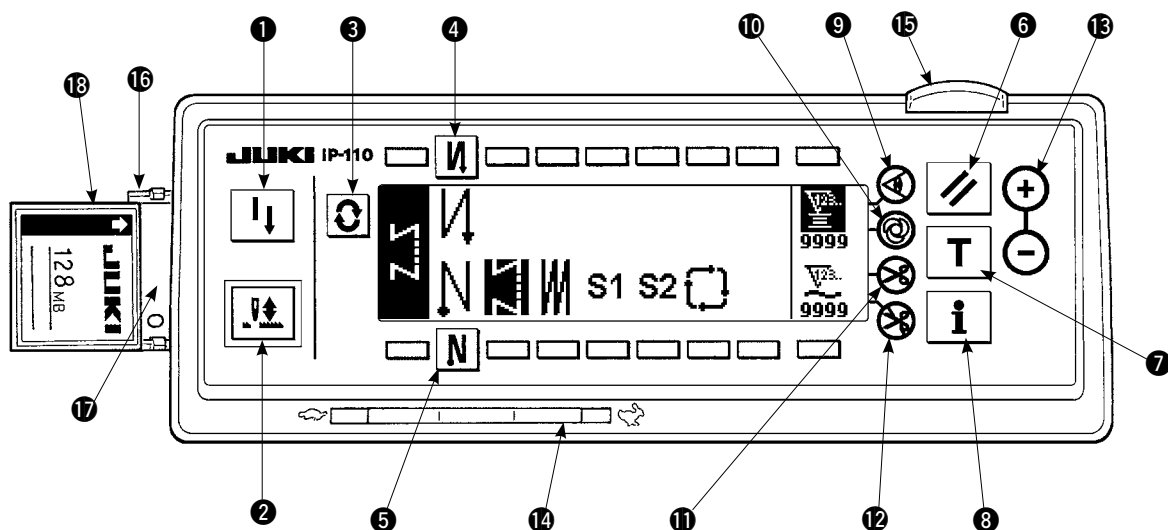
- 3) In this state, align the white dot ❷ of the hand-wheel with the concave ❸ of the handwheel cover as shown in the figure.



- 4) Once the angle is determined, press switch ❹. The angle displayed in reverse video is now displayed in normal video and the angle is replaced by the adjusted one. Turn the power switch OFF to exit from the angle adjustment.








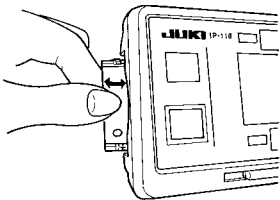
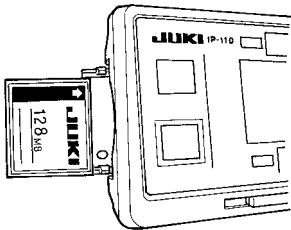
5. EXPLANATION OF THE OPERATION PANEL

5-1. Names and functions of each components

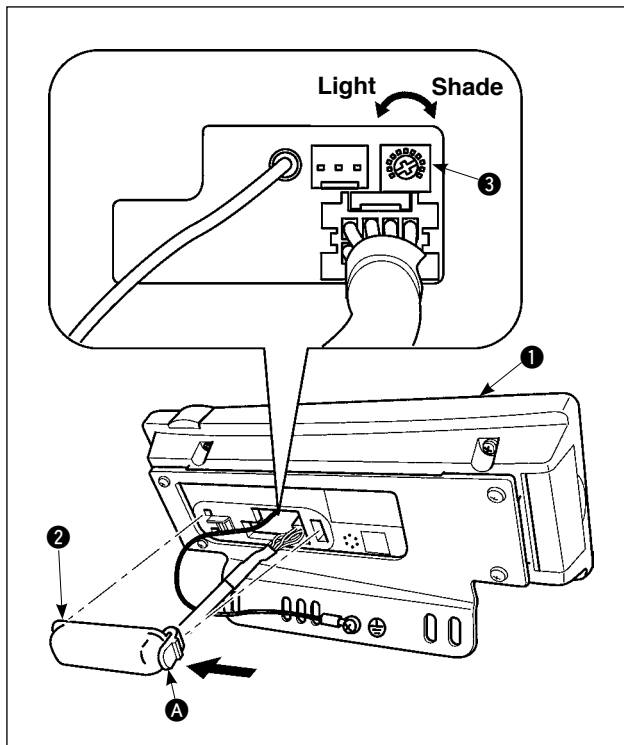


- | | | |
|---|--|-------------------------------|
| ① Re-sewing switch | ⑧ Information switch | ⑮ Power display lamp |
| ② Needle up/down compensating switch | ⑨ Material edge sensor switch | ⑯ Media cover |
| ③ Screen changeover switch | ⑩ One-shot automatic sewing switch | ⑰ Media slot |
| ④ With/without reverse feed stitch at sewing start switch | ⑪ With/without automatic thread trimmer switch | (Media inserting opening) |
| ⑤ With/without reverse feed stitch at sewing end switch | ⑫ Thread trimming prohibiting switch | ⑱ CompactFlash(TM) |
| ⑥ Reset switch | ⑬ Counter value setting switch | (Optional : Part No.40091100) |
| ⑦ Teaching switch | ⑭ Max.speed limitation variable resistor | |

| | | |
|---|--|--|
| ① Re-sewing switch | | This switch is used to continue sewing from the step on the way after replacing bobbin thread when bobbin thread has run out during program stitching step. |
| ② Needle up/down compensating switch | | This is the switch to perform needle up/down compensating stitching. (Needle up/down compensating stitching and one stitch compensating stitching can be changed over with function setting No. 22.) |
| ③ Screen changeover switch | | This is the switch to change over the screen. |
| ④ With/without reverse feed stitch at sewing start switch | | This is the switch to turn ON/OFF automatic reverse feed stitch at sewing start. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device. |
| ⑤ With/without reverse feed stitch at sewing end switch | | This is the switch to turn ON/OFF automatic reverse feed stitch at sewing end. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device. |
| ⑥ Reset switch | | This is the switch to make the value of bobbin thread counter or sewing counter the set value. |

| | |
|--|---|
| 7 Teaching switch  | <p>This is the switch to set the setting of the number of stitches with the value of number of stitches which has been actually sewn.</p> |
| 8 Information switch  | <p>This is the switch to perform various function settings.</p> |
| 9 Material edge sensor switch  | <p>Rendered effective when the material edge sensor is installed on the machine.</p> <p>Used for selecting whether or not the material edge sensor is used during sewing.</p> |
| 10 One-shot automatic sewing switch  | <p>When this switch is set to effective at the time of program stitching, the sewing machine automatically operates up to the specified number of stitches.</p> |
| 11 With/without automatic thread trimmer switch  | <p>When this switch is set to effective at the time of using the material end sensor for the reverse feed stitching pattern, the thread trimmer automatically trims the thread upon completion of sewing the specified number of stitches.</p> |
| 12 Thread trimming prohibiting switch  | <p>This switch prohibits all thread trimmings.</p> <p>* This switch cannot be used with the sewing machine which is not provided with the automatic thread trimming device.</p> |
| 13 Counter value setting switch  | <p>This is the switch to set the value of bobbin thread counter or No. of pcs. counter.</p> |
| 14 Max. speed limitation variable resistor | <p>When moving the resistor in the left direction, max. speed is limited.</p> |
| 15 Power display lamp | <p>This lamp lights up when the power switch is turned ON.</p> |
| 16 Media slot cover  | <p>This is the cover for media inserting opening.</p> <p>To open the cover, place your finger on the notch located on the side of the cover as shown in the figure and push the cover in the direction of left slanting rear.</p> <p>* There are some functions that are not able to be operated with the cover opened. Do not close the cover unless the CompactFlash(TM) is completely inserted.</p> |
| 17 Media slot (Media inserting opening)  | <p>To set CompactFlash(TM), place the label face of the CompactFlash(TM) to the front and insert the part that has a small hole (place the notch of the edge to the rear) to the panel.</p> <p>To remove the CompactFlash(TM), hold it between your fingers and draw it out.</p> <p>* When the inserting direction of the CompactFlash(TM) is wrong, the panel and the CompactFlash(TM) may be damaged. Do not insert anything other than the CompactFlash(TM).</p> |

5-2. Adjusting the contrast of the operation panel screen

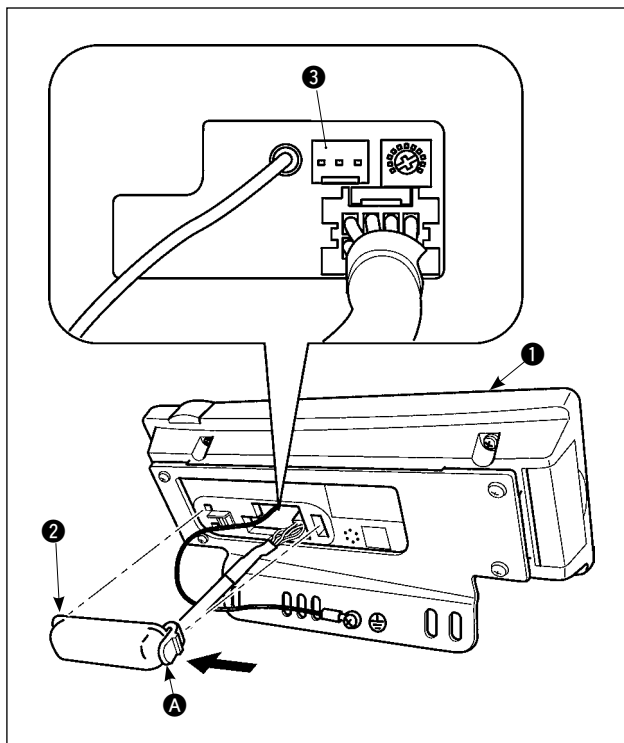


- 1) Press in the direction of arrow mark the click of section **A** of cord outlet cover **2** assembled in the rear of operation panel **1** and remove the cover.
- 2) Turn LCD screen display brightness adjustment variable resistor **3** to adjust the brightness (contrast) of LCD screen.



1. To prevent the operation panel from breakage, do not touch the circuit board pattern and the connector terminal.
2. Do not disassemble the operation panel to prevent it from breakage.

5-3. Connection of the production support switch

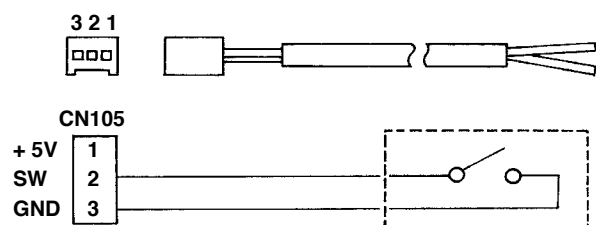


- 1) Press in the direction of arrow mark the click of section **A** of cord outlet cover **2** assembled in the rear of operation panel **1** and remove the cover.
- 2) Connect the optional junction cable connector to connector CN105 **3** of the production support switch.

Note) Prepare the switch main unit by the customers or ask JUKI business office about it.

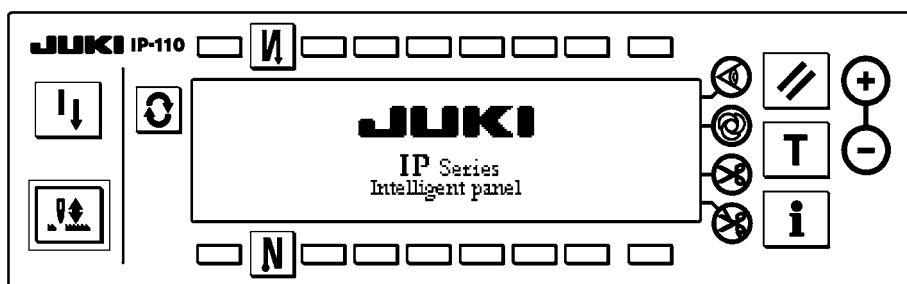
Optional relay cable A (asm.)

JUKI Part No. 40008168



5-4. Basic screen

WELCOME screen is displayed immediately after turning ON the power.

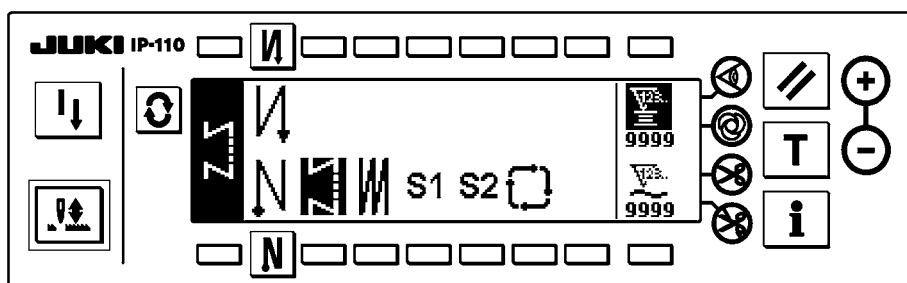


The screen immediately after WELCOME screen becomes the screen that performs the sewing pattern setting that was selected when turning OFF the power previously.

Every time switch is pressed, the screen changes.

■ Pattern list screen

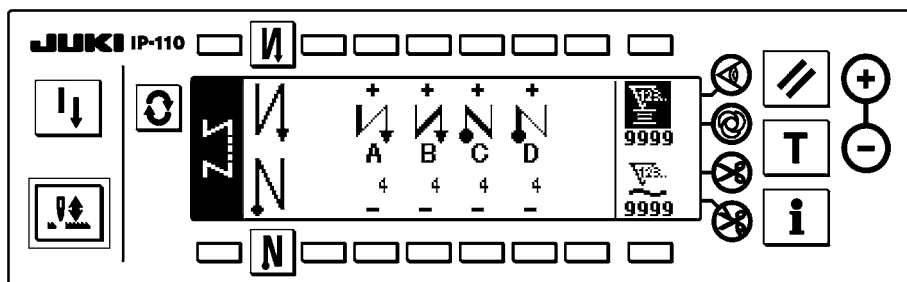
Selection of the respective shapes is performed.



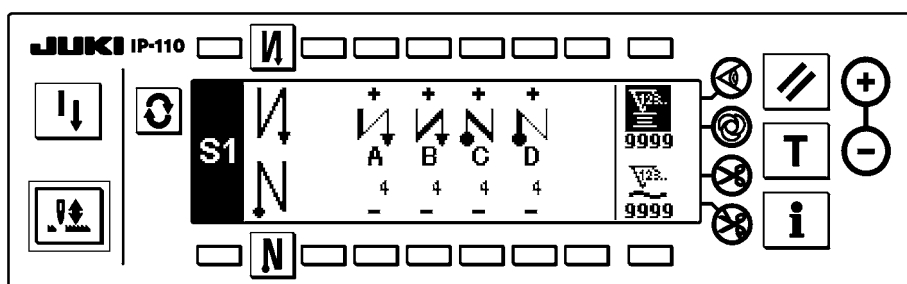
■ Number of stitches of back tuck stitching setting screen

Setting of number of stitches of reverse stitching is performed.

< When reverse stitching pattern is selected >

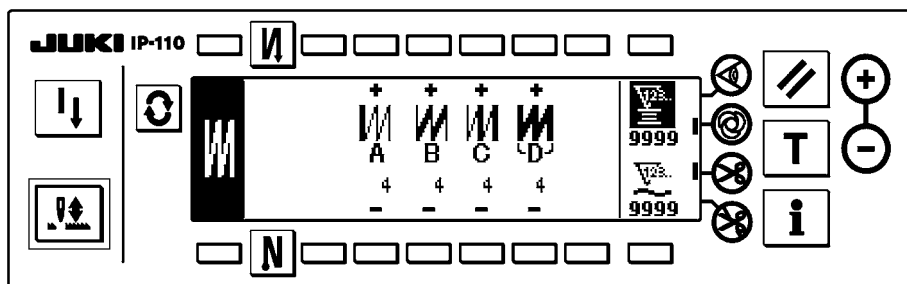


< When programmed stitching pattern 1 is selected >



■ Number of stitches of overlapped stitching setting screen

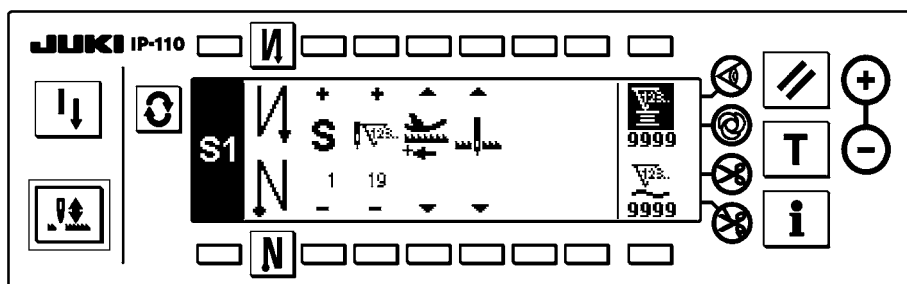
Setting of number of stitches of overlapped stitching is performed.



■ Programmed stitching setting screen

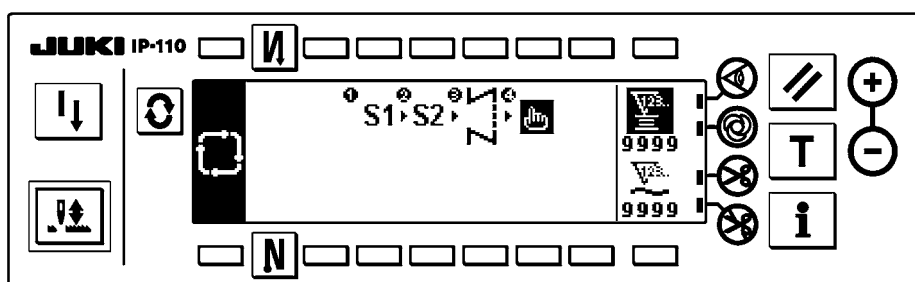
Setting of the respective conditions of programmed stitching is performed.

< When programmed stitching pattern 1 is selected >



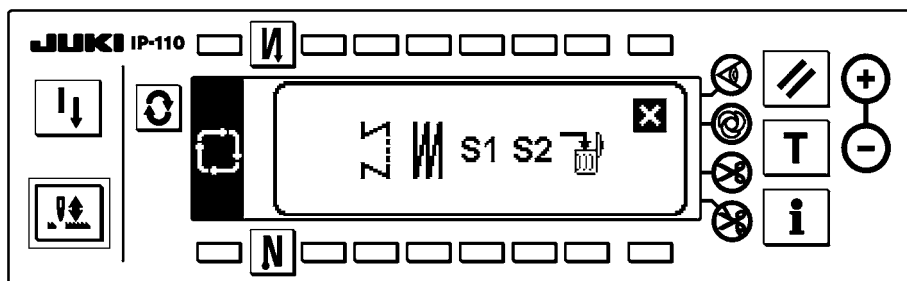
■ Cycle sewing setting screen

Setting of the step of cycle sewing is performed.









■ Cycle sewing pattern setting pop-up


Setting of the pattern of cycle sewing is performed.

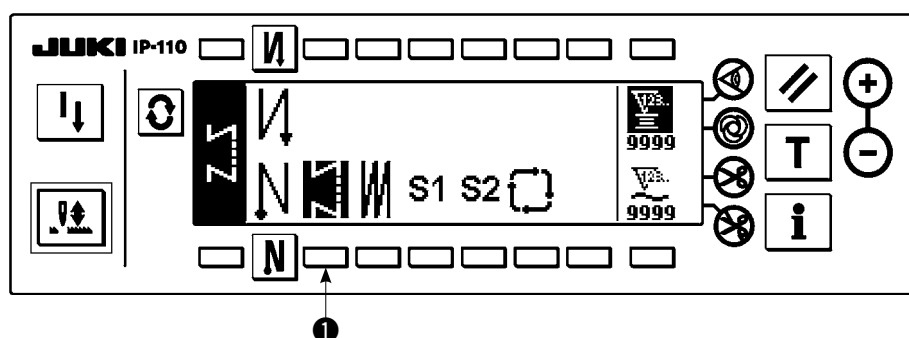


5-5. How to operate the operation panel for sewing stitching patterns

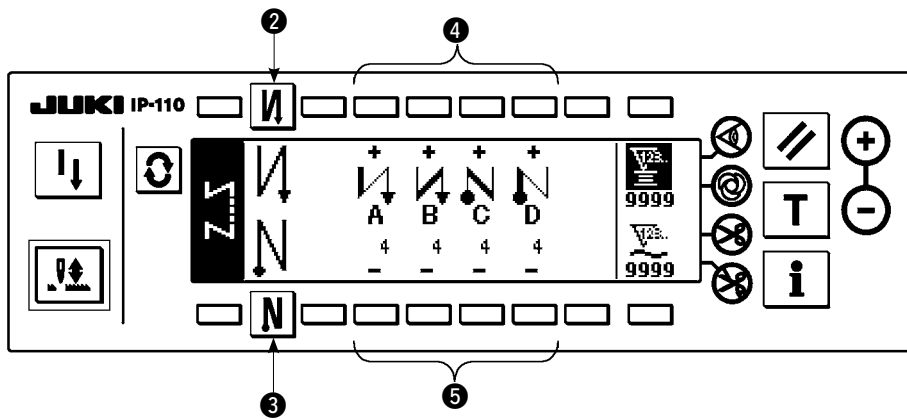
(1) Reverse stitching pattern

|  ② | OFF | ON | OFF | ON |
|---|---|---|---|---|
| Sewing pattern |  |  |  |  |
|  ③ | OFF | OFF | ON | ON |

Press  to display the pattern list screen.

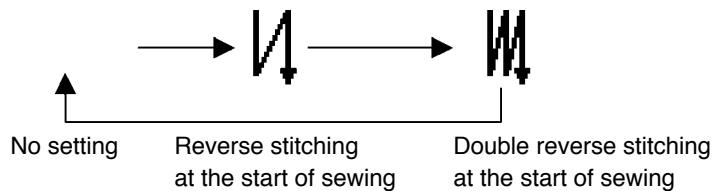


- 1) Press switch ① to select the reverse stitching pattern, and the screen is automatically changed over to the number of stitches of reverse stitching setting screen to display the number of stitches which has already been set.

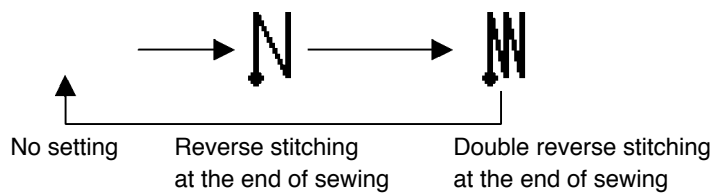


- 2) When changing the number of stitches, change it with switches ④ and ⑤ for setting the number of stitches A through D.
(The range of the number of stitches that can be changed : 0 to 99 stitches)

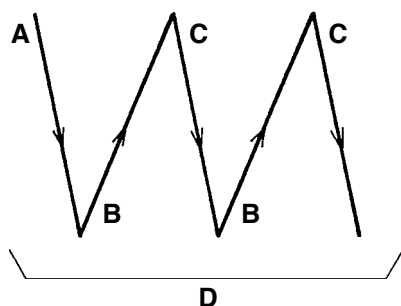
- 3) Press switch ② to set the reverse stitching at the start of sewing.



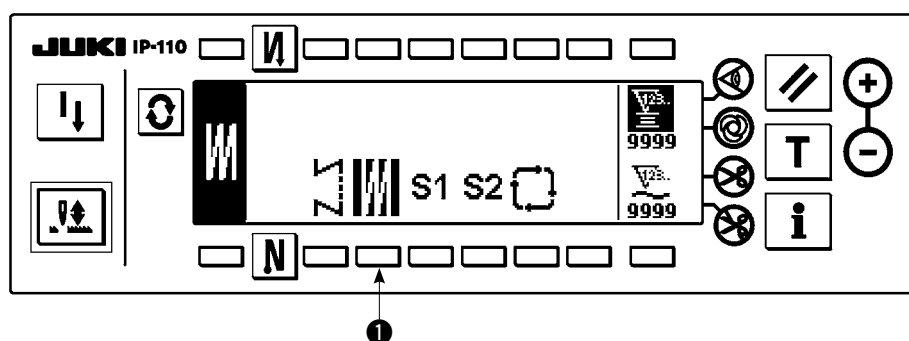
- 4) Press switch ③ to set the reverse stitching at the end of sewing.



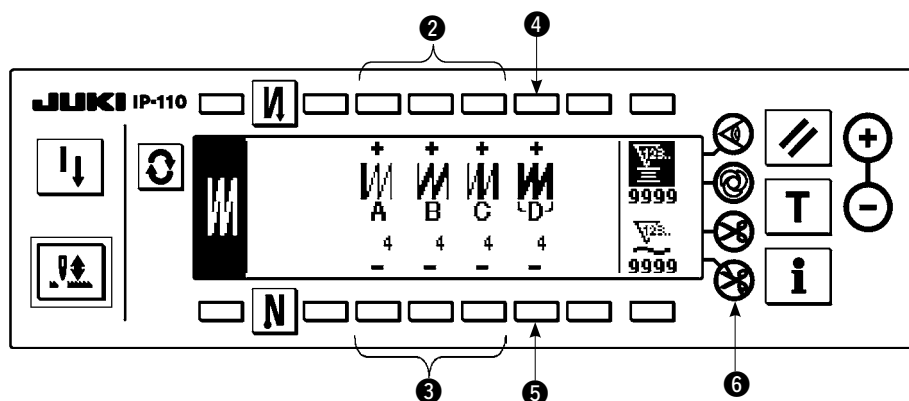
(2) Overlapped stitching pattern



Press to display the pattern list screen.



- 1) Press switch ① to select the overlapped stitching pattern, and the screen is automatically changed over to the number of stitches of overlapped stitching setting screen to display the number of stitches which has already been set.

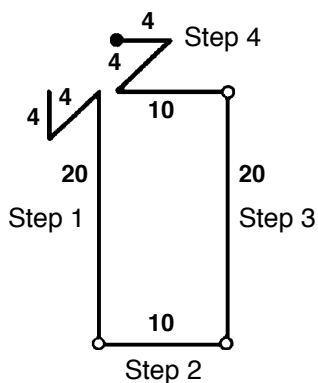


- 2) When changing the number of stitches, change it with switches ② and ③ for setting the number of stitches for processes A through C. To change the number of times of the whole processes, change it with switches ④ and ⑤ for setting the number of processes D.
(The range of the number of stitches A, B and C that can be changed : 0 to 19 stitches. The range of the number of processes D that can be changed : 0 to 9 times)
- 3) Depress the front part of the pedal once, and the sewing machine will repeat the normal stitching and reverse stitching as many as the number of specified times. Then the sewing machine will automatically make the thread trimmer actuate and will stop to complete the overlapped stitching procedure. (The one-shot automatic stitching cannot be turned OFF.)
- 4) When thread trimming prohibiting function ⑥ is selected, the machine will stop with the needle up upon completion of the overlapped stitching procedure without performing thread trimming.

(3) Programmed stitching pattern

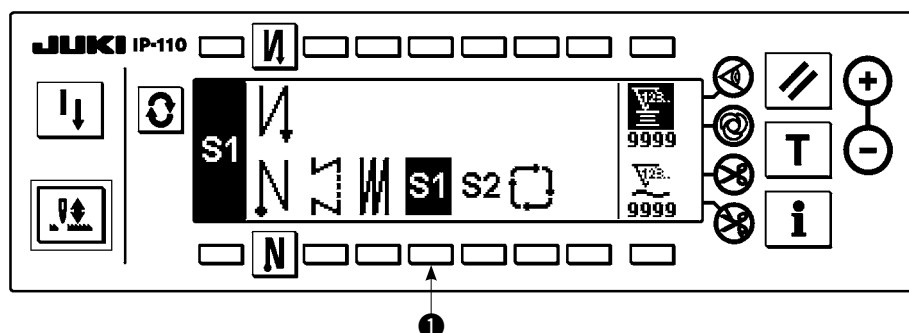
The constant-dimension stitching process can be programmed as many as 20 operation steps. The sewing conditions including the number of stitches, needle up/down stop mode, automatic thread trimming, continuous operation steps, lifting/lowering of presser foot and normal/reverse feed stitching can be separately specified for the respective operation steps. If the lifting of presser foot is specified, the time during which the presser foot is raised can be also specified.

Example of programmed stitching pattern



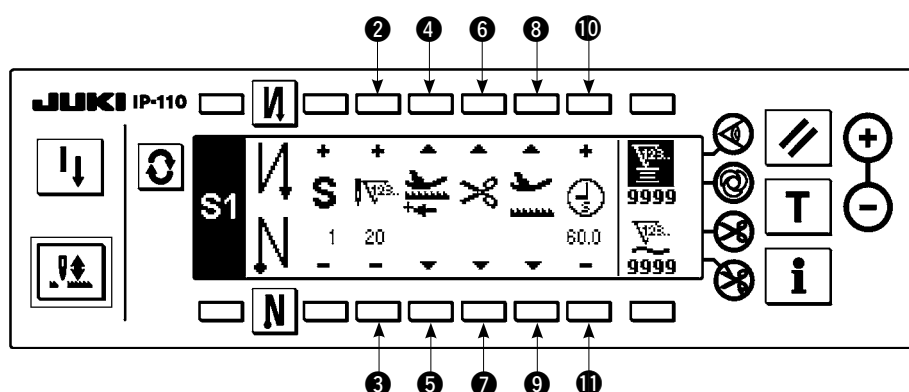
Programming procedure is described below taking the pattern on the left side as an example.

Press to display the pattern list screen.



- 1) Press switch **1** to select the programmed stitching pattern, and the screen is automatically changed over to the programmed stitching setting screen to display the number of stitches and data on the operation step 1 which have already been specified.

[Step 1]



- 1) Confirm that step 1 is displayed on the panel. Now, set the number of stitches to 20 using switches ② and ③.
- 2) Set the feeding direction to the normal direction using switches ④ and ⑤.
- 3) Set the stop state of the sewing machine to the needle-down stop mode using switches ⑧ and ⑨.



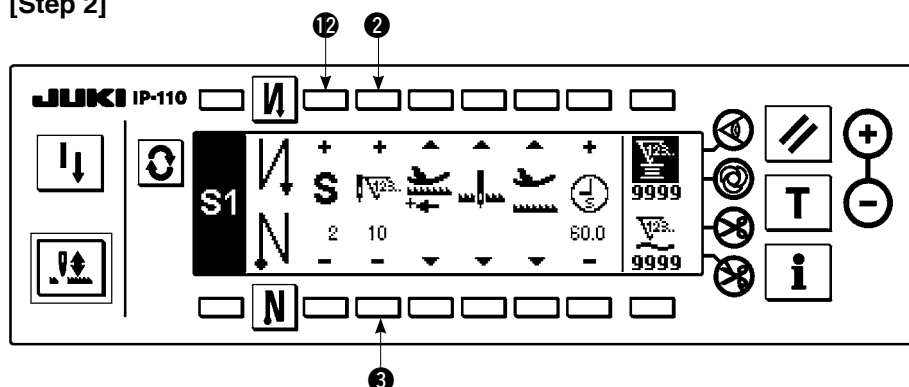
If the number of stitches is set to 0 stitch or the stop-state of the sewing machine is set to the auto-thread trimming mode ✂, the machine will not proceed to the subsequent operation step.

- 4) Set the position of the presser foot, when the sewing machine stops, to the upper stop position using switches ⑧ and ⑨.
(If you want to specify, in particular, the length of time during which the presser foot is raised, set it as desired using switches ⑩ and ⑪. In the initial state, the length of time is 60 seconds. Possible setting range of the time during which the presser foot is raised : 0.1 sec. to 99.9 sec.)



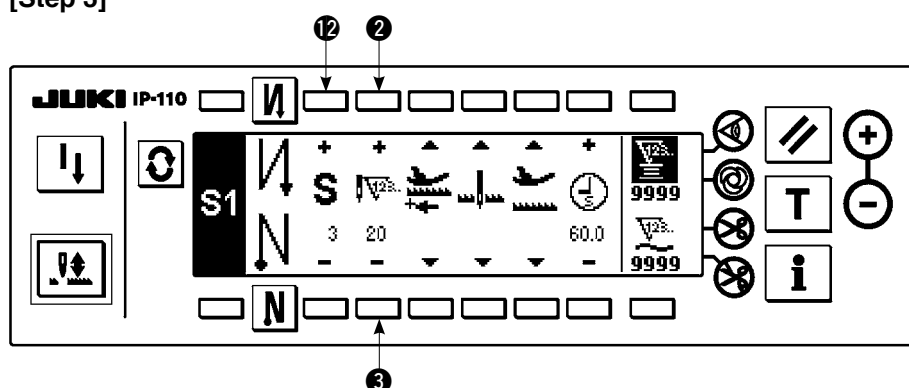
Settings done by switches ⑧, ⑨, ⑩ and ⑪ are only available under the setting where the auto-lifter can be used (i.e., FL ON).

[Step 2]



- 5) Press switch ⑫ once to display step 2.
- 6) Set the number of stitches to 10 using switches ② and ③.

[Step 3]



- 7) Set the feeding direction to the normal direction, the stop-state of the sewing machine to the needle-down stop mode and the position of the presser foot to the upper stop position as in the case of step 1.
- 8) Press switch ⑫ once to display step 3.
- 9) Set the number of stitches to 20 using switches ② and ③.
- 10) Set the feeding direction to the normal direction, the stop state of the sewing machine to the needle-down stop mode and the position of the presser foot to the upper stop position as in the case of steps 1 and 2.

The diagram shows the control panel of the JUKI IP-110. Numbered callouts point to the following controls:

- 1: JUKI IP-110 label
- 2: Stop button (N)
- 3: Start button (S)
- 4: Step 1 button (1)
- 5: Step 2 button (2)
- 6: Step 3 button (3)
- 7: Step 4 button (4)
- 8: Step 5 button (5)
- 9: Step 6 button (6)
- 10: Step 7 button (7)
- 11: Step 8 button (8)
- 12: Step 9 button (9)
- 13: Step 10 button (10)
- 14: Step 11 button (11)

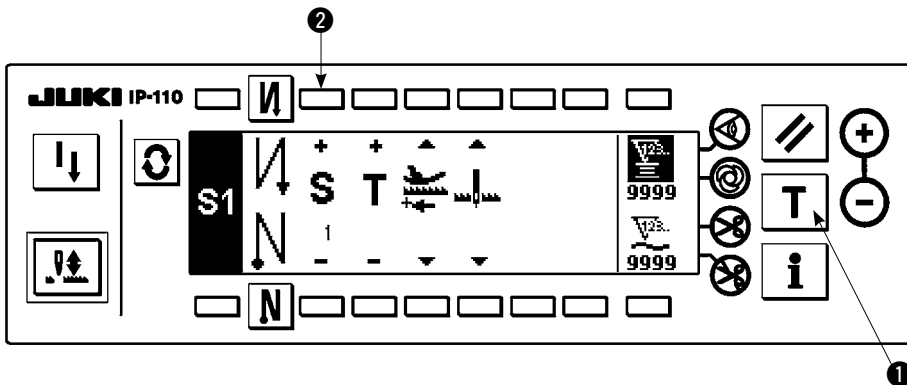
- Every time each step is finished, operate the touch-back switch, and the sewing machine runs at a low speed (stitch compensation operation).

In case of pattern 2, the display on the left end of the screen becomes **S2**.

- 14 -

< Teaching mode >

In the teaching mode, it is possible to set the number of stitches of the step in a programmed stitching pattern to the number of stitches that has been actually sewn.



- 1) In the programmed stitching setting screen, press teaching switch **1** to select the teaching mode.
- 2) The indication shown on the number of stitches input section changes to **T**. This shows that the sewing machine has entered the teaching mode.
- 3) Depress the front part of the pedal to make the sewing machine perform sewing until the last stitch of the current operation step is reached.

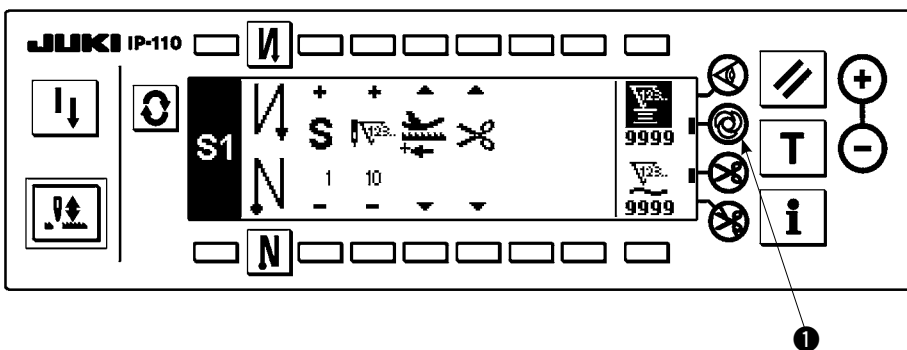


The number of stitches cannot be inputted by turning the hand wheel by hand or operating the needle up/down switch.

- 4) Return the pedal to its neutral position to make the sewing machine stop running. Now, the number of stitches which has been sewn is displayed.
- 5) Proceed to the subsequent step using switch **2** or make the sewing machine perform thread trimming. This completes the input of the number of stitches for operation step 1.

< One-shot automatic stitching >

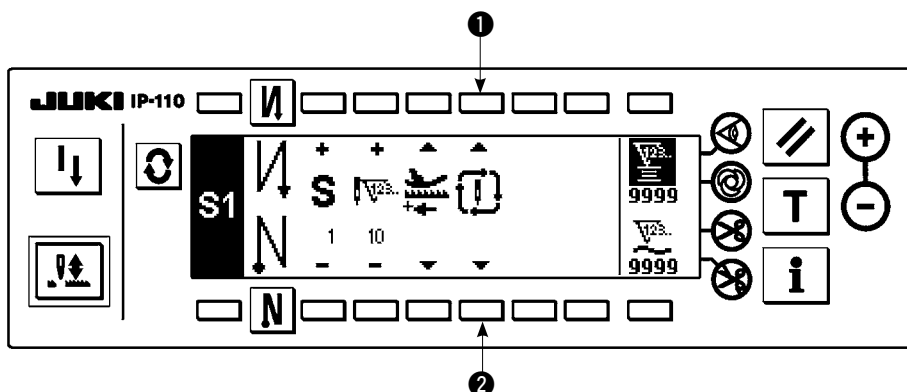
The one-shot automatic stitching function can be separately set by steps.



- 1) In the programmed stitching pattern setting screen, press one-shot automatic stitching switch **1** to select the one-shot automatic stitching function.
- 2) A mark is displayed on LCD section of the switch, which shows the one-shot automatic stitching function has been selected.
- 3) In the step where the one-shot automatic stitching function has been selected, the sewing machine will automatically continue sewing, once the sewing machine starts running, until the end of the step is reached.

< Continuous stitching mode >

In this mode, it is possible to make the sewing machine execute the subsequent step after the completion of the current step.



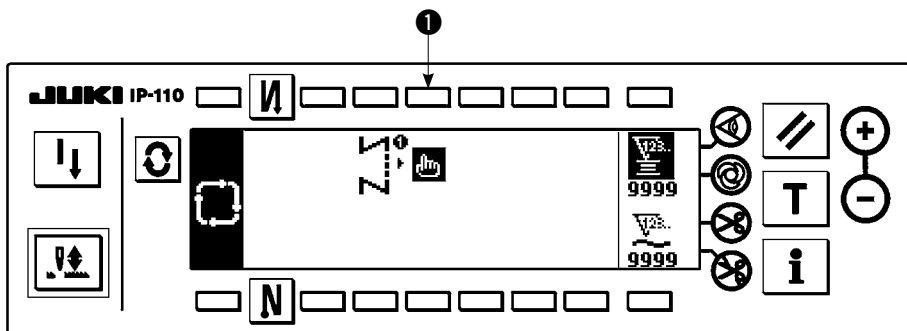
- 1) In the programmed stitching pattern setting screen, select the continuous stitching mode using switches ① and ②.
- 2) As long as the continuous stitching mode is selected, you can make the sewing machine execute the subsequent step set in the program after the completion of the current step by depressing the front part of the pedal.

< To operate the operation panel in combination with the material edge sensor >

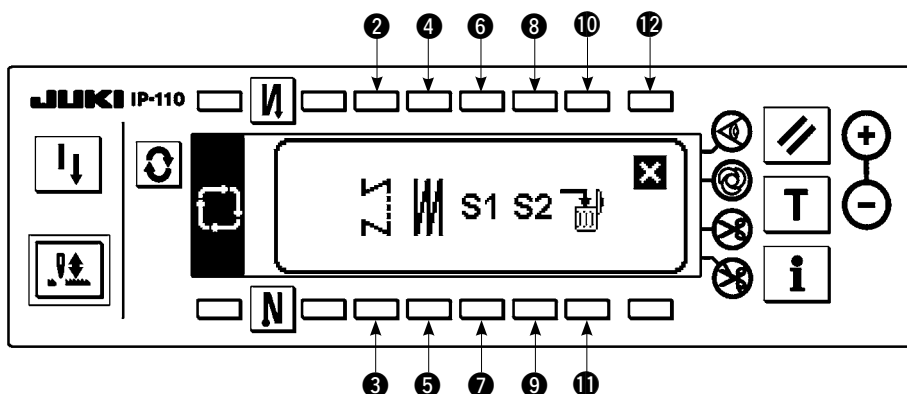
- When the operation panel is used in combination with the material edge sensor, the sewing process can be completed not by the predetermined number of stitches but by the input signal of the material edge sensor.
- Carefully read the Instruction Manual for the material edge sensor before using the sensor with the operation panel.

(4) Cycle sewing pattern

Reverse stitching pattern, overlapped stitching pattern, programmed stitching pattern 1 and programmed stitching pattern 2 can be set and sewn as desired. (As many as eight different patterns can be set.)



- 1) Press switch ① to display the cycle sewing edit pattern setting pop-up.



Switches ② and ③ : These switches set the reverse stitching pattern.

Switches ④ and ⑤ : These switches set the overlapped stitching pattern.

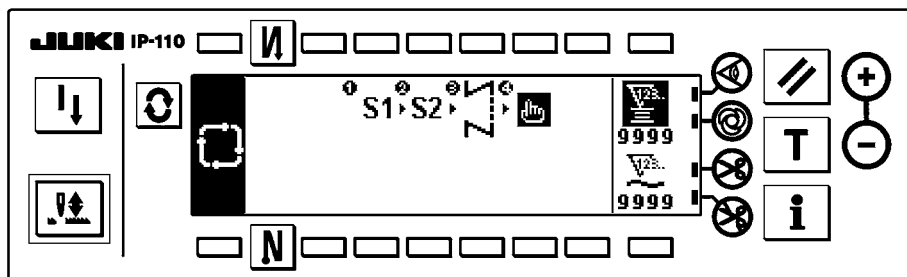
Switches ⑥ and ⑦ : These switches set the programmed stitching pattern 1.

Switches ⑧ and ⑨ : These switches set the programmed stitching pattern 2.

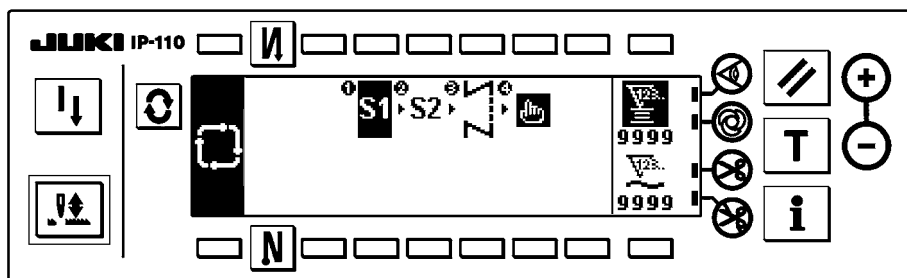
Switches ⑩ and ⑪ : These switches delete the editing step.

Switch ⑫ : The screen returns to the cycle sewing setting screen.

[Example of setting]



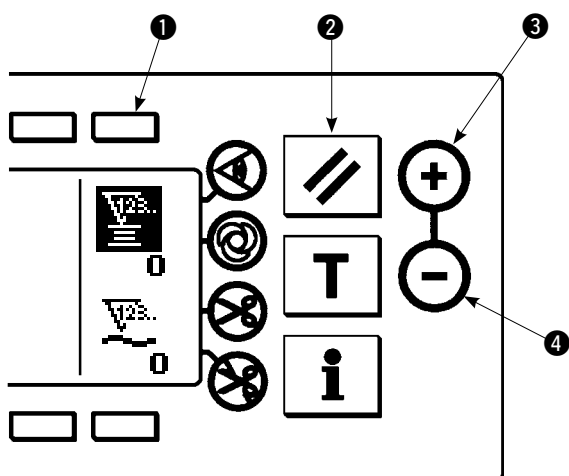
- 2) Every time the thread trimmer actuates, the machine proceeds to the subsequent pattern which has been selected. (The step which is being executed is shown in reverse video during execution.)



If the thread trimmer actuates before completion of a pattern, the machine will proceed to the subsequent program.

6. BOBBIN COUNTER

The number of stitches sewn by the sewing machine is detected. The detected number of stitches is decremented from the preset counter value (in units of the number of stitches preset using function setting No. 7 "Unit of bobbin thread counting down." When the counter value changes from the positive value to the negative value (... → 1 → 0 → -1), the buzzer sounds (3 sets of two consecutive blips) and the notification is shown on the popup window to alert the operator to change the bobbin.



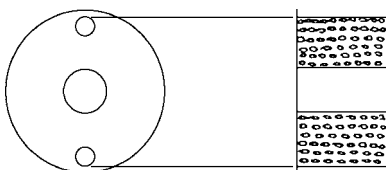
- 1) Press switch ① to select the bobbin thread counter. Then press counter reset switch ② to return the value indicated on the bobbin thread counter to the initial value (it has been factory-set to "0" at the time of delivery).



The bobbin thread counter cannot be reset during sewing. In this case, make the thread trimmer actuate once.

- 2) Set an initial value using counter value setting switches ③ and ④.

Initial value on the bobbin thread counter for reference



The table below gives the initial setting values for reference when the bobbin is wound with thread to the extent that the pinhole in the outside of the bobbin case is reached as shown in the figure on the left side.

| Thread used | Length of thread wound round the bobbin | Value on bobbin thread counter |
|---------------------------|---|--------------------------------|
| Polyester spun thread #50 | 36 m | 1200 (stitch length : 3 mm) |
| Cotton thread #50 | 31 m | 1000 (stitch length : 3 mm) |

Thread tension rate 100 %

* Actually, the bobbin thread counter is affected by the material thickness and the sewing speed. So, adjust the initial value of the bobbin thread counter in accordance with the operating conditions.

- 3) Once the initial value is specified, start the sewing machine.
- 4) When a minus value is shown on the counter, the buzzer peeps three times and the pop-up display appears, replace the bobbin thread.

Bobbin thread replacement warning pop-up



- 5) After the bobbin thread has been properly replaced, press counter reset switch ② to return the value on the bobbin thread counter to the initial value. Now, re-start the sewing machine.
- 6) If the remaining amount of bobbin thread is excessive or the bobbin thread runs out before the bobbin thread counter indicates a minus value, adjust the initial value appropriately using counter value setting switches ③ and ④.

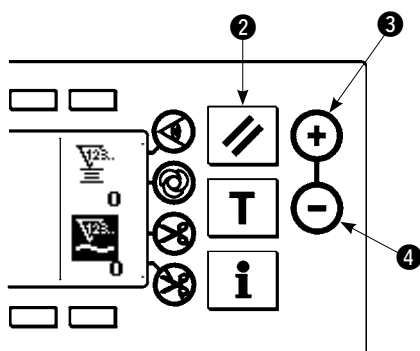
If the remaining amount of bobbin thread is excessive Increase the initial value using the "+" switch.
If the remaining amount of bobbin thread is insufficient Decrease the initial value using "-" switch.



1. Uneven performance may occur in accordance with the winding way of thread or the thickness of materials and it is necessary to set the thread trimming amount with some surplus.
2. If the bobbin thread counter is used in combination with the bobbin thread remaining amount detecting device, the bobbin thread counter indicates the number of detections of the bobbin thread remaining amount detecting device. So, be sure to use the device after carefully reading the Instruction Manual for the bobbin thread remaining amount detecting device.

7. NO. OF PCS. COUNTER

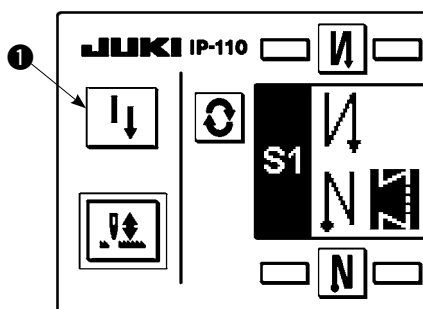
The No. of pcs. counter counts up the number of finished products every time the machine performs thread trimming. (0 → 1 → 2 → 9999)



The value on the No. of pcs. counter can be modified using counter value setting switches 3 and 4. The value on the No. of pcs. counter is reset to "0" by pressing counter reset switch 2.

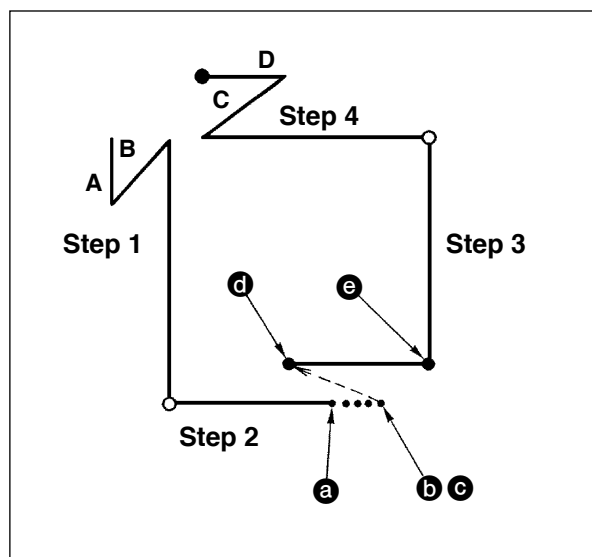
8. RE-SEWING SWITCH

The re-sewing switch is used when the bobbin thread runs out during the programmed stitching pattern sewing steps or the like.



- 1) The bobbin thread runs out during the operations steps for sewing. **a**
- 2) Bring the pedal to its neutral position to make the sewing machine stop. Now, depress the back part of the pedal to make the thread trimmer actuate. **b**
- 3) Turn ON re-sewing switch 1. **c**
- 4) Replace the bobbin. Slightly feed the material on the machine in the reverse direction to return the material to the position where the sewing was interrupted to allow the sewing machine to sew over the finished seam in step 2. **d**
- 5) Depress the front part of the pedal until stop position **e** of step 2 is reached.
- 6) Turn ON re-sewing switch **e** again at position 1 where the sewing has been interrupted, and the next step will be indicated on the operation panel. Now, you can re-start sewing of the programmed stitching pattern.

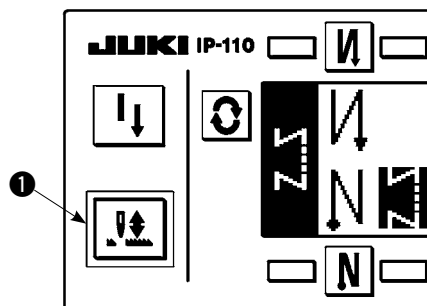
* If the needle thread breaks or any other trouble occurs, which is caused by re-sewing switch 1 during the operation steps (**d** → **e**) in the free sewing mode, bring the pedal to its neutral position, Then depress the back part of the pedal to actuate the thread trimmer. Thread the machine head and slightly feed the material in the reverse direction, and press re-sewing switch 1. This enables the sewing machine to continue the sewing under the free sewing mode. Then operate the operation panel as described in the aforementioned steps 5) and 6).



To return to the first step of the programmed stitching pattern without using re-sewing switch 1, depress the back part of the pedal to actuate the thread trimmer. This makes the operation panel give the step indication 1. Now, you can start sewing from the first step of the programmed stitching pattern.



9. NEEDLE UP/DOWN COMPENSATION SWITCH



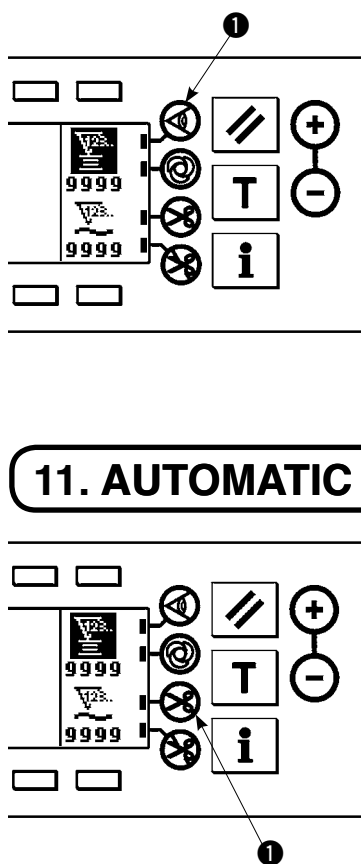
Every time needle up/down compensation switch ❶ is pressed, the needle goes up when it is in its lowest position or comes down when it is in its highest position. This compensates the stitch by a half of the predetermined stitch length.

Note, however, that the machine does not run continuously at a low speed even if you keep the switch held pressed.

Also, note that the needle up/down compensation switch is inoperative after turning the handwheel by hand.

Thread trimming is operative only at the time of stitch compensation after depressing the front part of the pedal once.

10. ON/OFF SWITCH ❶ OF THE MATERIAL EDGE SENSOR

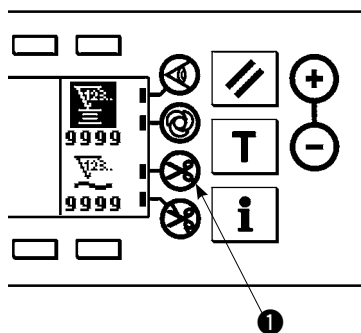


- When material edge sensor ❶ is pressed, ON/OFF of the material edge sensor is changed over.
- When the material edge sensor, which is optionally available, is connected to the operation panel, the ON/OFF switch of the material edge sensor becomes effective.
- If the material edge sensor is specified, the sewing machine will automatically stop running or perform thread trimming when the sensor detects the material edge.



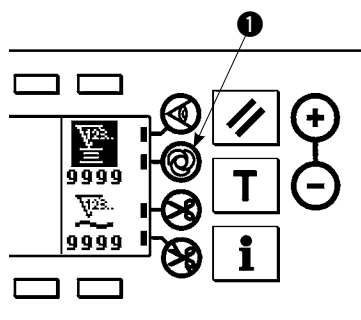
If the material edge sensor is used in combination with the operation panel, carefully read the Instruction Manual for the material edge sensor beforehand.

11. AUTOMATIC THREAD TRIMMING SWITCH ❶



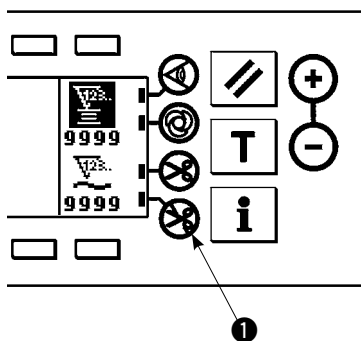
- When automatic thread trimming switch ❶ is pressed, ON/OFF of the automatic thread trimming is changed over.
- This switch is rendered effective, when the material end sensor is turned ON for the reverse feed stitching pattern, to automatically activate the thread trimmer upon detection of the material end.
(if the automatic reverse stitching (for end) is specified, the thread trimmer will actuate after the sewing machine completes the automatic reverse stitching (for end).)



12. ONE-SHOT AUTOMATIC STITCHING SWITCH ❶



- When one-shot automatic stitching switch ❶ is pressed, ON/OFF of the one-shot automatic stitching is changed over.
- This switch is used, in the constant-dimension stitching mode, rectangular stitching mode, or in the process where the material edge sensor is specified, to make the sewing machine automatically perform sewing at the specified speed until the end of the process is reached only by driving the sewing machine once.

13. THREAD TRIMMING PROHIBITION SWITCH



- When thread trimming prohibition switch **1** is pressed, ON/OFF of the thread trimming prohibition is changed over.
- This switch is used to temporarily make the thread trimming function inoperative.
The other performance of sewing machine is not affected by this switch.
(If the automatic reverse stitching (for end) is specified, the sewing machine will perform the automatic reverse stitching at the end of sewing.)
- If the automatic thread trimming switch  and the thread trimming prohibition switch  are both specified, the machine will not perform thread trimming but stop with its needle up.

14. SIMPLIFIED FUNCTION SETTING

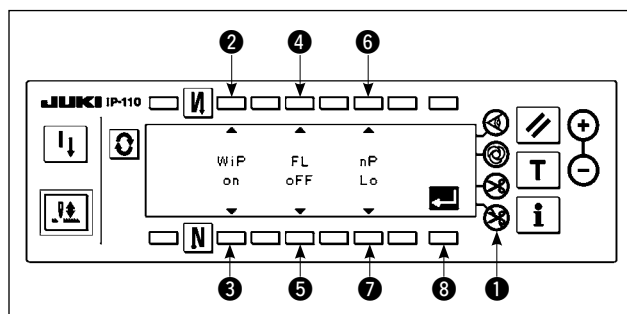


WARNING :

If the solenoid is used under the air drive mode, the solenoid can burn out. Be sure to carefully avoid the wrong setting of the presser foot lifting device specification.

Function setting items can be simplified in part.

[Simplified function setting screen]



- 1) Keeping thread trimming prohibiting switch ❶ held pressed, turn the power ON. Then, the screen is changed over to the simplified function setting screen. The details displayed on the screen represent the current settings.
- 2) Function items can be changed by pressing switches ❷ and ❸, ❹ and ❺ or ❻ and ❼.

* Wiper function (WiP): Switches ❷ and ❸

This function activates the wiper.

oFF : The wiper does not operate after thread trimming.

on : The wiper operates after thread trimming (standard setting at the time of delivery)

* Auto-lifter (FL): Switches ❹ and ❺

This function activates the auto-lifter function when the presser foot lifting device (AK) is installed on the sewing machine.

For the presser foot lifting device specifications, solenoid drive mode (+33 V) or air drive mode (+24 V) can be selected.

The drive source voltage (CN37) is changed over between +33 V and + 24 V according to the drive mode specification selection.

oFF : Auto-lifter does not operate. (standard setting at the time of delivery)

(The presser foot does not automatically go up when the program sewing is completed.)

on S : Auto-lifter operates. (Solenoid drive mode [+33 V])

on A : Auto-lifter operates. (Air drive mode [+24 V])

* Needle position changeover function for the time when the sewing machine stops (nP): Switches ❻ and ❼

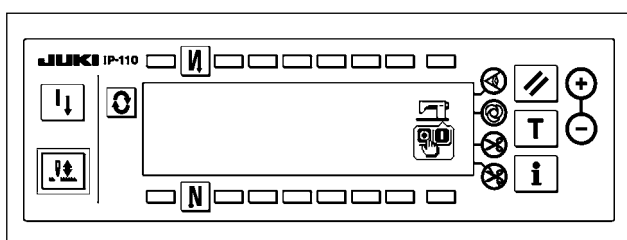
The needle position at the time when the sewing machine stops can be changed over.

Lo : Lower stop position (standard setting at the time of delivery)

UP : Upper stop position

- 3) Once you have completed the setting, press switch ❸. The screen is changed over to the power switch OFF notification screen.

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the simplified function setting.

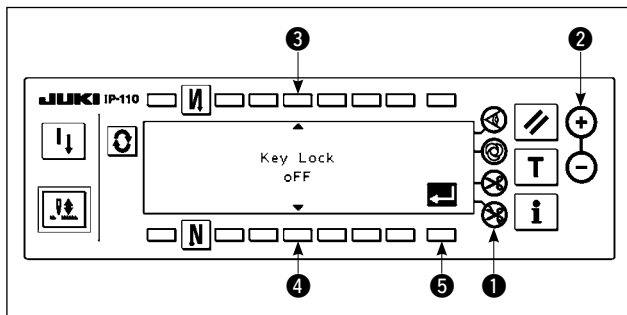


If "on" (auto-lifter operates) is selected without the auto-lifter installed, the machine startup is momentarily delayed at the beginning of sewing. In addition, the one-touch type reverse feed (touch-back) switch may be disabled. To avoid these troubles, be sure to select "oFF" (auto-lifter does not operate) when the auto-lifter device is not installed.

15. KEY-LOCK FUNCTION SETTING

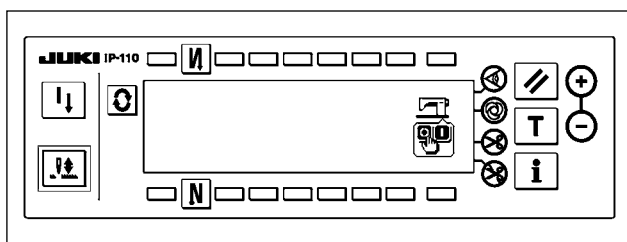
In order to prevent settings of the number of stitches or detailed settings for processes (A, B, C and D), it is possible to lock the function setting switches in the current state. (Even under the key-lock mode, the patterns or bobbin counter can be changed.)

[Key-lock function setting screen]



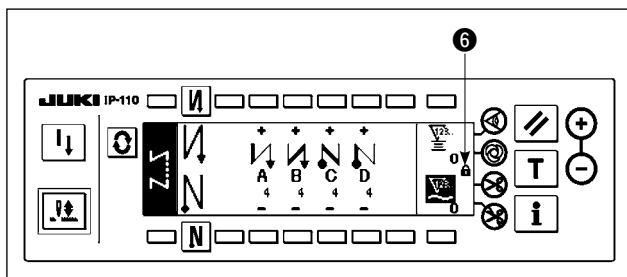
- 1) Keeping thread trimming prohibiting switch **1** and counter value setting switch (+) **2** held simultaneously, turn the power ON. Then, the screen is changed over to the key-lock function setting screen. Setting displayed on the screen represents the current setting of the key-lock function.
- 2) The key-lock function can be changed over between "on" (key-lock function is effective) and "oFF" (key-lock function is ineffective [standard setting at the time of delivery]) by pressing switches **3** and **4**.
- 3) Once you have completed the setting, press switch **5**. The screen is changed over to the power switch OFF notification screen.

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the simplified function setting.

[Number of reverse feed stitches setting screen] (Example of display)



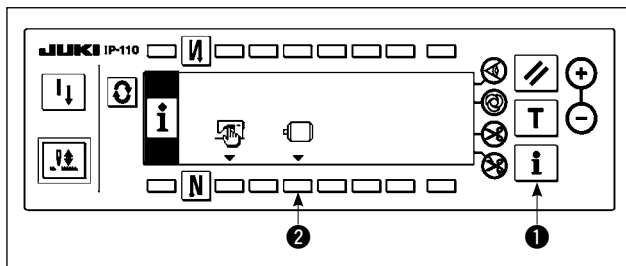
- 5) When the key-lock function is "on" (key-lock function is effective), key icon **6** is displayed on the screen.

16. FUNCTION SETTING

Functions of the sewing machine can be programmed and the number of stitches and the number of revolutions can be changed.

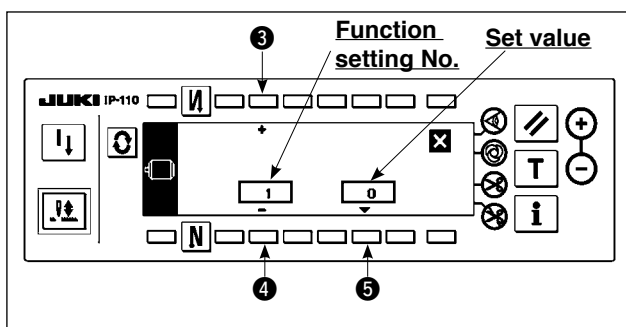
Refer to the Instruction Manual for the SC-920 for how to change the function setting items and for the details of the functions.

[Function settings list screen]



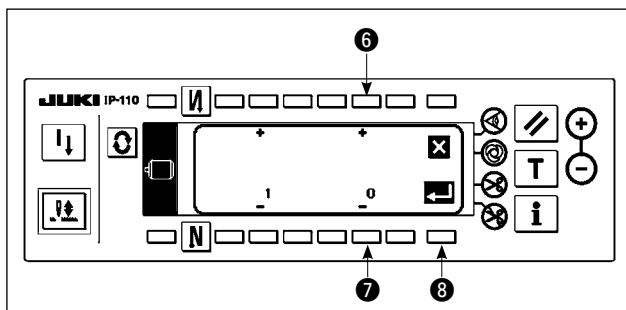
- 1) Keeping switch ❶ held pressed, turn the power ON. Then the screen is changed over to the function settings list screen.
When you press switch ❷, the screen is changed over to the function setting display screen.

[Function setting display screen]



- 2) Function setting item number can be incremented or decremented by pressing switches ❸ and ❹.
- 3) Once you have determined the target function setting number, press switch ❺. The screen is changed over to the function setting popup screen.

[Function setting popup screen]

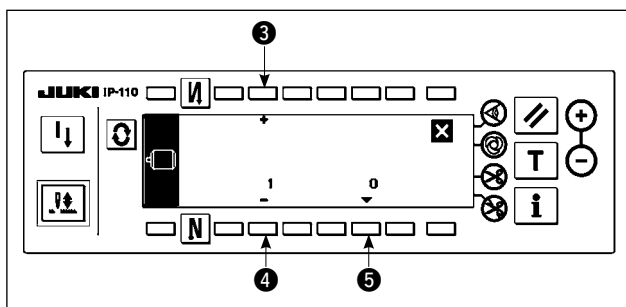


- 4) Function setting item number can be incremented or decremented by pressing switches ❹ and ❺.
- 5) Once you have completed set value changing, press switch ❽. The screen is changed over to the function setting display screen and the changed set value is displayed on the screen.
- 6) Turn OFF the power switch to exit from the function setting.

* To change two or more different function setting numbers, repeat the aforementioned steps of procedure 2) through 5) as required.

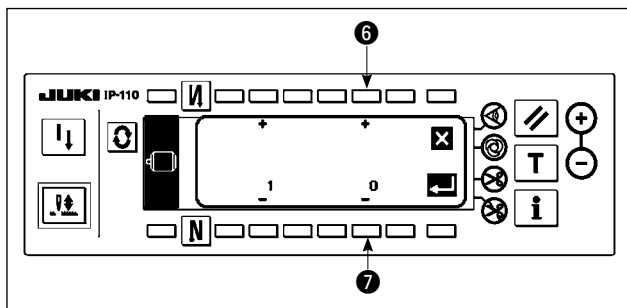
Example) [To change the number of stitches 0 to 3 using the soft-start function (function setting No. 1)]

[Function setting display screen]

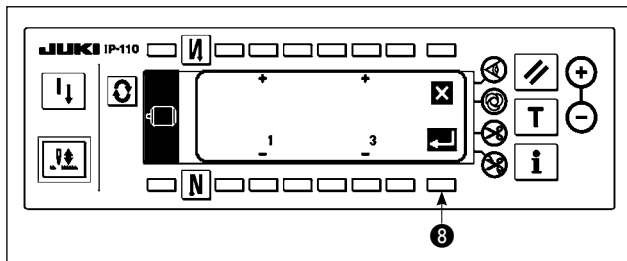


- 1) Press switches ❸ and ❹ to select function setting No. 1.
- 2) Press switch ❺. The screen is changed over to the function setting popup screen.

[Function setting popup screen]

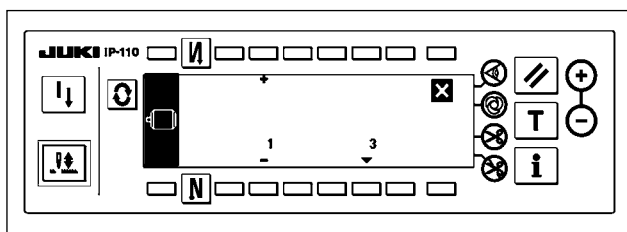


- 3) Press switches **6** and **7** to change the set value to 3.



- 4) Press switch **8**. The screen is changed over to the function setting display screen.

[Function setting display screen]



- 5) The changed set value is displayed on the function setting display screen.
- 6) Turn OFF the power switch to exit from the function setting.



Refer to the Instruction Manual for the function setting list and the details of the function setting items.

Function setting list

| No | Item | Description | Setting range | Indication of function setting | |
|-----|---|---|-----------------------|--------------------------------|---|
| 1 | Soft start function | The number of stitches to be sewn at a low speed when the soft-start function is used at the start of sewing. 0 : The function is not selected. 1 to 9 : The number of stitches to be sewn under the soft-start mode. | 0 to 9 (Stitches) | 1 | 0 |
| 2 | Material end sensor function | This item is not used on the IP-110F. | 0/1 | 2 | 0 |
| 3 | Thread trimming function by material end sensor | This item is not used on the IP-110F. | 0/1 | 3 | 0 |
| 4 | Number of stitches for material end sensor | This item is not used on the IP-110F. | 0 to 19 (Stitches) | 4 | 5 |
| 5 | Flicker reducing function | Flicker reducing function 0 : Flicker reducing function is not operative. 1 : Flicker reducing function is effective | 0/1 | 5 | 0 |
| 6 | Bobbin thread counting function | Bobbin thread counting function 0 : Bobbin thread counting function is not operative. 1 : Bobbin thread counting function is operative. | 0/1 | 6 | 1 |
| * 7 | Unit of bobbin thread counting down | Unit of bobbin thread counting down 0 : 1 Count/10 stitches 1 : 1 Count/15 stitches 2 : 1 Count/20 stitches 3 : 1 Count/thread trimming | 0 to 3 | 7 | 0 |

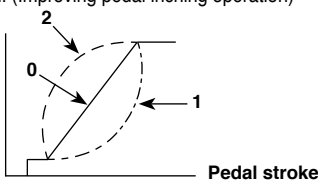
* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

| No | Item | Description | Setting range | Indication of function setting | |
|----|------|---|------------------------|--------------------------------|------|
| * | 8 | Number of rotation of reverse feed stitching | 150 to 3,000 (sti/min) | 8 | 1900 |
| | 9 | Thread trimming prohibiting function | 0/1 | 9 | 0 |
| | 10 | Setting of needle bar stop position when the sewing machine stops. 0 : Predetermined lowest position 1 : Predetermined highest position | 0/1 | 10 | 0 |
| | 11 | Operation confirmation sound for operation panel 0 : Operation confirmation sound is not generated 1 : Operation confirmation sound is generated. | 0/1 | 11 | 1 |
| * | 13 | Function of prohibiting start of the sewing machine by bobbin thread counter 0 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine is not operative. 1 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine after thread trimming is operative. 2 : When counting is out (-1 or less), the sewing machine stops once. Function of prohibiting start of the sewing machine after thread trimming is operative. | 0 to 2 | 13 | 0 |
| | 14 | Sewing counter Counting function of sewing (number of completion of process) 0 : Sewing counter function is not operative. 1 : Sewing counter function is operative. (Every time thread trimming is performed) 2 : With the sewing counting switch input function | 0 to 2 | 14 | 1 |
| | 15 | Thread wiping function after thread trimming Thread wiping operation after thread trimming is specified. 0 : Thread wiping is not carried out after thread trimming 1 : Thread wiping is carried out after thread trimming | 0/1 | 15 | 1 |
| | 21 | Function of neutral presser lifting Function of lifting presser foot when the pedal is in neutral position. 0 : Function of neutral automatic presser lifting is not operative. 1 : Selection of function of neutral presser lifting. | 0/1 | 21 | 0 |
| | 22 | Needle up/down correction switch changeover function Function of the needle up/down correction switch is changed over. 0 : Needle up/down compensation 1 : One stitch compensation | 0/1 | 22 | 0 |
| | 25 | Thread trimming operation after turning the handwheel by hand Thread trimming operation after moving the needle away from its upper or lower position by turning the handwheel by hand is specified. 0 : Thread trimming operation is carried out after turning the handwheel by hand 1 : Thread trimming operation is not carried out after turning the handwheel by hand | 0/1 | 25 | 1 |
| | 29 | Initial motion time of back-tack This function sets the suction time of initial motion of back-tack solenoid. 50 ms to 500 ms | 50 to 500 (ms) | 29 | 70 |
| | 30 | Function of reverse feed stitching on the way Function of reverse feed stitching on the way 0 : Function of reverse stitching on the way is not operative. 1 : Function of reverse feed stitching on the way is operative. | 0/1 | 30 | 0 |
| | 31 | Number of stitches of reverse feed stitching on the way. Number of stitches of reverse feed stitching on the way. | 0 to 19 (Stitches) | 31 | 4 |
| | 32 | Effective condition of reverse feed stitching on the way when the sewing machine is stopping. Effective condition of reverse feed stitching on the way 0 : Function is not operative when the sewing machine stops. 1 : Function is operative when the sewing machine stops. | 0/1 | 32 | 0 |
| | 33 | Thread trimming function by reverse feed stitching on the way Thread trimming function by reverse feed stitching on the way 0 : Automatic thread trimming function after completion of reverse feed stitching on the way is not operative. 1 : Automatic thread trimming after completion of reverse feed stitching on the way is performed. | 0/1 | 33 | 0 |
| * | 35 | Number of rotation at a low speed Lowest speed by pedal (The MAX value differs by machine head.) | 150 to MAX (sti/min) | 35 | 200 |
| * | 36 | Number of rotation of thread trimming Thread trimming speed (The MAX value differs by machine head.) | 100 to MAX (sti/min) | 36 | 420 |
| | 37 | Number of rotation of soft-start Sewing speed at the start of sewing (soft-start) (The MAX value differs by machine head.) | 100 to MAX (sti/min) | 37 | 800 |

* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

| No | Item | Description | Setting range | Indication of function setting | |
|----|------|--|---|--------------------------------|-----------------------|
| | 38 | One-shot speed | One-shot speed (The max. value depends on the number of rotation of the sewing machine head.) | 150 to MAX (sti/min) | 38 2500 |
| * | 39 | Pedal stroke at the start of rotation | Position where the sewing machine starts rotating from pedal neutral position (Pedal stroke) | 10 to 50 (0.1 mm) | 39 30 |
| * | 40 | Low speed section of pedal | Position where the sewing machine starts accelerating from pedal neutral position (Pedal stroke) | 10 to 100 (0.1 mm) | 40 60 |
| * | 41 | Starting position of lifting presser foot by pedal | Position where the cloth presser starts lifting from pedal neutral position (Pedal stroke) | - 60 to -10 (0.1mm) | 41 -21 |
| * | 42 | Starting position of lowering presser foot | Starting position of lowering presser foot Stroke from the neutral position | 8 to 50 (0.1 mm) | 42 10 |
| * | 43 | Pedal stroke 2 for starting thread trimming | Position 2 where the thread trimming starts from pedal neutral position (When the function of lifting presser foot by pedal is provided.) (Pedal stroke) | - 60 to -10 (0.1 mm) | 43 -51 |
| * | 44 | Pedal stroke for reaching the maximum number of rotation | Position where the sewing machine reaches its highest sewing speed from pedal neutral position (Pedal stroke) | 10 to 150 (0.1 mm) | 44 150 |
| * | 45 | Compensation of neutral point of the pedal | Compensation value of the pedal sensor | -15 to 15 | 45 0 |
| | 47 | Auto-lifter selecting function | Limitation time of waiting for lifting solenoid type auto-lifter device | 10 to 600 (second) | 47 60 |
| * | 48 | Pedal stroke 1 for starting thread trimming | Position where thread trimming starts from pedal neutral position (Standard pedal) (Pedal stroke) | - 60 to - 10 (0.1 mm) | 48 -35 |
| | 49 | Lowering time of presser foot | Lowering time of presser foot after the pedal has been depressed. (Start of rotation of the sewing machine is delayed during this time.) | 0 to 250 (10 ms) | 49 140 |
| | 50 | Selection of the pedal specification | Change the setting according to the pedal specification. 0 : KFL 1 : PFL | 0/1 | 50 1 |
| | 51 | Compensation of solenoid-on timing of reverse feed stitching at the start of sewing | Compensation of starting the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed. | - 36 to 36 (10°) | 51 -8 |
| | 52 | Compensation of solenoid-off timing of reverse feed stitching at the start of sewing | Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed. | - 36 to 36 (10°) | 52 10 |
| | 53 | Compensation of solenoid-off timing of reverse feed stitching at the end of sewing | Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the end of sewing is performed. | - 36 to 36 (10°) | 53 15 |
| | 55 | Foot lift after thread trimming | Function of lifting presser foot at the time of (after) thread trimming 0 : Not provided with the function of lifting presser foot after thread trimming 1 : Provided with the function of lifting presser foot automatically after thread trimming | 0/1 | 55 1 |
| | 56 | Reverse revolution to lift the needle after thread trimming | Function of reverse revolution to lift the needle at the time of (after) thread trimming 0 : Not provided with the function of reverse revolution to lift the needle after thread trimming 1 : Provided with the function of reverse revolution to lift the needle after thread trimming | 0/1 | 56 0 |
| | 58 | Function of holding predetermined upper/lower position of the needle bar | Function of holding predetermined upper/lower position of the needle bar 0 : Not provided with the function of holding predetermined upper/lower position of the needle bar 1 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is weak.) 2 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is medium.) 3 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is strong.) | 0 to 3 | 58 0 |
| | 59 | Function of Auto/Manual change-over of reverse feed stitching at the start of sewing | This function can specify the sewing speed of reverse feed stitching at the start of sewing. 0 : The speed will depend on the manual operation by pedal, etc. 1 : The speed will depend on the specified reverse feed stitching speed (No. 8). | 0/1 | 59 1 |
| | 60 | Function of stop immediately after reverse feed stitching at the start of sewing | Function at the time of completion of reverse feed stitching at the start of sewing 0 : Not provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing 1 : Provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing. | 0/1 | 60 0 |

* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

| No | Item | Description | Setting range | Indication of function setting | |
|-----|---|---|----------------------|--------------------------------|-------------|
| 64 | Change-over speed of condensation stitch or EBT (end back tack) | Initial speed when starting condensation stitch or EBT | 0 to 250 (sti/min) | 64 | 180 |
| 70 | Function of soft-down of presser foot | Presser foot is slowly lowered. 0 : Presser foot is rapidly lowered. 1 : Presser foot is slowly lowered. | 0/1 | 70 | 0 |
| 71 | Double reverse feed stitching function | This item is not used on the IP-110F. | 0/1 | 71 | 1 |
| 72 | Sewing machine startup selecting function | Current limit at the startup of sewing machine is specified. 0 : Normal (Current limit is applied during startup) 1 : Rapid (Current limit is not applied during startup) | 0/1 | 72 | 0 |
| 73 | Retry function | This function is used when needle cannot pierce materials . 0 : Normal 1 : Retry function is provided. | 0/1 | 73 | 1 |
| 76 | One-shot function | This item is not used on the IP-110F. | 0/1 | 76 | 0 |
| * | 84 | Initial motion suction time of presser foot lifting solenoid | 50 to 500 (ms) | 84 | 140 |
| | 87 | Function of pedal curve selection Pedal curve is selected. (Improving pedal inching operation) Number of rotations  Pedal stroke | 0/1/2 | 87 | 0 |
| | 90 | Initial motion up stop function Automatic UP stop function is set immediately after turning ON the power. 0 : off 1 : on | 0/1 | 90 | 1 |
| | 91 | Function of prohibiting compensation operation after turning handwheel by hand It is effective in combination with the machine head provided with tension release function. 0 : Tension release function is ineffective. 1 : Tension release function is effective. | 0/1 | 91 | 1 |
| | 92 | Function of reducing speed of reverse feed stitching at the start of sewing Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced. | 0/1 | 92 | 0 |
| | 93 | Function added to needle up/down compensating switch Operation of needle up/down compensating switch is changed after turning ON the power or thread trimming. 0 : Normal (needle up/down compensating stitching only) 1 : One stitch compensating stitching is performed only when aforementioned changeover is made. (Upper stop / upper stop) | 0/1 | 93 | 0 |
| | 94 | Continuous + One-shot nonstop function The function that does not stop the sewing machine by combining continuous stitching with one-shot stitching using the program sewing function which is available in the IP operation panel. 0 : Normal (The sewing machine stops when a step is completed.) 1 : The sewing machine does not stop when a step is completed and proceeds to next step. | 0/1 | 94 | 0 |
| | 96 | Max. number of rotation setting Max. number of rotation of the sewing machine head can be set. (The MAX value differs by machine head.) | 150 to MAX (sti/min) | 96 | 4000 |
| 103 | Needle cooler output OFF delay time | Delay time from the stop of sewing machine to the output OFF is specified using the needle cooler output function. | 100 to 2000 ms | 103 | 500 |
| 120 | Main shaft reference angle compensation | Main shaft reference angle is compensated. | -50 to 50 | 120 | -23 |
| 121 | Up position starting angle compensation | Angle to detect UP position starting is compensated. | -15 to 15 | 121 | 5 |
| 122 | DOWN position starting angle compensation | Angle to detect DOWN position starting is compensated. | -15 to 15 | 122 | 0 |
| 124 | Setting of energy-saving function during standby | Setting to reduce the power consumption while the sewing machine is in standby state 0 : Energy-saving mode is ineffective 1 : Energy-saving mode is effective | 0/1 | 124 | 0 |

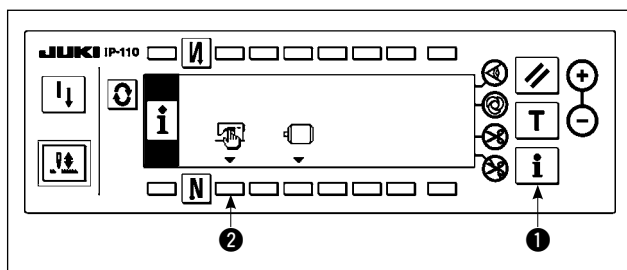
* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

17. OPTIONAL INPUT/OUTPUT SETTINGS

The optional input/output function is used for outputting signals which are allocated to the connectors and for controlling a certain simple operation of the sewing machine by allocating various functions to the input/output connectors of the SC-920 (control box).

Refer to the Instruction Manual for the SC-920 for details.

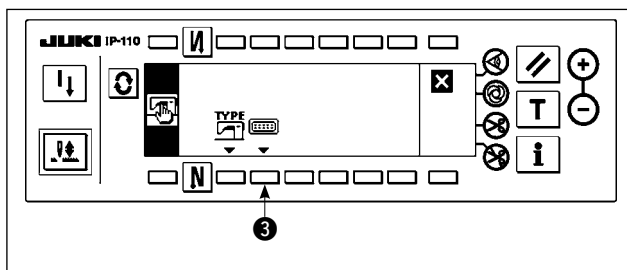
[Function settings list screen]



- 1) Keeping switch ❶ held pressed, turn the power ON. Then the screen is changed over to the function settings list screen.

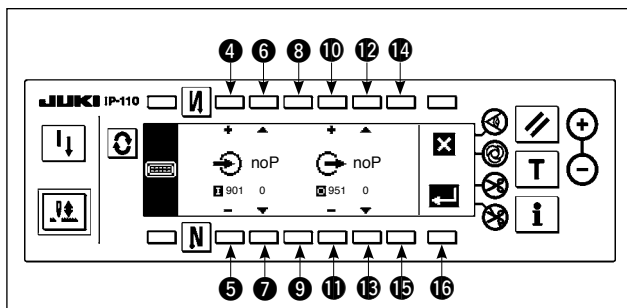
When you press switch ❷, the screen is changed over to the sewing common data screen.

[Sewing common data screen]



- 2) When you press switch ❸, the screen is changed over to the option input/output setting screen.

[Option input/output setting screen]



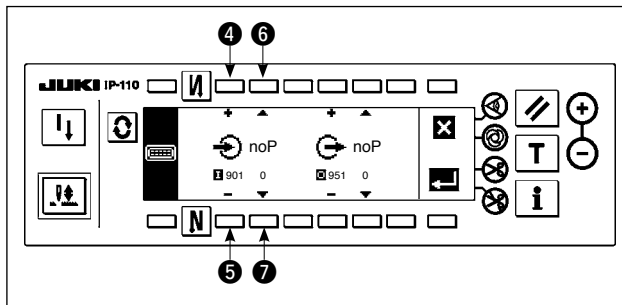
- To allocate a function to the input connector
- 3) Press switches ❹ and ❺ to select the optional input number corresponding to the input connector pin number.
 - 4) Press switches ❻ and ❼ to select the function code number and abbreviation of the input function.
 - 5) Press switches ❽ and ❾ to select the input status (L: Active when Low is input, or H: Active when High is input) of the selected input function. If function code No. 0 is selected, the input status selection is not required.
- To allocate a function to the output connector
- 6) Press switches ❿ and ⓫ to select the optional output number corresponding to the output connector pin number.
 - 7) Press switches ⓬ and ⓭ to select the function code number and abbreviation of the output function.
 - 8) Press switches ⓮ and ⓯ to select the output status (L: Low is output when Low is active, or H: High is output when High is active) of the selected input function. If function code No. 0 is selected, the output status selection is not required.
 - 9) Once you have completed the setting, press switch ⓰. The screen is changed over to the sewing common data screen.
 - 10) Turn OFF the power switch to exit from the function setting.



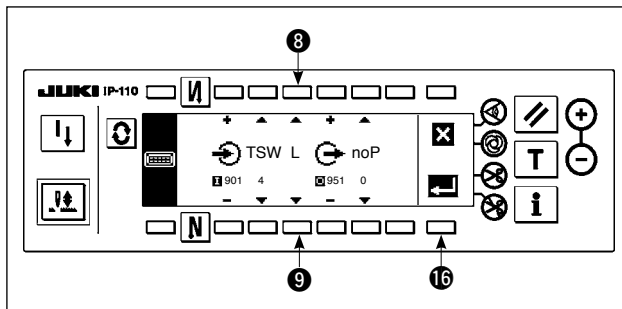
Refer to the Instruction Manual for the SC-920 for the input/output connector numbers and pin numbers and the relation between these numbers and the displayed number.

(Example) [To allocate the thread trimming function to the input connector (CN48,1)]

[Option input/output setting screen]

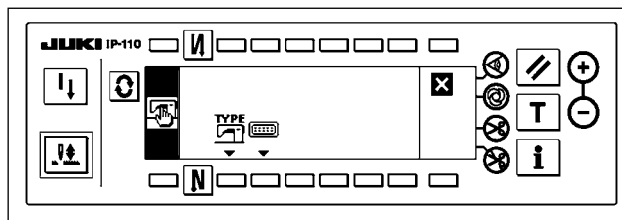


- 1) Press switches ④ and ⑤ to select input display No. 901 which represents the input connector (CN48, 1.)
- 2) Press switches ⑥ and ⑦ to select the function code No. 4 and abbreviation "TSW" of the input function.



- 3) Press switches ⑧ and ⑨ to select the input status of the input function. Set the input status code "L" if the thread trimmer activates when the input signal is Low, or "H" if the thread trimmer activates when the signal is High.
- 4) Press switch ⑯. The screen is changed over to the sewing common data screen.

[Sewing common data screen]



- 5) Turn OFF the power switch to exit from the function setting.

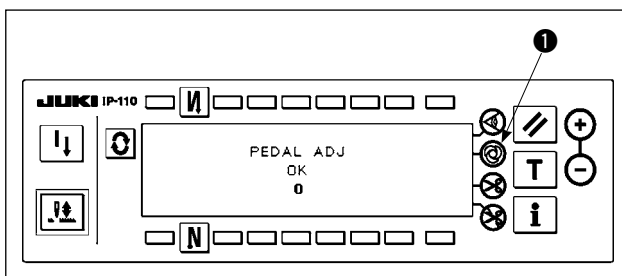


Refer to the Instruction Manual for the SC-920 for the input/output connector numbers and pin numbers and the relation between these numbers and the displayed number.

18. AUTOMATIC COMPENSATION OF NEUTRAL POINT OF THE PEDAL SENSOR

Whenever you have replaced the parts such as the pedal sensor and spring, be sure to carry out the following procedure.

[Pedal-sensor neutral-point automatic compensation screen]



- 1) Keep one-shot automatic sewing switch ① held pressed, turn the power ON. Then, the screen is changed over to the pedal-sensor neutral-point automatic compensation screen.
- 2) When the neutral point of the pedal sensor is properly corrected, the message "OK" and the compensation value (the compensation value "0" shown in the figure on the left is a value for reference) are displayed and the buzzer sounds (one short blip).
- 3) Turn OFF the power switch to exit from the function setting.

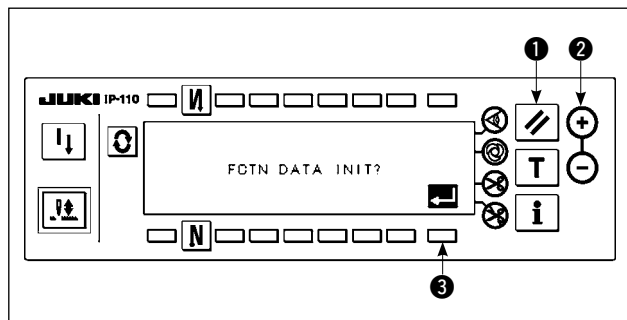


1. The pedal is depressed when the power is turned ON, the correct compensating operation cannot be carried out. Never place your foot or anything on the pedal. The audible warning sounds (two single tones, i.e., two blips) and neither the message "OK" nor the compensation value are displayed.
2. If any message or value other than "OK" or the compensation value, refer to the Engineer's Manual.

19. INITIALIZATION OF THE SETTING DATA

Data on the function setting items can be returned to the standard set values.

[Function setting data initialization screen]

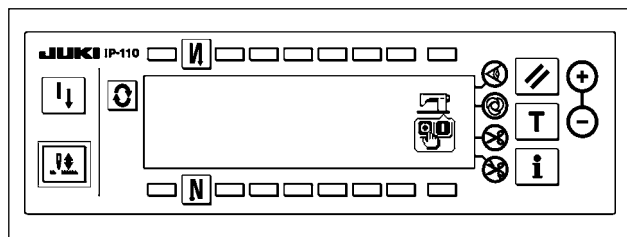


- 1) Keeping reset switch ❶ and counter value switch (+) ❷ held simultaneously pressed, turn the power ON. Then the screen is changed over to the function setting data initialization screen.
- 2) When you press switch ❸, the process for totally returning the function setting data to the standard set values (initialization operation) is executed.
- 3) Once the process is completed (approximately one second later), the buzzer sounds (three single tones, i.e., blip, blip, blip) and screen is changed over to the power switch OFF notification screen.



Do not run the power OFF during the initialization operation. It can damage the program of the main body.)

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the initialization.

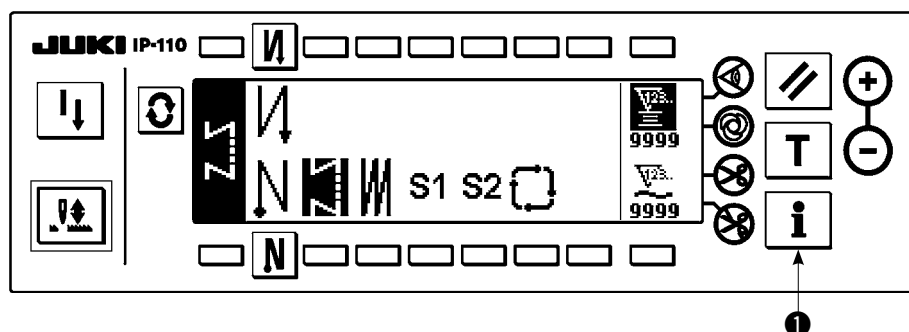


1. The neutral point compensation value of the pedal sensor is also initialized by carrying out the initialization operation. It is therefore necessary to carry out the automatic compensation of the neutral point of the pedal sensor without exceptions before using the sewing machine.
(Refer to "18. Automatic compensation of neutral point of the pedal sensor" p. 30.)
2. The machine head angle adjustment value is also initialized by carrying out the initialization operation. It is therefore necessary to carry out the machine head angle adjustment without exceptions before using the sewing machine.
(Refer to "4. Sewing machine angle adjustment" p.3.)
3. Sewing data programmed on the operation panel are not initialized by carrying out the initialization operation.

20. INFORMATION

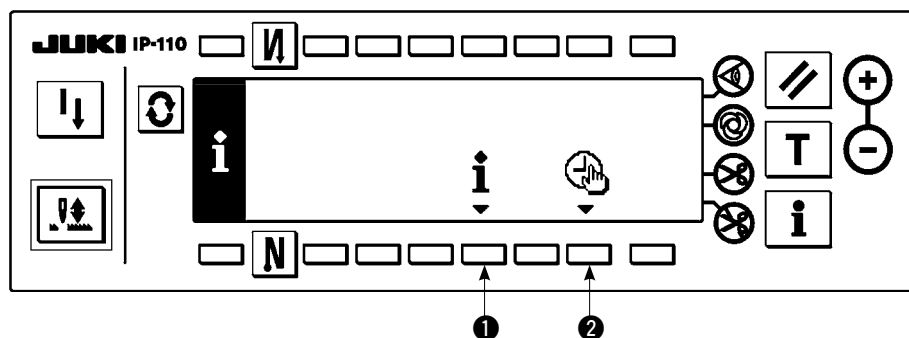
Various data can be set or checked on the information screen.

Operator level



- 1) Turn ON the power.
- 2) Press switch ❶ to display the information screen.

Information screen



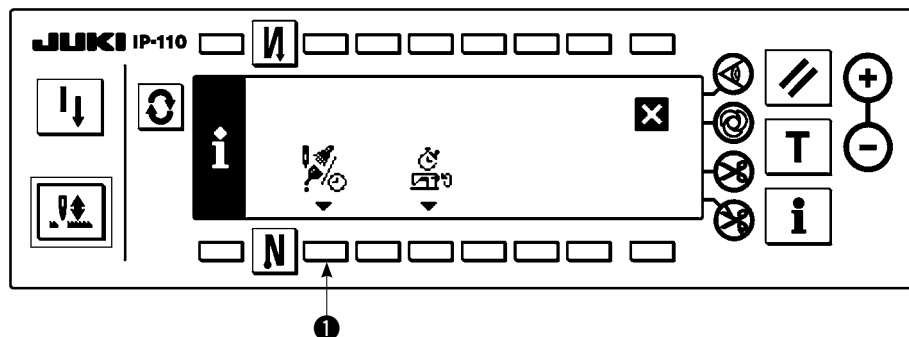
- ❶ : Sewing management information
- ❷ : Date and time setting

● Sewing management information

The sewing management information consists of the maintenance management function and working measurement function.

(1) Maintenance management function

■ Sewing management function screen

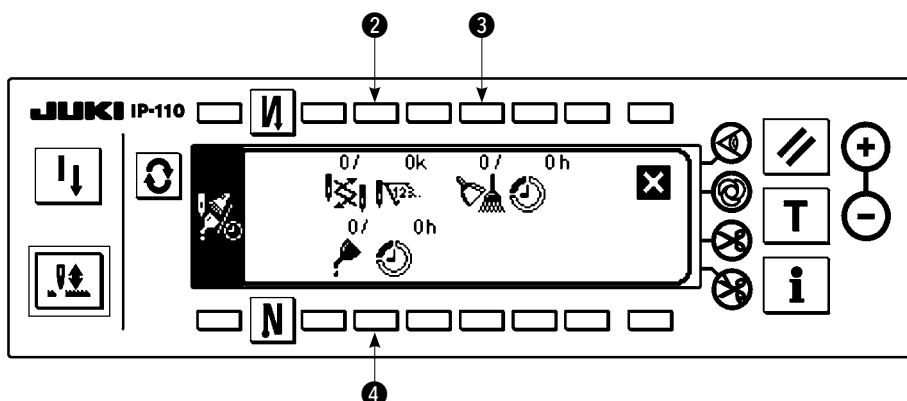


- 1) Press switch ❶ to change over the screen to the maintenance management function screen.

■ Maintenance function screen

The time for needle changing, the time for cleaning and the time for oil changing can be set to continuously display numeric values or display the notification after the lapse of preset time.

Refer to the Engineer's Manual for details.



[Explanation of the respective items]

- ② Time of replacement of needle Unit : X 1,000 stitches
- ③ Time of cleaning Unit : Hour
- ④ Time of replacement of oil Unit : Hour

[Explanation of the contents of display]

(Numerator / denominator)

* Number of remaining stitches up to * thousand stitches / * * thousand stitches

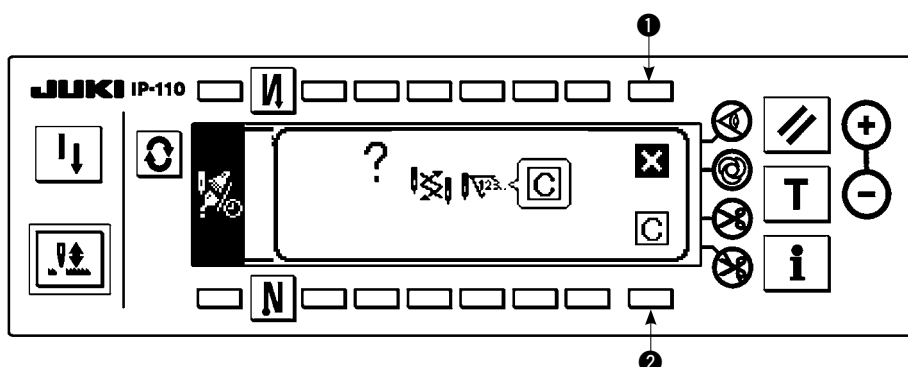
Example) Replacement of needle

100 / 1600 k

- Time of replacement of needle is informed every 1,600 thousand stitches.
- Time of replacement of needle is informed after 100 thousand stitches.

When ②, ③ and ④ switches are pressed, the clear checking screen is displayed.

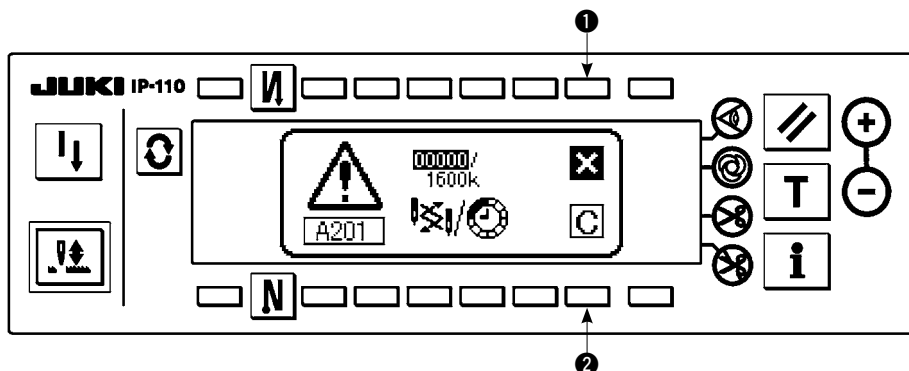
■ Clear screen



- ① : The screen returns to the maintenance function screen without performing clearing.
- ② : The screen returns to the maintenance function screen after executing clearing.

■ Warning screen

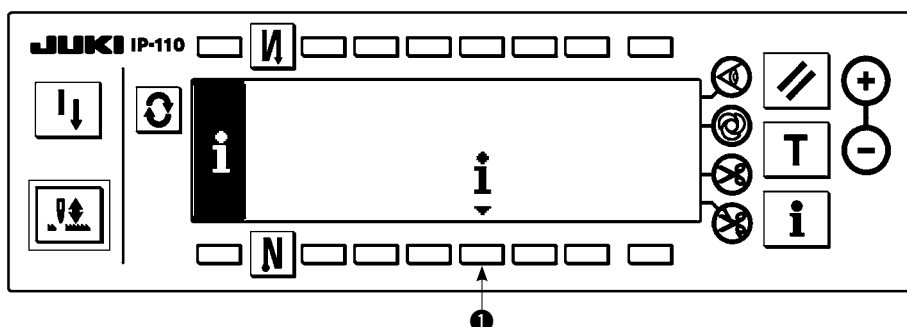
Warning screen is displayed when the warning time is reached.



- ① : When ① is pressed, the screen can be cleared. However, the counter itself cannot be cleared. In case of the replacement of needle, the warning screen is displayed at intervals of 10 minutes until clearing is performed. In case of other warnings, the warning screen is displayed at the time of turning ON the power until the counter is cleared.
- ② : When ② is pressed, the screen is cleared and the counter value is cleared as well. From this time, counting starts newly.

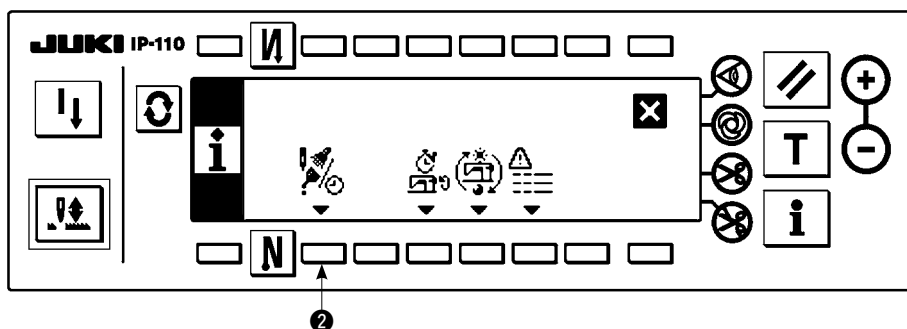
[Setting of the warning setting time]

■ Information screen



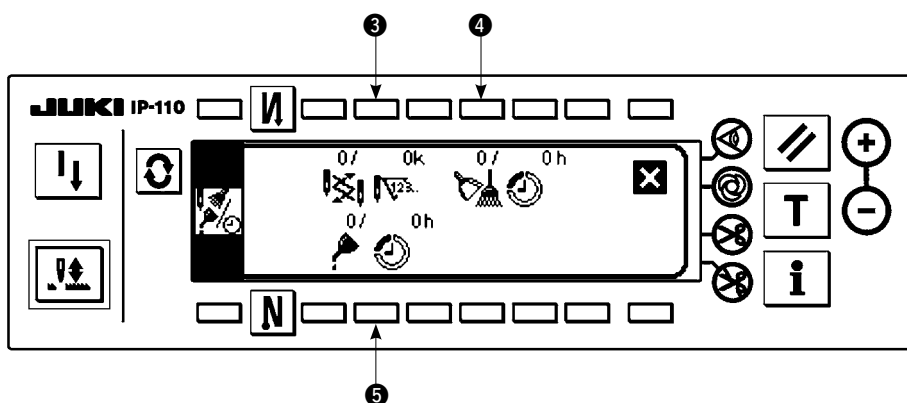
- 1) Press switch ① for approximately three seconds in the information screen.

■ Sewing management function screen



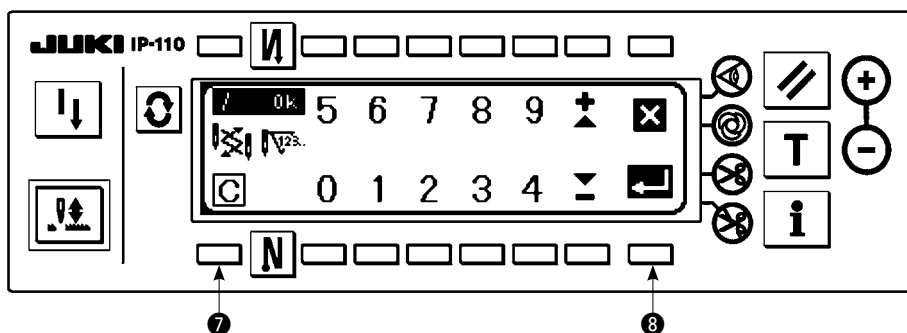
- 2) Press ② to display the maintenance function screen.
(For other functions, refer to the Engineer's Manual.)

■ Maintenance function screen



- ③ : Input screen of time of replacement of needle (number of stitches : unit : X 1,000 stitches) is displayed.
- ④ : Input screen of time of cleaning (time : unit : h) is displayed.
- ⑤ : Input screen of time of replacement of oil (time : unit : h) is displayed.

■ Various input screen (Time for needle changing, time for cleaning and the time for oil changing)



Press ⑦ to display the clear checking screen. After inputting the set value, press ⑧ to determine.



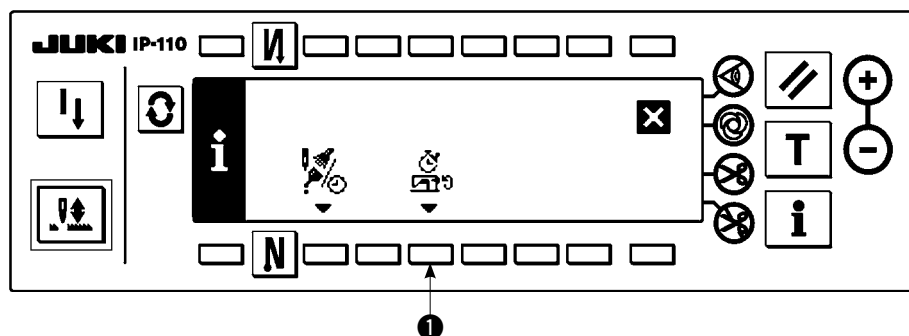
In case of stopping the warning function, set the set value to "0".

It is possible to individually set replacement of needle, cleaning, and replacement of oil respectively.

In case of stopping all, set "0" to each.

(2) Working measurement function

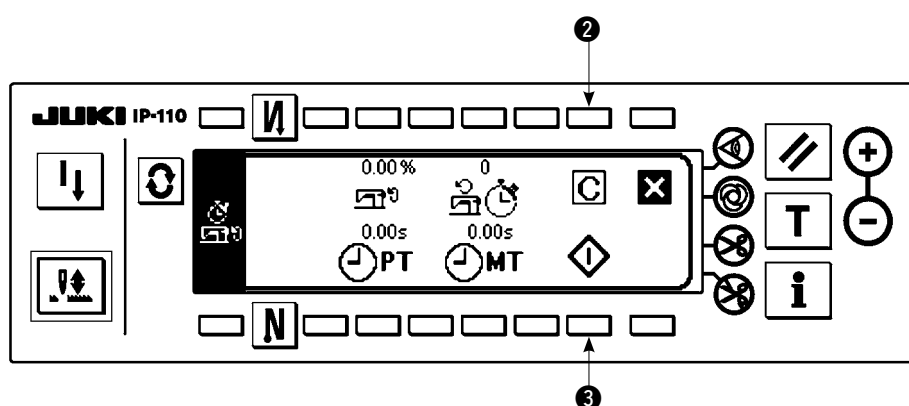
■ Sewing management function screen



- 1) Press switch ❶ to change over the screen to the working measurement function screen.

■ Working measurement function screen

Working factor, working mean speed, pitch time and machine time can be measured on this screen.



[Explanation of the respective items]

- Working factor..... Unit : %
- Working mean speed..... Unit : sti/min
- PT Pitch time Unit : Second
- MT Machine time Unit : Second

- 2) Press ❸ to start the working measurement.
- 3) To stop the measurement, press ❸ again.
- 4) The result of measurement can be cleared with ❷.

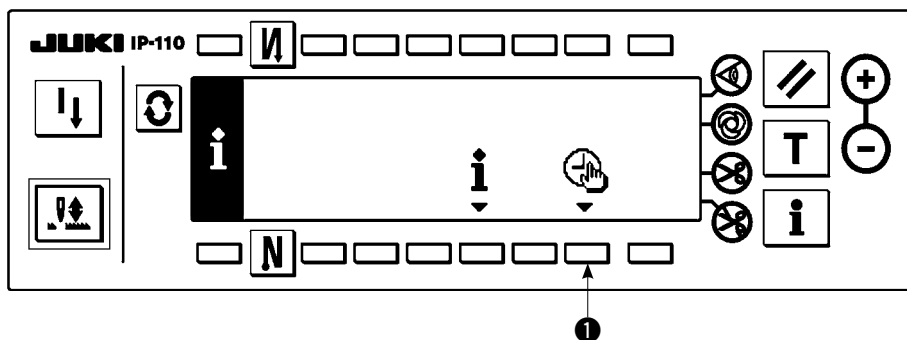


When “Clear” is not executed, the measurement from the last time can be continued.

● Date and time setting

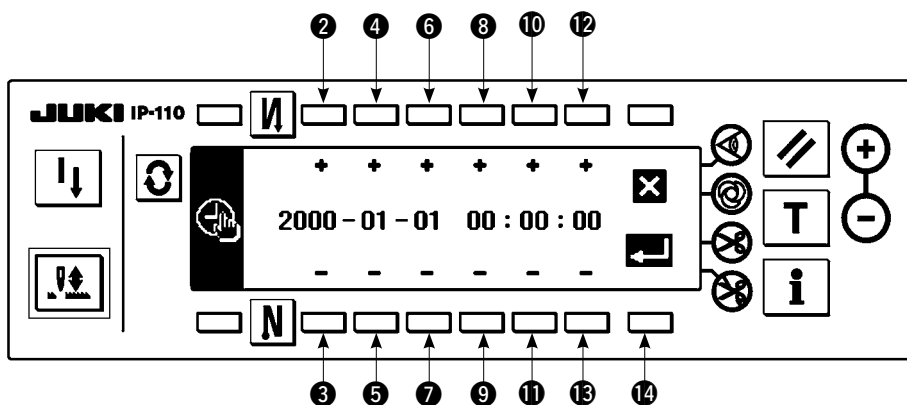
The current date and time can be set to display on the screen.

■ Information screen



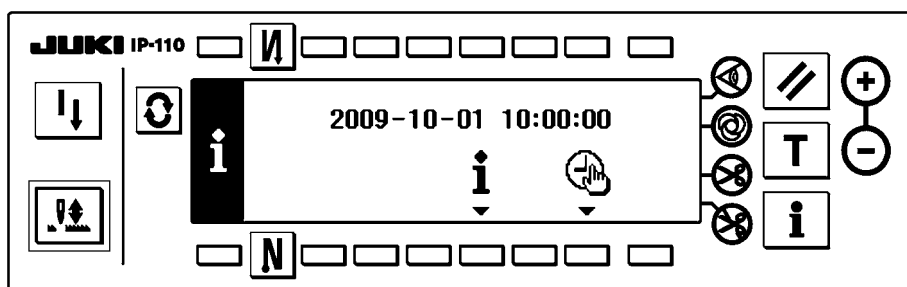
- 1) Press switch ① to change over the screen to the date and time setting screen.

■ Date and time setting screen



- 2) Press switches ② and ③, ④ and ⑤, and ⑥ and ⑦ to increment/decrement the date.
- 3) Press switches ⑧ and ⑨, ⑩ and ⑪, and ⑫ and ⑬ to increment/decrement the time.
- 4) Once you have set the date and time, press switch ⑭. The screen is changed over to the information screen.

■ Information screen



- 5) The set date and time are displayed on the information screen and the clock starts to operate. (When you have set the date and time to "2009-10-01 10:00:00" and press switch ⑭, the screen display will be as shown in the above figure.)

21. EXTERNAL INTERFACE

External interface means the section to connect the operation panel and the system which is different from the operation panel.

For the use and details, refer to the Engineer's Manual.

1) Media slot

Media slot is installed in the face cover located on the left side of operation panel.

2) RS-232C port

RS-232C connector is installed in the rubber cap located on the back side of operation panel.

3) General input port (Production support switch connecting connector)

General input connector, CN105 is installed in the cord outlet cover located on the back side of operation panel.

22. ERROR DISPLAY

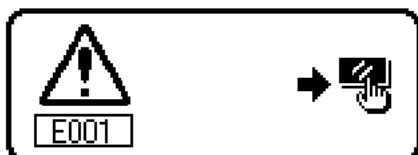


There are two different kinds of errors, those output from the operation panel and those from the SC-920 (control box). Both kinds of errors are notified by the error screen and the buzzer.

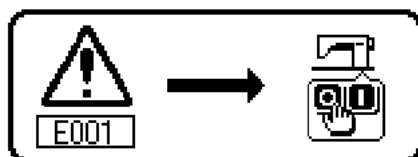
Three different kinds of screens of the panel display screen appear due to the difference of the procedures.



- 1) Error screen disappears when the operator removes the cause.
Example) Cover of the slot of media is open. Close the cover.



- 2) Press the reset switch, and remove the cause of error after erasing the error screen.



- 3) Remove the cause of error after turning OFF the power.

22-1. Error code list (Error display in panel)

There are the following error codes in this device. These error codes interlock (or limit function) and inform the problem so that the problem is not enlarged when any problem is discovered. When you request our service, please confirm the error codes.

| No. | Description of error detected | Cause of occurrence expected | Items to be checked |
|------|---|--|---|
| – | Media cover open | • Cover of the slot of media is open. | • Close the cover. |
| E000 | Execution of data initialization (This is not the error.) | • When the machine head is changed. • When the initialization operation is executed | |
| E003 | Disconnection of synchronizer connector | • When position detection signal is not input from the sewing machine head synchronizer. | • Check the synchronizer connector (CN33) for loose connection and disconnection. |
| E004 | Synchronizer lower position sensor failure | • When the synchronizer has broken. | • Check whether the synchronizer cord has broken since the cord is caught in the machine head. • Check the belt tension. • Check the setting of the machine head. • Check the setting of the motor pulley. |
| E005 | Synchronizer upper position sensor failure | • Belt is loose. • Machine head is not proper. • Motor pulley is not proper. | |
| E007 | Overload of motor | • When the machine head is locked. • When sewing extra-heavy material beyond the guarantee of the machine head. • When the motor does not run. • Motor or driver is broken. | • Check whether the thread has been entangled in the motor pulley. • Check the motor output connector (4P) for loose connection and disconnection. • Check whether there is any holdup when turning the motor by hand. |
| E011 | Media is not inserted. | • Media is not inserted. | • Turn the power OFF and check the media. |
| E012 | Read error | • Data of media cannot be read. | • Turn the power OFF and check the media. |
| E013 | Write error | • Data of media cannot be written. | • Turn the power OFF and check the media. |
| E014 | Write protect | • Media is in the state of writing prohibition. | • Turn the power OFF and check the media. |
| E015 | Format error | • Formatting cannot be performed. | • Turn the power OFF and check the media. |
| E016 | External media capacity over | • Capacity of media is short. | • Turn the power OFF and check the media. |
| E019 | File size over | • File is too large. | • Turn the power OFF and check the media. |
| E032 | File interchangeability error | • There is no interchangeability of file. | • Turn the power OFF and check the media. |
| E070 | Slip of belt | • When the machine head is locked. • Belt is loose. | • Check whether there is any holdup when turning the motor by hand. • Check the belt tension. |
| E071 | Disconnection of motor output connector | • Disconnection of motor connector | • Check the motor output connector for loose connection and disconnection. |
| E072 | Overload of motor at the time of thread trimming motion | • Same as E007 | • Same as E007 |
| E220 | Grease-up warning | • When the predetermined number of stitches has been reached. | • Replenish the specified places with grease and reset. (For the details, refer to the data of the machine head.) |
| E221 | Grease-up error | • When the predetermined number of stitches has been reached and the sewing is not possible. | • Replenish the specified places with grease and reset. (For the details, refer to the data of the machine head.) |
| E302 | Fall detection switch failure (When the safety switch works) | • When fall detection switch is input in the state that the power is turned ON. | • Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). • Check whether the fall detection switch cord is caught in the sewing machine or the like. • Check whether the fall detection switch lever is caught in something. • Check whether the contact of the tilt detection switch lever with the machine table is inadequate. (The table has a dent or the mounting location of the bed strut is too far) |

| No. | Description of error detected | Cause of occurrence expected | Items to be checked |
|------|--------------------------------------|--|---|
| E303 | Semicircular plate sensor error | • Semicircular plate sensor signal cannot be detected. | <ul style="list-style-type: none"> • Check whether the machine head corresponds with the machine type setting. • Check whether the motor encoder connector is disconnected. |
| E730 | Encoder failure | • When the motor signal is not properly inputted. | <ul style="list-style-type: none"> • Check the motor signal connector (CN39) for loose connection and disconnection. • Check whether the motor signal cord has broken since the cord is caught in the machine head. • Check whether the inserting direction of the motor encoder connector is wrong. |
| E731 | Motor hole sensor failure | | |
| E733 | Inverse rotation of motor | • This error occurs when the motor is running at 500 sti/min or more in the opposite direction of that of rotation indication during motor is running. | <ul style="list-style-type: none"> • Connection of the encoder of main shaft motor is wrong. • Connection for the electric power of main shaft motor is wrong. |
| E808 | Solenoid short circuit | • Solenoid power does not become normal voltage. | • Check whether the machine head cord is caught in the pulley cover or the like. |
| E809 | Holding motion failure | • Solenoid is not changed over to holding motion. | • Check whether the solenoid is abnormally heated. (CTL circuit board asm. Circuit is broken. |
| E810 | Solenoid current abnormality | • Solenoid rare short-circuit. | • Solenoid resistance |
| E811 | Abnormal voltage | <ul style="list-style-type: none"> • When voltage higher than guaranteed one is inputted. • 200V has been inputted to SC-920 of 100V specifications. • JUS : 220V is applied to 120V box. • CE : 400V is applied to 230V box. | <ul style="list-style-type: none"> • Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. • Check whether 100V/200V changeover connector is improperly set. <p>In the aforementioned cases, POWER p.c.b is broken.</p> |
| | | <ul style="list-style-type: none"> • When voltage lower than guaranteed one is inputted. • 100V has been inputted to SC-920 of 200V specifications. • JUS : 120V is applied to 220V box • Inner circuit is broken by the applied overvoltage | <ul style="list-style-type: none"> • Check whether the voltage is lower than the rated voltage - (minus) 10% or less. • Check whether 100V/200V changeover connector is improperly set. • Check whether fuse or regenerative resistance is broken. |
| E906 | Operation panel transmission failure | <ul style="list-style-type: none"> • Disconnection of operation panel cord • Operation panel has broken. | <ul style="list-style-type: none"> • Check the operation panel connector (CN34, CN35) for loose connection and disconnection. • Check whether the operation panel cord has broken since the cord is caught in the machine head. |
| E924 | Motor driver failure | • Motor driver has broken. | |
| E942 | Faulty EEPROM | • Data cannot be written on the EEPROM. | • Turn the power OFF. |