ENGLISH

INSTRUCTION MANUAL

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

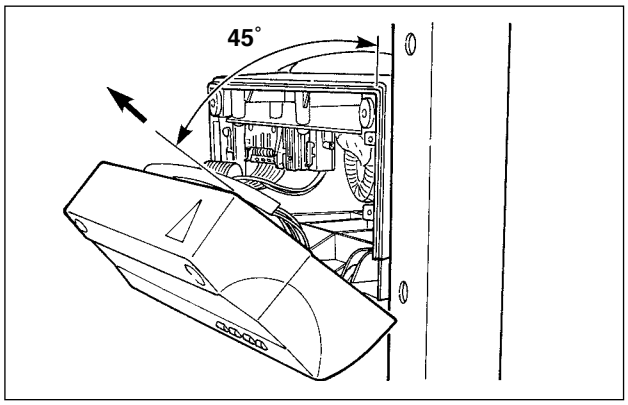
CONTENTS

1. SETUP OF HARDWARE

Refer to Instruction Manual for SC-510 together with this Instruction Manual.

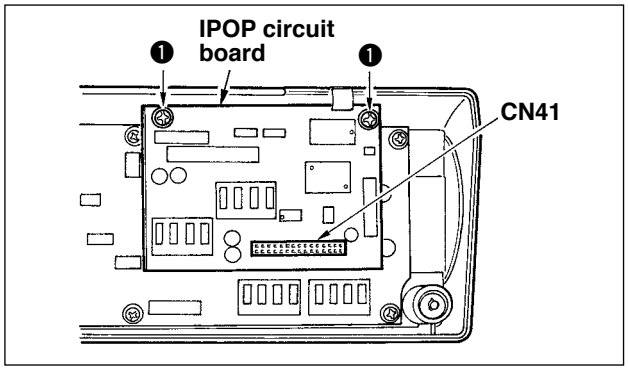
WARNING :
- **To prevent personal injury caused by abrupt start of the sewing machine, carry out the work after turning OFF the power switch and a lapse of 5 minutes or more.**
- **To prevent damage of device caused by maloperation and wrong specifications, be sure to connect all the corresponding connectors to the specified places.**
- **To prevent personal injury caused by maloperation, be sure to lock the connector with lock.**
- **As for the details of handling respective devices, read carefully the Instruction Manuals supplied with the devices before handling the devices.**

1-1. Installing IPOP circuit board



1) Loosen two screws in the front cover of control box and open the front cover.
2) Remove connectors and ground wire of the circuit board attached to the front cover.
3) Place the front cover at an angle of approximate 45°, draw it in the direction of arrow, and remove it from the box main unit.

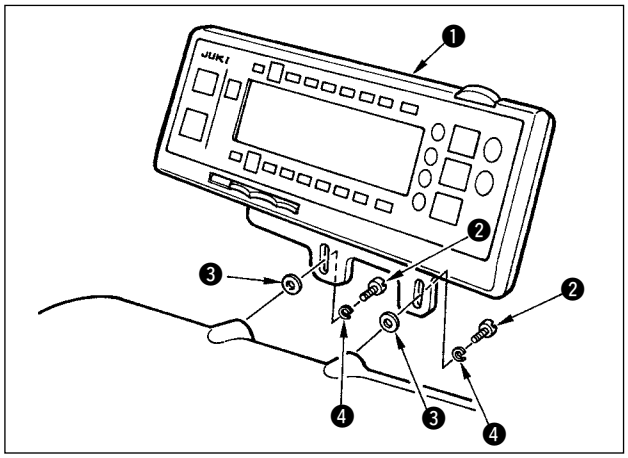
Do not draw the front cover forcibly since there is the possibility that the click of front cover is broken.



4) Securely insert CN41 of IPOP circuit board supplied as accessories to white connector CN41 on the front cover circuit board from the upper side.
5) Fix IPOP circuit board with two screws ❶ supplied as accessories.
6) Place the front cover at an angle of approximate 45°, attach it to the box main unit, and attach connectors and ground wire which have been removed in step 2).

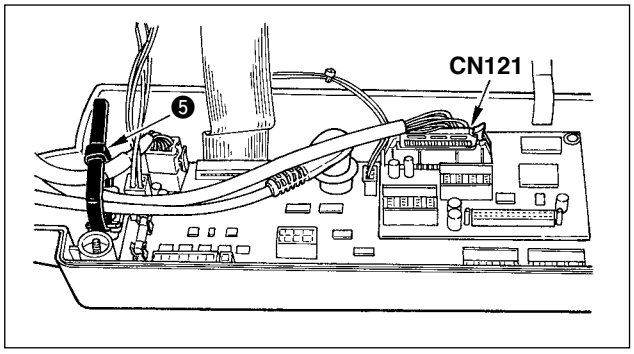
When removing IPOP circuit board, turn OFF the power and remove it after 5 minutes or more have passed.

1-2. Installing the panel



1) Install operation panel ❶ on the machine head using screws ❷, washers ❸ and spring washers ❹ supplied as accessories.

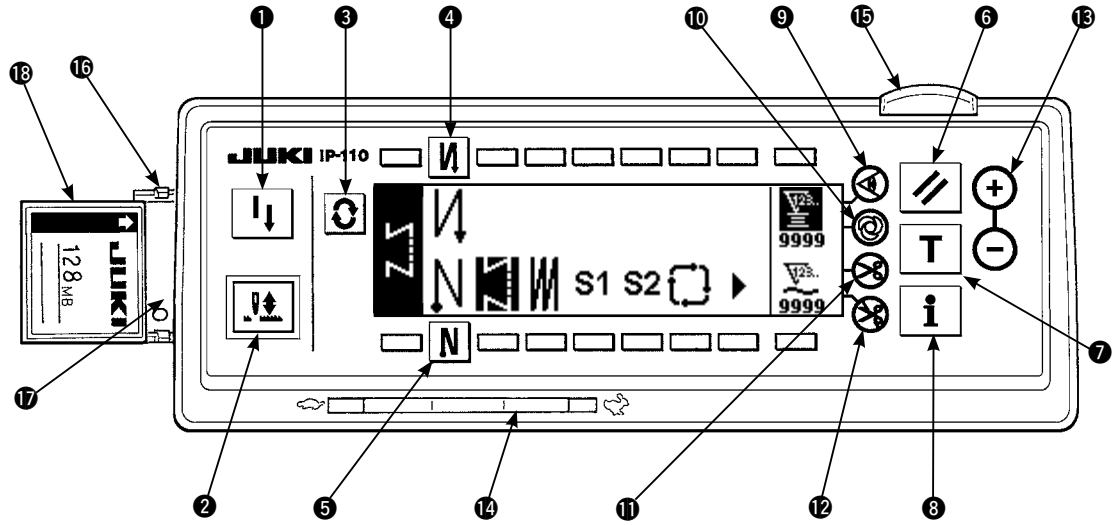
Do not disassemble the operation panel to prevent it from breakage.



2) Set the panel cord same as the other machine head cords, insert it to CN121 of the control box, and lock it.
3) Put it together with other machine head cords and bundle them with clip band ❺.
4) Close the front cover and tighten two screws, while taking care not to put the cords in the front cover.

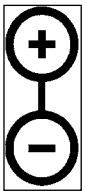
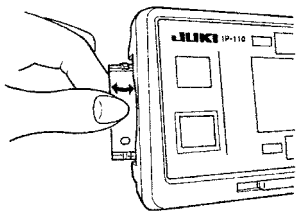
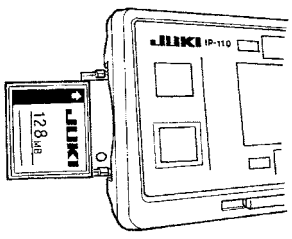
2. HOW TO USE THE OPERATION PANEL

2-1. Names and functions of each components

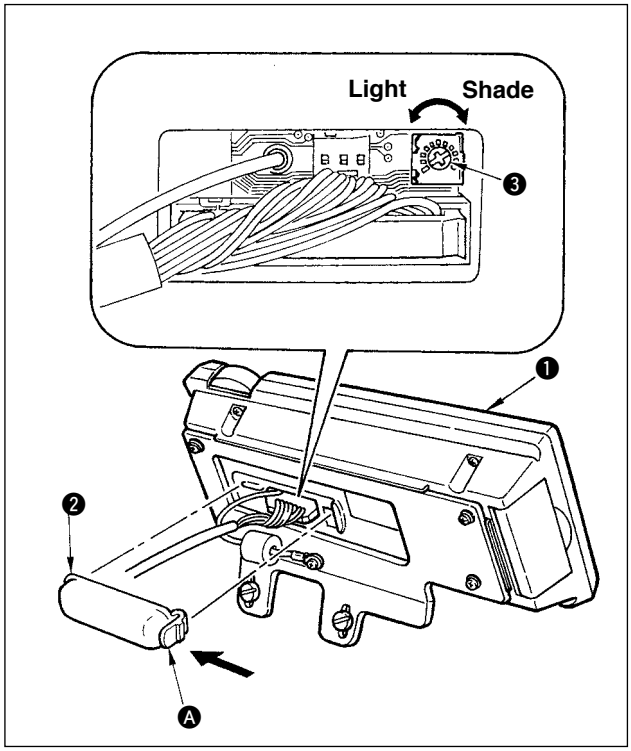


❶ Re-sewing switch
❷ Needle up/down compensating switch
❸ Screen changeover switch
❹ With/without reverse feed stitch at sewing start switch
❺ With/without reverse feed stitch at sewing end switch
❻ Reset switch
❼ Teaching switch
❽ Information switch
❾ Material edge sensor switch
❿ One-shot stitching switch
⓫ With/without automatic thread trimmer switch
⓬ Thread trimming prohibiting switch
⓭ Counter value setting switch
⓮ Max.speed limitation variable resistor
⓯ Power display lamp
⓰ Media cover
⓱ Media slot (Media inserting opening)
⓲ CompactFlash(TM)
(Optional: Part No. 40000100)

❶ Re-sewing switch	Unused
❷ 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.)
❸ Screen changeover switch	This is the switch to change over the screen.
❹ 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.
❺ 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.
❻ Reset switch	This is the switch to make the value of bobbin thread counter or sewing counter the set value.

❼ Teaching switch 	Unused
❽ Information switch 	This is the switch to perform various function settings.
❾ Material edge sensor switch 	Rendered effective when the material edge sensor is installed on the machine. Used for selecting whether or not the material edge sensor is used during sewing.
❿ One-shot stitching switch 	When this switch is set to effective, the sewing machine automatically operates up to the specified number of stitches.
⓫ With/without automatic thread trimmer switch 	When this switch is set to effective, the sewing machine automatically performs thread trimming when the specified number of stitches has been completed.
⓬ Thread trimming prohibiting switch 	This switch prohibits all thread trimmings. * This switch cannot be used with the sewing machine which is not provided with the automatic thread trimming device.
⓭ Counter value setting switch 	This is the switch to set the value of bobbin thread counter or No. of pcs. counter.
⓮ Max. speed limitation variable resistor	When moving the resistor in the left direction, max. speed is limited.
⓯ Power display lamp	This lamp lights up when the power switch is turned ON.
⓰ Media slot cover 	This is the cover for media inserting opening. To open the cover, place your fingers 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. * 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.
⓱ Media slot (Media inserting opening) 	To set the 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. To remove the CompactFlash(TM), hold it between your fingers and draw it out. * 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).

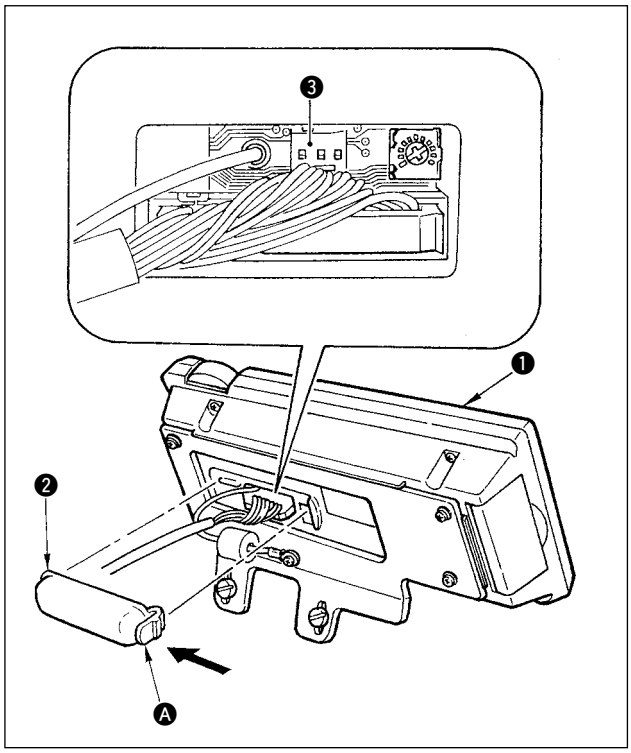
2-2. Adjusting the contrast of the operation panel display



1) Press in the direction of arrow mark the click of section Ⓐ of cord outlet cover ❷ assembled in the rear of operation panel ❶ and remove the cover.
2) Turn LCD screen display brightness adjustment variable resistor ❸ 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.

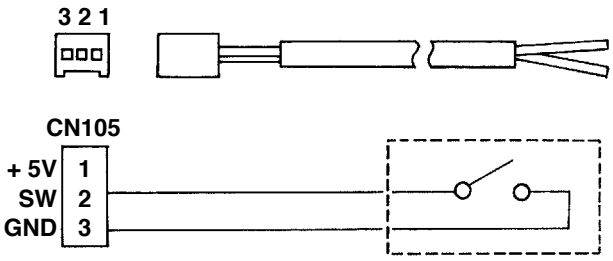
2-3. Production control switch connecting connector



1) Press in the direction of arrow mark the click of section Ⓐ of cord outlet cover ❷ assembled in the rear of operation panel ❶ and remove the cover.
2) Connect the optional relay cable connector to CN105 ❸ of the production control switch connecting connector.

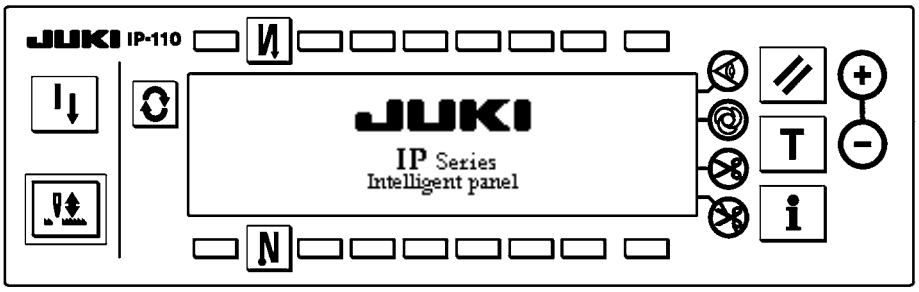
Note) Prepare the switch main unit by the customers or ask JUKI business office about it.

Optional relay cable A (asm.)
JUKI Part No. 40008168



2-4. Screen list

WELCOME screen is displayed immediately after turning ON the power.



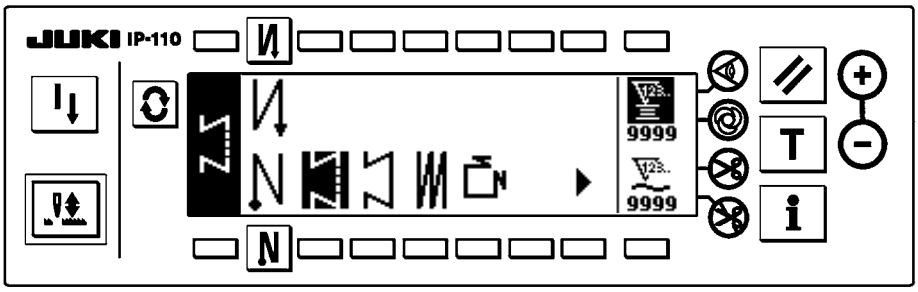
The screen immediately after WELCOME screen becomes the setting screen of pattern selection.

Every time [↻] switch is pressed, the screen changes.

When connecting with the sewing machine of MO system, MF system, MH system and DLN system, or setting 1 of Function setting No. 6 Clutch motor function or 1 of the setting No. 106 Pattern control function, the output display screen is displayed.

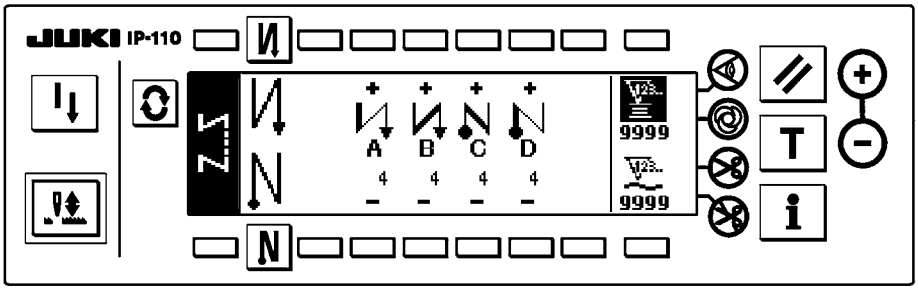
■ Pattern list screen

Selection of the respective shapes is performed.



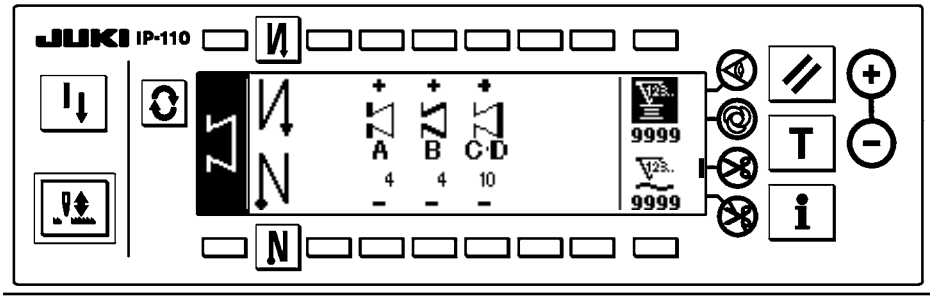
■ Number of stitches of free stitching setting screen

Setting of number of stitches of free stitching is performed.



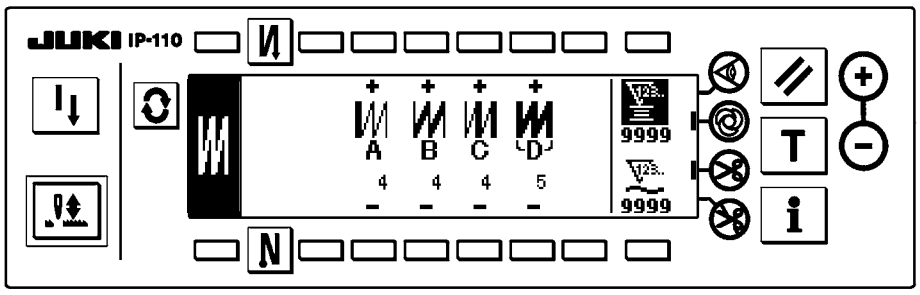
■ Number of stitches of constant dimension stitching setting screen

Setting of number of stitches of constant dimension stitching is performed.



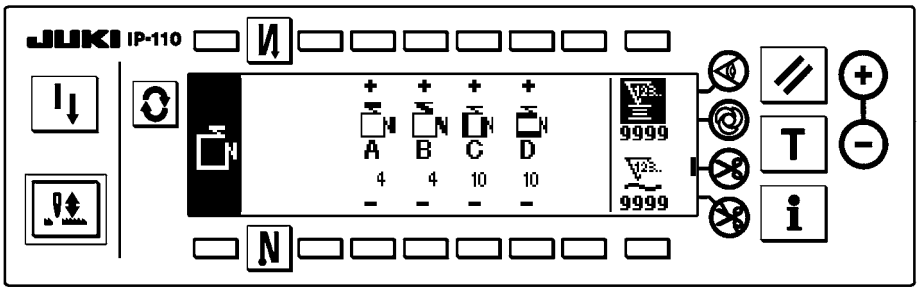
■ **Number of stitches of overlapped stitching setting screen**

Setting of number of stitches of overlapped stitching is performed.



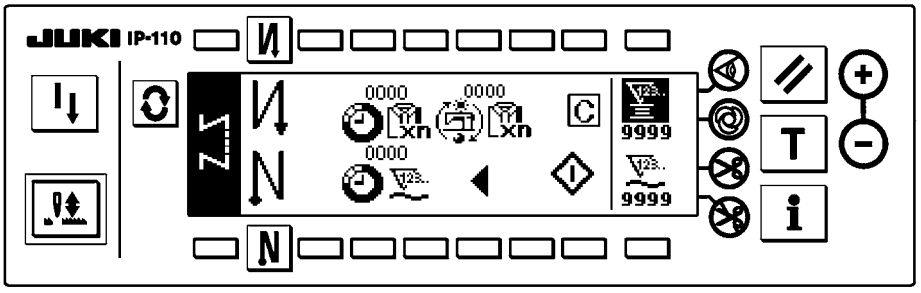
■ **Number of stitches of square stitching setting screen**

Setting of number of stitches of square stitching is performed.



■ **Output display screen**

Final target set value, current target value and actual results up to now are displayed.

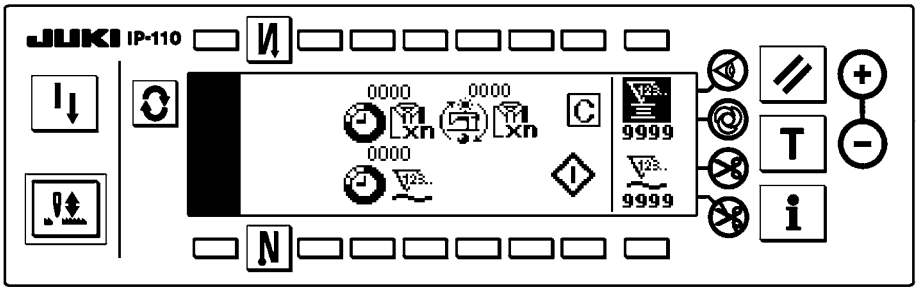


■ **Output display screen (for sewing machines of MO system, MF system, MH system and DLN system)**

Final target set value, current target value and actual results up to now are displayed.

In case of the sewing machines of MO system, MF system, MH system and DLN system, only this screen is displayed.

When Function setting No. 76 Clutch motor function is set to 1 or the setting No. 106 Pattern control function is set to 1, also only this screen is displayed.

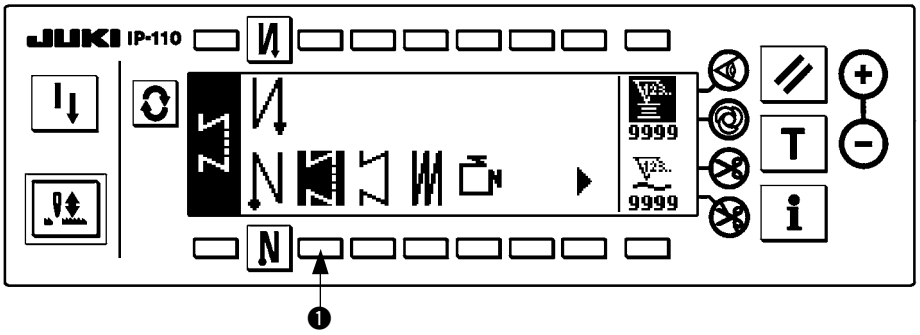


2-5. How to operate the operation panel for sewing stitching patterns

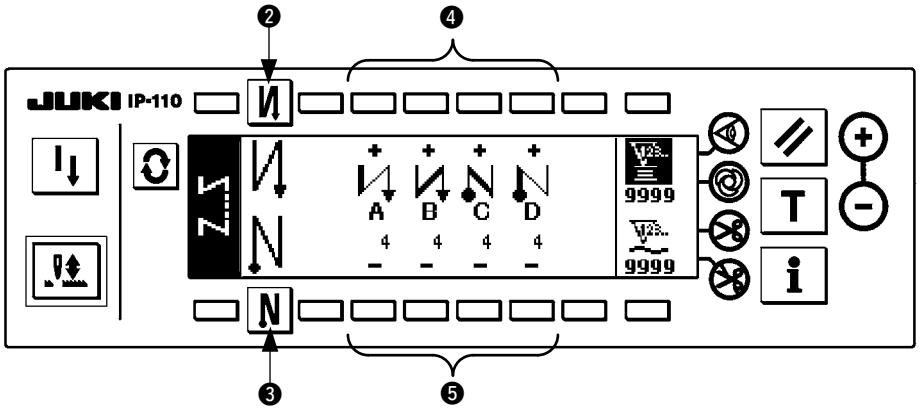
(1) Free stitching pattern

❷	OFF	ON	OFF	ON
Sewing pattern		A B	C D	A B C D
❸	OFF	OFF	ON	ON

Press to display the pattern list screen.

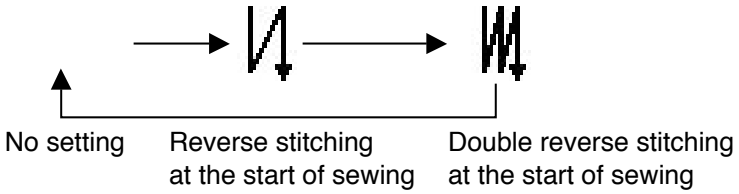


1) Press switch ❶ to select the free stitching pattern, and the screen is automatically changed over to the number of stitches of free stitching setting screen to display the number of stitches which has been already set.

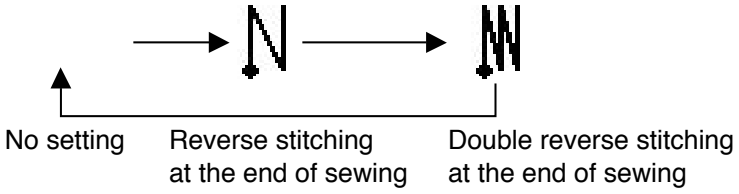


2) When changing the number of stitches, change it with switches ❹ and ❺ for setting the number of stitches A through D.
(The range of the number of stitches that can be changed : 0 to 99 stitches)

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



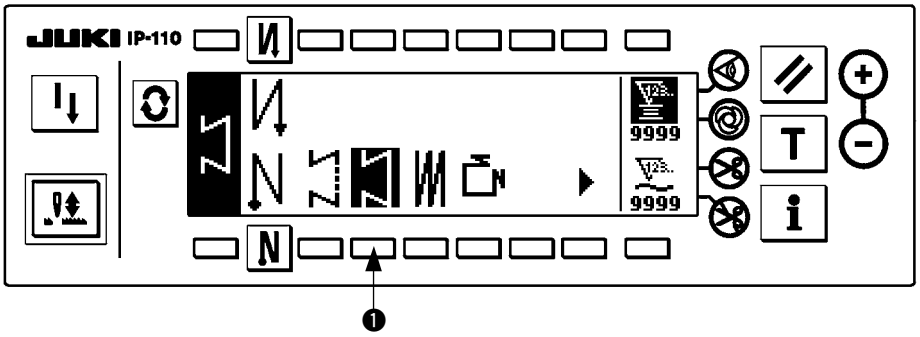
4) Press switch ❸ to set the reverse stitching at the end of sewing.



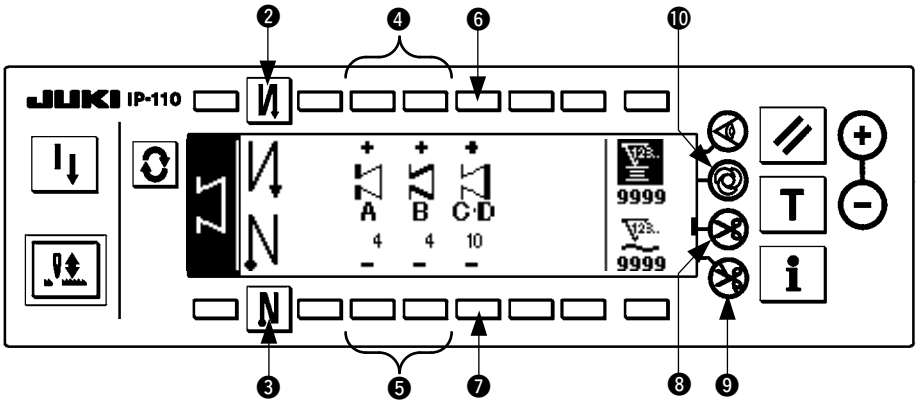
(2) Constant dimension stitching pattern

❷	OFF	ON	OFF	ON
Sewing pattern	C D	A B C D	C D B A	A B C D B A
❸	OFF	OFF	ON	ON

Press to display the pattern list screen.

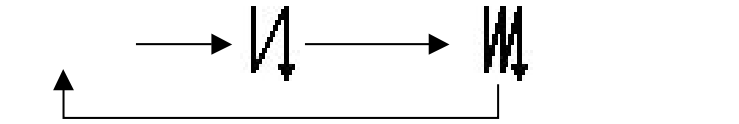


1) Press switch ❶ to select the constant dimension stitching pattern, and the screen is automatically changed over to the number of stitches of constant dimension stitching setting screen to display the number of stitches which has been already set.



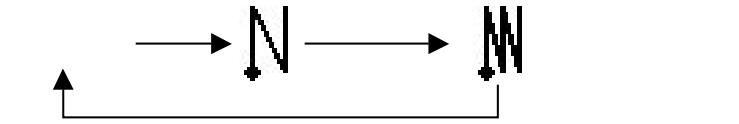
2) When changing the number of stitches of the reverse stitching, change it with switches ❹ and ❺ for setting the number of stitches of A and B.
In addition, when changing the number of stitches of the constant dimension stitching, change it with switches ❻ and ❼ for setting the number of stitches of C D.
(The range of the number of stitches that can be changed : A and B = 0 to 19 stitches, C D = 0 to 500 stitches)

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



No setting — Reverse stitching at the start of sewing — Double reverse stitching at the start of sewing

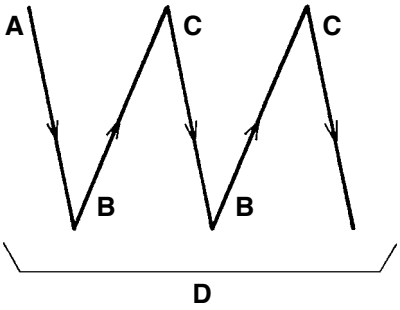
4) Press switch ❸ to set the reverse stitching at the end of sewing.



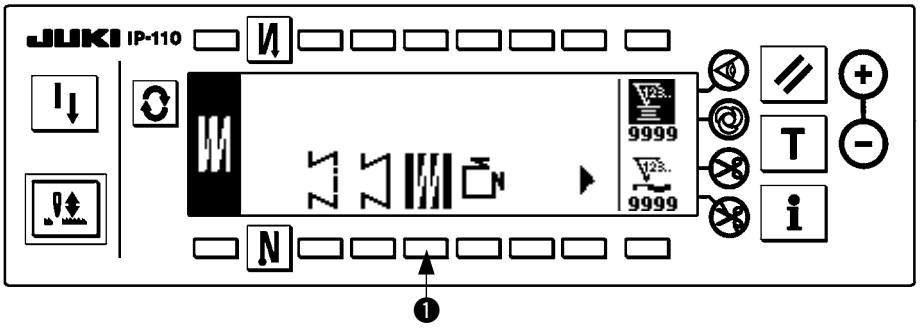
No setting — Reverse stitching at the end of sewing — Double reverse stitching at the end of sewing

5) When automatic thread trimming switch ❽ is selected, thread trimming is automatically performed after processes C D have been completed. (When setting the reverse stitching at the end of sewing, thread trimming is automatically performed after the reverse stitching at the end of sewing has been completed.
When automatic thread trimming switch ❽ is not selected, press the touch-back switch after processes C D have been completed, and the sewing machine rotates at low speed. (Compensation stitching operation)
In addition, when the pedal is returned to the neutral position and the front part of it is depressed again, the sewing can be continued regardless of the setting of the number of stitches.
6) When thread trimming prohibiting switch ❾ is selected, the sewing machine will stop with the needle up without performing thread trimming.
7) When one-shot automatic stitching switch ❿ is selected, automatic sewing is performed at the set speed without a break by depressing the front part of the pedal.

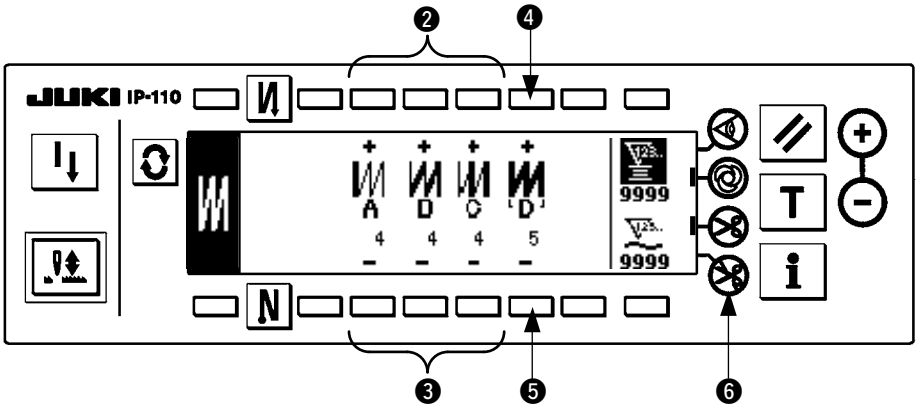
(3) Overlapped stitching pattern



Press  to display the pattern list screen.

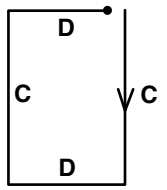
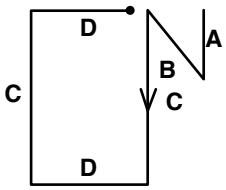
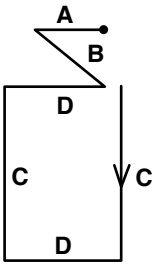
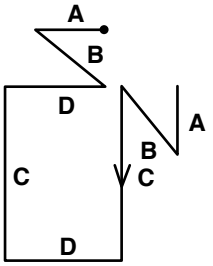


1) Press switch ❶ to select the overlapped stitching pattern, and the screen is automatically changed over to the number of stitches of overlapped stitching setting screen to display the number of stitches which has already been set.

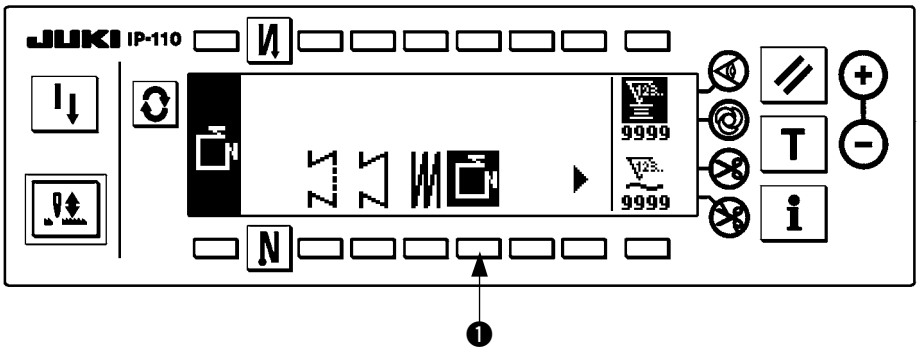


2) When changing the number of stitches, change it with switches ❷ and ❸ for setting the number of stitches for processes A through C. To change the number of times of the whole processes, change it with switches ❹ and ❺ for setting the number of processes D.
   (The range of the number of stitches A, 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 ❻ is selected, the machine will stop with the needle up upon completion of the overlapped stitching procedure without performing thread trimming.

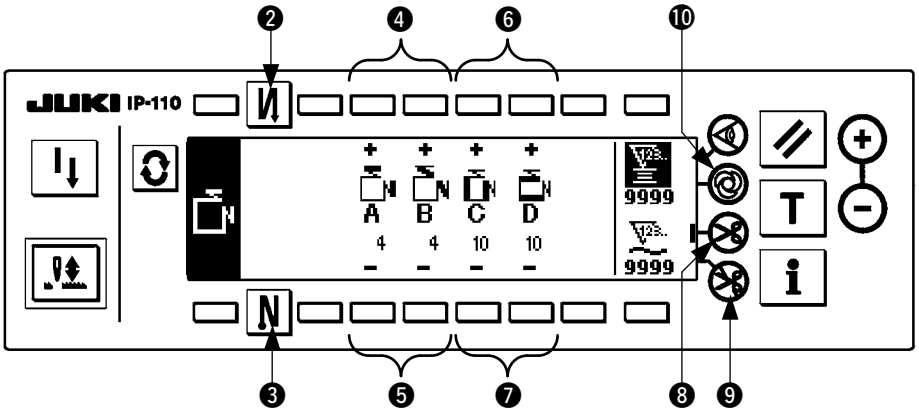
(4) Square stitching pattern

❷	OFF	ON	OFF	ON
Sewing pattern				
❸	OFF	OFF	ON	ON

Press  to display the pattern list screen.

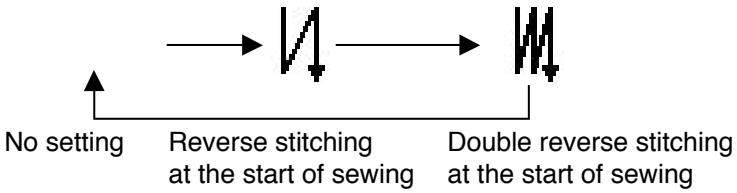


1) Press switch ❶ to select the square stitching pattern, and the screen is automatically changed over to the number of stitches of square stitching setting screen to display the number of stitches which has been already set.

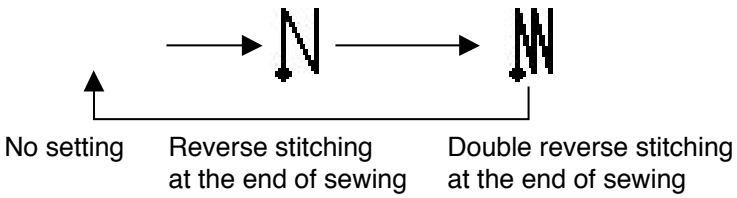


2) When changing the number of stitches of reverse stitching, change it with switches ❹ and ❺ for setting the number of stitches of A and B.
   In addition, when changing the number of stitches of square stitching, change it with switches ❻ and ❼ for setting the number of stitches of C and D.
   (The range of the number of stitches that can be changed : A and B = 0 to 19 stitches, C and D = 0 to 99 stitches)

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



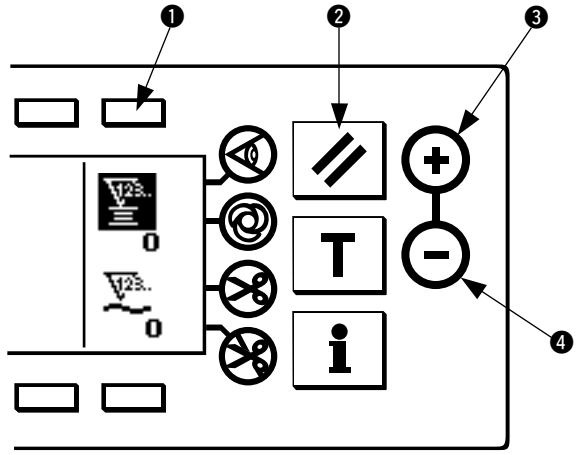
4) Press switch ❸ to set the reverse stitching at the end of sewing.



5) The sewing machine automatically stops after completion of the process at processes C and D. At this time, the sewing machine rotates at low speed when the touch-back switch is pressed (compensation stitching operation). In addition, when the pedal is returned to the neutral position and the front part of it is depressed again, the sewing can be continued regardless of the setting of the number of stitches.
6) When automatic thread trimming switch ❽ is selected, thread trimming is automatically performed after completion of the last process. (When the reverse feed stitching at the end of sewing is set, the reverse feed stitching at the end of sewing becomes the last process, and automatic thread trimming is performed after completion of the process.)
7) When thread trimming prohibiting switch ❾ is selected, the sewing machine will stop with the needle up without performing thread trimming.
8) When one-shot automatic stitching switch ❿ is selected, automatic sewing is performed at the set speed without a break by depressing the front part of pedal at processes C and D.
9) When the sewing machine is provided with auto-lifter, the presser foot automatically goes up after completion of the process at processes C and D.

2-6. How to use the bobbin thread counter

The machine detects the number of stitches. The preset value on the bobbin thread counter is subtracted in accordance with the number of stitches detected. (Every time the detector detects 10 stitches, 1 is subtracted from the preset value on the bobbin thread counter.) When the value on the counter becomes a minus value as (····· → 1 → 0 → –1), the buzzer (peeps three times) and the pop-up display inform that the time to change the bobbin thread has come.

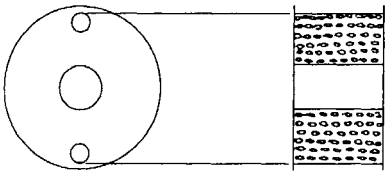


1) Press switch ❶ to select the bobbin thread counter. Then press counter reset switch ❷ to return the value indicated on the bobbin thread counter to the initial value (it has been factory-set to "0" at the time of delivery).

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 ❸ and ❹.

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.

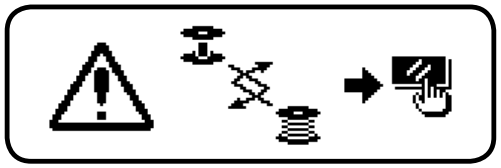
Thread used	Length of thread wound round the bobbin	Value on bobbin thread counter
Polyester spun thread #50	36 m	1200 (stitch length : 3 mm)
Cotton thread #50	31 m	1000 (stitch length : 3 mm)

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



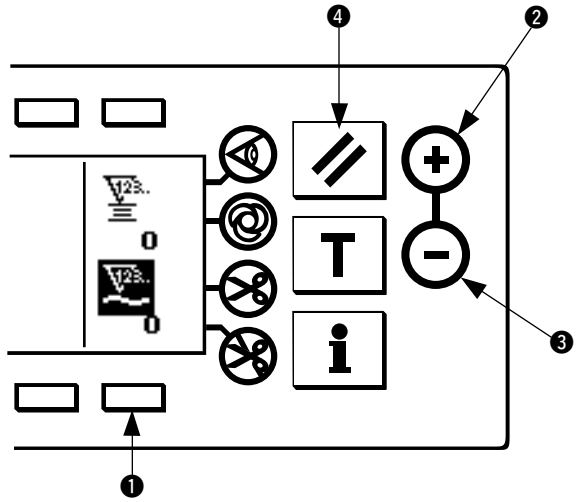
5) After the bobbin thread has been properly replaced, press counter reset switch ❷ to return the value on the bobbin thread counter to the initial value. Now, re-start the sewing machine.
6) If the remaining amount of bobbin thread is excessive or the bobbin thread runs out before the bobbin thread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

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.

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 times of detection 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.

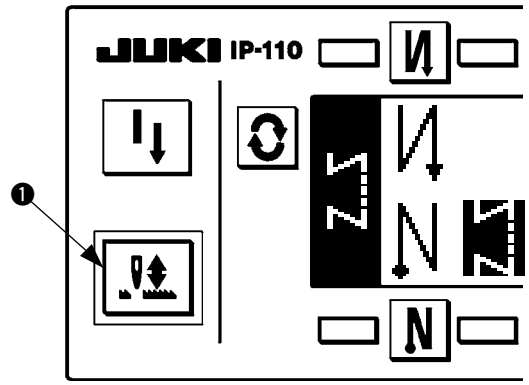
2-7. Sewing counter

Count-up is performed every time thread trimming is performed. (0 → 1 → 2 ····· → 9999)



After selecting the sewing counter by pressing switch ❶, the counter value can be modified using counter value setting switches ❷ and ❸. In addition, the sewing counter value returns to "0" by pressing counter reset switch ❹.

2-8. 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.

2-9. ON/OFF switch of the material edge sensor

- 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.

2-10. Automatic thread trimming switch

- This switch is used to automatically actuate the thread trimmer in a process where the sewing machine automatically stops or when the material edge sensor is used.
  (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).)

2-11. One-shot automatic stitching switch

- 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.

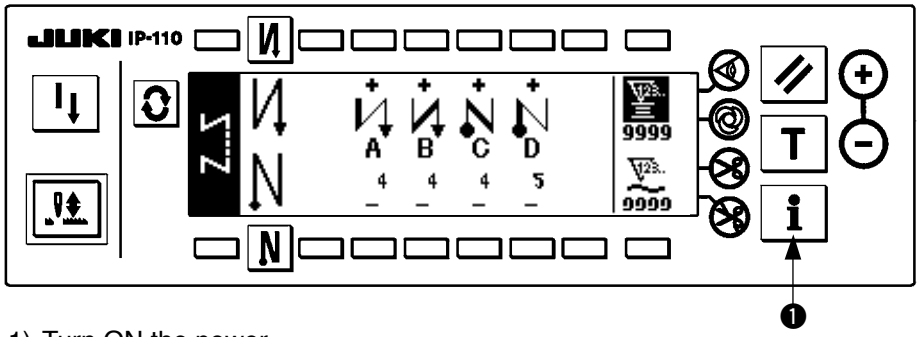
2-12. Thread trimming prohibition switch

- 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.

3. INFORMATION

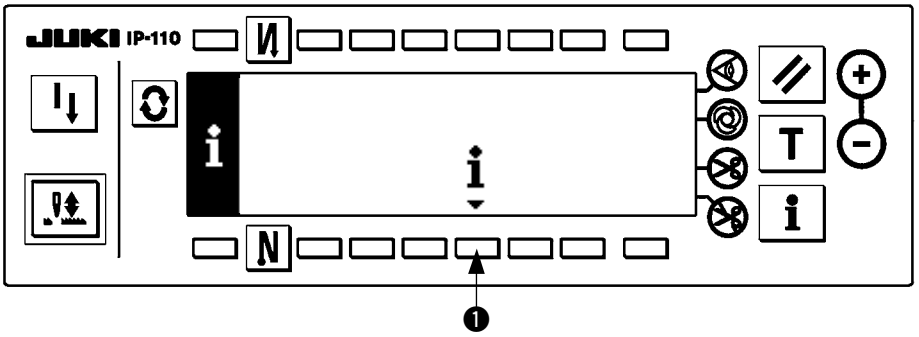
Setting and checking of various data can be performed with the information.
For the information, there are the operator level and the maintenance personnel level.

3-1. Operator level



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

■ Information screen (operator level)

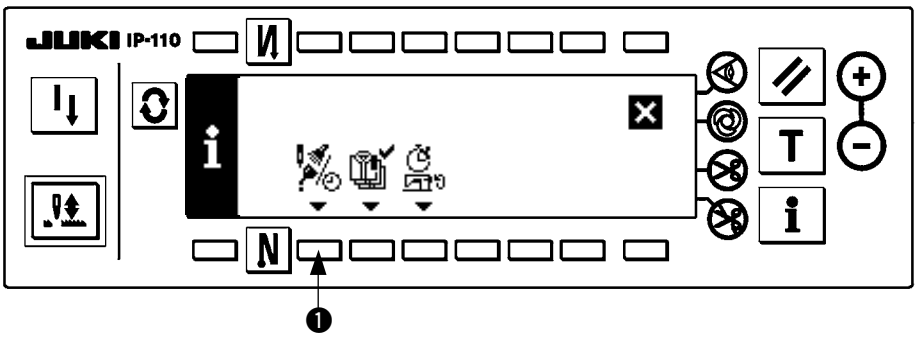


❶ : Sewing management information

(1) Sewing management information

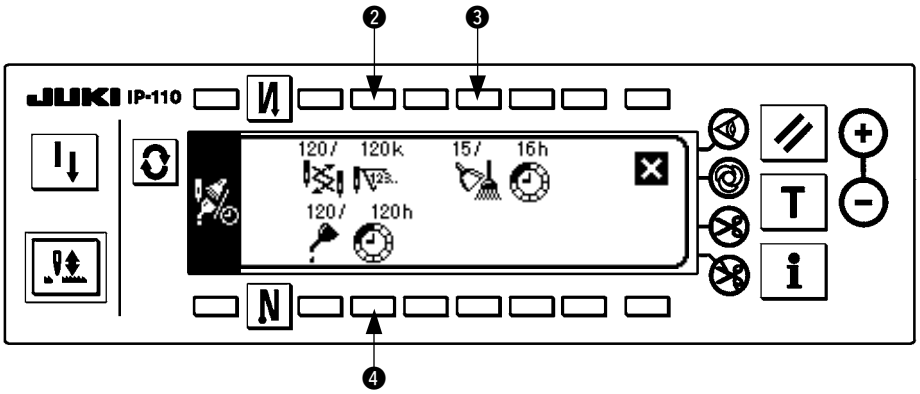
For the sewing management information, there are the maintenance management function, production control function and working measurement function.

[Maintenance management function]



1) Press ❶ to display the maintenance function screen.

■ **Maintenance function screen**



[Explanation of the respective items]

❷ Time of replacement of needle ..... Unit : X 1,000 stitches

❸ Time of cleaning ..... Unit : Hour

❹ 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

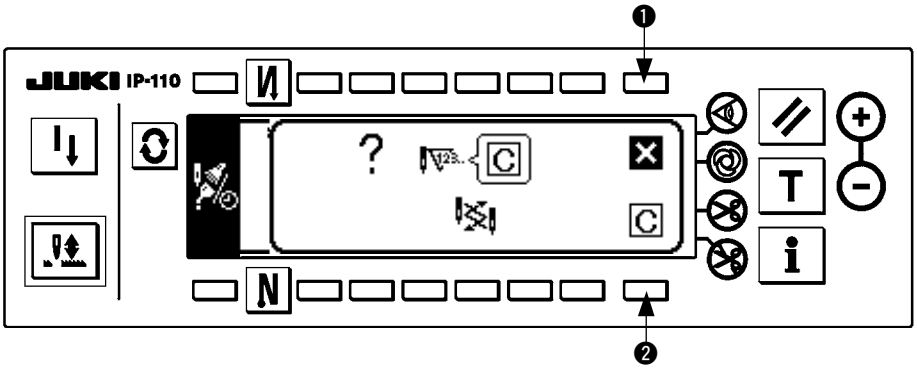
100 / 1600 k

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

Time of replacement of needle is informed after 100 thousand stitches.

When ❷, ❸ and ❹ switches are pressed, the clear checking screen is displayed.

■ **Clear screen**

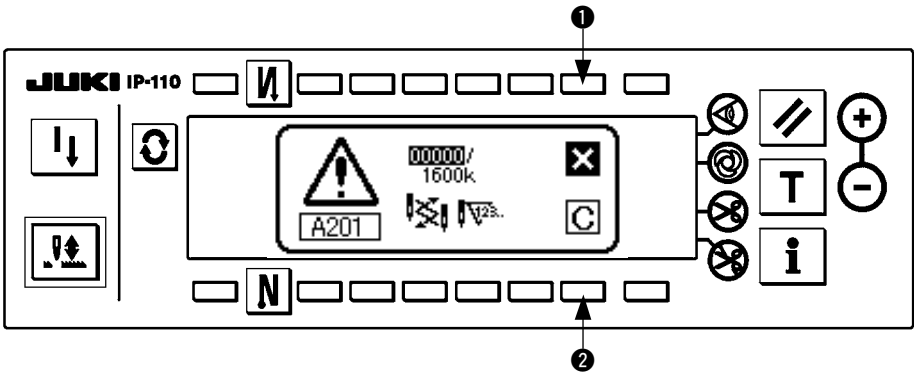


❶ : The screen returns to the maintenance function screen without performing clearing.

❷ : The screen returns to the maintenance function screen after executing clearing.

■ **Warning screen**

Warning screen is displayed when the warning time is reached.

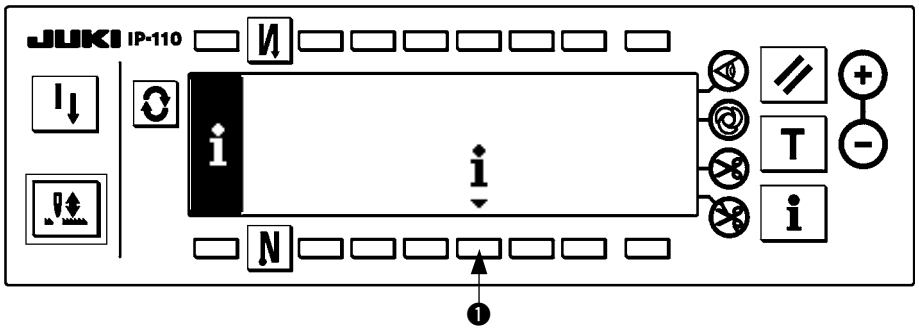


❶ : When ❶ is pressed, the screen can be cleared. However, the counter itself cannot be cleared. In case of the replacement of needle, the warning screen is displayed at intervals of 10 minutes until clearing is performed. In case of other warnings, the warning screen is displayed at the time of turning ON the power until the counter is cleared.

❷ : When ❷ is pressed, the screen is cleared and the counter value is cleared as well. From this time, counting starts newly.

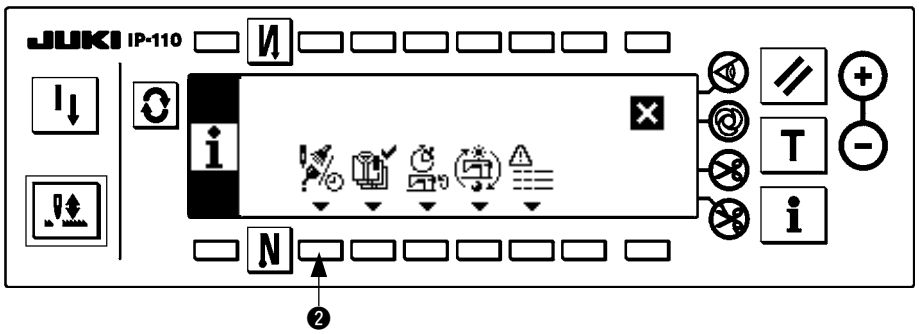
[Setting of the warning setting time]

■ Infomation screen



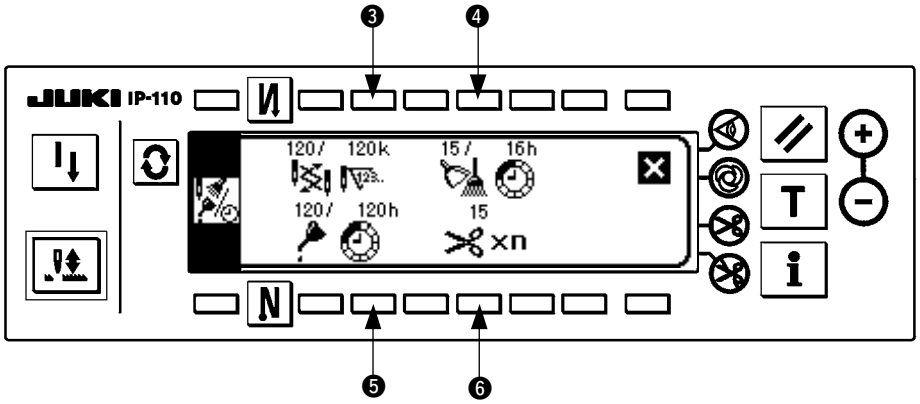
1) Press switch ❶ for approximately three seconds in the information screen.

■ Sewing management information selection screen



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

■ Maintenance function screen



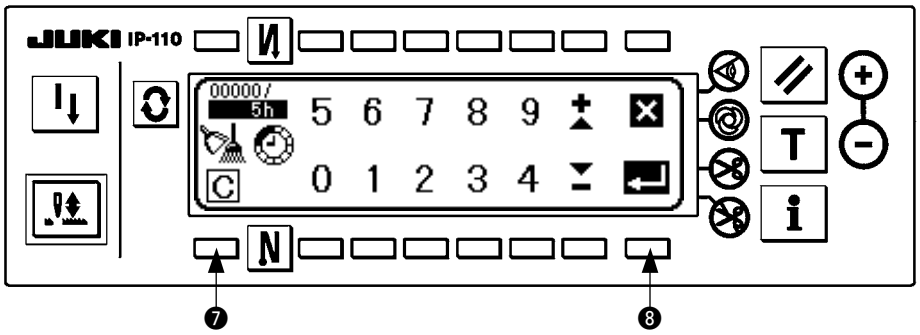
❸ : Input screen of time of replacement of needle (number of stitches : unit : X 1,000 stitches) is displayed.

❹ : Input screen of time of cleaning (time : unit : h) is displayed.

❺ : Input screen of time of replacement of oil (time : unit : h) is displayed.

❻ : Input screen of number of times of thread trimming (number of times : unit : time) is displayed.
(The number of times of thread trimming per count can be set when counting the number of pieces of sewing with the output display.)

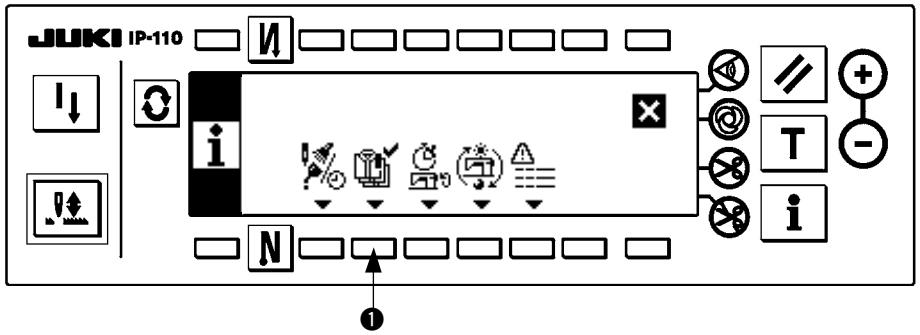
■ **Various input screen**
(time of replacement of needle, time of cleaning, time of replacement of oil, and number of times of thread trimming)



Press ❼ to display the clear checking screen. (The screen is not displayed when inputting the number of times of thread trimming.) After inputting the set value, press ❽ to determine.

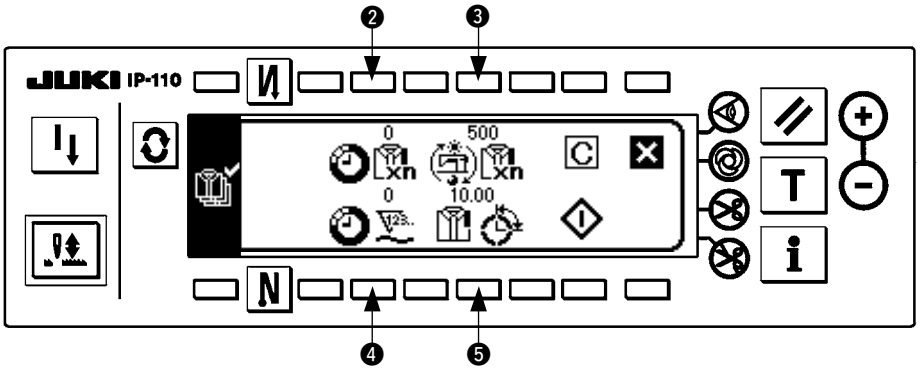
In case of stopping the warning function, set the set value to "0".
It is possible to individually set replacement of needle, cleaning, and replacement of oil respectively.
In case of stopping all, set "0" to each.

(2) Production control function



1) Press ❶ to display the production control screen.

■ **Production control screen**



[Explanation of the respective items]

Number of pcs. of current target ..... Unit : Piece

Number of pcs. of final target..... Unit : Piece

Current output ..... Unit : Piece

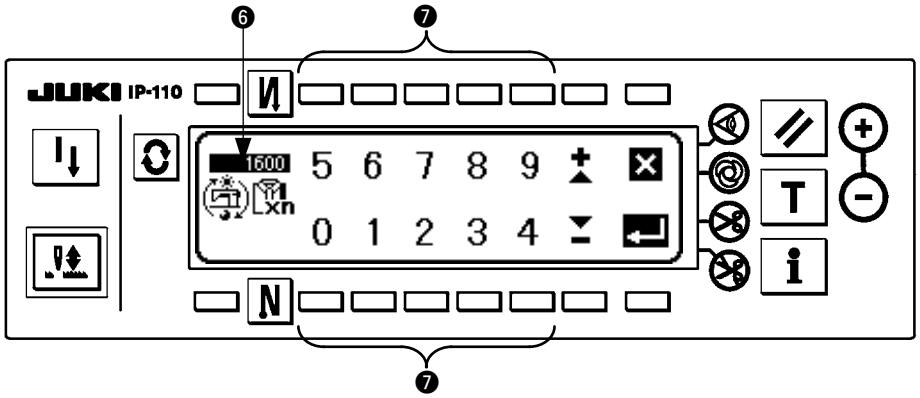
Time required to sew one piece (pitch time) ..... Unit : Second

This item displays that the measurement is stopped.

This item displays that the measurement is being performed.

2) Press ❷, ❸, ❹ and ❺ to display the production control input screen.

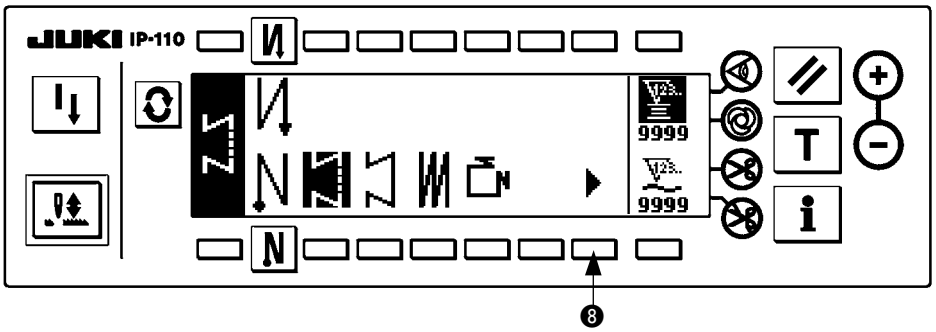
■ **Production control input screen**



3) Set the respective setting items with ❼. Setting time inputted in ❻ is shown in reverse video.

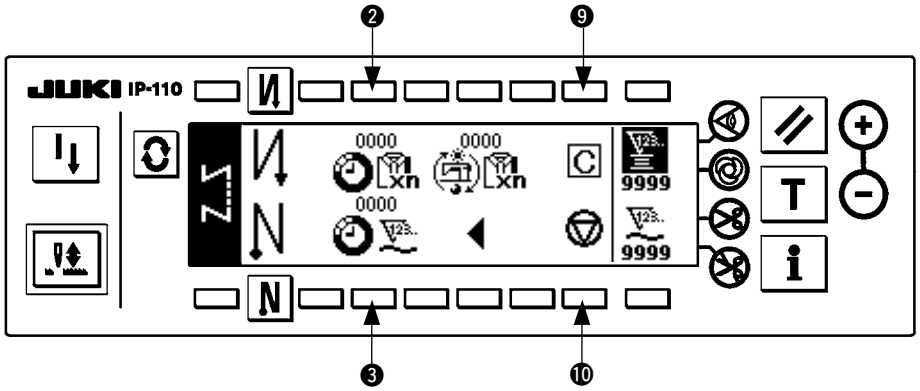
Minimum setting possible value of pitch time is 0.50 seconds.

When 0.00 second is set, make the current target non-display.



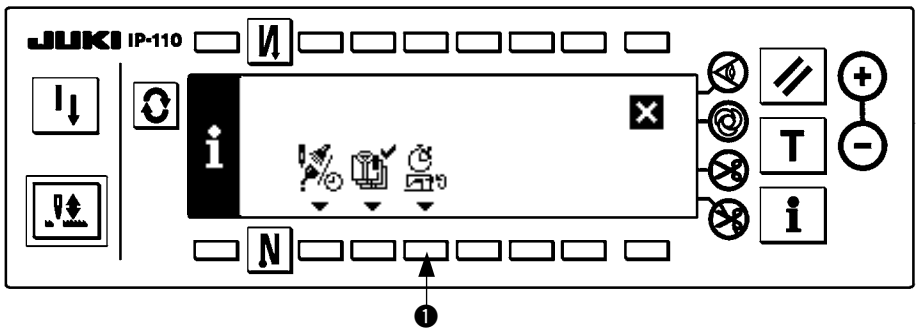
4) Press ❽ in the pattern list screen.

■ **Output display screen**



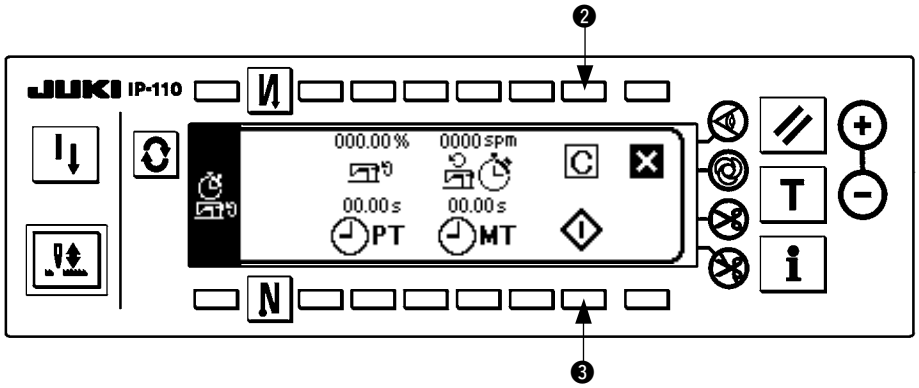
5) The output display screen is displayed. Sewing is possible with this screen.
Set value can be changed with switches ❷ and ❸ (Editing of the final target value and pitch time cannot be performed in this screen.).
The current target value and the current output can be cleared (make them “0”) with switch ❾.
Setting of start/stop of the output display function can be performed with switch ❿.

(3) Working measurement function



1) Press ❶ to display the working measurement function screen.

■ **Working measurement function screen**



[Explanation of the respective items]

Working factor ..... Unit : %

Working mean speed ..... Unit : rpm

PT Pitch time ..... Unit : Second

MT Machine time..... Unit : Second

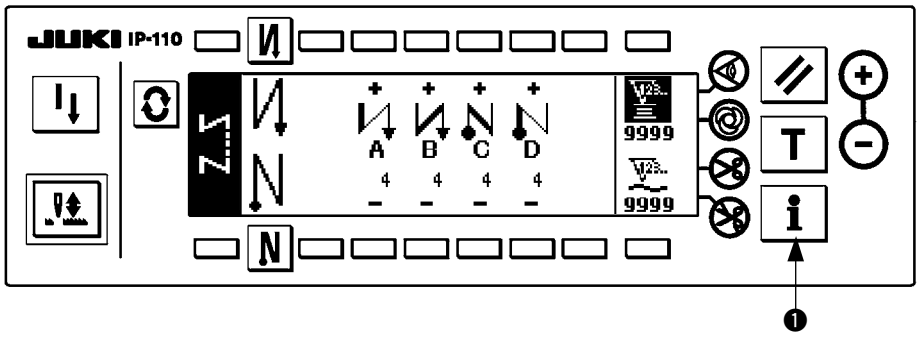
2) Press ❸ to start the working measurement.

3) To stop the measurement, press ❸ again.

4) The result of measurement can be cleared with ❷.

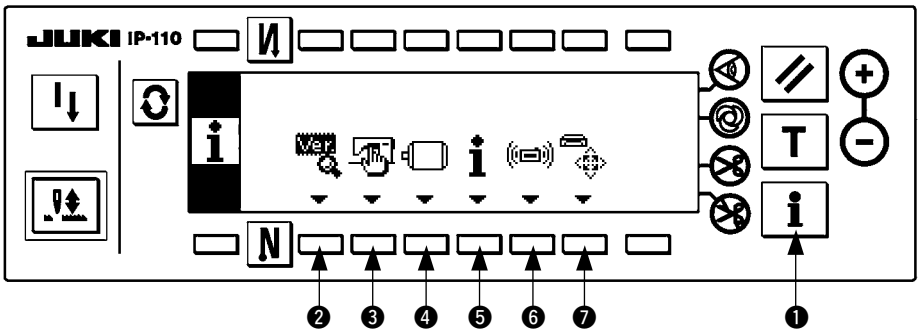
When "Clear" is not executed, the measurement from the last time can be continued.

3-2. Maintenance personnel level



1) Turn ON the power.
2) Press switch ❶ for approximately three seconds to display the information screen.

■ Information screen (Maintenance personnel level)

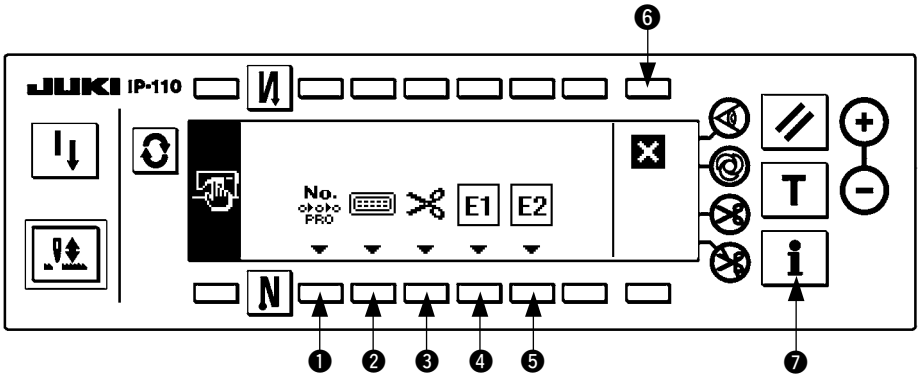


1) Press the respective switches to display the screens of the respective functions. (Press switches ❸, ❹, ❺, and ❻ for three seconds.)
   Press switch ❶ to end the information mode, and the screen returns to that before the information mode.
   ❷ : Version display ..... Refer to the Engineer's Manual.
   ❸ : Sewing common setting ..... Refer to the sewing common data function.
   ❹ : Function setting ..... Refer to the function setting procedure.
   ❺ : Sewing management setting ..... Refer to the sewing management information.
   ❻ : Data communication..... Refer to the Engineer's Manual.
   ❼ : Media format..... Refer to the Engineer's Manual.

When the media format is executed, all of the data that have been recorded disappear. Be careful not to use it for anything other than the initialization of the media.

(1) Sewing common data function

■ Sewing common data screen (Maintenance personnel level)



1) Press the respective switches to display the screens of the respective functions.
   ❶ : Simplified program edit..... Refer to the simplified program function.
   ❷ : Optional input/output setting..... Refer to the optional input/output function.
   ❸ : Thread trimmer device display ... Refer to the thread trimmer device function.
   ❹ : Additional device 1 setting..... Refer to the additional device function.
   ❺ : Additional device 2 setting..... Refer to the additional device function.

2) Press switch ❻ to return to the information screen (maintenance personnel level), and press switch ❼ to end the information mode. Then the screen returns to that before the information mode.

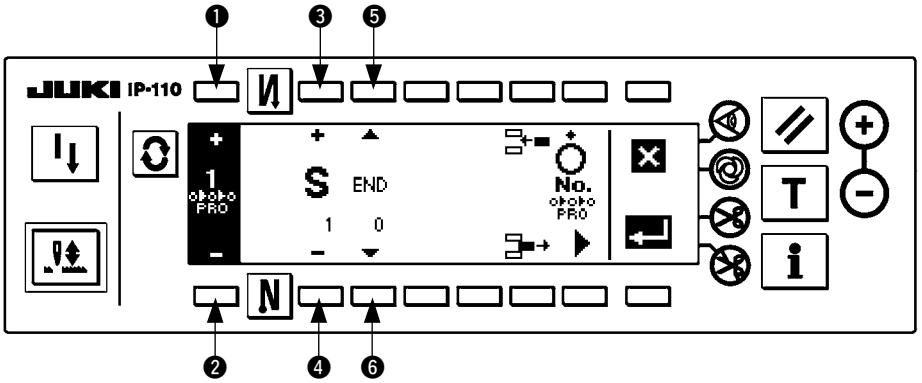
1. Simplified program function

This is the function to create the simplified program which takes in the various internal signals and the signal from the outside (connector), and can control the output of special signals to the outside (connector) and the complicated motion of the sewing machine with SC-510 main unit only without using the exclusive input device or the like.

For the detailed operation, refer to the Engineer's Manual for SC-510.

■ **Simplified program edit the 1st screen**

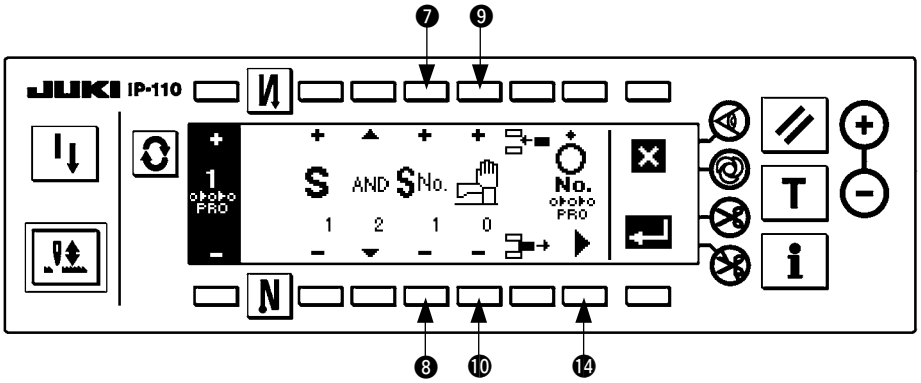
[Program command "END" : standard setting]



1) Press switches ❶ and ❷ to select programs (No. 1 to 4).
2) Press switches ❸ and ❹ to select steps (No. 1 to 20). When the program command selected with switches ❺ and ❻ is "END", the step No. becomes the last step and it is not possible to proceed to the next step No.
3) Press switches ❺ and ❻ to select the program command (Function code Nos. 0 to 20). Here, select the function code No. 2 "AND" as an example When "AND" is selected, the display is as shown in the figure below.

■ **Simplified program edit the 1st screen**

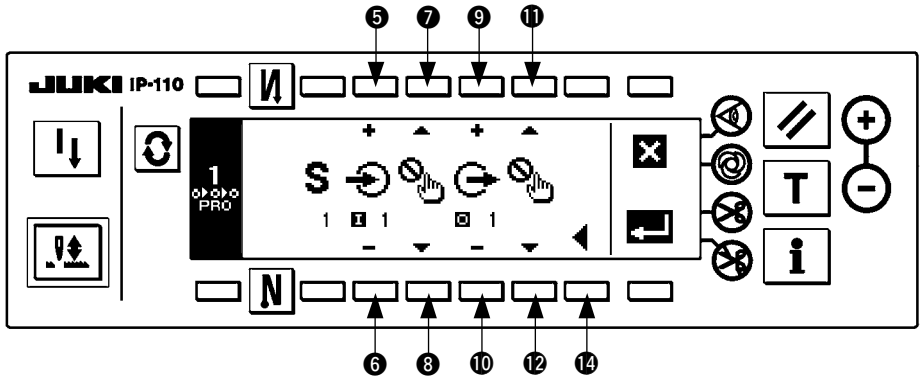
[Program command "AND" : standard setting]



4) Press switches ❼ and ❽ to set parameter 1. Contents of parameter 1 may differ or not exist depending on the selected program command.
5) Press switches ❾ and ❿ to set parameter 2. Contents of parameter 2 may differ or not exist depending on the selected program command.
6) Press switch ⓮ to display the simplified program edit the 2nd screen.

■ **Simplified program edit the 2nd screen**

[Program command “AND” : standard setting]



7) Press switches ❺ and ❻ to select input ports (No. 1 to 53). Input port may not exist depending on the selected program command.
8) Press switches ❼ and ❽ to select input state of the selected input port (Low : true when inputting Low, High : true when inputting High). Input logic of the input port may not exist depending on the selected program command.

* Selection of plural input ports (No. 1 to 53) and the accompanied input state is possible.

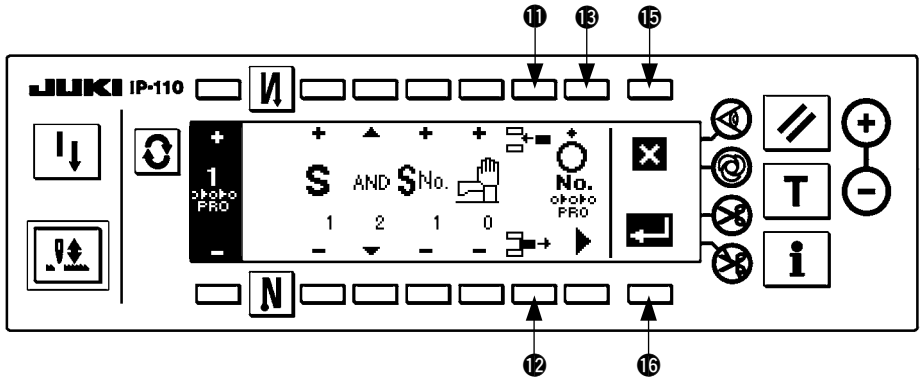
9) Press switches ❾ and ❿ to select output ports (No. 1 to 17).
10) Press switches ⓫ and ⓬ to select output state of the selected output port (Low : Low output when true, High : High output when true). Output state can be set with plural output ports.

* Selection of plural output ports (No. 1 to 17) and the accompanied output state is possible.

11) Press switch ⓮ to display the simplified program edit the 1st screen.

■ **Simplified program edit the 1st screen**

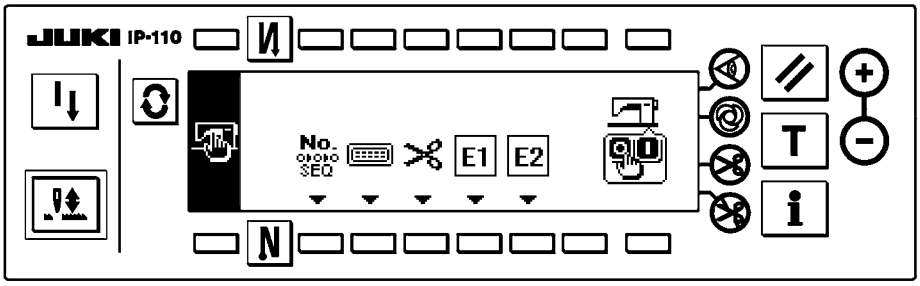
[Program command “AND” : standard setting]



12) When editing the next step, repeat items 2) to 11). When editing ends, press switch ⓭ to make this program effective. (The illustration above shows program off. When switch ⓭ is pressed, the display changes as shown in the illustration below, and the program becomes on.)

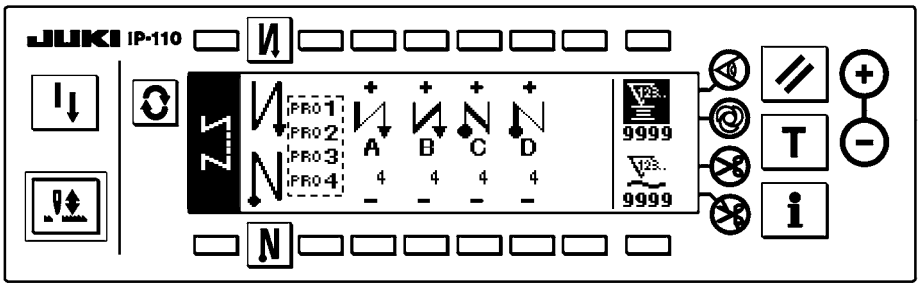
Program on **Program off**

13) When switch ⓰ is pressed to store this program in memory and end the editing, display the screen of the illustration below. When switch ⓯ is pressed, all contents of the edit up to that time are invalidated and the state returns to that before edit.



14) Lastly, turn OFF the power switch. This simplified program works when the power switch is turned ON again.

- Inserting procedure of the step
  When switch ⓫ is pressed, a step (program command “DELY” is set) is newly inserted after the displayed step, and the display is changed over to that of the step.
- Deleting procedure of the step
  When switch ⓬ is pressed, the displayed step is deleted, the next step is advanced, and the display is changed over to that of the step.
- Effective simplified program No. display at the time of sewing
  Simplified program No. which has been set effective is displayed in the frame of dotted line of the illustration below in the normal sewing screen or the like, and which simplified program No. is working can be confirmed. The illustration below shows the display when all of No. 1 to 4 are set effective. Simplified program No. which has been set invalidate is not displayed.

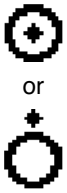
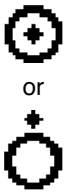


[Program command list]

Command display Function code No.	Command name	Parameter 1		Parameter 2		
		Display	Setting range	Display	Setting range	
END 0	Completion	-	-	-	-	
DELY 1	Delay	-	-	 0 to 999	(Delay time) 0 : Command invalid 1 to 999 : msec	
AND 2	AND conditional branch	 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 999	(Delay time) 0 : Waiting input until completion of condition 1 to 999 : msec	
OR 3	OR conditional branch	 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 999	(Delay time) 0 : Waiting input until completion of condition 1 to 999 : msec	
STIA 4	Number of stitches AND conditional branch	 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 999	(Number of stitches) 0 : Command invalid 1 to 999 : Stitch	
STIO 5	Number of stitches OR conditional branch	 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 999	(Number of stitches) 0 : Command invalid 1 to 999 : Stitch	
JUMP 6	Jump repeat counter	 1 to 20	(Jump) 1 to 20 : Step No.	 0 to 999	(Repeat count value) 0 : Infinite 1 to 999 : Time	
SPED 7	speed command	 0 to 999	(Speed) 0 to 999 : X 10 rpm	 0 to 999	(Delay time) 0 : Delay time invalid 1 to 999 : msec	

*** State setting of input ports (No. 1 to 53) and output ports (No. 1 to 17) can be individually performed.**

	Input port		Input port		Description of command
	Display	Setting range	Display	Setting range	
	-	-	1 to 17	: No setting High : H output Low : L output	End of program (initial setting)
	-	-	1 to 17	: No setting High : H output Low : L output	To next step after lapse of delay time
	1 to 53	: No setting High : H input Low : L input	1 to 17	: No setting High : H output Low : L output	Moves to next step when all conditions specified in the input setting are completed (AND input). Jumps to the step set at skip destination step No. when input conditions are not completed and delay time has lapsed.
	1 to 53	: No setting High : H input Low : L input	1 to 17	: No setting High : H output Low : L output	Moves to next step when any of conditions specified at input setting is completed (OR input). Jumps to the step set at skip destination step No. when input conditions are not completed and delay time has lapsed.
	1 to 53	: No setting High : H input Low : L input	1 to 17	: No setting High : H output Low : L output	Jumps to the step specified at skip destination step No. when all input setting conditions are completed within the set value of number of stitches setting (AND input), and moves to next step after number of stitches has finished.
	1 to 53	: No setting High : H input Low : L input	1 to 17	: No setting High : H output Low : L output	Jumps to the step specified at skip destination step No. when any of input setting conditions is completed within the set value of number of stitches setting (OR input), and moves to next step after number of stitches has finished.
	-	-	1 to 17	: No setting High : H output Low : L output	Repeats between the specified steps at jump until repeat count value is over. Loops infinitely at set value 0. (Caution) Do not perform the nest input of this command.
	-	-	1 to 17	: No setting High : H output Low : L output	Speed of the sewing machine can be set. The machine runs at the set speed within the set delay time, and the speed command is released after lapse of delay time. Minimum number of revolutions does not become less than the set value of function setting No. 35 Minimum number of revolutions of pedal. Also, maximum number of revolutions does not become more than the set value of function setting No. 96 Max. number of revolutions.

Command display Function code No.	Command name	Parameter 1		Parameter 2		
		Display	Setting range	Display	Setting range	
LIMI 8	Speed limitation command	 0 to 999	(Limitation speed) 0 to 999 : X 10 rpm	 0 to 999	(Delay time) 0 : Delay time invalid 1 to 999 : msec	
LINH 9	Lswinh command	 or	(on/off information)  : on  : off	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
TRM 10	Thread trimming command	-	-	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
TINH 11	Tswinh command	 or	(on/off information)  : on  : off	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
UP 12	UP stop command	-	-	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
HS 13	Needle up/down command	-	-	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
RSW 14	Rsw command	-	-	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	

*** State setting of input ports (No. 1 to 53) and output ports (No. 1 to 17) can be individually performed.**

	Input port		Input port		Description of command
	Display	Setting range	Display	Setting range	
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	Max. speed limitation value of the sewing machine can be set. The set speed limitation works within the set delay time and speed limitation command is released after lapse of delay time. Minimum number of revolutions does not become less than the set value of function setting No. 35 Minimum number of revolutions of pedal. Also, max. number of revolutions does not become more than the set value of function setting No. 96 Max. number of revolutions.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	LSW (depressing front part of pedal) is prohibited. Command is executed without delay time at delay time 0. For others, LSW is invalid within the set delay time, and input of LSW is effective after setting delay time.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	Thread trimming operation is performed. Command is invalid at delay time 0. For others, thread trimming command is output within the set delay time.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	Thread trimming output is prohibited. Command is executed without delay time at delay time 0. For others, thread trimming delay command is output within the set delay time, and released after lapse of delay time.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	UP position stop command (speed specified with other command is neglected.) Command is executed without delay time at delay time 0. For others, UP position stop command is effective within the set delay time, and command is invalid after lapse of delay time.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	When command is executed, if the needle is in DOWN position, it rotates to UP position in the normal rotation, and vice versa. Speed specified with other command is neglected. Command is executed without delay time at delay time 0. For others, command is effective within the set delay time, and command is invalid after lapse of delay time.
	-	-	 ⊠ 1 to 17	 : No setting **High** : H output **Low** : L output	Reverse revolution to lift needle command When command is executed, the machine is braked in the reverse rotation from the angle set with function setting No. 19. Command is executed without delay time at delay time 0. For others, command is effective within the set delay time, and command is invalid after lapse of delay time.

Command display Function code No.	Command name	Parameter 1		Parameter 2		
		Display	Setting range	Display	Setting range	
ANGA 15	Angle AND conditional branch	SNo. 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 359	(Angle) 0 to 359 : Degree	
ANGO 16	Angle OR conditional branch	SNo. 1 to 20	(Skip destination step No.) 1 to 20 : Step No.	 0 to 359	(Angle) 0 to 359 : Degree	
STOP 17	Stop command	-	-	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
BT 18	BTsw command (Reverse stitching command)	 or 	(on/off information)  : on  : off	 0 to 999	(Delay time) 0 : No delay 1 to 999 : msec	
FL 19	FLsw command (Presser lifter output)	 or 	(on/off information)  : on  : off	 0 to 999	(Delay time) 0 : Invalid 1 to 999 : msec	
REST 20	Program reset	No. PRO 1 to 4	(Program No.) 1 to 4 : Simplified program No.	 or 	(on/off information)  : on  : off	

*** State setting of input ports (No. 1 to 53) and output ports (No. 1 to 17) can be individually performed.**

	Input port		Input port		Description of command
	Display	Setting range	Display	Setting range	
	 1 to 53	 : No setting High: H input Low : L input	 1 to 17	 : No setting High : H output Low : L output	Step moves to the next step after progress of set angle, and moves to skip destination step No. when all input conditions are completed (AND input). (Reference angle is the angle which is off from UP position.)
	 1 to 53	 : No setting High: H input Low : L input	 1 to 17	 : No setting High : H output Low : L output	Step moves to the next step after progress of set angle, and moves to skip destination step No. when any of input conditions is completed (OR input). (Reference angle is the angle which is off from UP position.)
	-	-	 1 to 17	 : No setting High : H output Low : L output	Stop command is output, and step moves to the next step. When time is set, step moves to the next step after lapse of set time.
	-	-	 1 to 17	 : No setting High : H output Low : L output	On/off of reverse stitching switch is set. Command is executed without delay time at delay time 0. For other set values, reverse stitching switch is turned off after lapse of back-tuck output “on” time during set time.
	-	-	 1 to 17	 : No setting High : H output Low : L output	On/off of presser lifter switch command is set. Command is executed without delay time at delay time 0. For other set values, presser lifter switch is turned “off” after lapse of presser lifter output “on” time during set time.
	-	-	 1 to 17	 : No setting High : H output Low : L output	Initialization of the step of specified program No. The step of specified program is forcibly returned to the first step. Initialization of step can be performed to each program.

[Simplified program information input setting code list and connector location list]

The list below is the list of input/output port codes that are set in the second screen of the simplified program edit, the numbers of connectors and pin assignment on the circuit board, functions, etc.

Input list

Port input code	Signal name	Function	Connector No. and pin No. on the circuit board	Pin No.	Remarks
0	–	Invalid			Input is invalid.
1	opi0	Optional input 1	CN51-1	2	
2	opi1	Optional input 2	CN51-1	3	
3	opi2	Optional input 3	CN51-2	2	
4	opi3	Optional input 4	CN51-2	3	
5	opi4	Optional input 5	CN51-3	2	
6	opi5	Optional input 6	CN51-3	3	
7	opi6	Optional input 7	CN51-4	2	
8	opi7	Optional input 8	CN51-4	3	
9	opo0	Input of optional output 1	–	–	Output signal of optional output 1 can be internally inputted.
10	opo1	Input of optional output 2	–	–	Output signal of optional output 2 can be internally inputted.
11	opo2	Input of optional output 3	–	–	Output signal of optional output 3 can be internally inputted.
12	opo3	Input of optional output 4	–	–	Output signal of optional output 4 can be internally inputted.
13	opo4	Input of optional output 5	–	–	Output signal of optional output 5 can be internally inputted.
14	opo5	Input of optional output 6	–	–	Output signal of optional output 6 can be internally inputted.
15	opo6	Input of optional output 7	–	–	Output signal of optional output 7 can be internally inputted.
16	opo7	Input of optional output 8	–	–	Output signal of optional output 8 can be internally inputted.
17	TRMD	Thread trimming output	CN36	1	
18	WPD	Wiper output	CN36	2	
19	TLSUBD	Thread release output	CN36	7	
20	BRD	Reverse stitching output	CN36	6	
21	FLD	Presser lifting output	CN37	1	
22	BZ	Buzzer output	–	–	
23	M_ERR	Machine error output	CN40	6	
24	S.STATE	Stop state output	–	–	
25	HSTSW	UP/DOWN switch input	CN38	13	CP-160 (Operation panel)
26	LSSW	Low speed switch input	CN39	11	Standing machine type
27	BTSW	Reverse stitching switch input	CN36	5	
28	UDET	UP position input	CN33	6	
29	DDET	DOWN position input	CN33	1	
30	UP	UP key input	Operation panel	–	Front cover
31	DOWN	DOWN key input	Operation panel	–	Front cover
32	SET+	SET + key input	Operation panel	–	Front cover
33	SET–	SET – key input	Operation panel	–	Front cover
34	TSW	Thread trimming switch input	CN39	7	Standing machine type
35	FLSW	Presser lifting switch input	CN36	4	
36	FLSW	Presser lifting switch input	CN39	5	Standing machine type
37	HSSW	High speed switch input	CN39	9	Standing machine type
38	opi8	Optional input 9	CN123-1	2	Extension circuit board (IPOP circuit board) CN123
39	opi9	Optional input 10	CN123-1	3	Extension circuit board (IPOP circuit board) CN123
40	opi10	Optional input 11	CN123-2	2	Extension circuit board (IPOP circuit board) CN123
41	opi11	Optional input 12	CN123-2	3	Extension circuit board (IPOP circuit board) CN123
42	opi12	Optional input 13	CN123-3	2	Extension circuit board (IPOP circuit board) CN123
43	opi13	Optional input 14	CN123-3	3	Extension circuit board (IPOP circuit board) CN123
44	opi14	Optional input 15	CN123-4	2	Extension circuit board (IPOP circuit board) CN123
45	opi15	Optional input 16	CN123-4	3	Extension circuit board (IPOP circuit board) CN123
46	opo8	Input of optional output 9	–	–	Output signal of optional output 9 can be internally inputted.
47	opo9	Input of optional output 10	–	–	Output signal of optional output 10 can be internally inputted.
48	opo10	Input of optional output 11	–	–	Output signal of optional output 11 can be internally inputted.
49	opo11	Input of optional output 12	–	–	Output signal of optional output 12 can be internally inputted.
50	opo12	Input of optional output 13	–	–	Output signal of optional output 13 can be internally inputted.
51	opo13	Input of optional output 14	–	–	Output signal of optional output 14 can be internally inputted.
52	opo14	Input of optional output 15	–	–	Output signal of optional output 15 can be internally inputted.
53	opo15	Input of optional output 16	–	–	Output signal of optional output 16 can be internally inputted.

(Caution) 1. It is possible to use port input codes 38 to 45 only when IPOP circuit board is mounted.

2. The motion of port input codes 9 to 16 and 46 to 53 is the function that can use the output internally as the input signal and the signal in the program when using optional output described in the function.

Output list

port input code	Signal name	Function	Connector No. and pin No. on the circuit board	Pin No.	Remarks
0	–				Output is invalid.
1	opo0	Optional output 1	CN50-1	2	
2	opo1	Optional output 2	CN50-1	3	
3	opo2	Optional output 3	CN50-2	2	
4	opo3	Optional output 4	CN50-2	3	
5	opo4	Optional output 5	CN50-3	2	
6	opo5	Optional output 6	CN50-3	3	
7	opo6	Optional output 7	CN50-4	2	
8	opo7	Optional output 8	CN50-4	3	
9	BZ	Buzzer output	–	–	
10	opo8	Optional output 9	CN124-1	2	Extension circuit board (IPOP circuit board) CN124
11	opo9	Optional output 10	CN124-1	3	Extension circuit board (IPOP circuit board) CN124
12	opo10	Optional output 11	CN124-2	2	Extension circuit board (IPOP circuit board) CN124
13	opo11	Optional output 12	CN124-2	3	Extension circuit board (IPOP circuit board) CN124
14	opo12	Optional output 13	CN124-3	2	Extension circuit board (IPOP circuit board) CN124
15	opo13	Optional output 14	CN124-3	3	Extension circuit board (IPOP circuit board) CN124
16	opo14	Optional output 15	CN124-4	2	Extension circuit board (IPOP circuit board) CN124
17	opo15	Optional output 16	CN124-4	3	Extension circuit board (IPOP circuit board) CN124

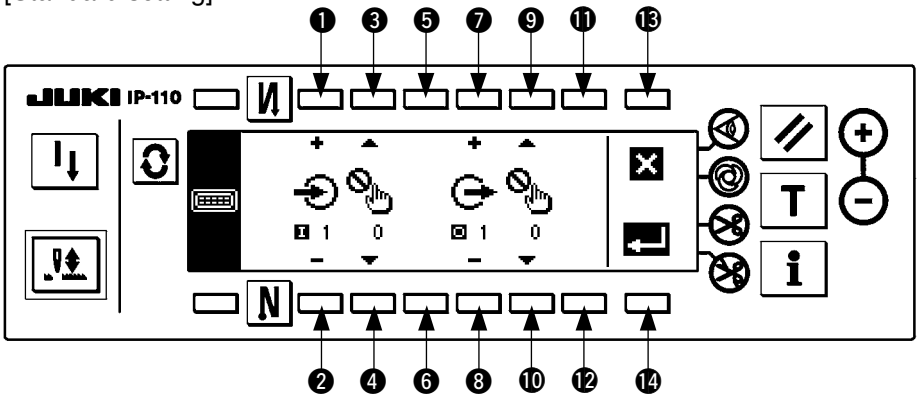
(Caution) It is possible to use port output codes 10 to 17 only when IPOP circuit board is mounted.

2. Optional input/output functions

This is the function to perform the output of function signal set to the connector and the control of simple motion of the sewing machine by setting various functions to input connector (CN51) and output connector (CN50) on CTL circuit board. For the details, refer to the Engineer's Manual for SC-510.

■ Optional input/output setting screen

[Standard setting]



- When setting the function to input connector (CN51)

1) Press switches ❶ and ❷, and select optional input (No. 1 to 8) corresponding to pin No. of input connector.
2) Press switches ❸ and ❹, and select input function (function code No. 0 to 26).
3) Press switches ❺ and ❻, and select input state (Low : true when Low is inputted, High : true when High is inputted) of the selected input function. When no function setting (function code No. 0) is selected, selection of input state does not exist.

* Selection of plural optional inputs (No. 1 to 8) and the accompanied input state is possible. However, when the same input function is set to plural optional inputs, optional input No., the number of which is smaller, becomes effective and that, the number of which is larger, becomes invalid and fails to work.

It is not possible to set the function to input connector (CN123) on the extension circuit board (IPOP circuit board).

- When setting the function to output connector (CN50)

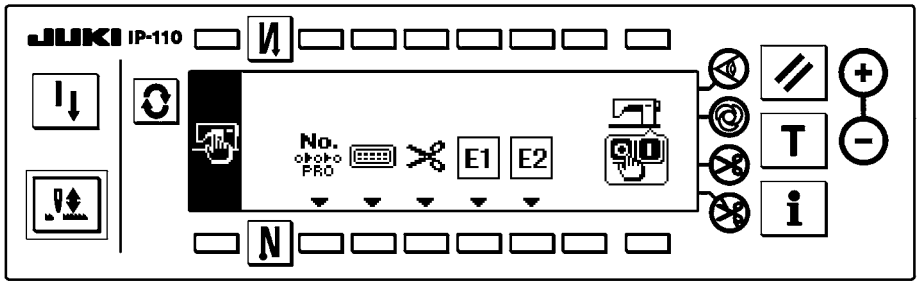
4) Press switches ❼ and ❽, and select optional output (No. 1 to 8) corresponding to pin No. of output connector.
5) Press switches ❾ and ❿, and select output function (function code No. 11 to 13).
6) Press switches ⓫ and ⓬, and select output state (Low : Low is output at the time of true, High : High is output at the time of true) of the selected output function. When no function setting (function code No. 0) is selected, selection of output state does not exist.

* Selection of plural optional outputs and the accompanied output state is possible. However, when the same output function is set to plural optional outputs, optional output No., the number of which is smaller, becomes effective, and that, the number of which is larger, becomes invalid and fails to work.

* When the output function selected at optional output (No. 1 to 8) is solenoid output function (TRM, BT, WP or FL), the optional output becomes effective, and the function corresponding to connectors for sewing machine (CN36 and 37) becomes invalid.

It is not possible to set the function to output connector (CN124) on the extension circuit board (IPOP circuit board).

7) Press switch ⓮ to store the setting in memory and end. Then the screen as shown in the illustration below is displayed. When switch ⓭ is pressed, all contents of the setting up to that time are invalidated, and the state returns to that before setting.



8) Lastly, turn OFF the power switch. This optional input/output function works by turning ON the power switch again.

[Input function list]

When setting input function to input connector CN51, set the function signal to input to optional input terminal to +5V (voltage) or less. When the input signal exceeds +5V or more, there is the possibility that breakage or deterioration of the circuit board occurs. So, be careful. For the details, refer to the Engineer's Manual for SC-510.

Function display Function code No.	Function name	Input state setting	Description of function
 0	No function setting	-	(Standard setting state)
 1	Needle up/down compensating stitching	Low : L input High : H input	Every time switch is pressed, as many as half stitch is fed in normal direction. (Same motion as that of needle up/down compensating stitching switch of the operation panel.)
 2	Back compensating stitching	Low : L input High : H input	Reverse stitching at low speed is performed while switch is held pressed.(Effective only when constant-dimension stitching is selected with the operation panel.)
 3	Function of cancel of once of reverse stitching at end	Low : L input High : H input	Motion of reverse stitching at end is not executed once by depressing the back part of pedal after pressing switch.
 4	Thread trimming function	Low : L input High : H input	The function works as thread trimming switch.
 5	Presser lifter function	Low : L input High : H input	The function works as presser lifter switch.
 6	One stitch compensating stitching	Low : L input High : H input	Every time switch is pressed, one stitch sewing motion is executed.
 7	Function of cancel of reverse stitching at start	Low : L input High : H input	Invalid/effective can be alternately changed over by operating optional switch.
 8	Function of lifting presser lifter when pedal is in neutral position	Low : L input High : H input	Every time switch is pressed, function of automatically lifting/not lifting presser lifter when pedal is in neutral position can be selected.
 9	Material end sensor input	Low : L input High : H input	This function works as input signal of material end sensor.
 10	Function of prohibition of pressing front part of pedal	Low : L input High : H input	This function prohibits rotation by means of pedal.
 11	Function of prohibition of thread trimming output	Low : L input High : H input	This function prohibits thread trimming output.

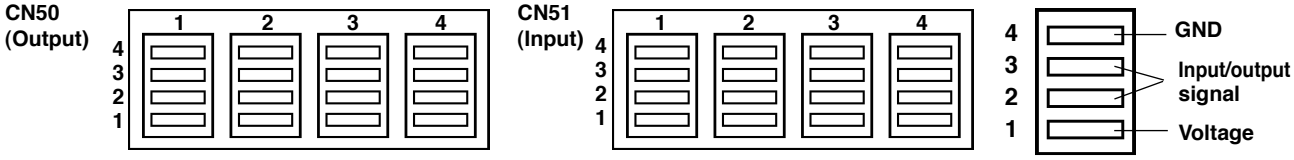
Function display Function code No.	Function name	Input state setting	Description of function
 12	Low speed command input	Low : L input High : H input	This function works as low speed switch for standing machine.
 13	High speed command input	Low : L input High : H input	This function works as high speed switch for standing machine.
 14	Needle lift function	Low : L input High : H input	When switch is pressed during DOWN stop, UP stop motion is performed.
 15	Function of reverse revolution to lift needle	Low : L input High : H input	When switch is pressed during DOWN stop, reverse revolution is performed and the machine is braked at the specified angle.
 16	Safety switch input	Low : L input High : H input	This function prohibits rotation.
 17	Thread trimmer knife sensor input	Low : L input High : H input	This function works as input signal of thread trimmer knife sensor.
 18	Cancel/addition of automatic reverse stitching switch input	Low : L input High : H input	Every time switch is pressed, this function performs cancel or addition of reverse stitching at start or end.
 19	Alternate vertical movement amount change panel switch input	Low : L input High : H input	Every time switch is pressed, this function performs alternate vertical movement amount change output.
 20	Alternate vertical movement amount change knee switch input	Low : L input High : H input	While switch is held pressed, this function performs alternate vertical movement amount change output.
 21	2-pitch alternate input	Low : L input High : H input	Every time switch is pressed, this function inverses 2-pitch change output.
 22	2-pitch momentary switch input	Low : L input High : H input	While switch is held pressed, this function performs 2-pitch change output.
 23	One-shot speed command switch input	Low : L input High : H input	While switch is held pressed, this function works as one-shot speed command.
 24	Bobbin replacement switch input	Low : L input High : H input	Presser rises at the 1st switch ON, and the start of sewing machine is invalidated. Presser lowers at the 2nd switch ON, and the sewing machine returns to the normal motion.
 25	Center guide switch input	Low : L input High : H input	Every time switch is pressed, this function inverses center guide output.
 26	Back one-shot speed command switch input	Low : L input High : H input	While switch is held pressed, this function works as one-shot speed command of reverse stitching.

[Output function list]

When setting output function to output connector CN50, do not apply voltage exceeding the value set with W1 and W2 (jumpers for power voltage) to the optional output terminal. When voltage exceeding the setting is applied, there is the possibility that breakage or deterioration of circuit board occurs. So, be careful. For the details, refer to the Engineer's Manual for SC-510.

Function display Function code No.	Function name	Input state setting	Description of function
 0	No function setting	-	(Standard setting)
 1	Thread trimming output	Low : L output High : H output	This function outputs thread trimming signal. (When this function is selected, function corresponding to connectors for sewing machine (CN36, CN37) becomes invalid.)
 2	Wiper output	Low : L output High : H output	This function outputs wiper signal. (When this function is selected, function corresponding to connectors for sewing machine (CN36, CN37) becomes invalid.)
 3	Tension release output	Low : L output High : H output	This function outputs tension release signal. (When this function is selected, function corresponding to connectors for sewing machine (CN36, CN37) becomes invalid.)
 4	Presser lifter output	Low : L output High : H output	This function outputs presser lifter signal. (When this function is selected, function corresponding to connectors for sewing machine (CN36, CN37) becomes invalid.)
 5	Reverse stitching output	Low : L output High : H output	This function outputs reverse stitching signal. (When this function is selected, function corresponding to connectors for sewing machine (CN36, CN37) becomes invalid.)
 6	Reverse stitching at end once cancel monitor output	Low : L output High : H output	This function outputs reverse stitching at end once cancel function state.
 7	Reverse stitching at start/ end cancel monitor output	Low : L output High : H output	This function outputs reverse stitching at start and/or end cancel function state.
 8	Cancel/addition of automatic reverse stitching switch monitor output	Low : L output High : H output	This function outputs cancel/addition of automatic reverse stitching switch input state.
 9	Alternate vertical movement amount change (monitor) output	Low : L output High : H output	This function outputs alternate vertical movement amount change signal.
 10	Sewing machine stop state output	Low : L output High : H output	This function outputs sewing machine stop state.
 11	2-pitch (monitor) output	Low : L output High : H output	This function outputs 2-pitch signal.
 12	Center guide output	Low : L output High : H output	This function outputs center guide signal.
 13	Needle cooler output	Low : L output High : H output	This function outputs the signal for needle cooler.

[Input/output connector specifications]



Input connector (CN51)

Connector No.	Pin No.	Function	Jumper for power voltage setting
CN51-1	1	Power voltage selected with W4	W4 Vcc4 selects +5V, +12V and +24V with the setting of W4.
	2	Optional input 1	
	3	Optional input 2	
	4	GND	
CN51-2	1	Power voltage selected with W4	
	2	Optional input 3	
	3	Optional input 4	
	4	GND	
CN51-3	1	Power voltage selected with W3	W3 Vcc4 selects +5V, +12V and +24V with the setting of W3.
	2	Optional input 5	
	3	Optional input 6	
	4	GND	
CN51-4	1	Power voltage selected with W3	
	2	Optional input 7	
	3	Optional input 8	
	4	GND	

Set function signal to input to optional input terminal of input connector to +5V (voltage) or less. When the input signal exceeds +5V or more, there is the possibility that breakage or deterioration of circuit board occurs. So, be careful. For the details, refer to the Engineer's Manual for SC-510.

Output connector (CN50)

Connector No.	Pin No.	Function	Jumper for power voltage setting
CN50-1	1	Power voltage selected with W1	W1 Vcc4 selects +5V, +12V and +24V with the setting of W1.
	2	Optional output 1	
	3	Optional output 2	
	4	GND	
CN50-2	1	Power voltage selected with W1	
	2	Optional output 3	
	3	Optional output 4	
	4	GND	
CN50-3	1	Power voltage selected with W2	W2 Vcc4 selects +5V, +12V and +24V with the setting of W2.
	2	Optional output 5	
	3	Optional output 6	
	4	GND	
CN50-4	1	Power voltage selected with W2	
	2	Optional output 7	
	3	Optional output 8	
	4	GND	

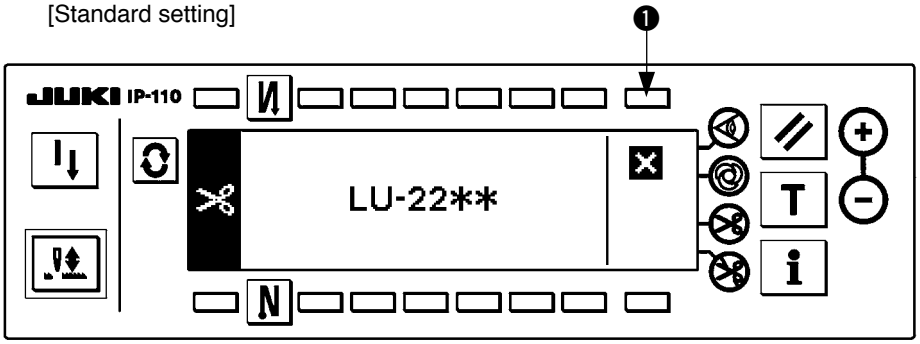
Do not apply voltage exceeding the value set with W1 and W2 (jumpers for power voltage) to the optional output terminal of output connector. When voltage exceeding the setting is applied, there is the possibility that breakage or deterioration of circuit board occurs. So, be careful. For the details, refer to the Engineer's Manual for SC-510.

3. Thread trimming device function

This is the function to confirm the thread trimming device mounted on the sewing machine.

■ **Thread trimming device display screen**

[Standard setting]



1) When the thread trimming device type is confirmed, press switch ❶ to end. Thread trimming device type depends on the sewing machine to be used and is automatically set. Do not change it.

[Thread trimming device list]

Thread trimming device display	Applicable model	Remarks
******	No setting	Others
LU-151*	LU-151 * system	
LU-152*	LU-152 * system	
LU-2212	LU-2212	
LU-22**	LU-22 ** system	(Standard setting state)
DLN-6390	DLN-6390	
PLC-1700	PLC-1700	

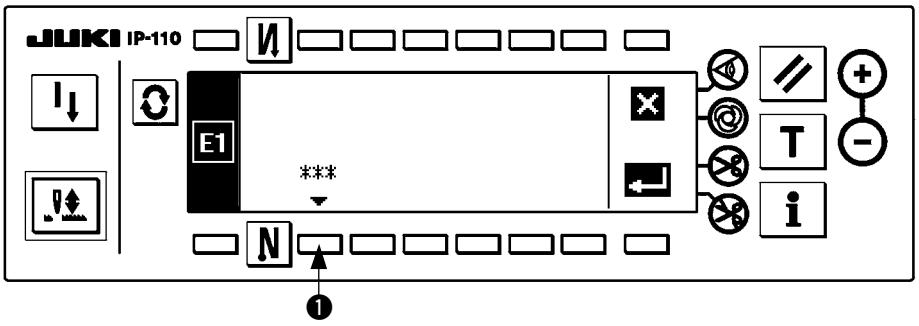
4. Additional device function

This is the function to select and set the types of additional devices such as threader, auto-hemmer, tape cutter, etc. which are interlocked with the sewing machine.

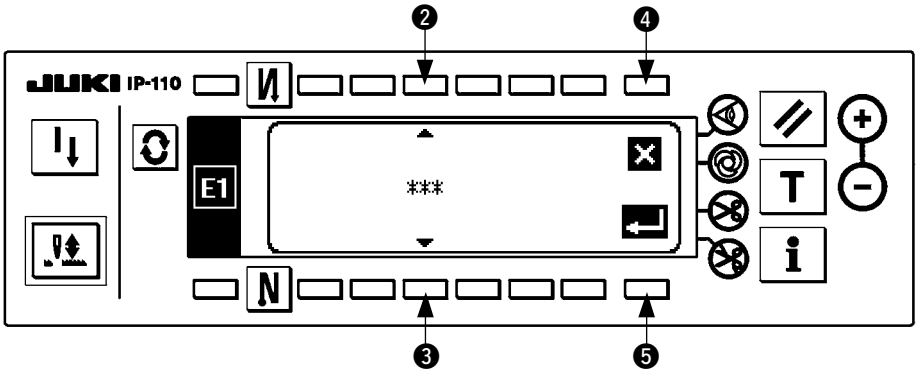
* Regarding additional device 1 and additional device 2, the operation is the same since all functions and types are the same. Operation and setting procedure of the additional device 1 are described below.

■ **Additional device setting screen**

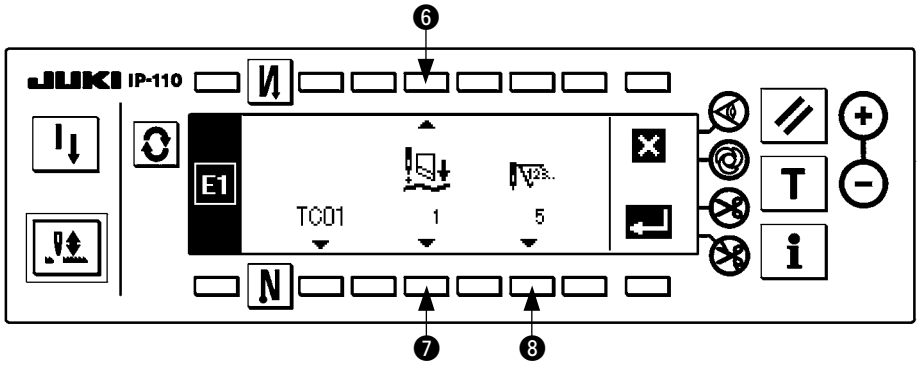
[Standard setting]



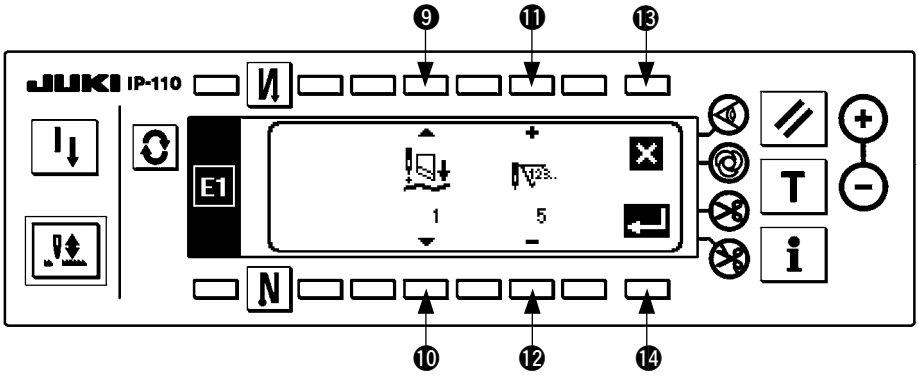
1) Press switch ❶ to display the screen to select the kind of additional device.



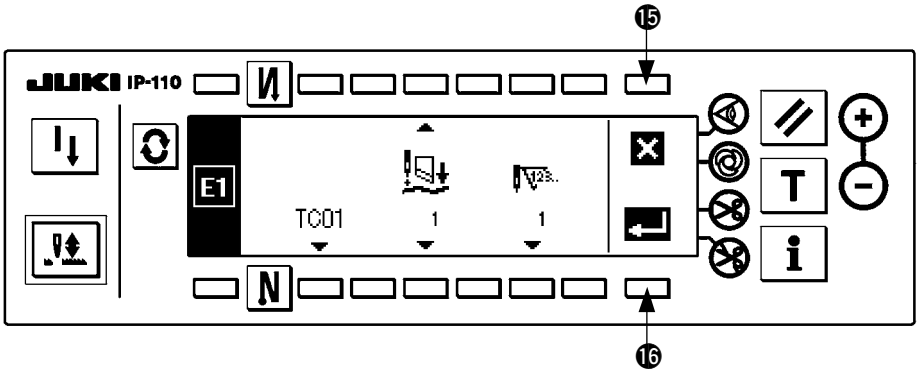
2) Press switches ❷ and ❸ to select the kind of additional device.
3) Press switch ❺ to determine the selected device. When switch ❹ is pressed, the selected device is invalidated, and the state returns to that before selection.
4) As an example, when selecting “TC01” (tape cutter device [solenoid type]), the screen display changes as shown below.



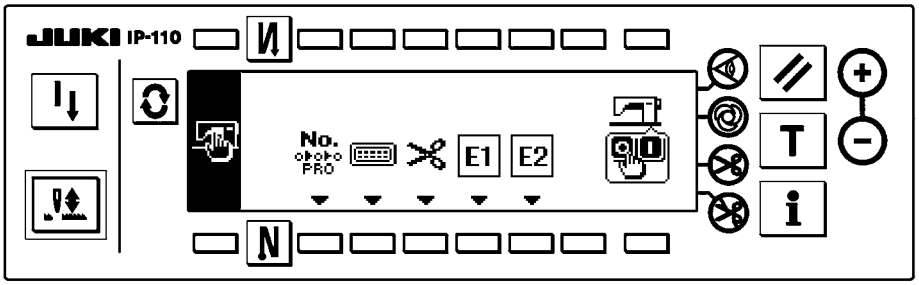
5) Press switches ❻ and ❼, and confirm parameter functions (No. 1 to 5) and the parameter set value (displayed in the upper part of switch ❽) regarding additional device “TC01” (tape cutter device [solenoid type]). Kind of parameter function and parameter set value depend on the additional device to be selected.
6) When changing parameter set value (displayed in the upper part of switch ❽), press switches ❻ and ❼ to display the parameter function and the set value to be changed. Press switch ❽ to display the screen to change the parameter set value.
7) As an example, when changing parameter function No. 1 (number of stitches of waiting cutter motion at sewing start), the screen display changes as shown below.



8) Press switches ❶❶ and ❶❷ to change the parameter set value. When changing other parameter function No., press switches ❾ and ❿ to select parameter function No., and change the parameter function No. When changing has ended, press switch ❶❹ to return to the previous screen. When switch ❶❸ is pressed, the parameter set value is invalidated, and the state returns to that before changing.
9) As an example, when changing parameter function No. 1 (number of stitches of waiting cutter motion at sewing start) from 5 to 1, the screen display is as shown below.



10) Press switch ⓰ to store all settings in memory and end, and the screen display is as shown below. When switch ⓯ is pressed, all contents of setting up to that time are invalidated, and the state returns to that before setting.



11) Lastly, turn OFF the power switch. This additional device function works by turning the power switch ON again.

[Kind of additional device and parameter function list]

The kind of parameter function and number of items depend on the kind of additional device.

Additional device display Additional device name	Parameter function Display Function code No.	Parameter function Name	Parameter function Display Function code No.	Parameter function Name	Remarks
*** No function setting	-	-	-	-	(Standard setting state)
WIND LU threading device	1	Threading short remaining thread output off angle	185	(Angle) 0 to 359 : degree	
AH10 MF auto-hemmer device	1	Number of stitches of waiting condensation start	30	(Number of stitches) 0 to 999 : stitch	
	2	Number of stitches of condensation	10	(Number of stitches) 0 to 999 : stitch	
	3	Number of stitches of normal stitching	2	(Number of stitches) 0 to 999 : stitch	
SS10 MF short stitch device	1	Number of stitches of short stitch	10	(Number of stitches) 0 to 999 : stitch	
	2	Number of stitches of normal stitching	2	(Number of stitches) 0 to 999 : stitch	
TC01 Tape cutter device (Solenoid type)	1	Number of stitches of waiting cutter motion at sewing start	5	(Number of stitches) 0 to 999 : stitch	
	2	Cutter motion time at start	50	(Time) 0 to 999 : msec	
	3	Number of stitches of waiting dust collection output stop	25	(Number of stitches) 0 to 999 : stitch	
	4	Number of stitches of waiting cutter motion at sewing end	0	(Number of stitches) 0 to 999 : stitch	
	5	Cutter motion time at end	50	(Time) 0 to 999 : msec	

Additional device display Additional device name	Parameter function		Parameter function		Remarks
	Display Function code No.	Name	Display Function code No.	Name	
TC02 Tape cutter device (Solenoid valve type)	 1	Number of stitches of waiting cutter motion at sewing start	 5	(Number of stitches) 0 to 999 : stitch	
	 2	Cutter motion time at start	 50	(Time) 0 to 999 : msec	
	 3	Number of stitches of waiting dust collection output stop	 25	(Number of stitches) 0 to 999 : stitch	
	 4	Number of stitches of waiting cutter motion at sewing end	 0	(Number of stitches) 0 to 999 : stitch	
	 5	Cutter motion time at end	 50	(Time) 0 to 999 : msec	
TC03 First action tape cutter device	 1	Number of stitches of waiting cutter motion at sewing start	 5	(Number of stitches) 0 to 999 : stitch	
	 2	Cutter motion time at start	 50	(Time) 0 to 999 : msec	
	 3	Number of stitches of waiting dust collection output stop	 25	(Number of stitches) 0 to 999 : stitch	
	 4	Number of stitches of waiting cutter motion at sewing end	 0	(Number of stitches) 0 to 999 : stitch	
	 5	Cutter motion time at end	 50	(Time) 0 to 999 : msec	
LB01 Back tuck device	 1	Number of stitches of tension release output at sewing start	 1	(Number of stitches) 0 to 999 : stitch	
	 2	Number of stitches of waiting tension release output at sewing end	 4	(Number of stitches) 0 to 999 : stitch	
	 3	Number of stitches of tension release output at sewing end	 40	(Number of stitches) 0 to 999 : stitch	
U160 U160 One-shot function	 1	Number of stitches of one-shot motion	 8	(Number of stitches) 0 to 999 : stitch	
	 2	Tension release motion time	 80	(Time) 0 to 999 : msec	

Additional device display Additional device name	Parameter function		Parameter function		Remarks
	Display Function code No.	Name	Display Function code No.	Name	
AH11 MF auto-hemmer device	1	Number of stitches that makes the sensor invalid at sewing start setting	100	(Number of stitches) 0 to 999 : stitch	
	2	Number of stitches count setting	40	(Number of stitches) 0 to 999 : stitch	
	3	Number of stitches of condensation output setting	5	(Number of stitches) 0 to 999 : stitch	
	4	Number of stitches of normal stitching setting	2	(Number of stitches) 0 to 999 : stitch	

3-3. Setting for functions

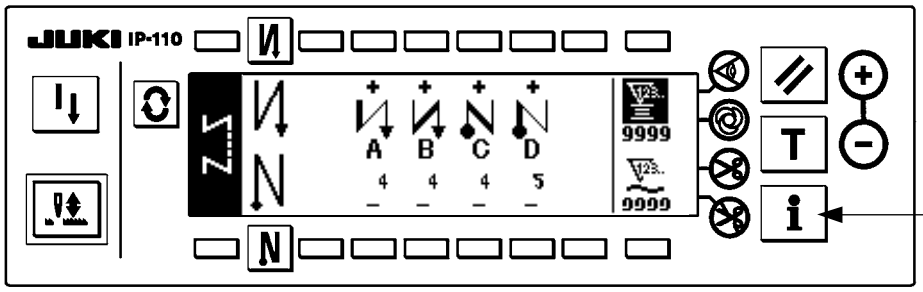
(1) How to change over to the function setting mode

Do not perform switch operations other than those described in the following explanations.
Be sure to re-turn the power switch ON after one second or more has passed. If the power is turned ON immediately after turning it OFF, the sewing machine may not work normally. In this case, turn ON the power again.

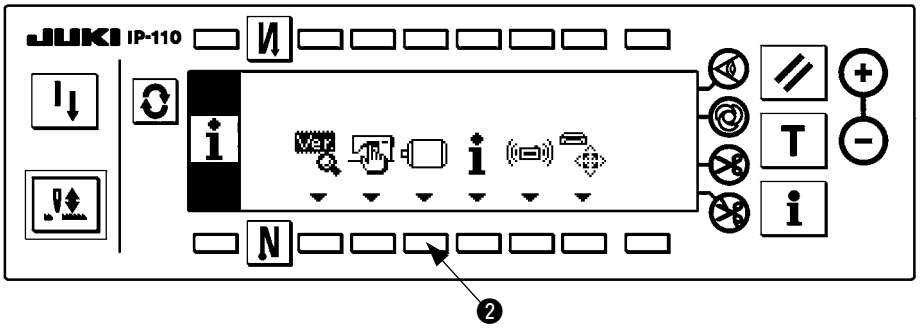
WARNING :
To avoid possible personal injuries caused by movement other than that you desired, do not operate the switches in the procedure other than those required, as described below, to specify the functions.

For the details of setting No., see p.41.

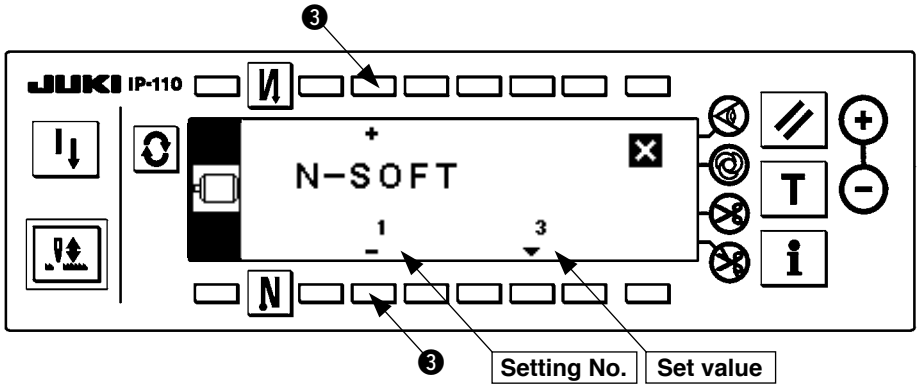
1) Turn ON the power.



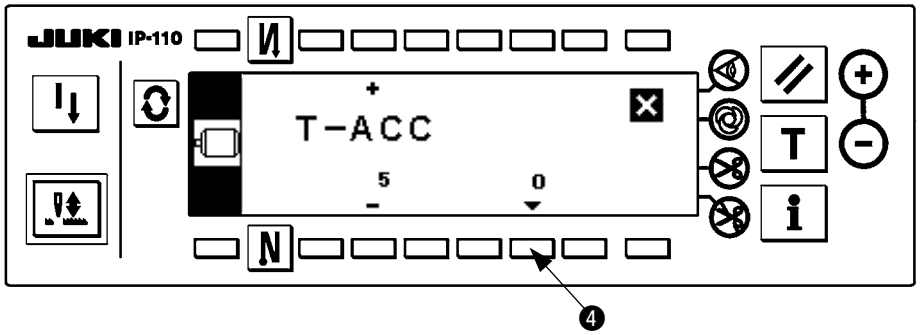
2) Press switch ❶ for approximately three seconds.



3) Press switch ❷ for approximately three seconds.



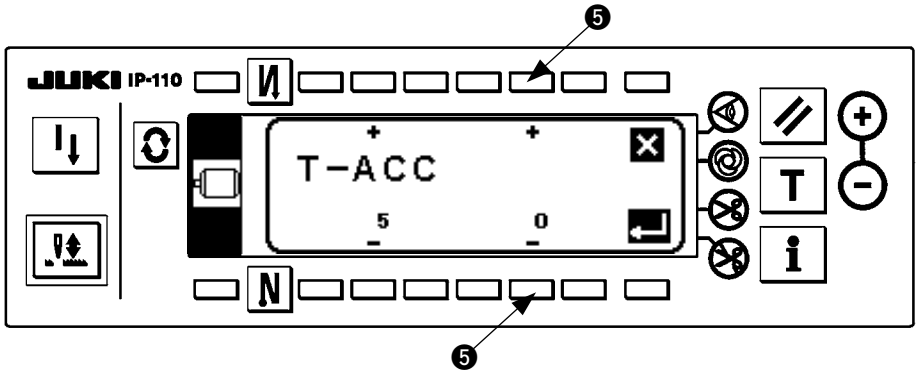
4) This screen is the function setting screen.
Change the setting No. with "+/–" Key of switch ❸.
For the details of setting No., see p.41.



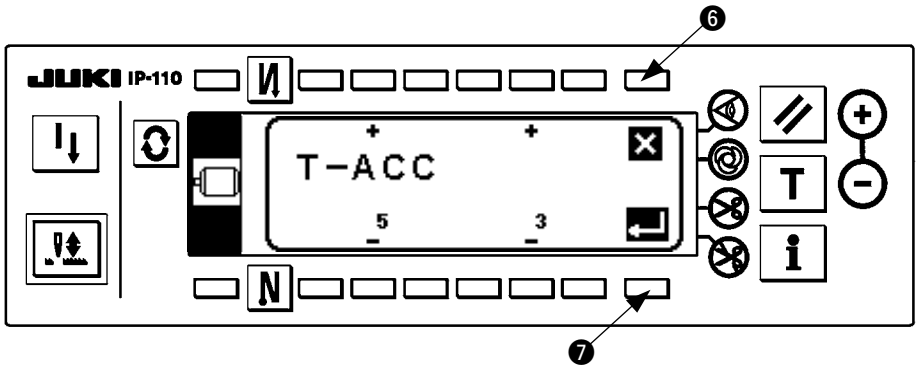
Example) Changing the flicker reducing function (Setting No. 5)

Change the setting No. to "5" with "+" Key of switch ❸ in the figure above.

• Press switch ❹.

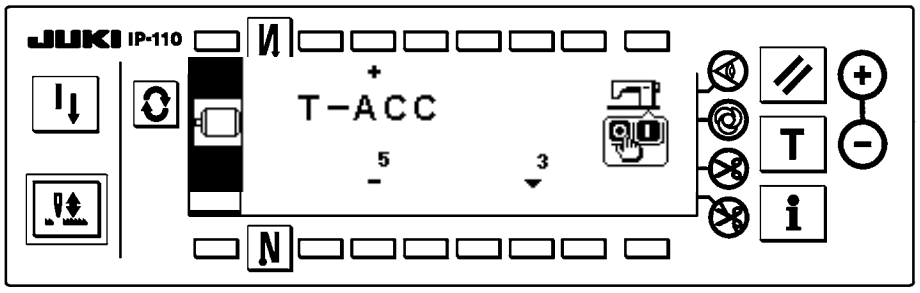


• Change set value with "+/–" Key of switch ❺.



The set value has been changed from "0" to "3".

• When this changed value is acceptable, press switch ❼.
When you desire to return the value to the previous one, press switch ❻.



• Turn OFF the power switch and turn ON the power switch after approximately one second.

• Change of the set value is determined by turning OFF the power switch.

(2) Function setting list

For the details of the function, refer to the Instruction Manual and Engineer's Manual for SC-510.

No.	Function	Setting level	Panel display Standard set value	Setting range
1	Soft-start function	2	N-SOFT 0	0 to 9
5	Flicker reduction function	2	T-ACC 0	0 to 3
6	Bobbin thread counting function	2	SCBOB 1	0 / 1
7	Bobbin thread counting down unit	2	RATIO 0	0 / 1 / 2
* 8	Number of revolutions of reverse stitching	2	S-BT 1200	150 to 3000
10	Designation of needle bar position at the time of sewing machine stop	2	NPS 0	0 / 1
11	Click sound of key switch function (Key mounted on SC-510 main unit and IP-110E panel)	2	SOUND 1	0 / 1
13	Bobbin thread counter start prohibiting function	2	ASCNT 0	0 / 1 / 2
14	No. of pcs. counter	2	NTO 1	0 / 1 / 2
15	Reverse stitching switch function	2	F-BTSW 0	0 to 6
18	Alternate vertical movement amount input function	2	F-INDL 1	0 / 1 / 2
19	Reversing brake start angle	2	A-SARR 288	0 to 359
20	Alternate vertical movement amount output delay time	2	T-DVMS 10	0 to 500
21	Presser lifting function when pedal is in neutral position	2	N-NPL 0	0 / 1
22	Panel compensation SW function changeover function	2	F-CMSP 0	0 / 1
24	Presser input function for standing sewing machine	2	F-FLSW 0	0 to 6
25	Thread trimming action conditions	2	F-TRMC 1	0 / 1
26	Reverse stitching output prohibiting section ①	2	A-BTINH1 112	0 to 359
27	Reverse stitching output prohibiting section ②	2	A-BTINH2 262	0 to 359
28	Reverse stitching one-shot revolution delay time	2	T-DBTAS 30	0 to 300
29	Back solenoid initial start suction time	2	T-RSS 250	50 to 500
30	Reverse feed stitching on the way function	2	OBT 0	0 / 1
31	Number of stitches of reverse feed stitching on the way	2	N-OBT 4	0 to 19
32	Effective conditions of reverse feed stitching on the way during stop	2	OBTS 0	0 / 1
33	Thread trimming function by reverse feed stitching on the way	2	OBTT 0	0 / 1
* 35	Number of revolutions of low speed	2	S-POS 170	150 to 250
36	Number of revolutions of thread trimming	2	S-TRM 170	100 to 250
37	Number of revolutions of soft-start (Max. depends on sewing machine used.)	2	S-SOFT 170	100 to Max

Standard set value may, however, change from the aforementioned one depending on the sewing machine used. In addition, function and set value are subject to be changed without permission to improve function and performance.

Do not change the set value of the functions with * mark since the functions are for maintenance. If the standard set value set at the time of delivery should be changed, it is very dangerous since breakage or deterioration of the sewing machine will be caused. When it is necessary to change the standard set value, please purchase the Engineer's Manual and follow the instructions.

	No.	Function	Setting level	Panel display Standard set value	Setting range
	38	Speed of one-shot (Max. depends on sewing machine used.)	2	S-ASS 1500	150 to Max
	39	Revolution start pedal stroke	2	P-SSP 30	10 to 50
	40	Low speed section of pedal	2	P-LSA 60	10 to 100
	41	Position where pedal presser lifter starts lifting	2	P-FLW –21	– 60 to – 10
*	42	Position where cloth presser starts lowering	2	P-FLD 10	8 to 50
*	43	Pedal stroke 2 of start of thread trimming	2	P-TRM2 –51	– 60 to – 10
*	44	Pedal stroke reaching max. number of revolutions	2	P-MAX 150	10 to 150
*	45	Compensation of neutral point of pedal	2	P-ANP 0	– 15 to 15
*	46	Power ON presser lifting function	2	F-FLPO 0	0 / 1
	47	Holding time of auto-lifter lifting	2	T-FL 60	10 to 600
*	48	Pedal stroke 1 of start of thread trimming	2	P-TRM1 –35	– 60 to – 10
	49	Presser lowering time	2	T-FLWT 140	0 to 250
	50	Pedal presser lifting function	2	PFL 1	0 / 1
	51	Compensation of solenoid ON timing of reverse feed stitching at the start of sewing	2	T-SON 25	– 36 to 36
	52	Compensation of solenoid OFF timing of reverse feed stitching at the start of sewing	2	T-SOFF –7	– 36 to 36
	53	Compensation of solenoid OFF timing of reverse feed stitching at the end of sewing	2	T-EOFF –12	–36 to 36
	54	Motor pulley effective diameter	2	PCDMP 850	500 to 1400
	55	Function of lifting cloth presser after thread trimming	2	FLAT 1	0 / 1
	56	Function of reverse revolution to lift needle after thread trimming	2	RATRM 1	0 / 1
	57	Bobbin thread remaining amount detection function	2	BTDF 1	0 to 4
	58	Function of holding up/down predetermined position of needle bar	2	HPOS 0	0 to 3
	59	Function of A/M changeover of reverse feed stitching at the start of sewing	2	SBTO 1	0 / 1
	60	Function of reducing speed of reverse feed stitching at the start of sewing	2	SBTQ 0	0 / 1
	61	Bobbin thread remaining amount detection air blow output time	2	T-BTDB 500	0 to 2000
	63	Tie stitch adjust function	2	T-STCP 0	0 to 1000
	64	EBT changeover speed	2	S-WAIT 180	0 to 250
	67	Auto-hemmer control changeover	2	F-AH 1	0 / 1
	68	Material end sensor of auto-hemmer control start prohibition	2	F-AHS 1	0 / 1
	69	Selection of material end sensor speed control of auto-hemmer control	2	F-AHSP 1	0 / 1
	70	Number of stitches of invalid material end sensor of auto-hemmer control	2	N-AHOF 0	0 to 500

Standard set value may, however, change from the aforementioned one depending on the sewing machine used. In addition, function and set value are subject to be changed without permission to improve function and performance.

Do not change the set value of the functions with * mark since the functions are for maintenance. If the standard set value set at the time of delivery should be changed, it is very dangerous since breakage or deterioration of the sewing machine will be caused. When it is necessary to change the standard set value, please purchase the Engineer's Manual and follow the instructions.

	No.	Function	Setting level	Panel display Standard set value	Setting range
	71	Thread trimming condensation invalid selection	2	F-TCON 1	0 / 1
	72	Clutch motor function	2	F-CMOT 0	0 / 1
	73	Retry function	2	F-RET 1	0 / 1
	74	MF thread trimming device function	2	MFTRM 0	0 / 1
*	75	Rotating direction of motor	2	DM 1	0 / 1
*	84	Presser lifter solenoid initial suction time	2	T-PUT 250	50 to 500
	85	Reverse stitching at the end of sewing start time	2	T-WAIT 50	0 to 250
	86	Reverse revolution to lift needle start waiting time	2	T-WRR 100	0 to 250
	87	Function of pedal curve selection	2	F-PCS 0	0 / 1 / 2
*	89	Tension release function	2	TRS 0	0 / 1
	90	Initial UP stop position move function	2	NUO 0	0 / 1
*	91	Function of prohibiting compensation motion after turning handwheel by hand	2	F-PMAT 1	0 / 1
	92	Function of reducing speed of reverse feed stitching at the start of sewing	2	F-DSBT 0	0 / 1
	93	Adding function of needle up/down compensating stitching SW	2	F-MADF 0	0 / 1
	94	Test display mode	2	F-TEST 0	0 / 1
	96	Max. number of revolutions (Max. depends on the sewing machine.)	2	S-MAX 3500	150 to Max
	100	2-pitch output function (At the time of reverse feed stitching at start and end of sewing)	2	F-2PBT 0	0 / 1
	101	2-pitch inversion output function (At the time of alternate vertical amount output)	2	F-2PDL 0	0 / 1
	102	2-pitch output initial setting	2	2PINI 0	0 / 1
	103	Number of stitches of alternate vertical amount output release setting	2	N-DLOF 0	0 to 30
	104	Automatic up-position of presser foot at the time of thread trimming reverse selection	2	F-RAFL 0	0 / 1
	105	Needle cooler output OFF delay time	2	T-DNCOFF 500	0 to 2000
	106	Pattern control setting * When No. 76 Clutch motor function is set to 1, No. 106 Pattern control setting is also changed to 1. When returning to the original state, set No. 106 to "0" after setting No. 76 to "0".	2	F-PATT 0	0 / 1
	107	Alternative vertical amount output after thread trimming selection	2	F-ATBO 0	0 / 1 / 2
	118	Grease-up error release setting	2	GN-CLR 0	0 / 1

Standard set value may, however, change from the aforementioned one depending on the sewing machine used. In addition, function and set value are subject to be changed without permission to improve function and performance.
Do not change the set value of the functions with * mark since the functions are for maintenance. If the standard set value set at the time of delivery should be changed, it is very dangerous since breakage or deterioration of the sewing machine will be caused. When it is necessary to change the standard set value, please purchase the Engineer's Manual and follow the instructions.

4. EXTERNAL INTERFACE

External interface means the part to connect the operation panel and other system. 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 control switch connecting connector)

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

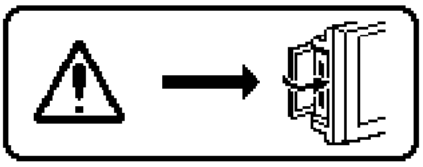
5. ERROR DISPLAY

In case of the following, check again before you judge the case as trouble.

Phenomenon	Cause	Corrective measure
When tilting the sewing machine, the buzzer beeps and the sewing machine cannot be operated.	When machine head is tilted without turning OFF power switch, trouble as described on the left side occurs.	Tilt the sewing machine after turning OFF the power.
Solenoids for thread trimming, reverse feed, wiper, etc. fail to work. Hand lamp does not light up.	When the fuse for solenoid power protection has blown out.	Check the fuse for solenoid power protection.
Even when depressing the pedal immediately after turning ON the power, the sewing machine does not run. When depressing the pedal after depressing the back part of pedal once, the sewing machine runs.	Neutral position of the pedal has varied. (Neutral position may be shifted when changing spring pressure of the pedal or the like.)	Execute the automatic neutral correction function of the pedal sensor.
The sewing machine does not stop even when the pedal is returned to its neutral position.		
Stop position of the sewing machine varies (irregular).	When tightening the screw in the handwheel is forgotten at the time of adjustment of needle stop position.	Securely tighten the screw in the handwheel.
Presser foot does not go up even when auto-lifter device is attached.	Auto-lifter function is OFF.	Select “FL ON” by auto-lifter function selection.
	Pedal system is set to KFL system.	Change the jumper to PFL setting to lift the presser foot by depressing the back part of the pedal.
	Cord of auto-lifter device is not connected to connector (CN37).	Connect the cord properly.
Touch-back switch fails to work.	Presser foot is going up by auto-liter device.	Operate the switch after the presser foot lowered.
	Auto-lifter device is not attached. However, auto-lifter function is ON.	Select “FL OFF” when auto-lifter device is not attached.
Sewing machine fails to run.	Motor output cord (4P) is disconnected.	Connect the cord properly.
	Connector (CN30) of motor signal cord is disconnected.	Connect the cord properly.

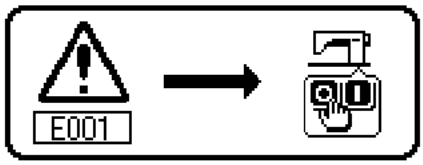
Error is informed by means of the panel display and control box buzzer.

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.

[Error code list (Error display in panel)]

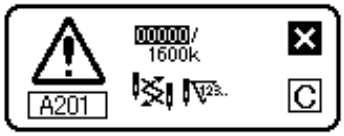
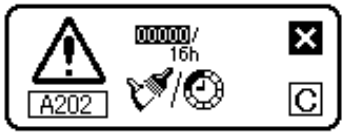
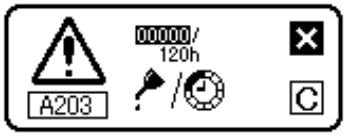
There are the following error codes in this device. These error codes interlock (or limit function) and inform the problem so that the problem is not enlarged when any problem is discovered. When you request our service, please confirm the error codes.

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. • When the synchronizer has broken.	• Check the synchronizer connector (CN33, CN43) for loose connection and disconnection. • Check whether the synchronizer cord has broken since the cord is caught in the machine head.
E004	Synchronizer lower position sensor failure		
E005	Synchronizer upper position sensor failure		
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.
E008	Machine head connector failure (Resistance pack)	• When the machine head connector is not properly read.	• Check the machine head connector (CN32) for loose connection and disconnection.
E011	Media is not inserted.	• Media is not inserted.	
E012	Read error	• Data of media cannot be read.	• Turn OFF the power.
E013	Write error	• Data of media cannot be written.	• Turn OFF the power.
E014	Write protect	• Media is in the state of writing prohibition.	• Turn OFF the power.
E015	Format error	• Formatting cannot be performed.	• Turn OFF the power.
E016	External media capacity over	• Capacity of media is short.	• Turn OFF the power.
E019	File size over	• File is too large.	• Turn OFF the power.
E032	File interchangeability error	• There is no interchangeability of file.	• Turn OFF the power.
E053	Execution of panel backup data initialization (Not error)	• When model code of panel does not agree with that of control box. When executing initialization operation with the panel.	• Turn OFF the power.

[Error code list (Error display in panel)]

No.	Description of error detected	Cause of occurrence expected	Items to be checked
E302	Fall detection switch failure (MF : Thread trimmer knife sensor) (When safety switch works)	• When fall detection switch is inputted in the state that the power is turned ON. • Improper position of thread trimmer knife	• 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 and has broken. • Check whether the fall detection switch lever is caught in something.
E331	Simultaneous ON of tape cutter device (TC03) and cutter sensor	• Cutter sensor trouble	• Check whether air pressure is proper.
E332	Simultaneous OFF of tape cutter device (TC03) and cutter sensor	• Assembly and adjustment trouble	• Check whether air pressure is proper.
E730	Encoder failure	• When the motor signal is not properly inputted.	• Check the motor signal connector (CN30) for loose connection and disconnection. • Check whether the motor signal cord has broken since the cord is caught in the machine head.
E731	Motor hole sensor failure		
E811	Overvoltage	• When voltage higher than guaranteed one is inputted. • 220V has been inputted to SC-510 of 110V specifications. • 400V is applied to the box of 220V (230V).	• Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. • Check whether 110V/220V changeover switch is improperly set. In the aforementioned cases, POWER p.c.b is broken.
E813	Low voltage	• When voltage lower than guaranteed one is inputted. • 110V has been inputted to SC-510 of 220V specifications. • 110V is applied to the box of 220V. • Inner circuit is broken by the applied overvoltage	• Check whether the voltage is lower than the rated voltage – (minus) 10% or less. • Check whether 110V/220V changeover switch is improperly set. • Check whether fuse or regenerative resistance is broken.
E915	Communication trouble (Between operation panel and IPOP (extension) circuit board)	• Disconnection of operation panel cord • Breakage of operation panel • Connection trouble or breakage of IPOP circuit board	• Check whether operation panel connector (CN121) is loosened or disconnected. • Check whether the operation panel cord has broken since the cord is caught in the machine head or the like. • Check whether IPOP circuit board is securely fixed or connector is loosened.
E916	Communication trouble (Between IPOP (extension) circuit board and CTL (front cover) circuit board)	• Connection trouble or breakage of IPOP circuit board	• Check whether IPOP circuit board is securely fixed or connector is loosened.
E924	Motor driver failure	• Motor driver has broken.	

[Warning list (Error display in panel)]

No	Contents and display of warning	Corrective measure	Remarks
A201	Replacement of needle warning 	• Press ✕ to close warning screen, and perform replacement of needle. Then clear the value in the clear screen. • Press C to clear the value, and perform replacement of needle.	Refer to “ (1) Sewing management information, p.14.
A202	Cleaning warning 	• Press ✕ to close warning screen, and perform cleaning. Then clear the value in the clear screen. • Press C to clear the value, and perform cleaning.	Refer to “ (1) Sewing management information, p.14.
A203	Replacement of oil warning 	• Press ✕ to close warning screen, and perform replacement of oil. Then clear the value in the clear screen. • Press C to clear the value and perform replacement of oil.	Refer to “ (1) Sewing management information, p.14.

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