ENGLISH

INSTRUCTION MANUAL

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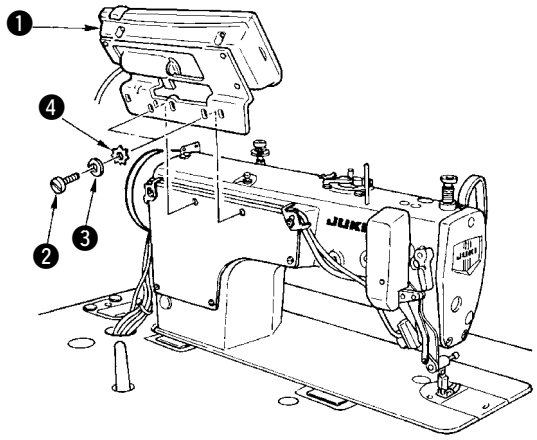
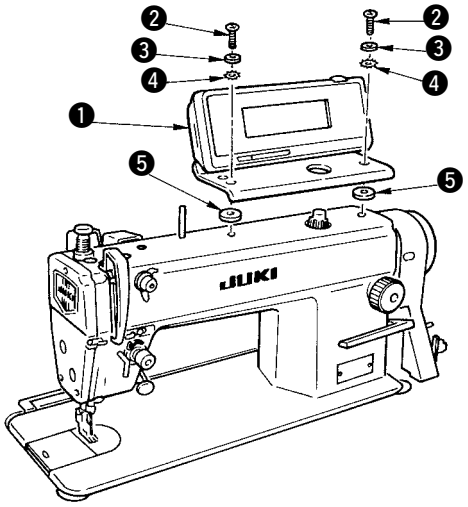
1. INSTALLING THE OPERATION PANEL

WARNING :
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Type B (Type name plate TYPE B0 ＊)



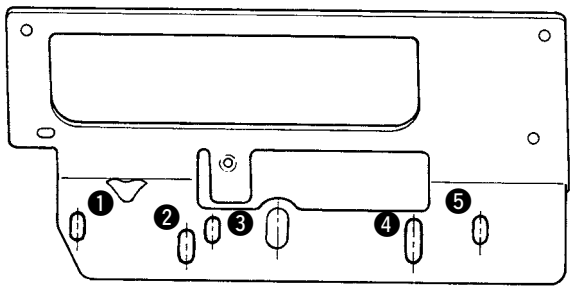
Type C (Type name plate TYPE C0 ＊)



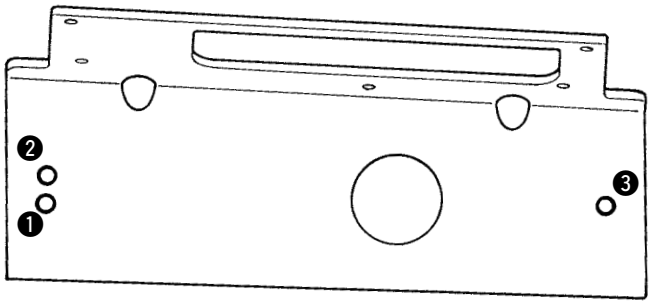
1) Attach operation panel ❶ to the machine head using screw ❷, plain washer ❸, toothed lock washer ❹ and spacer ❺ (for type C) supplied with the operation panel. Select and use screw ❷ referring to the table.
2) The positions of the holes in the bracket for installing the operation panel are different from each other according to the respective models. Refer to the table below.

IP-110 / bracket type classified by model correspondence table

Type B



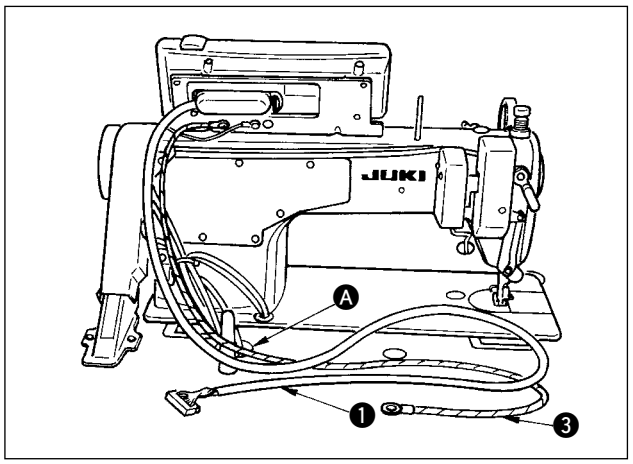
Type C



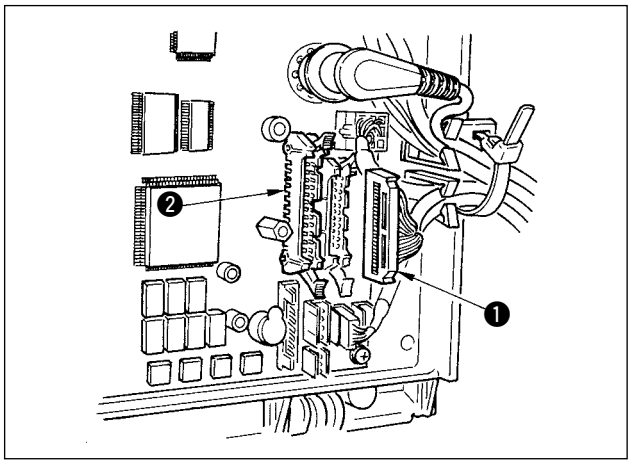
No.	Mounted machine head	Bracket type	Installing hole used	Part No. of screw	Remarks
1	DDL-9000	Type B	❷ – ❹	SS4121415SP(3/16-28)	
2	DLN-9010	Type B	❷ – ❹	SS4121415SP(3/16-28)	
3	LH-31 ＊＊, LH-35 ＊＊	Type B	❶ – ❺	SS6111210SP(11/64-40)	
4	LZ-228 ＊ N	Type B	❸ – ❹	SS4121415SP(3/16-28)	To be fixed on the exclusive bracket for installing standard panel
5	DDL-5550N	Type C	❶ – ❸	SS7121410SN(3/16-24)	Use ❷ – ❸ in case of optional unit (V0 and the like).
6	DDL-8700	Type C	❶ – ❸	SS7121410SN(3/16-24)	
7	DLN-5410N	Type C	❶ – ❸	SS7121410SN(3/16-24)	
8	DLU-5494N	Type C	❶ – ❸	SS7121410SN(3/16-24)	
9	LH-41 ＊＊	Type B	❷ – ❹	SM6051000SP(M5)	Use screw and washers that are used for machine head.

2. CONNECTING THE CORD

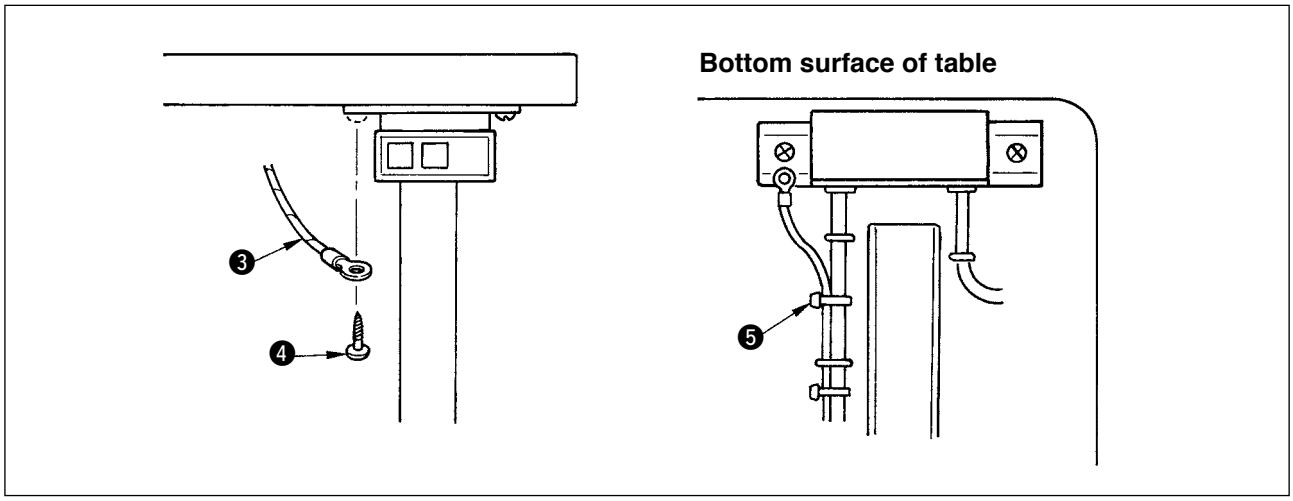
WARNING :
Turn OFF the power and start the work after 5 minutes or more have passed so as to prevent accidents caused by abrupt start of the sewing machine.



1) Pass cord ❶ and FG cord ❸ (for type C) of the operation panel through hole Ⓐ in the machine table to route it to the underside of the table.



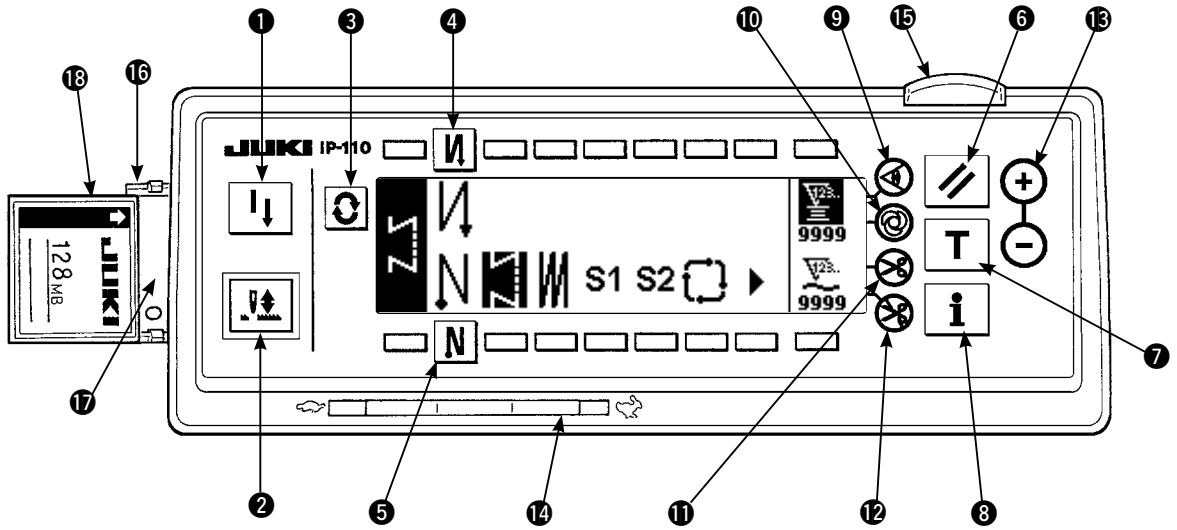
2) Connect the connector of cord ❶ to connector CN34 ❷ in the control box.



3) For type C, fix FG cord ❸ to the power switch with wood screw ❹ supplied with the panel as accessories. Wire FG cord ❸ after bundling it with the power cable and the like with cable clip band ❺ supplied with the panel as accessories.

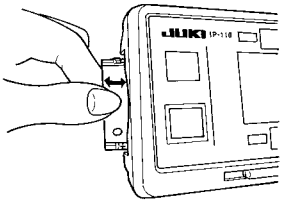
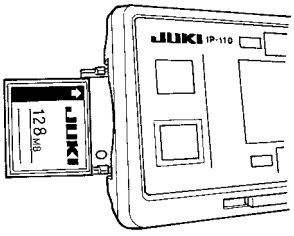
3. HOW TO USE THE OPERATION PANEL

3-1. Names and functions of each components

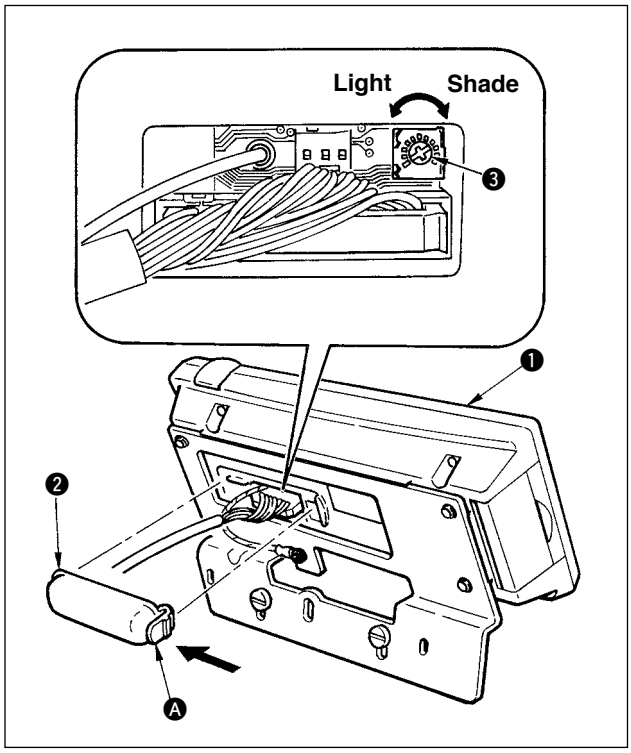


❶ Re-sewing switch
❷ Needle up/down compensating switch
❸ Screen changeover switch
❹ With/without reverse feed stitch at sewing start switch
❺ With/without reverse feed stitch at sewing end switch
❻ Reset switch
❼ Teaching switch
❽ Information switch
❾ Material edge sensor switch
❿ One-shot stitching 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	This switch is used to continue sewing from the step on the way after replacing bobbin thread when bobbin thread has run out during program stitching step.
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	This is the switch to set the setting of the number of stitches with the value of number of stitches which has been actually sewn.
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 at the time of program stitching, 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 at the time of program stitching, 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 finger on the notch located on the side of the cover as shown in the figure and push the cover in the direction of left slanting rear. * 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 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).

3-2. Adjusting the contrast of the operation panel display

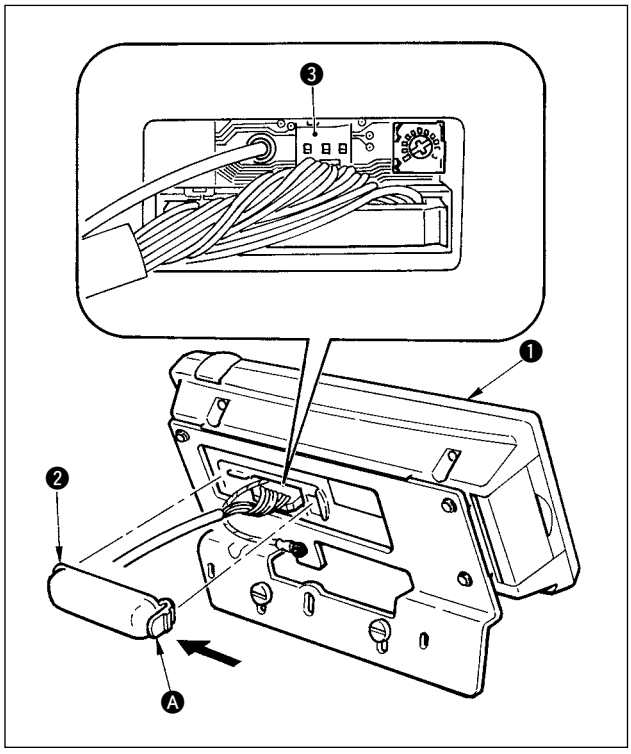


1) Press in the direction of arrow mark the click of section Ⓐ of cord outlet cover ❷ assembled in the rear of operation panel ❶ and remove the cover.
2) Turn LCD screen display brightness adjustment variable resistor ❸ to adjust the brightness (contrast) of LCD screen.

Caution

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.

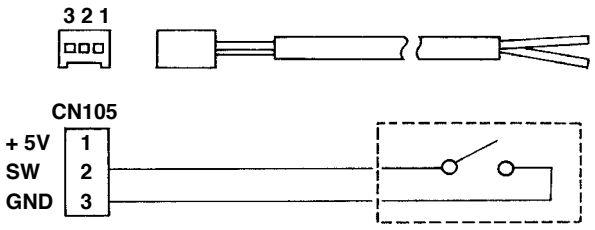
3-3. Production control switch connecting connector



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.

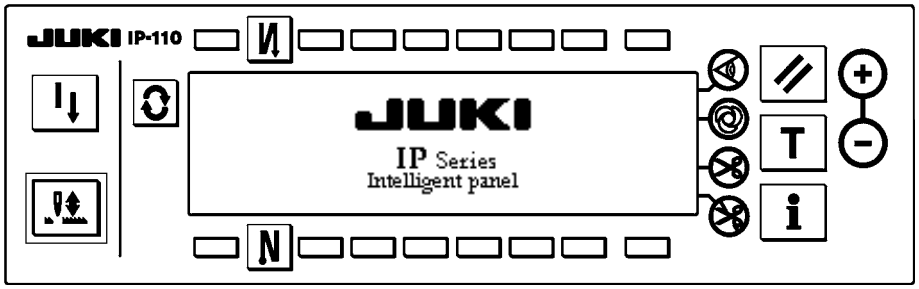
Optional relay cable A (asm.)
JUKI Part No. 40008168



4. STANDARD PANEL

4-1. Basic screen

WELCOME screen is displayed immediately after turning ON the power.

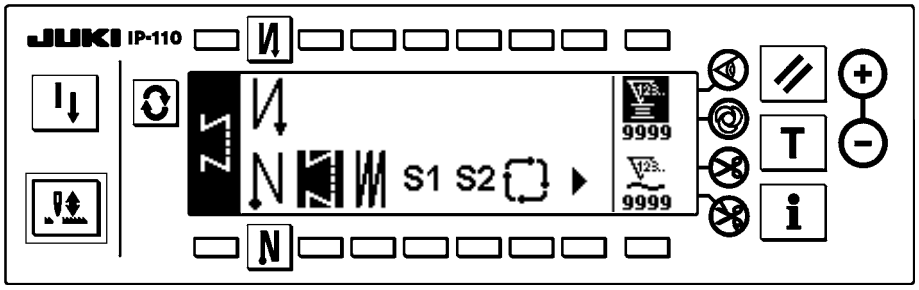


The screen immediately after WELCOME screen becomes the screen that performs the sewing pattern setting that was selected when turning OFF the power previously.

Every time switch is pressed, the screen changes.

■ **Pattern list screen**

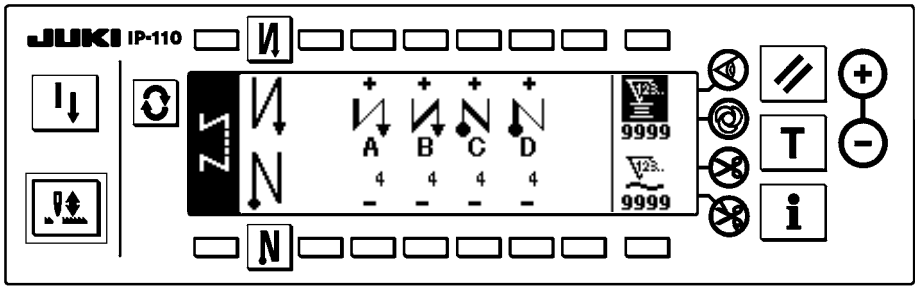
Selection of the respective shapes is performed.



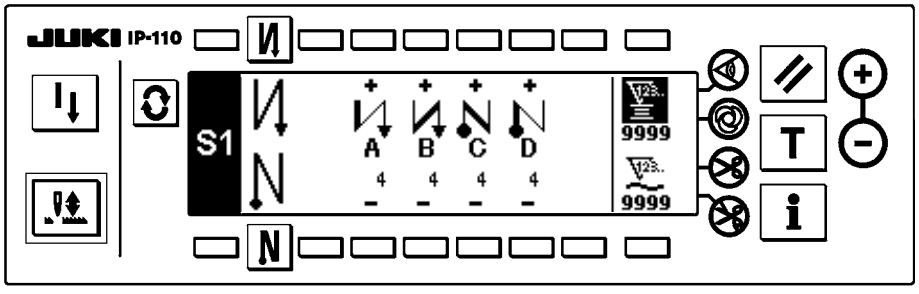
■ **Number of stitches of back tuck stitching setting screen**

Setting of number of stitches of reverse stitching is performed.

< When reverse stitching pattern is selected >

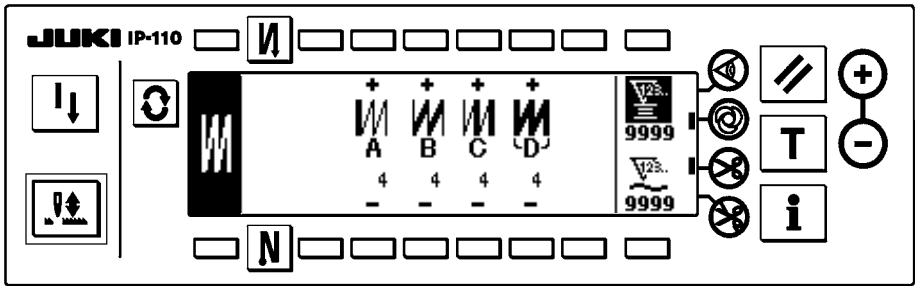


< When programmed stitching pattern 1 is selected >



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

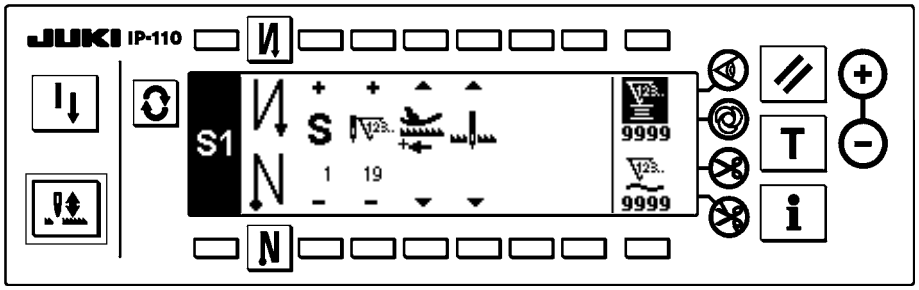
Setting of number of stitches of overlapped stitching is performed.



■ **Programmed stitching setting screen**

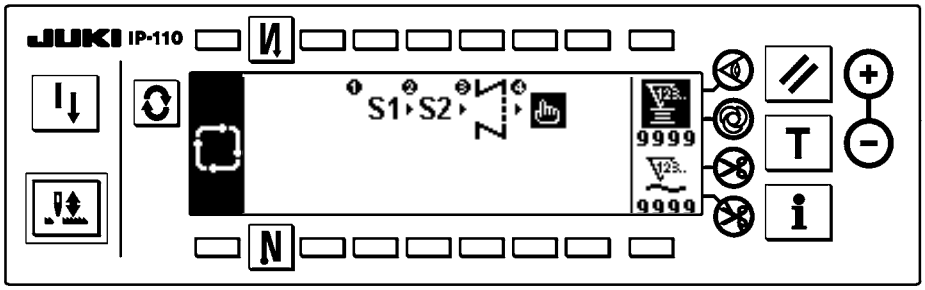
Setting of the respective conditions of programmed stitching is performed.

< When programmed stitching pattern 1 is selected >



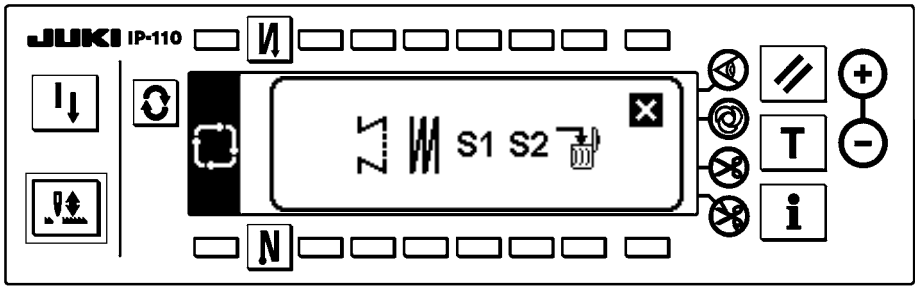
■ **Cycle sewing setting screen**

Setting of the step of cycle sewing is performed.



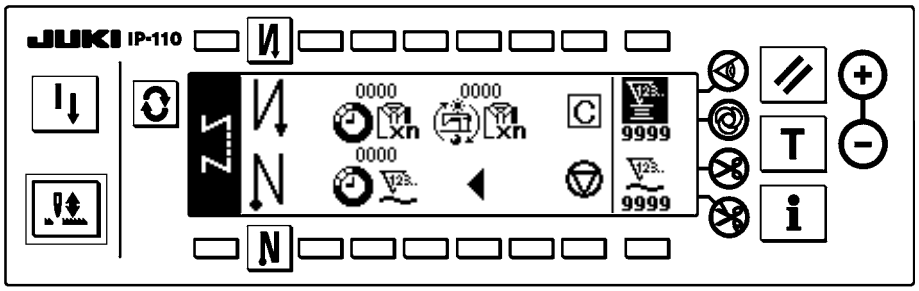
■ **Cycle sewing pattern setting pop-up**

Setting of the pattern of cycle sewing is performed.



■ **Output display screen**

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

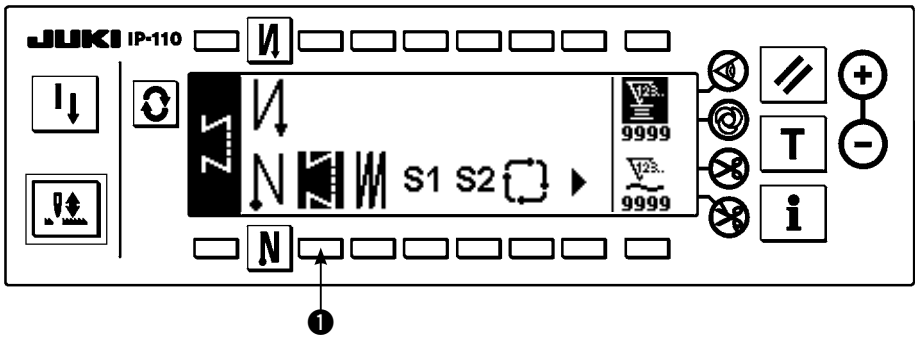


4-2. How to operate the operation panel for sewing stitching patterns

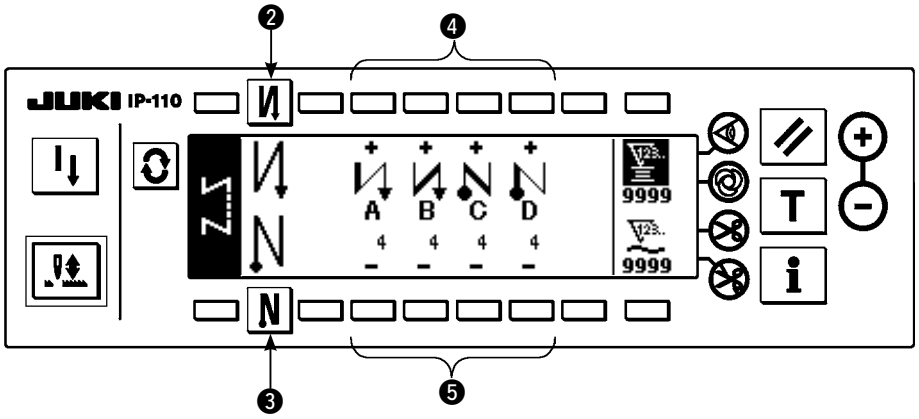
(1) Reverse stitching pattern

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.

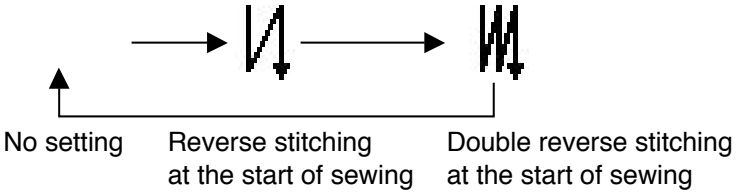


1) Press switch ❶ to select the reverse stitching pattern, and the screen is automatically changed over to the number of stitches of reverse stitching setting screen to display the number of stitches which has already been set.

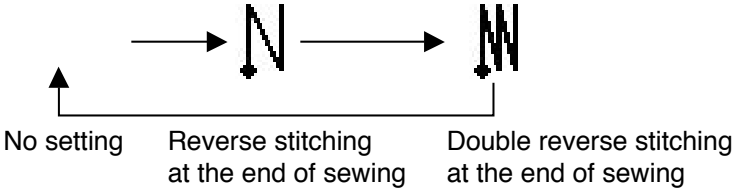


2) When changing the number of stitches, change it with switches ❹ and ❺ for setting the number of stitches A through D.
(The range of the number of stitches that can be changed : 0 to 99 stitches)

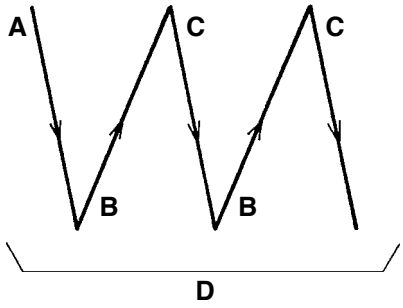
3) Press switch ❷ to set the reverse stitching at the start of sewing.



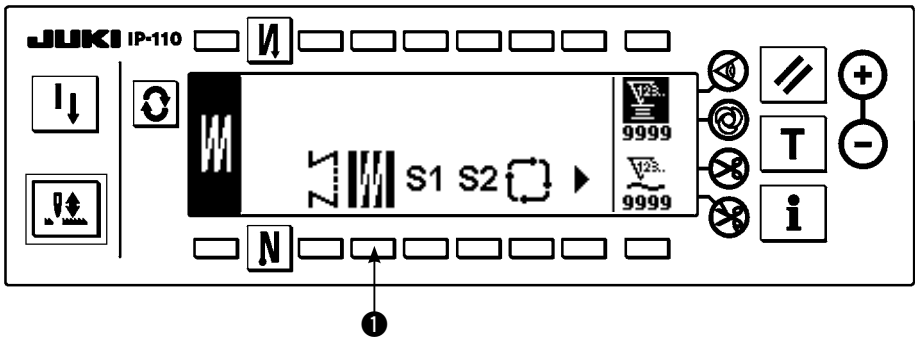
4) Press switch ❸ to set the reverse stitching at the end of sewing.



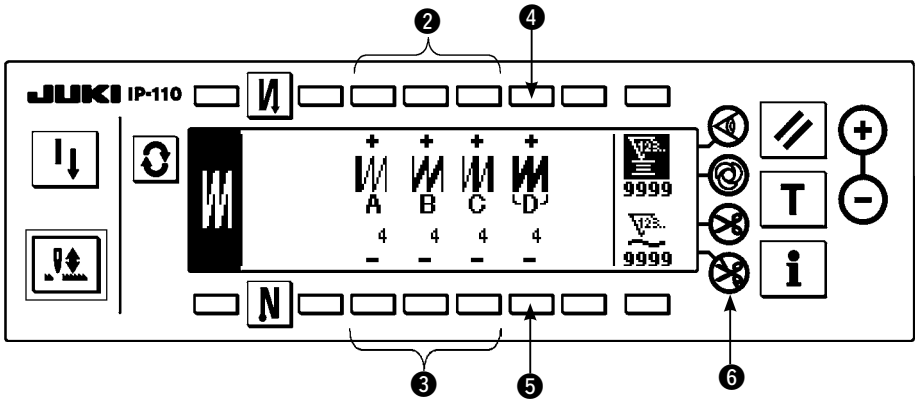
(2) Overlapped stitching pattern



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.

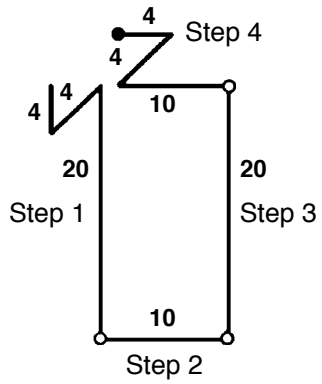


2) When changing the number of stitches, change it with switches ❷ and ❸ for setting the number of stitches for processes A through C. To change the number of times of the whole processes, change it with switches ❹ and ❺ for setting the number of processes D.
(The range of the number of stitches A, B 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.

(3) Programmed stitching pattern

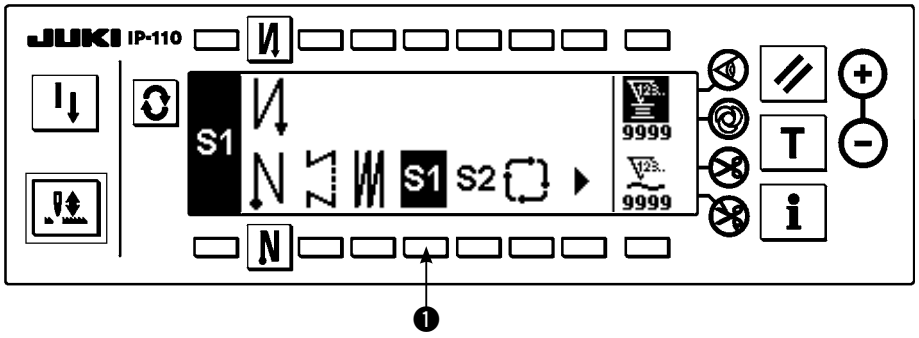
The constant-dimension stitching process can be programmed as many as 20 operation steps. The sewing conditions including the number of stitches, needle up/down stop mode, automatic thread trimming, continuous operation steps, lifting/lowering of presser foot and normal/reverse feed stitching can be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

Example of programmed stitching pattern



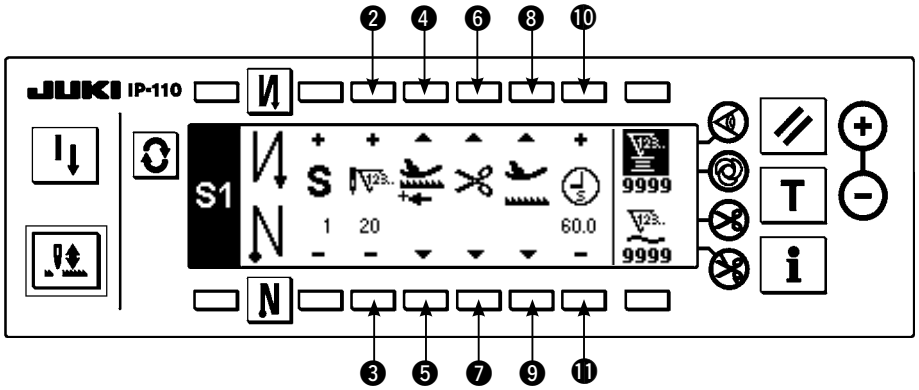
Programming procedure is described below taking the pattern on the left side as an example.

Press [↻] to display the pattern list screen.



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

[Step 1]



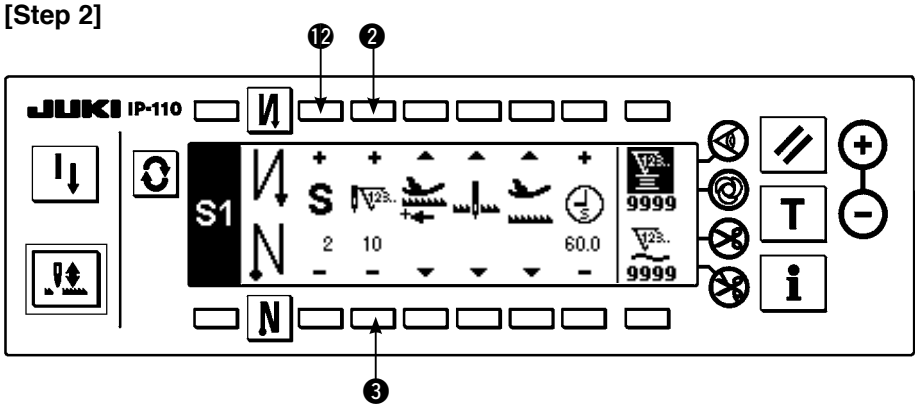
1) Confirm that step 1 is displayed on the panel. Now, set the number of stitches to 20 using switches ❷ and ❸.
2) Set the feeding direction to the normal direction using switches ❹ and ❺.
3) Set the stop state of the sewing machine to the needle-down stop mode using switches ❽ and ❾.

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

4) Set the position of the presser foot, when the sewing machine stops, to the upper stop position using switches ❽ and ❾.
(If you want to specify, In particular, the length of time during which the presser foot Is raised, set It as desired using switches ❿ and ⓫. In the Initial state, the length of time Is 60 seconds. Possible setting range of the time during which the presser foot Is raised : 0.1 sec. to 99.9 sec.)

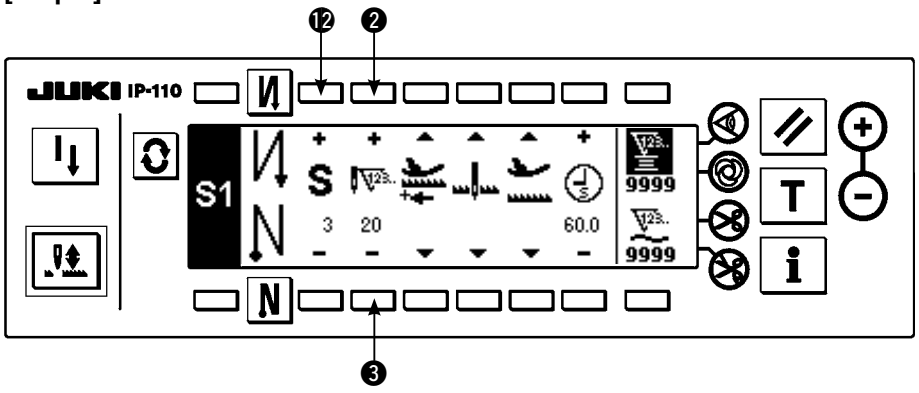
Setting with switches ❽ and ❾, or ❿ and ⓫ is possible only in the state that the use of auto lifter can be performed (FL ON). It is possible to change over FL ON / OFF by turning ON the power while pressing UP switch of the control box.

[Step 2]



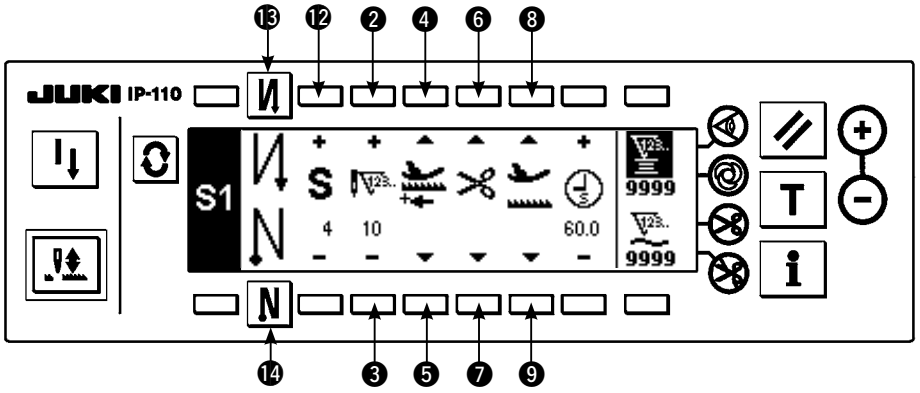
5) Press switch ⓬ once to display step 2.
6) Set the number of stitches to 10 using switches ❷ and ❸.

[Step 3]



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

[Step 4]



11) Press switch ⓬ once to display step 4.
12) Set the number of stitches to 10 using switches ❷ and ❸.
13) Set the feeding direction to the normal direction using switches ❹ and ❺.
14) Set the stop state of the sewing machine to the automatic thread trimming mode using switches ❻ and ❼.
15) Set the position of the presser foot, when the sewing machine stops, to the upper stop position using switches ❽ and ❾.
16) Select the reverse stitching using switches ⓭ and ⓮. This completes the data setting procedure.
17) It is also possible to specify the double reverse stitching using switches ⓭ and ⓮.

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

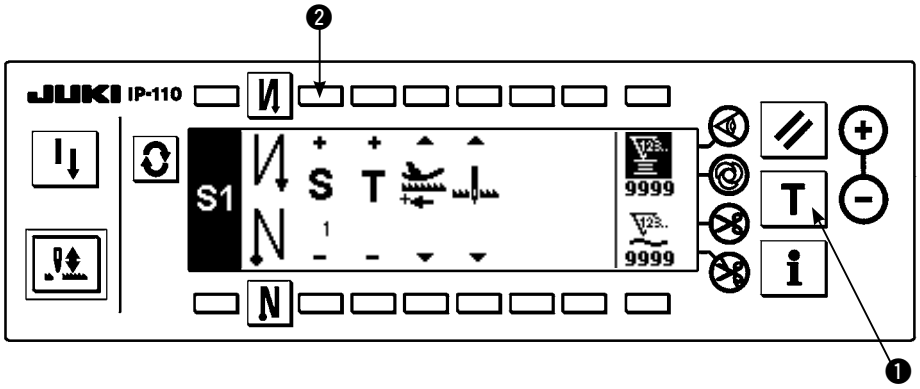
You can program another sewing processes in the programmed stitching pattern 2 following the aforementioned procedure.

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

When switch is pressed in the programmed stitching setting screen, the screen is changed over to the number of stitches of reverse stitching screen and the number of stitches of reverse stitching at the time of programmed stitching can be set. The number of stitches of reverse stitching can be separately set for patterns 1 and 2.

< Teaching mode >

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



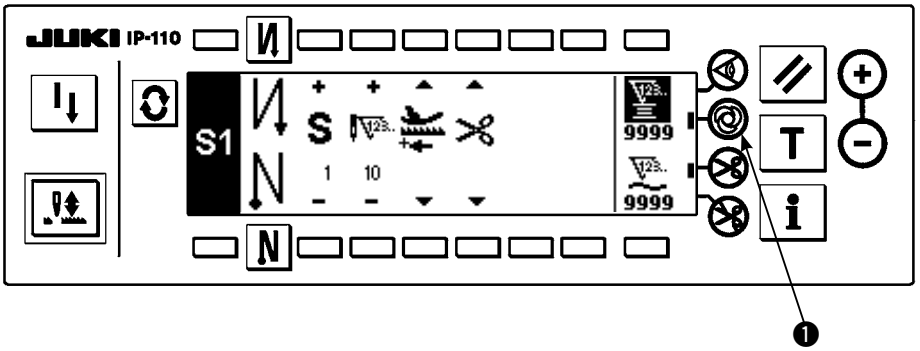
1) In the programmed stitching setting screen, press teaching switch ❶ to select the teaching mode.
2) The indication shown on the number of stitches input section changes to **T**. This shows that the sewing machine has entered the teaching mode.
3) Depress the front part of the pedal to make the sewing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

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

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

< One-shot automatic stitching >

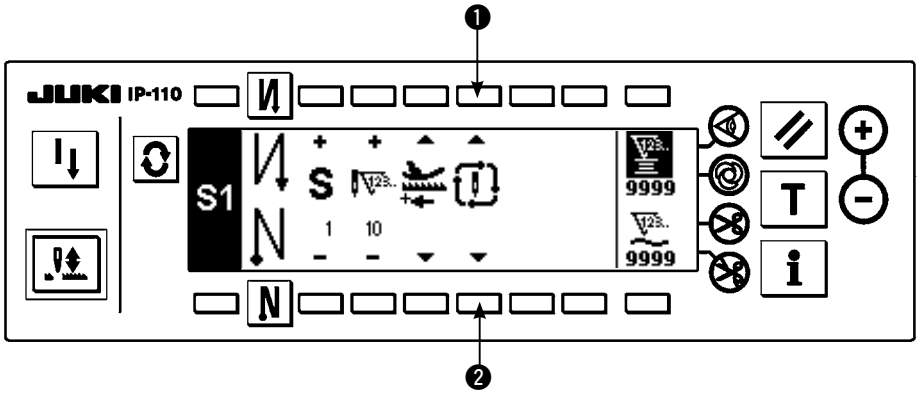
The one-shot automatic stitching function can be separately set by steps.



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

< Continuous stitching mode >

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



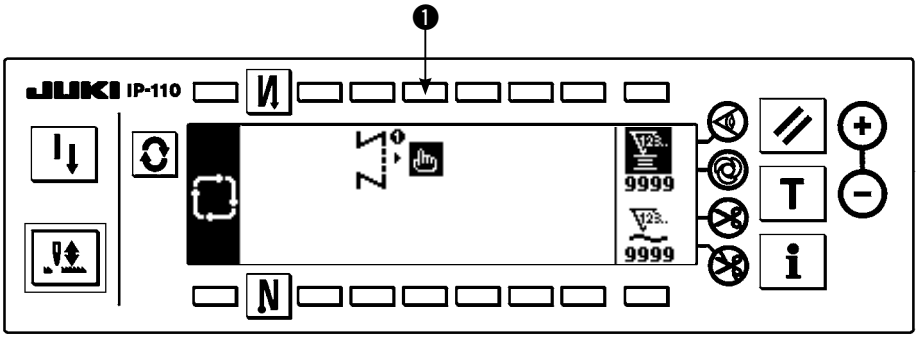
1) In the programmed stitching pattern setting screen, select the continuous stitching mode using switches ❶ and ❷.
2) As long as the continuous stitching mode is selected, you can make the sewing machine execute the subsequent step set in the program after the completion of the current step by depressing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

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

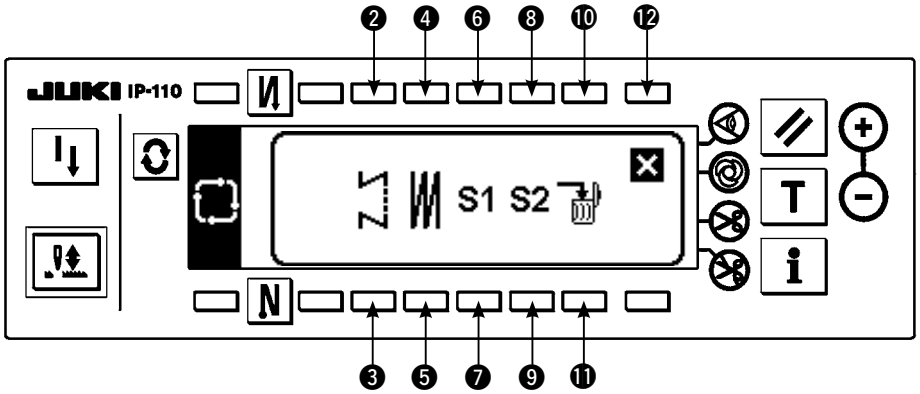
- When the operation panel is used in combination with the material edge sensor, the sewing process can be completed not by the predetermined number of stitches but by the input signal of the material edge sensor.
- Carefully read the Instruction Manual for the material edge sensor before using the sensor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

(4) Cycle sewing pattern

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

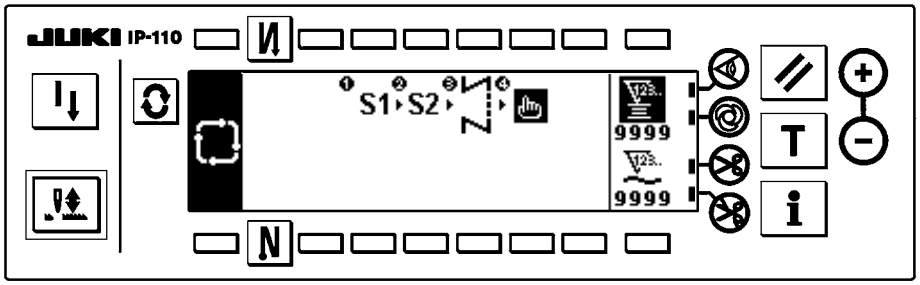


1) Press switch ❶ to display the cycle sewing edit pattern setting pop-up.

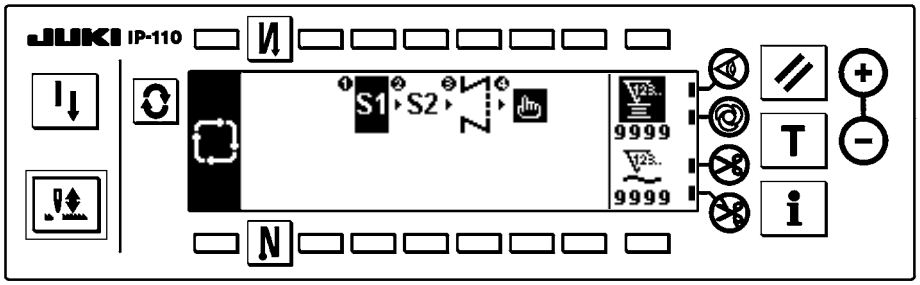


Switches ❷ and ❸ : These switches set the reverse stitching pattern.
Switches ❹ and ❺ : These switches set the overlapped stitching pattern.
Switches ❻ and ❼ : These switches set the programmed stitching pattern 1.
Switches ❽ and ❾ : These switches set the programmed stitching pattern 2.
Switches ❿ and ⓫ : These switches delete the editing step.
Switch ⓬ : The screen returns to the cycle sewing setting screen.

[Example of setting]



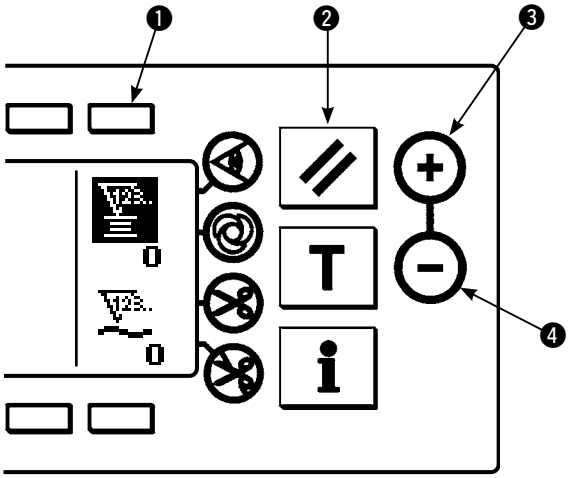
2) Every time the thread trimmer actuates, the machine proceeds to the subsequent pattern which has been selected. (The step which is being executed is shown in reverse video during execution.)



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

4-3. 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.

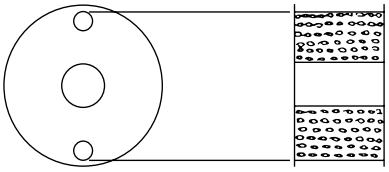


1) Press switch ❶ to select the bobbin thread counter. Then press counter reset switch ❷ to return the value indicated on the bobbin thread counter to the initial value (it has been factory-set to “0” at the time of delivery).

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.

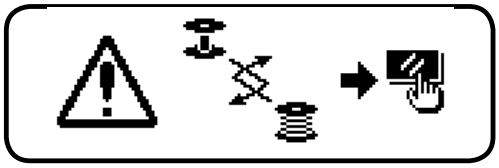
Thread used	Length of thread wound round the bobbin	Value on bobbin thread counter
Polyester spun thread #50	36 m	1200 (stitch length : 3 mm)
Cotton thread #50	31 m	1000 (stitch length : 3 mm)

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



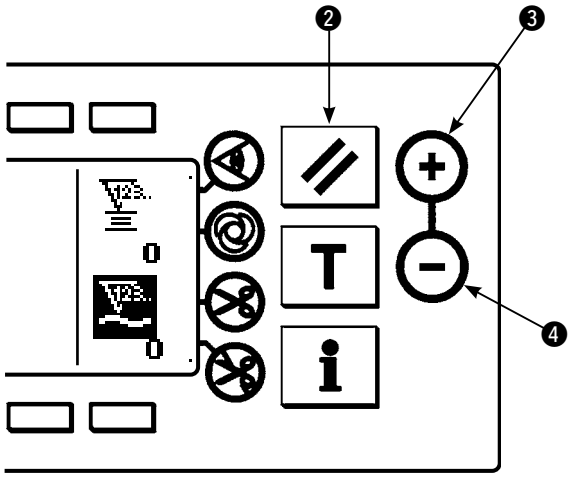
5) After the bobbin thread has been properly replaced, press counter reset switch ❷ to return the value on the bobbin thread counter to the initial value. Now, re-start the sewing machine.
6) If the remaining amount of bobbin thread is excessive or the bobbin thread runs out before the bobbin thread 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.

4-4. No. of pcs. counter

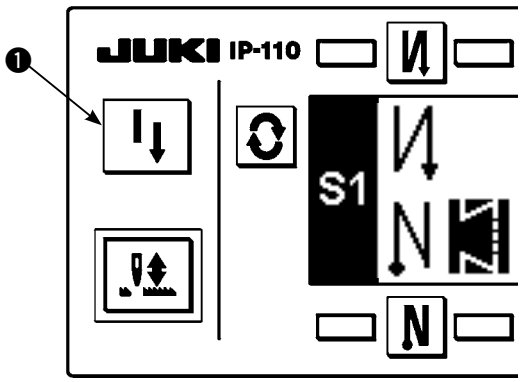
The No. of pcs. counter counts up the number of finished products every time the machine performs thread trimming. (0 → 1 → 2 ····· → 9999)

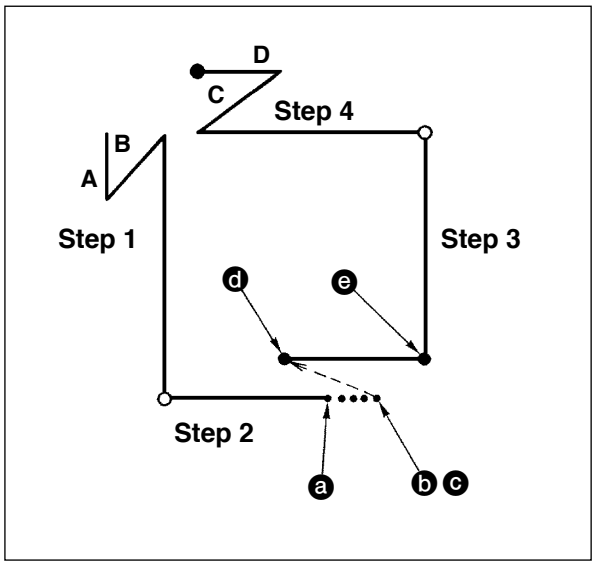


The value on the No. of pcs. counter can be modified using counter value setting switches ❸ and ❹. The value on the No. of pcs. counter is reset to "0" by pressing counter reset switch ❷.

4-5. Re-sewing switch

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



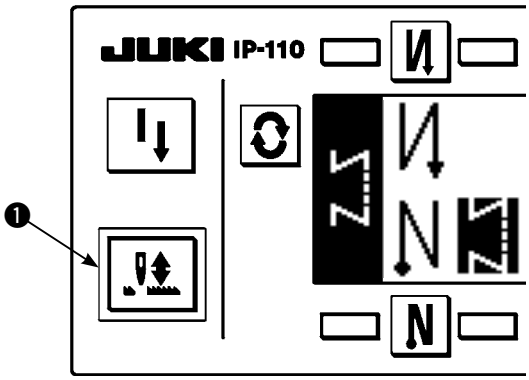


1) The bobbin thread runs out during the operations steps for sewing. ⓐ
2) Bring the pedal to its neutral position to make the sewing machine stop. Now, depress the back part of the pedal to make the thread trimmer actuate. ⓑ
3) Turn ON re-sewing switch ❶. ⓒ
4) Replace the bobbin. Slightly feed the material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

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

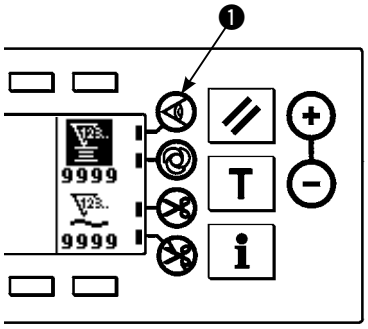
To return to the first step of the programmed stitching pattern without using re-sewing switch ❶, depress the back part of the pedal to actuate the thread trimmer. This makes the operation panel give the step indication 1. Now, you can start sewing from the first step of the programmed stitching pattern.

4-6. 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.

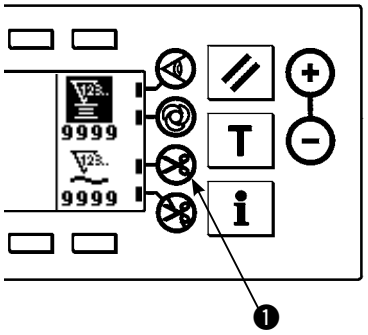
4-7. ON/OFF switch of the material edge sensor



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

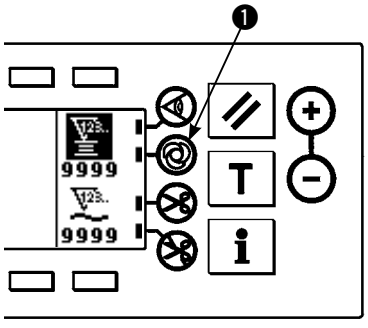
If the material edge sensor is used in combination with the operation panel, carefully read the Instruction Manual for the material edge sensor beforehand.

4-8. Automatic thread trimming switch



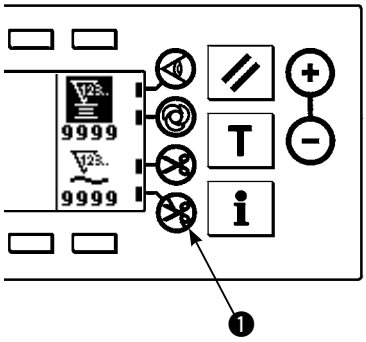
- When automatic thread trimming switch ❶ is pressed, ON/OFF of the automatic thread trimming is changed over.
- This switch is used to automatically actuate the thread trimmer in a process where the sewing machine automatically stops or when the material edge sensor is used.
  (if the automatic reverse stitching (for end) is specified, the thread trimmer will actuate after the sewing machine completes the automatic reverse stitching (for end).)

4-9. One-shot automatic stitching switch



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

4-10. Thread trimming prohibition switch



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

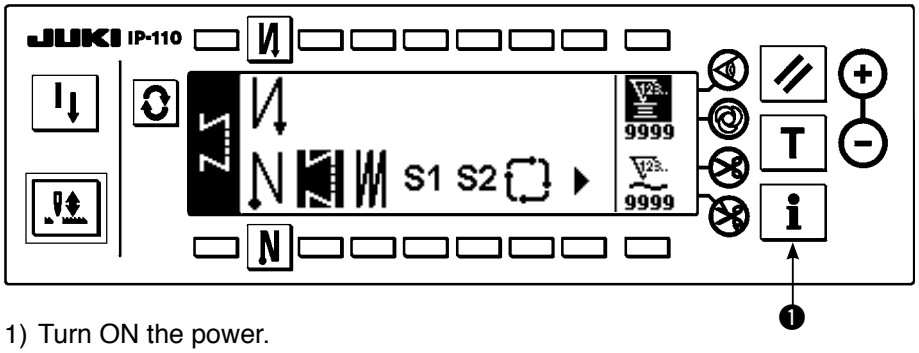
4-11. Key lock

- In order to prevent the specified data on the number of stitches or the processes (A, B, C and D, or step information) from changing by mistake, the setting switch can be locked. (Even with the setting key locked, the pattern to be sewn and the value on the bobbin thread counter can be changed.)
- For the setting procedure, refer to 4-13 Setting for functions and set function No. 17, Key lock function (key lock is effective with setting of “1”).

4-12. Information

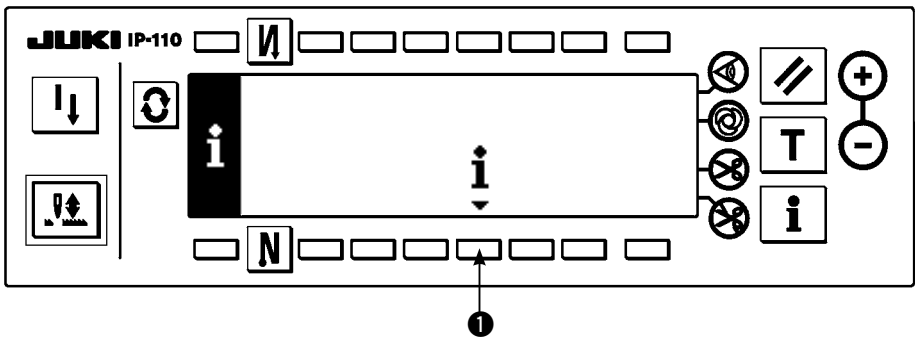
Setting and checking of various data can be performed with the information.
For the information, there are the operator level and the maintenance personnel level.

Operator level



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

■ Information screen (operator level)

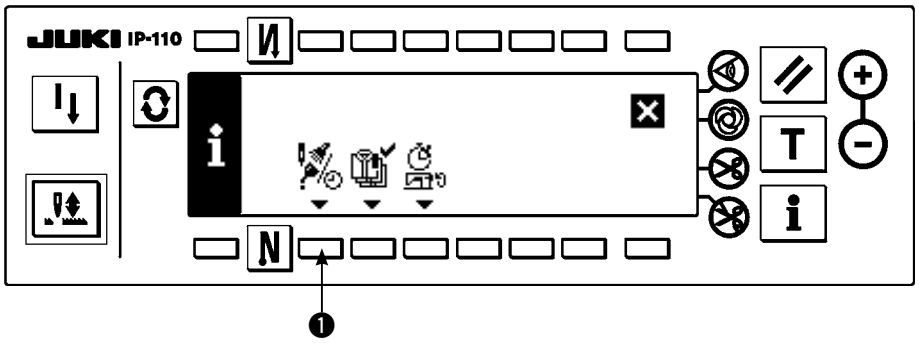


❶ : Sewing management information

● Sewing management information

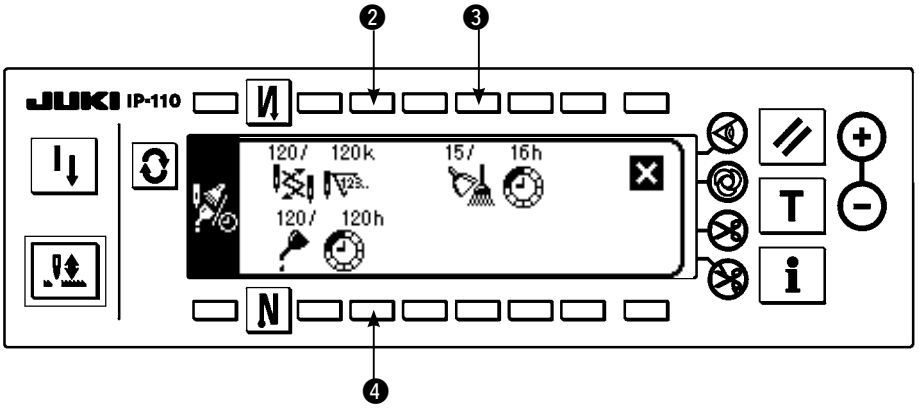
For the sewing management information, there are the maintenance management function, production control function and working measurement function.

(1) 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

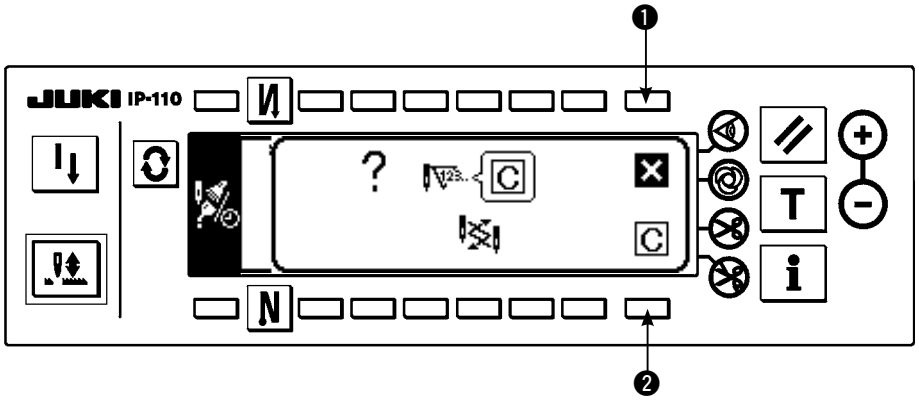
100 / 1600 k

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**

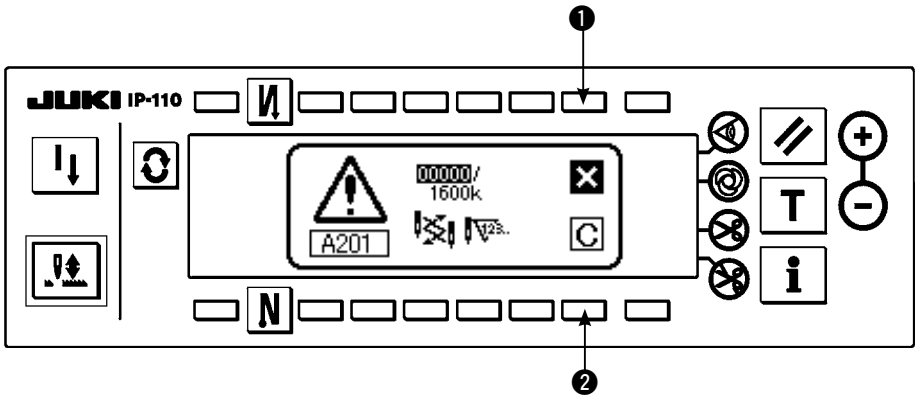


❶ : The screen returns to the maintenance function screen without performing clearing.

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

■ **Warning screen**

Warning screen is displayed when the warning time is reached.

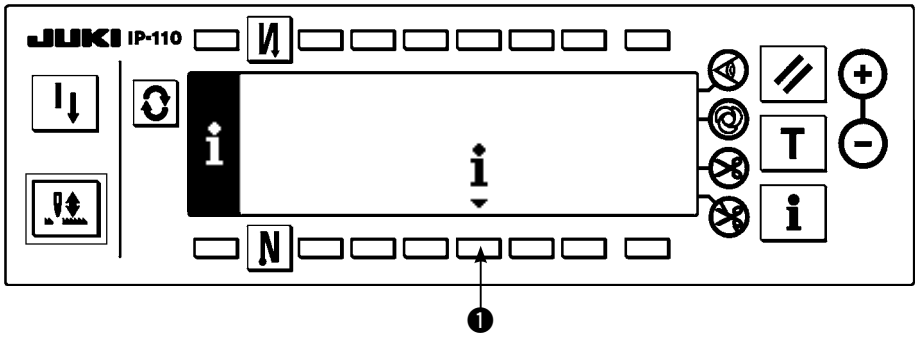


❶ : When ❶ is pressed, the screen can be cleared. However, the counter itself cannot be cleared. In case of the replacement of needle, the warning screen is displayed at intervals of 10 minutes until clearing is performed. In case of other warnings, the warning screen is displayed at the time of turning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

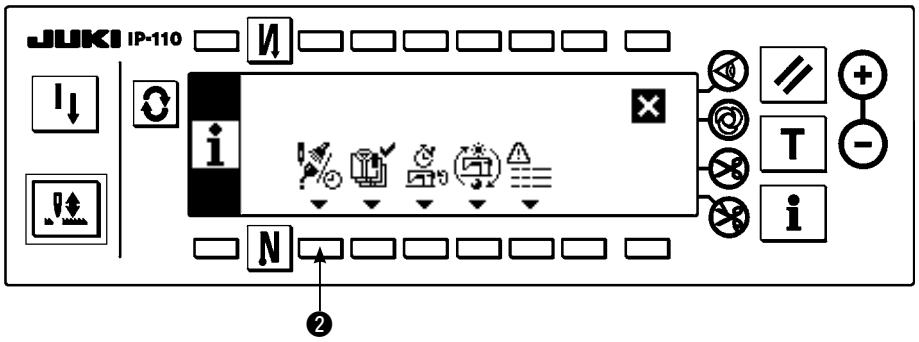
[Setting of the warning setting time]

■ **Infomation screen**



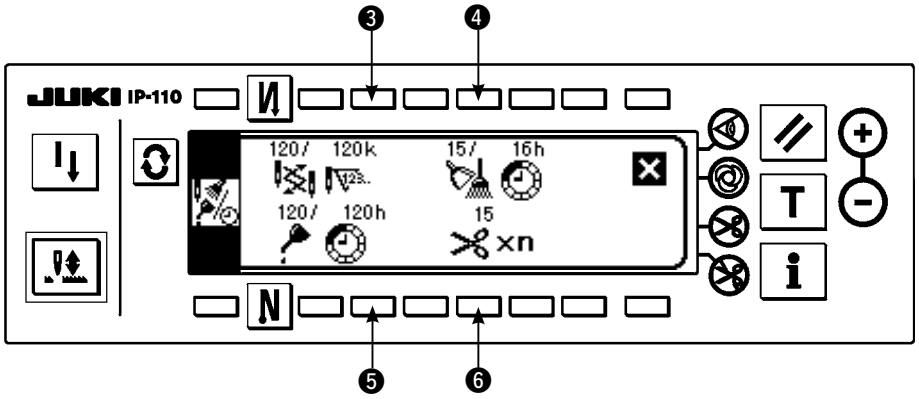
1) Press switch ❶ for approximately three seconds in the information screen.

■ **Sewing management information selection screen**



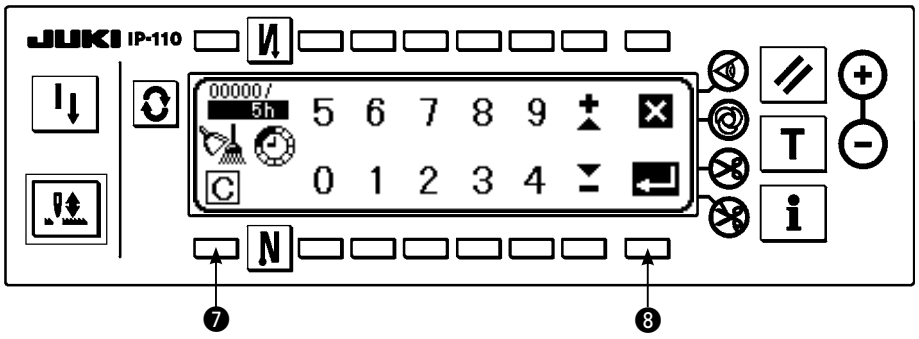
2) Press ❷ to display the maintenance function screen.
(For other functions, refer to the Engineer's Manual.)

■ **Maintenance function screen**



❸, ❹, ❺ : Inspection time (number of times of thread trimming) input screen is displayed.
❻ : ×n Number of times of thread trimming per sewing ... Unit : Number of times

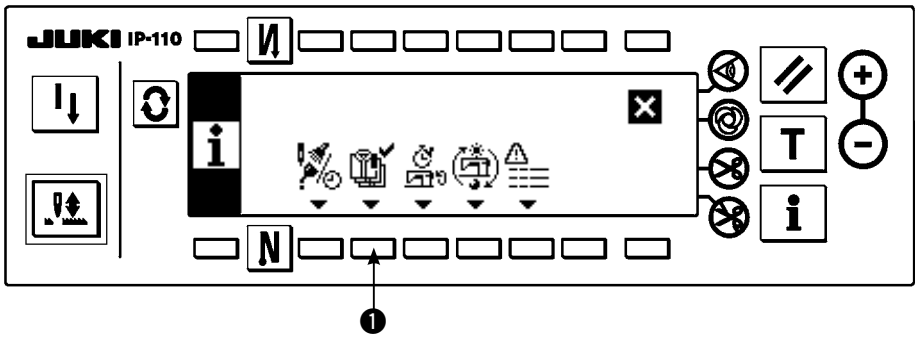
■ **Inspection time (number of times of thread trimming) input screen**



Clear checking screen is displayed in ❼. (It is not displayed when the number of times of thread trimming is specified.)
After inputting the setting time, determine the time with ❽.

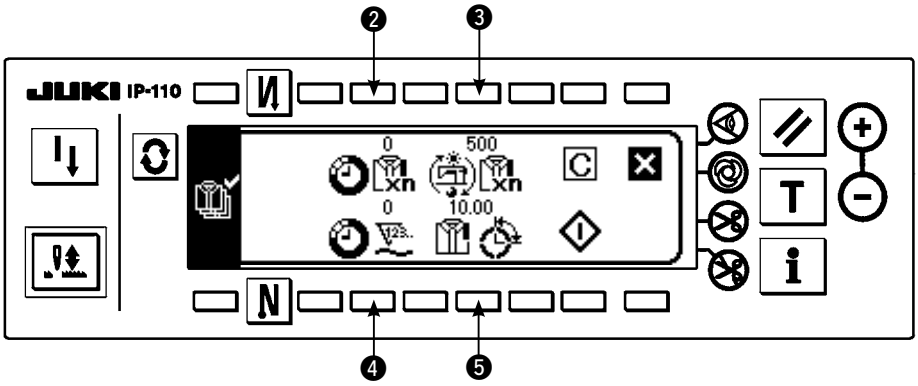
In case of stopping the warning function, set the set value to "0".
It is possible to individually set replacement of needle, cleaning, and replacement of oil respectively.
In case of stopping all, set "0" to each.

(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

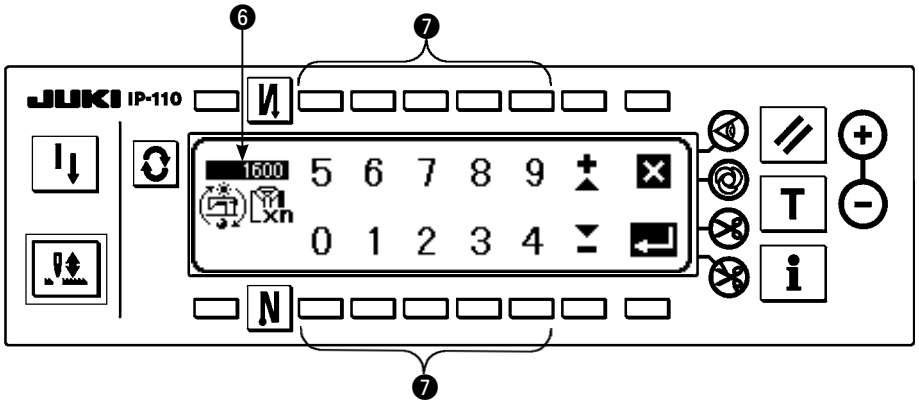
Time required to sew one piece (pitch time) ..... Unit : Second

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.

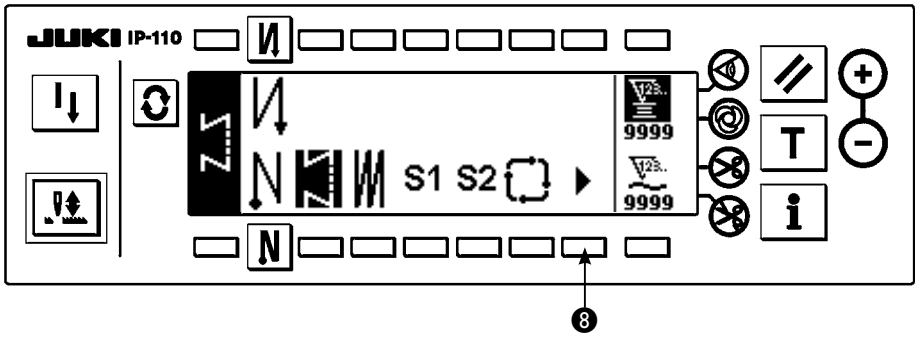
■ **Production control input screen**



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

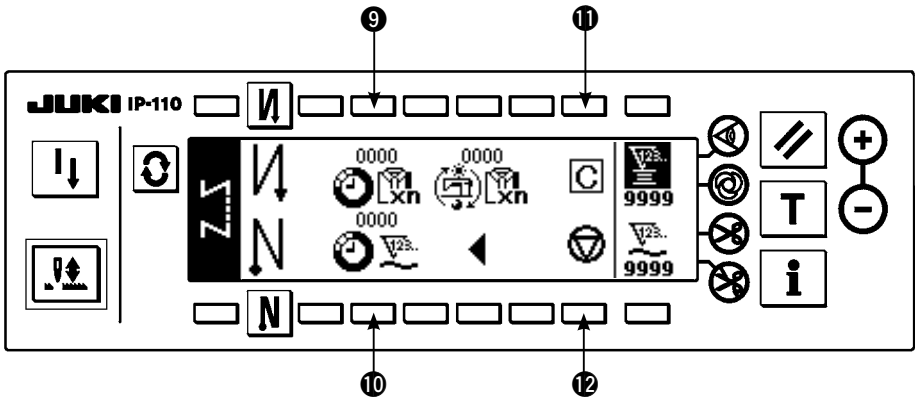
Minimum setting possible value of pitch time is 0.50 seconds.

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



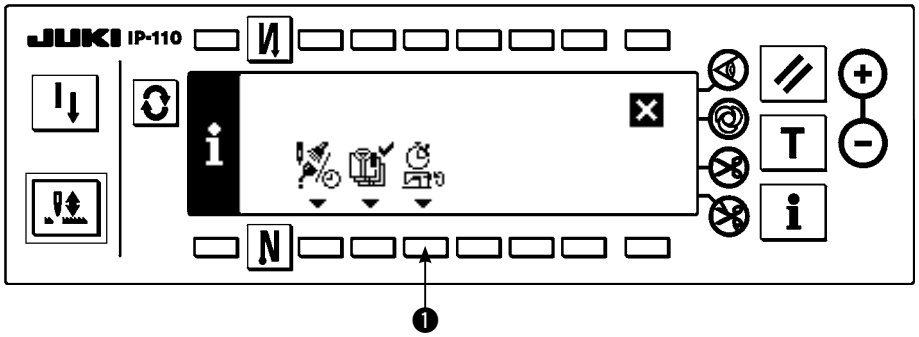
4) Press ❽ in the shape list screen.

■ **Output display screen**



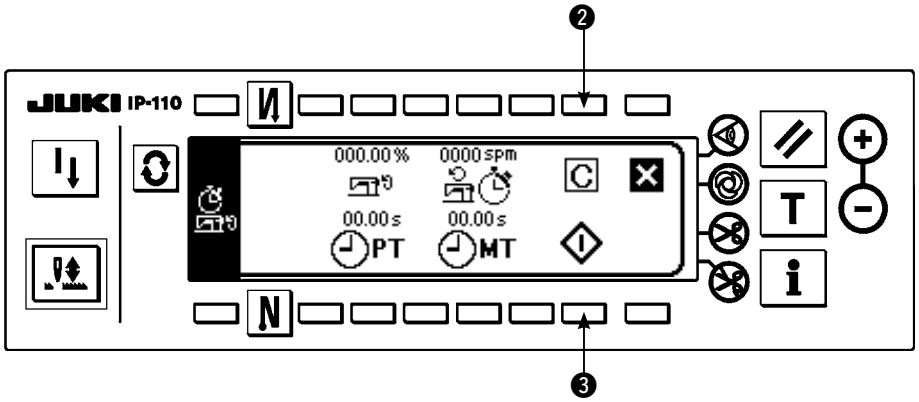
5) The output display screen is displayed. Sewing is possible with this screen.
Set value can be changed with switches ❾ and ❿ (Editing of the final target value and pitch time cannot be performed in this screen.)
The current target value and the current output can be cleared (make them “0”) with switch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

(3) Working measurement function



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

■ **Working measurement function screen**



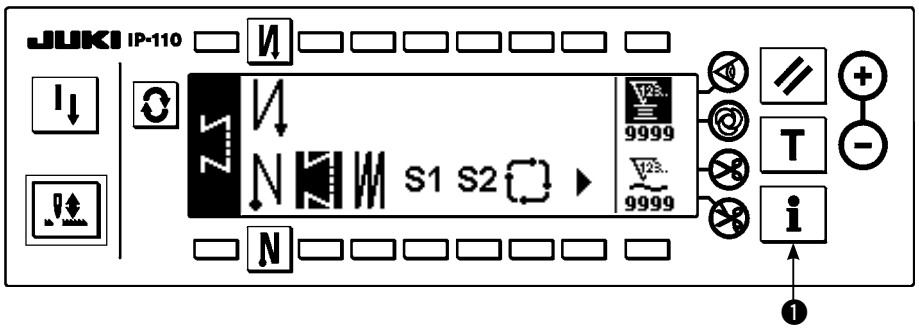
[Explanation of the respective items]

- 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.

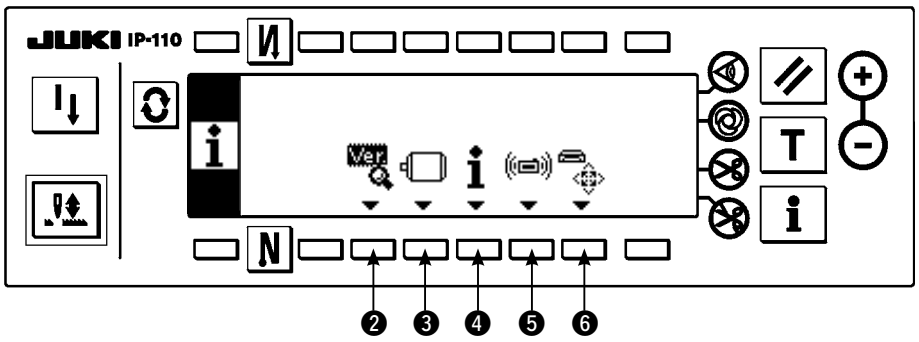
When "Clear" is not executed, the measurement from the last time can be continued.

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)**



❷ Ver display ..... For the details, refer to the Engineer's Manual.
❸ Function setting ..... Refer to the item "Function setting procedure".
❹ Sewing management information
❺ Communication mode ..... For the details, refer to the Engineer's Manual.
❻ Media format .... For the details, refer to Engineer's Manual.

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

4-13. 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.

There are two kinds of function settings, Level 1 and Level 2.

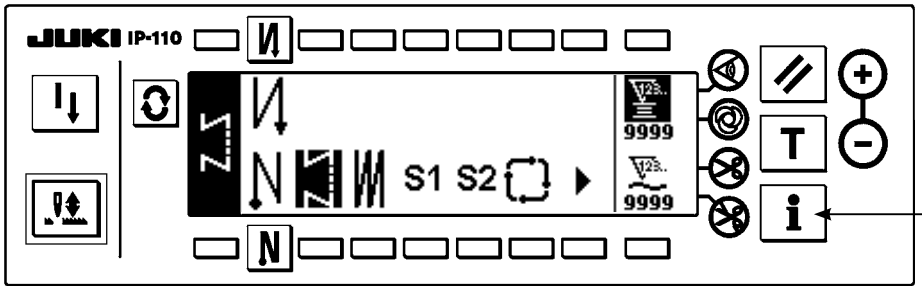
Level 1 : Change of setting can be performed without turning OFF the power switch.

Level 2 : It is necessary to turn OFF the power switch after change of setting.

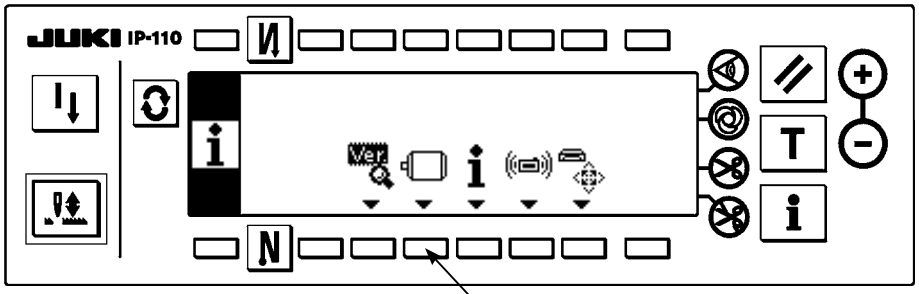
For the details of setting No., see P.32.

[Setting procedure of Level 2]

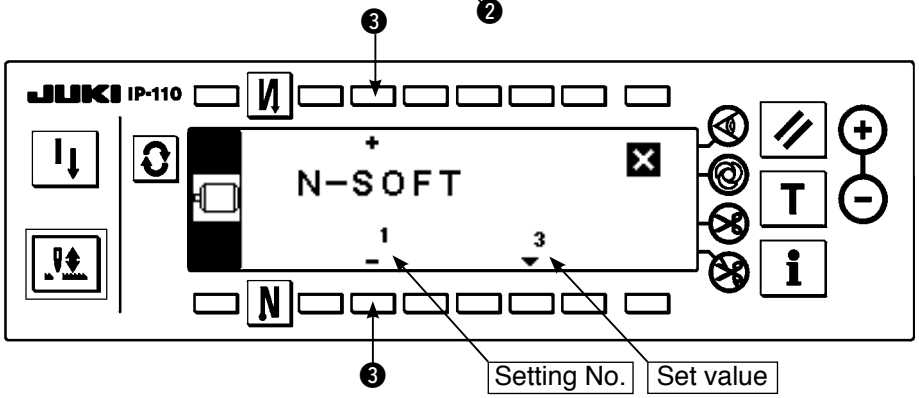
1) Turn ON the power. When the needle bar is not in its UP position, turn the handwheel to bring the needle bar to its UP position.



2) Press switch ❶ for approximately three seconds.



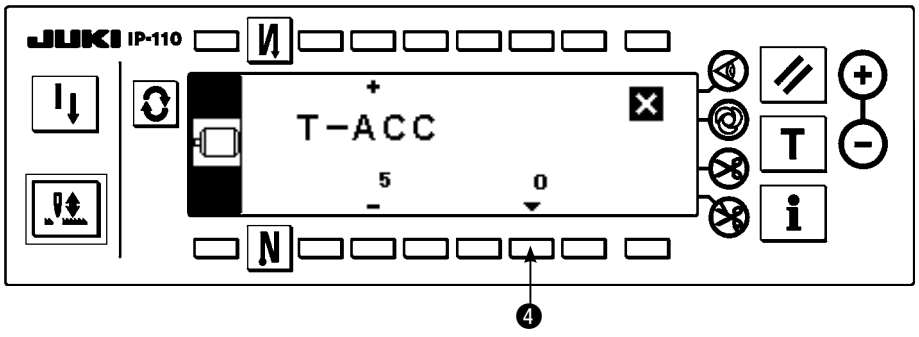
3) Press switch ❷ for approximately three seconds.



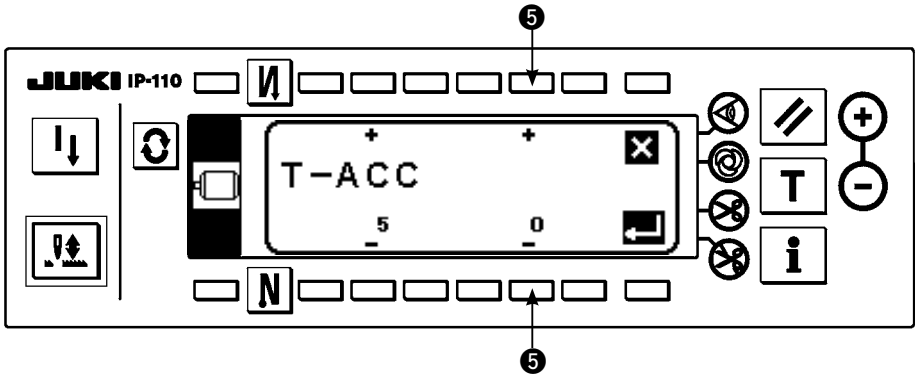
4) This screen is the function setting screen.
Change the setting No. with "+/–" Key of switch ❸.
For the details of setting No., see P. 32.

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

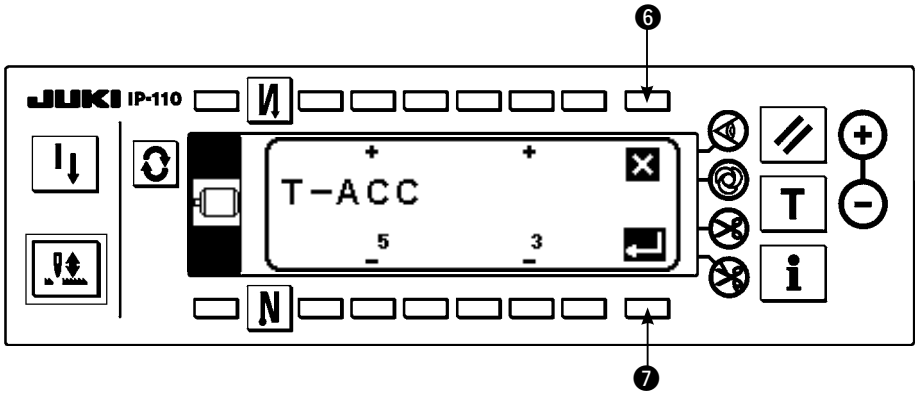
Change the setting No. to "5" with "+" Key of switch ❸ in the figure above.



• Press switch ❹.

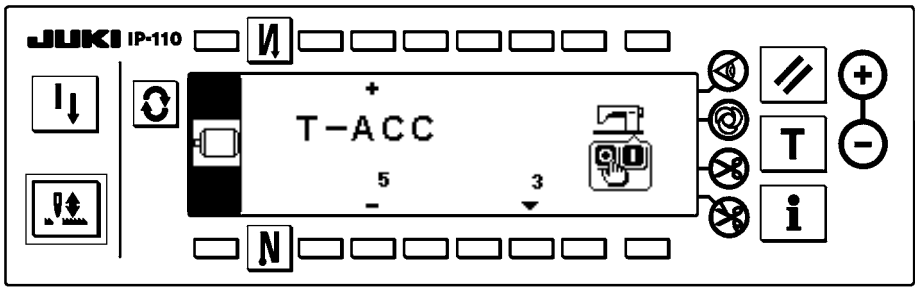


- Change set value with "+/–" Key of switch ❺.



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

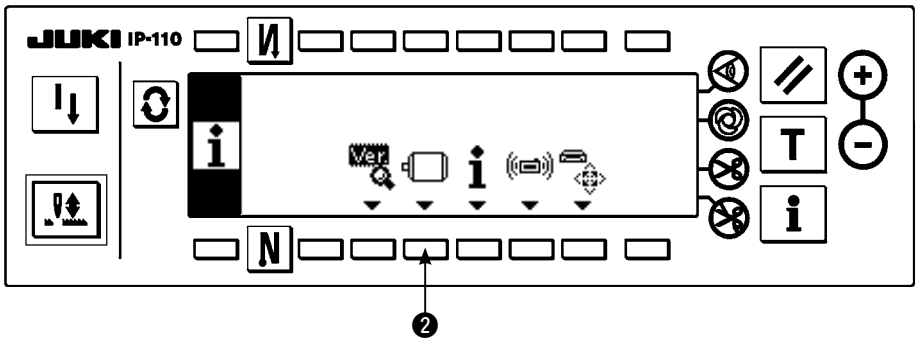
- When this changed value is acceptable, press switch ❼.
  When you desire to return the value to the previous one, press switch ❻.



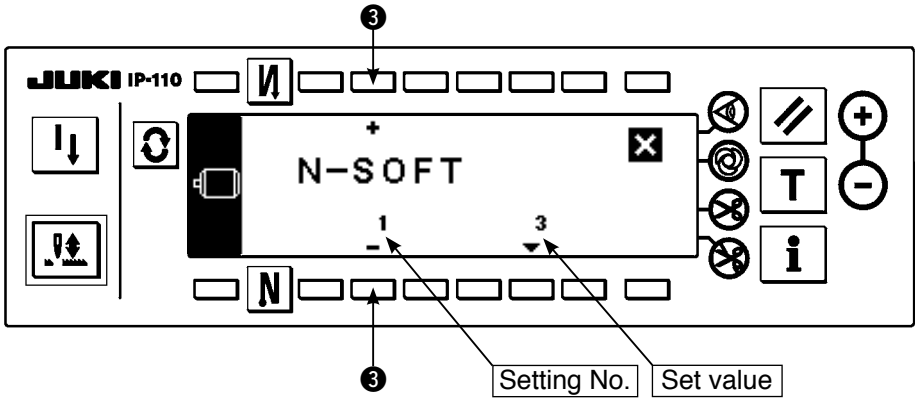
- Turn OFF the power switch and turn ON the power switch after approximately one second.
- Change of the set value is determined by turning OFF the power switch.

[Setting procedure of Level 1]

1) Press switch ❶ for approximately three seconds.

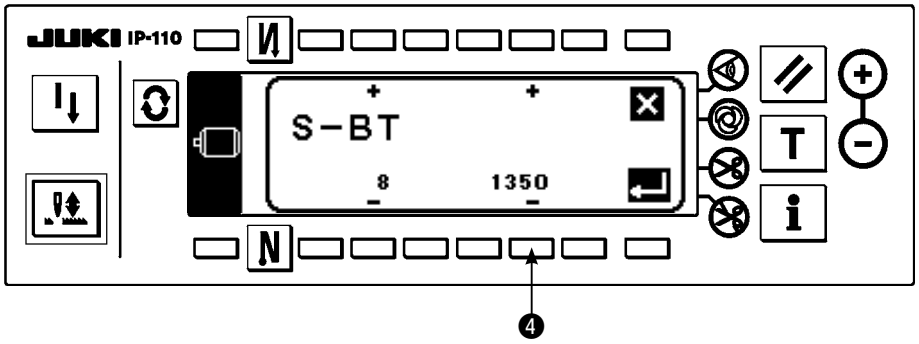


2) Press switch ❷.



3) This screen is the function setting screen.
Change the setting No. with “+/–” Key of switch ❸.

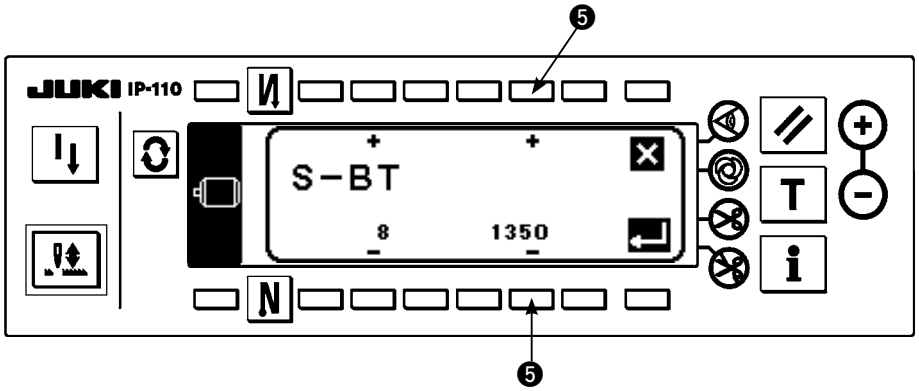
For the details of setting No., see P. 32.



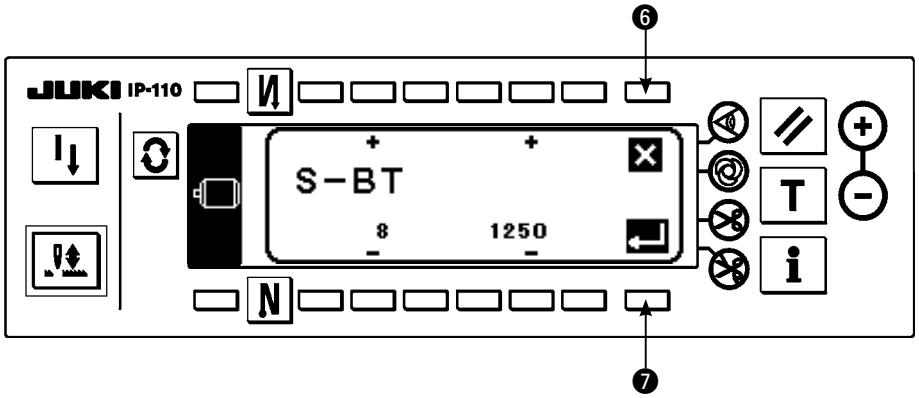
Example) Changing the number of rotation of reverse feed stitching (Setting No. 8)

Change the setting No. to “8” with “+” Key of switch ❸ in the figure above.

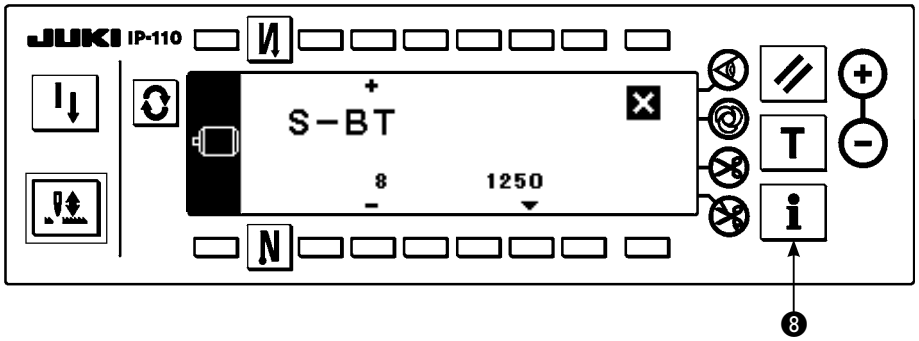
- Press switch ❹.



- Change the set value with “+/–” Key of switch ❺.



- Set value has been changed from 1350 to 1250.
- When this changed value is acceptable, press switch ❼.
  Press switch ❻ when you desire to return the value to the former one.



- Press switch ❽ in case of sewing.

(2) Function setting list

For the details of the items, refer to the Instruction Manual for SC-910.

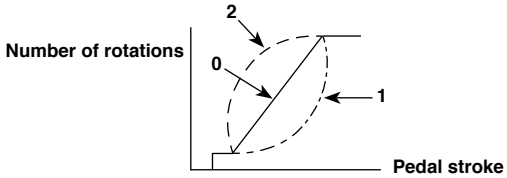
*** DDL-8700 is given as an example here. However, initial value changes according to the machine head to be connected.**

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
1	Soft start function	The number of stitches to be sewn at a low speed when the soft-start function is used at the start of sewing. 0 : Soft-start function is not operative.	1	0 to 9	N-SOFT 1
5	Flicker reducing function	Flicker reducing function (If the hand lamp flickers). 0 : Flicker reducing function is not operative. 1 : Less effective → 8 : Highly effective	2	0 to 8	T-ACC 0
6	Bobbin thread counting function	Bobbin thread counting function 0 : Bobbin thread counting function is not operative. 1 : Bobbin thread counting function is operative.	1	0 to 1	SCBOB 1
7	Bobbin thread count unit	Unit of bobbin thread counting down 0 : Count/10 stitches 1 : Count/15 stitches 2 : Count/20 stitches	1	0 to 2	RATIO 0
8	Number of rotation of reverse feed stitching	Sewing speed of reverse feed stitching	1	150 to 3000	S-BT 1500
10	Setting of needle bar stop position when the sewing machine stops.	Position of needle bar is specified when the sewing machine stops. 0 : Predetermined lowest position 1 : Predetermined highest position	2	0 to 1	NPS 0
11	Click sound of key switch mounted on PSC	Click sound of key switch mounted on PSC is specified. 0 : Click is not operative. 1 : Click is operative.	2	0 to 1	SOUND 1
12	Optinal switch function selection	Switching of function of optional switch. 0 : No function 1 : Needle up/down compensating stitching 2 : Back compensating stitching 3 : Function of canceling once reverse feed stitching at the end of sewing 4 : Thread trimming function 5 : Presser foot lifting function 6 : One stitch compensating stitching 7 : Function of simultaneously canceling reverse feed stitching at the start and end of sewing 8 : Function of neutral presser foot lifting changeover	2	0 to 8	SW2 0
13	Function of prohibiting start of the sewing machine by bobbin thread counter	Function of prohibiting start of the sewing machine by bobbin thread counting 0 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine is not operative. 1 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine after thread trimming is operative. 2 : When counting is out (-1 or less), the sewing machine stops once. Function of prohibiting start of the sewing machine after thread trimming is operative.	2	0 to 2	ASCNT 0
14	Sewing counter	Counting function of sewing (number of completion of process) 0 : Sewing counter function is not operative. 1 : Sewing counter function is operative.	2	0 to 1	NTO 1
15	Number of times of detection of run-out of bobbin thread remaining amount	Number of times of detection of run-out of bobbin thread remaining amount 0 :Function of bobbin thread remaining amount is not operative. 1 to 19 :Number of times during which the signal is not made even if run-out of bobbin thread remaining amount is detected.	2	0 to 19	BTDS 1
17	Key lock function	Key lock function 0 : Without key lock 1 : With key lock	2	0 to 1	KEYLOCK 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
18	Bird's nest prevention function	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Bird's nest prevention function is not operative. 1 : Bird's nest prevention function is operative. 2 : Bird's nest prevention function is operative (with thread release).	2	0 to 2	BNC 0
19	Needle thread release function at the sewing start	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Needle thread release function is not operative. 1 : Needle thread release function is operative.	2	0 to 1	THOLD 0
20	Number of condensation stitches	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Condensation function is not operative. 1 to 9 : Number of condensation stitches	1	0 to 9	N-CS 0
21	Function of neutral presser lifting	Function of lifting presser foot when the pedal is in neutral position. 0 : Function of neutral automatic presser lifting is not operative. 1 : Selection of function of neutral presser lifting.	1	0 to 1	N-NPL 0
22	Function of changeover of compensating switch on the operation panel function	Function of needle up/down compensating switch on the operation panel can be changed. 0 : Needle up/down compensation 1 : One stitch compensation	2	0 to 1	F-CMSP 0
24	Function of fine adjustment of number of rotation	Number of rotation can be compensated. Be sure to normally use this function with "0".	2	–15 to 15	F-FAS 0
25	Thread trimming motion condition	This function sets the thread trimming motion after DOWN position has been off by turning handwheel by hand. 0 : Thread trimming after turning handwheel by hand is permitted. 1 : Thread trimming after turning handwheel by hand is prohibited.	2	0 to 1	F-TRMC 1
26	Function of setting the holding force after stop	This function prevents the sewing machine from the reverse rotation after it has stopped. 0 : Initial value 1 : Less effective → 9 : Highly effective	2	0 to 9	F-RTPC 0
27	Function of setting the reaction force at the time of retry	This function sets the magnitude of return force of the needle bar before the retry motion. 1 : Less return force → 100 : High return force	2	1 to 100	F-RTRC 50
28	Number of stitches of needle thread release	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). This function sets the number of stitches grasping thread at the sewing start. 0 to 30 stitches	1	0 to 30	F-UTHR 1
29	Back solenoid initial motion suction time	This function sets the suction time of initial motion of back-tack solenoid. 50 ms to 300 ms	2	50 to 300	T-RSS 250
30	Function of reverse feed stitching on the way	Function of reverse feed stitching on the way 0 : Function of reverse stitching on the way is not operative. 1 : Function of reverse feed stitching on the way is operative.	2	0 to 1	OBT 0
31	Number of stitches of reverse feed stitching on the way	Number of stitches of reverse feed stitching on the way.	2	0 to 19	N-OBT 4
32	Effective condition of reverse feed stitching on the way when the sewing machine is stopping.	Effective condition of reverse feed stitching on the way 0 : Function is not operative when the sewing machine stops. 1 : Function is operative when the sewing machine stops.	2	0 to 1	OBTS 0
33	Thread trimming function by reverse feed stitching on the way	Thread trimming function by reverse feed stitching on the way 0 : Automatic thread trimming function after completion of reverse feed stitching on the way is not operative. 1 : Automatic thread trimming after completion of reverse feed stitching on the way is performed.	2	0 to 1	OBTT 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
35	Number of rotation at a low speed	Lowest speed by pedal	1	20 to 400	S-POS 200
36	Number of rotation of thread trimming	Thread trimming speed **(Caution) Do not change the set value. When it is changed, the sewing machine may be damaged.**	2	20 to 250	S-TRM 210
37	Number of rotation of soft-start	Sewing speed at the start of sewing (soft-start)	1	150 to 5500	S-SOFT 800
38	One-shot speed	One-shot speed (The max. value depends on the number of rotation of the sewing machine head.)	1	200 to Max	S-ASS 2000
39	Pedal stroke at the start of rotation	Position where the sewing machine starts rotating from pedal neutral position (Pedal stroke)	2	10 to 50	P-SSP 30
40	Low speed section of pedal	Position where the sewing machine starts accelerating from pedal neutral position (Pedal stroke)	2	10 to 100	P-LSA 60
41	Starting position of lifting presser foot by pedal	Position where the cloth presser starts lifting from pedal neutral position (Pedal stroke)	2	– 60 to – 10	P-FLW – 21
42	Starting position of lowering presser foot	Starting position of lowering presser foot Stroke from the neutral position	2	8 to 50	P-FLD 10
43	Pedal stroke 2 for starting thread trimming	Position 2 where the thread trimming starts from pedal neutral position(When the function of lifting presser foot by pedal is provided.) (Pedal stroke)	2	– 60 to – 10	P-TRM2 – 51
44	Pedal stroke for reaching the maximum number of rotation	Position where the sewing machine reaches its highest sewing speed from pedal neutral position (Pedal stroke)	2	10 to 150	P-MAX 150
45	Compensation of neutral point of the pedal	Compensation value of the pedal sensor	2	– 15 to 15	P-ANP 0
46	Auto-lifter selecting function	Auto-lifter selection 0 : Solenoid drive system 1 : Pneumatic drive system	2	0 to 1	FLSEL 0
47	Auto-lifter selecting function	Limitation time of waiting for lifting solenoid type auto-lifter device	2	10 to 600	T-FL 60
48	Pedal stroke 1 for starting thread trimming	Position where thread trimming starts from pedal neutral position (Standard pedal) (Pedal stroke)	2	– 60 to – 10	P-TRM1 – 35
49	Lowering time of presser foot	Lowering time of presser foot after the pedal has been depressed. (Start of rotation of the sewing machine is delayed during this time.)	2	0 to 250	T-FLWT 140
51	Compensation of solenoid-on timing of reverse feed stitching at the start of sewing	Compensation of starting the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	1	– 36 to 36	T-SON 10
52	Compensation of solenoid-off timing of reverse feed stitching at the start of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	1	– 36 to 36	T-SOFF 16
53	Compensation of solenoid-off timing of reverse feed stitching at the end of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the end of sewing is performed.	1	– 36 to 36	T-EOFF 18
55	Foot lift after thread trimming	Function of lifting presser foot at the time of (after) thread trimming 0 : Not provided with the function of lifting presser foot after thread trimming 1 : Provided with the function of lifting presser foot automatically after thread trimming	2	0 to 1	FLAT 1

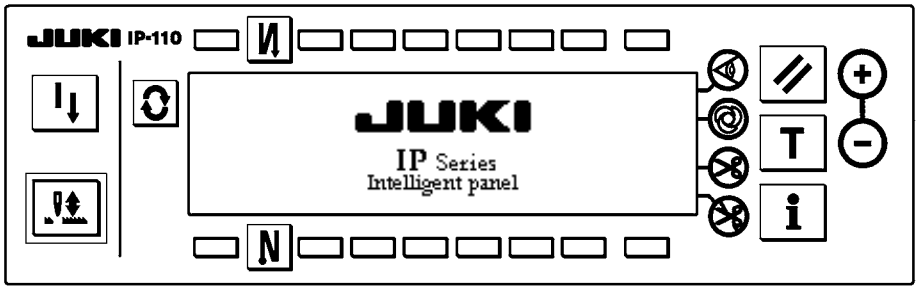
No.	Item	Description	Setting level	Setting range	Panel display Standard set value
56	Reverse revolution to lift the needle after thread trimming	Function of reverse revolution to lift the needle at the time of (after) thread trimming 0 : Not provided with the function of reverse revolution to lift the needle after thread trimming 1 : Provided with the function of reverse revolution to lift the needle after thread trimming	2	0 to 1	RATRM 0
57	Bobbin thread remaining amount detection function	Function of detecting bobbin thread remaining amount at the time of (after thread trimming 0 : Not provided with the function of detecting bobbin thread remaining amount 1 : Provided with the function of detecting bobbin thread remaining amount	2	0 to 1	BTDF 0
58	Function of holding predetermined upper/ lower position of the needle bar	unction of holding predetermined upper/lower position of the needle bar 0 : Not provided with the function of holding predetermined upper/lower position of the needle bar 1 : Provided with the function of holding predetermined upper/lower position of the needle bar	2	0 to 1	HPOS 0
59	Function of Auto/ Manual change-over of reverse feed stitching at the start of sewing	This function can specify the sewing speed of reverse feed stitching at the start of sewing. 0 : The speed will depend on the manual operation by pedal, etc. 1 : The speed will depend on the specified reverse feed stitching speed (No. 8).	2	0 to 1	SBTO 1
60	Function of stop immediately after reverse feed stitching at the start of sewing	Function at the time of completion of reverse feed stitching at the start of sewing 0 : Not provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing. 1 : Provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing.	2	0 to 1	SBTQ 0
61	Function of starting prohibition of the sewing machine by detection of bobbin thread remaining amount	Function of starting prohibition of the sewing machine by detection of bobbin thread remaining amount 0 : This function does not stop the sewing machine when counting is out (-1 or less). 1 : This function stops the sewing machine when counting is out (-1 or less).	2	0 to 1	ASBOB 1
64	Change-over speed of condensation stitch or EBT (end back tack)	Initial speed when starting condensation stitch or EBT	2	0 to 250	S-WAIT 180
65	On-timing of solenoid for condensation stitch (when condensation stitch is performed by 1 stitch.)	Starting (compensation) timing of solenoid for compensation stitch : -1 Compensation value of starting the solenoid when condensation stitch is performed by 1 stitch.	2	– 36 to 0	T-CS1 – 15
66	On-timing of solenoid for condensation stitch (when condensation stitch is performed by 2 stitches.)	Starting (compensation) timing of solenoid for condensation stitch : -2 Compensation value of starting the solenoid when condensation stitch is performed by 2 stitches.	2	– 36 to 0	T-CS2 – 15
67	Presser foot lifting solenoid output duty setting	Duty of presser foot lifting solenoid output [%]	2	5 to 40	FLDTY 20
70	Function of soft-down of presser foot	Presser foot is slowly lowered. 0 : Presser foot is rapidly lowered. 1 : Presser foot is slowly lowered.	2	0 to 1	F-SDFL 0
71	Function of limitation of re-acceleration from reduction of speed	Speed limitation is performed at the time of re-acceleration on the way of reducing speed of the sewing machine. It is effective when operating inching sewing.	2	0 to 5	F-ACRA 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
72	Function of limitation of acceleration at the start of rotation	Speed limitation is performed at the time of start-up of the sewing machine (excluding the start of sewing). It is effective when operating inching sewing.	1	0 to 5	F-ACR 0
73	Retry function	This function is used when needle cannot pierce materials. 0 : Normal 1 : Retry function is provided.	1	0 to 1	F-RET 1
75	Rotating direction of motor	Normal rotating direction of motor 0 : Clockwise 1 : Counterclockwise	2	0 to 1	DM 0
76	Function to select the start-up speed of the sewing machine	Starting curve of the sewing machine is selected. 0 : Normal curve 1 : More sharp curve	2	0 to 1	F-SCS 0
84	Initial motion suction time of presser foot lifting solenoid	Suction motion time of presser foot lifting solenoid	2	40 to 300	T-PUT 100
87	Function of pedal curve selection	Pedal curve is selected. (Improving pedal inching operation)  	2	0 to 2	F-PCS 0
89	Tension release function	Unused	2	0 to 1	TRS 0
91	Function of prohibiting compensation operation after turning handwheel by hand	It is effective in combination with the machine head provided with tension release function. 0 : Tension release function is ineffective. 1 : Tension release function is effective.	2	0 to 1	F-PMAT 1
92	Function of reducing speed of reverse feed stitching at the start of sewing	Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced.	2	0 to 1	F-DSBT 0
93	Function added to needle up/down compensating switch	Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced. (Upper stop → upper stop)	2	0 to 1	F-MADF 0
94	Continuous stitching + one-shot stitching non-stop function	In IP-110 program functions, a function that does not stop the sewing machine by combining continuous stitching with one-shot stitching when the step is changed. 0 : Normal (The sewing machine stops when a step is completed.) 1 : The sewing machine does not stop when a step is completed and proceeds to next step.	2	0 to 1	F-SBTC 0
96	Max. number of rotation setting	Max. number of rotation of the sewing machine head can be set. * Setting differs according to the resistor pack to be connected.	2	50 to Max	S-MAX 4000
101	Sewing counter input function	This function selects the input destination of the sewing counter. 0 : Every time thread trimming is performed, the counter automatically counts up. 1 : The counter counts up by inputting of the external sewing counter SW	2	0 to 1	F-MAC 0

5. PANEL FOR LH-4168/4188

5-1. Basic screen

WELCOME screen is displayed immediately after turning ON the power.

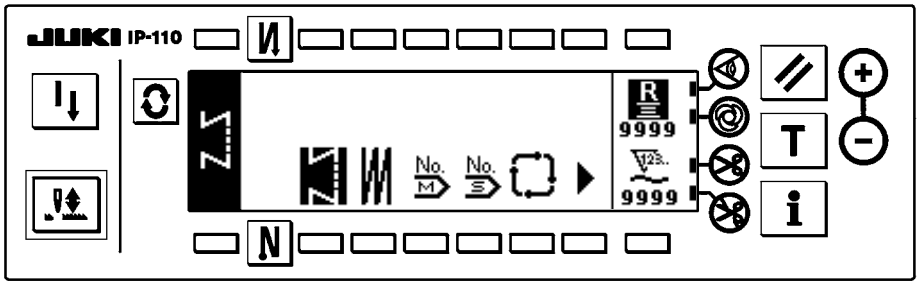


The screen immediately after WELCOME screen becomes the screen that performs the sewing pattern setting that was selected when turning OFF the power previously.

Every time switch is pressed, the screen changes.

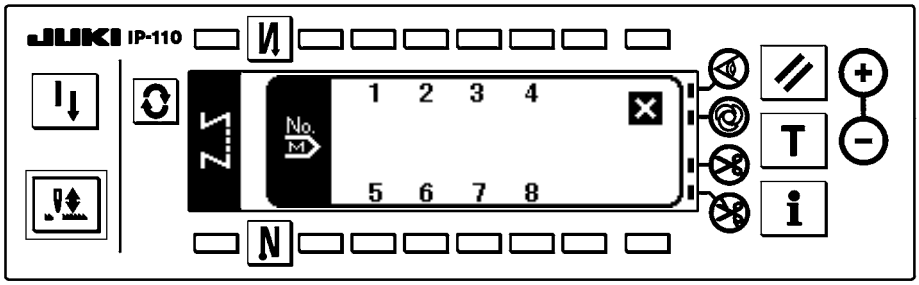
■ Pattern list screen

Selection of the respective shapes is performed.



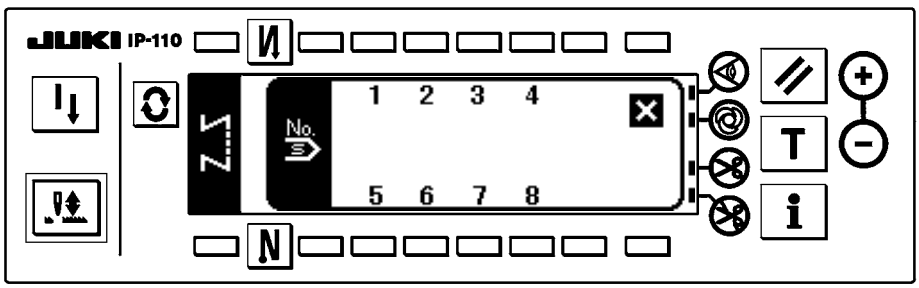
■ Corner pattern selection pop-up

Corner pattern No. is selected.



■ Step pattern selection pop-up

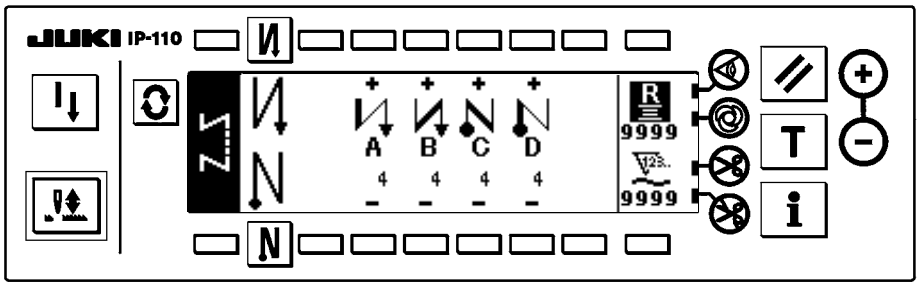
Step pattern No. is selected.



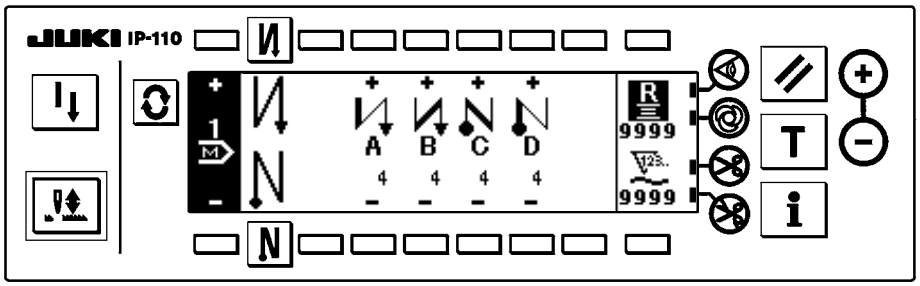
■ **Number of stitches of back tuck stitching setting screen**

Setting of number of stitches of reverse stitching is performed.

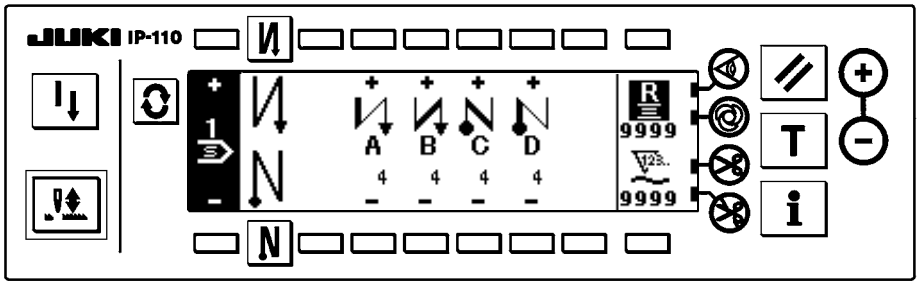
<When reverse stitching pattern is selected>



<When corner pattern is selected>

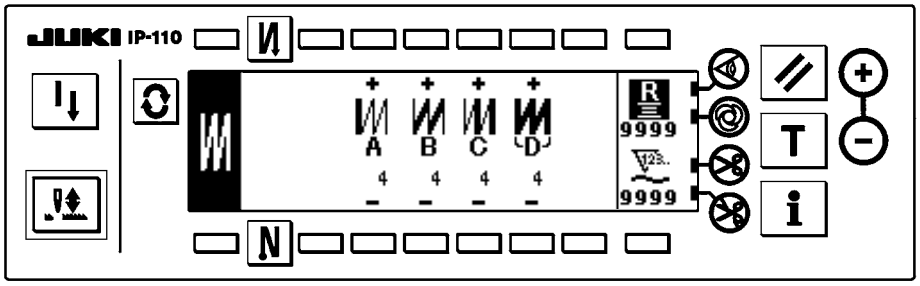


<When step pattern is selected>



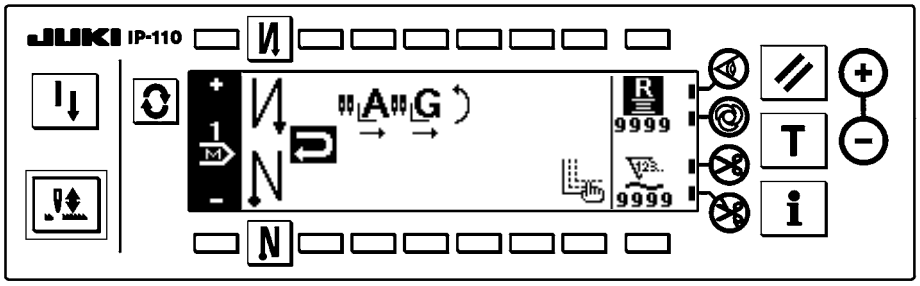
■ **Number of stitches of overlapped stitching setting screen**

Setting of number of stitches of overlapped stitching is performed.



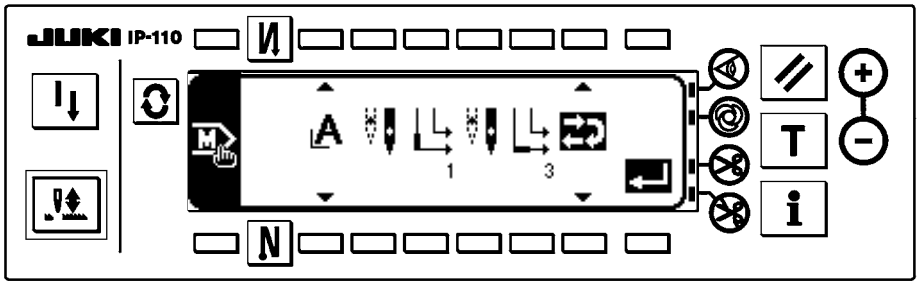
■ **Corner pattern setting screen**

Setting of the corner pattern is displayed.



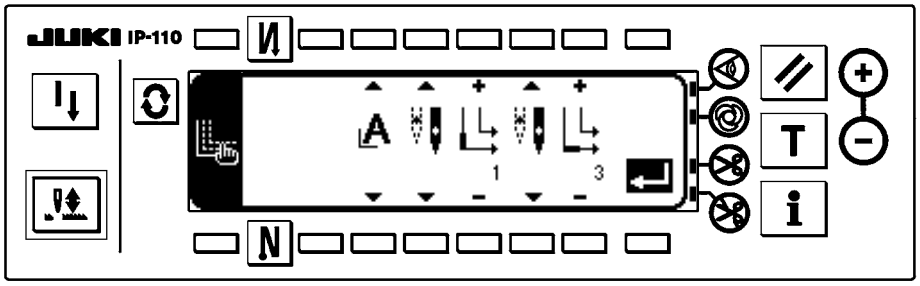
■ **Step edit screen**

Contents of the step are set.



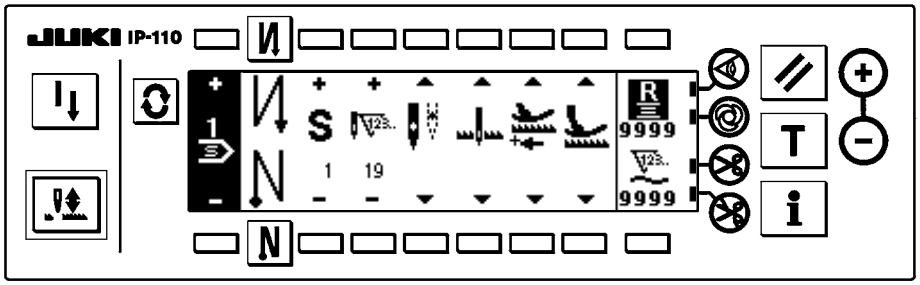
■ **Corner edit screen**

Contents of the corner are set.



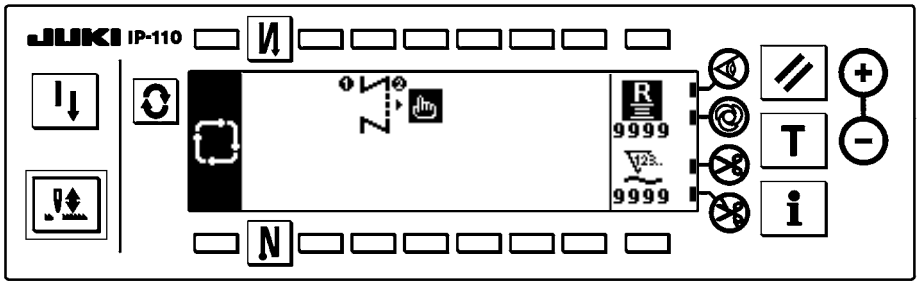
■ **Step pattern setting screen**

Setting of the respective conditions of the step pattern is performed.



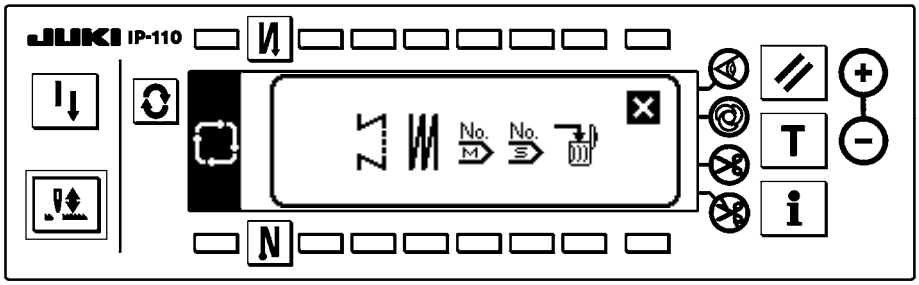
■ **Cycle sewing setting screen**

Setting of the step of cycle sewing is performed.



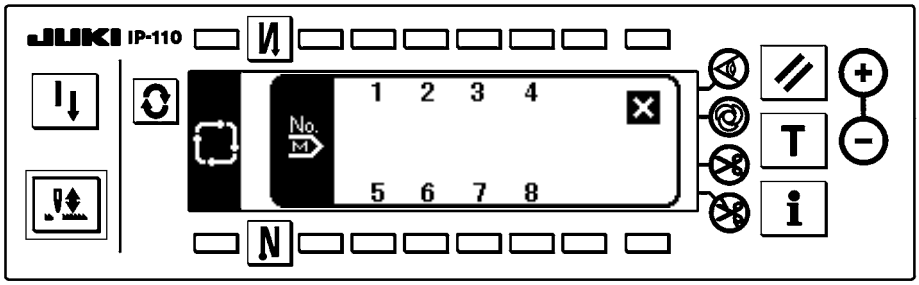
■ **Cycle sewing step setting pop-up**

Setting of the step of cycle sewing is performed.



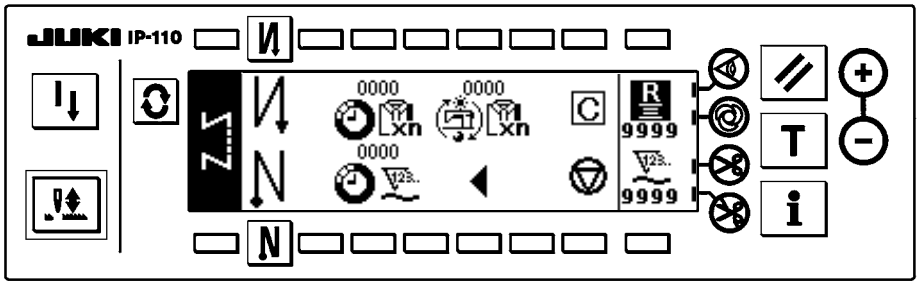
■ **Cycle sewing step No. selection pop-up**

Setting of the corner pattern and the step cycle sewing is performed.



■ **Output display screen**

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

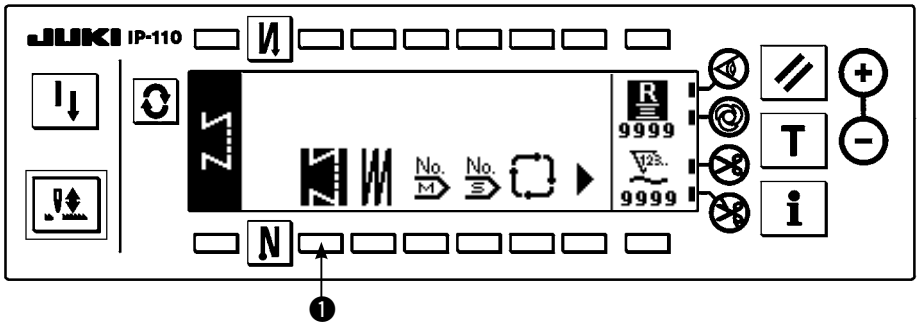


5-2. How to operate the operation panel for sewing stitching patterns

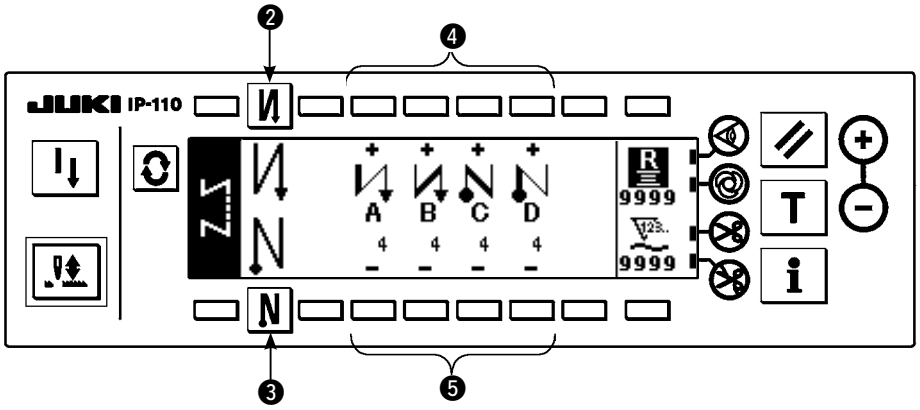
(1) Reverse stitching pattern

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.

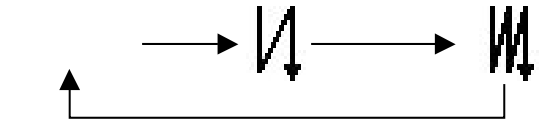


1) Press switch ❶ to select the reverse stitching pattern, and the screen is automatically changed over to the number of stitches of reverse stitching setting screen to display the number of stitches which has already been set.



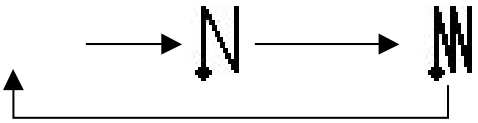
2) When changing the number of stitches, change it with switches ❹ and ❺ for setting the number of stitches A through D.
(The range of the number of stitches that can be changed : 0 to 99 stitches)

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



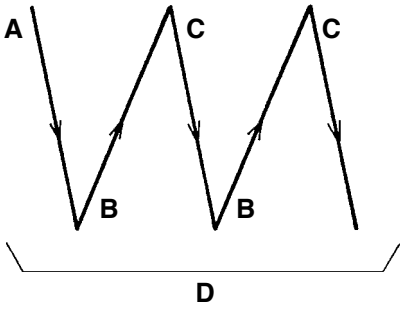
No setting — Reverse stitching at the start of sewing — Double reverse stitching at the start of sewing

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

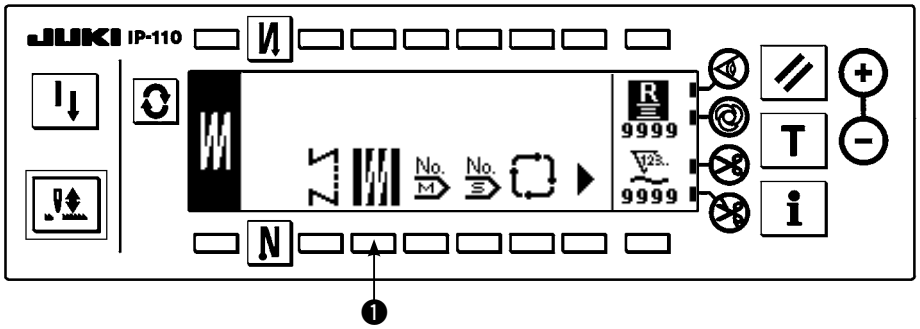


No setting — Reverse stitching at the end of sewing — Double reverse stitching at the end of sewing

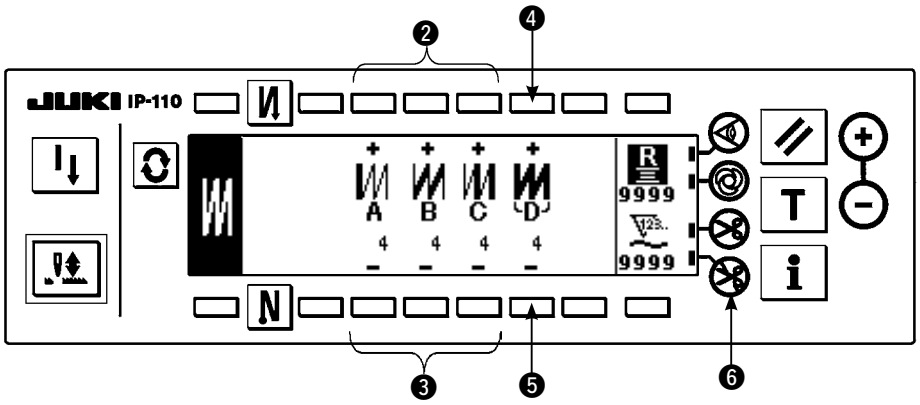
(2) Overlapped stitching pattern



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.

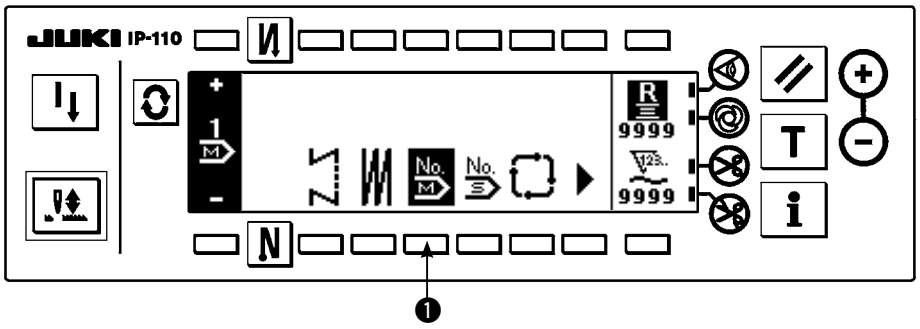


2) When changing the number of stitches, change it with switches ❷ and ❸ for setting the number of stitches for processes A through C. To change the number of times of the whole processes, change it with switches ❹ and ❺ for setting the number of processes D.
(The range of the number of stitches A, B 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.

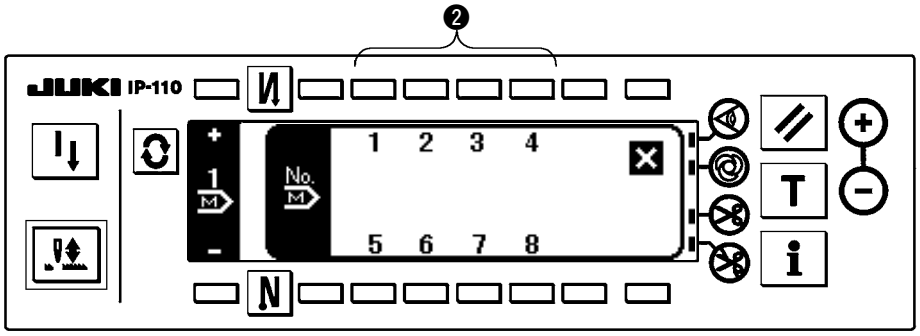
(3) Corner pattern

The corner stitching process can be programmed as many as 8 processes (as many as 16 processes when repeating is effective) in advance. The needle bar to be stopped and the number of stitches of sewing with single needle can be specified in advance for the respective processes.

Press switch to display the pattern list screen.

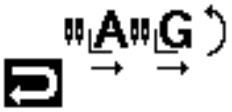
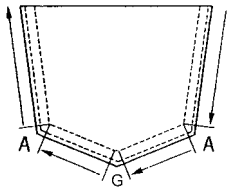
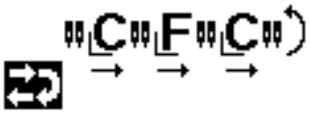
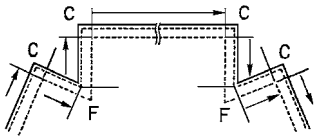


1) Press switch ❶ to display the corner pattern No. selection pop-up.

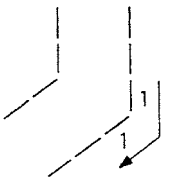
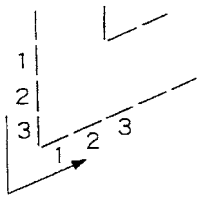
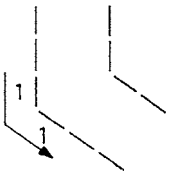
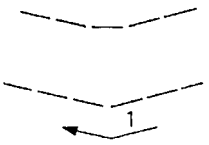
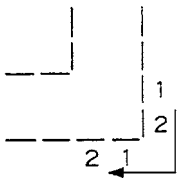
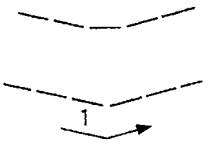
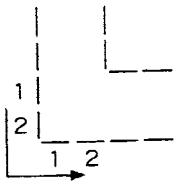
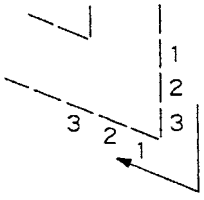


2) When switches ❷ are pressed and the corner pattern No. is selected, the screen is automatically changed over to the corner pattern setting screen to display the state of the pattern which has been already specified.

3) The table below shows the initial setting of each pattern.

Pattern No.	Indication	Corner type of the corner stitching processes	Example of sewing
1		→ A → G → A →	 Attaching pocket on jeans or the like
2		→ C → F → C → C → F → C →	 Sewing collars of jackets or the like
3 to 8		→ A →	——

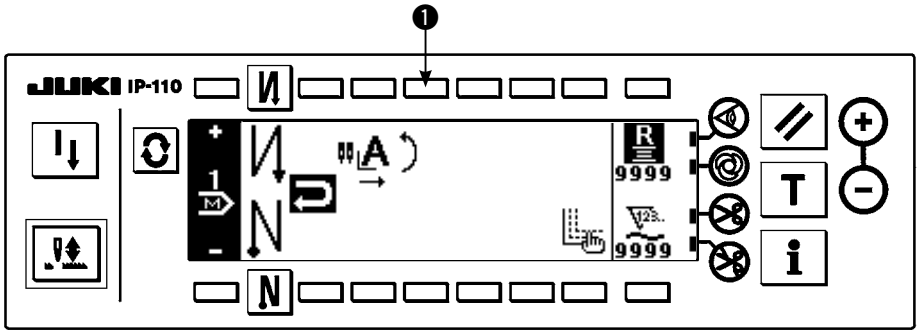
4) The table below shows the initial setting of each corner type.

Corner type	Indicating section	Needle bar to be stopped and the number of stitches	Example of sewing	Corner type	Indicating section	Needle bar to be stopped and the number of stitches	Example of sewing
A		Left-hand needle bar Inside corner 1 stitch Outside corner 1 stitch		F		Right-hand needle bar Inside corner 3 stitch Outside corner 3 stitch	
B		Right-hand needle bar Inside corner 1 stitch Outside corner 1 stitch		G		Left-hand needle bar Inside corner 1 stitch Outside corner 0 stitch	
C		Left-hand needle bar Inside corner 2 stitch Outside corner 2 stitch		H		Right-hand needle bar Inside corner 1 stitch Outside corner 0 stitch	
D		Right-hand needle bar Inside corner 2 stitch Outside corner 2 stitch		L		Left-hand needle bar Inside corner / Outside corner → Number of stitches is determined by operating the pedal.	—
E		Left-hand needle bar Inside corner 3 stitch Outside corner 3 stitch		R		Right-hand needle bar Inside corner / Outside corner → Number of stitches is determined by operating the pedal.	—

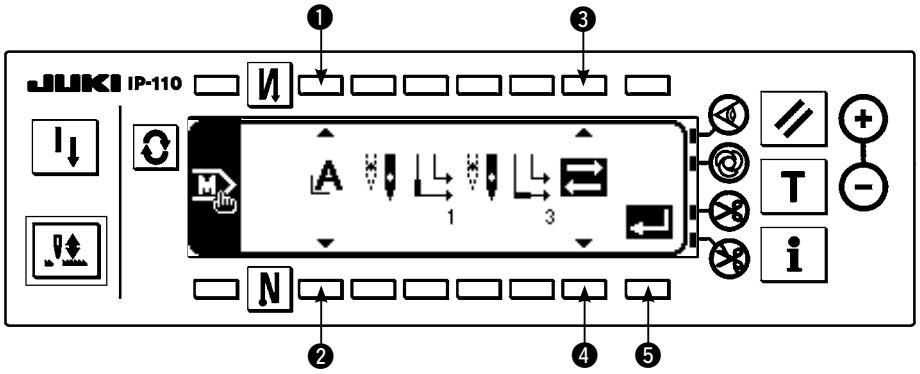
5) Modification of the pattern

[To add the step]

1. When adding the step, press the switch to which nothing is registered (example in the illustration is SW ❶).



2. Corner type which is used in the step and the kind of return are selected in the step edit pop-up.



❶ and ❷ : These switches select the corner type.

❸ and ❹ : These switches select the kind of return.

❺ : Change is determined and the screen returns to the step setting screen.

There are 4 kinds of returns in total.

: Return is performed after executing the selected corner step.

: Return is not performed.

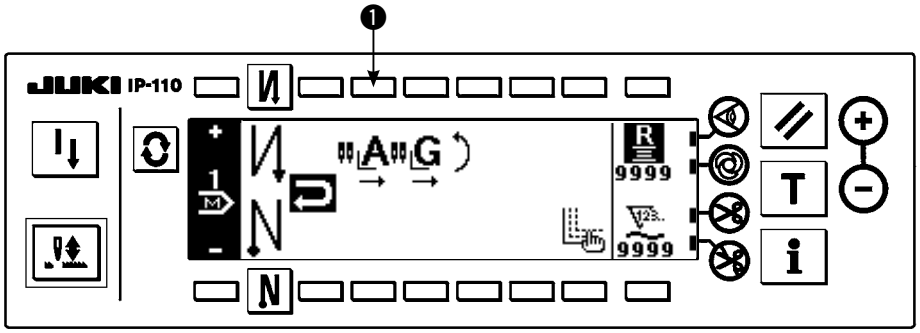
: It is the step on the way of return. It cannot be selected in the last step.

: 2-needle sewing is performed after executing the selected corner, and return is performed.

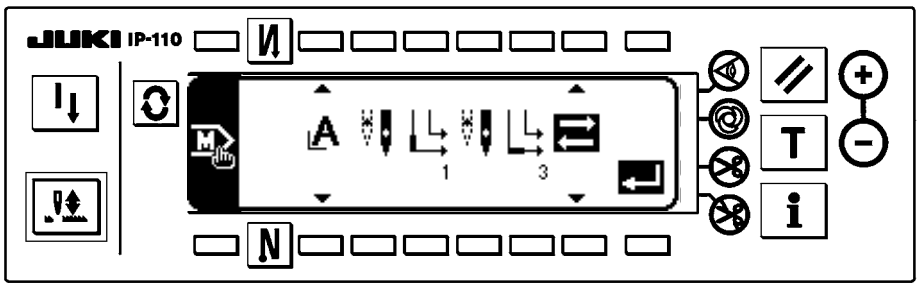
When or is selected in the kinds of returns, the step after it is deleted.

[To change the step]

1. In order to edit the step which has been already registered, press the switch of the step you desire to edit.
   (Example in the illustration is switch of ❶)

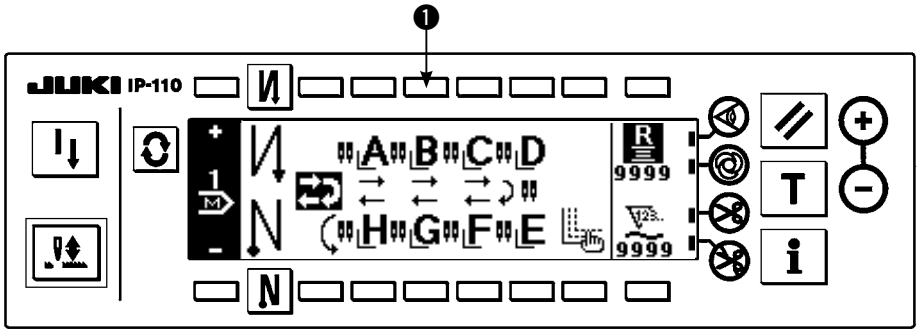


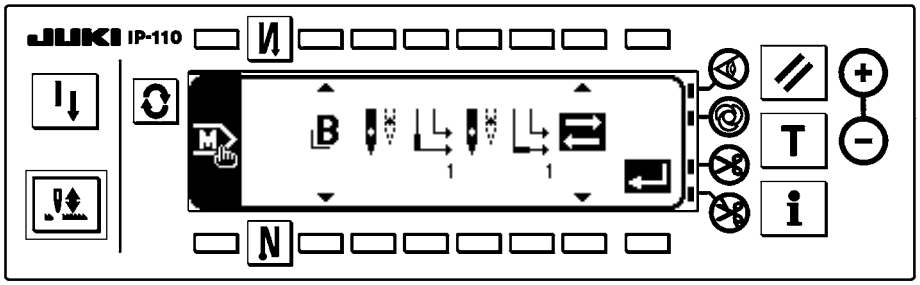
Setting procedure is the same as that of adding the step.



[To delete the step]

1. When deleting the step, press the switch ❶ of step which is one before the process you desire to delete.
   (As an example, select the step in which "B" exists to delete after "C".)

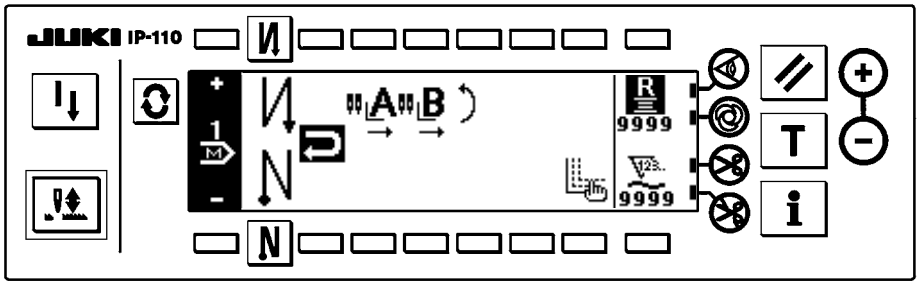




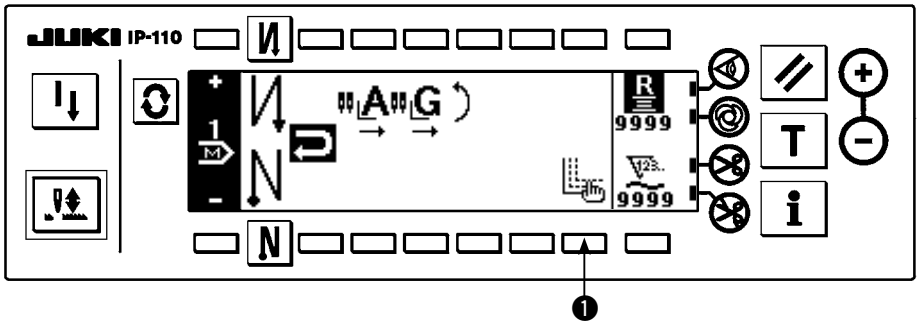
2. Set the kind of return to ⮌ or ⮌⮌ with switch ❷ in the step pop-up screen.

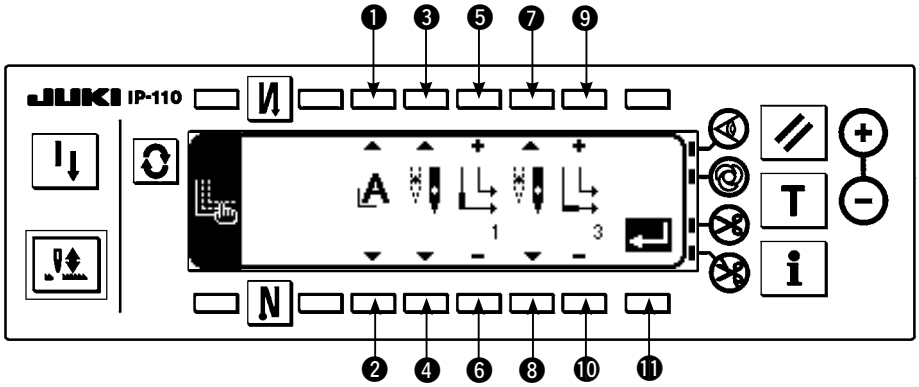
Even when ⮕ or ⮕⮕ is selected on the way of return, it is not reflected.

3. Step after the set step is deleted. (Screen is the case where ⮌ is set in the kinds of returns.)



6) Edit of the corner
Contents of the corners A to H are edited.
Press switch ❶ to display the corner edit pop-up.



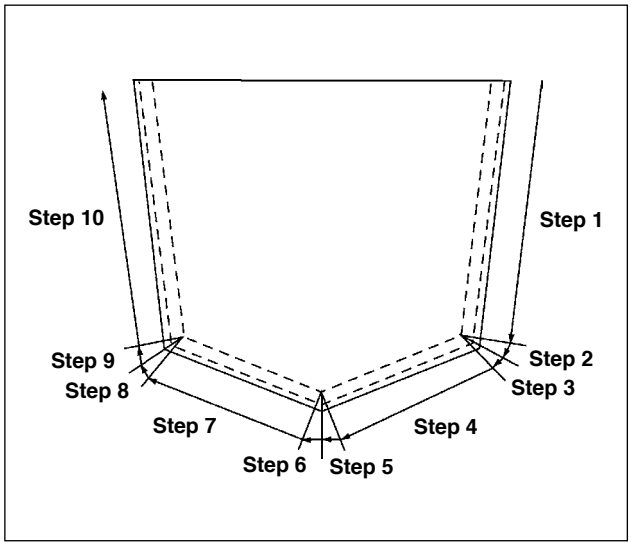


❶ and ❷ : These switches change the corner type of the object to be edited.
❸ and ❹ : These switches select the needle bar to be stopped for inside corner.
❺ and ❻ : These switches set the number of stitches for inside corner.
❼ and ❽ : These switches select the needle bar to be stopped for outside corner.
❾ and ❿ : These switches set the number of stitches for outside corner.
⓫ : This switch stores the data of all corners which have been edited, and the screen returns to the step setting screen.

Edit of corner L and corner R cannot be performed.

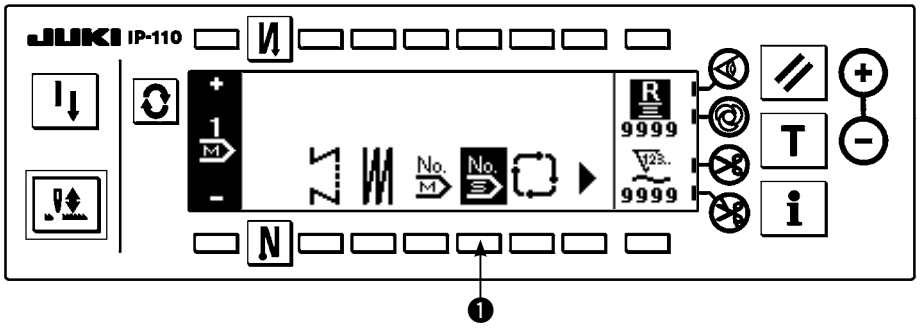
(4) Step pattern

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

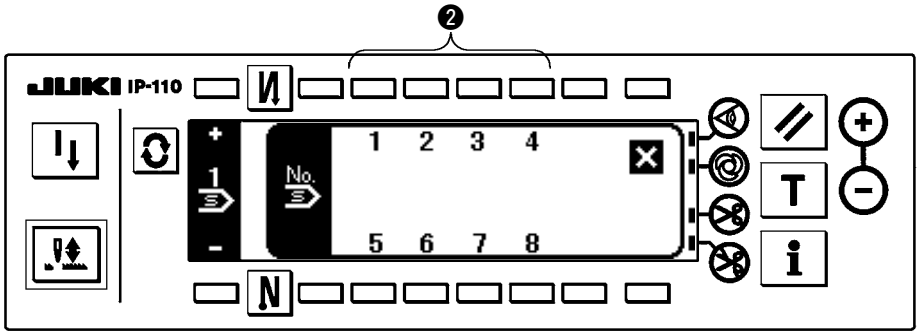


Programming procedure is described below taking the pattern on the left side as an example.

Press [↻] to display the pattern list screen.

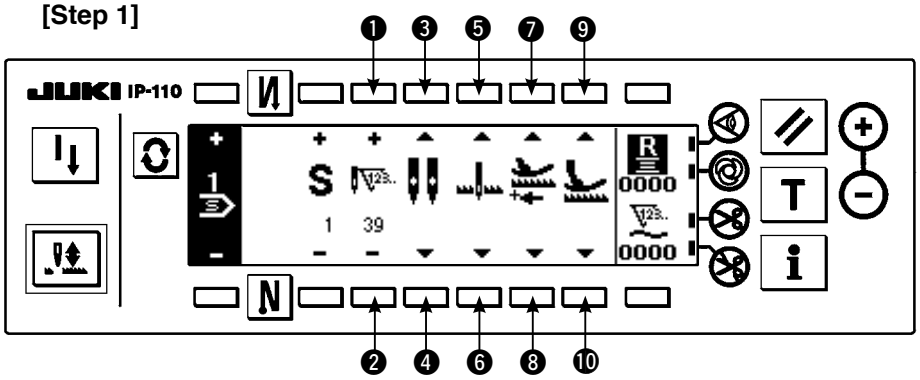


1) Press switch ❶ to display the step pattern No. selection pop-up.



2) When switches ❷ are pressed and step pattern No. is selected, the screen is automatically changed over to the step pattern setting screen to display the state of the pattern which has been already specified.

[Step 1]



3) Confirm that step 1 is displayed on the panel. Now, set the number of stitches to 39 using switches ❶ and ❷.
4) Change the needle bar to be stopped to the needle bar not to be stopped using switches ❸ and ❹.
5) Set the stop state of the sewing machine to the needle-down stop mode using switches ❺ and ❻.
6) Set the feeding direction to the normal direction using switches ❼ and ❽.

When the number of stitches is "0" or the stop state selects automatic thread trimming , it is not possible to go to the next step.

7) Set the state of the presser foot at the time of stop to the down stop using switches ❾ and ❿.
8) Input the steps after the operations above as shown in the table below.

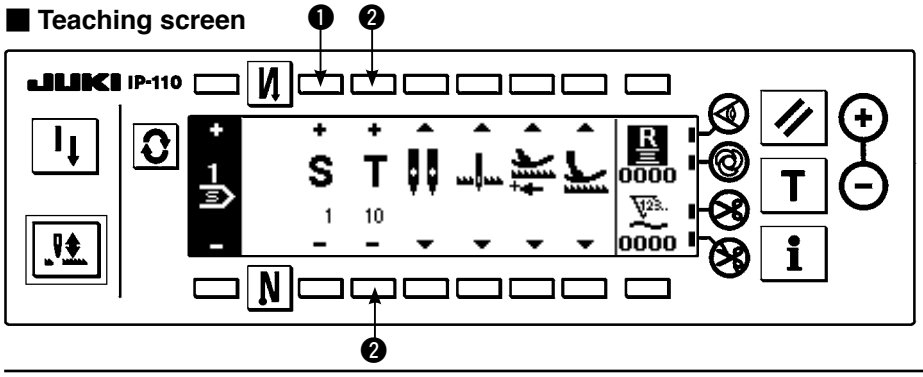
	Number of stitches	Needle bar to be stopped	Feeding direction	Stop state	State of presser foot at the time of stop
Step 2	2	Left	Normal direction	Needle-down stop	Up stop
Step 3	2	Left	Normal direction	Needle-down stop	Down stop
Step 4	20	Without stop	Normal direction	Needle-down stop	Down stop
Step 5	2	Left	Normal direction	Needle-down stop	Up stop
Step 6	2	Left	Normal direction	Needle-down stop	Down stop
Step 7	20	Without stop	Normal direction	Needle-down stop	Down stop
Step 8	2	Left	Normal direction	Needle-down stop	Up stop
Step 9	2	Left	Normal direction	Needle-down stop	Down stop
Step 10	39	Without stop	Normal direction	Automatic thread trimming	Up stop

■ Teaching

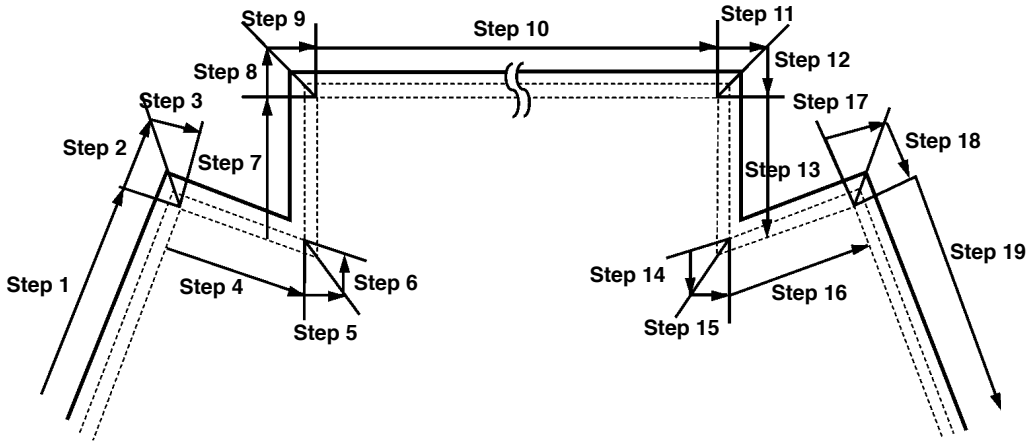
The number of stitches of the step during inputting can be inputted by the number of stitches actually sewn with teaching.

1) When T switch is pressed in the step sewing edit screen, the mode becomes the teaching mode.
2) Depress the front part of the pedal and perform sewing up to the last stitch of the step.
   * At this time, it is not possible to input the number of stitches with turning the machine by hand or needle up/down compensating stitching switch.
3) Set the pedal to the neutral position and stop the sewing machine, and number of stitches that has been sewn is displayed at ❷.
   ❶ : Step can be corrected with "+" and "-".
   ❷ : Number of stitches that has been sewn can be corrected with "+" and "-" by manual operation.
4) Proceed the step of ❶ to the next or perform thread trimming, and the input of the number of switches of the step is completed.
   * Motion of the separately driven needle changeover is not performed when changing the step during teaching.

■ Teaching screen



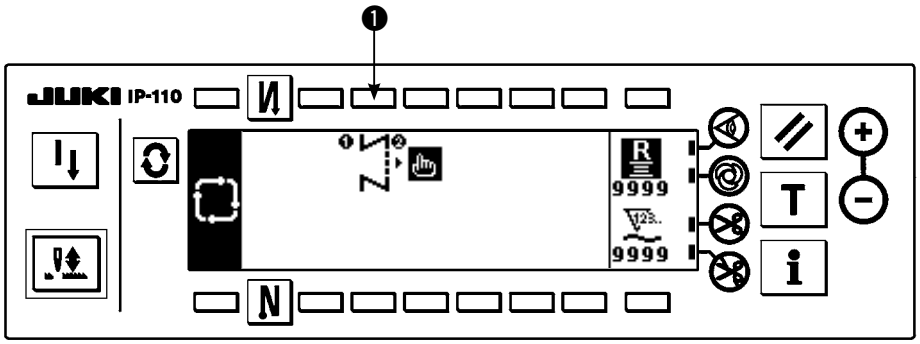
(Reference) In case of sewing of lapels of jacket or the like, refer to the table below.



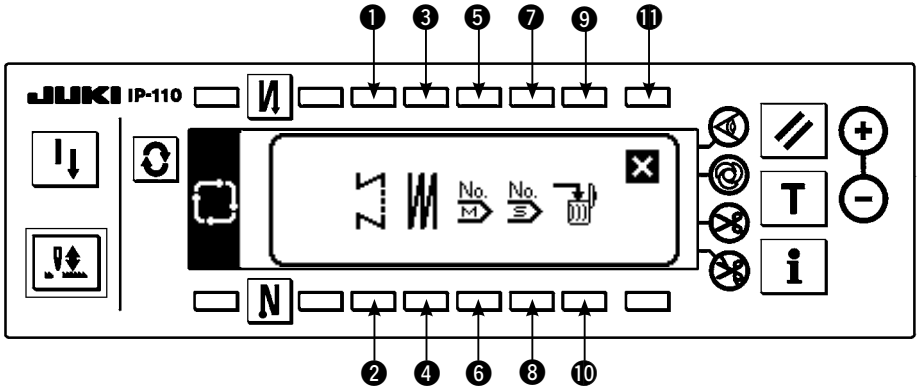
	Number of stitches	Needle bar to be stopped	Feeding direction	Stop state	State of presser foot at the time of stop
Step 1	35	Without stop	Normal direction	Needle-down stop	Down stop
Step 2	2	Left	Normal direction	Needle-down stop	Up stop
Step 3	2	Left	Normal direction	Needle-down stop	Down stop
Step 4	15	Without stop	Normal direction	Needle-down stop	Down stop
Step 5	5	Right	Normal direction	Needle-down stop	Up stop
Step 6	5	Right	Normal direction	Needle-down stop	Down stop
Step 7	20	Without stop	Normal direction	Needle-down stop	Down stop
Step 8	2	Left	Normal direction	Needle-down stop	Up stop
Step 9	2	Left	Normal direction	Needle-down stop	Down stop
Step 10	126	Without stop	Normal direction	Needle-down stop	Down stop
Step 11	2	Left	Normal direction	Needle-down stop	Up stop
Step 12	2	Left	Normal direction	Needle-down stop	Down stop
Step 13	20	Without stop	Normal direction	Needle-down stop	Down stop
Step 14	5	Right	Normal direction	Needle-down stop	Up stop
Step 15	5	Right	Normal direction	Needle-down stop	Down stop
Step 16	15	Without stop	Normal direction	Needle-down stop	Down stop
Step 17	2	Left	Normal direction	Needle-down stop	Up stop
Step 18	2	Left	Normal direction	Needle-down stop	Down stop
Step 19	35	Without stop	Normal direction	Automatic thread trimming	Up stop

(5) Cycle sewing pattern

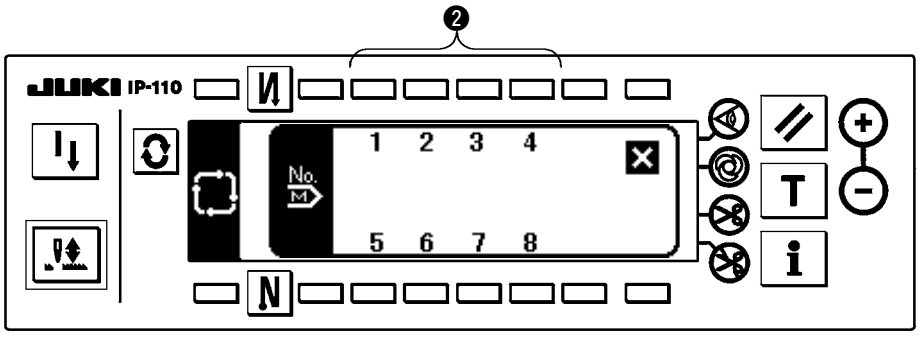
Reverse stitching pattern, overlapped stitching pattern, corner pattern and step pattern can be set and sewn as desired. (As many as eight patterns can be set.)



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

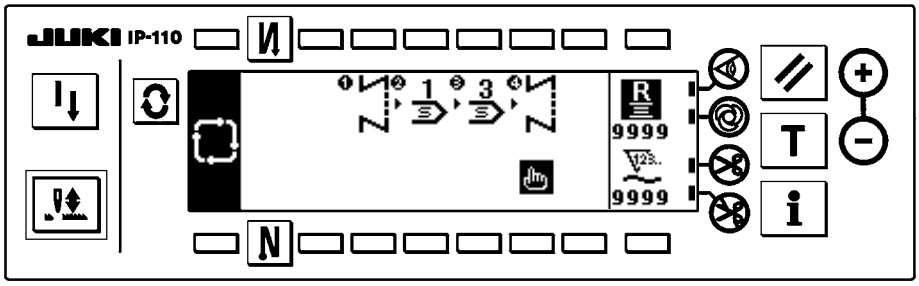


Switches ❶ and ❷ : These switches set the reverse stitching pattern.
Switches ❸ and ❹ : These switches set the overlapped stitching pattern.
Switches ❺ and ❻ : These switches display the corner pattern No. setting pop-up.
Switches ❼ and ❽ : These switches display the step pattern No. setting pop-up.
Switches ❾ and ❿: These switches delete the editing step.
Switch ⓫ : The screen returns to the cycle sewing setting screen.

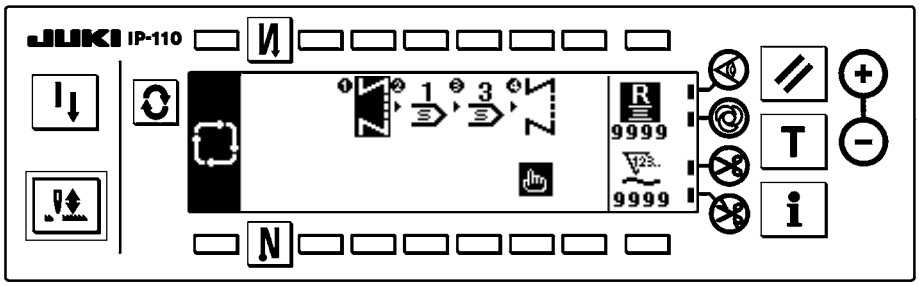


When registering the corner pattern or the step pattern to the cycle sewing step, select pattern No. using switches of ❷ in the pattern No. setting screen.

[Example of setting]



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

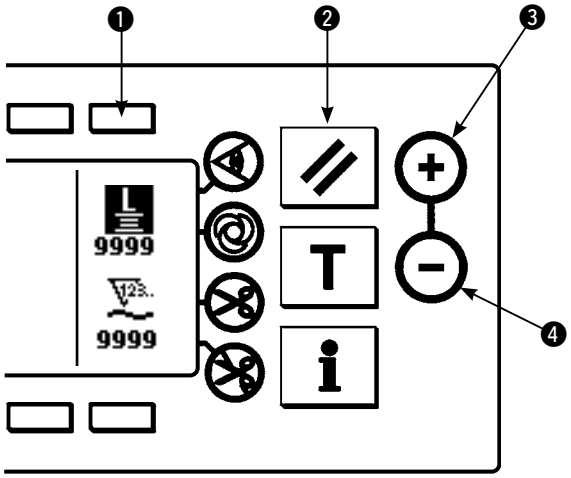


If the thread trimmer actuates before completion of a pattern, the machine will proceed to the subsequent program.

5-3. 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.

When IP-100 is mounted on LH-4168 and LH-4188, the bobbin thread counters are separately installed for left-hand bobbin L and right-hand bobbin R. However, the display on the panel is either one of them, and the display can be changed with switch ❶.

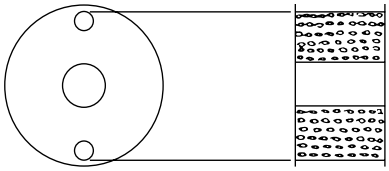


1) Press switch ❶ to select the bobbin thread counter. Then press counter reset switch ❷ to return the value indicated on the bobbin thread counter to the initial value (it has been factory-set to “0” at the time of delivery).

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.

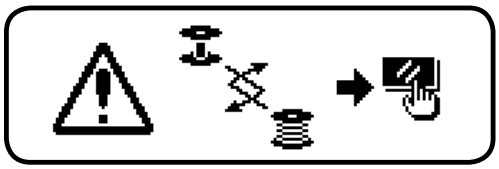
Thread tension rate 100 %

Sewing machine	Thread used	Length of thread wound round the bobbin	Value on bobbin thread counter
LH-4168	Polyester spun thread #60	Approx. 51 m	2000 (stitch length : 2.5 mm)
	Polyester filament #80	Approx. 130 m	6500 (stitch length : 2 mm)
	Core spun thread #20	Approx. 14 m	400 (stitch length : 3.5 mm)
LH-4188	Core spun thread #20	Approx. 27 m	770 (stitch length : 3.5 mm)

* 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

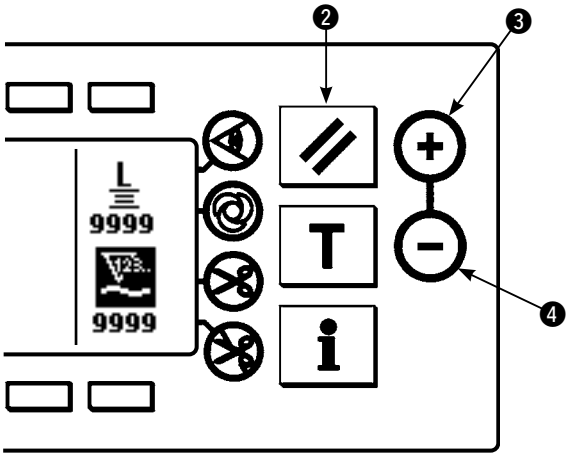


5) After the bobbin thread has been properly replaced, press counter reset switch ❷ to return the value on the bobbin thread counter to the initial value. Now, re-start the sewing machine.
6) If the remaining amount of bobbin thread is excessive or the bobbin thread runs out before the bobbin thread 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.

5-4. No. of pcs. counter

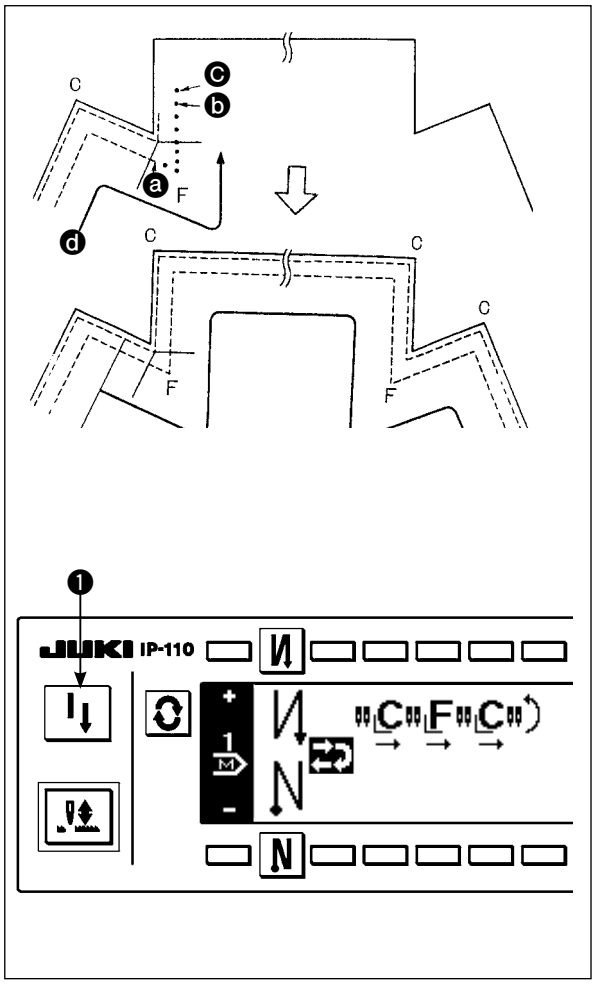
The No. of pcs. counter counts up the number of finished products every time the machine performs thread trimming. (0 → 1 → 2 ····· → 9999)



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

5-5. Re-sewing switch

The re-sewing switch is used when the bobbin thread runs out during the corner pattern sewing step or the step pattern sewing step. Explanation of the re-sewing switch is given using the corner pattern as an

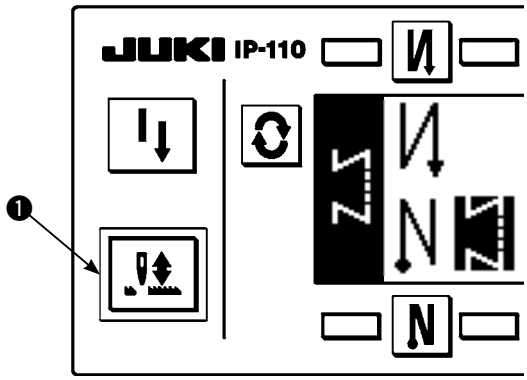


1) When the bobbin thread has run out during the sewing of a corner ⓐ, take the position at which you have noticed run out of the bobbin thread as ⓑ. Bring the pedal to its neutral position to allow the sewing machine to stop.
2) Depress the back part of the pedal to perform thread trimming.
3) Press re-sewing switch ❶. ⓒ
4) Replace the bobbin with a new bobbin and sew over the finished seam. ⓓ
5) Depress the front part of the pedal and continue to depress the pedal until the stop position of the current step.
6) When re-sewing switch ❶ is turned ON again at the stop position, the step is changed over to the subsequent step, and the corner pattern can be continued.

* When thread breakage or the like occurs during the free stitching operation ⓓ using re-sewing switch ❶, set the pedal to neutral and perform thread trimming operation by depressing the back part of the pedal. Perform threading and slightly return the material edge. Then press re-sewing switch ❶ and the free stitching can be continued. After this, the operation is the same as steps 5) and 6).

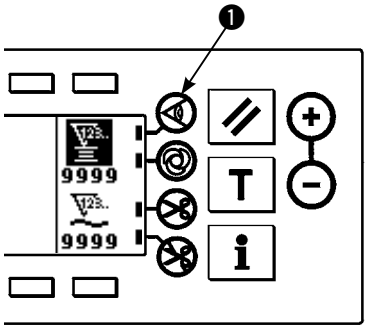
When returning to the first step without using re-sewing switch ❶, the step display returns to "1" and the sewing can be performed from the first by depressing the back part of the pedal to perform thread trimming.

5-6. 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.

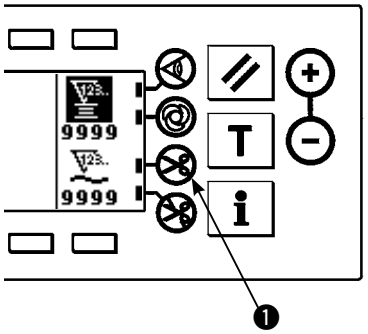
5-7. ON/OFF switch of the material edge sensor



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

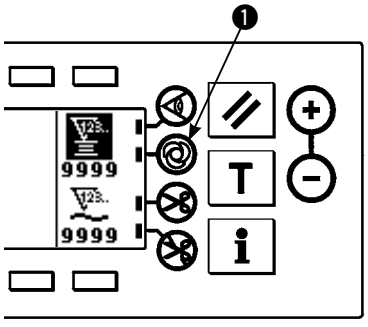
If the material edge sensor is used in combination with the operation panel, carefully read the Instruction Manual for the material edge sensor beforehand.

5-8. Automatic thread trimming switch



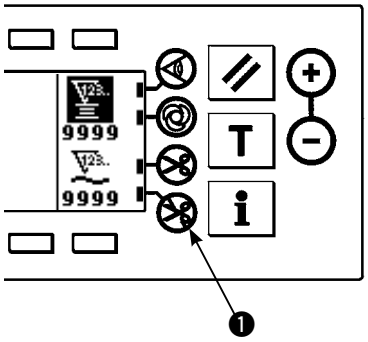
- When automatic thread trimming switch ❶ is pressed, ON/OFF of the automatic thread trimming is changed over.
- This switch is used to automatically actuate the thread trimmer in a process where the sewing machine automatically stops or when the material edge sensor is used.
  (if the automatic reverse stitching (for end) is specified, the thread trimmer will actuate after the sewing machine completes the automatic reverse stitching (for end).)

5-9. One-shot automatic stitching switch



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

5-10. Thread trimming prohibition switch



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

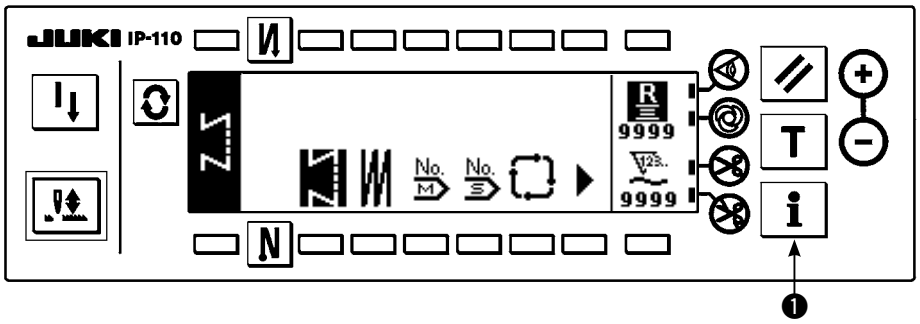
5-11. Key lock

- In order to prevent the specified data on the number of stitches or the processes (A, B, C and D, or step information) from changing by mistake, the setting switch can be locked. (Even with the setting key locked, the pattern to be sewn and the value on the bobbin thread counter can be changed.)
- For the setting procedure, refer to 5-13 Setting for functions and set function No. 17, Key lock function (key lock is effective with setting of “1”).

5-12. Information

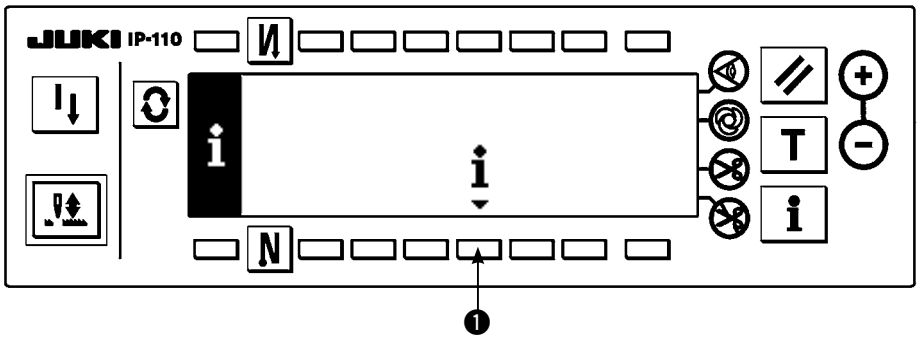
Setting and checking of various data can be performed with the information.
For the information, there are the operator level and the maintenance personnel level.

Operator level



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

■ Information screen (operator level)

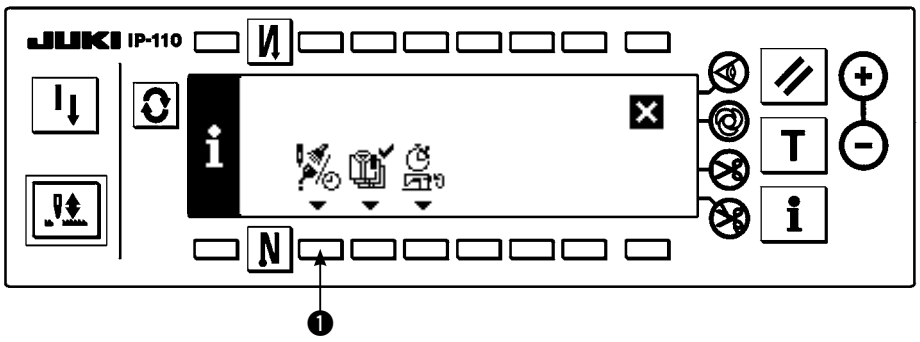


❶ : Sewing management information

● Sewing management information

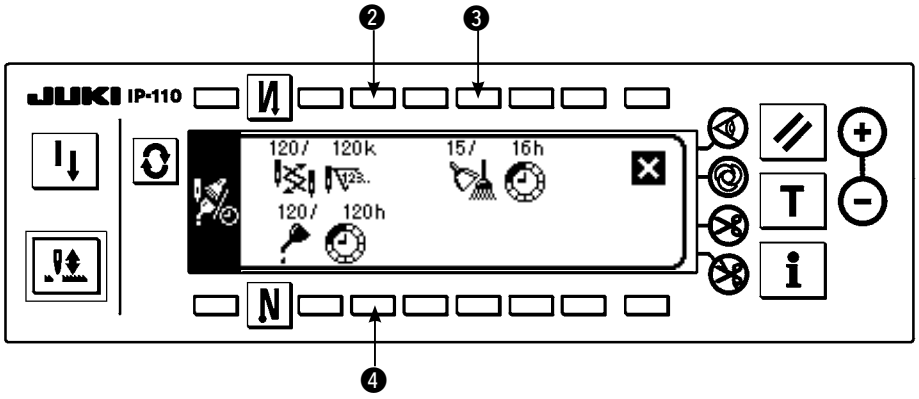
For the sewing management information, there are the maintenance management function, production control function and working measurement function.

(1) 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

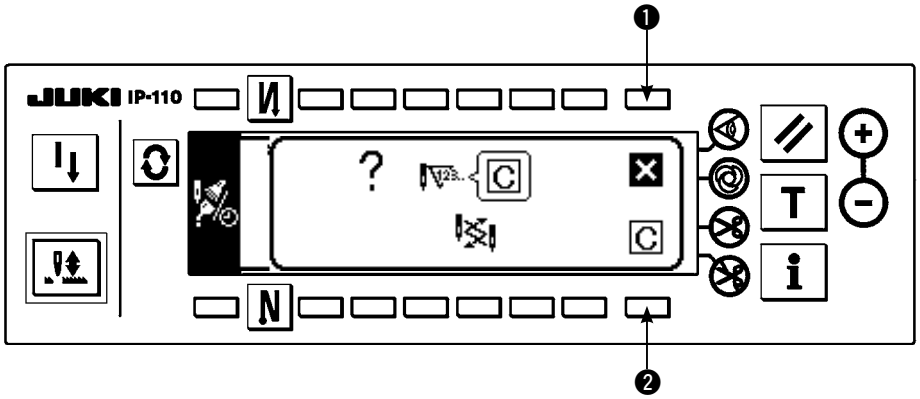
100 / 1600 k

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**

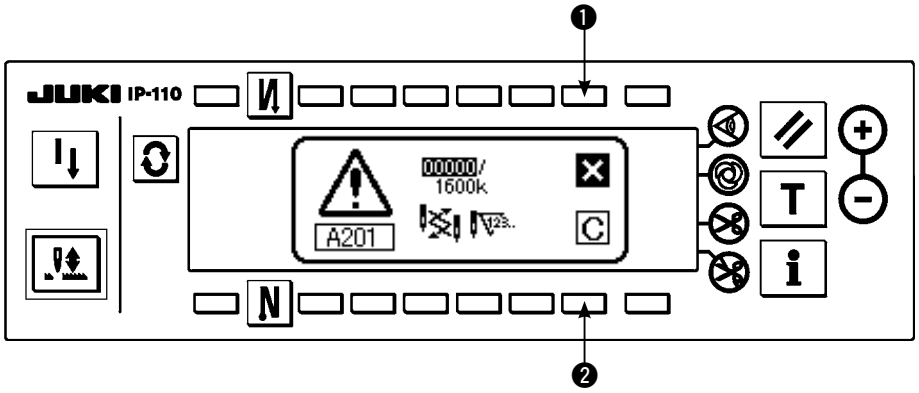


❶ : The screen returns to the maintenance function screen without performing clearing.

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

■ **Warning screen**

Warning screen is displayed when the warning time is reached.

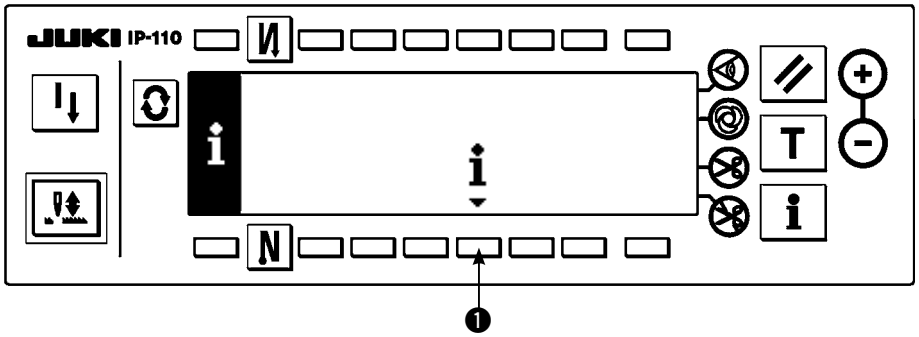


❶ : When ❶ is pressed, the screen can be cleared. However, the counter itself cannot be cleared. In case of the replacement of needle, the warning screen is displayed at intervals of 10 minutes until clearing is performed. In case of other warnings, the warning screen is displayed at the time of turning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

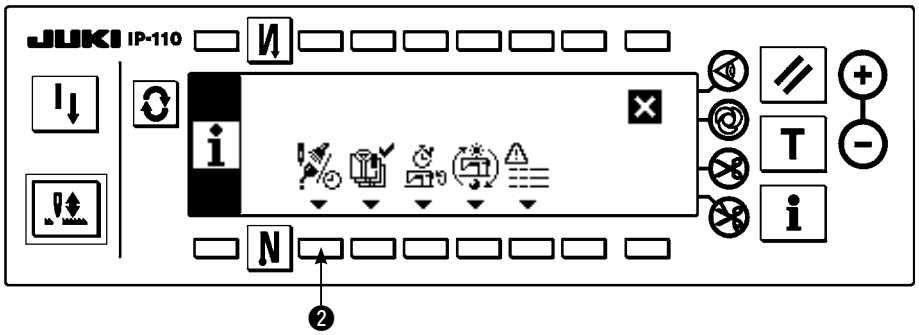
[Setting of the warning setting time]

■ **Infomation screen**



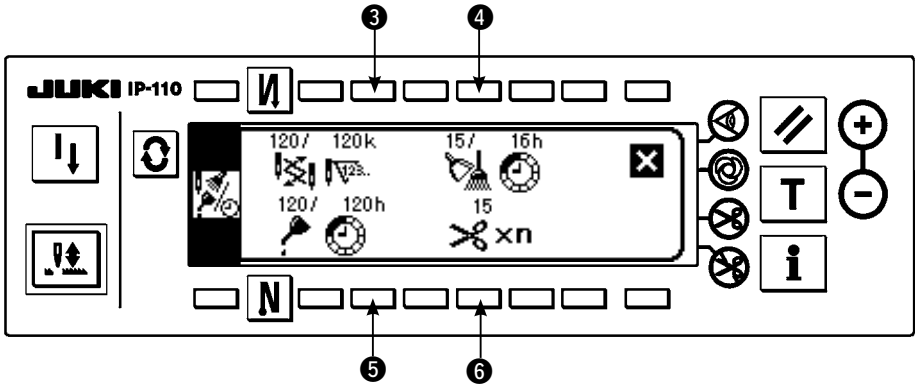
1) Press switch ❶ for approximately three seconds in the information screen.

■ **Sewing management information selection screen**



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

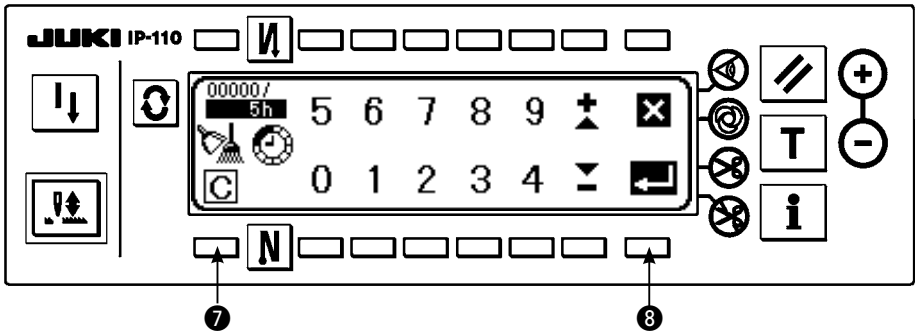
■ **Maintenance function screen**



❸, ❹, ❺ : Inspection time (number of times of thread trimming) input screen is displayed.

❻ : ×n Number of times of thread trimming per sewing ... Unit : Number of times

■ **Inspection time (number of times of thread trimming) input screen**

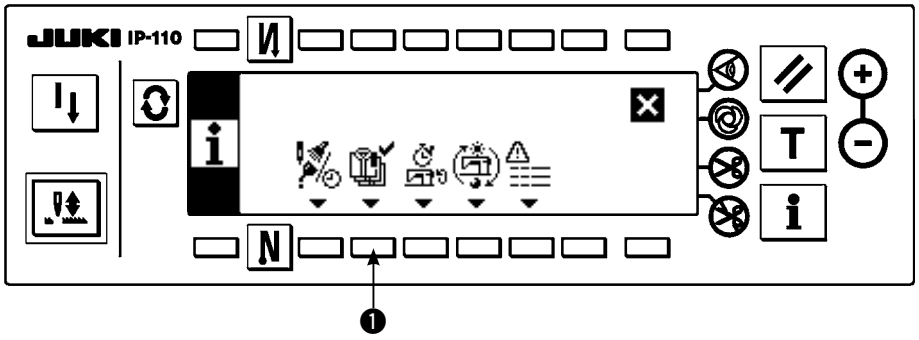


Clear checking screen is displayed in ❼. (It is not displayed when the number of times of thread trimming is specified.)

After inputting the setting time, determine the time with ❽.

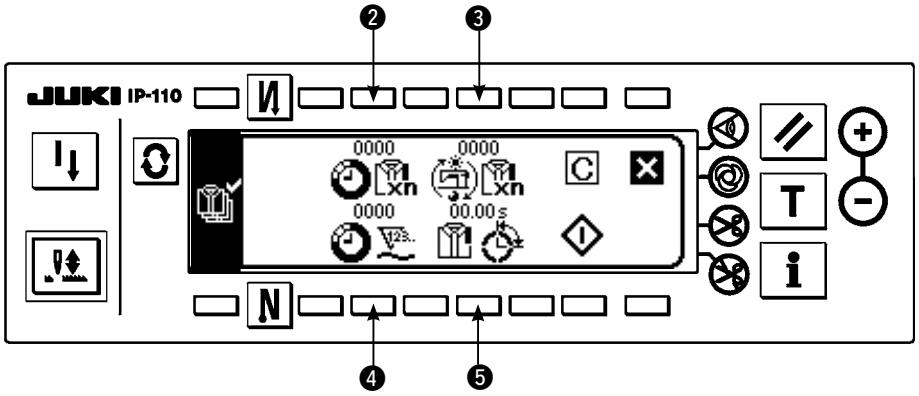
In case of stopping the warning function, set the set value to "0".
It is possible to individually set replacement of needle, cleaning, and replacement of oil respectively.
In case of stopping all, set "0" to each.

(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

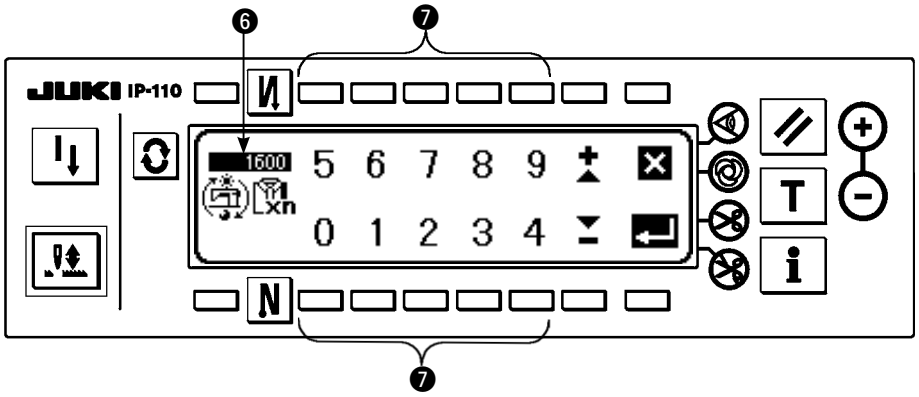
Time required to sew one piece (pitch time) ..... Unit : Second

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.

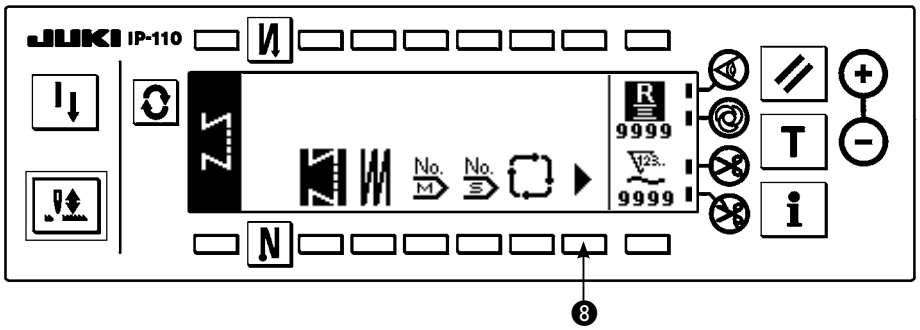
■ **Production control input screen**



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

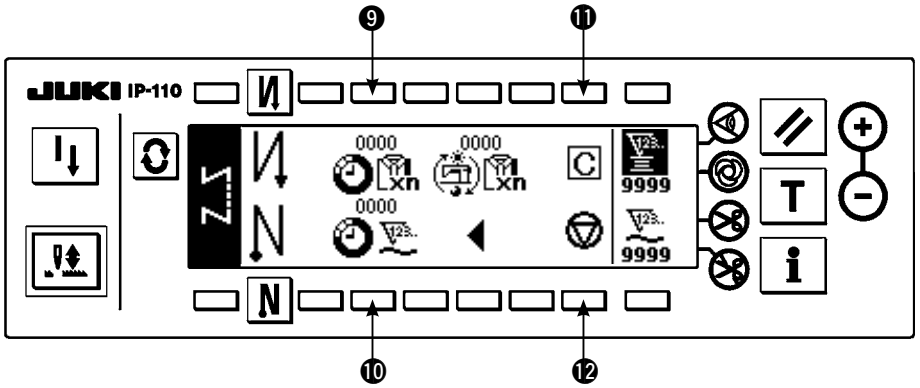
Minimum setting possible value of pitch time is 0.50 seconds.

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



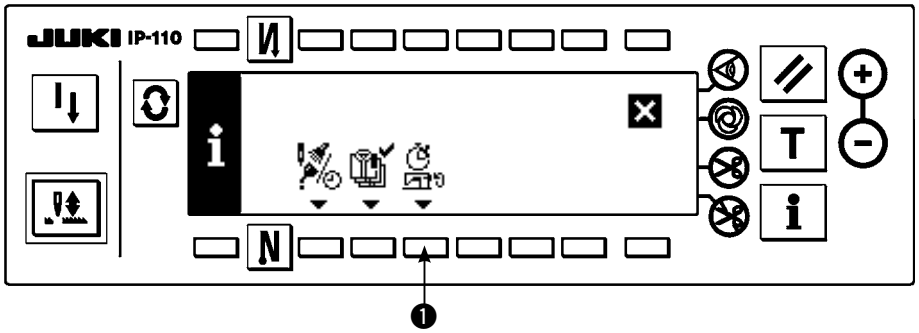
4) Press ❽ in the shape list screen.

■ **Output display screen**



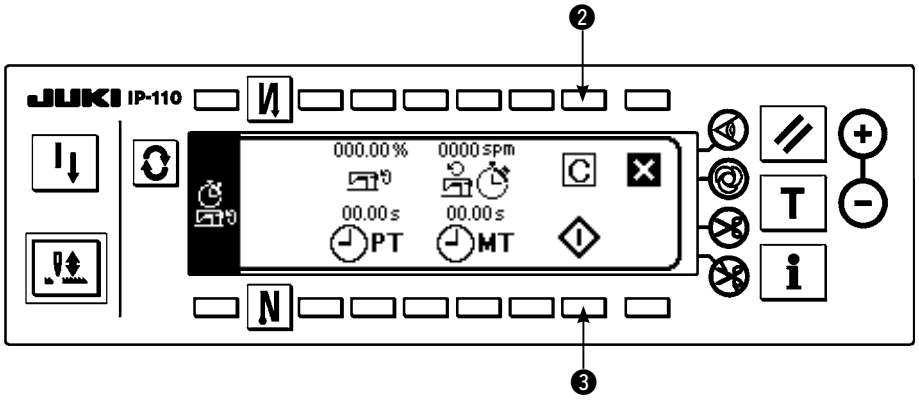
5) The output display screen is displayed. Sewing is possible with this screen.
Set value can be changed with switches ❾ and ❿ (Editing of the final target value and pitch time cannot be performed in this screen.)
The current target value and the current output can be cleared (make them “0”) with switch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

(3) Working measurement function



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

■ **Working measurement function screen**



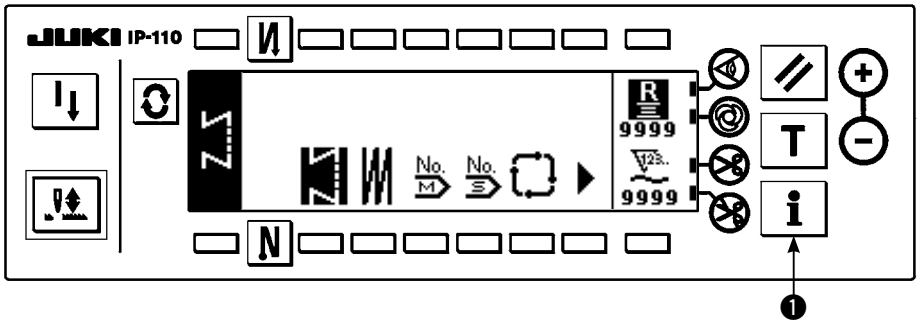
[Explanation of the respective items]

- 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.

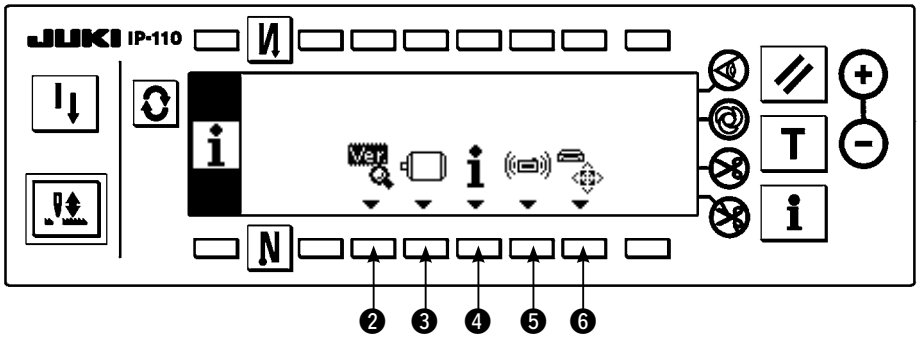
Caution **When "Clear" is not executed, the measurement from the last time can be continued.**

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)



❷ Ver display ..... For the details, refer to the Engineer's Manual.
❸ Function setting ..... Refer to the item "Function setting procedure".
❹ Sewing management information
❺ Communication mode ..... For the details, refer to the Engineer's Manual.
❻ Media format ..... For the details, refer to Engineer's Manual.

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

5-13. 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.

There are two kinds of function settings, Level 1 and Level 2.

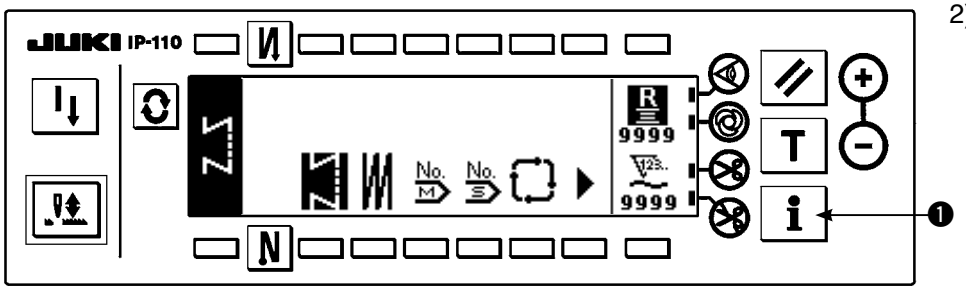
Level 1 : Change of setting can be performed without turning OFF the power switch.

Level 2 : It is necessary to turn OFF the power switch after change of setting.

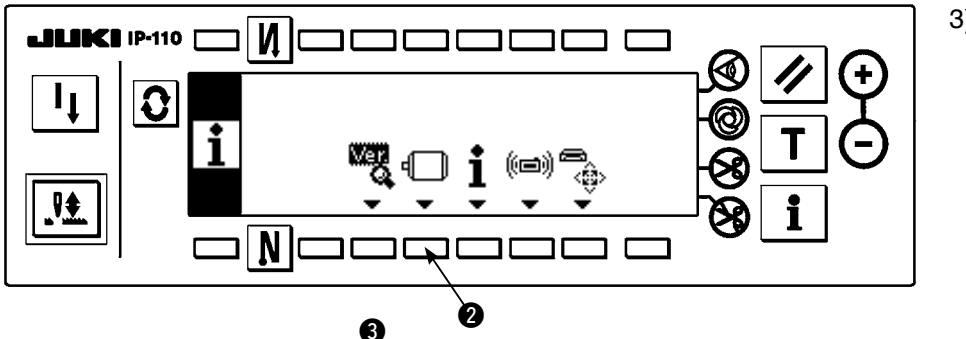
For the details of setting No., see P.70.

[Setting procedure of Level 2]

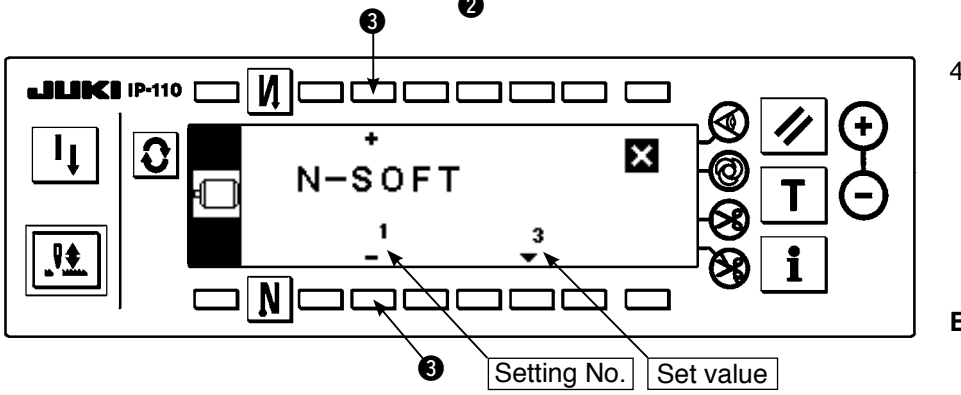
1) Turn ON the power. When the needle bar is not in its UP position, turn the handwheel to bring the needle bar to its UP position.



2) Press switch ❶ for approximately three seconds.



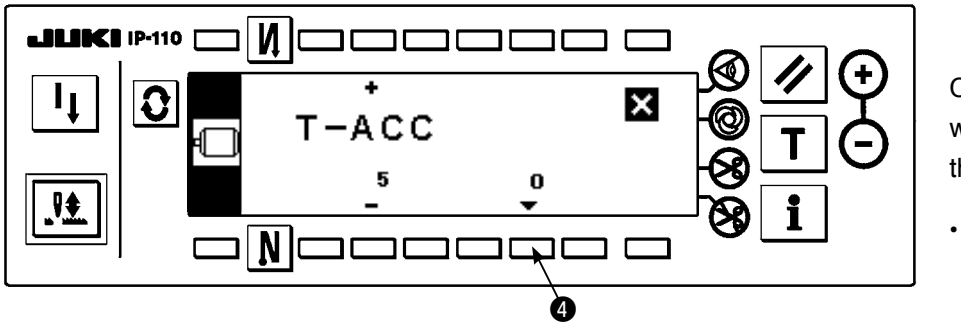
3) Press switch ❷ for approximately three seconds.



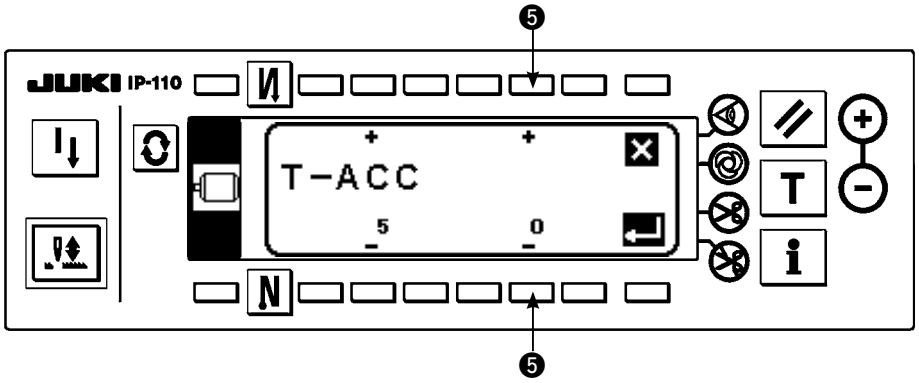
4) This screen is the function setting screen.
Change the setting No. with "+/–" Key of switch ❸.
For the details of setting No., see P.70.

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

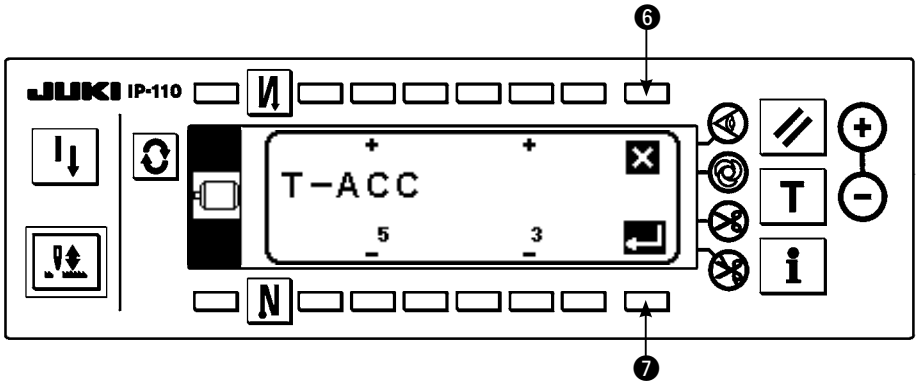
Change the setting No. to "5" with "+" Key of switch ❸ in the figure above.



- Press switch ❹.

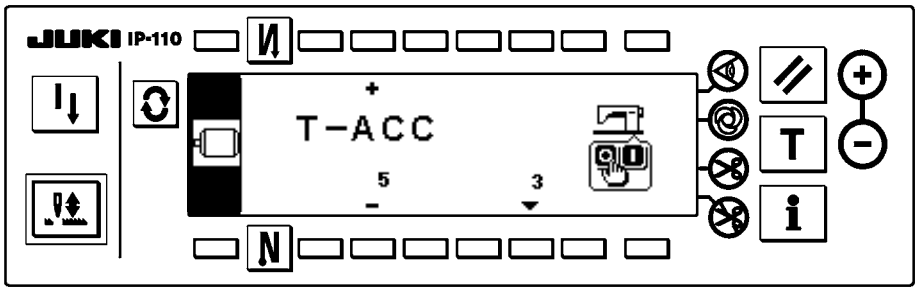


- Change set value with "+/–" Key of switch ❺.



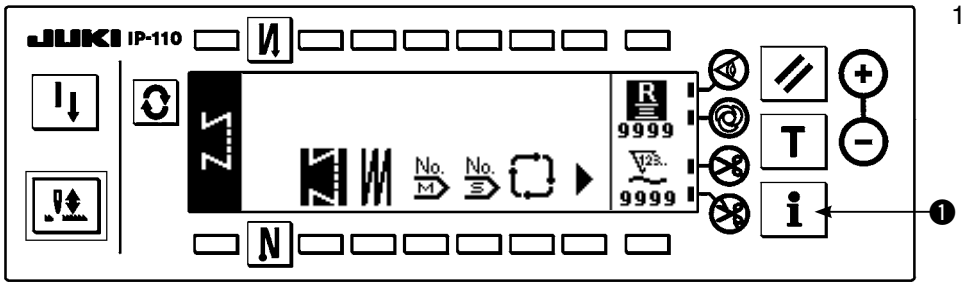
The set value has been changed from "0" to "3".

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

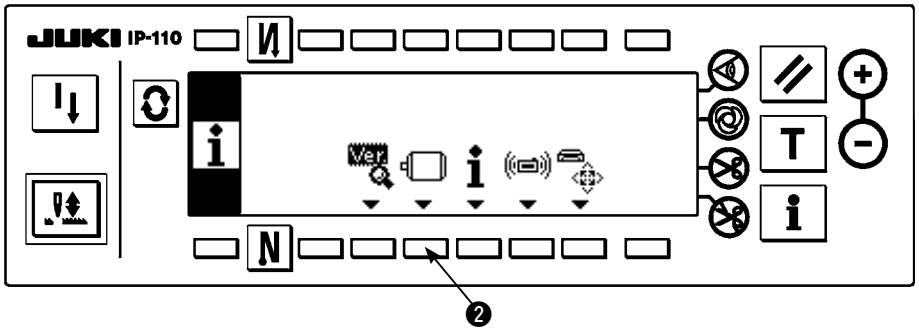


- Turn OFF the power switch and turn ON the power switch after approximately one second.
- Change of the set value is determined by turning OFF the power switch.

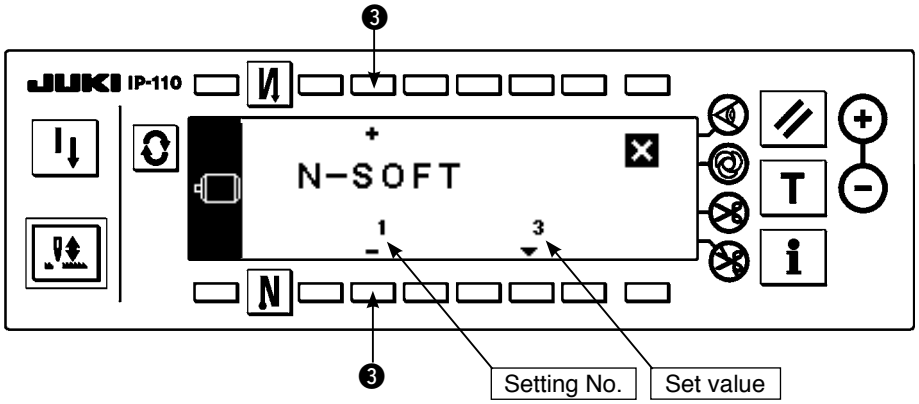
[Setting procedure of Level 1]



1) Press switch ❶ for approximately three seconds.

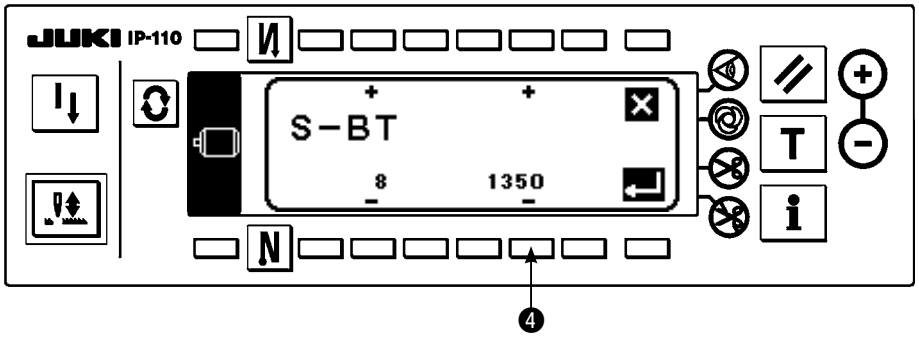


2) Press switch ❷.



3) This screen is the function setting screen.
Change the setting No. with "+/–" Key of switch ❸.

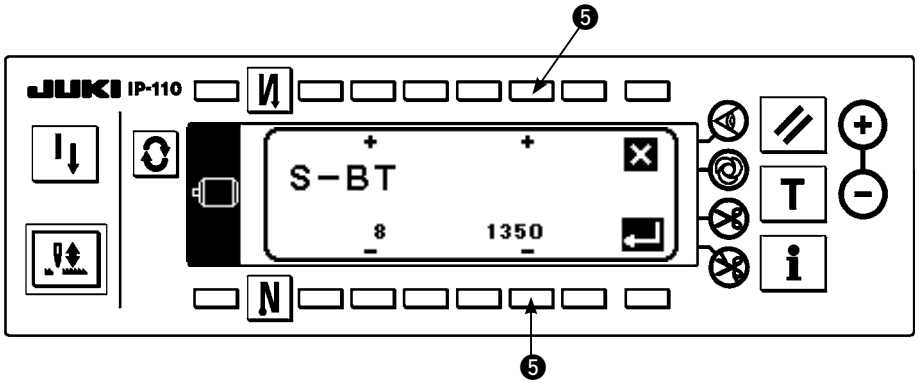
For the details of setting No., see P.70.



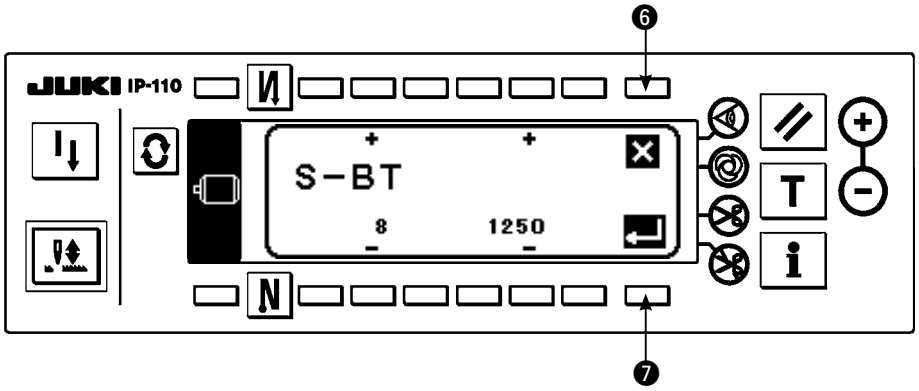
Example) Changing the number of rotation of reverse feed stitching (Setting No. 8)

Change the setting No. to "8" with "+" Key of switch ❸ in the figure above.

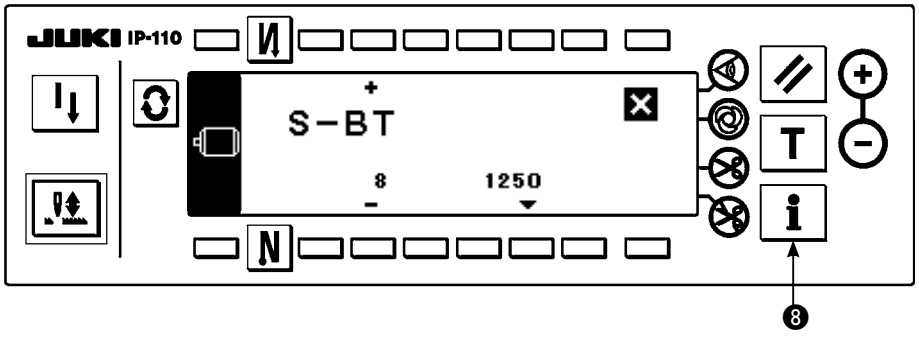
- Press switch ❹.



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



- Set value has been changed from 1350 to 1250.
- When this changed value is acceptable, press switch ❼.
  Press switch ❻ when you desire to return the value to the former one.



- Press switch ❽ in case of sewing.

(2) Function setting list

For the details of the items, refer to the Instruction Manual for SC-910.

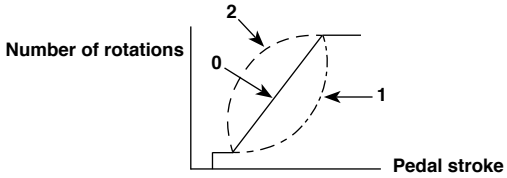
*** LH-4168S is given as an example here. However, initial value changes according to the machine head to be connected.**

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
1	Soft start function	The number of stitches to be sewn at a low speed when the soft-start function is used at the start of sewing. 0 : Soft-start function is not operative.	1	0 to 9	N-SOFT 1
5	Flicker reducing function	Flicker reducing function (If the hand lamp flickers). 0 : Flicker reducing function is not operative. 1 : Less effective → 8 : Highly effective	2	0 to 8	T-ACC 0
6	Bobbin thread counting function	Bobbin thread counting function 0 : Bobbin thread counting function is not operative. 1 : Bobbin thread counting function is operative.	1	0 to 1	SCBOB 1
7	Bobbin thread count unit	Unit of bobbin thread counting down 0 : Count/10 stitches 1 : Count/15 stitches 2 : Count/20 stitches	1	0 to 2	RATIO 0
8	Number of rotation of reverse feed stitching	Sewing speed of reverse feed stitching	1	150 to 3000	S-BT 1500
10	Setting of needle bar stop position when the sewing machine stops.	Position of needle bar is specified when the sewing machine stops. 0 : Predetermined lowest position 1 : Predetermined highest position	2	0 to 1	NPS 0
11	Click sound of key switch mounted on PSC	Click sound of key switch mounted on PSC is specified. 0 : Click is not operative. 1 : Click is operative.	2	0 to 1	SOUND 1
12	Optinal switch function selection	Switching of function of optional switch. 0 : No function 1 : Needle up/down compensating stitching 2 : Back compensating stitching 3 : Function of canceling once reverse feed stitching at the end of sewing 4 : Thread trimming function 5 : Presser foot lifting function 6 : One stitch compensating stitching 7 : Function of simultaneously canceling reverse feed stitching at the start and end of sewing 8 : Function of neutral presser foot lifting changeover	2	0 to 8	SW2 0
13	Function of prohibiting start of the sewing machine by bobbin thread counter	Function of prohibiting start of the sewing machine by bobbin thread counting 0 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine is not operative. 1 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine after thread trimming is operative. 2 : When counting is out (-1 or less), the sewing machine stops once. Function of prohibiting start of the sewing machine after thread trimming is operative.	2	0 to 2	ASCNT 0
14	Sewing counter	Counting function of sewing (number of completion of process) 0 : Sewing counter function is not operative. 1 : Sewing counter function is operative.	2	0 to 1	NTO 1
15	Number of times of detection of run-out of bobbin thread remaining amount	Number of times of detection of run-out of bobbin thread remaining amount 0 :Function of bobbin thread remaining amount is not operative. 1 to 19 :Number of times during which the signal is not made even if run-out of bobbin thread remaining amount is detected.	2	0 to 19	BTDS 1
17	Key lock function	Key lock function 0 : Without key lock 1 : With key lock	2	0 to 1	KEYLOCK 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
18	Bird's nest prevention function	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Bird's nest prevention function is not operative. 1 : Bird's nest prevention function is operative. 2 : Bird's nest prevention function is operative (with thread release).	2	0 to 2	BNC 0
19	Needle thread release function at the sewing start	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Needle thread release function is not operative. 1 : Needle thread release function is operative.	2	0 to 1	THOLD 0
20	Number of condensation stitches	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). 0 : Condensation function is not operative. 1 to 9 : Number of condensation stitches	1	0 to 9	N-CS 0
21	Function of neutral presser lifting	Function of lifting presser foot when the pedal is in neutral position. 0 : Function of neutral automatic presser lifting is not operative. 1 : Selection of function of neutral presser lifting.	1	0 to 1	N-NPL 0
22	Function of changeover of compensating switch on the operation panel function	Function of needle up/down compensating switch on the operation panel can be changed. 0 : Needle up/down compensation 1 : One stitch compensation	2	0 to 1	F-CMSP 0
24	Function of fine adjustment of number of rotation	Number of rotation can be compensated. Be sure to normally use this function with "0".	2	–15 to 15	F-FAS 0
25	Thread trimming motion condition	This function sets the thread trimming motion after DOWN position has been off by turning handwheel by hand. 0 : Thread trimming after turning handwheel by hand is permitted. 1 : Thread trimming after turning handwheel by hand is prohibited.	2	0 to 1	F-TRMC 1
26	Function of setting the holding force after stop	This function prevents the sewing machine from the reverse rotation after it has stopped. 0 : Initial value 1 : Less effective → 9 : Highly effective	2	0 to 9	F-RTPC 0
27	Function of setting the reaction force at the time of retry	This function sets the magnitude of return force of the needle bar before the retry motion. 1 : Less return force → 100 : High return force	2	1 to 100	F-RTRC 50
28	Number of stitches of needle thread release	This function is effective in combination with the machine head with bird's nest prevention function (optional unit A is necessary). This function sets the number of stitches grasping thread at the sewing start. 0 to 30 stitches	1	0 to 30	F-UTHR 1
29	Back solenoid initial motion suction time	This function sets the suction time of initial motion of back-tack solenoid. 50 ms to 300 ms	2	50 to 300	T-RSS 250
30	Function of reverse feed stitching on the way	Function of reverse feed stitching on the way 0 : Function of reverse stitching on the way is not operative. 1 : Function of reverse feed stitching on the way is operative.	2	0 to 1	OBT 0
31	Number of stitches of reverse feed stitching on the way	Number of stitches of reverse feed stitching on the way.	2	0 to 19	N-OBT 4
32	Effective condition of reverse feed stitching on the way when the sewing machine is stopping.	Effective condition of reverse feed stitching on the way 0 : Function is not operative when the sewing machine stops. 1 : Function is operative when the sewing machine stops.	2	0 to 1	OBTS 0
33	Thread trimming function by reverse feed stitching on the way	Thread trimming function by reverse feed stitching on the way 0 : Automatic thread trimming function after completion of reverse feed stitching on the way is not operative. 1 : Automatic thread trimming after completion of reverse feed stitching on the way is performed.	2	0 to 1	OBTT 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
35	Number of rotation at a low speed	Lowest speed by pedal	1	20 to 400	S-POS 200
36	Number of rotation of thread trimming	Thread trimming speed **(Caution) Do not change the set value. When it is changed, the sewing machine may be damaged.**	2	20 to 250	S-TRM 155
37	Number of rotation of soft-start	Sewing speed at the start of sewing (soft-start)	1	150 to 5500	S-SOFT 600
38	One-shot speed	One-shot speed (The max. value depends on the number of rotation of the sewing machine head.)	1	200 to Max	S-ASS 1500
39	Pedal stroke at the start of rotation	Position where the sewing machine starts rotating from pedal neutral position (Pedal stroke)	2	10 to 50	P-SSP 30
40	Low speed section of pedal	Position where the sewing machine starts accelerating from pedal neutral position (Pedal stroke)	2	10 to 100	P-LSA 60
41	Starting position of lifting presser foot by pedal	Position where the cloth presser starts lifting from pedal neutral position (Pedal stroke)	2	– 60 to – 10	P-FLW – 21
42	Starting position of lowering presser foot	Starting position of lowering presser foot Stroke from the neutral position	2	8 to 50	P-FLD 10
43	Pedal stroke 2 for starting thread trimming	Position 2 where the thread trimming starts from pedal neutral position(When the function of lifting presser foot by pedal is provided.) (Pedal stroke)	2	– 60 to – 10	P-TRM2 – 51
44	Pedal stroke for reaching the maximum number of rotation	Position where the sewing machine reaches its highest sewing speed from pedal neutral position (Pedal stroke)	2	10 to 150	P-MAX 150
45	Compensation of neutral point of the pedal	Compensation value of the pedal sensor	2	– 15 to 15	P-ANP 0
46	Auto-lifter selecting function	Auto-lifter selection 0 : Solenoid drive system 1 : Pneumatic drive system	2	0 to 1	FLSEL 0
47	Auto-lifter selecting function	Limitation time of waiting for lifting solenoid type auto-lifter device	2	10 to 600	T-FL 60
48	Pedal stroke 1 for starting thread trimming	Position where thread trimming starts from pedal neutral position (Standard pedal) (Pedal stroke)	2	– 60 to – 10	P-TRM1 – 35
49	Lowering time of presser foot	Lowering time of presser foot after the pedal has been depressed. (Start of rotation of the sewing machine is delayed during this time.)	2	0 to 250	T-FLWT 140
51	Compensation of solenoid-on timing of reverse feed stitching at the start of sewing	Compensation of starting the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	1	– 36 to 36	T-SON 10
52	Compensation of solenoid-off timing of reverse feed stitching at the start of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	1	– 36 to 36	T-SOFF 20
53	Compensation of solenoid-off timing of reverse feed stitching at the end of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the end of sewing is performed.	1	– 36 to 36	T-EOFF 25
55	Foot lift after thread trimming	Function of lifting presser foot at the time of (after) thread trimming 0 : Not provided with the function of lifting presser foot after thread trimming 1 : Provided with the function of lifting presser foot automatically after thread trimming	2	0 to 1	FLAT 1

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
56	Reverse revolution to lift the needle after thread trimming	Function of reverse revolution to lift the needle at the time of (after) thread trimming 0 : Not provided with the function of reverse revolution to lift the needle after thread trimming 1 : Provided with the function of reverse revolution to lift the needle after thread trimming	2	0 to 1	RATRM 0
57	Bobbin thread remaining amount detection function	Function of detecting bobbin thread remaining amount at the time of (after thread trimming 0 : Not provided with the function of detecting bobbin thread remaining amount 1 : Provided with the function of detecting bobbin thread remaining amount	2	0 to 1	BTDF 0
58	Function of holding predetermined upper/ lower position of the needle bar	unction of holding predetermined upper/lower position of the needle bar 0 : Not provided with the function of holding predetermined upper/lower position of the needle bar 1 : Provided with the function of holding predetermined upper/lower position of the needle bar	2	0 to 1	HPOS 0
59	Function of Auto/ Manual change-over of reverse feed stitching at the start of sewing	This function can specify the sewing speed of reverse feed stitching at the start of sewing. 0 : The speed will depend on the manual operation by pedal, etc. 1 : The speed will depend on the specified reverse feed stitching speed (No. 8).	2	0 to 1	SBTO 1
60	Function of stop immediately after reverse feed stitching at the start of sewing	Function at the time of completion of reverse feed stitching at the start of sewing 0 : Not provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing. 1 : Provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing.	2	0 to 1	SBTQ 0
61	Function of starting prohibition of the sewing machine by detection of bobbin thread remaining amount	Function of starting prohibition of the sewing machine by detection of bobbin thread remaining amount 0 : This function does not stop the sewing machine when counting is out (-1 or less). 1 : This function stops the sewing machine when counting is out (-1 or less).	2	0 to 1	ASBOB 1
64	Change-over speed of condensation stitch or EBT (end back tack)	Initial speed when starting condensation stitch or EBT	2	0 to 250	S-WAIT 150
65	On-timing of solenoid for condensation stitch (when condensation stitch is performed by 1 stitch.)	Starting (compensation) timing of solenoid for compensation stitch : -1 Compensation value of starting the solenoid when condensation stitch is performed by 1 stitch.	2	– 36 to 0	T-CS1 – 15
66	On-timing of solenoid for condensation stitch (when condensation stitch is performed by 2 stitches.)	Starting (compensation) timing of solenoid for condensation stitch : -2 Compensation value of starting the solenoid when condensation stitch is performed by 2 stitches.	2	– 36 to 0	T-CS2 – 15
67	Presser foot lifting solenoid output duty setting	Duty of presser foot lifting solenoid output [%]	2	5 to 40	FLDTY 20
68	LH separately driven needle changeover speed-up function	Function to speed up the speed at he time of changing over the separately driven needle. 0 : Standard speed 1 : High speed * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 / 1	F-LHNS 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
70	Function of soft-down of presser foot	Presser foot is slowly lowered. 0 : Presser foot is rapidly lowered. 1 : Presser foot is slowly lowered.	2	0 to 1	F-SDFL 0
71	Function of limitation of re-acceleration from reduction of speed	Speed limitation is performed at the time of re-acceleration on the way of reducing speed of the sewing machine. It is effective when operating inching sewing.	2	0 to 5	F-ACRA 0
72	Function of limitation of acceleration at the start of rotation	Speed limitation is performed at the time of start-up of the sewing machine (excluding the start of sewing). It is effective when operating inching sewing.	1	0 to 5	F-ACR 0
73	Retry function	This function is used when needle cannot pierce materials. 0 : Normal 1 : Retry function is provided.	1	0 to 1	F-RET 1
75	Rotating direction of motor	Normal rotating direction of motor 0 : Clockwise 1 : Counterclockwise	2	0 to 1	DM 0
76	Function to select the start-up speed of the sewing machine	Starting curve of the sewing machine is selected. 0 : Normal curve 1 : More sharp curve	2	0 to 1	F-SCS 0
84	Initial motion suction time of presser foot lifting solenoid	Suction motion time of presser foot lifting solenoid	2	40 to 300	T-PUT 100
87	Function of pedal curve selection	Pedal curve is selected. (Improving pedal inching operation)  	2	0 to 2	F-PCS 0
89	Tension release function	Unused	2	0 to 1	TRS 0
91	Function of prohibiting compensation operation after turning handwheel by hand	It is effective in combination with the machine head provided with tension release function. 0 : Tension release function is ineffective. 1 : Tension release function is effective.	2	0 to 1	F-PMAT 1
92	Function of reducing speed of reverse feed stitching at the start of sewing	Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced.	2	0 to 1	F-DSBT 0
93	Function added to needle up/down compensating switch	Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced. (Upper stop → upper stop)	2	0 to 1	F-MADF 0
94	Continuous stitching + one-shot stitching non-stop function	In IP-110 program functions, a function that does not stop the sewing machine by combining continuous stitching with one-shot stitching when the step is changed. 0 : Normal (The sewing machine stops when a step is completed.) 1 : The sewing machine does not stop when a step is completed and proceeds to next step.	2	0 to 1	F-SBTC 0
96	Max. number of rotation setting	Max. number of rotation of the sewing machine head can be set. * Setting differs according to the resistor pack to be connected.	2	50 to Max	S-MAX 3200
101	Sewing counter input function	This function selects the input destination of the sewing counter. 0 : Every time thread trimming is performed, the counter automatically counts up. 1 : The counter counts up by inputting of the external sewing counter SW	2	0 to 1	F-MAC 0

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
105	Touch back switch needle up/down compensating stitching function	When connecting IP-110 and selecting the corner pattern, this function performs compensating stitching during sewing in-corner with the touch back switch. 0 : Touch back switch compensating stitching is invalid. 1 : Touch back switch compensating stitching is valid. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	C-BT 0
106	Presser lifting switch one stitch compensating function	When connecting IP-110 and selecting the corner pattern, this function performs compensating stitching during sewing in-corner with the presser lifting switch. 0 : Presser lifting switch compensating stitching is invalid. 1 : Presser lifting switch compensating stitching is valid. * Possible to set when selecting the head of LH-4168 or LH4188. * When using this function, set the presser lifting switch function selection (No. 117) to "0" (function invalid).	2	0 to 1	C-FT 1
107	In-corner sewing one-shot function	When connecting IP-110 and selecting the corner pattern, this function performs the in-corner sewing with the one-shot automatic sewing. 0 : One-shot automatic sewing of the in-corner sewing is invalid. 1 : One-shot automatic sewing of the in-corner sewing is valid. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	A1-1 0
108	In-corner presser lifting function	When connecting IP-110 and selecting the corner pattern, this function automatically lifts the presser after completion of the in-corner sewing. 0 : Automatic presser lifting after the in-corner sewing is invalid. 1 : Automatic presser lifting after the in-corner sewing is valid. * Possible to set when selecting the head of LH-4168 or LH4188. * This function is valid only when Auto-lifter (AK) is connected.	2	0 to 1	ALIF 1
109	Resewing function	When connecting IP-110, this function stops/uses resewing (re-sewing from a point on the way). 0 : Resewing function is invalid. 1 : Resewing function is valid. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	STRT 1
110	Separately driven needle changeover function (free stitching/ overlapped stitching)	When selecting reverse stitching pattern/overlapped stitching pattern, this function stops/uses the separately driven needle change-over function. When "0" (invalid) is selected, the separately driven needle changeover is not possible with reverse stitching pattern/over-lapped stitching pattern. 0 : Separately driven needle changeover function (during free stitching) is invalid. 1 : Separately driven needle changeover function (during free stitching) is valid. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	MEDL 1
111	Separately driven needle changeover function (corner pattern)	When connecting IP-110 and selecting the corner pattern, this function stops/uses the separately driven needle changeover function. When "0" 'invalid) is selected, it is not possible to optionally perform the separately driven needle changeover with the corner pattern. 0 : Separately driven needle changeover function (during corner pattern) is invalid. 1 : Separately driven needle changeover function (during corner pattern) is valid. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	ANDL 1

No.	Item	Description	Setting level	Setting range	Panel display Standard set value
112	Teaching motion selection	Selection of the motion when pressing the teaching switch 0 : Normal (teaching motion with teaching + separately driven needle changeover) 1 : Teaching motion with separately driven needle changeover only (when starting teaching motion, it is not necessary to press the teaching switch.) 2 : Teaching motion in the state of two needles is prohibited. (Set the state to the separately driven needle state and press the teaching switch.) * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 2	TCMD 0
113	Number of stitches of teaching replay	This function selects the number of stitches of replay when performing corner teaching (measurement of number of stitches of separately driven needle sewing) 0 : Number of stitches of replay corresponds to that of measurement. 1 : Number of stitches of replay is that which is subtracted one stitch from number of stitches of measurement. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	TCRN 0
114	Left bobbin thread counter function	When connecting IP-110, this function stops/uses left bobbin thread counter function. 0 : Left bobbin thread counter is stopped. 1 : Left bobbin thread counter is used. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	L-TR 1
115	Right bobbin thread counter function	When connecting IP-110, this function stops/uses right bobbin thread counter function. 0 : Right bobbin thread counter is stopped. 1 : Right bobbin thread counter is used. * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 1	R-TR 1
116	Corner teaching start switch selection	When connecting IP-110, this function selects the switch to start in-corner sewing in the corner pattern sewing. 0 : No function 1 : Left needle changeover switch 2 : Right needle changeover switch 3 : Teaching switch 4 : Optional switch 5 : Knee switch and presser lifting switch 6 : No function (do not set.) * When selecting 1 : Left needle changeover switch, 2 : Right needle changeover switch or 3 : Teaching switch for in-corner changeover switch, be sure to set No. 111 Separately driven needle changeover function (corner pattern) to “0” (function invalid). * Possible to set when selecting the head of LH-4168 or LH4188.	2	0 to 6	A2-1 5
117	Presser lifting switch function selection	When connecting knee switch, this function selects stop/use of automatic presser lifting function by knee switch. 0 : Automatic presser lifting by knee switch is stopped. 1 : Automatic presser lifting by knee switch is used. * Possible to set when selecting the head of LH-4168 or LH4188. * When using this function, set the presser lifting switch one stitch compensating function (No. 106) to “0” (function invalid).	2	0 to 1	F-FPL 0
118	Grease-up error release	When grease-up error (E220 or E221) has occurred, the error is released by setting the value to 1. 0 : Normal state 1 : Grease-up error is released when turning ON the power next time. (This function is also released after releasing grease-up error.) * When releasing grease-up error, be sure to execute grease-up. * It is possible to set only to the machine heads that require grease-up (LH-4100 and some of LH-3500 series)	2	0 to 1	GN-CLR 0

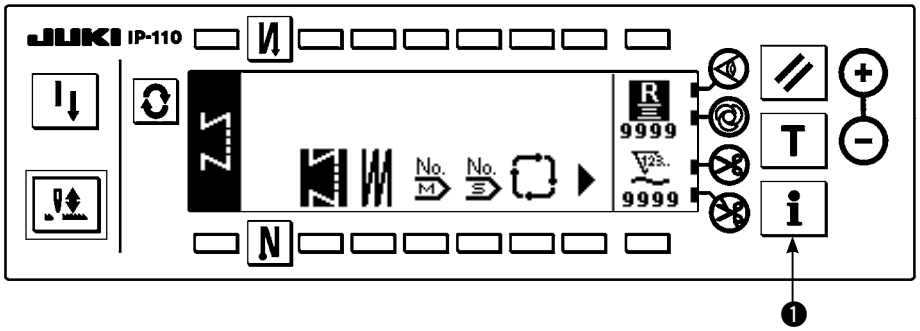
(3) Communication mode

Changing procedure to the communication mode

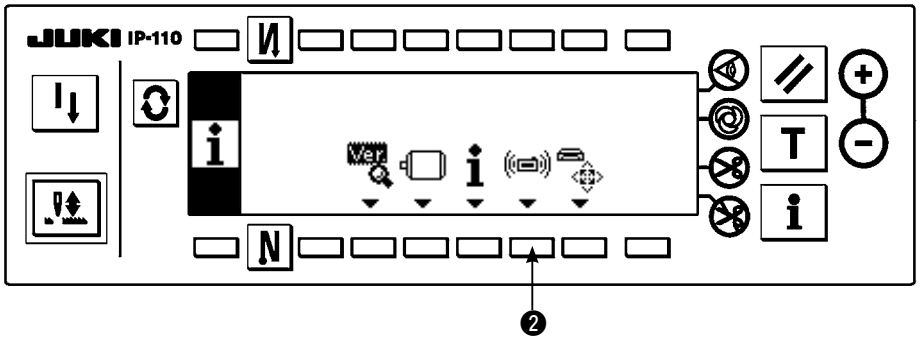
Do not perform switch operations other than those described in the following explanations.
Be sure to re-turn the power switch ON after one second or more has passed. If the power is turned ON immediately after turning it OFF, the sewing machine may not work normally. In this case, turn ON the power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

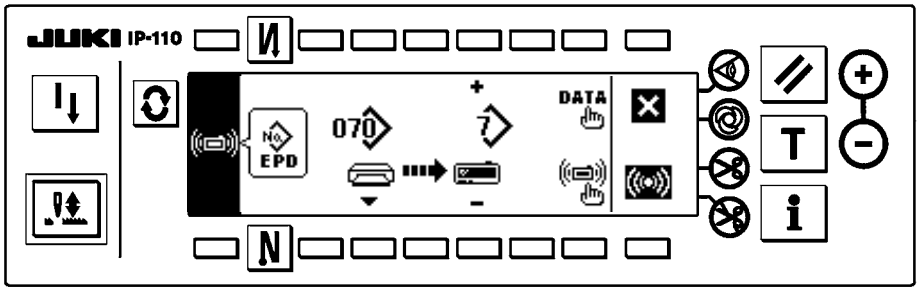
1) Turn ON the power. When the needle bar is not in the UP position, turn the handwheel to bring the needle bar to the UP position.
2) Press switch ❶ for approximately three seconds.



3) Press switch ❷ for approximately three seconds. The screen changes to the communication mode screen.



■ **Communication mode screen**



Example of download

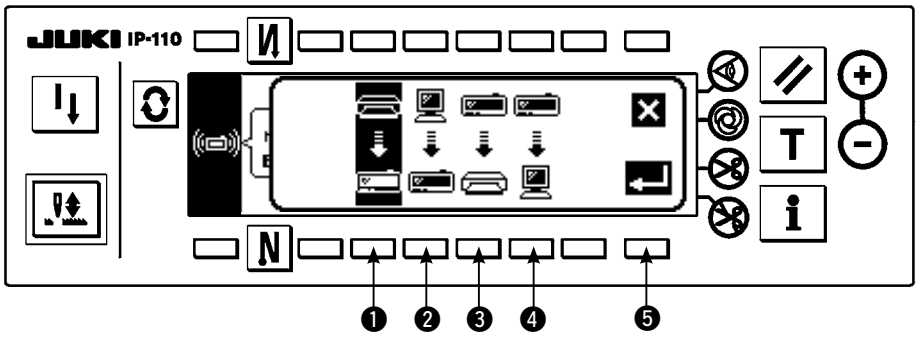
Example) Parameter file No. 70 of the media is downloaded to the sewing pattern No. 7.

①. Open the media cover and insert the CompactFlash(TM) (Optional Part No. : 40000100) from the insertion opening.
* Panel function does not work with the cover opened.

②. Selection of data
EPD is selected from the beginning since the data of EPD form only is handled for LH4168/4188.

③. Selection of communication method
Press ❷ in the communication setting screen to display the communication method setting screen.

■ Communication setting screen



Communication method which is selected at present is shown in reverse video.

[Explanation of the pictograph]

❶ : Down load from the media

❷ : Download from SU-1

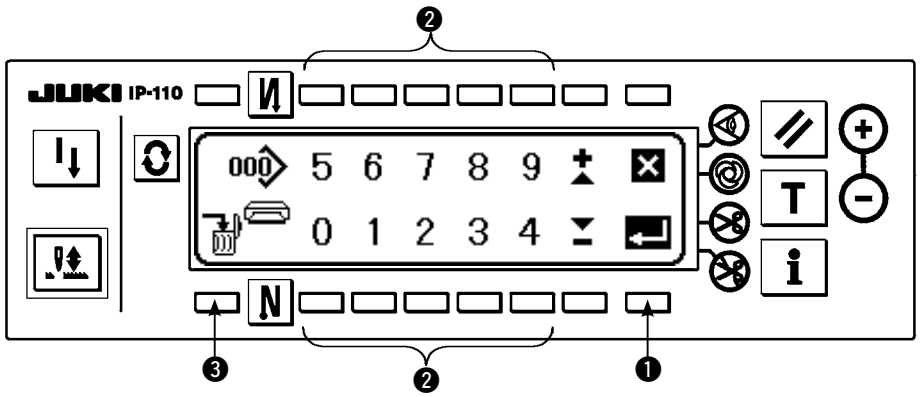
❸ : Upload to the media

❹ : Upload to SU-1

Press ❶ to select download from the media. Then press ❺ to determine.

④. Selection of the file No. of the media
Press ❸ in the communication setting screen to display the file No. input screen of the media.

■ File No. input screen

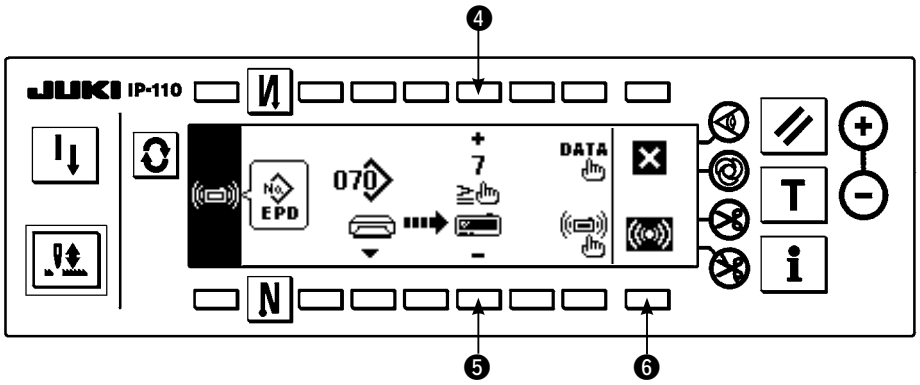


Input the file No. of the media with ❷. The file No. which has been inputted is displayed in ❯. The No. is determined with ❶ after inputting the file No.

⑤. Custom pattern No. setting

Press ❹ and ❺ in the communication setting screen to set the custom pattern No.

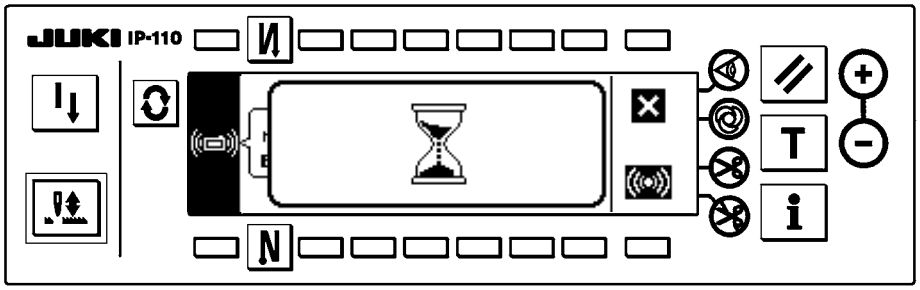
■ **Communication setting screen**



⑥. Start of download

When all setting procedures have been completed, press ❻ in the communication setting screen to start downloading.

■ **During communication screen**



When the screen returns to the communication setting screen after display of the during communication screen, communication is completed.

Example of upload

Example) Sewing pattern No. 8 is uploaded as the parameter format file No. 15 of the media.

①. Open the media cover and insert the CompactFlash(TM) (Optional Part No. : 40000100) from the insertion opening.

* Panel function does not work with the cover opened.

②. Selection of data

EPD is selected from the beginning since the data of EPD form only is handled for LH4168,4188.

③. Selection of communication method

Press ❷ in the communication setting screen to display the communication method setting screen.

[Explanation of the pictograph]

❶ Down load from the media
❷ Download from SU-1
❸ Upload to the media
❹ Upload to SU-1

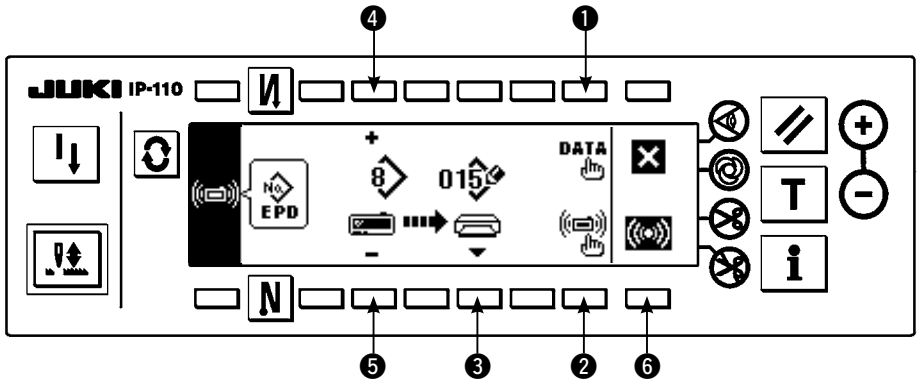
Press ❸ to select the upload to the media. Then press ❺ to determine.

④. Setting of the custom pattern No.
Press ❹ and ❺ in the communication setting screen to set the custom pattern No.

⑤. Selection of the file No. of the media
Press ❸ in the communication setting screen to display the file No. input screen of the media.
Input the file No. of the media. The inputted file No. is displayed in . After inputting the file No., determine it with ❶.

⑥. Start of the upload
When all setting procedures have been completed, press ❻ in the communication setting screen to start uploading.

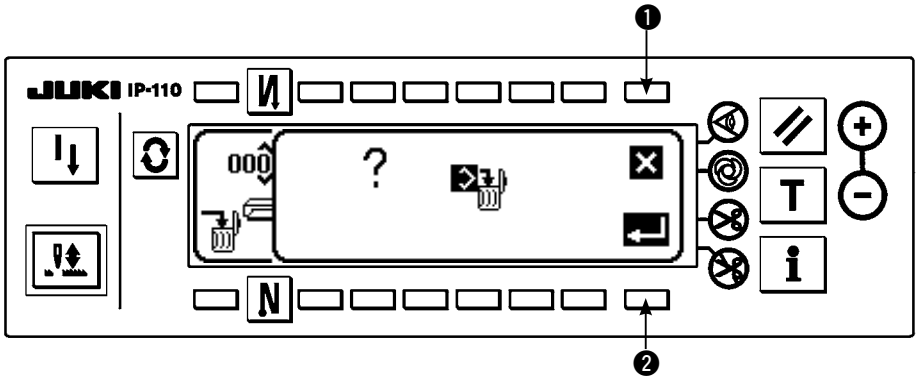
■ Communication setting screen



When the screen returns to the communication setting screen after display of the during communication screen, communication is completed.

[How to delete the file of the media]
Press switch ❸ after selecting the No. you desire to delete in the file No. input screen of the media, and the screen moves to the deletion confirmation screen.

■ Deletion confirmation screen



Press ❶ and the deletion is discontinued. Then the screen returns to the file No. input screen. Press ❷ and the deletion is executed. Then the screen returns to the file No. input screen.

The deleted file is not restored. Be very careful when executing the deletion.

6. EXTERNAL INTERFACE

External interface means the section to connect the operation panel and the system which is different from the operation panel.
For the use and details, refer to the Engineer's Manual.

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

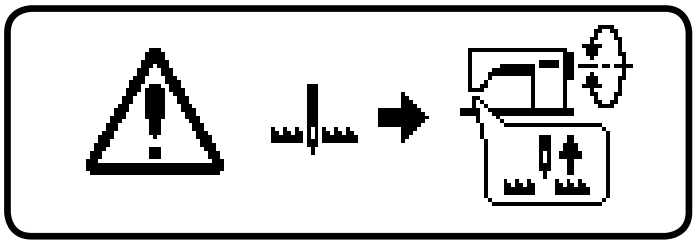
2) RS-232C port
RS-232C connector is installed in the rubber cap located on the back side of operation panel.

3) General input port (Production control switch connecting connector)
General input connector, CN105 is installed in the cord outlet cover located on the back side of operation panel.

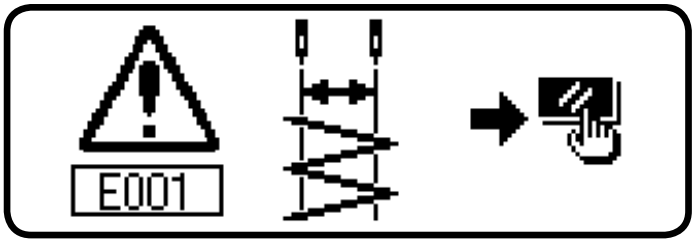
7. ERROR DISPLAY

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

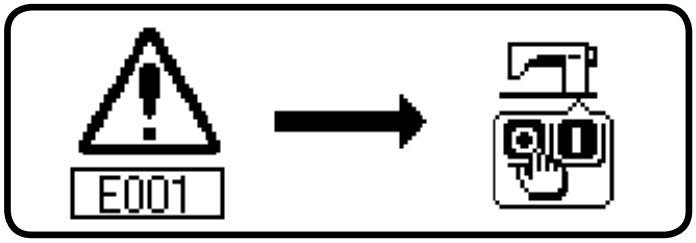
Three different kinds of screens of the panel display screen appear due to the difference of the procedures.



1) Error screen disappears when the operator removes the cause.



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.

7-1. Error code list (Error display in panel)

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

No.	Description of error detected	Cause	Item to be checked or corrective measure
—	Media cover open	• Lid of media slot is open.	• Close the lid.
000	Execution of data initialization (Not error)	• When machine head is replaced. • When initializing operation is executed.	
302	Fall detection switch failure (When safety switch works)	• When fall detection switch is inputted in the state that the power is turned ON.	• Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). • Check whether the fall detection switch cord is caught in the sewing machine or the like and has broken. • Check whether the fall detection switch lever is caught in something.
003	Synchronizer lower position sensor failure	• When position detection signal is not inputted from the sewing machine head synchronizer. • When the synchronizer has broken.	• Check the synchronizer connector (CN30) for loose connection and disconnection. • Check whether the synchronizer cord has broken since the cord is caught in the machine head or the like.
004	Synchronizer lower position sensor failure		
005	Synchronizer upper position sensor failure		
906	Operation panel transmission failure	• Disconnection of operation panel cord • Operation panel has broken.	• Check the operation panel connector (CN34,CN35) for loose connection and disconnection. • Check whether the operation panel cord has broken since the cord is caught in the machine head or the like.
007	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 draw when turning motor by hand.
008	Machine head connector failure (Resistance pack)	• When the machine head connector is not properly read.	• Check the machine head connector (CN31) for loose connection and disconnection.
011	Media not inserted	• Media is not inserted.	• Turn OFF the power.
012	Read error	• Data read from media is not possible.	• Turn OFF the power.
013	Write error	• Data write to media is not possible.	• Turn OFF the power.
015	Format error	• Formatting cannot be performed.	• Turn OFF the power.
016	External media capacity over	• Media capacity of media is short.	• Turn OFF the power.
019	File size over	• File is too big.	• Turn OFF the power.
032	File compatibility error	• There is no file compatibility.	• Turn OFF the power.
053	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.
703	Connection of panel which is not supposed	• When panel connected to the sewing machine is the kind which is not supposed.	• Turn OFF the power. • Connect the proper panel.

No.	Description of error detected	Cause	Item to be checked or corrective measure
704	Inconsistency of system versions	• When system versions are inconsistent.	• Turn OFF the power. • Consist system versions with each other.
810	Solenoid short-circuit	• When the short-circuited solenoid is desired to be driven.	• Check whether the solenoid is short-circuited.
811	Overvoltage	• When voltage upper than guaranteed one is inputted. • When 200V is inputted for 100V setting.	• Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. • Check whether 100V/200V changeover connector is set by mistake. • Check whether fuse or regenerative resistance is broken. In the above cases, POWER circuit board has broken.
813	Low voltage	• When voltage lower than guaranteed one is inputted. • When 100V is inputted for 200V setting. • Internal circuit is broken due to applied overvoltage.	• Check whether the votage is lower than the rated voltagw − (minus) 10% or less. • Check whether 100V/200V changeover connector is set by mistake. • Check whether fuse or regenerative resistance is broken.
924	Motor driver failure	• Motor driver has broken.	
930	Encoder failure	• When the motor signal is not properly inputted.	• Check the motor signal connector (CN38,CN39) for loose connection and disconnection. • Check whether the motor signal cord has broken since the cord is caught in the machine head or the like.
931	Motor hole sensor failure		
343	Bobbin thread remaining amount sensor unit trouble	• When the position of detection rod of AE device is out of the home position.	• Check whether the detection rod of AE device is returned to the proper position. • Check whether function setting No. 57 is wrongly set. • Check whether connectors (CN121 and CN123) of AE device are loosened or disconnected. • Check whether cord of AE device is broken due to pinching of cord or the like by machine head.
939	Stepping motor origin retrieval error	• When the origin position of the stepping motor is not detected at the time of turning ON the power.	• Check the detecting connector (CN139) for loose connection and disconnection. • Check whether the detecting connector (CN139) is wrongly inserted.
944	Left needle lock error	• When the left needle is not changed over at the time of stopping/driving the left needle.	• Check whether the detecting connector (CN128,129) is wrongly inserted.
945	Right needle lock error	• When the right needle is not changed over at the time of stopping/driving the right needle.	• Check whether the detecting connector (CN128,129) is wrongly inserted.
220	Grease fill-up time information	• When grease fill-up time to the specified place has come	• After turning OFF the power, perform grease fill-up, and set Function No. 118 to "1". When grease fill-up cannot be performed during sewing, release of error can be performed with the reset key of the panel.
221	Grease fill-up warning error	• When the period of grease fill-up time to the specified place has passed	• Immediately perform grease fill-up, and set Function No. 118 to "1".