

SC-910

ENGINEER'S MANUAL

PREFACE

This Engineer's Manual is written for the technical personnel.

Operating instructions for the sewing machine are fairly detailed in the Instruction Manual intended for the maintenance personnel and operators at the apparel factory. And this manual describes the contents and individual parts which are not described in the Instruction Manual. It is advisable to use the Instruction Manuals for IP-100 and SC-910 and the relevant Parts Lists with this Engineer's Manual when carrying out the maintenance of this sewing machine.

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1. SPECIFICATIONS

Supply voltage	Single phase 100 to 120V	3-phase 200 to 240V	Single phase 200 to 240V
Frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
Operating temperature range	Temperature : 0 to 40°C	Temperature : 0 to 40°C	Temperature : 0 to 40°C
Operating humidity range	Humidity : 90% or less	Humidity : 90% or less	Humidity : 90% or less
Power consumption	650VA	650VA	650VA

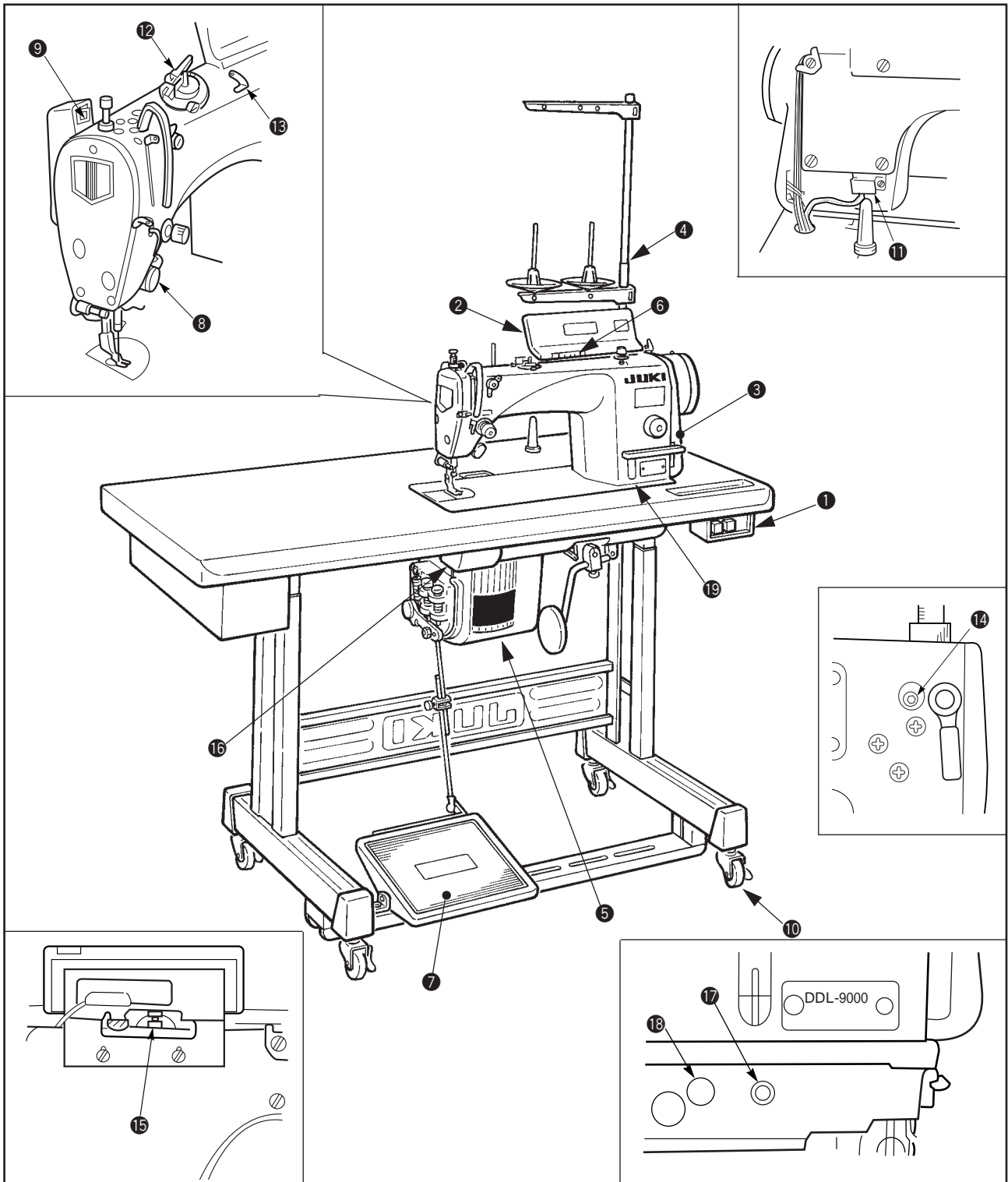
2. OUTLINE

(1) Features

- 1) Voltage changeover function of single phase 100 to 120V/3-phase 200 to 240V is provided.
The control box with voltage changeover function can be used either for single phase 100 to 120V or for 3-phase 200 to 240V by replacing the power cord up to the power switch and changing the voltage changeover connector inside the box.
In addition, it can be used for single phase 200 to 240V.
- 2) By using IP-100, the sewing management information such as output display, etc. can be displayed.
- 3) The conventional JUKI optional devices can be used without any adjustment.
However, when AE (bobbin thread remaining amount detection device) is used, it is necessary to separately purchase the optional circuit board.
- 4) By using the flash ROM for CPU, the future version-up can be adapted.
- 5) SC-910 control box can be used for DD (direct-drive) system machine head and drive system machine head by connecting the small-sized motor unit (M-91).

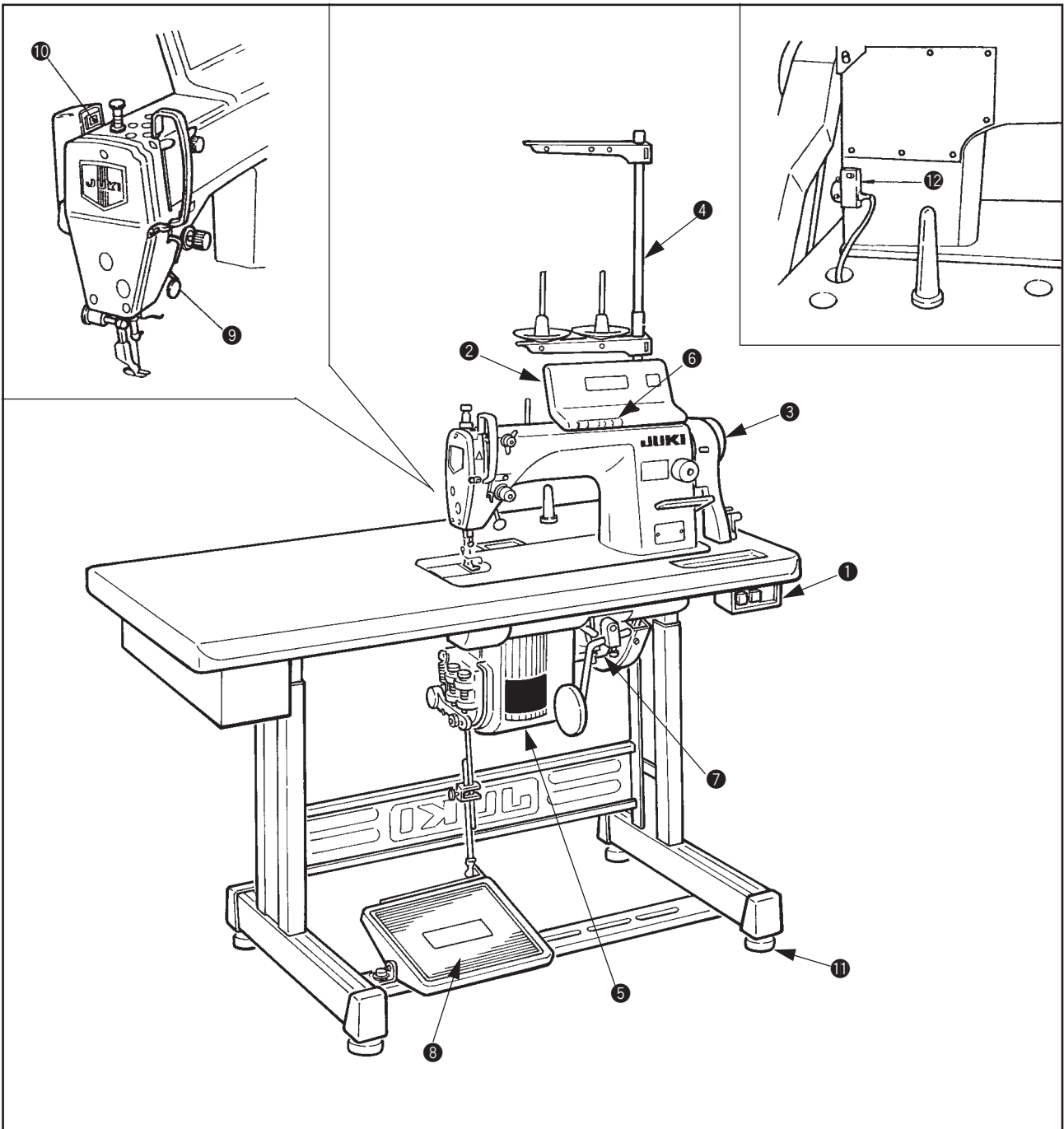
3. CONFIGURATION

(1) DDL-9000/SC-910



- | | | |
|---------------------------|---|---|
| ① Power switch | ⑩ Screw for leveling table and stand (Caster) | ⑬ Oil inlet |
| ② Operation panel | ⑪ Resistance pack | ⑭ Air vent |
| ③ Pulley cover | ⑫ Bobbin winder | ⑮ Oil amount indicating window (SS, SH) |
| ④ Thread stand | ⑬ Thread cutter retainer | |
| ⑤ PSC box (SC-910) | ⑭ Thread release changeover screw | |
| ⑥ Max. speed control knob | ⑮ Micro lifter screw | |
| ⑦ Operation pedal | ⑯ Under cover | |
| ⑧ Touch-back switch | | |
| ⑨ Wiper device | | |

(2) DDL-8700/SC-910/M-91

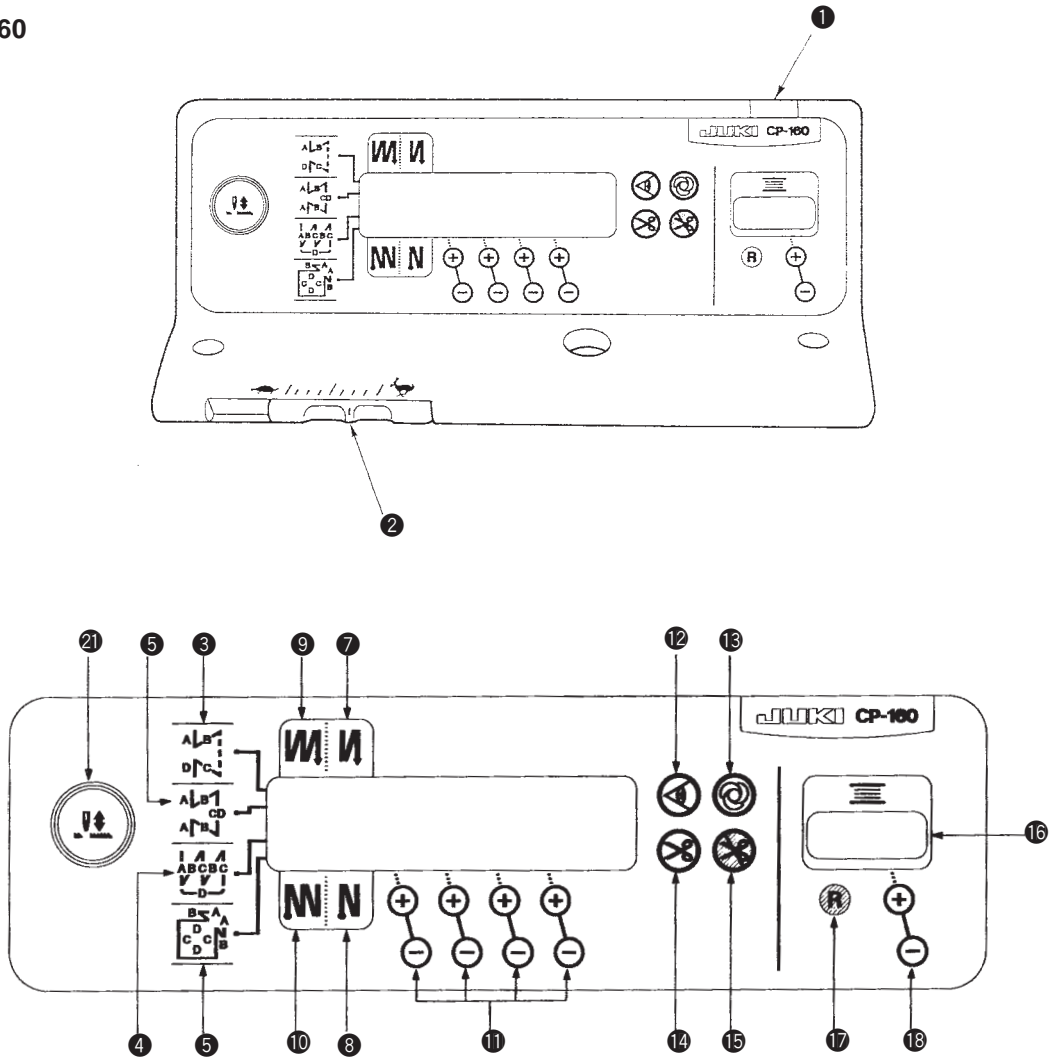


- | | |
|---------------------------|---|
| ① Power switch | ⑧ Operation pedal |
| ② Control panel | ⑨ Touch-back switch |
| ③ Synchronizer | ⑩ Thread wiping (wiper) device |
| ④ L-shaped thread stand | ⑪ Screw or caster for level adjustment of table / stand |
| ⑤ PSC box (SC-910) | ⑫ Resistor pack |
| ⑥ Max. speed control knob | |
| ⑦ Motor (M-91) | |

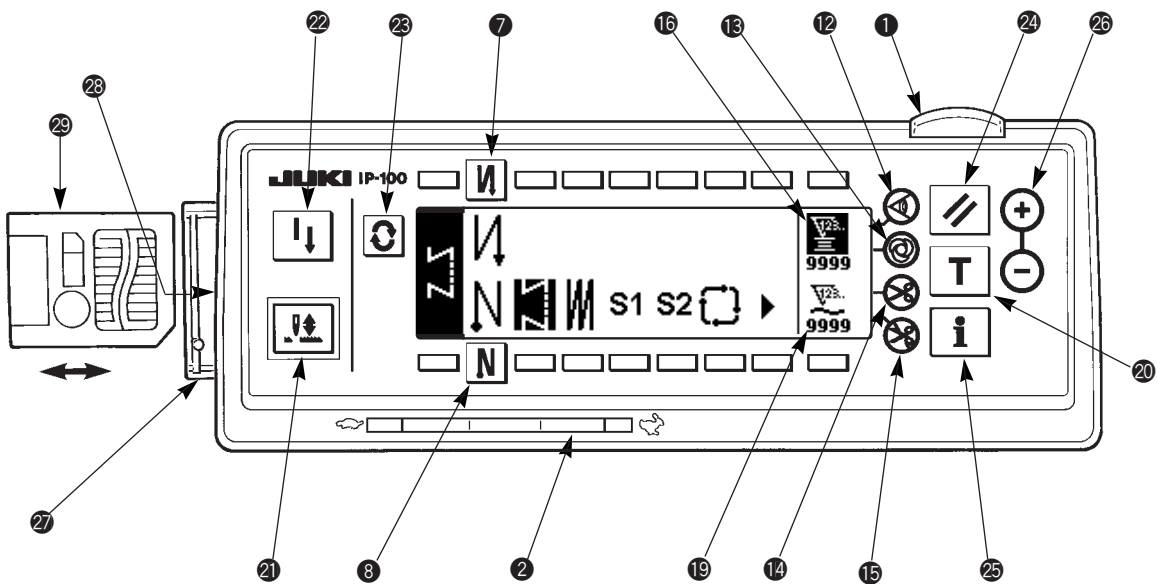
4. EXPLANATION OF CONTROL PANEL

(1) List of control panels of CP-160 and IP-100

CP-160



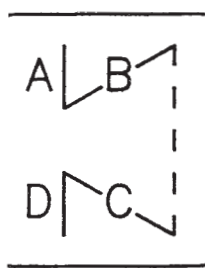
IP-100



No	Description	CP-160	IP-100
①	Power indication LED : Lights up when the power switch is turned ON.	<input type="radio"/>	<input type="radio"/>
②	Max. speed limit variable resistor : Maximum speed is limited when this resistor is moved in the left direction (←→).	<input type="radio"/>	<input type="radio"/>
③	Reverse stitching pattern switch : Used for specifying the reverse stitching pattern to be sewn.	<input type="radio"/>	
④	Overlapped stitching pattern switch : Used for specifying the overlapped stitching pattern to be sewn.	<input type="radio"/>	
⑤	Constant dimension stitching pattern switch : Used for specifying the constant dimension stitching pattern to be sewn.	<input type="radio"/>	
⑥	Rectangular stitching pattern switch : Used for specifying the rectangular stitching pattern to be sewn.	<input type="radio"/>	
⑦	Automatic reverse stitching at the start of sewing switch : Used for turning ON / OFF the automatic reverse stitching at the start of sewing.	<input type="radio"/>	<input type="radio"/>
⑧	Automatic reverse stitching at the end of sewing switch : Used for turning ON / OFF the automatic reverse stitching at the end of sewing.	<input type="radio"/>	<input type="radio"/>
⑨	Automatic double reverse stitching at the start of sewing switch : Used for turning ON / OFF the automatic double reverse stitching at the start of sewing.	<input type="radio"/>	
⑩	Automatic double reverse stitching at the end of sewing switch : Used for turning ON / OFF the automatic double reverse stitching at the end of sewing.	<input type="radio"/>	
⑪	Switches for setting the number of stitches : Used for setting the number of stitches to be sewn in processes A through D.	<input type="radio"/>	
⑫	Material edge sensor ON / OFF switch : Rendered effective when the material edge sensor is installed on the machine. Used for selecting whether or not the material sensor is used during sewing.	<input type="radio"/>	<input type="radio"/>
⑬	One-shot automatic stitching switch : Start the sewing machine with this switch, and the sewing machine will run automatically until the material edge is detected or the end of the set number of stitches is reached.	<input type="radio"/>	<input type="radio"/>
⑭	Automatic thread trimming switch : When the material edge is detected, the machine will perform thread trimming even when keeping depressing the front part of the pedal.	<input type="radio"/>	<input type="radio"/>
⑮	Thread trimming prohibition switch : Used for prohibiting thread trimming at any occasion.	<input type="radio"/>	<input type="radio"/>
⑯	Bobbin thread counter : Indicates the amount of bobbin thread while counting it by subtracting from the set value. When the bobbin thread remaining amount detecting device is installed on the machine, the counter indicates the number of times of detecting.	<input type="radio"/>	<input type="radio"/>
⑰	Bobbin counter reset switch : Used for returning the value shown on the bobbin thread counter to the initial value.	<input type="radio"/>	
⑱	Bobbin thread amount setting switch : Used for setting the amount of bobbin thread.	<input type="radio"/>	
⑲	No. of pcs. counter : The indication shown on the counter increases while counting up the number of finished pieces of garment every time the machine performs thread trimming.		<input type="radio"/>
⑳	Teaching switch : Used for setting the number of stitches to a value which has been actually sewn.		<input type="radio"/>
㉑	Needle up/down compensating switch : Used when performing needle up / down compensating stitching.	<input type="radio"/>	<input type="radio"/>
㉒	Re-sewing switch : If the bobbin thread runs out before the completion of the operation steps of a programmed stitching pattern, this switch is used for re-starting stitching from the position where the stitching has been interrupted after replacing the bobbin.		<input type="radio"/>
㉓	Screen changeover switch : This is the switch to change over the screen.		<input type="radio"/>
㉔	Reset switch : This is the switch to make the value of bobbin thread counter or sewing counter the set value.		<input type="radio"/>
㉕	Information switch : This is the switch to perform various function settings.		<input type="radio"/>
㉖	Counter value setting switch : This is the switch to set the value of bobbin thread counter or No. of pcs. counter.		<input type="radio"/>
㉗	Smart media cover : This is the cover for smart media inserting opening.		<input type="radio"/>
㉘	Smart media slot (Smart media inserting opening) : To set smart media, insert smart media into smart media slot and push it until it is almost hidden.		<input type="radio"/>
㉙	Smart media : (Optional : Part No.HX005750000)		<input type="radio"/>

(2) Explanation of control panel CP-160

1) Reverse stitching pattern



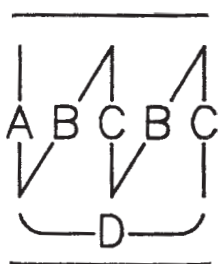
When the sewing machine performs the free stitching operation, the machine performs the reverse stitching operation at the start and end of sewing.

The reverse stitching operation can set the ON and OFF settings. Furthermore, single and double reverse stitching patterns can be selected.

Setting of number of stitches or other settings can be performed by operating the control panel.

A, B, C and D = 0 to 19 stitches

2) Overlapped stitching pattern



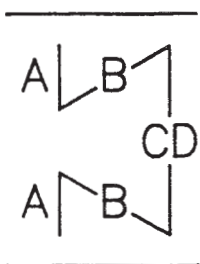
The sewing machine repeats the normal stitching and reverse stitching by the predetermined time, and performs the line bartacking. Then, the machine makes the thread trimmer actuate and stop to complete the overlapped stitching procedure.

Change of the number of stitches or the number of times of repetition can be performed by operating the control panel.

A, B and C = 0 to 19 stitches

D = 0 to 9 times

3) Constant-dimension stitching pattern

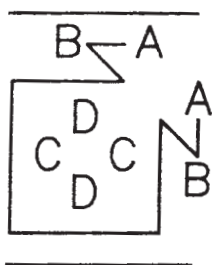


The free stitching process in the reverse stitching pattern becomes the set value of the number of stitches. The sewing machine will automatically stop (automatically perform thread trimming if the automatic thread trimming is selected.) after the machine finishes the predetermined number of stitches in the process of CD.

If the automatic thread trimming is not selected, operate the touch-back switch after the machine has automatically stopped. Then, the machine runs at a low speed (stitch compensation operation). Also, if the pedal is returned to its neutral position and depressed its front part again, the sewing can be continued regardless of the setting of number of stitches. Setting of number of stitches or selection of automatic thread trimming can be performed by operating the control panel.

A and B = 0 to 19 stitches CD = 0 to 500 stitches

4) Rectangular stitching pattern




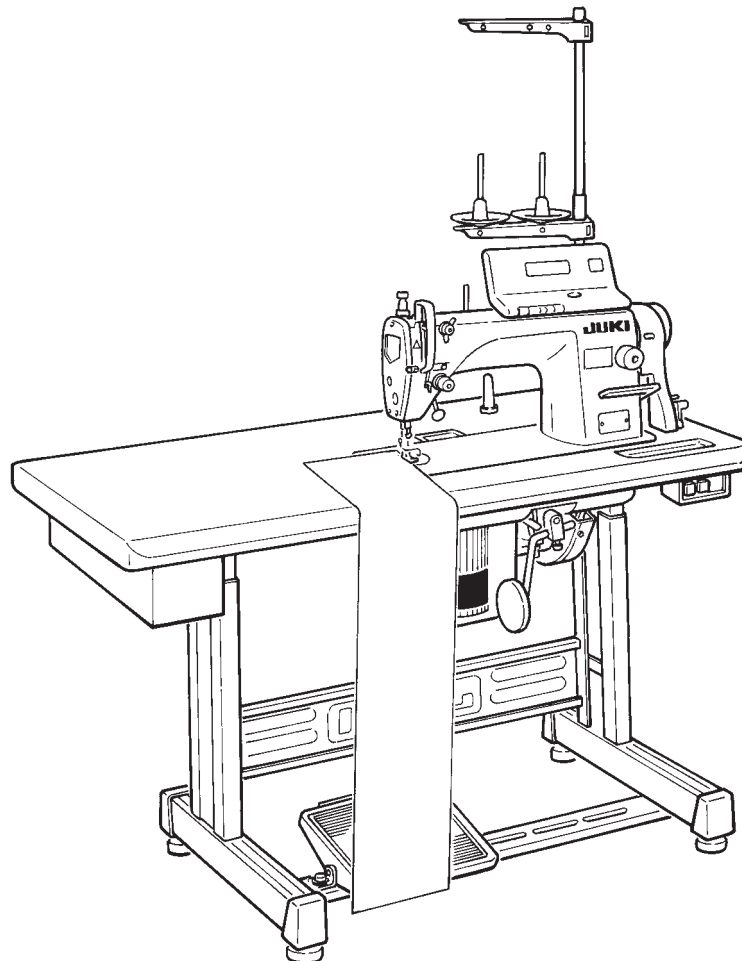
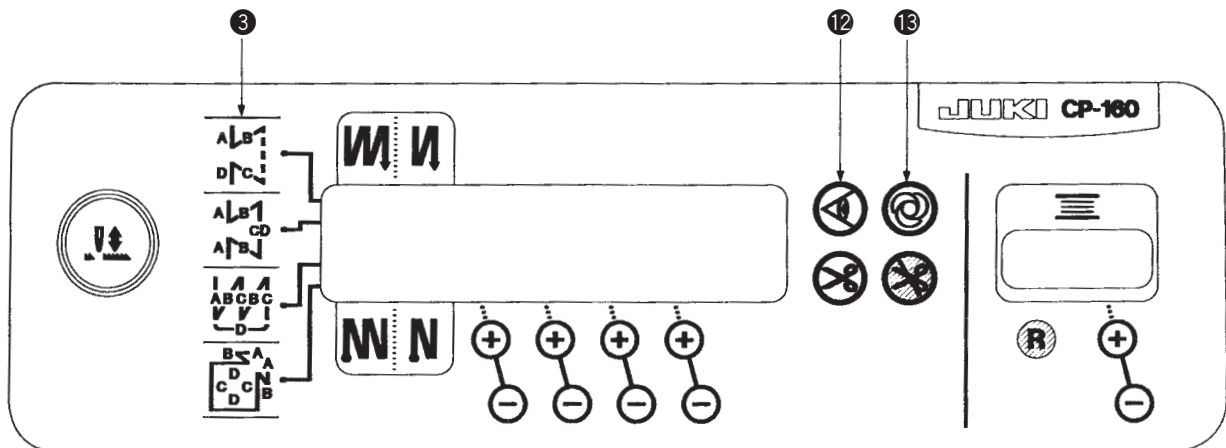
There are 4 operation steps in the process of constant-dimension stitching pattern. At each operation step the sewing machine automatically stops after sewing the predetermined number of stitches. At this time, if the touch-back switch is operated, the sewing machine runs at a low speed (stitch compensation operation). Also, in case of the last operation step, if the pedal is returned to its neutral position and depressed its front part again, the sewing can be continued regardless of the setting of number of stitches. However, if the automatic thread trimming is set, the machine will perform thread trimming. Setting of number of stitches or selection of automatic thread trimming can be performed by operating the control panel.

A and B = 0 to 19 stitches C and D = 0 to 99 stitches

(3) Example of application

- 1) When the CP-160 is used together with the material end sensor (ED : optional), it can be used as a small edge-controller.

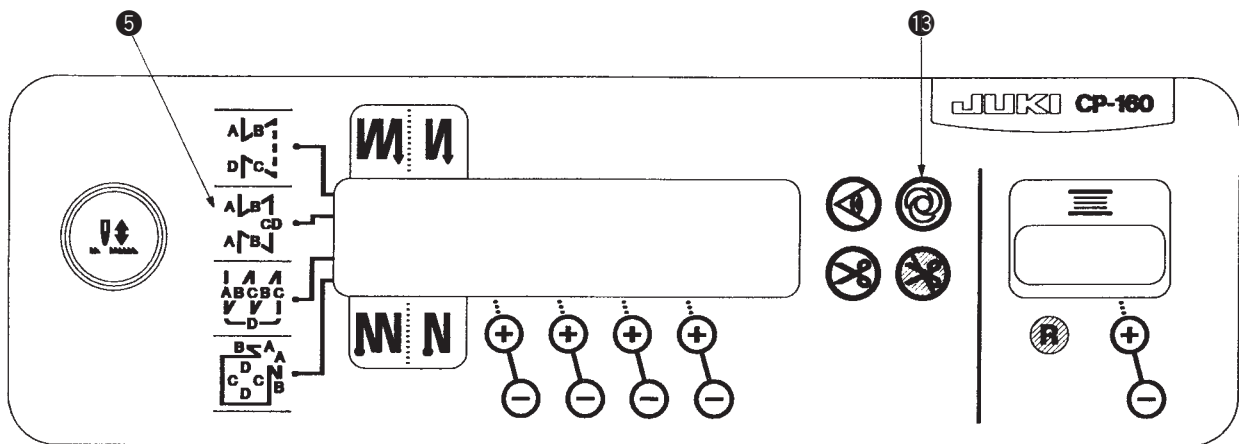
(Method) Adjust the position to $\overset{A|B}{\underset{D|C}{\downarrow}}$ mark ③ of the CP-160, turn ON material end sensor ON/OFF switch ⑫ of the CP-160, and turn ON  mark ⑬ of the automatic one-shot stitching.



Caution) Number of rotations of the automatic one-shot stitching can be changed by the function setting (No. 38).

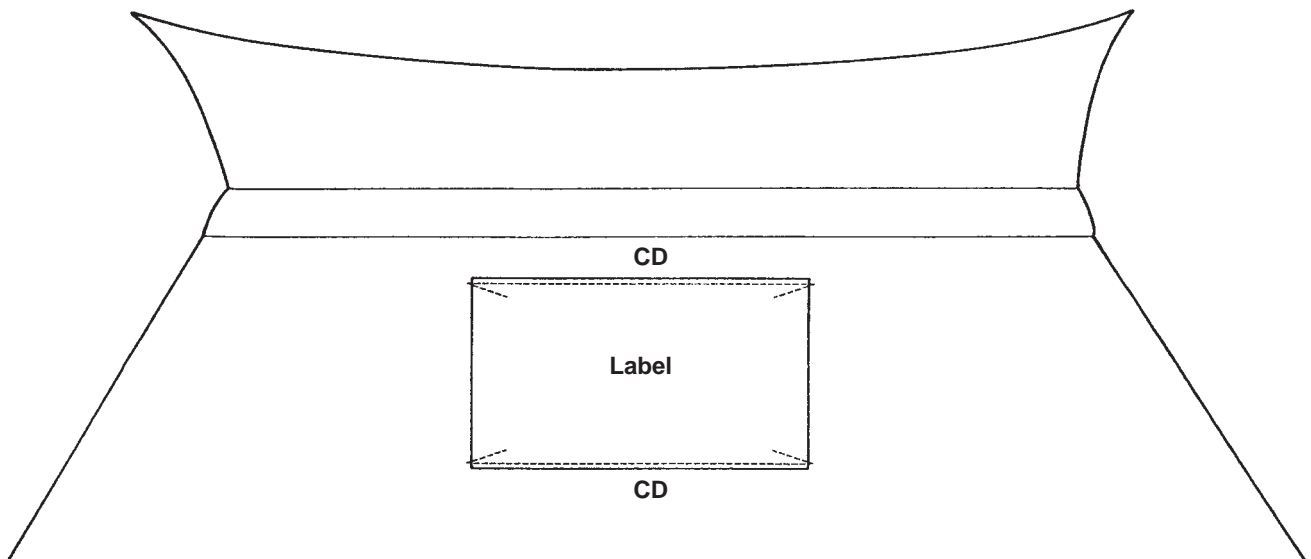
2) Label attaching is performed by the automatic one-shot stitching with the CP-160

(Method) Select $\begin{matrix} A|B| \\ \text{CD} \\ A|B| \end{matrix}$ mark ⑤ on the CP-160, and turn ON Ⓢ mark ⑬ of the automatic one-shot stitching.



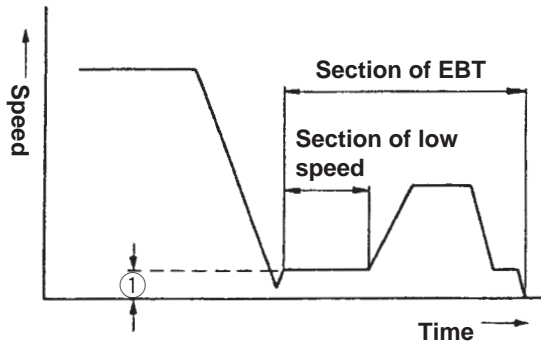
Explanation) Number of stitches at the section CD can be set up to 500 stitches. If the stitch length is 2 mm, it is possible to sew approximately 1,000 mm (1 m).

This function can perform the automatic one-shot stitching without using the material end sensor (ED : optional). Therefore, the sewing machine performs the sewing to the last according to the sewing pattern even if the label is not located at the end of material when the pedal is depressed once.



3) Seam joining of the reverse feed stitching at the end of sewing (For thick materials)

Especially some sewing machine heads for thick materials are likely to fail joining the seam at the section of the following figure even if the timing of reverse feed stitching at the end of sewing is compensated.



- ① At the timing to move to the reverse feed stitching action, the rotating speed at the section where the sewing machine is rotated at a low speed can be changed.

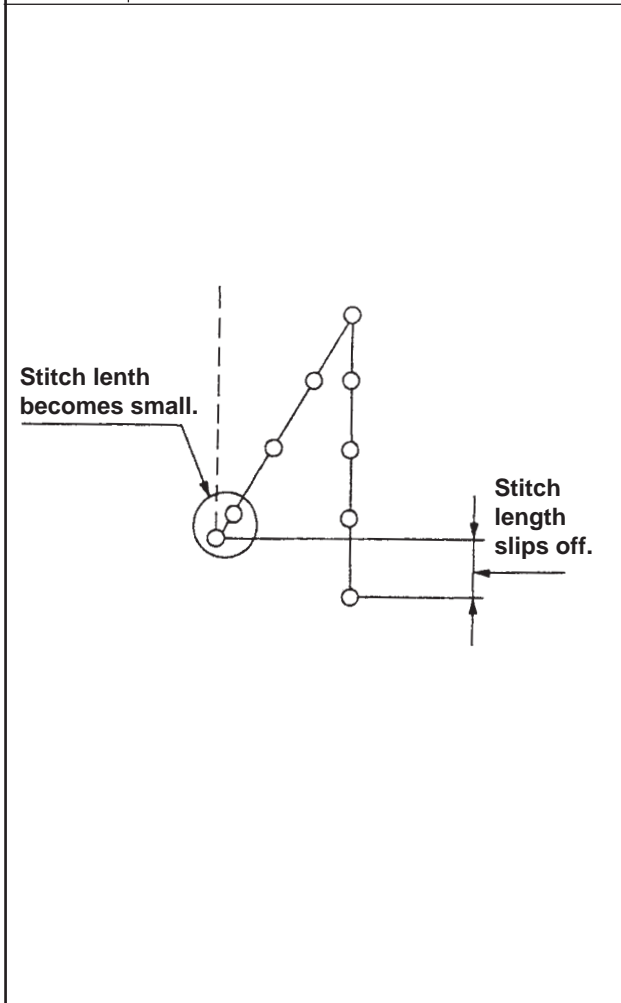
SC-910 function setting No. 64

(0 to 250 rpm changeable : 200 rpm was fixed in the past.)

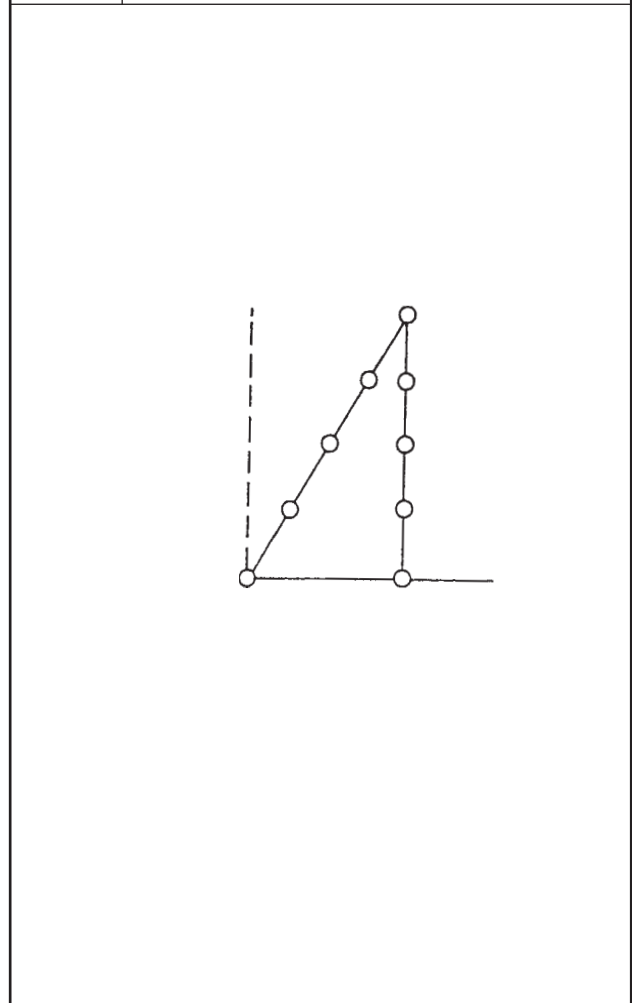
Example) Use for reference.

Standard

Condition	Machine head of DDL-8700H (for thick materials)	
	Stitch length	4 mm
	Number of stitches	4 stitches
	ITEM No. 64	170 rpm



Condition	Machine head of DDL-8700H (for thick materials)	
	Stitch length	4 mm
	Number of stitches	4 stitches
	ITEM No. 64	"0" rpm



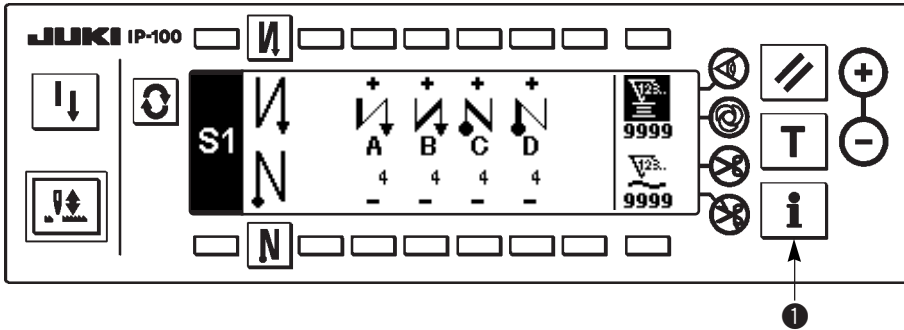
(4) Explanation of control panel IP-100

1) Information

Setting and checking of various data can be performed with the information.

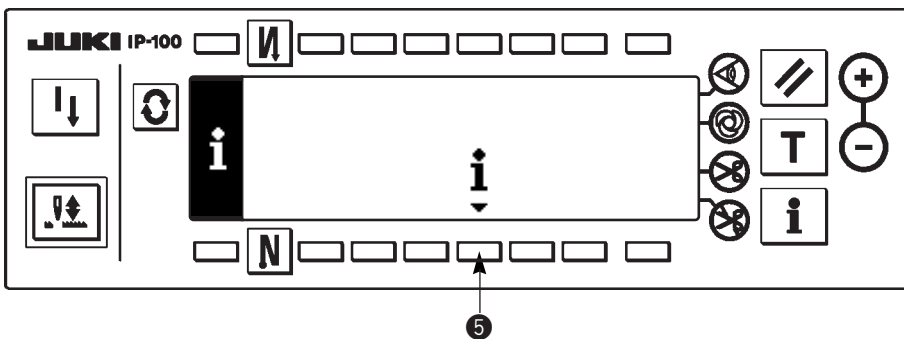
For the information, there are the operator level and the maintenance personnel level.

[Operator level]



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

Information screen (operator level)

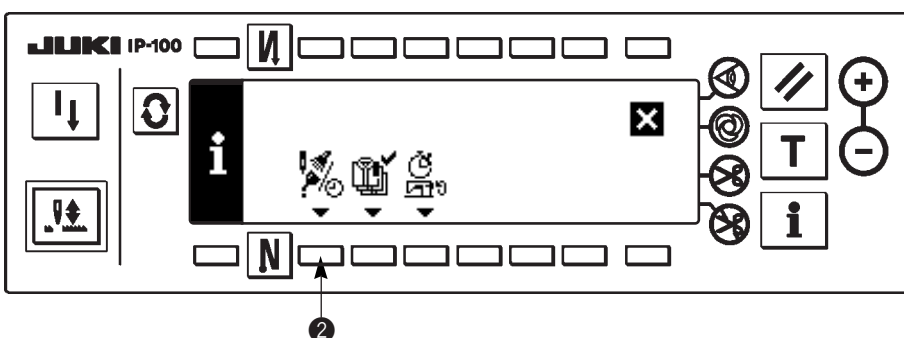


❶ : Sewing management information

1. Sewing management information

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

[Maintenance management function]



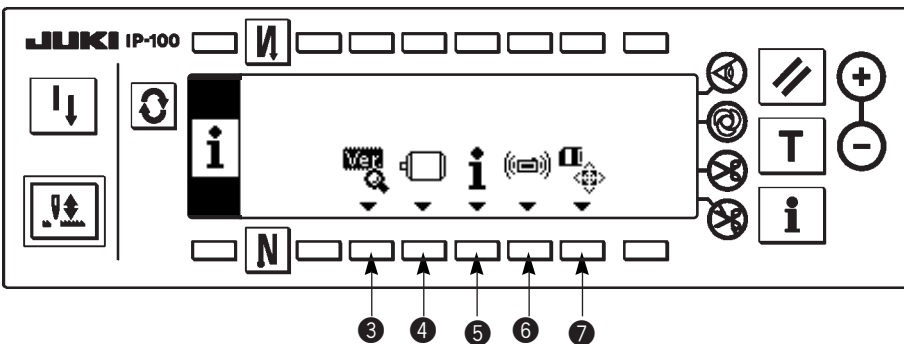
- 1) Press ❷ to display the maintenance function screen.

[Maintenance personnel level]



- 1) Turn ON the power. When the needle bar is not in the UP position, turn the handwheel to bring the needle bar to its UP position.
- 2) Press switch ① for approximately three seconds to display the information screen.
- 3) Press switches ③, ④, ⑤, ⑥ and ⑦ corresponding to the various functions.


Information screen (Maintenance personnel level)



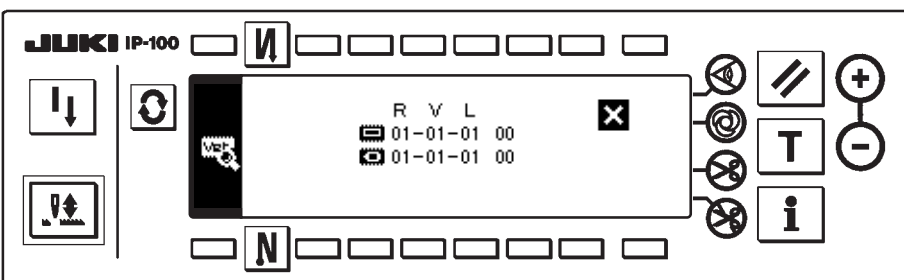
- ③ : Ver display
- ④ : Function setting
- ⑤ : Sewing management information
- ⑥ : Communication mode
- ⑦ : Smart media format

2. Ver display

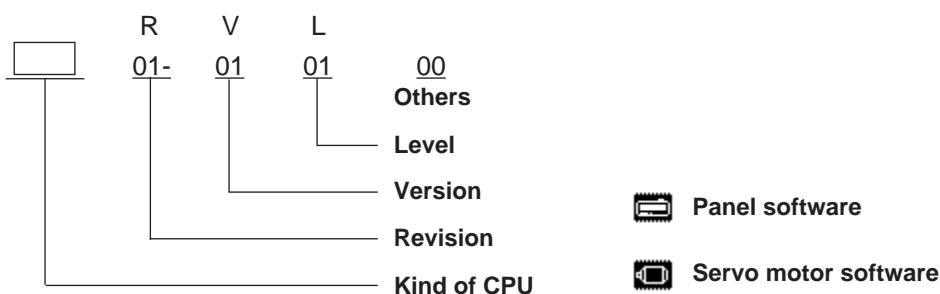
Software version of each CPU is displayed.

Press switch ③  in the information screen (maintenance personnel level).

Ver display screen




Explanation of display




3. Sewing management information

For the sewing management information, there are the operator level and the maintenance personnel level.

[Operator level]

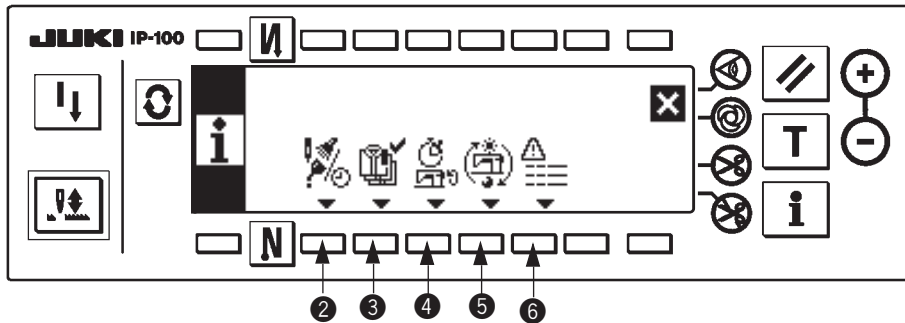
Press switch ⑤  in the information screen.

[Maintenance personnel level]

Press switch ⑤  for approximately three seconds in the information screen.

Pictograph on the left end of the sewing management information is shown in reverse video.

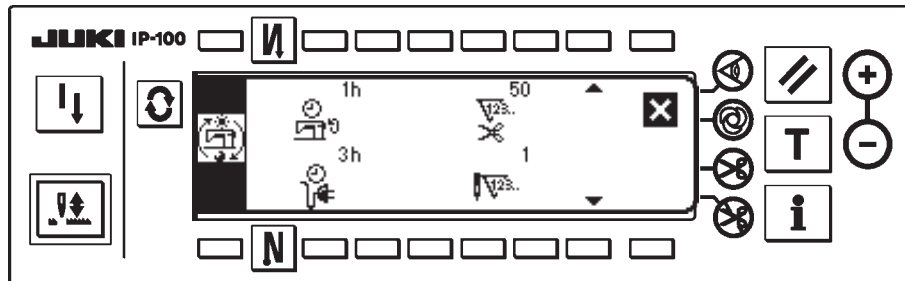
Sewing management information screen (Maintenance personnel level)





- ② : Maintenance function
- ③ : Production control function
- ④ : Operation measurement function
- ⑤ : Operation status
- ⑥ : Error record


4. Operation status screen


The total record of the sewing machine is displayed.




 : Total operation time of the sewing machine (hour)

 : Total number of times of thread trimming of the sewing machine (number of times)

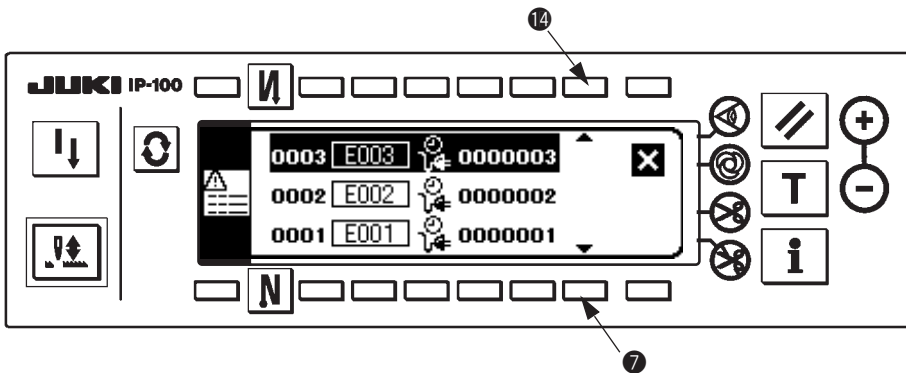
 : Total current-carrying time of the sewing machine (hour)

 : Total number of stitches of the sewing machine (1,000 stitches)

5. Error record display

Press error record display switch ⑥  in the sewing management information screen (maintenance personnel level).

Error record screen



When switch ⑦ or ⑭ is pressed, the error record scrolls up or down.

Explanation of display



Error record of approximately 100 cases (depending on the memory capacity) can be stored in memory in the order of the latest.








6. Communication mode


Uploading and downloading of various data with the sewing machine server utility (hereinafter called SU-1) or the smart media can be performed in the communication mode.

For the communication mode, there are the operator level and the maintenance personnel level.


The kind of data which can be handled with the operator level is different from that with the maintenance personnel level.

Communication function table

Kind of data	Operation level	Download	Upload	Extension of file	Remarks
 DATA All sewing machine data	Maintenance personnel			MSP	
 Panel  Main  Servo motor Each program data	Maintenance personnel		NG	PRG	


 : Panel

 : Smart media

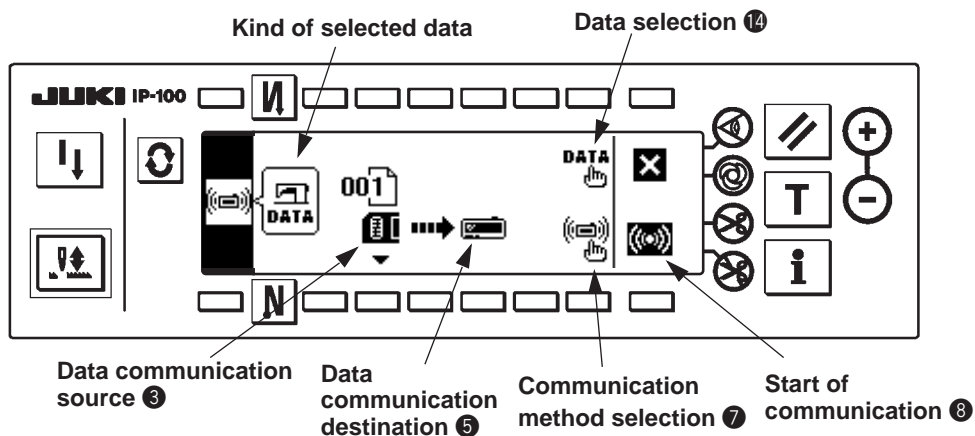
 : SU-1

Operating procedure

[Maintenance personnel level]

Press communication mode switch  ⑥ for approximately three seconds in the information screen.
The pictograph on the left end of the communication screen is shown in reverse video.

Communication screen (Maintenance personnel level)

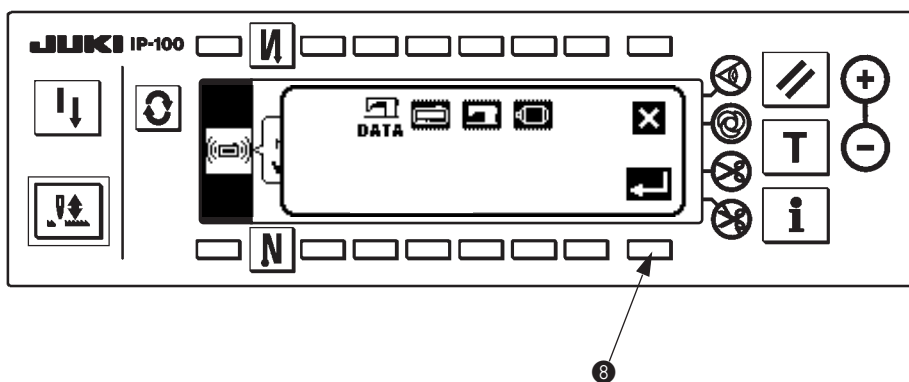


7. Communication setting

① Data selection

Press data selection switch ⑭ in the communication screen.

Data selection screen

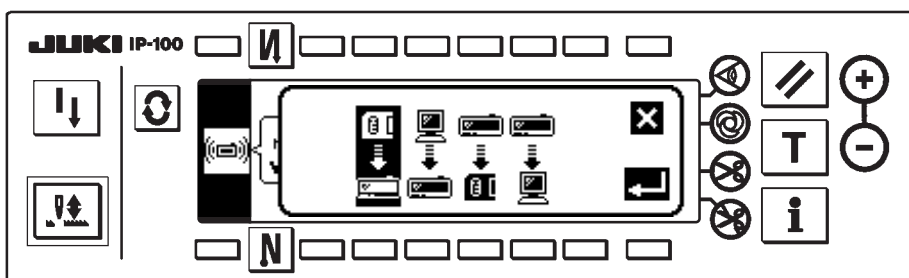


Select the data to perform communication, and press set key switch ⑧  .

② Communication method selection

Press communication method selection switch ⑦ in the communication screen.

Communication method selection screen



Select the method to perform communication and press set key switch ⑧  .

Reference : Communication method cannot be selected by downloading of program.

③ Data communication source ③

④ Data communication destination ⑤

Set data communication source ③ and data communication destination ⑤ in the ten key screen, or "+" or "-" key.

(Ten key input, or "+" or "-" key input is changed according to the kind of data.)

⑤ Start of communication

After all settings have been completed, press communication start key switch ⑧  to start communication.

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

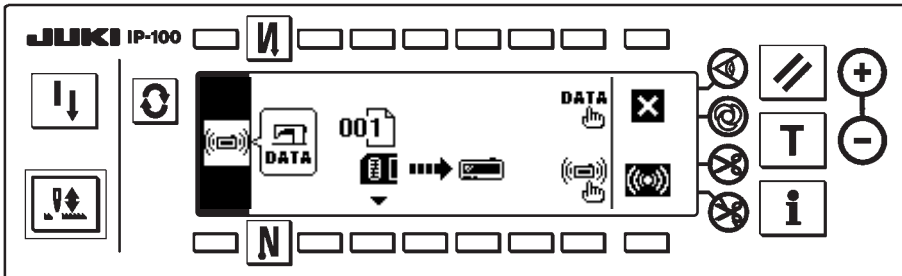
(Caution) Never turn OFF the power during communication.

Motion in case of OFF cannot be guaranteed.

8. All sewing machine data

1. Data such as sewing setting data, adjustment data, etc. which are memorized in the sewing machine can be stored in one package.
2. It is possible to download the all sewing machine data to the other sewing machines to make the same setting.

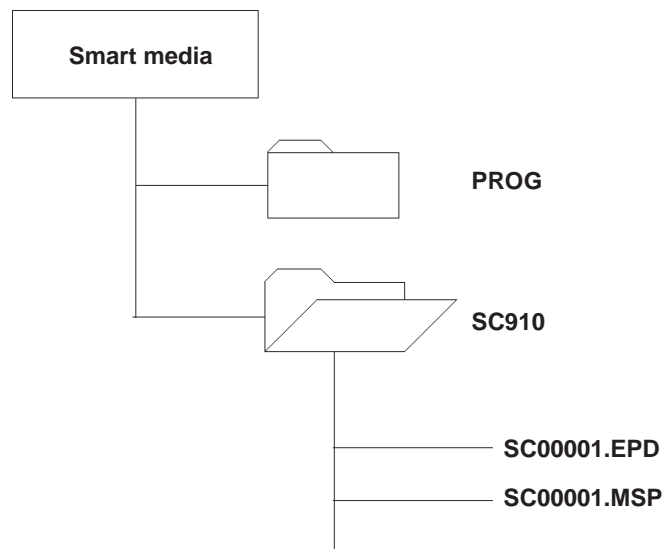
Communication screen (Download of all sewing machine data)



Reference : When downloading the all sewing machine data, it is necessary that the file and the Ver of the sewing machine have to agree with each other. An error occurs when the file of different Ver is downloaded.

(Caution) It is not possible to store and copy the function setting of the servo motor.

Folder structure of all sewing machine data (* .MSP) file in the smart media



Upload :

Uploading to the smart media is written in the folder of "SC910".

In case there is no folder, the folder of "SC910" is automatically created.

Download :

Downloading from the smart media is read from the folder of "SC910".

Store the copy from other media or the like in the folder of "SC910".

① Create folder "SC910" in the smart media.

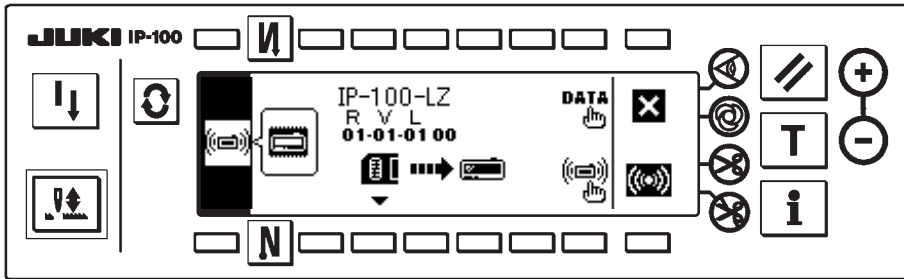
(It is not necessary to create the folder when it already exists.)

② Copy the file (extension MSP).

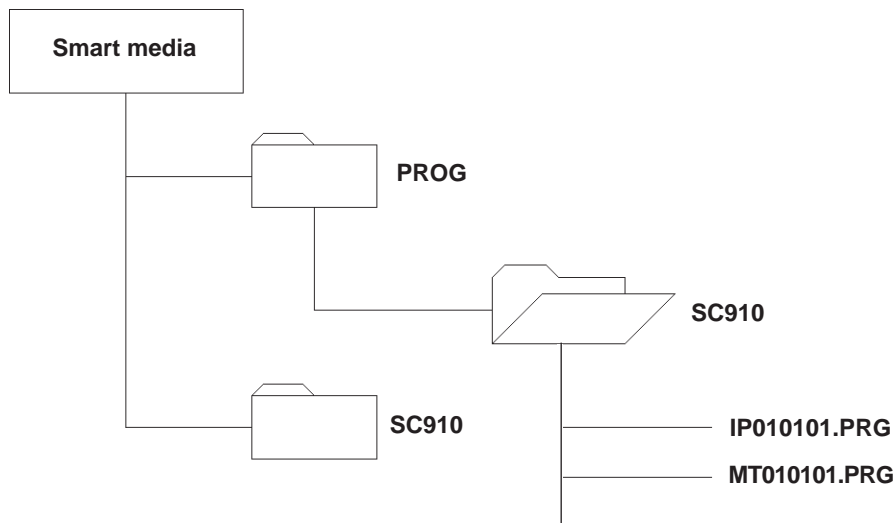
9. Program data

1. When the change of software occurs in the future due to Ver-up or the like, rewriting of the program can be performed. Rewriting of the program is performed with each CPU.

Communication screen (Download of IP-100 program data)



Folder structure of program (* .PRG) file in the smart media



Download :

Downloading from the smart media is read from the folder of "PROG\SC910".

Store the copy from other media or the like in the folder of "PROG\SC910".


- ① Create folder "PROG" in the smart media.
- ② Create folder "SC910" in the PROG folder.
(It is not necessary to create the folder when it already exists.)
- ③ Copy the program file (extension PRG).

10. Smart media format

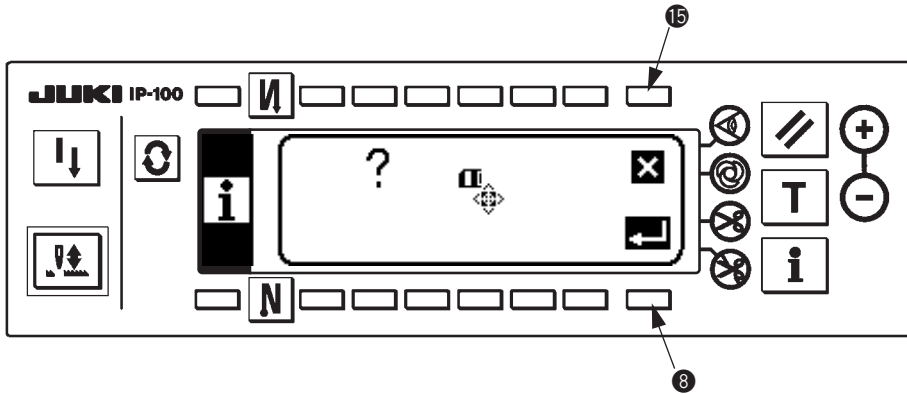
Perform formatting of the smart media.

The media formatted with the personal computer or the like may not be used.

When using the media with IP-100, be sure to perform formatting with IP-100.

Press smart media format switch  ⑧ in the information screen (maintenance personnel level)

Smart media format confirmation screen



⑧ : Formatting is performed.

Confirm again whether formatting can be performed before pressing the switch.

⑮ : The screen returns to the information screen.

(Caution) When formatting is performed, all data stored in the smart media are deleted. Take the back-up of necessary data beforehand.

2) Matters that demand special attention regarding the operation panel, IP-100

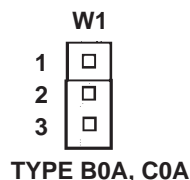
1. Kind of IP-100

For the operation panel, IP-100, there are several kinds of types in accordance with the specifications. Types that can be used for SC-910 are TYPE-B and TYPE-C. The product is TYPE B0A or TYPE C0A which is indicated on the name plate seal located in the rear of the panel case.

Brackets for installing panel for both types are different from each other.

There is the jumper wire W1 (side of RVR1 variable resistor) on the circuit board. Set the W1 setting to 2-3 for both types.

Type name plate seal	Setting of W1
TYPE B0A	2-3 pin setting (lower side)
TYPE C0A	2-3 pin setting (lower side)



(Caution) When setting is wrong, LCD screen display is not properly performed.

2. Matters that demand special attention when disassembling the operation panel

Operation panel, IP-100 is constructed with precision components.

Leave the action such as disassembling the panel case or the like to our service department since injury by electric shock or failure of panel will be caused.

If the force more than expected is applied when disassembling the panel case, it may be damaged since it is made of the plastic molding.

Especially when performing disassembling (opening/closing) the front panel and the rear panel in the state that the smart media cover attached to the rear case is closed, the small-sized switch mounted on the inside of the printed circuit board interferes with the smart media cover and may be damaged. So, be careful.

It is necessary to assemble all screws used in the operation panel with tightening torque of 0.56Ncm. (Excluding screws to fix it on the machine head and to fix the earth wire.)

3. Prohibition of the change of DIP switch setting

Do not perform the changeover of DIP switches since the guarantee of control program and stored data cannot be performed.

It is not necessary to operate these switches since they are all changeover switches for the production by the manufacturers.

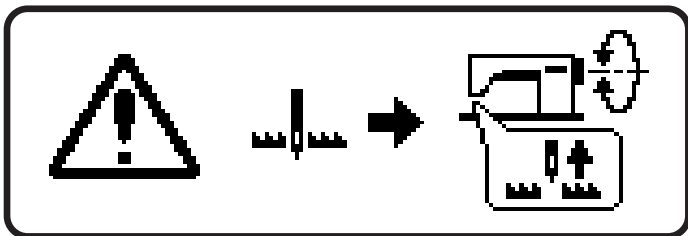
(Caution) The 4-string DIP switches are not exposed unless the operation panel case is disassembled.

3) Error Display

1. Error display

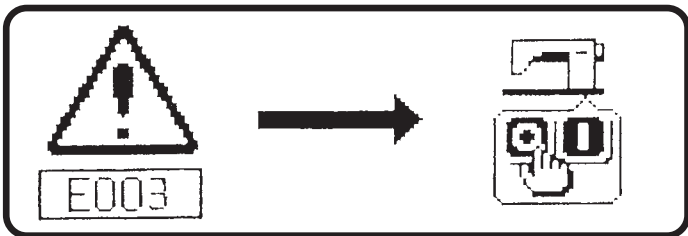
- * Error is informed by means of the panel display, machine head mirror LED blink and control box buzzer.

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



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

Example) The needle position is not in its UP position.
Make the needle position UP by turning the handwheel by hand.



2. Remove the cause of error after turning OFF the power.




4) 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
-	UP position detection error when turning ON the power	1. When needle position is not UP position at the time of turning ON the power.	1. Set to UP position by turning handwheel by hand. 2. Connect synchronizer connector.
-	Smart media cover open	1. Lid of smart media slot is open.	Close the lid.
E000	EEPROM initialization	1. EEPROM initialization is executed. 2. Resistor pack is replaced.	-
E003	Disconnection of synchronizer connector	1. When position detection signal is not inputted from the sewing machine head synchronizer.	1. Check the synchronizer connector (CN30) for loose connection and disconnection. 2. Check whether the synchronizer cord has broken since the cord is caught in the machine head or the like.
E004	Synchronizer lower position sensor failure	2. When the synchronizer has broken.	
E005	Synchronizer upper position sensor failure		
E007	Overload of motor	1. When the machine head is locked. 2. When sewing extra-heavy material beyond the guarantee of the machine head. 3. When the motor does not run.	1. Check whether the thread has been entangled in the motor pulley. 2. Check the motor output connector (4P) for loose connection and disconnection.
E008	Undefined machine head	When the machine head connector is not properly read.	Check the machine head connector (CN31) for loose connection and disconnection.
E011	Smart media not inserted	Smart media is not inserted.	Return after reset operation.
E012	Read error	Data read from smart media is not possible.	Return after reset operation.
E013	Write error	Data write to smart media is not possible.	Return after reset operation.
E014	Write protect	Smart media is in write prohibition state.	Return after reset operation.
E015	Format error	Formatting cannot be performed.	Return after reset operation.
E016	External media capacity over	Media capacity of smart media is short.	Return after reset operation.
E019	File size over	File is too big.	Return after reset operation.
E021	Access error	Abnormality of access of file	Return after reset operation.
E302	Fall detection switch failure	When fall detection switch is inputted in the state that the power is turned ON.	1. Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). 2. Check whether the fall detection switch cord is caught in the sewing machine or the like and has broken.
E343	Bobbin thread remaining amount sensor unit trouble	1. The device is not connected when bobbin thread remaining detection function is ON. 2. Failure of position sensor of the device 3. Failure of position solenoid of the device	1. Check whether the device is connected. 2. Check whether bobbin thread remaining amount detection connector (CN58) is loosened or disconnected.
E730	Motor encoder trouble (AB phase)	When the motor signal is not properly inputted.	1. Check the motor signal connector (CN38 and CN39) for loose connection and disconnection.
E731	Motor sensor error (UVW phase)		2. Check whether the motor signal cord has broken since the cord is caught in the machine head or the like.broken since the cord is caught in the machine head or the like.
E733	Reverse rotation of main shaft motor	State that the sewing machine is rotating in the different direction from the normal rotating direction at 500 rpm or more continues 40 times or more while motor is running (excluding holding of needle position).	Turn OFF the power.

No.	Description of error detected	Cause	Item to be checked or corrective measure
E810	Solenoid short-circuit	When the short-circuited solenoid is desired to be driven.	Check whether the solenoid is short-circuited.
E811	Overvoltage	1. When voltage upper than guaranteed one is inputted. 2. When 200V is inputted for 100V setting.	1. Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. 2. Check whether 100V/200V changeover connector is set by mistake. In the above cases, POWER circuit board has broken.
E813	Low voltage	1. When voltage lower than guaranteed one is inputted. 2. When 100V is inputted for 200V setting.	1. Check whether the voltage is lower than the rated voltage - (minus) 10% or less. 2. Check whether 100V/200V changeover connector is set by mistake.
E920	GA failure	Abnormality of gate array	When return is not performed even after turning OFF the power, the possibility of gate array breakage is large.
E922	Main shaft motor control is impossible.	When main shaft motor cannot be controlled.	Turn OFF the power.
E924	Motor driver failure	Motor driver has broken.	Turn OFF the power.
E940	Bird's nest sequence error	Bird's nest prevention sequence is not completed.	Turn OFF the power.
E941	GA failure	Abnormality of gate array	When return is not performed even after turning OFF the power, the possibility of gate array breakage is large.
E942	EEPROM failure	Writing is not completed even after the lapse of 10 [ms] or more.	Turn OFF the power.
E944	Left needle is uncontrollable.	In case of LH sewing machine with organized split needle bar mechanism 1. Same error is not detected yet. 2. Home position signal is ON when left needle is locked. 3. Home position signal is OFF when left needle is released.	Check whether needle control connectors (CN55 and CN56) are loosened or disconnected.
E945	Right needle is uncontrollable.	In case of LH sewing machine with organized split needle bar mechanism 1. Same error is not detected yet. 2. Home position signal is ON when right needle is locked. 3. Home position signal is OFF when right needle is released.	Check whether needle control connectors (CN55 and CN56) are loosened or disconnected.

5) Warning list

No	Contents and display of warning	Corrective measure	Remarks
A201	Replacement of needle warning 	<ul style="list-style-type: none"> • Press X to close warning screen, and perform replacement of needle. Then clear the value in the clear screen. • Press C to clear the value, and perform replacement of needle. 	Refer to Instruction Manual 6-15-(2) Sewing management information.
A202	Cleaning warning 	<ul style="list-style-type: none"> • Press X to close warning screen, and perform cleaning. Then clear the value in the clear screen. • Press C to clear the value, and perform cleaning. 	Refer to Instruction Manual 6-15-(2) Sewing management information.
A203	Replacement of oil warning 	<ul style="list-style-type: none"> • Press X to close warning screen, and perform replacement of oil. Then clear the value in the clear screen. • Press C to clear the value and perform replacement of oil. 	Refer to Instruction Manual 6-15-(2) Sewing management information.

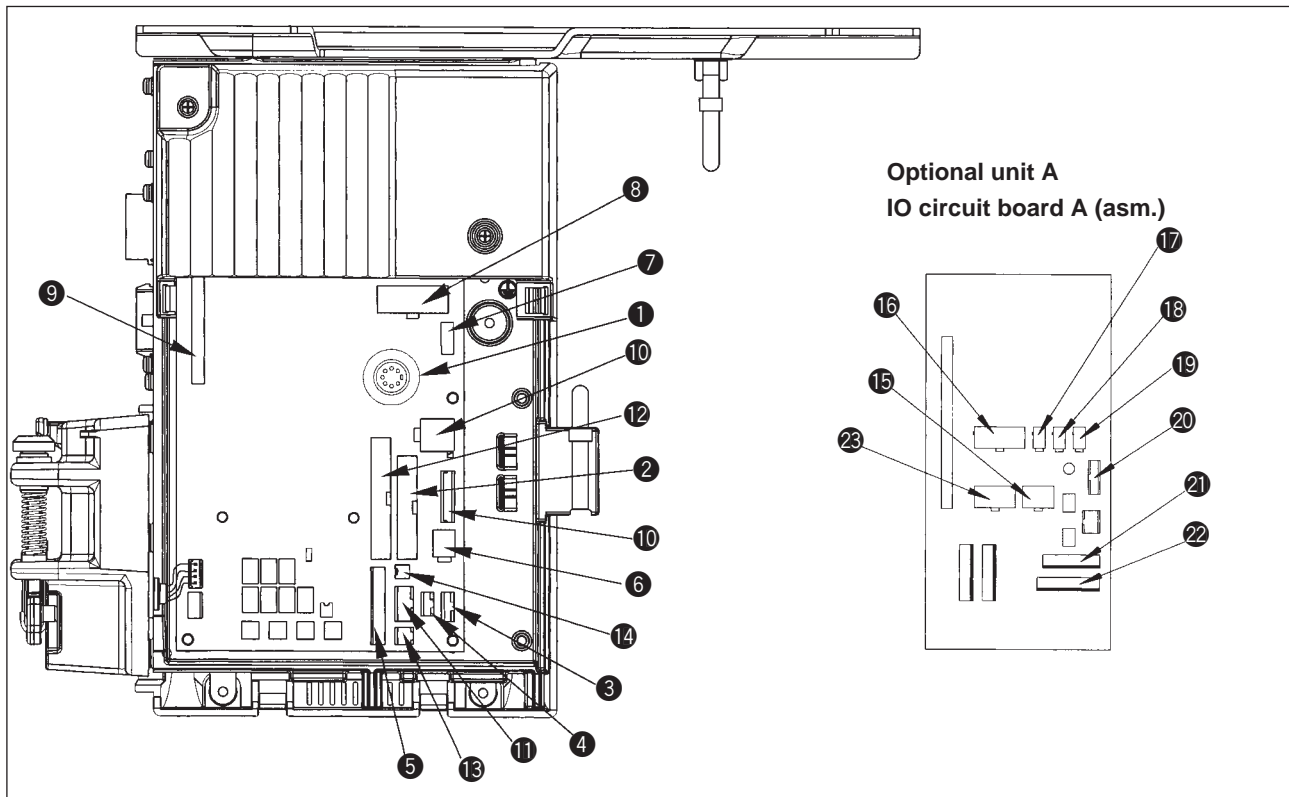
5. Control box (SC-910)

(1) Connecting the cords

WARNING :



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

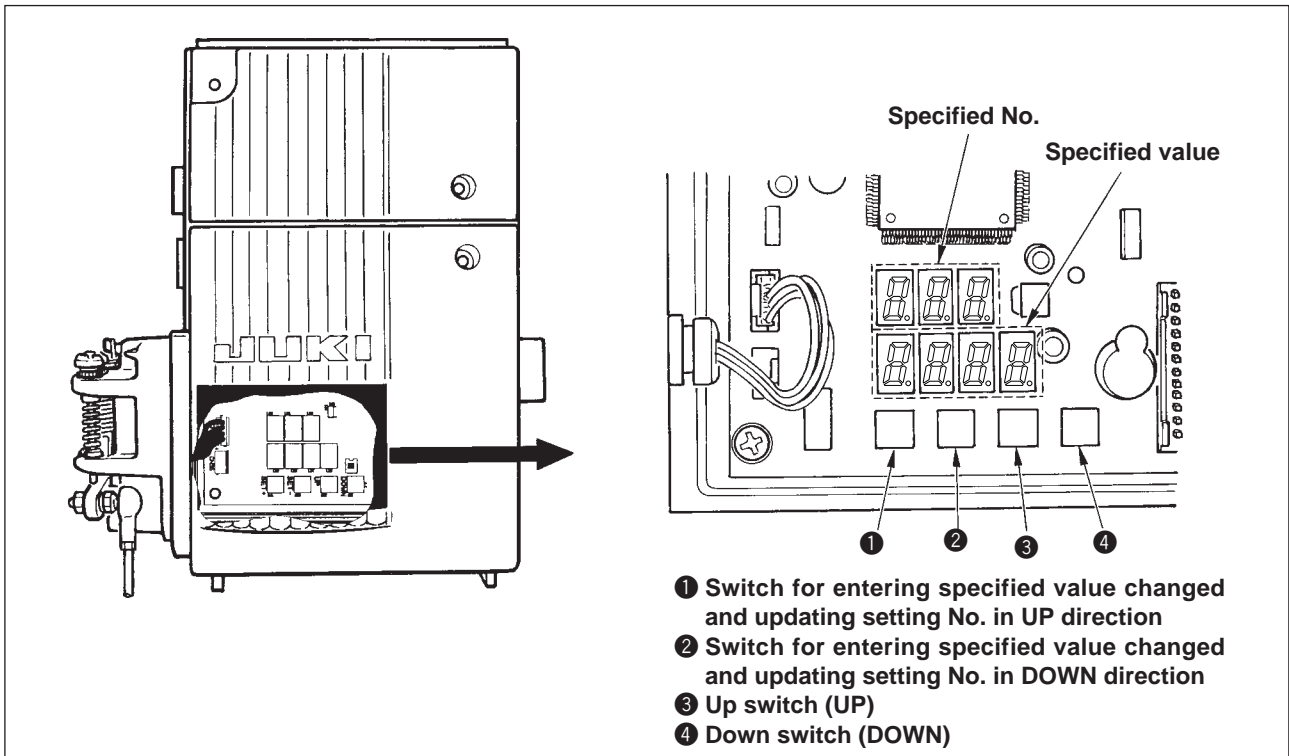


Following connectors are prepared on the front face of SC-910. Connect the connectors coming from the machine head to the corresponding places so as to fit the devices mounted on the machine head.

- | | | | |
|--------|---|--|---|
| ① CN30 | Synchronizer : it detects the needle bar position. | ⑩ CN38, CN39 | Motor signal connector |
| ② CN35 | CP-160 panel : Various kinds of programmed sewing can be executed. (Refer to the Instruction Manual for each panel for the details of functions.) | ⑪ CN32 | Standing machine pedal : JUKI standard PK-70, etc. Sewing machine can be controlled with the external signal. |
| ③ CN33 | Not used | ⑫ CN34 | IP-100 panel (LCD panel) : Various kinds of programmed sewing can be executed. |
| ④ CN31 | Machine head connector 4P | ⑬ CN45 | Material end detection sensor ED-4, etc. |
| ⑤ CN42 | External input/output connector : input/output of up/down detection signal, rotation prohibition signal, etc. is prepared. | ⑭ CN43 | Fan |
| ⑥ CN48 | Safety switch (standard) : When tilting the sewing machine without turning the power OFF, the operation of the sewing machine is prohibited so as to protect against danger. Optional switch : by changing over the internal functions, 6 kinds of functions can be selected. | * By adding the optional unit A, the following optional devices of JUKI standard can be connected. | |
| ⑦ CN40 | Presser foot lifter solenoid. (For automatic presser foot lifter type only) | ⑮ CN128 | Left/right needle detection |
| ⑧ CN46 | Machine head solenoid : Thread trimming, reverse-stitching solenoid, touch-back switch, etc. | ⑯ CN127 | Thread holding, thread suction, thread drawing |
| ⑨ CN47 | Optional circuit board connection connector : Required when using JUKI standard bobbin thread remaining amount detection sensor, etc. | ⑰ CN122 | Needle cooler (bottom fan) |
| | | ⑱ CN121 | Bobbin thread remaining amount detection |
| | | ⑲ CN120 | +24V external power source |
| | | ⑳ CN123 | Needle/bobbin thread remaining amount detection sensor |
| | | ㉑ CN125 | External interface I/F D/A Input |
| | | ㉒ CN126 | Left/right lock SW, LED |
| | | ㉓ CN129 | Thread holding, thread suction, thread drawing, bobbin thread remaining amount detection |

(2) Setting for functions

Functions can be selected and specified by means of the four setting switches and light emitting diode located inside the front cover of the SC-910.

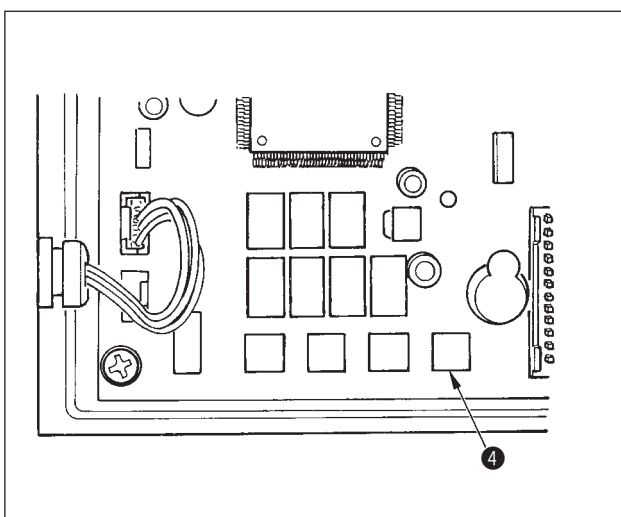


- (Caution)
- Do not perform switch operations other than those described in the following explanations.
 - Be sure to re-return the power switch ON after one second or more has passed. If the power is turned ON immediately after turning it OFF, the sewing machine may not work normally. In this case,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



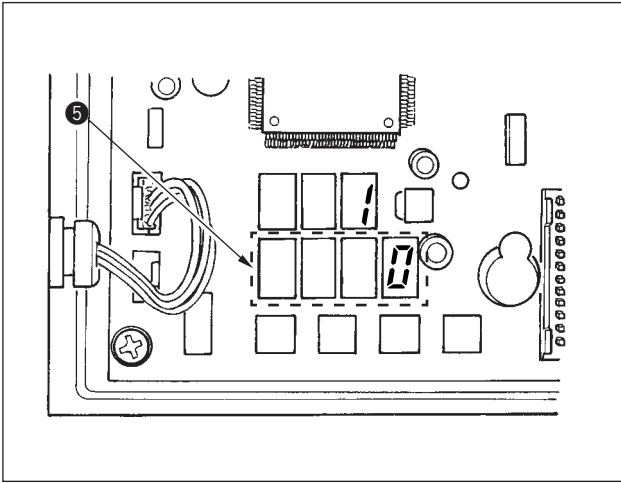
WARNING :

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.

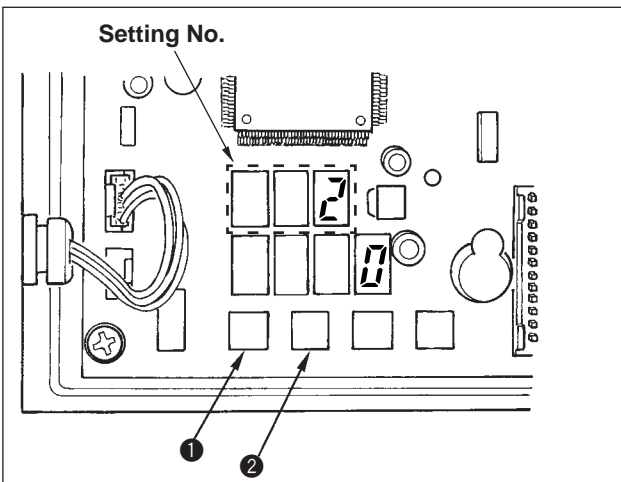


How to change over to the function setting mode

- 1) Turn OFF the power to the unit.
- 2) Open the front cover.
- 3) Pressing switch ④, turn ON the power to the unit.



4) Indication ⑤ will be shown on the display. (If the indication fails to change, re-perform the procedures 1) to 3).



5) When you want to advance the setting No., press switch ① to advance the setting No.
When you want to return the setting No., press switch ② to return the setting No.

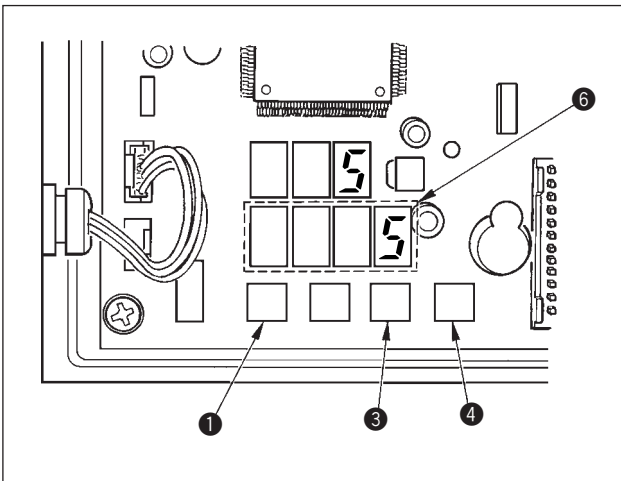
(Caution) Keep pressing switch ① or switch ②, and the setting No. will advance (return) continuously.

When the setting No. is advanced (returned), the contents which are before by one (after by one) will be etemined.

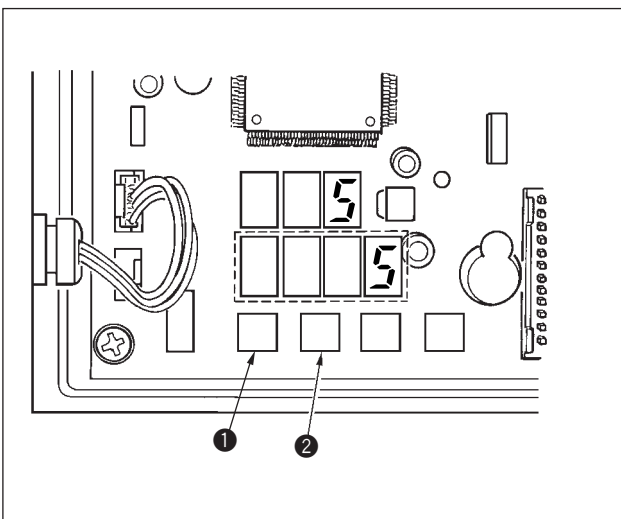
So be careful when changing the

EXAMPLE) CHANGING THE FLICKER REDUCING FUNCTION (SETTING No. 5)

Press switch ① four times to set the setting No. to "5".
Press switch ④ five times to change the set No. to "5" since the current set value is displayed on LED ⑥.
(Standard : "0")



(Caution) Keep pressing switch ④ or switch ③, and the setting vaue can be changed continuously.



6) When the change has been completed, press switch ① or ② to specify the changed value.

(Caution) 1. When turning OFF the power before performing this work, the contents which have been changed are not updated.

2. Press switch ①, and screen display will change to the contents of next setting No.

3. Press switch ②, and screen display will change to the contents of previous setting No.

After completing the operation, turn OFF the power, and return the front cover to the original position.

The machine returns to the normal operation by turning ON the power again.

(3) Function setting list

No.	Item	Description	Setting range	Indication of function setting	Ref. page
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.	0 to 9 (Stitches)	<input type="text"/> <input type="text"/> <input type="text"/> 1 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
2	Material end sensor function	Material end sensor function (used in case of without panel). 0 : Material end detection function is not operative. 1 : After detecting material end, the specified number of stitches (No. 4) will be sewn, and the sewing machine will stop.	0/1	<input type="text"/> <input type="text"/> <input type="text"/> 2 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
3	Thread trimming function by material end sensor	Thread trimming function by material end sensor (used in case of without panel). 0 : Automatic thread trimming function after detection of material end is not operative. 1 : After detecting material end, the specified number of stitches (No. 4) will be sewn, and the sewing machine will stop and perform automatic thread trimming.	0/1	<input type="text"/> <input type="text"/> <input type="text"/> 3 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
4	Number of stitches for material end sensor	Number of stitches for material end sensor (used in case of without panel). Number of stitches from detection of material end to stop of the sewing machine.	0 to 19 (Stitches)	<input type="text"/> <input type="text"/> <input type="text"/> 4 <input type="text"/> <input type="text"/> <input type="text"/> 5	32
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	0 to 8	<input type="text"/> <input type="text"/> <input type="text"/> 5 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
6	Bobbin thread counting function	Bobbin thread counting function 0 : Bobbin thread counting function is not operative. 1 : Bobbin thread counting function is operative.	0/1	<input type="text"/> <input type="text"/> <input type="text"/> 6 <input type="text"/> <input type="text"/> <input type="text"/> 1	32
7	Unit of bobbin thread counting down	Unit of bobbin thread counting down 0 : Count/10 stitches 1 : Count/15 stitches 2 : Count/20 stitches	0 to 2	<input type="text"/> <input type="text"/> <input type="text"/> 7 <input type="text"/> <input type="text"/> <input type="text"/> 0	
8	Number of rotation of reverse feed stitching	Sewing speed of reverse feed stitching	180 to 3,000 (r.p.m.)	<input type="text"/> <input type="text"/> <input type="text"/> 8 1 9 0 0	
9	Thread trimming prohibiting function	Thread trimming prohibiting function (used in case of without panel). 0 : Thread trimming prohibiting function is not operative. 1 : Thread trimming is prohibited. (Output of solenoid is prohibited. : Thread trimmer and wiper)	0/1	<input type="text"/> <input type="text"/> <input type="text"/> 9 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
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	0/1	<input type="text"/> <input type="text"/> 1 0 <input type="text"/> <input type="text"/> <input type="text"/> 0	32
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.	0/1	<input type="text"/> <input type="text"/> 1 1 <input type="text"/> <input type="text"/> <input type="text"/> 1	32
12	Optimal 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 : Neutral presser lifting changeover function	0 to 8	<input type="text"/> <input type="text"/> 1 2 <input type="text"/> <input type="text"/> <input type="text"/> 0	33
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 is operative. 2 : When counting is out (-1 or less) Function of forcibly prohibiting start of the sewing machine is operative.	0 to 2	<input type="text"/> <input type="text"/> 1 3 <input type="text"/> <input type="text"/> <input type="text"/> 0	41
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.	0/1	<input type="text"/> <input type="text"/> 1 4 <input type="text"/> <input type="text"/> <input type="text"/> 0	33
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.	0 to 19	<input type="text"/> <input type="text"/> 1 5 <input type="text"/> <input type="text"/> <input type="text"/> 1	
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 tension release)	0 to 2	<input type="text"/> <input type="text"/> 1 8 <input type="text"/> <input type="text"/> <input type="text"/> 1	33

No.	Item	Description	Setting range	Indication of function setting	Ref. page
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.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 9 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	33
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	0 : Function OFF 1 to 9 stitches	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 0 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	33
21	Function of neutral presser lifting	Function of lifting presser foot when the pedal is in neutral position. 0 : Function of neutral automatic presser lifting is not operative. 1 : Selection of function of neutral presser lifting.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	34
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	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	34
24	Function of fine adjustment of number of rotation	Number of rotation can be compensated. Be sure to normally use this function with "0".	-1.5% to 1.5% (0.1 %)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 4 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	42
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.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	34
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	0 to 9	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	34
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	1 to 100	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 5 0	34
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	0 to 30 (Stitches)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 8 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	34
29	Suction time of the first start of the back solenoid	This function sets the suction motion time of the back-tack solenoid. 50 ms to 300 ms	50 to 300 (ms)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 9 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 5 0	34
30	Function of reverse feed stitching on the way	Function of reverse feed stitching on the way 0 : Function of reverse stitching on the way is not operative. 1 : Function of reverse feed stitching on the way is operative.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 0 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	35
31	Number of stitches of reverse feed stitching on the way	Number of stitches of reverse feed stitching on the way.	0 to 19 (Stitches)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4	35
32	Effective condition of reverse feed stitching on the way when the sewing machine is stopping.	Effective condition of reverse feed stitching on the way 0 : Function is not operative when the sewing machine stops. 1 : Function is operative when the sewing machine stops.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	35
33	Thread trimming function by reverse feed stitching on the way	Thread trimming function by reverse feed stitching on the way 0 : Automatic thread trimming function after completion of reverse feed stitching on the way is not operative. 1 : Automatic thread trimming after completion of reverse feed stitching on the way is performed.	0/1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	35
35	Number of rotation at a low speed	Lowest speed by pedal	20 to 400 (r.p.m.)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 0 0	42
36	Number of rotation of thread trimming	Thread trimming speed (Caution) Do not change the set value. When it is changed, the sewing machine is apt to be broken.	20 to 250 (r.p.m.)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2 1 0	
37	Number of rotation of soft-start	Sewing speed at the start of sewing (soft-start)	150 to 5500 (r.p.m.)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 0 0	32

No.	Item	Description	Setting range	Indication of function setting	Ref. page
38	One-shot speed	One-shot speed (The max. value depends on the number of rotation of the sewing machine head.)	200 to MAX (r.p.m.)	<input type="text" value="3"/> <input type="text" value="8"/> <input type="text" value="2"/> <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/>	36
39	Pedal stroke at the start of rotation	Position where the sewing machine starts rotating from pedal neutral position (Pedal stroke)	1.0 to 5.0 (0.1 mm)	<input type="text" value="3"/> <input type="text" value="9"/> <input type="text" value="3"/> <input type="text" value="0"/>	36
40	Low speed section of pedal	Position where the sewing machine starts accelerating from pedal neutral position (Pedal stroke)	1.0 to 10.0 (0.1 mm)	<input type="text" value="4"/> <input type="text" value="0"/> <input type="text" value="6"/> <input type="text" value="0"/>	36
41	Starting position of lifting presser foot by pedal	Position where the cloth presser starts lifting from pedal neutral position (Pedal stroke)	-6.0 to 5.0 (0.1mm)	<input type="text" value="4"/> <input type="text" value="1"/> <input type="text" value="-"/> <input type="text" value="2"/> <input type="text" value="1"/>	36
42	Starting position of lowering presser foot	Starting position of lowering presser foot Stroke from the neutral position	0.8 to 5.0 (0.1 mm)	<input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="0"/>	37
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)	-6.0 to -1.0 (0.1 mm)	<input type="text" value="4"/> <input type="text" value="3"/> <input type="text" value="-"/> <input type="text" value="5"/> <input type="text" value="1"/>	37
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)	1.0 to 15.0 (0.1 mm)	<input type="text" value="4"/> <input type="text" value="4"/> <input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="0"/>	37
45	Compensation of neutral point of the pedal	Compensation value of the pedal sensor	-15 to 15	<input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="0"/>	37
46	Auto-lifter selecting function	Auto-lifter selection 0 : Solenoid drive system 1 : Pneumatic drive system	0/1	<input type="text" value="4"/> <input type="text" value="6"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="0"/>	
47	Holding time of lifting auto-lifter	Limitation time of waiting for lifting solenoid type auto-lifter device	10 to 600 (second)	<input type="text" value="4"/> <input type="text" value="7"/> <input type="text" value="6"/> <input type="text" value="0"/>	37
48	Pedal stroke 1 for starting thread trimming	Position where thread trimming starts from pedal neutral position (Standard pedal) (Pedal stroke)	-6.0 to -1.0 (0.1 mm)	<input type="text" value="4"/> <input type="text" value="8"/> <input type="text" value="-"/> <input type="text" value="3"/> <input type="text" value="5"/>	37
49	Lowering time of presser foot	Lowering time of presser foot after the pedal has been depressed. (Start of rotation of the sewing machine is delayed during this time.)	0 to 250 (10 ms)	<input type="text" value="4"/> <input type="text" value="9"/> <input type="text" value="1"/> <input type="text" value="4"/> <input type="text" value="0"/>	40
51	Compensation of solenoid-on timing of reverse feed stitching at the start of sewing	Compensation of starting the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	-36 to 36 (10°)	<input type="text" value="5"/> <input type="text" value="1"/> <input type="text" value="-"/> <input type="text" value=""/> <input type="text" value="6"/>	38
52	Compensation of solenoid-off timing of reverse feed stitching at the start of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	-36 to 36 (10°)	<input type="text" value="5"/> <input type="text" value="2"/> <input type="text" value="-"/> <input type="text" value=""/> <input type="text" value="4"/>	38
53	Compensation of solenoid-off timing of reverse feed stitching at the end of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the end of sewing is performed.	-36 to 36 (10°)	<input type="text" value="5"/> <input type="text" value="3"/> <input type="text" value="-"/> <input type="text" value=""/> <input type="text" value="9"/>	38
55	Foot lift after thread trimming	Function of lifting presser foot at the time of (after) thread trimming 0 : Not provided with the function of lifting presser foot after thread trimming 1 : Provided with the function of lifting presser foot automatically after thread trimming	0/1	<input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="1"/>	39
56	Reverse revolution to lift the needle after thread trimming	Function of reverse revolution to lift the needle at the time of (after) thread trimming 0 : Not provided with the function of reverse revolution to lift the needle after thread trimming 1 : Provided with the function of reverse revolution to lift the needle after thread trimming	0/1	<input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="0"/>	39

No.	Item	Description	Setting range	Indication of function setting	Ref. page
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	0/1	<input type="checkbox"/> 5 <input type="checkbox"/> 7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	39
58	Function of holding predetermined upper/lower position of the needle bar	Function of holding predetermined upper/lower position of the needle bar 0 : Not provided with the function of holding predetermined upper/lower position of the needle bar 1 : Provided with the function of holding predetermined upper/lower position of the needle bar	0/1	<input type="checkbox"/> 5 <input type="checkbox"/> 8 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	39
59	Function of Auto/Manual change-over of reverse feed stitching at the start of sewing	This function can specify the sewing speed of reverse feed stitching at the start of sewing. 0 : The speed will depend on the manual operation by pedal, etc. 1 : The speed will depend on the specified reverse feed stitching speed (No. 8).	0/1	<input type="checkbox"/> 5 <input type="checkbox"/> 9 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	39
60	Function of stop immediately after reverse feed stitching at the start of sewing	Function at the time of completion of reverse feed stitching at the start of sewing 0 : Not provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing 1 : Provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing.	0/1	<input type="checkbox"/> 6 <input type="checkbox"/> 0 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	39
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).	0/1	<input type="checkbox"/> 6 <input type="checkbox"/> 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	39
64	Change-over speed of condensation stitch or EBT (end back tack)	Initial speed when starting condensation stitch or EBT	0 to 250 (r.p.m.)	<input type="checkbox"/> 6 <input type="checkbox"/> 4 <input type="checkbox"/> 1 <input type="checkbox"/> 8 <input type="checkbox"/> 0	42
65	On-timing of solenoid for condensation stitch (when condensation stitch is performed by 1 stitch.)	Starting (compensation) timing of solenoid for condensation stitch : -1 Compensation value of starting the solenoid when condensation stitch is performed by 1 stitch.	-36 to 0 (10°)	<input type="checkbox"/> 6 <input type="checkbox"/> 5 - <input type="checkbox"/> <input type="checkbox"/> 1 <input type="checkbox"/> 5	33
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.	-36 to 0 (10°)	<input type="checkbox"/> 6 <input type="checkbox"/> 6 - <input type="checkbox"/> <input type="checkbox"/> 1 <input type="checkbox"/> 5	33
67	Number of times of drives of air-purge	Not used.	0 to 9 (Stitches)	<input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2	
68	Start-up position of air-purge	Not used.	0 to 35 (10°)	<input type="checkbox"/> 6 <input type="checkbox"/> 8 <input type="checkbox"/> <input type="checkbox"/> 2 <input type="checkbox"/> 7	
69	Pause position of air-purge	Not used.	0 to 35 (10°)	<input type="checkbox"/> 6 <input type="checkbox"/> 9 <input type="checkbox"/> <input type="checkbox"/> 1 <input type="checkbox"/> 2	
70	Function of soft-down of presser foot	Presser foot is slowly lowered. 0 : Presser foot is rapidly lowered. 1 : Presser foot is slowly lowered.	0/1	<input type="checkbox"/> 7 <input type="checkbox"/> 0 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	40
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.	0 to 5	<input type="checkbox"/> 7 <input type="checkbox"/> 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	40
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.	0 to 5	<input type="checkbox"/> 7 <input type="checkbox"/> 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	40
73	Retry function	This function is used when needle cannot pierce materials . 0 : Normal 1 : Retry function is provided.	0/1	<input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	40
75	Rotating direction of motor	Normal rotating direction of motor 0 : Clockwise 1 : Counterclockwise	0/1	<input type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0	42

(4) Detailed explanation of selection of functions

① Selection of the soft-start function (Function setting No. 1)

The needle thread may fail to interlace with the bobbin thread at the start of sewing when the stitching pitch (stitch length) is small or a thick needle is used. To solve such problem, this function (called "soft-start") is used to limit the sewing speed, thereby assuring successful formation of the starting stitches.

1 0 : The function is not selected.
 0 1 to 9 : The number of stitches to be sewn under the soft-start mode.

The sewing speed limited by the soft-start function can be changed. (Function setting No. 37)

3 **7** Data setting range
 8 **0** **0** 150 to 5,500 rpm <50 rpm>

② Material end sensor (ED : optional) function (Function setting No. 2 to 4)

This function is possible when the material end sensor (ED) is attached.

As for the details, refer to the instruction manual for the material end sensor.

(Caution) Setting will be invalid when the material end sensor is not attached, or CP-160 or higher class model is connected.

③ Flicker reducing function (Function setting No. 5)

The function reduces flickering of the hand lamp at the start of sewing. The higher the set value increases, the more effective the function will work.

5 Setting range
 0 0 to 8
 0 : Flicker reducing function does not work.
 to
 8 : Flickering is effectively reduced.

(Caution) The more effective the flicker reducing function works (the more the set value is made), the lower the start-up speed of the sewing machine will become.

④ Bobbin thread counting function (Function setting No. 6)

When the control panel (CP-160 or higher class model) is used, the function subtracts from the predetermined value and indicates the used amount of bobbin thread.

For the details, refer to the instruction manual for the control panel.

(Caution) If "0" is set, the LCD indication on the control panel will go out and the bobbin thread counting function will be invalid.

⑤ Thread trimming prohibiting function (Function setting No. 9)

This function turns OFF thread trimming solenoid output and wiper solenoid output when thread trimming is actuated. [If the control panel (CP-160 or higher class model) is used with the sewing machine, this function will work in accordance with the function setting on the control panel.]

By this function, separate sewing material can be spliced and sewn without trimming thread.

9 0 : off Thread trimming is operative. (thread can be trimmed).
 0 1 : on Thread trimming is inoperative. (thread can not be trimmed).

⑥ Setting of the needle bar stop position when the sewing machine stops (Function setting No. 10)

The position of the needle bar when the pedal is in its neutral position is specified.

1 **0** 0 : Down The needle bar stops in the lowest position of its stroke.
 0 1 : Up The needle bar stops in the highest position of its stroke.

(Caution) If the stop position of the needle bar is set to the highest position, the thread trimming action will be taken after the needle bar comes down once to the lowest position.

⑦ Sound of click of the key switch mounted on the PSC box (Function setting No. 11)

This function selects whether the sound is effective or ineffective when operating the four key switches mounted on the PSC box.

1 **1** 0 : off The sound of click is ineffective.
 1 1 : on The sound of click is effective.

6. Needle thread release function (Function setting No. 28)

This function sets the number of stitches until the clamped needle thread is held after the start of sewing

Setting range : 0 to 30 stitches

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	8		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				1

7. Thread draw-out/return solenoid (Function setting No. 89)

This function sets whether the motion of draw-out/return solenoid (LZ) is performed or prohibited.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	8	9		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				0

0 : Motion is ineffective.
1 : Function is effective.

8. Number of stitches of tension release motion at the sewing start (Function setting No. 100)

This function sets the number of stitches to make the tension release solenoid actuate at the sewing start.

Setting range : 0 to 2 stitches

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1	0	0	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				0

⑪ Neutral automatic presser lifting function (with AK device only) (Functionsetting No. 21)

This function can automatically lift the presser foot when the pedal is in the neutral position. Automatic lifting time of the pedal depends on the automatic lifting time after thread trimming and when the presser foot is automatically lowered, it is automatically lifted at the second neutral position after it has come off the neutral position once.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	1		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				0

0 : off Function of neutral automatic presser lifting is not operative.
1 : on Selection of function of neutral automatic presser lifting

⑫ Function of changeover of compensating switch on the operation panel function (Function setting No. 22)

Function of compensation switch on the operation panel of CP-160 or IP-100 can be changed over to needle up / down compensating stitching or one stitch compensating stitching.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	2		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				0

0 : Needle up / down compensating stitching
1 : One stitch compensating stitching

⑬ Thread trimming motion condition (Function setting No. 25)

This function makes the thread trimming motion ineffective when depressing the back part of the pedal after DOWN detection position has been off by turning handwheel by hand or the like.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				1

0 : Thread trimming motion is effective.
1 : Thread trimming motion is prohibited.

⑭ Function of setting the holding force after stop (Function setting No. 26)

Function to prevent the increased amount of reverse rotation after stop when the machine has been used for a long time and the machine head torque has become light. When the set value is increased, the prevention effect becomes large. However, when the set value is excessively increased, on the contrary, there is a danger that the machine normally rotates. Adjust the function while checking the motion of the needle bar.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	6		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				0

Setting range : 0 to 9

⑮ Function of setting the reaction force at the time of retry (Function setting No. 27)

This function changes the magnitude of the reversing force before moving to the retry motion.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	7		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		5	0	

Setting range : 1 to 100
1 : Less reversing force to 100 : More reversing force

⑯ Setting of the suction time of the back-tack solenoid (Function setting No. 29)

This function can change the suction time of the back-tack solenoid. It is effective to decrease the value when the heat is high.

(Caution) When the value is excessively decreased, failure of motion or defective pitch will follow. Be careful when changing the value.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	9		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	5	0	

Setting range : 50 to 300 ms <10 / ms>

⑰ **Function of reverse feed stitching on the way (Function setting Nos. 30 to 33)**

Functions of the limit of number of stitches and thread trimming command can be added to the touch back switch on the sewing machine head.

Function setting No. 30

Function of reverse feed stitching on the way is selected.

- 0 : off Normal back-tack function
 1 : on Function of reverse feed stitching on the way

Function setting No. 31 Number of stitches performing reverse feed stitching is set.

- Setting range
 4 0 to 19 stitches

Function setting No. 32 Effective condition of reverse feed stitching on the way

- 0 : off Inoperative when the sewing machine stops.
 (Reverse feed stitching on the way functions only when the sewing machine is running.)
 1 : on Operative when the sewing machine stops.
 (Reverse feed stitching on the way functions both when the sewing machine is running and stops.)

(Caution) Either condition is operative when the sewing machine is running.

Function setting No. 33 Thread trimming is performed when reverse feed stitching on the way is completed.

- 0 : off Without thread trimming
 1 : on Thread trimming is executed.

Actions under each setting state

Application	Function setting			Output function
	No.30	No.32	No.33	
1	0	0 or 1	0 or 1	It works as normal touch-back switch.
2	1	0	0	When operating touch-back switch at the time of depressing front part of the pedal, reverse feed stitching as many as the number of stitches specified by the function setting No. 31 can be performed.
3	1	1	0	When operating touch-back switch at the time of either stop of the sewing machine or depressing front part of the pedal, reverse feed stitching as many as the number of stitches specified by the function setting No. 31 can be performed.
4	1	0	1	When operating touch-back switch at the time of depressing front part of the pedal, automatic thread trimming is performed after reverse feed stitching as many as the number of stitches specified by the function setting No. 31 has been performed.
5	1	1	1	When operating touch-back switch at the time of either stop of the sewing machine or depressing front part of the pedal, automatic thread trimming is performed after reverse feed stitching as many as the number of stitches specified by the function setting No. 31 has been performed.

- 1 Used as the normal reverse feed stitching touch-back switch.
- 2 Used for reinforcing seam (press sewing) of the pleats. (It works only when the sewing machine is running.)
- 3 Used for reinforcing seam (press sewing) of the pleats.
(It works either when the sewing machine stops or when the sewing machine is running.)
- 4 Used as starting switch for reverse feed stitching at the sewing end.
(Used as the substitute for thread trimming by depressing back part of the pedal. It works only when the sewing machine is running. It is especially effective when the sewing machine is used as the standing-work machine.)
- 5 Used as starting switch for reverse feed stitching at the sewing end.
(Used as the substitute for thread trimming by depressing back part of the pedal. It works either when the sewing machine stops or when the sewing machine is running. It is especially effective when the sewing machine is used as the standing-work machine.)

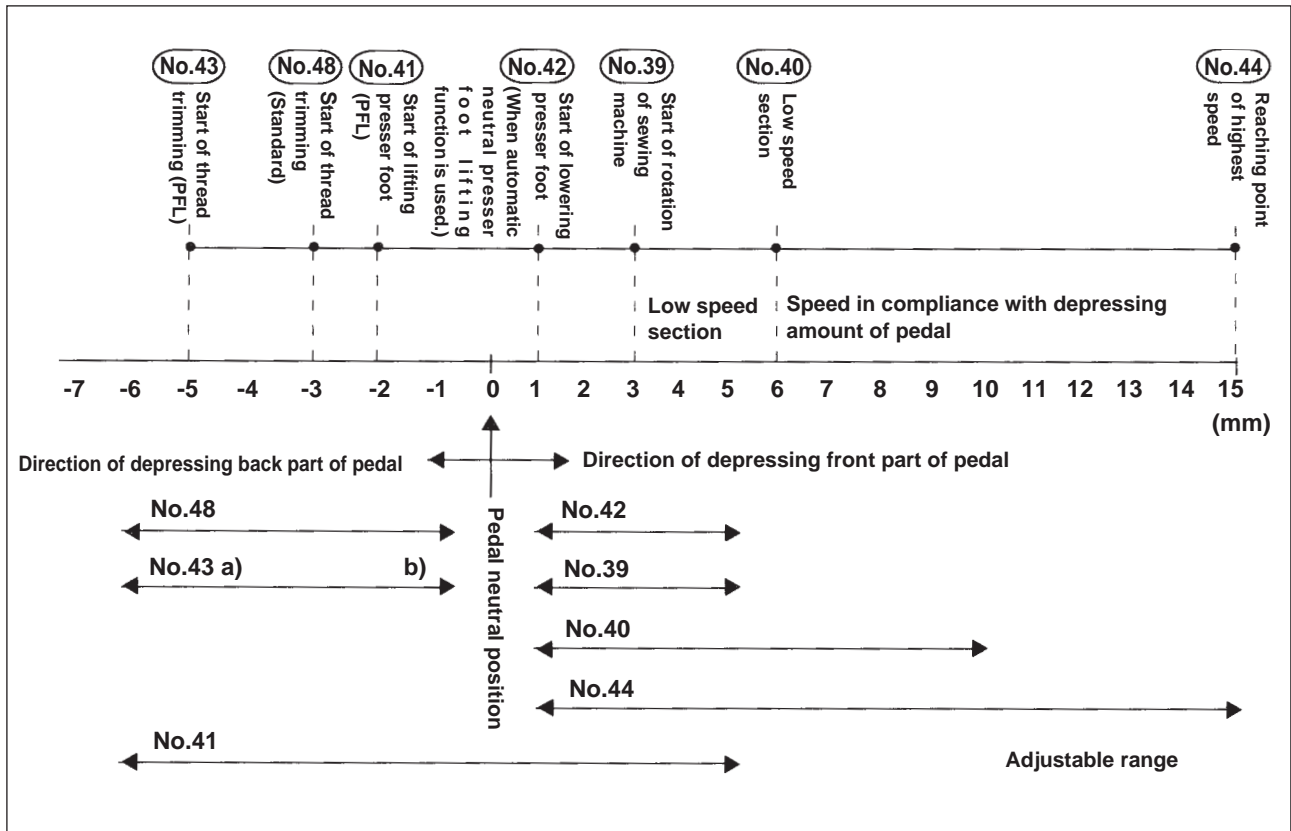
⑱ **Number of rotation of one-shot stitching (Function setting No. 38)**

This function can set, by the pedal operation of one time, the sewing speed of one-shot stitching when the sewing machine continues stitching until completing the number of stitches specified or detecting the material end.

 Setting range
 200 to MAX. rpm. <50 / rpm>

- (Caution) 1. Setting of the one-shot stitching is made by the control panel of the CP-160 or higher class model.
 2. The max. number of rotation of one-shot stitching is limited by the model of the sewing machine head.

⑲ **Adjustment of the pedal stroke (Function setting Nos. 39 to 44 and 48)**



1. **Pedal stroke at the start of rotation (Function setting No. 39)**

Stroke between the pedal in its neutral position and starting position of rotation of the sewing machine can be adjusted.

 Adjusting range
 1.0 to 5.0 [mm] <0.1 / mm>

2. **Low speed section of the pedal (Function setting No. 40)**

Stroke of the low speed section can be adjusted by operating the pedal.

 Adjusting range
 1.0 to 10.0 [mm] <0.1 / mm>

3. **Starting position of lifting presser foot by pedal (Function setting No. 41)**

Stroke between the pedal in its neutral position and starting position of lifting presser foot can be adjusted. (When lifting presser foot by pedal is applied.)

 Adjusting range
 - 6.0 to 5.0 [mm] <0.1 / mm>

4. Setting of starting position of lowering presser foot (Function setting No. 42)

Stroke between the pedal in its neutral position and starting position of lowering presser foot can be adjusted.(When the automatic neutral presser foot lifting function is used.)

 Adjusting range
 0.8 to 5.0 [mm] <0.1 / mm>

5. Pedal stroke 2 for starting thread trimming (Function setting No. 43)

Stroke between the pedal in its neutral position and starting position of thread trimming can be adjusted. (When the function of lifting presser foot by pedal is provided.)

 Adjusting range
 -6.0 to -1.0 [mm] <0.1 / mm>

6. Pedal stroke for reaching the maximum number of rotations (Function setting No. 44)

Stroke between the pedal in its neutral position and the position where the sewing machine reaches at its highest speed can be adjusted.

 Adjusting range
 1.0 to 15.0 [mm] <0.1 / mm>

7. Pedal stroke 1 for starting thread trimming (Function setting No. 48)

Stroke between the pedal in its neutral position and starting position of thread trimming can be adjusted. (Standard type, or when the function of lifting presser foot by knee switch is provided.)

 Adjusting range
 -6.0 to -1.0 [mm] <0.1 / mm>

②① Compensation of neutral point of the pedal (Function setting No. 45)

Compensation value of neutral point of the pedal is indicated. Setting of the compensation value of neutral point of the pedal is performed by the automatic compensation of neutral position of the pedal function.

 Adjusting range
 -15 to 15

②① Holding time of lifting presser foot (Function setting No. 47)

Solenoid type presser foot lifter (No. 46 0) can adjust the holding time control of lifting presser foot. This function automatically lowers the presser foot when the time set with the setting No. 47 has passed after lifting the presser foot.

When the pneumatic type presser foot lifter (No. 46 1) is selected, the holding time control of lifting presser foot is limitless regardless of the set value.

 Setting range
 10 to 600 sec <10 / sec>

② Compensation of timing of the solenoid for reverse feed stitching (Function setting No. 51 to 53)

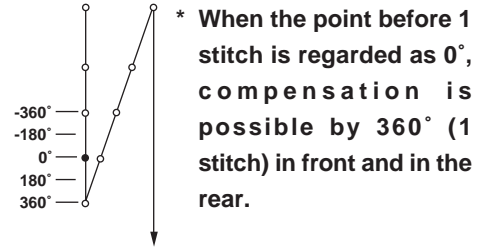
When the normal and reverse feed stitches are not uniform under the automatic reverse feed stitching action, this function can change the ON / OFF timing of the solenoid for back tack and compensate the timing.

1. Compensation of on-timing of solenoid for reverse feed stitching at the start of sewing (Function setting No. 51)

On-timing of solenoid for reverse feed stitching at the start of sewing can be compensated by the unit of angle.

5 **1** Adjusting range
 - **6** -36 to 36 <1 / 10°>

Set value	Compensation angle	Number of stitches of compensation
-36	-360°	-1
-18	-180°	-0.5
0	0°	0
18	180°	0.5
36	360°	1

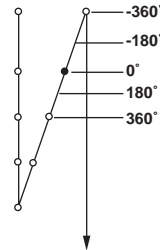


2. Compensation of off-timing of solenoid for reverse feed stitching at the start of sewing (Function setting No. 52)

Off-timing of solenoid for reverse feed stitching at the start of sewing can be compensated by the unit of angle.

5 **2** Adjusting range
 - **4** -36 to 36 <1 / 10°>

Set value	Compensation angle	Number of stitches of compensation
-36	-360°	-1
-18	-180°	-0.5
0	0°	0
18	180°	0.5
36	360°	1

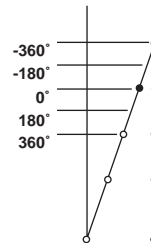


3. Compensation of off-timing of solenoid for reverse feed stitching at the end of sewing (Function setting No. 53)

Off-timing of solenoid for reverse feed stitching at the start of sewing can be compensated by the unit of angle.

5 **3** Adjusting range
 - **9** -36 to 36 <1 / 10°>

Set value	Compensation angle	Number of stitches of compensation
-36	-360°	-1
-18	-180°	-0.5
0	0°	0
18	180°	0.5
36	360°	1



②③ **Foot lift function after thread trimming (Function setting No. 55)**

This function can automatically lift the presser foot after thread trimming. This function is effective only when it is used in combination with the AK device.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	5	0 : off	Function of automatically lifting the presser foot is not provided. (Presser foot does not automatically go up after thread trimming.)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1	1 : on	Function of automatically lifting the presser foot is provided. (Presser foot automatically goes up after thread trimming.)

②④ **Reverse revolution to lift the needle after thread trimming (Function setting No. 56)**

This function is used to make the sewing machine rotate in the reverse direction after thread trimming to lift the needle bar almost to highest position. Use this function when the needle appears under the presser foot and it is likely to make scratches on the sewing products of heavy-weight material or the like.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	6	0 : off	Function of making the sewing machine rotate in the reverse direction to lift the needle after thread trimming is not provided.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0	1 : on	Function of making the sewing machine rotate in the reverse direction to lift the needle after thread trimming is provided.

(Caution) The needle bar is raised, by rotating the machine in the reverse direction, almost to the highest dead point. This may result in slip-off of the needle thread. It is therefore necessary to adjust the length of thread remaining after thread trimming properly.

②⑤ **Bobbin thread remaining amount detection function (Function setting No. 57, No. 61)**

This function detects the amount of the bobbin thread used and informs of the time of replacement of the bobbin.

This function is used when the bobbin thread remaining amount detection device (AE) is attached.

As for the details, refer to the instruction manual for the bobbin thread remaining amount detection device.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0

(Caution) Be sure to set the setting No. 57 to ineffective ("0") when the AE device is not attached. ("E43" is displayed, and the sewing machine is not actuated.)

②⑥ **Function of holding predetermined upper / lower position of the needle bar (Function setting No. 58)**

When the needle bar is in the upper position or in the lower position, this function holds the needle bar by applying a brake slightly.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	8	0 : off	Function of holding predetermined upper/lower position of the needle bar is ineffective.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0	1 : on	Function of holding predetermined upper/lower position of the needle bar is effective.

②⑦ **Change-over function of AUTO / Pedal for sewing speed of the reverse feed stitching at the start of sewing (Function setting No. 59)**

This function selects whether the reverse feed stitching at the start of sewing is performed without a break at the speed set by the function setting No. 8 or the stitching is performed at the speed by the pedal operation.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	9	0 : Manu	The speed is indicated by the pedal operation.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1	1 : Auto	Automatic stitching at the specified speed

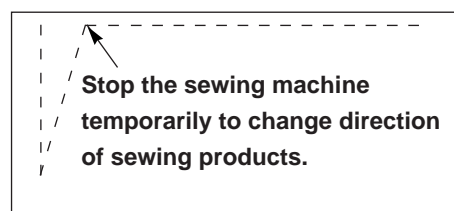
(Caution) 1. The max. sewing speed of the reverse feed stitching at the start of sewing is limited to the speed set by the function setting No. 8 regardless of the pedal.
2. When "0" is selected, stitches of reverse feed stitching may not match those of normal feed stitching.

②⑧ **Function of stop immediately after the reverse feed stitching at the start of sewing (Function setting No. 60)**

This function temporarily stops the sewing machine even when keeping depressing the front part of the pedal at the time of completion of process of reverse feed stitching at the start of sewing.

It is used when sewing a short length by reverse feed stitching at the start of sewing.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6	0	0 : Not provided with the function of temporary stop of the sewing machine immediately after the reverse feed stitching at the start of sewing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0	1 : Provided with the function of temporary stop of the sewing machine immediately after the reverse feed stitching at the start of sewing



②⑨ **Function of soft-down of presser foot (with AK device only) (Function setting Nos. 70 and 49)**

This function can softly lower the presser foot.

This function can be used when it is necessary to decrease contact noise, cloth defect, or slippage of cloth at the time of lowering the presser foot.

Note : Change the time of function setting No. 49 together at the time of selecting the function of soft-down since the sufficient effect cannot be obtained unless the time of function setting No. 49 is set longer when lowering the presser foot by depressing the pedal.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4	9					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1	4	0				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7	0					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				

0 to 250 ms
10 ms/Step

0 : Function of soft-down of presser foot is not operative. (Presser foot is rapidly lowered.)
1 : Selection of function of soft-down of presser foot

③⑩ **Function of improving inching operation (Function setting Nos. 71 and 72)**

This function improves operability of one-stitch sewing by operating the high-speed switch for the pedal or sewing machine for standing work.

The more the set value becomes, the more the speed limitation at the start of rotation is remarkably added and operability of one-stitch sewing is improved.

Function setting No. 71 limits the speed at the time of re-acceleration on the way of reducing speed.

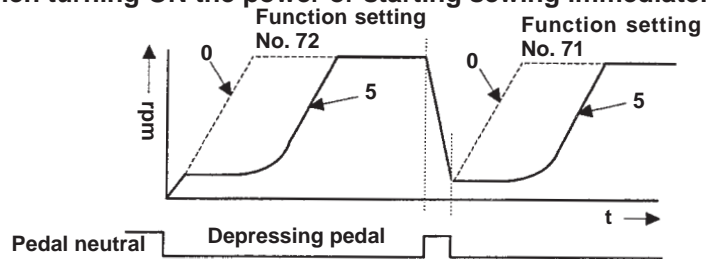
Function setting No. 72 limits acceleration from the stop state.

Note : This function fails to work when turning ON the power or starting sewing immediately after thread trimming.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7	1					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7	2					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				

0 to 5

0 to 5



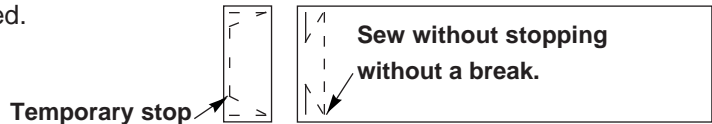
③⑪ **Function of reducing speed of reverse feed stitching at the start of sewing (Function setting No. 92)**

Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing : Normal use depending on the pedal condition (Speed is accelerated to the highest without a break.)

This function is used when temporary stop is used properly. (Cuff and cuff attaching)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9	2					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				

0 : Speed is not reduced.
1 : Speed is reduced.



③⑫ **Retry function (Function setting No. 73)**

When the retry function is used, if the sewing material is thick and not pierced with needle, this function makes the needle pierce in the material with ease.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7	3					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				

0 : Normal
1 : Retry function is provided.

③⑬ **Function to select the start-up speed of the sewing machine (Function setting No. 76)**

This function is selected in the case where the speed of the sewing machine is desired to be more at the time of start-up. (Time required to start is shortened by approximately 10%.)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7	6					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			0				

0 : Normal curve
1 : More sharp curve

(Caution) If "1" is set, motor may move irregularly. In addition, noise may occur when the sewing machine is running or noise may increase when the sewing machine is running.

④① **Setting of number of rotations at low speed (Function setting No. 35)**

This function sets the lowest speed of sewing machine when pedal is lightly operated.

Adjust when the speed of sewing machine is felt slow.

 Setting range : 20 to 400 rpm <5 rpm/step>

④② **Setting of change-over speed of condensation stitch/EBT (Function setting No. 64)**

This function sets the speed to be limited when performing reverse feed stitch at sewing end or condensation stitch which is sewn for preventing fray at the end of sewing.

It is effective to change setting when seams at the sewing end are not neatly overlapped.

 Setting range : 0 to 250 rpm <5 rpm/step>

④③ **Rotating direction of motor change-over function (Function setting No. 75)**

This function changes over rotating direction of motor.

Note : Normally, it is not necessary to change setting since rotating direction of motor automatically changes over according to the sewing machine.

 0 : Clockwise (CW)
 1 : Counterclockwise (CCW)

④④ **Function of prohibiting compensation stitching operation after turning handwheel by hand (Function setting No. 91)**

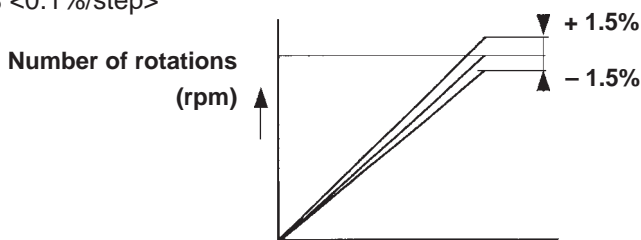
This function can select Prohibited/Effective of compensating stitch command after needle position detector signal is OFF once by turning handwheel by hand after stop of sewing machine.

 0 : Effective
 1 : Prohibited

④⑤ **Fine adjustment of number of rotations function (Function setting No. 24)**

When rotation is transmitted to the sewing machine by means of V belt, and the number of rotations of machine head and that of the sewing machine do not rotate in a ratio of 1 to 1 due to the uneven pulley groove or the like and the max. number of rotations of machine head is not gained, compensation can be added in the range of $\pm 1.5\%$.

 Setting range : -1.5 to 1.5% <0.1%/step>

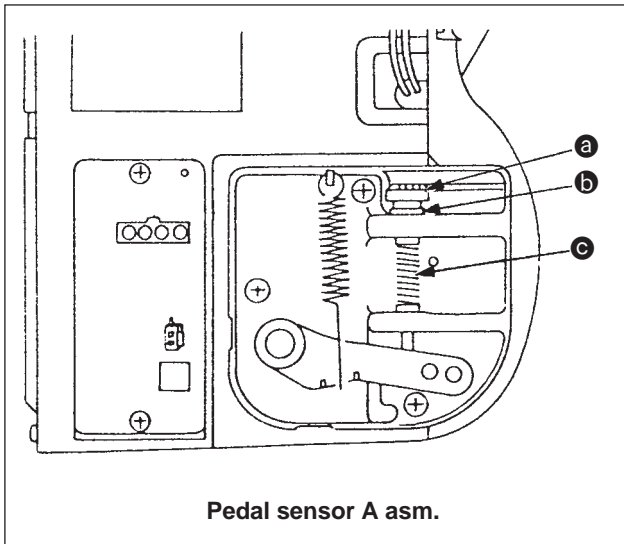


6. CHANGING PROCEDURE OF THE PEDAL TYPE

(1) Parts necessary for change

Part No.	Description	Q'ty
M4009351000A	Spring shaft B	1
M4011351000	Return spring B	2
M4012351000	Return pressure adjusting screw	1
M2010110000	Return pressure adjusting nut	1

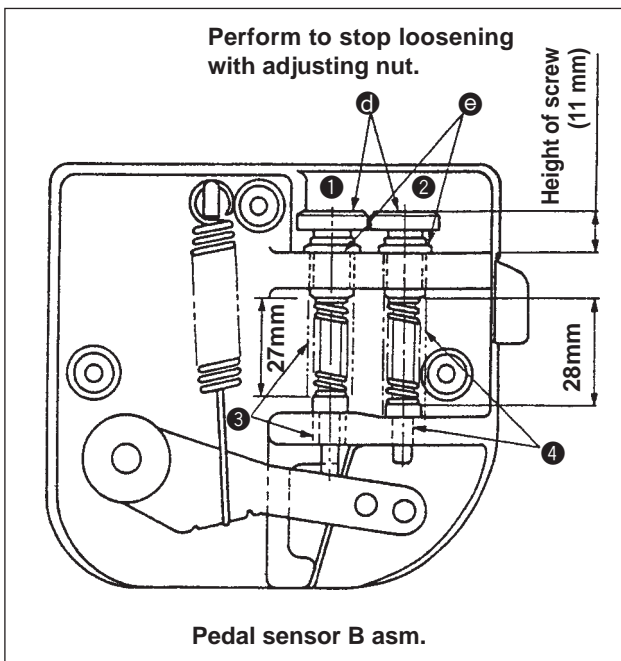
(2) Attaching parts



1. Loosen return pressure adjusting nut **b** in the pedal sensor A asm. (Fig. 1), remove return pressure adjusting screw **a**, remove return spring A **c**, and replace it with the return spring B. Then, assemble **a** and **b**.
2. On side **2** of pedal sensor B asm., assemble spring shaft B, return spring B, return pressure adjusting screw and return pressure adjusting nut in the same manner as side **1**.

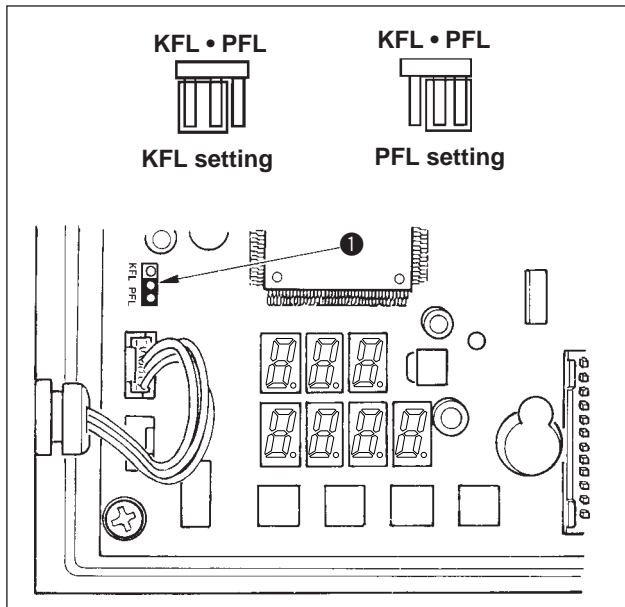
Caution) Apply grease to the shaft sections of sections **3 and **4** when assembling.**

(3) Adjusting pedal depressing pressure



Perform adjustment of the height of spring changed for the pedal type automatic presser foot lifter (PFL) Adjust with return pressure adjusting screw **d** so that the length of spring on side **1** in Fig. 2 should be 27 mm and that the length of spring on side **2** in Fig. 2 should be 28 mm. After the adjustment of height, tighten return pressure adjusting nut **e** so that return pressure adjusting screw **d** should not become loose.

(4) Change-over procedure of the jumper



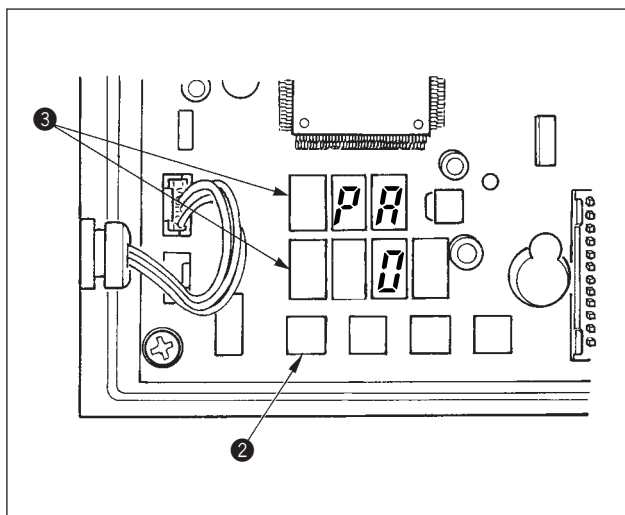
When the pedal sensor is changed (KFL → PFL or PFL → KFL), replace the jumper ❶ to fit the pedal type changed.

(Caution)

1. Type of pedal sensor with two return springs is PFL, and that of pedal sensor with one is KFL. Set the pedal sensor to PFL when lifting the presser foot by depressing the back part of the pedal.
2. When changing the jumper, be sure to do the work after turning OFF the power. If the jumper is changed while the power is ON, the setting does not change. The main unit may be broken.

(5) Automatic compensation of neutral point of the pedal sensor

Whenever the pedal sensor, spring, etc. are replaced, be sure to perform following operation :



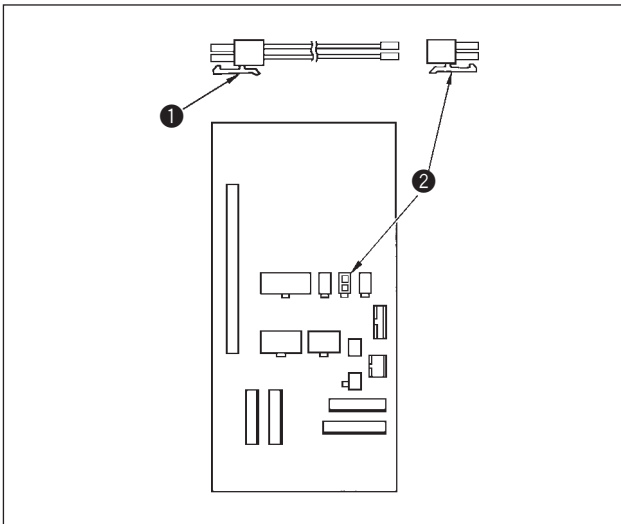
- 1) Pressing switch ❷, turn ON the power switch.
- 2) Indication on the screen will be as illustrated in ❸. At this time, the value indicated in the 7 segments of four figures is the compensation value.

(Caution)

- At this time, the pedal sensor does not work properly if the pedal is depressed. Do not place the foot or any object on the pedal. Warning sound “peeps” and the compensation value is not displayed.
- 3) Turn OFF the power switch once, and turn ON the power switch after closing the front cover to return to the normal mode.

7.CONNECTING PROCEDURE OF JUKI OPTIONAL DEVICE

(1)Connection of the bobbin thread remaining amount detection device, AE



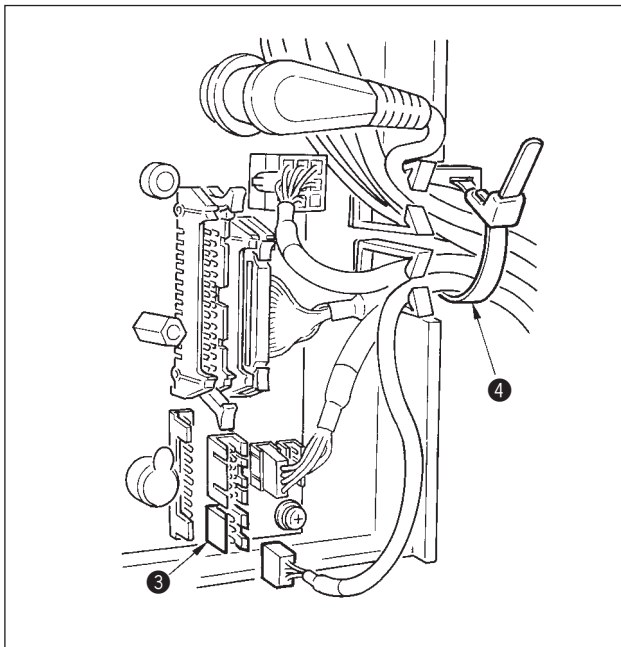
When using the AE device, the optional IO p.c.b. is necessary.

Connect solenoid cord ① attached to the side of the AE device to 2P plug (red) ② attached to the IO p.c.b. for use.

(Caution)

Even when connecting to 14P plug from the machine head, the device does not work. So, be careful.

(2) Connection of the material end sensor (ED)



1) Connect the connector of material end sensor (ED) to connector ③ (CN45 : 6P) of SC-910.

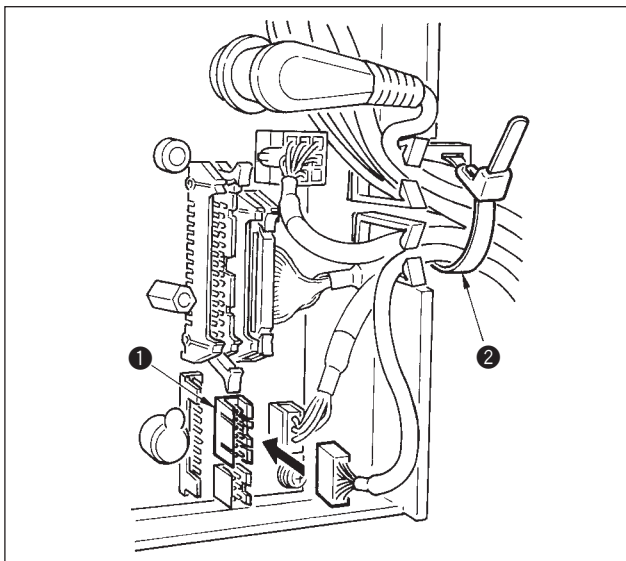
2) Tighten the cord of the material end sensor together with other cords with cable clip band ④ attached to the side of the box after passing it through the cable clamp.

(Caution)

1. Be sure to turn OFF the power before connecting the connector.

2. For the use of the material end sensor, refer to the Instruction Manual attached to the material end sensor.

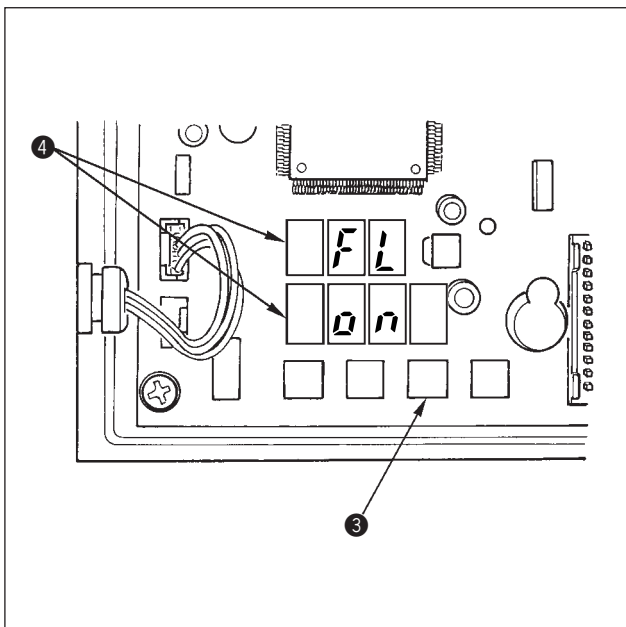
(3) Connection of the pedal of standing-work machine (PK)



- 1) Connect the connector of PK70 to connector ❶ (CN32 : 12P) of SC-910.
- 2) Tighten the cord of PK70 together with other cords with cable clip band ❷ attached to the side of the box after passing it through the cable clamp.

(Caution) Be sure to turn OFF the power before connecting the connector.

8. SETTING OF THE AUTO LIFTER FUNCTION



When the auto-lifter device (AK) is attached, this function makes the function of auto-lifter work.

- 1) Turn ON the power switch while pressing switch ❸ inside the control box.
- 2) LED display is turned to ❹ (FL ON) with “beep”, and the function of auto-lifter becomes effective.
- 3) Turn OFF the power switch and turn ON the power switch after closing the front cover. The machine returns to the normal motion.
- 4) Repeat the operation 1) to 3), and LED display is turned to (FL OFF). Then, the function of auto-lifter does not work.

FL ON : Auto-lifter device becomes effective.

FL OFF : Auto-lifter function does not work.

(Standard at the time of delivery)

(Similarly, the presser foot is not automatically lifted when programmed stitching is completed.)

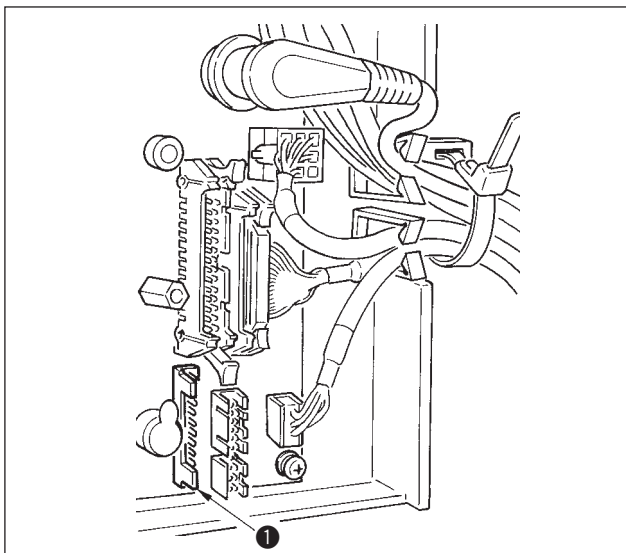
(Caution) 1. To perform re-turning ON of the power, be sure to perform after the time of one second or more has passed.

(If ON / OFF operation of the power is performed quickly, setting may be not changed over well.)

2. Auto-lifter is not actuated unless this function is properly selected.

3. When “FL ON” is selected without installing the auto-lifter device, starting is momentarily delayed at the start of sewing. In addition, be sure to select “FL OFF” when the auto-lifter is not installed since the touch-back switch may not work.

9. EXTERNAL INPUT / OUTPUT CONNECTOR



External input/output connector ❶ which can take out the following signals that are convenient when installing counter or the like outside is prepared.

(Caution) When using the signals, consult engineers who have electrical knowledge.

Table of assignment of connector and signal

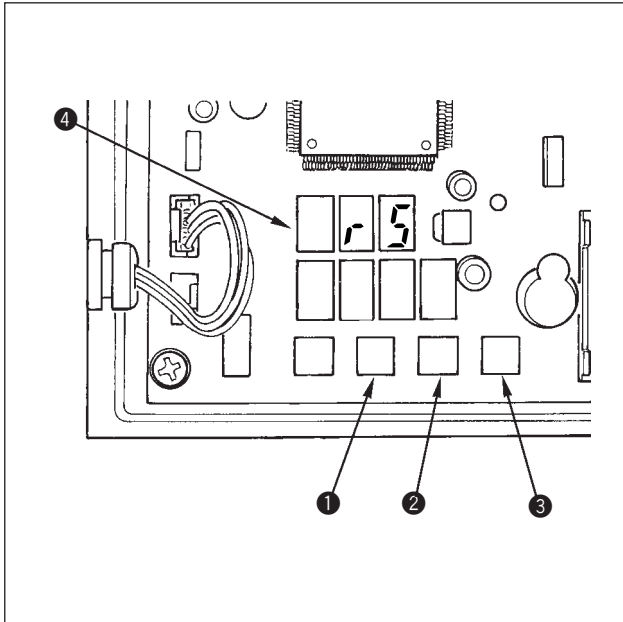
CN42	Signal name	Input / output	Description	Electric spec.
1	+5V	–	Power source	
2	LS(N)	Output	Rotation signal 360 pulses/rotation	DC5V
3	N.C.	–	–	
4	UDET(N)	Output	“L” is output when needle bar is at LOW position.	DC5V
5	DDET(N)	Output	“L” is output when needle bar is at UP position.	DC5V
6	HS(N)	Output	Rotation signal 45 pulses/rotation	DC5V
7	BTD(N)	Output	“L” is output when the back-tack solenoid works.	DC5V
8	TRMD(N)	Output	“L” is output when the thread trimmer solenoid works.	DC5V
9	LSWO(P)	Output	Rotation request (pedal or the like) monitor signal	DC5V
10	S.STATE(N)	Output	“L” is output when the sewing machine is in the stop state.	DC5V
11	LSWINH(N)	Input	Rotation by pedal is prohibited while “L” signal is being inputted.	DC5V, -5mA
12	SOFT	Input	Rotation speed is limited to the soft-speed while “L” signal is being inputted.	DC5V, -5mA
13	SGND	–	0V	

JUKI genuine part No.

Connector : Part No. HK016510130

Pin contact : Part No. HK016540000

10. INITIALIZATION OF THE SETTING DATA



All contents of function setting of SC-910 can be returned to the standard set values.

- 1) Pressing all switches ①, ② and ③ inside the front cover, turn ON the power switch.
- 2) LED displays indication ④ with the sound “peep”, and initialization starts.
- 3) The buzzer sounds after approximately one second (single sound three times, “peep”, “peep”, and “peep”), and the setting data returns to the standard setting value.

(Caution) Do not turn OFF the power on the way of initializing operation. Program of the main unit may be broken.

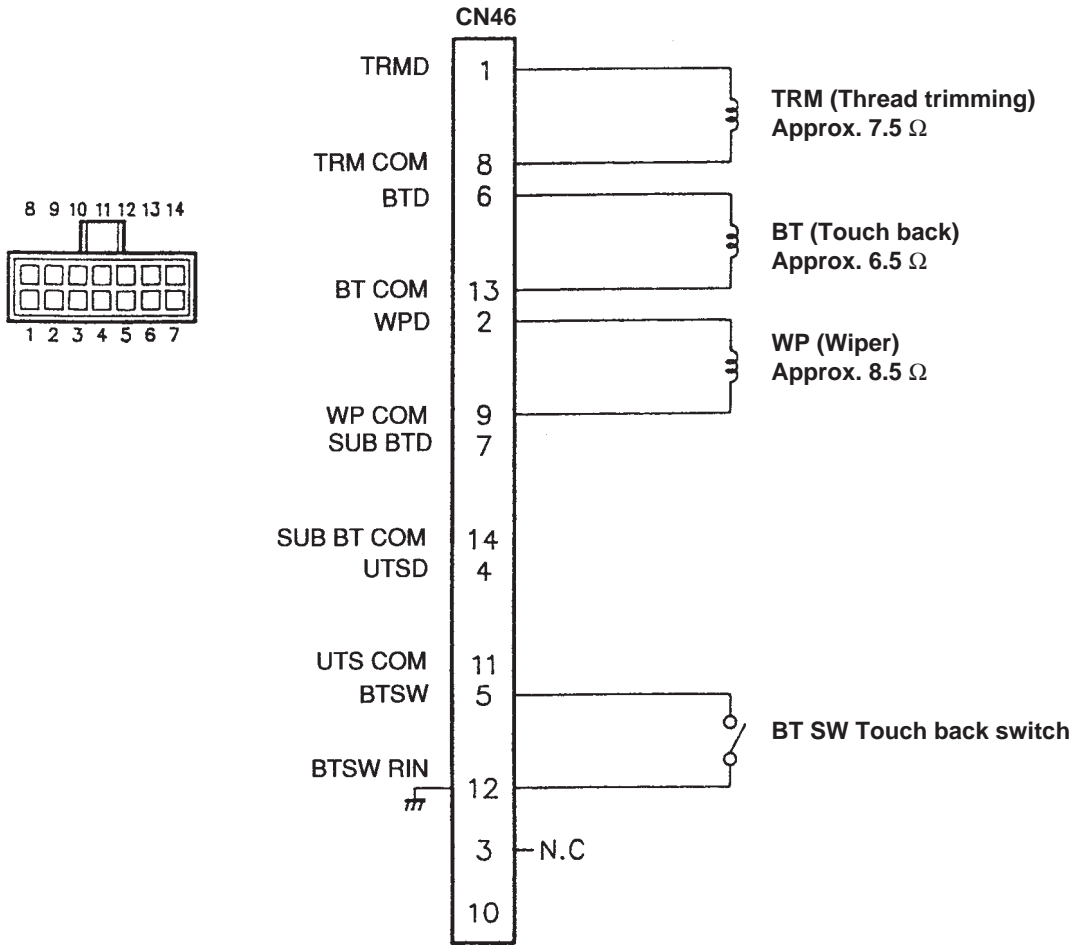
- 4) Turn OFF the power switch and turn ON the power switch after closing the front cover. The machine returns to the normal motion.

(Caution)

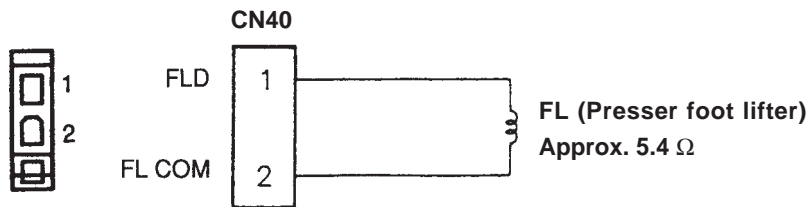
1. When this operation is performed, the neutral compensation value of the pedal sensor becomes “0”. Accordingly, be sure to execute the operation of automatic pedal sensor neutral compensation before using the sewing machine. (Refer to 6. - (5).)
2. Even when this operation is performed, the sewing data set by the operation panel cannot be initialized.

11. CONNECTOR CONNECTION DIAGRAM

(1) Solenoid for machine head

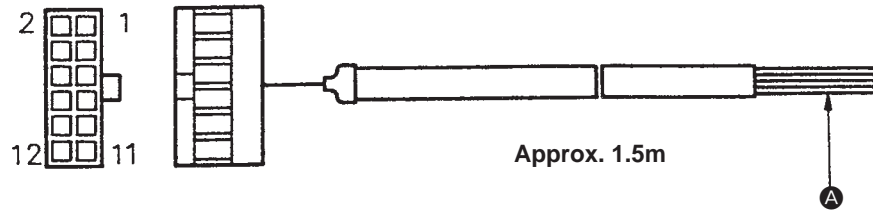


(2) Solenoid for lifting presser foot

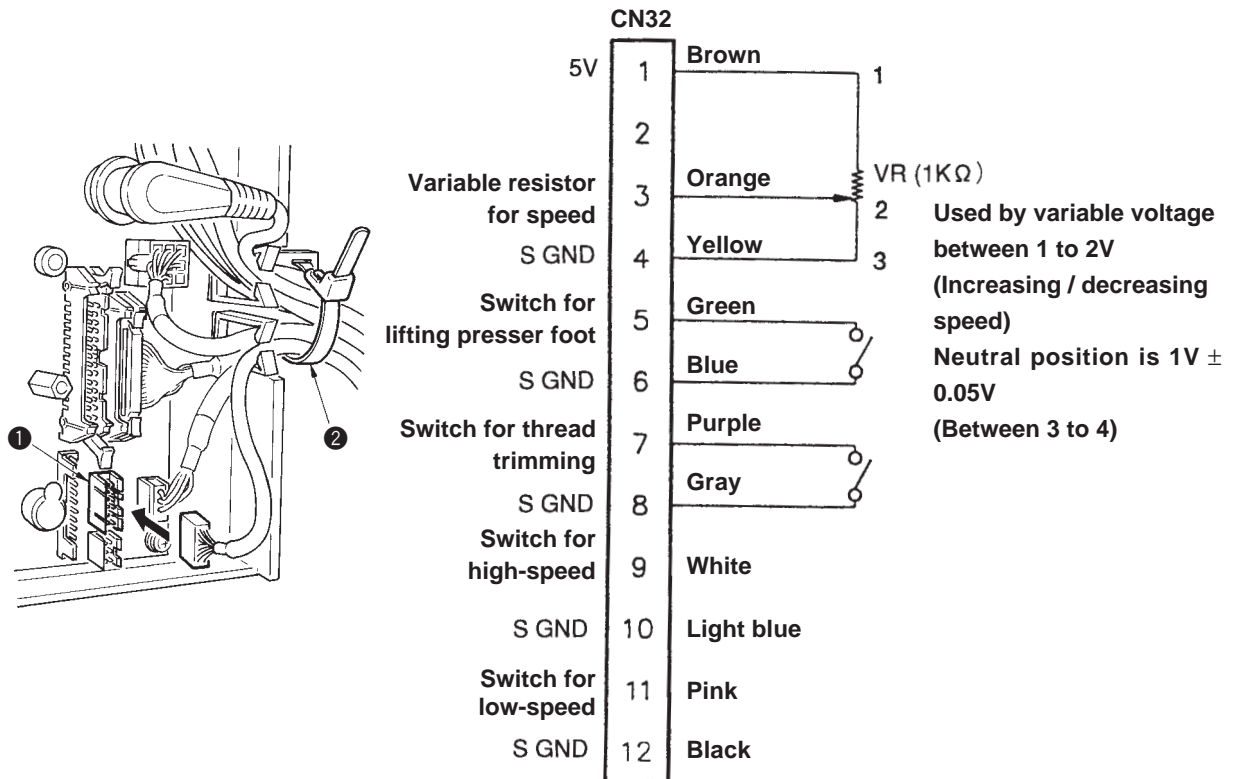


12. OPTIONAL CORD

(1) Relay cord A asm. for the standing sewing machine (Part No. M9701351AA0)



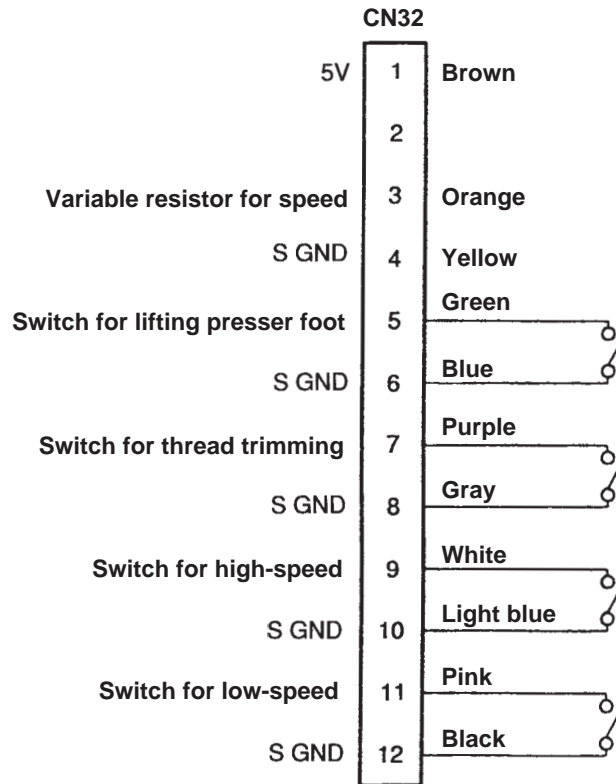
1) Wiring diagram of variable pedal PK-70 and -71



- Power section **A** which is separated by respective signals with different colors comes out from the relay cord A asm. for the standing sewing machine. Connect switches and variable resistor for speed in accordance with the wiring diagram.
- Insert to the connector **1** (CN32 : 12P) of standing sewing machine pedal in the PSC box and use it.
- Tighten the cord of the PK70 together with other cords with cable clip band **2** attached to the side of the box after passing it through the cable clamp.

(Caution) Be sure to turn OFF the power before connecting the connector.

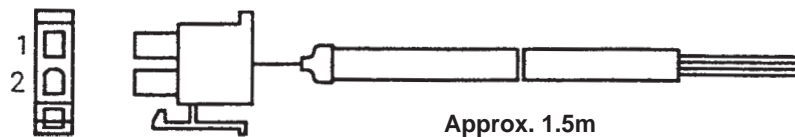
2) Wiring diagram of fixing max. speed



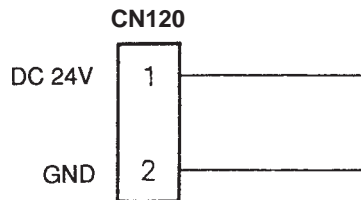
○ Insert to the connector (connector ❶ CN32) of standing sewing machine pedal in the PSC box and use it.

(Caution) In case of decreasing the speed of switch for high-speed, use the variable resistor for max. speed limit mounted on the control panel.

(2) Relay cord A asm. for DC24V (Part No. M9703351AA0)



Wiring diagram

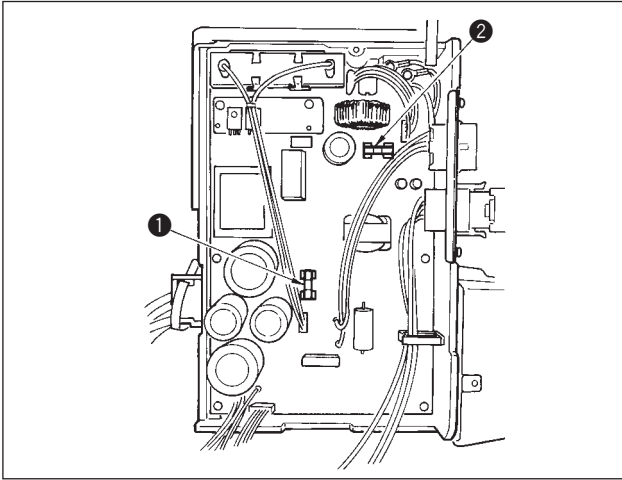


* Reference for use is approximately one piece of solenoid valve.
(Up to 100mA)

○ Insert to the yellow connector (CN120 2P) of DC24V in the PSC box and use it.

13. MAINTENANCE

(1) Replacing the fuse



- 1) Grasp the glass part of fuses ① and ② and remove them.
- 2) Use the fuse of which capacity is specified.
① : 2A/250V time-lag fuse
(regenerative resistance protection fuse)
Part No. HF0078020P0
② : 5A/250V time-lag fuse (solenoid power fuse)
Part No. HF0013050P0

(2) Power voltage changeover procedure

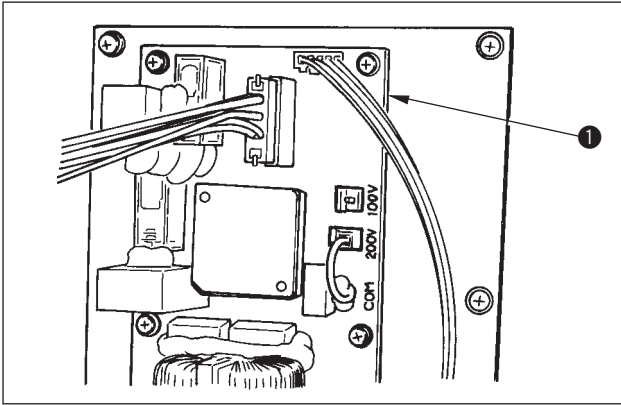


WARNING :

To prevent personal injuries caused by electric shock hazards or abrupt start of the sewing machine, carry out the work after turning OFF the power switch and a lapse of 5 minutes or more. To prevent accidents caused by unaccustomed work or electric shock, request the electric expert or engineer of our dealers when adjusting the electrical components.

It is adaptable to the voltage of single phase 100V to 120V/3-phase 200V to 240V by changing the voltage changeover connector mounted on FLT p.c.b.

(Caution) When the changing procedure is wrong, the control box will be broken. So, be very careful.



Changing procedure of the changeover connector

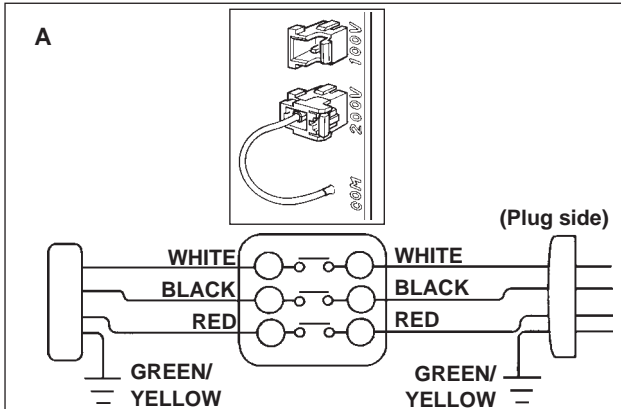
1. Turn OFF the power source with the power switch after confirming that the sewing machine has stopped.
2. Draw out the power cord from the power plug socket after confirming that the power switch is turned OFF. Then wait for five minutes or more.
3. Remove the front cover.
4. Remove three screws fixing the rear cover of the control box and slowly open the rear cover.

A. In case of using with 3-phase 200V to 240V

- Changing the changeover connector

Connect to 200V the 100/200V changeover connector of FLT p.c.b. ❶ located on the upper side of the right side face as observed from the rear cover side.

- Connect the crimp style terminal of AC input cord to the power plug as shown in the figure.



B. In case of using with single phase 100V to 120V

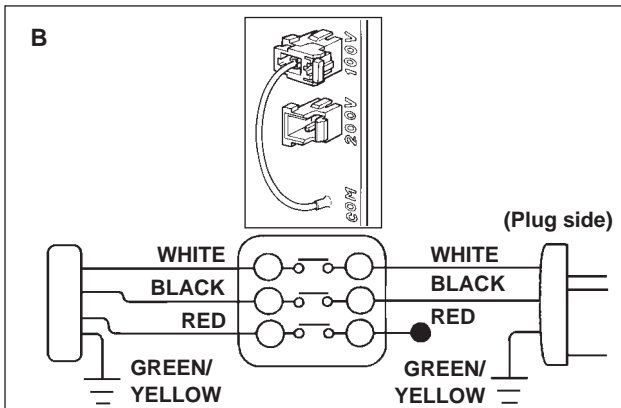
- Changing the changeover connector

Connect to 100V the 100/200V changeover connector of FLT p.c.b. ❶ located on the upper side of the right side face as observed from the rear cover side.

- Connect the crimp style terminal of AC input cord to the power plug as shown in the figure.

(Caution) Securely perform the insulation treatment to the red terminal which is not used with insulation tape or the like.

(When the insulation is insufficient, there is a danger of electric shock or leakage current.)



C. In case of using with single phase 200V to 240V

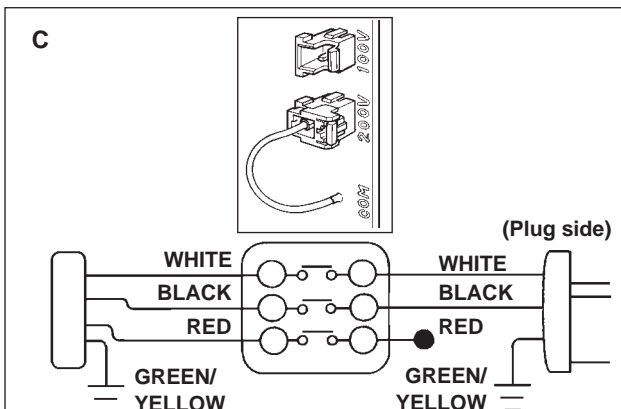
- Changing the changeover connector

Connect to 200V the 100/200V changeover connector of FLT p.c.b. ❶ located on the upper side of the right side face as observed from the rear cover side.

- Connect the crimp style terminal of AC input cord to the power plug as shown in the figure.

(Caution) Securely perform the insulation treatment to the red terminal which is not used with insulation tape or the like.

(When the insulation is insufficient, there is a danger of electric shock or leakage current.)



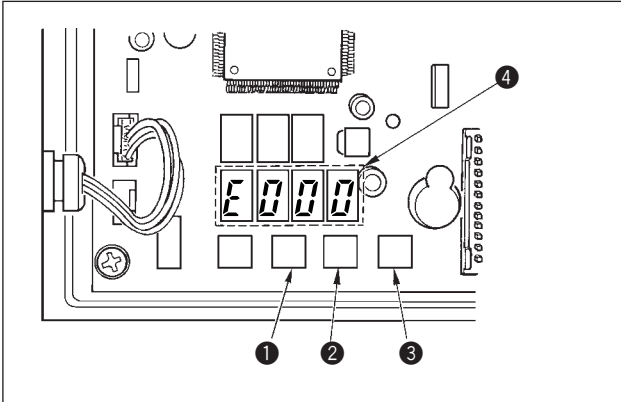
5. Check that the change has been performed without fail before closing the rear cover.
6. Be careful that the cord is not pinched between the rear cover and the control box main unit. Close the rear cover while pressing the lower side of rear cover, and tighten three screws.

14. REGARDING ERROR DISPLAY (SC-910)

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

No.	Phenomenon	Cause	Corrective measure
1	When tilting the sewing machine, the buzzer beeps and the sewing machine cannot be operated.	When tilting the sewing machine without turning OFF the power switch, Action given on the left side is taken for safety sake.	Tilt the sewing machine after turning OFF the power.
2	Solenoids for thread trimming, reverse feed, wiper, etc. fail to work. Hand lamp does not light up.	When the fuse for solenoid power protection has blown out	Check the fuse for solenoid power protection.
3	Even when depressing the pedal immediately after turning ON the power, the sewing machine does not run. When depressing the pedal after depressing the back part of pedal once, the sewing machine runs.	Neutral position of the pedal has varied. (Neutral position may be shifted when changing spring pressure of the pedal or the like.)	Execute the automatic neutral correction function of the pedal sensor.
4	The sewing machine does not stop even when the pedal is returned to its neutral position.		
5	Stop position of the sewing machine varies (irregular).	When tightening the screw in the handwheel is forgotten at the time of adjustment of needle stop position.	Securely tighten the screw in the handwheel.
6	Presser foot does not go up even when auto-lifter device is attached.	Auto-lifter function is OFF.	Select "FL ON" by auto-lifter function selection.
		Pedal system is set to KFL system.	Change the jumper to PFL setting to lift the presser foot by depressing the back part of the pedal.
		Cord of auto-lifter device is not connected to connector (CN40).	Connect the cord properly.
7	Touch-back switch fails to work.	Presser foot is going up by auto-lifter device.	Operate the switch after the presser foot lowered.
		Auto-lifter device is not attached. However, auto-lifter function is ON.	Select "FL OFF" when auto-lifter device is not attached.
8	UP position move fails to work when all lamps on the panel light up.	The mode is in the function setting mode. The switch on the CTL p.c.b. is pressed by the bound cords and the aforementioned mode resulted.	Remove the front cover, and arrange the cords by the regular binding procedure described in the Instruction Manual.
9	Sewing machine fails to run.	Motor output cord (4P) is disconnected.	Connect the cord properly.
		Connector (CN38,CN39) of motor signal cord is disconnected.	Connect the cord properly.

In addition, 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.



Checking procedure of the error code

- 1) Pressing switch ① in the control box (SC-910), turn ON the power switch.
- 2) LED becomes display ④ with the sound of “peep” and the latest error code is displayed.
- 3) Confirmation of the contents of previous error can be performed by operating switches ② or ③. (When the confirmation of the contents of previous error advanced to the last, the warning sound peeps in single tone two times.)

(Caution) When operating switch ③, one before the existing error code is displayed.

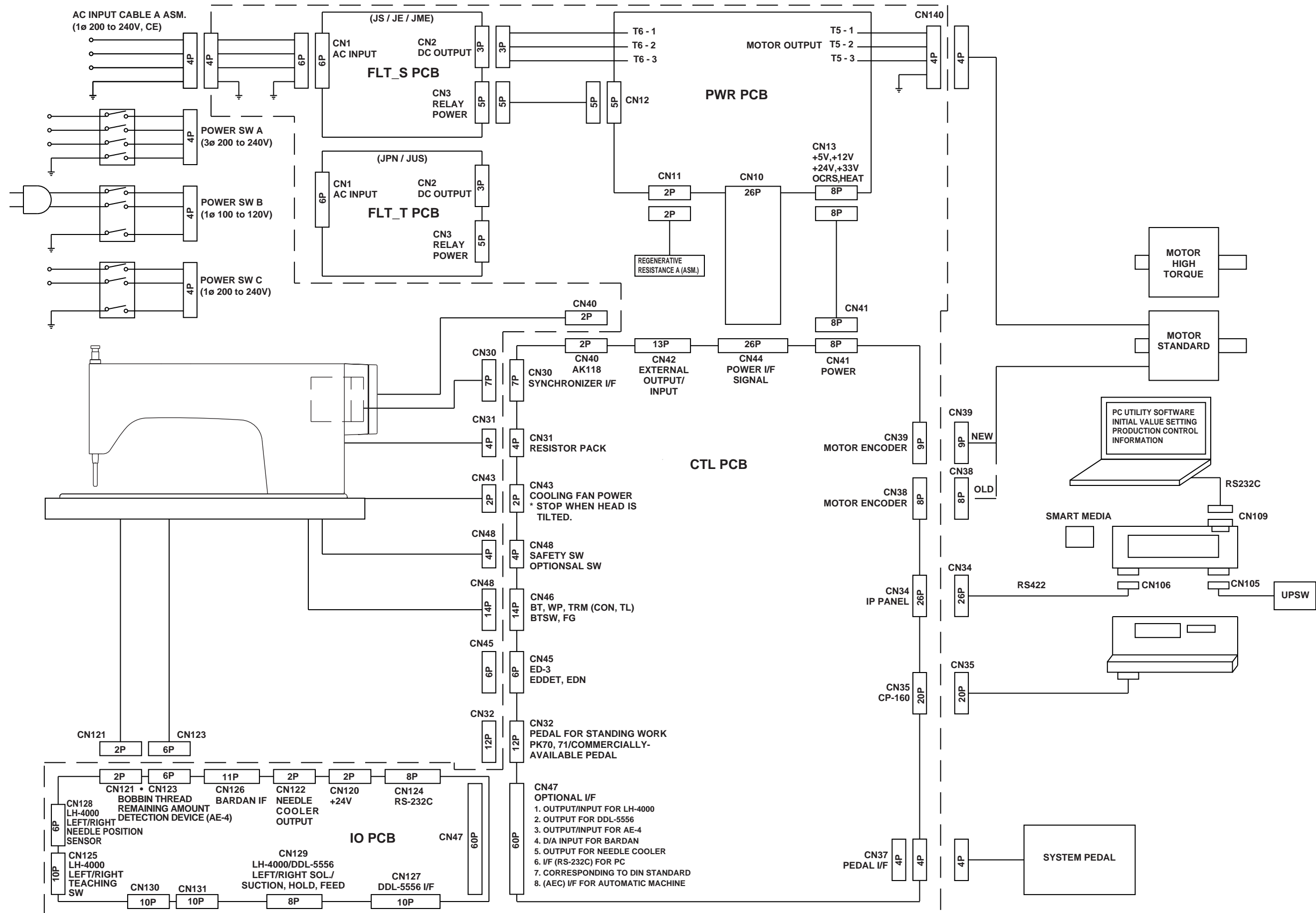
When operating switch ②, one after the existing error code is displayed.

(1) Error code list (SC-910)

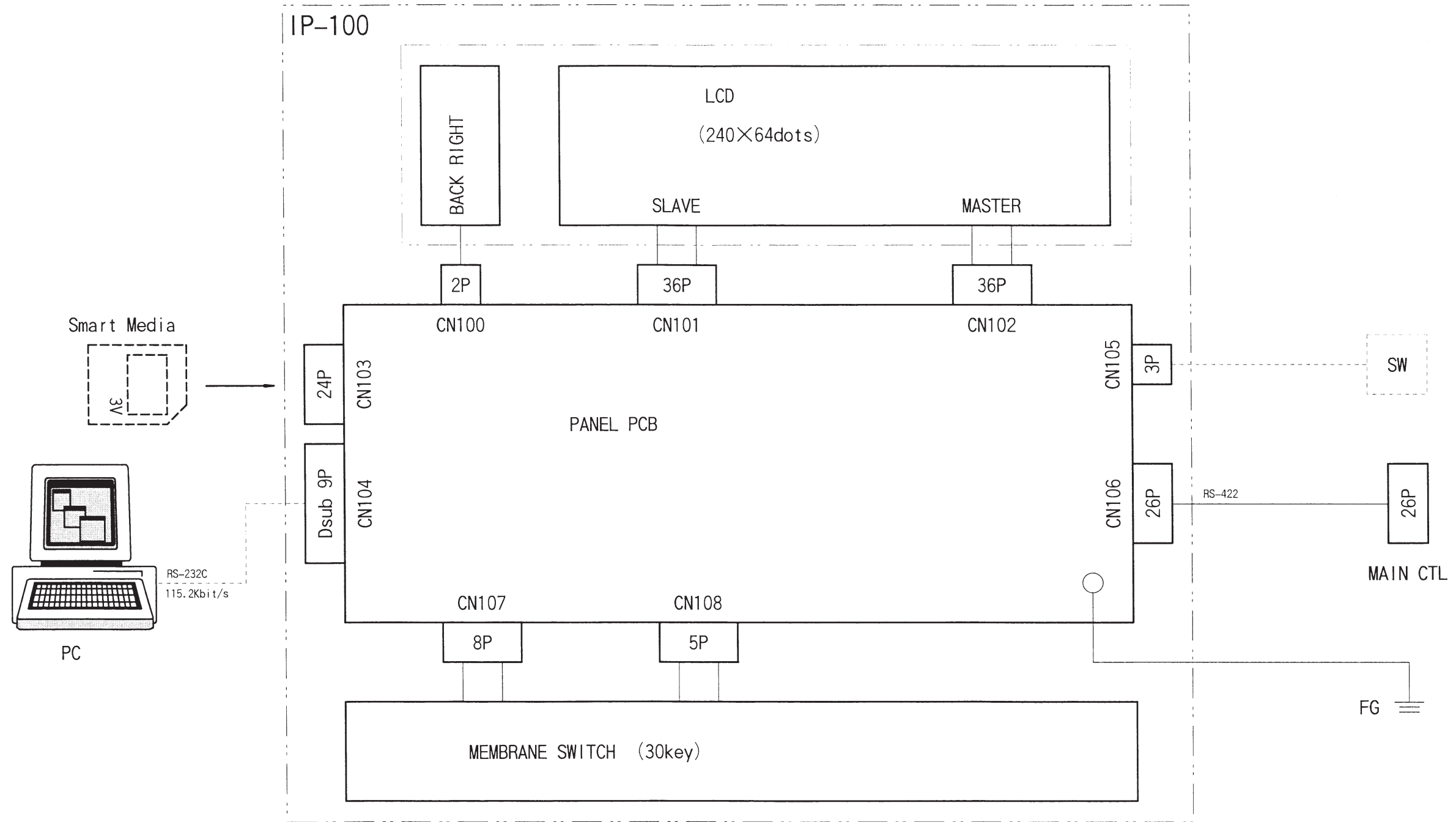
No.	Description of error detected	Cause of occurrence expected	Items to be checked
E000	Execution of data initialization (This is not the error.)	<ul style="list-style-type: none"> When the machine head is changed. When the initialization operation is executed 	
E003	Disconnection of synchronizer connector	<ul style="list-style-type: none"> When position detection signal is not input from the sewing machine head synchronizer. When the synchronizer has broken. 	<ul style="list-style-type: none"> 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.
E004	Synchronizer lower position sensor failure		
E005	Synchronizer upper position sensor failure		
E007	Overload of motor	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Check whether the thread has been entangled in the motor pulley. Check the motor output connector (4P) for loose connection and disconnection. Check whether there is any holdup when turning the motor by hand.
E008	Machine head connector failure (Resistance pack)	<ul style="list-style-type: none"> When the machine head connector is not properly read. 	<ul style="list-style-type: none"> Check the machine head connector (CN31) for loose connection and disconnection.
E302	Tilt detection switch (When the safety switch works)	<ul style="list-style-type: none"> When fall detection switch is input in the state that the power is turned ON. 	<ul style="list-style-type: none"> Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). Check whether the fall detection switch cord is caught in the sewing machine or the like. Check whether the fall detection switch lever is caught in something.
E343	Bobbin thread remaining amount sensor unit failure	<ul style="list-style-type: none"> When the position of the detection bar of the AE device is shifted from the home position. 	<ul style="list-style-type: none"> Check whether the detection bar of the AE device has returned to the correct position. Check whether the function setting No. 57 has been mistakenly set. Check the AE device connectors (CN121, CN123) for loose connection and disconnection. Check whether the AE device cord has broken since the cord is caught in the machine head.
E730	Encoder failure	<ul style="list-style-type: none"> When the motor signal is not properly inputted. 	<ul style="list-style-type: none"> 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.
E731	Motor hole sensor failure		
E810	Solenoid short-circuit	<ul style="list-style-type: none"> When the short-circuited solenoid is desired to be driven. 	<ul style="list-style-type: none"> Check whether the solenoid is short-circuited.
E811	Overvoltage	<ul style="list-style-type: none"> When voltage higher than guaranteed one is inputted. 200V has been inputted to SC-910 of 100V specifications. JUS : 220V is applied to the box of 120V. CE : 400V is applied to the box of 230V. 	<ul style="list-style-type: none"> Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. Check whether 100V/200V changeover connector is improperly set. In the aforementioned cases, POWER p.c.b is broken.
E813	Low voltage	<ul style="list-style-type: none"> When voltage lower than guaranteed one is inputted. 100V has been inputted to SC-910 of 200V specifications. JUS : 120V is applied to the box of 220V. Inner circuit is broken by the applied overvoltage 	<ul style="list-style-type: none"> Check whether the voltage is lower than the rated voltage - (minus) 10% or less. Check whether 100V/200V changeover connector is improperly set. Check whether fuse or regenerative resistance is broken.
E906	Communication trouble between operation panels	<ul style="list-style-type: none"> Operation panel cord is disconnected. Operation panel is broken. 	<ul style="list-style-type: none"> Check whether operation panel connectors (CN34 and CN35) are loosened or disconnected. Check whether operation panel cord is disconnected since the cord is caught with machine head.
E924	Motor driver failure	<ul style="list-style-type: none"> Motor driver has broken. 	

15. BLOCK DIAGRAM

(1) SC-910 block diagram

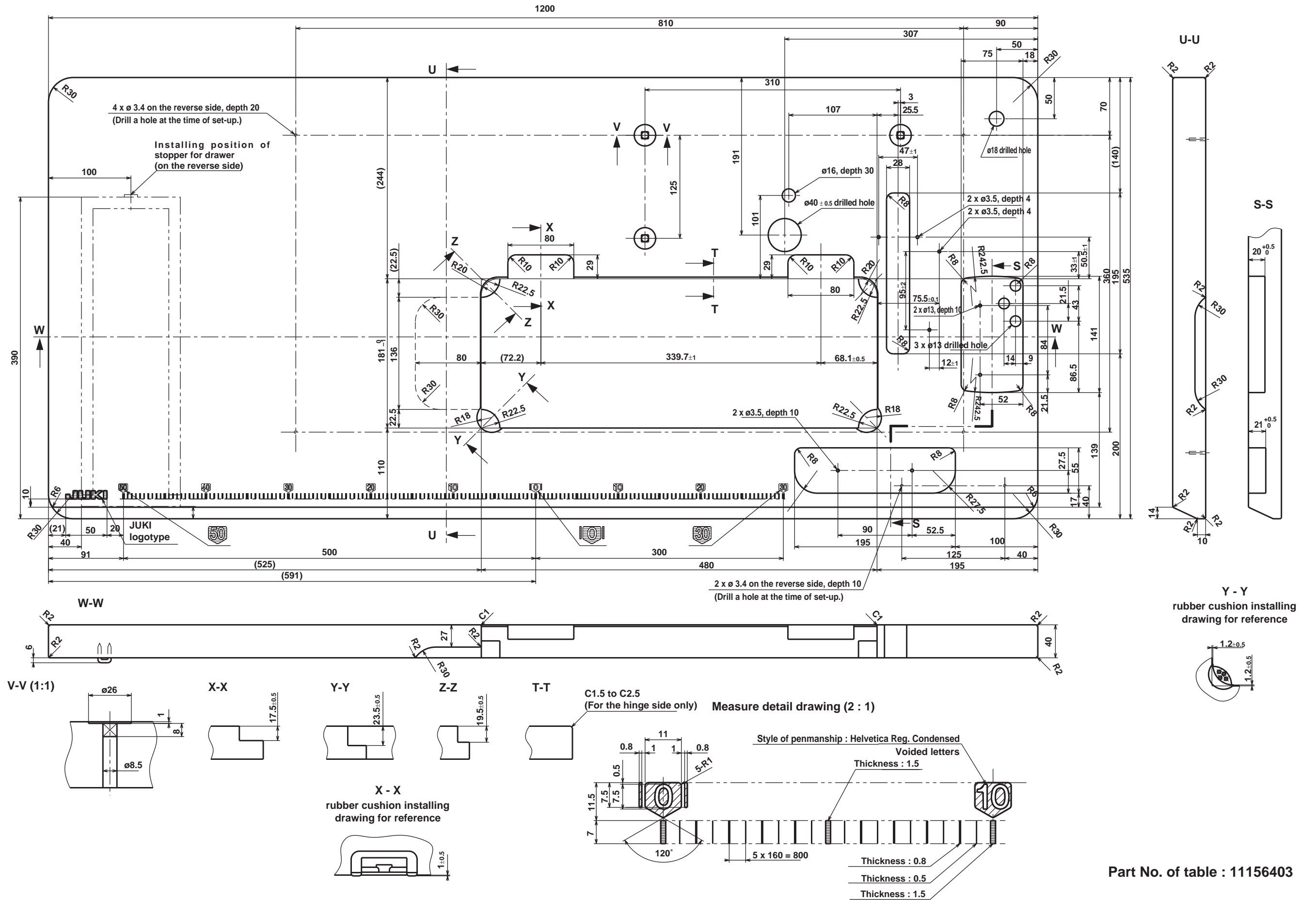


(2) IP-100 operation panel block diagram



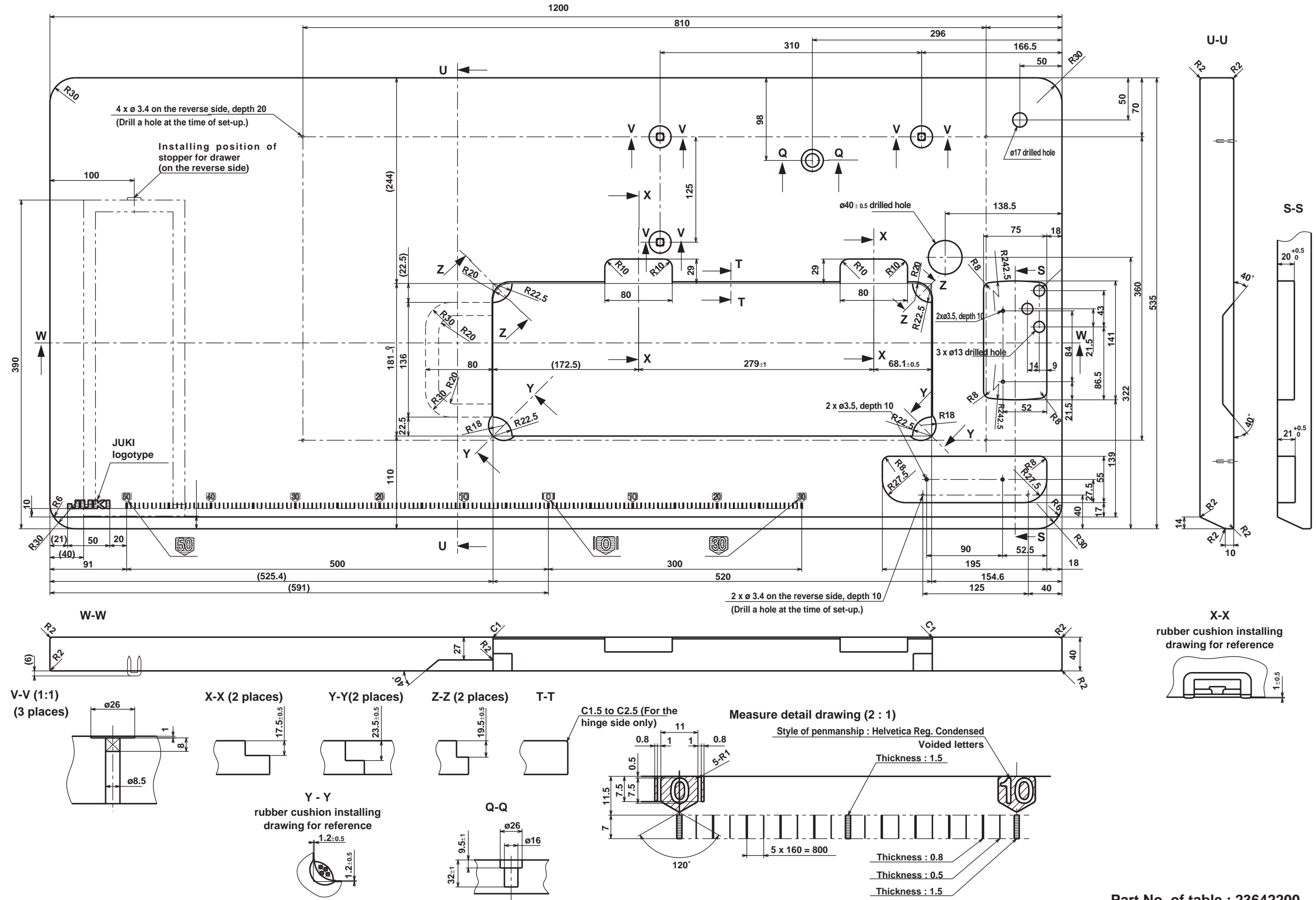
16. DRAWING OF TABLE

(1) For DDL-8700



Part No. of table : 11156403

(2) For DDL-9000



Part No. of table : 23642200



JUKI CORPORATION

INTERNATIONAL SALES H.Q.
8-2-1, KOKURYO-CHO,
CHOFU-SHI, TOKYO 182-8655, JAPAN
PHONE : (81)3-3430-4001 to 4005
FAX : (81)3-3430-4909 • 4914 • 4984
TELEX : J22967

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