

INSTRUCTION MANUAL	
IS-8029E	
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REV.	D

# 1.0mm PITCH 120P I/O

# CABLE SELECTOR

(A-Machine Number: 57868-7000)  
(B-Machine Number: 57869-7000)

**OPERATING MANUAL**



Molex Japan Co., Ltd.

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Molex Japan Co., Ltd.		Contents of Update	Instruction Manual No.	IS-8029JE
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Rev.	Issued	Description		
0	1996/09/20	New creation release. ECN-JM60028		
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			Approved by	A. Horino

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# <Safety Precautions>

Please read the following before operating the machine.

## 1. Introduction

Thank you for choosing our **1.0mm PITCH 120P I/O CABLE SELECTOR**.

This instruction manual is prepared so that the machine is properly used. Please take the time to read this manual, making sure you understand the operating procedures described herein before attempting to operate the machine.

## 2. To operation supervisors

- 1) Operators should fully understand the contents of this manual before operation.
- 2) If operators do not understand English, translate this manual into the proper language.
- 3) Keep this manual near the machine so that operators can refer to it anytime.

## 3. Dangerous operations

Observe the following precautions to prevent a life-threatening accident.

- 1) Don't insert a part of your body or other foreign materials into the machine when it is running.
- 2) Don't place the machine on an unstable, off-balanced worktable from which the machine might fall down.
- 3) If more than two operators are engaged in operation or checkup at the same time, even slight miscommunication might lead to a serious accident.
- 4) Don't put your face too near the operation area while this machine is operating, as flying fragments may hurt you seriously.

### Caution

- 1) Unauthorized reproduction of this document in part or in whole is prohibited.
- 2) The contents of this document are subject to change without notice.
- 3) Molex Japan Co., Ltd. assumes no responsibility for losses resulting from use or misuse of this document.

# <Safety Precautions>

Please read the following before operating the machine.

## 4. Careful handling

Keep the items below to use the machine safely and properly.

\* Please contact our application-tooling group if something's wrong with the machine.

1) Replacement and checkup of the parts

When you have to put your hands inside the machine to replace or check the parts, confirm in advance that unplugging the power cable.

2) Don't touch the internal electric circuit

Don't remove the safe cover of this machine during operation.

The electric circuit is included in this place, and it is not only dangerous, but it will become the cause of failure if a hand is touched.

3) Malfunctions

If you notice any unusual sound or movement in the machine, stop the operation immediately and check the suspicious parts.

4) Foreign materials

If foreign materials such as water or metals accidentally get inside the machine, stop the operation immediately and remove those materials.

## 5. Installation site

Be careful about the following items when you install the machine.

1) Temperature and humidity

Don't operate the machine in extremely high/low temperature or extremely high humidity.

\* Place it where the temperature is stable around 23 degrees centigrade and the air is well ventilated.

2) Dust and corrosive gas

It will become the cause of failure if dust, corrosive gas, etc. are in the circumference of this machine.

\* Please don't install this machine to such a place.

3) Near electromagnetic sources

If the machine is used near a surge generator or powerful electromagnetic source, there is a possibility of carrying out incorrect operation.

\* Please don't operate this machine in such a place.

4) In place where unstable power sources

The machine may incorrect-operate in the place where change of power supply voltage is sharp beyond a specification value.

\* Please don't install this machine in such environments.

# <Quality Precautions>

You surely carry out the following for defect-free production.

## 1. Introduction

In order not to produce a defective article with this machine, this chapter has described “Must be carried out”, and “Must not be carried out” as an important matter on operation.

**Keep in mind that there is a possibility that a defective article will be produced when not protecting this.**

## 2. Must be carried out

**Please be sure to perform the following matter to maintain product quality.**

### 1) Enforcement of startup check

Please check the machine in accordance with the “startup checklist” described in this document before an operation start, and start operation after confirming nothing is wrong with the machine.

\* If the check is neglected, there is a possibility that a defective article will be produced.

### 2) Confirmation of quality

Please start the production after confirming the quality of a product picked up from the first operation, and it passes all of the claims required in the I/O cable specification of a corresponding connector.

\* It is recommended to initiate the operation on the preferable condition that enough margins for the standard are identified.

## 3. Must not be carried out

**Please don't perform the following matter by any means to maintain product quality.**

### 1) Using of unqualified I/O cable

Please don't use an unqualified I/O cable. There is a possibility of causing connector breakage and termination defect by mismatching of a wire outer diameter.

\* Please operate using a qualified I/O cable.

### 2) Pushing a wire too much deeply

Don't push a wire too much deeply. It may lead to the breakage of an upper housing and a pusher.

\* Please operate the machine in the appropriate amount of the wire pushing.

### 3) Wire cutting in a defective state

When cutting the wire is defective, and the cutting drop exceeds the outside diameter of the wire insulation, the use of the machine is a prohibition because there is danger of short-circuits.

\* Please improve a wire defective cutting promptly.

## 1. Description

This machine is an electric semi-automatic wire arrangement machine that arranges the wire to the upper cover of 1.0mm pitch 120P I/O connector of Molex.

As the wire arrangement machine, two models of the A-arrangement machine and the B-arrangement machine are necessary to arrange the A-row (60 circuits) and the B-row (60 circuits) of the connector.

As a feature, "Master wire arrangement" arranged in circuit number order and "Conduction wire arrangement" that arranges by taking conduction on the other side of the cable with the one side connector can be selected.

Additionally, the twisted pair wire can be arranged at a right and left, same position at the same time in "Master wire arrangement" mode in this machine.

## 2. Machine Configuration and Applicable Products

### 2.1. Machine Name and Configuration

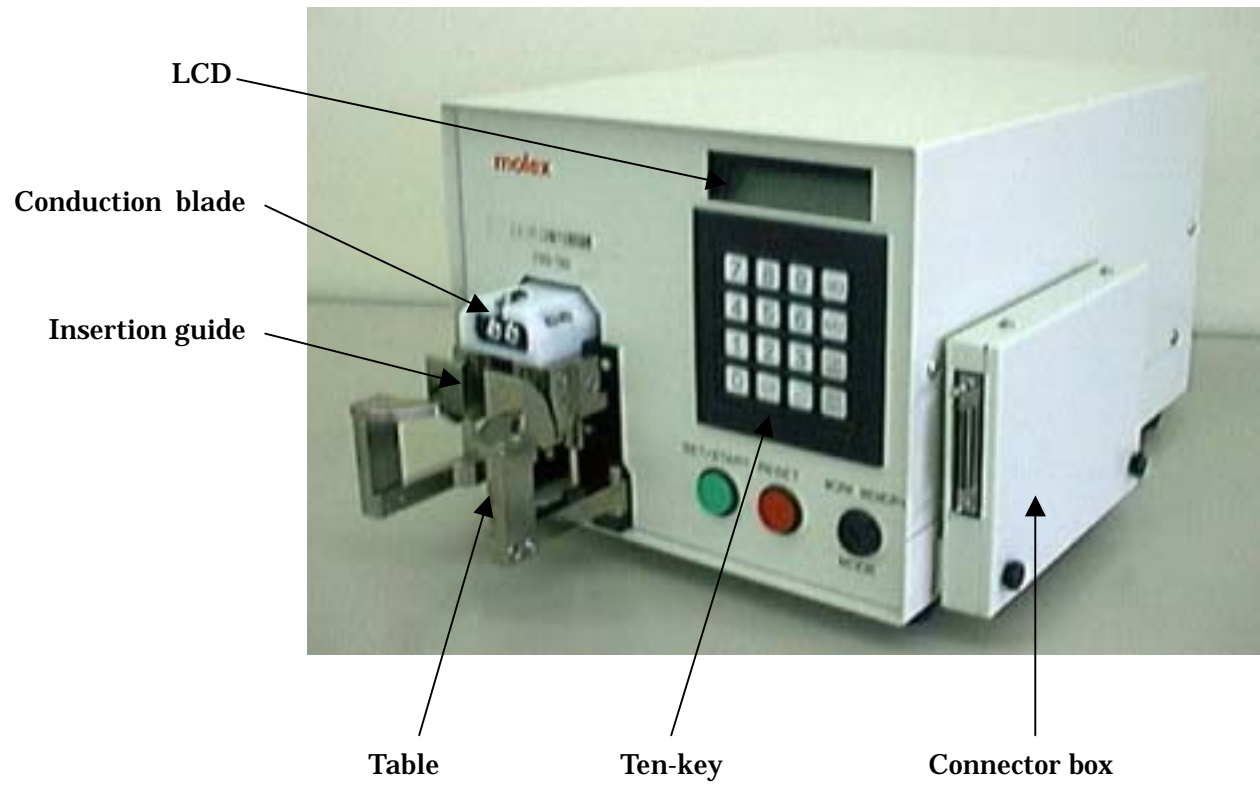
- 1) Machine name and number:
  - 57868-7000: 1.0mm PITCH 120P (A) I/O CABLE SELECTOR
  - 57869-7000: 1.0mm PITCH 120P (B) I/O CABLE SELECTOR
- 2) Machine configuration:
  - (1) Machine main unit
  - (2) Connector box
    - Installed a 1.0mm I/O 120P receptacle connector.

### 2.2. Applicable Connector and Cable

- 1 ) Connector:
  - Molex 1.0mm pitch I/O 120P connector
    - 53577-1200: Upper Cover A (White color)
    - 53577-1201: Upper Cover A (Black color)
    - 53578-1200: Upper Cover B (White color)
    - 53578-1201: Upper Cover B (Black color)
- 2 ) Cable:
  - UL20276, #28 AWG, Multi-pair braid shielded cable or other Molex quality cables.
  - Insulation diameter =  $\phi 0.58\text{mm}$ , Cable external diameter =  $\phi 14.0\text{mm}$  or less

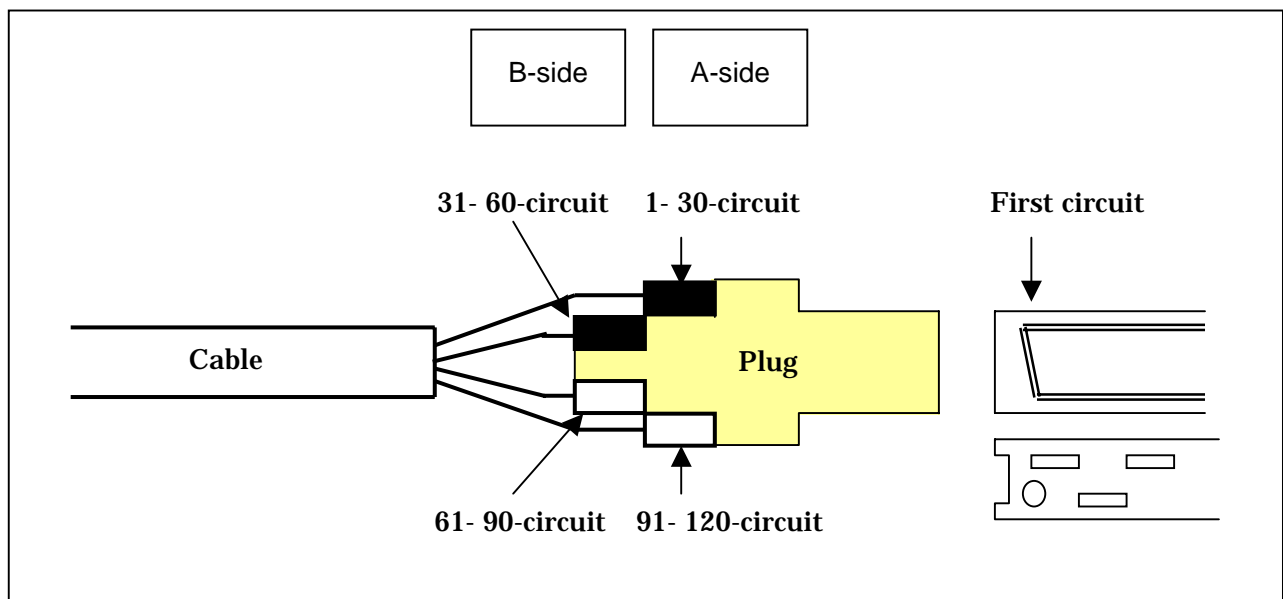
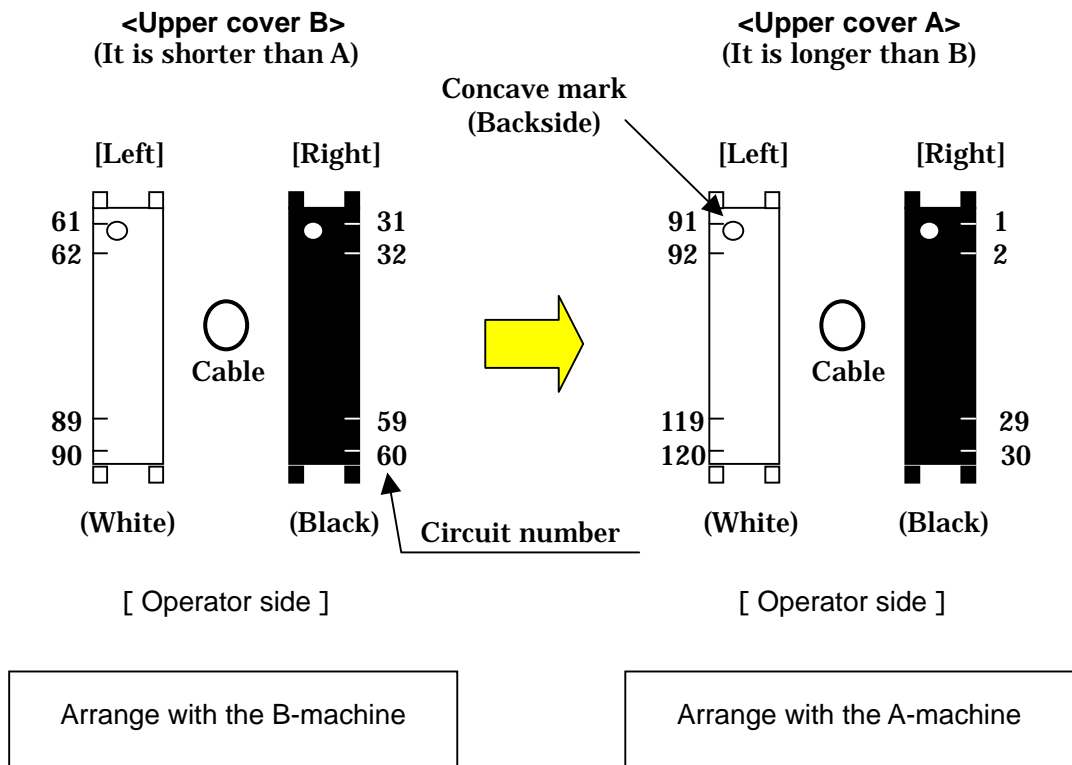


### 2.3. Machine Appearance and Main Name



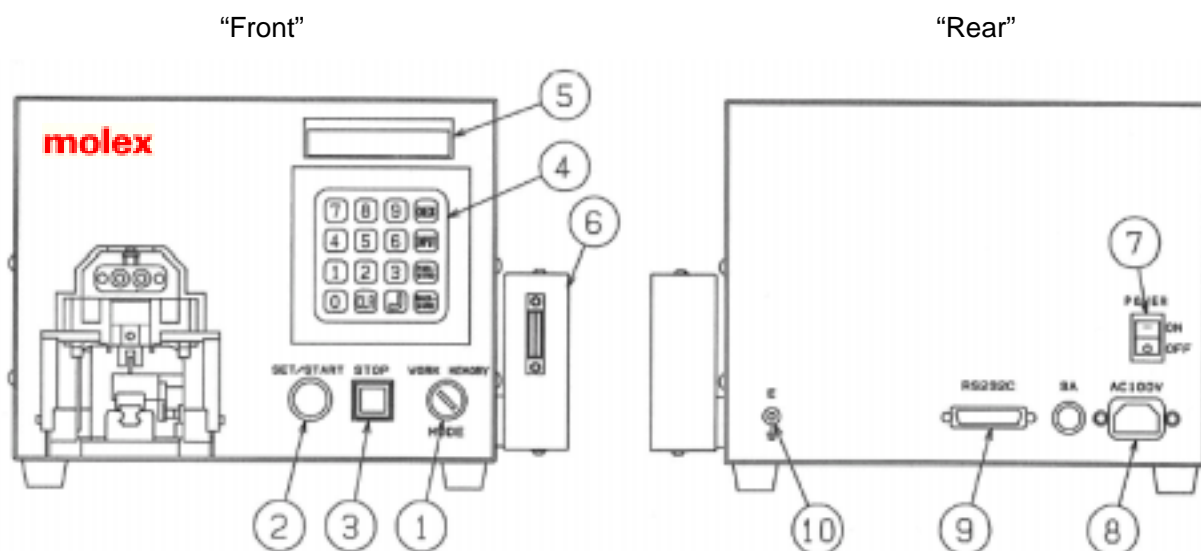
## 2.4. Circuit Number Assignment and Order of Wire Arrangement

As a procedure of wire arrangement, the upper cover B is arranged with the B-machine, and, next, the upper cover A is arranged with the A-machine.



## 2.5. Operation Panel

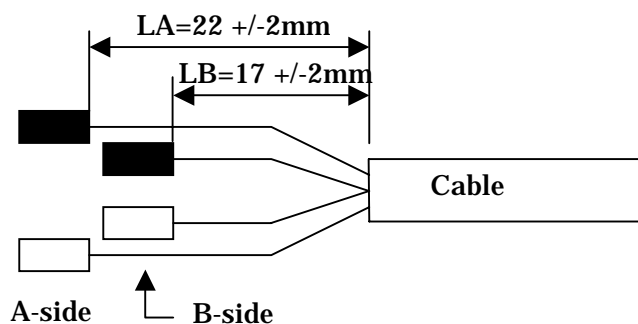
- (1) Mode change switch: The wire arrangement mode and the memory mode are switched.
- (2) "SET/START" switch: The set position and the wire arrangement work position (original position) are switched.
- (3) "RESET" switch: Work is interrupted and the power supply is reset.
- (4) Ten-key: Various conditions in the cloth line mode and the memory mode are input.
- (5) LCD monitor display: Information such as the necessary condition and present location in each mode is displayed.
- (6) Connector box: It uses it for the input side port of conduction wire arrangement.
- (7) Power switch: The power supply is done on off.
- (8) Power socket: It connects with AC100V through the power cable of the attachment.
- (10) Earth terminal: The earth wire is connected. (The malfunction by the noise etc. is prevented)



### 3. Specifications

#### 3.1. Machine Specifications

- 1) Strip length of sheath: 120mm or more
- 2) Shortest cable length: 300mm or more
- 3) Size under neck: Standard of finish size between the sheath edge and the upper cover.  
 "A-side" LA=22 +/-2mm  
 "B-side" LB=17 +/-2mm



- 4) Wire arrangement possible circuit number: 60 circuits /machine  
 \* Arranging the 60 circuits of the B-side with the B-machine beginning, and arranging the 60 circuits of the A-side with the A-machine execute the wire arrangement of 120 circuits in total.
- 5) Operation mode: Two kinds of a wire arrangement mode and a memory mode.  
 (It changes with the key switch)
- 6) Wire arrangement mode: Master wire arrangement, Conduction wire arrangement and Circuit number input wire arrangement.  
 \*Master wire arrangement is the standard mode.
- 7) Master wire arrangement: It sequentially displays from the smallest circuit number of the wire arrangement pattern in LCD, the table is moved to the position, and LED on the wire insertion side is lit.  
 (For wire arrangement of one side open cable)
- 8) Conduction wire arrangement: A detection circuit number is displayed in LCD when an arbitrary wire is pressed to the conduction blade, the table is moved to the position, and LED on the wire insertion side is lit. .  
 (For wire arrangement of cable with one side connector)
- 9) Circuit number input wire arrangement: The circuit number that inputs the ten-key is displayed directly in LCD, the table is moved to the position, and LED on the wire insertion side is lit.  
 (For restart or partial wire arrangement on the way)

- 10) Management of wire arranged circuit number: Method to save the wire arrangement circuit number in the work memory, and to erase the circuit number at each wire pushing operation.  
(Prevention measures of double wire arrangement)
- 11) Cycle time: Approx. one second /wire  
(Not including any operation time of a worker)
- 12) Operation panel: Arranged in the front panel of the machine.  
(Ten-key, function keys, and mode switch)
- 13) Display: LCD (Liquid Crystal Display) of 20 characters x two rows display (Alphabet, numbers and Kana)
- 14) Memory mode: Wire arrangement pattern making, memory check, and parameter input  
(For memory access)
- 15) Wire arrangement pattern making: It makes with the ten-key of the operation panel and uses after registering to the memory.
- 16) Memory capacity: 56 patterns or less can be memorized.  
(Setting, memory, and call from operation panel)
- 17) Connector box: It is mounted on the right side of a machine for conduction wire arrangement of the cable with the one side connector.
- 18) Conduction detection method: The method is that an operator presses a wire to the conduction blade of the machine.  
Conduction blade breaks through the insulation of the wire and the conduction is detected.
- 19) Wire arrangement of twisted-pair wire: It is a simultaneous wire arrangement function in the same position of a right and left as for the twisted-pair wire.  
This is possible in the master wire arrangement mode.

### 3.2. Power Source Specifications

- 1) Power supply: AC100V +/-10%, 50/60Hz, 150VA or less

### 3.3. External Dimensions and Weight

- 1) External dimensions: 310 (width) × 545 (depth) × 220 (height) mm
- 2) Weight: Approx. 15kgf

### 3.4. Operating Environment Conditions

- 1) Operating ambient temperature: 5 -35 degrees centigrade (Away from direct sunlight)
- 2) Operating ambient humidity: 35% -85% RH (No condensation)
- 3) Operating atmosphere: Atmosphere should be free of corrosive gases and contaminants such as dust or lint.
- 4) Voltage variation: Within +/-10% (of the rated voltage)
- 5) Grounding: Ground the earth terminal surely.

### 3.5. Installation Space

Machine installation space required for the purposes of performing operation and maintenance checkups.

(On the work desk of 700-750mm height)

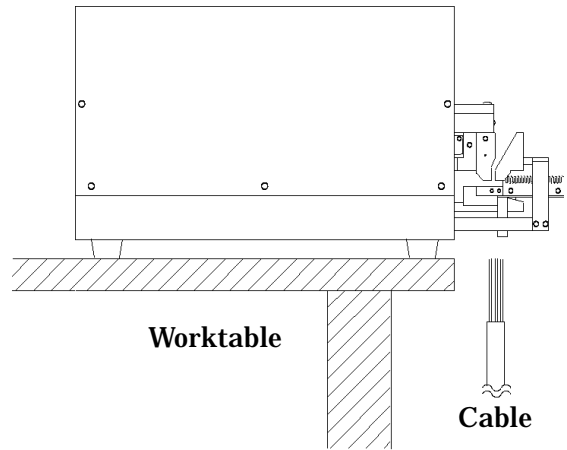
900 (width) × 900 (depth) × 1600 (height) mm

## 4. Installation of Machine

### 4.1. Setup

- 1) Set the front panel of the machine to the edge of a solid worktable and arrange the machine, and check the stable installation without shakiness.
- 2) Install the connector box of the attachment in a right side of the machine.
- 3) Turn off the power on/off switch and connect the power cable of the attachment with the machine and the AC100V outlet.

\* Recommended worktable construction:  
Anti-vibration structure of having an  
adjuster foot.  
(Load capacity: 200kgf or more)



### 4.2. Operation Preparation

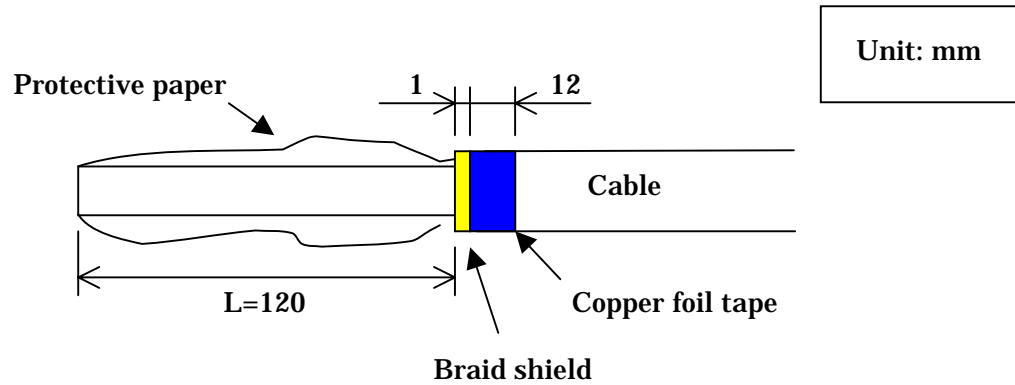
- 1) Insert an attached key into the mode change switch and turn to the “WORK” side.
- 2) Turn “ON” the power on/off switch, and set a wire arrangement pattern number to finish the preparation.

## 5. Operation Method

### 5.1. Pre-processing of Cable

#### 1) Removal of sheath

Remove the sheath of a cable by 120mm or more.



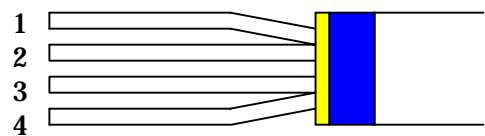
#### 2) Processing of shield wire

- (1) Cut the shield wire with 12mm length from the sheath edge, and turn up to the jacket side.
- (2) Wrap the copper foil tape of the 12mm width 1.5 times around the 1mm position from the sheath edge on the turned shield wire.
- (3) Cut the protective paper at the sheath edge.
- (4) Specification of copper foil tape: Type 2245 of 3M or equivalent

#### 3) Grouping of Wire

Eliminate the twist of wires carefully and divide into four groups of the following.

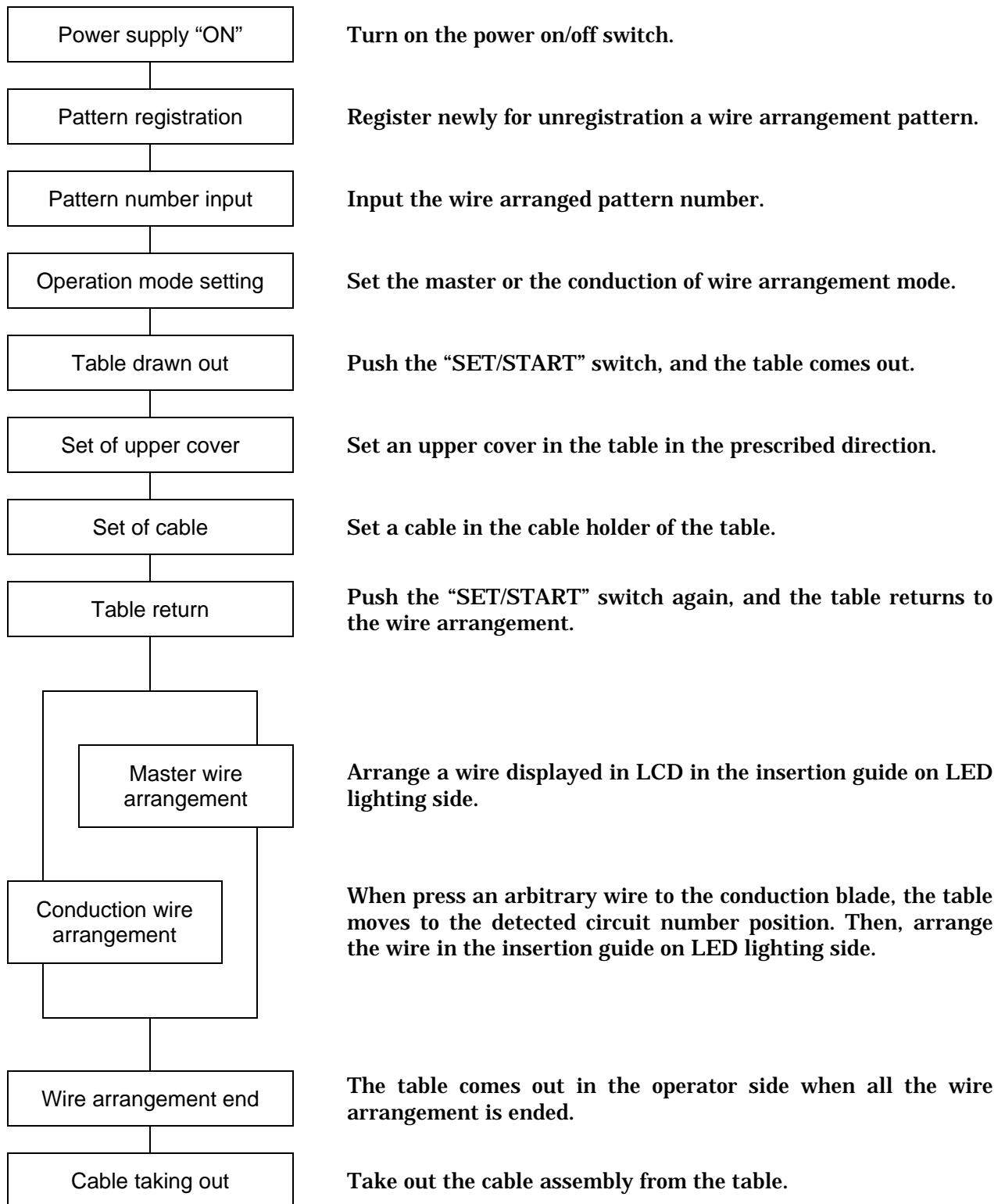
No.	Wire group
1	A-side right (1- 30-circuit)
2	B-side right (31- 60-circuit)
3	B-side left (61- 90-circuit)
4	A-side left (91- 120-circuit)



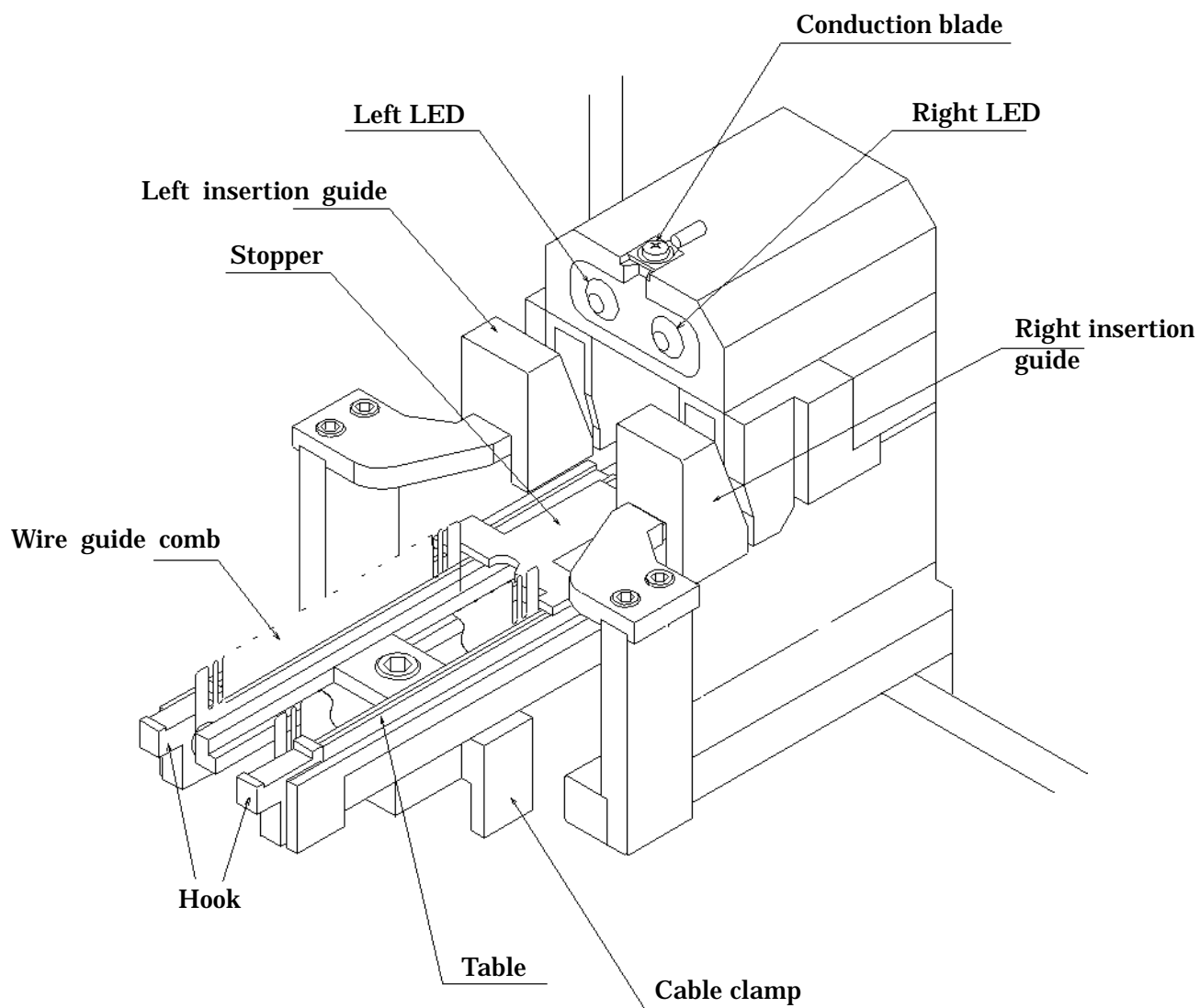


## 5.2. Wire Arrangement Flow (Outline)

After the wire arrangement pattern is specified, the operation mode (Master wire arrangement or Conduction wire arrangement) is set.

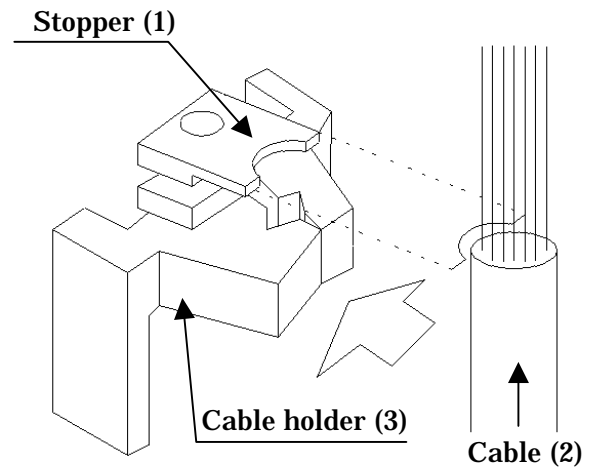


5.3. Name of Wire Arrangement Part



#### 5.4. Installation of Cable

- 1) Push the “SET/START” switch after tuning on the power on/off switch, and the table moves to the operator side.
- 2) Match the sheath edge of the cable to the “stopper (1)”, and clamp the “cable (2)” with the “cable holder (3)” in the state.



#### 5.5. Kinds of Wire Arrangement

The method of the wire arrangement has four kinds of the following.

- 1) **Master wire arrangement:** This is a basic operation mode of the machine. The table moves in order with a small circuit number of the registered pattern.
- 2) **Conduction wire arrangement:** The table moves to the detection circuit number position when the conduction is detected pressing a wire the conduction blade in the conduction wire arrangement mode and the LED on the wire arrangement side is lit.
- 3) **Circuit number input wire arrangement:** The table moves to the circuit number position input directly with the ten-key. However, a circuit number that doesn't exist in the wire arrangement data cannot be input.
- 4) **Advancement and retreat wire arrangement:** The table moves back and forth by one pitch when the “Forward” or “Backward” key is pushed. However, a circuit number that doesn't exist in the wire arrangement data cannot be arranged.

## 5.6. Setting of Wire Arrangement Pattern Number

It is necessary to register the wire arrangement pattern number when the wire arrangement work is done.

The wire arrangement pattern of "1:1" connecting wires of same circuit number is set to pattern No.1 at the machine shipment.

- 1) The mode change switch is switched to the "WORK" side, and the power on/off switch is turned on.

<Start message>

```

< I / O   C a b l e   S e l e c t o r >
  B y   M O L E X   C o . , L t d .

```

- 2) It changes into the wire arrangement main screen after the start message is displayed for a few seconds, and the pattern number at power supply "OFF" is displayed.

<Wire arrangement mode main screen>

```

P t n   N o .   1
                                     P i n   N o .   [   ]

```

- 3) The screen changes into the pattern number input demand screen if the "INPUT" key is pushed when the change in the pattern number is a necessity.

<Pattern number input demand screen>

```

P t n   N o .   I n p u t !   [   ]
N o . : 1 , 2 , 5 , 1 1 , 2 1 , 3 5

```

- 4) Pattern number is chosen from the lower display, input with the ten-key, and it fixes with the "ENT" key.

<Pattern number input screen>

```

P t n   N o .   I n p u t !   [ 2   ]
N o . : 1 , 2 , 5 , 1 1 , 2 1 , 3 5

```

- 5) If the pattern number is input, it becomes the input demand screen of the arrangement mode. "1" is input at the master wire arrangement and "2" is input at the conduction wire arrangement.

<Input demand screen of arrangement mode>

```

  W i r i n g   M o d e   I n p u t !
M a s t e r   [ 1 ] / C o n d u c t o r   [ 2 ]

```

- \* Please input again after it cancels once with the "CLR" key and fix it when you make a mistake in the input.

## 5.7. Master Wire Arrangement

Master (opening) wire arrangement is done to one side of the cable.

- 1) The table moves to the set position of the operator side when the "SET/START" switch is pushed.

<Table set position>

P t n N o . 0 1	P i n N o . [ S E T ]
-----------------	-----------------------

- 2) Set the "upper cover (1)" and a "cable (2)" to the "table (3)".

<First wire arrangement position>

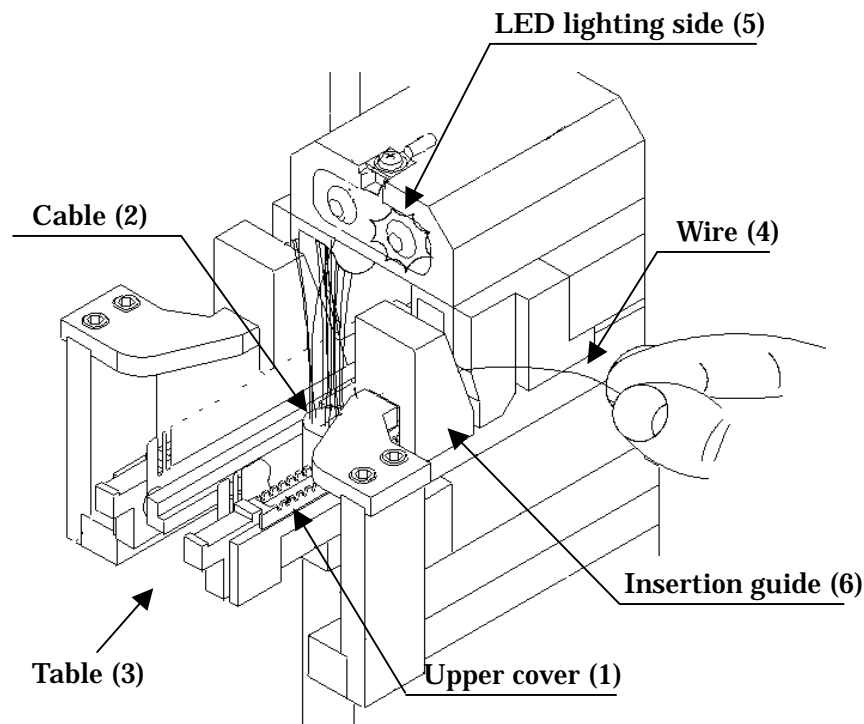
P t n N o . 0 1	P i n N o . [ 0 0 1 ]
-----------------	-----------------------

- 3) The table moves to the smallest circuit number position when the "SET/START" switch is pushed again, a circuit number is displayed in the LCD, and the LED on the wire arrangement side is lit.

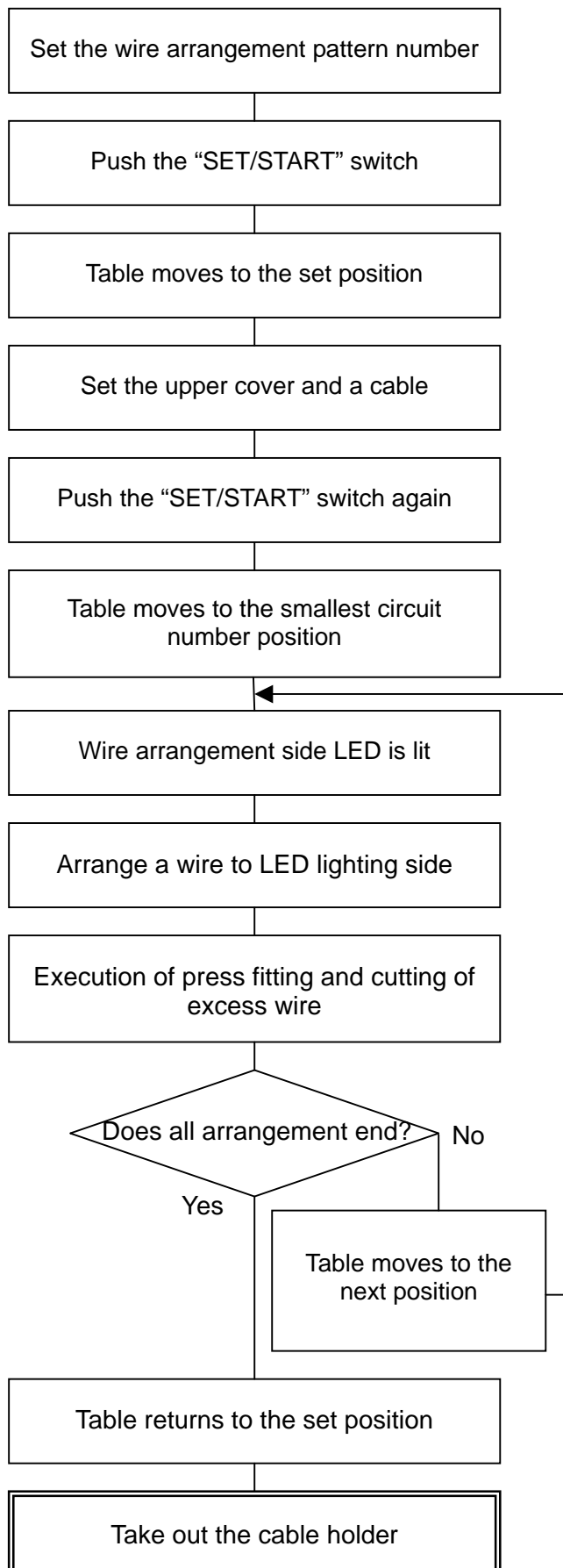
<Second wire arrangement position>

P t n N o . 0 1	P i n N o . [ 0 0 2 ]
-----------------	-----------------------

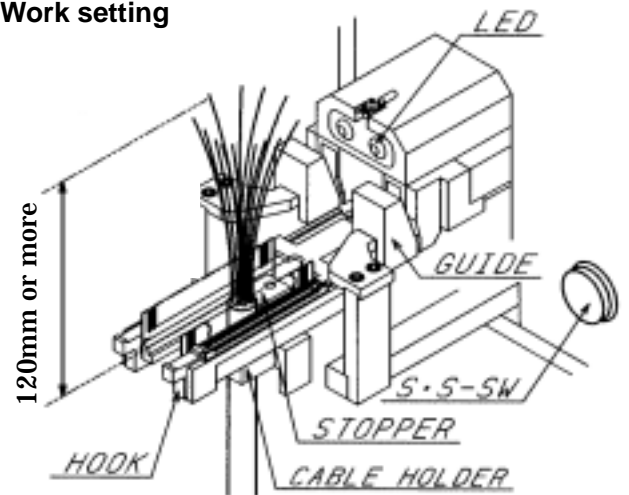
- 4) Arrange a "wire (4)" while strung according to the "insertion guide (6)" on the "LED lighting side (5)".
- 5) The arranged wire is automatically press- fitted to the upper cover, and the excess wire is cut on the upper cover edge.
- 6) After press-fitted, the table moves to the next wire arrangement position and displays the circuit number in the LCD.
- 7) The table automatically returns to the set position when all the wire arrangement is ended repeating the above-mentioned.



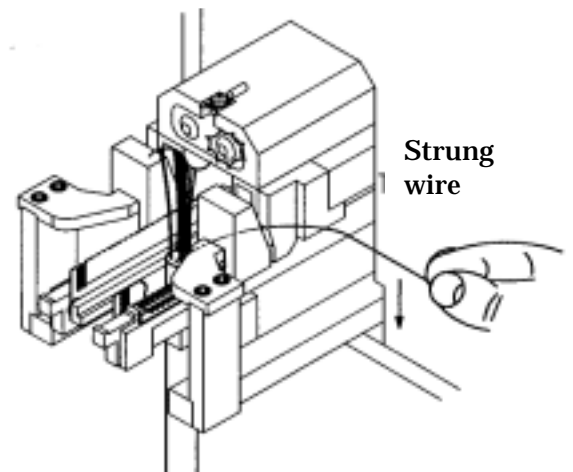
<Flow of Master Wire Arrangement>



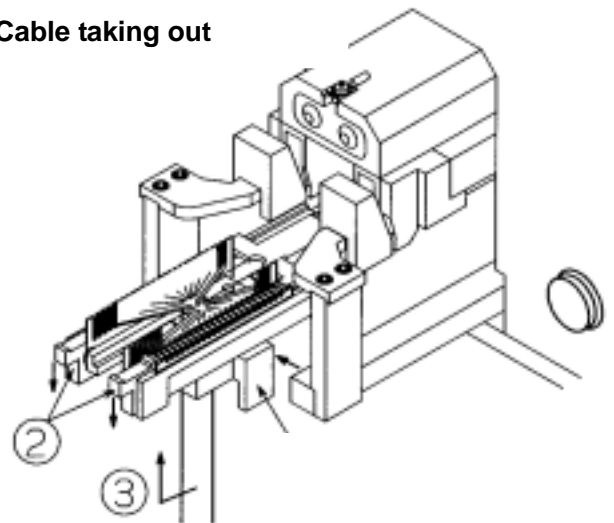
1) Work setting



2) Wire arrangement operation



3) Cable taking out



## 5.8. Conduction Wire Arrangement

Conduction wire arrangement can be done on the opposite side of the cable with the one side connector.

- 1) Connect the connector in the one end of the cable with the connector box.

<Set position>

P t n N o . 0 1
P i n N o . [ S E T ]

- 2) When the “upper cover (1)” and a “cable (2)” are set in the “table (3)”, and the “SET/START” switch is pushed, the table moves to the smallest circuit number position of the wire arrangement data.

<Smallest circuit number position>

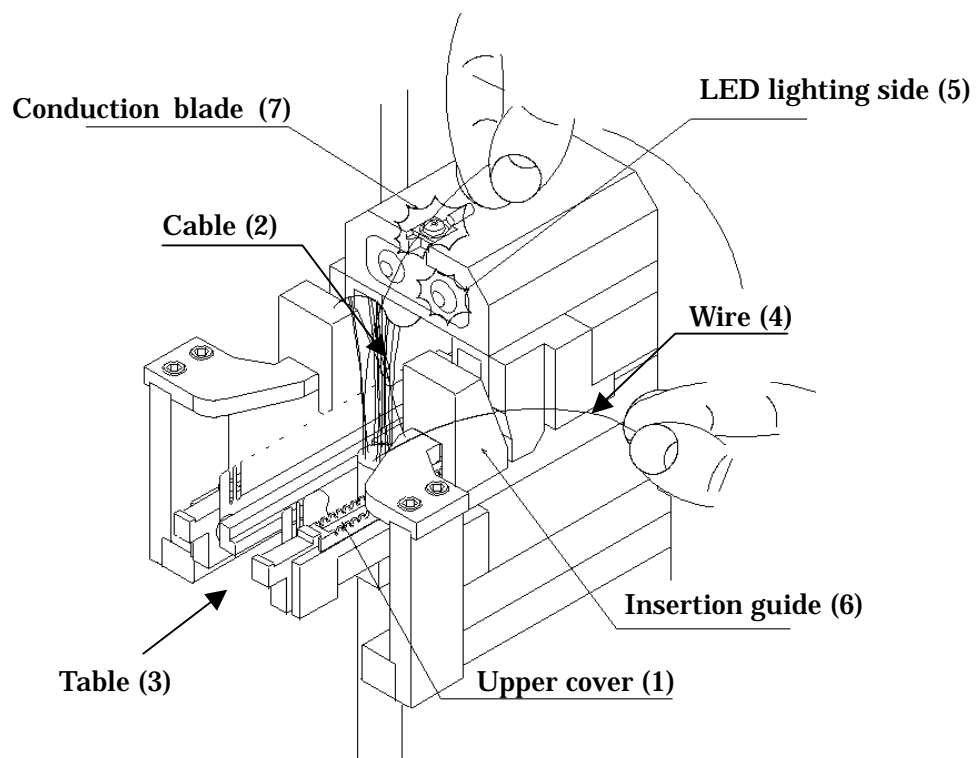
P t n N o . 0 1
P i n N o . [ 0 0 1 ]

- 3) Press an arbitrary “wire (4)” to the “conduction blade (7)”, and the table moves to the detected circuit number position emitting the confirmation sound of “Pi”.

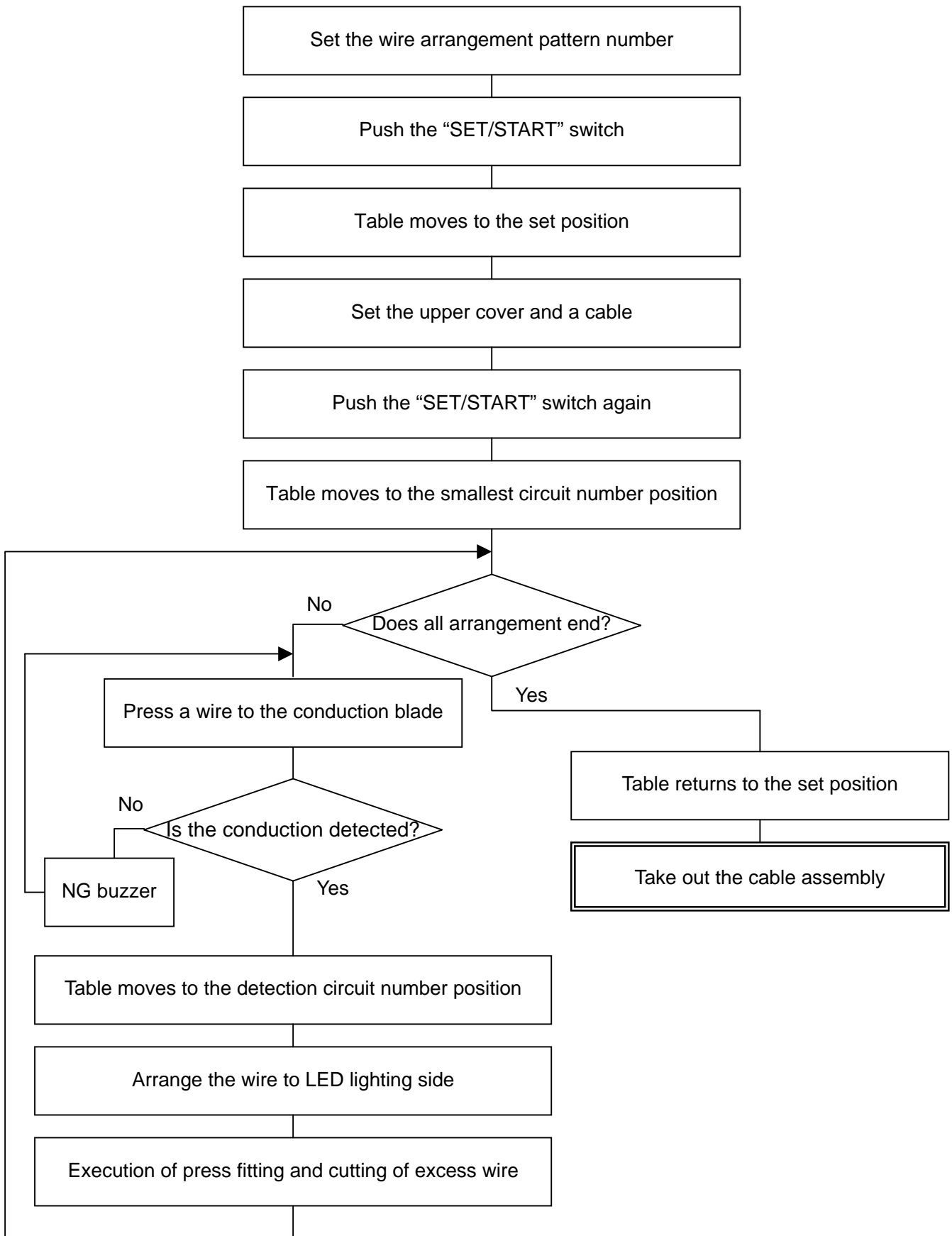
<Conduction circuit number position>

P t n N o . 0 1
P i n N o . [ 0 1 9 ]

- 4) Arrange the “wire (4)” while strung according to the “insertion guide (6)” on the “LED lighting side (5)”.
- 5) The arranged wire is automatically press- fitted to the upper cover, and the excess wire is cut on the upper cover edge.
- 6) The table automatically returns to the set position when all the wire arrangement data ends repeating the above-mentioned.



<Flow of Conduction Wire Arrangement>





## 5.9. Circuit Number Input Wire Arrangement

The wire arrangement to input directly the circuit number that wants to be arranged with the ten-key is possible.

- 1) Input the circuit number that wants to be arranged with the ten-key in the state of the wire arrangement mode screen.

<Circuit number input>

P t n   N o . 0 1	P i n   N o . [ 1 6 ]
-------------------	-----------------------

- 2) The table moves to the specified circuit number position when the input value is fixed with the “ENT” key.

<Circuit number fixed>

P t n   N o . 0 1	P i n   N o . [ 0 1 6 ]
-------------------	-------------------------

- 3) Confirm the circuit number in the LCD, and arrange a wire to the LED lighting side.

<Over of total pins>

P t n   N o . 0 1	< N G ! >	P i n   N o . [ 1 2 1 ]
-------------------	-----------	-------------------------

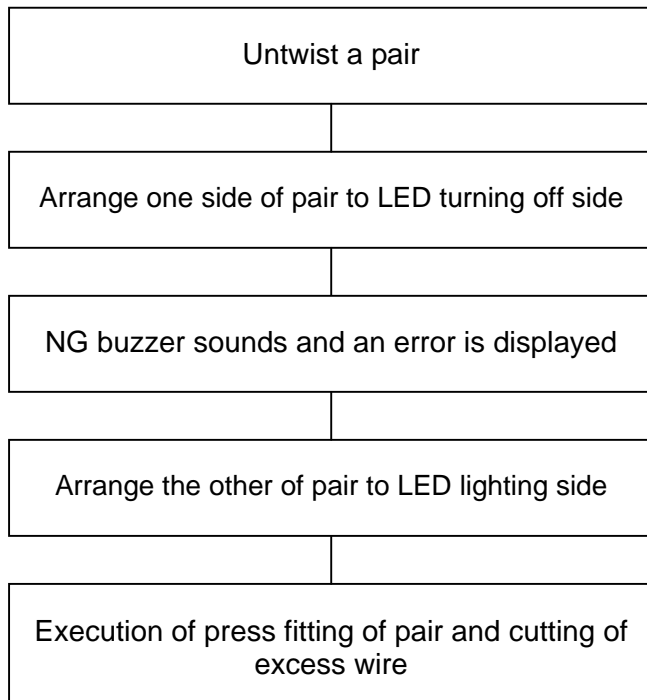
- \* The NG buzzer rings when an unregistered circuit number in the arrangement data is inputting fixed, and <NG> is displayed. The wire arrangement cannot be done.
- \* It doesn't accept excluding the set circuit number range of each wire arrangement machine.

## 5.10. Advancement and Retreat Wire Arrangement

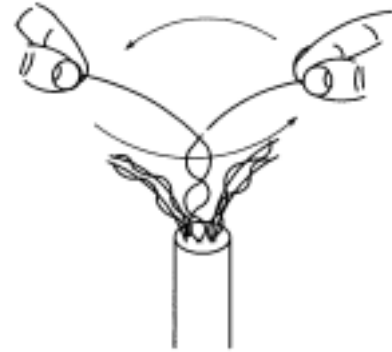
- 1) The table is moved with the “Forward” or “Backward” key, and the wire arrangement is also possible.
- 2) In this case, the moving range does only in the wire arrangement area though the table moves the endless loop regardless of the presence of the circuit number registration.
- 3) However, a circuit number that doesn't exist in the wire arrangement data cannot be arranged.

### 5.11. Wire Arrangement of Twisted-pair Wire

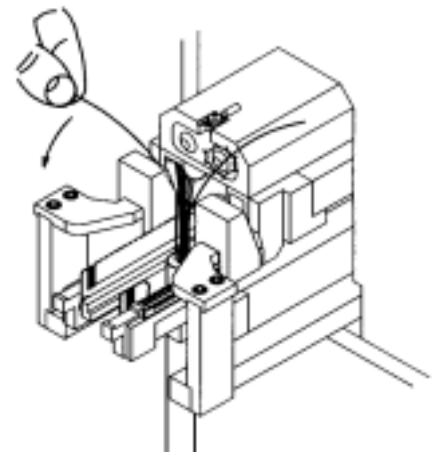
Please do the wire arrangement work according to the following procedures when you arrange the twisted-pair wire to right and left simultaneously.



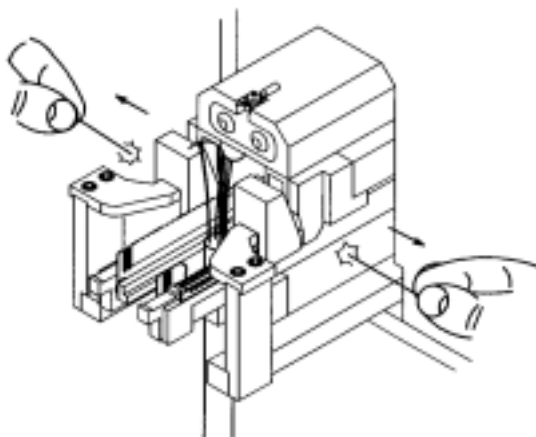
1) Untwist a pair



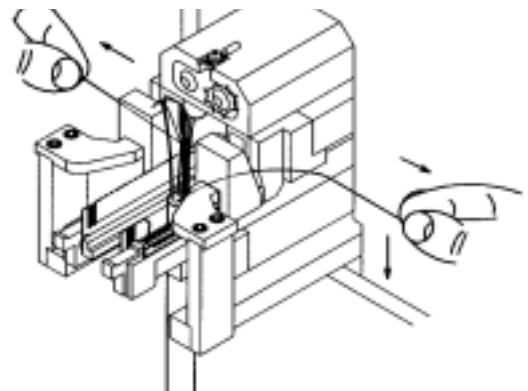
2) Arrange a wire to LED turning off side



4) Press fitting of both at the same time



3) Arrange the other wire to LED lighting side



## 5.12. Notes of Wire Arrangement

### 1) Possible or impossible of wire arrangement

It can be judged whether the wire arrangement is possible from the LED lighting (possible) and turning off (impossible).

### 2) Wire arrangement cannot be done to the same place twice.

The LED is turned off when arranging a wire once at the LED lighting position and continuous arrangement at the same position cannot be done.

\* The wire arrangement circuit number is saved in the work memory, and a double wire arrangement is prevented by the method to erase the circuit number at each wire press fitting operation.

### 3) When you make a mistake in wire arrangement.

A right screen is displayed with the NG buzzer when arranging a wire on the reverse-side (LED turning off side), and please does over again.

<Error when arranging to other side>

<p>Wiring to left ! Pin No. [ 0 9 7 ]</p>
---

\* This error display can be cleared also with the “CLR” key.

### 4) Strung of wire

Please arrange a wire while strung.

There is a case that the wire doesn't exactly enter the upper cover when arranging with the wire made to slacken.

### 5) When you cancel work on the way.

When the work is canceled on the way, the “RESET” switch is pushed. The power supply resets and the machine returns the initial.

“Note” Please note that the circuit number data that has been arranged while operating disappears in this case, too.

## 5.13. Start of Special Mode with “CHECK” Key

A special mode can be started by the “CHECK” key and figure (code) input in this machine.  
**“Note”** This function is possible since ROM version M128-02.

No.	Input	Contents
1	[CHECK] + [0] [0] [0]	The wire arrangement is done over again from the start. (The wire arrangement check data is deleted)
2	[CHECK] + [1] [1] [1]	The LCD screen display is switched to Japanese.
3	[CHECK] + [2] [2] [2]	The LCD screen display is switched to English.

[About confirmation and restart on the way of the wire arrangement]

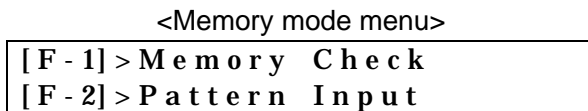
- 1) Please move the table to the set position pushing the “SET/START” switch when you want to confirm the state of the wire arrangement while operating.
- 2) Please push the “SET/START” switch again when you want to continue the work after confirmation. It is possible to restart on the way.
- 3) When the wire arrangement is done over again from the beginning, it is necessary to delete the check data in a special mode of the “CHECK” key.
- 4) In this machine, to do the end operation of the wire arrangement work by the automatic operation, the wire arrangement check is done. The check data is made, and data is deleted at each wire arrangement. The table returns to the set position by the automatic operation when deleting all pins ends.
- 5) Therefore, even if the table is returned to the set position pushing the “SET/START” switch while operating, the check data is not deleted.

## 6. Wire Arrangement Pattern Data Creation and Check

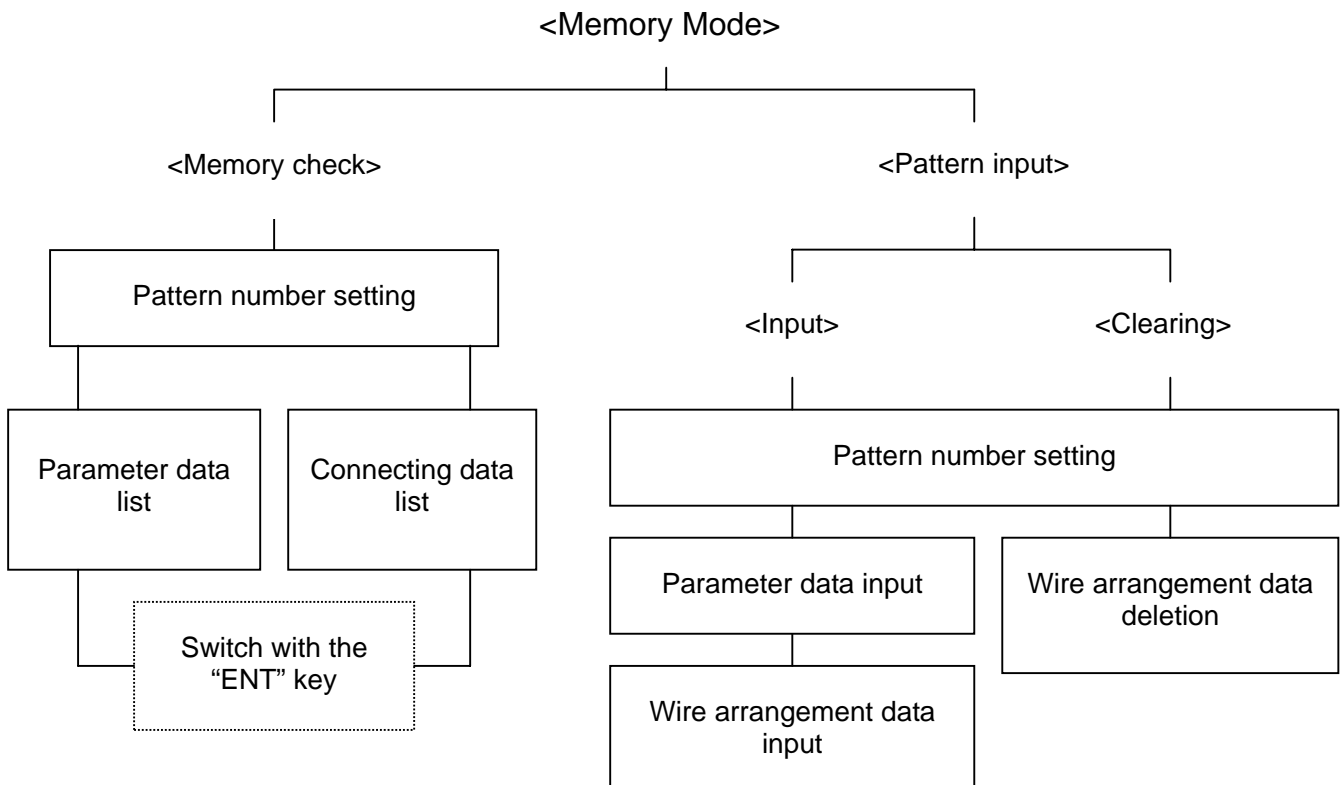
The mode change switch is switched to “MEMORY”, the wire arrangement pattern data is input with the ten-key according to the screen display, and it fixes it.

### 6.1. Memory Mode

The memory mode menu screen is displayed when the mode change switch is switched to “MEMORY”. Then, “F-1” is selected with “CHECK” key and “F-2” is selected with the “INPUT” key.



- 1) Memory check:                    The content of the wire arrangement data is displayed on the LCD.
- 2) Pattern input:                    Making and deletion of wire arrangement data.
  - \* Ten-key:                            Making a wire arrangement data through the ten-key.
  - \* Clearing:                            The wire arrangement data of each pattern is deleted.



## 6.2. Creation and Registration of Wire Arrangement Data

When the wire arrangement work is done, it is necessary to create and to register the wire arrangement pattern data. It explains the procedure in this paragraph.

- 1) "Pattern input" is specified pushing the "INPUT" key that corresponds to "F-2" on the memory mode menu screen.

```

<Memory mode main>
[ F - 1 ] > M e m o r y   C h e c k
[ F - 2 ] > P a t t e r n   I n p u t

```

- 2) Input "1", and the pattern number input demand screen is opened.

```

<Wire arrangement data input selection>
W i r i n g   d a t a   I n p u t
1 : K e y   2 : C l e a r

```

- 3) Input an unused pattern number, and fix it with the "ENT" key.  
(The lower is a display of the registered pattern number)

```

<Pattern number input>
P t n   N o .   I n p u t   ! [ 3   ]
N o . 1 ,   2 ,   5 .   1 1 .   2 1 .   3 5

```

- 4) Input the connector name repeating that it fixes with the "ENT" key looking for one character with the "Forward" or "Backward" key.

```

<Connector name>
C o n n e c t o r   N a m e
N a m e [ 1 2 0 P - A 0 1 ]

```

(The connector name is eight characters or less)

When the "ENT" key is pushed twice, the connector name is registered.

```

<Wire arrangement data input waiting>
P t n   N o . 3
                                0 0 1 > [ 0 0 0 ]
Input side > Arrangement side

```

- \* Please input again after it cancels once with the "CLR" key and fix it when you make a mistake in the input.

```

<No.1 pin is connected with No. 15 pin>
P t n   N o . 3
                                0 0 1 > [ 1 5   ]

```

- 5) The pin number on the wire arrangement side is input based on the pin number on the input side (connector box side) and the wire arrangement data input is fixed sequentially with the "ENT" key.

```

<Registration completion>
P t n   N o . 3
I n p u t   C o m p l e t e d   !

```

- 6) The same as the pin number on the input side is input at open wire arrangement.
- 7) It becomes an empty circuit number (no wire arrangement) when fixing with the "ENT" key without the figure.
- 8) Register it in the memory pushing the "INPUT" key when all the input is completed. It returns to the memory mode menu screen after the completion message is displayed for a few seconds.

- \* Please push the "RESET" switch when you want to cancel on the way. The input data is abandoned and returns to the memory mode menu screen.

**"Note"** If the "INPUT" key is not pushed at the end, the created data is not registered.

### 6.3. Input Error at Registering

When the following errors occur at registering, the NG buzzer rings and it becomes a data input demand screen with an error message.

Please register again the “INPUT” key pushing after restoring the error part.

- 1) When dual data exists.

There are two same circuit number or more.

\* The display of dual data displays the second data.

<Dual data error>

P t n N o . 3	
D u a l d a t a !	0 1 8 > [ 0 0 1 ]

\* Another has wire arrangement circuit number 001.

- 2) When data more than the number of total pins exists.

The circuit number is larger than the number of registered total pins.

<Over error of total pins>

P t n N o . 3	
E x c e s s i v e !	1 2 8 > [ 1 2 9 ]

\* Registered total pins = 129

\* Please push the “RESET” switch when you want to cancel on the way. The input data is abandoned and returns to the memory mode menu screen.

## 6.4. Deletion of Wire Arrangement Data

When the registered wire arrangement pattern is deleted, it does according to the following procedures.

- 1) If “2” is input with the ten-key on the wire arrangement input selection screen, it becomes this mode.

<Wire arrangement data input selection>

```

Wiring data Input
1:Key 2:Clear
  
```

- 2) Because the pattern number input demand screen is displayed, the deletion pattern number is input with the ten-key and it fixes with the “ENT” key.

<Pattern number input demand>

```

Ptn No. Input ! [ 2 1 ]
No. 1, 2, 5, 11, 21, 35
  
```

- 3) The wire arrangement data fixed to push the “ENT” key by blinking “Data clear OK?” is deleted, this mode is ended after a clear screen is displayed for a few seconds, and it returns to the memory mode menu screen.

<Confirmation of clearing pattern>

```

Ptn No. 2 1
Data Clear OK ?
  
```

- \* This mode is canceled when the “CLR” key is pushed, and it returns to the memory mode menu screen.

<Execution of clearing pattern>

```

Ptn No. 2 1
Data Clear !!
  
```

- \* When the pattern number of unregistration is input, the warning screen of an unregistered pattern is displayed. It returns to the pattern number input selection screen when the “ENT” key or the “CLR” key is pushed in the state.

<Arrangement of unregistered pattern>

```

Ptn No. 2 1
Not Entry Data OK?
  
```



## 6.5. Memory Check

The content of the registered wire arrangement pattern can be confirmed in this mode.

- 1) "Memory check" is specified pushing the "CHECK" key that corresponds to "F-1" on the memory mode menu screen.

<Memory mode menu>

[ F - 1 ] > M e m o r y C h e c k
[ F - 2 ] > P a t t e r n I n p u t

- 1) After pattern number is input with the ten-key, it fixes with the "ENT" key because pattern number that can be input to the lower is displayed.

<Pattern number input demand>

P t n N o . I n p u t ! [     ]
N o . 1 , 2 , 5 , 1 1 , 2 1 , 3 5

- 2) Then, the content of connecting wires is displayed in the LCD. The content of connecting wires is confirmed pushing the "Forward" or "Backward" key.

<Pattern number input demand>

P t n N o . I n p u t ! [ 3 5 ]
N o . 1 , 2 , 5 , 1 1 , 2 1 , 3 5

- 3) It becomes a display of the parameter data if the "ENT" key is pushed, and various parameter data can be confirmed similarly with the "Forward" or "Backward" key. It returns to the content of connecting wires display when the "ENT" key is pushed again.

< Data of connecting wires display>

P t n N o . 3 5
0 0 1 > [ 0 3 5 ]
I n p u t > A r r a n g e m e n t

- 4) This mode ends with the "CHECK" key or the "CLR" key, and returns to the memory mode menu screen.

< Number of arrangement side total pins>

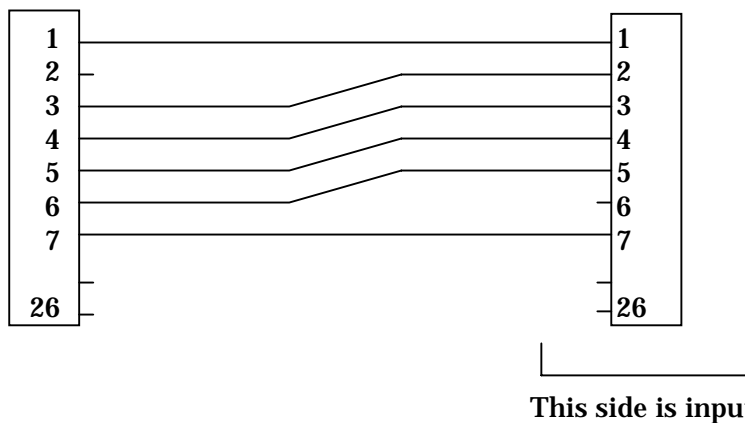
N u m b e r o f P i n
< W i r i n g > P i n [ 0 3 5 ]

## 7. Wire Arrangement Pattern Input Procedure

### 7.1. Example of Input of Conduction Wire Arrangement

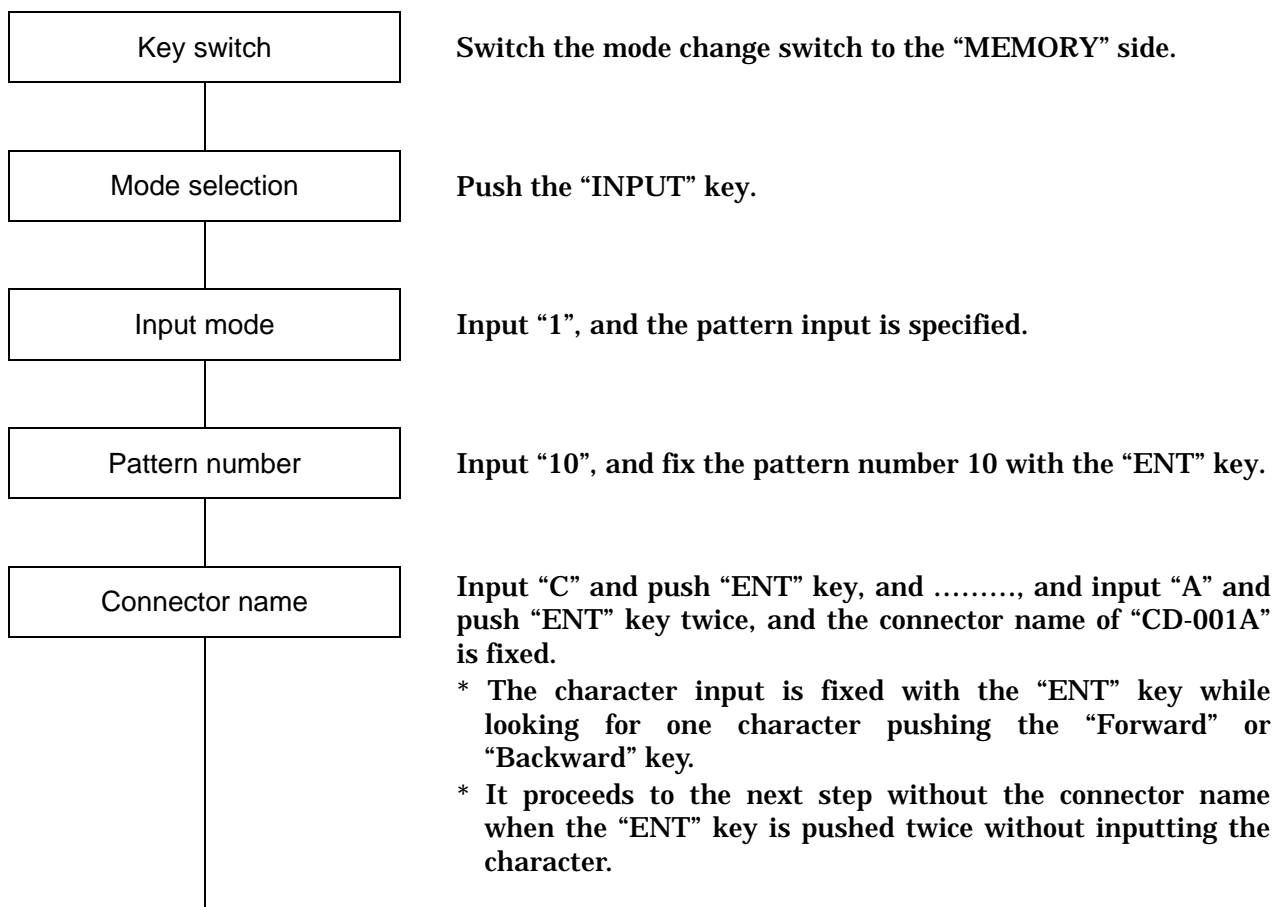
**[Example of Pattern]**

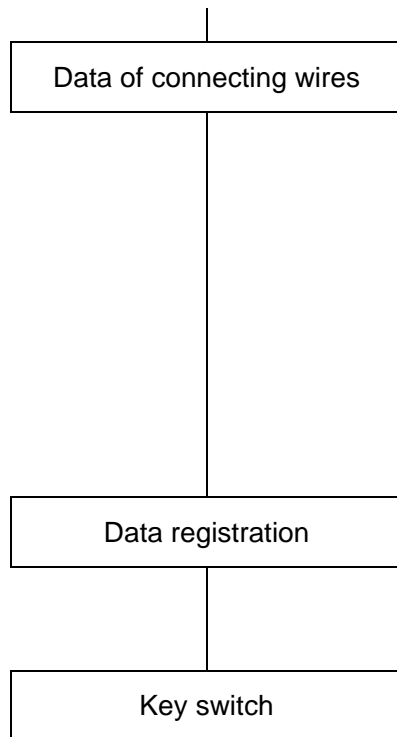
[Input side] [Wire arrangement side ]  
 (Connected side in the connector box) (Wire arrangement side in the future)



The pattern input and the registration procedure of the above-mentioned conduction wire arrangement is shown.

<Input example> Pattern number: 10, Connector name: CD-001A





Input the wire arrangement side (right side) to the circuit number on the input side. An empty circuit inputs only the “ENT” key.

No.	Display > Input value	Input
1	0 0 1 > [ 1 ]	“1” and “ENT”
2	0 0 2 > [ 0 ]	“ENT”
3	0 0 3 > [ 2 ]	“2” and “ENT”
4	0 0 4 > [ 3 ]	“3” and “ENT”
5	0 0 5 > [ 4 ]	“4” and “ENT”
6	0 0 6 > [ 5 ]	“5” and “ENT”
7	0 0 7 > [ 7 ]	“7” and “ENT”

Register the input wire arrangement data pushing the “INPUT” key at the end.

“**Note**” If this operation is not done, the created data is not registered.

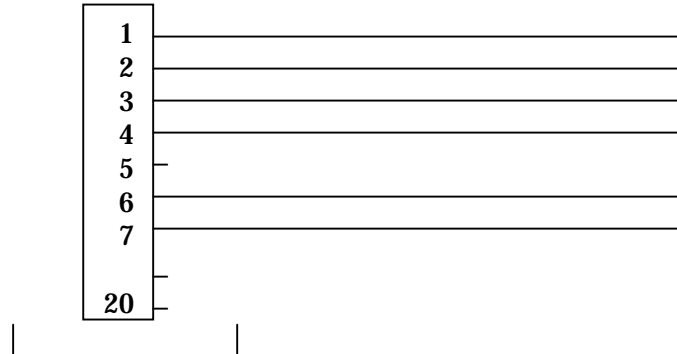
Switch the mode change switch to the “WORK” side.

“**Note**” After the existing pattern is cleared once, a new pattern is registered in an existing pattern when overwriting.

## 7.2. Example of Input of Master (Opening) Wire Arrangement

### [Example of Pattern]

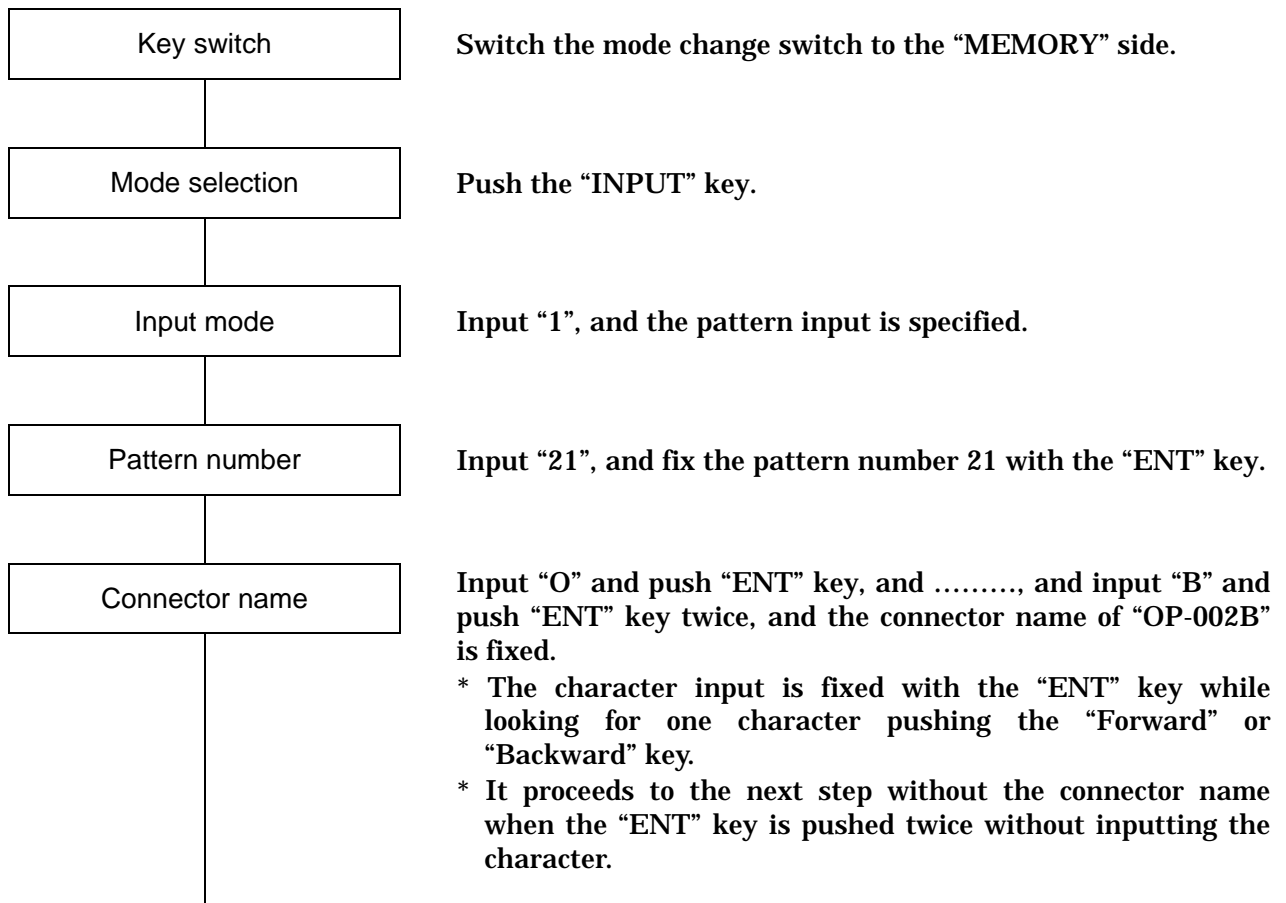
[Master wire arrangement side]

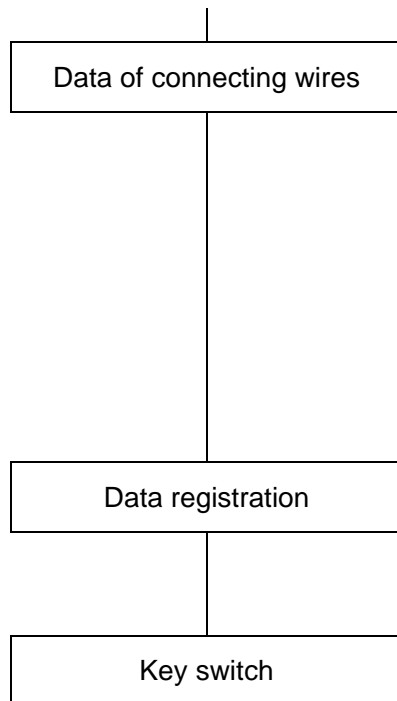


This side is input.

The pattern input and the registration procedure of the above-mentioned conduction wire arrangement is shown.

<Input example> Pattern number: 21, Connector name: OP-002B





The wire arranged circuit inputs the same number as the display. An empty circuit inputs only the “ENT” key.

No.	Display > Input value	Input
1	0 0 1 > [ 1 ]	“1” and “ENT”
2	0 0 2 > [ 2 ]	“2” and “ENT”
3	0 0 3 > [ 3 ]	“3” and “ENT”
4	0 0 4 > [ 4 ]	“4” and “ENT”
5	0 0 5 > [ 0 ]	“ENT”
6	0 0 6 > [ 6 ]	“6” and “ENT”
7	0 0 7 > [ 7 ]	“7” and “ENT”

Register the input wire arrangement data pushing the “INPUT” key at the end.

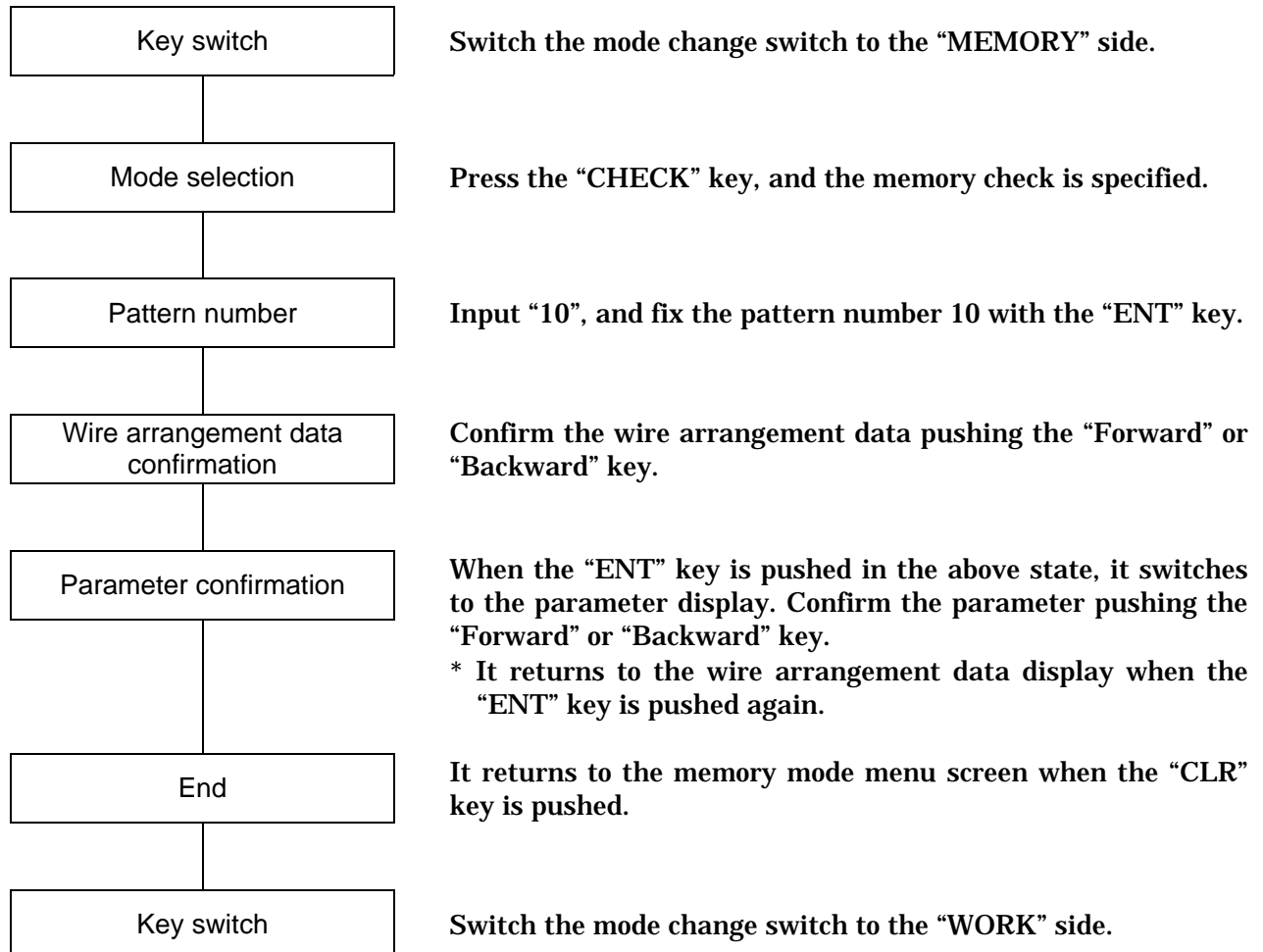
“Note” If this operation is not done, the created data is not registered.

Switch the mode change switch to the “WORK” side.

“Note” After the existing pattern is cleared once, a new pattern is registered in an existing pattern when overwriting.

### 7.3. Confirmation of Wire Arrangement Data

It explains the procedure for confirming the wire arrangement data of pattern No.10.



## **8. Maintenance and Check**

### **8.1. Daily Maintenance**

#### **1) Maintenance of machine**

Before a work start, please carry out the machine check in accordance with the “startup checklist” in this manual, and start work after checking that it satisfies a standard.

\* Please record each check result simultaneously.

#### **2) Removal of foreign article**

Foreign article may creep into a “pusher”, a “wire guide comb”, an “upper cover setting part” and a “table sliding part” during the operation. Remove these foreign articles from time to time.

\* If neglect the foreign article, it may results in the cause of wiring defect.

#### **3) Cleaning of work end**

Please wipe with a dry cloth lightly after cleaning a machine with compression air every day at the time of a work end. There is an effect that maintains a sensor function and prevents rusting.

#### **4) Lubrication**

Apply a proper amount of “Lithium family grease” (JIS No. 2) or equivalent to the table sliding part and the pusher sliding part with the frequency of once a month.

## 8.2. Check of Machine

Please confirm the standard value with the corresponding connector termination specifications of the latest version before the operation.

### 1) Wire protruding length

The wire protruding length from the upper cover must be a standard value or less.

<Standard> Wire protruding length = 0.3mm or less

### 2) Cutting drop of conductor

The conductor cutting drop amount of the cut wire must be a standard value or less, and it must not be short-circuited between pitches.

<Standard> Conductor cutting drop amount = Do not exceed the outside diameter of the insulation of the wire.

### 3) Wire press-fit depth

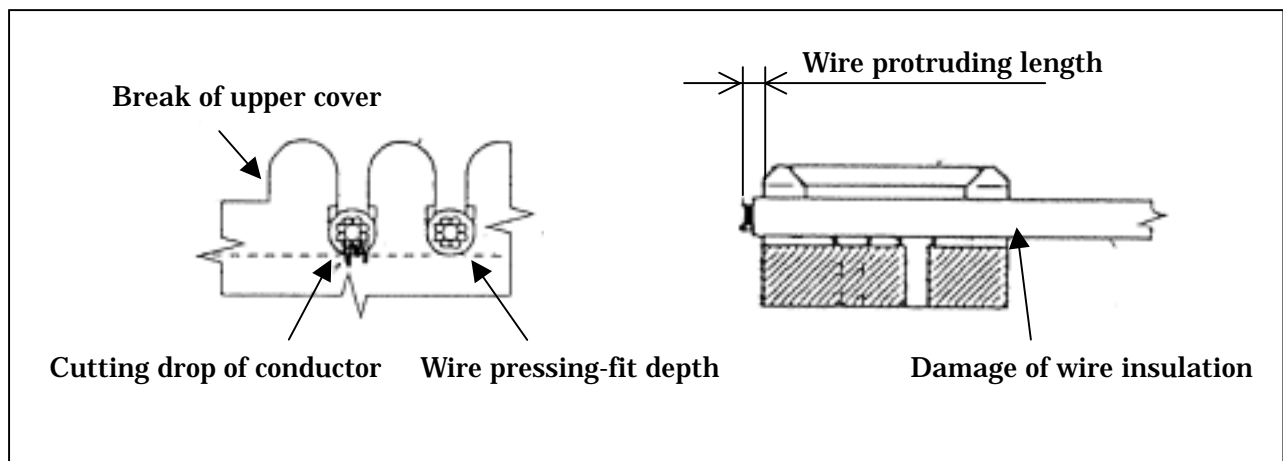
The wire must be press-fitted to the upper cover surely without extremely crushing the wire insulation.

### 4) Damage of wire insulation

A remarkable damage by the wire guide comb and the pusher do not be on the wire insulation.

### 5) Break of upper cover

There must be neither break nor remarkable damage of the upper cover by the pusher.

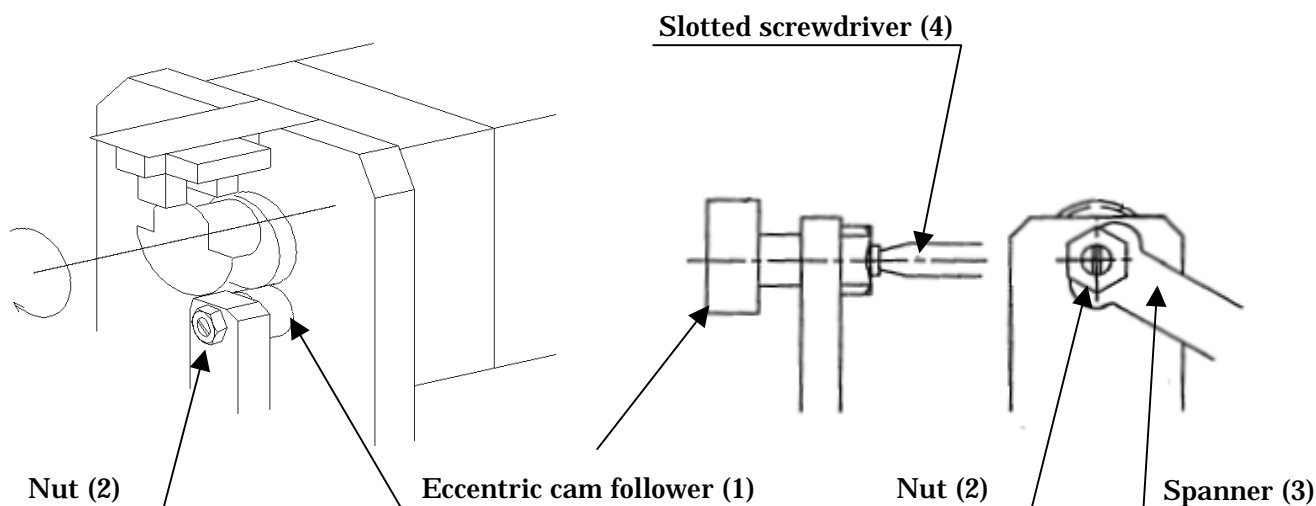




### 8.3. Adjustment Method of Wire Press-fit Depth

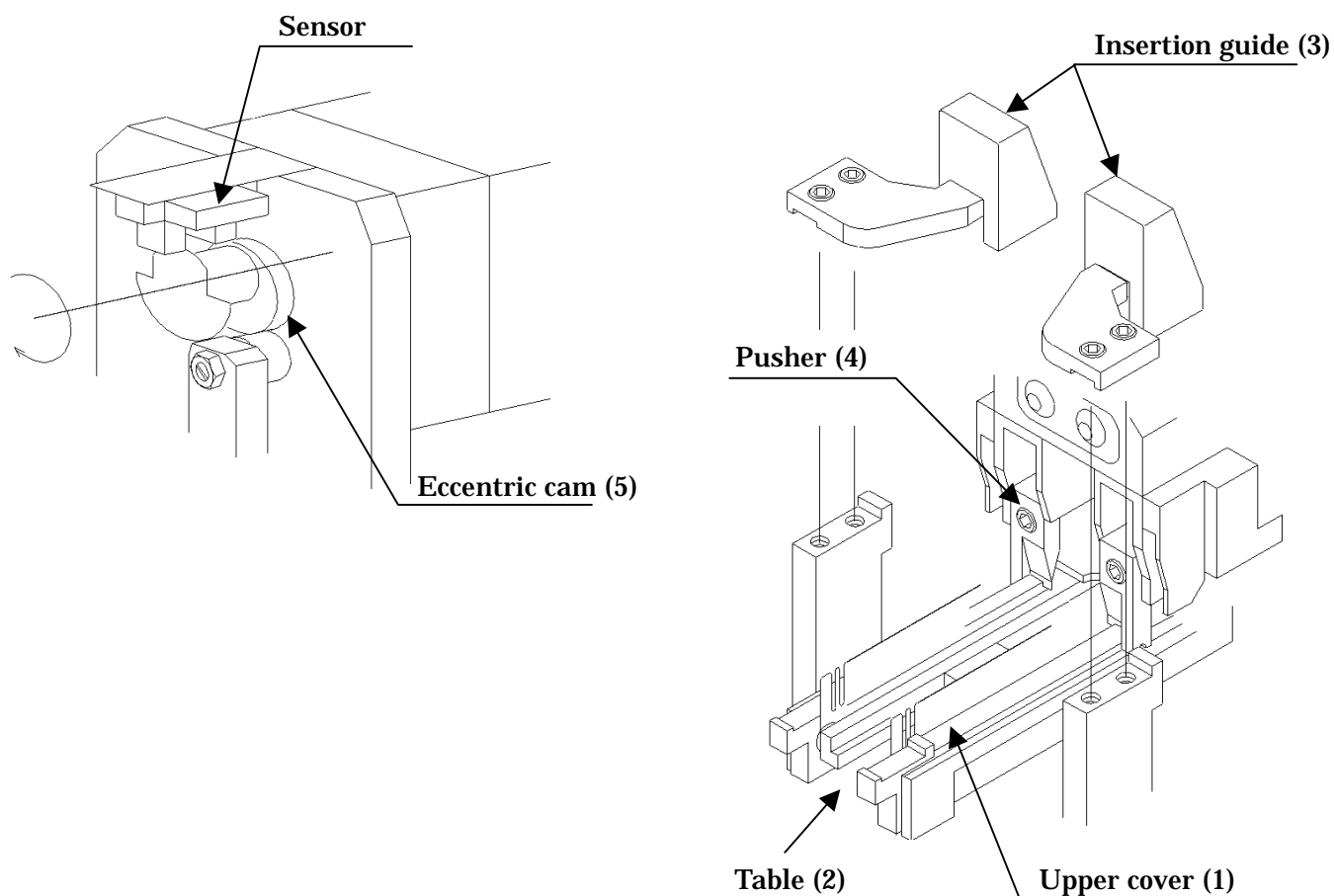
- 1) Turn off the power on/off switch, and remove the machine cover.
- 2) Remove the front panel of the main body. (The harness for switch is removed from the CPU board beforehand)
- 3) Turn the “eccentric cam follower (1)” by the “slotted screwdriver (4)” in the state, and adjust the wire press-fit depth.  
\* Eccentric amount of cam follower = 0.5mm /turn
- 4) When the adjustment ended, fix the “nut (2)” by the “spanner (3)” maintaining the position of the “slotted screwdriver (4)”.
- 5) After the wire press-fit depth confirms excellence by the trial operation, install the front panel and the machine cover.

**“Note”** Please note that the damage of the pusher is caused when deeply adjusting it too much.



#### 8.4. Exchange Method of Pushers (Wire press-fitting blade)

- 1) Turn off the power on/off switch, and remove the machine cover.
- 2) Set the “upper cover (1)” to the “table (2)”.
- 3) Remove the right and left “insertion guide (3)” in assembly.
- 4) Exchange the “pusher (4)” for a spear pusher, and fix it temporarily.
- 5) Make the position in which the point of the pusher enters the ditch of the upper cover while rotating an “eccentric cam (5)” by 180 degrees.
- 6) Pinch the “upper cover (1)” with the right and left “pusher (4)”, and fix the pusher in the state.
- 7) Confirm that the pusher is vertically fixed and moves vertically up and down at this time.
- 8) Turn the “eccentric cam (4)”, and return the pusher to the former position.
- 9) Set the right and left “insertion guide (3)”, and fix it while pressing backward.
- 10) After confirming the excellence by trial, set the machine cover.



## 8.5. Adjustment Method of Original Position

The original position of the table is adjusted so that the pusher may descend to the center of the ditch of the upper cover. (Unit of adjustment: 0.1mm)

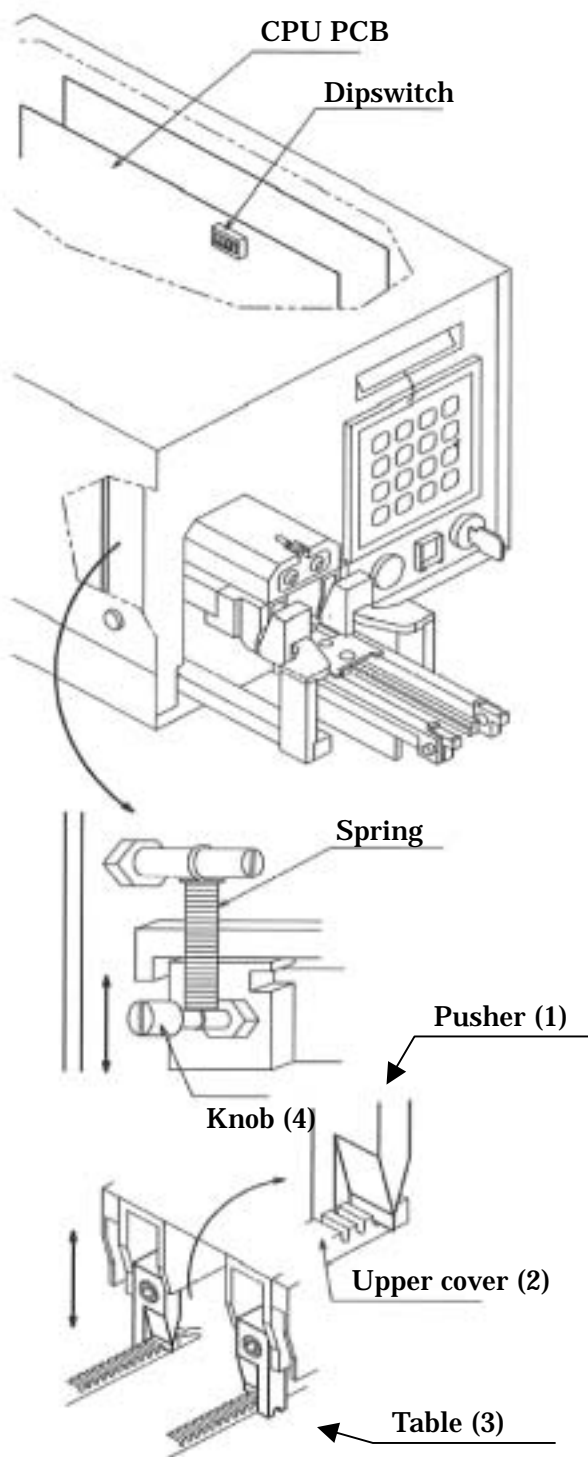
- 1) Detach the machine cover and the insertion guide of the wire by assembly.
- 2) Set the upper cover on the table.
- 3) Switch the mode change switch to the "WORK" side, and turn "ON" the power supply.
- 4) The LED on both sides blinks when the No.1 of the dipswitch on the CPU board is made "ON", and following "Original position adjustment screen" opens.

<Original Position Adjustment>

<p>* Adjust the origin* Pulse = [ 0 4 0 0 ]</p>
---

\* The place that moved from the set position to 400 pulses machine side is the original position when displayed as "pulse =0400".

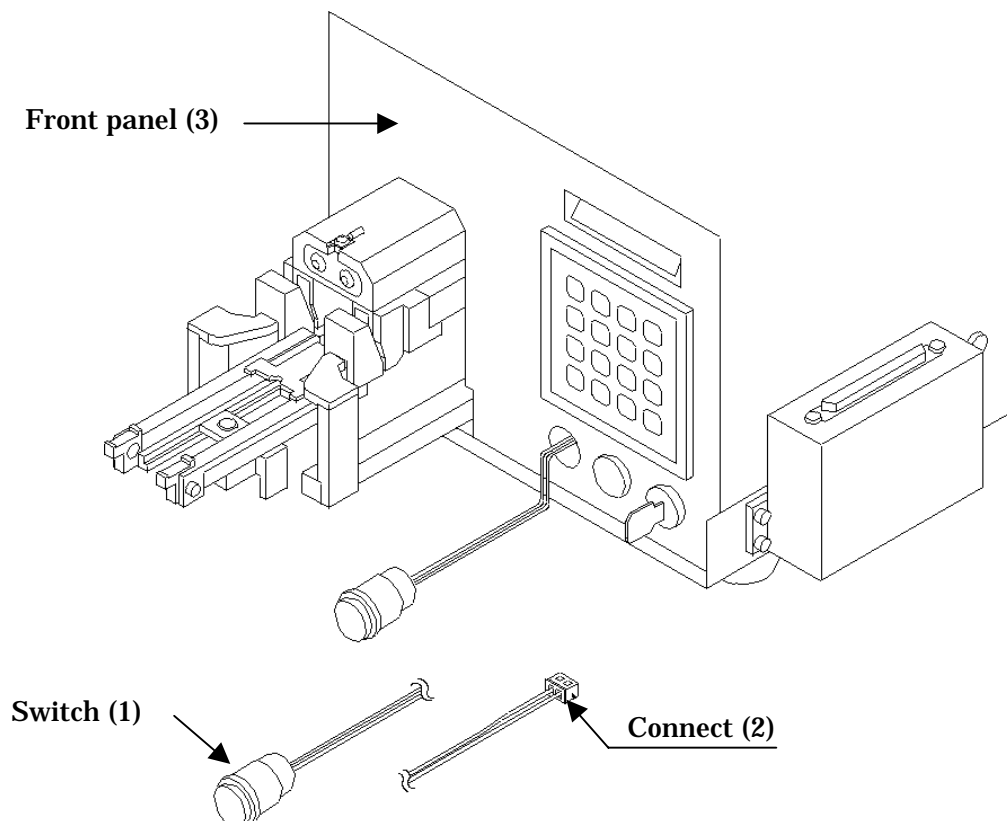
- 5) The table is moved to the original position pushing the "SET/START" switch twice.
- 6) Depress the "pusher (1)" lightly by operating the "knob (4)", and confirm whether it descends to the center of the ditch of the "upper cover (2)".
- 7) The "table (3)" moves for one pulse when the "Forward" or "Backward" key is pushed when the positioning is a necessity.  
 "Forward" key = Table moves in the machine (Pulse +N)  
 "Backward" key = Table moves to the operator side. (Pulse -N)
- 8) When the adjustment of the position ends, turn "OFF" the No.1 of the dipswitch on the CPU board.
- 9) Confirm the original position again pushing the "SET/START" switch twice because it returns to the usual wire arrangement mode.
- 10) Install the insertion guide and the machine cover at the end.



## 8.6. Exchange Method of Switches

There is a necessity for detaching a front panel when switch each place is exchanged. Please do this exchange according to the procedure below order.

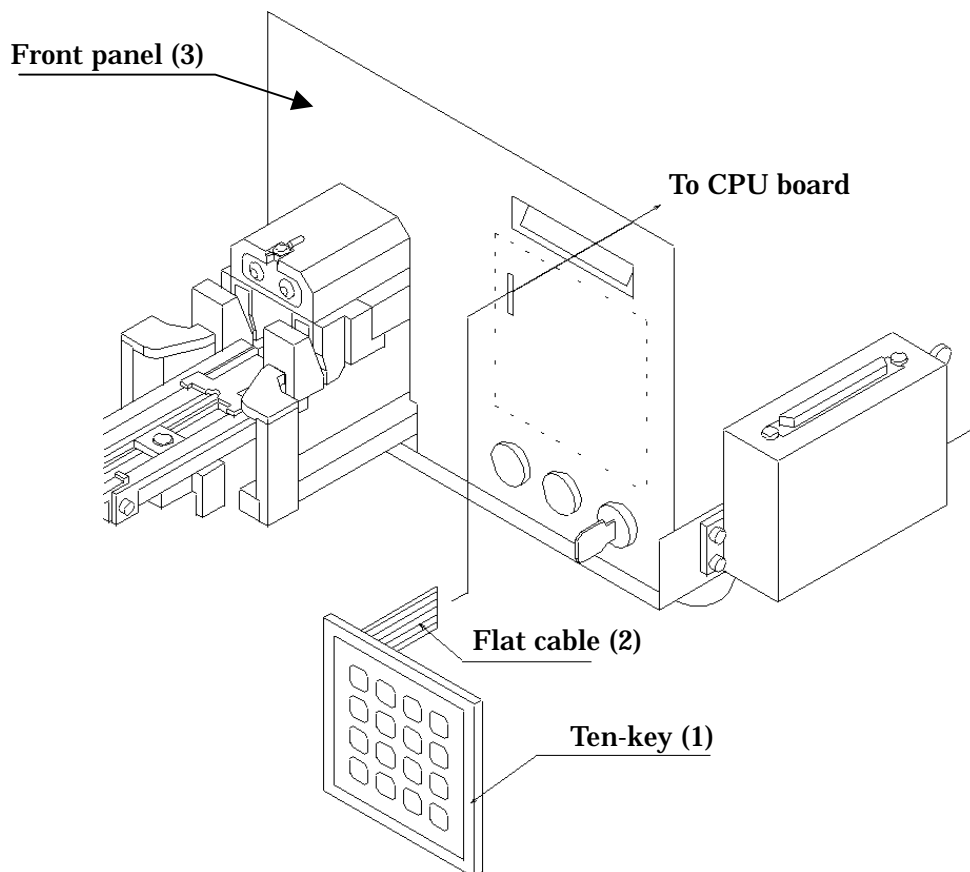
- 1) Detach the “connector (2)” of the “switch (1)” from the CPU board.
- 2) Remove the “front panel (3)” from the main body while noting other wiring.
- 3) Detach the exchanged switch from the front panel.  
\* Remove the switch gradually while pushing the hook that hangs in the switch.
- 4) Insert a new switch (The harness has been processed) from the surface of a front panel.  
\* The hook hangs when the switch is pushed.
- 5) Connect the connector of the switch with the prescribed position of the CPU board.



## 8.7. Exchange Method of Ten-key

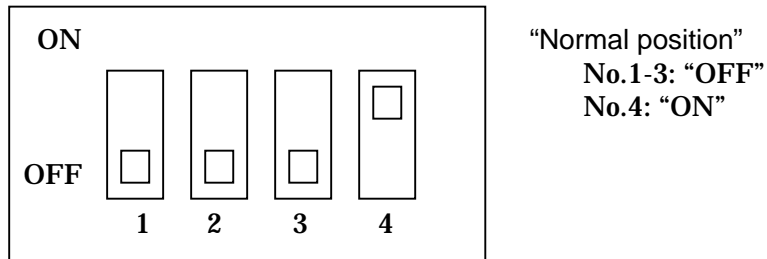
Ten-key is fixed to the front panel with the double-faced adhesive tape, and detaching is easy.

- 1) Detach the main body cover.
- 2) Remove the “flat cable (2)” of the “ten-key (1)” connected with the CPU board.
- 3) Remove the obituary part in the ten-key seat forcibly from the “front panel (3)”.
- 4) Insert the flat cable of new ten-key from the front panel, and fix the ten-key to the front panel with the double-faced adhesive tape.
- 5) Connect the flat cable with the CPU board.  
\* Insert the flat cable up to the interior noting so that it should not bend.



## 8.8. Setting of Dipswitch

The dipswitch in the upper part of CPU board setting is as follows.



\* Only when the original position of the table is adjusted, the No.1 switch is made “ON”. The No.2 and No.3 switches are fixed to “OFF”.

## 8.9. Version of ROM

The version of ROM is put on the surface of the ROM, and the content of the print is as follows.

M 1 2 0 \* - # # @

\*: A- A-machine, B- B-machine

##: The version is a chase number of 99 from 01.

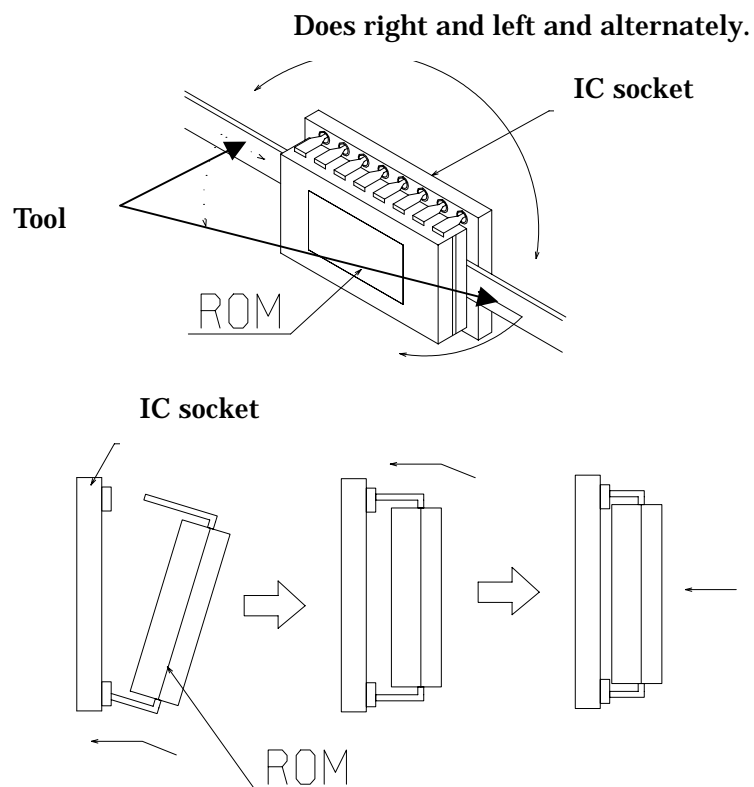
@: J- Japanese display, E- English display

**“Example”** M120B-01E: Version No.1 of 120P (B) I/O Cable Selector, English display

**“Note”** From ROM version M120\*-02, the indicative letter on LCD can be selected Japanese or English at the operation panel.

## 8.10. Replacement of ROM

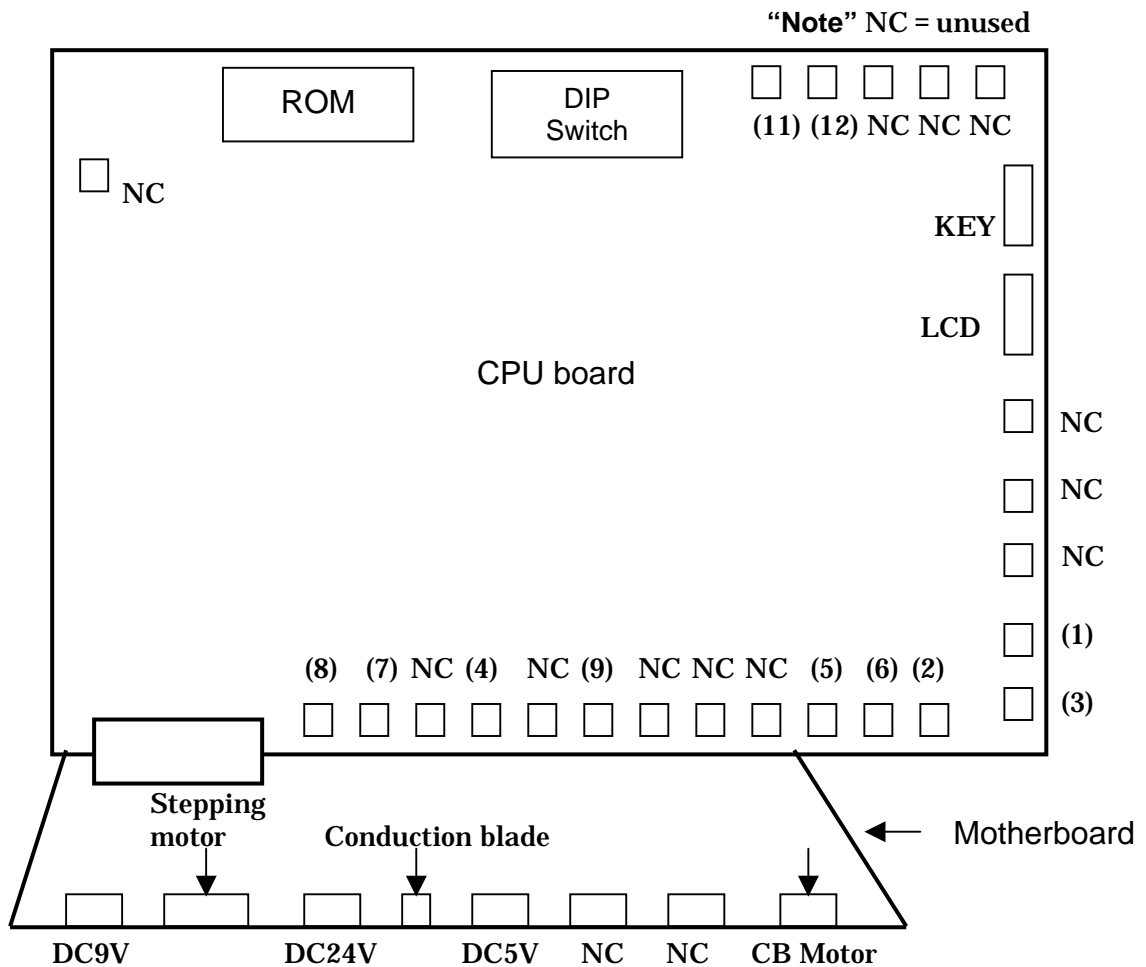
- 1) Turn off the power on/off switch, and remove the machine cover.
- 2) ROM on the CPU board is detached with a slotted screwdriver or a previous sharp tool.
- 3) It is done that the foot of ROM in one side is gradually alternately floated and detaches ROM as shown in the figure below.
- 4) After both feet of ROM are put into the state that queues up straight, it inserts in the socket when ROM is inserted.
- 5) It is not fragile except the foot of ROM, and then please don't break the foot.
- 6) As points when ROM is inserted, it is possible to do easily by inserting the foot on the other side after the foot in one side is matched as shown in the figure below.



8.11. Connected Part List of CPU Board

The list of the silk print name of the CPU board connected with each switch and sensor is shown as follows.

No.	Name of switch/sensor	Name of silk label
(1)	Set/Start Switch	SWSS
(2)	Reset Switch	SWEMG
(3)	Mode Change Switch	SWMOD
(4)	Sensor for Setting Position	SNSET
(5)	Front OT Limit Switch	SWOTF
(6)	Back OT Limit Switch	SWOTB
(7)	Right Limit Switch for Passing	SNINR
(8)	Left Limit Switch for Passing	SNINL
(9)	End Sensor for Pushing	SNPME
(10)	Right LED	LEDR
(11)	Left LED	LEDL
(12)	Sensor for Cable Holder A/B	SNPLE

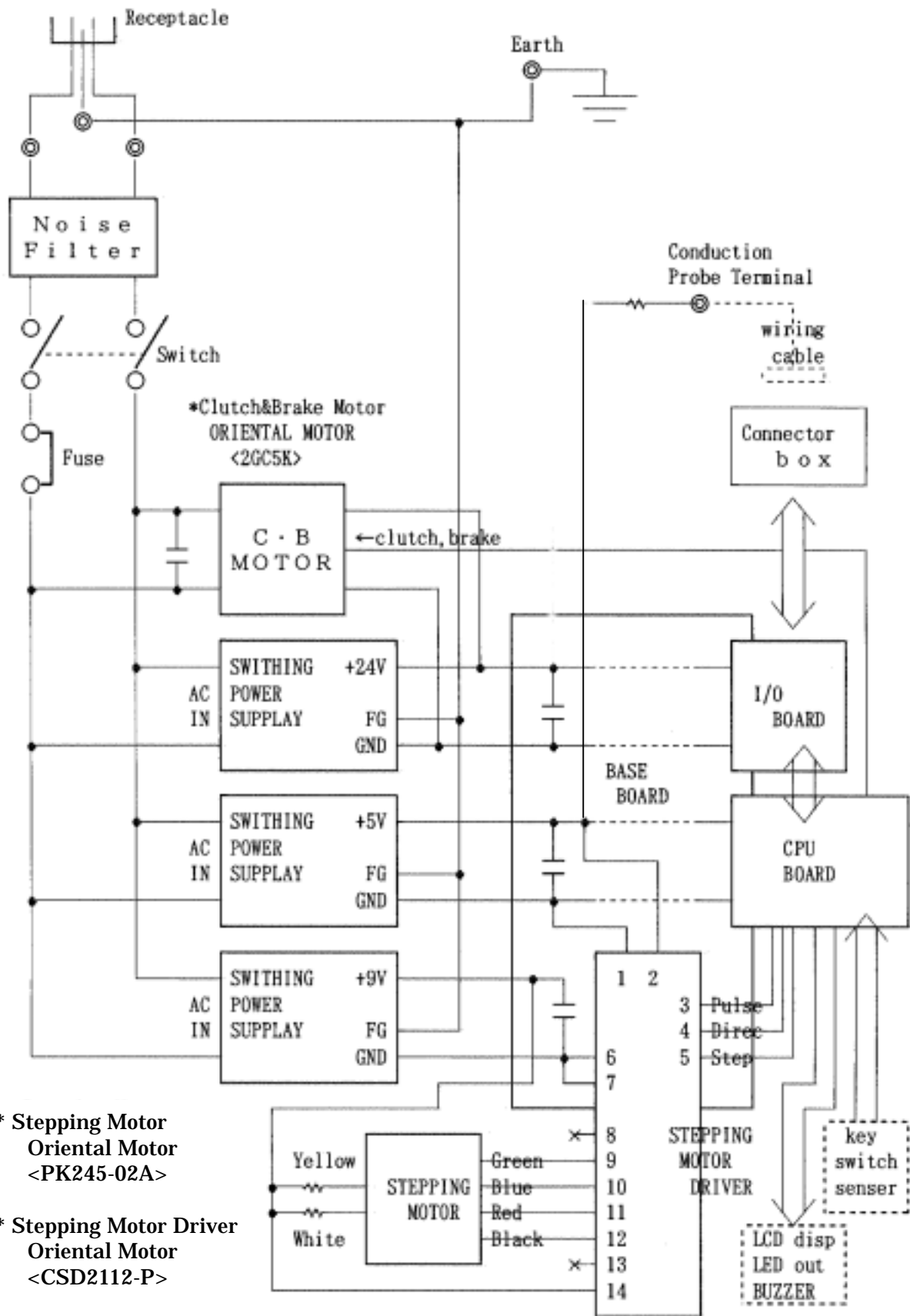




## 8.12. Trouble Shooting

No.	Content of trouble	Causes	Countermeasures
1	A wire doesn't cut well.	1) The pusher is not suitable for the width of the upper cover. 2) The pusher has been worn out.	1) Adjust the position of the pusher. 2) Exchange the pusher.
2	The position of the upper cover and the pusher shifts.	The original position of the table shifts.	Adjust the original position of the table.
3	Master (opening) wire arrangement cannot be done.	1) It is the memory mode. 2) It is the conduction wire arrangement mode.	1) Switch the mode change switch to the "WORK" side. 2) Start over from scratch pushing the "RESET" switch.
4	Conduction wire arrangement cannot do. (No start-up even though the wire is pushed to the conduction blade)	It is a memory mode.	Switch the mode change switch to the "WORK" side.
5	Wiring is wrong though the conduction wire arrangement was done. (The wire arrangement data is correct)	The connector box doesn't work normally.	Exchange the PCB of the connector box in assembly.
6	The table doesn't move smoothly. (The table originates the vibration sound and it doesn't move)	Some loads hang in the table.	Stop the operation pushing the "RESET" switch, and remove the load.
7	The mode doesn't change even if the mode change switch is switched. (The screen doesn't change)	It was not the menu screen of wire arrangement mode or memory mode.	Return to the menu screen, and switch the mode change switch.
8	The "ENT" key after the numerical value is input by the circuit number input doesn't work.	An unjustified numerical value is input.	Cancel the input value once with the "CLR" key, and input a correct numerical value again.
9	Ten-key doesn't work.	1) The key is not an effective mode. 2) It is defective or breaks down about the ten-key.	1) Check the LCD screen, and make it the state that the input is effective. 2) Exchange the ten-key.
10	The "SET/START" switch doesn't work.	1) The "SET/START" switch is not an effective mode 2) It is defective or breaks down about the switch.	1) Check the LCD screen and change it into a proper condition for inputting. 2) Exchange the switch.
11	The LCD screen is not displayed. (There is no backlight)	The power supply for LCD is defective. (Fuse breakdown)	Exchange the fuse of the power supply.

8.13. Circuit Diagram

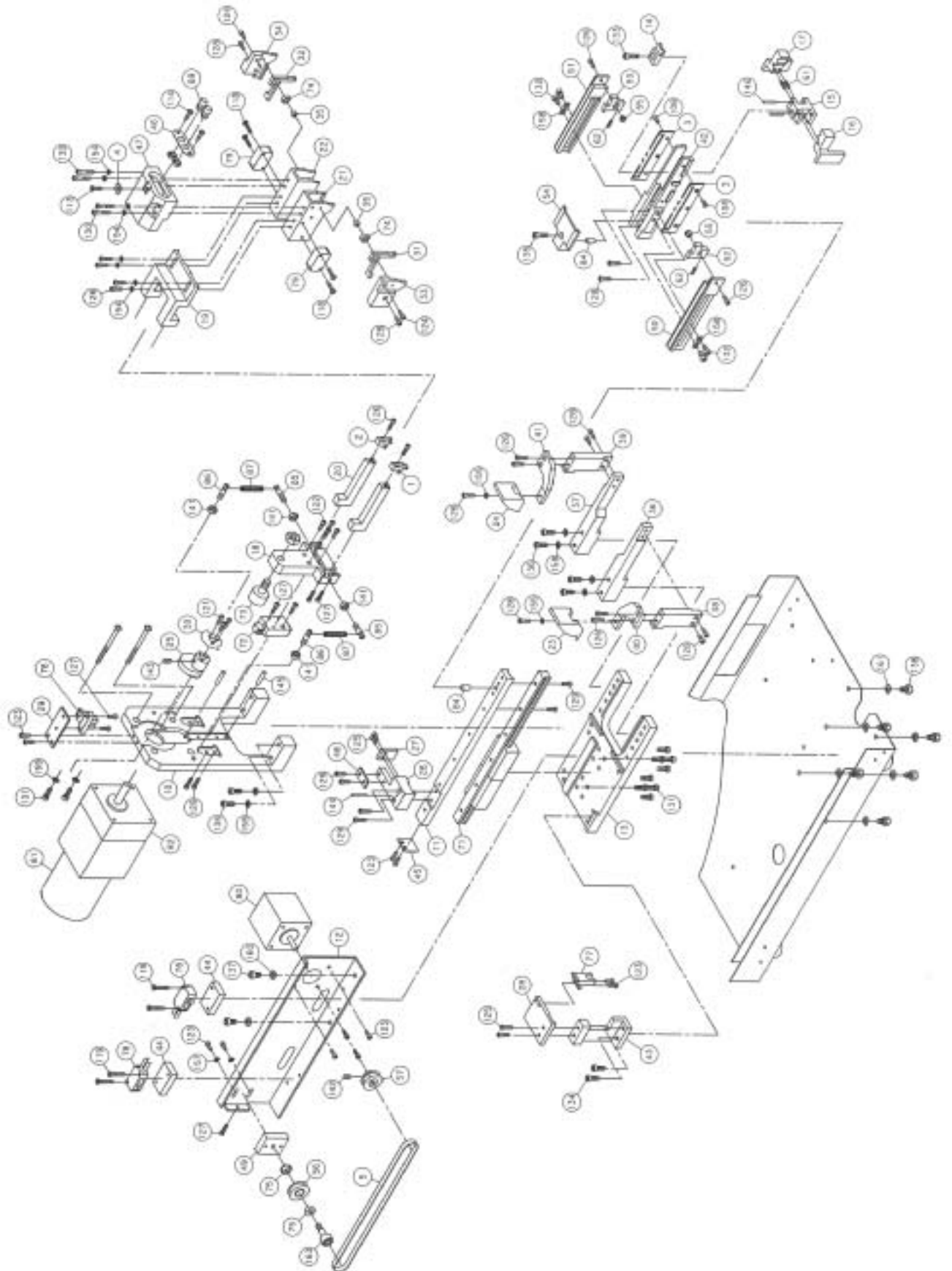


\* Stepping Motor  
Oriental Motor  
<PK245-02A>

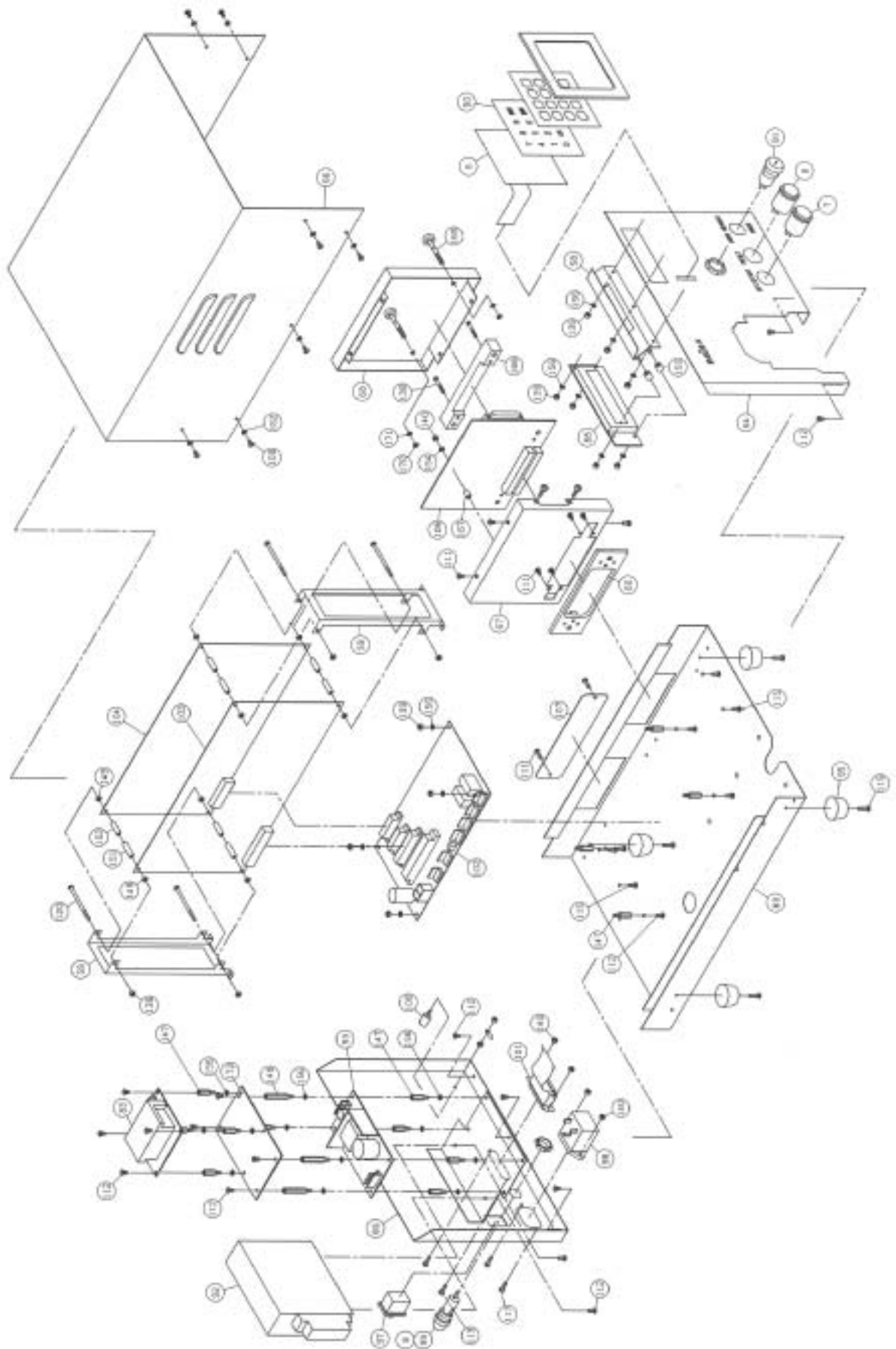
\* Stepping Motor Driver  
Oriental Motor  
<CSD2112-P>

## 9. Parts List

### 9.1. Parts Development Elevation (1 of 2)



9.1. Parts Development Elevation (2 of 2)



## 9.2. Parts List (1 of 3)

[Applicable Model] 57868-7000: 1.0mm Pitch 120P (A) I/O CABLE SELECTOR  
57869-7000: 1.0mm Pitch 120P (B) I/O CABLE SELECTOR

No.	Parts No.	Parts Name	Q'ty	Maker & Parts No.
	[Perishable Parts]			
1	57846-2001	Pusher-L	1	86A022-3
2	57846-2002	Pusher-R	1	86A023-3
3	57890-2003	Wire Guide Comb	2	86A103
4	57846-2004	Continuity Blade	1	BEPPU-KIKAI: No.099
5	57846-2005	Timing Belt	1	MITUBOSHI: B40S2M410
6	57846-2006	Ten-key	1	DMC: DTK-16
7	57846-2007	Set/Start Switch (G)	1	NIKKAI: LB15CKG4
8	57890-2008	Reset Switch (R) (Cubic)	1	NIKKAI: LB15SKG4
8	57846-2008	Reset Switch (R) (Tube)	1	NIKKAI: LB15CKG4
9	57846-2009	Fuse (3A)	1	FUJI: FGB0AC125V3A
14	57890-2010	Cable Holder	2	86A107
106	57890-2011	Conn. Box Board (120P)	1	ES-CB12
	[Standard Parts]			
10	57846-1001	Bracket	1	80A054-4
11	57846-1002	Rail Support	1	80A055-4
12	57846-1003	Frame	1	80A056-3
13	57846-1004	Mechanical Base	1	80A068-2
15	57890-1006	Holder Clamp Stage	1	86A104
16	57890-1007	Holder Clamp-L	1	86A105
17	57890-1008	Holder Clamp-R	1	86A106
18	57846-1009	Slide Block	1	85B127-3
19	57846-1010	Guide Holder	1	86A001
20	57846-1011	Pusher Arm	2	86A002-1
21	57846-1012	Guide-A	1	86A003-1
22	57846-1013	Guide-B	1	86A004-1
23	57846-1014	Guide-C	1	86A005-2
24	57846-1015	Guide-D	1	86A006-2
25	57846-1016	Cam	1	85B132-2
26	57846-1017	Belt Clamp	1	85B135-3
27	57846-1018	Limit Switch Dog	1	85B136-2
28	57846-1019	Sensor Plate-A	1	85B138-2
29	57846-1020	Sensor Plate-B	1	85B154-1
30	57846-1021	Interrupt	1	85B140-3
31	57846-1022	Hinge-L	1	85B142-4
32	57846-1023	Hinge-R	1	85B143-4
33	57846-1024	Hinge Cover-L	1	85B144-3
34	57846-1025	Hinge Cover-R	1	85B145-3

## 9.2. Parts List (2 of 3)

[Applicable Model] 57868-7000: 1.0mm Pitch 120P (A) I/O CABLE SELECTOR  
57869-7000: 1.0mm Pitch 120P (B) I/O CABLE SELECTOR

No.	Parts No.	Parts Name	Q'ty	Maker & Parts No.
35	57846-1026	Pin	2	85B146-1
36	57846-1027	Support-A	1	85B147-1
37	57846-1028	Support-B	1	85B149-1
38	57846-1029	Support-C	1	86A007
39	57846-1030	Support-D	1	86A008
40	57846-1031	Guide Arm-L	1	86A009-1
41	57846-1032	Guide Arm-R	1	86A010-1
42	57890-1033	Table	1	86A097-1
43	57846-1034	Sensor Pole	1	85B190
44	57846-1035	Micro Switch Base	2	85B191
45	57846-1036	Rail Stopper	1	85B192
46	57846-1037	LED Plate	1	85B193
47	57846-1038	LED Block	1	85B163-3
48	57846-1039	Belt Holding Plate	1	85A019
49	57846-1040	Pulley Setting Block	1	85C105
50	57890-1041	Sleeve Holder-L	1	86A099
51	57890-1042	Sleeve Holder-R	1	86A100
52	57890-1043	Hook-L	1	86A101
53	57890-1044	Hook-R	1	86A102
54	57890-1045	Stopper	1	86A098-2
55	57846-1046	Sleeve	2	85B175
56	57846-1047	Timing Pulley-A	1	85C106
57	57846-1048	Timing Pulley-B	1	85C107
58	57846-1049	LCD Plate	1	85B195
59	57846-1050	Board Bracket	2	85B023
60	57890-1051	Connector Plate	1	86A095
61	57846-1052	Clamp Spring	2	85B022-2
62	57846-1053	Hook Spring	2	85B035-1
63	57890-1054	Base	1	80A114-1
64	57846-1155	Front Panel (for cubic)	1	80A134
64	57846-1055	Front Panel (for tube)	1	80A062-3
65	57846-1056	Rear Panel	1	80A089
66	57846-1057	Cover	1	80A064-2
67	57890-1058	Connector Box	1	80A115
68	57890-1059	Connector Box Cover	1	80A116
168	57890-1105	Board Holding Plate	1	86A096
71	57846-1062	LM-Guide-A	1	THK: HSR12CR2UUM+230LM
72	57846-1063	LM-Guide-B	1	THK: HSR10CR1UUC1M+45LM
73	57846-1064	Cam Follower	1	THK: CFH8UUR-S



## 10. 1.0mm Pitch 120P I/O Cable Selector Startup Checklist

[Applicable Model] 57868-7000: 1.0mm Pitch 120P (A) I/O CABLE SELECTOR  
57869-7000: 1.0mm Pitch 120P (B) I/O CABLE SELECTOR

**“Note”** Please check the following matter before the commencement of work, and start operation after checking those without a problem. Please record check results simultaneously.

No.	Check point	Standard	Method/equipment	Record	Startup	Monthly
1	Wire protruding length	0.3mm or less	Check with a magnifying glass	Data	O	
2	Cutting drop of conductor	Don't exceed the outside diameter of the insulation	Check with a magnifying glass	-	O	
3	Wire press-fit depth	Held in the upper cover without crushing	Check with a magnifying glass	-	O	
4	Damage of wire insulation	No damage and no remarkable crushing	Visual check	-	O	
5	Damage of upper cover	No damage and no remarkable crack	Visual check	-	O	
6	Wire guide comb	No damage	Visual check	-	O	
	[Monthly Checking]					
7	Sliding part of table and pusher	Not lost of oil	Grease applying	-	-	O

