

**BIXOLON®**

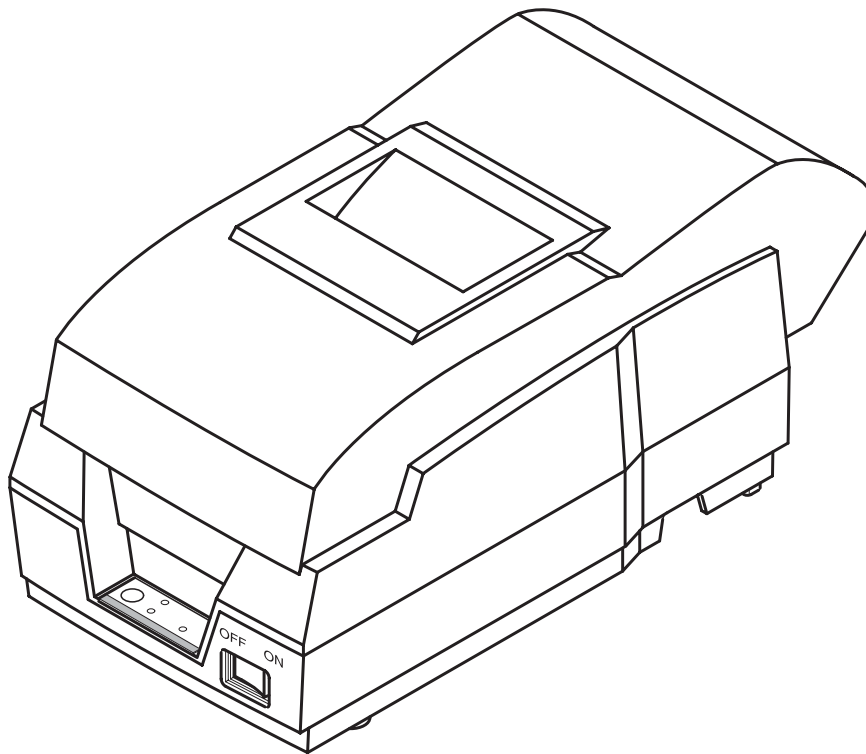
SAMSUNG mini printers

# Service Manual

# SRP-270

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**Impact Printer**  
**Rev. 3.02**



<http://www.samsungminiprinters.com>

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## ■ About

### About this Manual

This Service Manual describes how to perform hardware service maintenance for the BIXOLON SRP-270 Receipt Printer.

### Notes

Notes may appear anywhere in the manual. They draw your attention to additional information about the item.

### Precaution symbols



Indicates a Safety Precaution that applies to this part component.



Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

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## ■ Overview of this Receipt Printer

This System Receipt Printer is a microprocessor-based system, using a 16 bit-microprocessor.

This Service Manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center. Schematics and specifications provide the needed information for the accurate troubleshooting.

All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of BIXOLON Co., Ltd.

# 1. Precaution Segment

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

## 1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including nonmetallic control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people - particularly children - might insert fingers and contact dangerous voltages. Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.

### 4. Leakage Current Hot Check:

**WARNING: Do not use an isolation transformer during this test.**

Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Applications), and Underwriters Laboratories (UL Publications UL1410, 59.7)

With the unit completely reassembled, plug the AC line cord directly into a 100VAC or 240VAC outlet of the Adaptor.

With the unit's AC switch first in the ON position and then OFF, measure the current between a known Earth ground (metal water pipe, conduit, etc.) and all exposed metal part, including: metal cabinet, frame, and screw-heads and printer. The current measure should not exceed 0.1 milliamp. Reverse the power-plug prong in the AC outlet and repeat the test.

### 5. Design Alteration Warning:

Never alter or add to the mechanical or electrical design of the Receipt Printer. Unauthorized alterations might create a safety hazard. Also any design changes or additions will void the manufacture's warranty.



6. Components, parts and wiring that appear to have overhead or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damaged or overheating and correct any potential hazards.

7. Observe the original lead dress, especially near the following areas: sharp edges, and especially the AC and high voltage supplies. Always inspect for pinched, out-of-place, or frayed wiring.

Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

### 8. Product Safety Notice:

Some electrical and mechanical parts have special safety-related characteristics, which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original-even if the replacement is rated for higher voltage, wattage, etc.

Components that are critical for safety are indicated in the circuit diagram by shading, () or (). Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

## **1-2 Servicing Precaution**

**WARNING 1:** First read the Safety Precaution section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precaution.

**WARNING 2:** An electrolytic capacitor installed with the wrong polarity might explode.

1. Always unplug the unit's AC power cord from the AC power source or the Power Switch off before attempting to:
  - (a) Remove or reinstall any component or assembly,
  - (b) Disconnect an electrical plug or connector,
  - (c) Connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometime used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts. (example: metal panels and input terminals).
5. Insulation Checking Procedure:

Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 mega-ohm.
6. Never defeat any of the B+ voltage interlock. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
7. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

**1-3 Precaution for Electrostatically Sensitive Devices (ESDs)**

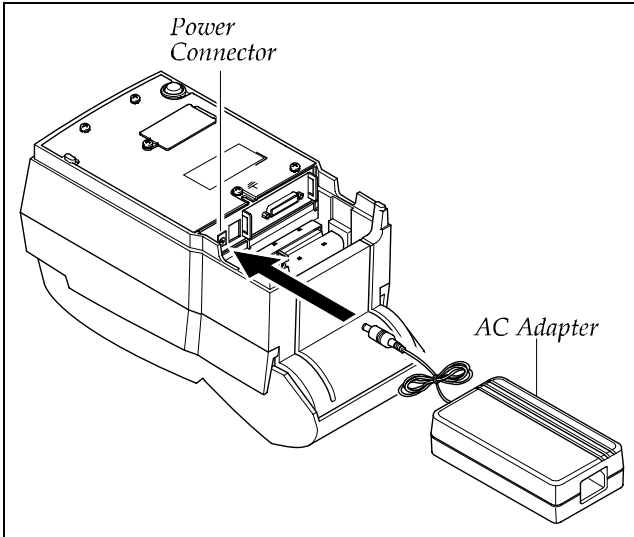
1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damaged caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power-this is an Electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemical. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the device will be installed.
9. Minimize body motions when handling unpacked replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damaged an ESD.



## 2. Installation and Operation

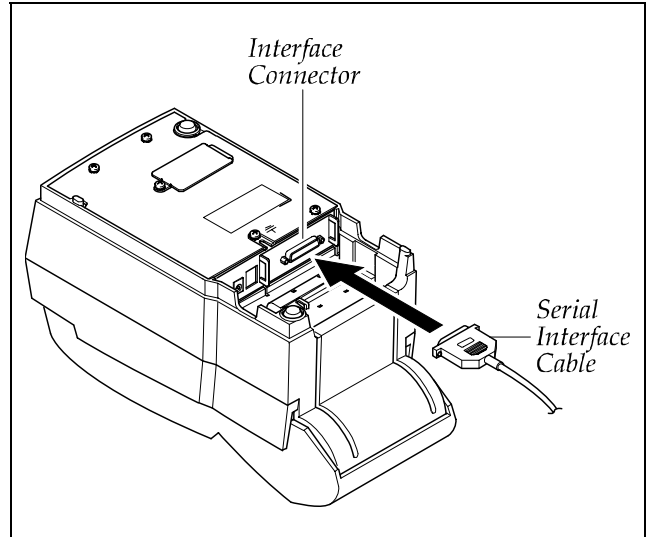
### 2-1 Installation

#### 2-1-1 AC Adapter Installation



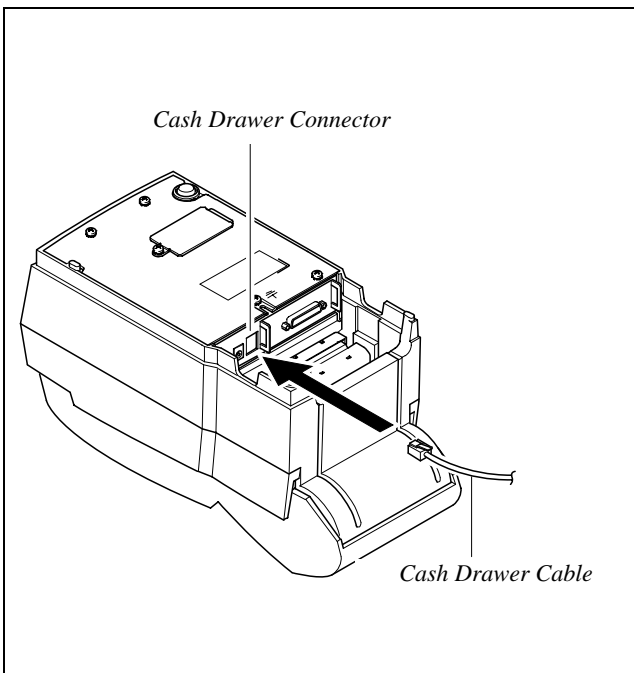
1. Make sure the printer is turned off with the "Off" side of the switch is pressed down.
2. Check the label on the AC Adapter to make sure the voltage required by the AC Adapter matches that of the electrical outlet.
3. Plug the DC cord connector into the power jack on the printer.
4. Plug the AC Adapter power cord into the wall outlet.

#### 2-1-2 Interface Cable Installation



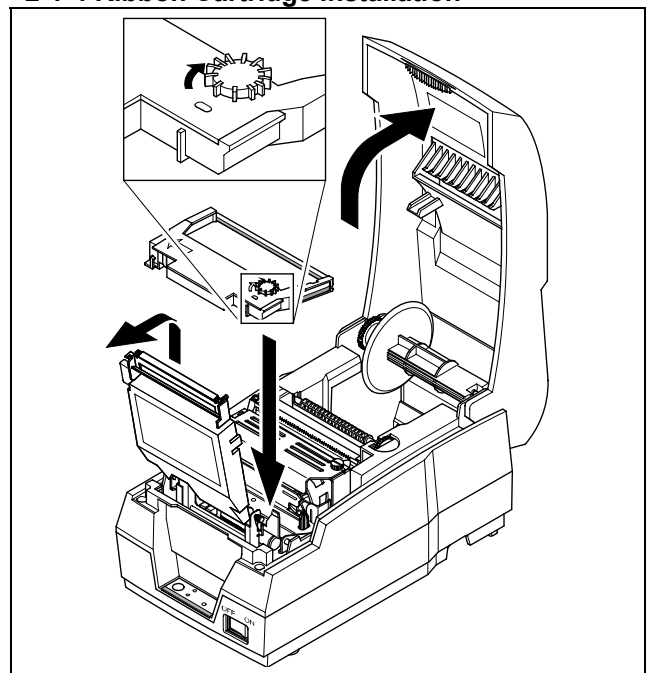
1. Turn off the printer, host ECR and Computer.
2. Plug RS-232, RS-485, USB or Parallel Cable connector into the I/F connector on the printer.
3. Tighten the screws on both sides of the connector.
4. Turn on the printer, host ECR and Computer.

#### 2-1-3 Cash Drawer Cable Installation



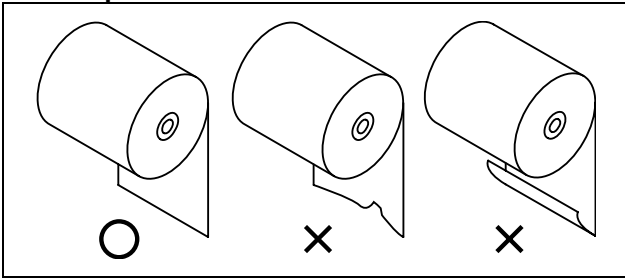
1. Turn the printer off.
2. Plug the Cash Drawer cable connector into the connector on the printer. (To remove the Cash Drawer cable, press the clip on the connector, grasp the connector and pull it out.)
3. Secure the Shield Wire on the bottom of the printer.

#### 2-1-4 Ribbon Cartridge Installation

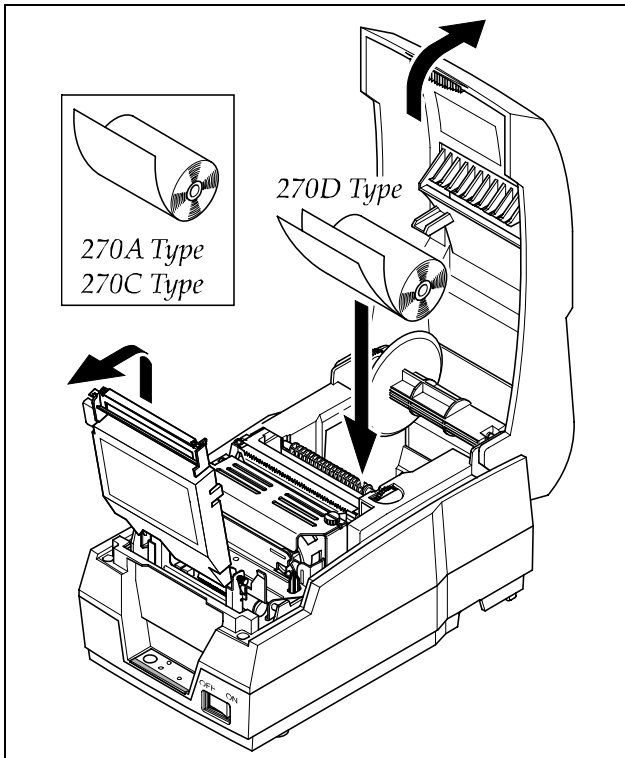


1. Before inserting the ribbon cartridge, turn the Knob.
2. Insert the ribbon cartridge. Pay particular attention to the placement of the ribbon behind the Print Head.
3. After inserting the ribbon cartridge, turn the knob clockwise again to make sure the ribbon moves freely in the cartridge.

**2-1-5 Paper Roll Installation**



1. Using a new roll paper, unroll the paper and cut the end as shown.



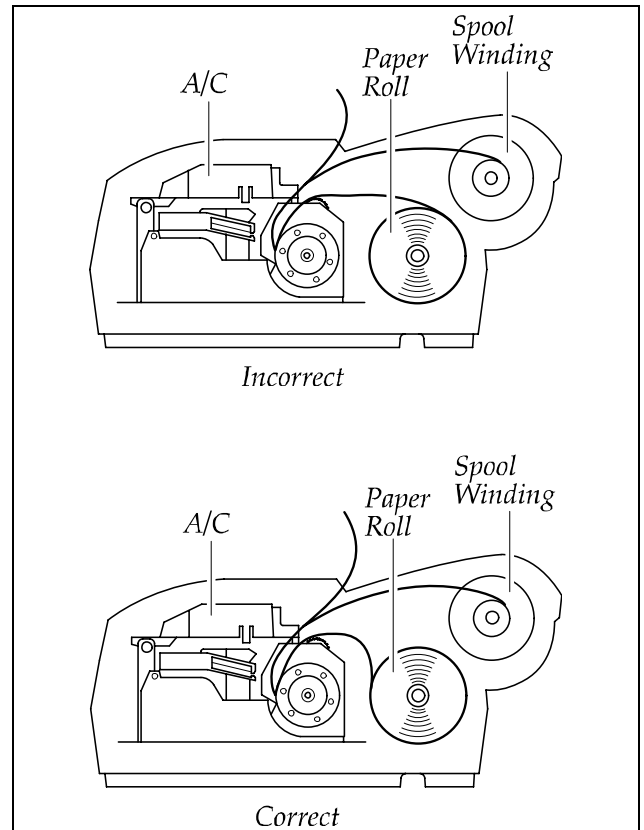
2. In case of Model 270C/D, open Auto Cutter on the power ON.

3. Auto feeding one paper.

4. Put first paper into Auto Cutter, set second paper rolling Spool Winding to Lower Case.

5. Setting Auto Cutter, then put first paper to the middle of guide for cover Printer and pull it out close cover.

6. If the paper is loose, wind the Rewind Spindle to tighten the paper.



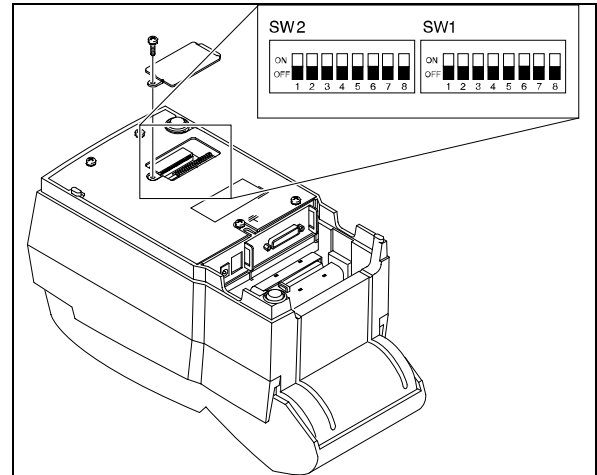
7. Release the holder after fitting the Roll Paper Core onto the Holder. Make sure to load the paper roll so that it rotates in the correct direction.

## 2-2 Operation

### 2-2-1 Setting the DIP switches

The DIP switches are located on the bottom of the printer. The DIP switches are used to set the printer to perform various functions. Follow these when changing DIP switches setting :

1. Turn the printer power switch off.
2. Remove the screw on the bottom of the printer and open the bracket.
3. Flip the DIP switches using tweezers or another narrow-ended tool. Switches are on when up and off when off down.
4. The new setting takes effect when you turn on the printer.



**※ Note : Always change DIP switch settings only when the printer is turned off. Change made with the power on have no effect and then on again.**

### 2-2-2 Setting the DIP switch (RS-232C Serial Interface)

• DIP Switch 1

SW	FUNCTION	ON	OFF	DEFAULT
1	Emulation Selection	Refer to the following Table 1		OFF
2				OFF
3	Auto-Cutter	Enable	Disable	OFF
4	FONT SPACE	2	3	OFF
5	Function for Service Engineer			-
6				-
7				OFF
8	Korean Type Selection	Unified	Complete	OFF

• DIP Switch 2

SW	FUNCTION	ON	OFF	DEFAULT
1	Auto Line Feed	Always Enabled	Always Disabled	OFF
2	Hexadecimal dump	YES	NO	OFF
3	Hand Shaking	XON/OFF	DTR/DSR	OFF
4	Word length	7 bits	8 bits	OFF
5	Parity check	Enable	Disable	OFF
6	Parity selection	EVEN	ODD	OFF
7	Baud Rate selection	Refer to the following Table 2		OFF
8				OFF

**※ NOTE**

When the word length is 7 bits, you can not parity check OFF status.

**2-2-3 Setting the DIP switch (IEEE1284 Parallel, USB Interface)**

• DIP Switch 1

SW	FUNCTION	ON	OFF	DEFAULT
1	Emulation Selection	Refer to the following Table 1		OFF
2				OFF
3	Auto-Cutter	Enable	Disable	OFF
4	FONT SPACE	2	3	OFF
5	Function for Service Engineer			-
6				-
7				OFF
8	Korean Type Selection	Unified	Complete	OFF

• DIP Switch 2

SW	FUNCTION	ON	OFF	DEFAULT
1	Auto Line Feed	Always Enabled	Always Disabled	OFF
2	Hex Dump	YES	NO	OFF
3	Reserved	-	-	OFF
4	Reserved	-	-	OFF
5	Reserved	-	-	OFF
6	Reserved	-	-	OFF
7	Reserved	-	-	OFF
8	Reserved	-	-	OFF

• Table 1 – Emulation Selection

SW – 1	SW – 2	MODE
OFF	OFF	Epson
OFF	ON	Citizen
ON	OFF	Star

• Table 2 – Baud rate (bps) Selection

Transmission speed	SW – 7	SW – 8
19200 baud	ON	ON
2400 baud	OFF	ON
4800 baud	ON	OFF
9600 baud	OFF	OFF

**2-2-4 Hexadecimal Dumping**

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hexadecimal dump function, the printer prints all commands and data in hexadecimal format along with a guide section the help you find specification commands.

To use hexadecimal dump mode, please follow these steps:

1. After you make sure that the printer is off.
2. Set DIP-switch 2-2to ON.
3. Turn on the printer, and then the printer enters the hexadecimal dump mode.
4. Run any software program to send data to the printer. The printer will print all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters corresponding to the codes.

```

1 B  2 1  0 0  1 B  2 6  0 2  4 0  4 0      . ! . . & . @ @
0 2  0 D  1 B  4 4  0 A  1 4  1 E  2 8      . . . D . . . (
0 0  0 1  0 A  4 1  0 D  4 2  0 A  4 3      . . . A . B . C .

```

**Note 1** : A period(.)is printed for each code that no ASCII equivalent.

**Note 2** : During the hex dump all the commands except DLE EOT and DLE ENQ are disabled.

5. When the printing finishes, turn off the printer, and change DIP-switch 2-2 to OFF.
6. Turn on the printer and then the hexadecimal mode is off.

**2-2-5 The self Test Mode**

The self-test checks whether the printer has any problem. If the printer does not function properly, contact your dealer. The self-test checks the following.

1. Make sure paper roll has been installed properly.
2. Turn on the printer power while holding down the FEED button so that the self-test begins.
3. The self-test prints the current printer status, which provides the control ROM version and the DIP switch setting.
4. After printing the current printer status self-test printing will print the following and pause.  
(The PAPER OUT and ERROR LED's light blinks.)

Please press the button
-------------------------

5. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.
6. The character test sheet to be printed is that four lines are printed as BLACK color and the next four lines are printed as RED color in turn. Total 20 character lines will be printed.
7. The self-test automatically ends and cuts the paper after printing the following.

** Character Test Completed **
--------------------------------

8. Back-Lash printing is possible when the DIP switch 1-7 is ON, or the printing is skipped when the DIP switch 1-7 is OFF.
9. The printer is ready to receive data as soon as it completes the self-test.

(A) Serial Self-Test Sheet

```
SRP-270 VER. A0.03 2000.06.23
=====
DIP SWITCH SW2/SW1 STATUS
      12345678 12345678
DN   :           * *
OFF  : ***** ** *** *
Serial(RS232C) Interface
Baud Rate : 9600 bps
Data Bits : 8 bits
HandShake : DTR/DSR
Parity Check : No Parity
Receive Error : Ignore
AutoCutter Status : Enable
Buffer Size : 4K Bytes
Epson Emulation Mode
Self-test printing
Please press the FEED button
```

(B) Parallel Self-Test Sheet

```
SRP-270 VER. A0.03 2000.06.23
=====
DIP SWITCH SW2/SW1 STATUS
      12345678 12345678
DN   :           * *
OFF  : ***** ** *** *
Parallel(IEEE1284) Interface
Receive Error : Ignore
AutoCutter Status : Enable
Buffer Size : 4K Bytes
Epson Emulation Mode
Self-test printing
Please press the FEED button
```

(A) Serial Self-Test Sheet

BACKLASH # 0 [DIPSW 1-5(ON) 1-6(OFF)]  
 |||||  
 BACKLASH # 1 [DIPSW 1-5(OFF) 1-6(OFF)]  
 |||||  
 BACKLASH # 2 [DIPSW 1-5(OFF) 1-6(ON)]  
 |||||  
 BACKLASH # 3 [DIPSW 1-5(ON) 1-6(ON)]  
 |||||

ADJUSTED VERTICAL ALIGNMENT CHECK SHEET  

(B) Parallel Self-Test Sheet

BACKLASH # 0 [DIPSW 1-5(ON) 1-6(OFF)]  
 |||||  
 BACKLASH # 1 [DIPSW 1-5(OFF) 1-6(OFF)]  
 |||||  
 BACKLASH # 2 [DIPSW 1-5(OFF) 1-6(ON)]  
 |||||  
 BACKLASH # 3 [DIPSW 1-5(ON) 1-6(ON)]  
 |||||

ADJUSTED VERTICAL ALIGNMENT CHECK SHEET  

Black [ !"#%&'()\*+,-./0123456789:;<=>?@ABCDEFGHI  
 "#%&'()\*+,-./0123456789:;<=>?@ABCDEFGHI  
 #%&'()\*+,-./0123456789:;<=>?@ABCDEFGHIJ  
 %&'()\*+,-./0123456789:;<=>?@ABCDEFGHIJK  
 &'()\*+,-./0123456789:;<=>?@ABCDEFGHIJKL  
 &'()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLM  
 '()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN  
 ()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO  
 )\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP  
 \*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOQP  
 +,-./0123456789:;<=>?@ABCDEFGHIJKLMNQPQR  
 ,-./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRS  
 -./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRST  
 ./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTU  
 /0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUV  
 0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUVW  
 -./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRST  
 .0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTU  
 /0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUV  
 0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUVW  
 \*\* Character Test Completed \*\*

!"#\$%&'()\*+,-./0123456789:;<=>?@ABCDEFGHI  
 "#%&'()\*+,-./0123456789:;<=>?@ABCDEFGHI  
 #%&'()\*+,-./0123456789:;<=>?@ABCDEFGHIJ  
 %&'()\*+,-./0123456789:;<=>?@ABCDEFGHIJK  
 &'()\*+,-./0123456789:;<=>?@ABCDEFGHIJKL  
 &'()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLM  
 '()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN  
 ()\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO  
 )\*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP  
 \*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOQP  
 +,-./0123456789:;<=>?@ABCDEFGHIJKLMNQPQR  
 ,-./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRS  
 -./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRST  
 ./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTU  
 /0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUV  
 0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUVW  
 -./0123456789:;<=>?@ABCDEFGHIJKLMNQPQRST  
 .0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTU  
 /0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUV  
 0123456789:;<=>?@ABCDEFGHIJKLMNQPQRSTUVW  
 \*\* Character Test Completed \*\*

# 3. Product Specifications

## 3-1 Appearance

### 3-1-1 Printer Dimensions (mm)

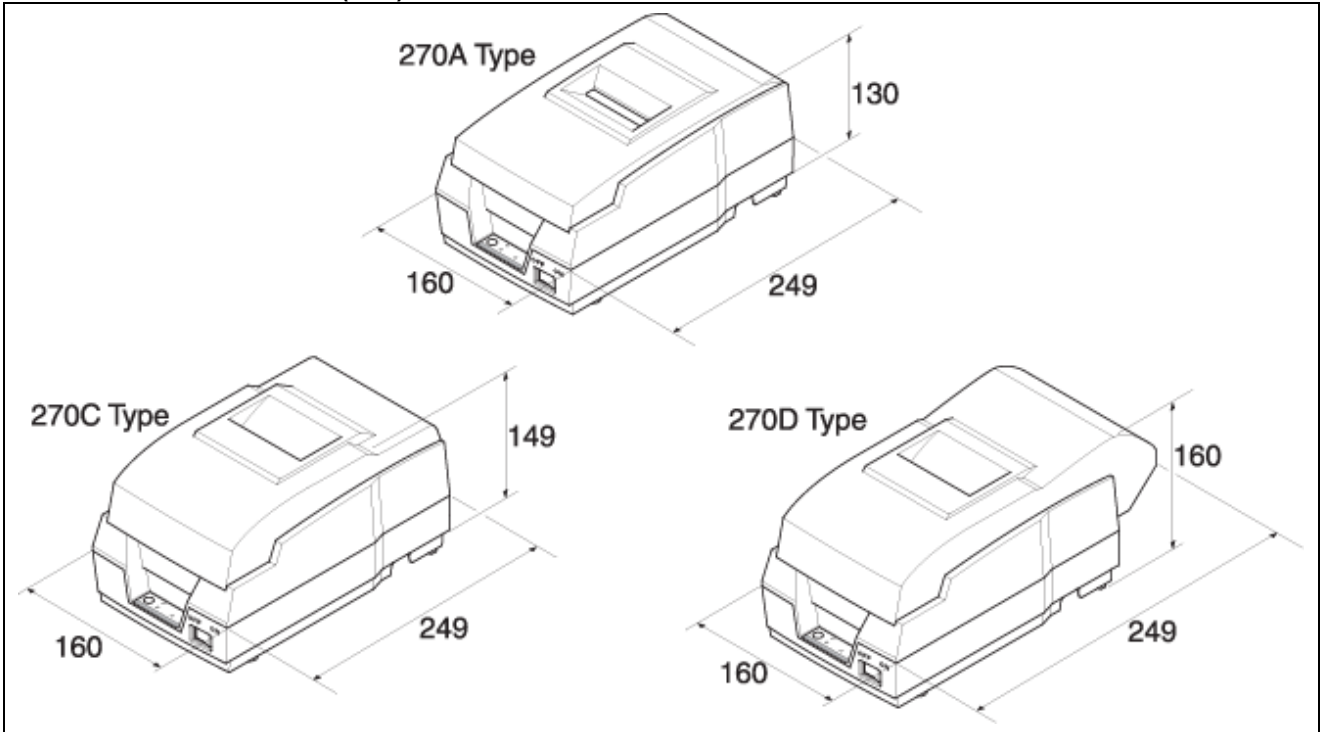


Figure 3-1 Printer Dimension

### 3-1-2 AC Adapter Dimensions (mm)

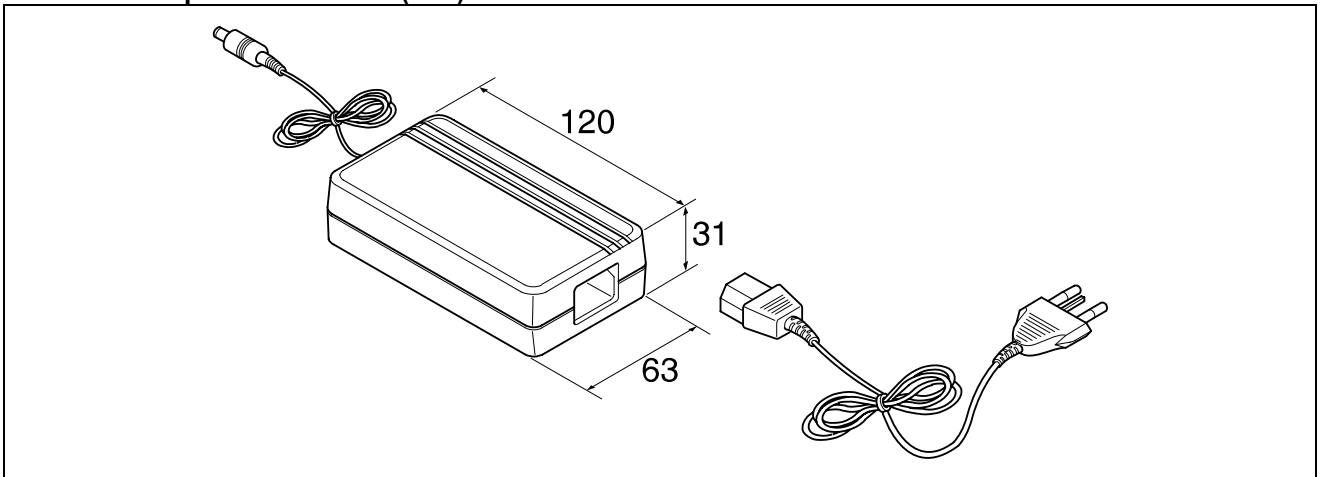
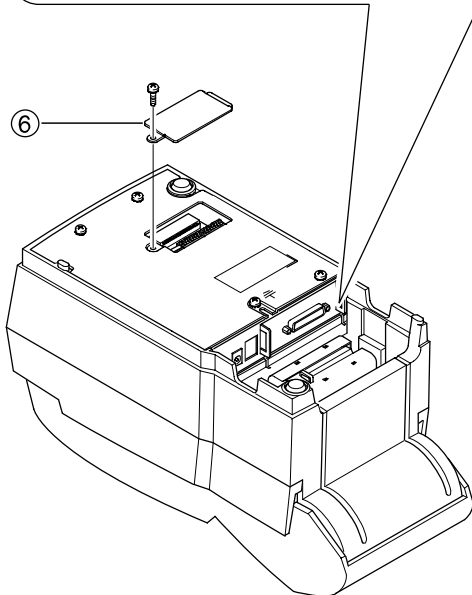
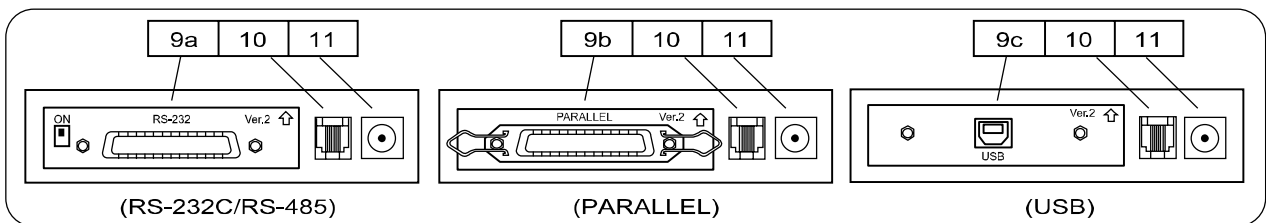
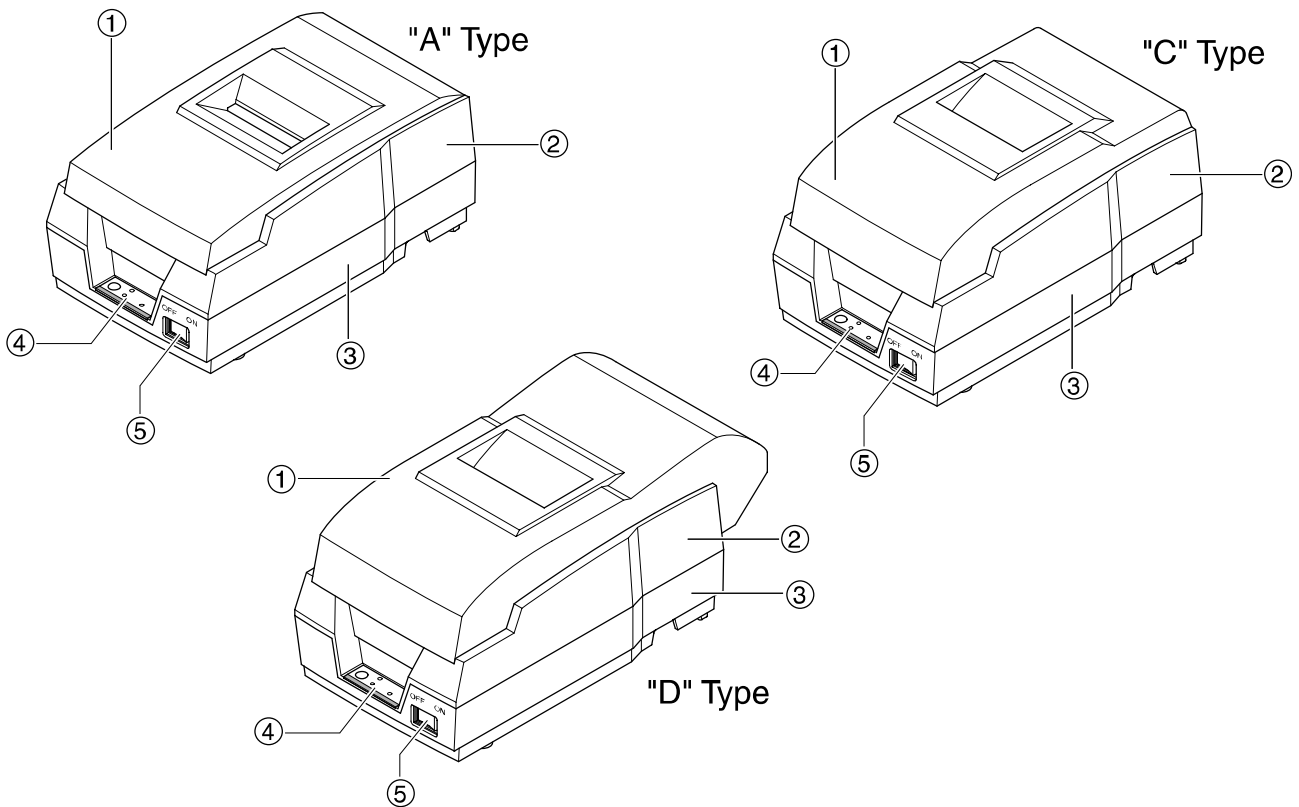


Figure 3-2 Adapter Dimension



**3-1-3 Feature Locations**



- 1. Cover, A/C/D
- 2. Case-Upper, A/C/D
- 3. Case-Lower, A/C/D
- 4. Label-Control
- 5. Power Switch
- 6. Bracket DIP Switch
- 9a. RS-232C/RS-485 (Serial I/F Connector)
- 9b. IEEE-1284 (Parallel I/F Connector)
- 9c. USB (USB I/F Connector)
- 10. Drawer Kick-Out Connector
- 11. DC Power Jack

Figure 3-3 Feature Location

### 3-2 General Specifications

Item	Description	Remark
Product	<ul style="list-style-type: none"> <li>• SRP-270 : RS-232 Serial Communication</li> <li>• SRP-270S : RS-485 Serial Communication</li> <li>• SRP-270P : IEEE1284 Parallel Communication</li> <li>• SRP-270U : USB Communication</li> </ul>	
Processor	<ul style="list-style-type: none"> <li>• MITSUBISHI M16C/62 Group M30622 SFP (16 Bit)</li> <li>Internal RAM Size : 3K Byte</li> </ul>	External ROM Version
Memory	<ul style="list-style-type: none"> <li>• EPROM : 1Mbits (M27C010)</li> <li>• SRAM : 256Kbits (KM62256)</li> </ul>	
Interface Serial (RS-232C / RS-485)	<ul style="list-style-type: none"> <li>• Flow Control :               <ol style="list-style-type: none"> <li>1) DTR / DSR (H/W Flow Control)</li> <li>2) XON / XOFF (S/W Flow Control)</li> </ol> </li> <li>• Baud Rate : 1200 / 2400 / 4800 / 9600 Bps</li> <li>• Receive Buffer : 4 Kbytes</li> <li>• Connector : DB25P Female (I/F PBA Side)</li> </ul>	The Flow Control, Baud Rate, Stop Bit and Parity are determined by DIP S/W position.
Interface Parallel	<ul style="list-style-type: none"> <li>• Mode :               <ol style="list-style-type: none"> <li>1) Forward Mode : Compatibility Mode</li> <li>2) Reverse Mode : Nibble / Byte Mode</li> </ol> </li> <li>• Connector : Self-Powered</li> </ul>	
USB	<ul style="list-style-type: none"> <li>• Transfer Type : BULK</li> <li>• Speed : 12 Mbps (Full-Speed)</li> <li>• Power : Self-Powered</li> </ul>	
Printer	<ul style="list-style-type: none"> <li>• Printing Method : 9pins Impact Serial Dot</li> <li>• Printing Speed : 4.6 Line/Sec</li> </ul>	
Auto Cutter	<ul style="list-style-type: none"> <li>• Type : Guillotine</li> <li>• Cutting Method : 1 Point Partial Cutting</li> </ul>	
Power Consumption	<ul style="list-style-type: none"> <li>• Approx. 24W</li> </ul>	
AC Adapter	<ul style="list-style-type: none"> <li>• Input : AC 100V ~ 240V, 50Hz/60Hz</li> <li>• Output : DC 24V±5%, 1.5A</li> </ul>	
Environment Condition	<ul style="list-style-type: none"> <li>• Temperature : 0℃ ~ 40℃</li> <li>• Humidity : 30% ~ 80% RH</li> </ul>	
Weight	<ul style="list-style-type: none"> <li>• 3.2 Kg (A Type) / 3.5 Kg (C Type) / 3.6 Kg (D Type)</li> <li>• 2.2 Kg (A Type) / 2.5 Kg (C Type) / 2.6 Kg (D Type)</li> </ul>	Packing Unpacking
Dimensions(mm)	<ul style="list-style-type: none"> <li>• A Type : 160 X 249 X 130</li> <li>• C Type : 160 X 249 X 149</li> <li>• D Type : 160 X 249 X 160</li> </ul>	
Reliability	<ul style="list-style-type: none"> <li>• Head: 300 million dots</li> <li>• Printer: 18 million lines (MCBF)</li> <li>• Auto Cutter: 1 million cuts</li> </ul>	

### 3-3 Printer Mecha Specifications

#### 3-3-1 Printer Mecha Specification

Item	Description	Remark
Model	<ul style="list-style-type: none"> <li>• SMP-710/SMP-710N</li> </ul>	
Print Method	<ul style="list-style-type: none"> <li>• Serial Impact Dot Matrix type (9-Pin Dot)</li> </ul>	
Printing Direction	<ul style="list-style-type: none"> <li>• Bi-Direction</li> </ul>	
Printing Speed	<ul style="list-style-type: none"> <li>• 4.6 Lines / Sec (9 x 7 Font 40 Columns)</li> </ul>	
Printing Resolution	<ul style="list-style-type: none"> <li>• 160(W) x 144(L) DPI</li> </ul>	
Paper Feeding	<ul style="list-style-type: none"> <li>• Performed by Step Motor</li> </ul>	
Paper	<ul style="list-style-type: none"> <li>• Rolled Paper : W 76±0.5 x Max ø 83mm</li> </ul>	
Supply Voltage	<ul style="list-style-type: none"> <li>• 24V ± 10% : Step Motor, Head</li> <li>• 5V ± 10% : Home Sensor, Motor Driver IC</li> </ul>	
Connector	<ul style="list-style-type: none"> <li>• 30P (Dot Head, Sensor Signal, Motor Control and Power Input)</li> <li>• LIFE : Approx.20 Million Print Lines</li> </ul>	
Head Life	<ul style="list-style-type: none"> <li>• Approx. 300 million Dots / Wire</li> </ul>	
Weight	<ul style="list-style-type: none"> <li>• Under 650g (Excluding Ribbon Cassette, Auto Cutter)</li> </ul>	

**3-3-2 Character Specification**

Item		Description		Remark
Dot Interval	H	0.3175 mm		
	V	0.3528 mm		
Font Type		ASCII		Chinese
Print Font	9 x 9	7 x 9	16 x 16	
Printing Columns	33	40	-	
Character Size (mm)	3.2 x 1.7	3.2 x 1.4	5.7 x 3.0	
Column Interval (mm)	2.13	1.59	3.19	
Line Interval	1/6"	1/6"	1/3"	

**3-3-3 Printer (SMP-710/SMP-710N) Pin Description**

Pin No.	Pin Name	Descriptions
1	Printer Head	Head #6
2	Printer Head	Head #8
3	Printer Head	Head #4
4	Printer Head	Head #9
5	Printer Head	Head #2
6	+24Vdc	The Voltage for Driving Print Heads
7	+24Vdc	The Voltage for Driving Print Heads
8	+24Vdc	The Voltage for Driving Print Heads
9	Print Head	Head #3
10	Printer Head	Head #5
11	Printer Head	Head #1
12	Printer Head	Head #7
13	Thermistor	Thermistor Output Value in Printer Head
14	GND	-
15		
16		
17		
18	Carriage Motor ON/OFF	Control Driving voltage or Holding Voltage Of Carriage Motor
19	Carriage Motor A	Phase A of the Carriage Motor
20	Carriage Motor B	Phase B of the Carriage Motor
21	Vcc (+5 Vdc)	-
22	Vcc	-
23	Feed Motor ON/OFF	Control, Driving Voltage or Holding Voltage of Feed Motor
24	Feed Moter A	Phase A of the Feed Motor
25	Feed Moter B	Phase B of the Feed Motor
26	H/S Output	-
27	P/E Output	-
28	+24 Vdc	The Voltage for Driving Motors
29	+24 Vdc	The Voltage for Driving Motors
30	Sol-	-

**3-3-4 Printer Head Specification**

Item	Description	Remark
Model	• DH400-G10	
Specification	• Type: Ballistic Type (Free Fight) • Number of Wire: 9Pin	
Solenoid Coil	• Resistance: 10W ± 15% • Inductance: 4.5mH ± 15% (Open Circuit) • Temperature Rate: 155 Deg.C • Insulation Resistance: 10MW	
Driver Circuit	• Type: constant Voltage • voltage: 24VDC ± 5% (Normal ) (At Printer Head) • Current: 1.3 A • Pulse: 330μ Sec (Head On Time) • Fly Back Voltage: 48VDC (Min)	
Performance	• Platen Gap: 0.51 ± 0.1 mm • Max Frequency: 1500 Hz • Forms Capability: Original + 2 Copies	
Temperature	• Max Operating Temp: 65°C • Max Transient Temp: 140°C (For 5 Minutes)	

**3-3-5 Printer Head Thermistor Specification**

Item	Description	Remark
Type	• LP310-1J (Tama Elec. Co., Ltd) or Correspond to it correspond to it	Any thermistor which correspond to it
Electronic Characteristics	• Resistance R25: 17.3 KW (At 25°C) • B Value: 3950K ± 2	
Max Operating Limit	• Operating Temp: 120°C ~ 150°C • Time Constant: Max 30 sec (In the air)	
Rx Formula	• $R_X = R_{25} \times \text{Exp} \{B \times (1/T_X - 1/T_{25})\}$	T : Absolute Temperature

**3-3-6 Feed & Carriage Motor Specification**

Item	Description	Remark
Model	• PM42S-048-SYM4 (NMB Electronic Co., Ltd)	
Voltage	• 24 VDC ± 10%	
Current	• 500 mA / Phase (Peak)	
Resistance	• 10 W	
Step Angle	• 7.5°	
Pull Out Torque	• 1200 PPS 200 g/cm	

**3-3-7 Auto cutter specification**

Item	Description	Remark
Model	• ORC-RUG80-2 (OHYANERIKI MFG. Co., Ltd)	
Type	• Guillotine Type	
Motor	• DC Brush Motor Fk-180SH-12280	Mabuchi Motor
Voltage	• 24VDC ± 10%	
Current	• 400 mA (Average), 1.6 A (Peak)	

**3-3-8 Paper Specification**

Item	Description	Remark
Paper Type	• Roll Paper	
Paper Roll Width	• W76 ± 0.5 mm (2.99" ± 0.00200")	
Paper Roll Diameter	• Max x ø 83mm (3.26")	
Normal Paper	• Thickness: 1 Sheet 0.06~0.085mm (0.0028 ~ 0.0034") • Weight: 52.3 ~64 g/m2 (0.115 ~ 0.1411 lb)	

**3-3-9 Ribbon Cassette Specification**

Item	Description	Remark
Standard	• ERC-38 (Black / Red)	
Color	• Black & Red	
Size	• 13 mm (W) x 6 mm (L)	
Life	• ERC-38 (B/P): 1,500,000 Characters (Black) 750,000 Character (Red) (Continuous Printing 7 x 9 Font / ASCII / 25°C)	

**3-3-10 Other Component Specification**

Item	Description	Remark
Paper End Sensor	• Reflection Type Micro Switch	
Paper Roll Near End Sensor	• Micro Switch Factory option	

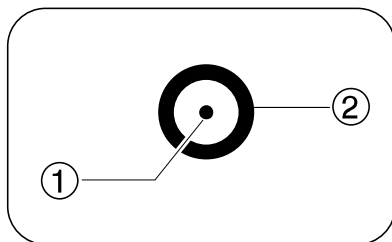
**3-4 SMPS Specifications**

**3-4-1 SMPS (Switching Mode Power Supply) Specification**

Item	Description	Remark
Input Voltage	• 100VAC ~ 240VAC	
Input Current	• 1.5A (Max)	
Line Regulation	• +24V ± 1%	
Load Regulation	• +24V ± 5%	
Ripple Noise	• Peak 300mV	
O.C.P	• 2.3A ~ 2.5A (Over Current Protect)	

**3-4-2 SMPS Output Connector**

Pin Number	Signal Name
1	+24 VDC
2	GND



Power Connector

### 3-5 Interface Specifications

#### 3-5-1 RS-232C Serial Interface

##### 3-5-1(a) Specification

Item	Description	Remark
Data Transmission	• Serial	
Synchronization	• Asynchronous	
HandShaking (Flow Control)	• H/W : DTR / DSR • S/W : XON / XOFF	XON: ASC Code 11h XOFF: ASC Code 13h
Signal Level	• Logic"1" (MARK) : -3V ~ -15V • Logic"0" (SPACE) : +3V ~ +15V	
Baud Rate	• 19200 / 2400 / 4800 / 9600 Bps	
Data Word Length	• 7 Bit / 8 Bit	
Parity	• None / Even / Odd	
Connector	• DB25P Female (I/F PBA)	

Table 3-14 RS-232C Specification

※ **Note: The HandShaking (Flow Control) / Data Word Length / Baud Rate / Parity functions depend on the DIP Switch settings. Refer to the User's Manual.**

##### 3-5-1(b) RS-232C I/F Cable

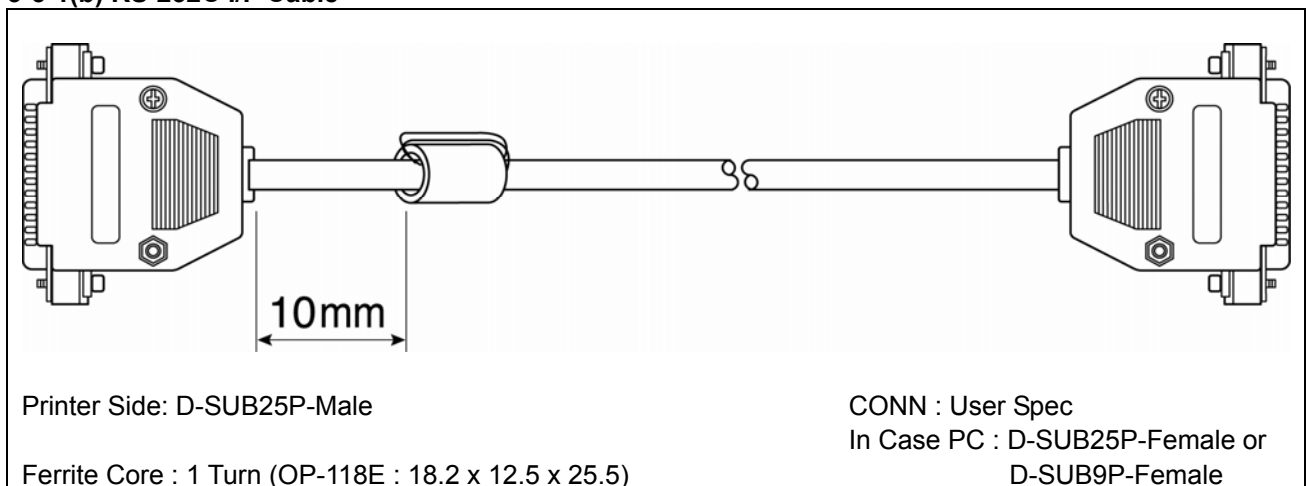


Figure 3-6 RS-232C Cable

**3-5-1(c) Cable Connection**

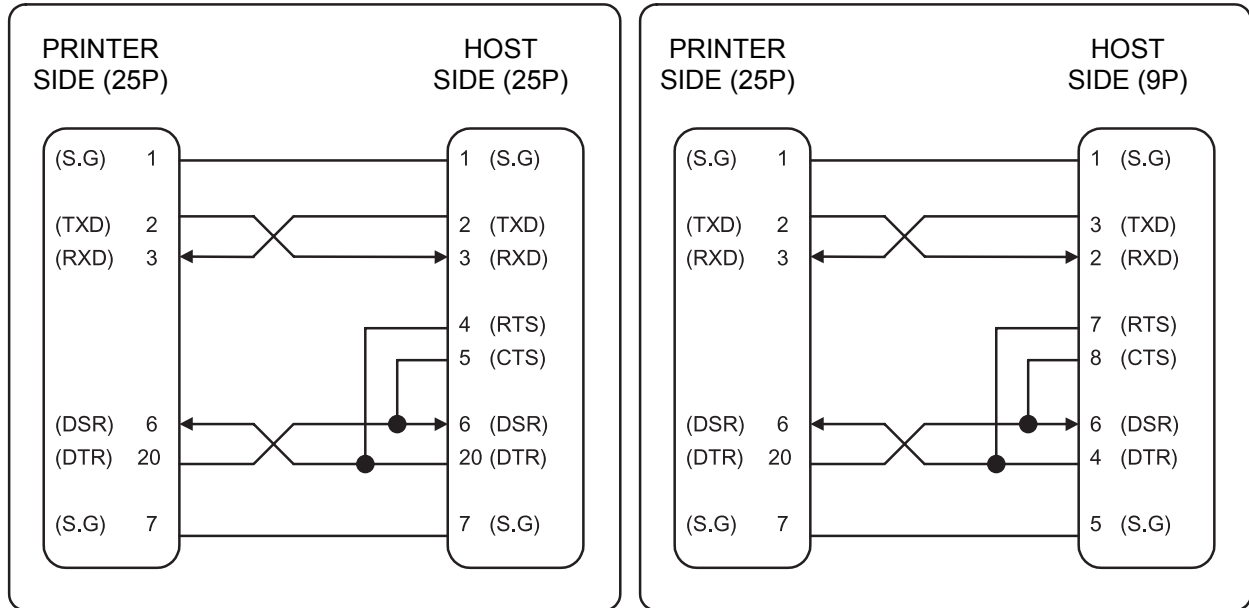


Figure 3-7 RS-232C Cable Connection

**3-5-1(d) Signal Description**

Pin No.	Signal name	Direction	Function
1	FG	-	Frame Ground
2	TxD	Output	Transmit Data
3	RxD	Input	Receive Data
4	RTS	Output	Ready To Send
5	CTS	Input	Clear To Send
6	DSR	Input	This signal indicates whether the host computer can receive data. (H/W flow control) 1) MARK(Logic1) : The host can receive a data. 2) SPACE(Logic0) : The host can not receive a data. 3) The printer transmits a data to the host, after confirming this signal. 4) When XON/XOFF flow control is selected, the printer does not check this signal.
7	SG	-	Signal Ground
20	DTR	Output	This signal indicates whether the printer is busy. (H/W flow control) 1) MARK(Logic1) : The printer is busy. 2) SPACE(Logic0) : The printer is not busy. 3) The host transmits a data to the printer, after confirming this signal. 4) When XON/XOFF flow control is selected, the host does not check this signal.

Table 3-15 RS-232C Pin Description

**3-5-1(e) H/W Flow Control**

When DTR/DSR flow control is select, before transmitting a data, the Printer checks whether the host is BUSY or not. If the host is BUSY, the Printer does not transmit a data to the host. If the host is not BUSY, the Printer transmits a data to the Host. The host is the same. Refer to the Interface Part of Chapter 4-3 Special Circuit Diagrams.

**3-5-1(f) S/W Flow Control**

When XON/XOFF flow control is selected, the printer transmits XON(ASCII 11h) or XOFF(ASCII 13h) signal through the TXD line. If the Printer is BUSY, the Printer transmits XOFF(ASCII 13h) to host through the TXD line. Then the host recognize that the Printer is BUSY. So, the host does not transmit a data to the Printer. If the Printer is released from BUSY, the Printer transmits XON(ASCII 11h) to host through the TXD line. Then the host recognize that the Printer is not BUSY. And the host transmit a data to the Printer.

※ **Note** : Refer to the Operation Manual about XON/XOFF flow control.

**3-5-2 RS-485 Serial Interface**

**3-5-2(a) Specification**

Item	Description	Remark
Data Transmission	• Serial	
Synchronization	• Asynchronous	
HandShaking (Flow Control)	• H/W : DTR / CTS (Same as DSR) • S/W : XON / XOFF	XON: ASC Code 11h XOFF: ASC Code 13h
Signal Level	• Logic"1" : SD1-SD2 ≥ 0.2V, RD1-RD2 ≥ 0.2V • Logic"0" : SD1-SD2 ≤ 0.2V, RD1-RD2 ≤ 0.2V	
Baud Rate	• 19200 / 2400 / 4800 / 9600 Bps	
Data Word Length	• 7 Bit / 8 Bit	
Parity	• None / Even / Odd	
Connector	• DB25P Female (I/F PBA)	

Table 3-16 RS-485 Specification

※ **Note** : The HandShaking (Flow Control) / Data Word Length / Baud Rate / Parity functions depend on the DIP Switch settings. Refer to the User's Manual.

**3-5-2(b) RS-232C I/F Cable**

Same as the appearance of RS-232C Cable

**3-5-2(c) Cable Connection**

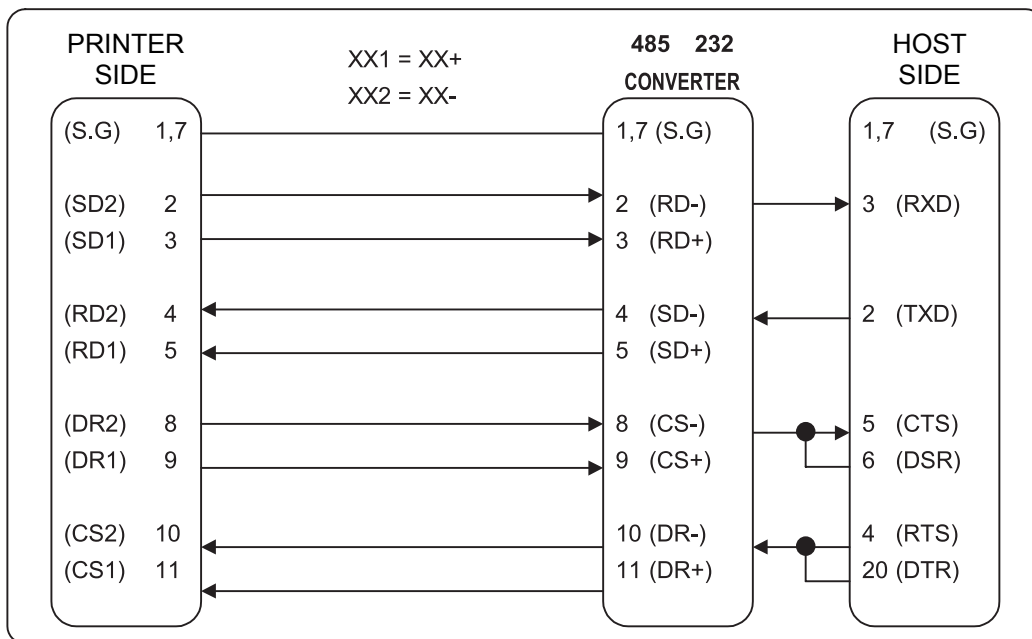


Figure 3-8 RS-485 Cable Connection



**3-5-2(d) Signal Description**

Pin No.	Signal name	Direction	Function
1	Frame GND	-	Frame Ground
2	SD2	Output	Send Data
3	SD1	Output	"H" : SD1 > SD2 , "L" : SD1 < SD2
4	RD2	Input	Receive Data
5	RD1	Input	"H" : RD1 > RD2 (RD1-RD2 ≥ 0.2V) "L" : RD1 < RD2 (RD1-RD2 ≤ 0.2V)
7	SGND	-	Signal Ground
8 9	DR2 DR1	Output	When DTR/DSR is selected, this signal indicates whether the printer is BUSY or READY. (H/W flow control) 1) DR1 > DR2 (H) : The printer is BUSY. 2) DR1 < DR2 (H) : The printer is READY. 3) The host computer transmits a data to the host, after confirming this signal.
10 11	CS2 CS1	Input	When DTR/DSR is selected, this signal indicates whether the host computer is BUSY or READY. (H/W flow control) 1) CS1 > CS2 (H) : The host computer is BUSY. 2) CS1 < CS2 (H) : The host computer is READY. 3) The printer transmits a data to the host, after confirming this signal.

Table 3-17 RS-485 Pin Description

※ **Note** : BUSY condition and other information refer to the User's Manual.

※ **Note** : This format is used when the UART for RS-232C is connected to the RS-485 driver.

**3-5-2(e) H/W Flow Control**

When DR1,2/CR1,2 flow control is select, before transmitting a data, the Printer checks whether the host is BUSY or not. If the host is BUSY, the Printer does not transmit a data to the host. If the host is not BUSY, the Printer transmits a data to the Host. The host is the same. Refer to the Interface Part of Chapter 4-3 Special Circuit Diagrams.

**3-5-2(f) S/W Flow Control**

When XON/XOFF flow control is selected, the printer transmits XON(ASCII 11h) or XOFF(ASCII 13h) signal through the TXD line. If the Printer is BUSY, the Printer transmits XOFF(ASCII 13h) to host through the TXD line. Then the host recognize that the Printer is BUSY. So, the host does not transmit a data to the Printer. If the Printer is released from BUSY, the Printer transmits XON(ASCII 11h) to host through the TXD line. Then the host recognize that the Printer is not BUSY. And the host transmit a data to the Printer.

※ **Note** : Refer to the Operation Manual about XON/XOFF flow control.

**3-5-3 IEEE1284 Parallel Interface**

Bidirectional parallel interface : in accordance with the IEEE1284 Nibble/Byte mode.

**3-5-3(a) Forward Mode Specification (Compatibility mode)**

Data transmission from host computer to printer : Centronics compatible

Item	Description	Remark
Data Transmission	• 8-bit Parallel	
Synchronization	• External supplied nStrobe signals	
HandShaking	• nACK and Busy signals	
Signal Level	• TTL compatible	
Connector	• Centronics 36P	

Table 3-18 IEEE1284 Specification

**3-5-3(b) Reverse Mode Specification (Nibble / Byte mode)**

Data transmission from the printer to the host computer.

The STATUS data transmission from the printer to the host computer is accomplished in the Nibble or Byte mode. This mode allows data transmission from the asynchronous printer under the control of the host computer. Data transmission in the Nibble mode are made via the existing control lines in units of for bits (Nibble). In the Byte mode, data transmission in accomplished by making the 8-bit data lines bidirectional. Neither mode can operate at the same time as the compatibility mode, so switching is always required.

**3-5-3(c) Signal Specification (Compatibility/Nibble/Byte mode)**

Pin No.	Source	Compatibility Mode	Nibble Mode	Byte Mode
1	Host	nStrobe	HostClk	HostClk
2	Host / Printer	Data 0 (LSB)	-	Data 0 (LSB)
3	Host / Printer	Data 1	-	Data 1
4	Host / Printer	Data 2	-	Data 2
5	Host / Printer	Data 3	-	Data 3
6	Host / Printer	Data 4	-	Data 4
7	Host / Printer	Data 5	-	Data 5
8	Host / Printer	Data 6	-	Data 6
9	Host / Printer	Data 7 (MSB)	-	Data 7 (MSB)
10	Printer	nAck	PtrClk	PtrClk
11	Printer	Busy	PtrBusy/Data3,7	PtrBusy
12	Printer	Perror	AckDataReq /Data2,6	AckDataReq
13	Printer	Select	Xflag/Data1,5	Xflag
14	Host	nAutoFeed	HostBusy	HostBusy
15		NC	ND	ND
16		GND	GND	GND
17		FG	FG	FG
18	Printer	Logic-H	Logic-H	Logic-H
19~30		GND	GND	GND
31	Host	nInit	nInit	nInit
32	Printer	nFault	nDataAvail /Data0,4	nDataAvail
33		GND	ND	ND
34	Printer	DK_Status	ND	ND
35	Printer	+5V	ND	ND
36	Host	nSelectIn	1284-Active	1284-Active

Table 3-19 IEEE1284 Pin Description

**3-5-3(c) IEEE1284 I/F Cable**

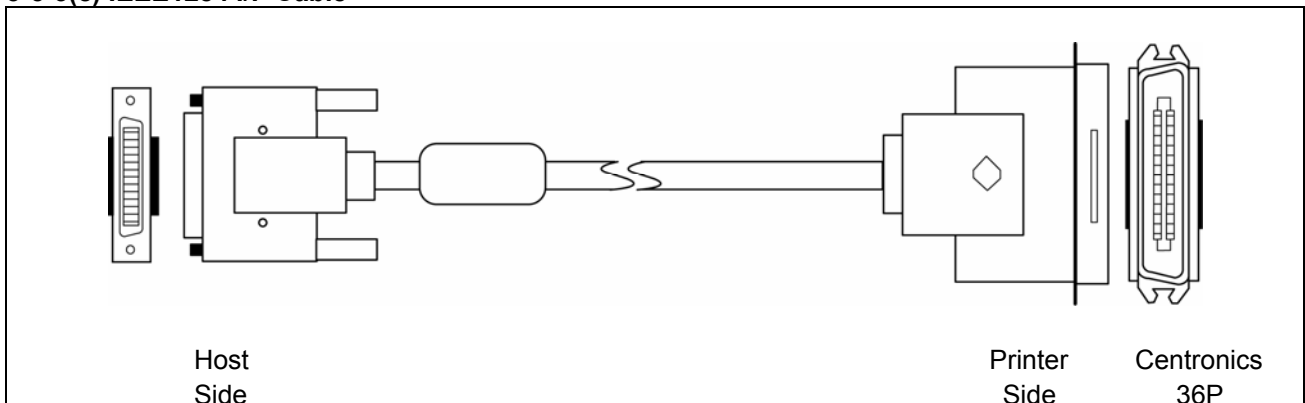


Figure 3-9 IEEE1284 Cable

**3-5-4 USB2.0 Interface**

SRP-270 support the USB (Universal Serial Bus) Serial Communication.

**3-5-4(a) Specification**

Item	Description	Remark
Transfer Type	• BULK	
Data Signal	• Bi-direction, Half-Duplex • Differential Signal Pair (D+ / D-)	
Data Format	• NRZI Format • Zero Bit Stuffing after 6 ones	
Transceiver	• Differential Receive Sensitivity : 200[mV] • Differential common Mode Range : 0.8 ~ 2.5[V] • Single-End Receiver Threshold : 0.8 ~ 2.0[V]	
Speed	• 12 Mbps	
Power	• Self-Powered	
Cable & Connector	• Cable : 5m / 2m • Connector : B Type	
Other	• Support USB SPEC V1.1	

Table 3-20 USB Specification

**3-5-4(b) Signal Description**

Pin No.	Signal Name	Assignment(Color)	Function
Shell	Shield	Drain Wire	Frame Ground
1	VBUS	Red	Host Power : DC5[V] / 500[mA]
2	D-	White	Differential Data Line
3	D+	Green	Differential Data Line
4	GND	Black	Signal Ground

Table 3-21 USB Pin Description

**3-5-4(c) USB I/F Cable**

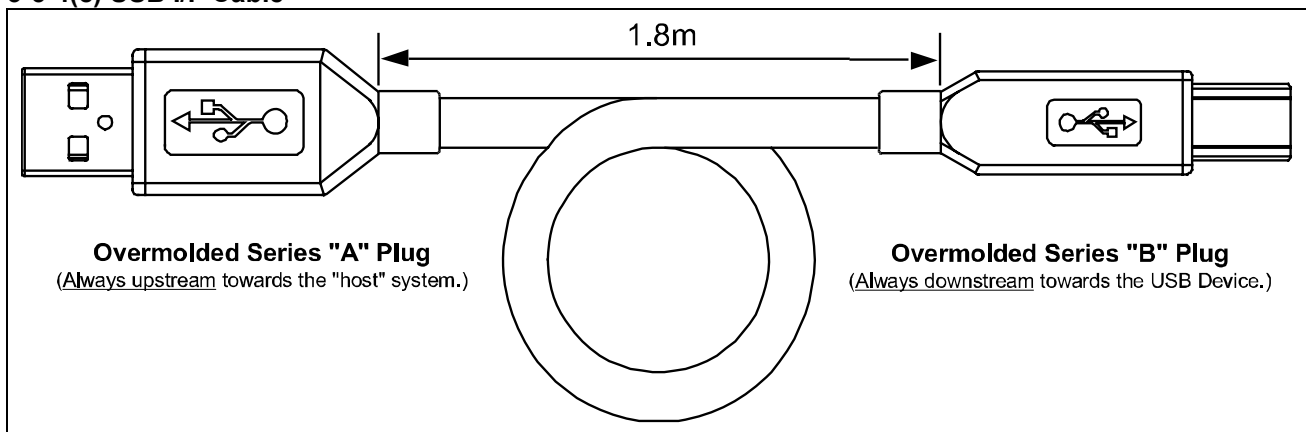
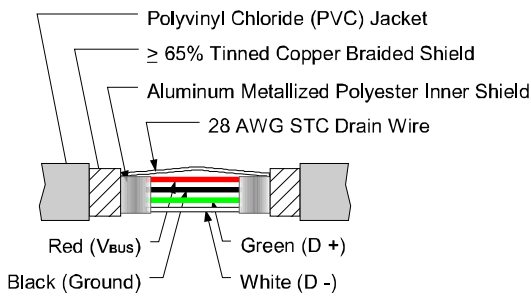


Figure 3-10 USB A-B Type Cable

# SRP-270

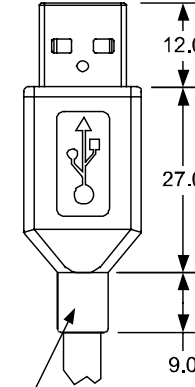
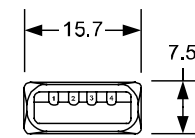
## (Typical USB Shielded Cable)



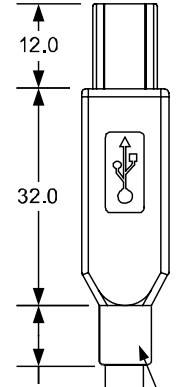
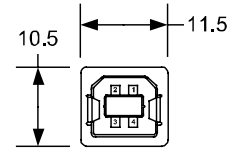
All dimensions are in millimeters (mm) unless otherwise noted.

Dimensions are **TYPICAL** and are for general reference purposes only.

## Detail A - A (Series "A" Plug)



## Detail B - B (Series "B" Plug)



Optional Molded Strain Relief

## 3-6 Cash Drawer Specifications

### 3-6-1 Cash Drawer Cable

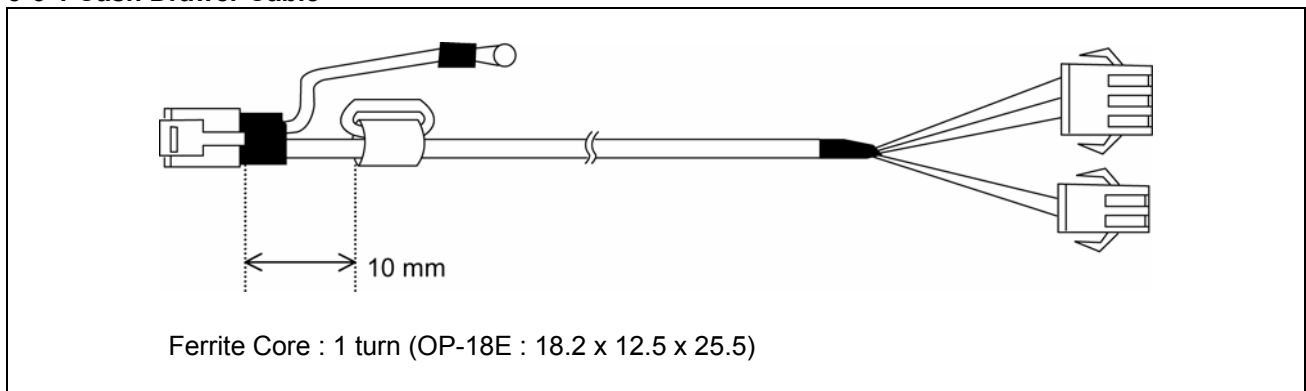


Figure 3-12 Cash Drawer Cable

### 3-6-2 Cable Connection

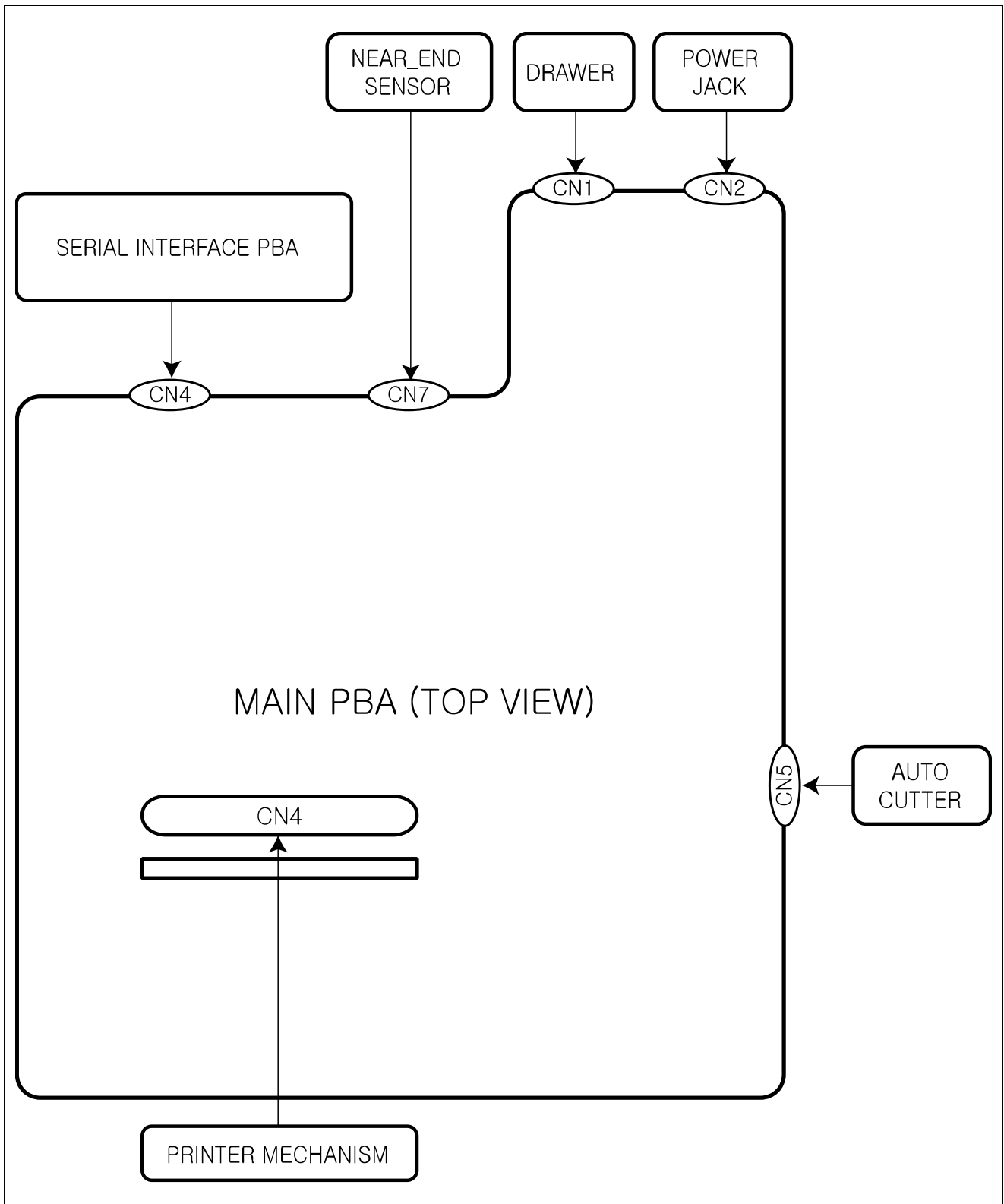
Pin No.	Description	Direction
1	Frame GND	-
2	Cash Drawer Driver Signal #1	Output
3	Drawer Open / Close Signal	Input
4	+24V	-
5	Cash Drawer Driver Signal #2	Output
6	Signal GND	-

Table 3-23 Cash Drawer Cable Connection

※ Note : +24V is always output through pin 4 during power on.

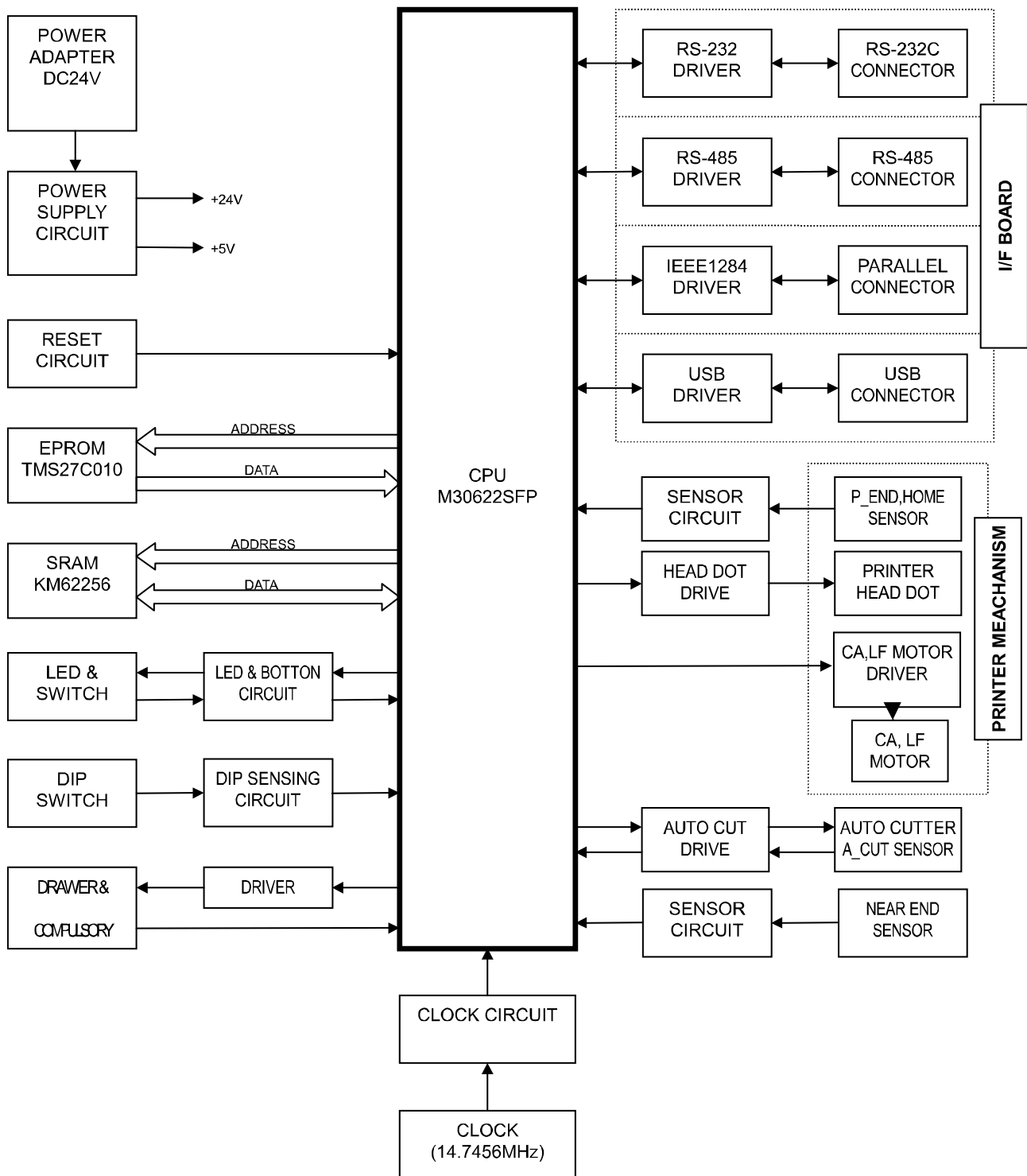
# 4. Hardware

## 4-1 Wiring Diagram



[Figure 4-1 Board Wiring Diagram]

4-2 Block Diagram

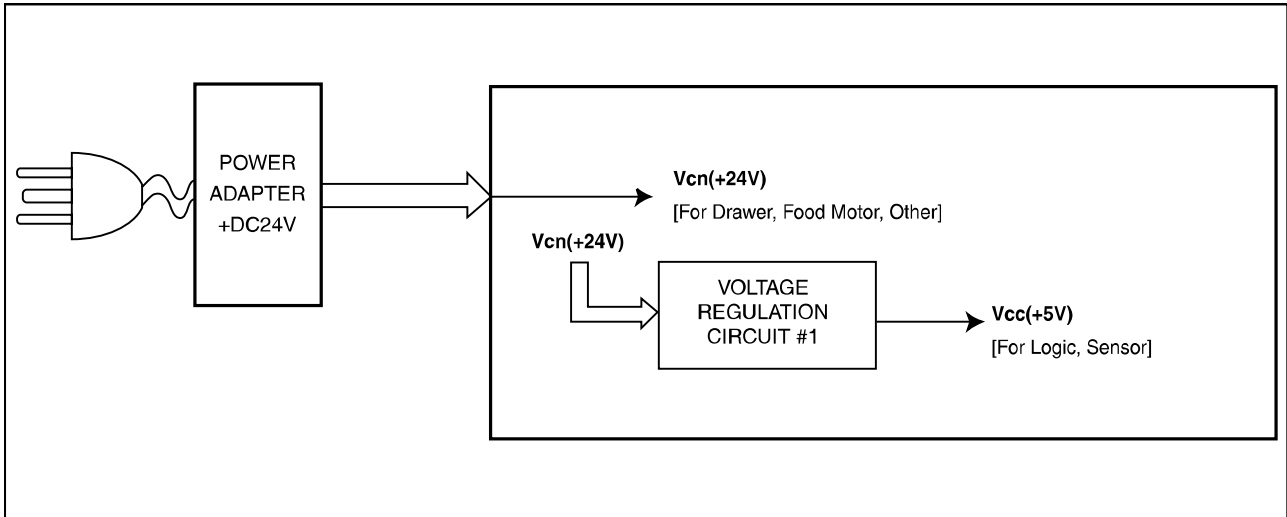


[Figure 4-2 Block Diagram]

## 4-3 Special Circuit Descriptions

### 4-3-1 Power Circuit

This system is operated under 110Vac or 230Vac. The power circuit supplies the three differential DC voltage sources.



[Figure 4-3 Power Block Diagram]

No.	VOLTAGE	DESCRIPTION
1	+24VDC	Cash Drawer Solenoid Driving / Step Motor Voltage
2	+5VDC	Logic IC Driving Voltage / Sensor

#### 1) Drawer Driving and Feed, Auto Cutter Motor Voltage : +24Vdc

+24VDC is supplied from SMPS. This Voltage is smoothed by capacitors (C1,6,39).

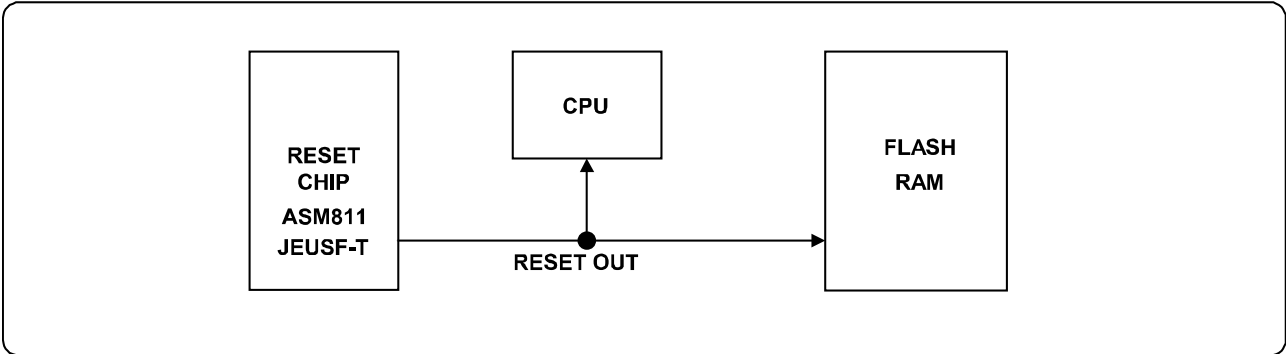
This voltage is used as a Printer Head, Printer Motor, Cash Drawer Solenoid Driving voltage and a source voltage of the +5V voltage sources.

#### 2) Logic IC Driving Voltage: +5V

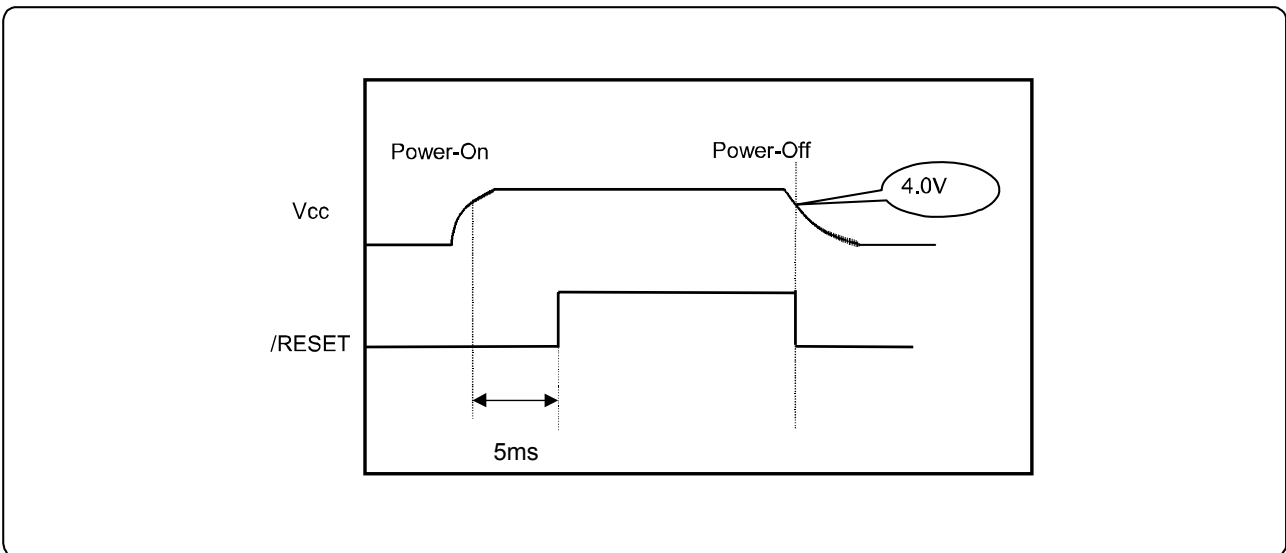
+5Vdc Logic driving voltage is produced by the step-down dc-dc converter U1(34063A). That is, U1 produces rectangular wave. This makes D2 (EK04) and L6 store energy. The voltage is smoothed by C8 (470uF) and then +5Vdc Logic voltage is produced.

**4-3-2 RESET Circuit**

Reset signal is a signal in order to start-up CPU under Power-on. Reset circuit uses a reset ICTL7705ACD (U5). When +5Vdc is fallen under 4.3Vdc by Power-off, reset signal prohibits the system from misoperating by lowering down to 0V.



[Figure 4-4 Reset Block Diagram]



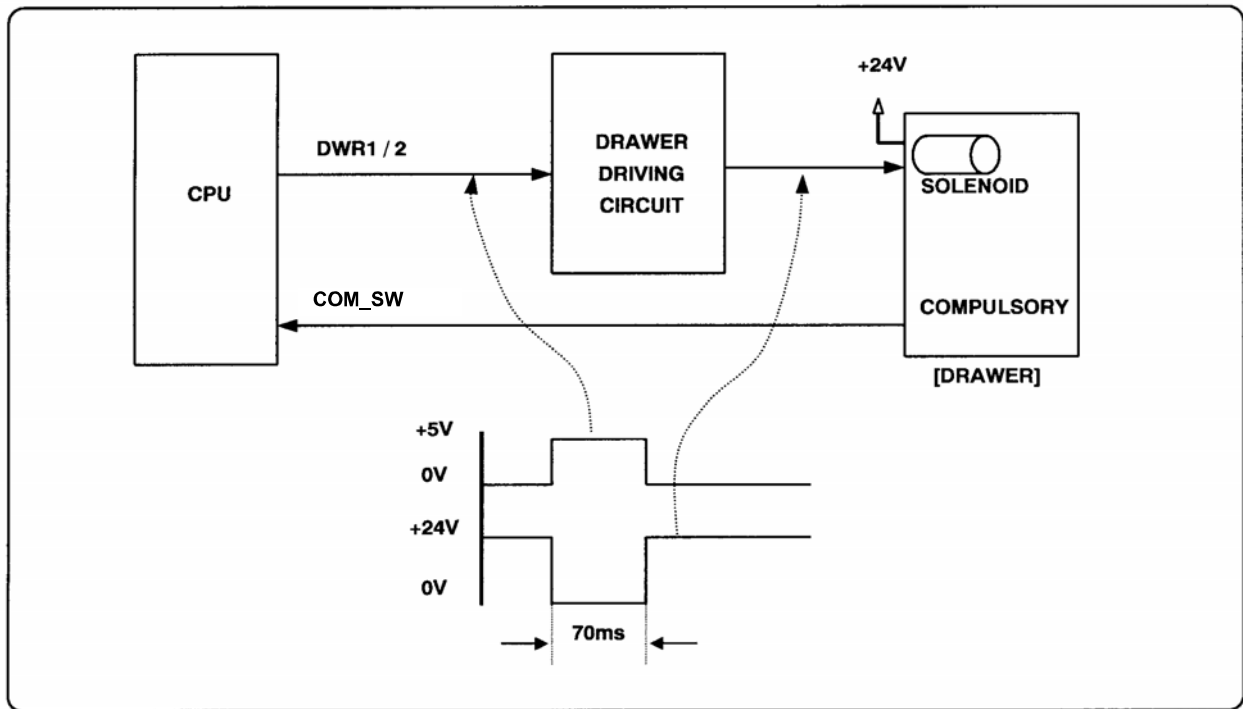
[Figure 4-5 Reset Waveform]



**4-3-3 Cash Drawer Circuits**

The circuit is used for opening cash drawer and driven by the Q8 (STA471). When its state is high level signal, Q8 (STA471) drive the solenoid to open the cash drawer. As an optional item, we provide sensor switch (we call it a compulsory switch) which checks the drawer whether it is opened or not. This sensor switch turns on for the drawer open condition, and turns off for the other.

※ **Caution:** make sure that the Cash Drawer solenoid resistance is more than 20Ω.



[Figure 4-6 Cash Drawer Block Diagram]

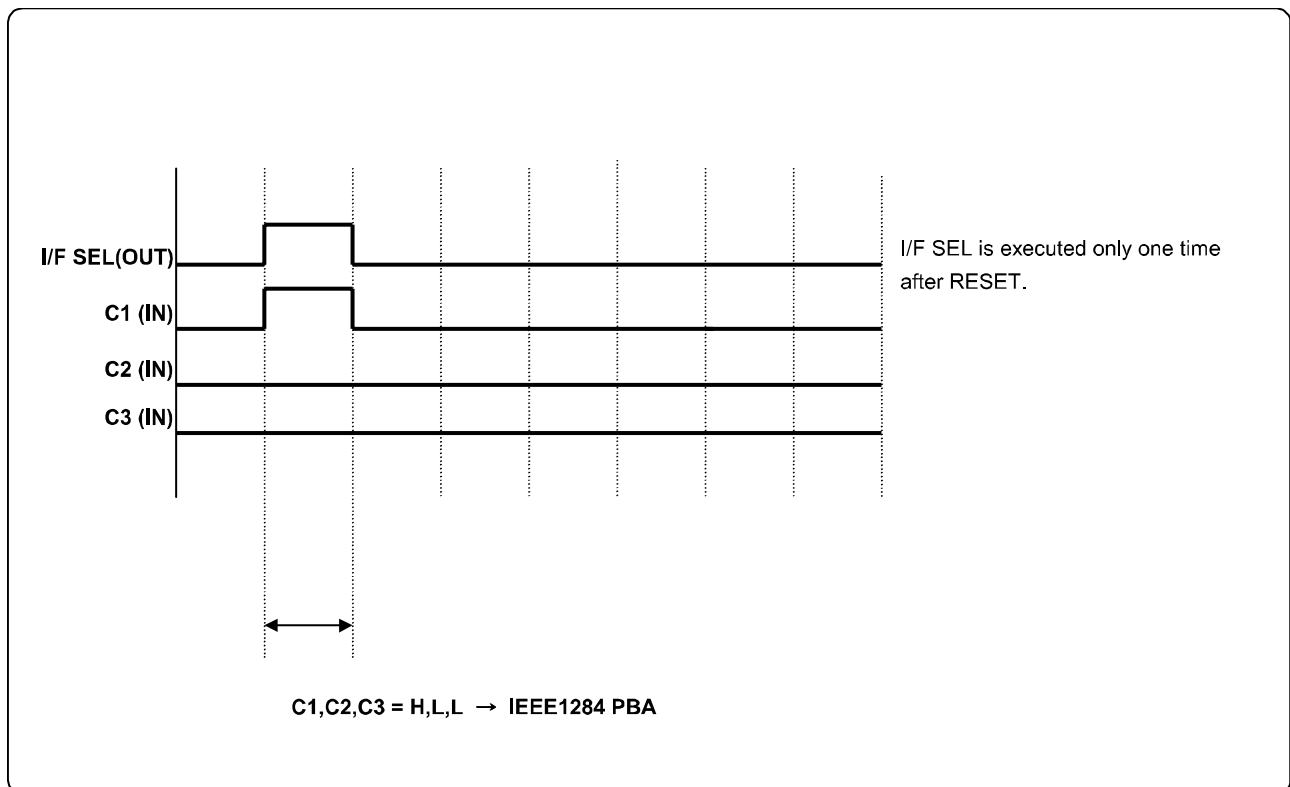
**4-3-4 I/F PBA Detect Block Diagram**

When the printer is ON, the printer checks what kind of the I/F PBA is installed. After detection, the CPU specify the I/O port properly. The following is the method of I/F PBA detection.

First, The CPU sends a "I/F Sel " signal (P7.3) to I/F PBA. The I/F PBA has the three return Signal (DIPC1~C3).

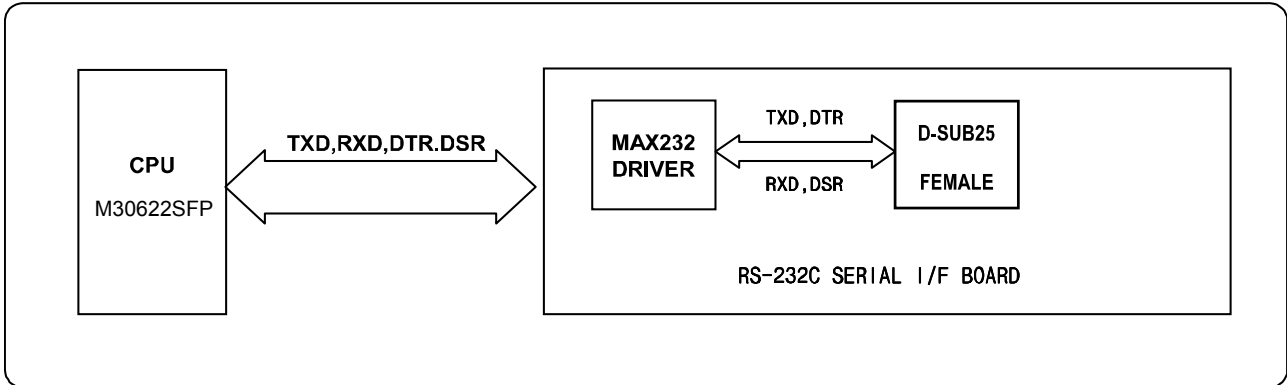
The CPU recognize the I/F PBA by the value of the three return signal.

I/F PBA	DIP_C1	DIP_C2	DIP_C3
RS-232C	L	L	H
RS-485	L	H	L
IEEE1284	H	L	L
USB2.0	H	H	L
No Connection	L	L	L

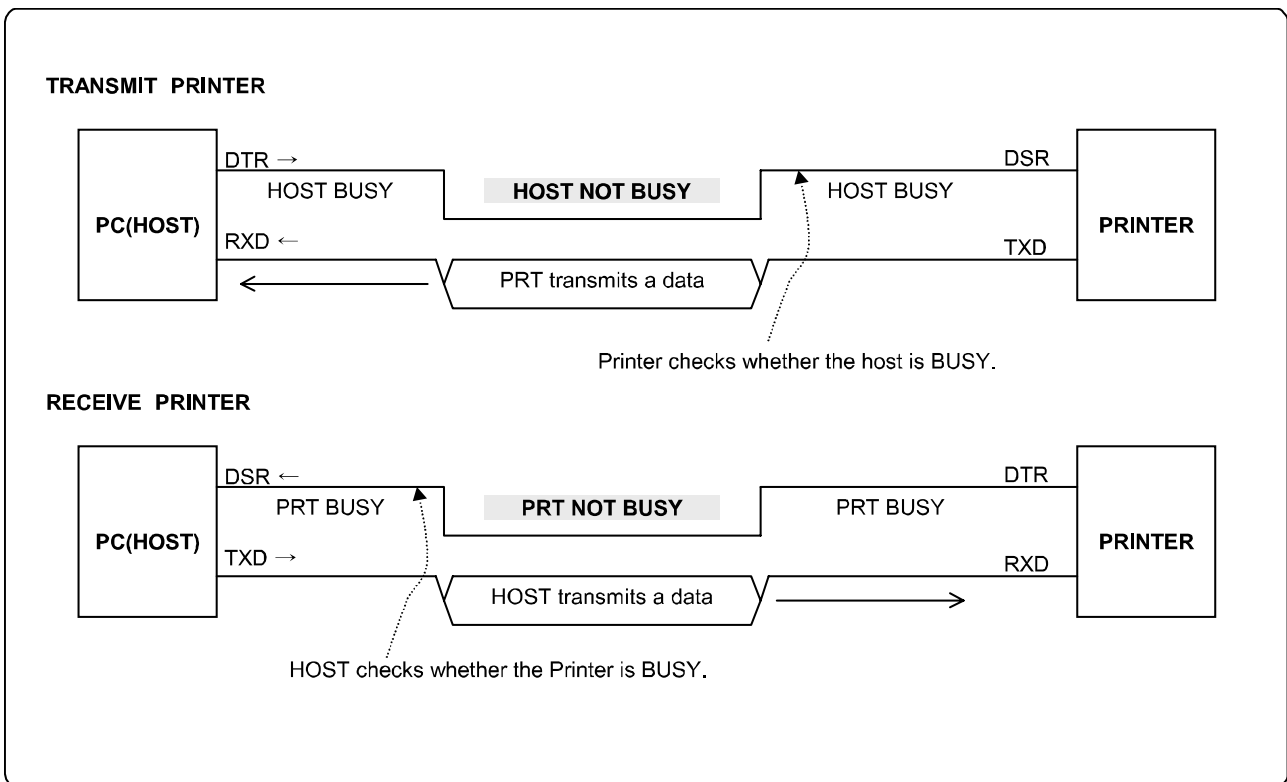


**4-3-5 RS-232C Communication Block Diagram**

The CPU is used for serial communication.  
 And also RS-232C Driver (MAX232), is used to serial communication.  
 Show following block diagram.



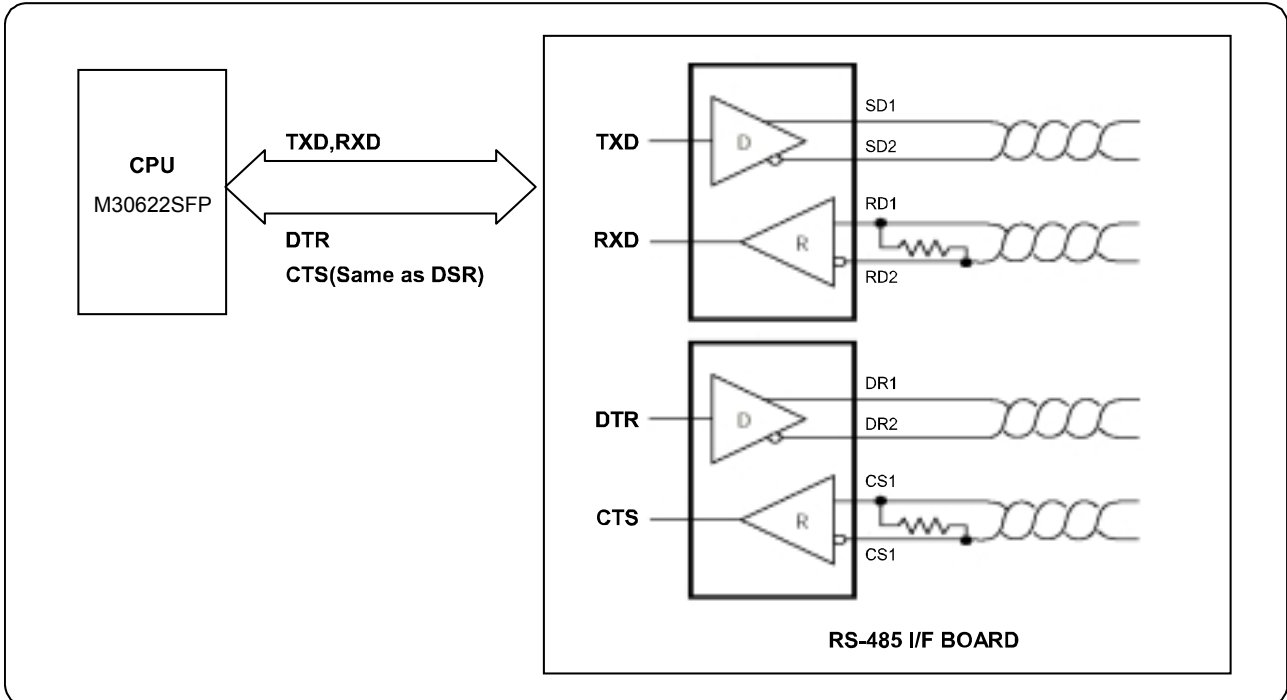
[Figure 4-8 RS-232C Communication Block Diagram]



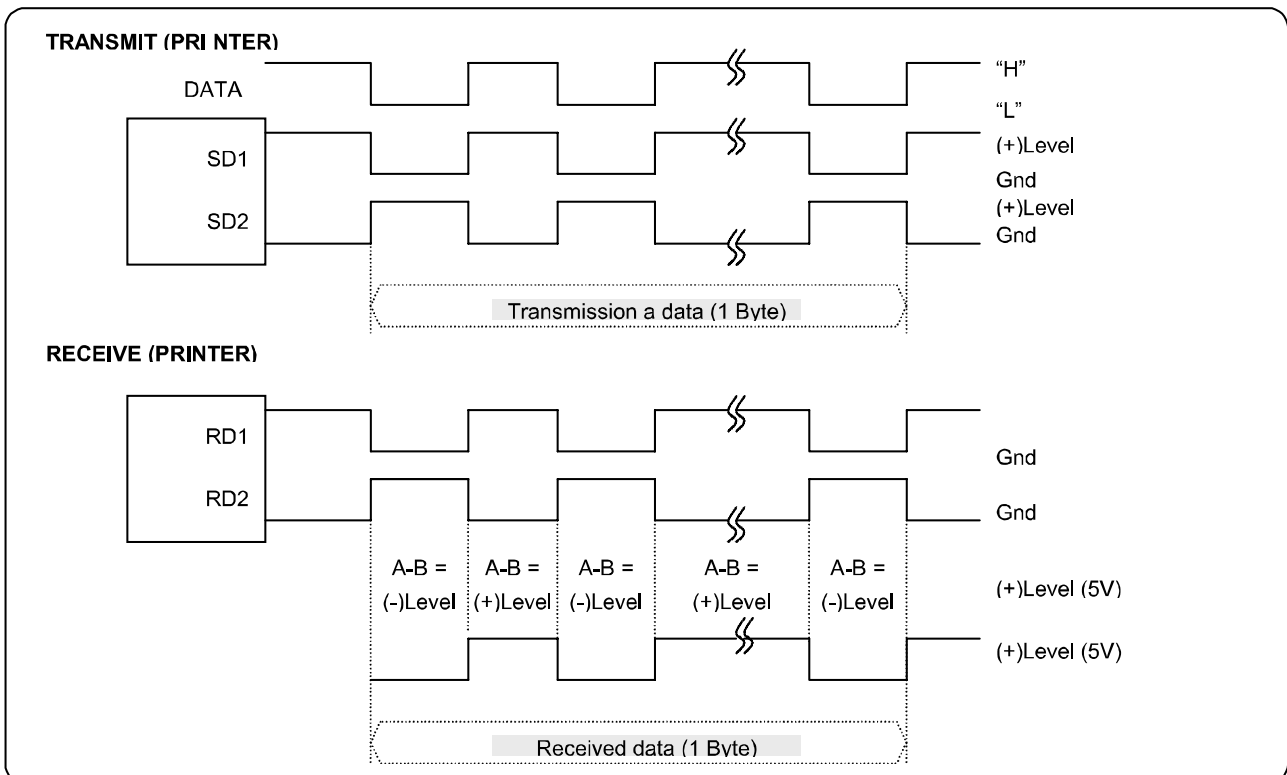
[Figure 4-9 RS-232C Communication Waveform]

**4-3-6 RS-485 Communication Block Diagram**

The CPU is used for serial communication.  
 And also RS-485 Driver (MAX488), is used to serial communication.  
 Show following block diagram.



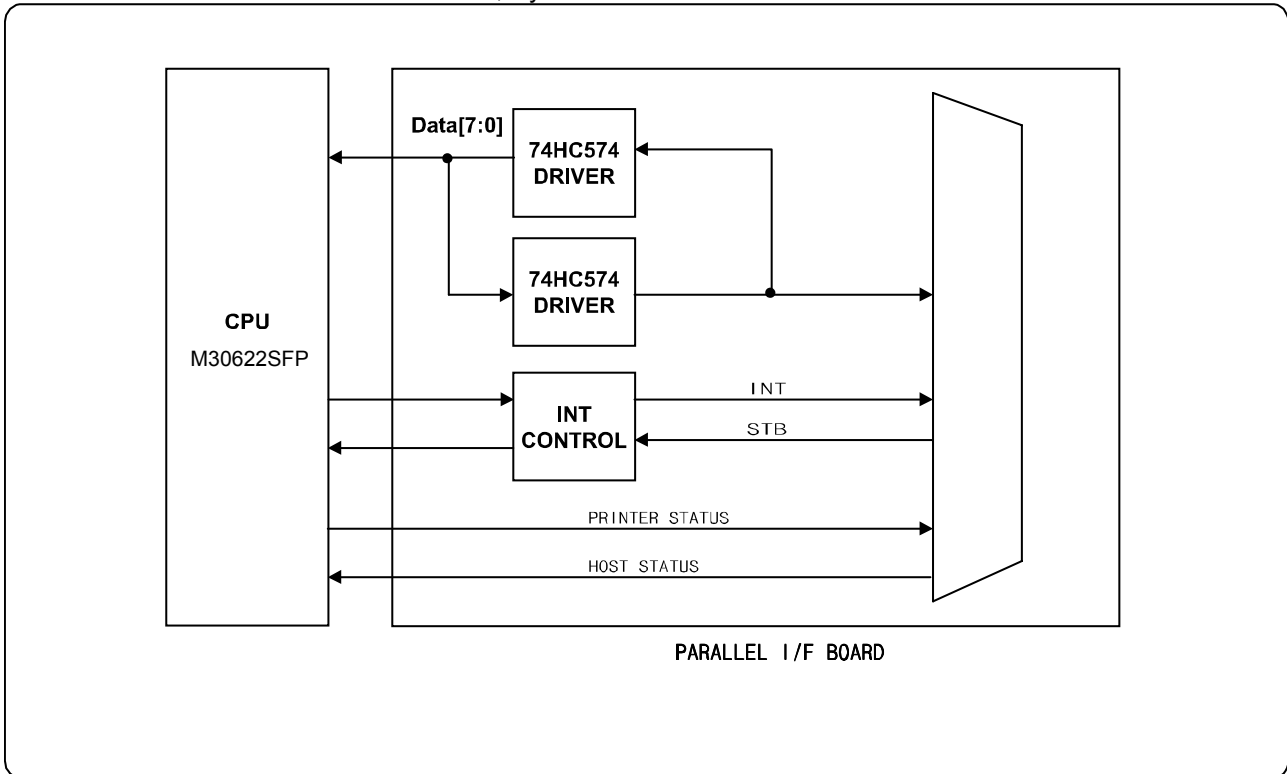
[Figure 4-10 RS-485 Communication Block Diagram]



[Figure 4-11 RS-485 Communication Waveform]

**4-3-7 Parallel Communication Block Diagram**

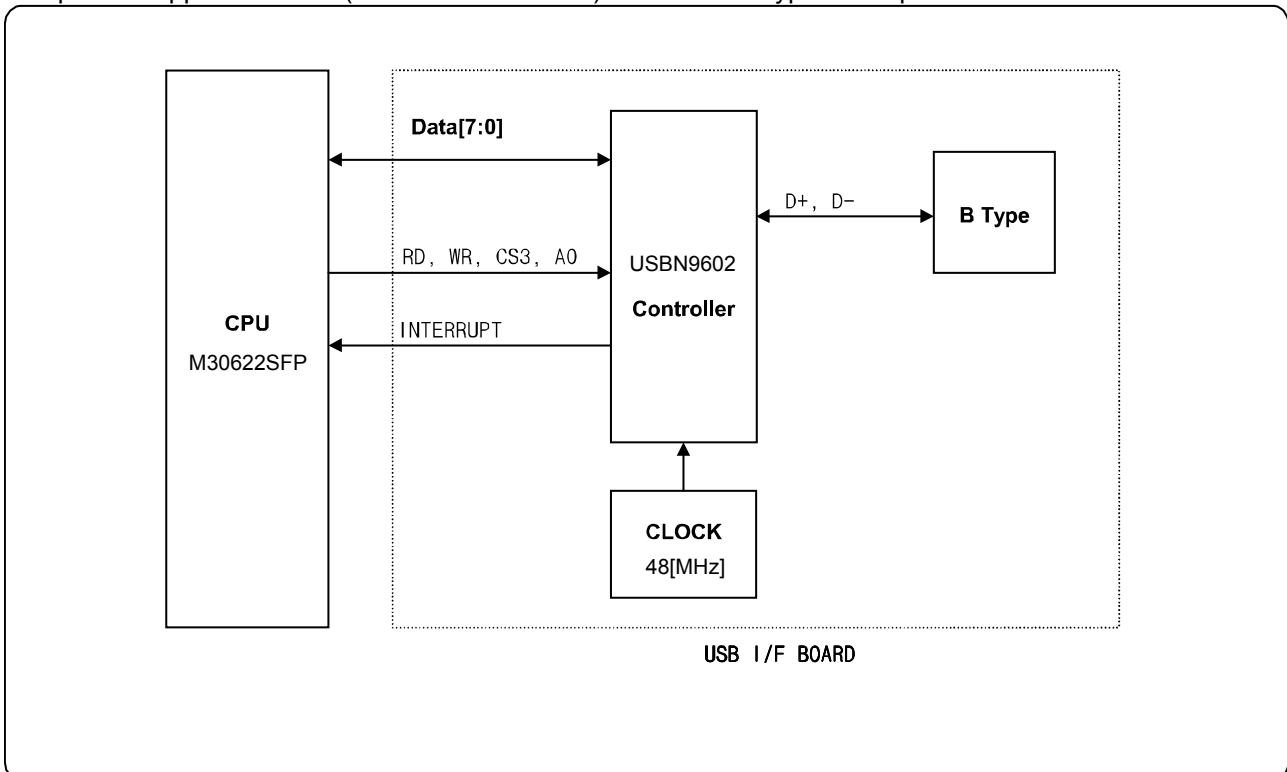
The printer support the bidirectional Parallel Interface with Centronics, Nibble, Byte Mode. The Centronics is Forward and the Nibble, Byte are reverse Mode.



[Figure 4-10 IEEE1284 Communication Block Diagram]

**4-3-8 USB Communication Block Diagram**

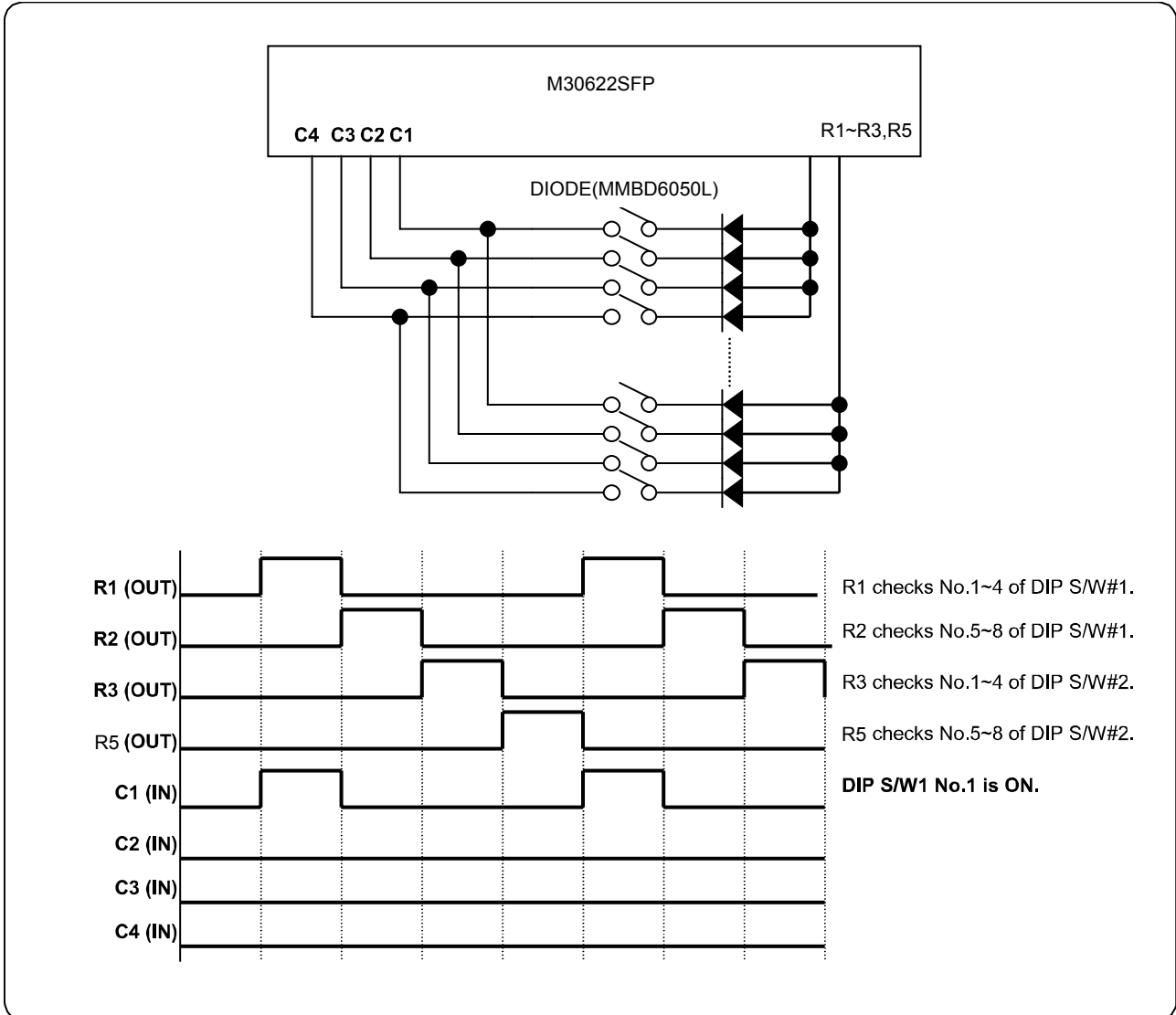
The printer support the USB (Universal Serial Bus). The transfer type of the printer is the BULK.



[Figure 4-11 USB2.0 Communication Block Diagram]

**4-3-9 DIP Switch Circuit**

The key Board Circuit consist of the scan signal of 4 lines and the return signal of 4-line. The CPU sends repeatedly and continuously the scan data R1, 2, 3, 5 through P10.0~10.2, P1.1. The DIP S/W information input in the return signal if the specific DIP S/W is ON Status during the given time. The CPU reads the data through C1~C4 and analyzes what DIP S/W is ON and performs the selected function.



[Figure 4-12 DIP Switch Block Diagram]

## 5. Disassembly and Assembly

### 5-1 General Precautions on Disassembly

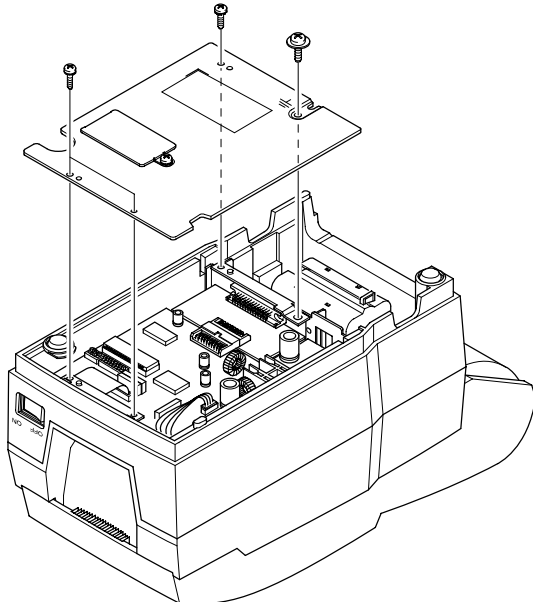
This chapter describes the Disassembly and Reassembly procedures for the Printer of SRP-270 Series. This Printer contains electronically sensitive device. Use caution when handling any component.

Whenever servicing the machine, you must perform as follows:

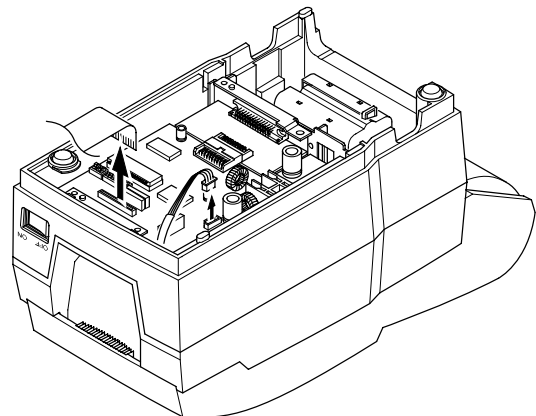
1. Disconnect the DC power jack of Adapter from the Printer before Disassembling.
2. Use a flat and clean surface.
3. Replace only with authorized components.
4. Do not force to remove plastic-material components.
5. Make sure all components are in their proper position.

### 5-2 Plate Bottom

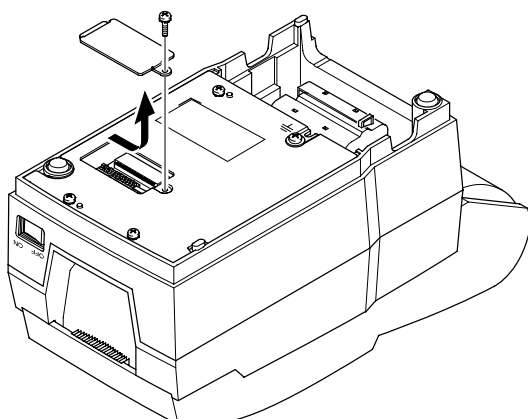
1. Remove four screws securing the Plate Bottom. Separate the Plate Bottom from the Lower Case.



3. Unplug Auto Cutter wire and FPC Cable from the Main PCB.

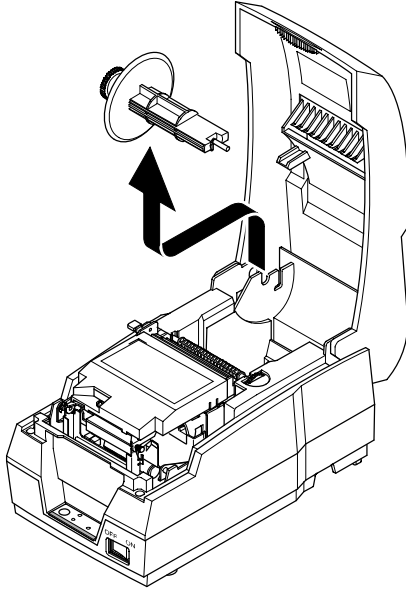


2. If you want to remove the PCB Cover, remove screw securing, as shown below.

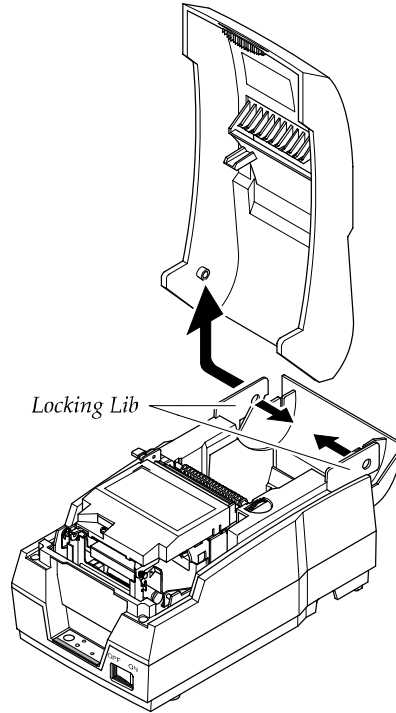


**5-3 Cover Assy (SRP-270D Type)**

1. Open the Cover Assy and take out the Spool Winding, as shown below.

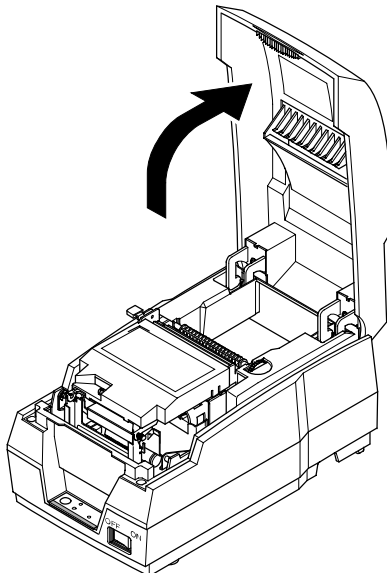


2. Push the locking lib to the direction of arrow and remove the Cover Assy, as shown below.

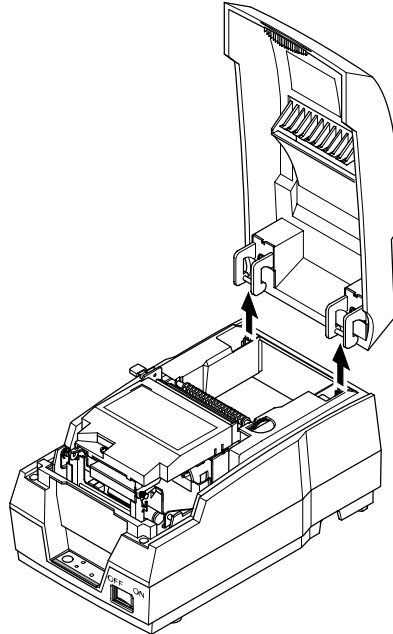


**5-4 Cover Assy (SRP-270A & SRP-270C Type)**

1. Open the Cover Assy.



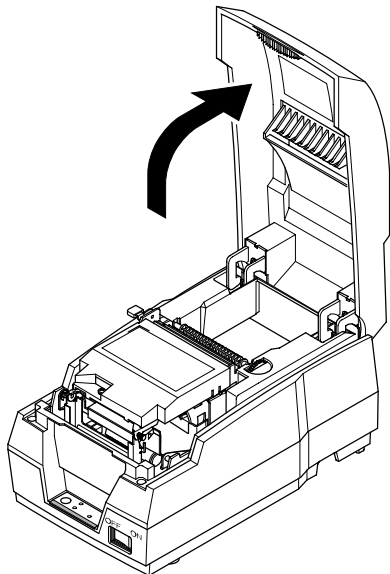
2. Pull the Cover Assy upward and remove it.



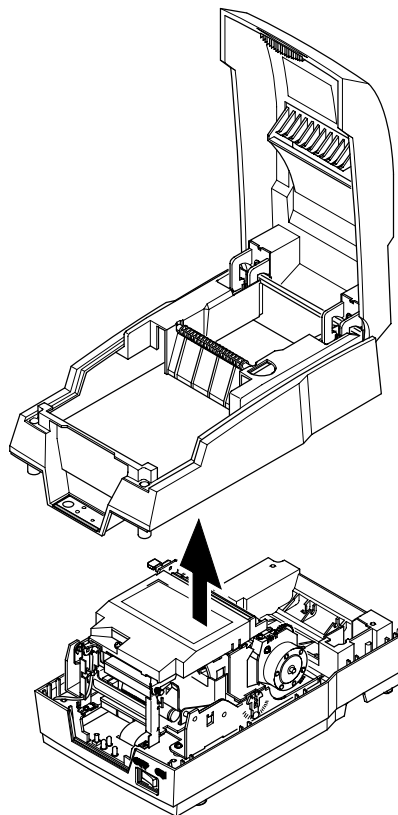


**5-5 Case Upper Assy (SRP-270A & SRP-270C Type)**

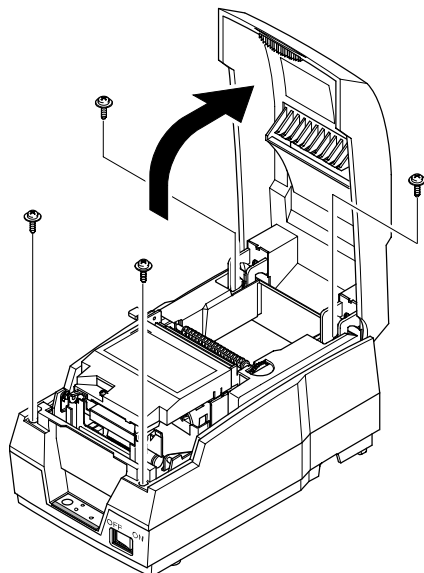
1. Open the cover Assy.



3. Separate the Case Upper from the Case Lower.

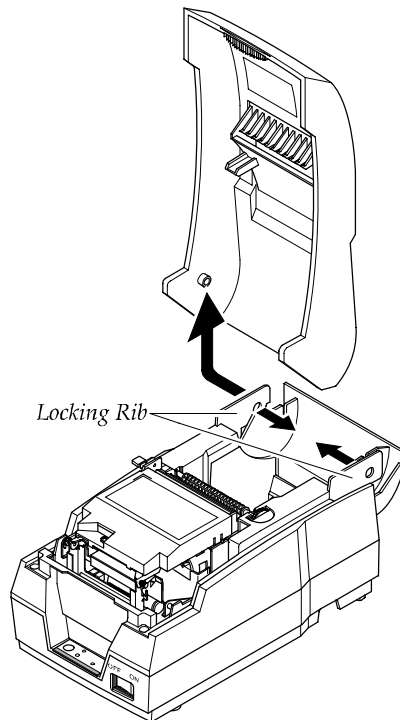


2. Remove four screws.

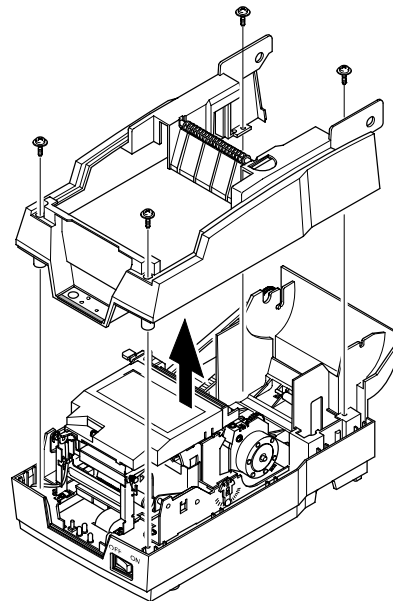


### 5-6 Case Upper Assy (SRP-270D Type)

1. Push the locking lib to the direction of arrow and remove the Cover Assy, as shown below.



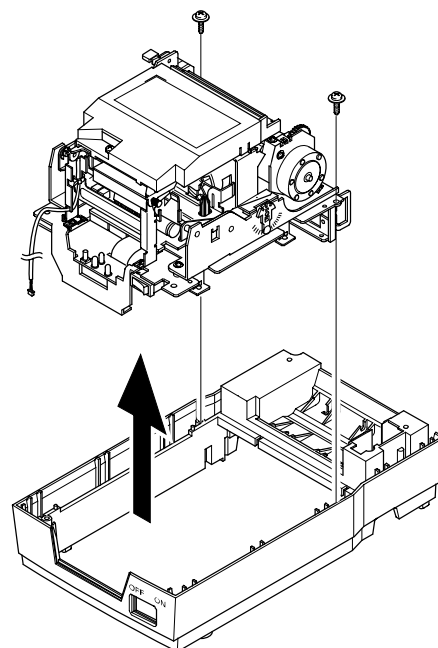
2. Remove four screws securing the Case Upper. Separate the Case Upper from the Case Lower.



### 5-7 Printer Assy (SRP-270A & SRP-270C Type)

1. Before you disassembly the Printer Assy, you should remove :  
- Plate Bottom (see Chapter 4-2)  
- Cover Assy (see Chapter 4-3 & 4-4)  
- Case Upper Assy (see Chapter 4-6)

2. Remove two screws securing the Printer Assy. Separate the Printer Assy from the Case Lower.

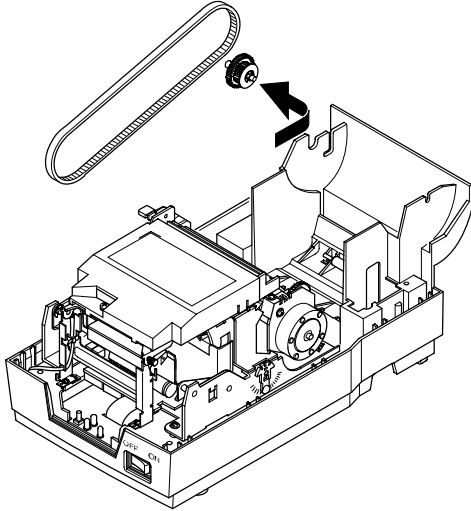


### 5-8 Printer Assy (SRP-270D Type)

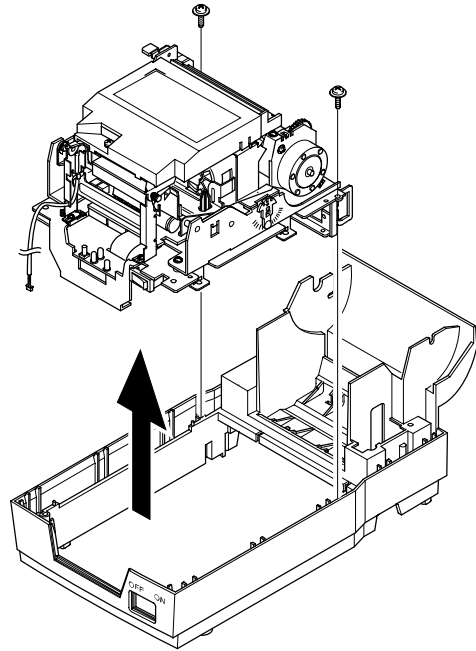
1. Before you disassembly the Printer Assy, you should remove :

- Plate Bottom (see Chapter 4-2)
- Cover Assy (see Chapter 4-3 & 4-4)
- Case Upper Assy (see Chapter 4-6)

2. Remove the Spool Gear and Belt, as shown below.(SRP-270D Type)



3. Remove two screws securing the Printer Assy. Separate the Printer Assy from the Case Lower.

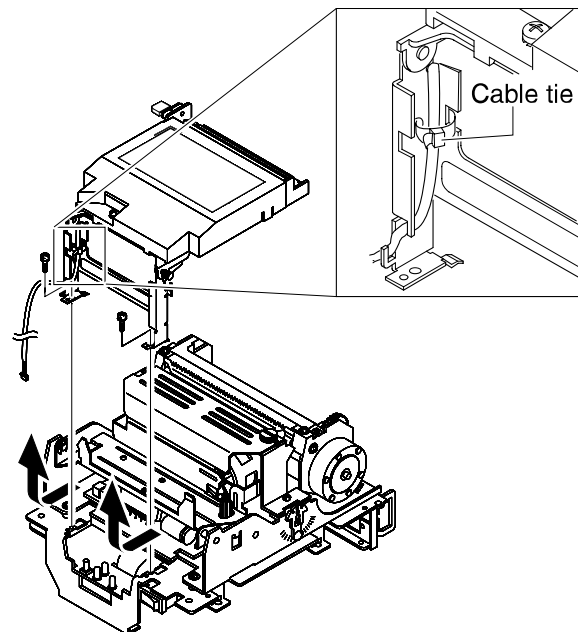


### 5-9 Auto Cutter Assy

1. Before you disassembly the Auto Cutter Assy, you should remove :

- Plate Bottom (see Chapter 4-2)
- Cover Assy (see Chapter 4-3 & 4-4)
- Case Upper Assy (see Chapter 4-6)
- Printer Assy (see Chapter 4-7 & 4-8)

2. Remove two screws securing the Auto Cutter Assy. Separate the Auto Cutter Assy from the Printer Assy, as shown below.

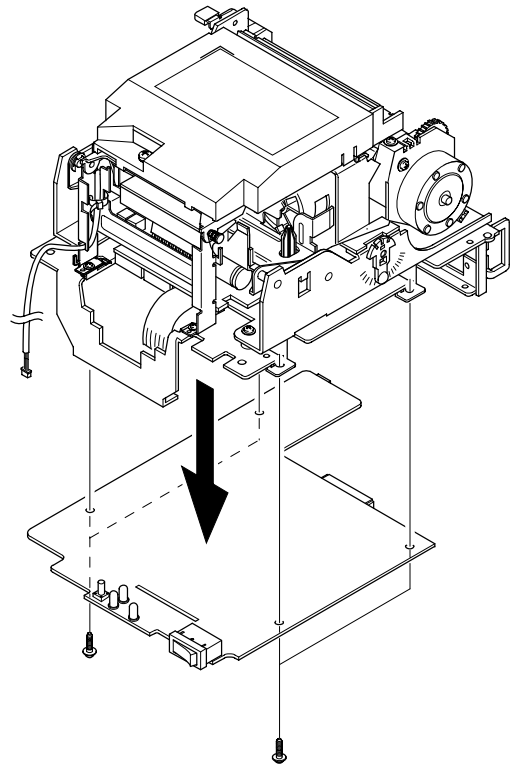


3. Before you reassembly the Auto Cutter Assy, you should set up the Belt and Hinge.

## 5-10 Main PCB

1. Before you disassembly the Main PCB, you should remove :
  - Plate Bottom (see Chapter 4-2)
  - Cover Assy (see Chapter 4-3 & 4-4)
  - Case Upper Assy (see Chapter 4-6)
  - Printer Assy (see Chapter 4-7 & 4-8)

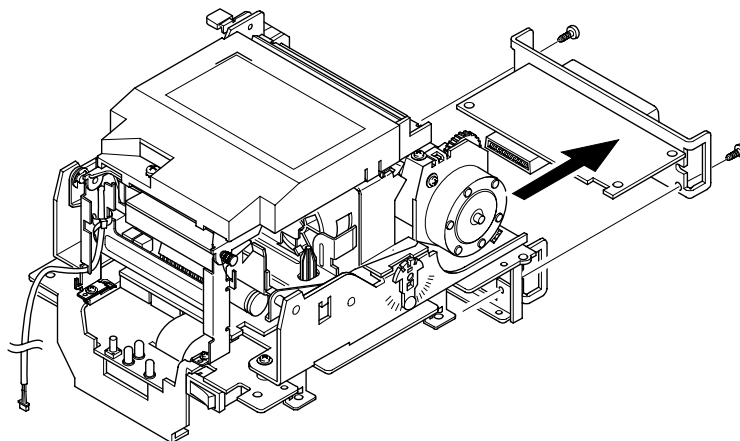
2. Remove four screws securing the Main PCB. Separate the Main PCB from the Main Frame.



## 5-11 Interface Board Assy

1. Before you disassembly the Interface Board Assy, you should remove :
  - Plate Bottom (see Chapter 4-2)
  - Cover Assy (see Chapter 4-3 & 4-4)
  - Case Upper Assy (see Chapter 4-6)
  - Printer Assy (see Chapter 4-7 & 4-8)

2. Remove two screws and take out the Interface Board Assy, as shown below.

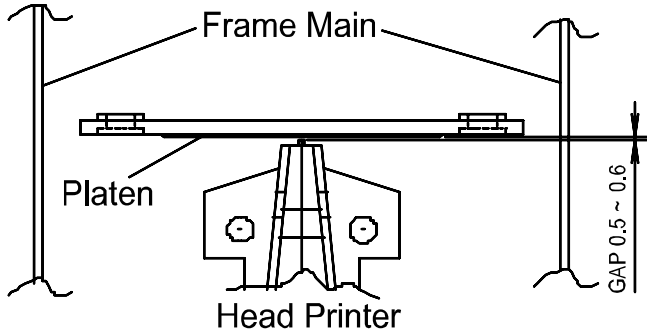


# 6. Alignment and Adjustments

## 6-1 Printer Adjustment

When assembling this printer, be sure to refer to the required adjustment procedure. To ensure normal operation of the printer after disassembly or replacement of a Component for maintenance or repair. Be sure to perform along to the required method.

**\* Adjustment of Head gap**

Adjustment Step	Description Points	in Adjustment
1	<ul style="list-style-type: none"> <li>Rotate Gear 1st Reduction to move the Head unit to L side.</li> </ul>	
2	<ul style="list-style-type: none"> <li>Insert the thickness gauge between Head unit and Platen, then rotate the Ad. Level L and adjust the gap.</li> </ul> 	<p>- Appropriate gap: 0.50~0.60mm</p> <p>- In order to make the gap narrow (wide), turn Ad. Lever to mark '-(+)'</p>
3	<ul style="list-style-type: none"> <li>Move the Head unit then check if the proper gap from R side center has been achieved.</li> </ul>	
4	<ul style="list-style-type: none"> <li>If Head gap is not proper, adjust Head gap by rotating Ad.Lever R.</li> </ul>	<p>- If gap is not correct, repeat once more.</p>

(Replacement of Head unit)

Follow below steps for replacing Head unit

1. Loosen the Ribbon frame
2. Disassemble the Head unit from the Head Carriage and take out the Head FPC from the connector of PCB Assy.
4. Replace the Head unit and assemble, according to the order of sub Assy-1
5. After assembling, adjust the gap as above "Adjustment" indicates.
6. Assemble the Ribbon Frame.

## **7. Troubleshooting**

### **7-1 Power Problem**

- Check the Power Out on SMPS.
- Check the Fuse.
- Check the related Pattern.
- Check the IC34063.

### **7-2 System Problem**

- Check the Reset part (IC & Pattern)
- Check the Clock on FS741 (14.7456MHz)
- Check the Adr/Data line Pattern

### **7-3 Printer Problem**

- Check the Feed Motor Signal on CPU
- Check the Feed Motor Block on PCB (STA471, Step Motor Connection)
- Check the Carriage Motor Signal on CPU
- Check the Carriage Motor Block on PCB (STA471, Step Motor Connection)
- Check the Ribbon Select Signal on 74HCT574 (U22)
- Check the Ribbon Block on PCB (STA471, Connection)
- Check the Auto Cutter Signal on 74HCT574 (U22)
- Check the Auto Cutter Block on PCB (TA8428K, Connection)
- Check the Near-End, Home Sensing Signal on Main PBA.
- Check the Sensing Block. (Sensor, Harness)
- Check the Head Trigger Signal, Head Signal on CPU.
- Check Dot Printing Block on Main PBA. (STA471, 74HCT05, Connection)

### **7-4 Cash Drawer Problem**

- Check the Drawer Connector & Harness.
- Check the Drawer Signals on 74HCT574.
- Check the Drawer Block on Main PBA (STA471, Connection).

### **7-5 DIP S/W Problem**

- Check the Output Signal (DIP R1~4)
- Check the Diode.
- Check the Input Signal (DIP C1~C4)
- Check the related Circuit & Pattern

### **7-6 RS232 Problem**

- Check the connection of the RS-232C CONN and Other side.
- Check the I/F Cable whether it is open or short.
- Check the Txd, Rxd Pin on CPU.
- Check the MAX232 Driving Chip and related Circuit on I/F PBA.
- Check the connection of the H/W handshaking Line and Other side (DTR/DSR)

### **7-7 RS485 Problem**

- Check the connection of the RS-485 Connector and Other side.
- Check the I/F Cable whether it is open or short.
- Check the TXD, RXD Pin on CPU.
- Check the MAX488 Driving Chip and related Circuit on I/F PBA.
- Check the connection of the H/W handshaking Line and Other side (DR1,2/CS1,2)
- Check the Voltage Level of each Line.

**7-8 IEEE 1284 Problem**

- Check the Control Line (CS3, WR, RD).
- Check the 1284 Control Line and Status Line.
- Check the Signal of ICs (U3, U6, U5)
- Check the related Circuit and Pattern on I/F PBA.
- Check the 1284 Control, Status Data Line.

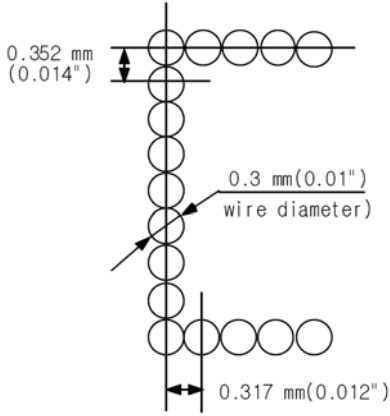
**7-9 USB Problem**

- Check the Control Line & Signal. (CS3, RD, WR, INT)
- Check the Data Line & Signal.
- Check the Connector (34P)
- Check the Clock (48MHz)
- Check the related Circuit and Pattern on I/F PBA & Main PBA.
- Check the D+ whether it is Pull up to V3.3.
- Check the USB Cable whether it is open or short.

# 8. Appendix (Spec of SMP-710/710N)

## 8-1 Specifications

### 8-1-1 Printing specifications

Item	Description
Printing method	serial impart dot-matrix
Head wire configuration	9-pin serial type 
Dot pitch	0.352mm(1/72")
Dot wire diameter	0.3mm(0.01")
Printing direction	Bidirectional with logic seeking
Printing width	63.5mm(2.5")
Line feed	4.233mm(1/6") (default setting)
Paper feed method	Friction feed
Paper feed speed	Approximately 6.2 inches/second (during continuous paper feeding)
Characters per line	See the table on the next page
Characters per inch	See the table on the next page
Total dot count (horizontal direction)	7×9 font (400 half-dot positions per line) 9×9 font (400 half-dot positions per line)
Print speed	Approximately 4.6 lines/second (40 columns, 16cpi) Approximately 8.4 lines/second (16 columns, 16cpi)

※ **NOTE:** If the print duty ratio is too high, the operation of the print head is stopped by the duty limit. In such circumstances, the print speeds shown above cannot be guaranteed.  
cpi=characters per inch.



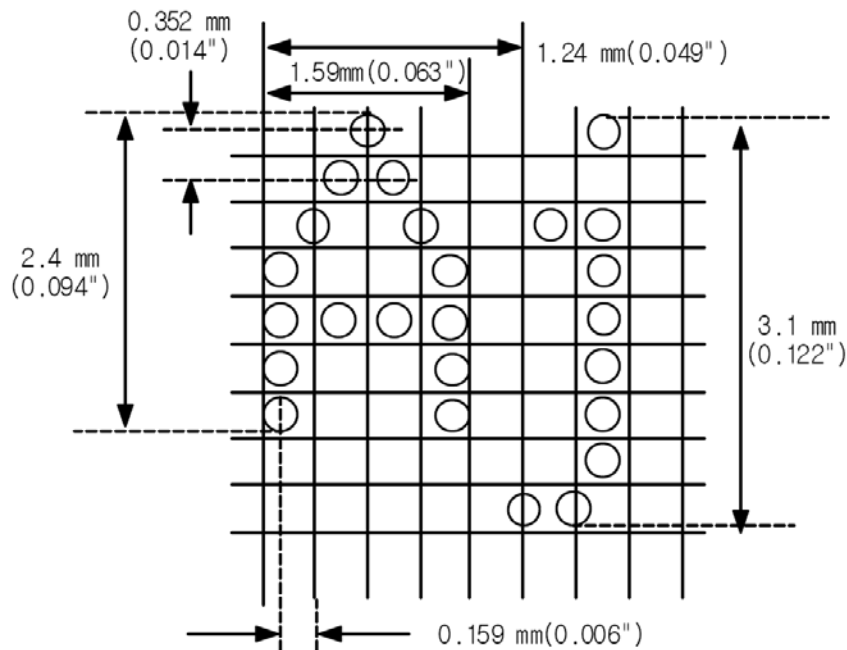
**8-1-2 Character specifications**

8-1-2-1 Character sets

Item	Description
Alphanumeric	95
International	32
Graphics	128×7 pages

8-1-2-2 Character structure

- \* 7×9 with 400 half-dot positions per line.
- \* 9×9 with 400 half-dot positions per line.

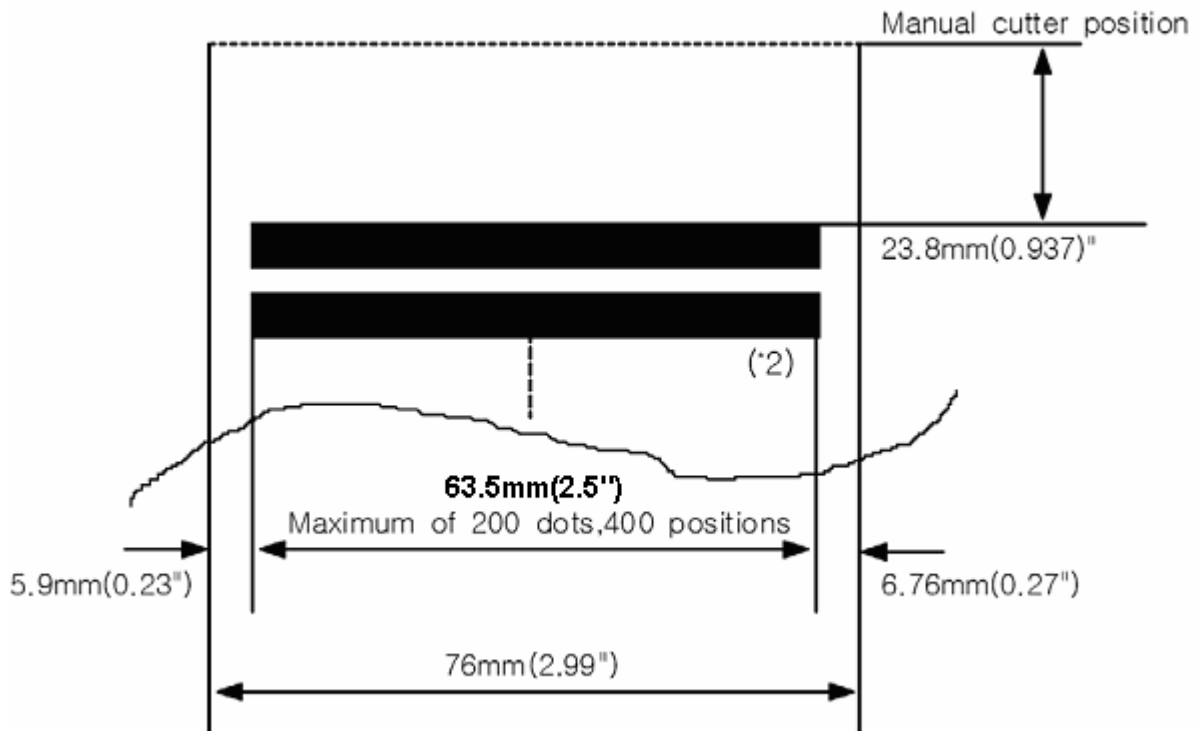


Character structure Horizontal × Vertical	Character structure Character Set	Character Dimensions W x H	Dot spacing Between Characters	Characters Per Line (cpi)	Characters Per Inch (cpi)
7 × 9	ANK	1.2×3.1 mm (.047×.122")	3 half dots	40	16
	Graphics	1.7×3.1 mm (.070×.122")	0	40	16
9 × 9	ANK	1.6×3.1 mm (.063×.122")	3 half dots	33	13.3
	Graphics	2.0×3.1 mm (.079×.122")	0	33	13.3
7 × 9	ANK	1.2×3.1 mm (.047×.122")	2 half dots	42	17.8
	Graphics	1.6×3.1 mm (.063×.122")	0	42	17.8
9 × 9	ANK	1.6×3.1 mm (.063×.122")	2 half dots	35	14.5
	Graphics	1.9×3.1 mm (.075×.122")	0	35	14.5

※ NOTE: The default font is 7×9; the dot spacing between characters is either 3 half dots or 2 half dots, depending on programming.

**8-1-3 Paper specifications**

Item	Description
Paper types	Paper roll: Platen paper or pressure-sensitive paper
Paper roll width	76±0.5mm (2.99±0.20")
Paper roll maximum diameter	Ø83mm(3.27")
Paper roll core	Unless there is an optional near-end detector, you cannot use a paper roll with the core and paper glued together.
Normal paper	Thickness: 1 sheet: 0.06 to 0.085 mm(.0024 to .0034") Weight: 52.3 to 64g/m <sup>2</sup> (13.9 to 171b) (45 to 55kg/1000 sheets/1091×788)
Pressure-sensitive paper	Original sheet + up to 1 copy sheet 1 sheet thickness: 0.05 to 0.08mm(.0020to.0031") Total thickness: 0.2mm(.0078")or less



(\*1) This dimension shows the distance from the manual cutter to the print position.

(\*2) Values for the printing area are calculated (between dot centers) with the wire diameter{0.29mm(.011")}

**8-1-4 Ribbon Cassette specifications**

Compatible Model	Color	Ribbon life ("1)
ERC-38 (B)	Black	3 million characters {with continuous printing at 25 °C (77 °F)}
ERC-38 (B/R)	Black and Red	Black: 1.5million characters {with continuous printing at 25 °C (77 °F)} Red: 750,000 characters {with continuous printing at 25 °C (77 °F)}

("1) Ribbon life is based on the following conditions:

Character font: 7×9 font (with descenders)

Print pattern: ASCII 96-character rolling pattern. See the specification published by SMP-710/710N for the print pattern example.

**※NOTE: Malfunctions and other problems may occur if a ribbon cassette other than the specified one is used.**

**8-1-5 Environmental specifications**

Item	Description
Temperature	<p>Operating: 0° to 40 °C (32° to 104 °F)                      At 34 °C (93 °F) or higher, there are humidity restrictions;                      See the figure below.                      Storage: -5° to 50 °C (23° to 122 °F), except paper and ribbon</p>
Humidity	<p>Operating: 30% to 80% RH (non-condensing)                      Storage: 10% to 90% RH (non-condensing), except paper and ribbon</p>
Vibration resistance	<p>* When packed                      Frequency: 5 to 55Hz                      Acceleration: 5G                      Sweep: 10 minutes (half cycle)                      Duration: 1 hour                      Directions: x, y and z</p>
Impact resistance	<p>* When packed                      Package: SMP-710/710N standard package                      Height: 60cm (23.62")                      Directions: 1 corner, 3 edges, and 6 surfaces                      * When unpacked                      Height: 5cm (1.97")                      Directions: Lift one edge and release it (for all 4 edges)</p>

**8-1-6 Reliability**

Item	Description
MCBF	This is an average failure interval based on failures relating to wear out and random failures up to the life of 18 million lines.

**8-1-7 Main Unit specifications**

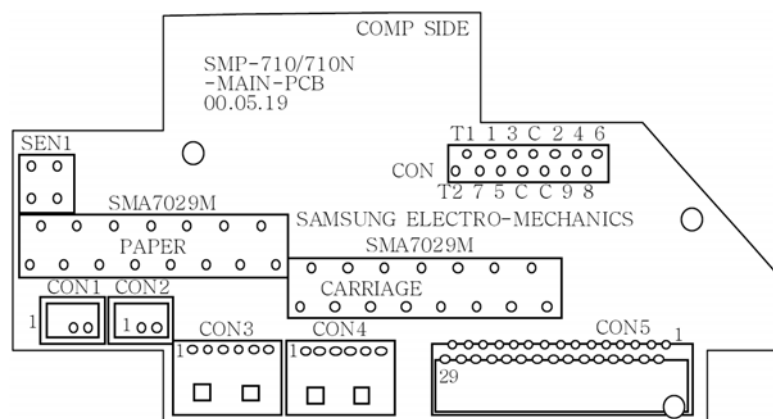
Item		Description
Paper Feed Motor	Type	4-phase, 48-polarity, PM-type stepping motor
	Drive voltage	24 VDC±10%
	Winding resistance	10Ω±1Ω at 25°C (77°F), per phase
	Current consumption	Average: 400mA at 24 VDC, 25°C (77°F), 570mA maximum
Carriage Motor	Type	4-phase, 48-polarity, PM-type stepping motor
	Drive voltage	24 VDC±10%
	Winding resistance	10Ω±1Ω at 25°C (77°F), per phase
	Current consumption	Peak: 1.5 A in maximum Average: 400mA at 24 VDC, 25°C (77°F), 570mA maximum
Print Head Unit	Number of solenoids	9
	Winding resistance	9.5Ω±10% at 25°C (77°F), per phase
	Drive voltage	24 VDC±10%
Home Position Sensor	Type	Photo sensor
	Voltage	5 VDC±5%
	Output level	LOW when the carriage home position is detected.

**8-1-8 Electrical specifications**

8-1-8-1 The explanations of the circuit operations

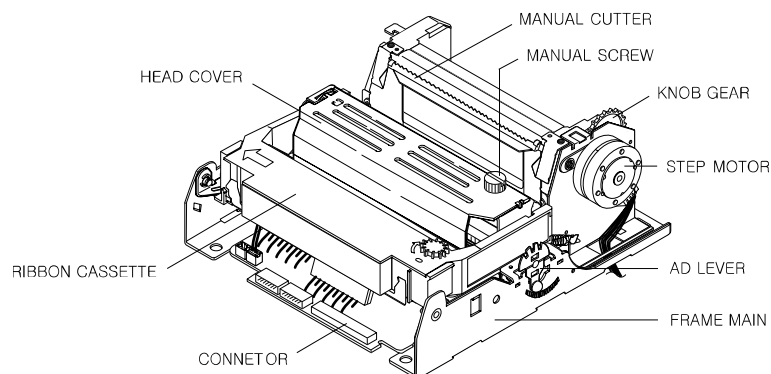
- 1) Head Carriage Step Motor
  - It rotates and moves the Dot Head by using the several gears and synchronous belt
  - Print Speed : 4.6 Line/Sec
  - This step motor is control by constant current method.  
So, current flows two red line of step motor is Max.560mA
  - This step motor is control by SMA7029M (Recommended)
- 2) Paper Feed Step Motor
  - It is used when the paper is fed.
  - The characteristics of step motor is as same as head carriage step motor
- 3) Home Sensor
  - It detects the head position
  - It decides the start point of printing
- 4) Solenoid
  - It plays part in exchanging printing color (red → black)
- 5) Head
  - It plays part in printing a character (Axiohn Co.)

8-1-8-2 Circuit Block Diagram



**8-1-9 Mechanisms specifications**

This printer consists of 5 mechanisms; Head feeding Mechanism. Printing Mechanism. Paper Feeding Mechanism. Detector Mechanism, Ribbon Mechanism. How is the external view of SMP-710/710N Impact dot matrix printer as shown. For details on the operating principles and handling of each of the mechanisms, refer to "Principle of Movement" in section 8-1-10 and "Handling, Maintenance and Repair" in 8-2.



**8-1-10 Principle of Movement**

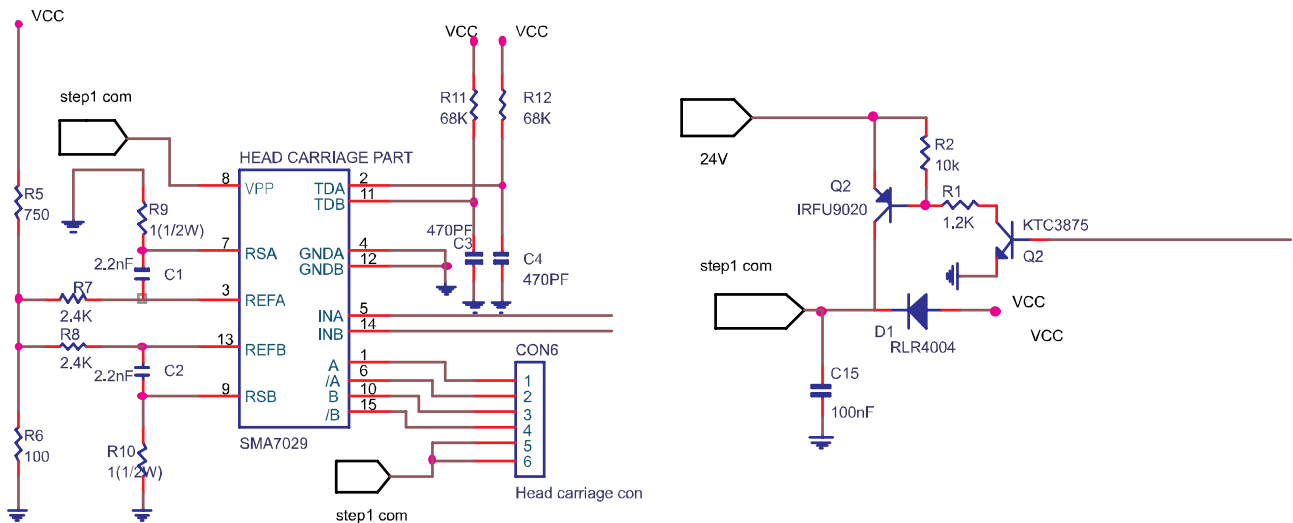
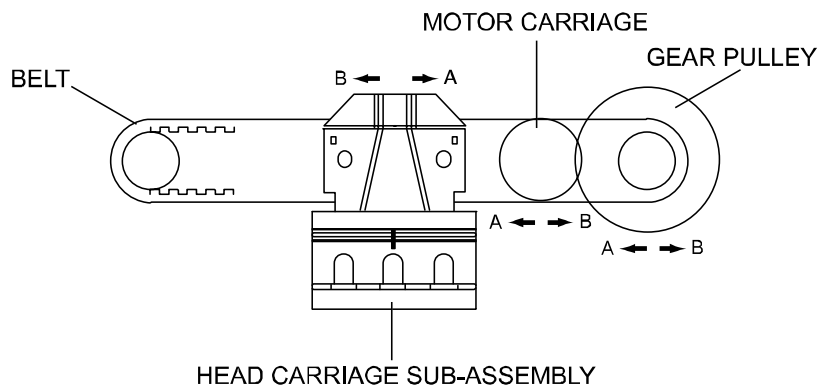
**8-1-10-1 Head Feeding Mechanism**

This printer is using DC24V PM Type Stepping motor.

As shown in figure the motor section consists of the motor. Motor speed control IC, motor drive/brake circuit and motor speed interface.

When the carriage motor is driven and the carriage motor gear is moved in the direction of arrow B (forward rotation), the rotational power is conveyed to the belt drive pulley, then the belt. Next the carriage sub assembly, which is fixed to the belt, moved in the direction of arrow B.

When the carriage motor gear is rotated in the direction of arrow A (reverse rotation), the carriage sub assembly is moved in the direction of arrow A.



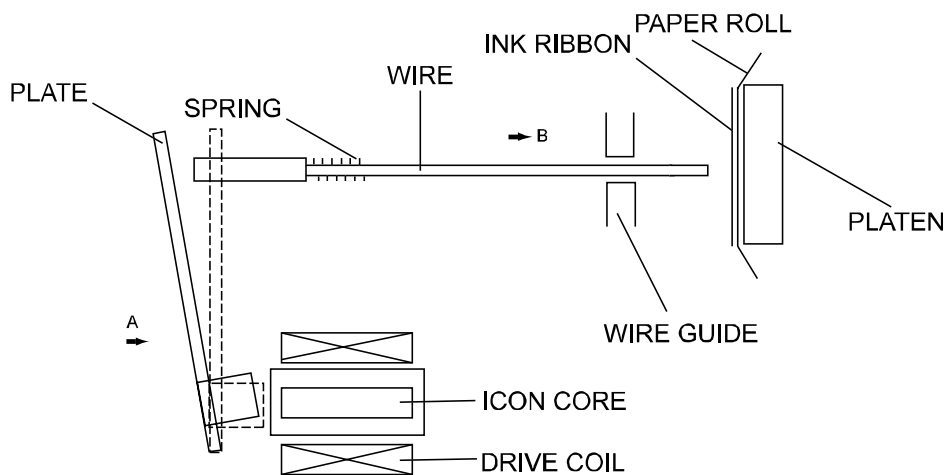
**8-1-10-2 Printing Mechanism**

When the specified print head drive pulse is input to the drive coil, the iron core is magnetized, and the actuating plate is pulled in the direction of arrow A.

This action pushed the wire toward the platen, When the wire strike s the ink ribbon and paper against the platen(\*), a single dot is printed.

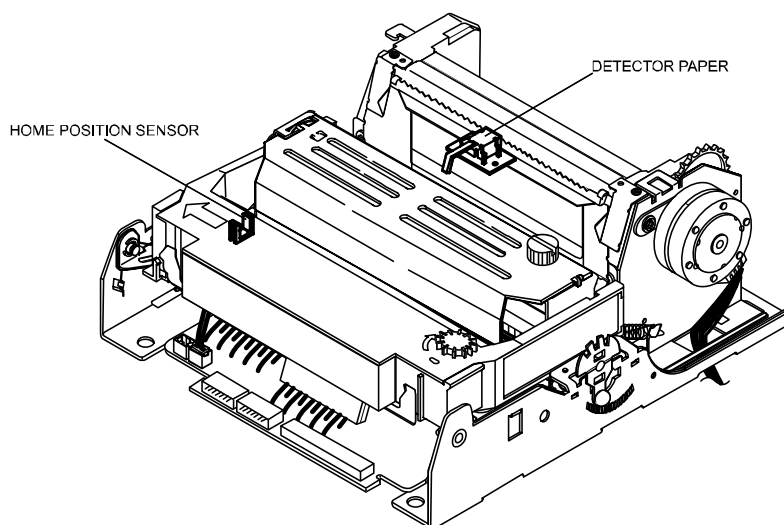
When the energizing of the drive coil is completed, the wire and actuating plate are re turned to the standby position by the wire return spring and actuating plate spring.

(\*)The "platen" is the portion of the base paper feed Assy being struck by the wires during printing.



**8-1-10-3 Detection Mechanism**

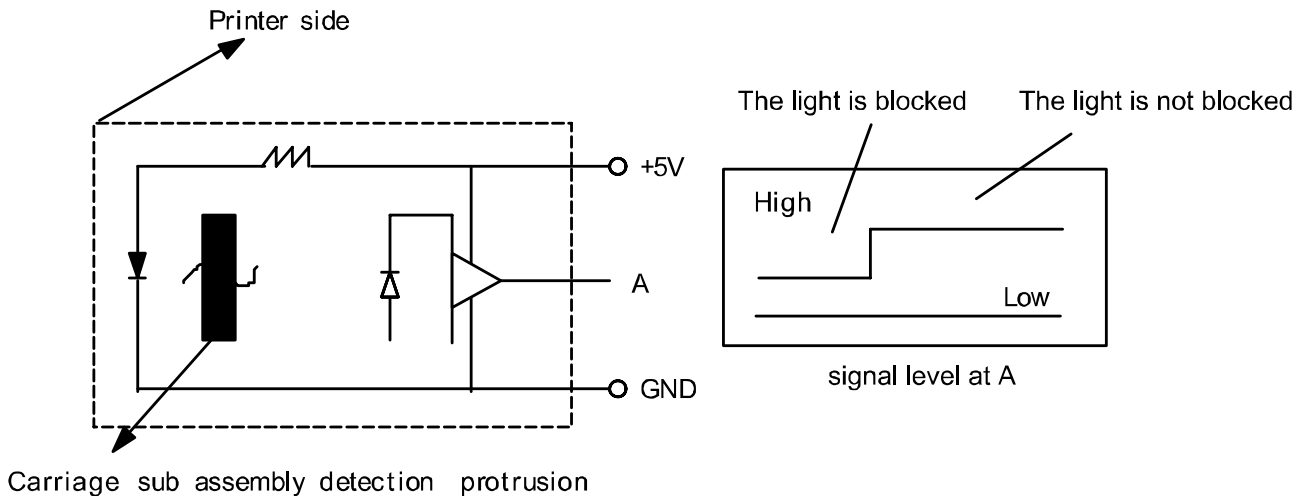
The detection mechanism unit consists of the home position detection, paper detection.



8-1-10-4 Home Position Detection Mechanism

The home position detection mechanism consists of the detection protrusion at the left side of the carriage sub assembly and the sensor sub assembly at the left side of the base frame. It determines the home position, identifies the carriage position, and detects carriage sub assembly operation errors.

The sensor sub assembly consists of an LED and photo transistor. When the carriage sub assembly moves, the detection protrusion passes between the LED and photo transistor and blocks the optical axis of the photo transistor, changing the output level of the photo transistor.





8-1-10-5 Paper Feeding

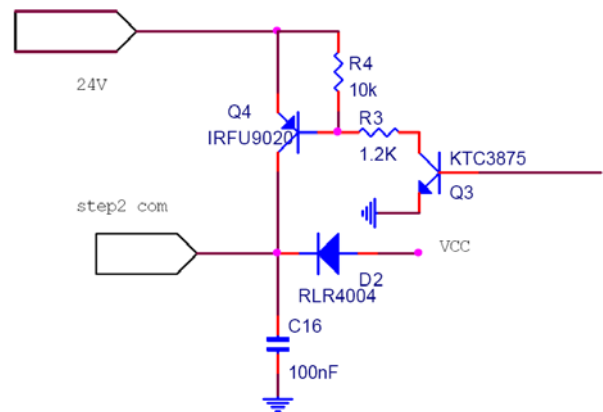
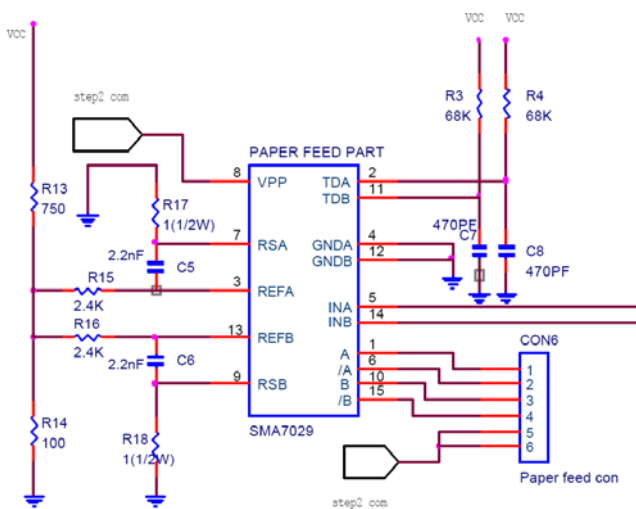
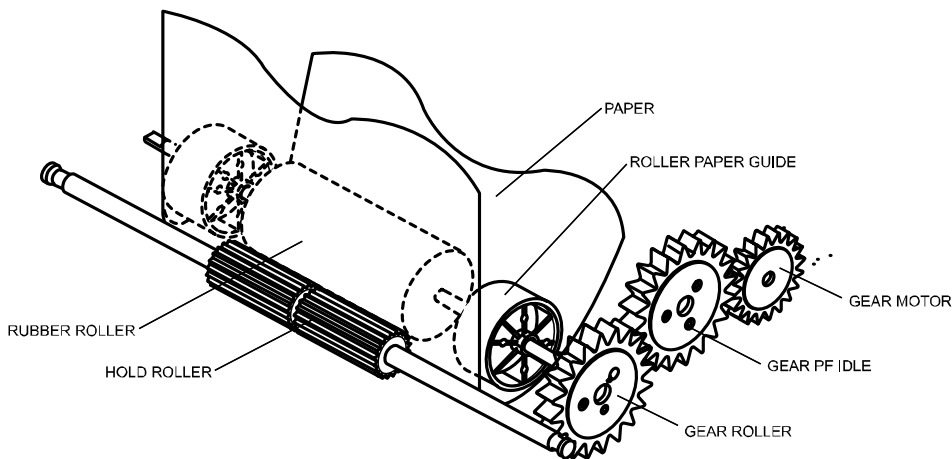
Paper feeding is performed by conveying the paper feed motor's rotational power from the paper feed motor gear through the paper feed reduction gear, paper feed gear, and paper feed roller.

Since the paper feed roller and paper hold roller are pressed together, paper advances to the top of the paper feed frame assembly because of the friction between the rubber of the paper feed roller and the paper hold roller.

As shown in Figure, Paper feeding mechanism consists of Rubber Roller Hold Roller Assy, Step Motor, Gear Step M/T idle, Gear MF and Gear M/F Idle The paper feeding operation can be selected by controlling the Step Motor. For detail explanations of paper feeding operation, refer to "SPECIFICAT10NS for SMP-710/710N".

Paper feeding is made as follows; As Step Motor set turning by electric signal, Gear Rubber Roller comes into turning, passing Gear Step M/T Idle for Shaft Roller is pressed to rubber Roller by Spring Roller, Paper is feed by friction A min. Pitch is 1/144".

Under condition Step Motor stops, turning Gear MF to direction of arrow or to 1, he contrary, and can feed or back feed as paper wants.



8-1-10-6 Ribbon feeding

When the carriage motor rotates counter clockwise and the carriage motor gear rotates in the direction of arrow A, the Gear Reduction B' Gear Reduction A Gear Reduction B, rotate in the directions of arrows B, and C, B' respectively.

This causes the Lever Ribbon Feeder Assy to move in the direction of arrow E, rotating round the Gear Reduction A shaft in the center, until the Gear Reduction B goes in with the Gear Reduction C.

Since the Gear Reduction C and the ribbon feeder are always engaged, the ribbon feeder rotates in the direction of arrow G.

When the carriage motor rotates in the reverse direction and the carriage motor gear rotates in the direction of arrow H, the Lever Ribbon Feeder Assy moves in the direction of arrow F, disengaging the Gear reduction B from the Gear Reduction C.

Therefore, the ribbon feeder Assy rotates in the direction of arrow G only when the carriage motor rotates counterclockwise.

Then the ribbon feed and ribbon hold rollers in the ribbon cassette, which are engaged with the ribbon feeder Assy, rotate and the ribbon is feed.

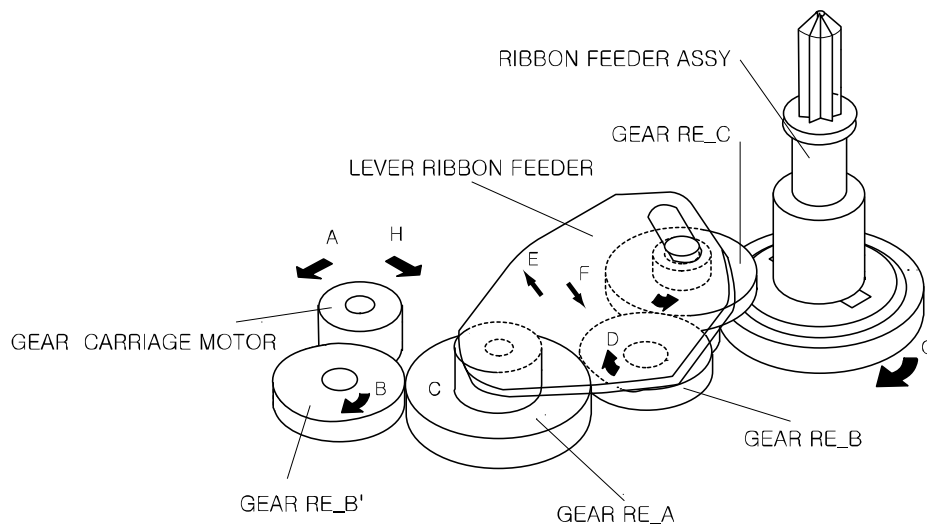
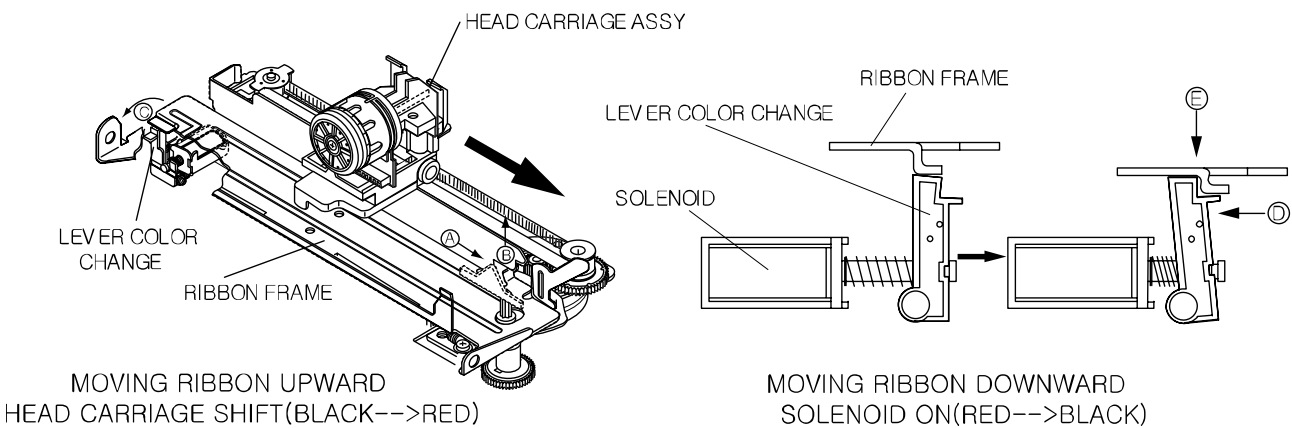


FIGURE RIBBON FEEDING SYSTEM

**\* Operation of Color change**

Color change system consists of Ribbon feeding Mechanism in section 8-1-10-6 and Ribbon Shifting Mechanism.

Shifting Mechanism on Ribbon consisted of Head carriage Assy, Ribbon Frame, Lever color change, solenoid Assy as shows in figure.



**\* Ribbon shifting operation**

Ribbon shifting action is as follows.

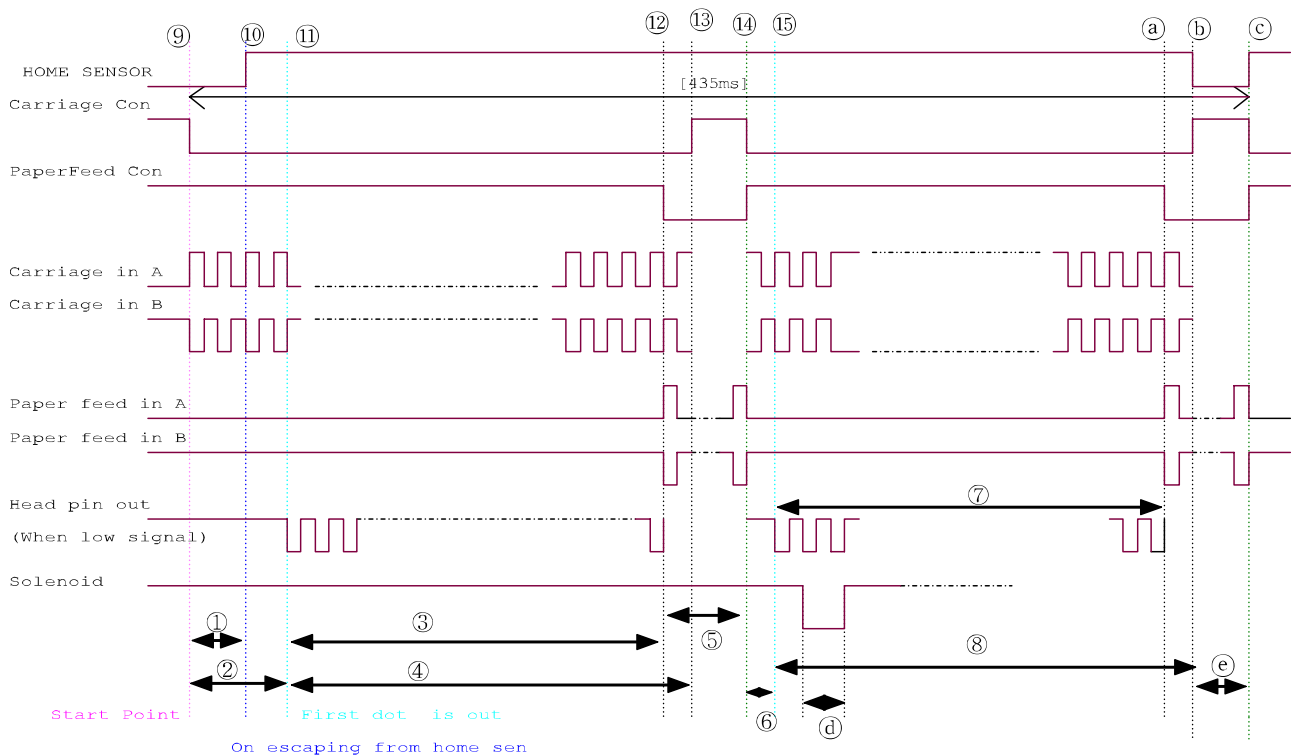
As the Carriage Motor rotates clockwise, Head carriage Assy moves from left to right. When you'd like to change from red color to black color you should shift Head carriage Assy as shows in figure timing chart. Delivers to Gear HF-1, and turns to direction of arrow with Lead Cam.

At this moment, if not energized in Solenoid, Solenoid Lever and Shift cachet are not moved, and so Shift Cam does not turn, and Ribbon Frame is not in Shift Up/Down.

As Solenoid moves energized, Solenoid lever goes down and turns Shift Cam which snatches with moving Shift cachet under stop. Shift Cam, along Top/Bottom makes to Shift Up/Down of Ribbon Frame and printing color is printed by Black/Red. Moving Shifting is up to energization and control of Solenoid.

1T=0.1587mm

1S=2T=0.3174



**[ Description of Timing chart.1 ]**

- ① 14Step(28T)
  - Head carriage step motor moves left(14step) after covering the home sensor
  - The maximum distance of head tip to move left is 18step, so we can make room for moving space of 4step, exactly 1.2696 mm
- ② This area is consisted of 3 region  
(Accelerating area of left side[30T] + constant speed area[6T] + vertical alignment adjustable time[3T])
- ③ 400T (printing area, when printing 40 characters of 7×9 font, space between one character and another one is 3T)
- ④ 421T(printing area + decelerating area of right side[24T])
  - Printing area includes part of right side area
- ⑤ 24Step - Paper feeding area
- ⑥ 24T - Distance until outing of head pin when printing from right to left
- ⑦ 400T - Printing area
- ⑧ 436T - Printing area + decelerating area of right side
- ⑨ The start position of head carriage tip
- ⑩ On uncovering of home sensor
- ⑪ When outing the first head pin
- ⑫ When paper is feed

**[ Description of Timing chart.2 ]**

- ⑬ When head carriage step motor stops(left → left)
- ⑭ The start position of head carriage step motor from right to left
- ⑮ When first outing of head pin from right to left
- Ⓐ When last outing of head pin from right to left and when starting line feed
- Ⓑ When ending of printing from fight to left
- Ⓒ The start position of second printing from left to right
- Ⓓ Solenoid on time(unlocking color-change printing) : 24ms
- Ⓔ When head carriage tip covers the home sensor (after printing from right to left)

**\* Electrical Circuit Operation Principles (Hardware Configuration)**

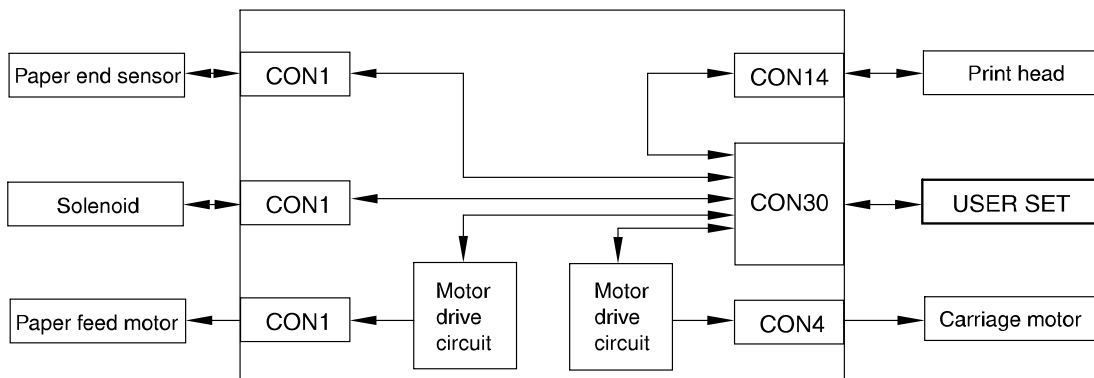
**[ Component connection diagram ]**

The electrical circuitry of the printer consists of the main circuit board and the interface circuit boards. The figure below is a component connection diagram of the electrical circuitry.



**[ Circuit board block diagram ]**

The figure below illustrates the circuit block diagram for the printer.

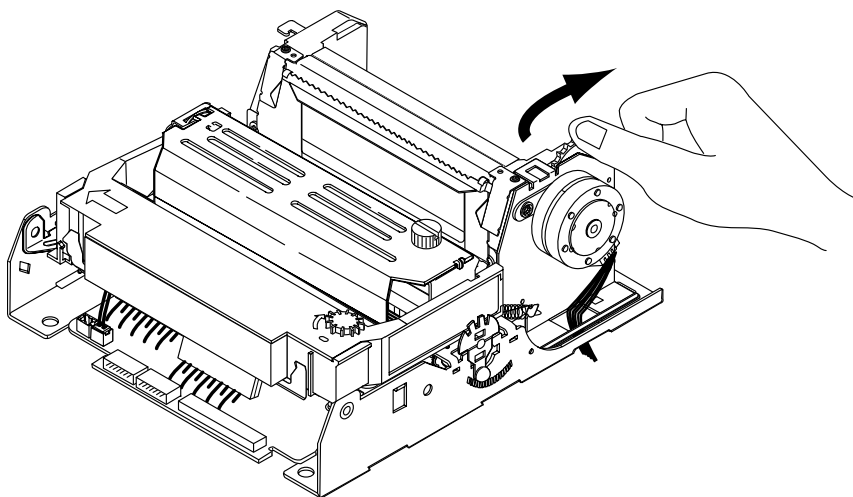
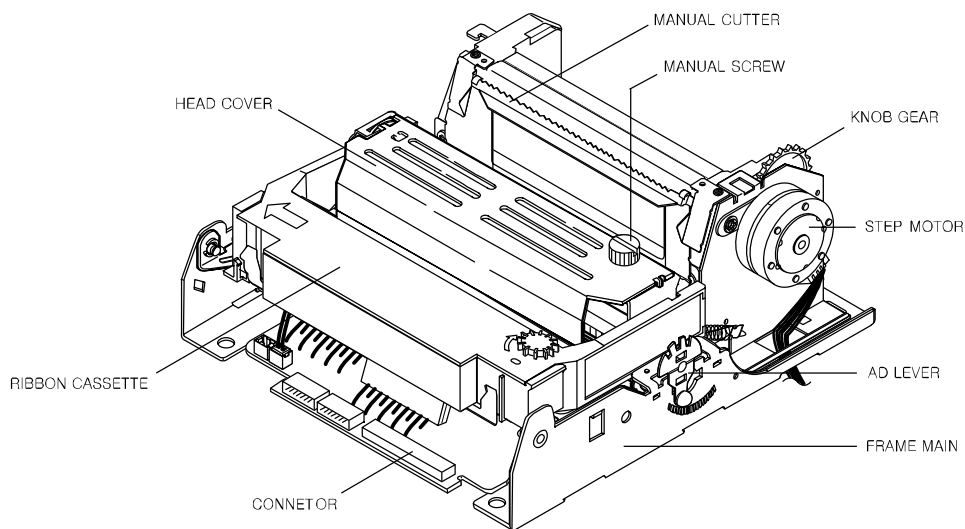


## 8-2 Handling the Printer

### 8-2-1 Precautions on Printer Handling

#### 8-2-1-1 Precautions on transport

- 1) When transporting this printer. It's proper handling method is to support both side of Frame main with both hands.
- 2) When transporting this printer. never grasp it by Ribbon cassette case, PCB Connector , and Solenoid Assy or other such parts.
- 3) Never expose the printer to impact by dropping or striking it.
- 4) Take special care that no foreign matter contacts the PCB at the bottom of the printer.



#### 8-2-1-2 Precautions on storage

- 1) Avoid storage in locations exposed to excessive dirt or dust, direct sunlight or excessive moisture.
- 2) In case of long- term storage, place the printer into a polyethylene bag after wrapping it in anti- rust paper, then store it in a dry location.

### 8-2-1-3 Precautions on use

- 1) Since this printer employs magnetic substance (Motor, Solenoid), avoid using it in locations exposed to excessive iron filings, dirt, dust or other foreign particles.
- 2) Never perform a printing operation without the paper and ribbon installed.
- 3) The printer must be installed on a level surface.
- 4) When installing this printer, be sure to use a buffer of rubber or other similar material between the mounting brackets of the printer and the printer itself (to prevent vibrations caused by printing or paper feeding and to avoid increased reverberations)
- 5) For the mounting holes of the printer, be sure to use the round or oblong holes.
- 6) Because the PCB is at the bottom of the printer, take care that there is no contact between its parts and mounting base and that no foreign matter contacts the board.
- 7) If end mark on Rolled paper appears. Replace the Rolled paper.

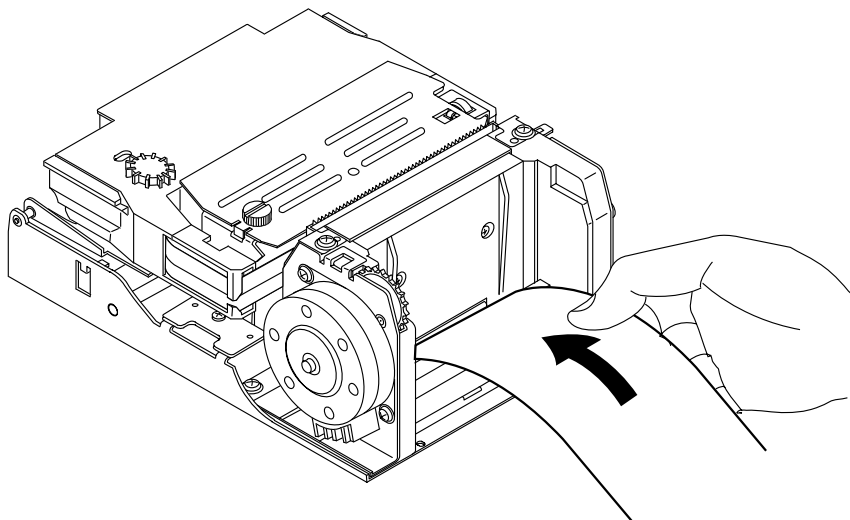
### 8-2-2 Paper Setting Procedures (Insertion/Removal)

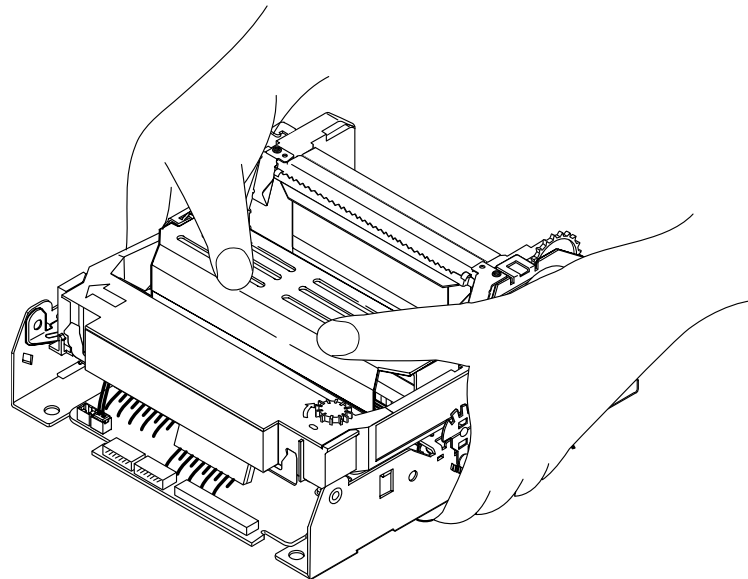
Make sure to always use only the paper types prescribed in the SMP- 710/710N Specifications.

#### 8-2-2-1 Inserting Rolled Paper

- 1) As shown in figure, cut straight the leading edge of rolled paper.
- 2) After the leading edge of paper goes through Paper Guide, slide the paper until it reaches the Rubber Roller and Hold Roller.
- 3) In order to pass the leading edge of paper between Rubber Roller and Hold Roller, rotate Gear Knob in the arrow direction.

**※ NOTE: Never perform paper insertion without carefully following the above precautions, because such handling may result in defective paper feeding or paper jams.**





8-2-2-2 Precautions on Paper Insertion

- 1) After cutting the edge of paper straight as shown in figure insert the paper. Which is described on next figure.
- 2) Insert the paper straight into the paper entrance section.
- 3) The end of the paper which is crinkled and bended, should not be inserted.
- 4) Make sure that the rolled paper tape is ripped off and discarded before inserting into the printer.

8-2-2-3 Precautions on paper removal

Cut the paper behind Base Paper Feed Assy.

8-2-2-4 Paper removal must be performed using one of the four method below

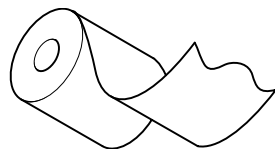
**\* Remove method by manual**

- 1) Back feed the paper by rotating Gear Knob to contrary arrow direction manually and remove the paper.
- 2) After Feed the paper by rotating Gear Knob to arrow direction cutting paper in backside Base Paper Feed Assy, and remove the paper.

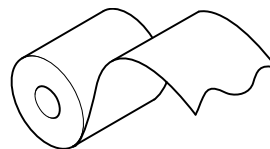
**\* Remove method by automatically**

- 1) Back feed the paper by using electrical operation (by paper back-feed button), then remove the paper.
- 2) After cutting paper in backside paper guide Assy, feed the paper by using electrical operation (by paper back feed button), then remove the paper.

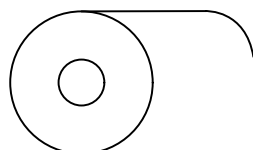
**※ NOTE: Never perform paper removal without carefully following the above precautions , because such handling may result in defective paper feeding or paper Jams.**



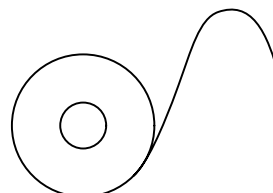
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**8-2-3 Ribbon Cassette Installation**

The Ribbon Cassette use must conform to the standards prescribed in the Specifications. Never use non-standard types, because such use may result in such trouble as the malfunction of printing quality.

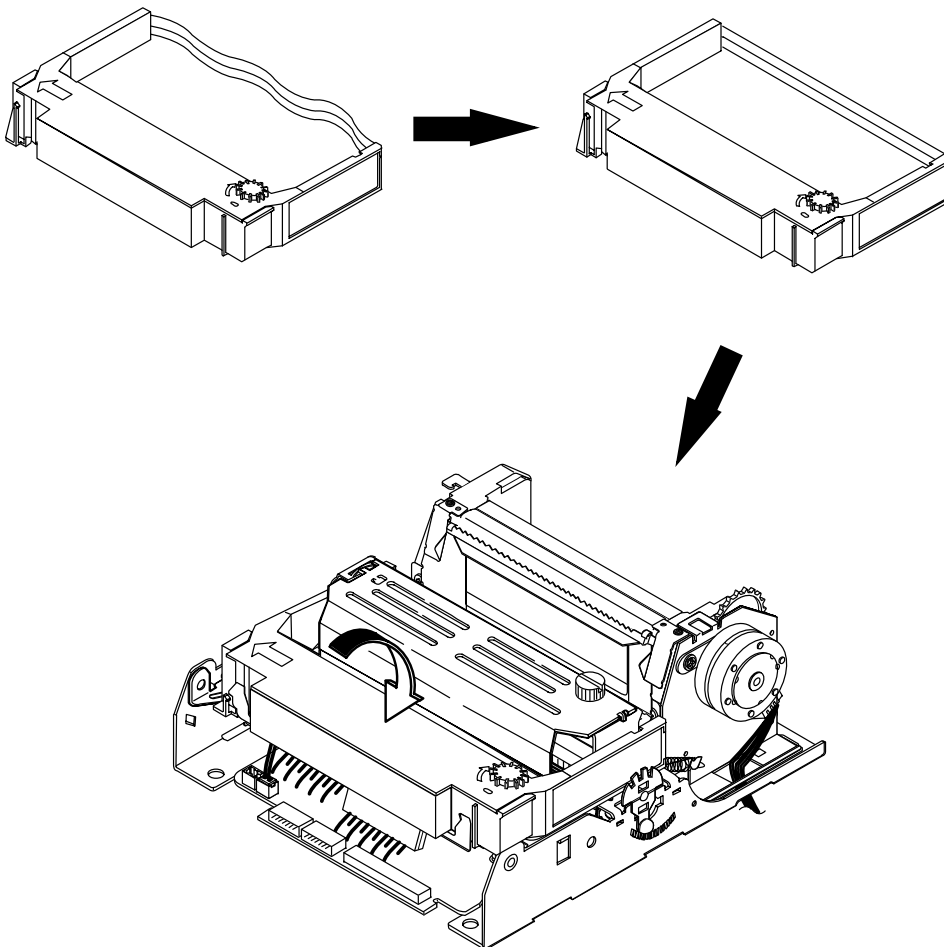
**8-2-3-1 Ribbon Cassette Installation**

Procedure for installing the Ribbon Cassette as shown figure.

- 1) By finger, turn the ribbon feeding roller of the Ribbon Cassette in the arrow direction to tighten up slack in the ribbon.
- 2) Bet the Ribbon Cassette onto the Ribbon Frame, then push the Ribbon Cassette down.
- 3) After setting is done, turn the ribbon feeding roller by finger again in the arrow direction, and check that the ribbon is not bent.

**8-2-3-2 Removing the Ribbon Cassette**

Grip the left side of Ribbon Cassette, and raise slowly the Cassette then raise right direction and lift/remove Ribbon Printer.





## **8-3 Maintenance**

To ensure the maintenance of this printer at its initial performance level throughout a long product life as well as preventing potential troubles, be sure to perform maintenance and management according to the points described in the following subsections.

### **8-3-1 Cleaning**

Eliminating dirt or strains

- 1) Wipe off the soiled sections using alcohol or benzene.
- 2) Eliminating dust, scraps, and other foreign particles.
- 3) Use a vacuum cleaner to carefully draw out all foreign particles from every part of the printer.

#### **※ NOTE**

- 1) Never use thinner, tricholyene nor ketone solvents as such use may deteriorate or damage the plastic parts.
- 2) Check the lubricant (each cleaned section and perform remaining lubrication as required. (See subsection 8-4-3, "Lubrication points")

### **8-3-2 Inspection**

The maintenance and check-up procedures for this printer are grouped into two types.

- 1) Daily checks that can be easily performed by the operator of the printer during the course of daily work.
- 2) Periodic checks that can be performed only by persons having a through understanding of the printer mechanisms. These maintenance and check procedures should be implemented according to the technical level of the person conducting them.

#### **8-3-2-1 Daily check**

The printer and printer operation are checked to see if the printer is being operated in the proper manner and always being maintained in optimum condition. If any unsatisfactory points are discovered. They should be replaced.

- 1) Check that the Ribbon Cassette is securely installed in the ribbon unit,
- 2) Check that the Ribbon Cassette in use conforms to the Specifications. (ERC-38 or compatible)
- 3) Check the ribbon for bending, twisting or damage.  
Replace the Ribbon Cassette if it is affecting print quality.
- 4) Check that the paper in use conforms to that described in the Specifications.

#### **8-3-2-2 Periodic check**

After every 6 months, the printer parts should be checked for wear. (cleanliness, deformation, remaining lubrication, installation status, etc.) If any unsatisfactory points are discovered, they should be replaced.

- 1) Check the printer interior for adhesion of paper dust or scraps. Dust, and other foreign particles, cleaning out any adhered particles with a vacuum cleaner (paying special attention to dirt in the vicinity of the detectors.)
- 2) Check all the springs for deformation, replacing any deformed springs.
- 3) Check the gap between Head unit and Platen Assy. If there is a malfunction, perform repair according to section Disassembly & Assembly.
- 4) Check the lubricant and adhesive status of all applications points, applying lubricant or adhesive as required according to section 8-4 Lubricants and Adhesive Application.
- 5) Check if printing, paper feeding, ribbon feeding and ribbon shifting are normal. If not, perform repair according to subsection 8-6-3 Repair guidelines.
- 6) Observe all of the functions and check for malfunctions due to wear or deformation of parts, paper jam. etc. If there is a malfunction, perform repair according to subsection 8-6-3 Repair guidelines.

## 8-4 Lubricants and Adhesive Application

Lubrication and application adhesive plays an important role in maintaining this printer at its initial performance level, throughout a long product life as well as preventing potential troubles. Make sure to apply the specified lubricants or adhesive in the appropriate amounts at the specified intervals.

### 8-4-1 Lubricant Requirements

Before applying the lubricants during an assembly or disassembly procedure, be sure to first thoroughly clean the part to be lubricated. For details on lubrication.

#### \* **Lubrication Classes**

Concerning the lubrication interval, lubrication should be performed periodically according to the lubrication classes described below. If lubrication becomes deficient due to cleaning, disassembly or parts replacement, be sure to lubricate the required part regardless of the lubrication interval.

A: Lubrication every 6 months.

B: Lubrication after on overhaul or every 1 million lines

### 8-4-2 Lubricant Types

The type of oil used greatly influences performance and durability, and special attention is required to its low temperature characteristic. Consequently, the oils to be used with this printer are specified by us on the basis of the result of the thorough analyses of technical data for many types of oils and various experiments.

2 types of oils to be used with this printer are HG-31S, G 948P.

### 8-4-3 Lubrication Points

No	No Lubrication Point	Oil type
1	Outer periphery of shaft hold roller	HG-31S
2	Contact point between cam of head carriage and ribbon frame	HG-31S
3	Contact point between shaft ribbon frame and lever cold change	HG-31S
4	Contact point between spring ribbon feeder and ribbon feeder	HG-31S
5	Outer periphery of shaft head carriage	HG-31S
6	Contact point between solenoid plunger and spring solenoid	G948P
7	Outer periphery of all gears	HG-31S
8	Outer periphery of shaft head guide	HG-31S

#### \* **Precautions on lubrication**

Never apply lubricant to Gear Ratchet or outer periphery of Rubber Roller.

If lubricant has accidentally been applied to these parts, clean them with alcohol.

### 8-4-4 Adhesive Application Requirements

To prevent from screws getting loose by various vibration while transporting the printer, adhesive should be applied after tightening screws. When performing disassembly or parts replacement.

### 8-4-5 Adhesive types

The adhesive type for use with this printer : Screw lock

### 8-4-6 Adhesive Application Points

No	Adhesive Application Point	Adhesive Type
12	Volume resistance adjustment of main PCB	Screw lock

**8-5 Tools, Lubricants and Adhesives****8-5-1 List of Tools**

No	Tool Designation	Availability
1	Brush #1	O
2	Brush #2	O
3	Cleaning brush	O
4	Screwdriver (+) No.2	O
5	Tweezers	O
6	Round pliers	O
7	Diagonal cutting nipper	O
8	Electric Soldering iron	O
9	Thickness gauge	O
10	ET holder #2.5	O
11	ET holder #3	O

**8-5-2 List of Lubricants and Adhesives**

Item	Oil	Grease	Adhesive
Description	CALTEX REGAL R/D #68, 948P	HG-31S	Screw lock

**8-6 Repair**

In Consideration of the level of expertise required for implementation of after-service and repair procedures for this printer, such procedures have been grouped into two rankings: Level A and Level B.

The person in charge of repair, therefore, should perform the repair procedures appropriate to the class and to his/her own level of expertise.

**8-6-1 Repair Levels**

- 1) Level A: Requires general knowledge and technical skills regarding the operating principles and construction of the printer, but does not require previous repair experience.
- 2) Level B: Requires full knowledge and technical skills regarding the operating principles and construction of the printer as well as previous repair experience.

**8-6-2 Repair Procedures**

In the case a problem occurs, check its symptoms and status .clarify the source of the problem with reference to subsection 8-6-3 Repair guidelines, then repair the damaged area Note that the tables of subsection 8-6-3 Repair Guidelines, consist of the 5 items listed below, enabling troubleshooting and repair to be performed with speed and efficiency with minimum error.

- 1) Phenomenon: Check the symptoms of the trouble.
- 2) Condition: Compare the trouble status of problem with the description of this column and locate the matching status.
- 3) Cause: This column lists the potential causes on the basis of the trouble status, allowing the location of the trouble to be checked. It also lists the repair level for each cause, so be sure to refer to this column before attempting repair.
- 4) Check point and Method: In correspondence to the cause, this column lists what parts to check as well as the checking procedure to be used. Be sure to inspect the check-points according to the method described here.
- 5) Repair Method: Repair the trouble area according to the description in this column. If the identical phenomenon and condition remain unchanged after performing the repair, check another item of the "CAUSE" column then perform the pertinent repair.

**8-6-3 Repair Guidelines**

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
1. Motor does not rotate	Motor does not rotate despite printing command has been given	① Defective power input to motor	B	·Check the input power ·Check the input voltage (24V±2V) between the motor terminals of the connector using a tester or oscilloscope	·Inspect and repair the power supply circuit
		② Defective motor drive signal	B	·Check input signal ·Check if the signal is being input to the motor drive terminal of the connector using an oscilloscope	·Replace the drive signal generating circuit
		③ Damaged or Improper connection between motor terminals of the connector	B	·Check the conductivity between the pertinent terminals	·Replace the main circuit board Assy if there is no conductivity ·If improperly connected, reconnect the pertinent leads in the proper manner
		④ Defective motor	B	·Apply 24V to the leads of the motor then check the rotation (red: + black: -)	·Replace the motor, if it does not rotate
		⑤ Occurrence of paper jam	A	·Check the deformation of Head pin guide or platen paper guide	·Replace Head pin guide or platen paper guide if they are deformed or destroyed
		2. No dot printing is performed	Motor rotates normally but no dot printing is performed	① Head FPC is disconnected from its connection	B
② Broken common lead in head FPC	B			·Check the conductivity between the common lead of head FPC and other terminals (20Ω±10%)	·Replace the head unit, if there is no conductivity
③ Common lead between the head FPC and connector is broken	A			·Check the conductivity of the common lead section ·Check the voltage (28V±2V)	·Replace the main circuit board Assy if there is no conductivity or 28V
④ Defective timing detector sub Assy	B			·Observe by oscilloscope to check if a timing signal is being generated	·Replace the timing detector sub Assy, if no timing signal is being generated

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
2. No dot printing is performed	Motor rotates normally but no dot printing is performed	⑤ Defective input charge pulse	B	·Observe by oscilloscope to check if the input charge pulse is within rated values ·Pulse rating: For voltage and pulse width refer to the specifications for SMP-710/710N	·If input pulse is not generated or if such pulse is outside rated values repair the driving control circuit
		⑥ Positional relations-hip between head and the platen	B	·Check if the gap between the Platen and the tip of head is correct correct value : 0.51±0.1mm	·If incorrect, perform repair according to "Adjustment"
3. Missing of Head dots	Only specific dots are never printed	① Damaged lead in head FPC	B	·Check the conductivity between the pertinent common lead of the head FPC and other terminal	·If there is no conductivity, replace the head
		② Lead breakage between connector and FPC terminals	B	·Check the conductivity between the pertinent terminals	·Replace the main circuit board Assy if there is no conductivity
		③ Damaged lead of a dot driving coil	B	·To check if the resistive value of the pertinent dot driving coil is within rated values, measure the resistance of the terminal between connectors Rated value : 20Ω±10%	·If the resistance is outside rated values, replace the head
		④ Defective timing detector sub Assy	B	See cause ④ of phenomenon 2	
		⑤ Defective input charge pulse	B	See cause ⑤ of phenomenon 2	
4. Missing of Dot Head	All of date are not printed	① Defective contact of the Head FPC	A	See cause ① of phenomenon 3	
		② Malfunction of the Head unit	B	·Check if paper dust is caught in the tips of the head pin	·If the paper dust is caught, remove it
		③ Defective Timing detector Assy	B	See cause ④ of phenomenon 2	
		④ Defective input charge pulse	B	See cause ⑤ of phenomenon 2	

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
5. Intermittently defective character width	Intermittent changes in character width	①Wear or damage of Lead Cam or the gear	A	·Check the teeth of each gear and of the Lead Cam for wear and damage	·If worn or damaged, replace the defective gear or the Lead Cam
		②Defective input charge pulse	B	See cause ⑤ of phenomenon 2	
6. Motor rotation does it stop		①Defective R·L reset detector sub Assy	B	·Use an oscilloscope to check if a signal is generated from of the R(L) reset detector sub Assy by rotating the Lead Cam	·Replace the R(L) reset detector sub Assy if no signal is generated
		②Defective motor drive signal	B	See cause ② of phenomenon 1 (Check input signal stop ⇒ high)	
7. Paper is not feed	All Printing is done at one line without the paper being feed	①Defective paper supply	A	·Check the width, length and thickness of the paper ·Check the paper feeding path	·Use the standard paper ·Repair each supply mechanism so that paper supply is smooth ·Check the end part of paper
		②Detect in step motor	B	·Apply 24V to motor and check to turn	·Substitute if motor is not in turning
		③In proper connection or damage of terminal connector in step motor, or cutting of wire or damaged connected part	B	·Check flow of electricity between Pertinent terminal	·In case of no flow of electricity, substitute Assy for main circular ·In case of no connection, try to connect with leading ·In case of cutting wire or damaged, substitute step motor
		④Occurrence of paper jam	A	See cause ⑤ of phenomenon 1	
		⑤Wear or damage of the teeth of the gears	B	·Check the gear for wear or damage	·If there is wear or damage, replace the pertinent gear
		⑥Wear of the Rubber Roller	B	·Check the surface of the Rubber Roller for wear	·If the Rubber Roller is worn, replace it
		⑦Deformation of the spring Roller	B	·Check if the Shaft Roller has become deformed	·If deformed, replace it with a new spring
		⑧The Shaft Roller rotates malfunction	B	·Check to be something in Gear and to be well touched	·If deformed, replace the pertinent Shaft Roller
⑨Turning direction of Gear	B	·Check to be something in gear and to be well touched	·Remove dusts removed wire		

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
8. Uneven paper feeding pitch	Uneven line spacing of the printed paper	①Defective paper supply	A	See cause ① of phenomenon 1	
		②Deformation of the Spring Roller	B	See cause ⑦ of phenomenon 1	
		③Wear of the Rubber Roller	B	See cause ⑥ of phenomenon 1	
		④The Shaft Roller rotates malfunction	B	See cause ⑧ of phenomenon 1	
		⑤Wear or damage of the teeth of the gears	B	See cause ⑤ of phenomenon 1	
		⑥Deformation of the Platen Paper Guide 710	B	·Check if Platen Paper Guide has become deformed	·If deformed, replace it with a new platen Paper Guide
		⑦Bad turning of gear	A	See cause ⑨ of phenomenon 1	
9. Ribbon mechanism does not function	Despite normal operation of the printing mechanism, the ribbon not feed	①The ratchet of Ribbon Cassette is damaged or worn out	A	·Check whether the ratchet of Ribbon Cassette is damage or worn out	·Replace it if damaged or worn out
		②Wear or damage of the teeth of the gears	A	·Check ribbon feed Assy and gear reduction a, b, c for wear of damage	·If there is wear or damage, replace it
10. Defective paper insertion	When the paper is inserted, it jams or does not come out to the exit	①Other substances may exist in paper passing track	B	·Check if other substance may exist in paper passing track	·Clean out any particles with a vacuum cleaner
		②Method of paper insertion	A	·Check if paper is inserted according to the method described	·Always insert the paper according to the method described
11. No working on ribbon shifting	No working of ribbon shifting in spite of normally moving printing	①Betraying from damage or transforming of spring solenoid	B	·Check betraying or damage, transform of spring solenoid	·Substitute with new spring or reconnect it ·In case of damage or transform of it, substitute by new spring
		②	B	·Check betraying from spring shift clutch and damage and transform of it	·Substitute with new spring or reconnect with it in case of betraying ·In case of damage or transform of it, substitute by new spring
		③Attrition or damage of shift cam shift		·Measure exterior diameter of spring shift clutch and check with eyes	·In case of attrition or damage, substitute them

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
12. No working of Solenoid		①Entry of solenoid is cut	B	·Measure resistant value between terminal of solenoid resistance: Some $70\pm 10\%$ (25°C)	·In case cutting substitute solenoid
		②Gear tooth cam, ratchet and ribbon frame get dusted or altered	A	·Check with eyes transforming or dusting in gear tooth, cam, ratchet, and ribbon frame	·Substitute dust to take out or part
13. No working of ribbon rotating		①Transforming or damage of spring shift clutch	B	See cause ② of phenomenon 12	
		②Attrition or damage of shift cam, shift ratchet	B	See cause ③ of phenomenon 12	
		③Transform or damage of ribbon frame	B	·Measure size of the part moving cam of ribbon frame, measure horizontal degree and check with eyes	·In case of transform or damage of ribbon frame, substitute them
		④Betray of ribbon papers	A	·Check with eyes ribbon paper in ribbon frame	·Set ribbon paper fit ably with ribbon frame
		⑤Volume of ribbon	A	·Different with each other of color and rate of ribbon	·Ribbon substitute



**8-6-4 Assignment Connector Pin**

## 8-6-4-1 Connector 30pin

\* Connector: Head, head carriage/paper feed step motor, solenoid P/E sensor, control

\* Model: 1.0mm FFC cable

Mechanism side: 403-030-099-061

**[Taiwan TACK co.]**

P/N	In or Out	Description
1	Output	head #6
2	Output	head #8
3	Output	head #4
4	Output	head #9
5	Output	head #2
6	Input	head com 24V
7	Input	head com 24V
8	Input	head com 24V
9	Output	head #3
10	Output	head #5
11	Output	head #1
12	Output	head #7
13	Output	thermistor
14	Output	ground
15	Output	ground

P/N	In or Out	Description
16	Output	ground
17	Output	ground
18	Input	head carriage control sig
19	Output	CA
20	Output	CB
21	Input	Vcc(5V)
22	Input	Vcc(5V)
23	Input	paper feed control sig
24	Output	PA
25	Output	PB
26	Output	home send output
27	Output	paper end output
28	Input	24V
29	Input	sol +(24V)
30	Output	sol -

## 8-6-4-2 Connector 14pin

\* Connector: Head control

\* Model: Mechanism side : GF120-14S-Ls

**[LG cable co.]**

P/N	In or Out	Description
1	Output	thermistor (-)
2	Input	thermistor (+)
3	Output	head #7
4	Output	head #1
5	Output	head #5
6	Output	head #3
7	Input	com(24V)
8	Input	com(24V)
9	Input	com(24V)
10	Output	head #2
11	Output	head #9
12	Output	head #4
13	Output	head #8
14	Output	head #6

## 8-7 Disassembly

To disassemble this printer, perform the assembly procedures described in section 8-8 Assembly in the reverse sequence. First, the main assembly blocks are disassembled and divided into the sub-assembly blocks, then each of the individual blocks is disassembled.

Disassembling printer components beyond the example shown in exploded view of SMP-710/710N at the PPL may result in damage to the printer and its functions, so you are advised not to do so.

## 8-8 Assembly

The assembly process is divided into the sub-assembly and main assembly procedures. First, assemble the sub-assembly, then proceed to assembling the main assemblies.

Perform assembly while referring to component shapes and mounting positions shown in exploded view.

The '\*' symbol in the "Assembly Step" column indicates the need for a (Check) or (Adjustment). The (Adjustment) process is explained in section 8-9. Even if only a small amount of disassembly has been performed, confirm the presence/absence of the pertinent adjustment point during assembly.

Circled numbers in the "Assembly Step" column indicate that lubrication is required during assembly of the component and that such lubrication will be difficult unless performed during assembly.

Details on the application of lubricants or adhesives, including point that require application after total assembly of the printer, are described in section 8-4 Lubrication and Adhesive Application perform such application while referring to exploded view.

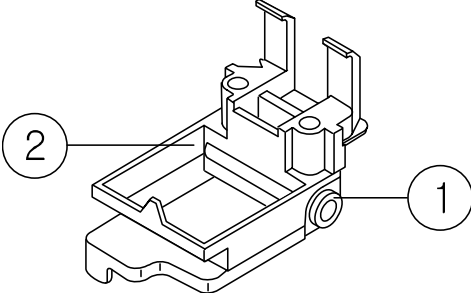
All small parts are represented by abbreviations as listed in the table below.

\* List of abbreviations for small parts

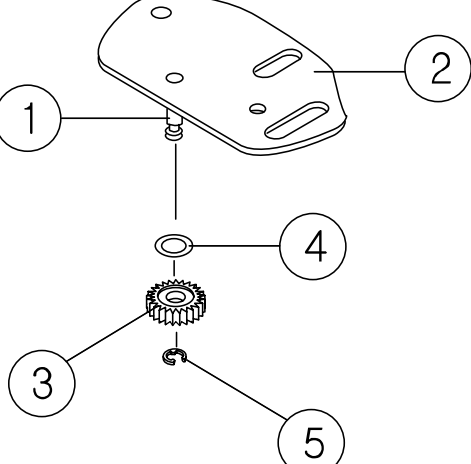
Abbreviation	Explanation
WBH	Washer faced Binding Head Screw
PH	Pan Head machine screw
WPH	Washer faced Pin Head Screw
T/T PH	Pan Head Taptite screw
T/P PH	Pan Head Tapping Screw
PW	Plain washer
WW	Wave Washer
PSW	Poly slide washer with slit
SP	Spring pin
RE	Retaining ring type-E
PP	Parallel pin
FS	Franged Screw

**8-8-1 Sub-assemblies**

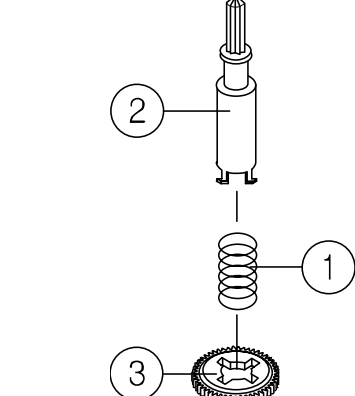
**8-8-1-1 Carriage Head Assy**

Name of Parts	Method and Procedure	Drawings
<p>①BERIN G FE (2ea) ②CARRIAGE HEAD</p>	<p>1. At first, set the ①BERIN G FE to be inserted into the shaft of JIG. * Notice: The direction of insert is to locate frange downward. 2. And then, set a ②CARRIAGE HEAD to be inserted into the shaft of JIG. 3. Next , set other ①BERIN G FE to be inserted into the shaft of JIG. * Notice: The direction of insert is to locate frange upward. 4. Lastly, insert two ①BERIN G FE in the ②CARRIAGE HEAD by pushing the handler of Lever Press. <b>&lt; Check Point &gt;</b> Check improper insertion of ①BERIN G FE and fraction of ②CARRIAGE HEAD.</p>	

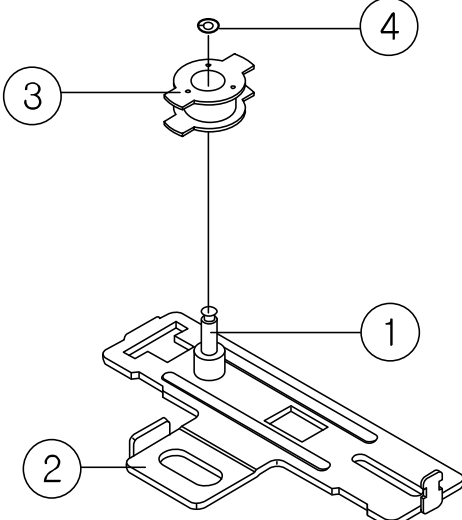
**8-8-1-2 Lever Ribbon Feed Assy**

Name of Parts	Method and Procedure	Drawings
<p>①SHAFT REDUCTION "B" ②LEVER RIBON FEED ③GEAR REDUCTION "B" ④WAVE WASHER ⑤E-RING (ø2.5)</p>	<p>1. At first, Grease ①SHAFT on the ②LEVER RIBON FEED with HG-31S. 2. And then, Assemble ④WAVE WASHER and Grease ④WAVE WASHER. 3. Last, assemble ③GEAR REDUCTION "B" and ⑤E-RING (ø2.5).</p>	

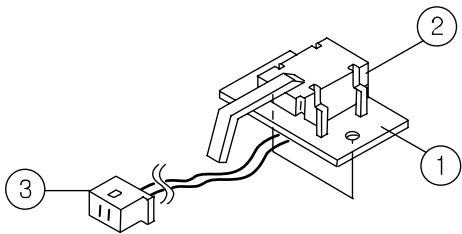
**8-8-1-3 Ribbon Feeder Assy**

Name of Parts	Method and Procedure	Drawings
<p>①SPRING RIBBON FEEDER ②RIBBON FEEDER ③GEAR RIBBON FEEDER</p>	<p>1. Grease ①SPRING RIBBON FEEDER with HG-31S and insert that into ②RIBBON FEEDER. 2. And then, insert ③GEAR RIBBON FEEDER to fit the section of hook.</p>	

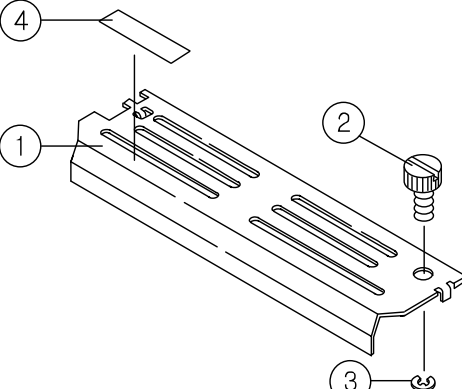
8-8-1-4 Lever Tension Belt C Assy

Name of Parts	Method and Procedure	Drawings
<p>① SHAFT PULLEY                      ② LEVER TENSION BELT                      ③ PULLEY                      ④ WASHER (2.6*5.0*0.5)</p>	<p>1. At first, grease ① SHAFT PULLEY with HG-31S.                      2. Next insert ③ PULLEY and then assemble ④ WASHER (2.6*5.0*0.5).  <b>&lt;Check Point&gt;</b>                      Check ③ PULLEY to rotate smoothly.</p>	

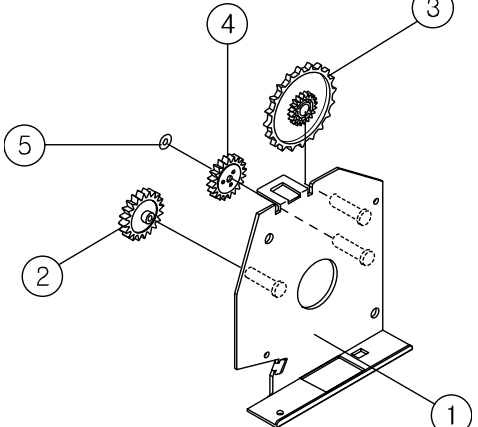
8-8-1-5 Sub PCB Assy

Name of Parts	Method and Procedure	Drawings
<p>① SUB PCB                      ② SWITCH LEVER                      ③ WIRE ASSY</p>	<p>1. Insert ② SWITCH LEVER to fit the hole of ① SUB PCB.                      2. And then, solder the land on the ① SUB PCB bottom side and attach the ③ WIRE ASSY on the land A, G.  <b>&lt;Check Point&gt;</b>                      After soldering, check the frozen lead and short.</p>	

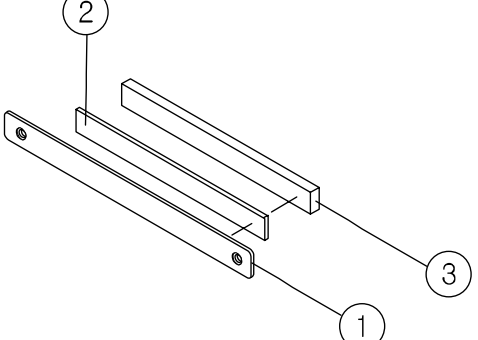
8-8-1-6 Cover Head Assy

Name of Parts	Method and Procedure	Drawings
<p>① COVER HEAD                      ② SCREW MANUAL                      ③ E-RING (ø2.5)                      ④ CAUTION LABEL</p>	<p>1. Insert the ② SCREW MANUAL into the right side hole of ① COVER HEAD.                      2. And then, assemble ③ E-RING onto the starting point of a spiral during adhering closely to the ① COVER HEAD.                      3. Paste the ④ CAUTION LABEL on the right bottom side.</p>	

8-8-1-7 Bracket PF "R" Assy

Name of Parts	Method and Procedure	Drawings
<p>① BRACKET P/F "R"                      ② GEAR PF IDLE                      ③ GEAR KNOB                      ④ GEAR KNOB IDLE                      ⑤ WASHER (1.6*3*0.3)</p>	<p>1. At first, grease the small shaft of ① BRACKET P/F "R" with EM-501. Next, insert ② GEAR PF IDLE, ③ GEAR KNOB, and ④ GEAR KNOB IDLE. Lastly, assemble ⑤ WASHER.</p> <p>2. Grease the outer diameter of gear with EM-501.</p> <p><b>&lt;Check Point&gt;</b>                      Check ③ GEAR KNOB to rotate smoothly.</p>	

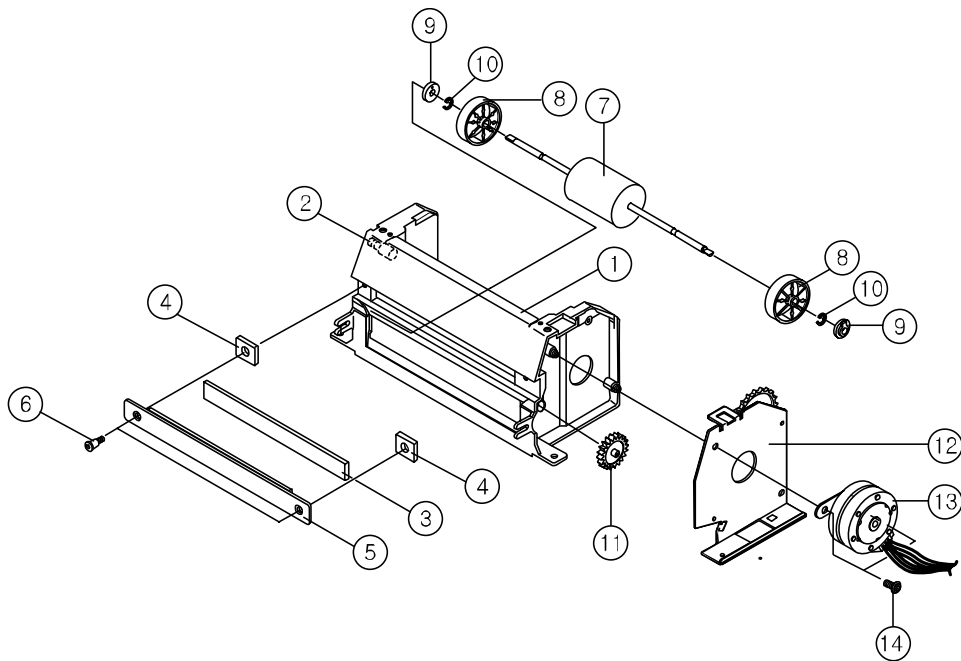
8-8-1-8 Platen Assy

Name of Parts	Method and Procedure	Drawings
<p>① PLATEN PLATE                      ② TAPE D/F                      ③ PLATEN</p>	<p>1. Paste the ② TAPE D/F onto the ① PLATEN PLATE and set the sub Assy into the rectangular hole of the exclusive JIG.</p> <p>2. Set the ③ PLATEN to fit the groove of JIG and paste by pushing.</p>	

**8-8-2 Main-assemblies**

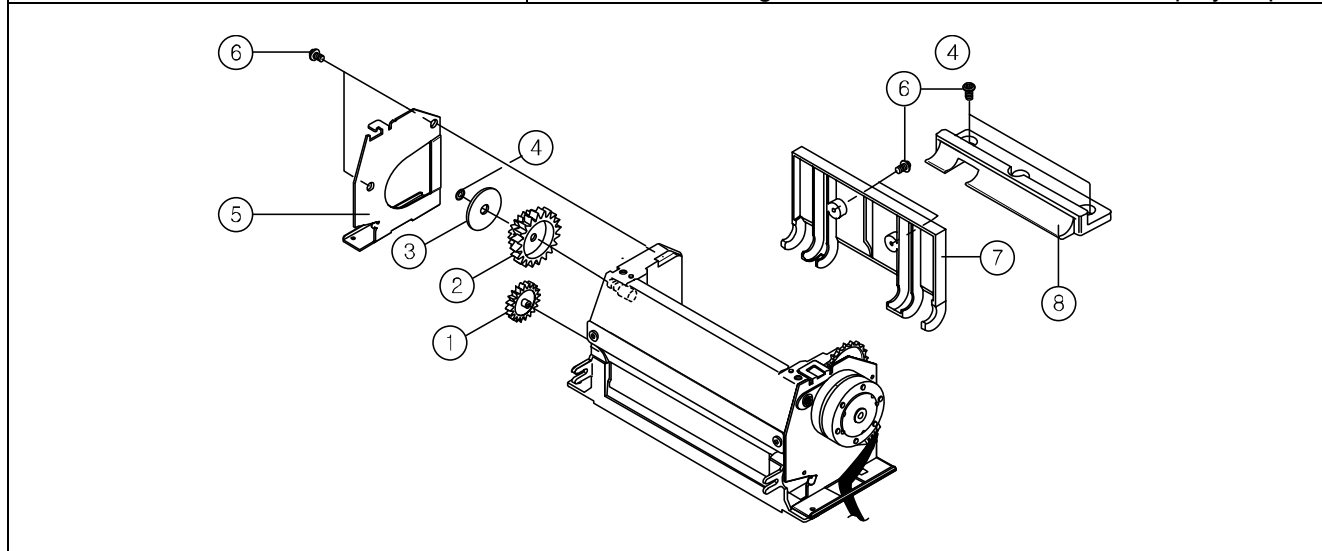
**8-8-2-1 Base Paper Feed Assy - #1**

Name of Parts	Method and Procedure
<p>① BASE PAPER FEED                  ② SHAFT TAKE UP                  ③ TAPE CUSION                  ④ RUBBER PLATE (2EA)                  ⑤ PLATEN ASSY                  ⑥ SCREW SPECIAL (M2.6*7.5, 2EA)                  ⑦ SHAFT RUBBER ROLLER                  ⑧ ROLLER PAPER GUIDE (2EA)                  ⑨ BEARING (2EA)                  ⑩ E-RING (ø3, 2EA)                  ⑪ GEAR ROLLER                  ⑫ BRACKET PF R ASSY                  ⑬ STEP MOTOR PF                  ⑭ SCREW TAPPING (M3*6, 2EA)</p>	<p>1. At first, set ① BASE PAPER FEED in the JIG. Next, insert ② SHAFT TAKE UP into the hole. Lastly, press it by Lever Press.</p> <p>2. Set ③ TAPE CUSION to fit rectangular hole of ① BASE PAPER FEED and then, insert ④ RUBBER PLATE in both side.</p> <p>3. Insert ⑤ PLATEN ASSY into the rectangular hole and then, tighten two ⑥ SCREW SPECIAL.</p> <p>4. Make ① BASE PAPER FEED stand(right side), and then, insert two ⑧ ROLLER PAPER GUIDE and ⑨ BEARING to fit ⑦ SHAFT RUBBER ROLLER in both side one by one. Next, fix the Sub Assy into the back face of ① BASE PAPER FEED and fit two ⑩ E-RING into the groove each other.</p> <p>5. Set ⑪ GEAR ROLLER onto right side shaft of ① BASE PAPER FEED and then set ⑫ BRACKET PF R ASSY.</p> <p>6. Insert ⑬ STEP MOTOR PF into the rectangular hole of BRACKET PF and drag backward. Next, tighten two ⑭ SCREW TAPPING on ⑫ BRACKET PF R ASSY.</p> <p><b>&lt;Check Point&gt;</b>                  Check ROLLER to rotate smoothly.</p>



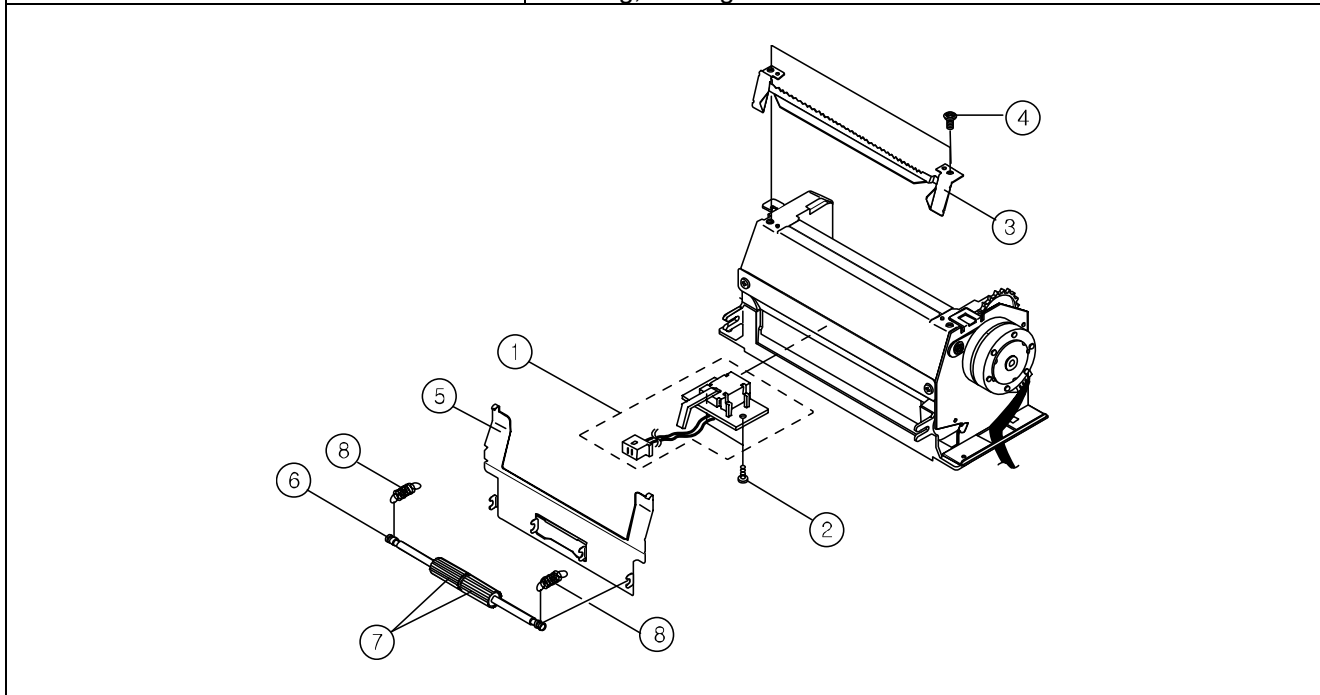
8-8-2-2 Base Paper Feed Assy - #2

Name of Parts	Method and Procedure
<p>① GEAR TAPE UP            ② GEAR TU PULLEY            ③ WASHER BELT GUIDE            ④ WASHER (2.6*5*0.5)            ⑤ BRACKET PF L            ⑥ SCREW TAPPING (M3*6, 6EA)            ⑦ GUIDE PAPER A            ⑧ GUIDE PAPER B</p>	<p>1. Make BASE PAPER FEED stand (left side), and then, insert ① GEAR TAPE UP to fit SHFAT(D-CUT) (long side is downward). Next, grease SHFAT and teeth of GEAR with HG-31S.</p> <p>2. Set ② GEAR TU PULLEY onto SHAFT and insert ③ WASHER BELT GUIDE. Next fix with ④ WASHER.</p> <p>3. Set ⑤ BRACKET PF L onto BASE PAPER FEED boss, and then, tighten two ⑥ SCREW TAPPING.</p> <p>4. Rotate BASE PAPER FEED and set ⑦ GUIDE PAPER A to the back face, and then, tighten two ⑥ SCREW TAPPING step by step.</p> <p>5. Make BASE PAPER FEED stand and set ⑧ GUIDE PAPER B to it, and then, tighten two ⑥ SCREW TAPPING step by step.</p>



8-8-2-3 Base Paper Feed Assy - #3

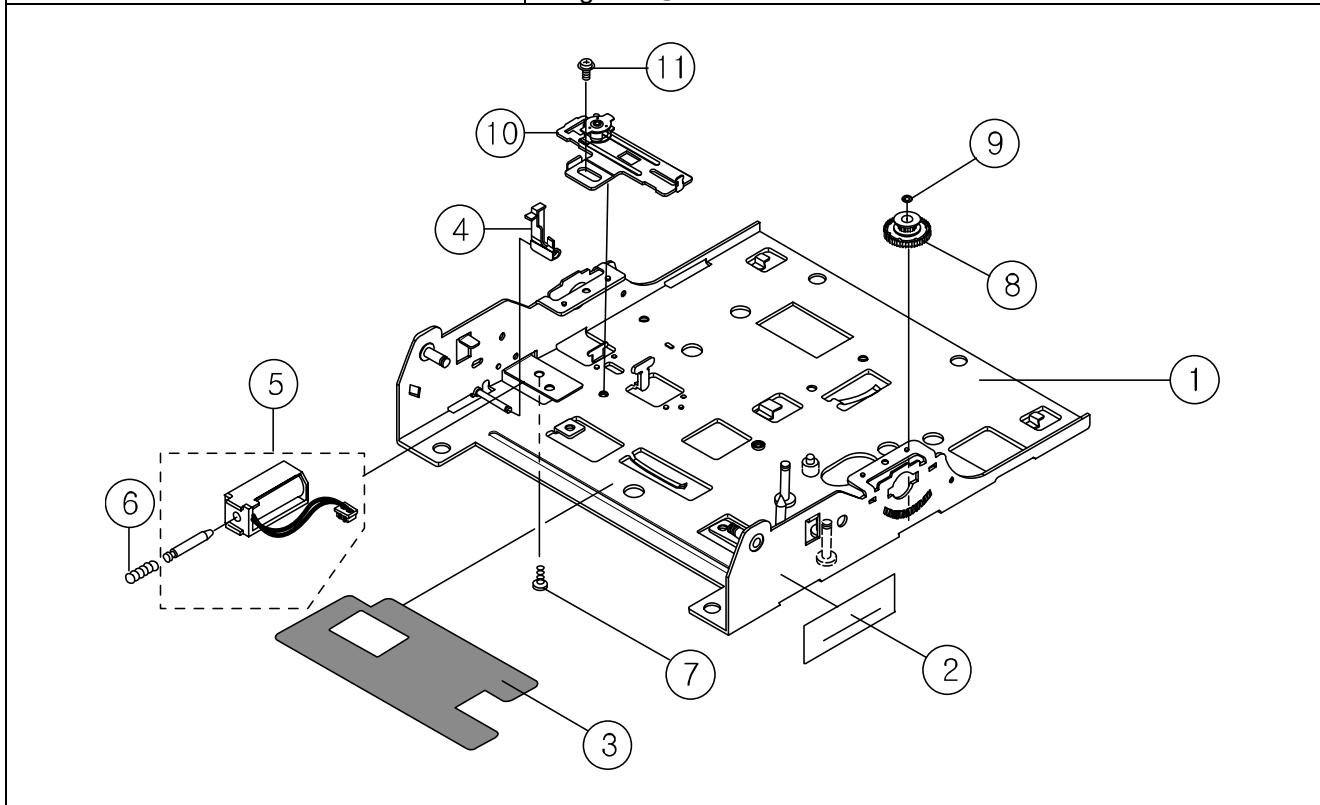
Name of Parts	Method and Procedure
<p>① SUB PCB ASSY            ② SCREW TAPPING (M2*3, 2EA)            ③ MANUAL CUTTER            ④ SCREW (M3*6, 2EA)            ⑤ PLATEN PAPER GUIDE            ⑥ SHAFT HOLE ROLLER            ⑦ HOLE ROLLER (2EA)            ⑧ SPRING HOLD ROLLER (2EA)</p>	<p>1. Set ① SUB PCB ASSY to fit the hole in the bottom face of BASE PAPER FEED and tighten two ② SCREW TAPPING.            2. Set the ③ MANUAL CUTTER to the boss on the BASE PAPER FEED and tighten two ④ SCREW.            3. Hook ⑤ PLATEN PAPER GUIDE on the manual cutter in the front face of BASE PAPER FEED.            4. Grease section of ⑥ SHAFT HOLE ROLLER mounted HOLE ROLLER and insert two ⑦ HOLE ROLLER. Next, set SHAFT to the each groove of BASE PAPER FEED as fitting HOLD ROLLER into PPG.            5. Hook two ⑧ SPRING HOLD ROLLER on the both side of BASE PAPER FEED.  <b>&lt;Check Point&gt;</b>            Check the location of PLATEN PAPER GUIDE, status of hooking, coming off.</p>





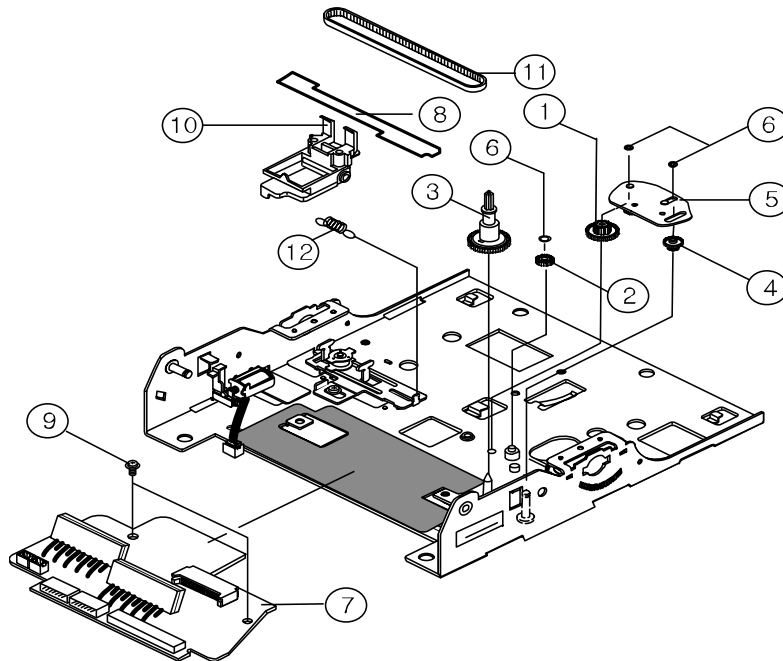
8-8-2-4 Main assembling - #1

Name of Parts	Method and Procedure
① FRAME MAIN C/K ASSY-4 ② SERIAL NO. TAG ③ TAPE INSULATION ④ LEVER COLOR CHANGE ⑤ SOLENOID ASSY ⑥ SPRING SOLENOID ⑦ SCREW MACHINE (M2*3) ⑧ GEAR PULLEY ASSY ⑨ WASHER (φ2.6*5*0.5) ⑩ LEVER TENTION BELT ASSY ⑪ SCREW (M3*4)	1. Set ①FRAME MAIN C/K ASSY-4 on the JIG. 2. Paste ②SERIAL NO. TAG in the right side and ③TAPE INSULATION on the bending line in the bottom face. 3. Grease SHAFT(6 point) with HG-31S. 4. Insert ④LEVER COLOR CHANGE into SHAFT in the left bottom side and fit WASHER(2.6*8*0.5). 5. Turn ⑤SOLENOID ASSY and ⑥SPRING SOLENOID downward and insert it into the hole of LEVER C/C and M/F side step by step. Next, tighten ⑦SCREW MACHINE. 6. Insert ⑧GEAR PULLEY ASSY and then, fit ⑨WASHER. 7. Insert ⑩LEVER TENTION BELT ASSY to the hole and then, tighten ⑪SCREW two-third.



8-8-2-5 Main assembling - #2

Name of Parts	Method and Procedure
<p>① GEAR REDUCTION A            ② GEAR REDUCTION B            ③ RIBBON FEEDER ASSY            ④ GEAR REDUCTION "C"            ⑤ LEVER RIBBON FEED ASSY            ⑥ WASHER (ø 2.6*5*0.5, 2EA)            ⑦ MAIN PCB ASSY            ⑧ FPC CONNECTOR            ⑨ SCREW MACHINE (M3*4)            ⑩ CARRIAGE HEAD ASSY            ⑪ BELT SYNCHRONUOS            ⑫ SPRING LEVER TENSION BELT</p>	<p>1. Set FRAME MAIN on the JIG.            2. Set ① GEAR REDUCTION A, ② GEAR REDUCTION B, ③ RIBBON FEEDER ASSY and ④ GEAR REDUCTION "C" onto SHAFT sequentially. Grease teeth and upper face of RIBBON FEED ASSY.            3. Insert ⑤ LEVER RIBBON FEED ASSY and ⑥ WASHER.            4. Attach ⑧ FPC CONNECTOR to ⑦ MAIN PCB ASSY. Next, plug SOLENOID WIRE (block) in connector 2p. And then, set it to M/F and tighten two ⑨ SCREW MACHINE.            5. Insert ⑪ BELT SYNCHRONUOS into ⑩ CARRIAGE HEAD ASSY, and then, belt up round PULLEY and GEAR PULLEY.            6. Hoot ⑫ SPRING LEVER TENSION BELT.  <b>&lt;Check Point&gt;</b>            Check the tear of FPC.</p>

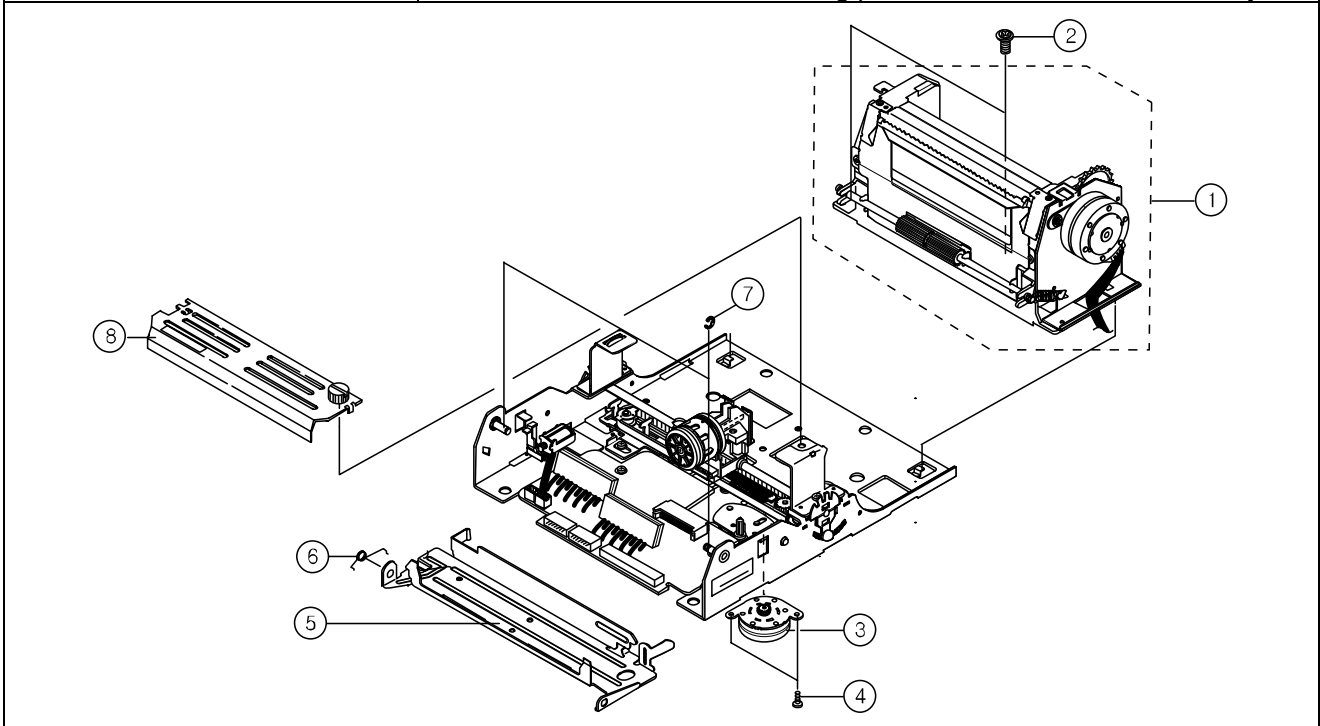


8-8-2-6 Main assembling - #3

Name of Parts	Method and Procedure
①AD LEVER ②SHAFT HEAD GUIDE ③SHAFT HEAD CARRIAGE ④E-RING (ø 3) ⑤HEAD PRINT ⑥SCREW (M3*10, 2EA) ⑦BRACKET HEAD COVER "L" ⑧BRACKET HEAD COVER "R" ⑨SCREW MACHINE (M2.6*3, 2EA)	1. Set FRAME MAIN on the JIG. 2. Insert ①AD LEVER in the left side and then, turn to the downward. Next insert the other ①AD LEVER into ②SHAFT HEAD GUIDE and insert the Sub Assy into F/M from right to left and then, turn AD LEVER downward. 3. Insert ③SHAFT HEAD CARRIAGE from left to right and fit ④E-RING in the left side. 4. Insert FPC into ⑤HEAD PRINT and set HEAD Assy to CARRIAGE HEAD, and then tighten two ⑥SCREW. 5. Tighten the screw mounted to LEVER TENTION BELT ASSY completely. 6. Fit ⑦BRACKET HEAD COVER "L" and ⑧BRACKET HEAD COVER "R" to both boss and then tighten two ⑨SCREW MACHINE.

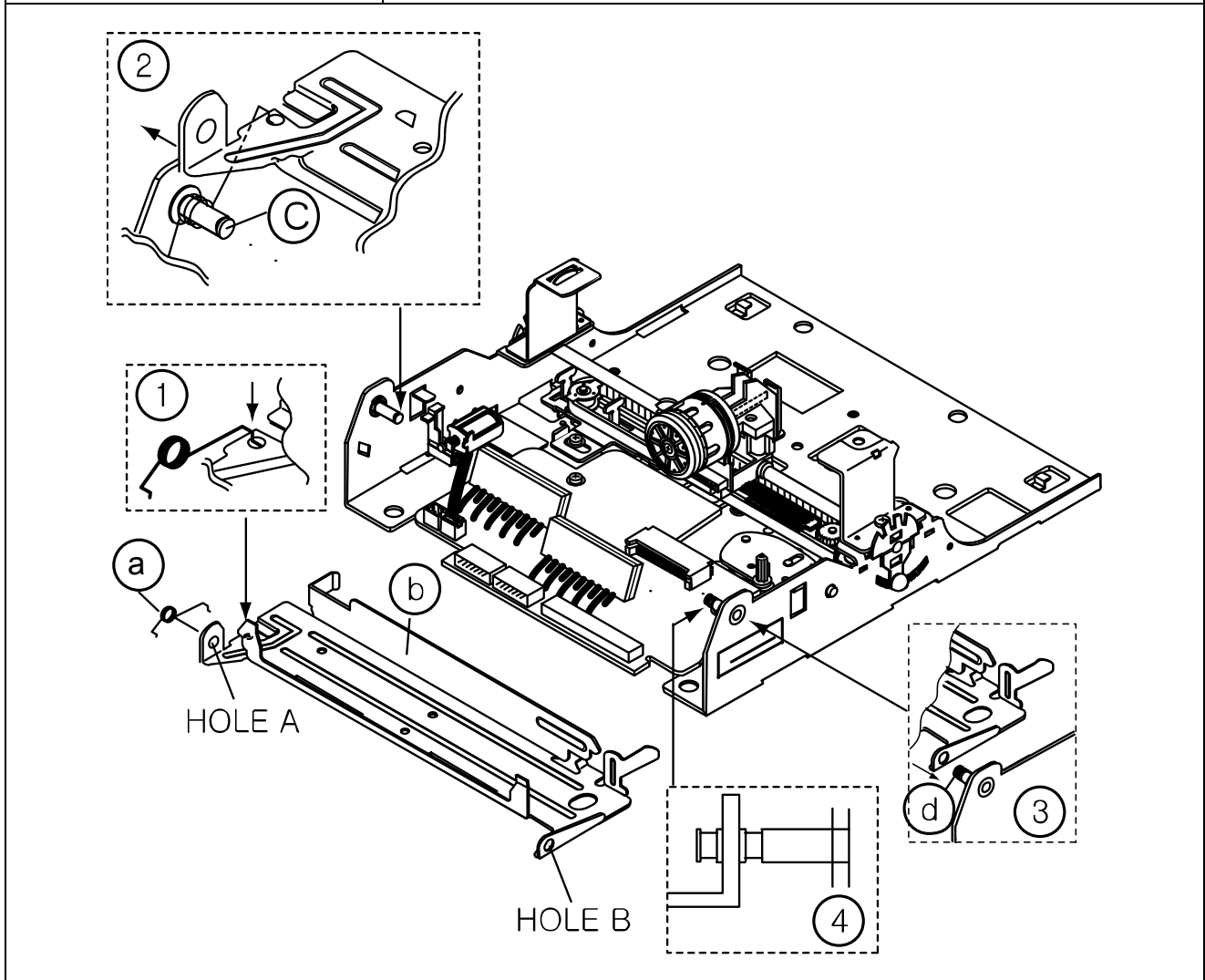
8-8-2-7 Main assembling - #4

Name of Parts	Method and Procedure
①BASE PAPER FEED ASSY ②SCREW MACHINE (M3*6, 3EA) ③STEP MOTOR H/F ④SCREW (M3*4, 2EA) ⑤RIBBON FRAME ⑥SPRING RIBBON FRAME ⑦E-RING (ø3, 3EA) ⑧HEAD COVER ASSY	1. Set FRAME MAIN on the JIG. 2. Put ①BASE PAPER FEED ASSY wire into the rectangular hole and drag it. Next, set ①BASE PAPER FEED ASSY and tighten three ②SCREW MACHINE. 3. Turn up FRAME MAIN and then set ③STEP MOTOR H/F to the hole. Next, tighten two ④SCREW. 4. Insert SUB PCB, STEP MOTOR P/F, STEP MOTOR H/F WIRE to the connectors of MAIN PCB ASSY sequentially, and then alignment and fix the WIRE ASSY by pressing the hooks. 5. Grease on the CARRIAGE HEAD, SHAFT RIBBON FRAME and SHAFT HEAD CARRIAGE with HG-31S. 6. Hook ⑥SPRING RIBBON FRAME on the ⑤RIBBON FRAME and insert the other side on the left side of SHAFT. Next, insert RIBBON FRAME onto right side of SHAFT and insert the other side of RIBBON FRAME onto SHAFT. Lastly, hook the spring (For more detail refer next page.) 7. Tighten three ⑦E-RING. And assemble ⑧HEAD COVER ASSY. <b>&lt;Check Point&gt;</b> Check the setting position of RIBBON FRAME and jam.



8-8-2-8 Main assembling - #5

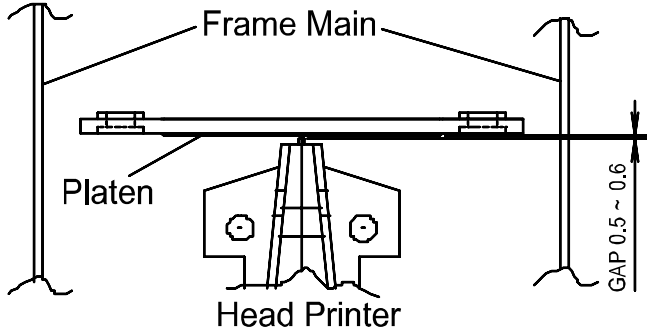
Name of Parts	Method and Procedure
① RIBBON FRAME ② SPRING RIBBON FRAME ③ E-RING (ø3, 3EA)	1. Insert ② SPRING RIBBON FRAME into the hole in left side of ① RIBBON FRAME to ward arrow on shows in Fig. 1 detail. 2. Set ② SPRING RIBBON FRAME onto the ③ SHAFT and then, move the RIBBON FRAME toward arrow. 3. Next, insert RIBBON FRAME onto ④ SHAFT toward arrow an shows in Fig. 3. 4. And then, insert the other hole A of RIBBON FRAME onto ③ SHAFT and then, adjust the position of RIBBON FRAME to the center as shows in Fig. 4. 5. First E-RING to ③ SHAFT and two E-RING to ④ SHAFT. 6. Check RIBBON FRAME to move smoothly as operating it up and down.



**8-8-3 Adjustment**

When assembling this printer, be sure to refer to the required adjustment procedure. To ensure normal operation of the printer after disassembly or replacement of a Component for maintenance or repair. Be sure to perform along to the required method.

**\* Adjustment of Head gap**

Adjustment Step	Description Points	in Adjustment
1	<ul style="list-style-type: none"> <li>• Rotate Gear 1st Reduction to move the Head unit to L side.</li> </ul>	
2	<ul style="list-style-type: none"> <li>• Insert the thickness gauge between Head unit and Platen, then rotate the Ad. Level L and adjust the gap.</li> </ul>	<p>- Appropriate gap: 0.50~0.60mm</p>
		<p>- In order to make the gap narrow (wide), turn Ad. Lever to mark '-(+)'</p>
3	<ul style="list-style-type: none"> <li>• Move the Head unit then check if the proper gap from R side center has been achieved.</li> </ul>	
4	<ul style="list-style-type: none"> <li>• If Head gap is not proper, adjust Head gap by rotating Ad.Lever R.</li> </ul>	<p>- If gap is not correct, repeat once more.</p>

(Replacement of Head unit)

Follow below steps for replacing Head unit

1. Loosen the Ribbon frame
2. Disassemble the Head unit from the Head Carriage and take out the Head FPC from the connector of PCB Assy.
4. Replace the Head unit and assemble, according to the order of sub Assy-1
5. After assembling, adjust the gap as above "Adjustment" indicates.
6. Assemble the Ribbon Frame.