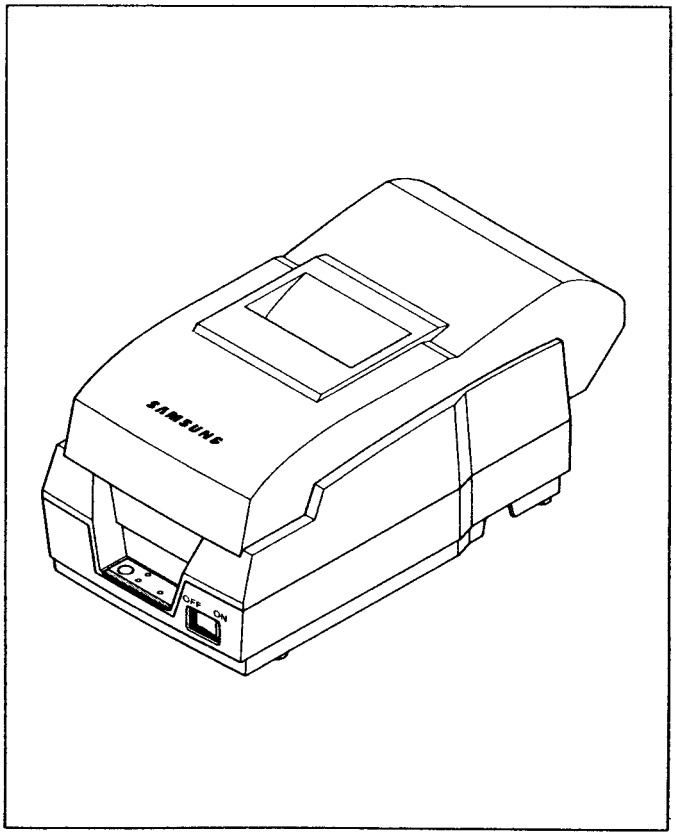
SAMSUNG

Receipt Printer

SRP-270A / SRP-270AS / SRP-270AP / SRP-270AU
SRP-270C / SRP-270CS / SRP-270CP / SRP-270CU
SRP-270D / SRP-270DS / SRP-270DP / SRP-270DU

SERVICE Manual

RECEIPT PRINTER



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SRP-270 Service Manual Second edition.

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About this Manual

This service manual describes how to perform hardware service maintenance for the Samsung 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.

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.

1. Precautions

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

1-1 Safety Precautions

1. Be sure that all built-in protective devices are in place. Restore any missing protective shields.

2. When re-installing chassis and assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people- particularly children might insert fingers or objects 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 metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (UL Publication UL1410, 59.7).
   With the unit completely reassembled. plug the AC line cord directly into 110V AC or 240V outlet of the Adapter. 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 parts,
   including : metal cabinet, frame, screwheads and printer. The current measured should not exceed 0.1 milliamp. Reverse the power-plug prongs 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 manufacturer's warranty.

6. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage 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 provide could be lost if a replacement component differs from the original. This holds true, even though the replacement may be rated for higher voltage, wattage, etc.

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

1-2 Servicing Precautions

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

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 sometimes 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(examples : 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 then 1 mega-ohm.
6. Never defeat any of the B+ voltage interlocks. 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 instruments ground lead last.

1-3 Precautions 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 damage 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 wriststrap 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 chemicals. 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 chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2. Specifications

2-1 General Specifications

ITEM	Description	Remark
Product	• SRP-270 : RS-232 Serial Communication • SRP-270S : RS-485 Serial Communication • SRP-270P : IEEE1284 Parallel Communication • SRP-270U : USB Communication	
Processor	• MITSUBISHI M16C/62 Group M30622 SFP (16Bit) Internal RAM Size : 3K Bytes	External ROM Version
Memory	• EPROM : 1M bits (M27C010) • SRAM : 256K bits (KM62256)	
Serial Interface (RS-232C/RS-485)	• Flow Control : ① DTR/DSR (H/W Flow Control) ② XON/XOFF (S/W Flow Control) • Baud Rate : 1200/2400/4800/9600 • Receive Buffer : 4K Bytes • Connector : DB25P Female (I/F PBA Side)	The Flow Control, Band Rate, Stop Bit and Parity ared determined by DIP S/W position.
Parallel Interface	• Mode : ① Forward Mode : Compatibility Mode ② Reverse Mode : Nibble / Byte Mode • Connector : Self-Powered	
USB	• Transfer Type : BULK • Speed : 12 Mbps (Full-Speed) • Power : Self-Powered	
Printer	• Printing Method : 9pins impact Serial dot • Printing Speed : 4.6 lines/sec	
Auto Cutter	• Type : Guillotine • Cutting Method : 1 Point Partial Cutting	
Power Consumption	• Approx. 24W	
AC Adapter	• Input : AC 110V ~ 240V, 50Hz ~ 60Hz • Output : DC24V ±5%, 1.0A	
Environment Condition	• Temperature : 0°C~40°C • Humidity : 30%~80% RH	
Weight	• 3.2 Kg (A Type) / 3.5 Kg (C Type) / 3.6 Kg (D Type) • 2.2 Kg (A Type) / 2.5 Kg (C Type) / 2.6 Kg (D Type)	Packing Unpacking
Dimensions(mm)	• A Type : 160 X 249 X 130 • C Type : 160 X 249 X 149 • D Type : 160 X 249 X 160	

Table 2-1 General Specification

2-2 Appearance

2-2-1 Printer Dimensions (mm)

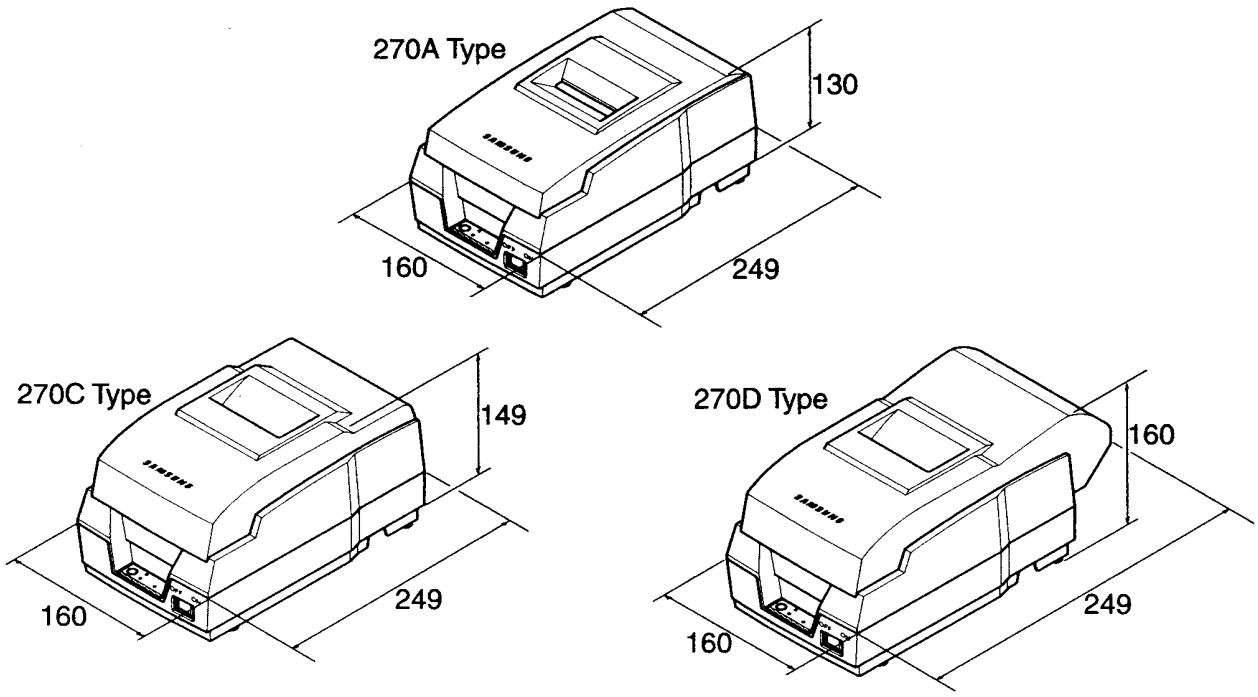


Figure 2-1 Printer Dimensions

2-2-2 AC Adapter Dimensions (mm)

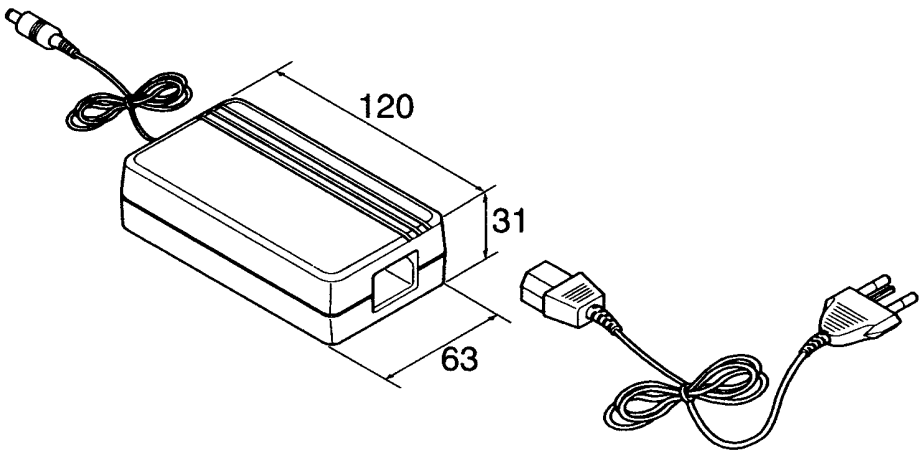
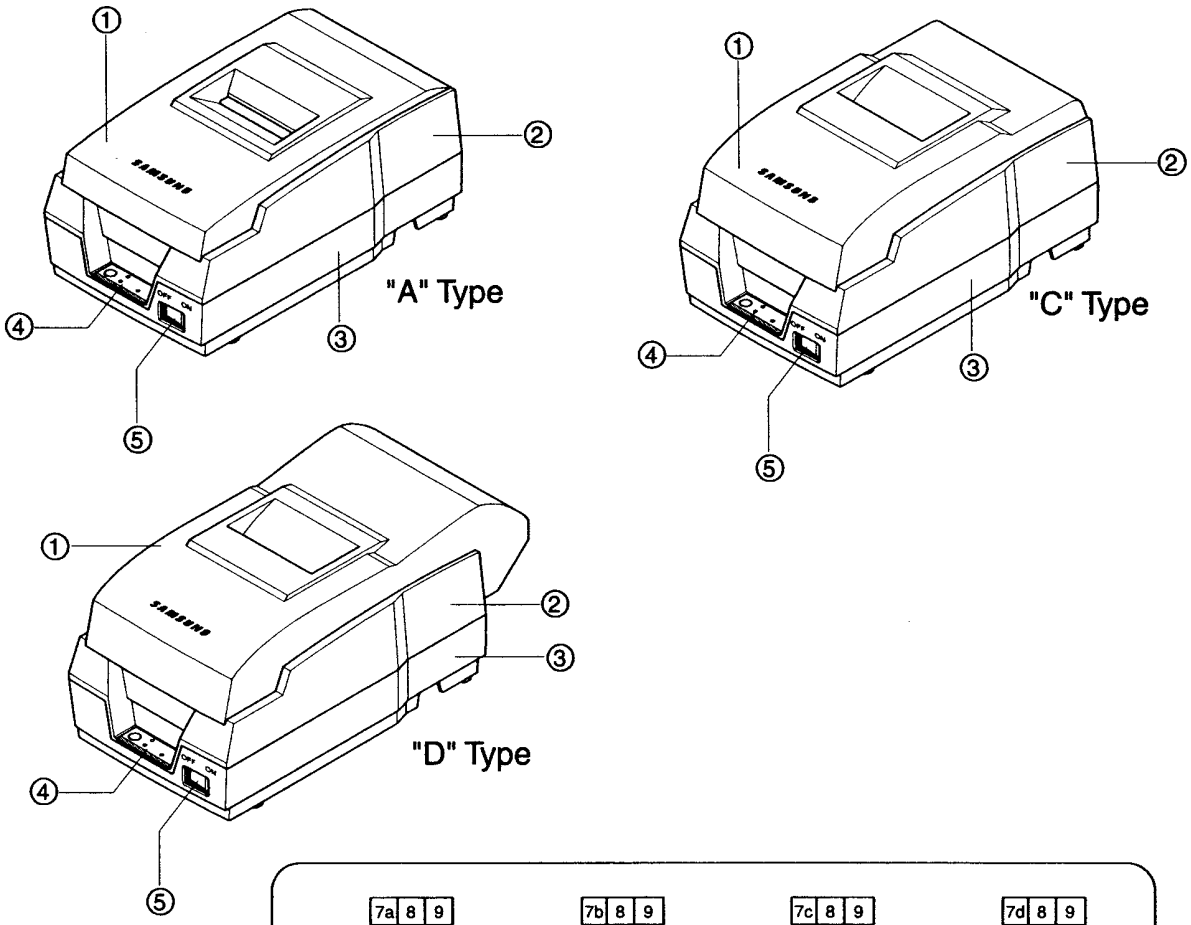
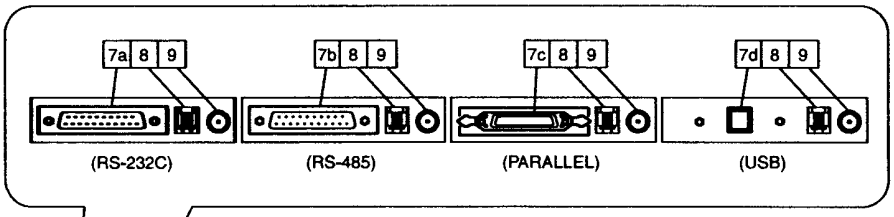
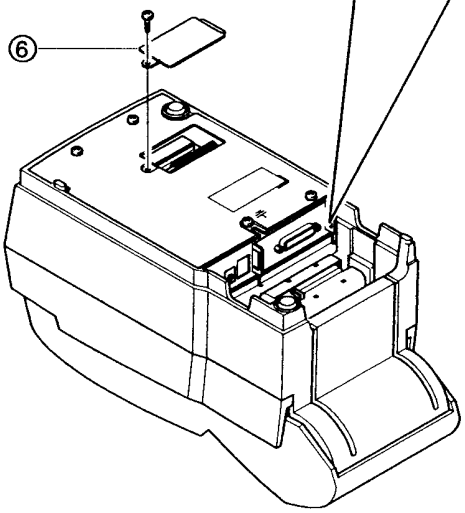


Figure 2-2 Adapter Dimensions

2-2-3 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. Braket DIP Switch

7a. RS-232C(Serial I/F Connector)
7b. RS-485(Serial I/F Connector)
7c. IEEE-1284(Parallel I/F Connector)
7d. USB(USB I/F Connector)

8. Drawer Kick-Out Connector
9. DC Power Jack

Figure 2-3 Feature Location

2-3 Printer Mecha Specifications

2-3-1 Printer Mecha Specifications

Model	• SMP-710/SMP-710N	Samsung
Printer Method	• Serial Impact Dot Matrix type (9-Pin Dot)	
Printing Direction	• Bi-Direction	
Printing Speed	• 4.6 Lines / Sec (9 x 7 Font 40 Columns)	
Printing Resolution	• 160(W) x 144(L) DPI	
Paper Feeding	• Performed by Step Motor	
Paper	• Rolled Paper : W 76±0.5 x Max ø 80mm	
Supply Voltage	• 24V ± 10% : Step Motor, Head • 5V ± 10% : Home Sensor, Motor Driver IC	
Connector	• 30P (Dot Head, Sensor Signal, Motor Control and Power Input) • LIFE : Approx.20 Million Print Lines	
Reliability	• MTBF : Approx. 7.5 Million Print Lines	
Head Life	• Approx. 300 million Dots / Wire	
Weight	• Under 650g (Excluding Ribbon Cassette, Auto Cutter)	

Table 2-2 Printer Specification

2-3-2 Character Specifications

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"	

Table 2-3 Printing Format Specification

2-3-3 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 15 16 17	GND	-
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-	-

Table 2-4

2-3-4 Printer Head Specification

Item	Description	Remark
Model	• DH400-G10	
Specification	• Type : Ballistic Type (Free Fight)	
	• Number of Wire : 9Pin	
Solenoid Coil	• Resistance : 10Ω ± 15%	
	• Inductance : 4.5mH ± 15% (Open Circuit)	
	• Temperature Rate : 155 Deg.C	
	• Insulation Resistance : 10MΩ	
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)	

Table 2-5 Printer Head Specification

2-3-5 Printer Head Thermistor Specification

Item	Description	Remark
Type	• LP310-1J (Tama Elec. Co.,Ltd) or Correspond to it	Any thermistor which correspond to it
Electronic Characteristics	• Resistance R25 : 17.3 KΩ (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	• RX = R25 x Exp {B x (1/TX -1/T25)]}	T : Absolute Temperature

Table 2-6 Printer Head Thermistor Specification

2-3-6 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 Ω	
Step Angle	• 7.5 °	
Pull Out Torque	• 1200 PPS 200 g/cm	

Table 2-7 Feed & Carriage Motor Specification

2-3-7 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)	

Table 2-8 Auto Cutter Specification

2-3-8 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 0.07~0.085mm (0.0028 ~ 0.0034") • Weight : 52.3 ~64 g/m^2 (0.115 ~ 0.1411 lb)	

Table 2-9 Printer Paper Specification

2-3-9 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)

Table 2-10 Ribbon Cassette Specification

2-3-10 Other Component Specification

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

Table 2-11 Other Component Specification

2-4 SMPS Specifications

2-4-1 SMPS (Switching Mode Power Supply) Specification

Input Voltage	• 110 VAC ~ 240 VAC	
Input Current	• 1.0 A (Max)	
Line Regulation	• +24V ± 1%	
Load Regulation	• +24V ±5%	
Ripple Noise	• Peak 300mV	
O.C.P	• 2.3 A ~ 2.5 A	(Over Current Protect)

Table 2-12 Power Adapter (SMPS) Specification

2-4-2 SMPS Output Connector

Pin Number	Signal Name
1	+24 VDC
2	GND

Table 2-13 Power Connector Pin Description

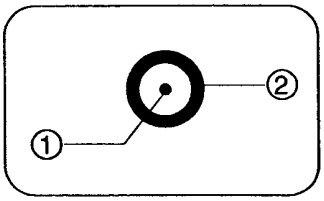


Figure 2-5 Power Connector

2-5 Interface Specification

2-5-1 RS-232C Serial Interface

2-5-1-(a) Specification

Item	Description	Remark
Data Transmission	• Serial	
Synchronization	• Asynchronous	
HandShaking (Flow Control)	• H/W : DTR / DSR • S/W : XON / XOFF	XON : ASC Code 11 XOFF : ASC Code 13
Signal Level	• Logic"1" (MARK) : -3V ~ -15V • Logic"0" (SPACE) : +3V ~ +15V	
Baud Rate	• 1200 / 2400 / 4800 / 9600 Bps	
Data Word Length	• 7 Bit / 8 Bit	
Parity	• None / Even / Odd	
Connector	• DB25P Female (I/F PBA)	

Table 2-14 RS-232C Specification

Note : The HandShaking (Flow Control) / Data Word Length / Baud Rate / Parity functions depend on the DIP switch settings. Refer to the Operation Manual.

2-5-1-(b) RS-232C I / F Cable

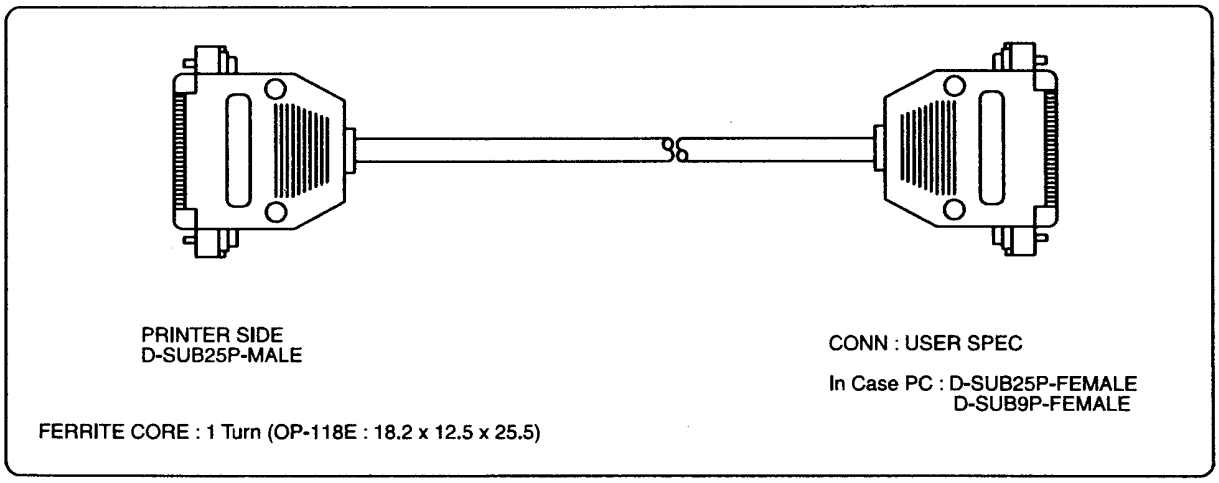


Figure 2-6 RS-232C Cable

2-5-1-(c) Cable Connection

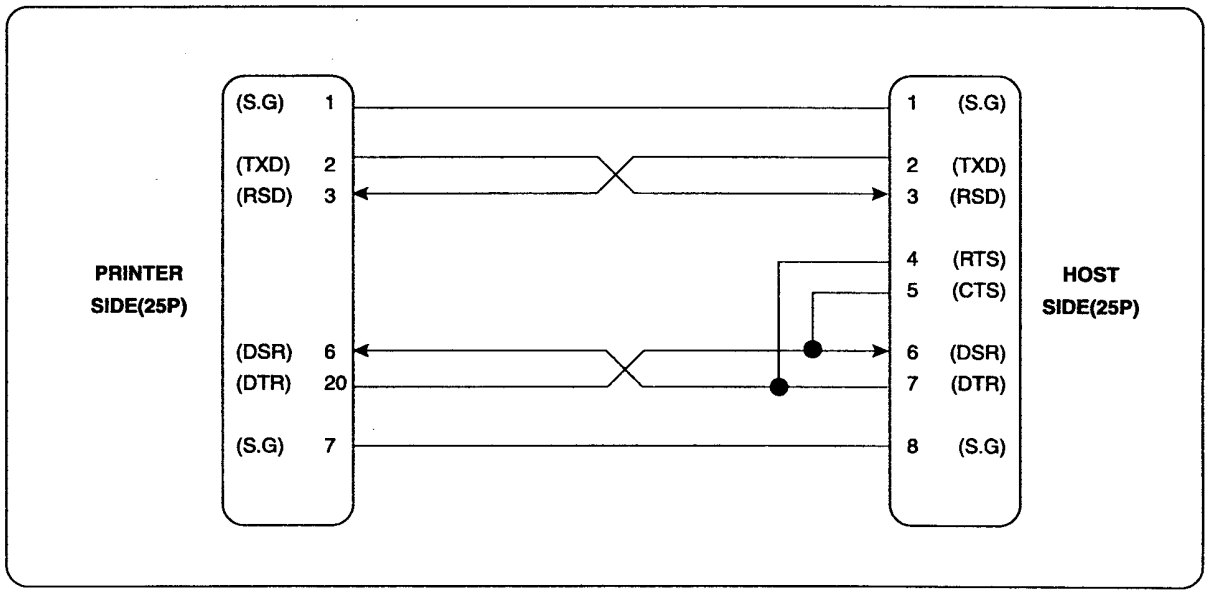


Figure 2-7 RS-232C Cable Connection

2-5-1-(d) Signal Description

Pin No.	Signal Name	Signal Direction	Function
BODY	Frame GND	-	Frame Ground
2	TXD	Output	Transmit Data
3	RXD	Input	Receive Data
6	DSR	Input	This signal indicates whether the host computer can receive data. (H/W flow control) ① MARK(Logic 1) : The host can receive data. ② SPACE(Logic 0) : The host can not receive 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	Signal GND	-	Signal Ground
20	DTR	Output	This Signal indicates whether the printer is busy. (H/W flow control) ① MARK(Logic 1) : The printer is busy ② SPACE(Logic 0) : 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 2-15 RS-232C Pin Description

Note : Refer to the Operation Manual about the busy condition

2-5-1-(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 7 (Special Circuit Diagrams).

2-5-1-(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 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.

2-5-2 RS-485 Serial Interface

2-5-1-(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 11th XOFF : ASC Code 13th
Signal Level	• Logic "1" : SD1-SD2 0.2V, RD1-RD2 0.2V • Logic"0" :SD1-SD2 ≤ 0.2V, RD1-RD2 ≤ 0.2V	
Baud Rate	• 1200 / 2400 / 4800 / 9600 bps	
Data Word Length	• 7 Bit / 8 Bit	
Parity	• None / Even / Odd	
Connector	• DB25P Female (I/F PBA)	

Table 2-16 RS-485 Specification

Note : The HandShaking (Flow Control) / Data Word Length / Baud Rate / Parity functions depend on the DIP switch settings. Refer to the Operation Manual.

2-5-1-(b) RS-485 I/F Cable

Same as the appearance of RS-232C Cable

2-5-2-(c) Cable Connection

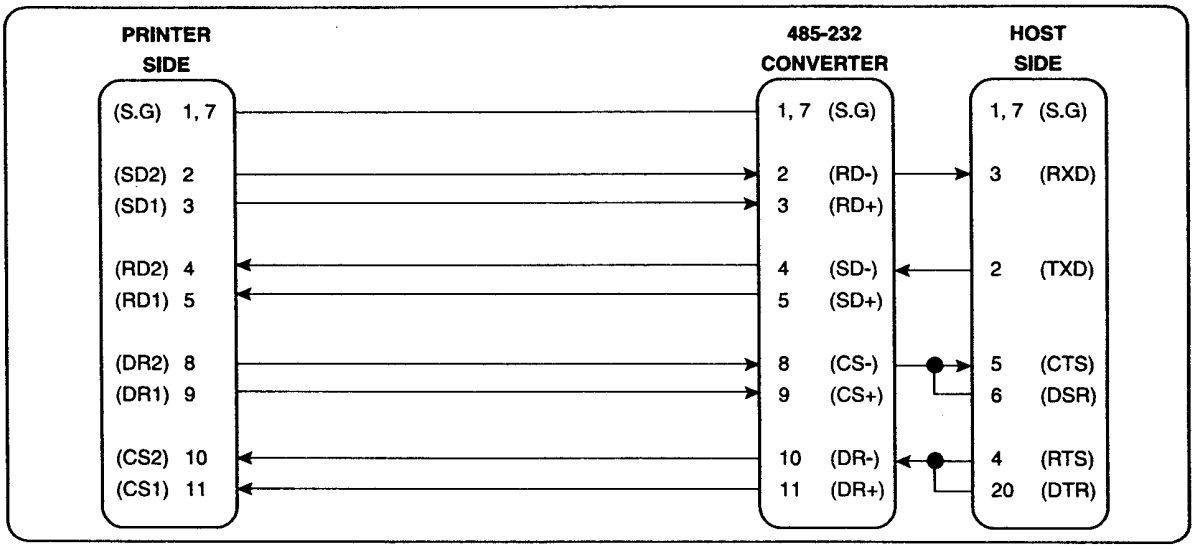


Figure 2-8 RS-485 Cable Connection

2-5-1-(d) Signal Description

Pin No.	Signal Name	Signal Direction	Function
BODY	Frame GND	-	Frame Ground
2	SD2	Output	Transmit 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	Signal GND	-	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 (L) : 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 (L) : The host computer is READY. ③ The printer transmits a data to the host, after confirming this signal.

Table 2-17 RS-485 Pin Description

Note : BUSY condition and other information refer to the Operation Manual.

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

2-5-1-(e) H/W Flow Control Timing

When DR1,2/ CS1,2 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 transmit a data to the Host. The host is the same. Refer to the Interface Part of Chapter 7(Special Circuit Diagrams).

2-5-1-(f) S/W Flow Control Timing

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 recognizes 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 recognizes that the printer is not busy. And the host transmits a data to the printer.

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

2-5-3 IEEE 1284 Parallel Interface

Bidirectional parallel interface : in accordance with the IEEE 1284 Nibble /Byte mode

2-5-3-(a) Forward Mode Specification(Compatibility mode)

Data transmission from host computer to printer : Centronics compatiable

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

Table 2-18 IEEE1284 Specification

2-5-3-(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 TS made via the existing control lines in units of bits(Nibble). In the Byte mode, data transmission TS accomplished by making the 8-bits data lines bidirectional.
Neither mode can operate at the same time as the compatibility mode, so switching is always required.

2-5-3-(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	NautoFd	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 2-19 IEEE1284 Pin Description

2-5-3-(c) IEEE 1284 I/F Cable

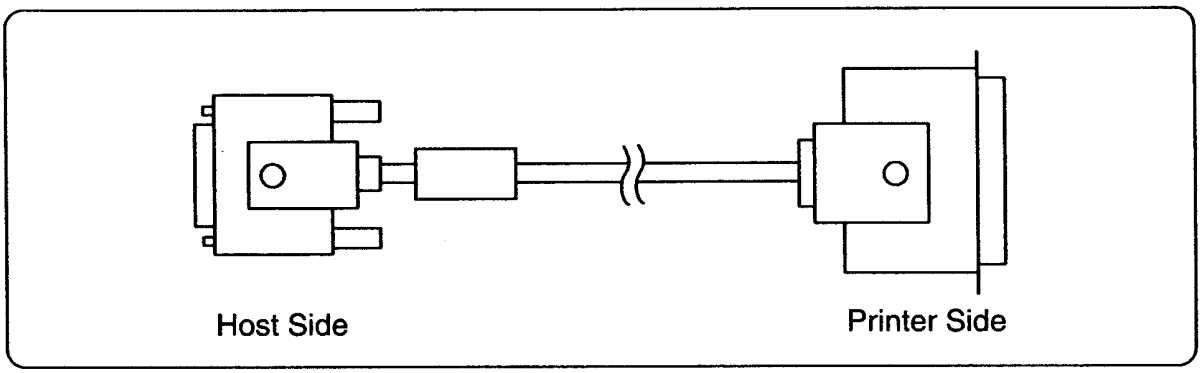


Figure 2-9 IEEE 1284 I/F Cable

2-5-4 USB Interface

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

2-5-4-(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	• 12Mbps	
Power	• Self - Powered	
Cable & Connector	• Cable : 5m / 2m • Connector : B Type	
Other	• Support USB SPEC V1.1	

Table 2-20 USB Specification

2-5-4-(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 2-21 USB Pin Description

2-5-4-(c) USB I/F Cable

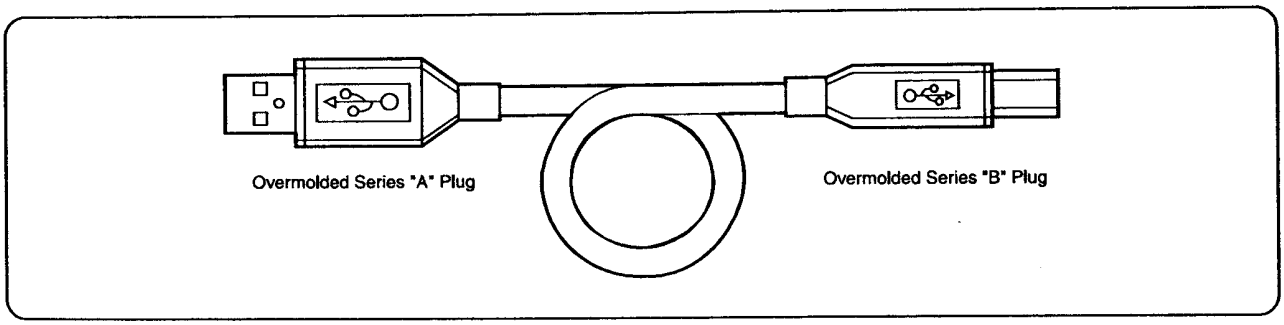


Figure 2-10 USB Cable

2-6 Drawer Kick-Out Specification

2-6-1 Drawer Cable

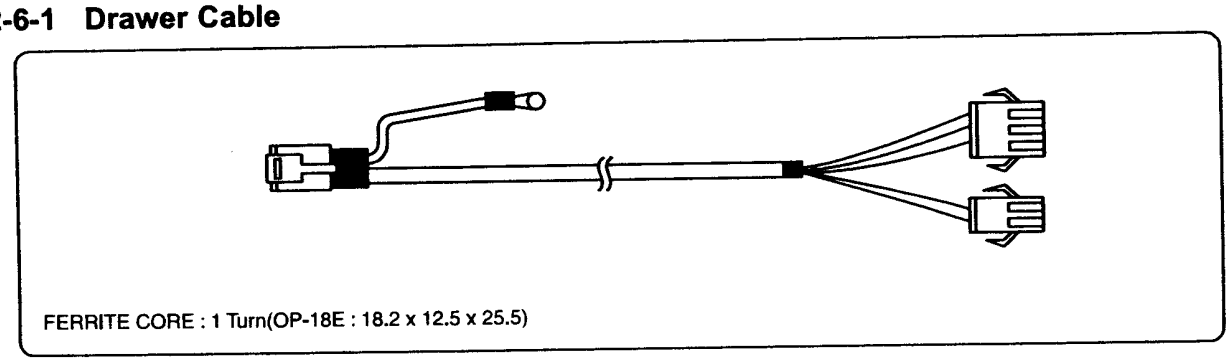


Figure 2-11 Drawer Cable

2-6-2 Cable Connection

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

Table 2-22 Drawer Cable Connection

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

3. Operating Instruction and Installation

This Chapter describes the method for installing the Roll Printer system and preparing it for use.

3-1 Installation

3-1-1 AC Adapter Installation

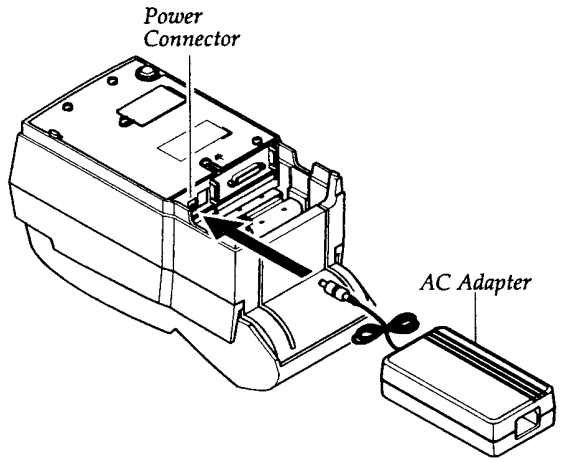


Figure 3-1. AC Adapter Installation

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.

3-1-2 Interface Cable Installation

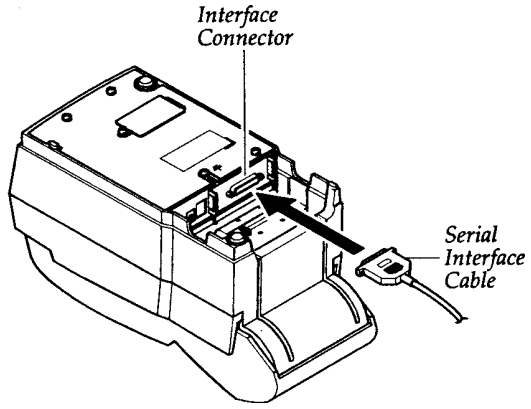


Figure 3-2. Interface Cable Installation

1. Turn off the Printer and host ECR or Computer.
2. Plug the Serial or Parallel Interface Cable Connector into the Interface Connector on the Printer.
3. Tighten the screws on both side of the Connector.
4. Turn on the Printer and host ECR or Computer.

3-1-3 Drawer Kick-Out Installation

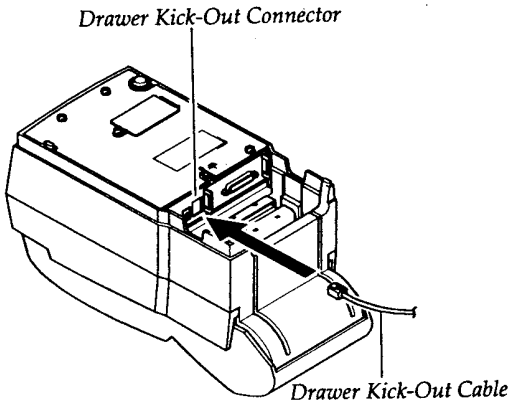


Figure 3-3. Drawer Kick-Out Installation

1. Turn off the Printer.
2. Plug the Drawer Kick-Out Cable Connector into the Connector on the Printer.(To remove the Drawer Kick-Out 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.

3-1-4 Ribbon Cassette Installation

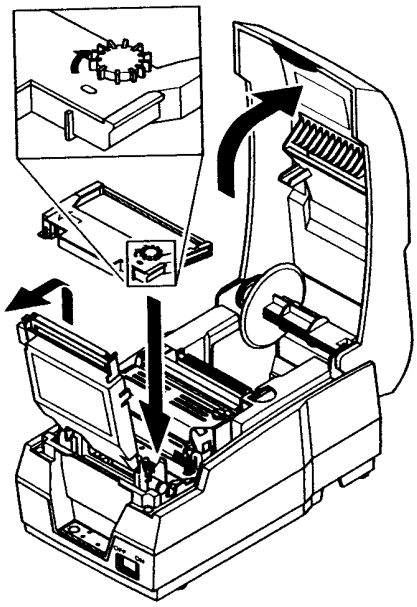


Figure 3-4. Ribbon Cassette Installation

1. Before inserting the ribbon cassette, turn the Knob.
2. Insert the ribbon cassette as shown in Figure 3-4. Pay particular attention to the placement of the ribbon behind the Print Head.
3. After inserting the ribbon cassette, turn the knob clockwise again to make sure the ribbon moves freely in the cassette.

3-1-5 Receipt Paper Installation

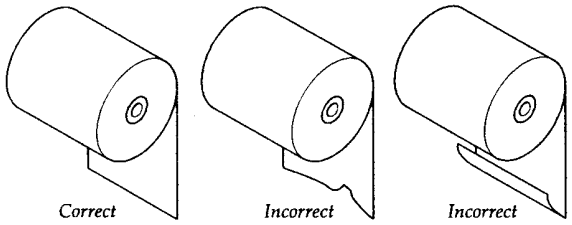


Figure 3-5. Preparing the Paper

1. Using a new roll paper, unroll the paper and cut the end as shown in Figure 3-5.

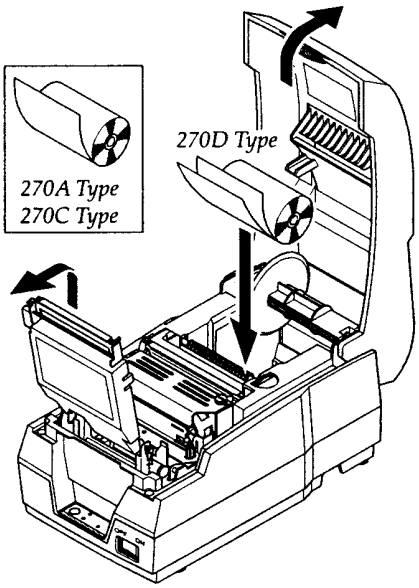


Figure 3-6. Paper Installation

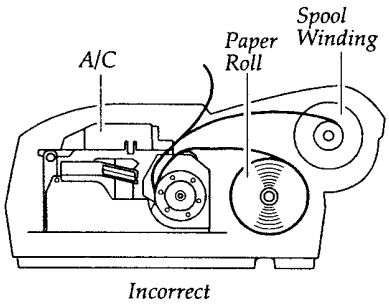
2. In case of Model 270C/D, open Auto Cutter on the power ON.

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.



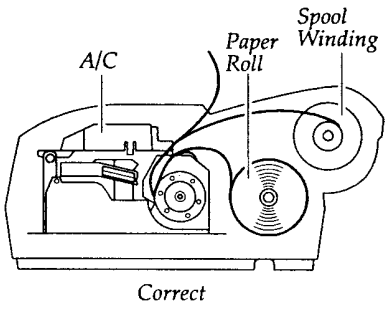


Figure 3-7. Inserting the Paper

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(see Figure 3-7).

3-2 Operation

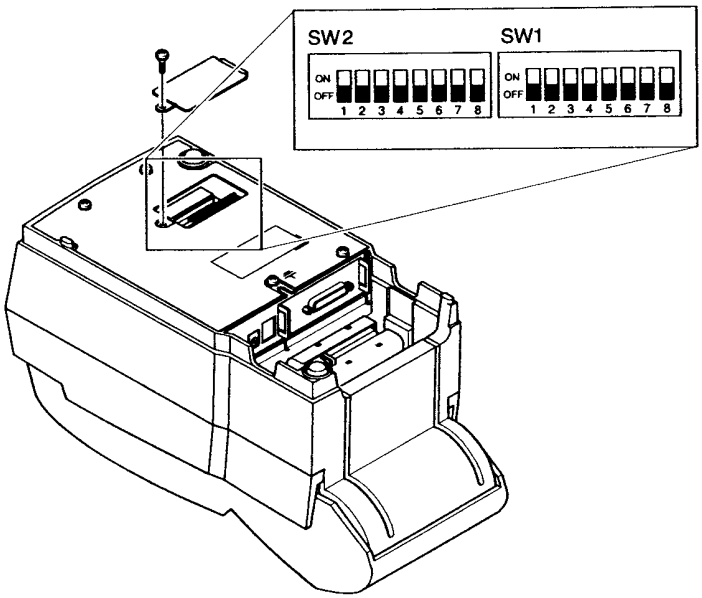
3-2-1 Setting the DIP Switches

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 steps when changing DIP Switch 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 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.



3-2-2 Setting the DIP switch (Serial Interface {RS232C / RS485} Specification)

SW	Function	ON	OFF	Default
1	Emulation Selection	Refer to the following table		OFF
2				OFF
3	Auto-Cutter	Enable	Disable	OFF
4	FONT SPACE	2	3	OFF
5	Vertical Alignment	Refer to the following table		OFF
6				OFF
7	Vertical Alignment Check	Enable	Disable	OFF
8	RESERVED	-	-	OFF

Table 3-1 DIP Switch 1 Setting

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

Table 3-2 Emulation mode selection

SW-5	SW-6	MODE
ON	OFF	BACKLASH #0
OFF	OFF	BACKLASH #1
OFF	ON	BACKLASH #2
ON	ON	BACKLASH #3

Table 3-3 Vertical Alignment Control

SW	Function	ON	OFF	Default
1	Data Receive Error	Print "?"	Ignore	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		OFF
8				OFF

Table 3-4 Dip Switch 2 Setting

Transmission speed	SW-7	SW-8
1200 baud	ON	ON
2400 baud	OFF	ON
4800 baud	ON	OFF
9600 baud	OFF	OFF

Table 3-5 Baud Rate Selection

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

3-2-3 Setting the DIP switch (Parallel/USB Interface Specification)

SW	Function	ON	OFF	Default
1	Emulation Selection	Refer to the following table		OFF
2				OFF
3	Auto-Cutter	Enable	Disable	OFF
4	FONT SPACE	2	3	OFF
5	Vertical Alignment	Refer to the following table		OFF
6				OFF
7	Vertical Alignment Check	Enable	Disable	OFF
8	RESERVED	-	-	OFF

Table 3-6 DIP Switch 1 Setting

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

Table 3-7 Emulation mode selection

SW-5	SW-6	MODE
ON	OFF	BACKLASH #0
OFF	OFF	BACKLASH #1
OFF	ON	BACKLASH #2
ON	ON	BACKLASH #3

Table 3-8 Vertical Alignment Control

SW	Function	ON	OFF	Default
1	Reserved	-	-	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 3-9 Dip Switch 2 Setting

3-2-4 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.

```
1B 21 00 1B 26 02 40 40    .!..&.@@
02 oD 1B 44 OA 14 1E 28    ...D...(
00 01 0A 41 OD 42 OA 43    ...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.

3-2-5 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.

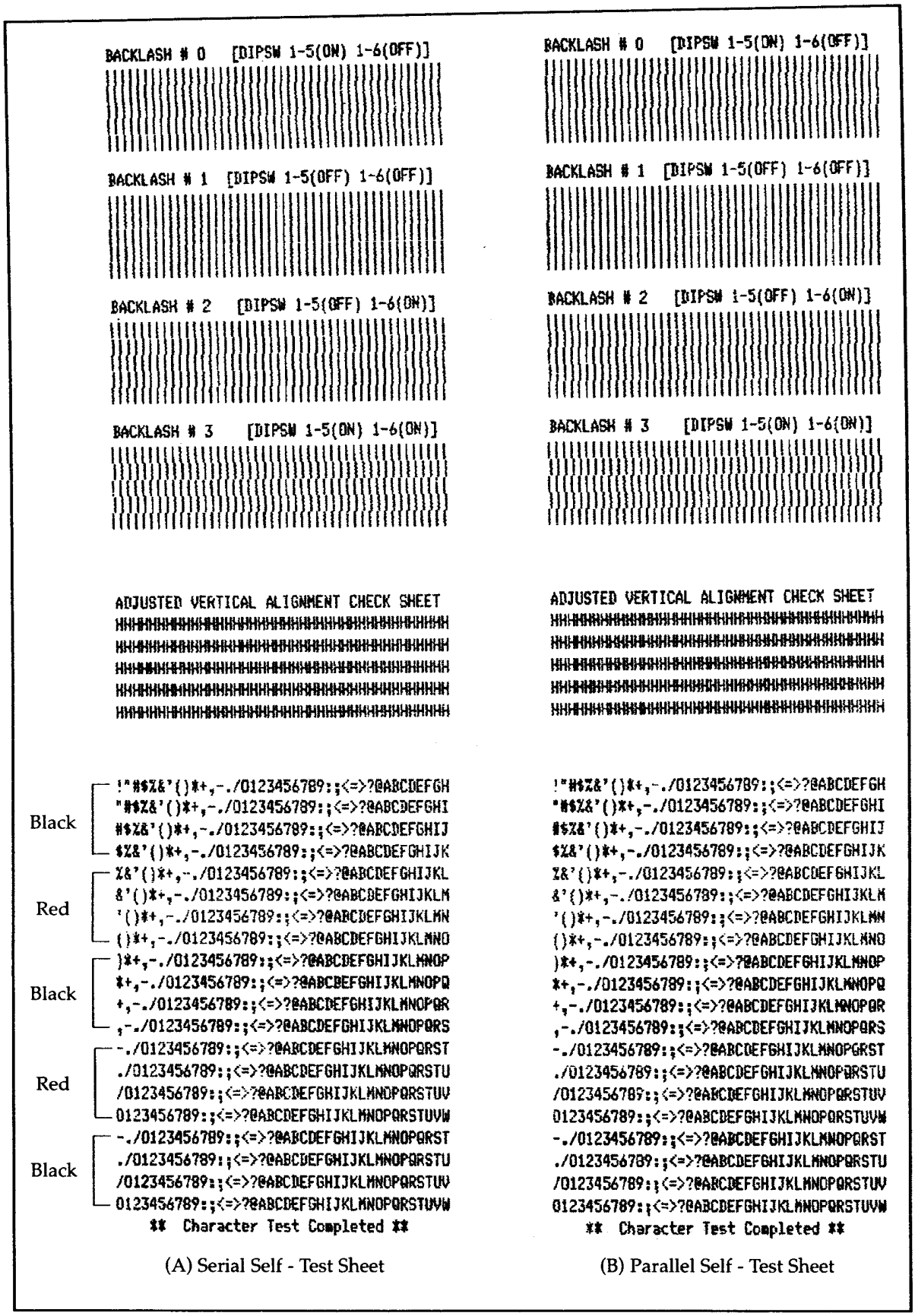
(Example of Self - Test Sheet)

(A) Serial Self - Test Sheet

```
SRP-270 VER. A0.03 2000.06.23
==============================
DIP SWITCH SW2/SW1 STATUS
       12345678 12345678
ON  :             *   *
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
ON  :             *   *
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

(B) Parallel Self - Test Sheet

3-3 Software Control

Command Notation

[Name]	The name of the command.
[Format]	The code sequence. ASCII indicates the ASCII equivalents. Hex indicates the hexadecimal equivalents. Decimal indicates the decimal equivalents. [ ] k indicates the contents of the [ ] should be repeated k times.
[Range]	Gives the allowable ranges for the arguments.
[Description]	Describes the function of the command.

Explanation of Terms

LSB	Least Significant Bit

HT

[Name]	Horizontal tab.
[Format]	ASCII HT Hex 09 Decimal 9
[Description]	Moves the print position to the next horizontal tab position.

LF

[Name]	Print and line feed.
[Format]	ASCII LF Hex 0A Decimal 10
[Description]	Prints the data in the print buf fer and feeds one line based on the current line spacing.

CR

[Name]	Print and carriage return.
[Format]	ASCII CR Hex 0D Decimal 13
[Description]	•This command prints the data in the print buf fer and does not feed the paper •Sets the print starting position to the beginning of the line.

DLE EOT n

[Name] Real-time status transmission.

[Format]

ASCII	DLE	EOT	n
Hex	10	04	n
Decimal	16	4	n

[Range] $1 \le n \le 4$

[Description] Transmits the selected printer status specified by n in real time, according to the following parameters:

n = 1 : Transmit printer status.

n = 2 : Transmit off-line status.

n = 3 : Transmit error status.

n = 4 : Transmit paper roll sensor status.

n = 1 : Printer status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Drawer open/close signal is LOW (connector pin 3).
	On	04	4	Drawer open/close signal is HIGH (connector pin 3).
3	Off	00	0	On-Line.
	On	08	8	Off-Line.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Not waiting for on-line recovery.
	On	20	32	Waiting for on-line recovery.
6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

n = 2 : Off-line status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	-	-	-	Undefined.
3	Off	00	0	Paper is not being fed by using the PAPER FEED button.
	On	08	8	Paper is being fed by the PAPER FEED button.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper-end stop.
	On	20	32	Printing stops due to paper end.
6	Off	00	00	No error.
	On	40	64	Error occurs.
7	Off	00	00	Not used. Fixed to Off.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	No mechanical error.
	On	04	4	Mechanical error occurred.
3	-	-	-	Undefined.
4	On	10	16	Not used. Fixed to On
6	Off	00	0	No auto-recoverable error.
	On	40	64	Auto-recoverable error has occurred.
7	Off	00	0	Not used. Fixed to Off.

n = 3 : Error status

Bit 2: Mechanical errors include home position, carriage sensor, and slip ejection errors.

Bits 2 and 3: If these errors occur due to paper jams or the like, it is possible to recover by correcting the cause of the error and executing DLE ENQ n ($1 \leq n \leq 2$). If an error due to a circuit failure (e.g. broken wire) occurs, it is impossible to recover.

Bit 6: If the print head temperature becomes high, bit 6 is transmitted until the print head temperature drops sufficiently. The printer automatically recovers from this error.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Paper roll end sensor. Paper adequate.
	On	04	4	Paper roll end sensor. Paper end.
3	Off	00	0	Paper roll end sensor. Paper adequate.
	On	08	8	Paper roll end sensor. Paper end.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Paper roll end sensor. Paper present.
	On	20	32	Paper roll end sensor. No paper.
6	On	00	0	Paper roll end sensor. Paper present.
	On	40	64	Paper roll end sensor. No paper.
7	Off	00	0	Not used. Fixed to Off.

n = 4 : Continuous paper sensor status

DLE ENQ n

[Name] Real-time request to printer.

[Format]

ASCII	DLE	ENQ	n
Hex	10	05	n
Decimal	16	5	n

[Range] $1 \le n \le 2$

[Description] Recovers from an error after clearing the receive and print buffers.

- This command is available only with a serial interface, and is ignored with a parallel interface.

ESC SP n

[Name] Set right-side character spacing.

[Format]

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

[Range] $0 \le n \le 255$

[Description] Sets the character spacing for the right side of the character to n/160 inches.

ESC ! n

[Name] Select print mode(s).

[Format]

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

[Range] $0 \le n \le 255$

[Description] Selects print mode(s) using n as follows.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character font(9 X 9) selected.
	On	01	1	Character font(9 X 7) selected.
1,2	-	-	-	Undefined.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	-	-	-	Undefined.
7	Off	00	0	Underline mode not selected.
	On	80	128	Underline mode selected.

- Determine the values of n by adding the value of all the characteristics you want to select.

ESC % n

[Name] Select/Cancel user-defined character set.

[Format]

ASCII	ESC	%	n
Hex	1B	25	n
Decimal	27	37	n

[Range] $0 \le n \le 255$

[Description] Selects or cancels the user-defined character set.
When the Least Significant Bit(LSB) is 0, the user-defined character set is canceled and the internal character set is enabled.
When the LSB is 1, the user-defined character set is selected.

[Notes]

- The user-defined character and the downloaded bit image cannot be defined simultaneously.

[Default] n=0

ESC & y c1 c2 [x1 d1... d(y X x1)]... [xk d1... d(yx X xk)]

[Name] Define user-defined characters.

[Format]

ASCII	ESC	&	n	y	c1	c2 [x1 d1... d(y X x1)]...[xk d1... d(yx X xk)]
Hex	1B	26	n	y	c1	c2 [x1 d1... d(y X x1)]...[xk d1... d(yx X xk)]
Decimal	27	38	n	y	c1	c2 [x1 d1... d(y X x1)]...[xk d1... d(yx X xk)]

[Range] y=2, $32 \le c1 \le c2 \le 126$
$0 \le x \le 12$ (9 X 9 font)
$0 \le x \le 9$ (7 X 9 font)
$0 \le d1 \ldots d(y \text{ X } x) \le 255$

[Description] Defines user-defined characters.

- y specifies the number of bytes in the vertical direction
- c1 specifies the beginning character code for the definition, and c2 specifies the final code. For only one character, use c1 = c2.
- The allowable character code range is from decimal code 32 to 126. The maximum number of user-define character is 95.
- x specifies the number of dots in the horizontal direction.
- d is the dot data for the characters. The dot pattern is on the horizontal direc tion from the left side. Any remaining dots on right side are blank.
- The number of bytes required to download a character definition for one character is "y" X "x".
- In the definition data, a "1" represents a dot that is to be printed, and a "0" represents a dot that is not to be printed.
- Independent downloaded character definitions are possible for each font. The font is selected characters are cleared in the following circumstance.
  1. When "ESC @" is executed
  2. When deleted by "ESC ?"
  3. When printer is reset or turned off

ESC * m nL nH d1...dk

[Name] Select bit-image mode.

[Format]

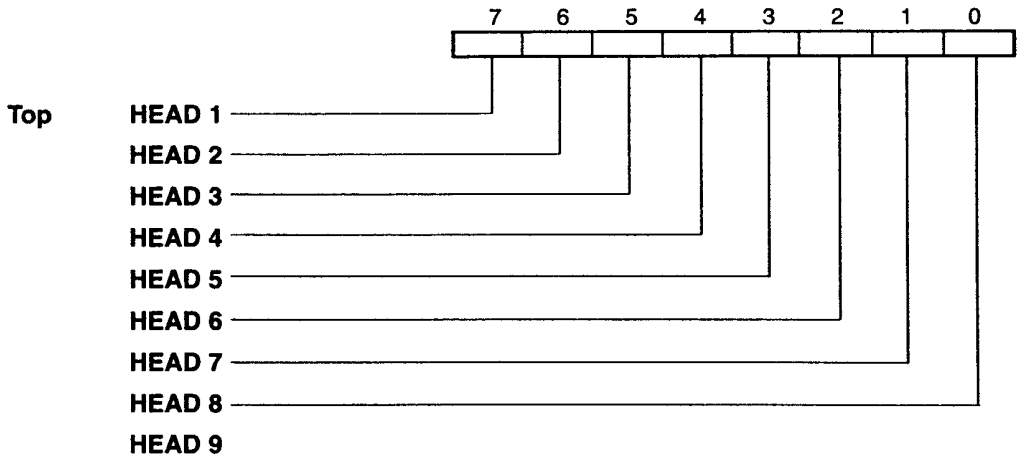
ASCII	ESC	*	m nL nH d1...dk
Hex	1B	2A	m nL nH d1...dk
Decimal	27	42	m nL nH d1...dk

[Range]
$m = 0, 1$
$0 \le nL \le 255$
$0 \le nH \le 1$
$0 \le d \le 255$

[Description] Selects a bit-image mode using m for the number of dots specified by nL and nH.

m	No. Vertical Dots	Horizontal Direction		Maximum number of dots
		Dot Density	Adjacent dot	
0	8	Single Density	Permitted	180
1	8	Double Density	Prohibited	360

- The nL and nH indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated by nL + nH X 256.
- If the bit-image data input exceeds the number of dots to be printed on a line, the excess data is ignored.
- d indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0 not to print a dot.
- The relationship between the image data and the dots to be printed is as follows.



ESC - n

[Name] Turn underline mode on/off.

[Format]

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

[Range] n = 0, 1, 48, 49

[Description] Turns underline mode on or off, based on the following values of n:

[Default] n = 0

n	Function
0,48	Turns off underline mode.
1,49	Turns on underline mode.

ESC 2

[Name] Select default line spacing.

[Format]

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

[Description] Sets the line spacing to 1/6-inch line spacing.

ESC 3 n

[Name] Set line spacing.

[Format]

ASCII	ESC	3	n
Hex	1B	33	n
Decimal	27	51	n

[Range] $0 \leq n \leq 255$

[Description] Sets the line spacing to [n X vertical or horizontal motion unit] inches.

[Default] n=24

ESC <

[Name] Return home.

[Format]

ASCII	ESC	<
Hex	1B	3C
Decimal	27	60

[Description] Moves the print head to the standby position.

ESC = n

[Name] Select peripheral device.

[Format]

ASCII	ESC	=	n
Hex	1B	3D	n
Decimal	27	61	n

[Range] $0 \le n \le 253$

[Description] Selects device to which host computer sends data, using n as follows:

[Default] n=1

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Printer Disabled.
	On	01	1	Printer Enabled.
1 ~ 7	-	-	-	Undefined

ESC ? n

[Name] Cancel user-defined characters.

[Format]

ASCII	ESC	?	n
Hex	1B	3F	n
Decimal	27	63	n

[Range] $32 \le n \le 126$

[Description] Cancels user-defined characters.

ESC @

[Name] Initialize printer.

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Description] Clears the data in the print buffer and resets the printer mode to the mode that was in effect when the power was turned on.

ESC D n1... nk NUL

[Name] Set horizontal tab positions.

[Format]

ASCII	ESC	D	n1... nk NUL
Hex	1B	44	n1... nk 00
Decimal	27	68	n1... nk 0

[Range] $1 \le n \le 255$

$0 \le k \le 32$

[Description] Sets horizontal tab positions.

- n specifies the column number for setting a horizontal tab position from the beginning of the line.
- k indicates the total number of horizontal tab positions to be set.

ESC E n

[Name] Turn emphasized mode on/off.

[Format]

ASCII	ESC	E	n
Hex	1B	45	n
Decimal	27	69	n

[Range] $0 \leq n \leq 255$ (Only the lowest bit of n is enabled)

[Description] Turns emphasized mode on or off.

- When the LSB of n is 0, emphasized mode is turned off.
- When the LSB of n is 1, emphasized mode is turned on.

ESC G n

[Name] Turn on/off double-strike mode.

[Format]

ASCII	ESC	G	n
Hex	1B	47	n
Decimal	27	71	n

[Range] $0 \leq n \leq 255$

[Description] Turns double-strike mode on or off.

- When the LSB of n is 0, double-strike mode is turned off.
- When the LSB of n is 1, double-strike mode is turned on.

ESC J n

[Name] Print and feed paper.

[Format]

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

[Range] $0 \leq n \leq 255$

[Description] Prints the data in the print buffer and feeds the paper n X vertical or horizontal motion unit.

ESC K n

[Name] Print and reverse feed.

[Format]

ASCII	ESC	K	n
Hex	1B	4B	n
Decimal	27	75	n

[Range] $0 \leq n \leq 255$

[Description] Prints the data in the print buffer and feeds the paper n X vertical or horizontal motion unit in the reverse direction.

ESC R n

[Name] Select an international character set.

[Format]

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

[Range] $0 \le n \le 10$

[Description] Selects an international character set n from the following table.

[Default] n=0

n	Character set	n	Character set
0	U.S.A	5	Sweden
1	France	6	Italy
2	Germany	7	Spain
3	U.K.	9	Norway
4	Denmark 1	10	Denmark 2

ESC U n

[Name] Turn on/off unidirectional printing mode.

[Format]

ASCII	ESC	U	n
Hex	1B	55	n
Decimal	27	85	n

[Range] $0 \le n \le 255$

[Description] Turns unidirectional printing mode on or off.

- When the LSB of n is 0, turns off unidirectional printing mode.
- When the LSB of n is 1, turns on unidirectional printing mode.

ESC a n

[Name] Select justification.

[Format]

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range] $0 \le n \le 2, 48 \le n \le 50$

[Description] Aligns all the data in one line to the specified position.
n selects the type of justification as follows.

n	Justification
0,48	Left justification
1,49	Centering
2,50	Right justification

ESC c 3 n

[Name] Select paper sensor(s) to output paper end signals.

[Format]

ASCII	ESC	c	3	n
Hex	1B	63	33	n
Decimal	27	99	51	n

[Range] $0 \le n \le 255$

[Description] Selects the paper sensor(s) to output paper end signals. This command is available only with a parallel interface and is ignored with serial interface.

- Each bit of n is used as follows.
- This command is available only with a parallel interface and is ignored with a serial interface.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper roll end sensor disabled.
	On	01	1	Paper roll end sensor enabled.
1 - 7	-	-	-	Undefined.

ESC c 5 n

[Name] Enable/Disable panel button.

[Format]

ASCII	ESC	c	5	n
Hex	1B	63	35	n
Decimal	27	99	53	n

[Range] $0 \le n \le 255$

[Description] Enables or disables the panel button.

- When the LSB is 0, the panel buttons are enabled.
- When the LSB is 1, the panel buttons are disabled.

ESC d n

[Name] Print and feed n lines.

[Format]

ASCII	ESC	d	n
Hex	1B	64	n
Decimal	27	100	n

[Range] $0 \le n \le 255$

[Description] Prints the data in the print buffer and feeds n lines.

ESC e n

[Name] Print and reverse feed n lines.

[Format]

ASCII	ESC	e	n
Hex	1B	65	n
Decimal	27	101	n

[Range] $0 \le n \le 2$

[Description] Prints the data in the print buffer and feeds n lines in the reverse direction.

ESC m

[Name] Executes partial cut.

[Format]

ASCII	ESC	m
Hex	1B	6D
Decimal	27	109

[Description] Executes partial cut with one point uncut.

ESC p m t1 t2

[Name] Generate pulse.

[Format]

ASCII	ESC	p	m t1 t2
Hex	1B	70	m t1 t2
Decimal	27	112	m t1 t2

[Range] m = 0, 1, 48, 49
$0 \le t1 \le 255$
$0 \le t2 \le 255$

[Description] Outputs the pulse specified by t1 and t2 to connector pin m as follows:

m	Connector pin
0, 48	Drawer kick-out connector pin 2
1, 49	Drawer kick-out connector pin 5

ESC r n

[Name] Select print color.

[Format]

ASCII	ESC	r	n
Hex	1B	72	n
Decimal	27	114	n

[Range] n = 0,1,48,49

[Description] Selects a print color, using n as follows.

n	Print color
0,48	Black
1,49	Red

ESC t n

[Name] Select character code table.

[Format]

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

[Range] $0 \le n \le 5, 254 \le n \le 255$

[Description] Selects a page n from the character code table.

n	Page
0	0 (PC437 {USA, standard Europe})
2	2 (PC850 {Multilingual})
3	3 (PC860 {Portuguese})
4	4 (PC863 {Canadian-French})
5	5 (PC865 {Nordic})
19	19 (PC858 {Euro})

ESC u n

[Name] Peripheral status.

[Format]

ASCII	ESC	u	n
Hex	1B	75	n
Decimal	27	117	n

[Range] n = 0

[Description] Transmits the peripheral status (drawer).
After receiving this command, the printer transmits only 1 byte without confirming the condition of the DSR signal.
Transmit data : 01H = drawer open.
00H = drawer closed.

- This command is available only with a serial interface, and is ignored with a parallel interface.

ESC { n

[Name] Turns on/off upside-down printing mode.

[Format]

ASCII	ESC	{	n
Hex	1B	7B	n
Decimal	27	123	n

[Range] $0 \le n \le 255$

[Description] Turns upside-down printing mode on or off.

- When the LSB of n is 0, upside-down printing mode is turned off.
- When the LSB of n is 1, upside-down printing mode is turned on.

GS I n

[Name] Transmit printer ID.

[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range] $1 \le n \le 3, 49 \le n \le 51$

[Description] Transmits the printer ID specified by n as follows:

n	Printer ID	Specification	ID (hexadecimal)
1, 49	Printer model ID	SRP-270/SRP-270P	0DH
2, 50	Type ID	See table below.	
3, 51	ROM version ID	ROM version	

n=2, Type ID

Bit	Off / On	Hex	Decimal	Function
0	Off	00	0	Two-byte character code not supported.
1	Off	00	0	Auto cutter not equipped.
2,3	-	-	-	Undefined.
4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

[Notes]

- When DTR/DSR control is selected, the printer transmits only 1 byte after confirming that the host is ready to receive data(DSR signal is SPACE).

  If the host computer is not ready to receive data (DSR signal is MARK), the printer waits until the host is ready. When XON/XOFF control is selected, the printer transmits only 1 byte without confirming the condition of the DSR signal.
- The printer ID is transmitted when the data in the receiving buffer is developed.

  Therefore, there may be a time lag between receiving this command and transmitting the status, depending on the receive buffer status.

GS V m n

[Name] Feed paper for cutting position.

[Format]

ASCII	GS	V	m	n
Hex	1D	56	m	n
Decimal	29	86	m	n

[Range] $65 \le m \le 66$, $0 \le n \le 255$

[Description] Feeds paper for cutting position as follows:

m	Print mode
65	Feeds paper (cutting position + [nX(vertical motion unit)]), and cuts the paper Partially.
66	Feeds paper (cutting position + [nX(vertical motion unit)]), and cuts the paper partially.

GS r n

[Name] Transmit status.

[Format]

ASCII	GS	r	n
Hex	1D	72	n
Decimal	29	114	n

[Range] $1 \le n \le 2$, $49 \le n \le 50$

[Description] Transmits the status specified by n as follows.

n	Function
1, 49	Transmits paper sensor status.
2, 50	Transmits drawer kick-out connector status.

Paper sensor status(n=1, 49):

Bit	Off / On	Hex	Decimal	Function
0	Off	00	0	Paper roll end sensor: paper adequate.
	On	01	1	Paper roll end sensor: paper end.
1	Off	00	0	Paper roll end sensor: paper adequate.
	On	02	2	Paper roll end sensor: paper end.
2	Off	00	0	Paper roll end sensor: paper present.
	On	04	4	Paper roll end sensor: no paper present.
3	Off	00	0	Paper roll end sensor: paper present.
	On	08	8	Paper roll end sensor: no paper present.
4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

Bits 0 and 1 : The "paper roll end" detector is an option; on units that do not have this detector, the "paper roll end" detector always indicates that paper is present(bits 0 and i=1), whether or not it actually is.

Drawer kick-out connector status(n=2);

Bit	Off / On	Hex	Decimal	Function
0	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	01	1	Drawer kick-out connector pin 3 is HIGH.
1-3	-	-	-	Undefined.
4	Off	00	0	Not used. Fixed to Off.
5-6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

3-4 Control Codes

STAR mode

Control code	Hexadecimal code	Function
<ESC> "C" n	1B 43 n	Set page length at n lines
<ESC> "R" n	1B 52 n	Select international character set.
<ESC> "M"	1B 4D	Select 9 x 7(Half dots) character size
<SO>	0E	Select expanded character mode
<SI>	0F	Select upside-down
<DC2>	12	Cancel upside-down character
<DC4>	14	Cancel expanded character mode (Default setting)
<ESC> "W" "1" <ESC> "W" <1>	1B 57 31 1B 57 01	Select expanded character mode
<ESC> "W" "0" <ESC> "W" <0>	1B 57 30 1B 57 00	Cancel expanded character mode (Default setting)
<ESC> "4"	1B 34	Red color print selection
<ESC> "5"	1B 35	Red color print deselection
<ESC> "E"	1B 45	Emphasized print mode selection
<ESC> "F"	1B 46	Emphasized print mode deselection (Default setting)
<ESC> "a" n	1B 61 n	Feed paper n lines
<ESC><BEL>n1 n2	1B 07 n1 n2	Adjust drive pulse width for peripheral unit (Default setting)
<BEL>	07	Deferred drive command "A" for peripheral unit 1
<FS>	1C	Immediate drive command "B" for peripheral unit 1
<SUB>	1A	Immediate drive command for peripheral unit 2
<EM>	19	Immediate drive command for peripheral unit 2
<CAN>	18	Cancel print data in buffer
<ESC> "@"	1B 40	Initialize printer
<ESC> "e" "0" <ESC> "e" <0>	1B 65 30 1B 65 00	FEED switch valid (Default setting)
<ESC> "e" "1" <ESC> "e" <1>	1B 65 31 1B 65 01	FEED switch invalid
<ESC> U n	1B 55 n	Set or Cancel uni-direction mode
<ESC> - n	1B 2D n	Set or Cancel underline mode
<ESC> "z" "1" <ESC> "z" <1>	1B 7A 31 1B 7A 01	Set 1/6 inch line feed
<FF>	0C	Page feed (form feed)
<ESC> d "0"	1B 64 30	Partial cut
<ESC> d "1"	1B 64 31	Partial cut
<ESC> "-" "1" <ESC> "-" <1>	1B 5F 31 1B 5F 01	Select over-line mode
<ESC> "-" "0" <ESC> "-" <0>	1B 5F 30 1B 5F 00	Cancel over-line mode
<ESC> "e" "1" <ESC> "e" <1>	1B 65 31 1B 65 01	Set the control panel switch invalid
<ESC> "e" "0" <ESC> "e" <0>	1B 65 30 1B 65 00	Set the control panel switch valid
<ESC> "f" "1" <ESC> "f" <1>	1B 66 31 1B 66 01	Set the ON LINE switch invalid
<ESC> "f" "0" <ESC> "f" <0>	1B 66 30 1B 66 00	Set the ON LINE switch valid

CITIZEN mode

Function code	Hexadecimal code	Function
<FF> "n"	0C + n	"n" -lines paper feed command
<LF>	OA	Paper feed command
<SO>	0E	Enlarged character command
<SI>	0F	Normal character command
<DC1>	11	Initial set command
<DC2>	12	Inverted character command
<DC3>	13	Red color print command
<CAN>	18	Clear command
<ESC> "P" "0"	1B, 50, 00	Paper partial cut command
<ESC> "P" "1"	1B, 50, 01	Paper partial cut command
<ESC> "-" "n"	1B, 2D, n	Underline command
<ESC> "1"	1B, 31	1/9 inch paper feed preset command
<ESC> "2"	1B, 32	2/9 inch paper feed preset command
<ESC> "C" "n"	1B, 43, n	Page length set command
<ESC> "f" "1"	1B, 66, 01	Form feed command
<SUB>	1A	Second drawer drive command
<FS>	1C	First drawer quick drive command
<ESC> <BEL> n1 n2	1B, 07, n1, n2	Drive pulse setting command for the first drawer
<BEL>	07	First drawer drive command

4. Disassembly and Reassembly

4-1 General Precautions on Disassembly

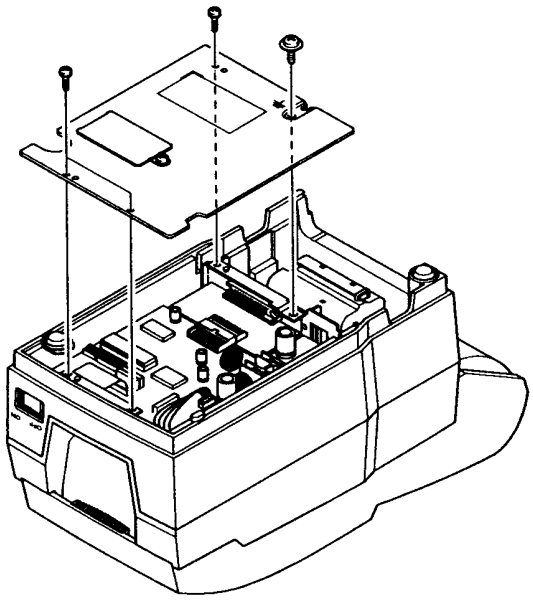
This chapter describes the Disassembly and Reassembly procedures for the Printer of SRP-270 Series.
This Printer contains electronically sensitive device.
Use caution when handling any component.

Whenever servicing the machine, you must perform as follows:

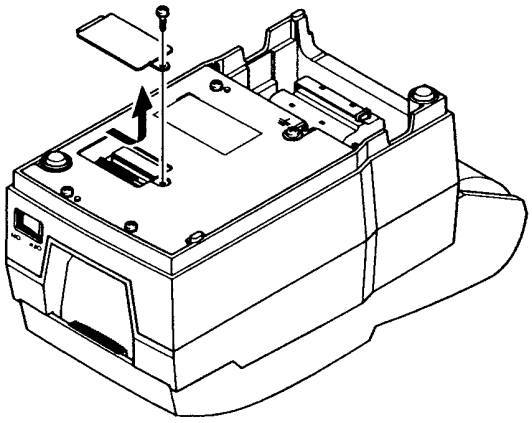
1. Disconnect the DC power jack of Adapter from the Printer before Disassembling.
2. Use a flat and clean surface.
3. Replace only with authorized components.
4. Do not force to remove plastic-material components.
5. Make sure all components are in their proper position.

4-2 Plate Bottom

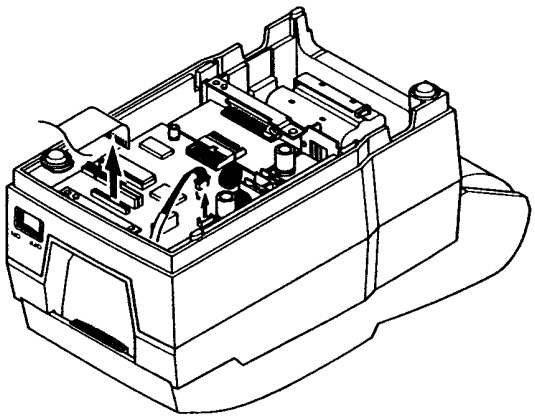
1. Remove four screws securing the Plate Bottom. Separate the Plate Bottom from the Lower Case.



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

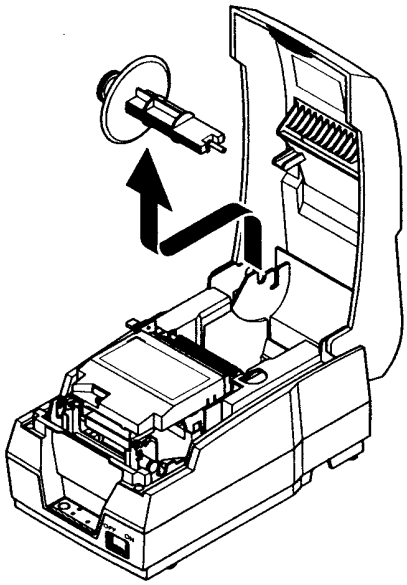


3. Unplug Auto Cutter wire and FPC Cable from the Main PCB.

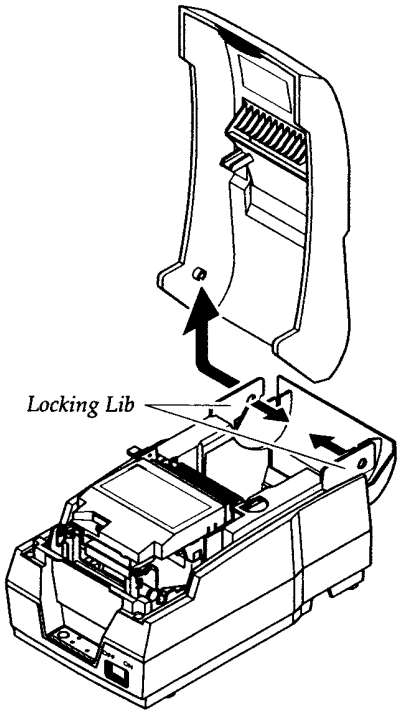


4-3 Cover Ass'y (SRP-270D Type)

1. Open the Cover Ass'y and take out the Spool Winding, as shown below.

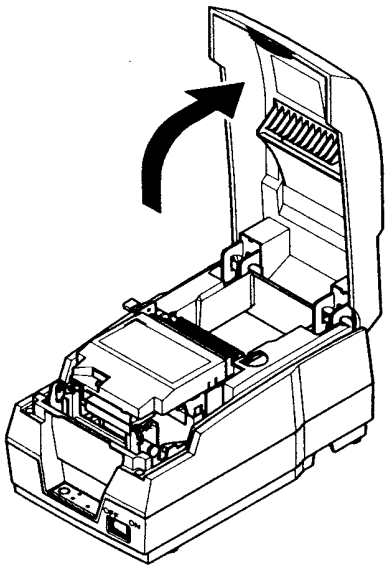


2. Push the locking lib to the direction of arrow and remove the Cover Ass'y, as shown below.

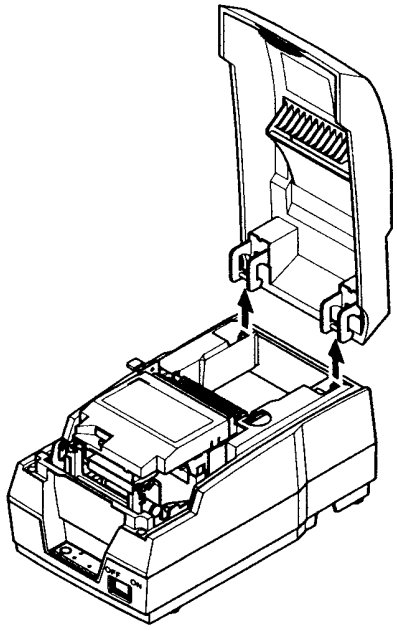


4-4 Cover Ass'y (SRP-270A, SRP-270C)

1. Open the Cover Ass'y.

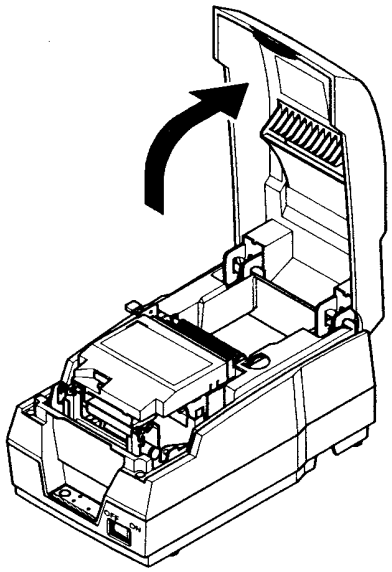


2. Pull the Cover Ass'y upward and remove it.

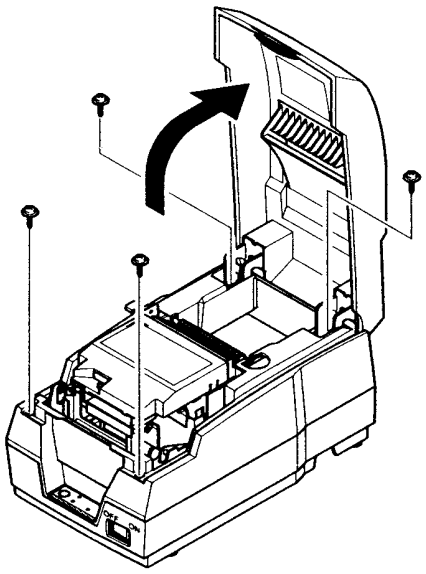


4-5 Case Upper Ass'y (SRP-270A,C Type)

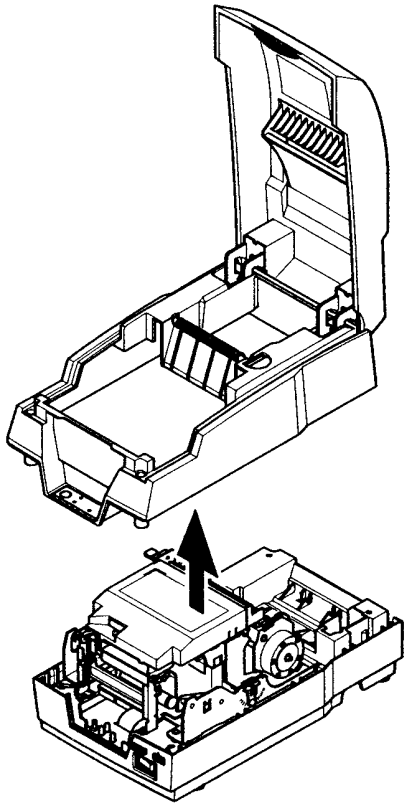
1. Open the cover Ass'y.



2. Remove four screws.

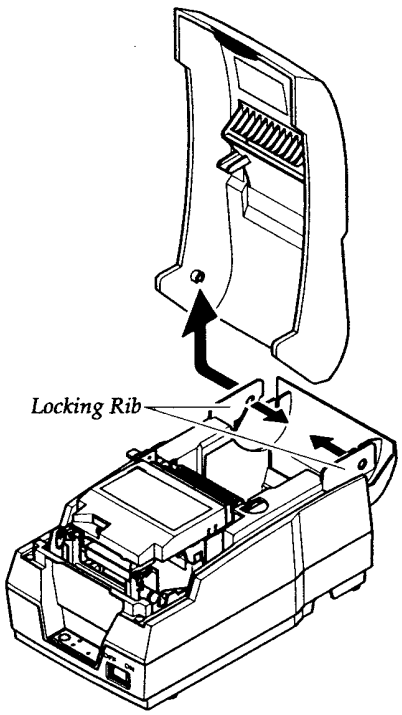


3. Separate the Case Upper from the Case Lower.

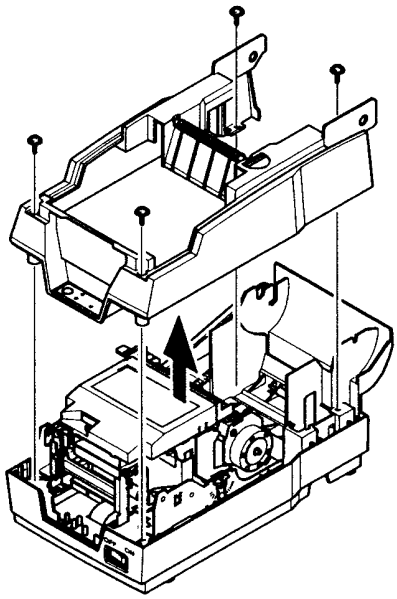


4-6 Case Upper Ass'y (SRP-270D Type)

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



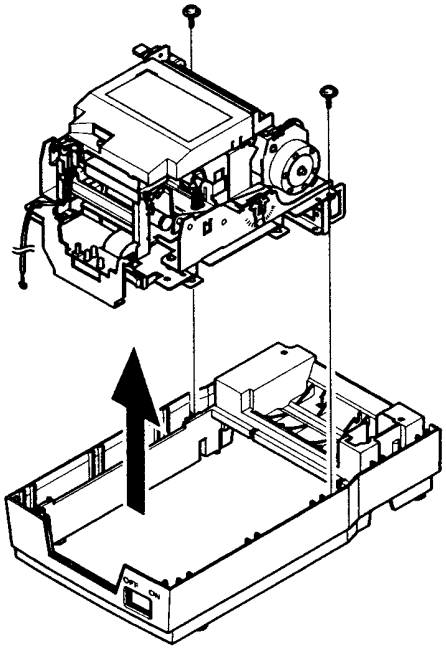
2. Remove four screws securing the Case Upper. Separate the Case Upper from the Case Lower.



4-7 Printer Ass'y (SRP-270A,C Type)

1. Before you disassembly the Printer Ass'y, you should remove :
   - Plate Bottom (see page 4-2)
   - Cover Ass'y (see page 4-3, 4-4)
   - Case Upper Ass'y (see page 4-6)

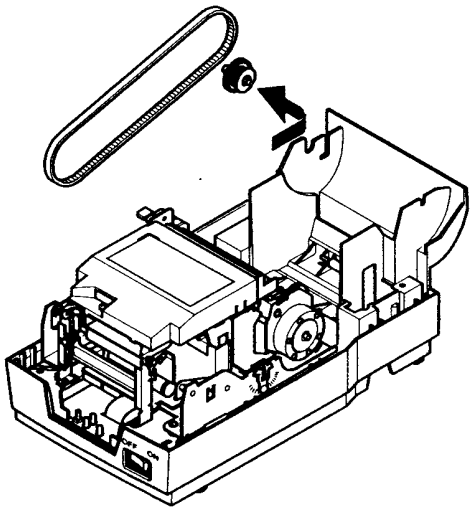
2. Remove two screws securing the Printer Ass'y. Separate the Printer Ass'y from the Case Lower.



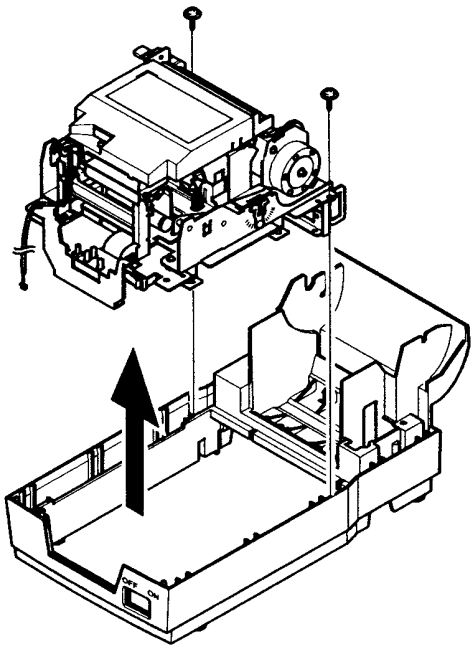
4-8 Printer Ass'y (SRP-270D Type)

1. Before you disassembly the Printer Ass'y, you should remove :
   - Plate Bottom (see page 4-2)
   - Cover Ass'y (see page 4-3, 4-4)
   - Case Upper Ass'y (see page 4-6)

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



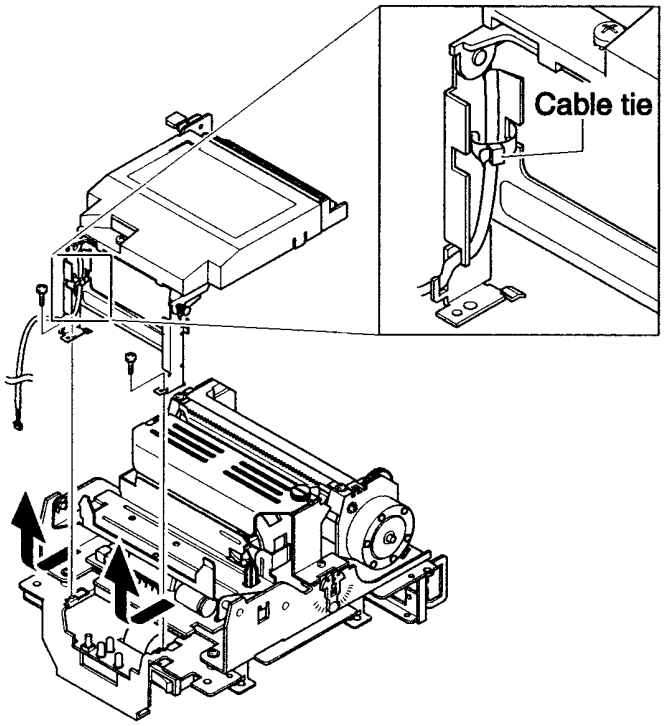
3. Remove two screws securing the Printer Ass'y. Separate the Printer Ass'y from the Case Lower.



4-9 Auto Cutter Ass'y

1. Before you disassembly the Auto Cutter Ass'y, you should remove :
   - Plate Bottom (see page 4-2)
   - Cover Ass'y (see page 4-3, 4-4)
   - Case Upper Ass'y (see page 4-6)
   - Printer Ass'y (see page 4-7, 4-8)

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

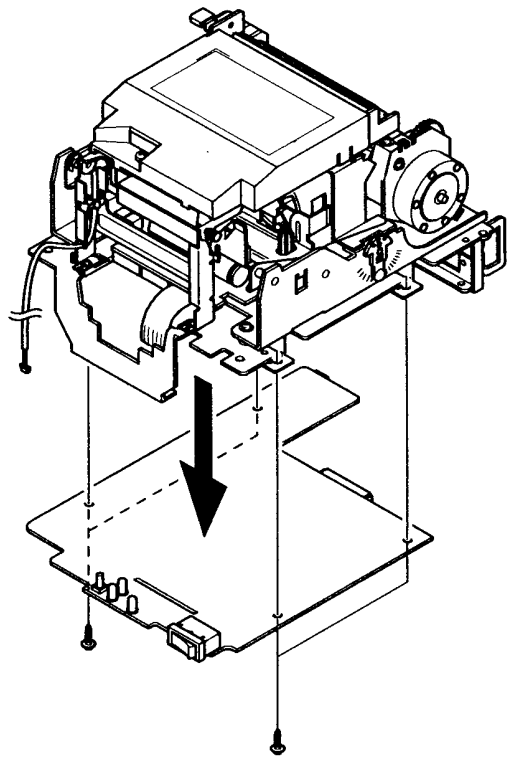


3 Before you reassembly the Auto Cutter Ass,y, you should set up the Belt and Hinge.

4-10 Main PCB

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

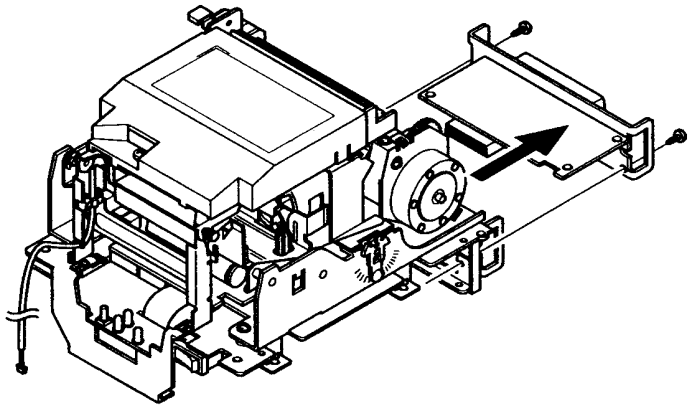
2. Remove four screws securing the Main PCB. Separate the Main PCB from the Main Frame.



4-11 Interface Board Ass'y

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

2. Remove two screws and take out the Interface Board Ass'y, as shown below.

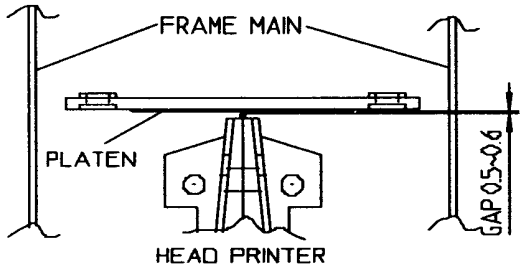


5. Alignment and Adjustments

5-1 Printer Adjustments

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	• Rotate Gear Ist Reduction to move the Head unit to L side	
2	• Insert the thickness gauge between Head unit and Platen,then rotate the Ad. Level L and adjust the gap	- Appropriate gap: 0.50~0.60mm
		- In order to make the gap narrow (wide),turn Ad. Lever to mark'-(+)'
3	• Move the Head unit then then check if the proper gap from R side center has been achieved.	
4	• If Head gap is not proper,adjust Head gap by rotating Ad.Lever R.	- If gap is not correct, repeat once more.

(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 ass`y.

4.Replace the Head unit and assemble,according to the order of sub ass`y-1

5.After assembling ,adjust the gap as above "Adjustment"indicates .

6 Assemble the Ribbon Frame.

6. Troubleshooting

1. Power Problem

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

2. System Problem

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

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)

4. Drawer Problem

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

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

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. 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.

8. IEEE 1284 Problem

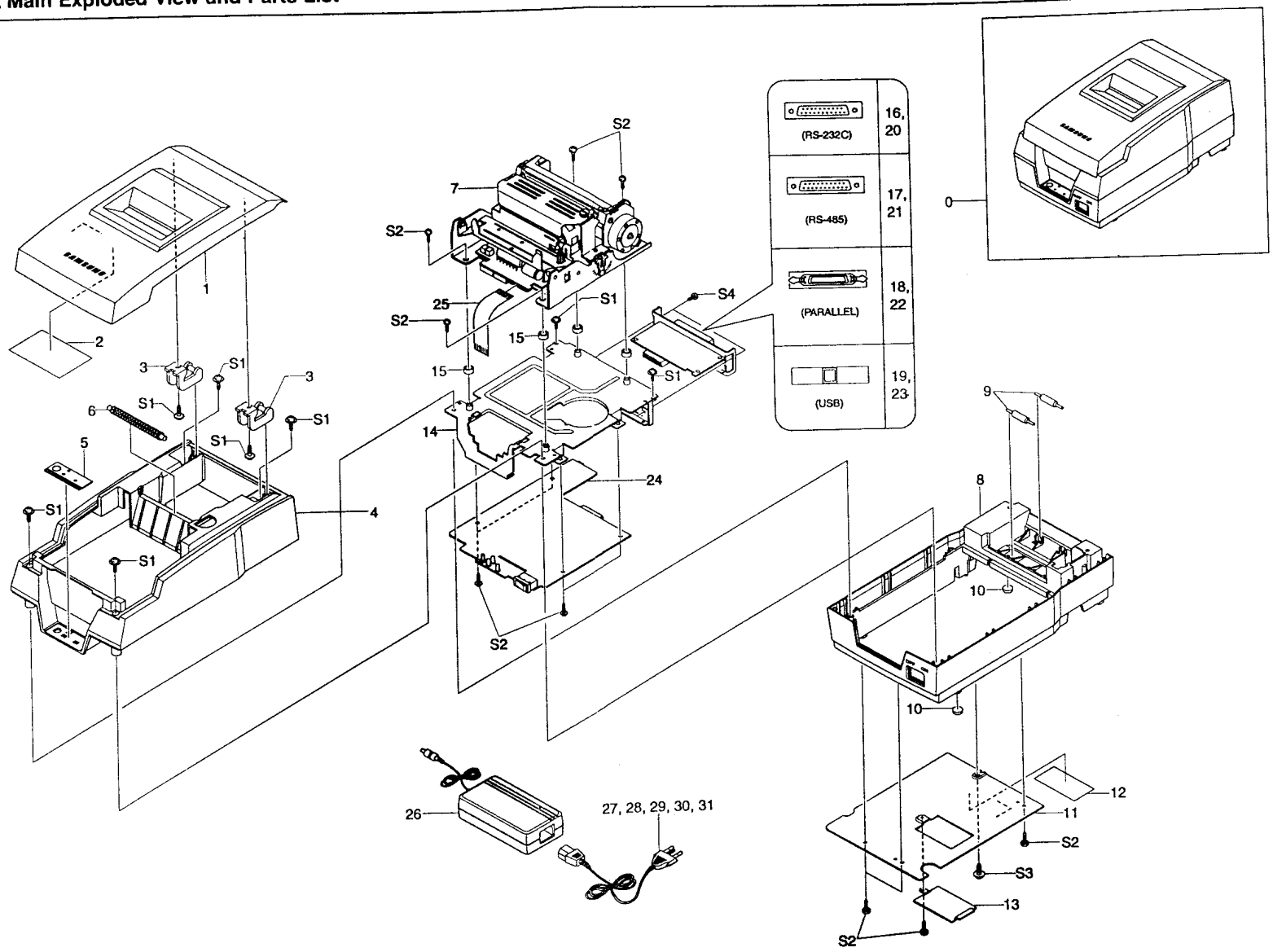
- Check the Control Line (CS3, WR, RD).
- Check the 1284 Control Line and Status Line.
- Check the Signal of ICs (U3, U6, U5)
- Check the related Circuit and Pattern on I/F PBA.
- Check the 1284 Control, Status Data Line.

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.

7. Exploded View and Parts List

7-1 SRP-270A Main Exploded View and Parts List



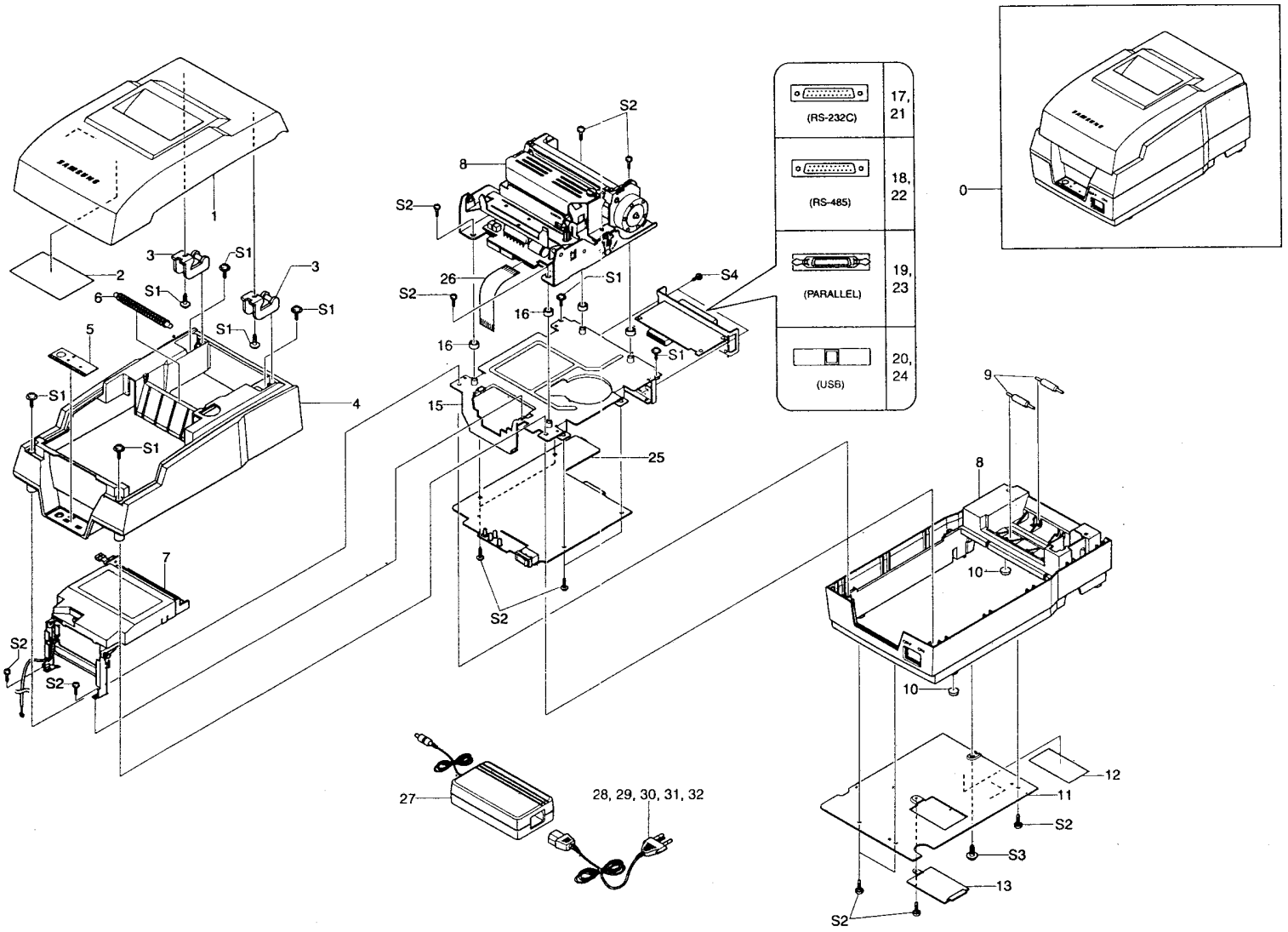
< SRP-270A Main Parts List >

SA. : Service Available

Location No.	Description	SEC. Code	Q'ty	SA	Remark
0	SRP-270A		1	X	
1	PMO-COVER A	JK72-00066A	1	O	IVORY
		JK72-00066B	1	O	DARK GRAY
2	LABEL-WARNING COVER, A	JK68-00093A	1	O	
3	PMO-HINGE COVER	JK61-00010A	1	O	IVORY
		JK61-00010B	1	O	DARK GRAY
4	PMO-CASE UPPER A,C	JK72-00072A	1	O	IVORY
		JK72-00072B	1	O	DARK GRAY
5	LABEL-CONTROL	JK68-00089A	1	O	IVORY
		JK68-00089B	1	O	DARK GRAY
6	PMO-ROLL PATH	JK72-00070A	1	O	IVORY
		JK72-00070B	1	O	DARK GRAY
7	ASS'Y PRINTER A,C	JK59-00007A	1	O	
8	PMO-CASE LOWER A,C	JK72-00064A	1	O	IVORY
		JK72-00064B	1	O	DARK GRAY
9	PMO-ROLLER PAPER END	JK72-40330A	2	O	
10	FOOT-RUBBER	JK61-40902A	2	O	
11	IPR-PLATE BOTTOM	JK70-00064A	1	O	
12	LABEL-RATING	JK68-00111A	1	O	
13	IPR-COVER PCB	JK70-10419A	1	O	
14	IPR-FRAME MAIN	JK70-00060A	1	O	
15	RMO-DAMPER MECH	JK73-00010A	4	O	
16	I/F BOARD(SERIAL RS232)	JK92-00944A	1	O	
17	I/F BOARD(RS485)	JK92-00945A	1	O	
18	I/F BOARD(IEEE-1284)	JK92-00946A	1	O	
19	I/F BOARD(USB)	JK92-00987A	1	O	
20	IPR-BRKT(SERIAL RS232)	JK70-00034C	1	O	
21	IPR-BRKT(RS485)	JK70-00034B	1	O	
22	IPR-BRKT(IEEE-1284)	JK70-00034A	1	O	
23	IPR-BRKT(USB)	JK70-00059A	1	O	
24	IPR-MAIN PBA	JK92-00993A	1	O	
25	FPC CABLE	JK39-00043A	1	O	
26	SMPS-SRP270	JK44-00002A	1	O	Common
27	CBF-POWER CORD	JF39-40692A	1	O	U.S.A
28	CBF-POWER CORD	JF39-50053A	1	O	Europe
29	CBF-POWER CORD	JC39-10100A	1	O	Australia
30	CBF-POWER CORD	JF39-10051A	1	O	U.K
31	CBF-POWER CORD	JG39-10001A	1	O	China
S1	SCREW-TAPPING;PWH3X10	6002-000174	8	O	
S2	SCREW-TAPTITE;BH3X8	JK60-00001A	11	O	
S3	SCREW-TAPTITE;BH4X8	6006-000199	1	O	
S4	SCREW-TAPTITE;BH3X6	6003-000269	2	O	

O: Service available X: Service not available
*:Reference to Appendix Information

7-2 SRP-270C Main Exploded View and Parts List



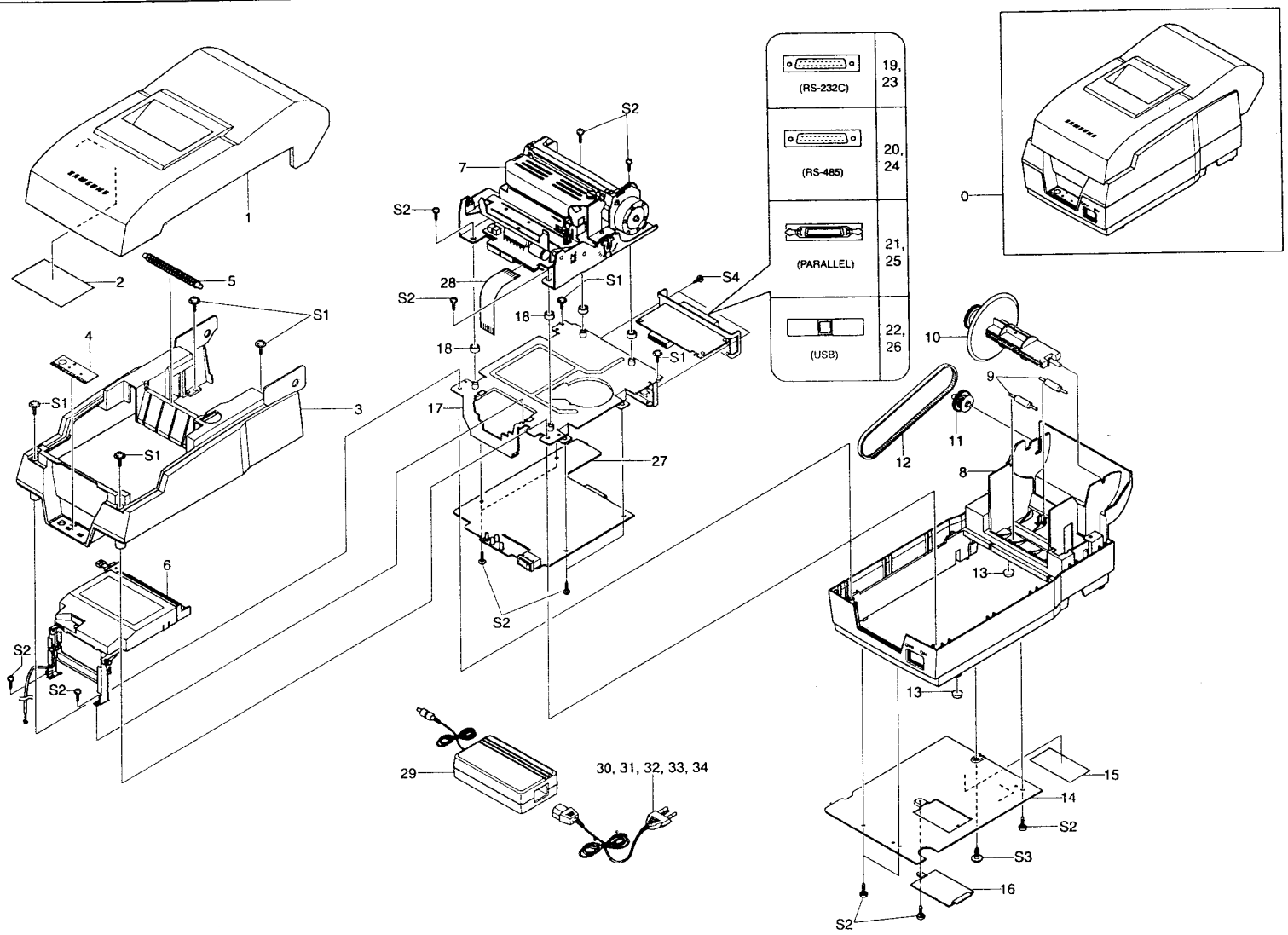
< SRP-270C Main Parts List >

SA. : Service Available

Location No.	Description	SEC. Code	Q'ty	SA	Remark
0	SRP-270A		1	X	
1	PMO-COVER A	JK72-00067A	1	O	IVORY
		JK72-00067B	1	O	DARK GRAY
2	LABEL-WARNING COVER, C	JK68-00093B	1	O	
3	PMO-HINGE COVER	JK61-00010A	1	O	IVORY
		JK61-00010B	1	O	DARK GRAY
4	PMO-CASE UPPER A,C	JK72-00072A	1	O	IVORY
		JK72-00072B	1	O	DARK GRAY
5	LABEL-CONTROL	JK68-00089A	1	O	IVORY
		JK68-00089B	1	O	DARK GRAY
6	PMO-ROLL PATH	JK72-00070A	1	O	IVORY
		JK72-00070B	1	O	DARK GRAY
7	ASS'Y AUTO CUTTER	JK97-01084A	1	X	
8	ASS'Y PRINTER	JK59-00007A	1	O	
9	PMO-CASE LOWER A,C	JK72-00064A	1	O	IVORY
		JK72-00064B	1	O	DARK GRAY
10	PMO-ROLLER PAPER END	JK72-40330A	2	O	
11	FOOT-RUBBER	JK61-40902A	2	O	
12	IPR-PLATE BOTTOM	JK70-00064A	1	O	
13	LABEL-RATING	JK68-00111A	1	O	
14	IPR-COVER PCB	JK70-10419A	1	O	
15	IPR-FRAME MAIN	JK70-00060A	1	O	
16	RMO-DAMPER MECH	JK73-00010A	4	O	
17	I/F BOARD(SERIAL RS232)	JK92-00944A	1	O	
18	I/F BOARD(RS485)	JK92-00945A	1	O	
19	I/F BOARD(IEEE-1284)	JK92-00946A	1	O	
20	I/F BOARD(USB)	JK92-00987A	1	O	
21	IPR-BRKT(SERIAL RS232)	JK70-00034C	1	O	
22	IPR-BRKT(RS485)	JK70-00034B	1	O	
23	IPR-BRKT(IEEE-1284)	JK70-00034A	1	O	
24	IPR-BRKT(USB)	JK70-00059A	1	O	
25	IPR-MAIN PBA	JK92-00993A	1	O	
26	FPC CABLE	JK39-00043A	1	O	
27	SMPS-SRP270	JK44-00002A	1	O	Common
28	CBF-POWER CORD	JF39-40692A	1	O	U.S.A
29	CBF-POWER CORD	JF39-50053A	1	O	Europe
30	CBF-POWER CORD	JC39-10100A	1	O	Australia
31	CBF-POWER CORD	JF39-10051A	1	O	U.K
32	CBF-POWER CORD	JG39-10001A	1	O	China
S1	SCREW-TAPPING;PWH3X10	6002-000174	8	O	
S2	SCREW-TAPTITE;BH3X8	JK60-00001A	13	O	
S3	SCREW-TAPTITE;BH4X8	6006-000199	1	O	
S4	SCREW-TAPTITE;BH3X6	6003-000269	2	O	

O: Service available X: Service not available
*:Reference to Appendix Information

7-3 SRP-270D Main Exploded View and Parts List



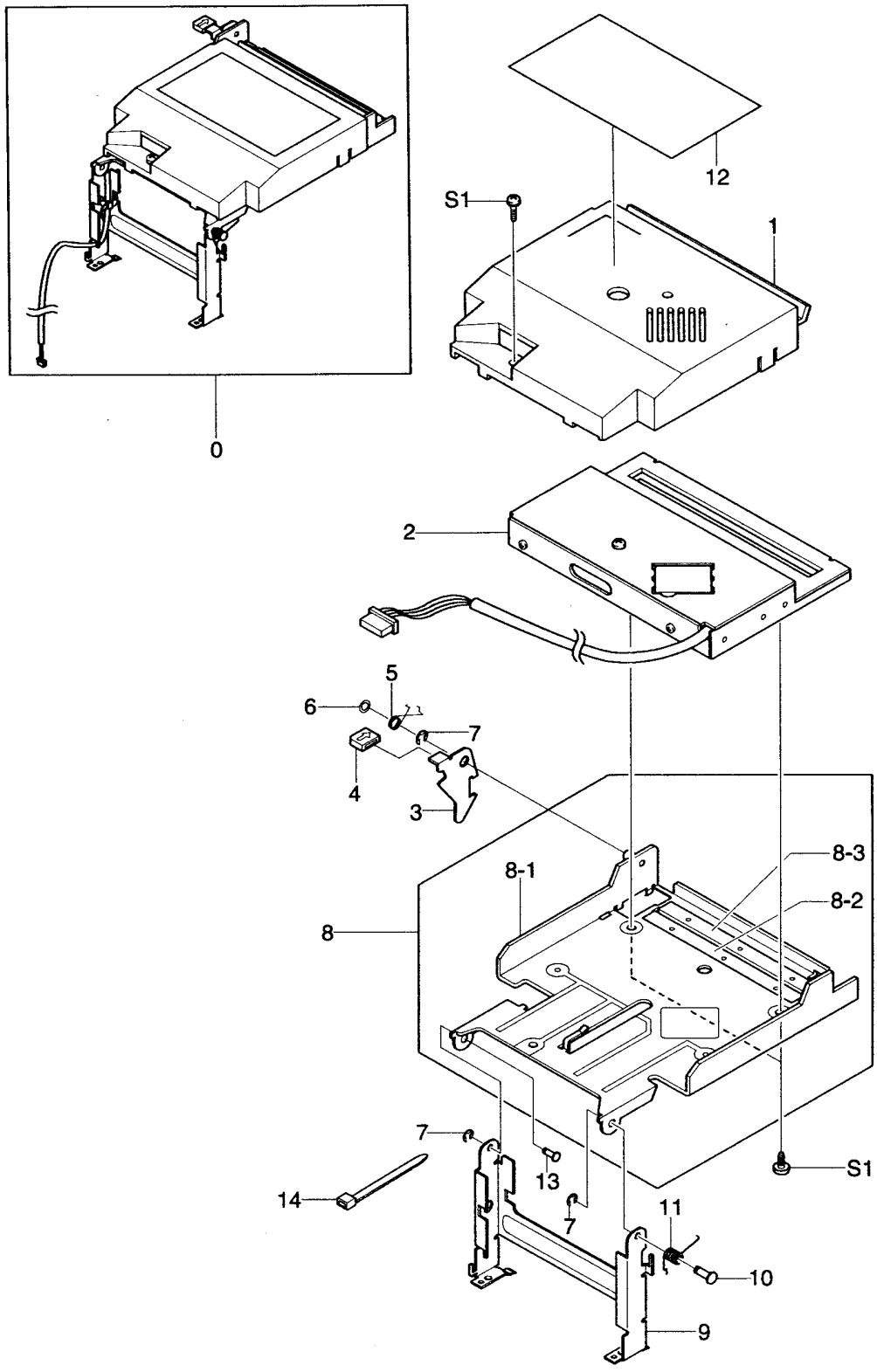
< Main Parts List >

SA. : Service Available

Location No.	Description	SEC. Code	Q'ty	SA	Remark
0	SRP-270D		1	X	
1	PMO-COVER D	JK72-00068A	1	O	IVORY
		JK72-00068B	1	O	DARK GRAY
2	LABEL-WARNING COVER, D	JK68-00093C	1	O	
3	PMO-CASE UPPER D	JK72-00063A	1	O	IVORY
		JK72-00063B	1	O	DARK GRAY
4	LABEL-CONTROL	JK68-00089A	1	O	IVORY
		JK68-00089B	1	O	DARK GRAY
5	PMO-ROLL PATH	JK72-00070A	1	O	IVORY
		JK72-00070B	1	O	DARK GRAY
6	ASS'Y AUTO CUTTER	JK97-01084A	1	X	
7	ASS'Y PRINTER-SPOOL	JK59-00008A	1	O	
8	PMO-CASE LOWER D	JK72-00065A	1	O	IVORY
		JK72-00065B	1	O	DARK GRAY
9	PMO-ROLLER PAPER END	JK72-40330A	2	O	
10	SPOOL ASS'Y	JK81-00201A	1	O	
11	SPOOL CLUTCH	JK81-00200A	1	O	
12	BELT TIMING	JK81-00175A	1	O	
13	FOOT-RUBBER	JK61-40902A	2	O	
14	IPR-PLATE BOTTOM	JK70-00064A	1	O	
15	LABEL-RATING	JK68-00111A	1	O	
16	IPR-COVER PCB	JK70-10419A	1	O	
17	IPR-FRAME MAIN	JK70-00060A	1	O	
18	RMO-DAMPER MECH	JK73-00010A	4	O	
19	I/F BOARD(SERIAL RS232)	JK92-00944A	1	O	
20	I/F BOARD(RS485)	JK92-00945A	1	O	
21	I/F BOARD(IEEE-1284)	JK92-00946A	1	O	
22	I/F BOARD(USB)	JK92-00987A	1	O	
23	IPR-BRKT(SERIAL RS232)	JK70-00034C	1	O	
24	IPR-BRKT(RS485)	JK70-00034B	1	O	
25	IPR-BRKT(IEEE-1284)	JK70-00034A	1	O	
26	IPR-BRKT(USB)	JK70-00059A	1	O	
27	IPR-MAIN PBA	JK92-00993A	1	O	
28	FPC CABLE	JK39-00043A	1	O	
29	SMPS-SRP270	JK44-00001A	1	O	Common
30	CBF-POWER CORD	JF39-40692A	1	O	U.S.A
31	CBF-POWER CORD	JF39-50053A	1	O	Europe
32	CBF-POWER CORD	JC39-10100A	1	O	Australia
33	CBF-POWER CORD	JF39-10051A	1	O	U.K
34	CBF-POWER CORD	JG39-10001A	1	O	China
S1	SCREW-TAPPING;PWH3X10	6002-000174	8	O	
S2	SCREW-TAPTITE;BH3X8	JK60-00001A	13	O	
S3	SCREW-TAPTITE;BH4X8	6006-000199	1	O	
S4	SCREW-TAPTITE;BH3X6	6003-000269	2	O	

O: Service available X: Service not available *:Reference to Appendix Information

7-4 Auto Cutter Exploded View & Parts List



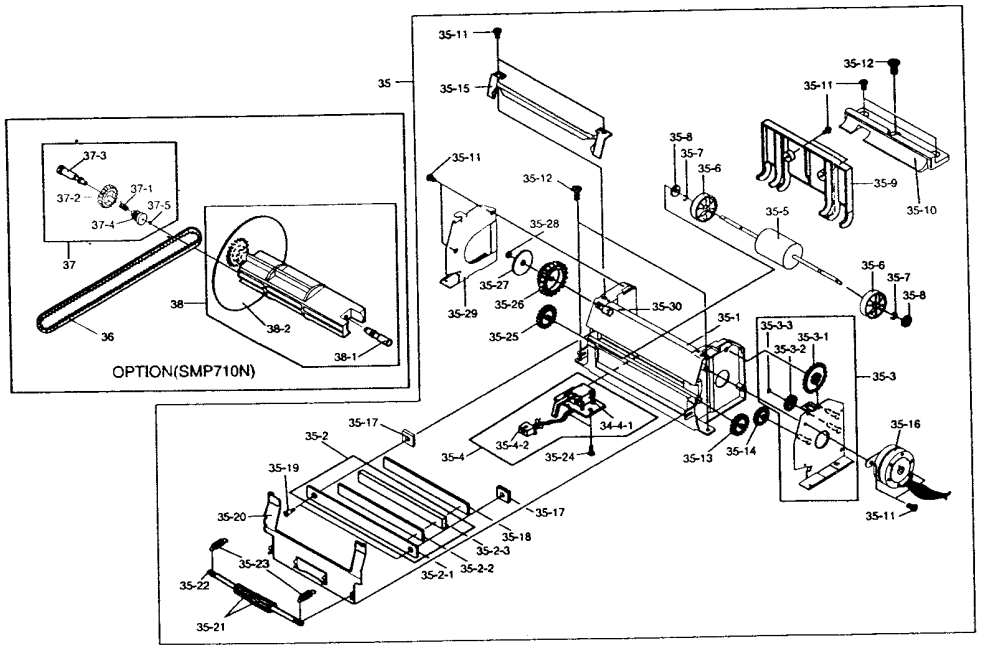
< Auto Cutter Parts List >

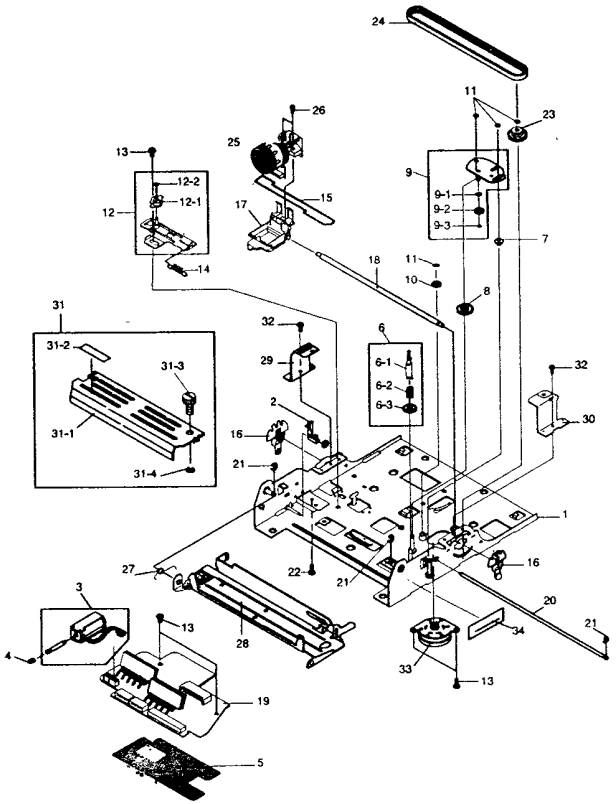
SA. : Service Available

Location No.	Description	SEC Code	Q'ty	SA	Remark
0	ASS'Y AUTO CUTTER	JK97-01084A	1	X	
1	PMO-COVER AUTO CUTTER	JK72-00069A	1	O	IVORY
		JK72-00069B	1	O	DARK GRAY
2	UNIT-AUTO CUTTER	JK59-10527B	1	O	
3	IPR-PLATE LOCK A/CUTTER	JK70-00065A	1	O	
4	PMO-KNOB LOCK	JK72-00071A	1	O	
5	SPRING LOCK A/CUTTER	JK61-00007A	1	O	
6	SLIP WASHER	JK72-00058A	1	O	
7	RING-E:Ø3	6044-000123	3	O	
8	MEC-BRKT A/CUTTER	JK75-00031A	1	O	
8-1	IPR-BRKT A/CUTTER	JK70-00061A	1	X	
8-2	IPR-GUIDE PAPER FRONT	JK70-00062A	1	X	
8-3	IPR-GUIDE PAPER REAR	JK70-00063A	1	X	
9	HINGE-BRKT A/CUTTER	JK61-00011A	1	O	
10	HINGE-SHAFT A/CUTTER, RT	JK61-00009A	1	O	
11	SPRING BRKT A/CUTTER	JK61-00008A	1	O	
12	LABEL-PAPER JAMMED	JK68-00094A	1	O	
13	HINGE-SHAFT A/CUTTER, LT	JK61-00012A	1	O	
14	CABLE-TIE	6501-000115	1	O	
S1	SCREW-TAPTITE;BH3X8	JK60-00001A	3	O	

O: Service available X: Service not available
*:Reference to Appendix Information

7-5 Printer Unit (SMP-710N) Exploded View & Parts List





< Printer Unit (SMP-710N) Parts List >

SMP710N PARTS LIST

2000.09.20

NO	Description	Component no.	Q'ty	A/S	Remark
1	FRAME-MAIN ASS'Y	JK81-00190A	1	Y	-
2	LEVER-CHANGE COLOR	JK81-00131A	1	Y	JE72-00189L
3	SOLENOID	JK81-00132A	1	Y	JE33-00001A
4	SPRING-SOLENOID	JK81-00133A	1	Y	JE61-00007A
5	PLATE-INSULATION	JK81-00134A	1	Y	JE70-00255B
6	RIBBON-FEEDER ASS'Y	JK81-00191A	1	Y	-
6_1	RIBBON-FEEDER	JK81-00176A	1	Y	JE72-00205A
6_2	SPRING-RIBBON-FEEDER	JK81-00177A	1	Y	JE70-00258C
6_3	GEAR-RIBBON FEEDER	JK81-00216A	1	Y	JE72-00189G
7	GEAR-RE_C	JK81-00135A	1	Y	JE72-00189D
8	GEAR-RE_A	JK81-00136A	1	Y	JE72-00189B
9	LEVER-RIBBON-FEEDER ASS'Y	JK81-00192A	1	Y	-
9_1	SPRING-WASHER	JK81-00179A	1	Y	JE61-00010A
9_2	GEAR-RE_B	JK81-00137A	1	Y	JE72-00188D
9_3	RING-E HOLE	JK81-00202A	1	Y	6044-000275
10	GEAR-RE_B	JK81-00137A	1	Y	JE72-00188D
11	WASHER-PLAIN	JK81-00209A	5	Y	6031-000581
12	LEVER-TENSION ASS'Y	JK81-00193A	1	Y	-
12_1	PULLEY	JK81-00181A	1	Y	JE66-00007A
12-2	WASHER-PLAIN	JK81-00209A	1	Y	6031-000581
13	SCREW-MACHINE	JK81-00203A	5	Y	6001-001379
14	SPRING-LEVER-TENSION	JK81-00138A	1	Y	JE70-00258B
15	FPC-HEAD	JK81-00139A	1	Y	JE41-00463A
16	LEVER-AD	JK81-00140A	2	Y	JE72-00185A
17	CARRIAGE HEAD ASS'Y	JK81-00194A	1	Y	-
18	SHAFT-HEAD_GUIDE	JK81-00141A	1	Y	JE70-00246A
19	PCB-MAIN ASS'Y	JK81-00195A	1	Y	-
20	SHAFT-HC	JK81-00142A	1	Y	JE70-00242A
21	RING-E HOLE	JK81-00205A	4	Y	6044-000230
22	SCREW-MACHINE	JK81-00210A	1	Y	6001-001380
23	GEAR-PULLEY	JK81-00143A	1	Y	JE72-00189F
24	BELT-ROUND	JK81-00144A	1	Y	6602-001071
25	PRINTER-HEAD	JK81-00145A	1	Y	JE59-00025A
26	SCREW-TAPTITE	JK81-00211A	2	Y	6003-000349
27	SPRING-RIBBON-FRAME	JK81-00146A	1	Y	JE70-00258A
28	FRAME-RIBBON	JK81-00147A	1	Y	JE70-00251B
29	BRACKET-HEAD-COVER-L	JK81-00148A	1	Y	JE70-00248A

NO	Description	Component no.	Q'ty	A/S	Remark
30	BRACKET-HEAD-COVER-R	JK81-00149A	1	Y	JE70-00248B
31	HEAD-COVER ASS'Y	JK81-00197A	1	Y	-
31_1	COVER-HEAD	JK81-00182A	1	Y	JE70-00249A
31_2	TAPE-CAUTION	JK81-00183A	1	Y	JE02-00002B
31_3	SCREW-MANUAL(M4.0)	JK81-00184A	1	Y	JE70-00263E
31-4	RING-E HOLE	JK81-00205A	1	Y	6044-000230
32	SCREW-MACHINE	JK81-00212A	2	Y	6001-001381
33	MOTOR-STEP	JK81-00150A	1	Y	3101-001225
34	LABEL STICKER	JK81-00151A	1	Y	JE68-00107A
35	BASE-PAPER-FEED ASS'Y	JK81-00213A	1	Y	-
35_1	BASE-PAPER_FEED	JK81-00152A	1	Y	JE61-00009A
35_2	PLATEN ASS'Y	JK81-00196A	1	Y	-
35_2_1	PLATEN	JK81-00185A	1	Y	JE70-00276
35_2_2	TAPE-D/F	JK81-00186A	1	Y	JE02-00002A
35_2_3	PLATE-PLATEN	JK81-00187A	1	Y	JE70-00255A
35_3	BRACKET PF R ASS'Y	JK81-00198A	1	Y	-
35_3_1	GEAR-KNOB	JK81-00153A	1	Y	JE72-00189H
35_3_2	GEAR-KNOB IDLE	JK81-00154A	1	Y	JE72-00189J
35_3_3	WASHER-PLAIN	JK81-00204A	1	Y	6031-000447
35_4	SWITCH-MICRO ASS'Y	JK81-00199A	1	Y	-
35_4_1	SWITCH-MICRO	JK81-00188A	1	Y	3405-001049
35_4_2	WIRE-SWITCH_ASS'Y	JK81-00189A	1	Y	JE66-00009A
35_5	SHAFT-RUBBER ROLLER	JK81-00155A	1	Y	JE70-00247A
35_6	ROLLER-PAPER_GUIDE	JK81-00156A	2	Y	JE66-00004A
35-7	RING-E HOLE	JK81-00205A	2	Y	6044-000230
35_8	POLY BEARING 2	JK81-00157A	2	Y	JE72-00054A
35_9	GUIDE-PAPER-A	JK81-00158A	1	Y	JE72-00189Q
35_10	GUIDE-PAPER-B	JK81-00159A	1	Y	JE72-00189R
35_11	SCREW-TAPPING	JK81-00206A	10	Y	6002-001141
35_12	SCREW-MACHINE	JK81-00207A	3	Y	6002-001379
35_13	GEAR-ROLLER	JK81-00160A	1	Y	JE72-00189E
35_14	GEAR-PF_IDLE	JK81-00215A	1	Y	JE72-00189A
35_15	CUTTER-MANUAL	JK81-00162A	1	Y	JE70-00250A
35_16	MOTOR-STEP	JK81-00163A	1	Y	3101-001224
35_17	PLATE-RUBBER	JK81-00164A	2	Y	JE70-00255C
35_18	PLATE-RUBBER-TAPE	JK81-00165A	1	Y	JE70-00255D
35_19	SCREW-SPECIAL(M2.6)	JK81-00214A	2	Y	JE70-00256A
35_20	GUIDE-PLATEN-PAPER	JK81-00166A	1	Y	JE70-00252A
35_21	ROLLER-HOLDER	JK81-00167A	2	Y	JE66-00006A
35_22	SHAFT-HOLD ROLLER	JK81-00168A	1	Y	JE70-00246B
35_23	SPRING-HOLD-ROLLER	JK81-00169A	2	Y	JE70-00258D
35_24	SCREW-TAPPING	JK81-00208A	2	Y	6002-001140
35_25	GEAR-TAKE-UP	JK81-00170A	1	Y	JE72-00190A
35_26	GEAR-TU-PULLEY	JK81-00171A	1	Y	JE72-00190C
35_27	GUIDE-WASHER BELT	JK81-00172A	1	Y	JE72-00197A
35_28	WASHER-PLAIN	JK81-00204A	1	Y	6031-000581
35_29	BRACKET-PF-L	JK81-00173A	1	Y	JE70-00248C
35_30	SHAFT-TAKE-UP	JK81-00174A	1	Y	JE70-00263F

NO	Description	Component no.	Q'ty	A/S	Remark
36	BELT TIMING	JK81-00175A	1	Y	JE66-00005A
37	SPOOL-CLUTCH ASS'Y	JK81-00200A	1	Y	-
37_1	SPRING-CKUTCH-SPOOL	JK81-00127A	1	Y	JE70-00263D
37_2	GEAR-CLUTCH-SPOOL	JK81-00128A	1	Y	JE72-00190B
37_3	SHAFT-SPOOL-PULLEY	JK81-00125A	1	Y	JE70-00263B
37_4	SPOOL-PULLEY	JK81-00130A	1	Y	JE72-00191B
37-5	RING-E HOLE	JK81-00205A	1	Y	6044-000230
38	SPOOL ASS'Y	JK81-00201A	1	Y	-
38-1	SHAFT-SPOOL	JK81-00126A	1	Y	JE70-00263C
38-2	SPOOL	JK81-00129A	1	Y	JE72-00191A

8. Special Circuit Descriptions

8-1 Power Circuit

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

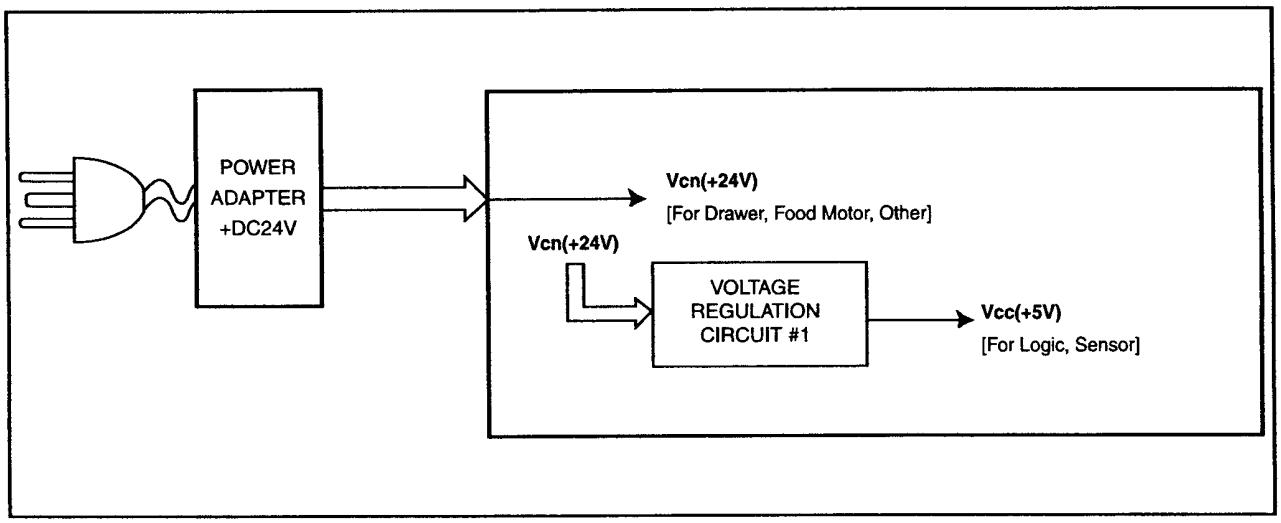


Figure 8-1 Power Block Diagram

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

Table 8-1 Power Source Voltage Descriptions

8-1-1 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.

8-1-2 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 .

8-2 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.

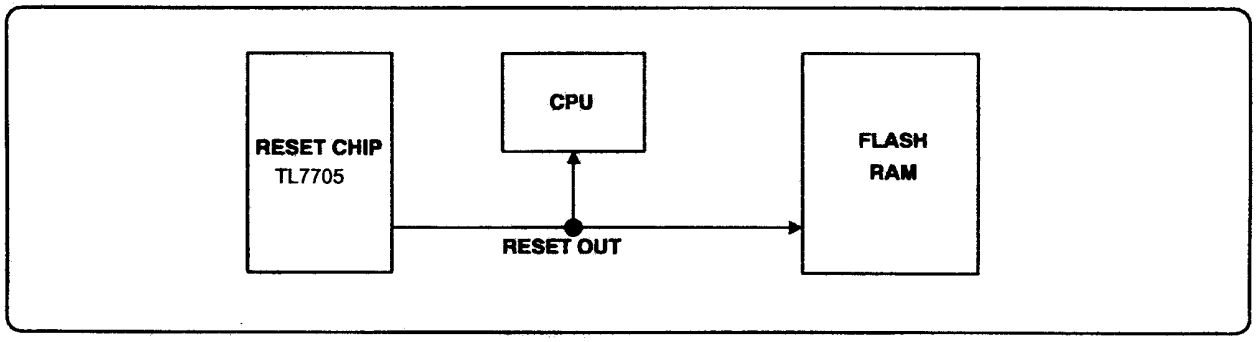


Figure 8-2 Reset Block Diagram

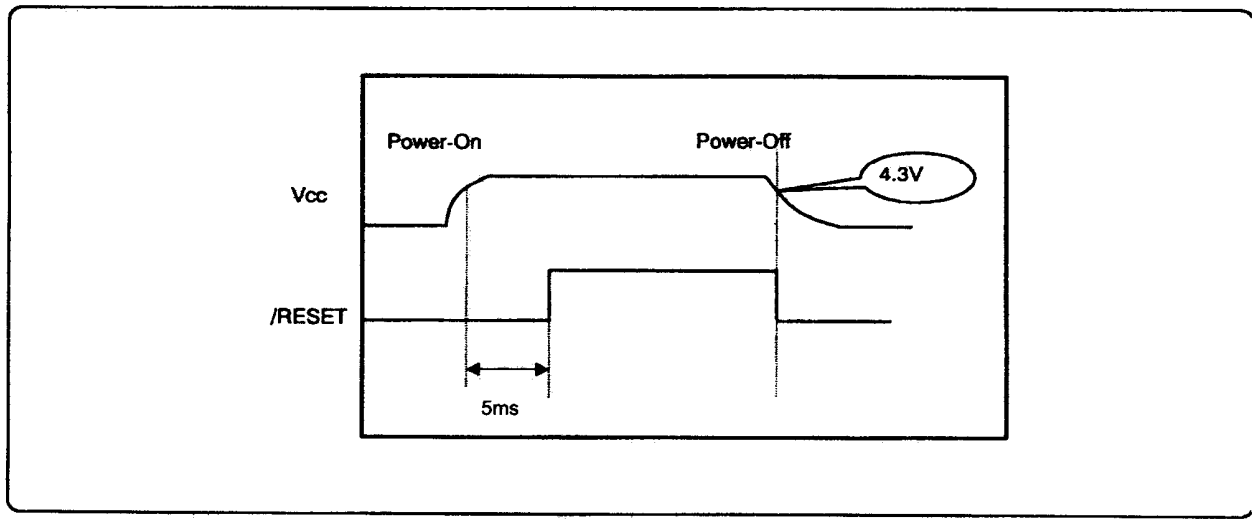


Figure 8-3 Reset Waveform

8-3 Cash Drawer circuits

8-3-1 Cash Drawer Driving Circuit

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

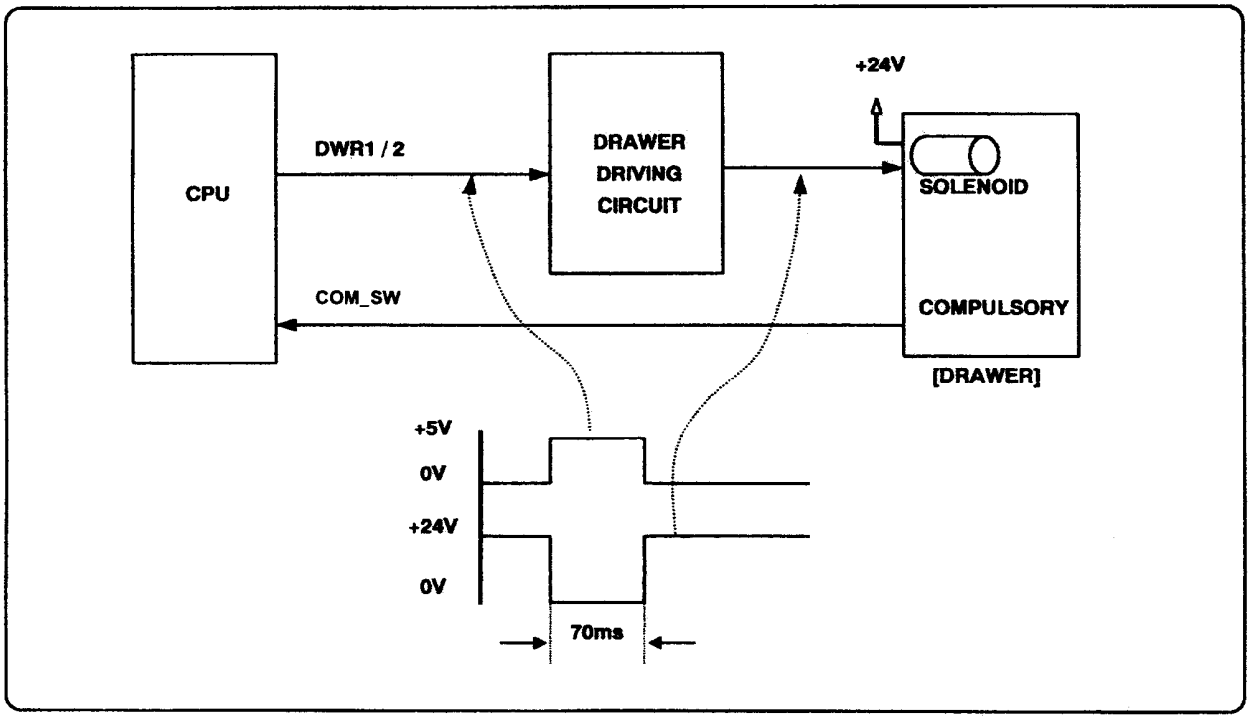


Figure 8-5 Cash Drawer Block Diagram

8-4 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
USB	H	H	L
NO CONNECTION	L	L	L

Table 8-2 I/F PBA Detector Descriptions

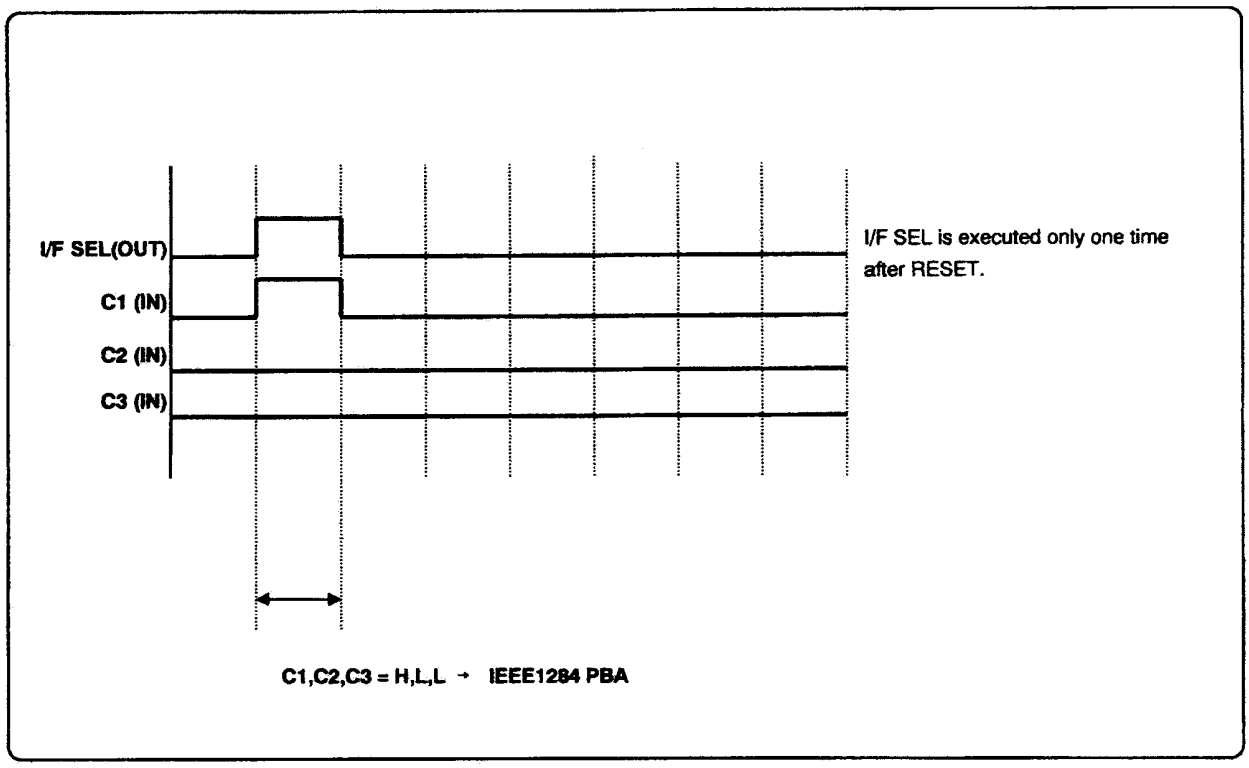


Table 8-6 I/F PBA Detector Block Diagram

8-5 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

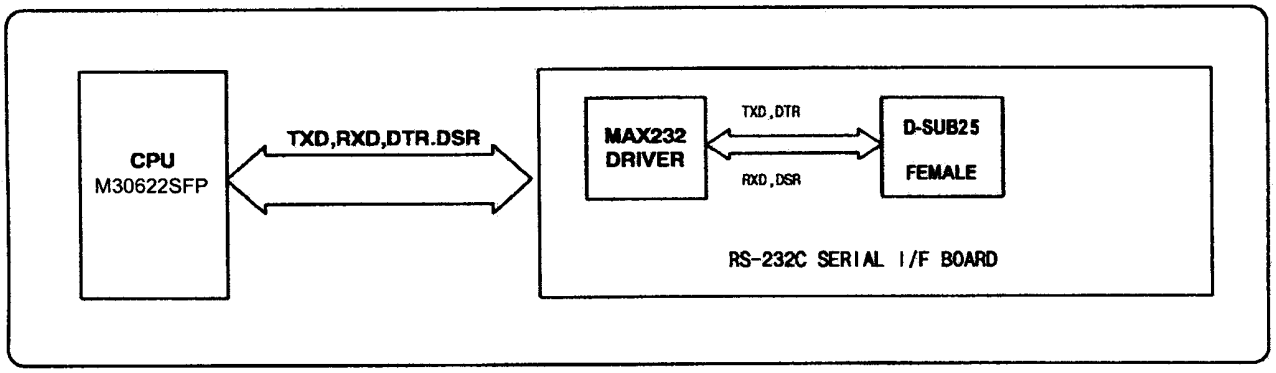


Figure 8-7 RS-232C Communication Block Diagram

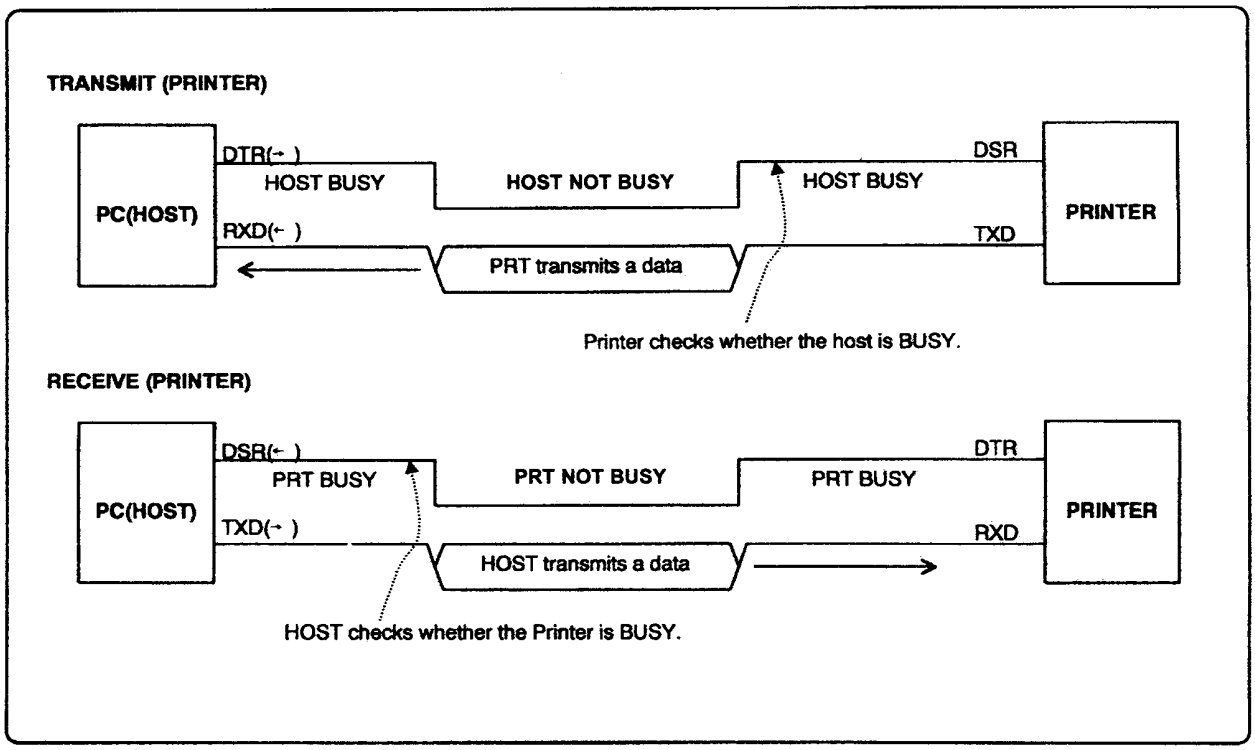


Figure 8-8 RS-232C Communication Waveform

8-6 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

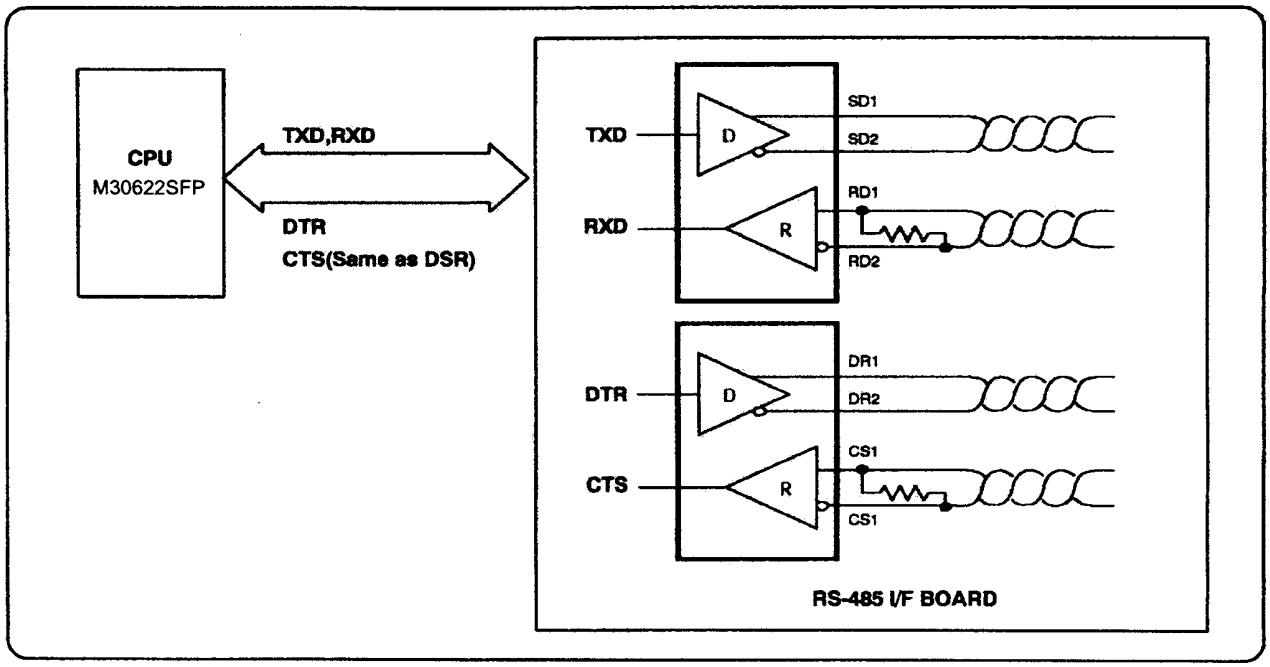


Figure 8-9 RS-485 Communication Block Diagram

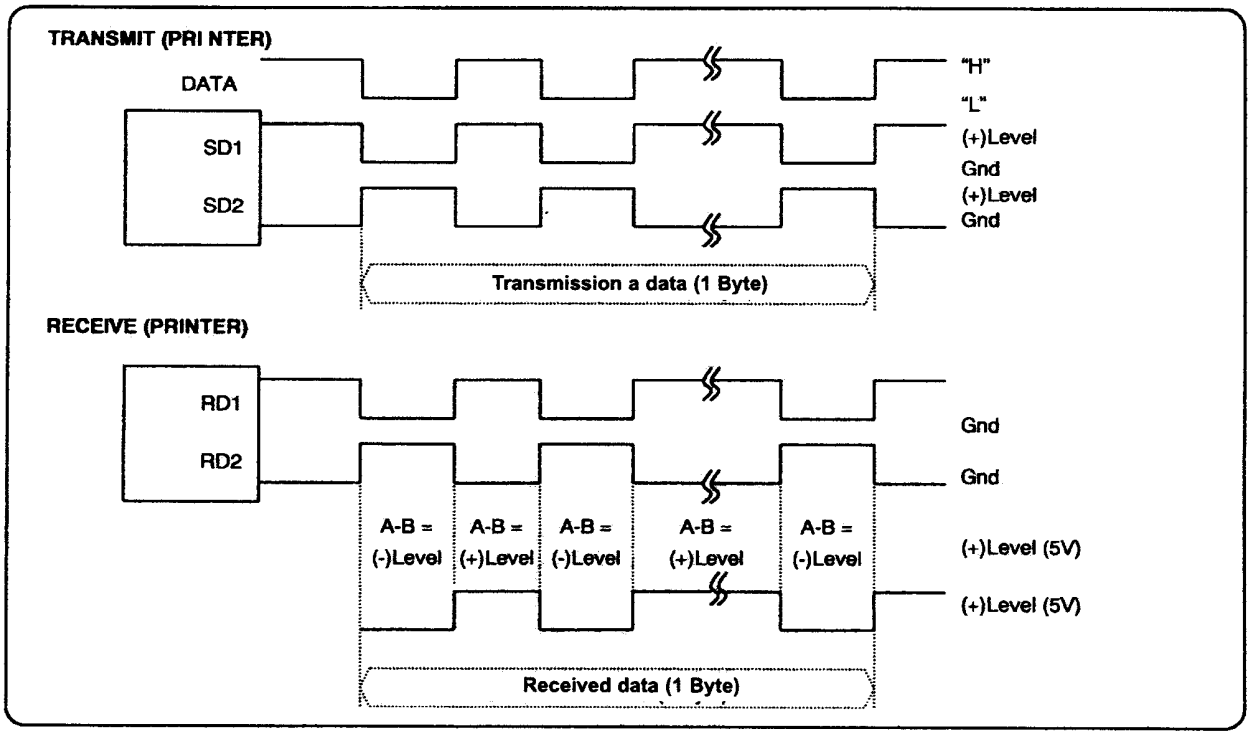


Figure 8-10 RS-485 Waveform

8-7 Parallel Communication Block Diagram

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

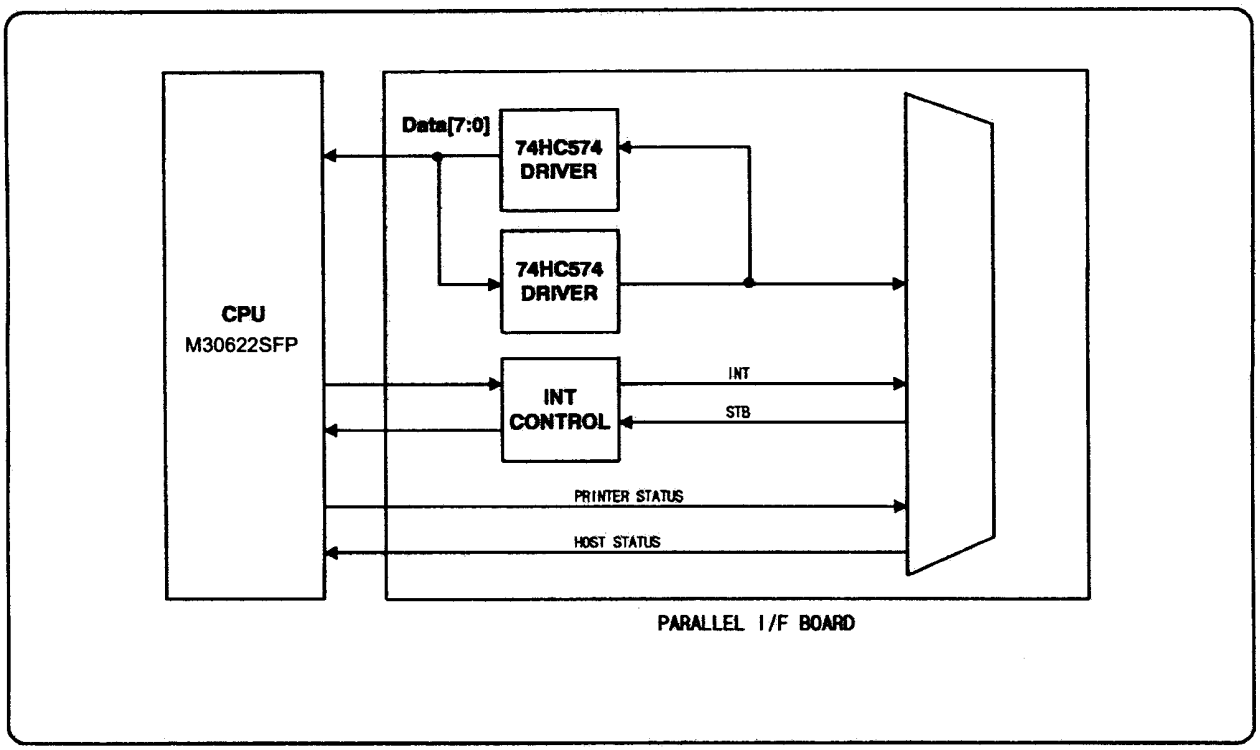


Table 8-11 IEEE-1284 Communication Block Diagram

8-8 USB Communication Block Diagram

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

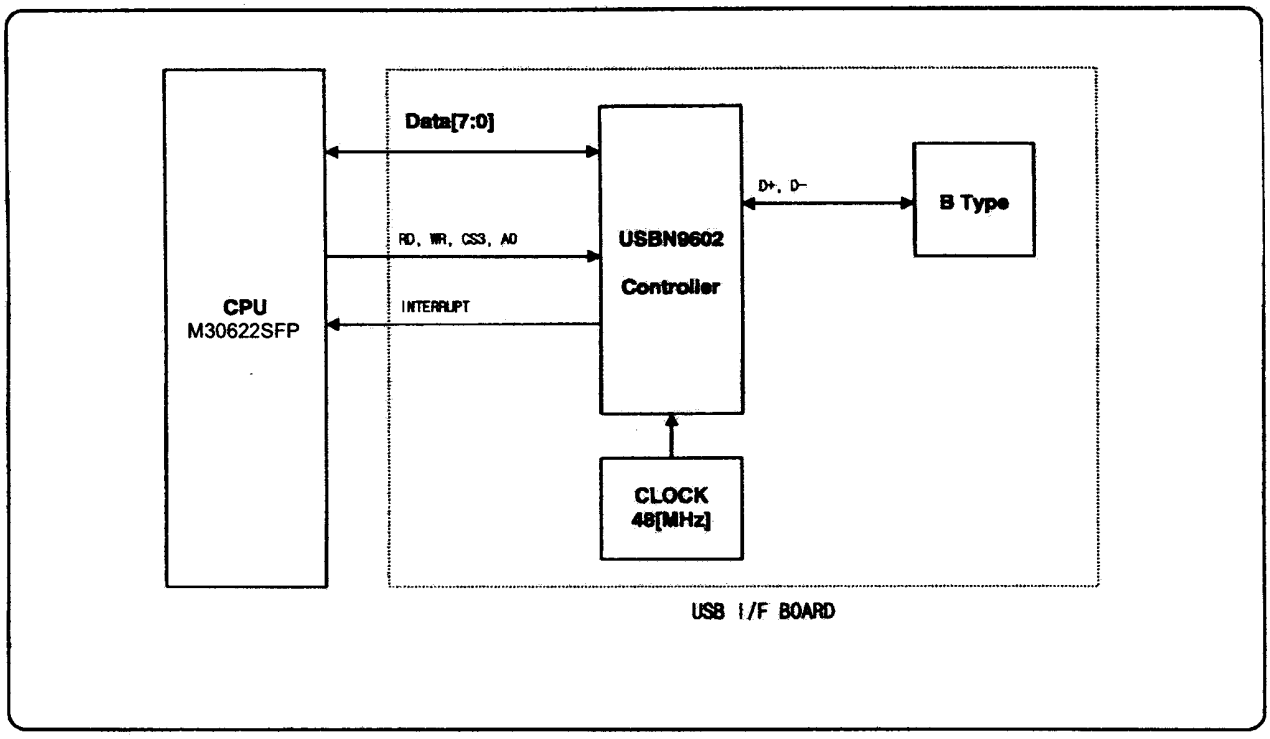


Table 8-12 USB Communication Block Diagram

8-9 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.

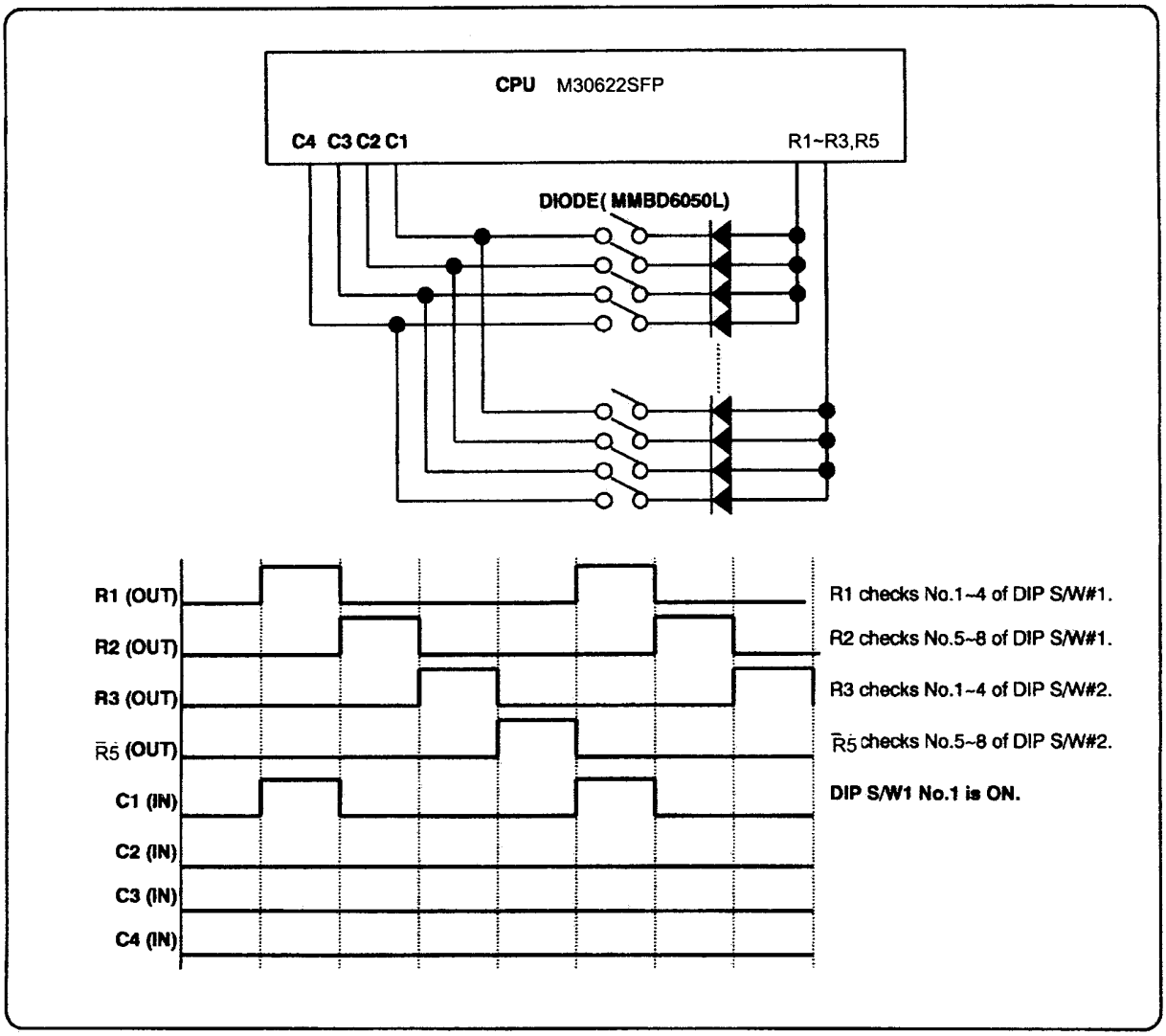
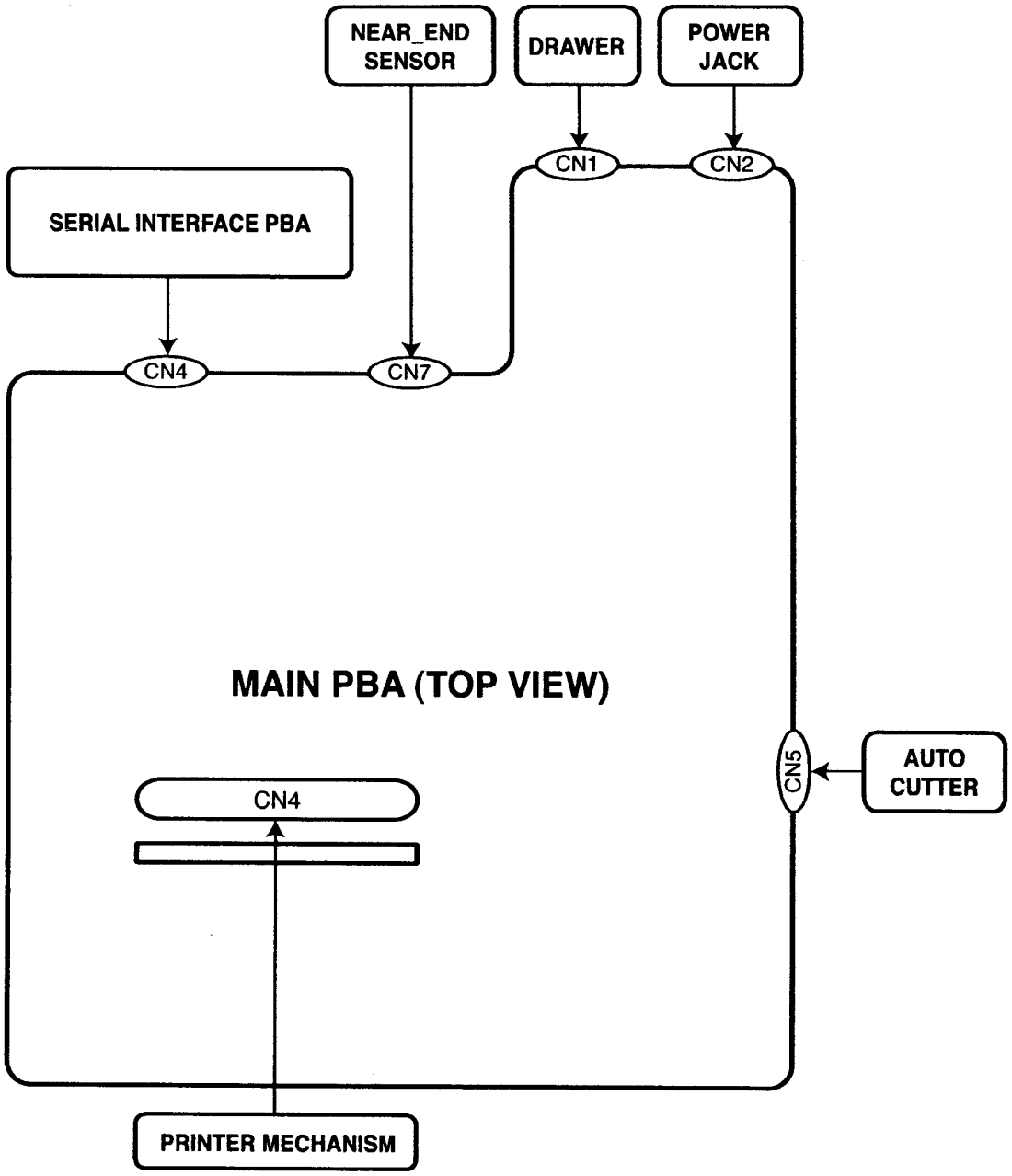


Figure 8-13 DIP Switch Block Diagram

9. Wiring Diagram
(SRP-270 / SRP-270S / SRP-270P /SRP-270U)



9-1 CPU Pin Function

Pin	Port	Function	I/O
1	P9.6	Head#2	Out
2	P9.5	Head#3	Out
3	P9.4	Head#4	Out
4	P9.3	Head#5	Out
5	P9.2	Head#6	Out
6	P9.1	Head#7	Out
7	P9.0	Head#8	Out
8	BYTE	+5V (VCC)	-
9	CNVSS	+5V (VCC)	-
10	P8.7	Parallel_P Error	Out
11	P8.6	Printer_Home Sensor	In
12	RESET	Reset	In
13	XOUT	X-TAL (14.7456MHz)	Out
14	VSS	Ground	-
15	XIN	X-TAL (14.7456MHz)	In
16	VCC	+5V (VCC)	-
17	P8.5	NMI Pull-Up (VCC)	-
18	P8.4	Parallel_/Fault	Out
19	P8.3	Parallel_/Selection	In
20	P8.2	Parallel_Interrupt & USB_Interrupt	In
21	P8.1	Head#9	Out
22	P8.0	Printer_PEnd Sensor	In
23	P7.7	Parallel_Out	Out
24	P7.6	Parallel_Busy & USB_CS	Out
25	P7.5	Parallel Read	Out
26	P7.4	Parallel Write	Out
27	P7.3	DIP_R4	Out
28	P7.2	DIP_R3	Out
29	P7.1	DIP_R2	Out
30	P7.0	DIP_R1	Out
31	P6.7	Motor_LF_PB	Out
32	P6.6	Motor_LF_PA	Out
33	P6.5	Motor_LF_COM	Out
34	P6.4	DSR (RS-232, RS-485)	In
35	P6.3	ACK (Parallel), TXD (RS-232, RS-485)	Out
36	P6.2	SLCT (Parallel), RXD (RS-232, RS-485)	In
37	P6.1	Head Trigger	Out
38	P6.0	DTR (RS-232, RS-485)	Out
39	P5.7	Pull-Up (/RDY)	Out
40	P5.6	Pull-Up (ALE)	-
41	P5.5	Pull-Up (/HOLD)	-

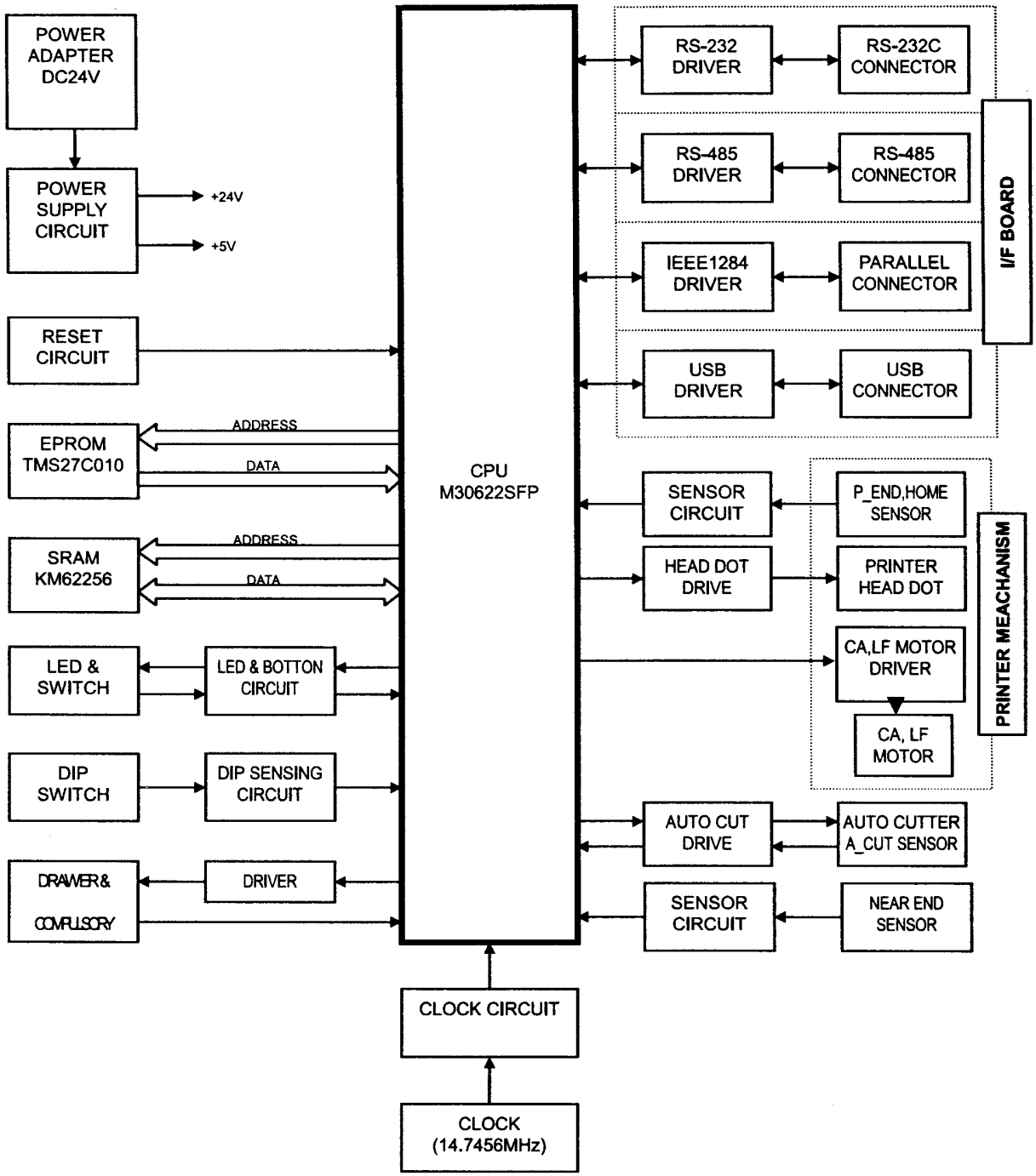
Pin	Port	Function	I/O
42	P5.4	Pull-Up (/HLDA)	-
43	P5.3	N.C (BCLK)	-
44	P5.2	/RD	Out
45	P5.1	N.C (/BHE)	-
46	P5.0	/WR	Out
47	P4.7	/CS3 (Chip Select 3)	Out
48	P4.6	/CS2 (Chip Select 2)-SRAM	Out
49	P4.5	/CS1 (Chip Select 1)	Out
50	P4.4	/CS0 (Chip Select 0)-EPROM	Out
51	P4.3	Address 19	Out
52	P4.2	Address 18	Out
53	P4.1	Address 17	Out
54	P4.0	Address 16	Out
55	P3.7	Address 15	Out
56	P3.6	Address 14	Out
57	P3.5	Address 13	Out
58	P3.4	Address 12	Out
59	P3.3	Address 11	Out
60	P3.2	Address 10	Out
61	P3.1	Address 9	Out
62	VCC	+5V / VCC	-
63	P3.0	Address 8	Out
64	VSS	Ground	Out
65	P2.7	Address 7	Out
66	P2.6	Address 6	Out
67	P2.5	Address 5	Out
68	P2.4	Address 4	Out
69	P2.3	Address 3	Out
70	P2.2	Address 2	Out
71	P2.1	Address 1	Out
72	P2.0	Address 0	Out
73	P1.7	Near End Sense	In
74	P1.6	Auto Cutter SW Sense	In
75	P1.5	Compulsory SW Sense	In
76	P1.4	Feed SW Sense	In
77	P1.3	Parallel_Auto Feed	In
78	P1.2	Parallel / Init	In
79	P1.1	DIP_R5	Out
80	P1.0	Head Rest	Out
81	P0.7	Data 7	In/Out
82	P0.6	Data 6	In/Out

Pin	Port	Function	I/O
83	P0.5	Data 5	In / Out
84	P0.4	Data 4	In / Out
85	P0.3	Data 3	In / Out
86	P0.2	Data 2	In / Out
87	P0.1	Data 1	In / Out
88	P0.0	Data 0	In / Out
89	P10.7	Head Temperature ADC Voltage	In
90	P10.6	Motor_CR_PB	Out
91	P10.5	Motor_CR_PA	Out
92	P10.4	Motor_CR_COM	Out
93	P10.3	DIP_C3	In
94	P10.2	DIP_C2	In
95	P10.1	DIP_C1	In
96	AVSS	Ground	-
97	P10.0	DIP_C0	In
98	VREF	AD Reference Voltage Input	In
99	AVCC	+5V (VCC)	-
100	P9.7	Head#1	Out

9-2 I/F Connector Pin(CN4)

Pin	RS-232C	RS-485	IEEE1284	IEEE1284	Remark
1	S.GND	S.GND	S.GND	S.GND	
2	S.GND	S.GND	S.GND	S.GND	
3	-	-	D0	D0	
4	-	-	D1	D1	
5	-	-	D2	D2	
6	-	-	D3	D3	
7	-	-	D4	D4	
8	-	-	D5	D5	
9	-	-	D6	D6	
10	-	-	D7	D7	
11	-	-	/WR	/WR	
12	TXD	TXD	ACK	-	
13	-	-	PARA_WR	-	
14	-	-	/CS3	-	
15	-	-	PARA_INT	USB_INT	
16	-	-	BUSY	USB_CS	
17	+5V	+5V	+5V	+5V	
18	-	-	P ERROR	-	
19	-	-	AUTOFEED	-	
20	-	-	/RD	/RD	
21	-	-	-	RESET	
22	RXD	RXD	SLCT	-	
23	DTR	DTR	-	-	
24	DSR	DSR	-	-	
25	-	-	SLCTIN	-	
26	-	-	/INIT	-	
27	-	-	/FAULT	-	
28	-	-	-	A0	
29	DIP_R4	DIP_R4	DIP_R4	DIP_R4	
30	DIP_C1	DIP_C1	DIP_C1	DIP_C1	
31	DIP_C2	DIP_C2	DIP_C2	DIP_C2	
32	DIP_C3	DIP_C3	DIP_C3	DIP_C3	
33	S.GND	S.GND	S.GND	S.GND	
34	S.GND	S.GND	S.GND	S.GND	

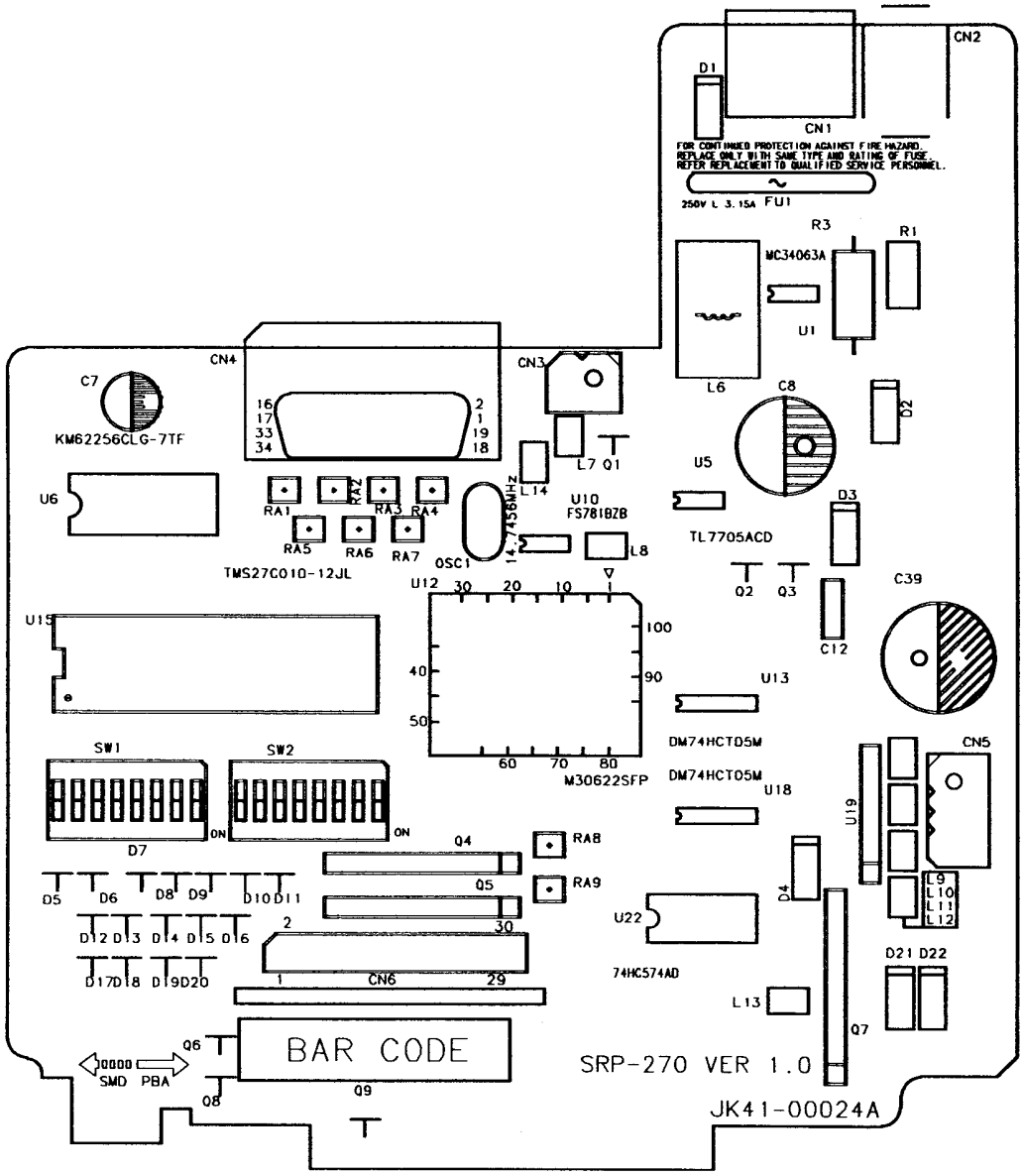
10. Block Diagram (SRP-270 / SRP-270S / SRP-270P / SRP-270U)



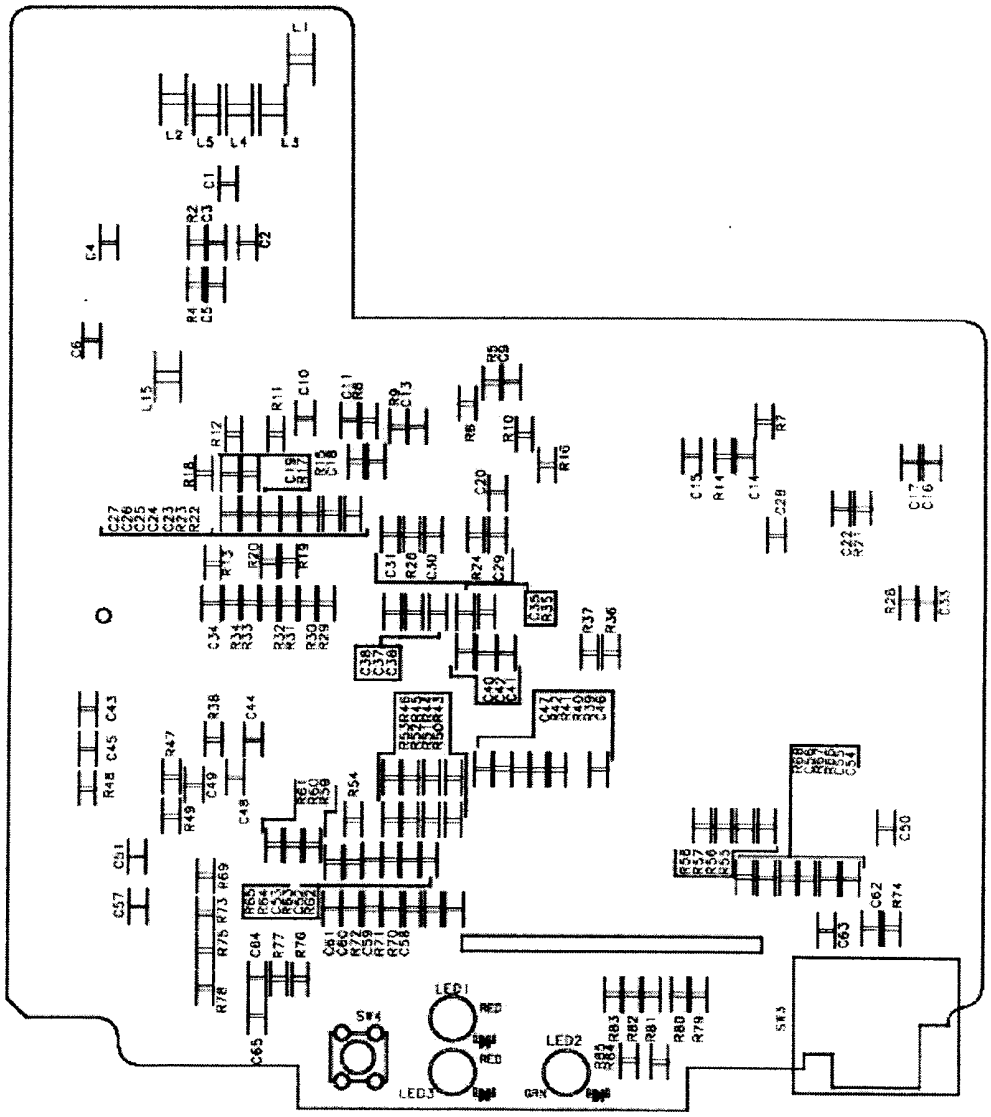
11. PCB Layout and Parts List

11-1 Main Board Layout

11-1-1 Component Side



11-1-2 Component Side



11-1-3 Part List (Manual)

CODE NO.	Description/Specification	Q'TY	Remarks	Serviceable
JK92-00993A	PBA-MAIN	1		
0506-001019	TR-ARRAY;STA471A,NPN,4,4W,SIP-	3	Q4 Q5 Q7	Y
0601-000161	LED;ROUND,GRN,5mm,563nm	1	LED2	Y
0601-000255	LED;ROUND,RED,5mm,700nm	2	LED1 LED3	Y
1003-001118	IC-CURRENT DRIVER;TA8428K,SIP,	1	U19	Y
1102-000109	IC-EPROM;27C010,128Kx8BIT,DIP,	1	U15	Y
2005-000419	R-WIRE WOUND,NON;0.33ohm,1%,1W	1	R3	Y
2401-000042	C-AL;100uF,20%,16V,GP,TP,6.3x7	1	C7	Y
2401-001363	C-AL;470uF,20%,16V,GP,TP,10x12	1	C8	Y
2401-001429	C-AL;470uF,20%,50V,GP,TP,13x20	1	C39	Y
2801-003263	CRYSTAL-UNIT;14.7456MHz,50ppm,	1	OSC1	Y
3402-000132	SWITCH-ROCKER;250V,3A,SPDT,ON-	1	SW3	Y
3404-000206	SWITCH-TACT;12V,50mA,120gf,6x6	1	SW4	Y
3407-000177	SWITCH-DIP;5V,10mA,SLIDE,SPST	2	SW1 SW2	Y
3601-000262	FUSE-CARTRIDGE;250V,3.15A,TIME	1	FUSE	Y
3602-000001	FUSE-CLIP;-,-,30mohm	2	FU1	Y
3702-001124	CONNECTOR-RIBBON;34P,MALE,ANGL	1	CN4	Y
3708-001058	CONNECTOR-FPC/FC/PIC;30P,1.0MM	1	CN6	Y
3711-000035	CONNECTOR-HEADER;BOX,2P,1R,2.5	1	CN3	Y
3711-000961	CONNECTOR-HEADER;BOX,4P,1R,2.5	1	CN5	Y
3722-001034	JACK-MODULAR;6P/2C,0.76mm,AU,G	1	CN1	Y
3722-001035	JACK-DC POWER;3P,6.3mm,-,AG	1	CN2	Y
JK27-60100D	COIL FILTER-;ER-350,140 UH,-,-	1	L6	Y

11-1-4 Part List (Auto)

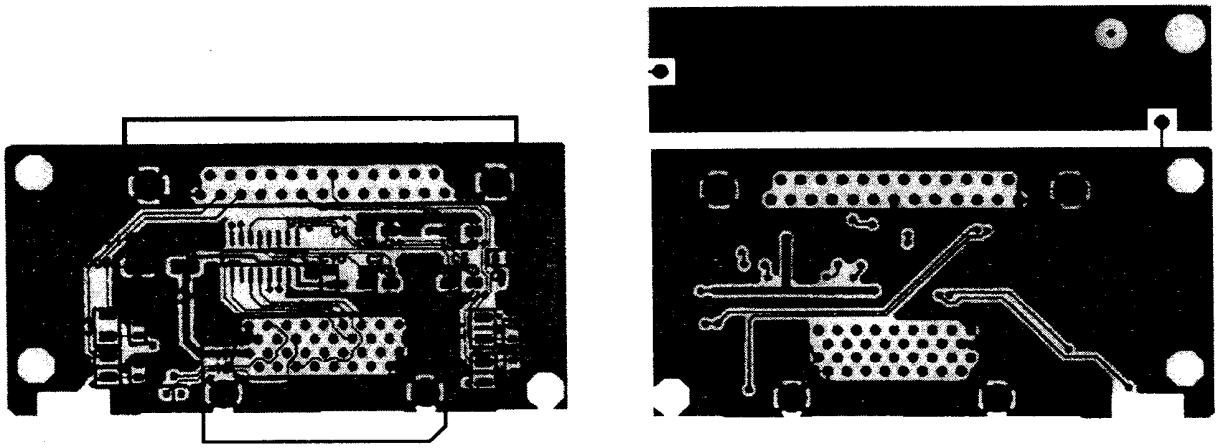
CODE NO.	Description/Specification	Q'TY	Remarks	Serviceable
JK94-00042A	SRP270			
0401-001003	DIODE-SWITCHING;MMBD6050LT1,70	16	D5 D6 D7 D8 D9 D10	Y
			D11 D12 D13 D14	Y
			D15 D16 D17 D18	Y
			D19 D20	Y
0402-001189	DIODE-RECTIFIER;M4,400V,1A,SMD	4	D1 D3 D21 D22	Y
0404-001051	DIODE-SCHOTTKY;SK14,40V,1A,DO-	2	D2 D4	Y
0501-000457	TR-SMALL SIGNAL;MMBT2222A,NPN,	6	Q1 Q2 Q3 Q6 Q8 Q9	Y
0801-000718	IC-CMOS LOGIC;74HC574,D FLIP-F	1	U22	Y
0801-001063	IC-CMOS LOGIC;74HCT05,INVERTER	2	U13 U18	Y
0903-001154	IC-MICROCOMPUTER;30622,16BIT,Q	1	U12	Y
1106-001037	IC-SRAM;62256,32Kx8BIT,SOP,28P	1	U6	Y
1203-000404	IC-DC/DC CONVERTER;34063,SOP,8	1	U1	Y
1203-000496	IC-VOL. SUPERVISORY;7705,SOP,8	1	U5	Y
1205-001771	IC-CLOCK GENERATOR;FS781BZB,SO	1	U10	Y
2007-000026	R-CHIP;200OHM,5%,1/10W,DA,TP,2	3	R10 R16 R73	Y
2007-000931	R-CHIP;470OHM,5%,1/10W,DA,TP,2	1	R24	Y
2007-000028	R-CHIP;39OHM,5%,1/10W,DA,TP,20	1	R14	Y
2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,	1	R20	Y
2007-000290	R-CHIP;100OHM,5%,1/10W,DA,TP,2	5	R22 R23 R39 R42	Y
			R77	Y
2007-000300	R-CHIP;10KOHM,5%,1/10W,DA,TP,2	16	R6 R7 R9 R17 R21	Y
			R29 R30 R31 R32	Y
			R33 R34 R38 R59	Y
			R60 R61 R65	Y
2007-000352	R-CHIP;12KOHM,1%,1/10W,DA,TP,2	1	R2	Y
2007-000395	R-CHIP;150KOHM,5%,1/10W,DA,TP,	5	R4 R55 R56 R57 R58	Y
2007-000468	R-CHIP;1KOHM,5%,1/10W,DA,TP,20	19	R43 R44 R45 R46	Y
			R47 R49 R50 R51	Y
			R52 R53 R54 R62	Y
			R63 R64 R68 R70	Y
			R71 R72 R85	Y
2007-000493	R-CHIP;2.2KOHM,5%,1/10W,DA,TP,	1	R26	Y

11-1-5 Part List (Auto)

CODE NO.	Description/Specification	QTY	Remarks	Serviceable
2007-000804	R-CHIP;36KOHM,5%,1/10W,DA,TP,2	2	R8 R40	Y
2007-000822	R-CHIP;390OHM,5%,1/10W,DA,TP,2	3	R81 R82 R83	Y
2007-000872	R-CHIP;4.7KOHM,5%,1/10W,DA,TP,	21	R5 R11 R12 R15 R18	Y
			R28 R35 R36 R37	Y
			R41 R48 R66 R67	Y
			R69 R74 R75 R76	Y
			R78 R79 R80 R84	Y
2007-001113	R-CHIP;680KOHM,5%,1/10W,DA,TP,	2	R13 R19	Y
2007-007863	R-CHIP;0.412ohm,1%,1W,DA,TP,63	1	R1	Y
2011-000005	R-NETWORK;220ohm,5%,1/16W,L,CH	2	RA8 RA9	Y
2011-001094	R-NETWORK;39ohm,5%,63mW,L,CHIP	7	RA1 RA2 RA3 RA4	Y
			RA5 RA6 RA7	Y
2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,5	34	C1 C2 C3 C4 C6 C9	Y
			C10 C11 C13 C17	Y
			C18 C20 C23 C24	Y
			C25 C26 C27 C33	Y
			C34 C36 C38 C40	Y
			C43 C44 C45 C48	Y
			C49 C51 C57 C60	Y
			C62 C63 C64 C65	Y
2203-000260	C-CERAMIC,CHIP;10nF,10%,50V,X7	15	C16 C19 C35 C37	Y
			C42 C46 C47 C50	Y
			C52 C53 C54 C55	Y
			C56 C58 C59	Y
2203-000361	C-CERAMIC,CHIP;150PF,10%,50V,X7	1	C31	Y
2203-000634	C-CERAMIC,CHIP;0.022nF,5%,50V,	7	C14 C15 C22 C28	Y
			C29 C30 C41	Y
2203-000938	C-CERAMIC,CHIP;0.47nF,5%,50V,N	1	C5	Y
2203-001245	C-CERAMIC,CHIP;0.082nF,5%,50V,	1	C61	Y
2301-000335	C-FILM,PEF;10nF,5%,50V,TP,6x3x	1	C12	Y
3301-000325	CORE-FERRITE BEAD;AB,3.2x2.5x1	6	L1 L2 L3 L4 L5 L15	Y
3301-000325	CORE-FERRITE BEAD;AB,3.2x2.5x1	8	L7 L8 L9 L10 L11	Y
			L12 L13 L14	

11-2 Rs-232C Serial I/F PCB Layout

11-2-1 Component and Solder Side

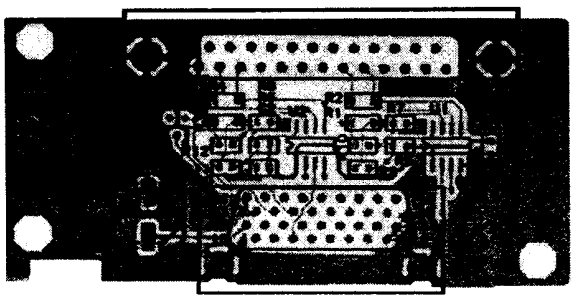


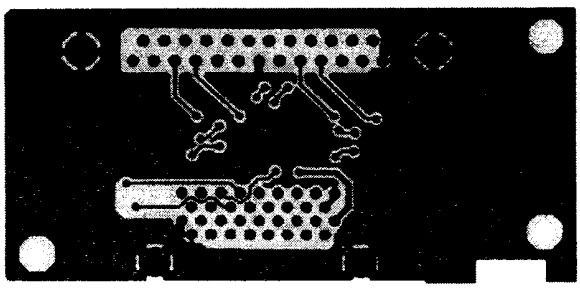
11-2-2 Parts List

Code No.	Description / Specification	Q'TY	Remarks	Serviceable
JK92-00944A	PBA-RS232C	1		Y
3701-000154	CONNECTOR-DSUB;25P,2R,FEMALE,A	1	CN2	Y
3702-001125	CONNECTOR-RIBBON;34P,FEMALE,AN	1	CN1	Y
JK94-00023A	PHANTOM AU JK92-00944A	1		N
0401-001003	DIODE-SWITCHING;MMBD6050LT1,70	1	D1	Y
1006-000133	IC-DRIVER/RECEIVER;232,SOP,16P	1	U1	Y
2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,5	2	C10,11	Y
2203-000938	C-CERAMIC,CHIP;0.47nF,5%,50V,N	4	C6,7,8,9	Y
2402-000168	C-AL,SMD;100uF,20%,16V,GP,TP,8	1	C1	Y
2402-000170	C-AL,SMD;1uF,20%,50V,GP,TP,4.3	4	C2,3,4,5	Y
3301-000325	CORE-FERRITE BEAD;AB,3.2x2.5x1	4	L1,2,3,4	Y
JK41-00006A	PCB-RS232;SRP-270,FR-4,2L,T1.6	1		N

11-3 Rs-485 Serial I/F PCB Layout

11-3-1 Component and Solder Side



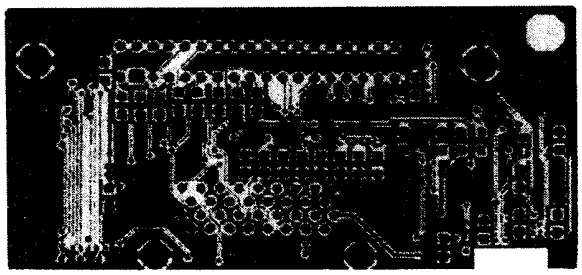


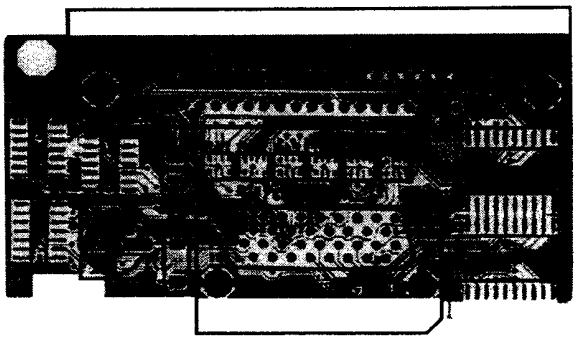
11-3-2 Parts List

Code No.	Description / Specification	Q'TY	Remarks	Serviceable
JK92-00945A	PBA-RS485	1		Y
3701-000154	CONNECTOR-DSUB;25P,2R,FEMALE,A	1	CN2	Y
3702-001125	CONNECTOR-RIBBON;34P,FEMALE,AN	1	CN1	Y
JK94-00027A	PHANTOM AU JK92-00945A	1		N
0401-001003	DIODE-SWITCHING;MMBD6050LT1,70	1	D1	Y
1006-001057	IC-LINE TRANSCEIVER;488,SOP,8P	2	U1,2	Y
2007-000293	R-CHIP;100OHM,5%,1/8W,DA,TP,32	4	R1,2,3,4	Y
2007-000300	R-CHIP;10KOHM,5%,1/10W,DA,TP,2	4	R5,6,7,8	Y
2007-000766	R-CHIP;330OHM,5%,1/10W,DA,TP,2	4	R9,10,11,12	Y
2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,5	2	C2,3	Y
2402-000168	C-AL,SMD;100uF,20%,16V,GP,TP,8	1	C1	Y
JK41-00007A	PCB-RS485;SRP-270,FR-4,2L,T1.6	1	PCB	N

11-4 IEEE 1284 Parallel I/F PCB

11-4-1 Component and Solder Side



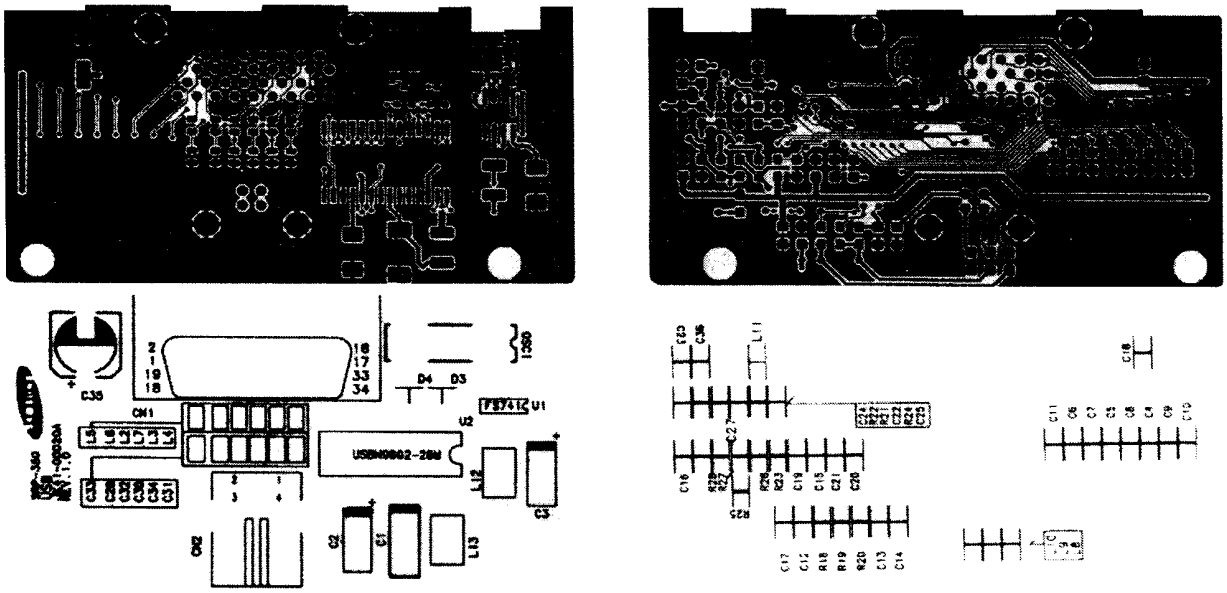


11-4-2 Parts List

Code No.	Description / Specification	Q'TY	Remarks	Serviceable
JK92-00946A	PBA-IEEE1284			Y
3702-000118	CONNECTOR-RIBBON;36P,FEMALE,AN	1	CN2	Y
3702-001125	CONNECTOR-RIBBON;34P,FEMALE,AN	1	CN1	Y
JK94-00024A	PHANTOM AU JK92-00946A	1		N
0401-001003	DIODE-SWITCHING;MMBD6050LT1,70	1	D1	Y
0404-001051	DIODE-SCHOTTKY;SK14,40V,1A,DO-	1	D2	Y
0801-000408	IC-CMOS LOGIC;74HC02,NOR GATE,	1	U3	Y
0801-000454	IC-CMOS LOGIC;74HC74,D FLIP-FL	1	U1	Y
0801-000719	IC-CMOS LOGIC;74HC574,D FLIP-F	2	U4,5	Y
0801-000891	IC-CMOS LOGIC;74HCT32,OR GATE,	1	U6	Y
2007-000028	R-CHIP;39OHM,5%,1/10W,DA,TP,20	1	R4	Y
2007-000493	R-CHIP;2.2KOHM,5%,1/10W,DA,TP,	1	R3	Y
2011-001094	R-NETWORK;39ohm,5%,1/16W,L,CHI	2	RA1,2	Y
2011-001097	R-NETWORK;5.1Kohm,5%,1/16W,L,C	4	RA5,6,7,8	Y
2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,5	5	C2,3,4,5,6	Y
2203-000634	C-CERAMIC,CHIP;0.022nF,5%,50V,	9	C7,10,11,12,13,14,15,16,17	Y
2203-000938	C-CERAMIC,CHIP;0.47nF,5%,50V,N	10	C9,19,20,21,22,23,24,25,26 C29	Y
2203-001801	C-CERAMIC,CHIP;10nF,10%,100V,X	3	C8,27,28	Y
2402-000168	C-AL,SMD;100uF,20%,16V,GP,TP,8	1	C1	Y
3301-000325	CORE-FERRITE BEAD;AB,3.2x2.5x1	1	L1	Y
JK41-00008A	PCB-IEEE1284;SRP-270,FR-4,2L,T	1		N

11-5 USB I/F PCB

11-5-1 Component and Solder Side



11-5-2 Parts List

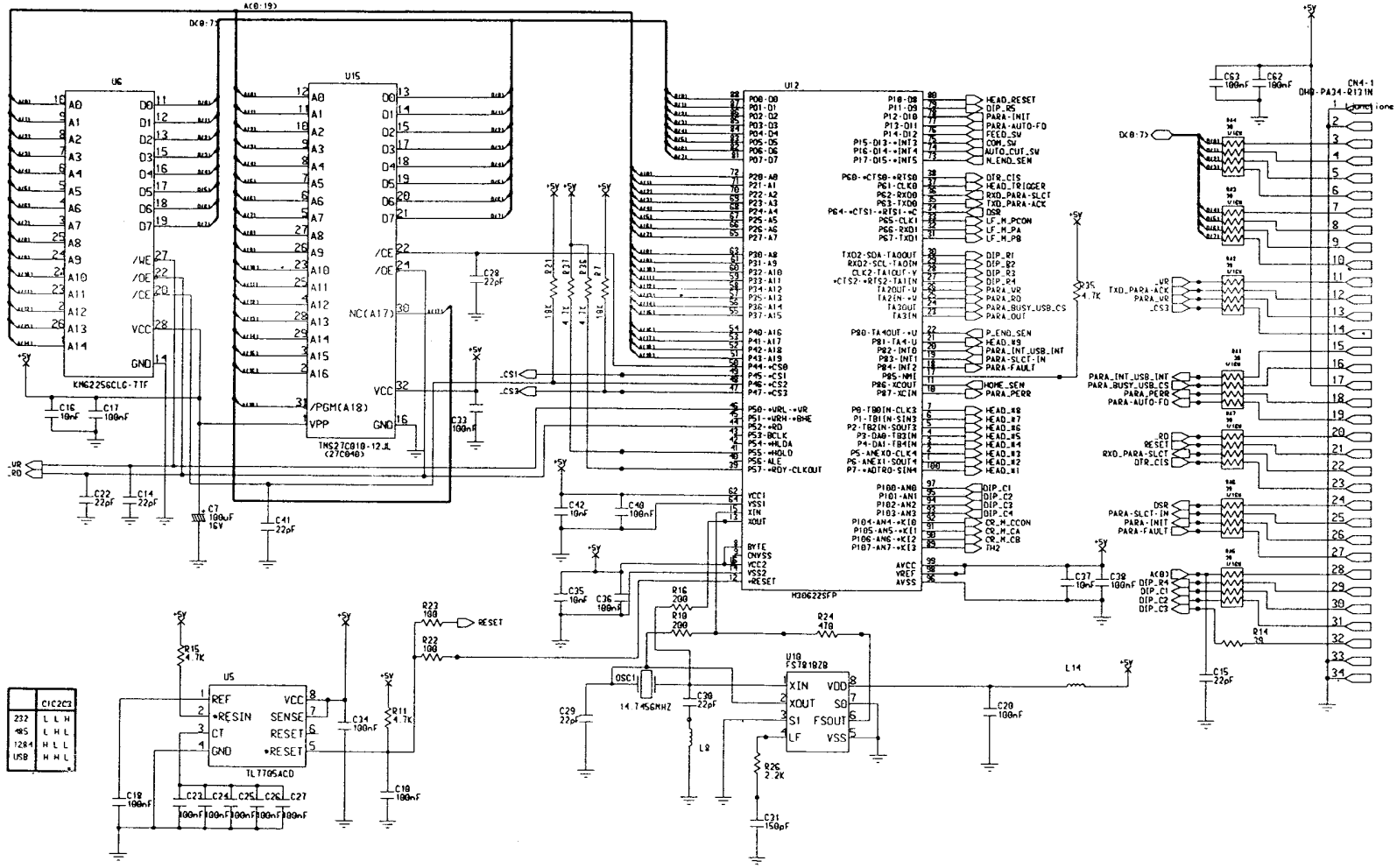
Code No.	Description / Specification	Q'TY	Remarks	Serviceable
0401-001003	DIODE-SWITCHING;MMBD6050LT1,70	2	D3,4	Y
0904-001319	IC-USB CONTROLLER;USBN9602-28M,28P	1	U2	Y
2007-000028	R-CHIP;39OHM,5%,1/10W,DA,TP,20	1	R21	Y
2007-000241	R-CHIP;1.5K,5%,1/10W,DA,TP,20	1	R20	Y
2007-000290	R-CHIP;100,5%,1/10W,DA,TP,20	1	R26	Y
2007-000300	R-CHIP;10K,5%,1/10W,DA,TP,20	1	R23	Y
2007-000308	R-CHIP;10,5%,1/10W,DA,TP,20	1	R25	Y
2007-000468	R-CHIP;1K,5%,1/10W,DA,TP,20	2	R27,28	Y
2007-000477	R-CHIP;1M,5%,1/10W,DA,TP,20	1	R22	Y
2007-000551	R-CHIP;20,5%,1/10W,DA,TP,20	2	R18,19	Y
2007-000671	R-CHIP;2K,5%,1/10W,DA,TP,20	1	R24	Y
2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,5	9	C12,13,14,15,16,17,18,19 C36	Y
2203-000239	C-CERAMIC,CHIP;100pF,+80-20%,5	11	C4,5,6,7,8,9,10,11,29,31 C34	Y
2203-000361	C-CERAMIC,CHIP;150pF,+80-20%,5	1	C27	Y
2203-000634	C-CERAMIC,CHIP;22pF,+80-20%,5	6	C20,21,22,30,32,33	Y
2203-000683	C-CERAMIC,CHIP;27pF,+80-20%,5	2	C23,24	Y
2203-000938	C-CERAMIC,CHIP;470pF,+80-20%,5	1	C25	Y

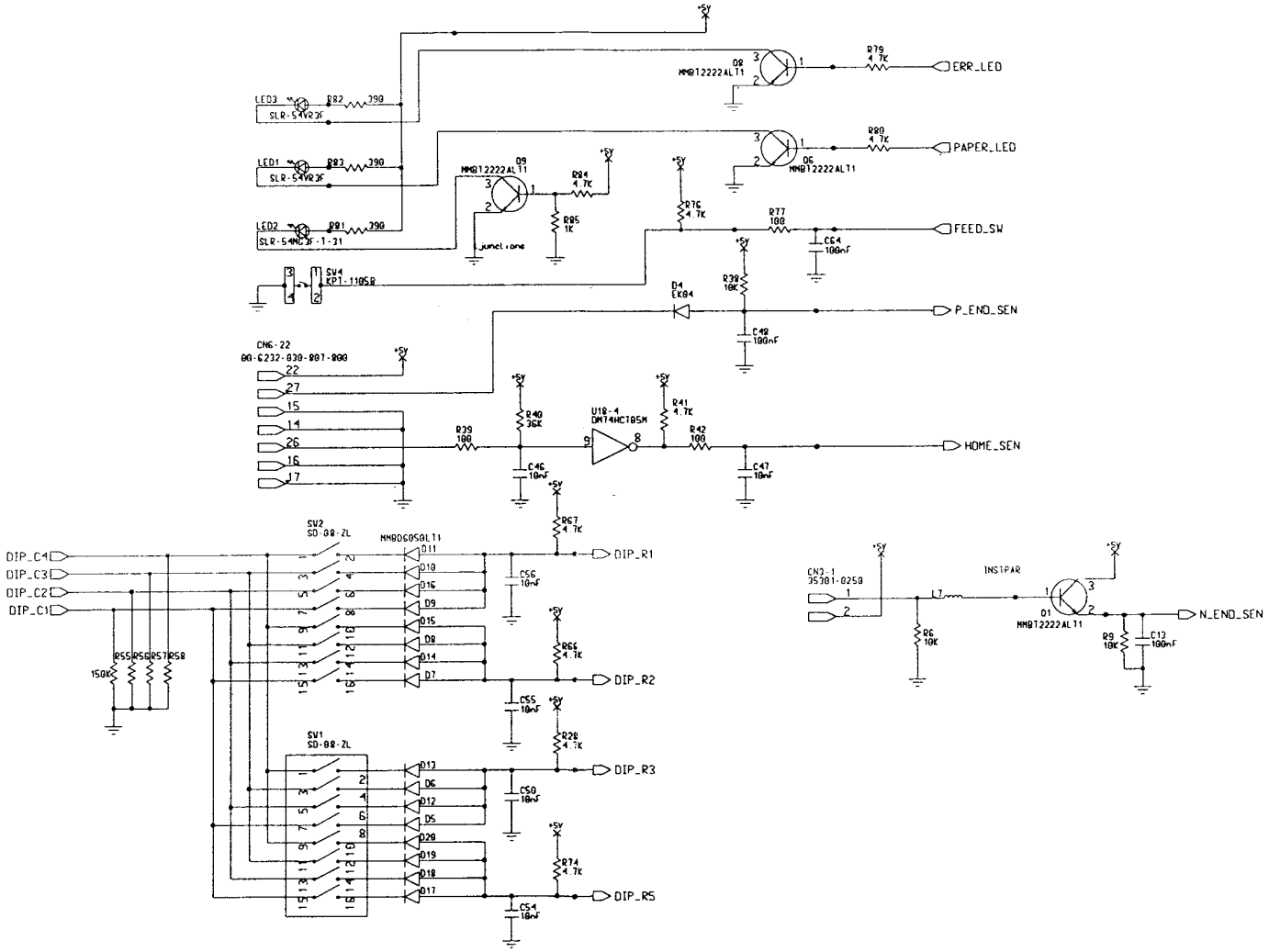
11-5-3 Parts List

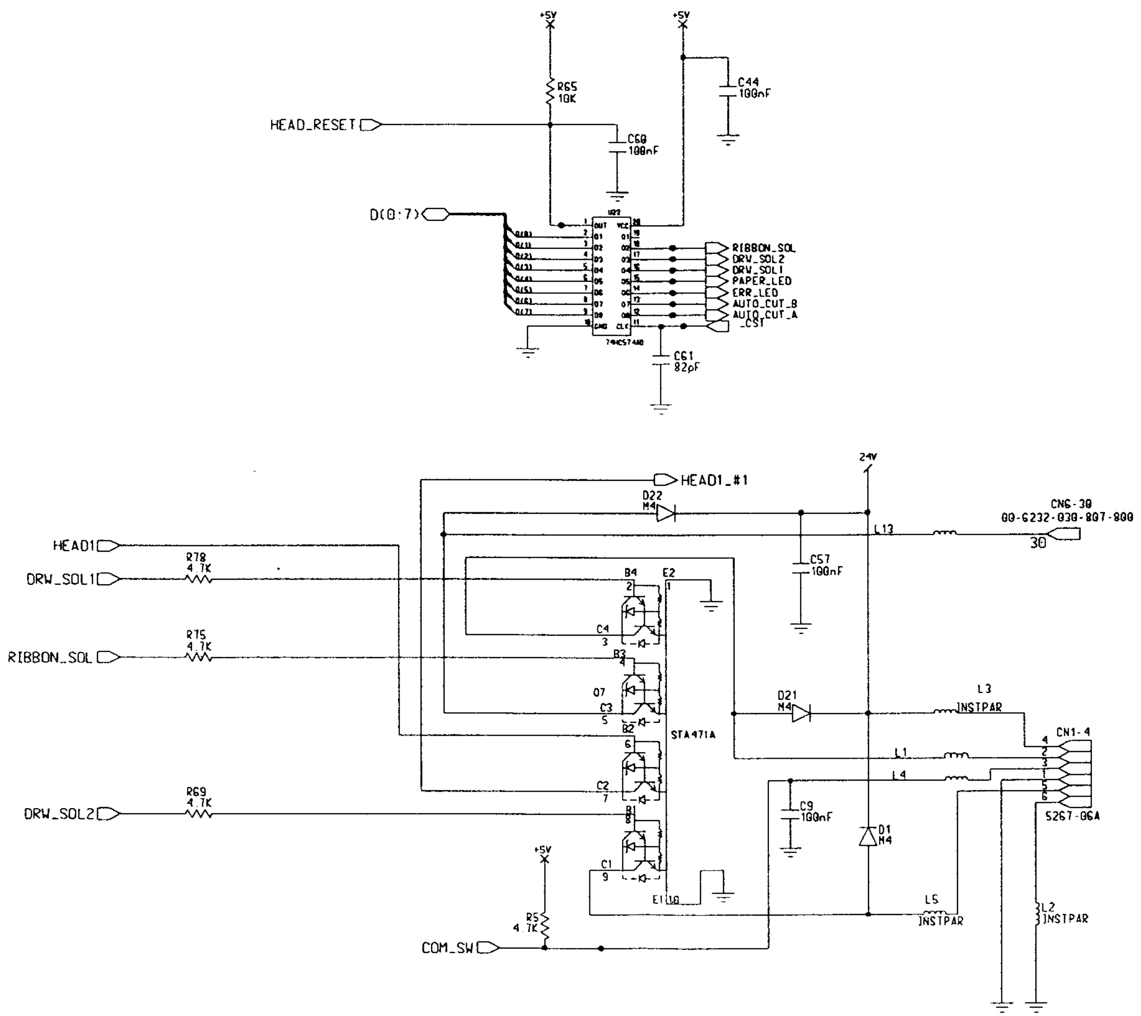
Code No.	Description / Specification	QTY	Remarks	Serviceable
2402-000168	C-AL,SMD;100uF,20%,16V,GP,TP,8	1	C35	Y
2404-000128	C-TAN,SMD;10uF, 16V,6032	2	C2,3	Y
2404-000468	C-TAN,SMD;33uF, 16V,7343	1	C1	Y
2703-000214	FERRITE-BEAD;MLF2012DR47KT	1	L11	Y
2801-003699	CLOCK;48MHZ	1	OSC1	Y
3301-001074	FERRITE-BEAD;CIM21J121NES	9	L2,3,4,5,6,7,8,9,10	Y
3301-001117	FERRITE-BEAD;HF50ACC453215-T	2	L13,L12	Y
3702-001125	CONNECTOR-RIBBON;34P,FEMALE,AN	1	CN1	Y
3722-001101	CONNECTOR-USB;4P,B-TYPE	1	CN2	Y
4701-001020	FREQ-ATTENUATOR;5-80MHz,15dB,FS741	1	U1	Y
JK41-00020A	PCB-USB;FR-4,2L,T	1	PCB	N

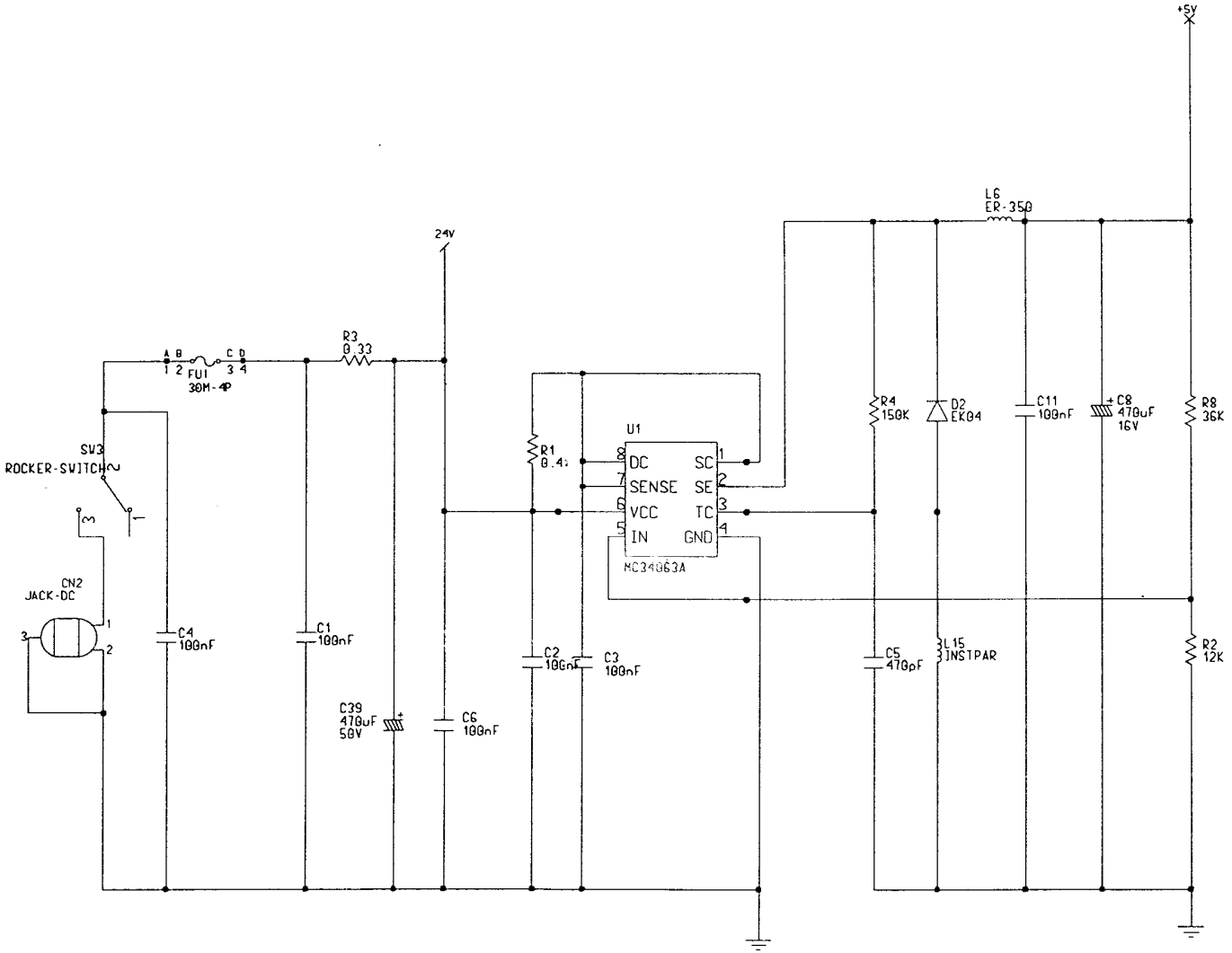
12. Schematic Diagrams

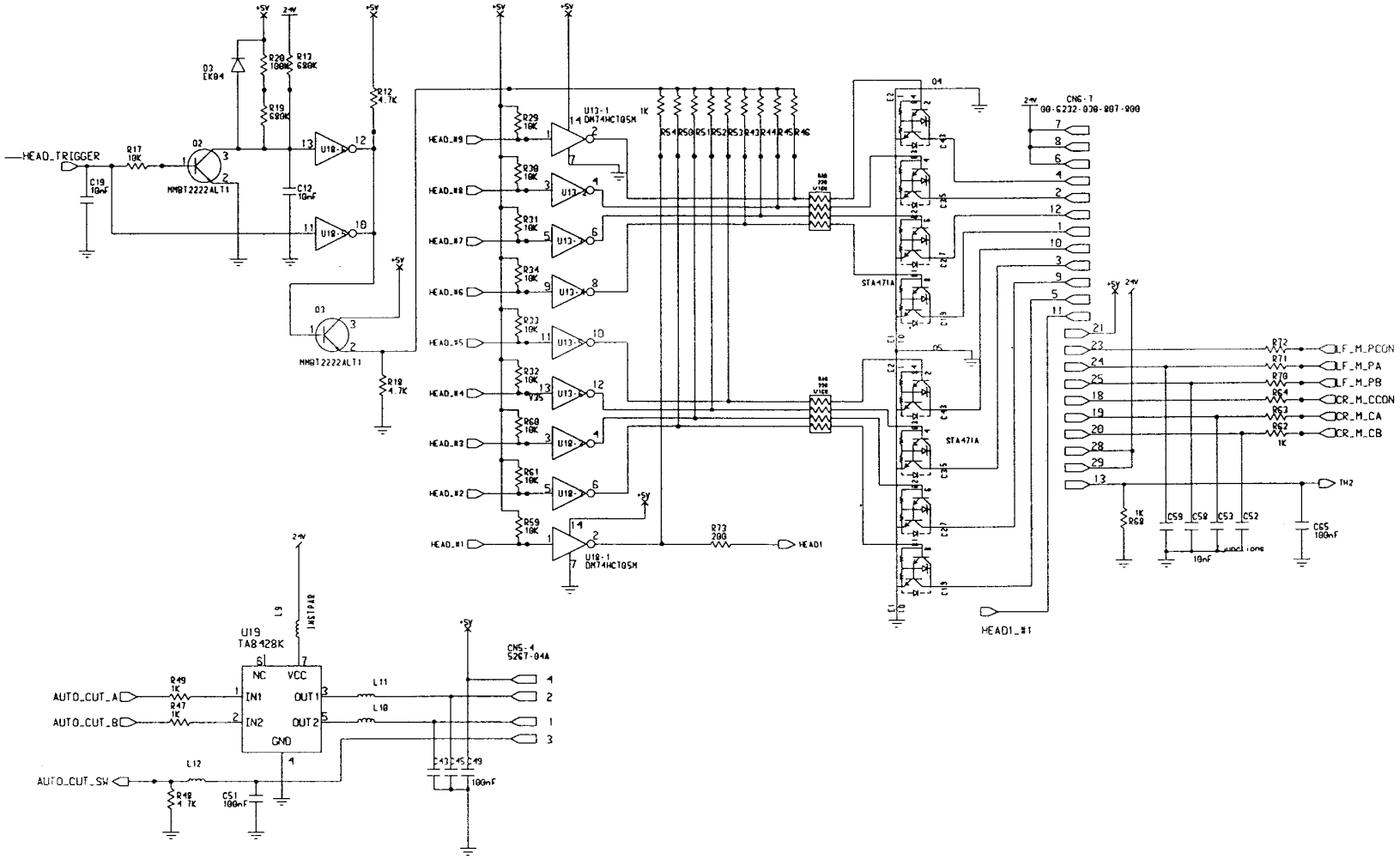
12-1 Main Circuit Diagrams



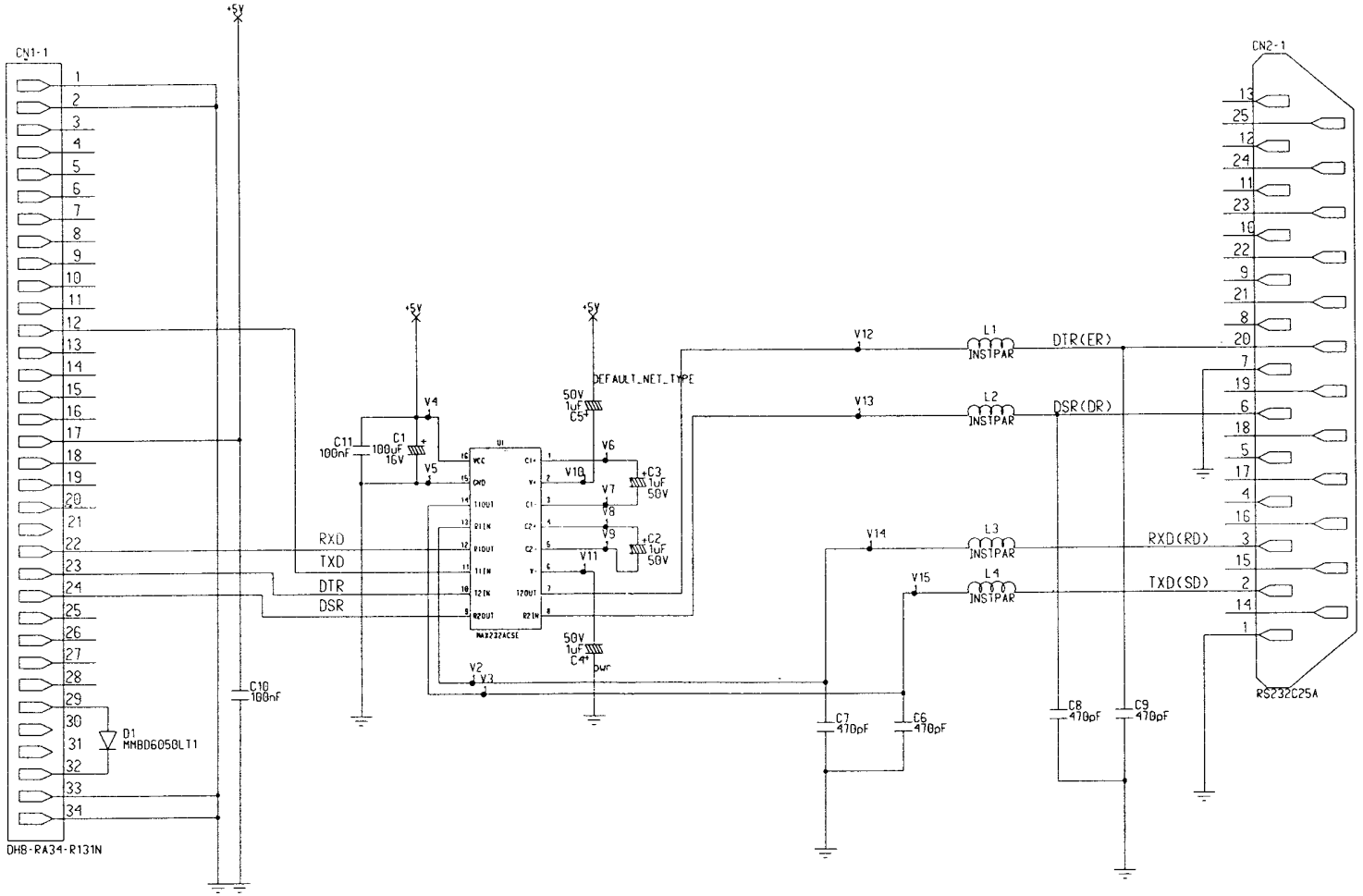

+5V
Q8
MMBT2222ALT1
R79
4.7K
ERR_LED
LED3
R82
390
SLR-54VR2F
Q7
MMBT2222ALT1
R80
4.7K
PAPER_LED
LED1
R83
390
SLR-54VR2F
Q9
MMBT2222ALT1
R84
4.7K
R85
1K
Q6
MMBT2222ALT1
LED2
R81
390
SLR-54MC3F-1-31
R76
4.7K
R77
100
FEED_SW
C54
100nF
SW1
SKPT-1105B
R78
10K
D4
EK84
P_END_SEN
C48
100nF
CN6-22
60-6232-830-887-800
22
27
15
14
26
16
17
R39
100
R40
3GK
U18-4
DM74HCT05M
R41
4.7K
R42
100
HOME_SEN
C46
10nF
C47
10nF
SW2
SD-08-ZL
MMBD6050LT1
DIP_C4
DIP_C3
DIP_C2
DIP_C1
R67
4.7K
DIP_R1
C56
10nF
R66
4.7K
DIP_R2
C55
10nF
R28
4.7K
DIP_R3
C50
10nF
R74
4.7K
DIP_R5
C51
10nF
R55
R56
R57
R58
150K
SW1
SD-08-ZL
CN3-1
35301-0250
INSTPAR
L7
R6
10K
Q1
MMBT2222ALT1
N_END_SEN
R9
10K
C13
100nF


+5V
R65
10K
HEAD_RESET
C60
100nF
C44
100nF
D(0:7)
U22
74HC574AD
RIBBON_SOL
DRW_SOL2
DRW_SOL1
PAPER_LED
ERR_LED
AUTO_CUT_B
AUTO_CUT_A
_CS1
C61
82pF
24V
HEAD1_#1
D22
M4
CN6-30
00-6232-030-007-800
30
L13
HEAD1
DRW_SOL1
R78
4.7K
B4
E2
C57
100nF
C4
RIBBON_SOL
R75
4.7K
B3
Q7
C3
D21
M4
L3
INSTPAR
B2
STA471A
CN1-4
L1
L4
C2
DRW_SOL2
R69
4.7K
B1
C9
100nF
5267-06A
D1
M4
C1
E1
L5
INSTPAR
L2
INSTPAR
R5
4.7K
COM_SW

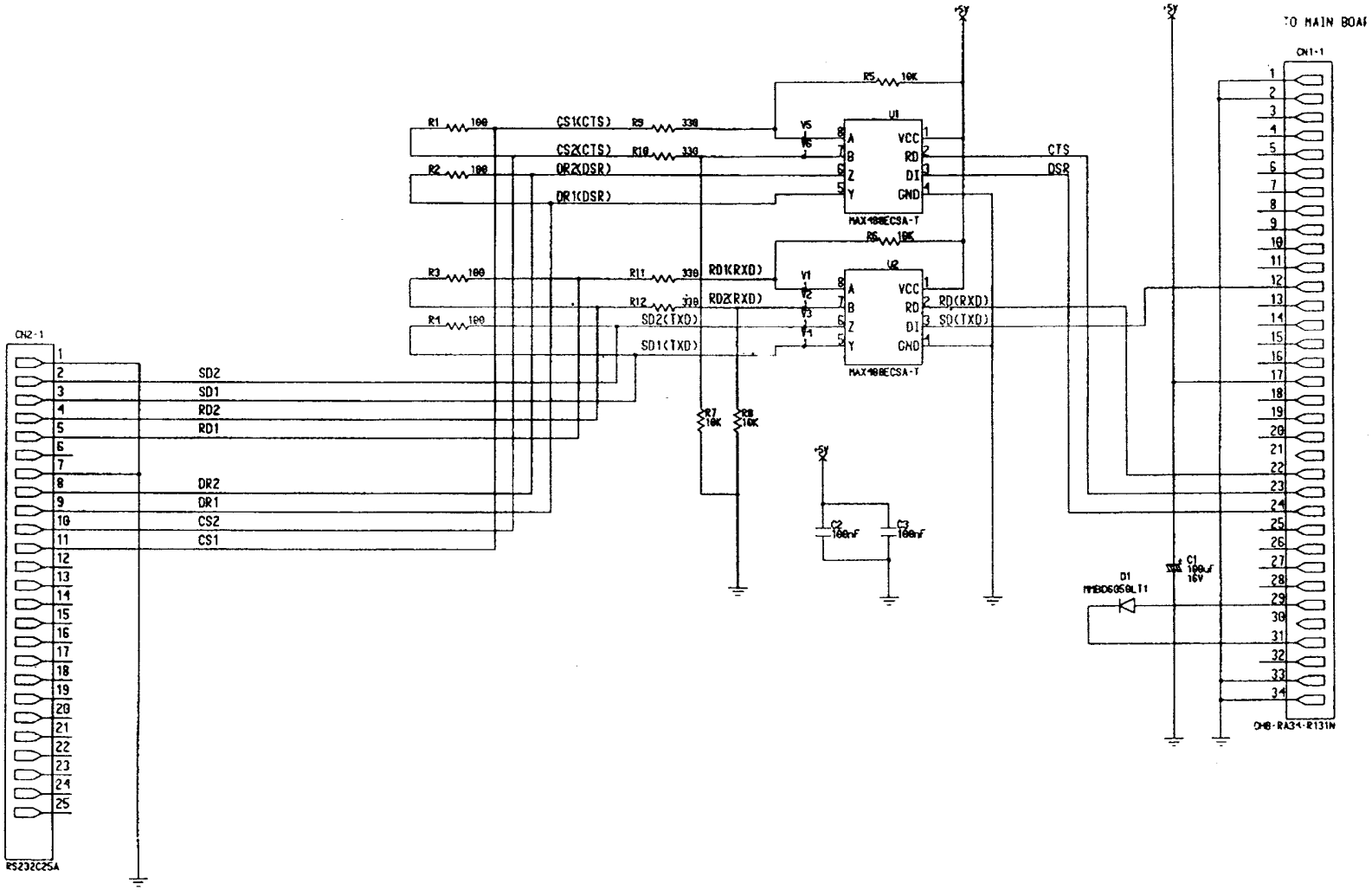

+5V
L6
ER-35B
24V
R3
0.33
A B C D
1 2 3 4
FU1
30M-4P
SW3
ROCKER-SWITCH
CN2
JACK-DC
C4
100nF
C1
100nF
C39
470uF
50V
C6
100nF
R1
0.4
U1
DC
SENSE
VCC
IN
SC
SE
TC
GND
MC34063A
C2
100nF
C3
100nF
R4
150K
D2
EK04
C11
100nF
C8
470uF
16V
R8
36K
C5
470pF
L15
INSTPAR
R2
12K


HEAD_TRIGGER
MMBT2222ALT1
U19
TA8428K
AUTO_CUT_A
AUTO_CUT_B
AUTO_CUT_SW
HEAD_#9
HEAD_#8
HEAD_#7
HEAD_#6
HEAD_#5
HEAD_#4
HEAD_#3
HEAD_#2
HEAD_#1
HEAD1
HEAD1_#1
STA471A
LF_M_PCON
LF_M_PA
LF_M_PB
CR_M_CCON
CR_M_CA
CR_M_CB
IN2

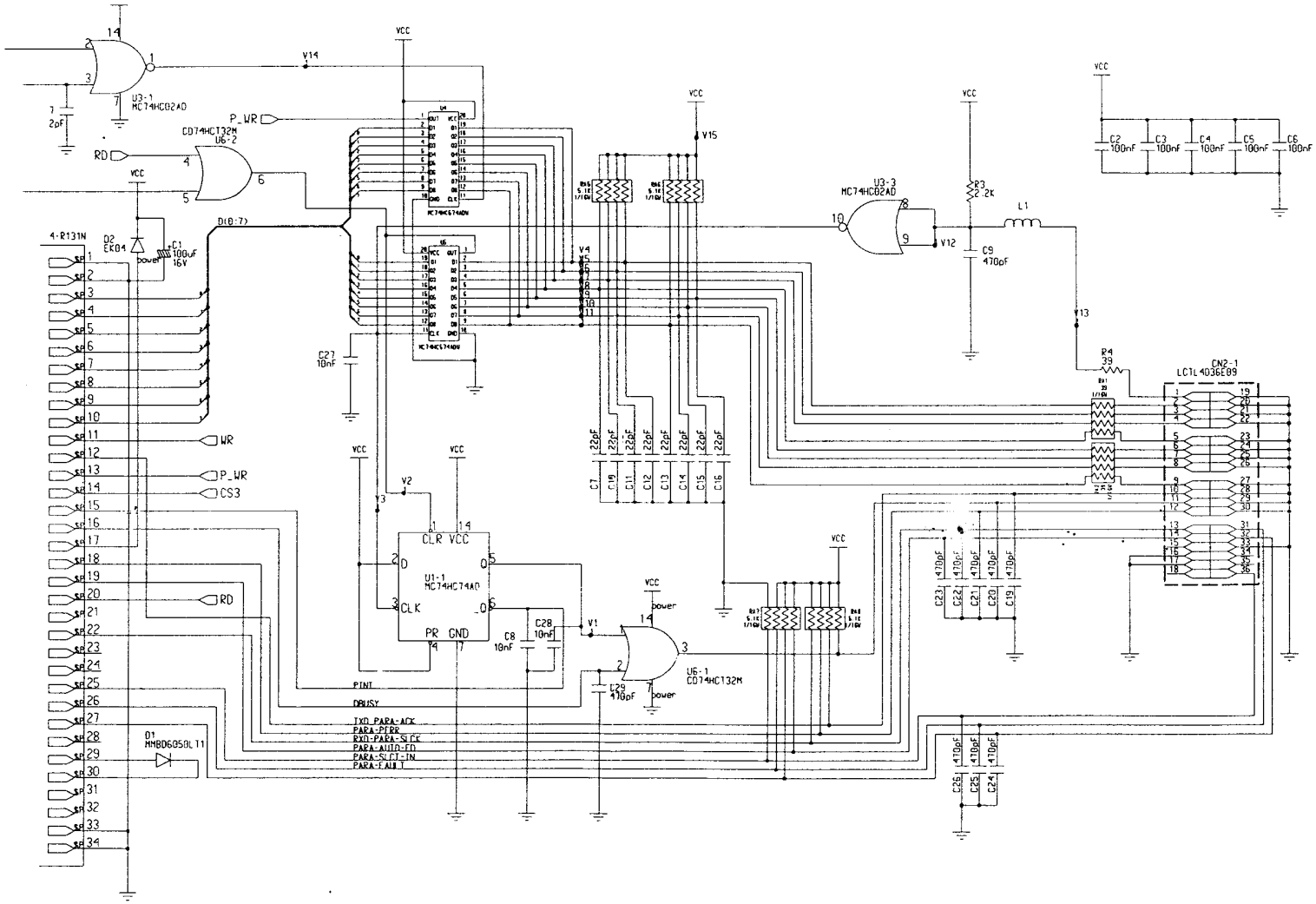
12-2 Serial Interface Diagrams (RS-232C)



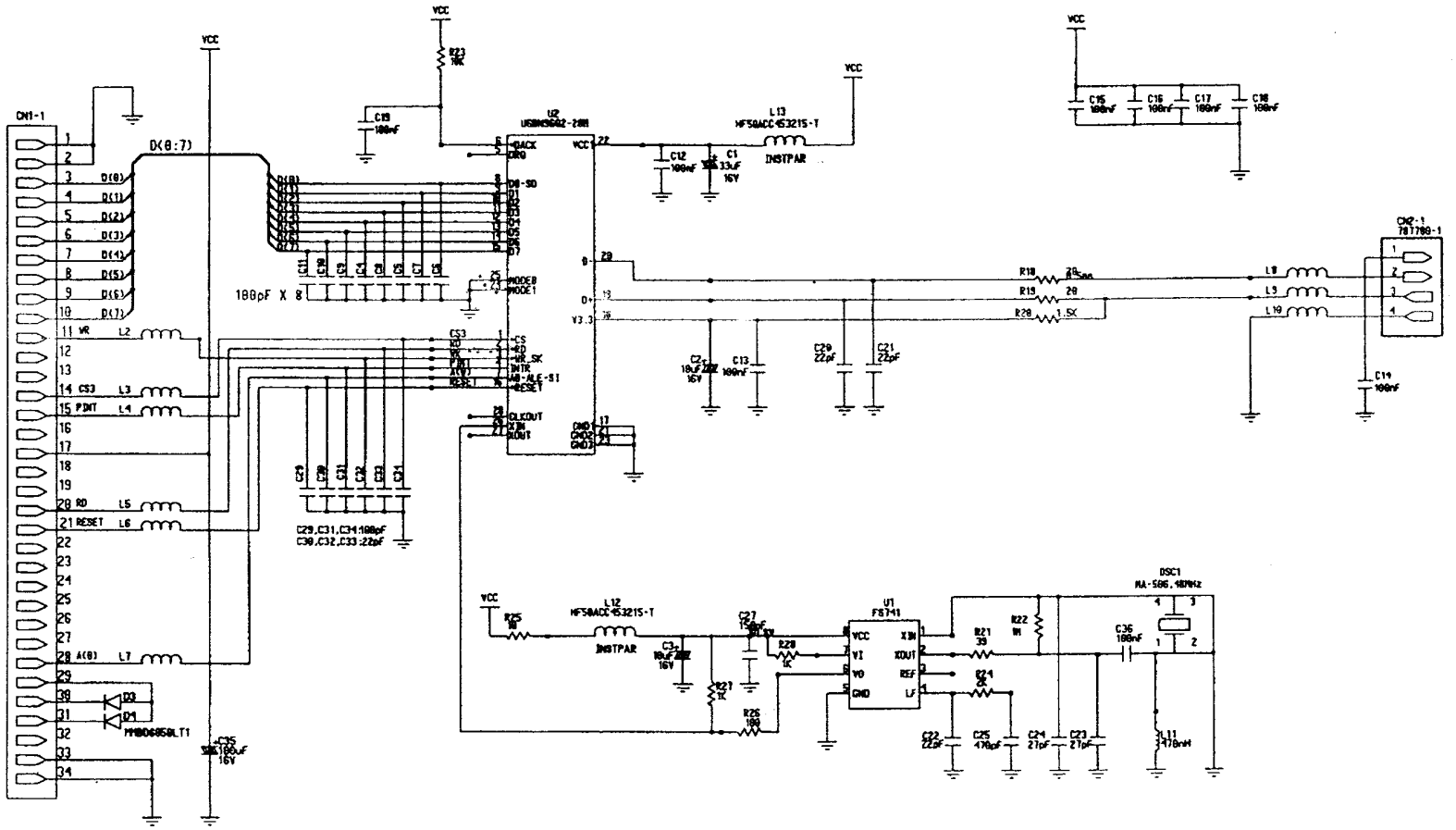
3 Serial Interface Diagrams (RS-485)



12-4 Parallel interface Diagrams (IEEE 1284)



12-5 USB interface Diagrams (Universal Serial Bus)



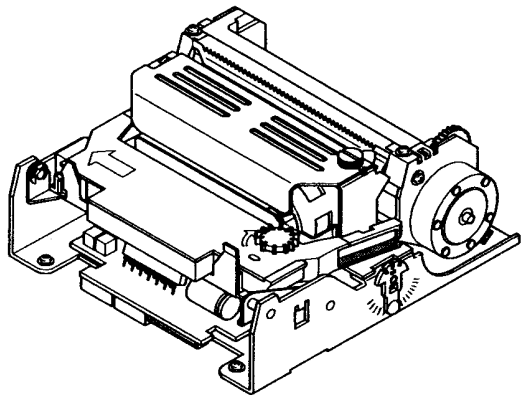
SAMSUNG

Electro_Mechanics

MODEL: SMP-710/710N

TECHNICAL MANUAL

MINI PRINTER



MINI PRINTER

All specifications are subject to change without prenotice

☆ Contents ☆

CHAP. I

Specifications & Principle of Movement

1.1 General specifications.

(1) Printing specifications

Printing method: serial impart dot-matrix

Head wire configuration: 9-pin serial type

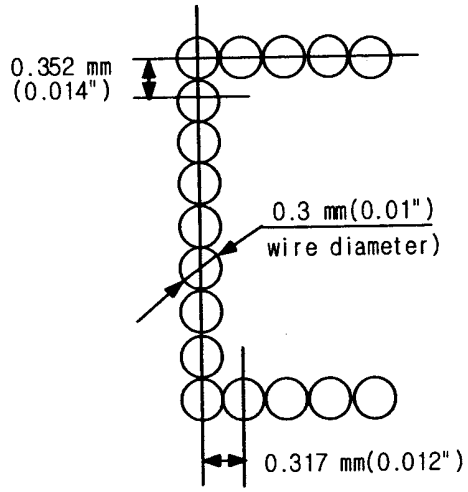


Fig.1-1 Dot configuration.

Dot pitch:	0.352mm(1/72")
Dot wire diameter :	0.3mm(0.01")
Printing direction:	Bidirectional with logic seeking
Printing width:	63.34mm(2.49")
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 papge.
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.

Character dimensions, characters per inch, characters 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.

(2) Character Specifications

Character sets: Alphanumeric: 95
International: 32
Graphics: 128×8 pages

Character structure: 7×9 with 400 half-dot positions per line.
9×9 with 400 half-dot positions per line.

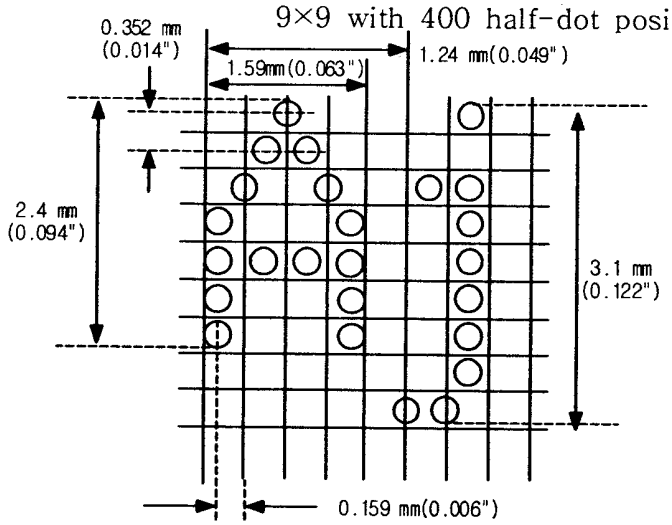


Fig.1-2 Character size (7×9 font example)

(3) Paper

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 dector,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 to64g/m²(13.9 to 171b)
	(45 to 55kg/1000 sheets/1091×788)
Pressure-sensitive paper	Original sheet + up to 1 copy sheet
	Thickness: 1 sheet:0.05 to 0.08mm(.0020to.0031")
	Total thickness: 0.2mm(.0078")or less

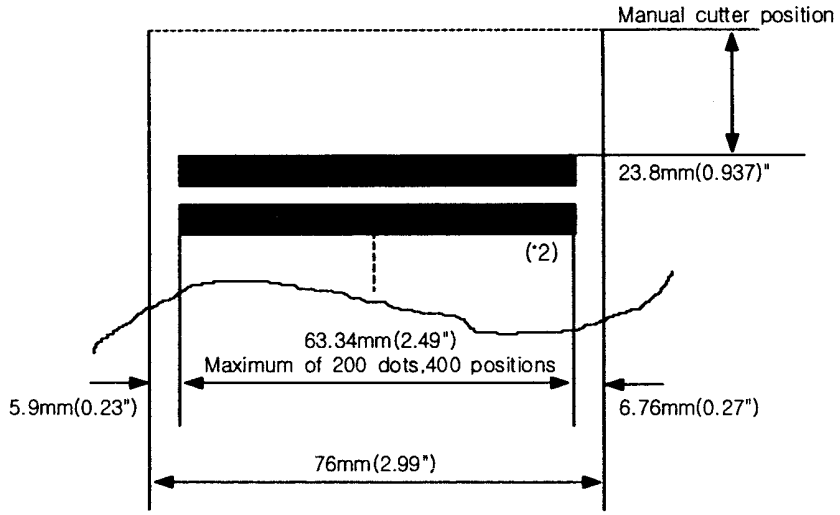


Fig.1-3 Printing area

(*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")}

(4) Ribbon Cassette

Ribbon cassette specifications

Compatible Mldel	Color	Ribbon life ("1)
ERC-38 (P)	Purple	4 million characters {with continuous printing at 25℃(77°F)}
ERC-38 (B)	Black	3 million characters {with continuous printing at 25℃(77°F)}
ERC-38 (B/R)	Black and Red	Black: 1.5million characters {with continuous pring at 25℃(77°F)} Red: 750,000 characters {with continuous pring at 25℃(77°F)}

("1) Ribbon life is based on the following conditions:
Character font: 7×9 font (with descenders)
Print papttern: 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.

(5) Environmental Specifications

Temperature: Operating: 0° to 50℃ (32° to 122° F)
At 34℃(93°F)or higher,there are humidity restrictions; see the figure below.
Storage: -10° to 50℃(14° to 122°F), except paper and ribbon

Humidity: Operating: 10% to 90% RH(non-condensing)
Storage: 10% to 90% RH(non-condensing),except paper and ribbon

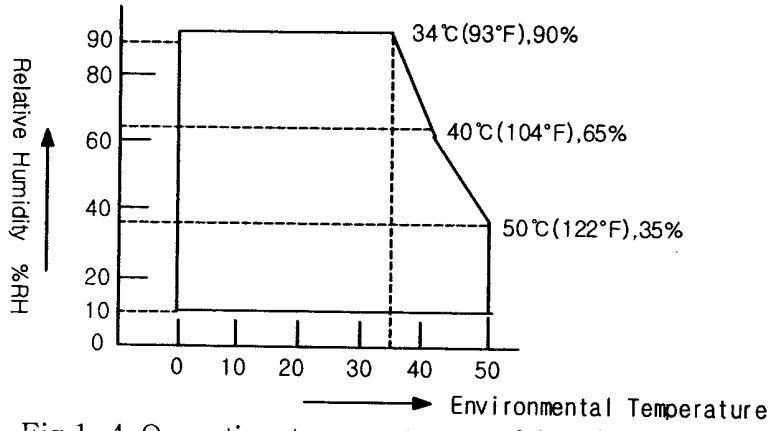


Fig.1-4 Operating temperature and humidity range

Vibration resisance: When packed:
Frequency: 5 to 55Hz
Acceleration: 5G
Sweep: 10 minutes (half cycle)
Duration: 1 hour
Directions: x,y and z

Impact resistanec: 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)

(6) reliability

Life: 7,500,000 lines(See the SMP-710/710N specifications)
Specification for the print color switching number.

Print head: 150 million characters(using an average of 2 dots/wire per character.)(The print pattern is shown in the SMP-710/710N specifications.

MTBF: 180,000 hours
Failure is defined as a random failure occurring with in the time of the random failure period.

MCBF: 180,000,000 lines
This is an average failure interval based on failures relating to wear out and random failures up to the life of 7,500,000 lines.

(7) Main Unit specifications

Paper Feed Motor

Type:	4-phase,48-polarity,PM-type stepping motor
Drive voltage:	24 VDC±10%
Winding resistance:	10Ω±1Ω at 25℃(77°F),per phase
Current consumption:	Average: 400mA at 24 VDC, 25℃(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℃(77°F),per phase
Current consumption:	Peak: 1.5 A in maximum Average: 400mA at 24 VDC, 25℃(77°F) 570mA maximum

Print Head Unit

Number of solenoids:	9
Winding resistaned:	9.5Ω±10% at 25℃(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

1.2 ELECTRICAL SPECIFICATIONS

(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 controled by constant current method
  So, current flows two red line of step motor is Max.560㎃
- This step motor is controled 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)

(2) CIRCUIT BLOCK DIAGRAM

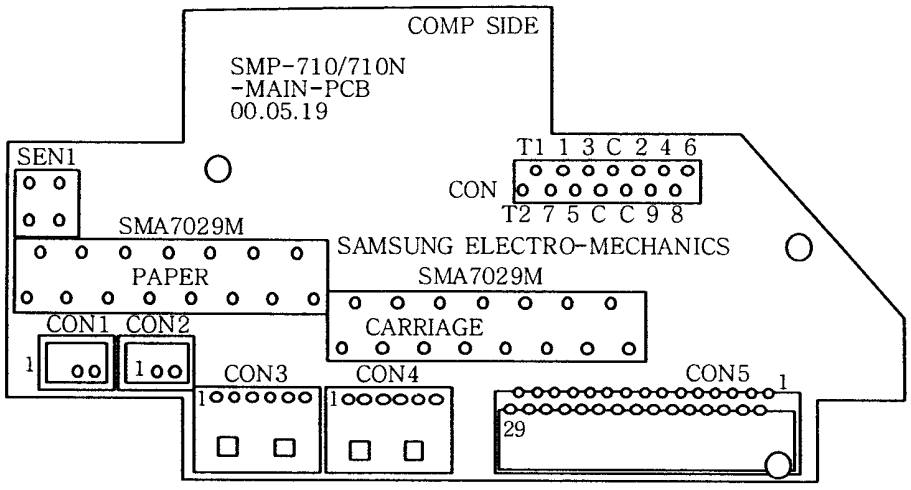


Fig.1-5 CIRCUIT BLOCK DIAGRAM

1.3 MECHANISMS

This printer consists of 5 mechanisms ;
Head feeding Mechanism, Printing Mechanism. Paper Feeding Mechanism.
Detector Mechanism, Ribbon Mechanism.

Fig.1-6 shows the external view of SMP-710/710N Impact dot matrix printer. For details on the operating principles and handling of each of the mechanisms, refer to "Principle of Movement" in section 2 and "Handling, Maintenance and Repair" in Chapter II.

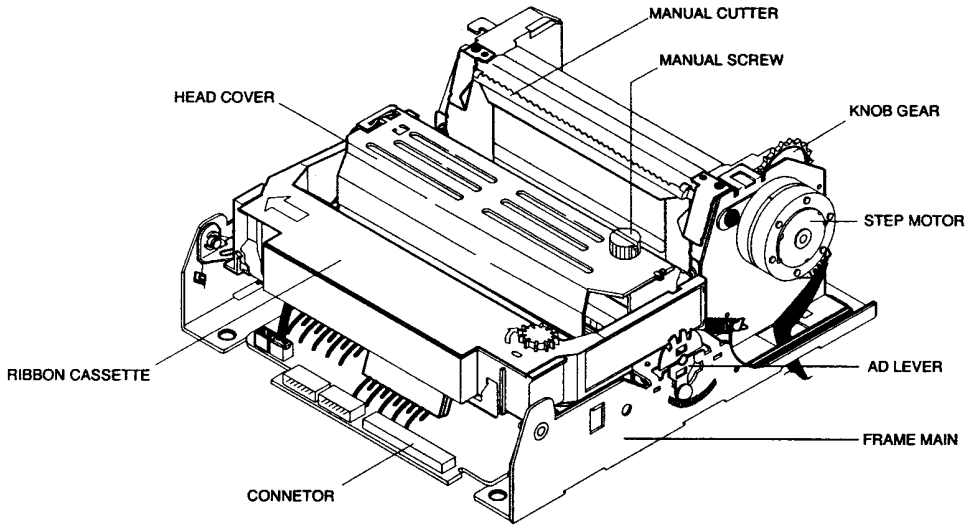


Fig.1-6 SMP-710/710N Exterior View

2. PRINCIPLE OF MOVEMENT

2.1 Head Feeding Mechanism

This printer is using DC24V PM Type Stepping motor.
As shown in Fig.1-7 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.

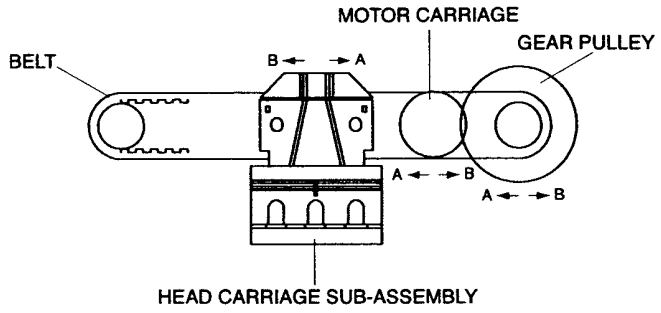


Fig.1-7 Head Feeding Mechanism

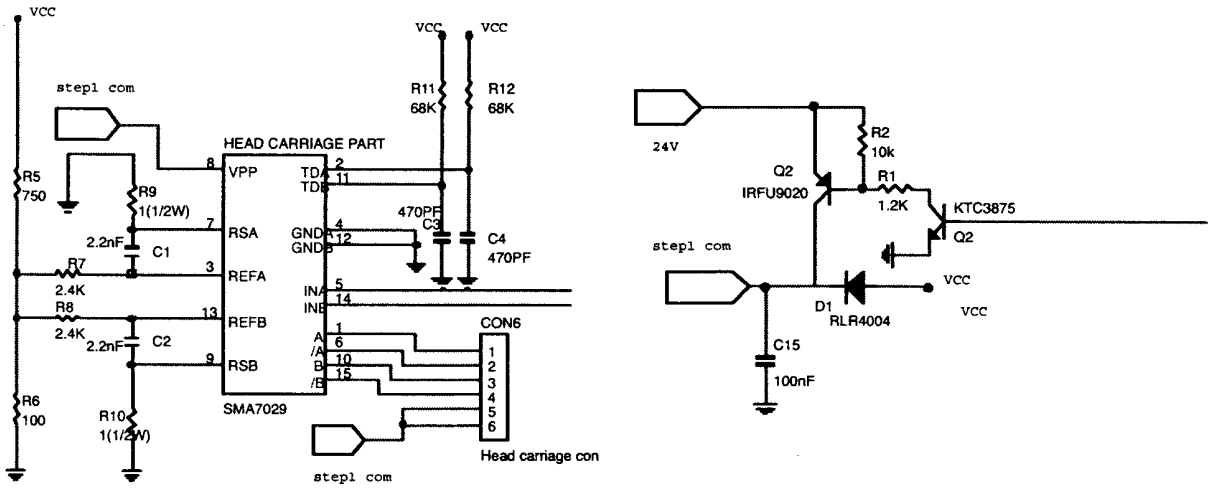


Fig.1-8 Head Feed Control Circuit

2.2 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 strikes 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 returned to the standby position by the wire return spring and actuating plate spring.

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

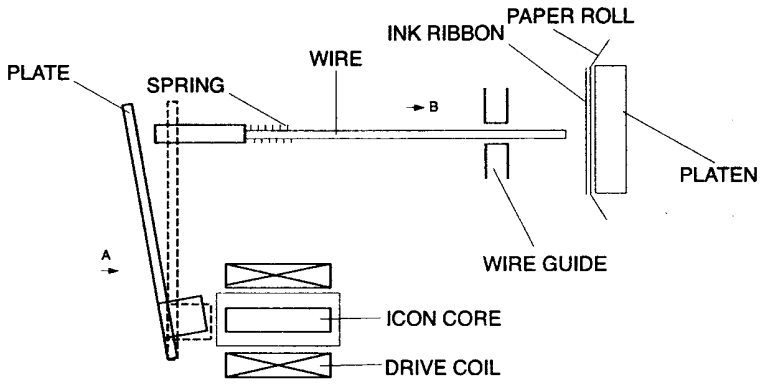


Fig.1-9 Printing

2.3 Detection Mechanism

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

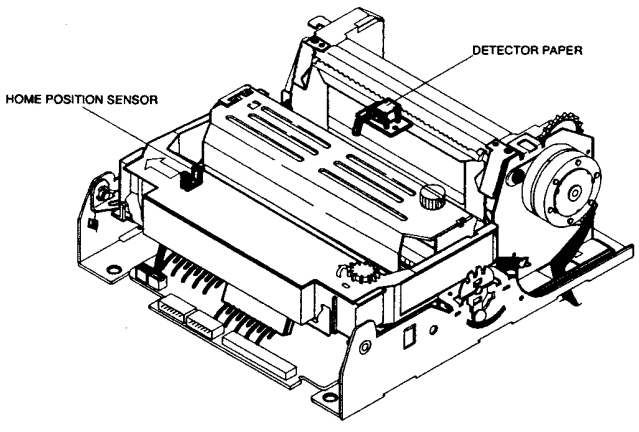


Fig 1-10. Dection Mechanism

2.4 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.
assembly.

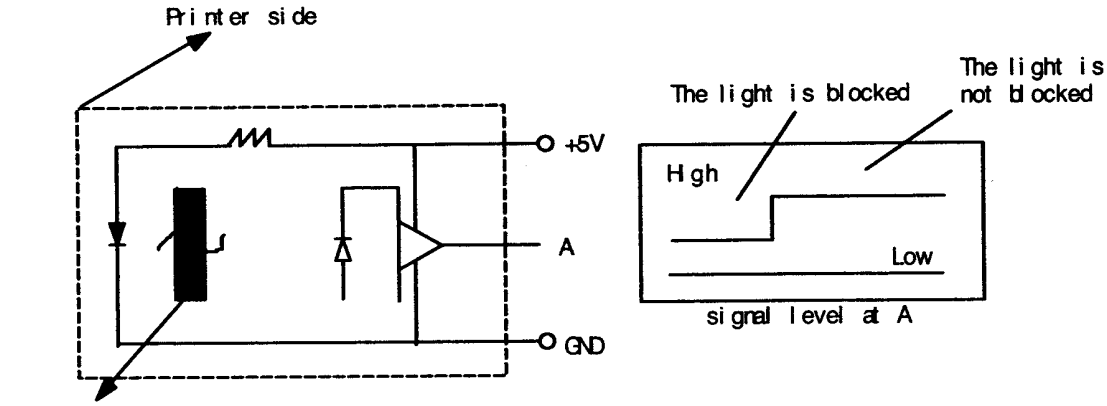


Fig. 1-11 Home position detection diagram

2.5 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 fed 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.

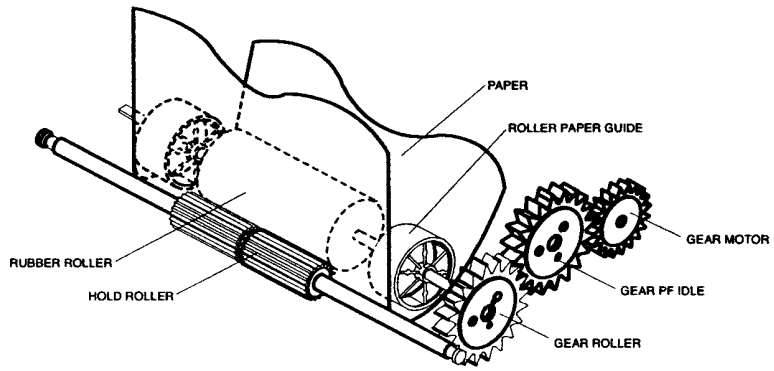
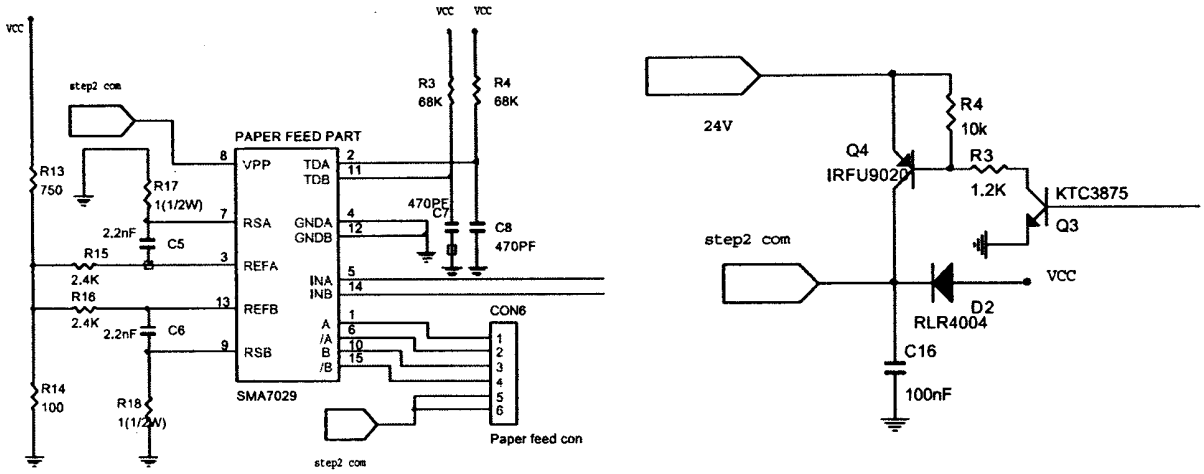


Fig. 1-12 Paper Feeding



1-13. Paper Feed Control Circuit

As shown in Fig.1-12, Paper feeding mechanism consists of Rubber Roller Hold Roller ass`y, 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 "SPECI-FICAT10NS 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, turing Gear MF to direction of arrow or to 1,he contary, and can feed or Back feed as paper wants.

2.6 Ribbon feeding

When the carriage motor rotates counterclockwise 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 Ass`y 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 Ass`y moves in the direction of arrow F, disengaging the Gear reduction B from the Gear Reduction C.

Therefore,the ribbon feeder ass`y 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 ass`y, rotate and the ribbon is fed.

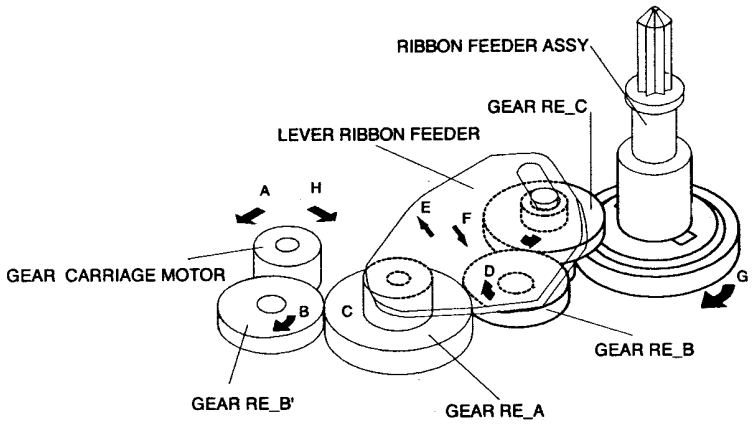


FIGURE RIBBON FEEDING SYSTEM

Fig. 1-14 Figure Ribbon feeding system

- **Operation of Color change**

Color change system consists of Ribbon feeding Mechanism in section 2.6 and Ribbon Shifting Mechanism .

Shifting Mechanism on Ribbon consisted of Head carriage ass'y, Ribbon Frame, Lever color change ,solenoid ass'y as shows in Fig.1-15

- Ribbon Shifting operation

Ribbon Shifting action is as follows.
As the Carriage Motor rotates clockwise, Head carriage ass'y moves from left to right. When you'd like to change from red color to black color you should shift Head carriage ass'y as shows in Fig timing chart. delivers to Gear HF-1, and turns to direction of arrow wit 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. The detail of Shifting movement refers to "SPECIfICATiON FOR SMP-710/710N" manual.

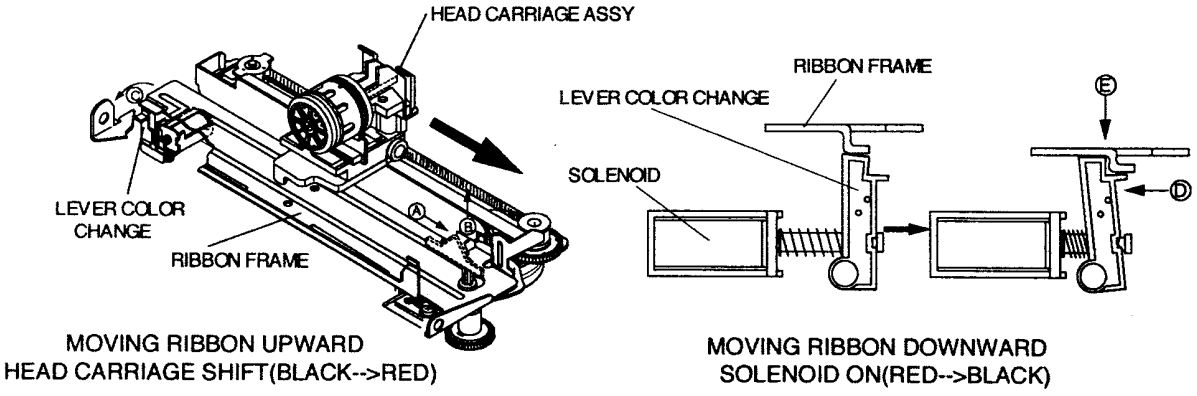


Fig. 1-15 Ribbon Shifting mechanism unit

■ Electrical Circuit Operation Principles

- Hardware Configuration

1) 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)

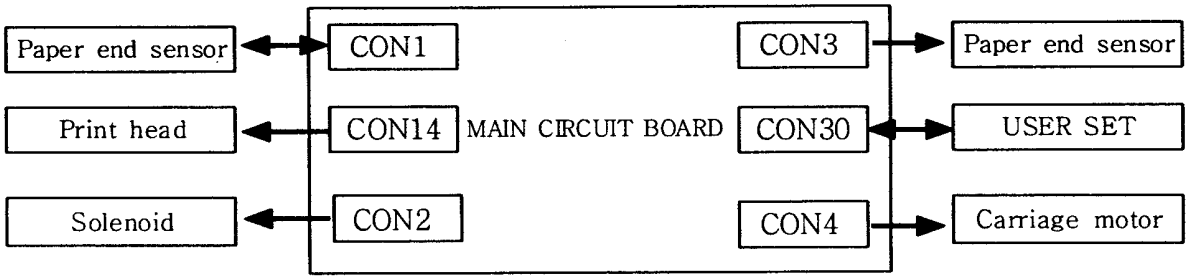


Fig. 1-16 Component connection diagram

2) Circuit board block diagram

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

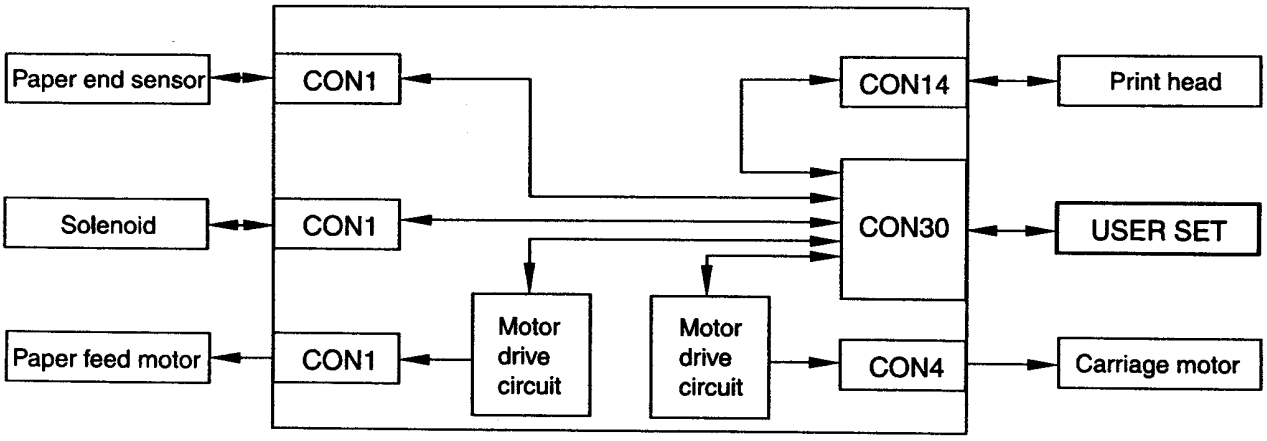
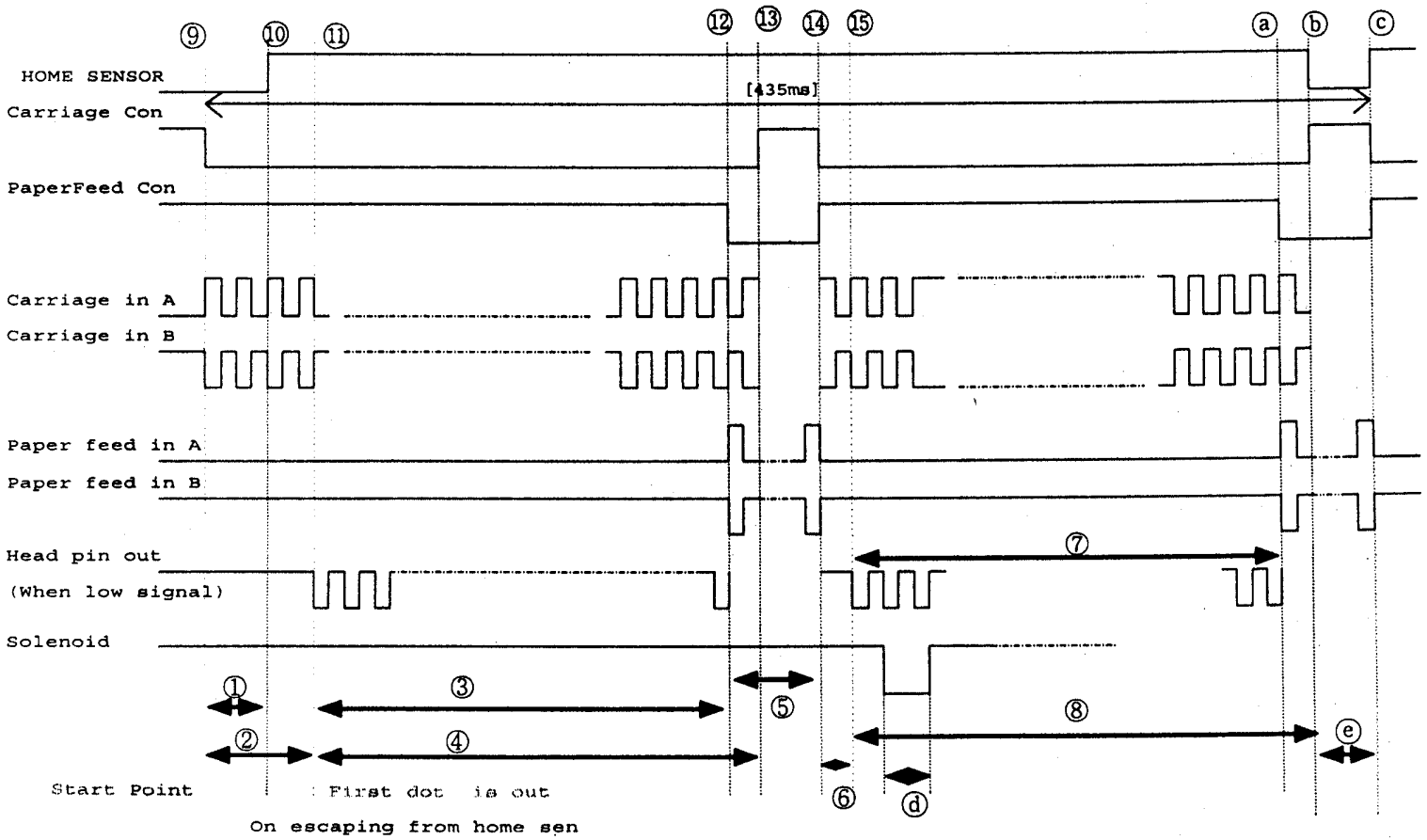


Fig. 1-17 Circuit board block diagram

2.7 Timing Chart

1T=0.1587mm
1S=2T=0.3174



1). Description of Timing chart.1

① 14Step(28T)
- Head carriage step motor moves left(14step) after covering the home scnsor
- 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

2) 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)

CHAP. II

Handling, Maintenance & Repair

1. Handling the Printer

1.1 Precautions on Printer Handling

- Precautions on transport
  1) When transporting this printer. its 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 ass`y 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.

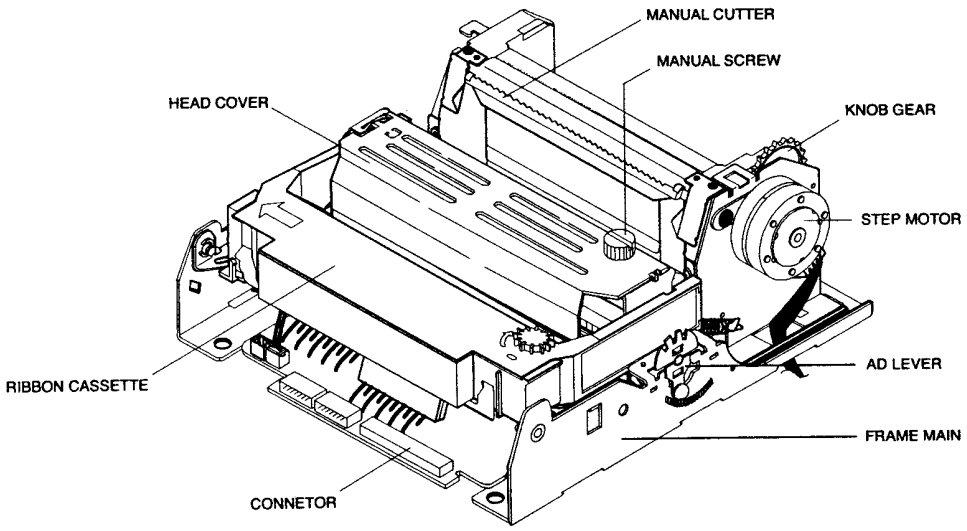


Fig.2- 1 Outer view of SMP- 710 printer

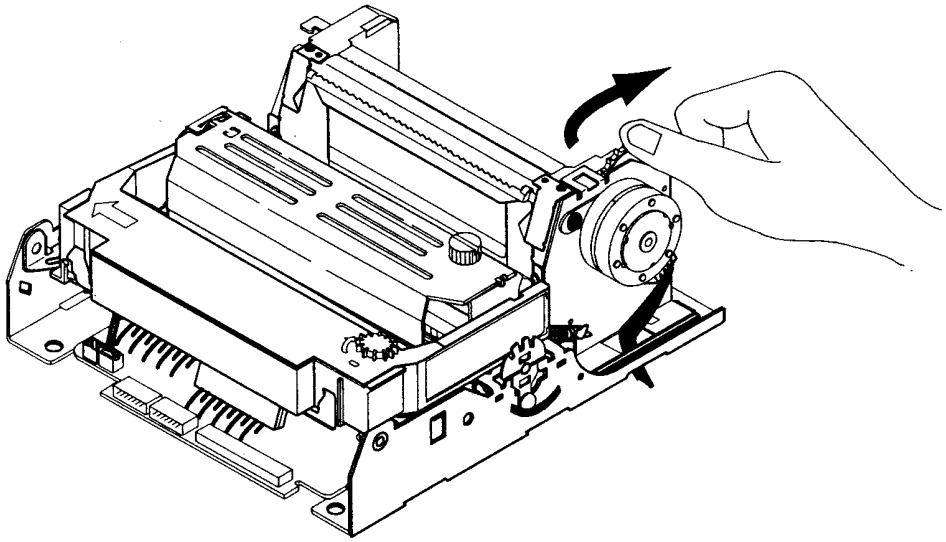


Fig.2-2 Prioer handing method for paper feed

- 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 .

- 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

1.2 Paper Setting Procedures(Insertion/Removal

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

- Inserting Rolled Paper
  1) As shown in Fig.2-3, 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.

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

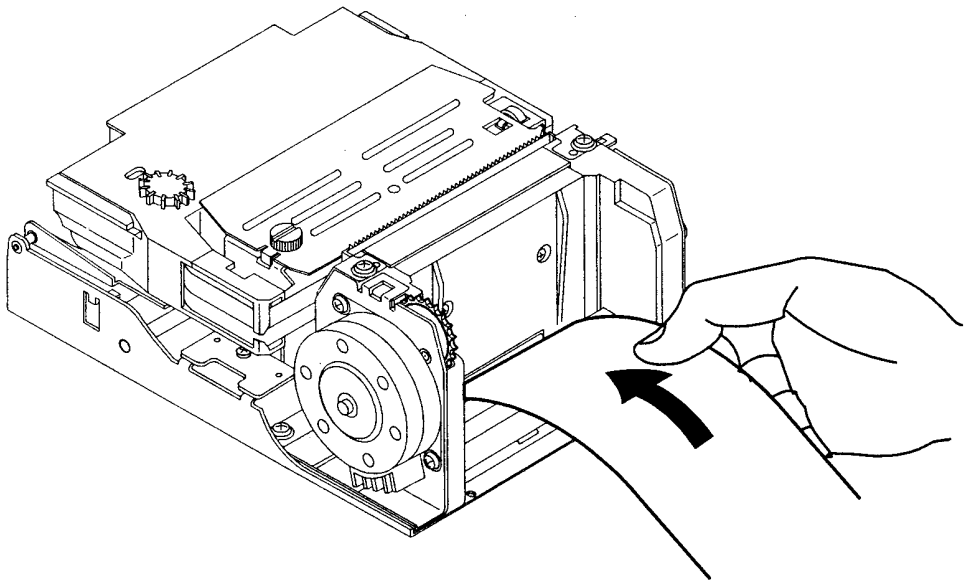


Fig.2-3 Insertion of Rolled Paper

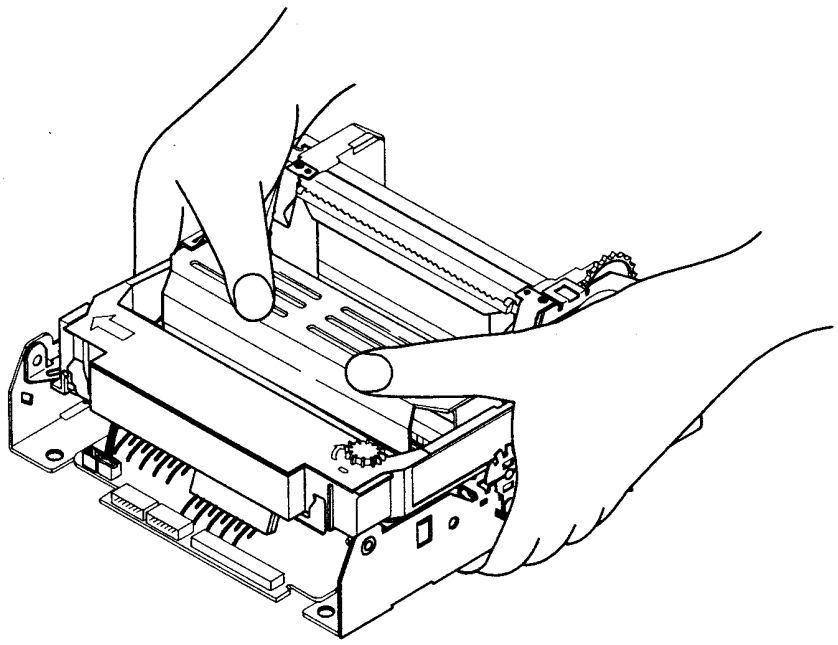


Fig.2- 4 proper handling method for trans port

- Precautions on Paper Insertion
  1) After cutting the edge of paper straight as shown in Fig.2- 5 insert the paper. which is described on page 28.
  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.
- Precautions on paper removal

  Cut the paper behind Base Paper Feed ass`y.
- Paper removal must be performed using one of the four method below.
  1) Remove method by manual
     ①Back feed the paper by rotating Gear Knob to contrary arrow direction manually and remove the paper.
     ②After Feed the paper by rotating Gear Knob to arrow direction cutting paper in backside Base Paper Feed ass`y, and remove the paper.
  2) Remove method by automatically
     ①Back feed the paper by using electrical operation (by paper back-feed button), then remove the paper.
     ②After cutting paper in backside paper guide ass`y, feed the paper by using electrical operation (by paper back feed button), then remove the paper.

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

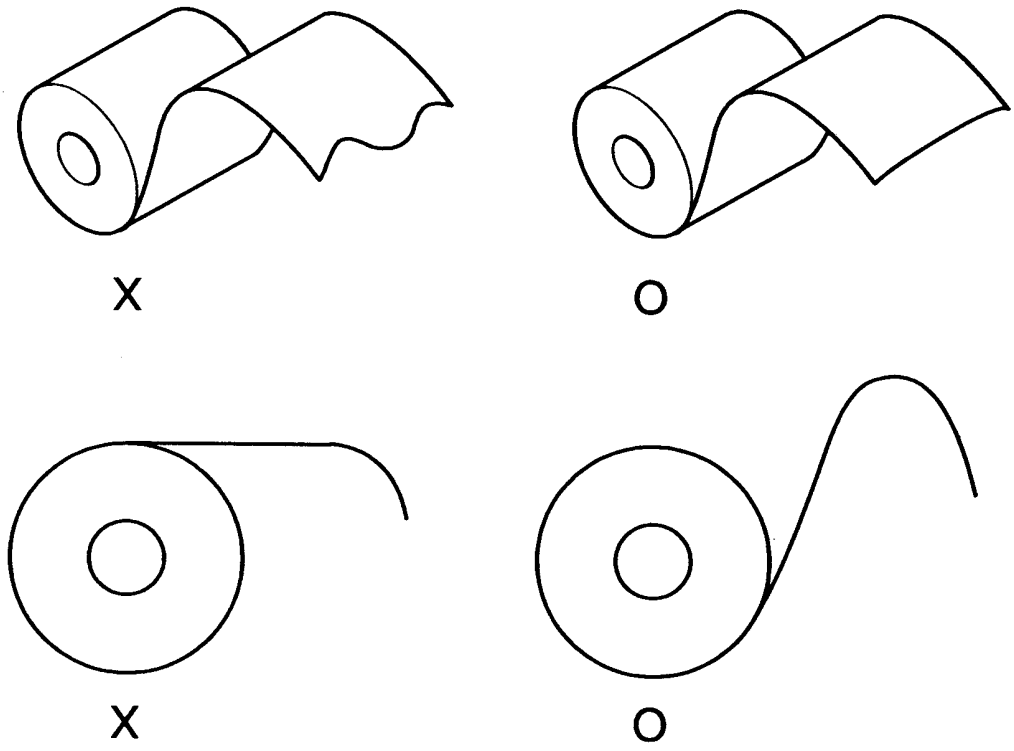


Fig. 2-5 Processing the leading edge of rolled paper

1.3 Ribbon Cassette Installation

The Ribbon Cassette use must conform to the standards prescribed in the SPECIFCAT10NS.
Never use non-standard types, because such use may result in such trouble as the malfunction of printing quality.

- Ribbon Cassette Installation
  Fig.2-6 shows the procedure for installing the Ribbon Cassette.
  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.

- 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 .

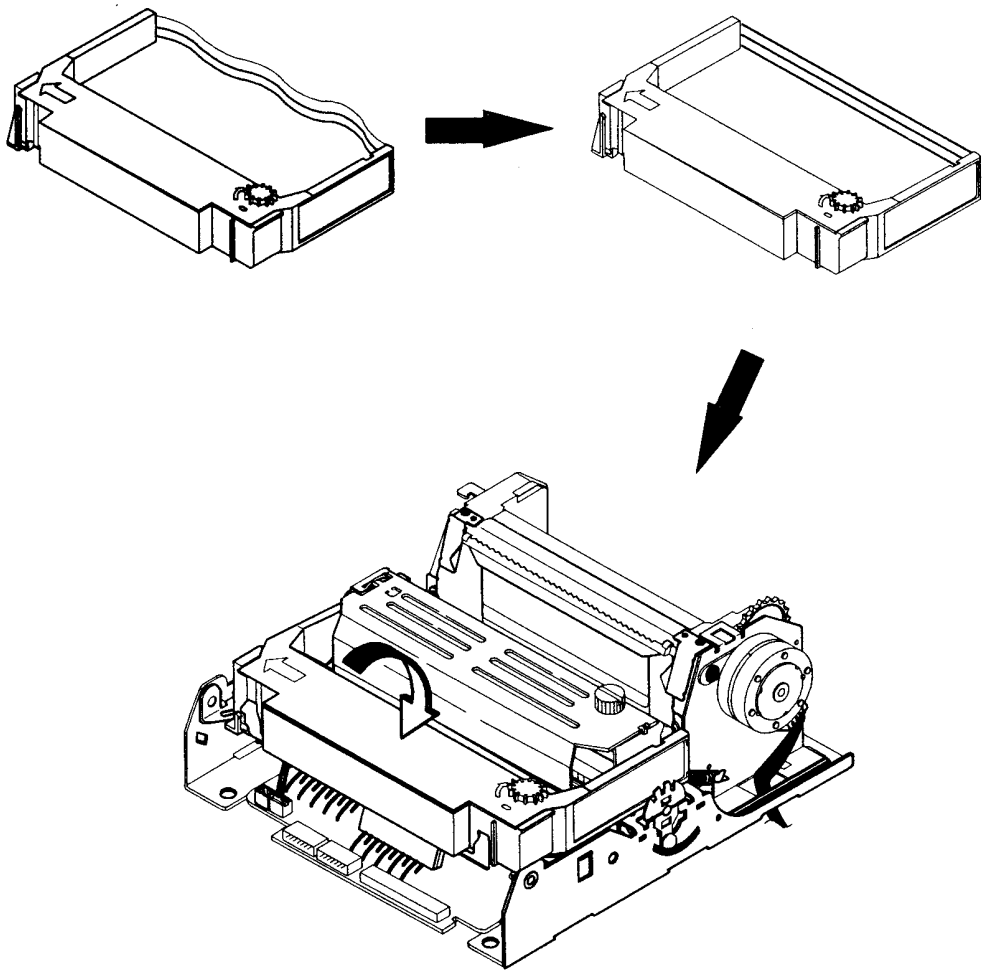


Fig. 2-6 Removal of ribbon cassette

2. 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 .

2.1 Cleaning

<Eliminating dirt or strains>

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

<NOTE>

- Never use thinner, tricholyene nor ketone solvents as such use may deteriorate or damage the plastic parts.
- Check the lubricant (each cleaned section and perform remaining lubrication as required. (See subsection 3.3, "Lubrication points")

2.2 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.

- 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 SPE CIFICAT10NS.

- 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 ass`y. If there is a malfunction, perform repair according to section 3 of CHAP. Ⅲ. "Adjustment".
4) Check the lubricant and adhesive status of all applications points, applying lubricant or adhesive as required according to section 3 "Lubricants and Adhesive Application"
5) Check if printing. paper feeding. ribbon feeding and ribbon shifting are normal. If not, perform repair according to subsection 5.3, "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 5.3, "Repair gulde71nes."

3. 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 amouts at the specified intervals .

3.1 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. see subsections 3.3, "Lubrication Points" and 3.2, "Lubr-icant Types" as well as Fig. "Lubrication Diagram" at the end of this manual.

- 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

3.2 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

3.3 Lubrication Points (Refer lubri catim points diagram in page 63.)

No	Lubrication Point	Oill 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

3.4 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

3.5 Adhesive types

The adhesive type for use with this printer : Screwlock

3.6 Adhesive Application Points

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

4. Tools, Lubricants and Adhesives

4.1 List of Tools

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

4.2 List of Lubricants and Adhesives

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

5. 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.

5.1 Repair Levels

Level A : Requires general knowledge and technical skills regarding the operating principles and construction of the printer, but does not require previous repair experience.

Level B : Requires full knowledge and technical skills regarding the operating principles and construction of the printer as well as previous repair experience.

5.2 Repair Procedures

In the case a problem occurs, check its symptoms and status .clarify the source of the problem with reference to subsection 5.3, "Repair guidelines", then repair the damaged area Note that the tables of subsection 5.3, "Repair Guidelines", consist of the 5 items listed below, enabling troubleshooting and repair to be performed with speed. and efficiency with minimum error.

- Phenomenon
  Check the symptoms of the trouble.

- Condition
  Compare the trouble status of problem with the description of this column and locate the matching status.

- Cause

  This column lists the potential causes on the basis of the trouble status, allowing the location of the trouble to be ckecked. It also lists the repair level for each cause, so be sure to refer to this column before attempting repair.

- 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.

- 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.

5.3 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	①Defective 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
		②Defective 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 dirve signal generating cireuit
		③Damaged or Improper connection between motor terminals of the connector	B	· Check the conductivity between the pertinent terminals	· Replace the main circuit board ass`y if there is no conduc-tivity · If inproperly connected, reconnect the pertinent leads in the proper manner
		④Defective motor	B	· Apply 24V to the leads of the motor then check the rotation (red: + black: -)	· Replace the motor, if it does not rotate
		⑤Occurence of paper jam	A	· Check the deformation of flead 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	①Head FPC is disconnected from it connetion	B	· Check if the head FPC is properly inserted into its connector	· If not, securely reinsert the head FPC
		②Broken 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
		③Common lead between the head FPC and connector is broken	A	· Check theconductivity of the common lead section · Check the voltage (28V±2V)	· Replace the main circuit board ass`y if there is no conductivity or 28V

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
		④Defective timing detector sub ass`y	B	· Observe by oseilloscope to check if a timing signal is being generated	· Replace the timing detector sub ass`y, if no timing signal is being generated
		⑤Defective 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
		⑥Positional relations-hip betwe-en 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, perforem repair according to section 3 of chap. Ⅲ "Adjustment"
3. Missing of Head dots	Only specific dots are never printed	①Damaged 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
		②Lead breakage betwe-en connector and FPC terminals	B	· Check the conductivity between the pertinent terminals	· Replace the main circuit board ass`y if these is no conductivity
		③Damaged lead of a dot dreving coil	B	· To check if the resistame 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
		④Defective timing detector sub ass`y	B	See cause ④ of phenomenon 2	
		⑤Defective input charge pulse	B	See cause ⑤ of phenomenon 2	

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
4. Missing of Dot Head	All of date are not printed	①Defective contact of the Head FPC	A	See cause ① of phenomenon 3	
		②Malfunction 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
		③Defecteive Timing detector ass`y	B	See cause ④ of phenomenon 2	
		④Defective input charge pluse	B	See cause ⑤ of phenomenon 2	
5.Intermittently defective character widht	Intermittent changes in character width	①Wear or damage of Lead Cam or the gearsr 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 cawse ⑤ of phenomenon 2	
6.Motor rotation doesrit stop		①Defective R · L reset detector sub as sies	B	· Use an oscilloscope to check if a signal is generated from of the R(L) reset detector sub assies by rotating the Lead Cam	· Replace the R(L) reset detector sub assies if no signal is generated
		②Defective motor drive signal	B	See cause ② of phenomenon 1 (Check input signal stop ⇒ high)	

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
7.Paper is not fed	All Printing is done at one line without the paper being fed	①Defective paepr 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.
		③Inproper connection or damage of terminal connector in step motor, or cutting of wise or damaged connected part	B	· Check flow of electricity between Pertinant terminal	· In case of no flow of electricty, substitute ass`y for main circular · In case of no connection, try to connect with leading · In case of cutting wire or damaged, substiture 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, reple-ace 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 malfunctional	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 ormoved 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 malfunctional	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 fed	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 ass`y and gear reduction a,b,c for wear of damage	· If there is wear or damage, replace it

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
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 paprticles with a bacuum 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 inspite of normally moving printing	①Betraying from damage or transforming of spring solenoid	B	· Check betraying or damage, tranform 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	B	· Measure exterior diameter of spring shift clutch and check with eyees	· In case of attrition or damage, substitute them

Phenomenon	Condition	Cause	Level	Check point & Method	Repair Method
12.No working of Solenoid		①Entery of solenoid is cut	B	· Measure resistant value between terminal of solenoid Resistance : Some 70±10% (25℃)	· In case cutting substitute solenoid
		⑤Gear tooth cam, rachet and ribbon frame get dusted or altered	A	· Check with eyes transforming or dusting in geat tooth, cam, rachet, 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 rachet	B	See cause ③ of phenomenon 12	
		③Transform or demage of ribbon frame	B	· Measure size of the part moving cam of ribbon frame, measure norizontal 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 fittably with ribbon frame
		⑤Volume of ribbon	A	· Different with each other of color and rate of ribbon	· Ribbon substitute

<ASSIGNMENT CONNECTOR PIN>

1. Connector 30pin

- Connector: Head, head carriage/paper feed step motor, solenoid P/E sensor, control
- Model: 1)1.0mm FFC cable
  2) Mechanism side:403-030-099-061

⊙: Input
▣:Output

Taiwan TACT.co

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

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

2. Connector 14Pin

- Connector : Head control
- Model : 1) Mechanism side : GF120-14S-Ls

LG cable.co

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

CHIP. Ⅲ

Disassembly, Assembly & Adjustment

1. Disassembly

- To disassemble this printer, perform the assembly procedures described in section 2 "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 Fig,21, "Exploded view of SMP-710/710N" at the end of this manual may result in damage to the printer and its functions, so you are advised not to do so.

2. Assembly

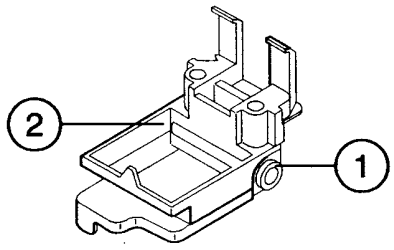
- The assembly process is divided into the sub-assembly and main assembly procedures. First, assemble the sub-assembies, then proceed to assembling the main assemblies.
- Perform assembly while referring to component shapes and mounting positions shown in Fig.21 at the end of this manual
- The '*' symbol in the "Assembly Step" column indicates the need for a (Check) or (Adjustment). The (Adjustment) process is explained in section 3. 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 subsections 3.3, "Lubrication Points" and 3.6, "Adhesive Application Points" in CHAP. II perform such application while referring to Fig.21.
- All small parts are represented by abbreviations as listed in the table below.

List of abbreviations for small parts

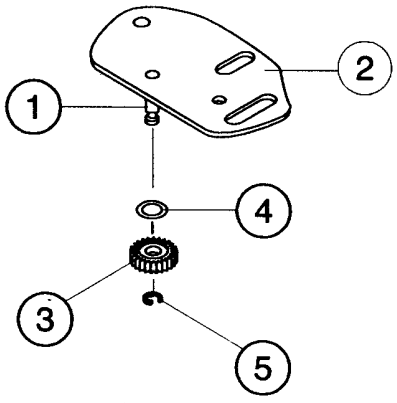
WBH	: Washer faced Binding Head Screw
PH	: Pan Head machine screw
WPH	: Washer faced Pin Head Screw
T/T PH	: Pan Head Taptite screw
T/P PH	: Pan Head Tapping Screw
PW	: Plain washer
WW	: Wave Washer
PSW	: Poly slide washer with slit
SP	: Spring pin
RE	: Retaining ring type-E
PP	: Parallel pin
FS	: Franged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

2.1 Sub-assemblies

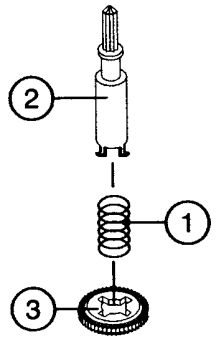
Sub ass'y-1 **Carriage Head Ass'y**

Name of Parts	Method and Procedure	Drawings
① BERING FE-2ea ② CARRIAGE HEAD	1. At first, set the Bearing FE to be inserted into the shaft of JIG * Notice: The direction of insert is to locate frange downward 2. And then, set a Carriage Head to be inserted into the shaft of JIG. 3. Next, set other Bearing FE to be inserted into the shaft of JIG * Notice: The direction of insert is to locate frange upward 4. Lastly, Insert two Bearing FE in the Carriage Head by pushing the handler of Lever Press. **< Check Point>** - Check improper insertion of Bearing FE and fraction of Carriage Head	

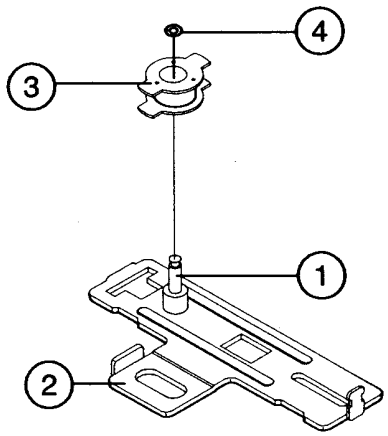
Sub ass'y-2 **Lever Ribbon Feed Ass'y**

Name of Parts	Method and Procedure	Drawings
① SHAFT REDUCTION "B" ② LEVER RIBBON FEED ③ GEAR REDUCTION "B" ④ WAVE WASHER ⑤ E-RING(ø2.5)	1. At first, Grease ① SHAFT on the ② LEVER RIBBON FEED with HG-31S. 2. And then , Assemble ③Wave Washer and . Grease ④Wave Washer 3. Last, assemble ③Gear Reduction B and ⑤ E-Ring (ø2.5)	

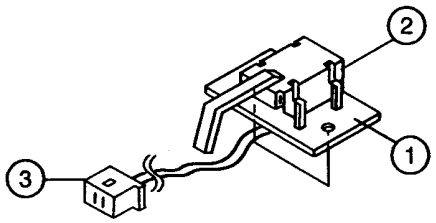
Sub ass'y-3 RIBBON FEEDER Ass'y

Name of Parts	Method and Procedure	Drawings
① SPRING RIBBON FEEDER ② RIBBON FEEDER ③ GEAR RIBBON FEEDER	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.	

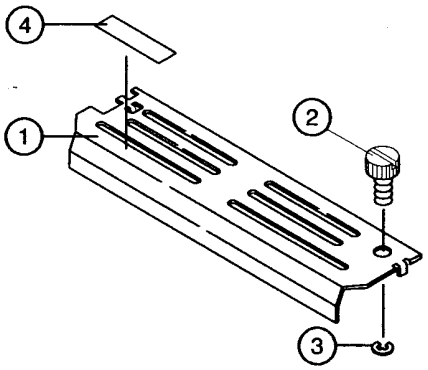
Sub ass'y-4 LEVER TENSION BELT C Ass'y

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

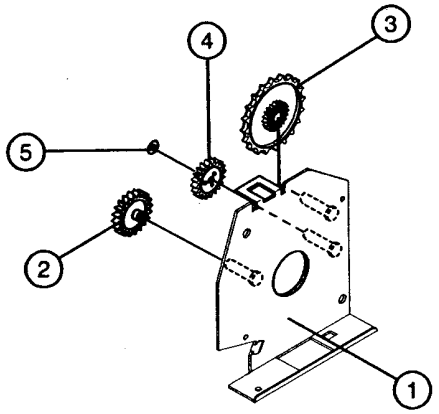
Sub ass'y-5 **SUB PCB Ass`y**

Name of Parts	Method and Procedure	Drawings
①SUB PCB ②SWITCH LEVER ③WIRE Ass'y	1. Insert ②SWITCH LEVER to fit the hole of ①SUB PCB. 2. And then , solder the land on the SUB PCB bottom side and attach the ③WIRE Ass'y on the land A, G . **< Check Point >** After soldering, check the frozen lead and short.	

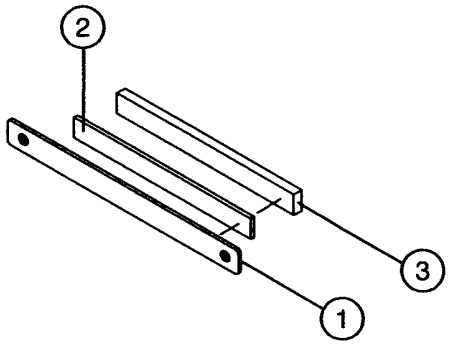
Sub ass'y-6 **COVER HEAD Ass`y**

Name of Parts	Method and Procedure	Drawings
①COVER HEAD ②SCREW MANUAL ③E-RING(ø2.5) ④CAUTION LABEL	1. Insert the ②SCREW MANUAL into the right side hole of ① COVER HEAD. 2. And then,assemble ③E-RING(2.5) onto the starting point of a spiral during adhering closely to the COVER HEAD. 3. Paste the ④CAUTION LABEL on the right bottom side..	

Sub ass'y-7 BRACKET PF R Ass'y

Name of Parts	Method and Procedure	Drawings
① BRACKET P/F "R" ② GEAR PF IDLE ③ GEAR KNOB ④ GEAR KNOB IDLE ⑤ WASHER(1.6*3*0.3)	1. At first, grease the small SHAFT of ①BRK'T P/F"R" with EM-501. Next, insert ②GEAR PF IDLE, ③GEAR KNOB,and ④GEAR KNOB IDLE . Lastly, assemble ⑤WASER(1.6*3*0.3). 2. Grease the outer diameter of GEAR with EM-501. **< Check Point>** - Check ③GEAR to rotate smoothly.	

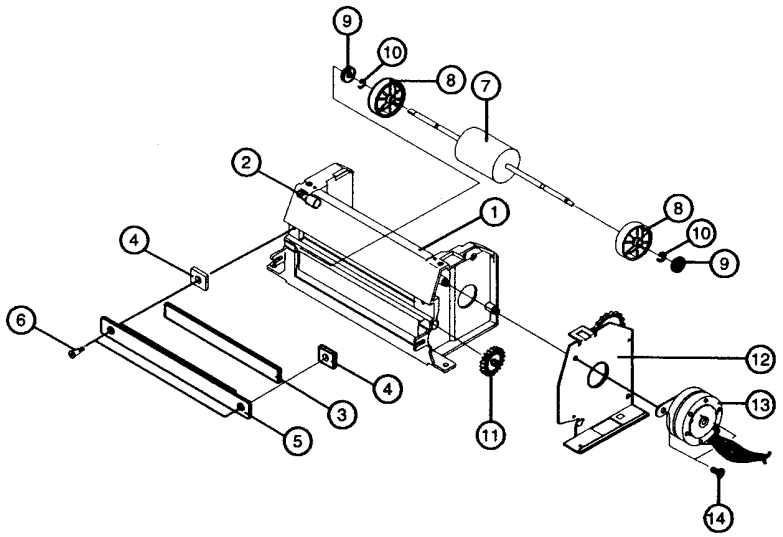
Sub ass'y-8 PLATEN Ass'y

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

2.2 Main- assemblies

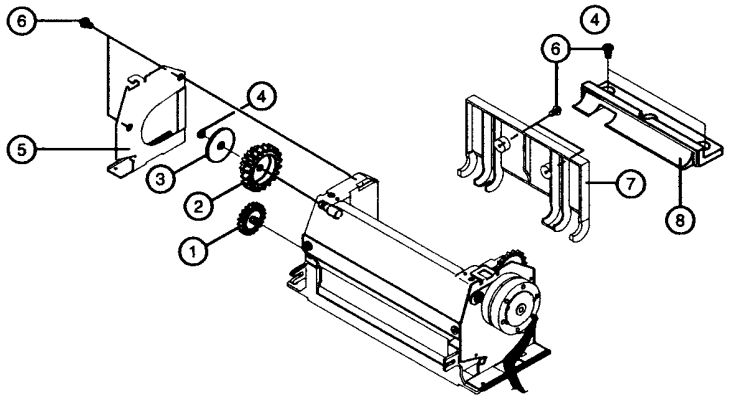
Main ass'y- 1 (BASE PAPER FEED Ass'y- 1)

Name of Parts	Method and Procedure
① BASE PAPER FEED ② SHAFT TAKE UP ③ TAPE CUSION ④ RUBBER PLATE - 2EA ⑤ PLATEN Ass'y ⑥ SCREW SPECIAL(M2.6x7.5) - 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 Ass` y ⑬ STEP MOTOR PF ⑭ SCREW TAPPING (M3x6)- 2EA	1. At first, set ①BASE PAPER FEED on the JIG. Next, insert ②SHAFT TAKE UP into the HOLE. Lastly, press it by LEVER PRESS. 2. Set ③TAPE CUSION to fit rectangular hole of BASE PAPER FEED and then, insert ④RUBBER PLATE in both side. 3. Insert ⑤ PLATEN Ass'y into the rectangular hole and then, tighten two ⑥SCREW SPECIAL (M2.6x7.5). 4. Make BASE PAPER FEED stand(right side), and then, insert two ⑧ROLLER PAPER GUIDE and ⑨BERING to fit ⑦SHAFT RUBBER ROLLER in both side one by one. Next, fix the sub Ass` y into the back face of BASE PAPER FEED and fit two ⑩E- RING(ø3) into the groove each other. 5. Set ⑪GEAR ROLLER onto right side shaft of BASE PAPER FEED and then set ⑫BRACKET PF R Ass'y. 6. Insert ⑬STEP MOTOR P/F¿« WIRE into the retangular hole of BRACKET PF and drag backward. Next, tighten two ⑭SCREW TAPPING (M3x6) on ⑫ BRACKET PF R Ass` y **< Check Point>** - Check ROLLER to rotate smoothly.



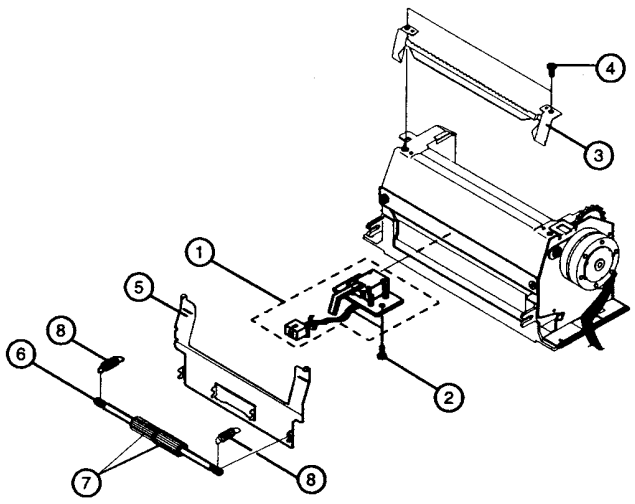
Main ass'y- 2 (BASE PAPER FEED Ass'y- 2)

Name of Parts	Method and Procedure
① GEAR TAPE UP ② GEAR TU PULLY ③ WASHER BELT GUIDE ④ WASHER(2.6x 5x 0.5) ⑤ BRACKET PF L ⑥ SCREW TAPPING(M3x 6)- 6ea ⑦ GUIDE PAPER A ⑧ GUIDE PAPER B	1. Make BASE PAPER FEED stand(left side),and then, insert ①GEAR TAPE UP to fit SHAFT(D-CUT) (long side is downward). Next, grease SHAFT and teeth of GEAR with HG-31S. 2. Set ②GEAR TU PULLY onto SHAFT and insert ③WASHER BELT GUIDE. Next, fix with ④WASHER(2.6x 5x 0.5). 3. Set ⑤BRACKET PF L onto BASE PAPER FEED BOSS ,and then tighten two ⑥SCREW TAPPING(M3x 6). 4. Rotate BASE PAPER FEED and set ⑦GUIDE PAPER A to the backface ,and then tighten two SCREW TAPPING(M3x 6) step by step. 5. Make BASE PAPER FEED stanf and set ⑧GUIDE PAPER B to it, and then tighten two SCREW TAPPING(M3x 6) step by step



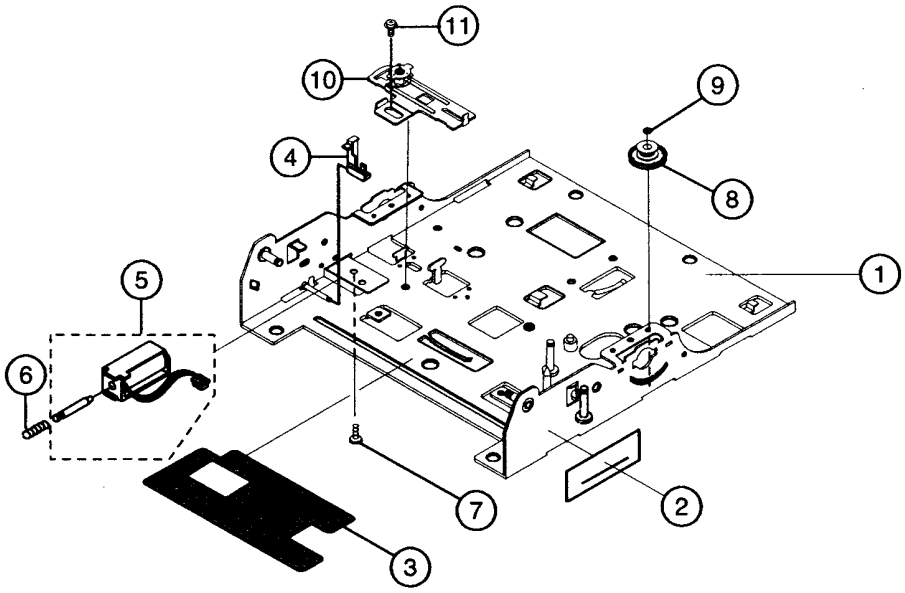
Main ass'y- 3 (BASE PAPER FEED Ass'y- 3)

Name of Parts	Method and Procedure
①SUB PCB Ass`y ②SCREW TAPPING(M2x3)-2ea ③MANUAL CUTTER ④SCREW(M3x6)-2ea ⑤PLATEN PAPER GUIDE ⑥SHAFT HOLE ROLLER ⑦HOLD ROLLER-2ea ⑧SPRING HOLD ROLLER-2ea	1. Set ① SUB PCB Ass`y to fit the hole in the bottom face of BASE PAPER FEED and tighten two ②SCREW TAPPING(M2x3). 2. Set the ③ MANUAL CUTTER to the boss on the BASE PAPER FEED and tighten two ④SCREW(M3x6). 3. Hook ⑤PLATEN PAPER GUIDE on the manual cutter in the front face of BASE PAPER FEED . 4. Grease section of ⑥SHAFT HOLD ROLLER mounted HOLD ROLLER and insert two ⑦HOLD 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 . **< Check Point >** Check the location of PLATEN PAPER GUIDE, status of hooking, coming off.



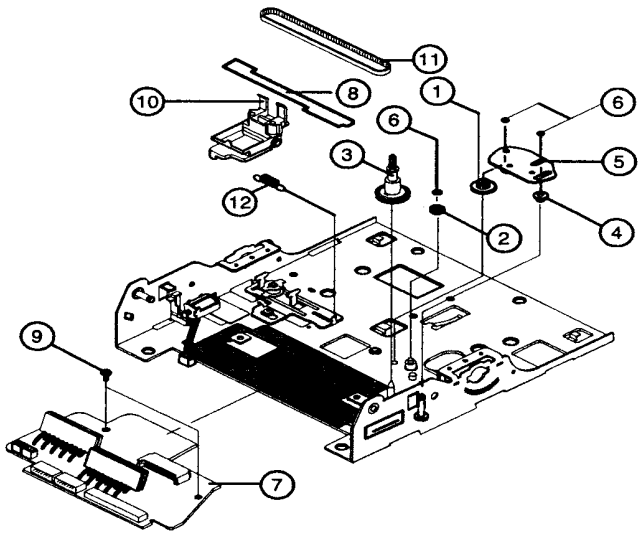
Main ass'y-4 (Main Assembling 1)

Name of Parts	Method and Procedure
① FRAME MAIN C/K Ass'y-4 ② SERIAL NO. TAG ③ TAPE INSULATION ④ LEVER COLOR CHANGE ⑤ SOLENOLD Ass`y ⑥ SPRING SOLENOID ⑦ SCREW MACHINE (M2x3) ⑧ GEAR PULLY Ass'y ⑨ WASHER (ø2.6x5x0.5) ⑩ LEVER TENTION BELT Ass'y ⑪ SCREW (M3x4)	1. Set ①FRAME MAIN C/K Ass'y-4 on the JIG. 2. Paste ②SERIAL NO. TAG in the right side and ③TAPE INSULATION to the bending line in the bottom face. 3. Gease SHAFT(6 point) with HG-31S. 4. Insert ④LEVER COLOR CHANGE into SHAFT in the left bottom side and fit WAHER(2.6*8*0.5). 5. Turn ⑤SOLENOID Ass`y and ⑥SPRING SOLENOIDWIRE downward and insert it into the hole of LEVER C/C and M/F SIDE step by step. Next, tighten ⑦SCREW MACHINE(M2x3). 6. Insert ⑧GEAR PULLEY Ass`y and then, fit ⑨ WASHER(ø2.6x5x0.5). 7. Insert ⑩LEVER TENTION BELT Ass`y to the HOLE and then tighten ⑪SCREW(M3x4) two-third.



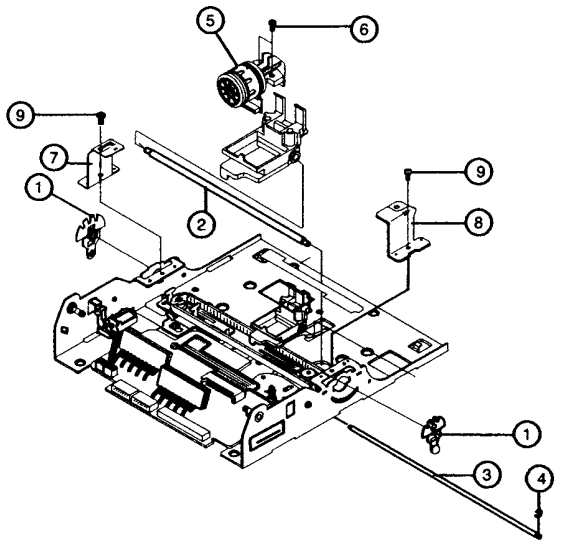
Main ass'y- 5 **(Main Assembling 2)**

Name of Parts	Method and Procedure
① GEAR REDUCTION A ② GEAR REDUCTION B ③ RIBBON FEEDER Ass`y ④ GEAR REDUCTION "C" ⑤ LEVER RIBBON FEED Ass`y ⑥ WASHER (ø2.6x5x0.5)- 2ea ⑦ MAIN PCB Ass`y ⑧ FPC CONNECTOR ⑨ SCREW MACHINE (M3x4) ⑩ CARRIAGE HEAD Ass`y ⑪ BELT SYNCHRONUOS ⑫ SPRING LEVER TENSION BELT	1. Set FRAME MAIN on the jig. 2. Set ①GEAR REDECTION A, ② GEAR REDECTION B , ③RIBBON FEEDER Ass`y and ④GEAR REDECTION "C" onto SHAFT sequentialy. Grease teeth and upper face of RIBBON FEED Ass'y. 3. Insert ⑤LEVER RIBBON FEED Ass`y and fit two ⑥WASHER (ø2.6x5x0.5). 4. Attach ⑧FPC to ⑦MAIN PCB Ass'y Next, Plug SOLENOID WIRE (block) in connecter 2p. And then, set it to M/F and tighten two ⑨SCREW MACHINE(M3x4). 5. Insert ⑪BELT SYNCHRONUOS into ⑩CARRIAGE HEAD Ass`y,and then belt up round PULLEY and GEAR PULLEY. 6. Hook ⑫SPRING LEVER TENSION BELT **< Check Point>** Check the tear of FPC .



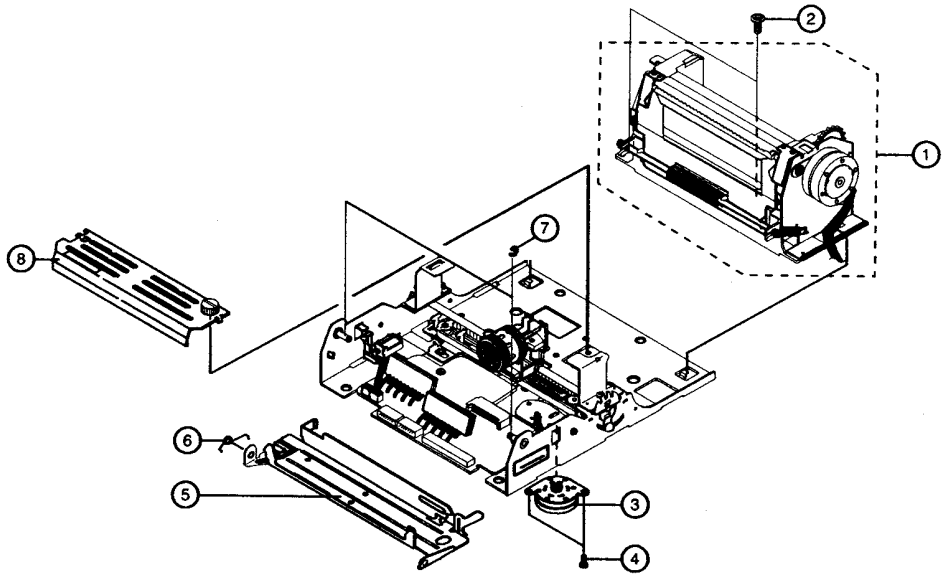
Main ass'y- 6 **(Main Assembling 3)**

Name of Parts	Method and Procedure
① AD LEVEL ② SHAFT HEAD GUIDE ③ SHAFT HEAD CARRIAGE ④ E-RING (ø3) ⑤ HEAD PRINT ⑥ SCREW(M3x10)-2ea ⑦ BRACKET HEAD COVER "L" ⑧ BRACKET HEAD COVER "R" ⑨ SCREW MACHINE(M2.6x3)-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 ass'y 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 (ø3) in the left side. 4. Insert FPC into ⑤HEAD PRINTand set Head Ass'y to CARRIAGE HEAD ,and then tighten two ⑥CREW (M3x10). 5. Tighten the screw mounted to LEVER TENTION BELT Ass'y completely. 6. Fit ⑦BRACKET HEAD COVER "L"and ⑧BRACKET HEAD COVER "R" to both boss and then, tighten two ⑨SCREW MACHINE (M2.6x3).



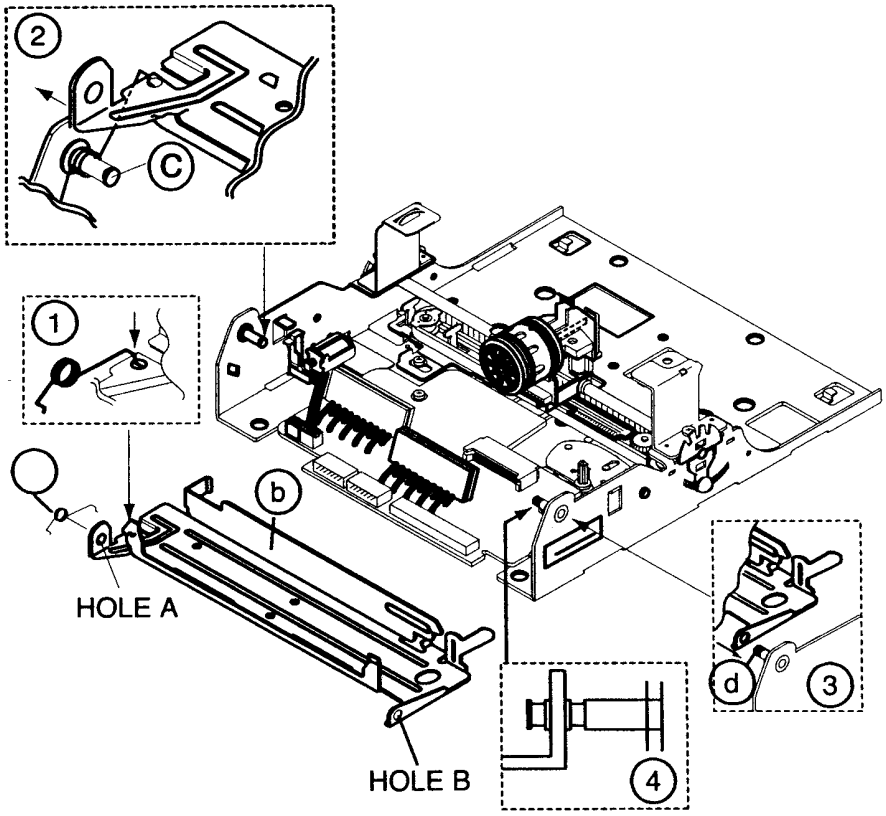
Main ass'y - 7 **(Main Assembling 4**

Name of Parts	Method and Procedure
① BASE PAPER FEED Ass'y ② SCREW MACHINE(M3x6)- 3ea ③ STEP MOTOR H/F ④ SCREW(M3x4)- 2ea ⑤ RIBBON FRAME ⑥ SPRING RIBBON FRAME ⑦ E-RING(ø3)- 3ea ⑧ HEAD COVER Ass'y	1. Set FRAME MAIN on the jig. 2. Put ①BASE PAPER FEED Ass'y WIRE into the rectangular hole and drag it. Next, Set ①BASE PAPER FEED Ass'y and tighten three ②SCREW MACHINE(M3x6). 3. Turn up FRAME MAIN and then set ③STEP MOTOR H/F to the hole Next , tighten two ④SCREW(M3x4). 4. Insert SUB PCB, STEP MOTOR P/F, STEP MOTOR H/F WIRE to the connecters of MAIN PCB Ass'y sequentialy, and then alignment and fix the wire ass'y by pressing the hooks. 5. Grease on the CARRIAGE HEAD(Δ), 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 leftside 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 gape(p54)) 7. Tighten three ⑦E-RING(ø3). 8. Assemble ⑧HEAD COVER Ass'y. **< Check Point>** Check the setting position of RIBBON FRAME and jam.



Main ass'y- 7_1 **Main Assembling 4- 1**

Name of parts	Method and procedure
① RIBBON FRAME ② SPRING RIBBON FRAME ③ E- RING(ø3)- 3ea	1. Insert ⓐ spring ribbon frame into the hole in left side of ⓑribbon frame to ward arrow on shows in fig 1 detail. 2. Set ⓐspring ribbon frame onto the shaft ⓒand then, move the ribbon frame toward arrow. 3. Next, insert ribbon frame onto shaft ⓓ toward arrow an shows in Fig 3. 4. And then, insert the other hole A of ribbon frame onto shaft ⓒ and then, adjust the position of ribbon frame to the center as shows in Fig 4 5. First E- ring(ø3.0) to shaft ⓒ and two E- ring to shaft ⓓ 6. Check ribbon frame to move smoothly as operating it up and down.

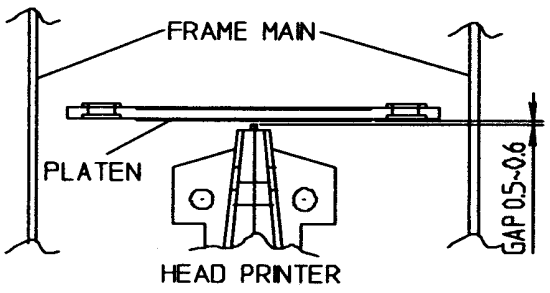


3. Adjustment

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	Rotate Gear lst Reduction to move the Head unit to L side	
2	Insert the thickness gauge between Head unit and Platen, then rotate the Ad. Level L and adjust the gap	- Appropriate gap: 0.50~0.60mm
		- In order to make the gap narrow (wide), turn Ad. Lever to mark'-(+)'
3	Move the Head unit then then check if the proper gap from R side center has been achieved	
4	If Head gap is not proper, adjust Head gap by rotating Ad. Lever R	- If gap is not correct, repeat once more.

(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 ass`y.
4. Replace the Head unit and assemble, according to the order of sub ass`y-1
5. After assembling , adjust the gap as above "Adjustment" indicates .

6 Assemble the Ribbon Frame.

ELECTRONICS

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