

Radio Shack[®]

REV 1/15/82

Service Manual

76-1001/1002

TRS-80

Portable Data Terminal PT-210

Catalog Number: 76-1001/1002



CUSTOM MANUFACTURED FOR RADIO SHACK A DIVISION OF TANDY CORPORATION

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Introduction

Model PT-210 is a Portable Data Terminal that combines a thermal printer, a keyboard, and an acoustic coupler. Electronic circuits are used for its control; its main control comes from a one-chip microcomputer (hereinafter abbreviated as μ CPU).

Separate units are provided for different functions. Pulse motors and solenoid are used as drive sources for mechanicals. Simplification is achieved by minimizing the number of mechanical parts. Accordingly, the number of points which require adjustment is extremely small and maintenance is easy.

Other units also incorporate electronics. Electronic circuits are simplified for improving reliability and stability, and the number of parts is minimized.

1/ Specification

Data Transmission

Communication method	Start-Stop Asynchronous
Communication speed	110/300 bps; Switch selectable 110 bps (11bit/character) 300 bps (10bit/character)
Communication mode	Half/Full duplex; Switch selectable ASCII for Information Interchange
Line status	On line/Off line; Switch selectable
Line buffer	48 characters; On received
Interface	Acoustic coupling RS232C (Optional) (CAT. No. 76-1002)
Parity	Odd., Even, Ignore; User selectable
Keyboard	Matrix full keyboard 99 codes generated 67 printable characters 32 control characters

Printer

Method	Non-impact, thermal-paper printing
Head life	20 million word
Paper	8-1/2" (100 ft) (CAT. No. 76-1003)
Character size	2.7 mm × 2.0 mm (7 × 5 dot-matrix)
Line length	8 inches 10 character per inch 80 character per line
Line spacing	6 lines per inch
Printing rate	50 characters per second; except CR time
CR/LF	Automatic at column 81; no code is transmitted
CR time	0.80 seconds (OFF LINE) 0.86 seconds (ON LINE)
LF time	0.05 seconds (single step) 0.03 seconds (continuous step)

Acoustic Coupler

Compatibility	Bell System 103A (equivalent) Telephone (CAT No. 43-301)
Mode	Originate
Modulation	Frequency shift keying (FSK)
Receive Frequencies	Originate Mark 2225 Hz Space 2025 Hz
Transmitter Frequencies	Originate Mark 1270 Hz Space 1070 Hz

Receive Sensitivity -35 dBm
Transmit Power -15 dBm
(within 15 dBm difference between transmit level and receive level)

Physical

Size (overall) 15.7" × 14.6" × 4.9"
(40.0 cm × 37.2 cm × 12.5 cm)
Weight (Overall) 15.0 pounds (6.8 kg)

Power Requirements

Voltage 105 through 135 volts
Frequency 47 through 63 Hz
Power (Overall) 75 watts maximum

Environment

Temperature Operating 50°F to 95°F (10°C to 35°C)
Storage 40°F to 104°F (-40°C to 71°C)
(not including paper)
40°F to 102°F (-40°C to 40°C)
(including paper)
Humidity Operating 10% to 80% (no condensation)
Storage 10% to 90% (no condensation)



Model PT-210 Keyboard Layout and Symbolization.

Figure 1.

	b7 → 0	0	0	0	1	1	1	1
b4 b3 b2 b1	b6 → 0	0	1	1	0	0	1	1
	b5 → 0	1	0	1	0	1	0	1
0 0 0 0		NUL	DLE	SP	0	@	P	⊗
0 0 0 1		SOH	DC1	!	1	A	&	a
0 0 1 0		STX	DC2	"	2	B	R	b
0 0 1 1		ETX	DC3	#	3	C	S	c
0 1 0 0		EOT	DC4	\$	4	D	T	d
0 1 0 1		ENQ	NAK	%	5	E	U	e
0 1 1 0		ACK	SYN	&	6	F	V	f
0 1 1 1		BEA	ETB	/	7	G	W	g
1 0 0 0		BS	CAN	(	8	H	X	h
1 0 0 1		HT	EM	)	9	I	Y	i
1 0 1 0		LF	SUB	*	:	J	Z	j
1 0 1 1		VT	ESC	+	;	K	[	k
1 1 0 0		FF	FS	,	<	L	\	l
1 1 0 1		CR	GS	-	=	M	]	m
1 1 1 0		SO	RS	.	>	N	^	n
1 1 1 1		SI	US	/	?	O	-	o

RUB OUT →

- Printable characters
- Printer control characters
- Codes generated and transmitted by the terminal, but no action is taken locally
- Translated to uppercase equivalents when received by the terminal
- ON received but not generated

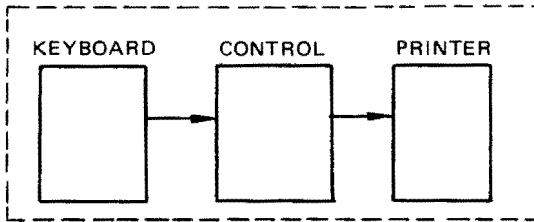
ASCII Code System and Character Set of Model PT-210.

Communication Mode (Switch Selectable)			Keyboard	Printing	Acoustic Coupler		Local Network	Remarks
					Transmit	Receive		
Off Line			<input type="radio"/>	<input type="radio"/>	/	/	/	Electric Typewriter
On Line	Half Duplex	110 / 300 Baud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	/	<input type="radio"/>	Modem
	Full Duplex	110 / 300 Baud	<input type="radio"/>	<input type="radio"/>	/	<input type="radio"/>	<input type="radio"/>	
RS-232C (Optional Cat. No. 76-1002)			<input type="radio"/>	<input type="radio"/>	/	/	<input type="radio"/>	
Self Test			/	<input type="radio"/>	/	/		

- Note: ① Keyboard: ASCII 99 codes generated.
 ② Printer: Non-impact, thermal-paper printing five by seven, 80 characters per line.
 ③ Acoustic Coupler: Compatibility Bell system 103A (or equivalent).
 ④ Self Test: Turning Power on while holding REPT key starts self test.
 (MODE S.W-HALF, SPEED S.W-300)
 All printable characters are printed. Self test ends by turning power off.

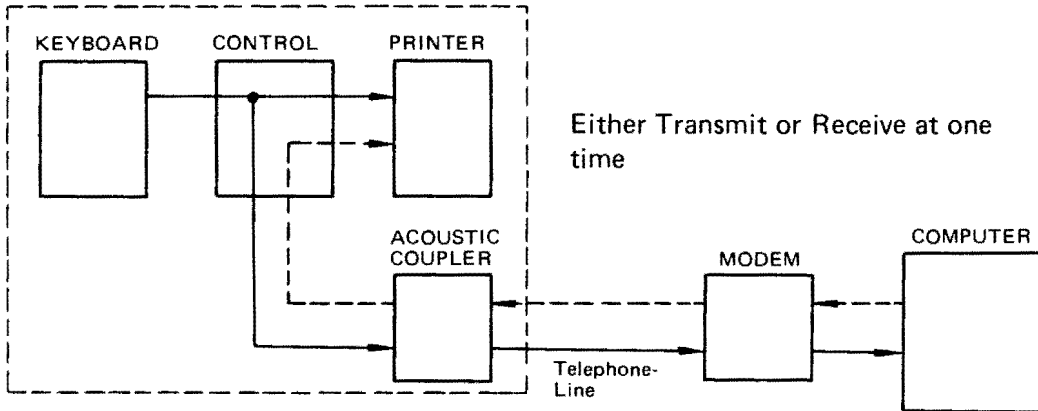
MODEL PT-210 COMMUNICATION DIAGRAM

OFF-LINE



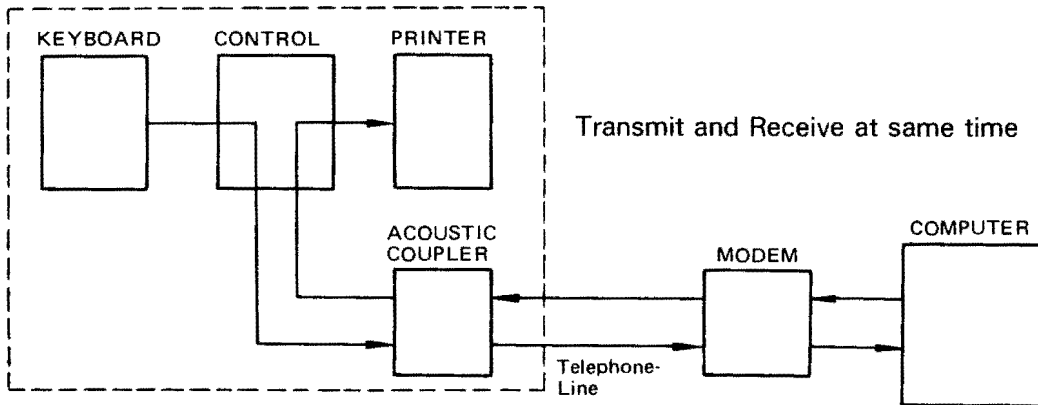
Use as electric typewriter.

ON-LINE HALF DUPLEX



Either Transmit or Receive at one time

ON-LINE FULL DUPLEX



Transmit and Receive at same time

RS-232C INTERFACE (OPTIONAL)

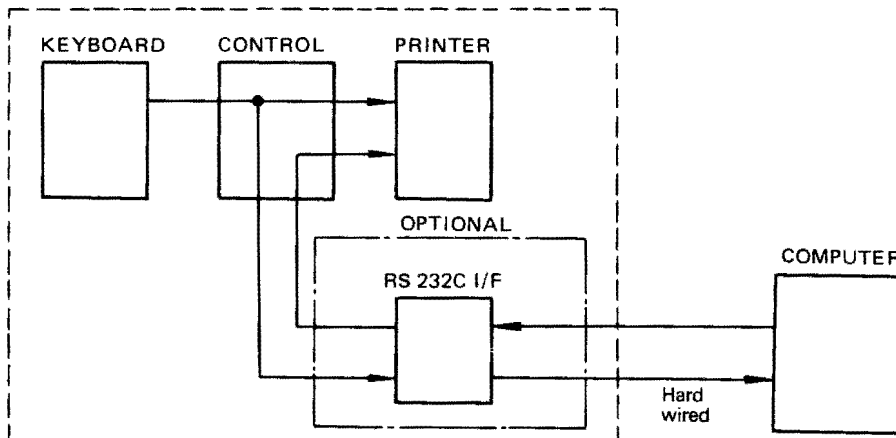


Figure 2.

Description of Function

This equipment is composed of the acoustic coupler unit coupled with a telephone line for transmission/receiving of data, the printer unit for input and printing of data, and the control unit that controls the acoustic coupler unit and the printer unit.

Acoustic Coupler Unit

- Microphone input unit
Mounted on the receiving side of the coupler assembly. Inputs the sounds from a telephone line to the demodulation circuit.
- Speaker output unit
Mounted to the transmitting side of the coupler assembly. Transmits analog signals produced out of the modulation circuit through a telephone line.
- Modem unit
Modulation and demodulation circuits. Modulates the digital signals from the control side into analog signals and demodulates sounds through the microphone input for transmission to the control side.

Printing Method

The printer uses a thermal head and special thermosensitive paper.

The heating unit (located at the tip of the thermal head) is heated when pulses are fed into it and causes discoloration of the thermosensitive paper.

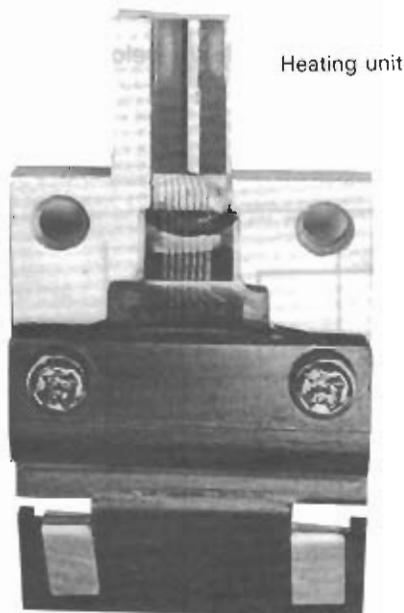


Figure 3.

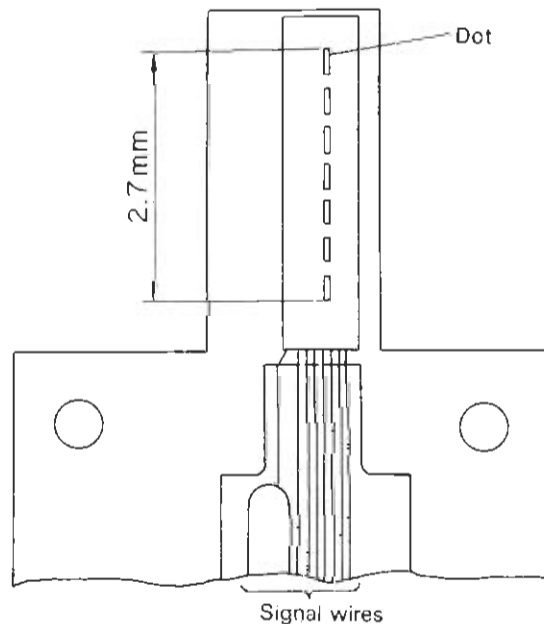


Figure 4.

- Structure of thermal head
Seven dots are arranged in a row.
Each dot has its own signal wire, which heats up the dot individually in correspondence to data (character).

- Character print

One character is composed of the 7×5 matrix dots. Assume letter "H" is to be printed. When Carriage Return and data "H" signals reach the printer, the line feed motor runs and the thermal head is caused to move in the direction indicated in the figure on the left.

When the thermal head moves and the row of dots reaches position A, all dots (1 ~ 7) are heated and the color of the paper is changed. When the thermal head advances to position B, only dot (4) is heated. Identically, as the thermal head advances and the row of dots reaches positions C, D, and E, dots (4), (4) and (1 ~ 7) are heated, and pattern "H" is printed on the printing paper.

Direction of movement of the thermal head

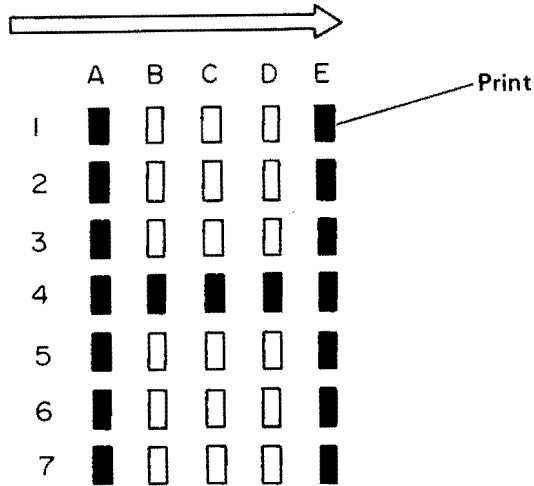


Figure 5.

The relationship between thermal head feed and dot printing positions is as shown below. (Since control signals are controlled by the μ CPU, it is not possible to make adjustment.)

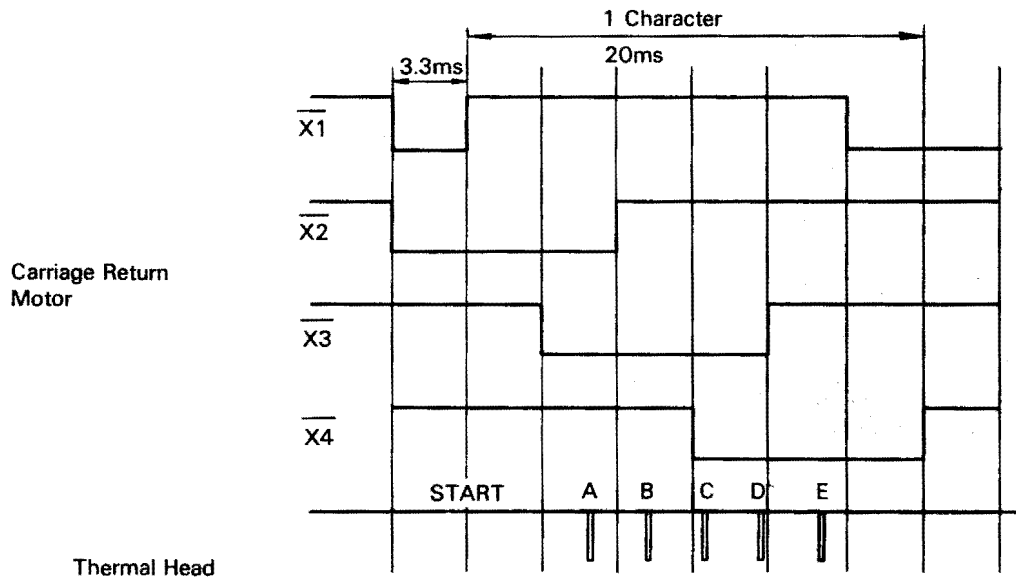


Figure 6.

Keyboard Unit

When a key that corresponds to the data to be input is pressed, its contact operates and a signal is sent to the control unit.

Printer Unit

The printer unit is controlled by the control unit. It prints data to be transmitted and receives data on thermosensitive paper (in roll). In the OFF-LINE mode, the printer can be used as an ordinary typewriter.

- CR motor assembly

The CR motor controls movement of the thermal head. When a control signal is input to the CR motor, the motion of the motor is transmitted to the head assembly (3) fixed by the CR timing belt (2) through the motor timing pulley (1) on the motor shaft.

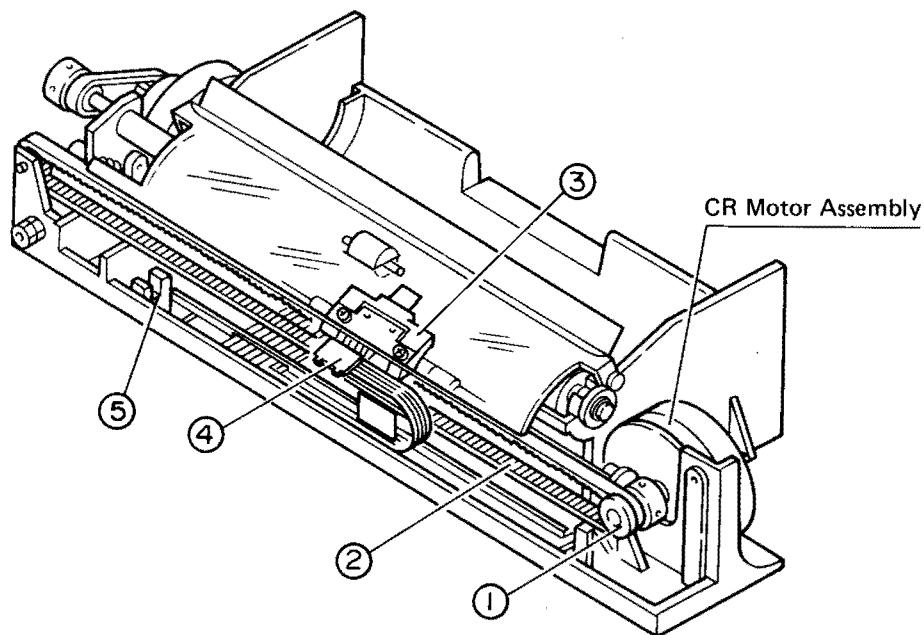


Figure 7.

The motor causes the thermal head (4) to move, in the direction of X-axis, a distance that corresponds to the size of one character, and to do so within 6 pulses of the motor control signal. Therefore, its moving distance is 2.54 mm (1/10").

The motor reverses when the head has travelled the distance of 203.2 mm, which is the effective travel of the thermal head good for 80 characters, and the head assembly (3) is caused to return to the start point. The start point is determined by the photo interruptor assembly (5). While the thermal head is returning to the start position, it is not in contact with the thermosensitive paper because of the operation of a relief solenoid.

- LF motor assembly

The LF motor controls the feeding of the thermosensitive paper.

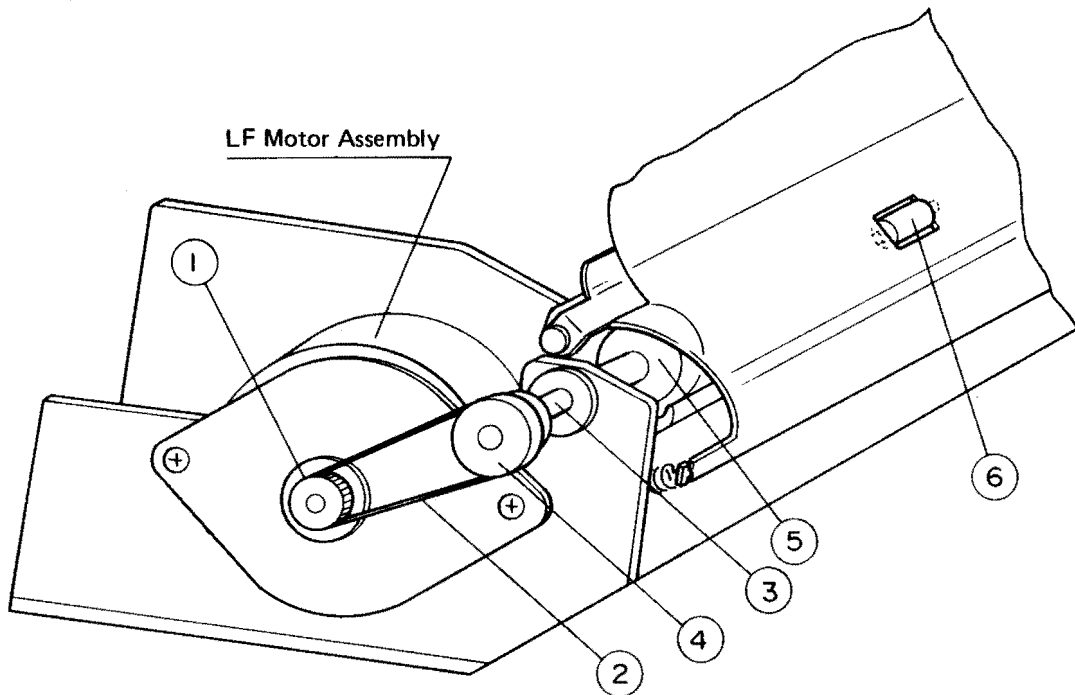


Figure 8.

The motion of the LF motor is transmitted to the motor timing pulley (4) set on the platen shaft (3) through the motor timing pulley (1) and the LF timing belt (2), and is further transmitted to the platen (5). The thermosensitive paper is led in by the friction force of the platen (5), and then is fed by the rotation of the platen (5) as pressure is applied to the paper by pinch rollers.

The LF motor feeds paper in the direction of Y-axis by a distance of 1 line; that is, it moves 4.23 mm (1/6") after 6 pulses of the LF motor control signal. The thermal head is not in contact with the thermosensitive paper during line feed, due to the operation of a relief solenoid.

- Solenoid assembly

The solenoid assembly controls printing motions by causing the thermal head to make contact with thermosensitive paper and to make a relief from the paper.

When a control signal is input to the solenoid, the solenoid is actuated and a rotary motion is transmitted to the head shaft (3) through the head lever (2) which is coupled with the plunger (1). The underhead (4) is coupled to the head shaft (3), and the thermal head assembly (5) is set to the underhead.

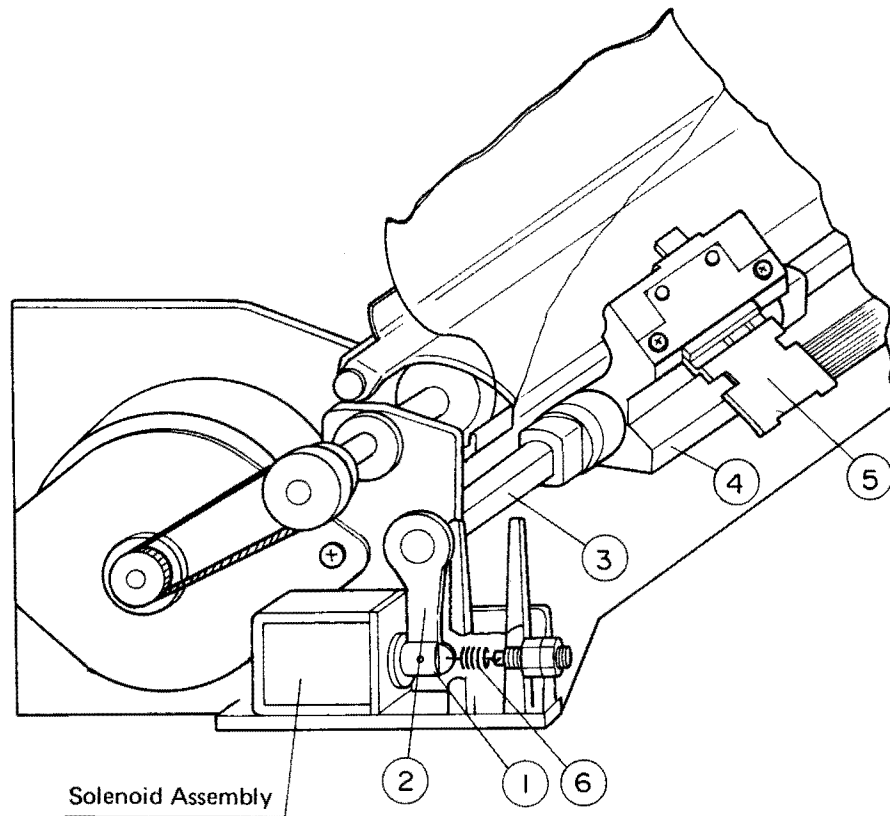


Figure 9.

A gap is produced between the thermal head (5) and the paper by the rotary motion of the head shaft (3).

While the solenoid is not actuated, the thermal head is in contact with the thermosensitive paper so that a print can be made at any time.

It is possible to adjust the pressure of the thermal head applied to the thermosensitive paper by changing the tension of the tension spring (6) located at the end of the plunger (1).

Control Unit

The control unit controls the recording of input/output data, the transformation of signal levels (TTL level — sound) and the transmission and receiving of data. Refer to the description of circuits and interface for details.

Modem Interface

This equipment modulates digital signals transmitted from the control side into analog signals, and then transmits them to the mouth side of the handset.

On the other hand, it demodulates analog signals received from the ear side of the handset into digital signals, and then transmits them to the control side.

The configuration can be divided into a speaker output unit, a microphone input unit, and a modem board unit. Coupling transmission/receiving is made with the speaker output unit attached to the transmission side of the handset and with the microphone input unit mounted to the receiving side of the handset. The modem board mounts modulation and demodulation circuits.

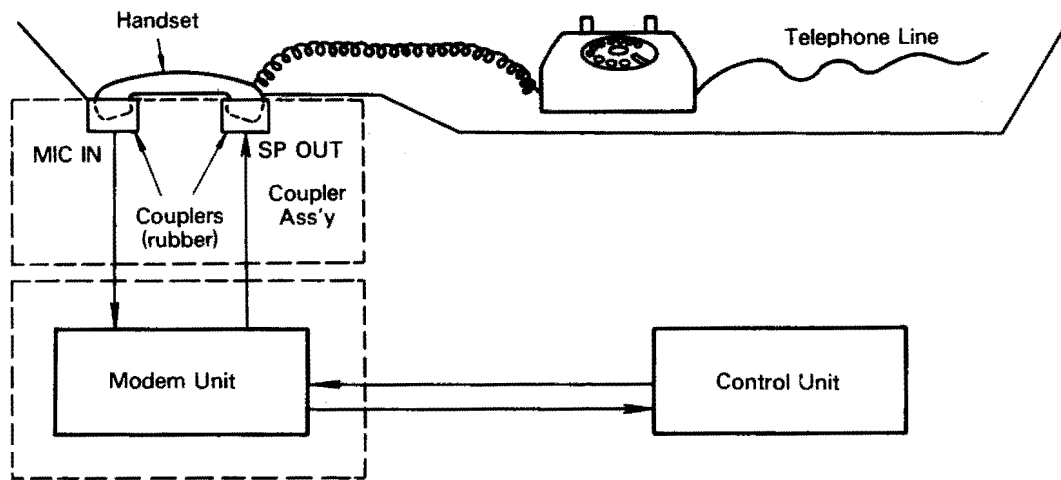


Figure 10. Configuration

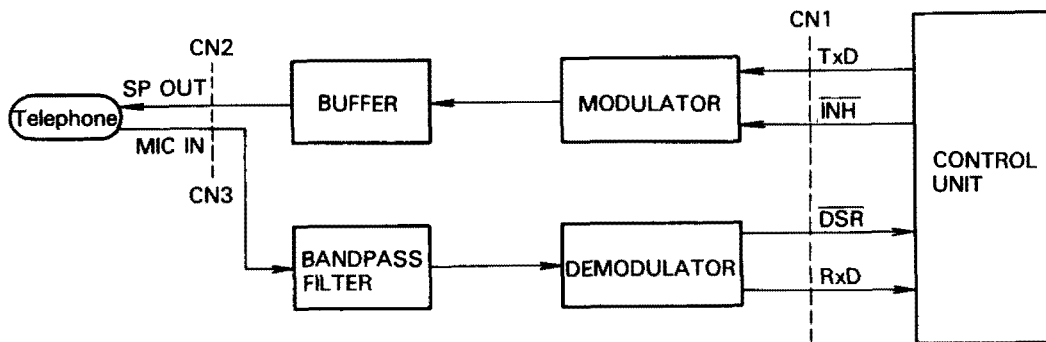


Figure 11. Modem Logic Block Diagram

Names used in the modem logic are described below.

- DSR (Data Set Ready): This signal indicates that the modem is in the status that permits operation in the case where exchange of data is made between a modem and its control unit. This signal becomes "L" level about 2~4 seconds after input of data to MIC IN, and operation is enabled.
- RxD (Required Data): Receives data signals transmitted from the modem and transfers them to the control side.
- TxD (Transmitted Data): Transmits data signals — data signals produced from the control side are transmitted to the modem.
- INH (Inhibit): Signal for discontinuing transmission of data. Transmission is made while this input is at level "L".
- MIC IN (Microphone Input Data): "The following analog frequencies are received from the telephone handset.
 Mark: $2,225 \pm 5$ Hz
 Space: $2,025 \pm 5$ Hz
- SP OUT (Speaker Output Data): The following analog frequencies are transmitted to the telephone handset.
 Mark: $1,270 \pm 5$ Hz
 Space: $1,070 \pm 5$ Hz

Description of Operation

- Modulator

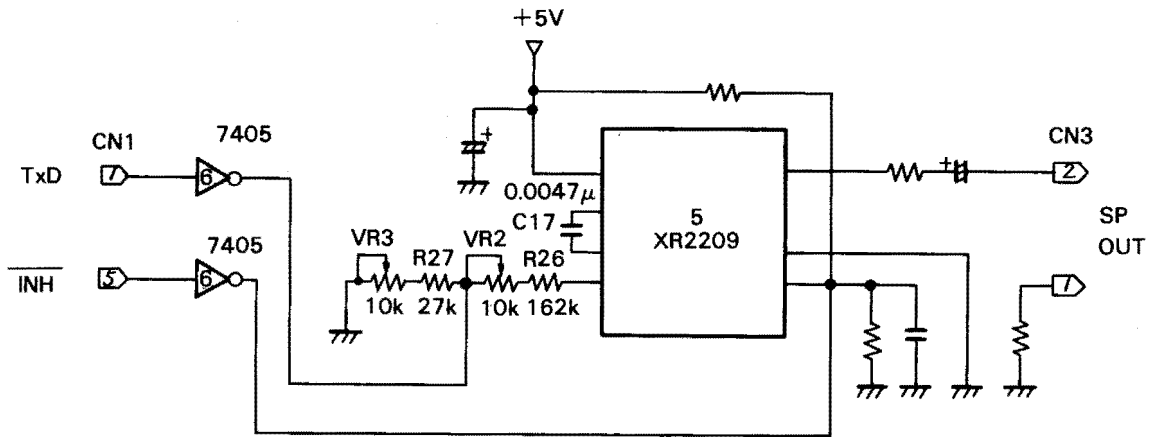


Figure 12.

Audible sound data is output to SP OUT, and a digital signal is input to TxD when signal "L" (transmission enable) is input to INH.

The timing chart is as follows:

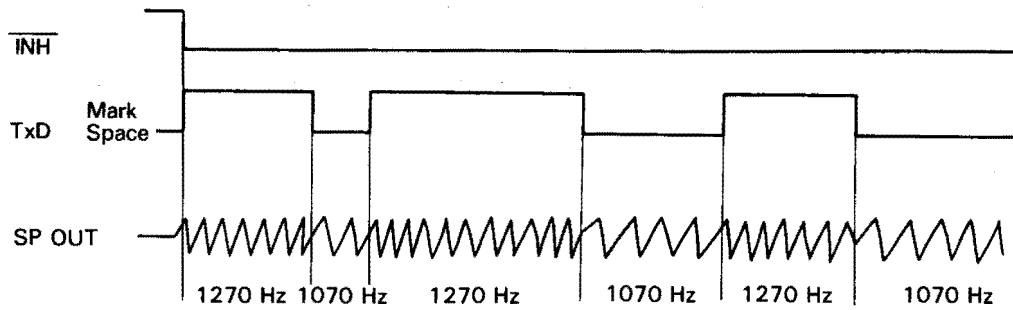


Figure 13.

• Demodulator

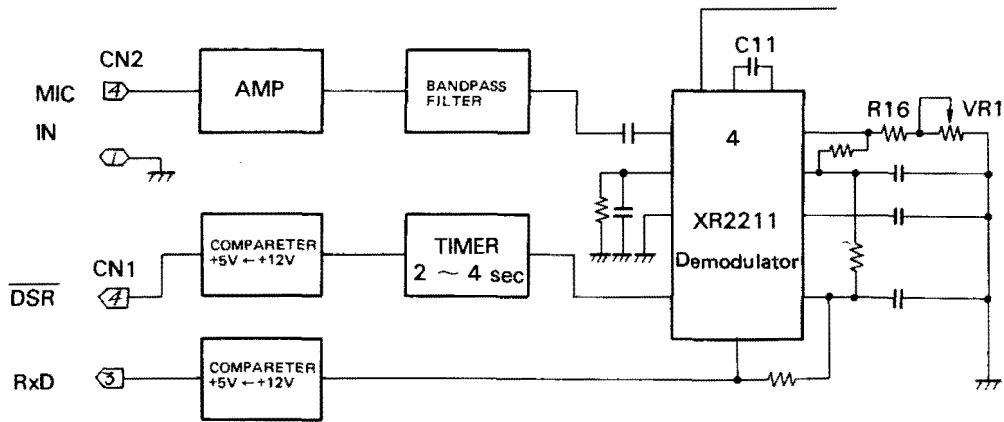


Figure 14.

The analog data signal input through MIC IN is amplified by the amplifier, its noise is cut by the band pass filter, and it is then input to the demodulator. The demodulator contains a frequency comparison circuit, and it outputs the difference in frequency by a digital signal.

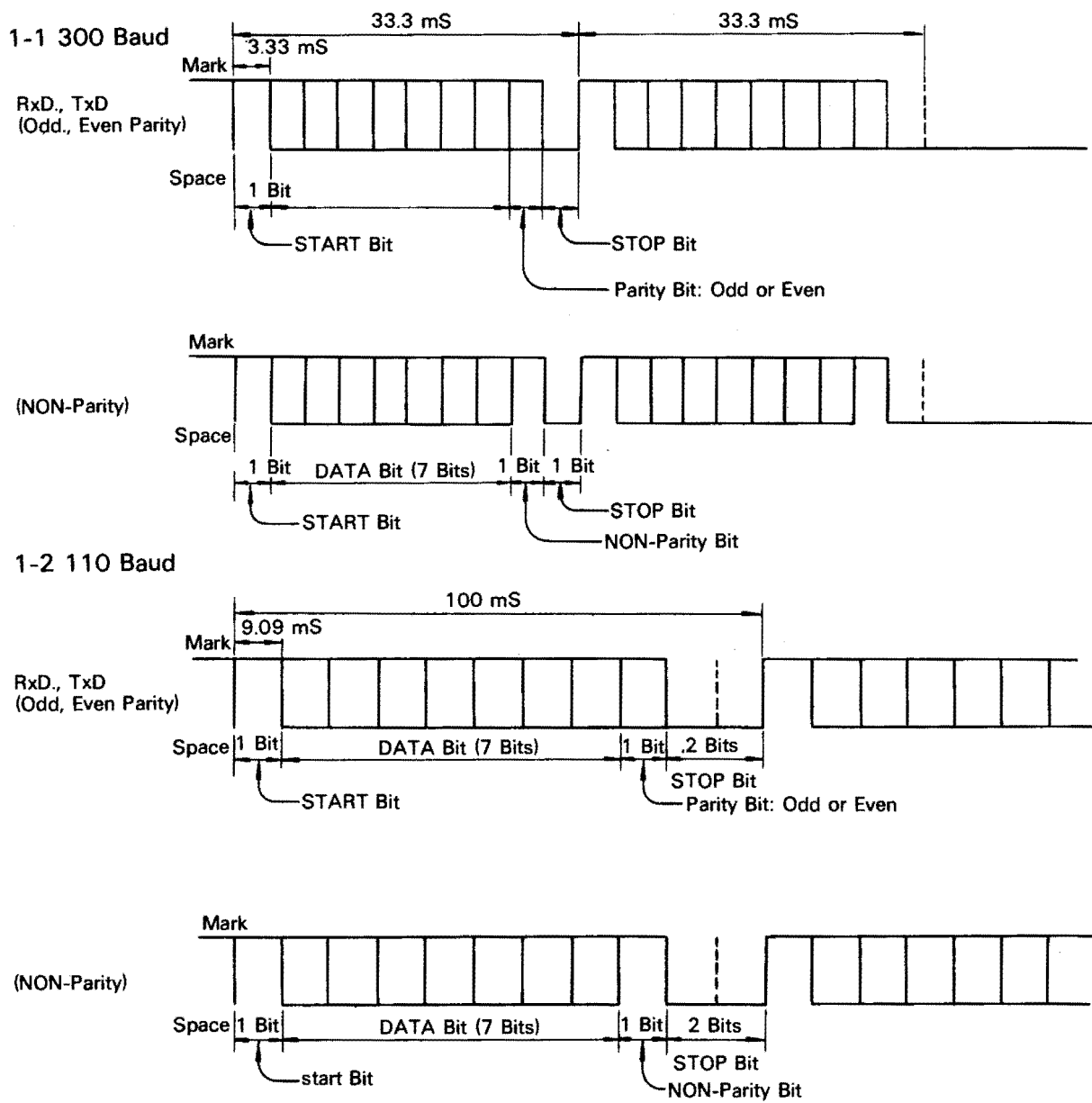


Figure 15. Timing Chart

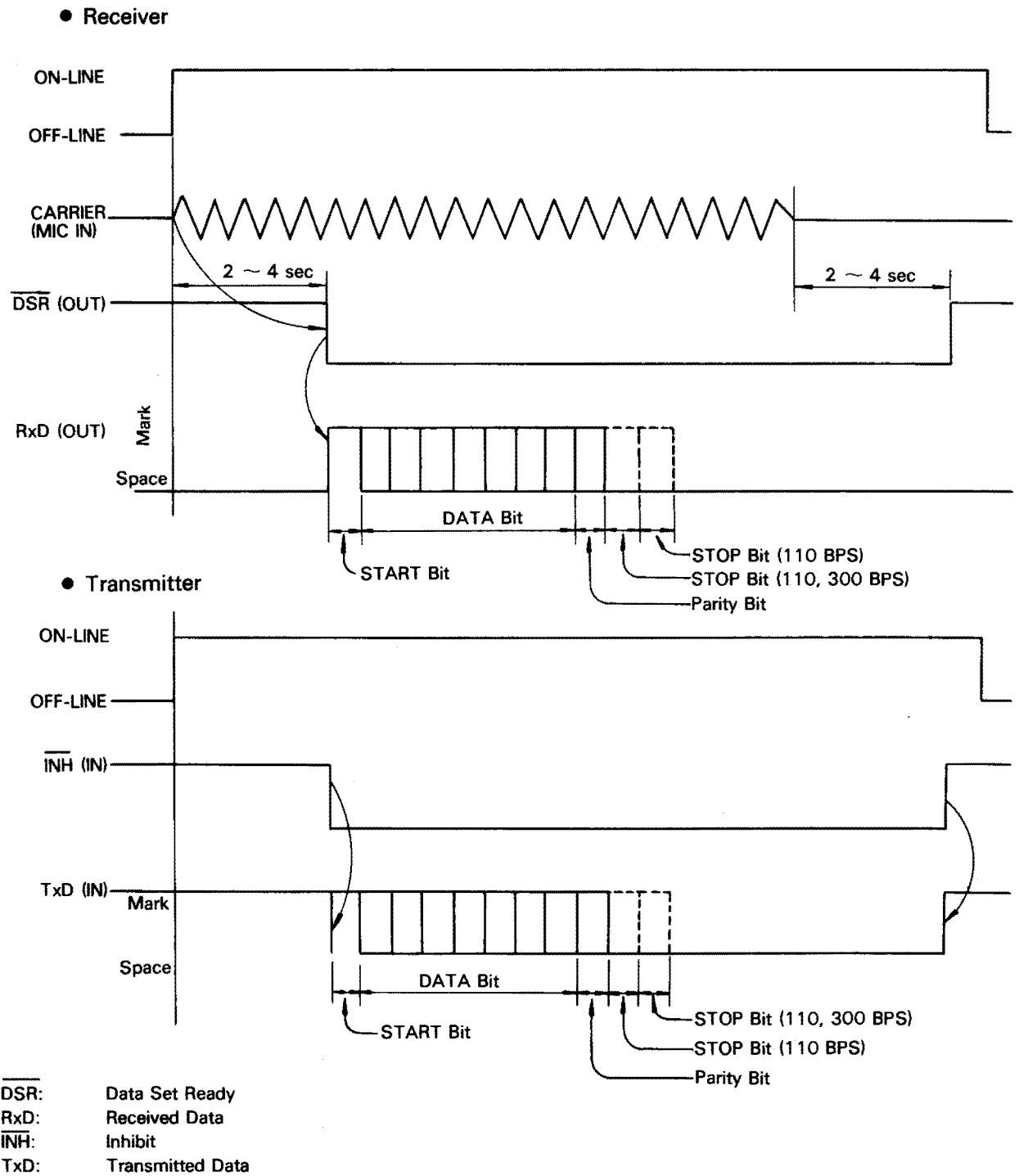


Figure 16.

Description of Keyboard Interface Circuit

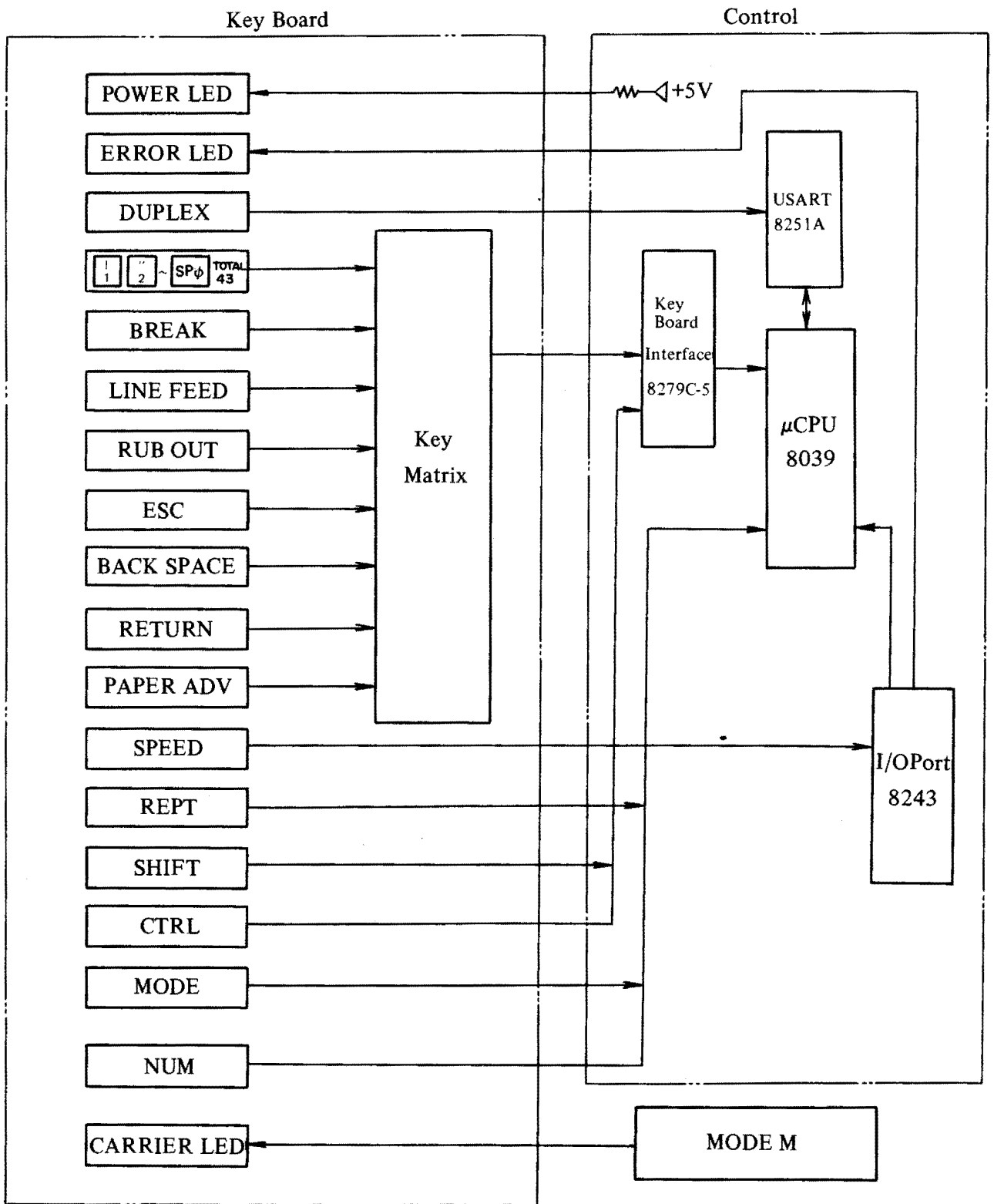


Figure 17.

Power Supply and Power Supply Protective Circuits

- Power supply

The standards of DC voltages are as follows.

+5V	±5%	
+5V~6.1V	±5%	Variable by turning a dial
+7.5V	±10%	
+12V	±5%	
-12V	±5%	

+5V is supplied to μ CPU, the digital circuits, the modem, and the RS-232C interface. +5.0 ~ 6.1V is supplied to the thermal head, +7.5V is supplied to motors and solenoids, and $\pm 12V$ is supplied to the analog circuit elements of the modem.

- Power supply protective circuits

A protective function is actuated when abnormal current flows at the time of power ON or when the PT-210 Portable Data Terminal operates.

Item	Protective function
+5V short	protection by IC3 on the power supply board.
$\pm 12V$ short	protection by IC1, IC2 on the power supply board.
+7.5V and +5.0~6.1V short	Protection by fuse 1 or fuse 2 or by the circuit breaker on the power supply board.
AC line primary side short	Protection by NFB (No Fuse Breaker).

Caution: Immediately turn the power switch to the OFF position if the specified DC voltage is not produced.

Check fuse 1, fuse 2, and the NFB for blowing before turning the power switch back to the ON position after repair and recovery. If any of them is blown, replace it with a spare.

Operational Description of the Control Unit

Symbols used in the description of control logic are listed in the following table:

Symbol	Description
X0 | X6	Key matrix output signals
Y0 / Y6	Key matrix input signals
SHIFT	Shift input character select signal
CNTL	Control key: special codes may be used
SPEED	110 BPS/300 BPS select signal
$\overline{\text{DUPLEX}}$	Half/Full-duplex select signal
MODE	On/Off-line select signal
NUMERIC	Numeric; 10-key mode select signal
REPEAT	Repeat signal
$\overline{\text{CARRIER LEAD}}$	Carrier indicating LED
$\overline{\text{ERROR LED}}$	Error indicating LED
POWER LED	Power indicating LED
+5V (VCC)	+5V power supply for logic
+12V (VPP)	+12V power supply for logic
-12V (VNN)	-12V power supply for logic
+7.5V (VMM)	+8V power supply for motor
+5.0V~6.1V (VTT)	+5.0 ~ 6.1V power supply for thermal head
GND	Signal ground
MGND	Magnet ground
FG	Frame ground
TxD	Transmitter data
RxD	Receive data
$\overline{\text{DSR}}$	Data set ready
$\overline{\text{INH}}$	Inhibit
$\overline{\text{SI}}$	Modem/RS232C receive data select switch signal
SD	Send data
RD	Receive data
$\overline{\text{DTR}}$	Data terminal ready
X1 | X4	Drive signals to transistors of the X-motor

$\overline{Y1}$ $|$ $\overline{Y4}$	Drive signals to transistors of the Y-motor
\overline{LM}	Photo interrupt signal
\overline{Mg}	Head release solenoid signal
$\overline{TH1}$ $|$ $\overline{TH7}$	Drive signals to transistors of the thermal matrix

Figure 1-10. Control Logic Block Diagram

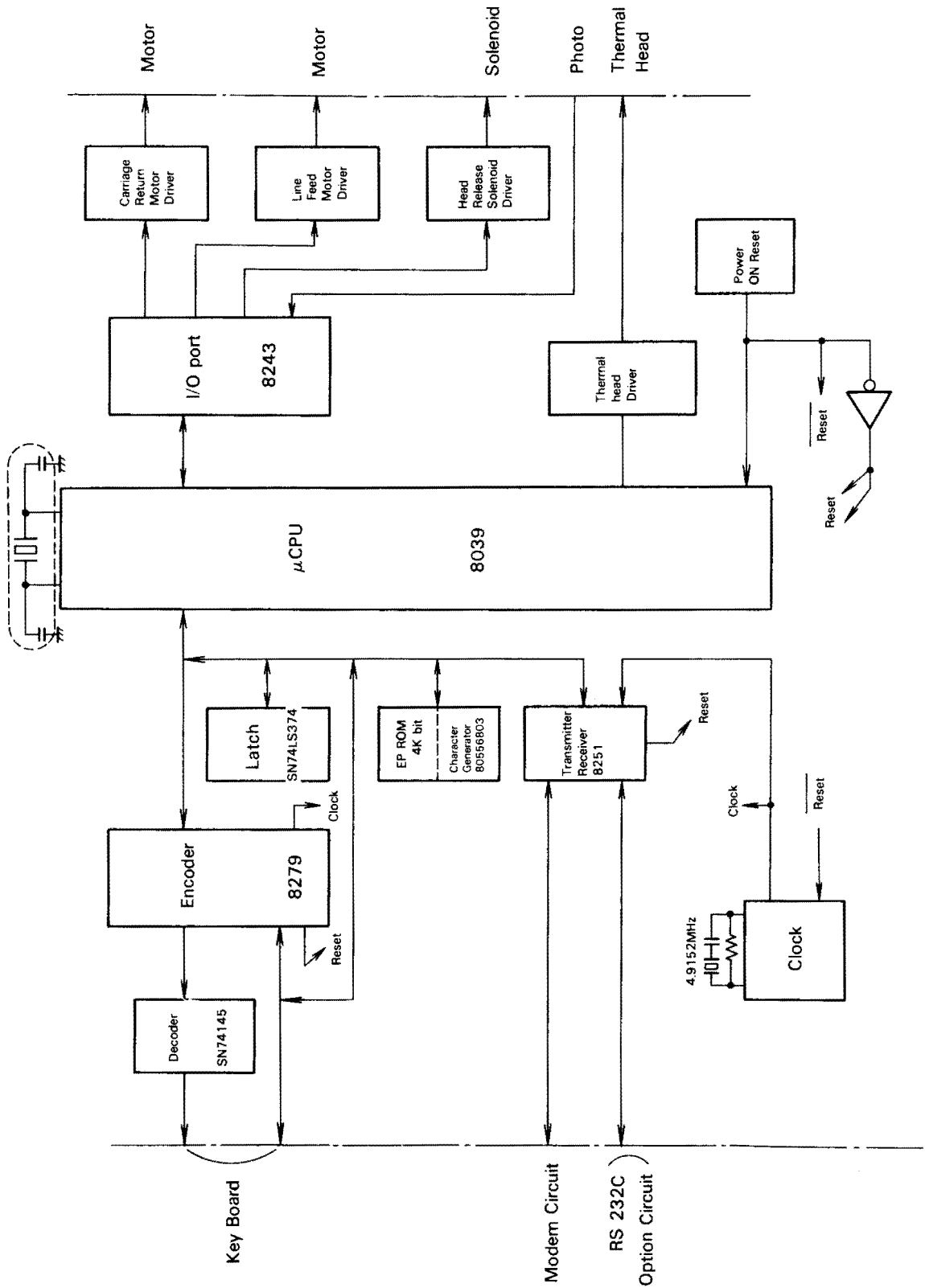


Figure 18

POWER ON Reset

When the POWER switch is ON, a Reset signal of about 20 ms is produced by causing a delay in activation of IC's input voltage "d" by C and R. A Reset signal resets the encoder, USART, and the data gate, and a Reset signal resets μ CPU and the clock. The timing chart as of POWER ON Reset is as follows:

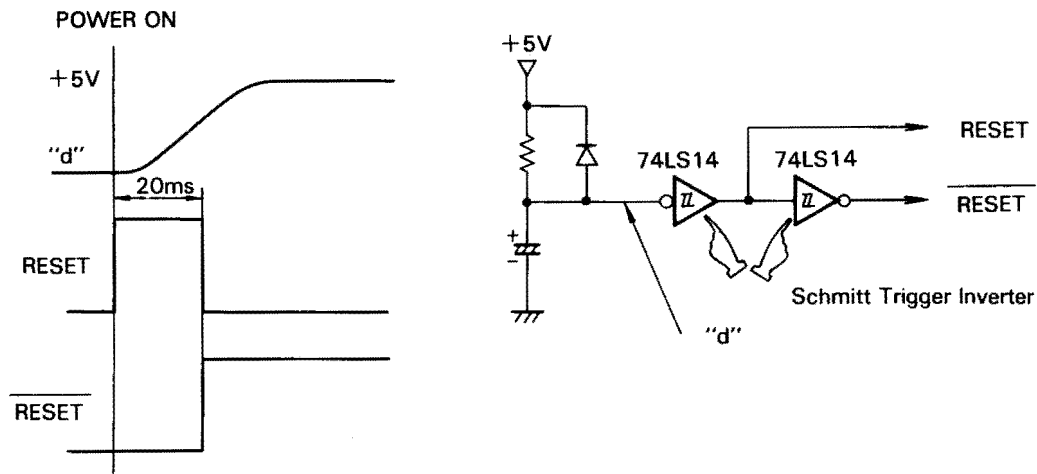


Figure 19.

μ CPU and Peripheral Circuits

The μ CPU is made up of the block composition shown below:

- Programmable Keyboard Control: Keyboard interface used for an 8-bit μ CPU. It scans each signal input through the keyboard and converts it into ASCII code in accordance with the instruction from the μ CPU control.
- EP ROM: 4K-byte EP ROM.

USART (Universal Synchronous/Asynchronous Receiver/Transmitter) USART is used for the peripheral circuit, and programming is done through the CPU. USART receives parallel data from the CPU and, after conversion, transmits it into serial data. It also receives serial data and, after conversion into parallel data, transmits it to the CPU.

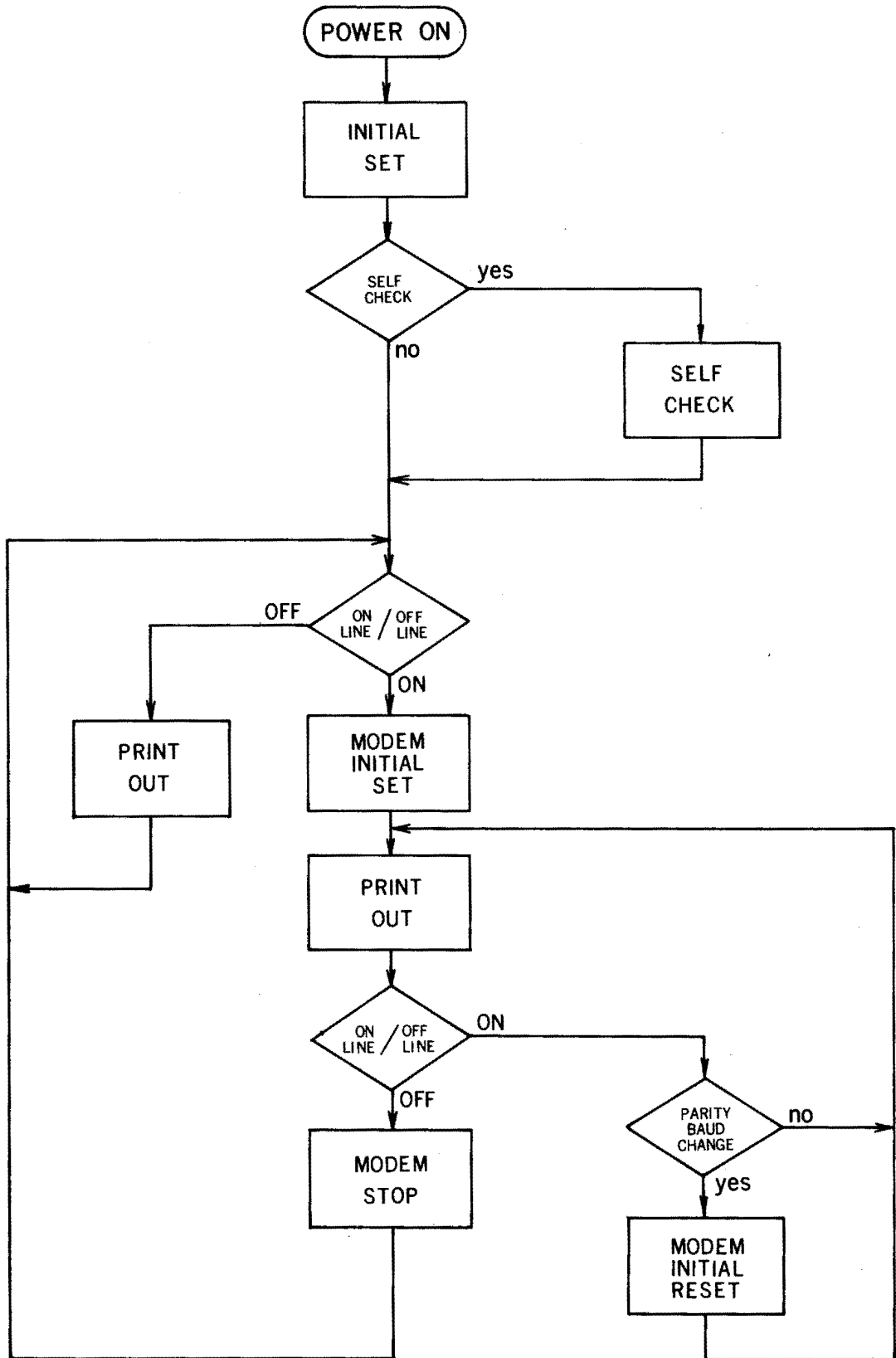
μ CPU: The μ CPU is an 8-bits microcomputer for parallel processing with RAM 128×8 bits, an I/O port, an 8-bit timer/counter, a control circuit, etc. on one chip.

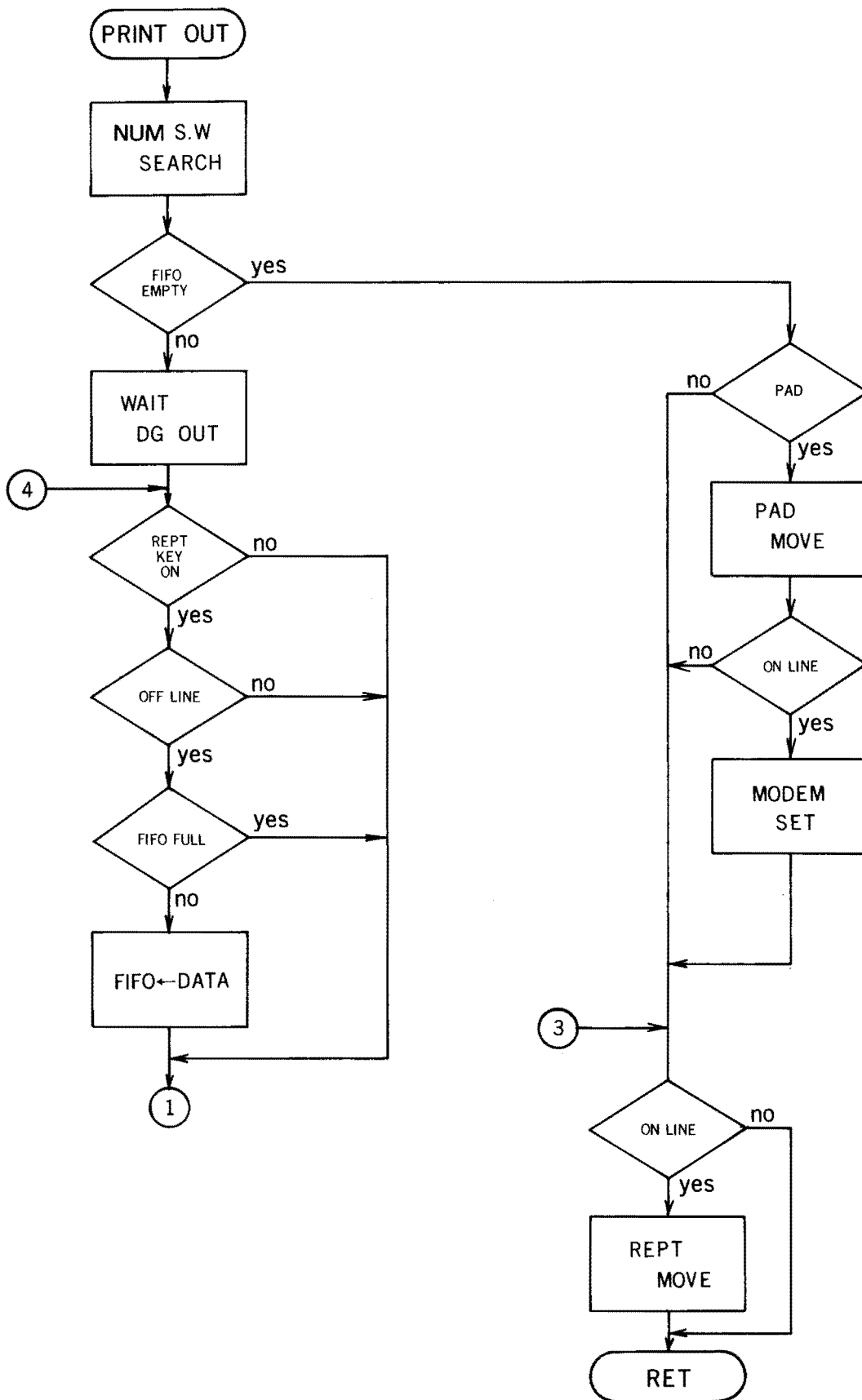
ROM and I/O port may be externally connector

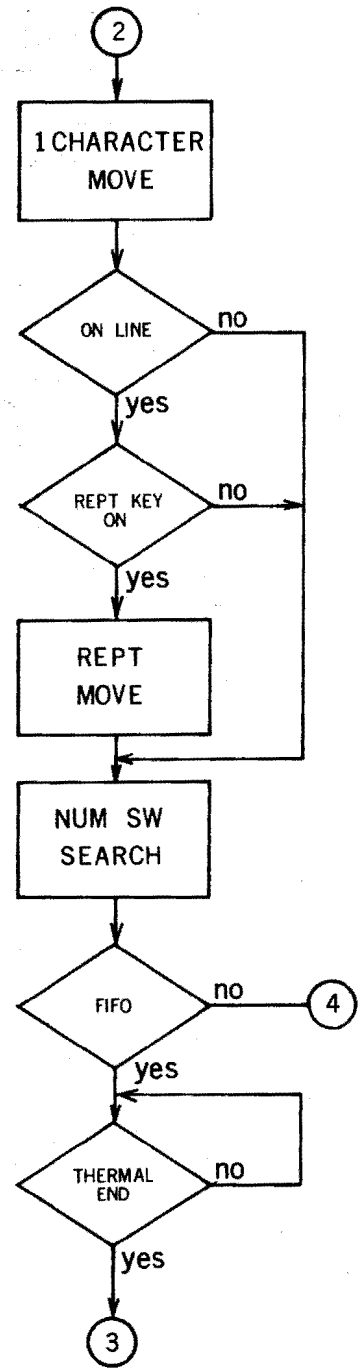
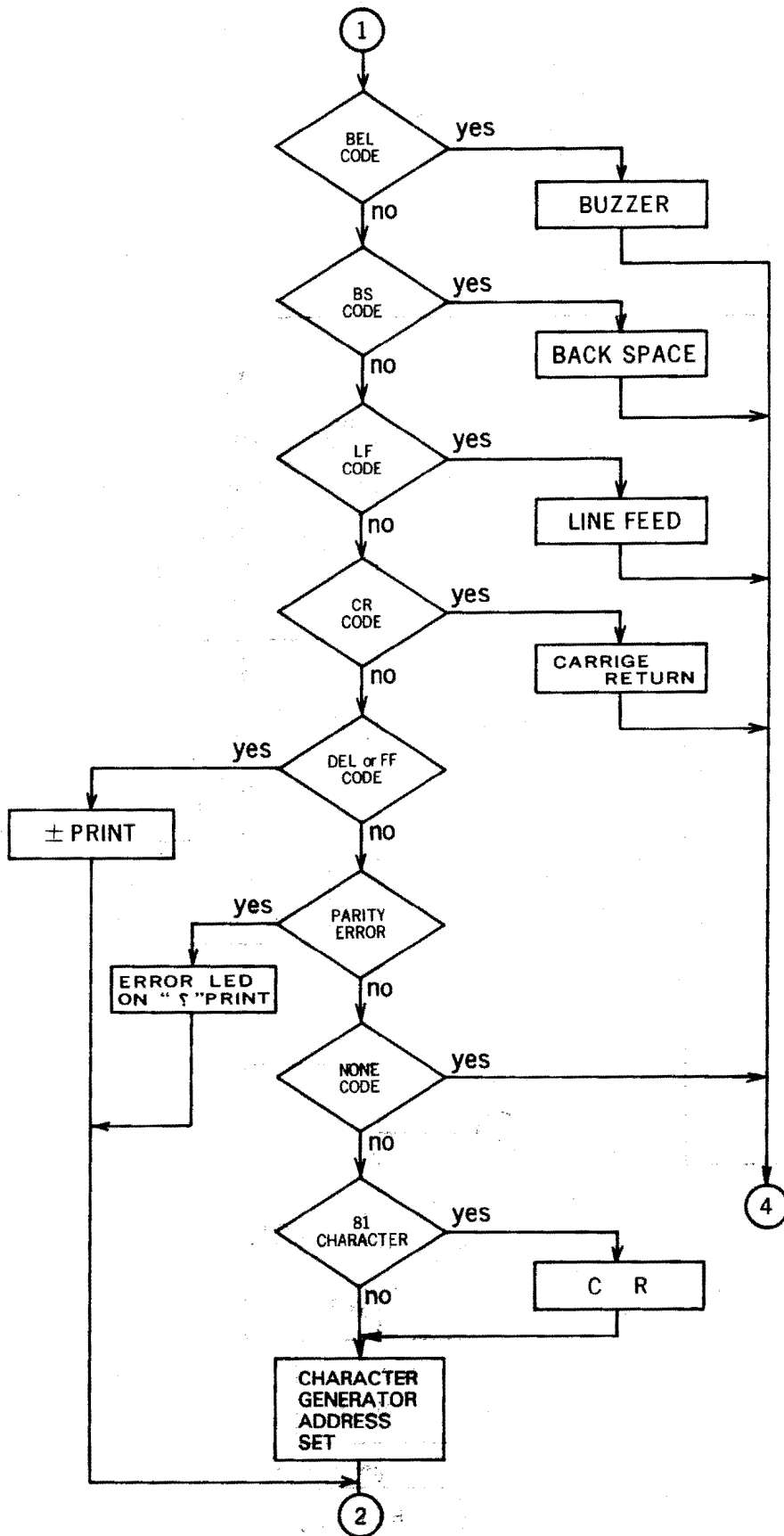
I/O Port (I/O expansion port: It is possible to expand a 4-bit I/O port of 1 set to a 4-bit I/O port of four sets by one chip.

Data is input from port 2 at the activation of the PROG terminal, processing is made in accordance with the mode, and the data is then output through the designated port.

+CPU Controls the I/F Circuit







Carriage Return and Line Feed Motor Control

Two pulse motors are used in the printer unit. X1 ~ X4 make carriage returns, and Y1 ~ Y4 make line feeds.

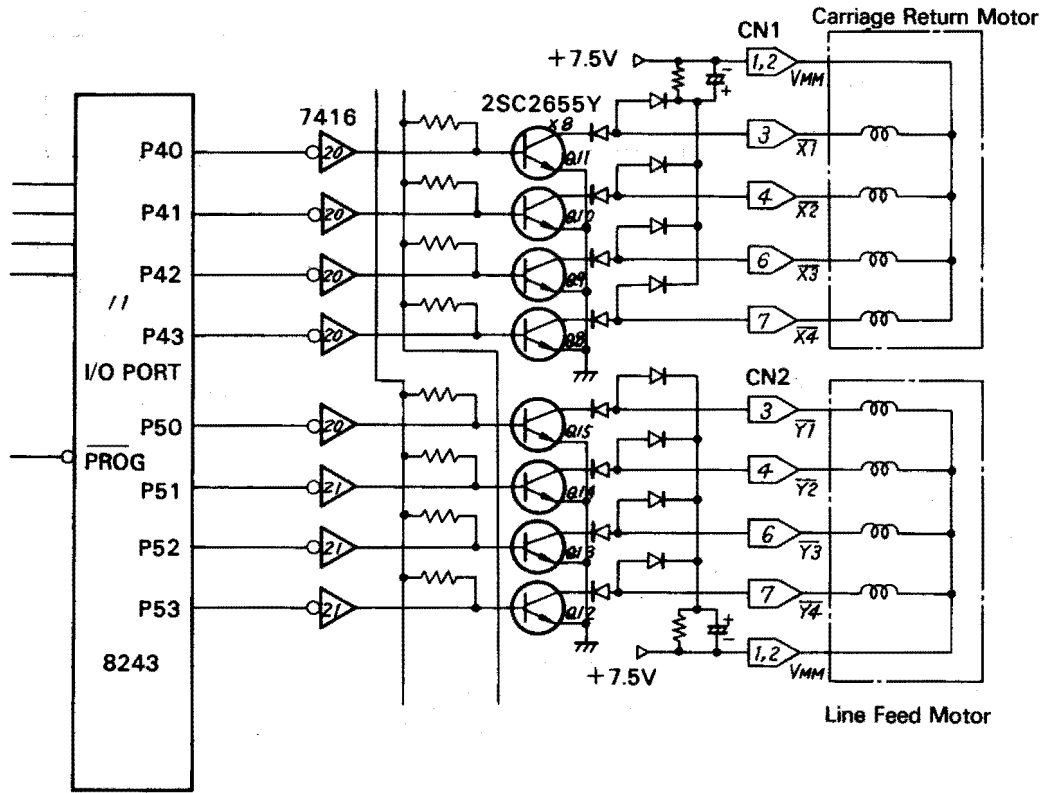


Figure 20.

- Method for excitation of the carriage return and line feed motors:

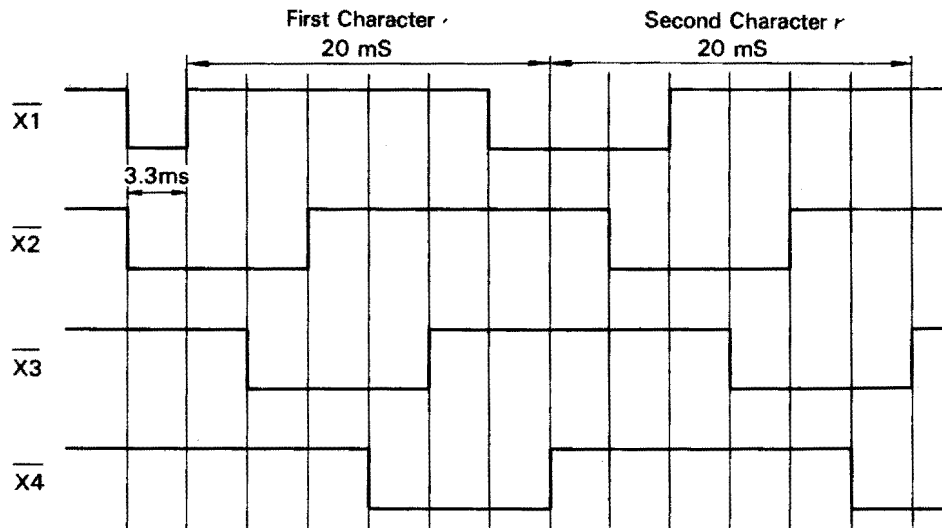
When "L" is input to the $\overline{\text{PROG}}$ terminal in accordance with an instruction from the μCPU , a motor excitation signal is output to an I/O expansion port.

Port 4 (P40 ~ P43) is for carriage return signals, and port 5 (P50 ~ P53) is for line feed signals.

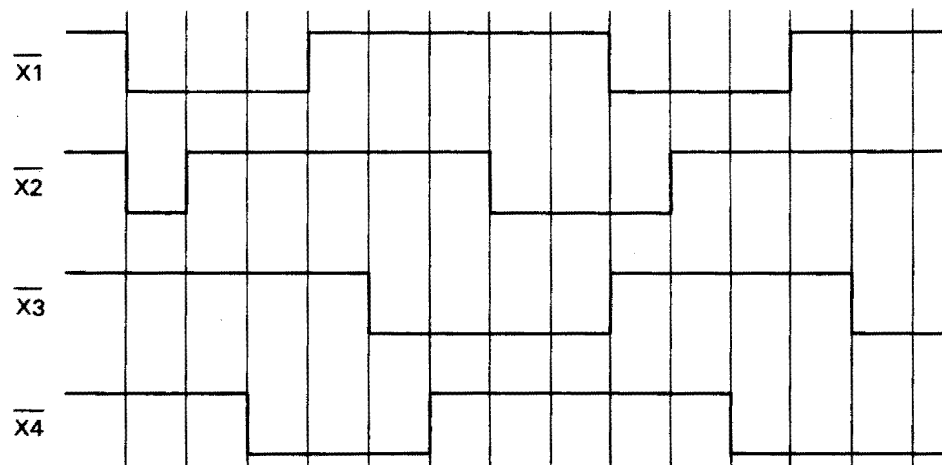
A signal output to port 4 or port 5 is driven by a transistor and drives the applicable motor.

Carriage Return Motor

Excitation in +X direction



Excitation in -X direction



Line Feed Motor

Excitation in +Y direction

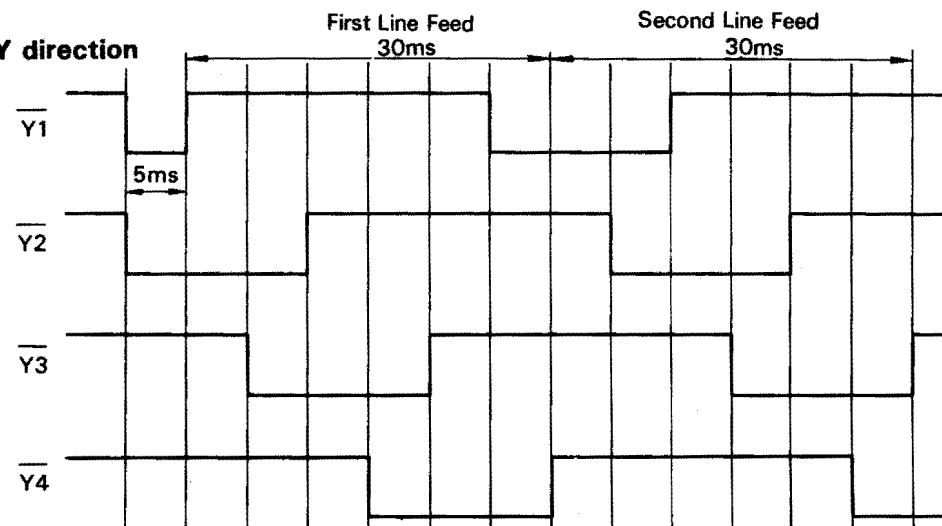


Figure 21. Timing Chart

Head Release Solenoid

The solenoid releases the head from the platen when:

- The carriage is returning.
- The PAPER ADV key is kept pressed.

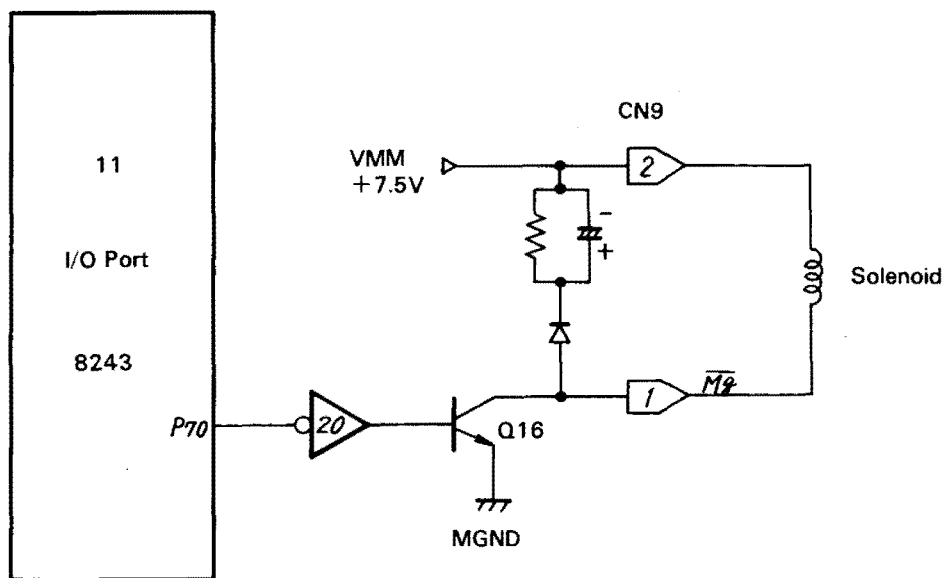


Figure 22.

VMM +7.5V, which is commonly used for the carriage return motor and the line feed motor, is also used as the power supply for driving the solenoid. When P70 becomes low, the transistor turns on and the solenoid is activated.

Thermal Head

The thermal head is used for printing with dots when the thermal head is heated by data pulses which are processed by the μ CPU and then driven by the transistors.

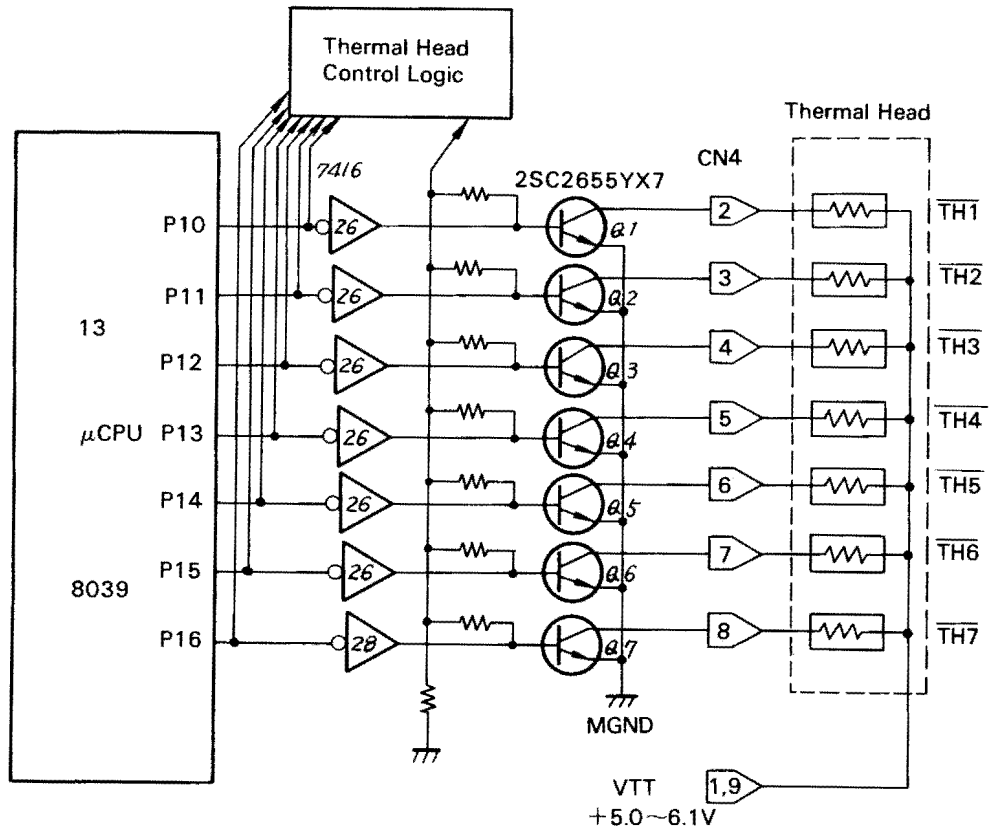


Figure 23.

VTT +5.0~6.1V is used as the power supply for driving the thermal head.

Photo Interrupt

The photo interrupt determines the print start position.

During carriage return, it detects an \overline{LM} signal, sends a signal to the μ CPU, and causes the carriage return motor to stop.

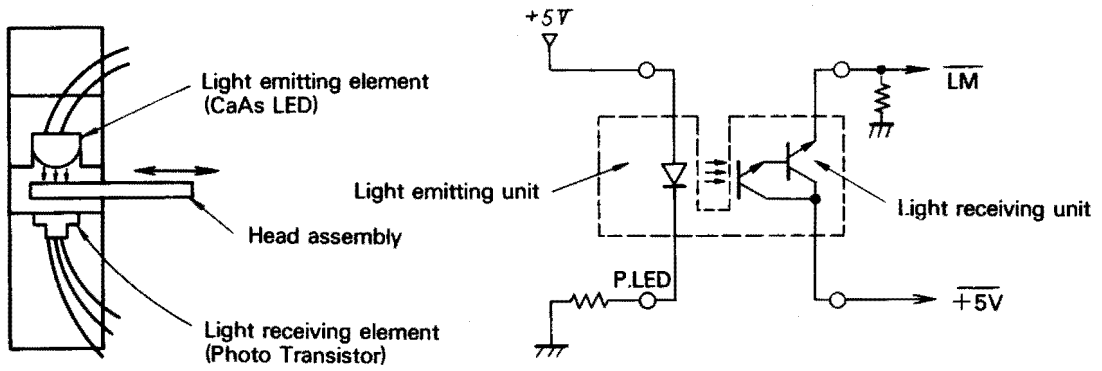


Figure 24.

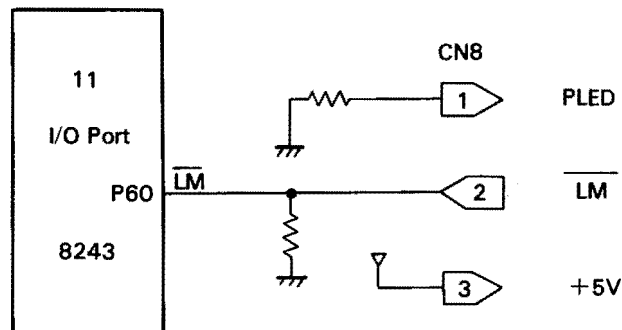


Figure 25.

Parity Check and Error Indication

This equipment is provided with the parity check function. Parity check has three modes (i.e., EVEN, ODD, and NONE) and any one of them may be selected by moving a switch to the desired choice.

- Parity Check

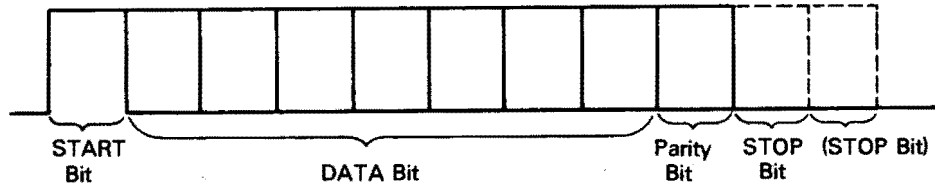


Figure 26.

EVEN check: Parity error lamp lights up when DATA Bit + Parity Bit = Odd number.

ODD check: Parity error lamp lights up when DATA Bit + Parity Bit = Even number.

NONE: No parity check is made. (No error indication is made.)

(Caution: Parity error lamp will not go out if the parity check mode is switched to NONE while it is lit.)

- Error Indication

When a parity error occurs, the following situations arise.

1. The error lamp (LED) is kept lit.
2. The printer prints backward question marks.

NOTE: Reset cannot be made unless power is OFF.

RS-232C Interface (Option) (76-1002)

FG: (Frame Ground)	This must be bonded to the chassis or equipment frame. It may also be connected to SG.
TD: (Transmit Data)	Direction-to data communication equipment. Signals on this circuit are generated by the data terminal equipment for transmission of data to remote equipment. This signal should be held in the marking condition during intervals between characters and at all times when no data is being transmitted.
RD: (Receive Data)	Direction-from data communication equipment. Signals on this circuit are received from remote equipment which transmits data to the terminal. This signal should be in the marking condition during intervals between characters and at all times when no data is being received.
$\overline{\text{RTS}}$: (Request to Send)	Direction-to data communication equipment. This signal is required by the terminal equipment to control the direction of data transmission by the data communication equipment. On one-way or duplex channels, the "off" condition maintains the data communication equipment in the transmit mode. The "on" condition maintains the data communication equipment in the non-transmit mode. On a half-duplex channel, the "off" condition maintains the data communication equipment in the transmit mode and inhibits the receive mode. The "on" condition maintains the data communication equipment in the receive mode.
$\overline{\text{CTS}}$: (Clear to Send)	Direction-from data communication equipment. This signal indicates input signals. The "on" condition maintains the data communication equipment in the transmit mode. The "off" condition maintains the data communication equipment in the non-transmit mode.
$\overline{\text{DSR}}$ (Data Set Ready) $\overline{\text{CF}}$, $(\overline{\text{CD}})$ (Carrier Flag)	
$\overline{\text{DTR}}$: (Data Terminal Ready)	Direction-to data communication equipment. This signal indicates output signals. The "on" condition maintains the data communication equipments in the transmit mode. The "off" condition maintains the data communication equipment in the non-transmit mode.

Interface Signal Pin Assignment

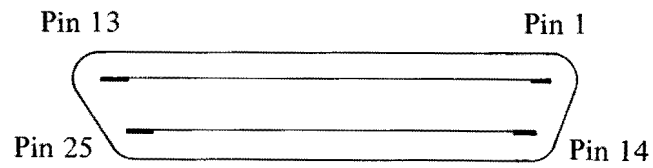
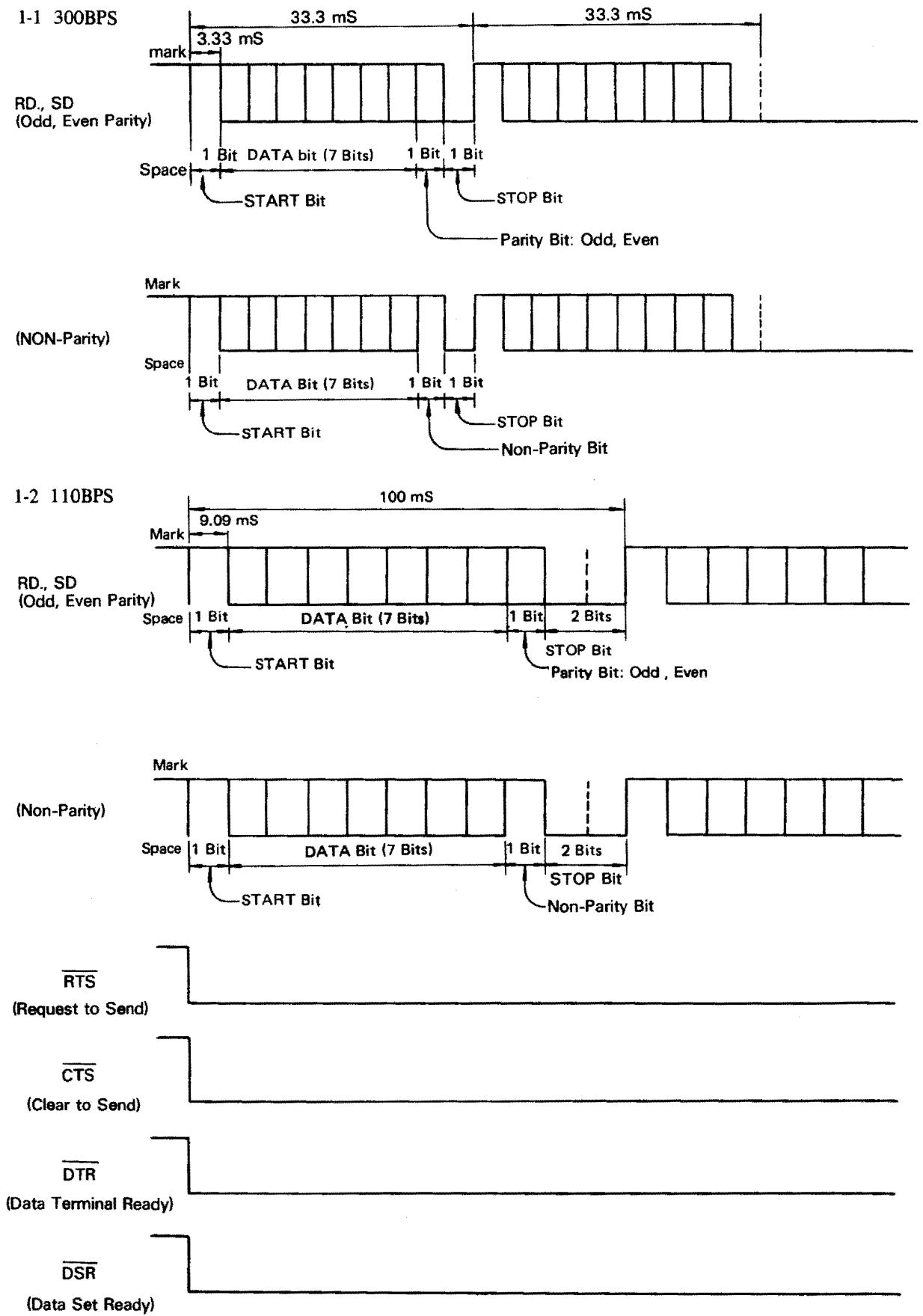


Figure 27.

Pin	Signal name	Pin	Signal name
1	PG	14	NC
2	TD	15	NC
3	RD	16	NC
4	RTS	17	NC
5	CTS	18	NC
6	DSR	19	NC
7	SG	20	DTR
8	CD	21	NC
9	NC	22	NC
10	NC	23	NC
11	NC	24	NC
13	NC	25	NC

Figure 28. Timing Chart



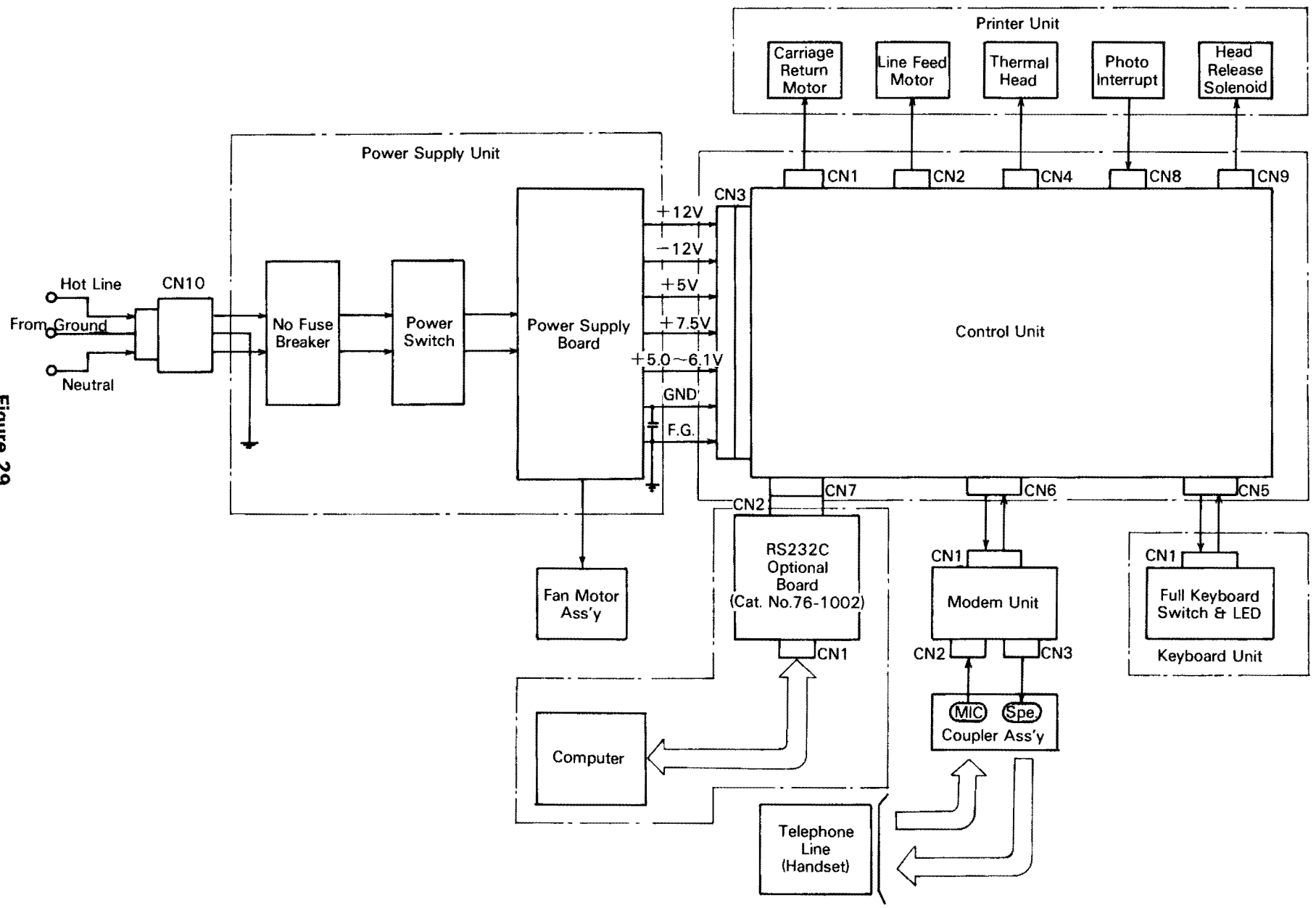


Figure 29.

3/ Maintenance Procedures

The Drive Mechanism is designed simply and lubrication is not required. This section explains how to replace defective parts and assemblies.

Handling of the Thermal Head

Although the life of the thermal head is 20 million characters, printing may become unclear before expiration of its life. In such a case, remove the thermal head assembly and clean the projected portion (that contacts the thermal paper) of the tip with an applicator, or gauze moistened with record head cleaning solution (44-1010).

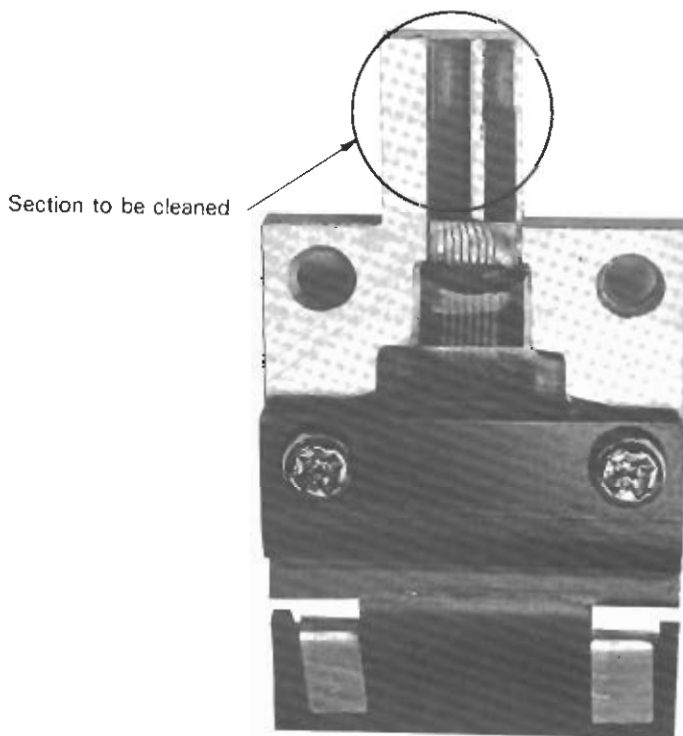


Figure 30. Cleaning the Thermal head

Do not apply excessive force to the projected portion.

Clean once every 40 rolls of thermal paper in order to consistently obtain prints.

4/ Disassembly Instructions

Components

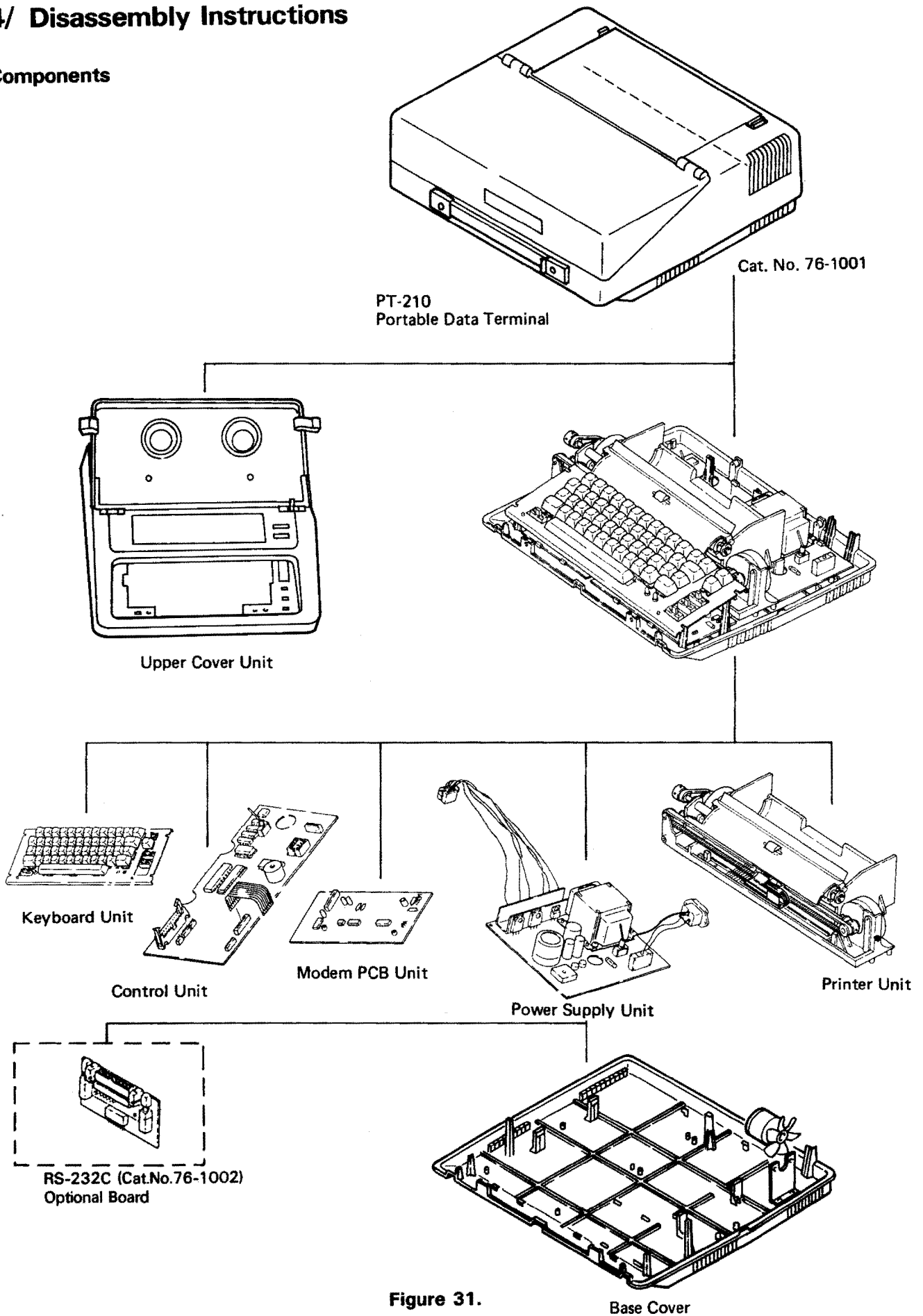


Figure 31.

Base Cover

Disassembly of PT-210 Portable Data Terminal

- Removal of the Upper Cover and the Base Cover Unit.
 1. Loosen the two screws ① holding the handle clips and remove the handle band.
 2. Loosen the two screws ② which join the Upper ③ and Base Covers ④ at the rear.
 3. Insert a coin or (-) driver between the front of the Upper Cover and the front of Base Cover. (Figure 32)
Separate the Upper Cover from the Base Cover to remove. There will be a click as it is pried up.

Note: Take care when removing the Upper Cover which has lead lines to the Modem Unit.

 4. Remove the two connectors of the lead line which connect with the Modem Unit
The Upper Cover can then be separated from the Base Cover.

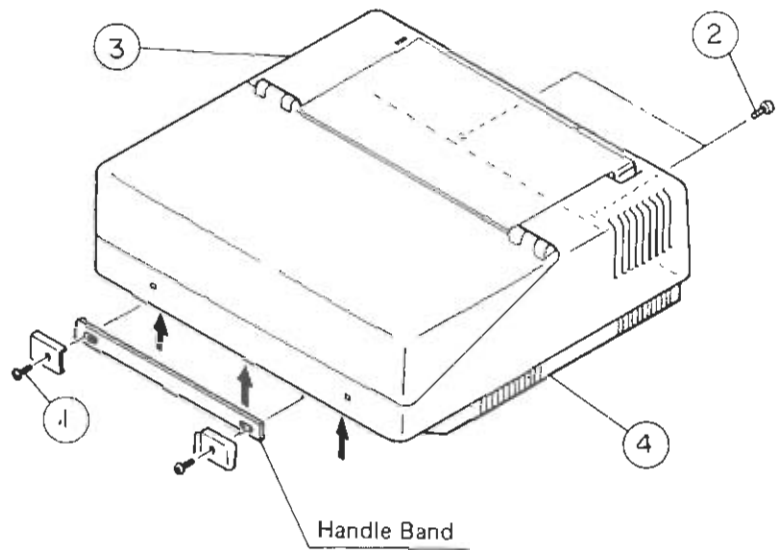
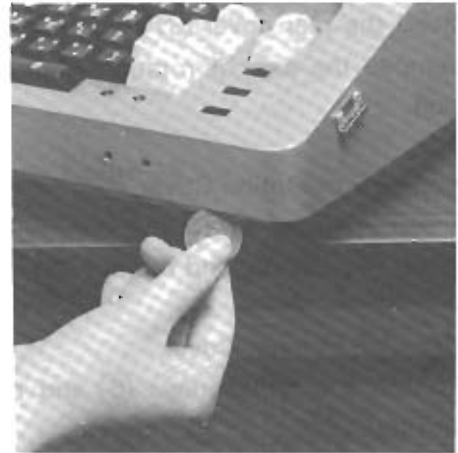


Figure 32.

● Removal of the Upper Cover Unit

1. Removal of Front Cover. Unfasten both right and left clips and open the front cover (2) slightly. Pull up and remove the front cover from the Upper Cover Unit (1).
2. Removal of Rear Cover. Open the rear cover at a 45° angle to the Upper Cover. Bend the rear cover (3) as shown in Figure 33 and remove the axis of rotation from the Upper Cover unit.
3. Removal of Option Cover. Insert a finger in to the concavity of the option cover (4), pull up, and remove the option cover.
4. Removal of Inner Cover. Loosen the two screws (6) and remove the inner cover (5).

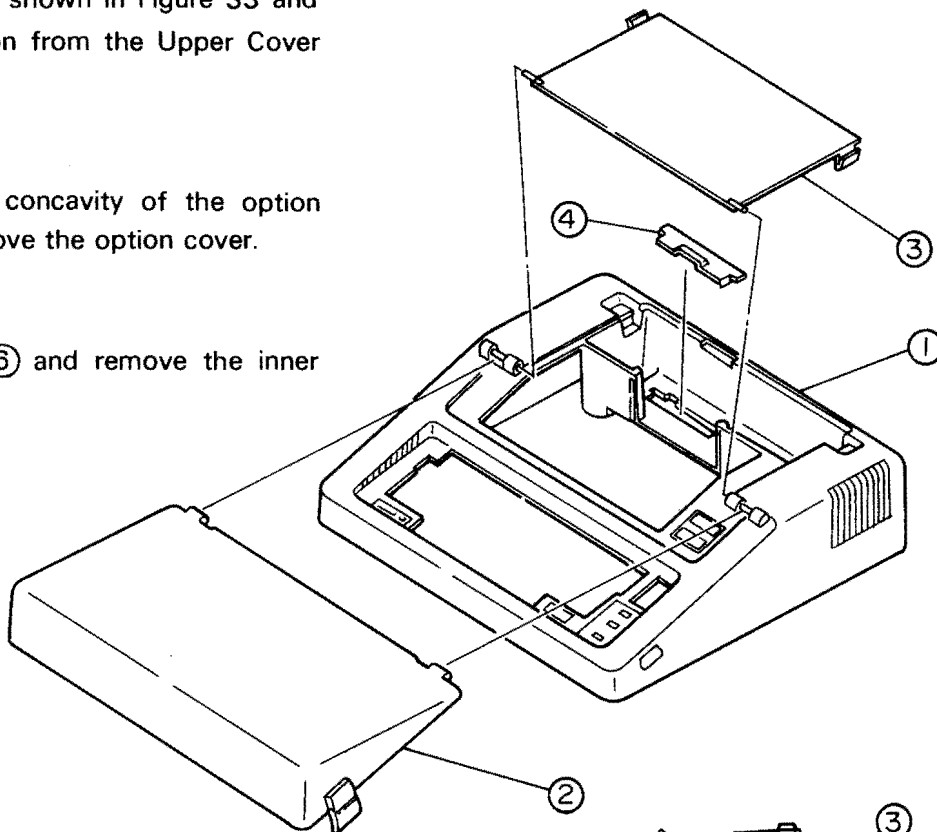


Figure 33.

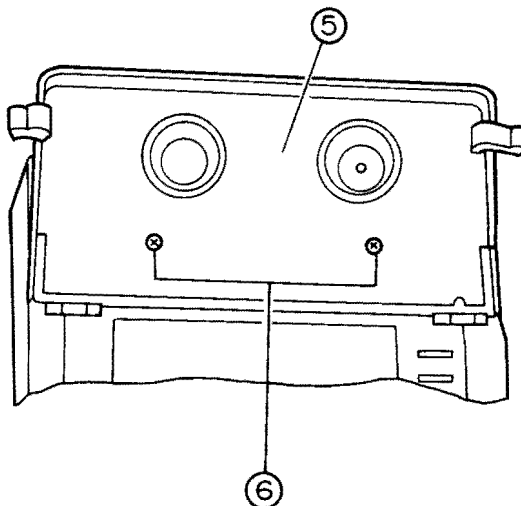


Figure 34.

- Disassembly of the Base Cover Unit

The Base Cover Unit is composed of seven units.

- ① Keyboard Unit
- ② Printer Unit
- ③ Modem Unit
- ④ Control Board Unit
- ⑤ Power Supply Unit
- ⑥ Optional Board
- ⑦ Base Cover

Note: There is need to loosen any screws to remove the above unit except the one for the Power Supply Unit.

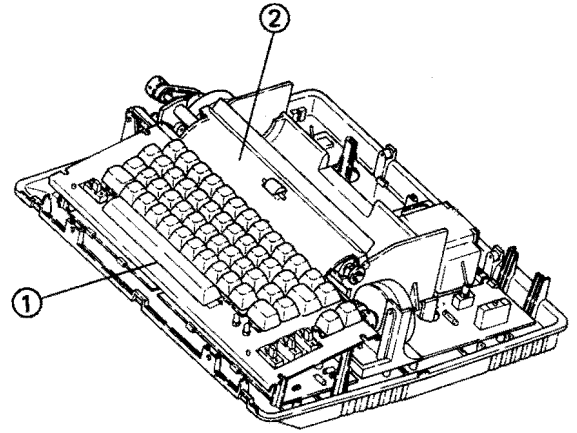


Figure 35.

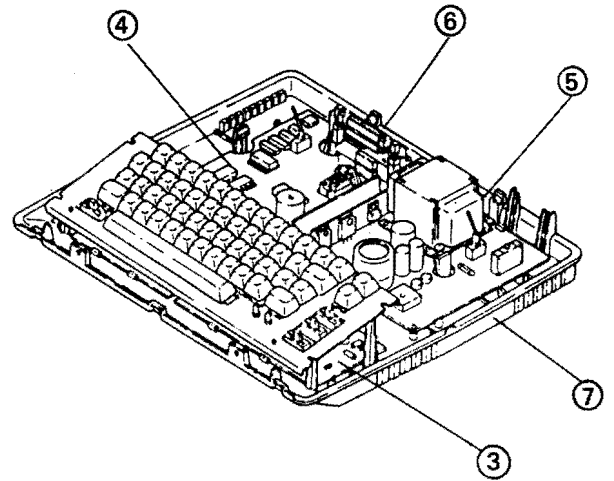


Figure 36.

- Removal of the Keyboard Unit

Remove the connector ① connected to the Control Board Unit.

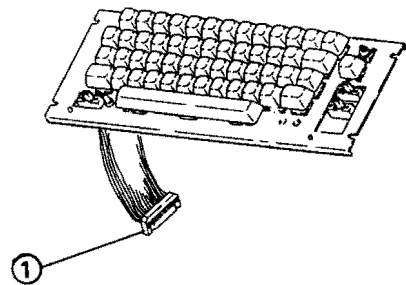
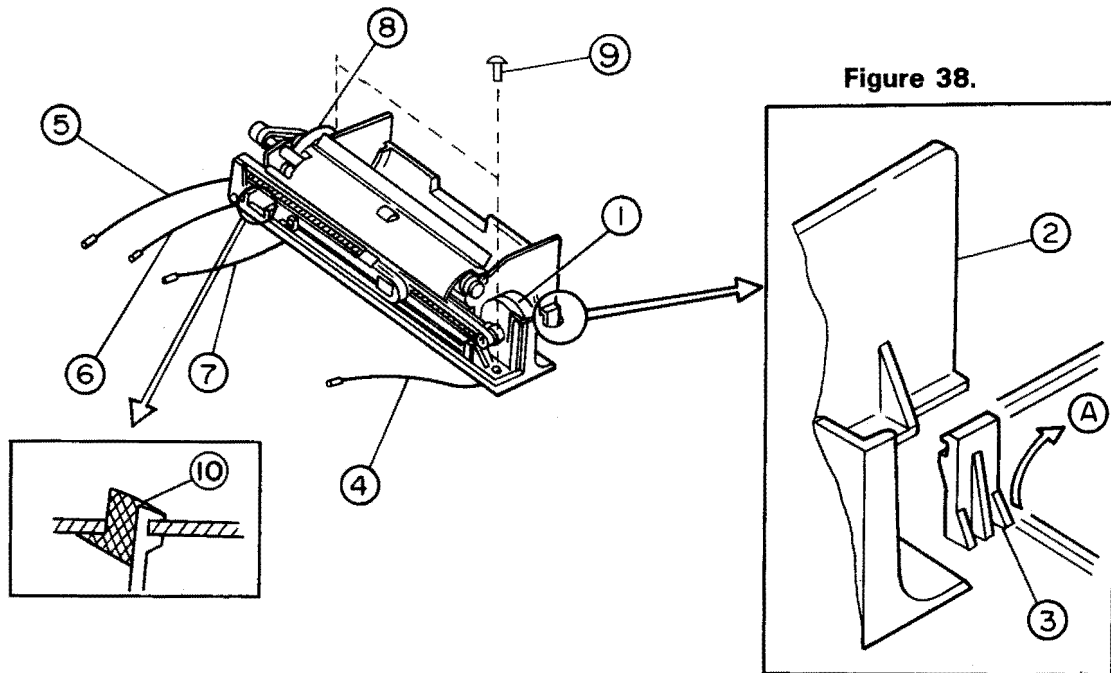


Figure 37.

● How to Dismount the Printer Unit

1. For dismounting the Printer Unit from the Base Cover Unit, first remove the printer rocks (10) on the side of the catch, and second disengage the catch (3) from the printer frame (2). The catch attaches the Printer Unit to the Printer frame (2) at two places on the side of the CR motor assembly (1). While holding the top of the catch, turn it in the direction shown by arrow (A) in Figure 38.



2. Remove the two screws (9), on the side of the CR motor assembly and the LF motor assembly, and then, remove the two screws, at the frame ground wire of the CR motor assembly and the LF motor assembly.
3. Disconnect the CR motor's lead wires (4) and the LF motor's lead wires (5) from the Control Unit at the connectors.
4. Disconnect the solenoid assembly's lead wires (6) and the photo-interrupter's lead wires (7) from the Control Unit at the connectors.
5. Extract the flexible printed circuit board of the thermal head assembly from the Control Unit.
6. Upon completion of these steps, disengage the Printer Unit from the catch on the side of the LF motor (8). Now the Printer Unit may be dismounted from the Base Cover Unit.

● How to Dismount the Modem Unit

1. Dismount the Keyboard Unit and the Printer Unit from the Base Cover Unit. The location of the Modem Unit will become clear.

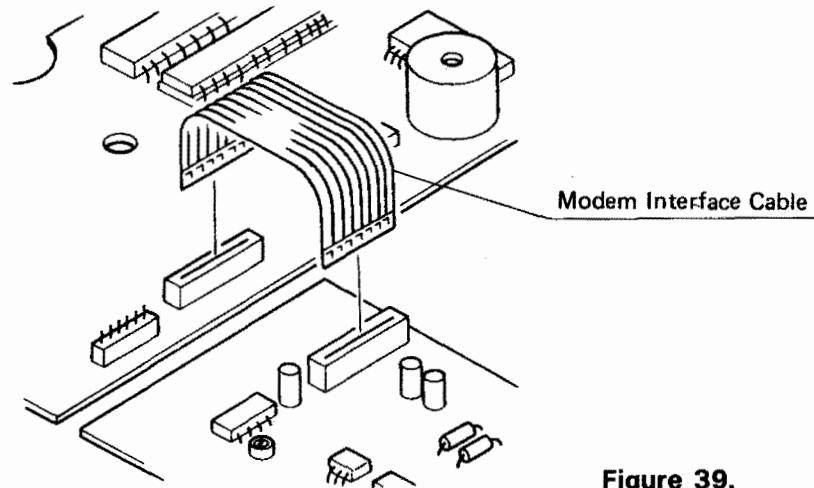


Figure 39.

2. Extract the modem interface cable from the Control Unit.
3. The Modem Unit is held in place by catches ① ~ ④ located on the Base Cover as shown in Figure 40.

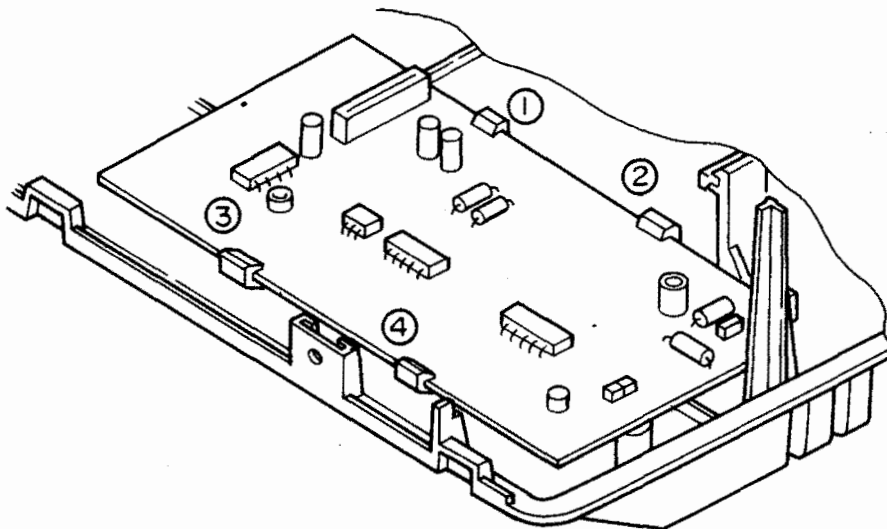


Figure 40.

4. In order to dismount the Modem Unit, deform the front portion of the Base Cover by forcing it in the direction of arrow (A) (shown in Figure 41) and disengage the Modem Unit from catches ③ and ④. Although the Modem Unit is held by catches ③ and ④, as shown in enlarged view (B) (Figure 41), the Modem Unit may be disengaged from them, as shown in enlarged view (C) (Figure 41), when the lower cover is deformed. The lower cover will return to its original shape when it is released.

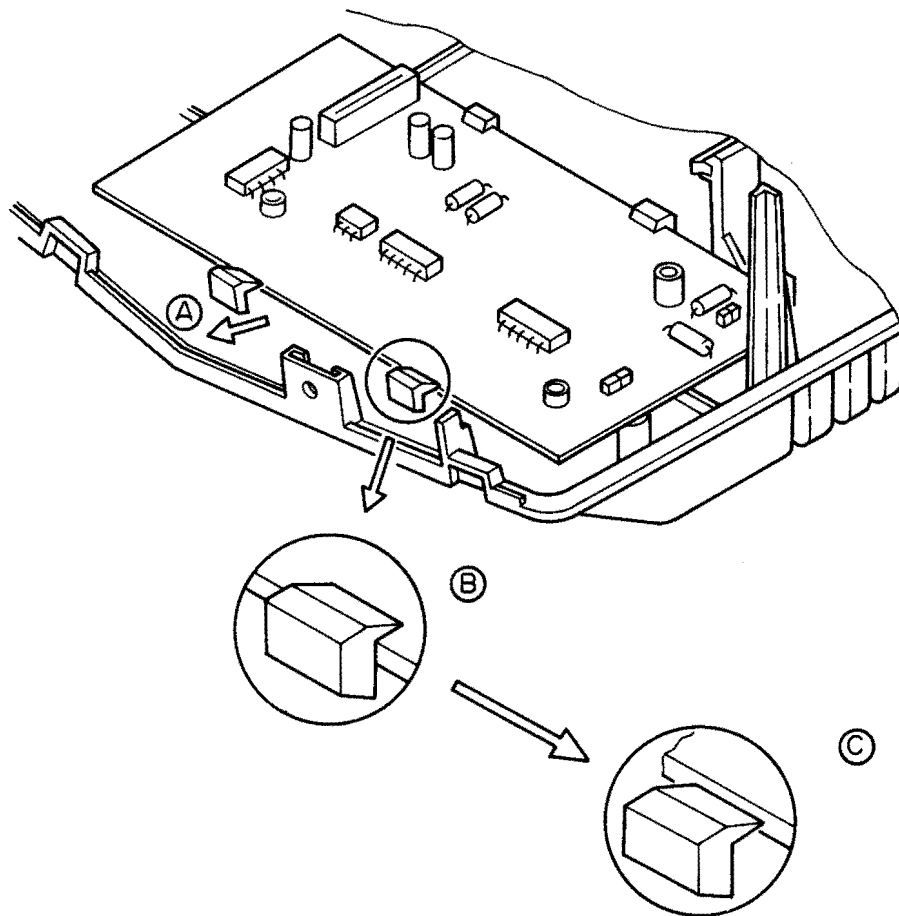


Figure 41.

5. Then disengage the Modem Unit from catches ① and ② on the other side. The Modem Unit becomes free.

● How to Dismount the Control Unit

1. In order to dismount the Control Unit, first dismount the Printer Unit and the Keyboard Unit from the Base Cover Unit.

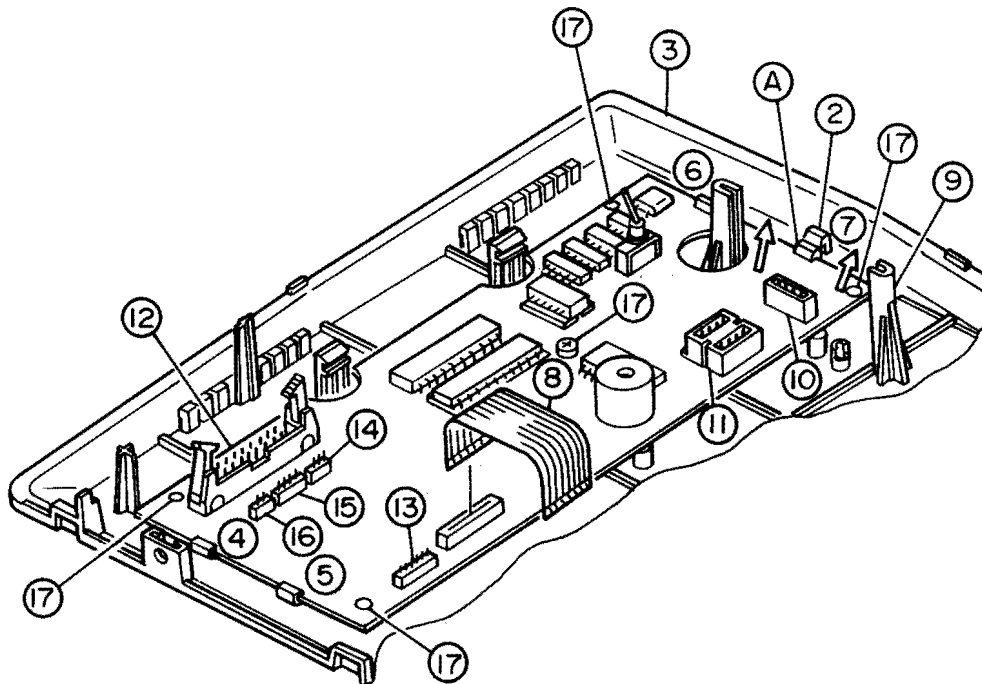


Figure 42.

2. The Control Unit is held in place by catches (4) ~ (7), located on the base cover (3), and by screws (17).
3. Extract the modem interface cable (8), which is used for connection with the modem unit, from the Control Unit, and remove the Control Unit set screws (17).
4. If an optional board is located, remove it from the board guides (9) and the connector (10).
5. Disconnect the power line from the Power Unit from the connector (11).
6. Be sure that all of the lead wires for connection with other units have been disconnected from the keyboard connector (12), the CR motor connector (13), the photo-interrupter connector (14), the LF motor connector (15), the solenoid connector (16), etc.
7. Push the Control Unit against catches (4) and (5).
8. Disengage the Control Unit from catches (6) and (7) by deforming the rear portion of the lower cover (force it in the direction shown by the arrow). When force is applied to a point of the lower cover adjacent to catch (7), catch (7) will be shifted from location (A) to location (B) and the Control Unit can be disengaged from catch (7). The Base Cover (3) will return to its original shape when it is released.
9. When the Control Unit is disengaged from catches (6) and (7), disengage it from catches (4) and (5). The Control Unit is then free.

● How to Dismount the Power Unit

1. In order to dismount the Power Unit, first dismount the printer unit from the base cover unit.
2. Disconnect the fan motor lead wires from terminal ①.
3. Disconnect connector ⑦ from the Control Unit.
4. If an optional board is located, remove it from its guides and connector.

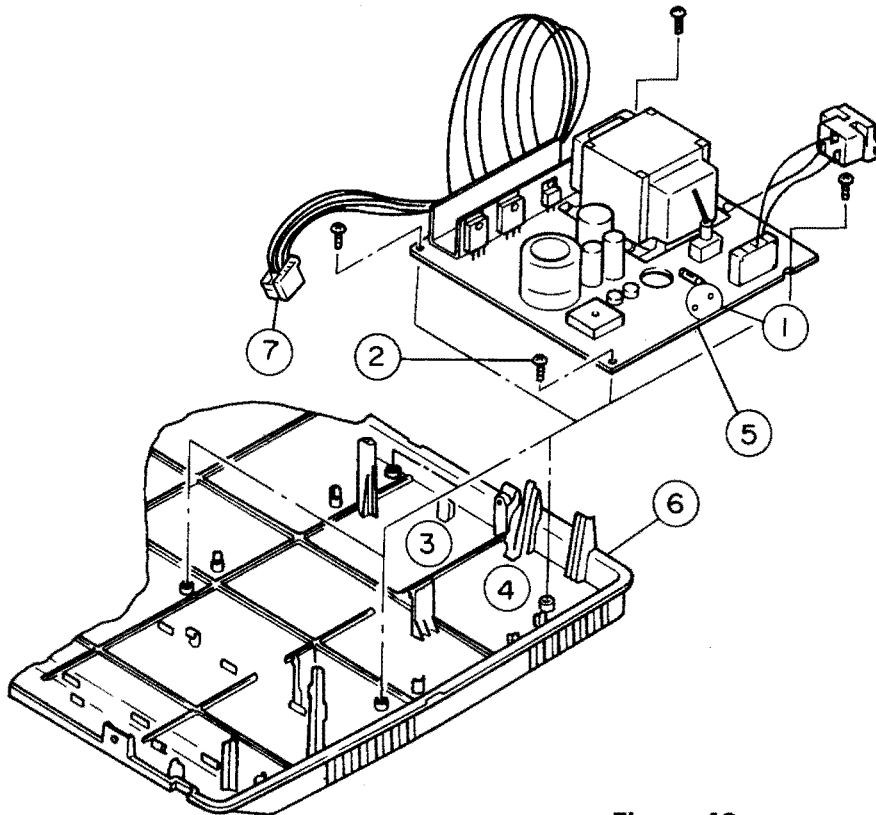


Figure 43.

5. Remove the four screws ② retaining the Power Unit ⑤.
6. Disengage the Power Unit ⑤ from catches ③ and ④. The Power Unit ⑤ is then free and can be removed when it is gently lifted upward.

● The Base Cover Unit

The Base Cover Unit is the base unit to which all units except the Upper Cover Unit are mounted. It is equipped with catches for attaching these units. Only the Cover Unit is left when all of these units are dismounted from it.

5/ Replacement and Adjustment Within PCB

Description of Assembly

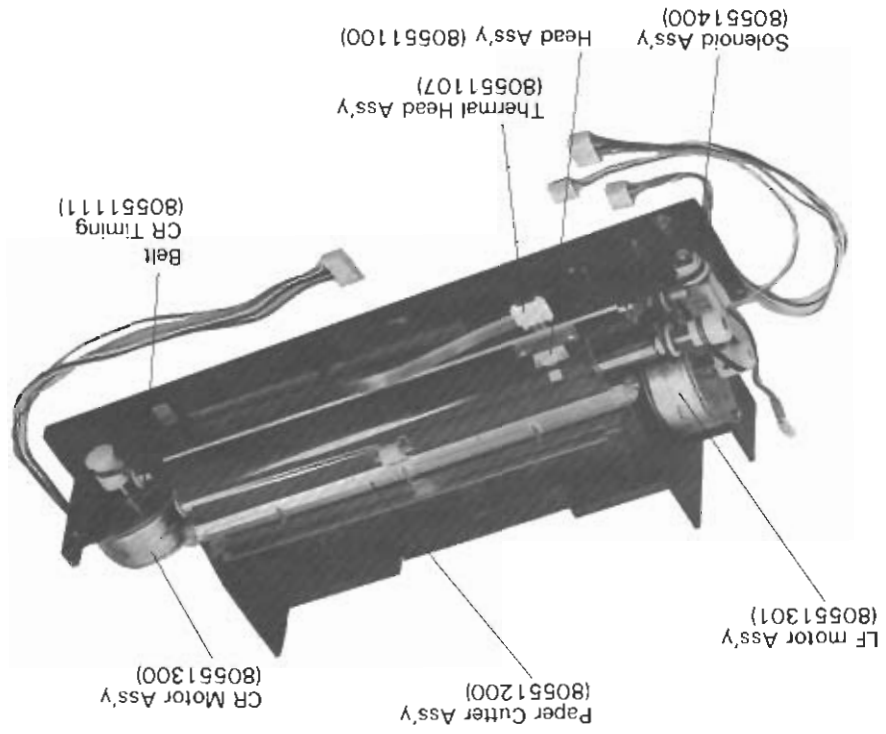


Figure 44.

Replacement:

● Replacement of the Thermal Head Assembly

1. Remove the Keyboard Unit from the front of the Printer Unit.

2. Pull out the Thermal Head Assembly (as shown in Figure 45) by pinching it between your fingers. Hold the Head Assembly with your other hand.

3. Remove the Flexible Cable from the Control Board.

4. Insert the new Thermal Head from the front side of the Head Assembly.

Check the gap between the Thermal Head Assembly and the Head Assembly. It should be no gap.

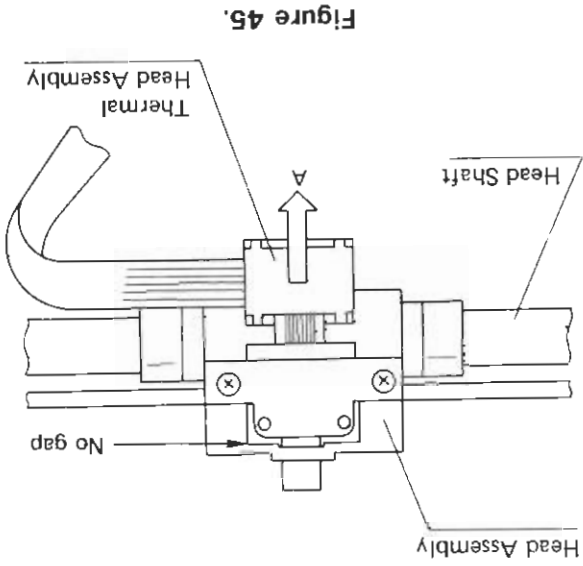


Figure 45.

● Replacement of the Paper Cutter

1. Remove the Paper Lock Spring from the Head Shaft Lock E-ring.
2. Remove E-rings from both sides of the Holder Shaft and take out the Holder Shaft.
3. Separate the Lower Guide and the Paper Cutter.
Remove the Paper Lock Spring from the Paper Cutter and install it on the new Paper Cutter.
4. Remove the Pinch Roller from the old Paper Cutter and install it on the new Paper Cutter.

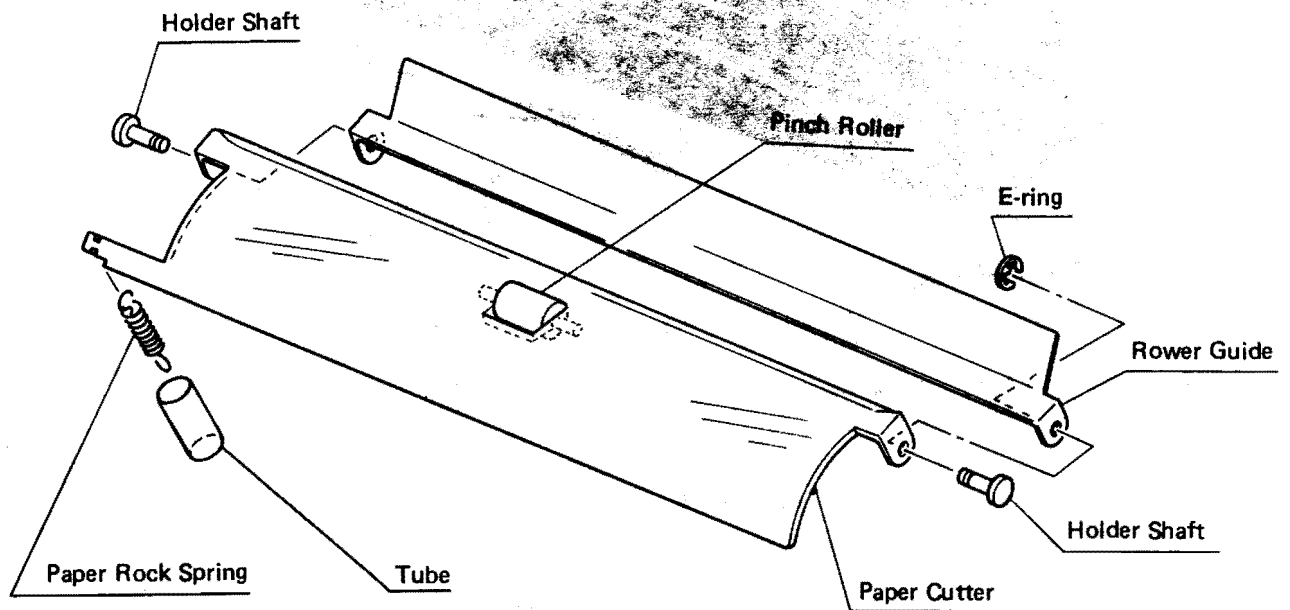


Figure 46.

5. Combine the upper Paper Cutter with the Lower Guide and install it on the Frame with the Holder Shaft.
6. Hook the E-ring to the Holder Shaft.

● Replacement of the CR Motor

1. The Timing Belt can be detached by removing two screws (② and ③) and taking out the Motor Timing Pulley.
2. Take out screw ① (Motor Set Screw) and remove the Motor from the Frame Unit. Disconnect the connector to control P.C.B.
3. Install the new CR Motor on the Frame Unit (do not tighten the Motor Set Screws yet).
4. Hook the Timing Belt to the Motor Timing Pulley and install the Timing Pulley on the Motor Shaft. Set the position of Motor Timing Pulley so that it is 10 mm from the Motor Supporter or 13 mm from the Motor face.
5. Move the head till the left edge of platen. (see Figure 47)
6. Push the middle of timing belt by the tension gaze.
7. Set the position of CR motor till the tension gaze indicate 30 ~ 60 g.
8. Tighten the Motor Set Screws.

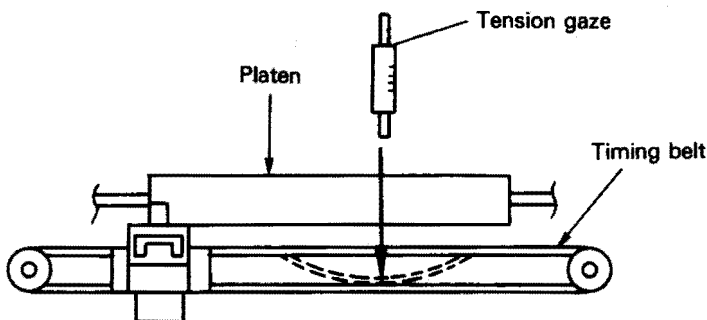


Figure 47.

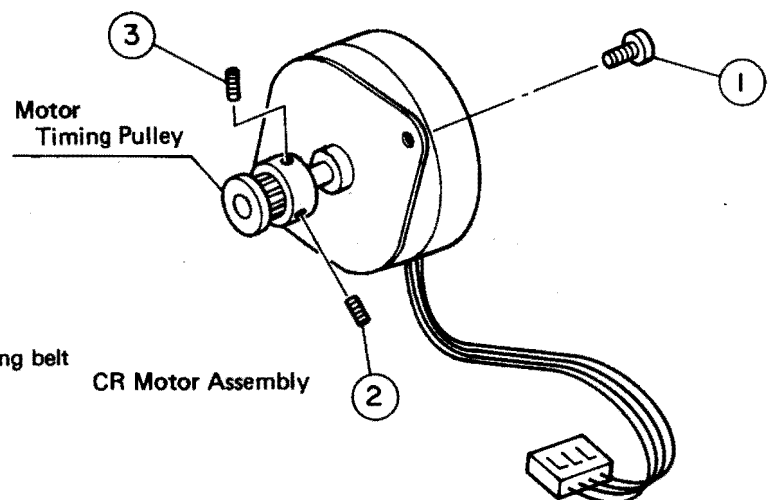


Figure 48.

● Replacement of the LF Motor

1. Remove the two mount screws (① and ②) on the Motor Timing Pulley. Separate the Motor Timing Pulley and Belt.
2. Take out the LF Motor Set Screw (③), and disconnect the connector from the control P.C.B.

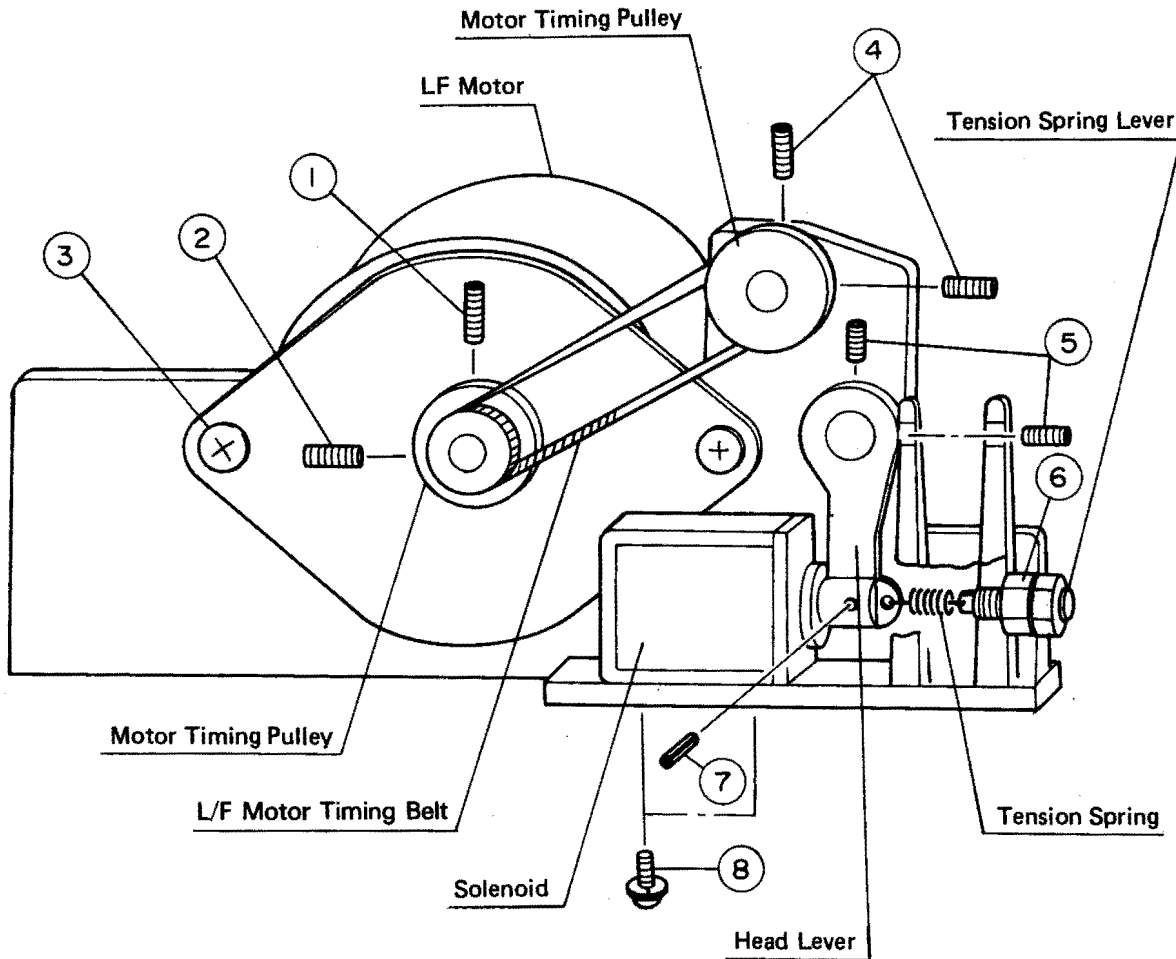


Figure 49.

3. Attach the New LF Motor to the Motor Timing Pulley. The distance between motor shaft and platen shaft is 37.6 ± 0.2 mm (see Figure 5-4).
The Motor timing Pulley should be installed 3 mm from the Motor Supporter, or 6 mm from the Motor face.

4. Install the Belt to both Motor Timing Pulleys. (Install the Platen side first.) Attach the LF Motor with screw ③.

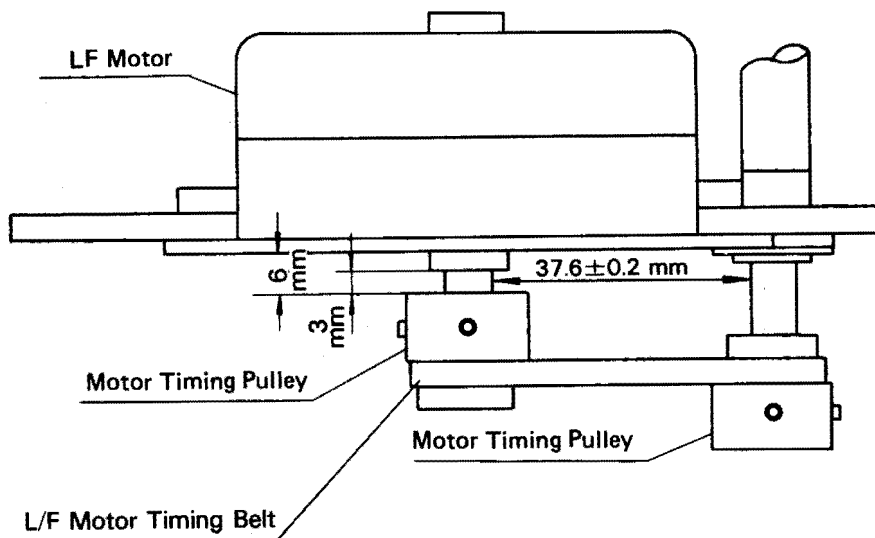


Figure 50.

● Replacement of the Belt (LF Motor Timing)

1. Take out the two mount screws ① and ② from the Motor Timing Pulley. Remove the Motor Timing Pulley and Belt. (see Figure 50)
2. Install the new Belt on the Motor Timing Pulley.
Mount the Motor Timing Pulley on the Motor Shaft and tighten screws ① and ②.
Motor Timing Pulley should be installed 6 mm from the Motor face. (see Figures 49 & 50)

● Replacement of the Solenoid (Refer to Figure 49)

1. Remove the Tension Spring from the Solenoid plunger.
2. Take out the two screws ⑧.
Remove the Solenoid from the Frame Unit.
Disconnect the connector from the control P.C.B.
3. Take out the two screws ⑤ and remove the Head Lever from the Head Shaft.
4. Take out the Spring Pin ⑦.
Remove the Plunger and the Head Lever.
5. Install the new Solenoid Plunger and the Head Lever with the Spring Pin ⑦.
6. Attach the Head Lever to the Head Shaft with the two screws ⑤.
7. Insert the plunger and the Head Lever in to the new Solenoid and tighten the set screws ⑧.

8. Head Lever adjustment

Establish the working position of the Solenoid; then adjust the gap between the head of the Hood Assembly and the platen.

Attach the two mounting screws ⑤.

The plunger should move smoothly.

9. Hook the Tension Spring to the Head Lever.

Adjust the Thermal Head pressure with the adjustment Nut ⑥. (Refer to Figure 49. Thermal Head Assembly Replacement.)

10. Adjust the Thermal Head Assembly pressure as follows:

Using a Spring Gauge, push on the bottom of the Thermal Head Assembly at point B.

Adjust the pressure level with Nut ⑥. A pressure level of 150 ~ 185g should be required to move the head. (use tension gage)

NOTE: Item 10 adjustment is related to printing Density. Therefore, this adjustment should be done with regard to Printing Density Adjustment on the P.C.B. If the Pressure is high, printing should be dark.

● Replacement of the CR Timing Belt

1. In order to remove the CR timing belt, first reverse the Printer Unit. Remove position plate 1 from the thermal head assembly.

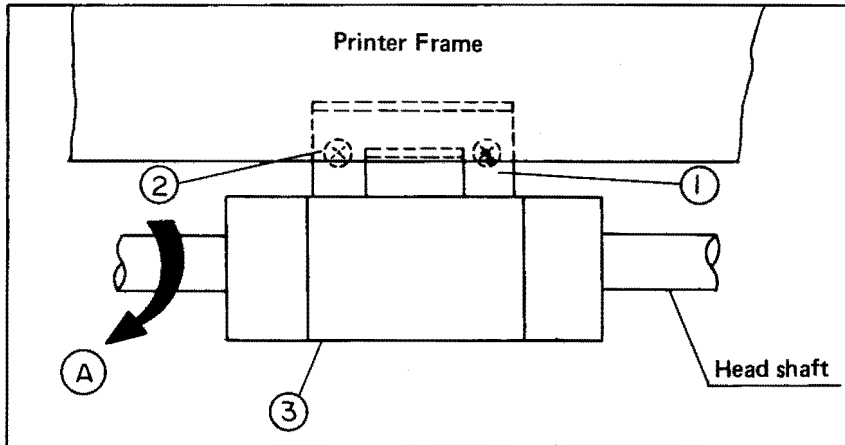


Figure 51.

2. As heads of position plate set screws ② are seen only partly in this state, push the thermal head assembly ③ in the direction of arrow A so that the screw heads are exposed. Then remove the position plate set screws and the position plate.
3. Return the Printer Unit to its original position and remove the CR Motor Timing Pulley. (Follow the instructions given earlier in this section.)
4. The CR timing belt can be separated from the Printer Unit. In order to install a new belt, fit the belt on the motor timing pulley on the left-hand side of the Printer Unit; then fit it on the motor timing pulley on the right-hand side; and, finally, install the motor timing pulley on the motor shaft. (Refer to instructions given earlier in this section under "Replacement of the CR Motor" regarding the installation procedures.)
5. Again, reverse the Printer Unit, attach the CR timing belt to the Thermal Head Assembly, and set position plate 1 with the belt suitably held.
Replacement of the CR timing belt is then completed.

Adjustment

- Print Contrast

Note:

- When making adjustments, the specified Roll Paper should be installed.
Improper paper may cause damage to the Thermal Head.
- Open the cover to make contrast adjustments to the Variable Resistor (VR-1). (see Figure 53.)
Turn clockwise to increase contrast. To decrease contrast, turn counterclockwise.

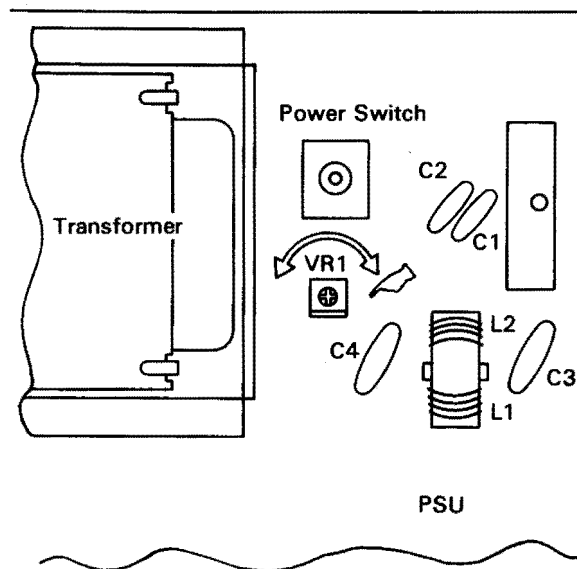


Figure 52.

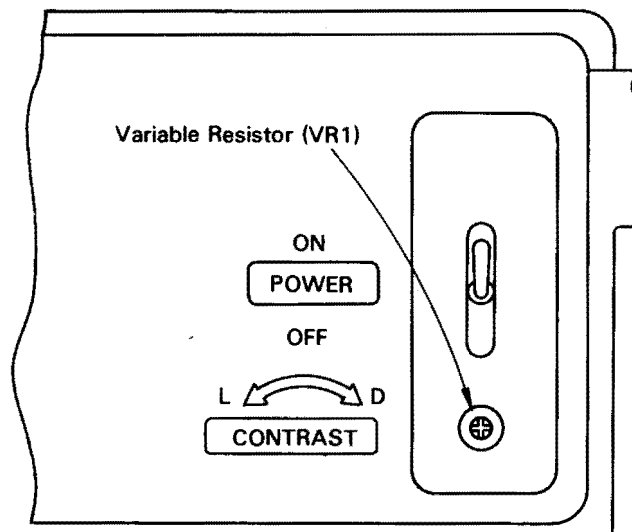


Figure 53.

• FSK Frequency Adjustment

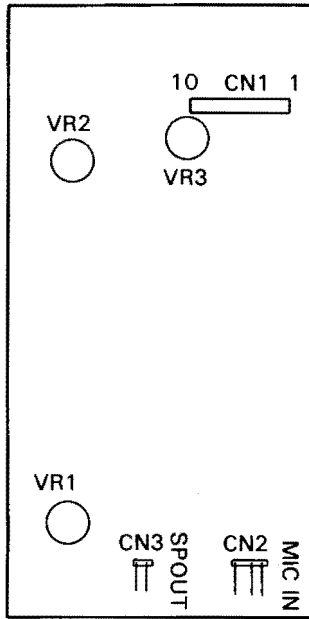


Figure 54.

Note:

- Do not touch Variable Resistors (VR1, VR2, and VR3) except for maintenance purposes. (Precise adjustment was made at the factory before shipment.)
- * A Frequency Counter capable of measuring frequencies from 1 to 3 k Hz is required for adjustments.

Receiving Frequency Adjustment (VR1)
(See Figure 55.)

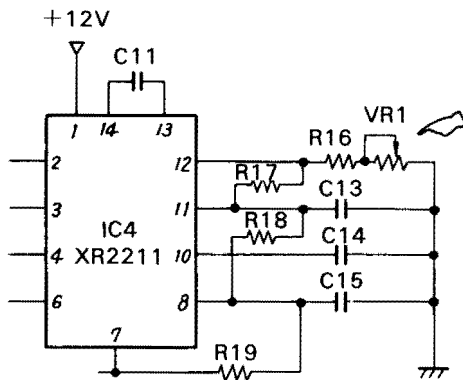


Figure 55.

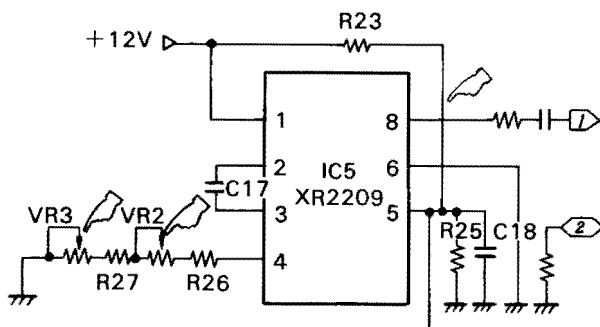
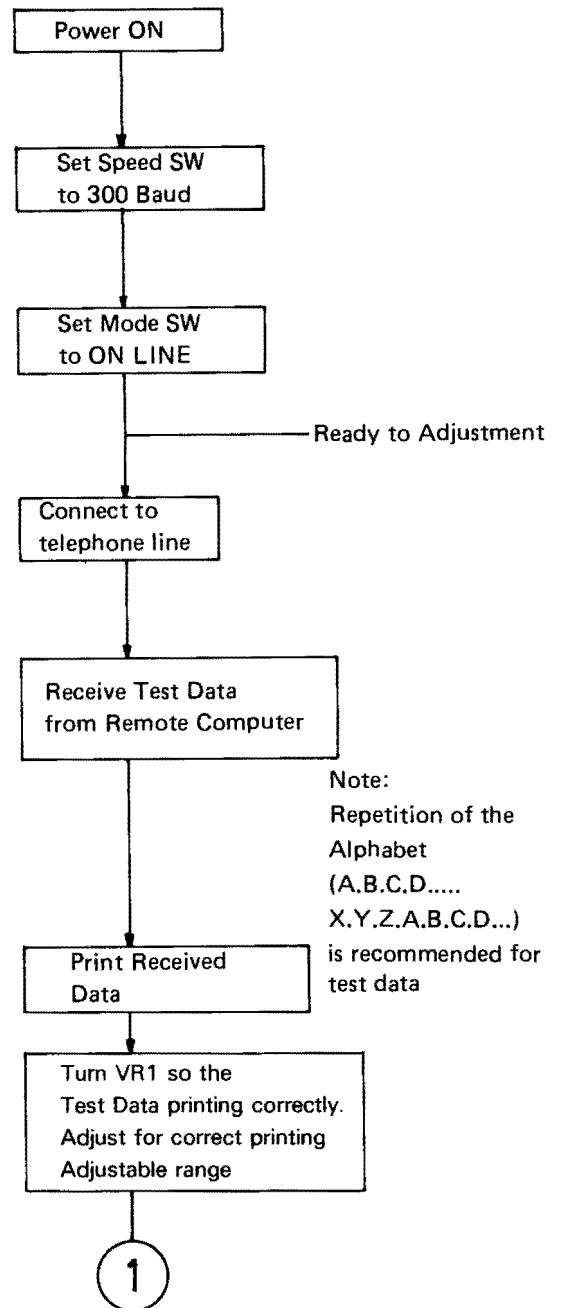


Figure 56.



Note:
Repetition of the Alphabet
(A.B.C.D.....
X.Y.Z.A.B.C.D...) is recommended for test data

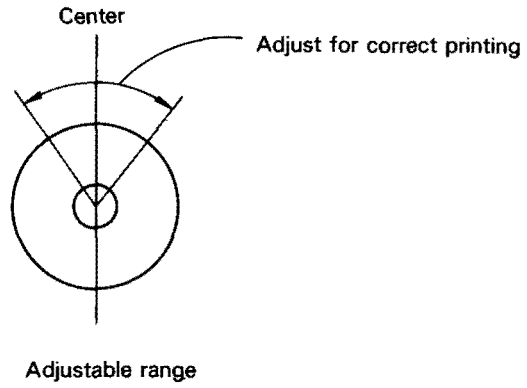


Figure 57.

Remarks:

The reference frequency is determined by time constants of VR1, R16, and C11. For making adjustments, input an analog data signal to MIC IN and turn VR2.

Transmitting Frequency Adjustment

Transmitting Frequency Adjustment

There are two ways of acoustic coupler adjustment. First, turn adjustable resistor on the side of acoustic muff (Figure 58) by inserting a small screwdriver; rotate clockwise to improve log-on or counterclockwise to reduce data errors. ($-15\text{dBm} \sim -5\text{dBm}$).

If you don't obtain a exactly frequency, try to do second way hereinafter.

Frequency Adjustment (VR2, VR3) (See Figure 54)

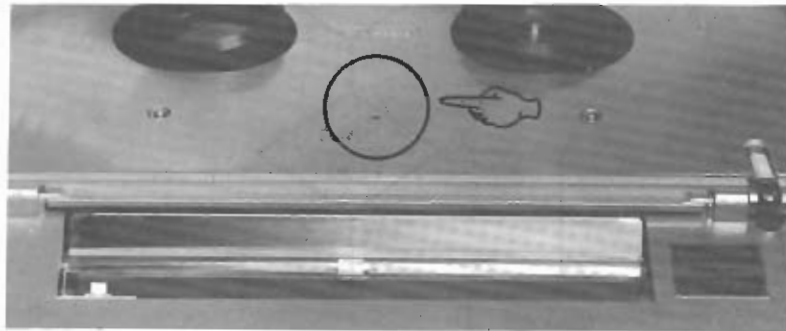
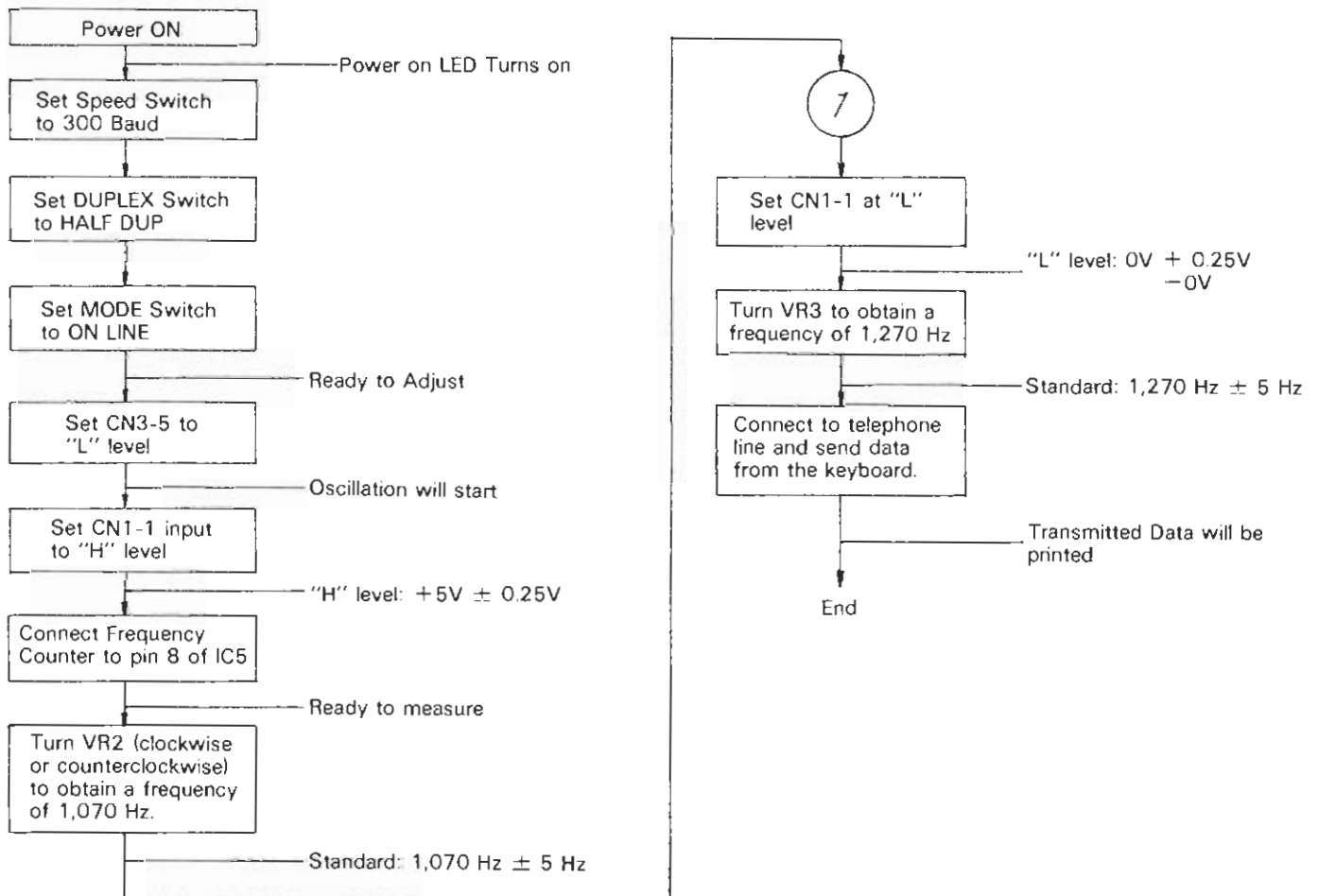


Figure 58.



Remarks:

Audible sound of 1,070 Hz is determined by time constants of VR2, R26, and C17. When adjustment is required, set TxD terminal to "H" level and turn VR2.

Identically, audible sound of 1,270 Hz is determined by time constants of VR2, R26, VR3, R27, and C17. For adjustment, set TxD terminal to "L" level and turn VR3.

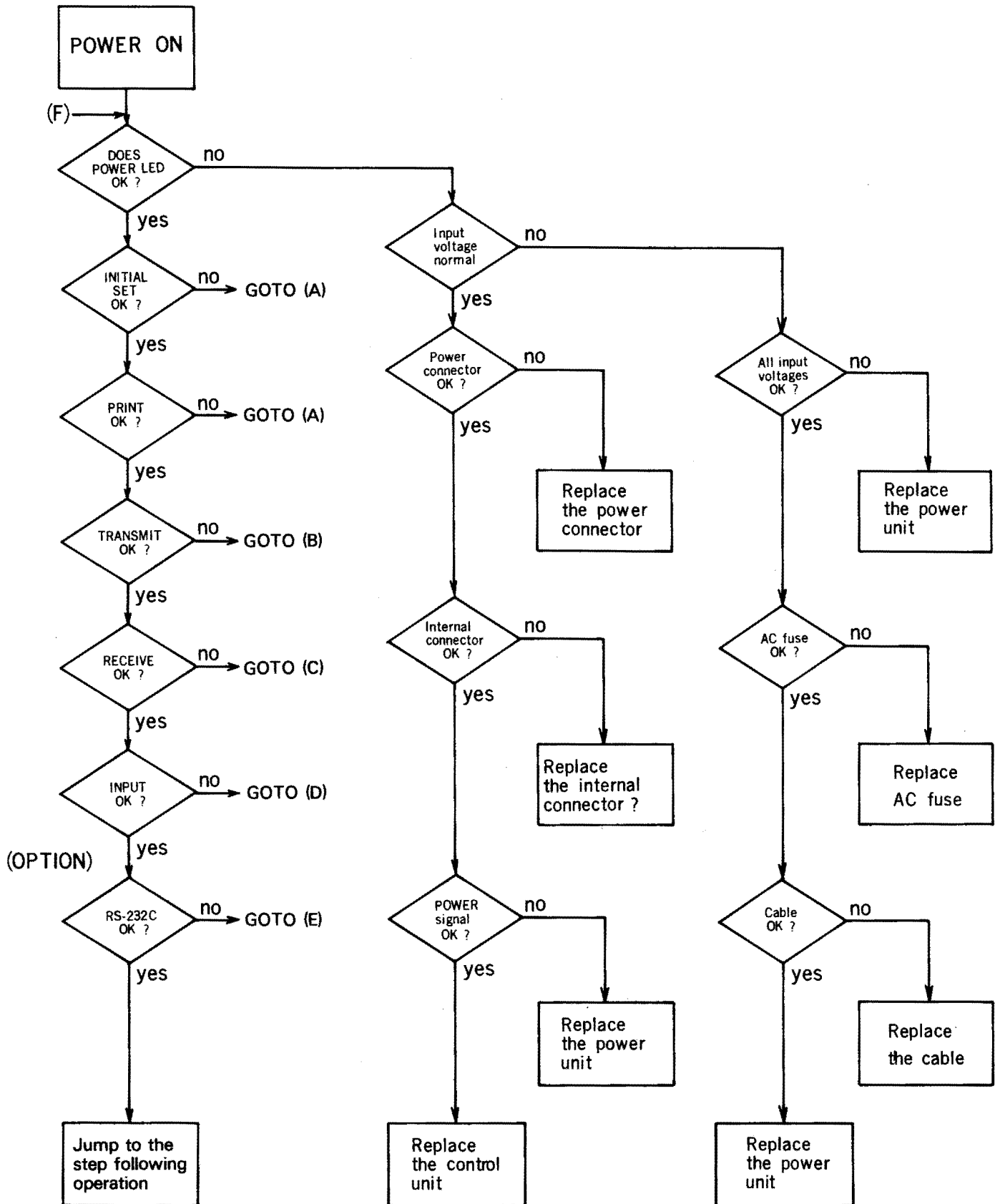
Note:

In order to make an adjustment in audible sound of 1,070 Hz and 1,270 Hz, make a setting of 1,070 Hz by turning VR2.

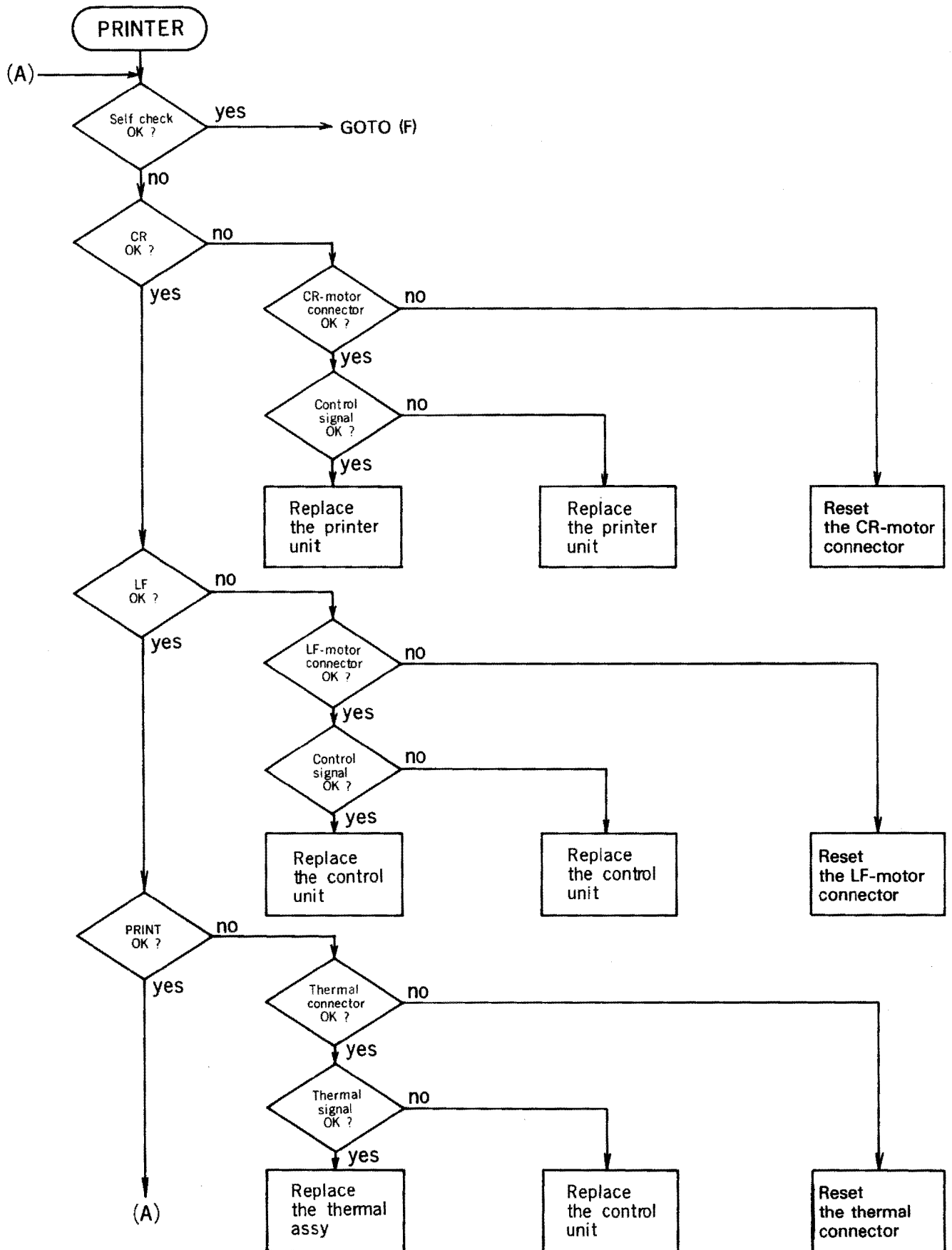
If an adjustment of 1,270 Hz by VR3 is made first and an adjustment of 1,070 Hz by VR2 is made next, the setting of 1,270 Hz will be deviated.

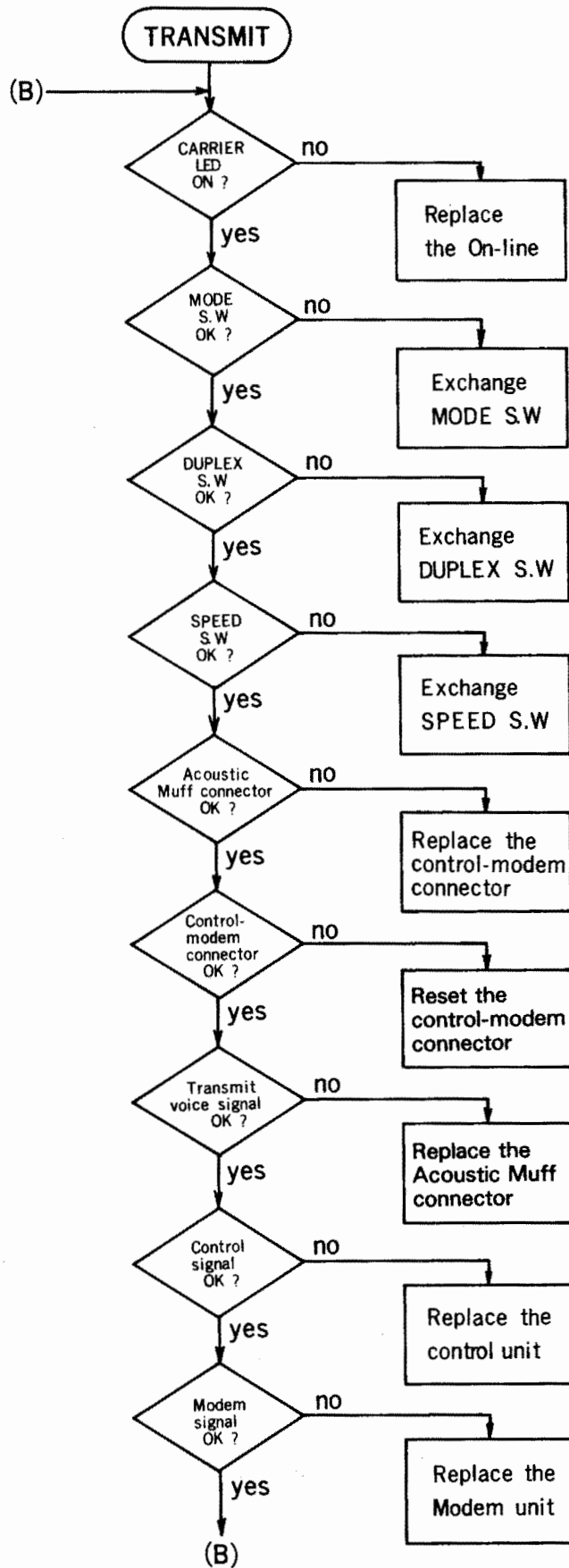
6/ Troubleshooting

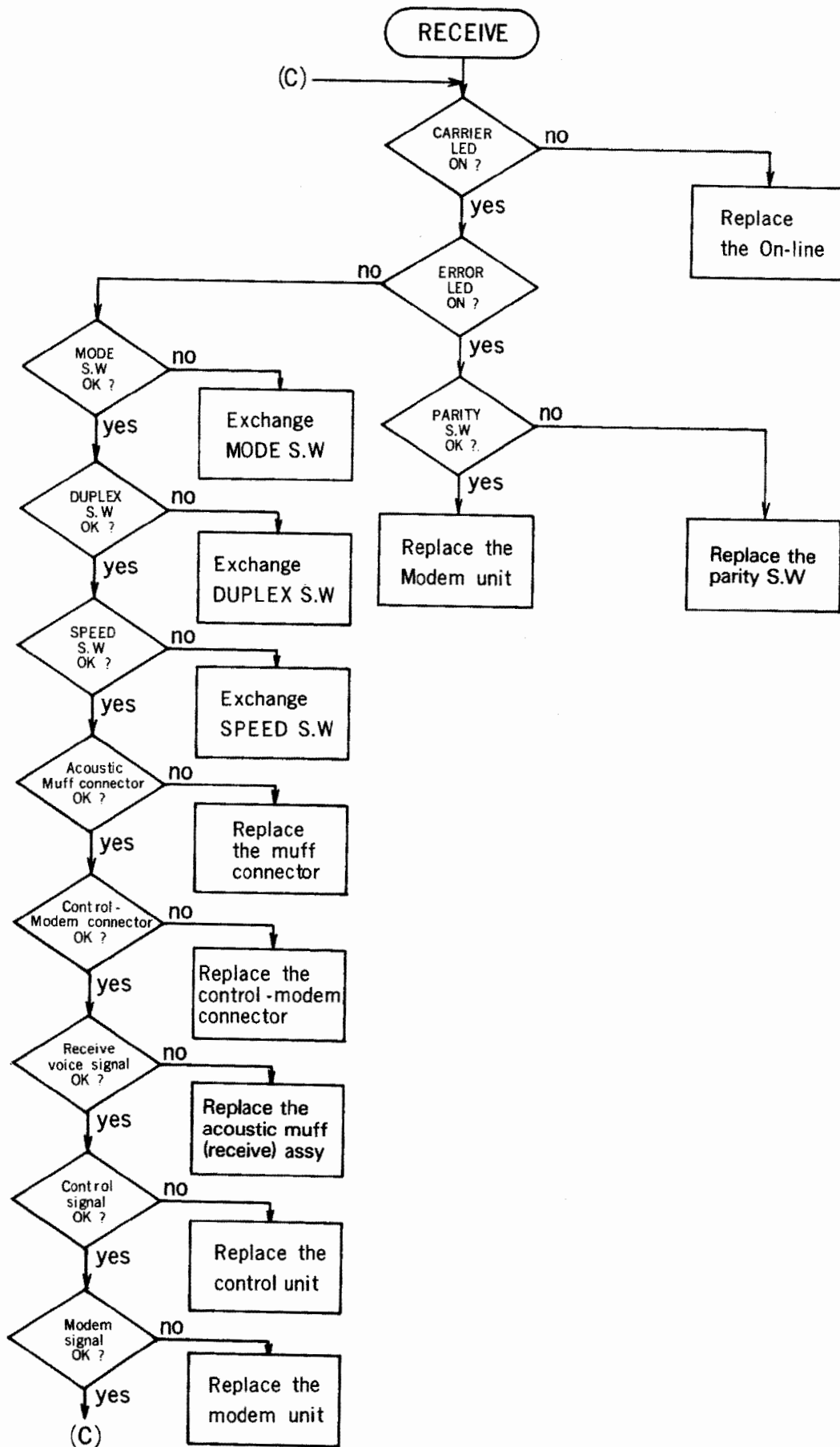
Problems at Power-ON (Restore) Time

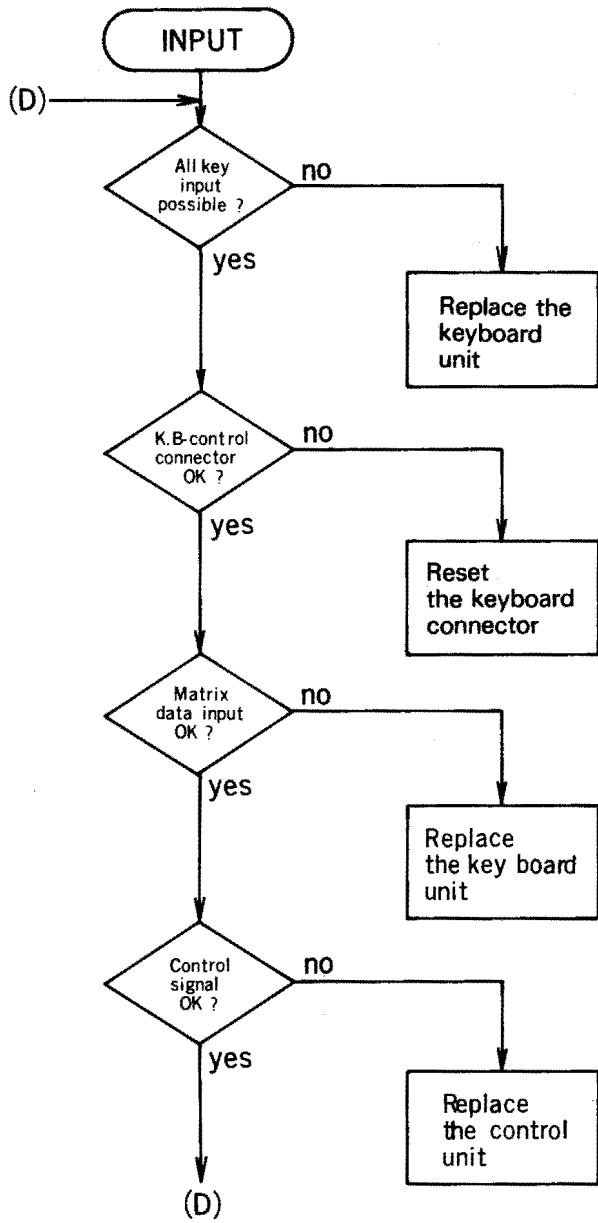


Problems in Operation

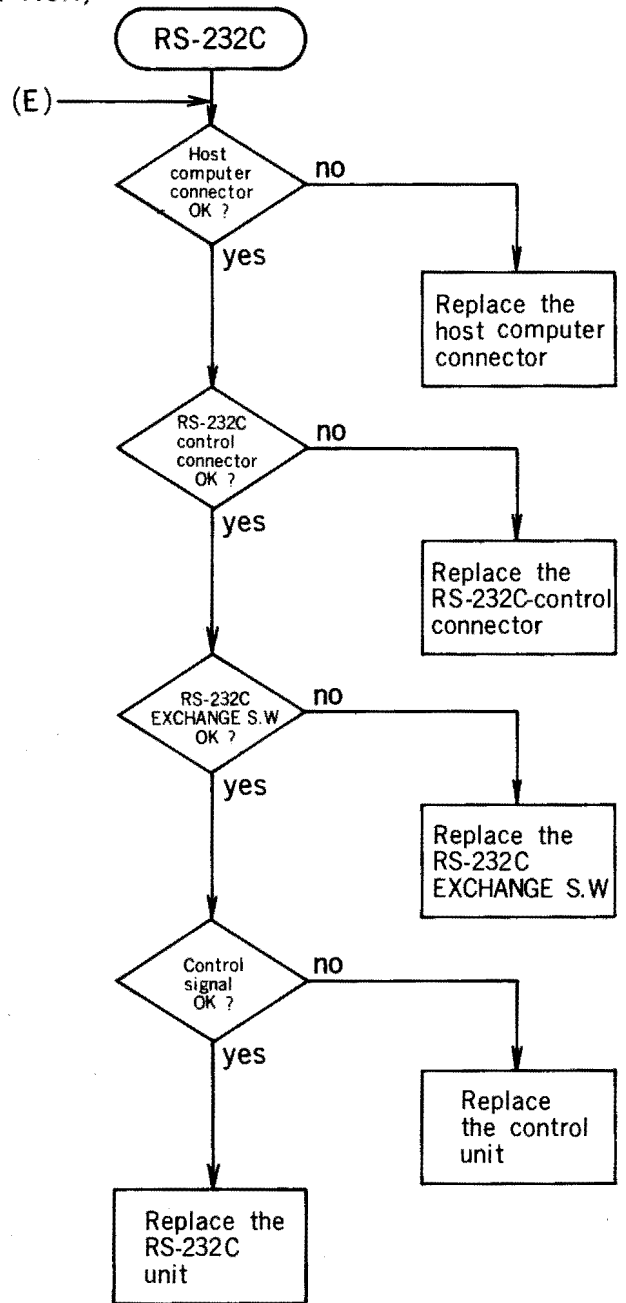




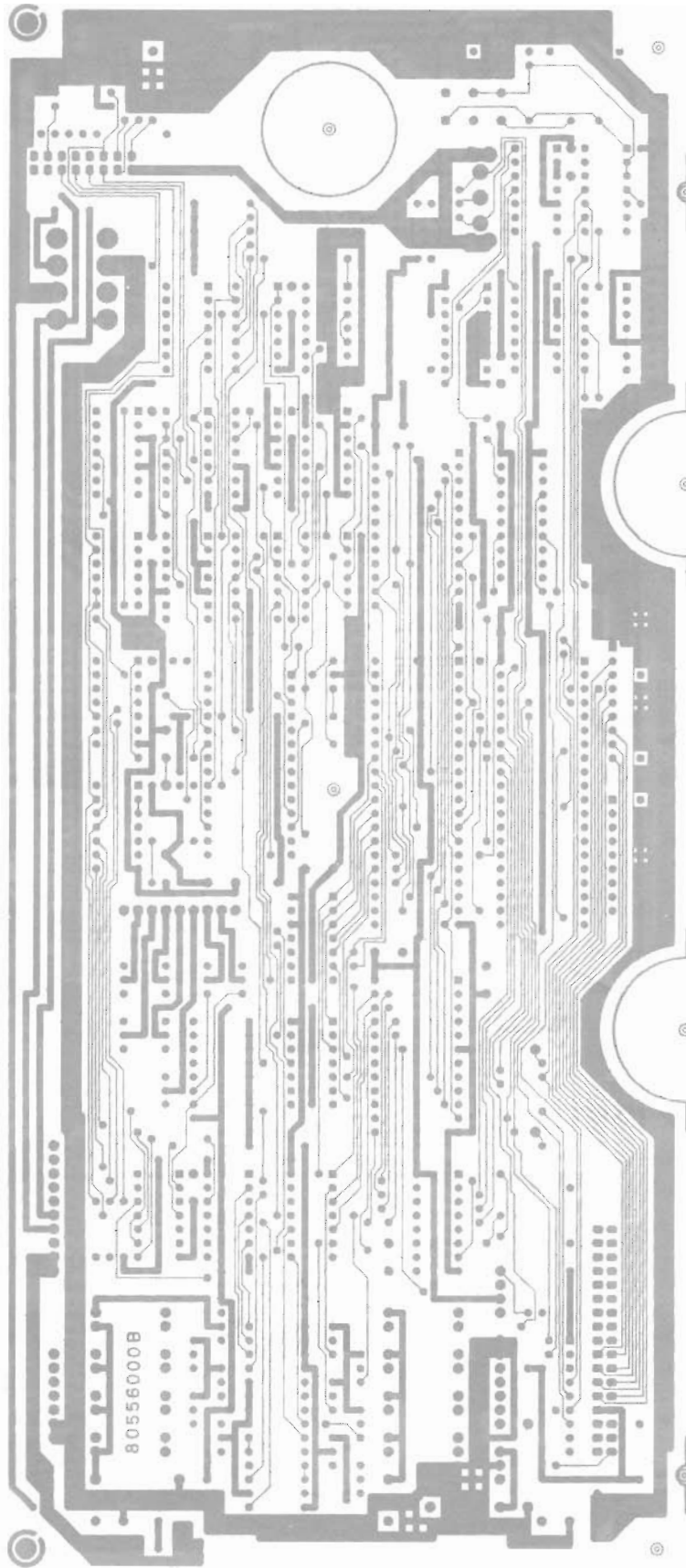




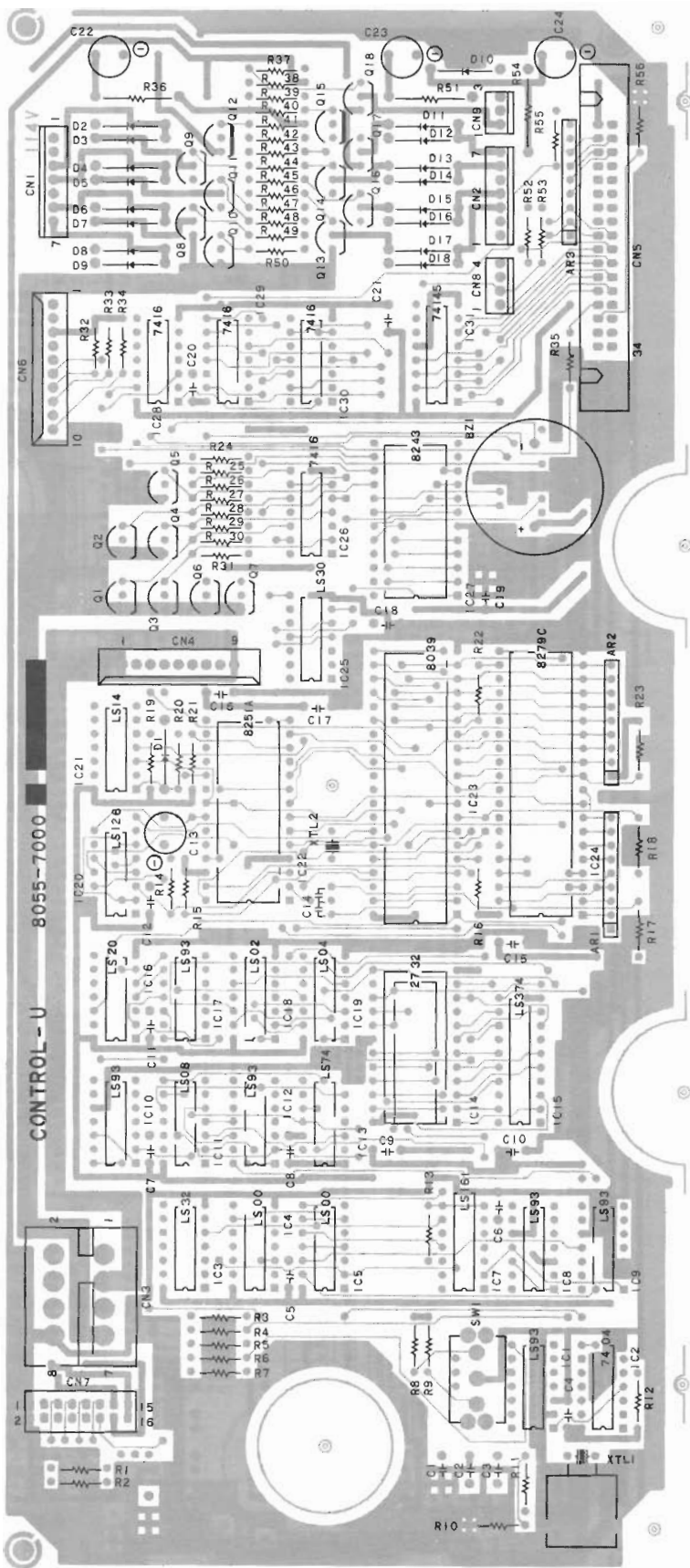
(OPTION)



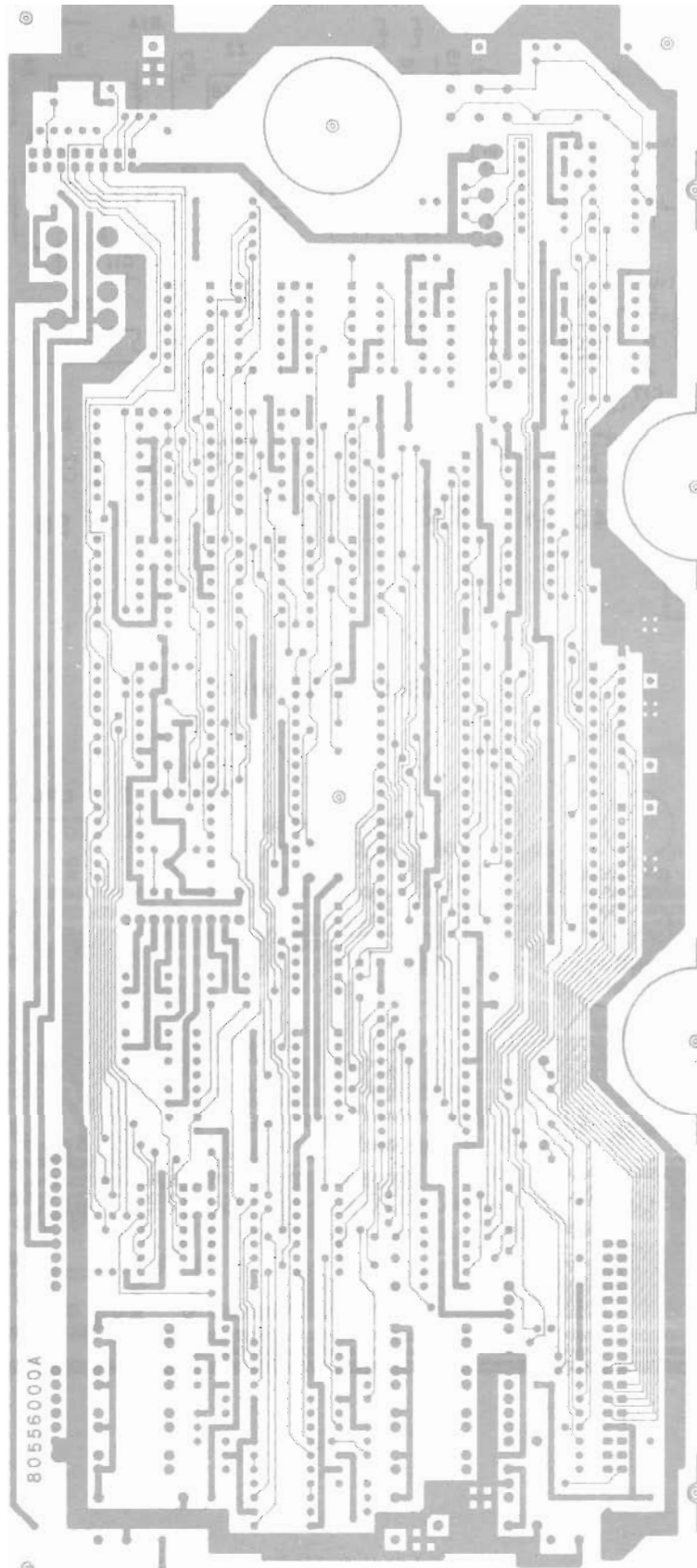
Control Board Assembly (1) First 2,000 units only
(Bottom View)



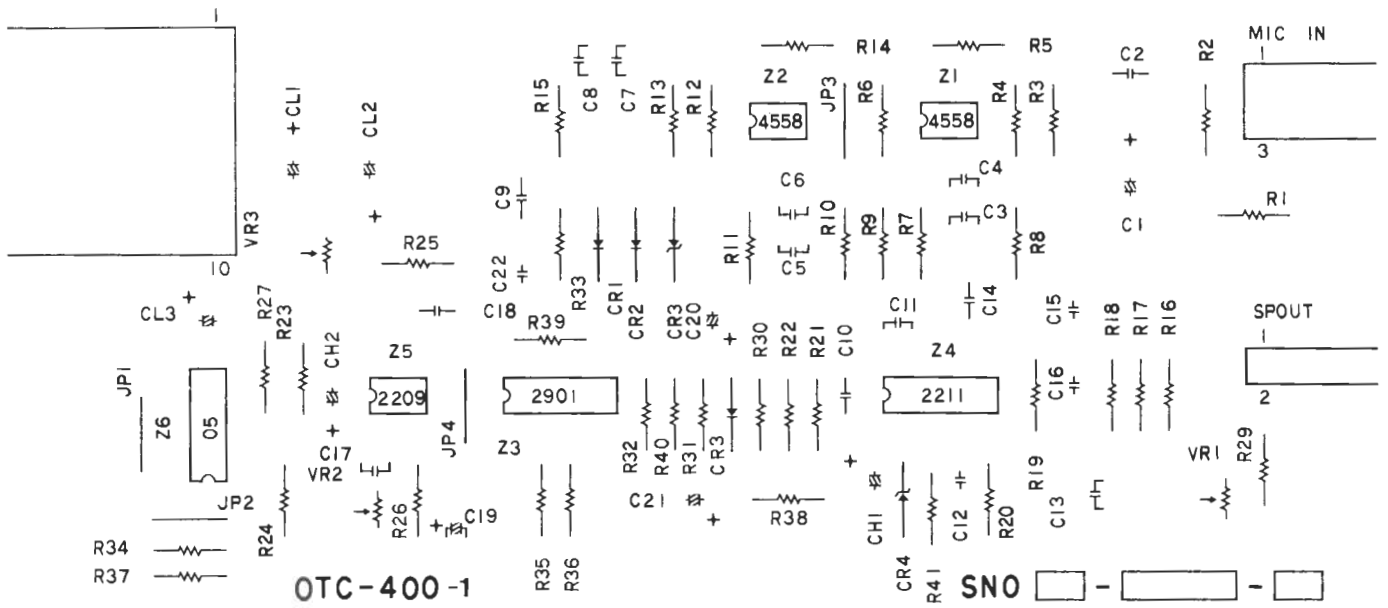
Control Board Assembly (2) 2,001st unit and on.
(Top View)



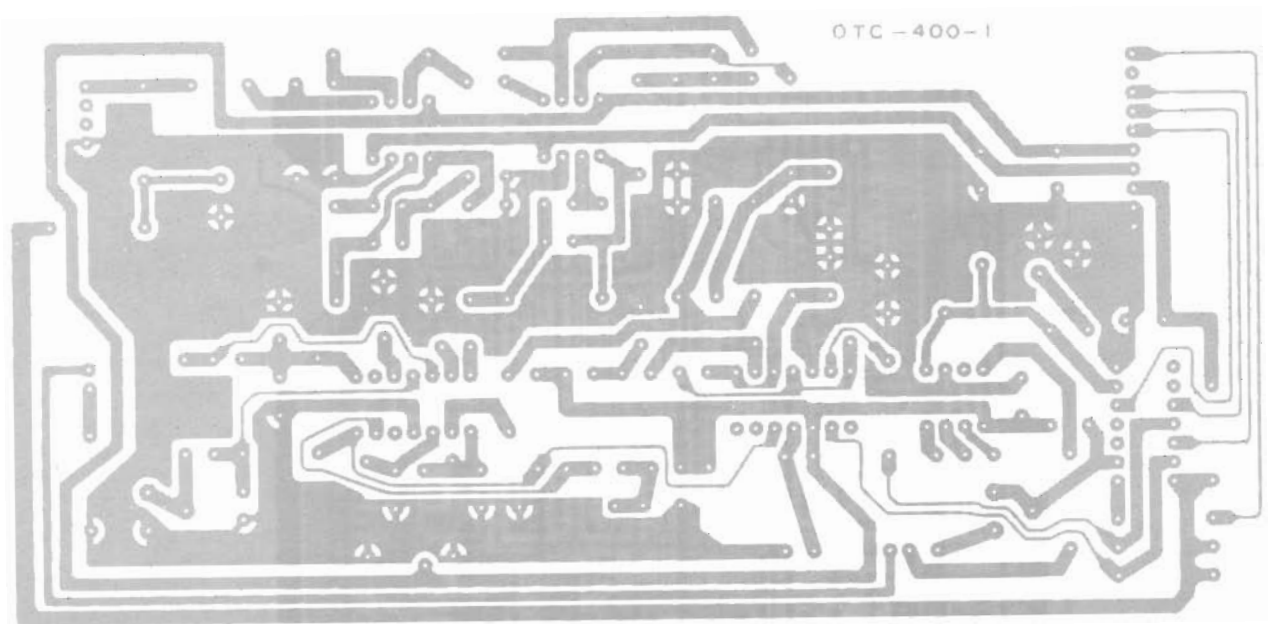
Control Board Assembly (2) 2,001st unit and on.
(Bottom View)



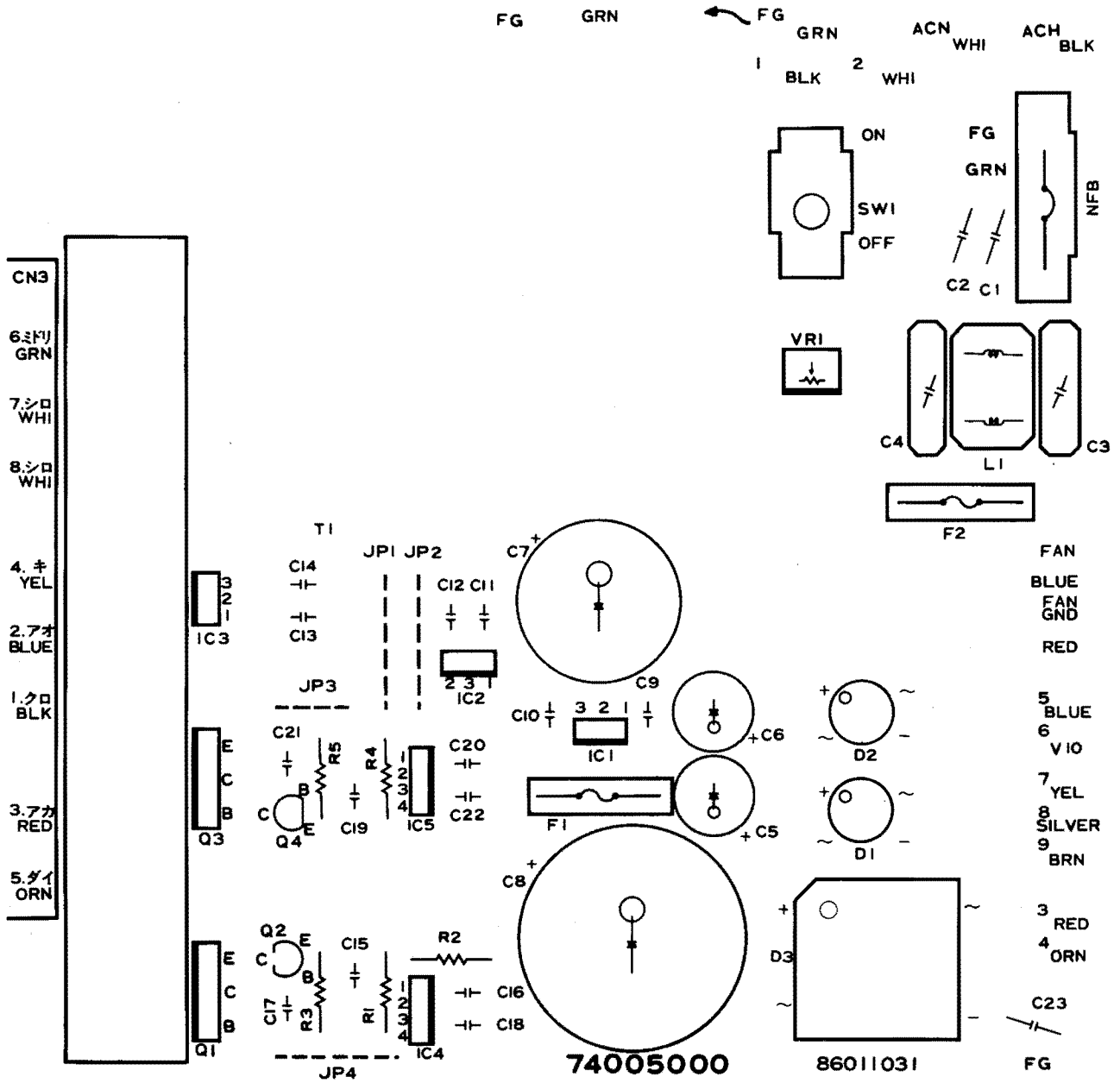
Modem Board Assembly (Top View)



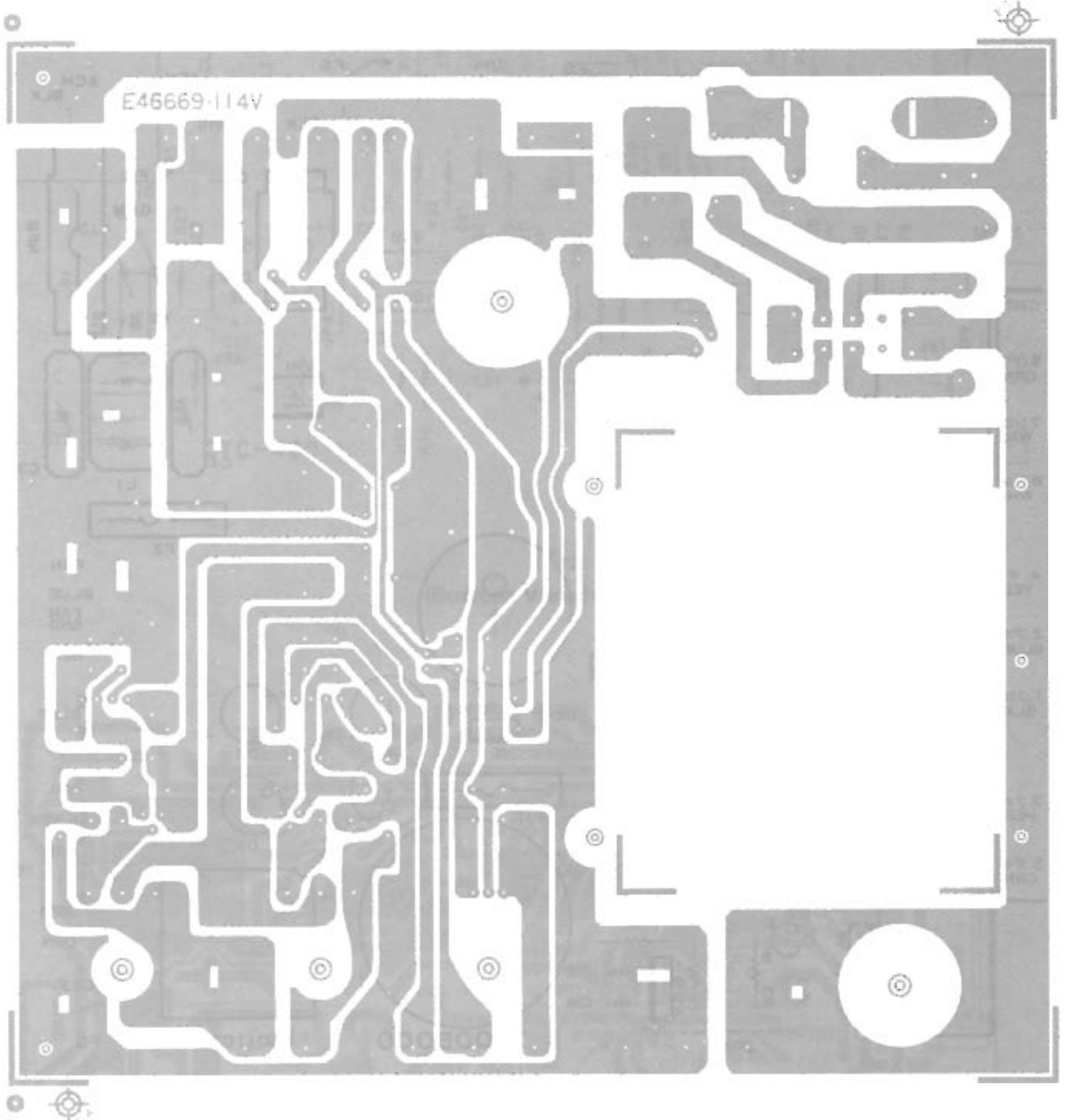
(Bottom View)



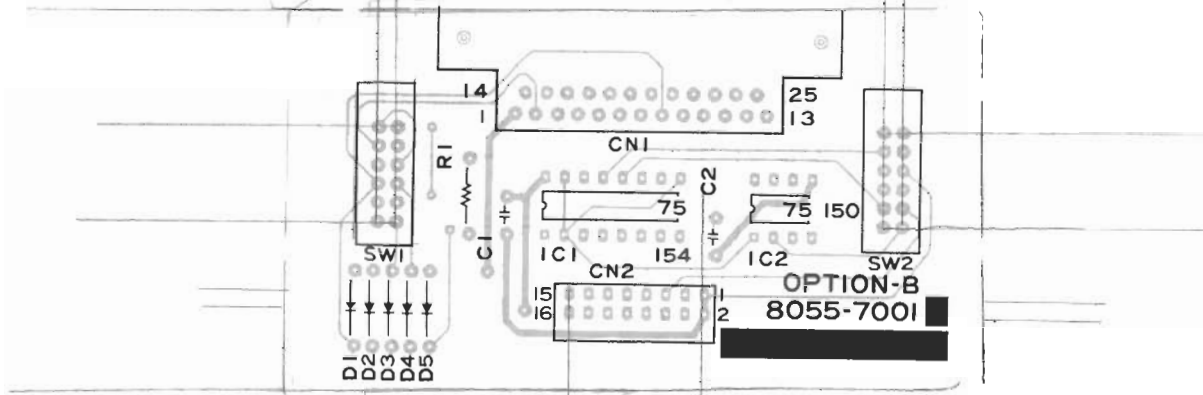
Power Supply Board Assembly (Top View)



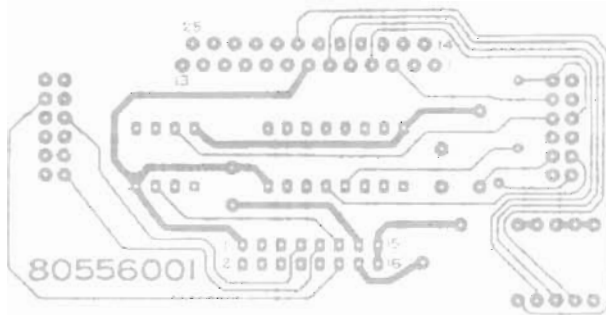
(Bottom View)



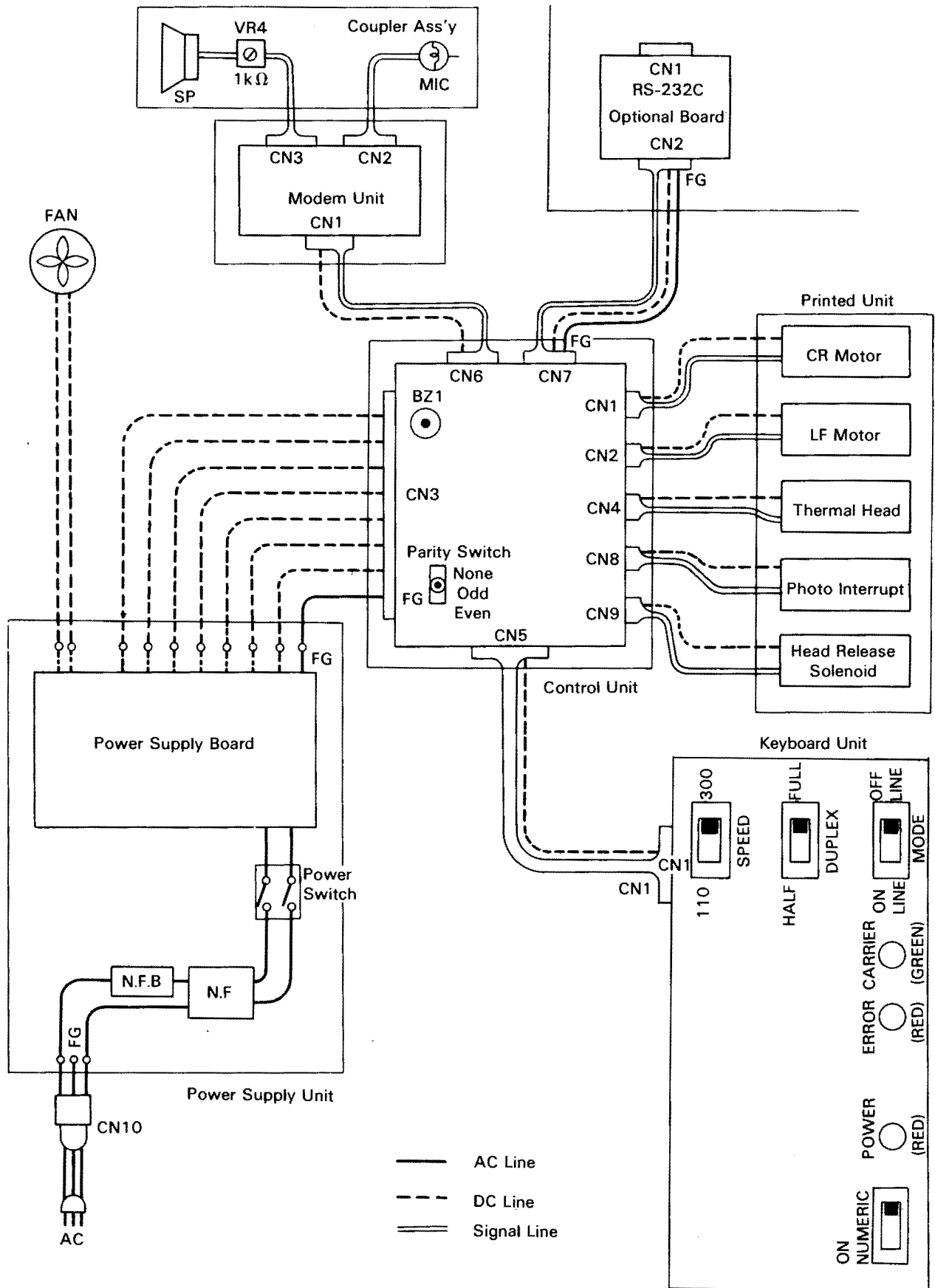
RS-232C Optional Board Assembly
 (76-1002)
 (Top View)



(Bottom View)



8/ Wiring Diagram



ELECTRICAL PARTS LIST

CONTROL UNIT

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	CONTROL UNIT	AX9266	80557000
	RESISTORS		
R1	2.2K Ω \pm 5% 1/4W : CARBON FILM		16114222
R2	3.3K Ω \pm 5% 1/4W : CARBON FILM		16114332
R3	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R4	1K Ω \pm 5% 1/4W : CARBON FILM		16114102
R5	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R6	1K Ω \pm 5% 1/4W : CARBON FILM		16114102
R7	3.3K Ω \pm 5% 1/4W : CARBON FILM		16114332
R8	470 Ω \pm 5% 1/4W : CARBON FILM		16114471
R9	470 Ω \pm 5% 1/4W : CARBON FILM		16114471
R10	5.1K Ω \pm 5% 1/4W : CARBON FILM		16114512
R11	2K Ω \pm 5% 1/4W : CARBON FILM		16114202
R12	1K Ω \pm 5% 1/4W : CARBON FILM		16114102
R13	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R14	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R15	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R16	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R17	5.1K Ω \pm 5% 1/4W : CARBON FILM		16114512
R18	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R19	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R20	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R21	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R22	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R23	4.7K Ω \pm 5% 1/4W : CARBON FILM		16114472
R24	100K Ω \pm 5% 1/4W : CARBON FILM		16114104
R25	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R26	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R27	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R28	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R29	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R30	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R31	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R32	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R33	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R34	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R35	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
R36	470 Ω \pm 5% 1W : METAL FILM	ANO169EGE	16011762
R37	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R38	100K Ω \pm 5% 1/4W : CARBON FILM		16114104
R39	330 Ω \pm 5% 1/4W : CARBON FILM		16114331
R40	470 Ω \pm 5% 1/4W : CARBON FILM		16114471
R41	470 Ω \pm 5% 1/4W : CARBON FILM		16114471
R42	330 Ω \pm 5% 1/4W : CARBON FILM		16114331
R43	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R44	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R45	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R46	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R47	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R48	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R49	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R50	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R51	470 Ω \pm 5% 1W : METAL FILM	ANO169EGE	16011762
R52	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R53	1K Ω \pm 5% 1/4W : CARBON FILM		16114102
R54	470 Ω \pm 5% 1W : METAL FILM	ANO169EGE	16011762
R55	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
R56	220 Ω \pm 5% 1/4W : CARBON FILM	ANO149EEB	16114221
AR1	3.3K Ω \pm 5% 8 ELEMENTS : ARRAY	ARX0305	16017055
AR2	4.7K Ω \pm 5% 8 ELEMENTS : ARRAY	ARX0306	16017056
AR3	3.3K Ω \pm 5% 8 ELEMENTS : ARRAY	ARX0305	16017055
	CAPACITORS		
C1	470pF \pm 10% : CERAMIC	ACC471JNGP	16060971
C2	820pF \pm 10% : CERAMIC	ACC821JNGP	16060972
C3	33pF \pm 5% : CERAMIC	ACC330JNGP	16060896
C4	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C5	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C6	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C7	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C8	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C9	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C10	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C11	0.1 μ F -20 to +80% 25V : CERAMIC		16060876
C12	0.1 μ F -20 to +80% 25V : CERAMIC		16060876

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
C13	10 μ F \pm 20% 25V : ELECTROLYTIC	ACC106mFAP	16041212
C15	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C16	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C17	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C18	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C19	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C20	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C21	0.1 μ F -20 +80% 25V : CERAMIC		16060876
C22	10 μ F \pm 20% 100V : ELECTROLYTIC	ACC107mLAP	16041213
C23	10 μ F \pm 20% 100V : ELECTROLYTIC	ACC107mLAP	16041213
C24	10 μ F \pm 20% 100V : ELECTROLYTIC	ACC107mLAP	16041213
TRANSISTORS			
Q1	2SC2655Y	AA2SC2655Y	14000296
Q2	2SC2655Y	AA2SC2655Y	14000296
Q3	2SC2655Y	AA2SC2655Y	14000296
Q4	2SC2655Y	AA2SC2655Y	14000296
Q5	2SC2655Y	AA2SC2655Y	14000296
Q6	2SC2655Y	AA2SC2655Y	14000296
Q7	2SC2655Y	AA2SC2655Y	14000296
Q8	2SC2655Y	AA2SC2655Y	14000296
Q9	2SC2655Y	AA2SC2655Y	14000296
Q10	2SC2655Y	AA2SC2655Y	14000296
Q11	2SC2655Y	AA2SC2655Y	14000296
Q12	2SA1020Y	AA2SA1020Y	14000291
Q13	2SC2655Y	AA2SC2655Y	14000296
Q14	2SC2655Y	AA2SC2655Y	14000296
Q15	2SA1020Y	AA2SA1020Y	14000291
Q16	2SC2655Y	AA2SC2655Y	14000296
Q17	2SC2655Y	AA2SC2655Y	14000296
Q18	2SC2655Y	AA2SC2655Y	14000296
CONNECTORS			
CN1	7P : 5045-07A	AJ7203	11020909
CN2	7P : 5045-07A	AJ7203	11020909
CN3	8P : 350212-1	AJ7208	11020722
CN4	FF-09B-003	AJ7211	11031152

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
CN5	HEADER : 34P	AJ7205	11031149
CN6	FF-10-001		11031151
CN7	HKP-16FD2-3AT	AJ7212	80558116
CN8	4P : 5045-04A	AJ7204	11020903
CN9	3P : 5045-03A	AJ7202	11020845
I.C.'S			
IC1	HD74LS93P : TTL		14071094
IC2	HD7404 : TTL		14070477
IC3	SN74LS32N : TTL		14070610
IC4	HD74LS03P : TTL	Amx5219	14070616
IC5	HD74LS00 : TTL		14070520
IC7	SN74LS161N : TTL		14070699
IC8	HD74LS93P : TTL		14071094
IC9	HD74LS93P : TTL		14071094
IC10	HD74LS93P : TTL		14071094
IC11	SN74LS08N : TTL		14070621
IC12	HD74LS93P : TTL		14071094
IC13	SN74LS74N : TTL		14070614
IC14	SOFT ASS'Y : PT-210		80556803
IC15	SN74LS374 : TTL		14070796
IC16	HD74LS20P : TTL	Amx5218	14070618
IC17	HD74LS93P : TTL		14071094
IC18	HD74LS02 : TTL		14071020
IC19	SN74LS04 : TTL		14070539
IC20	SN74LS126AN : TTL	Amx5217	14070742
IC21	HD74LS14 : TTL		14071023
IC22	MPD 8251AC : MOS LSI	Amx5212	14071015
IC23	TMP-8039-6	Amx5211	14071153
IC24	MPD-8279C-5	Amx5213	14071154
IC25	SN74LS30N : TTL		14070537
IC26	HD7416P : TTL		14070627
IC27	MPD 8243C : LSI I/O	Amx5214	14070988
IC28	HD7416P : TTL		14070627
IC29	HD7416P : TTL		14070627
IC30	HD7416P : TTL		14070627
IC31	SN74145 : TTL	Amx5216	14070584

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
DIODES			
D1	100V 1A : SILICON		14020302
D2	100V 1A : SILICON		14020302
D3	100V 1A : SILICON		14020302
D4	100V 1A : SILICON		14020302
D5	100V 1A : SILICON		14020302
D6	100V 1A : SILICON		14020302
D7	100V 1A : SILICON		14020302
D8	100V 1A : SILICON		14020302
D9	100V 1A : SILICON		14020302
D10	100V 1A : SILICON		14020302
D11	100V 1A : SILICON		14020302
D12	100V 1A : SILICON		14020302
D13	100V 1A : SILICON		14020302
D14	100V 1A : SILICON		14020302
D15	100V 1A : SILICON		14020302
D16	100V 1A : SILICON		14020302
D17	100V 1A : SILICON		14020302
D18	100V 1A : SILICON		14020302
MISCELLANEOUS			
C14, XTL2	IC SOCKET : 24P : ICT-246-S-T CERAMIC RESONATOR	AJ7214 Amx1003	11040294 80558123
SW1	TOGGLE SWITCH : 3TL-101E-B/M		12041216
BZ1	BUZZER : PK88-4AO	AB-7111	15020018
XTL1	CRYSTAL OSCILLATOR		80558106

MODEM PCB UNIT

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	MODEM PCB UNIT	AX9267	80557010
	RESISTORS		
R1	100Ω ±5% 1/4W : CARBON FILM		86215992
R2	470Ω ±5% 1/4W : CARBON FILM	AN0169EEB	86215995
R3	220KΩ ±5% 1/4W : CARBON FILM		86216310
R4	1KΩ ±5% 1/4W : CARBON FILM		86215996
R5	68KΩ ±5% 1/4W : CARBON FILM		86216306
R6	21KΩ ±1% 1/4W : METAL FILM	AN0214BEE	86215981
R7	825Ω ±1% 1/4W : METAL FILM	AN0653BEE	86215982
R8	374KΩ ±1% 1/4W : METAL FILM	AN654BEE	86215983
R9	16.9KΩ ±1% 1/4W : METAL FILM	AN655BEE	86215984
R10	732Ω ±1% 1/4W : METAL FILM	AN0656BEE	86215985
R11	309KΩ ±1% 1/4W : METAL FILM	AN0657BEE	86215986
R12	9.31KΩ ±1% 1/4W : METAL FILM	AN0658BEE	86215987
R13	1.78KΩ ±1% 1/4W : METAL FILM	AN0659BEE	86215988
R14	189KΩ ±1% 1/4W : METAL FILM	AN0660BEE	86215990
R15	2.2KΩ ±5% 1/4W : CARBON FILM		86215997
R16	18.2KΩ ±1% 1/4W : METAL FILM	AN0211BEE	86215989
R17	200KΩ ±5% 1/4W : CARBON FILM	AN0392EEB	86216309
R18	100KΩ ±5% 1/4W : CARBON FILM		86216307
R19	510KΩ ±5% 1/4W : CARBON FILM		86216305
R20	510KΩ ±5% 1/4W : CARBON FILM		86216305
R21	33KΩ ±5% 1/4W : CARBON FILM		86216302
R22	220KΩ ±5% 1/4W : CARBON FILM		86216310
R23	5.1KΩ ±5% 1/4W : CARBON FILM	AN0252EEB	86215999
R24	220Ω ±5% 1/4W : CARBON FILM		86215993
R25	3.9KΩ ±5% 1/4W : CARBON FILM	AN0237EEB	86215998
R26	162KΩ ±1% 1/4W : METAL FILM	AN0589BEE	86215991
R27	27KΩ ±5% 1/4W : CARBON FILM		86216313
R29	100Ω ±5% 1/4W : CARBON FILM		86215994
R30	22KΩ ±5% 1/4W : CARBON FILM		86216301
R31	10KΩ ±5% 1/4W : CARBON FILM		86216300
R32	100KΩ ±5% 1/4W : CARBON FILM		86216307
R33	56KΩ ±5% 1/4W : CARBON FILM	AN0330EEB	86216303
R34	10KΩ ±5% 1/4W : CARBON FILM		86216300
R35	120KΩ ±5% 1/4W : CARBON FILM		86216308
R36	82KΩ ±5% 1/4W : CARBON FILM	AN0360EEB	86216311

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
R37	10KΩ ±5% 1/4W : CARBON FILM		86216300
R38	470KΩ ±5% 1/4W : CARBON FILM		86216312
R39	2.7MΩ ±5% 1/4W : CARBON FILM	AN0625EEB	86216304
R40	10KΩ ±5% 1/4W : CARBON FILM		86216300
R41	470Ω ±5% 1/4W : CARBON FILM	AN0169EEB	86215995
VR1	10KΩ ±5% : VARIABLE	AP7306	86216314
VR2	10KΩ ±5% : VARIABLE	AP7306	86216314
VR3	10KΩ ±5% : VARIABLE	AP7306	86216314
	CAPACITORS		
C1	100μF ±20% 16V : ELECTROLYTIC		86216320
C2	0.1μF ±10% 50V : POLYESTER FILM	ACC104JJBP	86216325
C3	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C4	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C5	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C6	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C7	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C8	4700pF ±2% 50V : POLYESTER FILM	ACC472JJGP	86216323
C9	0.047μF ±10% 50V : POLYESTER FILM	ACC473JJGP	86216316
C10	0.1μF ±10% 50V : POLYESTER FILM	ACC104JJBP	86216325
C11	22000pF ±5% 50V : POLYESTER FILM	ACC223JJGP	86216324
C12	0.047μF ±10% 50V : POLYESTER FILM	ACC473JJGP	86216316
C13	0.01μF ±10% 50V : POLYESTER FILM		86216315
C14	0.1μF ±10% 50V : POLYESTER FILM	ACC104JJBP	86216325
C15	0.0047μF ±10% 50V : POLYESTER FILM	ACC475MDAP	86216318
C17	0.0047μF ±5% 50V : POLYESTER FILM		86216317
C18	0.1μF ±10% 50V : POLYESTER FILM	ACC104JJBP	86216325
C19	10μF ±20% 16V : ELECTROLYTIC	ACC106mDAP	86216321
C20	10μF ±20% 16V : TANTALUM ELECTROLYTIC		16040527
C21	10μF ±20% 16V : TANTALUM ELECTROLYTIC		16040527
C22	0.01μF ±10% 50V : POLYESTER FILM		86216315
C23	1μF ±20% 35V : TANTALUM ELECTROLYTIC		86216319
C24	1μF ±20% 35V : TANTALUM ELECTROLYTIC		86216319
C25	100μF ±20% 16V : ELECTROLYTIC		86216320
C26	22μF ±20% 16V : ELECTROLYTIC	ACC226mDAP	86216322

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
C27	22 μ F \pm 20% 16V : ELECTROLYTIC	ACC226mDAP	86216322
IC1	I.C.'S RC4558 : OP AMP	Amx3830	86216326
IC2	RC4558 : OP AMP	Amx3830	86216326
IC3	LM2901 : COMPALATOR	Amx5220	86216327
IC4	XR2211 : LINEAR		86216328
IC5	XR2209 : LINEAR	Amx4175	86216329
IC6	SN7405 : TTL		14070193
	DIODES		
D1	1S1588 : SILICON		14010611
D2	1S1588 : SILICON		14010611
D3	1S1588 : SILICON		14010611
ZD1	02BZ2.7r : ZENER	ADX1775	86216330
ZD2	02Z9.1A : ZENER	ADX1776	14020252
	CONNECTORS		
CN1	FF-10-001	AJ7210	86216331
CN2	5046-04A	AJ7206	11021056
CN3	5046-02A	AJ7202	11021055

POWER SUPPLY UNIT

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	POWER SUPPLY UNIT	AX9268	86011031
	RESISTORS		
R1	10K Ω \pm 5% 1/4W : CARBON FILM		16114103
R2	20K Ω \pm 5% 1/4W : CARBON FILM	AN0306EEB	16114203
R3	10 Ω \pm 5% 1/4W : CARBON FILM		16114100
R4	47K Ω \pm 5% 1/4W : CARBON FILM		16114473
R5	10 Ω \pm 5% 1/4W : CARBON FILM		16114100
VR1	10K Ω \pm 20% 1/2W : VARIABLE	AP7307	86215956
	CAPACITORS		
C1	0.01 μ F -20 to +80% 125V : CERAMIC	ACC103ZmCP	86215957
C2	0.01 μ F -20 to +80% 125V : CERAMIC	ACC103ZmCP	86215957
C3	0.022 μ F -20 to +80% 125V : CERAMIC	ACC474ZMCP	86215962
C4	0.022 μ F -20 to +80% 125V : CERAMIC	ACC474ZMCP	86215962
C5	470 μ F -10 to +30% 35V : ELECTROLYTIC	ACC477RGAP	86215958
C6	470 μ F -10 to +30% 35V : ELECTROLYTIC	ACC477RGAP	86215958
C7	4700 μ F -10 to +30% 16V : ELECTROLYTIC	ACC338RFAP	86215959
C8	15000 μ F -10 to +30% 16V : ELECTROLYTIC	ACC159RDAP	86215960
C9	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C10	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C11	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C12	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C13	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C14	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C15	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C16	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C17	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C18	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C19	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C20	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C21	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C22	0.1 μ F -20 to +80% 50V : CERAMIC		86215961
C23	0.01 μ F -20 to +80% 125V : CERAMIC	ACC103ZmCP	86215957

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	TRANSISTORS		
Q1	2SD844-Y	AA2SD844	86215963
Q2	2SA1020-Y	AA2SA1020Y	14000291
Q3	2SD844-Y	AA2SD844	86215963
Q4	2SA1020-Y	AA2SA1020Y	14000291
	I.C.'S		
IC1	AN7812 : LINEAR	Amx5221	86215964
IC2	μ PC7912H : LINEAR	Amx5222	86215965
IC3	AN7805 : LINEAR	Amx5223	86215966
IC4	AN6531 : LINEAR	Amx5224	86215967
IC5	AN6531 : LINEAR	Amx5224	86215967
	DIODES		
D1	1B4B1	ADX1777	86215968
D2	1B4B1	ADX1777	86215968
D3	6B4B1	ADX1778	86215969
	CONNECTOR		
CN3	1-480283-0 : 8P	AJ7209	11020121
	INDUCTOR		
L1	SC-02-107 (SC-02-101) : COIL	ACA8262	86215970
	MISCELLANEOUS		
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	SOCKET CONTACT : 170148-1	AJ7213	86215971
	AC PLUG SOCKET : NC174	AJ7215	86215972

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	HEAT SINK		86215973
F2	FUSE : 0.5A	AHF1247	86215974
F1	FUSE : 4A	AHF1248	86215975
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
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	CONTACT : 5298T	AJ7216	86215976
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	CONTACT : 5298T	AJ7216	86215976
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	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : 5298T	AJ7216	86215976
	CONTACT : R1.25-3	AJ7217	86215977
NFB	NO FUSE BREAKER	AHF-1246	86215978
SW1	POWER SWITCH : U21L3D9-V60-Q	AS1623	86215979
T1	TRANSFORMER	ATA0993	86215980
	CONTACT : 171255-1		86216322
	CONTACT : 171255-1		86216322

RS-232C OPTIONAL BOARD (76-1002)

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
	RS-232C OPTIONAL BOARD	AX-9221	80557001
R1	220Ω ±5% 1/4W : CARBON FILM	AN0149EEB	16114221
C1	0.1μF -20 to +80% 50V : CAPACITOR		16060876
C2	0.1μF -20 to +80% 50V : CAPACITOR		16060876
IC1	SN 75154 : TTL		14070486
IC2	SN 75150P : TTL	Amx4650	14070938
D1	1S1588 : SILICON	ADX-1765	14010611
D2	1S1588 : SILICON	ADX-1765	14010611
D3	1S1588 : SILICON	ADX-1765	14010611
D4	1S1588 : SILICON	ADX-1765	14010611
D5	1S1588 : SILICON	ADX-1765	14010611
CN	HKP-16ML-3AT	AJ-7191	80558117
CN	GMM-25RFDA	AJ-7192	11031150
SW1	SWITCH : SUJ12A	AS-1617	12041214
SW2	SWITCH : SUJ12A	AS-1617	12041214
	PHILIPS FRANGE SCREW : M3 x 6 (100 PCS/1 SET)		09603008W
	NUT : M3 (100 PCS/1 SET)		07110030B

**MECHANICAL PARTS LIST
COVER UNIT**

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
001	UPPER COVER UNIT		80550501
002	UPPER COVER ASSEMBLY		80553100
003	REAR COVER	AZ6722	80553102
004	OPTION COVER (DUST PLATE)	AHC1754	80553103
005	UPPER COVER	AZ6721	80553101
006	FRONT COVER ASSEMBLY		80553200
007	FRONT COVER	AZ6723	80553201
008	MOUTH ASSEMBLY (NON-REPAIRABLE ASS'Y)	AZ6726	80553207
009	EAR ASSEMBLY (NON-REPAIRABLE ASS'Y)	AZ6725	80553205
010	INNER COVER	AZ6724	80553202
011	BASE COVER UNIT		80550502
012	BOTTOM COVER	AZ6720	80554105
013	RETAINING PLATE		80554108
014	RUBBER FOOT	AF-0359	80554106
015	AC CAP	AC-1229	80554107
016	FAN ASSEMBLY	Am4696	80554100
017	FAN MOTOR		80554103
018	PROPERA FAN		80554104
019	FAN BRACKET (FAN ANGLE)	AHC1753	80554101
020	HANDLE	AH-6315	80553300
021	RUBBER BUSH		80554109
022	VARIABLE RESISTOR (VOLUME)	AP7305	80558100
023	COLOR : FAN MOTOR		80554110
024	RUBBER WASHER : FAN MOTOR		80554111
101	SCREW : M3 x 8 (100 PCS/1 SET)		08011203
102	SCREW : M4 x 16 (100 PCS/1 SET)		03340160Z
103	SCREW : M3 x 8 (100 PCS/1 SET)		09603008Z
104	HEXAGON HEADLESS SCREW : M3 x 6 (100 PCS/1 SET)		05530080E
106	SCREW : M3 x 8 (100 PCS/1 SET)		04330080B
107	PHILIPS SCREW WITH WASHER : M3 x 10 (100 PCS/1 SET)		08011176

PRINTER UNIT

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
001	PRINTER UNIT : PT-210	Axx5036	80550500
002	LOWER GUIDE	AHC1751	80551011
003	HOLDER SHAFT	AHC1752	80551012
004	PAPER CUTTER ASSEMBLY	ART4373	80551200
005	PAPER LOCK SPRING	ARB7602	80551204
006	LF MOTOR ASSEMBLY	Am4695	80551300
007	BELT : LF MOTOR TIMING	AB6566	80551304
008	MOTOR TIMING ASSEMBLY	ARA0455	80551303
009	MOTOR		80551302
010	SHAFT CR PULLEY	AHC1750	80551010
011	CR TIMING PULLEY	ARA0456	80551009
012	TENSION SPRING LEVER	AHC1746	80551405
013	TENSION SPRING	ARB7603	80551404
014	HEAD LEVER	AHC1745	80551401
015	SOLENOID ASSEMBLY (NON-REPAIRABLE ASS'Y)	AS9183	80551400
016	PLATEN SUPPORT	AHC1748	80551502
017	PLATEN	ART4375	80551500
018	FRAME ASS'Y : PT-210	AZ6719	80551000
019	CABLE ASSEMBLY (PHOTO INTERRUPT ASS'Y)	ART4372	80556500
020	TENSION ROLLER		80551013
021	SHAFT : TENSION ROLLER		80551014
022	DANCING PIPE		80551003
023	DANCING PIN		80551002
024	PRINTER FRAME		80551001
025	HEAD : SHAFT SUPPORT	AHC1749	80551008
026	CR MOTOR ASSEMBLY		80551301
027	MOTOR TIMING PULLEY		80551305
028	HEAD ASS'Y : PT-210	AH4496	80551100
029	HEAD : SHAFT	ART4376	80551007
030	BELT : CR TIMING	AB6565	80551111
031	HEAD SPRING		80551105
032	POSITION PLATE		80551106
033	UNDER HEAD ASSEMBLY (NON-REPAIRABLE ASS'Y)		80551101
034	THERMAL HEAD ASS'Y (NON-REPAIRABLE ASS'Y)		80551107
035	TENSION PLATE	AHC1743	80551004
036	FG CABLE : LF-SOLENOID-CR		80556505

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
037	FG CABLE : LF-CR		80556507
038	FG CABLE : CR-PSU		80556506
039	HEAD GUIDE		80551115
040	PRINTER LOCK		80553306
101	SCREW M3 x 10 (100 PCS/1 SET)		04330100B
102	SCREW M3 x 5 (100 PCS/1 SET)		05430050E
103	RETAINING RING : 2MM (100 PCS/1 SET)		07200020E
104	SCREW : M2.5 x 4 (100 PCS/1 SET)		08011205
105	SPRING PIN : 2 x 8 (100 PCS/1 SET)	AHC1747	06220080E
106	RETAINING RING : 5MM (100 PCS/1 SET)		07200050E
107	NUT : M4 (100 PCS/1 SET)		07110040B
108	SCREW : M3 x 8 (100 PCS/1 SET)		09503008B
109	SCREW : M3 x 6 (100 PCS/1 SET)		04330060B
110	WASHER : 3MM (100 PCS/1 SET)		07050030B
113	WAVE WASHER		80551015
114	SCREW : M4 x 8 (100 PCS/1 SET)		08011193

KEYBOARD UNIT

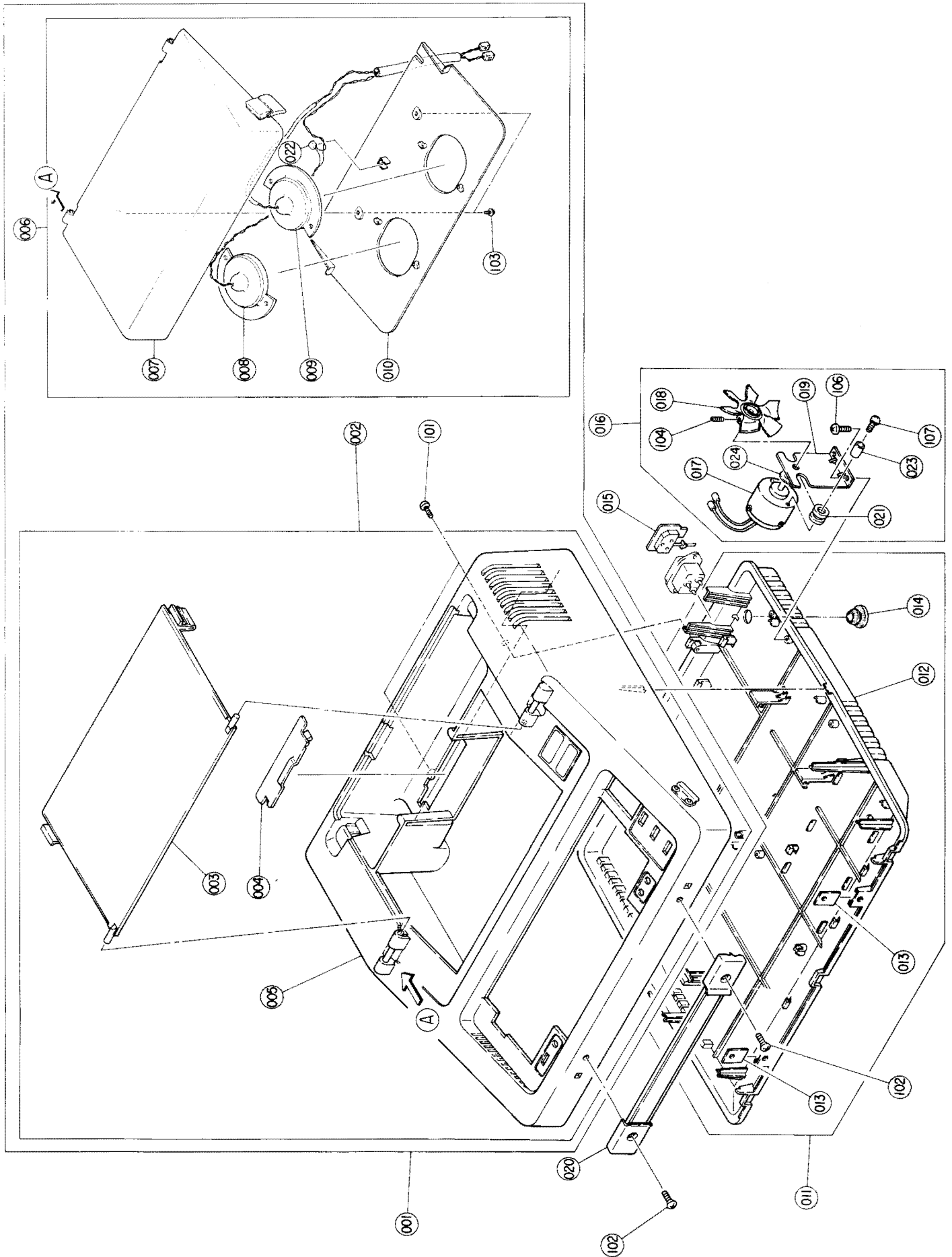
REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
1	KEY BOARD UNIT	AX9265	86003713
2	KEY TOP : SPACE		86215900
2	KEY TOP : SHIFT		86215901
2	KEY TOP : SHIFT		86215901
2	KEY TOP : RETURN		86215902
2	KEY TOP : CTRL		86215903
2	KEY TOP : BREAK		86215904
2	KEY TOP : RUB OUT		86215905
2	KEY TOP : ESC		86215906
2	KEY TOP : LINE FEED		86215907
2	KEY TOP : PAPER ADV		86215908
2	KEY TOP : BACK SPACE		86215909
2	KEY TOP : REPT		86215910
2	KEY TOP : 1		86215911
2	KEY TOP : 2		86215912
2	KEY TOP : #		86215913
2	KEY TOP : \$		86215914
2	KEY TOP : %		86215915
2	KEY TOP : &		86215916
2	KEY TOP : φ		86215917
2	KEY TOP : *		86215918
2	KEY TOP : =		86215919
2	KEY TOP : Q		86215920
2	KEY TOP : W		86215921
2	KEY TOP : E		86215922
2	KEY TOP : R		86215923
2	KEY TOP : T		86215924
2	KEY TOP : Y		86215925
2	KEY TOP : A		86215926
2	KEY TOP : S		86215927
2	KEY TOP : D		86215928
2	KEY TOP : F		86215929
2	KEY TOP : G		86215930
2	KEY TOP : H		86215931

REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
2	KEY TOP : +		86215932
2	KEY TOP : Z		86215933
2	KEY TOP : X		86215934
2	KEY TOP : C		86215935
2	KEY TOP : V		86215936
2	KEY TOP : B		86215937
2	KEY TOP : ?		86215938
2	KEY TOP : + ' 7		86215939
2	KEY TOP : - (8		86215940
2	KEY TOP : ') 9		86215941
2	KEY TOP : 9 - 0		86215942
2	KEY TOP : 8 } 1		86215943
2	KEY TOP : 7 { U		86215944
2	KEY TOP : 6 \ L		86215945
2	KEY TOP : 4 J		86215946
2	KEY TOP : 3 >		86215947
2	KEY TOP : 2 <		86215948
2	KEY TOP : 1] M		86215949
2	KEY TOP : P		86215950
2	KEY TOP : ^ N		86215951
2	KEY TOP : 5 [K		86215952
3	SLIDE SWITCH		86215953
3	SLIDE SWITCH		86215953
3	SLIDE SWITCH		86215953
3	SLIDE SWITCH		86215953
4	DIODE : GREEN		86215954
4	DIODE : RED		86215955
4	DIODE : RED		86215955

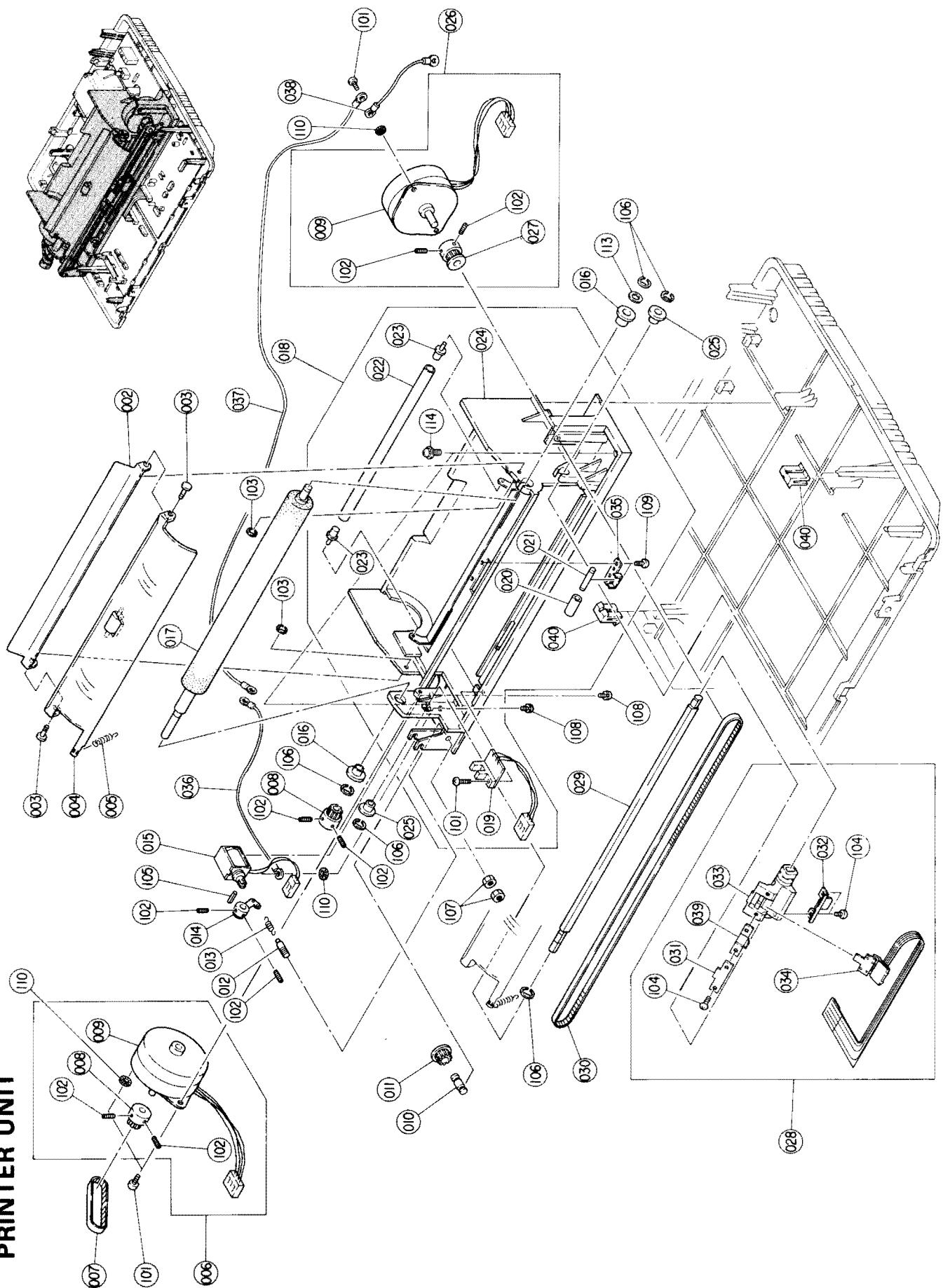
REF. NO.	DESCRIPTION	RS PART NO.	MANUFACTURER PART NUMBER
5	CABLE ASSEMBLY : KYB CABLE	AW2878	80556502
6	CONTROL UNIT	AX9266	80557000
7	MODEM INTERFACE CABLE	AW2877	80556503
8	MODEM UNIT	AX9267	80557010
9	POWER SUPPLY UNIT	AX9268	86011031
101	SCREW : M3 x 8 (100 PCS/1 SET)		04330080B

10/ Exploded Views

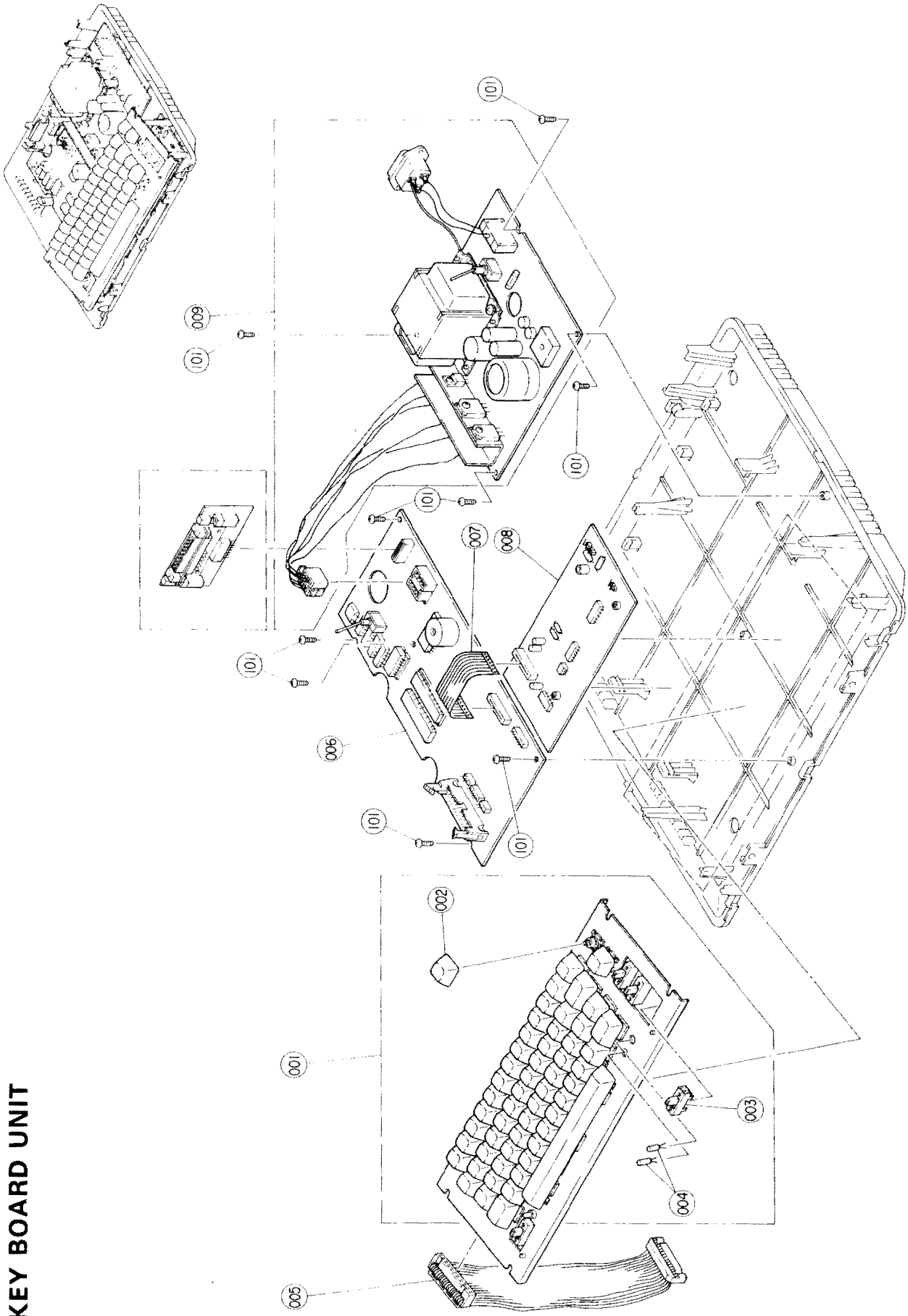
COVER UNIT



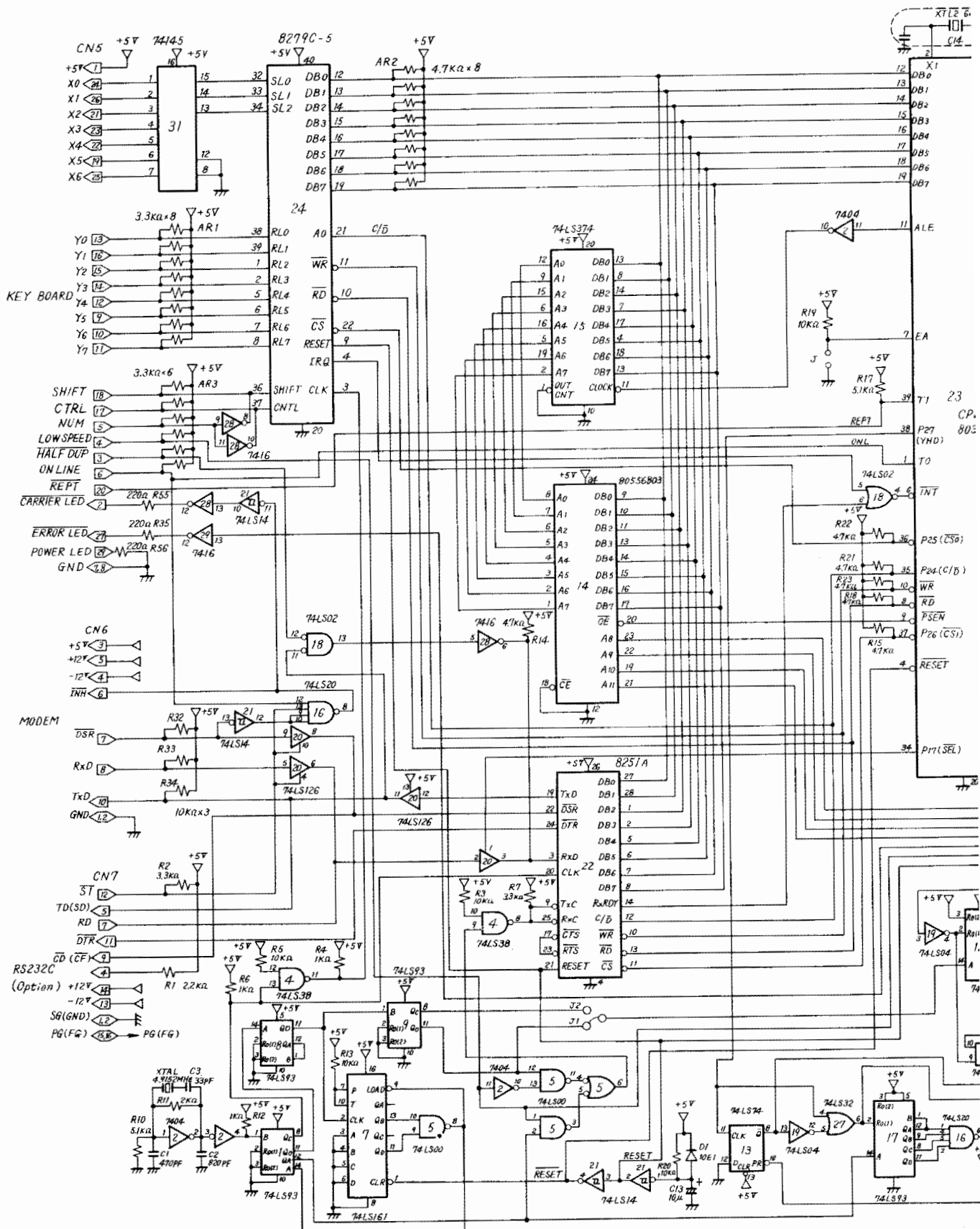
PRINTER UNIT

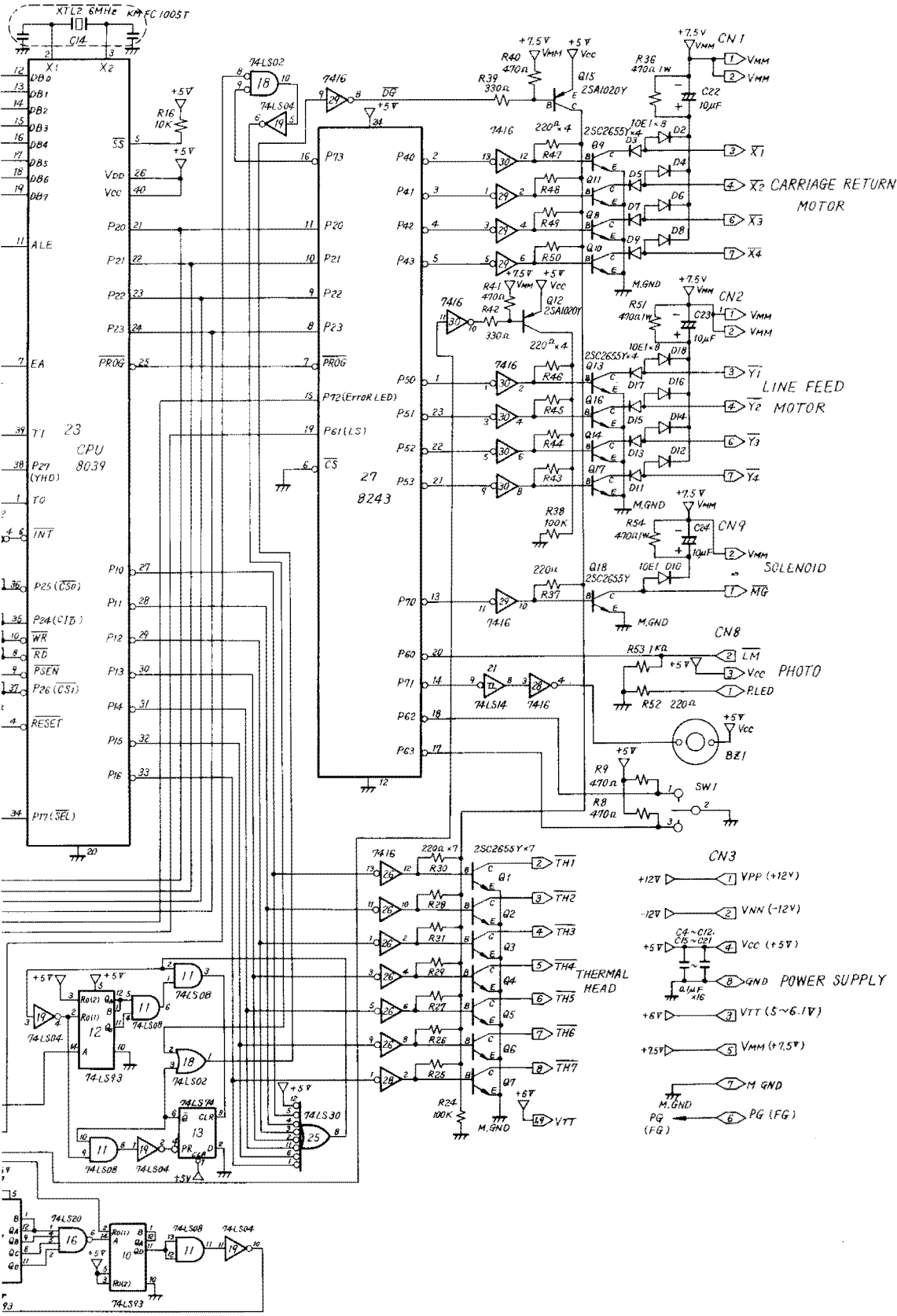


KEY BOARD UNIT

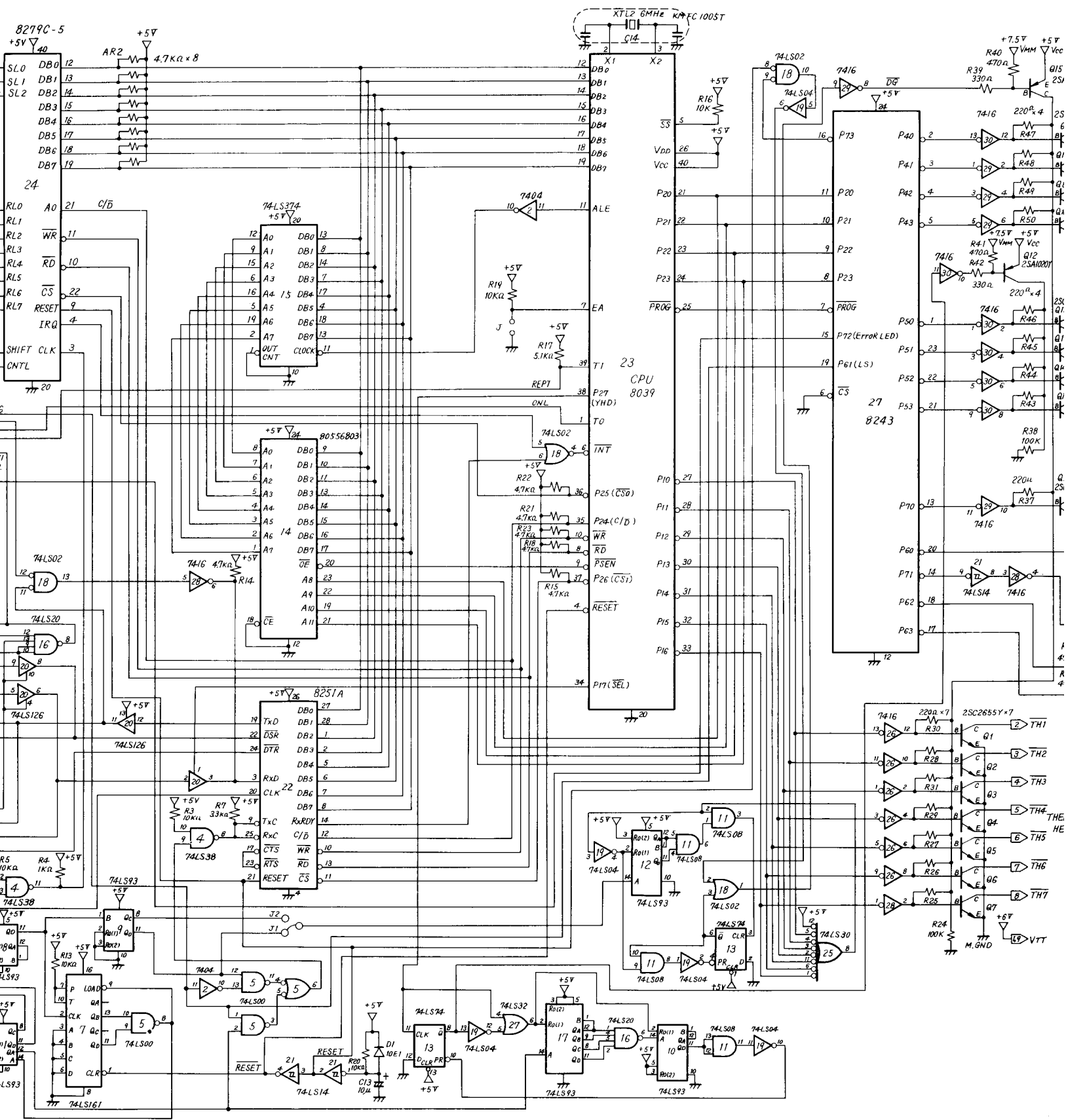


11/ Schematic Diagrams

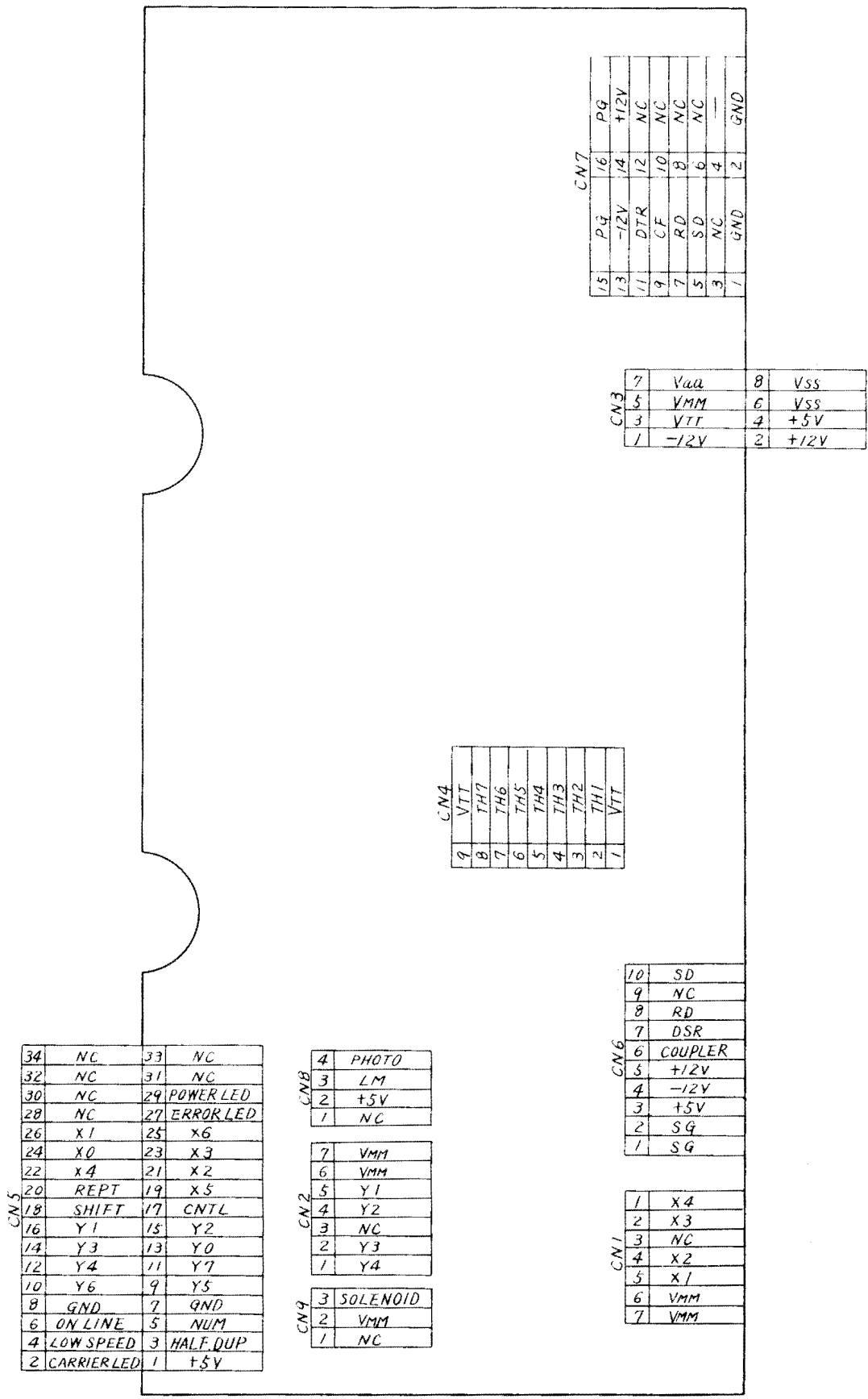


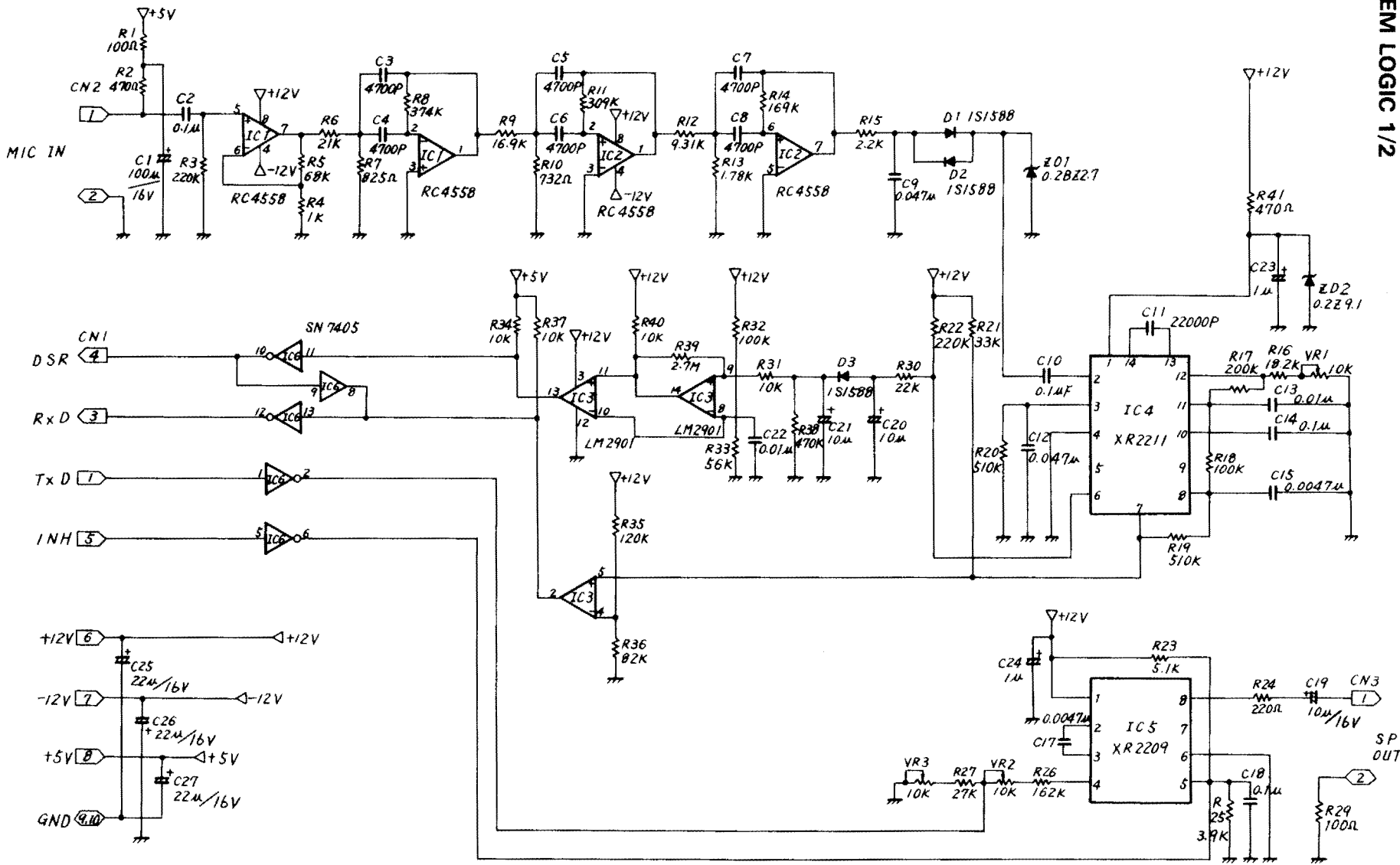


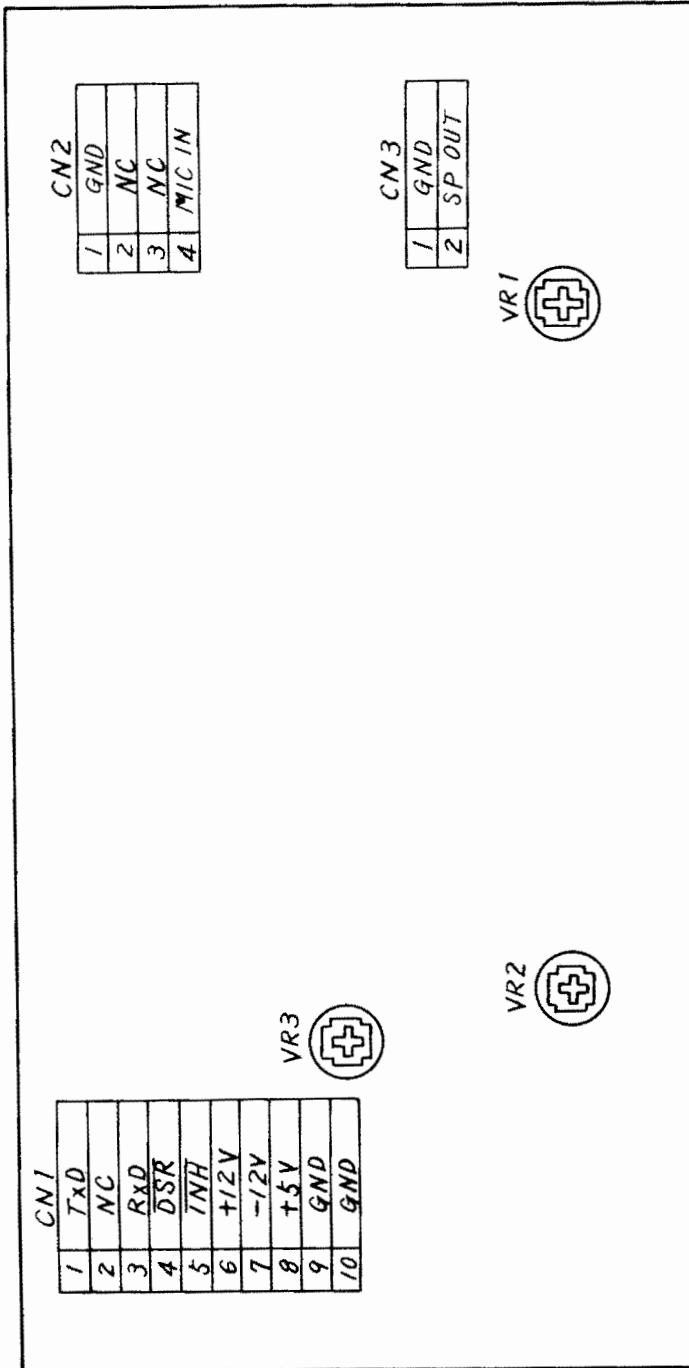
- CN3**
- 1 VPP (+12V)
 - 2 VNN (-12V)
 - 3 VCC (+5V)
 - 4 GND POWER SUPPLY
 - 5 VTT (5~6.1V)
 - 6 VMM (+7.5V)
 - 7 M.GND
 - 8 PG (FG)



CONTROL LOGIC 2/2

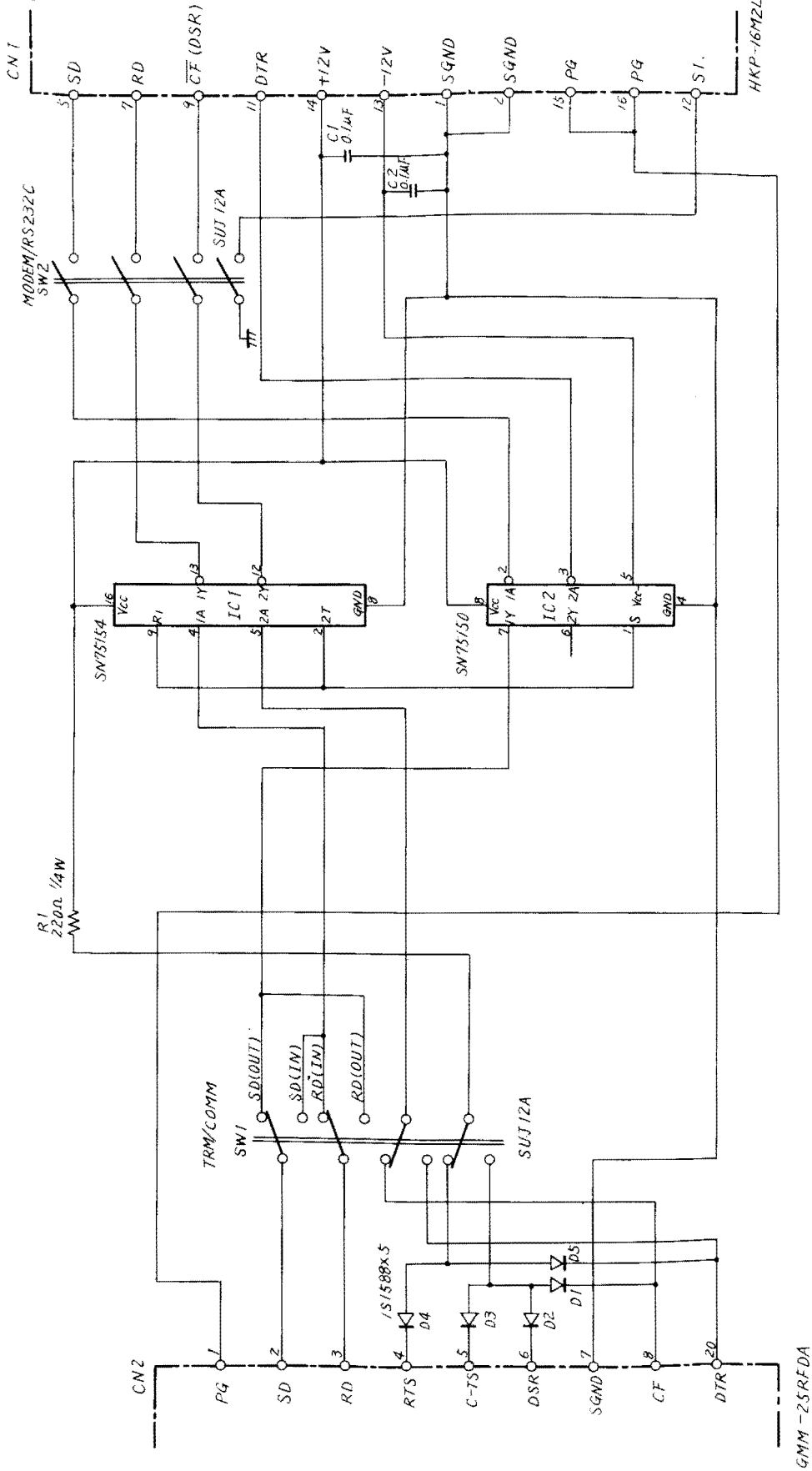






RS-232C INTERFACE LOGIC 1/2 (76-1002)

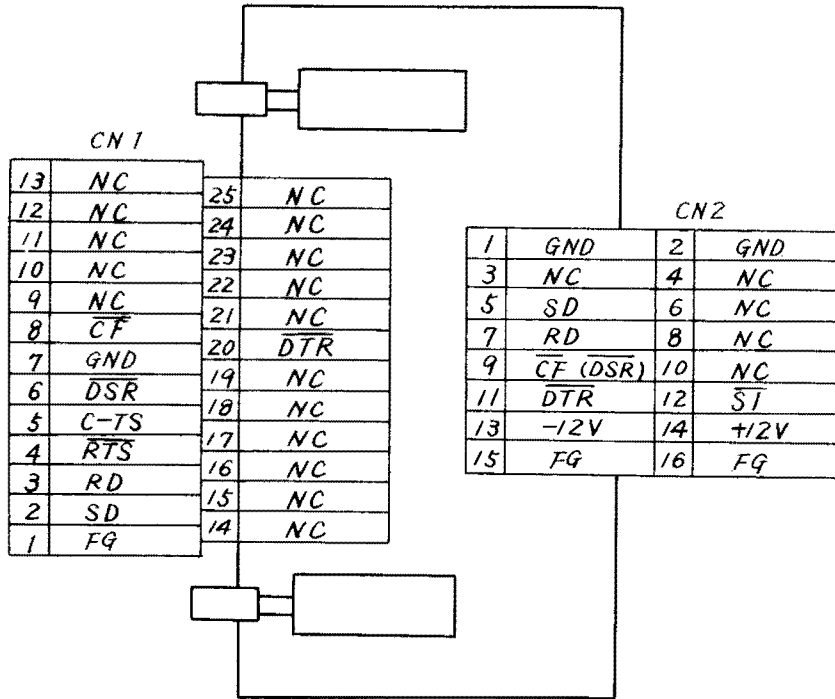
(Option)



GMM-25RFDA

RS-232C INTERFACE LOGIC 2/2

(Option)
(76-1002)



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