SHARP SERVICE MANUAL

CODE: 00ZCE129PSM/E

MODEL CE-129P

• Printer/Cassette Interface

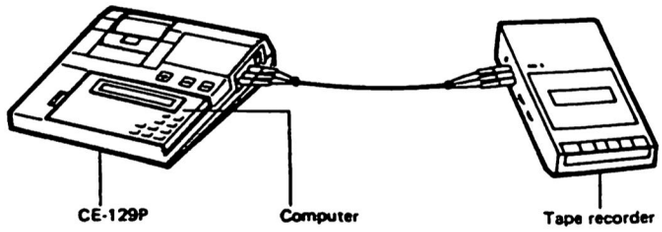
1. PRODUCTS OUTLINE

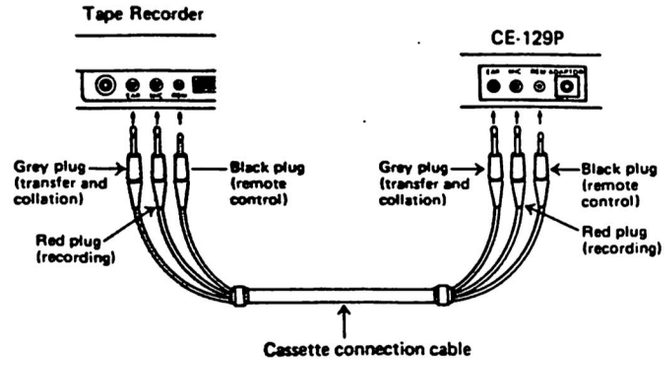
The CE-129P printer is an optional printer with the cassette interface designed for use with the pocket computer models EL-5500, PC-1401(EL-5500II), PC-1402, PC-1421 (EL-5510), and PC-1430 (EL-5400)

2. SPECIFICATIONS

Printer type:	Dot matrix thermal printer (MTP-201), identical to the one used for the CE-125
Printing digit:	24 digits/line
Printing speed:	Approx. 0.8 line/second (Printing speed varies with the number of printing digits per line.)
Paper feed speed:	Approx. 0.8 line/second
Paper:	Thermal paper (heat sensitive paper), EA-1250P 18mm (23/32") roll outer diameter (max.) 58mm (2-9/32") wide
Power source:	6V ⎓ (DC): Heavy duty manganese battery, size AA (or R6) x 4 AC: Local voltage with AC adaptor EA-23E (Option)
Operation:	Heavy duty manganese battery, size AA (or R6): Approx. 3,000 lines UM-3: Approx. 2,000 lines (Condition: 555555555555. is on continuous printing at an operating temperature of 20°C, this number of printing lines varies with the type of battery or the way of use.)
Power consumption:	3.0W
Operating temperature:	0°C ~ 40°C (32°F ~ 104°F)
Dimensions:	198 (W) x 156 (D) x 34 (H) mm 7-25/32"(W) x 6-5/32"(D) x 1-11/32"(H)
Weight:	385g (0.85 lbs.) (with batteries)
Accessories:	Hard case, Dry battery x 4, Paper roll x 3, Cassette cable, and Operation manual

3. TAPE RECORDER INTERFACING METHOD





Cassette Tape Recorder

The following is a description of the minimum tape recorder specifications necessary for interfacing with the CE-129P.

Item	Requirements
1. Recorder Type	Any tape recorder, standard cassette or micro-cassette recorder, may be used in accordance with the requirements outlined below.
2. Input Jack	The recorder should have a mini-jack input labeled "MIC". Never use the "AUX" jack.
3. Input Imepedance	The input jack should be a low impedance input (200 ~ 1,000 OHM.)
4. Minimum Input Level	Below 3mV or −50 dB.
5. Output jack	Should be a minijack labeled "EXT. (EXTernal speaker)", "MONITOR", "EAR (EAR-phone)" or quivalent.
6. Output impedance	Should be below 10 OHM.
7. Output level	Should be above 1V (practical maximum output above 100 mW)
8. Distortion	Should be within 15% within a range of 2 kHz through 4 kHz.
9. Wow and Flutter	0.3% maximum (W.R.M.S)
10. Other	Recorder motor should not fluctuate speed.

SHARP CORPORATION

NOTES:

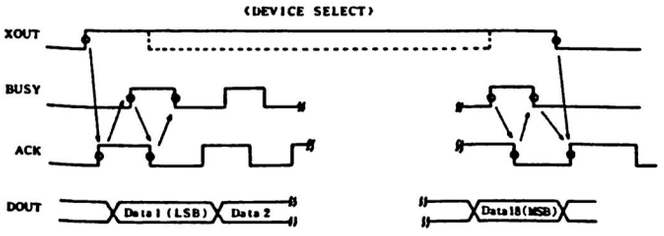
- Some of tape recorders may not operate properly owing to different specification or electrical characteristics affected by signal distortion, electrical noise, level drop-out caused after long years of use.
- When using the tape recorder fitted with the mixing feature, it needs to disable the mixing function for both recording and playback.
- Depending on the tape recorder used, better reading result may be attained when the red plug is unplugged from the MIC jack.
- As it may impede proper data transfer and verification depending on the position of the volume control, tone control, bass control, and treble control, try to find the optimum level by varying their positions.

4. CIRCUIT DESCRIPTION

The CE-129P has two microprocessors; the P-CPU (inside of CE-129P) by with data transfer is carried out with the host CPU (M-CPU: inside of computer) and the printer control PCU.

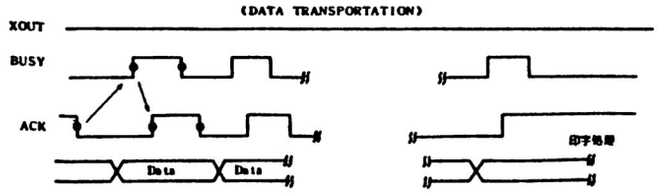
M-CPU to P-CPU data transfer method

Since there are no SEL1 and SEL2 used for the PC-1401 and EL5500, DEVICE SELECT is dependent on the contents of data.



(1) For DEVICE SELECT, XOUT becomes high.
(2) As the P-CPU receives a high state of XOUT, it sends ACK to the M-CPU.
(3) As the M-CPU receives ACK, it sends back BUSY.
(4) Data is received to the P-CPU with a high state of BUSY. ACL, REMOTE ON, CPU select actions is carried out depending on the contents of data.

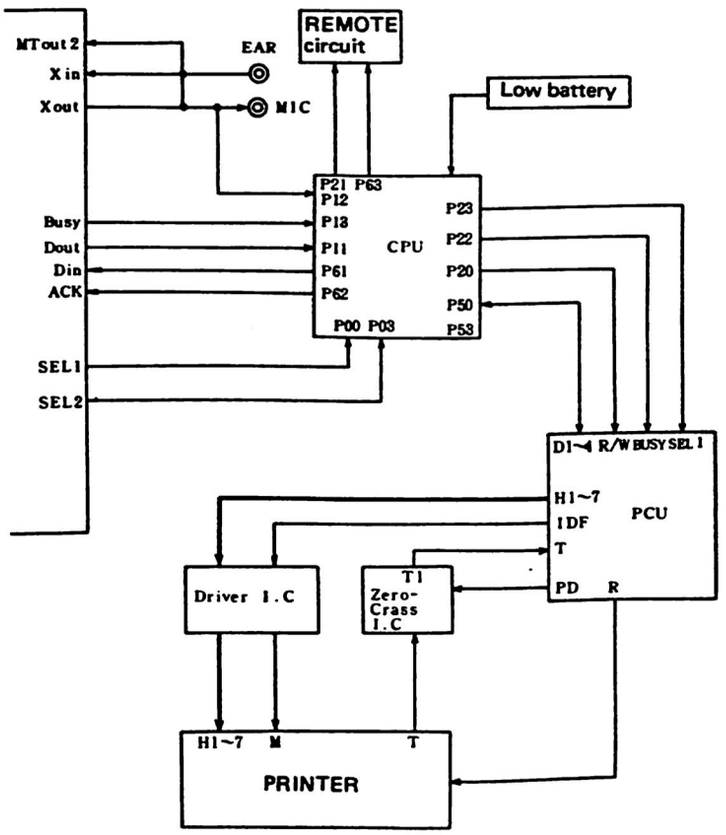
Print data transfer



(1) XOUT goes low when the print data is transferred.
(2) BUSY from the M-CPU turns high level.
(3) Upon receipt of BUSY, ACK of the P-CPU is set high and the data is received to the P-CPU.

Since the data is transferred in bit by bit serial mode, above steps (2) and (3) are repeated eight times to complete transfer of one data. For instance, those steps are repeated for 192 times (24 x 8) in order to transfer a 24 digits data. The print commands, however, is sent out to the P-CPU at the end of the data in a form of the code "0D".

5. BLOCK DIAGRAM



6. P-CPU (MPD75060515, 516 SIGNAL DESCRIPTION)

C-MOS 1 chip 4 bit micro-computer

Terminal No.	Terminal name	Signal name	Input/Output	Description
1	NC	–	–	
2	NC	–	–	
3	CL1	–	–	System clock Dscillation frequency —— approx. 200KHz
4	NC	–	–	
5	CL2	–	–	System clock
6	NC	–	–	
7	GND	GND	–	Power supply, 0V
8	RST	–	Input	P-CPU reset input: when power supply is ON, reset operation. Min 30 μs
9	P10	VDD	Input/(Output)	Setting VDD (–4 ~ –6V)
10	P11	DOUT	Input/(Output)	Device select data and print data
11	P12	XOUT	Input/(Output)	Identification of the contents of DOUT (whether it is device select data or print data.)
12	NC	–	–	
~	~	~	~	
15	NC	–	–	
16	P13	BUSY	Input/(Output)	Handshake signal. Latch signal by which the P-CPU abtains DOUT data.
17	P50	D1	Input/Output	Data bus line between the P-CPU and the PCU.
18	P51	D2	Input/Output	Data bus line between the P-CPU and the PCU.
19	NC	–	–	
20	NC	–	–	
21	P52	D3	Input/Output	Data bus line between the P-CPU and the PCU.
22	P53	D4	Input/Output	Data bus line between the P-CPU and the PCU.
23	P00	SEL1	Input	Select input signal. It is not used in the PC-1400, EL-5500 series.
24	P40	VDD	Input/Output	Setting VDD (–4 ~ –6V).
25	NC	–	–	
~	~	~	~	
28	NC	–	–	
29	P41	L.B	Input/(Output)	Low battery detection signal. Normal high.
30	P42	VDD	Input/(Output)	Setting VDD (–4 ~ –6V).
31	VDD	VDD	–	Power supply VDD (–4 ~ –6V)
32	NC	–	–	
33	GND	GND	–	Power supply 0V
34	P43	GND	Input/Output	Setting GND (0V)
35	NC	–	–	
36	X2	NOT USE	–	
37	NC	–	–	
~	~	~	~	
40	NC	–	–	
41	P03	SEL2	Input	Select input signal. It is not used in the PC-1400, EL-5500 series.
42	P20	R/W	Output	Read/write signal for the PCU. High: read High-Low: write
43	P21	REM2	Output	Remove OFF pulse signal
44	P22	(SEL2)	Output	PCU chip select signal. High: selected, Low: non select
45	P23	(SEL1)	Output	PCU clear signal. High: ACL active Low: normal
46	NC	–	–	
47	P60	JN	(Input)/Output	Paper feed key strobe signal when CPU: MPD7506G516 is used.
48	P61	DIN	(Input)/Output	Printe Error signal to host CPU. High: printer Error. Low: Normal
49	P62	ACK	(Input)/Output	Handshake signal P-CPU to host CPU.
50	P63	REM1	(Input/Output	Remoto ON pulse signal.
51	NC	–	–	
52	NC	–	–	

7. PCU (SC6994) SIGNAL DESCRIPTION

Pin No.	Signal Name	In/Out	Description
1	SEL2	In	Select
2	SEL1	In	Select
3	VDD	Out	Power supply
4	ACL		Not used
5	BUSY	In	High: chip select - - - - - - - - - Low: Non-select
6	R/W	In	High: read High to low transition: write
7 ~ 10	D4 ~ 1	In	Data input
11	STP		Not used
12	S	In	Data transfer mode select line High: serial input - - - - - - - - Low: parallel input/output
13	24	In	Print digit select line High: 24 digits (GND connected) Low: 16 digits
14	IDF	Out	Printer motor drive signal
15	H7	Out	Printhead element on pulse
16	H6	Out	Printhead element on pulse
17	GND	In	Power supply
18 ~ 22	H5 ~ H1	Out	Printhead element on pulse
23	R	In	Printer reset (printhead home position detect)
24	PD	Out	Power down (in supply during printer operating cycle, otherwise, power is not supplied to the printer drive circuit.
25	T	In	Printer timing (generated from the tachogenerator of the motor)
26 ~ 28	TS1 ~ 3	In	Test pins
29	VP1	Out	Printer control circuit supply power
30 ~ 32	BC1 ~ 3	In/Out	PCU frequency control
33	CCK	Out	Clock test pin
34	HA	In	Not used → (Print density adjust pin...JA and JB pin connection varies according to the printhead rank).
35	HB		
36	HC	In	
37, 38	CL1, 2	In	Basic clock pulse control resistor fitting pin
39	$\overline{PF}$	In	Paper feed key input
40	NP	In	GND Connected
41	ACL	In	All clear input
42	OP3	Out	ACL select (high when on)
43	OP2		Not used.
44	OP1		Not used.

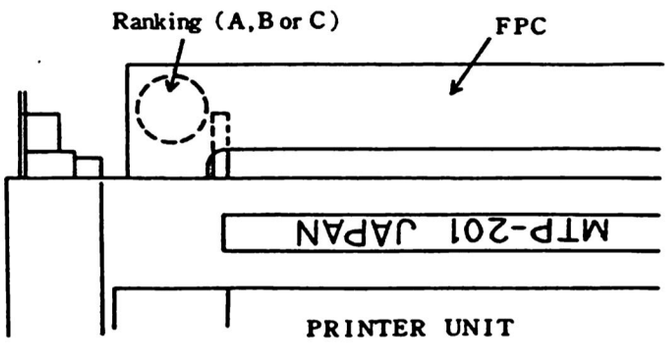
8. SERVICE CAUTIONS

Cautions in exchanging the printer unit

In order to prevent print density variation caused by thermal head resistance variation, the printhead is classified into three ranks of A, B, and C, and the rank is indicated on the reverse side of the printer unit F.P.C. After exchange of the printer unit, relevant circuit change must be observed in accordance with the procedure mentioned below.

Short JA when the rank A printer is used.
Leave all open when the rank B printer is used.
Shrt JC when the rank C printer is used.

Table-1



<Printer head ranking position>

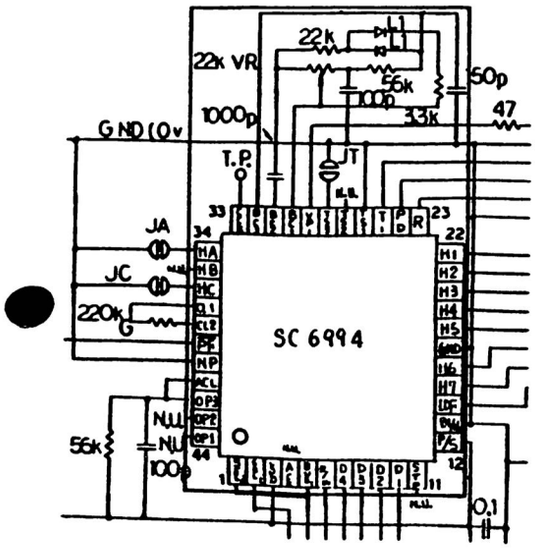
After the above procedure, adjust by means of the 22-Kohms protentiometer so that an optimum print quality is obtained. The circuit has been so designed as to attain the best result with the potentiometer set at its midway.
Therefore, existence of a remarkable print density variation might involve the following problems:

1. Drop in head performance
2. Quality change in the termal recording paper
3. Throuble in the thermal control circuit

1. When VR density adjustment is needed

A) After replacement has been made in some electronic component parts inside the solid line.

B) When service request is placed from the user claiming that print density is too low or high.



2. Print density control method

- Before the print density adjustment, make sure that the jumper pad is properly connected in a manner as described in Table-1.
- The VR should necessarily be set to the position mentioned in Fig. 1. If set too much counterclockwise, it may damage the printhead which may also cause dot omission.

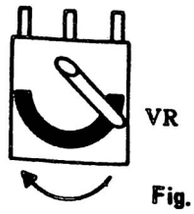


Fig. 1

- Ensure before the operation of the oscilloscope that the time axle control knob is set at CALIBRATION.

Adjust the print density in the following sequence, step 1 thru step 5.

Step 1.
Short the TEST3 jumper pad with a soldering.

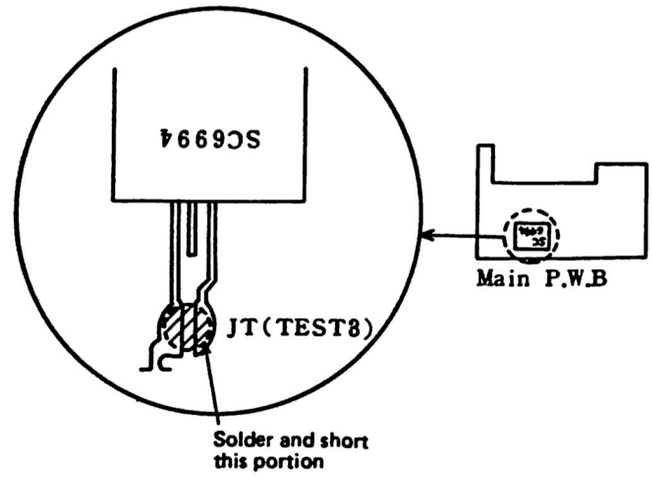
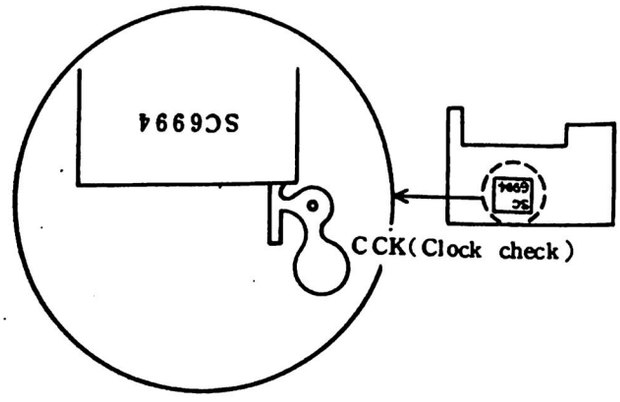


Fig. 2

Step 2.
Connect the EA-23E AC adaptor with the CE-129P after the TEST3 pad temperature came down to the room temperature, and check the voltage between the JT pad and #9 pin of the LB1256 (Vp) using the voltmeter. (Vp: check)

Step 3.
While observing a pulse waveform on the oscilloscope came from the CLOCK CHECK terminal, adjust the 22Kohms VR so that the pulse period (T) should become the value shown in the graph below.



• Pulse waveform

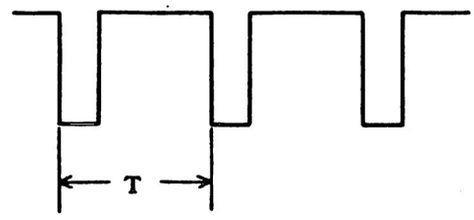
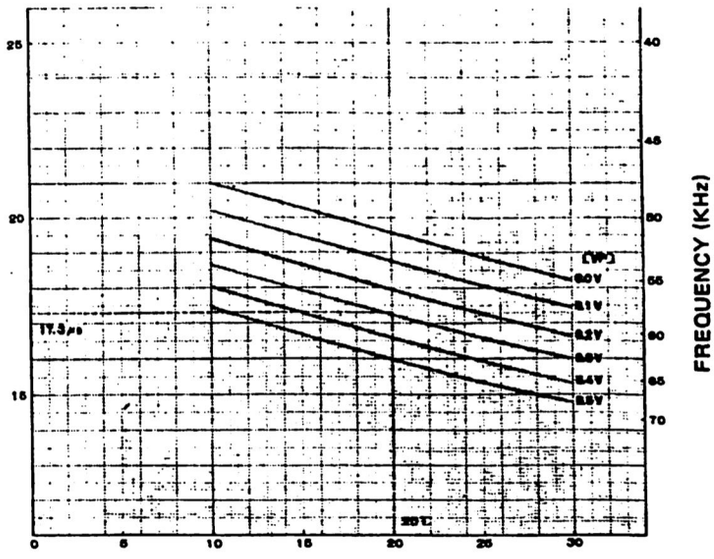


Fig. 3

PULSE PERIOD T (μs)



(An adjustment example)
When Vp is 6.2V under the room temperature of 20°C. It should be adjusted to T = 17.3μs, according to the above graph.

- In case the frequency counter is used
  Frequency counter may be used instead of the oscilloscope. In this case, connect the frequency counter to the CLOCK CHECK terminal and adjust the VR so that it should be the frequency range shown in the above graph.

Step 4.
Have the printer worked to check the actual print density. Among other things, let the capital "I" printed and ensure that there is no vertical dot omission.

Step 5.
After the check of the print result, remove the solder on the TEST3 terminal (Step (1)) and replace the cabinet back in the unit with care not to seize any lead wire with the cabinet.

CE-129P OFF CURRENT CHECK

1. Operate the paper feed key when a computer is not connected to the CE-129P, and check if paper feed operation (ON, OFF) is executed normally.
2. Supply −5.0V from stabilized DC power supply to Vp line. (GND = 0V: standard).
3. Measure the current on Vp line when the power switch is OFF. If it is 20μA or less, it may be recognized that the used power while the power supply is OFF is normal.

Current check during printing

1. Connect a computer to the CE-129P circuit.
2. Supply −5.0V from stabilized DC power supply tp Vp line. (GND = 0V; standard).
3. Set the power switches in the computer and the CE-129P to ON to execute check program 1. (DEF A)

— Print sample —

```
4444444444444444444444
4444444444444444444444
4444444444444444444444
4444444444444444444444
4444444444444444444444
```

— Check program 1 —

```
100:"A" FOR I=1 TO 5
110:LPRINT "444444444444
    444444444444"
120:NEXT I
130:END
```

4. Measure the current on the Vp line in printing, if it is 500mA or less, it may be recognized that the used power during printing is normal.

Low battery detection circuit

A circuit constant is defined so that low battery detection may be executed when Vp voltage is −3.8V or less. When checkprogram is executed after applying −3.8V to the Vp line, if display of ERROR 8 appears on the computer display without printer operation, it may be recognized that the low battery detection circuit is narmal.

Chracter printing grade check

Check the printing grade by executing the check program 2. (DEF B)

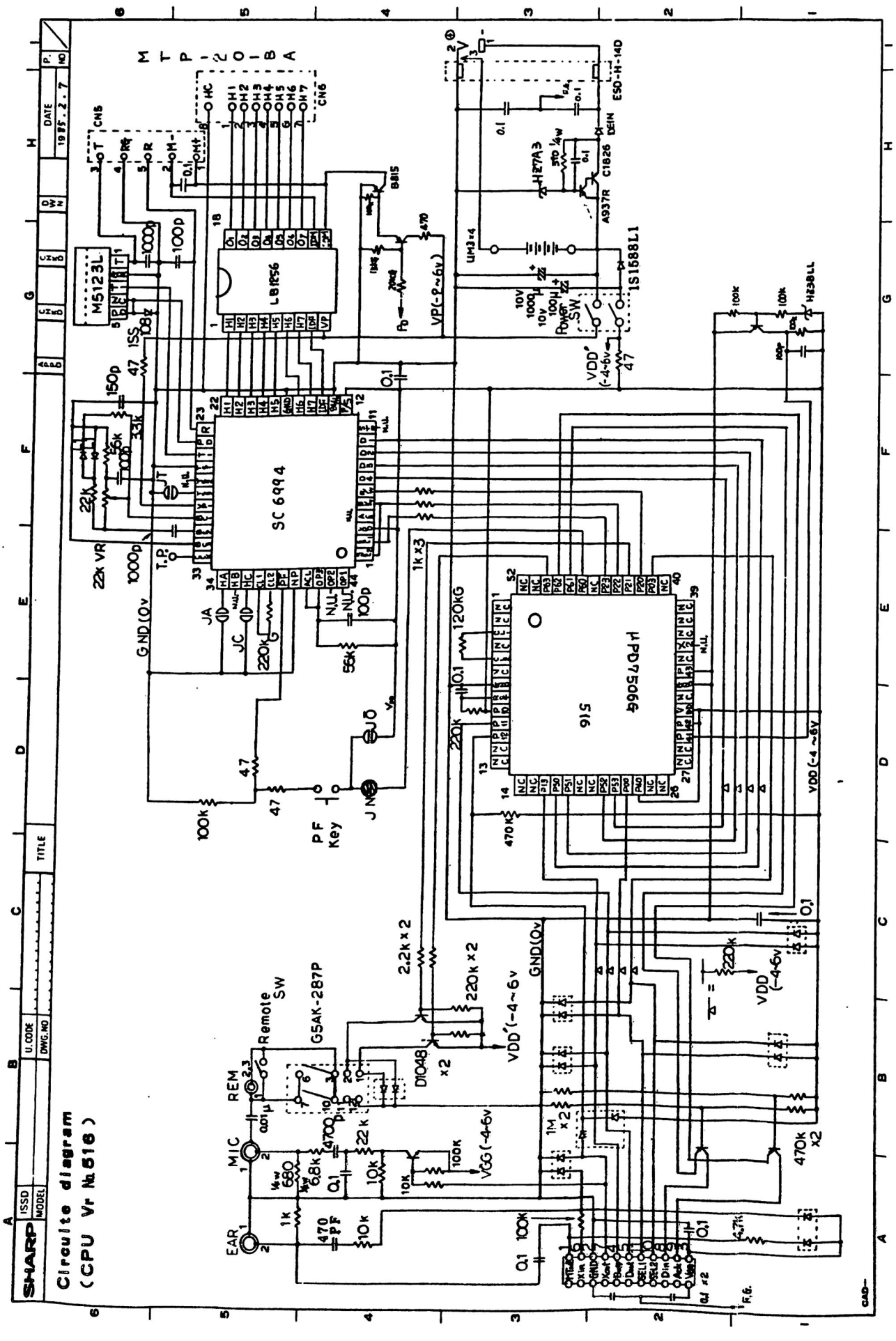
— Print sample —

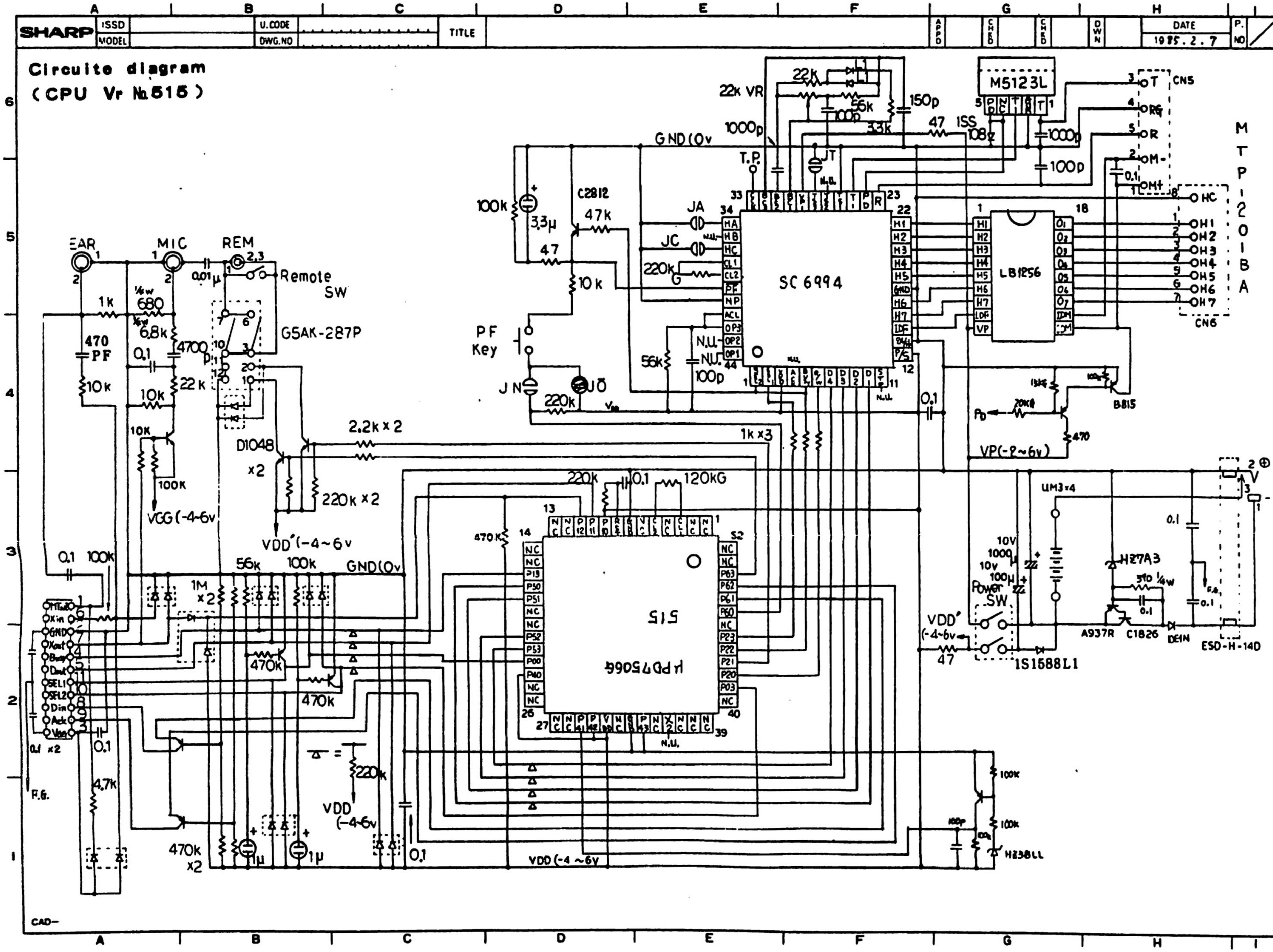
```
!"#$%&'()*+,-./012345678
9:;<=>?@ABCDEFGHIJKLMNOP
QRSTUVWXYZ[¥]^_
```

— Check program 2 —

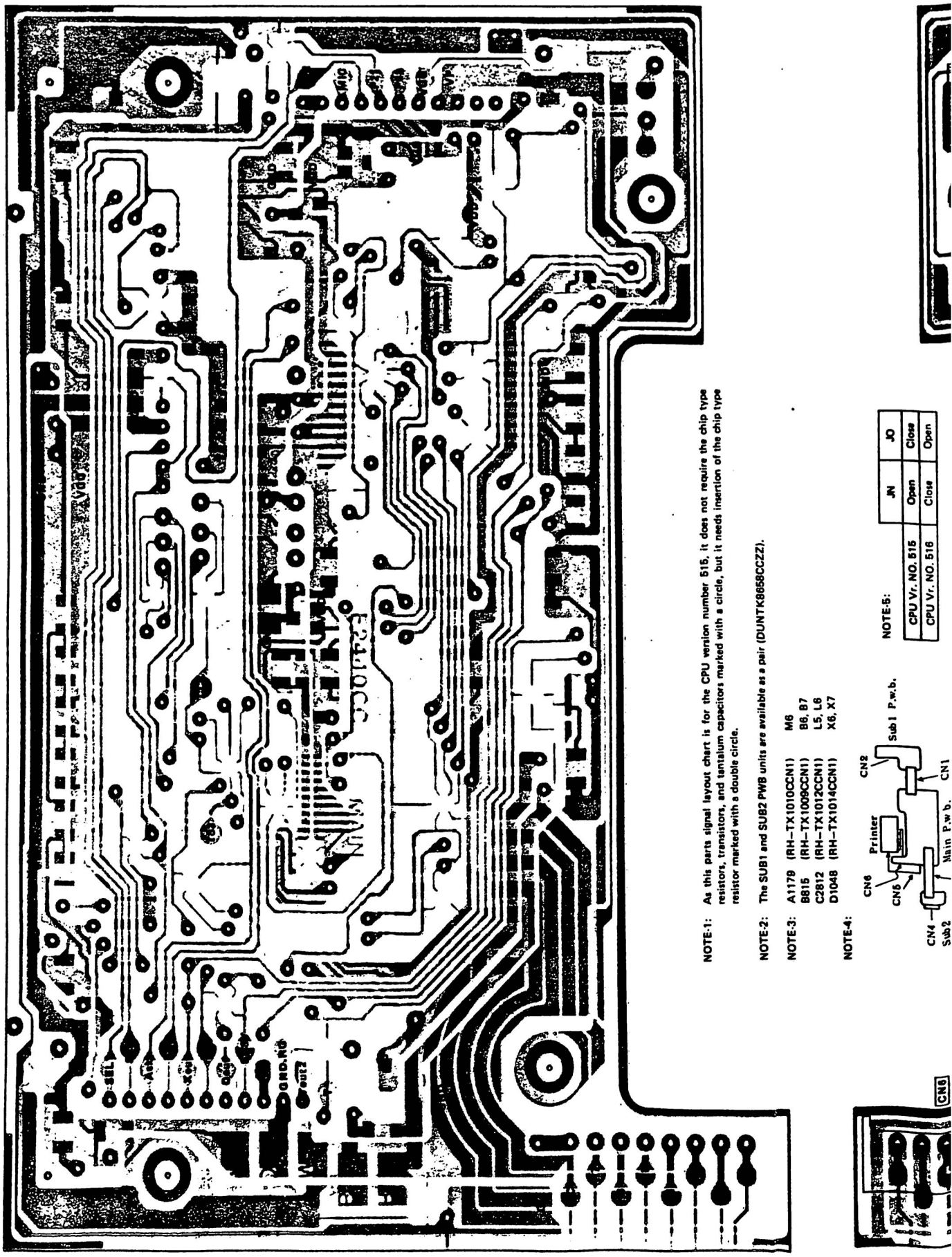
```
200:"B"
210:LPRINT "!";CHR$ 34;"
    #$%&";CHR$ 39;"()*+,
    -./012345678"
220:LPRINT "9:;<=>?@ABCD
    EFGHIJKLMNOP"
230:LPRINT "QRSTUVWXYZ";
    CHR$ 91;CHR$ 92;CHR$
    93;"^";CHR$ 95
240:END
```

9. CIRCUIT DIAGRAM




SHARP
ISSD
MODEL
U.CODE
DWG.NO
TITLE
DATE
1985.2.7
Circuite diagram
(CPU Vr №515)
SC 6994
μPD75066
515
LB1256
M5123L
MTP-201BA
CN5
CN6
EAR
MIC
REM
Remote SW
G5AK-287P
PF Key
D1048 x2
C2812
B815
A937R
C1826
H27A3
H238LL
1S1588L1
ESD-H-14D
UM3×4
Power SW
VDD' (-4~6v
VDD (-4~6v
VGG (-4-6v
VP(-2~6v)
GND (0v
T.P.
22k VR
F.G.
CAD-

10. MAIN P.W.B



NOTE-1: As this parts signal layout chart is for the CPU version number 515, it does not require the chip type resistors, transistors, and tantalum capacitors marked with a circle, but it needs insertion of the chip type resistor marked with a double circle.

NOTE-2: The SUB1 and SUB2 PWB units are available as a pair (DUNTK8658CCZZ).

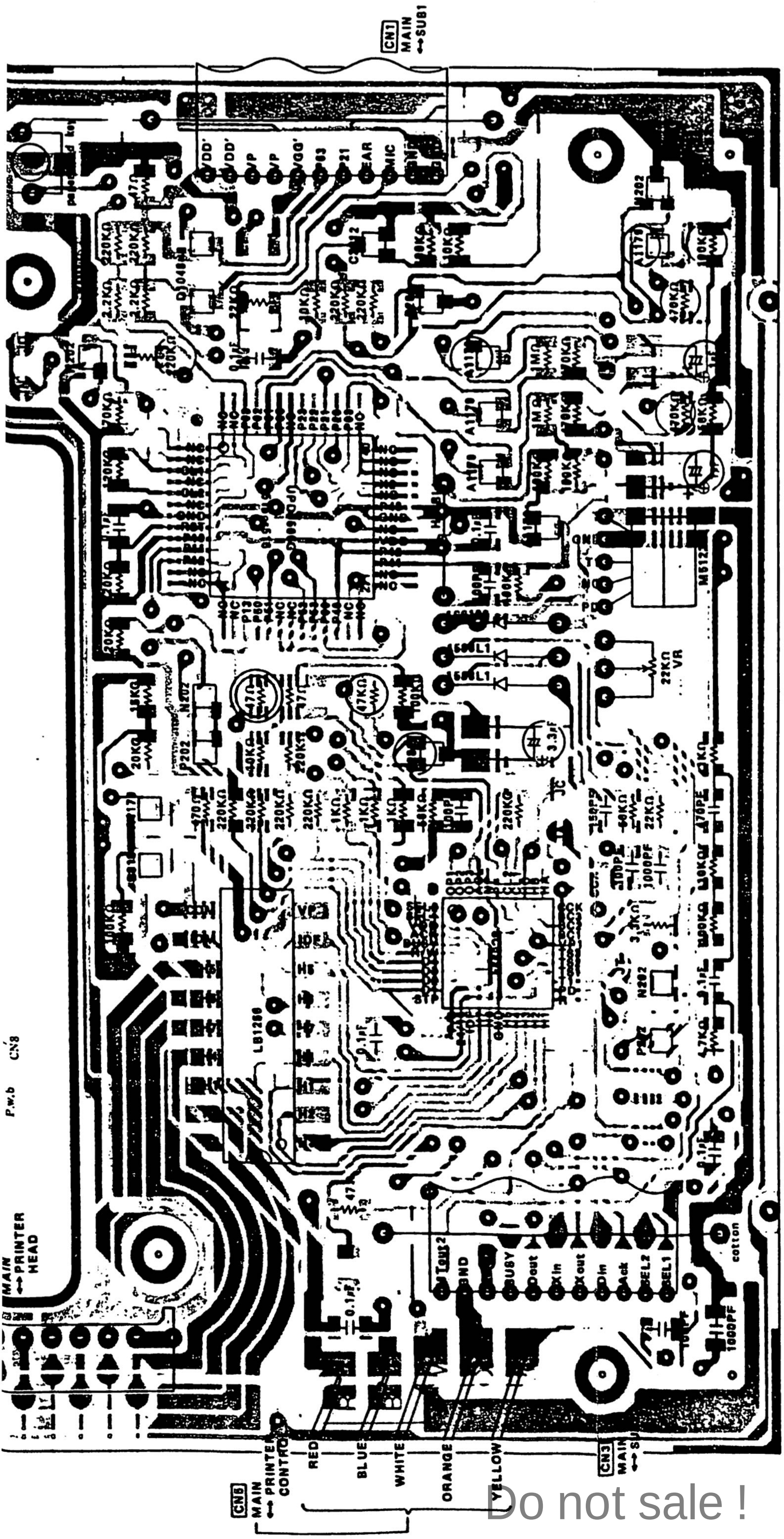
NOTE-3:

A1179	(RH-TX1010CCN1)	M6
B815	(RH-TX1009CCN1)	B6, B7
C2812	(RH-TX1012CCN1)	L5, L6
D1048	(RH-TX1014CCN1)	X6, X7

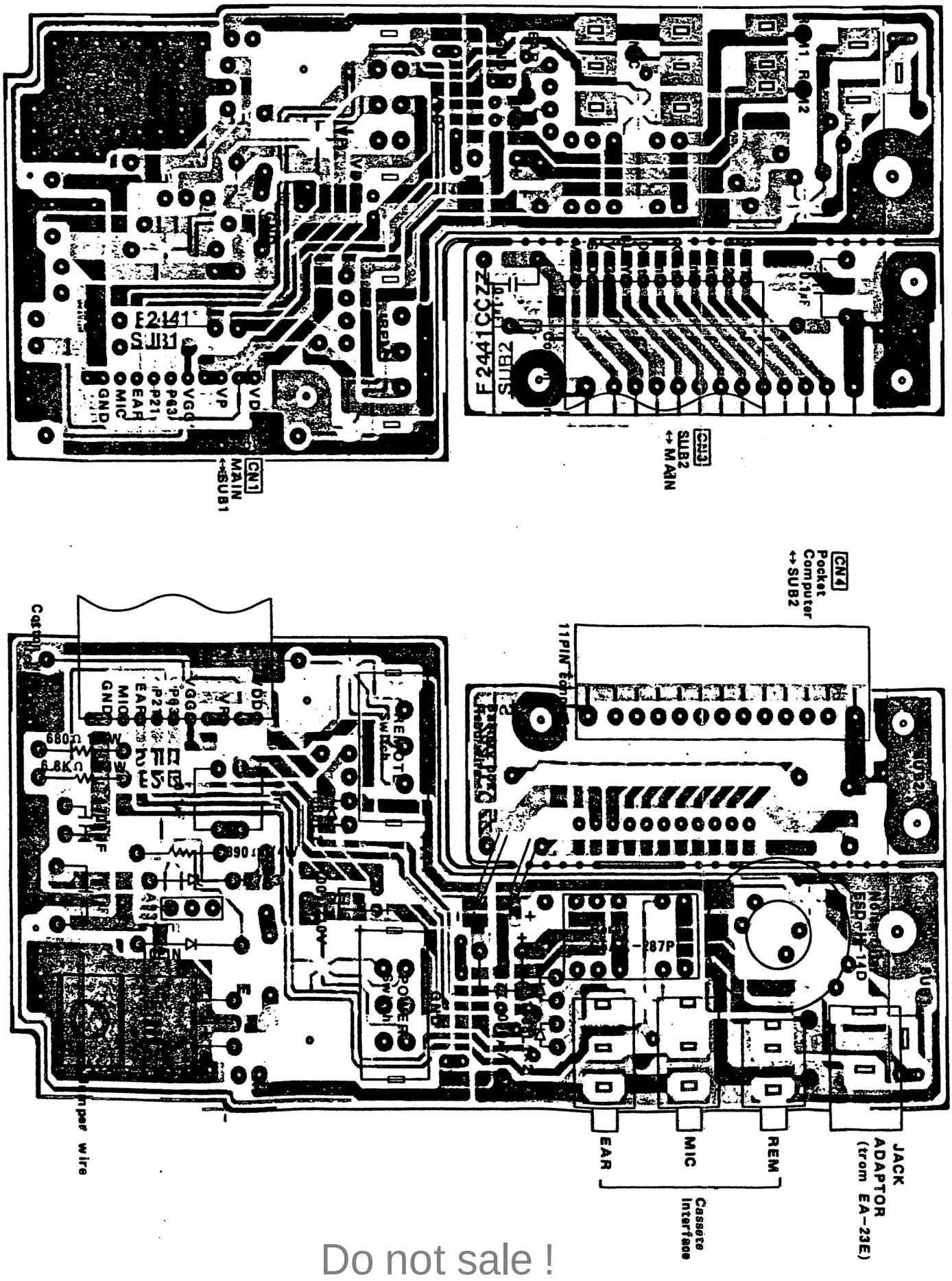
NOTE-4:

NOTE-5:

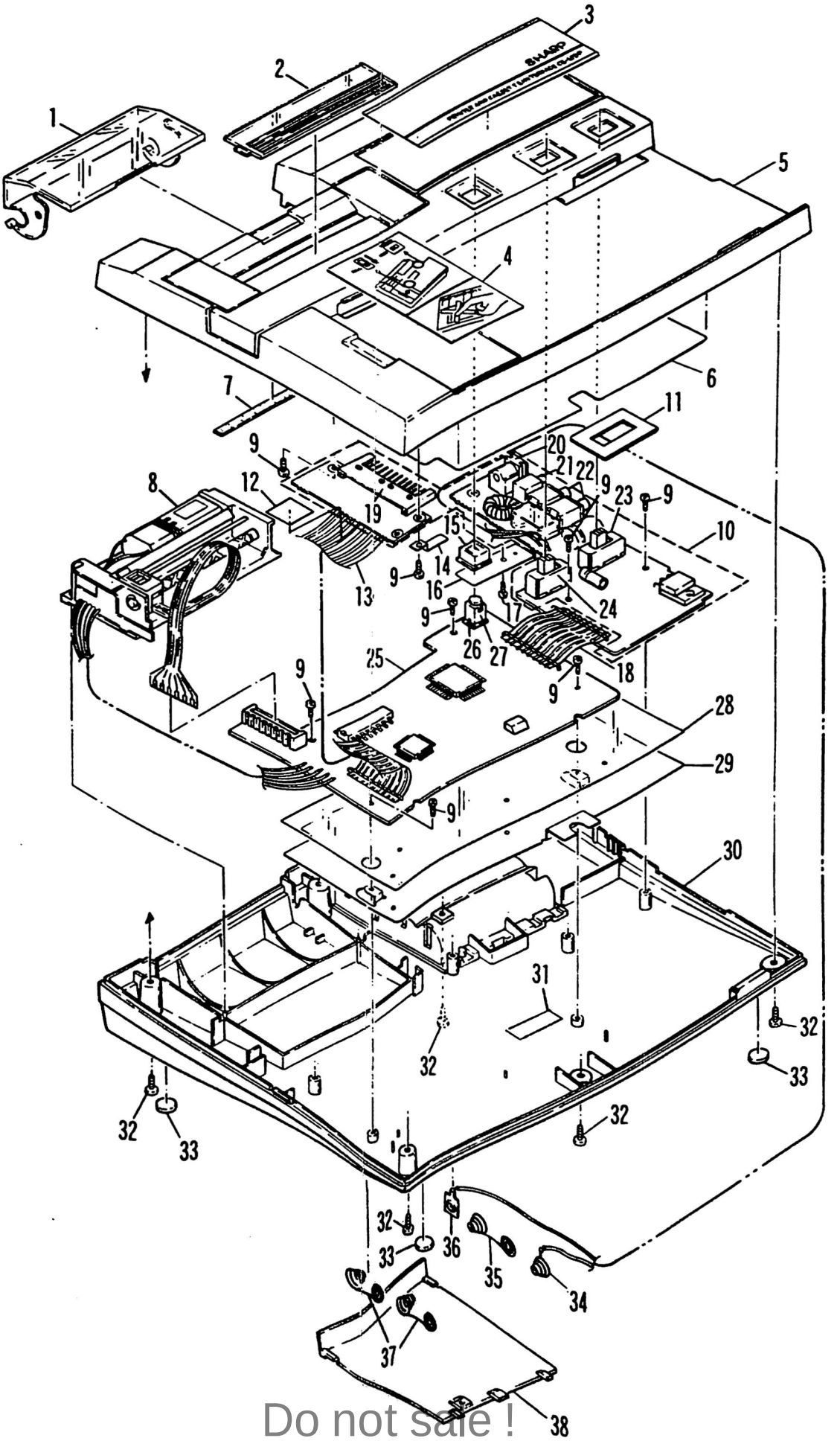
	JN	JO
CPU Vr. NO. 515	Open	Close
CPU Vr. NO. 516	Close	Open


CN1
MAIN
↔SUB1
LB1280
M6122
MAIN
↔PRINTER
HEAD
P.w.b CN8
CN5
MAIN
↔PRINTER
CONTROL
RED
BLUE
WHITE
ORANGE
YELLOW
CN3
MAIN
↔SU

11. SUB P.W.B



12. PARTS LIST & GUIDE



2 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
35	VRS-TP2BD224J	AA		C	Resistor (1/8W 220KΩ ±5%)
36	VRS-TP2BD332J	AA		C	Resistor (1/8W 3.3KΩ ±5%)
37	VRS-TP2BD470J	AA		C	Resistor (1/8W 47Ω ±5%)
38	VRS-TP2BD471J	AA		C	Resistor (1/8W 470Ω ±5%)
39	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)
40	VRS-TP2BD473J	AA		C	Resistor (1/8W 47KΩ ±5%)
41	VRS-TP2BD474J	AA		C	Resistor (1/8W 470KΩ ±5%)
42	VRS-TP2BD563J	AA		C	Resistor (1/8W 56KΩ ±5%)
	(Unit)				
901	DUNTK8655CCZZ	BG	N	E	Main PWB unit

3 Sub PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	QCNCM1307CC1B	AK		B	Connector (11pin)
2	QJAKC1003CCZZ	AD		B	Jack (for AC adaptor)
3	QJAKC1013CCZZ	AC		B	Jack (for MIC)
4	QJAKC1016CCZZ	AC		C	Jack socket (for Remote)
5	QSW-S0075FCZZ	AF		B	Slide switch
6	QSW-S1255CCZZ	AG		B	Slide switch
7	QTANS1408CCZZ	AB		C	Spring
8	VCTYPU1NX104M	AB		C	Capacitor (12WV 0.10μF)
9	RFiLN1008CCZZ	AH		C	Filter (ESD-H-14B)
10	RRLYZ2400QCZZ	AP		B	Relay
11	VCEAGU1AW107M	AB		C	Capacitor (10WV 100μF)
12	VCEAGU1AW108M	AC		C	Capacitor (10WV 1000μF)
13	VCTYPU1EX472M	AA		C	Capacitor (25WV 4700pF)
14	VHDDS1588L2-1	AB		B	Diode (DS1588L2)
15	VHD10E1N///-1	AB		B	Diode (10E1N)
16	VHEHZ7A3///-1	AB		B	Zener diode (HZ7A3)
17	VRD-ST2EY391J	AA		C	Resistor (1/4W 390Ω ±5%)
18	VRD-ST2EY681J	AA		C	Resistor (1/4W 680Ω ±5%)
19	VRD-ST2EY682J	AA		C	Resistor (1/2W 6.8KΩ ±5%)
20	VS2SA937-R/-1	AC		B	Transistor (2SA937-R)
21	VS2SC1826-GBC	AF		B	Transistor (2SC1826-GBC)
	(Unit)				
901	DUNTK8658CCZZ	BG	N	E	Sub PWB unit

4 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PHOG-1093CCZZ	AB		C	Rubber cap for 11pin connector cable
2	QPLGJ1022CCZZ	AQ		C	Cassette cable
3	TCAUK1198CCZZ	AA		C	Caution card for 11pin connector rubber cap (Export)
4	UBAGC1438CCZZ	AU	N	D	Carrying case
5	TINSE4456CCZZ	AL	N	D	Instruction book (USA only)
	TINSM4478CCZZ	AV	N	D	Instruction book (E,F,G,I,S)
6	SPAKA517ACCZZ	AF	N	D	Packing cushion for set
7	SPAKC518ACCZZ	AH	N	D	Packing case (USA only)
	SPAKC519ACCZZ	AH	N	D	Packing case (Except USA)
8	TLABP1002ECZZ	AB	N	C	Bar cord label (USA only)

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SHARP CORPORATION
Information Systems Group
Quality & Reliability Control Center
Yamatokoriyama, Nara 639-11, Japan
1985 August Printed in Japan Ⓢ

1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	GCOVA1360CC01	AC	N	D	Paper cover
2	PCUT-1025CCZZ	AC		D	Paper cutter
3	HDECA2189CCZZ	AD	N	D	Dec. panel A
4	HDECA2089CC01	AC	N	D	Dec. panel B
5	CCABB2863CC01	AL	N	D	Top cabinet
6	PTPEH1303CCZZ	AD	N	C	Shield tape
7	PCUSS1218CCZZ	AA		C	Printer cushion
8	Ki-OB0081CCZZ	BG		E	Thermal printer unit (MTP-201)
9	XUBSD20P05000	AA		C	Screw (2×5)
10	DUNTK8658CCZZ	BG	N	E	Sub PWB unit
11	PSHEP1108CCZZ	AA		C	Slide switch spacer
12	PZETL1161CCZZ	AA		B	Insulator
13	QCNW-1329CCZZ	AD	N	C	FPC (AP11L085A05)
14	QTANZ1426CCZZ	AB		C	Terminal
15	JKNBZ1808CC01	AG		D	Key top (P.F)
16	LFiX-1147CCZZ	AA		C	Fixing plate for P.F key top
17	XUBSD20P04000	AA		C	Screw (2×4)
18	QCNW-1328CCZZ	AC	N	C	FPC (AP11L035A05)
19	QCNCM1307CC1B	AK		B	Connector (11pin)
20	QJAKC1003CCZZ	AD		B	Jack (for AC adaptor)
21	QJAKC1016CCZZ	AC		C	Jack socket (for Remote)
22	QJAKC1013CCZZ	AC		B	Jack (for MIC)
23	QSW-S0075FCZZ	AF		B	Slide switch
[illegible]	QSW-S1255CCZZ	AG		B	Slide switch
[illegible]	DUNTK8655CCZZ	BG	N	E	Main PWB unit
26	PSPAP1230CCZZ	AA		C	Spacer
27	QSW-K1295CCZZ	AD		B	Paper feed switch
28	PZETL1586CCZZ	AB	N	C	Insulator sheet
29	PSLDC1511CCZZ	AD	N	C	Shield plate
30	GCABA2862CCZZ	AH	N	D	Bottom cabinet
31	PTPEH1084CCZZ	AA		C	Tape
32	XUBSF26P06000	AA		C	Screw (2.6×6)
33	GLEGP1009CCZZ	AA		C	Rubber foot
34	QTANZ1055CCZZ	AA		B	Battery terminal (⊖)
35	QTANZ1506CCZZ	AA	N	C	Battery terminal B
36	QTANZ1186CCZZ	AA		B	Battery terminal (⊕)
37	QTANZ1505CCZZ	AA	N	C	Battery terminal
38	GFTAB1321CCZZ	AC	N	D	Battery cover

2 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PSPAP1230CCZZ	AA		C	Spacer
2	QCNCW1308CCAi	AC		B	Connector for printer (8pin Black)
3	QSW-K1295CCZZ	AD		B	Paper feed switch
4	RC-CZ1021CCZZ	AB		C	Capacitor (0.1μF)
[illegible]	RC-CZ1031CCZZ	AB		C	Capacitor (1000pF)
[illegible]	RC-CZ1035CCZZ	AC		C	Capacitor (100pF)
7	RC-CZ1038CCZZ	AB		C	Capacitor (470pF)
8	RC-CZ1052CCZZ	AB		C	Capacitor (150pF)
9	RC-SZ1018CCZZ	AD		C	Capacitor
10	RC-SZ1021CCZZ	AC		C	Capacitor (10WV 3.3μF)
11	RH-DZ1005CCZZ	AC		B	Diode (DAP202)
12	RH-DZ1008CCZZ	AC		B	Diode (DAN202)
13	RH-TX1009CCZZ	AC		C	Transistor
14	RH-TX1010CCZZ	AC		B	Transistor (2SA1179)
15	RH-TX1012CCZZ	AC		B	Transistor (2SC2812)
16	RH-TX1014CCZZ	AC		B	Transistor (2SD1048)
17	RVR-MB410QCZZ	AD		B	Variable resistor (22KΩ)
18	VHDDS1588L2-1	AB		B	Diode (DS1588L2)
19	VHD1SS108//-1	AB		B	Diode (1SS108)
20	VHEHZ3BLL//-1	AC		B	Zener diode (HZ3BLL)
21	VHiD7506G-515	AU		B	IC (D7506G-515)
22	VHiLB1256//-1	AK		B	IC (LB1256)
23	VHiM5123L//-1	AG		B	IC (M5123L)
24	VHiSC6994//-1	AS		B	IC (SC6994)
25	VRS-TP2BD102J	AA		C	Resistor (1/8W 1KΩ ±5%)
26	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)
27	VRS-TP2BD104J	AA		C	Resistor (1/8W 100KΩ ±5%)
28	VRS-TP2BD105J	AA		C	Resistor (1/8W 1.0MΩ ±5%)
29	VRS-TP2BD124G	AA		C	Resistor (1/8W 120KΩ ±2%)
30	VRS-TP2BD153G	AA		C	Resistor (1/8W 15KΩ ±2%)
31	VRS-TP2BD203G	AA		C	Resistor (1/8W 20KΩ ±2%)
32	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)
33	VRS-TP2BD223J	AA		C	Resistor (1/8W 22KΩ ±5%)
34	VRS-TP2BD224G	AA		C	Resistor (1/8W 220KΩ ±2%)