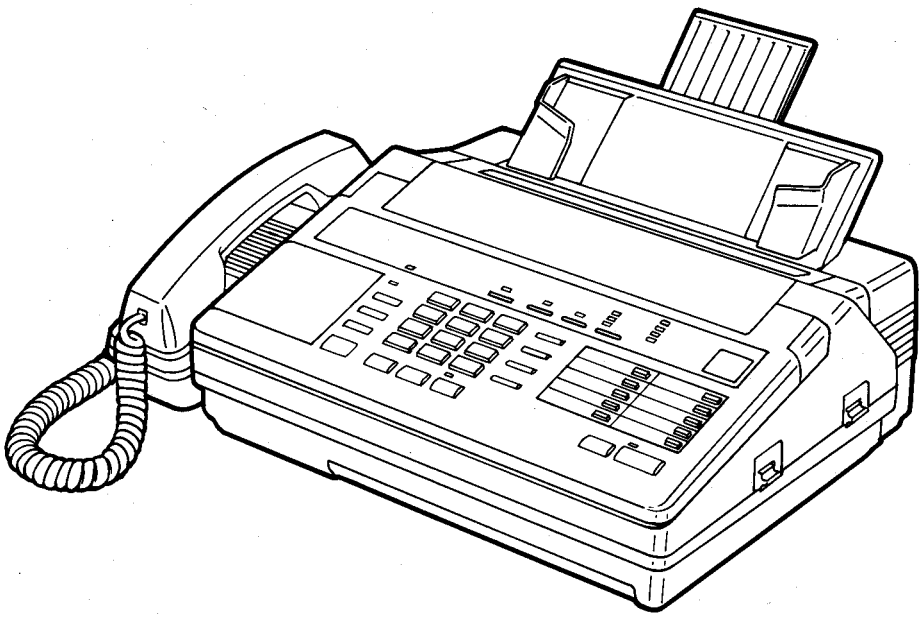
ORDER NO. KM49010294C1
F7

Service Manual
and Technical Guide

TELEPHONE ANSWERING
SYSTEM WITH FACSIMILE

KX-F50

REVISION



SPECIFICATIONS\ ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
MAINTENANCE ITEM\ ТОЧКИ СЕРВИСНОГО ОБСЛУЖИВАНИЯ
TROUBLESHOOTING GUIDE\ НЕИСПРАВНОСТИ И МЕТОДЫ ИХ УСТРАНЕНИЯ
DISASSEMBLY INSTRUCTIONS\ МЕТОДИКА РАЗБОРКИ
ADJUSTMENTS\ РЕГУЛИРОВКИ
GENERAL BLOCK DIAGRAM\ ОБЩАЯ БЛОК-СХЕМА
SCHEMATIC DIAGRAMS\ ПРИНЦИПИАЛЬНЫЕ СХЕМЫ
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES\ ЦОКОЛЕВКА ВЫВОДОВ МИКРОСХЕМ, ТРАНЗИСТОРОВ И ДИОДОВ
CONNECTOR LEAD AND EXTENTION CORD CONNECTION METHOD\ РАСПОЛОЖЕНИЕ РАЗЪЕМОВ И МЕТОД ПОДКЛЮЧЕНИЯ ШТАТНЫХ И СЕРВИСНЫХ КАБЕЛЕЙ
CABINET, MECHANICAL AND ELECTRICAL PARTS LOCATION\ РАСПОЛОЖЕНИЕ ЧАСТЕЙ КОРПУСА, МЕХАНИЧЕСКИХ И ЭЛЕКТРИЧЕСКИХ ЧАСТЕЙ
CASSETTE DECK PARTS LOCATION\ РАСПОЛОЖЕНИЕ ЧАСТЕЙ ДЕКИ
ACCESSORIES AND PACKING MATERIALS\ ПРИНАДЛЕЖНОСТИ И УПАКОВОЧНЫЕ МАТЕРИАЛЫ
REPLACEMENT PARTS LIST\ СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

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SPECIFICATIONS

1. Integrated Telephone System (ITS) Section

Type:	K type handset, Single line ITS
	Push button type 12 key dial pad
Function:	Line monitor (Volume control type)
	10 stations automatic dialer (30 digits)
	Auto redial
	Combination dialing
	20 speed dialer
	Ringer control (3-steps control type)
	Pulse dialing or DTMF (Tone) Dialing

2. AutomaticTelephone Answering System (ATAS) Section

Type:	1 micro cassette automatic logic control mode
	Semiconductor record/playback mode OGM
	DTMF tone remote control
Function:	Remote turn on
	Message memo (Remote record/playback type)
	2 way record
	Call counter (Remote listening)
	Operation selectable 3 digits ID code
	CPC control
	TEL/FAX TAD/FAX selector

3. Facsimile Section

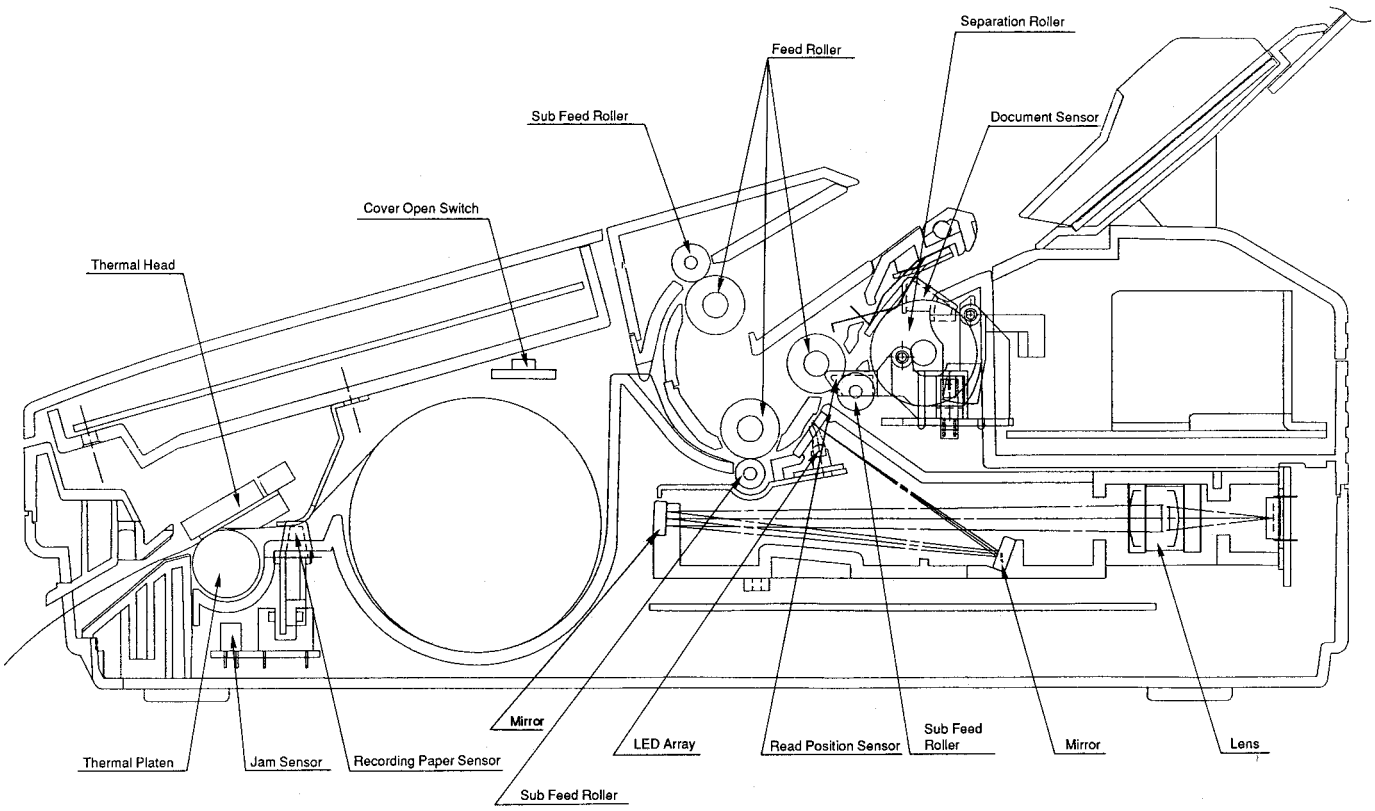
Type:	Desk top
Applicable Lines:	Public switched telephone network
Compatibility:	CCITT G3
Document Size:	MAX. 8 1/2" (216 mm) in width, MAX. 23 5/8" (600 mm) in length
Effective Scanning Width:	MAX. 8 3/16" (208 mm)
Printing Paper Size:	8 1/2" (letter) x 98ft roll (216 mm x 30 m roll)
Effective Printing Width:	8 3/16" (208 mm)
Transmission Time:	Approx. 30 sec/page (G3 Normal mode)
	Approx. 17 sec/page (Original mode)
Scanning Density:	Horizontal 203 pels/inch (8 pels/mm)
	Vertical 98 lines/inch (3.85 lines/mm)-Standard
	196 lines/inch (7.7 lines/mm)-Fine
Image Sensor Type:	CCD image sensor
Printer Type:	Thermal printer
Data Compression System:	Modified Huffman (MH)
Modem Speed:	9600/7200/4800/2400 bps; Automatic fallback
Function:	10 stations automatic transmission
	Automatic document feeder (Max. 10 page), Polling

4. General

Power Supply:	AC 120V, 60Hz
Power Consumption:	65W
	Battery 3V (Lithium Battery)...for Memory Backup
Speaker:	1 31/32" (5 cm) PM dynamic
Microphone:	Condensor microphone (for OGM record)
Dimensions (H x W x D):	4 29/32" x 16 7/8" x 9 9/32" (125 x 429 x 312 mm)
Weight:	11 lb 7.4 oz. (5.2kg)

Design and specifications are subject to change without notice.

2. MAINTENANCE CHECK ITEM



NO.	OPERATION	CHECK ITEM	REMARKS
1	Document Path	Remove any foreign matter such as paper.	-----
2	Rollers	If the roller is dirty, clean it with a damp cloth then dry thoroughly.	See page 11.
3	Thermal Platen	If the platen is dirty, clean its with a damp cloth then dry thoroughly. Remove the piece of paper.	See page 11.
4	Thermal Head	If the thermal head is dirty, clean the printing surface with a cloth moistened with denatured alcohol (alcohole without water), then dry thoroughly.	See page 11.
5	LED Array	If the LED Array is dirty, clean the glass dry soft cloth.	See page 11.
6	Sensor & Switch	Jam Sensor(PC801), Recording Paper Sensor(PC802), Document Sensor(PC701), Read position Sensor (PC702), Cover Open Switch (SW901). Confirm operation of sensor.	Pages 26-28.
7	Mirrors and Lens	If the mirror and lens are dirty, clean its with a dry soft cloth.	-----
8	Cassette Deck	If the capstan, pinch roller and heads, clean its.	See page 10.
9	Abnormal, wear and tear or looseness of parts	Exchange the part. Check the tightness of screws on each parts.	-----

1. TEST MODE

Test Mode	Function	Operation
1. Printer Test	Print a test pattern and check the thermal head for abnormalities (missing dots, etc.) and also check the operation of the reception motor.	1. Press the PROGRAM button. 2. Press the #, 4 and 2 buttons. 3. Press the START button.
2. Motor Test	Rotate the transmission and reception motors to check the operation of the motors.	1. Press the PROGRAM button. 2. Press the #, 9, 0, 0, 0 and ✕ buttons. 3. Press the 5 and 6 buttons. 4. Press the START button. 5. Press the STOP/CLEAR button.
3. Modem Test	Send four kinds of FAX signals to check the sending function of the modem. 1) 462 Hz: Consecutive signal of PIS for tonal process. 2) 1100 Hz: Consecutive signal of EOM for tonal. 3) 2100 Hz: G2 carrier signal Consecutive of CED signal 4) G3, V29 training signal [modulation wave of carrier signal (1700 Hz)]	1. Press the PROGRAM button. 2. Press the #, 9, 0, 0, 0 and ✕ buttons. 3. Press the 5 and 4 buttons. 4. Press the START button. (every time press; 462 Hz→1100 Hz→2100 Hz→V29) 5. Press the STOP/CLEAR button.
4. Scanner Test	Turn on the LED lamp for document and operate the read system (there is no need to use paper). Observe the signals obtained to check the read system.	1. Press the PROGRAM button. 2. Press the #, 9, 0, 0, 0 and ✕ buttons. 3. Press the 5 and 5 buttons. 4. Press the START button. 5. Press the STOP/CLEAR button.
5. ROM Check	Check the ROM (IC102) by means of a check sum to see if the contents have been destroyed and also to check the version.	1. Press the PROGRAM button. 2. Press the #, 9, 0, 0, 0 and ✕ buttons. 3. Press the 5 and 1 buttons. 4. Press the START button.
6. RAM Check (Memory Clear)	The read and write operations of the RAMs (IC103, 502) can be checked to see whether or not the contents have been destroyed. **Note:** Before servicing, you must print the telephone and system list and keep the printouts as the memory will be cleared when the RAM is checked.	1. Press the PROGRAM button. 2. Press the #, 9, 0, 0, 0 and ✕ buttons. 3. Press the 5 and 0 buttons. 4. Press the START button.

2. SERVICE HINTS

SYMPTOM	CURE
1. Defective general ATAS/ITS operation.	Defective solder of IC15 or check solder short.
1) Defective OGM record/playback.	Replace IC5 → IC6 → IC7.
2) Does not pull the plunger.	Replace Q27 and Q29.
3) Holds line constantly.	Replace Q6 and SA1.
4) ICM will not cut off.	Check R86, R124, C106 and C108.
5) Does not rewind.	Check Q22, Q23 and Q24.
6) Does not fast forward.	Check Q20.
2. Other defective operation.	Defective solder of IC301 or IC501, check short of solder. (Refer to pages 22 and 23.)

3. SERVICE FUNCTION TABLE

OPERATION:
1. Press the PROGRAM button.
2. Press the #, 9, 0, 0, 0 and ✳ buttons.
3. Input the code No.
4. Set the range (number).
5. Press the SET button. (An exception of code No. 50, 51, 54~57.)

Code	Function	Set Value	Effective Range	Default	Remarks
01	Pause time set	×100 ms.	000~600	050	
02	Flash time set	×10 ms.	01~99	70	
03	Dial speed select	1..10PPS 2..20PPS	1, 2	1	
10	VOX time select	1..6 seconds 2..4 seconds	1, 2	1	
20	CED frequency select	1..2100 Hz 2..1100 Hz	1, 2	1	
21	International mode select	1..On 2..Off	1, 2	1	
22	Auto recovery select	1..On 2..Off	1, 2	1	
23	Receive equalizer select	1..0.0 Km 2..1.8 Km 3..3.6 Km 4..7.2Km	1~4	2	
24	Transmit equalizer select	1..0.0 Km 2..1.8 Km 3..3.6 Km 4..7.2Km	1~4	2	
50	Memory clear (Refer to page 13.) Returns the set values of #1~#34 (#30~E34: user selectable) to default				"START/COPY" input
51	ROM check (Refer to page 13.)				"START/COPY" input
52	DTMF single tone transmit select	1...On 2..Off	1, 2	2	Refer to page 15.
53	Monitor on FAX communication select	1..all phases 2..phase B 3..Off	1~3	3	
54	Modem test (Refer to page 13.)				"START/COPY" input
55	Scanner test (Refer to page 13.)				"START/COPY" input
56	Motor test (Refer to page 13.)				"START/COPY" input
57	LED test				"START/COPY" input
59	Paper jam detection select	1..On 2..Off	1, 2	1	
60	Cutter select	1..1 per page 2..2 per call 3..Off	1~3	1	
63	CCD position adjustment value set	×1 mm	–20~20	00	Press "*" for entering negative values.
70	BREAK % select	1..61% 2..67%	1, 2	1	
71	ITS auto redial time set	×number of times	00~99	14	
72	ITS auto redial line disconnection time set	× second	001~999	30	
73	Remote turn-on ring number set	×number of rings	00~99	15	

Code	Function	Set Value	Effective Range	Default	Remarks
80	TAM sequential tone detection select	1..On 2..Off	1, 2	1	
82	2-way recording select	1..Enable 2..Disable	1, 2	1	
83	2-way beep time set	×10 ms.	00~99	17	
84	Initial OGM reload select	1..On 2..Off	1, 2	1	
86	White line skip 1 select	1..On 2..Off	1, 2	1	
87	White line skip 2 select	1..On 2..Off	1, 2	1	
90	FAX auto redial time set	×number of times	00~99	05	
91	FAX auto redial line disconnection time set	×second	001~999	045	
92	CNG transmit select	1..auto/manual 2..auto 3..Off	1~3	1	
93	Time between CED and 300 bps	×10 ms.	006~999	008	
94	Overseas DIS detection select	1..detects at the 1st time 2..detects at the 2nd time	1, 2	1	
95	Receive error limit value set	×number of times	000~999	100	
96	Transmit level set	× dBm	−15~00	10	The values entered without "minus sign" will be regarded as negative.
97	Transmit speed fixed mode select	1..9600BPS 2..7200BPS 3..4800BPS 4..2400BPS 5..Off	1~5	5	
----	User setting list output				"START/COPY" input (If pressed down for more than 3 seconds, codes will also be output.)
74	Dial Tone Defection set	1. On 2. Off	1, 2	2	
81	ICM Tape End Defection set	1. Off 2. Off	1, 2	2	

DTMF single tone transmit select.
When set to ON (=1), the 12 keys and transmission frequencies are as shown.

Key	Frequency(Hz)	Key	Frequency(Hz)
"1"	697	"5"	1209
"2"	770	"6"	1366
"3"	852	"7"	1477
"4"	941		

When set to OFF (=2), the 12 keys and transmission frequencies are as shown.

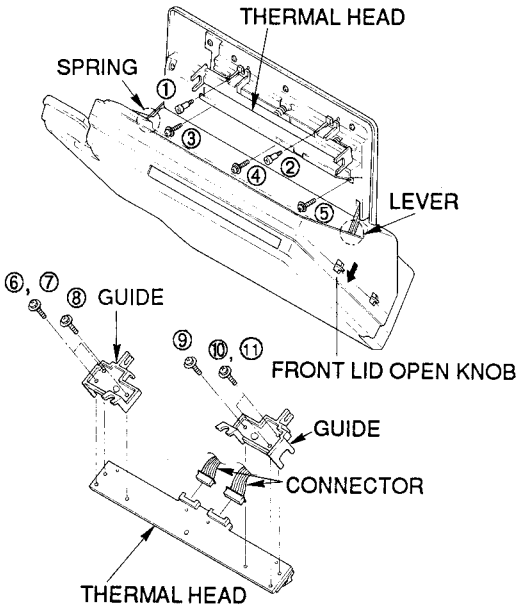
Low(Hz) \ High(Hz)	1209	1366	1477
697	"1"	"2"	"3"
770	"4"	"5"	"6"
852	"7"	"8"	"9"
941	"*"	"0"	"#"

DISASSEMBLY INSTRUCTIONS

Ref. No. 1	HOW TO REMOVE THE THERMAL HEAD

Procedure 1

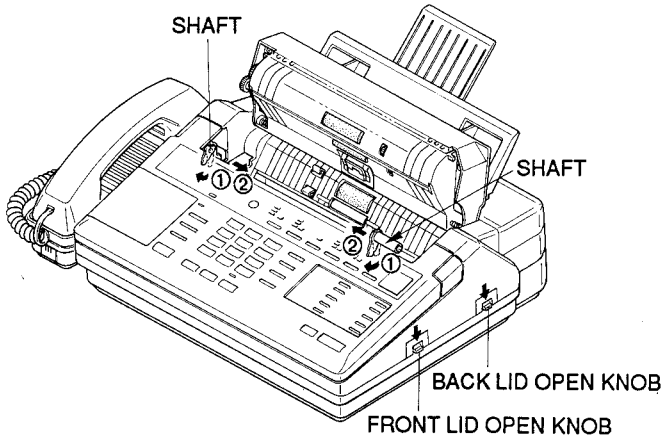
Fig. A

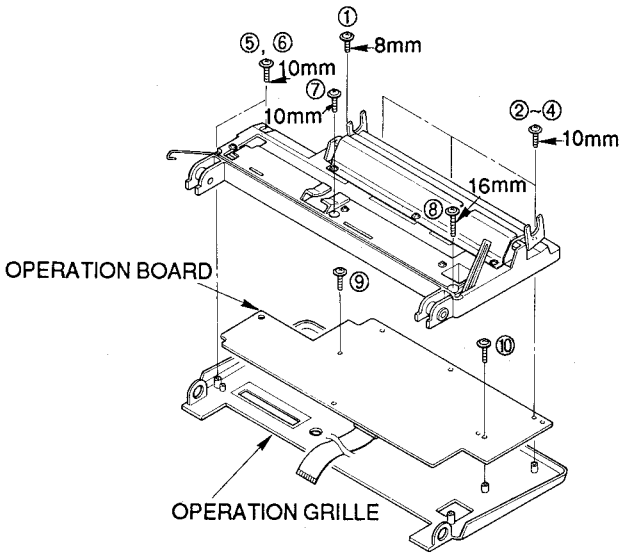


1. Push the front lid open knob.
2. Remove the 2 screws (①, ②).
3. Remove the 3 screws (③-⑤).
4. Remove the thermal head.
5. Remove the 6 screws (⑥-⑪).
6. Pull out the 2 connectors.
7. Remove the guide of the thermal head.
8. Exchange the thermal head.

Ref. No. 2	HOW TO REMOVE THE OPERATION GRILLE AND BOARD

Procedure 2

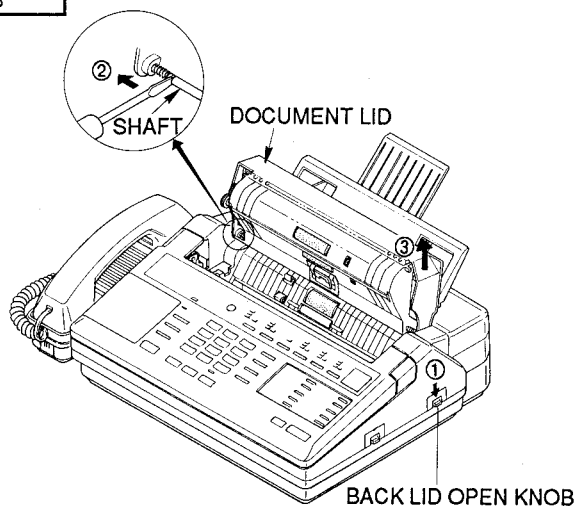


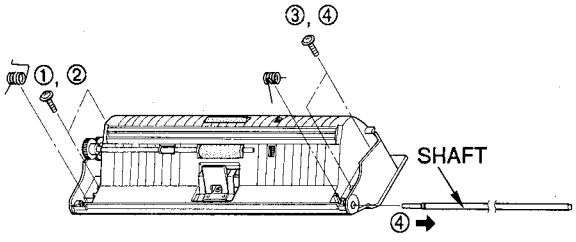


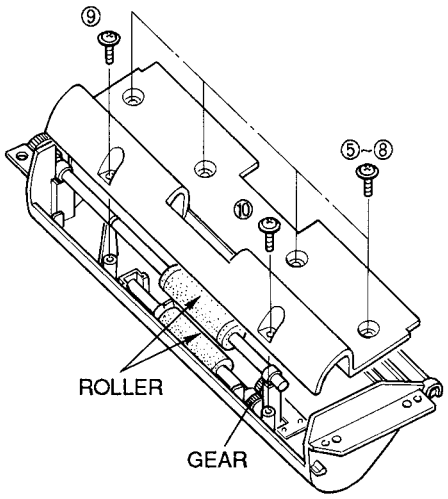
1. Push the back lid open knob.
2. Remove the 2 shafts.
3. Push the front lid open knob.
4. Remove the spring and lever. (See Fig. A).
5. Remove the 8 screws (①-⑧).
6. Remove the 2 screws (⑨, ⑩).
7. Remove the operation geille and board.

Ref. No. 3	HOW TO REMOVE THE DOCUMENT FEED ROLLERS

Procedure 3



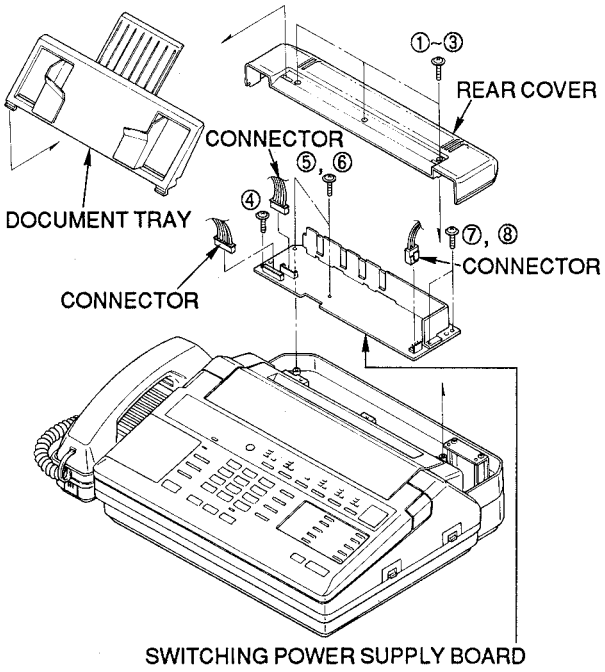




1. Open the back lid open knob.
2. Slide the shaft to the left and remove the document lid.
3. Remove the 4 screws (①-④).
4. Remove the 6 screws (⑤-⑩).
5. Exchange the rollers and gears.

Ref. No. 4	HOW TO REMOVE THE SWITCHING POWER SUPPLY BOARD

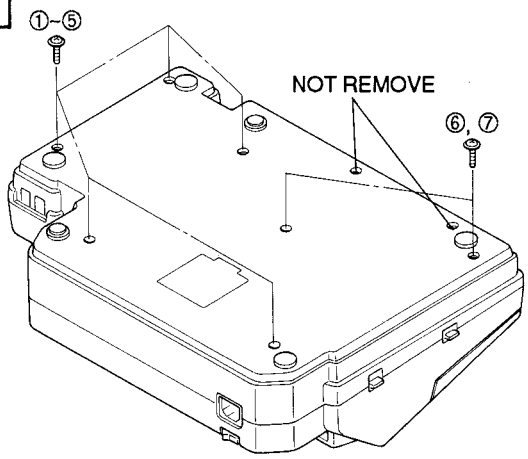
Procedure 4



1. Remove the document tray.
2. Remove the 3 screws (①-③).
3. Remove the rear cover.
4. Remove the 5 screws (④-⑧).
5. Pull out the 3 connectors.
6. Remove the switching power supply board.

Ref. No. 5	HOW TO REMOVE THE LOWER CABINET

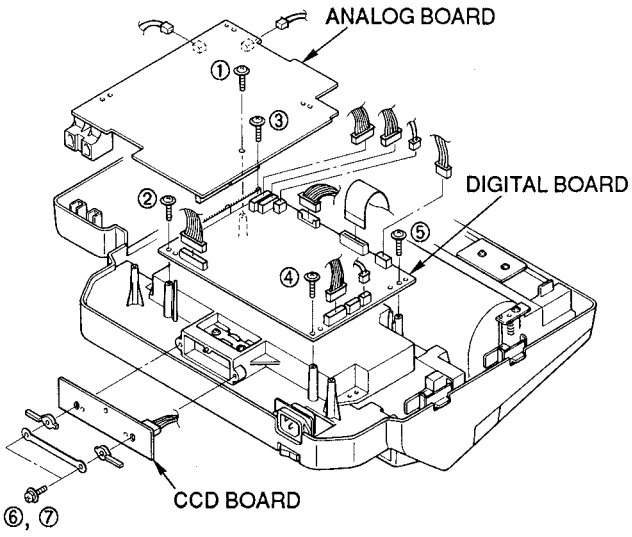
Procedure 5



1. Remove the 7 screws (①-⑦).
2. Remove the lower cabinet.

Ref. No. 6	HOW TO REMOVE THE ANALOG, DIGITAL AND CCD BOARDS

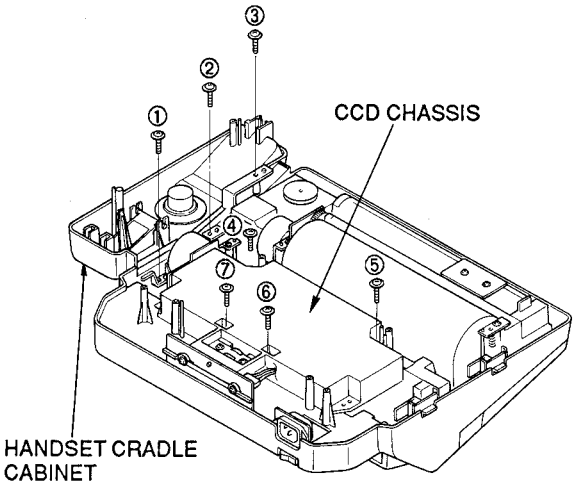
Procedure 5→6

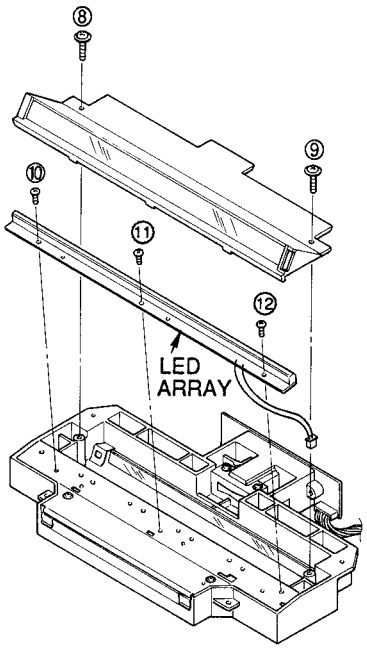


(ANALOG & DIGITAL BOARDS)
1. Remove the 2 connectors.
2. Remove the screws (①).
3. Remove the analog board.
4. Pull out the 12 connectors.
5. Remove the 4 screws (②-⑤).
6. Remove the digital board.

(CCD BOARD)
1. Remove the 2 screws (⑥-⑦).
2. Remove the CCD board.
3. CCD adjustment. (See page 52.)

Ref. No. 7	HOW TO REMOVE THE HANDSET CRADLE CABINET AND LED ARRAY
Procedure 5→6→7	

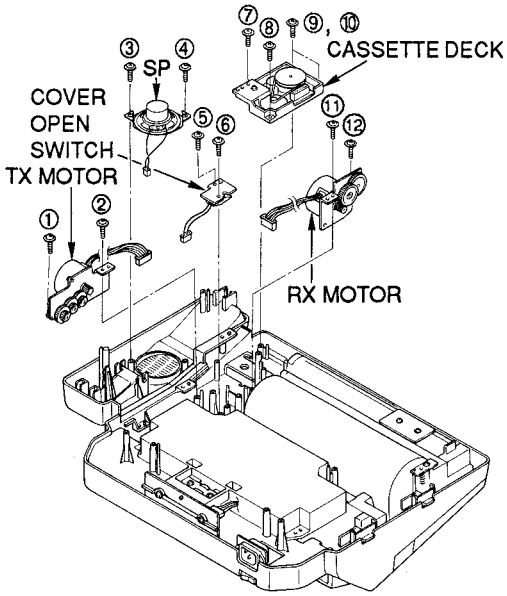




(HANDSET CRADLE CABINET)
1. Remove the 3 screws (①-③).
2. Remove the handset cradle cabinet.

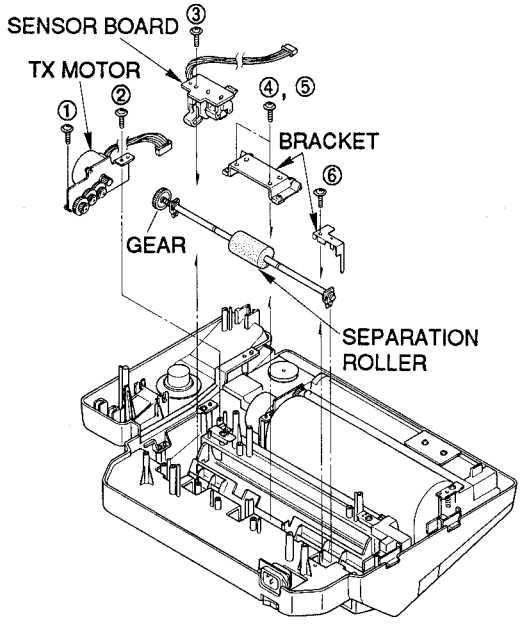
(LED ARRAY)
1. Remove the 4 screws (④-⑦).
2. Remove the CCD chassis.
3. Remove the 2 screws (⑧, ⑨).
4. Remove the 3 screws (⑩-⑫).
5. Exchange the LED array.

Ref. No. 8	HOW TO REMOVE THE MOTOR, SPEAKER, CASSETTE DECK AND COVER OPEN SWITCH
Procedure 5→6→8	

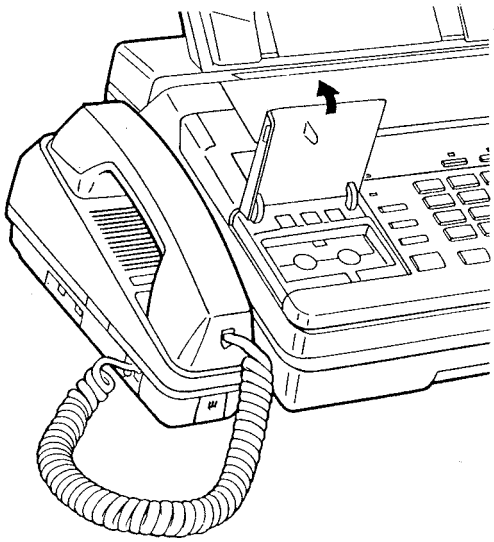


1. Remove the 12 screws (①-⑫).

Ref. No. 9	HOW TO REMOVE THE SEPARATION ROLLER AND GEAR
Procedure 5→6→7→9	



1. Remove the 6 screws.
2. Remove the bracket, motor and sensor board.
3. Exchange the separation roller or gear.

Ref. No. 10	**HOW TO REMOVE THE CASSETTE LID**
Procedure 10	

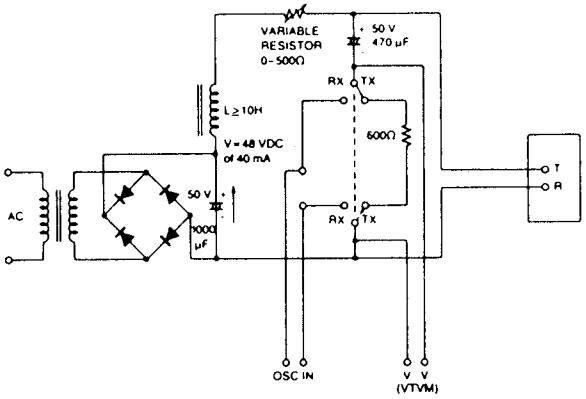
1. When removing the cassette lid, pull out in direction of arrow.
2. To reassemble, reverse the above procedure.

ADJUSTMENTS

1. TABLE OF TEST EQUIPMENTS AND JIG

No.	Test Equipment and Jig Name	Jig No.	Adjustment Name
1	VTVM	———	FAX Transmission Level Cassette Deck
2	Loop Simulator	———	FAX Transmission Level
3	Test Tape	QZZMWA	Cassette Deck
4	Oscilloscope	———	Cassette Deck CCD
5	Frequency Counter	———	Cassette Deck
6	CCD Jig	PQZZF50M	CCD

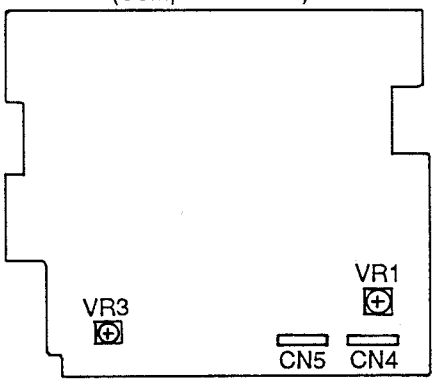
2. SCHEMATIC DIAGRAM OF LOOP SIMULATOR



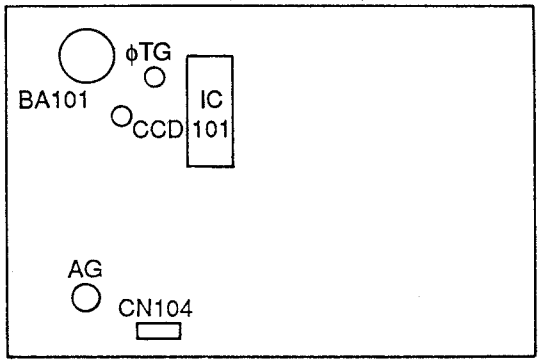
If a 48 V DC power supply is not available a 20V DC power supply can be substituted. However, the variable resistor (0–500Ω) must be set to 0 ohms.

3. LOCATION OF TEST POINT AND VR

ANALOG BOARD
(Component View)

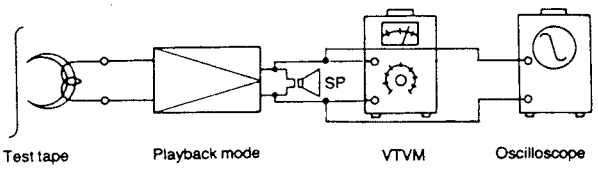
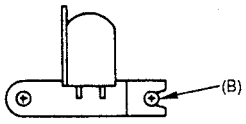
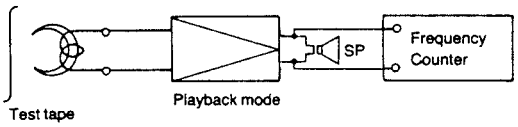


DIGITAL BOARD
(Component View)



4. CASSETTE DECK ADJUSTMENT

Notes: 1. Make sure the heads are clean.
2. Make sure the capstan and pressure roller are clean.
3. Room temperature for measuring and adjusting: 20±5°C (68±9°F)
4. Test equipments are not treated as replacement parts.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
1. Head azimuth adjustment	1. Play back the test tape (QZZMWA). 2. Adjust screw (B) shown in Fig. A for maximum output at SP terminal. (Test equipment connection is shown below.) 	* Record/playback head  Fig. A
2. Tape speed adjustment	1. Play back the test tape (QZZMWA). 2. Adjust VR3 for 3000 ±50 Hz on frequency counter reading. 	

5. FACSIMILE TRANSMISSION LEVEL ADJUSTMENT

Perform the following adjustment after replacing FAX transmission system (IC104, T1 and VR1).

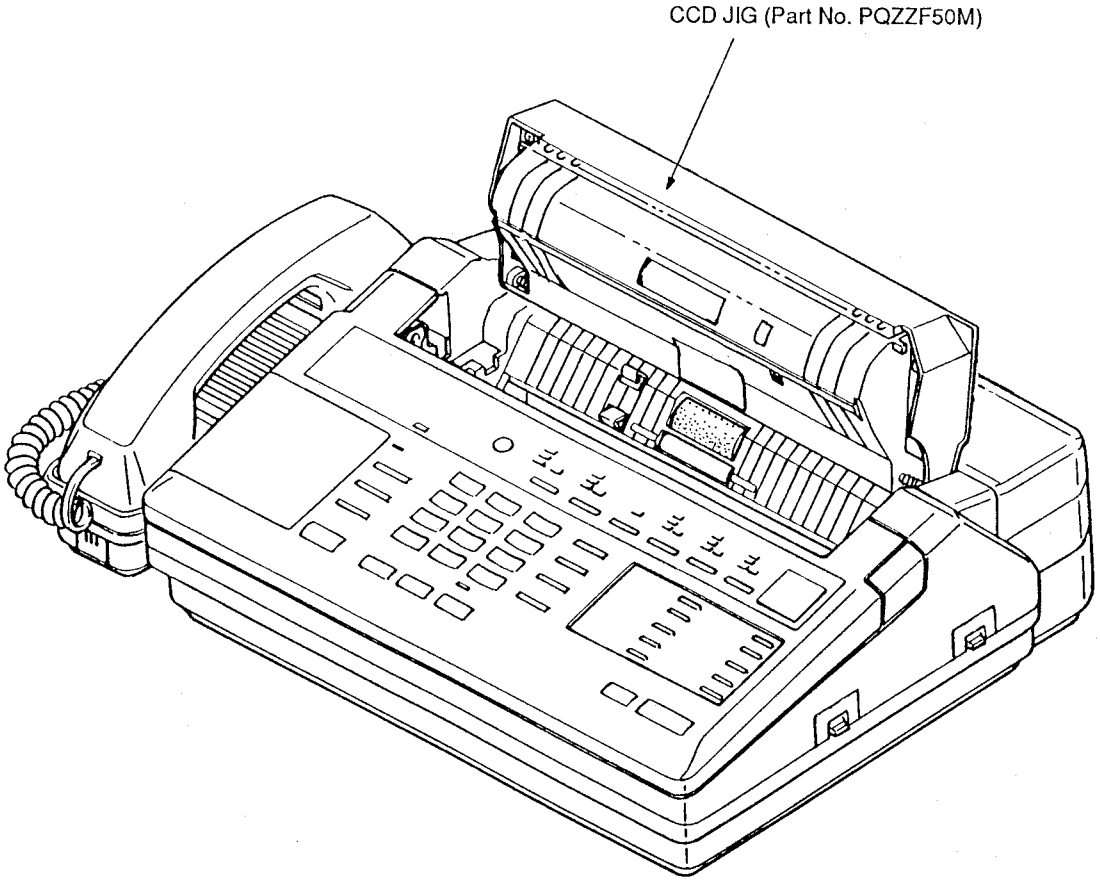
1) Connect the unit to loop simulator. (Set the selector switch to "TX".)
2) Power switch ON.
3) Press the PROGRAM button.
4) Press the #, 9, 0, 0, 0 and ✳ buttons.
5) Press the 5 and 4 buttons.
6) Press the START/COPY button.
7) Adjust VR1 for a reading of −10.5 ±0.5 dBm, on the VTVM.

6. CCD ADJUSTMENT

Perform the following adjustment after replacing lens and CCD board.

PREPARATION:

1) Remove the document lid [Refer to page 44 (Ref. No. 3)] and attach the CCD jig (PQZZF50M).
2) Oscilloscope connection as shown in the figure right.
3) Power switch ON.
4) Press the PROGRAM button.
5) Press the #, 9, 0, 0, 0 and ✳ buttons.
6) Press the 5 and 5 buttons.
7) Press the START/COPY button.



Notes:

1) When replacing the lens, pay attention to the markings on the lens are white, yellow or orange. The number of the CCD spacers to use differs depending on the markings as follows.
   *Two CCD spacers are provided with the lens.
   *Refer to page 138 for the location of the CCD spacers.

Marking on the lens	Number of CCD Spacer
Orange	0 (not used)
White	1
Yellow	2

2) Install the lens so that the making (White or Yellow or Orange) on it is upper side.
3) Do not touch the glass face of the lens with the bare hand.

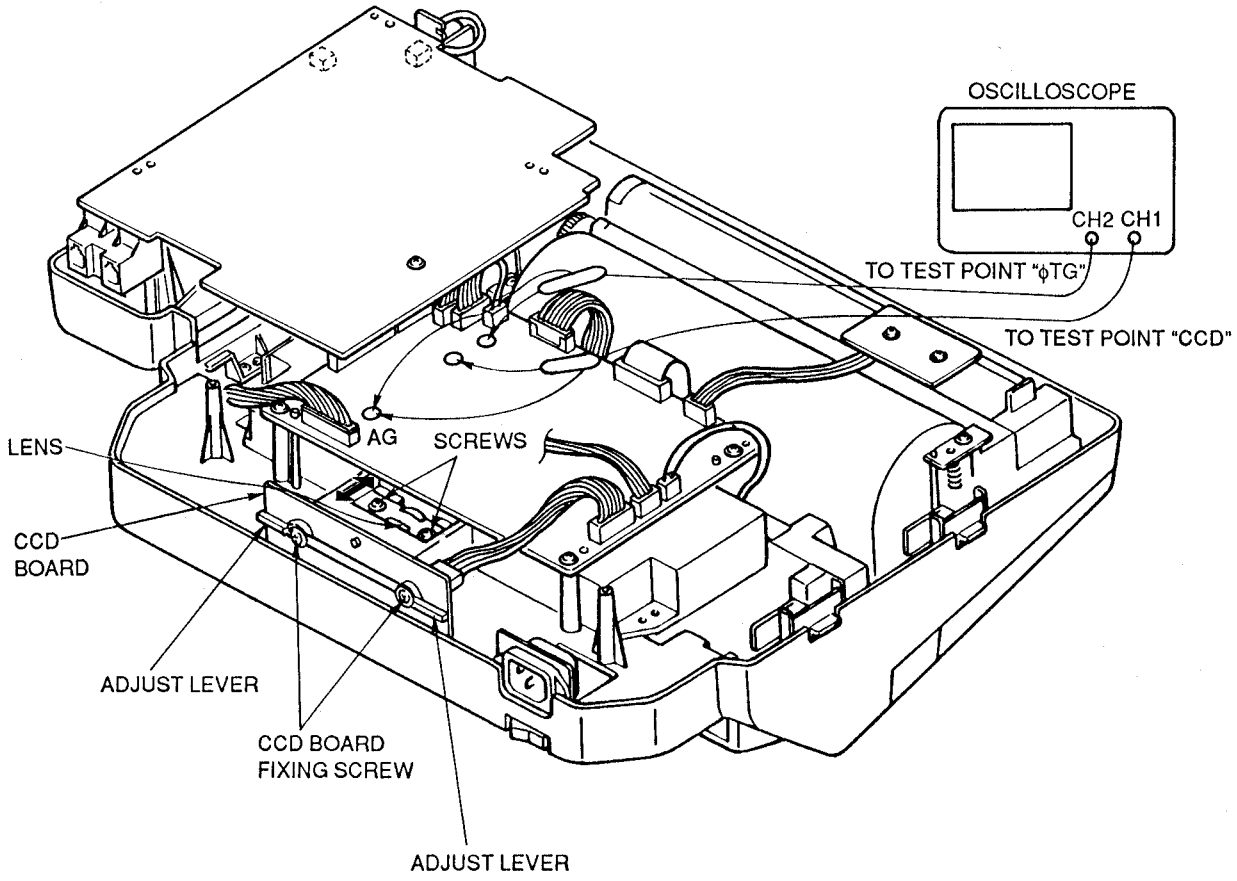
Cleaning:

If the lens is dirty, clean it with a dry soft cloth.

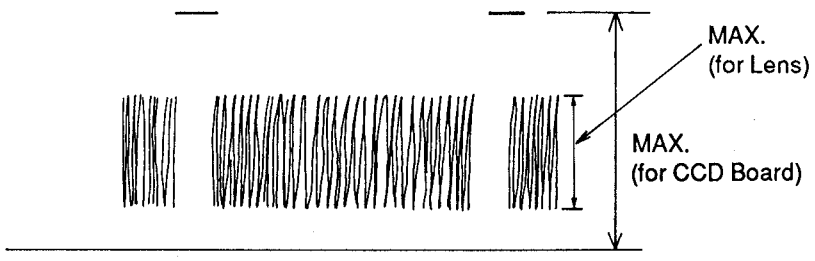
ADJUSTMENT:

LENS AND CCD READ POSITION ADJUSTMENT

1) Loosen the lens fixing screw and CCD board fixing screw.
2) Adjust the position of the lens and CCD board so that the waveform appears as shown in the figure below.
3) Fix the lens fixing screw and CCD board fixing screw.

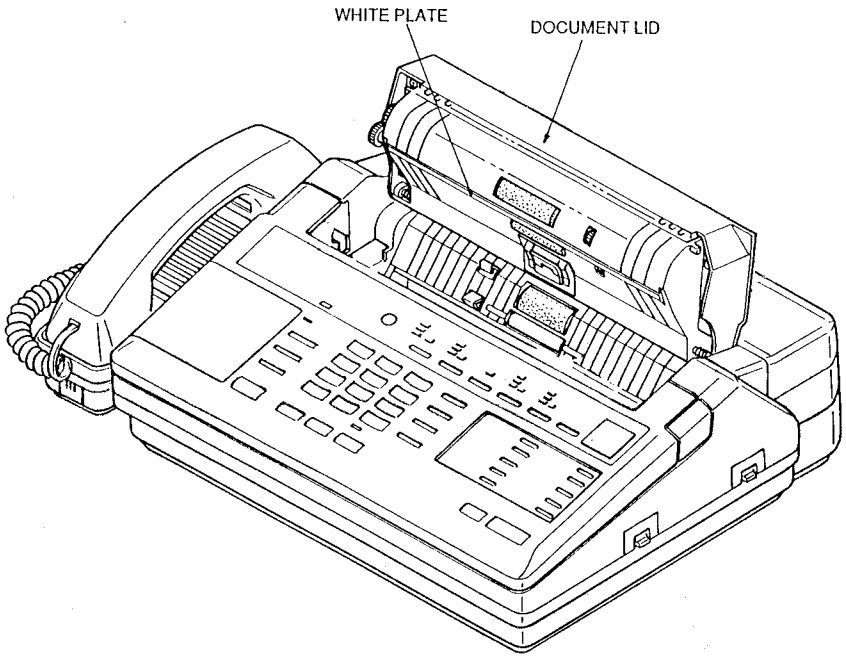


WAVEFORM



WHITE LEVEL ADJUSTMENT

1) Exchange the CCD jig (PQZZF50M) and document lid.
2) Adjust VR101 on the CCD board so that the waveform becomes 3 V.



WAVEFORM

7. DOCUMENT READ START POSITION ADJUSTMENT

1) Power Switch ON.
2) Copy the document, and confirm the read start position of the document.
3) If get out of position, adjust the read position.
4) Press the PROGRAM button.
5) Press the #, 9, 0, 0, 0, ✳ and 6 buttons.
6) Press the 3,□,□, SET and PROGRAM buttons.

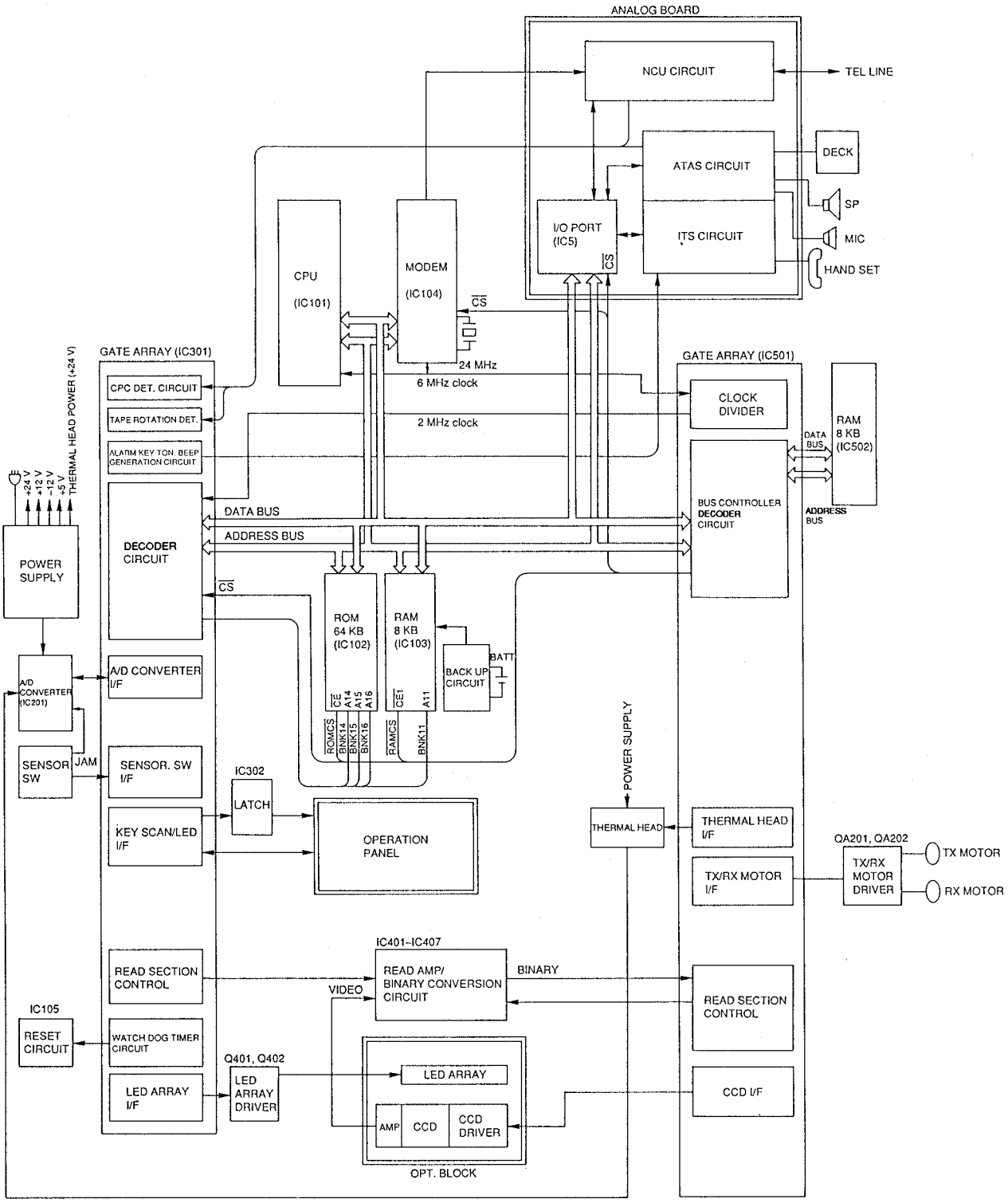
30
⋮ To move the image to the right direction
16 ↑
15 ← Standard (Default)
14 ↓
⋮ To move the image to the left direction
0

* The starting position of the reading shifts 1 mm as the numbers changes.

1. GENERAL BLOCK DIAGRAM

1) CPU (IC101)	Fetch and executes instruction from ROM, writes (read) data to (from) RAM, writes commands to the gate array IC's and reads status information from gate array IC's.
2) ROM (IC102)	Contains all of the program instructions for unit operation.
3) RAM (IC103)	Working storage area (Auto dial number etc) backed up by a lithium battery.
4) RAM (IC502)	Used mainly for image processing.
5) GATE ARRAY ..... (IC301)	Composed mainly key scan/LED I/F and some circuits for controlling analog section.
6) GATE ARRAY ..... (IC501)	Controls the general FAX operation.
7) Reset circuit (IC105)	Provides reset pulse to each of the major IC's.
8) Memory Back up ..... circuit (BA101)	Back up RAM (IC103).
9) A/D Converter ..... (IC201)	Detect temperature of thermal head and power supply, and paper Jam condition.
10) MOTOR DRIVER ..... (QA201, QA202)	DRIVE TX MOTOR and RX MOTOR.
11) READING Section	Composed of Read Amp, Binary conversion circuit and OPT. Block. OPT Block is composed of LED ARRAY, Mirror Lens, CCD, CCD DRIVER and so on. They execute reading of the transmission document.
12) Thermal Head	Contains heating elements for dot matrix image printing.
13) MODEM (IC104)	Executes modulation and demodulation for FAX communication.
14) Operation grille	Composed of many keys and LEDs.
15) Analog Board	Composed of ITS, ATAS and NCU circuit. each circuit is controlled by I/O port (IC5), +6 V power is regulated from +12 V in this Board.
16) Sensor Section	Document sensor, Reading position sensor, Cover open sensor, recording paper sensor.
17) Switching power supply ...	Supply +24 V, ±12 V, +5 V and Thermal head power (+24 V).

Block Diagram



3-5. DOCUMENT AND RECORDING PAPER FEED MECHANISM SECTION AND SENSOR SECTION

1) Document and Recording Paper Feed Mechanism

[Document Path]

- When the document is aligned in the center, the maximum document width is 218 mm.
- The separation roller (2) and feed rollers (3), (4), (5) are driven by the stepping motor via gears, and rotate in the direction of the arrows as shown in the figure.

The paper feed sequence is described below.

(1) Insert the document along the document insertion guide on the tray. When the documents are placed into position, the document sensor (7) is turned on and a beep will sound so that the user knows the document is properly set.

(2) When the START button is pressed, the motor starts and the rollers start rotating.

(3) One sheet at a time is separated by the separation rubber (6) then sent to the separation roller (2) which rotates and then feeds the document into the unit. (Automated feeding operation)

(4) The read position sensor (8) is turned on when the document is fed.

(5) The document is fed to the CCD start reading position according to the ON data of the read position sensor (8).

(6) When the document reaches the CCD start reading position, the CCD starts reading.

(7) The document is fed when the document feeding and CCD reading are synchronized.

(8) When the document is completely fed and the read position sensor (8) is turned off, the CCD stops reading and the document is discharged by the feed roller (5).

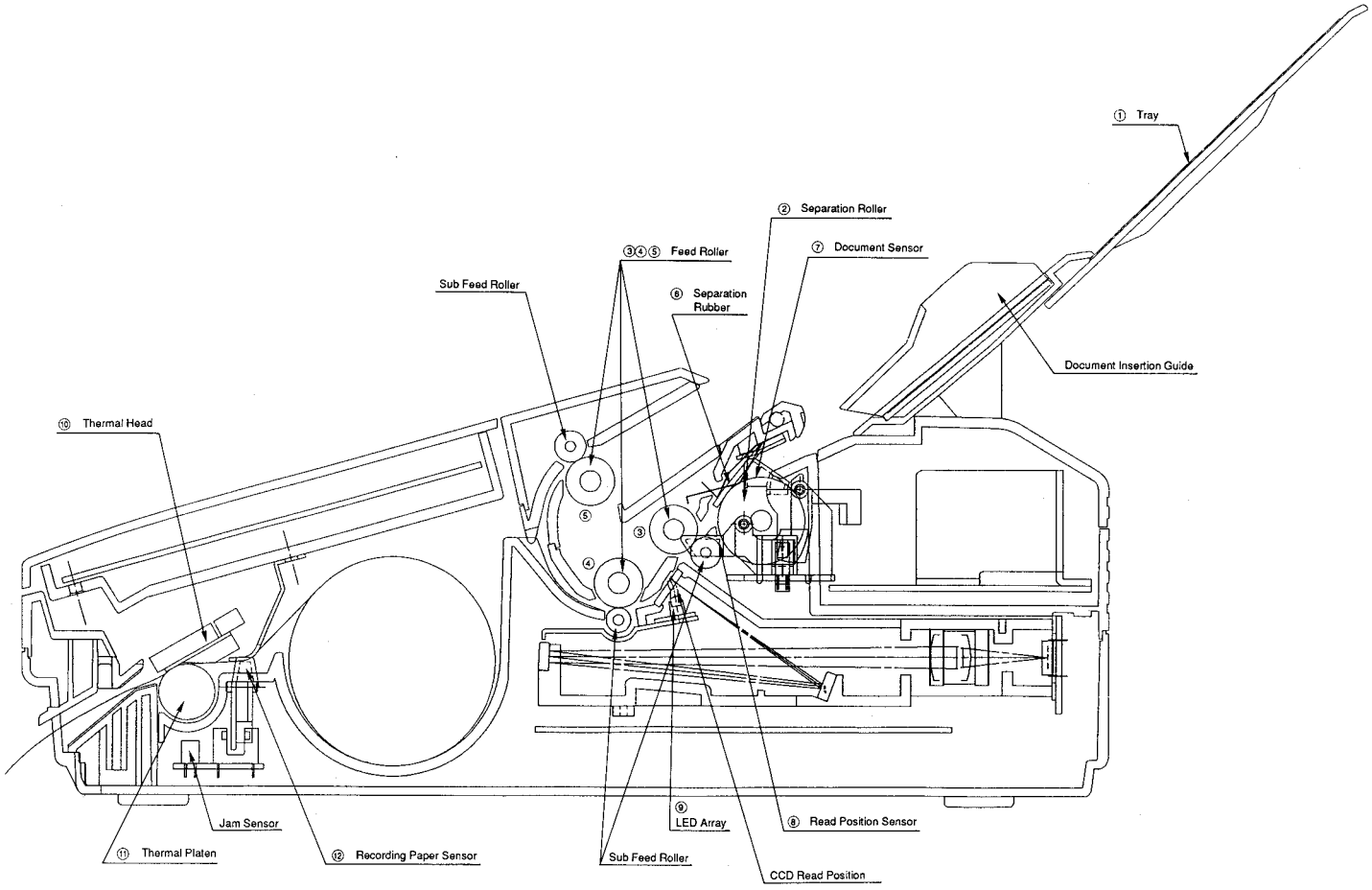
(9) The next sheet separated by the separation roller is fed in.

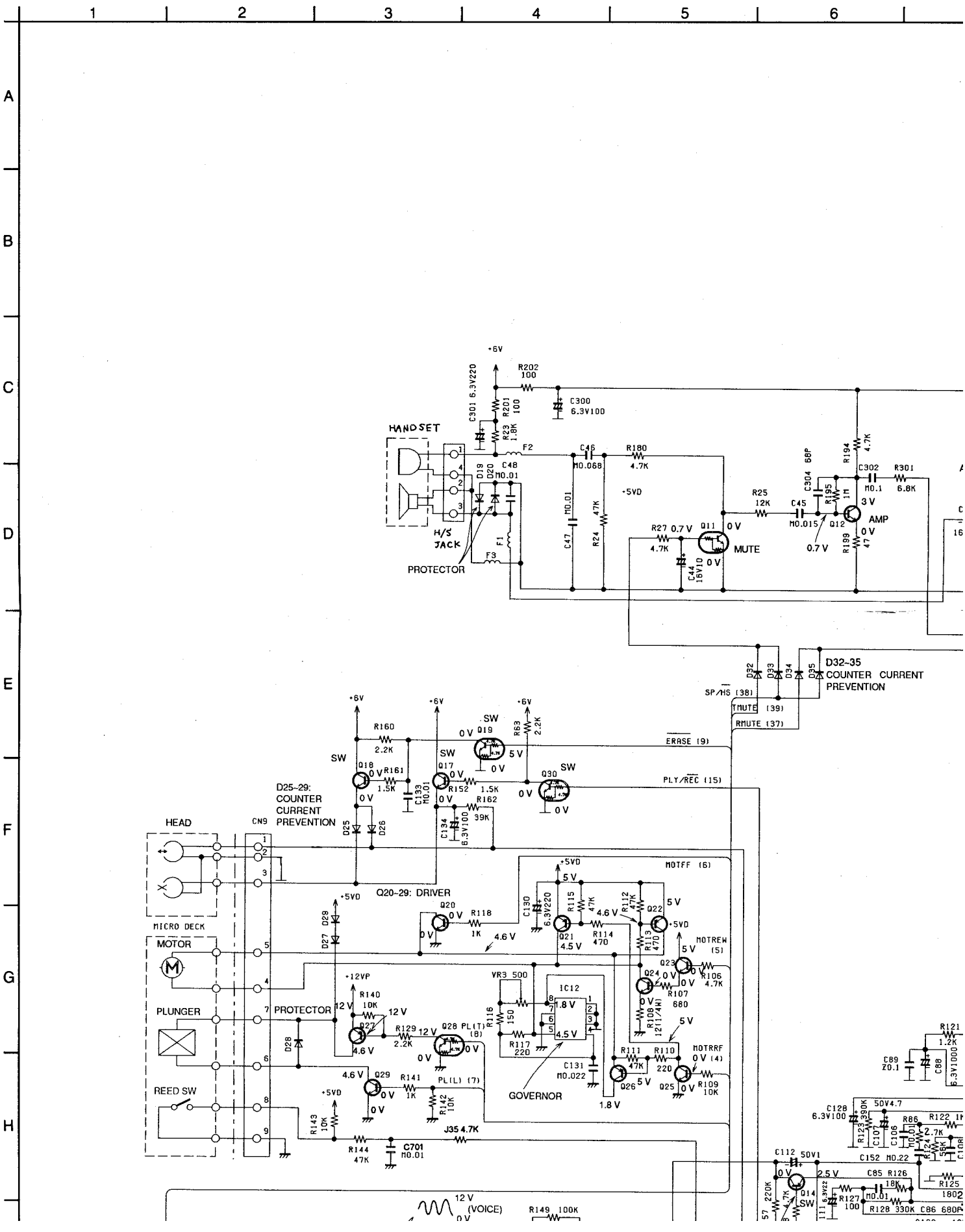
[Recording Paper Path]

(1) The recording paper is set between the thermal head and thermal platen.

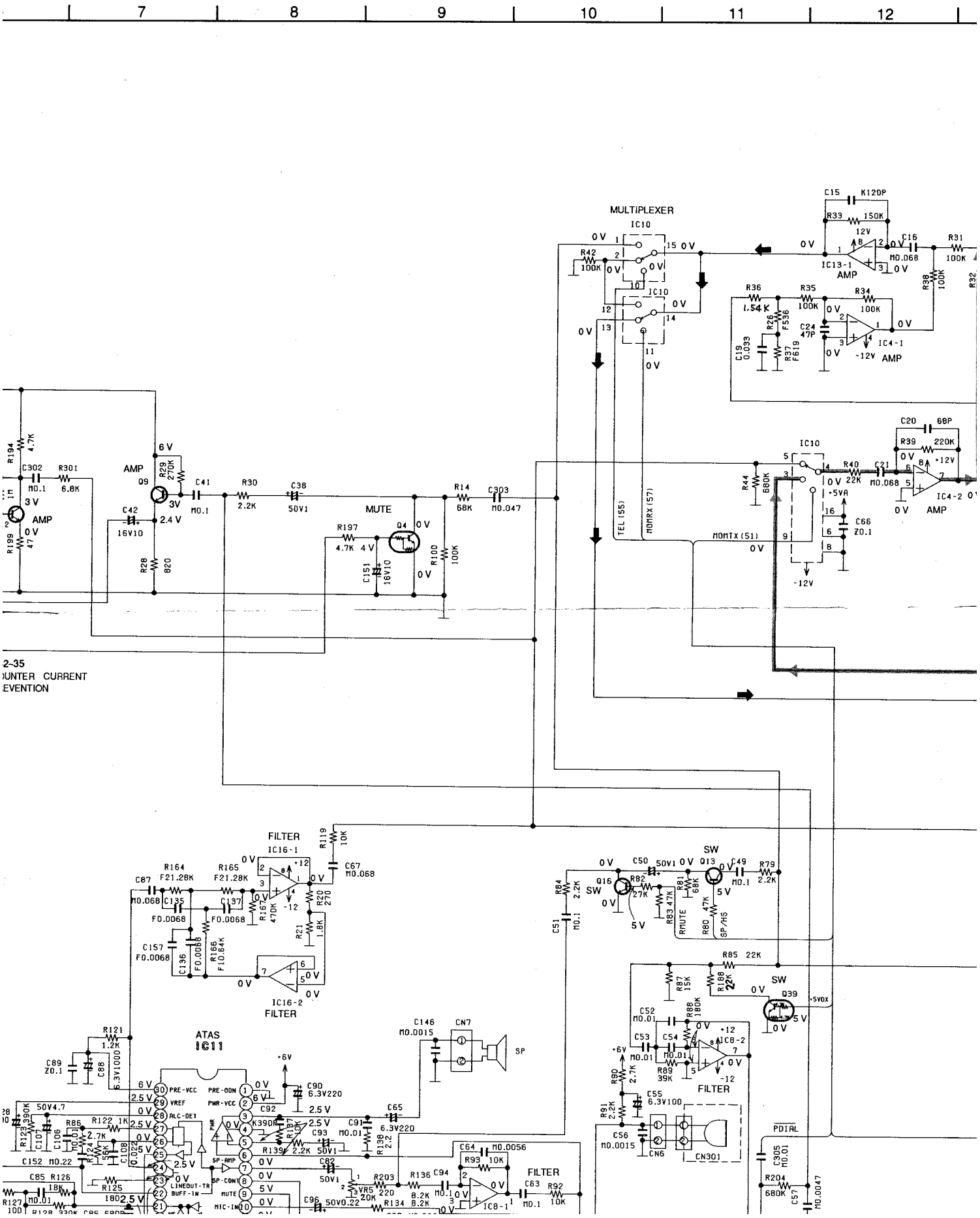
(2) When the signal is sent to the thermal head, printing on the thermosensible recording paper is started.

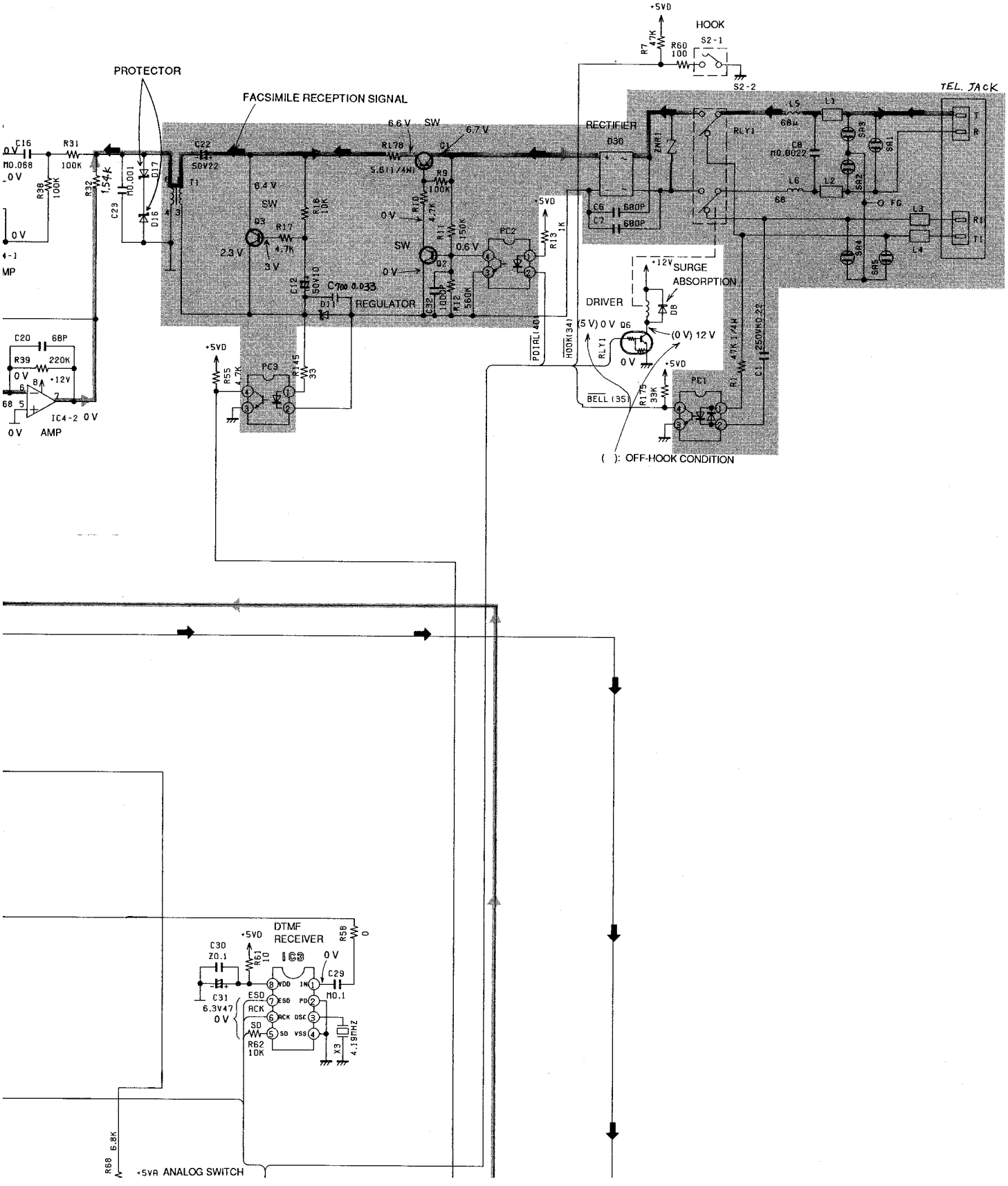
(3) When the recording paper runs out, the recording paper sensor (12) is turned off so as to warn the user.

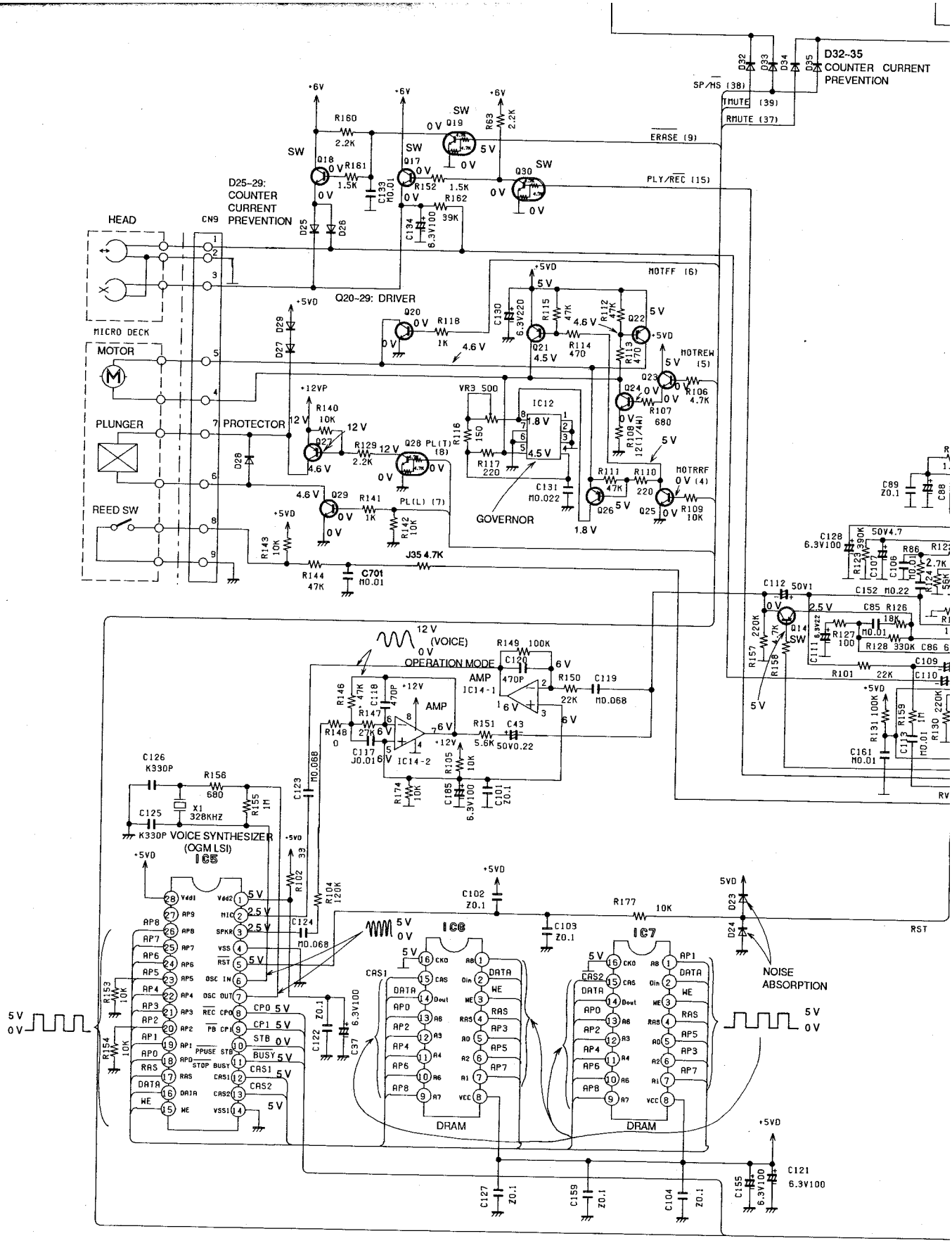


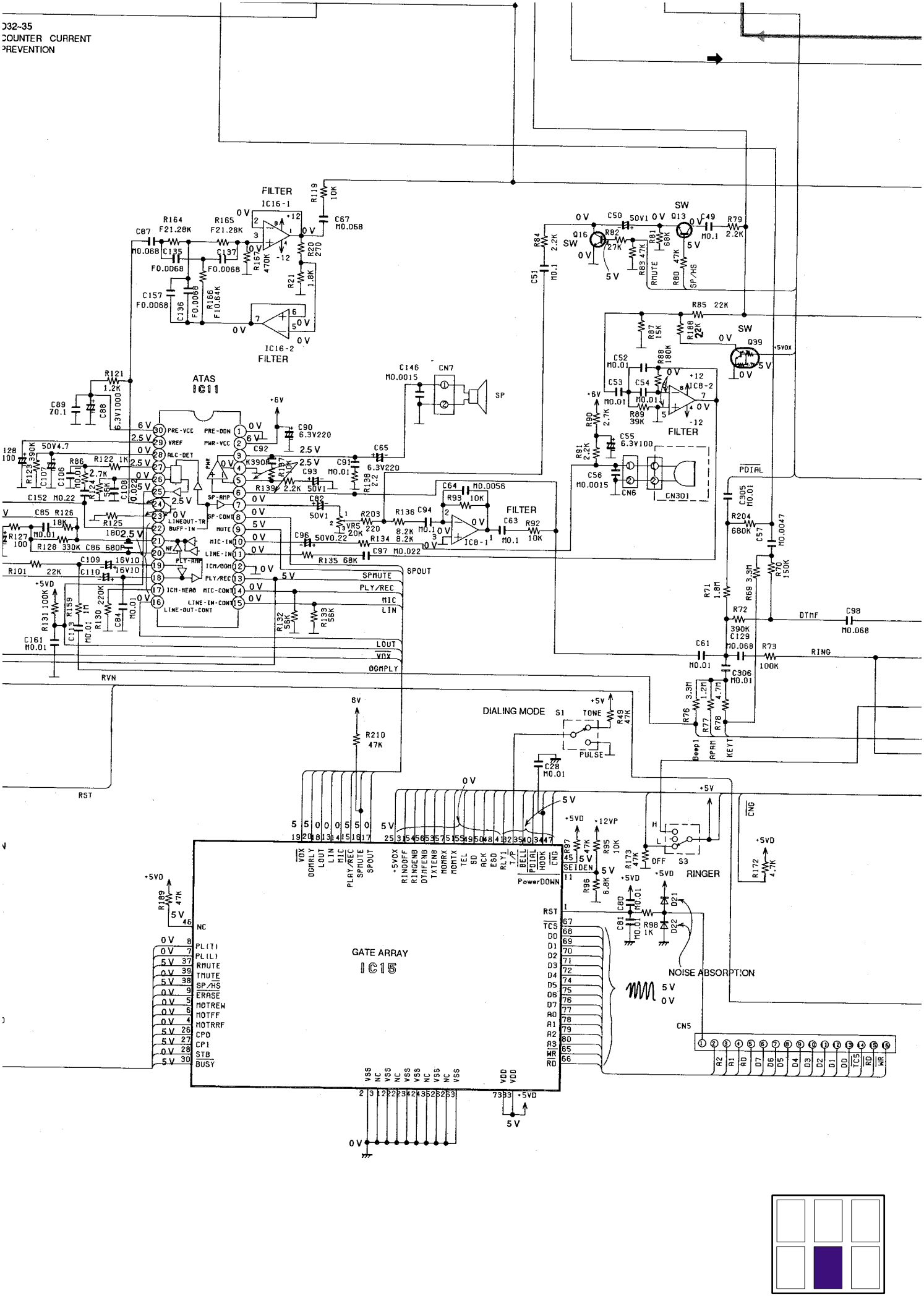

HANDSET
H/S JACK
PROTECTOR
MUTE
AMP
D32-35 COUNTER CURRENT PREVENTION
SP/HS (38)
TMUTE (39)
RMUTE (37)
ERASE (9)
PLY/REC (15)
D25~29: COUNTER CURRENT PREVENTION
HEAD
CN9
MICRO DECK
MOTOR
PLUNGER
REED SW
Q20~29: DRIVER
MOTFF (6)
MOTREW (5)
MOTRRF (4)
PL(L) (7)
PL(T) (8)
GOVERNOR
(VOICE)

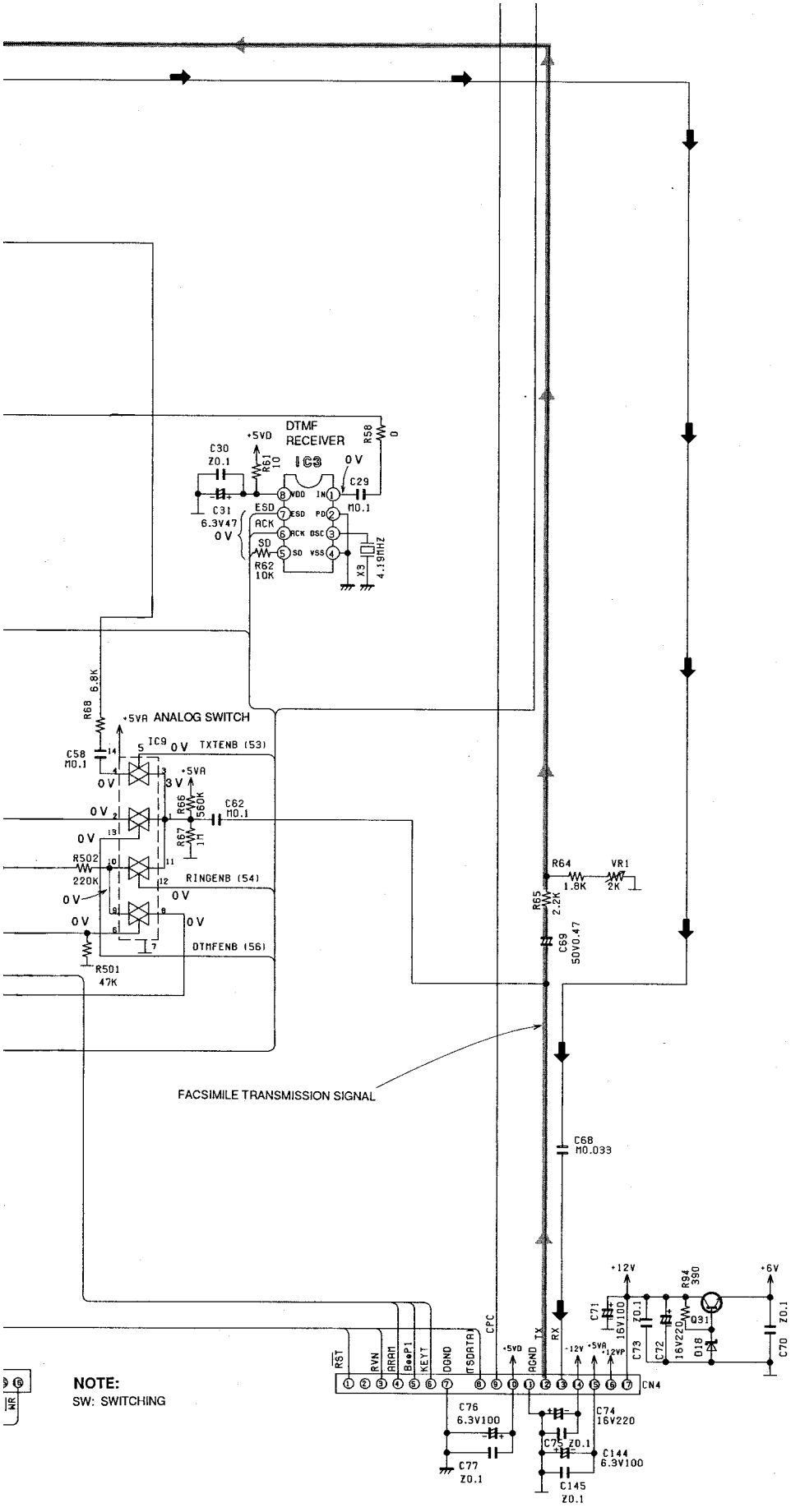
SCHEMATIC DIAGRAM (ANALOG CIRCUIT)

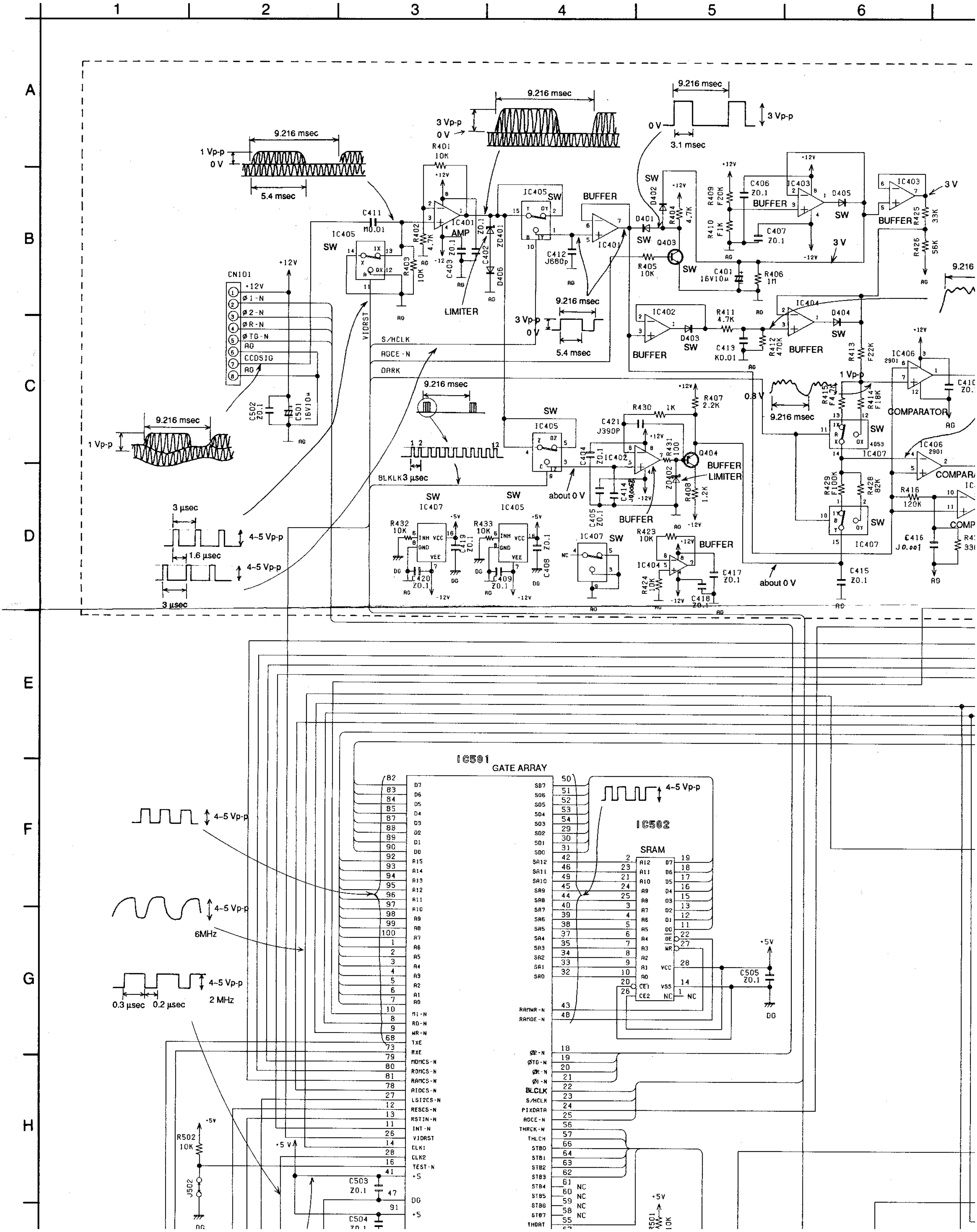



PROTECTOR
FACSIMILE RECEPTION SIGNAL
HOOK
S2-1
S2-2
TEL. JACK
RECTIFIER
SURGE ABSORPTION
DRIVER
REGULATOR
AMP
IC4-2
DTMF RECEIVER
IC3
ANALOG SWITCH
( ): OFF-HOOK CONDITION


D32-35
COUNTER CURRENT
PREVENTION
D25-29:
COUNTER
CURRENT
PREVENTION
Q20-29: DRIVER
HEAD
MICRO DECK
MOTOR
PLUNGER
REED SW
PROTECTOR
GOVERNOR
VOICE SYNTHESIZER
(OGM LSI)
IC5
IC6
IC7
DRAM
DRAM
NOISE
ABSORPTION
OPERATION MODE
(VOICE)
AMP
IC14-1
IC14-2
SP/HS (38)
TMUTE (39)
RMUTE (37)
ERASE (9)
PLY/REC (15)
MOTFF (6)
MOTREW (5)
MOTRRF (4)
PL(T) (8)
PL(L) (7)
RST

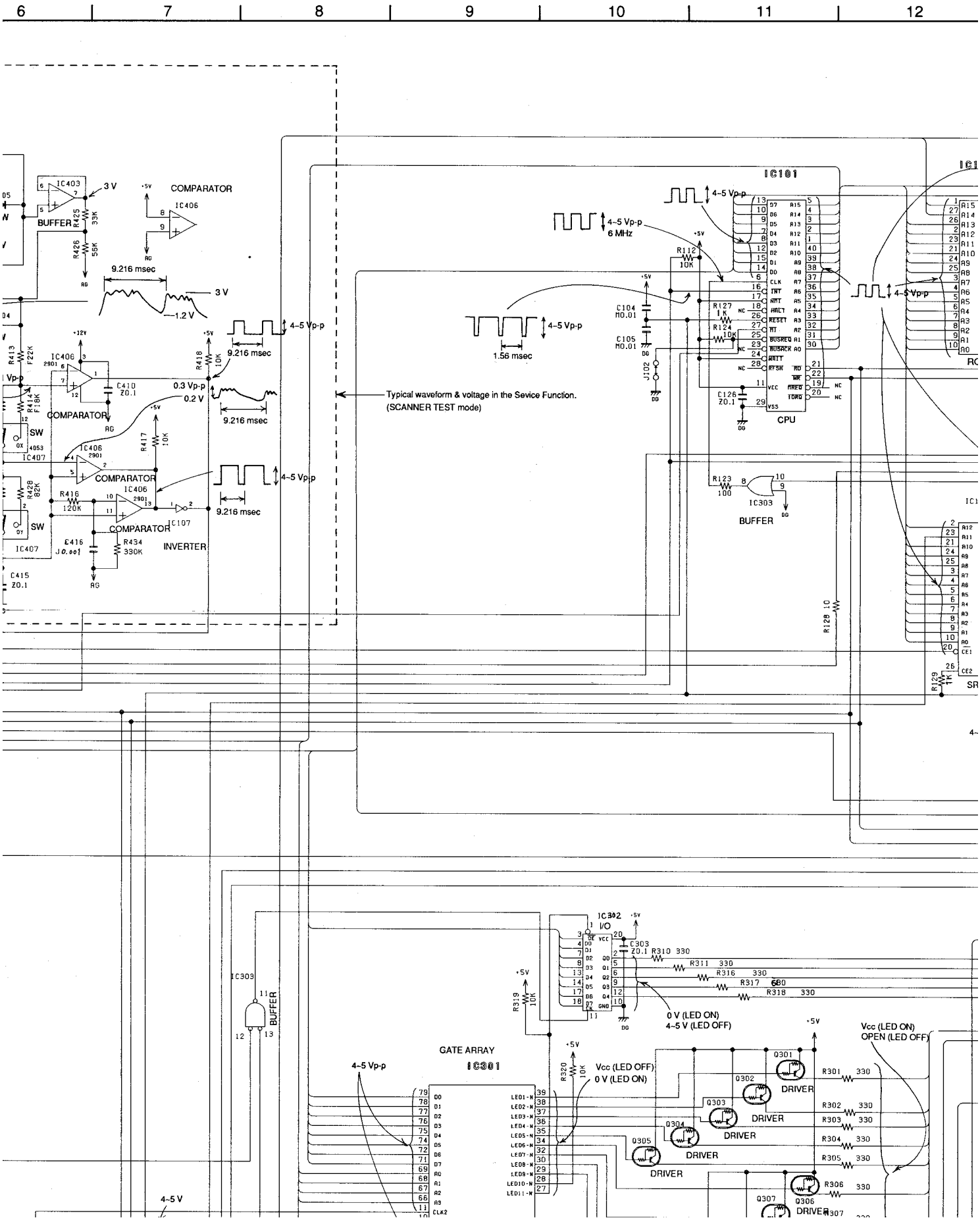

032-35
COUNTER CURRENT
PREVENTION
FILTER
IC16-1
IC16-2
FILTER
ATAS
IC11
PRE-VCC
VREF
ALC-DET
PRE-DON
PWR-VCC
PWR-AMP
SP-CONT
MUTE
MIC-IN
LINE-IN
PLY-REC
MIC-CONT
LINE-IN-CONT
LINEOUT-TR
BUFF-IN
ICM-MIC
ICM-MIC
PLY-AMP
NF
SP
SW
FILTER
IC8-2
FILTER
IC8-1
FILTER
CN7
SP
CN6
CN301
PDIAL
DTMF
RING
SPOUT
SPMUTE
PLY/REC
MIC
LIN
LOUT
VOX
OGMPLY
RVN
RST
DIALING MODE
S1
TONE
PULSE
Beep1
APAM
KEYT
+5VD
+12VP
CNG
H
L
OFF
S3
RINGER
SEIDEN
PowerDOWN
GATE ARRAY
IC15
NOISE ABSORPTION
CN5

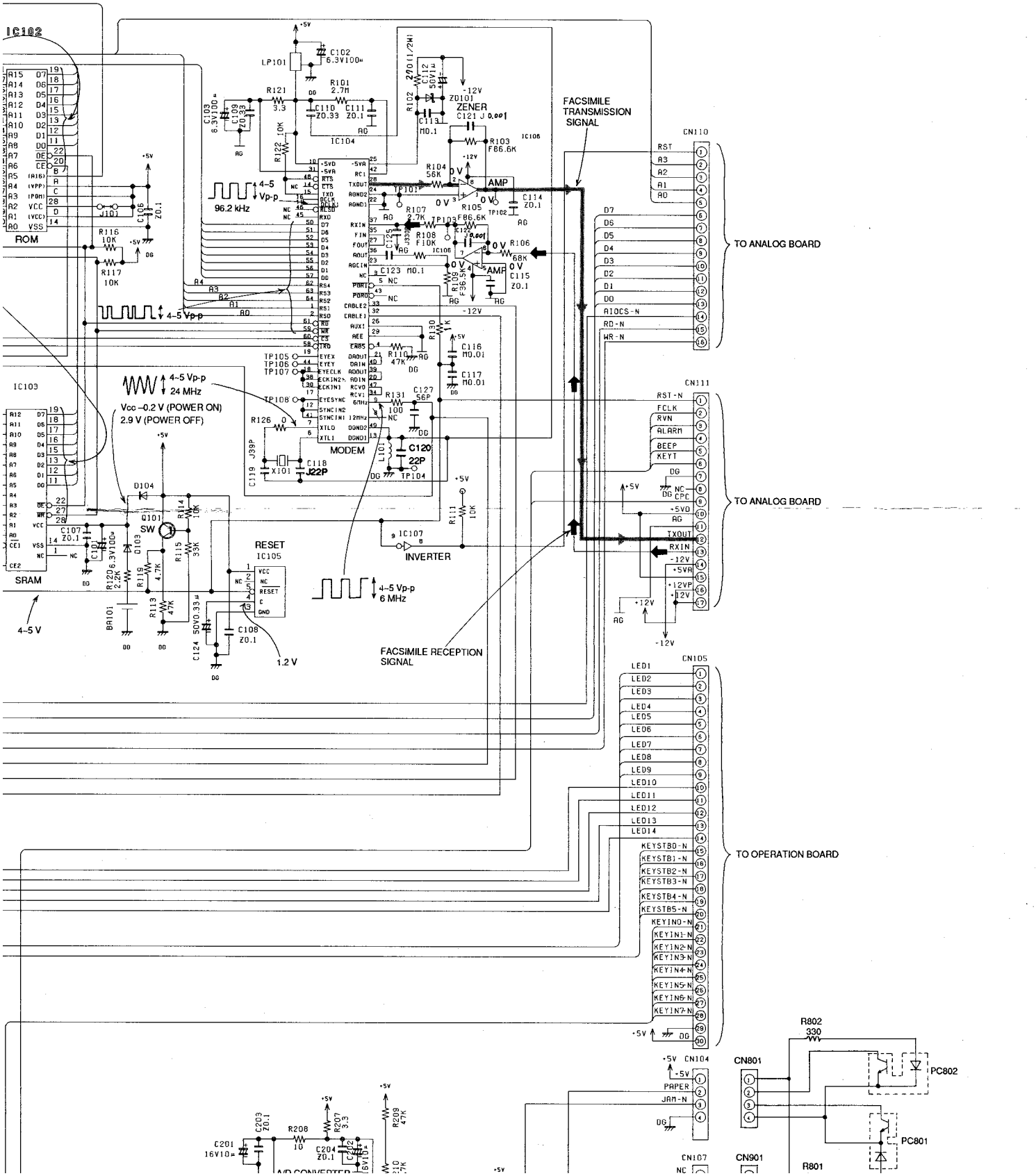

DTMF RECEIVER
IC3
+5VD
C30 Z0.1
R61 10
C31 6.3V47
0V
R58 0
C29 M0.1
VDD
IN
ESD
PD
ACK
OSC
SD
VSS
R62 10K
X3 4.19MHZ
R68 6.8K
+5VA ANALOG SWITCH
IC9
TXTENB (53)
RINGENB (54)
DTMFENB (56)
C58 M0.1
R66 560K
C62 M0.1
R67 1M
R502 220K
R501 47K
3V
R64 1.8K
VR1 2K
R65 2.2K
C69 50V0.47
FACSIMILE TRANSMISSION SIGNAL
C68 M0.033
+12V
R94 390
+6V
C71 16V100
C73
C72 16V220
D18
Q31
C70 Z0.1
CPC
TX
RX
RST
RVN
ARAM
BeeP1
KEYT
DGND
MSDATA
AGND
-12V
+12VP
CN4
C76 6.3V100
C77 Z0.1
C74 16V220
C75 Z0.1
C144 6.3V100
C145 Z0.1
NOTE:
SW: SWITCHING

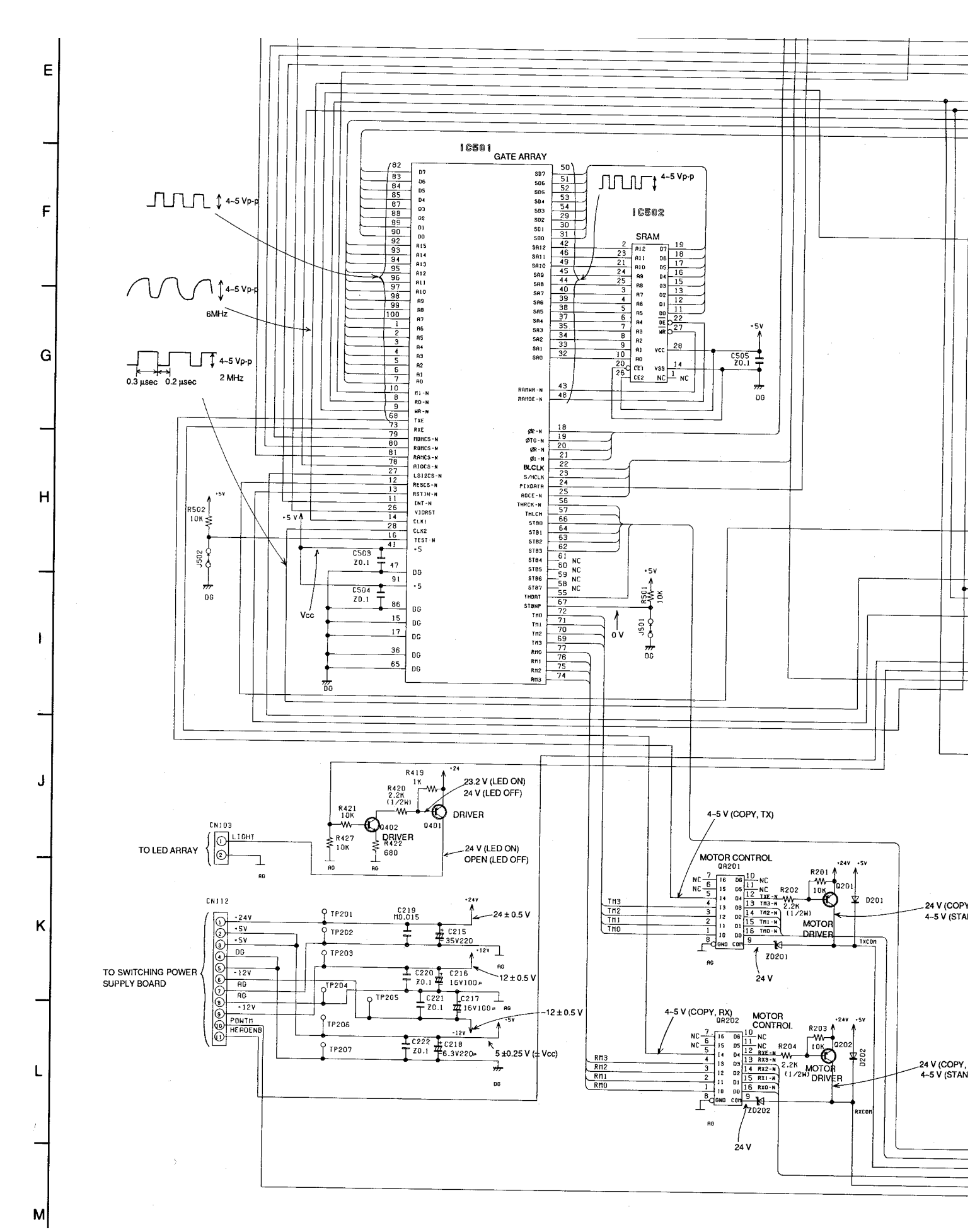


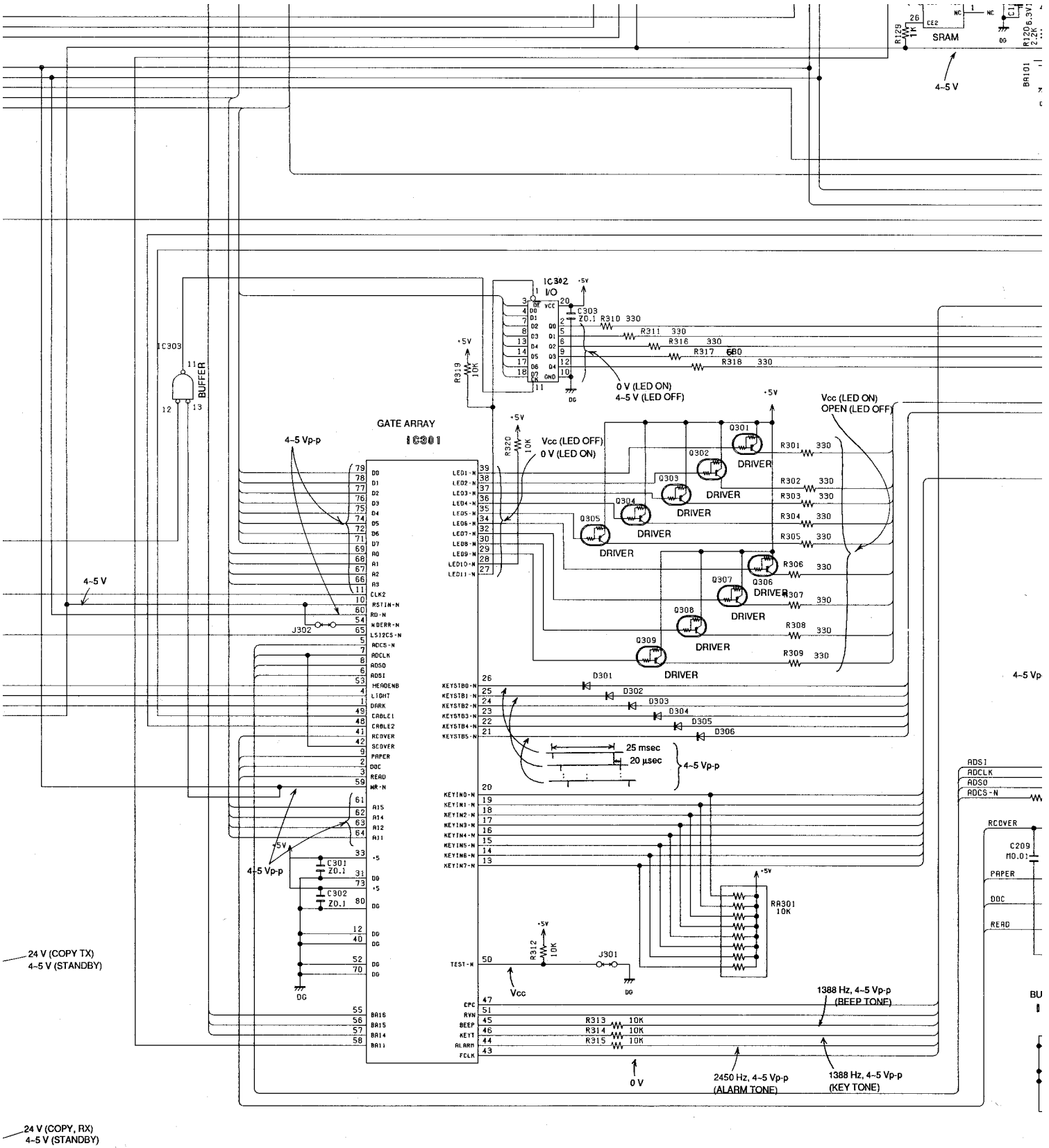
1
2
3
4
5
6
A
B
C
D
E
F
G
H
9.216 msec
1 Vp-p
0 V
5.4 msec
3 Vp-p
3.1 msec
R401 10K
C411 M0.01
IC405 SW
IC401 AMP
LIMITER
BUFFER
C412 J680p
SW
Q403
R405 10K
C401 16V10μ
R406 1M
R409 F20K
R410 F1K
C406 Z0.1
C407 Z0.1
IC403
BUFFER
D405
R425 33K
R426 56K
3 V
IC402
D403
R411 4.7K
C413 K0.01
R412 470K
IC404
D404
R413 F22K
IC406
COMPARATOR
IC407
CN101
+12V
ø1-N
ø2-N
øR-N
øTG-N
AG
CCDSIG
VIDRST
S/HCLK
AGCE-N
DARK
BLKLK
3 μsec
1.6 μsec
4~5 Vp-p
about 0 V
C502 Z0.1
C501 16V10μ
R430 1K
C421 J390P
R407 2.2K
Q404
BUFFER
LIMITER
R408 1.2K
R429 F100K
R428 82K
R416 120K
C416 J0.001
C415 Z0.1
about 0 V
R432 10K
R433 10K
C420 Z0.1
C409 Z0.1
R423 10K
R424 10K
C417 Z0.1
C418 Z0.1
IC501
GATE ARRAY
IC502
SRAM
6MHz
2 MHz
0.3 μsec
0.2 μsec
C505 Z0.1
R502 10K
J502
C503 Z0.1
C504
R501 10K
RAMWR-N
RAMOE-N
BLCLK
PIXDATA
THRCK-N
THLCH
+5V
DG
NC

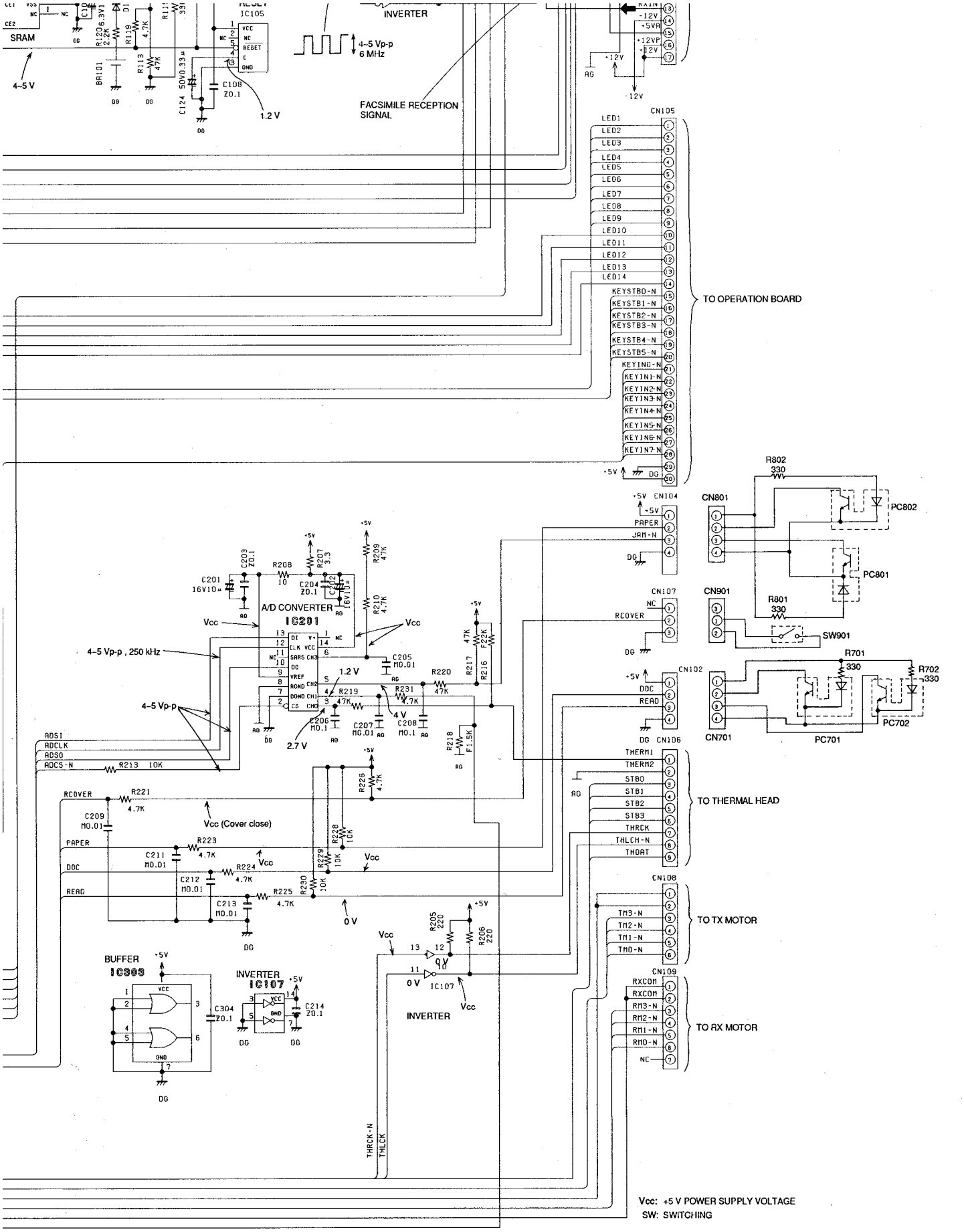
SCHEMATIC DIAGRAM (DIGITAL CIRCUIT)




IC102
ROM
SRAM
IC103
MODEM
IC104
IC105
RESET
INVERTER
AMP
ZENER
FACSIMILE TRANSMISSION SIGNAL
FACSIMILE RECEPTION SIGNAL
TO ANALOG BOARD
TO ANALOG BOARD
TO OPERATION BOARD
CN110
CN111
CN105
CN104
CN107
CN801
CN901
PC802
PC801
R802
R801
4–5 Vp-p
96.2 kHz
4–5 Vp-p
4–5 Vp-p 24 MHz
Vcc –0.2 V (POWER ON)
2.9 V (POWER OFF)
4–5 Vp-p 6 MHz
4–5 V
1.2 V
A/D CONVERTER

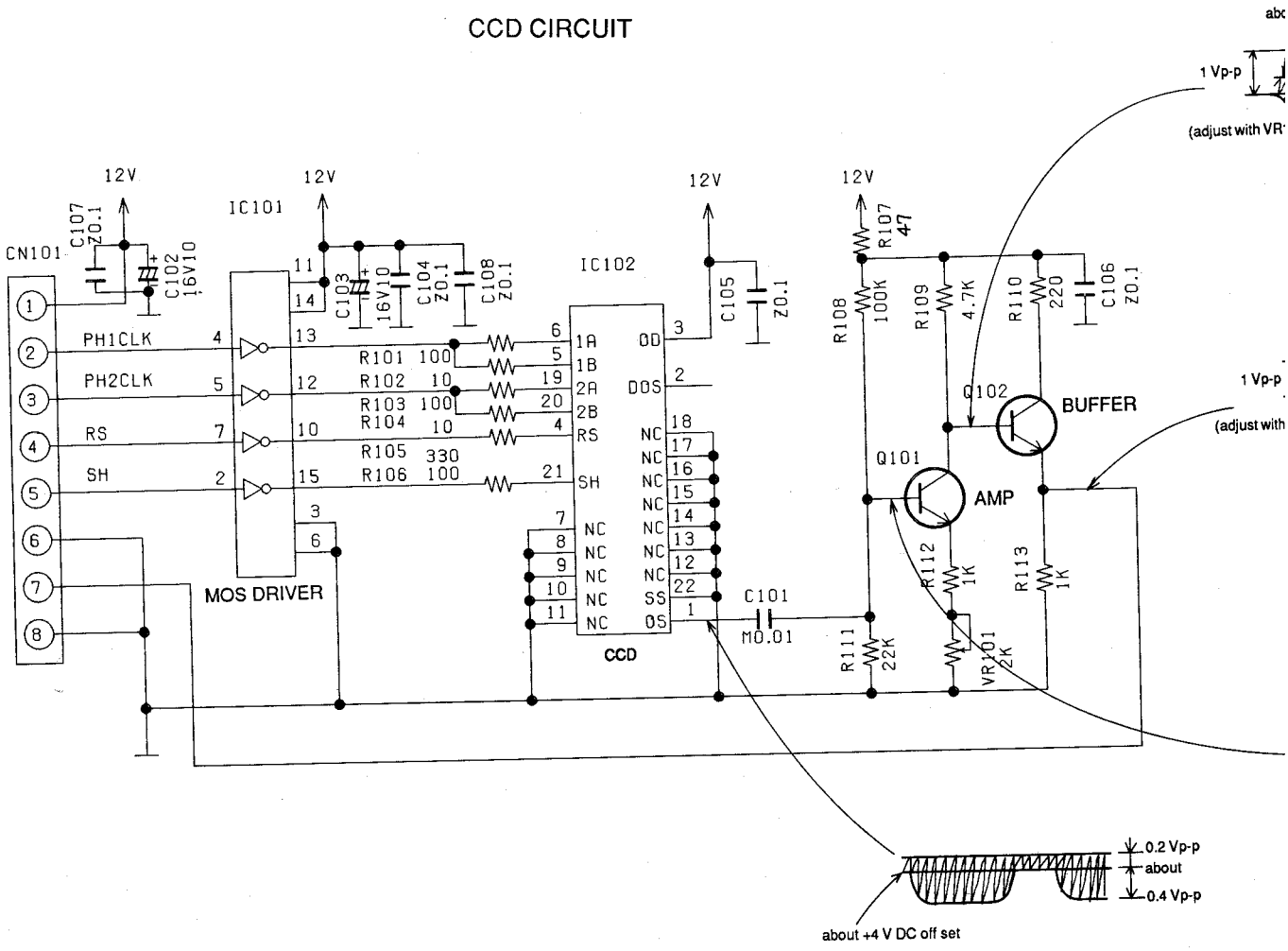

IC501
GATE ARRAY
IC502
SRAM
4~5 Vp-p
6MHz
2 MHz
0.3 µsec
0.2 µsec
R502 10K
J502
R501 10K
J501
C503 Z0.1
C504 Z0.1
C505 Z0.1
Vcc
0 V
+5 V
DG
R419 1K
R420 2.2K (1/2W)
R421 10K
R427 10K
R422 680
Q402 DRIVER
Q401 DRIVER
23.2 V (LED ON)
24 V (LED OFF)
24 V (LED ON)
OPEN (LED OFF)
CN103
LIGHT
TO LED ARRAY
CN112
TO SWITCHING POWER SUPPLY BOARD
+24V
+5V
-12V
POWTM
HEADENB
TP201
TP202
TP203
TP204
TP205
TP206
TP207
C219 M0.015
C215 35V220
C220 Z0.1
C216 16V100µ
C221 Z0.1
C217 16V100µ
C222 Z0.1
C218 6.3V220µ
24 ± 0.5 V
12 ± 0.5 V
-12 ± 0.5 V
5 ±0.25 V (≒ Vcc)
4~5 V (COPY, TX)
4~5 V (COPY, RX)
MOTOR CONTROL
QA201
QA202
MOTOR CONTROL
R201 10K
R202 2.2K (1/2W)
R203 10K
R204 2.2K (1/2W)
Q201
Q202
D201
D202
MOTOR DRIVER
ZD201
ZD202
24 V
TXCOM
RXCOM
24 V (COPY
4~5 V (STA
24 V (COPY,
4~5 V (STAN


SRAM
4~5 V
IC303
BUFFER
IC302
I/O
C303
Z0.1
R310 330
R311 330
R316 330
R317 680
R318 330
R319
10K
0 V (LED ON)
4~5 V (LED OFF)
GATE ARRAY
IC301
4~5 Vp-p
Vcc (LED OFF)
0 V (LED ON)
R320
10K
Vcc (LED ON)
OPEN (LED OFF)
Q301
Q302
Q303
Q304
Q305
Q306
Q307
Q308
Q309
DRIVER
R301 330
R302 330
R303 330
R304 330
R305 330
R306 330
R307 330
R308 330
R309 330
4~5 V
J302
D301
D302
D303
D304
D305
D306
25 msec
20 µsec
4~5 Vp-p
C301
Z0.1
C302
Z0.1
RR301
10K
R312
10K
J301
TEST-N
Vcc
1388 Hz, 4~5 Vp-p
(BEEP TONE)
R313 10K
R314 10K
R315 10K
0 V
2450 Hz, 4~5 Vp-p
(ALARM TONE)
1388 Hz, 4~5 Vp-p
(KEY TONE)
24 V (COPY TX)
4~5 V (STANDBY)
24 V (COPY, RX)
4~5 V (STANDBY)
ADSI
ADCLK
ADSO
ADCS-N
RCOVER
C209
M0.01
PAPER
DOC
READ


SRAM
4–5 V
IC105
RESET
INVERTER
4–5 Vp-p
6 MHz
1.2 V
FACSIMILE RECEPTION SIGNAL
CN105
LED1
LED2
LED3
LED4
LED5
LED6
LED7
LED8
LED9
LED10
LED11
LED12
LED13
LED14
KEYSTB0-N
KEYSTB1-N
KEYSTB2-N
KEYSTB3-N
KEYSTB4-N
KEYSTB5-N
KEYIN0-N
KEYIN1-N
KEYIN2-N
KEYIN3-N
KEYIN4-N
KEYIN5-N
KEYIN6-N
KEYIN7-N
TO OPERATION BOARD
CN104
PAPER
JAM-N
CN107
RCOVER
CN102
DOC
READ
CN106
THERM1
THERM2
STB0
STB1
STB2
STB3
THRCK
THLCH-N
THDAT
TO THERMAL HEAD
CN108
TM3-N
TM2-N
TM1-N
TM0-N
TO TX MOTOR
CN109
RXCOM
RM3-N
RM2-N
RM1-N
RM0-N
NC
TO RX MOTOR
A/D CONVERTER
IC201
Vcc
4–5 Vp-p , 250 kHz
4–5 Vp-p
2.7 V
4 V
ADSI
ADCLK
ADSO
ADCS-N
Vcc (Cover close)
BUFFER
IC303
INVERTER
IC107
THRCK-N
THLCK
R802
330
PC802
PC801
CN801
CN901
R801
330
SW901
R701
330
R702
330
PC702
PC701
CN701
Vcc: +5 V POWER SUPPLY VOLTAGE
SW: SWITCHING

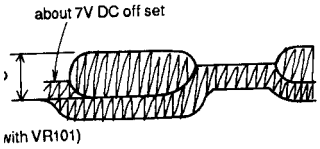
SCHEMATIC DIAGRAM AND P

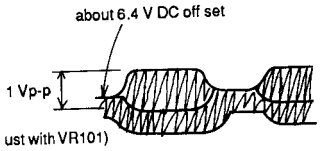
CCD CIRCUIT



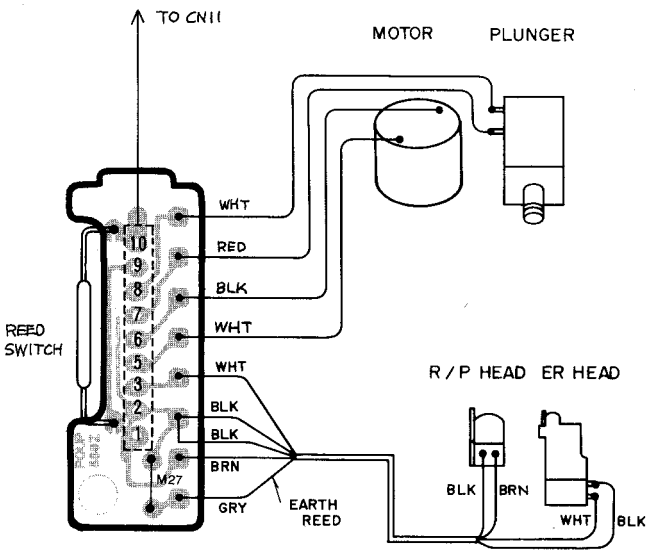
ɔ PRINTED CIRCUIT BOARD

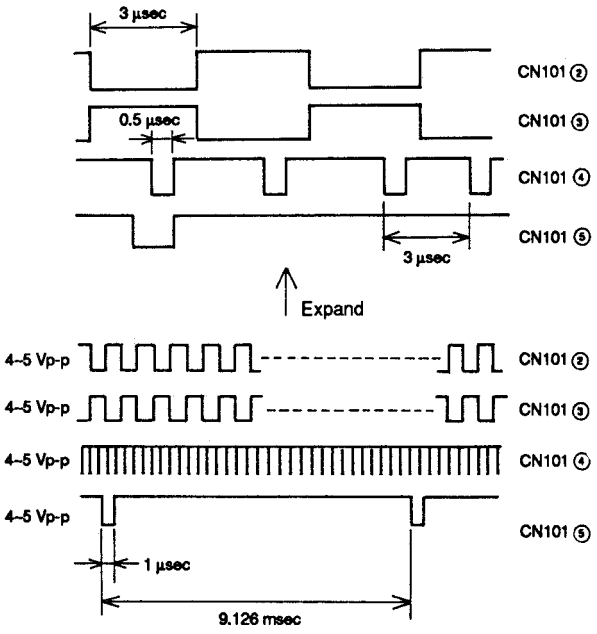
7 | 8 | 9 | 10 | 11 | 12 | 13

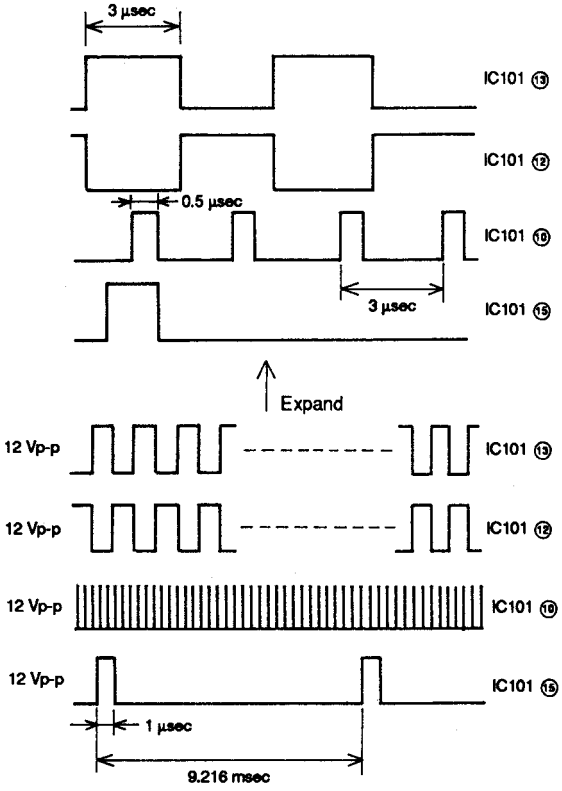




CASSETTE DECK BOARD (COMPONENT VIEW)



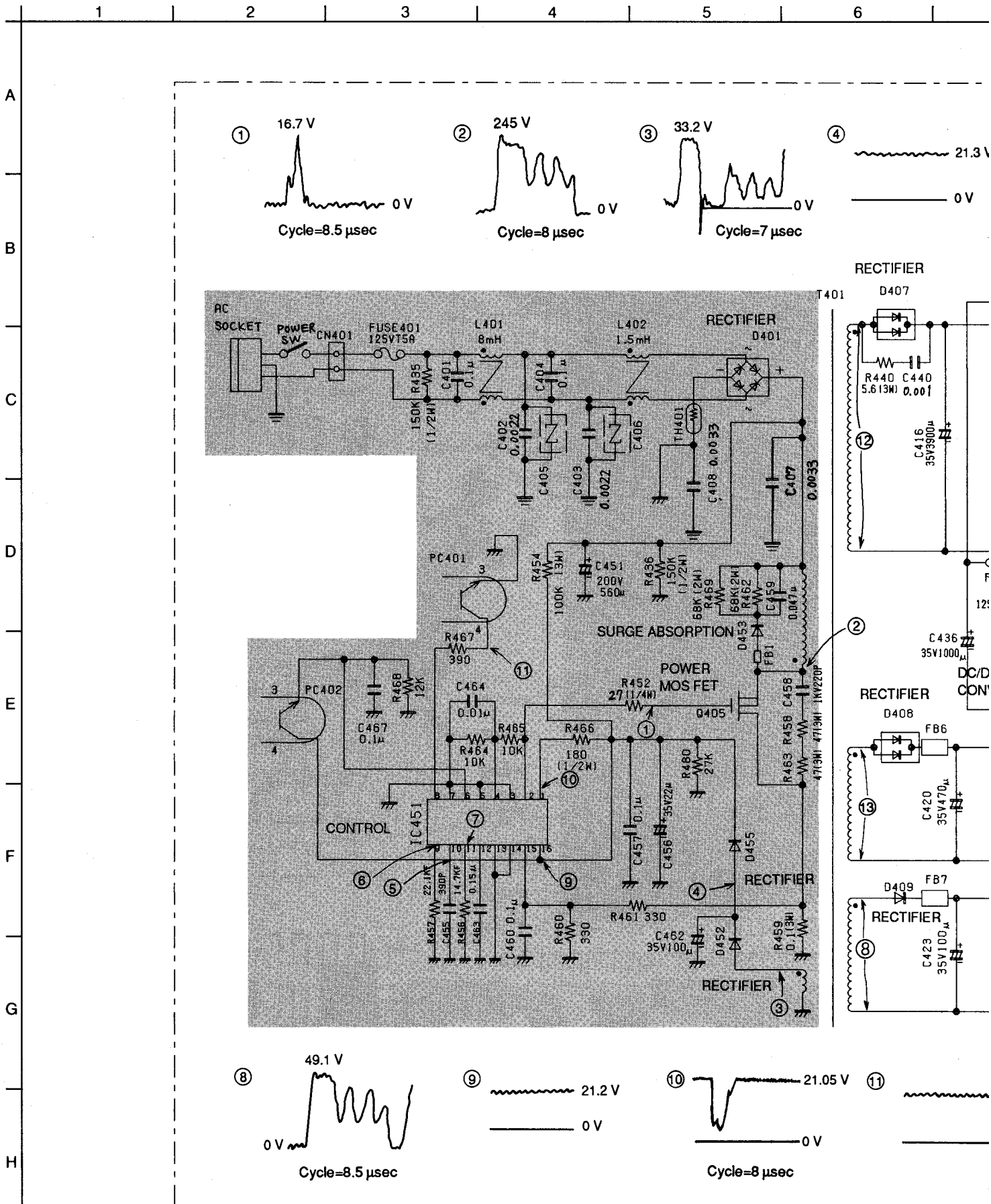




Notes:

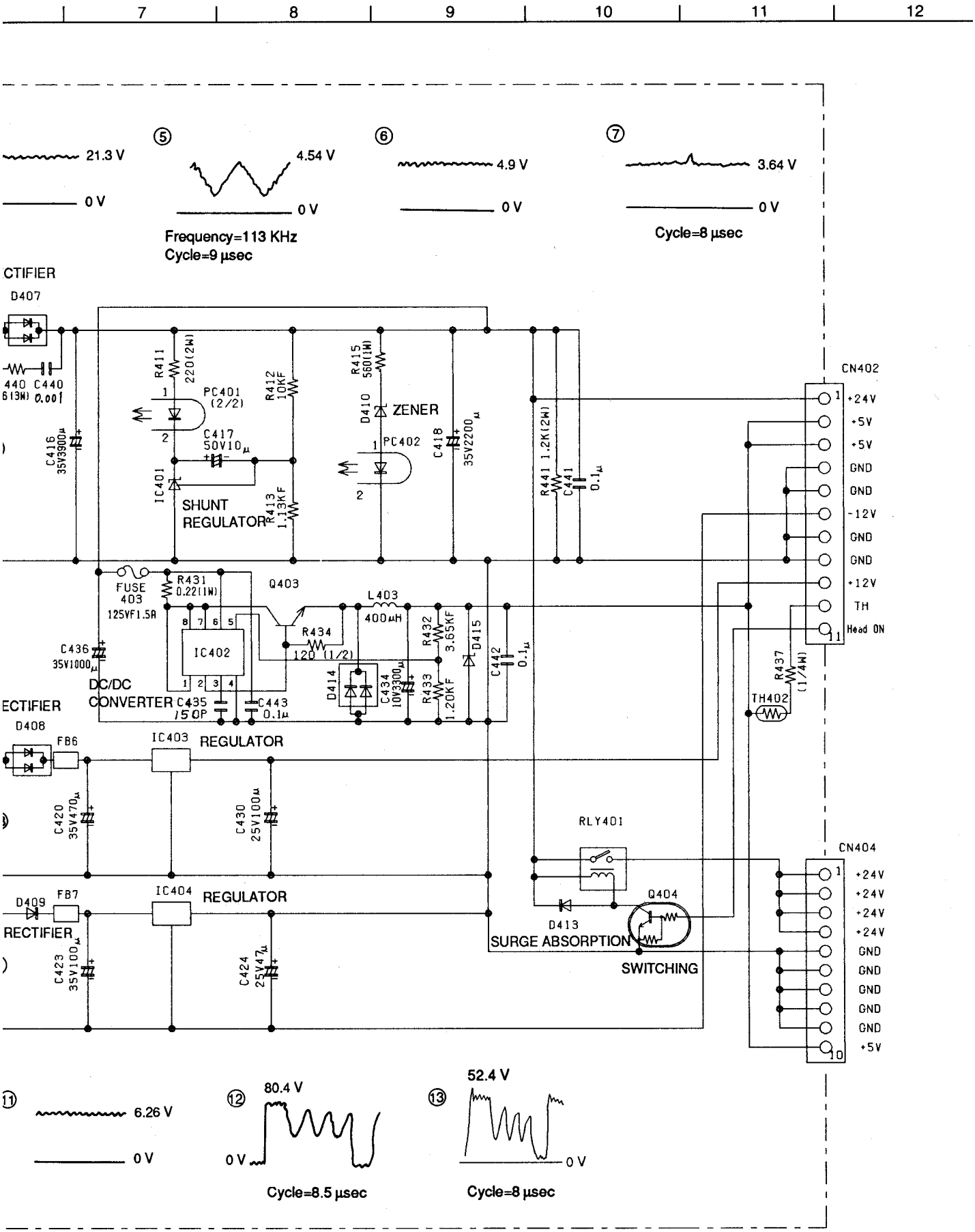
1. The circuit shown in ▒▒ on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ▒▒ on the conductor indicates printed circuit on the front side of the printed circuit board.

SCHEMATIC DIAGRAM (SWI

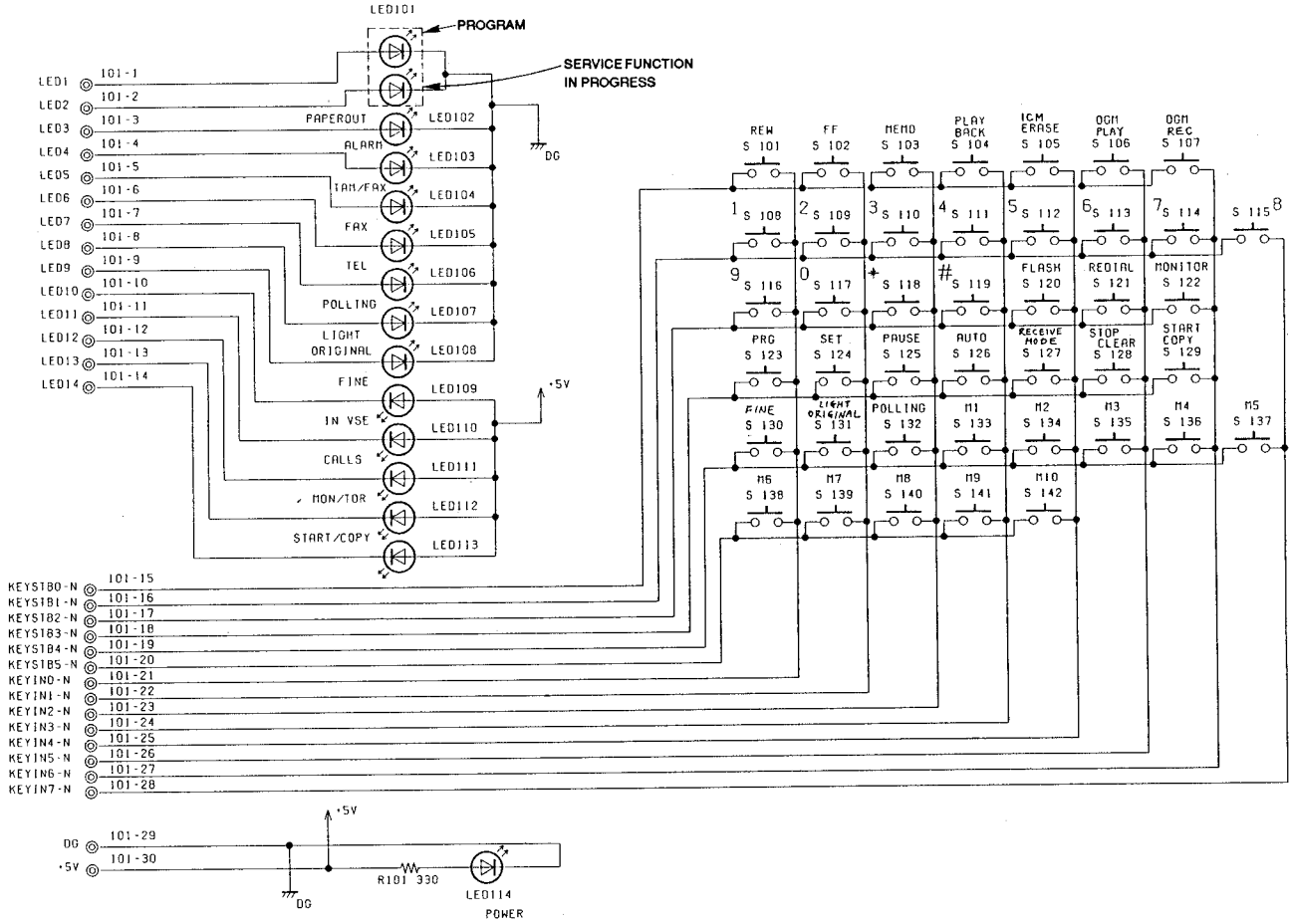


Note:
When measuring the waveform on the primary circuit of the Switching Power Supply Board, be sure to insulate the ground of the oscilloscope's probe from the ground of its power supply.

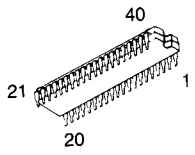
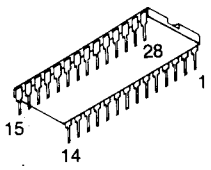
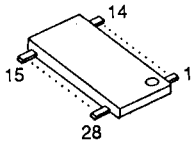
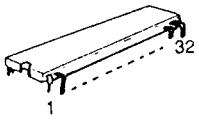
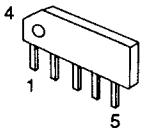
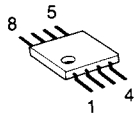
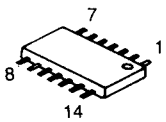
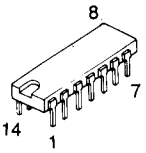
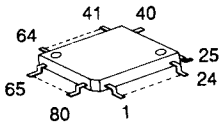
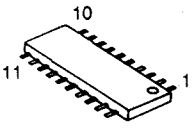
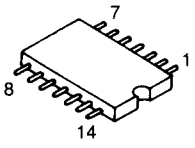
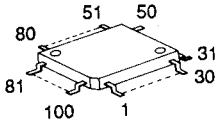
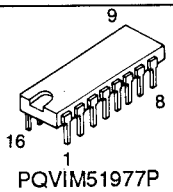
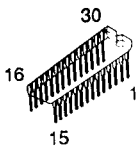
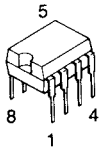
AM (SWITCHING POWER SUPPLY)

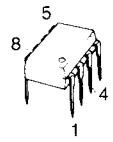
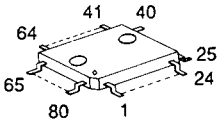
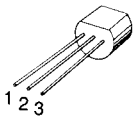
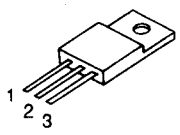
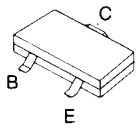
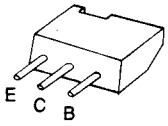
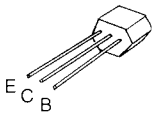
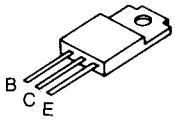
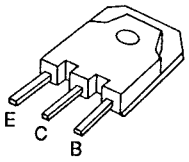
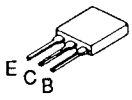
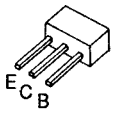
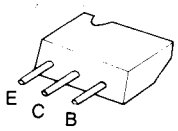
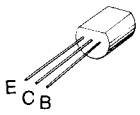
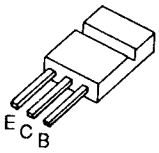
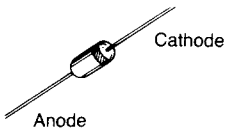
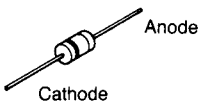
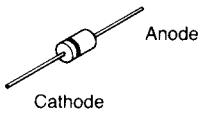
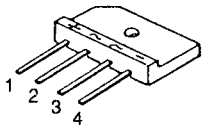
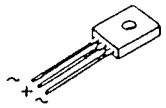
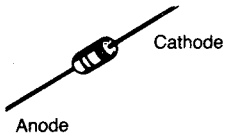
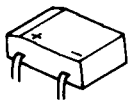
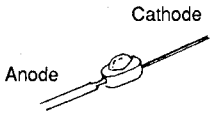
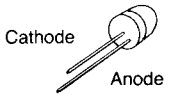


SCHEMATIC DIAGRAM (OPERATION CIRCUIT)

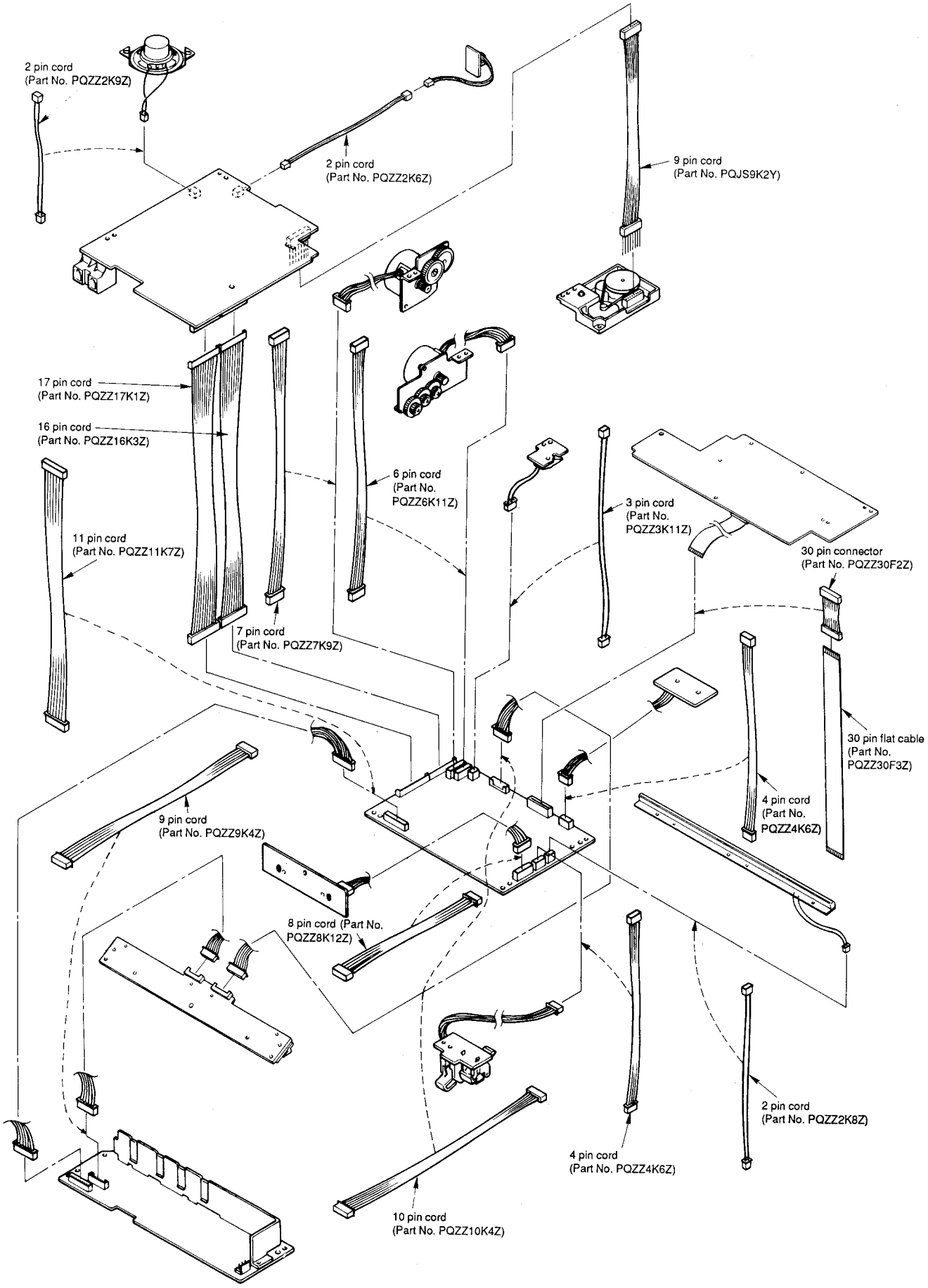


TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

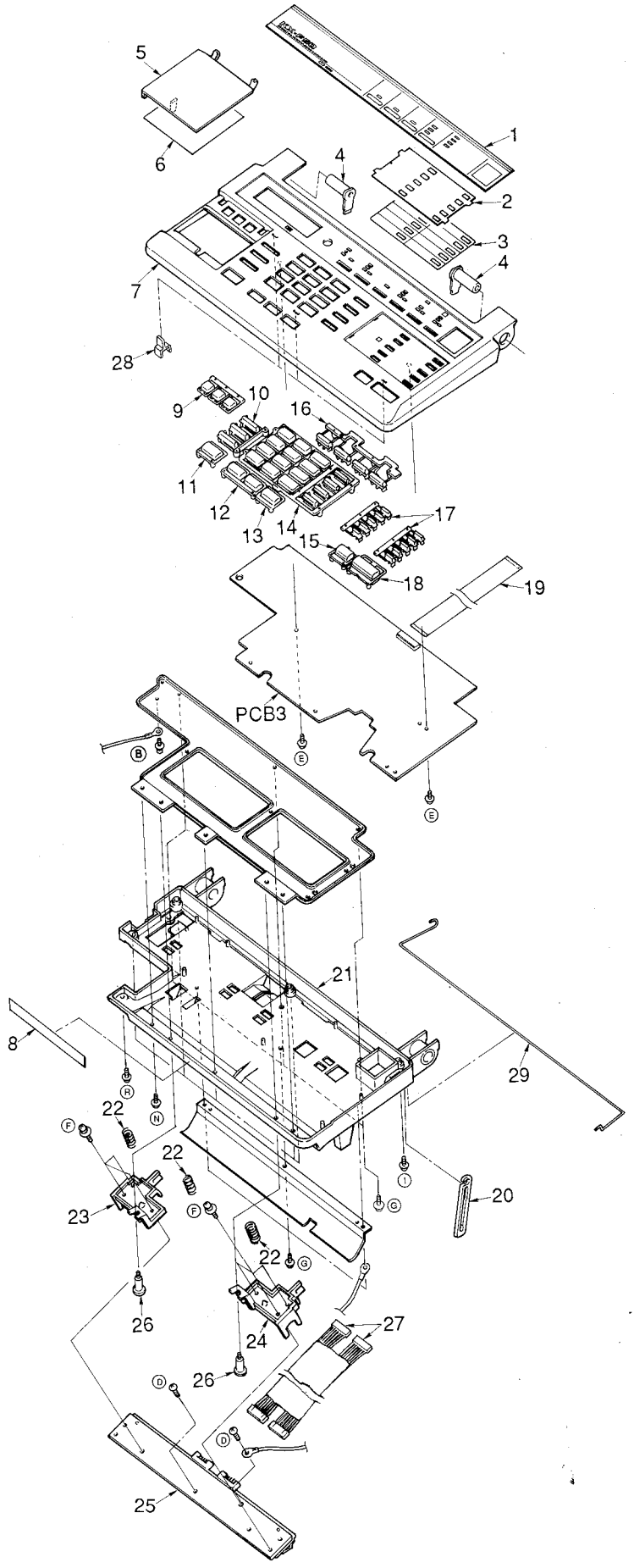
 PQVIZ8400P6G	 PQVITMS3477 PQWIF50M	 PQVIM5165FCL	 PQVIR96MFX	 PQVIM5195BL
 PQVINJM082BM PQVINJM4558M	 PQVINJM2901M PQVISN7H32S PQVISN7L06S	 PQVIPD4066BC PQVIDC0834CN	 PQVIE15R20F	 PQVISN7L374S
 PQVITC4053BF	 PQVIE22R76F	 PQVIM51977P PQVITM41256A PQVINJ4053BD PQVIBA12003	 AN6181K	 PQVIM3074AE1 PQVIBA6220

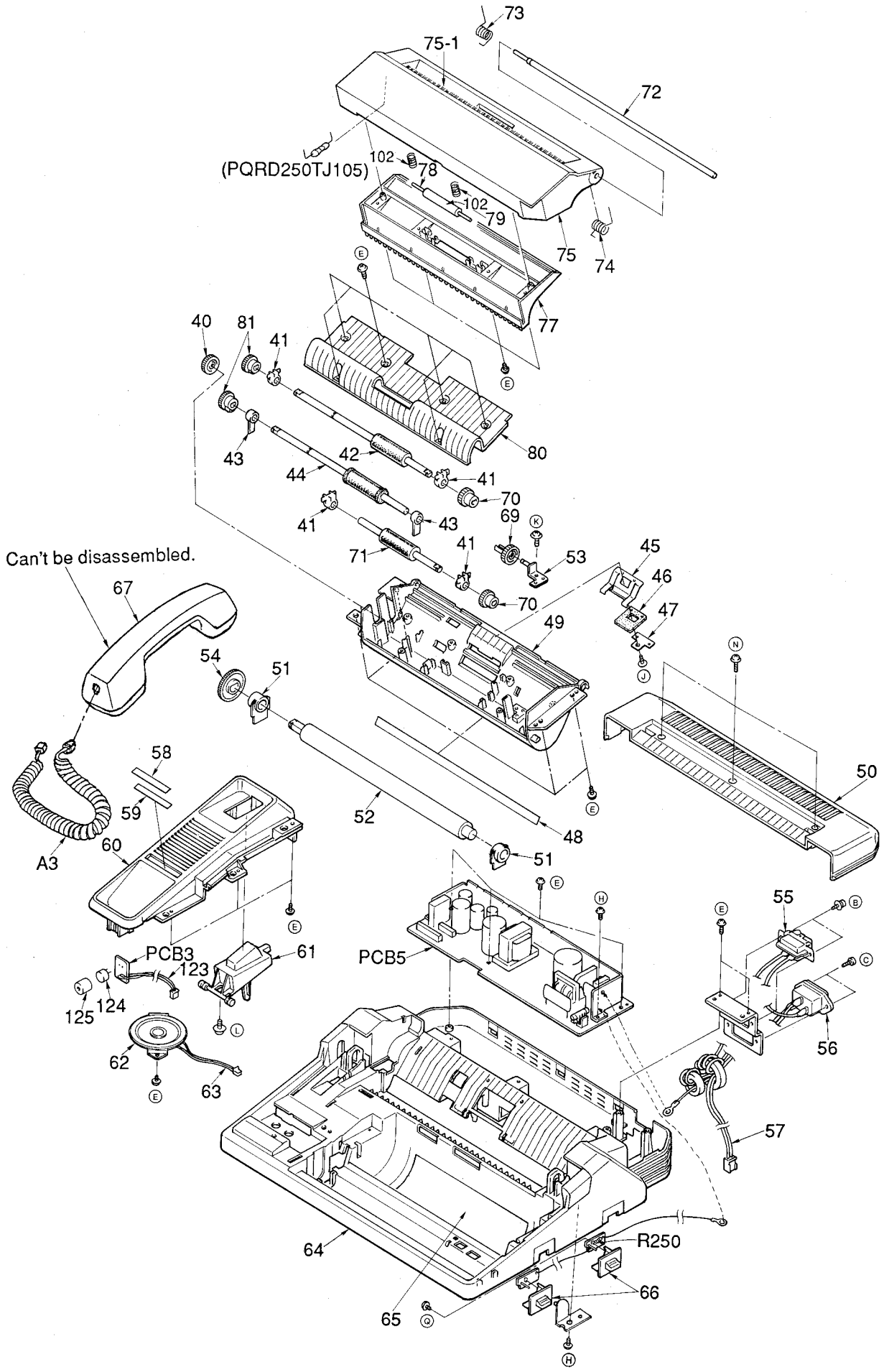
 PQVINJ2360D PQVINJM4558D	 PQVI672191F	 PQVIUPC1093J	 PQVITA7812AP	 PQVTDTC143E PQVTDTA114YU, 2SB1218A, 2SD1819A
 2SC1652 2SB1322, 2SD1994A	 PQVTDTC143XS 2SC1740S, 2SA933	 2SD1266	 2SK1488	 2SA1626
 PQVTBB1A4A	 2SD662B	 2SC2235	 2SD2136	 PQVDHZS3A1, 1SS131, MA700A
 MA7200 1SS147, MA4270	 PQVD1GU42, PQVD1JU41 1S1588	 PQVDD5SBA40S	 PQVDD5LC20U PQVDD10LC20U	 MA4068 MA4039, MA4056 MA7062, MA4051
 PQVDS1YB40F1	 PQVDGL1E11C PQVDGL1D11E	 LN38GP LN28RPXTA3 LN086WP38		

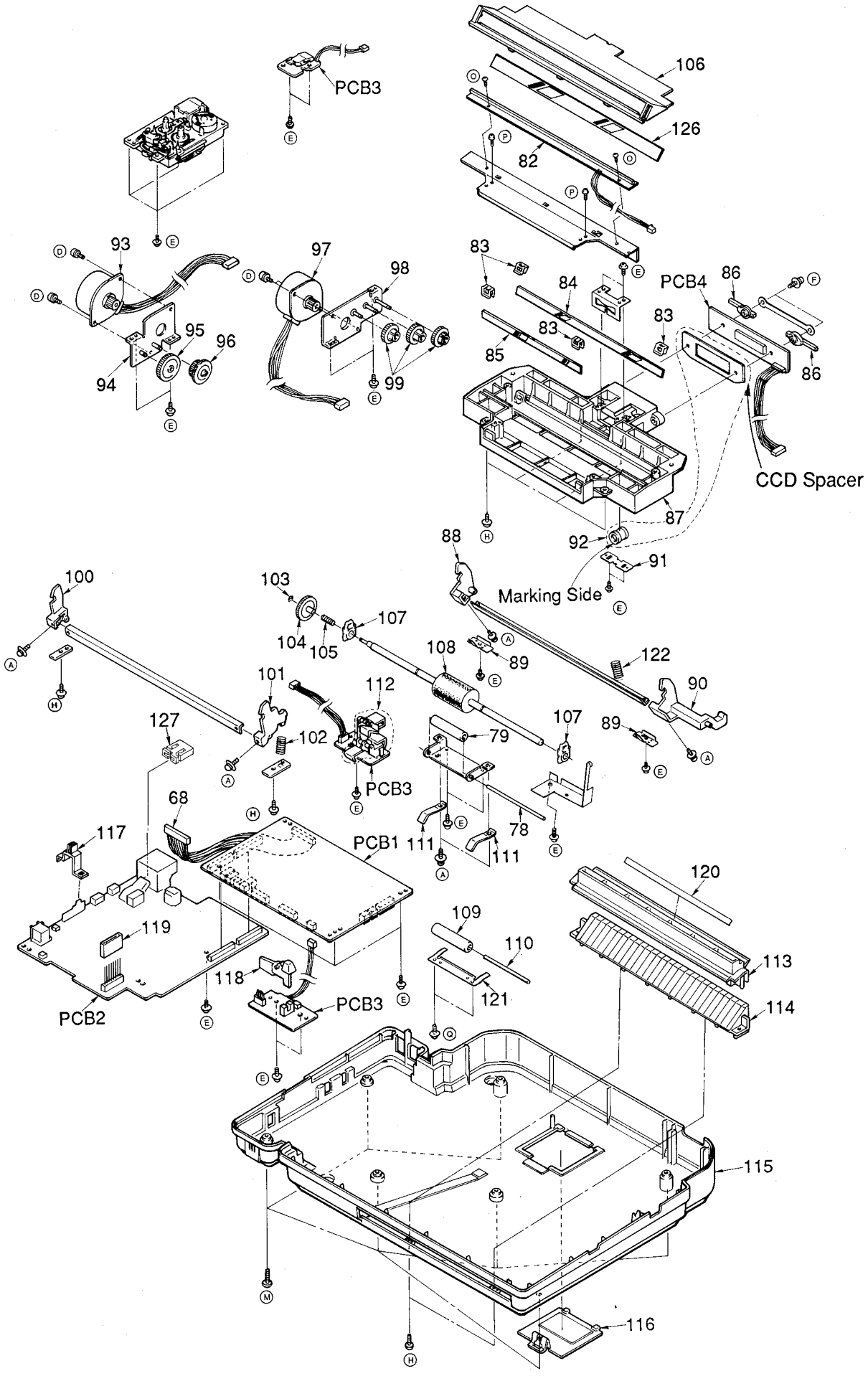
CONNECTOR LEAD AND EXTENSION CORD CONNECTING METHOD



CABINET, MECHANICAL AND ELECTRICAL PARTS LOCATION




Can't be disassembled.
(PQRD250TJ105)
PCB3
PCB5
A3
R250


PCB3
106
126
82
93
97
98
83
84
PCB4
86
83
95
96
85
83
86
94
99
CCD Spacer
87
88
92
91
Marking Side
100
103
107
104
105
108
89
122
101
112
90
127
102
107
79
89
PCB3
68
PCB1
111
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78
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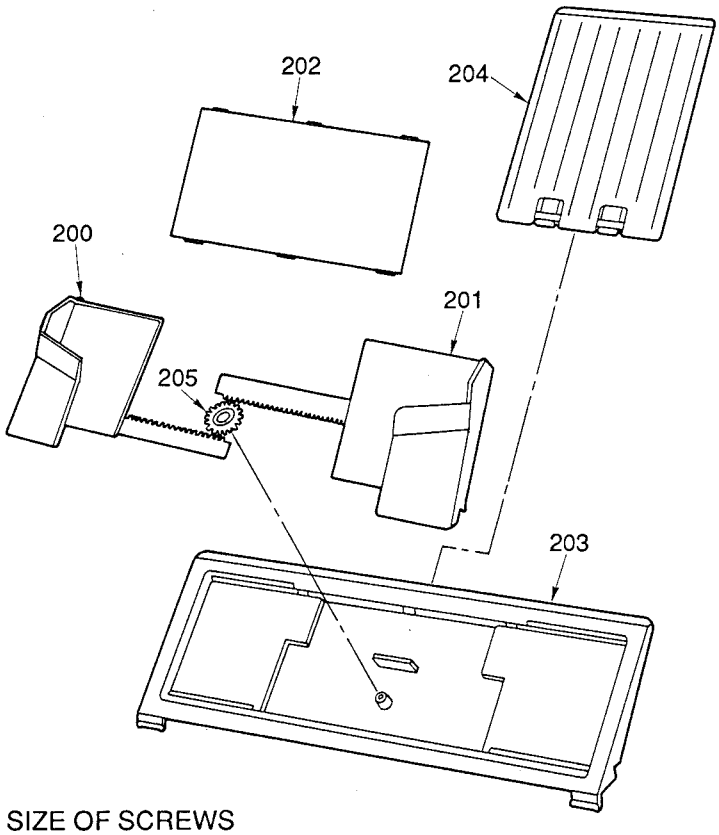
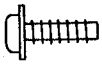
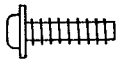
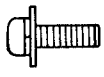
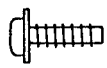
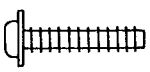
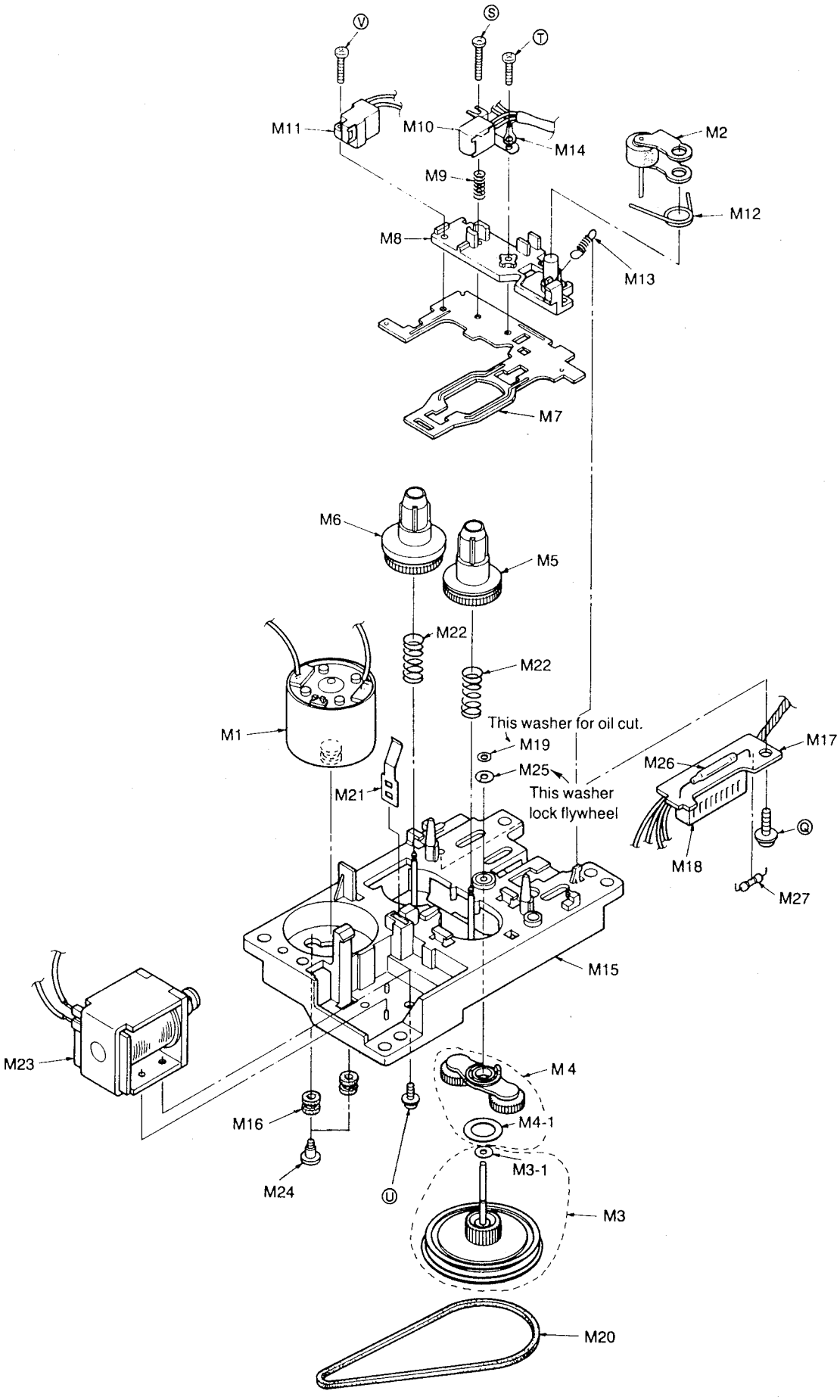
113
118
PCB3
121
114
PCB2
115
116



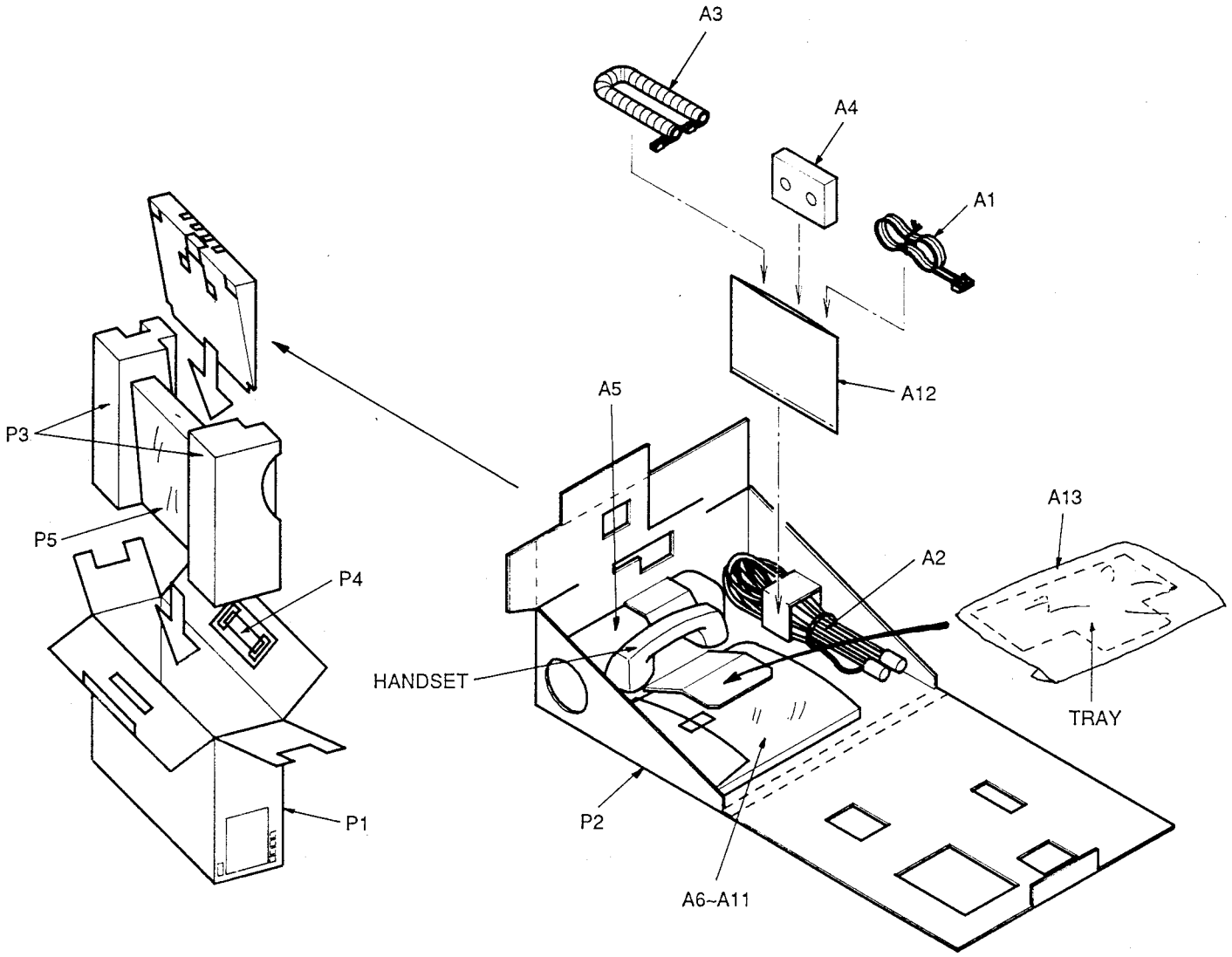
ACTUAL SIZE OF SCREWS

Ref. No.	Figure	Part No.	Ref. No.	Figure	Part No.
Ⓐ		XYN3+F6	Ⓛ		PJHE5065Z
Ⓑ		XYN3+C6	Ⓜ		XTW3+S14P
Ⓒ		XSS3+6	Ⓝ		XTW3+S10PFZ
Ⓓ		XYN3+C4	Ⓞ		XSN26+4
Ⓔ		XTW3+S8M	Ⓟ		XTW3+S12M
Ⓕ		XYN3+F10	Ⓠ		XTW26+6F
Ⓖ		XYN3+F8	Ⓡ		XTB3+8GFZ
Ⓗ		XTW3+S10M	Ⓢ		XSN17+10FN-3
Ⓘ		XTW3+S16M	Ⓣ		XSN17+6FZ-3
Ⓙ		XTS26+6C	Ⓤ		XTW26+5LF
Ⓚ		XTW3+S6P	Ⓥ		XSN17+7FN-3

CASSETTE DECK PARTS LOCATION



ACCESSORIES AND PACKING MATERIALS



REPLACEMENT PARTS LIST

Model KX-F50

Notes:

1. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.
2. Important safety notice.
   Components identified by the ⚠ mark special characteristics important for safety. when replacing any of these components, use only manufacture's specified parts.
3. The S mark indicates service standard parts and may differ from production parts.
4. RESISTORS & CAPACITORS
   Unless otherwise specified.
   All resistors are in ohms(Ω) k=l000Ω,M=l000kΩ
   All capacitors are in MICRO FARADS(μF) P=μμF
   *Type &Wattage of Resistor
   Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyster
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polyproplylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs
		CABINET, MECHANICAL AND ELECTRICAL PARTS	
1	PQGP125Z	PANEL	1
2	PQHR5288Z	TRANSPARENT PLATE, MEMORY CARD	1
3	PQHP5056Z	CARD, MEMORY	1
4	PQDF9031Z	SHAFT, OPERATION GRILLE	2
5	PQKG10Y	CASSETTE LID	1
6	PQQT5150Z	INSTRUCTION LABEL	1
7	PQGG87Y	GRILLE, OPERATION	1
8	PQQT4336Z	CAUTION LABEL-A	1
9	PQBCX171Z	BUTTON, OGM PLAY/REC/ICM EARSE	1
10	PQBCX170Z	BUTTON, REW/FF/MEMO/2WAY	1
11	PQBC260Z	BUTTON, PALYBACK/PAUSE	1
12	PQBCX172Z	BUTTON, FLASH, REDIAL	1
13	PQBC261Z	BUTTON, MONITOR/VOICE STDBY	1
14	PQBCX167Z	BUTTON, DIAL/PRO/SET/PAUSE/AUTO	1
15	PQBC259Z	BUTTON, STOP/CLEAR	1
16	PQBCX169Y	BUTTON, FINE/LIGHT/POLLING/RECE.	1
17	PQBCX168Z	BUTTON, MEMORY	2
18	PQBC258Z	BUTTON, START/COPY	1
19	PQJE109Y	FLAT CABLE	1
20	PQHR9466Z	HOLDER, OPERATION GRILLE	1
21	PQHR9423Z	COVER, OPERATION GRILLE	1
22	PQUS211Z	SPRING, THERMAL HEAD	3
23	PQHR9421Z	LEFT GUIDE, THERMAL HEAD	1
24	PQHR9422Z	RIGHT GUIDE, THERMAL HEAD	1
25	PQJHS9Z	THERMAL HEAD	1
26	PQHE5020Y	SCREW, THERMAL HEAD M'TG	2
27	PQJS19S30Y	CONNECTOR, 19P	1
28	PQGP119Z	LED COVER	3
29	PQUS213Z	SPRING, OPERATION GRILLE COVER	1
40	PQDG5036Z	MIDDLE GEAR-A	1
41	PQHR9426Z	SPACER, FEED ROLLER	4
42	PQDN19Y	ROLLER, DOCUMENT FEED	1
43	PQHR9427Z	SPACER, FEED ROLLER	2
44	PQDN20Y	ROLLER, DOCUMENT DISCHARGE	1
45	PQUS187Y	SPRING, DOCUMENT SEPARARTION	1
46	PQHG827Z	RUBBER, DOCUMENT SEPARATION	1
47	PQHM117Z	METAL, SEPARATION RUBBER M'TG	1
48	PQHR5289Z	READING PLATE	1
49	PQZMF50M	DOCUMENT GUIDE-A ASS'Y	1
50	PQUV104Y	REAR COVER	1
51	PQHR9424Z	SPACER, THERMAL PLATEN	2
52	PQDN17Z	THERMAL PLATEN	1
53	PQMD9021Z	GEAR CHASSIS-A	1
54	PQDG5037Z	GEAR, PLATEN	1
55	EST15704V	SWITCH, POWER ⚠	1
56	PQJP3A2Z	AC SOCKET ⚠	1
57	PQJS2L94Z	CONNECTOR, 2P ⚠	1
58	PQHR576Z	TRANSPARENT PLATE, TEL. NO. CARD	1
59	PQHP532X	CARD, TEL. NO.	1
60	PQKM195Y	CABINET BODY, HANDSET CRADLE	1
61	PQBE32Y	BUTTON, HOOK	1
62	PQAS5P05Z	SPEAKER	1
63	PQJS2L93Z	CONNECTOR, 2P	1
64	PQYMF50M	UPPER CABINET ASS'Y	1
65	PQQT4335Z	CAUTION LABEL-B	1
66	PQBD163Z	KNOB, FRONT/BACK LID OPEN	2
67	PQJX2PM409Z	HANDSET ASS'Y	1
68	PQJS11M34Z	CONNECTOR, 11P	1
69	PQDG5043Z	MIDDLE GEAR-B	1
70	PQDG5044Z	GEAR, RECORDING PAPER FEED	2
71	PQDN21Y	ROLLER, DOCUMENT FEED	1
72	PQDF9028Z	SHAFT, DOCUMENT LID	1
73	PQUS219Y	SPRING, DOCUMENT LID (LEFT)	1
74	PQUS221Y	SPRING, DOCUMENT LID (RIGHT)	1
75	PQYEF50M	DOCUMENT LID	1
75-1	PQJE113Z	BRUSH-A	1
76	Not Used		
77	PQHR9428Z	DOCUMENT GUIDE, UPPER SIDE	1
78	PQDF9029Z	SHAFT, SUB ROLLER	2
79	PQDR16Z	SUB ROLLER-A	2
80	PQHR9445Y	DOCUMENT GUIDE-B	1
81	PQDG5038Z	GEAR, RECORDING PAPER FEED	2
82	LN803184UN	LED ARRAY	1
83	PQUS216Z	SPRING, MIRROR M'TG	4
84	PQ0M3Z	MIRROR -A (LONG)	1
85	PQ0M4Z	MIRROR-B (SHORT)	1
86	PQHR9429Z	LEVER, CCD ADJUSTMENT	2
87	PQZEF50M	CCD CHASSIS	1
88	PQHR9419Z	LOCK LEVER-L	1
89	PQUS208Z	SPRING, LOCK LEVER	2
90	PQHR9420Z	LOCK LEVER-R	1
91	PQUS217Z	SPRING, LENS M'TG	1
92	PQWEF50M	LENS (WITH SPACER)	1
93	PQJQ26Z	MOTOR, RECEPTION	1
94	PQMD9014Z	GEAR CHASSIS-B	1
95	PQDG5035Z	MIDDLE GEAR-B	1
96	PQDG5034Z	MIDDLE GEAR-C	1
97	PQJQ27Z	MOTOR, TRANSMISSION	1
98	PQMD9013Z	GEAR CHASSIS-C	1
99	PQDG5033Z	MIDDLE GEAR-D	3
100	PQHR9417Z	LOCK LEVER, LEFT	1
101	PQHR9418Z	LOCK LEVER, RIGHT	1
102	PQUS207Y	SPRING, RIGHT LOCK LEVER, ROLLER	3
103	XUC2FY	RETAINING RING	1
104	PQDG5039Z	GEAR, SEPARATION	1
105	PQUS215Z	SPRING, SEPARATION ROLLER	1
106	PQUV103Y	COVER	1
107	PQHR9425Z	SPACER, SEPARARION ROLLER	2
108	PQDN18Z	ROLLER, DOCUMENT SEPARATION	1
109	PQDR17Z	SUB ROLLER-B	1
110	PQDF9042Z	SHAFT, SUB ROLLER-B	1
111	PQUS209Z	SPRING, SUB ROLLER-A M'TG	2
112	PQHR9539Z	LEVER, SENSOR	1
113	PQHR9489Z	UPPER GUIDE, RECORDING PAPER	1
114	PQHR9490Z	LOWER GUIDE, RECORDING PAPER	1
115	PQYFF50M	LOWER CABINET	1
116	PQKE55Z1	ROM LID	1
117	PQBD162Z	KNOB, VOLUME	1
118	PQHR9416Y	LEVER, RECORDING PAPER DET.	1
119	PQHR9510Z	SPACER, DECK CONNECTOR	1
120	PQQT4337Z	CAUTION LABEL-C	1
121	PQZSF50M	SPRING ASS'Y, SUB ROLLER-B M'TG	1
122	PQUS228Z	SPRING, LOCK LEVER	1
123	PQJS2L96Z	CONNECTOR,2P	1
124	PQJM120Z	MICROPHONE	1
125	PQHG503Z	RUBBER PARTS, MIC COVER	1

Ref. No.	Part No.	Part Name & Description	Pcs
126	PQ0G2Z	GLASS	1
127	PQHR9451Z	SPACER, HOOK SWITCH	1
200	PQHR9410Z	SLIDER-L	1
201	PQHR9411Z	SLIDER-R	1
202	PQHR9412Y	COVER,SLIDER	1
203	PQKE71Y	TRAY (LARGE)	1
204	PQKE72Y	TRAY (SMALL)	1
205	PQDG5042Z	GEAR	1
R250	PQRD250TJ105	RESISTOR, 1MΩ	1
		CASSETTE DECK PARTS	
M1	PQFM9909Z	MOTOR ASS'Y	1
M2	PQFD9913Z	PINCH ROLLER ASS'Y	1
M3	PQFF9909Z	FLYWHEEL ASS'Y	1
M3-1	PQFN35Z	WASHER-C	1
M4	PQFG9904Z	GEAR ASS'Y	1
M4-1	PQFN48Z	WASHER-D	1
M5	PQFR9912Z	TAKEUP REEL TABLE ASS'Y	1
M6	PQFR9913Z	SUPPLY REEL TABLE ASS'Y	1
M7	PQFD82Y	HEAD BASE PLATE	1
M8	PQFW42Z	HEAD BASE	1
M9	PQFS73Z	SPRING, RECORD/PLAYBACK HEAD	1
M10	PQJH1M2Z	RECORD/PLAYBACK HEAD	1
M11	PQJH6M2Z	ERASE HEAD	1
M12	PQFS109Z	SPRING, PINCH ROLLER	1
M13	PQFS110Z	SPRING, HEAD PLATE	1
M14	PQFJ2Z	TERMINAL	1
M15	PQFC9909X	CHASSIS ASS'Y	1
M16	PQFI14Z	RUBBER PARTS, MOTOR SPACER	2
M17	PQUP589Z	P.C. BOARD, REED SWITCH	1
M18	PQJS9B30Z	CONNECTOR, 9P	1
M19	PQFN33Z	WASHER (FOR OIL CUT)	2
M20	PQFB12Z	BELT	1
M21	PQFD64Z	PLATE SPRING	1
M22	PQFS82Z	SPRING, REEL TABLE	2
M23	PQFP126Y	PLUNGER	1
M24	PQHD15Z	SCREW	2
M25	PQFN49Z	WASHER (FOR LOCK OF FLYWHEEL)	1
M26	PQSE91Z	SWITCH, REED	1
M27	ERDS2TJ563	RESISTOR, 56 kΩ	1
		ACCESSORIES AND PACKING MATERIALS	
A1	PQJA59Y	CORD, TEL. S	1
A2	PQJA200Z	CORD, POWER ⚠	1
A3	PQJA30V	CORD, HANDSET	1
A4	RT-N30-JT1P	MICRO CASETTE TAPE	1
A5	PQHP416Z	RECORDING PAPER	1
A6	PQQX6246Z	INSTRUCTION BOOK	1
A7	PQQX9752Z	FAX CORRESPONDECE SHEET	1
A8	PQQX9636Z	CARD, DIAL	1
A9	PQQX9736Z	INSTRUCTION BOOK (QUICK REFERENCE) (ENGLISH)	1
A10	PQQX9737Z	INSTRUCTION BOOK (QUICK REFERENCE) (SPANISH)	1
A11	XZB25X34A04	PROTECTION COVER (DOCUMENT)	1
A12	XZB20X20A04	PROTECTION COVER (CORD)	1
A13	PQPH103Z	PROTECTION COVER (TRAY)	1
P1	PQPK1189Z	GIFT BOX	1
P2	PQPN1111Z	ACCESSORY BOX	1
P3	PQPN9056Z	CUSHION, COMPLETE	1
P4	PQPN935Z	HANDLE	1
P5	PQPH92Z	PROTECTION COVER (UNIT)	1

Ref. No.	Part No.	Part Name & Description	Pcs
		DIGITAL BOARD PARTS	
PCB1	PQWP1F50M	DIGITAL BOARD ASS'Y (NLA)	1
		(ICs)	
IC101	PQVIZ8400P6G	IC	1
IC102	PQWIF50M	IC	1
IC103	PQVIM5165FCL	IC S	1
IC104	PQVIR96MFX	IC	1
IC105	PQVIM5195BL	IC	1
IC106	PQVINJM4558M	IC	1
IC107	PQVISN7L06S	IC	1
IC201	PQVIDC0834CN	IC	1
IC301	PQVIE15R20F	IC	1
IC302	PQVISN7L374S	IC	1
IC303	PQVISN7H32S	IC	1
IC401	PQVINJM082BM	IC	1
IC402	PQVINJM082BM	IC	1
IC403	PQVINJM4558M	IC	1
IC404	PQVINJM082BM	IC	1
IC405	PQVITC4053BF	IC	1
IC406	PQVINJM2901M	IC	1
IC407	PQVITC4053BF	IC	1
IC501	PQVIE22R76F	IC	1
IC502	PQVIM5165FCL	IC S	1
QA201	PQVIBA12003	IC	1
QA202	PQVIBA12003	IC	1
		(TRANSISTORS)	
Q101	2SB1218A	TRANSISTOR(SI)	1
Q201	2SB1322	TRANSISTOR(SI)	1
Q202	2SB1322	TRANSISTOR(SI)	1
Q301-309	PQVTDTA114YU	TRANSISTOR(SI)	9
Q401	2SB1322	TRANSISTOR(SI)	1
Q402	2SC1740S	TRANSISTOR(SI)	1
Q403	2SD1819A	TRANSISTOR(SI)	1
Q404	2SA933	TRANSISTOR(SI)	1
		(DIODES)	
D103	1SS131	DIODE(SI)	1
D104	MA700A	DIODE(SI)	1
D201	1SS147	DIODE(SI)	1
D202	1SS147	DIODE(SI)	1
D301-306	1S1588	DIODE(SI)	6
D401-406	1SS131	DIODE(SI)	6
ZD101	MA4051	DIODE(SI)	1
ZD201	MA7200	DIODE(SI)	1
ZD202	MA7200	DIODE(SI)	1
ZD401	MA4039	DIODE(SI)	1
ZD402	PQVDHZS3A1	DIODE(SI)	1
		(COMPONENT COMBINATIONS)	
RA301	PQRSLD8X103J	RESISTOR ARRAY	1
LP101	EXEMT220B	NOISE FILTER	1
		(COIL)	
L101	PQLE53	CHOKE COIL S	1
		(CRYSTAL OSCILLATOR)	
X101	PQVCL2400N3Z	CRYSTAL OSCILLATOR	1
		(CAPACITORS)	
C101	ECEA0JKS101	100	1
C102	ECEA0JKS101	100	1
C103	ECEA1CK101	100 S	1

Ref. No.	Part No.	Value		Pcs
C104	PQCUV1H103KB	0.01		1
C105	PQCUV1H103KB	0.01		1
C106	PQCUV1E104MD	0.1		1
C107	PQCUV1E104MD	0.1		1
C108	PQCUV1E104MD	0.1		1
C109	PQCUV1C334ZF	0.33		1
C110	PQCUV1C334ZF	0.33		1
C111	PQCUV1E104MD	0.1		1
C112	ECEA1HKS010	1	S	1
C113	PQCUV1E104MD	0.1		1
C114	PQCUV1E104MD	0.1		1
C115	PQCUV1E104MD	0.1		1
C116	PQCUV1H103KB	0.01		1
C117	PQCUV1H103KB	0.01		1
C118	PQCUV1H220JC	22P		1
C119	PQCUV1H390JC	39P		1
C120	PQCUV1H220JC	22P		1
C121	PQCUV1H102J	0.001		1
C122	PQCUV1H102J	0.001		1
C123	PQCUV1E104MD	0.1		1
C124	ECEA1HKSR33	0.33	S	1
C125	PQCUV1H331JC	330P		1
C126	PQCUV1E104MD	0.1		1
C127	PQCUV1H560JC	56P		1
C201	ECEA1CKS100	10	S	1
C202	ECEA1CKS100	10	S	1
C203	PQCUV1E104MD	0.1		1
C204	PQCUV1E104MD	0.1		1
C205	PQCUV1H103KB	0.01		1
C206	PQCUV1E104MD	0.1		1
C207	PQCUV1H103KB	0.01		1
C208	PQCUV1E104MD	0.1		1
C209	PQCUV1H103KB	0.01		1
C210	Not Used			
C211	PQCUV1H103KB	0.01		1
C212	PQCUV1H103KB	0.01		1
C213	PQCUV1H103KB	0.01		1
C214	PQCUV1E104MD	0.1		1
C215	ECEA1VU221	220		1
C216	ECEA1CK101	100		1
C217	ECEA1CK101	100		1
C218	ECEA0JK221	220		1
C219	PQCUV1H153KB	0.015		1
C220	PQCUV1E104MD	0.1		1
C221	PQCUV1E104MD	0.1		1
C222	PQCUV1E104MD	0.1		1
C301-304	PQCUV1E104MD	0.1		4
C401	ECEA1CKS100	10	S	1
C402-410	PQCUV1E104MD	0.1		9
C411	PQCUV1H103KB	0.01		1
C412	ECQG1H681JZ	680P		1
C413	PQCUV1H103KB	0.01		1
C414	ECQG1H682JZ	0.0068		1
C415	PQCUV1E104MD	0.1		1
C416	PQCUV1H102J	0.001		1
C417-420	PQCUV1E104MD	0.1		4
C421	PQCUV1H391JC	390P		1
C501	ECEA1CKS100	10	S	1
C502-505	PQCUV1E104MD	0.1		4
		(RESISTORS)		
R101	PQ4R10XJ275	2.7M		1
R102	ERD25TJ271	270		1
R103	PQ4R10XF8662	86.6K		1
R104	ERDS2TJ563	56K		1
R105	PQ4R10XF8662	86.6K		1
R106	ERDS2TJ683	68K		1
R107	PQ4R10XJ272	2.7K		1
R108	ER016CKF1002	10K		1
R109	ER016CKF3652	36.5K		1
R110	PQ4R10XJ473	47K		1
R111	PQ4R10XJ103	10K		1
R112	PQ4R10XJ103	10K		1
R113	PQ4R10XJ473	47K		1

Part No.	Part No.	Value	Pcs
R114	PQ4R10XJ103	10K	1
R115	PQ4R10XJ333	33K	1
R116	PQ4R10XJ103	10K	1
R117	PQ4R10XJ103	10K	1
R118	Not Used		
R119	PQ4R10XJ472	4.7K	1
R120	PQ4R10XJ222	2.2K	1
R121	PQ4R10XJ3R3	3.3K	1
R122	PQ4R10XJ103	10K	1
R123	PQ4R10XJ101	100	1
R124	PQ4R10XJ103	10K	1
R125	Not Used		1
R126	Chip Jumper	0Ω	1
R127	PQ4R10XJ102	1K	1
R128	PQ4R10XJ100	10	1
R129	PQ4R10XJ102	1K	1
R130	PQ4R10XJ102	1K	1
R131	PQ4R10XJ101	100	1
R201	PQ4R10XJ103	10K	1
R202	ERDS1TJ222	2.2K	1
R203	PQ4R10XJ103	10K	1
R204	ERDS1TJ222	2.2K	1
R205	ERDS2TJ221	220	1
R206	ERDS2TJ221	220	1
R207	PQ4R10XJ3R3	3.3	1
R208	PQ4R10XJ100	10	1
R209	PQ4R10XJ473	47K	1
R210	PQ4R10XJ472	4.7K	1
R211	Not Used		
R212	Not Used		
R213	PQ4R10XJ103	10K	1
R214	Not Used		
R215	Not Used		
R216	ER016CKF2202	22K	1
R217	PQ4R10XJ473	47K	1
R218	ER016CKF1501	1.5K	1
R219	PQ4R10XJ473	47K	1
R220	PQ4R10XJ473	47K	1
R221	PQ4R10XJ472	4.7K	1
R222	Not Used		
R223-226	PQ4R10XJ472	4.7K	4
R227	Not Used		
R228	PQ4R10XJ103	10K	1
R229	PQ4R10XJ103	10K	1
R230	PQ4R10XJ103	10K	1
R231	PQ4R10XJ472	4.7K	1
R301-311	PQ4R10XJ331	330	11
R312-315	PQ4R10XJ103	10K	4
R316	PQ4R10XJ331	330	1
R317	PQ4R10XJ681	680	1
R318	PQ4R10XJ331	330	1
R319	PQ4R10XJ103	10K	1
R320	PQ4R10XJ103	10K	1
			1
R401	PQ4R10XJ103	10K	1
R402	PQ4R10XJ472	4.7K	1
R403	PQ4R10XJ103	10K	1
R404	PQ4R10XJ472	4.7K	1
R405	PQ4R10XJ103	10K	1
R406	PQ4R10XJ105	1M	1
R407	PQ4R10XJ222	2.2K	1
R408	PQ4R10XJ122	1.2K	1
R409	ER016CKF2002	20K	1
R410	ER016CKF1001	1K	1
R411	PQ4R10XJ472	4.7K	1
R412	PQ4R10XJ474	470K	1
R413	ER016CKF2202	22K	1
R414	ER016CKF1802	18K	1
R415	ER016CKF4701	4.7K	1
R416	PQ4R10XJ124	120K	1
R417	PQ4R10XJ103	10K	1
R418	PQ4R10XJ103	10K	1
R419	PQ4R10XJ102	1K	1
R420	ERDS1TJ222	2.2K	1
R421	PQ4R10XJ103	10K	1
R422	PQ4R10XJ681	680	1

Part No.	Part No.	Part Name & Description		Pcs
R423	PQ4R10XJ103	10K		1
R424	PQ4R10XJ103	10K		1
R425	PQ4R10XJ333	33K		1
R426	PQ4R10XJ563	56K		1
R427	PQ4R10XJ103	10K		1
R428	PQ4R10XJ823	82K		1
R429	PQ4R10XF1003	100K		1
R430	PQ4R10XJ102	1K		1
R431	PQ4R10XJ101	100		1
R432	PQ4R10XJ103	10K		1
R433	PQ4R10XJ103	10K		1
R434	PQ4R10XJ334	330K		1
R501	PQ4R10XJ103	10K		1
R502	PQ4R10XJ103	10K		1
		(BATTERY & CONNECTORS)		
BA101	BR2032/1HF1	LITHIUM BATTERY		1
CN101	PQJP8D94Z	CONNECTOR, 8P		1
CN102	PQJP4D94Z	CONNECTOR, 4P		1
CN103	PQJP2D107Z	CONNECTOR, 2P		1
CN104	PQJP4D94Z	CONNECTOR, 4P		1
CN105	PQJS30X59Z	CONNECTOR, 30P		1
CN106	PQJP9G74Z	CONNECTOR, 9P		1
CN107	PQJP3D94Z	CONNECTOR, 3P		1
CN108	PQJP6D94Z	CONNECTOR, 6P		1
CN109	PQJP7D94Z	CONNECTOR, 7P		1
CN110	PQJP16G72Z	CONNECTOR, 16P		1
CN111	PQJP17G72Z	CONNECTOR, 17P		1
CN112	PQJP11D70Z	CONNECTOR, 11P		1
		ANALOG BOARD PARTS		
PCB2	PQWP2F50M	ANALOG BOARD ASS'Y (NLA)		1
		(ICs)		
IC3	PQVIM3074AE1	IC		1
IC4	PQVINJM4558D	IC		1
IC5	PQVITMS3477	IC		1
IC6	PQVITM41256A	IC	S	1
IC7	PQVITM41256A	IC	S	1
IC8	PQVINJM4558D	IC		1
IC9	PQVIPD4066BC	IC	S	1
IC10	PQVINJ4053BD	IC		1
IC11	AN6181K	IC		1
IC12	PQVIBA6220	IC		1
IC13	PQVINJM4558D	IC		1
IC14	PQVINJM4558D	IC		1
IC15	PQVI672191F	IC		1
IC16	PQVINJM4558D	IC		1
		(TRANSISTORS)		
Q1	2SA1626	TRANSISTOR(SI)	⚠	1
Q2	2SD662B	TRANSISTOR(SI)	⚠	1
Q3	2SC2235	TRANSISTOR(SI)	⚠	1
Q4	PQVTBB1A4A	TRANSISTOR(SI)		1
Q5	Not Used			
Q6	PQVTDTC143E	TRANSISTOR(SI)		1
Q7	Not Used			
Q8	Not Used			
Q9	2SD1819A	TRANSISTOR(SI)	S	1
Q10	Not Used			
Q11	PQVTBB1A4A	TRANSISTOR(SI)		1
Q12	2SD1819A	TRANSISTOR(SI)	S	1
Q13	2SD1819A	TRANSISTOR(SI)	S	1
Q14	2SB1218A	TRANSISTOR(SI)	S	1
Q15	Not Used			
Q16	2SD1819A	TRANSISTOR(SI)	S	1
Q17	2SD1819A	TRANSISTOR(SI)	S	1
Q18	2SD1819A	TRANSISTOR(SI)	S	1
Q19	PQVTDTC143E	TRANSISTOR(SI)		1
Q20	2SD1994A	TRANSISTOR(SI)		1
Q21	2SB1322	TRANSISTOR(SI)		1
Q22	2SB1322	TRANSISTOR(SI)		1

Part No.	Part No.	Part Name & Description		Pcs
Q23	2SC1740S	TRANSISTOR(SI)		1
Q24	2SC1652	TRANSISTOR(SI)		1
Q25	2SC1652	TRANSISTOR(SI)		1
Q26	2SB1322	TRANSISTOR(SI)		1
Q27	2SB1322	TRANSISTOR(SI)		1
Q28	PQVTDTC143E	TRANSISTOR(SI)		1
Q29	2SD1994A	TRANSISTOR(SI)		1
Q30	PQVTDTC143E	TRANSISTOR(SI)		1
Q31	2SD2136	TRANSISTOR(SI)		1
Q39	PQVTDTC143E	TRANSISTOR(SI)		1
		(DIODES)		
D8	1S1588	DIODE(SI)		1
D9	Not Used			
D10	Not Used			
D11	PQVDHZS2B1	DIODE(SI)	⚠	1
D12-15	Not Used			
D16	MA4056	DIODE(SI)		1
D17	MA4056	DIODE(SI)		1
D18	MA4068	DIODE(SI)		1
D19-22	1SS131	DIODE(SI)		4
D23	1S1588	DIODE(SI)		1
D24-29	1SS131	DIODE(SI)		6
D30	PQVDS1YB40F1	DIODE(SI)	⚠	1
D31	Not Used			
D32-35	1SS131	DIODE(SI)		4
		(COILS)		
F1,2,3, L1-4	PQLE106	CHOKE COIL	⚠	7
L5,6	PQLQZK680K	CHOKE COIL	⚠	2
		(PHOTO ELECTRIC TRANSDUCERS)		
PC1	PQVIPC814K	PHOTO COUPLER	⚠	1
PC2,3	PQVIPC817CD	PHOTO COUPLER	⚠	2
		(RELAY)		
RLY1	PQSL61Z	RELAY	⚠	1
		(SWITCHES)		
S1	PQSS2A27Z	SWITCH, DIALING MODE		1
S2	ESE14A211	SWITCH, HOOK		1
S3	PQSS3B10Z	SWITCH, RINGER		1
		(TRANSFORMER)		
T1	ETA14Y85AY	CALL TRANSFORMER	⚠	1
		(VARIABLE RESISTORS)		
VR1	EVNDXAA03B23	SEMI-FIXED, 2KΩ (B)		1
VR3	EVNDXAA03B52	SEMI-FIXED, 500Ω (B)		1
VR4	Not Used			
VR5	PQVAL103A14A	VOLUME CONTROL, 10KΩ (A)		1
		(FILTERS)		
X1	PQVFCSB328D1	CERAMIC FILTER		1
X2	Not Used			
X3	PQVBA4.19M2	CERAMIC FILTER		1
		(VARISTOR)		
ZNR1	ERZC07DK820	VARISTOR	⚠	1
SA1	PQVDDDA401M	VARISTOR (SURGE ABSORBER)	⚠	1
SA2-5	PQVDSAE310F1	VARISTOR (SURGE ABSORBER)	⚠	4
		(CAPACITORS)		
C1	ECQE2E224JZ	0.22	⚠	1
C2-5	Not Used			
C6	ECKD2H681KB	680P	⚠	1
C7	ECKD2H681KB	680P	⚠	1
C8	ECKDKC222KB	0.0022	⚠ S	1

Part No.	Part No.	Value		Pcs
C9	Not Used			
C10	Not Used			
C11	Not Used			
C12	ECEA1HU100	10	⚠	1
C13	Not Used			
C14	Not Used			
C15	PQCUV1H121JC	120P		1
C16	PQCUV1C683MD	0.068		1
C17	Not Used			
C18	Not Used			
C19	PQCUV1E333MD	0.033		1
C20	PQCUV1H680JC	68P		1
C21	PQCUV1C683MD	0.068		1
C22	ECEA1HU220	22	⚠	1
C23	ECKD1H102JA	0.001		1
C24	PQCUV1H470JC	47P		1
C25-27	Not Used			
C28	PQCUV1H103KB	0.01		1
C29	PQCUV1E104MD	0.1		1
C30	PQCUV1E104MD	0.1	S	1
C31	ECEA1EU470	47	S	1
C32	PQCUV1H102J	0.001	⚠	1
C33-36	Not Used			
C37	ECEA1AU101	100	S	1
C38	ECEA1HU010	1		1
C39	Not Used			
C40	Not Used			
C41	PQCUV1E104MD	0.1		1
C42	ECEA1HU100	10	S	1
C43	ECEA1HUR22	0.22		1
C44	ECEA1HU100	10	S	1
C45	PQCUV1H153KB	0.015		1
C46	PQCUV1C683MD	0.068		1
C47	PQCUV1H103KB	0.01		1
C48	PQCUV1H103KB	0.01		1
C49	PQCUV1E104MD	0.1		1
C50	ECEA1HU010	1		1
C51	Not Used			
C52	PQCUV1H103KB	0.01		1
C53	PQCUV1H103KB	0.01		1
C54	PQCUV1H103KB	0.01		1
C55	ECEA1AU101	100	S	1
C56	PQCUV1H152KB	0.0015		1
C57	PQCUV1H472KB	0.0047		1
C58	PQCUV1E104MD	0.1		1
C59	Not Used			
C60	Not Used			
C61	PQCUV1H103KB	0.01		1
C62	PQCUV1E104MD	0.1		1
C63	PQCUV1E104MD	0.1		1
C64	PQCUV1H562KB	0.0056		1
C65	ECEA1AU221	220	S	1
C66	PQCUV1E104MD	0.1		1
C67	PQCUV1C683MD	0.068		1
C68	PQCUV1E333MD	0.033		1
C69	ECEA1HNR47S	0.47		1
C70	ECUV1H104MD	0.1	S	1
C71	ECEA1EU101	100	S	1
C72	ECEA1CU221	220		1
C73	ECUV1H104MD	0.1	S	1
C74	ECEA1CU221	220		1
C75	PQCUV1E104MD	0.1		1
C76	ECEA0JKS101	100		1
C77	PQCUV1E104MD	0.1		1
C78	Not Used			
C79	Not Used			
C80	PQCUV1H103KB	0.01		1
C81	PQCUV1H103KB	0.01		1
C82	ECEA1HU010	1		1
C83	Not Used			
C84	PQCUV1H103KB	0.01		1
C85	PQCUV1H103KB	0.01		1
C86	PQCUV1H681JC	680P		1
C87	PQCUV1C683MD	0.068		1
C88	ECEA0JU102	1000		1
C89	PQCUV1E104MD	0.1		1
C90	ECEA1AU221	220	S	1
C91	PQCUV1H103KB	0.01		1

Part No.	Part No.	Value		Pcs
C92	PQCUV1H391JC	390P		1
C93	ECEA1HU010	1		1
C94	PQCUV1E104MD	0.1		1
C95	Not Used			
C96	ECEA1HUR22	0.22		1
C97	PQCUV1H223KB	0.022		1
C98	PQCUV1C683MD	0.068		1
C99	Not Used			
C100	Not Used			
C101	PQCUV1E104MD	0.1		1
C102	ECUV1H104MD	0.1		1
C103	PQCUV1E104MD	0.1		1
C104	PQCUV1E104MD	0.1		1
C105	Not Used			
C106	PQCUV1H103KB	0.01		1
C107	ECEA1HU4R7	4.7		1
C108	PQCUV1H223KB	0.022	S	1
C109	ECEA1HU100	10	S	1
C110	ECEA1HU100	10	S	1
C111	ECEA0JU220	22		1
C112	ECEA1HU010	1		1
C113	PQCUV1H103KB	0.01		1
C114-116	Not Used			
C117	ECQG1H103JZ	0.01		1
C118	PQCUV1H471JC	470P		1
C119	PQCUV1C683MD	0.068		1
C120	PQCUV1H471JC	470P		1
C121	ECEA1AU101	100	S	1
C122	PQCUV1E104MD	0.1		1
C123	PQCUV1C683MD	0.068		1
C124	PQCUV1C683MD	0.068		1
C125	PQCUV1H331JC	330P		1
C126	PQCUV1H331JC	330P		1
C127	Not Used			
C128	ECEA1AU101	100	S	1
C129	PQCUV1C683MD	0.068		1
C130	ECEA1AU221	220	S	1
C131	PQCUV1H223KB	0.022		1
C132	Not Used			
C133	PQCUV1H103KB	0.01		1
C134	ECEA1AU101	100	S	1
C135	ECQP1H682GZ	0.0068		1
C136	ECQP1H682GZ	0.0068		1
C137	ECQP1H682GZ	0.0068		1
C138-143	Not Used			
C144	ECEA0JKS101	100		1
C145	PQCUV1E104MD	0.1		1
C146	PQCUV1H152KB	0.0015		1
C147-150	Not Used			
C151	ECEA1HU100	10		1
C152	PQCUV1C224ZF	0.22		1
C153	Not Used			
C154	Not Used			
C155	ECEA1AU101	100	S	1
C156	Not Used			
C157	ECQP1H682GZ	0.0068		1
C158	Not Used			
C159	PQCUV1E104MD	0.1		1
C160	Not Used			
C161	PQCUV1H103KB	0.01		1
C162-170	Not Used			
C185	ECEA1AU101	100	S	1
C300	ECEA1AU101	100	S	1
C301	ECEA1AU221	220	S	1
C302	PQCUV1E104MD	0.1		1
C303	PQCUV1E473MD	0.047		1
C304	PQCUV1H680JC	68P		1
C305	PQCUV1H103KB	0.01		1
C306	PQCUV1H103KB	0.01		1
C700	PQCUV1E333MD	0.033		1
C701	PQCUV1H103KB	0.01		1
		(RESISTORS)		
R1	ERD25TJ473	47K	⚠	1
R2-6	Not Used			
R7	PQ4R10XJ473	47K		1
R8	Not Used			

Part No.	Part No.	Value	Pcs
R9	PQ4R10XJ104	100K ⚠	1
R10	PQ4R10XJ472	4.7K ⚠	1
R11	PQ4R10XJ154	150K ⚠	1
R12	PQ4R10XJ564	560K ⚠	1
R13	ERDS2TJ102	1K	1
R14	PQ4R10XJ683	68K	1
R15	Not Used		
R16	ERDS2TJ103	10K ⚠	1
R17	ERDS2TJ472	4.7K ⚠	1
R18	Not Used		
R19	Not Used		
R20	PQ4R10XJ271	270	1
R21	PQ4R10XJ182	1.8K	1
R22	Not Used		
R23	PQ4R10XJ182	1.8K	1
R24	PQ4R10XJ473	47K	1
R25	PQ4R10XJ123	12K	1
R26	ER016CKF5360	536	1
R27	PQ4R10XJ472	4.7K	1
R28	PQ4R10XJ821	820	1
R29	PQ4R10XJ274	270K	1
R30	PQ4R10XJ222	2.2K	1
R31	PQ4R10XJ104	100K	1
R32	ER016CKF1541	1.54K	1
R33	PQ4R10XJ154	150K	1
R34	PQ4R10XJ104	100K	1
R35	PQ4R10XJ104	100K	1
R36	ER016CKF1541	1.54K	1
R37	ER016CKF6190	619	1
R38	PQ4R10XJ104	100K	1
R39	PQ4R10XJ224	220K	1
R40	PQ4R10XJ223	22K	1
R41	Not Used		
R42	PQ4R10XJ104	100K	1
R43	Not Used		
R44	PQ4R10XJ684	680K	1
R45-48			
R49	PQ4R10XJ473	47K	1
R50	Not Used		
R51	Not Used		
R52-54	Not Used		
R55	PQ4R10XJ472	4.7K	1
R56	Not Used		
R57	Not Used		
R58	Chip Jumper	0Ω	1
R59	Not Used		
R60	PQ4R10XJ101	100	1
R61	PQ4R18XJ100	10	1
R62	PQ4R10XJ103	10K	1
R63	PQ4R10XJ222	2.2K	1
R64	PQ4R10XJ182	1.8K	1
R65	PQ4R10XJ222	2.2K	1
R66	ERDS2TJ564	560K	1
R67	ERDS2TJ105	1M	1
R68	PQ4R10XJ682	6.8K	1
R69	PQ4R10XJ335	3.3M	1
R70	PQ4R10XJ154	150K	1
R71	PQ4R10XJ185	1.8M	1
R72	PQ4R10XJ394	390K	1
R73	PQ4R10XJ104	100K	1
R74	Not Used		
R75	Not Used		
R76	PQ4R10XJ335	3.3M	1
R77	PQ4R10XJ225	2.2m	1
R78	PQ4R10XJ475	4.7M	1
R79	PQ4R10XJ222	2.2K	1
R80	ERDS2TJ473	47K	1
R81	PQ4R10XJ683	68K	1
R82	PQ4R10XJ272	2.7K	1
R83	PQ4R10XJ473	47K	1
R84	PQ4R10XJ223	22k	1
R85	PQ4R18XJ223	22K	1
R86	PQ4R10XJ272	2.7K	1
R87	PQ4R10XJ153	15K	1
R88	PQ4R10XJ184	180K	1
R89	PQ4R10XJ393	39K	1
R90	PQ4R10XJ272	2.7K	1
R91	PQ4R10XJ222	2.2K	1

Part No.	Part No.	Value	Pcs
R92	PQ4R10XJ103	10K	1
R93	PQ4R10XJ103	10K	1
R94	ERDS2TJ391	390	1
R95	PQ4R10XJ103	10K	1
R96	PQ4R10XJ682	6.8K	1
R97	PQ4R10XJ473	47K	1
R98	PQ4R10XJ102	1K	1
R99	Not Used		
R100	PQ4R10XJ104	100K	1
R101	PQ4R10XJ223	22K	1
R102	PQ4R10XJ330	33	1
R103	Not Used		
R104	PQ4R10XJ124	120K	1
R105	PQ4R10XJ103	10K	1
R106	ERDS2TJ472	4.7K	1
R107	ERDS2TJ681	680	1
R108	ERD25TJ120	12	1
R109	PQ4R10XJ103	10K	1
R110	ERDS2TJ221	220	1
R111	PQ4R10XJ473	47K	1
R112	PQ4R10XJ473	47K	1
R113	PQ4R10XJ471	470	1
R114	PQ4R10XJ471	470	1
R115	PQ4R10XJ473	47K	1
R116	ERDS2TJ151	150	1
R117	PQ4R10XJ221	220	1
R118	ERDS2TJ102	1K	1
R119	ERDS2TJ103	10K	1
R120	Not Used		
R121	PQ4R10XJ122	1.2K	1
R122	PQ4R10XJ102	1K	1
R123	PQ4R10XJ394	390K	1
R124	PQ4R10XJ563	56K	1
R125	PQ4R10XJ181	180	1
R126	PQ4R10XJ183	18K	1
R127	PQ4R10XJ121	120	1
R128	PQ4R10XJ334	330K	1
R129	PQ4R10XJ222	2.2K	1
R130	PQ4R10XJ224	220K	1
R131	PQ4R10XJ104	100K	1
R132	PQ4R10XJ563	56K	1
R133	PQ4R10XJ563	56K	1
R134	PQ4R10XJ822	8.2K	1
R135	ERDS2TJ124	120K	1
R136	PQ4R10XJ682	6.8K	1
R137	PQ4R18XJ103	10K	1
R138	PQ4R10XJ2R2	2.2K	1
R139	PQ4R10XJ222	2.2K	1
R140	PQ4R10XJ103	10K	1
R141	PQ4R10XJ102	1K	1
R142	PQ4R10XJ103	10K	1
R143	ERDS2TJ103	10K	1
R144	PQ4R10XJ473	47K	1
R145	ERDS2TJ330	33	1
R146	PQ4R10XJ473	47K	1
R147	PQ4R10XJ333	33K	1
R148	Chip Jumper	0Ω	1
R149	PQ4R10XJ104	100K	1
R150	PQ4R10XJ223	22K	1
R151	PQ4R10XJ562	5.6K	1
R152	PQ4R10XJ152	1.5K	1
R153	PQ4R10XJ103	10K	1
R154	PQ4R18XJ103	10K	1
R155	PQ4R10XJ105	1M	1
R156	PQ4R10XJ681	680	1
R157	PQ4R10XJ224	220K	1
R158	PQ4R10XJ472	4.7K	1
R159	PQ4R10XJ105	1M	1
R160	PQ4R10XJ222	2.2K	1
R161	PQ4R10XJ152	1.5K	1
R162	PQ4R10XJ393	39K	1
R163	Not Used		
R164	ER016CKF21281	21.28K	1
R165	ER016CKF21281	21.28K	1
R166	ER016CKF10641	10.64K	1
R167	PQ4R10XJ474	470K	1
R168-171	Not Used		
R172	ERDS2TJ472	4.7K	1

Part No.	Part No.	Part Name & Description	Pcs
R173	PQ4R10XJ473	47K	1
R174	PQ4R10XJ103	10K	1
R175	PQ4R10XJ333	33K	1
R176	Not Used		
R177	PQ4R10XJ103	10K	1
R178	ERD25TJ5R6	5.6 ⚠	1
R179	Not Used		
R180	PQ4R10XJ472	4.7K	1
R181-187	Not Used		
R188	PQ4R10XJ223	22K	1
R189	PQ4R10XJ473	47K	1
R190-193	Not Used		
R194	PQ4R10XJ472	4.7K	1
R195	PQ4R10XJ105	1M	1
R196	Not Used		
R197	PQ4R10XJ472	4.7K	1
R198	Not Used		
R199	PQ4R10XJ470	47	1
R200	Not Used		
R201	PQ4R10XJ101	100	1
R202	PQ4R10XJ101	100	1
R203	PQ4R10XJ122	1.2K	1
R204	PQ4R10XJ684	680K	1
R205	PQ4R10XJ152	1.5K	1
R206-209	Not Used		
R210	PQ4R10XJ473	47K	1
R301	ERDS2TJ682	6.8K	1
R501	PQ4R10XJ473	47K	1
R502	PQ4R10XJ224	220K	1
J35	PQ4R18XJ472	4.7K	1
		(CONNECTORS & JACK)	
CN4	PQJS17B30Z	CONNECTOR, 17P	1
CN5	PQJS16B32Z	CONNECTOR, 16P	1
CN6	PQJP2G43Z	CONNECTOR, 2P	1
CN7	PQJP2G71Z	CONNECTOR, 2P	1
CN9	PQJP9D93Z	CONNECTOR, 9P	1
TEL JACK	PQJJ2TAA1Z	JACK, TELEPHONE ⚠	1
H/S JACK	PQJJ1TB18Z	JACK, HANDSET	1
		OPERATION AND SENSOR BOARD PARTS	
PCB3	PQWP3F50M	OPERATION & SENSOR BOARD ASS'Y (NLA)	1
		(DIODES)	
LED101	LN086WP38	LED	1
LED102	LN28RPXTA3	LED	1
LED103	LN28RPXTA3	LED	1
LED104-109	LN38GP	LED	6
LED110	PQVDGL1E11C	LED	1
LED111	LN28RPXTA3	LED	1
LED112	PQVDGL1D11E	LED	1
LED113	PQVDGL1E11C	LED	1
LED114	LN28RPXTA3	LED	1
		(RESISTORS)	
R101	ERD25TJ331	330	1
R701	ERDS2TJ331	330	1
R702	ERDS2TJ331	330	1
R801	ERDS2TJ331	330	1
R802	ERDS2TJ331	330	1
		(SWITCHES)	
S101	EVQ12405K	SWITCH, REW	1
S102	EVQ12405K	SWITCH, FF	1
S103	EVQ12405K	SWITCH, MEMO/2WAY	1
S104	EVQ12405K	SWITCH, PLAYBACK/PAUSE	1
S105	EVQ12405K	SWITCH, ICM ERASE	1
S106	EVQ12405K	SWITCH, PGM PLAY	1
S107	EVQ12405K	SWITCH, OGM REC	1
S108	PQSH1A33Z	SWITCH, 1	1
S109	PQSH1A33Z	SWITCH, 2	1
S110	PQSH1A33Z	SWITCH, 3	1

Part No.	Part No.	Part Name & Description	Pcs
S111	PQSH1A33Z	SWITCH, 4	1
S112	PQSH1A33Z	SWITCH, 5	1
S113	PQSH1A33Z	SWITCH, 6	1
S114	PQSH1A33Z	SWITCH, 7	1
S115	PQSH1A33Z	SWITCH, 8	1
S116	PQSH1A33Z	SWITCH, 9	1
S117	PQSH1A33Z	SWITCH, 0	1
S118	PQSH1A33Z	SWITCH, *	1
S119	PQSH1A33Z	SWITCH, #	1
S120	EVQ12405K	SWITCH, FLASH	1
S121	EVQ12405K	SWITCH, REDIAL	1
S122	EVQ12405K	SWITCH, MONITOR/VOICE STDBY	1
S123	EVQ12405K	SWITCH, PROGRAM	1
S124	EVQ12405K	SWITCH, SET	1
S125	EVQ12405K	SWITCH, PAUSE	1
S126	EVQ12405K	SWITCH, AUTO	1
S127	EVQ12405K	SWITCH, RECEIVE MODE	1
S128	PQSH1A33Z	SWITCH, STOP/CLEAR	1
S129	PQSH1A33Z	SWITCH, START/COPY	1
S130	EVQ12405K	SWITCH, FINE (MODE)	1
S131	EVQ12405K	SWITCH, LIGHT ORIGINAL	1
S132	EVQ12405K	SWITCH, POLLING	1
S133	EVQ12405K	SWITCH, M1	1
S134	EVQ12405K	SWITCH, M2	1
S135	EVQ12405K	SWITCH, M3	1
S136	EVQ12405K	SWITCH, M4	1
S137	EVQ12405K	SWITCH, M5	1
S138	EVQ12405K	SWITCH, M6	1
S139	EVQ12405K	SWITCH, M7	1
S140	EVQ12405K	SWITCH, M8	1
S141	EVQ12405K	SWITCH, M9	1
S142	EVQ12405K	SWITCH, M10	1
SW901	ESE14A211	SWITCH, COVER OPEN	1
		(PHOTO ELECTRIC TRANSDUCERS)	
PC701	PQVIPS4506	SENSOR, DOCUMENT SET	1
PC702	PQVIPS4506	SENSOR, READ POSITION	1
PC801	PQVIPS6002	SENSOR, JAM	1
PC802	PQVIPS4506	SENSOR, RECODING PAPER	1
		(CONNECTORS)	
CN101	PQJS30X48Z	CONNECTOR, 30P	1
CN701	PQJS4R35Z	CONNECTOR, 4P	1
CN801	PQJS4R36Z	CONNECTOR, 4P	1
CN901	PQJS2R31Z	CONNECTOR, 2P	1
		CCD BOARD PARTS	
PCB4	PQWP4F50M	CCD BOARD ASS'Y (NLA)	1
		(ICs)	
IC101	PQVIM66705FP	IC	1
IC102	PQWP4F50M	CCD BOARD ASS'Y (NLA)	1
		(TRANSISTORS)	
Q101	2SD1819A	TRANSISTOR(SI) S	1
Q102	2SD1819A	TRANSISTOR(SI) S	1
		(VARIABLE RESISTOR)	
VR101	EVNDXAA03B23	SEMI-FIXED, 2K(B)	1
		(CAPACITORS)	
C101	PQCUV1H103KB	0.01	1
C102	ECEA1CKS100	10	1
C103	ECEA1CKS100	10	1
C104-108	PQCUV1E104MD	0.1	5

Part No.	Part No.	Part Name & Description	Pcs
		(RESISTORS)	
R101	PQ4R10XJ101	100	1
R102	PQ4R10XJ100	10	1
R103	PQ4R10XJ101	100	1
R104	PQ4R10XJ100	10	1
R105	PQ4R10XJ331	330	1
R106	PQ4R10XJ101	100	1
R107	PQ4R10XJ470	47	1
R108	PQ4R10XJ104	100K	1
R109	PQ4R10XJ472	4.7K	1
R110	PQ4R10XJ221	220	1
R111	PQ4R10XJ223	22K	1
R112	PQ4R10XJ102	1K	1
R113	PQ4R10XJ102	1K	1
		(CONNECTOR)	
CN101	PQJS8R32Z	CONNECTOR, 8P	

SWITCHING POWER SUPPLY BOARD PARTS

PCB5	PQLP017Z	SWITCHING POWER SUPPLY BOARD ASS'Y (NLA)	⚠	1
		(ICs)		
IC401	PQVIUPC1093J	IC	S	1
IC402	PQVINJ2360D	IC		1
IC403	PQVITA7812AP	IC		1
IC404	PQVITA7812AP	IC		1
IC451	PQVIM51977P	IC	⚠	1
		(TRANSISTORS)		
Q403	2SD1266P	TRANSISTOR(SI)	S	1
Q404	PQVTDTC143XS	TRANSISTOR(SI)		1
Q405	2SK1488	TRANSISTOR(SI)	⚠ S	1
		(DIODES)		
D401	PQVDD5SBA40S	DIODE(SI)	⚠	1
D402-406	Not Used			
D407	PQVDD10LC20U	DIODE(SI)		1
D408	PQVDD5LC20U	DIODE(SI)		1
D409	PQVD1GU42	DIODE(SI)	S	1
D410	MA4270	DIODE(SI)		1
D411	Not Used			
D412	Not Used			
D413	1SS147	DIODE(SI)		1
D414	PQVDD5LC20U	DIODE(SI)		1
D415	MA7062	DIODE(SI)		1
D451	Not Used			
D452	PQVD1GU42	DIODE(SI)	⚠	1
D453	PQVD1JU41	DIODE(SI)	⚠	1
D454	Not Used			
D455	PQVD1GU42	DIODE(SI)	⚠	1
		(FUSE)		
F401	XBA1C50NU100	FUSE	⚠	1
F402	Not Used			
F403	PQBA1P15NMAL	FUSE	⚠	1
		(COILS)		
L401	PQLE105	COIL, CHOKE	⚠	1
L402	PQLE104	COIL, CHOKE	⚠	1
L403	PQLE107	COIL, CHOKE		1
		(PHOTO ELECTRIC TRANSDUCERS)		
PC401	PQVIPC817K	PHOTO COUPLER	⚠	1
PC402	PQVIPC817K	PHOTO COUPLER	⚠	1

Part No.	Part No.	Part Name & Description	Pcs
		(THERMISTORS)	
TH401	PQRTD5FFL8R0	THERMISTOR ⚠	1
TH402	PQRTE0FFF103	THERMISTOR	1
		(TRANSFORMER)	
T401	ETS33K336V	SWITCHING TRANSFORMER	1
		(RELAY)	
RLY401	PQSL79Z	RELAY	1
		(CAPACITORS)	
C401	ECQU1A104MH	0.1 ⚠	1
C402	ECKZRS222ME	0.0022 ⚠	1
C403	ECKZRS222ME	0.0022 ⚠	1
C404	ECQU1A104MH	0.1 ⚠	1
C405	PQVDSR471KD	VARISTOR ⚠	1
C406	PQVDSR471KD	VARISTOR ⚠	1
C407	ECKDRS332ME	0.0033 ⚠	1
C408	ECKDRS332ME	0.0033 ⚠	1
C409-415	Not Used		
C416	EC0S1VG392L	3900	1
C417	ECEA1HGE100	10	1
C418	ECEA1VGE222	2200	1
C419	Not Used		
C420	ECEA1VGE471	470	1
C421	Not Used		
C422	Not Used		
C423	ECEA1VGE101	100	1
C424	ECEA1EGE470	47	1
C425-429	Not Used		
C430	ECEA1EGE101	100	1
C431-433	Not Used		
C434	ECEA1AGE332	3300	1
C435	ECCD1H151JC	150P	1
C436	ECEA1VGE102	1000	1
C437-439	Not Used		
C440	ECKZRS102ME	0.001	1
C441	ECQV1H104JZ	0.1	1
C442	ECQV1H104JZ	0.1	1
C443	ECQV1H104JZ	0.1	1
C444	Not Used		
C451	EC0S2DG561M	560 ⚠	1
C452-454	Not Used		
C455	ECQB1H391KF	390P ⚠	1
C456	ECEA1VGE220	22 ⚠	1
C457	ECQV1H104JZ	0.1 ⚠	1
C458	ECKD3A221KBN	220P ⚠	1
C459	ECQE6473B	0.047 ⚠	1
C460	ECQV1H104JZ	0.1 ⚠	1
C461	Not Used		
C462	ECEA1VGE101	100 ⚠	1
C463	ECQV1H154JZ	0.15 ⚠	1
C464	ECQM1H103JV	0.01 ⚠	1
C465	Not Used		
C466	Not Used		
C467	ECQV1H104JZ	0.1 ⚠	1
		(RESISTORS)	
R411	ERG2SJ221	220	1
R412	ER016CKF1002	10K	1
R413	ER016CKF1131	1.13K	1
R414	Not Used		
R415	ERG1SJ561	560	1
R431	ERX1SJR22	0.22	1
R432	ER016CKF3651	3.65K	1
R433	ER016CKF1201		1
R434	ERDS1TJ121	120	1
R435	ERDS1TJ154	150K ⚠	1
R436	ERDS1TJ154	150K ⚠	1
R437	Chip Jumper	0Ω	1
R438	Not Used		
R439	Not Used		
R440	ERX3SJ5R6	5.6	1
R441	ERG2SJ122	1.2K	1

Part No.	Part No.	Part Name & Description	Pcs
R452	ERDS2TJ270	27 ⚠	1
R453	Not Used		
R454	ERG3SJ104	100K ⚠	1
R455	Not Used		
R456	ER016CKF1472	14.7K ⚠	1
R457	ER016CKF2212	22.1K ⚠	1
R458	ERG3SJ470	47 ⚠	1
R459	ERX3SJR10	0.1 ⚠	1
R460	ERDS2TJ331	330 ⚠	1
R461	ERDS2TJ331	330 ⚠	1
R462	ERG2SJ683	68K ⚠	1
R463	ERG3SJ470	47 ⚠	1
R464	ERDS2TJ103	10K ⚠	1
R465	ERDS2TJ103	10K ⚠	1
R466	ERDS1TJ181	180 ⚠	1
R467	ERDS2TJ391	390 ⚠	1
R468	ERDS2TJ123	12K ⚠	1
R469	ERG2SJ683	68K ⚠	1
R480	ERDS2TJ273	27K ⚠	1
		(CONNECTORS)	
CN401	PQJP3D97Z	CONNECTOR, 3P ⚠	1
CN402	PQJP11D70Z	CONNECTOR, 11P	1
CN403	Not Used		
CN404	PQJP10G74Z	CONNECTOR, 10P	1