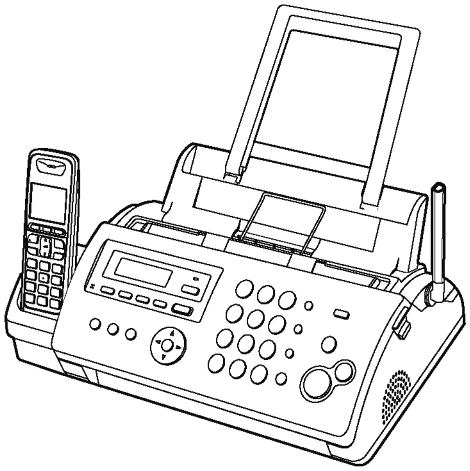
ORDER NO. KMF1012336CE

Service Manual

Compact Plain Paper FAX with DECT

Model No. KX-FC265CX-S

Silver version
(for Middle East and Asia)



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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING

If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF. Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.

When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

When you note the serial number,write down all 11 digits. The serial number may be found on the bottom of the unit.

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1 Safety Precautions

1. Before servicing, unplug the AC power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to perform the following insulation resistance test to prevent the customer from being exposed to shock hazards.

1.1. For Service Technicians

- **Repair service shall be provided in accordance with repair technology information such as service manual so as to prevent fires, injury or electric shock, which can be caused by improper repair work**.
  1. When repair services are provided, neither the products nor their parts or members shall be remodeled.
  2. If a lead wire assembly is supplied as a repair part, the lead wire assembly shall be replaced.
  3. FASTON terminals shall be plugged straight in and unplugged straight.

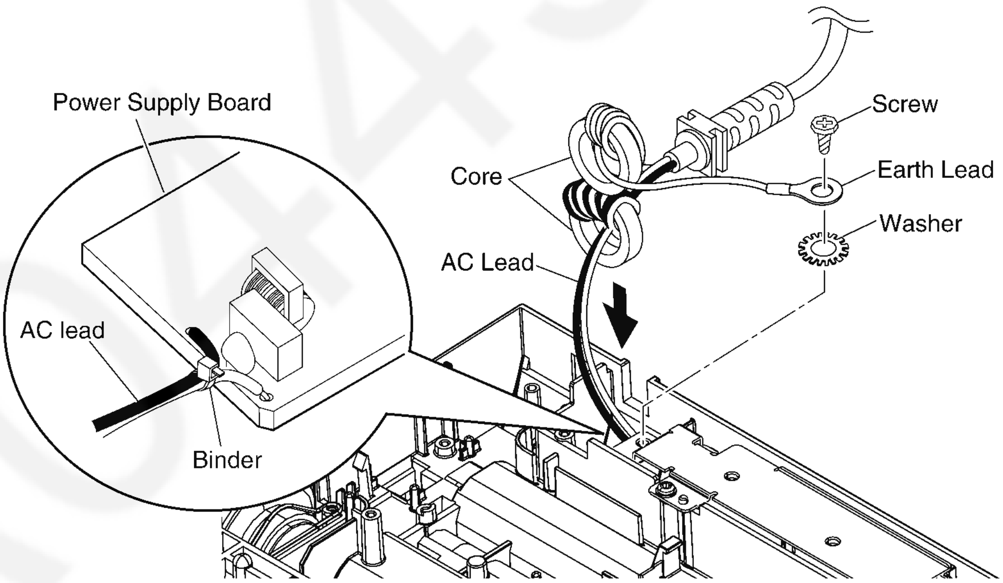
- **ICs and LSIs are vulnerable to static electricity.**
  When repairing, the following precautions will help prevent recurring malfunctions.
  1. Cover plastic parts boxes with aluminum foil.
  2. Ground the soldering irons.
  3. Use a conductive mat on worktable.
  4. Do not grasp IC or LSI pins with bare fingers.

1.2. AC Caution

For safety, before closing the lower cabinet, please make sure of the following precautions.

1. The earth lead is fixed with the screw.
2. The AC lead is connected properly to power supply board.
3. Wrap the earth lead around the core 5 times.
4. Wrap the AC lead around the core 5 times.

(Bottom View)



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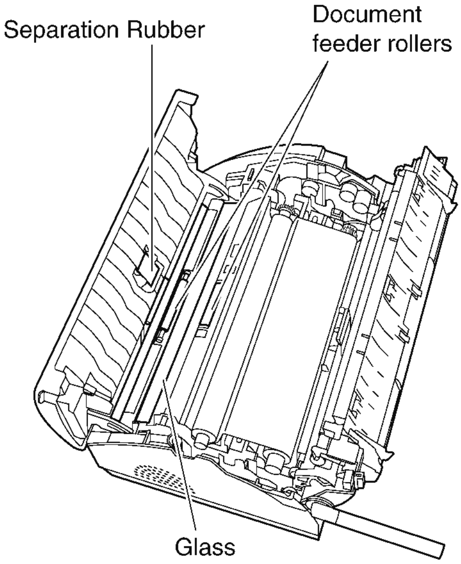
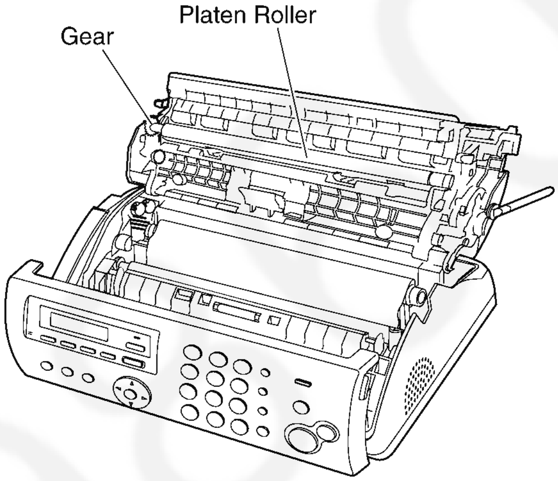
1.3. Personal Safety Precautions

1.3.1. Moving Sections of the Unit

Be careful not to let your hair, clothes, fingers, accessories, etc., become caught in any moving sections of the unit.
The moving sections of the unit are the rollers and a gear. There is a separation roller and a document feed roller which are rotated by the document feed motor. A gear rotates the two rollers. Be careful not to touch them with your hands, especially when the unit is operating.


Separation Rubber
Document feeder rollers
Glass

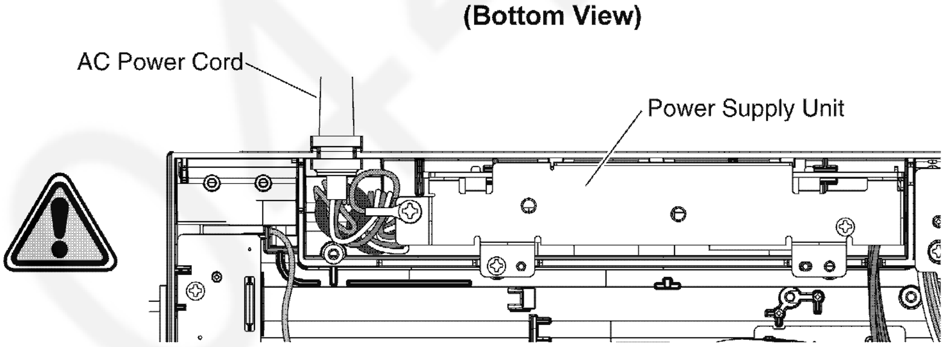

Gear
Platen Roller

1.3.2. Live Electrical Sections

All the electrical sections of the unit supplied with AC power by the AC power cord are live.
Never disassemble the unit for service with the AC power supply plugged in.

CAUTION:

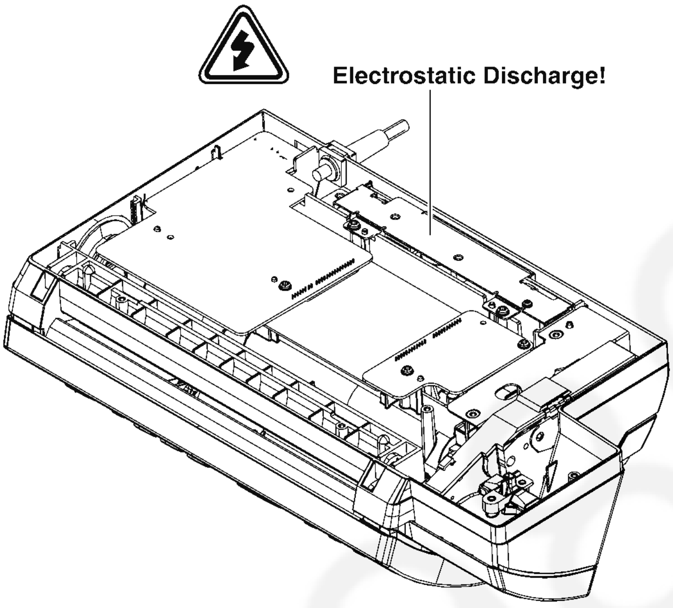
AC voltage is supplied to the primary side of the power supply unit. Therefore, always unplug the AC power cord before disassembling for service.


(Bottom View)
AC Power Cord
Power Supply Unit

1.4. Service Precautions

1.4.1. Precautions to Prevent Damage from Static Electricity

Electrical charges accumulate on a person. For instance, clothes rubbing together can damage electric elements or change their electrical characteristics. In order to prevent static electricity, touch a metallic part that is grounded to release the static electricity. Never touch the electrical sections such as the power supply unit, etc.



2 Warning

2.1. About Lead Free Solder (PbF: Pb free)

Note:

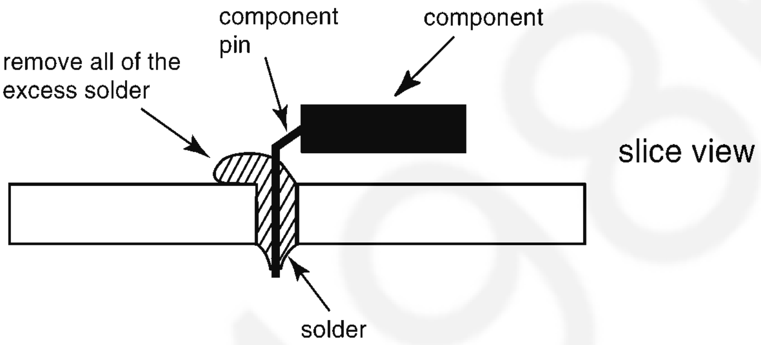
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin (Sn), Silver, (Ag), and Copper, (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder.

Caution

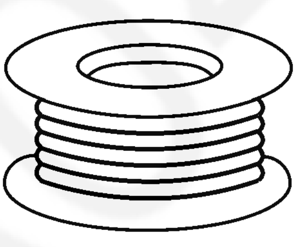
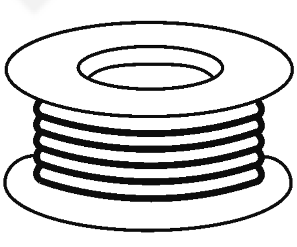
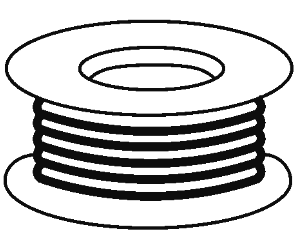
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C).
- Exercise care while using higher temperature soldering irons.: Do not heat the PCB for too long time in order to prevent solder splash or damage to the PCB
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).



2.1.1. Suggested PbF Solder

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

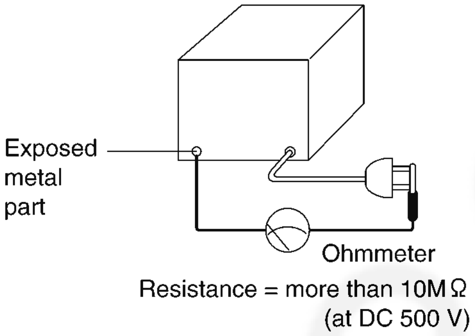
0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

2.2. Discarding of P. C. Board

When discarding P. C. Board, delete all personal information such as telephone directory and caller list or scrap P. C. Board.

2.3. Insulation Resistance Test

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part (screw heads, control shafts, bottom frame, etc.).
   Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard.

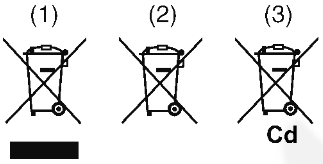


2.4. Battery Caution

CAUTION

Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

2.4.1. Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols ((1), (2), (3)) on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

These symbols ((1), (2), (3)) are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

Note for the battery symbol

This symbol ((2)) might be used in combination with a chemical symbol ((3)). In this case it complies with the requirement set by the Directive for the chemical involved.

2.5. Note for Repairing

Caution

Please inform users of the danger of data being lost at the time of repair.

Data will be lost in the following situations.

1. When replacing the ROM ass'y.
2. When replacing the Main board ass'y.
3. When executing mode #550 or #710.

There is a possibility of data loss in the following situations.

1. When removing a board.
2. When writing new software to ROM.

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3 Specifications

Any details given in these instructions are subject to change without notice.

3.1. Base Unit

Applicable Lines:	Public Switched Telephone Network
Document Size:	Max. 216 mm in width, Max. 600 mm in length
Effective Scanning Width:	208 mm
Effective Printing Width:	202 mm
Transmission Time*[1]**:**	Approx. 12 s/page (ECM-MMR)*[2]
Scanning Density:	Horizontal: 8 pels/mm Vertical: 3.85 lines/mm - in standard resolution 7.7 lines/mm - in fine/photo resolution 15.4 lines/mm - in super fine resolution
Photo Resolution:	64 levels
Scanner Type:	Contact Image Sensor
Printer Type:	Thermal Transfer on Plain Paper
Data Compression System:	Modified Huffman (MH), Modified READ (MR), Modified Modified READ (MMR)
Modem Speed:	9,600 / 7,200 / 4,800 / 2,400 bps; Automatic Fallback
Operating Environment:	5°C—35°C, 20%—80 % RH (Relative Humidity)
Dimensions:	Approx. height 106 mm × width 374 mm × depth 200 mm
Mass (Weight):	Approx. 2.7 kg
Power Consumption:	Standby: Approx. 4.0 W Transmission: Approx. 15 W Reception: Approx. 40 W (When receiving a 20% black document) Copy: Approx. 40 W (When copying a 20% black document) Maximum: Approx. 135 W (When copying a 100% black document)
Power Supply:	220 V - 240 V AC, 50/60 Hz
Fax Memory Capacity*[3]**:**	Approx. 25 pages of memory transmission Approx. 28 pages of memory reception (Based on the ITU-T No. 1 Test Chart in standard resolution, without using the Error Correction Mode.)
Voice Memory Capacity*[4]**:**	Approx. 15 minutes of recording time
Copy Memory Capacity:	Approx. 10 pages (Based on the ITU-T No. 1 Test Chart in fine resolution.)
CIS's LED light properties:	LED radiation output: Max. 1 mW Wavelength: Yellowish Green 570 nm typical Emission duration: Continuous

*[1] Transmission speed depends upon the contents of the pages, resolution, telephone line conditions and capability of the other party's machine.

*[2] Transmission speed is based upon the ITU-T No. 1 Test Chart with original mode. If the capability of the other party's machine is inferior to your unit, the transmission time may be longer. (Refer to **ITU-T No.1 Test Chart** (P.205).)

*[3] If an error occurs during fax reception, such as a paper jam or if the recording paper runs out, the fax and subsequent faxes will be retained in memory.

*[4] Recording time may be reduced by the calling party's background noise.

Note:

- Design and specifications are subject to change without notice.
- The pictures and illustrations in these instructions may vary slightly from the actual product.

3.2. Cordless Handset

Standard:	DECT (Digital Enhanced Cordless Telecommunications) GAP (Generic Access Profile)
Number of Channels:	120 Duplex channels
Frequency Range:	1.88 GHz to 1.9 GHz
Duplex Procedure:	TDMA (Time Division Multiple Access)
Channel Spacing:	1,728 kHz
Bit Rate:	1,152 kbit/s
Modulation:	GFSK (Gaussian Frequency Shift Keying)
RF Transmission Power:	Approx. 10 mW (average power per channel)
Voice Coding:	ADPCM 32 kbit/s
Operating Environment:	0°C - 40°C, 20 % - 80 % RH (Relative Humidity)
Operation Range:	Up to 300 m outdoors, Up to 50 m indoors
Dimensions:	Approx. height 158 mm × width 48 mm × depth 30 mm
Mass (Weight):	Approx. 130 g

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4 General/Introduction

4.1. Optional Accessories

Model No.	Description	Specification
KX-FA52E or KX-FA52A	Replacement film[*1]	30 m × 2 rolls (Each roll will print about 90 A4-sized pages)
P03P or HHR-4MRE	Recharageable batteries[*2]	2 rechargeable nickel metal hydride (Ni-MH) batteries, AAA (R03) size.
KX-TGA641BX	Additional digital cordless handset	-------------------
KX-A272	DECT repeater	-------------------

[*1] To ensure the unit operates properly, we recommend the Panasonic replacement film.
The ink film is not reusable. Do not rewind and use the ink film again.

[*2] Replacement batteries may have a different capacity from that of the supplied batteries.

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5 Features

General

- LCD (Liquid Crystal Display) readout

Plain Paper Facsimile Machine

- 12 second transmission speed *
- A4, G3 compatible
- Automatic document feeder (up to 10 sheets)
- Quick scan
- Resolution: Standard/Fine/Super fine/Photo (64 level)
- Broadcast
- 20-sheet recording paper capacity
- Automatic fax/phone switching

  * The 12 second speed is based upon the ITU-T No. 1 Test Chart with original mode. If the capability of the other party's machine is inferior to your unit the transmission time may be longer.

Large Memory... Performed by DRAM

Approx. 25 pages of memory transmission
Approx. 28 pages of memory reception

Integrated Telephone System

- On-hook dialing
- Digital speakerphone
- Voice muting
- Redialing function
- The Base unit provide a phonebook (100 items)
- The cordless handset provide a phonebook (100 items)
- Caller ID

  The calling party's name or telephone number will be displayed after the 1st ring. You have the option of whether or not to answer the call.

  The unit will automatically store caller information (name, telephone number, date and time of the call) from the 50 most recent callers.

  It is possible to view caller information one at a time on the display or print the entire Caller ID list.

Enhanced Copier Function

- Multi-copy function (up to 20 copies)
- Enlargement and reduction
- Collate
- 64-Level halftone

Digital Answering System

- Voice Time / Day Stamp
- 15-Minutes recording time

DECT Cordless

- Fax activation from cordless handset
- Battery performance:

  18 hours max. (In continuous use)
  170 hours max. (Not in use (standby))

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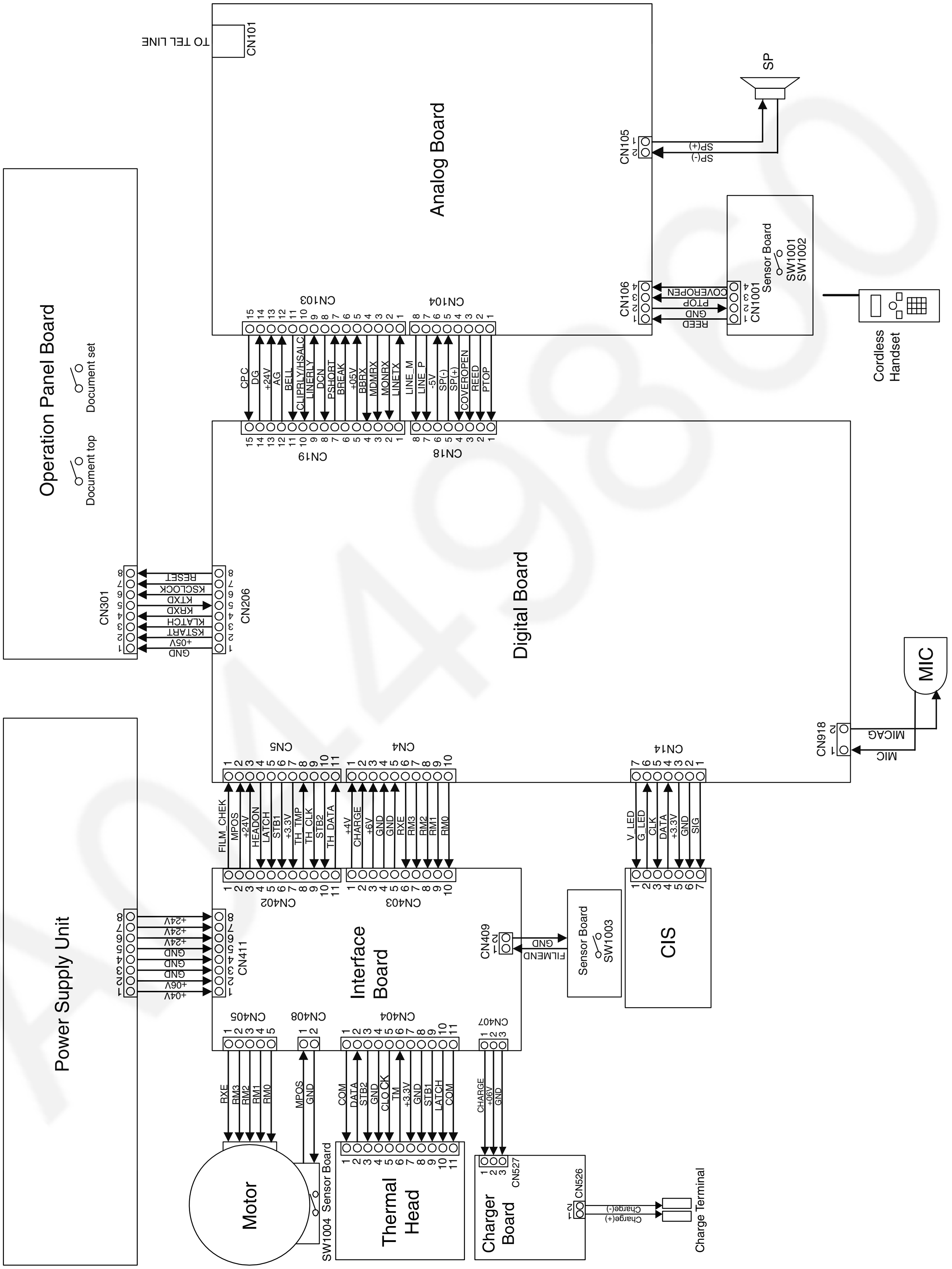
6 Technical Descriptions

6.1. Connection Diagram


Analog Board
CN101
TO TEL LINE
CN105
SP(+)
SP(-)
SP
CN106
COVEROPEN
PTOP
GND
REED
Sensor Board
CN1001
SW1001
SW1002
Cordless Handset
CN103
CN104
CPC
DG
+24V
AG
BELL
CLIPRLY/HSALC
LINERLY
DCN
PSHORT
BREAK
+05V
BBRX
MDMRX
MONRX
LINETX
LINE_M
LINE_P
-5V
SP(-)
SP(+)
COVEROPEN
REED
PTOP
CN19
CN18
Operation Panel Board
Document top
Document set
CN301
CN206
RESET
KSCLOCK
KTXD
KRXD
KLATCH
KSTART
+05V
GND
Digital Board
MIC
CN918
MIC
MICAG
CN5
CN4
CN14
FILM_CHEK
MPOS
+24V
HEADON
LATCH
STB1
+3.3V
TH_TMP
TH_CLK
STB2
TH_DATA
+4V
CHARGE
+6V
GND
GND
RXE
RM3
RM2
RM1
RM0
V_LED
G_LED
CLK
DATA
+3.3V
GND
SIG
CN402
CN403
Power Supply Unit
CN411
+24V
+24V
+24V
GND
GND
GND
+06V
+04V
Interface Board
CN409
GND
FILMEND
Sensor Board
SW1003
CIS
CN405
CN408
CN404
CN407
RXE
RM3
RM2
RM1
RM0
MPOS
GND
COM
DATA
STB2
GND
CLOCK
TM
+3.3V
GND
STB1
LATCH
COM
CHARGE
+06V
GND
Motor
Sensor Board
SW1004
Thermal Head
Charger Board
CN527
CN526
Charge(-)
Charge(+)
Charge Terminal

ADA49860

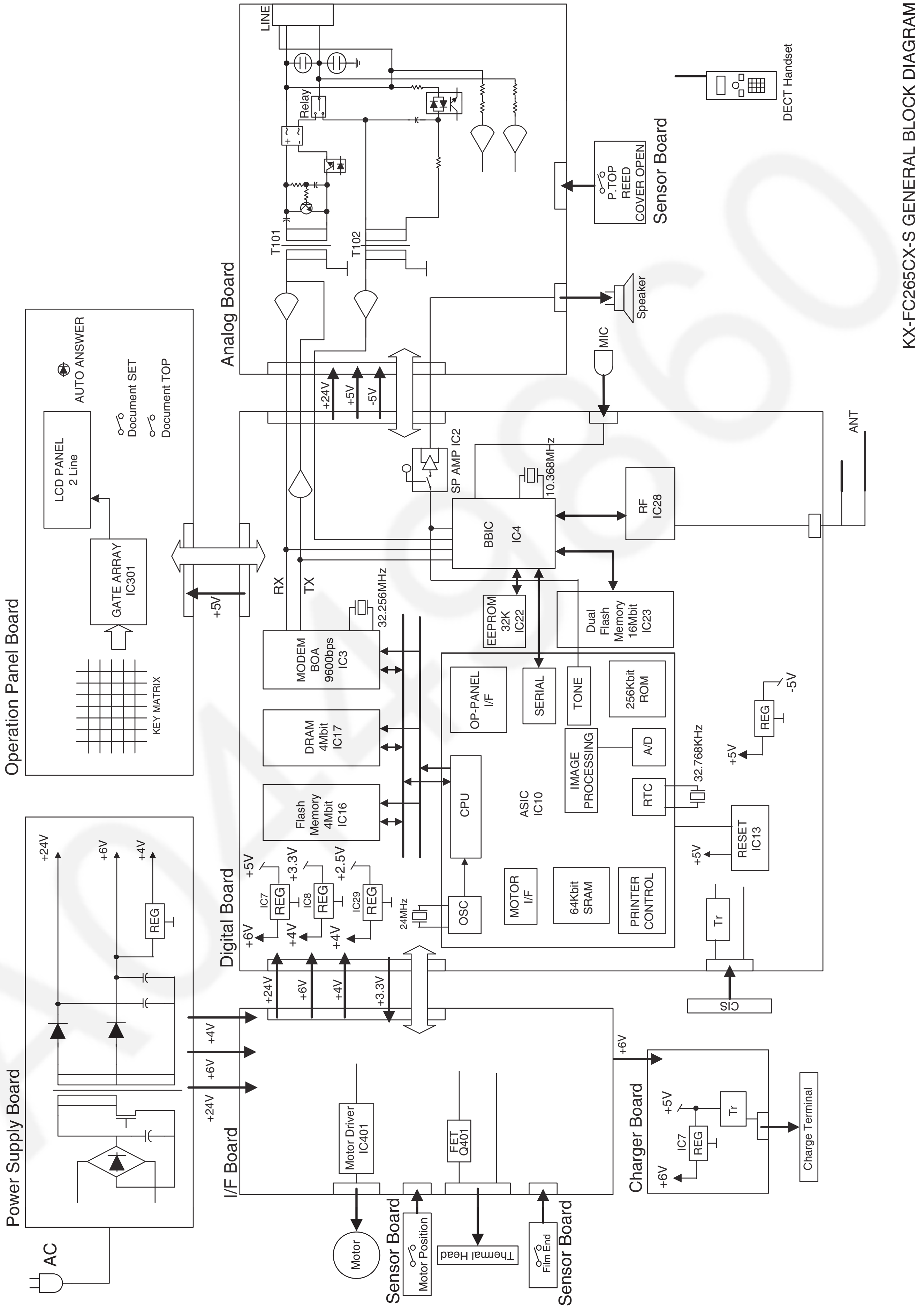
6.2. General Block

The following is an outline of each device IC on the digital board. (Refer to **General Block Diagram** (P.15).).

1. ASIC (IC10)
   Composed mainly of an address decoder and a modem control.
   Controls the general FAX operations.
   Controls the operation panel I/F.
   Controls the thermal head I/F and CIS I/F.
   Performs the image processing.
   CPU and Real time clock
   Provides the reset pulse for each of the major ICs.
2. Flash ROM (IC16)
   Contains all of the program instructions on the unit operations.
   This memory is used mainly for the parameter working in the storage area.
3. Dynamic RAM (IC17)
   This memory is used mainly for the parameter working in the storage area.
4. MODEM (IC3)
   Performs the modulation and the demodulation for FAX communication.
5. Read Section
   CIS image sensor to read transmitted documents.
6. Motor Driver (IC401)
   Drives the transmission motor and the reception motor.
7. Thermal Head
   Contains heat-emitting elements for dot matrix image printing.
8. BBIC (**B**ase **B**and IC): IC4
   Handling all the audio, signal and data processing needed in a DECT base unit
   Controlling the DECT specific physical layer and radio section (**B**urst **M**odule **C**ontroller section)
   ADPCM codec filter for speech encoding and speech decoding (DSP section)
   Echo-cancellation and Echo-suppression (DSP section)
   Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
   DTMF receiver (DSP section)
   Clock Generation for RF Module
   ADC, DAC, timer, and power control circuitry
   All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
9. RF Module: IC28
   PLL Oscillator
   Detector
   Compress/Expander
   First/Second Mixer
   Amplifier for transmission and reception
10. FLASH MEMORY: IC23
    Voice Prompt (TAM) D/L (**D**own**L**oad) Area
    Programming for BBIC (IC4)
11. EEPROM: IC22
    Temporary operating parameters (for RF, etc.)
12. Sensor Section
    Composed of a cover open and film end switch, a document set switch, a document top switch, a paper top sensor and a motor position switch.
13. Power Supply Board Switching Section
    Supplies +4V, +6V and +24V to the unit.

A049860

6.2.1. General Block Diagram


KX-FC265CX-S GENERAL BLOCK DIAGRAM
Analog Board
LINE
Relay
T101
T102
Sensor Board
P.TOP
REED
COVER OPEN
Speaker
MIC
DECT Handset
ANT
+24V
+5V
-5V
Digital Board
SP AMP IC2
10.368MHz
BBIC
IC4
RF
IC28
EEPROM
32K
IC22
Dual
Flash
Memory
16Mbit
IC23
RX
TX
32.256MHz
MODEM
BOA
9600bps
IC3
DRAM
4Mbit
IC17
Flash
Memory
4Mbit
IC16
ASIC
IC10
OP-PANEL
I/F
SERIAL
TONE
256Kbit
ROM
IMAGE
PROCESSING
A/D
CPU
RTC
32.768KHz
REG
-5V
+5V
RESET
IC13
OSC
24MHz
MOTOR
I/F
64Kbit
SRAM
PRINTER
CONTROL
Tr
CIS
IC7
IC8
IC29
+3.3V
+2.5V
+6V
+4V
Operation Panel Board
AUTO ANSWER
LCD PANEL
2 Line
Document SET
Document TOP
GATE ARRAY
IC301
KEY MATRIX
Power Supply Board
AC
I/F Board
Motor Driver
IC401
FET
Q401
Motor
Motor Position
Thermal Head
Film End
Charger Board
Charge Terminal

6.3. Control (Facsimile) Section

6.3.1. ASIC (IC10)

This custom IC is used for the general FAX operations.

1. CPU:
   This model uses a Z80 equivalent to the CPU operating at 12 MHz. Most of the peripheral functions are performed by custom-designed LSIs. Therefore, the CPU only works for processing the results.
2. RTC:
   Real Time Clock
3. DECODER:
   Decodes the address.
4. ROM/RAM I/F:
   Controls the SELECT signal of ROM or RAM and the bank switching.
5. CIS I/F:
   Controls the document reading.
6. IMAGE DATA RAM:
   This memory is programmed into the ASIC and uses 8 KB for the image processing.
7. THERMAL HEAD I/F:
   Transmits the recorded data to the thermal head.
8. MOTOR I/F:
   Controls the transmission motor which feeds the document.
   Controls the receiving motor which feeds the recording paper.
9. OPERATION PANEL I/F:
   Serial interface with Operation Panel.
10. I/O PORT:
    I/O Port Interface.

Note*:

This memory is incorporated into the ASIC (IC10) and used for the image processing.
Fig. A shows the memory map of the Image Data RAM.

6.3.2. Flash Memory (IC16)

This 512KB ROM (FLASH MEMORY) carries a common area of 32KB and bank areas which each have 8KB (BK4~BK63). The addresses from 0000H to 7FFFH are for the common area and from 8000H to 9FFFH are for the bank areas.

6.3.3. Dynamic RAM (IC17)

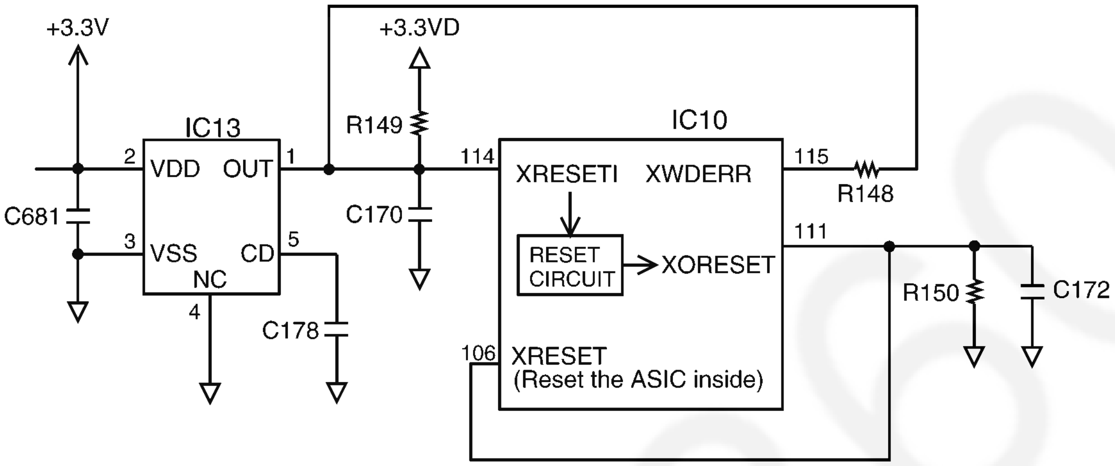
The DRAM serves as CPU and receives memory.
The address is F200H~F3FFH (DRAM access window 1) and F600H~F7FFH (DRAM access window 2).

A049860

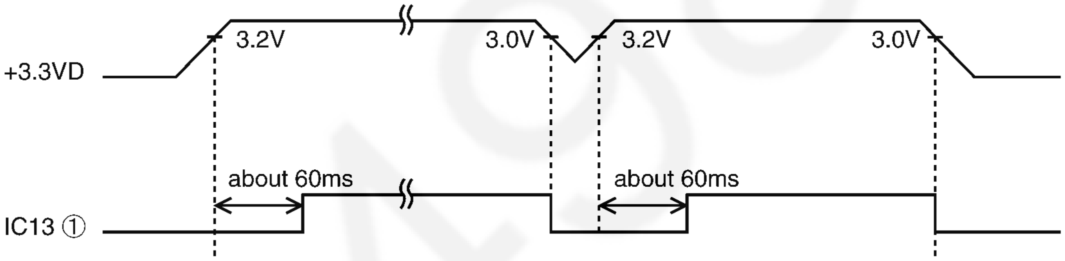
6.3.4. Reset Circuit (Watch Dog Timer)

The output signal (reset) from pin 2 of the voltage detect IC (IC10) is input to the ASIC (IC10) 114 pin.

Circuit Diagram


+3.3V
+3.3VD
IC13
2
VDD
OUT
1
C681
3
VSS
CD
5
NC
4
C178
R149
C170
114
IC10
XRESETI
XWDERR
115
R148
RESET CIRCUIT
XORESET
111
R150
C172
106
XRESET
(Reset the ASIC inside)

1. During a momentary power interruption, a positive reset pulse of 60 msec is generated and the system is reset completely.



2. The watch dog timer, built-in the ASIC (IC10), is initialized by the CPU about every 1.5 ms.
   When a watch dog error occurs, pin 115 of the ASIC (IC10) becomes low level.
   The terminal of the 'WDERR' signal is connected to the reset line, so the 'WDERR' signal works as the reset signal.

A049860

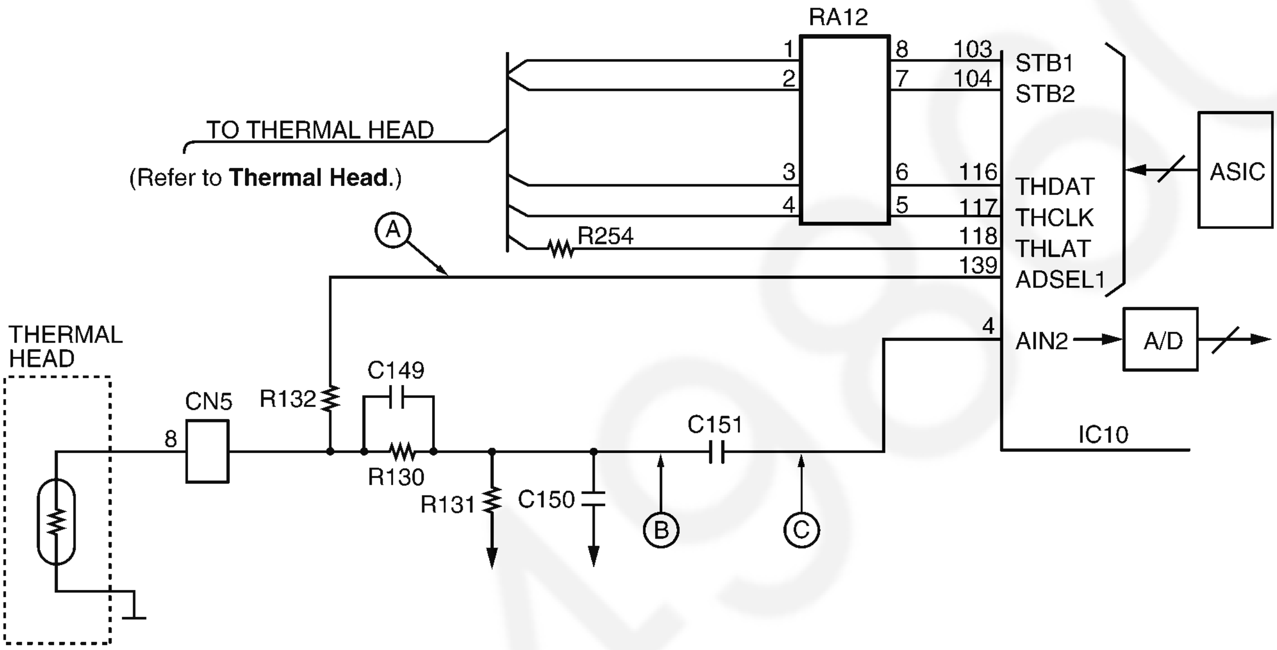
6.3.5. Supervision Circuit for the Thermal Head Temperature

1. **Function**

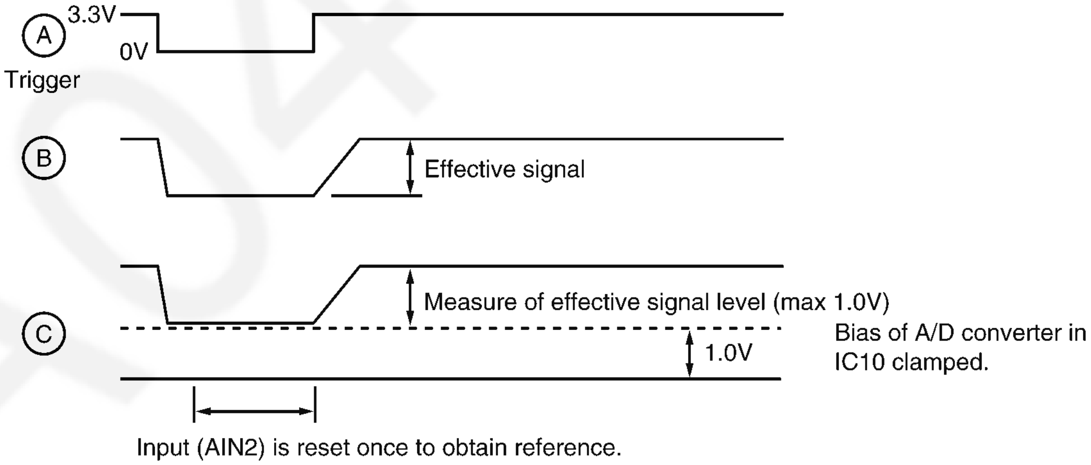
The thermistor changes the resistor according to the temperature and uses the thermistor's characteristics. The output of pin 139 of IC10 becomes a low level. Then when it becomes a high level, it triggers point A In point C, according to the voltage output time, the thermal head's temperature is detected.

After the thermal head temperature is converted to voltage in B, it is then changed to digital data in the A/D converter inside IC10. The CPU decides the strobe width of the thermal head according to this value. Therefore, this circuit can keep the thermal head at an even temperature in order to stabilize the printing density and prevent the head from being overheated.

Circuit Diagram


RA12
1
2
3
4
8
7
6
5
103
104
116
117
118
139
4
STB1
STB2
THDAT
THCLK
THLAT
ADSEL1
AIN2
ASIC
A/D
IC10
TO THERMAL HEAD
(Refer to Thermal Head.)
A
R254
THERMAL HEAD
CN5
8
R132
C149
R130
R131
C150
C151
B
C

Timing Chart


A
Trigger
3.3V
0V
B
Effective signal
C
Measure of effective signal level (max 1.0V)
1.0V
Bias of A/D converter in IC10 clamped.
Input (AIN2) is reset once to obtain reference.

CROSS REFERENCE:

Thermal Head (P.21)

A04980

6.4. Facsimile Section

6.4.1. Image Data Flow During Facsimile Operation

Copy (Fine, Super-Fine, Half Tone)

1. Line information is read by CIS (to be used as the reference white level) via route1, and is input to IC10. Refer to **Block Diagram** (P.20)
2. In IC10, the data is adjusted to a suitable level for A/D conversion in the Analogue Signal Processing Section, and via route2 it is input to A/D conversion (8 bit). After finishing A/D conversion, the data is input to the Image Processing Section via route3. Then via route4 and route5, it is stored in RAM as shading data.
3. The draft's information that is read by CIS is input to IC10 via route1. After it is adjusted to a suitable level for A/D conversion via route2, the draft's information is converted to A/D (8 bit), and it is input to the Image Processing Section. The other side, the shading data which flows from RAM via route6 and route7, is input to the Image Processing Section. After finishing the draft's information image processing, white is regarded as "0" and black is regarded as "1". Then via routes4 and 5, they are stored in RAM.
4. The white/black data stored as above via routes6 and8 is input to the P/S converter. The white/black data converted to serial data in the P/S converter is input to the Thermal Head via route9 and is printed out on recording paper.

   Note:

   Standard: Reads 3.85 lines/mm
   Fine/Photo: Reads 7.7 lines/mm
   Super-Fine: Reads 15.4 lines/mm

Transmission

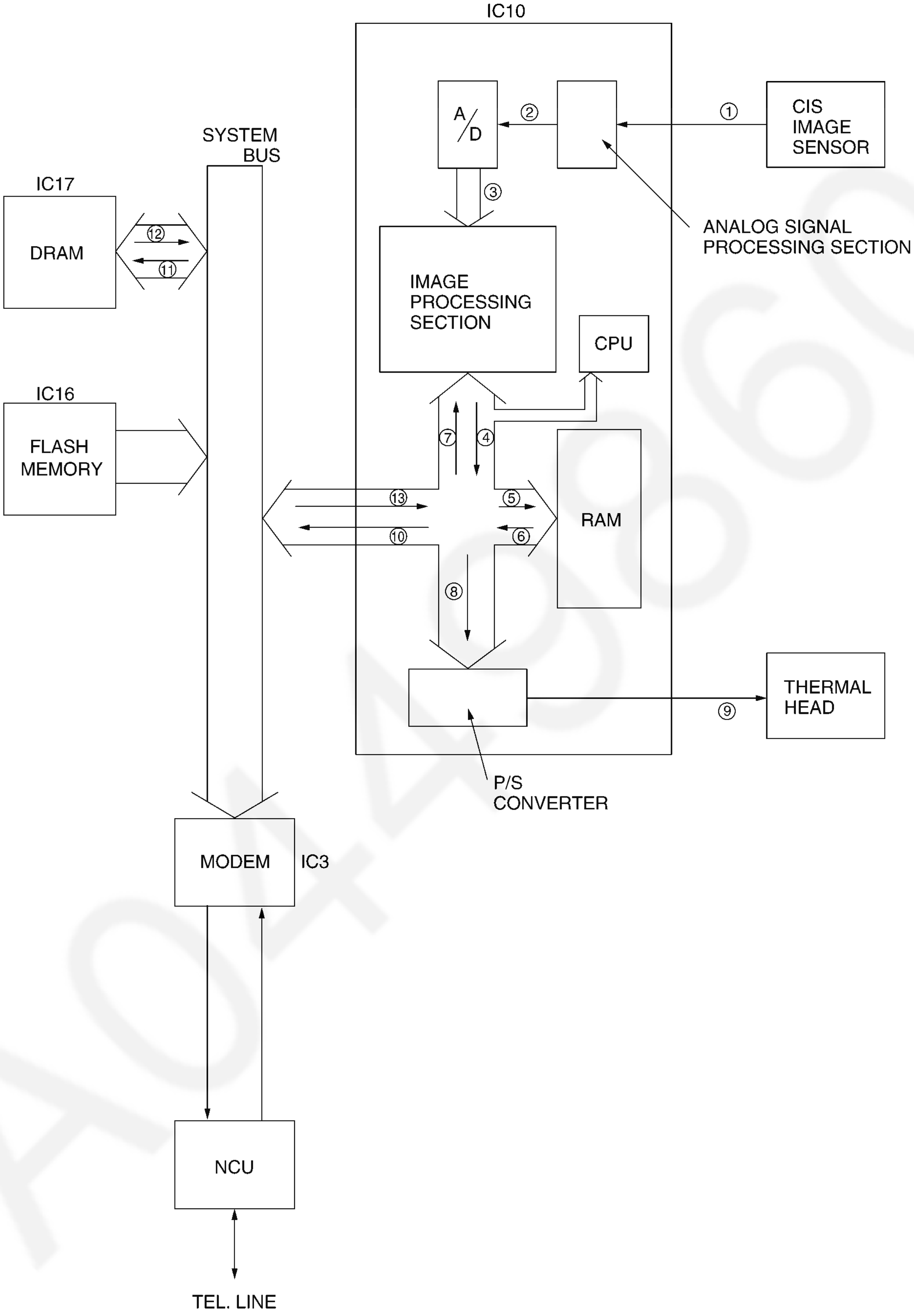
1. Same processing as **Copy** items 1 - 3.
2. The data stored in the RAM of IC10 is output from IC10 via routes6 and 10, and is stored in the system bus.
   Via route11, it is stored in the communication buffer inside DRAM (IC17).
3. While retrieving data stored in the communication buffer synchronous with the modem, the CPU (inside IC10) inputs the data to the modem along route12, where it is converted to serial analogue data and forwarded over the telephone lines via the NCU Section.

Reception

1. The serial analogue image data is received over the telephone lines and input to the modem via the NCU section, where it is demodulated to parallel digital data. Then the CPU (IC10) stores the data in the communication buffer DRAM (IC17) along route12.
2. The data stored in DRAM (IC17) is decoded by the CPU (IC10) via route12, and is stored in DRAM (IC17) via routes13 and 5.
3. Same processing as **Copy** item 4.

A04496U

6.4.2. Block Diagram


IC10
A/D
②
①
CIS
IMAGE
SENSOR
SYSTEM
BUS
IC17
DRAM
⑫
⑪
③
ANALOG SIGNAL
PROCESSING SECTION
IMAGE
PROCESSING
SECTION
CPU
IC16
FLASH
MEMORY
⑦
④
⑬
⑤
RAM
⑩
⑥
⑧
THERMAL
HEAD
⑨
P/S
CONVERTER
MODEM
IC3
NCU
TEL. LINE

A040860

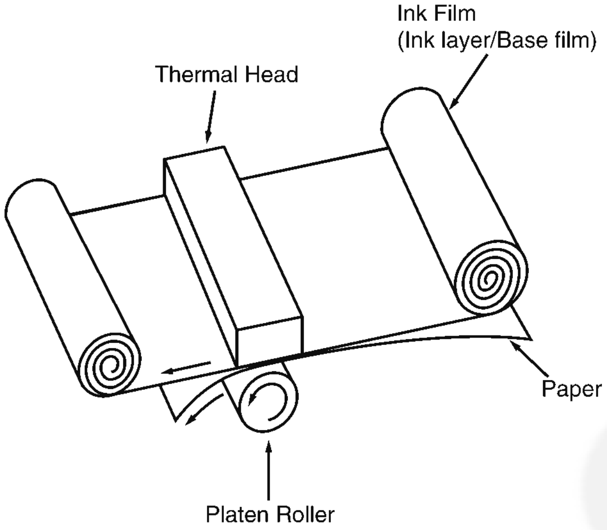
6.4.3. Thermal Head

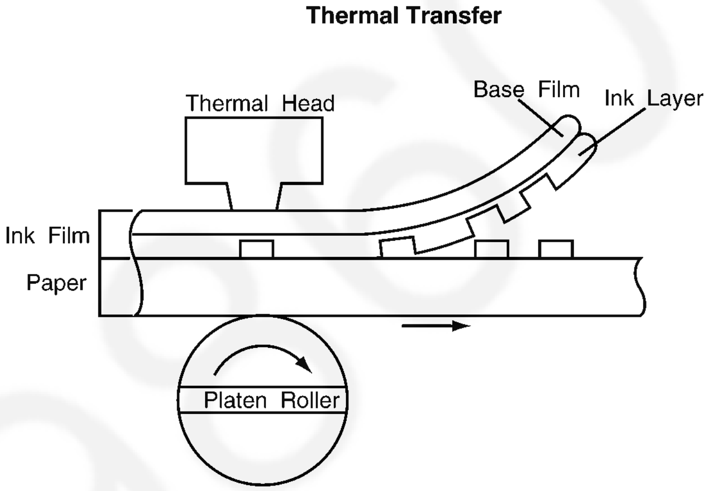
1. **Function**

   This unit utilizes the state of the art thermal printer technology.

   The ink film is chemically processed. The ink film is comprised of two parts: an ink layer and a base film. When the thermal head contacts this ink film, it emits heat momentarily, and the ink layer is melted and transferred to the paper. If this continues, letters and/or diagrams appear, and the original document is reproduced.

Composition of the receive record section (Thermal recording format)





2. **Circuit Operation**

   Refer to the block diagram and the timing chart on the following page.

   There are 9 driver ICs aligned horizontally on the thermal head and each one of these ICs can drive 192 heat-emitting registers. This means that one line is at a density of 192×9=1728 dots=(8 dots/mm).

   White/Black (white=0, black=1) data in one line increment is synchronized at IC10 pin 117 (THCLK), and sent from IC10 pin 116 (THDAT) to the shift register of the ICs. The shift registers of the 9 ICs are connected in series, and upon the shift of the 1728 dot increment, the shift register becomes filled with data, and a latch pulse is emitted to each IC from IC10 pin 118 (THLAT).

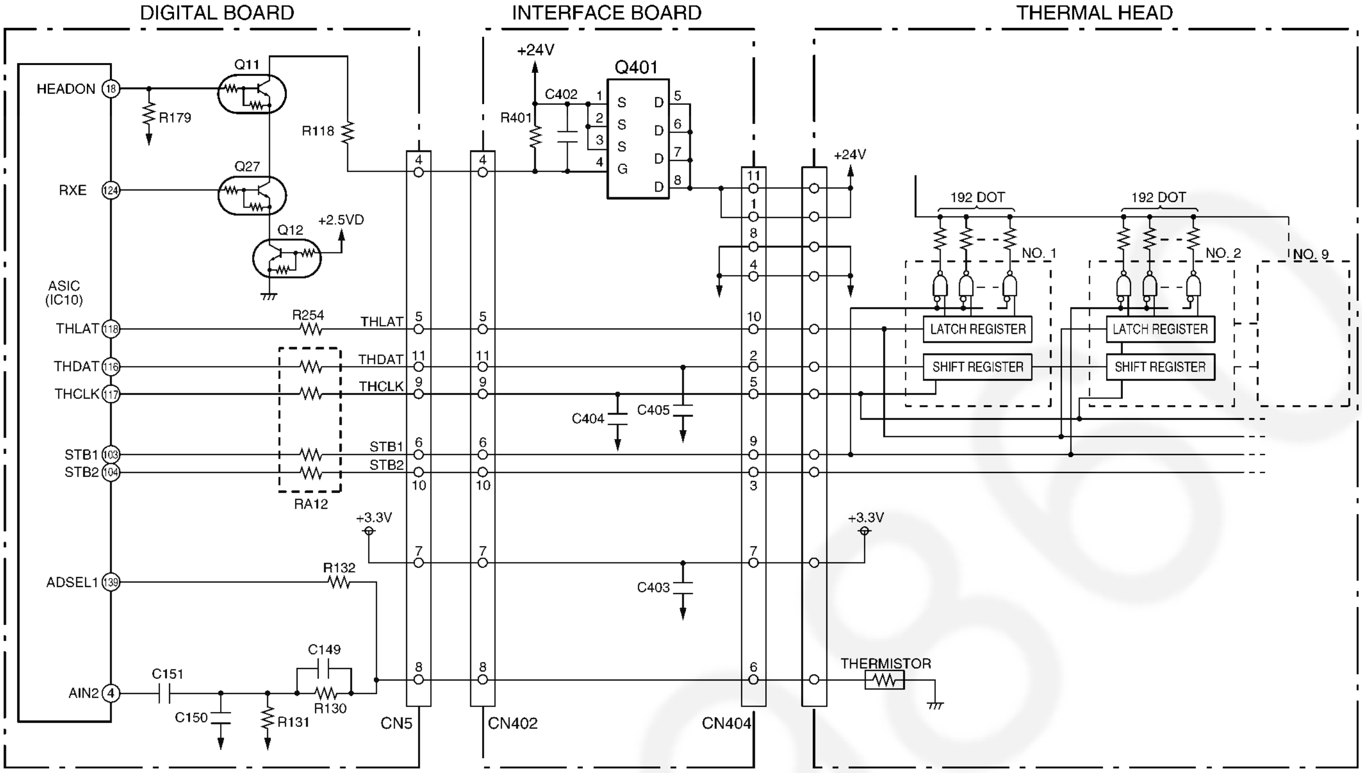
   With this latch pulse, all the contents of the shift registers are latched to the latch registers. Thereafter, through the addition of strobes from the IC10 pins (103, 104), only the dot location of black (=1) among latched data activates the driver, and the current passes to heat the emitting body to cause heat emission.

   Here, the two line strobes, STB1 and STB2, impress at intervals of 9.216 msec, as required for one-line printout.

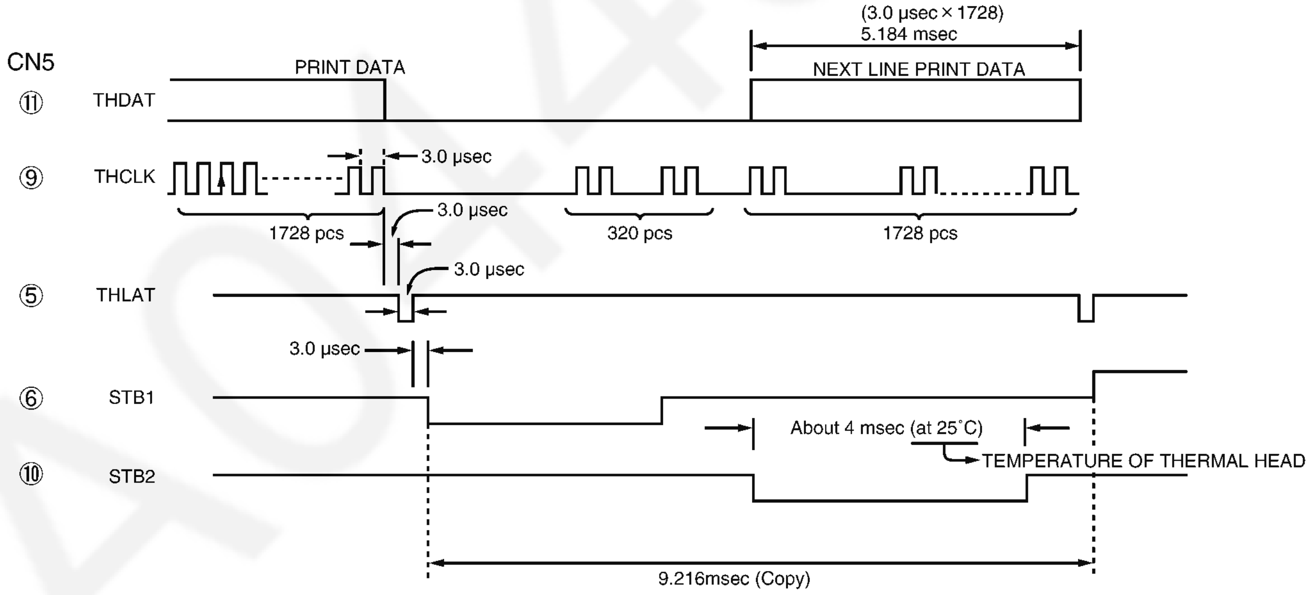
   The sequence is shown on the next page. [Moreover, for the strobe width, the thermistor value inside the thermal head is detected according to IC10 pin 4. Depending on that value, the strobe width is recorded in FLASH ROM (IC16). Accordingly, the strobe width is determined.]

   When the thermal head is not used, the IC10 (17, THON) becomes low, Q603 turns OFF, Q401 turns OFF, and the +24V power supply for the thermal head driver is not impressed to protect the IC.

Circuit Diagram


DIGITAL BOARD
INTERFACE BOARD
THERMAL HEAD
HEADON 18
RXE 124
ASIC (IC10)
THLAT 118
THDAT 116
THCLK 117
STB1 103
STB2 104
ADSEL1 139
AIN2 4
Q11
Q27
Q12
R179
R118
+2.5VD
R254
RA12
R132
C149
C151
C150
R131
R130
+3.3V
THLAT
THDAT
THCLK
STB1
STB2
CN5
CN402
CN404
+24V
Q401
C402
R401
S
S
S
G
D
D
D
D
C404
C405
C403
+24V
+3.3V
192 DOT
192 DOT
NO. 1
NO. 2
NO. 9
LATCH REGISTER
LATCH REGISTER
SHIFT REGISTER
SHIFT REGISTER
THERMISTOR

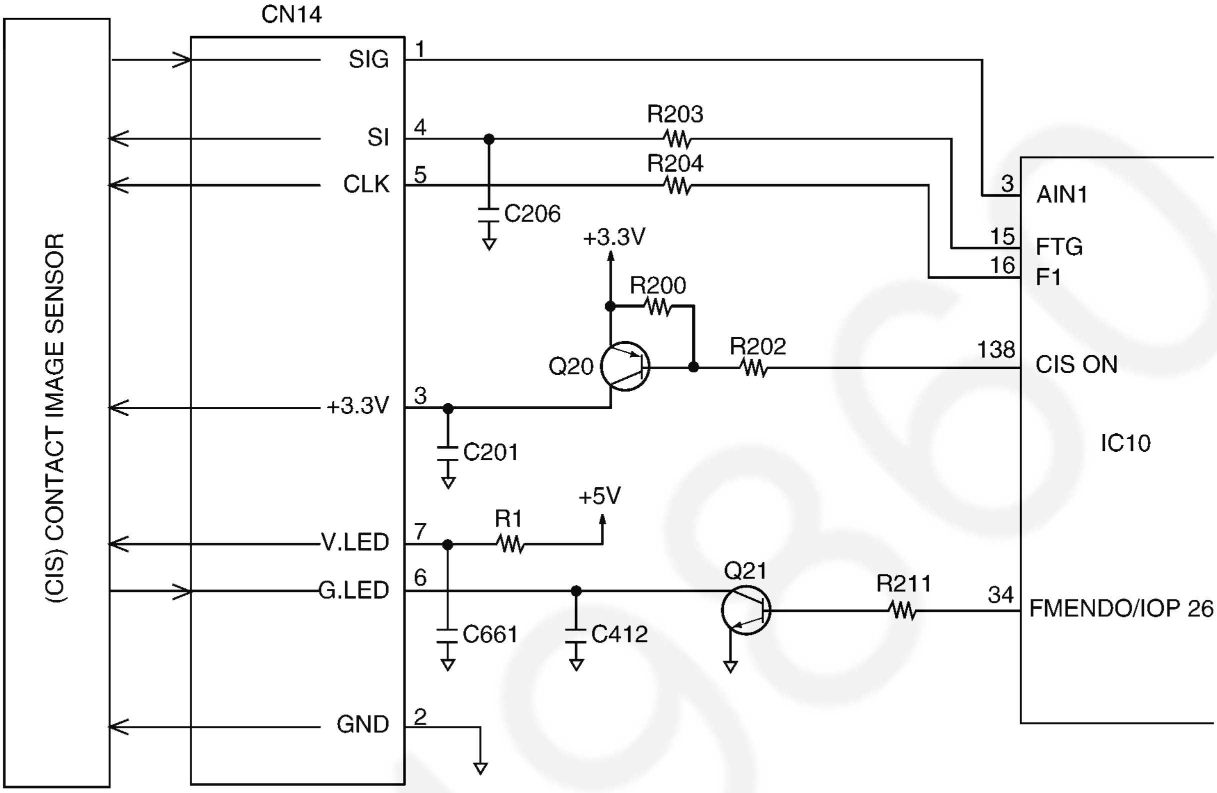
Timing Chart



6.4.4. Scanning Block

The scanning block of this device consists of a control circuit and a contact image sensor made up of a celfoc lens array, an LED array, and photoelectric conversion elements.

Circuit Diagram

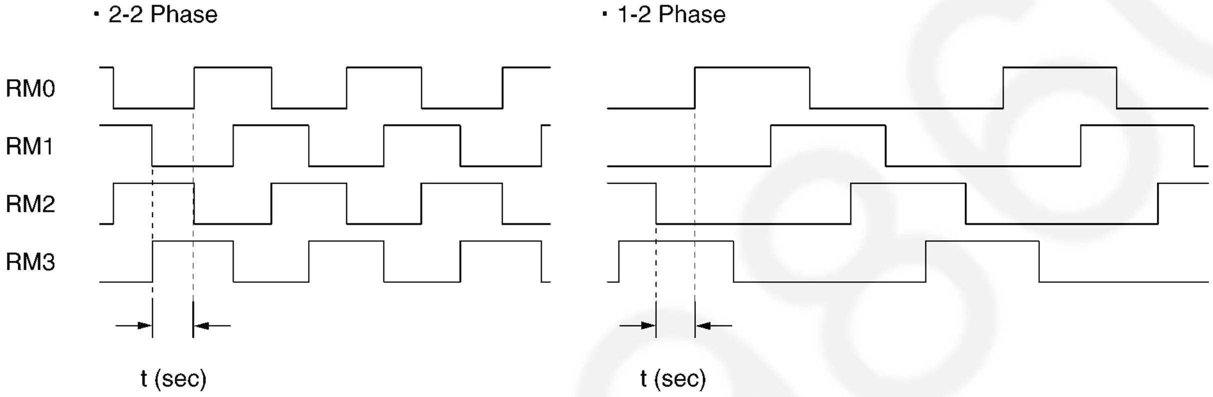

CN14
(CIS) CONTACT IMAGE SENSOR
SIG
SI
CLK
+3.3V
V.LED
G.LED
GND
1
4
5
3
7
6
2
R203
R204
C206
+3.3V
R200
Q20
R202
C201
+5V
R1
Q21
R211
C661
C412
3
15
16
138
34
AIN1
FTG
F1
CIS ON
IC10
FMENDO/IOP 26

When an original document is inserted and the start button pressed, pin 138 of IC10 goes to a low level and Q20 are turned ON, pin 34 of IC10 goes to a high level and the transistor Q21 turns on.This applies voltage to the LED array to light it. The contact image sensor is driven by each of the FTG-F1 signals output from IC10, and the original image illuminated by the LED array undergoes photoelectric conversion to output an analog image signal (SIG). The analog image signal is input to the system ASIC on AIN1 (pin 3 of IC10) and converted into 8-bit data by the A/D converter inside IC10. Then this signal undergoes digital processing in order to obtain a high-quality image.

6.4.5. Stepping Motor Drive Circuit

1. **Function**
   One individual stepping motor is used for transmission and reception. It feeds the document or recording paper synchronized for reading or printing.
2. **Circuit Operation**
   During motor driving, pin 124 of ASIC IC10 becomes a high level, and Q403, Q402 turns ON. As a result, +24V is supplied to the motor coil.
   Stepping pulses are output from ASIC IC10 pins, 120~123, causing driver IC401 pins, 11~14 to drive the Motor Coil. The motor coil is energized sequentially in 2 phase increments, which causes a 1-step rotation. A 1-step rotation feeds 0.13 mm of recording paper.
   The timing chart is below.

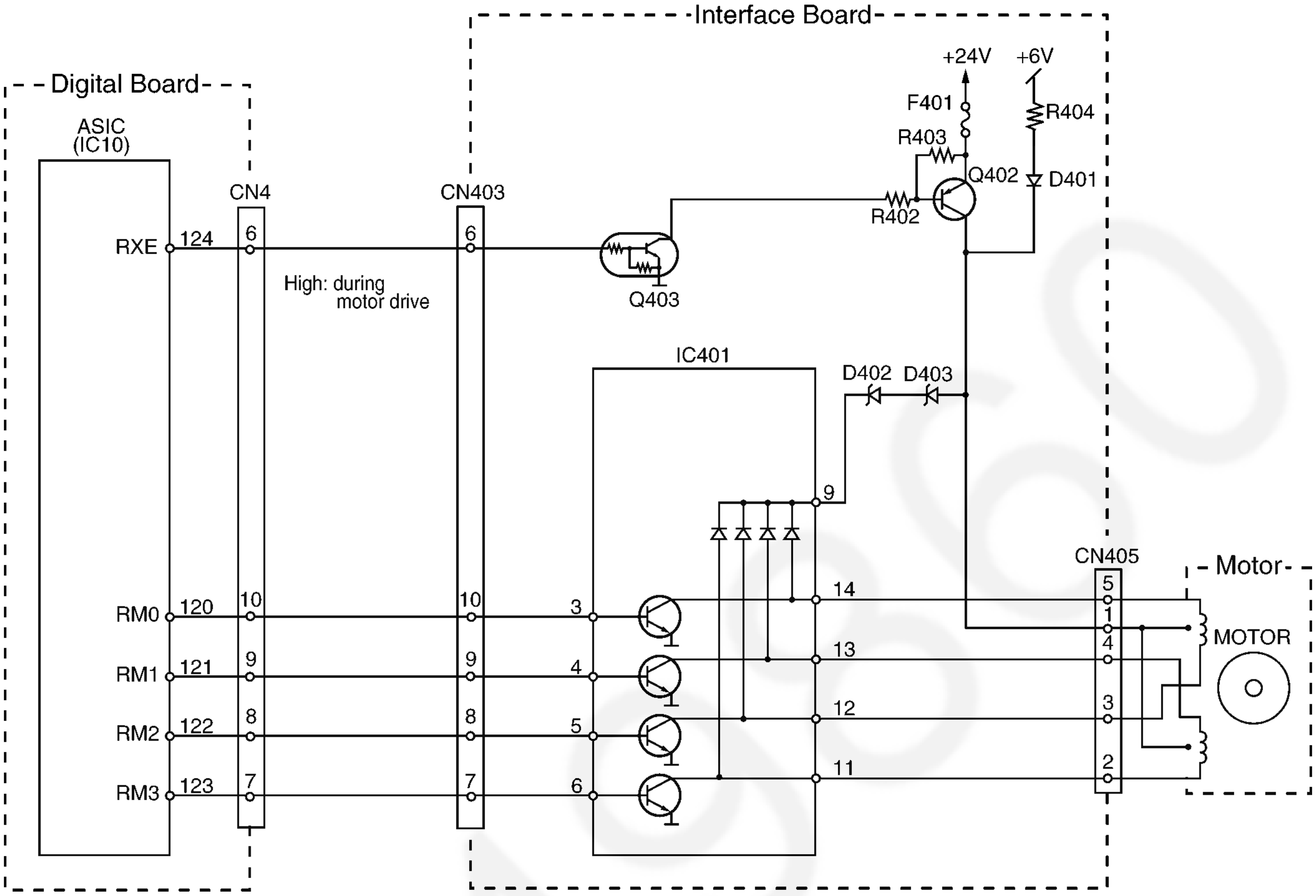
Stepping Monitor Timing Chart



Stepping Motor Drive Mode

Function	Mode	Phase Pattern	Speed
Copy	Fine, Photo	1-2	432 pps (t=1/432)
	Super Fine	1-2	216 pps (t=1/216)
FAX Sending	Standard	2-2	432 pps (t=1/432)
	Fine, Photo	1-2	432 pps (t=1/432)
	Super Fine	1-2	216 pps (t=1/216)
FAX Receiving	Standard, Fine, Photo	1-2	432 pps (t=1/432)
	Super Fine	1-2	216 pps (t=1/216)
Paper Feed	———	1-2	432 pps (t=1/432)
Document Feed	———	1-2	432 pps (t=1/432)
Stand-by	———	All phases are currently off.	None

Circuit Diagram


Interface Board
Digital Board
ASIC
(IC10)
CN4
CN403
RXE
124
6
High: during
motor drive
+24V
+6V
F401
R404
R403
Q402
D401
R402
Q403
IC401
D402
D403
9
CN405
Motor
MOTOR
RM0
120
10
RM1
121
9
RM2
122
8
RM3
123
7
3
4
5
6
14
13
12
11
5
1
4
3
2

When the motor suspends while it is in the receive mode (about 70~80 msec), pin 124 of ASIC IC10 becomes a low level and Q403 turns OFF. Then Q402 also turns OFF, and instead of +24 V, +6 V is supplied through D401 so that the motor is held in place. When the system is in the stand-by mode, all of the motor drive transistors turn OFF. Consequently, the motor current stops.

6.5. Sensor and Switches

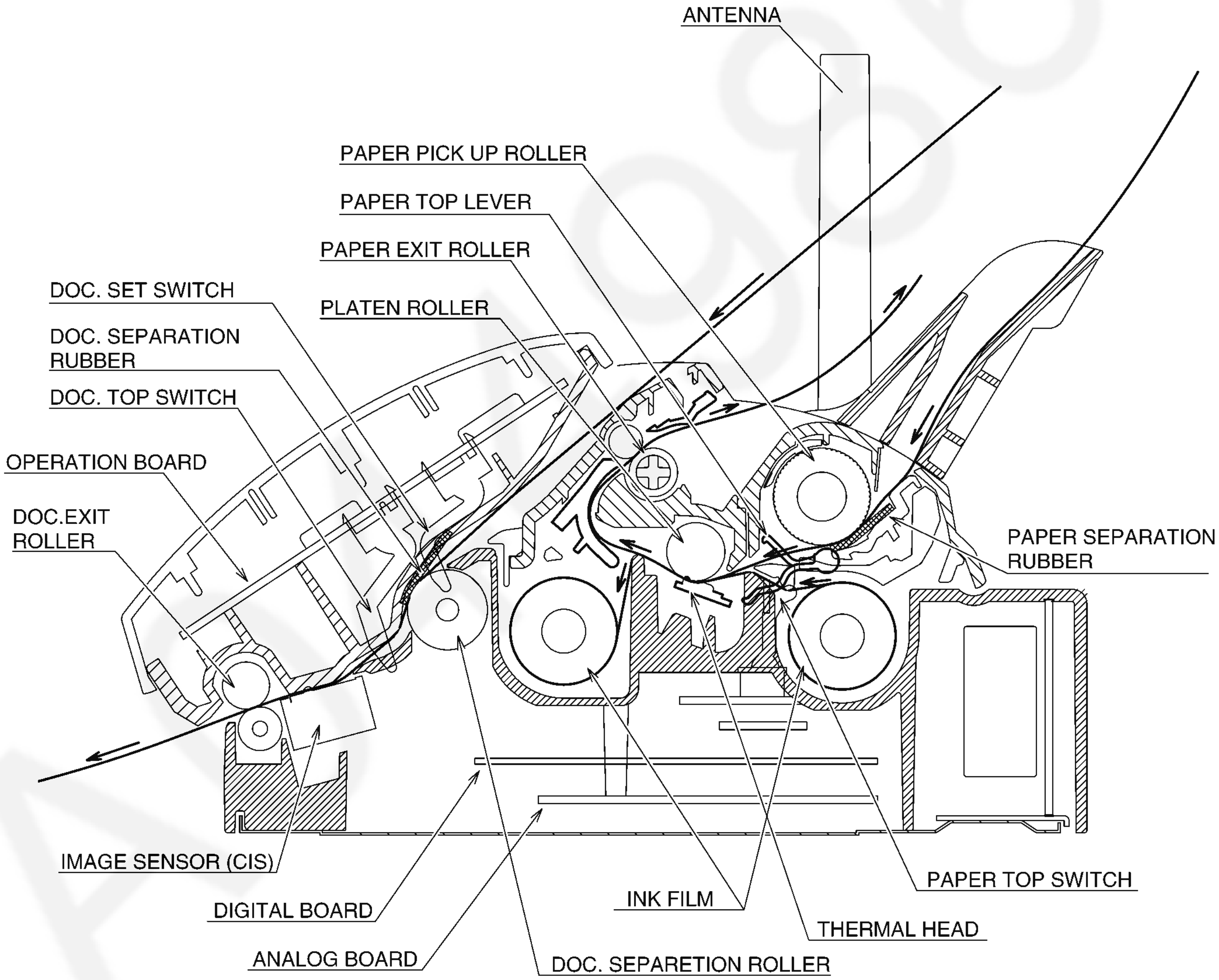
All of the sensor and switches are shown below.

Sensor Circuit Location	Sensor	Sensor or Switch Name	Error Message (*1)
Operation Panel	SW351	Document top sensor	[REMOVE DOCUMENT]
	SW352	Document set sensor	[CHECK DOCUMENT]
Sensor P.C.Board	SW1001	Cover Open sensor Paper Top sensor	[CHECK COVER] [PAPER JAMMED]
	SW1002	Film Detection sensor	[FILM EMPTY]
Film End Sensor P.C.Board	SW1003	Film End sensor	[CHECK FILM]
Gear Block	SW1004	Motor Position sensor	[CALL SERVICE2]

Note:

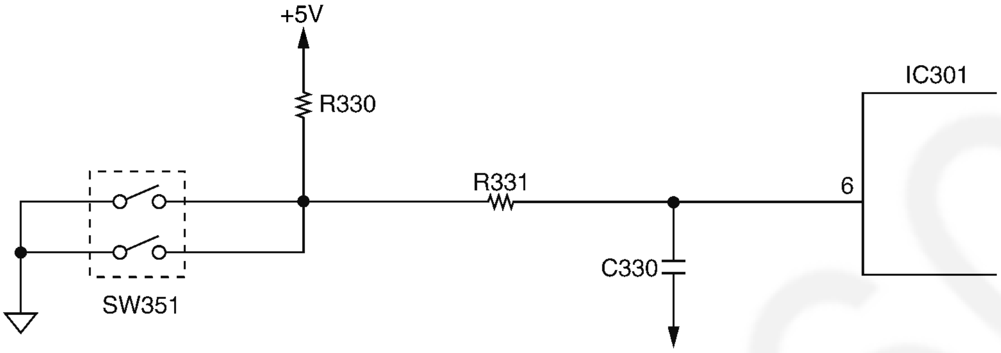
See **Test Mode** (P.59). (#815: Sensor Check)

Sensor Locations


ANTENNA
PAPER PICK UP ROLLER
PAPER TOP LEVER
PAPER EXIT ROLLER
PLATEN ROLLER
DOC. SET SWITCH
DOC. SEPARATION RUBBER
DOC. TOP SWITCH
OPERATION BOARD
DOC.EXIT ROLLER
PAPER SEPARATION RUBBER
IMAGE SENSOR (CIS)
DIGITAL BOARD
ANALOG BOARD
INK FILM
PAPER TOP SWITCH
THERMAL HEAD
DOC. SEPARETION ROLLER

6.5.1. Document Top Sensor (SW351)

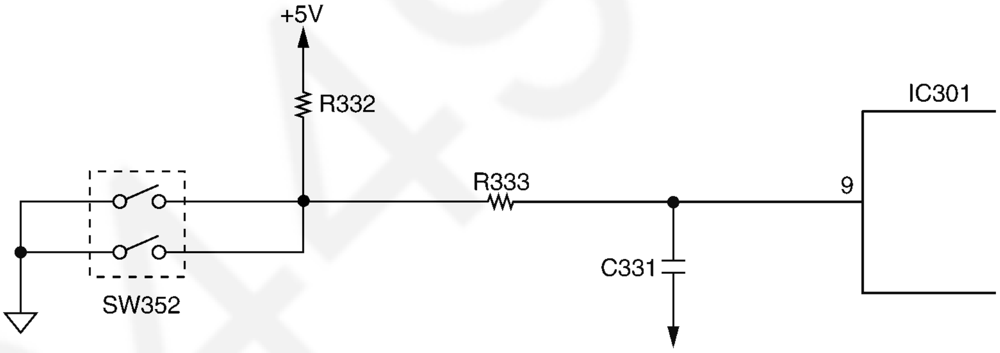
When a document is brought to the read position, the SW turns ON, and the input signal of IC301-6 pin (Operation Board) becomes a low level. When there is no document at the read position, the SW turns OFF, and the input signal of IC301-6 pin (Operation Board) becomes a high level.



	SW	Signal (IC301-6 pin)
Out of the Read Position	OFF	High level
At the Read Position	ON	Low level

6.5.2. Document Set Sensor (SW352)

When a document is set, the SW turns ON, and the input signal of IC301-9 pin (Operation Board) becomes a low level. When there is no document, the SW turns ON, and the input signal of IC301-9 pin (Operation Board) becomes a high level.



	SW	Signal (IC301-9 pin)
No document	OFF	High level
Set document	ON	Low level

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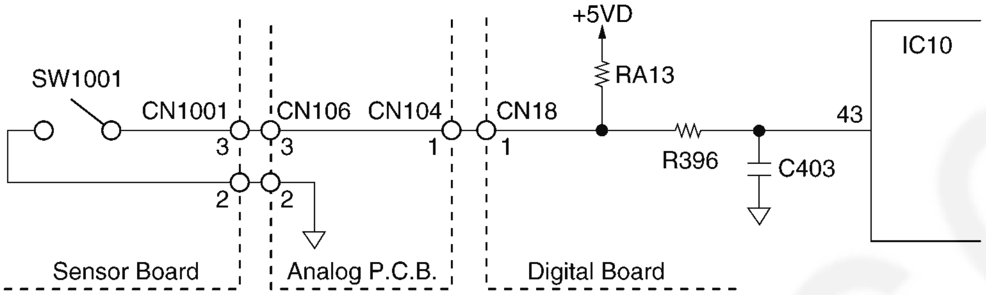
6.5.3. Paper Top Sensor (SW1001)

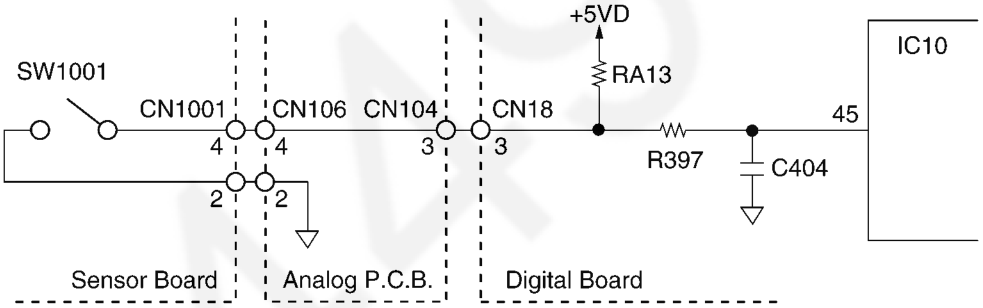
When the recording paper is loaded on the print head or the recording paper cover is opened, the paper top sensor SW turns ON, and the input signal of IC10-43 pin (Digital Board) becomes a low level. Usually, the SW turns OFF, and the input signal of IC10-43 pin (Digital Board) becomes a high level.


+5VD
IC10
SW1001
RA13
CN1001
CN106
CN104
CN18
43
3
3
1
1
R396
C403
2
2
Sensor Board
Analog P.C.B.
Digital Board

	SW	Signal (IC10-43 pin)
Set recording paper or paper cover is opened	ON	Low level
No recording paper or paper cover is closed	OFF	High level

6.5.4. Cover Open Sensor (SW1001)

When the u-TURN BLOCK is closed, the SW becomes ON, and the input signal of IC10-45 pin (Digital Board) becomes a low level. When the cover is opened, the SW becomes OFF, and the input signal of IC10-45 (Digital Board) pin becomes a high level.


+5VD
IC10
SW1001
RA13
CN1001
CN106
CN104
CN18
45
4
4
3
3
R397
C404
2
2
Sensor Board
Analog P.C.B.
Digital Board

	SW	Signal (IC10-45 pin)
Cover is opened	OFF	High level
Cover is closed	ON	Low level

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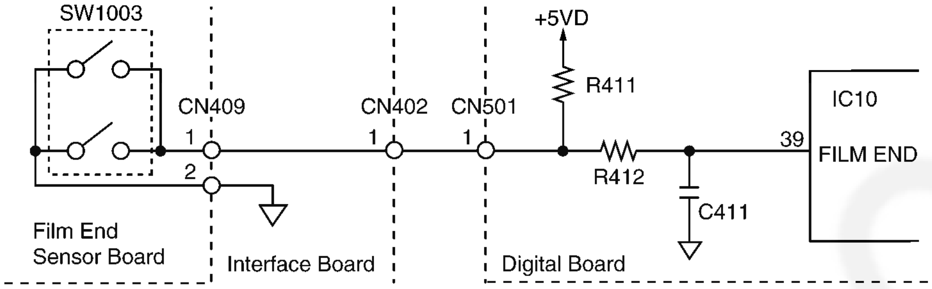
6.5.5. Film End Sensor (SW1003)

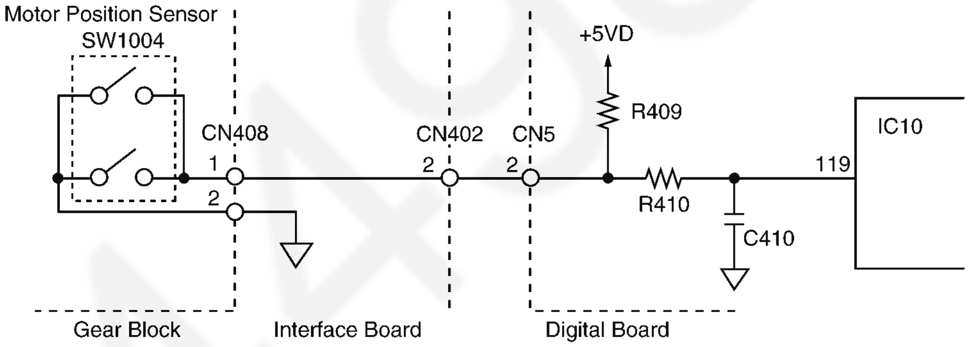
When the operation panel cover is closed and a film is set, the SW turns ON, and the input signal of IC10-39 pin (Digital) becomes a low level. When the cover is opened, the SW turns OFF, and the input signal of IC10-39 pin (Digital) becomes a high level.


SW1003
CN409
1
2
CN402
1
CN501
1
+5VD
R411
R412
C411
39
IC10
FILM END
Film End
Sensor Board
Interface Board
Digital Board

	SW	Signal (IC10-39 pin)
Cover open or no film	OFF	High level
Cover closed and set a film	ON	Low level

6.5.6. Motor Position Sensor (SW1004)

When the recording paper is loaded on the print head, the SW turns ON, and the input signal of IC10-119 pin (Digital Board) becomes a low level. When the recording paper is not loaded on the print head, the SW turns OFF, and the input signal of IC10-119 pin (Digital Board) becomes a high level.


Motor Position Sensor
SW1004
CN408
1
2
CN402
2
CN5
2
+5VD
R409
R410
C410
119
IC10
Gear Block
Interface Board
Digital Board

	Signal (IC10-119 pin)
Home position	Low level
Other	High level

A0A9860

6.6. Modem Section

6.6.1. Function

The unit uses a 1 chip modem (IC3) that serves as an interface between the control section for FAX transmission and reception and the telephone line. During a transmitting operation, the digital image signals are modulated and sent to the telephone line. During a receiving operation, the analogue image signals which are received via the telephone line are demodulated and converted into digital image signals. The communication format and procedures for FAX communication are standardized by ITU-T.
This 1 chip modem (IC3) has hardware which sends and detects all of the necessary signals for FAX communication.
It can be controlled by writing commands from the CPU (IC10: inside ASIC) to the register in the modem (IC3).
This modem (IC3) also sends DTMF signals, generates a call tone (from the speaker), and detects a busy tone and dial tones.

Overview of Facsimile Communication Procedures (ITU-T Recommendation):

1. ON CCIT (International Telegraph and Telephone Consultative Committee)

The No. XIV Group of CCITT, one of the four permanent organizations of the International Telecommunications Union (ITU), investigates and make recommendations on international standards for facsimiles.

2. Definition of Each Group

- Group I (G1)
  Official A-4 size documents without using formats which reduce the band width of a signal are sent over telephone lines.Determined in 1968.
  Transmission for about 6 minutes at a scanning line density of 3.85 lines/mm.
- Group II (G2)
  Using reduction technology in the modulation/demodulation format, an A-4 size document is sent at an official scanning line density of 3.85 lines/mm for about 3 minutes.
  Methods to suppress redundancy are not used.
  Determined in 1976.
- Group III (G3)
  Method of suppressing redundancy in the image signal prior to modulation is used. An A-4 size document is sent within about one minute.
  Determined in 1980.
- Group IV (G4)
  Transmission is via the data network. A method is provided for suppressing redundancy in signals prior to transmission, and error-free reception of transmission is possible.
  The scope of these facsimile applications is not limited simply to transmission of written statements. Through symbiotic linkages with other communication methods, it can be expected to expand to include integrated services.

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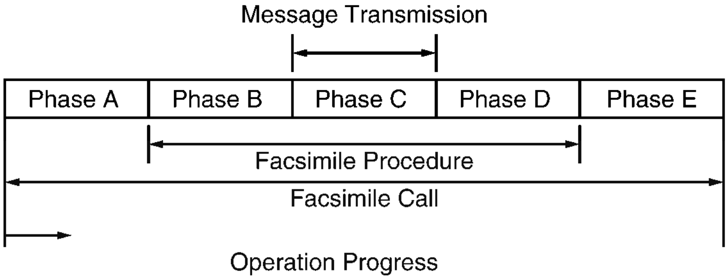
3. Facsimile Call Time Series

As shown in the following diagram, the facsimile call time series is divided into five phases.



Phase A: Call setting

Call setting can be manual/automatic.

Phase B: Pre-message procedure

Phase B is a pre-processing procedure and sequence for confirming the status of the terminal, transmission route, etc., and for terminal control. It implements terminal preparation status, determines and displays terminal constants, confirms synchronization status, etc. and prepares for transmission of facsimile messages.

Phase C: Message transmission

Phase C is the procedure for the transmitting facsimile messages.

Phase D: Post message procedure

Phase D is the procedure for confirming that the message is completed and received. For continuous transmission, phase B or phase C is repeated for transmission.

Phase E: Call retrieval

Phase E is the procedure for call retrieval, that is for circuit disconnection.

4. Concerning Transmission Time

Transmission Time = **Control Time** + **Image Transmission Time** + **Hold Time**

Transmission time consists of the following.

Control time:

This is time at the start of transmission when the functions at the sending and receiving sides are confirmed, the transmission mode is established, and transmission and reception are synchronized.

Image transmission time:

This is the time required for the transmission of document contents (image data). In general, this time is recorded in the catalog, etc.

Hold time:

This is the time required after the document contents have been sent to confirm that the document was actually sent, and to check for telephone reservations and/or the existence of continuous transmission.

5. Facsimile Standards

Item	Telephone Network Facsimile
	G3 Machine
Connection Control Mode	Telephone Network Signal Mode
Terminal Control Mode	T. 30 Binary
Facsimile Signal Format	Digital
Modulation Mode	PSK (V. 27 ter) or QAM (V. 29)
Transmission Speed	300 bps (Control Signal) 2400, 4800, 7200, 9600 bps (FAX Signal)
Redundancy Compression Process (Coding Mode)	1 dimension : MH Mode 2 dimension : MR Mode (K=2.4) 3 dimension : MMR Mode
Resolution	Main Scan : 8 pel/mm Sub Scan : 3.85, 7.7l/mm
Line Synchronization Signal	EOL Signal
1 Line Transmission Time [ms/line]	Depends on the degree of data reduction. Minimum Value : 10, 20 Can be recognized in 40ms.

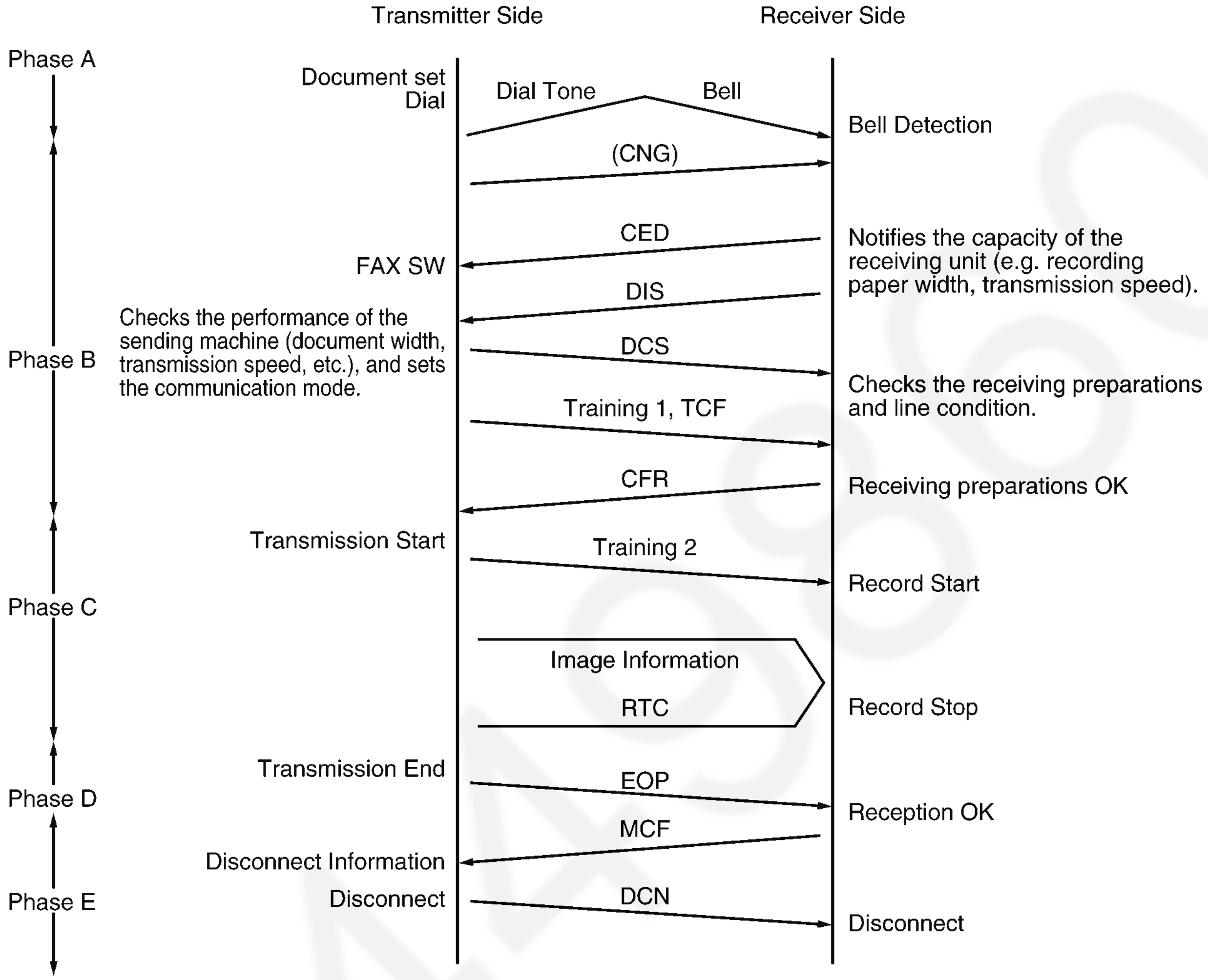
6. Explanation of Communication and Compression Technology

a. G3 Communication Signals (T. 30 Binary Process)

For G3 Facsimile communication, this is the procedure for exchanging control signals between the sending and receiving machines both before and after transmission of image signals.

Control signals at 300 bps FSK are: 1850 Hz...0, 1650Hz...1.

An example of a binary process in G3 communication is shown below.


Transmitter Side
Receiver Side
Phase A
Document set
Dial
Dial Tone
Bell
Bell Detection
(CNG)
CED
Notifies the capacity of the receiving unit (e.g. recording paper width, transmission speed).
FAX SW
DIS
Checks the performance of the sending machine (document width, transmission speed, etc.), and sets the communication mode.
Phase B
DCS
Checks the receiving preparations and line condition.
Training 1, TCF
CFR
Receiving preparations OK
Transmission Start
Training 2
Record Start
Phase C
Image Information
RTC
Record Stop
Transmission End
EOP
Phase D
Reception OK
MCF
Disconnect Information
Phase E
Disconnect
DCN
Disconnect

Explanation of Signals

Control signals are comprised mainly of 8-bit identification signals and the data signals added to them. Data signals are added to DIS and DCS signals.

Signal.....DIS (Digital Identification Signal)

Identification Signal Format.....00000001

Function:

Notifies the capacity of the receiving unit. The added data signals are as follows.

Signal.....DCS (Digital Command Signal)

Identification Signal Format.....X1000001

Example (Some models do not support the following items.):

Bit No.	DIS/DTC	DCS
1	Transmitter --- T.2 operation	
2	Receiver --- T.2 operation	Receiver --- T.2 operation
3	T.2 IOC = 176	T.2 IOC = 176
4	Transmitter --- T.3 operation	
5	Receiver --- T.3 operation	Receiver --- T.3 operation
6	Reserved for future T.3 operation features	
7	Reserved for future T.3 operation features.	
8	Reserved for future T.3 operation features.	
9	Transmitter --- T.4 operation	
10	Receiver --- T.4 operation	Receiver --- T.4 operation

Bit No.	DIS/DTC	DCS
11,12,13,14	Data signaling rate	Data signaling rate
0,0,0,0	V.27 ter fall back mode	2400 bit/s, V.27 ter
0,1,0,0	V.27 ter	4800 bit/s, V.27 ter
1,0,0,0	V.29	9600 bit/s, V.29
1,1,0,0	V.27 ter and V.29	7200 bit/s, V.29
0,0,1,0	Not used	14400 bit/s, V.33
0,1,1,0	Reserved	12000 bit/s, V.33
1,0,1,0	Not used	Reserved
1,1,1,0	V.27 ter and V.29 and V.33	Reserved
0,0,0,1	Not used	14400 bit/s, V.17
0,1,0,1	Reserved	12000 bit/s, V.17
1,0,0,1	Not used	9600 bit/s, V.17
1,1,0,1	V.27 ter and V.29 and V.33 and V.17	7200 bit/s, V.17
0,0,1,1	Not used	Reserved
0,1,1,1	Reserved	Reserved
1,0,1,1	Not used	Reserved
1,1,1,1	Reserved	Reserved
15	R8×7.7 lines/mm and/or 200×200 pels/25.4mm	R8×7.7 lines/mm and/or 200×200 pels/25.4mm
16	Two-dimensional coding capability	Two-dimensional coding capability
17, 18	Recording width capabilities	Recording width
(0, 0)	1728 picture elements along scan line length of 215 mm ± 1%	1728 picture elements along scan line length of 215 mm ± 1%
(0, 1)	1728 picture elements along scan line length of 215 mm ± 1% 2048 picture elements along scan line length of 255 mm ± 1% 2432 picture elements along scan line length of 303 mm ± 1%	2432 picture elements along scan line length of 303 mm ± 1%
(1, 0)	1728 picture elements along scan line length of 215 mm ± 1% 2048 picture elements along scan line length of 255 mm ± 1%	2048 picture elements along scan line length of 255 mm ± 1%
(1, 1)	Invalid	Invalid
19, 20	Maximum recording length capability	Maximum recording length
(0, 0)	A4 (297 mm)	A4 (297 mm)
(0, 1)	Unlimited	Unlimited
(1, 0)	A4 (297 mm) and B4 (364 mm)	B4 (364 mm)
(1, 1)	Invalid	Invalid
21, 22, 23	Minimum scan line time capability of the receiver	Minimum scan line time
(0, 0, 0)	20 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	20 ms
(0, 0, 1)	40 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	40 ms
(0, 1, 0)	10 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	10 ms
(1, 0, 0)	5 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	5 ms
(0, 1, 1)	10 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$	
(1, 1, 0)	20 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$	
(1, 0, 1)	40 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$	
(1, 1, 1)	0 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	0 ms
24	Extend field	Extend field
25	2400 bit/s handshaking	2400 bit/s handshaking
26	Uncompressed mode	Uncompressed mode
27	Error correction mode	Error correction mode
28	Reserved for G4 capability on PSTN	Frame size 0 = 256 octets 1 = 64 octets
29	T.6 coding capability	Error limiting mode
30	Reserved for G4 capability on PSTN	Reserved for G4 capability on PSTN
31	T.6 coding capability	T.6 coding enabled
32	Extend field	Extend field
33	Validity of bits 17, 18	Recording width
(0)	Bits 17, 18 are valid	Recording width indicated by bits 17, 18
(1)	Bits 17, 18 are invalid	Recording width indicated by this field bit information
34	Recording width capability 1216 picture elements along scan line length of 151 ± mm 1%	Middle 1216 elements of 1728 picture elements
35	Recording width capability 864 picture elements along scan line length of 107 ± mm 1%	Middle 864 elements of 1728 picture elements
36	Recording width capability 1728 picture elements along scan line length of 151 ± mm 1%	Invalid
37	Recording width capability 1728 picture elements along scan line length of 107 ± mm 1%	Invalid
38	Reserved for future recording width capability.	
39	Reserved for future recording width capability.	

Bit No.	DIS/DTC	DCS
40	Extend field	Extend field
41	R8×15.4 lines/mm	R8×15.4 lines/mm
42	300×300 pels/25.4 mm	300×300 pels/25.4 mm
43	R16×15.4 lines/mm and/or 400×400 pels/25.4 mm	R16×15.4 lines/mm and/or 400×400 pels/25.4 mm
44	Inch based resolution preferred	Resolution type selection "0": neritic based resolution "1": inch based resolution
45	Metric based resolution preferred	Don’t care
46	Minimum scan line time capability for higher resolutions "0": $T_{15.4} = T_{7.7}$ "1": $T_{15.4} = 1/2T_{7.7}$	Don’t care
47	Selective Polling capability	Set to "0".
48	Extend field	Extend field

Note 1 - Standard facsimile units conforming to T.2 must have the following capability : Index of cooperation (IOC)=264.

Note 2 - Standard facsimile units conforming to T.3 must have the following capability : Index of cooperation (IOC)=264.

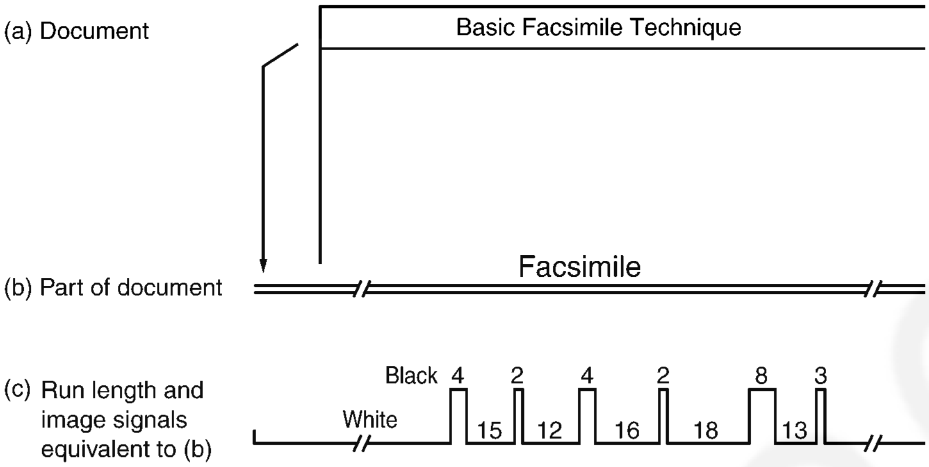
Note 3 - Standard facsimile units conforming to T.4 must have the following capability : Paper length=297 mm.

Signal	Identification Signal Format	Function
Training 1	——————	A fixed pattern is transmitted to the receiving side at a speed (2400 to 9600 bps) designated by DCS, and the receiving side optimizes the automatic equalizer, etc., according to this signal.
TCF (Training Check)	——————	Sends 0 continuously for 1.5 seconds at the same speed as the training signal.
CFR (Confirmation to Receive)	X0100001	Notifies the sending side that TCF has been properly received. If TCF is not properly received, FTT (Failure To Train) X0100010 is relayed to the sender. The sender then reduces the transmission speed by one stage and initiates training once again.
Training 2	——————	Used for reconfirming the receiving side like training 1.
Image Signal	Refer to the next page.	——————
RTC (Return to Control)	——————	Sends 12 bits (0...01 × 6 times) to the receiver at the same speed as the image signal and notifies completion of transmission of the first sheet.
EOP (End of Procedure)	X1110100	End of one communication
MCF (Message Confirmation)	X0110001	End of 1 page reception
DCN (Disconnect)	X1011111	Phase E starts.
MPS (Multi-Page Signal)	X1110010	Completion of transmission of 1 page. If there are still more documents to be sent, they are output instead of EOP. After MCF reception, the sender transmits an image signal of the second sheet.
PRI-EOP (Procedural Interrupt-EOP)	X1111100	If there is an operator call from the sender, it is output after RTC.
PIP (Procedural Interrupt Positive)	X0110101	This is output when an operator call is received.

b. Redundancy Compression Process Coding Mode

This unit uses one-dimensional MH format.

Modified Huffman (MH) Code		
Run length	Code for White Line	Code for Black Line
0	00110101	000011011
1	000111	010
2	0111	11
3	1000	10
4	1011	011
5	1100	0011
6	1110	0010
7	1111	00011
8	10011	000101
9	10100	000100
10	00111	0000100
11	01000	0000101
12	001000	0000111
13	000011	00000100
14	110100	00000111
15	110101	000011000
16	101010	0000010111
17	101011	0000011000
18	0100111	0000001000


(a) Document
Basic Facsimile Technique
(b) Part of document
Facsimile
(c) Run length and image signals equivalent to (b)
Black
4
2
4
2
8
3
White
15
12
16
18
13

(d) Codification of (c) according to MH formula

00110111101010	011	110101	11	001000	011	101010
(White 400)	(Black 4)	(White 15)	(Black 2)	(White 12)	(Black 4)	(White 16)

11	0100111	000101	000011	10
(Black 2)	(White 18)	(Black 8)	(White 13)	(Black 3)

(c) Total bit number before MH codification (497 bit)
(d) Total bit number after MH codification (63 bit)

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6.6.2. Modem Circuit Operation

The modem (IC3) has all the hardware satisfying the CCITT standards mentioned previously.

When the ASIC IC10 (61) is brought to a low level, the modem (IC3) is chip-selected and the resistors inside IC are selected by the select signals from ASIC (IC10) ADR0-ADR4. The commands are written through the data bus, and all the processing is controlled by the ASIC (IC10) according to CCITT procedures. The INT signal dispatched from IRQ (pins 100 of IC3) to ASIC (IC10) when the transmission data is accepted and the received data is demodulated, the ASIC (IC10) implements post processing. This modem (IC3) has an automatic application equalizer.

With training signal 1 or 2 during G3 reception, it can automatically establish the optimum equalizer. The modem (IC3) operates using the 32.256 MHz clock (X1).

1. **Facsimile Transmission**

   The digital image data on the data bus is modulated in the modem (IC3), and sent from pin 56 via, amplifier IC102 and the NCU section to the telephone line.

   Refer to **Check Sheet for Signal Route** (P.124).

2. **Facsimile Reception**

   The analog image data which is received from the telephone line passes through the NCU section and enters pin 47 of the modem (IC3). The signals that enter pin 47 of the modem (IC3) are demodulated in the board to digital image signals, then placed on the data bus.

   In this case, the image signals from the telephone line are transmitted serially. Hence, they are placed on the bus in 8 bit units.

   Here, the internal equalizer circuit reduces the image signals to a long-distance receiving level.

   This is designed to correct the characteristics of the frequency band centered around 3 kHz and maintain a constant receiving sensitivity.

   It can be set in the service mode.

   Refer to **Check Sheet for Signal Route** (P.124).

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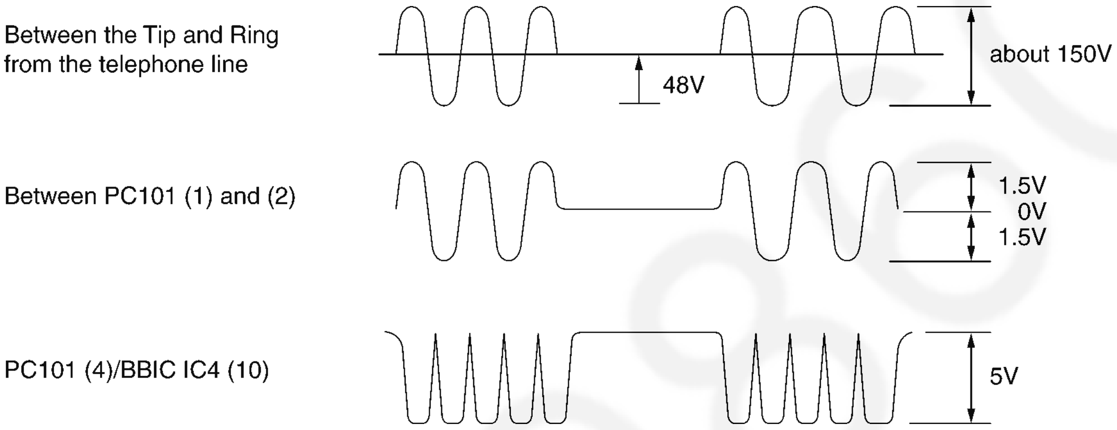
6.7. NCU Section

6.7.1. General

It is composed of bell detection circuit, pulse dial circuit, line amplifier, sidetone circuits.

6.7.2. Bell Detection Circuit

1. **Circuit Operation**
   The signal waveform for each point is indicated below. The signal (low level section) input to pin 10 of BBIC IC4 on the digital board.
   TEL LINE → PC101 (1, 2 → 4) → IC4 (10)



6.7.3. On/Off Hook Circuit

Normally (ON-HOOK condition), LINE RELAY (RL101) and Opt Isorator (PC102) is OFF. While OFF-HOOK, RL101 and PC102 turns ON. This LINE RELAY is controlled by pin 83 of IC4 through the Q101. PC102 is controlled by pin 12 of IC4 through the Q104.

ON-HOOK:
IC4 (83) Low Level → Q101 OFF → RL101 OFF
IC4 (12) Low Level → Q104 OFF → PC102 OFF

OFF-HOOK:
IC4 (83) High Level → Q101 ON → RL101 ON
IC4 (12) High Level → Q104 ON → PC102 ON

6.7.4. Pulse Dial Circuit

The pulse dial is generated by operating the transistor PC102 while OFF-HOOK (RL101 ON) condition.

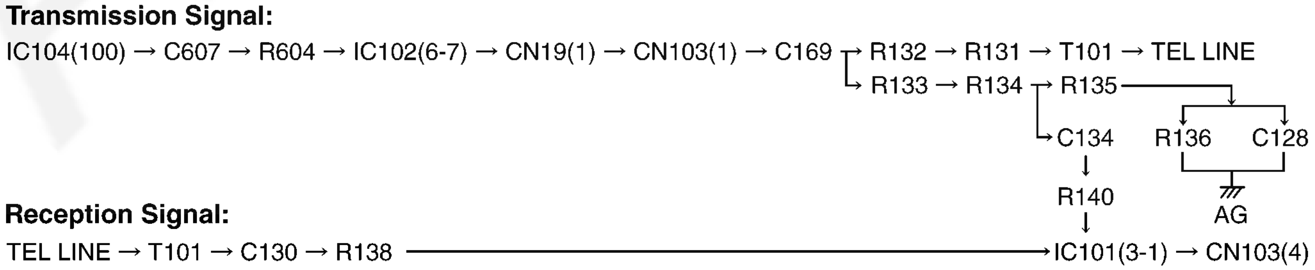
Make state:
IC4 (12) High Level → Q104 ON → PC102 ON

Break state:
IC4 (12) Low Level → Q104 OFF → PC102 OFF

6.7.5. Line Amplifier and Side Tone Circuit

1. **Circuit Operation**
   The reception signal output from the line transformer T101 is input to pin (2) of IC101 via C130, R138 and then the signal is amplified at pin (1) of IC101 and sent to the reception system at through the LPF.

Side Tone Circuit


Transmission Signal:
IC104(100) → C607 → R604 → IC102(6-7) → CN19(1) → CN103(1) → C169
R132 → R131 → T101 → TEL LINE
R133 → R134
R135
C134
R136
C128
R140
AG
Reception Signal:
TEL LINE → T101 → C130 → R138
IC101(3-1) → CN103(4)

6.7.6. Calling Line Identification Circuit

1. **Function**

   This unit is compatible with the Caller ID service offered by your local telephone company. To use this feature, you must subscribe to a Caller ID service. The data for the caller ID from the telephone exchange is sent during the interval between the first and second rings of the bell signal. The data from the telephone exchange is a modem signal which is modulated in an FSK (Frequency Shift Keying) format. Data "0" is a 1300 Hz sine wave, and data 1 a 2100 Hz sine wave.

   There are two type of the message format which can be received:i.e.the single data message format and multiple data message format.

   The multiple data format allows to transmit the name and data code information in addition to the time and telephone number data.

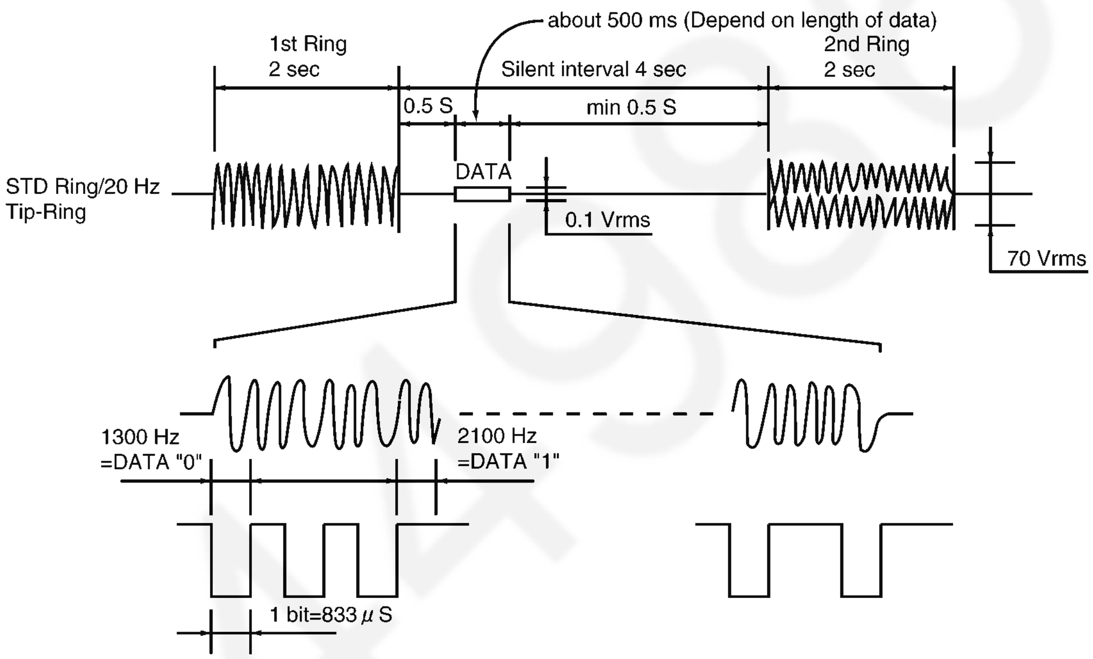
   When there is multiple data in the unit, the name or telephone number are displayed.

2. **Circuit Operation:**

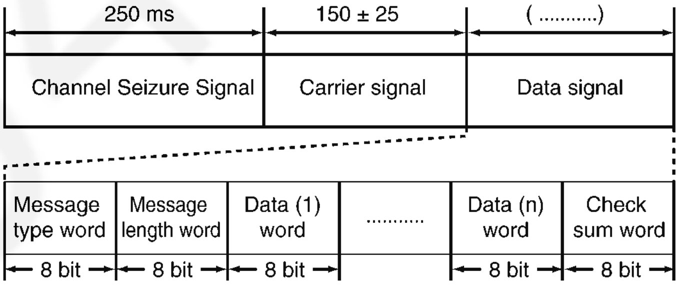
   The caller ID signal input from TEL LINE is processed with BBIC (IC4).

   Refer to **Check Sheet for Signal Route** (P.124) for the route of caller ID signal.

Timing Chart

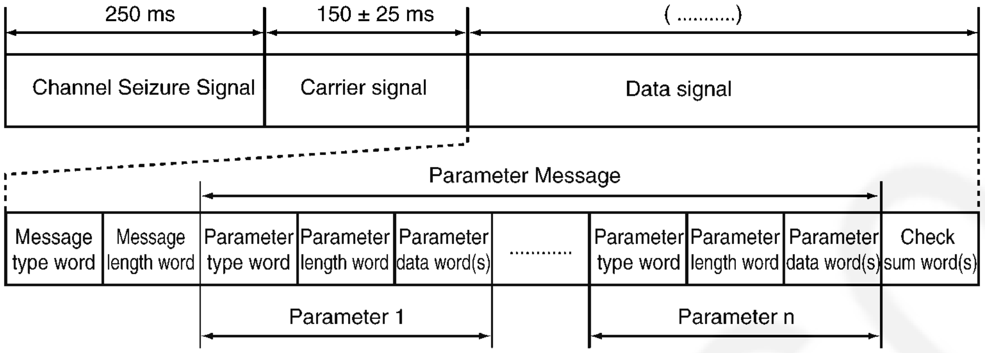

about 500 ms (Depend on length of data)
1st Ring
2 sec
Silent interval 4 sec
2nd Ring
2 sec
0.5 S
min 0.5 S
DATA
STD Ring/20 Hz
Tip-Ring
0.1 Vrms
70 Vrms
1300 Hz
=DATA "0"
2100 Hz
=DATA "1"
1 bit=833 µ S

• Single data message


250 ms
150 ± 25
(...........)
Channel Seizure Signal
Carrier signal
Data signal
Message type word
Message length word
Data (1) word
....
Data (n) word
Check sum word
8 bit
8 bit
8 bit
8 bit
8 bit

- •1 word = All 8 bit data
- •Message Type Word = Fixed value "00000100"
- •Message Length Word = number of the data word
- •Data word = The data value (month, day, hour, minute, telephone number)

· Multiple data message


250 ms
150 ± 25 ms
(...........)
Channel Seizure Signal
Carrier signal
Data signal
Parameter Message
Message type word
Message length word
Parameter type word
Parameter length word
Parameter data word(s)
....
Parameter type word
Parameter length word
Parameter data word(s)
Check sum word(s)
Parameter 1
Parameter n

·1 word = All 8 bit data
·Message Type = Fixed value "10000000"
·Message Length Word = number of the Parameter Message word
·Parameter Type Word = Kind of data (ex. the time, phone number)
·Parameter Length Word = number of the Parameter data word
·Parameter Word (s) = the data value

6.8. ITS (Integrated Telephone System) and Monitor Section

6.8.1. Speakerphone Circuit

Function

This circuit controls the automatic switching of the transmitted and received signals, to and from the telephone line, when the unit is used in the hands-free mode.

Circuit Operation

The speakerphone can only provide a one-way communication path.
In order words, it can either transmit an outgoing signal or receive an incoming signal at a given time, but cannot do both simultaneously. Therefore, a switching function is necessary to control the flow of the outgoing and incoming signals.
This switching function is contained in IC4 and consists of voice detector, TX attenuator, RX attenuator, comparator and attenuator control. The function analyzes whether the TX (Transmit) or the RX (receiver) signal is louder, and then it processed the signal such that the louder signal is given precedence. The vice detector provides the attenuator control corresponding to the TX signal. The comparator receives a TX and RX signals to the attenuator control corresponding to the RX signal. The attenuator control provides a control signal to the TX and the RX attenuator to switch the appropriate signals ON and OFF. The attenuator control also detects the level of the volume control to automatically adjust for changing ambient conditions.

6.9. Transmitter / Receiver (Cordless)

Base Unit and Cordless Handset mainly consist of RF Module and DECT BBIC.

Base Unit and Cordless Handset transmit/receive voice signal and data signal through the antenna on carrier frequency.

6.9.1. Transmitter Block

The voice signal input from the TEL LINE interface goes to RF Module (IC28) through DECT BBIC (IC4).

The voice signal passes through the analog part of IC4 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (**G**eneric **A**ccess **P**rofile) standard DECT frame, assigning to a time slot and channel etc.

In IC28, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Cordless Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.

6.9.2. Receiver Block

The signal of 19.2 MHz band (18.81792 MHz ~ 18.97344 MHz) which is input from antenna is input to IC28.

In IC28, the signal of 19.2 MHz band is down converted to 864 kHz signal and demodulated, and goes to IC4 as GAP (**G**eneric **A**ccess **P**rofile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.

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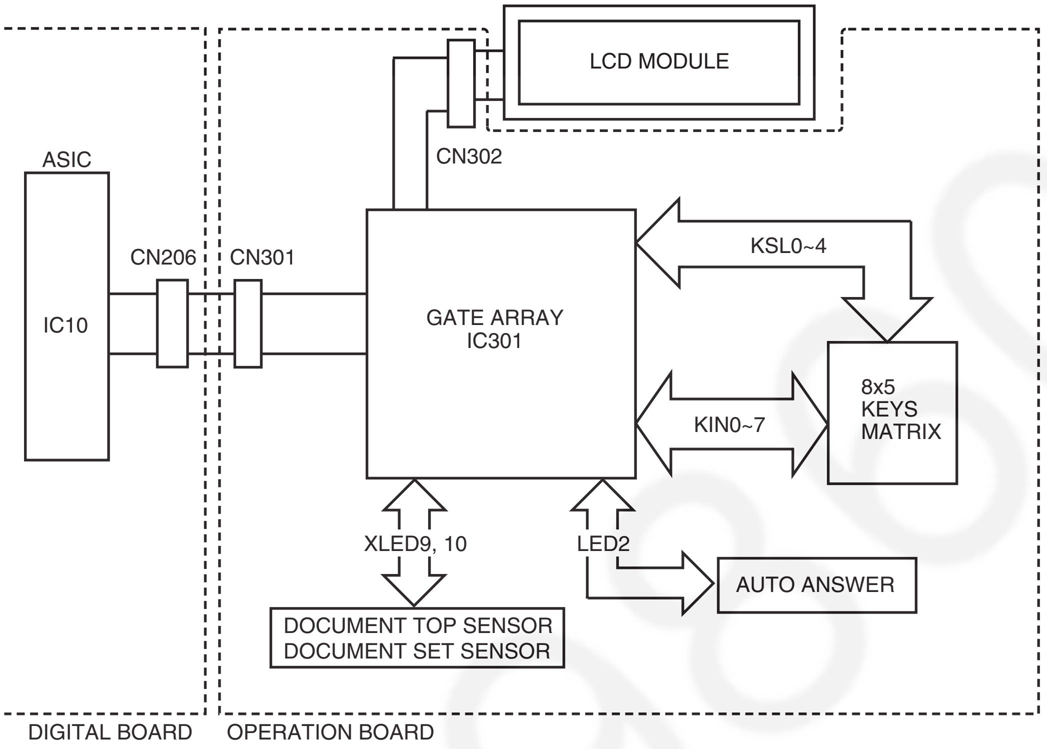
6.10. Operation Board Section

The unit consists of a LCD (Liquid crystal display), KEYs and LEDs (light-emitting diodes). They are controlled by the Gate Array (IC301) and ASIC (IC10: on the DIGITAL BOARD). The key matrix table is shown below.


LCD MODULE
CN302
ASIC
IC10
CN206
CN301
GATE ARRAY
IC301
KSL0~4
KIN0~7
8x5
KEYS
MATRIX
XLED9, 10
LED2
AUTO ANSWER
DOCUMENT TOP SENSOR
DOCUMENT SET SENSOR
DIGITAL BOARD
OPERATION BOARD

KX-FC265CX-S OPERATION BOARD BLOCK DIAGRAM

	KIN0	KIN1	KIN2	KIN3	KIN4	KIN5	KIN6	KIN7
KSL0	SW327 REDIAL / PAUSE	SW331 CALLER ID	SW323 3	SW319 2	SW315 1	SW311 →	SW306 ERASE	SW301 ←
KSL1	SW328 FLASH (RECALL)	SW332 STOP	SW324 6	SW320 5	SW316 4	SW312 ↑	SW307 MEMO	SW302 LOCATOR/ INTERCOM
KSL2	SW329 MUTE	SW333 COPY	SW325 9	SW321 8	SW317 7	SW313 SET	SW308 CHECK	SW303 PRINT REPORT
KSL3							SW310 PLAYBACK	SW305 AUTO ANSWER
KSL4	SW330 SP-PHONE	SW334 FAX/START	SW326 #	SW322 0	SW318 *	SW314 ↓	SW309 REC	SW304 MENU

XLED

	XLED10	XLED9
	DOCUMENT SET	DOCUMENT TOP

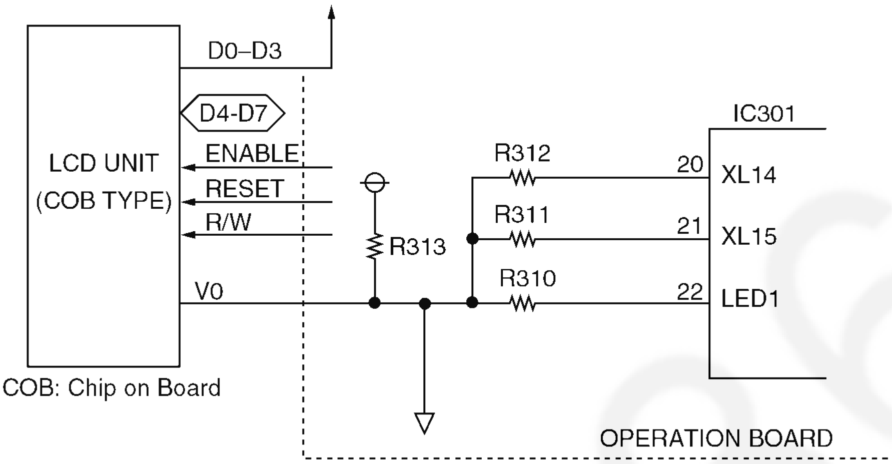
LED

	LED2	LED3	LED4	LED5
	AUTO ANSWER			

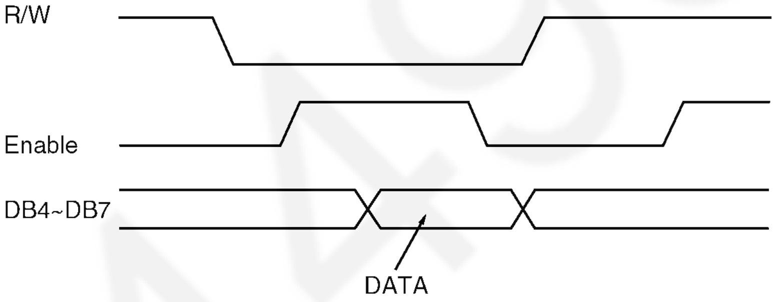
6.11. LCD Section

The Gate Array (IC301) works only for writing the ASCII code from the data bus (D4~D7). V0 is supplied for the crystal drive.
R310, R311 and R312 are density control resistors.
Consequently, in this unit, the timing (positive clock) is generated by the LCD interface circuitry in the gate array (IC301).

Circuit Diagram


LCD UNIT
(COB TYPE)
D0–D3
D4-D7
ENABLE
RESET
R/W
V0
R313
R312
R311
R310
20
21
22
IC301
XL14
XL15
LED1
COB: Chip on Board
OPERATION BOARD

Timing Chart


R/W
Enable
DB4~DB7
DATA

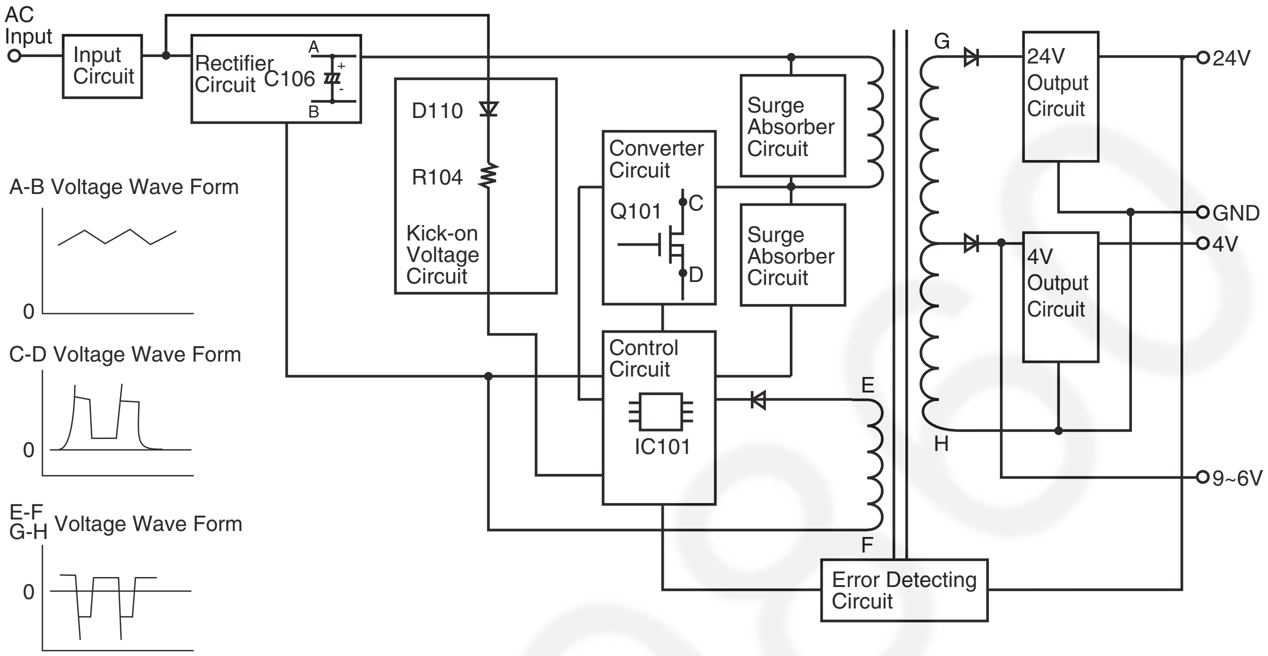
DIsplay mode	Density	Normal	Dark
2 lines (X1.0)	LED1 (IC301-22pin)	H	L
	XL14 (IC301-20pin)	Hi-Z	L
	XL15 (IC301-21pin)	L	L
1 line (X1.5)	LED1	H	H
	XL14	Hi-Z	Hi-Z
	XL15	Hi-Z	L

A0409060

6.12. Power Supply Board Section

This power supply board uses the switching regulator method.

Block Diagram


AC Input
Input Circuit
Rectifier Circuit
C106
A
B
D110
R104
Kick-on Voltage Circuit
Converter Circuit
Q101
C
D
Surge Absorber Circuit
Surge Absorber Circuit
Control Circuit
IC101
G
H
E
F
24V Output Circuit
4V Output Circuit
Error Detecting Circuit
24V
GND
4V
9~6V
A-B Voltage Wave Form
C-D Voltage Wave Form
E-F G-H Voltage Wave Form
0
0
0

[Input Circuit]

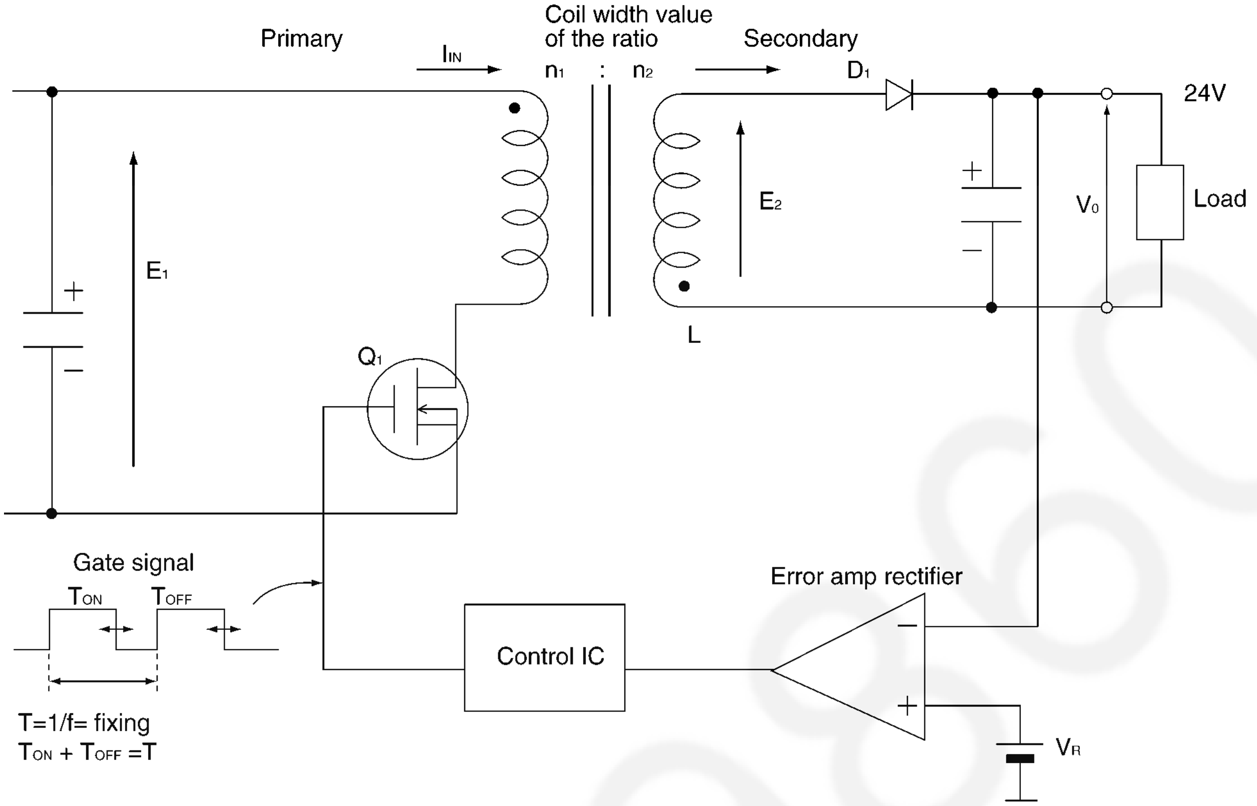
The input current goes into the input rectifier circuit through the filter circuit. The filter circuit decreases the noise voltage and the noise electric field strength.

[Rectifier Circuit]

The input current is rectified by D101, D102, D103 and D104 and charges C106 to make DC voltage. Then it supplies power to the converter circuit.

[Kick-on voltage circuit]

Bias is applied to the Q101 gate via this circuit when the AC power is turned on and Q101 begins operating.


Primary
Coil width value of the ratio
Secondary
I_{IN}
n_1 : n_2
D_1
24V
E_1
E_2
V_0
Load
L
Q_1
Gate signal
T_{ON}
T_{OFF}
T=1/f= fixing
T_{ON} + T_{OFF} =T
Control IC
Error amp rectifier
V_R

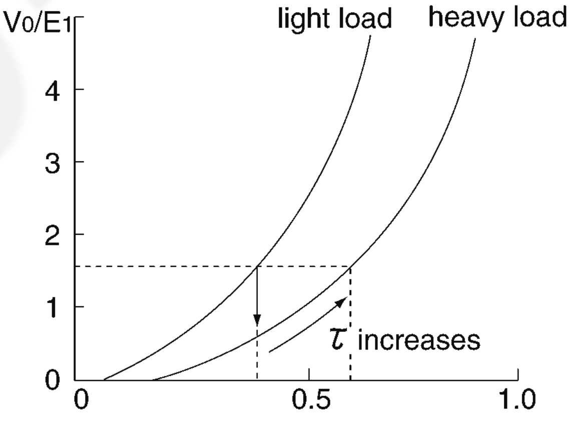
The following is an overview of how the power supply unit is controlled.
The control method of this power supply unit is pulse width modulation.

When Q_1 is ON, the energy is charged in the transfer primary coil according to E_1. When Q_1 is OFF, the energy is output from the secondary transfer as follows.

L → D_1 → Load → L

Then the power is supplied to the Load. When Q_1 is ON, power is not output from the secondary side. The output voltage is fed back in the control IC according to the error amp rectifier. Then depending on how T_{ON} is controlled, stabilization occurs. Also, when the current load becomes too large, in order to decrease the voltage output, the increase in τ is controlled and the output voltage is stabilized.
Therefore, basically the timing: Ton/Toff of Q1 controls the output voltage.

Output/Input voltage value of ratio



τ= Duty ratio
$= \frac{Ton}{T}$

[Surge Absorber Circuit]

This circuit is for absorbing surge voltage generated by the transformer.

[Control Circuit and Detecting Circuit]

The control circuit amplifies the output with increased voltage detected in the error detecting circuit. Then it drives the main transistor.

In this power supply, the duty ratio is defined by changing the ON period of the main transistor.

This is shown as follows.

When the output voltage of the 24V circuit increases, the current of the photo coupler PC101 increases, the pulse width of the output control IC becomes narrower and the ON period of Q101 becomes shorter.

[Over Current Limiter (O.C.L)]

The highest drain current (Q101) is limited by a limiter circuit (IC101) of 24V. The 24V output is limited by this circuit.

[Over Voltage Circuit]

If the 24V output increases because the error detecting circuit or control circuit is broken, IC101 will recognize this signal and output becomes 0V.

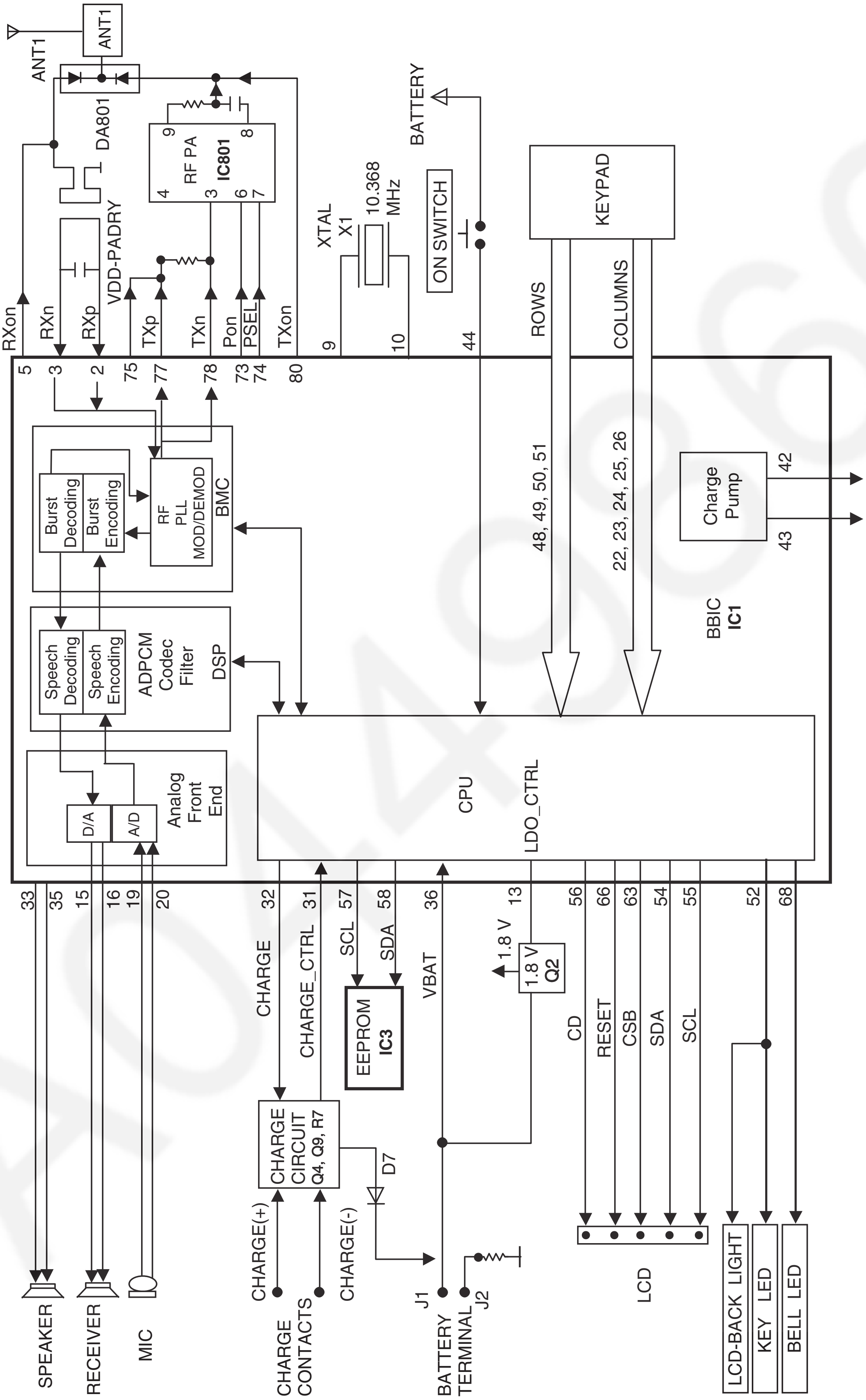
Dummy load method (to quickly check the power supply output)

Refer to **Power Supply Board Section** (P.126).

A049860

6.13. Cordless Handset

6.13.1. Block Diagram


ANT1
ANT1
DA801
VDD-PADRY
RF PA
IC801
4 3 6 7 9 8
RXon
RXn
RXp
TXp
TXn
Pon
PSEL
TXon
5 3 2 75 77 78 73 74 80
XTAL
X1
10.368 MHz
9 10
ON SWITCH
BATTERY
44
KEYPAD
ROWS
COLUMNS
48, 49, 50, 51
22, 23, 24, 25, 26
Burst Decoding
Burst Encoding
RF PLL MOD/DEMOD
BMC
Speech Decoding
Speech Encoding
ADPCM Codec Filter
DSP
D/A
A/D
Analog Front End
CPU
LDO_CTRL
Charge Pump
42
43
CP4.0 V
CP3.0 V
BBIC
IC1
33 35 15 16 19 20
32 31 57 58 36 13
56 66 63 54 55 52 68
CHARGE
CHARGE_CTRL
SCL
SDA
EEPROM
IC3
VBAT
1.8 V
1.8 V
Q2
CD
RESET
CSB
SDA
SCL
CHARGE CIRCUIT
Q4, Q9, R7
D7
CHARGE(+)
CHARGE(-)
CHARGE CONTACTS
J1
J2
BATTERY TERMINAL
SPEAKER
RECEIVER
MIC
LCD
LCD-BACK LIGHT
KEY LED
BELL LED

KX-FC265CX-S CORDLESS HANDSET BLOCK DIAGRAM

6.13.2. Circuit Operation (Cordless Handset)

6.13.2.1. Outline

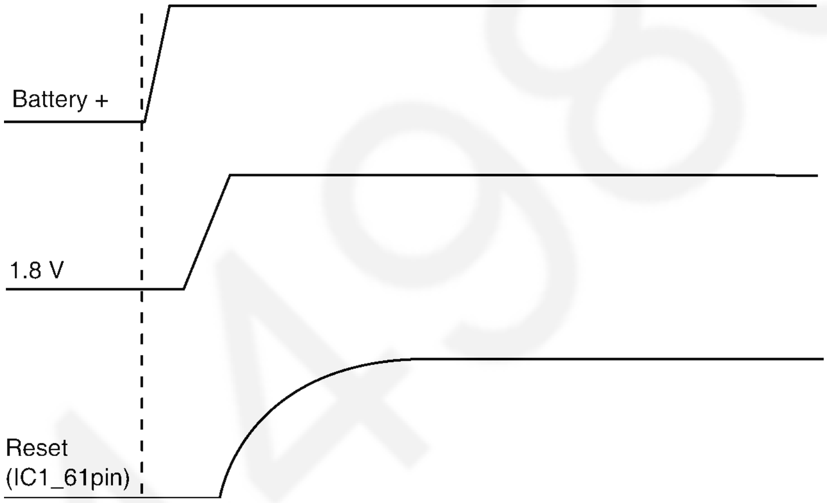
Handset consists of the following ICs as shown in **Block Diagram** (P.46).

- DECT BBIC (**B**ase **B**and IC): IC1
  - All data signals (forming/analyzing ACK or CMD signal)
  - All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter, EEPROM, LCD, RF Power Amp.)
  - PLL Oscillator
  - Detector
  - Compress/Expander
  - Reception
- RF Power Amp: IC801
  - Amplifier for transmission
- EEPROM: IC3
  - Temporary operating parameters (for RF, etc.)

6.13.2.2. Power Supply Circuit/Reset Circuit

Circuit Operation:

When power on the Handset, the voltage is as follows;
BATTERY(2.2 V ~ 2.6 V: BATT+) → F1 → Q2 (1.8 V), IC1-43pin (2.5V)
The Reset signal generates IC1 (61 pin) and 1.8 V.



6.13.2.3. Charge Circuit

Circuit Operation:

When charging the cordless handset on the Base Unit, the charge current is as follows;
DC+(6.5 V) → D1 → R56 → R55 → D22 → CHARGE+(Base) → CHARGE+(Handset) → Q4 → D7→ F1 → BATTERY+...
Battery...
BATTERY- → R45 → GND → CHARGE-(Handset)→ CHARGE-(Base) → GND → DC-(GND)
In this way, the BBIC on cordless handset detects the fact that the battery is charged.
The charge current is controlled by switching Q9 of cordless handset.

6.13.2.4. Battery Low/Power Down Detector

Circuit Operation:

"Battery Low" and "Power Down" are detected by BBIC which check the voltage from battery.
The detected voltage is as follows;

- Battery Low
  Battery voltage: V(Batt) ≦ 2.25V ± 50mV
  The BBIC detects this level and " 🔋 " starts flashing.
- Power Down
  Battery voltage: V(Batt) ≦ 2.0V ± 50mV
  The BBIC detects this level and power down.

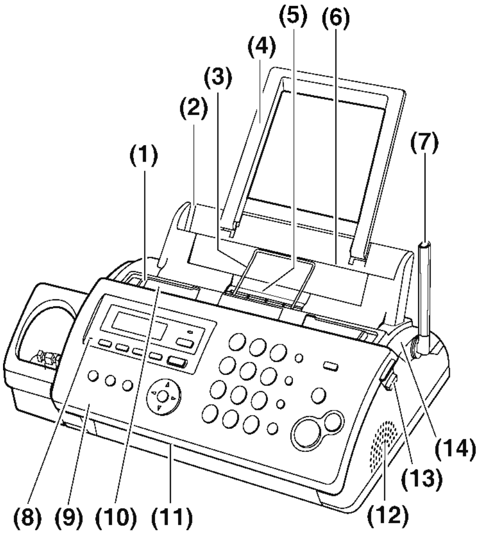
6.13.2.5. Speakerphone

The hands-free loudspeaker at SP+ and SP- is used to generate the ring alarm.

7 Location of Controls and Components

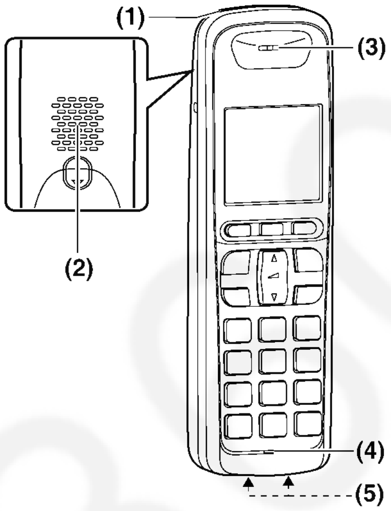
7.1. Overview

7.1.1. Base Unit



(1) Document guides
(2) Paper tray
(3) Metal recording paper guide
(4) Paper support
(5) Recording paper exit
(6) Recording paper entrance
(7) Antenna
(8) Microphone
(9) Front cover
(10) Document entrance
(11) Document exit
(12) Speaker
(13) Green button (Back cover release button)
(14) Back cover

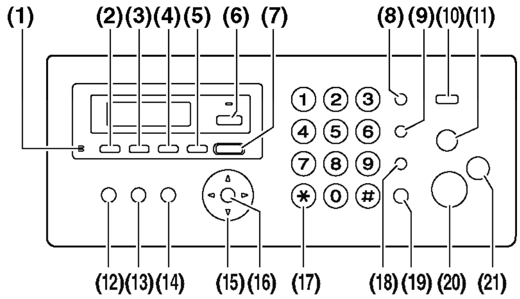
7.1.2. Cordless Handset



(1) Charge indicator
Ringer indicator
(2) Speaker
(3) Receiver
(4) Microphone
(5) Charge contacts

7.2. Control Panel

7.2.1. Base Unit



(1) [MIC] (Microphone)
- The built-in microphone.

(2) [GREETING REC]
- To record a greeting message.

(3) [GREETING CHECK]
- To check a greeting message.

(4) [MEMO]
- To record a memo message.

(5) [ERASE]
- To erase messages.

(6) [AUTO ANSWER]
- To turn the auto answer setting ON/OFF.

(7) [PLAYBACK]
- To play messages.

(8) [REDIAL] / [PAUSE]
- To redial the last number dialled. If the line is busy when you make a phone call using the [SP-PHONE] button, or when you send a fax, the unit will automatically redial the number 2 or more times.
- To insert a pause during dialing.

(9) [R(FLASH)]
- To access special telephone services or for transferring extension calls.
- The recall/flash time can be changed (feature #72). (Refer to **Program Mode Table** (P.99).)

(10) [CALLER ID]
- To use Caller ID features.

(11) [STOP]
- To stop an operation or programming session.
- To erase a character/number.

(12) [LOCATOR] / [INTERCOM]
- To make/answer intercom calls.
- To page or locate a cordless handset.

(13) [PRINT REPORT]
- To print lists and reports for reference purposes.

(14) [MENU]
- To start or exit programming.

(15) Navigator/[PHONEBOOK] / [VOLUME]
- To search for a stored item.
- To select features or feature settings during programming.
- To adjust the volume.
- To open a phonebook.

(16) [SET]
- To store a setting during programming.

(17) [TONE]
- To change from pulse to tone temporarily during dialling when your line has rotary pulse service.

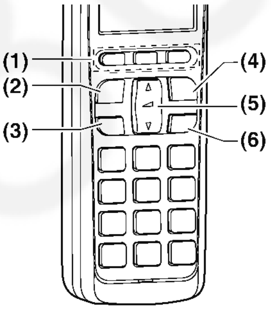
(18) [MUTE]
- To mute your voice during a conversation. Press again to resume the conversation.

(19) [SP-PHONE]
- For speakerphone operation.

(20) [FAX START]
- To send or receive a fax.

(21) [COPY]
- To copy a document.

7.2.2. Cordless Handset



(1) Soft keys
- To select the features or operations displayed directly above each key.

(2) [☎] (TALK)
- To make/answer calls.

(3) [🔈] (Speakerphone)
- For speakerphone operation.

(4) [☎⏻] (Off/Power)
- To turn power ON/OFF.
- To hang up.
- To stop an operation or programming.

(5) Navigator
- To adjust the receiver or speaker volume (up or down) while talking.
- To scroll through (up or down) various lists or items.
- To move the cursor (left or right) to edit number or name.

(6) [R/🕘](Recall)
- To access special telephone services or for transferring extension calls.
- The recall/flash time can be changed (feature #72).
- To set the alarm feature.

Display Icons

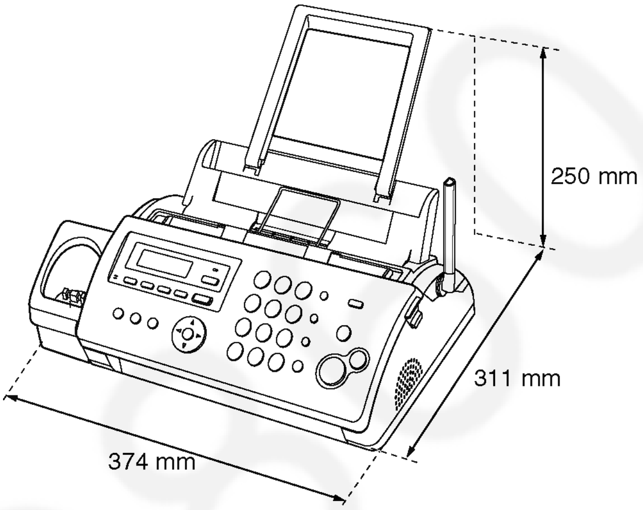
Display icon	**Meaning**
📶	Within range of a base unit ● When flashing: Cordless handset is searching for base unit.
•))	Paging, intercom mode.
☎	Cordless handset is on an outside call
→)	Missed call[*1]
[oo]	When displayed next to the battery icon: Auto answer setting is ON. ● When feature #10 is set to "`GREETING ONLY`", 🗣 will be displayed.
📼	When displayed with a number: New messages have been recorded.
🗣	Answering machine answers calls with a greeting message and caller messages are not recorded.
🔋	Battery level
⏰	Alarm is ON.
🔕	Ringer volume is OFF.
✉	New voice mail message received.[*2]
`IN USE`	● Someone is using the line. ● Answering machine is being used by another cordless handset.

*1 Caller ID subscribers only
*2 Voice mail subscribers only

8 Installation Instructions

8.1. Installation Space

The space required to install the unit is shown below.
The dimensions given are necessary for the unit to operate efficiently. (When the recording paper is not inserted to the unit.)



Note:

- Avoid excessive heat or humidity.
- Use the unit within the following ranges of temperature and humidity.
- Ambient temperature: 5°C to 35°C
- Relative humidity: 20% to 80% (without condensation)
- Avoid direct sunlight.
- Do not install near devices which contain magnets or generate magnetic fields.
- Do not subject the unit to strong physical shock or vibration.
- Keep the unit clean. Dust accumulation can prevent the unit from functioning properly.
- To protect the unit from damage, hold both sides when you move it.

8.2. Connections

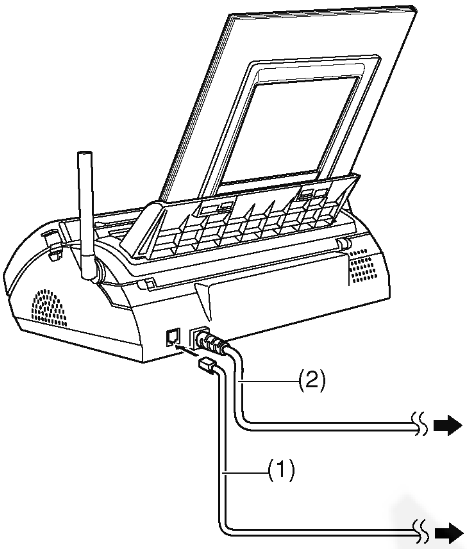
Important:

- **The unit will not work during a power failure. We recommend connecting a corded-type telephone (without AC adaptor) to the same telephone line or to the same telephone line jack, if you have such a telephone jack in your house.**

8.2.1. Base Unit

(1) Telephone line cord
- Connect to a single telephone line jack.

(2) Power cord
- Connect to the power outlet (220 V - 240 V, 50/60 Hz).



Note:

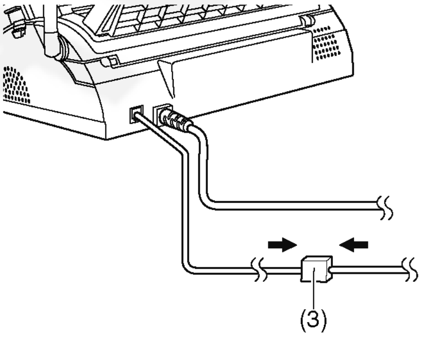
(*1) Refer to Code #074 on **Program Mode Table** (P.99)

Caution:

- **When you operate this product, the power outlet should be near the product and easily accessible.**
- **Be sure to use the telephone line cord included in this unit.**
- **Do not extend the telephone line cord.**

Note:

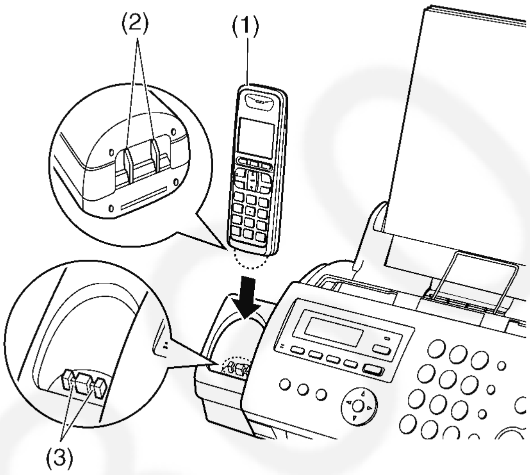
- If any other device is connected to the same telephone line, this unit may disturb the network condition of the device.
- If you use the unit with a computer and your internet provider instructs you to install a filter (3), please connect it as follows.



8.3. Battery Charge

Place the cordless handset on the base unit or charger for about **7 hours** before initial use. Confirm "Charging" is displayed.

When the batteries are fully charged, the charge indicator (1) goes OFF.



Note:

- It is normal for the cordless handset to feel warm during charging.
- Clean the charge contacts of the cordless handset (2), base unit (3) or charger (4) with a soft and dry cloth once a month. Clean more often if the unit is exposed to grease, dust, or high humidity.

Battery level

Icon	Battery level
▤	High
▥	Medium
▭	Low
▭	Needs charging.

Panasonic Ni-MH battery performance (included batteries)

Operation	Operating time
In continuous use	18 hours max.
Not in use (standby)	170 hours max.

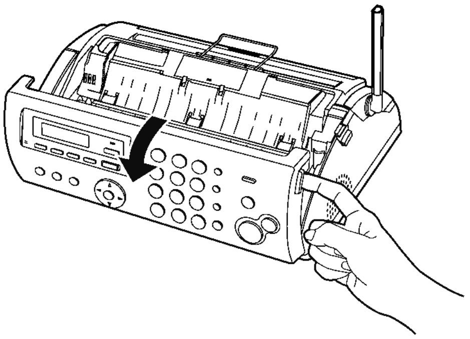
Note:

- It is normal for batteries not to reach full capacity at the initial charge. Maximum battery performance is reached after a few complete cycles of charge/discharge (use).
- Actual battery performance depends on a combination of how often the cordless handset is in use and how often it is not in use (standby).
- Even after the cordless handset is fully charged, the cordless handset can be left on the base unit or charger without any ill effect on the batteries.
- The battery level may not be displayed correctly after you replace the batteries. In this case, place the cordless handset on the base unit or charger and let it charge for at least 7 hours.

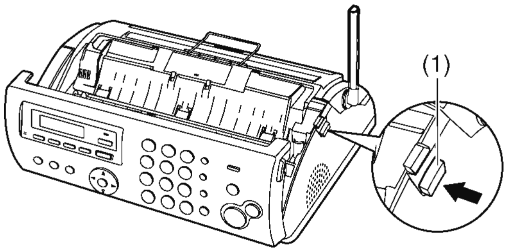
8.4. Installing the Ink film

The included film roll is a starter ink film.

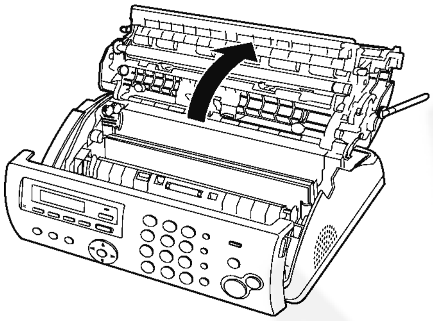
1. Open the front cover.



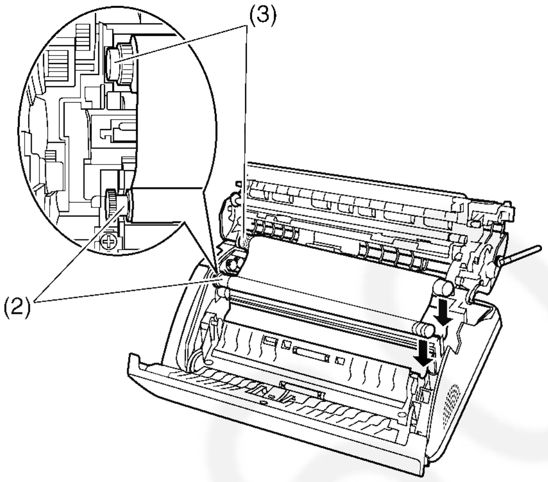
2. Release the back cover by pushing the green button (1).



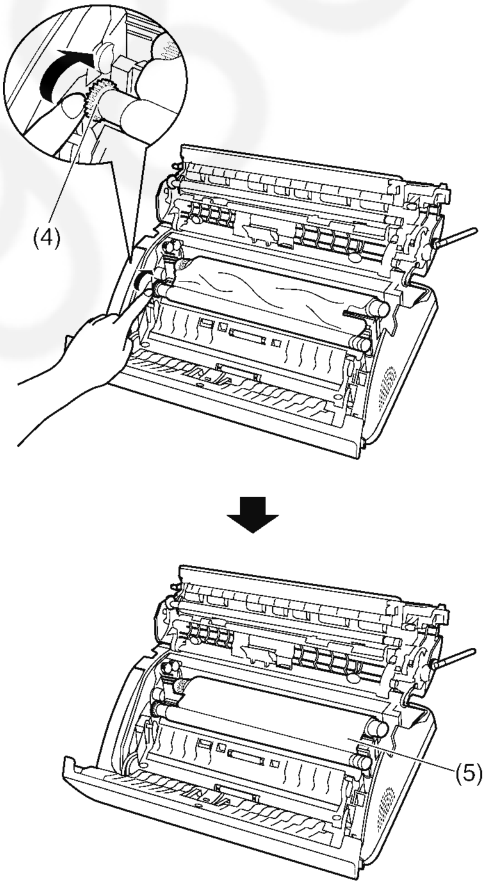
3. Open the back cover.



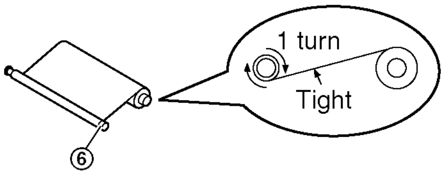
4. Insert the blue gear of the ink film roll into the front left slot of the unit (2) and the white gear of the ink film roll into the rear left slot of the unit (3).
   - The ink film is safe to touch and will not rub off on your hands like carbon paper.
   - Make sure the blue gear (2) and white gear (3) are installed as shown.



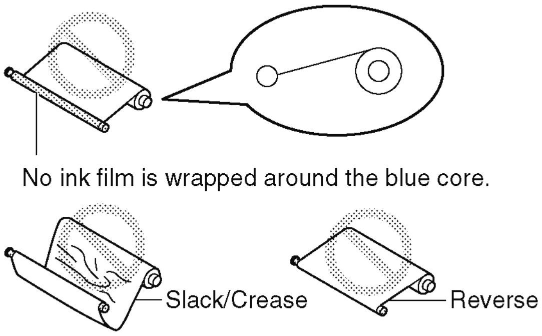
5. Turn the blue gear (4) in the direction of the arrow until the ink film is tight (5) and at least one layer of ink film is wrapped around the blue core (6).



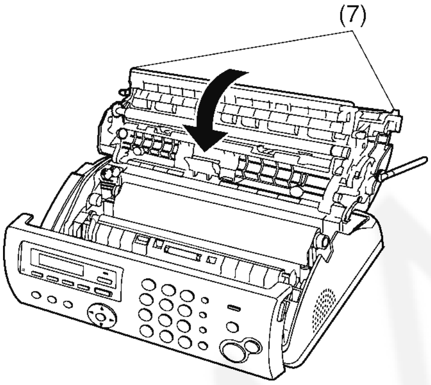
Correct


1 turn
Tight
⑥

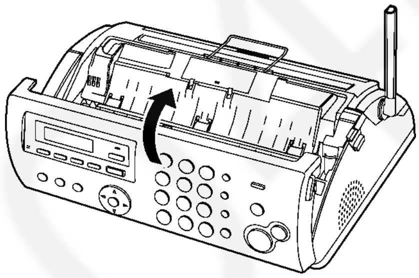
Incorrect


No ink film is wrapped around the blue core.
Slack/Crease
Reverse

6. Close the back cover securely by pushing down on the dotted area at both ends (7).

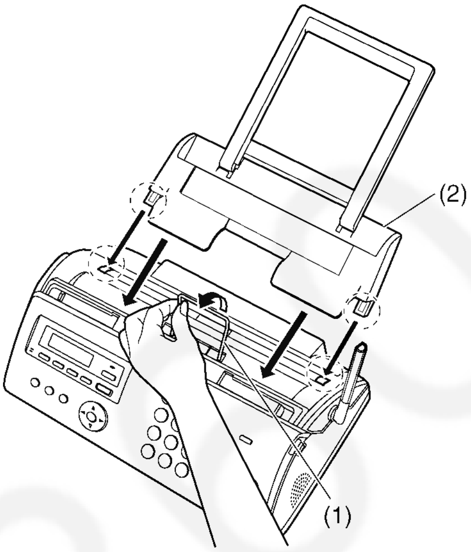


7. Close the front cover securely.

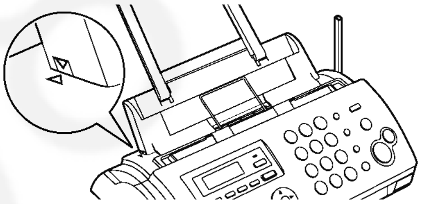


8.5. Installing the Paper Tray

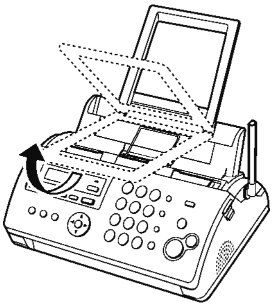
Pull up the metal recording paper guide (1), then install the paper tray (2).



- Make sure the arrows on the paper tray and the unit match.



- If the paper support is folded, unfold it.



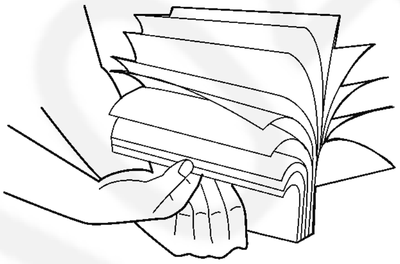
8.6. Installing the Recording Paper

The unit can hold up to 20 sheets of 64 g/m^2 to 80 g/m^2 paper.

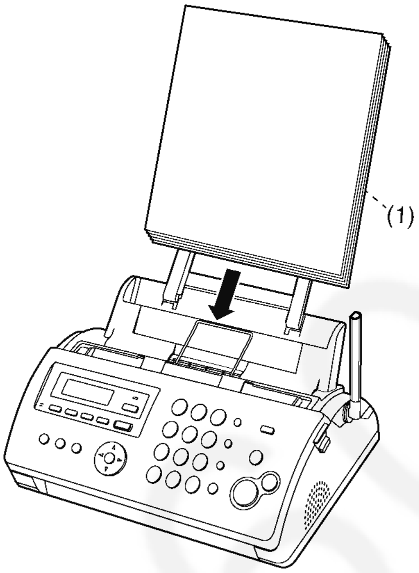
Note for recording paper:

- Do not use the following types of paper:
  - Paper with a cotton and/or fibre content that is over 20%, such as letterhead paper or paper used for resumes
  - Extremely smooth or shiny paper, or paper that is highly textured
  - Coated, damaged or wrinkled paper
  - Paper with foreign objects attached, such as tabs or staples
  - Paper which has dust, lint or oil stains
  - Paper that will melt, vaporize, discolour, scorch or emit dangerous fumes near 200 °C, such as vellum paper. These materials may transfer onto the fusing roller and cause damage.
  - Moist paper
- Some paper only accepts print on one side. Try using the other side of the paper if you are not happy with the print quality, or if misfeeding occurs.
- For proper paper feeding and best print quality, we recommend using long-grained paper.
- Do not use paper of different types or thickness at the same time. This may cause a paper jam.
- Avoid double-sided printing.
- Do not use paper printed from this unit for double-sided printing with other copiers or printers.
  This may cause a paper jam.
- To avoid curling, do not open paper packs until you are ready to use the paper. Store unused paper in the original packaging, in a cool and dry location.
- For customers who live in high humidity areas:
  Please be sure to store paper in an air-conditioned room at all times. If you print using moist paper, it may cause paper jam.

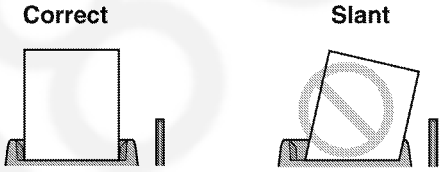
1. Fan the paper to prevent paper jams.



2. Insert the paper gently, print-side down (1).
   - Do not force the paper into the paper tray.



- If the paper is not inserted correctly, remove all of the installed paper, and re-install it gently. Otherwise the paper may jam.



Note:
- Remove all of the installed paper before adding paper.

Document requirements

Minimum document size

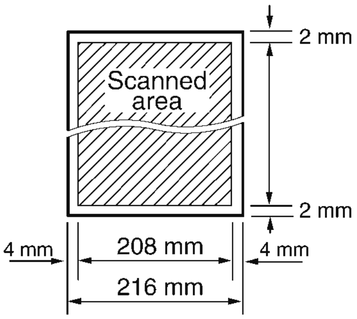
128 mm in width, 128 mm in length

Maximum document size

216 mm in width, 600 mm in length

Effective scanning area

- Shaded area will be scanned.

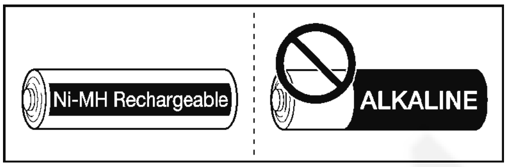


Document weight
- single sheet:
  45 g/m^2 to 90 g/m^2
- multiple sheet:
  60 g/m^2 to 80 g/m^2

Note:
- Remove chips, staples or other fasteners.
- Do not send the following types of documents. (Make a copy of the document using another copier and send the copy.)
  - — Chemically treated paper such as carbon or carbonless duplicating paper
  - — Electrostatically charged paper
  - — Badly curled, creased or torn paper
  - — Paper with a coated surface
  - — Paper with a faint image
  - — Paper with printing on the opposite side that can be seen through the other side, such as newsprint
- Check that ink, paste or correction fluid has dried completely.
- To send a document with a width of less than 210 mm, we recommend using a copy machine to copy the original document onto A4 or letter-sized paper, than sending the copied document.

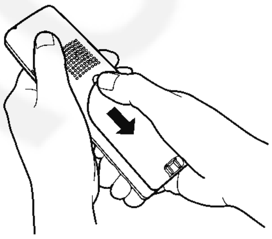
8.7. Battery Installation / Replacement

Important:
- **USE ONLY Ni-MH batteries AAA (R03) size.**
  Do NOT use alkaline/Manganese/Ni-Cd batteries etc.

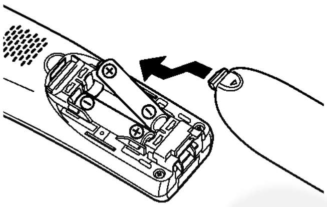


- **Use the supplied rechargeable batteries. For replacement, we recommend using the Panasonic rechargeable batteries noted on Optional Accessories** (P.11).
- **Wipe the battery ends (⊕, ⊖) with a dry cloth.**
- **Avoid touching the battery ends (⊕, ⊖) or the unit contacts.**
- **Confirm correct polarities (⊕, ⊖).**
- **Install the batteries without touching the battery ends (⊕, ⊖) or the unit contacts.**

1. Press the notch on the cordless handset cover firmly, and slide the cover.
   - When replacing batteries, remove the old batteries positive (⊕) terminal first.



2. Insert the batteries negative (⊖) terminal first. Close the cordless handset cover.



9 Operating Instructions

9.1. Setting Your Logo

You can program your logo (name, company name, etc.) so that it appears on the top of each page sent.

With the base unit

1. **[MENU]** → **[#][0][2]** → **[SET]**
2. Enter your logo, up to 30 characters. (See the **Operation Instruction** for character entry.)
   - To enter a hyphen, press **[RECALL]**.
   - To enter a space, press **[MUTE]**.
3. **[SET]**
4. Press **[MENU]** to exit.

To correct a mistake

Press **[◀]** or **[▶]** to move the cursor to the incorrect character, and make the correction.

- To erase all of the characters, press and hold **[STOP]**.

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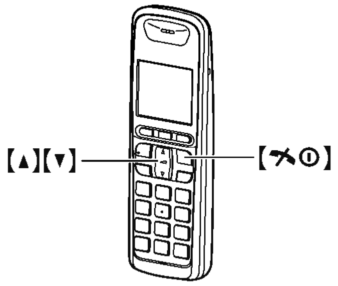
9.2. Cordless Handset Programming



1. ▤
2. Press 【▼】 or 【▲】 to select the desired top-menu. → OK
3. Press 【▼】 or 【▲】 to select the desired item in sub-menu 1. → OK
    - In some cases, you may need to select from sub-menu 2. → OK
4. Press 【▼】 or 【▲】 to select the desired setting. → OK
    - This step may vary depending on the feature being programmed.
    - To exit the operation, press 【↖⏻】.

Note:

For other top-menus, please refer to each chapter.
The current item or setting is highlighted on the display.

9.2.1. Cordless Handset Features

Top-menu	Sub-menu 1	Sub-menu 2	Feature (default setting)
“Handset Setup”	“Time Settings”	“Set Date/Time”^{*1}	Date and time
		“Alarm”	Set the alarm
	“Ringer Setup”	“Ringer Volume”$^{*2, *3}$	Cordless handset ringer volume (*Maximum*)
		“Ringtone”$^{*2, *4, *5}$	Ringtones for outside calls (“Ringtone 1”)
	“Display Setup”^{*2}	“Language”	Display language (“English”)
		“Contrast”	LCD display contrast (*Level 3*)
	“Register H.set”	–	–
	“Keytones”^{*6}	–	Keytones ON/OFF (“On”)
	“Auto Talk”	–	Auto talk ON/OFF (“Off”)
“Base Unit Setup”	“Area Code”	–	–
	“Base Unit PIN”	–	Change base unit PIN (“0000”).^{*7} Enter the current 4-digit base unit PIN.^{*8} → Enter the new 4-digit base unit PIN. → OK
	“Repeater”	–	(“Off”)

- *1 When this setting is changed using the cordless handset, the setting for the base unit will also be changed, and vice versa.
- *2 This setting can be changed individually for the base unit and the cordless handset.
  - – To set the base unit ringer volume.
  - – To set the base unit ringtone for outside calls, see feature #17.
  - – To set the base unit language, see feature #48.
  - – To set the base unit LCD display contrast, see feature #39.
- *3 When the ringer volume is turned OFF, 🔕 is displayed and the cordless handset does not ring for outside calls. However even when the ringer volume is set to OFF, the cordless handset rings:
  - – at the low level for alarm and intercom calls
  - – at the high level for paging
- *4 If you select one of the melody ringer tones, the ringer tone continues to play for several seconds even if the caller has already hung up. You may either hear a dial tone or no one on the line when you answer the call.
- *5 The preset melodies in this product are used with permission of © 2007 Copyrights Vision Inc.
- *6 Turn this feature OFF if you prefer not to hear key tones while you are dialling or pressing any keys, including confirmation tones and error tones.
- *7 If you change the PIN, please make note of your new PIN. The unit will not reveal the PIN to you.
- *8 If you forget your PIN, consult your nearest Panasonic service centre.

Note:

Refer to **Program Mode Table** (P.99).

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10 Test Mode

10.1. Facsimile Section

The codes listed below can be used to perform simple checks for some of the unit’s functions. When complaints are received from customers, they provide an effective tool for identifying the locations and causes of malfunctions. To do this, you set the Service mode (Refer to **Operation** (P.62).) first, then operate the below test items.

Test Mode	Type of Mode	Code Operation after code input	Function
MEMORY CLEAR	Service Mode	“5” “5” “0” SET	Refer to **Memory Clear Specification** (P.65).
FLASH MEMORY CHECK	Service Mode	“5” “5” “1” SET	Indicates the version and checks the sum of the FLASH MEMORY.
MODEM TEST	Service Mode	“5” “5” “4” SET	Telephone line circuit is connected automatically, output the following signals on the circuit line. 1) OFF 2) 9600bps 3)7200bps 4) 4800bps 5) 2400bps 6) 300bps 7) 2100Hz 8)1100Hz
SCAN CHECK	Service Mode	“5” “5” “5” -------	Turns on the LEDs of the CIS and operates the read systems.
MOTOR TEST	Service Mode	“5” “5” “6” SET	Rotates the transmission and reception motor to check the operation of the motor. 00: Stop 02: TX 05: Pickup 08: Rx 10: Copy 11: Assist 13: Home position Press **[STOP]** button to quit.
LED CHECK	Service Mode	“5” “5” “7” -------	All LEDs above the operation panel board flash on and off, or are illuminated.
LCD CHECK	Service Mode	“5” “5” “8” SET	Checks the LCD indication. Illuminates all the dots to check if they are normal.
KEY CHECK	Service Mode	“5” “6” “1” SET (any key)	Checks the button operation. Indicates the button code on the LCD while the button is pressed. Refer to **Button Code Table** (P.60).
MEMORY CLEAR (except History data)	Service Mode	“7” “1” “0” SET	Refer to **Memory Clear Specification** (P.65).
VOICE PROMPT CHECK	Service Mode	“7” “8” “4” SET	You can hear the voice prompt from speaker after pressing .SET. key.
SENSOR CHECK	Service Mode	“8” “1” “5” -------	If you enter this mode and operate sensor levers with your hands, the LCD display of the related sensor (or switch) turns ON / OFF. Also, when copying a document, the related sensor will turn ON / OFF. (Do, Sn, Co, Mo, Pt, Ri) For each sensor’s operation, refer to **Sensor and Switches** (P.26). Do Sn Co Mo Pt Ri : LCD DISPLAY **Do: Document set sensor** :Turns on when the front cover us opened and a document is inserted. **Sn: Read position sensor.** :Turned on when the front cover is opened and the starts to read a document. **Co: Cover open sensor** :Turned off when the cover is opened. **Mo: Motor home position sensor** :A home position detection sensor that is used when shifting the motor mode. **Pt: Paper top sensor** :Turned on when the cover is opened and the detects a recording paper on the right side end. **Ri: Film sensor** :Turned off when the film are run out. • Press **[STOP]** button to quit.
PRINT TEST PATTERN	Service Mode	“8” “5” “2” -------	Prints out the test pattern. Used mainly at the factory to test the print quality. You can select 1~4. (See **Print Test Pattern** (P.61))

Note: The numbers in the boxes (XXX) indicate the keys to be input for the various test modes.

10.1.1. Button Code Table

Code	Button Name	Code		Code	Button Name
00	NO INPUT	12	GREETING RECORD	31	1
----	STOP	14	MEMO	32	2
04	FAX START	15	GREETING CHECK	33	3
06	COPY	16	ERASE	34	4
08	SP-PHONE	18	PLAY BACK	35	5
09	LOCATOR / INTERCOM			36	6
0A	MUTE			37	7
0C	AUTO ANSWER	20	MENU	38	8
0D	SET	22	PRINT REPORT	39	9
		25	**[+]** VOLUME	3A	0
		26	**[—]** VOLUME	3B	✳
1E	[▶]			3C	#
1F	[◀]			3D	REDIAL / PAUSE
				3E	FLASH (RECALL)
				47	CALLER ID

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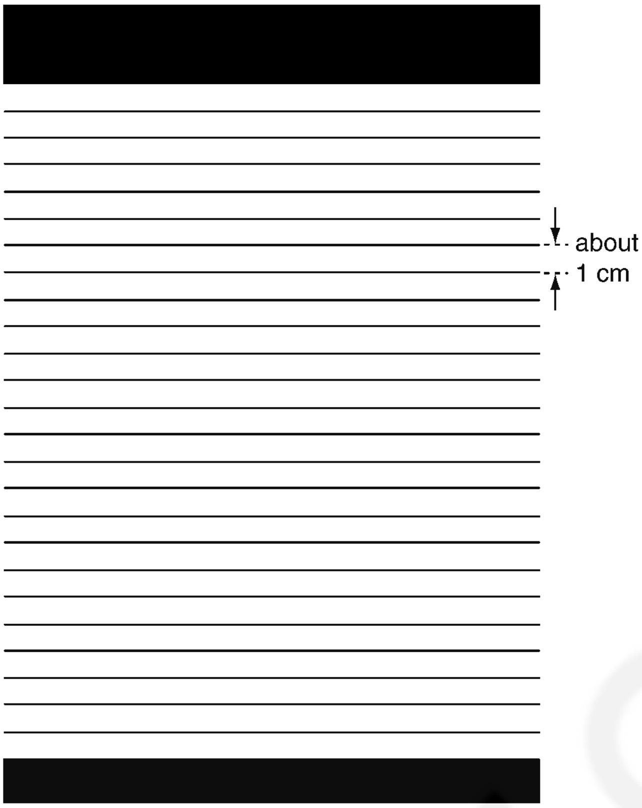
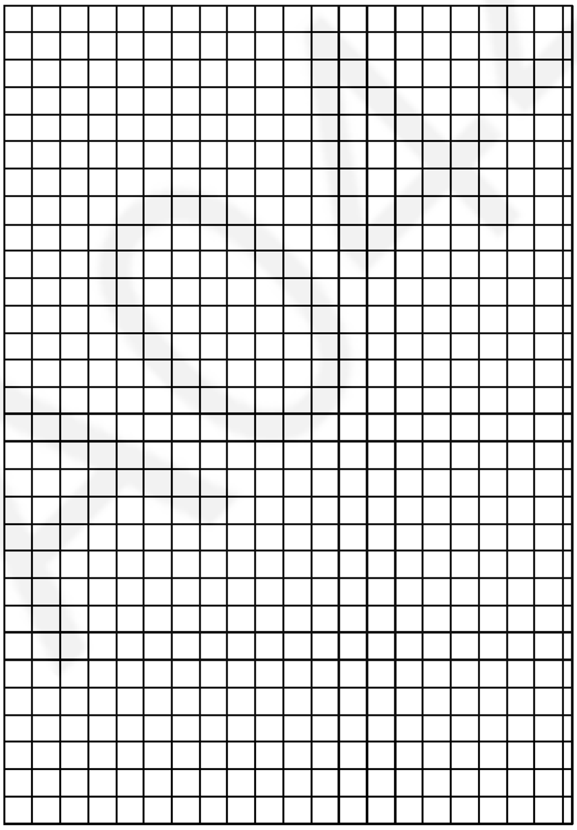
10.1.2. Print Test Pattern

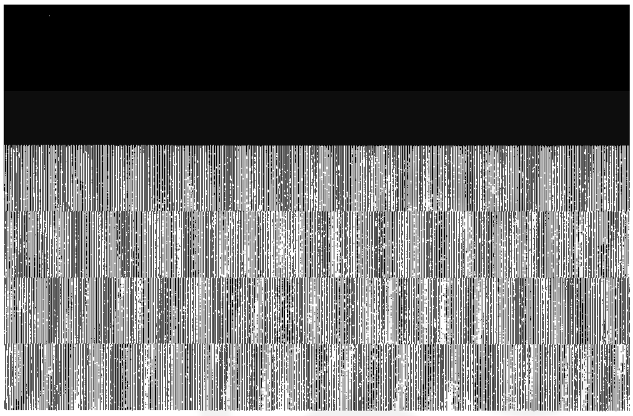
1. Platen roller



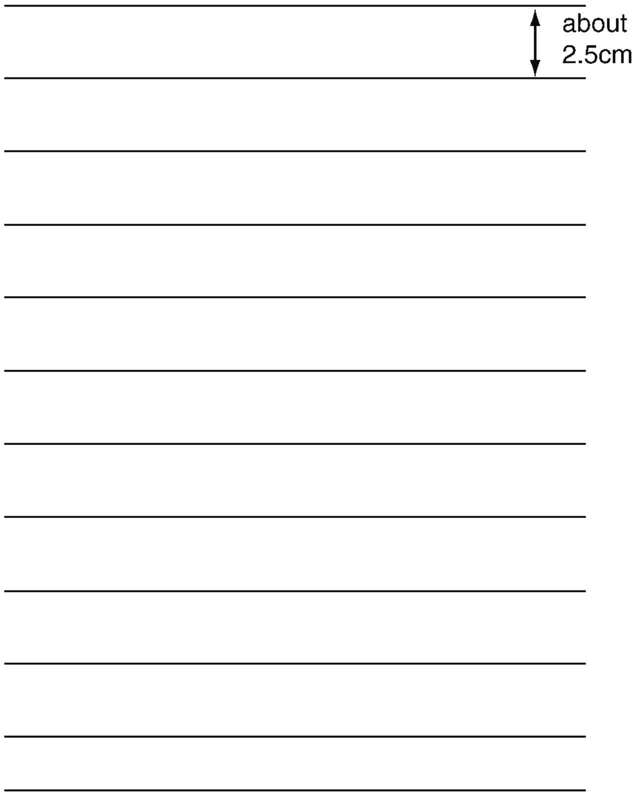
2. Left margin / Top margin



3. Thermal head 1 dot



4. Use this test pattern to confirm the torque limiter for Ink film and platen roller timing.



11 Service Mode

The programming functions are used to program the various features and functions of the machine, and to test the machine. This facilitates communication between the user and the service man while programming the unit.

11.1. Base Unit

11.1.1. Programming and Lists

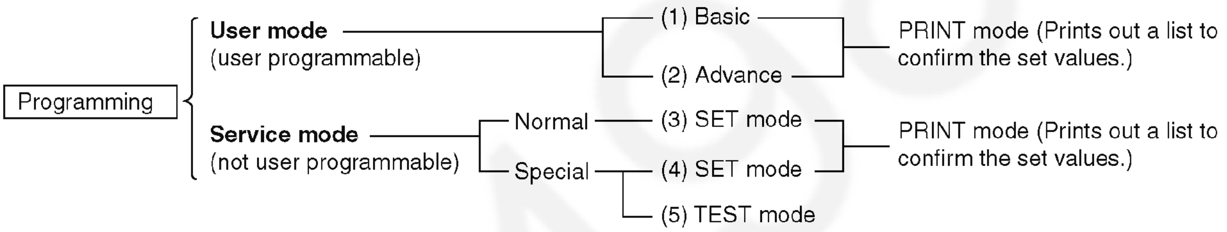
11.1.1.1. Operation

There are 2 basic categories of programming functions, the User Mode and the Service Mode. The Service Mode is further broken down into the normal and special programs. The normal programs are those listed in the Operating Instructions and are available to the user. The special programs are only those listed here and not displayed to the user. In both the User and Service Modes, there are Set Functions and Test Functions. The Set Functions are used to program various features and functions, and the Test Functions are used to test the various functions. The Set Functions are accessed by entering their code, changing the appropriate value, then pressing the SET key. The Test Functions are accessed by entering their code and pressing the key listed on the menu. While programming, to cancel any entry, press the STOP key.

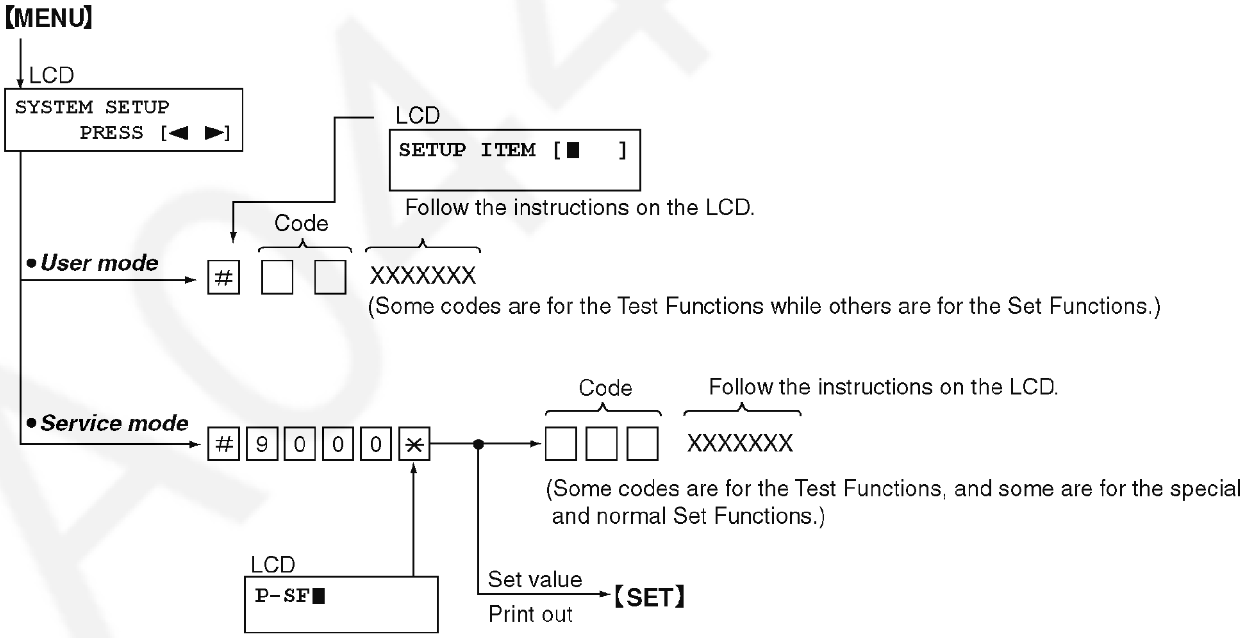
Note:

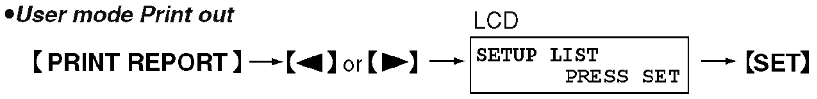
When changing the set values on the service function table, they should not be set beyond the local regulation.
Follow the laws and regulations of your area.

11.1.1.2. Operation Flow


Programming
User mode
(user programmable)
Service mode
(not user programmable)
Normal
Special
(1) Basic
(2) Advance
(3) SET mode
(4) SET mode
(5) TEST mode
PRINT mode (Prints out a list to confirm the set values.)
PRINT mode (Prints out a list to confirm the set values.)

■Operating Procedure


【MENU】
LCD
SYSTEM SETUP
PRESS [◄ ►]
LCD
SETUP ITEM [■]
Follow the instructions on the LCD.
Code
• User mode
#
XXXXXXX
(Some codes are for the Test Functions while others are for the Set Functions.)
Code
Follow the instructions on the LCD.
• Service mode
# 9 0 0 0 ✱
XXXXXXX
(Some codes are for the Test Functions, and some are for the special and normal Set Functions.)
LCD
P-SF■
Set value
Print out
【SET】


•User mode Print out
【PRINT REPORT】
【◄】or【►】
LCD
SETUP LIST
PRESS SET
【SET】

11.1.1.3. Service Function Table

Code	Function	Set Value	Effective Range	Default	Remarks
501	Pause time set	1: 3s (Short) 2: 5s (Long)	1, 2	1	----------
511	VOX sense	1:High 2:Low	1, 2	1	When the TAM (or EXT TAM) does not stop recording the ICM because noise is detected on the telephone line, change this setting to "LOW".
514	Bell detection time	X 10 msec	10~90	60	----------
520	CED frequency select	1:2100 Hz 2:1100 Hz	1, 2	1	See Symptom/Countermeasure Table for long distance and international calls in **The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94).
521	International mode select	1:ON 2:OFF	1, 2	1	See Symptom/Countermeasure Table for long distance and international calls in **The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94).
522	Auto standby select	1:ON 2:OFF	1, 2	1	The resolution reverts to the default when transmission is complete.
523	Receive equalizer select	1: 0 km 2: 1.8 km 3: 3.6 km 4: 7.2 km	1~4	1	When the telephone station is far from the unit or reception cannot be performed correctly, adjust accordingly.
524	Transmission equalizer select	1: 0 km 2: 1.8 km 3: 3.6 km 4: 7.2 km	1~4	1	When the telephone station is far from the unit or transmission cannot be performed correctly, adjust accordingly.
544	Document feed position adjustment value set	1: -2.0mm 2: -1.5mm 3: -1.0mm 4: -0.5mm 5: 0.0mm 6: 0.5mm 7: 1.0mm 8: 1.5mm 9: 2.0mm	1~9	5	When the ADF function is in correct, adjust the feed position.
550	Memory clear				See **Memory Clear Specification** (P.65).
551	Flash memory check				See **Test Mode** (P.59).
553	Monitor on FAX communication select	1:OFF 2:PHASE B 3:ALL	1~3	1	Sets whether to monitor the line signal with the unit's speaker during FAX communication or not.
554	Modem test				See **Test Mode** (P.59).
555	Scan check				See **Test Mode** (P.59).
556	Motor test				See **Test Mode** (P.59).
557	LED test				See **Test Mode** (P.59).
558	LCD test				See **Test Mode** (P.59).
559	Document jam detection select	1:ON 2:OFF	1, 2	1	Sets whether or not to detect a paper jam. If a document with a length longer than 600 mm is copied or transmitted, the unit stops copying or transmitting as a paper jamming because a document over 600 mm is not normal. In the factory, transmitting or copying a document longer than 600 mm is done as an aging test. In this case, OFF is selected.
561	KEY test				See **Test Mode** (P.59).
567	T0 timer	X second	001~255	046	Sets a higher value when the response from the other party needs more time during automatic FAX transmission.
570	Break % select	1:61% 2:67%	1, 2	1	Sets the % break of pulse dialing according PBX.
571	ITS auto redial time set	X number of times	00~99	05	Selects the number of times that ITS is redialed (not including the first dial).
572	ITS auto redial line disconnection time set	X second	001~999	185	Sets the interval of ITS redialing.
573	Remote turn-on ring number set	X number of rings	00~99	10	Sets the number of rings before the unit starts to receive a document in the TEL mode.
590	FAX auto redial time set	X number of times	00~99	05	Selects the number of redial times during FAX communication (not including the first dial).

Code	Function	Set Value	Effective Range	Default	Remarks
591	FAX auto redial time disconnection time set	X second	001~999	185	Sets the FAX redial interval during FAX communication.
592	CNG transmit select	1:OFF 2:ALL 3:AUTO	1~3	2	Lets you select the CNG output during FAX transmission. ALL: CNG is output at phase A. AUTO: CNG id output only when automatic dialing is performed. OFF: CNG id not output at phase A. Refer to **Sometime There is a Transmit Problem** (P.91).
593	Time between CED and 300bps	1:75 msec 2:500 msec 3:1 sec	1~3	1	See **Symptom/Countermeasure Table** for long distance and international calls in **The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94). Refer to **Receive Problem** (P.92) .
594	Overseas DIS detection select	1:detects at the 1st time 2:detects at the 2st time	1, 2	1	See **Symptom/Countermeasure Table** for long distance and international calls in **The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94). Refer to **Sometime There is a Transmit Problem** (P.91).
595	Receive error limit value set	1:5 % 2:10 % 3:15 % 4:20%	1~4	2	Refer to **Receive Problem** (P.92).
596	Transmit level set	X -1dbm (10 = -10 dbm)	00~15	10	Selects the FAX transmission level. Refer to **Sometime There is a Transmit Problem** (P.91) and **Receive Problem** (P.92).
598	Receiving sensitivity	X -1dbm (40 = -40 dbm)	20~48	44	Used when there is an error problem. Refer to **The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94). Power is OFF/ON after changing this set value.
599	ECM frame size	1: 256 byte 2: 64 byte	1, 2	1	----------
710	Memory clear except History data				See **Memory Clear Specification** (P.65).
717	Transmit speed selection	1:9600BPS 2:7200BPS 3:4800BPS 4:2400BPS	1~4	1	Adjusts the speed to start training during FAX transmission. Refer to **Sometime There is a Transmit Problem** (P.91) and **The unit can copy, but the transmission and reception image are incorrect** (P.96).
718	Receive speed selection	1:9600BPS 2:7200BPS 3:4800BPS 4:2400BPS	1~4	1	Adjusts the speed to start training during FAX reception. Refer to **Receive Problem** (P.92) and **The unit can copy, but the transmission and reception image are incorrect** (P.96).
722	Redial tone detect	1:ON 2:OFF	1, 2	1	Sets the tone detection mode after redialing.
731	CPC mode	X 10 msec	000~255	000	Sets the CPC signal detection mode from the converter.
745	Power ON film feed	1:ON 2:OFF	1, 2	1	When the power is turned on, the film is wound to take up any slack.
763	CNG detect time for friendly reception	1:10 sec 2:20 sec 3:30 sec	1~3	3	Selects the CNG detection tone of friendly reception.
773	DIS-DIC interval	1: 500msec 2: 200msec	1, 2	2	This is similar to #594. The time interval from receiving DIS to sending DCS can be changed to wait for the echo canceler to recover.
774	T4 timer	X 100 msec	00~99	00	Use this function when delay occurs in the line and communication (ex. Mobile comm) does not work well.
784	Voice prompt test				You can hear the voice prompt from speaker after pressing “SET” key.
815	Sensor check				See **Test Mode** (P.59).
852	Print test pattern				See **Test Mode** (P.59).
853	Top margin	X mm	1~9	9	----------
861	Paper size	1:A4 2:Letter	1,2	1	----------
874	DTMF ON time	X 10 msec	06~20	10	----------
875	DTMF OFF time	X 10 msec	06~20	10	----------
880	History list				See **History** (P.70).
881	Journal 2 list				See **Printout Example** (P.87).
882	Journal 3 list				See **Printout Example** (P.87).
961	The time transmitting the false ring back tone	X sec	01~10	07	Set the time transmitting the false ring back tone to the line in TEL/FAX mode.

Code	Function	Set Value	Effective Range	Default	Remarks
962	The operator calling time	X sec	05~30	10	Set the operator calling time through the speaker in TEL/Fax mode.

11.1.1.4. Memory Clear Specification

Item	Status after Memory Clear	
	Service Mode **#550**[*1]	Service Mode **#710**[*2]
Date and time (user mode #001)	—	Default
Your logo (user mode #002)	—	Default
Your Fax Number (user mode #003)	—	Default
One touch dial and Phonebook	—	Default
History	—	—
Top margin (service mode #853)	—	—
Other Setting data (User setting and Service setting data)	Default	Default

— : Not changed

[*1] Execute Service Mode #550 when you want to reset the all setting data keeping the user information.

[*2] Execute Service Mode #710 to clear the user information in case that Main Unit is recycled.

Note:

- Please restart a power supply after clearing a memory.

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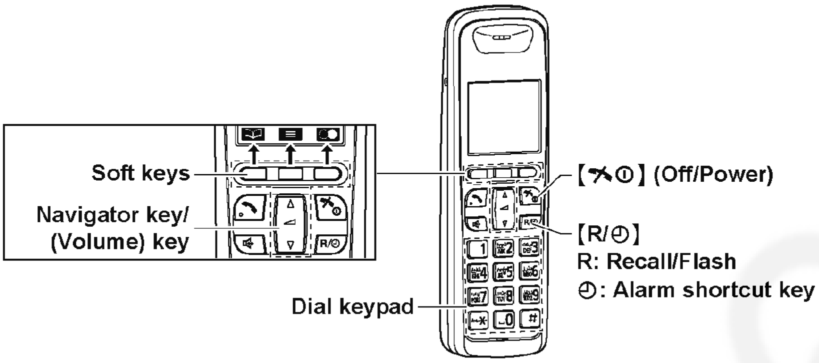
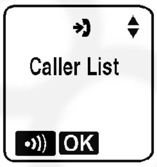
11.2. Cordless Handset

Important:
Make sure the address on LCD is correct when entering new data. Otherwise, you may ruin the unit.

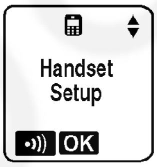

Soft keys
Navigator key/
(Volume) key
Dial keypad
[⏻] (Off/Power)
[R/◷]
R: Recall/Flash
◷: Alarm shortcut key

H/S key operation — **H/S LCD**

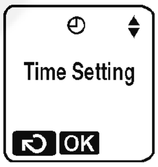
1). Press ▤.


Caller List
OK

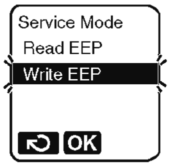
2). Select "Handset Setup" using [▲]or[▼] then press. OK


Handset
Setup
OK

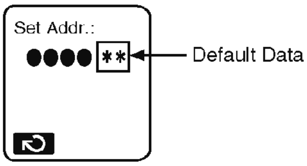
3). Enter "7","2","6","2","7","6","6","4","2".
Note: 726276642 = PANASONIC
(see letters printed on dial keys)


◷
Time Setting
OK

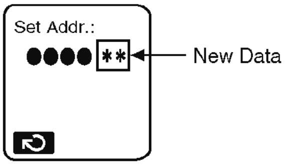
4). Select "Write EEP" using [▲]or[▼] then press OK.


Service Mode
Read EEP
Write EEP
OK

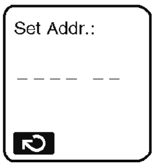
5). Enter "●", "●", "●", "●" (Address). (*1)


Set Addr.:
●●●● **
Default Data

6). Enter "*", "*" (New Data). (*1)


Set Addr.:
●●●● **
New Data

7). Press OK, a long confirmation beep will be heard.



8). Press [⏻] (off) to return to standby mode.
After that, remove and reinsert the batteries. Press the Power button for about 1 second if the power is not turned on.

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Frequently Used Items (Cordless Handset)

ex.)

Items	Address	Default Data	New Data	Possible Adjusted Value MAX (hex)	Possible Adjusted Value MIN (hex)	Remarks
Sending level	00 06	Adjusted value	Given value	6F	00	(*2)
Receiving level	00 07	Adjusted value	Given value	00	3F	(*3)
Battery Low	00 04	70	-	-	-	(*4)
Frequency	00 02/00 01	02/70	-	-	-	
ID	00 10~00 14	Given value	-	-	-	

Note:

(*1) When you enter the address or New Data, please refer to the table below.

Desired Number (hex.)	Input Keys	Desired Number (hex.)	Input Keys
0	0	A	[R] + 0
1	1	B	[R] + 1
.	.	C	[R] + 2
.	.	D	[R] + 3
.	.	E	[R] + 4
9	9	F	[R] + 5

(*2) When adding “01” (hex) to default value, sending level increases by 0.25 dB.

ex.)

Item	Default Data	New Data	
	35	39	31
Sending level	-7dBm	-6dBm	-8dBm

(*3) When reducing “01” (hex) from default value, receiving level increases by 0.25 dB.

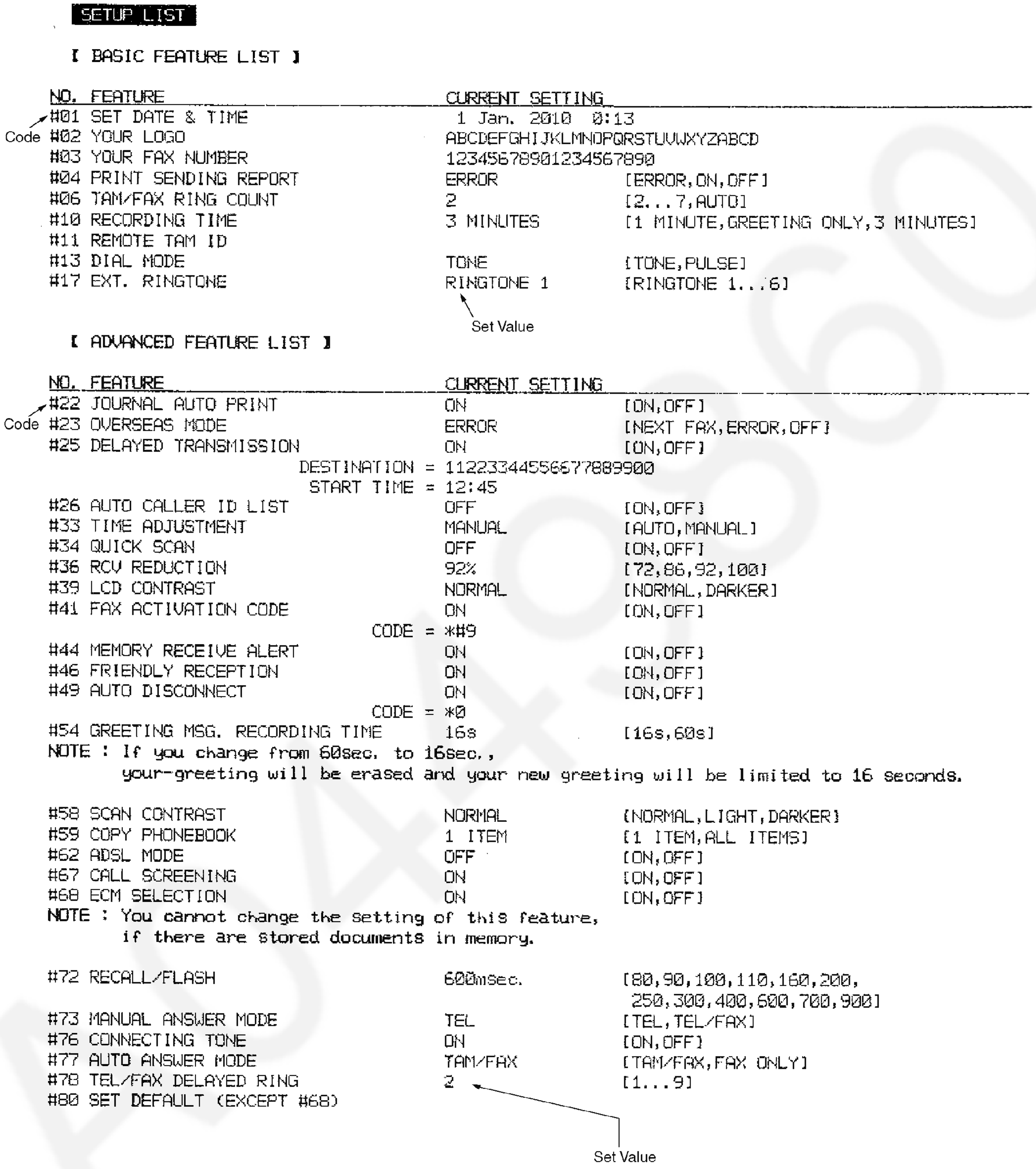
ex.)

Item	Default Data	New Data	
	1F	23	1B
Receiving level	-21dBm	-22dBm	-20dBm

(*4) Use these items in a READ-ONLY mode to confirm the contents. Careless rewriting may cause serious damage to the handset.

11.3. The Example of the Printed List

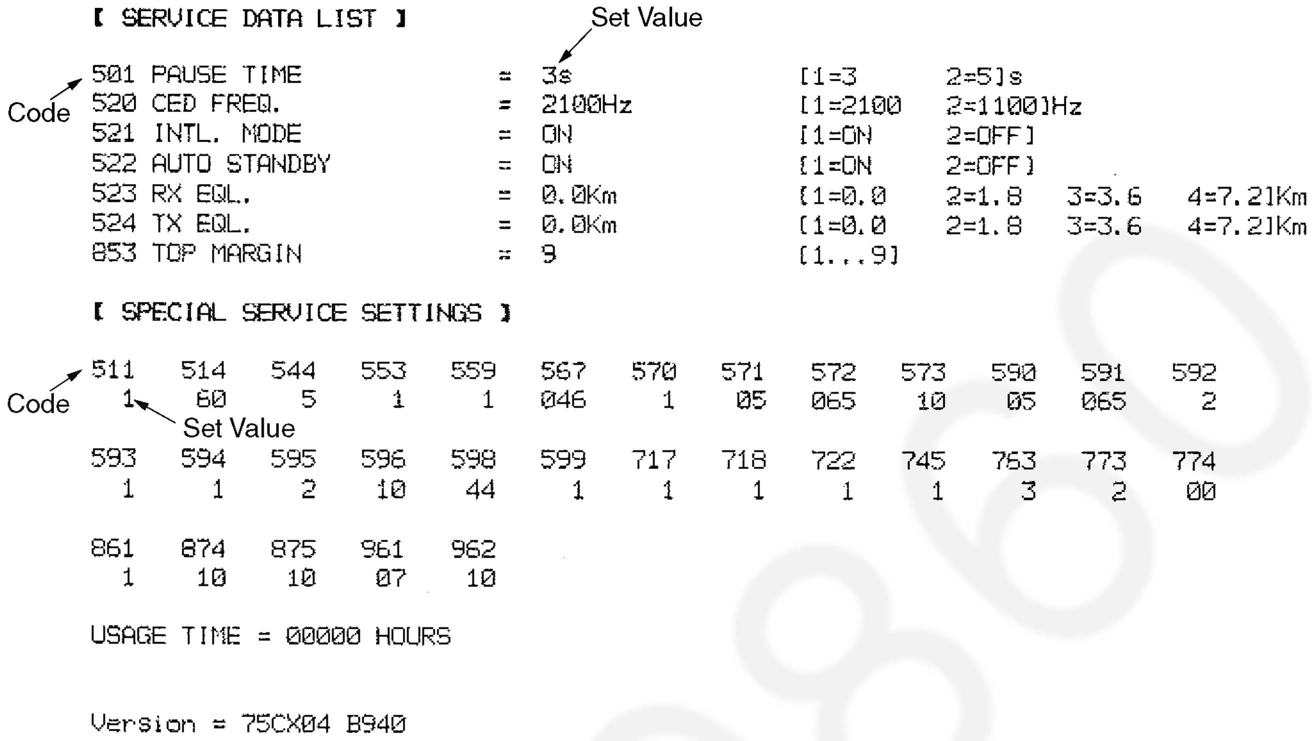
11.3.1. User Mode



```
SETUP LIST

[ BASIC FEATURE LIST ]

NO. FEATURE                              CURRENT SETTING
#01 SET DATE & TIME                       1 Jan. 2010  0:13
#02 YOUR LOGO                            ABCDEFGHIJKLMNOPQRSTUVWXYZABCD
#03 YOUR FAX NUMBER                      12345678901234567890
#04 PRINT SENDING REPORT                 ERROR             [ERROR,ON,OFF]
#06 TAM/FAX RING COUNT                   2                 [2...7,AUTO]
#10 RECORDING TIME                       3 MINUTES         [1 MINUTE,GREETING ONLY,3 MINUTES]
#11 REMOTE TAM ID
#13 DIAL MODE                            TONE              [TONE,PULSE]
#17 EXT. RINGTONE                        RINGTONE 1        [RINGTONE 1...6]

[ ADVANCED FEATURE LIST ]

NO. FEATURE                              CURRENT SETTING
#22 JOURNAL AUTO PRINT                   ON                [ON,OFF]
#23 OVERSEAS MODE                        ERROR             [NEXT FAX,ERROR,OFF]
#25 DELAYED TRANSMISSION                 ON                [ON,OFF]
                           DESTINATION = 11223344556677889900
                            START TIME = 12:45
#26 AUTO CALLER ID LIST                  OFF               [ON,OFF]
#33 TIME ADJUSTMENT                      MANUAL            [AUTO,MANUAL]
#34 QUICK SCAN                           OFF               [ON,OFF]
#36 RCV REDUCTION                        92%               [72,86,92,100]
#39 LCD CONTRAST                         NORMAL            [NORMAL,DARKER]
#41 FAX ACTIVATION CODE                  ON                [ON,OFF]
                                  CODE = *#9
#44 MEMORY RECEIVE ALERT                 ON                [ON,OFF]
#46 FRIENDLY RECEPTION                   ON                [ON,OFF]
#49 AUTO DISCONNECT                      ON                [ON,OFF]
                                  CODE = *0
#54 GREETING MSG. RECORDING TIME         16s               [16s,60s]
NOTE : If you change from 60sec. to 16sec.,
       your-greeting will be erased and your new greeting will be limited to 16 seconds.

#58 SCAN CONTRAST                        NORMAL            [NORMAL,LIGHT,DARKER]
#59 COPY PHONEBOOK                       1 ITEM            [1 ITEM,ALL ITEMS]
#62 ADSL MODE                            OFF               [ON,OFF]
#67 CALL SCREENING                       ON                [ON,OFF]
#68 ECM SELECTION                        ON                [ON,OFF]
NOTE : You cannot change the setting of this feature,
       if there are stored documents in memory.

#72 RECALL/FLASH                         600mSec.          [80,90,100,110,160,200,
                                                            250,300,400,600,700,900]
#73 MANUAL ANSWER MODE                   TEL               [TEL,TEL/FAX]
#76 CONNECTING TONE                      ON                [ON,OFF]
#77 AUTO ANSWER MODE                     TAM/FAX           [TAM/FAX,FAX ONLY]
#78 TEL/FAX DELAYED RING                 2                 [1...9]
#80 SET DEFAULT (EXCEPT #68)
```

Note:
The above values are the default values.

11.3.2. Service Mode Settings



```
[ SERVICE DATA LIST ]

501 PAUSE TIME          =  3s          [1=3      2=5]s
520 CED FREQ.           =  2100Hz      [1=2100   2=1100]Hz
521 INTL. MODE          =  ON          [1=ON     2=OFF]
522 AUTO STANDBY        =  ON          [1=ON     2=OFF]
523 RX EQL.             =  0.0Km       [1=0.0    2=1.8    3=3.6    4=7.2]Km
524 TX EQL.             =  0.0Km       [1=0.0    2=1.8    3=3.6    4=7.2]Km
853 TOP MARGIN          =  9           [1...9]

[ SPECIAL SERVICE SETTINGS ]

511   514   544   553   559   567   570   571   572   573   590   591   592
  1    60     5     1     1   046     1    05   065    10    05   065     2

593   594   595   596   598   599   717   718   722   745   763   773   774
  1     1     2    10    44     1     1     1     1     1     3     2    00

861   874   875   961   962
  1    10    10    07    10

USAGE TIME = 00000 HOURS


Version = 75CX04 B940
```

Note:
The above values are the default values.

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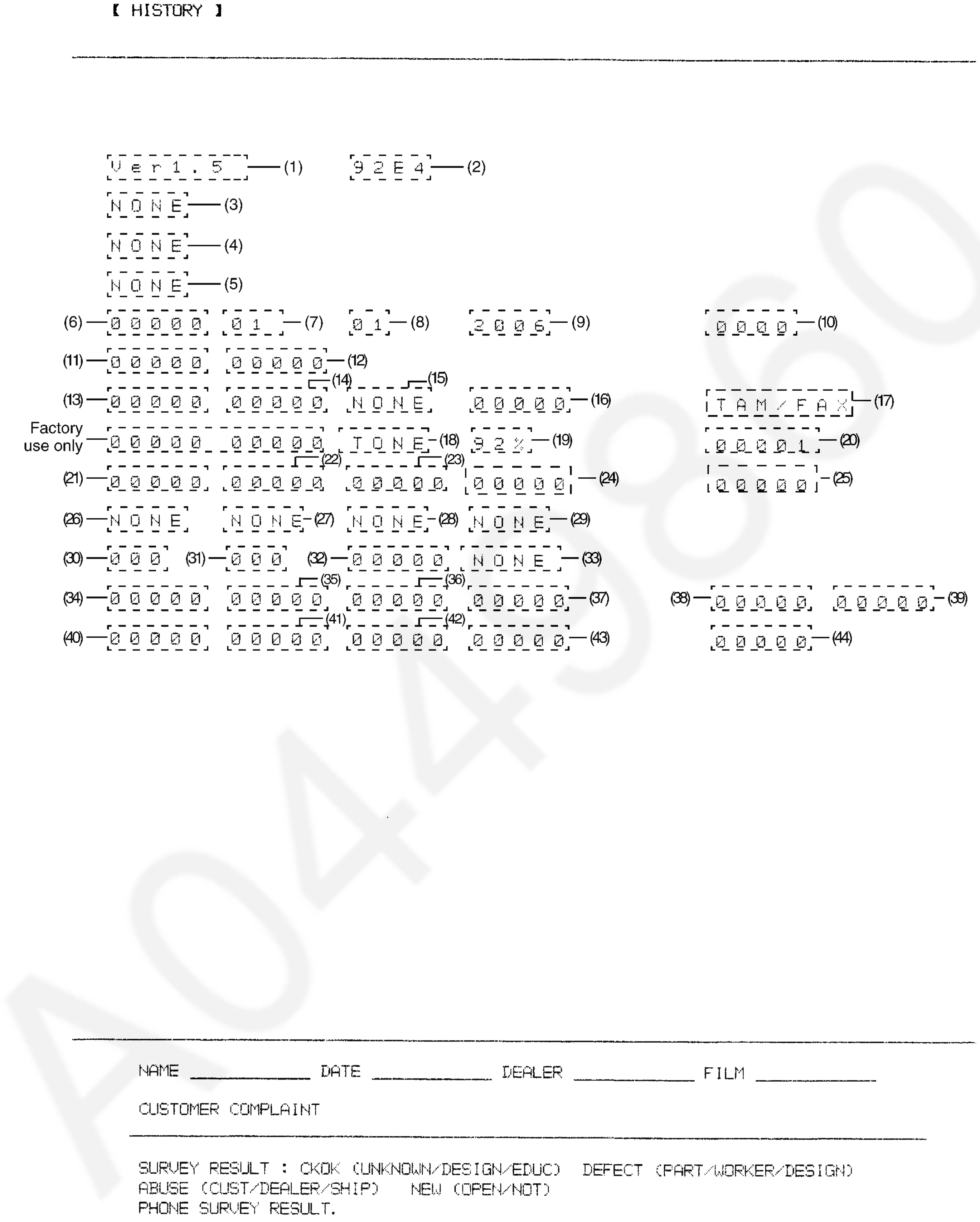
11.3.3. History



【 HISTORY 】

Ver1.5 —(1) 92E4 —(2)

NONE —(3)

NONE —(4)

NONE —(5)

(6)— 00000 01 —(7) 01 —(8) 2006 —(9) 0000 —(10)

(11)— 00000 00000 —(12)

(13)— 00000 00000 (14) NONE (15) 00000 —(16) TAM/FAX —(17)

Factory use only — 00000 00000 TONE —(18) 92% —(19) 00001 —(20)

(21)— 00000 00000 (22) 00000 (23) 00000 —(24) 00000 —(25)

(26)— NONE NONE —(27) NONE —(28) NONE —(29)

(30)— 000 (31)— 000 (32)— 00000 NONE —(33)

(34)— 00000 00000 (35) 00000 (36) 00000 —(37) (38)— 00000 00000 —(39)

(40)— 00000 00000 (41) 00000 (42) 00000 —(43) 00000 —(44)

NAME ____________ DATE ____________ DEALER ____________ FILM ____________

CUSTOMER COMPLAINT

SURVEY RESULT : OKOK (UNKNOWN/DESIGN/EDUC) DEFECT (PART/WORKER/DESIGN)
ABUSE (CUST/DEALER/SHIP) NEW (OPEN/NOT)
PHONE SURVEY RESULT.

Note:

See the following descriptions of this report. Item No. (1) ~ (44) are corresponding to the listed items in **Descriptions of the History Report** (P.71).

11.3.3.1. Descriptions of the History Report

(1) SOFTWARE VERSION
FLASH ROM version

(2) SUM
FLASH ROM internal data calculation.

(3) YOUR LOGO
The user logo recorded in the unit. If it is not recorded, NONE will be displayed.

(4) YOUR TELEPHONE NUMBER
The user telephone number recorded in the unit. If it is not recorded, NONE will be displayed.

(5) FAX PAGER NUMBER
If you program a pager number into the unit, the pager number will be displayed here.

(6) FACTORY - CUSTOMER
This shows how many days from factory production until the user turns ON the unit.

(7) MONTH
The shows the very first month, date, year and time set by the user after they purchased the unit.

(8) DAY
The shows the very first month, date, year and time set by the user after they purchased the unit.

(9) YEAR
The shows the very first month, date, year and time set by the user after they purchased the unit.

(10) TIME
The shows the very first month, date, year and time set by the user after they purchased the unit.

(11) USAGE TIME
The amount of time the unit has been powered ON.

(12) FACTORY - NOW
This shows how many days from factory production until the user prints out this history list.

(13) TEL MODE
The amount of time the TEL mode setting was used.

(14) FAX MODE
The amount of time the FAX mode setting was used.

(15) TEL/FAX MODE
The amount of time the TEL/FAX mode setting was used.

(16) ANS/FAX MODE
The amount of time the ANS/FAX mode setting was used.

(17) FINAL RECEIVE MODE
The last set receiving mode by the user.

(18) TONE/PULSE SELECTION
The most recently used setting used, either TONE or PULSE.

(19) RECEIVE REDUCTION
The compression rate when receiving.

(20) SETTING NO. OF DIRECTORY
The recorded directory stations.

(21) NUMBER OF COPY
The number of pages copied.

(22) NUMBER OF RECEIVE
The number of pages received.

(23) NUMBER OF SENDING
The number of pages sent.

(24) NUMBER OF CALLER ID
The number of times Caller ID was received.

(25) NUMBER OF RECORDING MESSAGE
The number of messages recorded in TAM.

(26)~(29) Not Used

(30) NUMBER OF PRINTING WARNING LIST
The number of warning lists printed until now.

(31) NUMBER OF PRINTING HELP
The number of help lists printed until now.

(32) NUMBER OF DIVIDED PRINTING IN FAX RECEPTION
The number of faxes received that were divided into more than one sheet since the unit was purchased.

(33) Not used

(34) FAX MODE
Means the unit received a fax message in the FAX mode.

(35) MAN RCV
Means the unit received a fax message by manual operation.

(36) FRN RCV
Means the unit received a fax message by friendly signal detection.

(37) VOX
Means the unit detected silence or no voice.

(38) RMT DTMF
Means the unit detected DTMF (Remote Fax activation code) entered remotely.

(39) PAL DTMF
Means the unit detected DTMF (Remote Fax activation code) entered by a parallel connected telephone.

(40) TURN-ON
Means the unit started to receive after 10 rings. (Remote Turn On: Service Code #573)

(41) TIME OUT
Means the unit started to receive after Ring Time Out in the EXT-TAM or TEL/FAX mode.

(42) IDENT
Means the unit detected Ring Detection.

(43) CNG OGM
Means the unit detected the CNG while it was sending the Dummy Ring Back Tone in the TEL/FAX mode, or while answering a call in the EXT-TAM mode. Or means the unit detected the CNG while it was sending the OGM in the ANS/FAX mode.

(44) CNG ICM
Means the unit detected the CNG while it was recording the ICM in the ANS/FAX mode.

12 Troubleshooting Guide

12.1. Troubleshooting Summary

After confirming the problem by asking the user, troubleshoot according to the instructions and observe the following precautions.

12.1.1. Precautions

1. If there is a problem with the print quality or the paper feed, first check if the installation space and the print paper meets the specifications, the paper selection lever/paper thickness lever is set correctly, and the paper is set correctly without any slack.
2. Before troubleshooting, first check that the connectors and cables are connected correctly (not loose).
   If the problem occurs randomly, check it very carefully.
3. When connecting the AC power cord with the unit case and checking the operation, exercise utmost care when handling electric parts in order to avoid electric shocks and short-circuits.
4. After troubleshooting, double check that you have not forgotten any connectors, left any loose screws, etc.
5. Always test to verify that the unit is working normally.

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12.2. Error Messages-Display

If the unit detects a problem, one or more of the following messages will appear on the display.
The explanations given in the [ ] are for servicemen only.

12.2.1. Base Unit

“BACK COVER OPEN”

- The back cover is open. Close the back cover firmly.

“BUSY”

- The cordless handset you tried to call is in use.
  The cordless handset you are calling is too far from the base unit.

“CALL SERVICE”

- [This error is displayed when the thermal head does not warm up or the motor position sensor does not work properly. Check the thermistor on the thermal head and connector lead or replace the motor position sensor.]

“CALL SERVICE 2”

- [This error is displayed when the gear is not in an idle state. Check the GEAR BLOCK.]
  (Refer to **Gear Section** (P.187).)

“CHECK DOCUMENT”

- The document was not fed into the unit properly. Re-insert the document. If misfeeding occurs frequently, clean the document feeder rollers and try again.
  (Refer to **Document feeder/recording paper feeder/scanner glass cleaning** (P.196).)
- The document is longer than 600 mm. Press **[STOP]** to remove the document. Divide the document into two or more sheets, and try again.
  [Alternately, turn off service code #559 to enable sending of documents longer than 600 mm] (Refer to **Service Function Table** (P.63).)

“CHECK FILM”

- The ink film is empty. Replace the ink film with a new one.
- The ink film is not installed. Install it.
- The ink film is slack or creased. Tighten it.
  (Refer to step 5 on **Installing the Ink film** (P.52).)

“CHECK PAPER”

- The recording paper is not installed or the unit has run out of paper. Install paper and press **[SET]** to clear the message.
- The recording paper was not fed into the unit properly. (Refer to **When the recording paper was not fed into the unit properly** (P.195).) Reinstall paper and press **[SET]** to clear the message.
  (Refer to **Installing the Recording Paper** (P.54).)
- The recording paper has jammed near the recording paper entrance. Remove the jammed paper and press **[SET]** to clear the message. (Refer to **Recording Paper Jams** (P.194).)

“FAX IN MEMORY”

- See the other displayed message instructions to print out the document.
  Received documents are stored in memory due to a lack of recording paper, a lack of ink film or a recording paper jam. Install paper, install ink film or remove the jammed paper. You will lose all faxes in memory if the power is removed. Check with power connected. (Refer to **Installing the Recording Paper** (P.54) and **Installing the Ink film** (P.52) and **Recording Paper Jams** (P.194).)

“FAX MEMORY FULL”

- The memory is full of received documents due to a lack of recording paper, a lack of ink film or a recording paper jam. Install paper, install ink film or remove the jammed paper. You will lose all faxes in memory if the power is removed. Check with power connected. (Refer to **Installing the Recording Paper** (P.54) and **Installing the Ink film** (P.52) and **Recording Paper Jams** (P.194).)
- When performing memory transmission, the document being stored exceeded the memory capacity of the unit. Send the entire document manually.

“FILM EMPTY”

- The ink film is empty. Replace the ink film with a new one.
- The ink film is slack. Tighten it (See step 5 on **Installing the Ink film** (P.52).) and install again.
- The fax machine is positioned near appliances such as TVs or speakers which generate an intense magnetic field.

“FILM NEAR EMPTY”

- The remaining ink film is low. Prepare a new ink film. (Refer to **Optional Accessories** (P.11).)

“MEMORY FULL”

- The base unit’s phonebook memory is full. Erase unnecessary items.
- When making a copy, the document being stored exceeded the memory capacity of the unit. Press **[STOP]** to clear the message. Divide the document into sections.

“MESSAGE FULL”

- There is no room left in memory to record voice messages. Erase unnecessary messages.

“MODEM ERROR”

- There is something wrong with the unit’s modem. (Refer to **Test Mode** (P.59) and **Digital Block Diagram** (P.118).)

“NO FAX REPLY”

- The other party’s fax machine is busy or has run out of recording paper. Try again.

“OPEN CABINET
CHECK FILM SLACK”
“OPEN CABINET
CHECK FILM TYPE”

- Please use genuine Panasonic replacement film. (Refer to **Optional Accessories** (P.11).)
- The ink film is slack. Tighten it (See step 5 on **Installing the Ink film** (P.52)).
- The fax machine is positioned near appliances such as TVs or speakers which generate an intense magnetic field.

“PAPER JAMMED”

- A recording paper jam occurred. Remove the jammed paper. (Refer to **Recording Paper Jams** (P.194).)
- You forced the recording paper into the paper tray too strongly. Remove all of the installed paper, and re-install it gently.

“PLEASE WAIT”

- The unit is checking that there is no slack or crease in the ink film. Wait for a moment while the check is completed.

“POLLING ERROR”

- The other party’s fax machine does not support polling. Check with the other party.

“RECORDING ERROR”

- The greeting message you recorded was under 1 second long. Record a longer message.

“REDIAL TIME OUT”

- The other party’s fax machine is busy or has run out of recording paper. Try again.

“REMOVE DOCUMENT”

- The document is jammed. Remove the jammed document. (Refer to **Document Jams** (P.195).)
- Press **[STOP]** to eject the jammed paper.

“SERIAL ERROR”

- “Serial Error” means internal data transmission error between CPU(BBIC) on cordless board in main unit and main CPU on digital board.

“TRANSMIT ERROR”

- A transmission error occurred. Try again.
- If you send a fax overseas, try the following:
  —Use the overseas transmission mode (feature #23 on **Program Mode Table** (P.99)).
  —Add 2 pauses at the end of the telephone number or dial manually.

“UNIT OVERHEATED”

- The unit is too hot. Stop using the unit for a while and let the unit cool down.

12.2.2. Cordless Handset

“Error”

- Recording was too short. Try again.

“Failed”

- Phonebook copy failed. Confirm the destination unit is in standby mode and try again.

“Incomplete”

- The destination unit’s phonebook memory is full. Erase the unnecessary phonebook items from the destination unit and try again.

“Memory Full”

- The cordless handset’s phonebook memory is full. Erase unnecessary items.

“Messages Full”

- There is no room left in memory to record voice messages. Erase unnecessary messages.

“No link. Reconnect AC adaptor.”

- The cordless handset has lost communication with the base unit. Move closer to the base unit and try again.
- Unplug the base unit’s power cord to reset the unit. Reconnect the power cord and try again.
- The cordless handset’s registration may have been cancelled. Re-register the cordless handset.

“Use rechargeable battery.”

- A wrong type of battery such as Alkaline or Manganese was inserted. Use only the rechargeable Ni-MH battery noted on Optional Accessories P.11

“You must first subscribe to Caller ID”

- You must subscribe to use Caller ID service. Once you receive caller information after subscribing to a Caller ID service, this message will not be displayed.

“Press •)) 5sec on base, then put on charger”

- The cordless handset is not registered to the base unit. Press 【LOCATOR】 (•))) on the base unit for about 5 seconds, then place the cordless handset on the base unit or charger. The cordless handset will be registered to the base unit.

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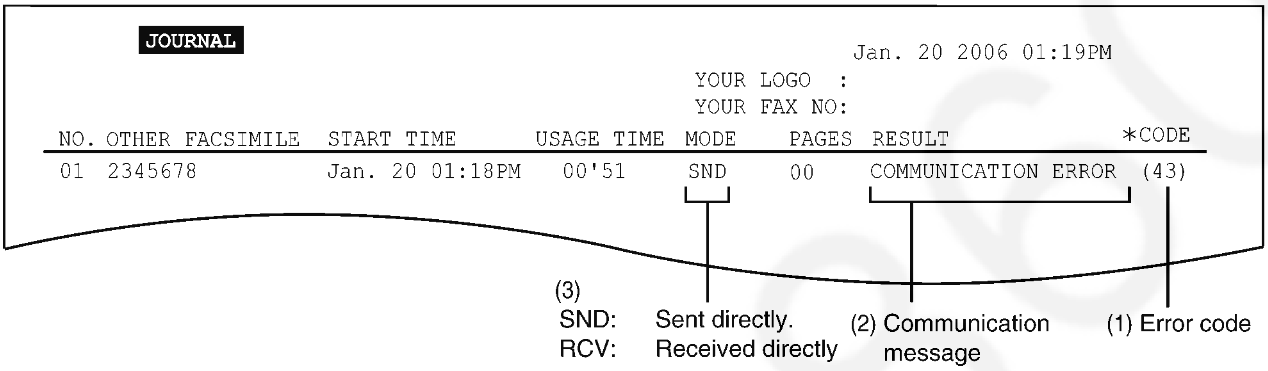
12.3. Error Messages-Report

12.3.1. Journal Report

If a problem occurs during fax transmission or reception, one of the following messages will be printed on the sending and journal reports.

How to output the Journal Report

1. Press **[PRINT REPORT]**.
2. Press **[◀]** or **[▶]** repeatedly to display “ JOURNAL REPORT ”.
3. Press **[SET]**.
4. The report is printed out.



```
        JOURNAL
                                                Jan. 20 2006 01:19PM
                                        YOUR LOGO   :
                                        YOUR FAX NO:

NO. OTHER FACSIMILE   START TIME       USAGE TIME  MODE    PAGES  RESULT               *CODE
01  2345678           Jan. 20 01:18PM    00'51      SND     00    COMMUNICATION ERROR  (43)
```

Error code table:

(1) CODE	(2) RESULT	(3) MODE	SYMPTOM	Counter-measure*
	PRESSED THE STOP KEY	SND & RCV	Communication was interrupted by the STOP button.	
	DOCUMENT JAMMED	SND	The document paper is jammed.	
	NO DOCUMENT	SND	No document paper.	
	THE COVER WAS OPENED	SND & RCV	The cover is open.	
	OTHER FAX NOT RESPONDING	SND	Transmission is finished when the T1 TIMER expires.	1
28	COMMUNICATION ERROR	SND & RCV		
41	COMMUNICATION ERROR	SND	DCN is received after DCS transmission.	2
42	COMMUNICATION ERROR	SND	FTT is received after transmission of a 2400BPS training signal.	3
43	COMMUNICATION ERROR	SND	No response after post message is transmitted three times.	4
44	COMMUNICATION ERROR	SND	RTN and PIN are received.	5
46	COMMUNICATION ERROR	RCV	No response after FTT is transmitted.	6
48	COMMUNICATION ERROR	RCV	No post message.	7
49	COMMUNICATION ERROR	RCV	RTN is transmitted.	8
50	COMMUNICATION ERROR	RCV	PIN is transmitted (to PRI-Q).	8
51	COMMUNICATION ERROR	RCV	PIN is transmitted.	8
	OTHER FAX NOT RESPONDING	RCV	Reception is finished when the T1 TIMER expires.	9
54	ERROR-NOT YOUR UNIT	RCV	DCN is received after DIS transmission.	11
58	COMMUNICATION ERROR	RCV	DCN is received after FTT transmission.	13
59	ERROR-NOT YOUR UNIT	SND	DCN responds to the post message.	14
65	COMMUNICATION ERROR	SND	DCN is received before DIS reception.	2
65	COMMUNICATION ERROR	RCV	Reception is not EOP, EOM PIP, PIN, RTP or RTN.	2
68	COMMUNICATION ERROR	RCV	No response at the other party after MCF or CFR is transmitted.	13
70	ERROR-NOT YOUR UNIT	RCV	DCN is received after CFR transmission.	13
72	COMMUNICATION ERROR	RCV	Carrier is cut when the image signal is received.	16
	MEMORY FULL	RCV	The document was not received due to memory full.	
	JUNK FAX PROH. REJECT	RCV	The fax was rejected by the junk fax prohibitor feature.	
	CANCELED	SND	The multi-station transmission was rejected by the user.	
FF	COMMUNICATION ERROR	SND & RCV	Modem error. For the DCN, DCN, etc. abbreviations, refer to **Modem Section** (P.30).	12

SND=TRANSMISSION RCV=RECEPTION

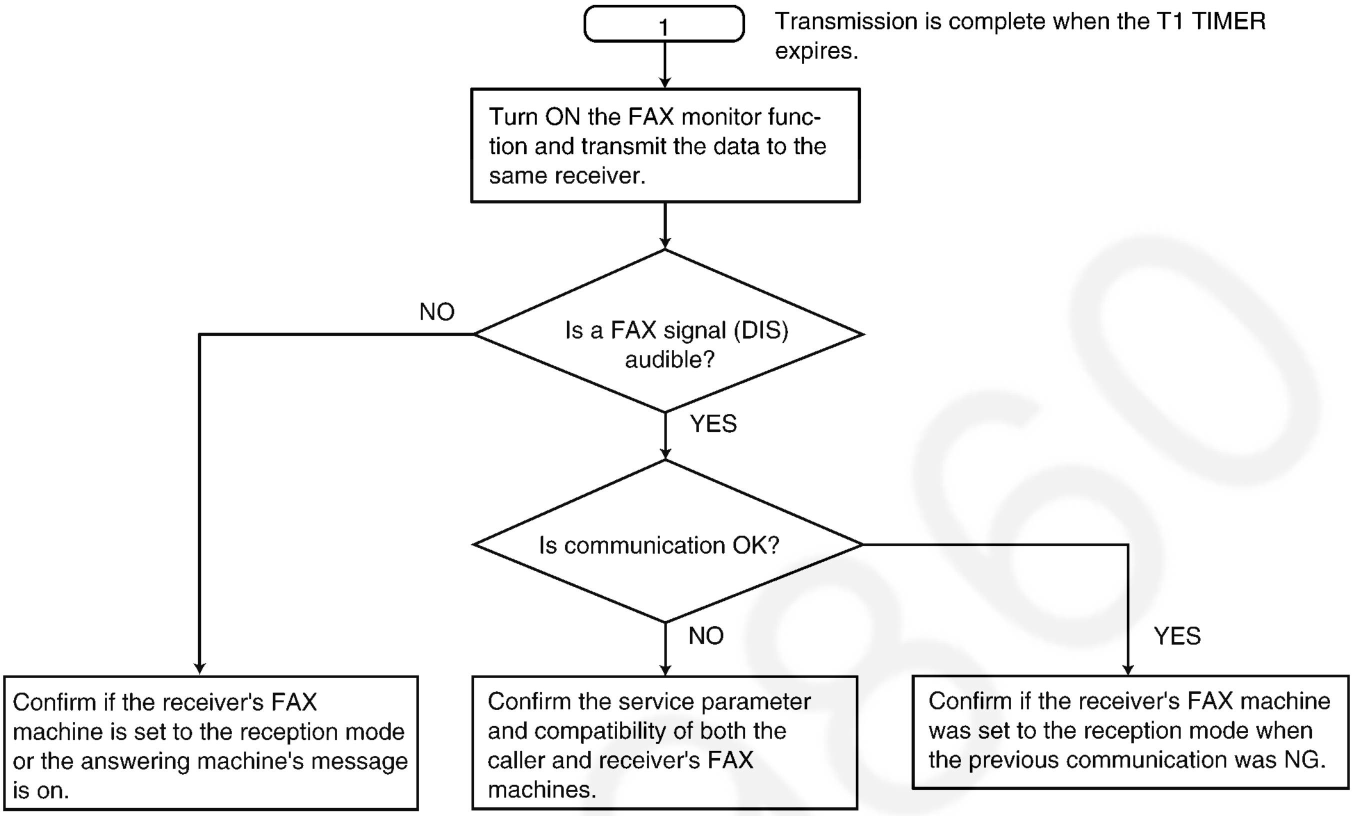
Most fax communication problems can be resolved by the following steps.

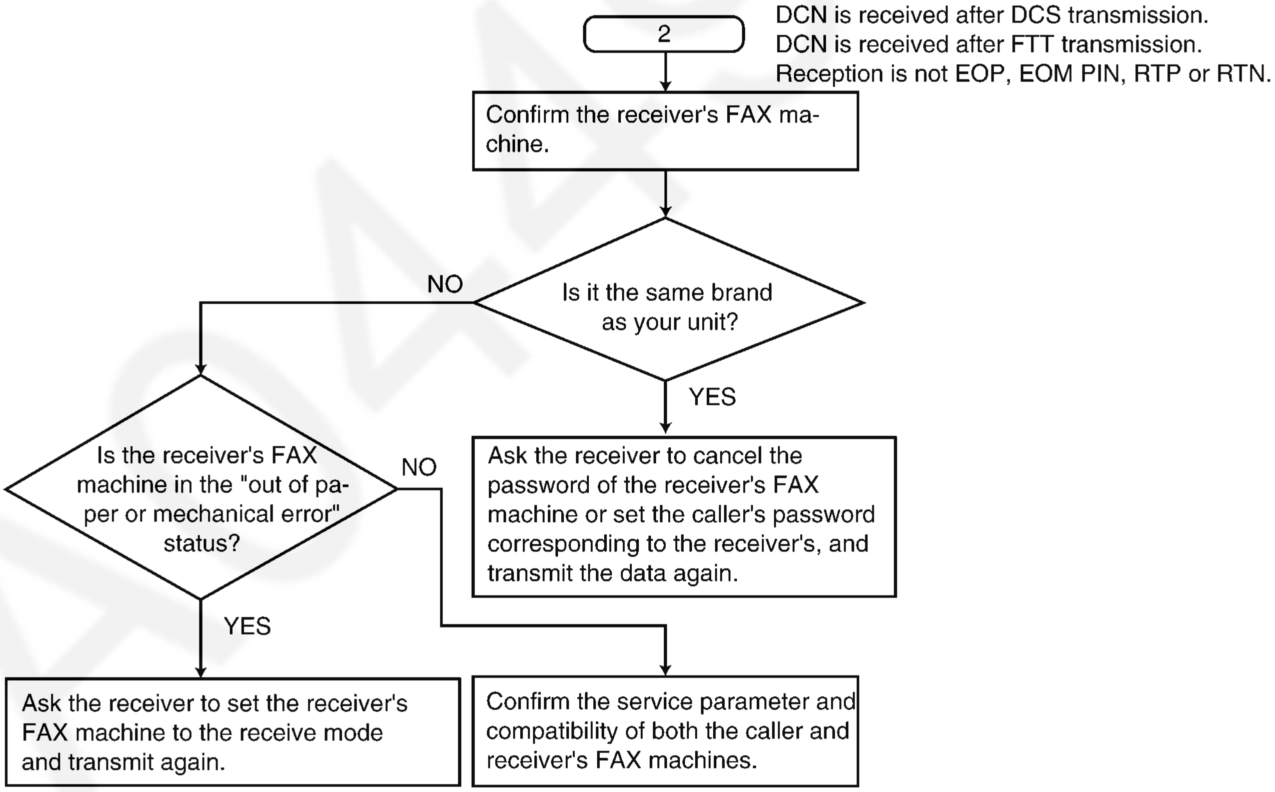
1. Change the transmit level. (Service code: 596, refer to **Service Function Table** (P.63).)
2. Change the TX speed/RX speed. (Service code: 717/718, refer to **Service Function Table** (P.63).)

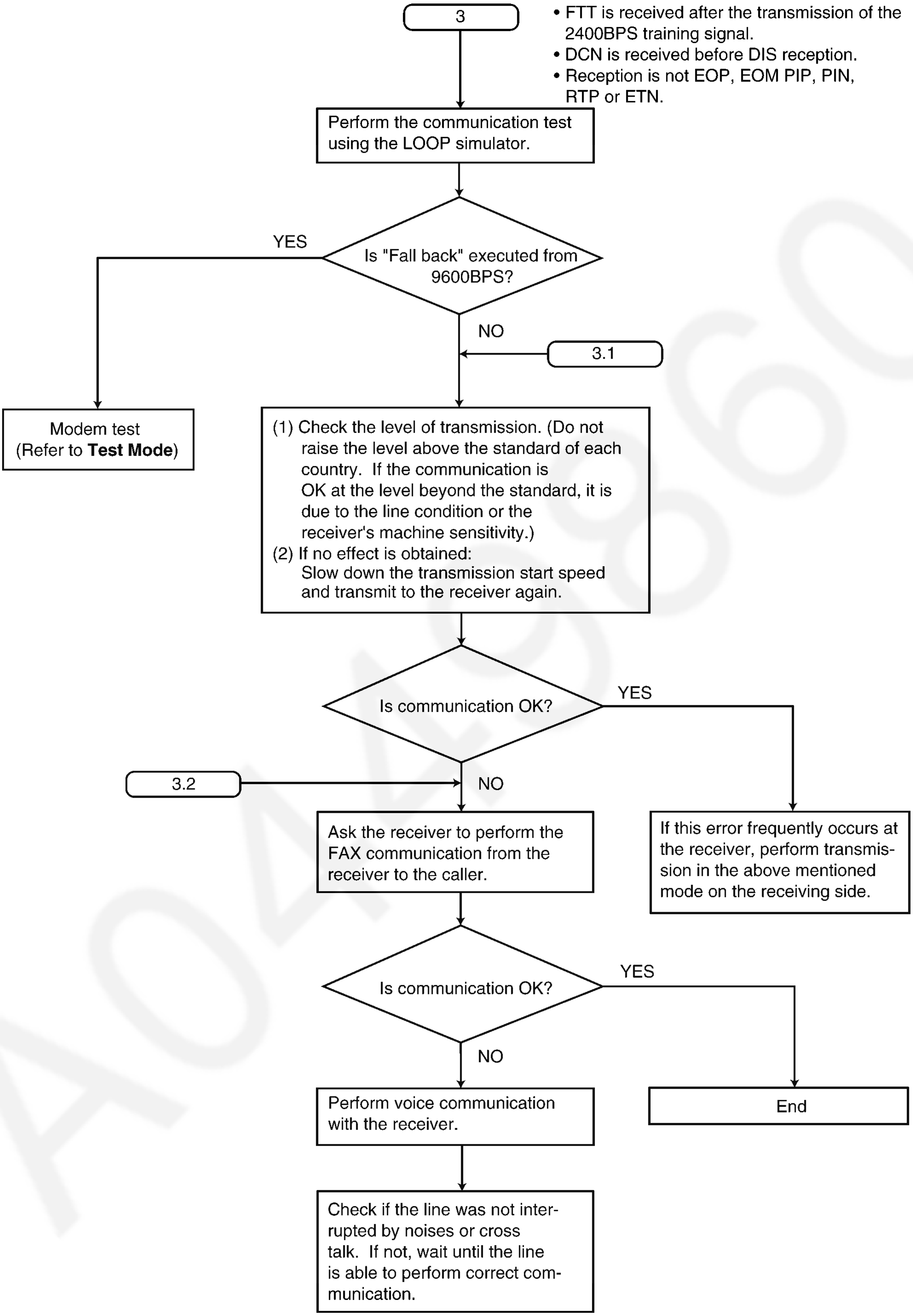
Note:

- If the problem remains, see the following **"Countermeasure"** flow chart.

Countermeasure


1
Transmission is complete when the T1 TIMER expires.
Turn ON the FAX monitor function and transmit the data to the same receiver.
Is a FAX signal (DIS) audible?
NO
YES
Is communication OK?
NO
YES
Confirm if the receiver's FAX machine is set to the reception mode or the answering machine's message is on.
Confirm the service parameter and compatibility of both the caller and receiver's FAX machines.
Confirm if the receiver's FAX machine was set to the reception mode when the previous communication was NG.

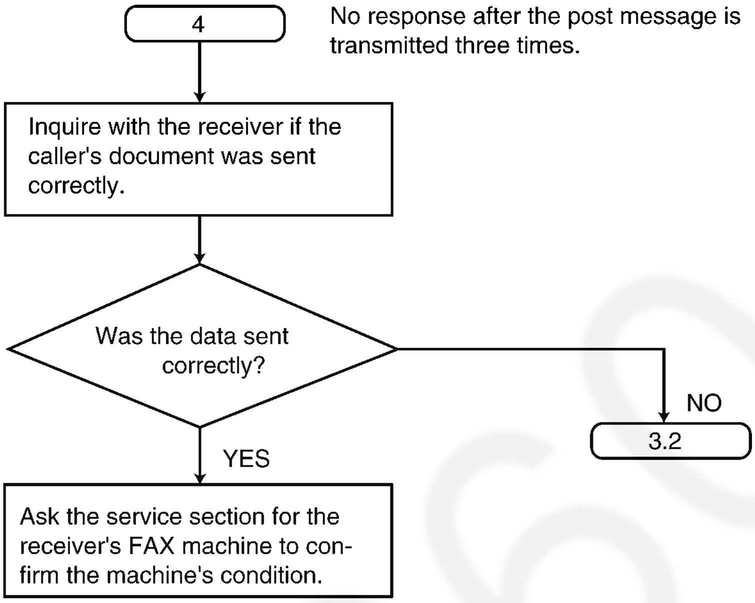

2
DCN is received after DCS transmission.
DCN is received after FTT transmission.
Reception is not EOP, EOM PIN, RTP or RTN.
Confirm the receiver's FAX machine.
Is it the same brand as your unit?
NO
YES
Ask the receiver to cancel the password of the receiver's FAX machine or set the caller's password corresponding to the receiver's, and transmit the data again.
Is the receiver's FAX machine in the "out of paper or mechanical error" status?
NO
YES
Ask the receiver to set the receiver's FAX machine to the receive mode and transmit again.
Confirm the service parameter and compatibility of both the caller and receiver's FAX machines.

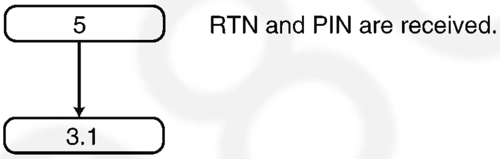


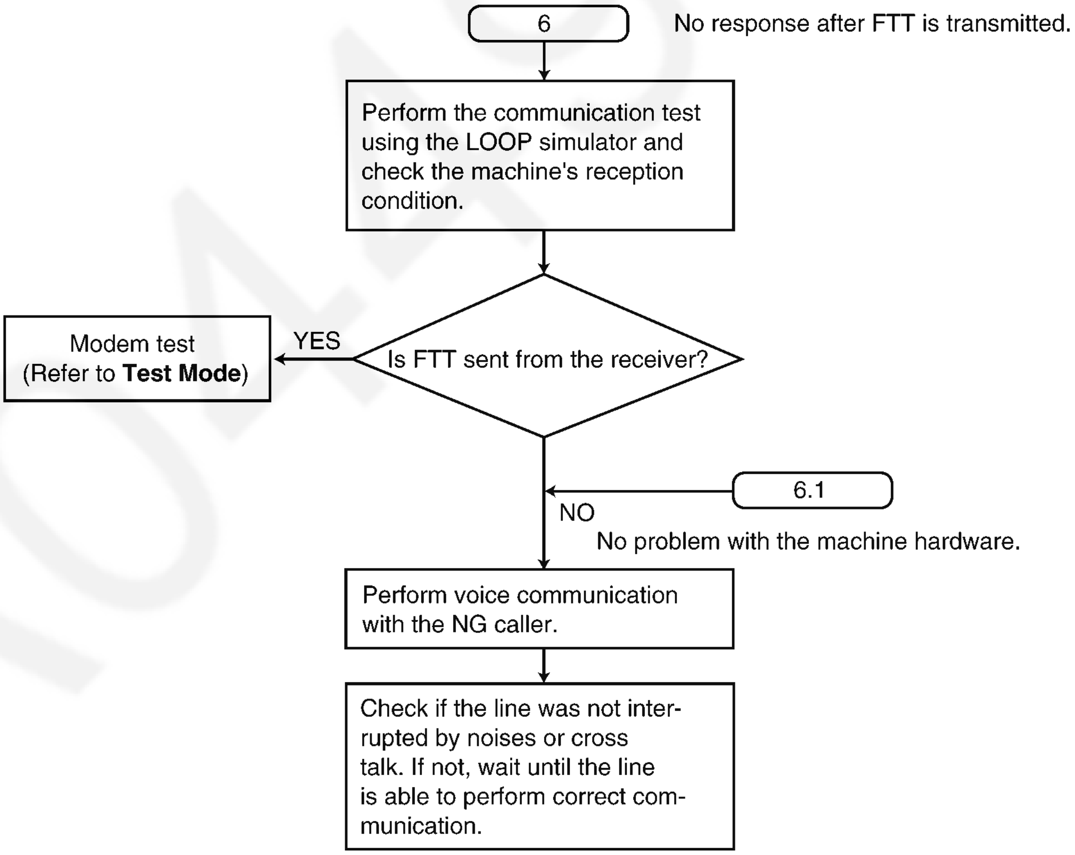
- FTT is received after the transmission of the 2400BPS training signal.
- DCN is received before DIS reception.
- Reception is not EOP, EOM PIP, PIN, RTP or ETN.

3
Perform the communication test using the LOOP simulator.
Is "Fall back" executed from 9600BPS?
YES
Modem test (Refer to **Test Mode**)
NO
3.1
(1) Check the level of transmission. (Do not raise the level above the standard of each country. If the communication is OK at the level beyond the standard, it is due to the line condition or the receiver's machine sensitivity.)
(2) If no effect is obtained: Slow down the transmission start speed and transmit to the receiver again.
Is communication OK?
YES
If this error frequently occurs at the receiver, perform transmission in the above mentioned mode on the receiving side.
3.2
NO
Ask the receiver to perform the FAX communication from the receiver to the caller.
Is communication OK?
YES
End
NO
Perform voice communication with the receiver.
Check if the line was not interrupted by noises or cross talk. If not, wait until the line is able to perform correct communication.

REFERENCE:
Test Mode (P.59)

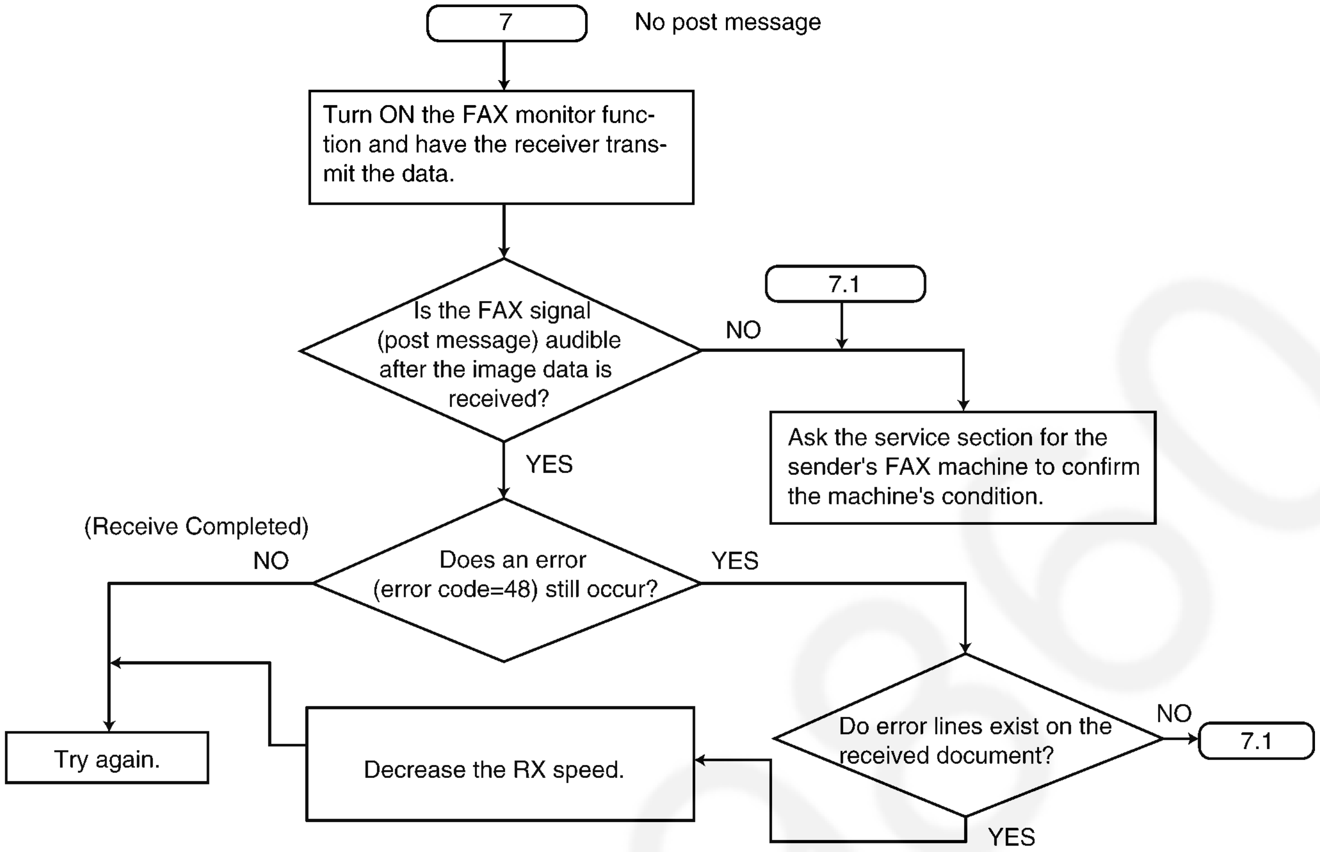

4
No response after the post message is transmitted three times.
Inquire with the receiver if the caller's document was sent correctly.
Was the data sent correctly?
NO
3.2
YES
Ask the service section for the receiver's FAX machine to confirm the machine's condition.

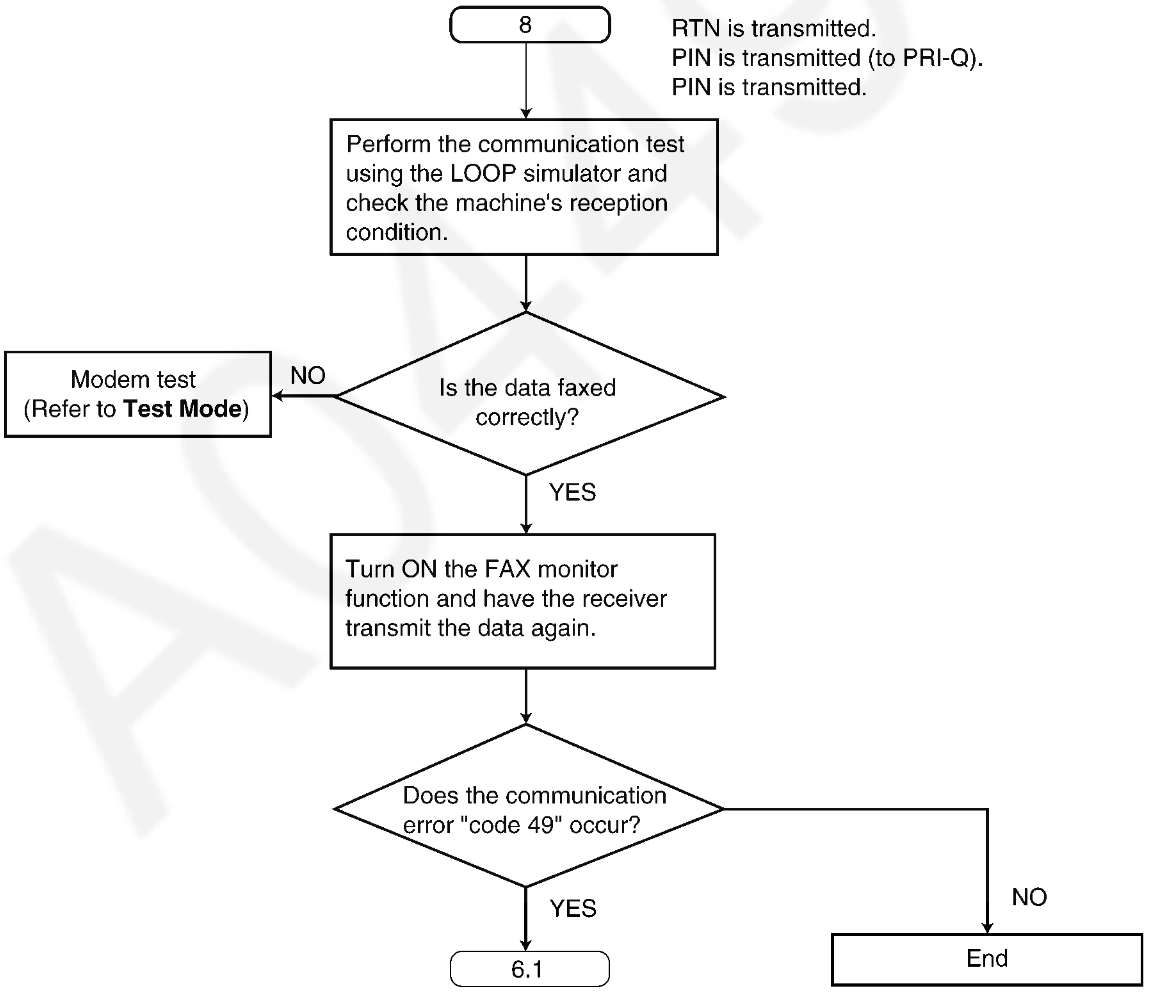

5
RTN and PIN are received.
3.1


6
No response after FTT is transmitted.
Perform the communication test using the LOOP simulator and check the machine's reception condition.
Is FTT sent from the receiver?
YES
Modem test
(Refer to **Test Mode**)
6.1
NO
No problem with the machine hardware.
Perform voice communication with the NG caller.
Check if the line was not interrupted by noises or cross talk. If not, wait until the line is able to perform correct communication.

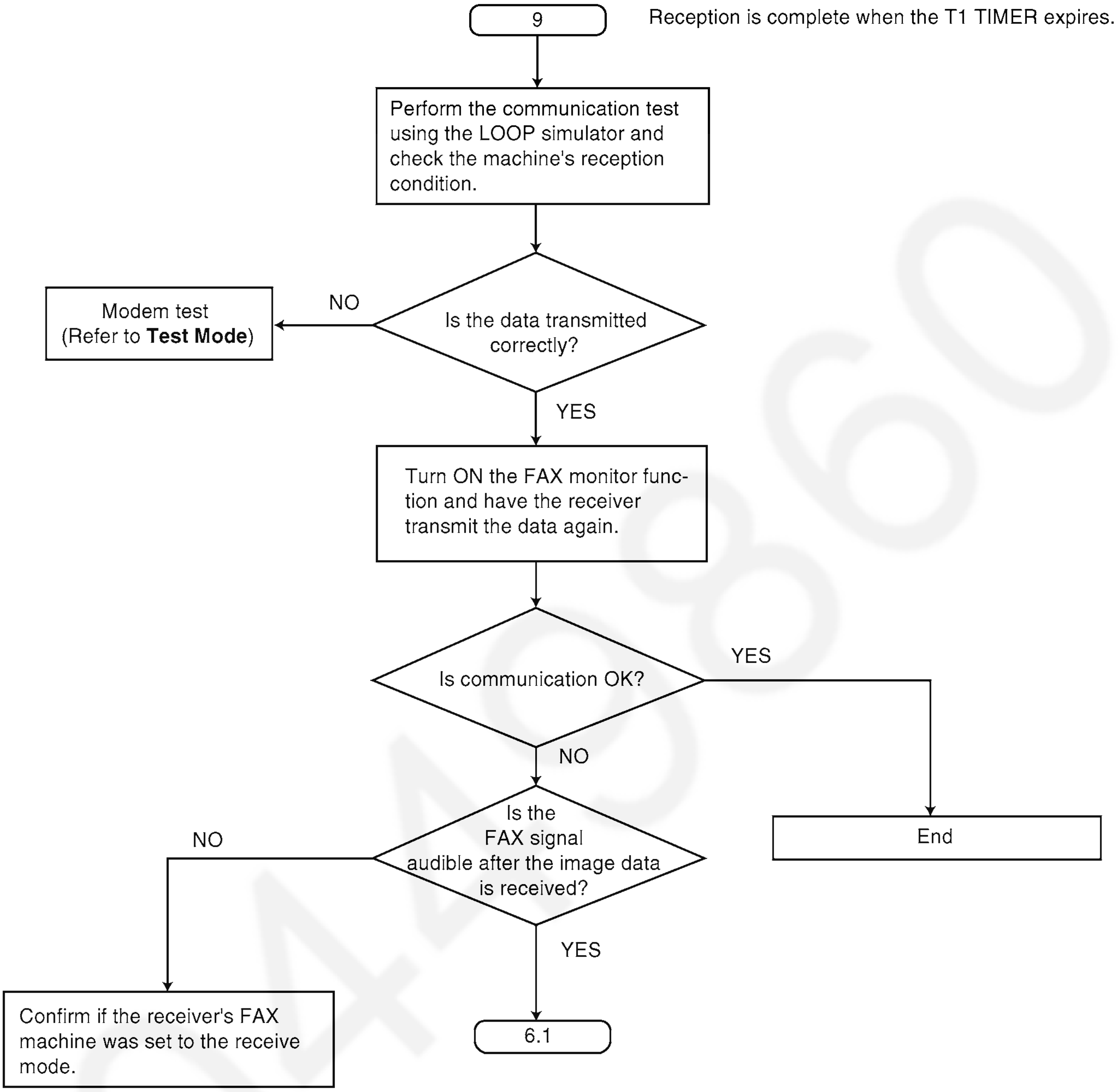
REFERENCE:
Test Mode (P.59)

A049860


7
No post message
Turn ON the FAX monitor function and have the receiver transmit the data.
Is the FAX signal (post message) audible after the image data is received?
NO
7.1
Ask the service section for the sender's FAX machine to confirm the machine's condition.
YES
(Receive Completed)
NO
Does an error (error code=48) still occur?
YES
Try again.
Decrease the RX speed.
Do error lines exist on the received document?
NO
7.1
YES

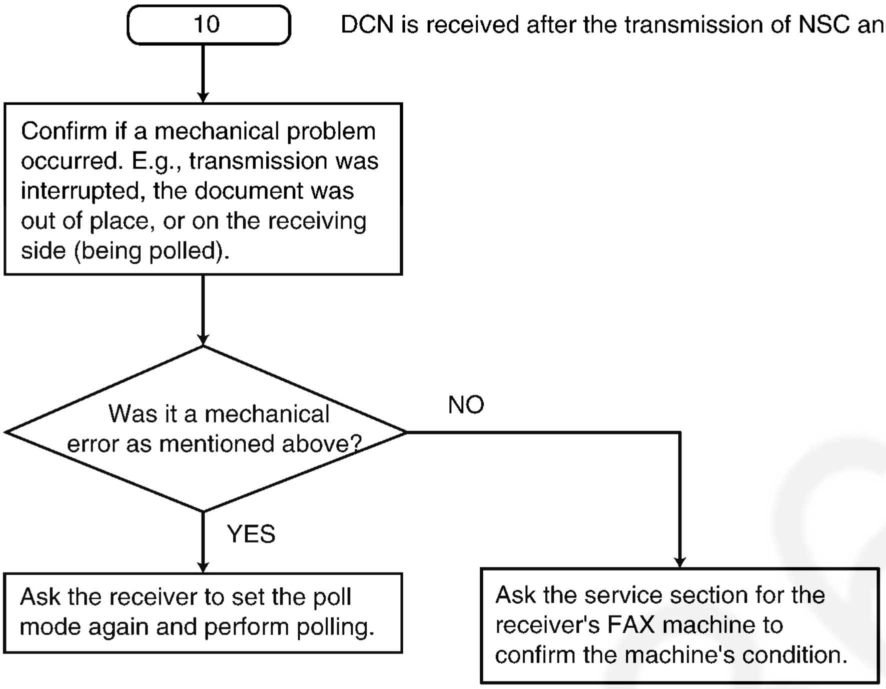

RTN is transmitted.
PIN is transmitted (to PRI-Q).
PIN is transmitted.
8
Perform the communication test using the LOOP simulator and check the machine's reception condition.
Modem test (Refer to **Test Mode**)
NO
Is the data faxed correctly?
YES
Turn ON the FAX monitor function and have the receiver transmit the data again.
Does the communication error "code 49" occur?
YES
NO
6.1
End

REFERENCE:
Test Mode (P.59)


9
Reception is complete when the T1 TIMER expires.
Perform the communication test using the LOOP simulator and check the machine's reception condition.
Is the data transmitted correctly?
NO
Modem test (Refer to **Test Mode**)
YES
Turn ON the FAX monitor function and have the receiver transmit the data again.
Is communication OK?
YES
End
NO
Is the FAX signal audible after the image data is received?
NO
Confirm if the receiver's FAX machine was set to the receive mode.
YES
6.1

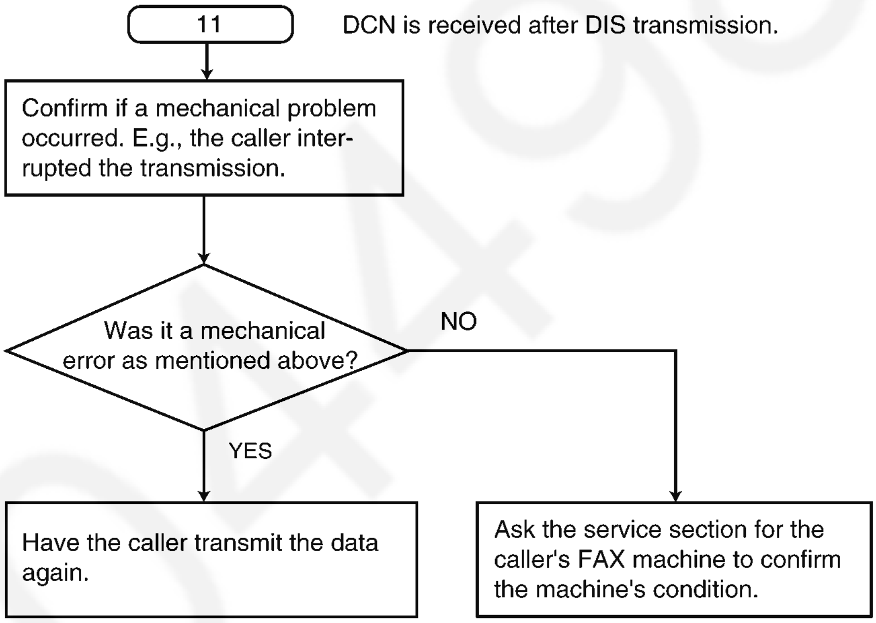
A040860

REFERENCE:
Test Mode (P.59)



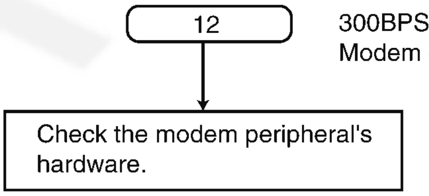
DCN is received after the transmission of NSC and DTC.

10
Confirm if a mechanical problem occurred. E.g., transmission was interrupted, the document was out of place, or on the receiving side (being polled).
Was it a mechanical error as mentioned above?
NO
YES
Ask the receiver to set the poll mode again and perform polling.
Ask the service section for the receiver's FAX machine to confirm the machine's condition.



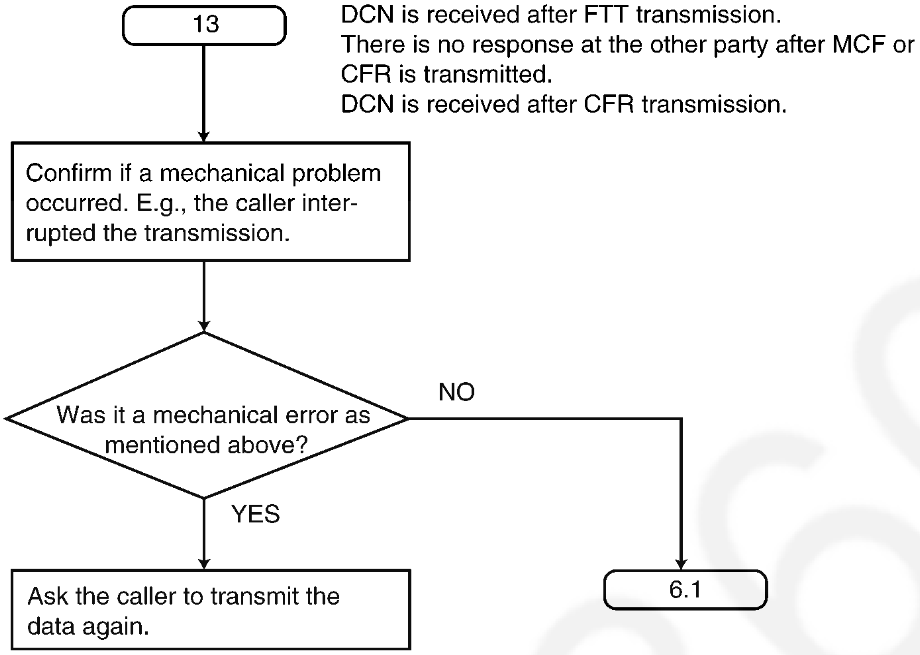
DCN is received after DIS transmission.

11
Confirm if a mechanical problem occurred. E.g., the caller interrupted the transmission.
Was it a mechanical error as mentioned above?
NO
YES
Have the caller transmit the data again.
Ask the service section for the caller's FAX machine to confirm the machine's condition.



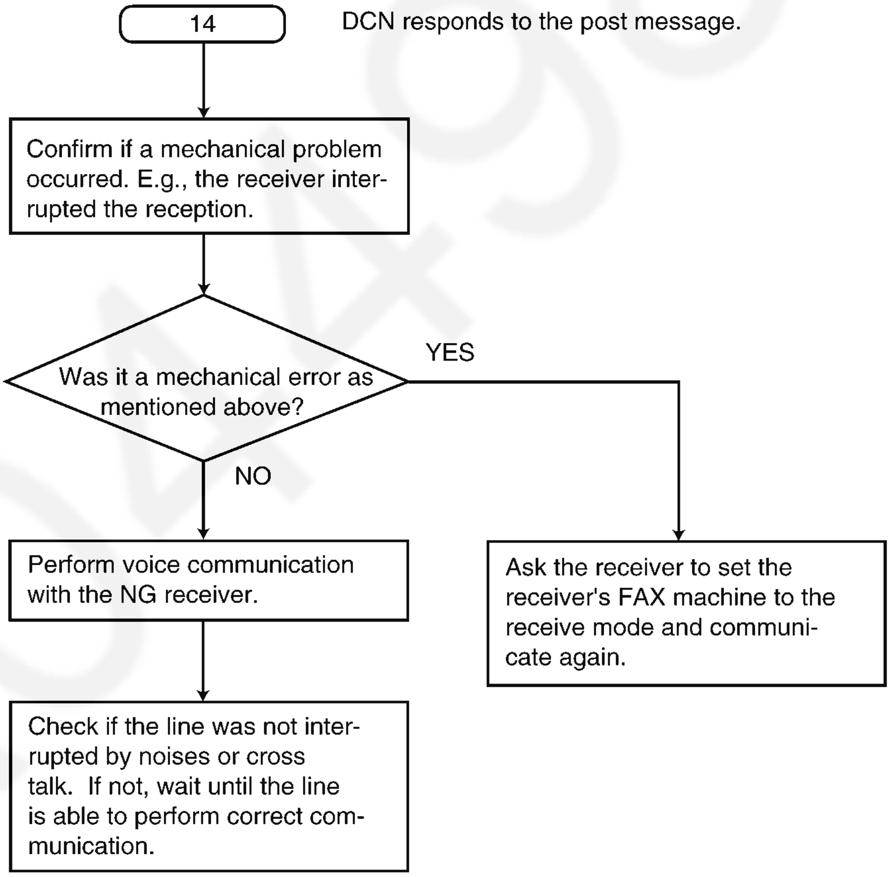
300BPS error
Modem error

12
Check the modem peripheral's hardware.



DCN is received after FTT transmission.
There is no response at the other party after MCF or CFR is transmitted.
DCN is received after CFR transmission.

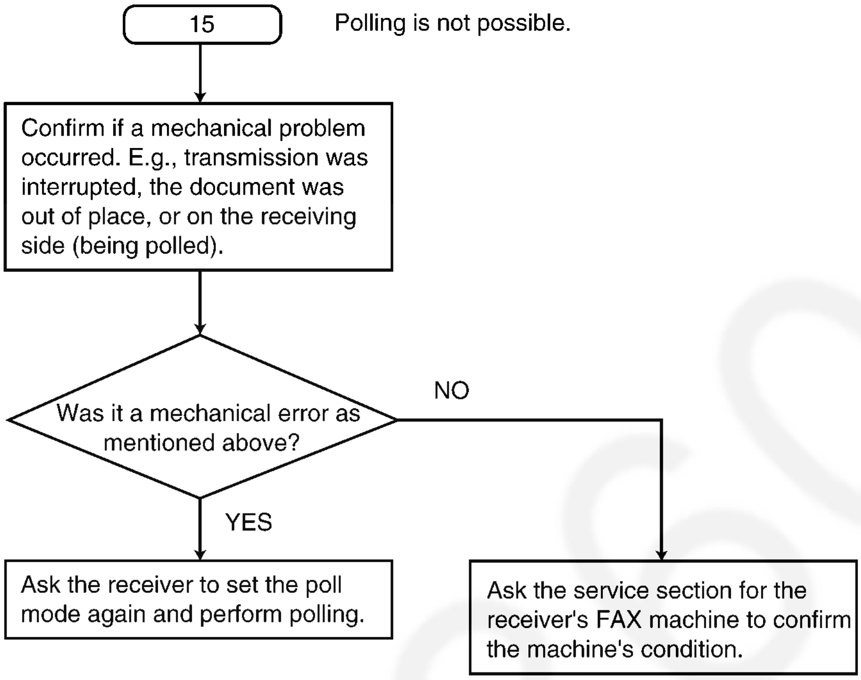
13
Confirm if a mechanical problem occurred. E.g., the caller interrupted the transmission.
Was it a mechanical error as mentioned above?
NO
YES
Ask the caller to transmit the data again.
6.1

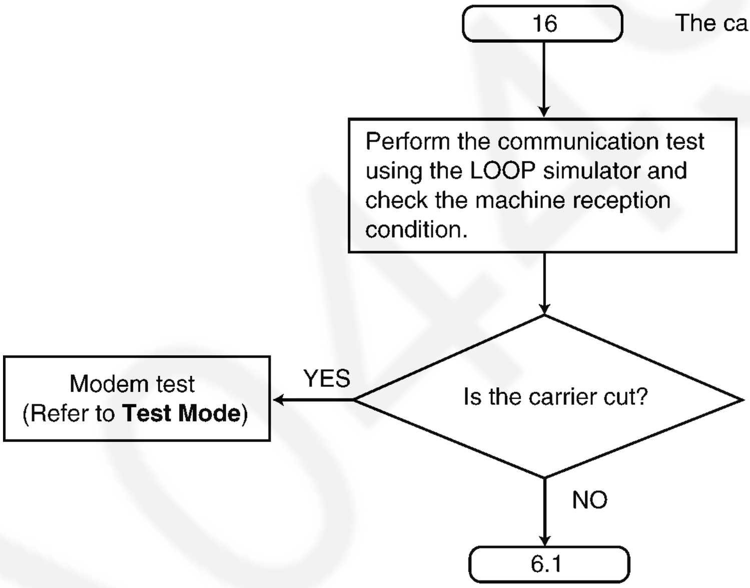


DCN responds to the post message.

14
Confirm if a mechanical problem occurred. E.g., the receiver interrupted the reception.
Was it a mechanical error as mentioned above?
YES
NO
Perform voice communication with the NG receiver.
Check if the line was not interrupted by noises or cross talk. If not, wait until the line is able to perform correct communication.
Ask the receiver to set the receiver's FAX machine to the receive mode and communicate again.

REFERENCE:
Test Mode (P.59)


Polling is not possible.
15
Confirm if a mechanical problem occurred. E.g., transmission was interrupted, the document was out of place, or on the receiving side (being polled).
Was it a mechanical error as mentioned above?
NO
YES
Ask the receiver to set the poll mode again and perform polling.
Ask the service section for the receiver's FAX machine to confirm the machine's condition.

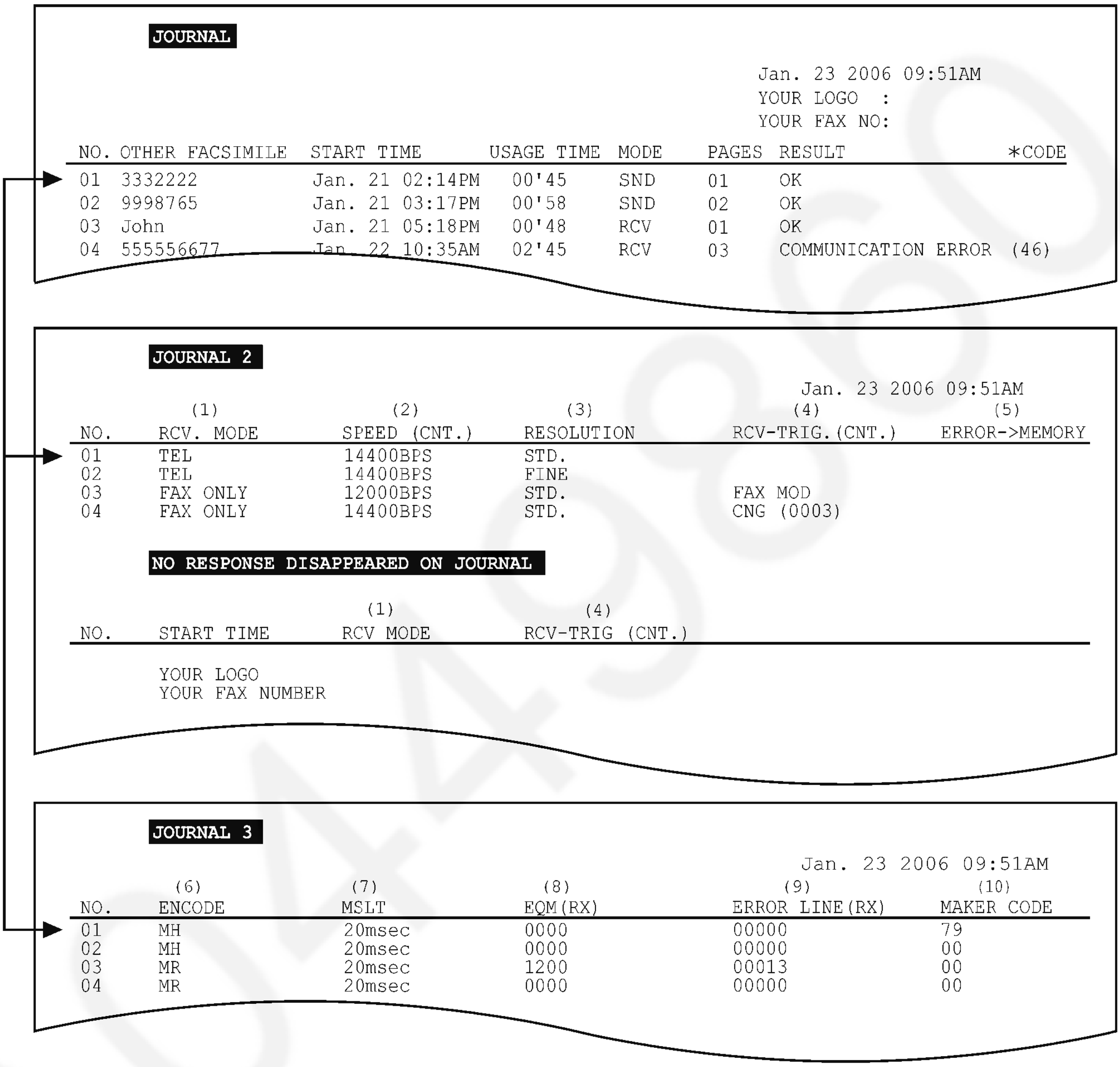

The carrier is cut when the image signal is received.
16
Perform the communication test using the LOOP simulator and check the machine reception condition.
Is the carrier cut?
YES
Modem test
(Refer to Test Mode)
NO
6.1

REFERENCE:

Test Mode (P.59)

12.3.2. Special Service Journal Reports

Journal 2 and Journal 3 shown below, which are special journals giving the additional detailed information about the latest 35 communications, can be printed by Service Code 881 or 882. Remote printing function for the journal reports (JOURNAL, JOURNAL 2 and JOURNAL 3) is also available for service technicians. (Refer to **Remote Programming** (P.98).) The JOURNAL report only gives you basic information about a communication, but the other two journal reports provide different information on the same item (communication).



```
JOURNAL

                                                          Jan. 23 2006 09:51AM
                                                          YOUR LOGO  :
                                                          YOUR FAX NO:
NO. OTHER FACSIMILE  START TIME      USAGE TIME  MODE    PAGES  RESULT              *CODE
01  3332222          Jan. 21 02:14PM  00'45      SND     01     OK
02  9998765          Jan. 21 03:17PM  00'58      SND     02     OK
03  John             Jan. 21 05:18PM  00'48      RCV     01     OK
04  555556677        Jan. 22 10:35AM  02'45      RCV     03     COMMUNICATION ERROR  (46)
```

```
JOURNAL 2

                                                                Jan. 23 2006 09:51AM
        (1)              (2)              (3)                  (4)                 (5)
NO.     RCV. MODE        SPEED (CNT.)     RESOLUTION           RCV-TRIG.(CNT.)     ERROR->MEMORY
01      TEL              14400BPS         STD.
02      TEL              14400BPS         FINE
03      FAX ONLY         12000BPS         STD.                 FAX MOD
04      FAX ONLY         14400BPS         STD.                 CNG (0003)

        NO RESPONSE DISAPPEARED ON JOURNAL

                                 (1)              (4)
NO.     START TIME       RCV MODE         RCV-TRIG (CNT.)

        YOUR LOGO
        YOUR FAX NUMBER
```

```
JOURNAL 3

                                                                Jan. 23 2006 09:51AM
        (6)              (7)              (8)                  (9)                 (10)
NO.     ENCODE           MSLT             EQM(RX)              ERROR LINE(RX)      MAKER CODE
01      MH               20msec           0000                 00000               79
02      MH               20msec           0000                 00000               00
03      MR               20msec           1200                 00013               00
04      MR               20msec           0000                 00000               00
```

HOW TO READ JOURNAL REPORTS:

Example:

1. Look at **NO. 01** in the JOURNAL. If you want to know about the details about that item, see **NO. 01** in the JOURNAL 2 and the JOURNAL 3. You can get the following information.
   * MODE: Fax transmission
   * RCV. MODE: TEL
   * TX SPEED: 9.6 kbps
   * RESOLUTION: standard
   * ENCODE: MH
   * MAKER CODE: 79
2. Look at **NO. 04** in the JOURNAL 2. CNG (0003) indicates that the CNG signal has been received three times since the purchase date.

For further details, see **Journal 2** (P.86) and **Journal 3** (P.87).

12.3.2.1. Journal 2

Refer to JOURNAL 2 in **Printout Example** (P.87).
Journal 2 displays the additional detailed information about the last 35 communications.

Descriptions:

(1) RCV. MODE

Indicates which receive mode the unit was in when the unit received a fax message.
This information is also displayed when the unit transmitted a fax message.

(2) SPEED

Indicates the speed of the communication. If multiple pages are transmitted or received, it indicates the last page's communication speed. If there is a communication error, "?" is displayed.

(3) RESOLUTION

Indicates the resolution of the communication. If multiple pages are transmitted or received, it indicates the last page's resolution. If there is a communication error, "?" is displayed.

(4) RCV-TRIG. (CNT.)

Indicates the trigger that causes the unit to switch to the fax receive mode. The available options are listed in JOURNAL 2 in **Printout Example** (P.87). The values in parentheses indicate how many times the trigger has been used. (For example, "0003" means three times.)

No.	Display	Function
1	FAX MODE	Means the unit received a fax message in the FAX mode.
2	MAN RCV	Means the unit received a fax message by manual operation.
3	FRN RCV	Means the unit received a fax message by friendly signal detection.
4	VOX	Means the unit detected silence or no voice.
5	RMT DTMF	Means the unit detected DTMF (Remote Fax activation code) entered remotely.
6	PAL DTMF	Means the unit detected DTMF (Remote Fax activation code) entered by a parallel connected telephone.
7	TURN-ON	Means the unit started to receive after 10 rings. (Remote Turn On: Service Code #573)
8	TIME OUT	Means the unit started to receive after Ring Time Out.
9	IDENT	Means the unit detected Ring Detection.
10	CNG OGM	Means the unit detected the CNG while it was sending the OGM in the TAM/FAX mode.
11	CNG ICM	Means the unit detected the CNG while it was recording the ICM in the TAM/FAX mode.

(5) ERROR→MEMORY

Indicates the reason why the unit received a fax message in memory.
If you look at No.11 in the JOURNAL 2 in **Printout Example** (P.87), it shows the fax message was received in memory due to "PAPER OUT" error.

NO RESPONSE DISAPPEARED ON JOURNAL

The "**NO RESPONSE DISAPPEARED ON JOURNAL**" displays the information about the last 10 communications terminated by "No Response". (Some of the communications terminated by "No Response" were not displayed in the JOURNAL.)
When a fax transmission cannot be performed because the other party's unit is set to the TEL mode, "No response" will be printed.

12.3.2.2. Journal 3

Refer to JOURNAL 3 in **Printout Example** (P.87).

Descriptions:

(6) ENCODE

Compression Code: MH/MR

(7) MSLT

MSLT means Minimum Scan Line Time. Used only at the factory.

(8) EQM

EQM means Eye Quality Monitor. Used only at the factory.

(9) ERROR LINE(RX)

When an error occurs while receiving a fax, this shows the number of error lines.

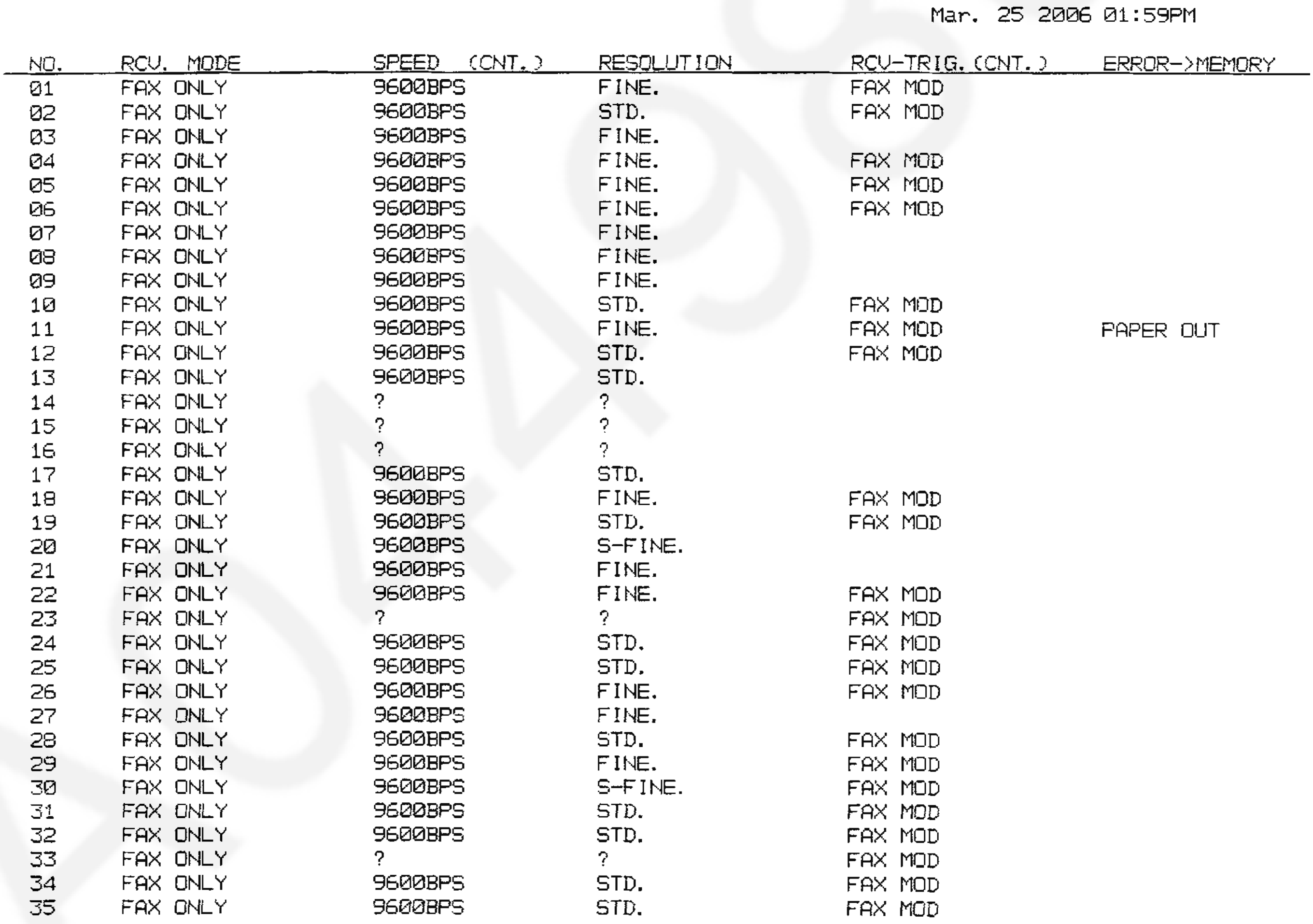
(10) MAKER CODE

This shows a 2 digit code of the other party's fax machine brand.

0E: "KX" model
00: Unknown
79: "UF" model
19: "Xerox" model

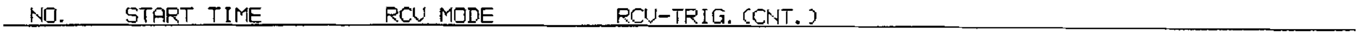
12.3.2.3. Printout Example

JOURNAL2



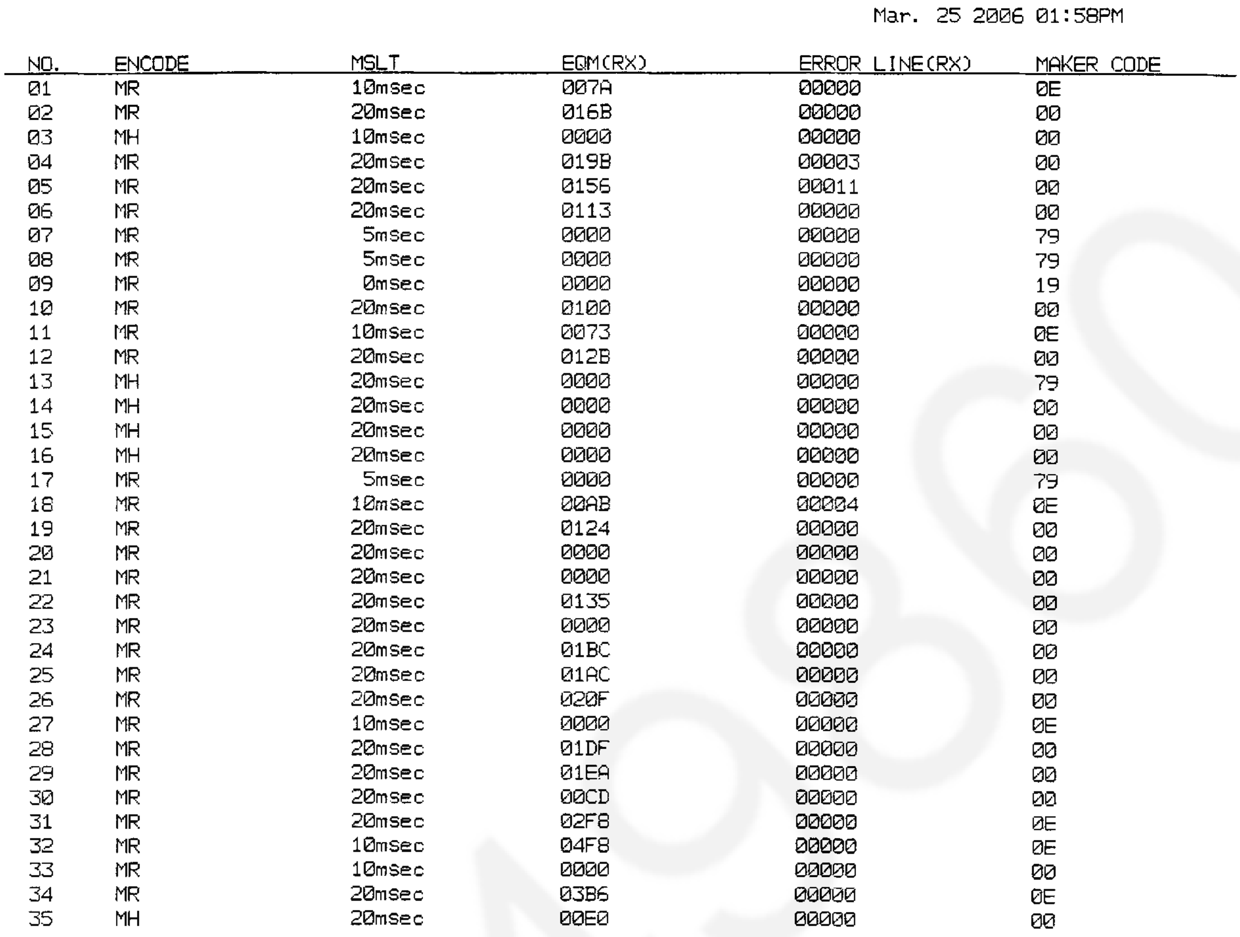
```
                                                                Mar. 25 2006 01:59PM

NO.   RCV. MODE         SPEED  (CNT.)   RESOLUTION        RCV-TRIG.(CNT.)   ERROR->MEMORY
01    FAX ONLY          9600BPS         FINE.             FAX MOD
02    FAX ONLY          9600BPS         STD.              FAX MOD
03    FAX ONLY          9600BPS         FINE.
04    FAX ONLY          9600BPS         FINE.             FAX MOD
05    FAX ONLY          9600BPS         FINE.             FAX MOD
06    FAX ONLY          9600BPS         FINE.             FAX MOD
07    FAX ONLY          9600BPS         FINE.
08    FAX ONLY          9600BPS         FINE.
09    FAX ONLY          9600BPS         FINE.
10    FAX ONLY          9600BPS         STD.              FAX MOD
11    FAX ONLY          9600BPS         FINE.             FAX MOD           PAPER OUT
12    FAX ONLY          9600BPS         STD.              FAX MOD
13    FAX ONLY          9600BPS         STD.
14    FAX ONLY          ?               ?
15    FAX ONLY          ?               ?
16    FAX ONLY          ?               ?
17    FAX ONLY          9600BPS         STD.
18    FAX ONLY          9600BPS         FINE.             FAX MOD
19    FAX ONLY          9600BPS         STD.              FAX MOD
20    FAX ONLY          9600BPS         S-FINE.
21    FAX ONLY          9600BPS         FINE.
22    FAX ONLY          9600BPS         FINE.             FAX MOD
23    FAX ONLY          ?               ?                 FAX MOD
24    FAX ONLY          9600BPS         STD.              FAX MOD
25    FAX ONLY          9600BPS         STD.              FAX MOD
26    FAX ONLY          9600BPS         FINE.             FAX MOD
27    FAX ONLY          9600BPS         FINE.
28    FAX ONLY          9600BPS         STD.              FAX MOD
29    FAX ONLY          9600BPS         FINE.             FAX MOD
30    FAX ONLY          9600BPS         S-FINE.           FAX MOD
31    FAX ONLY          9600BPS         STD.              FAX MOD
32    FAX ONLY          9600BPS         STD.              FAX MOD
33    FAX ONLY          ?               ?                 FAX MOD
34    FAX ONLY          9600BPS         STD.              FAX MOD
35    FAX ONLY          9600BPS         STD.              FAX MOD
```

NO RESPONSE DISAPPEARED ON JOURNAL



```
NO.   START TIME        RCV MODE        RCV-TRIG.(CNT.)
```

JOURNAL3



```
                                                                        Mar. 25 2006 01:58PM

NO.   ENCODE           MSLT            EQM(RX)          ERROR LINE(RX)   MAKER CODE
01    MR               10msec          007A             00000            0E
02    MR               20msec          016B             00000            00
03    MH               10msec          0000             00000            00
04    MR               20msec          019B             00003            00
05    MR               20msec          0156             00011            00
06    MR               20msec          0113             00000            00
07    MR                5msec          0000             00000            79
08    MR                5msec          0000             00000            79
09    MR                0msec          0000             00000            19
10    MR               20msec          0100             00000            00
11    MR               10msec          0073             00000            0E
12    MR               20msec          012B             00000            00
13    MH               20msec          0000             00000            79
14    MH               20msec          0000             00000            00
15    MH               20msec          0000             00000            00
16    MH               20msec          0000             00000            00
17    MR                5msec          0000             00000            79
18    MR               10msec          00AB             00004            0E
19    MR               20msec          0124             00000            00
20    MR               20msec          0000             00000            00
21    MR               20msec          0000             00000            00
22    MR               20msec          0135             00000            00
23    MR               20msec          0000             00000            00
24    MR               20msec          01BC             00000            00
25    MR               20msec          01AC             00000            00
26    MR               20msec          020F             00000            00
27    MR               10msec          0000             00000            0E
28    MR               20msec          01DF             00000            00
29    MR               20msec          01EA             00000            00
30    MR               20msec          00CD             00000            00
31    MR               20msec          02F8             00000            0E
32    MR               10msec          04F8             00000            0E
33    MR               10msec          0000             00000            00
34    MR               20msec          03B6             00000            0E
35    MH               20msec          00E0             00000            00
```

A0409860

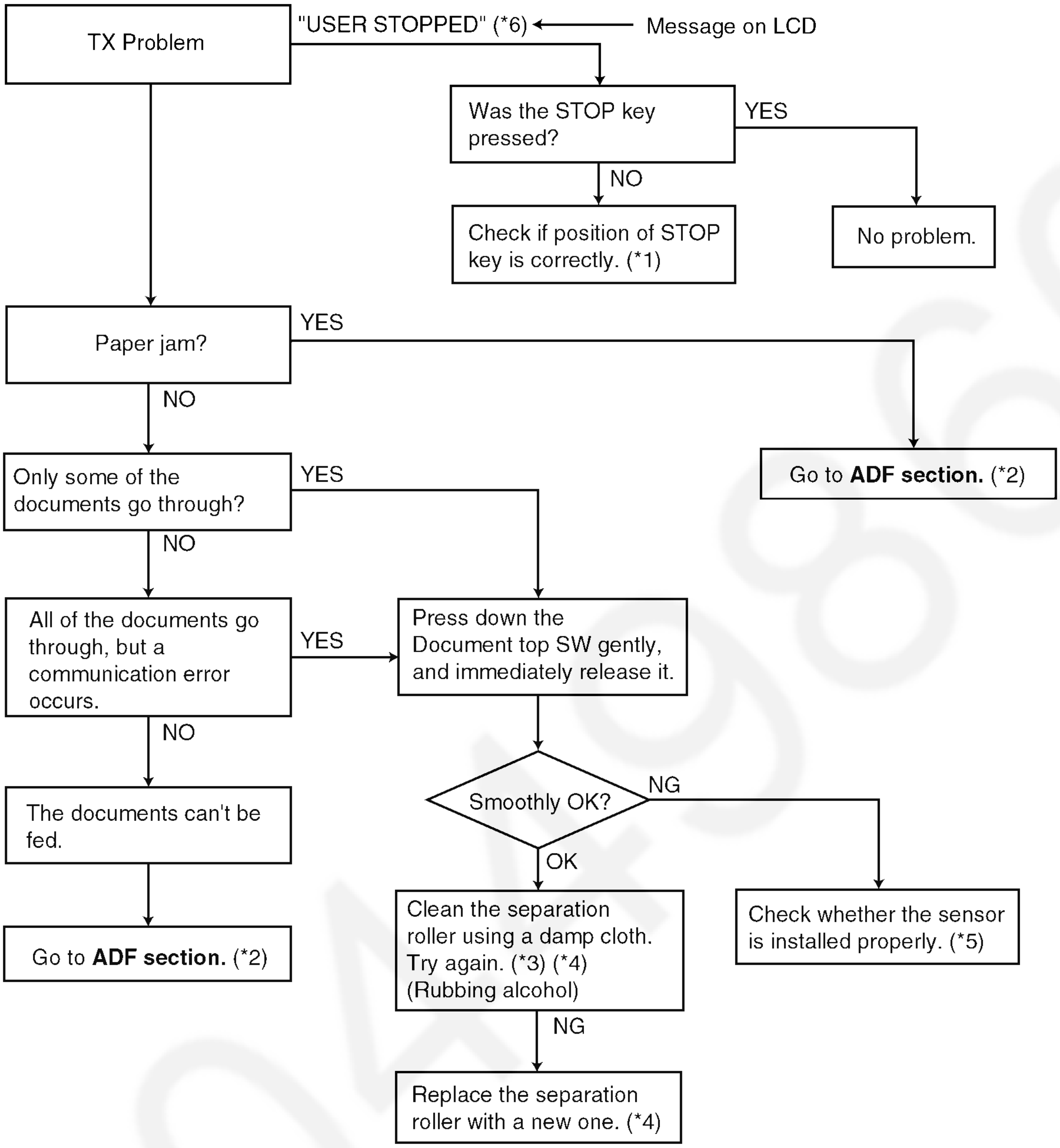
12.3.3. Communication Section

Find the problem in the table shown below, and refer to the corresponding troubleshooting procedure in **Defective Facsimile Section** (P.90).

No.	Symptom	Reference Content	Possible cause
1	The paper is not fed properly when faxing. (Not in the copy mode.)	**Transmit Problem** (P.90)	Problem with the feeding mechanism. Refer to **ADF (Auto Document Feed) Section** (P.104).
2	The fax usually transmits successfully but sometimes fails. (The unit can copy documents.)	**Sometime There is a Transmit Problem** (P.91)	Problem with the service line or with the receiver's fax.
3	The fax usually receives successfully but sometimes fails. (The unit can copy documents.)	**Receive Problem** (P.92)	Problem with the service line or with the transmitter's fax.
4	The fax completely fails to transmit or receive. (The unit can copy documents.)	**The Unit can copy, but cannot Transmit / Receive** (P.93)	Problem with the electric circuit.
5	The fax fails either to transmit or receive when making a long distance or an international call. (The unit can copy documents.)	**The unit can copy, but cannot either transmit/receive long distance or international communications** (P.94)	Problem with the service line.
6	The fax image is poor when transmitting or receiving during a long distance or an international call.	**The unit can copy, but the transmission and reception image are incorrect** (P.96)	
7	No.1~No.5	• The troubleshooting procedure for each error code will be printed on the communication result report. • **Error Messages-Report** (P.76)	

12.3.3.1. Defective Facsimile Section

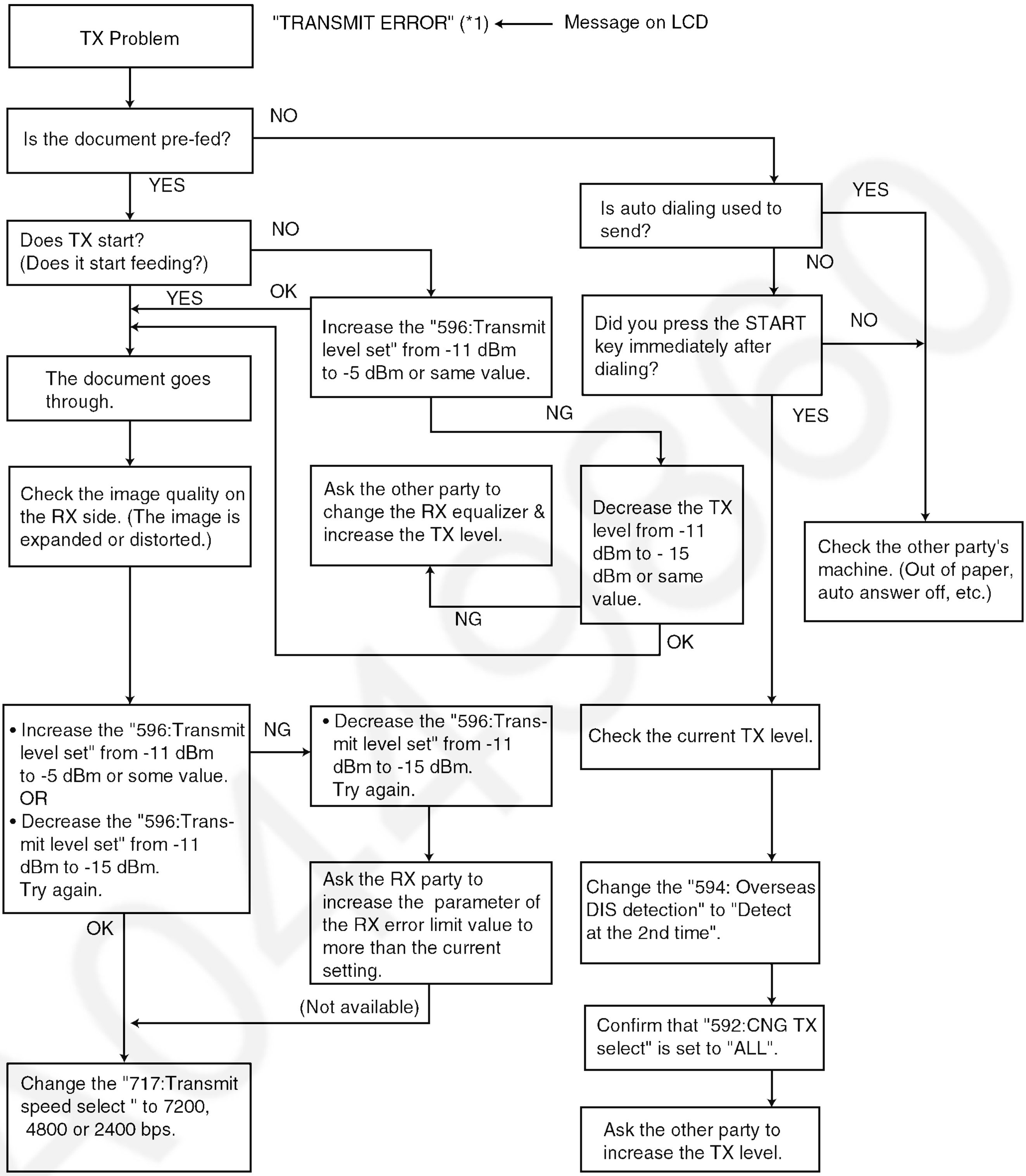
12.3.3.1.1. Transmit Problem


TX Problem
"USER STOPPED" (*6)
Message on LCD
Was the STOP key pressed?
YES
NO
Check if position of STOP key is correctly. (*1)
No problem.
Paper jam?
YES
NO
Go to **ADF section.** (*2)
Only some of the documents go through?
YES
NO
All of the documents go through, but a communication error occurs.
YES
NO
Press down the Document top SW gently, and immediately release it.
Smoothly OK?
NG
OK
The documents can't be fed.
Check whether the sensor is installed properly. (*5)
Go to **ADF section.** (*2)
Clean the separation roller using a damp cloth. Try again. (*3) (*4) (Rubbing alcohol)
NG
Replace the separation roller with a new one. (*4)

REFERENCE:

(*1): **Operation Panel Section** (P.129)
(*2): **ADF (Auto Document Feed) Section** (P.104)
(*3): **Maintenance** (P.185)
(*4): **How to Remove the Gear Block and Separation Roller** (P.153)
(*5): **How to Remove the Operation Board, MIC Board and LCD** (P.162)

12.3.3.1.2. Sometime There is a Transmit Problem

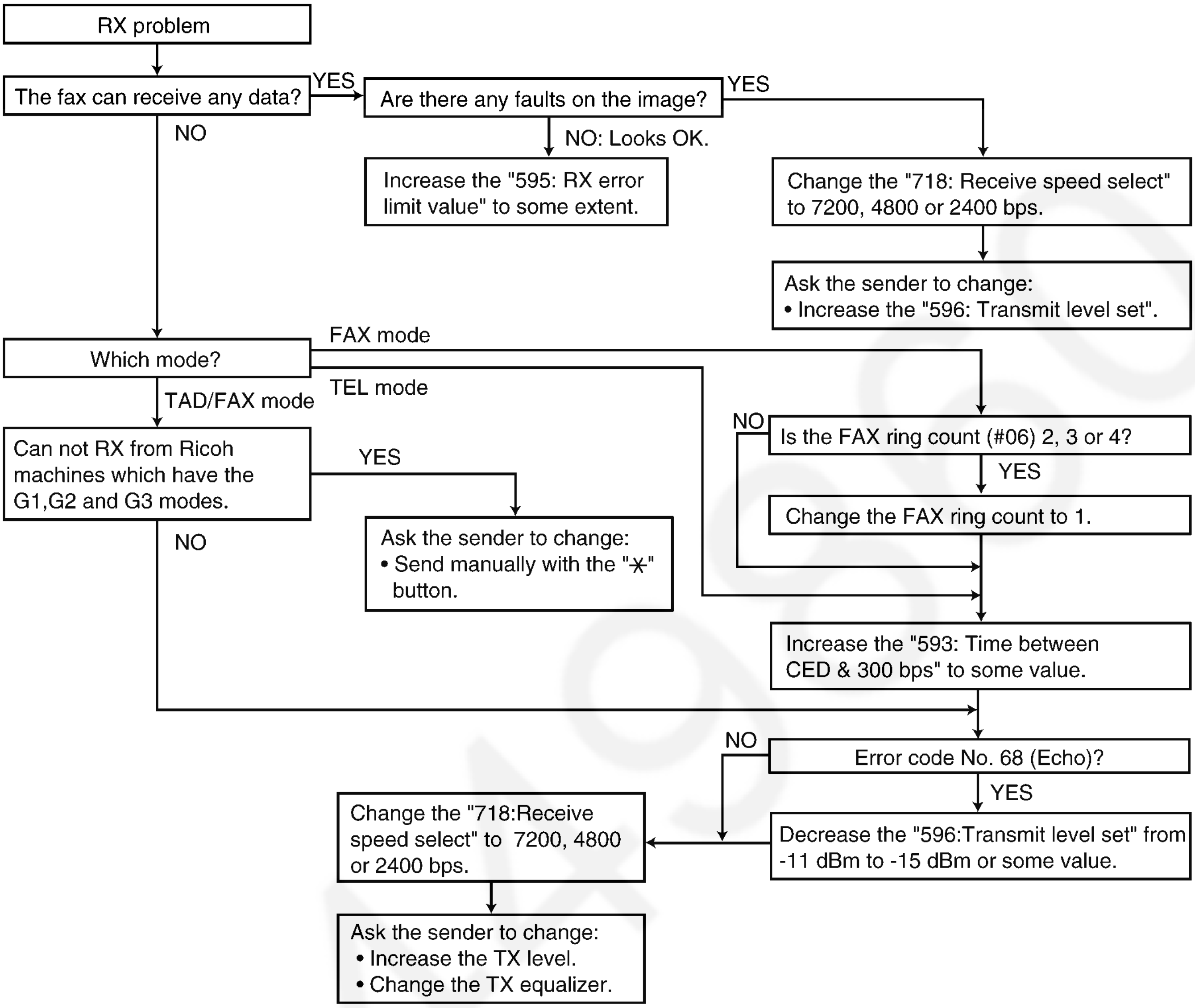

TX Problem
"TRANSMIT ERROR" (*1)
Message on LCD
Is the document pre-fed?
NO
YES
Does TX start? (Does it start feeding?)
NO
YES
OK
Increase the "596:Transmit level set" from -11 dBm to -5 dBm or same value.
NG
The document goes through.
Check the image quality on the RX side. (The image is expanded or distorted.)
Ask the other party to change the RX equalizer & increase the TX level.
Decrease the TX level from -11 dBm to - 15 dBm or same value.
NG
OK
Is auto dialing used to send?
YES
NO
Did you press the START key immediately after dialing?
NO
YES
Check the other party's machine. (Out of paper, auto answer off, etc.)
• Increase the "596:Transmit level set" from -11 dBm to -5 dBm or some value. OR • Decrease the "596:Trans-mit level set" from -11 dBm to -15 dBm. Try again.
NG
OK
• Decrease the "596:Trans-mit level set" from -11 dBm to -15 dBm. Try again.
Ask the RX party to increase the parameter of the RX error limit value to more than the current setting.
(Not available)
Change the "717:Transmit speed select " to 7200, 4800 or 2400 bps.
Check the current TX level.
Change the "594: Overseas DIS detection" to "Detect at the 2nd time".
Confirm that "592:CNG TX select" is set to "ALL".
Ask the other party to increase the TX level.

Note:

"596: Transmit level set" represents a service code. (Refer to **Service Function Table** (P.63).)

12.3.3.1.3. Receive Problem

First confirm whether the recording paper is installed properly or not before starting troubleshooting. (Refer to "**Remarks**".)


RX problem
The fax can receive any data?
YES
Are there any faults on the image?
YES
NO: Looks OK.
Increase the "595: RX error limit value" to some extent.
Change the "718: Receive speed select" to 7200, 4800 or 2400 bps.
Ask the sender to change:
• Increase the "596: Transmit level set".
NO
Which mode?
FAX mode
TEL mode
TAD/FAX mode
NO
Is the FAX ring count (#06) 2, 3 or 4?
YES
Change the FAX ring count to 1.
Can not RX from Ricoh machines which have the G1,G2 and G3 modes.
YES
Ask the sender to change:
• Send manually with the "⁎" button.
NO
Increase the "593: Time between CED & 300 bps" to some value.
NO
Error code No. 68 (Echo)?
YES
Decrease the "596:Transmit level set" from -11 dBm to -15 dBm or some value.
Change the "718:Receive speed select" to 7200, 4800 or 2400 bps.
Ask the sender to change:
• Increase the TX level.
• Change the TX equalizer.

Note:
- "596: Transmit level set" represents a service code. (Refer to **Service Function Table** (P.63).)
- #06 : Refer to for **Program Mode Table** (P.99) Fax ring count.

Remarks:

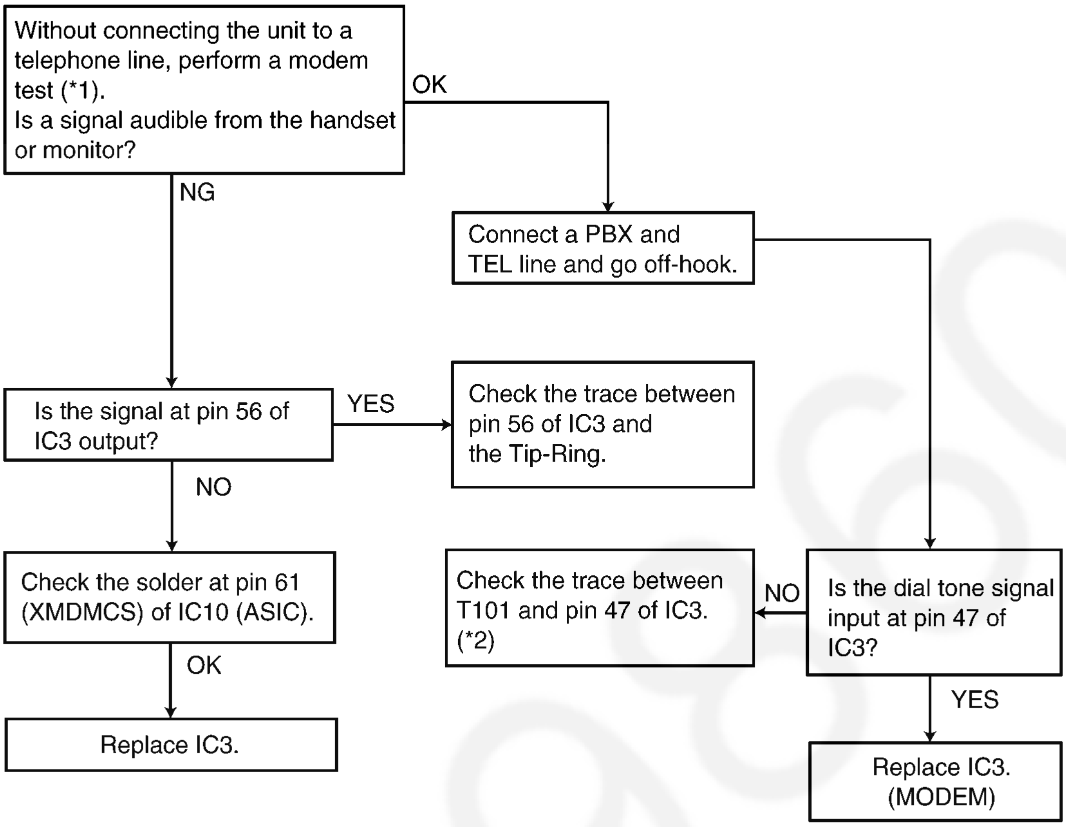
Regarding the reception problem, we have investigated the conceivable causes in the flow chart except for the software-related errors. However, some troubles may occur due to the software-related problems such as "OUT OF PAPER" when the fax switches to the memory receiving mode and the memory capacity becomes full of the unprintable data. In this case, error messages [MEMORY FULL] and its main cause, for example "CHECK PAPER" are displayed on the LCD. Once you solve the main problem, [MEMORY FULL] will be cancelled and the reception problem will be resolved.

LCD display messages indicating the error causes are shown below.

CHECK PAPER
COVER OPEN
UNIT OVERHEATED (COVER OPEN, etc.)...Reset the unit.
PAPER JAMMED
CHECK FILM

Please refer to **Error Messages-Display** (P.73) for the above items. If it turns out to be a hardware deformity, please check each sensor. (Refer to **Test Mode** (P.59).)

12.3.3.1.4. The Unit can copy, but cannot Transmit / Receive


Without connecting the unit to a telephone line, perform a modem test (*1).
Is a signal audible from the handset or monitor?
OK
NG
Connect a PBX and TEL line and go off-hook.
Is the signal at pin 56 of IC3 output?
YES
Check the trace between pin 56 of IC3 and the Tip-Ring.
NO
Check the solder at pin 61 (XMDMCS) of IC10 (ASIC).
OK
Replace IC3.
Check the trace between T101 and pin 47 of IC3. (*2)
NO
Is the dial tone signal input at pin 47 of IC3?
YES
Replace IC3. (MODEM)

REFERENCE:

(*1): **Test Mode** (P.59)
(*2): **Analog Board Section** (P.124)

A049860

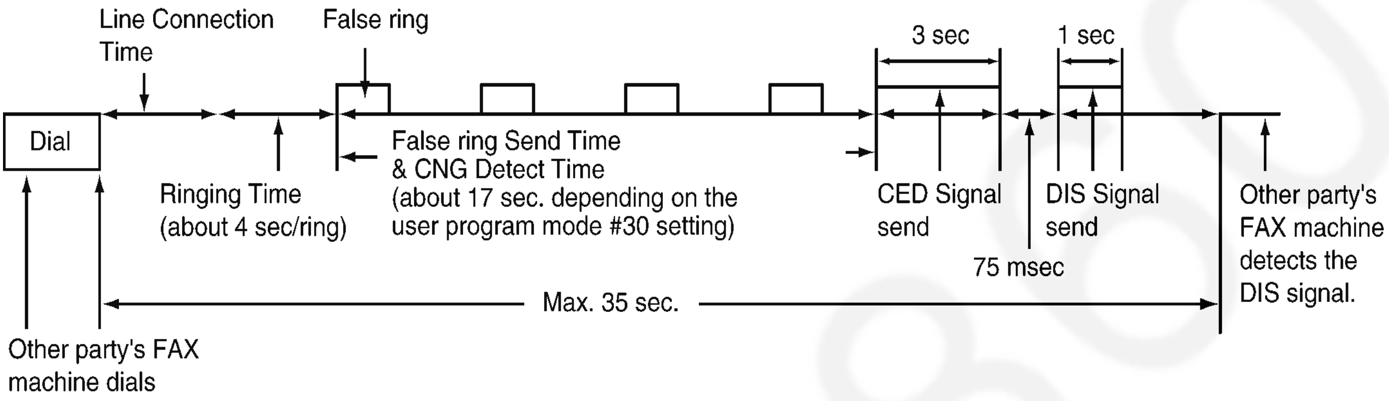
12.3.3.1.5. The unit can copy, but cannot either transmit/receive long distance or international communications

The following two causes can be considered for this symptom.

Cause 1:

The other party is executing automatic dialing, the call has been received by this unit, and the CED or DIS signal response time is too long. (In most cases, this unit detects the CNG signal and can respond to CED or DIS.) (According to the ITU-T standard, the communication procedure is cancelled when there is no response from the other party within 35 sec, so that the other party releases the line.)

(Response Time)


Line Connection Time
False ring
3 sec
1 sec
Dial
Ringing Time (about 4 sec/ring)
False ring Send Time & CNG Detect Time (about 17 sec. depending on the user program mode #30 setting)
CED Signal send
DIS Signal send
75 msec
Other party's FAX machine detects the DIS signal.
Max. 35 sec.
Other party's FAX machine dials

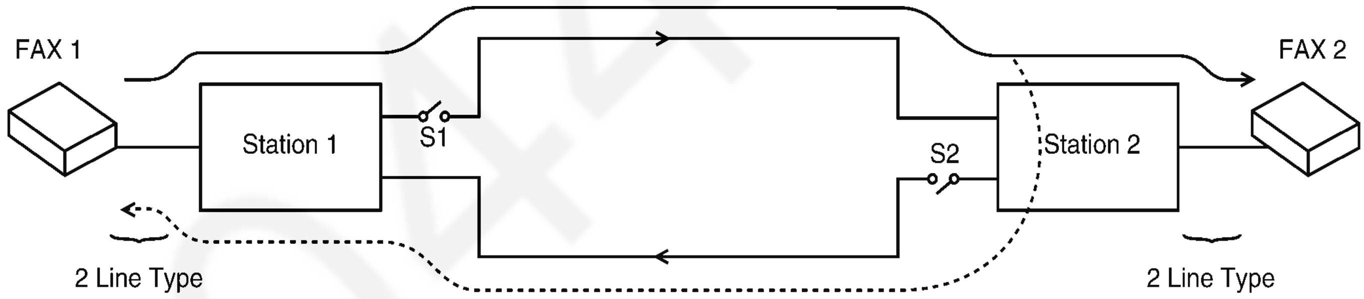
(Cause and Countermeasure)

As shown in the chart above, the total handshaking time must be reduced, but because of the long distance connection and linking of several stations, the line connection time cannot be reduced. Accordingly, the following countermeasures should be tried.

(A)... As the 35 sec. count is started directly after dialing or directly after the START button has been pressed for models with a START button, the other party should be called manually, if possible. Another possibility is entering two pauses at the end of the auto dial number on the transmission side. Then the count start time can be delayed for 2 pauses (about 10 sec.).

Cause 2:

Erroneous detection because of an echo or an echo canceler.


FAX 1
FAX 2
Station 1
Station 2
S1
S2
2 Line Type
2 Line Type

(Echo/Echo Canceler)

The signal from FAX1 reaches FAX2 via stations 1 and 2, but the reflection signal at station 2 also returns via station 1 (echo). As the distance between station 1 and station 2 is far, the echo returns to FAX 1 at a max of 600 msec after transmission. There is a possibility that this signal is detected erroneously as the signal from FAX2. For a normal call, there is also a possibility that the echo of their own voice will make the call difficult to understand. For this reason, each station (station 1 and station 2) attaches echo cancelers (S1 and S2) for international lines or long distance lines. For the echo canceler, the level of the transmission signal from FAX 1 is compared with the level of the reception signal from FAX2. When the transmission signal is larger, S1 is closed while S2 is opened when it is smaller. In other words, for transmission from FAX1, S1 is closed and S2 is open, so that the echo does not return to FAX1.

(Causes and Countermeasures)

No.	Countermeasure Side	Echo Communication Problem Example	Countermeasure	Service Code
1	Sending side	Some time is needed to compare the level of the receiving and sending signals for the echo canceler. The header of the training signal lacks due to a switching delay to close S1.	Add a dummy signal to the beginning of the training signal.	Service code (521) (International mode select) This countermeasure becomes the default value.
2	Receiving side	The echo canceler function stops according to a CED signal frequency of 2100Hz (S1 and S2 are both ON), a DIS signal is returned as an echo, and a DCS signal from the sending side overlaps the DIS echo. Then the receiving side FAX cannot retrieve the DCS signal. (Refer to Fig. a)	Change to a 1100Hz CED signal frequency. (Refer to Fig. b)	Service code (520) (CED frequency select)
	Receiving side		Change the regular rime of 75 msec between the CED signal and DIS signal to 500 msec. This will give at least 250 msec to recover the echo canceler operation. (Refer to Fig. c)	Service code (593) (Time between CED and 300 bps)
	Sending side		The sending side FAX sends a DCS signal not after receiving the 1st DIS signal but after receiving the 2nd DIS signal. (Refer to Fig. d)	Service code (594) (Overseas DIS detection select)
3	Sending side	Communication failure occurs in a long distance communication on the telephone line without an echo canceler. or There are some cases (e.g. Mobil comms.) which cause the collision of TX / RX signals due to the delay / echo and noise of the network / terminal. (Refer to Fig. e)	Decrease the transmission level from -10 dBm to -15 dBm and the echo level will decrease.	Service code (596) (Transmit level set)
4	Sending side Receiving side		Decrease the receiving sensitivity from -13 dBm to about -32 dBm so an echo signal will not received.	Service code (598) (Receiving sensitivity)
5	Sending side Receiving side		Set additional Pause time (Service mode: code No. 774) in between the original and its repeated signals, to prevent the collision of the signals at both end.	Service code (774) (T4 timer)

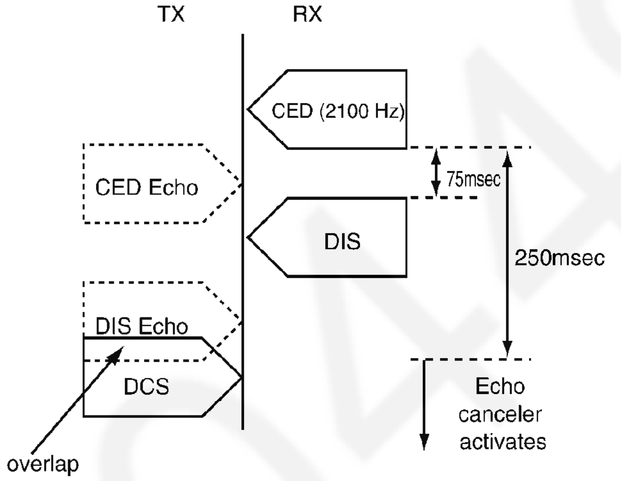


Fig. a
(Overlapping the Echo of the DIS signal and DCS signal)

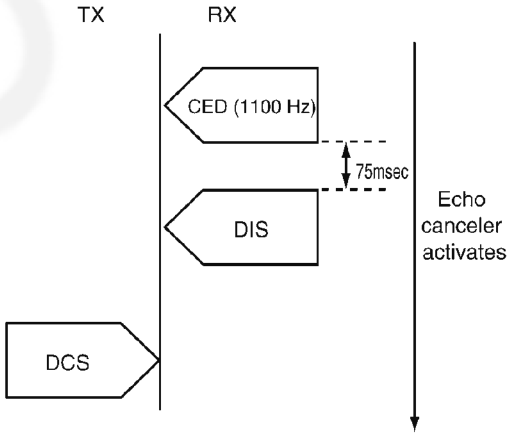


Fig. b
(Countermeasure by Changing the CED Frequency)

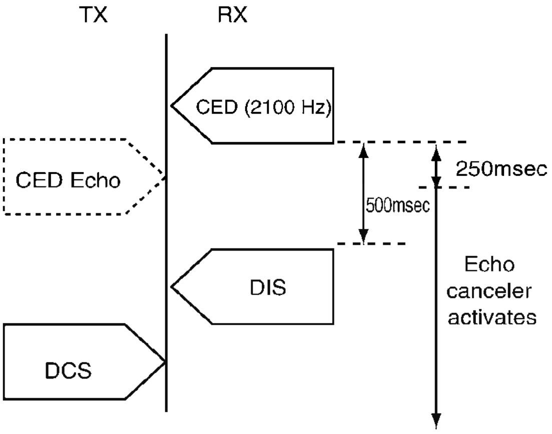

TX
RX
CED (2100 Hz)
CED Echo
250msec
500msec
DIS
Echo
canceler
activates
DCS

Fig. c
(Countermeasure by Changing the Interval Between CED and DIS)

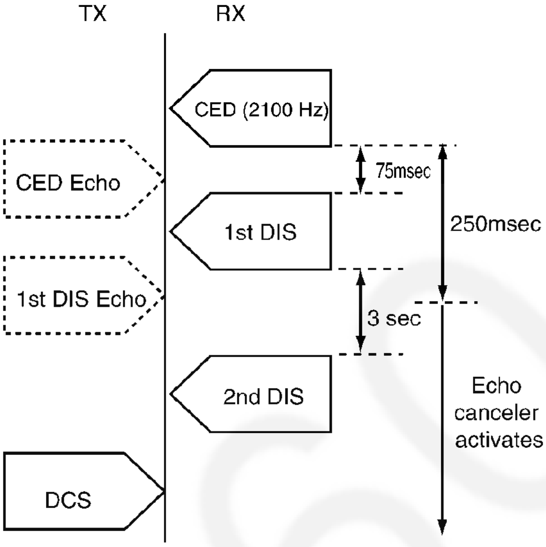
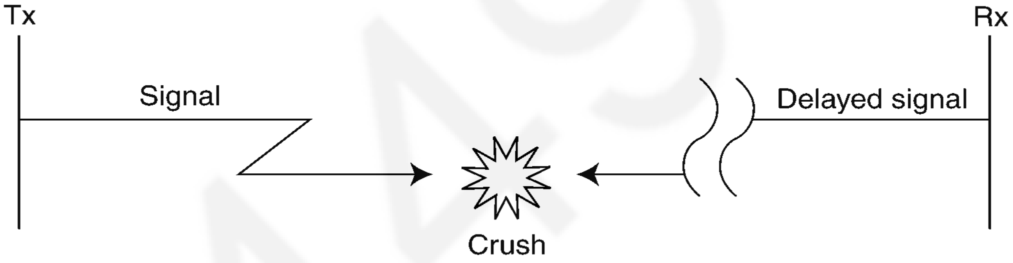

TX
RX
CED (2100 Hz)
CED Echo
75msec
250msec
1st DIS
1st DIS Echo
3 sec
2nd DIS
Echo
canceler
activates
DCS

Fig. d
(Countermeasure by Ignoring the 1st DIS)

<TX side signal>	<RX side signal>	<Countermeasure>
2nd / 3rd DCS / Training	& delayed CFR / FTT	at TX side
2nd / 3rd EOP / EOM / MPS	& delayed MCF / PIP / PIN / RTP / RTN	at TX side
delayed DCS	& 2nd / 3rd / --- DIS	at RX side


Tx
Rx
Signal
Delayed signal
Crush

(Fig. e)

12.3.3.1.6. The unit can copy, but the transmission and reception image are incorrect

(Long distance or international communication operation)

This symptom highly depends on the transmission and reception capability of the other FAX unit and the line conditions.
The countermeasures for this unit are shown below.

Transmission Operation:
Set the transmitting speed to 4800BPS (service mode: code No. 717) or select the overseas mode.

Reception Operation:
If 80% or more of the reception is incorrect, set the receiving speed to 4800BPS. (Service mode: code No. 718)

- Refer to **Service Function Table** (P.63).

12.3.3.1.7. How To Record Fax Signal by Using PC

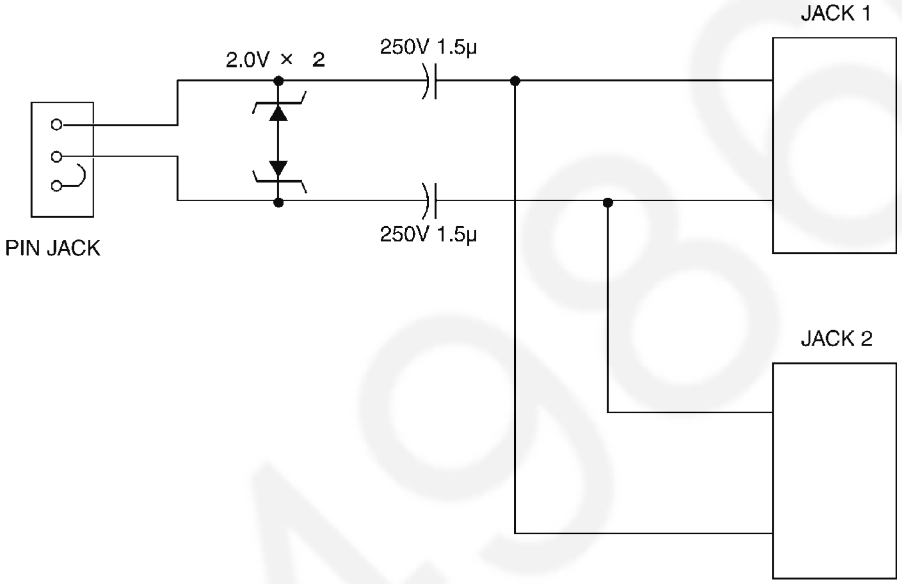
Recording FAX signal is one of the useful analysis measures to solve communication problems.
The way of recording easily by using PC is shown as follows.

1. Equipment

- 1 jig
- 1 PC (with LINE IN)
- 1 audio cord (mini jack supported)
- 2 tel cords

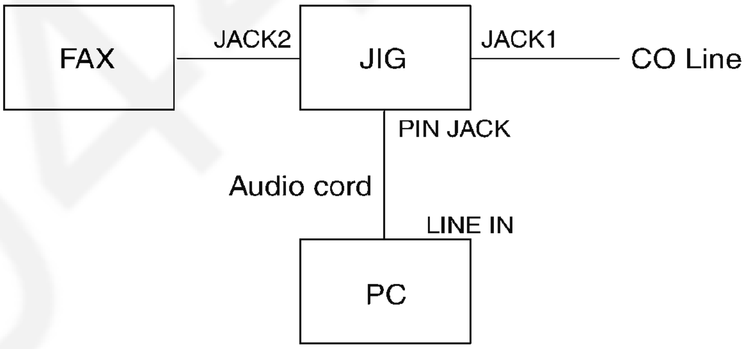
Parts No.	Parts Name & Description	Qt'y
PQJJ1T004Z	JACK1, JACK2	2
PQJJ1D010Z	PIN JACK	1
ECQE2155KF or ECQE2E155KC	CAPACITOR	2
MA4020	DIODE	2

2. Setting up



FAX SIGNAL RECORDING JIG

3. Connecting PC and JIG



4. PC setting and recording

1. Set LINE IN to be valid in the volume control setting.
   Refer to the PC instruction book.
2. Start up the PC software " SOUND RECORDER". (This software is bundled to Windows OS, which can create WAV file.)
   Set the audio format " PCM 22.050kHz, 8bit, mono".
3. Click the record button and start recording after acquisition the signal.

Note:

- Not to be wind wave patterns on the wave monitor.
- Please compress the recording data when you send attaching to E-Mail because the data size will be so heavy.
- Any software which can create WAV files is available.

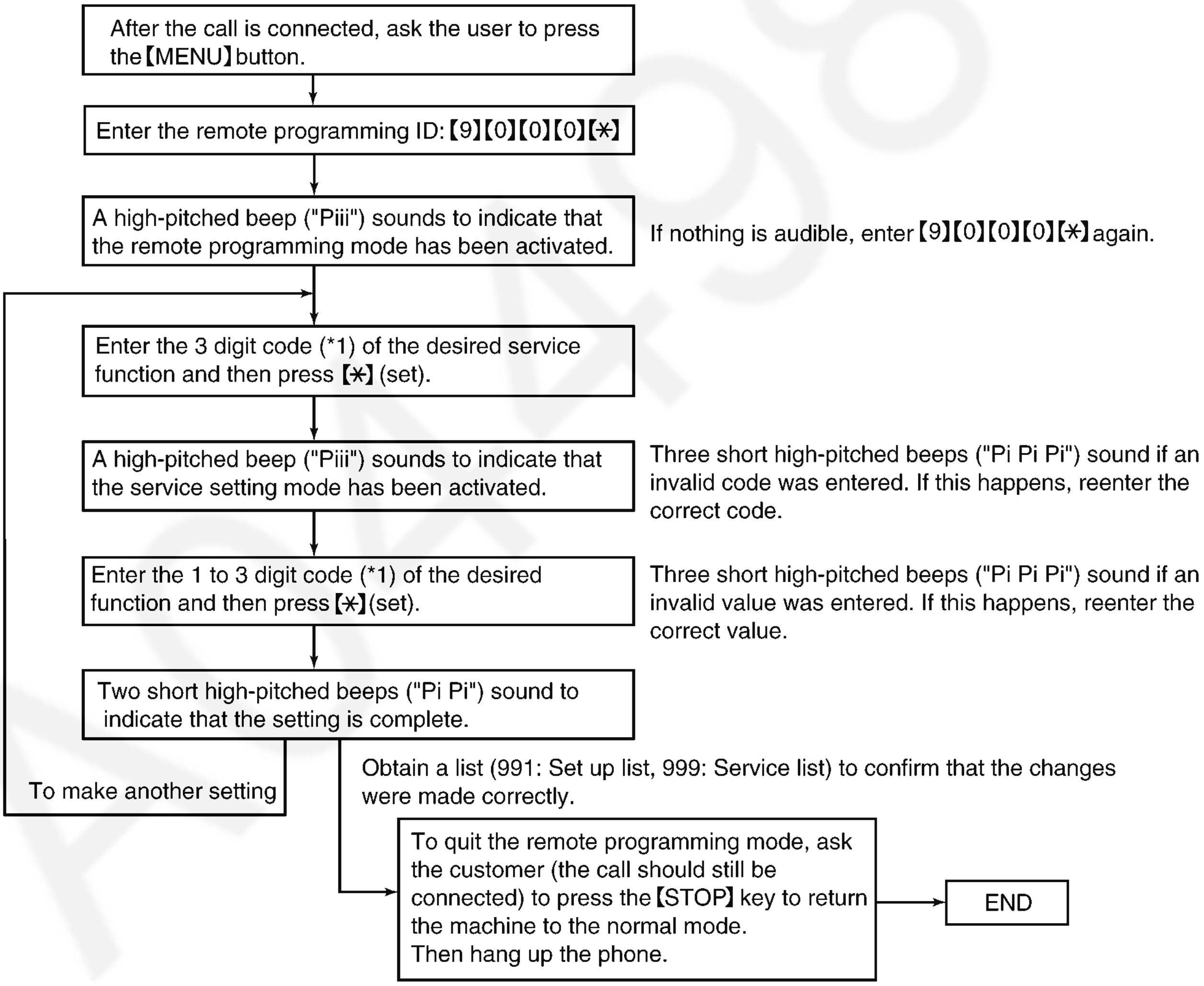
12.4. Remote Programming

If, after the call is connected, the customer describes the situation and it is determined that the problem can be corrected by making parameter changes, this function makes it possible to change parameters such as the user code and service code from another fax (using DTMF tones). Therefore, travel to the customer's location is not required. However, it is not possible to change all the parameters remotely (**Program Mode Table** (P.99)). The function used to accomplish this is remote programming.

First, in order to check the current status of the service code parameter, print out the setup list (code: 991) and the service list (code: 999) from the customer's fax machine.
Based on this, the parameters for the desired codes can be changed.
The procedure for changing and listing parameters is described on **Entering the Remote Programming Mode and Changing Service Codes** (P.98). Also, before exiting the remote programming mode, it is advisable to obtain a new list to confirm that the changes were made correctly.

Hint:
Since the connected telephone is in use during the remote programming mode, it may be helpful to ask the customer to switch to the speakerphone. This frees the customer from the need to remain right next to the fax while you are making parameter settings. When finished, inform the customer. Also note that in very noisy locations where the DTMF tones are not audible, the remote programming function will not work.

12.4.1. Entering the Remote Programming Mode and Changing Service Codes



After the call is connected, ask the user to press the 【MENU】 button.

Enter the remote programming ID: 【9】【0】【0】【0】【✱】

A high-pitched beep ("Piii") sounds to indicate that the remote programming mode has been activated.

If nothing is audible, enter 【9】【0】【0】【0】【✱】 again.

Enter the 3 digit code (*1) of the desired service function and then press 【✱】 (set).

A high-pitched beep ("Piii") sounds to indicate that the service setting mode has been activated.

Three short high-pitched beeps ("Pi Pi Pi") sound if an invalid code was entered. If this happens, reenter the correct code.

Enter the 1 to 3 digit code (*1) of the desired function and then press 【✱】 (set).

Three short high-pitched beeps ("Pi Pi Pi") sound if an invalid value was entered. If this happens, reenter the correct value.

Two short high-pitched beeps ("Pi Pi") sound to indicate that the setting is complete.

To make another setting

Obtain a list (991: Set up list, 999: Service list) to confirm that the changes were made correctly.

To quit the remote programming mode, ask the customer (the call should still be connected) to press the 【STOP】 key to return the machine to the normal mode.
Then hang up the phone.

END

Note:
(*1): Refer to **Program Mode Table** (P.99)

12.4.2. Program Mode Table

Code	Function	Set Value	Default	Remote Setting
001	Set date and time[*1]	dd/mm/yy hh:mm	01/01/2010	NG
002	Your logo	---------	None	NG
003	Your FAX number	---------	None	NG
004	Print sending report	1:ERROR / 2:ON / 3: OFF	ERROR	OK
006	FAX ring count[*1]	1~9	2	OK
	TAM/FAX ring count	2~7 / 0:AUTO	2	OK
010	Recording time[*1]	1: 1 MINUTE / 2:GREETING ONLY / 3: 3 MINUTES	3 MINUTES	OK
011	Remote TAM ID[*1]	---------	------	NG
013	Dialing Mode	1:PULSE / 2:TONE	TONE	OK
017	EXT. Ringtone[*2]	RINGTONE 1~6	RINGTONE 1	NG
022	Journal auto print	1:ON / 2:OFF	ON	OK
023	Overseas mode	1:NEXT FAX / 2:ERROR / 3:OFF	ERROR	OK
025	Delayed transmission	ON / OFF	ON	NG
026	Auto caller ID list	1:ON / 2:OFF	OFF	OK
033	Time Adjustment	0:MANUAL / 1:AUTO	MANUAL	OK
034	Quick scan	1:ON / 2:OFF	OFF	OK
036	RCV reduction	1:72% / 2:86% / 3:92% / 4:100%	92%	OK
039	LCD contrast[*2]	NORMAL / DARKER	NORMAL	NG
041	FAX activation code	ON / OFF	ON ID=*#9	NG
044	Memory receive alert	1:ON / 2:OFF	ON	OK
046	Friendly reception	1:ON / 2:OFF	ON	OK
049	Auto disconnect	ON / OFF	ON CODE=*0	NG
054	Greeting MSG. REC. time	1:16s / 2:60s	16s	OK
058	Scan contrast	1: NORMAL / 2: DARKER / 3: LIGHT	Normal	OK
059	Copy phonebook	1 ITEM / ALL ITEMS	1 ITEM	NG
062	ADSL mode	1 ON / 2:OFF	OFF	OK
067	Call screening	1:ON / 2:OFF	ON	OK
068	ECM selection	1:ON / 2:OFF	ON	OK
072	Set flash mode	1: 80msec. / 2:90msec. / 3:100msec. / 4: 110msec. / 5:160msec. / 6:200msec. / 7:250msec. / 8:300msec. / 9: 400msec. / 10: 600msec. / 11:700msec. / 12:900msec.	600msec.	OK
073	Manual answer mode	1:TEL / 2:TEL/FAX	TEL	OK
076	Connecting tone	1:ON / 2:OFF	ON	OK
077	Auto answer mode	2: FAX Only / 3:TAM/FAX	TAM/FAX	OK
078	TEL/FAX delayed ring	1~9	2	OK
080	Set default	YES / NO	NO	NG
501	Pause time set	1: 3s (Short) / 2: 5s (Long)	3s	OK
511	Vox sense	1:High / 2:Low	High	OK
514	Bell detection time	10~90 × 10msec	60 × 10msec	OK
520	CED frequency select	1:2100Hz / 2:1100Hz	2100Hz	OK
521	International mode select	1:ON / 2:OFF	ON	OK
522	Auto standby select	1:ON / 2:OFF	ON	OK
523	Receive equalizer select	1:0km / 2:1.8km / 3:3.6km / 4:7.2km	0km	OK
524	Transmission equalizer select	1:0km / 2:1.8km / 3:3.6km / 4:7.2km	0km	OK
544	Document feed position adjustment value set	1:-2.0mm / 2:-1.5mm / 3: -1.0mm / 4:-0.5mm 5:0.0mm / 6:0.5mm / 7:1.0mm / 8:1.5mm 9: 2.0mm	0.0mm	OK
550	Memory clear	---------	---------	NG
551	Flash memory check	---------	---------	NG
553	Monitor on FAX communication	1:OFF / 2:Phase B / 3:ALL	OFF	OK
554	Modem test	---------	---------	NG
555	Scan test	---------	---------	NG
556	Motor test	---------	---------	NG
557	LED test	---------	---------	NG
558	LCD test	---------	---------	NG

Code	Function	Set Value	Default	Remote Setting
559	Document jam detection	1:ON / 2:OFF	ON	OK
561	Key test	---------	---------	NG
567	T0 timer	001~255sec	046sec	OK
570	Break % select	1:61% / 2:67%	61%	OK
571	ITS auto redial time set	00~99	05	OK
572	ITS auto redial line disconnection time set	001~999sec	185sec	OK
573	Remote turn-on ring number	01~99	10	OK
590	FAX auto redial time set	00~99	05	OK
591	FAX auto redial line disconnection time set	001~999sec	185sec	OK
592	CNG transmit select	1:OFF / 2:ALL / 3:AUTO	ALL	OK
593	Time between CED and 300 bps	1:75ms / 2:500ms / 3:1sec	75ms	OK
594	Overseas DIS detection	1:1st / 2:2nd	1st	OK
595	Receive error limit value	1:5% / 2:10% / 3:15% / 4:20%	10%	OK
596	Transmit level set	00~15 x -1dbm	10 x -1dbm	OK
598*1	Receiving Sensitivity	20~48 x -1dbm	44 x -1dbm	OK
599	ECM frame size	1:256 byte / 2:64 byte	256 byte	OK
710	Memory clear except history data	---------	---------	NG
717	Transmit speed select	1:9600/ 2:7200/ 3:4800/ 4:2400	9600bps	OK
718	Receive speed select	1:9600/ 2:7200/ 3:4800/ 4:2400	9600bps	OK
722	Redial tone detect	1:ON / 2:OFF	ON	OK
745	Power on film feed	1:ON / 2:OFF	ON	OK
763	CNG detect time for friendly reception	1:10s / 2:20s / 3:30s	30s	OK
773	DIS-DCS interval	1:500msec / 2:200msec	200ms	OK
774	T4 timer	00~99 x 100ms	00ms	OK
784	Voice prompt	---------	---------	NG
815	Sensor test	---------	---------	NG
852	Print test pattern	---------	---------	NG
853	Top margin	1~9 mm	5 mm	OK
861	Paper size	1:A4 / 2:Letter	A4	OK
874	DTMF ON time	06~20 × 10msec	10 × 10msec	OK
875	DTMF OFF time	06~20 × 10msec	10 × 10msec	OK
880	History list	“Set” Key	---------	NG
881	Journal 2	Set	---------	NG
882	Journal 3	Set	---------	NG
961	The time transmitting the false ring back tone	01~10 sec	07 sec	OK
962	The operator calling time	05~30 sec	10 sec	OK
991	Remote Setup list	1: Print start	---------	OK
994	Remote Journal list	1: Print start	---------	OK
995	Remote Journal 2 list	1: Print start	---------	OK
996	Remote Journal 3 list	1: Print start	---------	OK
998	Remote History list	1: Print start	---------	OK
999	Remote Service list	1: Print start	---------	OK

OK means "can set".
NG means "can not set".

Note:

*1 When this setting is changed using the base unit, the setting for the cordless handset will also be changed, and vice versa.

*2 This setting can be changed individually for the base unit and the cordless handset

- To set the cordless handset ringtone for outside calls, see **Cordless Handset Programming** (P.57).
- To set the cordless handset LCD display contrast, see **Cordless Handset Programming** (P.57).
- To set the cordless handset language, see **Cordless Handset Programming** (P.57).

Refer to **Service Function Table** (P.63) for descriptions of the individual codes.

Example:

If you want to set value in the "004 Print sending report", press the dial key number 1 or 2 corresponding to the Set Value you want to select. (1:ERROR / 2:ON)

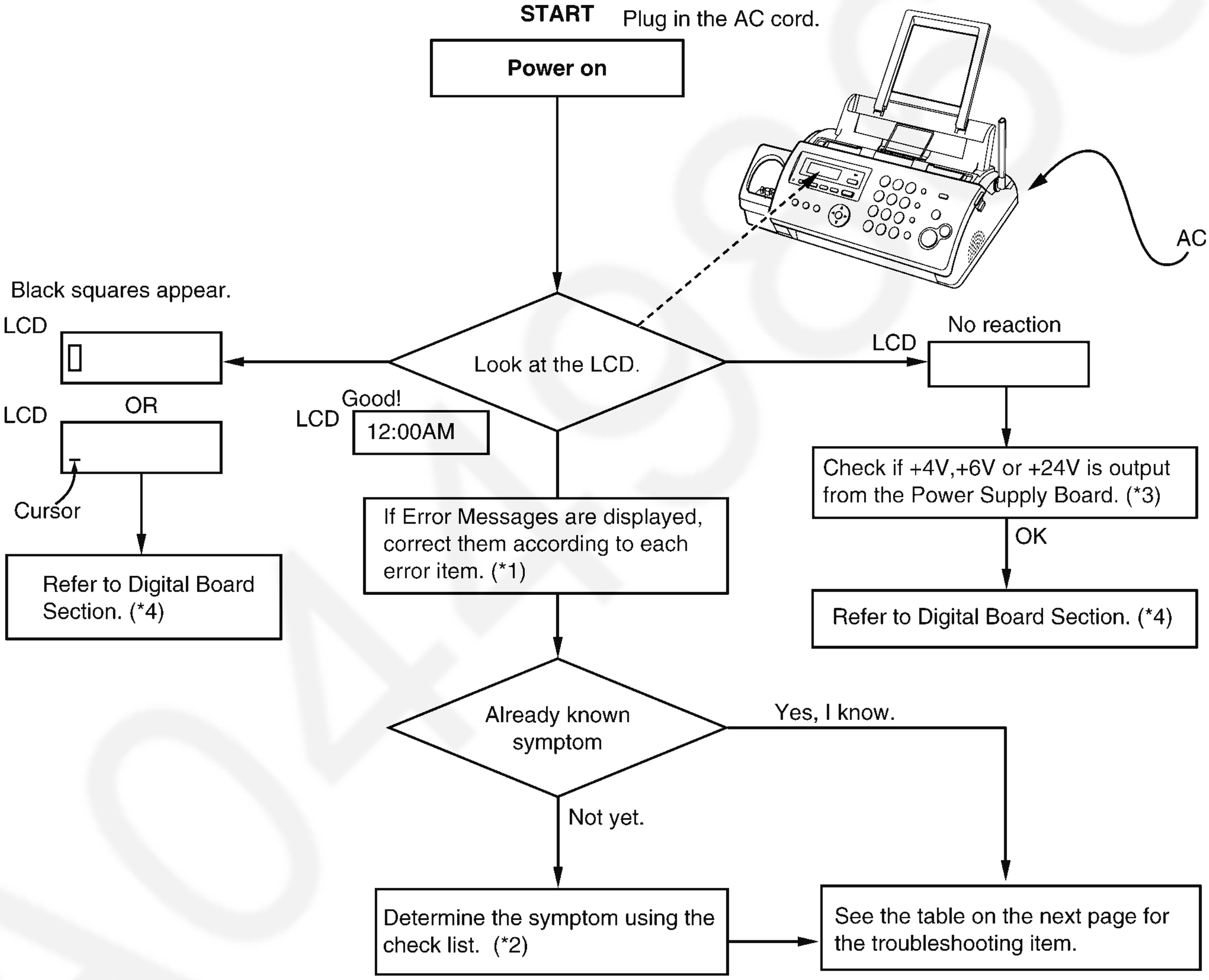
12.5. Troubleshooting Details

12.5.1. Outline

Troubleshooting is for recovering quality and reliability by determining the broken component and replacing, adjusting or cleaning it as required. First, determine the problem then decide the troubleshooting method. If you have difficulty finding the broken part, determine which board is broken. (For example: the Digital PCB, Analog PCB, etc.) The claim tag from a customer or dealer may use different expressions for the same problem, as they are not a technician or engineer. Using your experience, test the problem area corresponding to the claim. Also, returns from a customer or dealer often have a claim tag. For these cases as well, you need to determine the problem. Test the unit using the simple check list on **Simple Check List** (P.103). Difficult problems may be hard to determine, so repeated testing is necessary.

12.5.2. Starting Troubleshooting

Determine the symptom and the troubleshooting method.


START
Plug in the AC cord.
Power on
AC
Look at the LCD.
Black squares appear.
LCD
OR
LCD
Cursor
Refer to Digital Board Section. (*4)
Good!
LCD
12:00AM
If Error Messages are displayed, correct them according to each error item. (*1)
No reaction
LCD
Check if +4V,+6V or +24V is output from the Power Supply Board. (*3)
OK
Refer to Digital Board Section. (*4)
Already known symptom
Yes, I know.
Not yet.
Determine the symptom using the check list. (*2)
See the table on the next page for the troubleshooting item.

REFERENCE:

(*1): **Error Messages-Display** (P.73)
(*2): **Simple Check List** (P.103)
(*3): **Power Supply Board Section** (P.126)
(*4): **Digital Board Section** (P.117)

12.5.3. Troubleshooting Items Table

ITEM	SYMPTOM	REFERENCE
ADF (Auto Document Feeder)	The document does not feed.	See **No Document Feed** (P.104)
	Document jam	See **Document Jam** (P.105)
	Multiple feed	See **Multiple Document Feed** (P.106)
	Skew	See **Document Skew** (P.107)
Recording paper feed	The recording paper does not feed.	See **The Recording Paper does not Feed** (P.108)
	Paper jam	See **Paper Jam** (P.109)
	Multiple feed and skew	See **Recording Paper Multiple Feed and Skew** (P.110)
Printing	The sent fax data is skewed.	See **The Sent Fax Data is Skewed** (P.110)
	The received fax data is skewed.	See **The Received Fax Data is Skewed** (P.110)
	The received or copied data is expanded.	See **Received or Copied Data is Expanded** (P.111)
	A black page is copied.	See **A Blank Page is Copied** (P.112)
	A blank page is received.	See **A Blank Page is Received** (P.114)
	Black or white vertical line	See **Black or White Vertical Line** (P.114)
	Black or white lateral line on print out	See **Black or White Lateral Line on Print Out** (P.115)
	An abnormal image is printed	See **An Abnormal Image is Printed** (P.116)
Communication FAX, TEL (Analog board)	Cannot communicate by fax. An error code is displayed.	See **Communication Section** (P.89) and **Journal Report** (P.76)
	Cannot talk. The DTMF tone doesn't work. The handset / monitor doesn't work, etc.	See **Analog Board Section** (P.124)
Operation panel	Keys are not accepted.	See **Operation Panel Section** (P.129)
Sensor	If the electric circuit is the cause, the error message corresponding to the sensor will be displayed.	See **Sensor Section** (P.130)
Cordless (handset)	Cordless Handset does not work.	See **Check Power (Cordless Handset)** (P.134)
	No link	See **Check Link (Cordless Handset)** (P.135)
	Battery won't charge	See **Check Battery Charge (Cordless Handset)** (P.134)
	No voice reception	See **Check Cordless Handset Reception** (P.136)
	No voice transmission	See **Check Cordless Handset Transmission** (P.136)
	Bell does not sound	See **Bell Reception (Cordless Handset)** (P.137)

12.5.3.1. Simple Check List

SERIAL NO.		DATE	
FUNCTION		JUDGEMENT	REFERENCE
FAX operation	Transmission	OK / NG	
	Receiving	OK / NG	
Copy operation		OK / NG	
Telephone operation	Handset transceiver / receiver	OK / NG	
	SP-PHONE sound	OK / NG	
	Ringer sound	OK / NG	
	Dial operation	OK / NG	
	Volume operation	OK / NG	
Operation Panel	Key check	OK / NG	Service code #561 (Refer to **Test Mode** (P.59).)
	LED check	OK / NG	Service code #557 (Refer to **Test Mode** (P.59).)
	LCD check	OK / NG	Service code #558 (Refer to **Test Mode** (P.59).)
Sensor	Sensor check	OK / NG	Service code #815 (Refer to **Test Mode** (P.59).)
Clock	Display changing	OK / NG	Is the time kept correctly? Check with another clock.
Digital TAM	Greeting REC / PLAY	OK / NG	
	Incoming message REC / PLAY	OK / NG	
	Memo REC / PLAY	OK / NG	
Voice prompt		OK / NG	Service code #784 (Refer to **Test Mode** (P.59).) Check whether voice prompt is play or not.
Cordless Operation	Cordless handset	OK / NG	
	Link	OK / NG	
	Battery charge	OK / NG	

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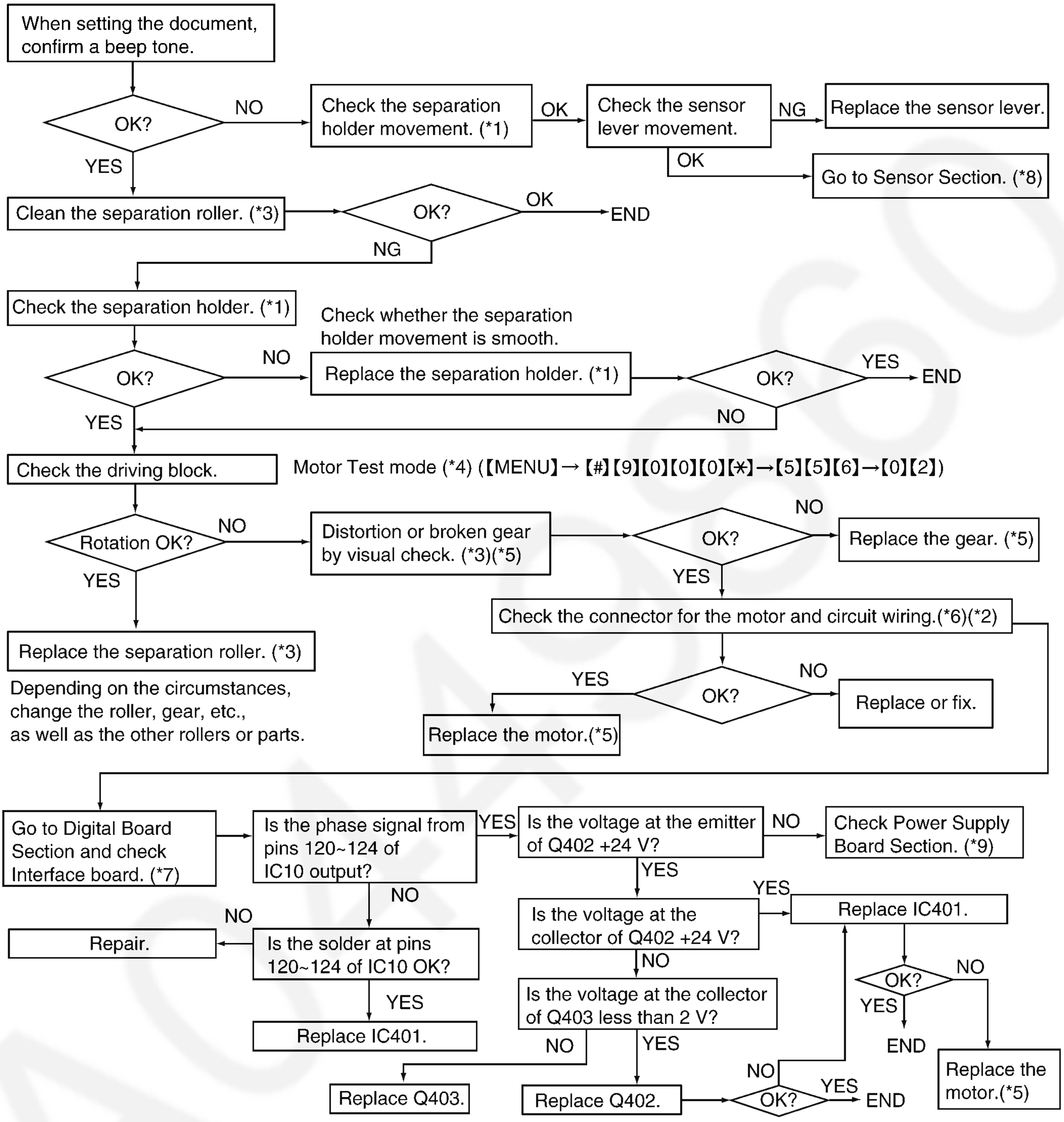
12.5.4. ADF (Auto Document Feed) Section

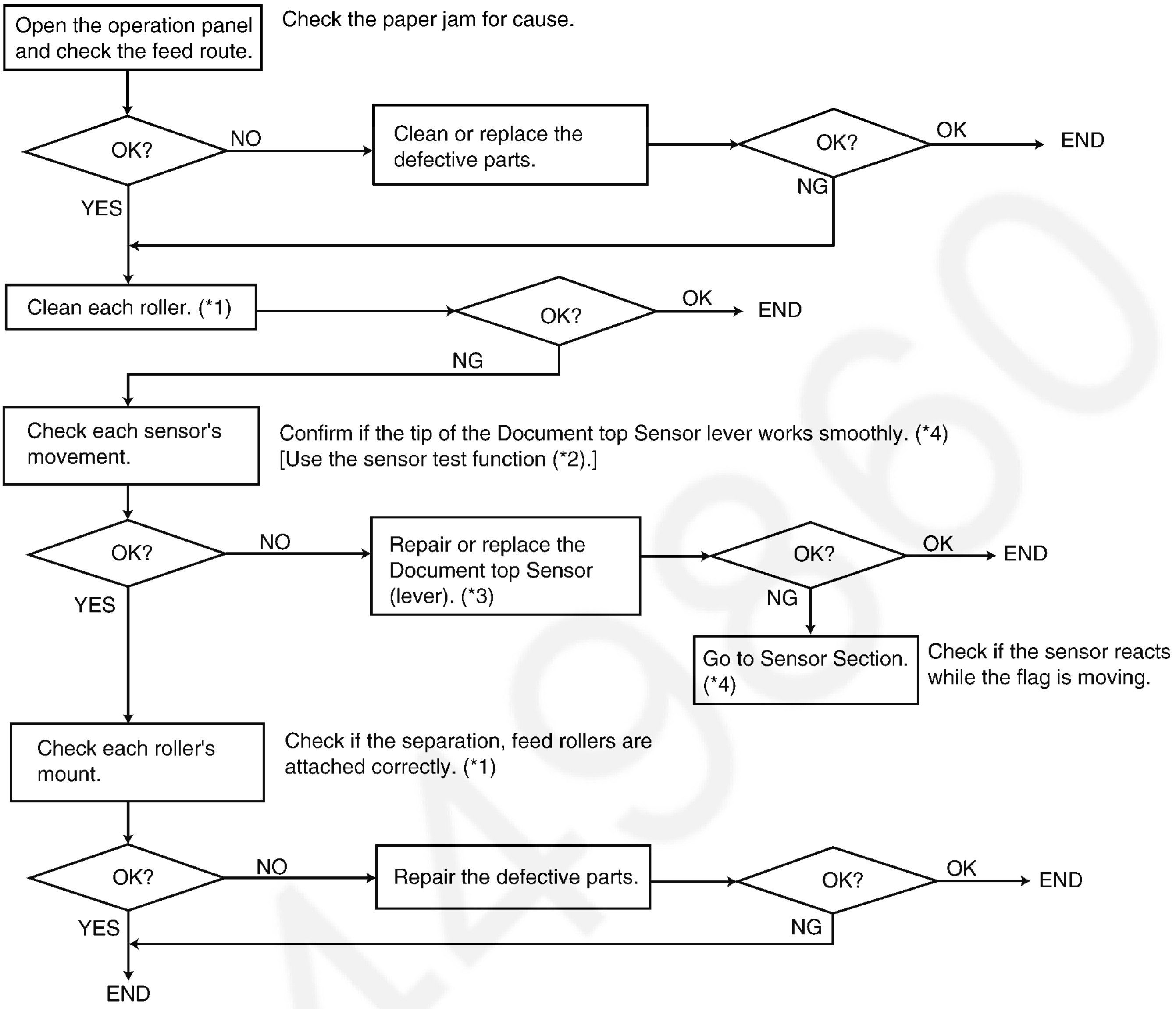
12.5.4.1. No Document Feed


When setting the document, confirm a beep tone.
OK?
NO
YES
Check the separation holder movement. (*1)
OK
Check the sensor lever movement.
NG
Replace the sensor lever.
OK
Go to Sensor Section. (*8)
Clean the separation roller. (*3)
OK?
OK
END
NG
Check the separation holder. (*1)
Check whether the separation holder movement is smooth.
OK?
NO
Replace the separation holder. (*1)
OK?
YES
END
NO
YES
Check the driving block.
Motor Test mode (*4) (【MENU】→【#】【9】【0】【0】【0】【✱】→【5】【5】【6】→【0】【2】)
Rotation OK?
NO
Distortion or broken gear by visual check. (*3)(*5)
OK?
NO
Replace the gear. (*5)
YES
YES
Check the connector for the motor and circuit wiring.(*6)(*2)
Replace the separation roller. (*3)
Depending on the circumstances, change the roller, gear, etc., as well as the other rollers or parts.
YES
OK?
NO
Replace or fix.
Replace the motor.(*5)
Go to Digital Board Section and check Interface board. (*7)
Is the phase signal from pins 120~124 of IC10 output?
YES
Is the voltage at the emitter of Q402 +24 V?
NO
Check Power Supply Board Section. (*9)
YES
NO
NO
YES
Repair.
Is the solder at pins 120~124 of IC10 OK?
Is the voltage at the collector of Q402 +24 V?
Replace IC401.
YES
NO
OK?
NO
YES
Replace IC401.
Is the voltage at the collector of Q403 less than 2 V?
NO
YES
END
NO
Replace the motor.(*5)
Replace Q403.
Replace Q402.
OK?
YES
END

REFERENCE:

- (*1): **How to Remove the Separation Holder and Exit Roller** (P.163)
- (*2): **Installation Position of the Lead Wires** (P.164)
- (*3): **How to Remove the Gear Block and Separation Roller** (P.153)
- (*4): **Test Mode** (P.59)
- (*5): **How to Remove the Gears, Motors and Arms of the Gear Block** (P.154)
- (*6): **Thermal Head** (P.21)
- (*7): **Digital Board Section** (P.117)
- (*8): **Sensor Section** (P.130)
- (*9): **Power Supply Board Section** (P.126)

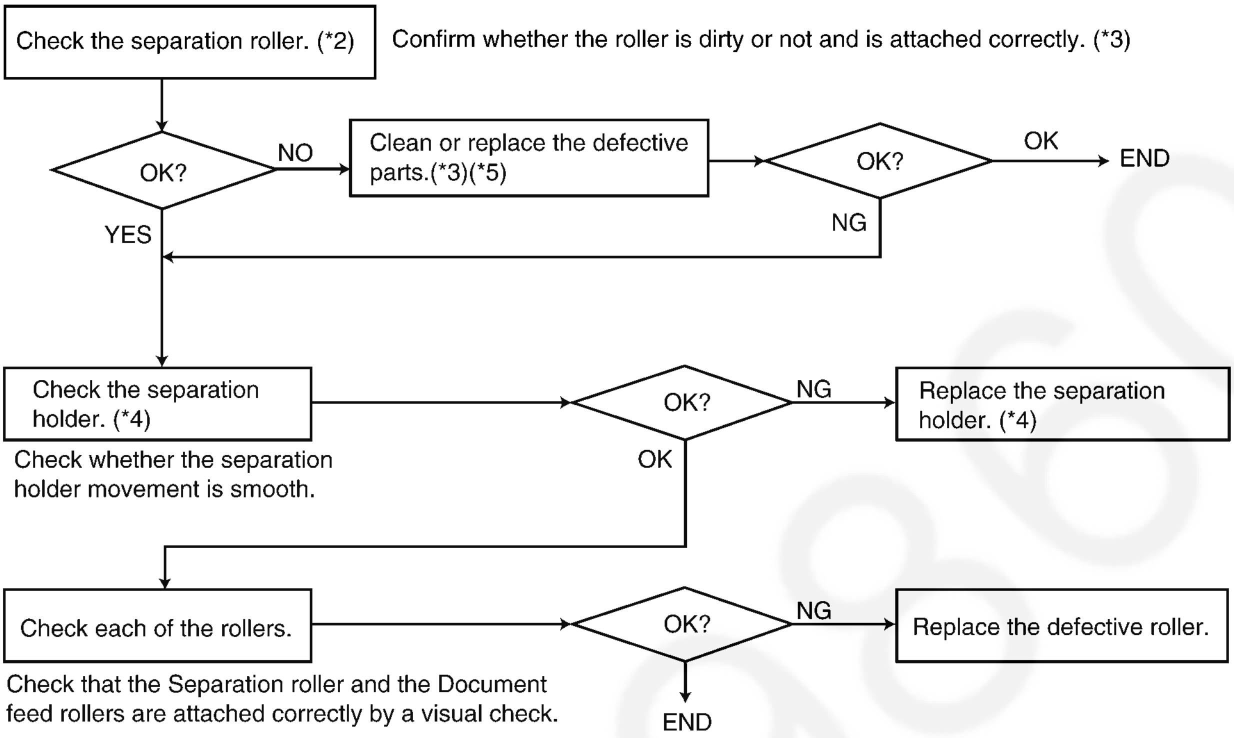
12.5.4.2. Document Jam


Open the operation panel and check the feed route.
Check the paper jam for cause.
OK?
NO
YES
Clean or replace the defective parts.
OK?
OK
NG
END
Clean each roller. (*1)
OK?
OK
END
NG
Check each sensor's movement.
Confirm if the tip of the Document top Sensor lever works smoothly. (*4)
[Use the sensor test function (*2).]
OK?
NO
YES
Repair or replace the Document top Sensor (lever). (*3)
OK?
OK
END
NG
Go to Sensor Section. (*4)
Check if the sensor reacts while the flag is moving.
Check each roller's mount.
Check if the separation, feed rollers are attached correctly. (*1)
OK?
NO
YES
Repair the defective parts.
OK?
OK
END
NG
END

REFERENCE:
(*1): **Disassembly and Assembly Instructions** (P.143)
(*2): **Test Mode** (P.59)
(*3): **How to Remove the Separation Holder and Exit Roller** (P.163)
(*4): **Sensor Section** (P.130)

12.5.4.3. Multiple Document Feed

- When using thick paper etc., sometimes the document will not be fed. (*1)


Check the separation roller. (*2)
Confirm whether the roller is dirty or not and is attached correctly. (*3)
OK?
NO
Clean or replace the defective parts.(*3)(*5)
OK?
OK
END
NG
YES
Check the separation holder. (*4)
Check whether the separation holder movement is smooth.
OK?
NG
Replace the separation holder. (*4)
OK
Check each of the rollers.
Check that the Separation roller and the Document feed rollers are attached correctly by a visual check.
OK?
NG
Replace the defective roller.
END

REFERENCE:

(*1): **Installing the Recording Paper** (P.54)
(*2): **How to Remove the Gear Block and Separation Roller** (P.153)
(*3): **Disassembly and Assembly Instructions** (P.143)
(*4): **How to Remove the Separation Holder and Exit Roller** (P.163)
(*5): **Maintenance** (P.185)

Note:

When confirming if the characters are extended or distorted, or if the feed problem is occurred, use this test chart format. (Refer to **Test Chart** (P.207).)

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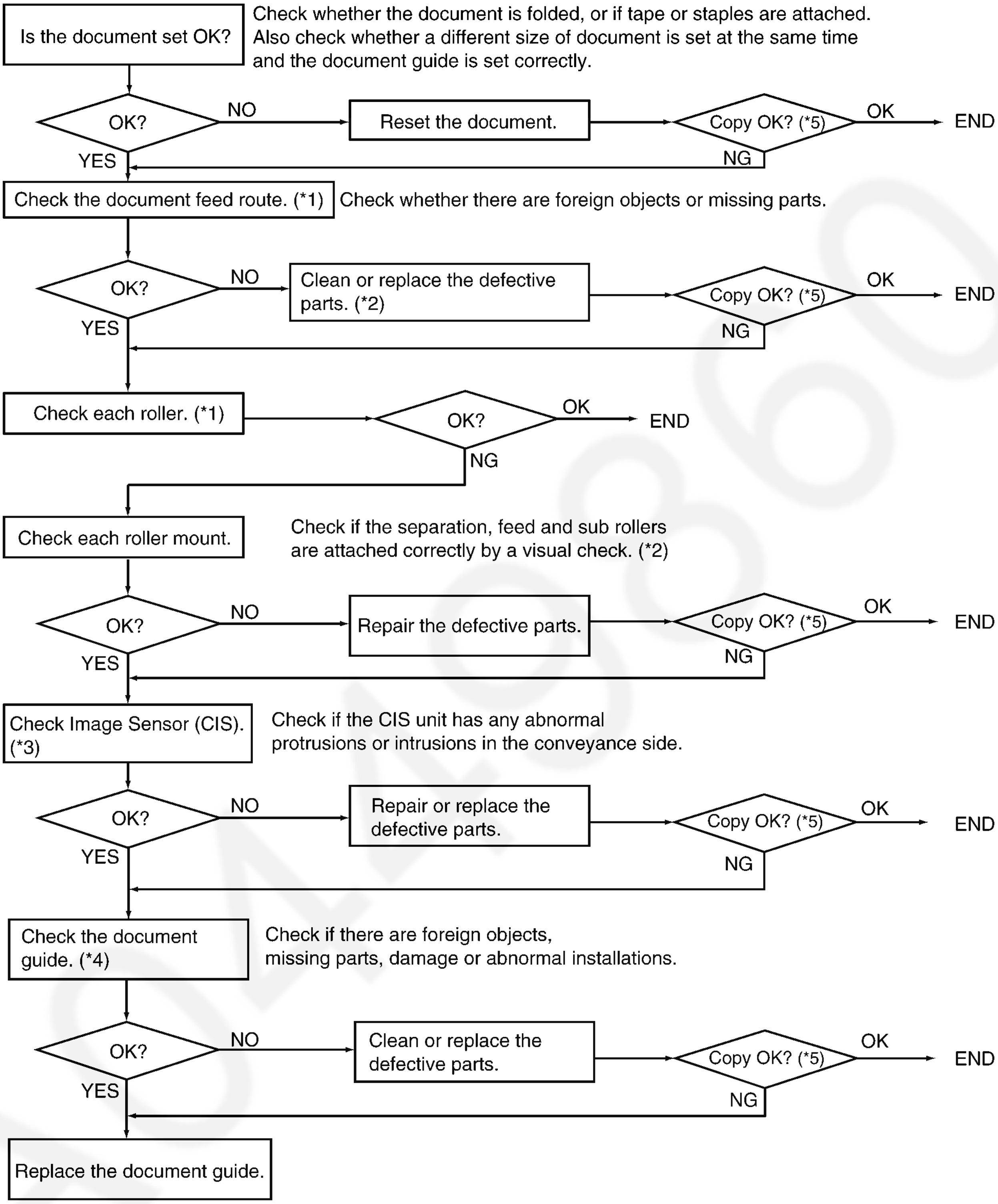
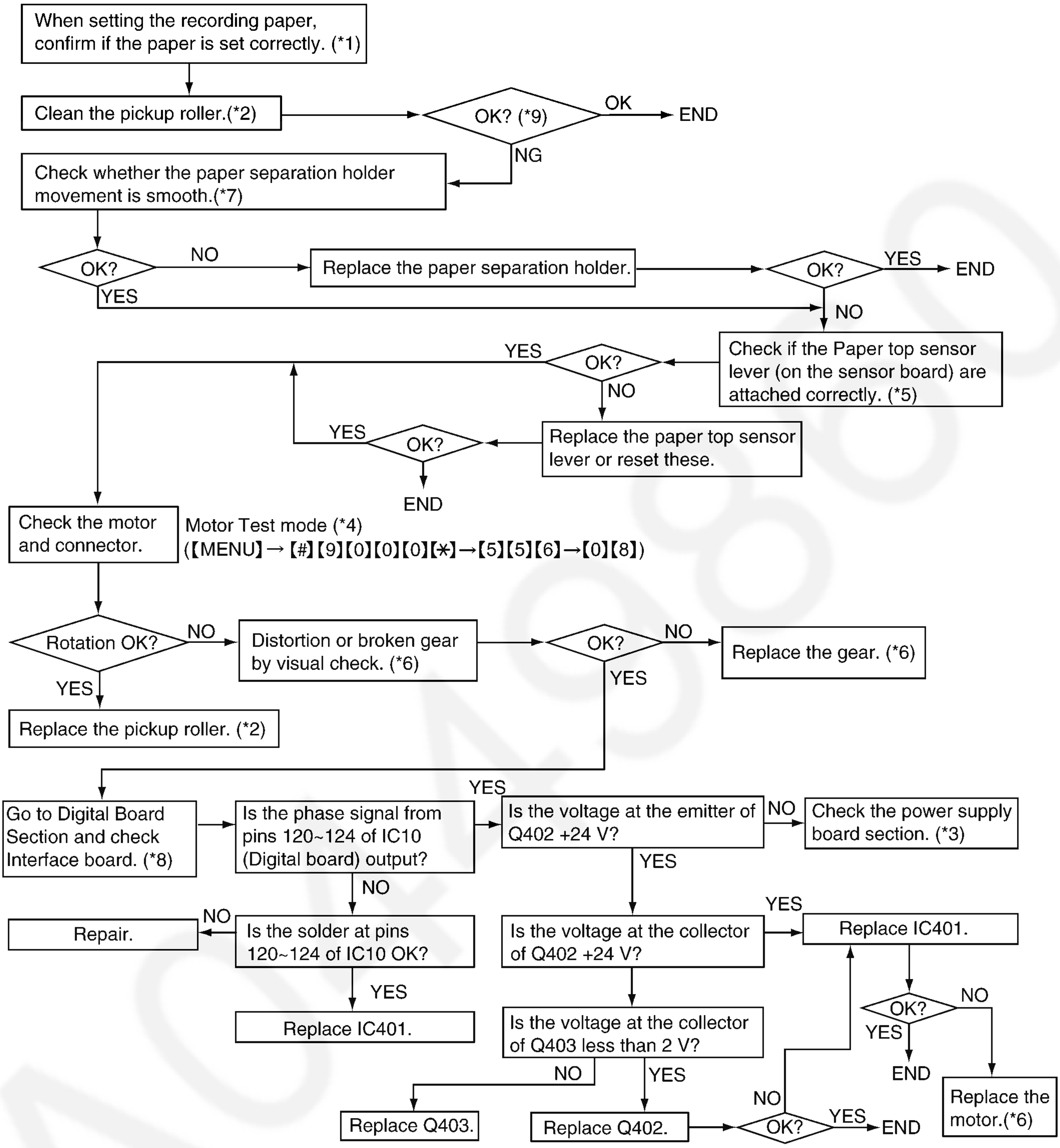
12.5.4.4. Document Skew


Is the document set OK?
Check whether the document is folded, or if tape or staples are attached. Also check whether a different size of document is set at the same time and the document guide is set correctly.
OK?
NO
Reset the document.
Copy OK? (*5)
OK
END
NG
YES
Check the document feed route. (*1)
Check whether there are foreign objects or missing parts.
OK?
NO
Clean or replace the defective parts. (*2)
Copy OK? (*5)
OK
END
NG
YES
Check each roller. (*1)
OK?
OK
END
NG
Check each roller mount.
Check if the separation, feed and sub rollers are attached correctly by a visual check. (*2)
OK?
NO
Repair the defective parts.
Copy OK? (*5)
OK
END
NG
YES
Check Image Sensor (CIS). (*3)
Check if the CIS unit has any abnormal protrusions or intrusions in the conveyance side.
OK?
NO
Repair or replace the defective parts.
Copy OK? (*5)
OK
END
NG
YES
Check the document guide. (*4)
Check if there are foreign objects, missing parts, damage or abnormal installations.
OK?
NO
Clean or replace the defective parts.
Copy OK? (*5)
OK
END
NG
YES
Replace the document guide.

REFERENCE:

(*1): **Maintenance Check Items/Component Locations** (P.185)
(*2): **Disassembly and Assembly Instructions** (P.143)
(*3): **How to Remove the Image Sensor (CIS)** (P.147)
(*4): **Overview** (P.48)
(*5): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.

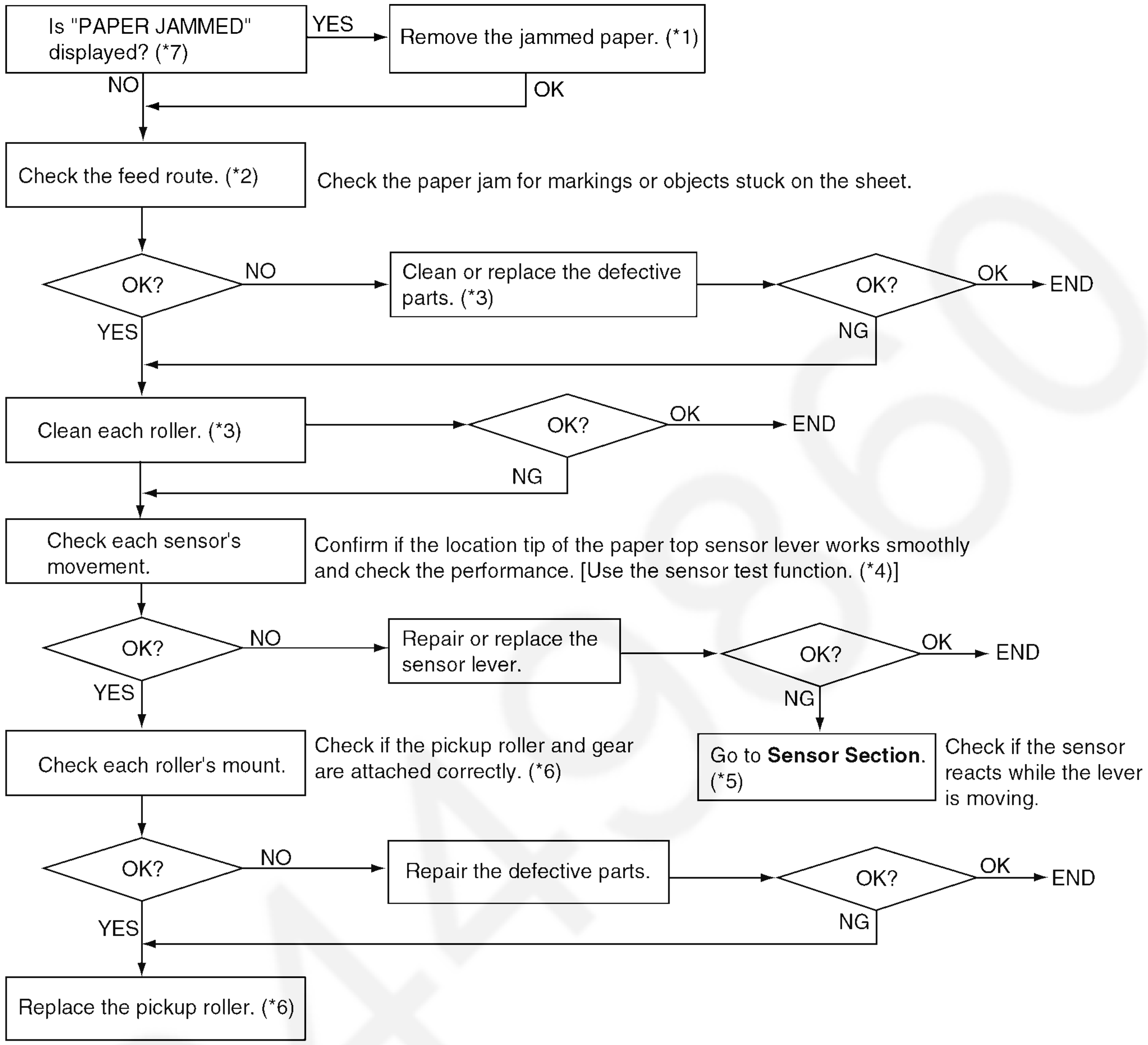
12.5.4.5. The Recording Paper does not Feed


When setting the recording paper, confirm if the paper is set correctly. (*1)
Clean the pickup roller.(*2)
OK? (*9)
OK
END
NG
Check whether the paper separation holder movement is smooth.(*7)
OK?
NO
YES
Replace the paper separation holder.
OK?
YES
END
NO
Check if the Paper top sensor lever (on the sensor board) are attached correctly. (*5)
OK?
YES
NO
Replace the paper top sensor lever or reset these.
OK?
YES
END
Check the motor and connector.
Motor Test mode (*4)
([MENU] → [#] [9] [0] [0] [0] [✱] → [5] [5] [6] → [0] [8])
Rotation OK?
NO
YES
Distortion or broken gear by visual check. (*6)
OK?
NO
YES
Replace the gear. (*6)
Replace the pickup roller. (*2)
Go to Digital Board Section and check Interface board. (*8)
Is the phase signal from pins 120~124 of IC10 (Digital board) output?
YES
NO
Is the voltage at the emitter of Q402 +24 V?
NO
YES
Check the power supply board section. (*3)
Repair.
NO
Is the solder at pins 120~124 of IC10 OK?
YES
Replace IC401.
Is the voltage at the collector of Q402 +24 V?
YES
Replace IC401.
OK?
NO
YES
END
Replace the motor.(*6)
Is the voltage at the collector of Q403 less than 2 V?
NO
YES
Replace Q403.
Replace Q402.
OK?
NO
YES
END

REFERENCE:

(*1): **Installing the Recording Paper** (P.54)
(*2): **How to Remove the Pickup Roller and Antenna** (P.160)
(*3): **Power Supply Board Section** (P.126)
(*4): **Test Mode** (P.59)
(*5): **How to Remove the P.C. Boards and Speaker** (P.151)
(*6): **How to Remove the Gears, Motors and Arms of the Gear Block** (P.154)
(*7): **How to Remove the Platen Roller and Lock Lever** (P.158)
(*8): **Digital Board Section** (P.117)
(*9): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.

12.5.4.6. Paper Jam


Is "PAPER JAMMED" displayed? (*7)
YES
Remove the jammed paper. (*1)
NO
OK
Check the feed route. (*2)
OK?
NO
Clean or replace the defective parts. (*3)
OK?
OK
END
YES
NG
Clean each roller. (*3)
OK?
OK
END
NG
Check each sensor's movement.
OK?
NO
Repair or replace the sensor lever.
OK?
OK
END
YES
NG
Check each roller's mount.
Go to **Sensor Section**. (*5)
OK?
NO
Repair the defective parts.
OK?
OK
END
YES
NG
Replace the pickup roller. (*6)

Check the paper jam for markings or objects stuck on the sheet.

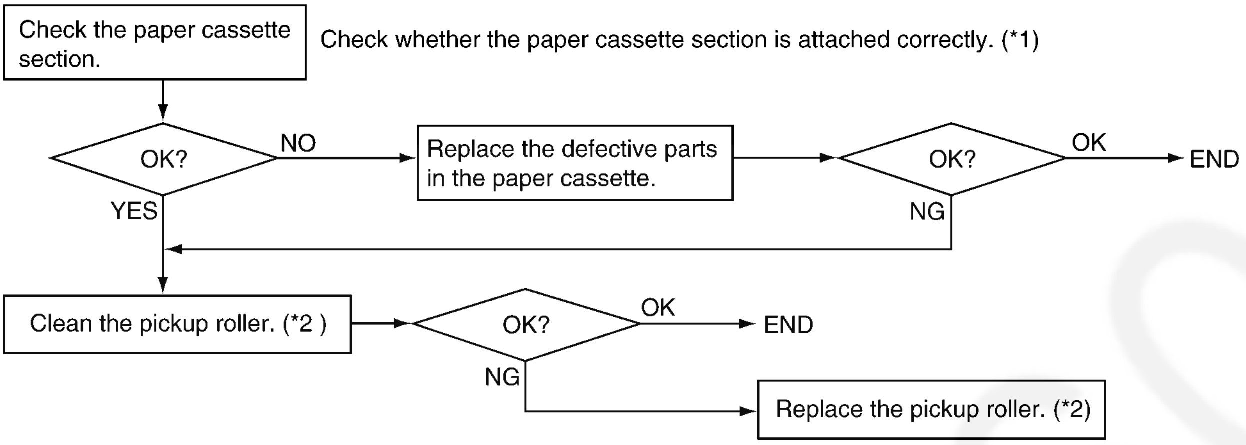
Confirm if the location tip of the paper top sensor lever works smoothly and check the performance. [Use the sensor test function. (*4)]

Check if the pickup roller and gear are attached correctly. (*6)

Check if the sensor reacts while the lever is moving.

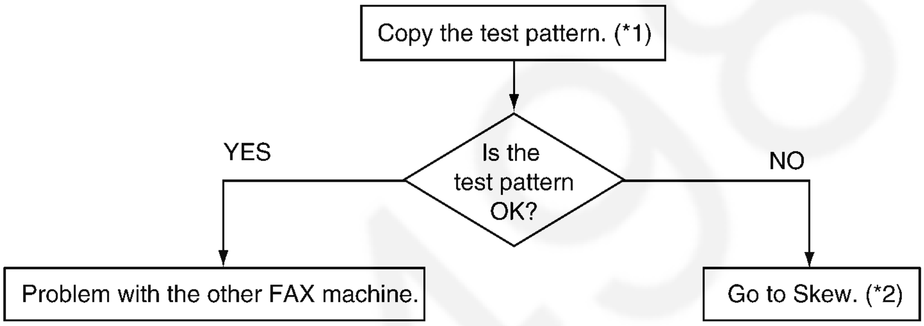
REFERENCE:
(*1): **Jams** (P.194)
(*2): **Maintenance Check Items/Component Locations** (P.185)
(*3): **Disassembly and Assembly Instructions**(P.143)
(*4): **Test Mode** (P.59)
(*5): **Sensor and Switches** (P.26)
(*6): **How to Remove the Pickup Roller and Antenna** (P.160)

12.5.4.7. Recording Paper Multiple Feed and Skew


Check the paper cassette section.
Check whether the paper cassette section is attached correctly. (*1)
OK?
NO
YES
Replace the defective parts in the paper cassette.
OK?
OK
END
NG
Clean the pickup roller. (*2)
OK?
OK
END
NG
Replace the pickup roller. (*2)

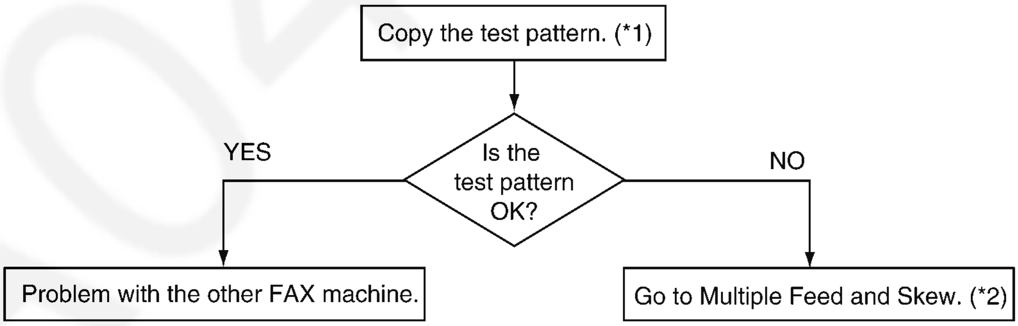
REFERENCE:
(*1): **How to Remove the Platen Roller and Lock Lever** (P.158)
(*2): **How to Remove the Pickup Roller and Antenna** (P.160)

12.5.4.8. The Sent Fax Data is Skewed


Copy the test pattern. (*1)
Is the test pattern OK?
YES
NO
Problem with the other FAX machine.
Go to Skew. (*2)

REFERENCE:
(*1): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.
(*2): **Document Skew** (P.107)

12.5.4.9. The Received Fax Data is Skewed


Copy the test pattern. (*1)
Is the test pattern OK?
YES
NO
Problem with the other FAX machine.
Go to Multiple Feed and Skew. (*2)

REFERENCE:
(*1): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.
(*2): **Recording Paper Multiple Feed and Skew** (P.110)

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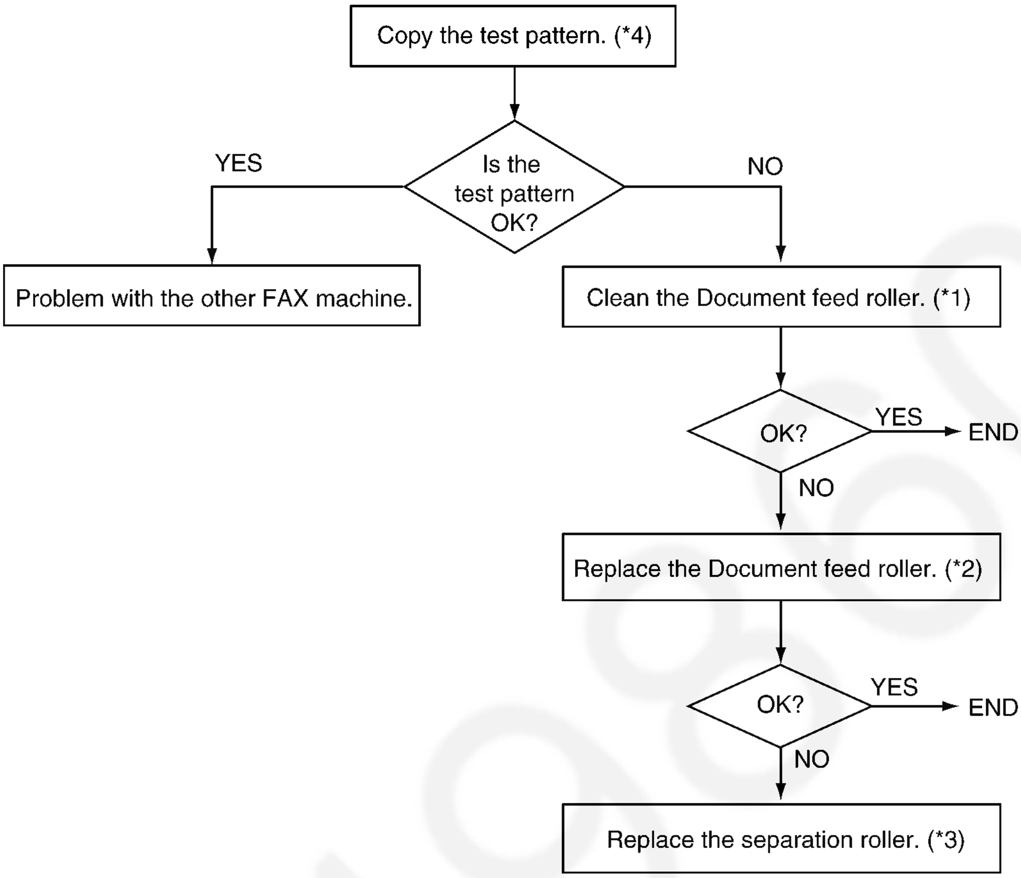
12.5.4.10. Received or Copied Data is Expanded


Copy the test pattern. (*4)
Is the test pattern OK?
YES
NO
Problem with the other FAX machine.
Clean the Document feed roller. (*1)
OK?
YES
END
NO
Replace the Document feed roller. (*2)
OK?
YES
END
NO
Replace the separation roller. (*3)

REFERENCE:

(*1): **Document feeder/recording paper feeder/scanner glass cleaning** (P.196)
(*2): **Disassembly and Assembly Instructions** (P.143)
(*3): **How to Remove the Separation Holder and Exit Roller** (P.163)
(*4): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.

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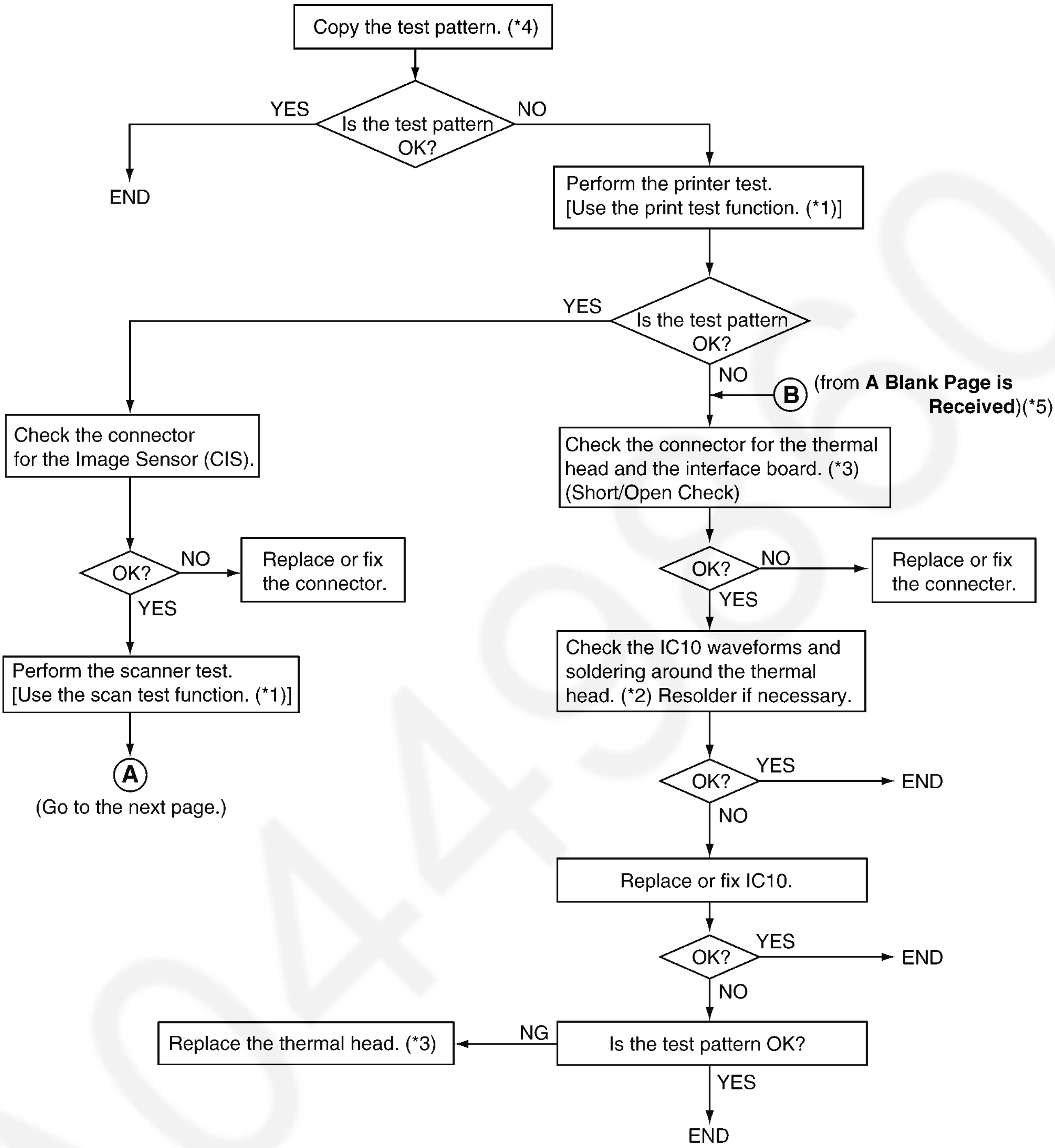
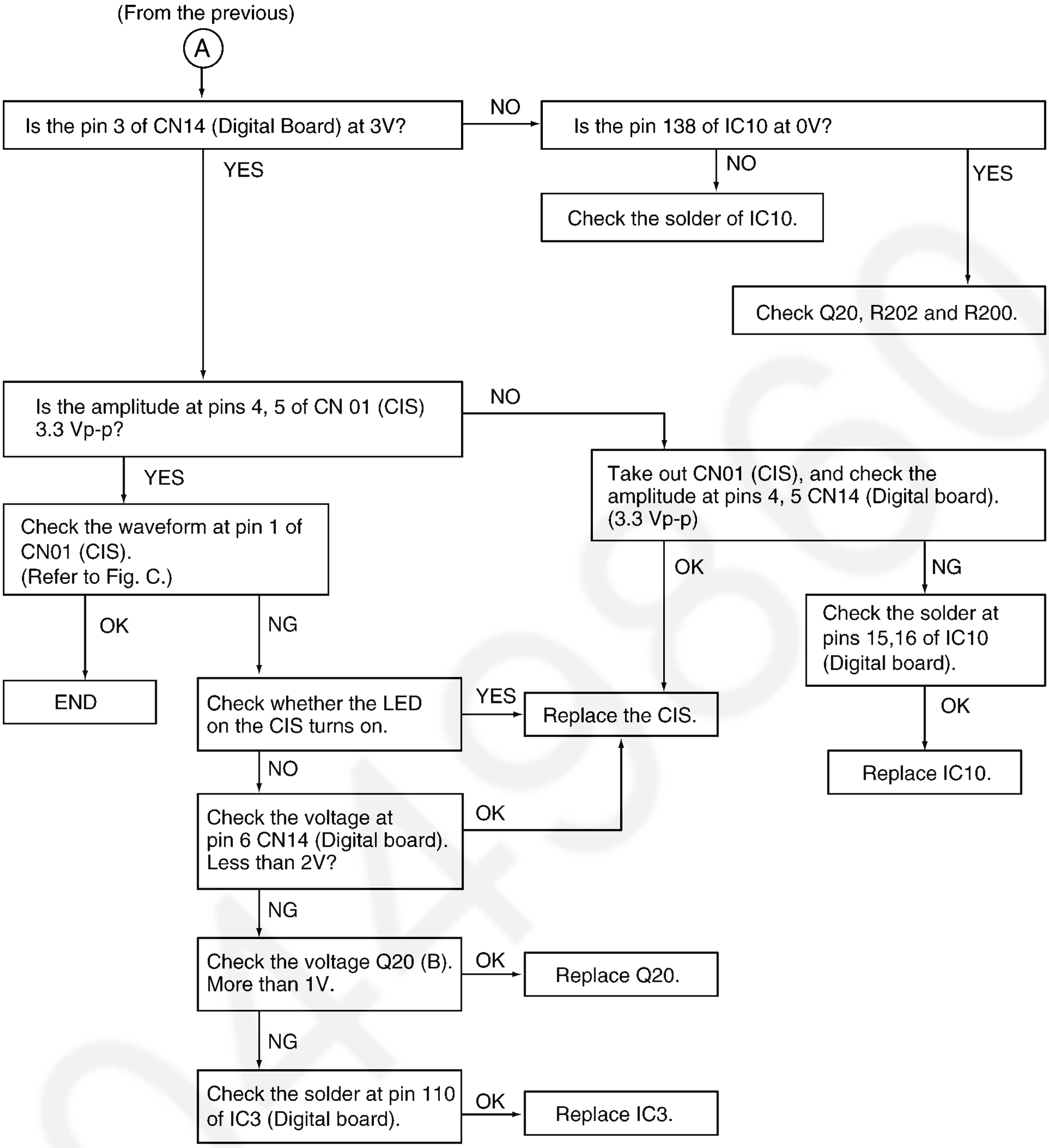
12.5.4.11. A Blank Page is Copied


Copy the test pattern. (*4)
Is the test pattern OK?
YES
NO
END
Perform the printer test.
[Use the print test function. (*1)]
Is the test pattern OK?
YES
NO
B
(from A Blank Page is Received)(*5)
Check the connector for the Image Sensor (CIS).
OK?
NO
Replace or fix the connector.
YES
Perform the scanner test.
[Use the scan test function. (*1)]
A
(Go to the next page.)
Check the connector for the thermal head and the interface board. (*3) (Short/Open Check)
OK?
NO
Replace or fix the connecter.
YES
Check the IC10 waveforms and soldering around the thermal head. (*2) Resolder if necessary.
OK?
YES
END
NO
Replace or fix IC10.
OK?
YES
END
NO
Is the test pattern OK?
NG
Replace the thermal head. (*3)
YES
END

REFERENCE:
(*1): **Test Mode** (P.59)
(*2): **Thermal Head** (P.21)
(*3): **How to Remove the Thermal Head** (P.148)
(*4): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.
(*5): **A Blank Page is Received** (P.114)


(From the previous)
A
Is the pin 3 of CN14 (Digital Board) at 3V?
NO
Is the pin 138 of IC10 at 0V?
NO
Check the solder of IC10.
YES
Check Q20, R202 and R200.
YES
Is the amplitude at pins 4, 5 of CN 01 (CIS) 3.3 Vp-p?
NO
Take out CN01 (CIS), and check the amplitude at pins 4, 5 CN14 (Digital board). (3.3 Vp-p)
OK
NG
Check the solder at pins 15,16 of IC10 (Digital board).
OK
Replace IC10.
YES
Check the waveform at pin 1 of CN01 (CIS). (Refer to Fig. C.)
OK
END
NG
Check whether the LED on the CIS turns on.
YES
Replace the CIS.
NO
Check the voltage at pin 6 CN14 (Digital board). Less than 2V?
OK
NG
Check the voltage Q20 (B). More than 1V.
OK
Replace Q20.
NG
Check the solder at pin 110 of IC3 (Digital board).
OK
Replace IC3.

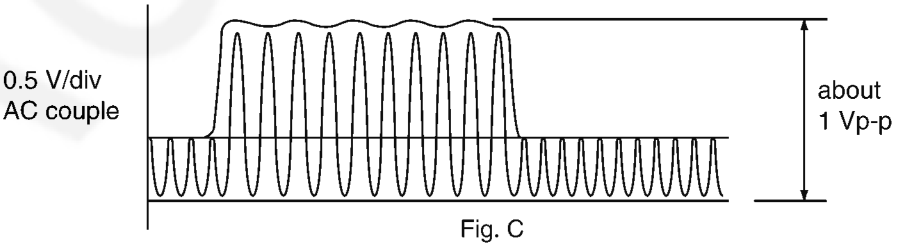
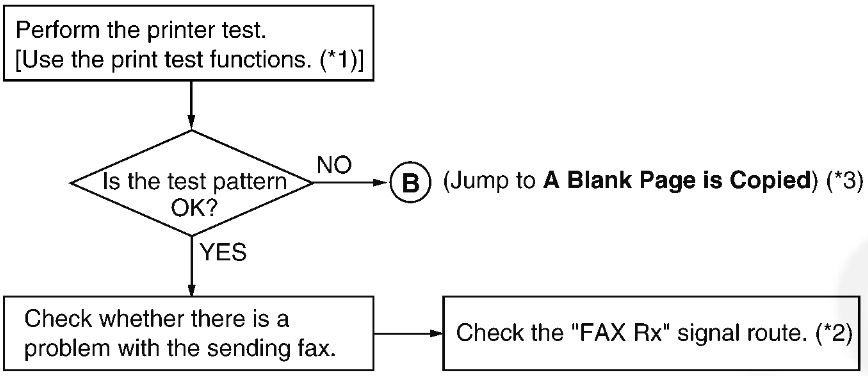

0.5 V/div
AC couple
about
1 Vp-p

Fig. C

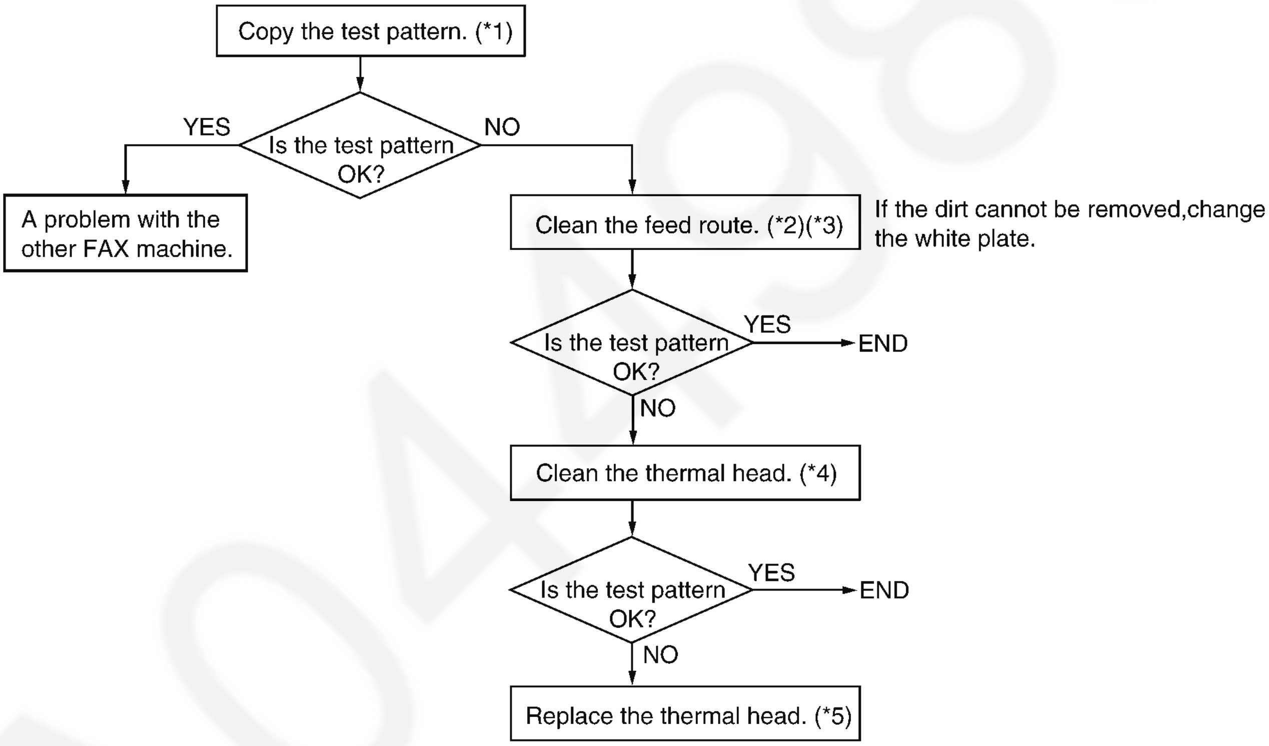
12.5.4.12. A Blank Page is Received


Perform the printer test.
[Use the print test functions. (*1)]
Is the test pattern OK?
NO
B
(Jump to **A Blank Page is Copied**) (*3)
YES
Check whether there is a problem with the sending fax.
Check the "FAX Rx" signal route. (*2)

REFERENCE:

(*1): **Test Mode** (P.59)
(*2): **Check Sheet for Signal Route** (P.124)
(*3): **A Blank Page is Copied** (P.112)

12.5.4.13. Black or White Vertical Line


Copy the test pattern. (*1)
YES
Is the test pattern OK?
NO
A problem with the other FAX machine.
Clean the feed route. (*2)(*3)
If the dirt cannot be removed,change the white plate.
Is the test pattern OK?
YES
END
NO
Clean the thermal head. (*4)
Is the test pattern OK?
YES
END
NO
Replace the thermal head. (*5)

REFERENCE:

(*1): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.
(*2): **Maintenance Check Items/Component Locations** (P.185)
(*3): **Document feeder/recording paper feeder/scanner glass cleaning** (P.196)
(*4): **Thermal Head Cleaning** (P.197)
(*5): **How to Remove the Thermal Head** (P.148)

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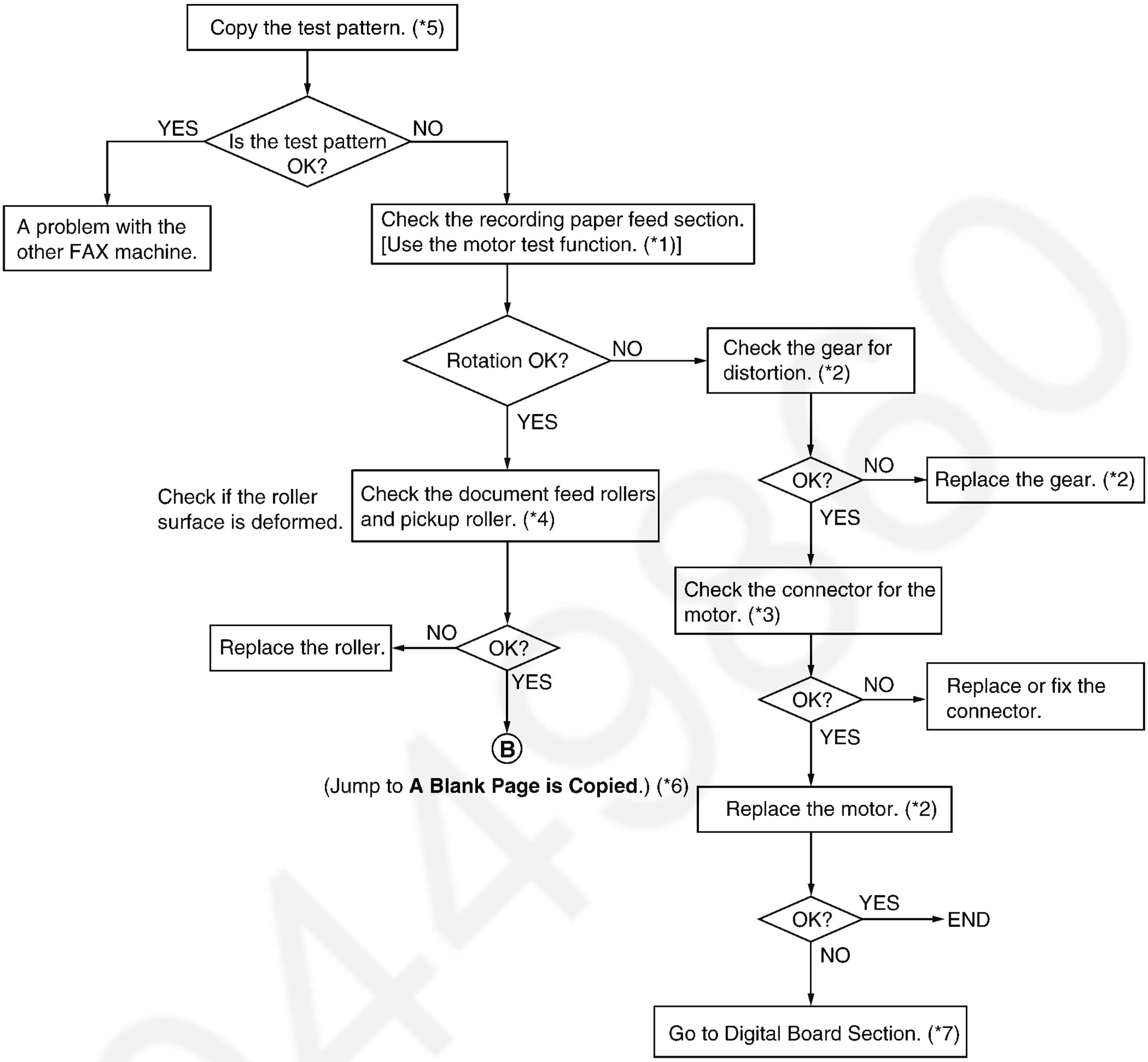
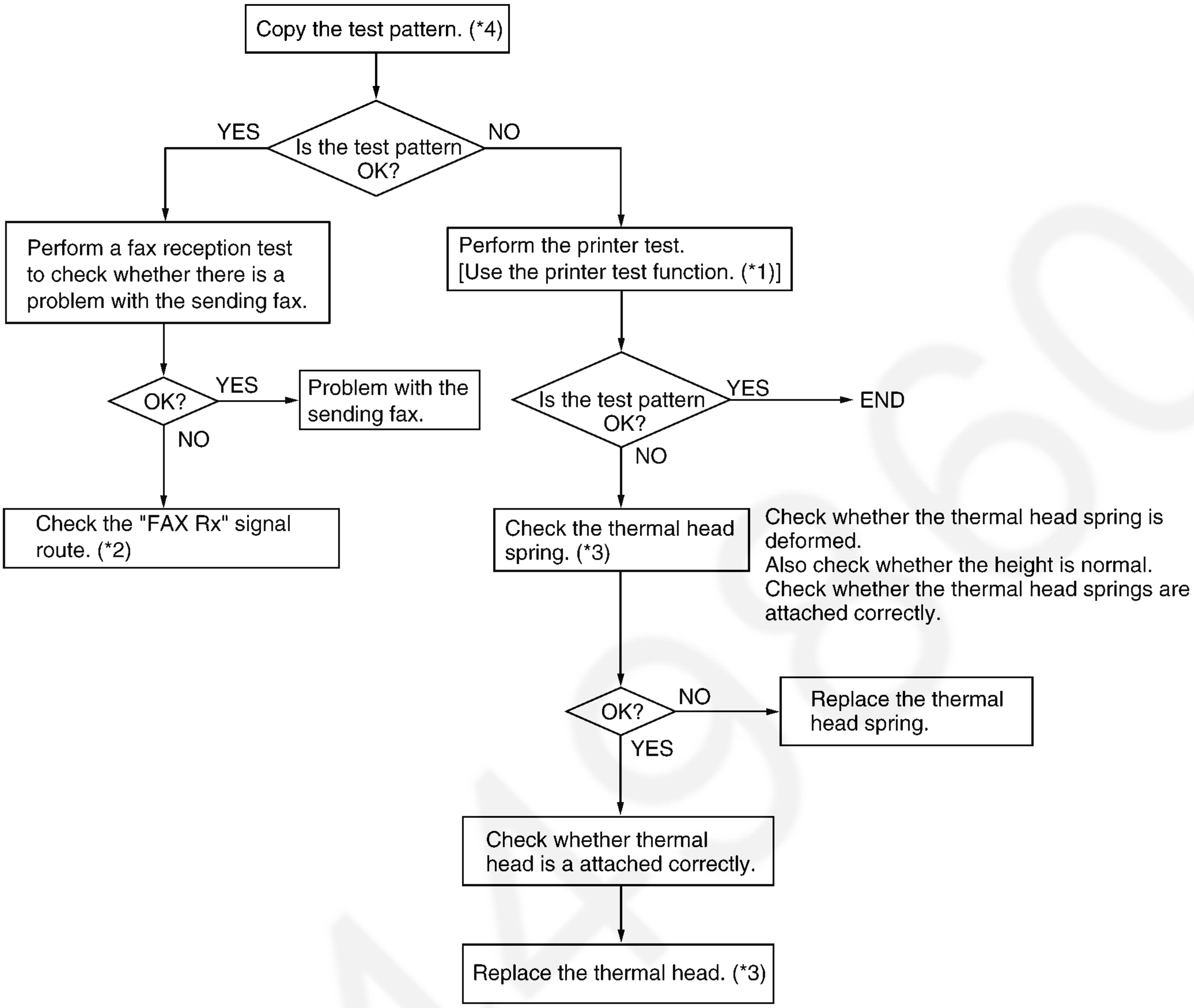
12.5.4.14. Black or White Lateral Line on Print Out


Copy the test pattern. (*5)
Is the test pattern OK?
YES
NO
A problem with the other FAX machine.
Check the recording paper feed section. [Use the motor test function. (*1)]
Rotation OK?
NO
Check the gear for distortion. (*2)
YES
Check if the roller surface is deformed.
Check the document feed rollers and pickup roller. (*4)
OK?
NO
Replace the gear. (*2)
YES
Check the connector for the motor. (*3)
Replace the roller.
NO
OK?
YES
B
(Jump to A Blank Page is Copied.) (*6)
OK?
NO
Replace or fix the connector.
YES
Replace the motor. (*2)
OK?
YES
END
NO
Go to Digital Board Section. (*7)

REFERENCE:
(*1): **Test Mode** (P.59)
(*2): **How to Remove the Gears, Motors and Arms of the Gear Block** (P.154)
(*3): **Installation Position of the Lead Wires** (P.164)
(*4): **Disassembly and Assembly Instructions** (P.143)
(*5): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.
(*6): **A Blank Page is Copied** (P.112)
(*7): **Digital Board Section** (P.117)

12.5.4.15. An Abnormal Image is Printed

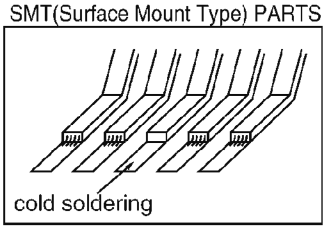

Copy the test pattern. (*4)
Is the test pattern OK?
YES
NO
Perform a fax reception test to check whether there is a problem with the sending fax.
Perform the printer test. [Use the printer test function. (*1)]
OK?
YES
Problem with the sending fax.
NO
Check the "FAX Rx" signal route. (*2)
Is the test pattern OK?
YES
END
NO
Check the thermal head spring. (*3)
Check whether the thermal head spring is deformed.
Also check whether the height is normal.
Check whether the thermal head springs are attached correctly.
OK?
NO
Replace the thermal head spring.
YES
Check whether thermal head is a attached correctly.
Replace the thermal head. (*3)

REFERENCE:
(*1): **Test Mode** (P.59)
(*2): **Check Sheet for Signal Route** (P.124)
(*3): **How to Remove the Thermal Head** (P.148)
(*4): We recommend making a copy of the test chart in **Test Chart** (P.207) and using it.

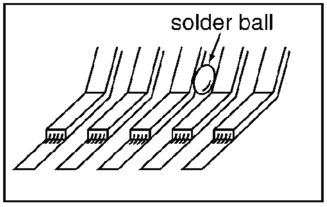
12.5.5. Digital Board Section

When the unit fails to boot up the system, take the troubleshooting procedures very carefully. It may have a serious problem.
The symptom: No response when the power is turned on. (No LCD display, and keys are not accepted.)
The first step is to check the power source. If there is no problem with the power supply unit, the problem may lie in the digital unit (main board).
As there are many potential causes in this case (ASIC, DRAM, etc.), it may be difficult to specify what you should check first. If a mistake is made in the order of checks, a normal part may be determined faulty, wasting both time and money.
Although the tendency is to regard the problem as a serious one (IC malfunction, etc.), usually most cases are caused by solder faults (poor contact due to a tunnel in the solder, signal short circuit due to solder waste).

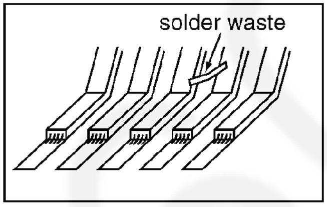
SMT(Surface Mount Type) PARTS



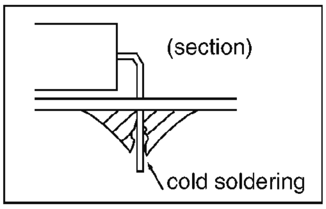
SMT PARTS



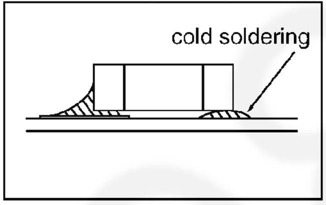
SMT PARTS



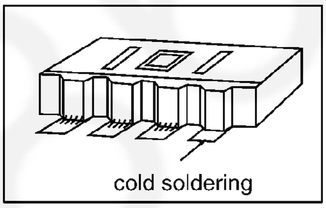
LEADED PARTS



CHIP PARTS (section)



RESISTOR ARRAY



Note:

1. Electrical continuity may have existed at the factory check, but a faulty contact occurred as a result of vibration, etc., during transport.
2. Solder waste remaining on the board may get caught under the IC during transport, causing a short circuit.

Before we begin mass production, several hundred trial units are produced at the plant, various tests are applied and any malfunctions are analyzed. (In past experiences, digital IC (especially DRAM and FLASH ROM) malfunctions are extremely rare after installation in the product.)
This may be repaired by replacing the IC, (DRAM etc.). However, the real cause may not have been an IC malfunction but a soldering fault instead.
Soldering faults difficult to detect with the naked eye are common, particularly for ASIC and RA (Resistor Array). But if you have an oscilloscope, you can easily determine the problem site or IC malfunction by checking the main signal lines.
Even if you don't have such a measuring instrument, by checking each main signal line and resoldering it, in many cases the problem will be resolved.
An explanation of the main signals (for booting up the unit) is presented below.

Don't replace ICs or stop repairing until checking the signal lines.
An IC malfunction rarely occurs. (By understanding the necessary signals for booting up the unit, the "Not Boot up" display is not a serious problem.)

What are the main signals for booting up the unit?

Please refer to **Digital Block Diagram** (P.118).
The ASIC (IC10) controls all the other digital ICs. When the power is turned on, the ASIC retrieves the operation code stored in the FLASH ROM (IC16), then follows the instructions for controlling each IC. All ICs have some inner registers that are assigned to a certain address.
It is the address bus by which the ASIC designates the location inside each IC. And the data bus reads or writes the data in order to transmit the instructions from the ASIC to the ICs.
These signal lines are all controlled by voltages of 3.3V (H) or 0V (L).

12.5.5.1. Digital Block Diagram

You also need to check the signal lines listed here [List 1] when the unit fails to boot up the system. Those signal lines should remain normal. Other signal lines are not directly related to that failure even if they have faults or troubles.

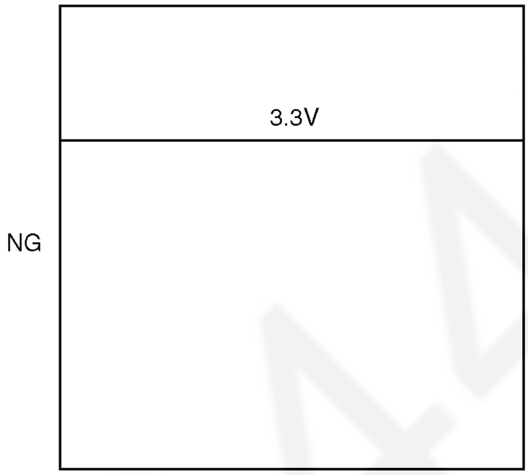
[List 1]

①	D0～D7	(Data Bus)
②	A0～A15	(Address Bus)
③	$\overline{\text{RD}}$	(Read Signal)
	$\overline{\text{ROMCS}}$	(ROM Select Signal)
	$\overline{\text{WR}}$	(Write Signal)
④	RBA0～RBA5	(Bank Address Signal)
⑤	$\overline{\text{RAS}}$	(DRAM Row Address Strobe Signal)
	$\overline{\text{CAS}}$	(DRAM Column Address Strobe Signal)
⑥	$\overline{\text{MDMCS}}$	(Modem Select Signal)

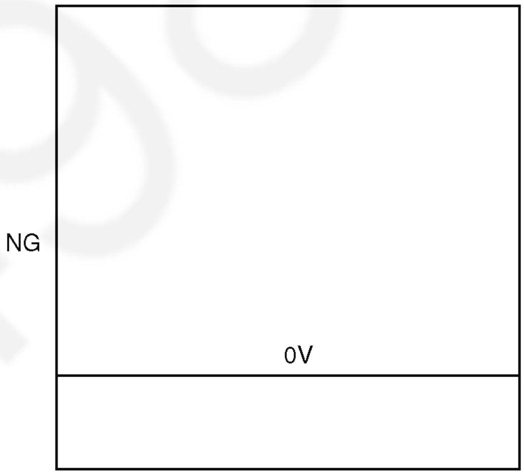
As long as these signals remain normal, once the power is turned on, each IC can repeatedly output 3.3V (H) and 0V (L). The following shows NG and normal wave patterns.

NG Wave pattern

0V never appears.



3.3V never appears.



Note:

Refer to **NG Example** (P.123).

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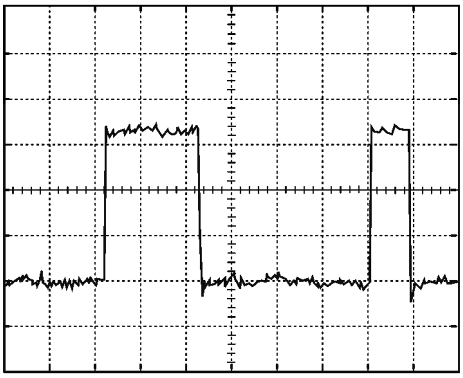
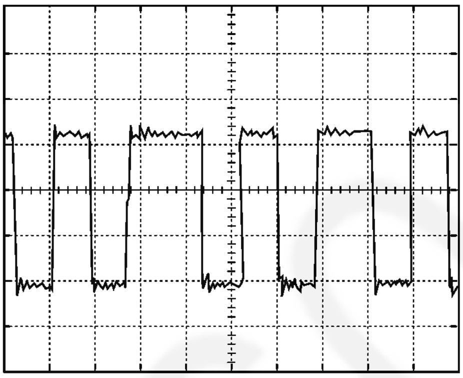
Normal Wave Patterns

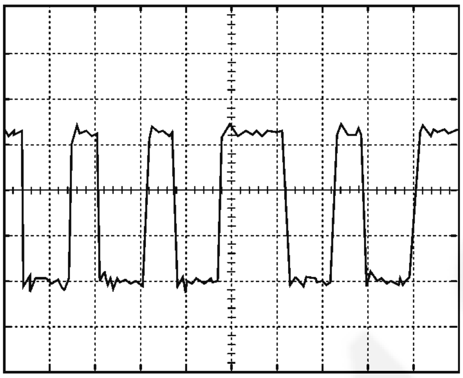
① D0~D7 200ns/div, 1V/div



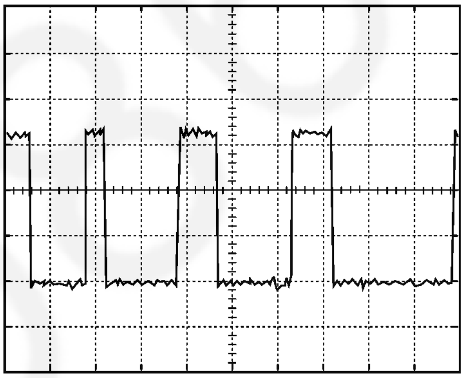
② A0~A5 200ns/div, 1V/div



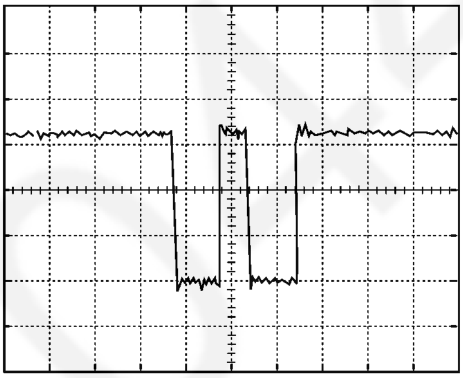
③ $\overline{\text{RD}}$ 100ns/div, 1V/div



③ $\overline{\text{ROMCS}}$ 400ns/div, 1V/div



⑤ $\overline{\text{RAS}}$, $\overline{\text{CAS}}$ 100ns/div, 1V/div



Remarks:

When you use an oscilloscope to judge whether a signal to be tested is normal or NG, perform the signal check in exactly the same order as in [List 1]. (If the ASIC fails to access the FLASH ROM, the ASIC cannot access DRAM normally.)

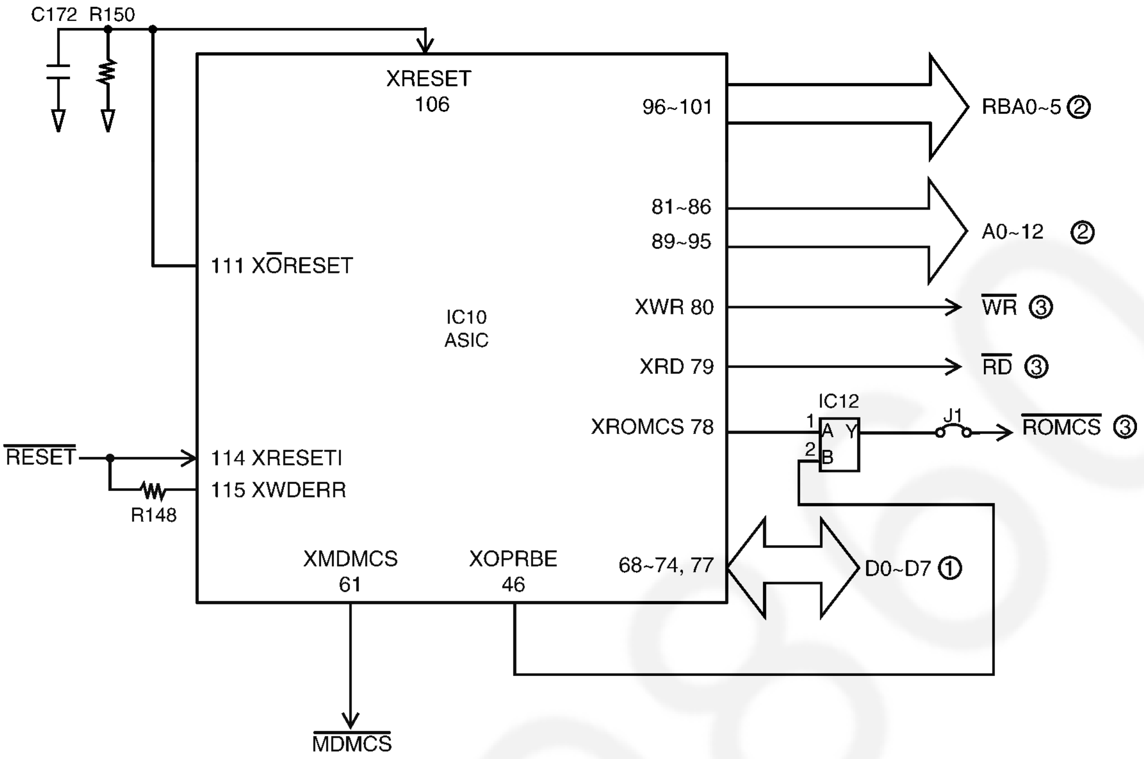
The digital circuit actually operates according to the timing combinations of these signals. If the timing of these signals is even slightly delayed, the circuit will not work. Nor will it if the IC is defective and the output voltage level is not normal although the timing of these signals is accurate enough to meet the specifications. (Make sure that your oscilloscope is calibrated before starting a test.)

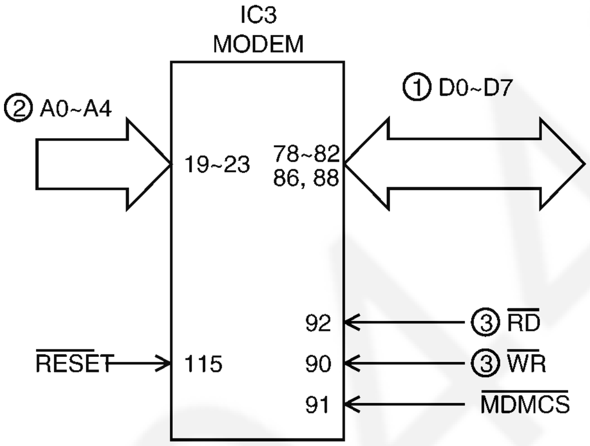
Therefore, it is imperative to confirm whether each IC outputs the signal at the correct level. (See the **I/O Pin No. Diagram**.) The signal level should be constantly output at between 3.3V (H) and 0V (L) as described earlier.

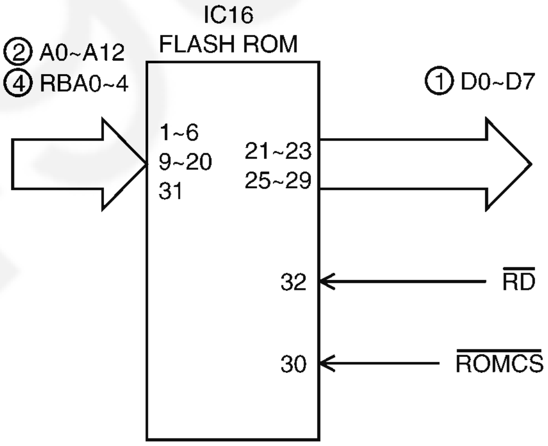
Note:

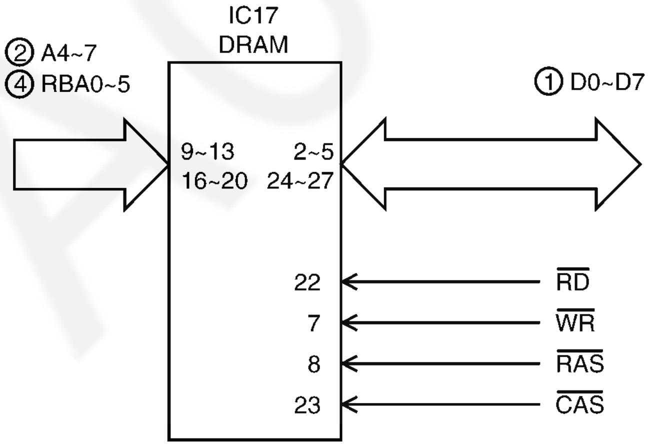
Simply check the output level and make sure if the IC repeatedly outputs the signal at between 3.3V (H) and 0V (L).

I/O and Pin No. Diagram

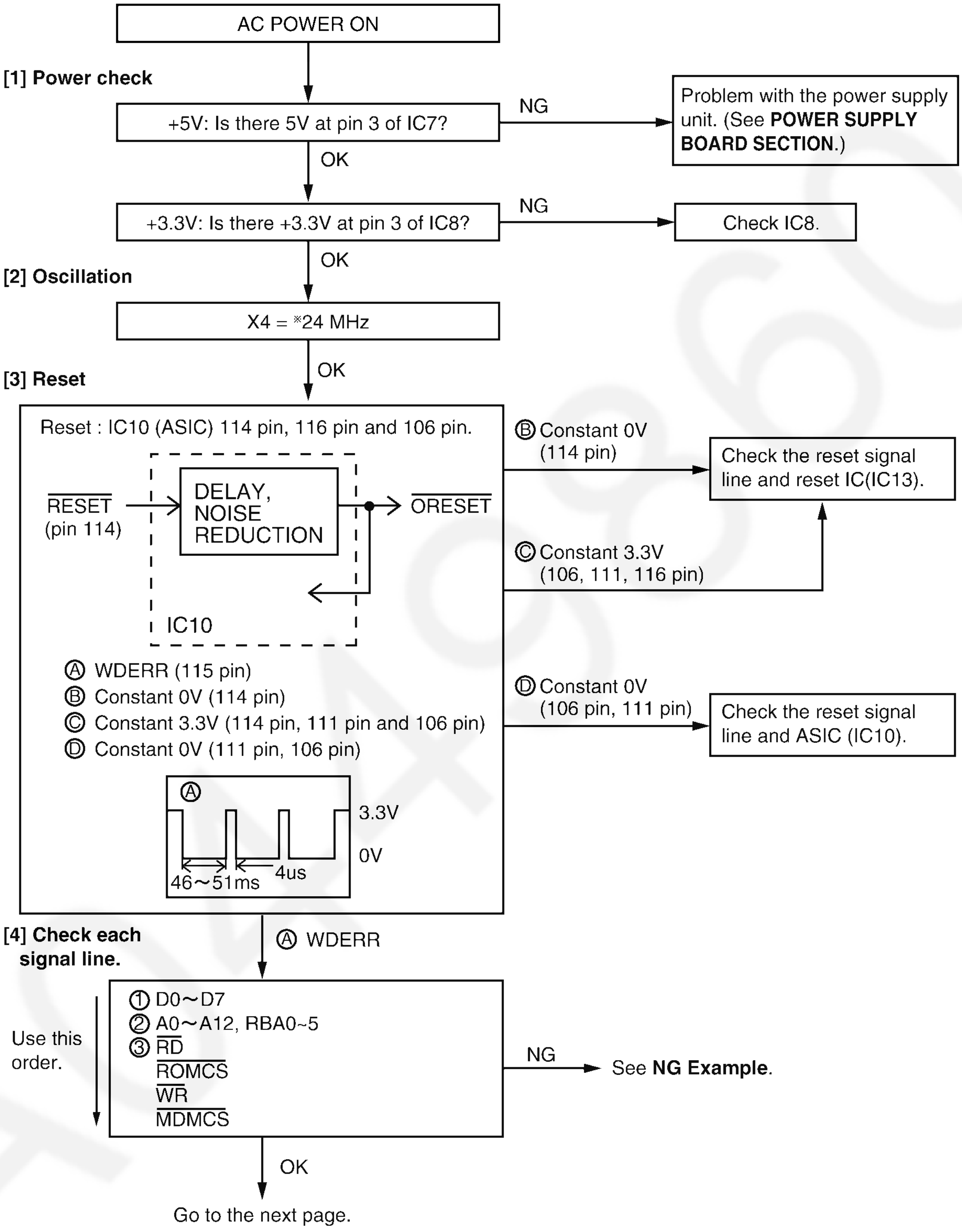

C172
R150
XRESET
106
96~101
RBA0~5 ②
81~86
89~95
A0~12 ②
111 XORESET
IC10
ASIC
XWR 80
WR ③
XRD 79
RD ③
IC12
XROMCS 78
1
2
A
B
Y
J1
ROMCS ③
RESET
114 XRESETI
115 XWDERR
R148
XMDMCS
61
XOPRBE
46
68~74, 77
D0~D7 ①
MDMCS


IC3
MODEM
② A0~A4
19~23
78~82
86, 88
① D0~D7
92
③ RD
RESET
115
90
③ WR
91
MDMCS


IC16
FLASH ROM
② A0~A12
④ RBA0~4
1~6
9~20
31
21~23
25~29
① D0~D7
32
RD
30
ROMCS


IC17
DRAM
② A4~7
④ RBA0~5
9~13
16~20
2~5
24~27
① D0~D7
22
RD
7
WR
8
RAS
23
CAS

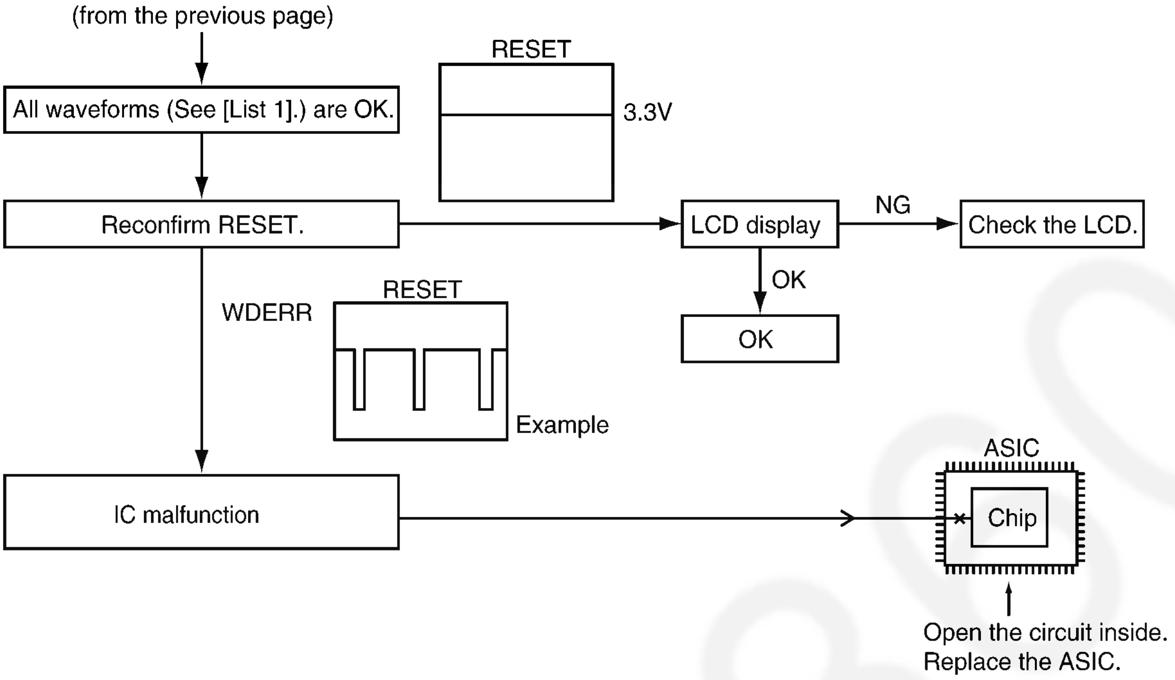
After the power is turned on, the ASIC initializes and checks each IC.
The ROM, DRAM, and modem are checked.
If initialization fails for the ICs, the system will not boot up.
In this case, please find the cause as follows.


AC POWER ON
[1] Power check
+5V: Is there 5V at pin 3 of IC7?
NG
Problem with the power supply unit. (See POWER SUPPLY BOARD SECTION.)
OK
+3.3V: Is there +3.3V at pin 3 of IC8?
NG
Check IC8.
OK
[2] Oscillation
X4 = *24 MHz
OK
[3] Reset
Reset : IC10 (ASIC) 114 pin, 116 pin and 106 pin.
RESET (pin 114)
DELAY, NOISE REDUCTION
ORESET
IC10
Ⓐ WDERR (115 pin)
Ⓑ Constant 0V (114 pin)
Ⓒ Constant 3.3V (114 pin, 111 pin and 106 pin)
Ⓓ Constant 0V (111 pin, 106 pin)
Ⓐ
3.3V
0V
46~51ms
4us
Ⓑ Constant 0V (114 pin)
Check the reset signal line and reset IC(IC13).
Ⓒ Constant 3.3V (106, 111, 116 pin)
Ⓓ Constant 0V (106 pin, 111 pin)
Check the reset signal line and ASIC (IC10).
[4] Check each signal line.
Ⓐ WDERR
Use this order.
① D0~D7
② A0~A12, RBA0~5
③ RD
ROMCS
WR
MDMCS
NG
See NG Example.
OK
Go to the next page.

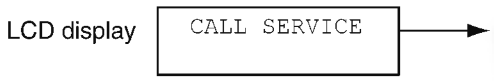
REFERENCE:

NG Example (P.123)

Power Supply Board Section (P.126)


(from the previous page)
All waveforms (See [List 1].) are OK.
RESET
3.3V
Reconfirm RESET.
LCD display
NG
Check the LCD.
OK
OK
WDERR
RESET
Example
ASIC
Chip
IC malfunction
Open the circuit inside.
Replace the ASIC.

Other NG example while the power is ON and the LCD displays the following.


LCD display
CALL SERVICE

This display occurs when the temperature of the thermistor on the terminal head is NG.
Faulty connection of the thermal head connector.

↓

ASIC IC10 pins 4 and 139 or the thermistor on the thermal head is NG.

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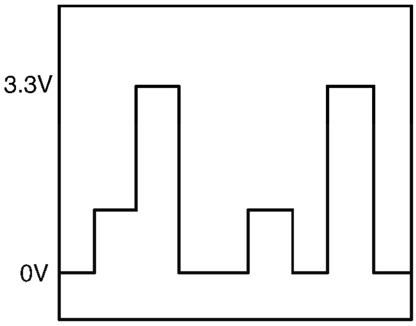
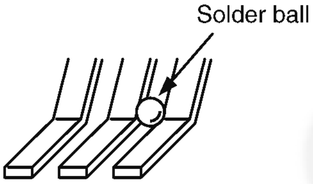
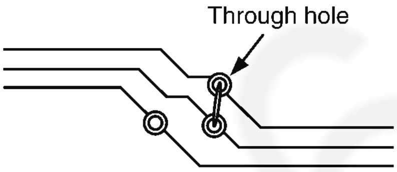
12.5.5.2. NG Example

1.

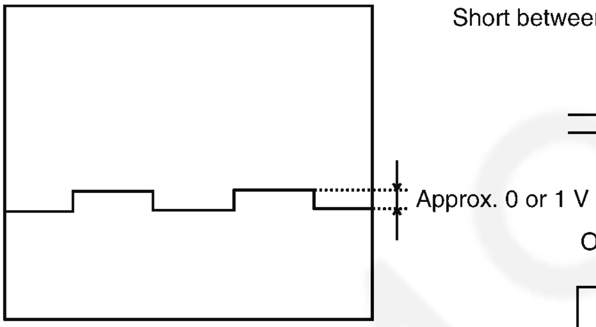


Short circuit from the adjacent signal wires.
Check for a short circuit in the IC leads and the signal wire at the through hole.

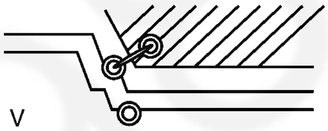

Solder ball


Through hole

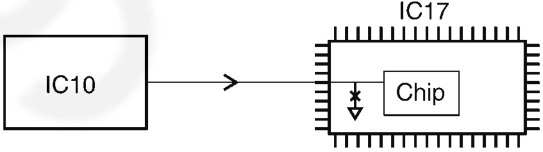
2.



Short between the signal line and GND.



OR IC malfunction


IC17
IC10
Chip

A04980

12.5.6. Analog Board Section

This chapter provides the testing procedures required for the analog parts. A signal route to be tested is determined depending upon purposes. For example, the handset TX route begins at the handset microphone and the signal is output to the telephone line. The signal mainly flowing on this route is analog. You can trace the signal with an oscilloscope. The signal flow on each route is shown in the Check Sheet here. If you find a specific problem in the unit, for example if you cannot communicate with the H/S, trace that signal route locally with the following Check Sheet and locate the faulty point.

12.5.6.1. Check Sheet for Signal Route

(SYMPTOM) ITEMS TO CHECK	IN signal → ROUTE → OUT
SP-PHONE Tx	MIC → {CN918(1) → C363 → R337 → IC4(112-113) → C361 → R366 → IC4(114-100) → C607 → R604 → IC102(6-7) → CN19(1)} → CN103(1) → C169 → R132 → R131 → T101 → TEL LINE
SP-PHONE Rx	TEL LINE → T101 → C130 → R138 → IC101(2-1) → CN103(4) → {CN19(4) → R230 → C98-R75 → IC4(102-110) → C11 → R11 → IC2(4-5,8) → (L1,L2) → CN18(4,5)} → CN104(4,5) → CN105(1,2) → Speaker
DTMF for SP	{IC4(110) → C11 → R11 → IC2(4-5,8) → (L1,L2) → CN18(4,5)} → CN104(4,5) → CN105(1,2) → Speaker
FAX Tx	IC3(56) → C247 → R262 → C603 → R603 → IC102(6-7) → CN19(1)} → CN103(1) → C169 → R132 → R131 → T101 → TEL LINE
DTMF/OGM/BEEP for TEL LINE	{IC4(100) → C607 → R604 → IC102(6-7) → CN19(1)} → CN103(1) → C169 → R132 → R131 → T101 → TEL LINE
FAX Rx	TEL LINE → T101 → C130 → R138 → IC101(2-1) → CN103(3) → {CN19(3) → C18 → R17 → R22 → C20 → IC3(47)}
CNG/DTMF/ VOX Detection/ ICM Record	TEL LINE → T101 → C130 → R138 → IC101(2-1) → CN103(4) → {CN19(4) → R230 → C98 → R75 → IC4(102)}
OGM/ MEMO Record	{MIC → {CN918(1) → C363 → R337 → IC4(112)
Ringing/BEEP/ Alarm/Key Tones	{IC4(110) → C11 → R11 → IC2(4-5,8) → (L1,L2) → CN18(4,5)} → CN104(4,5) → CN105(1,2) → Speaker
Caller ID	TEL LINE → T102 → C157 → R153 → IC101(6-7) → CN103(2) → {CN19(2) → C292 → R63 → IC4(101)}
Cordless Handset Tx	On the Air 1.9GHz Radio Frequency → Antenna → {(ANT-1,ANT-2) → (C354,C355) → (R360,R361) → (L46,L47) → IC28(2,21-18) → R343 → IC4(28-100) → C607 → R604 → IC102(6-7) → CN19(1) → CN103(1) → C169 → R132 → R131 → T101 → TEL LINE
Cordless Handset Rx	TEL LINE → T101 → C130 → R138 → IC101(2-1) → CN103(4) → {CN19(4) → R230 → C98 → R75 → IC4(102-26) → R344 → IC28(16-2,21) → (L46,L47) → (R360,R361) → (C354,C355) → (ANT-1,ANT-2)} → Antenna → On the Air 1.9GHz Radio Frequency

Note:

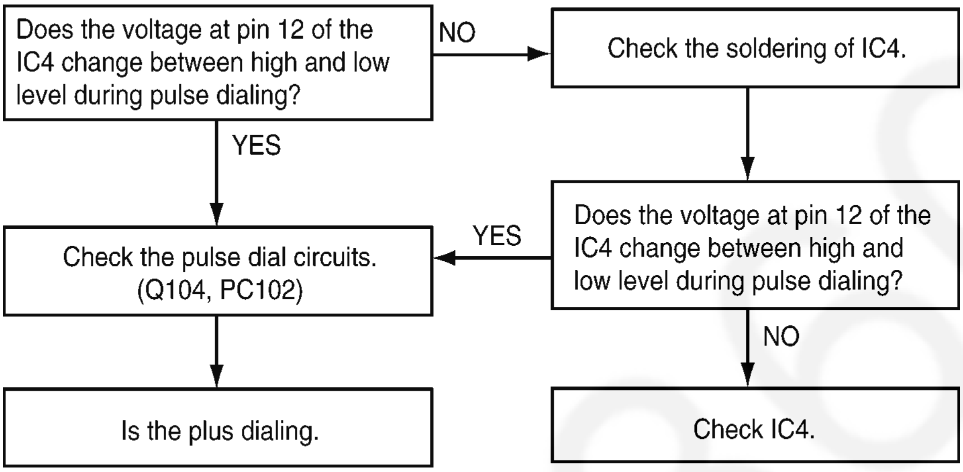
{ } : Inside the Digital board

12.5.6.2. Defective fax NCU section

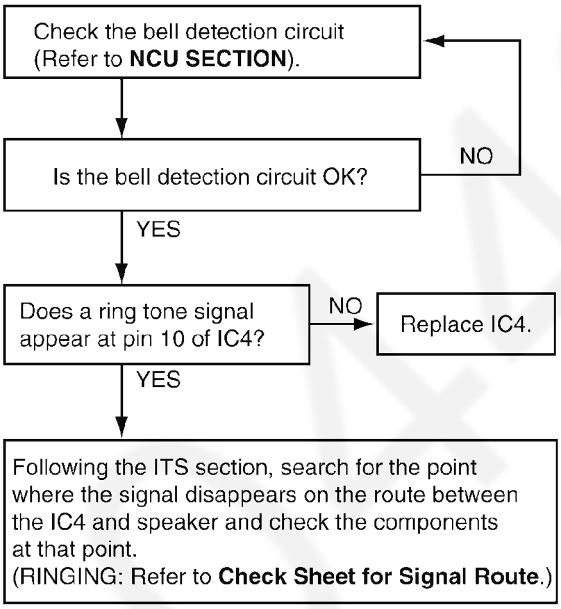
1. No Speakerphone and no monitor reception

Perform a signal test in the **FAX NCU section** and locate a defective point (where the signal disappears) on each route between the microphone and the telephone line (sending), or between the telephone line and the speaker (receiving). Check the components at that point. **Check Sheet for Signal Route** (P.124) is useful for this investigation.

2. No pulse dialing


Does the voltage at pin 12 of the IC4 change between high and low level during pulse dialing?
NO
Check the soldering of IC4.
YES
Check the pulse dial circuits. (Q104, PC102)
YES
Does the voltage at pin 12 of the IC4 change between high and low level during pulse dialing?
NO
Is the plus dialing.
Check IC4.

3. No ring tone (or No bell)

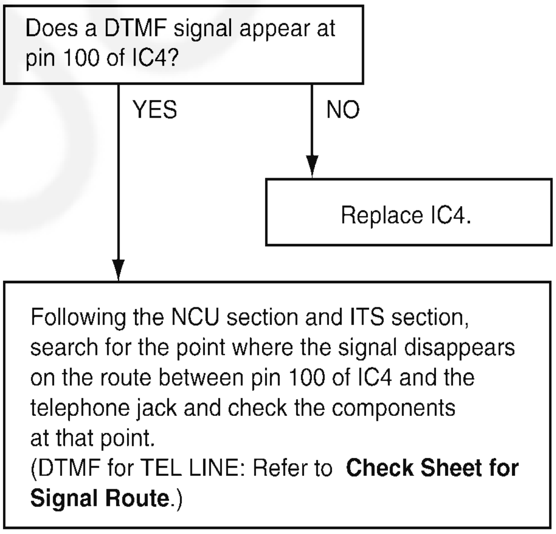

Check the bell detection circuit (Refer to NCU SECTION).
Is the bell detection circuit OK?
NO
YES
Does a ring tone signal appear at pin 10 of IC4?
NO
Replace IC4.
YES
Following the ITS section, search for the point where the signal disappears on the route between the IC4 and speaker and check the components at that point.
(RINGING: Refer to Check Sheet for Signal Route.)

REFERENCE:

Check Sheet for Signal Route (P.124)

NCU Section (P.37)

4. No tone dialing


Does a DTMF signal appear at pin 100 of IC4?
YES
NO
Replace IC4.
Following the NCU section and ITS section, search for the point where the signal disappears on the route between pin 100 of IC4 and the telephone jack and check the components at that point.
(DTMF for TEL LINE: Refer to Check Sheet for Signal Route.)

REFERENCE:

Check Sheet for Signal Route (P.124)

12.5.7. Power Supply Board Section

12.5.7.1. Key Components for Troubleshooting

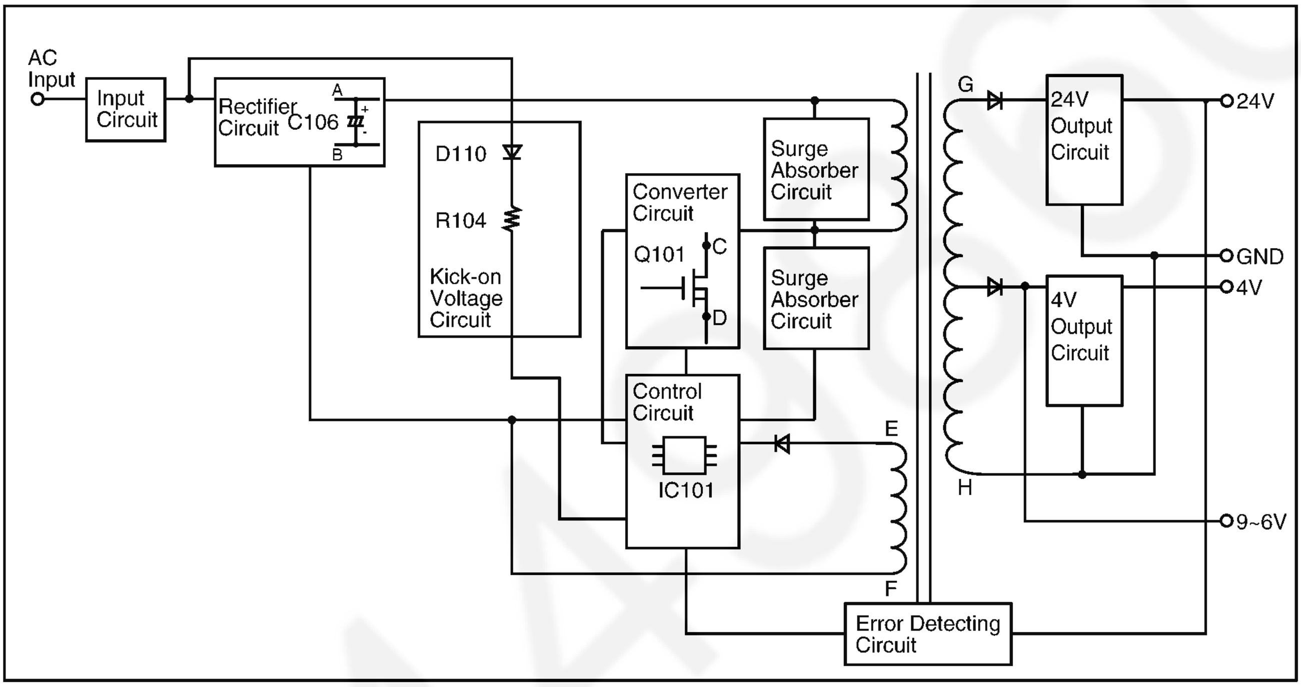
Check the following parts first: F101, D101-D104, C106, Q101and IC101.
This comes from our experience with experimental tests. For example: power supply and lightning surge voltage test, withstanding voltage test, intentional short circuit test, etc.

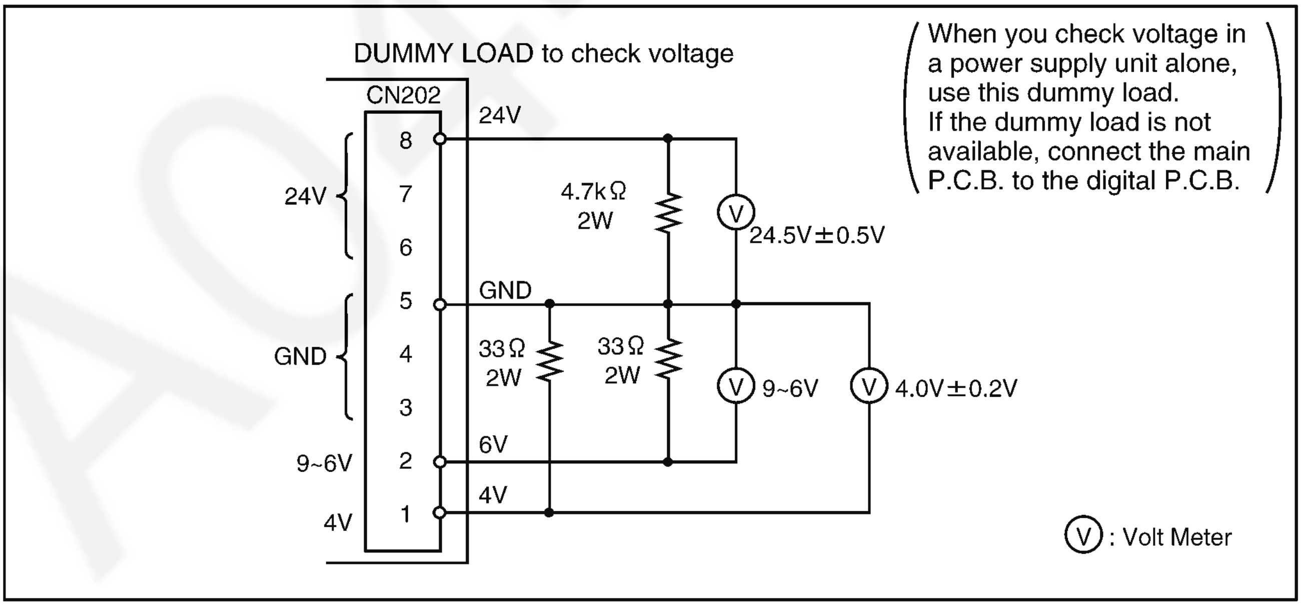
Caution:

If you find a melted fuse in the unit, do not turn on the power until you locate and repair the faulty parts (except for the fuse); otherwise the fuse will melt again and you cannot pinpoint the faulty point.

In most cases, the symptom is that nothing is output. It is more likely that the fault is in the primary side rather than the secondary side. Check the primary side first.

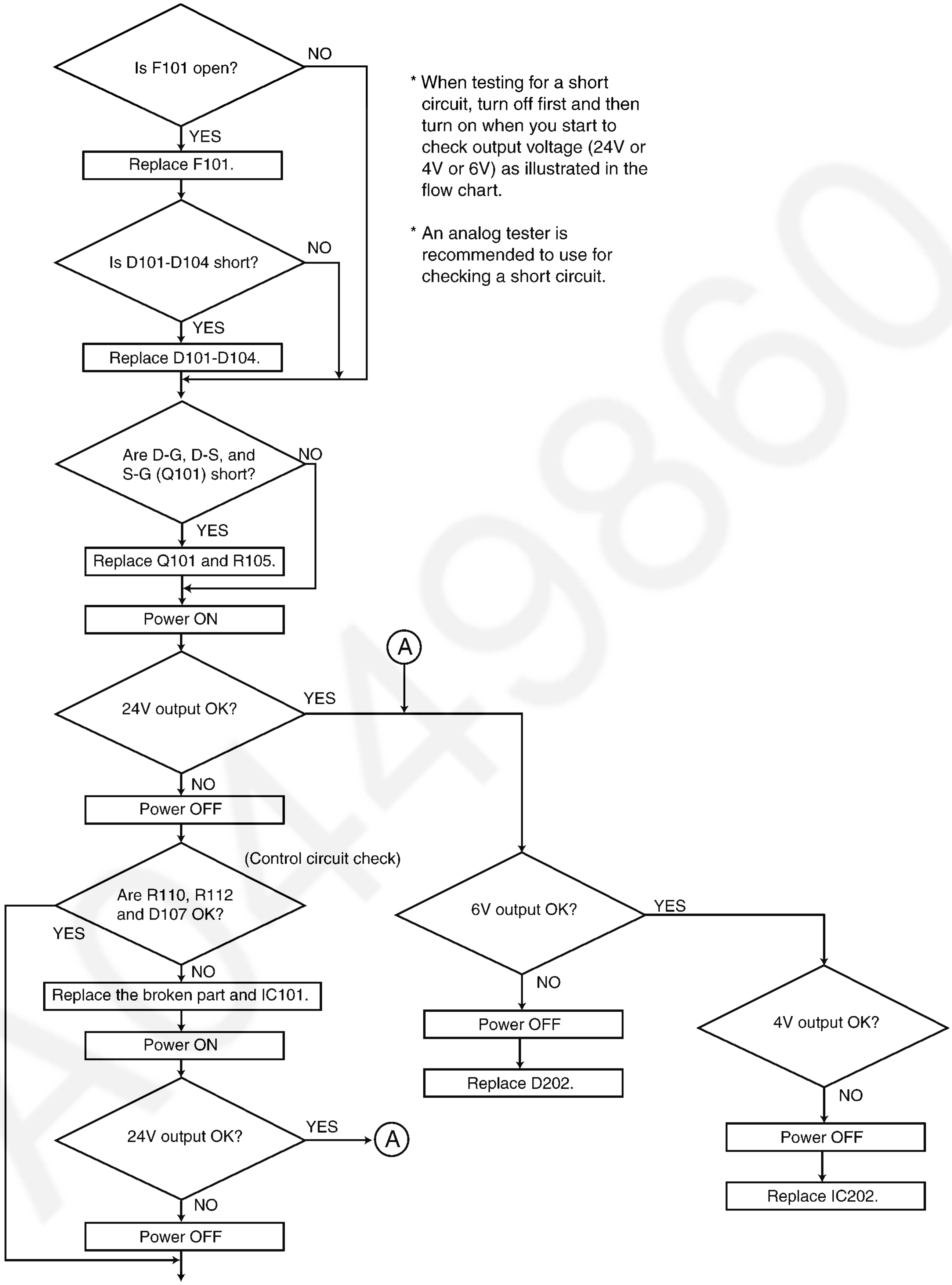
POWER SUPPLY BLOCK DIAGRAM


AC Input
Input Circuit
Rectifier Circuit
C106
A
B
+
-
D110
R104
Kick-on Voltage Circuit
Converter Circuit
Q101
C
D
Surge Absorber Circuit
Surge Absorber Circuit
Control Circuit
IC101
E
F
G
H
24V Output Circuit
4V Output Circuit
24V
GND
4V
9~6V
Error Detecting Circuit


DUMMY LOAD to check voltage
CN202
24V
8
7
6
GND
5
4
3
9~6V
2
4V
1
24V
GND
6V
4V
4.7kΩ 2W
33Ω 2W
33Ω 2W
V
24.5V±0.5V
V
9~6V
V
4.0V±0.2V
V : Volt Meter

(When you check voltage in a power supply unit alone, use this dummy load. If the dummy load is not available, connect the main P.C.B. to the digital P.C.B.)

12.5.7.2. Troubleshooting Flow Chart


Is F101 open?
NO
YES
Replace F101.
Is D101-D104 short?
NO
YES
Replace D101-D104.
Are D-G, D-S, and S-G (Q101) short?
NO
YES
Replace Q101 and R105.
Power ON
A
24V output OK?
YES
NO
Power OFF
(Control circuit check)
Are R110, R112 and D107 OK?
YES
NO
Replace the broken part and IC101.
Power ON
24V output OK?
YES
A
NO
Power OFF
6V output OK?
YES
NO
Power OFF
Replace D202.
4V output OK?
NO
Power OFF
Replace IC202.

* When testing for a short circuit, turn off first and then turn on when you start to check output voltage (24V or 4V or 6V) as illustrated in the flow chart.

* An analog tester is recommended to use for checking a short circuit.

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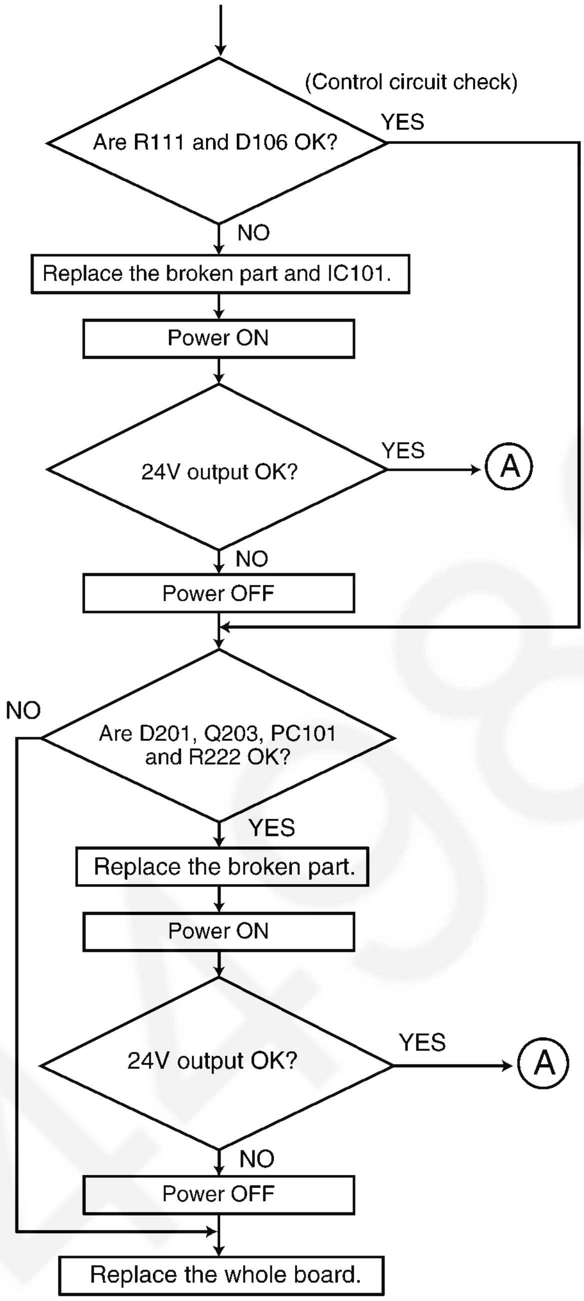

(Control circuit check)
Are R111 and D106 OK?
YES
NO
Replace the broken part and IC101.
Power ON
24V output OK?
YES
A
NO
Power OFF
NO
Are D201, Q203, PC101 and R222 OK?
YES
Replace the broken part.
Power ON
24V output OK?
YES
A
NO
Power OFF
Replace the whole board.

12.5.7.3. Broken Parts Repair Details

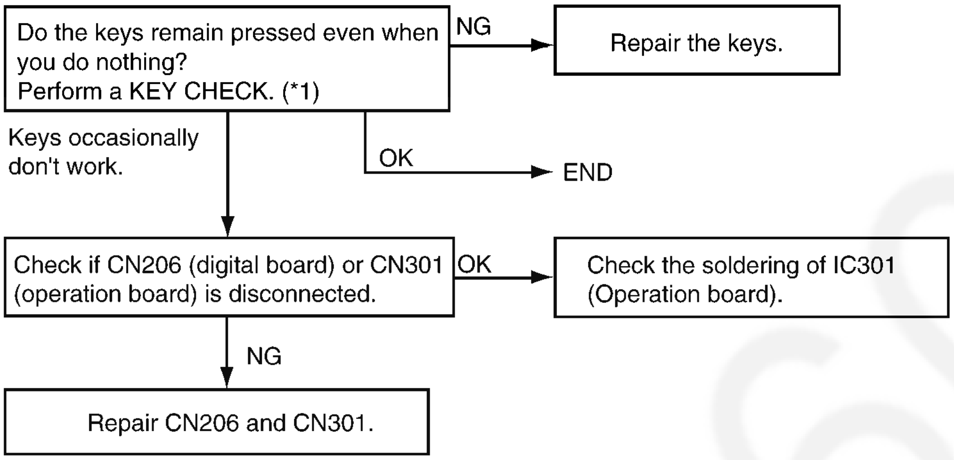
(D101, D102, D103, D104)
Check for a short-circuit in terminal 4. If D101, D102, D103 and D104 are short-circuits, F101 will melt (open).
In this case, replace all of the parts (D101, D102, D103, D104, F101).

(Q101)
The worst case of Q101 is a short-circuit between the Drain and Gate because damage expands to the peripheral circuit of Q101.
This is due to a very high voltage through the Gate circuit which is composed of R110, R112, D107 and IC101.
You should change all of the parts listed as follows.
F101, Q101, R110, R112, D107, IC101

(D201)
If D201 is broken, the oscillation circuit in the power supply cannot operate. Check it with an electric tester.

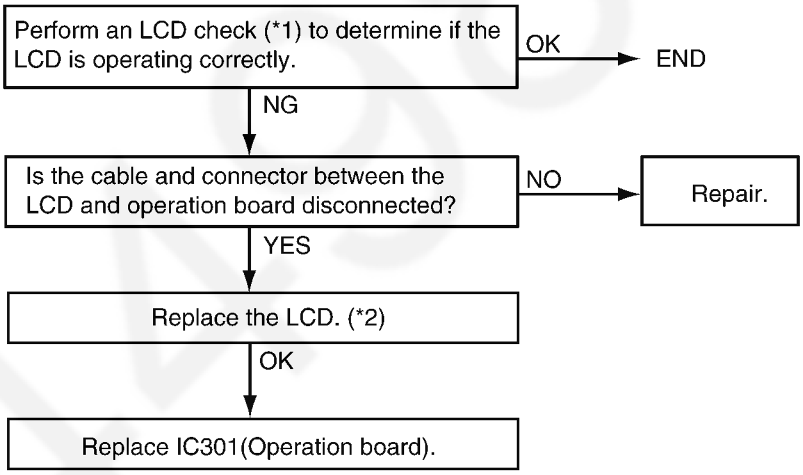
12.5.8. Operation Panel Section

12.5.8.1. No Key Operation


Do the keys remain pressed even when you do nothing?
Perform a KEY CHECK. (*1)
NG
Repair the keys.
Keys occasionally don't work.
OK
END
Check if CN206 (digital board) or CN301 (operation board) is disconnected.
OK
Check the soldering of IC301 (Operation board).
NG
Repair CN206 and CN301.

REFERENCE:
(*1): **Test Mode** (P.59)

12.5.8.2. No LCD Indication


Perform an LCD check (*1) to determine if the LCD is operating correctly.
OK
END
NG
Is the cable and connector between the LCD and operation board disconnected?
NO
Repair.
YES
Replace the LCD. (*2)
OK
Replace IC301(Operation board).

REFERENCE:
(*1): **Test Mode** (P.59)
(*2): **How to Remove the Operation Board, MIC Board and LCD** (P.162)

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12.5.9. Sensor Section

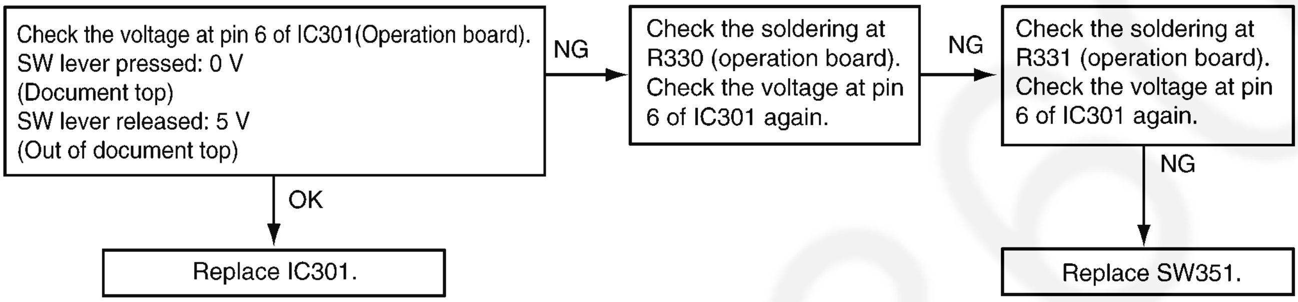
Refer to **Sensor and Switches** (P.26) for the circuit descriptions.

The Test Function makes the sensor circuit check easier. (Refer to **Test Mode** (P.59).)

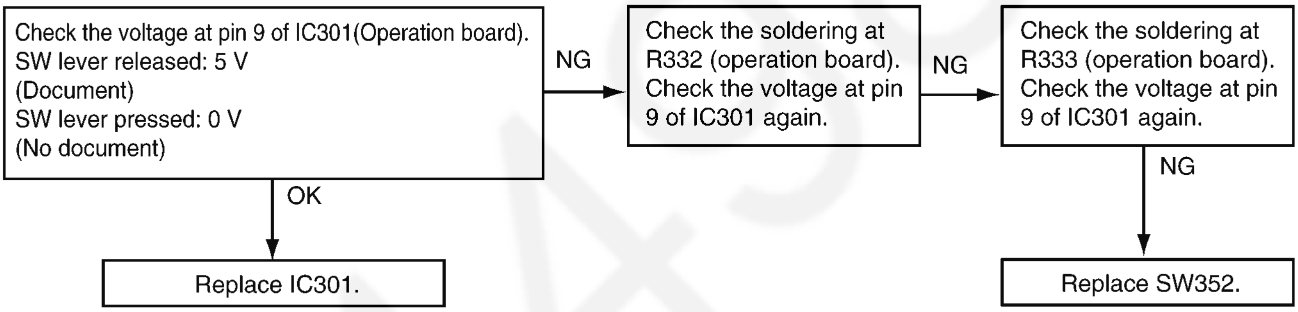
For example, as for "FILM END/COVER OPEN SENSOR", "CO" is turned ON/OFF on the display when you open or close the cover. Also, document sensor, read position sensor, recording paper sensor are turned ON/OFF by the copy operation. Therefore, each sensor can be checked for proper mechanical operation.

As for the electric check, check whether each voltage is right or not with following flowchart turning each sensor lever ON/OFF manually.

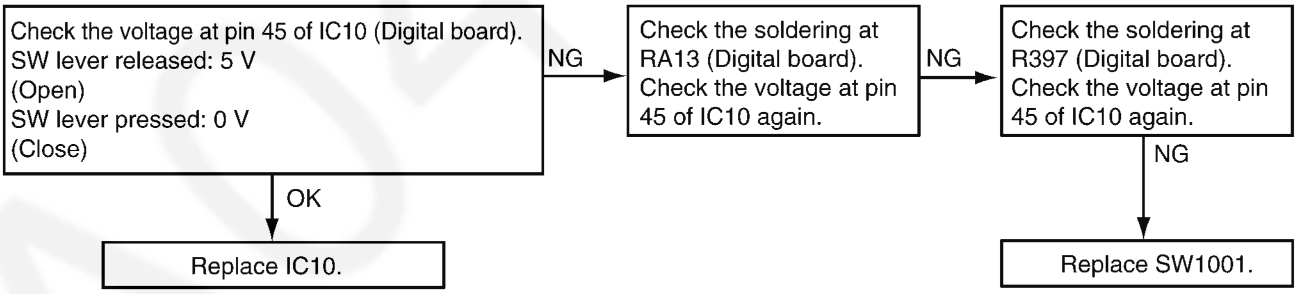
12.5.9.1. Check the Document Top Sensor (SW351)................."REMOVE DOCUMENT"


Check the voltage at pin 6 of IC301(Operation board).
SW lever pressed: 0 V
(Document top)
SW lever released: 5 V
(Out of document top)
NG
Check the soldering at R330 (operation board). Check the voltage at pin 6 of IC301 again.
NG
Check the soldering at R331 (operation board). Check the voltage at pin 6 of IC301 again.
NG
Replace SW351.
OK
Replace IC301.

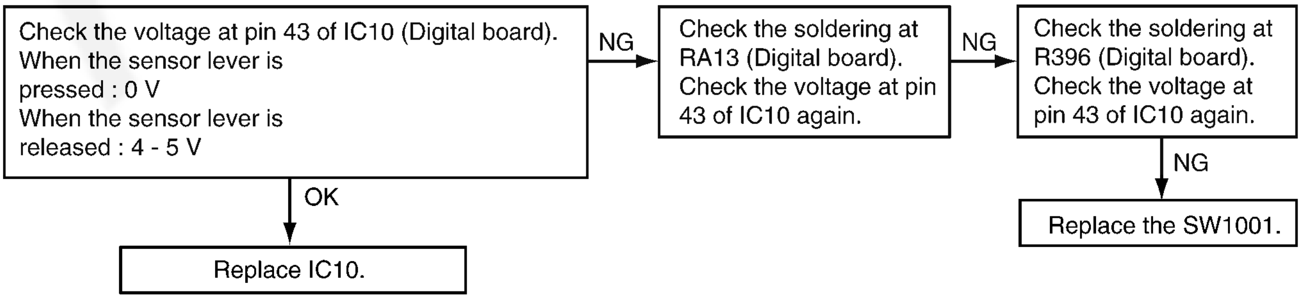
12.5.9.2. Check the Document Set Sensor (SW352)................."CHECK DOCUMENT"


Check the voltage at pin 9 of IC301(Operation board).
SW lever released: 5 V
(Document)
SW lever pressed: 0 V
(No document)
NG
Check the soldering at R332 (operation board). Check the voltage at pin 9 of IC301 again.
NG
Check the soldering at R333 (operation board). Check the voltage at pin 9 of IC301 again.
NG
Replace SW352.
OK
Replace IC301.

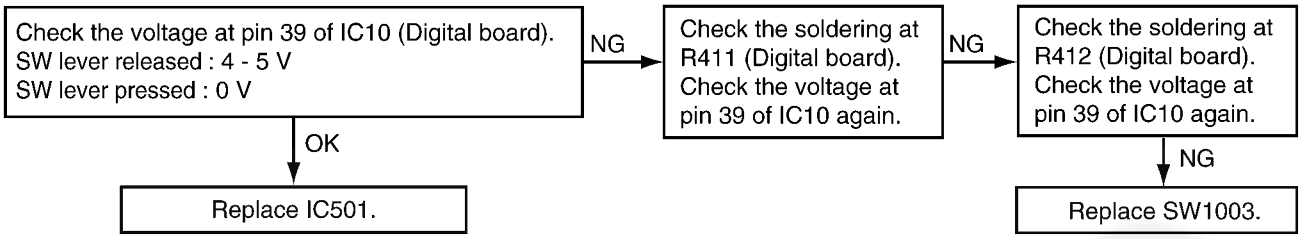
12.5.9.3. Check the Cover Open Sensor (SW1001)................."COVER OPEN"


Check the voltage at pin 45 of IC10 (Digital board).
SW lever released: 5 V
(Open)
SW lever pressed: 0 V
(Close)
NG
Check the soldering at RA13 (Digital board). Check the voltage at pin 45 of IC10 again.
NG
Check the soldering at R397 (Digital board). Check the voltage at pin 45 of IC10 again.
NG
Replace SW1001.
OK
Replace IC10.

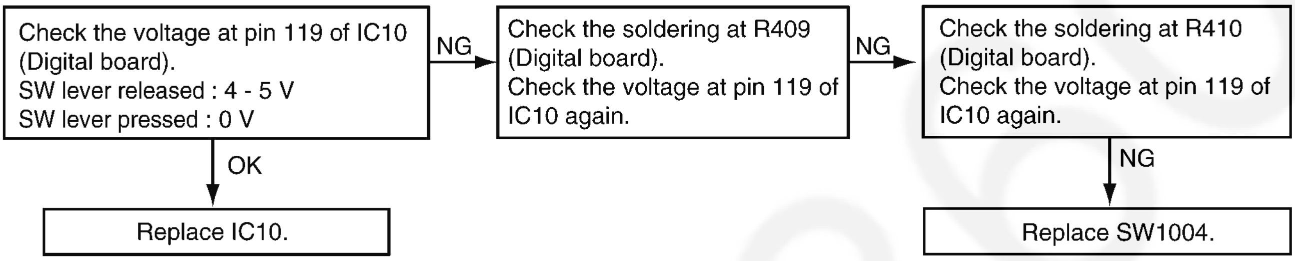
12.5.9.4. Check the Paper Top Sensor (SW1001)........................"PAPER JAMMED"


Check the voltage at pin 43 of IC10 (Digital board).
When the sensor lever is pressed : 0 V
When the sensor lever is released : 4 - 5 V
NG
Check the soldering at RA13 (Digital board). Check the voltage at pin 43 of IC10 again.
NG
Check the soldering at R396 (Digital board). Check the voltage at pin 43 of IC10 again.
NG
Replace the SW1001.
OK
Replace IC10.

12.5.9.5. Check the Film End Sensor (SW1003)........................"CHECK FILM"


Check the voltage at pin 39 of IC10 (Digital board).
SW lever released : 4 - 5 V
SW lever pressed : 0 V
NG
Check the soldering at R411 (Digital board).
Check the voltage at pin 39 of IC10 again.
NG
Check the soldering at R412 (Digital board).
Check the voltage at pin 39 of IC10 again.
OK
Replace IC501.
NG
Replace SW1003.

12.5.9.6. Check the Motor Position Sensor (SW1004)........................"CALL SERVICE 2"


Check the voltage at pin 119 of IC10 (Digital board).
SW lever released : 4 - 5 V
SW lever pressed : 0 V
NG
Check the soldering at R409 (Digital board).
Check the voltage at pin 119 of IC10 again.
NG
Check the soldering at R410 (Digital board).
Check the voltage at pin 119 of IC10 again.
OK
Replace IC10.
NG
Replace SW1004.

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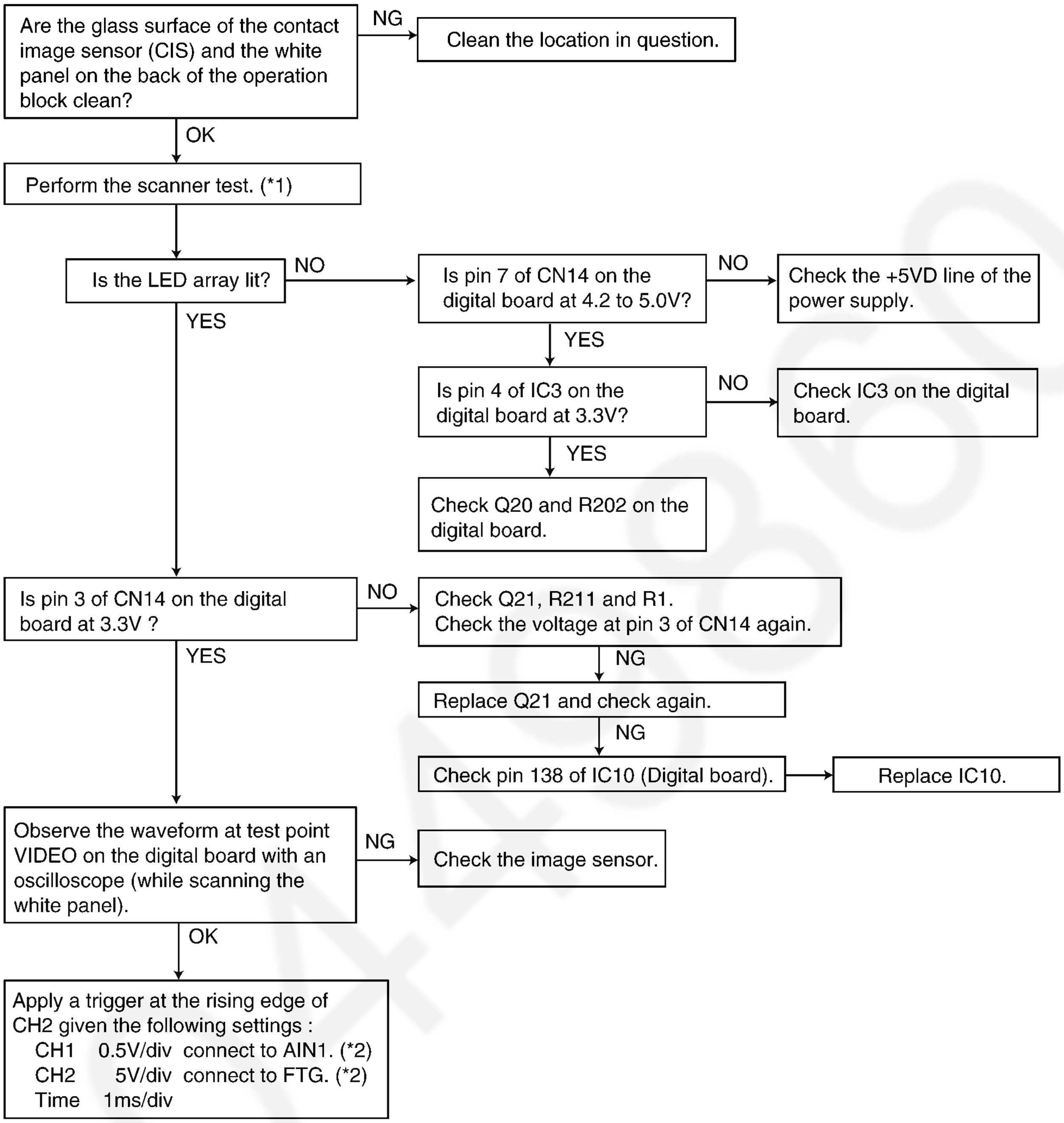
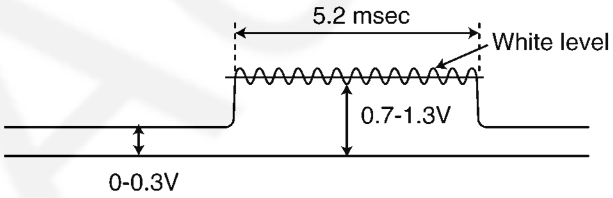
12.5.10. CIS (Contact Image Sensor) Section

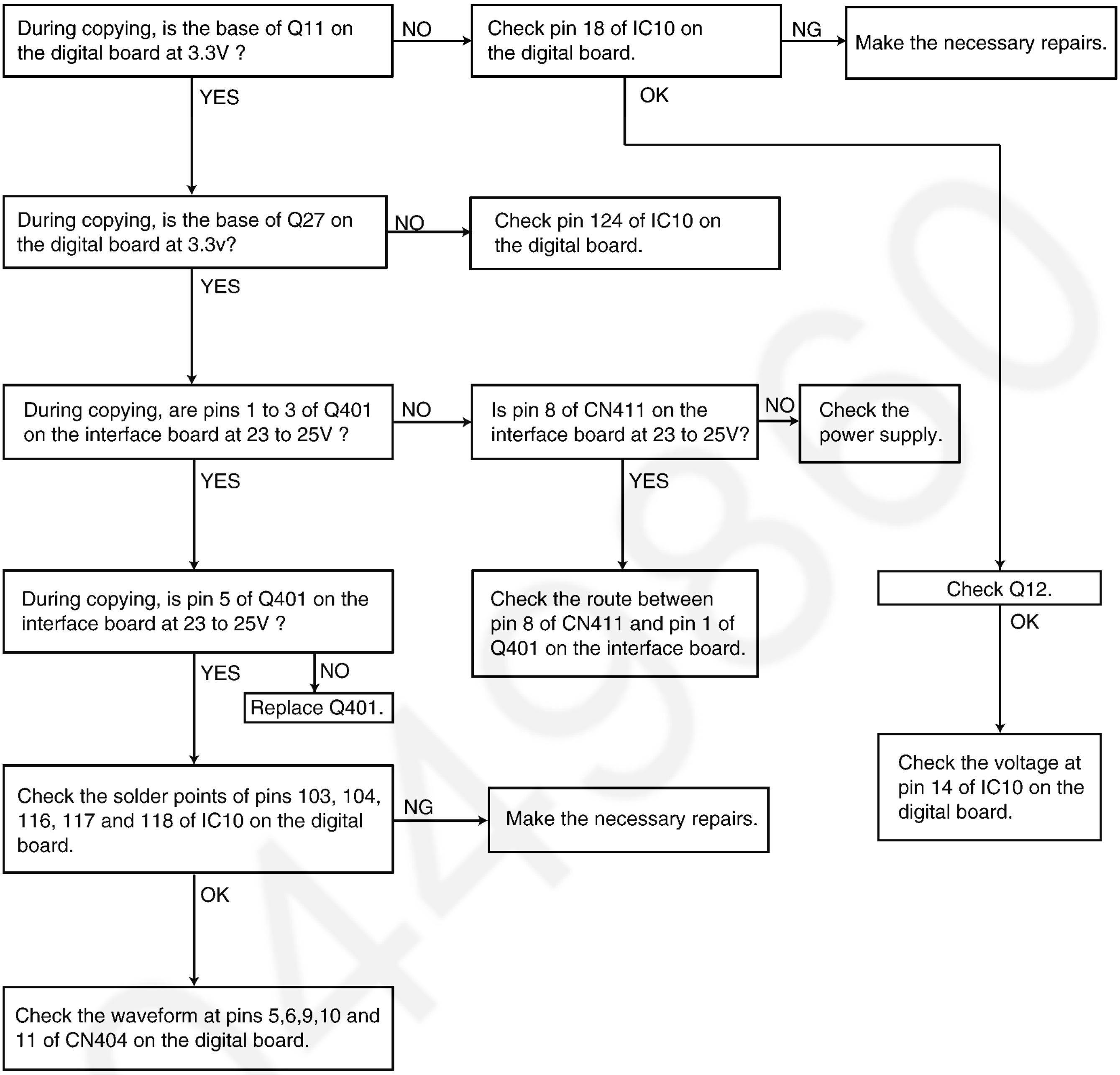

Are the glass surface of the contact image sensor (CIS) and the white panel on the back of the operation block clean?
NG
Clean the location in question.
OK
Perform the scanner test. (*1)
Is the LED array lit?
NO
Is pin 7 of CN14 on the digital board at 4.2 to 5.0V?
NO
Check the +5VD line of the power supply.
YES
Is pin 4 of IC3 on the digital board at 3.3V?
NO
Check IC3 on the digital board.
YES
Check Q20 and R202 on the digital board.
YES
Is pin 3 of CN14 on the digital board at 3.3V ?
NO
Check Q21, R211 and R1.
Check the voltage at pin 3 of CN14 again.
NG
Replace Q21 and check again.
NG
Check pin 138 of IC10 (Digital board).
Replace IC10.
YES
Observe the waveform at test point VIDEO on the digital board with an oscilloscope (while scanning the white panel).
NG
Check the image sensor.
OK
Apply a trigger at the rising edge of CH2 given the following settings :
CH1 0.5V/div connect to AIN1. (*2)
CH2 5V/div connect to FTG. (*2)
Time 1ms/div


5.2 msec
White level
0.7-1.3V
0-0.3V

Note:

- (*1): **Test Mode** (P.59)
- (*2): **Digital Board (PCB1)** (P.220)
- Refer to **Block Diagram**(P.20).

12.5.11. Thermal Head Section


During copying, is the base of Q11 on the digital board at 3.3V ?
NO
Check pin 18 of IC10 on the digital board.
NG
Make the necessary repairs.
OK
YES
During copying, is the base of Q27 on the digital board at 3.3v?
NO
Check pin 124 of IC10 on the digital board.
YES
During copying, are pins 1 to 3 of Q401 on the interface board at 23 to 25V ?
NO
Is pin 8 of CN411 on the interface board at 23 to 25V?
NO
Check the power supply.
YES
YES
During copying, is pin 5 of Q401 on the interface board at 23 to 25V ?
Check the route between pin 8 of CN411 and pin 1 of Q401 on the interface board.
Check Q12.
OK
YES
NO
Replace Q401.
Check the voltage at pin 14 of IC10 on the digital board.
Check the solder points of pins 103, 104, 116, 117 and 118 of IC10 on the digital board.
NG
Make the necessary repairs.
OK
Check the waveform at pins 5,6,9,10 and 11 of CN404 on the digital board.

Note:
Refer to **Thermal Head** (P.21).

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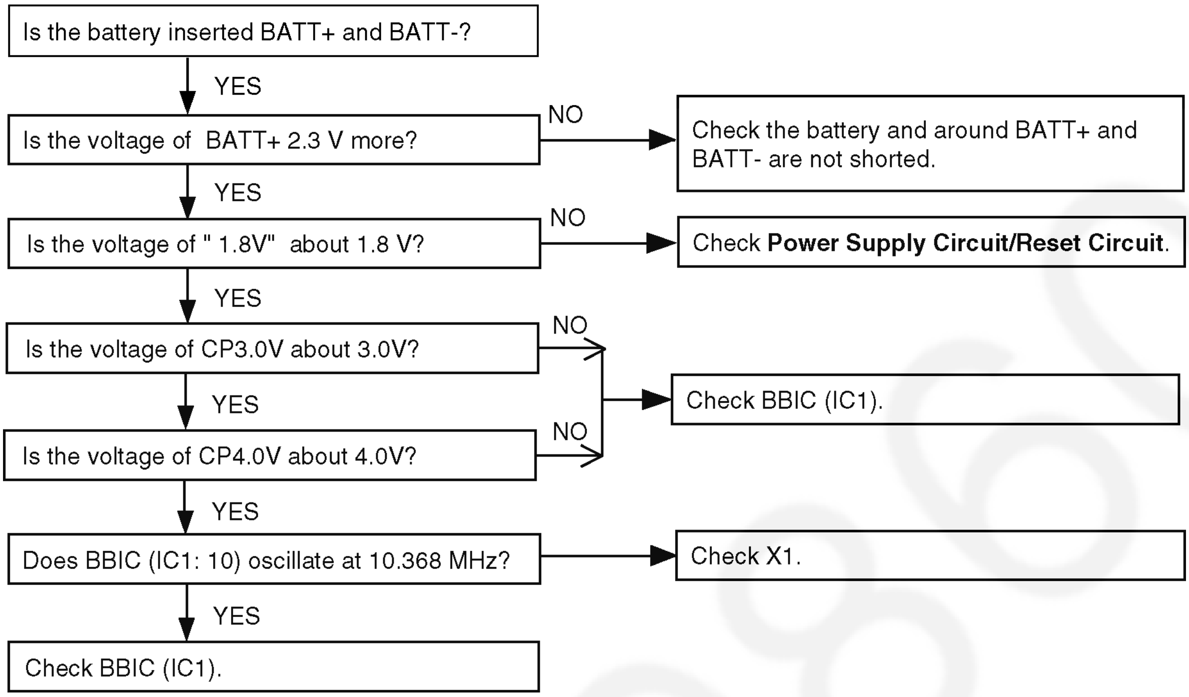
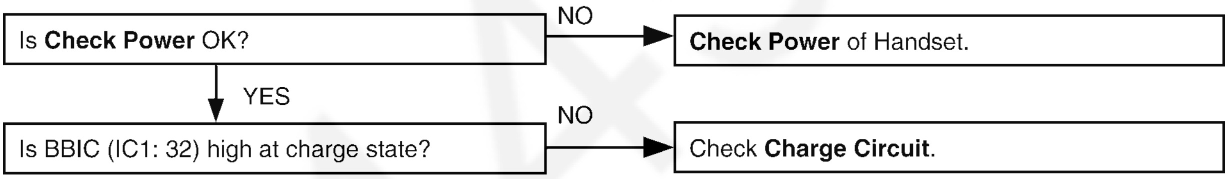
12.5.12. Cordless Section

12.5.12.1. Check Power (Cordless Handset)


Is the battery inserted BATT+ and BATT-?
YES
Is the voltage of BATT+ 2.3 V more?
NO
Check the battery and around BATT+ and BATT- are not shorted.
YES
Is the voltage of " 1.8V" about 1.8 V?
NO
Check Power Supply Circuit/Reset Circuit.
YES
Is the voltage of CP3.0V about 3.0V?
NO
YES
Is the voltage of CP4.0V about 4.0V?
NO
Check BBIC (IC1).
YES
Does BBIC (IC1: 10) oscillate at 10.368 MHz?
Check X1.
YES
Check BBIC (IC1).

Cross Reference:
Power Supply Circuit/Reset Circuit (P.47)

12.5.12.2. Check Battery Charge (Cordless Handset)


Is Check Power OK?
NO
Check Power of Handset.
YES
Is BBIC (IC1: 32) high at charge state?
NO
Check Charge Circuit.

Cross Reference:
Check Power (Cordless Handset) (P.134)
Charge Circuit (P.47)

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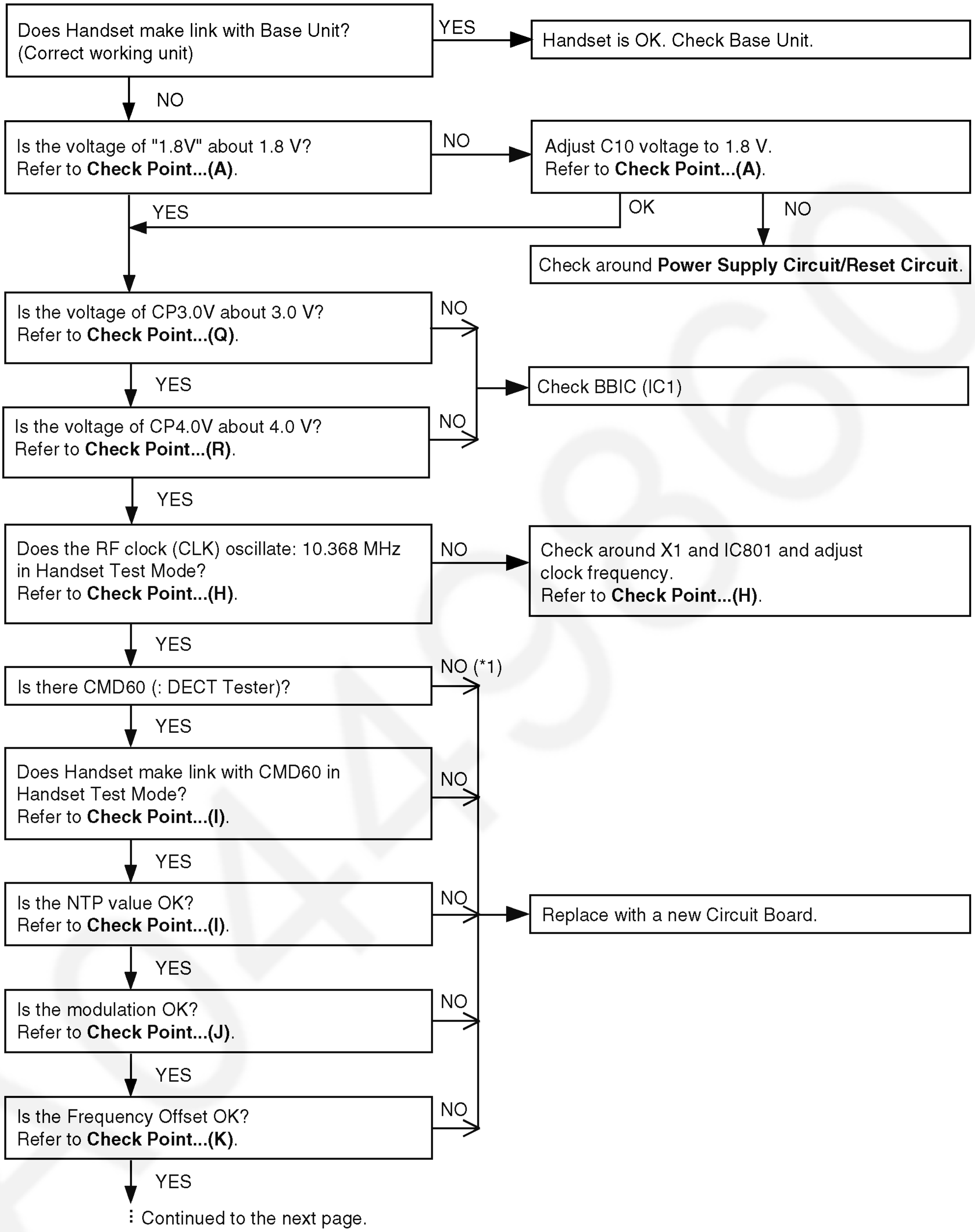
12.5.12.3. Check Link (Cordless Handset)


Does Handset make link with Base Unit? (Correct working unit)
YES
Handset is OK. Check Base Unit.
NO
Is the voltage of "1.8V" about 1.8 V? Refer to Check Point...(A).
NO
Adjust C10 voltage to 1.8 V. Refer to Check Point...(A).
OK
NO
YES
Check around Power Supply Circuit/Reset Circuit.
Is the voltage of CP3.0V about 3.0 V? Refer to Check Point...(Q).
NO
Check BBIC (IC1)
YES
Is the voltage of CP4.0V about 4.0 V? Refer to Check Point...(R).
NO
YES
Does the RF clock (CLK) oscillate: 10.368 MHz in Handset Test Mode? Refer to Check Point...(H).
NO
Check around X1 and IC801 and adjust clock frequency. Refer to Check Point...(H).
YES
Is there CMD60 (: DECT Tester)?
NO (*1)
YES
Does Handset make link with CMD60 in Handset Test Mode? Refer to Check Point...(I).
NO
YES
Is the NTP value OK? Refer to Check Point...(I).
NO
Replace with a new Circuit Board.
YES
Is the modulation OK? Refer to Check Point...(J).
NO
YES
Is the Frequency Offset OK? Refer to Check Point...(K).
NO
YES
Continued to the next page.

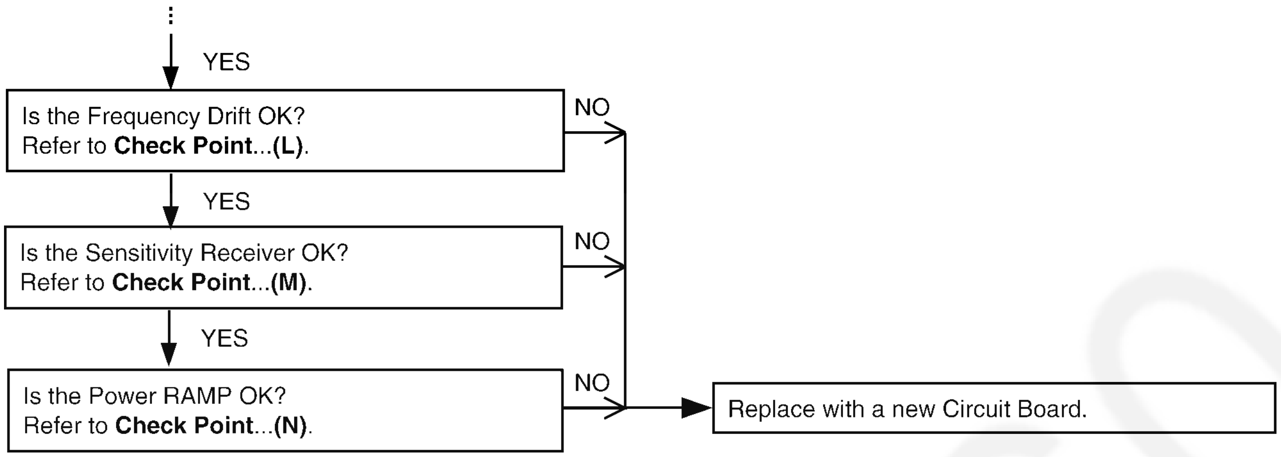
Cross Reference:

Power Supply Circuit/Reset Circuit (P.47)

Check Point (Cordless Handset) (P.138)

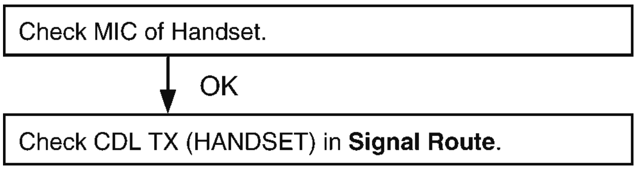
Note:

(*1) Refer to **Troubleshooting by Symptom (Cordless Handset)** (P.138).


YES
Is the Frequency Drift OK?
Refer to Check Point...(L).
NO
YES
Is the Sensitivity Receiver OK?
Refer to Check Point...(M).
NO
YES
Is the Power RAMP OK?
Refer to Check Point...(N).
NO
Replace with a new Circuit Board.

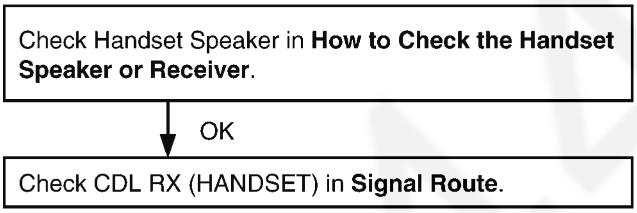
Cross Reference:
Check Point (Cordless Handset) (P.138)

12.5.12.4. Check Cordless Handset Transmission


Check MIC of Handset.
OK
Check CDL TX (HANDSET) in Signal Route.

Cross Reference:
Check Sheet for Signal Route (P.124)

12.5.12.5. Check Cordless Handset Reception


Check Handset Speaker in How to Check the Handset Speaker or Receiver.
OK
Check CDL RX (HANDSET) in Signal Route.

Cross Reference:
How to Check the Cordless Handset Speaker or Receiver (P.184).
Check Sheet for Signal Route (P.124)

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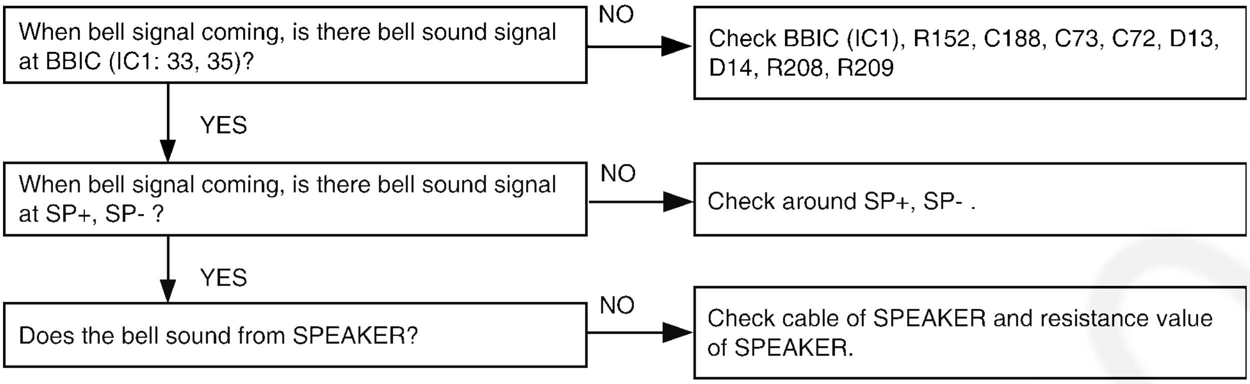
12.5.12.6. Bell Reception (Cordless Handset)


When bell signal coming, is there bell sound signal at BBIC (IC1: 33, 35)?
NO
Check BBIC (IC1), R152, C188, C73, C72, D13, D14, R208, R209
YES
When bell signal coming, is there bell sound signal at SP+, SP- ?
NO
Check around SP+, SP- .
YES
Does the bell sound from SPEAKER?
NO
Check cable of SPEAKER and resistance value of SPEAKER.

Cross Reference:

Check Link (Cordless Handset) (P.135)

How to Check the Cordless Handset Speaker or Receiver (P.184)

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12.5.13. Troubleshooting by Symptom (Cordless Handset)

If your unit has below symptoms, follow the instructions in remedy column. Remedies depend on whether you have DECT tester (*1) or not.

Symptom	Remedy (*2)	
	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)
Battery strength is not indicated correctly by Battery icon.	Check item (**A**)-(**D**), (**E**)-(**G**).	Check item (**A**)-(**D**), (**E**)-(**G**).
You cannot hear the caller's voice.	Check item (**A**)-(**C**), (**H**).	Check item (**A**)-(**C**), (**H**)-(**M**), (**O**).
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item (**I**)-(**M**).
Does not link between base unit and handset.	Check item (**A**)-(**C**), (**H**).	Check item (**A**)-(**C**), (**I**)-(**M**).
The Audio level is high or low.	Check item (**O**).	Check item (**O**).
The SP-Phone level is high or low.	Check item (**P**).	Check item (**P**).

Note:

(*1) A general repair is possible even if you don’t have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.

(*2) Refer to **Check Point (Cordless Handset)** (P.138)

12.5.13.1. Check Point (Cordless Handset)

Please follow the items below when BBIC or EEPROM is replaced.

Note:

After the measuring, suck up the solder of TP.

*: **PC Setting** (P.178) is required beforehand.

The connections of simulator equipments are as shown in **Adjustment Standard (Cordless Handset)** (P.180).

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)*	1.8 V Supply Adjustment	VDD1	1. Confirm that the voltage between test point VDD1 and GND is 1.8 V ± 0.02 V. 2. Execute the command “VDD”, then check the current value. 3. Adjust the 1.8V voltage of VDD1 executing command “VDD XX“(XX is the value).	IC1, Q2, C48, D1, C1, C44, R12, R45, C40, C45, F1
(**B**)*	BBIC Confirmation	-	1. BBIC Confirmation (Execute the command “getchk”). 2. Confirm the returned checksum value. Connection of checksum value and program number is shown below. ex.) checksum value: 523A, program number: D862ZA	IC1, X1, RA61, R64, R66
(**C**)*	EEP-ROM Confirmation	-	1. EEP-ROM Confirmation (Execute the command "sendchar EPV"). 2. Confirm the returned Value (Value for reference is written at "EEPROM C/SUM" in Software_Version_Table.xls).	IC1, IC3, R40~R42, C172
(**D**)	Charge Control Check & Charge Current Monitor Check	-	1. Apply 3.5 V between CHG(+) and CHG(-) with DC power supply and set current limit to 250 mA. Confirm the indication of “charging” on LCD. 2. Confirm that the current limit LED of DC power supply is ON/OFF. Confirm it after waiting over 1 minute at least. 3. Decrease current limit of DC power supply to 100 mA. 4. Confirm that the current limit LED of DC power supply is stable. (Current limiter is ON.) (If charge control cannot be confirmed by this procedure, please use battery to handset power supply and try again.)	IC1, Q4 Q9, D7, R6, R7, F1, C1, R2, R30, R31, R8, R45
(**E**)*	Charge Detection (OFF) Check	-	1. Stop supplying 3.5 V to CHG (+) and CHG (-). 2. Confirm the indication of “charging” has been cleared.	IC1, Q4 Q9, D7, R6, R7, F1, C1, R2, R30, R31, R8, R45

	Items	Check Point	Procedure	Check or Replace Parts
(**F**)*	Battery Monitor Check	-	1. Apply 2.25 V between BATT+ and BATT-. 2. Execute the command sendchar PAD sendchar LED 0 sendchar CRX 0 1 sendchar AD1 It assumes that the return value is XX. a) 6c ≤ XX ≤ 71: No need to adjust b) XX: 6A ~ 6B: Need to adjust XX: 72 ~ 74: Need to adjust Write AD value of 2.25 V to EEPROM. ex) read data: XX = 6A, write data: YY = 6A read data: XX = 73, write data: YY = 73 EEPROM = 0004(Low Voltage) write “YY” Execute the command “wreeprom 00 04 01 YY”. EEPROM = 0005(No Voltage) write ‘’YY - 1D’’ Execute the command “×wreeprom 00 05 01 ZZ”. EEPROM = 000A(Low Voltage BL) write “YY - 16” Execute the command “wreeprom 00 0A 01 WW”. **Note:** ZZ = YY - C No Voltage writing data limit is ‘00’. c) XX: 00 ~ 69: Reject XX: 75 ~ FF: Reject	IC1, F1, C1, R12, R45
(**G**)	Battery Low Confirmation	-	1. Apply 2.40 V between BATT+ and BATT-. 2. Confirm that there is no flashing of Battery Icon. 3. Apply 2.25 V ± 0.08 V between BATT+ and BATT-. 4. Confirm that there is flashing of Battery Icon.	IC1, F1, C1, R12, R45
(**H**)*	BBIC Clock Adjustment	CLK	1. Apply 2.6 V between BATT+ and BATT- with DC power. 2. Input Command “sendchar sfr”, then you can confirm the current value. 3. Check X’tal Frequency. (10.368 MHz ± 100 Hz). 4. If the frequency is not 10.368 MHz ± 100 Hz, adjust the frequency of CLK executing the command “sendchar sfr xx xx (where xx is the value)” so that the reading of the frequency counter is 10.368000 MHz ± 5 Hz. Note: Clear the registered information for Base Unit before measurement, because the Frequency will not possibly get stable due to the registered information. Pressing the button of “3” “7” “9” “#” clears the registration. Register to it on Base Unit after measurement.	IC1, X1, C47
(**I**)*	Transmitted Power Confirmation	-	Remove the Antenna before starting step from 1 to 4. 1. Configure the DECT tester (CMD60) as follows; <Setting> • Test mode: PP • RFPI: 0102030405 • Traffic Carrier: 5 • Traffic Slot: 4 • Mode: Loopback • RF LEVEL = -70 dBm • PACKET: PP32Z 2. Execute the command “sendchar TST 01 02 03 04 05". 3. Initiate connection from DECT tester. 4. Confirm that the NTP value at ANT is 19 dBm ~ 25 dBm.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808
(**J**)*	Modulation Check and Adjustment	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that the B-Field Modulation is -370±30/ +370±30 kHz/div & Modulated width ≧ 690 kHz using data type Fig 31.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808

	Items	Check Point	Procedure	Check or Replace Parts
(**K**)*	Frequency Offset Confirmation	-	Follow steps 1 to 3 of **(I)**. 4.Confirm that the frequency Offset is < ± 50 kHz.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808
(**L**)*	Frequency Drift Confirmation	-	Follow steps 1 to 3 of **(I)**. 4.Confirm that the frequency Drift is < ± 35 kHz/ms.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808
(**M**)*	Sensitivity Receiver Confirmation	-	Follow steps 1 to 3 of **(I)**. 4.Set DECT tester power to -88 dBm. 5.Confirm that the BER is < 1000 ppm.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808
(**N**)*	Power RAMP Confirmation	-	Follow steps 1 to 3 of **(I)**. 4.Confirm that Power RAMP is matching.	IC1, C802~C806, C808~C814, C819~C820, C822, C825~C827, C834, C859~C864, L801~L804, DA801, R801~R808
(**O**)	Audio Check and Confirmation	-	1. Link to BASE which is connected to Line Simulator. 2. Set line voltage to 48 V and line current to 40 mA. 3. Input -45 dBm/1KHz to MIC and measure Line output level. 4. Confirm that the level is -7 dBm ± 2 dBm and that the distortion level is < 5% at TEL Line (600 Ω Load). 5. Input -20 dBm/1KHz to Line I/F and measure Receiving level at REV+ and REV-. 6. Confirm that the level is -21.0 dBm ± 2 dBm and that the distortion level is < 5% at Receiver. (vol = 2)	IC1, C12, D19, D20, C96, C97, R215, R27, RA4, C11, C13, R28, D3, D4, MIC, L9, RA2, R73, R74
(**P**)	SP phone Audio Check and Confirmation	-	1. Link to Base which is connected to Line Simulator. 2. Set line voltage to 48 V and line current to 40 mA. 3. Set the handset off-hook using SP-Phone key. 4. Input -25 dBm/1KHz to Line I/F and measure Receiving level at SP+ and SP-. 5. Confirm that the level is -6 dBm ± 2 dBm and that the distortion level is < 5%. (vol = 3)	IC1, C12, C73, D13, D14, R152, R73, R74, RA2, MIC, C11, C13, RA4, R27, R28, R208, R209, C96, C97, R215, C72
(**Q**)	Charge Pump 3.0V Supply Confirmation	CP3.0V	1. Confirm that the voltage between testpoint CP3.0V and GND is 3.0V -0.1/+0.3V.	C52, C53, C49
(**R**)	Charge Pump 4.0V Supply Confirmation	CP4.0V	1. Confirm that the voltage between testpoint CP4.0V and GND is 4.0V -0.2V.	C50, C51

A0498609

12.5.13.2. Troubleshooting for Speakerphone

When the customer’s telephone line corresponds to the following conditions and transmission signal of SP-Phone is interrupted, performing the next set up to a cordless handset will improve it to some extent.

Conditions

1. When customer’s line has less line loss.
   ex.) The customer is using optical fiber, ISDN terminal adaptor, or PBX.
   In this case, receiving signal is strong and it may affect transmission signal.
2. When the other party is talking from noisy place.
   ex.) The other party is using cellular phone. The background noise is very loud.
   In this case, the noise from the other party (i.e. surrounding noise) may affect transmission signal.

Setting Method

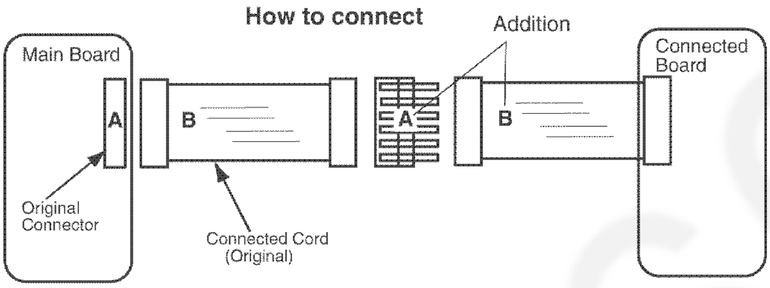
- Change the address of EEPROM (0144) from 0×00 to 0×01.

A049860

13 Service Fixture & Tools

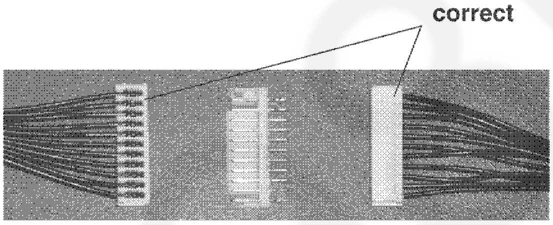
How to extend cords

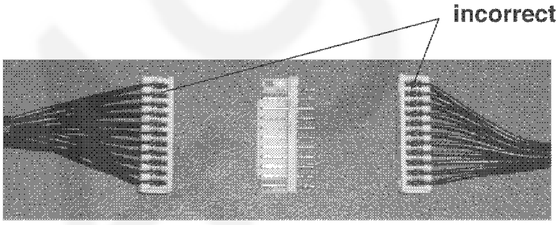
When extending cords, you need 2 pairs of A,B (A=connector,B=cord)
(One pair is connected to the Main board.)
If you do not have 2 pairs, order the necessary parts.

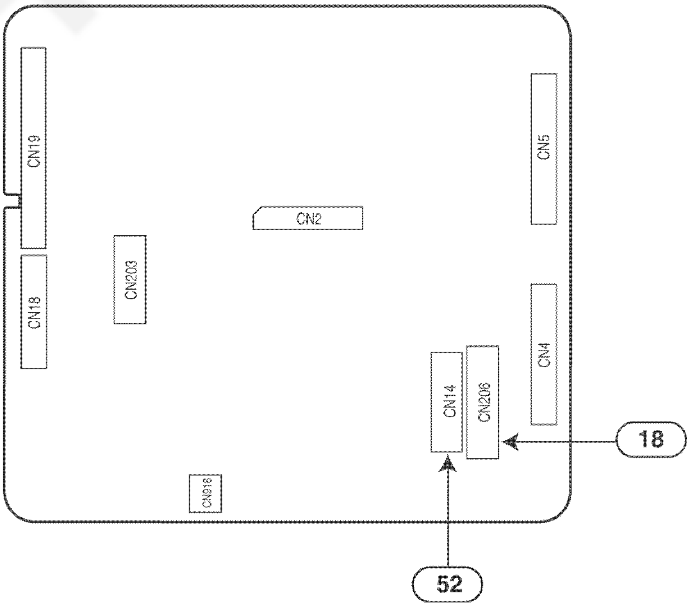

How to connect
Addition
Main Board
Connected Board
A
B
A
B
Original Connector
Connected Cord (Original)

NOTE

Be sure if the direction of the connectors is correct.

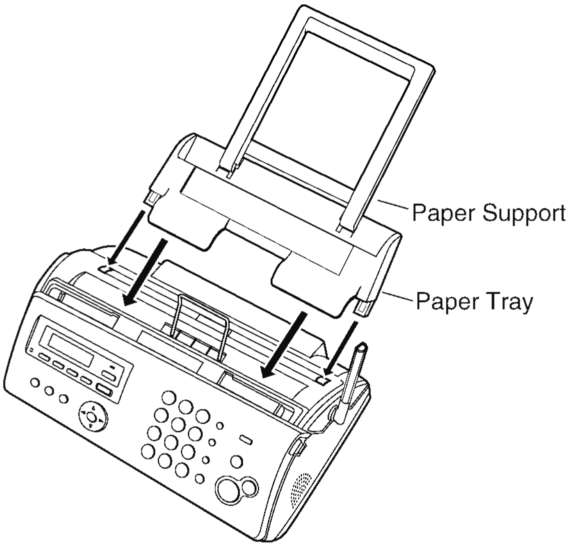


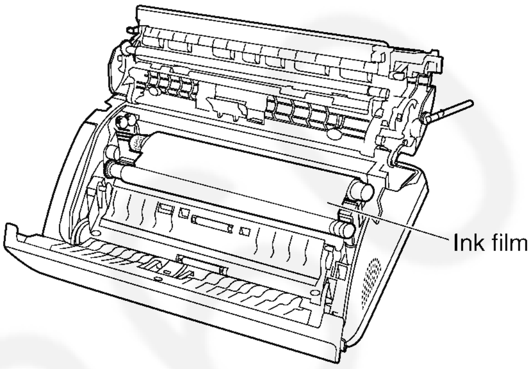



CN19
CN5
CN2
CN203
CN18
CN4
CN14
CN206
CN918
18
52

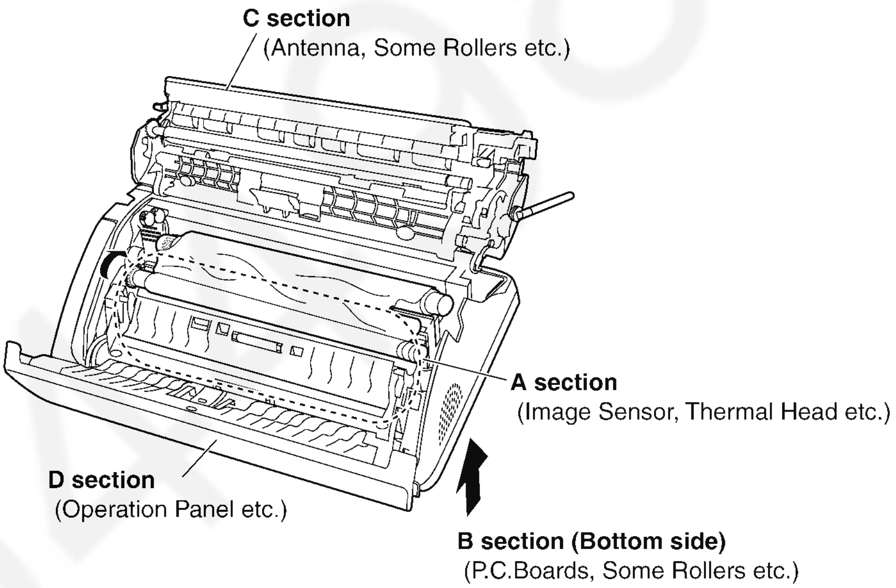
14 Disassembly and Assembly Instructions

Please remove the Paper Support Spring, Paper Tray and Ink Film before disassembling.


Paper Support
Paper Tray

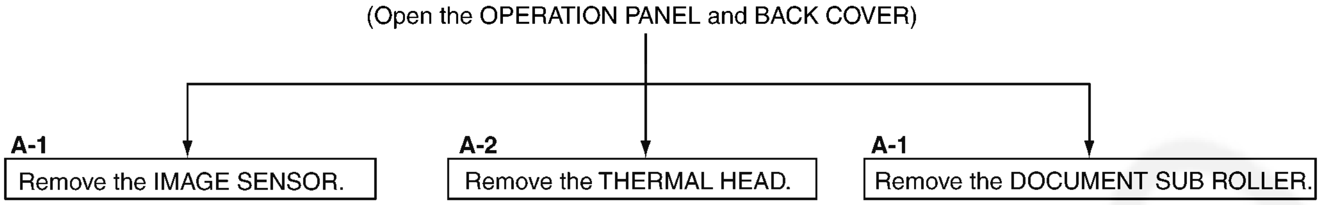


14.1. General Section


C section
(Antenna, Some Rollers etc.)
A section
(Image Sensor, Thermal Head etc.)
D section
(Operation Panel etc.)
B section (Bottom side)
(P.C.Boards, Some Rollers etc.)

14.2. Disassembly Flowchart

14.2.1. Upper Cabinet Section

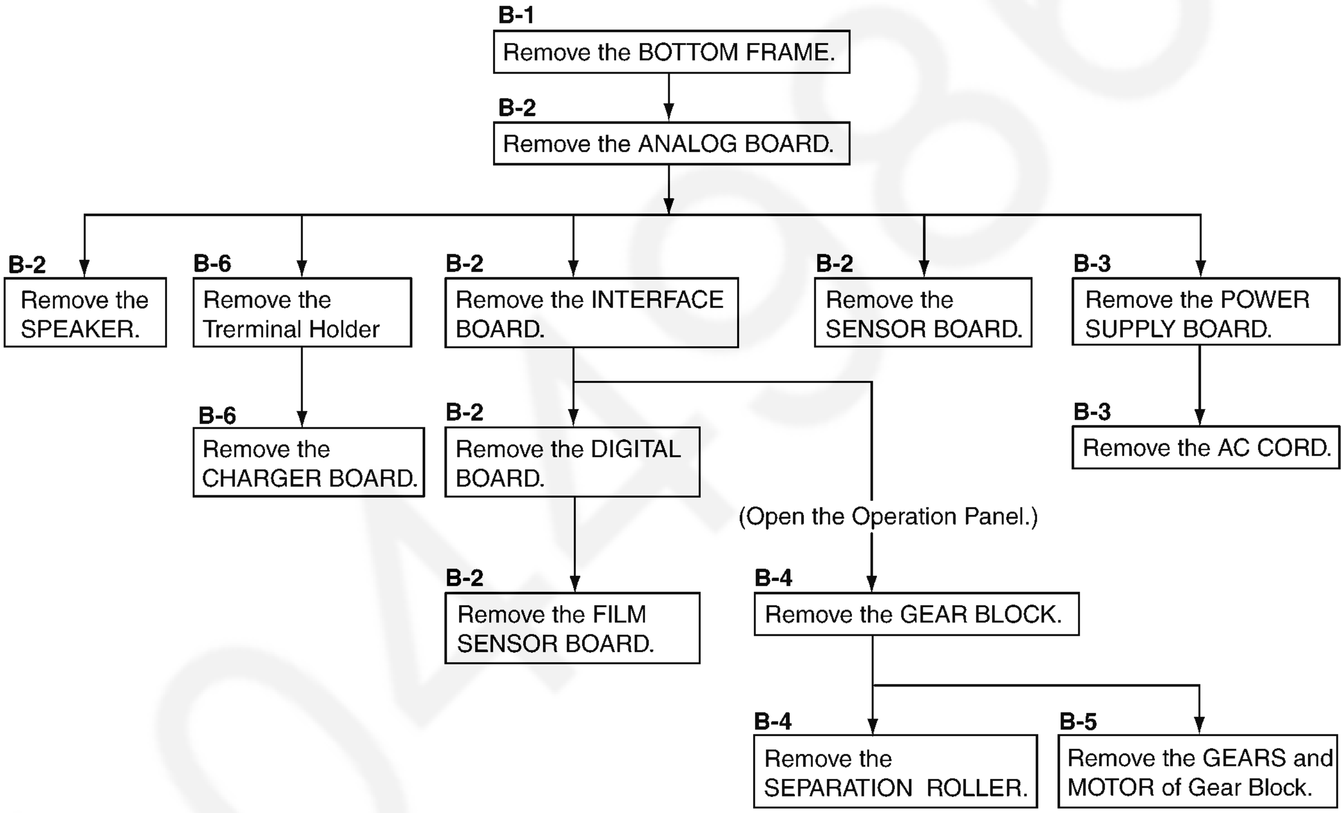

(Open the OPERATION PANEL and BACK COVER)
A-1
Remove the IMAGE SENSOR.
A-2
Remove the THERMAL HEAD.
A-1
Remove the DOCUMENT SUB ROLLER.

REFERENCE:

A-1: How to Remove the Image Sensor (CIS) (P.147)

A-2: How to Remove the Thermal Head (P.148)

14.2.2. Lower Cabinet Section


B-1
Remove the BOTTOM FRAME.
B-2
Remove the ANALOG BOARD.
B-2
Remove the SPEAKER.
B-6
Remove the Trerminal Holder
B-2
Remove the INTERFACE BOARD.
B-2
Remove the SENSOR BOARD.
B-3
Remove the POWER SUPPLY BOARD.
B-6
Remove the CHARGER BOARD.
B-2
Remove the DIGITAL BOARD.
B-3
Remove the AC CORD.
(Open the Operation Panel.)
B-2
Remove the FILM SENSOR BOARD.
B-4
Remove the GEAR BLOCK.
B-4
Remove the SEPARATION ROLLER.
B-5
Remove the GEARS and MOTOR of Gear Block.

REFERENCE:

B-1: How to Remove the Bottom Frame (P.150)

B-2: How to Remove the P.C. Boards and Speaker (P.151)

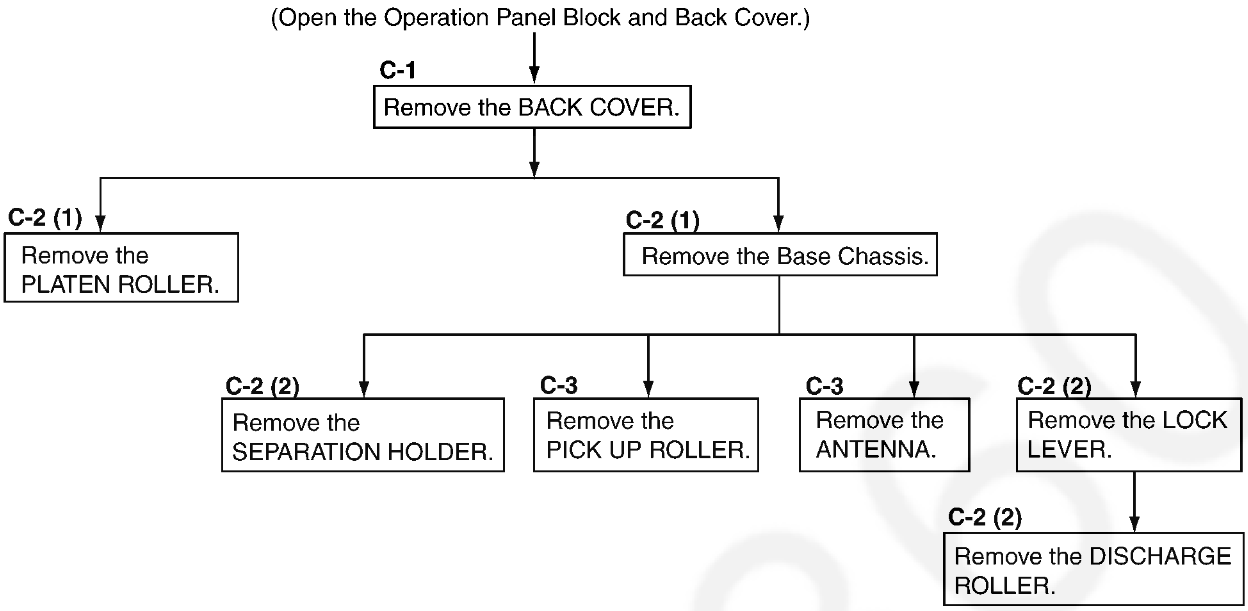
B-3: How to Remove the Power Supply Board and AC Cord (P.152)

B-4: How to Remove the Gear Block and Separation Roller (P.153)

B-5: How to Remove the Gears, Motors and Arms of the Gear Block (P.154)

B-6: How to Remove the Charger Board-A (P.156)

14.2.3. Back Cover Section


(Open the Operation Panel Block and Back Cover.)
C-1
Remove the BACK COVER.
C-2 (1)
Remove the PLATEN ROLLER.
C-2 (1)
Remove the Base Chassis.
C-2 (2)
Remove the SEPARATION HOLDER.
C-3
Remove the PICK UP ROLLER.
C-3
Remove the ANTENNA.
C-2 (2)
Remove the LOCK LEVER.
C-2 (2)
Remove the DISCHARGE ROLLER.

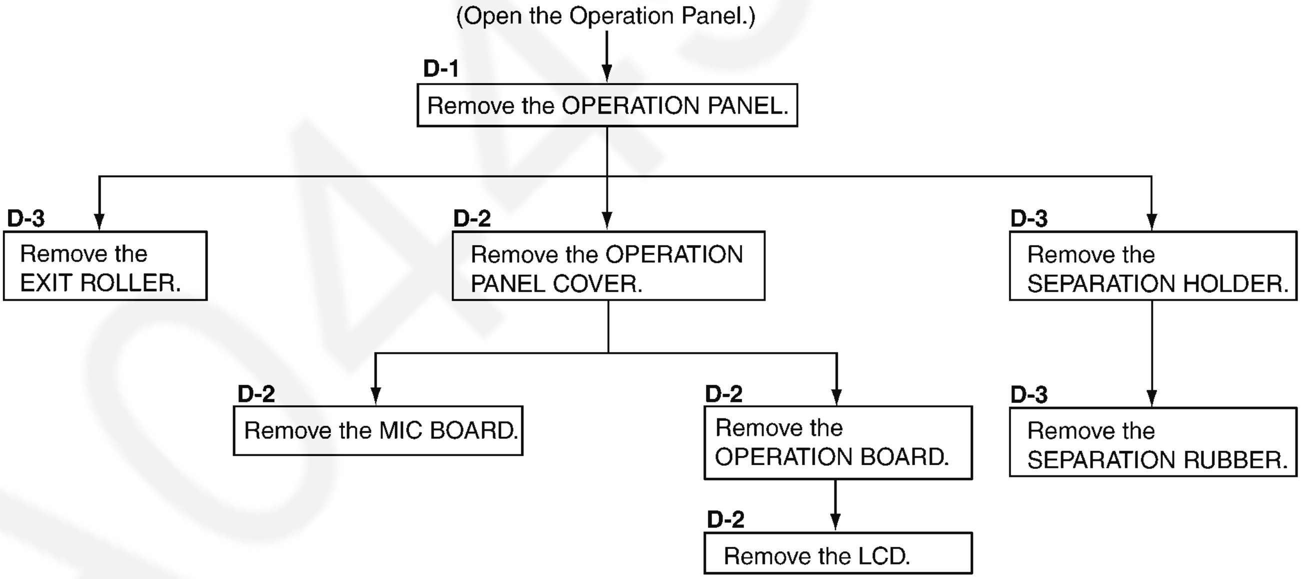
REFERENCE:

C-1: How to Remove the Back Cover (P.157)

C-2: How to Remove the Platen Roller and Lock Lever (P.158)

C-3: How to Remove the Pickup Roller and Antenna (P.160)

14.2.4. Operation Panel Section


(Open the Operation Panel.)
D-1
Remove the OPERATION PANEL.
D-3
Remove the EXIT ROLLER.
D-2
Remove the OPERATION PANEL COVER.
D-3
Remove the SEPARATION HOLDER.
D-2
Remove the MIC BOARD.
D-2
Remove the OPERATION BOARD.
D-3
Remove the SEPARATION RUBBER.
D-2
Remove the LCD.

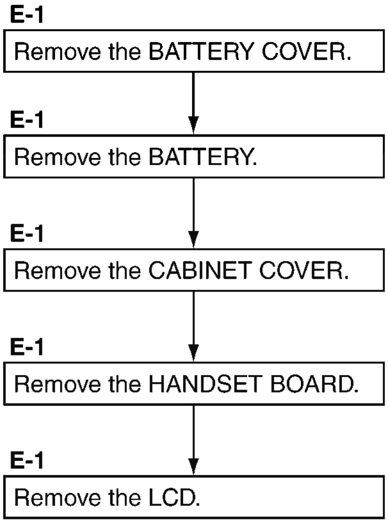
REFERENCE:

D-1: How to Remove the Operation Panel (P.161)

D-2: How to Remove the Operation Board, MIC Board and LCD (P.162)

D-3: How to Remove the Separation Holder and Exit Roller (P.163)

14.2.5. Cordless Handset Section


E-1
Remove the BATTERY COVER.
E-1
Remove the BATTERY.
E-1
Remove the CABINET COVER.
E-1
Remove the HANDSET BOARD.
E-1
Remove the LCD.

REFERENCE:

E-1: How to Remove the Cordless Handset Board (P.170)

A049860

14.3. Disassembly Procedure

14.3.1. How to Remove the Image Sensor (CIS)

PROCEDURE: A-1

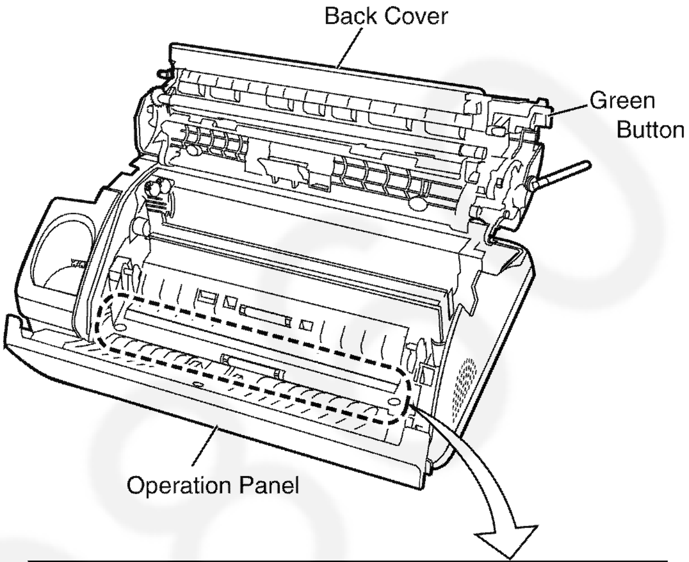
Ref. No. A-1

IMAGE SENSOR

1) Push the Green Button to open the Operation Panel and Back Cover.
2) Remove the 2 screws (D).
3) Remove the IMAGE SENSOR from the Main Cabinet, as shown in a Fig. A.
4) Disconnect the Connector.

DOCUMENT SUB ROLLER

1) Push the Green Button to open the Operation Panel and Back Cover.
2) Remove the DOCUMENT SUB ROLLER, as shown in a Fig. B.


Back Cover
Green Button
Operation Panel

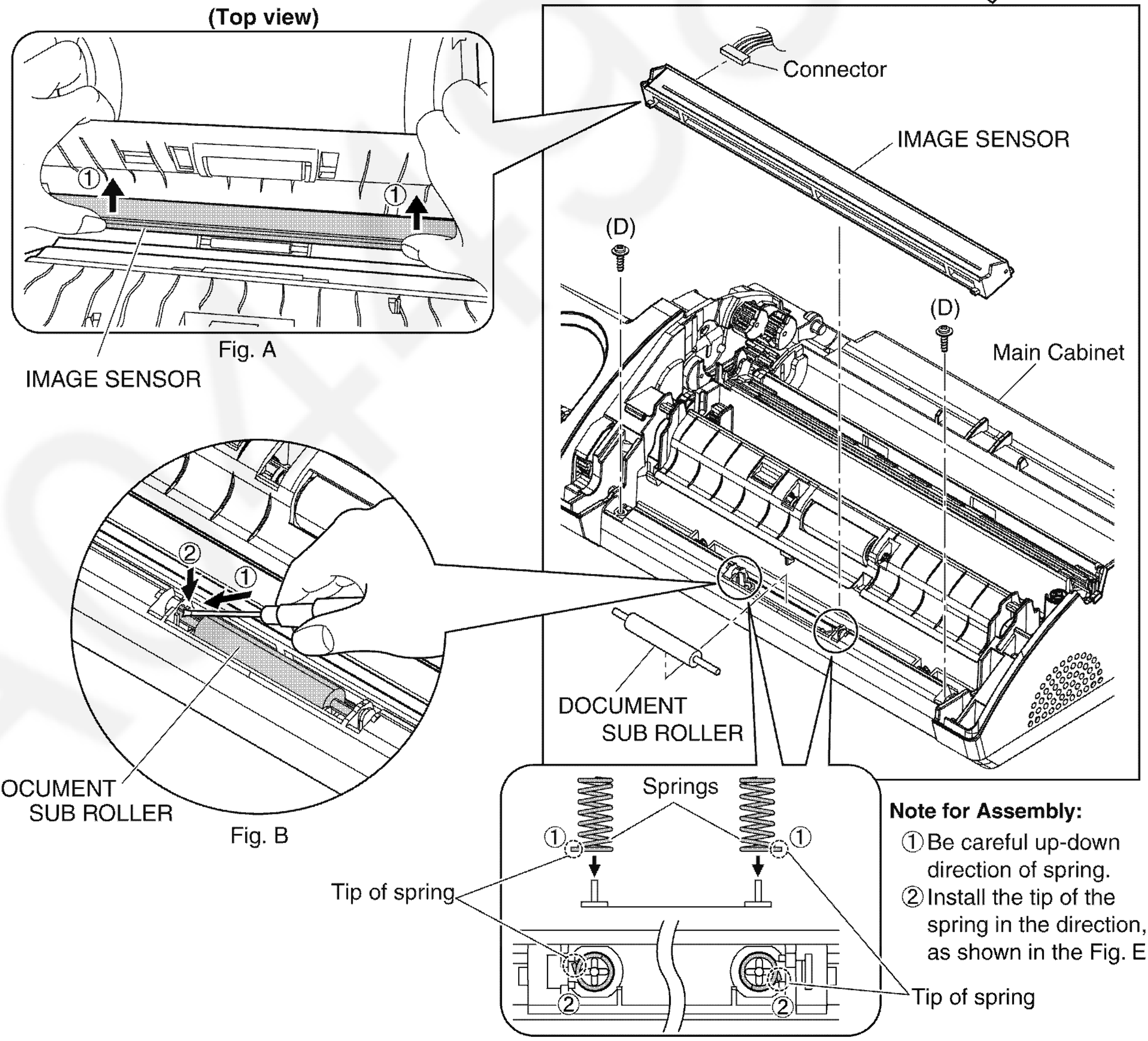

(Top view)
①
①
IMAGE SENSOR
Connector
IMAGE SENSOR
(D)
(D)
Main Cabinet
②
①
DOCUMENT SUB ROLLER
DOCUMENT SUB ROLLER
Springs
①
①
Tip of spring
②
②
Tip of spring

Fig. A

Fig. B

Fig. E

Note for Assembly:

① Be careful up-down direction of spring.

② Install the tip of the spring in the direction, as shown in the Fig. E.

14.3.2. How to Remove the Thermal Head

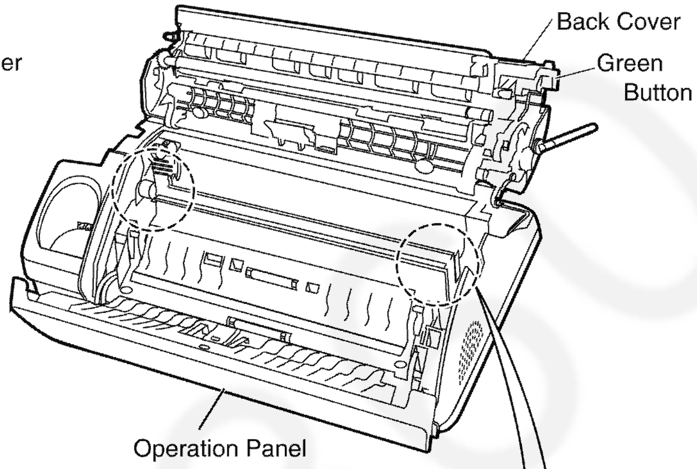
PROCEDURE: A-2

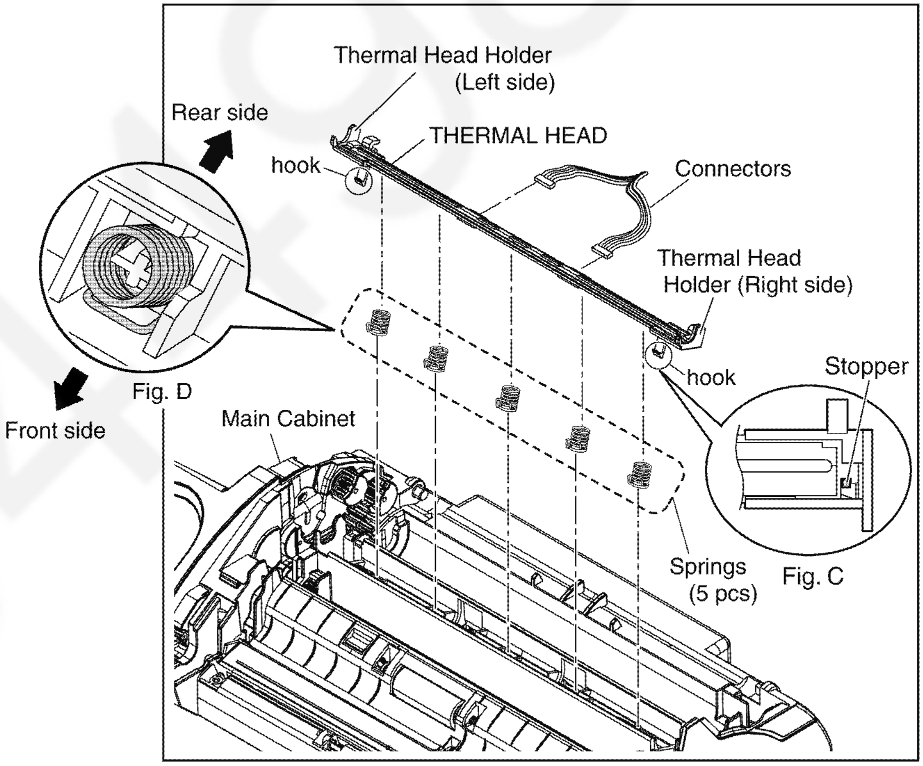
Ref. No. A-2 (1)

1) Push the Green Button to open the Operation Panel and Back Cover.
2) Release the both-side hooks of Thermal Head Holder from Main Cabinet. (Refer to next page.) Remove the holder from thermal head after releasing this stopper. (Fig. C)
3) Disconnect the Connectors.
4) Remove the THERMAL HEAD.

Note for Assembly:

- When springs are inserted in the Main Cabinet, be careful in the direction of springs. (See Fig. D)


Back Cover
Green Button
Operation Panel

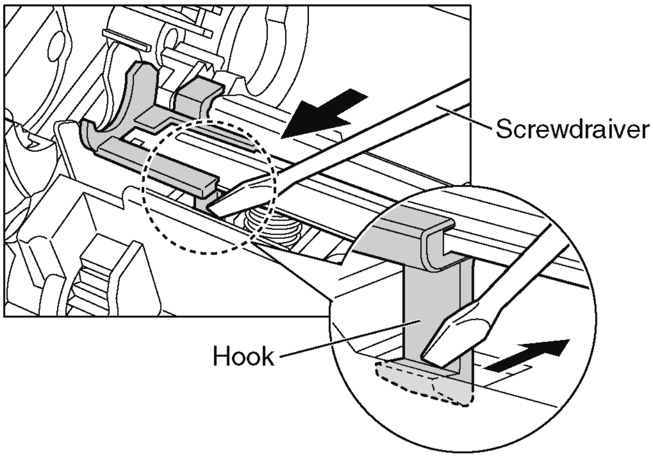

Thermal Head Holder (Left side)
Rear side
THERMAL HEAD
hook
Connectors
Thermal Head Holder (Right side)
hook
Stopper
Fig. D
Front side
Main Cabinet
Springs (5 pcs)
Fig. C

A04990

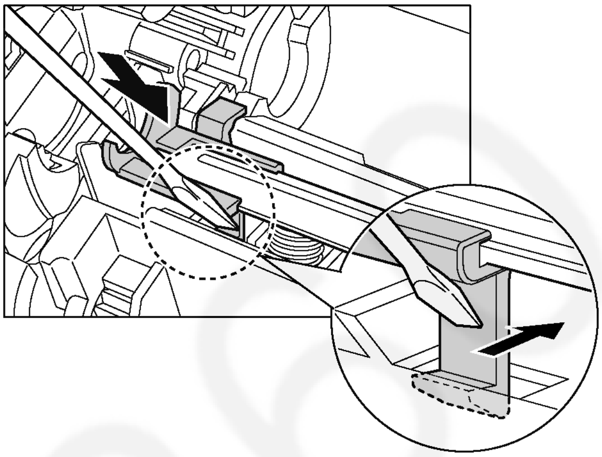
Ref. No. A-2 (2)

① Push the left side hook first, as shown in a figure.

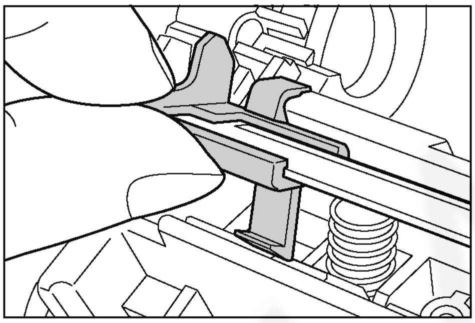
CORRECT


Screwdraiver
Hook

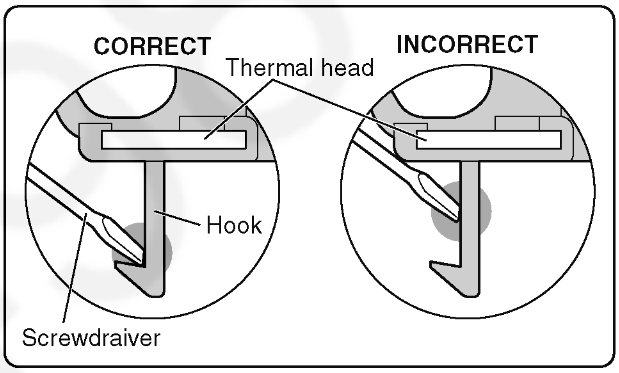
INCORRECT



② Keep a left side hook situation and push the right side hook, as shown in a figure.

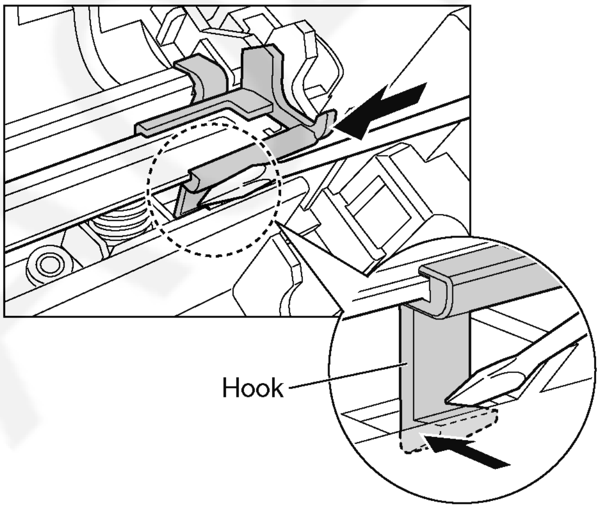


SIDE VIEW

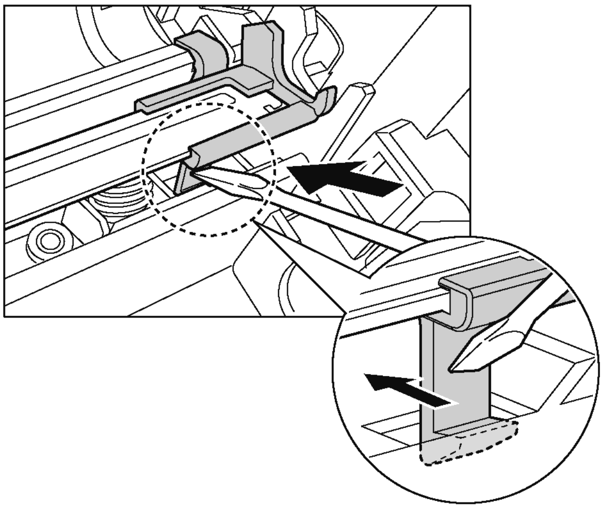

CORRECT
INCORRECT
Thermal head
Hook
Screwdraiver

③ Push the right side hook, as shown in a figure. The both side hooks release from Main Cabinet.

CORRECT



INCORRECT



14.3.3. How to Remove the Bottom Frame

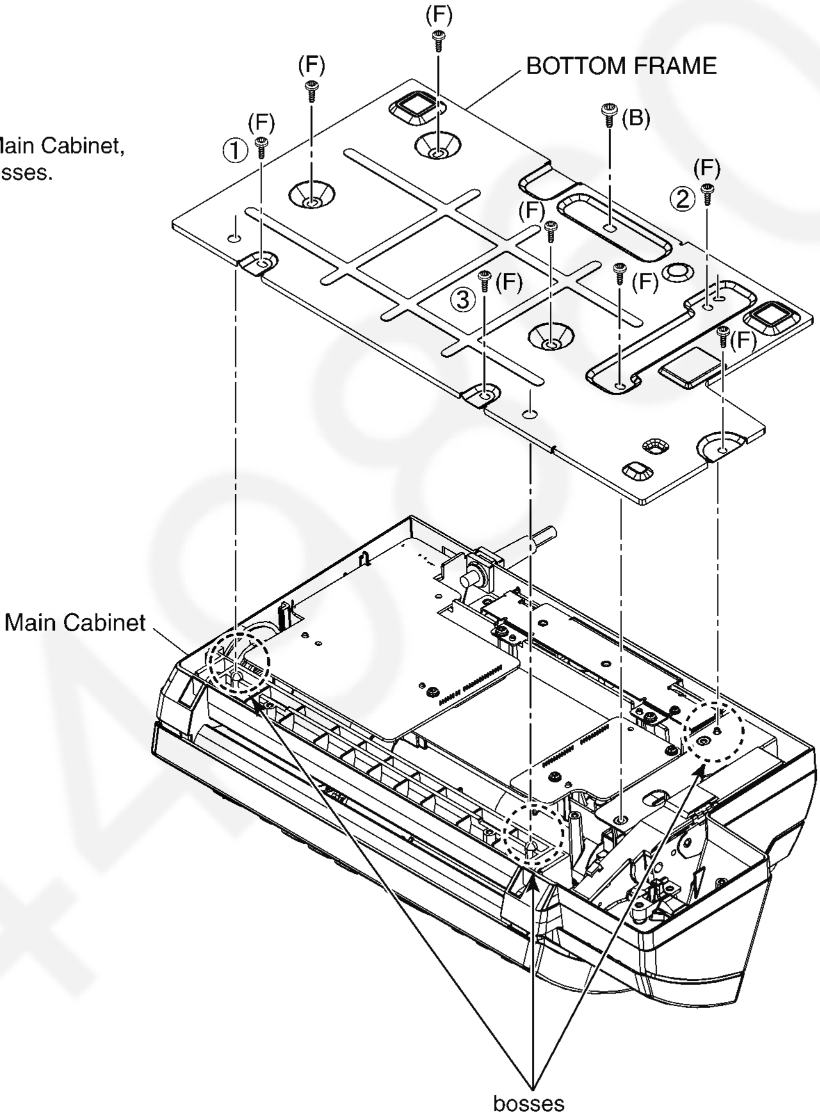
PROCEDURE: B-1

Ref. No. B-1

1) Remove the 8 screws (F) and 1 screw (B).
2) Remove the BOTTOM FRAME.

Note for Assembly:

- Fasten ①, ② and ③ screws first.
  (Order is ①→②→③.)
- When Bottom Frame is installed in the Main Cabinet, be careful not to run aground into the bosses.


(F)
(F)
BOTTOM FRAME
(B)
(F)
① (F)
(F)
② (F)
③ (F)
(F)
(F)
Main Cabinet
bosses

A0409

14.3.4. How to Remove the P.C. Boards and Speaker

PROCEDURE: B-1→B-2

Ref. No. B-2

ANALOG BOARD

1) Remove the 1 screw (F)-a.
2) Disconnect the Connector on the Analog Board.
3) Remove the ANALOG BOARD.

INTERFACE BOARD

1) Remove the 1 screw (F)-b.
2) Disconnect the Connectors on the Interface Board.
3) Remove the INTERFACE BOARD.

DIGITAL BOARD

1) Remove the Analog Board.
2) Remove the Interface Board.
3) Remove the 1 screw (F)-c.
4) Disconnect the Connectors on the Digital Board.
5) Unsolder the Antenna lead wires. (See Fig. E)
6) Release the hooks of the Main Cabinet.
7) Remove the DIGITAL BOARD.

FILM END SENSOR BOARD

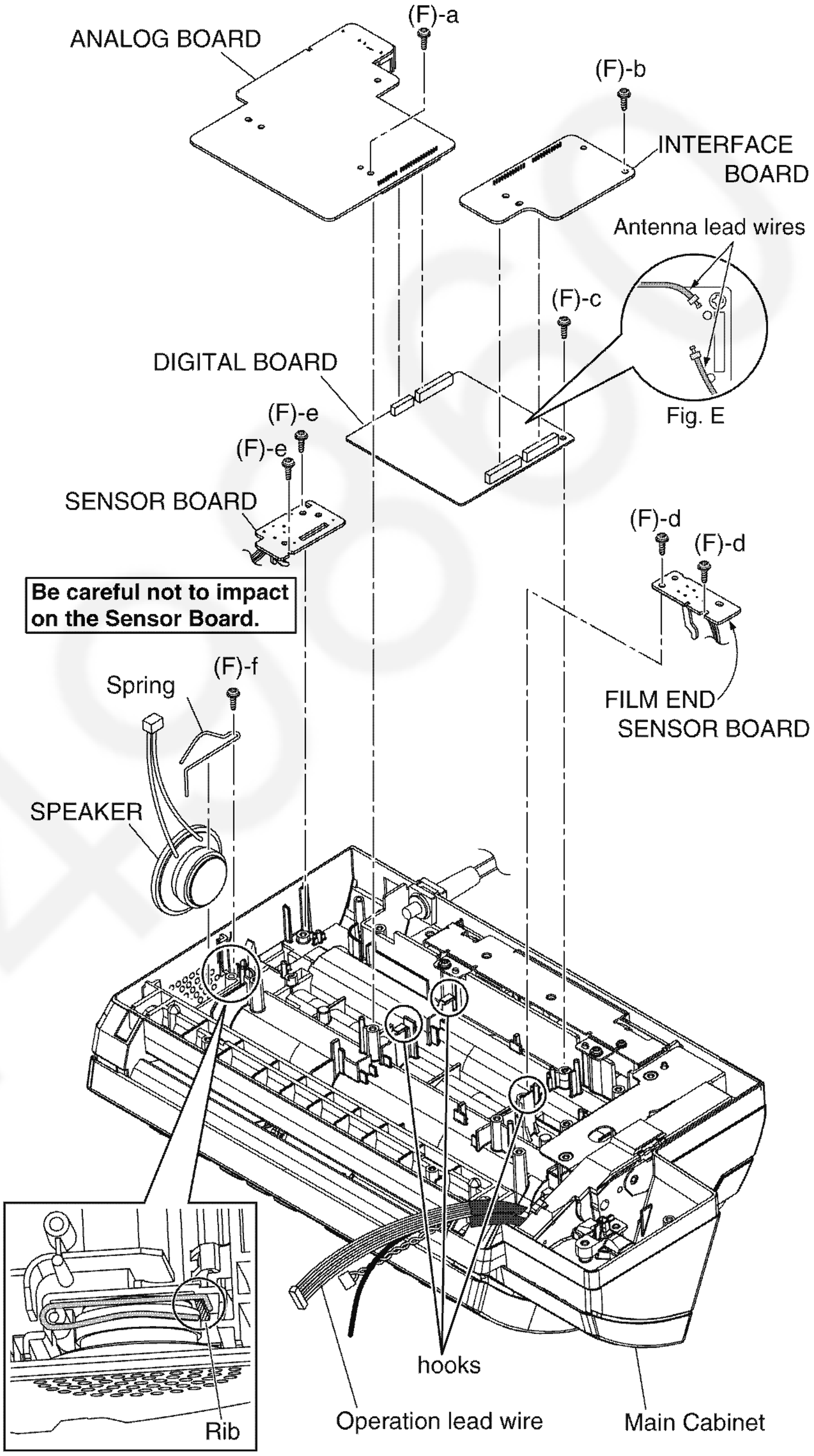
1) Remove the Analog Board.
2) Remove the Interface Board.
3) Remove the Digital Board.
4) Remove the 2 screws (F)-d.
5) Disconnect the Connectors on the Film End Sensor Board.
6) Remove the FILM END SENSOR BOARD.

SENSOR BOARD

1) Remove the Analog Board.
2) Remove the 2 screws (F)-e.
3) Remove the SENSOR BOARD.

SPEAKER

1) Remove the Analog Board.
2) Remove the 1 screw (F)-f.
3) Remove the SPEAKER.


ANALOG BOARD
(F)-a
(F)-b
INTERFACE BOARD
Antenna lead wires
(F)-c
DIGITAL BOARD
Fig. E
(F)-e
(F)-e
SENSOR BOARD
(F)-d
(F)-d
Spring
(F)-f
FILM END SENSOR BOARD
SPEAKER
hooks
Operation lead wire
Main Cabinet
Rib

Be careful not to impact on the Sensor Board.

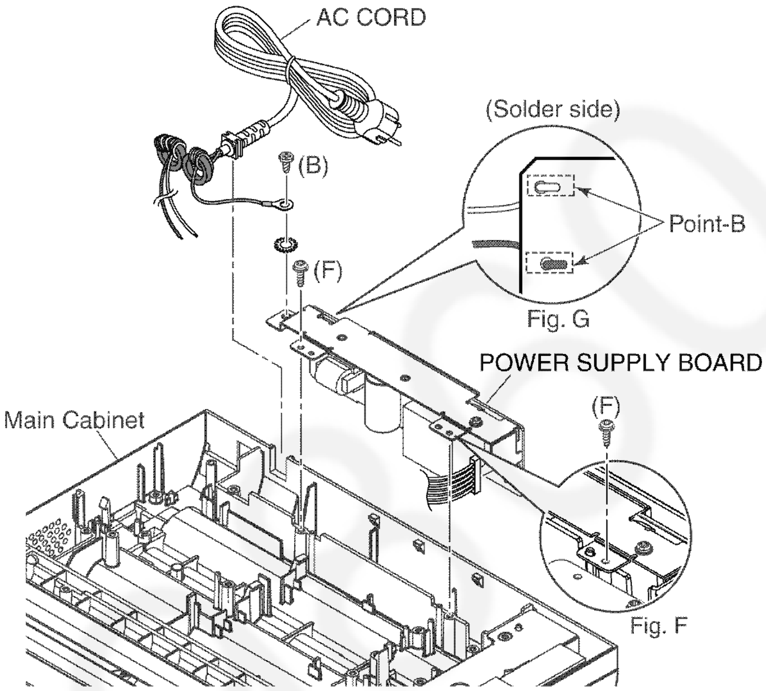
When spring is attached, catch it in the rib.

14.3.5. How to Remove the Power Supply Board and AC Cord

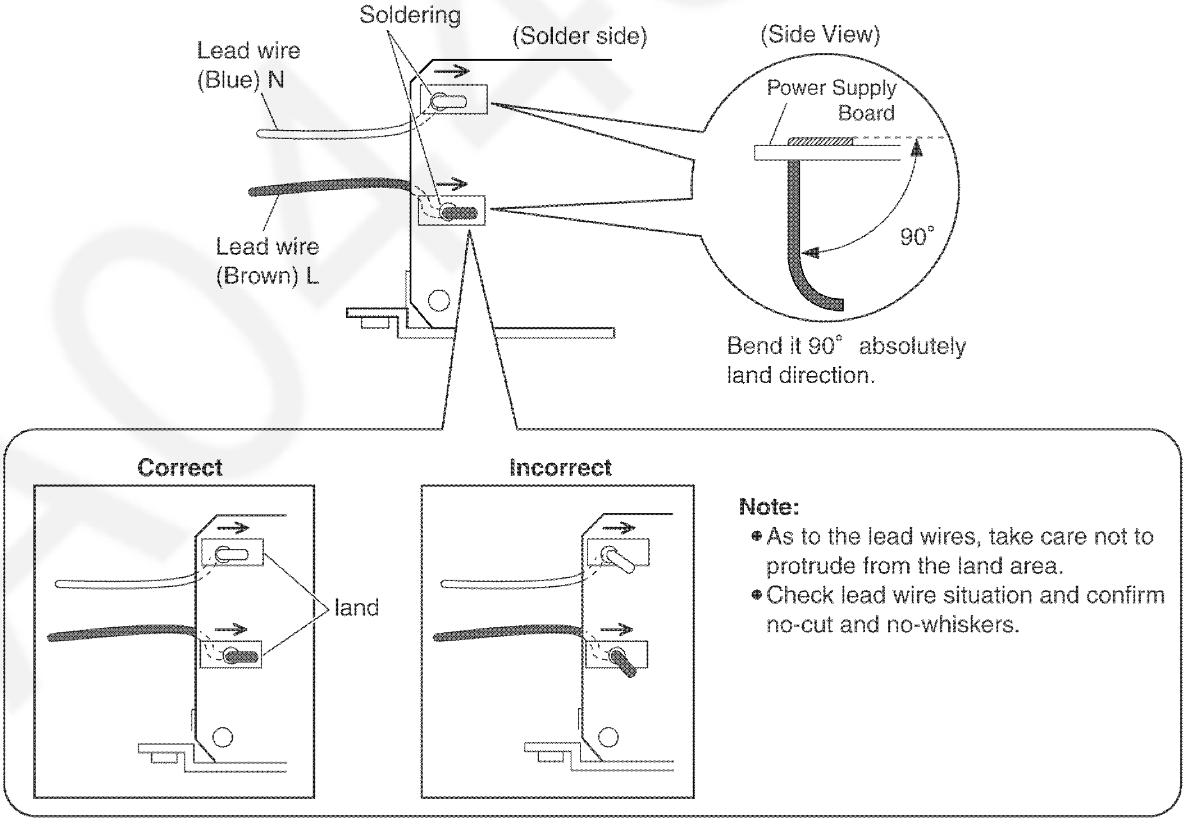
PROCEDURE: B-1→B-2→B-3

Ref. No. B-3

1) Remove the Analog Board. (Refer to **B-2**.)
2) Remove the 2 screws (F). (See Fig. F)
3) Remove the Power Supply Board with AC Cord from Main Cabinet.
4) Remove the 1 screw (B).
5) Unsolder the Point-B. (See Fig. G)
6) Remove the POWER SUPPLY BOARD and AC CORD.


AC CORD
(Solder side)
(B)
Point-B
(F)
Fig. G
POWER SUPPLY BOARD
(F)
Main Cabinet
Fig. F

The soldering of AC Cord


Soldering
(Solder side)
(Side View)
Lead wire
(Blue) N
Lead wire
(Brown) L
Power Supply
Board
90°
Correct
Incorrect
land

Bend it 90° absolutely land direction.

Note:
- As to the lead wires, take care not to protrude from the land area.
- Check lead wire situation and confirm no-cut and no-whiskers.

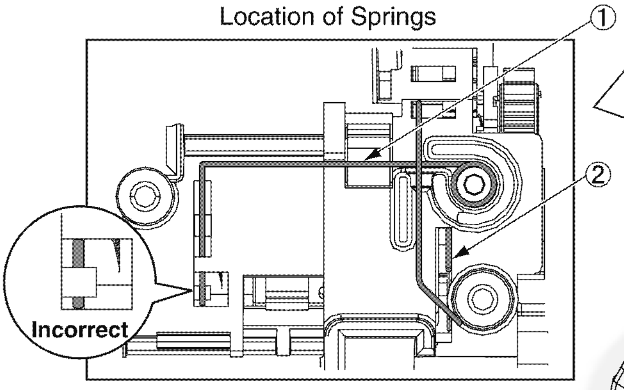
14.3.6. How to Remove the Gear Block and Separation Roller

PROCEDURE: B-1→B-2→B-4

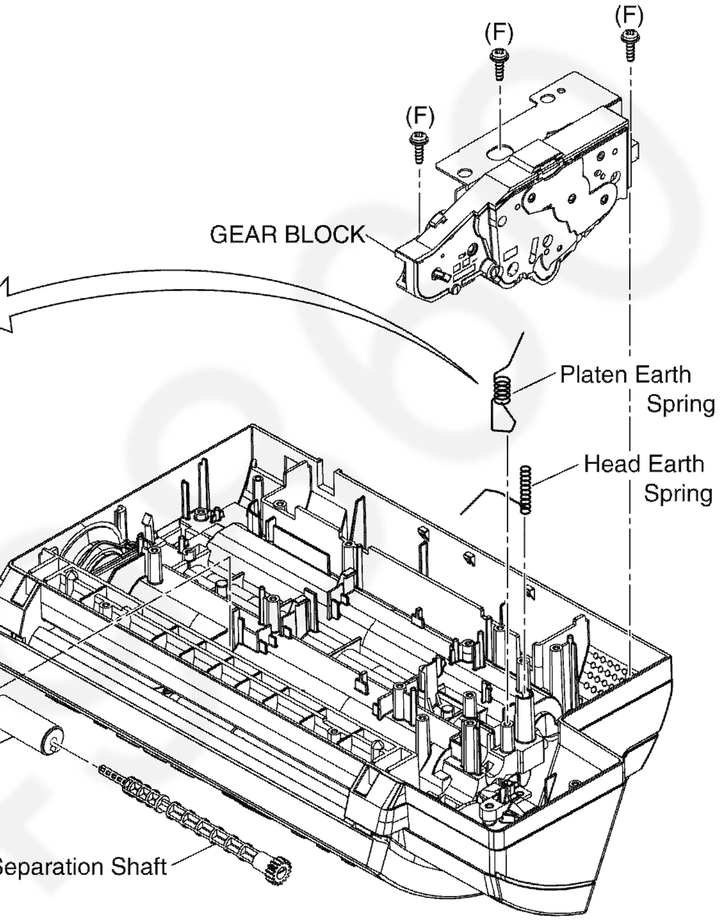
Ref. No. B-4

1) Remove the Interface Board. (Refer to **B-2**.)
2) Remove the 3 screws (F).
3) Open the Operation Panel. (See Fig. H)
4) Remove the GEAR BLOCK.
5) Release the hook, as shown in a Fig. J.
6) Pull out the Separation Shaft.
7) Remove the SEPARATION ROLLER.

Location of Springs


①
②
Incorrect

① Insert the Head Earth Spring along rib.
② Insert the Platen Earth Spring to hole.


(F)
(F)
(F)
GEAR BLOCK
Platen Earth Spring
Head Earth Spring
SEPARATION ROLLER
Separation Shaft

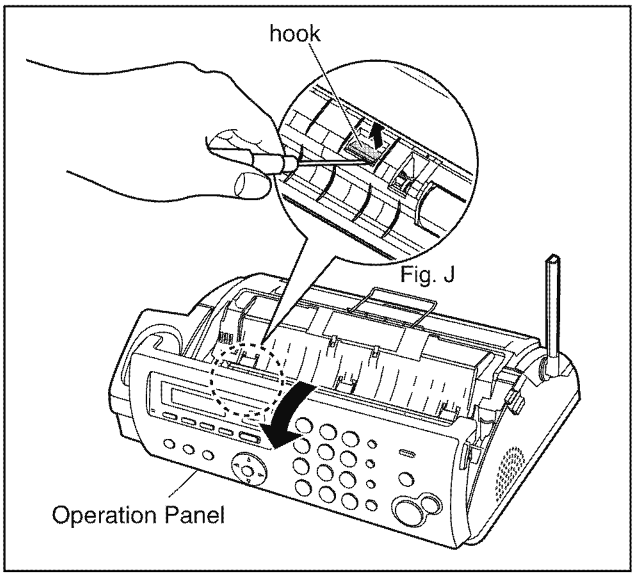

hook
Fig. J
Operation Panel

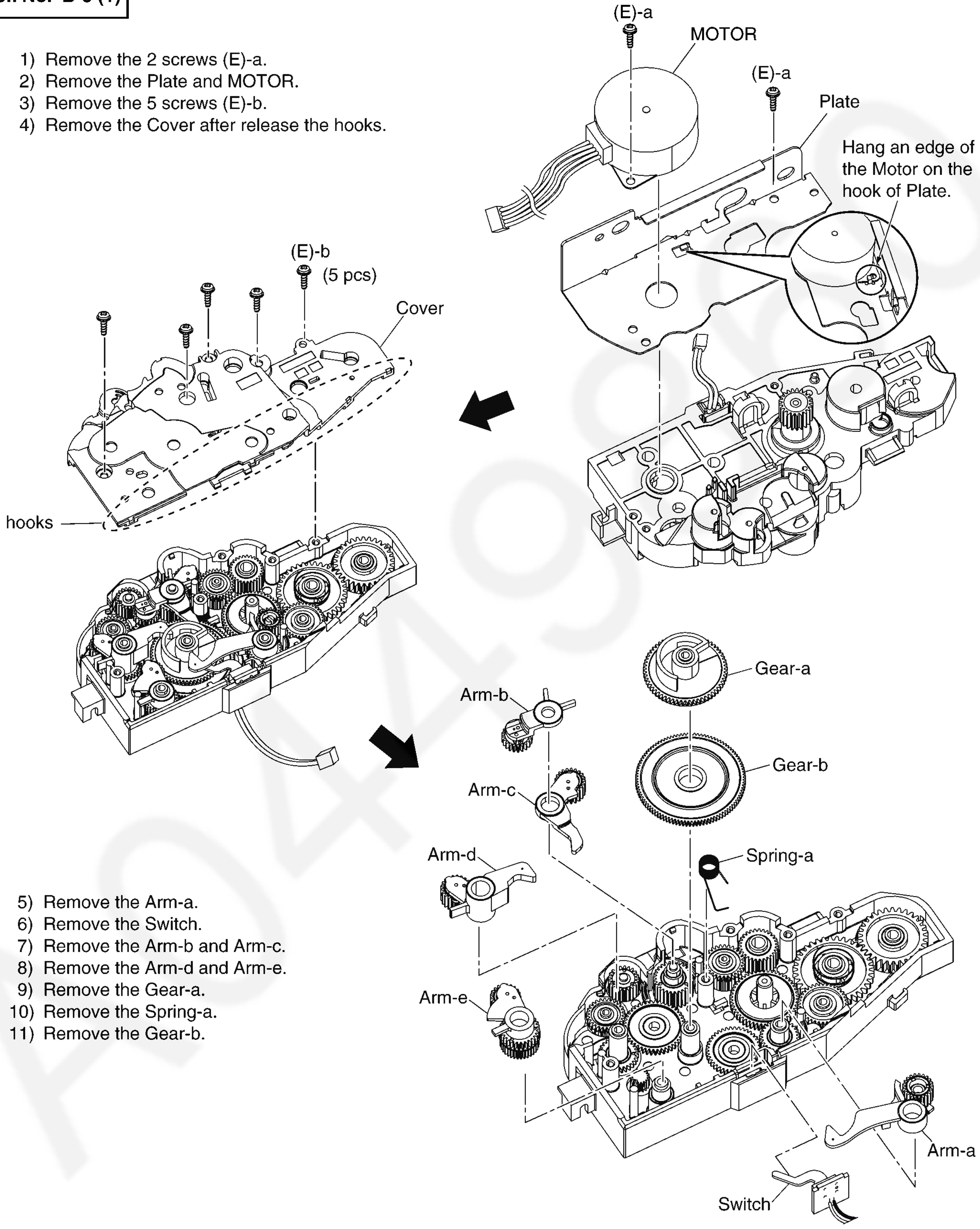
Fig. H

14.3.7. How to Remove the Gears, Motors and Arms of the Gear Block

PROCEDURE: B-1→B-2→B-4→B-5

Ref. No. B-5 (1)

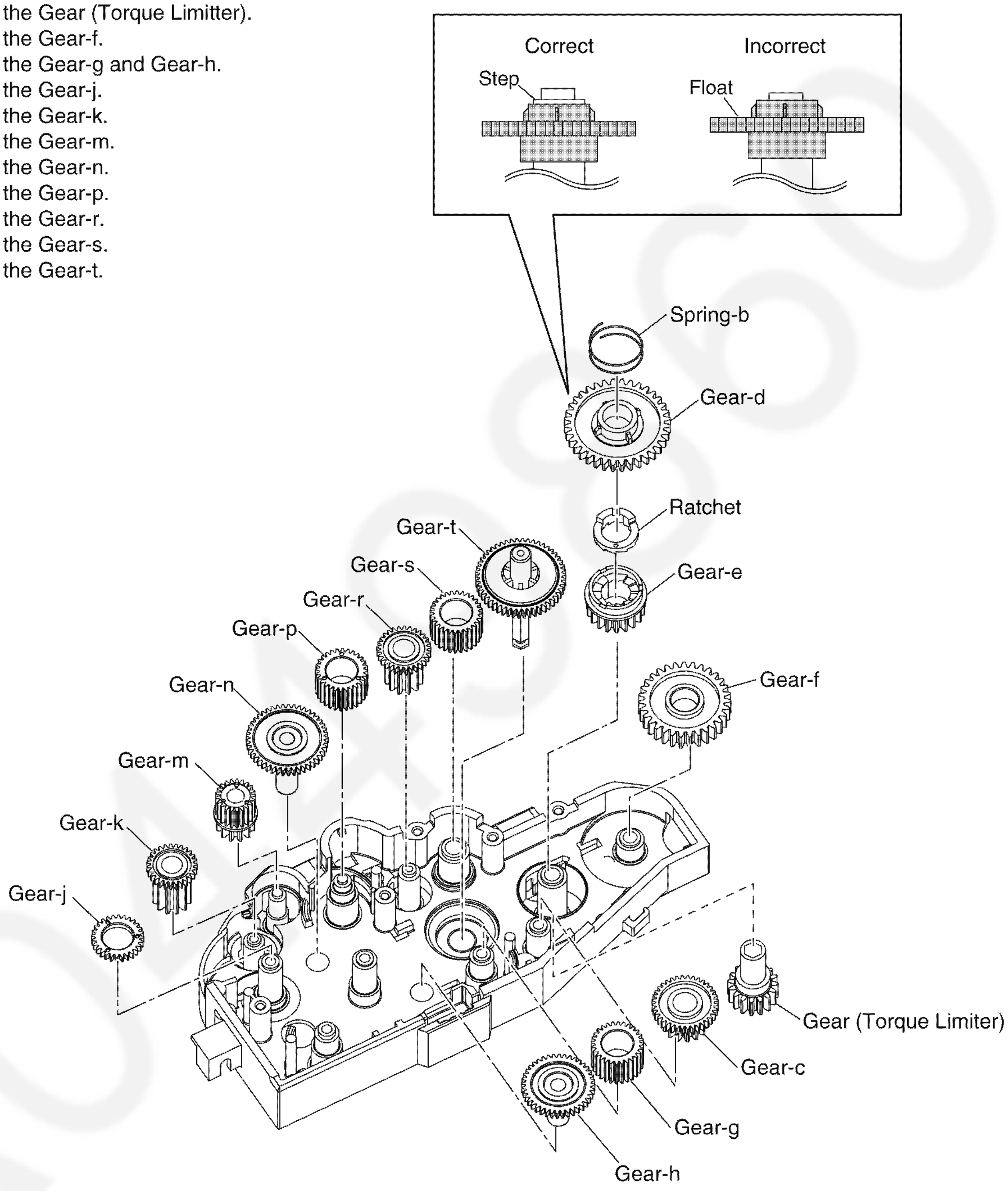
1) Remove the 2 screws (E)-a.
2) Remove the Plate and MOTOR.
3) Remove the 5 screws (E)-b.
4) Remove the Cover after release the hooks.


(E)-a
MOTOR
(E)-a
Plate
Hang an edge of the Motor on the hook of Plate.
(E)-b
(5 pcs)
Cover
hooks
Gear-a
Arm-b
Gear-b
Arm-c
Spring-a
Arm-d
Arm-e
Arm-a
Switch

5) Remove the Arm-a.
6) Remove the Switch.
7) Remove the Arm-b and Arm-c.
8) Remove the Arm-d and Arm-e.
9) Remove the Gear-a.
10) Remove the Spring-a.
11) Remove the Gear-b.

Ref. No. B-5 (2)

12) Remove the Gear-c.
13) Remove the Spring-b.
14) Remove the Gear-d.
15) Remove the Ratchet and Gear-e.
16) Remove the Gear (Torque Limitter).
17) Remove the Gear-f.
18) Remove the Gear-g and Gear-h.
19) Remove the Gear-j.
20) Remove the Gear-k.
21) Remove the Gear-m.
22) Remove the Gear-n.
23) Remove the Gear-p.
24) Remove the Gear-r.
25) Remove the Gear-s.
26) Remove the Gear-t.


Correct
Incorrect
Step
Float
Spring-b
Gear-d
Ratchet
Gear-t
Gear-s
Gear-e
Gear-r
Gear-p
Gear-n
Gear-f
Gear-m
Gear-k
Gear-j
Gear (Torque Limiter)
Gear-c
Gear-g
Gear-h

14.3.8. How to Remove the Charger Board-A

PROCEDURE: B-1→B-6

Ref. No. B-6

1) Remove the 2 screws (F)-a.
2) Remove the Terminal Holder and CHARGE BOARD.
3) Disconnect the connectors on the Charger Board.
4) Remove the 1 screw (F)-b.
5) Remove the CHARGER CASE.

Note for Assembly:

- The Rib comes out from a hole of Main Cabinet. (Fig. K)

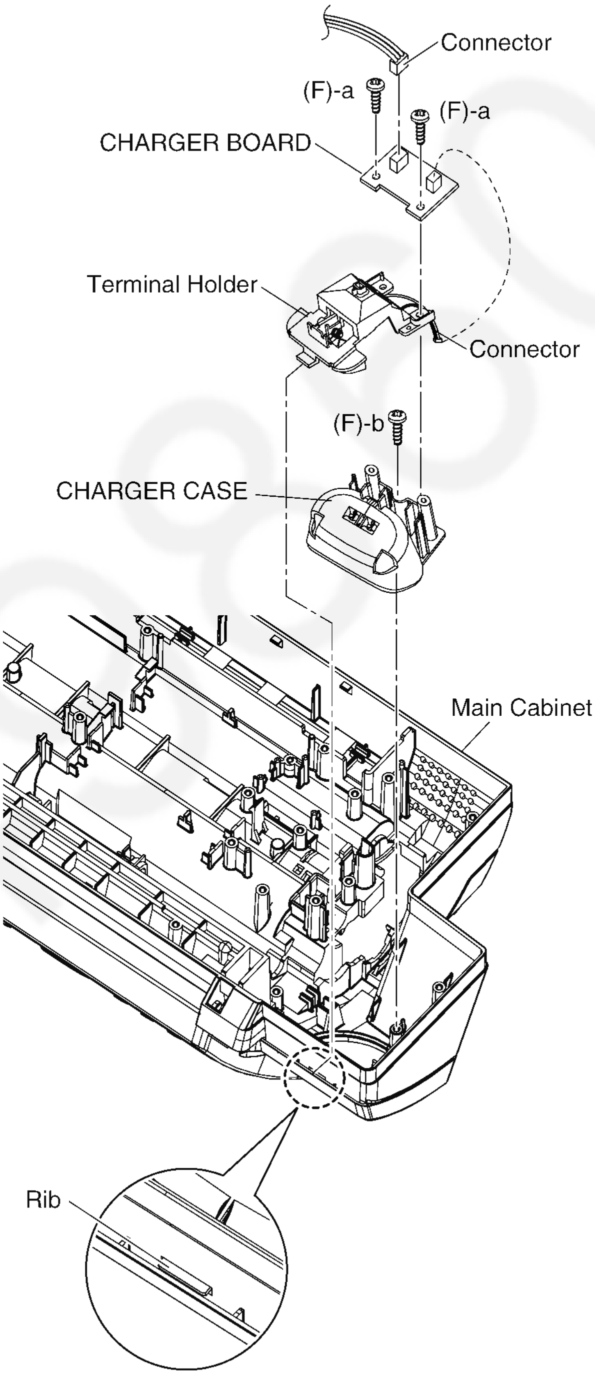

Connector
(F)-a
(F)-a
CHARGER BOARD
Terminal Holder
Connector
(F)-b
CHARGER CASE
Main Cabinet
Rib

Fig. K

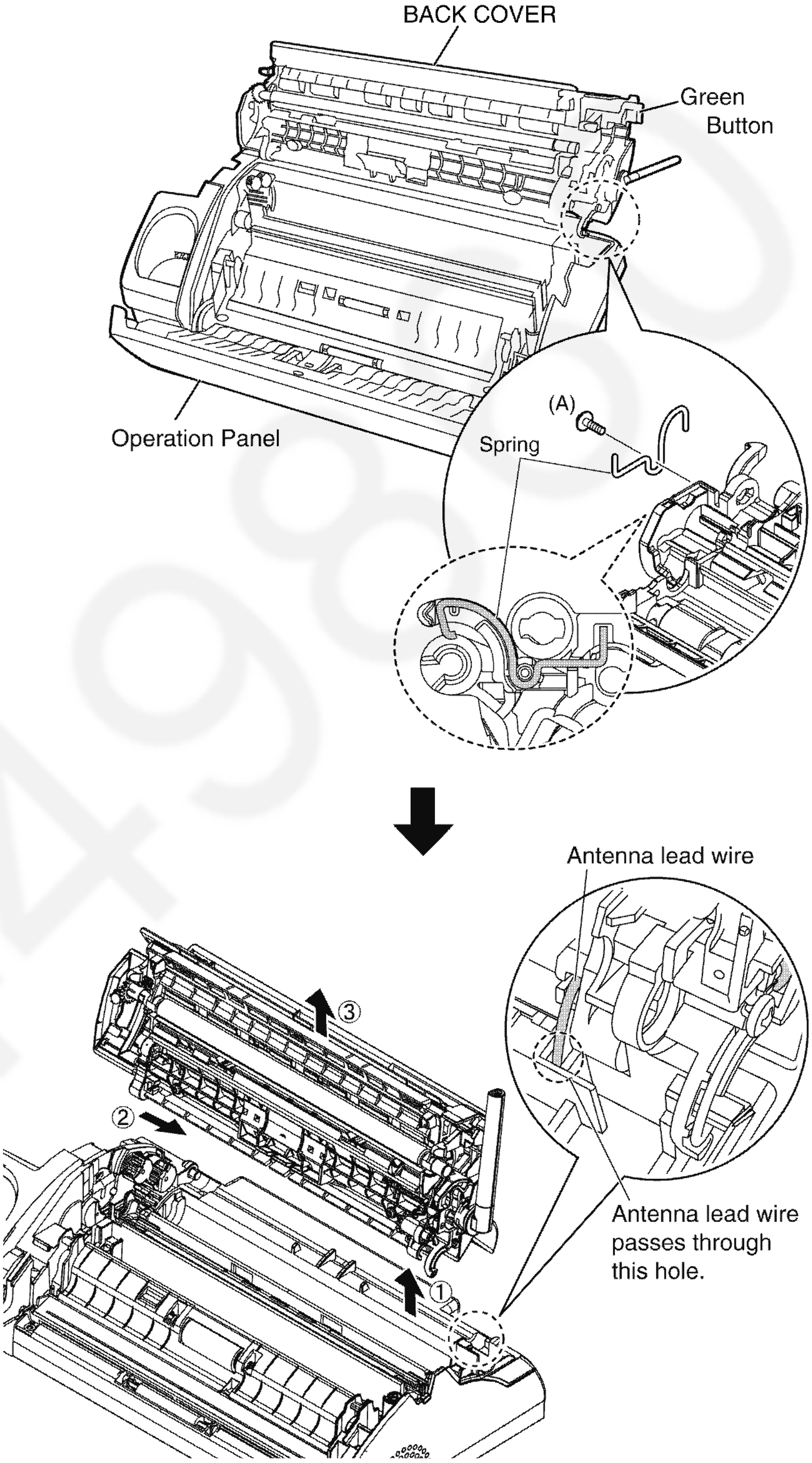
A04

14.3.9. How to Remove the Back Cover

PROCEDURE: B-1→B-2→C-1

Ref. No. C-1

1) Unsolder the Antenna lead wire on the Digital Board. (Refer to **B-2**.)
2) Push the Green Button to open the Operation Panel and Back Cover.
3) Remove the 1 screw (A).
4) Remove the Spring.
5) Remove the BACK COVER.

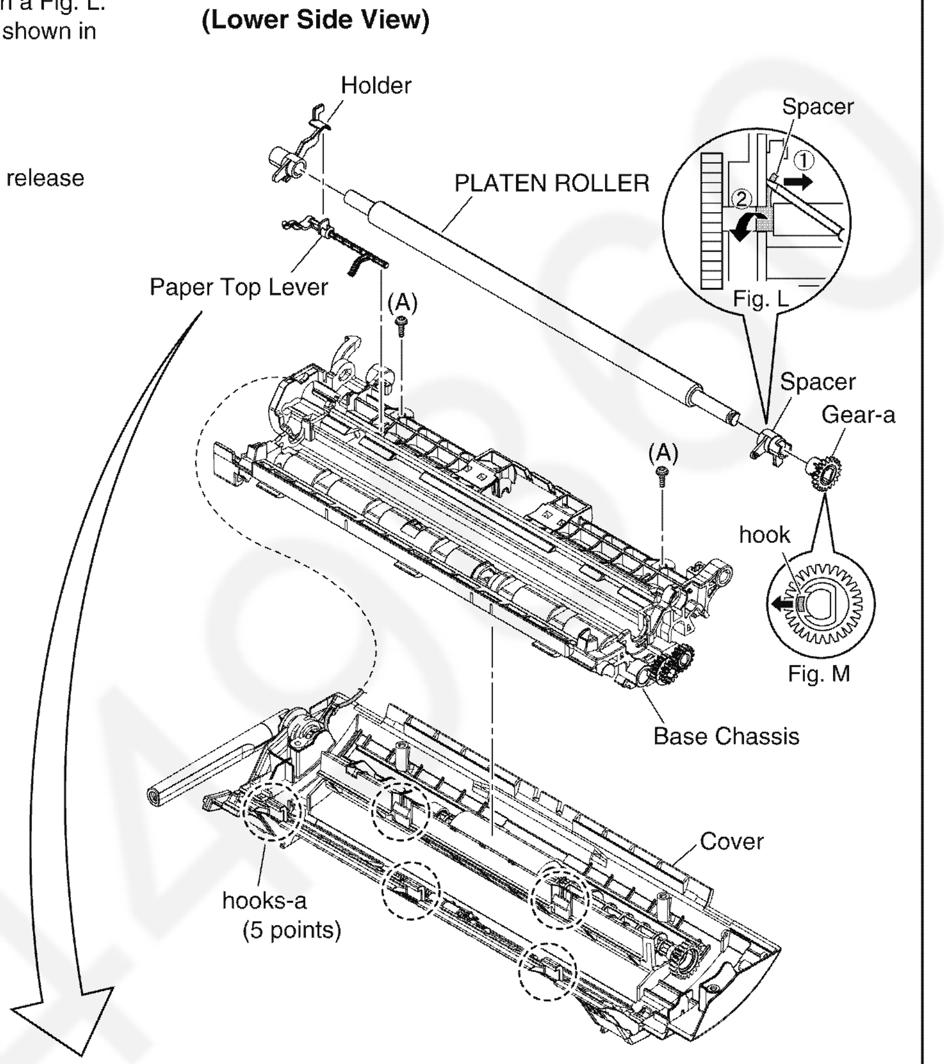

BACK COVER
Green Button
Operation Panel
(A)
Spring
Antenna lead wire
③
②
①
Antenna lead wire passes through this hole.

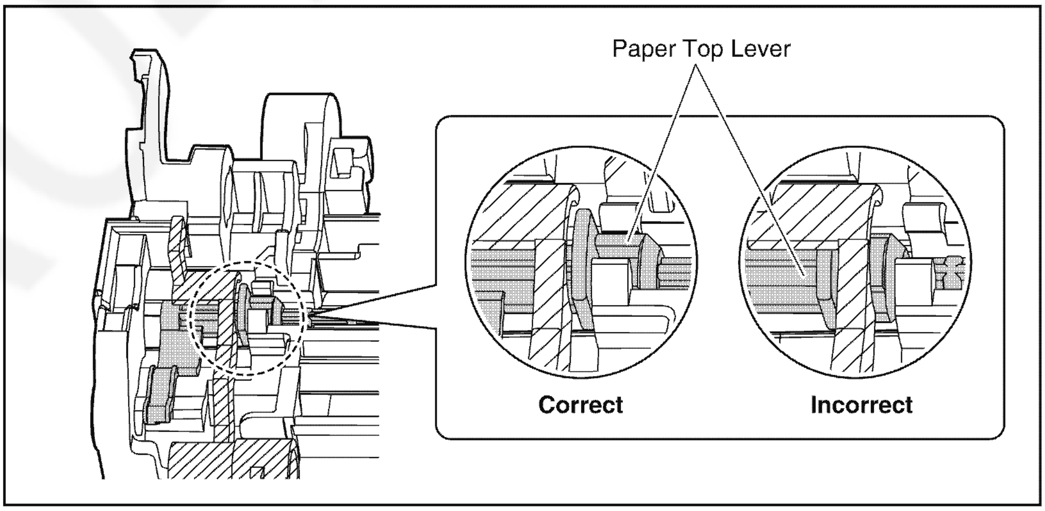
14.3.10. How to Remove the Platen Roller and Lock Lever

PROCEDURE: B-1→B-2→C-1→C-2

Ref. No. C-2 (1)

1) Release the Spacer, as shown in a Fig. L.
2) Release the hook of Gear-a, as shown in a Fig. M.
3) Remove the Gear-a.
4) Remove the PLATEN ROLLER.
5) Remove the 2 screws (A).
6) Remove the Base Chassis after release the 5 hooks-a.


(Lower Side View)
Holder
Spacer
①
②
PLATEN ROLLER
Paper Top Lever
(A)
Fig. L
Spacer
Gear-a
(A)
hook
Fig. M
Base Chassis
Cover
hooks-a
(5 points)


Paper Top Lever
Correct
Incorrect

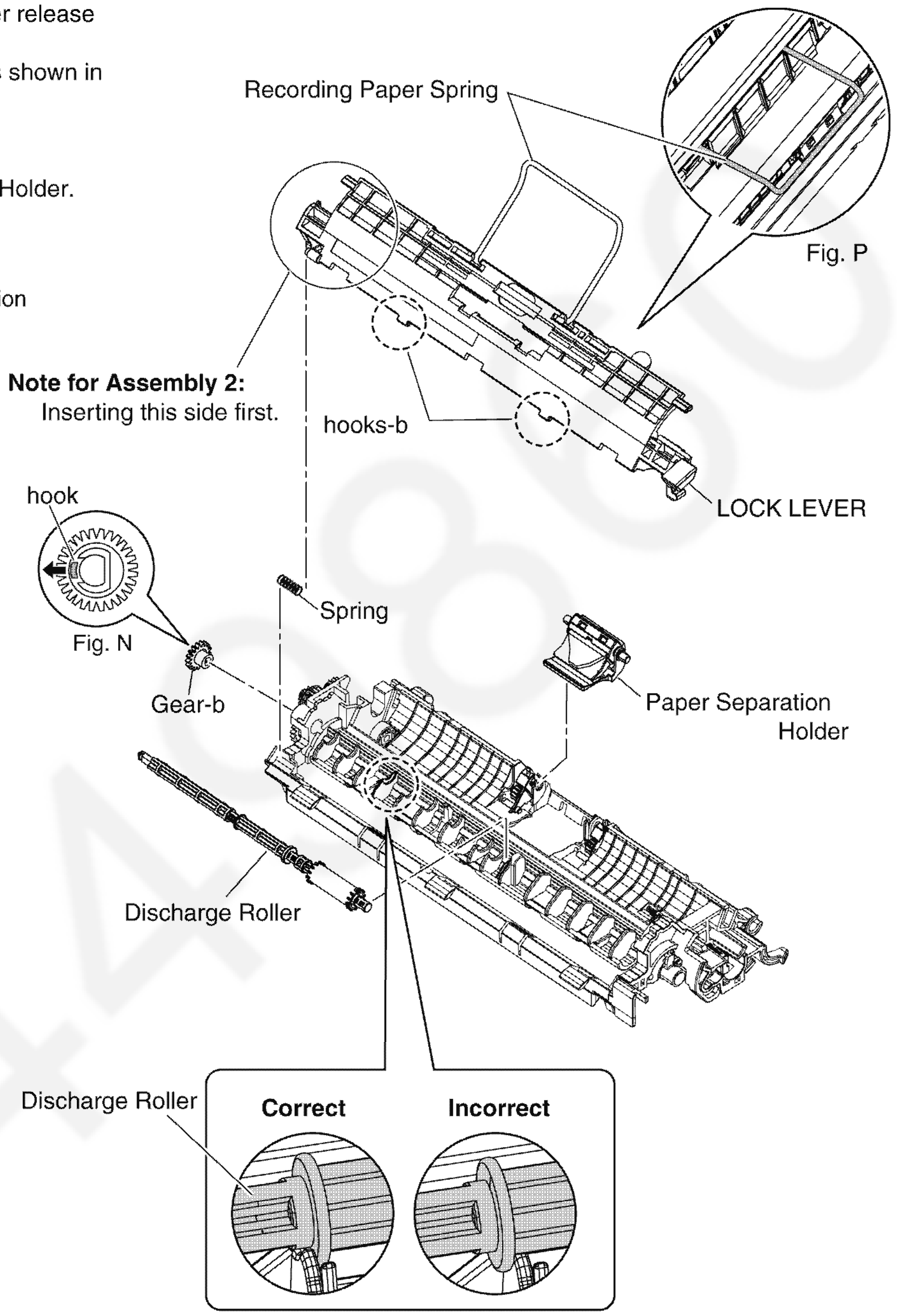
Ref. No. C-2 (2)

7) Remove the Spring.
8) Remove the LOCK LEVER after release the 2 hooks-b.
9) Release the hook of Gear-b, as shown in a Fig. N.
10) Remove the Gear-b.
11) Remove the Discharge Roller.
12) Remove the Paper Separation Holder.

Note for Assembly 1:

- When Base Chassis is inserted in the Cover, be careful of the insertion of Recording paper spring. (See Fig. P)

(Upper Side View)


Recording Paper Spring
Fig. P
hooks-b
LOCK LEVER
hook
Fig. N
Spring
Gear-b
Paper Separation Holder
Discharge Roller
Discharge Roller
Correct
Incorrect

Note for Assembly 2:
Inserting this side first.

14.3.11. How to Remove the Pickup Roller and Antenna

PROCEDURE: B-1→B-2→C-1→C-2→C-3

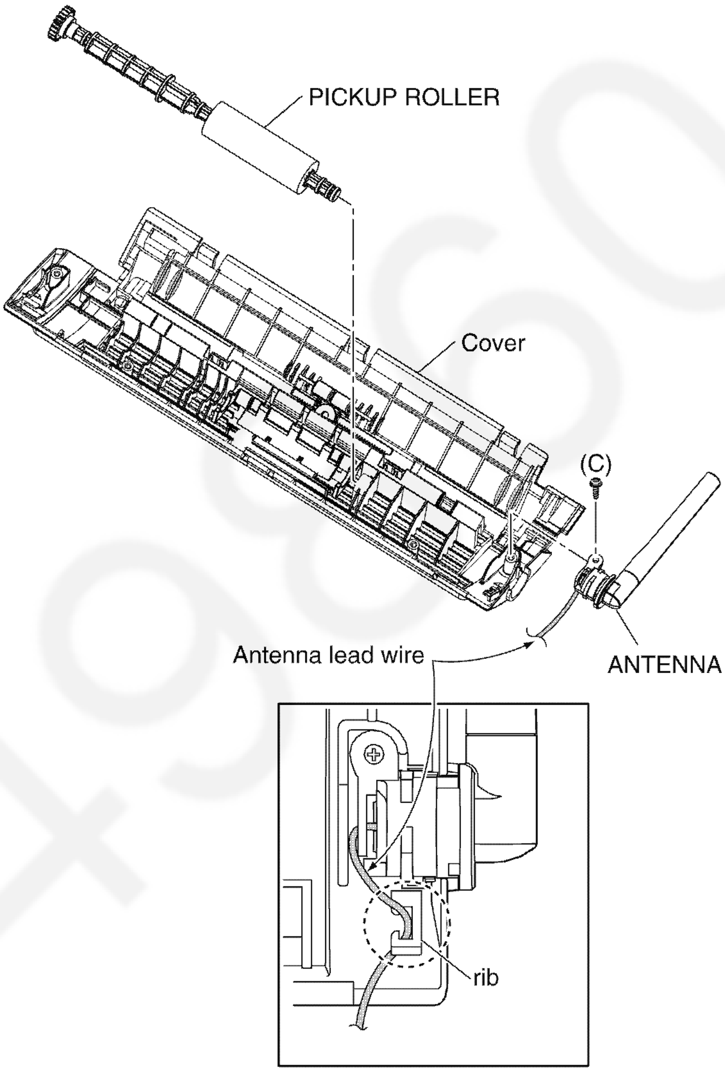
Ref. No. C-3

PICK UP ROLLER

1) Remove the PICK UP ROLLER.

ANTENNA

1) Remove the 1 screw (C).
2) Remove the ANTENNA.


PICKUP ROLLER
Cover
(C)
Antenna lead wire
ANTENNA
rib

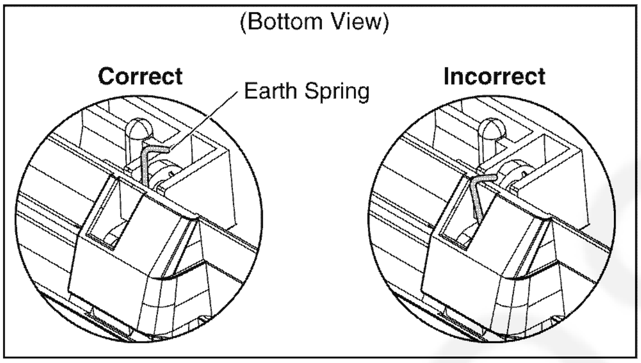
•Hook an Antenna lead wire on the rib, as shown in a figure.

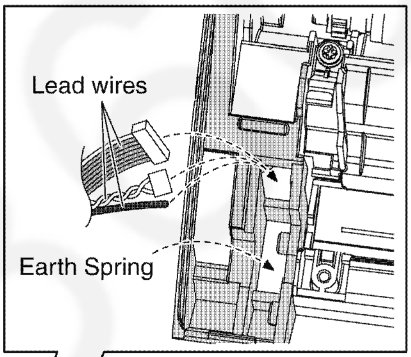
14.3.12. How to Remove the Operation Panel

PROCEDURE: B-1→B-2→D-1

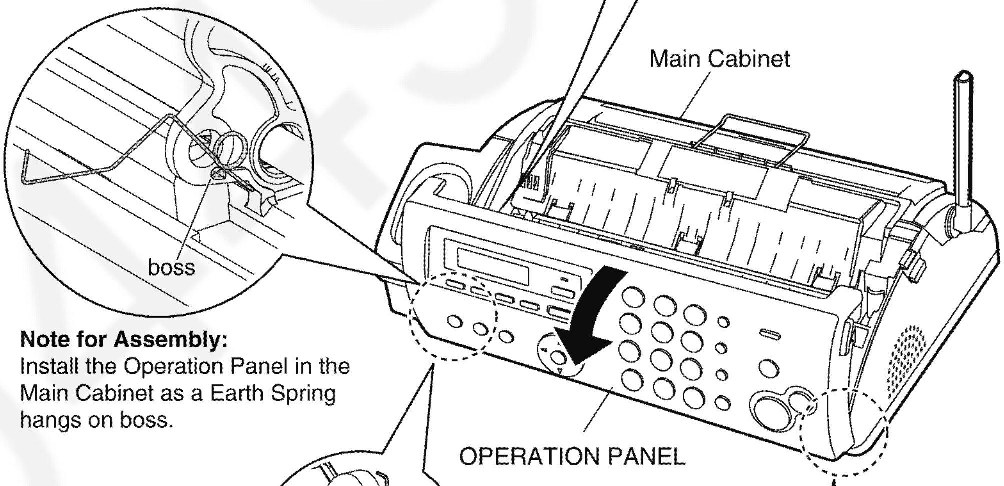
Ref. No. D-1

1) Disconnect the Operation lead wire and Mic lead wire on the Digital Board. (Refer to **B-2**.)
2) Open the Operation Panel.
3) Release the both Arms, as shown in a Fig. Q.
4) **Release the Earth Spring from the Main Cabinet certainly.**
5) Remove the OPERATION PANEL from Main Cabinet.

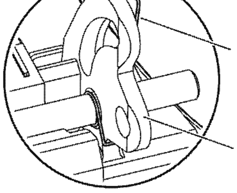

(Bottom View)
Correct
Earth Spring
Incorrect


Lead wires
Earth Spring

Note for Assembly:
Insert the Lead Wires and Earth Spring, as shown in a figure.


Main Cabinet
boss
OPERATION PANEL

Note for Assembly:
Install the Operation Panel in the Main Cabinet as a Earth Spring hangs on boss.


Earth Spring
Arm

Caution:
Please remove the Operation Panel after releasing Earth Spring from Main Cabinet so that spring may not be deformed.

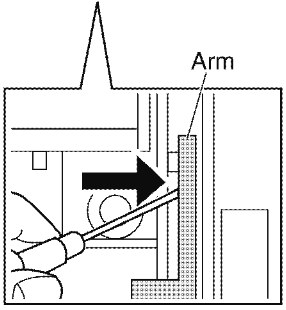


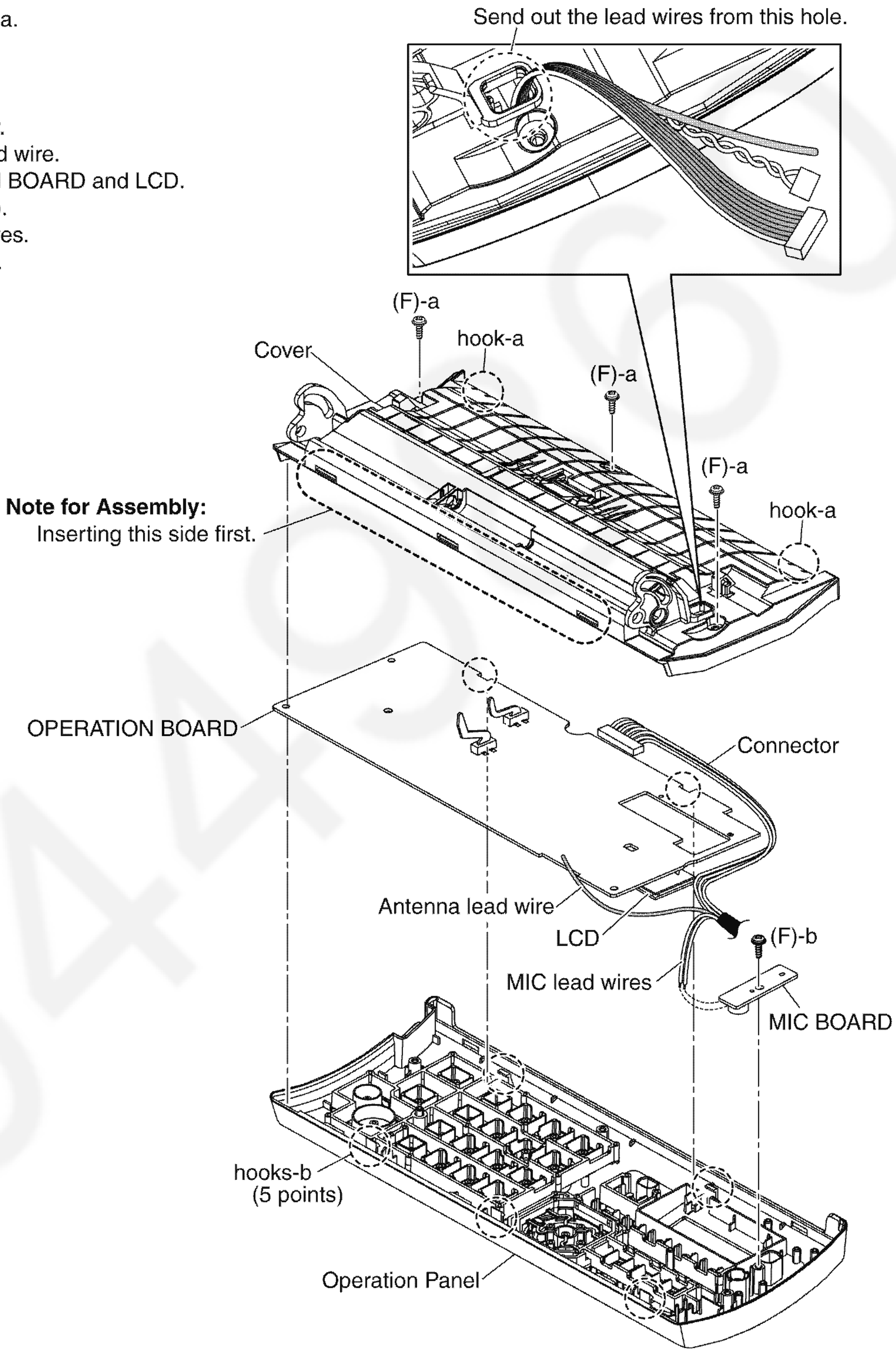
Fig. Q

14.3.13. How to Remove the Operation Board, MIC Board and LCD

PROCEDURE: B-1→B-2→D-1→D-2

Ref. No. D-2

1) Remove the 3 screws (F)-a.
2) Release the 2 hooks-a.
3) Remove the Cover.
4) Release the 5 hooks-b.
5) Disconnect the Connector.
6) Unsolder the Antenna lead wire.
7) Remove the OPERATION BOARD and LCD.
8) Remove the 1 screw (F)-b.
9) Unsolder the MIC lead wires.
10) Remove the MIC BOARD.


Send out the lead wires from this hole.
(F)-a
hook-a
Cover
(F)-a
(F)-a
hook-a
Note for Assembly:
Inserting this side first.
OPERATION BOARD
Connector
Antenna lead wire
LCD
(F)-b
MIC lead wires
MIC BOARD
hooks-b
(5 points)
Operation Panel

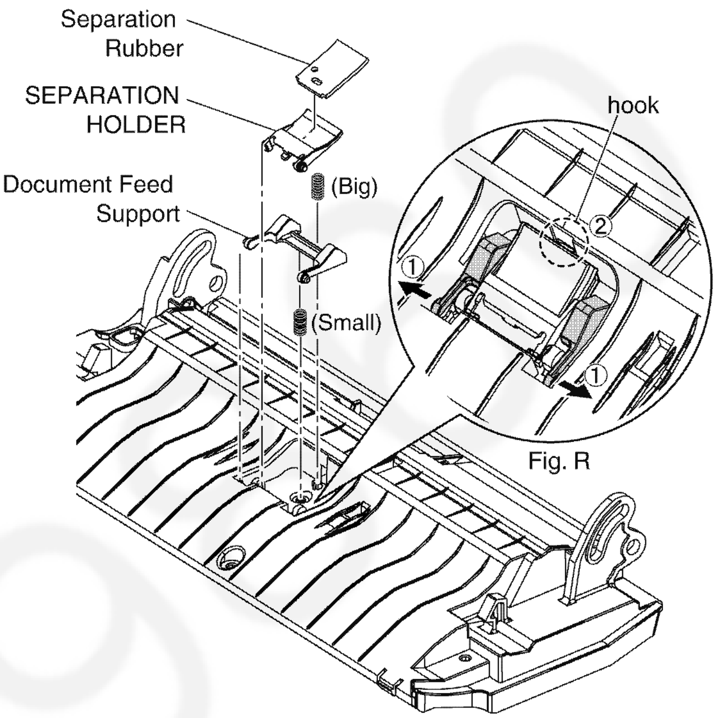
14.3.14. How to Remove the Separation Holder and Exit Roller

PROCEDURE: B-1→B-2→D-1→D-3

Ref. No. D-3

SEPARATION HOLDER

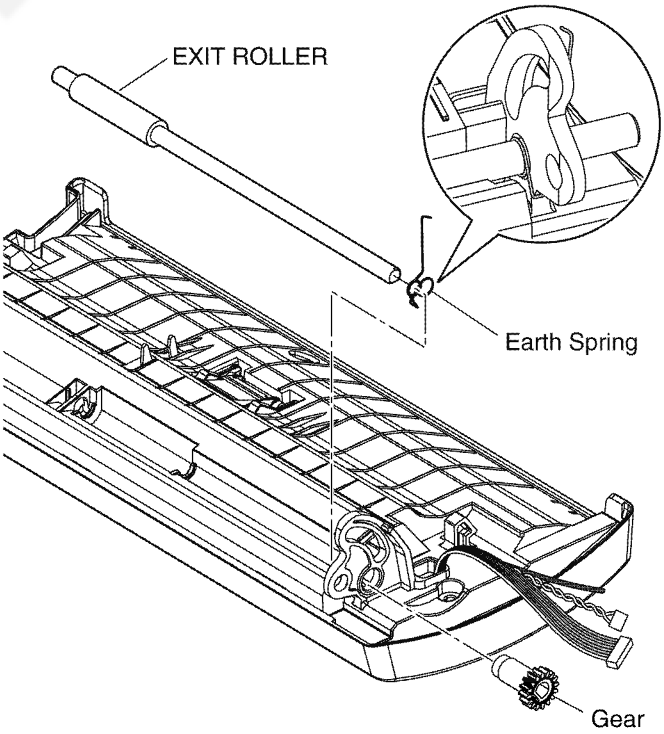
1) Release the hook. (See Fig. R)
2) Remove the Document Feed Support. (See Fig. R)
3) Remove the SEPARATION HOLDER.


Separation Rubber
SEPARATION HOLDER
Document Feed Support
(Big)
(Small)
hook
①
②
①
Fig. R

EXIT ROLLER

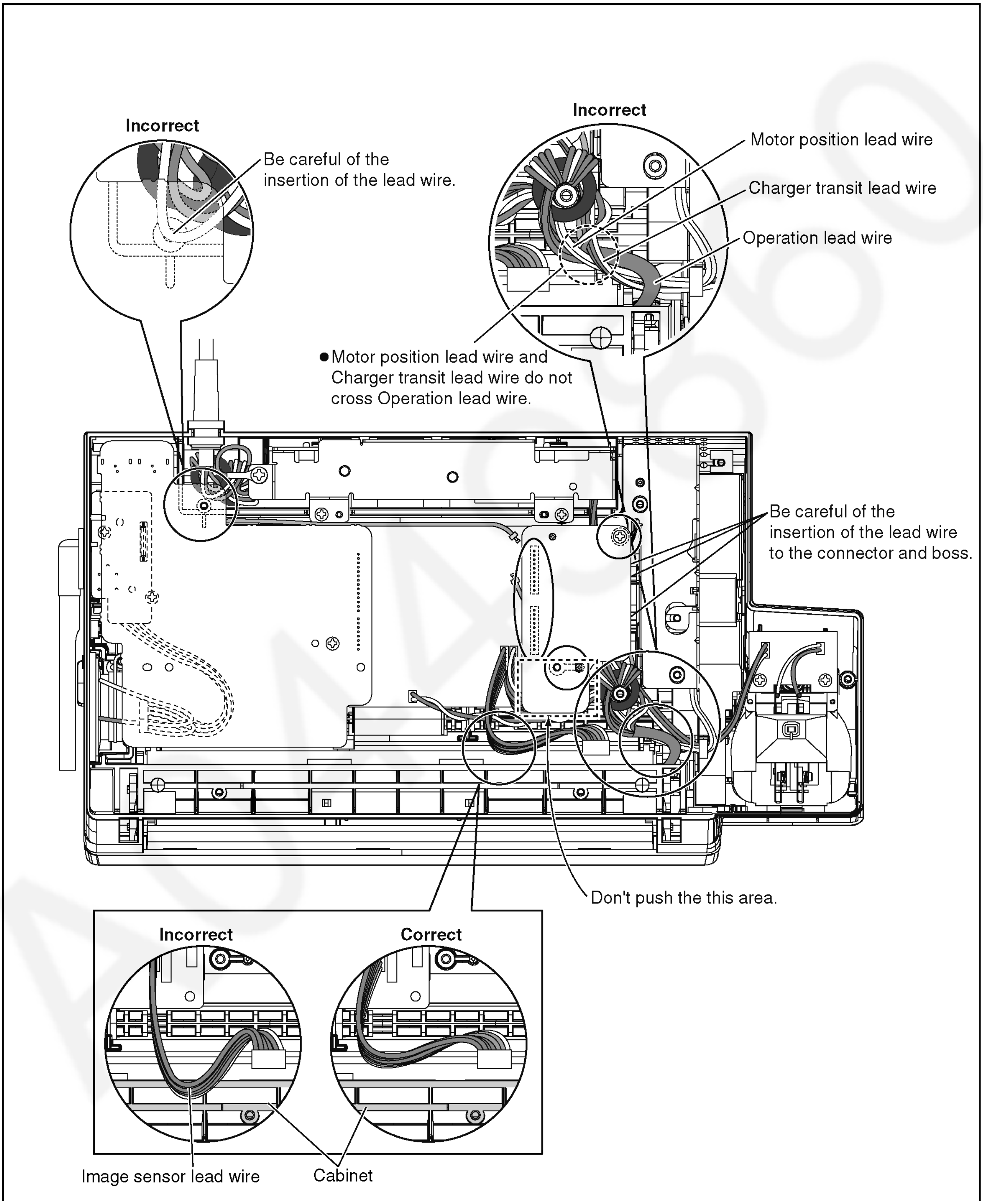
1) Pull out the Gear from Exit Roller.
2) Remove the EXIT ROLLER.

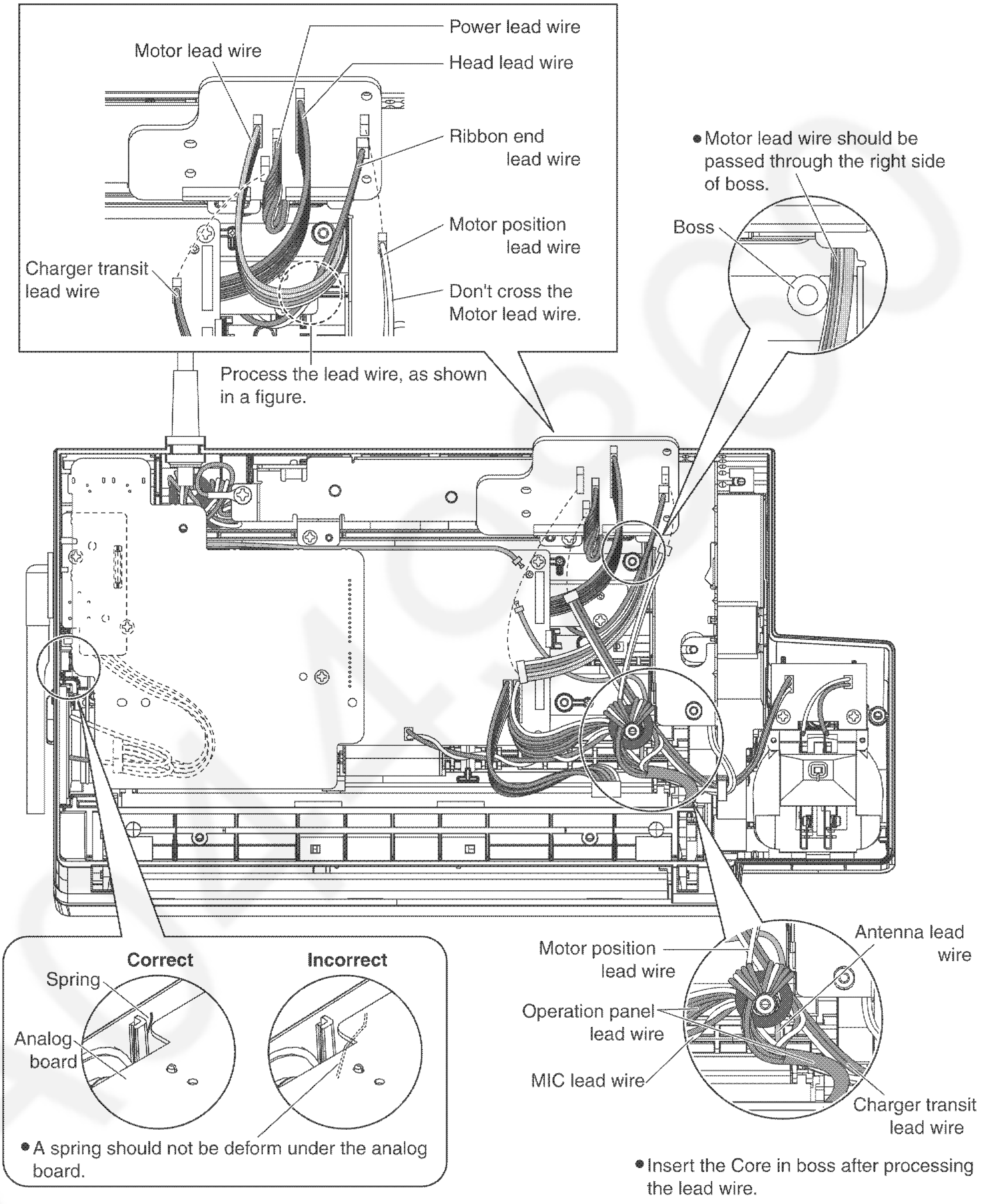
Caution:
Be careful not to deform the Earth Spring.


EXIT ROLLER
Earth Spring
Gear

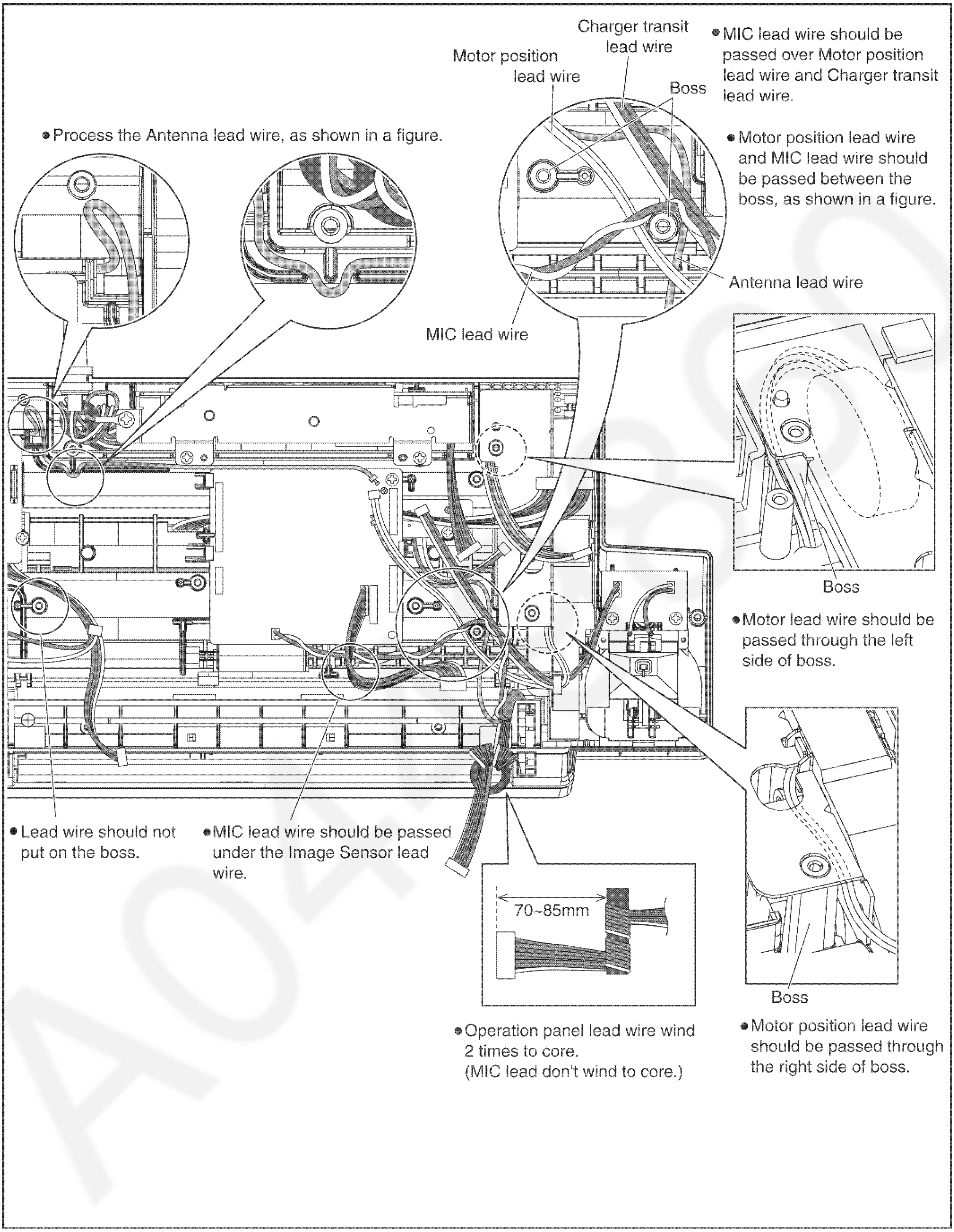
14.3.15. Installation Position of the Lead Wires

14.3.15.1. Lower Section

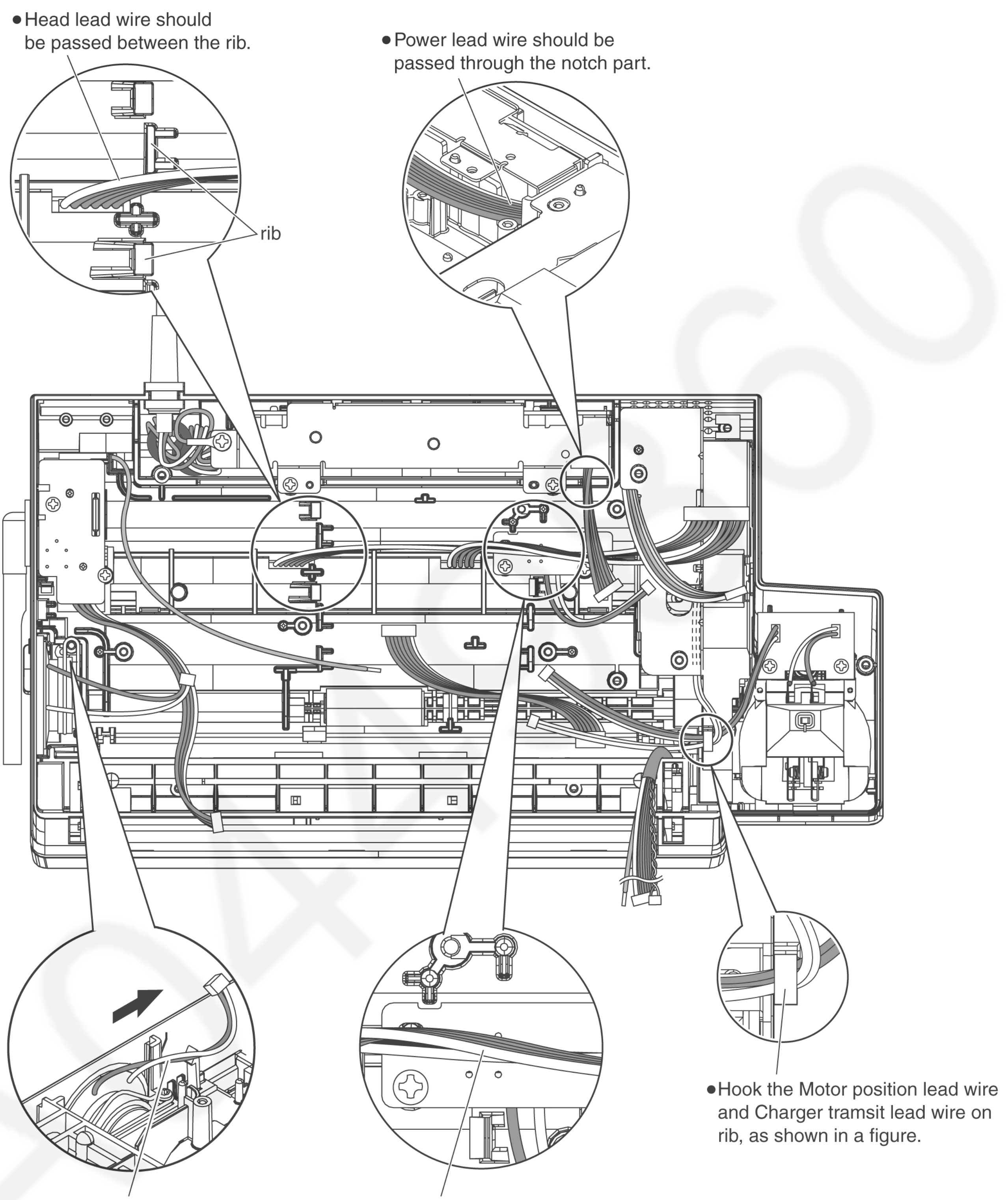

Incorrect
Be careful of the insertion of the lead wire.
Incorrect
Motor position lead wire
Charger transit lead wire
Operation lead wire
●Motor position lead wire and Charger transit lead wire do not cross Operation lead wire.
Be careful of the insertion of the lead wire to the connector and boss.
Don't push the this area.
Incorrect
Correct
Image sensor lead wire
Cabinet


Power lead wire
Motor lead wire
Head lead wire
Ribbon end lead wire
Motor position lead wire
Charger transit lead wire
Don't cross the Motor lead wire.
Process the lead wire, as shown in a figure.
Boss
Correct
Incorrect
Spring
Analog board
Motor position lead wire
Antenna lead wire
Operation panel lead wire
MIC lead wire
Charger transit lead wire

- Motor lead wire should be passed through the right side of boss.
- A spring should not be deform under the analog board.
- Insert the Core in boss after processing the lead wire.

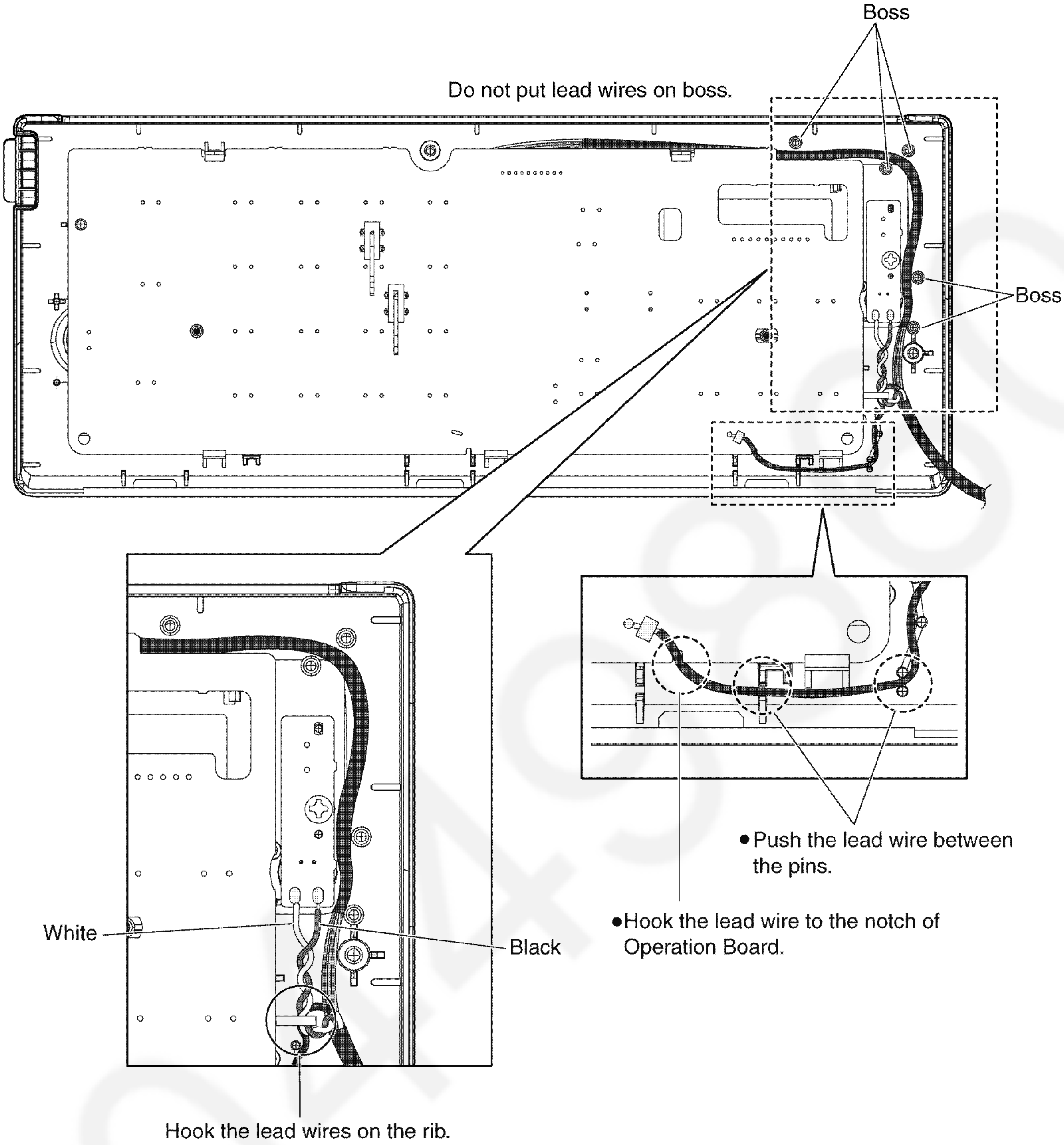

Motor position lead wire
Charger transit lead wire
Boss
Antenna lead wire
MIC lead wire
Boss
Boss
70~85mm

- Process the Antenna lead wire, as shown in a figure.
- MIC lead wire should be passed over Motor position lead wire and Charger transit lead wire.
- Motor position lead wire and MIC lead wire should be passed between the boss, as shown in a figure.
- Motor lead wire should be passed through the left side of boss.
- Lead wire should not put on the boss.
- MIC lead wire should be passed under the Image Sensor lead wire.
- Operation panel lead wire wind 2 times to core. (MIC lead don't wind to core.)
- Motor position lead wire should be passed through the right side of boss.



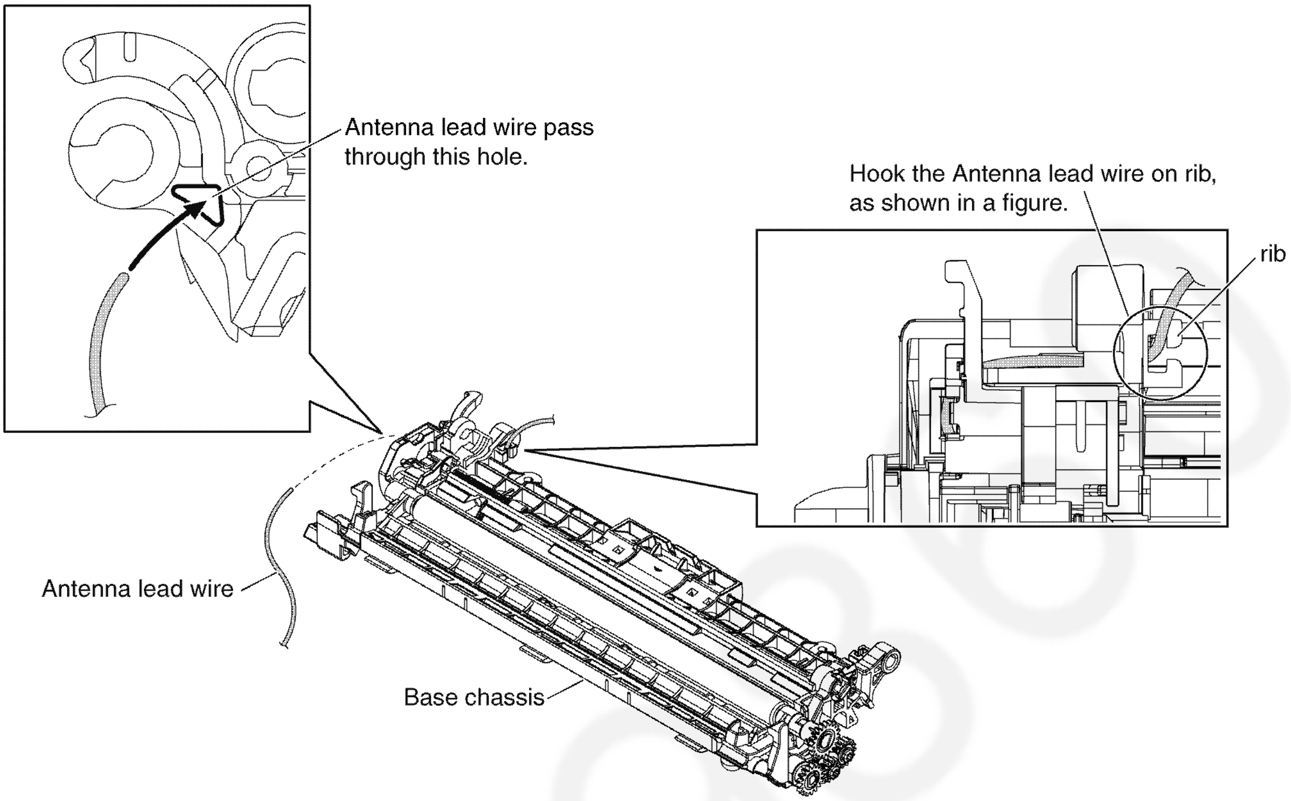
- Head lead wire should be passed between the rib.
- Power lead wire should be passed through the notch part.
- Hook the Motor position lead wire and Charger tramsit lead wire on rib, as shown in a figure.
- Push the Speaker lead wire into the direction of the arrow when installing in the Analog board.
- Head lead wire should be passed on the Film end sensor board.

14.3.15.2. Operation Panel Section


Boss
Do not put lead wires on boss.
Boss
White
Black
Hook the lead wires on the rib.
●Push the lead wire between the pins.
●Hook the lead wire to the notch of Operation Board.

A04990

14.3.15.3. Back Cover Section

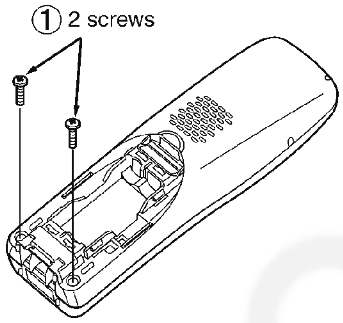

Antenna lead wire pass through this hole.
Hook the Antenna lead wire on rib, as shown in a figure.
rib
Antenna lead wire
Base chassis

14.3.16. How to Remove the Cordless Handset Board

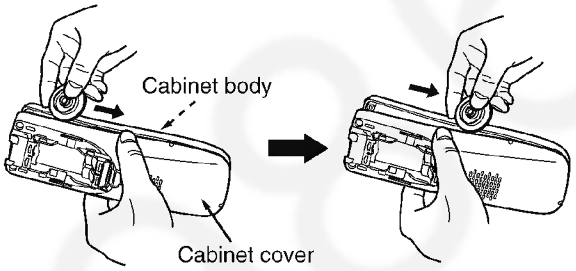
PROCEDURE: E-1

Ref. No. E-1

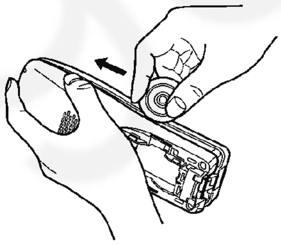
① Remove the 2 screws.



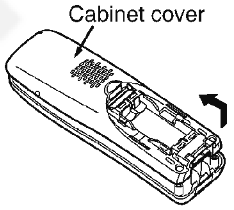
② Insert a JIG (PQDJ10006Y) between the cabinet body and the cabinet cover, then pull it along the gap to open the cabinet.


Cabinet body
Cabinet cover

③ Likewise, open the other side of the cabinet.



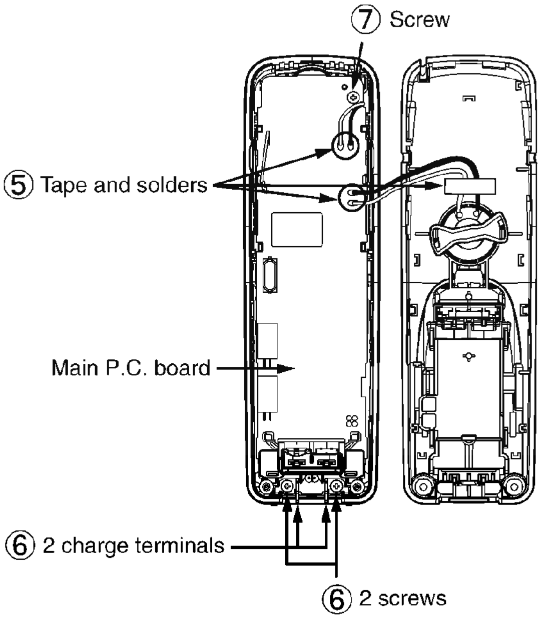
④ Remove the cabinet cover by pushing it upward.


Cabinet cover

⑤ Remove the tape and solders.

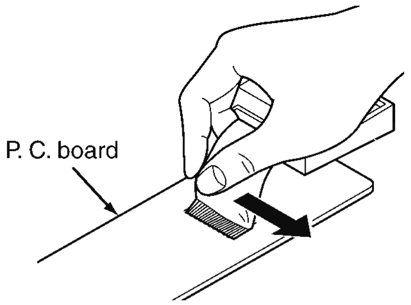
⑥ Remove the 2 screws to remove the 2 charge terminals.

⑦ Remove the screw to remove the main P. C. board.


⑦ Screw
⑤ Tape and solders
Main P.C. board
⑥ 2 charge terminals
⑥ 2 screws

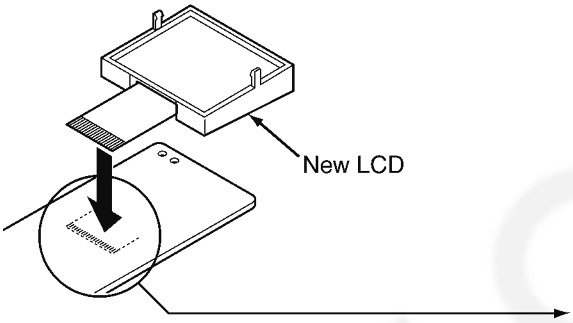
14.3.16.1. How to Replace the LCD

①

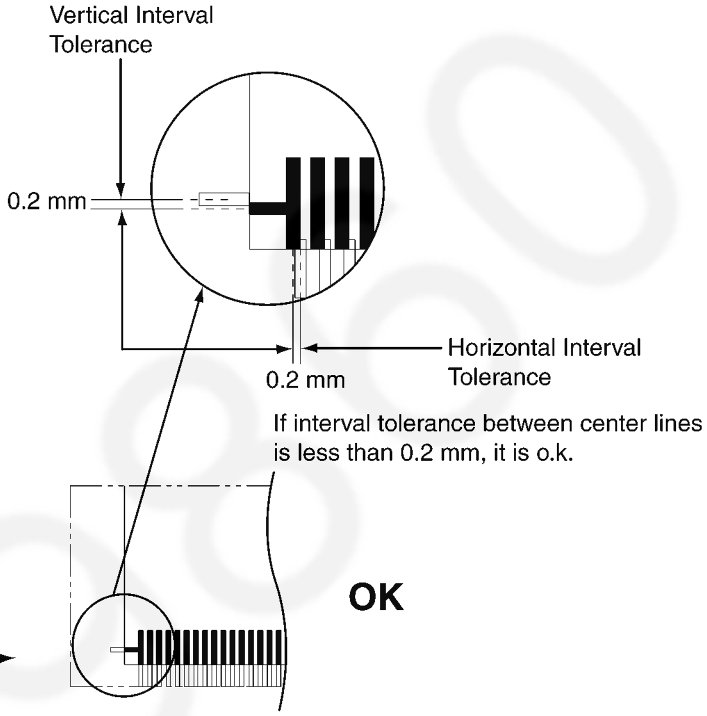


Peel off the FFC (Flexible Flat Cable) from the LCD, in the direction of the arrow. Take care to ensure that the foil on the P.C. board is not damaged.

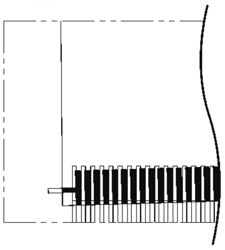
②



Fit the heatseal of a new LCD.


Vertical Interval Tolerance
0.2 mm
0.2 mm
Horizontal Interval Tolerance
OK

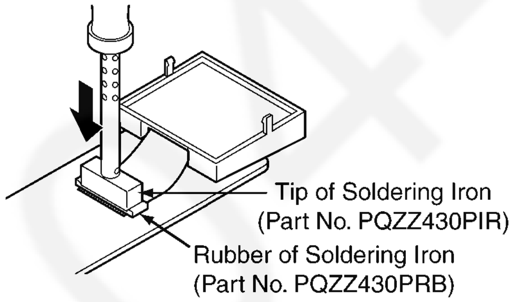
If interval tolerance between center lines is less than 0.2 mm, it is o.k.



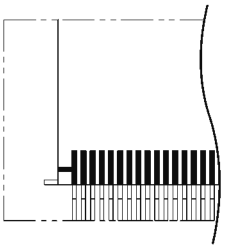
NG

(Inclined)

③

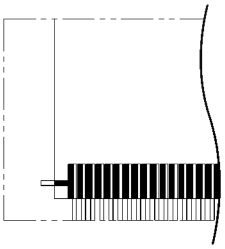

Tip of Soldering Iron
(Part No. PQZZ430PIR)
Rubber of Soldering Iron
(Part No. PQZZ430PRB)

Heatweld with the tip of the soldering iron about 5 to 8 seconds (in case of 60W soldering iron).



NG

(Vertical interval tolerance is more than 0.2 mm.)



NG

(Horizontal interval tolerance is more than 0.2 mm.)

15 Measurements and Adjustments

15.1. Cordless Base Section (Digital Board) Adjustment

When you have replaced EEPROM or BBIC or X'tal, adjustment is necessary.
This supplement will explain further details for adjustment.

15.1.1. Equipment Required

1. **PQZZ1CD300E***
   3 wire cable: It connect the Digital Board and PC.
2. **PNZZFC265CX**
   Batch Files: it's executed on PC.
   Please copy "Base" folder in PNZZFC265CX (CD-ROM) folder including Batch files to your PC.
3. **PC**
   Input a command for adjustment.
4. **Frequency Counter**
   It's to adjust frequncy(10.368000MHz) of BBIC.
   It requires an accuracy that can measure 1Hz. (precise; ±1ppm)
5. **Digital multimeter**
   It's to adjust voltage (1.8V) of BBIC.

Note:

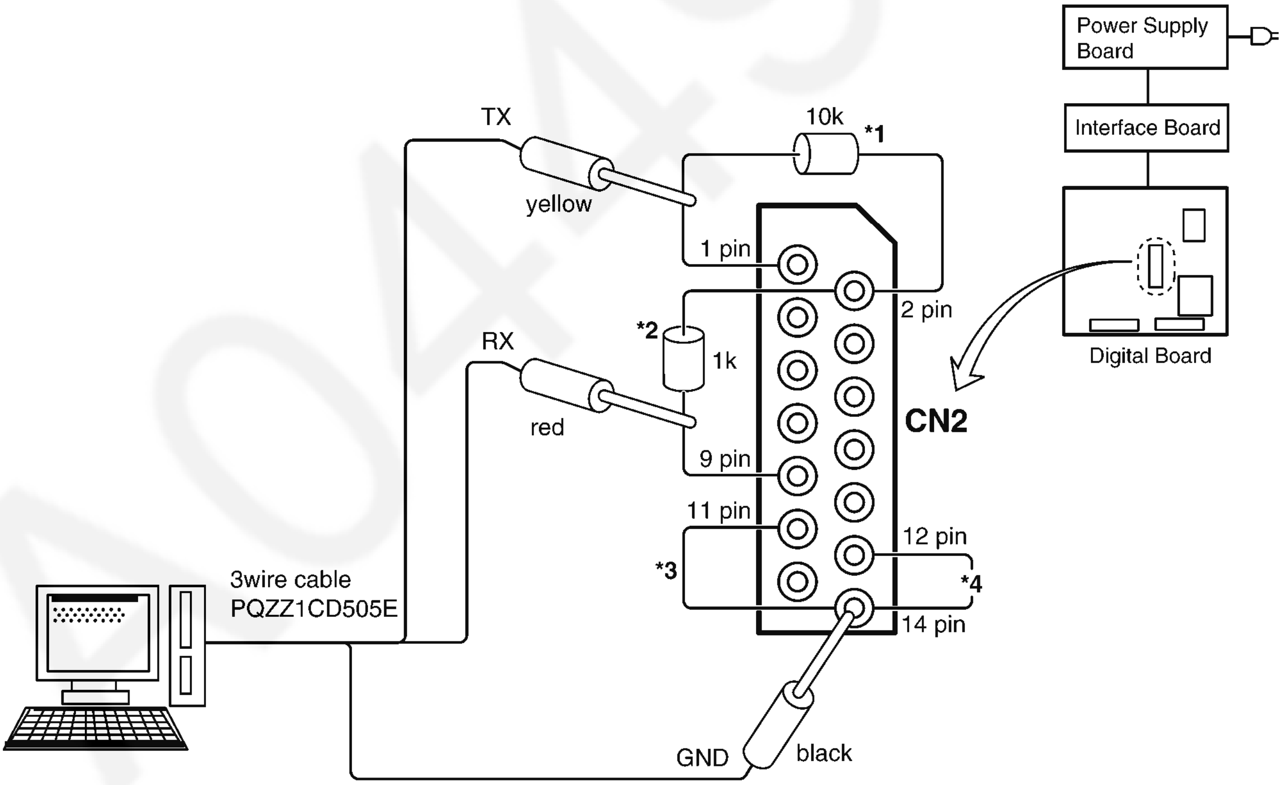
*: If you have the JIG Cable for FC245 series (TCD500 series) [PQZZ1CD505E], change the following values of resistance. Then you can use it as a JIG Cable for both FC962 and FC245 series (TCD300 and TCD500 series). (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

15.1.2. PC Setting

15.1.2.1. Connections

At pins of CN2 on the back side of the digital board
Please connect the component and the cable as follows:



Refer to **Adjustment Standard (Base Unit)** (P.176).

***1: 10k resistor**: Please put it between 1pin and 2pin and connect TX cable from PC. (ERDS2TJ103T or ERDS1TJ103T)

***2: 1k resistor**: Please put it between 9pin and 2pin and connect RX cable from PC. (ERDS2TJ102T or ERDS1TJ102T)

***3: wire**: Please put it between 11pin and 14pin (shorted) and connect GND cable from PC. (This makes a board 3 wire mode.)

***4: 2 wires**: Please put it 12pin and 14pin. **Please connect 2 wires after turning power on. (this makes reset)**

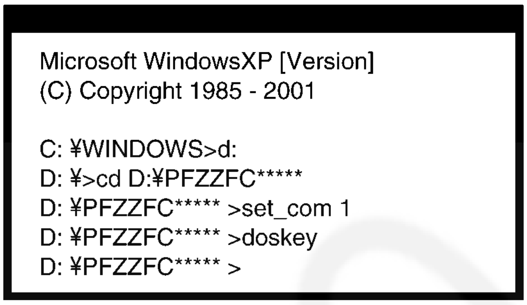
15.1.2.2. Batch Files Settings

Please copy "Base" folder in PFZZFC***** (CD-ROM) folder including Batch files to your PC.

How to use it:

1. Open COMMAND PROMPT window
2. Change directly to PFZZFC***** refer to Figure-1.
   This is an example for there is a folder in D drive.
3. Type "set_com 1" and push Enter key.
   (When com port 1 is used for the connection)
4. Type "doskey" and push Enter key.

It is just ready to input a command for adjustment item.



```
Microsoft WindowsXP [Version]
(C) Copyright 1985 - 2001

C: ¥WINDOWS>d:
D: ¥>cd D:¥PFZZFC*****
D: ¥PFZZFC***** >set_com 1
D: ¥PFZZFC***** >doskey
D: ¥PFZZFC***** >
```

<Figure-1>

Here is the screen that appears when batch file is copied into the D drive.

Note:

- “*****” varies depending on the country.
- See the **Command** (P.173) for frequently used commands.

15.1.2.3. Command

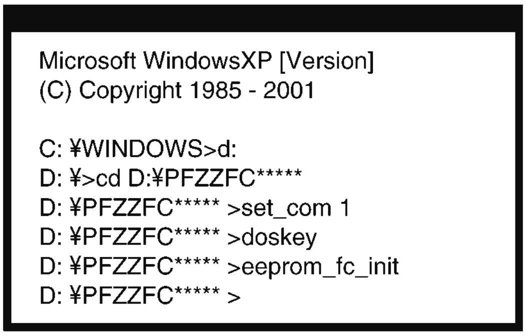
command	function and how to use
readid	read ID number of Base unit
writeid ** ** ** ** **	write ID number of Base unit **: ID number, example if ID number is 007B700000, input 00 7B 70 00 00
rdeeprom ** ** **	read EEPROM with address 1st, 2nd **: Address you want: example: if you want to read address 0010, input 00 10. 3rd ** data length: example: if you want to read 10 datas from address ** **, input 10.
wreeprom ** ** ** **	write EEPROM with address 1st, 2nd **: Address you want: example: if you want to write to address 0010, input 00 10. 3rd ** data length: example: if you want to write 2 datas from address ** **, input 2. 4th ** data example: if you want to write datas “01” from address ** **, input 01.
eeprom_fc_init	initialize EEPROM: default vales are written to EEPROM
getver	get Version of BBIC software: you can check Version.
conttx	output RF CLK continuously

15.1.3. How to Adjust

15.1.3.1. In Case of EEPROM Replacement

When you replace EEPROM, you need to adjust **Frequency** and **Voltage.**
ID number has been already written to the EEPROM that you take from service center.

1. Initilize please input initialzing command "eeprom_fc_init"
2. Adjust **Frequency** and **Voltage**.
   --> Refer to "**Frequency and Voltage Adjustment**"
3. Confirm ID of Base unit.
   Please check ID number with "readid" command.
   If ID is 00 00 00 00 00, please replace again.
4. Re-register CDL Handsets <-- Don't forget please.



```
Microsoft WindowsXP [Version]
(C) Copyright 1985 - 2001

C: ¥WINDOWS>d:
D: ¥>cd D:¥PFZZFC*****
D: ¥PFZZFC***** >set_com 1
D: ¥PFZZFC***** >doskey
D: ¥PFZZFC***** >eeprom_fc_init
D: ¥PFZZFC***** >
```

Here is the screen that appears when batch file is copied into the D drive.

Note:

- “*****” varies depending on the country.
- See the **Frequency and Voltage Adjustment** (P.174).

15.1.3.2. In Case of BBIC Replacement

When you replace BBIC, you need to adjust **Frequency** and **Voltage**. --> Refer to **Frequency and Voltage Adjustment** (P.174).

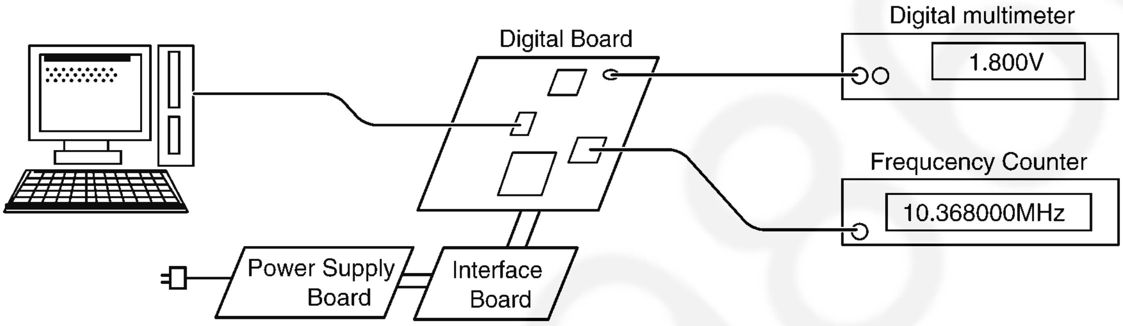
15.1.3.3. In Case of X’tal (X5) Replacement

When you replace X’tal, you need to adjust **Frequency**. --> Refer to **Frequency Adjustment** (P.174).

15.1.4. Frequency and Voltage Adjustment

15.1.4.1. Settings and Connectings

Please connect a Frequency counter to “RFCLK” point on the Digital Board located near the RF unit.
Please connect a Digital multimeter to “1.8V_A” or “1.8V_B” point on the Digital Board located near the BBIC.
See the **Adjustment Standard (Base Unit)** (P.176).



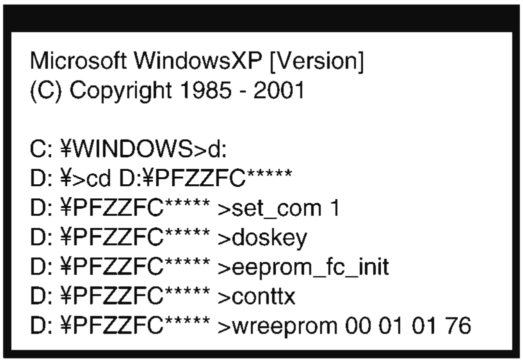
15.1.4.2. Frequency Adjustment

Adjustment value of frequency is at address "00 01" of EEPROM. (default value: 75)

After typing "eeprom_fc_init", please type "conttx" to output RFCLK. (In order to be continuously output RFCLK, it is necessary to type "conttx".)

If Frequency displayed on the frequency counter is lower than 10.368000MHz, please increase the value at 00 01.
In order to do it, please write a value with "**wreeprom 00 01 01 ＊＊**" command.
If you increase 1, input "wreeprom 00 00 01 76".
If frequency is higher, please write decreased value to.

Frequency should be
10.367990MHz < frequency < 10.368010MHz



```
Microsoft WindowsXP [Version]
(C) Copyright 1985 - 2001

C: ¥WINDOWS>d:
D: ¥>cd D:¥PFZZFC*****
D: ¥PFZZFC***** >set_com 1
D: ¥PFZZFC***** >doskey
D: ¥PFZZFC***** >eeprom_fc_init
D: ¥PFZZFC***** >conttx
D: ¥PFZZFC***** >wreeprom 00 01 01 76
```

Here is the screen that appears when batch file is copied into the D drive.

Note:
“*****” varies depending on the country.

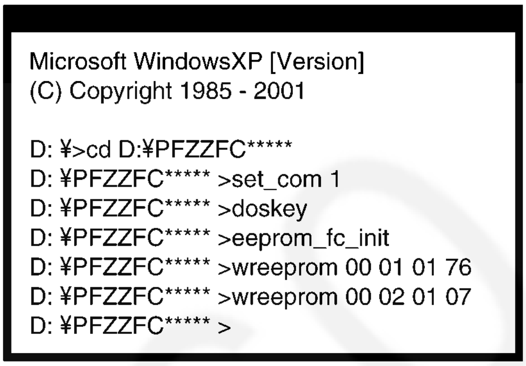
15.1.4.3. Voltage Adjustment

Adjustment value of voltage is at address 00 02 of EEPROM. (default value: 08)

If 1.8V_voltage displayed on the Digital multimeter is higher than 1.85v, please decrease the value at 00 02.

Please write a value with "**wreeprom 00 02 01 ∗∗**" command.
If you decrease 1, input "wreeprom 00 02 01 07".
If voltage is lower, please write increased value to.

Voltage should be
1.75V < Voltage < 1.85V



```
Microsoft WindowsXP [Version]
(C) Copyright 1985 - 2001

D: ¥>cd D:¥PFZZFC*****
D: ¥PFZZFC***** >set_com 1
D: ¥PFZZFC***** >doskey
D: ¥PFZZFC***** >eeprom_fc_init
D: ¥PFZZFC***** >wreeprom 00 01 01 76
D: ¥PFZZFC***** >wreeprom 00 02 01 07
D: ¥PFZZFC***** >
```

Here is the screen that appears when batch file is copied into the D drive.

Note:
- "*****" varies depending on the country.
- **When you write new value to the EEPROM, it is necessary to turn the power off and then power on again. After power on again, Board works with new value you wrote.**

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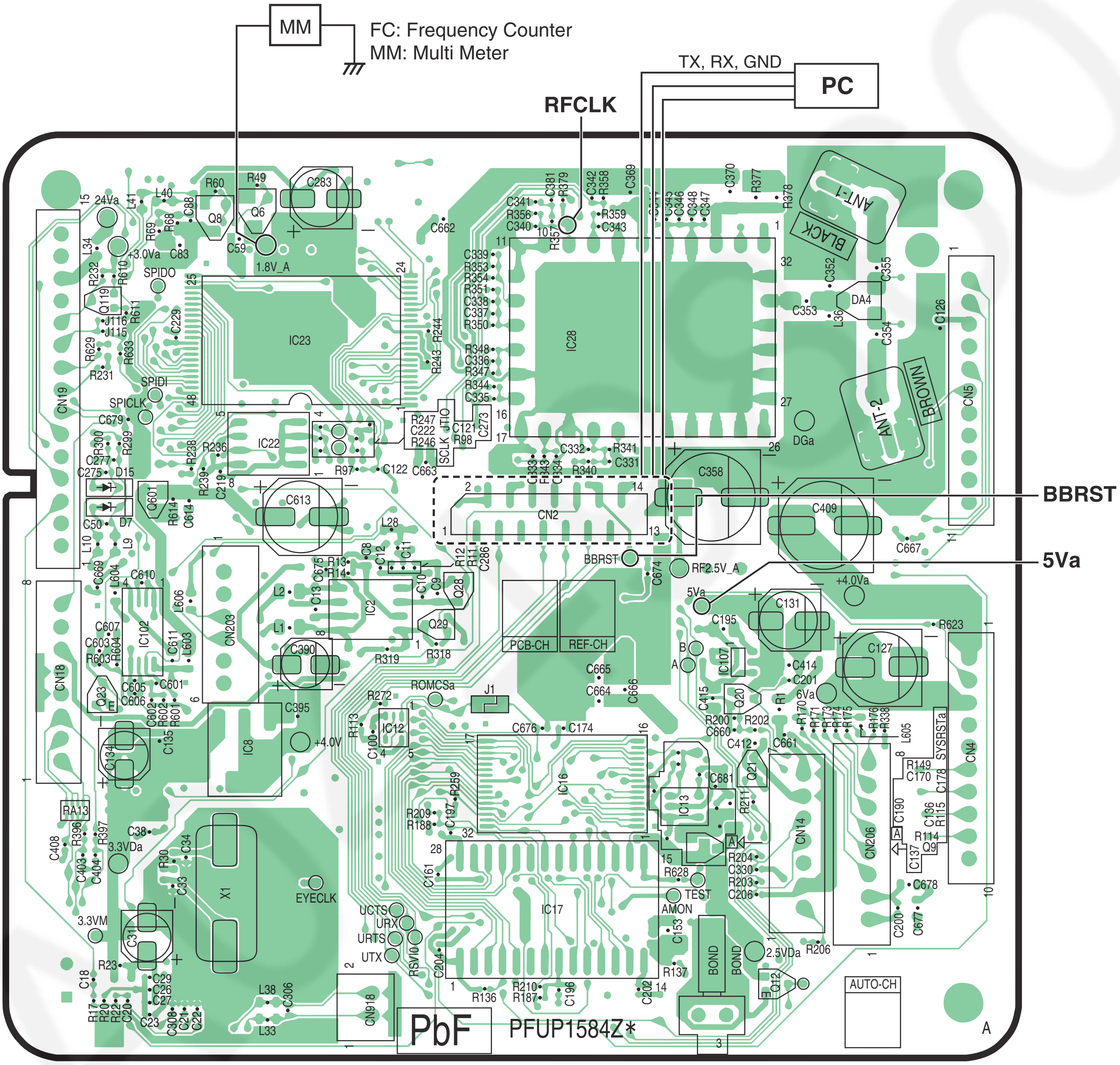
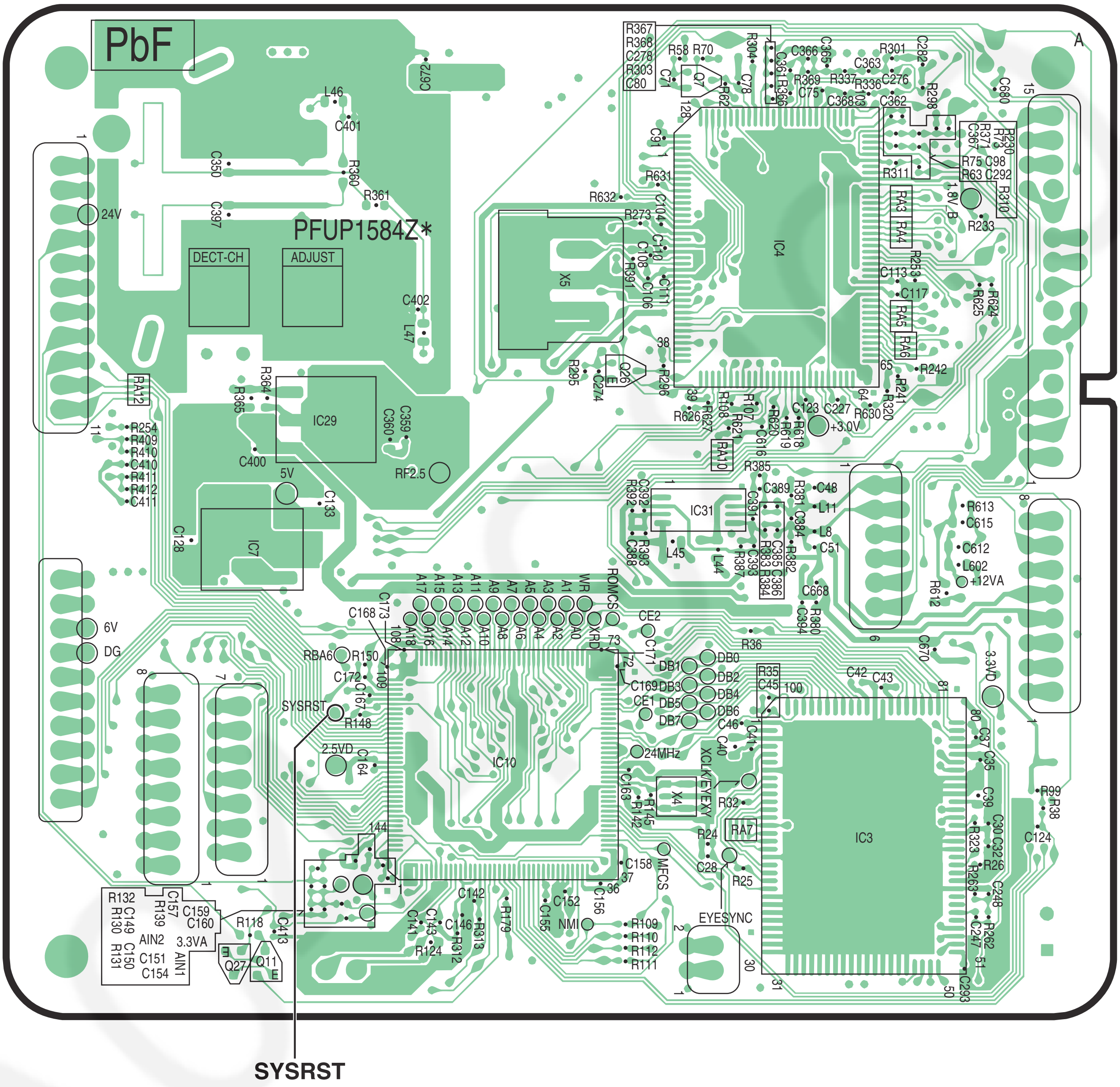
15.2. Adjustment Standard (Base Unit)

15.2.1. Component View


MM
FC: Frequency Counter
MM: Multi Meter
TX, RX, GND
PC
RFCLK
BBRST
5Va
IC23
IC28
IC22
CN2
IC17
IC16
X1
CN19
CN18
CN5
CN4
ANT-1
BLACK
ANT-2
BROWN
PCB-CH
REF-CH
AUTO-CH
PbF
PFUP1584Z*

15.2.2. Bottom view


PbF
PFUP1584Z*
DECT-CH
ADJUST
24V
IC29
IC7
5V
RF2.5
X5
IC4
1.8V_B
+3.0V
IC31
+12VA
6V
DG
IC10
IC3
3.3VD
2.5VD
24MHz
X4
EYESYNC
NMI
MFCS
3.3VA
AIN1
AIN2
Q27
Q11
SYSRST

15.3. The Setting Method of JIG (Cordless Handset)

15.3.1. Preparation

15.3.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm). Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 2.4V for Handset.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

15.3.1.2. JIG and PC

- Serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode.
- **Batch file CD-ROM** for setting: PNZZTG6421BX

Note:

*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

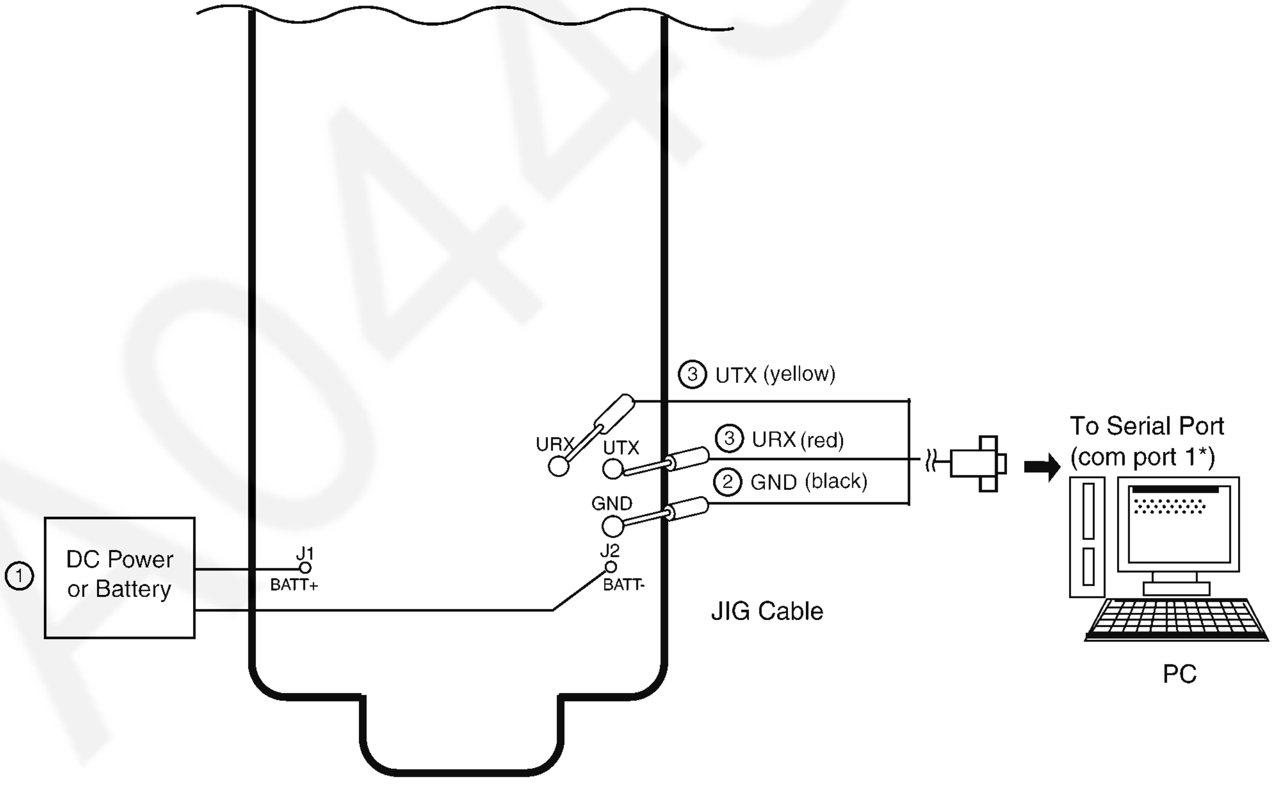
15.3.2. PC Setting

15.3.2.1. Connections

① Connect the DC Power or Battery to J1 and J2 (Handset).

② Connect the JIG Cable GND (black).

③ Connect the JIG Cable UTX (yellow) and URX (red).



Handset P. C. board

Note:

*: COM port names may vary depending on what your PC calls it.

15.3.2.2. Batch Files Setting

1. Insert the Batch file CD-ROM into CD-ROM drive and copy PNZZTG**** folder to your PC (example: D drive).

2. Open an MS-DOS mode window.

<Example for Windows>

On your computer, click **[Start]**, select **Programs** (**All Programs** for Windows XP/Windows Server 2003), then click
MS-DOS Prompt. (for Windows 95/Windows 98)
Or
Accessories-MS-DOS Prompt. (for Windows Me)
Or
Command Prompt. (for Windows NT 4.0)
Or
Accessories-Command Prompt.
(for Windows 2000/Windows XP/Windows Server 2003)

3. At the DOS prompt, type "**D:**" (for example) to select the drive, then press the **Enter** key.

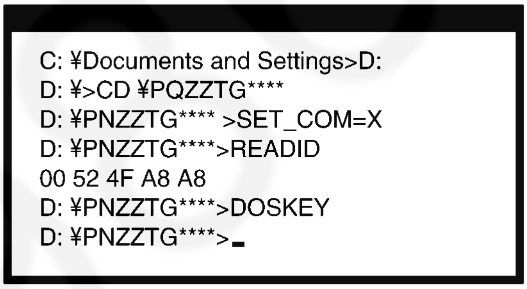
4. Type "**CD ¥PNZZTG****", then press the **Enter** key.

5. Type "**SET_COM=X**", then press the **Enter** key (**X**: COM port number used for the serial connection on your PC).

6. Type "**READID**", then press the **Enter** key.
   - If any error messages appear, change the port number or check the cable connection.
   - If any value appear, go to next step.

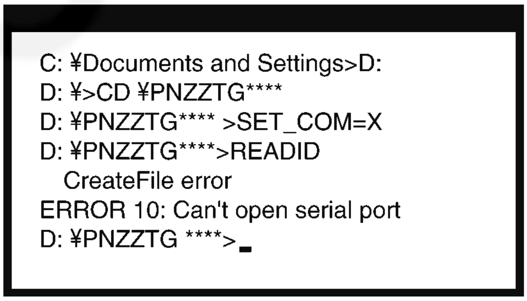
7. Type "**DOSKEY**", then press the **Enter** key.

<Example>



```
C: ¥Documents and Settings>D:
D: ¥>CD ¥PQZZTG****
D: ¥PNZZTG**** >SET_COM=X
D: ¥PNZZTG****>READID
00 52 4F A8 A8
D: ¥PNZZTG****>DOSKEY
D: ¥PNZZTG****>_
```

<Example: error happens>



```
C: ¥Documents and Settings>D:
D: ¥>CD ¥PNZZTG****
D: ¥PNZZTG**** >SET_COM=X
D: ¥PNZZTG****>READID
  CreateFile error
ERROR 10: Can't open serial port
D: ¥PNZZTG ****>_
```

Note:
- "*****" varies depending on the country.
- See the **Commands** (P.179) for frequently used commands.

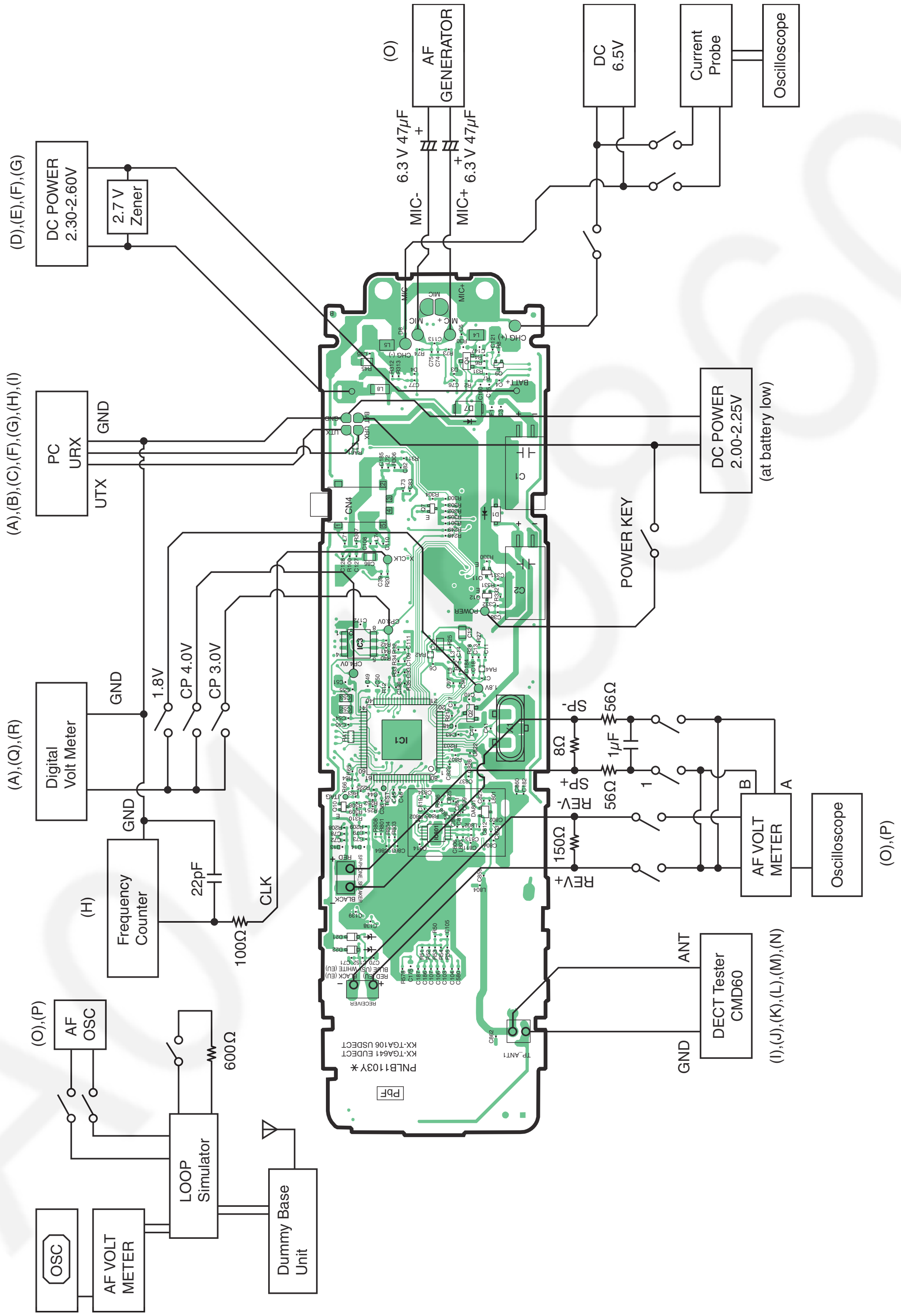
15.3.2.2.1. Commands

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type "rdeeprom 00 00 FF", and the data from address "00 00" to "FF" is read out.
readid	Read ID (RFPI)	Type "readid", and the registered ID is read out.
writeid	Write ID (RFPI)	Type "writeid 00 18 E0 0E 98", and the ID "0018 E0 0E 98" is written.
setfreq	Adjust Frequency of RFIC	Type "setfreq nn".
getchk	Read checksum	Type "getchk".
wreeprom	Write the data of EEPROM	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.

15.4. Adjustment Standard (Cordless Handset)

When connecting the Simulator Equipments for checking, please refer to below.

15.4.1. Component View


(O)
AF GENERATOR
6.3 V 47μF
MIC-
MIC+
DC 6.5V
Current Probe
Oscilloscope
(D),(E),(F),(G)
DC POWER 2.30-2.60V
2.7 V Zener
(A),(B),(C),(F),(G),(H),(I)
PC
URX
UTX
GND
DC POWER 2.00-2.25V
(at battery low)
POWER KEY
(A),(Q),(R)
Digital Volt Meter
GND
1.8V
CP 4.0V
CP 3.0V
SP-
56Ω
8Ω
1μF
SP+
REV-
56Ω
1
150Ω
REV+
B
A
AF VOLT METER
Oscilloscope
(O),(P)
(H)
Frequency Counter
GND
22pF
100Ω
CLK
ANT
DECT Tester CMD60
GND
(I),(J),(K),(L),(M),(N)
(O),(P)
AF OSC
600Ω
LOOP Simulator
Dummy Base Unit
OSC
AF VOLT METER
PNLB1103Y
KX-TGA641 EUDECT
KX-TGA106 USDECT
PbF
IC1
CN4
C1
C2
BATT+
BATT-
CHG (+)
CHG (-)
TP_ANT1
RECEIVER
RED
BLACK

Note:

(**A**) - (**T**) is referred to **Check Point (Cordless Handset)** (P.138)

15.5. Things to Do after Replacing IC

Cautions:

Since this page is common to each country, it may not apply to some models in your country. The contents below are the minimum adjustments required for operation.

15.5.1. Base Unit

Before doing the following adjustment, be sure to do **PC Setting** (P.172) in **Cordless Base Section (Digital Board) Adjustment** (P.172).

IC		Necessary Adjustment
BBIC (IC4)	Programs for Voice processing, interface for RF and EEPROM	1. Default batch file: Execute the command “default.bat”. 2. Country version batch file (*2) : Execute the command “FC265XXrevYY.bat”. (*1) 3. Model code batch file : Excute the command “FC265XXmip.bat” . (*1) 4. Clock adjustment: Refer to **Frequency Adjustment** (P.174).
EEPROM (IC22)	Adjustment parameter data (country version batch file, default batch file, etc.)	1. Default batch file: Execute the command “default.bat”. 2. Country version batch file (*2) : Execute the command “FC225XXrevYY.bat”. (*1) 3. Model code batch file : Excute the command “FC225XXmip.bat” . (*1) 4. Clock adjustment: Refer to **Frequency Adjustment** (P.174).

Note:

(*1) XX: country code, YY: revision number

“XX” and “YY” vary depending on the country version. You can find them in the batch file, PFZZ- mentioned in **Equipment Required** (P.172).

(*2) XX= “NZ”, “SA”, “HK”, “ML”, “CX” model only

15.5.2. Cordless Handset

Before doing the following adjustment, be sure to do **PC Setting** (P.178) in **The Setting Method of JIG (Cordless Handset)**.

Items		How to download/Required adjustment
BBIC (FLASH type) (IC1)	Programming data is stored in memory.	1) Make sure to connect the JIG cable, then disconnect the DC Power in order to download the data. 2) Execute the command “flw480 *********.hex”. 3) Connect the DC Power. 4) Press and hold the handset Power key. 5) While holding down the handset Power key, press the PC Enter key once. 6) After a few minutes, “Successful upgrade” is displayed on the PC indicating downloading has finished. 7) Detach the JIG cable, then press the handset Power key to turn it on. 8) Connect the JIG cable again, and execute the command "getchk”, then confirm the checksum value is correct. • If the downloading fails, start again from step 1). 10) Default batch file: Execute the command “default.bat”. 11) Default batch file (remaining): Execute the command “TGA641EX_DEFrevYY.bat”. (*3). 12) Country version batch file: Execute the command “TGA641XXrevYY.bat”. (*3). 13) Clock adjustment: Refer to Check Point (H). (*4). 14) 1.8 V setting and battery low detection: Refer to Check Point (A), (F) and (G). (*4).
EEPROM (IC3)	Adjusted parameter data is stored in memory. (country version batch file, default batch file, etc.)	1) Default batch file: Execute the command “default.bat”. 2) Default batch file (remaining): Execute the command “TGA641EX_DEFrevYY.bat”. (*3) 3) Country version batch file: Execute the command “TGA641XXrevYY.bat”. (*3) 4) Clock adjustment: Refer to Check Point (J). (*4) 5) 1.8 V setting and battery low detection: Refer to Check Point (A), (F) and (G). (*4)
X'tal (X1)	System clock	Clock adjustment data is in EEPROM, adjust the data again after replacing it. 1) Refer to Check Point (H). (*4)

Note:

(*3) XX: country code, YY: revision number

“XX” and “YY” vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.178).

(*4) Refer to **Check Point (Cordless Handset)** (P.138)

15.6. RF Specification

15.6.1. Base Unit

Item	Value
TX Power	20 dBm ~ 25 dBm
Modulation	-350 ~ -400/+320 ~ +370 kHz/div
Frequency Offset	-45 kHz ~ +45 kHz
Frequency Drift	< ± 30 kHz / ms
RX Sensitivity	< 1000 ppm
Timing Accuracy	< ± 2.0 ppm
RSSI Level	22 hex ± A hex
Power RAMP	Power RAMP is matching

15.6.2. Cordless Handset

Item	Value	Refer to -. **
TX Power	19 dBm ~ 25 dBm	**Check Point (Cordless Handset) (I)**
Modulation	-370±30/+370±30 kHz/div & Modulated width ≧ 690 kHz	**Check Point (Cordless Handset) (J)**
Frequency Offset	-50 kHz ~ +50 kHz	**Check Point (Cordless Handset) (K)**
Frequency Drift	< ± 35 kHz / ms	**Check Point (Cordless Handset) (L)**
RX Sensitivity	< 1000 ppm	**Check Point (Cordless Handset) (M)**
Power RAMP	Power RAMP is matching	**Check Point (Cordless Handset) (N)**

: Refer to **Check Point (Cordless Handset) (P.138)

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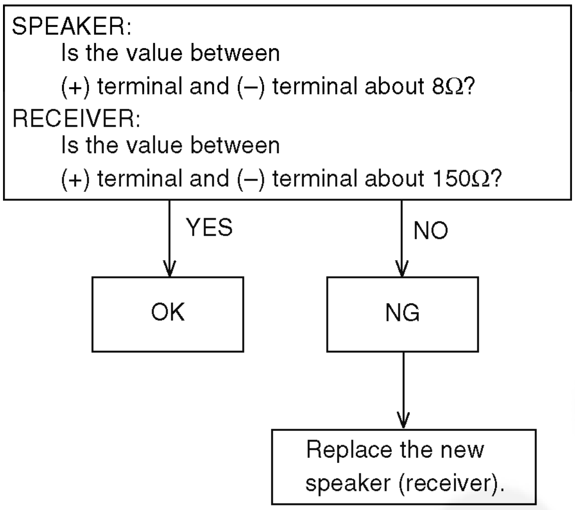
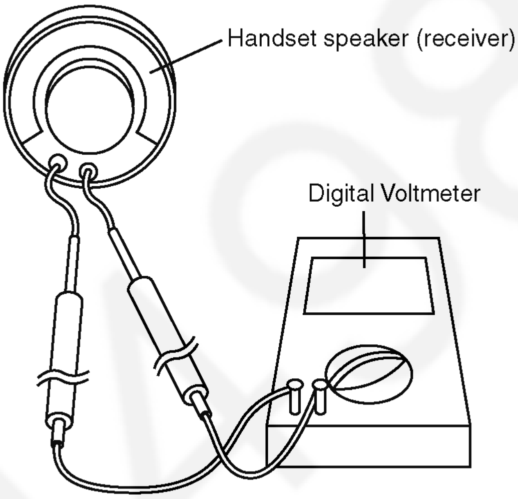
15.7. How to Check the Cordless Handset Speaker or Receiver

1. Prepare the digital voltmeter, and set the selector knob to ohm meter.
2. Put the probes at the speaker terminals as shown below.


SPEAKER:
Is the value between
(+) terminal and (–) terminal about 8Ω?
RECEIVER:
Is the value between
(+) terminal and (–) terminal about 150Ω?
YES
NO
OK
NG
Replace the new speaker (receiver).


Handset speaker (receiver)
Digital Voltmeter

15.8. Frequency Table (MHz)

	BASE UNIT		CORDLESS HANDSET	
Channel No	**Transmit Frequency**	Receive Frequency	**Transmit Frequency**	**Receive Frequency**
1	1897.344	1897.344	1897.344	1897.344
2	1895.616	1895.616	1895.616	1895.616
3	1893.888	1893.888	1893.888	1893.888
4	1892.160	1892.160	1892.160	1892.160
5	1890.432	1890.432	1890.432	1890.432
6	1888.704	1888.704	1888.704	1888.704
7	1886.976	1886.976	1886.976	1886.976
8	1885.248	1885.248	1885.248	1885.248
9	1883.520	1883.520	1883.520	1883.520
10	**1881.792**	**1881.792**	**1881.792**	**1881.792**

Note:

Channel No. 10: In the Test Mode on Base Unit and Cordless Handset.

16 Maintenance

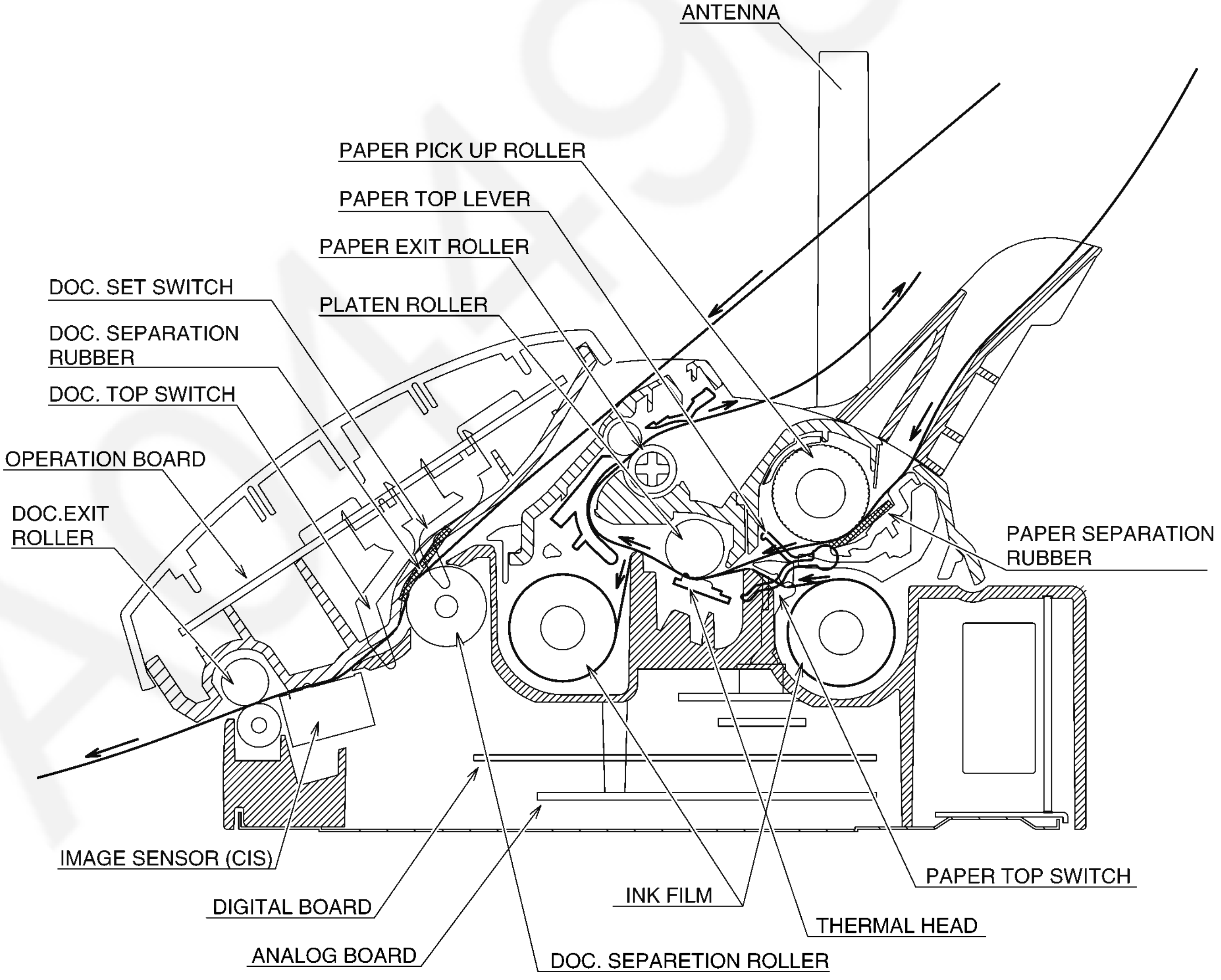
16.1. Maintenance Items and Component Locations

16.1.1. Outline

Maintenance and repairs are reformed using the following steps.

1. **Periodic maintenance**
   Inspect the equipment periodically and if necessary, clean any contaminated parts.
2. **Check for breakdowns**
   Look for problems and consider how they arose.
   If the equipment can be still used, perform copying, self testing or communication testing.
3. **Check equipment**
   Perform copying, self testing and communication testing to determine if the problem originates from the transmitter, receiver or the telephone line.
4. **Determine causes**
   Determine the causes of the equipment problem by trouble-shooting.
5. **Equipment repairs**
   Repair or replace the defective parts and take appropriate measures at this stage to ensure that the problem will not recur
6. **Confirm normal operation of the equipment**
   After completing the repairs, conduct copying, self testing and communication testing to confirm that the equipment operates normally.
7. **Record keeping**
   Make a record of the measures taken to rectify the problem for future reference.

16.1.2. Maintenance Check Items/Component Locations


ANTENNA
PAPER PICK UP ROLLER
PAPER TOP LEVER
PAPER EXIT ROLLER
DOC. SET SWITCH
PLATEN ROLLER
DOC. SEPARATION RUBBER
DOC. TOP SWITCH
OPERATION BOARD
DOC.EXIT ROLLER
PAPER SEPARATION RUBBER
IMAGE SENSOR (CIS)
DIGITAL BOARD
ANALOG BOARD
INK FILM
THERMAL HEAD
PAPER TOP SWITCH
DOC. SEPARETION ROLLER

16.1.2.1. Maintenance List

No.	OPERATION	CHECK	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.	Refer to **Document feeder/recording paper feeder/scanner glass cleaning** (P.196).
3	Platen Roller	If the platen is dirty, clean it with a damp cloth then dry thoroughly. Remove the paper and film cartridge before cleaning.	—
4	Thermal Head	If the thermal head is dirty, clean the printing surface with a cloth moistened with denatured alcohol (alcohol without water), then dry thoroughly.	Refer to **Thermal Head Cleaning** (P.197).
5	Sensors	Document top sensor (SW351), Document set sensor (SW352), Cover open sensor (SW1001), Paper top sensor (SW1001), Film detection sensor (SW1002), Film end sensor (SW1003) . Confirm the operation of the sensors.	See **Maintenance Check Items/Component Locations** (P.185) and **How to Remove the P.C. Boards and Speaker** (P.151).
6	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to **Document feeder/recording paper feeder/scanner glass cleaning** (P.196).
7	Abnormal, wear and tear or loose parts	Replace the part. Check if the screws are tight on all parts.	—

16.1.2.2. Maintenance Cycle

No.	Item	Cleaning Cycle	Replacement	
			Cycle	Procedure
1	Separation Roller (Ref. No. 145)*2	3 months	7 years*1 (31,500 documents)	Refer to **How to Remove the Gear Block and Separation Roller** (P.153).
2	Separation Rubber (Ref. No. 13)*2	3 months	7 years (31,500 documents)	Refer to **Document feeder/recording paper feeder/scanner glass cleaning** (P.196).
3	Feed Rollers (Ref. No. 11, 56, 94)*2	3 months	7 years (31,500 documents)	Refer to **Disassembly and Assembly Instructions** (P.143).
4	Thermal Head (Ref. No. 40)*2	3 months	7 years (31,500 documents)	Refer to **How to Remove the Thermal Head** (P.148).
5	Platen Roller (Ref. No. 70)*2	3 months	7 years (31,500 documents)	Refer to **How to Remove the Platen Roller and Lock Lever** (P.158).
6	Pickup Roller (Ref. No. 96)*2	3 months	7 years (31,500 documents)	Refer to **How to Remove the Pickup Roller and Antenna** (P.160).

Note:

*1 These values are standard and may vary depending on usage conditions.

*2 Refer to **Cabinet, Mechanical and Electrical Parts Location** (P.238).

16.2. Gear Section

This model provides a motor-driven gear mechanism for transmitting/copying documents and printing fax data. In this chapter, you will see how the gears work to select and operate a mode and how the gear section, sensors and rollers mechanically work during the main operations (FAX transmission, FAX reception and Copy).

16.2.1. Mode Selection

When a motor with Drive Motor Gear attached rotates clockwise (CW), Swing Gear E engages CAM Gear to rotate clockwise (CW). This operation provide five mode options (**A:** Transmit mode, **B:** Paper-Pickup mode, **C:** Assist mode **D:** Receive mode and **E:** Copy mode) selected by the Sensor Switch. (The Sensor Switch Lever's position in the CAM Gear controlled by the software selects a specific mode.) You can see which mode is selected by confirming the Mode Marker's position as shown in Fig. 1.

(Ex. If the Mode Marker is in position **A**, a transmit mode is selected.)

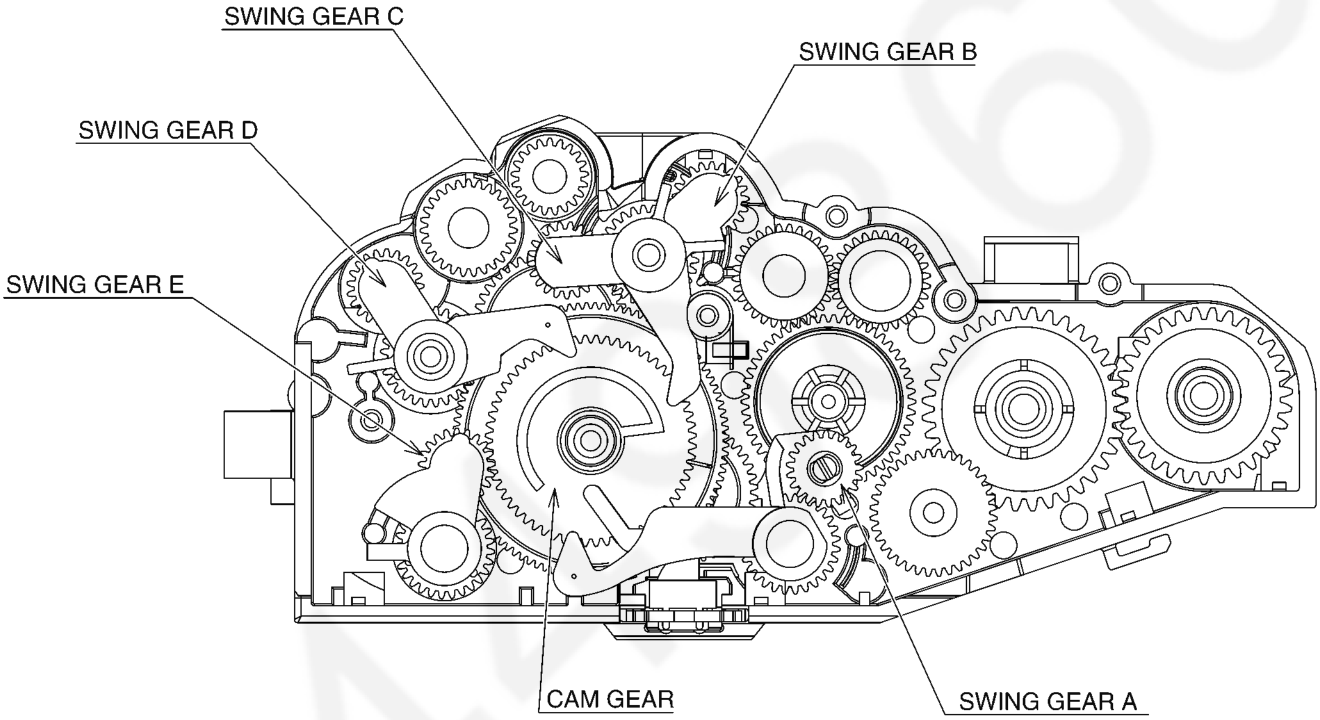


Fig. 1: Mode Selection

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16.2.2. Mode Operation

Once a mode is selected, the Drive Motor Gear rotates counterclockwise (CCW) and then the controlling positions of Swing Gears A, B and C, D, E determine which gears convey their drive power in each mode. See “**Sensor Location**” in **Sensor and Switches** (P.26).

A. Transmit mode (See Fig. A.):

The Swing Gear A engages with the next gear to drive Document Separation Roller and Document Exit Roller.

The Swing Gear C engages with the next gear to drive Paper Exit Roller.

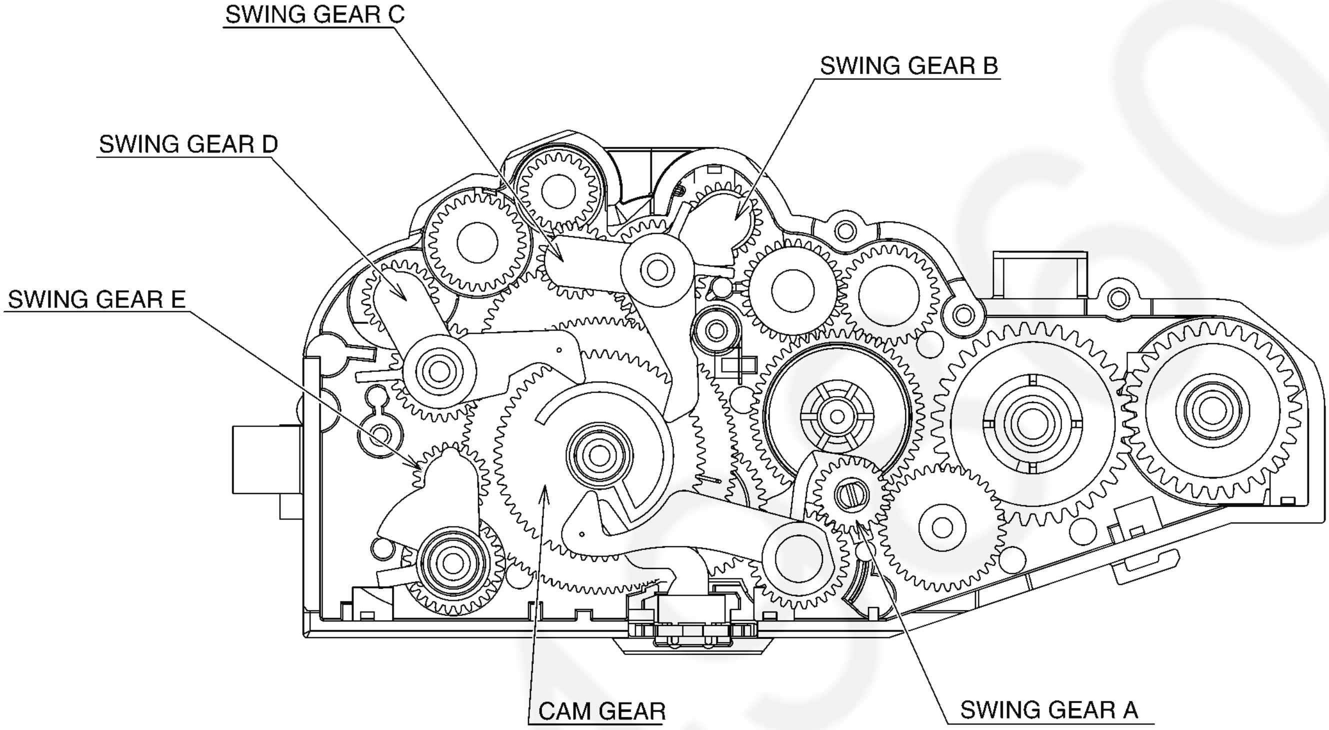

SWING GEAR C
SWING GEAR B
SWING GEAR D
SWING GEAR E
CAM GEAR
SWING GEAR A

Fig. A: Transmit mode

B. Paper-Pickup mode (See Fig. B):

The Swing Gear C engages with the next gear to drive Paper Exit Roller.

The Swing Gear D engages with the next gear to drive Pickup Roller.

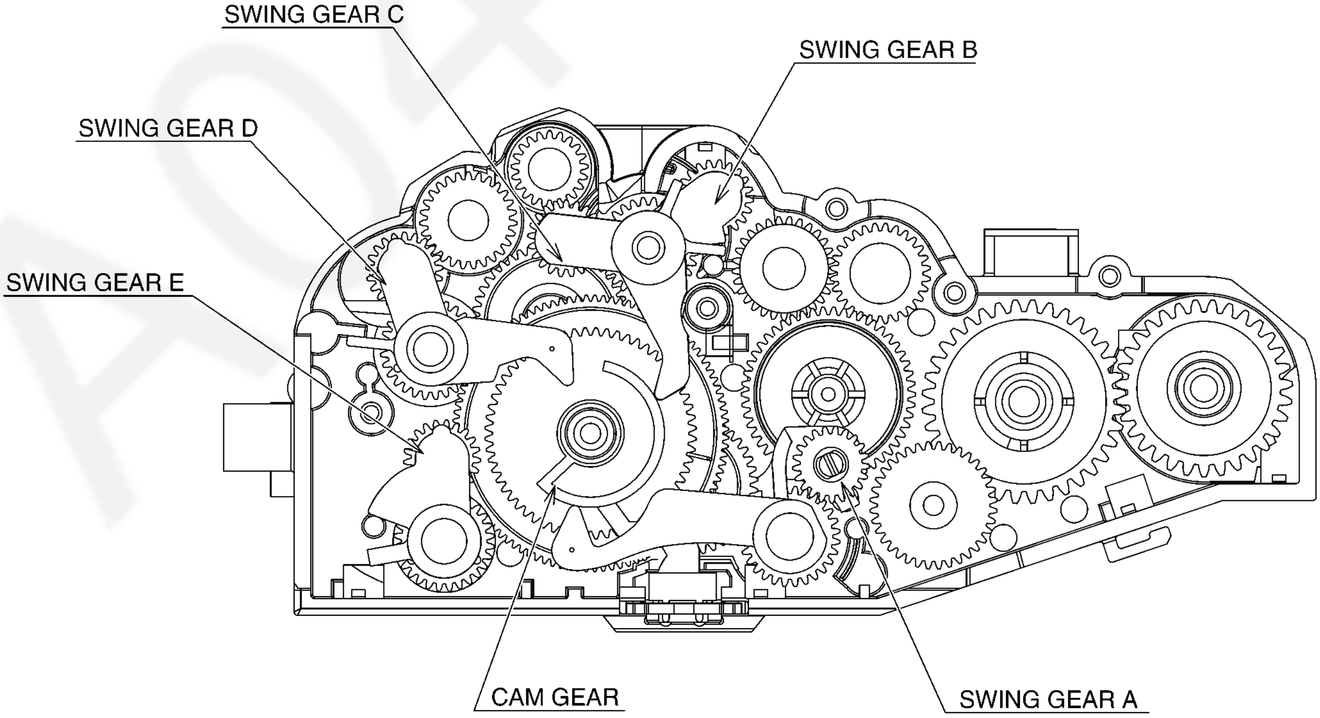

SWING GEAR C
SWING GEAR B
SWING GEAR D
SWING GEAR E
CAM GEAR
SWING GEAR A

Fig. B: Paper-Pickup mode

C. Assist mode (See Fig. C.):

The Swing Gear D engages with the next gear to drive Pickup Roller.

The Swing Gear B engages with the next gear to drive Platen Roller gear and Ribbon Drive Gear.

The Swing Gear C engages with the next gear to drive Paper Exit Roller Gear.

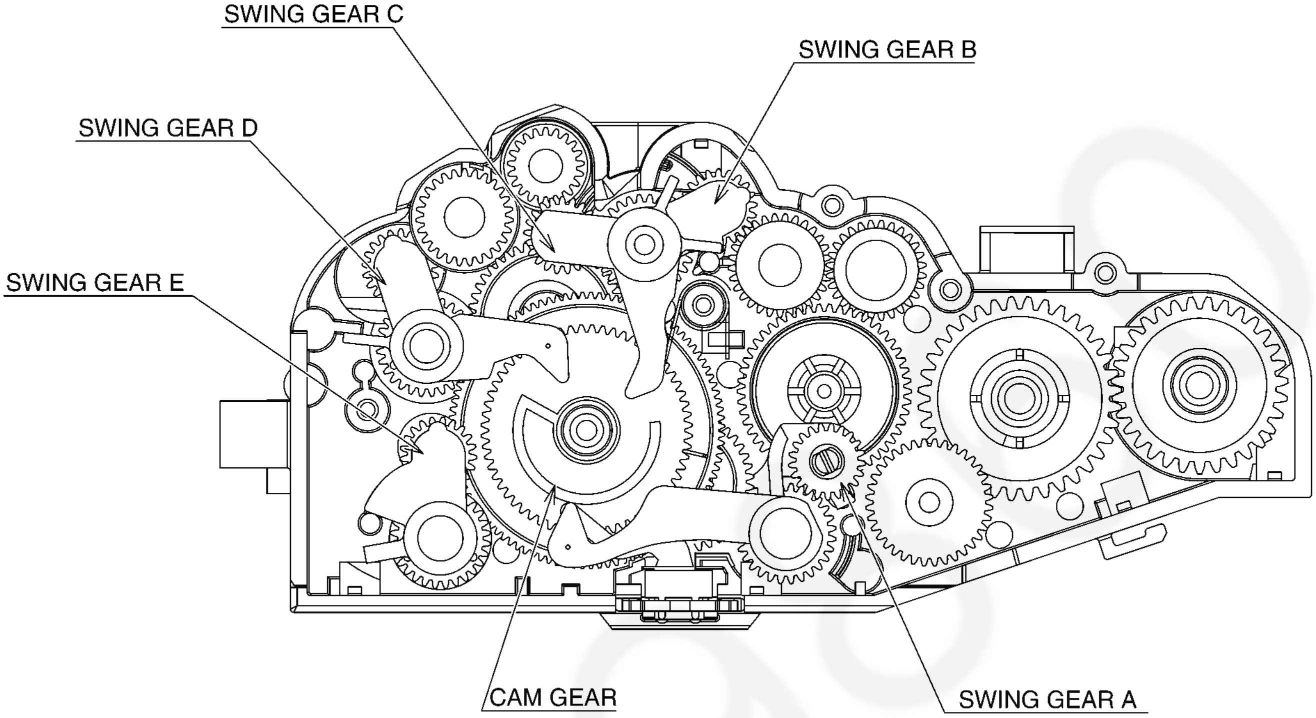

SWING GEAR C
SWING GEAR B
SWING GEAR D
SWING GEAR E
CAM GEAR
SWING GEAR A

Fig. C: Assist mode

D. Receive mode (See Fig. D.):

The Swing Gear B engages with the next gear to drive Platen Roller gear and Ribbon Drive Gear.

The Swing Gear C engages with the next gear to drive Paper Exit Roller Gear.

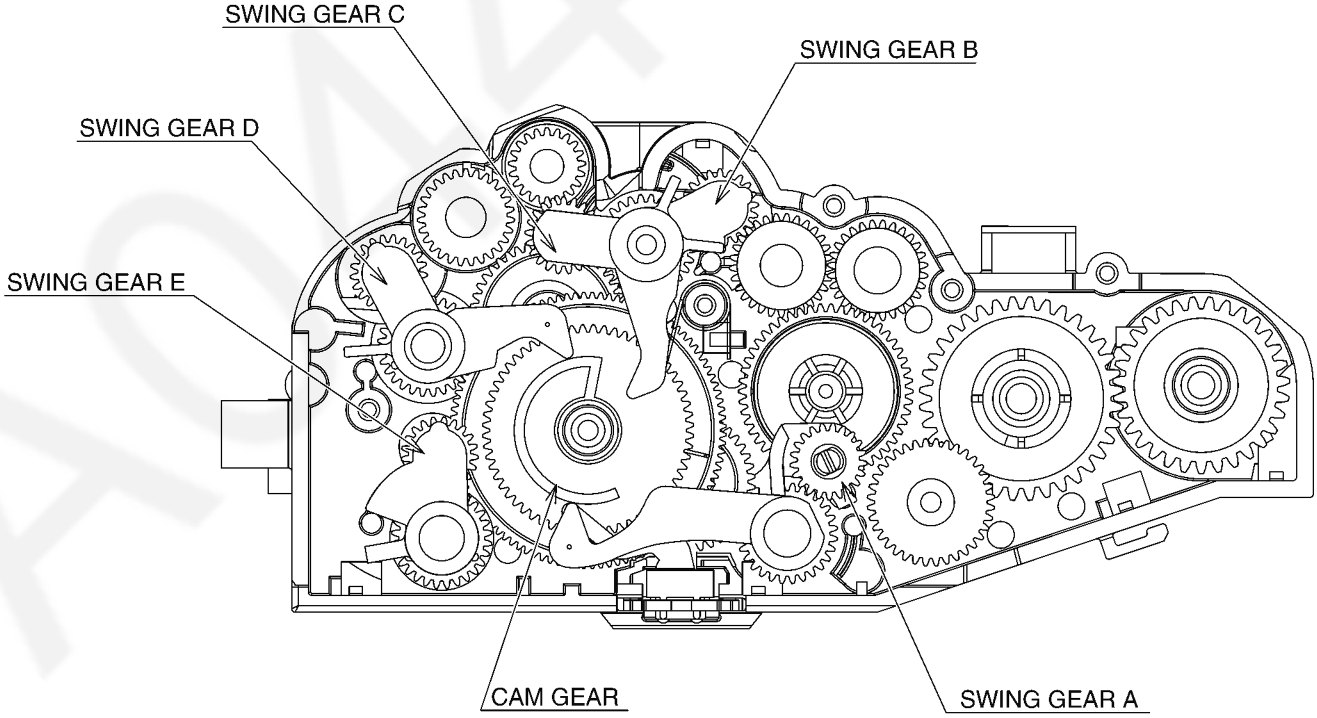

SWING GEAR C
SWING GEAR B
SWING GEAR D
SWING GEAR E
CAM GEAR
SWING GEAR A

Fig. D: Receive mode

E. Copy mode (See Fig. E.):

"Copy mode" = "Transmit mode" + "Receive mode"

The Swing Gear A engages with the next gear to drive Document Separation Roller and Document Exit Roller.

The Swing Gear B engages with the next gear to drive Platen Roller gear and Ribbon Drive Gear.

The Swing Gear C engages with the next gear to drive Paper Exit Roller.

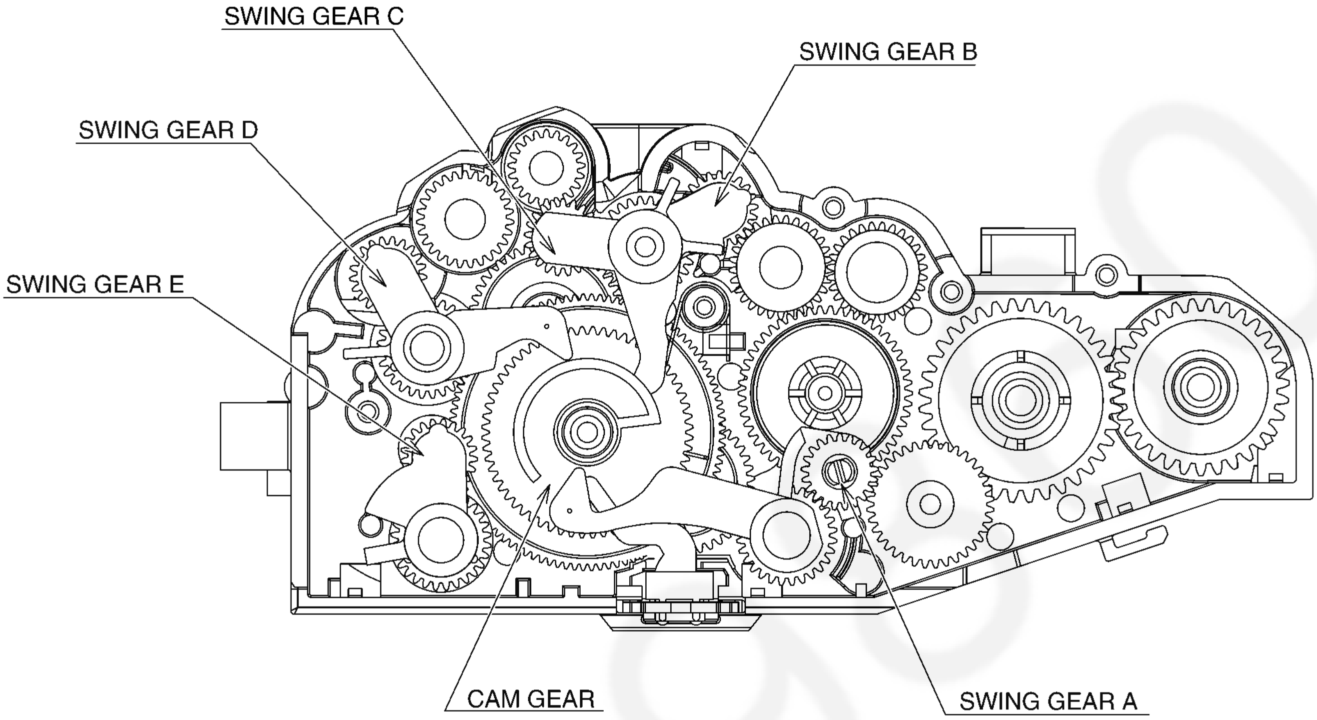
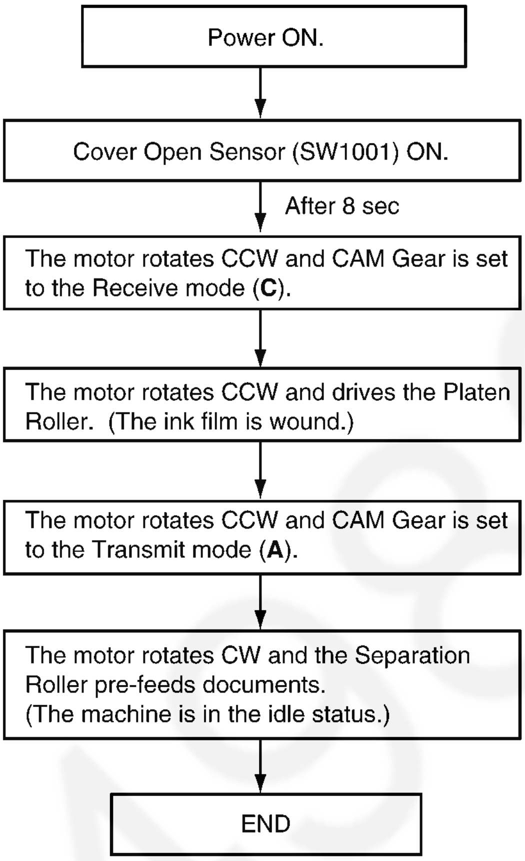

SWING GEAR C
SWING GEAR B
SWING GEAR D
SWING GEAR E
CAM GEAR
SWING GEAR A

Fig. E: Copy mode

A04490

16.2.3. Mechanical Movements in the Main Operations (transmitting documents, receiving faxes and copying)

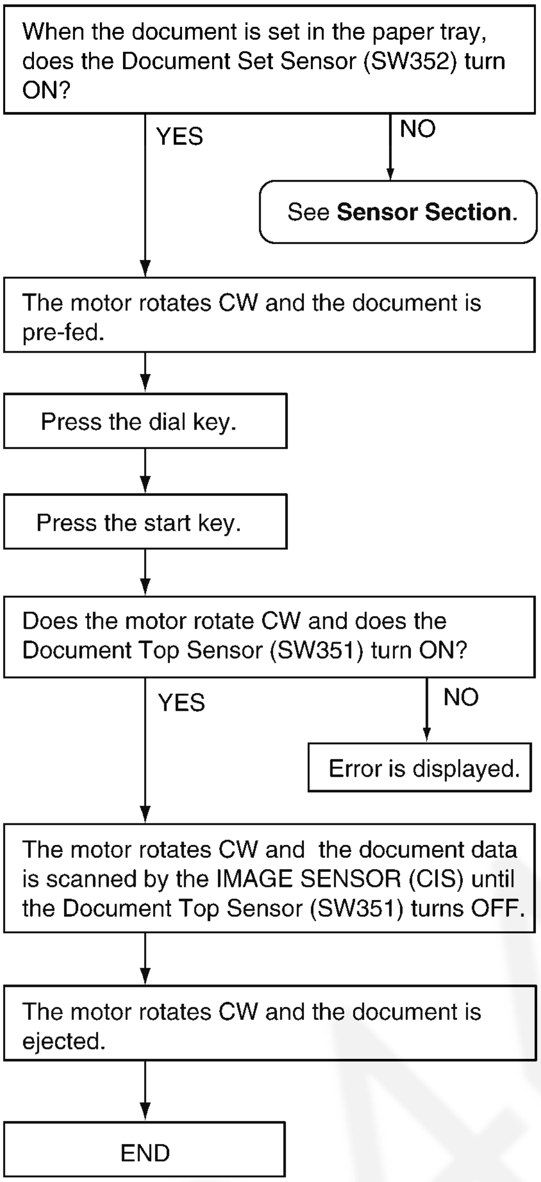
16.2.3.1. Idle Status


Power ON.
Cover Open Sensor (SW1001) ON.
After 8 sec
The motor rotates CCW and CAM Gear is set to the Receive mode (**C**).
The motor rotates CCW and drives the Platen Roller. (The ink film is wound.)
The motor rotates CCW and CAM Gear is set to the Transmit mode (**A**).
The motor rotates CW and the Separation Roller pre-feeds documents. (The machine is in the idle status.)
END

Note:

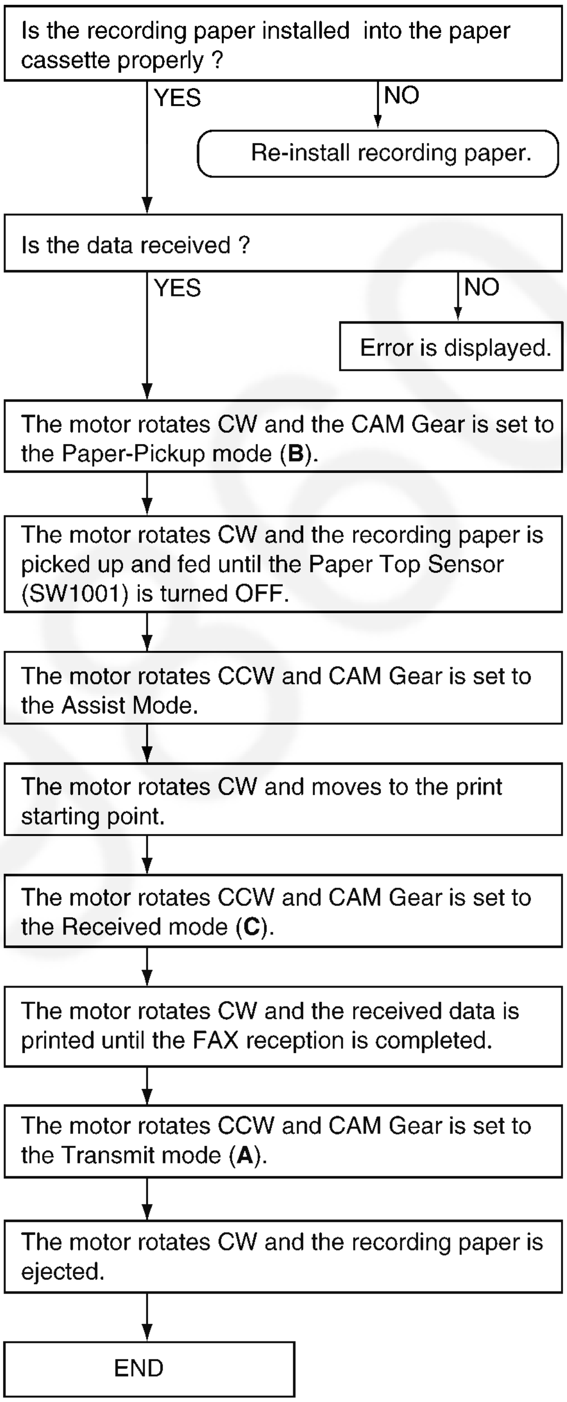
- See “**Sensor Locations**” in **Sensor and Switches** (P.26).
- CW......clockwise
- CCW....counterclockwise

16.2.3.2. Transmitting Documents


When the document is set in the paper tray, does the Document Set Sensor (SW352) turn ON?
YES
NO
See **Sensor Section**.
The motor rotates CW and the document is pre-fed.
Press the dial key.
Press the start key.
Does the motor rotate CW and does the Document Top Sensor (SW351) turn ON?
YES
NO
Error is displayed.
The motor rotates CW and the document data is scanned by the IMAGE SENSOR (CIS) until the Document Top Sensor (SW351) turns OFF.
The motor rotates CW and the document is ejected.
END

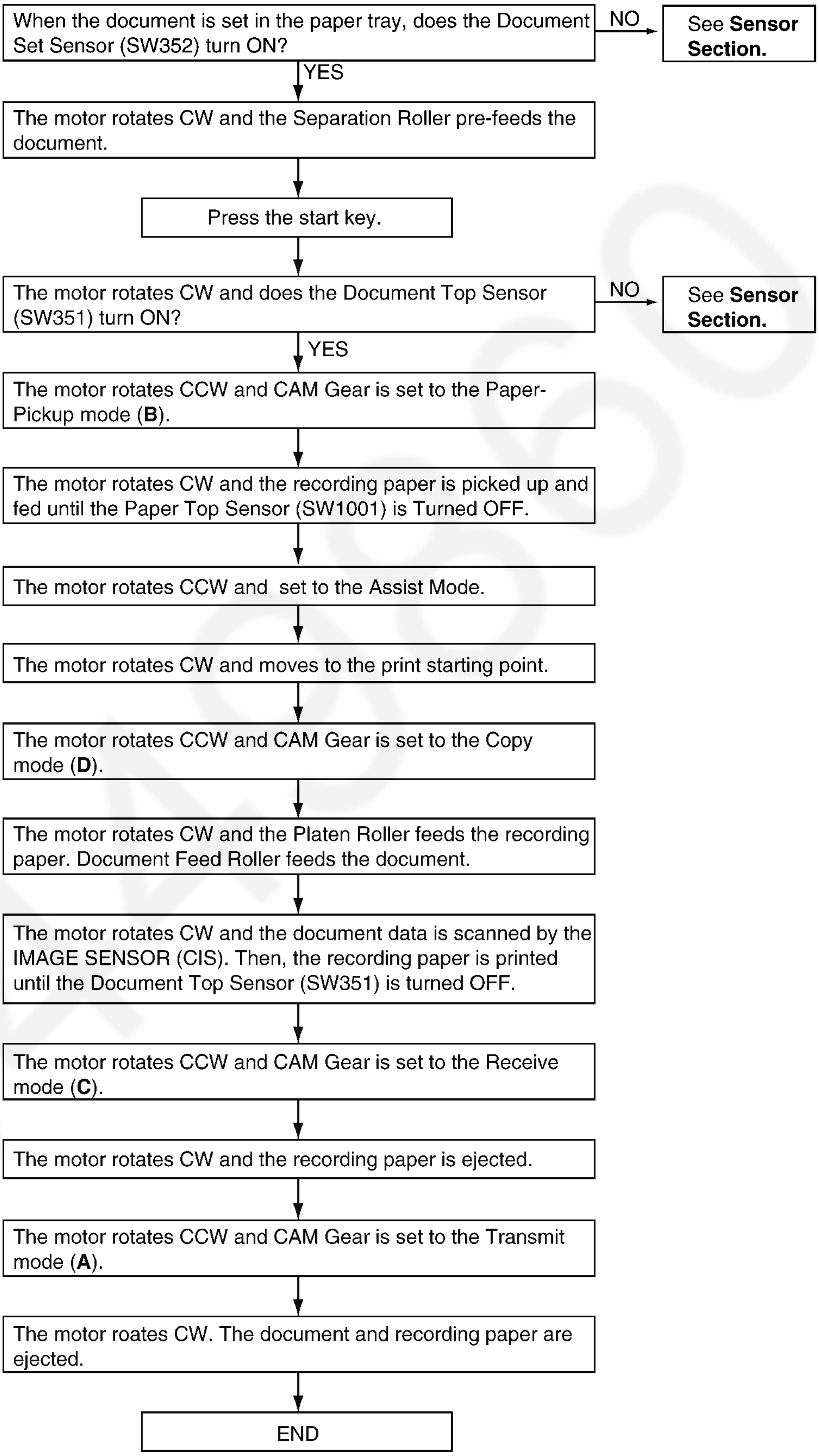
REFERENCE:
Sensor Section (P.130).

16.2.3.3. Receiving Fax


Is the recording paper installed into the paper cassette properly ?
YES
NO
Re-install recording paper.
Is the data received ?
YES
NO
Error is displayed.
The motor rotates CW and the CAM Gear is set to the Paper-Pickup mode (**B**).
The motor rotates CW and the recording paper is picked up and fed until the Paper Top Sensor (SW1001) is turned OFF.
The motor rotates CCW and CAM Gear is set to the Assist Mode.
The motor rotates CW and moves to the print starting point.
The motor rotates CCW and CAM Gear is set to the Received mode (**C**).
The motor rotates CW and the received data is printed until the FAX reception is completed.
The motor rotates CCW and CAM Gear is set to the Transmit mode (**A**).
The motor rotates CW and the recording paper is ejected.
END

Note:
See "**Sensor Locations**" in **Sensor and Switches** (P.26).

16.2.3.4. Copying



(a) Document detection

When the document is set in the paper tray, does the Document Set Sensor (SW352) turn ON?

(b) Pre-feeding documents

The motor rotates CW and the Separation Roller pre-feeds the document.

Press the start key.

The motor rotates CW and does the Document Top Sensor (SW351) turn ON?

The motor rotates CCW and CAM Gear is set to the Paper-Pickup mode (**B**).

The motor rotates CW and the recording paper is picked up and fed until the Paper Top Sensor (SW1001) is Turned OFF.

The motor rotates CCW and set to the Assist Mode.

The motor rotates CW and moves to the print starting point.

The motor rotates CCW and CAM Gear is set to the Copy mode (**D**).

(c) Feeding recording paper
Feeding document paper

The motor rotates CW and the Platen Roller feeds the recording paper. Document Feed Roller feeds the document.

(d) Copying

The motor rotates CW and the document data is scanned by the IMAGE SENSOR (CIS). Then, the recording paper is printed until the Document Top Sensor (SW351) is turned OFF.

The motor rotates CCW and CAM Gear is set to the Receive mode (**C**).

(e) Ejecting recording paper

The motor rotates CW and the recording paper is ejected.

The motor rotates CCW and CAM Gear is set to the Transmit mode (**A**).

(f) Ejecting documents

The motor roates CW. The document and recording paper are ejected.

END

Note:

See “**Sensor Locations**” in **Sensor and Switches** (P.26).

REFERENCE:

Sensor Section (P.130)

16.3. Jams

16.3.1. Recording Paper Jams

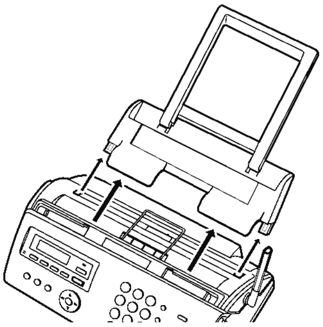
16.3.1.1. When the recording paper has jammed in the unit

The display will show the following.

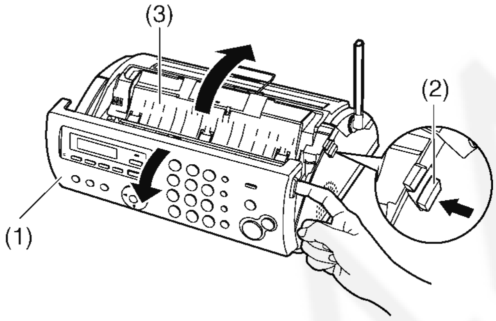
```
PAPER JAMMED
```

Important:

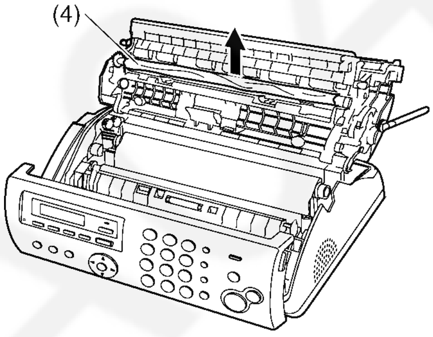
- **Remove the recording paper, then remove the paper tray beforehand, otherwise the paper may misfeed or jam.**



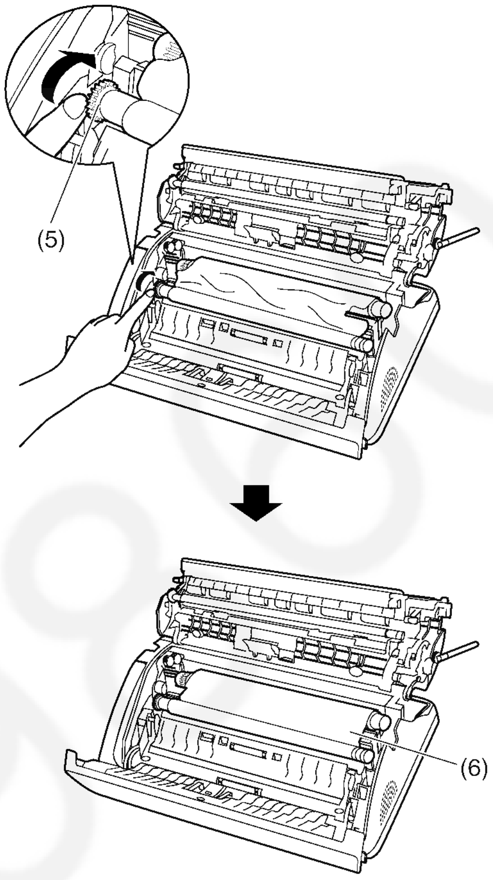
1. Open the front cover (1), push the green button (2), then open the back cover (3).



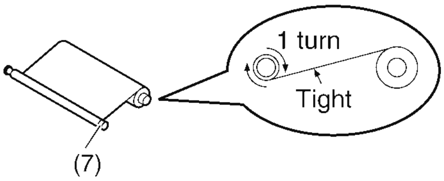
2. Remove the jammed recording paper (4).



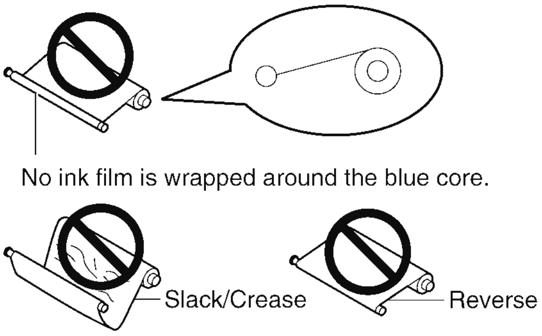
3. Turn the blue gear (5) in the direction of the arrow until the ink film is tight (6) and at least one layer of ink film is wrapped around the blue core (7).



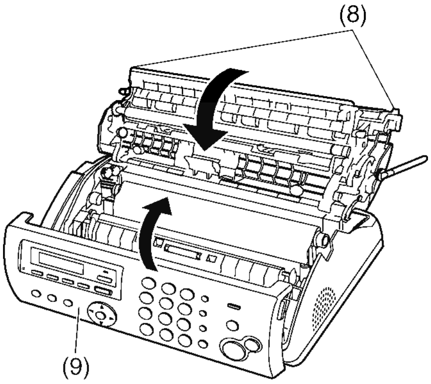
Correct


1 turn
Tight
(7)

Incorrect


No ink film is wrapped around the blue core.
Slack/Crease
Reverse

4. Close the back cover securely by pushing down on the dotted area at both ends (8), then close the front cover securely (9).



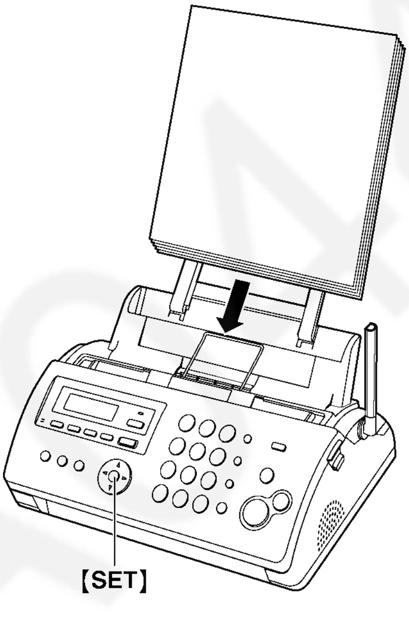
5. Install the paper tray, then insert the recording paper gently.
   (See **Installing the Paper Tray** (P.53) and **Installing the Recording Paper** (P.54))

16.3.1.2. When the recording paper was not fed into the unit properly

The display will show the following.

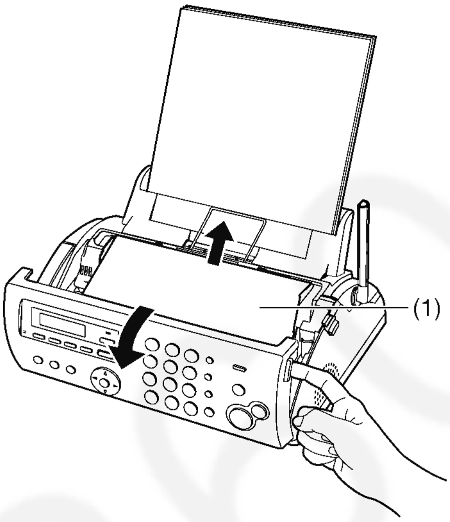
```
CHECK PAPER
```

Remove the recording paper and straighten. Insert the paper, then press **[SET]** to clear the message.



16.3.2. Document Jams

1. Open the front cover. Remove the jammed document carefully (1).



2. Close the front cover securely.

Note:

- Do not pull out the jammed paper forcibly before opening the front cover.

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16.4. Cleaning

16.4.1. Document feeder/recording paper feeder/scanner glass cleaning

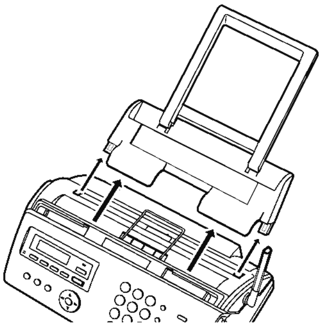
Clean the document feeder/recording paper feeder/scanner glass when:

— Documents or recording paper frequently misfeed.

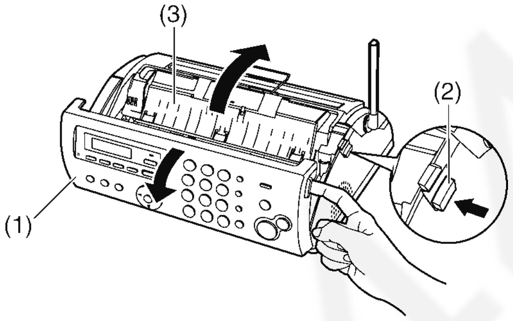
— Smudges or black/white lines appear on the original document when sending or copying.

Important:

- **Remove the recording paper, then remove the paper tray beforehand, otherwise the paper may misfeed or jam.**



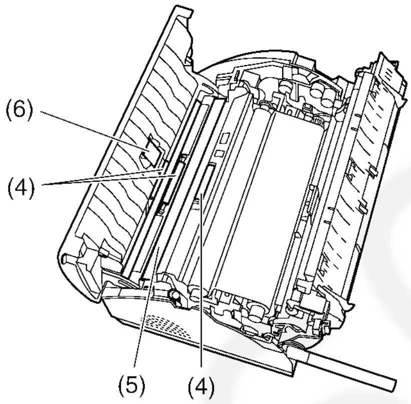
1. Disconnect the power cord and the telephone line cord.
2. Open the front cover (1), push the green button (2), then open the back cover (3).



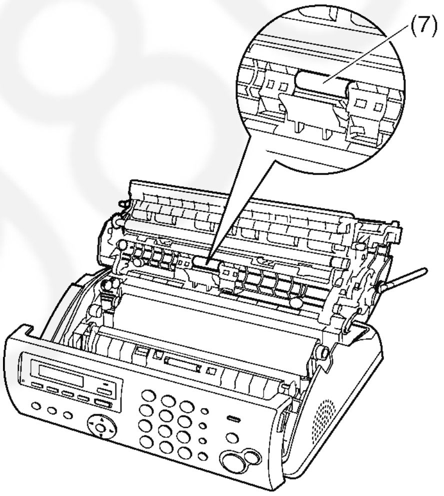
3. Clean the document feeder rollers (4) and rubber flap (5) with a cloth moistened with isopropyl rubbing alcohol, and let all parts dry thoroughly. Clean the scanner glass (6) with a soft, dry cloth.

Caution:

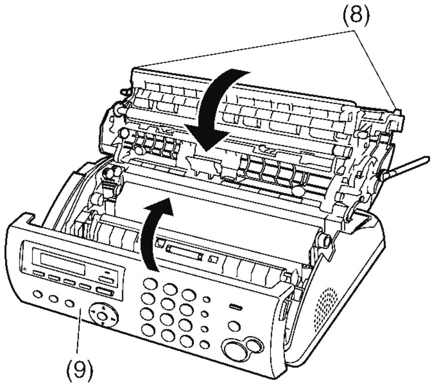
- **Do not use paper products, such as paper towels or tissues.**



4. Clean the recording paper feeder roller (7) with a cloth moistened with isopropyl rubbing alcohol, and let all parts dry thoroughly.



5. Close the back cover securely by pushing down on the dotted area at both ends (8), then close the front cover securely (9).



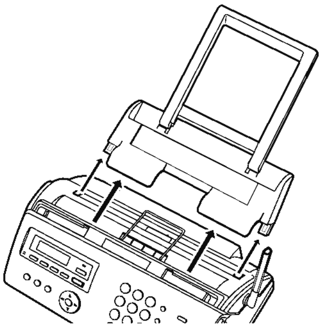
6. Install the paper tray, then insert the recording paper gently.
   (See **Installing the Paper Tray** (P.53) and **Installing the Recording Paper** (P.54))
7. Connect the power cord and the telephone line cord.

16.4.2. Thermal Head Cleaning

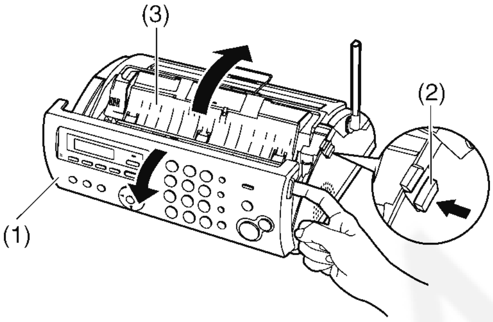
If smudges or black/white lines appear on a copied/received document, check whether there is dust on the thermal head. Clean the thermal head to remove the dust.

Important:

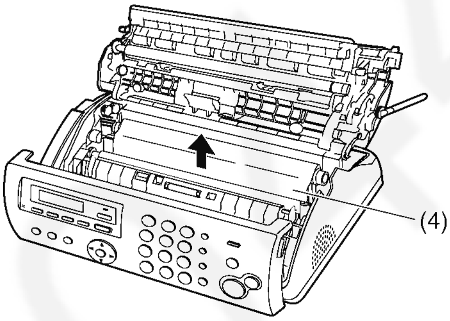
- **Remove the recording paper, then remove the paper tray beforehand, otherwise the paper may misfeed or jam.**



1. Disconnect the power cord and the telephone line cord.
2. Open the front cover (1), push the green button (2), then open the back cover (3).



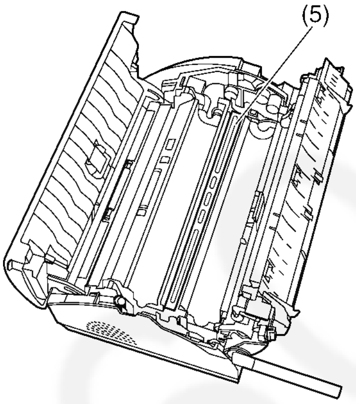
3. Remove the ink film (4).



4. Clean the thermal head (5) with a cloth moistened with isopropyl rubbing alcohol, and let it dry thoroughly.

Caution:

- **To prevent a malfunction due to static electricity, do not use a dry cloth and do not touch the thermal head directly.**



5. Re-install the ink film and close the covers (see step 4 to 7 on **Installing the Ink film** (P.52)).

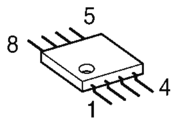
6. Install the paper tray, then insert the recording paper gently.
   (See **Installing the Paper Tray** (P.53) and **Installing the Recording Paper** (P.54))

7. Connect the power cord and the telephone line cord.

17 Miscellaneous

17.1. Terminal Guide of the ICs, Transistors and Diodes

17.1.1. Digital Board



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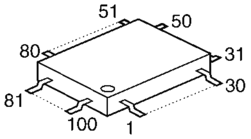
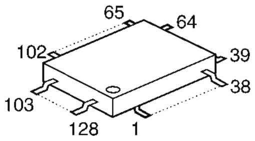

51
50
80
31
30
81
100
1

C1CB00001959


65
64
102
39
38
103
128
1

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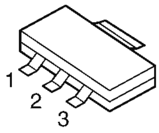
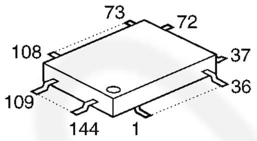
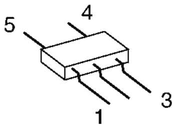


C0CBADD00010
C0CBABD00017
C0CBAYG00016


73
72
108
37
36
109
144
1

C1ZBZ0003300



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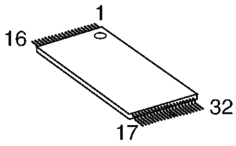
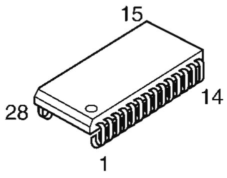
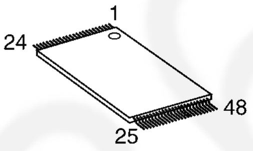
C0EBF0000419



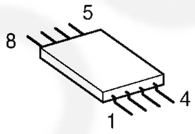
PNWI1******



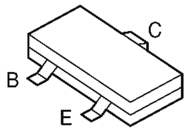
C3ABKY000001



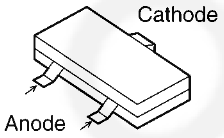
PNWI2******



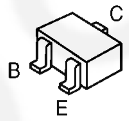
C0ABEB000064



B1ABDF000025, B1ADGE000004
B1ABDF000026, 2SB1218ARL

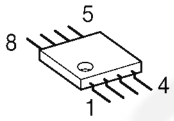

Cathode
Anode

B0DDCM000001



B1GBCFGG0028

17.1.2. Analog Board



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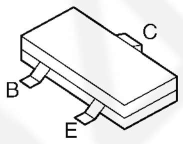
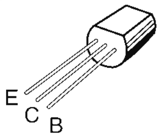
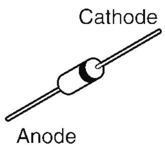


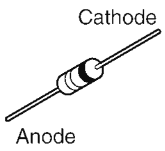
PQVTDTC143E



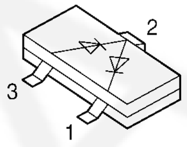
B1AAKL000006


Cathode
Anode

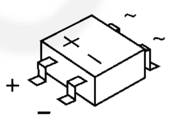
B0EAAD000001


Cathode
Anode

MA4056

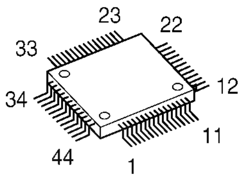


MA143

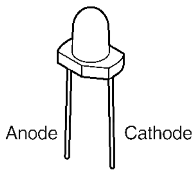


B0EDER000009

17.1.3. Operation Board / Microphone Board

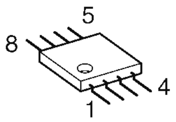

23
22
33
12
34
11
44
1

C1ZBZ0004019

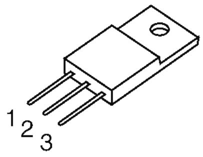

Anode
Cathode

B3AAA0000534

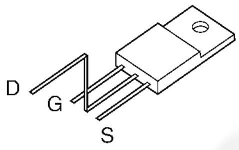
17.1.4. Power Supply Board



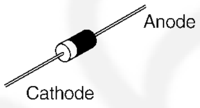
PFVIFA5518N



TA7804

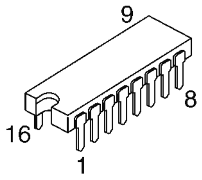


FQPF4N90C

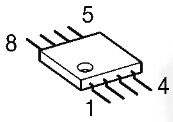

Anode
Cathode

PFVD1N4005

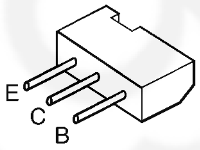
17.1.5. Interface Board



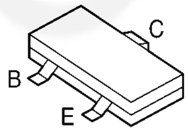
B1HAGFF00015



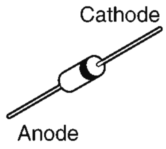
B1DHDD000026



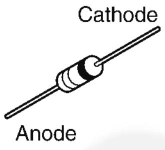
2SB1322



PQVTDTC143E
PQVTDTC144TU

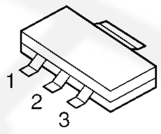

Cathode
Anode

B0BA7R900004

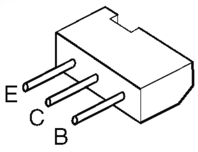

Cathode
Anode

PFVDRMRLS245

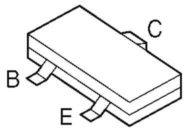
17.1.6. Charger Board



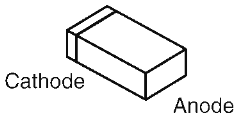
C0CBADD00010



2SB1237TV2Q

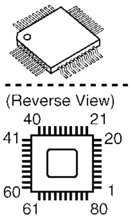


2SB1197KQ
B1GDCFJA0022

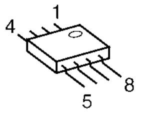

Cathode
Anode

MA8068M

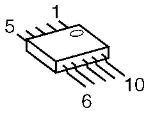
17.1.7. Cordless Handset Board


(Reverse View)
40
21
41
20
60
1
61
80

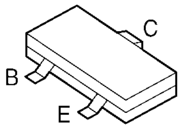
C1CB00002906



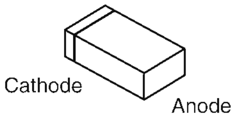
PQWIA130EXRR



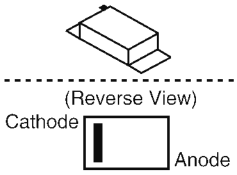
C1CB00001842



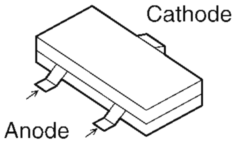
UN9219J, 2SC6054JSL
B1ADGE000004, B1ADCF000161


Cathode
Anode

MA8043M
MA2YD2120L
B0JCME000035


(Reverse View)
Cathode
Anode

B3ACB0000216


Cathode
Anode

B0DDCD000001

A049860

17.2. How to Replace the Flat Package IC

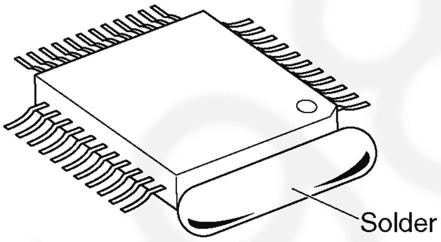
Even if you do not have the special tools (for example, a spot heater) to remove the Flat IC, with some solder (large amount), a soldering iron and a cutter knife, you can easily remove the ICs that have more than 100 pins.

17.2.1. Preparation

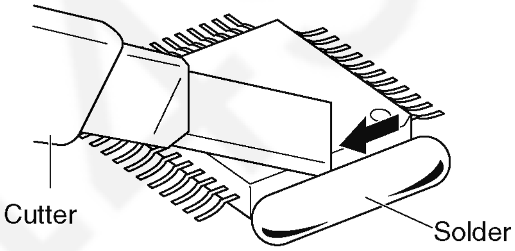
- PbF (: Pb free) Solder
- Soldering Iron
  Tip Temperature of 662°F ± 50°F (350°C ± 10°C)
  Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.
- Flux
  Recommended Flux: Specific Gravity → 0.82.
  Type → RMA (lower residue, non-cleaning type)
  Note: See **About Lead Free Solder (PbF: Pb free)** (P.6).

17.2.2. Flat Package IC Removal Procedure

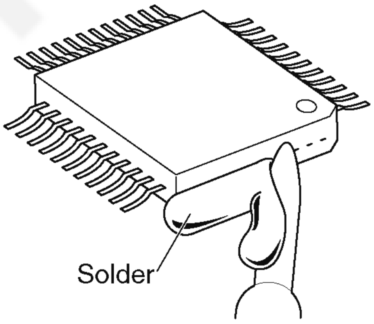
1. Put plenty of solder on the IC pins so that the pins can be completely covered.
   Note:
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.



3. While the solder melts, remove it together with the IC pins.

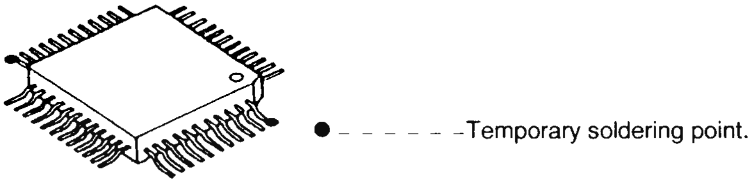


When you attach a new IC to the board, remove all solder left on the land with some tools like a soldering wire. If some solder is left at the joint on the board, the new IC will not be attached properly.

A04080860

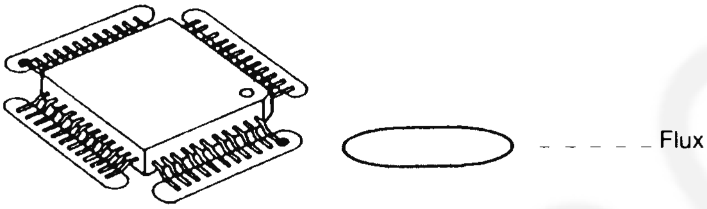
17.2.3. Flat Package IC Installation Procedure

1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.

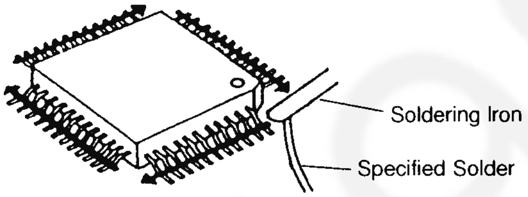

● Temporary soldering point.

*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux to all pins of the FLAT PACKAGE IC.

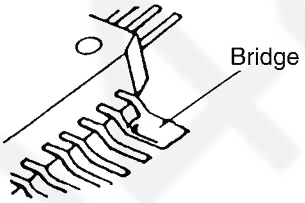


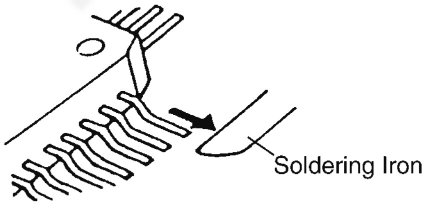
3. Solder the pins, sliding the soldering iron in the direction of the arrow.


Soldering Iron
Specified Solder

17.2.4. Bridge Modification Procedure

1. Lightly resolder the bridged portion.
2. Remove the remaining solder along the pins using a soldering iron as shown in the figure below.




Soldering Iron

A049860

17.3. How to Replace the Shield Case

17.3.1. Preparation

- PbF (: Pb free) Solder
- Soldering Iron

  Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

  Note:

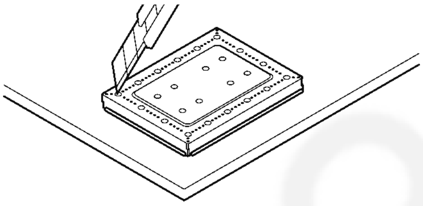
  We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

17.3.2. How to Remove the Shield Case

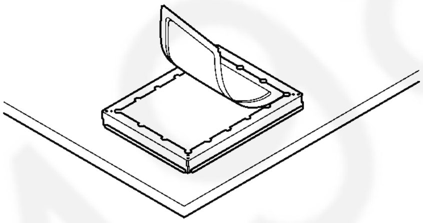
Note:

If you don’t have special tools (ex. Hot air disordering tool), conduct the following operations.

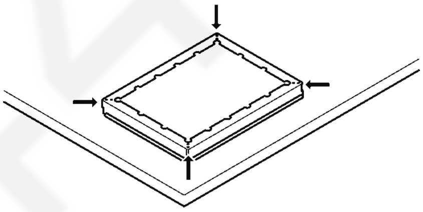
1. Cut the case along perforation.



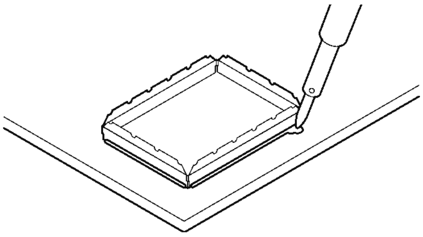
2. Remove the cut part.



3. Cut the four corners along perforation.



4. Remove the reminds by melting solder.



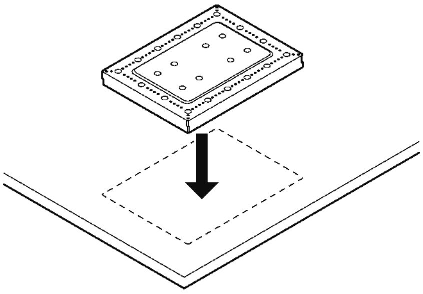
A049860

17.3.3. How to Install the Shield Case

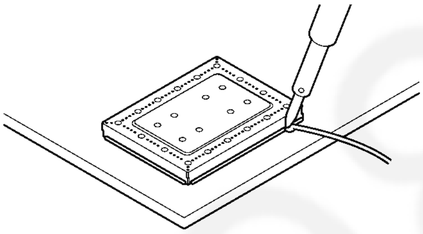
Note:

- If you don’t have special tools (ex. Hot air disordering tool), conduct the following operations.
- Shield case’s No. : PNMC1013Z

1. Put the shield case.



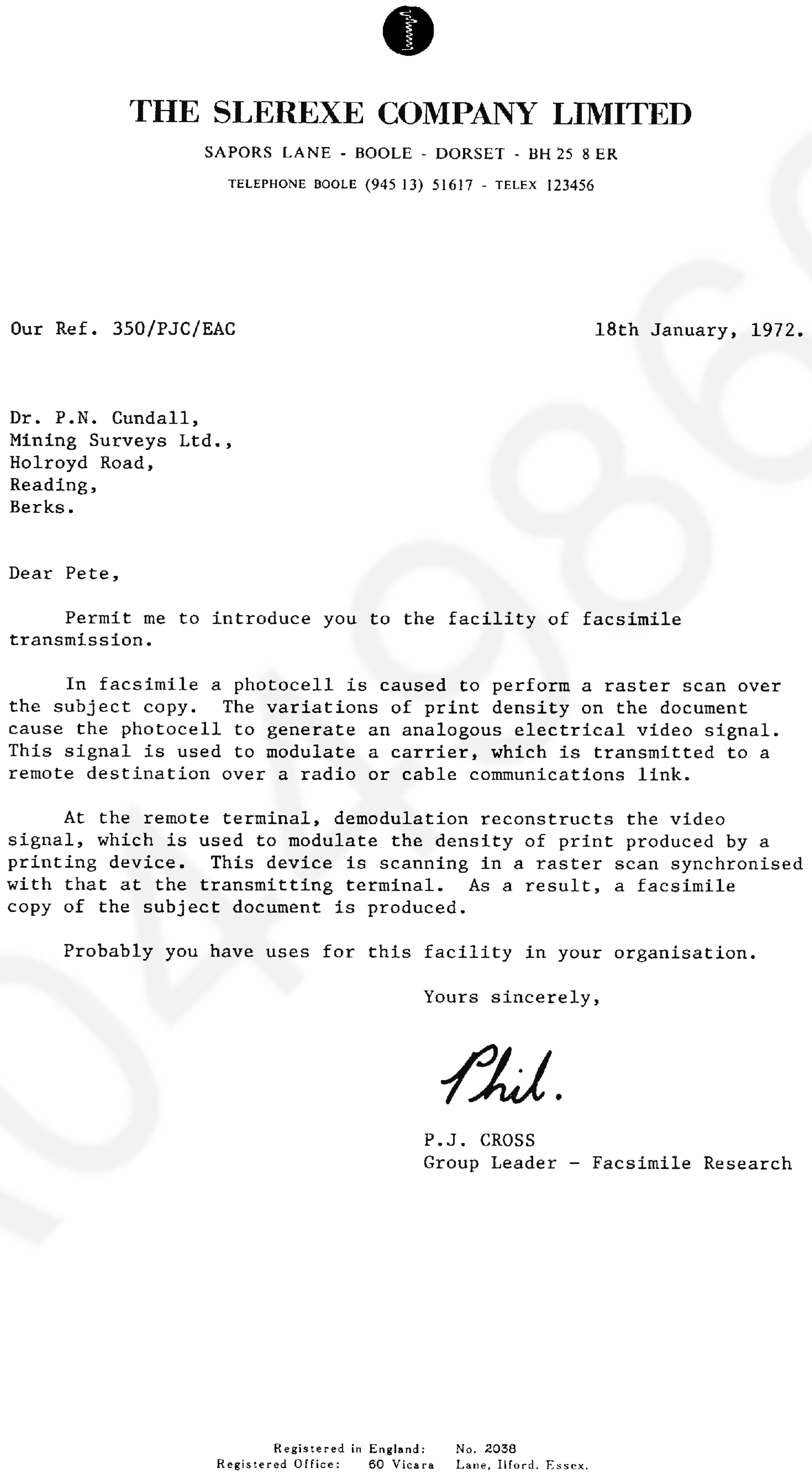
2. Solder the surroundings.



A049860

17.4. Test Chart

17.4.1. ITU-T No.1 Test Chart



THE SLEREXE COMPANY LIMITED
SAPORS LANE - BOOLE - DORSET - BH 25 8 ER
TELEPHONE BOOLE (945 13) 51617 - TELEX 123456

Our Ref. 350/PJC/EAC 18th January, 1972.

Dr. P.N. Cundall,
Mining Surveys Ltd.,
Holroyd Road,
Reading,
Berks.

Dear Pete,

Permit me to introduce you to the facility of facsimile transmission.

In facsimile a photocell is caused to perform a raster scan over the subject copy. The variations of print density on the document cause the photocell to generate an analogous electrical video signal. This signal is used to modulate a carrier, which is transmitted to a remote destination over a radio or cable communications link.

At the remote terminal, demodulation reconstructs the video signal, which is used to modulate the density of print produced by a printing device. This device is scanning in a raster scan synchronised with that at the transmitting terminal. As a result, a facsimile copy of the subject document is produced.

Probably you have uses for this facility in your organisation.

Yours sincerely,

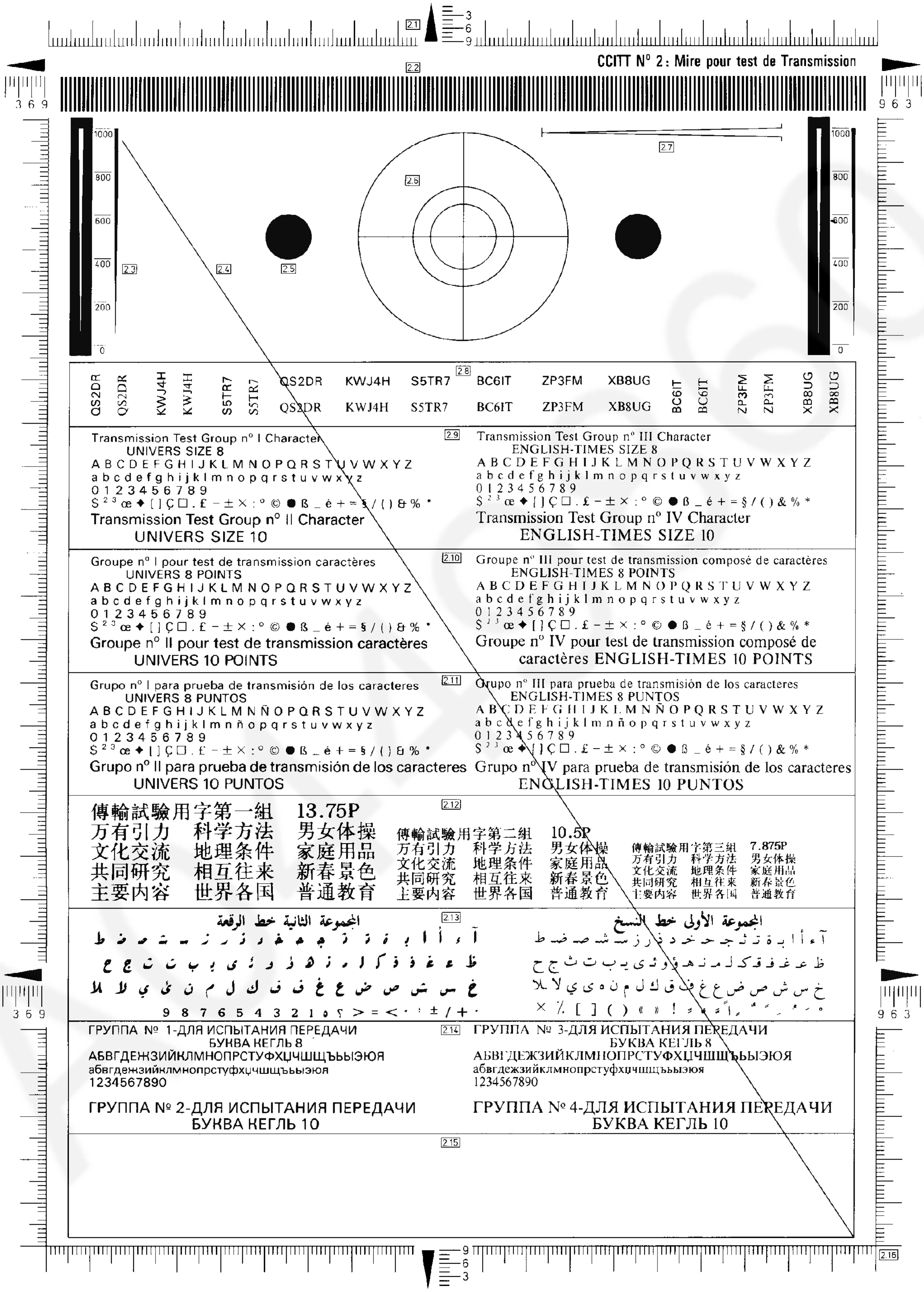
Phil.

P.J. CROSS
Group Leader - Facsimile Research

Registered in England: No. 2038
Registered Office: 60 Vicara Lane, Ilford. Essex.

A049860

17.4.2. ITU-T No.2 Test Chart


2.1
3
6
9
CCITT N° 2 : Mire pour test de Transmission
2.2
3 6 9
9 6 3
1000
800
600
400
200
0
2.3
2.4
2.5
2.6
2.7
2.8
QS2DR QS2DR KWJ4H KWJ4H S5TR7 S5TR7 QS2DR KWJ4H S5TR7 BC6IT ZP3FM XB8UG
QS2DR KWJ4H S5TR7 BC6IT ZP3FM XB8UG BC6IT BC6IT ZP3FM ZP3FM XB8UG XB8UG
2.9
2.10
2.11
2.12
2.13
2.14
2.15
2.16

Transmission Test Group n° I Character
UNIVERS SIZE 8
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Transmission Test Group n° II Character
UNIVERS SIZE 10

Transmission Test Group n° III Character
ENGLISH-TIMES SIZE 8
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Transmission Test Group n° IV Character
ENGLISH-TIMES SIZE 10

Groupe n° I pour test de transmission caractères
UNIVERS 8 POINTS
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Groupe n° II pour test de transmission caractères
UNIVERS 10 POINTS

Groupe n° III pour test de transmission composé de caractères
ENGLISH-TIMES 8 POINTS
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Groupe n° IV pour test de transmission composé de
caractères ENGLISH-TIMES 10 POINTS

Grupo n° I para prueba de transmisión de los caracteres
UNIVERS 8 PUNTOS
A B C D E F G H I J K L M N Ñ O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n ñ o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Grupo n° II para prueba de transmisión de los caracteres
UNIVERS 10 PUNTOS

Grupo n° III para prueba de transmisión de los caracteres
ENGLISH-TIMES 8 PUNTOS
A B C D E F G H I J K L M N Ñ O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n ñ o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9
$ ² ³ œ ✦ [ ] Ç □ . £ − ± × : ° © ● ß _ é + = § / ( ) & % *
Grupo n° IV para prueba de transmisión de los caracteres
ENGLISH-TIMES 10 PUNTOS

傳輸試驗用字第一組　13.75P
万有引力　科学方法　男女体操
文化交流　地理条件　家庭用品
共同研究　相互往来　新春景色
主要内容　世界各国　普通教育

傳輸試驗用字第二組　10.5P
万有引力　科学方法　男女体操
文化交流　地理条件　家庭用品
共同研究　相互往来　新春景色
主要内容　世界各国　普通教育

傳輸試驗用字第三組　7.875P
万有引力　科学方法　男女体操
文化交流　地理条件　家庭用品
共同研究　相互往来　新春景色
主要内容　世界各国　普通教育

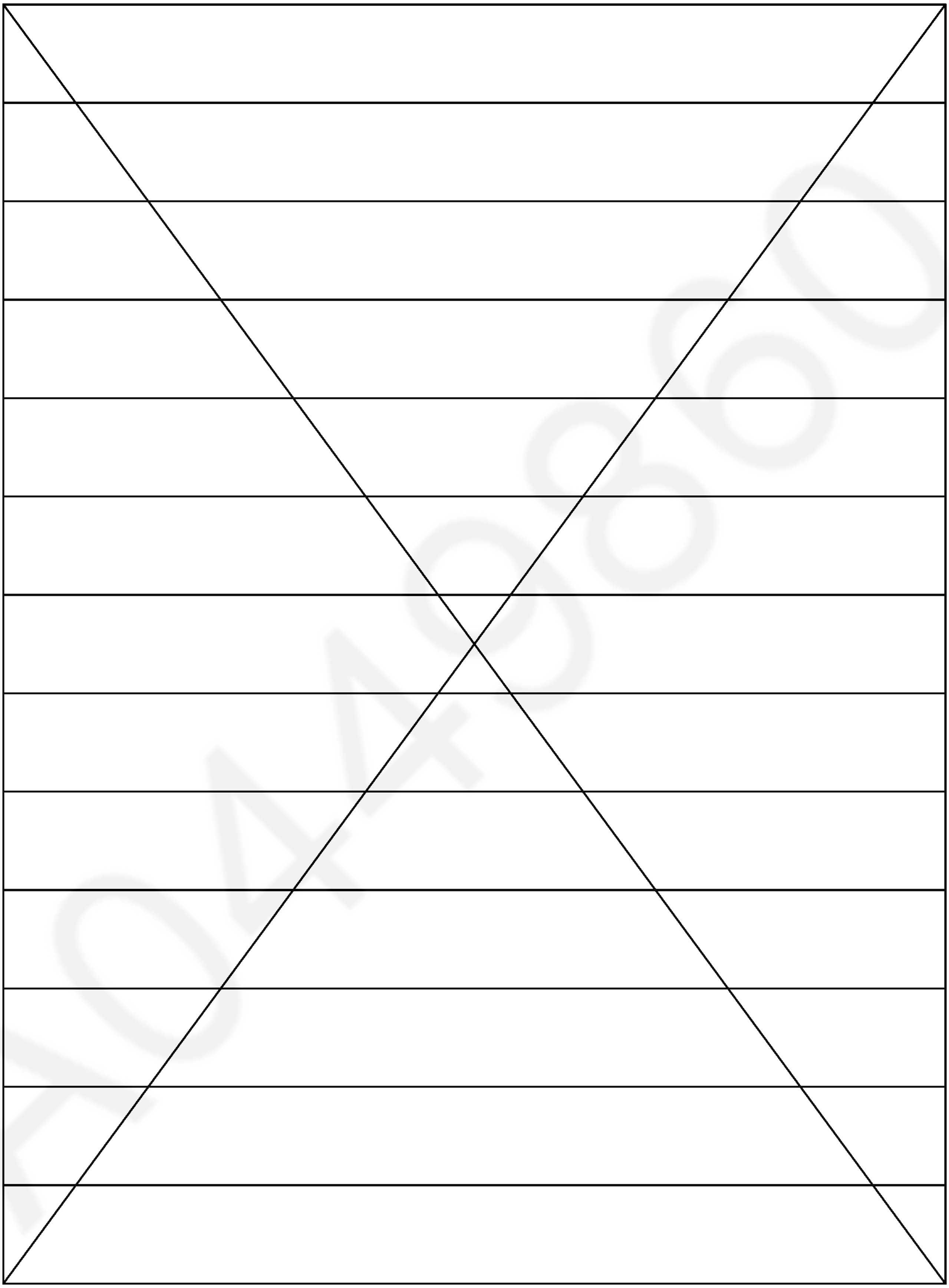
المجموعة الثانية خط الرقعة
آ ء أ ا ب ة ت ث ج ح خ د ذ ر ز س ش ص ض ط
ظ ع غ ف ق ك ل م ن ه ؤ و ئ ى ي ب ت ث ج ح
خ س ش ص ض ع غ ف ق ك ل م ن ئ ي لا لا
9 8 7 6 5 4 3 2 1 ٥ ؟ > = < · ، ± / + ·

المجموعة الأولى خط النسخ
آ ء أ ا ب ة ت ث ج ح خ د ذ ر ز س ش ص ض ط
ظ ع غ ف ق ك ل م ن ه ؤ و ئ ى ي ب ت ث ج ح
خ س ش ص ض ع غ ف ق ك ل م ن ه ى ي لا لا
× ٪ [ ] ( ) « » !

ГРУППА № 1-ДЛЯ ИСПЫТАНИЯ ПЕРЕДАЧИ
БУКВА КЕГЛЬ 8
АБВГДЕЖЗИЙКЛМНОПРСТУФХЦЧШЩЪЬЫЭЮЯ
абвгдежзийклмнопрстуфхцчшщъьыэюя
1234567890
ГРУППА № 2-ДЛЯ ИСПЫТАНИЯ ПЕРЕДАЧИ
БУКВА КЕГЛЬ 10

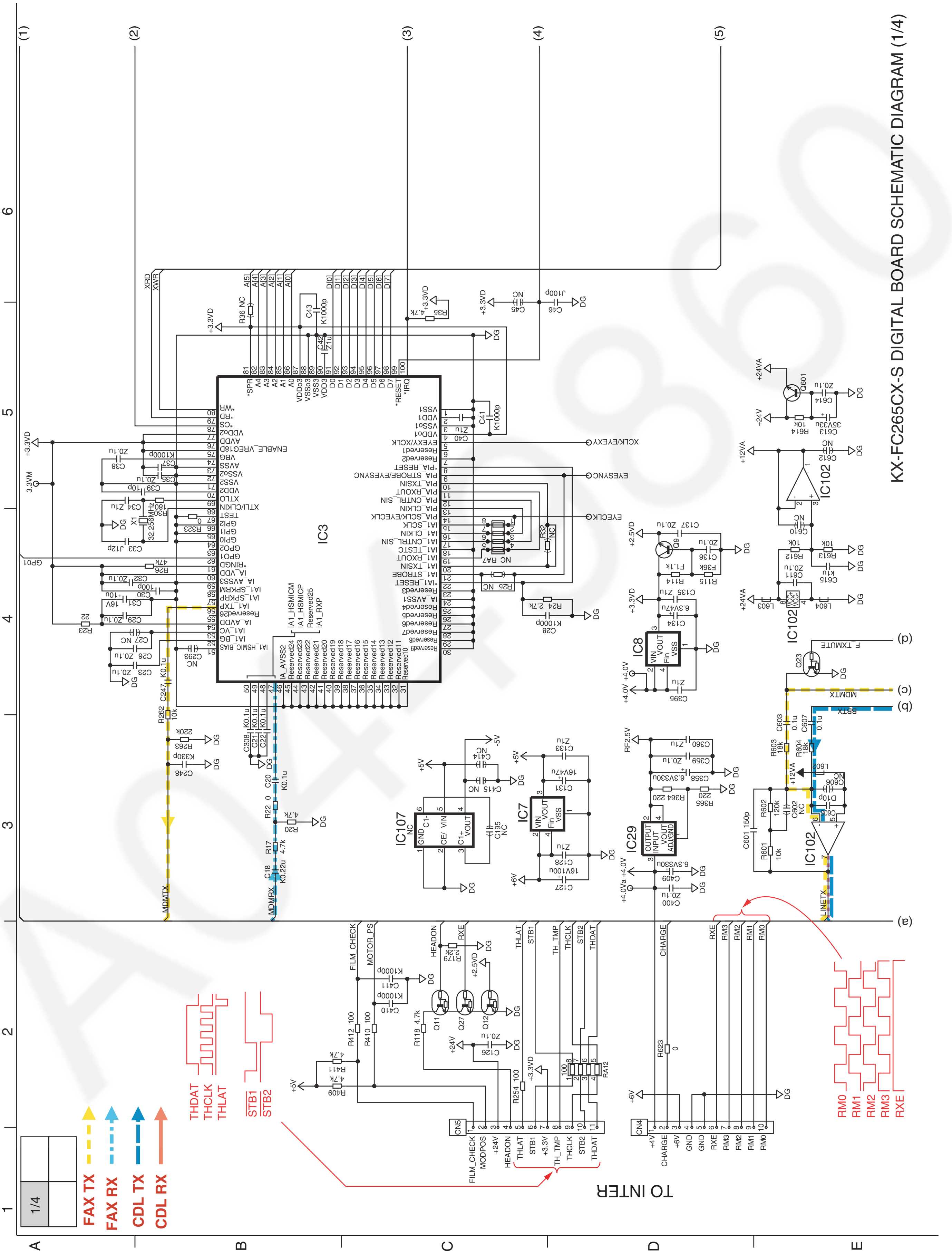
ГРУППА № 3-ДЛЯ ИСПЫТАНИЯ ПЕРЕДАЧИ
БУКВА КЕГЛЬ 8
АБВГДЕЖЗИЙКЛМНОПРСТУФХЦЧШЩЪЬЫЭЮЯ
абвгдежзийклмнопрстуфхцчшщъьыэюя
1234567890
ГРУППА № 4-ДЛЯ ИСПЫТАНИЯ ПЕРЕДАЧИ
БУКВА КЕГЛЬ 10

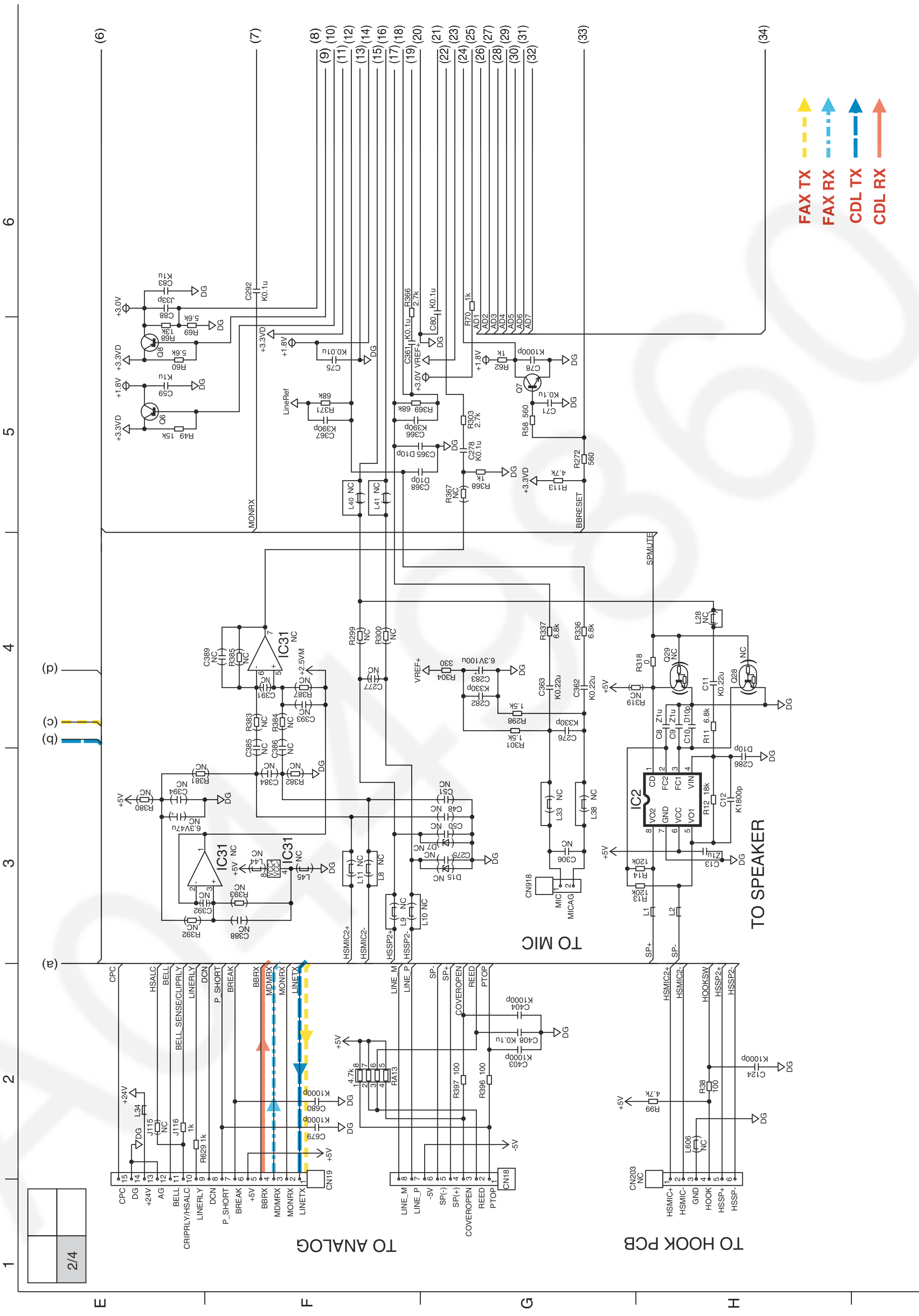
17.4.3. Test Chart



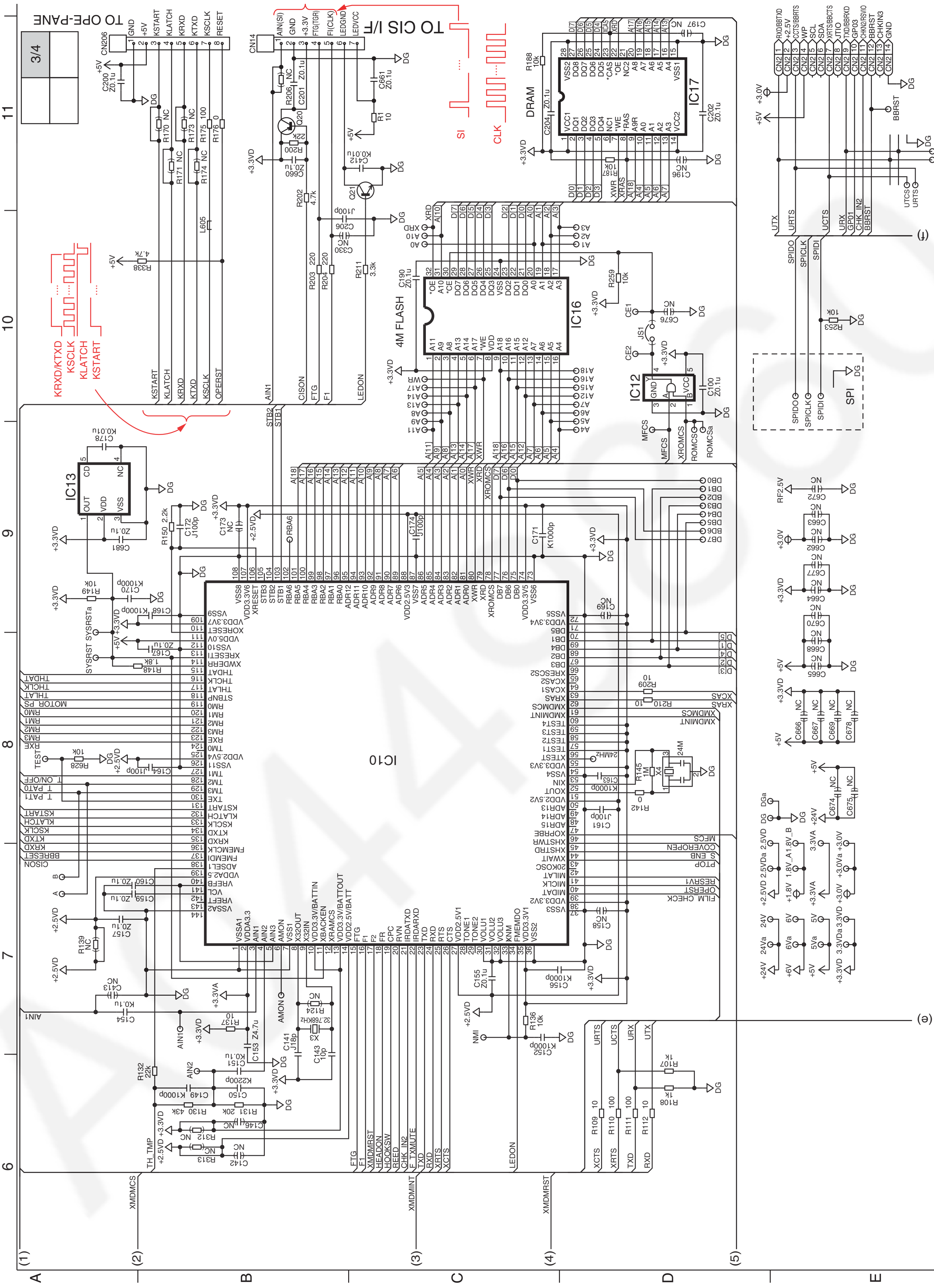
18 Schematic Diagram

18.1. Digital Board (PCB1)

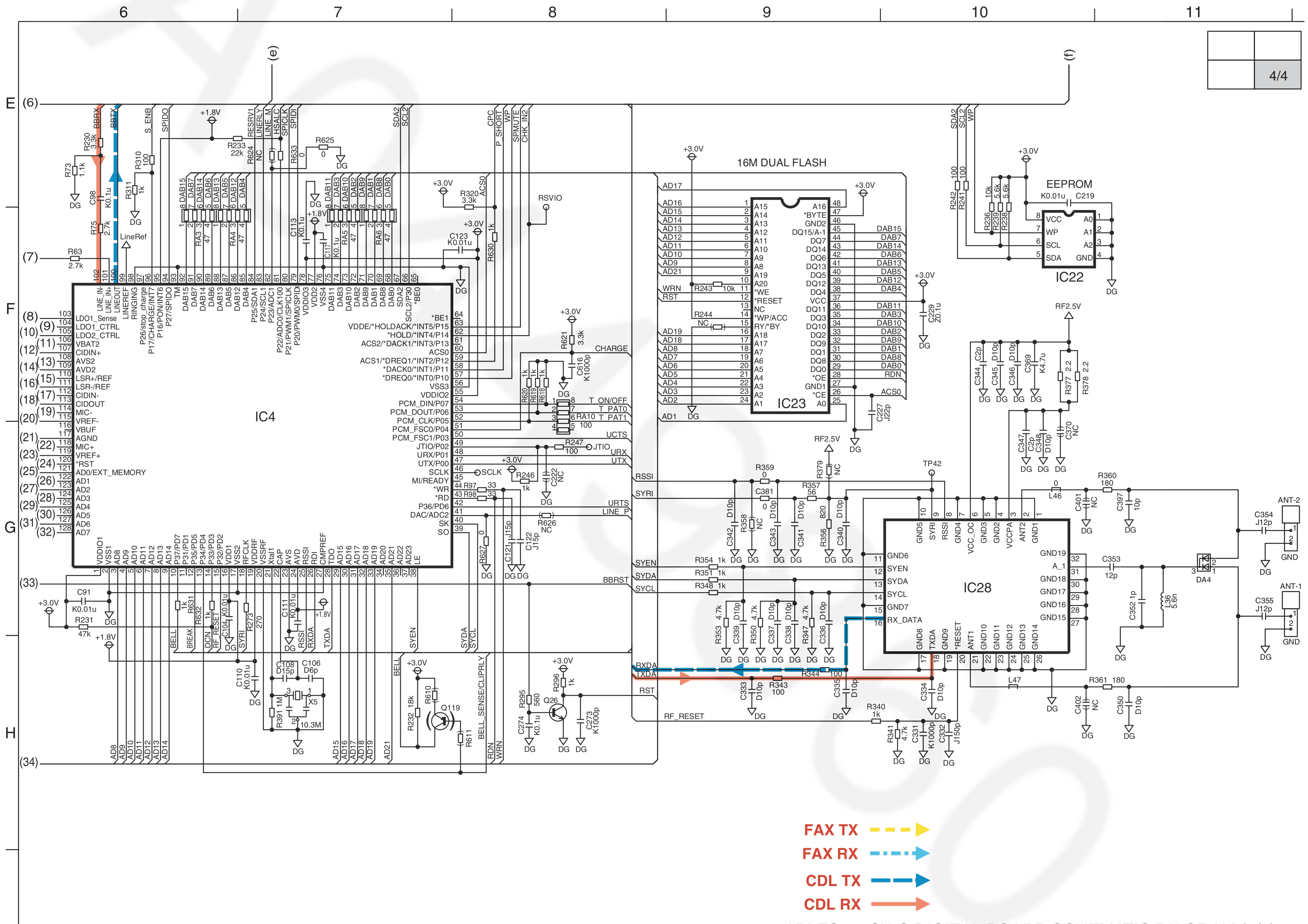

KX-FC265CX-S DIGITAL BOARD SCHEMATIC DIAGRAM (1/4)
IC3
IC7
IC8
IC29
IC102
IC107
CN4
CN5
TO INTER
FAX TX
FAX RX
CDL TX
CDL RX
1/4
THDAT
THCLK
THLAT
STB1
STB2
RM0
RM1
RM2
RM3
RXE
MDMTX
MDMRX
LINETX
F_TXMUTE
XCLKEYEXY
EYESYNC
EYECLK
GPO1
+3.3VD
+3.3VM
+24V
+24VA
+12VA
+5V
-5V
+6V
DG


FAX TX
FAX RX
CDL TX
CDL RX
TO ANALOG
TO HOOK PCB
TO MIC
TO SPEAKER
CN19
CN18
CN203 NC
CN918
IC31
IC2
Q6
Q7
Q8
Q28
Q29
CPC
DG
+24V
AG
BELL
CRIPRLY/HSALC
LINERLY
DCN
P_SHORT
BREAK
+5V
BBRX
MDMRX
MONRX
LINETX
HSALC
BELL_SENSE/CLIPRLY
LINE_M
LINE_P
-5V
SP(-)
SP(+)
COVEROPEN
REED
PTOP
SP-
SP+
HSMIC+
HSMIC-
GND
HOOK
HOOKSW
HSSP+
HSSP-
HSMIC2+
HSMIC2-
HSSP2+
HSSP2-
MIC
MICAG
BBRESET
SPMUTE
VREF+
LineRef
+2.5VM
AD1
AD2
AD3
AD4
AD5
AD6
AD7
CD
FC2
FC1
VIN
VO2
VCC
VO1
+3.3VD
+1.8V
+3.0V
+3.3V
RA13
(a)
(b)
(c)
(p)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
(18)
(19)
(20)
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
1
2
3
4
5
6
E
F
G
H
2/4

KX-FC265CX-S DIGITAL BOARD SCHEMATIC DIAGRAM (2/4)

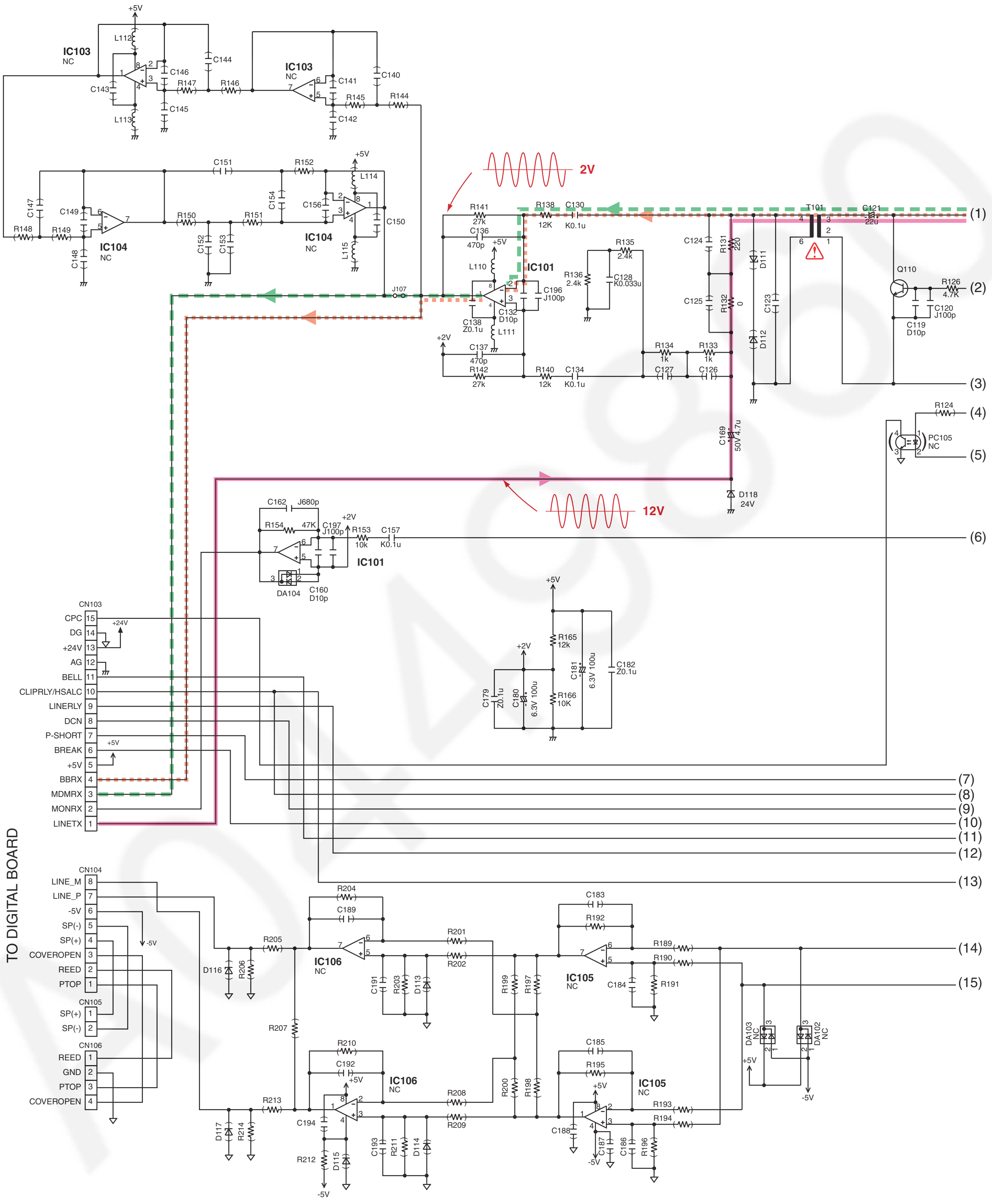

3/4
TO OPE-PANE
CN206
TO CIS I/F
CN14
SI
CLK
KRXD/KTXD
KSCLK
KLATCH
KSTART
IC13
IC10
4M FLASH
IC16
DRAM
IC17
IC12
SPI
CN2
X3 32.768kHz
X4 24M
(1)
(2)
(3)
(4)
(5)
(e)
(f)
A
B
C
D
E
6
7
8
9
10
11

KX-FC265CX-S DIGITAL BOARD SCHEMATIC DIAGRAM (3/4)

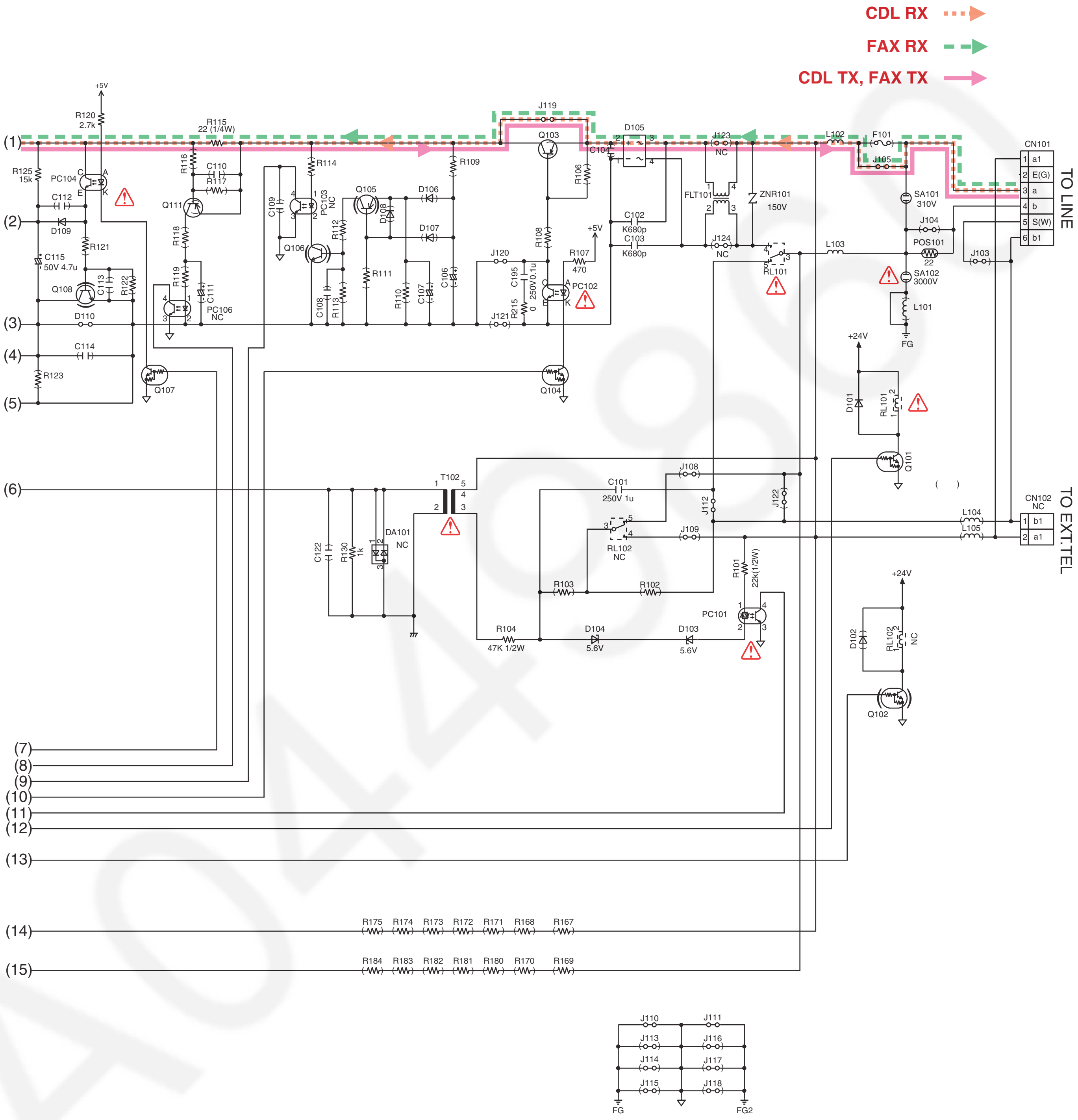

6
7
8
9
10
11
E
F
G
H
4/4
(e)
(f)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
(18)
(19)
(20)
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
IC4
IC23
16M DUAL FLASH
IC22
EEPROM
IC28
DA4
ANT-1
ANT-2
GND
Q26
Q119
X5
10.3M
BBRX
BBTX
S_ENB
SPIDO
RESRV1
LINERLY
LINE_M
HSALC
SPICLK
SPIDI
SDA2
SCL2
WP
CPC
P_SHORT
SPMUTE
CHK_IN2
RSVIO
CHARGE
T_ON/OFF
T_PAT0
T_PAT1
UCTS
URX
UTX
URTS
LINE_P
BBRST
RSSI
SYRI
SYEN
SYDA
SYCL
RXDA
TXDA
RST
RF_RESET
RDN
WRN
BELL
BELL_SENSE/CLIPRLY
BREAK
DCN
RF_RESET
ACS0
LineRef
SCLK
JTIO
TP42
RF2.5V
+3.0V
+1.8V
DG
R230 3.3k
R73 1.1k
C98 K0.1u
R75 2.7k
R63 2.7k
R310 100
R311 1k
R233 22k
R624 NC
R633 0
R625 0
R320 3.3k
R630 1k
C123 K0.01u
C113 K0.1u
C117 K0.1u
RA3 47
RA4 47
RA5 47
RA6 47
RA10 100
R621 3.3k
C616 K1000p
R620 1k
R619 1k
R618 1k
R247 100
R246 1k
C222 NC
R97 33
R98 33
R627 0
C121 J15p
C122 J15p
R626 NC
C91 K0.01u
R231 47k
R631 1k
R632 1k
C104 K0.01u
R273 270
C111 K0.01u
C110 K0.01u
C108 D15p
C106 D6p
R391 1M
R232 18k
R610
R611
R295 560
C274 K0.1u
R296 1k
C273 K1000p
R243 10k
R244 NC
C229 Z0.1u
C227 J22p
R242 100
R241 100
R236 10k
R239 5.6k
R238 5.6k
C219 K0.01u
C344 C2p
C345 D10p
C346 D10p
C369 K4.7u
R377 2.2
R378 2.2
C347 C2p
C348 D10p
C370 NC
R359 0
C381 0
R379 NC
R357 56
C342 D10p
R358 NC
C343 D10p
C341 D10p
R356 820
C340 D10p
R354 1k
R351 1k
R348 1k
R353 4.7k
C339 D10p
R350 4.7k
C337 D10p
C338 D10p
R347 4.7k
C336 D10p
C333 D10p
R343 100
R344 100
C335 D10p
R340 1k
R341 4.7k
C334 D10p
C331 K1000p
C332 J150p
L46 0
L47
C401 NC
C397 10p
R360 180
R361 180
C402 NC
C350 D10p
C353 12p
C352 1p
L36 5.6n
C354 J12p
C355 J12p
FAX TX
FAX RX
CDL TX
CDL RX

KX-FC265CX-S DIGITAL BOARD SCHEMATIC DIAGRAM (4/4)

18.2. Analog Board (PCB2)

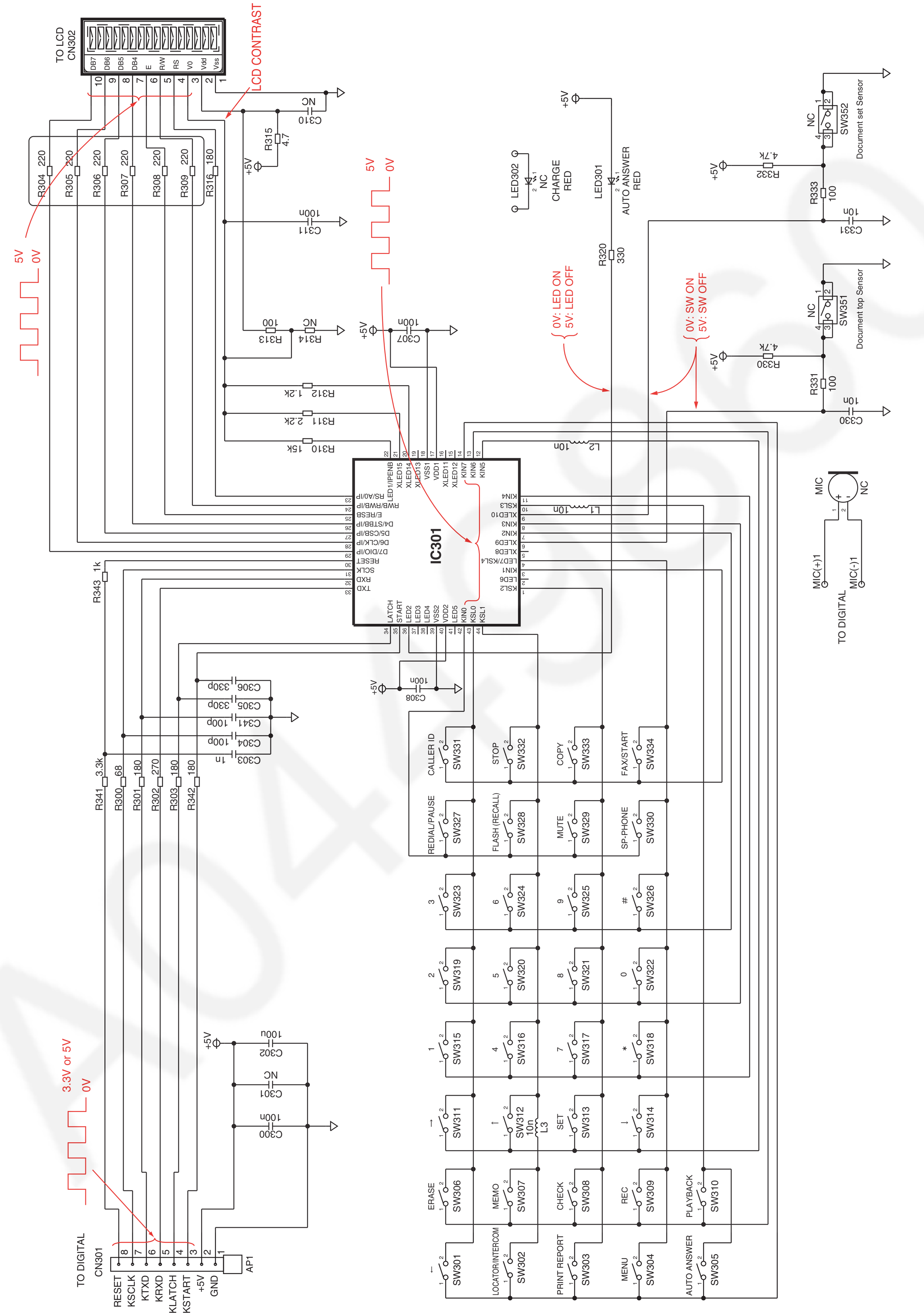

IC103
NC
+5V
L112
C144
C146
C143
R147
R146
C145
L113
IC103
NC
C141
C140
R145
R144
C142
C151
R152
+5V
L114
C147
C149
R148
R149
IC104
NC
C148
R150
R151
C152
C153
C154
C156
IC104
NC
L115
C150
J107
2V
R141
27k
C136
470p
R138
12K
C130
K0.1u
+5V
L110
IC101
C196
J100p
C138
Z0.1u
C132
D10p
L111
+2V
C137
470p
R142
27k
R140
12k
C134
K0.1u
R135
2.4k
R136
2.4k
C128
K0.033u
C124
R131
220
C125
R132
0
R134
1k
R133
1k
C127
C126
D111
D112
C123
T101
C121
22u
Q110
R126
4.7K
C120
J100p
C119
D10p
R124
PC105
NC
C169
50V4.7u
D118
24V
12V
C162
J680p
R154
47K
C197
J100p
+2V
R153
10k
C157
K0.1u
IC101
DA104
C160
D10p
+5V
R165
12k
+2V
C181
6.3V 100u
C182
Z0.1u
C179
Z0.1u
C180
6.3V 100u
R166
10K
(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
CN103
CPC 15
DG 14
+24V 13
AG 12
BELL 11
CLIPRLY/HSALC 10
LINERLY 9
DCN 8
P-SHORT 7
BREAK 6
+5V 5
BBRX 4
MDMRX 3
MONRX 2
LINETX 1
+24V
+5V
TO DIGITAL BOARD
CN104
LINE_M 8
LINE_P 7
-5V 6
SP(-) 5
SP(+) 4
COVEROPEN 3
REED 2
PTOP 1
-5V
CN105
SP(+) 1
SP(-) 2
CN106
REED 1
GND 2
PTOP 3
COVEROPEN 4
R204
C189
R205
D116
R206
IC106
NC
R201
R202
C191
R203
D113
R199
R197
C183
R192
IC105
NC
R189
R190
C184
R191
R207
R210
C192
+5V
IC106
NC
R213
R208
R209
R200
R198
C185
R195
+5V
IC105
NC
R193
R194
D117
R214
C194
R212
D115
-5V
C193
R211
D114
C188
C187
-5V
C186
R196
DA103
NC
+5V
DA102
NC
-5V

KX-FC265CX-S ANALOG BOARD SCHEMATIC DIAGRAM (1/2)


CDL RX
FAX RX
CDL TX, FAX TX
TO LINE
TO EXT.TEL
CN101
1 a1
2 E(G)
3 a
4 b
5 S(W)
6 b1
CN102
NC
1 b1
2 a1
(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
+5V
R120
2.7k
R115
22 (1/4W)
R125
15k
PC104
C112
D109
R121
C115
50V 4.7u
Q108
C113
R122
D110
C114
R123
Q107
R116
C110
R117
Q111
R118
R119
C111
PC106
NC
R114
C109
PC103
NC
Q105
Q106
R112
R113
C108
D108
D106
D107
R111
R110
C107
C106
R109
J119
Q103
R106
R108
J120
C195
250V0.1u
R215
0
J121
R107
470
PC102
Q104
D105
C104
C102
K680p
C103
K680p
J123
NC
FLT101
J124
NC
ZNR101
150V
RL101
L102
F101
J105
SA101
310V
J104
POS101
22
SA102
3000V
L101
FG
L103
J103
+24V
D101
RL101
Q101
T102
DA101
NC
C122
R130
1k
C101
250V 1u
J108
J112
J122
RL102
NC
J109
R103
R102
R101
22k(1/2W)
PC101
R104
47K 1/2W
D104
5.6V
D103
5.6V
L104
L105
D102
RL102
NC
Q102
R175
R174
R173
R172
R171
R168
R167
R184
R183
R182
R181
R180
R170
R169
J110
J111
J113
J116
J114
J117
J115
J118
FG
FG2

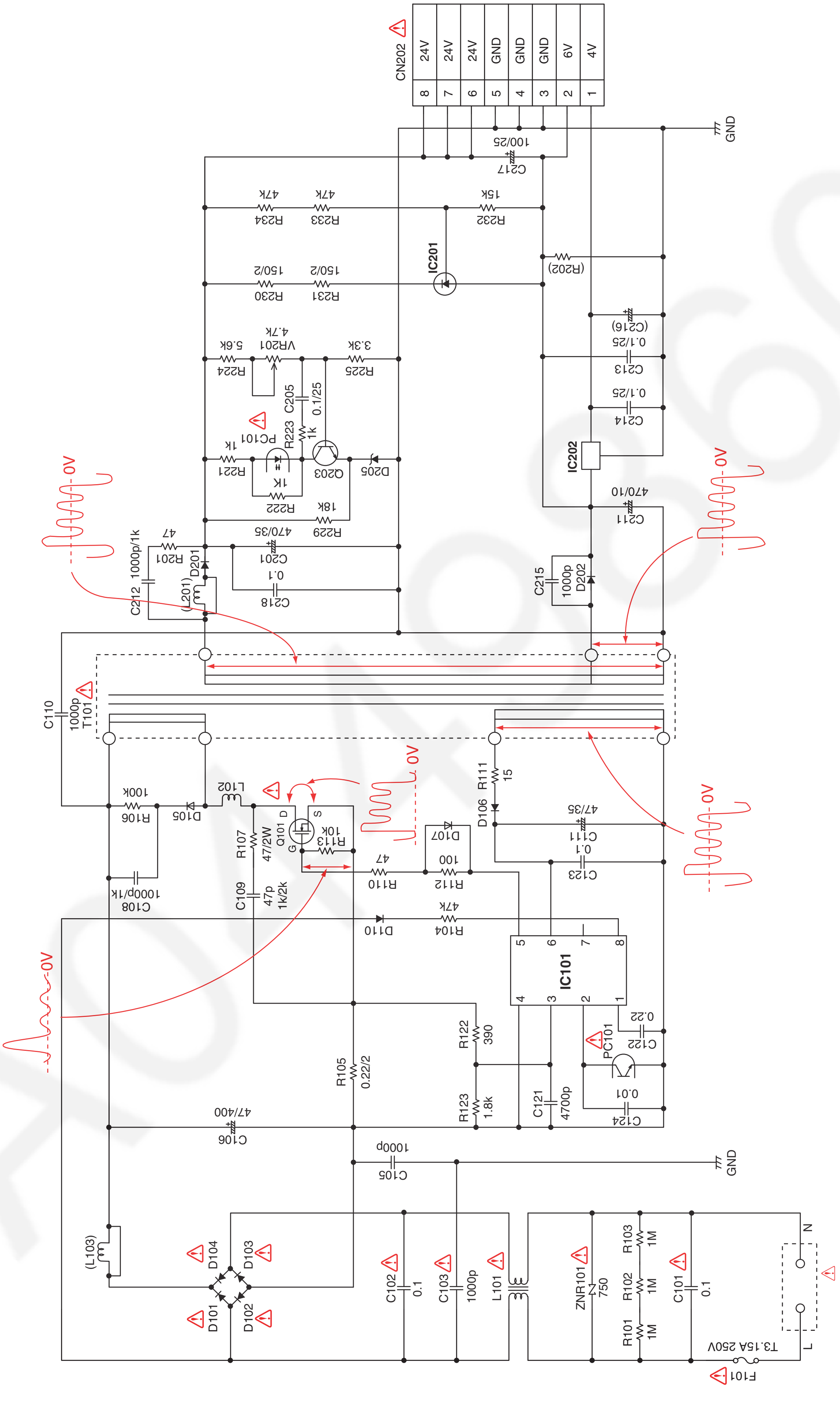
KX-FC265CX-S ANALOG BOARD SCHEMATIC DIAGRAM (2/2)

18.3. Operation Board (PCB3) / MIC Board (PCB9)


TO LCD
CN302
DB7
DB6
DB5
DB4
E
R/W
RS
V0
Vdd
Vss
10
9
8
7
6
5
4
3
2
1
LCD CONTRAST
C310
NC
R315
4.7
+5V
R304 220
R305 220
R306 220
R307 220
R308 220
R309 220
R316 180
5V
0V
C311
100n
R313
100
R314
NC
C307
100n
R312 1.2k
R311 2.2k
R310 15k
IC301
LED1/IPENB
XLED15
XLED14
XLED13
VSS1
VDD1
XLED11
XLED12
KIN7
KIN6
KIN5
RS/A0/IP
RWB/RWB/IP
E/RESB
D4/STBB/IP
D5/CSB/IP
D6/CLK/IP
D7/DIO/IP
RESET
SCLK
RXD
TXD
KIN4
KSL3
XLED10
KIN3
KIN2
XLED9
XLED8
LED7/KSL4
KIN1
LED6
KSL2
LATCH
START
LED2
LED3
LED4
VSS2
VDD2
LED5
KIN0
KSL0
KSL1
L1
10n
L2
10n
LED302
NC
CHARGE
RED
LED301
AUTO ANSWER
RED
R320
330
0V: LED ON
5V: LED OFF
0V: SW ON
5V: SW OFF
R332
4.7K
R333
100
C331
10n
NC
SW352
Document set Sensor
R330
4.7K
R331
100
C330
10n
SW351
Document top Sensor
MIC
NC
MIC(+)1
MIC(-)1
TO DIGITAL
R343 1k
C308
100n
C306 330p
C305 330p
C341 100p
C304 100p
C303 1n
R341 3.3k
R300 68
R301 180
R302 270
R303 180
R342 180
3.3V or 5V
0V
C302
100u
C301
NC
C300
100n
TO DIGITAL
CN301
RESET
KSCLK
KTXD
KRXD
KLATCH
KSTART
+5V
GND
AP1
CALLER ID
SW331
STOP
SW332
COPY
SW333
FAX/START
SW334
REDIAL/PAUSE
SW327
FLASH (RECALL)
SW328
MUTE
SW329
SP-PHONE
SW330
3
SW323
6
SW324
9
SW325
#
SW326
2
SW319
5
SW320
8
SW321
0
SW322
1
SW315
4
SW316
7
SW317
*
SW318
←
SW311
→
SW312
10n
L3
SET
SW313
↓
SW314
ERASE
SW306
MEMO
SW307
CHECK
SW308
REC
SW309
PLAYBACK
SW310
↑
SW301
LOCATOR/INTERCOM
SW302
PRINT REPORT
SW303
MENU
SW304
AUTO ANSWER
SW305

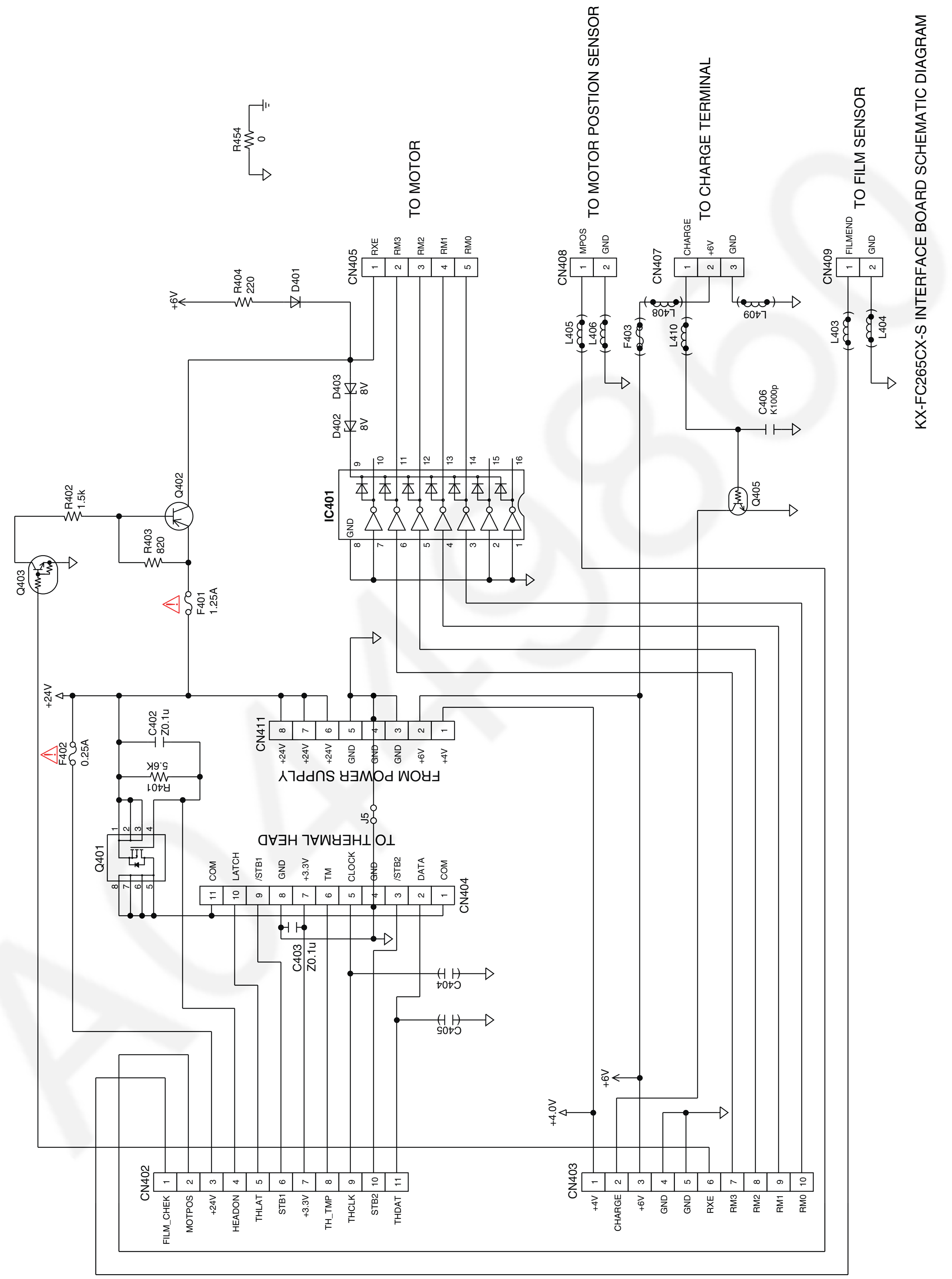
KX-FC265 OPERATION BOARD SCHEMATIC DIAGRAM

18.4. Power Supply Board (PCB4)

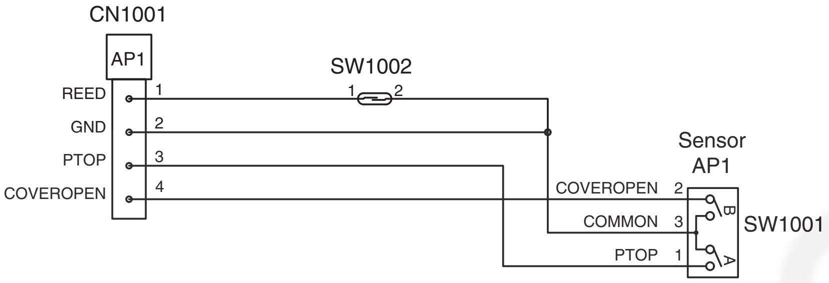

CN202
8 24V
7 24V
6 24V
5 GND
4 GND
3 GND
2 6V
1 4V
GND
C217 100/25
R234 47k
R233 47k
R232 15k
IC201
R230 150/2
R231 150/2
(R202)
(C216)
C213 0.1/25
C214 0.1/25
IC202
C211 470/10
R224 5.6k
VR201 4.7k
R225 3.3k
C205 0.1/25
R223 1k
PC101
R221 1k
R222 1k
Q203
D205
R229 18k
C201 470/35
C218 0.1
R201 47
C212 1000p/1k
D201
(L201)
C215 1000p
D202
C110 1000p
T101
R106 100k
D105
L102
R107 47/2W
Q101
D
S
G
R113 10k
D107
R110 47
R112 100
C108 1000p/1k
C109 47p 1k/2k
D110
R104 47k
R111 15
D106
C111 47/35
C123 0.1
IC101
R122 390
R123 1.8k
R105 0.22/2
C121 4700p
PC101
C122 0.22
C124 0.01
C106 47/400
C105 1000p
GND
(L103)
D104
D103
D101
D102
C102 0.1
C103 1000p
L101
ZNR101 750
R103 1M
R102 1M
R101 1M
C101 0.1
N
L
F101 T3.15A 250V
0V
0V
0V
0V
0V

KX-FC265 POWER SUPPLY BOARD SCHEMATIC DIAGRAM

18.5. Interface Board (PCB5)

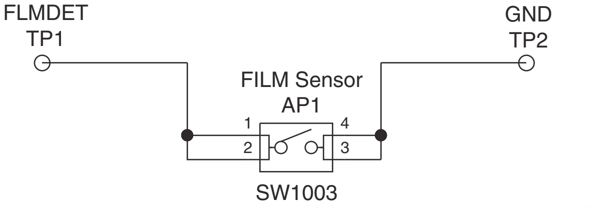

KX-FC265CX-S INTERFACE BOARD SCHEMATIC DIAGRAM
TO MOTOR
TO MOTOR POSTION SENSOR
TO CHARGE TERMINAL
TO FILM SENSOR
FROM POWER SUPPLY
TO THERMAL HEAD
CN405
RXE
RM3
RM2
RM1
RM0
CN408
MPOS
GND
CN407
CHARGE
+6V
GND
CN409
FILMEND
GND
CN411
+24V
+24V
+24V
GND
GND
GND
+6V
+4V
CN404
COM
LATCH
/STB1
GND
+3.3V
TM
CLOCK
GND
/STB2
DATA
COM
CN402
FILM_CHEK
MOTPOS
+24V
HEADON
THLAT
STB1
+3.3V
TH_TMP
THCLK
STB2
THDAT
CN403
+4V
CHARGE
+6V
GND
GND
RXE
RM3
RM2
RM1
RM0
IC401
GND
R454
0
R404
220
D401
+6V
D403
8V
D402
8V
Q402
R402
1.5k
R403
820
Q403
F401
1.25A
+24V
F402
0.25A
C402
Z0.1u
R401
5.6K
Q401
J5
C403
Z0.1u
C404
C405
L405
L406
F403
L408
L410
L409
C406
K1000p
Q405
L403
L404
+4.0V
+6V

18.6. Sensor Board (PCB6)


CN1001
AP1
REED
GND
PTOP
COVEROPEN
1
2
3
4
SW1002
1
2
Sensor
AP1
COVEROPEN 2
COMMON 3
PTOP 1
B
A
SW1001

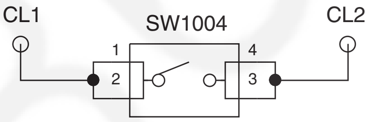
KX-FC265 SENSOR BOARD SCHEMATIC DIAGRAM

18.7. Film End Sensor Board (PCB7)


FLMDET
TP1
GND
TP2
FILM Sensor
AP1
1
2
4
3
SW1003

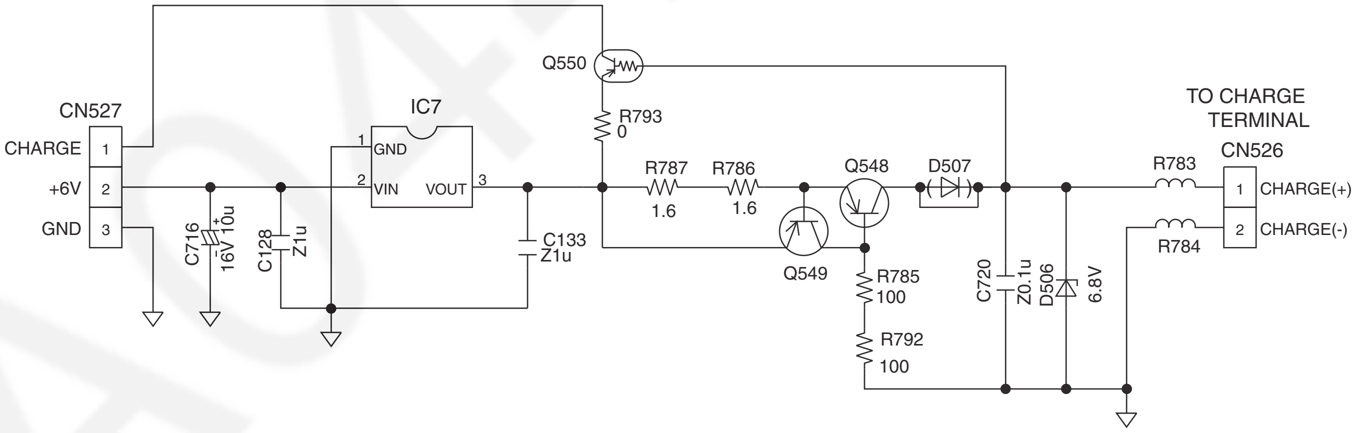
KX-FC265 FILM END SENSOR BOARD
SCHEMATIC DIAGRAM

18.8. Motor Position Sensor Board (PCB8)


CL1
SW1004
CL2
1
2
4
3

KX-FC265 MOTOR POSITION SENSOR BOARD
SCHEMATIC DIAGRAM

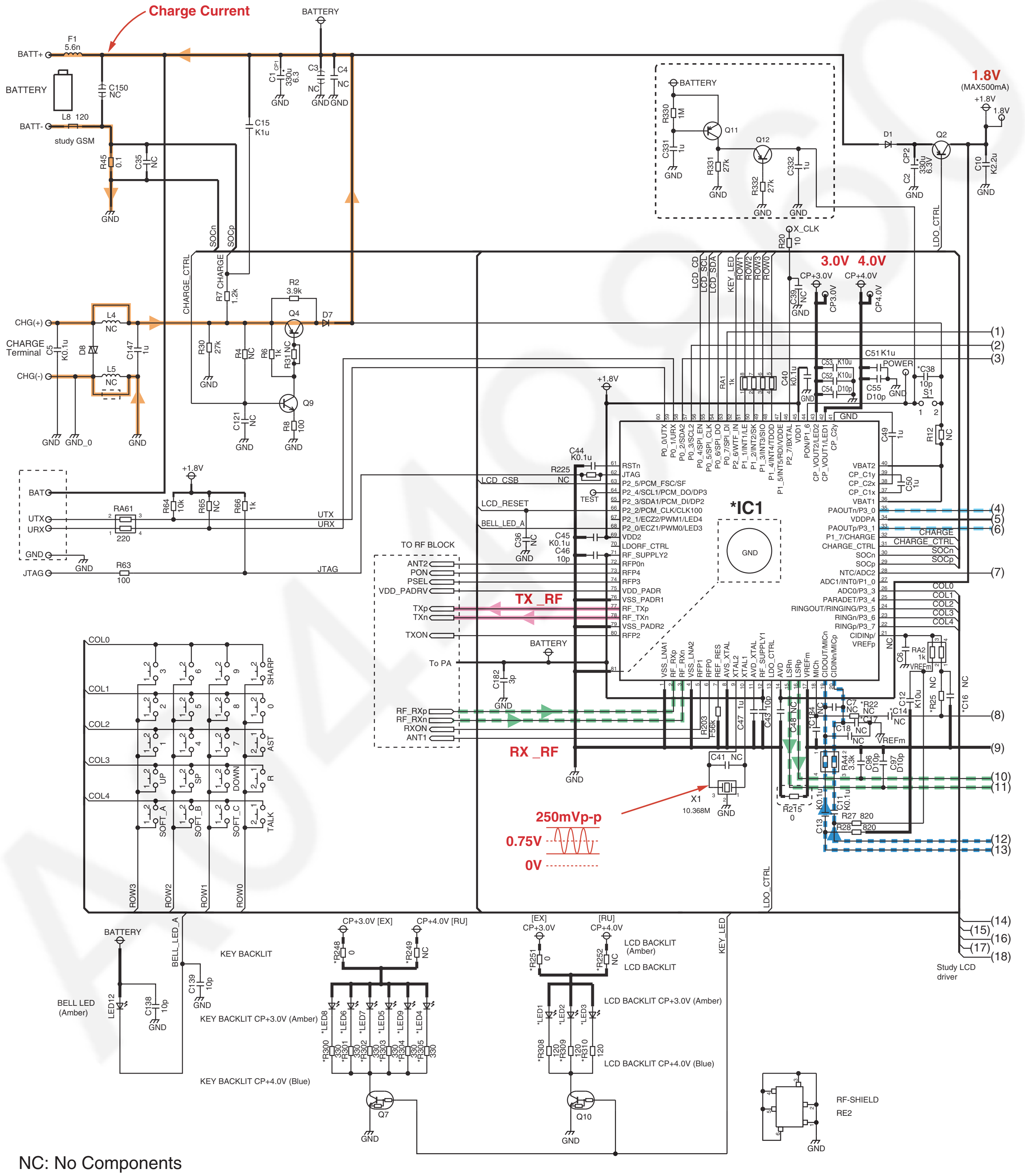
18.9. Charger Board-A (PCB10)


CN527
CHARGE 1
+6V 2
GND 3
C716
16V 10u
C128
Z1u
IC7
1 GND
2 VIN
VOUT 3
C133
Z1u
Q550
R793
0
R787
1.6
R786
1.6
Q549
Q548
D507
R785
100
R792
100
C720
Z0.1u
D506
6.8V
TO CHARGE
TERMINAL
R783
R784
CN526
1 CHARGE(+)
2 CHARGE(-)

KX-FC265 CHARGER BOARD SCHEMATIC DIAGRAM

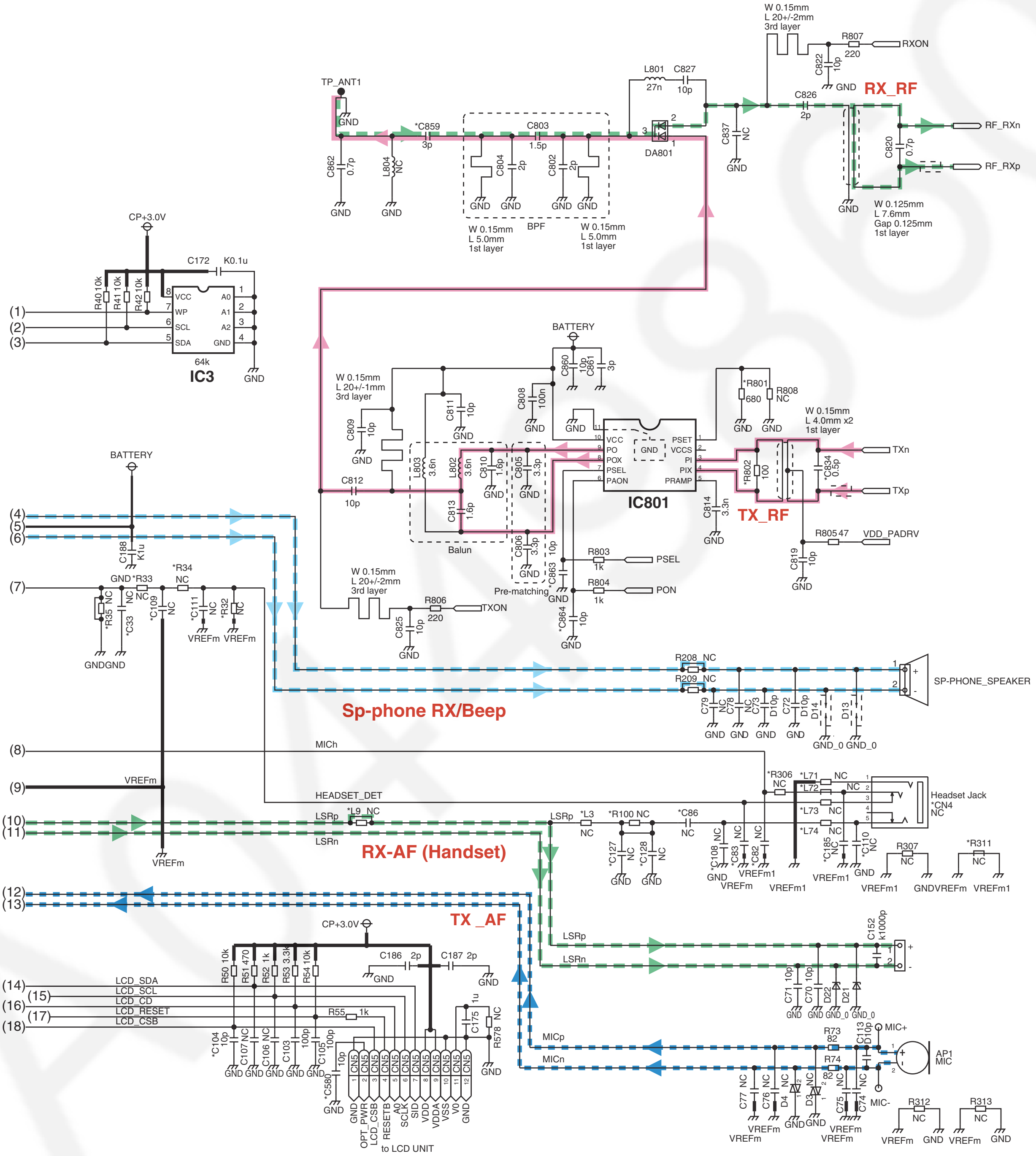
A0A49860

18.10. Cordless Handset Board (PCB100)


Charge Current
BATTERY
BATT+
F1
5.6n
BATTERY
C150
NC
L8 120
BATT-
study GSM
R45
0.1
C35
NC
GND
C1
330u
6.3
C3
NC
C4
NC
GND
C15
K1u
SOCn
SOCp
CHARGE_CTRL
R7 CHARGE
1.2k
R2
3.9k
Q4
D7
CHG(+)
CHARGE
Terminal
CHG(-)
L4
NC
L5
NC
C5
K0.1u
D8
C147
1u
R30
27k
R4
NC
R6
1k
R31 NC
Q9
R8
100
C121
NC
GND_0
BAT
UTX
URX
GND
JTAG
RA61
220
+1.8V
R64
10k
R65
NC
R66
1k
R63
100
UTX
URX
JTAG
BATTERY
R330
1M
Q11
Q12
C331
1u
R331
27k
R332
27k
C332
1u
1.8V
(MAX500mA)
+1.8V
D1
Q2
CP2
330u
6.3V
C2
C10
K2.2u
LDO_CTRL
X_CLK
R20
10
3.0V
4.0V
CP+3.0V
CP+4.0V
C39
NC
CP3.0V
CP4.0V
LCD_CD
LCD_SCL
LCD_SDA
KEY_LED
ROW1
ROW2
ROW3
ROW0
RA1
1k
C40
K0.1u
C53 K10u
C52 K10u
C54 D10p
C51 K1u
POWER
C55
D10p
*C38
10p
S1
C49
1u
R12
NC
(1)
(2)
(3)
C44
K0.1u
R225
NC
LCD_CSB
LCD_RESET
BELL_LED_A
TEST
C36
NC
C45
K0.1u
C46
10p
*IC1
GND
RSTn
JTAG
P2_5/PCM_FSC/SF
P2_4/SCL1/PCM_DO/DP3
P2_3/SDA1/PCM_DI/DP2
P2_2/PCM_CLK/CLK100
P2_1/ECZ2/PWM1/LED4
P2_0/ECZ1/PWM0/LED3
VDD2
LDORF_CTRL
RF_SUPPLY2
RFP0n
RFP4
RFP3
VDD_PADR
VSS_PADR1
RF_TXp
RF_TXn
VSS_PADR2
RFP2
P0_0/UTX
P0_1/URX
P0_2/SDA2
P0_3/SCL2
P0_4/SPI_EN
P0_5/SPI_CLK
P0_6/SPI_DO
P0_7/SPI_DI
P2_6/WTF_IN
P1_1/INT1/LE
P1_2/INT2/SK
P1_3/INT3/SIO
P1_4/INT4/TDOD
P1_5/INT5/RDI/VDDE
P2_7/BXTAL
VDD1
PON/P1_6
CP_VOUT2/LED2
CP_VOUT1/LED1
CP_C2y
VBAT2
CP_C1y
CP_C2x
CP_C1x
VBAT1
PAOUTn/P3_0
VDDPA
PAOUTp/P3_1
P1_7/CHARGE
CHARGE_CTRL
SOCn
SOCp
NTC/ADC2
ADC1/INT0/P1_0
ADC0/P3_3
PARADET/P3_4
RINGOUT/RINGING/P3_5
RINGn/P3_6
RINGp/P3_7
CIDINp/
VREFp
VSS_LNA1
RF_RXp
RF_RXn
VSS_LNA2
RFP1
RFP0
REF_RES
AVS_XTAL
XTAL2
XTAL1
AVD_XTAL
RF_SUPPLY1
LDO_CTRL
AVD
LSRn
LSRp
VREFm
MICh
CIDOUT/MICn
CIDINn/MICp
C50
1u
(4)
(5)
(6)
CHARGE
CHARGE_CTRL
SOCn
SOCp
(7)
COL0
COL1
COL2
COL3
COL4
NC
C6
RA2
1k
VREFm
TO RF BLOCK
ANT2
PON
PSEL
VDD_PADRV
TXp
TXn
TXON
TX _RF
BATTERY
To PA
C182
3p
RF_RXp
RF_RXn
RXON
ANT1
RX _RF
GND
R203
F56k
C47 1u
C43 10p
C48 NC
C184 NC
C7 NC
*R22 NC
C17
C18 NC
C14 NC
C12 K10u
*R25 NC
*C16 NC
VREFm
(8)
(9)
C41 NC
X1
10.368M
R215
0
RA4
3.3k
C96 D10p
C97 D10p
C11 K0.1u
C13 K0.1u
R27 820
R28 820
(10)
(11)
(12)
(13)
250mVp-p
0.75V
0V
SHARP
0
AST
R
TALK
UP
SP
DOWN
SOFT_A
SOFT_B
SOFT_C
ROW3
ROW2
ROW1
ROW0
LDO_CTRL
(14)
(15)
(16)
(17)
(18)
Study LCD
driver
BATTERY
BELL_LED_A
KEY BACKLIT
C139
10p
BELL LED
(Amber)
LED12
C138
10p
KEY BACKLIT CP+3.0V (Amber)
KEY BACKLIT CP+4.0V (Blue)
CP+3.0V [EX]
CP+4.0V [RU]
*R248
0
*R249
NC
*LED8
*LED6
*LED7
*LED5
*LED9
*LED4
*R300 330
*R301 330
*R302 330
*R303 330
*R304 330
*R305 330
Q7
[EX]
CP+3.0V
[RU]
CP+4.0V
*R251
0
*R252
NC
LCD BACKLIT
(Amber)
LCD BACKLIT
KEY_LED
LCD BACKLIT CP+3.0V (Amber)
*LED1
*LED2
*LED3
*R308 120
*R309 120
*R310 120
LCD BACKLIT CP+4.0V (Blue)
Q10
RF-SHIELD
RE2

NC: No Components

KX-FC265CX-S CORDLESS HANDSET BOARD SCHEMATIC DIAGRAM (1/2)


TP_ANT1
GND
*C859
3p
C803
1.5p
C862
0.7p
L804
NC
C804
2p
C802
2p
BPF
W 0.15mm
L 5.0mm
1st layer
L801
27n
C827
10p
DA801
C837
NC
W 0.15mm
L 20+/-2mm
3rd layer
R807
220
RXON
C822
10p
C826
2p
RX_RF
RF_RXn
C820
0.7p
RF_RXp
W 0.125mm
L 7.6mm
Gap 0.125mm
1st layer
CP+3.0V
C172
K0.1u
R40 10k
R41 10k
R42 10k
VCC
WP
SCL
SDA
A0
A1
A2
GND
64k
IC3
(1)
(2)
(3)
BATTERY
C860
10p
C861
3p
C808
100n
C809
10p
C811
10p
W 0.15mm
L 20+/-1mm
3rd layer
C812
10p
L803
3.6n
L802
3.6n
C810
1.6p
C805
3.3p
C813
1.6p
Balun
C806
3.3p
Pre-matching
C863
10p
C864
10p
PSET
VCCS
PI
PIX
PRAMP
PO
POX
PSEL
PAON
IC801
*R801
680
R808
NC
W 0.15mm
L 4.0mm x2
1st layer
TXn
*R802
100
*C834
0.5p
TXp
C814
3.3n
TX_RF
R805 47
VDD_PADRV
C819
10p
R803
1k
PSEL
R804
1k
PON
W 0.15mm
L 20+/-2mm
3rd layer
R806
220
TXON
C825
10p
(4)
(5)
(6)
C188
K1u
(7)
*R33
*R34
NC
*R35 NC
*C33 NC
*C109 NC
*C111 NC
*R32 NC
VREFm
R208 NC
R209 NC
SP-PHONE_SPEAKER
C79 NC
C78 NC
C73 NC
C72 10p
D14
D13
GND_0
Sp-phone RX/Beep
(8)
MICh
(9)
VREFm
HEADSET_DET
(10)
(11)
LSRp
*L9 NC
LSRn
RX-AF (Handset)
*L3 NC
*R100 NC
*C86 NC
*C127 NC
*C128 NC
*C108 NC
C83 NC
C82 NC
*R306 NC
*L71 NC
*L72 NC
*L73 NC
*L74 NC
Headset Jack
*CN4
NC
*C185 NC
*C110 NC
R307 NC
*R311 NC
VREFm1
(12)
(13)
TX _AF
CP+3.0V
R50 10k
R51 470
R52 1k
R53 3.3k
R54 10k
C186 2p
C187 2p
(14)
(15)
(16)
(17)
(18)
LCD_SDA
LCD_SCL
LCD_CD
LCD_RESET
LCD_CSB
R55 1k
C175 1u
R578 NC
*C104 10p
C107 NC
C106 NC
C103 100p
C105 100p
*C580 10p
CN5
GND
OPT_PWR
LCD_CSB
RESETB
A0
SCLK
SID
VDD
VDDA
VSS
V0
GND
to LCD UNIT
C152
k1000p
C71 10p
C70 10p
D22
D21
MICp
MICn
R73 82
R74 82
C113 10p
MIC+
MIC-
AP1
MIC
C77 NC
C76 NC
D4
D3
C75 NC
C74 NC
R312 NC
R313 NC

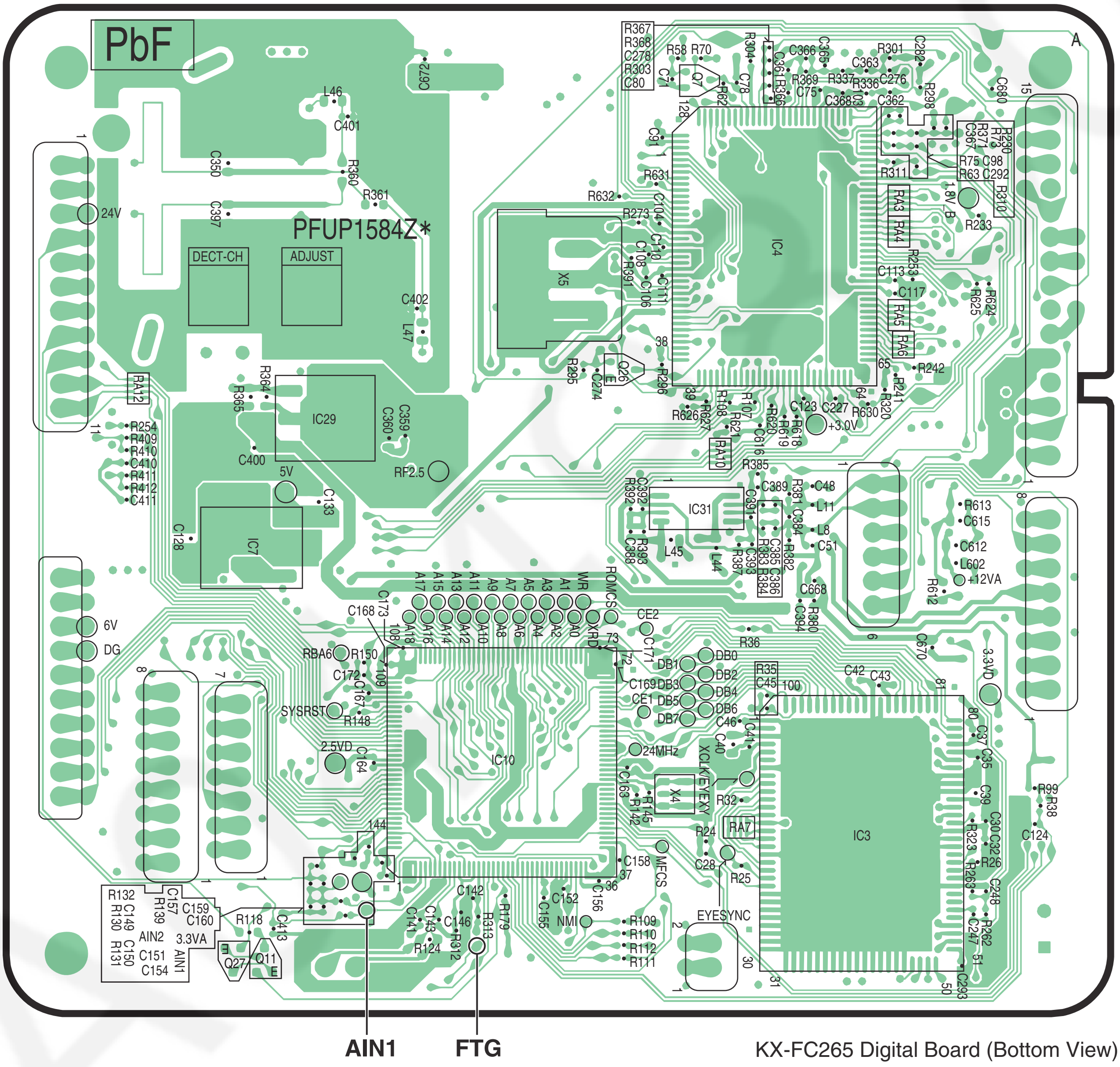
NC: No Components

KX-FC265CX-S CORDLESS HANDSET BOARD SCHEMATIC DIAGRAM (2/2)

19 Printed Circuit Board

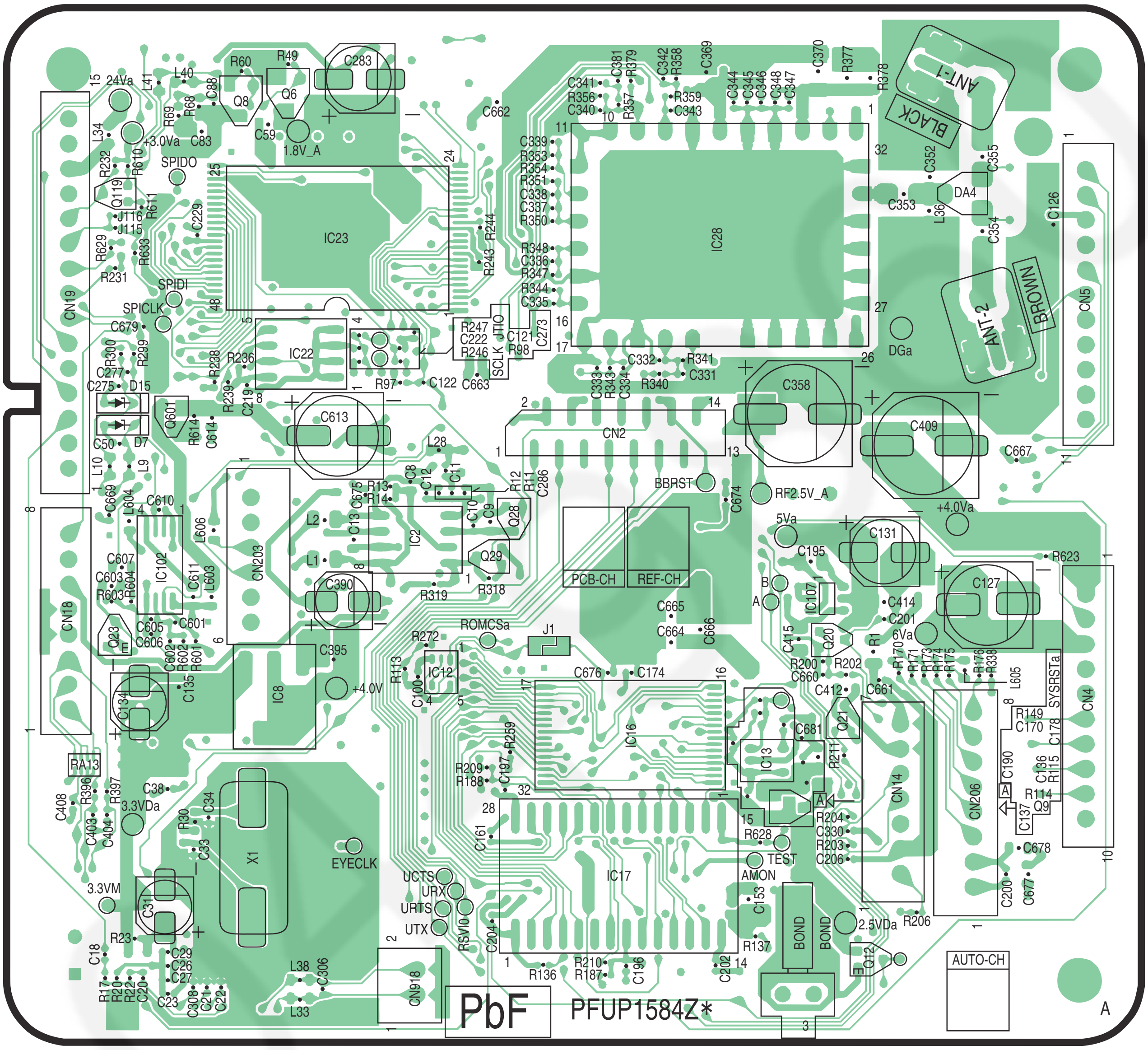
19.1. Digital Board (PCB1)

19.1.1. Bottom View


PbF
PFUP1584Z*
DECT-CH
ADJUST
A
24V
6V
DG
5V
RF2.5
+3.0V
+12VA
3.3VD
1.8V_B
2.5VD
24MHz
SYSRST
NMI
MFCS
EYESYNC
XCLK
YEYEXY
ROMCS
WR
XRD
AIN2
3.3VA
AIN1
IC3
IC4
IC7
IC10
IC29
IC31
X4
X5
Q7
Q11
Q26
Q27
L44
L45
L46
L47
L602
RA1
RA3
RA4
RA5
RA6
RA7
RA10
RA12
RBA6
CE1
CE2
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18
R367
R368
C278
R303
C80
R58
R70
C71
R62
C78
R304
C366
C365
C361
R366
R369
R337
C75
R336
C363
C368
R301
C276
C282
C362
R298
C680
R311
C367
R371
R373
R230
R75
C98
R63
C292
R310
R233
R253
C113
C117
R625
R624
R242
R241
R320
R630
C123
C227
R618
R619
R620
R621
C616
R626
R627
R108
R107
R385
C389
C48
L11
L8
C51
R381
C384
C391
R382
R383
R384
C385
C386
C393
R387
C668
R380
C394
C392
R392
R393
C388
R613
C615
C612
R612
C670
R631
R632
R273
C104
C110
C108
R391
C106
C111
R295
C274
R296
C91
C272
L46
C401
C350
C397
R360
R361
C402
R364
R365
C359
C360
C400
C133
C128
R254
R409
R410
C410
R411
R412
C411
C168
C173
R150
C172
C167
R148
C164
C171
C169
C46
C41
C40
C163
R145
R142
R32
R24
R25
C28
R36
R35
C45
C42
C43
C37
C35
C39
C30
C32
C124
R99
R38
R26
R323
R263
C248
R262
C247
C293
C158
C156
C152
C155
R109
R110
R112
R111
C142
C143
C141
C146
R124
R312
R313
R179
R118
C413
R132
C149
C130
R131
C157
R139
C159
C160
C151
C150
C154
1
11
8
7
15
128
38
39
64
65
73
72
108
109
144
37
36
100
81
80
51
50
31
30
2
FTG

KX-FC265 Digital Board (Bottom View)

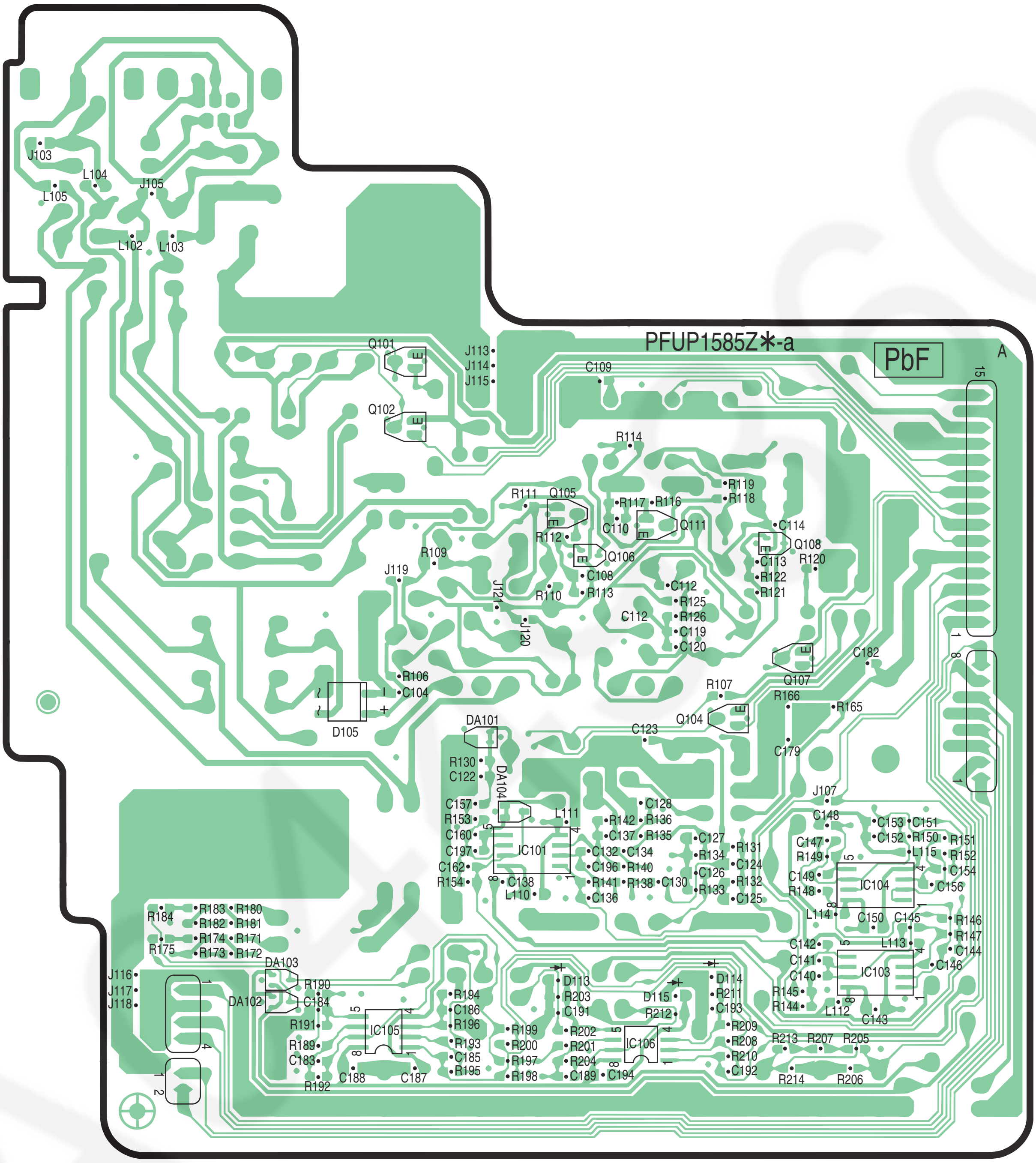
19.1.2. Component View


IC23
IC28
IC22
IC2
IC8
IC16
IC17
IC12
IC13
IC102
IC107
CN2
CN4
CN5
CN14
CN18
CN19
CN203
CN206
CN918
C358
C409
C613
C390
C131
C127
ANT-1
ANT-2
BLACK
BROWN
X1
PCB-CH
REF-CH
AUTO-CH
BOND
ROMCSa
EYECLK
BBRST
RF2.5V_A
+4.0Va
+4.0V
5Va
6Va
2.5VDa
3.3VDa
3.3VM
24Va
+3.0Va
1.8V_A
DGa
SPIDO
SPIDI
SPICLK
SCLK
JTIO
UCTS
URX
URTS
UTX
RSVIO
TEST
AMON
SYSRSTa
PbF
PFUP1584Z*

KX-FC265 Digital Board (Component View)

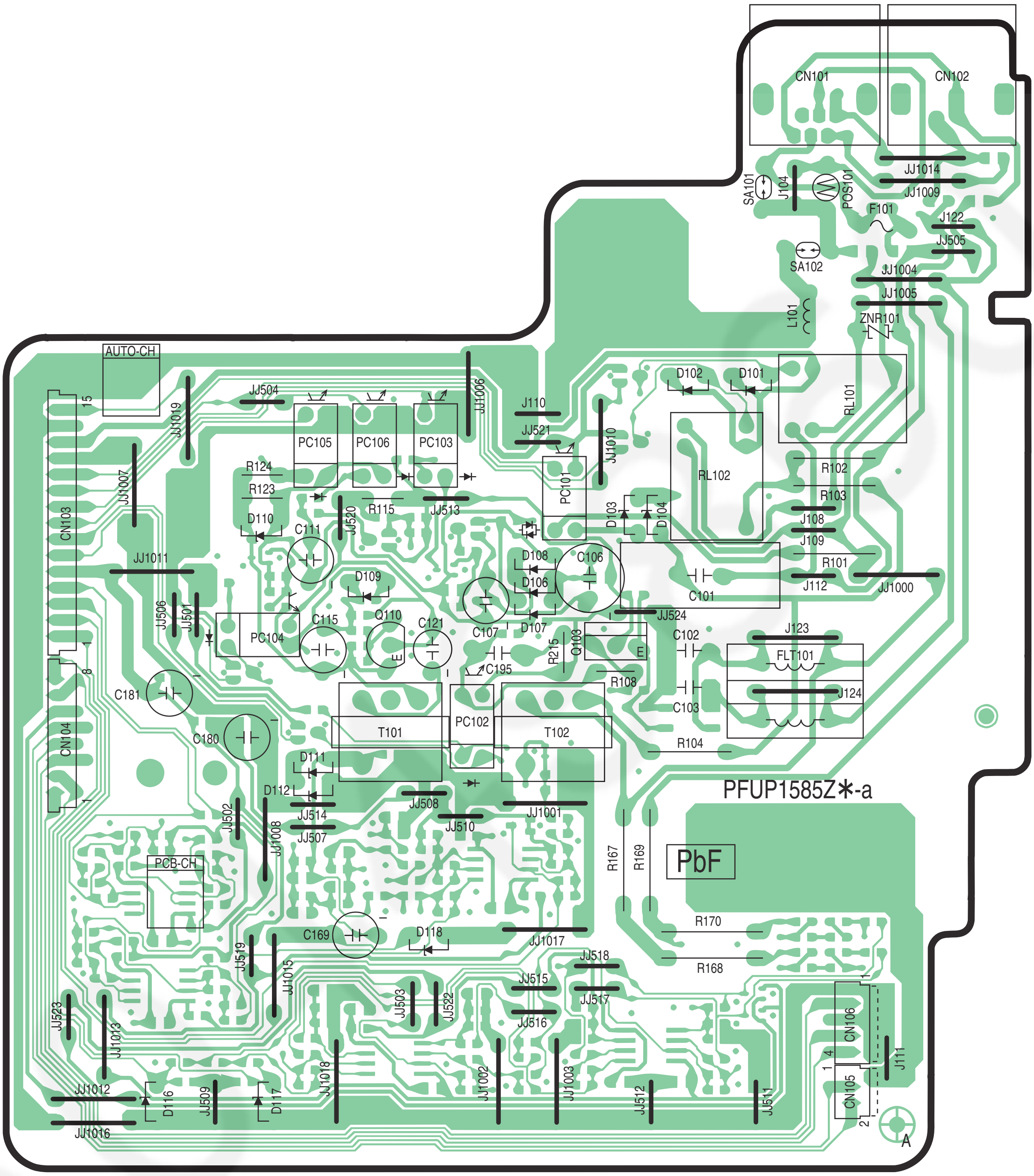
19.2. Analog Board (PCB2)

19.2.1. Bottom View


PFUP1585Z✱-a
PbF
A
15
1
8
1
J103
L104
L105
J105
L102
L103
Q101
Q102
J113
J114
J115
C109
R114
R111
Q105
R112
R117
R116
C110
Q111
R119
R118
C114
Q108
C113
R120
R122
R121
Q106
C108
R113
R109
J119
J121
R110
J120
C112
R125
R126
C112
C119
C120
C182
Q107
R107
R166
R165
Q104
C123
C179
R106
C104
D105
DA101
R130
C122
DA104
C157
R153
C160
C197
C162
R154
L111
IC101
C138
L110
C128
R142
R136
C137
R135
C132
C134
C196
R140
R141
R138
C130
C136
C127
R134
C126
R133
R131
C124
R132
C125
J107
C148
C147
R149
C149
R148
L114
C153
C151
C152
R150
R151
L115
R152
IC104
C154
C156
C150
C145
R146
R147
C142
C141
C140
L113
C144
C146
IC103
R145
R144
L112
C143
R184
R183
R180
R182
R181
R174
R171
R175
R173
R172
J116
J117
J118
DA103
R190
C184
DA102
R191
IC105
R189
C183
R192
C188
C187
R194
C186
R196
R193
C185
R195
D113
R203
C191
R199
R200
R197
R198
R202
R201
R204
C189
D115
R212
IC106
C194
D114
R211
C193
R209
R208
R210
C192
R213
R207
R205
R214
R206

KX-FC265 Analog Board (Bottom View)

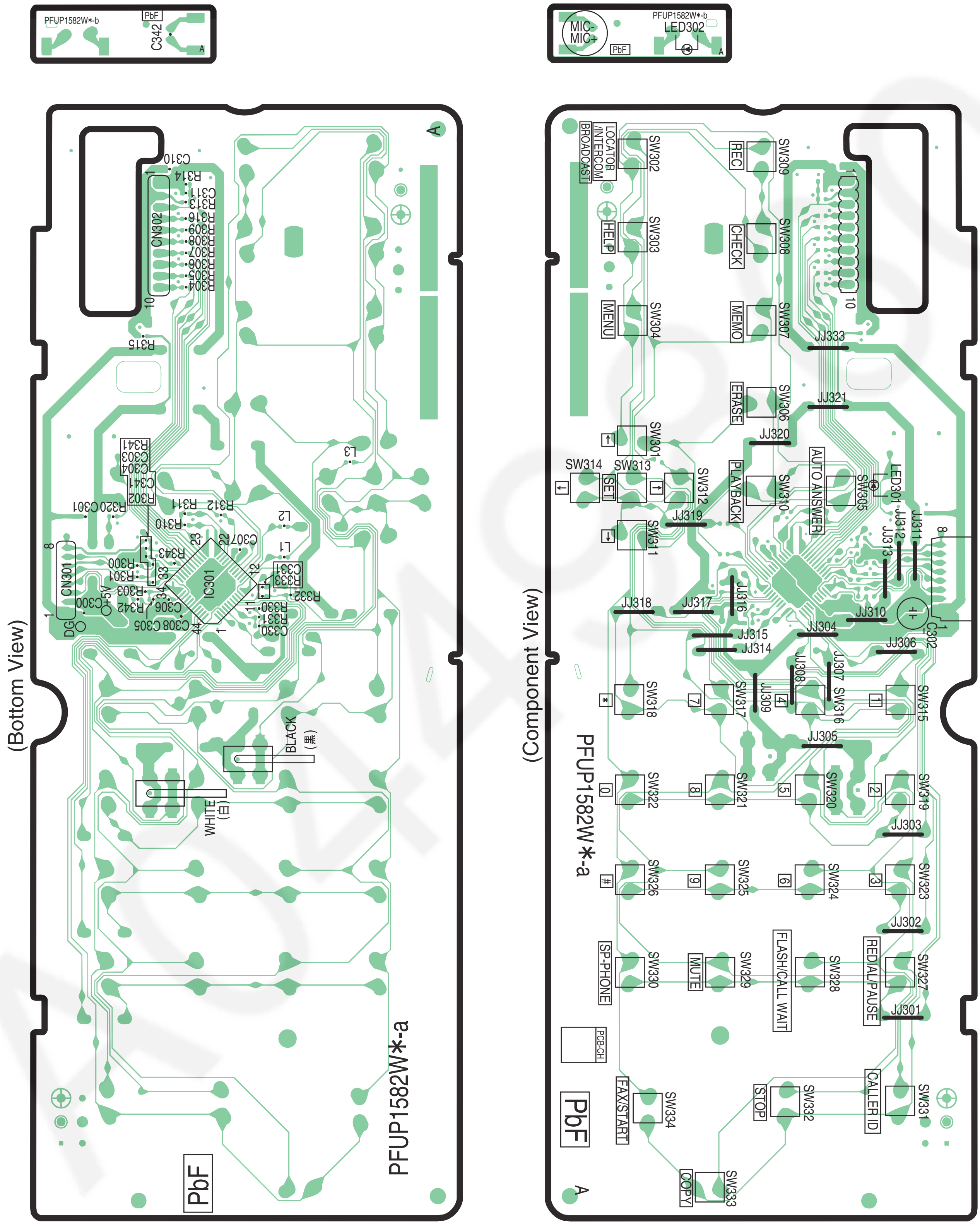
19.2.2. Component View


CN101
CN102
JJ1014
JJ1009
SA101
J104
POS101
F101
J122
JJ505
SA102
JJ1004
JJ1005
L101
ZNR101
AUTO-CH
15
JJ504
PC105
PC106
PC103
JJ1006
J110
JJ521
JJ1010
D102
D101
RL101
JJ1019
R124
R123
R115
JJ513
PC101
RL102
R102
R103
J108
J109
D110
C111
JJ520
D103
D104
R101
J112
JJ1000
JJ1007
CN103
JJ1011
D109
D108
D106
C106
C101
JJ506
JJ501
PC104
C115
Q110
C121
C107
D107
Q103
JJ524
J123
C195
R215
E
C102
FLT101
8
C181
R108
C103
J124
C180
T101
PC102
T102
R104
CN104
1
D111
D112
PFUP1585Z✱-a
JJ508
JJ514
JJ510
JJ1001
JJ502
JJ1008
JJ507
R167
R169
PbF
PCB-CH
C169
D118
JJ1017
R170
R168
JJ519
JJ1015
JJ518
JJ515
JJ517
JJ503
JJ522
JJ516
CN106
JJ523
JJ1013
4
1
J111
JJ1012
D116
JJ509
D117
JJ1018
JJ1002
JJ1003
JJ512
JJ511
CN105
2
JJ1016
A

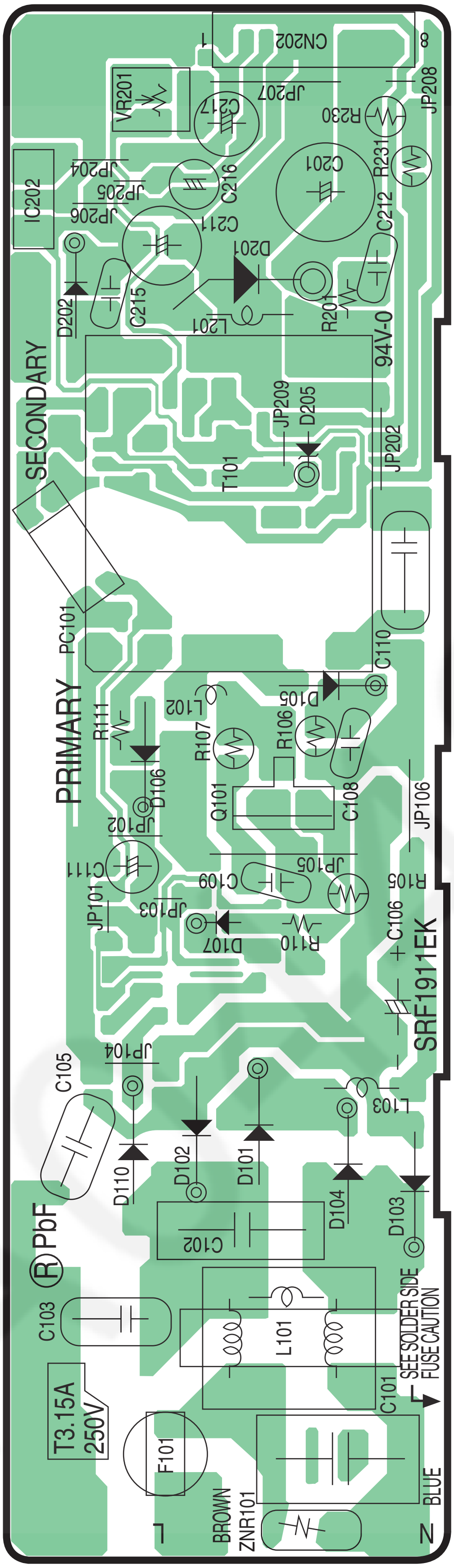
KX-FC265 Analog Board (Component View)

19.3. Operation Board (PCB3) / MIC Board (PCB9)

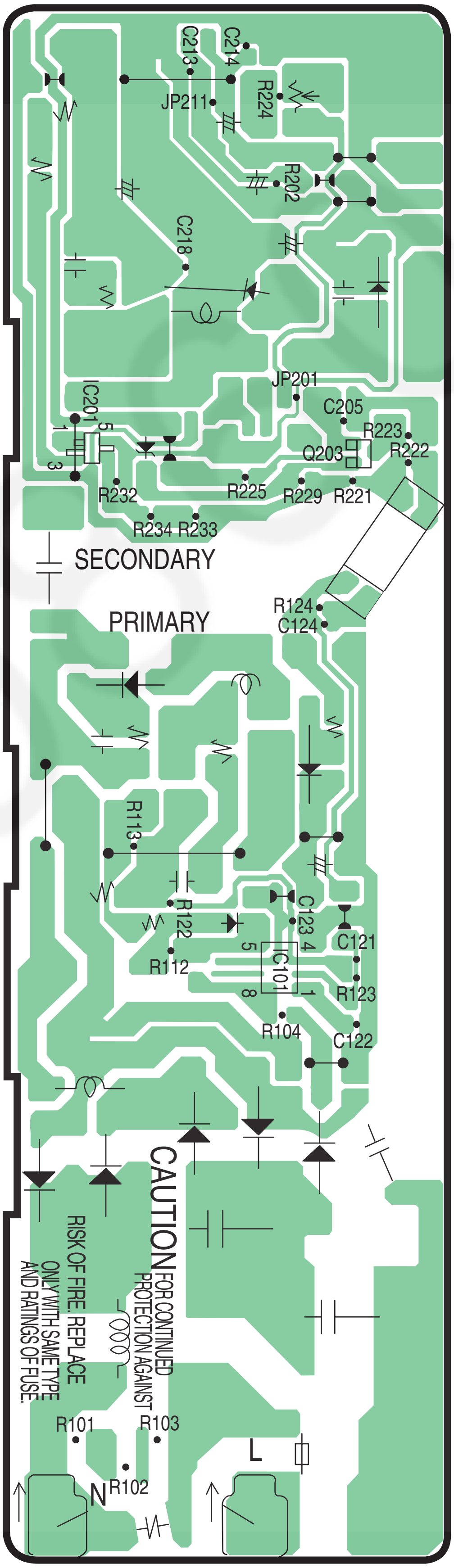
KX-FC265 Operation Board / MIC Board


PFUP1582W*-b
PbF
C342
A
MIC-
MIC+
LED302
(Bottom View)
(Component View)
PFUP1582W*-a
CN302
CN301
IC301
C310
R314
C311
R313
R316
R309
R308
R307
R306
R305
R304
R315
R341
C303
C304
C341
R302
R320
C301
R311
R312
R310
L1
L2
L3
R343
R300
R301
R303
R342
C300
C306
C308
C305
C307
C333
R331
R332
R330
C330
+5V
DG
BLACK
(黒)
WHITE
(白)
SW301
SW302
SW303
SW304
SW305
SW306
SW307
SW308
SW309
SW310
SW311
SW312
SW313
SW314
SW315
SW316
SW317
SW318
SW319
SW320
SW321
SW322
SW323
SW324
SW325
SW326
SW327
SW328
SW329
SW330
SW331
SW332
SW333
SW334
LOCATOR
/INTERCOM
BROADCAST
HELP
MENU
REC
CHECK
MEMO
ERASE
PLAYBACK
AUTO ANSWER
SET
LED301
C302
JJ301
JJ302
JJ303
JJ304
JJ305
JJ306
JJ307
JJ308
JJ309
JJ310
JJ311
JJ312
JJ313
JJ314
JJ315
JJ316
JJ317
JJ318
JJ319
JJ320
JJ321
JJ333
SP-PHONE
MUTE
FLASH/CALL WAIT
REDIAL/PAUSE
FAX/START
STOP
CALLER ID
COPY
PCB-CH
*
#
0
1
2
3
4
5
6
7
8
9

19.4. Power Supply Board (PCB4)


CN202
1
8
VR201
JP207
C217
R230
JP208
IC202
JP204
JP205
JP206
C216
C201
R231
C211
C212
D201
D202
C215
L201
R201
SECONDARY
94V-0
JP209
D205
T101
JP202
PC101
C110
PRIMARY
R111
L102
D105
R107
R106
D106
Q101
C108
JP102
JP106
C111
C109
JP105
R105
JP101
JP103
D107
R110
C106
SRF1911EK
C105
JP104
L103
D110
D102
D101
D104
D103
PbF
C102
C103
L101
SEE SOLDER SIDE FUSE CAUTION
T3.15A 250V
F101
C101
BROWN
ZNR101
L
BLUE
N

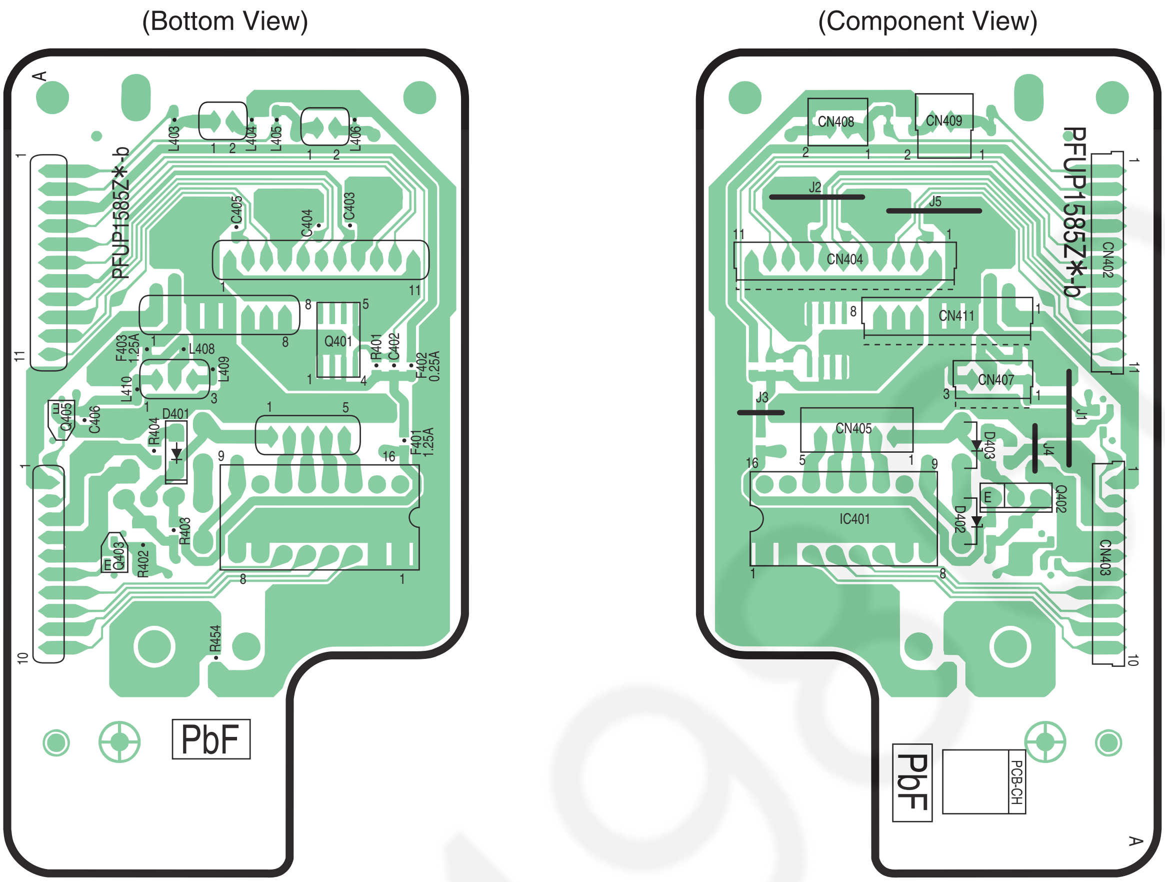
(Component View)


C213
C214
JP211
R224
R202
C218
JP201
IC201
C205
R223
Q203
R222
R232
R225
R229
R221
R234
R233
SECONDARY
PRIMARY
R124
C124
R113
C123
C121
R122
IC101
R112
R123
R104
C122
CAUTION
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS OF FUSE.
R101
R103
R102
N
L

(Bottom View)

KX-FC265 Power Supply Board

19.5. Interface Board (PCB5)

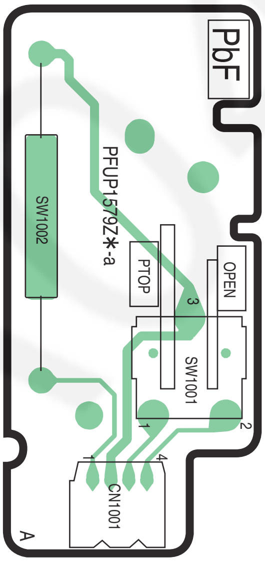

(Bottom View)

(Component View)

PFUP1585Z∗-b
L403
L404
L405
L406
C405
C404
C403
Q401
R401
C402
F402 0.25A
F403 1.25A
L408
L409
L410
Q405
C406
R404
D401
F401 1.25A
Q403
R402
R403
R454
PbF
CN408
CN409
J2
J5
CN404
CN411
CN402
CN407
J1
J3
CN405
D403
J4
Q402
D402
IC401
CN403
PCB-CH
A

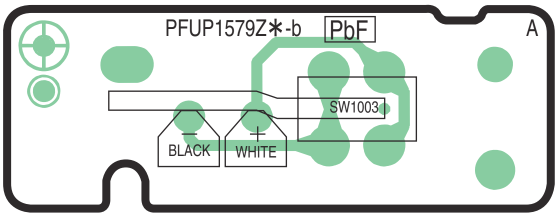
KX-FC265 Interface Board

19.6. Sensor Board (PCB6)


PbF
PFUP1579Z∗-a
SW1002
PTOP
OPEN
SW1001
CN1001
A

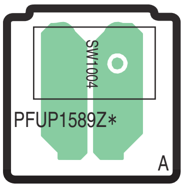
KX-FC265 Sensor Board

19.7. Film End Sensor Board (PCB7)


PFUP1579Z∗-b
PbF
A
SW1003
BLACK
WHITE

KX-FC265 Film End Sensor Board

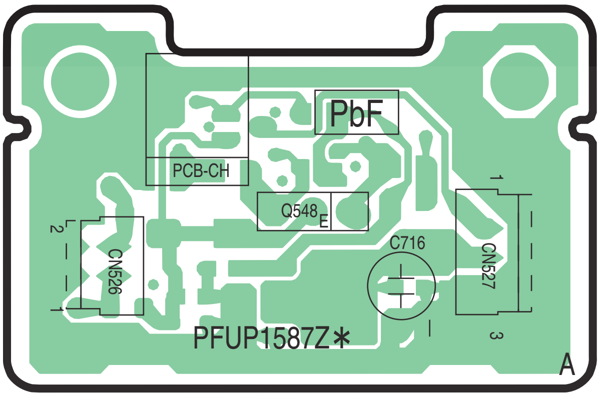
19.8. Motor Position Sensor Board (PCB8)


SW1004
PFUP1589Z∗
A

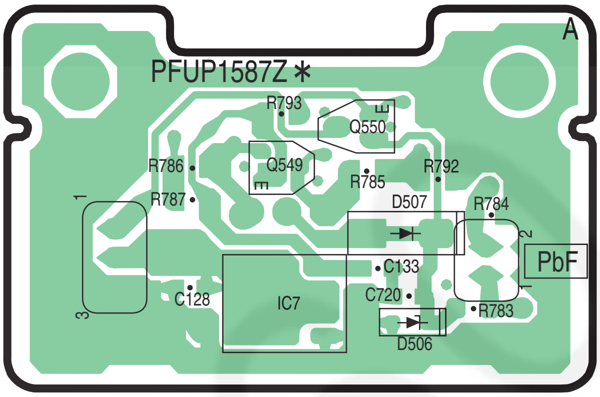
KX-FC265 Motor position Board

19.9. Charger Board-A (PCB10)

(Component View)


PbF
PCB-CH
Q548
E
C716
CN526
CN527
1
2
3
PFUP1587Z＊
A

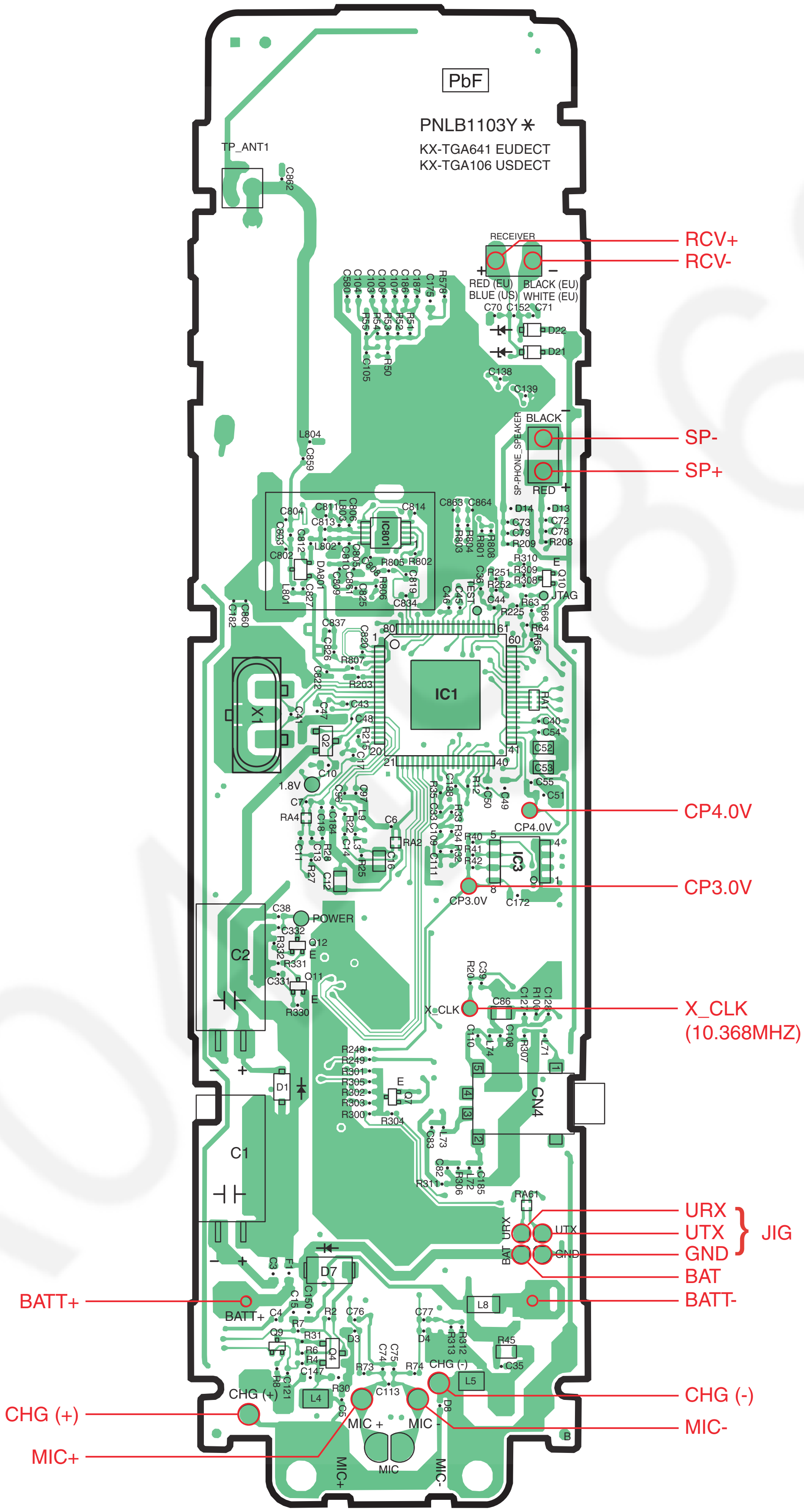
(Bottom View)


A
PFUP1587Z＊
R793
Q550
E
Q549
E
R786
R787
R785
R792
D507
R784
PbF
1
2
3
C133
C720
C128
IC7
R783
D506

KX-FC265 Charger Board

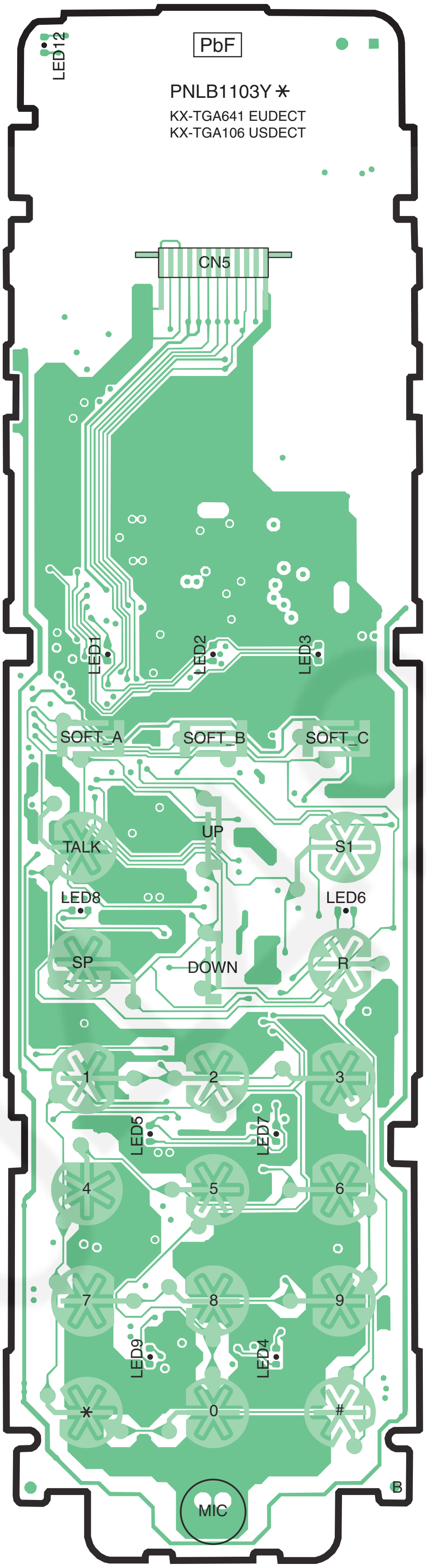
19.10. Cordless Handset Board (PCB100)

19.10.1. Component View


PbF
PNLB1103Y ✱
KX-TGA641 EUDECT
KX-TGA106 USDECT
TP_ANT1
RECEIVER
RED (EU)
BLUE (US)
BLACK (EU)
WHITE (EU)
RCV+
RCV-
SP-PHONE_SPEAKER
BLACK
RED
SP-
SP+
IC801
IC1
X1
JTAG
TEST
1.8V
CP4.0V
CP3.0V
IC3
POWER
C2
C1
X_CLK
X_CLK
(10.368MHZ)
CN4
D1
D7
URX
UTX
GND
BAT
JIG
URX
UTX
GND
BAT
BATT+
BATT+
BATT-
L8
L5
L4
CHG (+)
CHG (+)
CHG (-)
CHG (-)
MIC +
MIC
MIC+
MIC-
MIC-
MIC+

KX-FC265 Cordless Handset Board (Component View)

19.10.2. Bottom View


LED12
PbF
PNLB1103Y ∗
KX-TGA641 EUDECT
KX-TGA106 USDECT
CN5
LED1
LED2
LED3
SOFT_A
SOFT_B
SOFT_C
UP
TALK
S1
LED8
LED6
SP
DOWN
R
1
2
3
LED5
LED7
4
5
6
7
8
9
LED9
LED4
∗
0
#
B
MIC

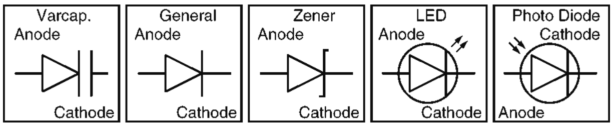
KX-FC265 Cordless Handset Board (Bottom View)

20 Appendix Information of Schematic Diagram

20.1. For Schematic Diagram

Note:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.


Varcap.
Anode
Cathode
General
Anode
Cathode
Zener
Anode
Cathode
LED
Anode
Cathode
Photo Diode
Cathode
Anode

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

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20.2. CPU Data

20.2.1. IC4: BBIC (Digital Board)

PIN NO.	PIN NAME				DESCRIPTION		PIN STATEMENT		ASSIGNMENT		
	1	2	3	4	1	2	Pull up or down	Reset state	PIN NAME	DIR	Connection
10	P3[7]	PD7			General purpose I/O port			O_HiZ	BELL/DCN	I	external 33k pullup to 3.0V
42	P3[6]	PD6			General purpose I/O port			O_HiZ	URTS	O	directly connect to ASIC
12	P3[5]	PD5			General purpose I/O port			O_HiZ	BREAK	O	
13	P3[4]	PD4			General purpose I/O port			O_HiZ	BELL SENSE/ CLIP RLY	O	
14	P3[3]	PD3			General purpose I/O port			O_HiZ	BCN	O	
15	P3[2]	PD2			General purpose I/O port			O_HiZ	RF RESET	O	RF
11	P3[1]	PD1			General purpose I/O port			O_HiZ	OPEN	I	external 10k pullup to 3.0V
66	P3[0]	SCL2			General purpose I/O port	Access bus2 fixed clk output		O_1	SCL2	O	external 5.6k pullup to 3.0V
94	P2[7]	SPIDO			General purpose Output	SPI Data out		O_HiZ	SPIDO	O	directly to connect CN703
97	P2[6]	stop_charge			-	-		O_0	Do not use.		OPEN
84	P2[5]	SDA1			General purpose I/O port	Access bus1 serial clk output		I	RESRV1	O	
83	P2[4]	SCL1			General purpose I/O port	Access bus1 serial Data output		I	LINERLY	O	
82	P2[3]	ADC1			General purpose Output	ADC1 input		I	LINE M	O	
81	P2[2]	ADC0	CLK100		General purpose Output	ADC0 input		I	HSALC	O	connect to Digital Tr
80	P2[1]	PWM1	SPICLK			SPI CLK		I	SPICLK	O	directly to connect CN703
79	P2[0]	PWM0	SPIDI			SPI DATA in		I	SPIDI	I	external pull down
96	P1[7]	CHARGE	INT7n		General purpose I/O port		160k pull down	I_PD	S ENB	I	voltage convert with R/R ,, 3.3V->3.0V
95	P1[6]	PON	INT6n		General purpose I/O port	power on	160k pull down	I_PD			directly connect to 1.8V
63	P1[5]	INT5n	HOLD-ACKn	VDDE	General purpose I/O port		selectable pullup	O_1	SPMUTE	O	directly connect to SP AMP CD
62	P1[4]	INT4n	HOLDn		General purpose I/O port		selectable pullup	I_PU	CHK IN2	I	connect to CHK_IN2
61	P1[3]	INT3n	DACK1n	ACS2	General purpose I/O port	Auxiliary Chip Select2	selectable pullup	I_PU		O	OPEN
59	P1[2]	INT2n	DREQ1n	ACS1	General purpose I/O port	Auxiliary Chip Select1	selectable pullup	I_PU	CPC	I	voltage convert with R/R ,, 3.3V->3.0V
58	P1[1]	INT1n	DACK0n		General purpose I/O port		selectable pullup	I_PU	P-SHORT	I	external 3.3k pullup to 3.0V
57	P1[0]	INT0n	DREQ0n		General purpose I/O port		selectable pullup	I_PU	WP	O	external 10k pullup to 3.0V
54	P0[7]	PCM_DIN			General purpose I/O port	PCM_DIN	selectable pullup	I_PU	T-ON/OFF	O	connect to Digital Tr
53	P0[6]	PCM_DOUT			General purpose I/O port	PCM_DOUT	selectable pullup	I_PU	T-PAT0	O	directly to connect CN917
52	P0[5]	PCM_CLK			General purpose I/O port	PCM_CLK	selectable pullup	I_PU	T-PAT1	O	directly to connect CN917
51	P0[4]	PCM_FSC0			General purpose I/O port	PCM_FSC0	selectable pullup	I_PU	CHARGE	O	directly to connect CN917
50	P0[3]	PCM_FSC1			General purpose I/O port	PCM_FSC1	selectable pullup	I_PU	UCTS	I	voltage convert with R/R,, 3.3V->3.0V
49	P0[2]	JTIO			General purpose I/O port	JTAG INPUT/ OUTPUT	selectable pullup	I_PU	JTIO	I/O	external 1k pullup to 3.0V

PIN NO.	PIN NAME				DESCRIPTION		PIN STATEMENT		ASSIGNMENT		
	1	2	3	4	1	2	Pull up or down	Reset state	PIN NAME	DIR	Connection
48	P0[1]	URX			General purpose I/O port	input Data to UART	pull down	I	URX	I	voltage convert with R/R ,, 3.3V->3.0V
47	P0[0]	UTX			General purpose I/O port	UART DATA output	selectable pullup	I_PU	UTX	O	connect to ASIC UART RXD

20.2.2. IC10: ASIC (Digital Board)

INPUT PORT

PIN NO.	SIGNAL	RESET STATE		533	I/O
19	CPC		I	HOOK	I
20	RVN		I	PDET	I
43	XWAIT/IP60		I	PTOP	I
119	STBNP		I	FLMDET	I
136	KRXD/IP	KRXD	I	KRXD	I

SWITCHING OUTPUT PIN/INPUT PORT

PIN NO.	SIGNAL	RESET STATE		533	I/O
124	RXE/IP04		HIGH	RXE	O
131	TXE/IP14		HIGH	TXE	O

OUTPUT PORT

PIN NO.	SIGNAL	RESET STATE		533	I/O
17	F2/OP50	F2	LOW	XMDMRST	O
18	FR/OP51	FR	LOW	HEADON	O
46	XOPRBE/MUX/OP53	XOPRBE	HIGH	XOPRBE	O
47	ADR13/OP	ADR13			
48	ADR14/OP	ADR14			
49	ADR15/OP	ADR15			
65	XRESCS2/OP71	XRESCS2	HIGH	—	O
101	RBA5/OP	RBA5		A18	
133	KLATCH	KLATCH		KLATCH	O

PORT ENABLE TO SWITHING INPUT/OUTPUT

PIN NO.	SIGNAL	RESET STATE		533	I/O
21	IRDATXD/IOP81	TXD	LOW	CHK_IN2	I/O
22	IRDARXD/IOP80	RXD	INPUT	F_TXMUTE	O
23	TXD/IOP30	IOP	INPUT	TXD	O
24	RXD/IOP31	IOP	INPUT	RXD	I
25	XRTS/IOP32	IOP	INPUT	XRTS	O
26	XCTS/IOP33	IOP	INPUT	XCTS	I
34	FMEMDO/IOP26	IOP	INPUT	LEDON	O
39	MIDAT/IOP45	IOP	INPUT	PWRCNT	O
40	MICLK/IOP46	IOP	INPUT	OPERST	O
41	MILAT/IOP47	IOP	INPUT	NISHI1	I
42	20KOSC/IOP56	IOP	INPUT	CCONT	O
44	XHSTRD/IOP40	IOP	INPUT	MURA1	O
45	XHSTWR/IOP41	IOP	INPUT	TX2-2	O
62	XRAS/IOP42	IOP	INPUT	RAS	O
63	XCAS1/IOP43	IOP	INPUT	CAS	O
64	XCAS2/IOP44	IOP	INPUT	RCONT	O
102	RBA6/IOP	RBA6		A19	
120	RM0/IOP00	RM0	LOW	RM0	
121	RM1/IOP01	RM1	LOW	RM1	
122	RM2/IOP02	RM2	LOW	RM2	
123	RM3/IOP03	RM3	LOW	RM3	
125	TM0/IOP10	TM0	LOW	TM0	O
128	TM1/IOP11	TM1	LOW	TM1	O
129	TM2/IOP12	TM2	LOW	TM2	O
130	TM3/IOP13	TM3	LOW	TM3	O

PIN NO.	SIGNAL	RESET STATE		533	I/O
137	FMEMCLK/IOP24	IOP	INPUT	BBRST	O
138	FMEMDI/IOP25	IOP	INPUT	CISON	O

[MODEM GPIO]: 100

PIN NO.	SIGNAL	RESET STATE		533	I/O
93	GPI2	GPI2	INPUT	-	I
94	GPI3	GPI3	INPUT	-	I
95	GPI4	GPI4	INPUT	-	I
96	GPI5	GPI5	INPUT	-	I
97	GPI6	GPI6	INPUT	CHK_IN2	I
98	GPI7	GPI7	INPUT	CHK_IN3	I
99	GPO7	GPO7	LOW	-	O
101	GPO6	GPO6	LOW	-	O
102	GPO5	GPO5	LOW	-	O
104	GPO4	GPO4	LOW	-	O
105	GPO3	GPO3	LOW	GPO3	O
109	GPO2	GPO2	LOW	-	O
110	GPO1	GPO1	LOW	-	O

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20.2.3. IC1: BBIC (Cordless Handset Board)

Pin No.	Description	I/O	Connection	at Normal mode	at Reset mode
1	VSS_LNA1	-	GND	-	-
2	RF_RXp	A.I	RF_RXp	A.I	A.I
3	RF_RXn	A.I	RF_RXn	A.I	A.I
4	VSS_LNA2	-	GND	-	-
5	RFP1	D.O	RXON	H/L	Hi-Z
6	RFP0	D.O	ANT1	H/L	Hi-Z
7	REF_RES	A.O	REF_RES	A.O	A.O
8	AVS_XTAL	-	GND	-	-
9	XTAL2	A.I	XTAL2	A.I	A.I
10	XTAL1	A.I	XTAL1	A.I	A.I
11	AVD_XTAL	-	AVD_XTAL	-	-
12	RF_SUPPLY1	-	RF_SUPPLY1	-	-
13	LDO_CTRL	A.O	LDO_CTRL	A.O	O-1
14	AVD	-	+1.8V	-	-
15	LSRn	A.O	LSRn	A.O	A.O
16	LSRp	A.O	LSRp	A.O	A.O
17	VREFm	-	GND	-	-
18	MICh	A.I	N.C.	A.I	A.I
19	CIDOUT/MICn	A.I	MICn	A.I	A.I
20	CIDINn/MICp	A.I	MICp	A.I	A.I
21	CIDINp/VREFp	A.O	VREFp	A.O	A.I
22	RINGp/P3_7	D.O	COL4	H/L	L
23	RINGn/P3_6	D.O	COL3	H/L	L
24	RINGOUT/RINGING/P3_5	D.O	COL2	H/L	L
25	PARADET/P3_4	D.O	COL1	H/L	L
26	ADC0/P3_3	D.O	COL0	H/L	L
27	ADC1/INT0/P1_0	D.O	NC	L	L
28	NTC/ADC2	A.I	ADC2	I_0	A.I
29	SOCp	A.I	SOCp	A.I	A.I
30	SOCn	A.I	SOCn	A.I	A.I
31	CHARGE_CTRL	A.O	CHARGE_CTRL	A.O	O-0
32	P1_7/CHARGE	A.I	CHARGE	A.I	I-PD
33	PAOUTp/P3_1	A.O	PAOUTp	A.O	O-0
34	VDDPA	-	VDDPA	-	-
35	PAOUTn/P3_0	A.O	PAOUTn	A.O	O-0
36	VBAT1	-	VBAT1	-	-
37	CP_C1x	A.I/O	CP_C1x	A.I/O	A.I
38	CP_C2x	A.I/O	CP_C2x	A.I/O	A.I
39	CP_C1y	A.I/O	CP_C1y	A.I/O	A.I
40	VBAT2	-	VBAT2	-	-
41	CP_C2y	A.I/O	CP_C2y	A.I/O	A.I
42	CP_VOUT1/LED1	A.O	CP_VOUT1	A.O	A.I
43	CP_VOUT2/LED2	A.O	CP_VOUT2	A.O	A.I
44	PON/P1_6	A.I	PON	A.I	L
45	VDD1	-	+1.8V	-	-
46	P2_7/BXTAL	D.O	BXTAL	H/L	H
47	P1_5/INT5/RDI/VDDE	D.O	N.C.	L	L
48	P1_4/INT4/TDOD	D.I	ROW0	H/L	L
49	P1_3/INT3/SIO	D.I	ROW3	H/L	L
50	P1_2/INT2/SK	D.I	ROW2	H/L	H
51	P1_1/INT1/LE	D.I	ROW1	H/L	H
52	P2_6/WTF_IN	D.O	KEY_LED	H/L	H
53	P0_7/SPI_DI	D.O	EEPROM_WP	H/L	H
54	P0_6/SPI_DO	D.O	LCD_SDA	H/L	L
55	P0_5/SPI_CLK	D.O	LCD_SCL	H/L	L
56	P0_4/SPI_EN	D.O	LCD_CD	H/L	L
57	P0_3/SCL2	D.O	SCL	H/L	L
58	P0_2/SDA2	D.I/O	SDA	H/L	L
59	P0_1/URX	D.I	URX	H/L	H
60	P0_0/UTX	D.O	UTX	H/L	L
61	RSTn	D.O	RSTn	H/L	H
62	JTAG	D.I/O	JTAG	H/L	H
63	P2_5/PCM_FSC/SF	D.O	LCD_CSB	H/L	H
64	P2_4/SCL1/PCM_DO/DP3	D.O	N.C.	L	L

Pin No.	Description	I/O	Connection	at Normal mode	at Reset mode
65	P2_3/SDA1/PCM_DI/DP2	D.O	N.C.	L	L
66	P2_2/PCM_CLK/CLK100	D.O	LCD_RESET	H/L	L
67	P2_1/ECZ2/PWM1/LED4	D.O	N.C.	L	L
68	P2_0/ECZ1/PWM0/LED3	D.O	BELL_LED_A	A.I	A.I
69	VDD2	-	+1.8V	-	-
70	LDORF_CTRL	A.I	N.C.	A.I	A.I
71	RF_SUPPLY2	-	RF_SUPPLY2	-	-
72	RF0n	D.O	ANT2	H/L	Hi-Z
73	RFP4	D.O	PON	H/L	Hi-Z
74	RFP3	D.O	PSEL	H/L	Hi-Z
75	VDD_PADR	A.O	VDD_PADRV	A.O	A.O
76	VSS_PADR1	-	GND	-	-
77	RF_TXp	A.O	TXp	A.O	A.O
78	RF_TXn	A.O	TXn	A.O	A.O
79	VSS_PADR2	-	GND	-	-
80	RFP2	D.O	TXON	H/L	Hi-Z
81	GND	-	GND	-	-

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21 Exploded View and Replacement Parts List

RTL (Retention Time Limited)

Notes:

1. The “RTL” marking indicates that its Retention Time is Limited.
   When production is discontinued, this item will continue to be available only for a specific period of time. This period of time depends on the type of item, and the local laws governing parts and product retention.
   At the end of this period, the item will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.
3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.
4. ISO code (Example : ABS-HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.
5. RESISTORS & CAPACITORS
   Unless otherwise specified;
   All resistors are in ohms (Ω) k=1000Ω, M=1000kΩ
   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 : Polyester
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropylene

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

Memo

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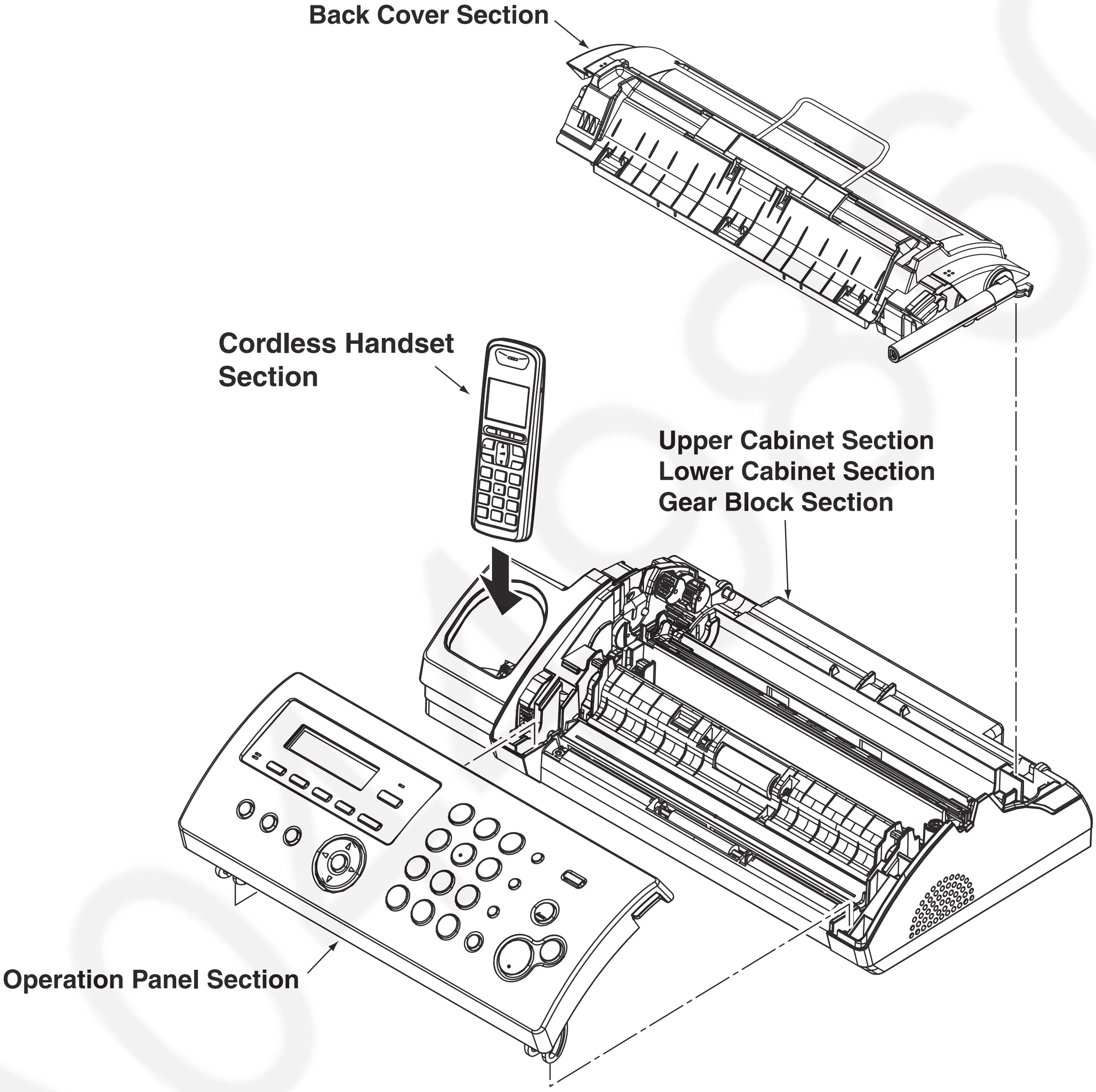
21.1. Cabinet, Mechanical and Electrical Parts Location

21.1.1. General Section

21.1.1.1. Exploded View


Back Cover Section
Cordless Handset Section
Upper Cabinet Section
Lower Cabinet Section
Gear Block Section
Operation Panel Section

Memo

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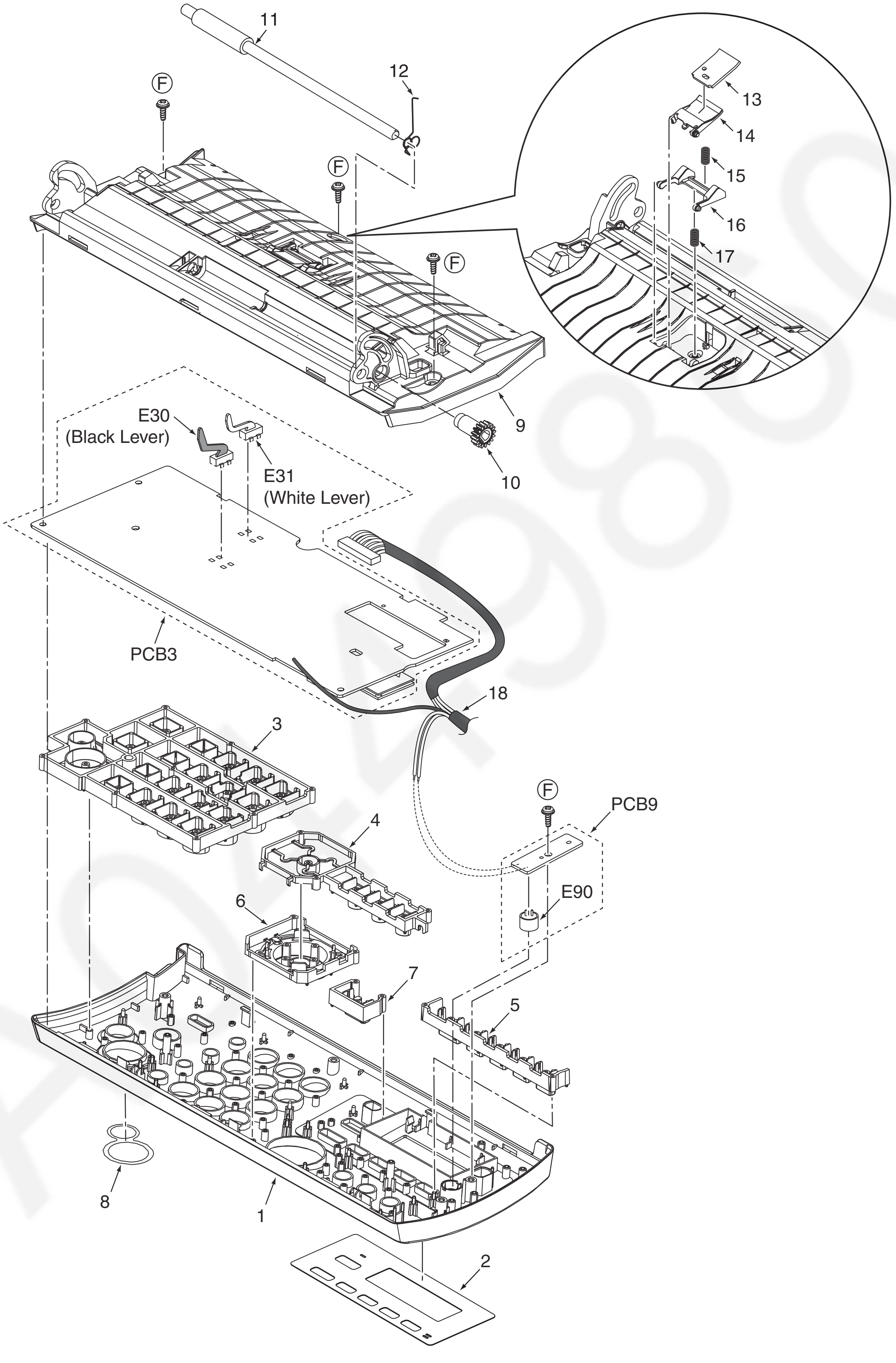
21.1.2. Operation Panel Section

21.1.2.1. Exploded View


11
12
Ⓕ
Ⓕ
Ⓕ
13
14
15
16
17
9
10
E30
(Black Lever)
E31
(White Lever)
PCB3
18
3
Ⓕ
PCB9
4
6
E90
7
5
8
1
2

21.1.2.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PFGG1330X7	PANEL	PS-HB
	2	PNGP1167Z	PANEL, LCD	PC
	3	PFBX1255Y3	BUTTON, 20 KEY	ABS-HB
	4	PFBX1256Y3	BUTTON, 4 KEY	ABS-HB
	5	PFBX1257Z6	BUTTON, 5 KEY	ABS-HB
	6	PFBC1168Z1	BUTTON	ABS-HB
	7	PFBC1169Z4	BUTTON	ABS-HB
	8	PFHX1957Z6	SPACER, SHEET	PC
	9	PFUV1103Z	COVER, OPERATION	PS-HB
	10	PFDG1494Z	GEAR, DOC. EXIT	POM-HB
	11	PNDR1016Z	ROLLER, EXIT	
	12	PFUS1717Z	SPRING, DOC. EXIT EARTH	SUS
	13	PFHG1249Z	SPACER, PAD (RUBBER)	
	14	PFHR1573Z	COVER, SEPARATION HOLDER	ABS-HB
	15	PFUS1712Z	COIL SPRING	SUS
	16	PFHR1575Z	SPACER, DOC. FEED SUPPORT	POM-HB
	17	PFUS1713Z	COIL SPRING, DOC. FEED	SUS
	18	PFJS11M38Z	CONNECTOR, 11 PIN	

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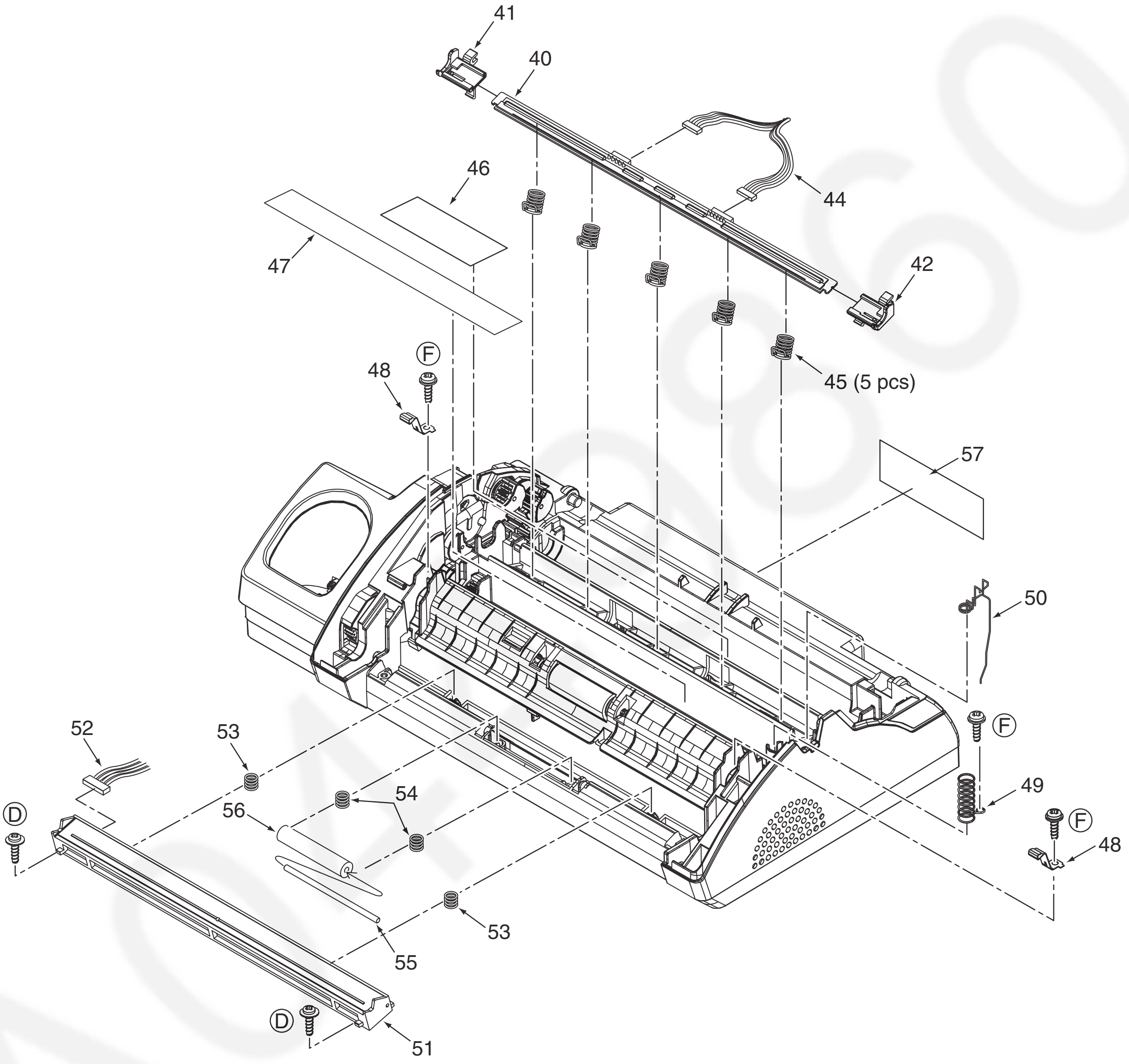
21.1.3. Upper Cabinet Section

21.1.3.1. Exploded View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45 (5 pcs)
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21.1.3.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	40	L1CC00000066	PRINTER UNITS, THERMAL HEAD	
	41	PFHR1569W	GUIDE, HOLDER (LEFT)	POM-HB
	42	PFHR1570Y	GUIDE, HOLDER (RIGHT)	POM-HB
	43	NOTUSED		
	44	PFJS11M16Z	CONNECTOR, 11 PIN	
	45	PFUS1710Z	COIL SPRING	SUS
	46	PFQT2701Z	LABEL, INK RIBBON	
	47	PFQT2708Z	LABEL, INK RIBBON SET	
	48	PFUS1699Y	LEAF SPRING	SUS
	49	PFUS1708Z	COIL SPRING	SUS
	50	PFUS1716Z	SPRING, LOCK EARTH	SUS
	51	N2GZYY000003	IMAGE SENSOR (CIS)	
	52	PFJS07M18Z	CONNECTOR, 7 PIN	
	53	PFUS1494Z	SPRING, CIS	SUS
	54	PFUS1756Y	COIL SPRING	SUS
	55	PFDF1017Z	SHAFT	SUS
	56	PFDR1045Z	ROLLER, DOC. SUB	POM-HB
	57	PNGT5288Z-M	NAME PLATE	

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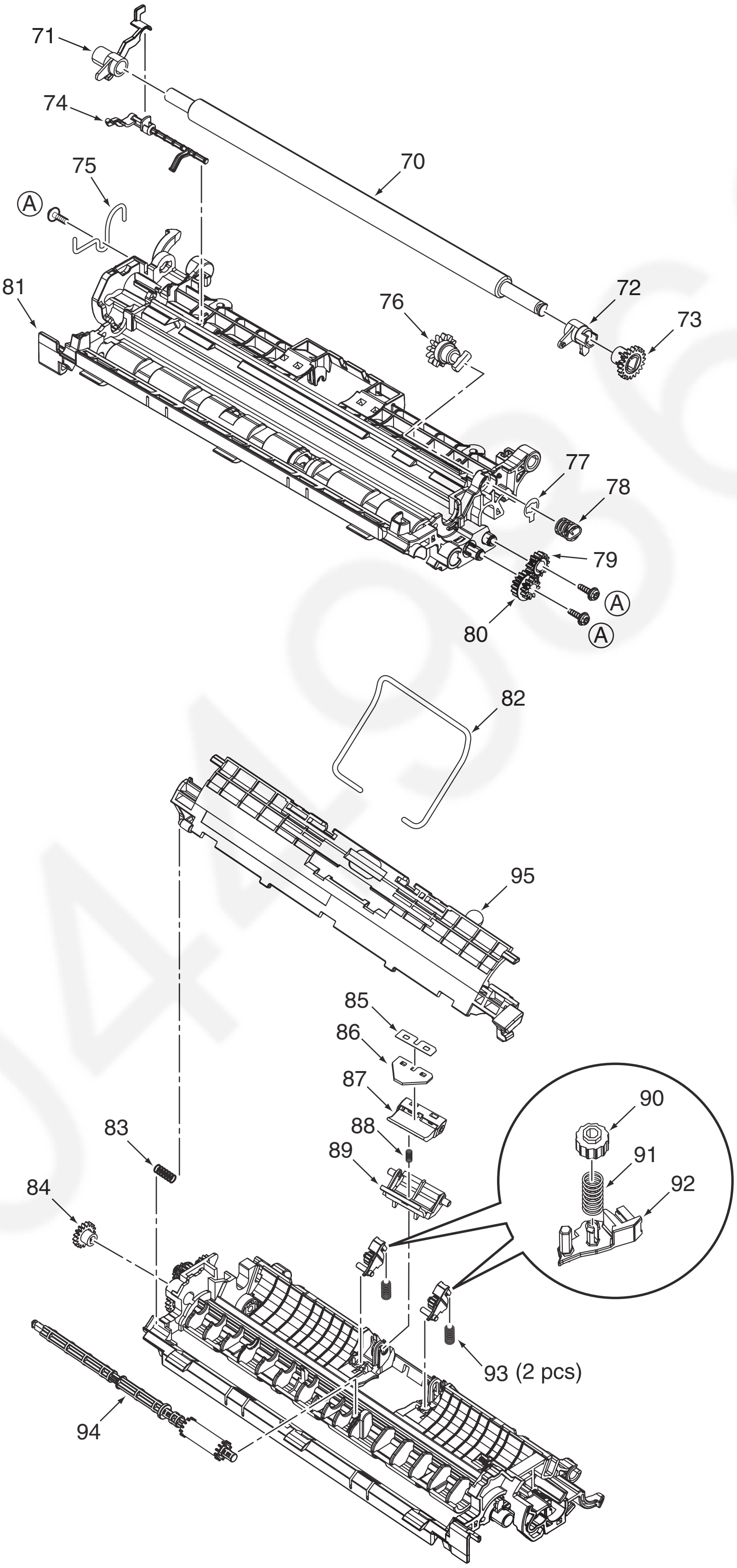
21.1.4. Back Cover Section (1)

21.1.4.1. Exploded View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93 (2 pcs)
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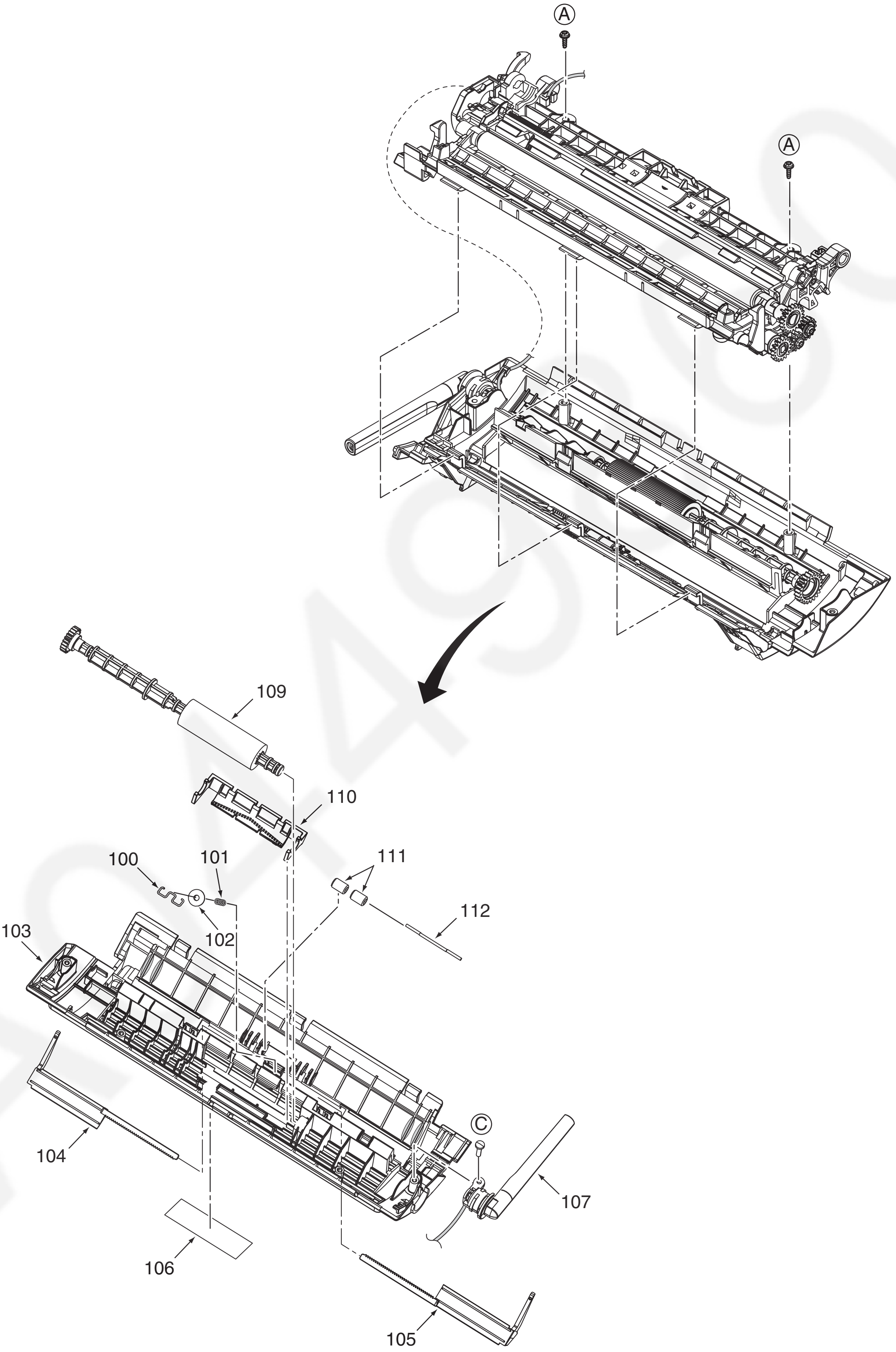
21.1.4.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	70	PNDN1004Z	ROLLER, PLATEN	
	71	PFHR1572Z	SPACER, HOLDER (RIGHT)	POM-HB
	72	PFHR1571Z	SPACER, HOLDER (LEFT)	POM-HB
	73	PFDG1368Z	GEAR	POM-HB
	74	PFHR1574Z	LEVER, PAPER TOP	POM-HB
	75	PFUS1743Z	TORSION SPRING	SUS
	76	PFDG1518Z	GEAR	POM-HB
	77	PFHX1968Z	SPACER, SHEET	
	78	PFUS1740Z	COIL SPRING	SUS
	79	PFDG1496Z	GEAR	POM-HB
	80	PFDG1497Z	GEAR	POM-HB
	81	PFUA1082Y	CHASSIS	PS-HB
	82	PFUS1703Y	SPRING, RECORDING PAPER	SUS
	83	PFUS1705Z	COIL SPRING	SUS
	84	PFDG1365Z	GEAR	POM-HB
	85	PFHX1757Z	COVER, SHEET	
	86	PFHG1263Z	SPACER, SEPARATION RUBBER	
	87	PFHR1446Z	COVER, SEPARATION HOLDER	ABS
	88	PFUS1746Z	COIL SPRING	SUS
	89	PFHR1567Z	CASE	PS-HB
	90	PFDR1056Z	ROLLER	POM-HB
	91	PFUS1540Z	COIL SPRING	SUS
	92	PFHR1447Z	LEVER	POM-HB
	93	PFUS1539Z	COIL SPRING	SUS
	94	PFDR1088Z	ROLLER, DISCHARGE	POM-HB/ EPDM
	95	PFKE1057X2	LEVER, LOCK	ABS+GF20-HB

A0449860

21.1.5. Back Cover Section (2)

21.1.5.1. Exploded View


A
A
109
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100
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104
C
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105

21.1.5.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	100	PFUS1750Z	TORSION SPRING	SUS
	101	PFUS1792Z	LEAF SPRING	PS-HB
	102	PFDG1015X	SPACER	POM-HB
	103	PFKV1143W4	COVER	PS-HB
	104	PFKR1100Z2	GUIDE, RIGHT	ABS-HB
	105	PFKR1099Z2	GUIDE, LEFT	ABS-HB
	106	PFQT2670Z	LABEL, SENDING	
	107	PFSA1053Z	ANTENNA	
	109	PFDR1087Z	ROLLER, PICKUP	POM/ EPDM
	110	PFKV1142Z4	COVER, ROLLER	PS-HB
	111	PFDR1057Z	ROLLER, SUPPORT	POM
	112	PFUS1706Z	BAR SPRING	SUS

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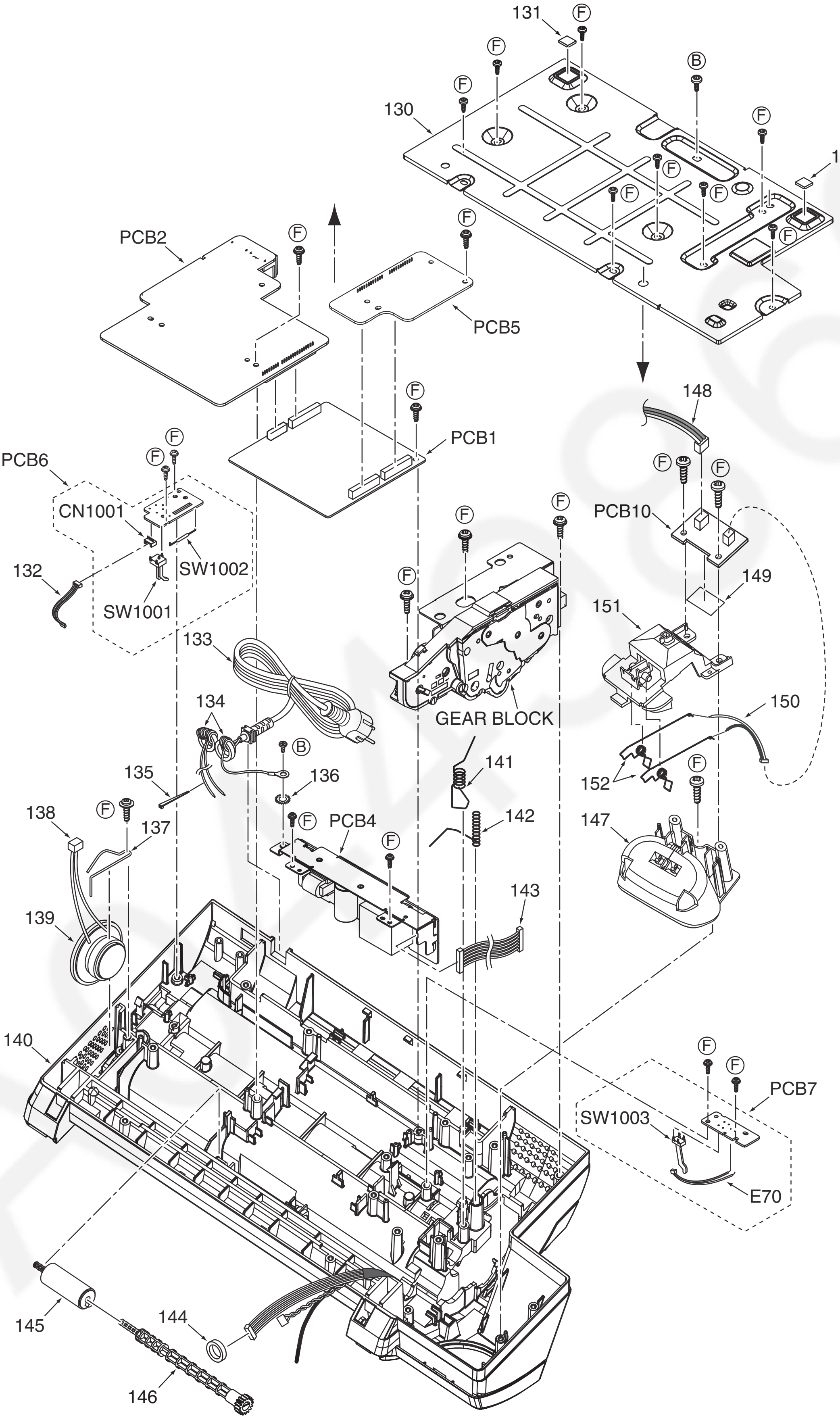
21.1.6. Lower Cabinet Section

21.1.6.1. Exploded View


131
F
F
B
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130
F
131
F
F
F
F
F
PCB2
F
PCB5
148
F
PCB1
F
F
PCB6
F
F
CN1001
PCB10
F
F
132
SW1002
149
SW1001
151
133
134
GEAR BLOCK
150
B
135
136
141
F
152
138
F
137
F
PCB4
142
147
F
143
139
140
F
F
PCB7
SW1003
E70
145
144
146

21.1.6.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	130	PFMD1104Z	FRAME, BOTTOM	SECC
	131	PNHA1017Z	RUBBER PART, LEG	PORON
	132	PFJS04M36Z	CONNECTOR, 4 PIN	
⚠	133	PFJA03A016Z	POWER CORD	
	134	J0KE00000114	INSULATOR	S
	135	PQHR945Z	BAND	
	136	XWC4BFJ	WASHER	
	137	PFUS1707Z	TORSION SPRING	SUS
	138	PFJS02M17Z	CONNECTOR, 2 PIN	
	139	L0AA05A00048	SPEAKER	S
	140	PFKM1204Z3	CABINET BODY	PS-VO
	141	PFUS1715Z	SPRING,PLATEN EARTH	SUS
	142	PFUS1709Z	SPRING, HEAD EARTH	SUS
	143	PFJS08M14Z	CONNECTOR, 8 PIN	
	144	J0KE00000114	INSULATOR	S
	145	PFDR1086Z	ROLLER, DOC. SEPARATION	POM-HB/ EPDM
	146	PFDF1151Z	SHAFT, SEPARATION	POM-HB
	147	PNKE1100Z2	CASE, CHARGE	
	148	PFJS03M41Z	CONNECTOR, 3 PIN	
	149	PFHX2012Y	SPACER, SHEET	
	150	PFJS02M40Z	CONNECTOR, 2 PIN	
	151	PNHR1401Z	CASE, TERMINAL	
	152	PNJT1044Z	TERMINAL, BATTERY	

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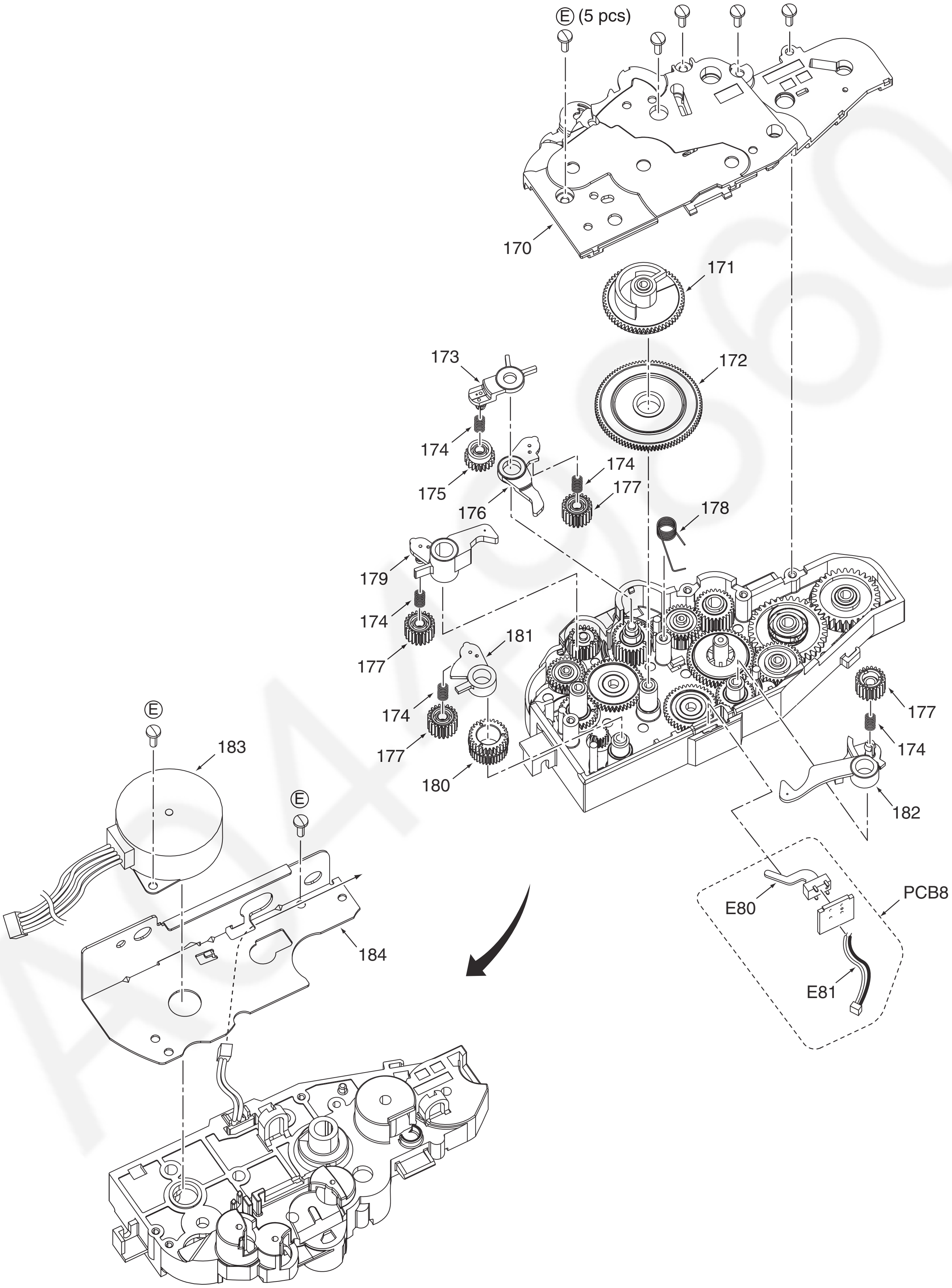
21.1.7. Gear Block Section (1)

21.1.7.1. Exploded View


Ⓔ (5 pcs)
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E80
PCB8
E81

21.1.7.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	170	PFUV1102Z	COVER	POM-HB
	171	PFDG1491Y	GEAR	POM-HB
	172	PFDG1478Z	GEAR	POM-HB
	173	PFHR1578Z	ARM	POM-HB
	174	PFUS1545Z	BAR SPRING	SUS
	175	PFDG1485Z	GEAR	POM-HB
	176	PFHR1579Z	ARM	POM-HB
	177	PFDG1484Z	GEAR	POM-HB
	178	PFUS1718Z	COIL SPRING	SUS
	179	PFHR1577Z	ARM	POM-HB
	180	PFDG1483Z	GEAR	POM-HB
	181	PFHR1576Z	ARM	POM-HB
	182	PFHR1580Z	ARM	POM-HB
	183	L6HAYYYK0006	DC MOTOR	
	184	PFMH1199Z	FRAME	SECC

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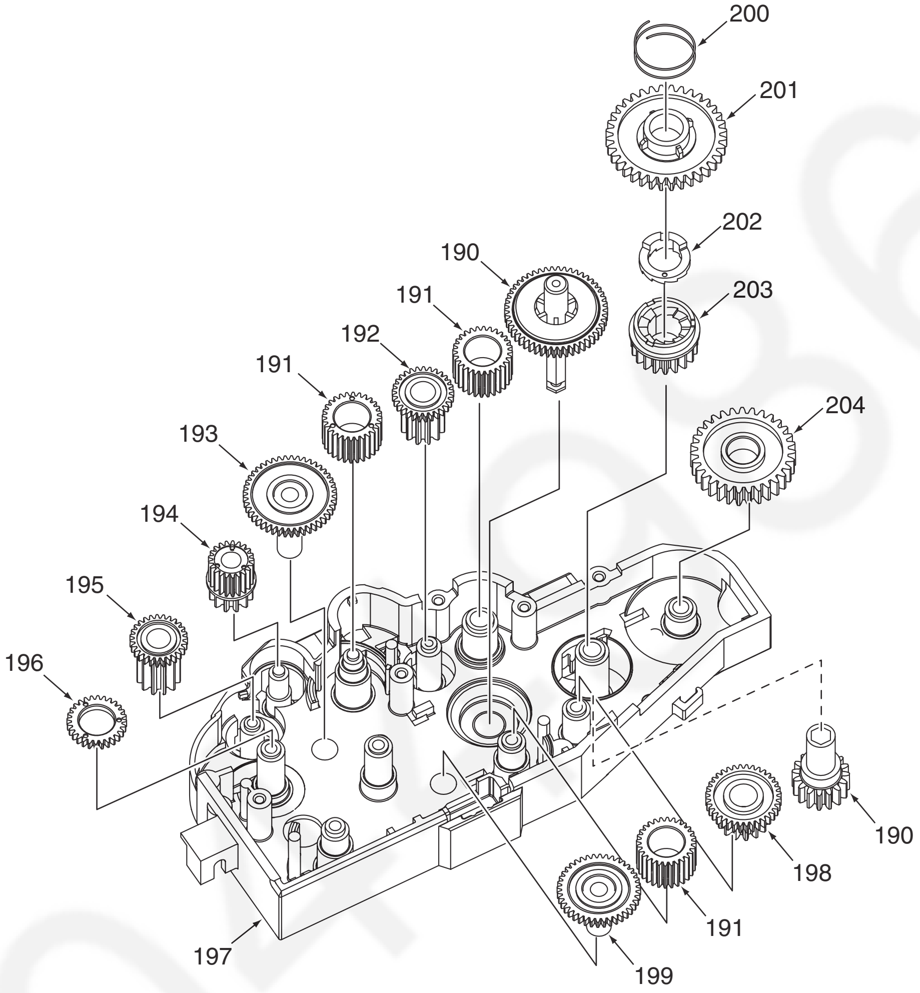
21.1.8. Gear Block Section (2)

21.1.8.1. Exploded View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21.1.8.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	190	PFDX1075Z	GEAR	POM+SUS
	191	PFDG1482Z	GEAR	POM-HB
	192	PFDG1486Z	GEAR	POM-HB
	193	PFDG1480Z	GEAR	POM-HB
	194	PFDG1488Z	GEAR	POM-HB
	195	PFDG1487Z	GEAR	POM-HB
	196	PFDG1481Z	GEAR	POM-HB
	197	PFUA1081Y	CHASSIS	ABS+PBT-V0
	198	PFDG1489Z	GEAR	POM-HB
	199	PFDG1479Z	GEAR	POM-HB
	200	PFUS1714Z	COIL SPRING	SUS
	201	PFDG1492Z	GEAR	POM-HB
	202	PFDE1289Z	SPACER	POM-HB
	203	PFDG1493Z	GEAR	POM-HB
	204	PFDG1490Z	GEAR	POM-HB

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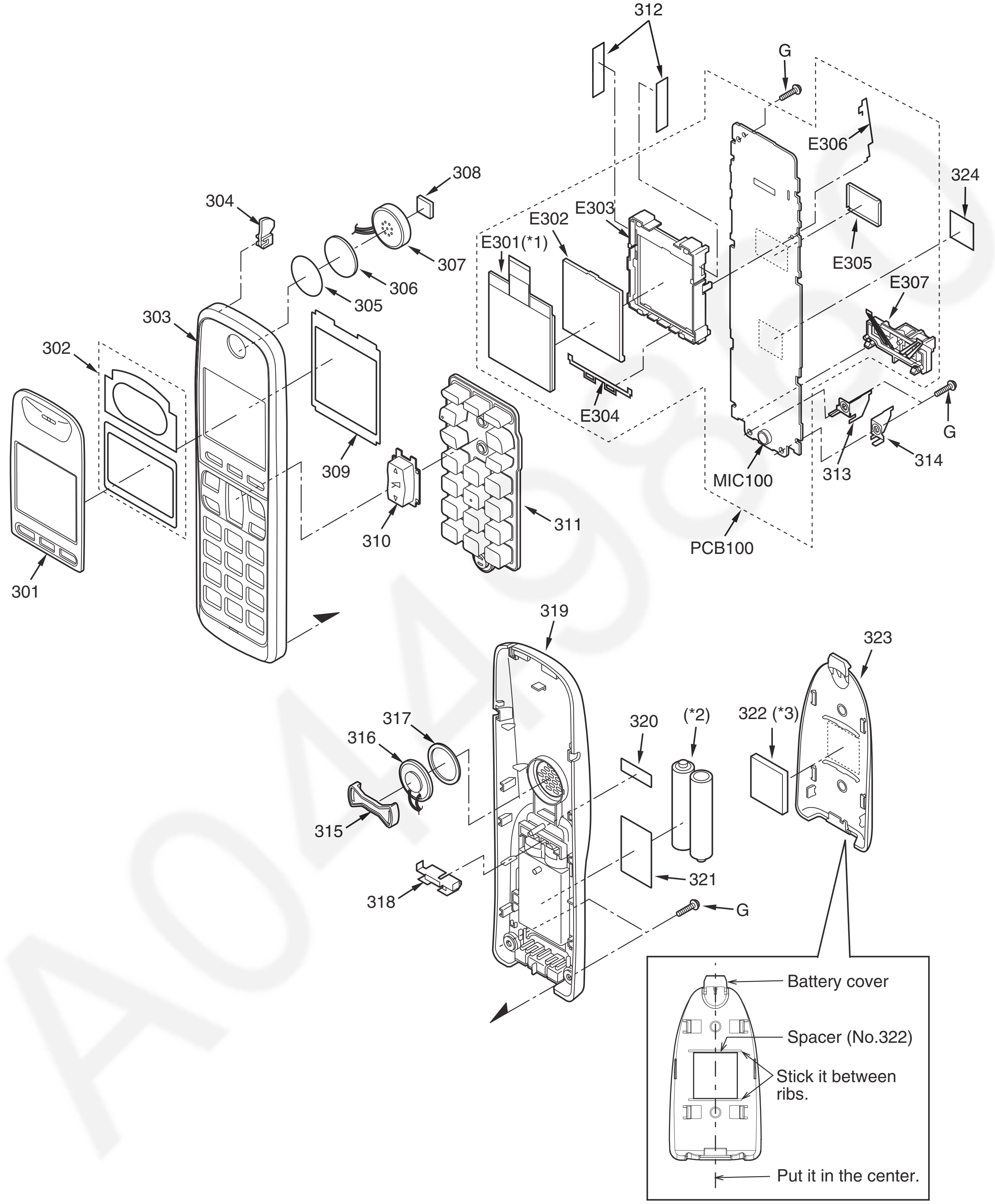
21.1.9. Cordless Handset Section

21.1.9.1. Exploded View


312
G
E306
324
308
304
E303
E302
E301(*1)
307
E305
306
E307
305
303
302
309
E304
G
313
314
MIC100
310
311
PCB100
301
319
323
317
320
(*2)
322 (*3)
316
315
321
318
G
Battery cover
Spacer (No.322)
Stick it between ribs.
Put it in the center.

Note:

(*1) This cable is fixed by welding. Refer to **How to Replace the LCD** (P.171).

(*2) The rechargeable Ni-MH battery P03P or HHR-4MRE is available through sales route of Panasonic.

(*3) Attach the spacer (No. 322) to the exact location described above.

21.1.9.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	301	PNGP1048Y3	PANEL, LCD	PMMA-HB
	302	PNYE1008Z	TAPE, DOUBLESIDED	
	303	PNKM1080Y7	CABINET BODY	PS-HB
	304	PNHR1105Z	OPTIC CONDUCTIVE PARTS, LED LENS	PS-HB
	305	PNHS1072Z	SPACER, RECEIVER NET	
	306	PQHS10467Z	COVER, SPEAKER NET	
	307	L0AD02A00028	RECEIVER	
	308	PQHG10729Z	RUBBER PARTS, RECEIVER	
	309	PNYE1009Z	SPACER, CUSHION LCD	
	310	PNBC1265Z1	BUTTON, VOLUME KEY	ABS-HB
	311	PNJK1050T	KEYBOARD SWITCH	
	312	PNHX1165Z	COVER, LCD SHEET	
	313	PNJT1027Z	CHARGE TERMINAL (L)	
	314	PNJT1026Z	CHARGE TERMINAL (R)	
	315	PQHR11315Z	GUIDE, SPEAKER HOLDER	ABS-HB
	316	L0AA02A00095	SPEAKER	
	317	PQHS10784Y	SPACER, SPEAKER NET	
	318	PNJC1014Y	BATTERY TERMINAL	
	319	PNKF1057Z3	CABINET COVER	ABS-HB
	320	PQQT23182Z	LABEL, ATTENTION	
	321	PNGT5483Z-M	NAME PLATE	
	322	PNHS1079Z	SPACER, BATTERY COVER	
	323	PNKK1027Z3	LID, BATTERY COVER	ABS-HB
	324	PNHX1219Z	PET SHEET	

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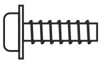
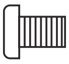
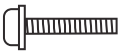
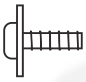
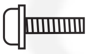
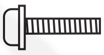
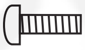
21.1.10. Screws

21.1.10.1. Exploded View

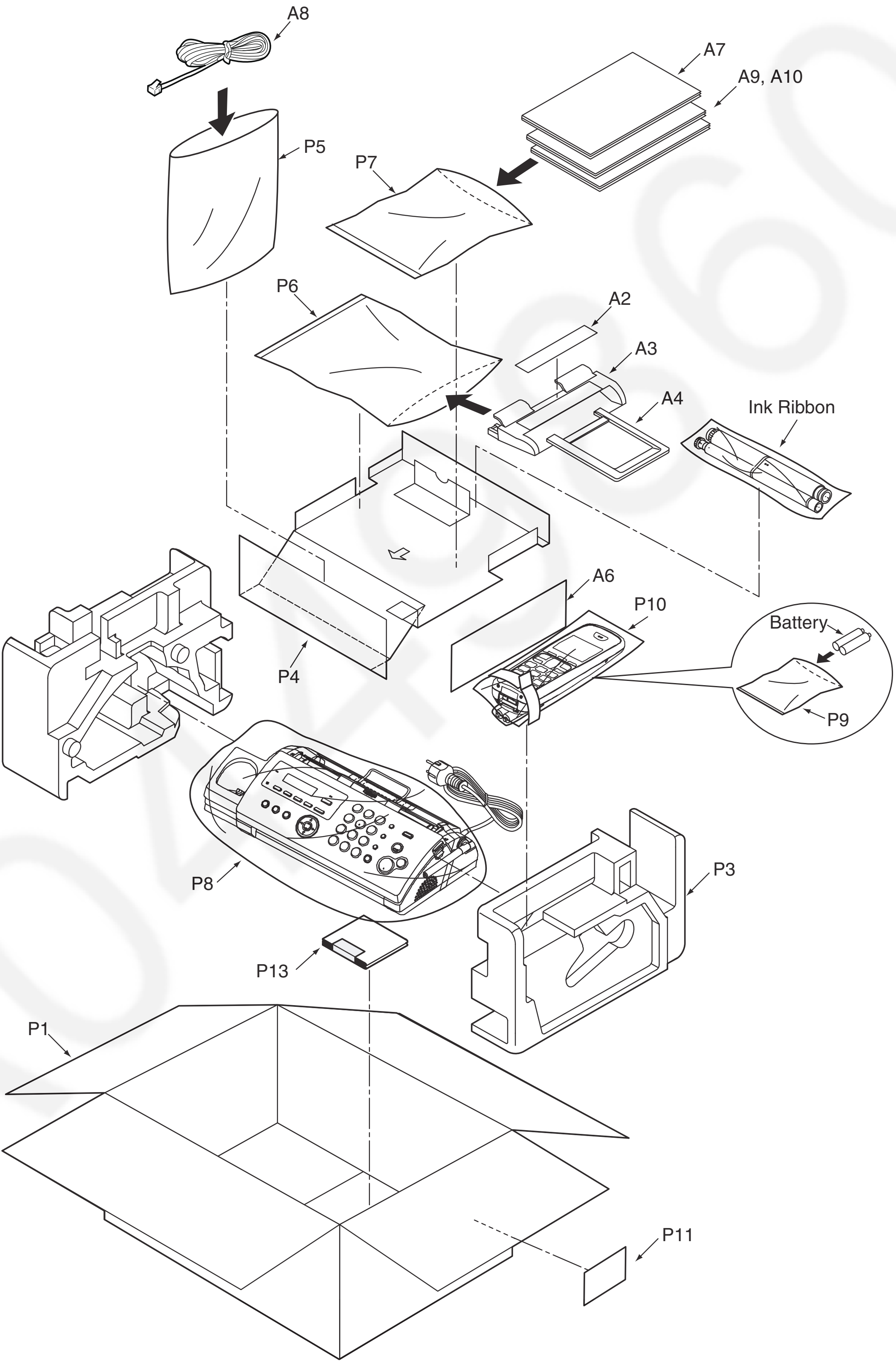
	Part No.	Figure
Ⓐ	XTW3+10PFJ7	 ϕ3 × 10 mm
Ⓑ	XSB4+6FJ	 ϕ4 × 6 mm
Ⓒ	XTW26+14PFJ7	 ϕ2.6 × 14 mm
Ⓓ	XTW3+W8PFJ	 ϕ3 × 8 mm
Ⓔ	XTB26+8GFJ	 ϕ2.6 × 8 mm
Ⓕ	XTB3+10GFJ	 ϕ3 × 10 mm
Ⓖ	XTB2+8GFJ	 ϕ2 × 8 mm

21.1.10.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A	XTW3+10PFJ7	TAPPING SCREW,STEEL	
	B	XSB4+6FJ	SMALL SCREW,STEEL	
	C	XTW26+14PFJ7	TAPPING SCREW,STEEL	
	D	XTW3+W8PFJ	TAPPING SCREW,STEEL	
	E	XTB26+8GFJ	TAPPING SCREW,STEEL	
	F	XTB3+10GFJ	TAPPING SCREW,STEEL	
	G	XTB2+8GFJ	SCREW WITH WASHER,STEEL	

21.1.11. Accessories and Packing Materials

21.1.11.1. Exploded View


A8
A7
A9, A10
P5
P7
P6
A2
A3
A4
Ink Ribbon
A6
P10
Battery
P9
P2
P4
P8
P3
P13
P1
P11

21.1.11.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A2	PNQT2086Z	LABEL, PAPER SET	
	A3	PFKS1145Z4	TRAY, PAPER	
	A4	PFKS1148Z3	TRAY, PAPER SUPPORT	
	A6	PFQW2538Z	LEAFLET for BATTERY	
	A7	PNQX3061Z	INSTRUCTION BOOK	
	A8	PFJA02B002Y	CORD, TELEPHONE	
	A9	PNQW2672Z	LEAFTLET, QUICK GUIDE	
	A10	PNQW2673Z	LEAFTLET, QUICK GUIDE	
	P1	PNPK3205022Z	PACKING CASE	
	P2	PFPN1437Z	CUSHION, LEFT	
	P3	PFPN1438Z	CUSHION, RIGHT	
	P4	PFPD1293Z	CUSHION	
	P5	PNPP1021Z	PROTECTION COVER (for Cord)	
	P6	PNPP1041Z	PROTECTION COVER (for Tray)	
	P7	PQPP10005Z	PROTECTION COVER (for Printed)	
	P8	PFPH1085Z	PACKING SHEET	
	P9	XZB05X10A03	PROTECTION COVER (for Battery)	
	P10	XZB08X22C05	PROTECTION COVER (for Cordless Handset)	
	P11	PNQA3276Z	LABEL, INDONESIA REGULATION	
	P13	PFPD1324Z	CUSHION	

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21.2. Replacement Parts List

21.2.1. Digital Board Parts

Note:

- (*1) When replacing IC4 or IC22, data need to be written to them with PNZZFC265CX. Refer to **Base Unit** (P.181) of **Things to Do after Replacing IC**.
- (*2) Refer to **In Case of X'tal (X5) Replacement** (P.174).

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWP1C265CX	DIGITAL BOARD ASS'Y (RTL)	
			(ICs)	
	IC2	C1AB00002556	IC	
	IC3	C1CB00001959	IC	
	IC4	C1CB00001879	IC (BBIC) (*1)	
	IC7	C0CBADD00010	IC	
	IC8	C0CBABD00017	IC	
	IC10	C1ZBZ0003300	IC	
	IC12	C0JBAA000362	IC	
	IC13	C0EBF0000419	IC	
	IC16	PNWI1C275CX	IC (FLASH MEMORY)	
	IC17	C3ABKY000001	IC	
	IC22	PFWI3FC225E	IC (EEPROM) (*1)	
	IC23	PNWI2C275CX	IC (FLASH MEMORY)	
	IC29	C0CBAYG00016	IC	S
	IC102	C0ABEB000064	IC	
			(TRANSISTORS)	
	Q6	B1ADGE000012	TRANSISTOR(SI)	
	Q7	B1ABDF000025	TRANSISTOR(SI)	
	Q8	B1ADGE000012	TRANSISTOR(SI)	
	Q9	B1ABDF000025	TRANSISTOR(SI)	
	Q11	B1GBCFGG0028	TRANSISTOR(SI)	
	Q12	B1GBCFGG0028	TRANSISTOR(SI)	
	Q20	B1ADCF000088	TRANSISTOR(SI)	
	Q21	B1ABDF000026	TRANSISTOR(SI)	
	Q23	B1GBCFGG0028	TRANSISTOR(SI)	
	Q26	B1ABDF000025	TRANSISTOR(SI)	
	Q27	B1GBCFGG0028	TRANSISTOR(SI)	
	Q601	B1ABDF000025	TRANSISTOR(SI)	
			(DIODE)	
	DA4	B0DDCM000001	DIODE(SI)	
			(CAPACITORS)	
	C8	ECUV1A105ZFV	1	
	C9	ECUV1A105ZFV	1	
	C10	ECUE1H100DCQ	10p	
	C11	ECJ0EB0J224K	0.22	S
	C12	ECUE1H182KBQ	0.0018	
	C13	ECUV1A105ZFV	1	
	C18	ECJ0EB0J224K	0.22	S
	C20	ECUE1A104KBQ	0.1	
	C21	ECUE1A104KBQ	0.1	
	C22	ECUE1A104KBQ	0.1	
	C23	ECUE1C104ZFQ	0.1	
	C26	ECUE1C104ZFQ	0.1	
	C28	ECUE1H102KBQ	0.001	
	C29	ECUE1C104ZFQ	0.1	
	C30	ECUE1H101JCQ	100p	
	C31	F2G1C1000014	10	
	C32	ECUE1C104ZFQ	0.1	
	C33	ECUE1H120JCQ	12p	
	C39	ECUV1A105ZFV	1	
	C34	ECUE1H100DCQ	10p	
	C35	ECUE1C104ZFQ	0.1	
	C37	ECUE1H102KBQ	0.001	
	C38	ECUE1C104ZFQ	0.1	
	C40	ECUV1A105ZFV	1	
	C41	ECUE1H102KBQ	0.001	
	C42	ECUE0J105Z	1	
	C43	ECUE1H102KBQ	0.001	
	C46	ECUE1H101JCQ	100p	
	C59	ECUV1C105KBV	1	
	C71	ECUE1A104KBQ	0.1	
	C75	ECUE1C103KBQ	0.01	
	C78	ECUE1H102KBQ	0.001	
	C80	ECUE1A104KBQ	0.1	
	C83	ECUV1C105KBV	1	
	C88	ECUE1H330JCQ	33p	
	C91	ECUE1C103KBQ	0.01	
	C98	ECUE1A104KBQ	0.1	
	C100	ECUE1C104ZFQ	0.1	
	C104	ECUE1C103KBQ	0.01	
	C106	ECUE1H6R0DCQ	6	
	C108	ECUE1H150JCQ	15p	
	C110	ECUE1C103KBQ	0.01	
	C111	ECUE1C103KBQ	0.01	
	C113	ECUE1A104KBQ	0.1	
	C117	ECUE1A104KBQ	0.1	
	C121	ECUE1H150JCQ	15p	
	C122	ECUE1H150JCQ	15p	
	C123	ECUE1C103KBQ	0.01	
	C124	ECUE1H102KBQ	0.001	
	C126	ECUV1H104ZFV	0.1	
	C127	EEE1CA101WP	100	S
	C128	ECUV1A105ZFV	1	
	C131	F2G1C4700026	47	
	C133	ECUV1A105ZFV	1	
	C134	F2G0J4700032	47	
	C135	ECUV1A105ZFV	1	
	C136	ECUE1C104ZFQ	0.1	
	C137	ECUE1C104ZFQ	0.1	
	C141	ECUE1H180JCQ	18p	
	C143	ECUE1H100DCQ	10p	
	C149	ECUE1H102KBQ	0.001	
	C150	ECUE1H222KBQ	0.0022	
	C151	ECUE1A104KBQ	0.1	
	C152	ECUE1H102KBQ	0.001	
	C153	PQCUV1A475ZF	4.7	
	C154	ECUE1A104KBQ	0.1	
	C155	ECUE1C104ZFQ	0.1	
	C156	ECUE1H102KBQ	0.001	
	C157	ECUE1C104ZFQ	0.1	
	C159	ECUE1C104ZFQ	0.1	
	C160	ECUE1C104ZFQ	0.1	
	C161	ECUE1H101JCQ	100p	
	C163	ECUE1H102KBQ	0.001	
	C164	ECUE1H101JCQ	100p	
	C167	ECUE1C104ZFQ	0.1	
	C168	ECUE1H102KBQ	0.001	
	C170	ECUE1H102KBQ	0.001	
	C171	ECUE1H102KBQ	0.001	
	C172	ECUE1H101JCQ	100p	
	C174	ECUE1H101JCQ	100p	
	C178	ECUE1C103KBQ	0.01	
	C190	ECUE1C104ZFQ	0.1	
	C200	ECUE1C104ZFQ	0.1	
	C201	ECUE1C104ZFQ	0.1	
	C202	ECUE1C104ZFQ	0.1	
	C204	ECUE1C104ZFQ	0.1	
	C206	ECUE1H101JCQ	100p	
	C219	ECUE1C103KBQ	0.01	
	C227	ECUE1H220JCQ	22p	
	C229	ECUE1C104ZFQ	0.1	
	C247	ECUE1A104KBQ	0.1	
	C248	ECUE1H331KBQ	330p	
	C273	ECUE1H102KBQ	0.001	
	C274	ECUE1A104KBQ	0.1	
	C276	ECUE1H331KBQ	330p	
	C278	ECUE1A104KBQ	0.1	
	C282	ECUE1H331KBQ	330p	
	C283	F2G0J1010042	100	
	C286	ECUE1H100DCQ	10p	
	C292	ECUE1A104KBQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C308	ECUE1A104KBQ	0.1	
	C331	ECUE1H102KBQ	0.001	
	C332	ECUE1H151JCQ	150p	
	C333	ECUE1H100DCQ	10p	
	C334	ECUE1H100DCQ	10p	
	C335	ECUE1H100DCQ	10p	
	C336	ECUE1H100DCQ	10p	
	C337	ECUE1H100DCQ	10p	
	C338	ECUE1H100DCQ	10p	
	C339	ECUE1H100DCQ	10p	
	C340	ECUE1H100DCQ	10p	
	C341	ECUE1H100DCQ	10p	
	C342	ECUE1H100DCQ	10p	
	C343	ECUE1H100DCQ	10p	
	C344	ECUE1H2R0CCQ	2	
	C345	ECUE1H100DCQ	10p	
	C346	ECUE1H100DCQ	10p	
	C347	ECUE1H2R0CCQ	2	
	C348	ECUE1H100DCQ	10p	
	C350	ECUV1H100DCV	10p	
	C352	ECUV1H1R0CCV	1	
	C353	ECUV1H120JCV	12p	
	C354	ECUV1H120JCV	12p	
	C355	ECUV1H120JCV	12p	
	C358	F2G0J3310015	330	
	C359	ECUE1C104ZFQ	0.1	
	C360	ECUV1A105ZFV	1	
	C361	ECUE1A104KBQ	0.1	
	C362	ECJ0EB0J224K	0.22	S
	C363	ECJ0EB0J224K	0.22	S
	C365	ECUE1H100DCQ	10p	
	C366	ECUE1H391KBQ	390p	
	C367	ECUE1H391KBQ	390p	
	C368	ECUE1H100DCQ	10p	
	C369	F1K1A4750003	4.7	
	C381	ERJ2GE0R00	0	S
	C395	ECUV1A105ZFV	1	
	C397	ECUV1H100DCV	10p	
	C400	ECUE1C104ZFQ	0.1	
	C403	ECUE1H102KBQ	0.001	
	C404	ECUE1H102KBQ	0.001	
	C408	ECUE1A104KBQ	0.1	
	C409	F2G0J3310015	330	
	C410	ECUE1H102KBQ	0.001	
	C411	ECUE1H102KBQ	0.001	
	C412	ECUV1H103KBV	0.01	
	C601	ECUE1H151JCQ	150p	
	C603	ECUV1C104KBV	0.1	
	C605	ECUE1H100DCQ	10p	
	C607	ECUV1C104KBV	0.1	
	C611	ECUV1H104ZFV	0.1	
	C613	F2G1V3300012	33	
	C614	ECUV1H104ZFV	0.1	
	C615	ECUV1C105KBV	1	
	C616	ECUE1H102KBQ	0.001	
	C660	ECUE1C104ZFQ	0.1	
	C661	ECUE1C104ZFQ	0.1	
	C679	ECUE1H102KBQ	0.001	
	C680	ECUE1H102KBQ	0.001	
	C681	ECUE1C104ZFQ	0.1	
			(CONNECTORS)	
	CN2	K1MY14AA0080	CONNECTOR, 14 PIN	
	CN4	K1KA10A00441	CONNECTOR, 10 PIN	
	CN5	K1KA11A00170	CONNECTOR, 11 PIN	
	CN14	K1KA07A00257	CONNECTOR, 7 PIN	
	CN18	K1KA05A00413	CONNECTOR, 5 PIN	
	CN19	K1KA15A00163	CONNECTOR, 15 PIN	
	CN206	K1KA08A00440	CONNECTOR, 8 PIN	
	CN918	K1KA02A00587	CONNECTOR, 2 PIN	
			(RF)	
	IC28	PQLP10263Z	RF UNIT	
			(IC FILTERS)	
	L1	J0JHC0000035	IC FILTER	
	L2	J0JHC0000035	IC FILTER	
			(COILS)	
	L34	PQLQR2KB20T	COIL	S
	L36	G1C5N6Z00011	COIL	
	L46	PQLQR2KA113	COIL	S
	L47	PQLQR2KA113	COIL	S
	L602	PQLQR2KB113T	COIL	S
	L603	PQLQR2KA113	COIL	S
	L604	PQLQR2KA113	COIL	S
	L605	PQLQR2KA20T	COIL	S
			(RESISTORS)	
	R1	ERJ6GEYJ100V	10	S
	R11	ERJ2GEJ682	6.8k	S
	R12	ERJ2GEJ183	18k	S
	R13	ERJ2GEJ124	120k	S
	R14	ERJ2GEJ124	120k	S
	R17	ERJ2GEJ472X	4.7k	S
	R20	ERJ2GEJ472X	4.7k	S
	R22	ERJ2GE0R00	0	S
	R23	ERJ2GEJ220	22	S
	R24	ERJ2GEJ272	2.7k	S
	R26	ERJ2GEJ473	47k	S
	R30	ERJ3GEYJ181	180	S
	R35	ERJ2GEJ472X	4.7k	S
	R38	ERJ2GEJ101	100	S
	R49	ERJ2GEJ153	15k	S
	R58	ERJ2GEJ561	560	S
	R60	ERJ2GEJ562X	5.6k	S
	R62	ERJ2GEJ102	1k	S
	R63	ERJ2GEJ272	2.7k	S
	R68	ERJ3GEYF133	13k	S
	R69	ERJ3EKF5601	5.6k	
	R70	ERJ2GEJ102	1k	S
	R73	ERJ2GEJ112X	1.1k	S
	R75	ERJ2GEJ272	2.7k	S
	R97	ERJ2GEJ330	33	S
	R98	ERJ2GEJ330	33	S
	R99	ERJ2GEJ472X	4.7k	S
	R107	ERJ2GEJ102	1k	S
	R108	ERJ2GEJ102	1k	S
	R109	ERJ2GEJ100	10	S
	R110	ERJ2GEJ101	100	S
	R111	ERJ2GEJ101	100	S
	R112	ERJ2GEJ100	10	S
	R113	ERJ2GEJ472X	4.7k	S
	R114	ERJ3EKF1101	1.1k	
	R115	ERJ3EKF3602	36k	
	R118	ERJ3GEYJ472	4.7k	S
	R130	ERJ2GEJ433	43k	S
	R131	ERJ2GEJ203	20k	S
	R132	ERJ2GEJ223	22k	S
	R136	ERJ2GEJ103	10k	S
	R137	ERJ2GEJ100	10	S
	R142	ERJ2GE0R00	0	S
	R145	ERJ2GEJ105X	1M	S
	R148	ERJ2GEJ182	1.8k	S
	R149	ERJ2GEJ103	10k	S
	R150	ERJ2GEJ222	2.2k	S
	R175	ERJ2GEJ101	100	S
	R176	ERJ2GE0R00	0	S
	R179	ERJ2GEJ222	2.2k	S
	R187	ERJ2GEJ103	10k	S
	R188	ERJ2GEJ103	10k	S
	R200	ERJ2GEJ223	22k	S
	R202	ERJ2GEJ472X	4.7k	S
	R203	ERJ2GEJ221	220	S
	R204	ERJ2GEJ221	220	S
	R209	ERJ2GEJ100	10	S
	R210	ERJ2GEJ100	10	S
	R211	ERJ2GEJ332	3.3k	S
	R230	ERJ2GEJ332	3.3k	S
	R231	ERJ2GEJ473	47k	S
	R232	ERJ2GEJ183	18k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R233	ERJ2GEJ223	22k	S
	R236	ERJ2GEJ103	10k	S
	R238	ERJ2GEJ562X	5.6k	S
	R239	ERJ2GEJ562X	5.6k	S
	R241	ERJ2GEJ101	100	S
	R242	ERJ2GEJ101	100	S
	R243	ERJ2GEJ103	10k	S
	R246	ERJ2GEJ102	1k	S
	R247	ERJ2GEJ101	100	S
	R253	ERJ2GEJ103	10k	S
	R254	ERJ2GEJ101	100	S
	R259	ERJ2GEJ103	10k	S
	R262	ERJ2GEJ103	10k	S
	R263	ERJ2GEJ224	220k	S
	R272	ERJ2GEJ561	560	S
	R273	ERJ2GEJ271	270	S
	R295	ERJ2GEJ561	560	S
	R296	ERJ2GEJ102	1k	S
	R298	ERJ2GEJ152	1.5k	S
	R301	ERJ2GEJ152	1.5k	S
	R303	ERJ2GEJ272	2.7k	S
	R304	ERJ2GEJ331	330	S
	R310	ERJ2GEJ101	100	S
	R311	ERJ2GEJ102	1k	S
	R318	ERJ2GE0R00	0	S
	R320	ERJ2GEJ332	3.3k	S
	R323	ERJ2GE0R00	0	S
	R336	ERJ2GEJ682	6.8k	S
	R337	ERJ2GEJ682	6.8k	S
	R338	ERJ2GEJ472X	4.7k	S
	R340	ERJ2GEJ102	1k	S
	R341	ERJ2GEJ472X	4.7k	S
	R343	ERJ2GEJ101	100	S
	R344	ERJ2GEJ101	100	S
	R347	ERJ2GEJ472X	4.7k	S
	R348	ERJ2GEJ102	1k	S
	R350	ERJ2GEJ472X	4.7k	S
	R351	ERJ2GEJ102	1k	S
	R353	ERJ2GEJ472X	4.7k	S
	R354	ERJ2GEJ102	1k	S
	R356	ERJ2GEJ821	820	S
	R357	ERJ2GEJ560X	56	S
	R359	ERJ2GE0R00	0	S
	R360	ERJ3GEYJ181	180	S
	R361	ERJ3GEYJ181	180	S
	R364	ERJ3EKF2200	220	
	R365	ERJ3EKF2200	220	
	R366	ERJ2GEJ272	2.7k	S
	R368	ERJ2GEJ102	1k	S
	R369	ERJ2GEJ683X	68k	S
	R371	ERJ2GEJ683X	68k	S
	R377	ERJ6GEYJ2R2V	2.2	S
	R378	ERJ6GEYJ2R2V	2.2	S
	R391	ERJ3GEYJ105	1M	S
	R396	ERJ2GEJ101	100	S
	R397	ERJ2GEJ101	100	S
	R409	ERJ2GEJ472X	4.7k	S
	R410	ERJ2GEJ101	100	S
	R411	ERJ2GEJ472X	4.7k	S
	R412	ERJ2GEJ101	100	S
	R601	ERJ2GEJ103	10k	S
	R602	ERJ2GEJ124	120k	S
	R603	ERJ2GEJ183	18k	S
	R604	ERJ2GEJ183	18k	S
	R612	ERJ3GEYJ103	10k	S
	R613	ERJ3GEYJ103	10k	S
	R614	ERJ3GEYJ103	10k	S
	R618	ERJ2GEJ102	1k	S
	R619	ERJ2GEJ102	1k	S
	R620	ERJ2GEJ102	1k	S
	R621	ERJ2GEJ332	3.3k	S
	R623	ERJ2GE0R00	0	S
	R625	ERJ2GE0R00	0	S
	R627	ERJ2GE0R00	0	S
	R628	ERJ2GEJ103	10k	S
	R629	ERJ2GEJ102	1k	S
	R630	ERJ2GEJ102	1k	S
	R631	ERJ2GEJ102	1k	S
	R632	ERJ2GEJ102	1k	S
	R633	ERJ2GE0R00	0	S
	J116	ERJ2GEJ102	1k	S
			(COMPONENTS PARTS)	
	RA3	EXB28V470JX	RESISTOR ARRAY	
	RA4	EXB28V470JX	RESISTOR ARRAY	
	RA5	EXB28V470JX	RESISTOR ARRAY	
	RA6	EXB28V470JX	RESISTOR ARRAY	
	RA10	EXB28V101JX	RESISTOR ARRAY	
	RA12	EXB28V101JX	RESISTOR ARRAY	
	RA13	D1H84724A013	RESISTOR ARRAY	S
			(CRYSTAL OSCILLATORS)	
	X1	H0J322500006	CRYSTAL OSCILLATOR	
	X3	H0A327200147	CRYSTAL OSCILLATOR	
	X4	H2C240500006	CRYSTAL OSCILLATOR	
	X5	H0D103500003	CRYSTAL OSCILLATOR (*2)	

21.2.2. Analog Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PNLP1045CX-A	ANALOG BOARD ASS'Y (RTL)	
			(Ics)	
	IC101	C0ABEB000083	IC	
			(TRANSISTORS)	
	Q101	PQVTDTC143E	TRANSISTOR(SI)	S
	Q104	PQVTDTC143E	TRANSISTOR(SI)	S
	Q107	PQVTDTC143E	TRANSISTOR(SI)	S
	Q110	B1AAKL000006	TRANSISTOR(SI)	
			(DIODES)	
	D101	B0AACK000011	DIODE(SI)	
	D103	MA4056	DIODE(SI)	S
	D104	MA4056	DIODE(SI)	S
	D105	B0EDER000009	DIODE(SI)	
	D109	B0AACK000011	DIODE(SI)	
	D118	PQVDMZJ24A	DIODE(SI)	S
	DA104	MA143	DIODE(SI)	
			(CAPACITORS)	
	C101	F0C2E105A216	1	
	C102	F1B2H681A070	680p	
	C103	F1B2H681A070	680p	
	C115	ECEA1HKA4R7	4.7	
	C119	ECUV1H100DCV	10p	
	C120	ECUV1H101JCV	100p	
	C121	F2A1H2200013	22	
	C128	PQCUV1H333JC	0.033	S
	C130	ECUV1C104KBV	0.1	
	C132	ECUV1H100DCV	10p	
	C134	ECUV1C104KBV	0.1	
	C136	ECUV1H471JCV	470p	
	C137	ECUV1H471JCV	470p	
	C138	PQCUV1E104MD	0.1	S
	C157	ECUV1C104KBV	0.1	
	C160	ECUV1H100DCV	10p	
	C162	ECUV1H681JCV	680p	
	C169	ECEA1HKA4R7	4.7	
	C179	ECUV1C104ZFV	0.1	
	C180	ECEA1CK101	100	S
	C181	ECEA1CK101	100	S
	C182	ECUV1C104ZFV	0.1	
	C195	ECQE2104KF	0.1	
	C196	ECUV1H101JCV	100p	
	C197	ECUV1H101JCV	100p	
			(JACKS AND CONNECTORS)	
	CN101	K2LB102B0055	JACK	
	CN103	K3E032C00040	CONNECTOR, 15PIN	
	CN104	PQJS05A10Z	CONNECTOR, 5PIN	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	CN105	K1KA02A00587	CONNECTOR, 2PIN	
	CN106	K1KA04A00527	CONNECTOR, 4PIN	
			(COILS)	
	L110	PQLQR2KB20T	COIL	S
	L111	PQLQR2KB20T	COIL	S
	FLT101	PFLE003	COIL	S
			(PHOTO ELECTRIC TRANSDUCERS)	
⚠	PC101	B3PAA0000330	PHOTO ELECTRIC TRANSDUCER	
⚠	PC102	B3PAB0000058	PHOTO ELECTRIC TRANSDUCER	S
⚠	PC104	B3PAB0000058	PHOTO ELECTRIC TRANSDUCER	S
			(THERMISTOR)	
	POS101	D4DAY220A022	THERMISTOR	
			(CERAMIC FILTERS)	
	L102	PFVF2B272ST	CERAMIC FILTER	S
	L103	PFVF2B272ST	CERAMIC FILTER	S
			(RESISTORS)	
	R101	ERDS1TJ223	22k	S
	R104	ERDS1TJ473	47k	
	R107	ERJ3GEYJ471	470	S
	R115	ERDS2TJ220	22	
	R120	ERJ3GEYJ272	2.7k	S
	R125	ERJ3GEYJ153	15k	S
	R126	ERJ3GEYJ472	4.7k	S
	R130	ERJ3GEYJ102	1k	S
	R131	ERJ3GEYJ221	220	S
	R132	ERJ3GEY0R00	0	S
	R133	ERJ3GEYJ102	1k	S
	R134	ERJ3GEYJ102	1k	S
	R135	ERJ3GEYJ242	2.4k	S
	R136	ERJ3GEYJ242	2.4k	S
	R138	ERJ3GEYJ123	12k	S
	R140	ERJ3GEYJ123	12k	S
	R141	ERJ3GEYJ273	27k	S
	R142	ERJ3GEYJ273	27k	S
	R153	ERJ3GEYJ103	10k	S
	R154	ERJ3GEYJ473	47k	S
	R165	ERJ3GEYJ123	12k	S
	R166	ERJ3GEYJ103	10k	S
	J105	ERJ6GEY0R00	0	S
	J107	ERJ3GEY0R00	0	S
	J119	ERJ3GEY0R00	0	S
	J120	ERJ3GEY0R00	0	S
			(RELAY)	
⚠	RL101	PFSL003Z	RELAY	S
			(VARISTORS)	
	SA101	PFRZRA311P6T	VARISTOR	S
⚠	SA102	J0LS00000024	VARISTOR	
			(TRANSFORMERS)	
⚠	T101	G4A1A0000170	TRANSFORMER	
⚠	T102	G4A1A0000172	TRANSFORMER	

21.2.3. Operation Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB3	PFWP2FC255E	OPERATION BOARD ASS'Y (RTL)	
			(IC)	
	IC301	C1ZBZ0004019	IC	
			(DIODE)	
	LED301	B3AAA0000534	DIODE(SI)	
			(CAPACITORS)	
	C300	ECUV1C104ZFV	0.1	
	C302	ECEA0JKS101	100	S
	C303	ECUV1H102KBV	0.001	
	C304	ECUV1H101JCV	100p	
	C305	ECUV1H331JCV	330p	
	C306	ECUV1H331JCV	330p	
	C307	ECUV1C104ZFV	0.1	
	C308	ECUV1C104ZFV	0.1	
	C311	ECUV1C104ZFV	0.1	
	C330	ECUV1H103KBV	0.01	
	C331	ECUV1H103KBV	0.01	
	C341	ECUV1H101JCV	100p	
			(LIQUID CRYSTAL DISPLAY)	
	CN302	L5DAAYY00002	LIQUID CRYSTAL DISPLAY	
			(CONNECTOR)	
	CN301	K1KA08B00243	CONNECTOR, 8PIN	
			(COILS)	
	L1	PQLQR2M10NJ	COIL	S
	L2	PQLQR2M10NJ	COIL	S
	L3	PQLQR2M10NJ	COIL	S
			(RESISTORS)	
	R300	ERJ3GEYJ680	68	
	R301	ERJ3GEYJ181	180	
	R302	ERJ3GEYJ271	270	
	R303	ERJ3GEYJ181	180	
	R304	ERJ3GEYJ221	220	
	R305	ERJ3GEYJ221	220	
	R306	ERJ3GEYJ221	220	
	R307	ERJ3GEYJ221	220	
	R308	ERJ3GEYJ221	220	
	R309	ERJ3GEYJ221	220	
	R310	ERJ3GEYJ153	15k	
	R311	ERJ3GEYJ222	2.2k	
	R312	ERJ3GEYJ122	1.2k	
	R313	ERJ3GEYJ101	100	
	R315	ERJ3GEYJ4R7	4.7	
	R316	ERJ3GEYJ181	180	
	R320	ERJ3GEYJ331	330	
	R330	ERJ3GEYJ472	4.7k	
	R331	ERJ3GEYJ101	100	
	R332	ERJ3GEYJ472	4.7k	
	R333	ERJ3GEYJ101	100	
	R341	ERJ3GEYJ332	3.3k	
	R342	ERJ3GEYJ181	180	
	R343	ERJ3GEYJ102	1k	
			(SWITCHES)	
	SW301	K0H1BA000259	SWITCH	
	SW302	K0H1BA000259	SWITCH	
	SW303	K0H1BA000259	SWITCH	
	SW304	K0H1BA000259	SWITCH	
	SW305	K0H1BA000259	SWITCH	
	SW306	K0H1BA000259	SWITCH	
	SW307	K0H1BA000259	SWITCH	
	SW308	K0H1BA000259	SWITCH	
	SW309	K0H1BA000259	SWITCH	
	SW310	K0H1BA000259	SWITCH	
	SW311	K0H1BA000259	SWITCH	
	SW312	K0H1BA000259	SWITCH	
	SW313	K0H1BA000259	SWITCH	
	SW314	K0H1BA000259	SWITCH	
	SW315	K0H1BA000259	SWITCH	
	SW316	K0H1BA000259	SWITCH	
	SW317	K0H1BA000259	SWITCH	
	SW318	K0H1BA000259	SWITCH	
	SW319	K0H1BA000259	SWITCH	
	SW320	K0H1BA000259	SWITCH	
	SW321	K0H1BA000259	SWITCH	
	SW322	K0H1BA000259	SWITCH	
	SW323	K0H1BA000259	SWITCH	
	SW324	K0H1BA000259	SWITCH	
	SW325	K0H1BA000259	SWITCH	
	SW326	K0H1BA000259	SWITCH	
	SW327	K0H1BA000259	SWITCH	
	SW328	K0H1BA000259	SWITCH	
	SW329	K0H1BA000259	SWITCH	
	SW330	K0H1BA000259	SWITCH	
	SW331	K0H1BA000259	SWITCH	
	SW332	K0H1BA000259	SWITCH	
	SW333	K0H1BA000259	SWITCH	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	SW334	K0H1BA000259	SWITCH	
	E30	K0L1BA000126	SWITCH, SENSOR LEVER	
	E31	K0L1BA000127	SWITCH, SENSOR LEVER	

21.2.4. Power Supply Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB4	N0AC3GJ00012	POWER SUPPLY BOARD ASS'Y (RTL)	
			(ICs)	
	IC101	PFVIFA5518N	IC	S
	IC202	TA7804	IC	
			(TRANSISTORS)	
⚠	Q101	FQPF4N90C	TRANSISTOR(SI)	
			(DIODES)	
⚠	D101	PFVD1N4005	DIODE(SI)	S
⚠	D102	PFVD1N4005	DIODE(SI)	S
⚠	D103	PFVD1N4005	DIODE(SI)	S
⚠	D104	PFVD1N4005	DIODE(SI)	S
			(FUSE)	
⚠	F101	PFBAST250315	FUSE	S
			(PHOTO ELECTRIC TRANSDUCER)	
⚠	PC101	PFVIPC123	PHOTO COUPLER	S
			(CAPACITOR)	
	C106	400SXW47MM71	47	

21.2.5. Interface Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB5	PNLP1045CX-B	INTERFACE BOARD ASS'Y (RTL)	
			(TRANSISTORS)	
	Q401	B1DHDD000026	TRANSISTOR(SI)	
	Q402	2SB1322	TRANSISTOR(SI)	
	Q403	PQVTDTC143E	TRANSISTOR(SI)	S
	Q405	PQVTDTC144TU	TRANSISTOR(SI)	S
	IC401	B1HAGFF00015	TRANSISTOR(SI)	
			(DIODES)	
	D401	PFVDRMRLS245	DIODE(SI)	S
	D402	B0BA7R900004	DIODE(SI)	
	D403	B0BA7R900004	DIODE(SI)	
			(CAPACITORS)	
	C402	ECJ1VF1H104Z	0.1	
	C403	ECUV1C104ZFV	0.1	
	C406	ECUV1H102KBV	0.001	
			(CONNECTORS)	
	CN402	PQJS11A10Z	CONNECTOR, 11 PIN	S
	CN403	PQJS10A10Z	CONNECTOR, 10 PIN	S
	CN404	K1KA11A00158	CONNECTOR, 11 PIN	
	CN405	K1KA05AA0193	CONNECTOR, 5 PIN	
	CN407	K1KA03A00495	CONNECTOR, 3 PIN	
	CN408	K1KA02AA0193	CONNECTOR, 2 PIN	
	CN409	K1KA02A00585	CONNECTOR, 2 PIN	
	CN411	K1KA08A00440	CONNECTOR, 8 PIN	
			(FUSES)	
⚠	F401	K5H122200005	FUSE	
⚠	F402	K5H251200003	FUSE	
			(RESISTORS)	
	R401	ERJ3GEYJ562	5.6k	S
	R402	D0GN152JA016	1.5k	
	R403	ERJ3GEYJ821	820	S
	R404	ERJ6GEYJ221	220	S
	R454	ERJ3GEY0R00	0	S
	ZNR101	ERZVA7D151	150	

21.2.6. Sensor Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB6	PFWP4FG2451M	SENSOR BOARD ASS'Y (RTL)	
			(CONNECTOR)	
	CN1001	K1KA04B00225	CONNECTOR, 4 PIN	
			(SWITCHES)	
	SW1001	K0L2BA000001	PUSH SWITCH	
	SW1002	K0MA11000041	REED SWITCH	

21.2.7. Film End Sensor Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB7	PFWP5FG2451M	FILM END SENSOR BOARD ASS'Y (RTL)	
			(CONNECTOR)	
	E70	PFJS02M17Z	CONNECTOR, 2 PIN	
			(SWITCH)	
	SW1003	K0L1BA000111	PUSH SWITCH	

21.2.8. Motor Position Sensor Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB8	PFWP6FG2451M	MOTOR POSITION SENSOR BOARD ASS'Y (RTL)	
			(CONNECTOR)	
	E81	PFJS02M15Z	CONNECTOR, 2 PIN	
			(SWITCH)	
	E80	K0L1BA000128	PUSH SWITCH	

21.2.9. Microphone Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB9	PFWP3FC255E	MICROPHONE BOARD ASS'Y (RTL)	
			(MICROPHONE)	
	E90	L0CBAY000006	MICROPHONE	

21.2.10. Charger Board-A Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB10	PFLP1828EZ	CHARGER BOARD-A ASS'Y (RTL)	
			(IC)	
	IC7	C0CBADD00010	IC	
			(DIODE)	
	D506	MA8068M	DIODE(SI)	S
			(TRANSISTORS)	
	Q548	2SB1237TV2Q	TRANSISTOR(SI)	S
	Q549	2SB1197KQ	TRANSISTOR(SI)	S
	Q550	B1GDCFJA0022	TRANSISTOR(SI)	
			(CAPACITORS)	
	C128	ECUV1A105ZFV	1	
	C133	ECUV1A105ZFV	1	
	C716	ECEA1CKA100	10	
	C720	ECUV1C104ZFV	0.1	
			(CONNECTORS)	
	CN526	K1KA02A00587	CONNECTOR, 2PIN	
	CN527	K1KA03A00495	CONNECTOR, 3PIN	
			(IC FILTERS)	
	R783	J0JHC0000035	IC FILTER	
	R784	J0JHC0000035	IC FILTER	
			(RESISTORS)	
	R785	PQ4R10XJ101	100	S
	R786	ERJ6GEYJ1R6	1.6	
	R787	ERJ6GEYJ1R6	1.6	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R792	PQ4R10XJ101	100	S
	R793	ERJ6GEY0R00	0	

21.2.11. Cordless Handset Board Parts

Note:

(*3) Reconfirm the model No. written on the handset's name plate when replacing PCB100. Because the model No. of the optional handset may differ from the included handset.

(*4) When replacing IC1, IC3 or X1, make the adjustment using PNZZTG6421BX. Refer to **How to Remove the Cordless Handset Board** (P.170) of **Things to Do after Replacing IC.**

(*5) When you removing E305, use special tools (ex. Hot air disordering tool).

(*6) When replacing the handset LCD, See **How to Replace the LCD** (P.171).

(*7) Backside of this IC has a ground plate.

(*8) Supplied IC is Flat Package Type.

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB100	PNWPGA641BXR	MAIN P.C.BOARD ASS'Y (RTL) (*3)	
			(ICs)	
	IC1	C1CB00002906	IC (BBIC (FLASH)) (*4) (*7) (*8)	
	IC3	PQWIA130EXRR	IC (EEPROM) (*4)	
	IC801	C1CB00001842	IC (*7)	
			(TRANSISTORS)	
	Q2	B1ADGE000012	TRANSISTOR(SI)	
	Q4	B1ADGE000012	TRANSISTOR(SI)	
	Q7	UN9219J	TRANSISTOR(SI)	S
	Q9	2SC6054JSL	TRANSISTOR(SI)	
	Q10	UN9219J	TRANSISTOR(SI)	S
	Q11	B1ADCF000161	TRANSISTOR(SI)	
	Q12	B1ADCF000161	TRANSISTOR(SI)	
			(DIODES)	
	D1	MA2YD2120L	DIODE(SI)	
	D7	B0JCME000035	DIODE(SI)	
	D21	MA8043M	DIODE(SI)	S
	D22	MA8043M	DIODE(SI)	S
	DA801	B0DDCD000001	DIODE(SI)	
	LED1	B3ACB0000216	DIODE(SI)	
	LED2	B3ACB0000216	DIODE(SI)	
	LED3	B3ACB0000216	DIODE(SI)	
	LED4	B3ACB0000216	DIODE(SI)	
	LED5	B3ACB0000216	DIODE(SI)	
	LED6	B3ACB0000216	DIODE(SI)	
	LED7	B3ACB0000216	DIODE(SI)	
	LED8	B3ACB0000216	DIODE(SI)	
	LED9	B3ACB0000216	DIODE(SI)	
	LED12	B3ACB0000216	DIODE(SI)	
	DA801	B0DDCD000001	DIODE(SI)	
			(COILS)	
	L8	J0JHC0000045	COIL	
	L801	G1C27NJ00010	COIL	
	L802	G1C3N6ZA0063	COIL	
	L803	G1C3N6ZA0063	COIL	
	F1	PQLQR2M5N6K	COIL	S
			(RESISTOR ARRAYS)	
	RA1	D1H810240004	RESISTOR ARRAYS	S
	RA2	D1H410220001	RESISTOR ARRAYS	
	RA4	D1H433220001	RESISTOR ARRAYS	
	RA61	D1H422120001	RESISTOR ARRAYS	
			(VARISTORS)	
	D8	D4ED1270A014	VARISTOR	
	D13	D4ZZ00000024	VARISTOR	
	D14	D4ZZ00000024	VARISTOR	
			(RESISTORS)	
	R2	ERJ2GEJ392	3.9k	S
	R6	ERJ2GEJ102	1k	S
	R7	ERJ2GEJ122	1.2k	S
	R8	ERJ2GEJ101	100	S
	R20	ERJ2GEJ100	10	S
	R27	ERJ2GEJ821	820	S
	R28	ERJ2GEJ821	820	S
	R30	ERJ3GEYJ273	27k	S
	R40	ERJ2GEJ103	10k	S
	R41	ERJ2GEJ103	10k	S
	R42	ERJ2GEJ103	10k	S
	R45	ERJ6RSJR10V	0.1	
	R50	ERJ2GEJ103	10k	S
	R51	ERJ2GEJ471	470	S
	R52	ERJ2GEJ102	1k	S
	R53	ERJ2GEJ332	3.3k	S
	R54	ERJ2GEJ103	10k	S
	R55	ERJ2GEJ102	1k	S
	R63	ERJ2GEJ101	100	S
	R64	ERJ2GEJ103	10k	S
	R66	ERJ2GEJ102	1k	S
	R73	ERJ2GEJ820	82	S
	R74	ERJ2GEJ820	82	S
	R203	D0GA563ZA006	56k	
	R215	ERJ2GE0R00	0	S
	R248	ERJ2GE0R00	0	S
	R251	ERJ2GE0R00	0	S
	R300	ERJ2GEJ331	330	S
	R301	ERJ2GEJ331	330	S
	R302	ERJ2GEJ331	330	S
	R303	ERJ2GEJ331	330	S
	R304	ERJ2GEJ331	330	S
	R305	ERJ2GEJ331	330	S
	R308	ERJ2GEJ121	120	S
	R309	ERJ2GEJ121	120	S
	R310	ERJ2GEJ121	120	S
	R330	ERJ2GEJ105X	1M	S
	R331	ERJ2GEJ273X	27k	S
	R332	ERJ2GEJ273X	27k	S
	R801	ERJ2GEJ681	680	S
	R802	ERJ2GEJ101	100	S
	R803	ERJ2GEJ102	1k	S
	R804	ERJ2GEJ102	1k	S
	R805	ERJ2GEJ470	47	S
	R806	ERJ2GEJ221	220	S
	R807	ERJ2GEJ221	220	S
			(CAPACITORS)	
	C1	F2A0J3310067	330	
	C2	F2A0J3310067	330	
	C5	ECUE1A104KBQ	0.1	
	C10	ECUV1A225KB	2.2	
	C11	ECUE1A104KBQ	0.1	
	C12	PQCUV0J106KB	10	
	C13	ECUE1A104KBQ	0.1	
	C15	ECUV1A105KBV	1	
	C38	ECUE1H100DCQ	10p	
	C40	ECUE1A104KBQ	0.1	
	C43	ECUE1H100DCQ	10p	
	C44	ECUE1A104KBQ	0.1	
	C45	ECUE1A104KBQ	0.1	
	C46	ECUE1H100DCQ	10p	
	C47	ECUV1A105KBV	1	
	C49	ECUV1A105KBV	1	
	C50	ECUV1A105KBV	1	
	C51	ECUV1A105KBV	1	
	C52	PQCUV0J106KB	10	
	C53	PQCUV0J106KB	10	
	C54	ECUE1H100DCQ	10p	
	C55	ECUE1H100DCQ	10p	
	C70	ECUE1H100DCQ	10p	
	C71	ECUE1H100DCQ	10p	
	C72	ECUE1H100DCQ	10p	
	C73	ECUE1H100DCQ	10p	
	C96	ECUE1H100DCQ	10p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C97	ECUE1H100DCQ	10p	
	C103	ECUE1H101JCQ	100p	
	C104	ECUE1H100DCQ	10p	
	C105	ECUE1H101JCQ	100p	
	C113	ECUE1H100DCQ	10p	
	C138	ECUE1H100DCQ	10p	
	C139	ECUE1H100DCQ	10p	
	C147	ECUV1C105KBV	1	
	C152	ECUE1H102KBQ	0.001	
	C172	ECUV1C104KBV	0.1	
	C175	ECUV1C105KBV	1	
	C182	F1G1H3R0A480	3p	
	C186	F1G1H2R0A480	2p	
	C187	F1G1H2R0A480	2p	
	C188	ECUE0J105KBQ	1	
	C331	ECUE0J105KBQ	1	
	C332	ECUE0J105KBQ	1	
	C580	ECUE1H100DCQ	10p	
	C802	F1G1H2R0A480	2p	
	C803	F1G1H1R5A480	1.5p	
	C804	F1G1H2R0A480	2p	
	C805	F1G1H3R3A480	3.3p	
	C806	F1G1H3R3A480	3.3p	
	C808	ECUE1A104KBQ	0.1	
	C809	ECUE1H100DCQ	10p	
	C810	F1G1H1R6A480	1.6p	
	C811	ECUE1H100DCQ	10p	
	C812	ECUE1H100DCQ	10p	
	C813	F1G1H1R6A480	1.6p	
	C814	ECUE1H332KBQ	0.0033	
	C819	ECUE1H100DCQ	10p	
	C820	F1G1HR70A480	0.7p	
	C822	ECUE1H100DCQ	10p	
	C825	ECUE1H100DCQ	10p	
	C826	F1G1H2R0A480	2p	
	C827	ECUE1H100DCQ	10p	
	C834	F1G1HR50A480	0.5p	
	C859	F1G1H3R0A480	3p	
	C860	ECUE1H100DCQ	10p	
	C861	F1G1H3R0A480	3p	
	C862	F1G1HR70A480	0.7p	
	C863	ECUE1H100DCQ	10p	
	C864	ECUE1H100DCQ	10p	
			(OTHERS)	
	MIC100	L0CBAY000032	BUILTIN-MICROPHONE	
	E301	L5DYBYY00001	LIQUID CRYSTAL DISPLAY (*6)	
	E302	PNHR1114Z	TRANSPARENT PLATE, LCD PLATE	
	E303	PNHR1113Z	GUIEDE, LCD HOLDER	
	E304	PNHX1136Z	COVER, LCD COVER SHEET	
	E305	PNMC1013Z	CASE, MAGNETIC SHIELD (*5)	
	E306	PNLA1020Z	ANTENNA	
	E307	PNVE1002Z	BATTERY TERMINAL	
	X1	H0J103500034	CRYSTAL OSCILLATOR (*4)	

21.2.12. Service Fixture and Tools

Note:

- (*9) See **Cordless Base Section (Digital Board) Adjustment** (P.172) and **The Setting Method of JIG (Cordless Handset)** (P.178).
- (*10) When replace the Handset LCD, see **How to Replace the LCD** (P.171)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
		PQZZ1CD300E	JIG CABLE (*9)	
		PNZZFC265CX	BATCH FILE CD-ROM (*9) (for Base Unit)	
		PNZZTG6421BX	BATCH FILE CD-ROM (*9) (for Cordless Handset)	
		PQZZ430PIR	TIP OF SOLDERING IRON (*10)	
		PQZZ430PRB	RUBBER OF SOLDERING IRON (*10)	

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