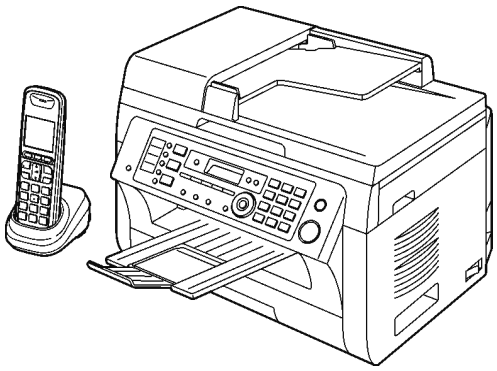
ORDER NO. KMF1009309CE

Service Manual

Multi-Function printer



Model No. KX-MB2061CXB
KX-MB2061CX2
KX-MB2062CXB

(Black version)
(for Middle East, Africa, Asia)

⚠ 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 Replacements 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.

Panasonic®

TABLE OF CONTENTS

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.

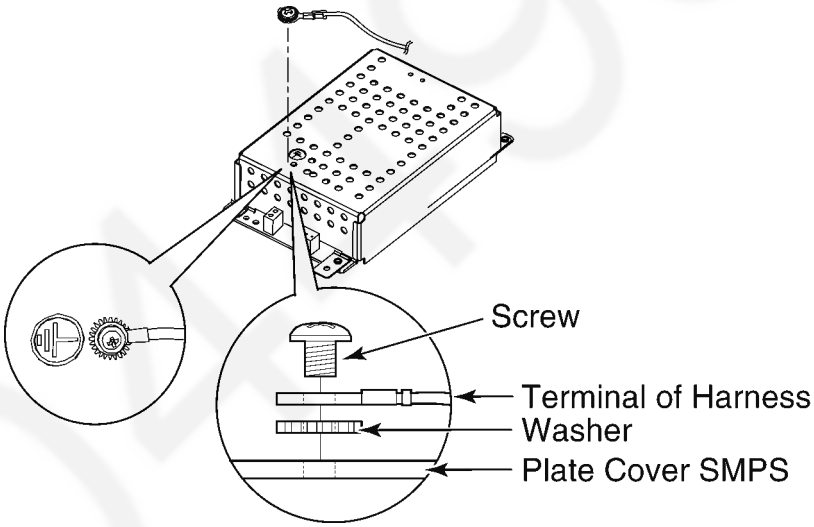
1.1. For Service Technicians

- **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 out.
- **ICs and LSIs are vulnerable to static electricity.**
  When repairing, the following precautions will help prevent recurring malfunctions.
  1. Cover the plastic part's boxes with aluminum foil.
  2. Ground the soldering irons.
  3. Use a conductive mat on the worktable.
  4. Do not touch the 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.

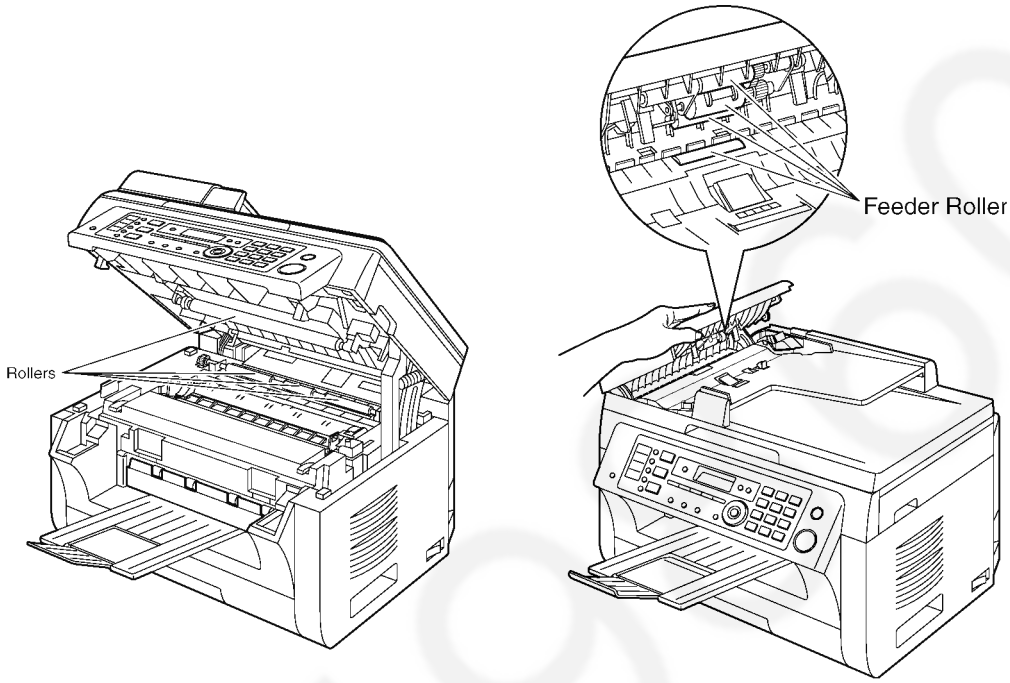
1. The earth lead is fixed with the screw.
2. The AC connector is connected properly.



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.

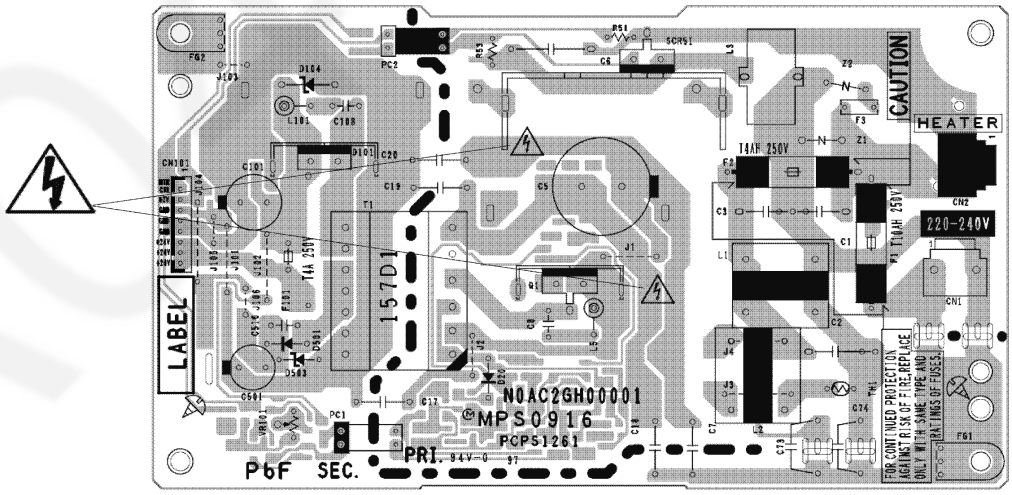


1.3.2. Live Electrical Sections

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.



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:

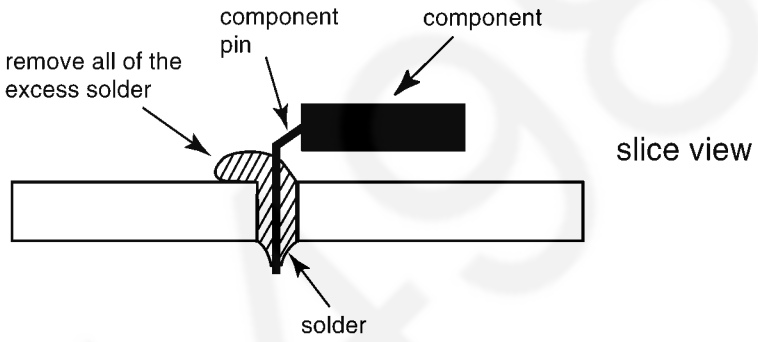
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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 although, with some precautions, standard Pb solder can also be used.

Caution

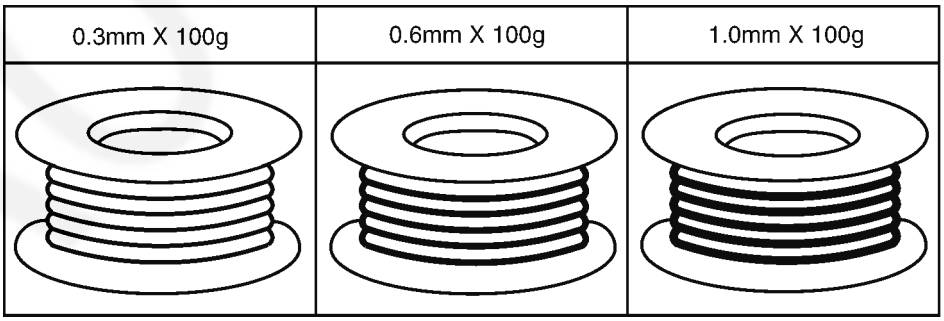
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).
- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.
- 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.

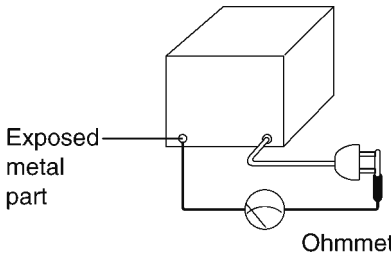


2.2. Discarding of P. C. Board

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.



Resistance = more than 10MΩ (at DC 500 V)

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.

The lithium battery is a critical component (type No.CR2354). Please observe for the proper polarity and exact location when replacing it and the soldering the replacement lithium battery in.

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

These symbols 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.

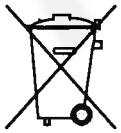
By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

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.

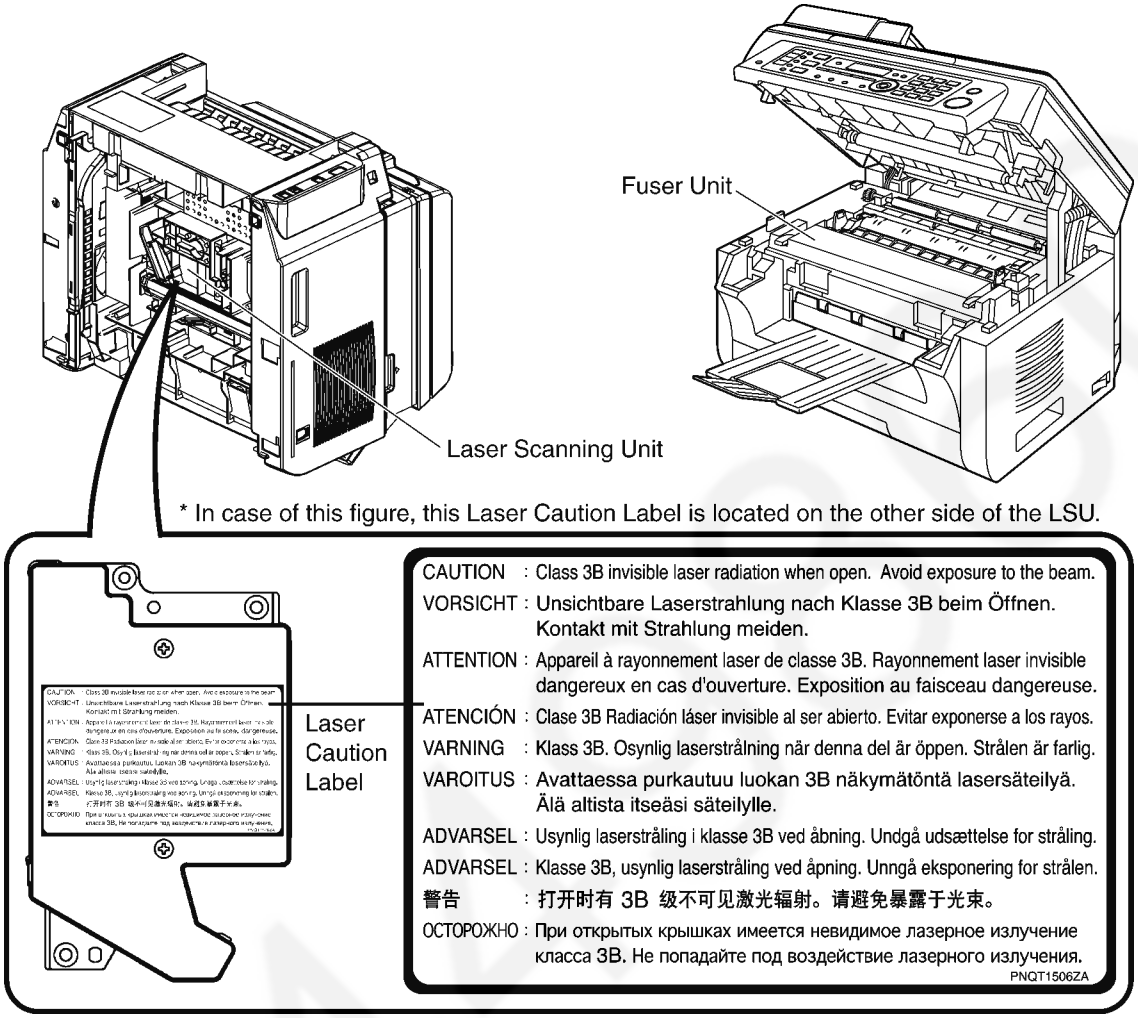
[Information on Disposal in other Countries outside the European Union]
These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal



Note for the battery symbol (bottom two symbol examples):
This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

2.5. Laser Beam And Fuser Unit Section

- The printer of this unit utilizes a laser. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- The fuser unit is inside of the unit and gets hot. Do not touch it when removing the jammed paper or cleaning the lower glass.



2.6. 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.

3 Specifications

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:	Letter/ Legal: 208 mm
	A4: 202 mm
Transmission Time[*1]:	Approx. 4 s/page (ECM-MMR Memory transmission)[*2]
Scanning Density:	**Scanning resolution:**
	Up to 600 × 1,200 dpi (Optical)
	Up to 9,600 × 9,600 dpi (Interpolated)
	Copy resolution:
	Up to 600 × 600 dpi
	FAX resolution:
	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-level
Scanner Type:	Color Contact Image Sensor
Printer Type:	Laser printer
Data Compression System:	Modified Huffman (MH), Modified READ (MR), Modified Modified READ (MMR)
Modem Speed:	33,600 / 31,200 / 28,800 / 26,400 / 24,000 / 21,600 / 19,200 / 16,800 / 14,400 / 12,000 / 9,600 / 7,200 / 4,800 / 2,400 bps; Automatic Fallback
Operating Environment:	10°C—32.5°C, 20%—70% RH (Relative Humidity)
Dimensions:	Approx. width 420 mm x depth 432 mm x height 305 mm (Width is 505 mm when the hand-set unit is installed)
Mass (Weight):	Approx. 12 kg
Power Consumption:	Standby: Approx. 6 W
	Preheat: Approx. 65 W
	Copy: Approx. 500 W
	Maximum: Approx. 1,000 W (When the fuser lamp turns on)
Power Supply:	220-240 V AC, 50/60 Hz
Memory Capacity (for operation and storing memory):	32 MB
Fax Memory Capacity:	5 MB in total
	Approx. 220 pages of memory reception
	Approx. 150 pages of memory transmission
	(Based on the ITU-T No. 1 Test Chart in standard resolution.)
Voice memory capacity:	Approx. 30 minutes of recording time
Scan to email address memory capacity:	5 MB in total (including the header and email message)
Scan to FTP server memory capacity:	5 MB in total
Scan to SMB folder memory capacity:	5 MB in total
Laser diode properties:	Laser output: Max. 15 mW
	Wavelength: 760 nm—800 nm
	Emission duration: Continuous
Print Speed:	Approx. 24 ppm (pages per minute)
Printing Resolution:	600 x 600 dpi
CIS's LED light properties:	LED radiation output: Max. 1 mW
	Wavelength:
	Red 630 nm typical
	Green 520 nm typical
	Blue 465 nm typical
	Emission duration: Continuous
Product life:	50,000 (Fifty thousand) pages or 5 years whichever comes first.

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

*2 Transmission speed is based on the ITU-T No. 1 Test Chart. (Refer to **ITU-T No.1 Test Chart** (P.301).) If the capability of the other party's machine is inferior to your unit, the transmission time may be longer.

Note:

- Design and specifications are subject to change without notice.
- The pictures and illustrations in these instructions may vary slightly from the actual product.
- The accuracy of the clock is approximately ±60 seconds a month.

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 1.90 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)
Dimensions:	Approx. width 48 mm x depth 30 mm x height 158 mm
Mass (Weight):	Approx. 130 g
Power Consumption:	Standby: Approx. 0.7 W Maximum: Approx. 3.8 W

Note:

- Operation range: Up to 300 m outdoors, Up to 50 m indoors, depending on the condition.

3.3. Charger Unit

Operating Environment:	0°C - 40°C, 20% - 80% RH (Relative Humidity)
Dimensions:	Approx. width 75 mm x depth 88 mm x height 52 mm
Mass (Weight):	Approx. 60 g
Power Consumption:	Standby: Approx. 0.2 W Maximum: Approx. 3.2 W
Power Supply:	AC adaptor (220 V-240 V AC, 50/60 Hz)

4 General/Introduction

4.1. Optional Accessories

Model No.	Description	Specifications
KX-FAT411E	Replacement toner cartridge*1	1 toner cartridge
KX-FAD412E	Replacement drum cartridge	1 drum cartridge
HHR-4MPT	Rechargeable batteries*2	2 rechargeable nickel metal hydride (Ni-MH) batteries, AAA (R03) size
KX-TGA641CX	Additional digital cordless handset	----------
KX-A272	DECT repeater	----------

Note:

- ISO/IEC 19752 standard is as follows:
  - Environment: 23 ± 2°C / 50 ± 10% RH
  - Print mode: Continuous printing

*1 Prints about 2,000 pages at ISO/IEC 19752 standard page.

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

5 Features

5.1. General Features

General

- Help function
  1. BASIC SETTINGS
  2. FEATURE LIST
  3. PHONEBOOK
  4. TAM OPERATION
  5. FAX RECEIVING
  6. COPIER
  7. REPORTS
  8. CALLER ID
- LCD (Liquid Crystal Display) readout

Flat-Bed Multifunction Laser Fax

Output tray (approx. 100 sheets)
Letter/A4/Legal, G3 compatible
Automatic document feeder (20 sheets)
Quick scan
Resolution: Standard/Fine/Super fine/Photo (64 level).
STANDARD: For printed or typewritten originals with normal-sized characters.
FINE: For originals with small printing.
SUPER FINE: For originals with very small printing.
PHOTO: For originals containing photographs, shaded drawing, etc.
Broadcast

- 250-sheet paper capacity (60 g/m^2 ~ 75 g/m^2)

Large Memory... Performed by DRAM
Approx. 150 pages of memory transmission
Approx. 110 pages of memory reception

Enhanced Copier Function

Multi-copy function (up to 99 copies)
Enlargement and reduction
64-Level halftone

Integrated Telephone System

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

Digital Answering System

- Voice Time / Day Stamp
- 30-Minutes of recording time

DECT Cordless

- Fax activation from cordless handset
- Battery performance:
  18 hours max (In continuous use) and 170 hours max (not in use (standby mode))

5.2. Hardware Requirements for Multi-Function Software

To use Multi-Function Station on your computer, the following are required:

Operating System:

Windows 2000 / Windows XP / Windows Vista / Windows 7

CPU:

Windows 2000: Pentium® Ⅱ or higher processor
Windows XP: Pentium Ⅲ or higher processor
Windows Vista/Windows 7: Pentium 4 or higher processor

RAM:

Windows 2000/Windows XP: 128 MB (256 MB or more recommended)
Windows Vista: 512 MB (1GB or more recommended)
Windows 7: 1 GB (2GB or more recommended)

Other Hardware:

CD-ROM drive
Hard disk drive with at least 200 MB of available space
USB interface
LAN interface (10Base-T/100Base-TX)

Other:

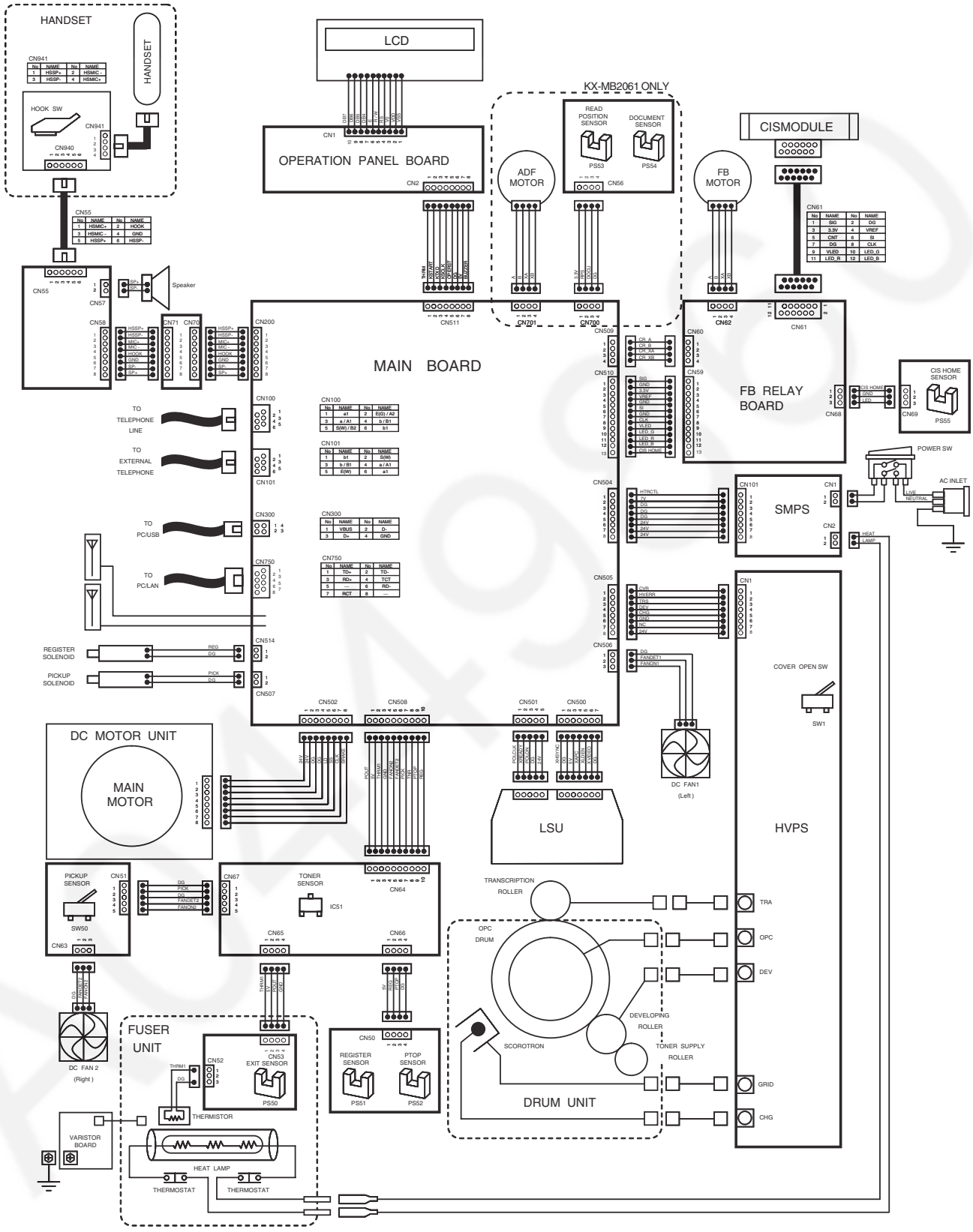
Internet Explorer® 5.0 or later
Audio output

Warning:

- To assure continued emission limit compliance;
  - use only shielded USB cable (Example: Hi-Speed USB 2.0 certified cable).
  - use only shielded LAN cable (category 5 straight cable).
- To protect the unit, use only shielded USB cable in areas where thunderstorms occur.
- To use Easy Print Utility on your computer, the following are required:
  - Windows 2000 Service Pack 4 and Security update for Windows 2000 (KB835732). Install KB835732 from Microsoft download site before installing Easy Print Utility.
  - Windows XP Service Pack 2 or later.

6 Technical Descriptions

6.1. Connection Diagram



6.2. General Block Diagram

MAIN UNIT

SOC (IC300)

This custom IC is used for general MFP operations.

1)	CPU	ARM9 operating at 250MHz.
2)	SDRAM Controller	Controls SDRAM Memory.
3)	USB Controller with PHY	Apply to USB2.0 HS
4)	Scanner I/F	Controls the CIS and AFE, and process the scan images.
5)	LSU I/F	Controls the polygon motor and outputs the VIDEO signal to LSU.
6)	MOTOR I/F	Controls the DC motor and Stepping Motor.
7)	FAN I/F	Controls FAN MOTOR and detect the rotation of FAN MOTOR.
8)	OPERATION PANEL I/F	Serial interface with Operation Panel.
9)	SENSOR I/F	Detects the sensor signal.
10)	I/O PORT	I/O Port Interface.
11)	A/D, D/A converter	Sends beep tones, etc. Convert the analog signal to the digital signal.
12)	RTC	Real time clock.
13)	MODEM	Performs the modulation and the demodulation for FAX communication.
14)	Analog Front End I/F	Controls the DAA device for TEL/FAX function.
15)	LAN Controller	Ethernet Control.

ROM (IC402)

This 8MB FLASH ROM contains all of the program instructions on the unit operations.
And support the backup of user setting and FAX receive data.

SYNCHRONOUS DYNAMIC RAM (IC400)

This 256Mbit SDRAM is used for CPU work and receiving memory and page memory.

POWER SUPPLY

DC-DC converters generate 3.3V and 1.2V for system power.
Regurator generates 5V for peripheral devices.

TEL/FAX I/F

Composed of ITS circuit and NCU circuit.

BBIC (Base Band IC): IC902

Handling all the audio, signal and data processing needed in a DECT base unit
Controlling the DECT specific physical layer and radio section (Burst Module Controller 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.)

RF Module: IC905

PLL Oscillator
Detector
Compress/Expander
First/Second Mixer
Amplifier for transmission and reception

FLASH MEMORY: IC903

Voice Prompt (TAM) D/L (DownLoad) Area
Programming for BBIC (IC902)

EEPROM: IC904

Temporary operating parameters (for RF, etc.)

READ SECTION

CIS Unit to read transmitted documents.
CIS Unit is connected to FLATBED transit Unit.
Scan data is converted by AFE(IC503).

MOTOR

This model has 1 DC motor and 2 stepping motors.
IC300 drives the DC motor for printing.
IC502 and IC700 drive the stepping motor for Auto Document Feeder motor and CIS carriage.

LSU

Forms the images on the OPC DRUM by rotating polygon motor and reflecting the laser beam against polygon.

SENSORS

Composed of 2 switches and 6 sensors.

POWER SUPPLY BOARD

Supplies +24V and +7V to the Main unit and controls the Heat Lamp.

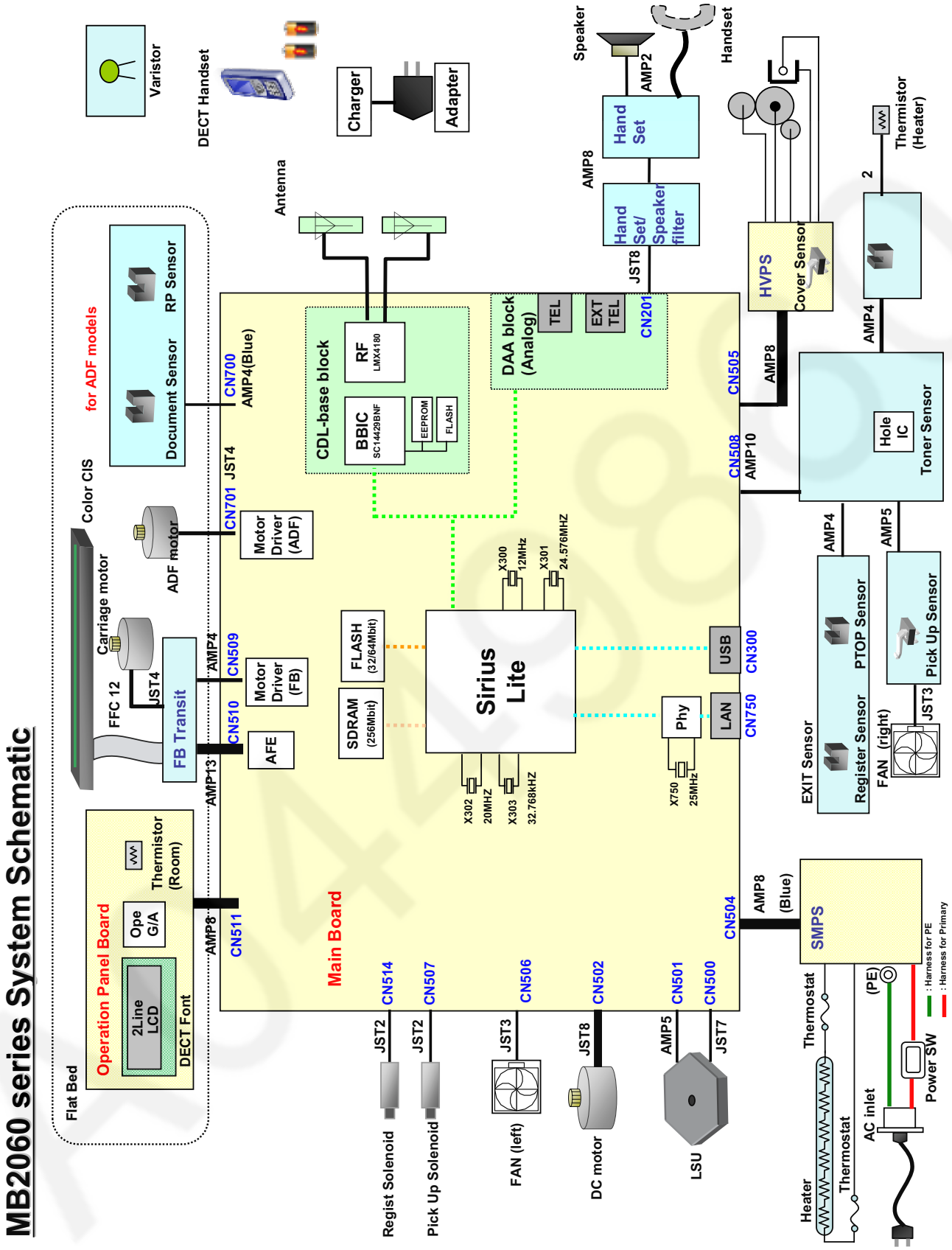
HIGH VOLTAGE POWER SUPPLY BOARD

Supplies bias need for the printing operation: bias of the DRUM, Developing and Transcription.

FIXING UNIT

Composed heat lamp, thermistor and thermostats.

MB2060 series System Schematic

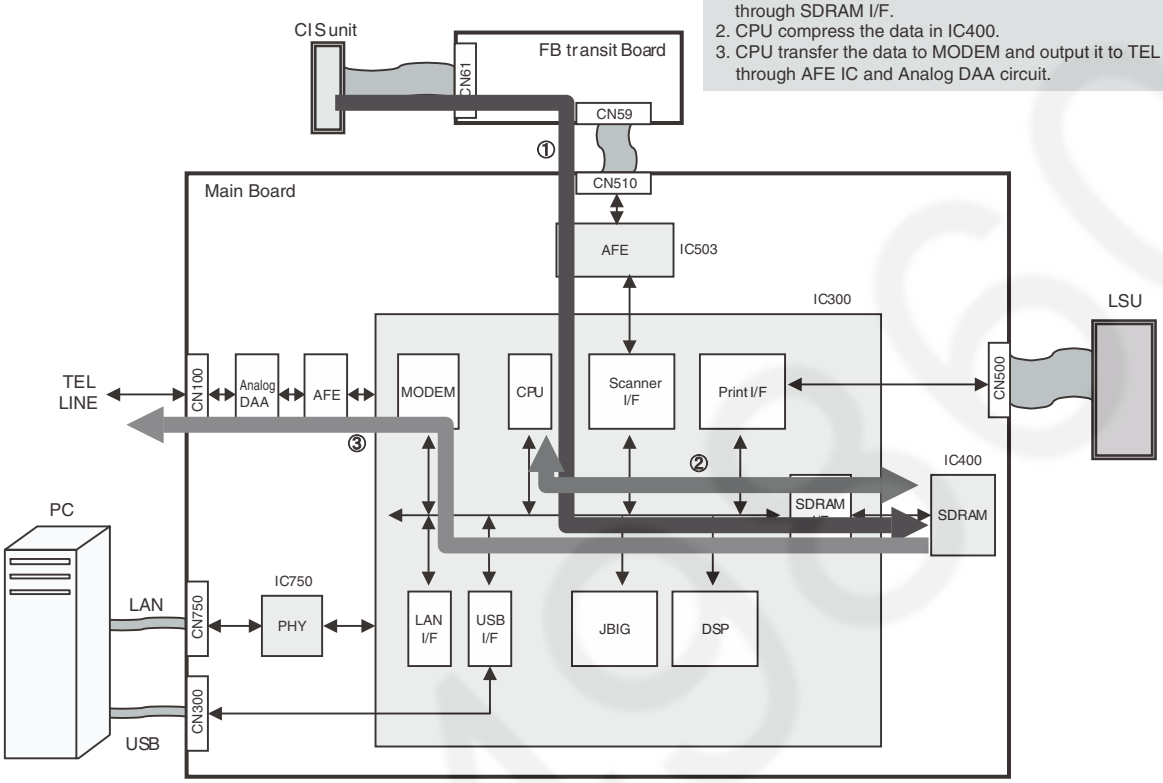


6.3. Main Board Section

6.3.1. Data Flow

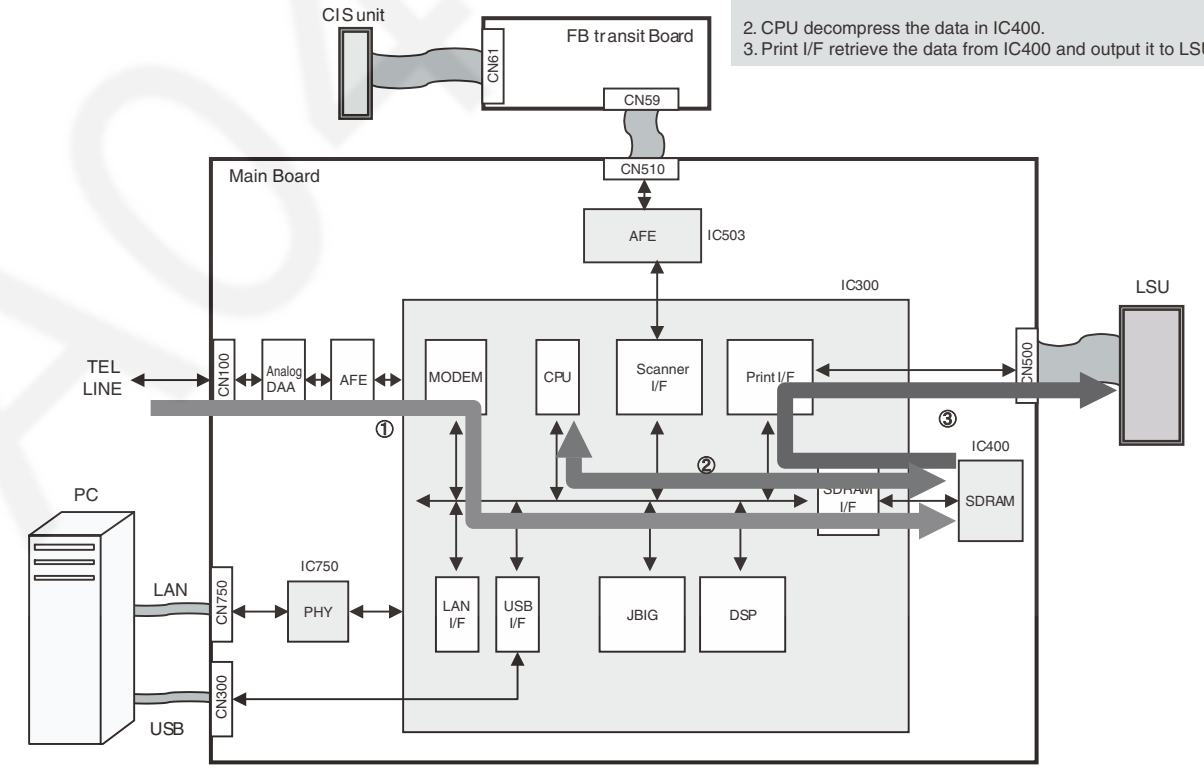
[FAX Tx]

1. An analog image data is output from CIS unit to IC503.
   IC503 decode the analog data to digital data, and output to IC300.
   Scanner I/F in IC300 process image data and store it in IC400 through SDRAM I/F.
2. CPU compress the data in IC400.
3. CPU transfer the data to MODEM and output it to TEL LINE through AFE IC and Analog DAA circuit.



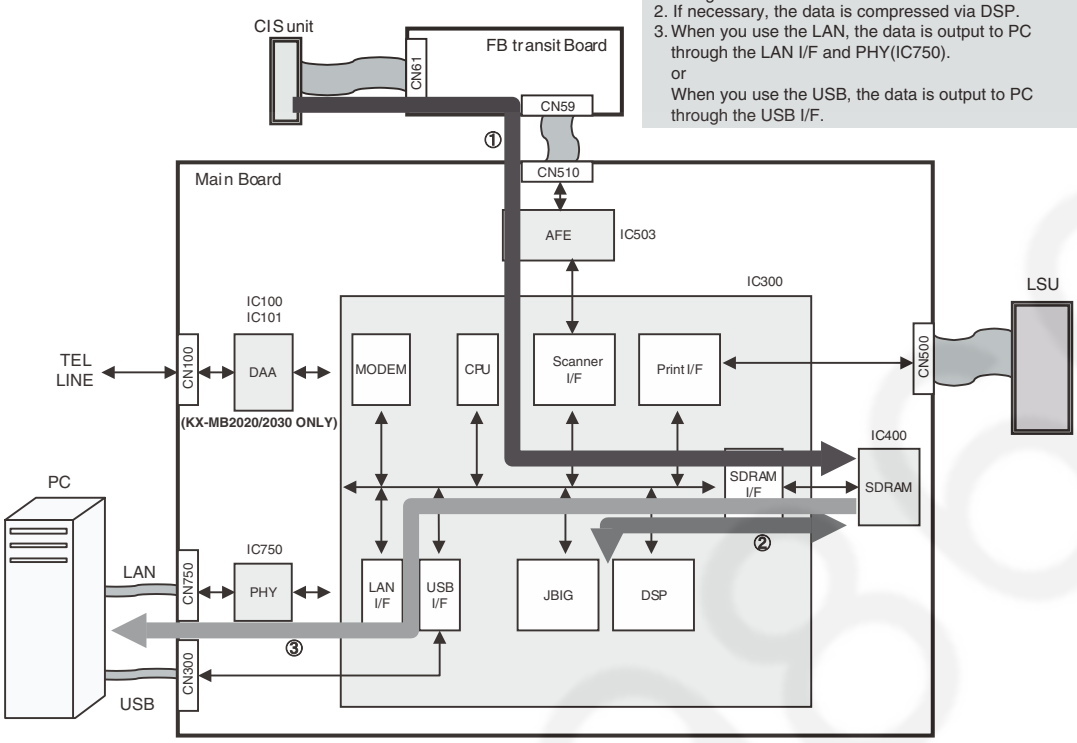
[FAX Rx]

1. FAX data is input from TEL LINE to MODEM in IC300 through Analog DAA circuit and AFE IC.
   And then store it in IC400 through SDRAM I/F.
2. CPU decompress the data in IC400.
3. Print I/F retrieve the data from IC400 and output it to LSU.



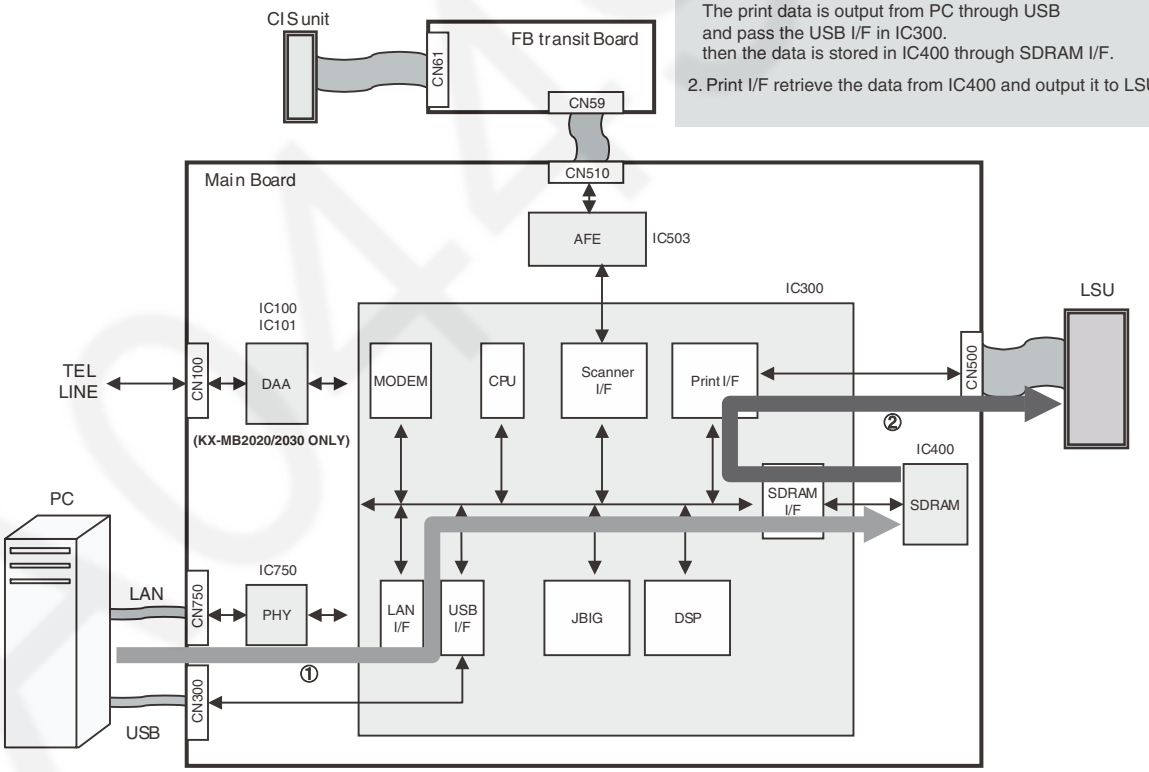
[PC Scan]

1. An analog image data is output from CISunit to IC503.
   IC503 decode the analog data to digital data, and output to IC300.
   Scanner I/F in IC300 process image data and store it in IC400 through SDRAM I/F.
2. If necessary, the data is compressed via DSP.
3. When you use the LAN, the data is output to PC through the LAN I/F and PHY(IC750).
   or
   When you use the USB, the data is output to PC through the USB I/F.



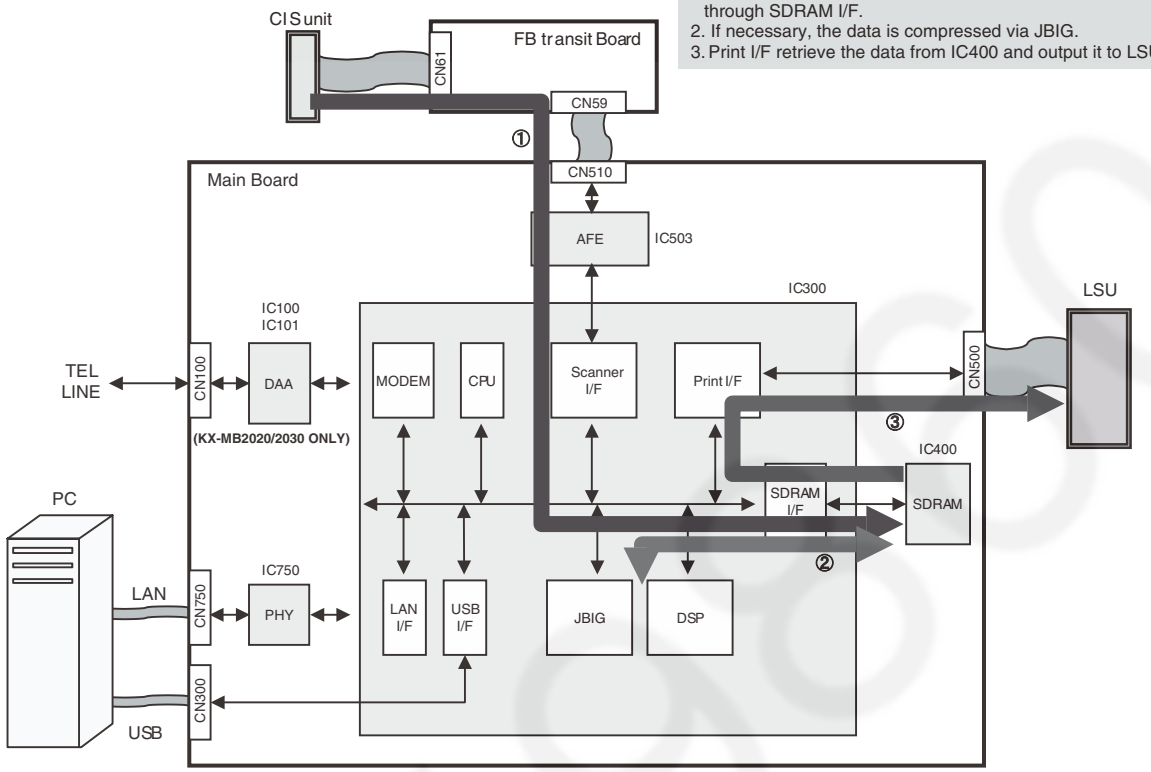
[PC print]

1. The print data is output from PC through LAN and pass the PHY(IC750) and LAN I/F in IC300.
   or
   The print data is output from PC through USB and pass the USB I/F in IC300.
   then the data is stored in IC400 through SDRAM I/F.
2. Print I/F retrieve the data from IC400 and output it to LSU.



[Copy]

1. An analog image data is output from CISunit to IC503.
   IC503 decode the analog data to digital data, and output to IC300.
   Scanner I/F in IC300 process image data and store it in IC400 through SDRAM I/F.
2. If necessary, the data is compressed via JBIG.
3. Print I/F retrieve the data from IC400 and output it to LSU.



Description of Pin Distribution (IC300) SOC (System On Chip)

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
A02	LEDONB	O	3.3V	SCANNER INTERFACE
A03	NCCDON	O	3.3V	SCANNER INTERFACE
A04	AFEMCLK	O	3.3V	SCANNER INTERFACE
A05	NCCDCP	O	3.3V	NOT USED
A06	CCDCLK	O	3.3V	NOT USED
A07	PIO29	O	3.3V	OPERATION PANEL INTERFACE
A08	PIO57	O	3.3V	CARRIAGE MOTOR INTERFACE
A09	PIO53	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
A10	PIO50	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
A11	PIO46	O	3.3V	FAN1 CONTROL
A12	PIO42	O	3.3V	DC MOTOR INTERFACE
A13	NFRCE	O	3.3V	FLASH MEMORY CHIP SELECT
A14	FRMD0	I/O	3.3V	FLASH MEMORY DATA BUS 0
A15	FRMD3	I/O	3.3V	FLASH MEMORY DATA BUS 3
A16	FRMD7	I/O	3.3V	FLASH MEMORY DATA BUS 7
A17	FRMA3	O	3.3V	FLASH MEMORY ADDRESS BUS 3
A18	FRMA6	O	3.3V	FLASH MEMORY ADDRESS BUS 6
A19	FRMA10	O	3.3V	FLASH MEMORY ADDRESS BUS 10
A20	THRMAVDD	-	3.3V	POWER SUPPLY
A21	FRMA11	O	3.3V	FLASH MEMORY ADDRESS BUS 11
A22	FRMA15	O	3.3V	FLASH MEMORY ADDRESS BUS 15
A23	FRMA17	O	3.3V	FLASH MEMORY ADDRESS BUS 17
A24	FRMA20	O	3.3V	FLASH MEMORY ADDRESS BUS 20
A25	FRMA22	O	3.3V	FLASH MEMORY ADDRESS BUS 22
AA01	SDMD8	I/O	3.3V	SDRAM DATA BUS 8
AA02	SDMD9	I/O	3.3V	SDRAM DATA BUS 9
AA03	SDMA7	O	3.3V	SDRAM ADDRESS BUS 7
AA04	SDMA6	O	3.3V	SDRAM ADDRESS BUS 6
AA23	VDD1.2	-	1.2V	POWER SUPPLY
AA24	AFERST	O	3.3V	NCU INTERFACE
AA25	RING	I	3.3V	NCU INTERFACE
AA26	EXTINT	I	3.3V	NCU INTERFACE
AB01	SDMD10	I/O	3.3V	SDRAM DATA BUS 10
AB02	SDMD11	I/O	3.3V	SDRAM DATA BUS 11
AB03	SDMA5	O	3.3V	SDRAM ADDRESS BUS 5
AB04	VDD1.2	-	1.2V	POWER SUPPLY
AB23	VSS	-	GND	GND
AB24	BTXD	O	3.3V	NCU INTERFACE
AB25	BRXD	I	3.3V	NCU INTERFACE
AB26	AFECLK	O	3.3V	NCU INTERFACE
AC01	SDMD12	I/O	3.3V	SDRAM DATA BUS 12
AC02	SDMD13	I/O	3.3V	SDRAM DATA BUS 13
AC03	SDMA4	O	3.3V	SDRAM ADDRESS BUS 4
AC04	VSS	-	GND	GND
AC05	VSS	-	GND	GND
AC06	VDD1.2	-	1.2V	POWER SUPPLY
AC07	TXD0	O	3.3V	ETHERNET INTERFACE
AC08	TX_ER	O	3.3V	ETHERNET INTERFACE
AC09	RXD1	I	3.3V	ETHERNET INTERFACE
AC10	VDD3.3	-	3.3V	POWER SUPPLY
AC11	TEST	I	3.3V	NOT USED
AC12	USBREXT	I	3.3V	USB INTERFACE
AC13	VDD1.2	-	1.2V	POWER SUPPLY
AC14	VDD3.3	-	3.3V	POWER SUPPLY
AC15	USBXIN	I	3.3V	CRYSTAL(12MHz) INPUT
AC16	LSI_SCAN_ENABLE	I	3.3V	NOT USED
AC17	VDD1.2	-	1.2V	POWER SUPPLY
AC18	NWDTRST	O	3.3V	WATCH DOG TIMER RESET OUTPUT
AC19	LSI_TN	I	3.3V	NOT USED
AC20	PSCIO2	I	3.3V	INPUT PORT (FANDET1)
AC21	PSCIO6	O	3.3V	NOT USED
AC22	VDD1.2	-	1.2V	POWER SUPPLY
AC23	VSS	-	GND	GND
AC24	ATXD	O	3.3V	NCU INTERFACE
AC25	BBITCLK	I/O	3.3V	NCU INTERFACE

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
AC26	BSPCLK	I/O	3.3V	NCU INTERFACE
AD01	SDMD14	I/O	3.3V	SDRAM DATA BUS 14
AD02	SDMD15	I/O	3.3V	SDRAM DATA BUS 15
AD03	VSS	-	GND	GND
AD04	NBATRST	I	3.3V	BATTERY RESET INPUT
AD05	VDD2RTC	-	1.2V	POWER SUPPLY
AD06	CRS	I	3.3V	ETHERNET INTERFACE
AD07	TXD1	O	3.3V	ETHERNET INTERFACE
AD08	RX_DV	I	3.3V	ETHERNET INTERFACE
AD09	RXD2	I	3.3V	ETHERNET INTERFACE
AD10	RX_ER	I	3.3V	ETHERNET INTERFACE
AD11	CLKSEL	I	3.3V	NOT USED
AD12	USBVSSA33_BIAS	-	GND	GND
AD13	USBVSSA33	-	GND	GND
AD14	USBVDDA12_SQ	-	1.2V	POWER SUPPLY
AD15	USBVSSA12	-	GND	GND
AD16	LSI_TRSTN	I	3.3V	NOT USED
AD17	LSI_TDO	O	3.3V	NOT USED
AD18	NRST	I	3.3V	SYSTEM RESET INPUT
AD19	HTRCTL	O	3.3V	HEATER CONTROL
AD20	PSCIO3	I	3.3V	INPUT PORT (POUT)
AD21	PSCIO7	O	3.3V	NOT USED
AD22	PSCIO15	I	3.3V	INPUT PORT (RPS)
AD23	NC	-	-	NOT USED
AD24	VSS	-	GND	GND
AD25	ASPCLK	I/O	3.3V	NCU INTERFACE
AD26	ARXD	I	3.3V	NCU INTERFACE
AE01	SDLDM1	O	3.3V	SDRAM DQML1
AE02	VSS	-	GND	GND
AE03	SYSPLLVSS1	-	GND	GND
AE04	RTCCLKOUT	O	3.3V	CRYSTAL(32.768KHz) OUTPUT
AE05	RTCPWRDWN	I	3.3V	RTC POWER DOWN
AE06	TX_CLKI	I	3.3V	ETHERNET INTERFACE
AE07	TXD2	O	3.3V	ETHERNET INTERFACE
AE08	RX_CLKI	I	3.3V	ETHERNET INTERFACE
AE09	RXD3	I	3.3V	ETHERNET INTERFACE
AE10	MDC	O	3.3V	ETHERNET INTERFACE
AE11	NC	-	-	NOT USED
AE12	USBID	O	3.3V	NOT USED
AE13	USBDM	I/O	3.3V	USB INTERFACE
AE14	USBVSSA12_SQ	-	GND	GND
AE15	USBVDDA12PLL	-	1.2V	POWER SUPPLY
AE16	USBVDDA12	-	1.2V	POWER SUPPLY
AE17	LSI_TDI	I	3.3V	NOT USED
AE18	LSI_PROCMON	O	3.3V	NOT USED
AE19	LSI_IDDT	I	3.3V	NOT USED
AE20	PSCIO1	I	3.3V	INPUT PORT (PICK)
AE21	PSCIO5	O	3.3V	NOT USED
AE22	PSCIO13	I	3.3V	INPUT PORT (TNR)
AE23	MDMCLKOUT	O	3.3V	CRYSTAL(24.576MHz) OUTPUT
AE24	MDMPLLVDD	-	3.3V	POWER SUPPLY
AE25	VSS	-	GND	GND
AE26	ABITCLK	I/O	3.3V	NCU INTERFACE
AF02	SYSPLLVDD1	-	3.3V	POWER SUPPLY
AF03	VDD3.3OSC	-	3.3V	POWER SUPPLY
AF04	RTCCLKIN	I	3.3V	CRYSTAL(32.768KHz) INPUT
AF05	COL	I	3.3V	ETHERNET INTERFACE
AF06	TX_EN	O	3.3V	ETHERNET INTERFACE
AF07	TXD3	O	3.3V	ETHERNET INTERFACE
AF08	RXD0	I	3.3V	ETHERNET INTERFACE
AF09	MDIO	I/O	3.3V	ETHERNET INTERFACE
AF10	MGTINT	I	3.3V	ETHERNET INTERFACE
AF11	USBVBUS	O	3.3V	USB INTERFACE
AF12	USBVDDA33_BIAS	-	3.3V	POWER SUPPLY
AF13	USBDP	I/O	3.3V	USB INTERFACE
AF14	USBVDDA33	-	3.3V	POWER SUPPLY
AF15	USBVSSA12PLL	-	GND	GND

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
AF16	USBXOUT	I	3.3V	CRYSTAL(12MHz) OUTPUT
AF17	LSI_TMS	I	3.3V	NOT USED
AF18	LSI_TCK	I	3.3V	NOT USED
AF19	LSI_CW_TAP	I	3.3V	NOT USED
AF20	PSCIO0	I	3.3V	INPUT PORT (REGIST)
AF21	PSCIO4	O	3.3V	NOT USED
AF22	PSCIO12	I	3.3V	INPUT PORT (POUT)
AF23	PSCIO14	I	3.3V	INPUT PORT (DOCU)
AF24	MDMCLKIN	I	3.3V	CRYSTAL(24.576MHz) INPUT
AF25	MDMPLLVSS	-	GND	GND
B01	AFEADC0	I	3.3V	NOT USED
B02	VSS	-	GND	GND
B03	LEDONG	O	3.3V	SCANNER INTERFACE
B04	AFERSMP	O	3.3V	NOT USED
B05	AFEVSMP	O	3.3V	SCANNER INTERFACE
B06	NCCDRS	O	3.3V	SCANNER INTERFACE
B07	PIO30	I/O	3.3V	OPERATION PANEL INTERFACE
B08	MMPWR	O	3.3V	NOT USED
B09	PIO54	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
B10	PIO51	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
B11	PIO47	O	3.3V	NOT USED
B12	PIO43	O	3.3V	DC MOTOR INTERFACE
B13	NFROE	O	3.3V	FLASH MEMORY CHIP OUTPUT ENABLE
B14	FRMD1	I/O	3.3V	FLASH MEMORY DATA BUS 1
B15	FRMD4	I/O	3.3V	FLASH MEMORY DATA BUS 4
B16	FRMA0	O	3.3V	FLASH MEMORY ADDRESS BUS 0
B17	FRMA4	O	3.3V	FLASH MEMORY ADDRESS BUS 4
B18	FRMA7	O	3.3V	FLASH MEMORY ADDRESS BUS 7
B19	THRMAVSS	-	GND	GND
B20	TONE	O	3.3V	ANALOG(TONE) OUTPUT
B21	FRMA12	O	3.3V	FLASH MEMORY ADDRESS BUS 12
B22	FRMA16	O	3.3V	FLASH MEMORY ADDRESS BUS 16
B23	FRMA19	O	3.3V	FLASH MEMORY ADDRESS BUS 19
B24	FRMA21	O	3.3V	FLASH MEMORY ADDRESS BUS 21
B25	VSS	-	GND	GND
B26	DOTPLLVSS	-	GND	GND
C01	AFEADC3	I	3.3V	NOT USED
C02	AFEADC1	I	3.3V	NOT USED
C03	VSS	-	GND	GND
C04	LEDONR	O	3.3V	SCANNER INTERFACE
C05	OEB	O	3.3V	NOT USED
C06	CCDSH	O	3.3V	SCANNER INTERFACE
C07	PIO31	O	3.3V	OPERATION PANEL INTERFACE
C08	OPMPWR	O	3.3V	NOT USED
C09	PIO55	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
C10	PIO52	O	3.3V	CARRIAGE/ADF MOTOR INTERFACE
C11	PIO49	O	3.3V	NOT USED
C12	PIO45	O	3.3V	DC MOTOR INTERFACE
C13	NFRWE	O	3.3V	FLASH MEMORY CHIP WRITE ENABLE
C14	FRMD2	I/O	3.3V	FLASH MEMORY DATA BUS 2
C15	FRMD6	I/O	3.3V	FLASH MEMORY DATA BUS 6
C16	FRMA2	O	3.3V	FLASH MEMORY ADDRESS BUS 2
C17	FRMA5	O	3.3V	FLASH MEMORY ADDRESS BUS 5
C18	FRMA9	O	3.3V	FLASH MEMORY ADDRESS BUS 9
C19	THRMSTR0	I	3.3V	ANALOG INPUT(THERMISTOR)
C20	TONEAVDD	-	3.3V	POWER SUPPLY
C21	FRMA14	O	3.3V	FLASH MEMORY ADDRESS BUS 14
C22	FRMA18	O	3.3V	FLASH MEMORY ADDRESS BUS 18
C23	FRMA23	O	3.3V	FLASH MEMORY ADDRESS BUS 23
C24	VSS	-	GND	GND
C25	DOTPLLVDD	-	3.3V	POWER SUPPLY
C26	DOTCLKIN	I	3.3V	CRYSTAL(20MHz) INPUT
D01	AFEADC5	I	3.3V	SCANNER INTERFACE
D02	AFEADC4	I	3.3V	SCANNER INTERFACE
D03	AFEADC2	I	3.3V	NOT USED
D04	VSS	-	GND	GND
D05	VSS	-	GND	GND

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
D06	VDD1.2	-	1.2V	POWER SUPPLY
D07	PIO32	O	3.3V	OPERATION PANEL INTERFACE
D08	CRMPWR	O	3.3V	MOTOR CURRENT CONTROL
D09	PIO56	O	3.3V	ADF MOTOR INTERFACE
D10	VDD1.2	-	1.2V	POWER SUPPLY
D11	PIO48	O	3.3V	NOT USED
D12	PIO44	O	3.3V	DC MOTOR INTERFACE
D13	VDD3.3	-	3.3V	POWER SUPPLY
D14	VDD1.2	-	1.2V	POWER SUPPLY
D15	FRMD5	I/O	3.3V	FLASH MEMORY DATA BUS 5
D16	FRMA1	O	3.3V	FLASH MEMORY ADDRESS BUS 1
D17	VDD3.3	-	3.3V	POWER SUPPLY
D18	FRMA8	O	3.3V	FLASH MEMORY ADDRESS BUS 8
D19	THRMSTR1	I	3.3V	ANALOG INPUT(THERMISTOR)
D20	TONEAVSS	-	GND	GND
D21	FRMA13	O	3.3V	FLASH MEMORY ADDRESS BUS 13
D22	VDD1.2	-	1.2V	POWER SUPPLY
D23	VSS	-	GND	GND
D24	NC	-	-	NOT USED
D25	DOTCLKOUT	O	3.3V	CRYSTAL(20MHz) OUTPUT
D26	PIO66	I	3.3V	INPUT PORT (BMINFT2)
E01	SDUDM0	O	3.3V	SDRAM DQMU0
E02	AFEADC7	I	3.3V	SCANNER INTERFACE
E03	AFEADC6	I	3.3V	SCANNER INTERFACE
E04	VSS	-	GND	GND
E23	VDD1.2	-	1.2V	POWER SUPPLY
E24	FRMA24	O	3.3V	FLASH MEMORY ADDRESS BUS 24
E25	PIO65	O	3.3V	NOT USED
E26	PIO64	O	3.3V	NOT USED
F01	SDMD16	I/O	3.3V	SDRAM DATA BUS 16
F02	SDMD17	I/O	3.3V	SDRAM DATA BUS 17
F03	AFESIFCLK	O	3.3V	SCANNER INTERFACE
F04	VDD1.2	-	1.2V	POWER SUPPLY
F23	PIO24	I	3.3V	NOT USED
F24	PIO61	O	3.3V	NOT USED
F25	PIO60	O	3.3V	OUTPUT PORT (BBFWMOD)
F26	PIO3	O	3.3V	NOT USED
G01	SDMD18	I/O	3.3V	SDRAM DATA BUS 18
G02	SDMD19	I/O	3.3V	SDRAM DATA BUS 19
G03	AFESIFDIN	I	3.3V	SCANNER INTERFACE
G04	AFESIFEN	O	3.3V	SCANNER INTERFACE
G23	PSCIO24	I	3.3V	LSU INTERFACE
G24	PIO2	O	3.3V	LSU INTERFACE
G26	PIO58	O	3.3V	OUTPUT PORT(CIDRLY)
H01	SDMD20	I/O	3.3V	SDRAM DATA BUS 20
H02	SDMD21	I/O	3.3V	SDRAM DATA BUS 21
H03	NSDCS2	O	3.3V	SDRAM CHIP SELECT 2
H04	AFESIFDOUT	O	3.3V	SCANNER INTERFACE
H23	PIO63	O	3.3V	LSU INTERFACE
H24	PIO62	O	3.3V	LSU INTERFACE
H25	PIO28	O	3.3V	LSU INTERFACE
H26	PIO21	O	3.3V	LSU INTERFACE
J01	SDMD22	I/O	3.3V	SDRAM DATA BUS 22
J02	SDMD23	I/O	3.3V	SDRAM DATA BUS 23
J03	SDMA3	O	3.3V	SDRAM ADDRESS BUS 3
J04	SDMA2	O	3.3V	SDRAM ADDRESS BUS 2
J23	PIO6	O	3.3V	HIGH VOLTAGE UNIT INTERFACE
J24	PIO27	O	3.3V	OUTPUT PORT (BBRESET)
J25	PIO5	O	3.3V	HIGH VOLTAGE UNIT INTERFACE
J26	PIO4	O	3.3V	HIGH VOLTAGE UNIT INTERFACE
K01	VSS	-	GND	GND
K02	SDCLK2	O	3.3V	SDRAM CLOCK 2
K03	VSS	-	GND	GND
K04	VDD3.3	-	3.3V	POWER SUPPLY
K23	VDD1.2	-	1.2V	POWER SUPPLY
K24	PIO41	O	3.3V	NOT USED (UCTS)
K25	PIO40	O	3.3V	BBIC INTERFACE (URX)

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
K26	PIO39	O	3.3V	NOT USED (URTS)
L01	SDMD24	I/O	3.3V	SDRAM DATA BUS 24
L02	SDMD25	I/O	3.3V	SDRAM DATA BUS 25
L03	SDMA1	O	3.3V	SDRAM ADDRESS BUS 1
L04	SDMAÇO	O	3.3V	SDRAM ADDRESS BUS 0
L11	VSS	-	GND	GND
L12	VSS	-	GND	GND
L13	VSS	-	GND	GND
L14	VSS	-	GND	GND
L15	VSS	-	GND	GND
L16	VSS	-	GND	GND
L23	PIO37	I	3.3V	BBIC INTERFACE (NCBUSY2)
L24	PIO38	O	3.3V	BBIC INTERFACE (UTX)
L25	PIO36	O	3.3V	BBIC INTERFACE (NCBUSY1)
L26	PIO35	O	3.3V	BBIC INTERFACE (SPICLK)
M01	SDMD26	I/O	3.3V	SDRAM DATA BUS 26
M02	SDMD27	I/O	3.3V	SDRAM DATA BUS 27
M03	SDMA10	O	3.3V	SDRAM ADDRESS BUS 10
M04	SDBA1	O	3.3V	SDRAM BANK ADDRESS 1
M11	VSS	-	GND	GND
M12	VSS	-	GND	GND
M13	VSS	-	GND	GND
M14	VSS	-	GND	GND
M15	VSS	-	GND	GND
M16	VSS	-	GND	GND
M23	PIO33	O	3.3V	BBIC INTERFACE (SPIDO)
M24	PIO34	O	3.3V	BBIC INTERFACE (SPIDI)
M25	PIO26	O	3.3V	NOT USED
M26	PIO25	O	3.3V	OUTPUT PORT(F_MUTE)
N01	SDMD28	I/O	3.3V	SDRAM DATA BUS 28
N02	SDMD29	I/O	3.3V	SDRAM DATA BUS 29
N03	SDBA0	O	3.3V	SDRAM BANK ADDRESS 0
N04	VDD1.2	-	1.2V	POWER SUPPLY
N11	VSS	-	GND	GND
N12	VSS	-	GND	GND
N13	VSS	-	GND	GND
N14	VSS	-	GND	GND
N15	VSS	-	GND	GND
N16	VSS	-	GND	GND
N23	VDD3.3	-	3.3V	POWER SUPPLY
N24	PIO23	O	3.3V	NOT USED
N25	PIO22	O	3.3V	BBIC INTERFACE (BMINFT2)
N26	PIO20	O	3.3V	BBIC INTERFACE (BMINFT1)
P01	SDMD30	I/O	3.3V	SDRAM DATA BUS 30
P02	SDMD31	I/O	3.3V	SDRAM DATA BUS 31
P03	NSDCS	O	3.3V	SDRAM CHIP SELECT 1
P04	VDD3.3	-	3.3V	POWER SUPPLY
P11	VSS	-	GND	GND
P12	VSS	-	GND	GND
P13	VSS	-	GND	GND
P14	VSS	-	GND	GND
P15	VSS	-	GND	GND
P16	VSS	-	GND	GND
P23	VDD1.2	-	1.2V	POWER SUPPLY
P24	PIO16	I	3.3V	INPUT PORT
P25	PIO17	I	3.3V	INPUT PORT
P26	PIO18	I	3.3V	HIGH VOLTAGE UNIT INTERFACE
R01	SDUDM1	O	3.3V	SDRAM DQMU1
R02	SDLDM0	O	3.3V	SDRAM DQML0
R03	BZVDD33	-	3.3V	POWER SUPPLY
R04	BZRST33	-	3.3V	POWER SUPPLY
R11	VSS	-	GND	GND
R12	VSS	-	GND	GND
R13	VSS	-	GND	GND
R14	VSS	-	GND	GND
R15	VSS	-	GND	GND
R16	VSS	-	GND	GND

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
R23	PIO13	O	3.3V	NOT USED
R24	PIO12	O	3.3V	NOT USED
R25	PIO14	O	3.3V	LSU INTERFACE
R26	PIO15	I	3.3V	INPUT PORT
T01	SDMD0	I/O	3.3V	SDRAM DATA BUS 0
T02	SDMD1	I/O	3.3V	SDRAM DATA BUS 1
T03	NSDCAS	O	3.3V	SDRAM CAS
T04	NSDRAS	O	3.3V	SDRAM RAS
T11	VSS	-	GND	GND
T12	VSS	-	GND	GND
T13	VSS	-	GND	GND
T14	VSS	-	GND	GND
T15	VSS	-	GND	GND
T16	VSS	-	GND	GND
T23	PIO9	O	3.3V	OUTPUT PORT(SNPICK)
T24	PIO8	O	3.3V	NOT USED
T25	PIO10	O	3.3V	NOT USED
T26	PIO11	O	3.3V	OUTPUT PORT(SNREG)
U01	SDMD2	I/O	3.3V	SDRAM DATA BUS 2
U02	SDMD3	I/O	3.3V	SDRAM DATA BUS 3
U03	NSDWE	O	3.3V	SDRAM WRITE ENABLE
U04	VDD1.2	-	1.2V	POWER SUPPLY
U23	VDD3.3	-	3.3V	POWER SUPPLY
U24	PIO0	I	3.3V	INPUT PORT (HOOK)
U25	PIO1	O	3.3V	NOT USED
U26	PIO7	O	3.3V	NOT USED
V01	SDMD4	I/O	3.3V	SDRAM DATA BUS 4
V02	SDMD5	I/O	3.3V	SDRAM DATA BUS 5
V03	SDCKE	O	3.3V	SDRAM CLOCK ENABLE
V04	SDMA12	O	3.3V	SDRAM ADDRESS BUS 12
V23	PSCIO20	I	3.3V	INPUT PORT (CIS HOME)
V24	PSCIO21	O	3.3V	NOT USED
V25	PSCIO22	O	3.3V	NOT USED
V26	PSCIO23	O	3.3V	NOT USED
W01	SDMD6	I/O	3.3V	SDRAM DATA BUS 6
W02	SDMD7	I/O	3.3V	SDRAM DATA BUS 7
W03	SDMA11	O	3.3V	SDRAM ADDRESS BUS 11
W04	SDMA9	O	3.3V	SDRAM ADDRESS BUS 9
W23	PSCIO16	O	3.3V	NOT USED
W24	PSCIO17	I	3.3V	INPUT PORT (FANDET2)
W25	PSCIO18	I	3.3V	INPUT PORT (TOPCVR)
W26	PSCIO19	I	3.3V	INPUT PORT (PSTART)
Y01	VSS	-	GND	GND
Y02	SDCLK	O	3.3V	SDRAM CLOCK 1
Y03	SDMA8	O	3.3V	SDRAM ADDRESS BUS 8
Y04	VSS	-	GND	GND
Y23	AFESEL0	I	3.3V	NCU INTERFACE
Y24	AFESEL1	I	3.3V	NCU INTERFACE
Y25	EXMDMCS	O	3.3V	NOT USED
Y26	DP	O	3.3V	NCU INTERFACE

Description of Pin Distribution (IC902)

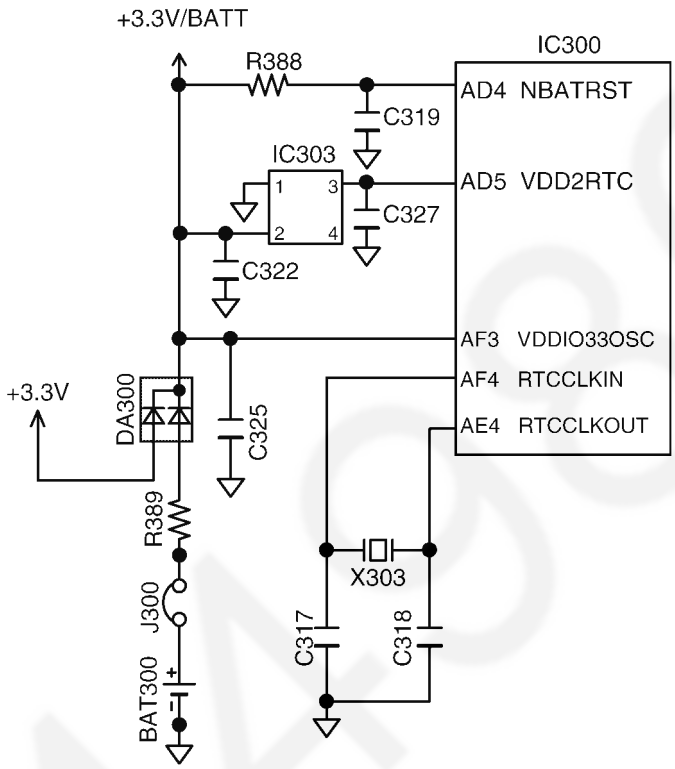
PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
1	VDDIO1	-	+3.0V	+3.0V
2	VSS1	-	GND	GND
3	AD8	O	+3.0V	Flash/Mask ROM Address [8]
4	AD9	O	+3.0V	Flash/Mask ROM Address [9]
5	AD10	O	+3.0V	Flash/Mask ROM Address [10]
6	AD11	O	+3.0V	Flash/Mask ROM Address [11]
7	AD12	O	+3.0V	Flash/Mask ROM Address [12]
8	AD13	O	+3.0V	Flash/Mask ROM Address [13]
9	AD14	O	+3.0V	Flash/Mask ROM Address [14]
10	P37/PD7	I	+3.0V	CIRCUIT CONTROL INPUT PORT (BELL)
11	P31/PD1	O	+3.0V	CIRCUIT CONTROL INPUT PORT (P-SHORT)
12	P35/PD5	O	+3.0V	CIRCUIT CONTROL INPUT PORT (BREAK)
13	P34/PD4	O	+3.0V	CIRCUIT CONTROL INPUT PORT (CIDRLY)
14	P33/PD3	I	+3.0V	CIRCUIT CONTROL INPUT PORT (DCN)
15	P32/PD2	O	+3.0V	RF RESET SIGNAL
16	VDD1	-	+1.8V	+1.8V
17	VSS2	-	GND	GND
18	RFCLK	O	+1.8V	RF INTERFACE
19	VDDRF	-	+1.8V	+1.8V
20	VSSRF	-	GND	GND
21	XTAL1	I	+1.8V	CRYSTAL INPUT SIGNAL
22	CAP	I	+1.8V	CRYSTAL ADJUST SIGNAL
23	AVS	-	GND	GND
24	AVD	-	+1.8V	+1.8V
25	RSSI	I	+1.8V	NOT USED
26	RDI	I	+3.0V	RF INTERFACE
27	CMPREF	I	+1.8V	NOT USED
28	TDO	O	+3.0V	RF INTERFACE
29	AD15	O	+3.0V	Flash/Mask ROM Address [15]
30	AD16	O	+3.0V	Flash/Mask ROM Address [16]
31	AD17	O	+3.0V	Flash/Mask ROM Address [17]
32	AD18	O	+3.0V	Flash/Mask ROM Address [18]
33	AD19	O	+3.0V	Flash/Mask ROM Address [19]
34	AD20	O	+3.0V	Flash/Mask ROM Address [20]
35	AD21	O	+3.0V	Flash/Mask ROM Address [21]
36	AD22	O	+3.0V	Flash/Mask ROM Address [22]
37	AD23	O	+3.0V	Flash/Mask ROM Address [23]
38	LE	O	+3.0V	RF INTERFACE
39	SO	O	+3.0V	RF INTERFACE
40	SK	O	+3.0V	RF INTERFACE
41	DAC/ADC2	I	+1.8V	NOT USED
42	P36/PD6	I	+3.0V	NOT USED (URTS)
43	*RD	O	+3.0V	Flash/Mask ROM READ COMMAND
44	*WR	O	+3.0V	Flash/Mask ROM WRITE COMMAND
45	MI/READY	I	+3.0V	NOT USED
46	SCLK	O	+3.0V	SYSTEM BUS CLOCK
47	UTX/P00	O	+3.0V	UART SERIAL INTERFACE (UTX)
48	URX/P01	I	+3.0V	UART SERIAL INTERFACE (URX)
49	JTIO/P02	I	+3.0V	NOT USED
50	PCM_FSC1/P03	I	+3.0V	NOT USED (UCTS)
51	PCM_FSC0/P04	O	+3.0V	CIRCUIT CONTROL INPUT PORT (SPMUTE)
52	PCM_CLK/P05	I	+3.0V	SoC(IC300)INTERFACE SIGNAL (BMINFT1)
53	PCM_DOUT/P06	O	+3.0V	SoC(IC300)INTERFACE SIGNAL (BMINFT2)
54	PCM_DIN/P07	O	+3.0V	RF CONTROL SIGNAL (ECO_MODE)
55	VDDIO2	-	+3.0V	+3.0V
56	VSS3	-	GND	GND
57	*DREQ0/*INT0/P10	O	+3.0V	EEPROM INTERFACE SIGNAL (WP)
58	*DACK0/*INT1/P11	O	+3.0V	SoC(IC300) INTERFACE SIGNAL (NCBUSY1)
59	ACS1/*DREQ1/*INT2/P12	O	+3.0V	CIRCUIT CONTROL OUTPUT PORT (SPMUTE2)
60	ACS0	O	+3.0V	Flash/Mask ROM Chip Select
61	ACS2/*DACK1/*INT3/P13	I	+3.0V	SoC(IC300) INTERFACE SIGNAL (NCBUSY2)
62	*HOLD/*INT4/P14	O	+3.0V	BBIC ROM WRITE MODE(BBFWMOD)
63	VDDE/*HOLDACK/*INT5/P15	O	+3.0V	RF CONTROL SIGNAL (LOW_LAD)
64	*BE1	O	+3.0V	Byte Enable signal (NOT USED)

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
65	*BE0	O	+3.0V	Byte Enable signal (NOT USED)
66	SCL2/P30	O	+3.0V	EEPROM INTERFACE SIGNAL (SCL2)
67	SDA2	IO	+3.0V	EEPROM INTERFACE SIGNAL
68	DAB0	IO	+3.0V	Flash/Mask ROM Data [0]
69	DAB8	IO	+3.0V	Flash/Mask ROM Data [8]
70	DAB1	IO	+3.0V	Flash/Mask ROM Data [1]
71	DAB9	IO	+3.0V	Flash/Mask ROM Data [9]
72	DAB2	IO	+3.0V	Flash/Mask ROM Data [2]
73	DAB10	IO	+3.0V	Flash/Mask ROM Data [10]
74	DAB3	IO	+3.0V	Flash/Mask ROM Data [3]
75	DAB11	IO	+3.0V	Flash/Mask ROM Data [11]
76	VSS4	-	GND	GND
77	VDD2	-	+1.8V	+1.8V
78	VDDIO3	-	+3.0V	+3.0V
79	P20/PWM0/SPIDI	I	+3.0V	SPI SERIAL INTERFACE (SPIDI)
80	P21/PWM1/SPICLK	O	+3.0V	SPI SERIAL INTERFACE (SPICLK)
81	P22/ADC0/CLK100	I	+1.8V	CIRCUIT CONTROL INPUT PORT (ALC)
82	P23/ADC1	I	+3.0V	NOT USED
83	P24/SCL1	O	+3.0V	CIRCUIT CONTROL OUTPUT PORT (LINERLY)
84	P25/SDA1	I	+3.0V	CIRCUIT CONTROL INPUT PORT (CPC)
85	DAB4	IO	+3.0V	Flash/Mask ROM Data [4]
86	DAB12	IO	+3.0V	Flash/Mask ROM Data [12]
87	DAB5	IO	+3.0V	Flash/Mask ROM Data [5]
88	DAB13	IO	+3.0V	Flash/Mask ROM Data [13]
89	DAB6	IO	+3.0V	Flash/Mask ROM Data [6]
90	DAB14	IO	+3.0V	Flash/Mask ROM Data [14]
91	DAB7	IO	+3.0V	Flash/Mask ROM Data [7]
92	DAB15	IO	+3.0V	Flash/Mask ROM Data [15]
93	TM	I	+3.0V	NOT USED
94	P27/SPIDO	O	+3.0V	SPI SERIAL INTERFACE (SPIDO)
95	P16/PON/INT6	I	+1.8V	POWER ON SIGNAL
96	P17/CHARGE/INT7	O	+3.0V	NOT USED
97	P26/stop_charge	O	+3.0V	NOT USED
98	RINGING	I	+3.0V	NOT USED
99	LINEREF	O	+1.8V	CID REFERENCE VOLTAGE OUTPUT
100	LINEOUT	O	+1.8V	CIRCUIT OUTPUT
101	LINE_IN+	I	+1.8V	CID SIGNAL INPUT
102	LINE_IN-	I	+1.8V	CIRCUIT INPUT
103	LDO1_sense	I	+3.0V	+3.0V POWER CONTROL SIGNAL
104	LDO1_CTRL	O	+3.0V	+3.0V POWER CONTROL SIGNAL
105	LDO2_CTRL	O	+3.0V	+1.8V POWER CONTROL SIGNAL
106	VBAT2	I	+3.3V	NOT USED
107	CIDIN+	I	+1.8V	NOT USED
108	AVS2	-	GND	GND
109	AVD2	-	+1.8V	+1.8V
110	LSR+/REF	O	+1.8V	SPEAKER/HANDSET SPEAKER OUTPUT (+)
111	LSR-/REF	O	+1.8V	HANDSET SPEAKER OUTPUT (-)
112	CIDIN-	I	+1.8V	NOT USED
113	CIDOUT	O	+1.8V	NOT USED
114	MIC-	I	+1.8V	NOT USED
115	VREF-	O	GND	NOT USED
116	VBUF	O	GND	NOT USED
117	AGND	-	GND	GND
118	MIC+	I	+1.8V	HANDSET MIC INPUT
119	VREF+	O	+1.8V	NOT USED
120	*RST	I	+1.8V	BBIC SYSTEM RESET
121	AD0	O	+3.0V	Flash/Mask ROM Address [0]
122	AD1	O	+3.0V	Flash/Mask ROM Address [1]
123	AD2	O	+3.0V	Flash/Mask ROM Address [2]
124	AD3	O	+3.0V	Flash/Mask ROM Address [3]
125	AD4	O	+3.0V	Flash/Mask ROM Address [4]
126	AD5	O	+3.0V	Flash/Mask ROM Address [5]
127	AD6	O	+3.0V	Flash/Mask ROM Address [6]
128	AD7	O	+3.0V	Flash/Mask ROM Address [7]

6.3.2. RTC Backup Circuit

1. **Function**
   This unit has a lithium battery (BAT300) which works for the Real Time Clock IC (RTC: inside IC300).
   The RTC continues to work, backed up by a lithium battery even when the power switch is OFF.
2. **RTC Inside (IC300) Backup Circuit Operation**
   When the power switch is turned ON, power is supplied to the RTC (inside IC300). At this time, the voltage at pin AF3 of the IC300 is +3.3V. When the power switch is turned OFF, the BAT300 supplies power to RTC through DA300.
   When the power switch is OFF and the voltage of +3.3V decreases, pin AF3 of RTC (IC300) becomes roughly the same voltage as the battery voltage. RTC goes into the backup mode, in which the power consumption is lower.

Circuit Diagram



6.3.3. Modem Circuit Operation

The modem (Included IC300) has all the hardware satisfying the CCITT standards mentioned previously.
ALL processing is controlled by the SOC (IC300) according to CCITT procedures.
This modem (Included IC300) has an automatic application equalizer. With training signal 1 or 2 at the time of G3 reception, it can automatically establish the optimum equalizer.

Facsimile Transmission

The digital image data sent on ATXD line from modem (Included IC300) .

AFE IC(IC200) and Analog DAA*1 circuit to the telephone line.

Facsimile Reception

The analog image data which is received from the telephone line passes through Analog DAA circuit and enters AFE IC(IC200). The signals are changed to digital data in AFE IC and IC300. In this case, the image signals from the telephone line are transmitted serially. 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.

Busy/Dial Tone Detection

The path is the same as Facsimile Reception.

Call Tone Transmission

This is the call signal which is generated the BBIC (IC902) and sent to the speaker.

*1 DAA : Direct Access Arrangement

6.3.4. TEL Line Section

Composed of ITS circuit and NCU circuit.

6.3.4.1. Description of Block Diagram in Analog Section

Function

The analog section works as an interface between the telephone line and controls ITS circuit and NCU circuit.
The analog section control signals are output from BBIC (IC902).

Circuit Operation

[NCU]: Network Control Unit the NCU comprises of the following; DC loop forming circuit to connect with the telephone line; Switching circuit for other interconnected telephones; Bell detection circuit; Remote fax activation circuit.
Refer to **NCU Section** (P.39) for the details.

6.4. Analog circuit of Telephone section

6.4.1. General

This section is the explanation about analog signal route of voice, beep, fax signal, DTMF signal and so on.
Refer to **Check Sheet for Signal Route** (P.193).

6.4.1.1. Telephone Monitor

1. **Function**
   This is the function when you are not holding the handset and can hear the caller's voice from the line.
2. **Signal Path**
   Refer to **Check Sheet for Signal Route**(P.193).

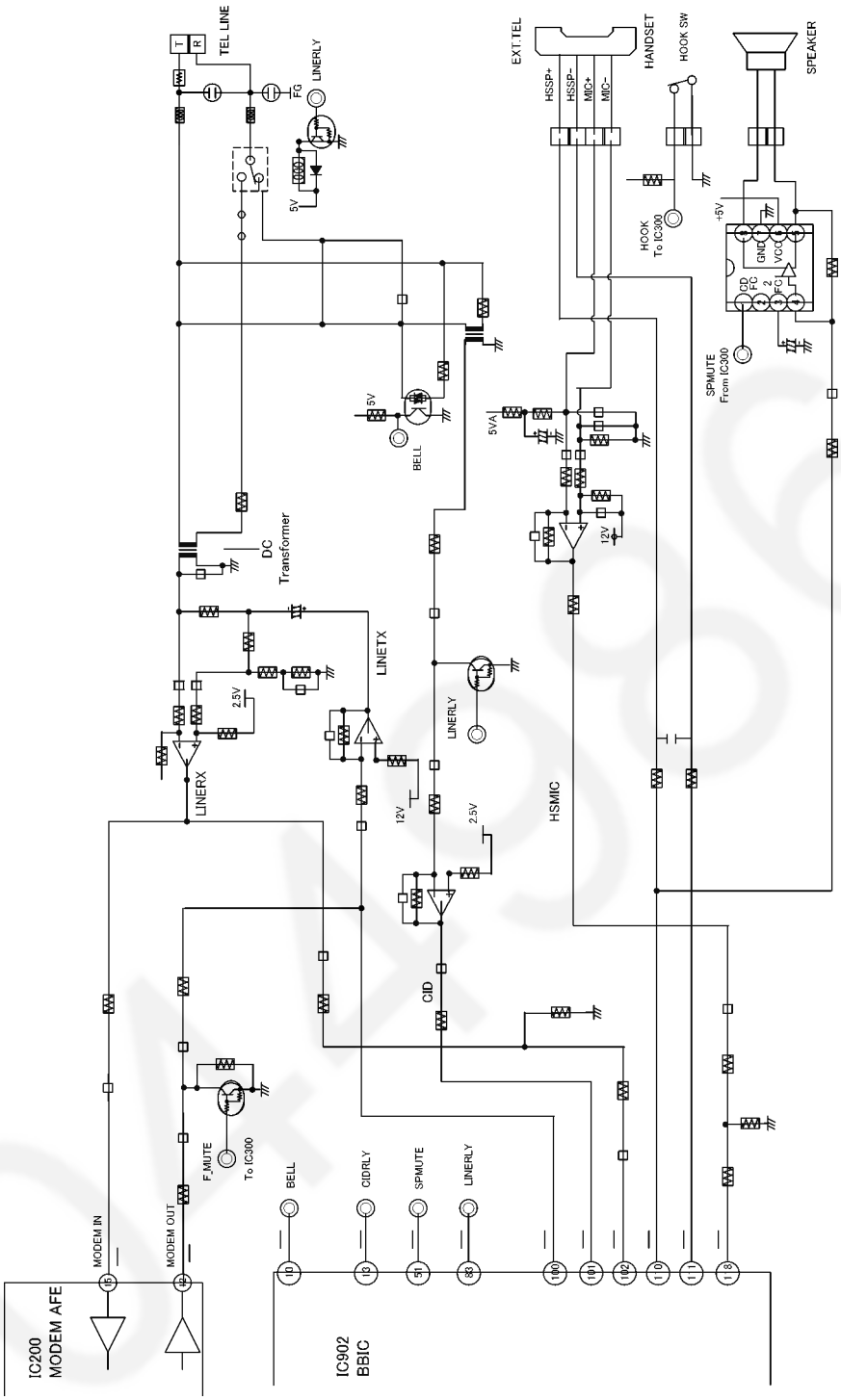
6.4.1.2. Handset Circuit

1. **Function**
   This circuit controls the conversation over the handset, i.e. the transmitted and received voices to and from the handset.
2. **Signal Path (Transmission signal)**
   Refer to **Check Sheet for Signal Route**(P.193).

6.4.1.3. Monitor Circuit

1. **Function**
   This circuit monitors various tones, such as (1) DTMF tone, (2) Alarm/Beep/Key tone/Bell.
2. **Signal Path**
   Refer to **Check Sheet for Signal Route** (P.193).

6.4.1.4. Analog Block Diagram



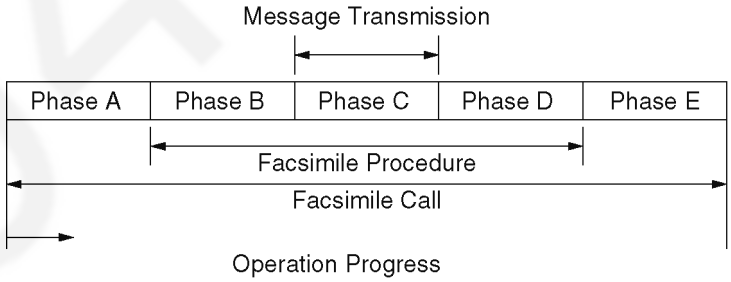
6.5. Modem Section

6.5.1. Function

The unit uses MODEM (IC300) 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 via AFE(Analog Front End : IC200).
During a receiving operation, the analog image signals which are received from the telephone line via AFE(IC200) are demodulated and converted into digital image signals. The communication format and procedures for FAX communication are standardized by ITU-T. MODEM has hardware which sends and detects all of the necessary signals for FAX communication.
It can be controlled by the SOC (inside:IC300).
This MODEM also sends DTMF signals, and detects a caller ID signal, a busy tone and dial tones.

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

1. **ON CCITT (International Telegraph and Telephone Consultative Committee)**
   The No. XIV Group of ITU-T, 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.
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**

$$\overline{\text{Transmission Time}} = \overline{\text{Control Time}} + \overline{\text{Image Transmission Time}} + \overline{\text{Hold Time}}$$

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) or TCM (V17,V34)
Transmission Speed	300 bps (Control Signal) 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400 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.

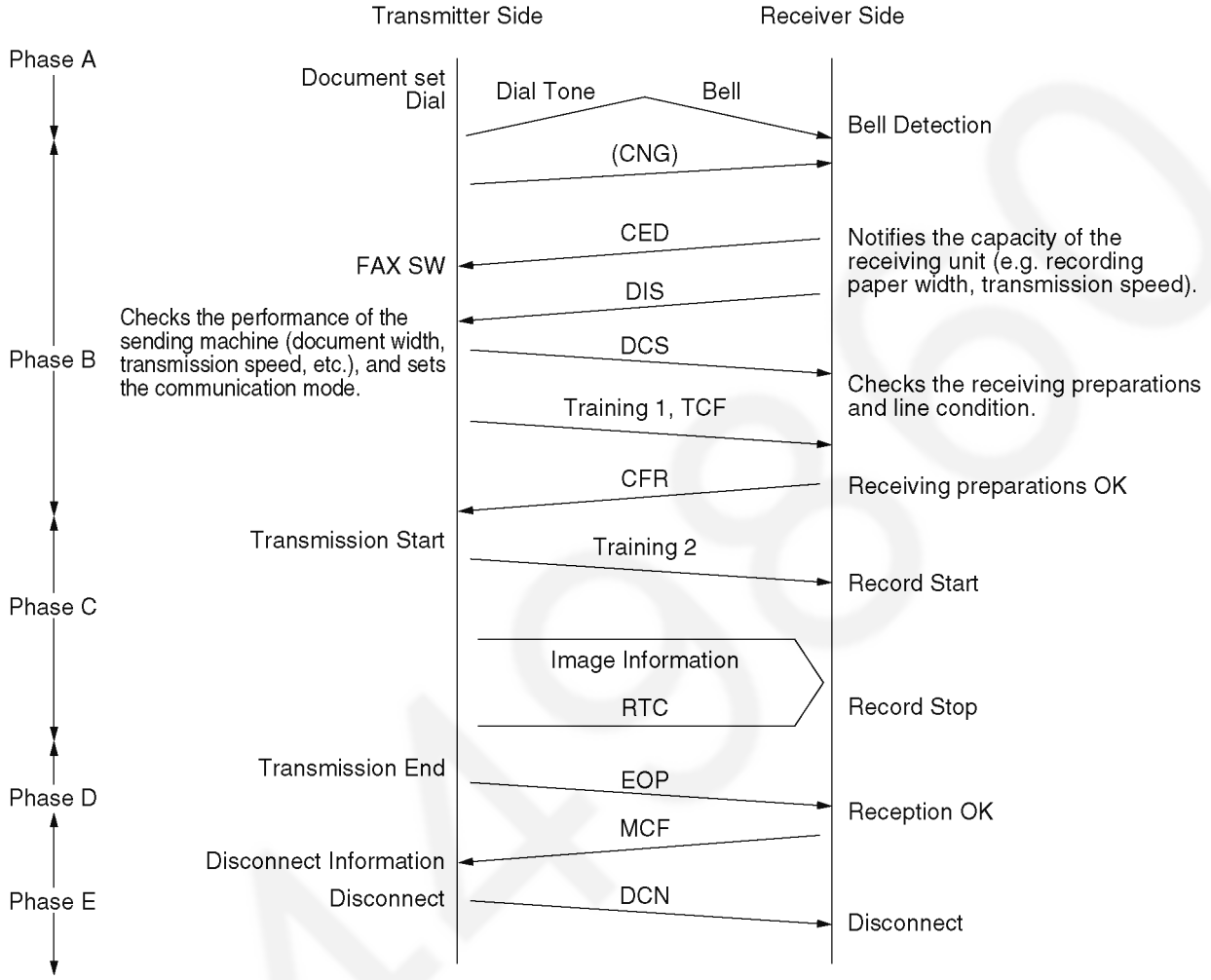
6. **Explanation of Communication and Compression Technology**

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.



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	

Bit No.	DIS/DTC	DCS
10	Receiver --- T.4 operation	Receiver --- T.4 operation
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

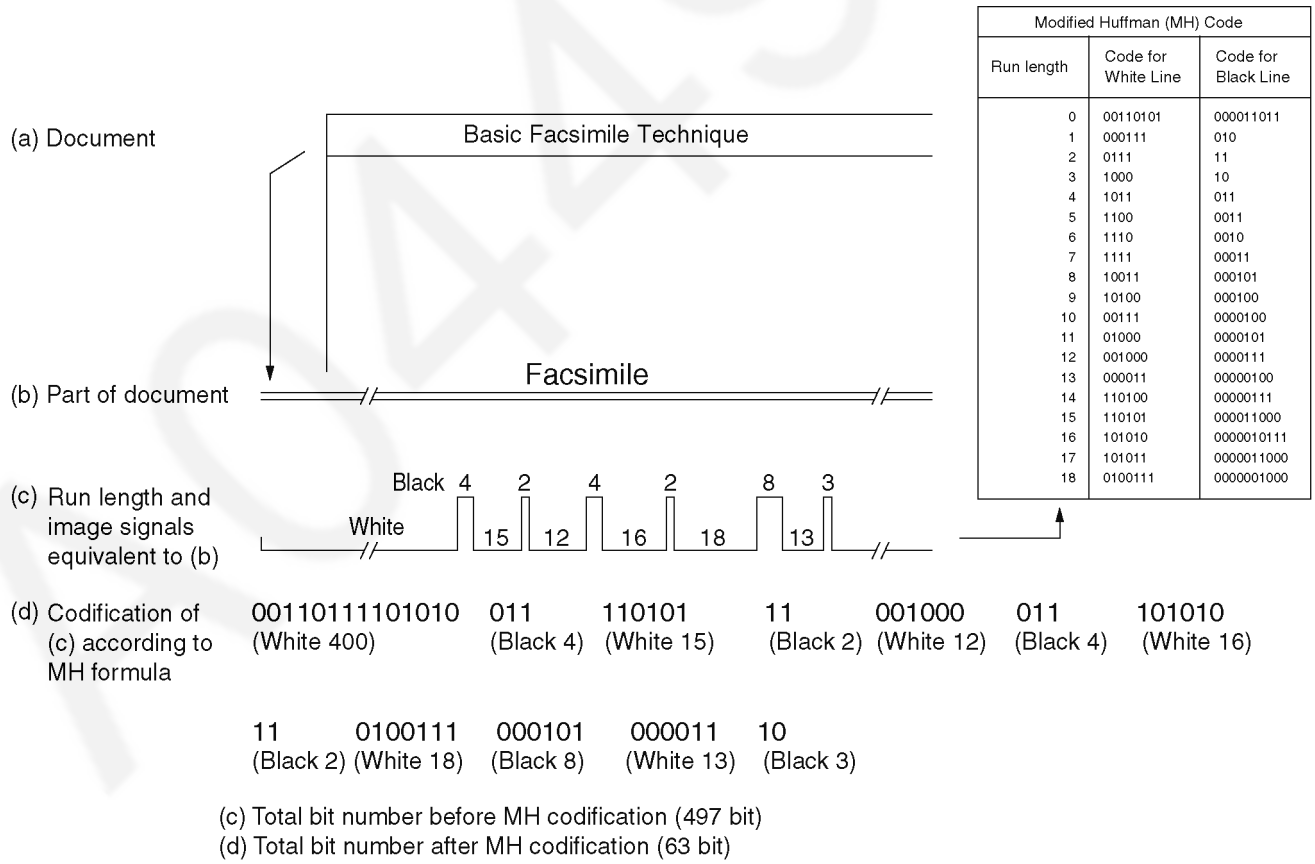
Bit No.	DIS/DTC	DCS
21, 22, 23 (0, 0, 0) (0, 0, 1) (0, 1, 0) (1, 0, 0) (0, 1, 1) (1, 1, 0) (1, 0, 1) (1, 1, 1)	Minimum scan line time capability of the receiver 20 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$ 40 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$ 10 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$ 5 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$ 10 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$ 20 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$ 40 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$ 0 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	Minimum scan line time 20 ms 40 ms 10 ms 5 ms 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	Set to “0”.	Frame size 0 = 256 octets 1 = 64 octets
29	Error limiting mode	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 (0) (1)	Validity of bits 17, 18 Bits 17, 18 are valid Bits 17, 18 are invalid	Recording width Recording width indicated by bits 17, 18 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.	
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”: neuritic 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 14400 bps) designated by DCS, and the receiving side optimizes the automatic equalizer, etc., according to this signal.

Signal	Identification Signal Format	Function
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

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

6.6. NCU Section

6.6.1. General

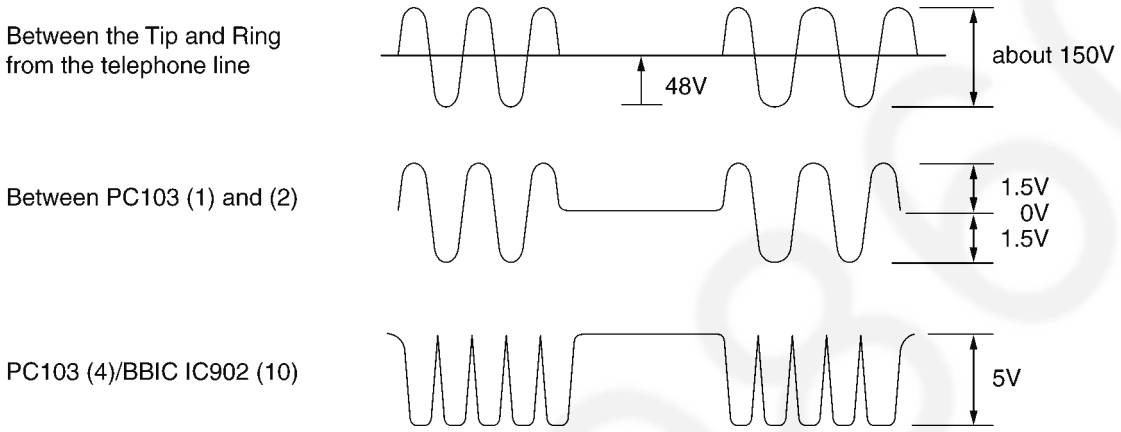
NCU is the with the telephone line. It is composed of Bell detection circuit, Pulse dial circuit, Line amplifier and sidetone circuits. The following is a brief explanation of each circuit.

6.6.2. 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 → PC103 (1, 2 → 4) → IC902 (10)



6.6.3. ON/OFF Hook Circuit

Normally (ON-HOOK condition), LINE RELAY (RLY100) is OFF. While OFF-HOOK, RLY100 turns ON. LINE RELAY is controlled by pin 83 of IC902 through the Q201.

ON-HOOK:

IC902 (83) Low Level → Q201 OFF → RLY100 OFF

OFF-HOOK:

IC902 (83) High Level → Q201 ON → RLY100 ON

6.6.4. Pulse Dial Circuit

The pulse dial is generated by operating the transistor Q201 while OFF-HOOK (RLY100 ON) condition.

Make state:

IC902(83) High Level → Q201 ON → RLY100 ON

Break state:

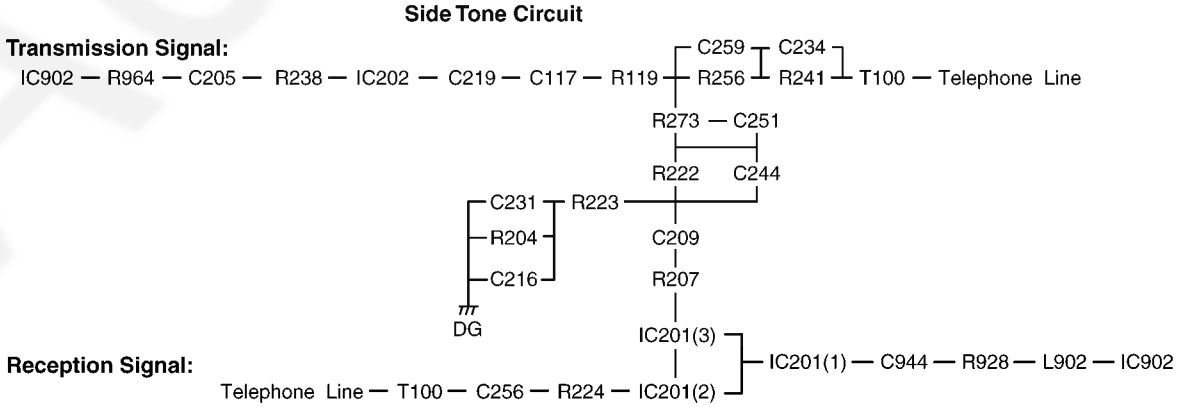
IC902(83) High Level → Q201 OFF → RYL100 OFF

6.6.5. Line Amplifier and Side Tone Circuit

1. **Circuit Operation**

The reception signal output from the line transformer T100 is input to pin (2) of IC201 via C256, R224 and then the signal is amplified at pin (1) of IC201 and sent to the reception system at through the LPF.

Side Tone Circuit



6.6.6. Calling Line Identification Circuit (FSK)

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 SK (Frequency Shift Keying) format. Data “0” is a 1200 Hz sine wave, and data 1 a 2200 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 imput from TEL LINE is processed with BBIC (IC902).
   Refer to **Check Sheet for Signal Route** (P.193) for the route of caller ID signal.

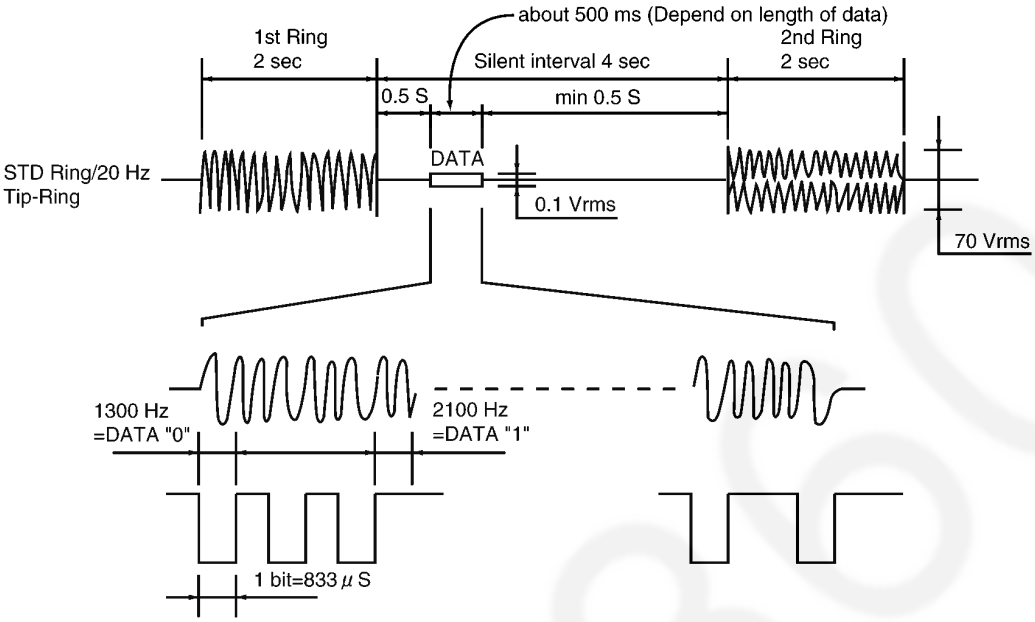
6.6.7. Calling Line Identification Circuit (DTMF)

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. This data for the caller ID from the telephone exchange is sent before the first rings of the bell signal. The data from the telephone exchange is a DTMF signal.
2. **Circuit Operation**
   The caller ID signal imput from TEL LINE is processed with BBIC (IC902).
   Refer to **Check Sheet for Signal Route** (P.193) for the route of caller ID signal.

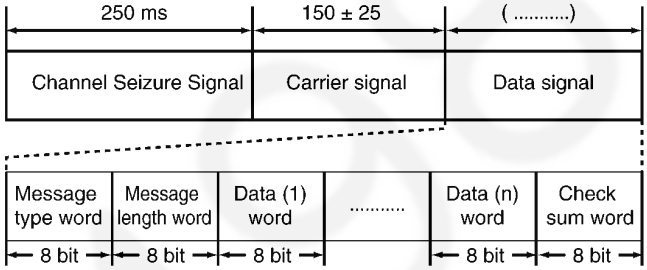
6.6.8. Calling Line Identification Circuit (Western)

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 (IC902).
   Refer to **Check Sheet for Signal Route** (P.193) for the route of caller ID signal.

Timing Chart

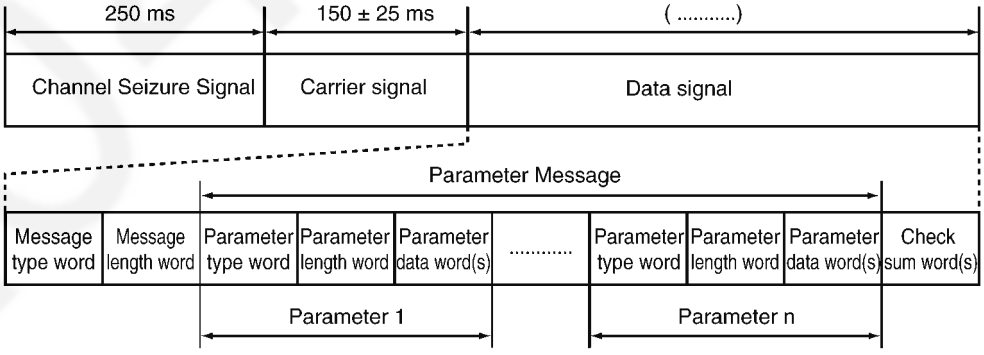


• Single data message



•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



·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

6.6.9. Remote FAX Activation Circuit

1. **Function**

Another telephone connected to same line activates the unit to the FAX mode by using a DTMF signal.

2. **Signal Path**
   TEL LINE→T101→R245→C202→C224→R212→IC201(6-7)→R277→R949→C936→R905→IC902(101)

6.6.10. TAM Interface Circuit

This circuit is to switch between FAX receiving and the external TAM's message recording automatically.

1. **Function**
   When TAM is connected to this unit, the unit receives documents for FAX calls or the external TAM records a voice message automatically.

2. **Circuit Operation**
   The TAM INTERFACE circuit consists of Soc(IC300) to detect the other party CNG signal, and RLY100 to separate EXT.TAM.
   a. **CNG signal detection circuit**
      The CNG signal from the other party's FAX is detected in Soc IC300
      (Signal path)
      TEL LINE→T100→C256→R224→IC201(2-1)→R247→C207→IC200(15)
   b. **Remote receiving**
      This is the parallel-connected DTMF signal for the TEL or EXT.TEL mode between T and R. When the other party is a FAX, the unit switches to FAX receiving.
      (Signal Path)
      TEL LINE→T101→R245→C202→C224→R212→IC201(6-7)→R277→R949→C936→R905→IC902(101)

6.7. 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.

6.7.1. Transmitter Block

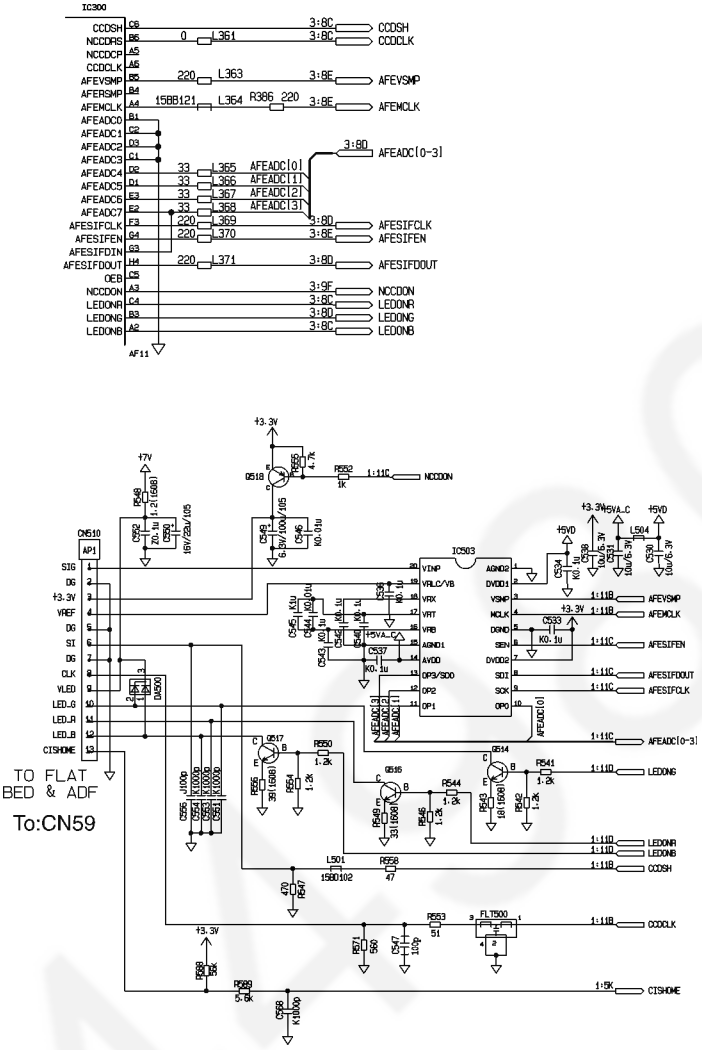
The voice signal input from the TEL LINE interface goes to RF Module (IC905) through DECT BBIC (IC902).
The voice signal passes through the analog part of IC902 where it is amplified and converted to a digital audio stream signal. The
burst switch controller processes this stream performing encryption 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 IC905, 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.

6.7.2. Receiver Block

The signal of 19.2 MHz band (18.81792 MHz ~ 18.97344 MHz) which is input from antenna is input to IC905.
In IC905, the signal of 19.2 MHz band is down converted to 864 kHz signal and demodulated, and goes to IC902 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.

6.8. CIS Control Section

The scanning block of this device consists of a control circuit and a CIS (contact image sensor), and AFE(Analog Front End) include A/D Converter.



When an original document is inserted and the start button pressed, pin A3 of IC300 goes to a low level and the transistor Q518 turns on.

This applies voltage to the CIS. The CIS is driven by each of the CCDSH , CCDCLK signals output from IC300, and the original image illuminated by the LED to output an analog image signal.

The analog image signal is input to the AFE on VINP(20pin of IC503) and converted into 16-bit data by the A/D converter inside IC503. Then this signal undergoes digital processing in order to obtain a high-quality image.

6.9. Motor Drive Section

6.9.1. Engine Motor Control Circuit

1. **Functions**

   All driving forces of printer engine part are supplied by this engine motor.
   Engine motor is controlled so as to rotate at constant speed during printing and copying.

2. **Motor operation**

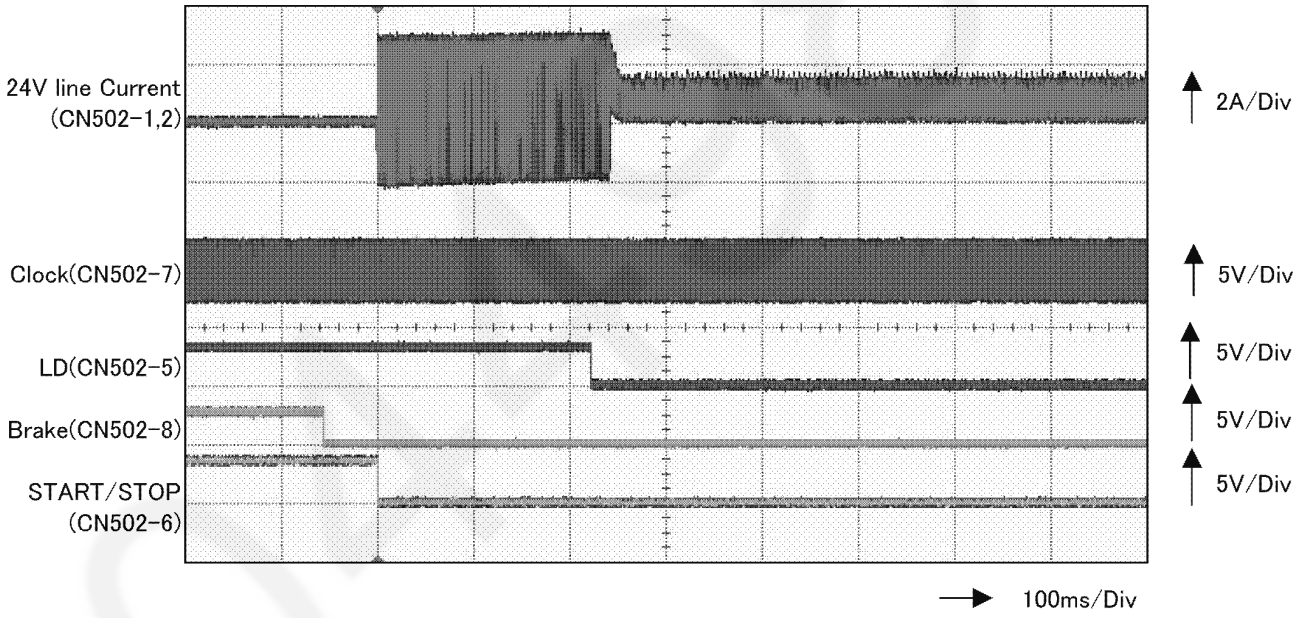
<Start operation>

In order to start the motor rotation, following 3 signals are supplied from IC300.

1. SS signal (Output pin: Pin B12/Output Signal: "H")
When this signal is inverted by transistor Q502 and becomes "L", motor recognize this signal as "start" signal.
2. Clock signal (Output pin: Pin A12/Output Signal: Pulse)
Pulse frequency :approx. 2.2KHz (at normal printing speed)
Pulse frequency :approx. 1.1KHz.(at half printing speed)
This signal is also inverted by transistor Q525, and supplied to motor as "clock" signal.
3. Brake signal (Output pin: Pin C12/Output Signal: "H")
When this signal is inverted by transistor Q526 and becomes "L", motor recognize this signal as "brake off" signal.

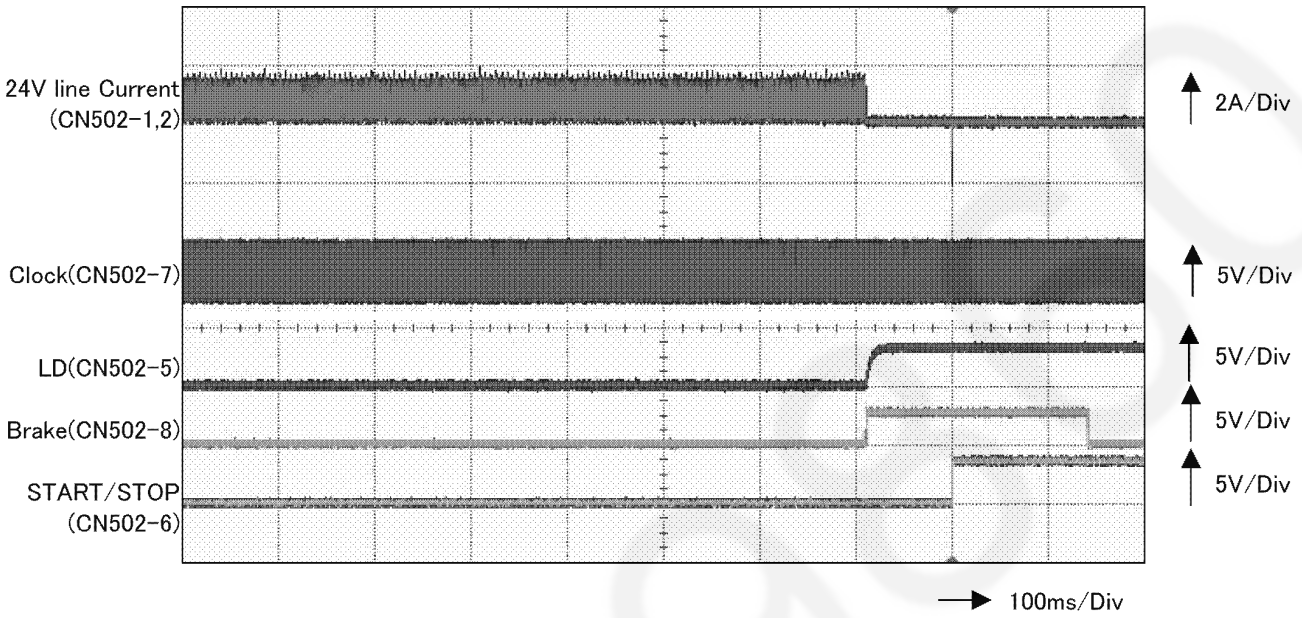
When motor reaches constant speed, "L" signal is supplied from motor to IC300 pin D12 as "Lock detect (LD)" signal.
If "LD" signal does not becomes "L" within predetermined period after "SS" signal becomes "H", or if "LD" signal becomes "H" during rotation, it is judged that motor Error occurred.

Timing Chart of Start operation

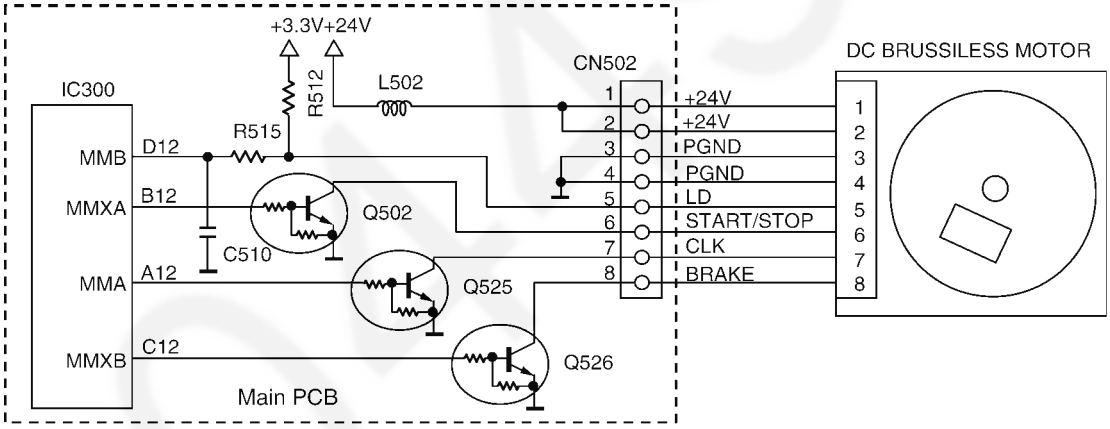


<Stop operation>
In order to stop the motor rotation, following 2 signals are supplied from IC300.
1. SS signal (Output pin: Pin B12/Output Signal: "L")
When this signal is inverted by transistor Q502 and becomes "H", motor recognize this signal as "stop" signal.
2. Brake signal (Output pin: Pin C12/Output Signal: "L")
When this signal is inverted by transistor Q526 and becomes "H", motor recognize this signal as "brake on" signal.

Timing Chart of Stop operation



6.9.1.1. Engine Motor Drive Circuit



6.9.2. Scanner Motor Drive Circuit

General
Scanner motor drive circuit is consist of motor current control circuit ,FB (Flat Bed) motor driver, ADF (Auto Document Feeder: equipped model only) motor driver and OCP (Over Current Protection) circuit.

6.9.2.1. Motor current control circuit

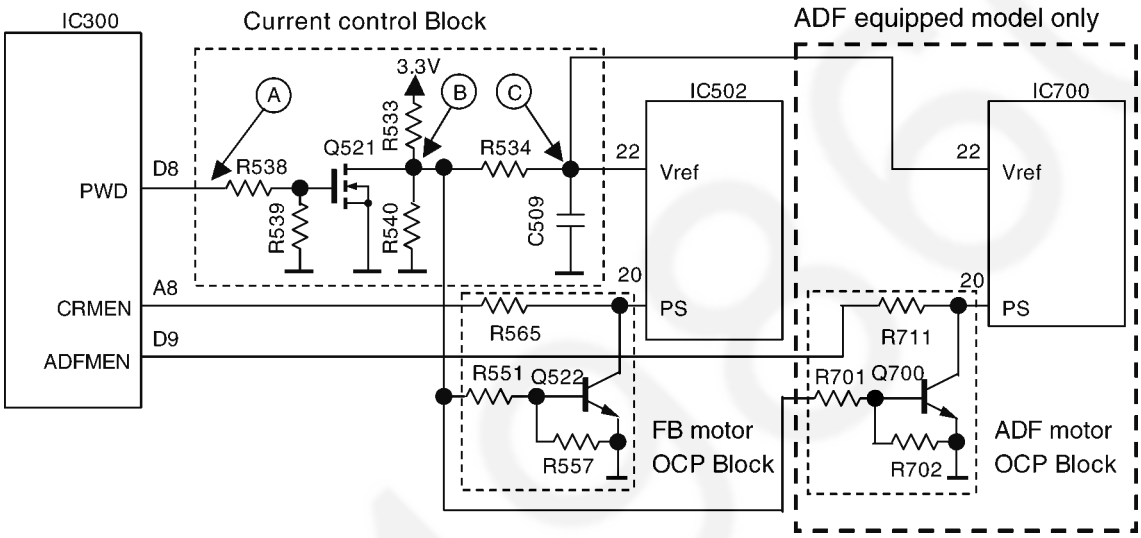
1. Circuit explanation
According to the scan speed, each motor current is controlled for appropriate value.
When scan speed is low, motor current is reduced to prevent the vibration during motor rotation.
When scan speed is high, motor needs much driving force. so much current should be supplied.

For the control of motor current, Vref voltage of each motor driver is controlled.
When Vref voltage is high, motor current is increased, and the voltage is low, motor current is reduced.
In order to control the Vref voltage, PWM pulse is supplied from IC300 pin D8.
PWM pulse is inverted by Q521 and integrated by R533, R534, and C509, then converted to DC voltage.

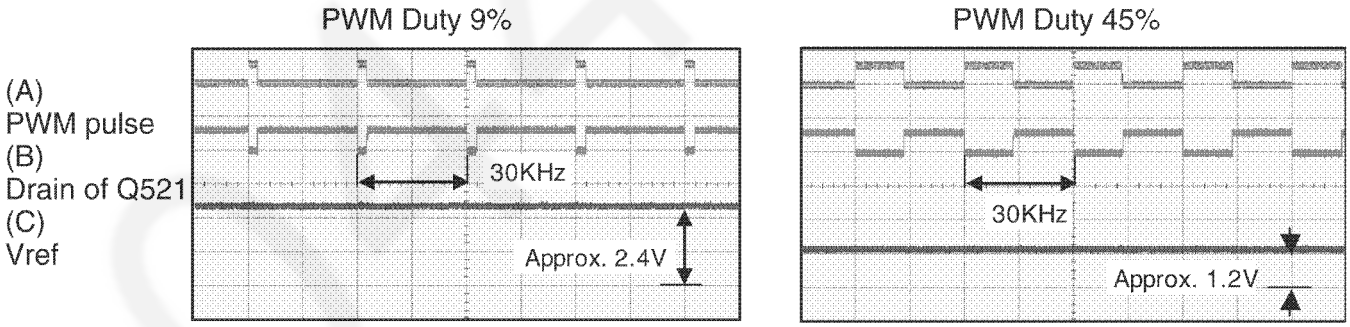
This DC voltage is supplied to Vref pin of each motor drivers.
When duty of PWM pulse is high, Vref voltage is decreased and when duty is low, Vref voltage is increased.

For FB motor, motor current is controlled approx. 0.1A-0.25A.
For ADF motor, motor current is controlled approx. 0.2A-0.35A (ADF equipped model only).

2. Circuit diagram of current control and OCP circuit



3. Timing chart
Following timing charts are the example when PWM pulse duty are approx 9% and 45%.



6.9.2.2. OCP (Over Current Protection) circuit

1. Functions

   By parts failure or other reason, if Vref voltage exceeds 0.9V, extreme current is supplied to the motor. This may cause motor over heat and damage.

   To prevent this problem, over current protection circuit is provided.

   If Vref voltage becomes over 0.9V, Q522 or Q700 turns on. Then PS signal (pin20 of motor driver) becomes "L" and motor driver stops output the motor current.

2. Circuit Diagram

Refer to the circuit diagram in **Motor current control circuit** (P.46).

6.9.2.3. FB (Flat Bed) Motor Drive Circuit

1. Functions

   This motor functions for main operations including FAX transmission, FB copy and PC scan.

   This motor feeds CIS unit with synchronizing for reading.

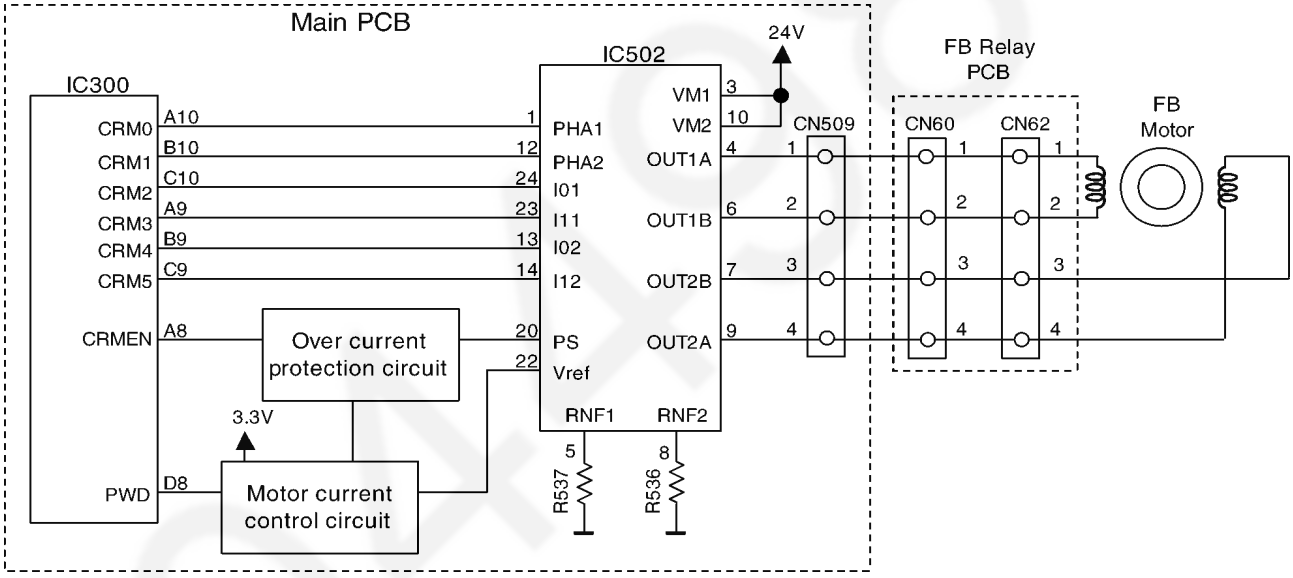
2. Motor operation

   During motor driving, pin A8 of IC 300 become "H" level, then motor driver IC502 is activated.

   Stepping pulses are output from IC300 pins A9, B9, C9, A10, B10, and C10, causing driver IC502 pin 4, 6, 7 and 9 to drive the motor coil.

   A 1-step rotation of this motor feeds 0.021mm of CIS unit.

3. Circuit Diagram



6.9.2.4. ADF (Auto Document Feeder) Motor drive circuit

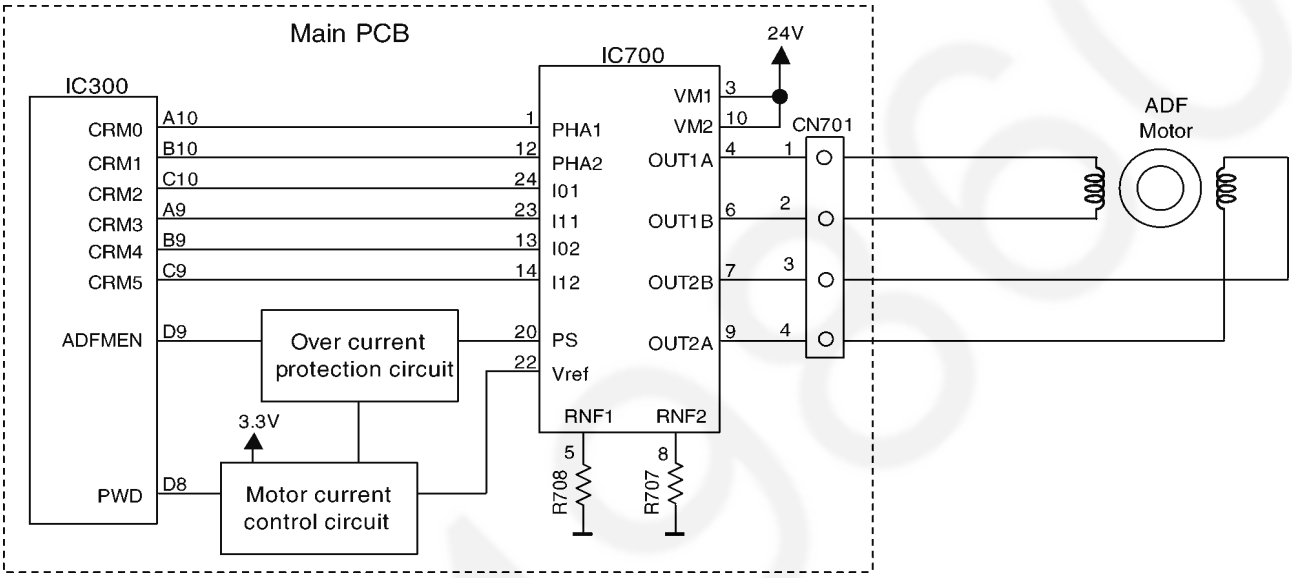
1. Functions

   This motor functions for main operations including FAX transmission, ADF copy and PC scan.
   This motor feeds document, which are set to ADF with synchronizing for reading.

2. Motor operation

   During motor driving, pin D9 of IC 300 become low level, then motor driver IC700 is activated.
   Stepping pulses are output from IC300 pins A9, B9, C9, A10, B10, and C10, causing driver IC700 pin 4, 6, 7 and 9 to drive the motor coil.
   A 1-step rotation of this motor feeds 0.042mm of document.

3. Circuit Diagram

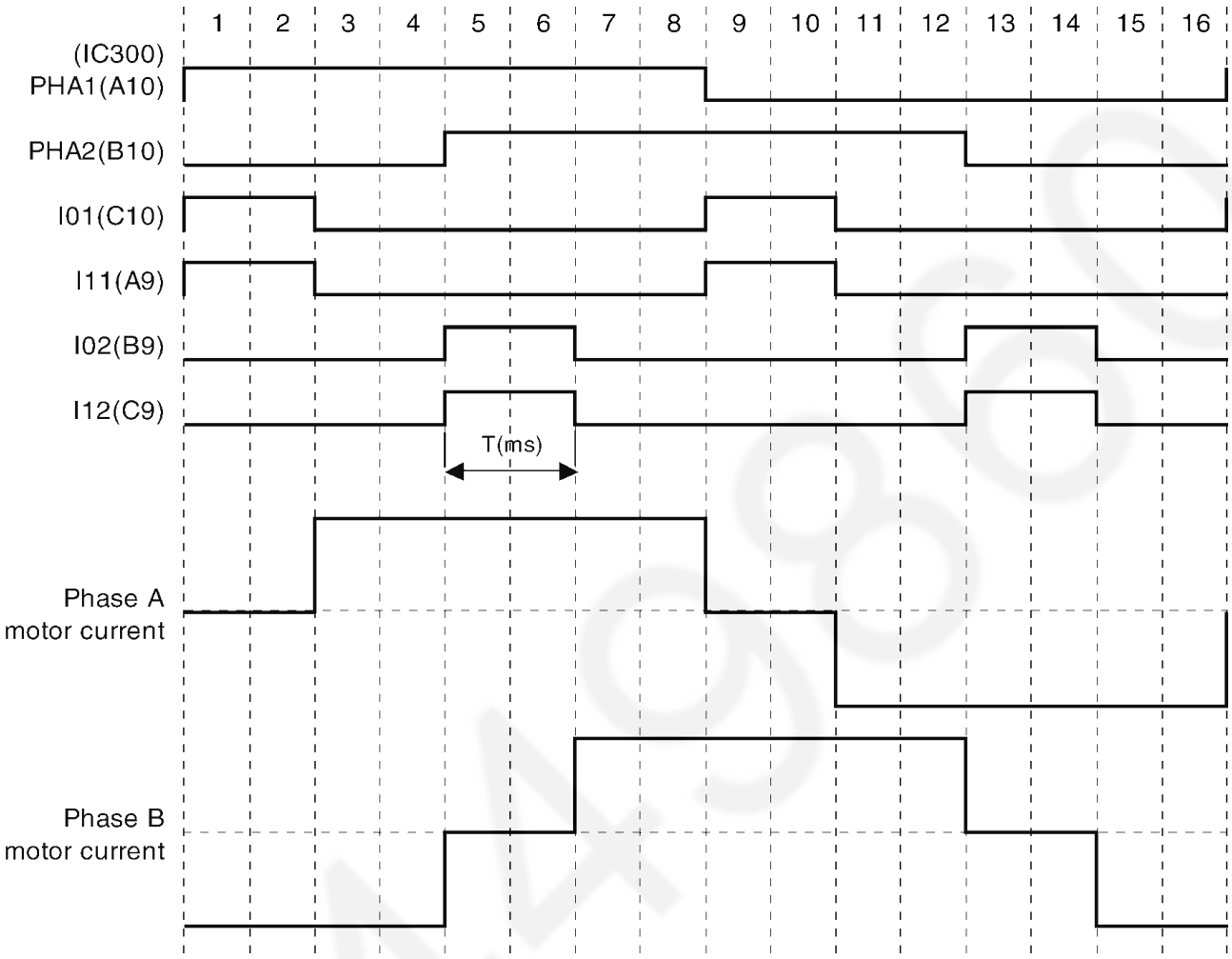


6.10. Timing chart and wave form of scanner motors

Control sequence and waveform of both FB and ADF motor are almost same.

6.10.1. Normal 1-2 phase excitation (half step)

1. Timing chart



2. Wave form

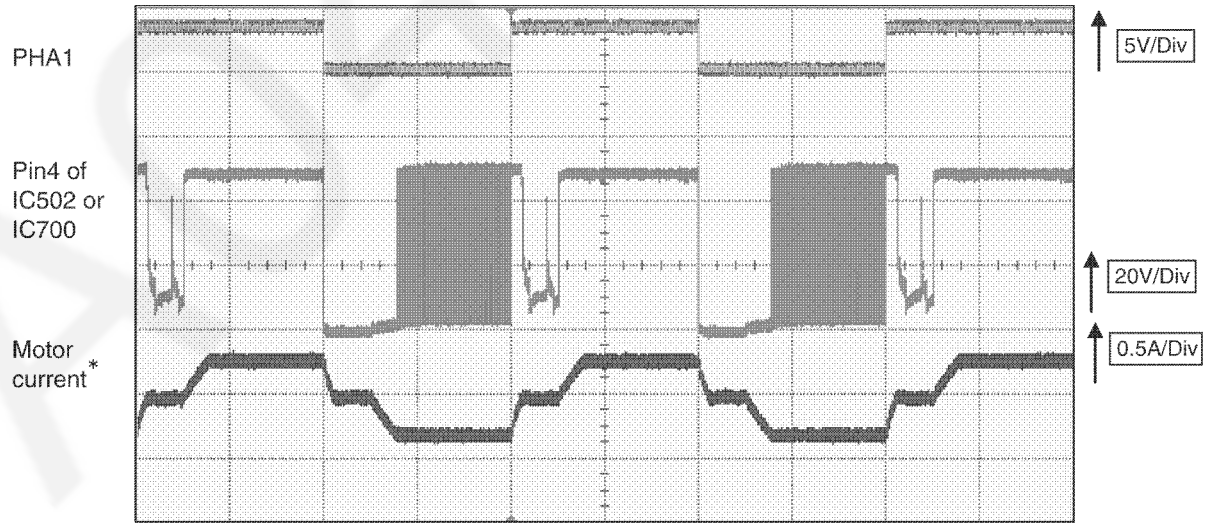
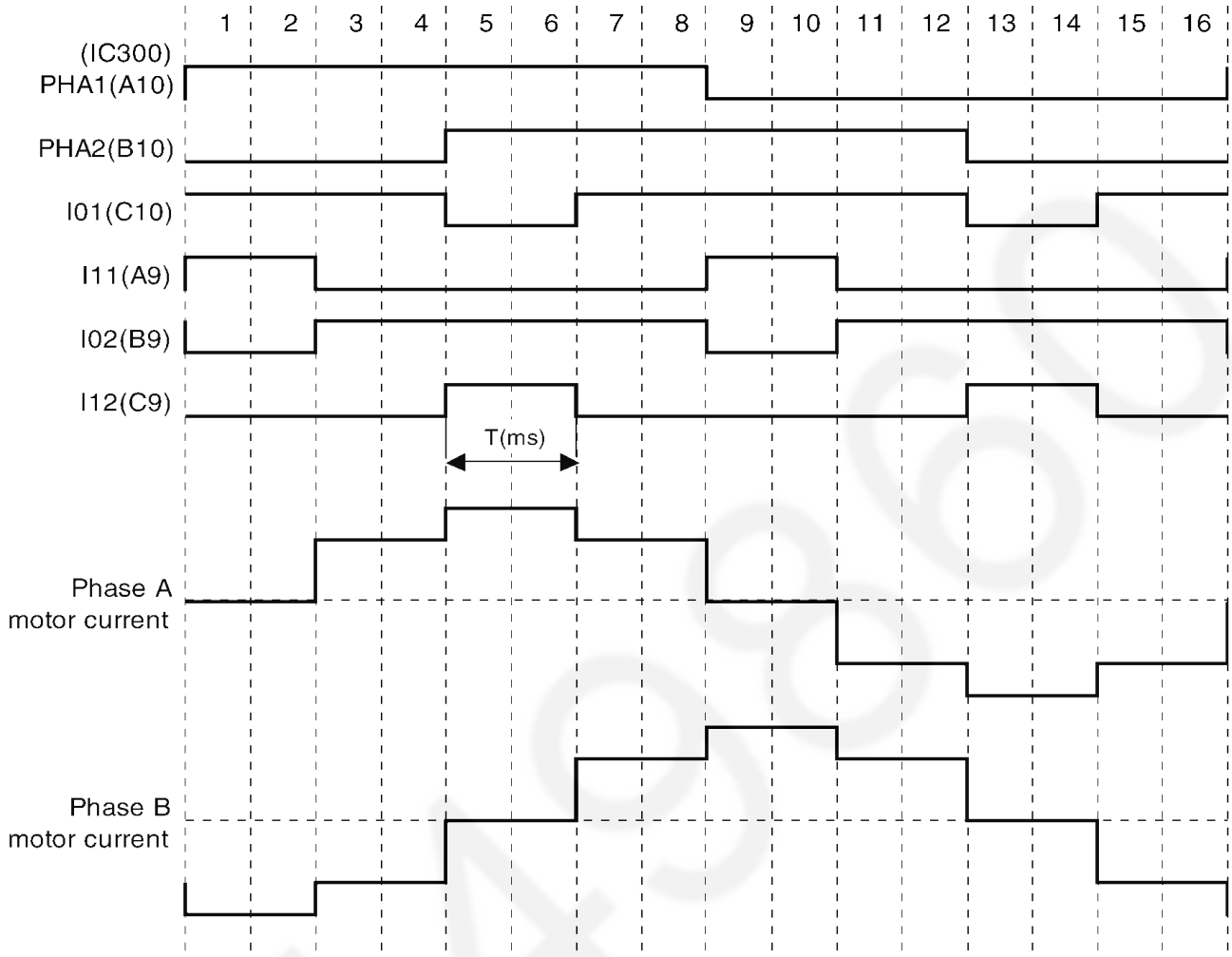


Fig. 1

* Motor current is changed according to the scan speed.

6.10.2. Flat torque 1-2 phase excitation (half step)

1. Timing chart



2. Wave form

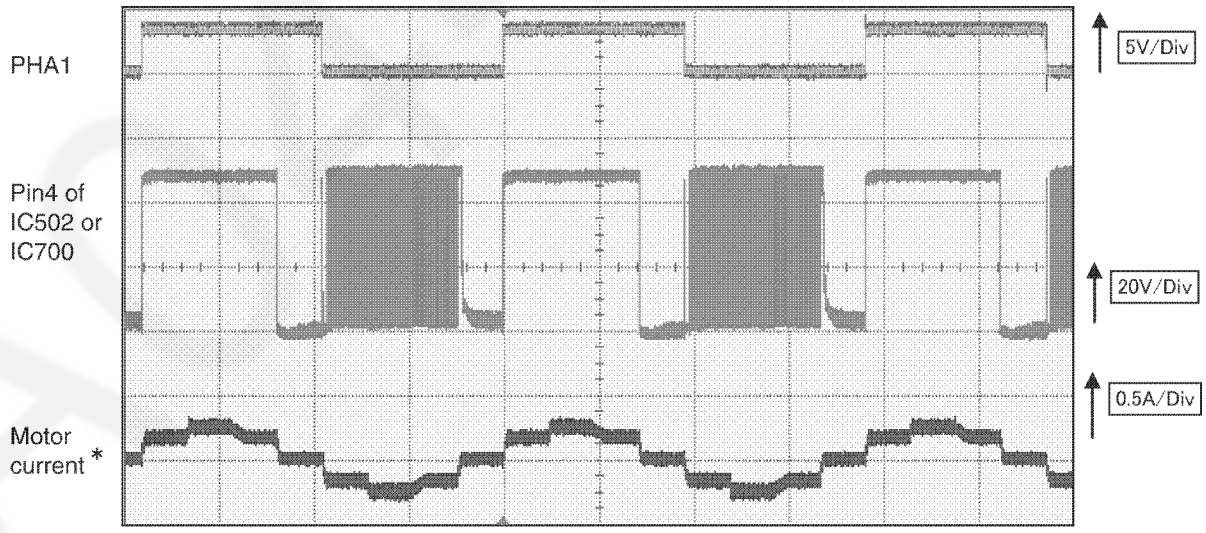
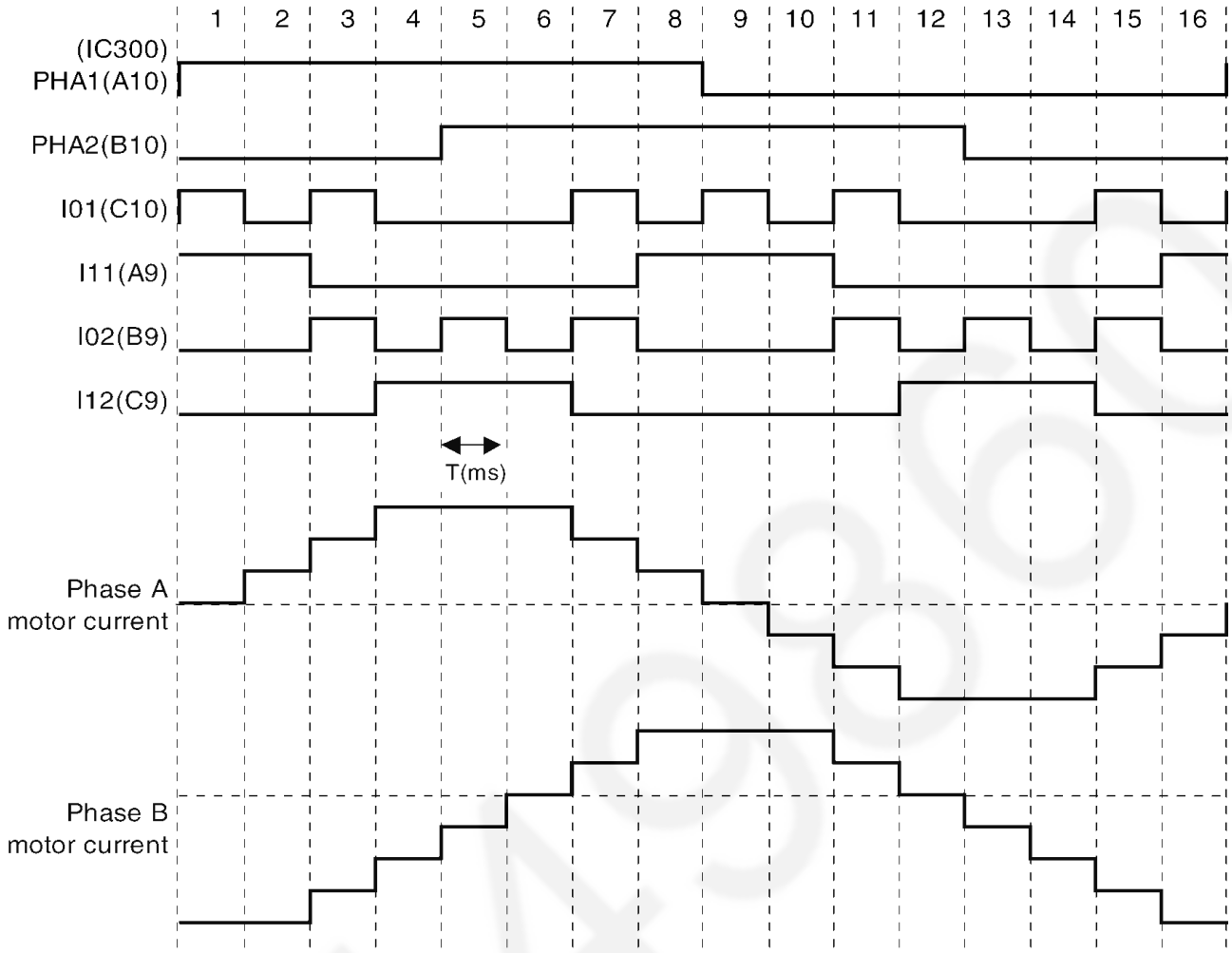


Fig. 2

* Motor current is changed according to the scan speed.

6.10.3. W1-2 phase excitation (Quarter step)

1. Timing chart



2. Wave form

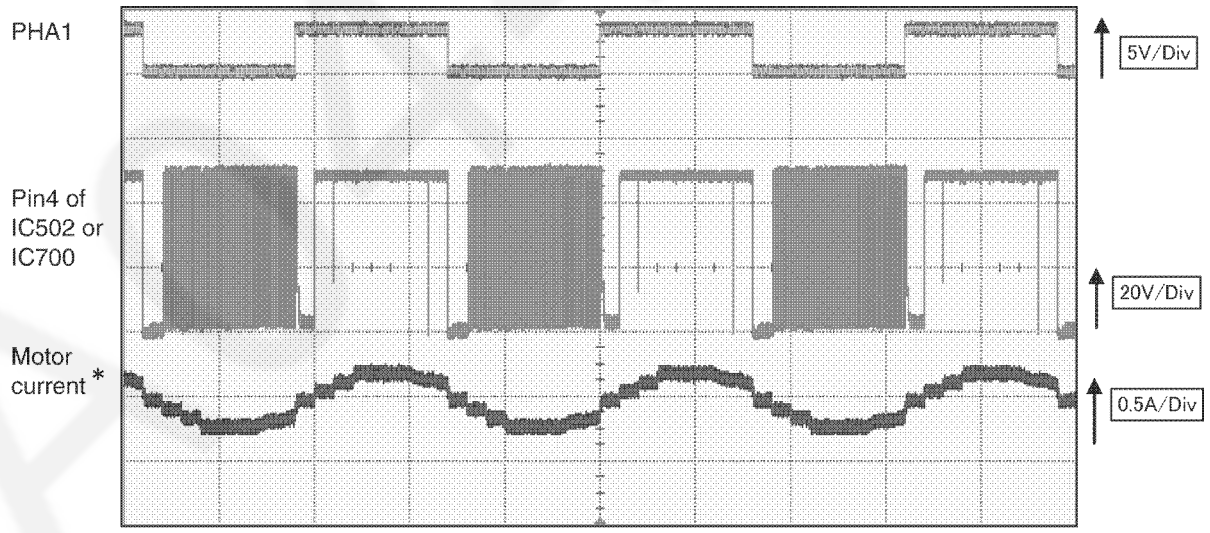


Fig. 3

* Motor current is changed according to the scan speed.

6.10.4. Drive mode of FB and ADF motor

Correspondent table of operation

Operation	Color mode	ADF/FB	Time & Figure \ Resolution (dpi)	Pre Scan	75 x 75	100 x 100	150 x 150	200 x 200	300 x 300	400 x 400	600 x 600	1200 x 1200	>1200
PC scan	Color	ADF*	T(msec)		1.0			2.5		2.0			
			Figure		②					③			
		FB	T(msec)		0.5			2.0					
			Figure		②							③	
	Black & White	ADF*	T(msec)		0.67					1.33			
			Figure		①					②			
		FB	T(msec)		0.22			0.67				1.33	
			Figure		①			②					

Operation	Color mode	ADF/FB	Time & Figure \ Copy magnification / Copy mode	100%			other than 100%		
				Photo/Text	Text	Photo	Photo/Text	Text	Photo
Copy	Black & White	ADF* (non Sort)	T(msec)	0.67		1.33	0.67		1.33
			Figure	①		②	①		②
		ADF* (Sort)	T(msec)	0.67			1.33		
			Figure	①			②		
		FB	T(msec)	0.67					
			Figure	②					

Operation	Color mode	ADF/FB	Time & Figure \ FAX mode	Standard	Fine	Super Fine	Photo
FAX	Black & White	ADF*	T(msec)	1.33			
			Figure	②			
		FB	T(msec)	1.33			
			Figure	②			

*KX-MB2061 ONLY

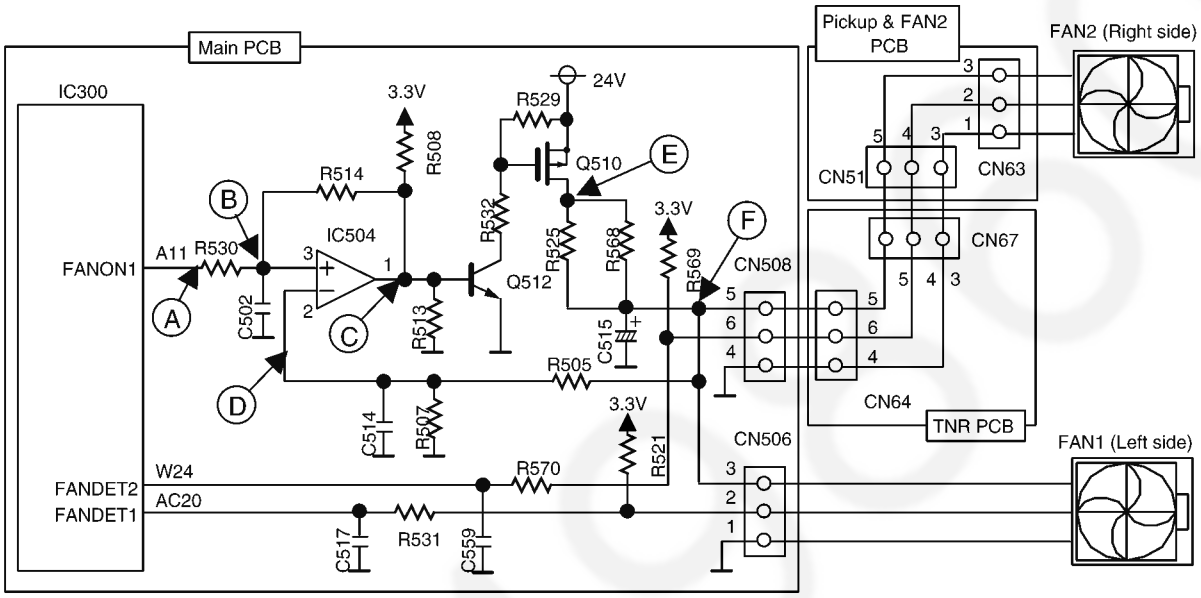
6.11. FAN Motor Section

6.11.1. General

This unit is equipped with two FAN motors to prevent the developing devices, Power Supply Unit (PSU) and other devices from overheating during printing.
The FAN rotates at high speed (Approx. 3000rpm) while printing.
After printing is finished, FAN rotates at low speed (Approx.2200rpm) while predetermined period.

6.11.2. Circuit Diagram of FAN

Two FAN motors are controlled by following one circuit.
So the operation of two FAN motors (Full speed rotation/Half speed rotation/Stop) are controlled simultaneously.



6.11.3. Fan Control

For the control of FAN speed, comparator IC (IC504) is used.
This IC compares (+) side input level and (-) side input level.
If (+) side input level is bigger than (-) side input level, output of this IC is "OPEN".
If (+) side input level is less than (-) side input level, it outputs "L" level.

6.11.3.1. Half Speed Mode

In half speed mode, IC300_pinA11 outputs pulse (frequency is about 30KHz, duty is about 37.5%).
This pulse is integrated by R30 and C502 then Pin2_IC504 becomes approx. DC1.24V. Input level of IC504_pin2 is determined by the voltage of between R507.
If voltage between R507 is less than 1.24V, output of pin1_IC504 becomes "H".
Then both Q512 and Q510 are turned on. So voltage between R504 (=the voltage of pin2_IC504) rises gradually.
When the voltage between R507 exceeds 1.24V, output of pin1_IC504 becomes "L".
Then both Q512 and Q510 are turned off. So voltage between R507 falls gradually.
By repeating these sequences, voltage between R507 is controlled approx. 1.24V.
On the other hand, if FAN voltage is represented Vo and voltage between R507 is represented VL, VL is determined as below formula.

VL=Vo*R507/(R505+R507) → Vo=VL*(R505+R507)/R507

Since each value is as follows, Vo is determined approx. 9.7(V).

VL=1.24(V), R505=150(Kohm), R507=22(Kohm)

Vo=1.24*(150K+22K)/22K=9.7(V)

Therefore by reducing the voltage of FAN power supply, FAN rotates with half speed.

6.11.3.2. Full Speed Mode

In full speed mode, IC300_pinA11 outputs constant 3.3V.
When both Q512 and Q510 are turned on, Vo becomes 24V.
So the voltage between R507 is determined as follows

VL=Vo*R507/(R505+R507)=24*22K/(150K+22K)=3.07(V)

Since IC504_pinA3 is 3.3V and IC504_pinA2 is 3.07V, pin1_IC504 is always "H".
Consequently both Q512 and Q510 are always turned on, and then 24V is supplied to FAN motors.
Therefore FAN rotates with full speed.

6.11.3.3. FAN stop

When IC300_pinA11 is "L", both Q512 and Q510 are turned off, then both FAN stop.

6.11.3.4. Rotation detect signal

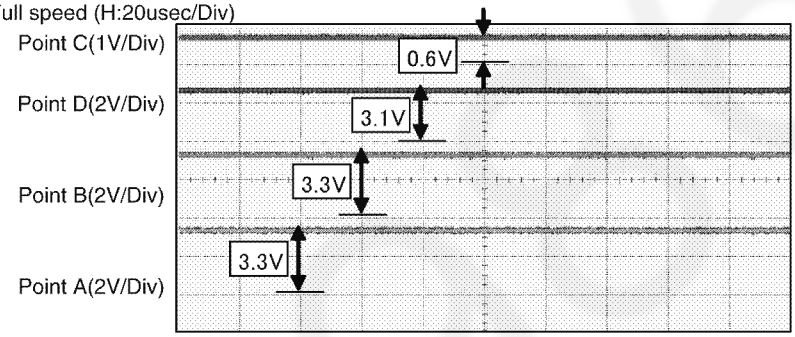
During the FAN rotation, the pulse signal is output from pin 2 of FAN motors as the rotation detects signals.
If the period of the pulse is wider than predetermined value, it is judged that FAN error occurred.
Then display shows "Call Service 4". (Refer to **CALL SERVICE 4** (P.153)).

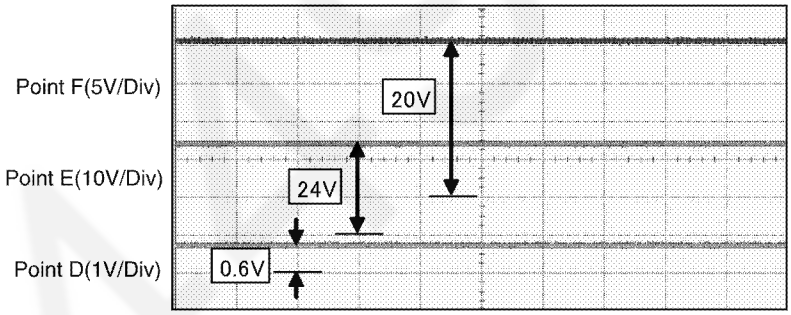
6.11.4. Control table

FANON1H (IC300_pinA11)	FAN1and FAN2 mode
H	Full speed
Pulse	Half speed
L	Stop

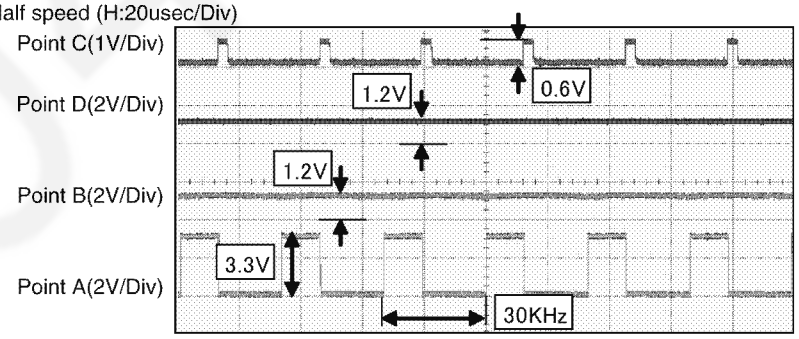
6.11.5. Waveform

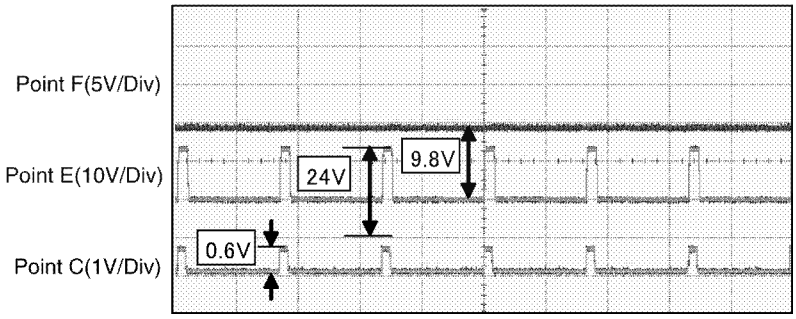
(1)Full speed (H:20usec/Div)





(2)Half speed (H:20usec/Div)

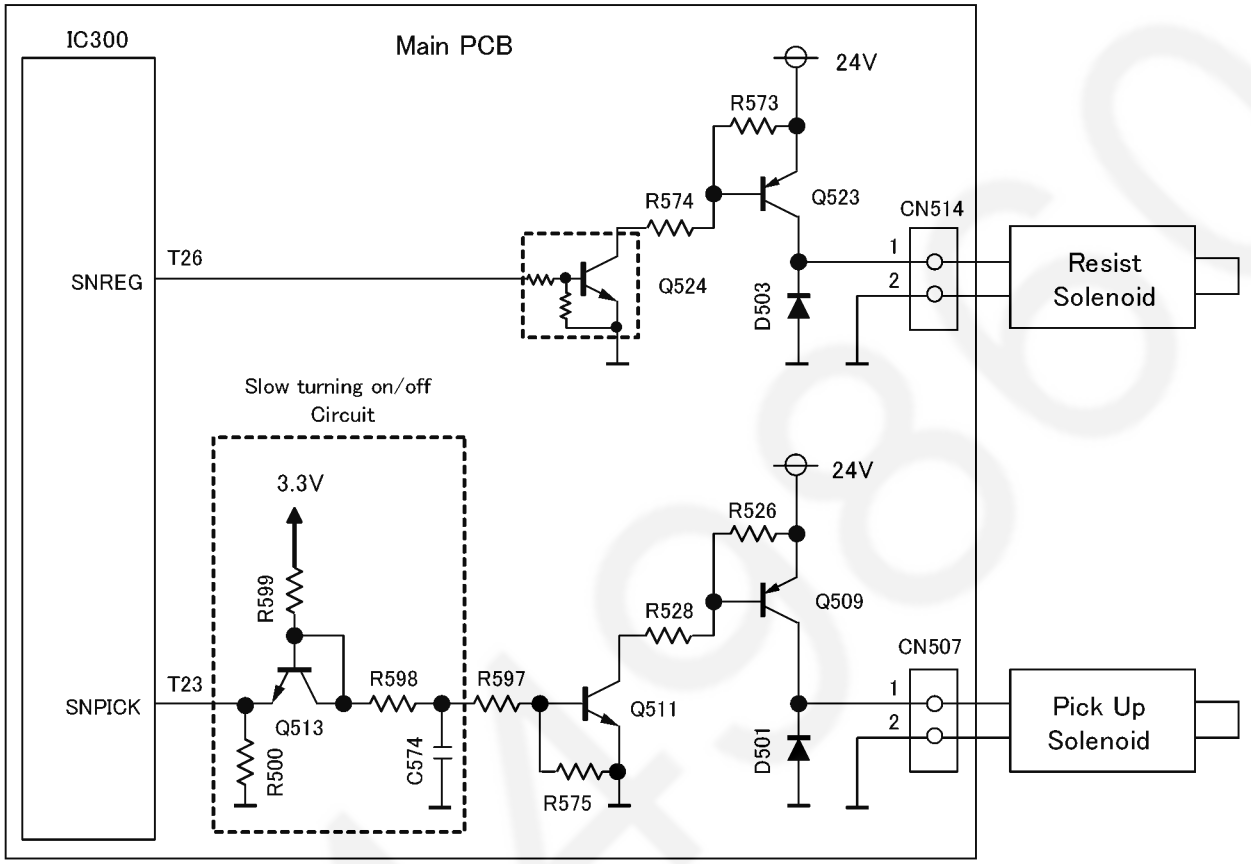




6.12. Solenoid Driver Section

The solenoid drive circuit controls Resistor solenoid and Pick up Solenoid.
These solenoids are designed to be driven 24V.
The diodes protect transistors from reverse generated voltage when solenoids are turned off.
"Slow turning on/off" circuit is provided for Pick Up solenoid drive circuit so as to prevent the FAX Error from electromagnetic noise which is caused by the rapid turning on and off of Pick up solenoid .

1. Circuit Diagram

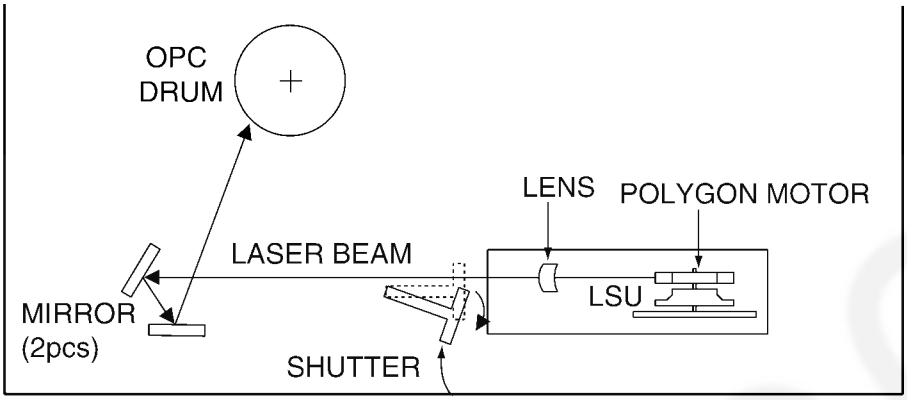


2. Active Logic

REGISTRATION	
MODE	IC300_T26
Solenoid ON	High level
Solenoid OFF	Low level

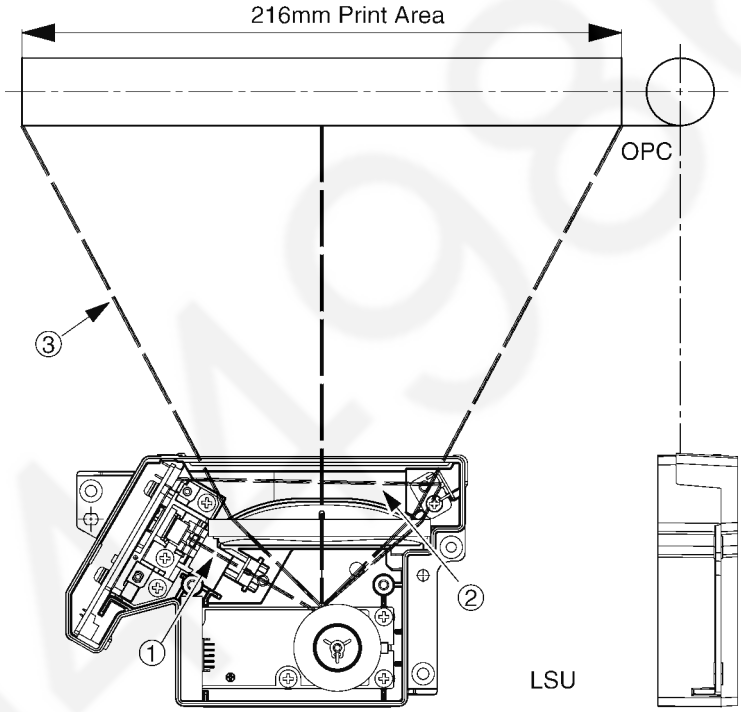
PICKUP	
MODE	IC300_T23
Solenoid ON	High level
Solenoid OFF	Low level

6.13. LSU (Laser Scanning Unit) Section



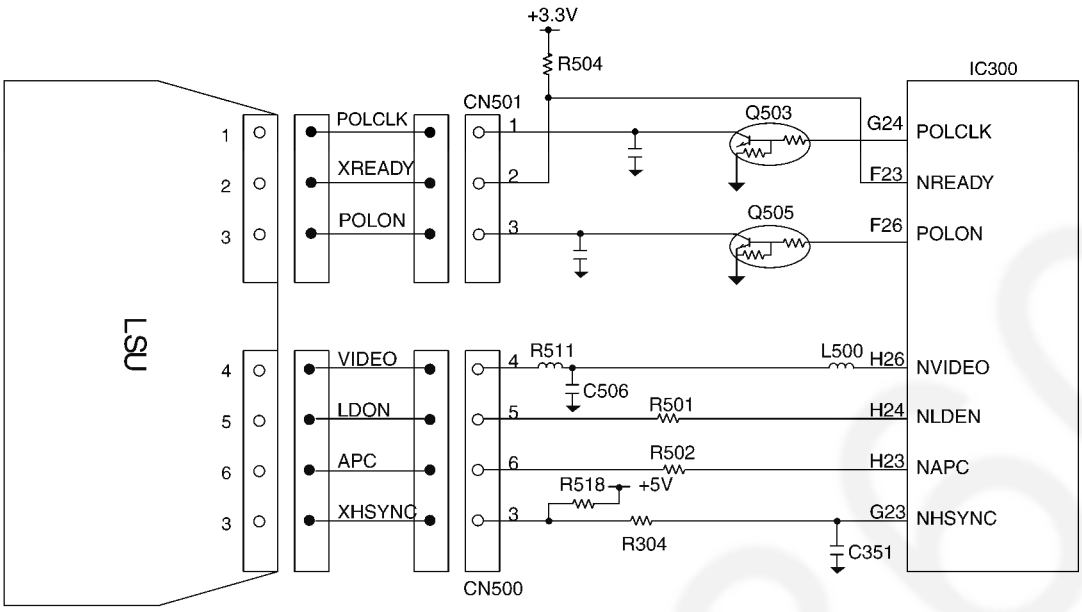
The mechanical shutter will be opened by setting DRUM UNIT properly.

LSU Layout

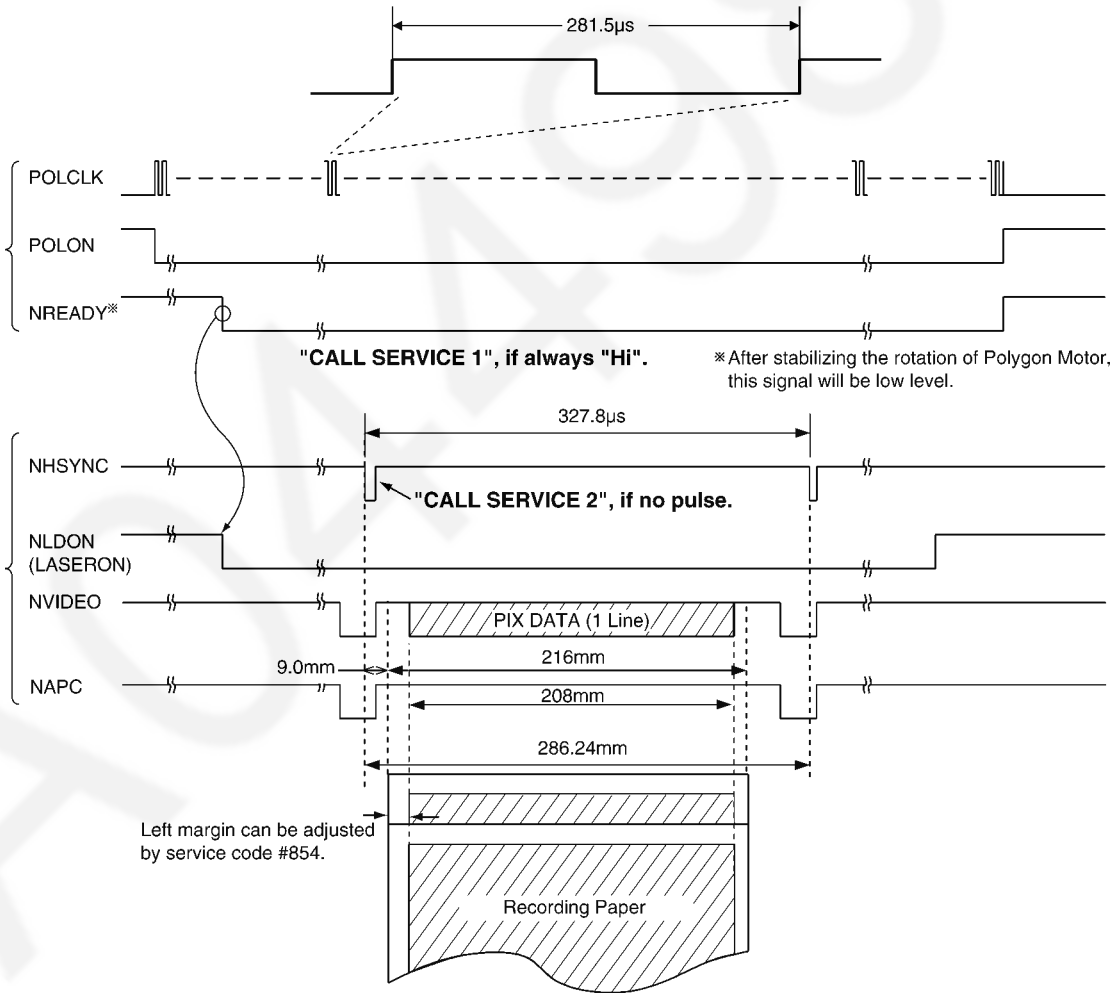


① Laser output
② OPC DRUM is irradiated with a laser.
③ The sensor outside the effective printing area detects the 1-line operation (scanning).

Circuit Diagram



Timing Chart



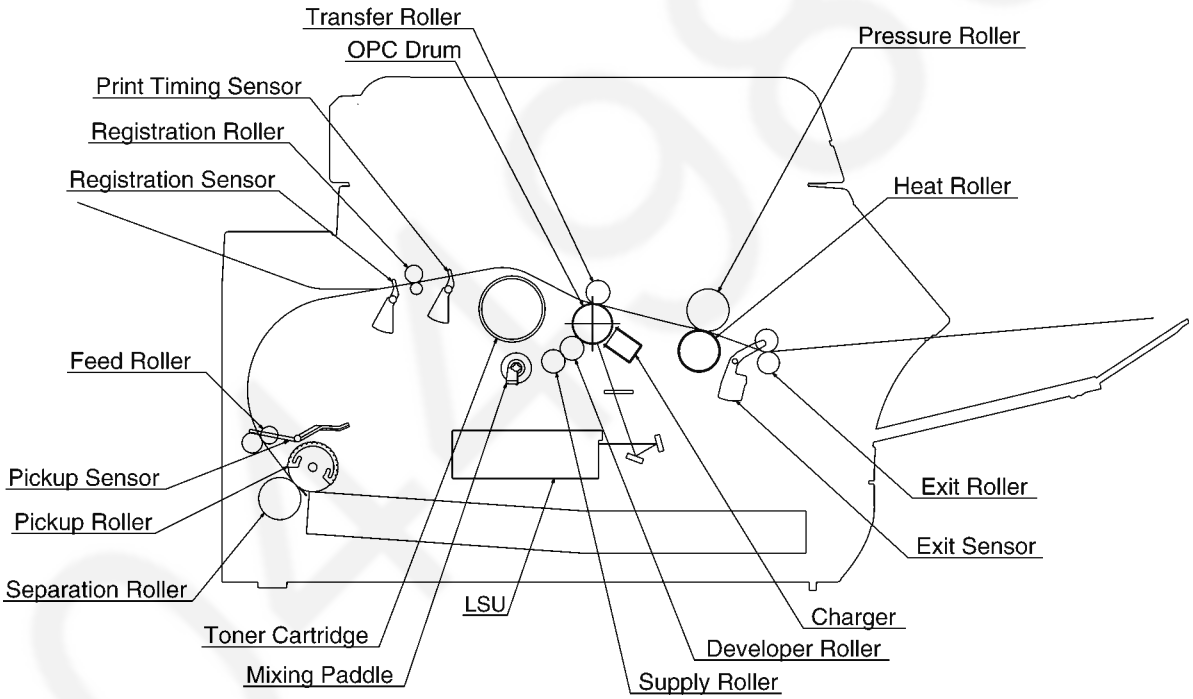
6.14. Sensors and Switches Section

All of the sensor and switches are shown below.

Sensor Name	Sensor Location	Reference number	Message Error
Pickup sensor	Pickup & Fan2 PCB	SW50	[PAPER JAMMED] [CHECK REAR CVR] [WRONG PAPER & PRESS START]
Exit sensor	Fuser PCB	PS50	[PAPER JAMMED]
Home sensor	CIS Home PCB	PS55	[SCANNER POSITION ERROR]
Read position sensor	ADF PCB	PS53	[CHECK DOCUMENT]
Registration & Manual paper sensor	Registration & PTOP PCB	PS51	[PAPER JAMMED]
Print timing sensor	Registration & PTOP PCB	PS52	[PAPER JAMMED]
Document sensor	ADF PCB	PS54	-
Top cover sensor	H.V.P.S	SW1	[TOP COVER OPEN]
Toner sensor	TONER PCB	IC51	[TONER EMPTY] [TONER LOW] [CHECK DRUM]
Handset hook switch	Handset PCB	SW940	-

Note:

See TEST FUNCTIONS - SENSOR CHECK SECTION for the sensor test.
(#815 of Service Mode test. Refer to **Test Functions** (P.119).

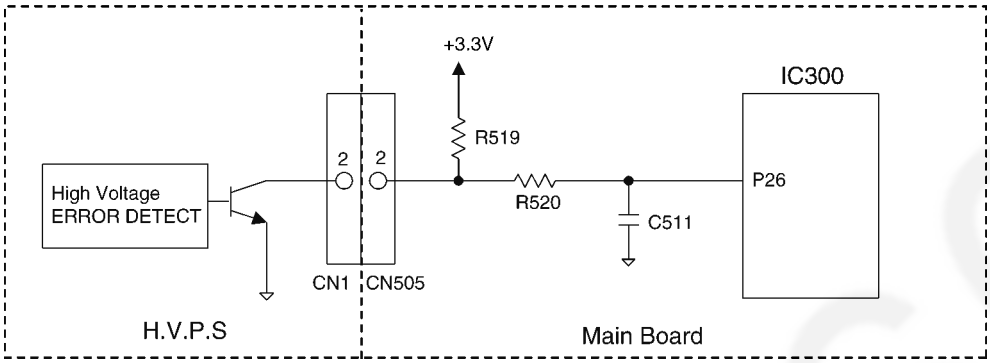


6.14.1. Drum Detection

DRUM SENSOR is not arranged.

DRUM cartridge is detected when HVERR SENSOR arranged in H.V.P.S becomes effective.

[HVERR Sensor]



High Voltage ERROR Status	Drum sensor	Signal (IC300-P26)
Abnormal	DRUM can not be detected	Low level
Normal	DRUM can be detected	High level

6.14.2. Pickup Sensor

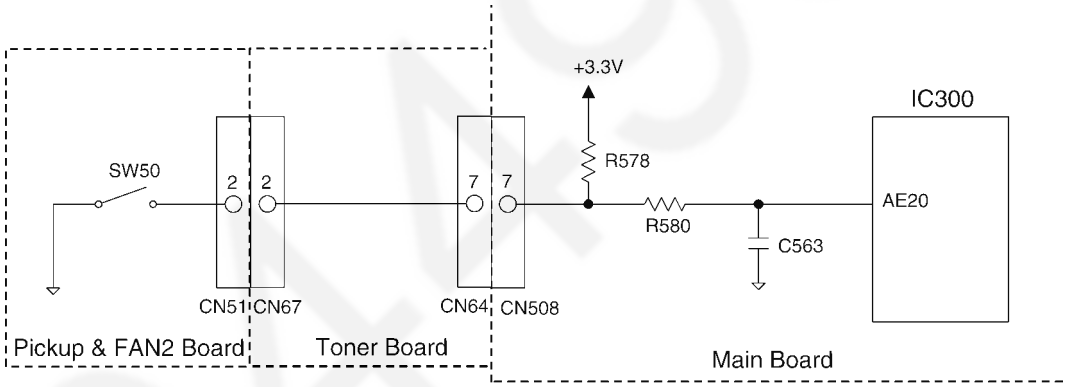
Paper SENSOR is not arranged.

Paper is detected when PICKUP SENSOR described as follows becomes effective.

This Switch detects whether a recording paper is picked up or not, and whether Rear Cover is opened or closed.

When there is a recording paper at the position of the switch, the input signal of IC300-AE20pin becomes low level.

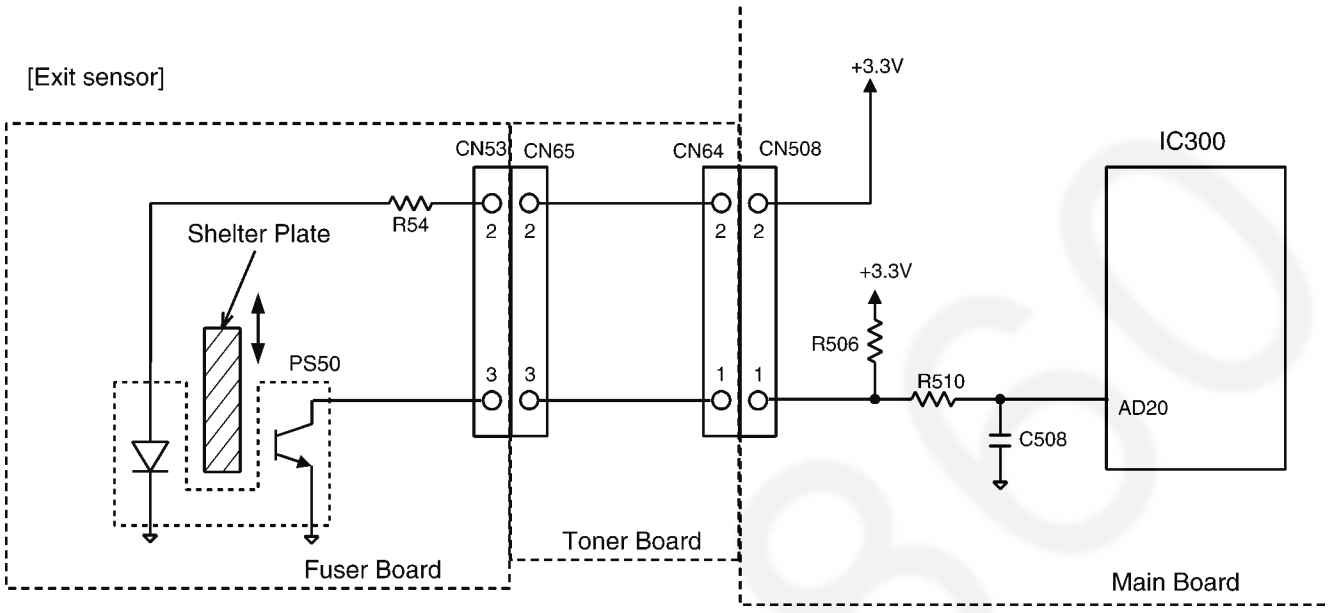
When there is no recording paper at the position of the switch, the input signal of IC300-AE20pin becomes high level.



Pickup status	Idling status	Signal (IC300-AE20pin)
A paper exists	Rear Cover opened	Low level
No papers	Rear Cover closed	High level

6.14.3. Exit Sensor

This sensor detects whether the recording paper exits or not.
When there is a recording paper at the position of the sensor, the input signal of IC300-AD20pin becomes low level.
When there is no recording paper at the position of the sensor, the input signal of IC300-AD20pin becomes high level.



	Signal (IC300-AD20pin)
A paper exists	Low level
No papers	High level

6.14.4. Home Sensor

This sensor detects whether the carriage is at its home position or not.
When the carriage is at its home position, a shelter plate closes the sensor light.
So the photo-transistor turns off and the input signal of IC300-V23pin becomes high level.
When the carriage is not at its home position, a shelter plate lets the sensor light pass.
So the photo-transistor turns on and the input signal of IC300-V23pin becomes low level.

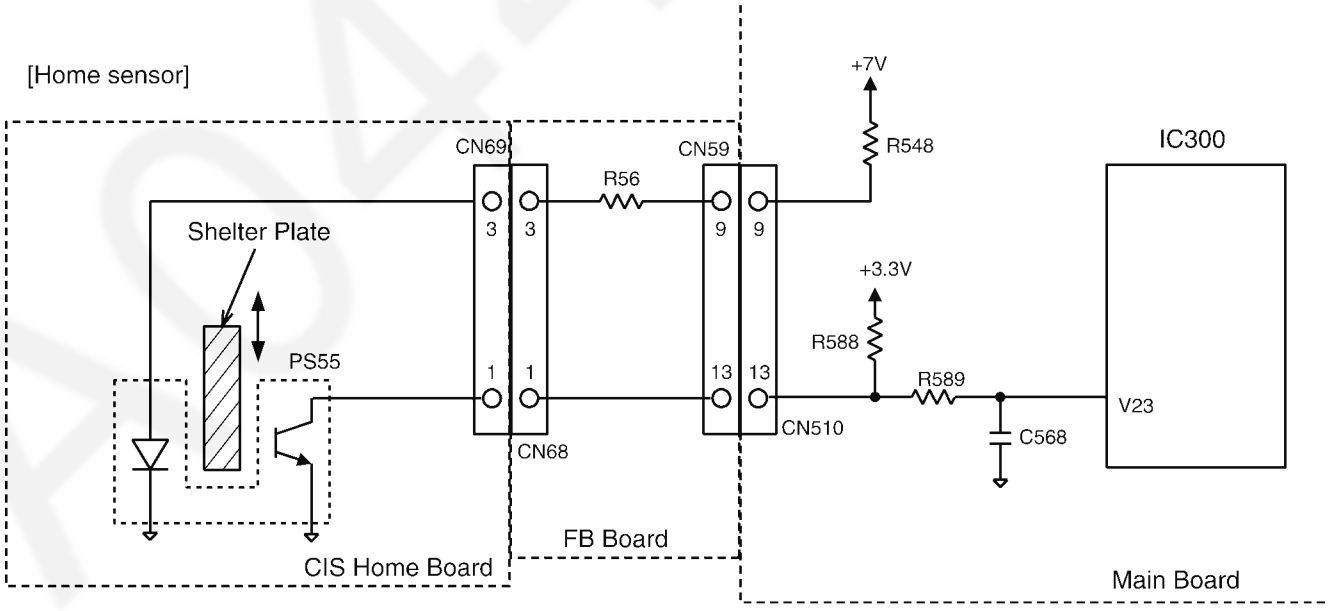


	Photo-transistor	Signal (IC300-V23pin)
A carriage is at home	OFF	High level
A carriage is not at home	ON	Low level

6.14.5. Read Position Sensor

This sensor detects the front edge of the document.
When the front edge of the document is detected, the shelter plate closes the sensor light.
So the photo-transistor turns off and the input signal of IC300-AD22pin becomes high level.
When the front edge of the document is not detected, the shelter plate lets the sensor light pass.
So the photo-transistor turns on and the input signal of IC300-AD22pin becomes low level.

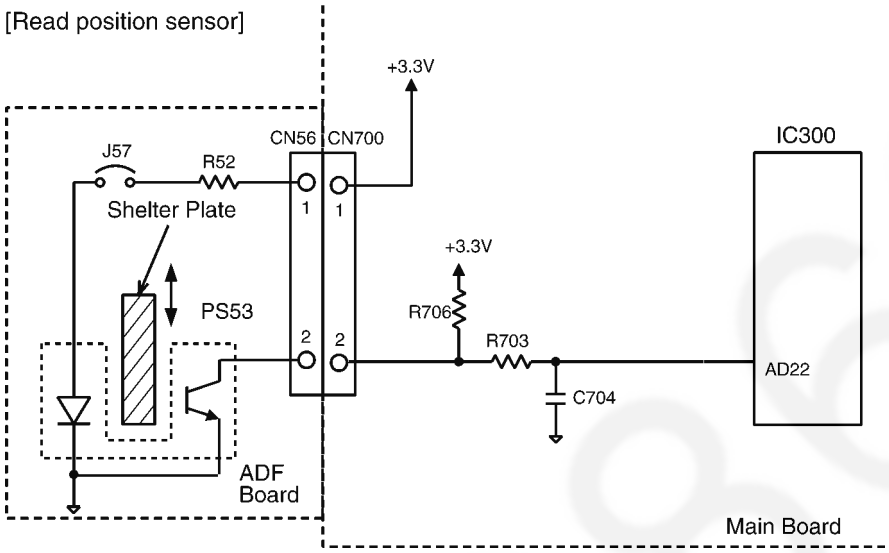


	Photo-transistor	Signal (IC300-AD22pin)
A document exists	OFF	High level
No document	ON	Low level

6.14.6. Registration & Manual Paper Sensor

This sensor detects whether the recording paper is at the sensor position.
When the recording paper is detected, the shelter plate lets the sensor light pass.
So the photo-transistor turns on, and input signal of IC300-AF20pin becomes low level.
When the recording paper is not detected, the shelter plate closes the sensor light.
So the photo-transistor turns off, and input signal of IC300-AF20pin becomes high level.

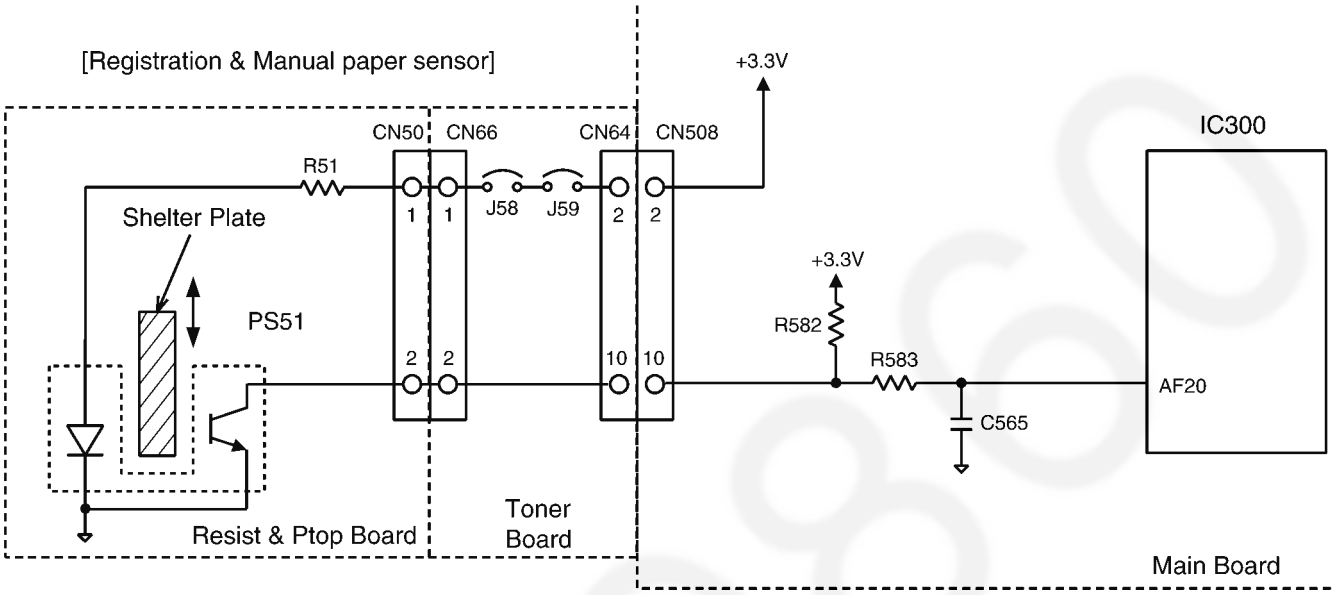


	Photo-transistor	Signal (IC300-AF20pin)
Paper exists	ON	Low level
No paper	OFF	High level

6.14.7. Print Timing Sensor

This sensor detects whether the recording paper is at the printing position.
When the recording paper is detected, the shelter plate lets the sensor light pass.
So the photo-transistor turns on, and input signal of IC300-W26pin becomes low level.
When the recording paper is not detected, the shelter plate closes the sensor light.
So the photo-transistor turns off, and input signal of IC300-W26pin becomes high level.

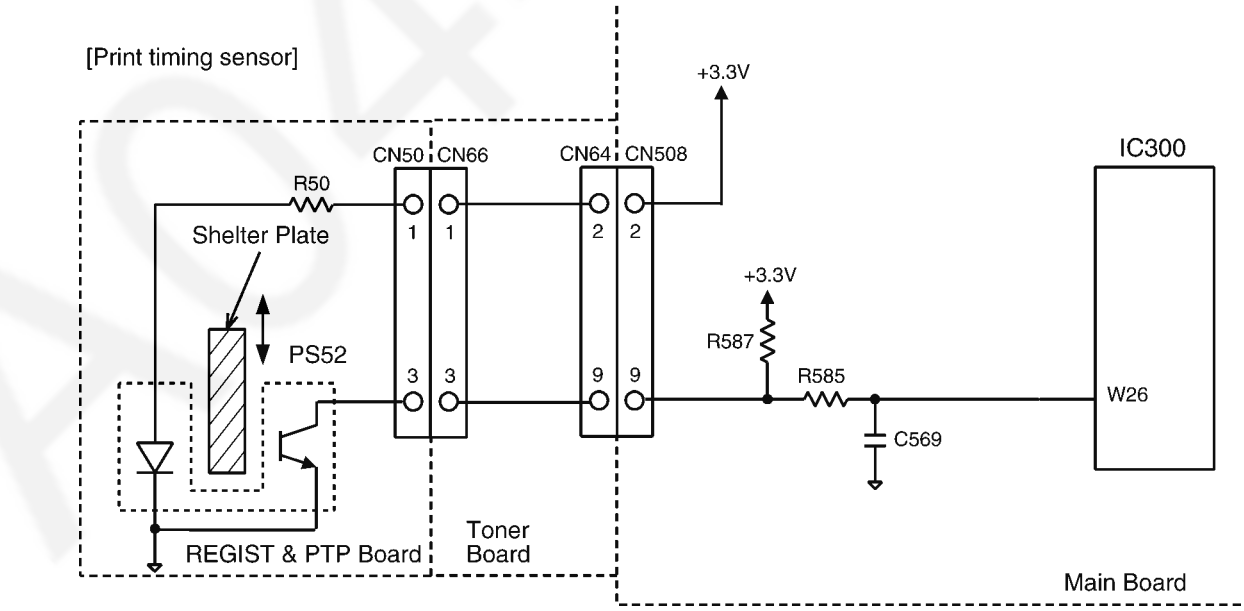


	Photo-transistor	Signal (IC300-W26pin)
Paper exists	ON	Low level
No paper	OFF	High level

6.14.8. Document Sensor

This sensor detects whether a document is set in ADF or not.
When a document is set in ADF, the shelter plate closes the sensor light.
So the photo-transistor turns off, and input signal of IC300-AF23pin becomes high level.
When a document is not set in ADF, the shelter plate lets the sensor light pass.
So the photo-transistor turns on, and input signal of IC300-AF23pin becomes low level.

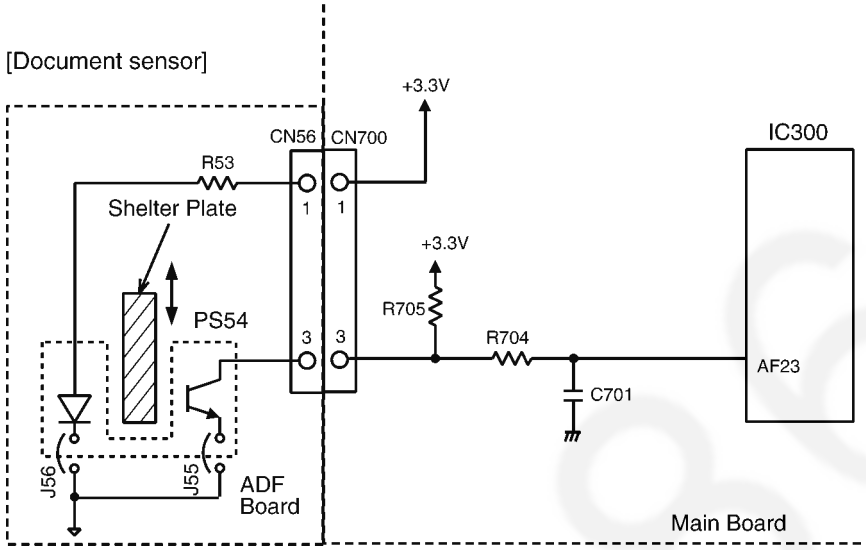
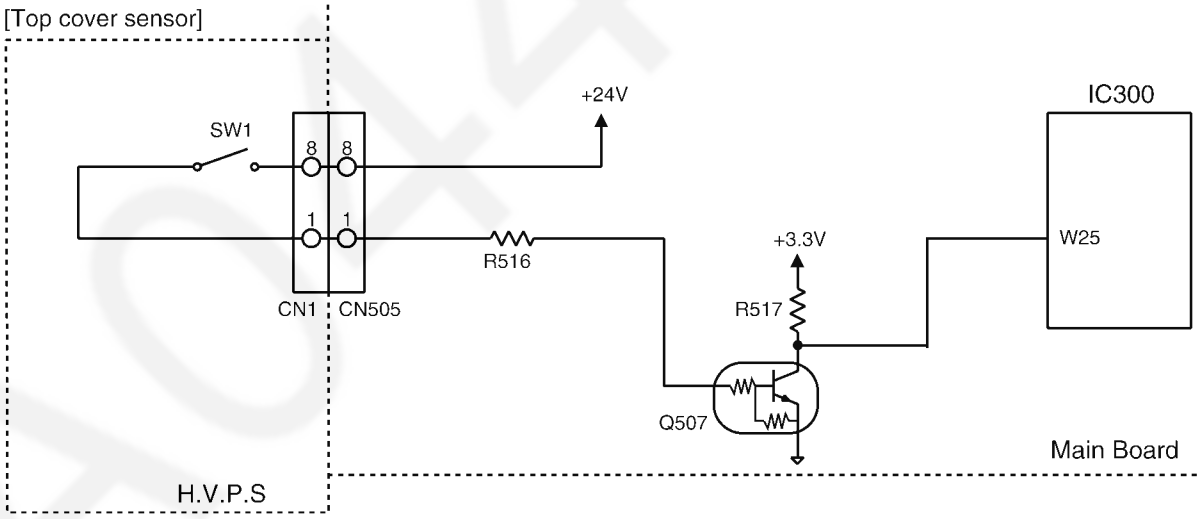


	Photo-transistor	Signal (IC300-AF23)
document exists	OFF	High level
No document	ON	Low level

6.14.9. Top Cover Sensor

The Switches detect whether the top cover is open or closed.
When the top cover is closed, the switches turn ON, and the input signal of IC300-W25pin becomes a low level.
When the top cover is open, the switches turns OFF, and the input signal of IC300-W25pin becomes a high level.

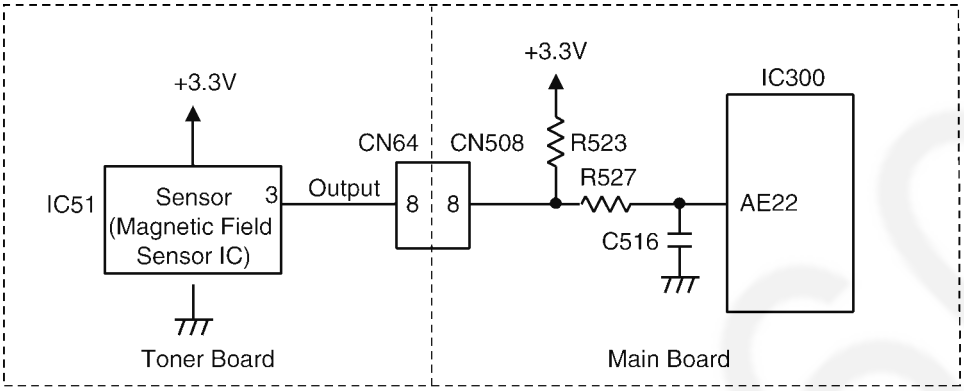


	Switch	Signal (IC300-W25pin)
Open	OFF	High level
Close	ON	Low level

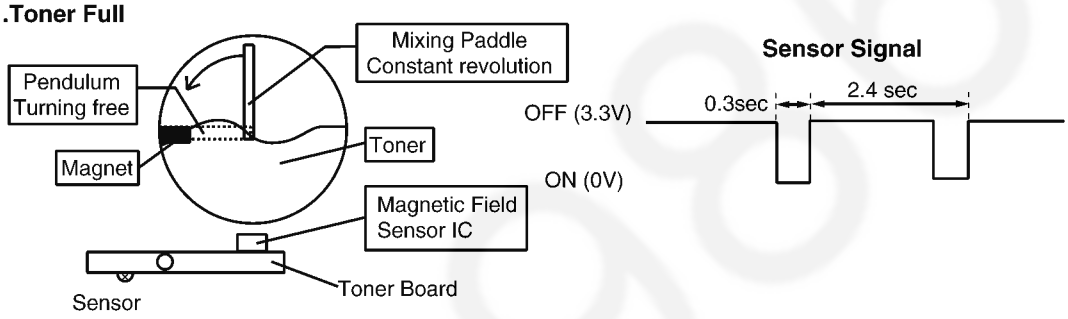
6.14.10. Toner Sensor.... “Toner Empty”, “Toner Low”, “Change Drum”

The Sensor detects whether or not the Drum cartridge and the toner are present.

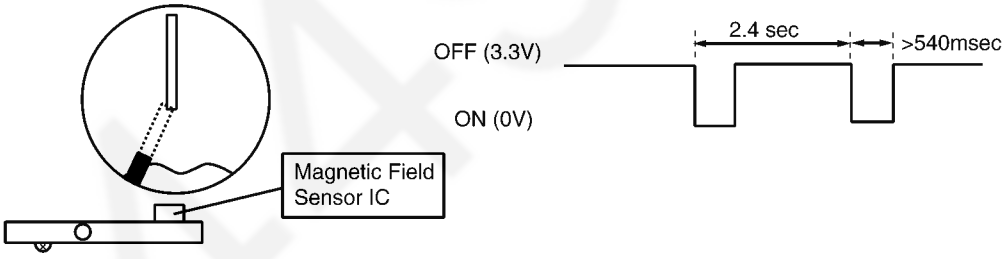
When there is not Drum cartridge, Magnetic Field Sensor IC (IC51) turns off, and the input signal of IC300-AE22pin (Main Board) becomes a High level over 9s. When the Drum cartridge is set, Magnetic Field Sensor IC (IC51) turns ON/OFF. If the time of IC300-AE22pin's Low level is under 600ms, there is enough toner in Drum cartridge, if not, toner is near empty.



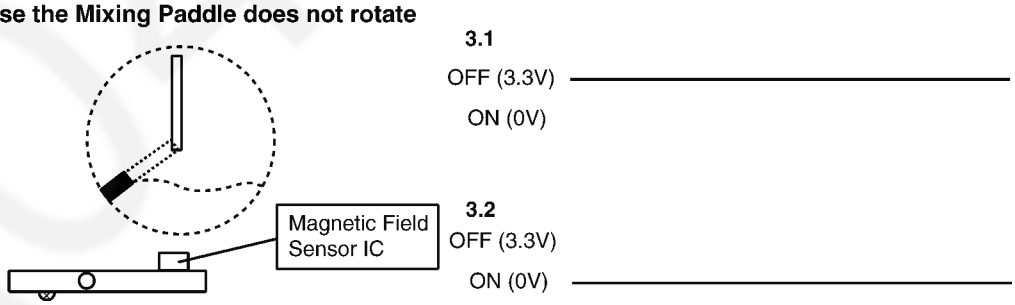
1.Toner Full



2. Toner Low



3. In case the Mixing Paddle does not rotate

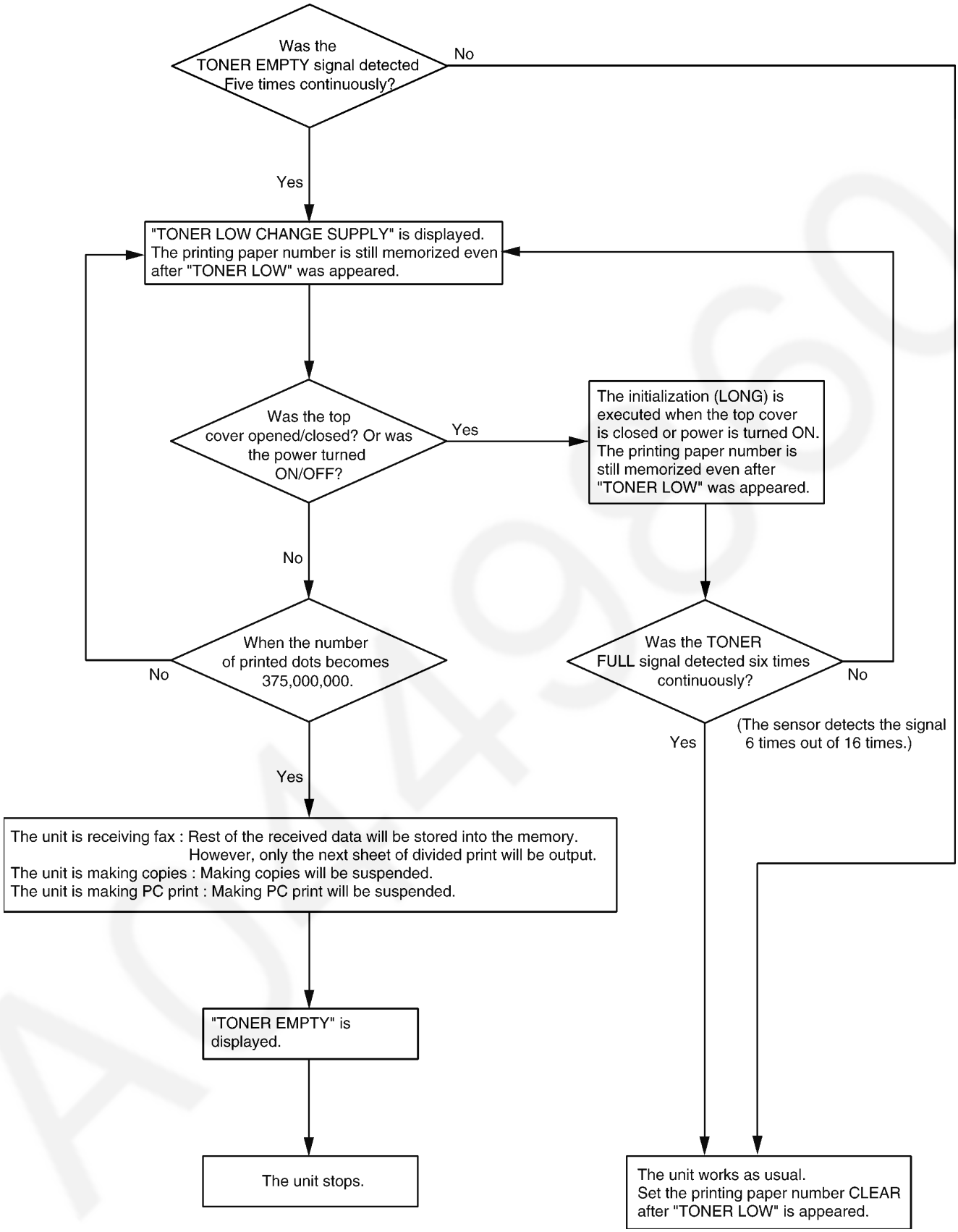


Toner Sensor

The rest of toner is detected by the move speed of the magnet put on the pendulum of Mixing Paddle. The pendulum is pushed up by the Mixing Paddle, then it falls down by its own weight. The rotation speed of paddle is set slower than the one of pendulum which falls down by its own weight. When the toner is still left, the pendulum falls and stops on the toner, then pushed by the paddle, it starts to rotate. When no toner is left, the pendulum falls to the bottom. Consequently the contact time between the magnet and Magnetic Field sensor IC becomes short when toner is left and long with no toner.

State	Display	Signal (IC300-AE22pin)
Toner Set (full)	-	level = about 0.3s
Near Empty Toner	TONER LOW	Low level>540ms
Mixing Paddle does not rotate (“CHANGE DRUM”)	CHANGE DRUM	High level fix or Low level fix

6.14.10.1. Toner Detection Flow

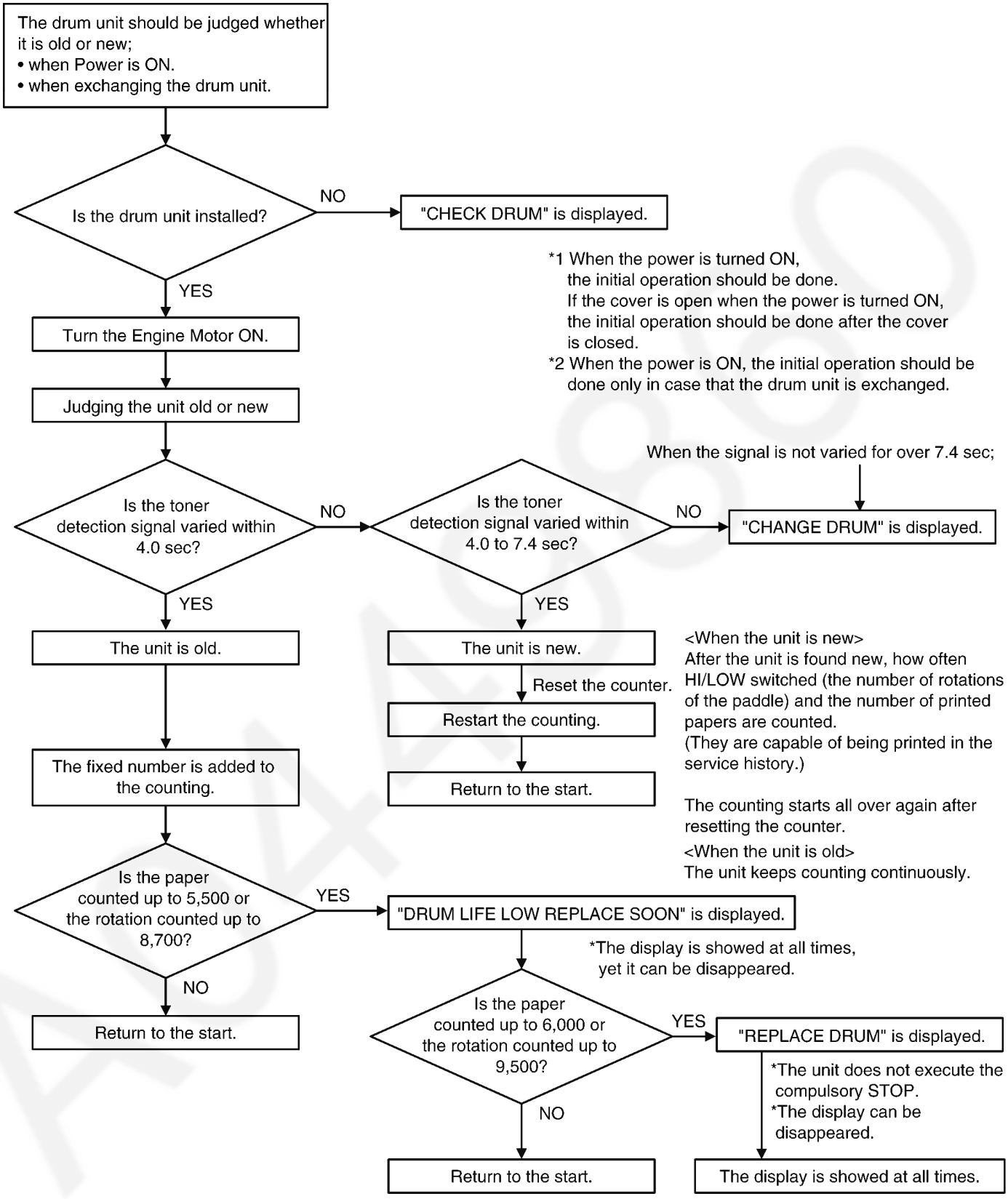


CAUTION:

1. Toner low can be judged by continuous 5-times TONER LOW signal at only printing.
   (It is not executed at.)
2. Toner full can be judged by continuous 6-times TONER FULL signal at initialization.
   (It is not executed at printing.)
3. In the ordinal operation, “CHANGE DRUM” is displayed when TONER EMPTY sensor does not generate a signal for 7.4 seconds.

6.14.10.2. Drum Detection

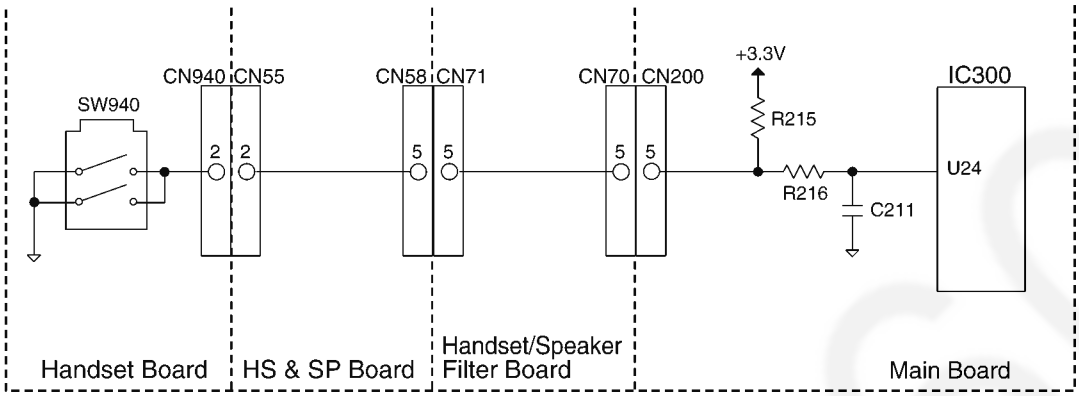
Detection Flowchart



6.14.11. Handset Hook Switch

When the handset is raised, the switch is turned off, and the signal of IC300-U24pin becomes low level.
When the handset is settled, the switch is turned on, and the signal of IC300-U24pin becomes high level.

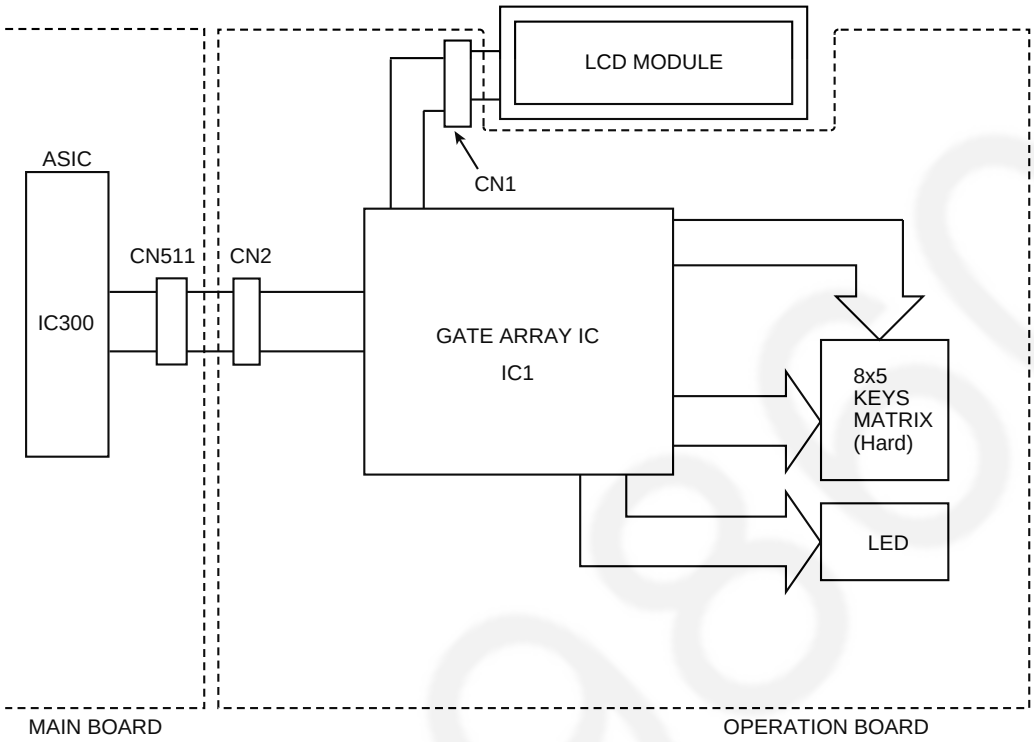
[Handset Hook SW sensor]



	SW940	Signal (IC300-U24pin)
ON HOOK	OPEN	High level
OFF HOOK	CLOSE	Low level

6.15. 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 (IC1) on Operation board and IC300 on Main board.
The key matrix table is shown below.



1. **Key Matrix**
   a. Hard Scan

	KIN7	KIN6	KIN5	KIN4	KIN3	KIN2	KIN1	KIN0
KSL0	RESOLUTIOIN	S4	S2	MENU	9	↓	7	8
KSL1	CONTRAST	FLASH	PLAYBACK	MONITOR	#	→	*	0
KSL2	COLLATE	←	S1	REDIAL	3	RECORDING	1	2
KSL3	ZOOM	S3	COPY	N in 1	START	↑	STOP	ERASE
KSL4 (LED7)	LOCATOR	AUTO ANSWER	SCAN	FAX	6	SET	4	5

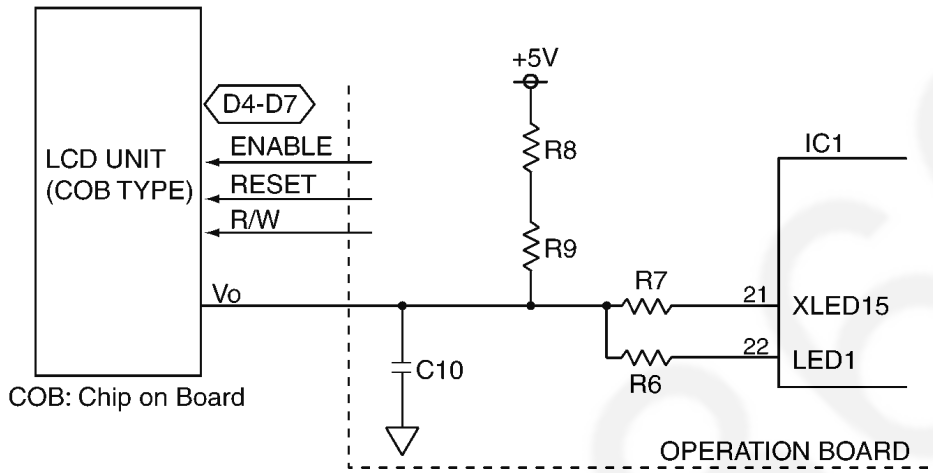
*LED7 should be set to KSL4. "8 x 5" key matrix is executed by hardware scanning.

2. **LED**
   - AUTO ANSWER LED ON/OFF port---LED2 (IC1-36pin)
   - FAX MODE LED ON/OFF port---XLED10 (IC1-9pin)
   - COPY MODE LED ON/OFF port---XLED12 (IC1-15pin)
   - SCAN MODE LED ON/OFF port---XLED11 (IC1-16pin)
   - PLAYBACK LED ON/OFF port---LED3 (IC1-37pin)

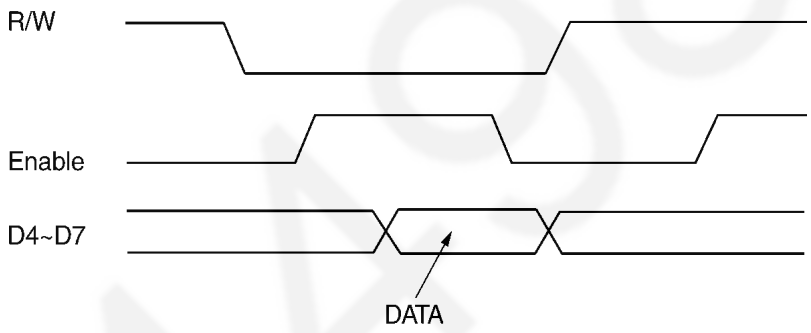
6.16. LCD Section

The Gate Array (IC1) works only for writing the ASCII code from the data bus (D4~D7). V0 is supplied for the LCD drive.
R6 and R7 and R8 and R9 are density control resistors.
Consequently, in this unit, the timing (positive clock) is generated by the LCD interface circuitry in the gate array (IC1).

Circuit Diagram



Timing Chart



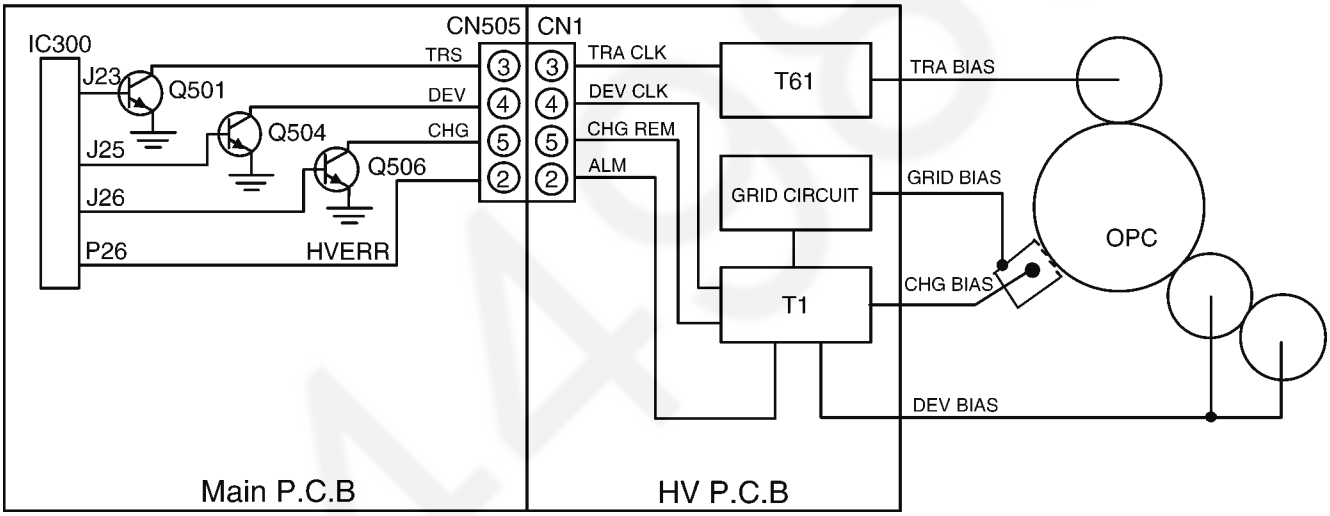
6.17. HVPS (High Voltage Power Supply) Section

6.17.1. HVPS Specification

	Charge (CHG)	Grid	Developing DC	Developing AC	Transfer (TRA) -	Transfer (TRA) +
Output Characteristics	Constant current	Constant voltage	Constant voltage	Constant voltage	Constant current (Variable)	Constant voltage
Nominal Output Voltage	4.35KV	475±10V	230V±15V (50~300V) PWM20% 300MΩ/220pF	330V±15Vp-p 34KHz	100MΩ (-1.48KV)	785V±100V
Nominal Output Current	200±15μA (19.4MΩ)	200μA	0.73μA	-----	-14.8μA±1μA (0μA~25μA) PWM 35%	1000MΩ (0.8μA)
Load Range	18.1MΩ~20.6MΩ	-----	100MΩ~2000MΩ	-----	33.8MΩ~284MΩ	10MΩ~1000MΩ
Constant Current Range	4.1~4.6KV	-----	-----	-----	-0.5KV ~ -4.2KV	-----

As for the developing voltage, the DC voltage and AC voltage are overlapped and output from an output terminal.
There is one terminal for transcription output and + and - are switched to be output.

H.V.P.S.(High Voltage Power Supply) Circuit Diagram



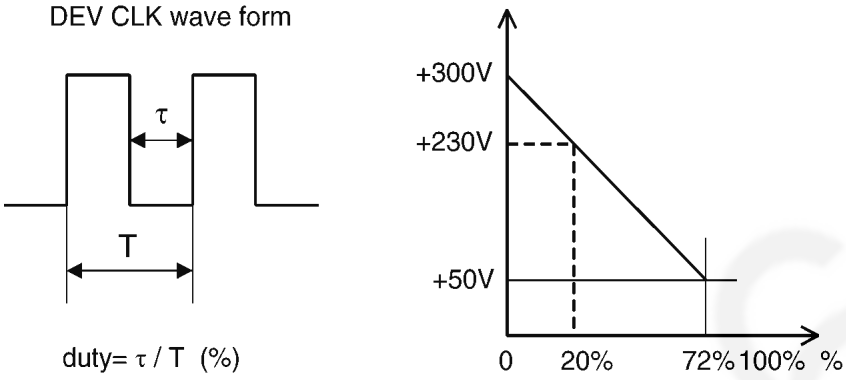
6.17.2. CHG-BIAS (Charge BIAS)/GRID/ UNIT

When IC300 turns on the transistor Q506, CHG REM becomes “L”, and Charge BIAS (200μA) is output from CHG OUTPUT. GRID BIAS is generated by the current flowing in the GRID circuit via charge wire and GRID.

6.17.3. DEV DC BIAS UNIT

When CHG REM is “L”, 5.425kHz PWM (Pulse Width Modulation) is input from IC300 to DEV CLK through Q504, developing voltage corresponding to the DUTY of PWM signal is output from DEV OUTPUT. Also DUTY is adjusted by the utilization of the developing unit and environmental temperature.

Transfer Current Variation by PWM Input



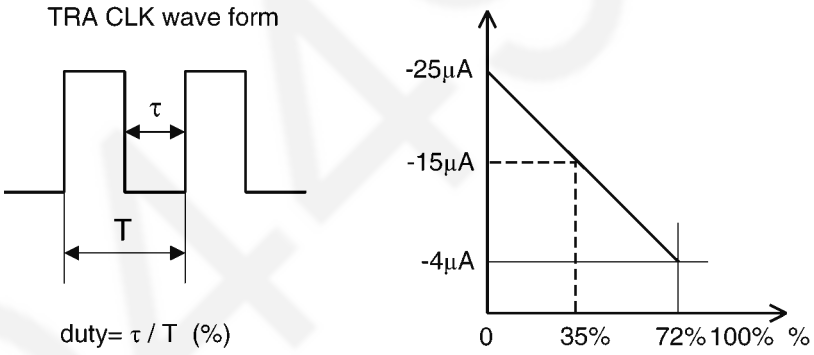
6.17.4. DEV AC BIAS UNIT

330 Vp-p 34 kHz wave of developing AC voltage is output from DEV OUTPUT. This voltage is overlapped with developing DC voltage and output as AC voltage that includes the development DC voltage.

6.17.5. TRA (+) BIAS (Transfer (+) BIAS)/TRA (-) BIAS (Transfer (-) BIAS) UNIT

When CHG REM is “L” and TRA CLK is “open”, Charge BIAS (200μA) is output from CHG OUTPUT, and at the same time Transfer (+) BIAS (785V) is output from TRA OUTPUT. When 5.086kHz PWM (Pulse Width Modulation) signal is input to TRA CLK through transistor Q501, Transfer (-) CURRENT BIAS corresponding to PWM signal is output from TRA OUTPUT.

Transcription current variation corresponding to PWM input



6.18. Heat Lamp Control Circuit

The temperature of the fixing part of the Fuser Unit is converted to a voltage by THERMISTOR and input to IC300-D19pin. The heat lamp is turned on/off by the HTRCTL signal (IC300-AD19pin) through the photo triac (PC2) and the triac (SCR51). And two thermostats are set on the AC line as the safety devices.

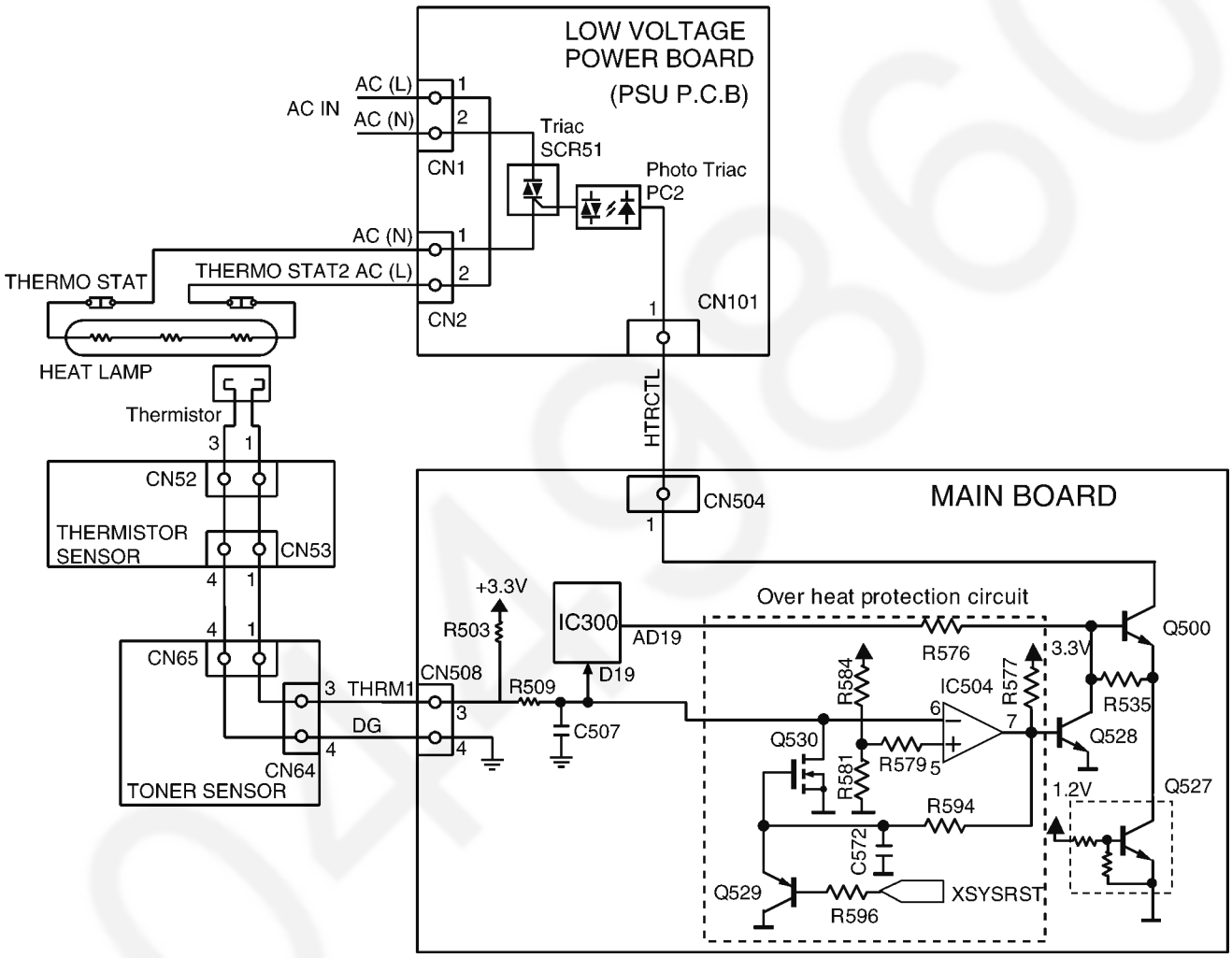
Overheat protection circuit is provided in order to prevent the Fuser unit from overheating when CPU cannot control Fuser by some problem.

IC504 compares Thermistor voltage and fixed voltage, which is determined by R581 and R584.

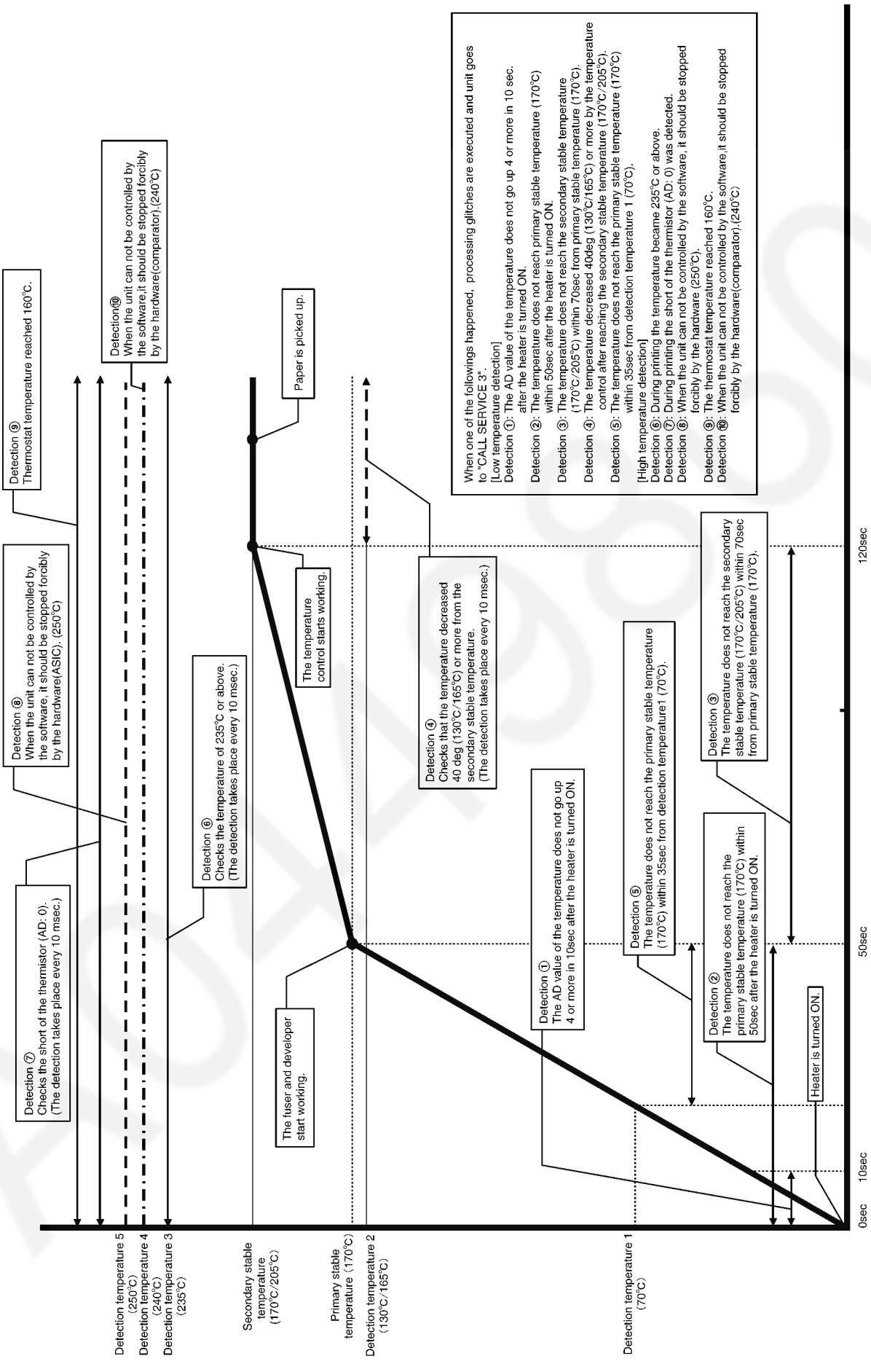
If Thermistor voltage becomes lower than this fixed voltage (this voltage corresponds to about 240 degree C), output of IC504 become "H", then Q528 turns ON, and Q500 is turned Off.

As the result, no current is supplied to Fuser lamp.

Circuit Diagram

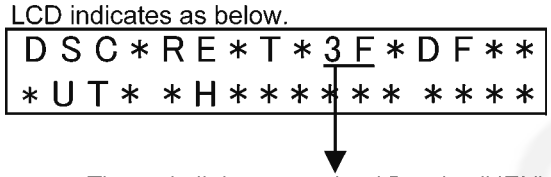


1. **Control at Printing**
   a. After the printing signal is received, turn ON the heater.
   b. After that, turn ON the motor at the Primary Stable Temperature (170°C).
   c. After that, control at the Secondary Stable temperature (195°C), and feed papers.

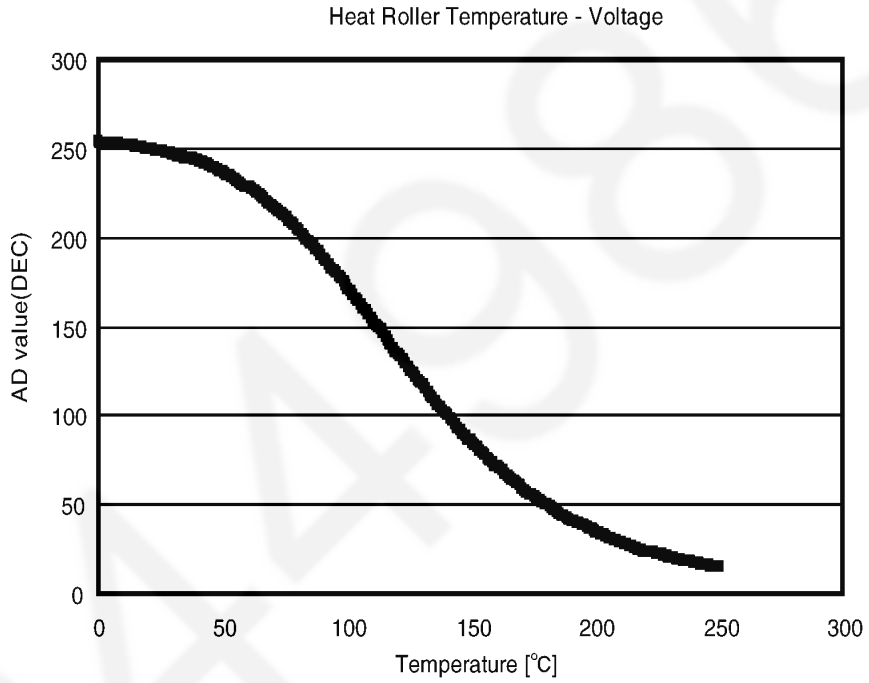

When one of the followings happened, processing glitches are executed and unit goes to "CALL SERVICE 3".
[Low temperature detection]
Detection ①: The AD value of the temperature does not go up 4 or more in 10 sec. after the heater is turned ON.
Detection ②: The temperature does not reach primary stable temperature (170°C) within 50sec after the heater is turned ON.
Detection ③: The temperature does not reach the secondary stable temperature (170°C/205°C) within 70sec from primary stable temperature (170°C).
Detection ④: The temperature decreased 40deg (130°C/165°C) or more by the temperature control after reaching the secondary stable temperature (170°C/205°C).
Detection ⑤: The temperature does not reach the primary stable temperature (170°C) within 35sec from detection temperature 1 (70°C).
[High temperature detection]
Detection ⑥: During printing the temperature became 235°C or above.
Detection ⑦: During printing the short of the thermistor (AD: 0) was detected.
Detection ⑧: When the unit can not be controlled by the software, it should be stopped forcibly by the hardware (250°C).
Detection ⑨: The thermostat temperature reached 160°C.
Detection ⑩: When the unit can not be controlled by the software,it should be stopped forcibly by the hardware(comparator).(240°C)
Detection ⑦ Checks the short of the thermistor (AD: 0). (The detection takes place every 10 msec.)
Detection ⑧ When the unit can not be controlled by the software, it should be stopped forcibly by the hardware(ASIC). (250°C)
Detection ⑨ Thermostat temperature reached 160°C.
Detection⑩ When the unit can not be controlled by the software,it should be stopped forcibly by the hardware(comparator).(240°C)
Detection ⑥ Checks the temperature of 235°C or above. (The detection takes place every 10 msec.)
Detection ④ Checks that the temperature decreased 40 deg (130°C/165°C) or more from the secondary stable temperature. (The detection takes place every 10 msec.)
Paper is picked up.
The temperature control starts working.
The fuser and developer start working.
Detection ① The AD value of the temperature does not go up 4 or more in 10sec after the heater is turned ON.
Detection ⑤ The temperature does not reach the primary stable temperature (170°C) within 35sec from detection temperature1 (70°C).
Detection ③ The temperature does not reach the secondary stable temperature (170°C/205°C) within 70sec from primary stable temperature (170°C).
Detection ② The temperature does not reach the primary stable temperature (170°C) within 50sec after the heater is turned ON.
Heater is turned ON.
Detection temperature 5 (250°C)
Detection temperature 4 (240°C)
Detection temperature 3 (235°C)
Secondary stable temperature (170°C/205°C)
Primary stable temperature (170°C)
Detection temperature 2 (130°C/165°C)
Detection temperature 1 (70°C)
0sec
10sec
50sec
120sec

2. Safety Protection
   a. 2 thermostats are provided with the unit, and the heater circuit is shut down when their surface temperatures became over 160 °C.
   b. The heater control circuit of IC300 has the built-in function that the hardware turns off the heater control automatically if the software does not keep turning ON the heater every a fixed time.
   c. When the temperature became over 250 °C, the heater control circuit of IC300 is turned off forcedly and system reset will be executed.
3. **The correspondence readings between temperature measured by fixing thermistor and HEX readings**
   You can read the AD value of heater temperature in service mode.
   Push the keys [MENU]-[#]-[9][0][0][0]-[∗]-[8][1][5].

LCD indicates as below.



These 2 digits mean the AD value(HEX) according to the table below.



Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value	
[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX
0	254	FE	51	236	EC	101	171	AB	151	84	54	201	34	22
1	253	FD	52	235	EB	102	170	AA	152	83	53	202	34	22
2	253	FD	53	235	EB	103	168	A8	153	82	52	203	33	21
3	253	FD	54	234	EA	104	166	A6	154	80	50	204	33	21
4	253	FD	55	233	E9	105	164	A4	155	79	4F	205	32	20
5	253	FD	56	232	E8	106	162	A2	156	78	4E	206	31	1F
6	253	FD	57	231	E7	107	160	A0	157	76	4C	207	31	1F
7	253	FD	58	230	E6	108	159	9F	158	75	4B	208	30	1E
8	253	FD	59	229	E5	109	157	9D	159	74	4A	209	30	1E
9	252	FC	60	229	E5	110	155	9B	160	72	48	210	29	1D
10	252	FC	61	228	E4	111	153	99	161	71	47	211	29	1D
11	252	FC	62	227	E3	112	151	97	162	70	46	212	28	1C
12	252	FC	63	226	E2	113	149	95	163	69	45	213	28	1C
13	252	FC	64	225	E1	114	148	94	164	67	43	214	27	1B
14	252	FC	65	224	E0	115	146	92	165	66	42	215	27	1B
15	251	FB	66	223	DF	116	144	90	166	65	41	216	26	1A
16	251	FB	67	222	DE	117	142	8E	167	64	40	217	26	1A
17	251	FB	68	220	DC	118	140	8C	168	63	3F	218	25	19
18	251	FB	69	219	DB	119	138	8A	169	62	3E	219	25	19
19	250	FA	70	218	DA	120	136	88	170	61	3D	220	24	18

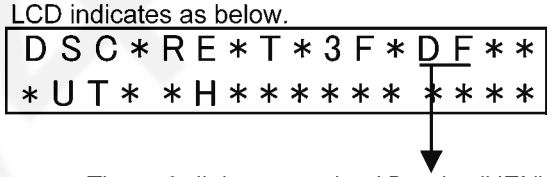
Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value	
[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX
20	250	FA	71	217	D9	121	135	87	171	59	3B	221	24	18
21	250	FA	72	216	D8	122	133	85	172	58	3A	222	24	18
22	250	FA	73	215	D7	123	131	83	173	57	39	223	23	17
23	249	F9	74	213	D5	124	129	81	174	56	38	224	23	17
24	249	F9	75	212	D4	125	127	7F	175	55	37	225	22	16
25	249	F9	76	211	D3	126	125	7D	176	54	36	226	22	16
26	249	F9	77	209	D1	127	124	7C	177	53	35	227	22	16
27	248	F8	78	208	D0	128	122	7A	178	52	34	228	21	15
28	248	F8	79	207	CF	129	120	78	179	51	33	229	21	15
29	248	F8	80	205	CD	130	118	76	180	50	32	230	20	14
30	247	F7	81	204	CC	131	117	75	181	50	32	231	20	14
31	247	F7	82	202	CA	132	115	73	182	49	31	232	20	14
32	246	F6	83	201	C9	133	113	71	183	48	30	233	19	13
33	246	F6	84	199	C7	134	111	6F	184	47	2F	234	19	13
34	246	F6	85	198	C6	135	110	6E	185	46	2E	235	19	13
35	245	F5	86	196	C4	136	108	6C	186	45	2D	236	18	12
36	245	F5	87	195	C3	137	106	6A	187	44	2C	237	18	12
37	244	F4	88	193	C1	138	105	69	188	44	2C	238	18	12
38	244	F4	89	192	C0	139	103	67	189	43	2B	239	18	12
39	243	F3	90	190	BE	140	101	65	190	42	2A	240	17	11
40	243	F3	91	188	BC	141	100	64	191	41	29	241	17	11
41	242	F2	92	187	BB	142	98	62	192	41	29	242	17	11
42	242	F2	93	185	B9	143	97	61	193	40	28	243	16	10
43	241	F1	94	183	B7	144	95	5F	194	39	27	244	16	10
44	241	F1	95	182	B6	145	93	5D	195	38	26	245	16	10
45	240	F0	96	180	B4	146	92	5C	196	38	26	246	16	10
46	239	EF	97	178	B2	147	90	5A	197	37	25	247	15	0F
47	239	EF	98	177	B1	148	89	59	198	36	24	248	15	0F
48	238	EE	99	175	AF	149	87	57	199	36	24	249	15	0F
49	237	ED	100	173	AD	150	86	56	200	35	23	250	15	0F
50	237	ED												

Note:

The value is displayed on LCD at **Test Functions** (P.119) [#815].

4. The correspondence readings between room temperature measured by thermistor and HEX readings
   You can read the AD value of room temperature in service mode.
   Push the keys [MENU]-[#]-[9][0][0][0]-[∗]-[8][1][5].

LCD indicates as below.



These 2 digits mean the AD value(HEX) according to the table below.

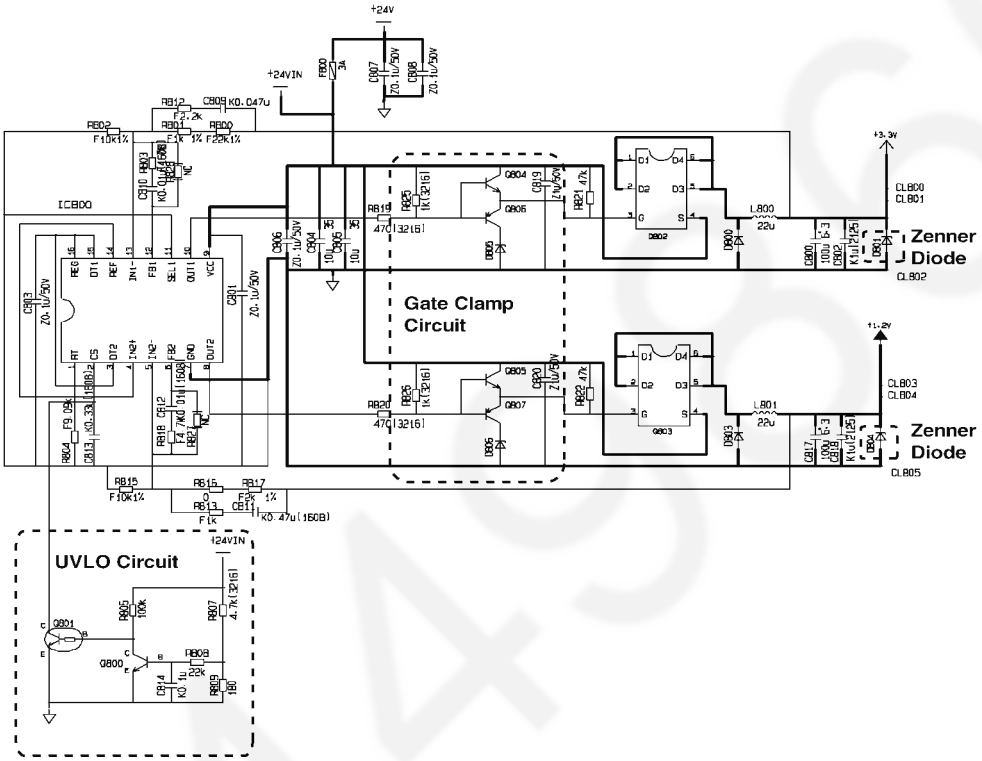
Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value	
[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX
-40	230	E6	-5	164	A4	30	80	50	65	32	20	100	13	0D
-39	229	E5	-4	161	A1	31	78	4E	66	31	1F	101	12	0C
-38	228	E4	-3	159	9F	32	76	4C	67	30	1E	102	12	0C
-37	226	E2	-2	156	9C	33	74	4A	68	29	1D	103	12	0C
-36	225	E1	-1	154	9A	34	72	48	69	28	1C	104	11	0B
-35	224	E0	0	151	97	35	71	47	70	28	1C	105	11	0B
-34	222	DE	1	149	95	36	69	45	71	27	1B	106	11	0B
-33	221	DD	2	146	92	37	67	43	72	26	1A	107	11	0B
-32	219	DB	3	144	90	38	65	41	73	26	1A	108	10	0A
-31	218	DA	4	141	8D	39	64	40	74	25	19	109	10	0A
-30	216	D8	5	139	8B	40	62	3E	75	24	18	110	10	0A
-29	215	D7	6	136	88	41	60	3C	76	24	18	111	10	0A
-28	213	D5	7	134	86	42	59	3B	77	23	17	112	9	09

Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value		Temper-ature	AD value	
[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX	[°C]	DEC	HEX
-27	211	D3	8	131	83	43	57	39	78	22	16	113	9	09
-26	209	D1	9	129	81	44	56	38	79	22	16	114	9	09
-25	208	D0	10	126	7E	45	54	36	80	21	15	115	9	09
-24	206	CE	11	124	7C	46	53	35	81	21	15	116	9	09
-23	204	CC	12	121	79	47	51	33	82	20	14	117	8	08
-22	202	CA	13	119	77	48	50	32	83	20	14	118	8	08
-21	200	C8	14	116	74	49	49	31	84	19	13	119	8	08
-20	198	C6	15	114	72	50	47	2F	85	19	13	120	8	08
-19	196	C4	16	111	6F	51	46	2E	86	18	12	121	8	08
-18	194	C2	17	109	6D	52	45	2D	87	18	12	122	7	07
-17	192	C0	18	107	6B	53	44	2C	88	17	11	123	7	07
-16	189	BD	19	104	68	54	43	2B	89	17	11	124	7	07
-15	187	BB	20	102	66	55	41	29	90	16	10	125	7	07
-14	185	B9	21	100	64	56	40	28	91	16	10			
-13	183	B7	22	97	61	57	39	27	92	16	10			
-12	180	B4	23	95	5F	58	38	26	93	15	0F			
-11	178	B2	24	93	5D	59	37	25	94	15	0F			
-10	176	B0	25	91	5B	60	36	24	95	14	0E			
-9	173	AD	26	88	58	61	35	23	96	14	0E			
-8	171	AB	27	86	56	62	34	22	97	14	0E			
-7	169	A9	28	84	54	63	33	21	98	13	0D			
-6	166	A6	29	82	52	64	33	21	99	13	0D			

6.19. Main Board Section

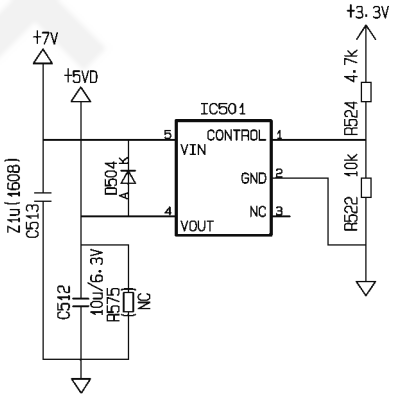
3.3V and 1.2V Power Supply descriptions

- IC800 is 2ch-output PWM type DC-DC converter controller, which make up step down type DC-DC converter circuit with Pch power MOSFET Q802 and Q803, coil of L800 and L801, schottky diode of D800 and D803, capacitor of C800, C802 and C817, C818.
  The oscillation frequency in operation of this DC-DC converter is set to about 410kHz.
- R807,R809,R808,C814,R805,Q800,Q801 are UVLO (Under Voltage Lock Out) circuit.
  Q801 turns on when the in-out voltage is about 16V or less and CS terminal becomes low so that IC800's operation is stopped.
- Q804,Q806,D805 and Q805,Q807,D806 are Clamp circuit which clamps VGS(Gate Voltage of Q802 and Q803) not to be a over voltage.
- D801 and D804 are Zenner diodes which control not to be a over voltage at 3.3V and 1.2V output when ICs including IC800 break down.

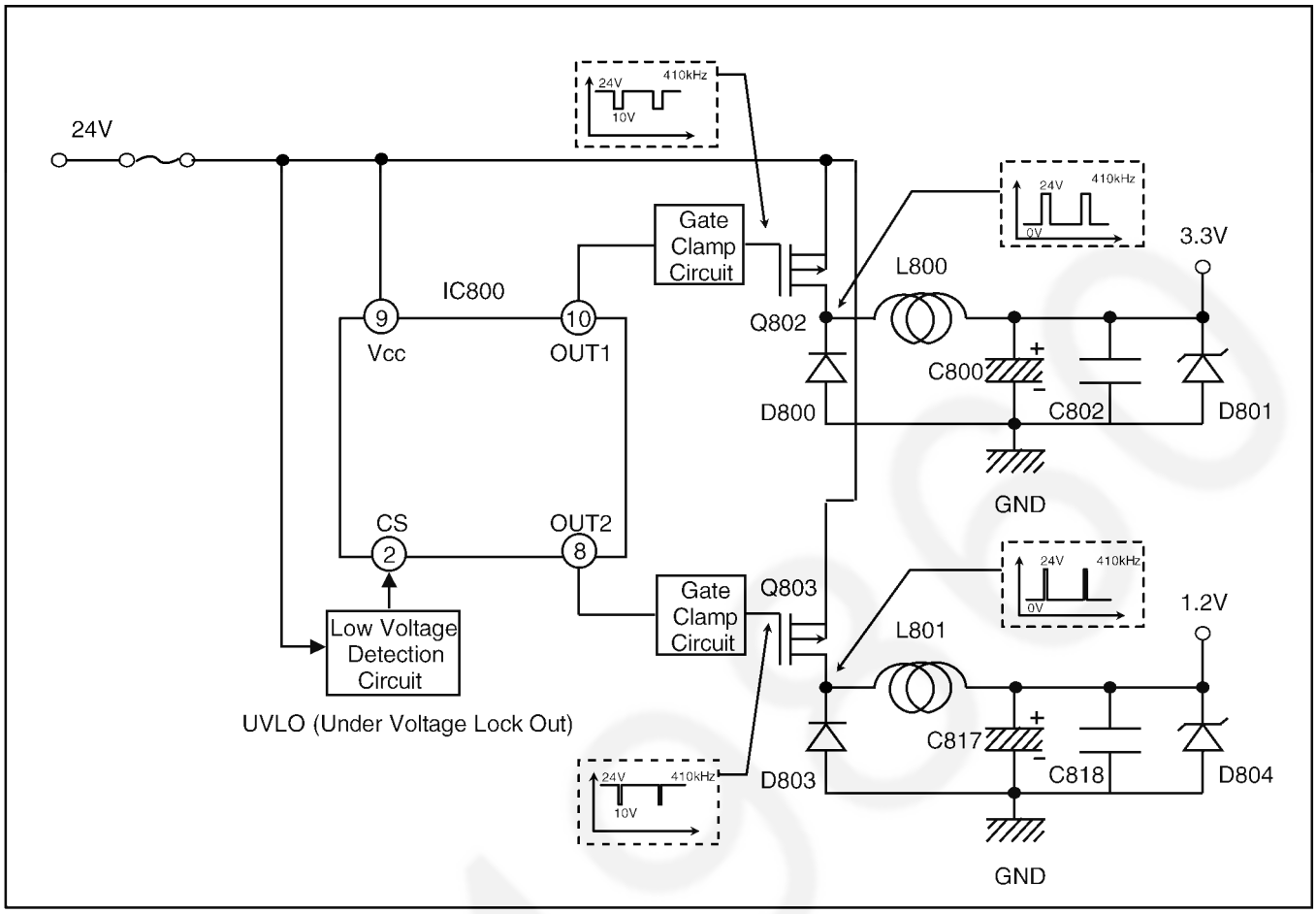


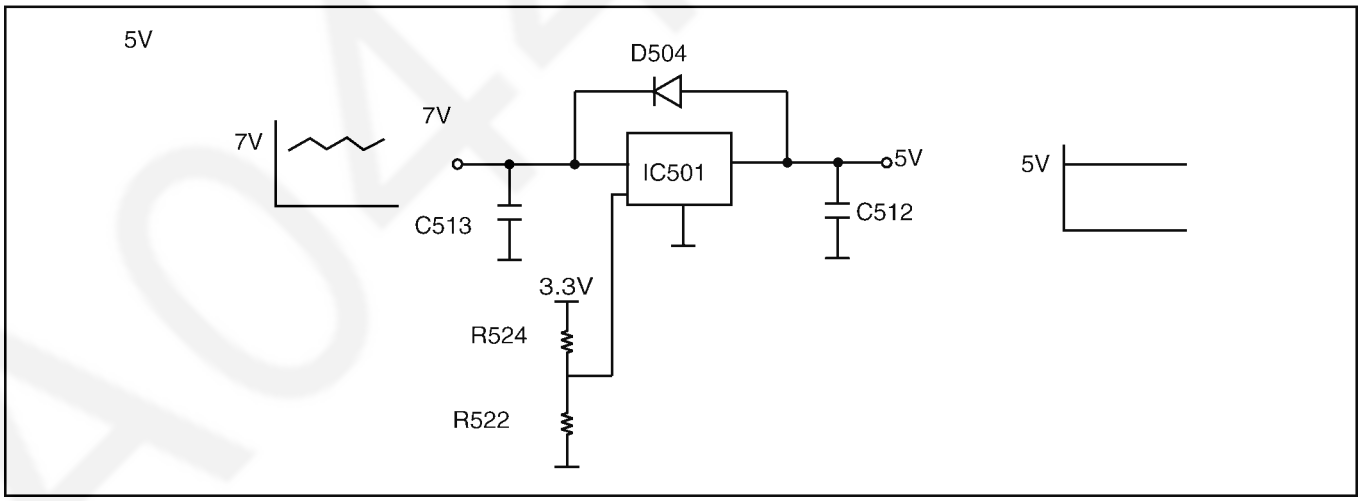
5V Power Supply descriptions

- IC501 is turned ON when 3.3V power supply is booted , 5V is generated from 7V-input.

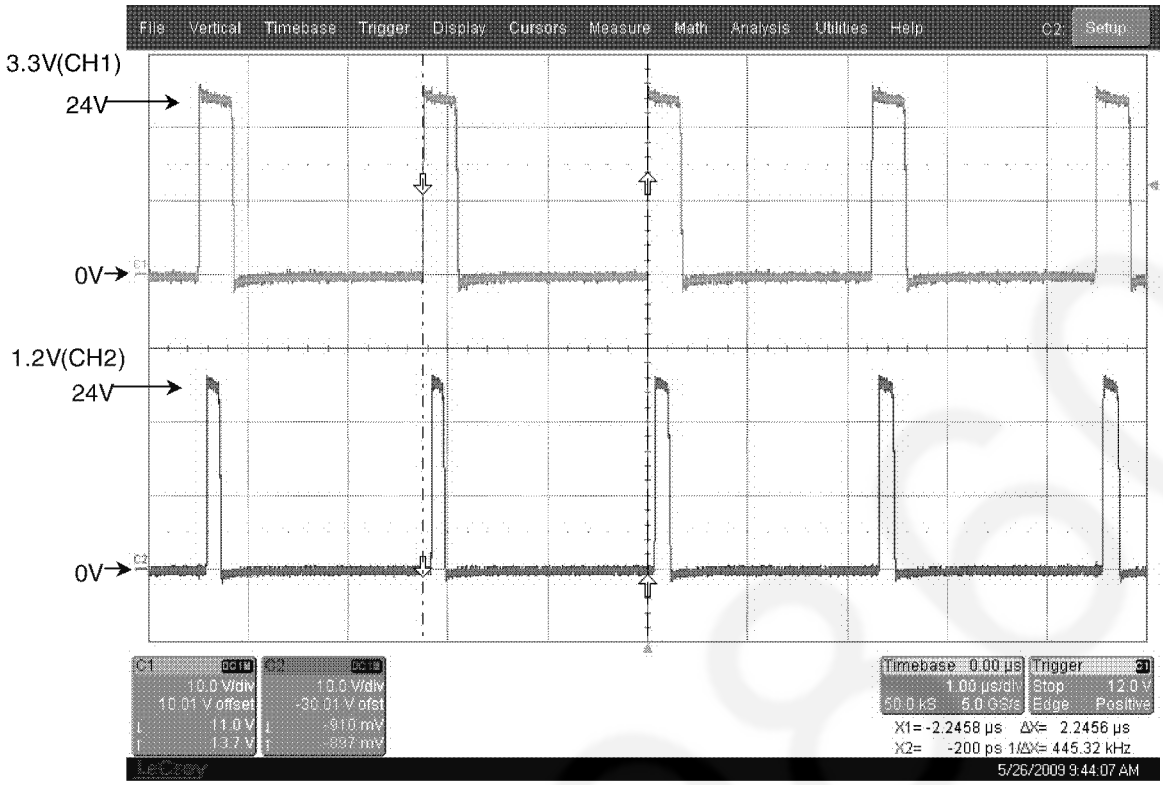


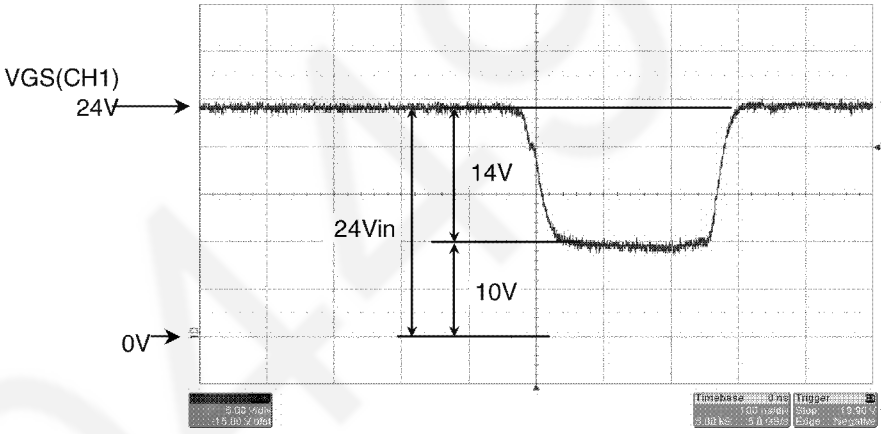
Power Supply

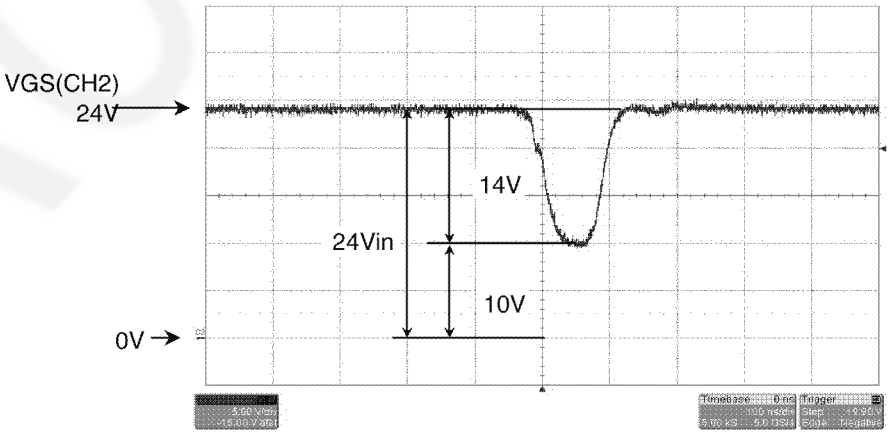




wave form

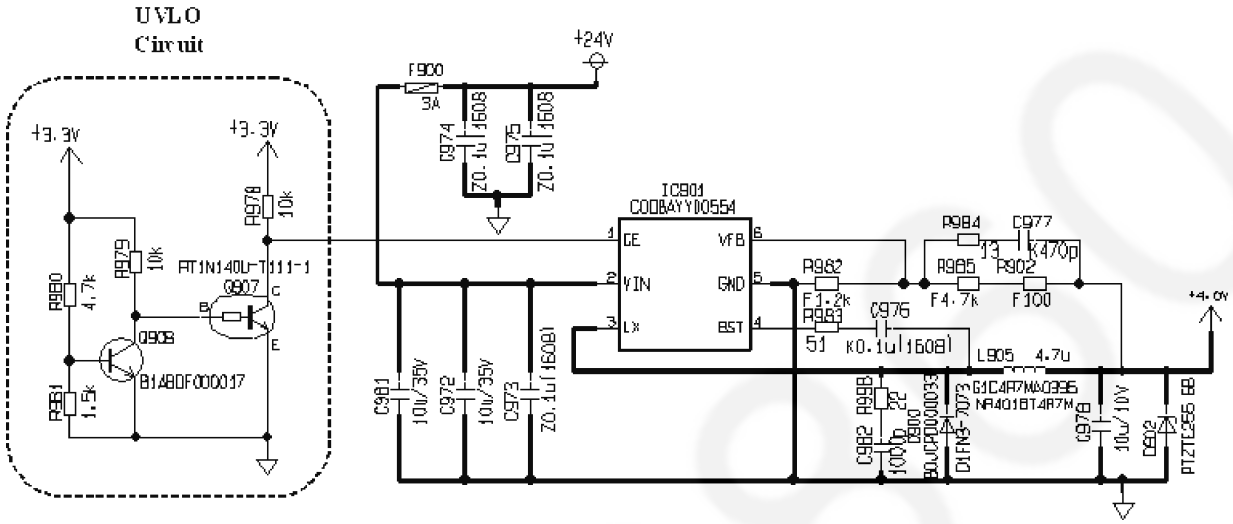

File Vertical Timebase Trigger Display Cursors Measure Math Analysis Utilities Help C2 Setup
3.3V(CH1)
24V
0V
1.2V(CH2)
24V
0V
C1 DC1M 10.0 V/div 10.01 V offset 11.0 V 13.2 V
C2 DC1M 10.0 V/div -30.01 V ofst -910 mV 997 mV
Timebase 0.00 µs 1.00 µs/div 50.0 kS 5.0 GS/s
Trigger Stop 12.0 V Edge Positive
X1= -2.2458 µs ΔX= 2.2456 µs
X2= -200 ps 1/ΔX= 445.32 kHz
LeCroy
5/26/2009 9:44:07 AM


VGS(CH1)
24V
0V
14V
24Vin
10V


VGS(CH2)
24V
0V
14V
24Vin
10V

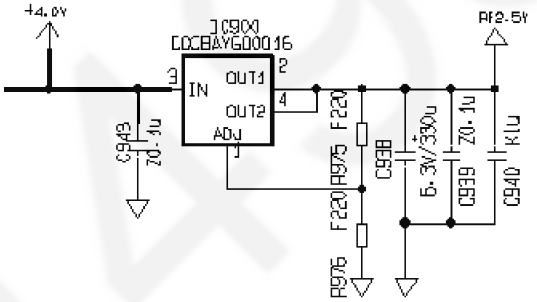
4V Power Supply descriptions

- IC901 is PWM type DC-DC converter with MOSFET, which make up step down type DC-DC converter circuit with coil of L905 , schottky diode of D900,Capacitor of C978.
  The oscillation frequency in operation of this DC-DC converter is set to about 1.25MHz.
- R978,R979,R980,R981,Q907,Q908 are UVLO (Under Voltage Lock Out) circuit.
  Q907 turns on when 3.3V output voltage is about 2.5V or less and CE terminal becomes low so that IC901's operation is stopped.

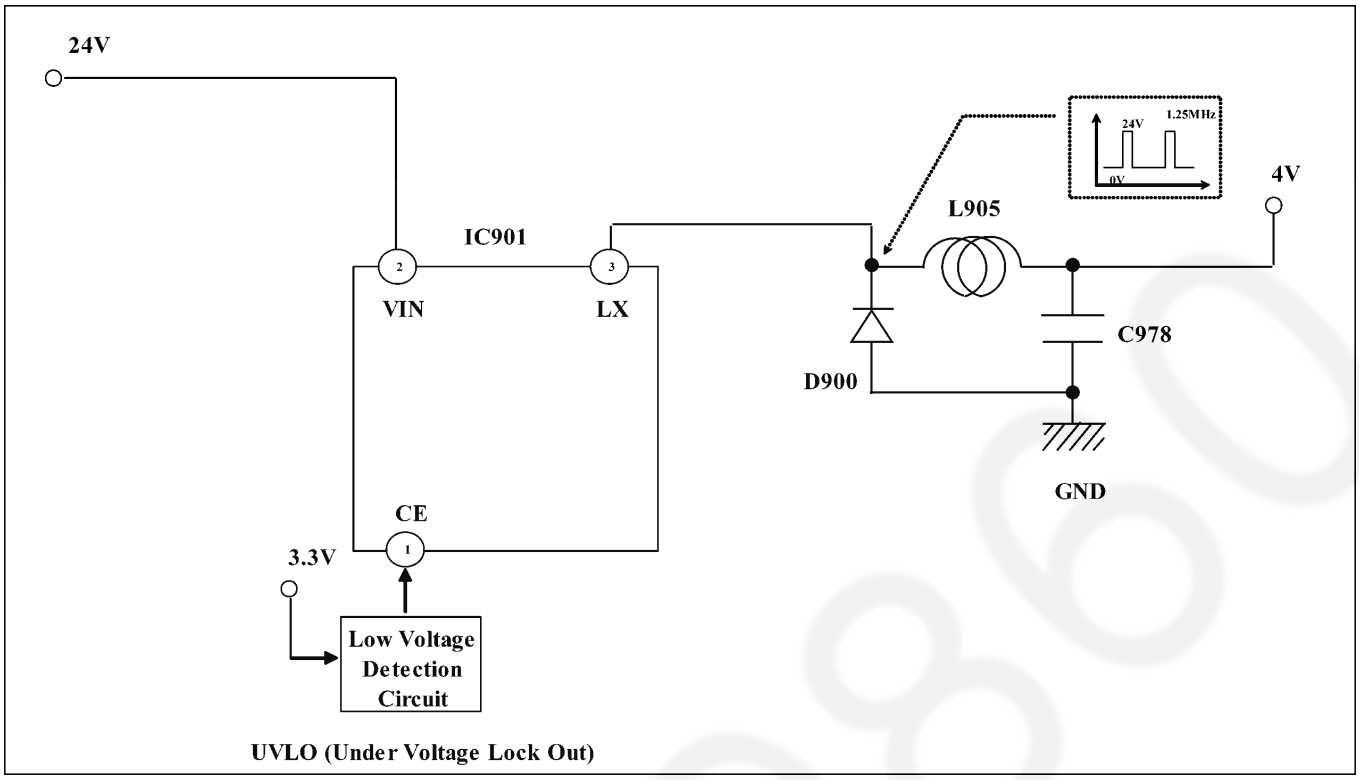


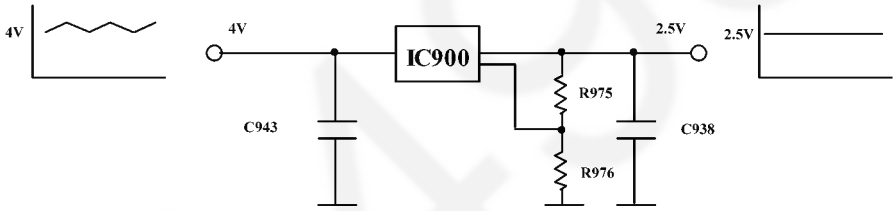
2.5V Power Supply descriptions

- IC900 is adjustable regulator and the output voltage is adjusted 2.5V with external resistors R975 and R976.

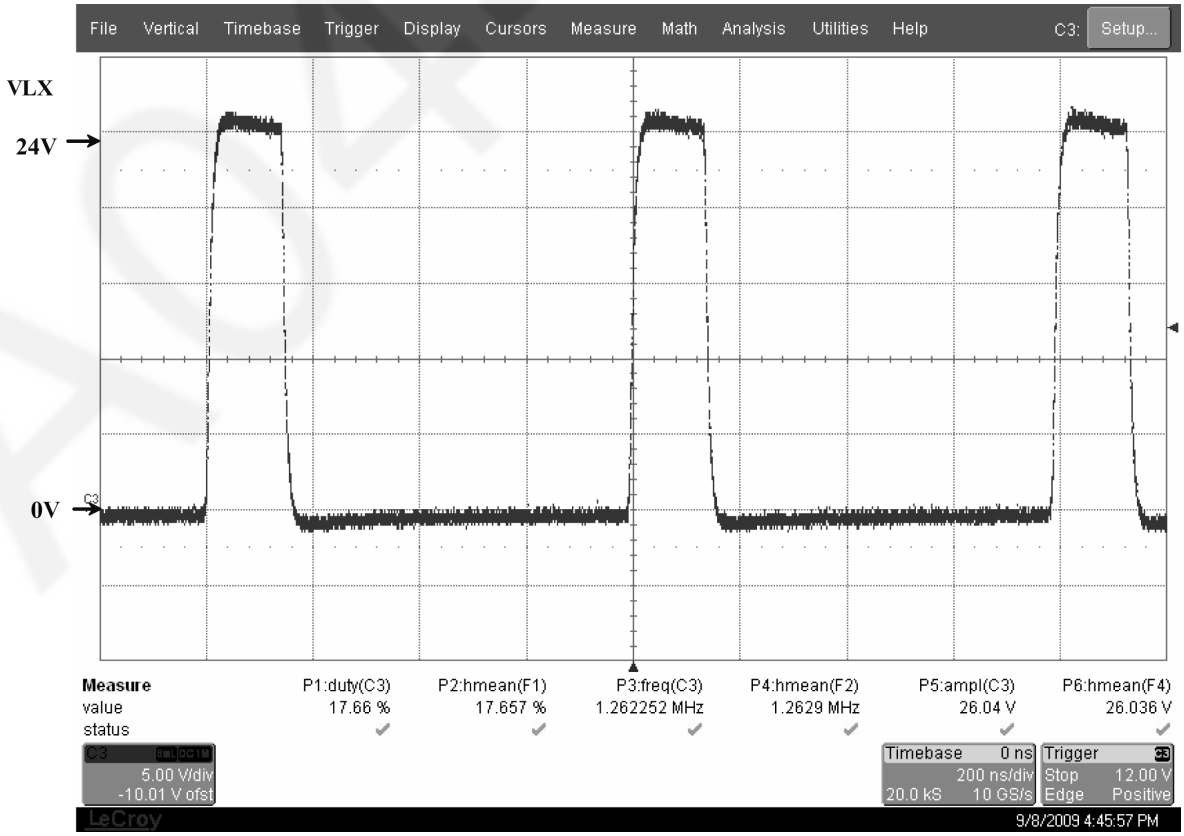


Power Supply





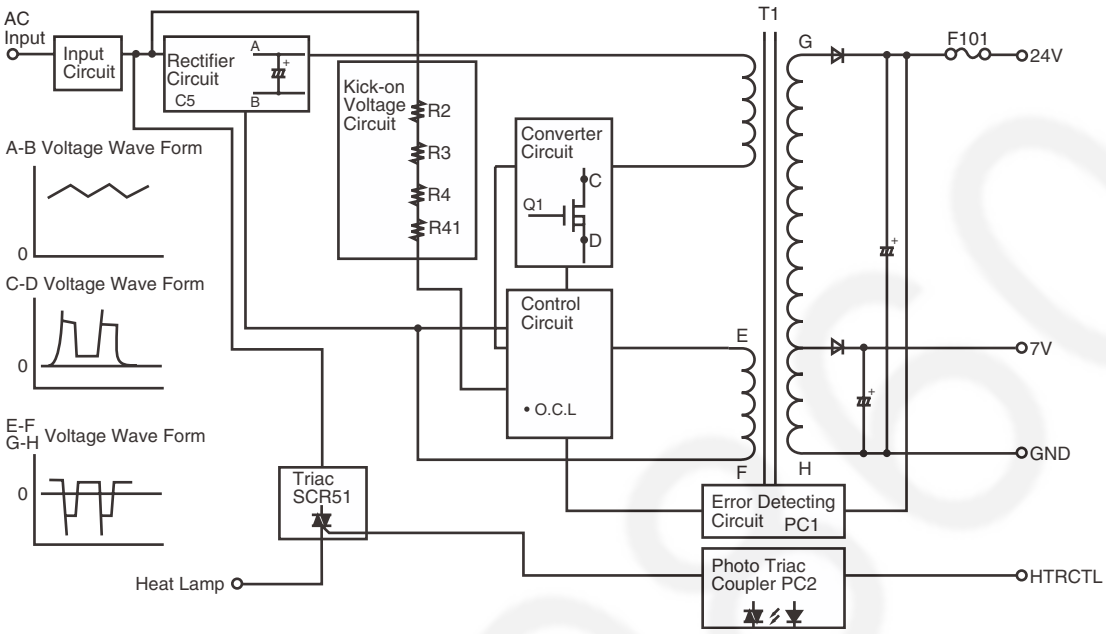
wave form



6.20. Power Supply Board Section

The power supply board circuit generates +7V and +24Vdc. It also supplies AC voltage to the halogen heat lamp in the fuser unit. The power supply board uses the switching regulator method.

Block Diagram



[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 circuit is rectified by D1 and charge C5 to make DC voltage.
Then it supplies power to the converter circuit.

[Kick-on Voltage Circuit]

Bias is applied to the Q1 gate via this circuit when the AC power is turned on and Q1 begins operating.

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

The highest drain current of Q1 is limited by a limit current circuit. The 24V output is limited by this circuit.

[Over Voltage Circuit]

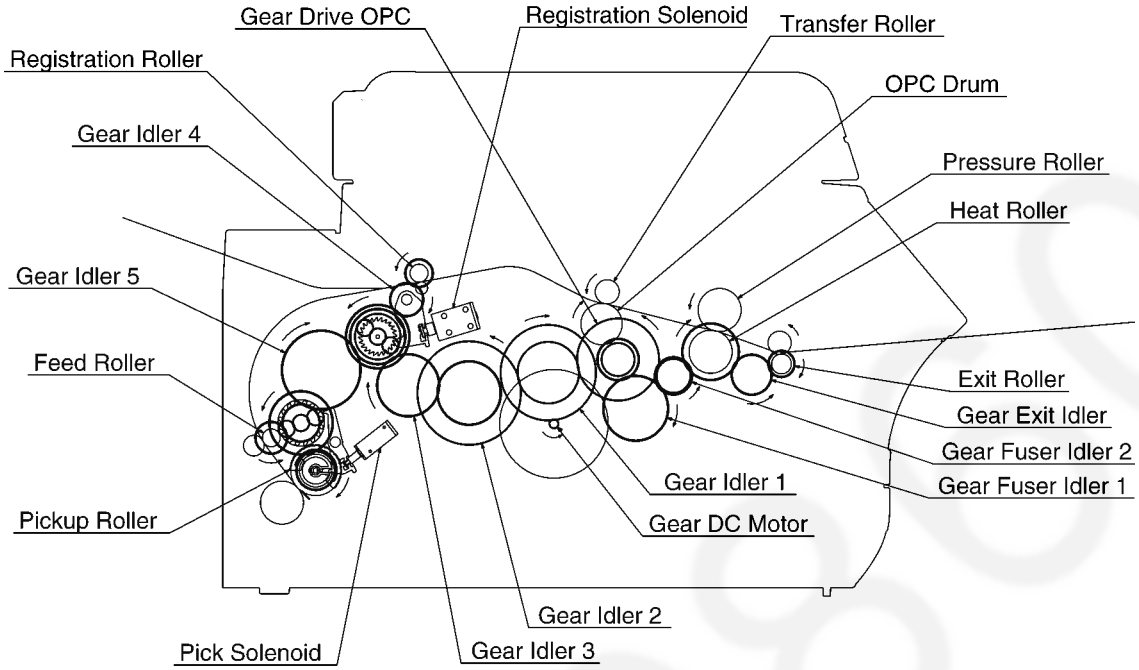
If the 24V output increases because the error detecting circuit or control circuit is broken.
Control circuit will recognize this signal and output becomes 0V. D104 and D503 also prevent over voltage.

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

Refer to **Power Supply Board Section** (P.233)

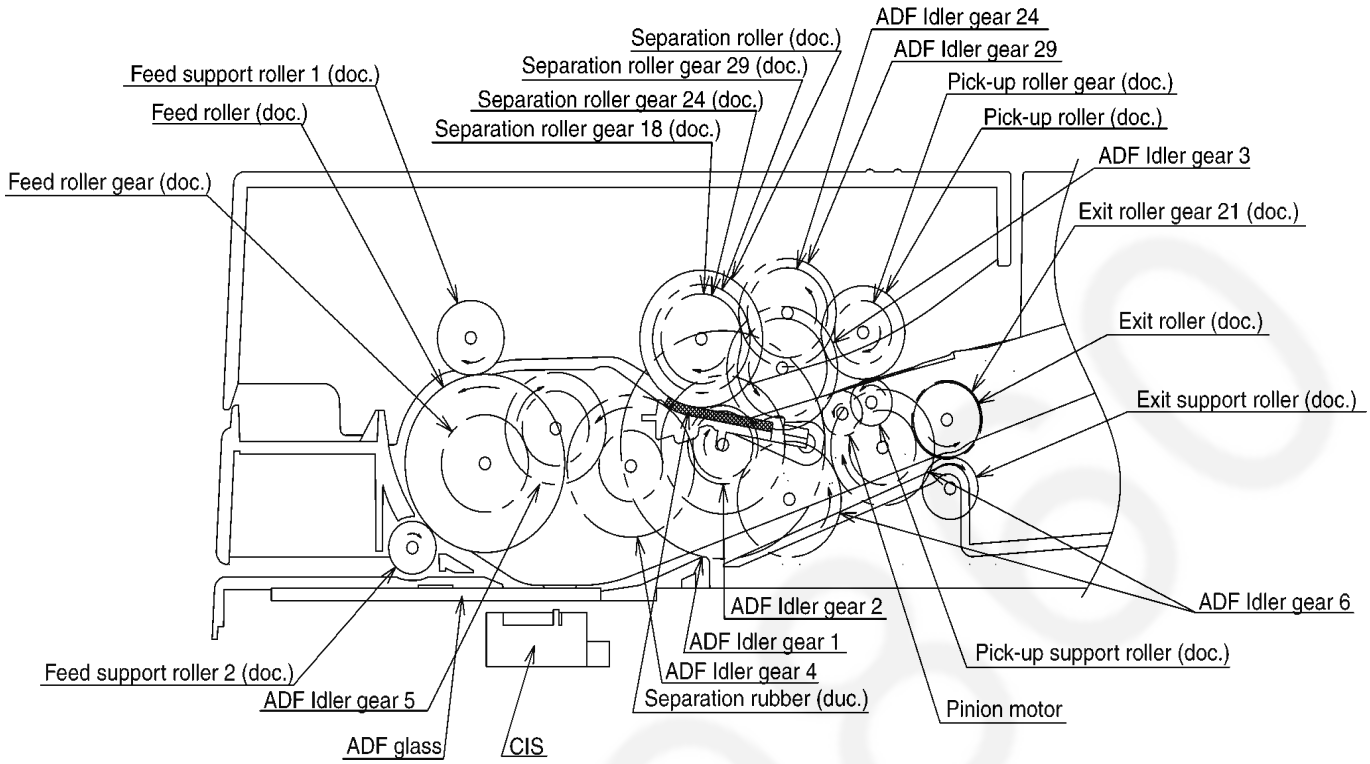
6.21. Mechanical Operation

6.21.1. Printing



The main motor gear rotates as shown in figure.
GEAR DRIVE OPC drives each part of fixing and developing.
When paper is fed from the standard cassette, the plunger of solenoid is pulled to drive PICK UP ROLLER (STANDARD), then the roller starts feeding paper.
When paper is fed manually, first the plunger of solenoid is pulled to stop REGISTRATION ROLLER. After a few moments turn off the solenoid to drive REGISTRATION ROLLER, then the roller starts feeding paper.

6.21.2. Scanning (ADF)

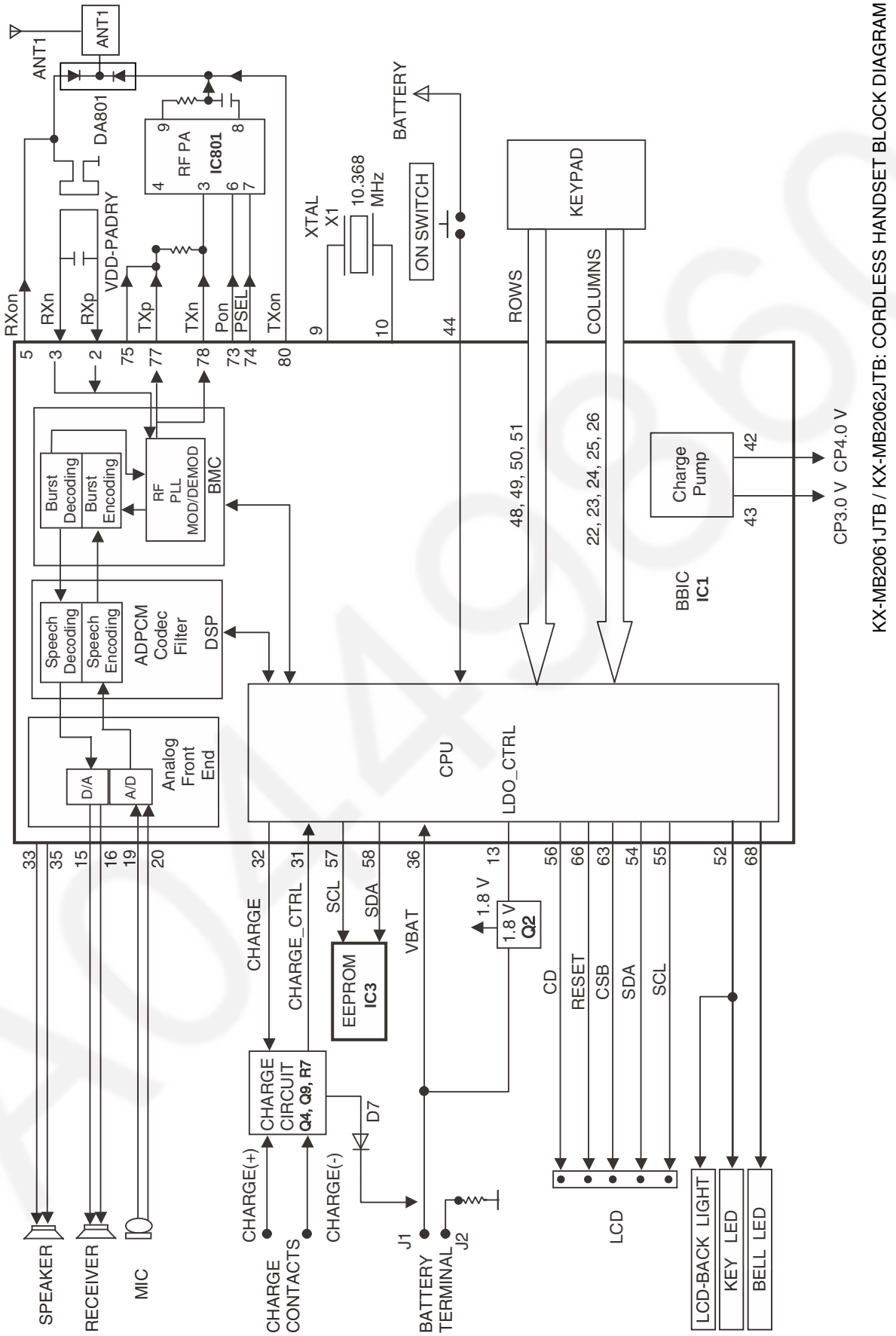


• DOCUMENT TRANSMISSION (ADF)
The frictional force between SEPARATION ROLLER (DOC.)and SEPARATION RUBBER makes PICK UP ROLLER (DOC.) move downward from standby position to pick up paper.
Pick-upped paper is separated by SEPARATION ROLLER (DOC.) and SEPARATION RUBBER (DOC.), and then fed by FEED ROLLER (DOC.).
After being read by CIS, the paper is ejected by ROLLER DOC EJECT.

• DOCUMENT TRANSMISSION (SCANNER GLASS)
CIS Module is carried by the belt timing along the shaft carriage to the reading start position.
Then it goes back to the home position reading the document through the glass.

6.22. Cordless Handset

6.22.1. Block Diagram



6.22.2. Circuit Operation (Cordless Handset)

6.22.2.1. Outline

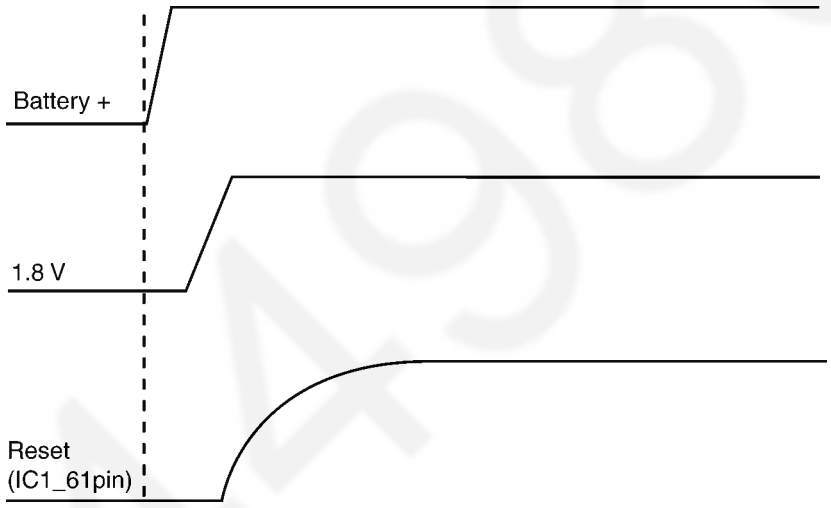
Cordless handset consists of the following ICs as shown in **Block Diagram** (P.86).

- 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.)

6.22.2.2. 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.



6.22.2.3. 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.

6.22.2.4. 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.

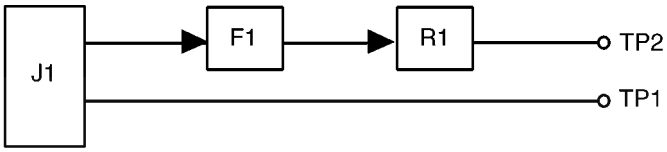
6.22.2.5. Speakerphone

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

6.22.3. Circuit Operation (Charger Unit)

6.22.3.1. Power Supply Circuit

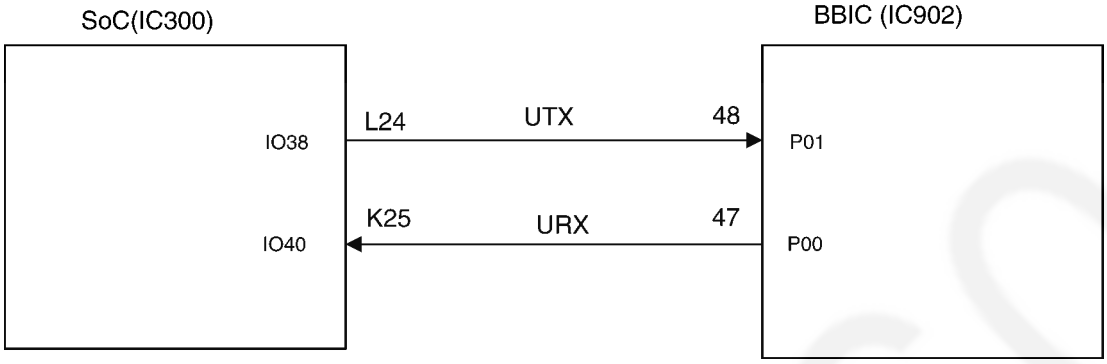
The power supply is as shown.



AC Adaptor

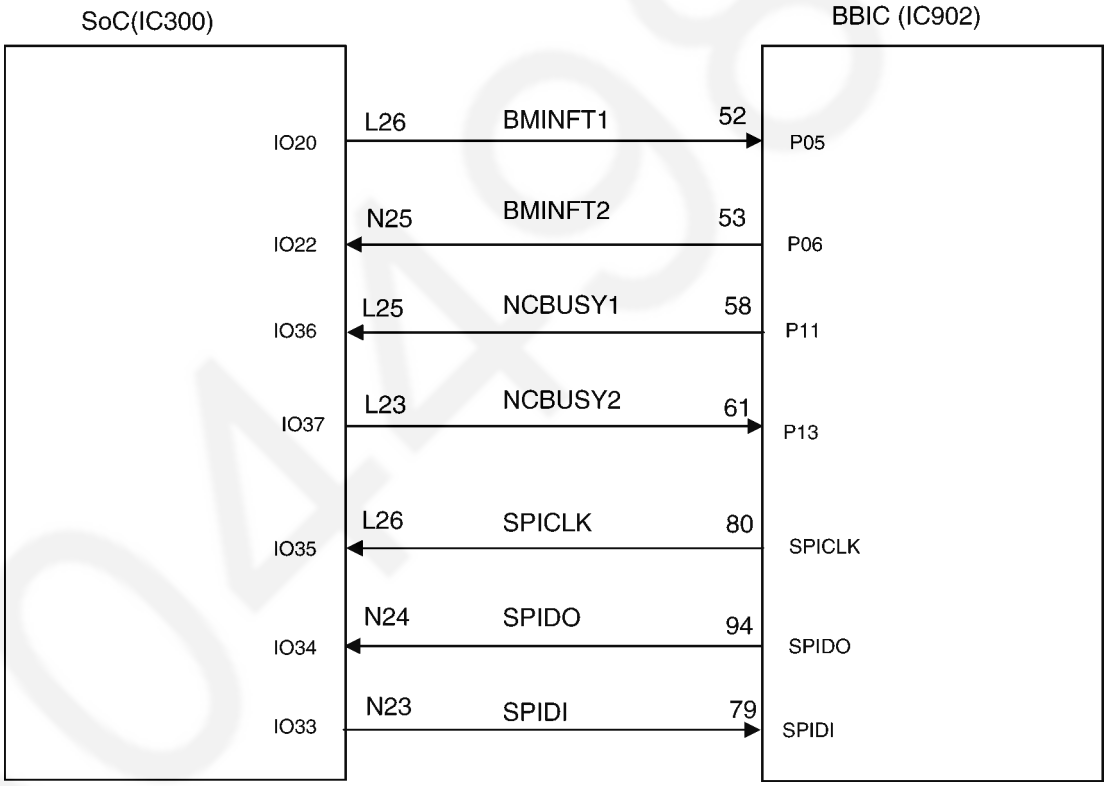
6.23. Telephone Answering Data Transfer

6.23.1. UART Interface



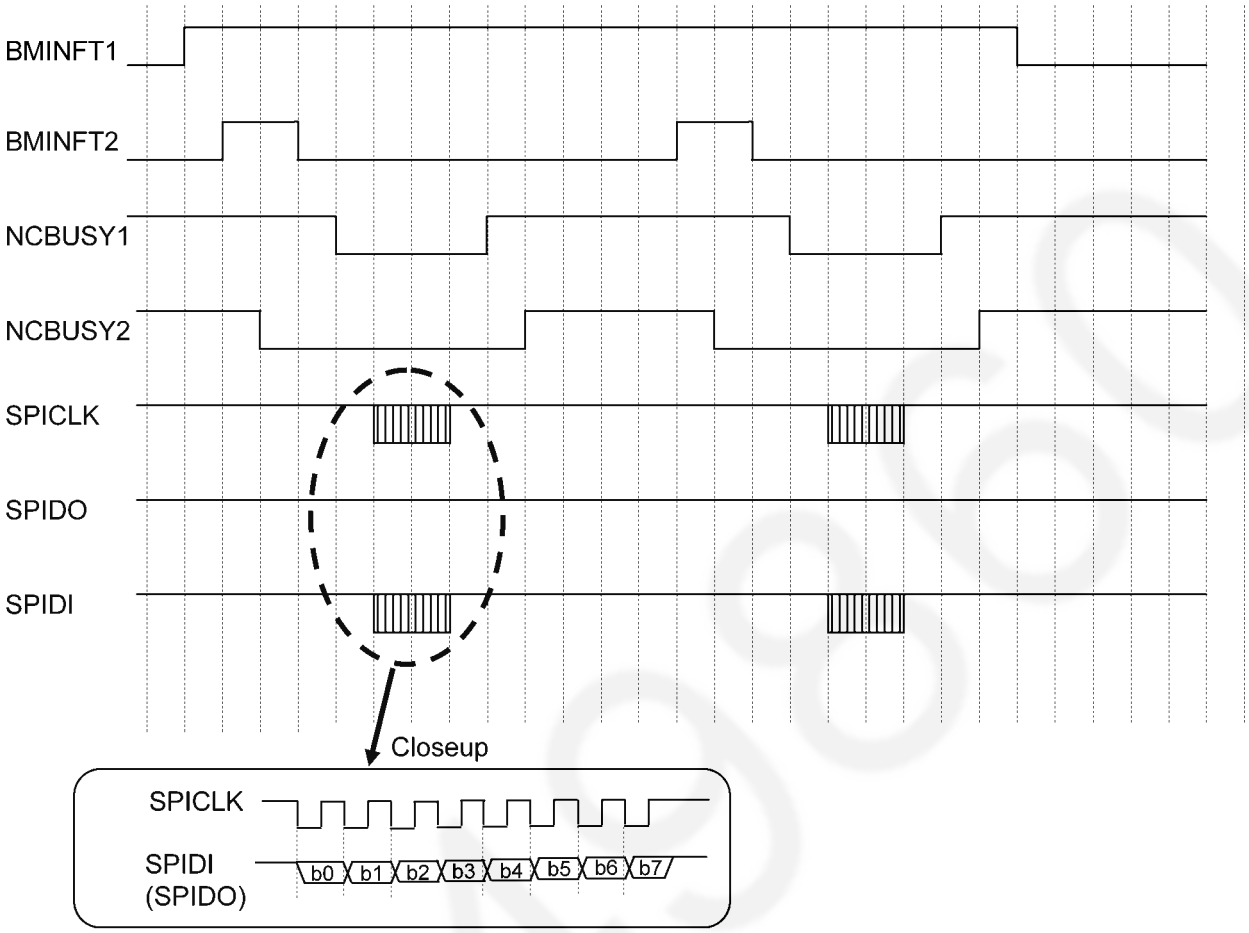
SoC controls lines and voices while it communicates with BBIC (Base band IC).
Mainly BBIC controls them and SoC transmits and receives commands through the UART (Universal Asynchronous Receiver Transmitter) interface.
Communication rate of UART is 115.2kbps.

6.23.2. SPI Interface

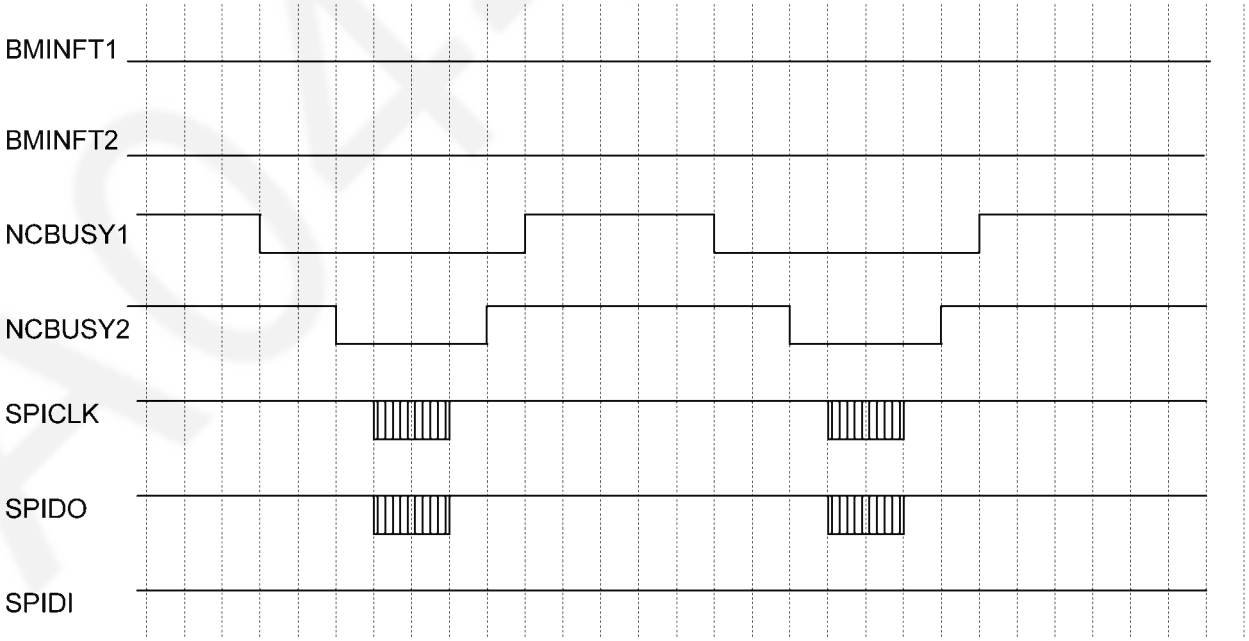


When voice data including TAM are transferred via PC or E-mail, data need to be transmitted and received by BBIC and SoC using SPI (Serial peripheral Interface) system.
This 3 wire system of synchronous transfer uses signals SPICLK, SPIDO, and SPIDI.
Transfer clock (SPICLK) is 5.18 MHz and is supplied from BBIC to SoC.
The signal used differs depending on the direction of data transfer.
SPIDO is used on transfer from SoC to BBIC and SPIDI is used on transfer from BBIC to SoC.
The other signals, BMINFT1, BMINFT2, NCBUSY1, and NCBUSY2 are used to adjust data transfers as a whole.
Please refer to the next chart for details on the timing chart.

<Data Direction : SoC to BBIC>



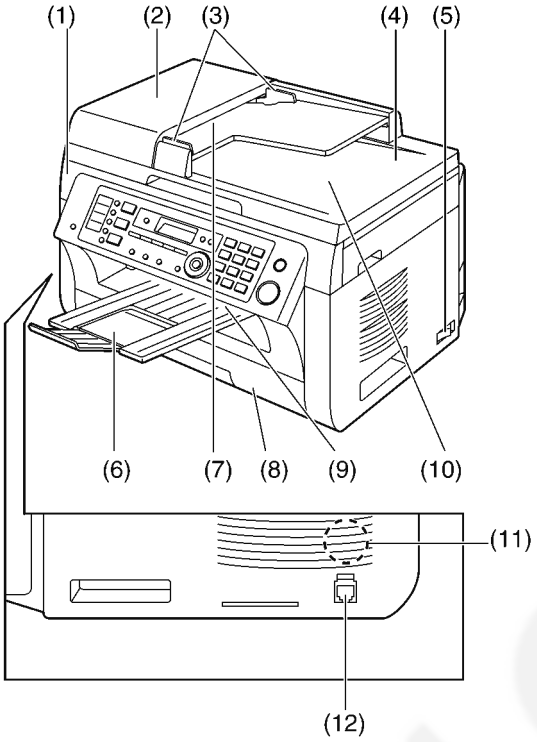
<Data Direction : BBIC to SoC>



7 Location of Controls and Components

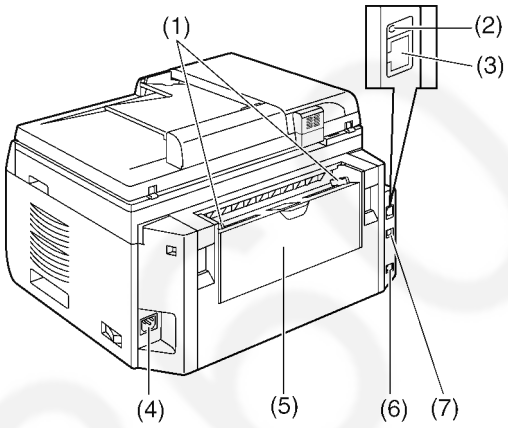
7.1. Overview

7.1.1. Front view



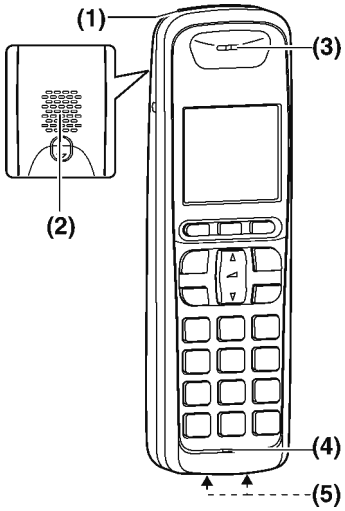
(1) Top cover
(2) ADF (Automatic Document Feeder) cover
(3) Document guides
(4) Document cover
(5) Power switch
(6) Output tray
(7) Document entrance
(8) Paper input tray
(9) Recording paper exit
(10) Document exit
(11) Speaker
(12) Handset unit connection jack

7.1.2. Rear view



(1) Recording paper guides
(2) LED
(3) LAN interface connector
• 10Base-T/100Base-TX
(4) Power inlet
(5) Manual input tray (Rear cover)
(6) Telephone line jack
(7) USB interface connector

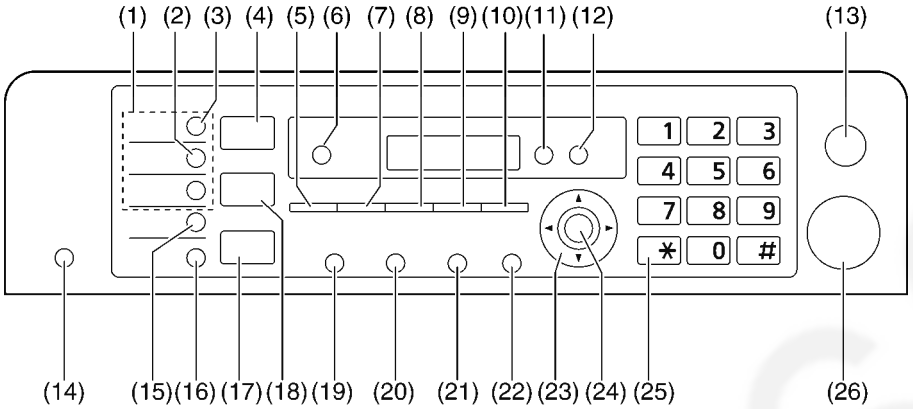
7.1.3. Cordless Handset



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

7.2. Control Panel

7.2.1. Base Unit



(1) Station keys
- To use the one-touch dial feature.

(2) {**Manual Broad**}
- To send a document to multiple parties by using the dial keypad.

(3) {**Broadcast**}
- To send a document to multiple parties.

(4) {**Scan**}
- To switch to the scan mode.

(5) {**Copy Size**}
- To select the copy size.

{**Phonebook**}
- To initiate the phonebook.

(6) {**Playback**}
- To play messages.

{**Voice to PC**}
- To transfer a voice message to an email address, or a computer

(7) {**Contrast**}
- To select the contrast when copying.
- To select the contrast when sending a fax.

(8) {**Resolution**}
- To select the resolution when copying.
- To select the resolution when sending a fax.

(9) {**Zoom**}
- To enlarge or reduce a document when copying.

{**Quick Scan**}
- To store a scanned document into memory, and then send it.

(10) {**Page Layout**}
- To make copies using various page layouts.

{**Caller ID**}
- To use Caller ID features.

(11) {**Erase**}
- To erase messages.

(12) {**Recording**}
- To record a greeting message, conversation or memo message.

(13) {**Stop**}
- To stop an operation or programming session.
- To erase a character/number.

(14) {**Auto Answer**}
- To turn the auto answer setting ON/OFF.

(15) {**Lower**}
- To select station 4-6 for the one-touch dial feature.

(16) {**Locator**}/{**Intercom**}
- To make/answer intercom calls
- To page or locate a cordless handset.

(17) {**Fax**}
- To switch to the fax mode.

(18) {**Copy**}
- To switch to the copy mode.

(19) {**Redial**}{**Pause**}
- To redial the last number dialled. If the line is busy when you make a phone call using the {**Monitor**} button, or when you send a fax, the unit will automatically redial the number 2 or more times.
- To insert a pause during dialling.

(20) {**Flash(R)**}
- To access special telephone services such as call waiting (page 54) or for transferring extension calls.

(21) {**Monitor**}
- To initiate dialling.

When you press {**Monitor**} while receiving a call, you will be able to hear the other party, but the other party will not be able to hear you.

(22) {**Menu**}
- To start or exit programming.

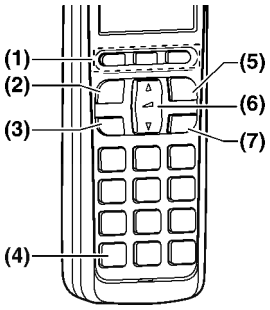
(23) Navigator key
- To select desired settings.
- To adjust the volume.
- To search for a stored item.

(24) {**Set**}
- To store a setting during programming.

(25) {**Tone**}
- To change from pulse to tone temporarily during dialling when your line has rotary/pulse service.

(26) {**Start**}
- To copy a document.
- To scan a document (push scan).
- To send a fax

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 #121).
- To set the alarm feature.

Display items

Display item	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
	When displayed next to the battery icon: Auto answer setting is ON. ● When the maximum recording time (feature #305) is set to "GREET ONLY"/"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 or the base unit.

*1 Caller ID subscribers only

*2 Voice mail subscribers only

Note:

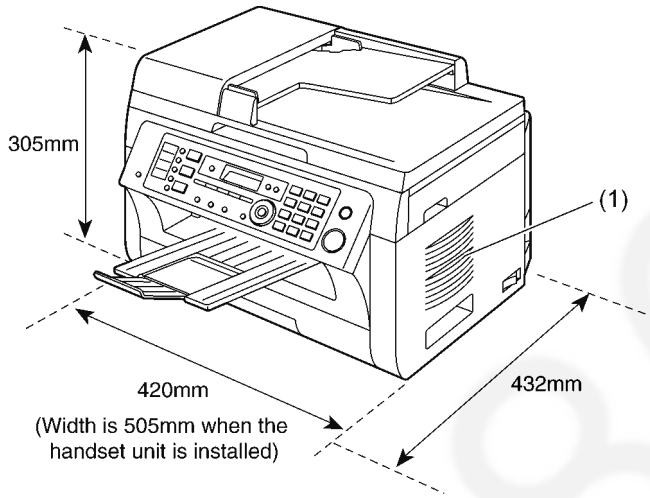
Refer to **Program Mode Table** (P.138).

8 Installation Instructions

8.1. Installation

8.1.1. Installation Space

The space required to install the unit is shown below.
The dimensions given are necessary for the unit to operate efficiently.

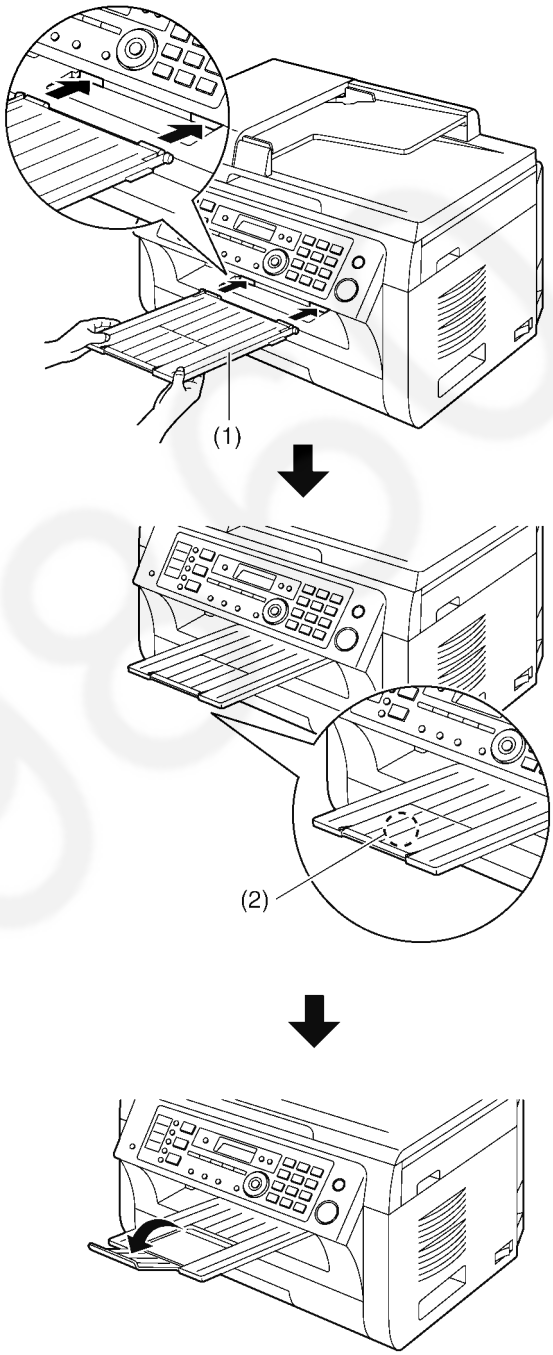


Note:

- Avoid excessive heat or humidity.
- Use the unit within the following ranges of temperature and humidity.
- Ambient temperature: 10°C to 32.5°C
- Relative humidity: 20% to 80% (without condensation)
- Power cord length should be less than 5 meters. Using a longer cord may reduce the voltage or cause malfunctions.
- 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.
- Do not place the unit in an area where the paper tray may be obstructed (i.e., by a wall, etc.)
- Keep this surface (1) away from walls etc. more than 100 mm to let the unit cool down.

8.1.2. OUTPUT TRAY

1. Insert the output tray (1) until it clicks into place, and then press the centre part (2) of the extender to open it.

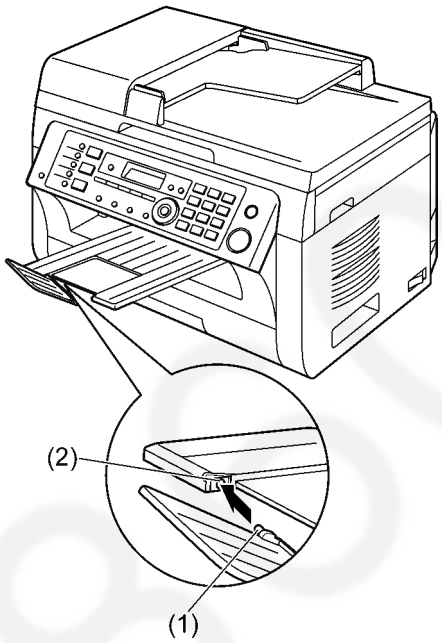


Note:

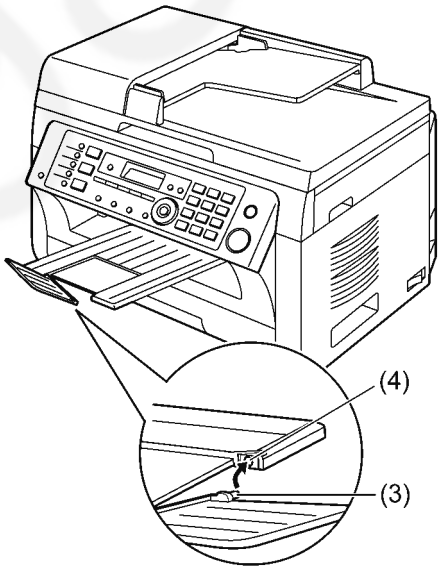
- Do not place the base unit in an area where the output tray may be easily bumped into.
- The output tray can hold up to approximately 100 sheets of printed paper (the number of sheets may vary depending on the usage environment). Remove the printed paper before the output tray becomes full.

If the top part of the extender is detached

1. With the top part of the extender in the open position, insert the tab (1) into the left hole (2) of the extender.



2. Slide the other tab (3) into the right hole (4) of the extender from below until it clicks into place.



8.1.3. RECORDING PAPER

The paper input tray unit can hold:

— Up to 250 sheets of 64 g/m^2 to 75 g/m^2 paper.

— Up to 230 sheets of 80 g/m^2 paper.

— Up to 200 sheets of 90 g/m^2 paper.

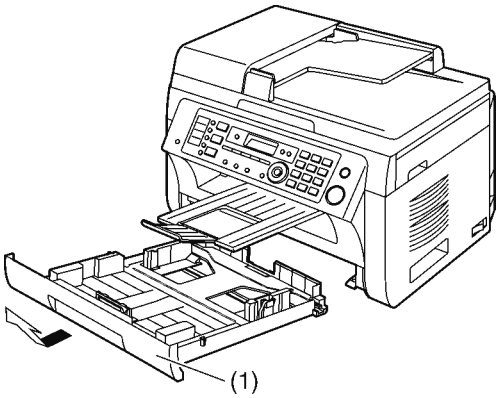
- A4, letter, B5 and 16K-size paper can be used. B5 and 16K-size paper can only be used when using the unit for printing or copying.
- The unit is set for printing A4-size plain paper by default.
  - To use other paper sizes, change the recording paper size setting (feature #380).
  - To use thin paper, change the recording paper type setting (feature #383).

  (Refer to **Program Mode Table** (P.138).)

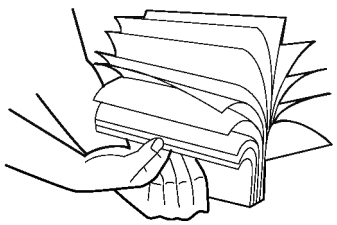
Note for recording paper:

- We recommend that you test paper (especially special sizes and types of paper) on the unit before purchasing large quantities.
- Do not use the following types of paper:
  - Paper with 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 that 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
  - Inkjet paper
- Some paper is designed to be printed on only one side. Try printing on 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 thicknesses at the same time. This may cause paper jams.
- Avoid double-sided printing.
- Do not use paper printed from this unit for double-sided printing with other copiers or printers.
  This may cause paper jams.
- 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. Pull the paper input tray (1) until it clicks into place, then pull it completely out, lifting the front part of the tray.



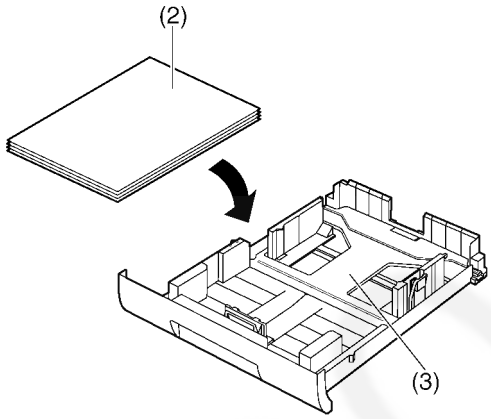
2. Before loading a stack of paper, fan the paper to prevent paper jams.



3. Load the paper, print-side up (2).

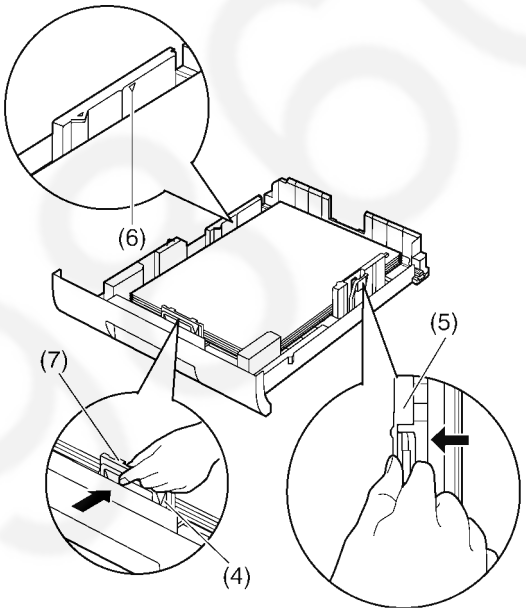
Important:

- **Push down to lock the plate (3) in the paper input tray, if necessary.**



4. Adjust the recording paper guides. Pinch the front side of the recording paper guide (4), then slide it to match the paper size mark. Pinch the right side of the recording paper guide (5), then slide it to adjust the width to the size of the recording paper.

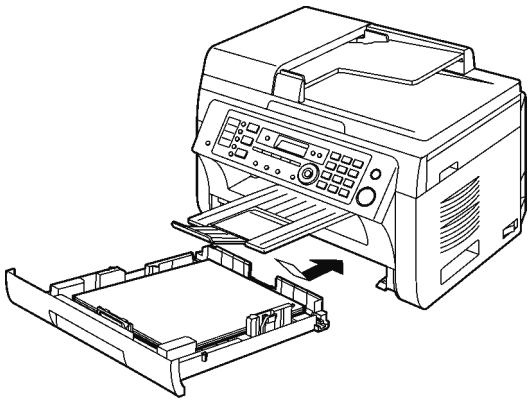
- Make sure that the recording paper is under the paper limit mark (6), and the paper should not be loaded over the snubbers (7).



5. Insert the paper input tray into the base unit, lifting the front part of the tray. Then push it completely into the base unit.

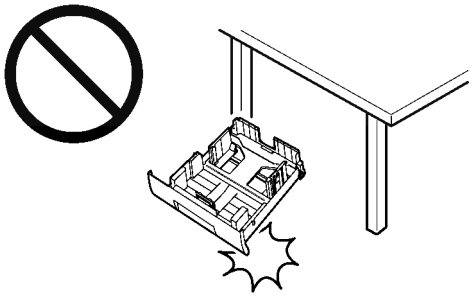
Note:

- If the paper is not loaded correctly, re-adjust the paper guides, or the paper may jam.
- If the paper input tray does not close, the plate in the paper input tray may not be in the locked position. Push the paper down and make sure that the paper is laying flat in the paper input tray.

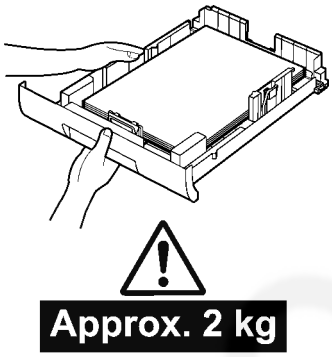


Caution for the paper input tray

- Do not drop the paper input tray.



• Hold the paper input tray with both hands when removing or installing. The paper input tray weighs approximately 2 kg when fully loaded with recording paper.



8.1.3.1. Using the manual input tray

You can use the manual input tray for printing with the computer and for copying. It can hold one page at a time.
When printing or copying multiple pages, add a next page after the first page has been fed into the base unit.

• The unit is set for printing A4-size plain paper by default.
  - To use other paper sizes, change the recording paper size setting (feature #381). (Refer to **Program Mode Table** (P.138).)
  - To use thin paper, change the recording paper type setting (feature #384). (Refer to **Program Mode Table** (P.138).)

1. Adjust the width of the guides (1) to the size of the recording paper.

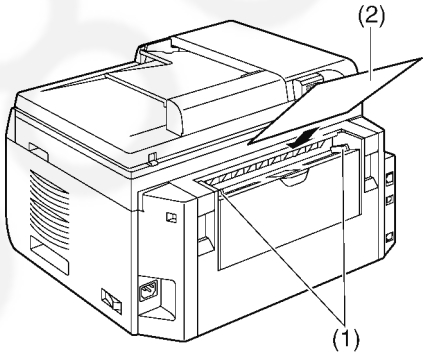
2. Insert the paper, print-side down (2) until the base unit grasps the paper and a single beep is heard.

Note:

• To print from the manual input tray;
  - when printing with the computer, select #2 for the printer properties.
  - when making a copy, set the copy input tray setting to "#2" beforehand (feature #460). (Refer to **Program Mode Table** (P.138).)

  If these settings are not changed, when printing or copying multiple pages, the 1st page will be printed from the manual input tray, but the rest of the pages will be printed from the paper input tray.

• If the paper is not inserted correctly, re-adjust the paper, or the paper may jam.

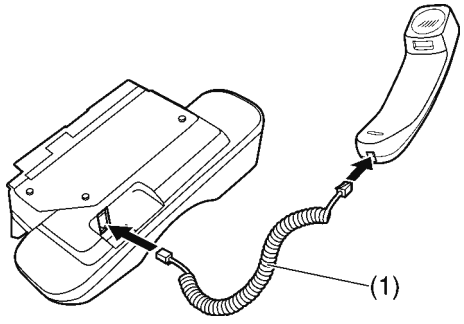


8.1.3.2. Handset Unit

Important:

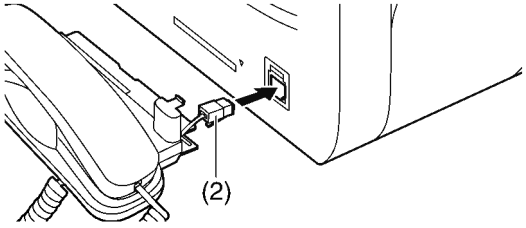
• **Before installing or removing the handset unit, be sure to turn the power switch OFF.**

1. Connect the handset cord (1).

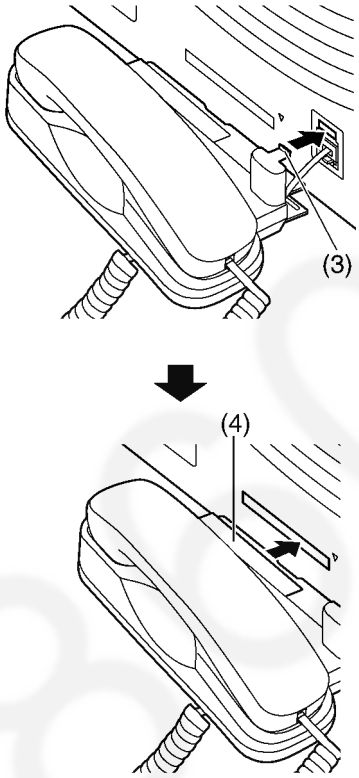


2. Connect the handset connector (2).

• Remove the seal from the handset unit connection jack if attached.



3. Insert the tab (3) and rib (4).

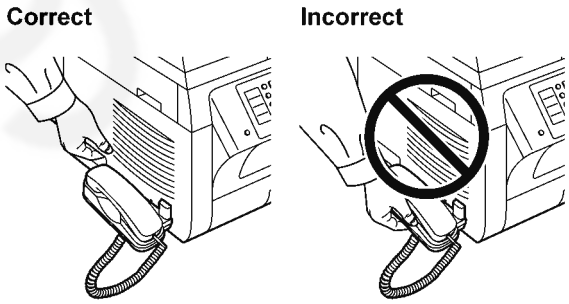


Caution:

- When moving the base unit, be sure to hold by the grip. Do not hold by the handset unit.

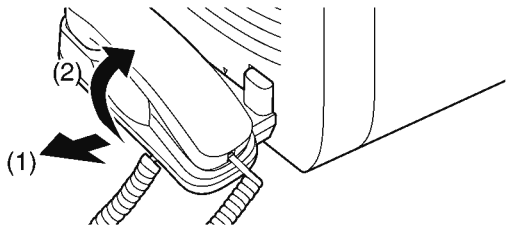
Note:

- While talking to the other party, you can send a fax using the scanner glass by pressing **[Start]**, and then **[1]** (To receive a fax, press **[2]**).

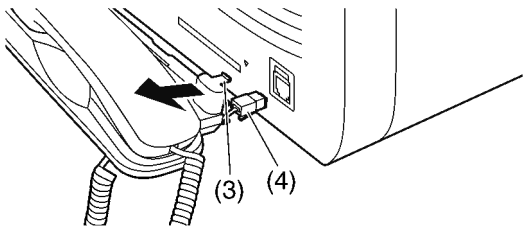


To remove the handset unit

1. Pull the handset unit slightly forward (1), then lift it in the direction of the arrow (2) to remove the rib.



2. Remove the tab (3), then disconnect the handset connector (4).



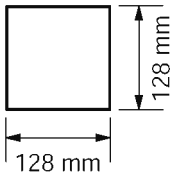
8.1.4. Documents the Unit Can Send

8.1.4.1. Using the automatic document feeder

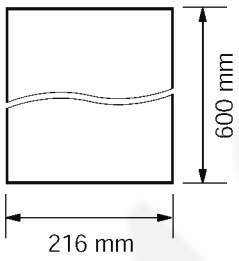
Note:

- Confirm that there are no documents on the scanner glass.
- Confirm that any ink, paste or correction fluid has dried completely.
- Remove clips, staples or other fasteners.
- Do not insert the following types of documents (Make a copy of the document using the scanner glass and set the copy instead.):
  - 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 printing on the opposite side that can be seen through the other side, such as newsprint
- The total height of the documents when laid flat, must be less than 4 mm. If the documents exceed the capacity of the automatic document feeder, they may fall or cause a jam in the feeder.
- To set a document with a width of less than 210 mm, we recommend using the scanner glass to copy the original document onto A4 or letter-size paper, then setting the copied document for better results.
- Do not set documents that do not satisfy the requirements of size and weight. Make a copy of the document using the scanner glass and set the copy.
- Available document size, document weight and effective scanning area are as follows:

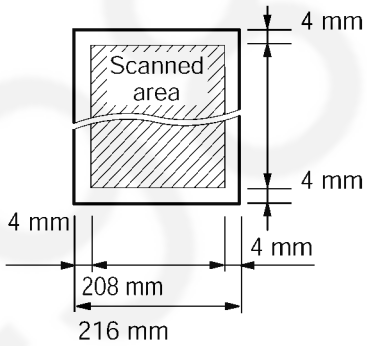
Minimum document size



Maximum document size



Effective scanning area



Document weight

Single sheet:
60 g/m^2 to 75 g/m^2
Multiple sheets:
60 g/m^2 to 75 g/m^2

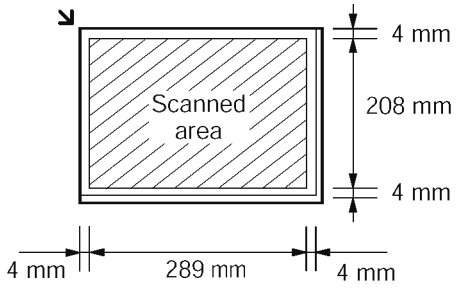
- Shaded area will be scanned.
- When using the unit as a scanner, the effective scanning length depends on the selected paper size.

8.1.4.2. Using the scanner glass

Note:

- Confirm that there are no documents in the automatic document feeder.
- Place the original onto the scanner glass gently. To avoid malfunction, do not press down too firmly.
- If the original is a thick book, do not close the document cover.
- Confirm that any ink, paste or correction fluid has dried completely.
- Effective scanning area is shown by the shaded area:

Effective scanning area



8.1.5. Toner Cartridge and Drum Cartridge

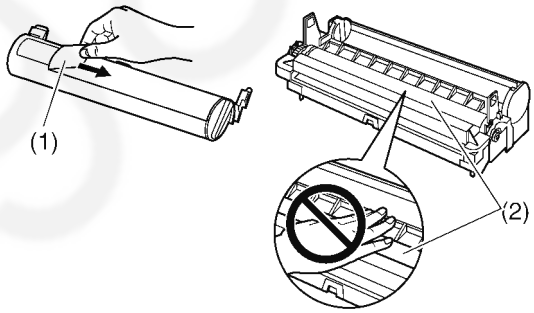
The supplied toner cartridge is a starter toner cartridge.

Caution:

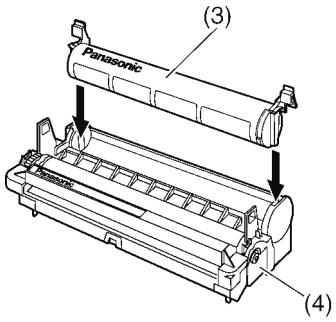
- **Read the following instructions before you begin installation. After you have read them, open the drum cartridge protective bag. The drum cartridge contains a photosensitive drum. Exposing it to light may damage the drum. Once you have opened the protective bag:**
  - **— Do not expose the drum cartridge to light for more than 5 minutes.**
  - **— Do not touch or scratch the black drum surface inside of the drum cartridge.**
  - **— Do not place the drum cartridge near dust or dirt, or in a high humidity area.**
  - **— Do not expose the drum cartridge to direct sunlight.**
- **Do not leave the toner cartridge out of the protective bag for a long time. It will decrease the toner life.**
- **We cannot be responsible for any damage to the unit or degradation of print quality which may occur from the use of a non-Panasonic toner and drum cartridges.**
- **Do not add toner to the toner cartridge.**

1. Before opening the protective bag of the new toner cartridge, shake it vertically more than 5 times.

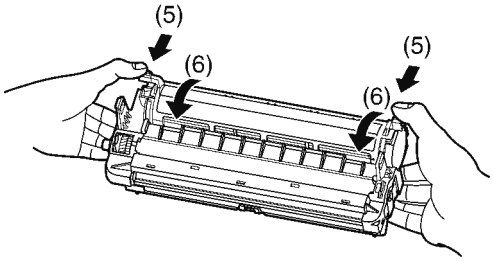
2. Remove the toner cartridge and drum cartridge from the protection bags. Peel off the seal (1) from the toner cartridge.
- Do not touch or scratch the black drum surface (2).



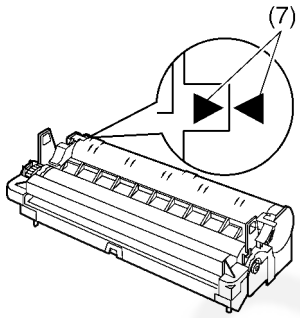
3. Place the toner cartridge (3) into the drum cartridge (4) vertically.



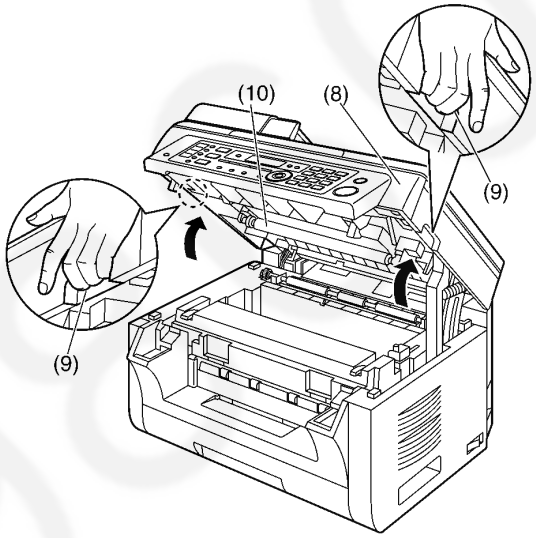
4. Press down the toner cartridge firmly (5). Keep pressing while turning the green lever on each side of the toner cartridge towards you (6).



5. Make sure that the arrows (7) match, to install the toner cartridge correctly.

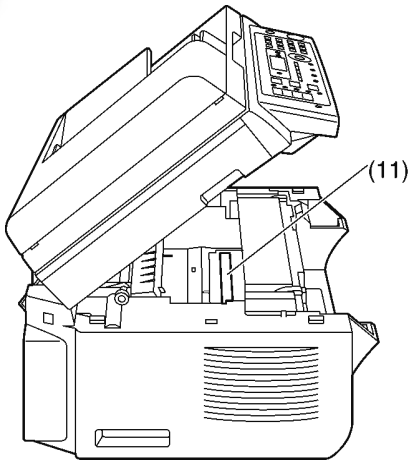


6. Open the top cover (8) by holding the indentations (9) on both sides of the base unit.

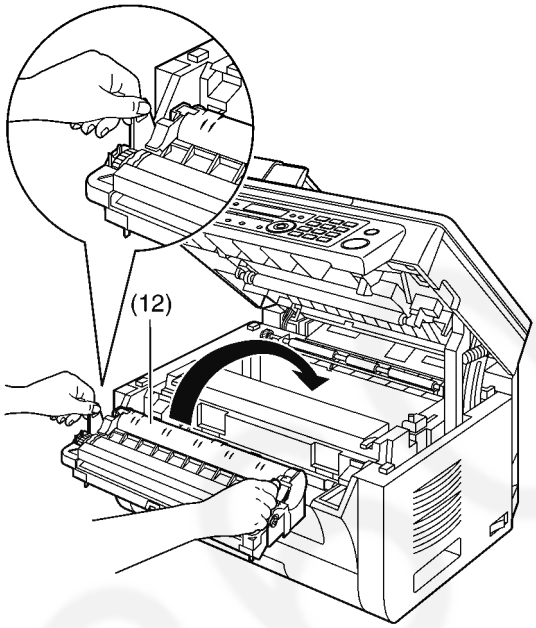


Note:

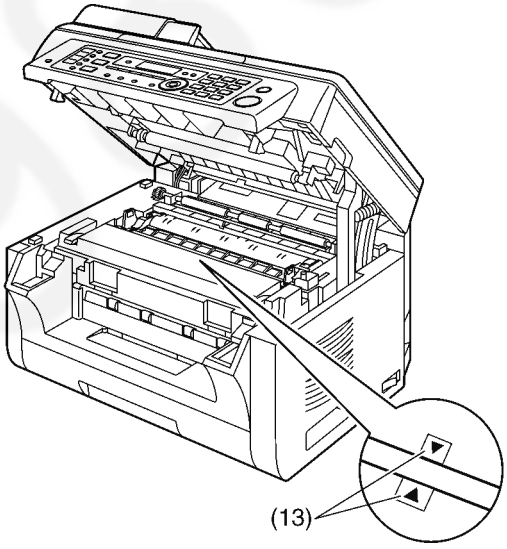
- Do not touch the transfer roller (10).
- If the lower glass (11) is dirty, clean it with a soft and dry cloth.



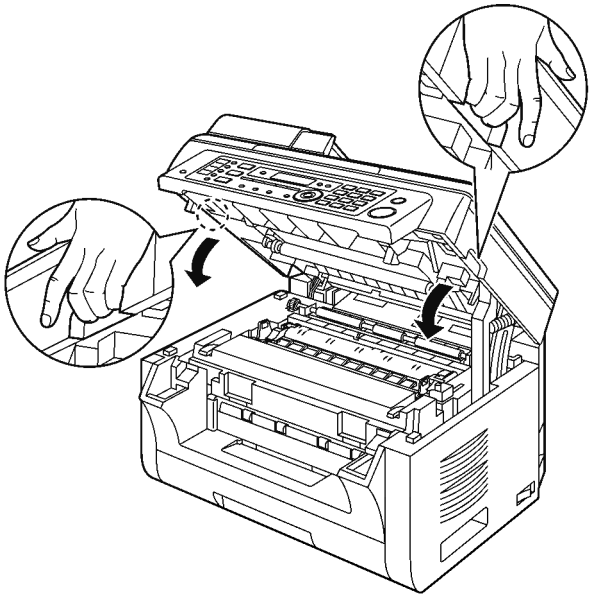
7. Install the drum and toner cartridge (12) by holding the tabs.



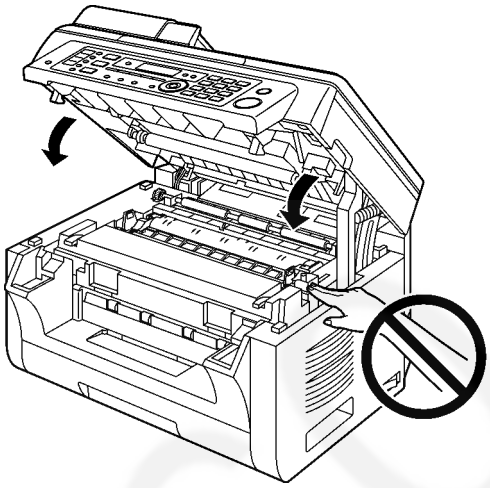
• Make sure that the arrows (13) match, to install the drum and toner cartridge correctly.



8. Close the top cover by holding the indentations on both sides of the base unit, until locked.



Caution:
- To prevent injuries, be careful not to put your hands under the top cover.



8.1.5.1. When to replace the toner and drum cartridges

When the display shows the following, replace the toner cartridge.

– "TONER LOW"
– "TONER EMPTY"

Note:
- To check the drum life and quality, please print the printer test list (Refer to (**ITU-T No.1 Test Chart** (P.301)). If printing quality is still poor or "REPLACE DRUM" appears on the display, replace the toner cartridge and drum cartridge.
- To ensure that the unit operates properly, we recommend the use of Panasonic toner and drum cartridges. (Refer to **Optional Accessories** (P.11)).
- To maintain print quality and machine life, we recommend you to clean slots and openings and the inside of the base unit when replacing the toner cartridge and/or drum cartridge.

Waste disposal method

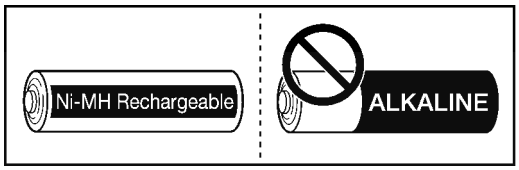
Waste material should be disposed of under conditions which meet all national and local environmental regulations.

Toner save feature
- If you want to reduce toner consumption, set the toner save setting to ON (feature #482) (Refer to **Program Mode Table** (P.138). The toner cartridge will last approximately 20 % longer. This feature may lower the print quality.

8.2. Battery Installation / Replacement

Important:

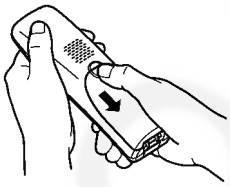
- **USE ONLY Ni-MH batteries AAA (R03) size.**
  Do NOT use alkaline/Manganese/Ni-Cd batteries etc.



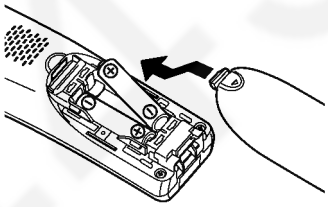
- **Use the supplied rechargeable batteries. For replacement, we recommend using the Panasonic rechargeable batteries noted on Optional Accessories (P.11).**
- **Wipe the battery ends (⊕, ⊖) with a dry cloth.**
- **Avoid touching the battery ends (⊕, ⊖) or the unit contacts.**
- **Confirm correct polarities (⊕, ⊖).**
- **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.



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



8.3. Installing Multi-Function Station

8.3.1. Required computer environment

Panasonic Multi-Function Station software enables the base unit to carry out the following functions:

- Printing on plain paper, thin paper and labels
- Previewing documents and changing printer settings before printing (Easy Print Utility)
- Scanning documents and converting an image into text with Readiris OCR software
- Scanning from other applications for Microsoft® Windows® that support TWAIN scanning and WIA scanning (Windows XP/ Windows Vista®/Windows 7, USB connection only)
- Storing, editing or erasing items in directories using your computer
- Programming the features using your computer
- Sending, receiving fax documents using your computer
- Listening to voice messages on your computer (PC TAM)

To use Multi-Function Station on your computer, the following are required:

Operating System:

Windows 2000/Windows XP/Windows Vista/Windows 7

CPU:

Windows 2000: Pentium® Ⅱ or higher processor

Windows XP: Pentium Ⅲ or higher processor

Windows Vista/Windows 7: Pentium 4 or higher processor

RAM:

Windows 2000/Windows XP: 128 MB (256 MB or more recommended)

Windows Vista: 512 MB (1 GB or more recommended)

Windows 7: 1 GB (2 GB or more recommended)

Other Hardware:

CD-ROM drive

Hard disk drive with at least 200 MB of available space

USB interface

LAN interface (10Base-T/100Base-TX)

Other:

Internet Explorer® 5.0 or later

Audio output

Warning:

- To assure continued emission limit compliance;
  - use only shielded USB cable (Example: Hi-Speed USB 2.0 certified cable).
  - use only shielded LAN cable (category 5 straight cable).
- To protect the unit, use only shielded USB cable in areas where thunderstorms occur.
- To use Easy Print Utility on your computer, the following are required:
  - Windows 2000 Service Pack 4 and Security update for Windows 2000 (KB835732). Install KB835732 from Microsoft download site before installing Easy Print Utility.
  - Windows XP Service Pack 2 or later.

8.3.2. Installing Multi-Function Station on a computer

- **Install Multi-Function Station (CD-ROM) before connecting the unit to a computer with the USB cable. If the unit is connected to a computer with the USB cable before installing Multi-Function Station, the [Found New Hardware Wizard] dialogue box will appear. Click [Cancel] to close it.**
- **The screenshots shown in these instructions are for Windows XP and are included for reference only.**
- **The screenshots shown in these instructions may differ slightly from those of the actual product.**
- **Software features and appearance are subject to change without notice.**

1 Start Windows and exit all other applications.
- You must be logged in as an administrator in order to install Multi-Function Station.

2 Insert the supplied CD-ROM into your CD-ROM drive.
- If the **[Select Language]** dialogue box appears, select the language that you want to use with this software. Click **[OK]**.
- If the installation does not start automatically:
  Click **[Start]**. Choose **[Run...]**. Type "**D:\Install**" (where "**D**" is the drive letter of your CD-ROM drive). Click **[OK].**
  (If you are not sure what the drive letter is for your CD-ROM drive, use Windows Explorer and look for the CD-ROM drive.)

3 [Easy Installation]
- The installation will start automatically.

4 When the setup program starts, follow the on-screen instructions.
- Easy Print Utility, Readiris OCR software and Device Monitor will also be installed.

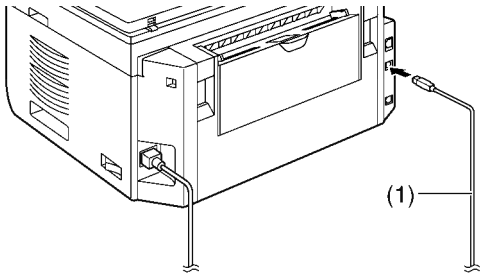
5 The **[Connection Type]** dialogue box appears.

For USB connection:

1 [Connect directly with a USB cable.]→ [Next].

• The **[Connect Device]** dialogue box will appear.

2 Connect the unit to a computer with the USB cable (1), then click **[Next]**.



• If the unit is connected to your computer, the model name will be automatically detected.

• You can change the name of the unit if necessary.

3 Click **[Install]**, then follow the on-screen instructions.

• The files will be copied to your computer.

For LAN connection

1. **[Connect via the Network.] → [Next]**
   • The **[Select a Network Device]** dialogue box will appear.
2. Check **[Select from the search list]** and select the unit from the list.
   • If the name of the desired unit is not displayed on the list, and the IP address for the unit has been assigned, check **[Direct input]** and enter the IP address.
3. **[Next]**
   • You can change the name of the unit if necessary.
4. Click **[Install]**, then follow the on-screen instructions.
   • The files will be copied to your computer.

Important notice

If you are using Windows XP, Windows Vista or Windows 7, a message may appear after connecting the unit with the USB cable. This is normal and the software will not cause any difficulties with your operating system. You can continue the installation with no problem. This kind of message is displayed:

• **For Windows XP users**

"The software you are installing for this hardware has not passed Windows Logo testing to verify its compatibility with Windows XP."

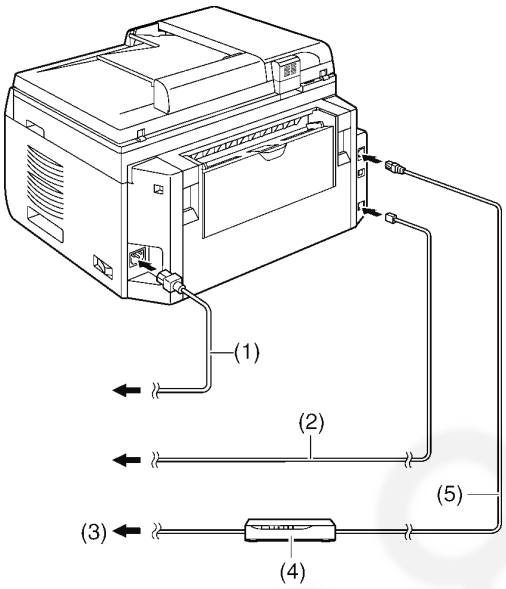
• **For Windows Vista/Windows 7 users**

"Would you like to install this device software?"

8.4. Connections

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 supplied with this unit.**
- **Do not extend the telephone line cord.**



8.4.1. Base Unit

(1) Power cord

- Connect to a power outlet.
  (220-240 V, 50/60 Hz).

(2) Telephone line cord

- Connect to a single telephone line jack.

(3) To the Internet

(4) Network router/Network hub (not supplied)

- Also connect networked computers.

(5) LAN cable (not supplied)

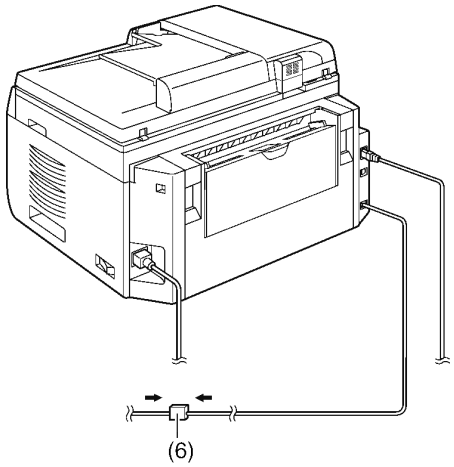
- To assure continued emission limit compliance, use only shielded LAN cable (category 5 straight cable).

Important notice for the USB connection

- DO NOT CONNECT THE UNIT TO A COMPUTER WITH THE USB CABLE UNTIL PROMPTED TO DO SO DURING THE SETUP OF MULTI-FUNCTION STATION.

Note:

- Do not place any objects within 10 cm of the right, left and back sides of the base unit.
- 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 (6), please connect it as follows.



Using network router/network hub

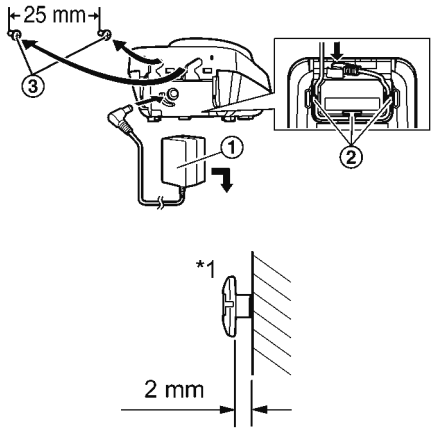
- We recommend using network routers/network hubs (4) under secure network environments. Consult your network administrator for firewall settings, etc.
- The warranty does not cover damage due to security problems or any inconveniences relating to it.

8.4.2. Charger Unit

① AC adaptor
- Connect to a power outlet (220 - 240 V, 50/60 Hz).

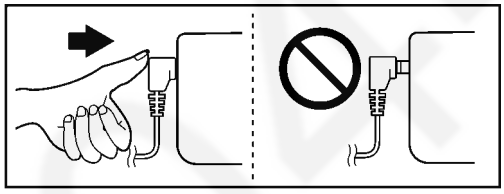
② Hooks
- Fasten the AC adaptor cord to prevent it from being disconnected.

③ Screws (not supplied)
- The charger can be mounted on the wall, if required.



*1 Use screws longer than 20 mm.

Caution:
- **USE ONLY WITH the supplied Panasonic AC adaptor.**
- **The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)**
- **The AC adaptor should be connected to a vertically oriented or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.**
- Press the AC adaptor plug firmly.

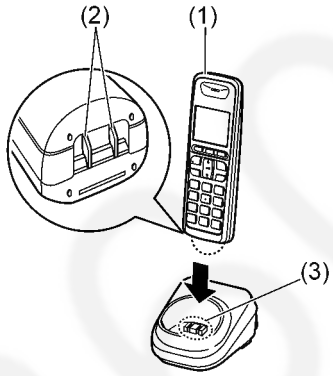


8.5. Battery Charge

Place the cordless handset on the 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) and charger (3) with a soft and dry cloth. Clean 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 (supplied batteries)

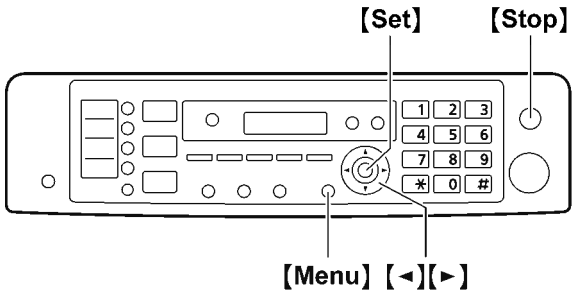
Operation	Operating time
In continuous use	18 hours max.
Not in use (standby)	170 hours max.

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 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 charger and let it charge for at least 7 hours.

9 Operating Instructions

9.1. Your Logo

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



1 【Menu】 → 【⌗】【1】【0】【2】 → 【Set】.

2 Enter your logo, up to 30 characters (see next page for character entry). → 【Set】

3 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 characters, press and hold 【Stop】.

9.1.1. Characters available in each character entry mode

When the base unit displays the character entry screen:

Press 【#】 repeatedly to select a character entry mode.

When the cordless handset displays the character entry screen:

1/A/? → Select a character entry mode. → OK

Alphabet character table (ABC)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space 0	Space # & ' ( ) * , - . / 1	A B C 2	D E F 3	G H I 4	J K L 5	M N O 6	P Q R S 7	T U V 8	W X Y Z 9
		a b c 2	d e f 3	g h i 4	j k l 5	m n o 6	p q r s 7	t u v 8	w x y z 9

Numeric entry table (0-9)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
0	1	2	3	4	5	6	7	8	9

Arabic character table (ابت)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space ٠	# Space * ( ) ‘ & ١ / . - ،	ث ج چ ح خ ٢	ا ب پ ة ت أ إ آ ٣	ط ظ ع غ ٤	س ش ص ض ٥	د ذ ر ز ژ ٦	ئ ء ى ي ٧	م ن ه و ؤ ٨	ف ق ك ک گ ل ٩

- When you select Arabic as the display language, Arabic character table is available.
- This character table is only available for the cordless handset.

Persian character table (ابت)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space ٠	# Space * ( ) ‘ & ١ / . - ،	ث ج چ ح خ ٢	ا ب پ ة ت أ إ آ ٣	ط ظ ع غ ۴	س ش ص ض ۵	د ذ ر ز ژ ۶	ئ ء ى ي ٧	م ن ه و ؤ ٨	ف ق ك ک گ ل ٩

- When you select Persian as the display language, Persian character table is available.
- This character table is only available for the cordless handset.

Greek character table (АВГ)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space 0	Space # & ' ( ) * , - . / 1	A B Γ 2	Δ E Z 3	H Θ I 4	K Λ M 5	N Ξ O 6	Π P Σ 7	T Y Φ 8	X Ψ Ω ϰ 9

- This character table is only available for the base unit.

Extended 1 character table (AÄÅ)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space 0	Space # & ' ( ) ∗ , - . / 1	A À Á Â Ã Ä Å Æ B C Ç 2	D E È É Ê Ë Ẽ F 3	G Ğ H I Ì Í Î Ï Ĩ İ Ǐ 4	J K L 5	M N Ñ O Ò Ó Ô Õ Ö ø 6	P Q R S Ș ß 7	T U Ù Ú Û Ü Ũ V 8	W Ŵ X Y ŷ Z 9
		a à á â ã ä å æ b c ç 2	d e è é ê ë ẽ f 3	g ğ h i ì í î ï ĩ ı ǐ 4	j k l 5	m n ñ o ò ó ô õ ö ø 6	p q r s ș ß 7	t u ù ú û ü ũ v 8	w ŵ x y ŷ z 9

- The following are used for both uppercase and lowercase: ø Ș ß Ŵ ŷ

Extended 2 character table (SŚŠ)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space 0	Space # & ' ( ) ∗ , - . / 1	A Á Ä Ą B C Ć Č 2	D Ď E É Ę Ě F 3	G H I Í 4	J K L Ł Ĺ Ľ 5	M N Ń Ň O Ó Ö Ő 6	P Q R Ŕ Ř S Ś Š 7	T Ť U Ú Ü Ű ů V 8	W X Y ỳ Ý Z Ź Ż Ž 9
		a á ä ą b c ć č 2	d ď e é ę ě f 3	g h i í 4	j k l Ł ĺ ľ 5	m n ń ň o ó ö ő 6	p q r ŕ ř s ś š 7	t ť u ú ü ű ů v 8	w x y ỳ ý z ź ż ž 9

- This character table is only available for the base unit.
- The following are used for both uppercase and lowercase:

  Ą Ć Č Ę Ł Ĺ Ľ Ń Ŕ Ś Š ů ỳ Ź Ż Ž

Cyrillic character table (АБВ)

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
Space 0 Ґ Є І Ї Ў	Space # & ' ( ) ∗ , - . / 1	А Б В Г 2	Д Е Ж З 3	И Й К Л 4	М Н О П 5	Р С Т У 6	Ф Х Ц Ч 7	Ш Щ Ъ Ы 8	Ь Э Ю Я 9

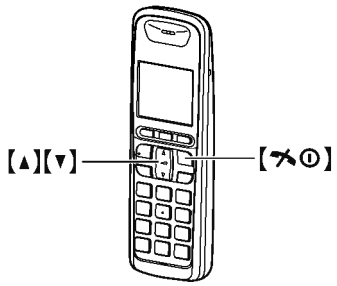
- This character table is only available for the base unit.

Character table for specific functions

【0】	【1】	【2】	【3】	【4】	【5】	【6】	【7】	【8】	【9】
@ ( ) < > ! ˝ # $ % & \ ∗ ^ ' ˜ Space 0	. _ – [ ] { } + / = , ` : ; ? | 1	A B C 2	D E F 3	G H I 4	J K L 5	M N O 6	P Q R S 7	T U V 8	W X Y Z 9
		a b c 2	d e f 3	g h i 4	j k l 5	m n o 6	p q r s 7	t u v 8	w x y z 9

- You can also enter a hyphen by pressing **【Flash(R)】**.

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:

- When you select Arabic as the display language, enter the current year/month/date.
- The time can only be set to 24-hour time.

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
		"Contrast"	LCD display contrast (*Level 3*)
	"Register H.set"	–	–
	"Keytones"*2, *6	–	Keytones ON/OFF ("On")
	"Auto Talk"*7	–	Auto talk ON/OFF ("Off")
"Base Unit Setup"	"Base Unit PIN"	–	Change base unit PIN ("0000").*8 Enter the current 4-digit base unit PIN.*9 → 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 #161.
– To set the base unit language, see feature #110.
– To set the base unit LCD display contrast, see feature #145.
– To set the base unit keytone, see feature #165.
*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 subscribe to a Caller ID service and want to view the caller¡¯s information after lifting up the cordless handset to answer a call, turn OFF this feature.
*8 If you change the PIN, please make note of your new PIN. The unit will not reveal the PIN to you.
*9 If you forget your PIN, see **For Service Hint**.

Note:

Refer to **Program Mode Table** (P.138).
Refer to **For Service Hint** (P.118).

9.3. Registering a Cordless Handset to a Base Unit

The supplied cordless handset and base unit are pre-registered. If for some reason the cordless handset is not registered to the base unit (for example, flashes even when the cordless handset is near the base unit), re-register the cordless handset.
After purchasing an additional cordless handset, register it to the base unit. Ensure that the additional cordless handset is switched ON. If it is not ON, press and hold 【】 for few seconds to turn the cordless handset ON.

1
2 “Handset Setup” → OK
3 “Register H.set” → OK
4 Press and hold 【Locator】 on the base unit for about 3 seconds, until the registration tone sounds.
- If all registered cordless handsets start ringing, press the same button to stop. Then repeat this step.
- After pressing 【Locator】, the rest of this procedure must be completed within 1 minute.

5 Wait until “Base PIN” is displayed, then enter the base unit PIN (default: “0000”), then press OK.
- If you forget your PIN, see **For Service Hint**.
- When the cordless handset has been registered successfully, will stop flashing. If keytones are turned ON, a confirmation tone will be heard.

Note:
- Charge the batteries of your additional cordless handset for about 7 hours before initial use.

REFERENCE:
For Service Hint (P.118)

9.3.1. Deregistering a Cordless Handset

A cordless handset can cancel its own registration (or the registration of another cordless handset) that is stored in the base unit. This allows the cordless handset to end its wireless connection with the system.

1
2 “Base Unit Setup” → OK
3 【3】【3】【5】
4 “Cancel Register” → OK
- The numbers of all cordless handsets registered to the base unit are displayed.

5 Select the cordless handset(s) you want to cancel, by pressing the desired cordless handset number. → OK
- The selected cordless handset number(s) flashes.
- To cancel a selected cordless handset number, press the number again. The number stops flashing.

6 “Yes” → OK
- A confirmation tone sounds as each cordless handset number disappears.
- The cordless handset does not beep when cancelling its own registration.

7 【】

9.4. For Service Hint

Items	Contents
Battery	You could use other rechargeable batteries sold in a market, but the unit is not guaranteed to work properly.
	The battery strength may not be indicated correctly if the battery is disconnected and connected again, even after it is fully charged. In that case, by recharging the battery as mentioned in **Battery Charge**, you will get a correct indication of the battery strength.
PIN Code	● Change the PIN using the following method. **1** (middle soft key) **2** 【▼】/【▲】: "Base Unit Setup" → OK **3** 【▼】/【▲】: "Base Unit PIN" → OK **4** 【✳】【7】【0】【0】【0】 **5** Enter the new 4-digit base unit PIN. → OK → 【⏻】

REFERENCE:
Battery Charge (P.111)

10 Test Mode

10.1. Test Functions

The codes listed below can be used to perform simple checks of 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.

Test Mode	Type of Mode	Code Operation after code input	Function
MEMORY CLEAR	Service Mode	"5" "5" "0" SET	Clear the memory where the users can store data.
ROM CHECK	Service Mode	"5" "5" "1" SET	Indicates the version and checks the sum of the ROM.
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) 1100Hz 3) 2100Hz 4) V21 ter 300bps 5) V27 ter 2400bps 6)V27 ter 4800bps 7) V29 7200bps 8) V29 9600bps 9) V17 7200bps 10) V17 9600bps 11) V17 12000bps 12) V17 14400bps 13)V34 2400bps 14)V34 4800bps 15) V34 7200bps 16) V34 9600bps 17)V34 12000bps 18)V34 14400bps 19) V34 16800bps 20) V34 19200bps 21)V34 21600bps 22)V34 24000bps 23) V34 26400bps 24) V34 28800bps 25)V34 31200bps 26)V34 33600bps
SCANNER TEST	Service Mode	"5" "5" "5"	LED lights up, Scanner scanning. 1:RED / 2:GREEN / 3:BLUE / 4:monochrome / 5:Color
MOTOR TEST	Service Mode	"5" "5" "6" SET	00:printer motor feed 10:auto document feed 20:carriage
LED TEST	Service Mode	"5" "5" "7"	All LEDs above the operation panel board flash on and off, or are illuminated.
LCD TEST	Service Mode	"5" "5" "8" SET	Checks the LCD indication. Illuminates all the dots to check if they are normal.
KEY TEST	Service Mode	"5" "6" "1" START (any key)	Checks the button operation. Indicates the button code on the LCD while the button is pressed. Refer to **Button Code Table** (P.120).
High Voltage Power Supply Board CHECK	Service Mode	"6" "2" "8" SET	Refer to **High Voltage Value Check Point** (P.212).
LSU TEST	Service Mode	"6" "3" "9"	Laser radiates, Polygon rotates
FAN TEST	Service Mode	"6" "7" "7"	1:TEST OFF 2:FAN 1 & 2 High-speed rotation 3:FAN 1 & 2 Low-speed rotation 4:FAN 1 & 2 STOP
MEMORY CLEAR (except History data)	Service Mode	"7" "1" "0" SET	Refer to **Memory Clear Specification** (P.125).
VOICE PROMPT CHECK	Service Mode	"7" "8" "4"	You can hear the voice prompt from speaker after enter the code.
PRINT TEST PATTERN	Service Mode	"8" "5" "2"	1. Press "852" then the SET key in the service mode. 2. As "PATNO. =" is displayed on the LCD, enter the test pattern No. and press the SET key. 3. When "No. = "is displayed on the LCD, enter the printing number and press the SET key. (Press "00" for the infinite printing.) 4. "MODE=" is displayed on the LCD. Press "0" to start printing or press "1" to go to the next screen. 5. When "1" is pressed at MODE, "INTVL = "is displayed on the LCD. Enter the printing interval (000~999 sec). 6. The printing repeats the designated number of times at the programmed printing intervals. Refer to **Print Test Pattern** (P.121)

Test Mode	Type of Mode	Code Operation after code input	Function
SENSOR CHECK	Service Mode	“8” “1” “5”	First of all, press the copy button, and confirm the action of ON/OFF. For each sensor’s operation, refer to **Sensors and Switches Section** (P.59). LCD DISPLAY: D S C ∗ R E ∗ T ∗ 3 F ∗ D F ∗ ∗ ∗U T ∗ ∗ H ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ **D: Document** D: Document set -: No document **S: Read position** S: Docu detect -: No document **C: Top cover** C: Cover open -: Cover close **∗: None** **R: Registration** R: Paper detect -: No paper **E: Paper exit** E: Paper detect -: No paper **∗: None** **T: Toner** T: Toner detect -: No toner **∗: None** **3F: Fuser thermistor** 3F: 00 (high temp.) - FF (low temp.) **∗: None** **DF: Fuser thermistor** DF: 00 (high temp.) - FF (low temp.) **∗: None** **∗: None** **∗: None** **U: Pickup/Rear Cover** U: Paper detect -: No paper **T: Print timing** T: Paper detect -: No paper **∗: None** **∗: None** **H: Carriage** H: Carriage detect -: No carriage **∗: None** **∗: None** **∗: None** **∗: None** **∗: None** **∗: None** **∗: None** **∗: None** **∗: None**

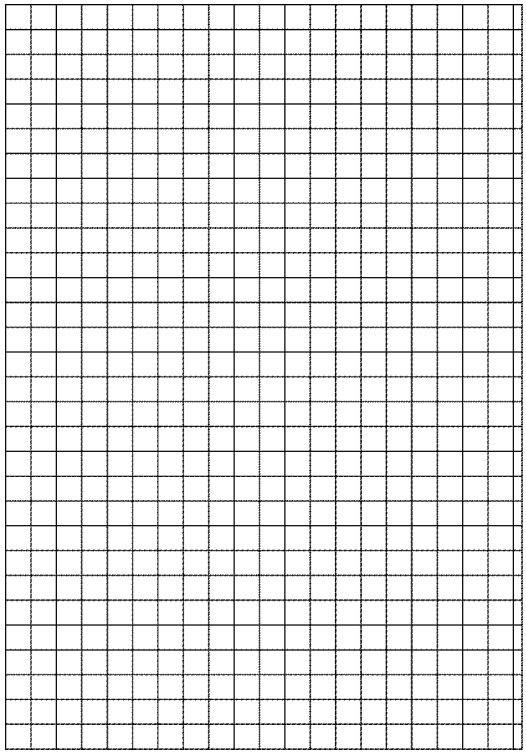
Note:
The numbers in the boxes (XXX) indicate the keys to be input for the various test modes.

10.1.1. Button Code Table

Code	Button Name	Code	Button Name	Code	Button Name
31	1	41	START	5F	ZOOM
32	2	-	STOP	51	AUTO ANSWER
33	3	40	SET	48	STATION 1
34	4	44	MENU	49	STATION 2
35	5	66	NAVIGATOR ←	4A	STATION 3
36	6	65	NAVIGATOR →	67	LOWER
37	7	46	NAVIGATOR ↑	52	PAGE LAYOUT
38	8	47	NAVIGATOR ↓	8A	INTERCOM
39	9	60	FAX MODE	59	PLAYBACK
30	0	61	COPY MODE	89	ERASE
3B	∗	62	SCAN MODE	8D	RECORD
3C	#	8C	COPY SIZE		
3D	REDIAL	5D	CONTRAST		
57	FLASH(R)	5C	RESOLUTION		
54	MONITOR				

10.1.2. Print Test Pattern

1. NO.01



2. NO.06

3. NO.03

- These print test patterns are just image printing, and different from actual ones.
- When it is required to judge the print quality, compare with the printing of a nondefective machine.

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. Programming and Lists

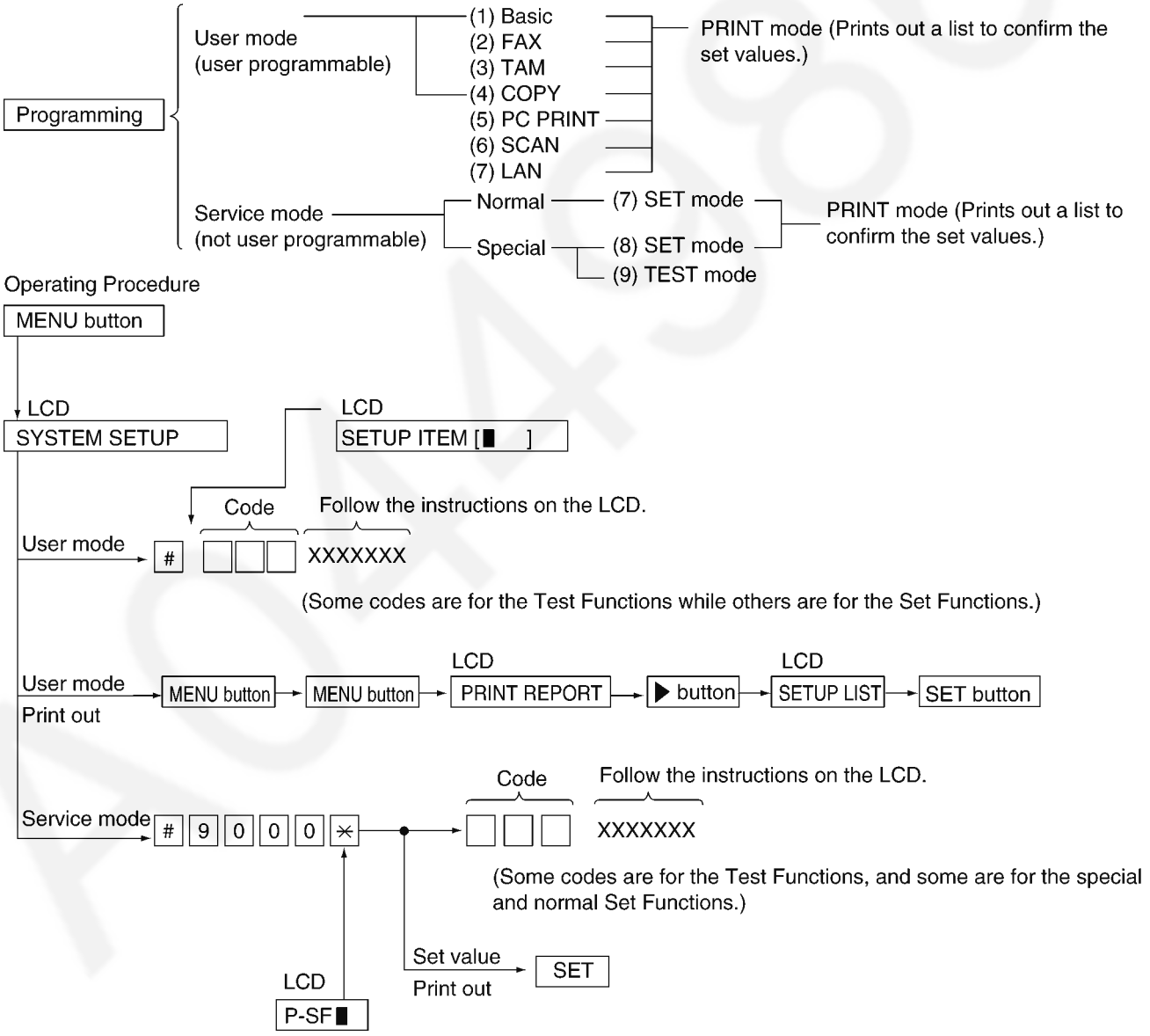
11.1.1. Operation

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.

11.1.2. Operation Flow



11.1.3. Service Function Table

Code	Function	Set Value	Effective Range	Default	Remarks
501	Pause time set	1: 3s (Short) 2: 5s (Long)	1, 2	1	----------
507	V34 transmission start speed	0: Disable 1: 33.6 2: 31.2 3: 28.8 4: 26.4 5: 24.0 6: 21.6 7: 19.2 8: 16.8	0~8	1	If the code 527 is set at 2, the code 507 and 508 work.
508	V34 reception start speed	0: Disable 1: 33.6 2: 31.2 3: 28.8 4: 26.4 5: 24.0 6: 21.6 7: 19.2 8: 16.8	0~8	1	If the code 527 is set at 2, the code 507 and 508 work.
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 signal detect time	X 100msec	1~9	6	----------
520	CED frequency select	1:2100 Hz 2:1100 Hz	1, 2	1	See **How To Output The Journal Report** (P.183).
521	International mode select	1:ON 2:OFF	1, 2	1	See **How To Output The Journal Report** (P.183).
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	Set RX equalizer to automatic mode.
524	Transmission equalizer select	1: 0 km 2: 1.8 km 3: 3.6 km 4: 7.2 km	1~4	1	
527	V.8 function select	1:OFF 2:ON	1, 2	2	
529	Call Service Clear				
550	Memory clear				Refer to **Memory Clear Specification** (P.125).
551	ROM check				See **Test Functions** (P.119).
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 Functions** (P.119).
555	Scanner test				See **Test Functions** (P.119).
556	Motor test			0	See **Test Functions** (P.119).
557	LED test				See **Test Functions** (P.119).
558	LCD test				See **Test Functions** (P.119).
561	KEY test				See **Test Functions** (P.119).
567	T0 timer	X second	001~255	052	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% 3:63%	1~3	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	001~255	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 operate TAM in the TEL mode.
574	Dial tone detect check	1: ON 2: OFF	1, 2	2	----------
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.176).
593	Time between CED and 300bps	1:75 msec 2:500 msec 3:1 sec	1~3	1	See **How To Output The Journal Report** (P.183) and **Receive Problem** (P.177).
594	Overseas DIS detection select	1:detects at the 1st time 2:detects at the 2nd time	1, 2	1	See **How To Output The Journal Report** (P.183) and **Sometime There Is a Transmit Problem** (P.176).
595	Receive error limit value set	1: 5% 2: 10% 3: 15% 4: 20%	1~4	2	If the number of errors during transmission exceeds this value, the sending side terminates the call.
596	Transmit level set	X dBm	- 15~00	10	Selects the FAX transmission level. Refer to **Sometime There Is a Transmit Problem** (P.176) and **Receive Problem** (P.177).
598	Receiving sensitivity	43= -43 dBm	20~48	48	Used when there is an error problem. Refer to **How To Output The Journal Report** (P.183).
599	ECM frame size	1:256 2:64	1, 2	1	----------
628	H.V.P.S. check				See **Test Functions** (P.119).
639	LSU test				See **Test Functions** (P.119).
655	Cause Distinction Code of Call Service 3				See **CALL SERVICE Troubleshooting Guide** (P.149).
677	FAN test				See **Test Functions** (P.119).
710	Memory clear except History data				Refer to **Memory Clear Specification** (P.125).
717	Transmit speed select	1:14400BPS 2:12000BPS 3:9600BPS 4:7200BPS 5:4800BPS 6:2400BPS	1~6	1	If the code 527 is set at 1, the code 717 and 718 work.
718	Receive speed select	1:14400BPS 2:12000BPS 3:9600BPS 4:7200BPS 5:4800BPS 6:2400BPS	1~6	1	If the code 527 is set at 1, the code 717 and 718 work.
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	033	Sets the CPC signal detection mode from the converter.
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.
774	Receiving 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.
775	Transmission T4 timer	X 100m sec	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 Functions** (P.119).
852	Print test pattern				See **Test Functions** (P.119).
853	Top margin	X 0.5mm	01~11	05	----------
854	Left margin	X 0.5mm	01~11	06	----------
874	DTMF ON time	X msec	060~200	100	----------
875	DTMF OFF time	X 10 msec	06~20	10	----------
880	History list				See **History (Example of a printed out list)** (P.131).
881	Journal 2 list				See **Journal 2** (P.180).
882	Journal 3 list				See **Journal 3** (P.181).
956	CORDLESS TEST MODE	Command			

Code	Function	Set Value	Effective Range	Default	Remarks
961	The time transmitting the false ring back tone	X sec	01~10	05	Set the time transmitting the false ring back tone to the line in TEL/FAX mode.
962	The operator calling time	X sec	05~30	13	Set the operator calling time through the speaker in TEL/Fax mode.

11.1.4. Memory Clear Specification

Item	Status after Memory Clear	
	Service Mode **#550**[*1]	Service Mode **#710**[*2]
Date and time (user mode #101)	–	Default
Your logo (user mode #102)	–	Default
Your Fax Number (user mode #103)	–	Default
Password (user mode #155)	–	Default
One touch dial and Phonebook	–	Default
History	–	–
Top margin (service mode #853)	–	–
Left margin (service mode #854)	–	–
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.

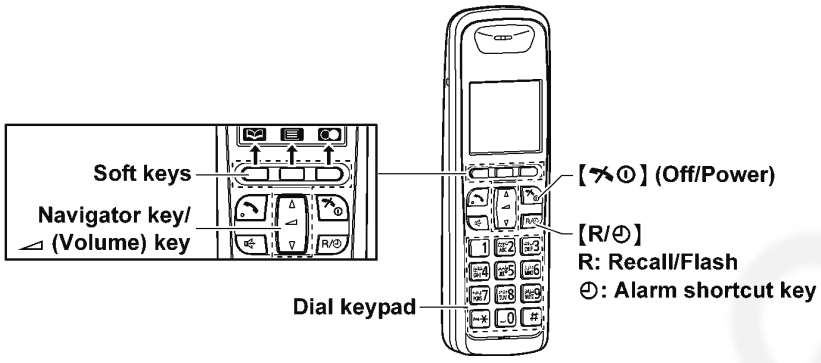
*2 Execute Service Mode #710 to clear the user information in case that Main Unit is recycled.

Note:

Please restart a power supply after clearing a memory.

11.2. Cordless Handset

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



H/S key operation

1). Press ☰.

2). Select "Handset Setup" using 【▲】or【▼】 then press OK.

3). Enter "7", "2", "6", "2", "7", "6", "6", "4".
Note: 7262 7664 = PANA SONI
(see letters printed on dial keys)

4). Select "Write EEP" using 【▲】or【▼】 then press OK.

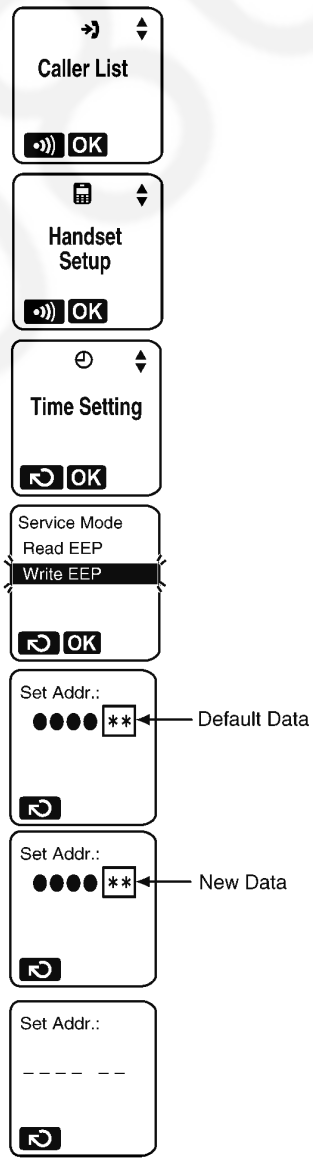
5). Enter "●", "●", "●", "●" (Address). (*1)

6). Enter "＊", "＊" (New Data). (*1)

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

8). Press 【Off/Power】(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.

H/S LCD



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	-8.5dBm	-7.5dBm	-9.5dBm

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

ex.)

Item	Default Data	New Data	
	18	1C	14
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. User Mode (The list below is an example of the SYSTEM SETUP LIST the unit prints out.)

[redacted]

[BASIC FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#101	SET DATE & TIME	24 Sep. 2010 10:40	
#102	YOUR LOGO	ARIFF	
#103	YOUR FAX NUMBER		
#120	DIALLING MODE	TONE	[TONE,PULSE]
#121	RECALL/FLASH	600ms	[900,700,600,400,300,250, 200,160,110,100,90,80[ms]]
#145	LCD CONTRAST	NORMAL	[NORMAL,DARKER]
#147	SCALE	MILLIMETRES	[MILLIMETRES,INCHES]
#155	CHANGE PASSWORD		
#158	MAINTENANCE TIME	12:00	
#159	RESTORE DEFAULT		
#161	RINGER PATTERN	RINGTONE 1	[RINGTONE 1...6]
#165	BEEP SOUND	ON	[OFF,ON]
#210	FAX RING COUNT	2	[1...9]
#211	TAM RING COUNT	2	[2...7,AUTO]
#216	AUTO CALLER ID LIST	OFF	[OFF,ON]
#226	TIME ADJUSTMENT	MANUAL	[AUTO,MANUAL]
#380	PAPER SIZE #1	A4	[LETTER,A4,B5[ISO],B5[JIS],16K]
#381	PAPER SIZE #2	A4	[LETTER,A4,LEGAL,B5[ISO],B5[JIS],16K, 216X330,216X340]
#383	MEDIA TYPE #1	PLAIN PAPER	[PLAIN PAPER,THIN PAPER]
#384	MEDIA TYPE #2	PLAIN PAPER	[PLAIN PAPER,THIN PAPER]
#400	AUTO ANSWER MODE	TAM/FAX	[TAM/FAX,FAX ONLY]
#403	POWER SAVE	5min	[5min,15min,30min,1h]
#404	MANUAL ANSWER MODE	TEL	[TEL,TEL/FAX]
#462	CONTRAST HOLD	DISABLED	[DISABLED,ENABLED]
#463	DEFAULT MODE	COPY	[COPY,FAX]
#464	MODE TIMER	1min	[OFF,30s,1min,2min,5min]
#482	TONER SAVE	OFF	[OFF,ON]

Code

Set Value

[FAX FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#212	TEL/FAX DELAYED RING	2	[1...9]
#282	COPY PHONEBOOK		
#299	ERASE PHONEBOOK		
#401	PRINT SENDING REPORT	ERROR	[OFF,ON,ERROR]
#402	JOURNAL AUTO PRINT	ON	[OFF,ON]
#411	OVERSEAS MODE	ERROR	[NEXT FAX,ERROR,OFF]
#412	DELAYED TRANSMISSION	OFF	[OFF,ON]
	DESTINATION =		
	START TIME = 00:00		
#413	ECM SELECTION	ON	[OFF,ON]
#416	CONNECTING TONE	ON	[OFF,ON]
#418	MAX FAX SPEED	33.6kbps	[33.6kbps,14.4kbps]
#419	QUICK SCAN MODE	OFF	[OFF,ALWAYS]
#430	DISTINCTIVE RING	OFF	[OFF,ON]
#431	FAX RING PATTERN	R-D	[R-D,A,B,C,D]
#432	AUTO REDUCTION	ON	[OFF,ON]
#434	FAX ACTIVATION CODE	ON	[OFF,ON]
	CODE = *#9		
#435	AUTO DISCONNECT	ON	[OFF,ON]
	CODE = *0		
#437	MEMORY RECEIVE ALERT	ON	[OFF,ON]
#438	FRIENDLY RECEPTION	ON	[OFF,ON]
#442	PCFAX SETTING	OFF	[OFF,ALWAYS,CONNECTED]
#443	PCFAX RCV PC	USB HOST	
#448	PREVIEW MODE	OFF	[OFF,ON]
#450	WEB FAX PREVIEW		
#451	RECEIVE NOTIFY	OFF	[OFF,ON]
#452	FAX AUTO EMAIL	OFF	[OFF,ON]
#459	SET FAX DEFAULT		

Code

Set Value

[TAM FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#305	RECORDING TIME	3 MINUTES	[1 MINUTE,GREET ONLY,3 MINUTES]
#306	REMOTE TAM ID		
#310	CALL SCREENING	ON	[OFF,ON]
#315	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.

Code

#365	PCTAM SETTING	OFF	[OFF,ALWAYS]
#366	PCTAM RCV PC	USB HOST	
#367	PLAYBACK MODE	OFF	[OFF,ON]
#368	WEB VOICE PLAYBACK		
#369	TAM AUTO EMAIL	OFF	[OFF,ON]

Set Value

[COPY FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#460	COPY INPUT TRAY	#1	[#1,#2]
#461	COPY RESOLUTION	TEXT/PHOTO	[TEXT/PHOTO,TEXT,PHOTO]
#467	PAGE LAYOUT HOLD	DISABLED	[DISABLED,ENABLED]
#468	ZOOM HOLD	DISABLED	[DISABLED,ENABLED]
#469	COLLATE HOLD	DISABLED	[DISABLED,ENABLED]
#473	EDGE HOLD	DISABLED	[DISABLED,ENABLED]
#474	FRAME MARGIN	DISABLED	[DISABLED,ENABLED]
#475	MARGIN HOLD	DISABLED	[DISABLED,ENABLED]

[PC PRINT FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#774	DATA TIMEOUT	60s	[5...600(s)]
#776	MUTUAL A4/LETTER	ON	[OFF,ON]

[SCAN FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#493	SCAN MODE	VIEWER	[VIEWER,FILE,EMAIL,OCR]
#494	SCAN PARAM. HOLD	DISABLED	[DISABLED,ENABLED]

[LAN FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#500	DHCP	ENABLED	[DISABLED,ENABLED]
#501	IP ADDRESS	0.0.0.0	
#502	SUBNET MASK	0.0.0.0	
#503	DEFAULT GATEWAY	0.0.0.0	
#504	DNS SERVER #1	0.0.0.0	
#505	DNS SERVER #2	0.0.0.0	
#507	MACHINE NAME	MB2061CX_758F3D	
#508	MAC ADDRESS	00:80:F0:75:8F:3D	
#532	IP FILTERING	DISABLED	[DISABLED,ENABLED]
#533	AUTO IP	DISABLED	[DISABLED,ENABLED]
#534	HTTPD	ENABLED	[DISABLED,ENABLED]
#535	IPv6 PROTOCOL	DISABLED	[DISABLED,ENABLED]
#536	WINS SERVER #1	0.0.0.0	
#539	WINS SERVER #2	0.0.0.0	
#570	ERASE ADDRESS		

Code

Set Value

FIRMWARE VERSION	GDC1CP	
	GDC2CW	

Note:
The above values are the default values.

11.4. Service Mode Settings (Example of a printed out list)

```
[ SERVICE DATA LIST ]

501 PAUSE TIME              =  3sec             [1=3       2=5]sec
514 BELL DETECT TIME        =  6*100ms          [1...9]*100ms
520 CED FREQUENCY           =  2100Hz           [1=2100    2=1100]Hz
521 INTERNATIONAL MODE      =  ON               [1=ON      2=OFF]
522 AUTO STANDBY            =  ON               [1=ON      2=OFF]
523 RX EQUALIZER            =  0.0Km            [1=0.0     2=1.8     3=3.6     4=7.2]Km
524 TX EQUALIZER            =  0.0Km            [1=0.0     2=1.8     3=3.6     4=7.2]Km
853 TOP MARGIN              =  06*0.5mm         [01...11]*0.5mm
854 LEFT MARGIN             =  06*0.5mm         [01...11]*0.5mm
874 DTMF ON TIME            =  100ms            [060...200]ms
875 DTMF OFF TIME           =  10*10ms          [06...20]*10ms

[ SPECIAL SERVICE SETTINGS ]

 507   508   553   567   570   573   590   591   592   593   594   595   596
   1     1     1   052     1    10    05   185     2     1     1     2    10

 598   599   717   718   731   774   775
  48     1     1     1   033    00    00
```

Code

Set Value

Code

Set Value

```
USAGE TIME = 15 HOURS

Version = GDC1CP  1C67
```

Note:
The above values are the default values.

11.5. History (Example of a printed out list)

[HISTORY]

Model	: MB2061RU	Usage Time	: 000001
Rom Version(Main)	: 26R925A	Receive Mode	: TAM/FAX
Check SUM	: B773	Number of Copy	: 000000
Rom Version(BBIC)	: MRU025	Number of Receive	: 000000
Check SUM	: A19E	Number of Send	: 000000
Your LOGO	:		
Your Fax NO	:	Drum Print Count	: 00003
First Setting Date/Time		Drum Paddle Count	: 00008
Month	: 01	Toner Print Count	: 000000
Day	: 01	Toner Paddle Count	: 000000
Year	: 2010	Total Print Count	: 0000003
Hour/Minute	: 0000	Duplex Count	: 0000000
Factory to Customer(Day)	: 00000		
Factory to Now(Day)	: 00000		
Power On Count	: 0000000		

(1) 0 0 0 0 0 0	(2) 0 0 0 0 0 0	(3) 0 0 0 0 0 0	(4) 0 0 0 0 0 1	(5) P U L S E	(6) 0 0 0 0 0
(7) 0 0 0 0 0	(8) 0 0 0 0 0 0	(9) 0 0 0 0 0 0	(10) 0 0 0 0 0 0	(11) 0 0 0 0 0 0	(12) 0 0 0 0
(13) 0 0 0 0 0 0	(14) 0 0 0	(15) 0 0 0	(16) 0 0 0 0	(17) 0 0 0 0	(18) 0 0 0 0
(19) 0 0 0 0	(20) 0 0 0 0	(21) 0 0 0 0	(22) 0 0 0 0	(23) 0 0 0 0	(24) 0 0 0 0 0 0
(25) 0 0 0 0 0 0		(26) 0 0 0 0 0 0		(27) 0 0 0 0 0 0	(28) 0 0 0

NAME _____ DATE _____ DEALER _____

CUSTOMER COMPLAINT

SURVEY RESULT : CKOK (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) ~ (27) are corresponding to the listed items in **Descriptions of The History Report** (P.132).

11.5.1. Descriptions of The History Report

(1) Usage Time of Receive Mode (Tel Mode)
(2) Usage Time of Receive Mode (Fax Mode)
(3) Usage Time of Receive Mode (Tel/Fax Mode)
(4) Usage Time of Receive Mode (Tam/Fax Mode)
(5) Dial Mode
(6) Number of Directory Entry
(7) Number of Caller ID
(8) Number of Scan
(9) Number of ADF Scan
(10) Number of Flatbed Scan
(11) Number of PC Scan
(12) Number of Document JAM
(13) Number of Print
(14) Number of Warning List
(15) Number of Help List
(16) Call Service 3 Information 1
(17) Call Service 3 Information 2
(18) Call Service 3 Information 3
(19) Number of Recording paper JAM
(20) Number of Pickup Errors in Cassette 1
(21) Not used
(22) Not used
(23) Not used
(24) Not used
(25) Not Used
(26) Not Used
(27) Number of Copies
(28) Number of Recording Message

12 Troubleshooting Guide

12.1. User Recoverable Errors

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.

DISPLAY MESSAGE	CAUSE AND REMEDY
CALL SERVICE 1	• Polygon motor error. Refer to **CALL SERVICE 1** (P.150).
CALL SERVICE 2	• Laser beam error. Replace LSU unit. Refer to **CALL SERVICE 2** (P.151).
CALL SERVICE 3	• Fuser unit cannot heat up. Replace fuser unit. Refer to **CALL SERVICE 3** (P.152).
CALL SERVICE 4	• Fan motor error. Replace fan motor. Refer to **CALL SERVICE 4** (P.153).
CALL SERVICE 5	• Print motor error. (only for DC motor) Refer to **CALL SERVICE 5** (P.154).
CALL SERVICE 6	• Charge unit error (An error occurred in the Charge unit including High voltage unit. (Also the Charger went wrong.)) Refer to **CALL SERVICE 6** (P.155).
CORDLESS IN USE BUSY	• The cordless handset you tried to call is in use. • The cordless handset you are calling is too far from the base unit.
CHANGE DRUM	• There is something wrong with the drum cartridge. Replace the drum cartridge and the toner cartridge.
CHECK DOCUMENT	• The document was not fed into the unit properly. Remove the document, and then press **[Stop]** to clear the message. Re-insert the document. If misfeeding occurs frequently, clean the document feeder rollers and try again.
CHECK DRUM	• The drum cartridge is not inserted properly. Re-insert it correctly.
CHECK PAPER #1	• Recording paper is not installed or the paper input tray has run out of paper. Install paper. • Recording paper was not fed into the unit properly. Re-insert the recording paper. • The paper input tray is not installed or is not inserted completely. Insert the paper input tray into the base unit.
CHECK PAPER TRAY #1	• The loaded recording paper is not the appropriate size. Load recording paper of the size that is shown on the display. • If this message is often displayed, also change the recording paper size setting (feature #380). • The recording paper size setting (feature #380) is set to “B5(ISO)”, “B5(JIS)” or “16K”, so received faxes have been stored into memory. Change the recording paper size setting and load the appropriate recording paper. **Note:** • "#1”: Check the paper input tray. The displayed paper size depends on the recording paper size setting (feature #380). • "#2”: Check the manual input tray. The displayed paper size depends on the recording paper size setting (feature #381).
CHECK PICK UP INPUT TRAY #2	• Recording paper was not fed into the unit properly. Load the paper again.
CHECK REAR COVER	• The manual input tray (rear cover) is open. Close it. • A recording paper jam occurred near the manual input tray (rear cover). Remove the jammed paper.
COOL DOWN FUSER	• The unit is cooling down the fuser unit. Wait for a while.
DRUM LIFE LOW REPLACE SOON	• The drum is reaching the end of its life. Replace the drum cartridge and the toner cartridge as soon as possible.
EMAIL SIZE OVER	• When performing scan to email address, the total file size of scanned data exceeded the file size limitation. Divide the document into sections. • When performing voice to email address, the total size of audio data exceed the file size limitation. Transfer the voice message on your computer first, divide it into sections, then send it to the desired destination using your email software.

DISPLAY MESSAGE	CAUSE AND REMEDY
FAX IN MEMORY	• The unit has a document in memory. See the other displayed message instructions to print out the document. • If the PC fax setting (feature #442) is set to “ALWAYS”, - check the connection between the computer and the unit. - check that the computer is turned ON. • If the fax preview mode (feature #448) is set to “ON”, - view, print or save the received fax documents using the web browser on the computer connected via the LAN, and then erase the unnecessary documents. - turn the setting to “OFF”. The fax documents stored in memory will be printed automatically.
FILE SIZE OVER	• When performing scan to FTP server or scan to SMB folder, the total file size of scanned data exceeded the file size limitation. Divide the document into sections.
KEEP COPYING	• Copying has stopped due to some existing problem (Example: a lack of recording paper or a recording paper jam). See the other displayed message instructions to continue copying.
LOW TEMP.	• The inside of the unit is extremely cold and cannot be operated. Use the unit in a warmer area.
MEMORY FULL	• When performing memory transmission, the document being stored exceeded the memory capacity of the unit. Send the entire document manually. • 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. • There is no space to store new items in the base unit’s phonebook. Erase unnecessary items.
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.
NO FAX REPLY	• The other party’s fax machine is busy or has run out of recording paper. Try again.
OUT OF PAPER INPUT TRAY #2	• Recording paper is not loaded in the manual input tray. Load paper.
PAPER IN TRAY #2	• The recording paper is installed in the manual input tray.
PAPER JAMMED ↕ OPEN TOP COVER	• A recording paper jam occurred. Remove the jammed paper.
PC FAIL OR BUSY	• The cable or the computer power cord is not connected correctly. Check the connections. • The software is not running on the computer. Restart the software and try again.
PLEASE WAIT	• The unit is warming up. Wait for a while.
POLLING ERROR	• The other party’s fax machine does not offer the polling function. 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. • Attempted to send or copy a document longer than 600 mm using the automatic document feeder. Press **[STOP]** to remove the document. Divide the document into two or more sheets and try again.
REMOVE PAPER IN INPUT TRAY #2	• The recording paper is installed in the manual input tray when trying to receive faxes or print reports. Remove the recording paper from manual input tray.
REPLACE DRUM CHANGE SUPPLIES	• The drum cartridge’s service life is finished. Replace the drum cartridge and the toner cartridge immediately.

DISPLAY MESSAGE	CAUSE AND REMEDY
RX MEMORY FULL	• The memory is full of received documents due to a lack of recording paper or a recording paper jam. Load paper or remove the jammed paper. • If the PC fax (feature #442) is set to “ALWAYS”, - check the connection between the computer and the unit. - check that the computer is turned ON. • If the fax preview mode (feature #448) is set to “ON”, - view, print or save the received fax documents using the web browser on the computer connected via the LAN, and then erase the unnecessary documents. - turn the setting to “OFF”. The fax documents stored in memory will be printed automatically.
SCANNER POSITION ERROR	• There is something wrong with the scanner position. Turn the power switch OFF, then ON. If the problem cannot be solved, contact our service personnel.
SERIAL ERROR	• “Serial Error“ means internal data transmission error between CPU(BBIC) and main CPU on main unit.
SUBSCRIBE TO CALLER ID	• You must subscribe to use Caller ID service. Contact your service provider/telephone company for service availability. Once you receive caller information, this message will not be displayed.
TONER EMPTY ↕ CHANGE SUPPLIES	• The toner is empty. Replace the toner cartridge immediately.
TONER LOW ↕ CHANGE SUPPLIES	• The toner is reaching the end of its life. You will need to replace the toner cartridge soon.
TOP COVER OPEN	• The top cover is open. Close it.
TRANSMIT ERROR	• A transmission error occurred. Try again.

12.1.1. Cordless Handset

DISPLAY MESSAGE	CAUSE AND REMEDY
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. • Turn the base unit’s power switch OFF to reset the unit. Turn the power switch ON 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 Caller ID service. Contact your service provider/telephone company for service availability. Once you receive caller information, 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 charger. The cordless handset will be registered to the base unit.

12.2. Remote Programming

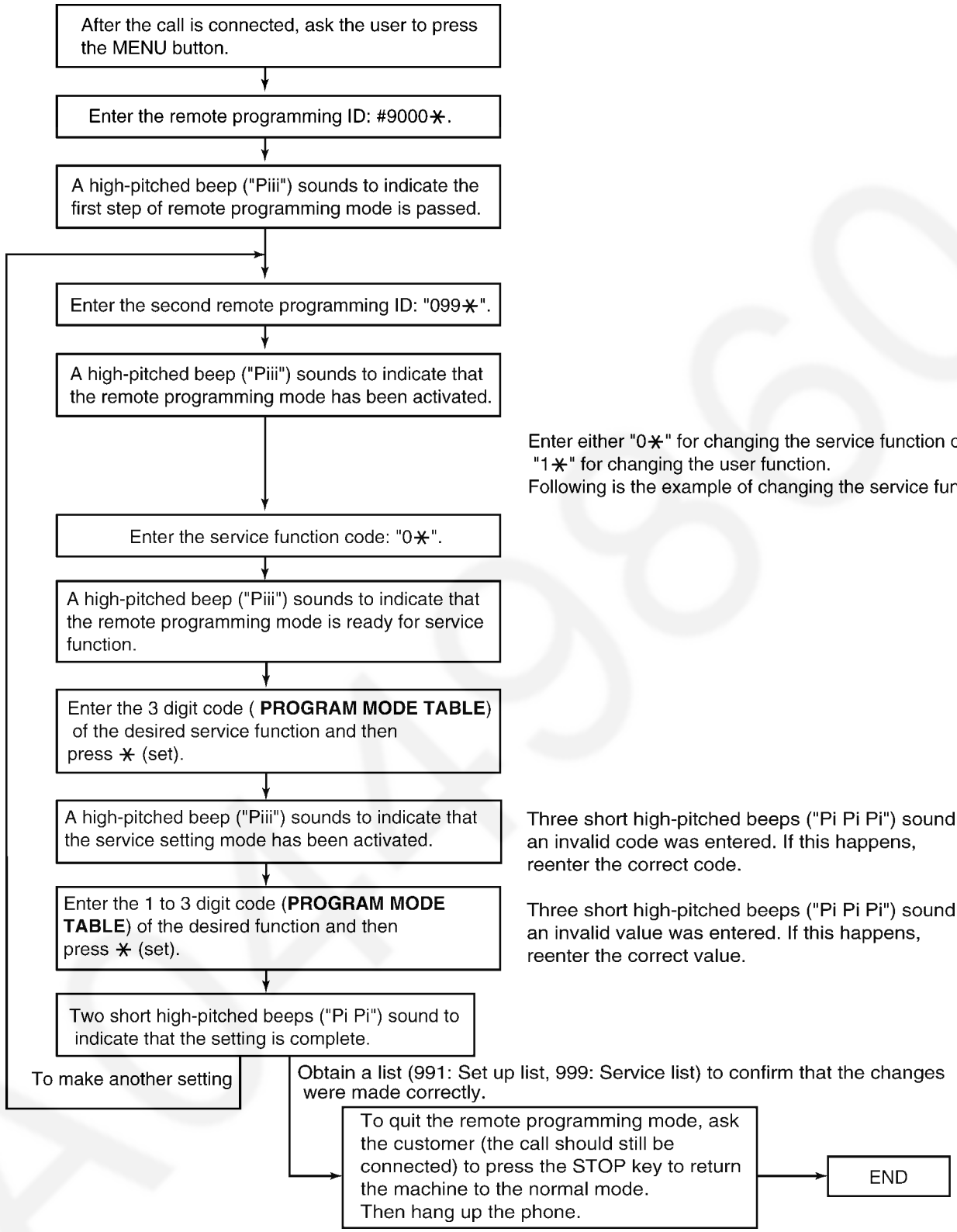
If, after the call is connected, the customer describes the situation and it is determined that the problem can be corrected by making parameter changes, this function makes it possible to change parameters such as the user code and service code from another fax (using DTMF tones). Therefore, travel to the customer's location is not required. However, it is not possible to change all the parameters remotely (**Program Mode Table**(P.138)). 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.137). 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.

12.2.1. Entering the Remote Programming Mode and Changing Service Codes



CROSS REFERENCE:

Program Mode Table (P.138)

12.2.2. Program Mode Table

12.2.2.1. User Function

Basic features

Code	Function	Set Value	Default	Remote Setting
101	SET DATE & TIME*1	dd/mm/yy hh:mm	01/01/10	NG
102	YOUR LOGO	---------	None	NG
103	YOUR FAX NUMBER	---------	None	NG
120	DIALLING MODE	1:PULSE / 2:TONE	TONE	OK
121	SET RECALL / FLASH TIME	90:900 / 70:700 / 60:600 / 40:400 / 30:300 / 25:250 / 20:200 / 16:160 / 11:110 / 10: 100 / 9: 90 / 8: 80 (ms)	600ms	OK
145	LCD CONTRAST*2	1:NORMAL / 2:DARKER	NORMAL	NG
147	SCALE	1:MILLIMETRES / 2:INCHES	MILLIMETRES	OK
155	CHANGE PASSWORD	---------	DEFAULT=1234	NG
158	MAINTENANCE TIME	---------	12:00	NG
159	RESTORE DEFAULT	YES / NO	NO	NG
161	RINGER PATTERN*1	RINGTONE1~6	RINGTONE 1	NG
165	BEEP SOUND*2	2:ON / 1:OFF	ON	OK
210	FAX RING COUNT	1 to 9 rings (for ext. tam)	2	OK
211	TAM RING COUNT	1:AUTO/ 2~7	2	OK
216	AUTO CALLER ID LIST	2:ON / 1:OFF	OFF	OK
226	TIME ADJUSTMENT	1:MANUAL / 2:AUTO	Manual	OK
380	PAPER SIZE #1	1:LETTER / 2:A4 / 4:B5(ISO) / 5:B5(JIS) / 6:16K	A4	OK
381	PAPER SIZE #2	1:LETTER / 2:A4 / 3:LEGAL /4:B5 (ISO) / 5:B5(JIS) / 6:16K / 7:216x330 / 8:216x340*3	A4	OK
383	MEDIA TYPE #1	1:PLAIN PAPER / 2:THIN PAPER	PLAIN PAPER	OK
384	MEDIA TYPE #2	1:PLAIN PAPER / 2:THIN PAPER	PLAIN PAPER	OK
400	AUTO ANSWER MODE	1:TAM/FAX / 2: FAX Only	TAM/FAX	OK
403	POWER SAVE	5:5min / 15:15min / 30:30min / 60:1h	5min	OK
404	MANUAL ANSWER MODE	1:TEL / 2:TEL/FAX	TEL	OK
462	CONTRAST HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
463	DEFAULT MODE	1:COPY / 2:FAX	COPY	OK
464	MODE TIMER	0:OFF / 1:30S / 2:1min / 3:2min / 4:5min	1min	OK
482	TONER SAVE	2:ON / 1:OFF	OFF	OK

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 language, see **Cordless Handset Programming** (P.115)
- To set the cordless handset LCD display contrast, see **Cordless Handset Programming** (P.115)
- To set the cordless handset ringtone for outside calls, see **Cordless Handset Programming** (P.115)
- To set the cordless handset keytone, see **Cordless Handset Programming** (P.115)

*3 Choices “7:216 x 330 / 8:216 x 340” change to Inch display when “INCHES” is set on feature #147 setting.

Fax features

Code	Function	Set Value	Default	Remote Setting
212	TEL/FAX RING	1~9	2	OK
282	COPY PHONEBOOK	1 ITEM / ALL ITEMS	1 ITEM	NG
289	ERASE PHONEBOOK	YES / NO	NO	NG
401	PRINT SENDING REPORT	1:ERROR / 2:ON / 3:OFF	ERROR	OK
402	JOURNAL AUTO PRINT	2:ON / 1:OFF	ON	OK
411	OVERSEAS MODE	1:NEXT FAX / 2:ERROR / 3:OFF	ERROR	OK
412	DELAYED TRANSMISSION	1:ON / 0:OFF	OFF	NG
413	ECM SELECTION	2:ON / 1:OFF	ON	OK
416	CONNECTING TONE	2:ON / 1:OFF	ON	OK
418	MAX FAX SPEED	1:14.4Kbps / 2:33.6Kbps	33.6Kbps	OK
419	QUICK SCAN MODE	2:ALWAYS / 1:OFF	OFF	OK
430	DISTINCTIVE RING	1:OFF / 2:ON	OFF	OK
431	RING PATTERN	2:A / 3:B / 4:C / 5:D / 1:B-D	B-D	OK
432	AUTO REDUCTION	2:ON / 1:OFF	OFF	OK
434	FAX ACTIVATION CODE	ON / OFF	ON CODE=*#9	NG

Code	Function	Set Value	Default	Remote Setting
435	AUTO DISCONNECT	1:OFF/ 2:ON	ON	NG
437	MEMORY RECEIVE ALERT	2:ON / 1:OFF	ON	OK
438	FRIENDLY RECEPTION	2:ON / 1:OFF	ON	OK
442	PCFAX SETTING	1:OFF / 2:ALWAYS / 3:CONNECTED	OFF	OK
443	PCFAX RCV PC	---------	USB HOST	NG
448	PREVIEW MODE	2:ON / 1:OFF	OFF	OK
450	WEB FAX PREVIEW	---------	---------	NG
451	RECEIVE NOTIFY	2:ON / 1:OFF	OFF	OK
452	FAX AUTO EMAIL	1:OFF/ 2:ON	OFF	OK
459	SET FAX DEFAULT	YES / NO	NO	NG

TAM features

Code	Function	Set Value	Default	Remote Setting
305	RECORDING TIME*1	1:1 MINUTE / 2:GREETING ONLY / 3:3 MINUTES	3 MINUTES	OK
306	REMOTE OPERATION ID*1	--------- (000~999)	---------	NG
310	CALL SCREENING	1:OFF / 2:ON	ON	OK
315	COMMON GREETING MSG. REC. TIME	1:16s / 2:60s	16s	OK
365	PC TAM SETTING	1:OFF / 2:ALWAYS	OFF	OK
366	PC TAM RCV PC	---------	USB HOST	NG
367	PLAYBACK MODE	1:OFF / 2:ON	OFF	OK
368	WEB VOICE PLAYBACK	---------	---------	NG
369	TAM AUTO EMAIL	1:OFF/ 2:ON	OFF	OK

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

Copy features

Code	Function	Set Value	Default	Remote Setting
460	COPY INPUT TRAY	1:#1/ 2:#2	#1	NG
461	COPY RESOLUTION	1:TEXT/PHOTO / 2:TEXT / 3:PHOTO	TEXT/PHOTO	OK
467	PAGE LAYOUT HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
468	ZOOM HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
469	COLLATE HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
473	EDGE HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
474	FRAME MARGIN	1:DISABLED / 2:ENABLED	DISABLED	OK
475	MARGIN HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK

PC print features

Code	Function	Set Value	Default	Remote Setting
774	DATA TIMEOUT	5~600s	60s	NG
776	MUTUAL A4/LETTER	2:ON / 1:OFF	ON	OK

Scan features

Code	Function	Set Value	Default	Remote Setting
493	SCAN MODE	1:VIEWER / 2:FILE / 3:E-MAIL / 4:OCR / 5:EMAIL ADDRESS / 6:FTP SERVER / 7:SMB FOLDER	VIEWER	OK
494	SCAN PARAM. HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK

LAN features

Code	Function	Set Value	Default	Remote Setting
500	DHCP	1:DISABLED / 2:ENABLED	ENABLED	OK
501	IP ADDRESS	---------		NG
502	SUBNET MASK	---------		NG
503	DEFAULT GATEWAY	---------		NG
504	DNS SERVER #1	---------		NG
505	DNS SERVER #2	---------		NG
507	MACHINE NAME	---------		NG
508	MAC ADDRESS	---------		NG
532	IP FILTERING	1:DISABLED / 2:ENABLED	DISABLED	OK
533	AUTO IP	1:DISABLED / 2:ENABLED	DISABLED	OK
534	HTTPD	1:DISABLED / 2:ENABLED	ENABLED	OK

Code	Function	Set Value	Default	Remote Setting
535	IPv6 PROTOCOL	1:DISABLED / 2:ENABLED	DISABLED	OK
538	WINS SERVER #1	---------		NG
539	WINS SERVER #2	---------		NG
578	ERASE ADDRESS	YES / NO	NO	NG

12.2.2.2. Service Function

Code	Function	Set Value	Default	Remote Setting
501	Pause time set	1:Short (3S) / 2:Long (5S)	Short (3S)	OK
507	V34 transmission start speed	0:Disable/1:33.6/2:31.2/3:28.8/4:26.4/5:24.0/6:21.6/7:19.2/8:16.8	33600bps	OK
508	V34 reception start speed	0:Disable/1:33.6/2:31.2/3:28.8/4:26.4/5:24.0/6:21.6/7:19.2/8:16.8	33600bps	OK
511	VOX sense	1:High / 2:Low	High	OK
514	Bell signal detect time	(1~9) x 100msec	6	OK
520	CED frequency select	1:2100Hz / 2:1100Hz	2100	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	1:0kms / 2:1.8km / 3:3.6km / 4:7.2km	0 km	OK
524	Transmission equalizer select	1:0kms / 2:1.8km / 3:3.6km / 4:7.2km	0 km	OK
527	V8 function select	1:OFF / 2:ON	ON	OK
529	Memory clear for Call Service	---	---	NG
550	Memory clear	---	---	NG
551	ROM check	---	---	NG
553	Monitor on FAX communication select	1:OFF / 2:Phase B / 3:ALL	OFF	OK
554	Modem test	---	---	NG
555	Scanner test	---	---	NG
556	Motor test	---	---	NG
557	LED test	---	---	NG
558	LCD test	---	---	NG
561	Key test	---	---	NG
567	T0 timer	001~255sec	052	OK
570	Break % select	1:61% / 2:67% / 3:63%	61%	OK
571	ITS auto redial time set	00-99	05	OK
572	ITS auto redial line disconnection time set	001-255sec	185sec	OK
573	Remote turn-on ring number set	00~99	10	OK
574	Dial tone detect check	1: ON / 2: OFF	OFF	OK
590	FAX auto redial time set	00~99	05	OK
591	FAX auto redial line disconnection time set	001~999sec	185	OK
592	CNG transmit select	1:OFF / 2:ALL / 3:AUTO	ALL	OK
593	Time between CED and 300bps	1:75ms / 2:500ms / 3:1sec	75ms	OK
594	Overseas DIS detection select	1:1st / 2:2nd	1st	OK
595	Receive error limit value set	1:5% / 2:10% / 3:15% / 4:20%	10%	OK
596	Transmit level set	-15~00dBm	10	OK
598	Receiving Sensitivity	20~48	48	OK
599	ECM Frame size	1:256 / 2:64	256byte	OK
628	H.V.P.S check	---	---	NG
639	LSU test	---	---	NG
655	Cause distinction code of call service 3	---	---	NG
677	Fan test	---	---	NG
717	Transmit speed select	1: 14400bps / 2:12000bps / 3:9600bps / 4:7200bps / 5:4800bps / 6:2400bps	14400bps	OK
718	Receive speed select	1: 14400bps / 2:12000bps / 3:9600bps / 4:7200bps / 5:4800bps / 6:2400bps	14400bps	OK
722	Redial tone detect	1:ON / 2:OFF	ON	OK
731	CPC mode	000-255	033	OK
763	CNG detect time for friendly reception	1:10s / 2:20s / 3:30s	30s	OK
774	Receiving T4 timer	00~99 × 100msec	00	OK
775	Transmission T4 timer	00~99 × 100msec	00	OK
784	Voice prompt	1:Start	000	NG
815	Sensor check	---	---	NG
852	Print test pattern	---	---	NG
853	Top margin	1~11	5	OK
854	Left margin	1~11	6	OK
874	DTMF ON time	060~200msec	100	OK
875	DTMF OFF time	06~20 × 10msec	10 × 10msec	OK
880	History list	---	---	NG
881	Journal 2	---	---	NG
882	Journal 3	---	---	NG
961	TEL / FAX pseudo ring back time	01~10sec	05sec	OK
962	TEL / FAX pseudo ring back time and bell time	05~30sec	13sec	OK
991	Setup list	1:Start	---	OK

Code	Function	Set Value	Default	Remote Setting
994	Journal list	1:Start	---------	OK
995	Journal 2 list	1:Start	---------	OK
996	Journal 3 list	1:Start	---------	OK
998	History list	1:Start	---------	OK
999	Service list	1:Start	---------	OK

OK means “can set”.

NG means “can not set”.

Note:

Refer to **Service Function Table** (P.123) for descriptions of the individual codes.

Example:

If you want to set value in the “401 PRINT SENDING REPORT”, press the dial key number 1, 2 or 3 corresponding to the Set Value you want to select. (1:ERROR/2:ON/3:OFF)

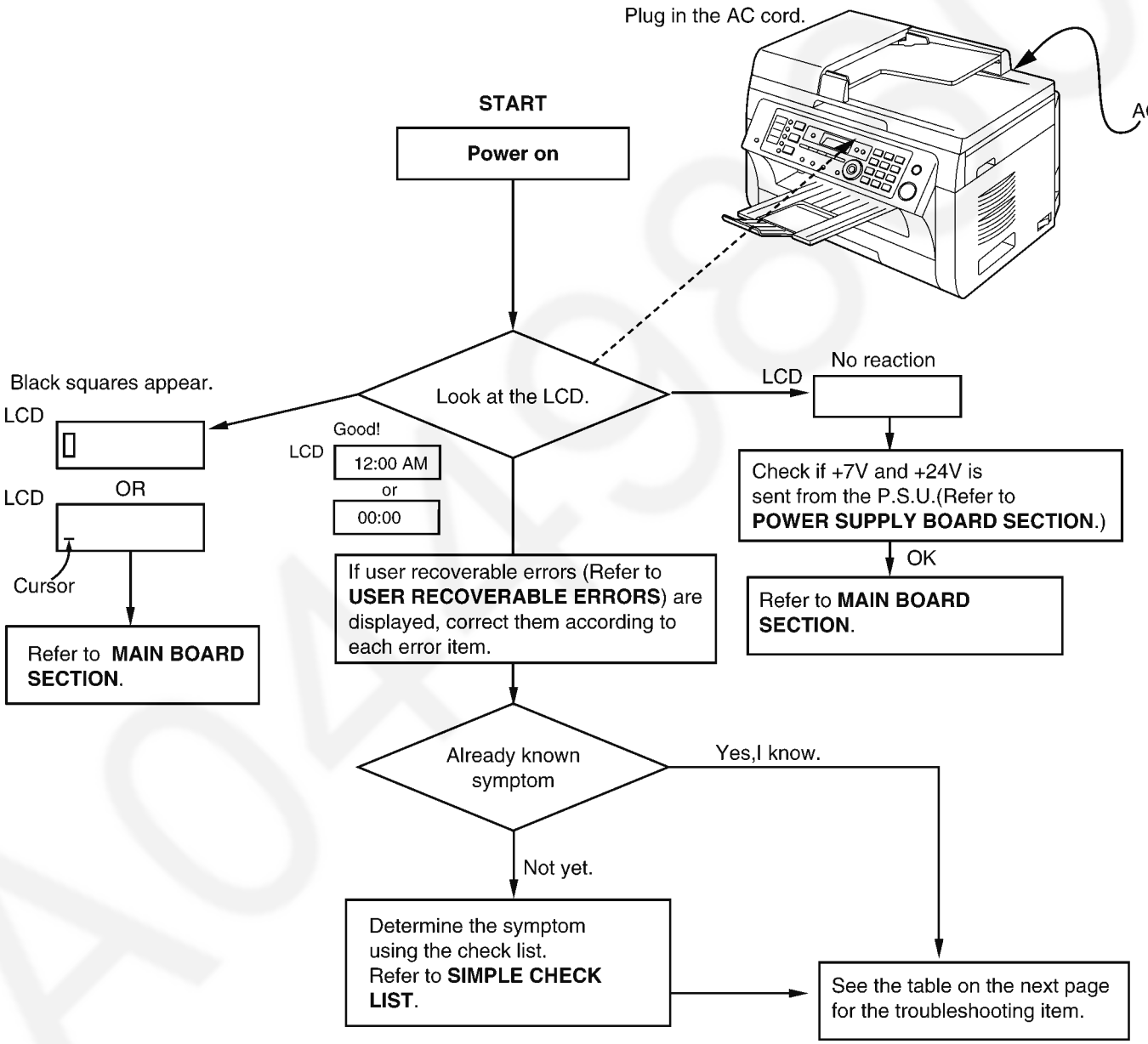
12.3. Troubleshooting Details

12.3.1. 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 Main PCB, Sensor 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.145). Difficult problems may be hard to determine, so repeated testing is necessary.

12.3.2. Starting Troubleshooting

Determine the symptom and the troubleshooting method.

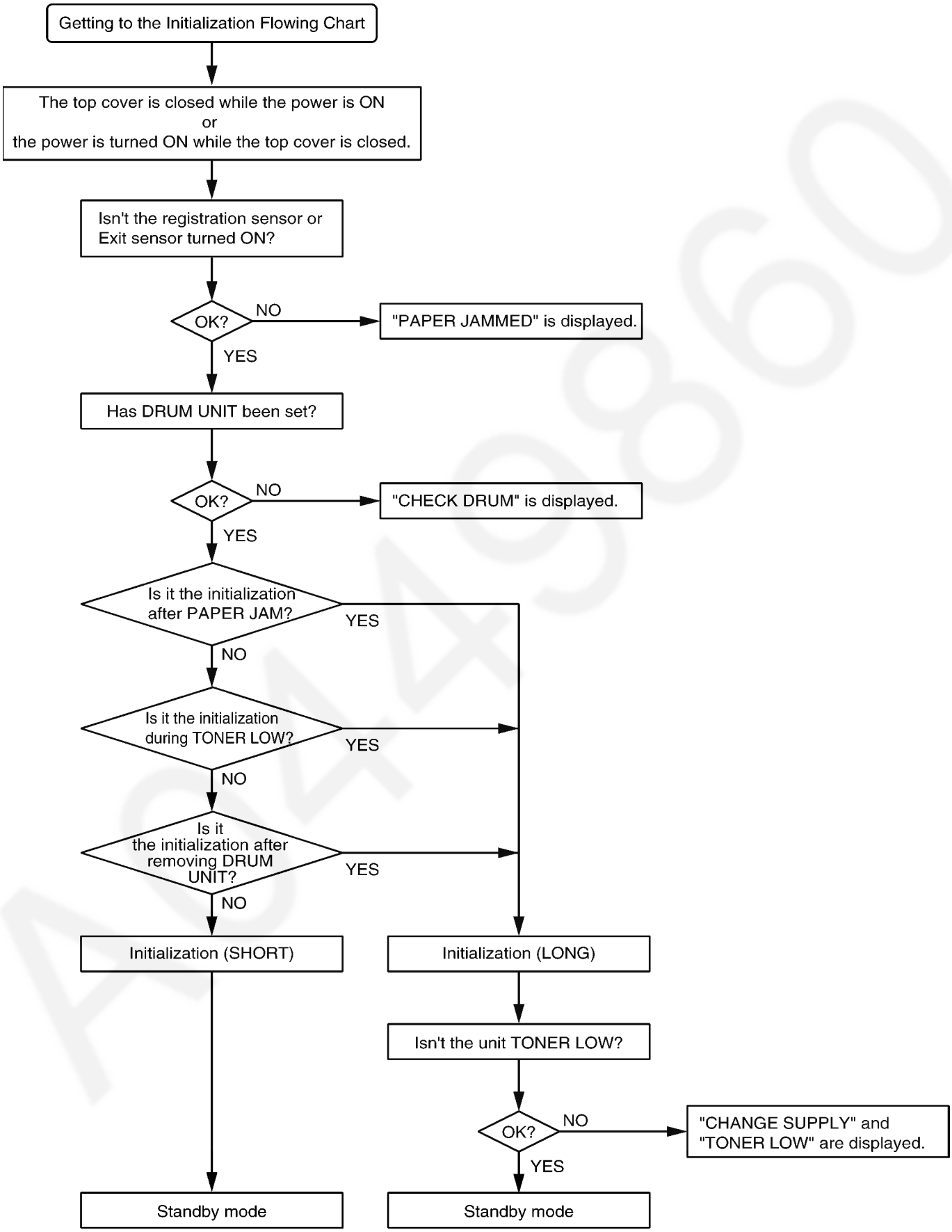


CROSS REFERENCE:

Simple Check List (P.145)
User Recoverable Errors (P.133)
Main Board Section (P.298)
Power Supply Board Section (P.83)

12.3.3. Initialization

There are two types of initialization, one is the short initialization (about 3 seconds) and the other is the long initialization (about 10 seconds). The short initialization makes the unit enter the standby mode. The long initialization makes the unit enter the standby mode after cleaning or detecting the rest of toner.



12.3.4. Simple Check List

SERIAL NO. _____ DATE _____

FUNCTION		JUDGEMENT	REFERENCE
FAX operation	Transmission	OK / NG	
	Receiving	OK / NG	
Copy operation	Copy by ADF	OK / NG	
	Copy by Flat Bed	OK / NG	
PC operation	USB PC print	OK / NG	
	LAN PC print	OK / NG	
Telephone operation	MONITOR sound	OK / NG	
	Ringer sound	OK / NG	
	Dial operation	OK / NG	
	Volume operation	OK / NG	
Operation panel	Key check	OK / NG	Service code 561※
	LED check	OK / NG	Service code 557※
	LCD check	OK / NG	Service code 558※
Sensor	Sensor check	OK / NG	Service code 815※
Clock		OK / NG	Is the time kept correctly? Check with another clock.
Cordless Operation	Cordless handset	OK / NG	
	Link	OK / NG	
	Battery charge	OK / NG	

Note:

Check according to the service code referring to **Test Functions** (P.119)

12.3.5. Simplified Troubleshooting Guide

12.3.5.1. Printing

No.	Symptom	Cause	Countermeasure
1	**Ghost Image** (P.156)	Failed drum cartridge	Replace drum cartridge
		Failed transfer unit	Check the transfer roller and spring
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Failed fuser unit	Check the heat roller and the pressurized roller and the spring and the heat lamp and the thermistor
		Too thick or too thin recording paper	Use the recording paper from 16lb to 24lb
2	**Dark or White Vertical Line** (P.157)	Dirty the cover glass or the reflecting mirror	Clean the cover glass and the reflecting mirror
		Dust on the path of the laser beam	Clean the path of the laser beam
		Failed drum cartridge	Replace drum cartridge
		Failed the heat roller or the pressurized roller	Check the heat roller and the pressurized roller
		Failed LSU	Go to **LSU (Laser Scanning Unit) Section** (P.57)
3	**Dark or White Horizontal Line** (P.158)	Failed drum cartridge	Replace drum cartridge
		Failed the gear	Check the gear
		Failed the engine motor	Go to **FB (Flatbed) Motor** (P.207)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Scratch on the OPC drum	Replace drum cartridge
		Static electricity on the documents (when copying)	Check the connection between the parts around CIS and earth
4	**Dirty or Half Darkness Background** (P.159)	Failed drum cartridge	Replace drum cartridge
		Dirty the pickup roller and the regist roller and the feed roller and the eject roller and the heat roller and the pressure roller	Clean the pickup roller and the regist roller and the feed roller and the eject roller and the heat roller and the pressure roller
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Dirty the recording paper path	Clean the recording paper path
5	**Black Print** (P.160)	Failed drum cartridge	Replace drum cartridge
		Failed LSU	Go to **LSU (Laser Scanning Unit) Section** (P.57)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Failed the main board	Go to **Main Board Section** (P.17)
		Failed CIS (when copying)	Go to **CIS Control Section** (P.210)
6	**Black Print** (P.160) **OR Light Print** (P.161)	Short toner	Supply toner
		Failed drum cartridge	Replace drum cartridge
		Life of drum cartridge is over	Replace drum cartridge
		Dirty the cover glass or the reflecting mirror	Clean the cover glass and the reflecting mirror
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Failed the main board	Go to **Main Board Section** (P.17)
		Failed CIS (when copying)	Go to **CIS Control Section** (P.210)
7	**Black or White Point** (P.162)	Failed the developer roller (32mm pitch)	Replace drum cartridge
		Failed the OPC drum (75mm pitch)	Replace drum cartridge
		Failed the heat roller (79mm pitch)	Check the heat roller
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)
		Too thick or too thin recording paper	Use the recording paper from 16lb to 24lb

12.3.5.2. Recording Paper Feed

No.	Symptom	Cause	Countermeasure
1	**Multiple Feed** (P.162)	Dirty or failed the pickup roller	Clean or replace the pickup roller
		Dirty or failed the pickup rubber	Clean or replace the separation rubber
2	**The Recording Paper Is Waved or Wrinkled** (P.163)	Dirty the pressure roller or the heat roller	Clean the pressure roller and the heat roller
		Failed the spring of pressure roller	Replace the spring of pressure roller
		Separator of heat roller a check	Replace separator
		Dust on the recording paper path	Clean the recording paper path
		Too thin recording paper	Use the recording paper from 16lb to 24lb
3	**Skew** (P.164)	Dirty or failed the pickup roller	Clean or replace the pickup roller
		Dirty or failed the pickup rubber	Clean or replace the separation rubber
		Dirty or failed the paper feed roller	Clean or replace the regist roller
		Dust on the recording paper path	Clean the recording paper path
		Failed LSU	Replace LSU
		Over the max capacity of the recording paper	Set up to MAX 250 sheets
		Too thick or too thin recording paper	Use the recording paper from 16lb to 24lb
4	**The Recording Paper Does Not Feed** (P.165)	Dirty or failed the pickup roller	Clean or replace the pickup roller
		Dirty or failed the pickup rubber	Clean or replace the separation rubber
		Failed the gear	Check the gear
		Failed the solenoid	Check the solenoid
		Failed the engine motor	Go to **Motor Section** (P.206)
		Failed the pickup sensor lever	Check the pickup sensor lever
		Failed the pickup sensor	Go to **Sensor Section** (P.196)
5	**The Recording Paper Jam** (P.166) "PAPER JAMMED" ON THE LCD	Dirty or failed the pressure roller	Clean or replace the pressure roller
		Dirty or failed the heat roller	Clean or replace the heat roller
		Separator of heat roller a check	Replace separator
		Dust on the recording paper path	Clean the recording paper path
		Failed the paper feed roller	Replace the registration roller
		Failed the pickup sensor lever	Check the pickup sensor lever
		Failed the pickup sensor	Go to **Sensor Section** (P.196)
		Failed the registration sensor lever	Check the Registration & Manual paper sensor (paper top sensor) lever
		Failed the registration sensor	Go to **Sensor Section** (P.196)
		Failed the exit sensor	Check the Paper Exit sensor lever
		Too thick or too thin recording paper	Use the recording paper from 16lb to 24lb
		Not set the toner bottle	Set toner bottle
6	**Back Side of The Recording Paper Is Dirty** (P.168)	Dirty the recording paper path	Clean the recording paper path
		Dirty the pressure roller	Clean the pressure roller
		Dirty the regist roller	Clean the registration roller
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.214)

12.3.5.3. Copy and FAX

No.	Symptom	Cause	Countermeasure
1	**NO DOCUMENT FEED** (No Document Feed, Document Jam and Multiple Document Feed) (P.168)	Failed the document sensor lever	Replace the document sensor lever
		Failed the document sensor	Go to **Sensor Section** (P.196)
		Dirty or failed the separation roller	Clean or replace the separation roller
		Dirty or failed the separation rubber	Clean or replace the separation rubber
		Failed the separation spring	Replace the separation spring
	DOCUMENT JAM (No Document Feed, Document Jam and Multiple Document Feed) (P.168)	Dust or scratch on the document paper path	Clean the document paper path
		Failed the gear	Check the gear
		Failed the ADF motor	Go to **ADF Motor** (P.208)
		Failed the ADF cover open switch lever	Replace the ADF cover open switch lever
	MULTIPLE DOCUMENT FEED(No Document Feed, Document Jam and Multiple Document Feed) (P.168)	Dirty or failed the separation roller	Clean or replace the separation roller
		Dirty or failed the separation rubber	Clean or replace the separation rubber
		Failed the separation spring	Replace the separation spring
2	**Skew (ADF)** (P.170)	Dust or scratch on the document paper path	Clean the document paper path
		Failed the document feed roller	Replace the document feed roller
		Failed the document guide	Replace the document guide
3	**The Sent FAX Data Is Skewed** (P.171)	The cause of ADF	Go to **Skew** (P.164)
		The cause of scanner glass	Check the scanner glass
		Problem with the other FAX machine	
4	**The Received FAX Data Is Skewed** (P.171)	The cause of printing	Go to **Skew** (P.164)
		Problem with the other FAX machine	
5	**The Received or Copied Data Is Expanded** (P.171)	Dirty or failed the document feed roller (at ADF)	Clean or replace the document feed roller
		Dirty or failed the separation roller (at ADF)	Clean or replace the separation roller
		Failed CIS movement (at SG)	Replace the belt or the gear or the shaft or the FB motor
6	**Black or White Vertical Line Is Copied** (P.172)	Dirty or failed the white plate and sheet (2 places)	Clean or replace the white plate and sheet
		Dirty or failed the glass board	Clean or replace the glass board
		The cause of printing	Go to **Dark or White Vertical Line** (P.157)
		Failed CIS	Go to **CIS Control Section** (P.210)
7	**An Abnormal Image Is Copied** (P.173)	Dirty or failed the white plate and sheet (2 places)	Clean or replace the white plate and sheet
		Dirty or failed the glass board	Clean or replace the glass board
		Dirty or failed the document feed roller (at ADF)	Clean or replace the document feed roller
		Dirty or failed the separation roller (at ADF)	Clean or replace the separation roller
		Failed CIS movement (at SG)	Replace the belt or the gear or the shaft or the FB motor
		Failed CIS	Go to **CIS Control Section** (P.210)
		The cause of printing	Go to **Dark or White Vertical Line** (P.157)

12.3.5.4. Cordless (handset)

No.	Symptom	Cause	Countermeasure
1	**Cordless (handset)**	Cordless Handset does not work.	See **Check Power (Cordless Handset)** (P.199)
		No link	See **Check Link (Cordless Handset)** (P.200)
		Battery won't charge	See **Check Battery Charge (Cordless Handset)** (P.199) and **Check Battery Charge (Charger Unit)** (P.199)
		No voice reception	See **Check Cordless Handset Reception** (P.201)
		No voice transmission	See **Check Cordless Handset Transmission** (P.201)
		Bell does not sound	See **Bell Reception (Cordless Handset)** (P.202)

12.3.6. CALL SERVICE Troubleshooting Guide

Call Service related error is most frequent.

Call Service 1 ----- Polygon doesn't rotate..... Refer to **LSU (Laser Scanning Unit) Section** (P.57).

- First, listen to the sound. If rotation sound isn't heard, check 24V line, POLON signal and POLCLK signal. If even a little of sound is heard, check XREADY signal.

Call Service 2 ----- Laser isn't output..... Refer to **LSU (Laser Scanning Unit) Section** (P.57)

- This can be judged only by referring to signal. Check 5V line, XHSYNC, XAPC, XVIDEO, XLDON.

Call Service 3 ----- Detection of fixing temperature..... Refer to **Heat Lamp Control Circuit** (P.73)

- *Service mode *655 tells the detection number and 3 latest temperatures of the thermistor. The detection point of the Call Service 3 and the thermistor temperature is displayed. Maximum 3 latest temperatures are displayed showing the newest on the left. [AABB CCDD EEFF] AA, CC and EE show the detection points and BB, DD and FF show their temperature detection points.
  00: CALL SERVICE 3 was not occurred.
  01: means that the value of AD did not increased by 4 steps or more within 10 sec soon after the heater was turned ON. (thermistor's open detection)
  02: means that it did not reach the first stabilizing temperature (170°C: 3Dh) within 50 seconds.
  03: means that it did not reach the second stabilizing temperature (205°C: 20h)* within 75 seconds after reaching the first stabilizing temperature (170°C: 3Dh).
  04: means that it dropped to -40 deg or below by the temperature control after reaching the second stabilizing temperature (205°C: 20h)*.
  05: means that it did not reach the first stabilizing temperature (170°C: 3Dh) within 35 seconds from detection temperature 1 (70°C: DAh).
  06: means that it became 235°C: 13h or over during printing.
  07: means that during printing the short of the thermistor (AD: 00h) was detected.
  08: means that the thermistor's short (AD: 00h) were detected.
  09: means that it became 235°C: 13h or over during sleep condition (heater OFF).
  *: depend on its printing conditions (room temperature, number of printing, printing paper size etc.).

<Note>

Once "CALL SERVICE3" is displayed, it does not disappear until the Factory Setup or Service Function #529 is executed. Therefore Service Function #529 should not be executed before the confirmation, and #529 should be done after the countermeasure.

Call Service 4 ----- Rotation of Fan..... Refer to **FAN Motor Section** (P.54)

- Connector isn't inserted firmly, dust is caught in and the fan is broken.
- Rotation of the Fan can be confirmed by following Test Mode.
  Service mode *677
  :1... Normal operation (default)
  :2... Right Fan & Left Fan ON (High speed)
  :3... Right Fan & Left Fan ON (Low speed)
  :4... Both Fan OFF

Call service 5 ----- Rotation of Engine motor..... Refer to **Motor Drive Section** (P.45)

- Engine motor's rotation detection signal LD did not become Low within rated speed ±6.25%.
- Service mode *556: the operation of Main Motor can be checked by pressing 0 and SET buttons.

Call service 6 ----- Detection of Charger error..... Refer to the **HVPS (High Voltage Power Supply) Section** (P.71)

- Breaking of charger's wire of drum cartridge and/or loose connection of High voltage terminals (CHRG, GRID).
- First, replace the drum cartridge even so, it doesn't function check the high voltage power supply.

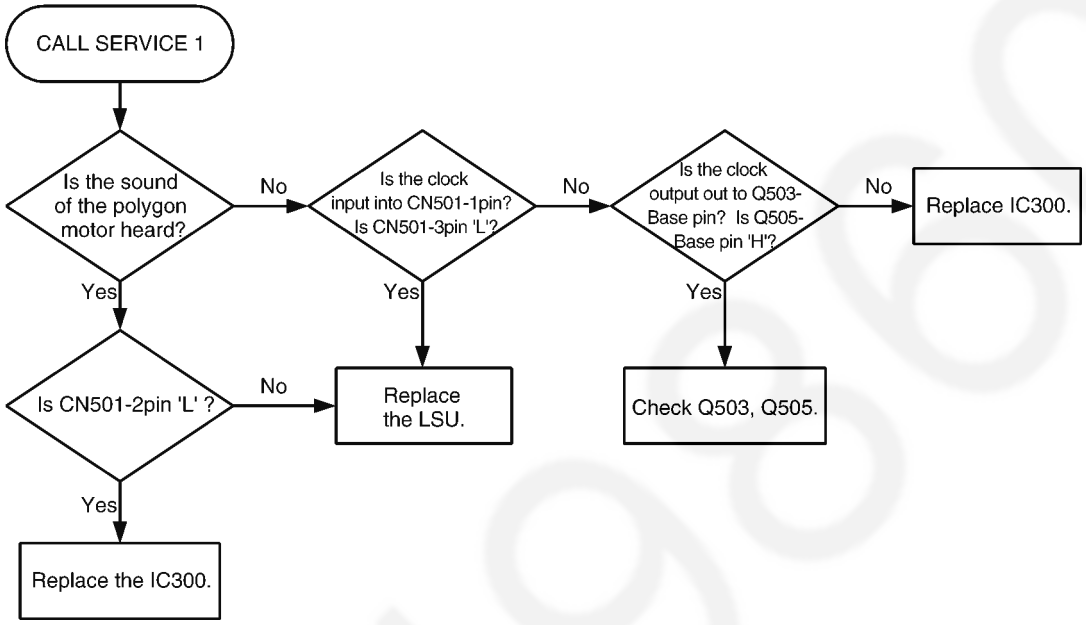
* As for Call Service 1, 2, 4, 5 and 6, turn the power OFF then ON to restart.

12.3.6.1. CALL SERVICE 1

"CALL SERVICE 1" means that the polygon motor inside the LSU does not rotate.
The rotation of the polygon motor is detected by IC300-F23pin (NREADY).

After the LCD indicates "CALL SERVICE 1 ", turn the power OFF/ON. Then, when the unit starts initial operation, confirm that the rotating sound of the polygon motor is heard before the engine motor starts to run.

* You can check the LSU function by service mode ✳639.

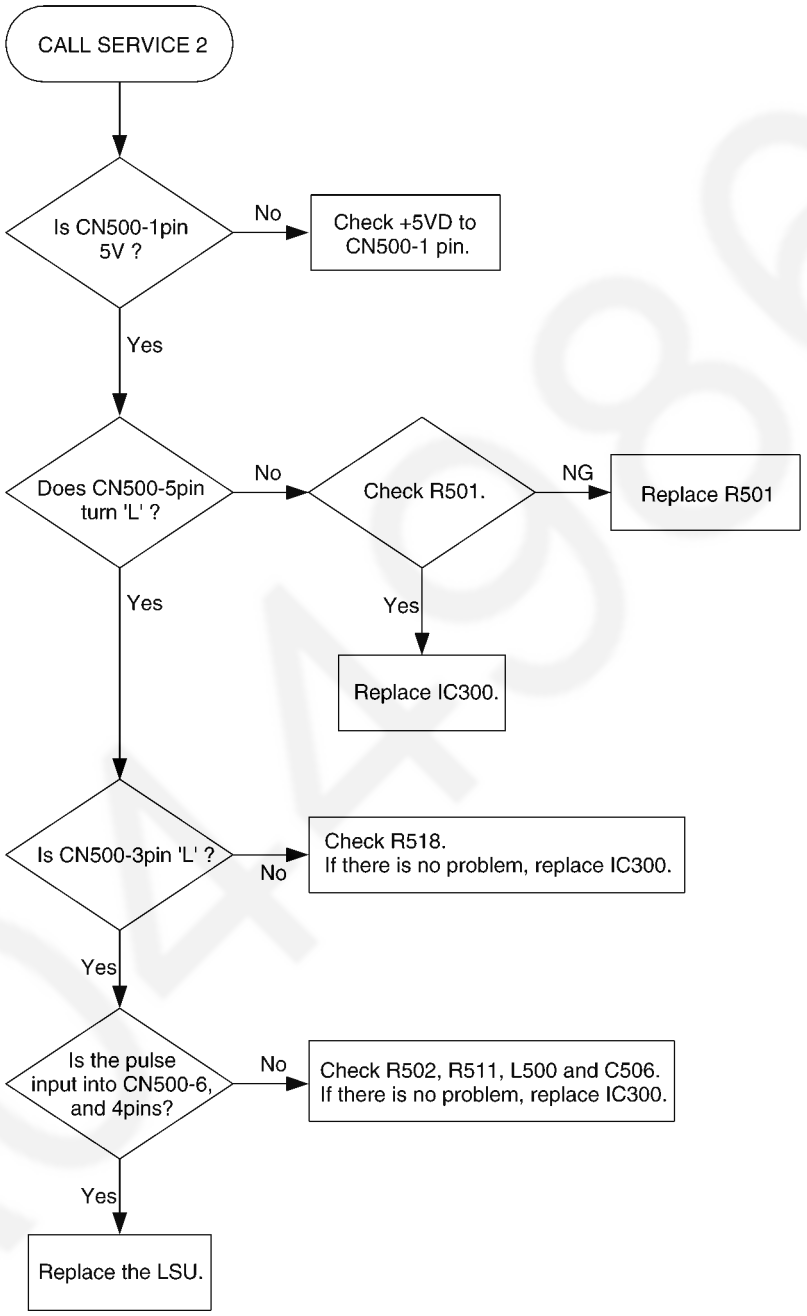


12.3.6.2. CALL SERVICE 2

"CALL SERVICE 2" means that the synchronous signal out of the LSU cannot be detected.
The synchronous signal out of the LSU is detected by IC 300-G23pin. (NHSYNC)

After the LCD indicates "CALL SERVICE 2 ", turn the power OFF/ON, then confirm the waveform when the unit starts initial operation.

* You can check the LSU function by service mode ✳639.



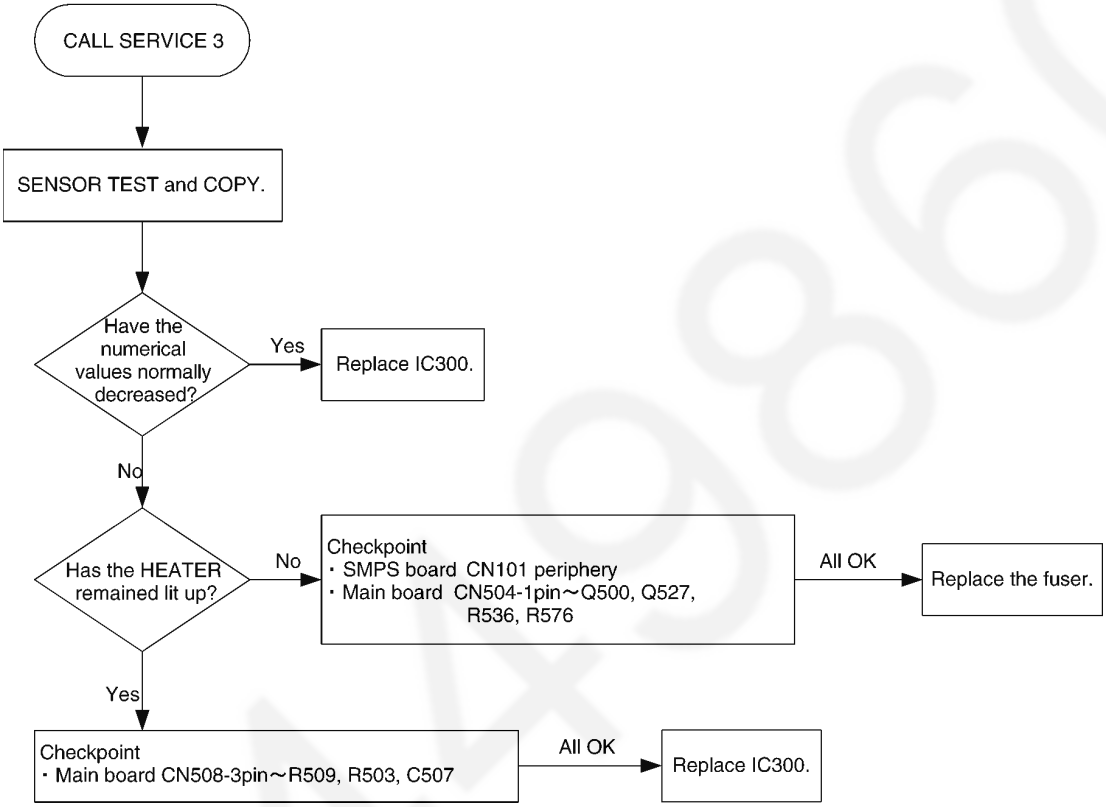
Note:

As for the "Pulse" waveform of the above flow chart, see the timing chart.

12.3.6.3. CALL SERVICE 3

"CALL SERVICE 3" means that the temperature of the fuser does not rise up to or exceed a constant temperature.
The temperature is monitored with the thermistor inside the fuser and detected with the voltage input into IC 300-D19.

After the LCD indicate "CALL SERVICE 3" , perform the MENU → # → 9000 → ✳529. Then, turn the power OFF/ON.
Perform the SENSOR TEST in service mode.
SENSOR TEST can be performed by pressing MENU → # → 9000 → ✳815.
In this state, perform the copy operation to confirm how the two-digit numbers on the LCD change. In normal times, 'F9h(25°C)' is displayed in the waiting state, and '20h(205°C)' or its approximate numbers are displayed during printing.

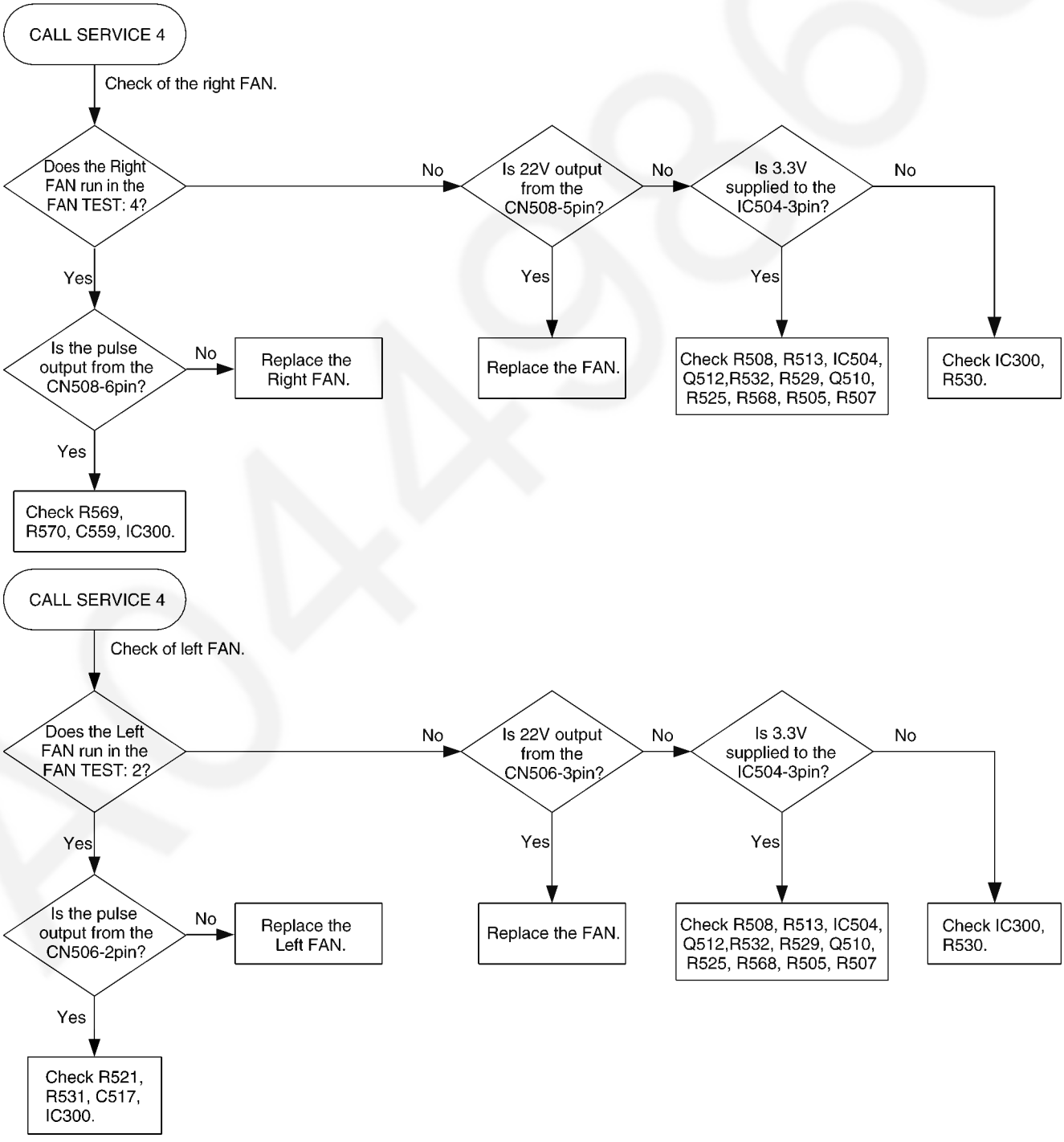


* When Call Service 3 is occurred, the cause can be distinguished by service mode ✳655.
Refer to **CALL SERVICE Troubleshooting Guide** (P.149) for details.

12.3.6.4. CALL SERVICE 4

"CALL SERVICE 4" means that the FAN does not run or the running of the FAN cannot be detected normally.
The running of the FAN is detected by IC300-AC20 and W24pin. "CALL SERVICE 4" is displayed when it detects NG three times continuously.
After repairing, copy three times.If “CALL SERVICE 4 “ is displayed, check again.

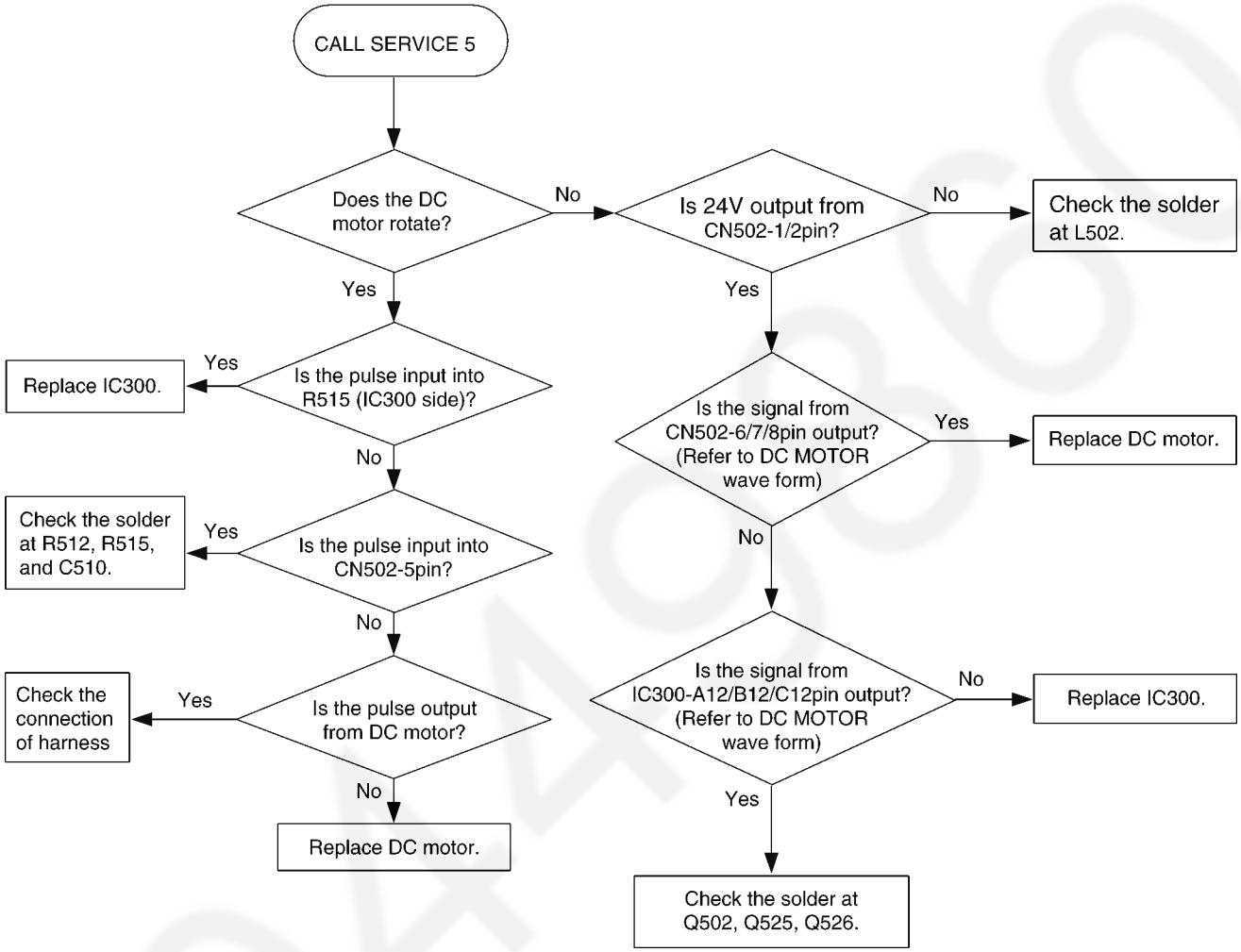
After the LCD indicates "CALL SERVICE 4 " , turn the power OFF/ON.
Then, perform the FAN TEST in service mode.
This can be performed by pressing MENU→#→9000→✳677.
1: Normal operation (Default)
2: Right FAN & Left FAN: ON (High Speed)
3: Right FAN & Left FAN: ON (Low Speed)
4: Both FAN: OFF



12.3.6.5. CALL SERVICE 5

"CALL SERVICE 5" means that Engine DC motor's rotation detection signal (LD) does not become Low.

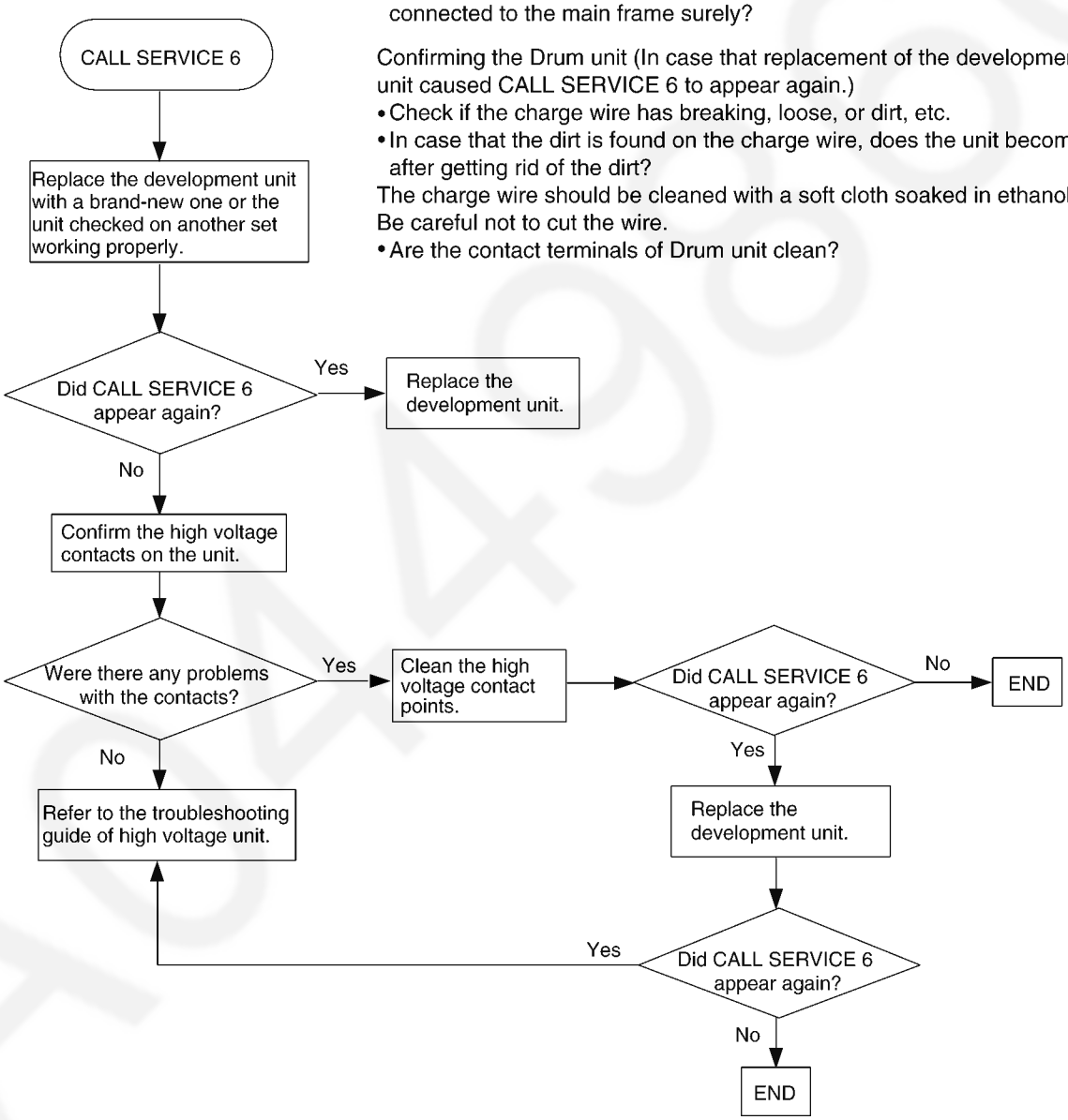
After the LCD indicates "CALL SERVICE 5", turn the power OFF/ON.
Perform the MOTOR TEST in service mode.
MOTOR TEST can be performed by pressing MENU → # → 9000 → ∗556.
And Press 0 and SET buttons.



12.3.6.6. CALL SERVICE 6

"CALL SERVICE 6" indicates that abnormal charge voltage is output from the high voltage unit.

CALL SERVICE 6 appears when the charge voltage turns into abnormal voltage caused by charge wire breaking, short circuit, defect, and contact failure between Drum unit and main frame through charge and GRID terminals.
When the charge voltage becomes abnormal, the high voltage unit shuts off the charge output, and then trouble detection signal (HVERR) is output from pin 2 of CN1.
When the main PCB detects the trouble detection signal, the unit displays CALL SERVICE 6.
CALL SERVICE 6 is canceled by turning the power OFF then ON. (When the problem is not solved, CALL SERVICE 6 will be displayed again.)



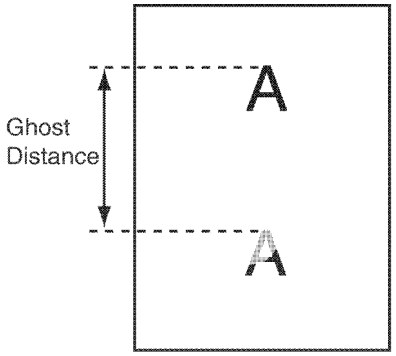
Confirming the contact points of the main frame
- Check the dirt on the high voltage terminals.
- Check if the spring pressure of each high voltage terminal is strong enough. (Isn't it distorted or bent?)
- When a Drum unit is installed on the main frame, are the terminals connected to the main frame surely?

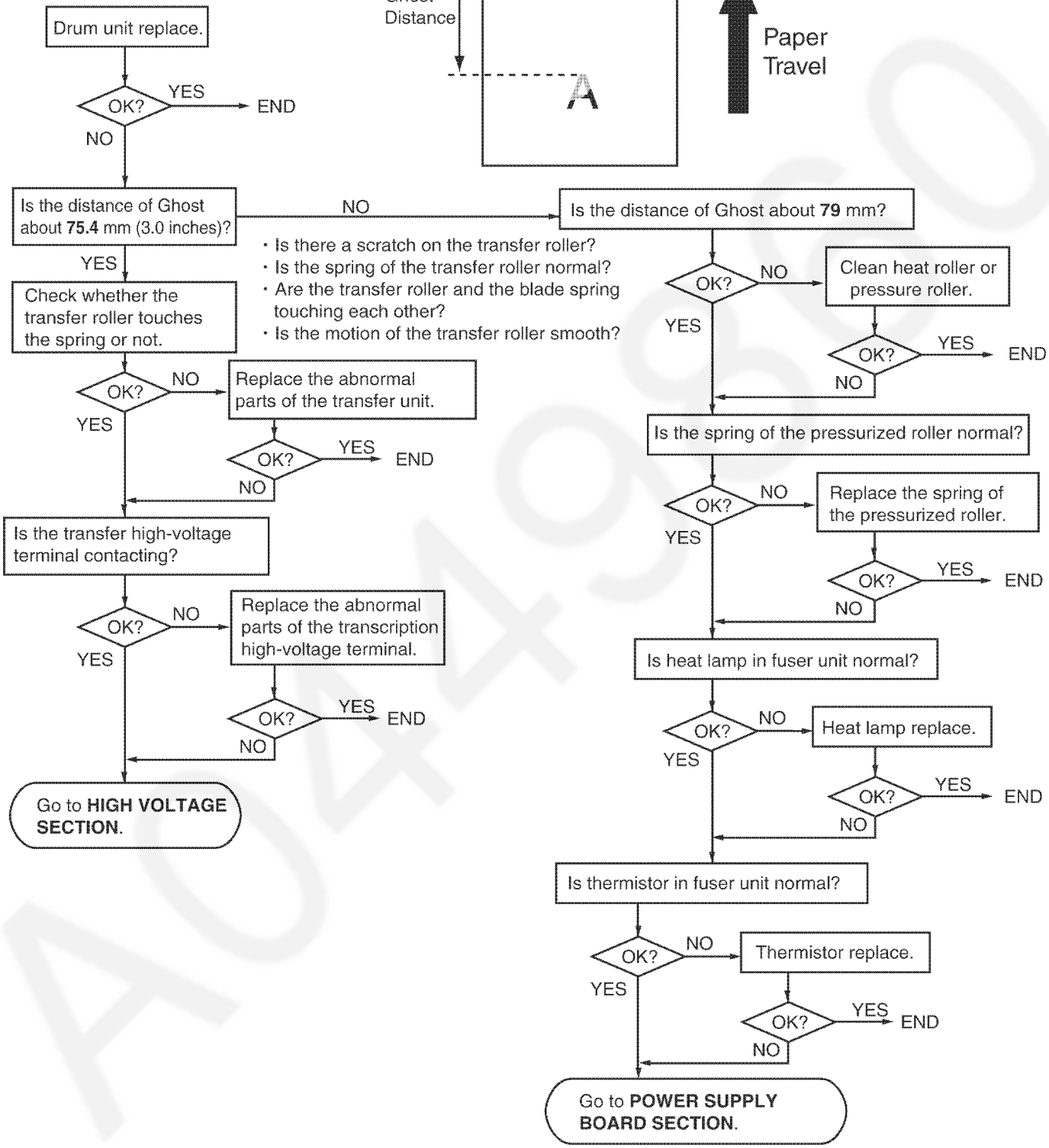
Confirming the Drum unit (In case that replacement of the development unit caused CALL SERVICE 6 to appear again.)
- Check if the charge wire has breaking, loose, or dirt, etc.
- In case that the dirt is found on the charge wire, does the unit become normal after getting rid of the dirt?

The charge wire should be cleaned with a soft cloth soaked in ethanol.
Be careful not to cut the wire.
- Are the contact terminals of Drum unit clean?

12.3.7. Print

12.3.7.1. Ghost Image



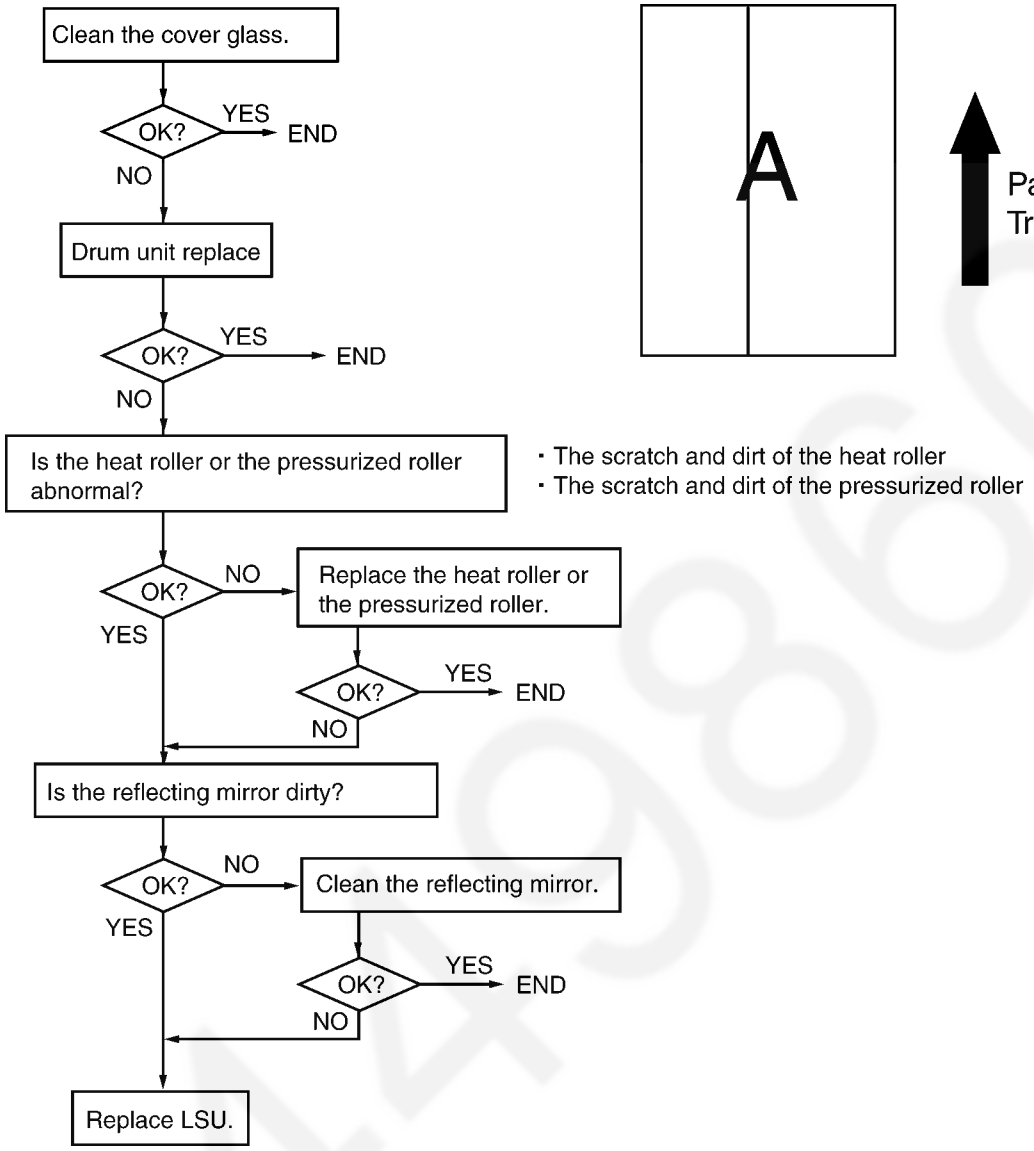


CROSS REFERENCE:

High Voltage Section (P.214)

Power Supply Board Section (P.83)

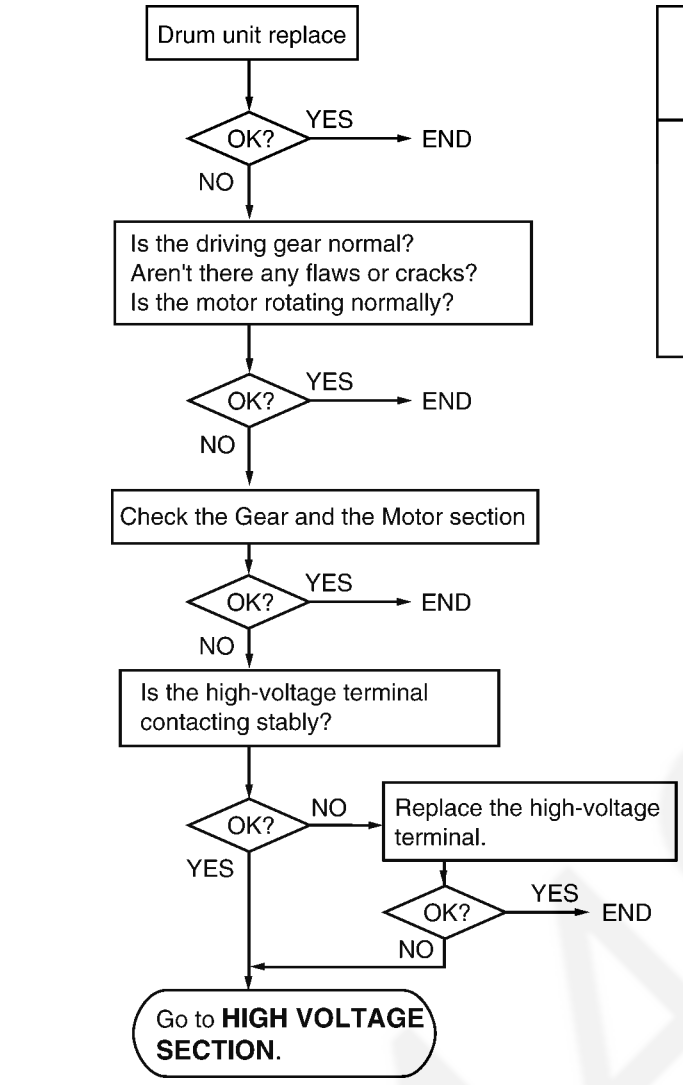
12.3.7.2. Dark or White Vertical Line

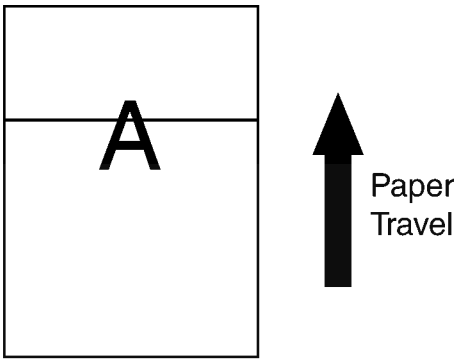


Note:

When wiping the cover glass, reflecting mirror, use a dry and soft cloth.

12.3.7.3. Dark or White Horizontal Line

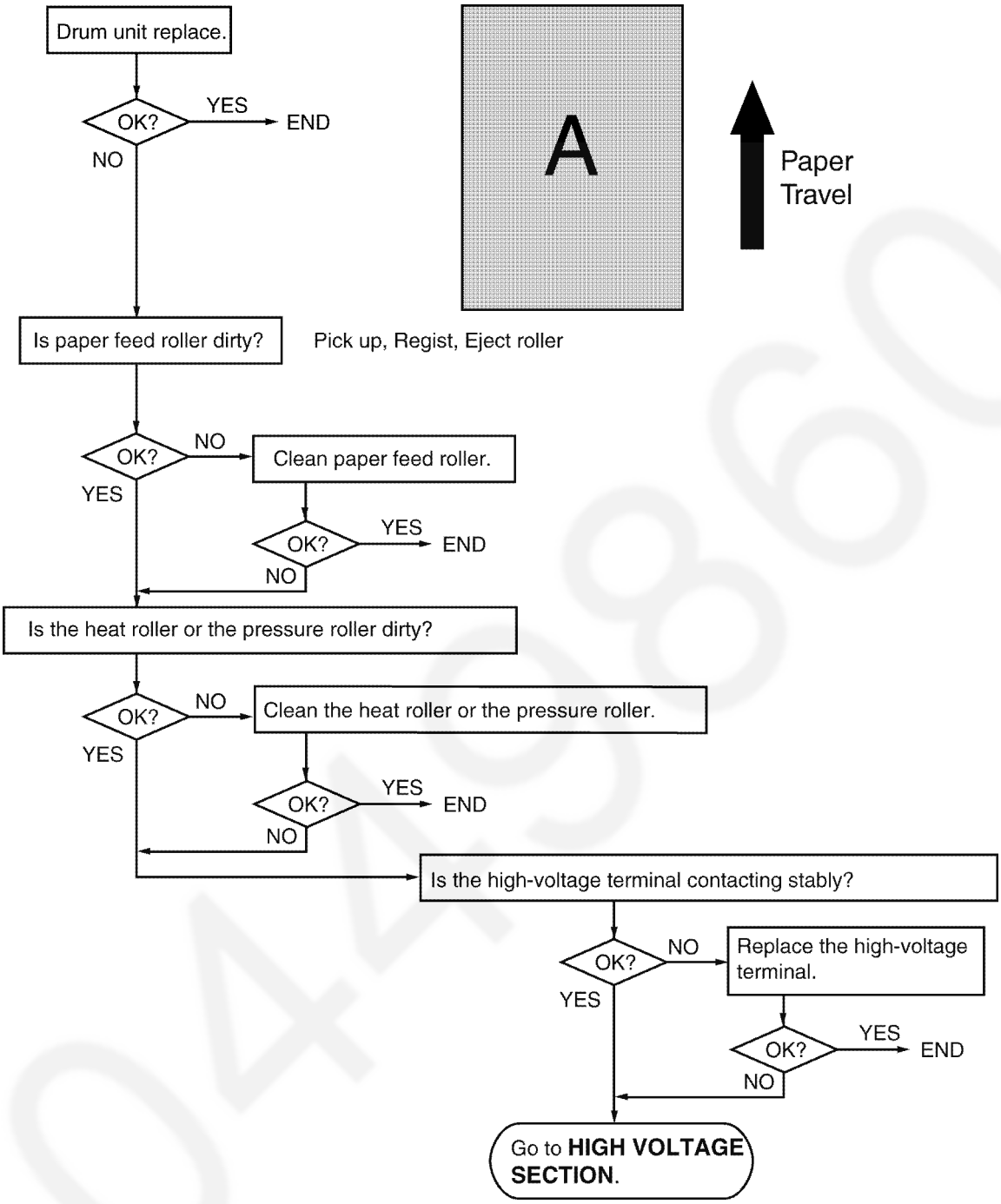




・It is necessary to describe the information about the lines that cannot be troubleshooted in such as halftone.
・When there is the information about the troubleshooted horizontal line, please add the description of it.

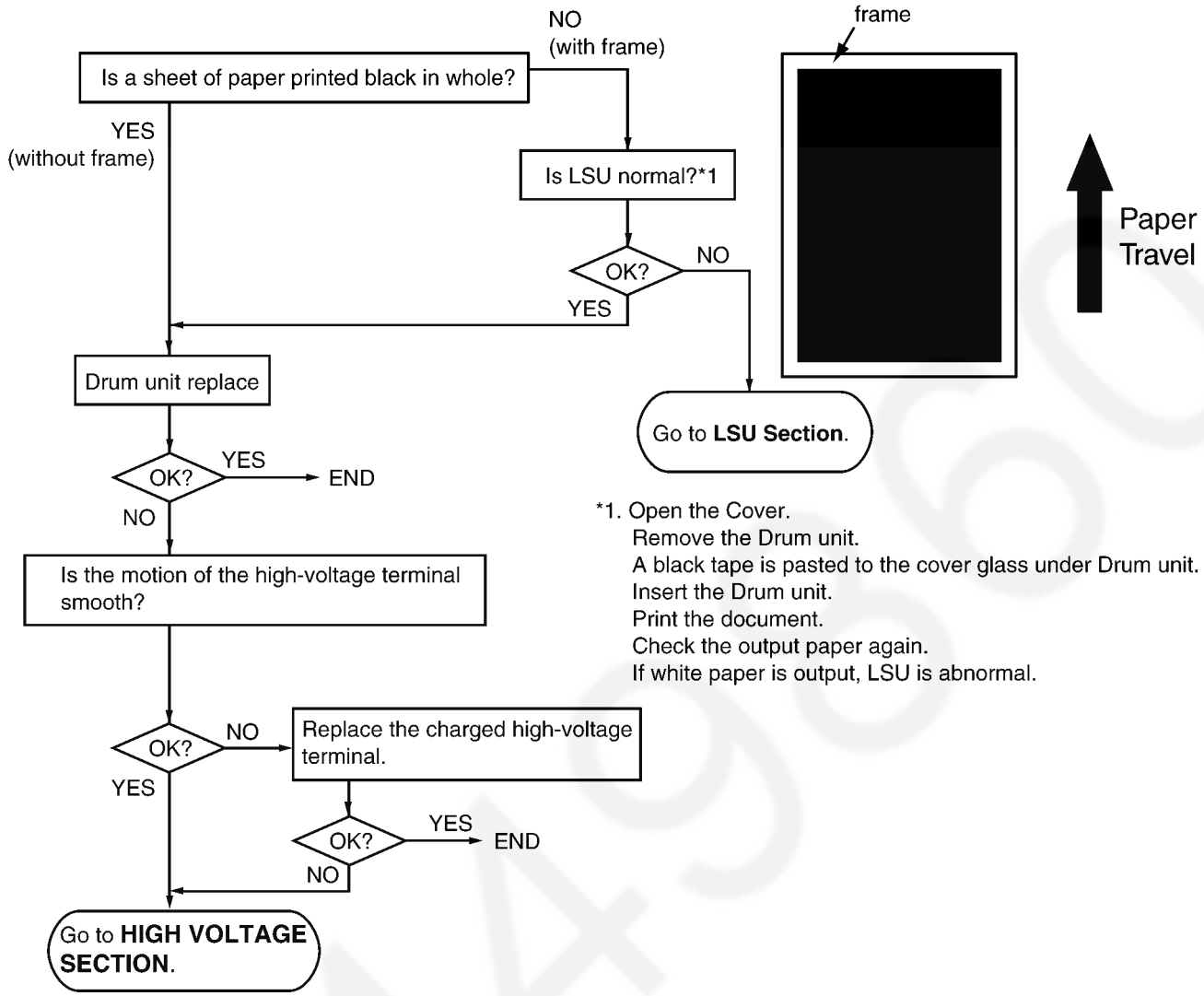
CROSS REFERENCE:
High Voltage Section (P.214)

12.3.7.4. Dirty or Half Darkness Background



CROSS REFERENCE:
High Voltage Section (P.214)

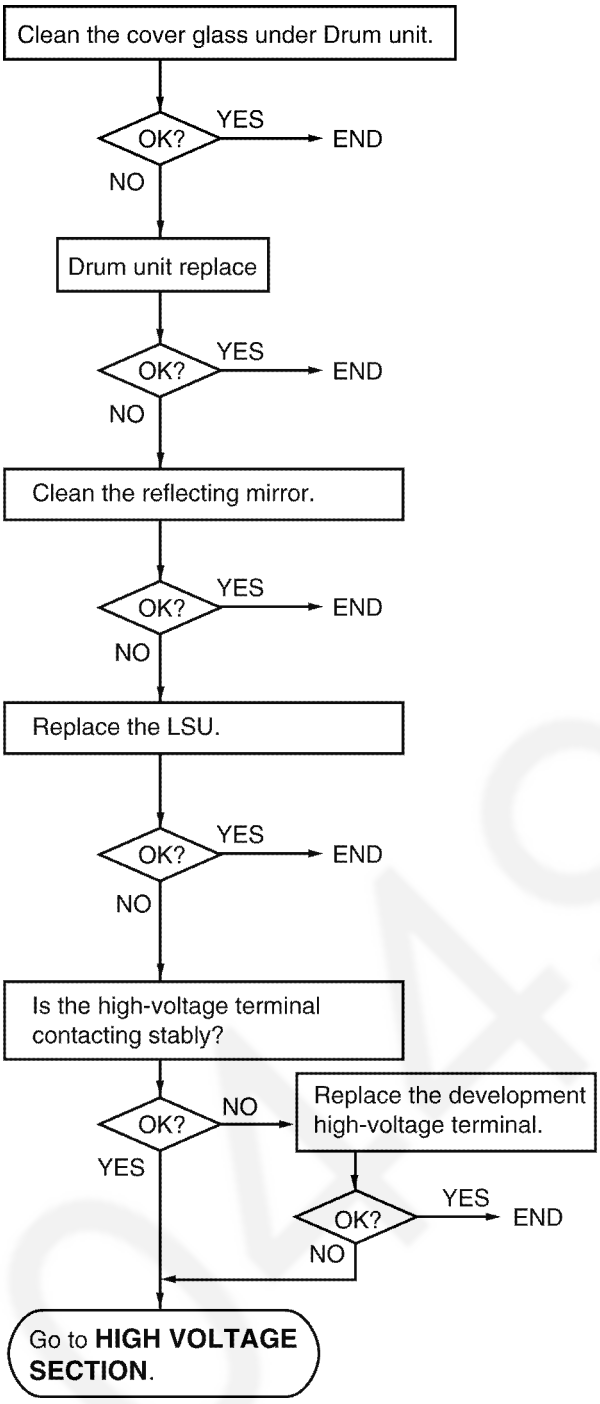
12.3.7.5. Black Print

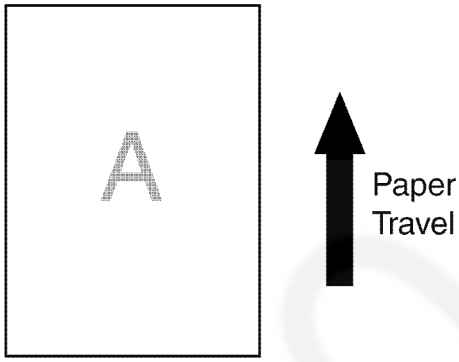


*1. Open the Cover.
Remove the Drum unit.
A black tape is pasted to the cover glass under Drum unit.
Insert the Drum unit.
Print the document.
Check the output paper again.
If white paper is output, LSU is abnormal.

CROSS REFERENCE:
High Voltage Section (P.214)
LSU (Laser Scanning Unit) Section (P.57)

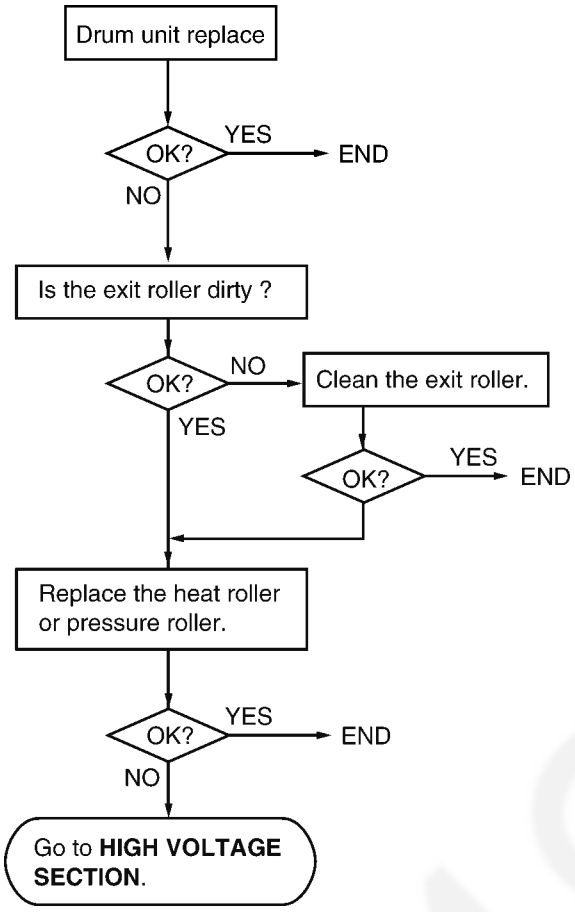
12.3.7.6. Light Print

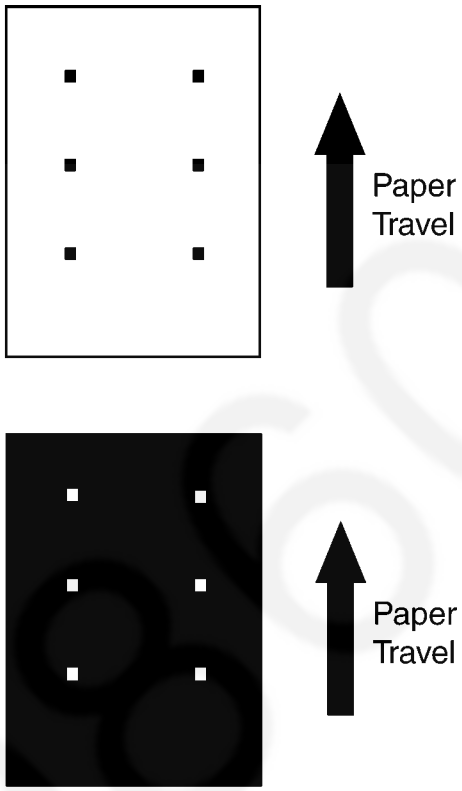




CROSS REFERENCE:
High Voltage Section (P.214)

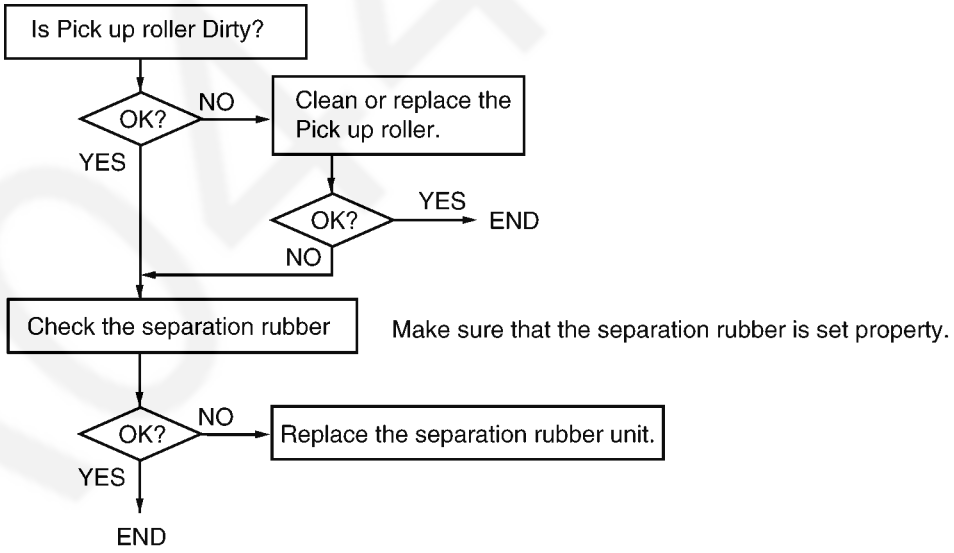
12.3.7.7. Black or White Point



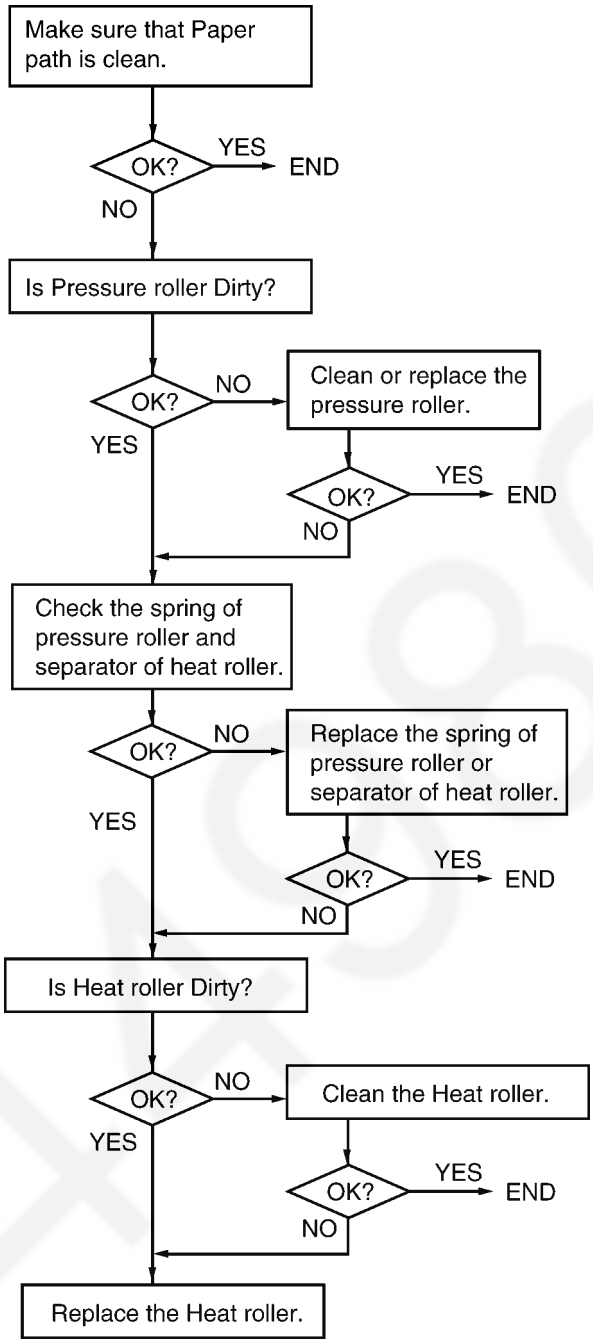


12.3.8. Recording Paper Feed

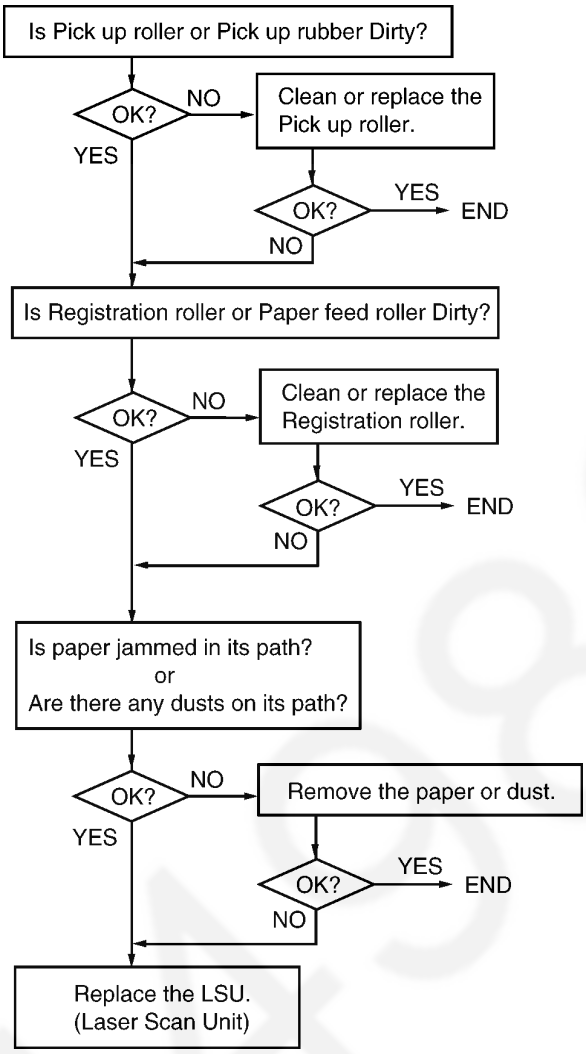
12.3.8.1. Multiple Feed



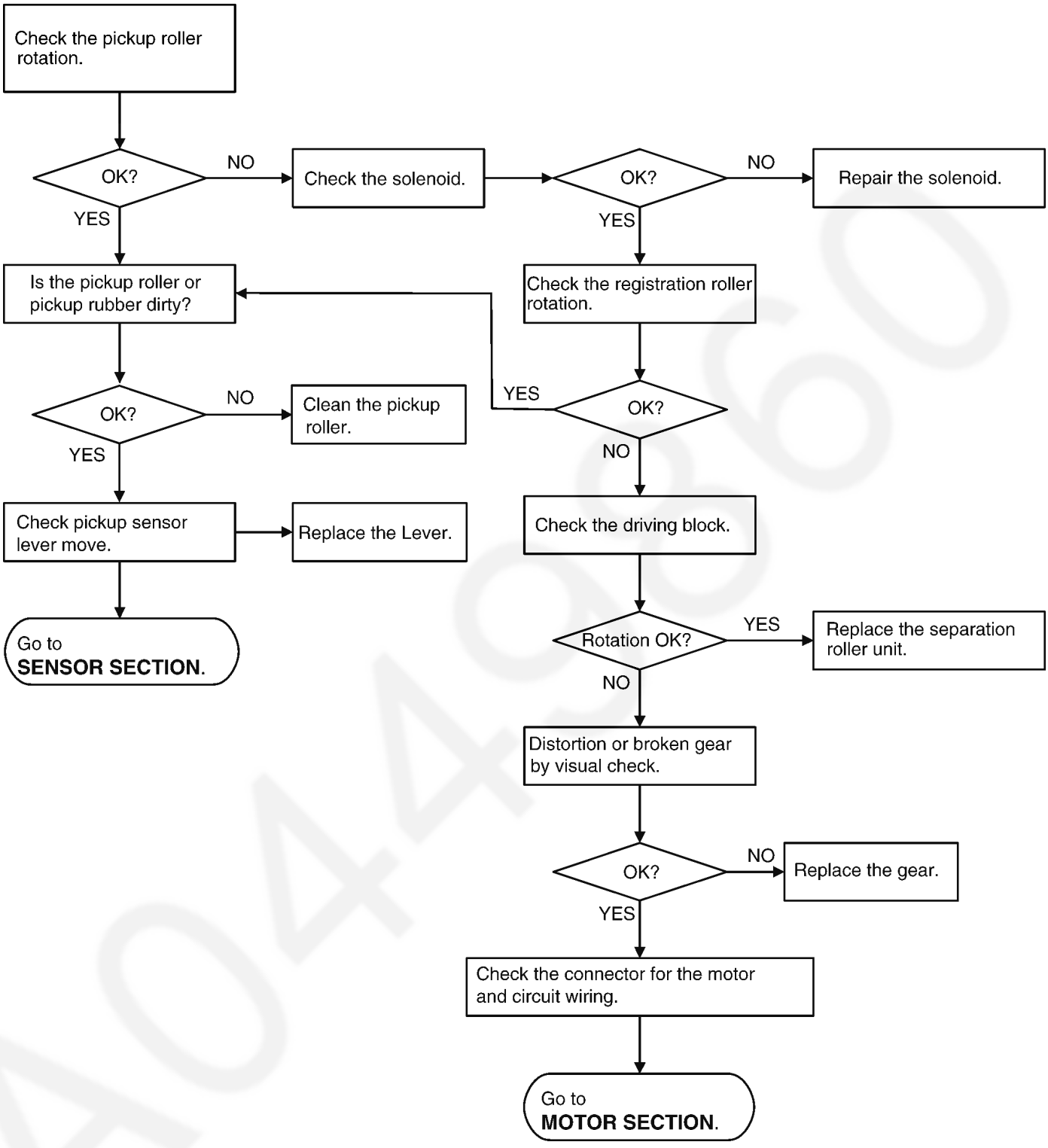
12.3.8.2. The Recording Paper Is Waved or Wrinkled



12.3.8.3. Skew


Is Pick up roller or Pick up rubber Dirty?
OK?
NO
YES
Clean or replace the Pick up roller.
OK?
YES
END
NO
Is Registration roller or Paper feed roller Dirty?
OK?
NO
YES
Clean or replace the Registration roller.
OK?
YES
END
NO
Is paper jammed in its path?
or
Are there any dusts on its path?
OK?
NO
YES
Remove the paper or dust.
OK?
YES
END
NO
Replace the LSU.
(Laser Scan Unit)

12.3.8.4. The Recording Paper Does Not Feed

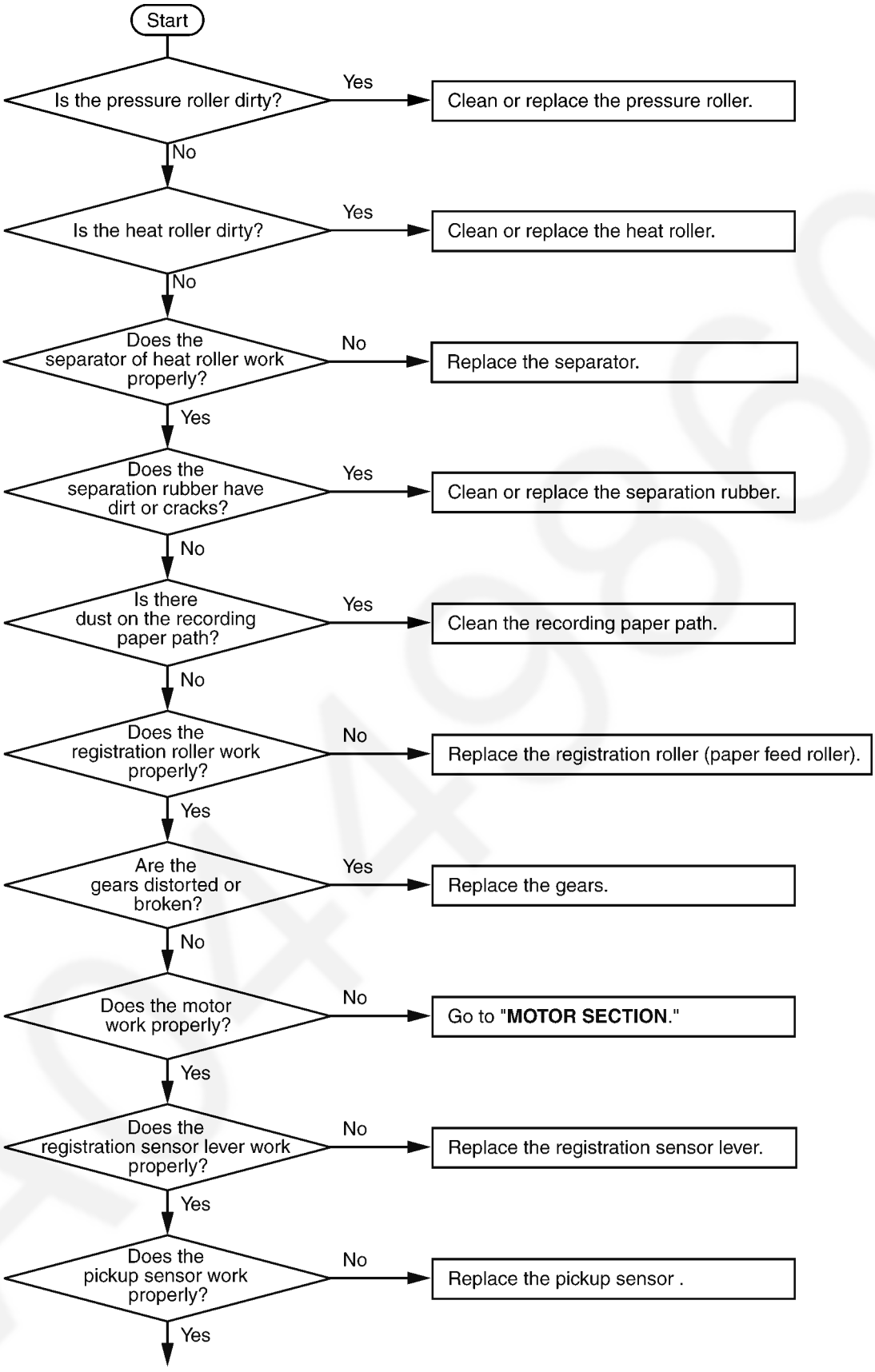


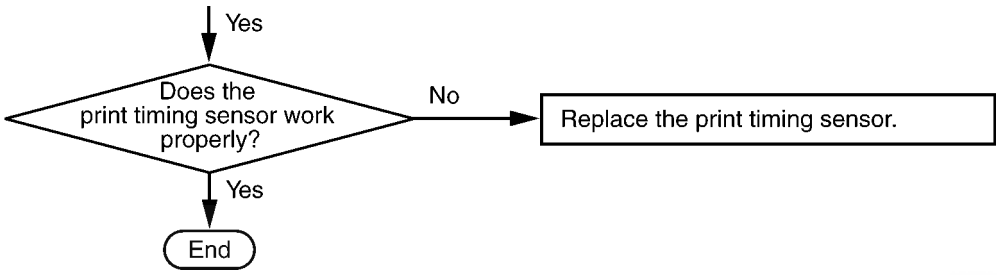
CROSS REFERENCE:

Sensor Section (P.196)

Motor Section (P.206)

12.3.8.5. The Recording Paper Jam





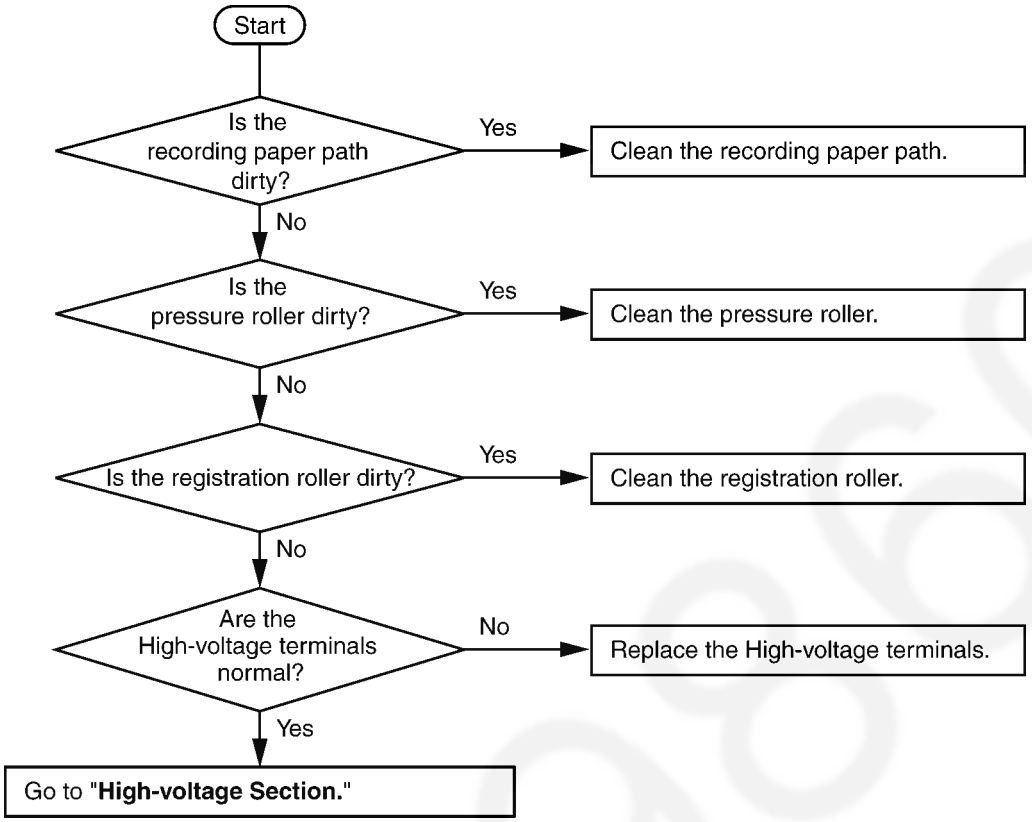
CROSS REFERENCE:

FAN Motor Section (P.54)

When the recording paper jam is occurred, the service mode *630 distinguishes the cause.

0:No Jam
1:Exit Sensor turns ON, though not under the conditions for ON.
2:Exit Sensor turns OFF, though not under the conditions for OFF.
3:After Exit Sensor falls, it turns ON already on terminating of Cancel Timer.
4:After Exit Sensor rises, it turns ON already on terminating of Cancel Timer.
5:Top Sensor turns ON, though not under the conditions for ON.
6:Top Sensor turns OFF, though not under the conditions for OFF.
7:After Top Sensor falls, it turns ON already on terminating of Cancel Timer.
8:After Top Sensor rises, it turns OFF already on terminating of Cancel Timer.
9:Exit Sensor never turns ON in the specified time, though Top Sensor turns ON.
10:Top Sensor MAX-length-JAM.
11:Exit Sensor never turns OFF in the specified time, though Top Sensor turns OFF.
12:Registration Sensor turns ON, though not under the conditions for ON.
13:Registration Sensor turns OFF, though not under the conditions for OFF.
14:After Registration Sensor falls, it turns ON already on terminating of Cancel Timer.
15:After Registration Sensor rises, it turns OFF already on terminating of Cancel Timer.
16:Top Sensor never turns ON in the specified time, though Registration Sensor turns ON.
17:Registration Sensor MAX-length-JAM.
18:Top Sensor never turns OFF in the specified time, though Registration Sensor turns OFF.
Top Sensor never turns OFF in the specified time, though Pick1 Sensor turns OFF.
19:PICK1 Sensor turns ON, though not under the conditions for ON.
20:PICK1 Sensor turns OFF, though not under the conditions for OFF.
21:After PICK1 Sensor falls, it turns ON already on terminating of Cancel Timer.
22:After PICK1 Sensor rises, it turns OFF already on terminating of Cancel Timer.
23:Registration Sensor never turns ON in the specified time, though PICK1 Sensor turns ON.
Top Sensor never turns ON in the specified time, though PICK1 Sensor turns ON.
24:PICK2 Sensor MAX-length-JAM.
25:Registration Sensor never turns OFF in the specified time, though PICK1 Sensor turns OFF.
90:Abnormal stop during printing DMA.
91:Incompleteness of JBIG decompression.
92:HVERR(error of an abnormal charge voltage) was detected during printing.
99:Before Motor Rotation.

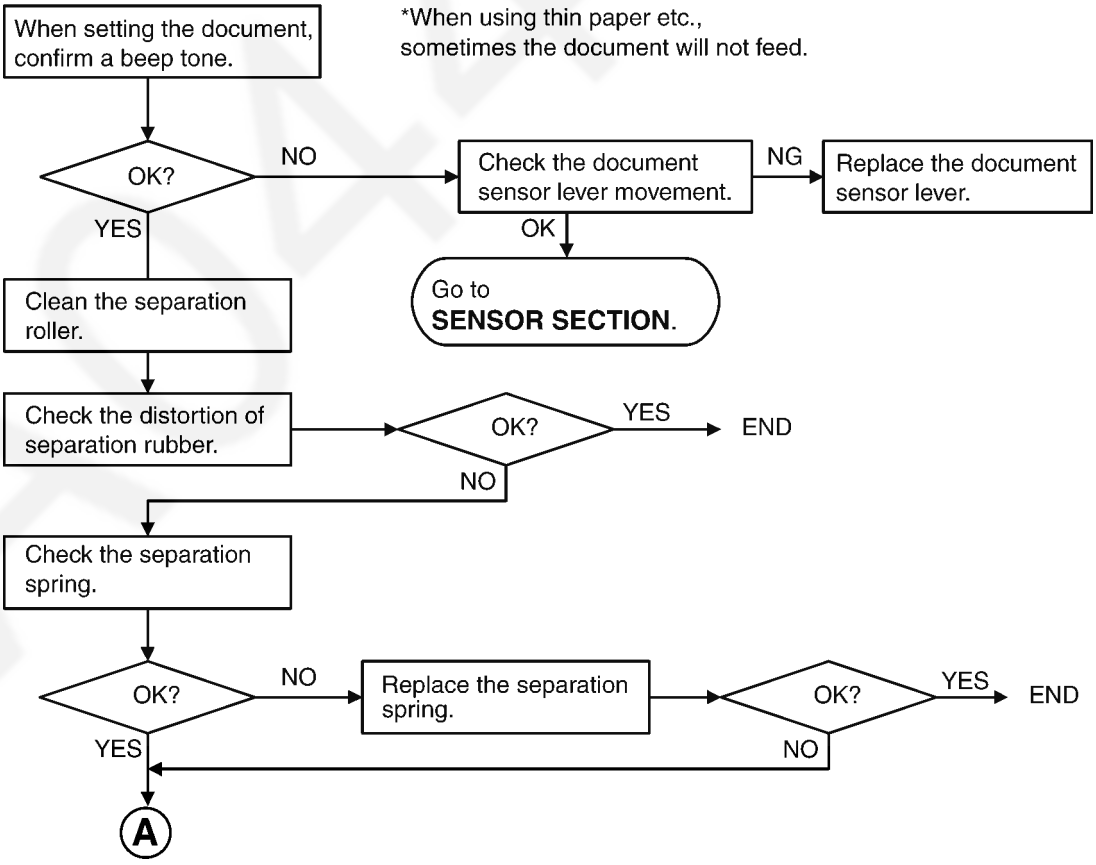
12.3.8.6. Back Side of The Recording Paper Is Dirty



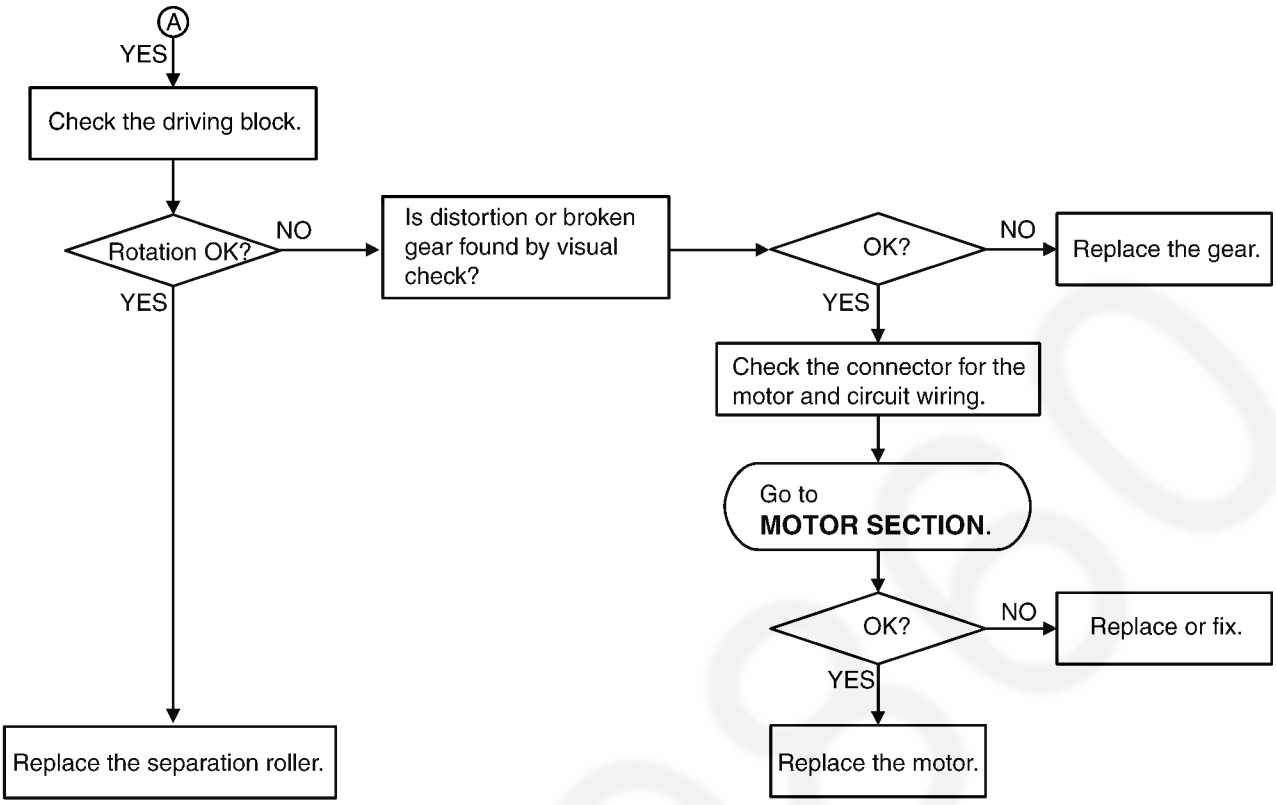
CROSS REFERENCE:
High Voltage Section (P.214)

12.3.9. ADF (Auto Document Feeder) Section

12.3.9.1. No Document Feed, Document Jam and Multiple Document Feed



CROSS REFERENCE:
Sensor Section (P.196)



Depending on the circumstances, change the roller, one-way spring gear, etc., as well as the other rollers or parts.

When confirming if the characters are extended or distorted on,if the feed problem occurs,use this test chart. (Fig b)

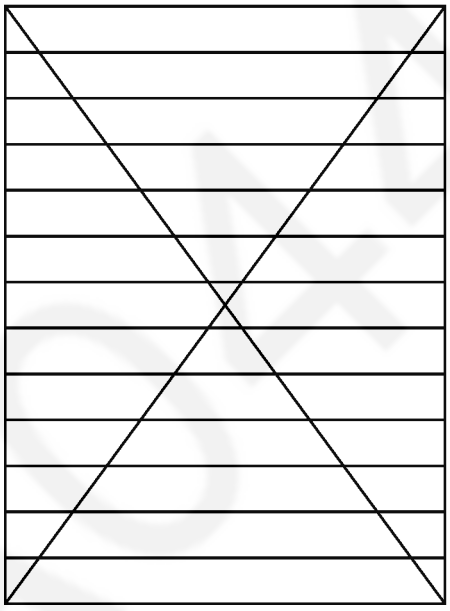
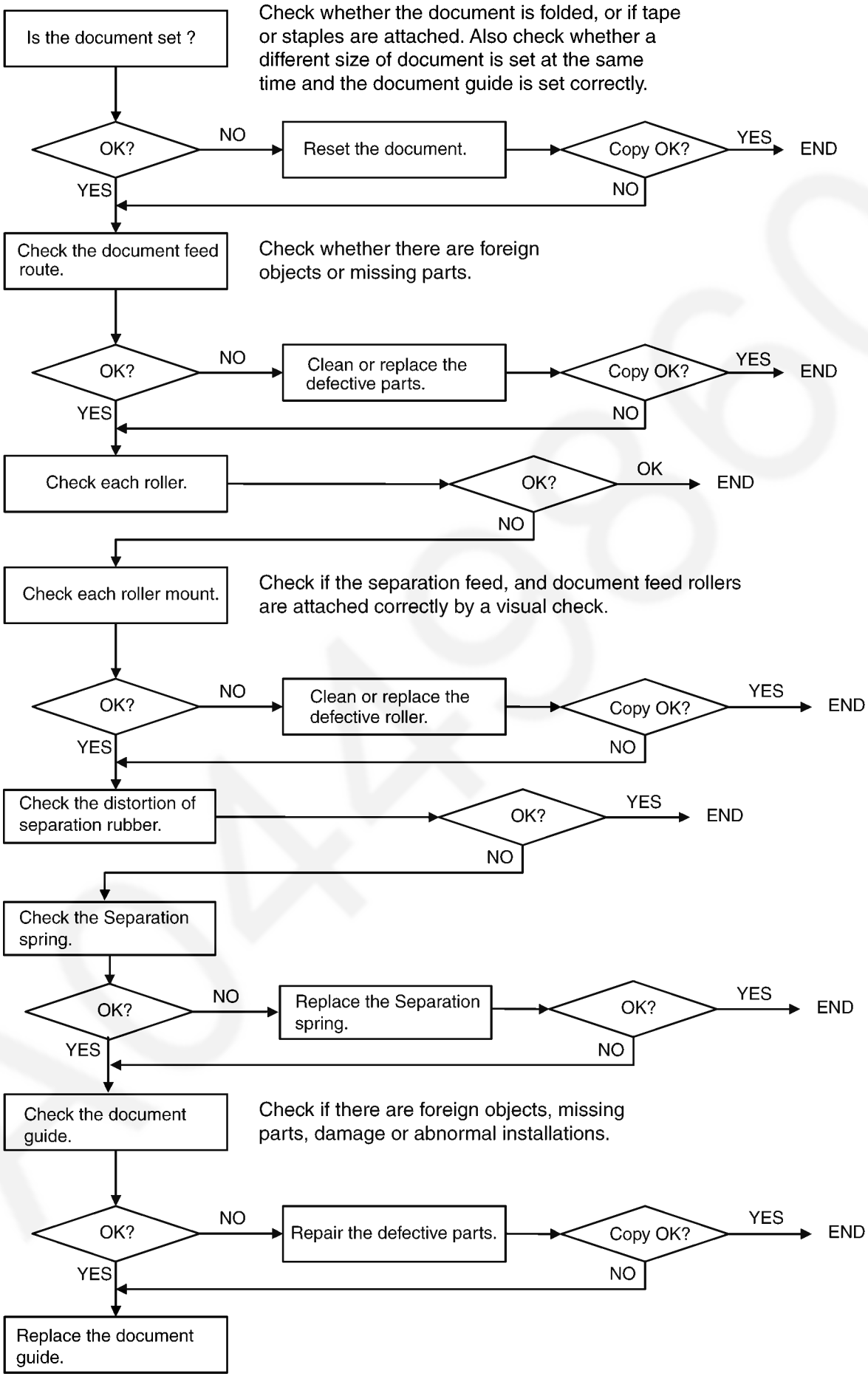


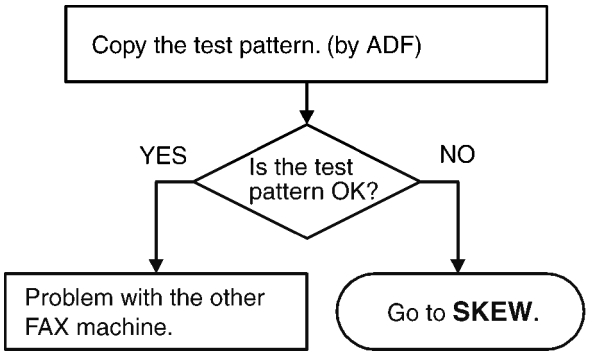
Fig. b

CROSS REFERENCE:
Motor Section (P.206)

12.3.9.2. Skew (ADF)

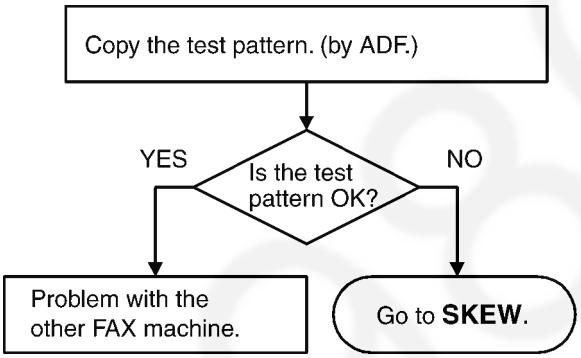


12.3.9.3. The Sent FAX Data Is Skewed



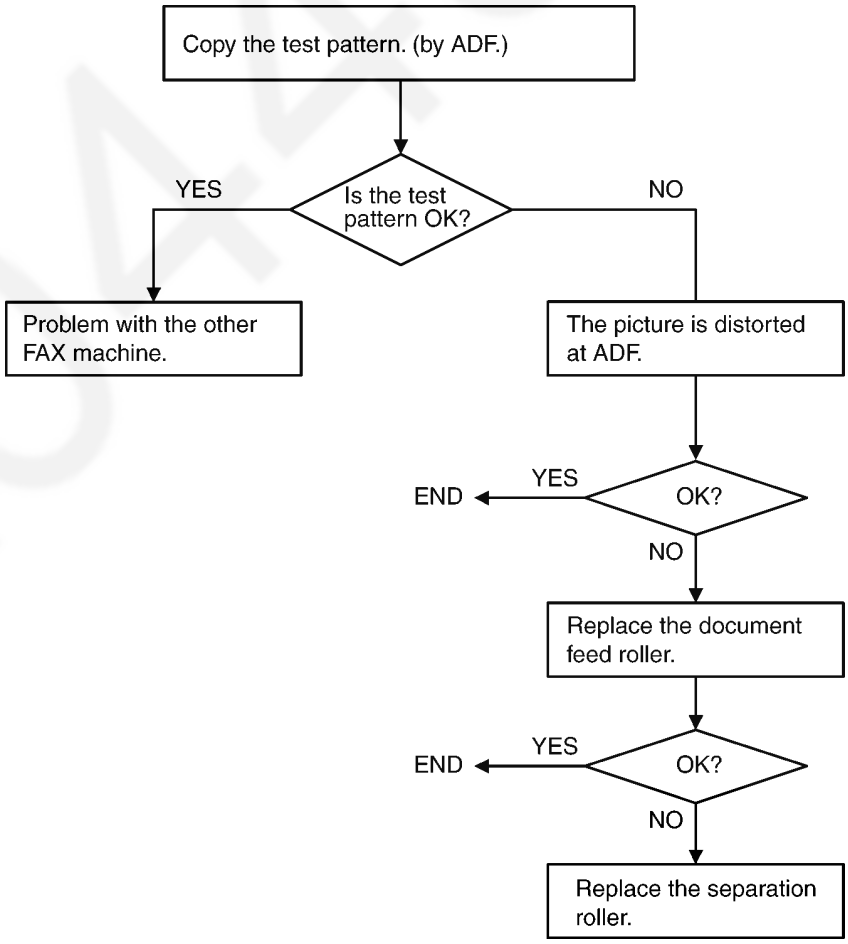
CROSS REFERENCE:
Skew (ADF) (P.170)

12.3.9.4. The Received FAX Data Is Skewed

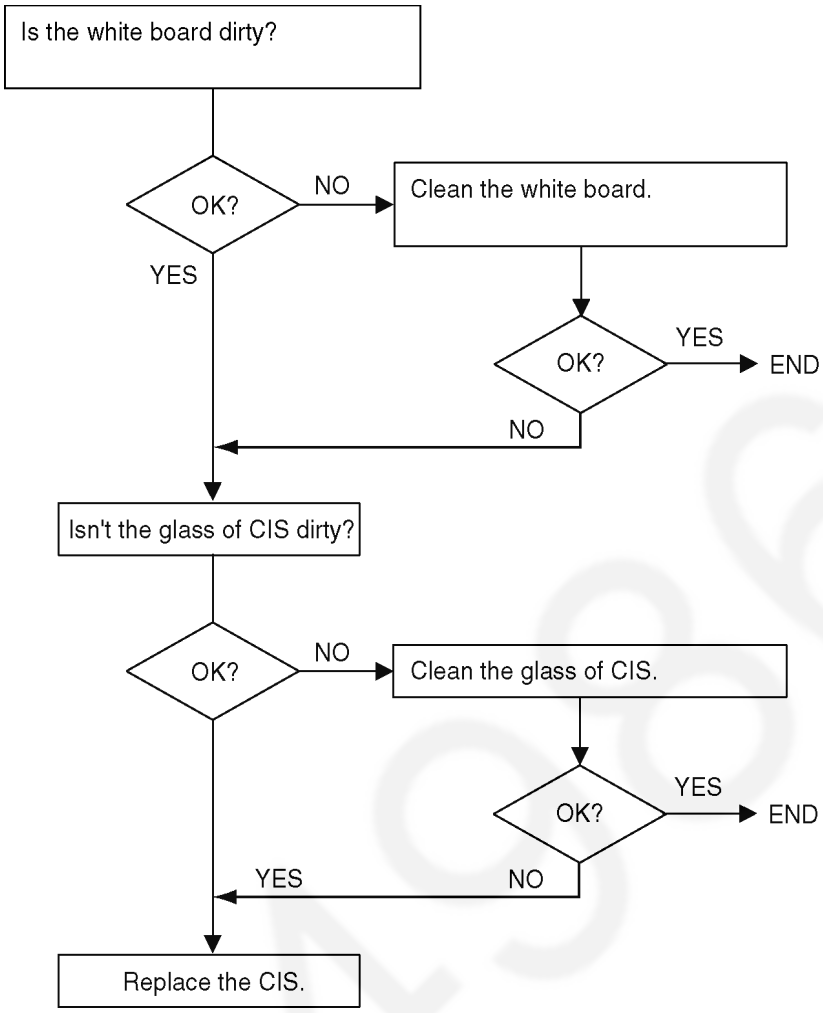


CROSS REFERENCE:
Skew (P.164)

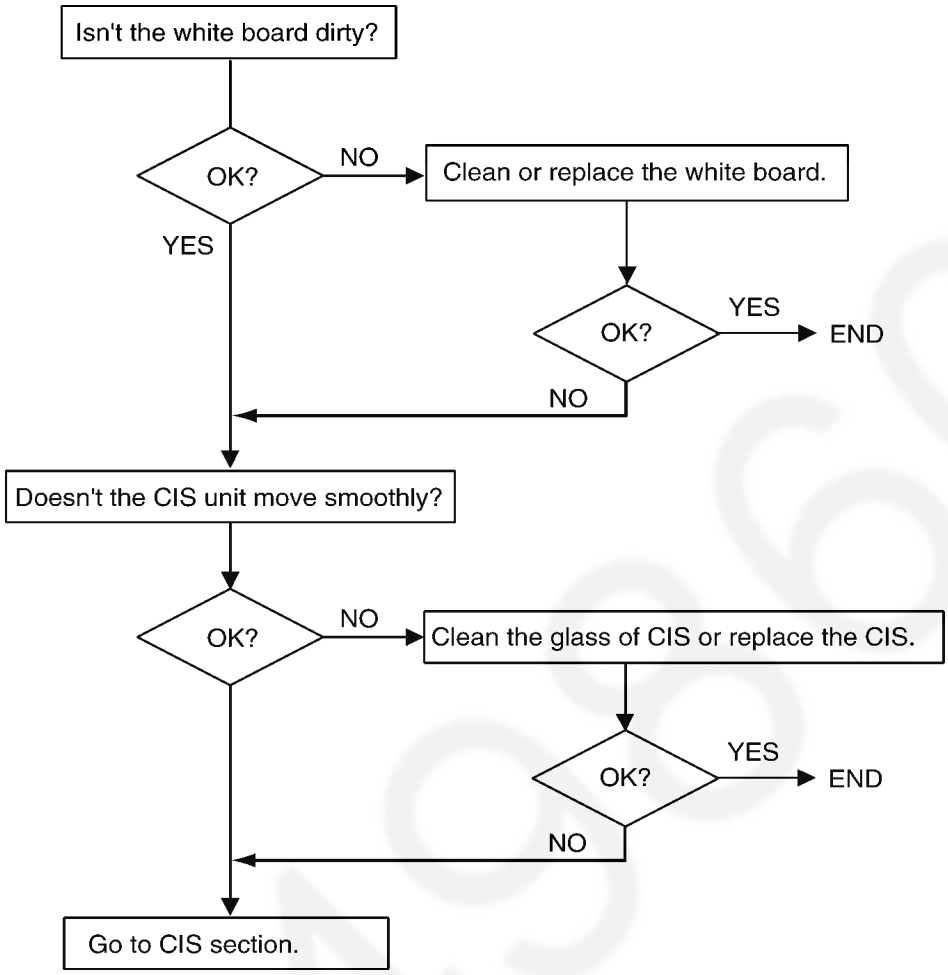
12.3.9.5. The Received or Copied Data Is Expanded



12.3.9.6. Black or White Vertical Line Is Copied



12.3.9.7. An Abnormal Image Is Copied



CROSS REFERENCE:
CIS Control Section (P.210)

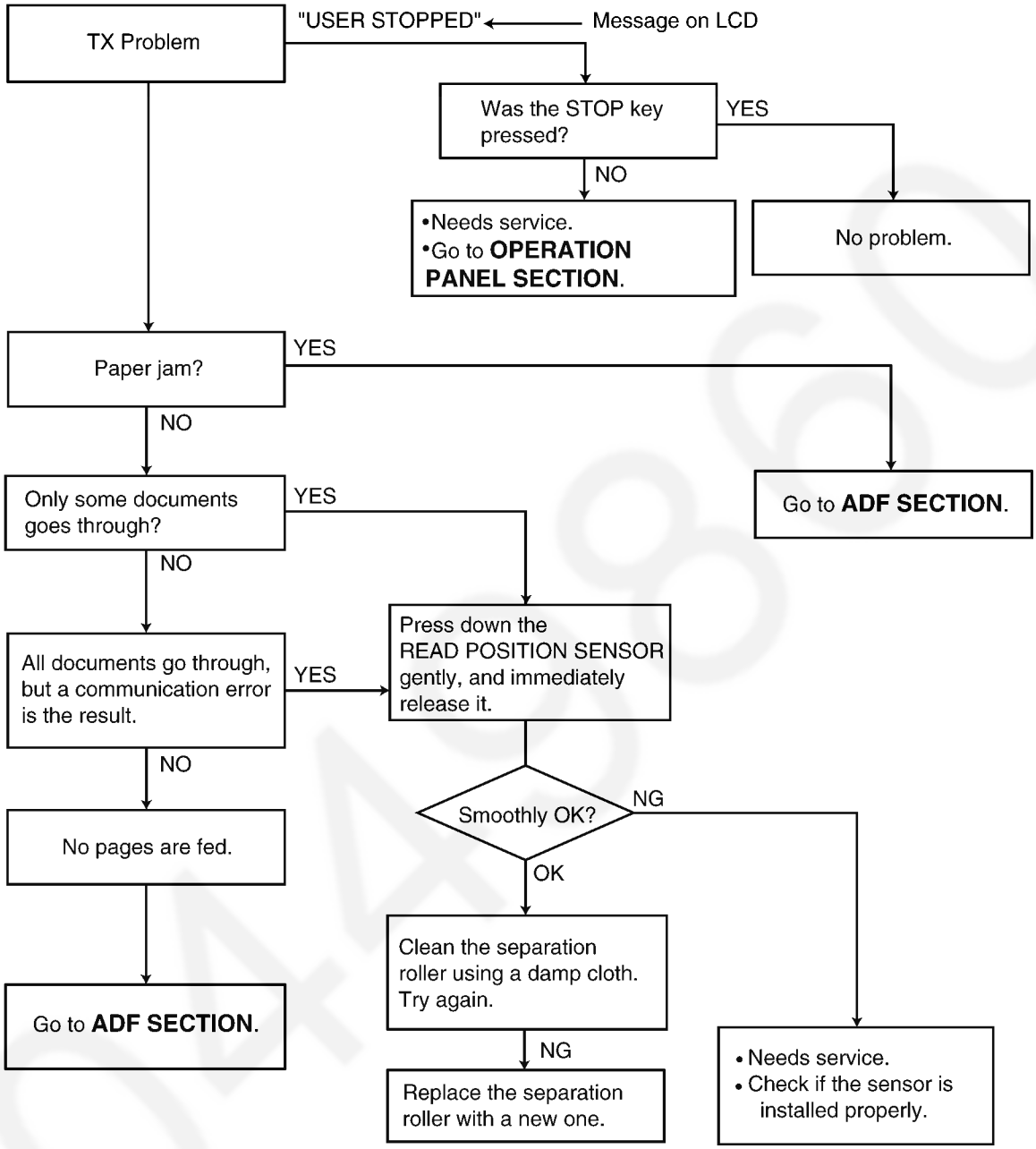
12.3.10. Communication Section

Find the problem in the table shown below, and refer to the corresponding troubleshooting procedure in **Defective Facsimile Section** (P.175).

No.	Symptom	Content	Possible cause
1	The paper dose not feed properly when faxing. (Copying is also not possible.)	Troubleshooting	Problem with the feeding mechanism. (Refer to **Transmit Problem** (P.175)
2	The fax transmits successfully one time and fails another. (Copying is also possible.)	Troubleshooting	Problem with the service line or with the receiver's fax. (Refer to **Sometime There Is a Transmit Problem** (P.176)
3	The fax receives successfully one time and fails another. (Copying is also possible.)	Troubleshooting	Problem with the service line or with the transmitter's fax. (Refer to **Receive Problem (**P.177)
4	The fax completely fails to transmit or receive. (Copying is also possible.)	Troubleshooting	Problem with the electric circuit. (Refer to **The Unit Can Copy, But Cannot Transmit/Receive** (P.178)
5	The fax fails either to transmit or receive when making a long distance or an international call. (Copying is also possible.)	Detailed description of the possible causes (Similar to troubleshooting items No.2 and No.3.)	Problem with the service line.
6	The fax image is poor when transmitting or receiving during a long distance or international call.		
7	No.1-No.5	The troubleshooting procedure for each error code will be printed on the communication result report.	(Refer to **How To Output The Journal Report** (P.183)

12.3.10.1. Defective Facsimile Section

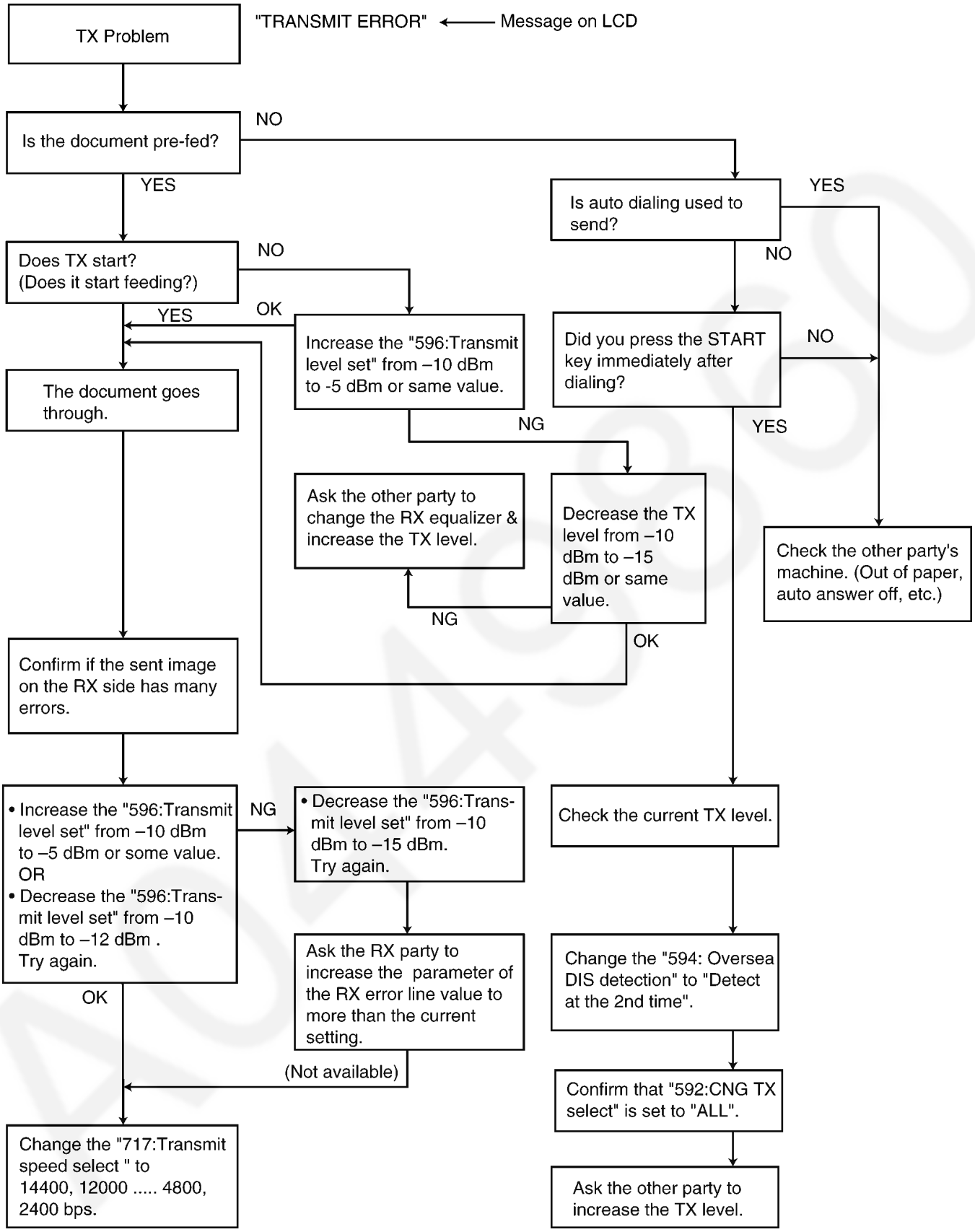
12.3.10.1.1. Transmit Problem



CROSS REFERENCE:

Cleaning the White Plates and Glass (P.283)
ADF (Auto Document Feeder) Section (P.168)
Operation Panel Section (P.196)

12.3.10.1.2. Sometime There Is a Transmit Problem



Note:

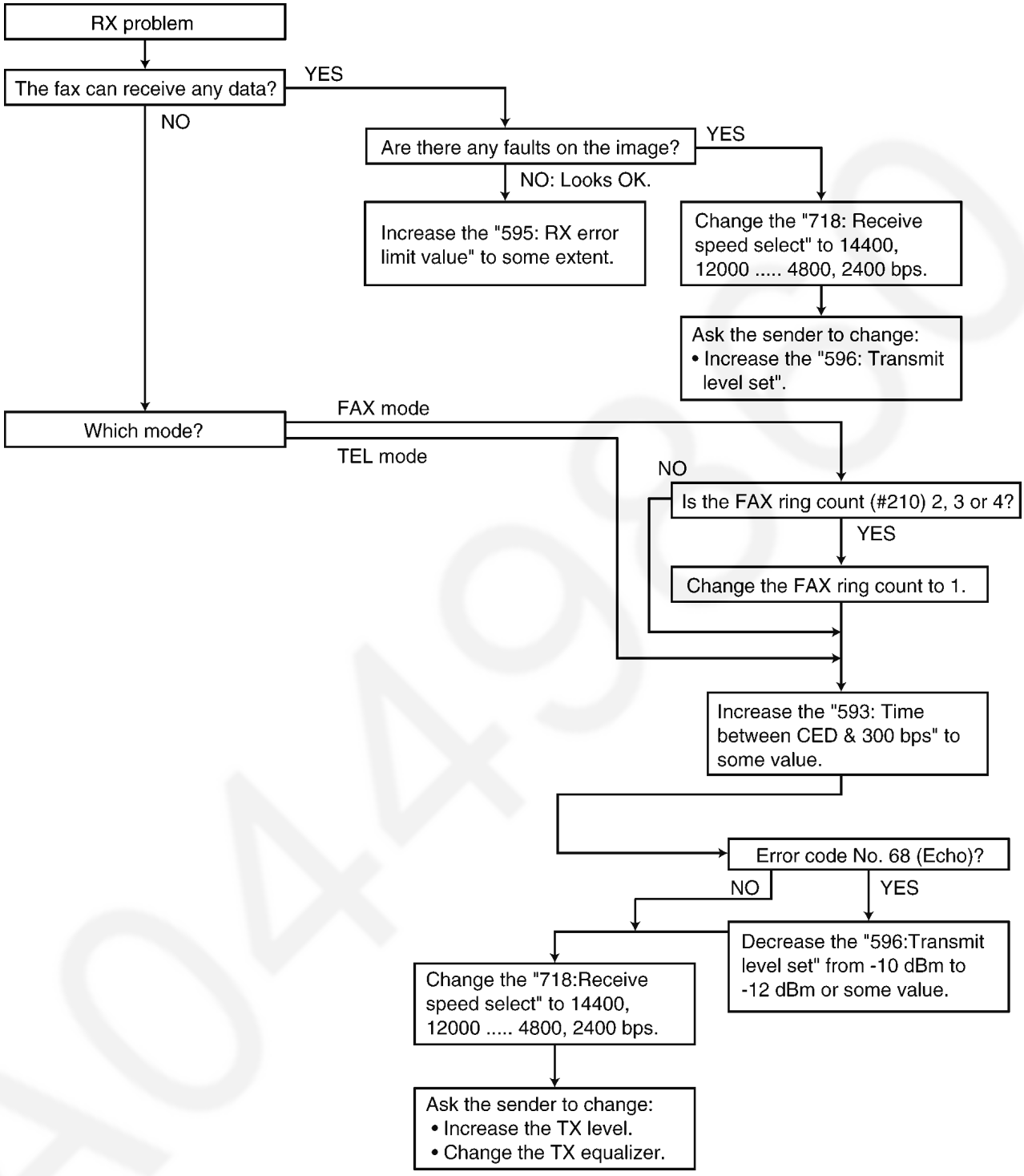
"596: Transmit level set" represents a service code. Refer to the **Service Function Table** (P.123).

"717: Transmit speed select" represents a service code. Refer to the **Service Function Table** (P.123).

12.3.10.1.3. Receive Problem

Confirm the following before starting troubleshooting.

• Is the recording paper installed properly? Refer to the next page.



Note:

"596: Transmit level set" represents a service code. Refer to the **Service Function Table** (P.123).

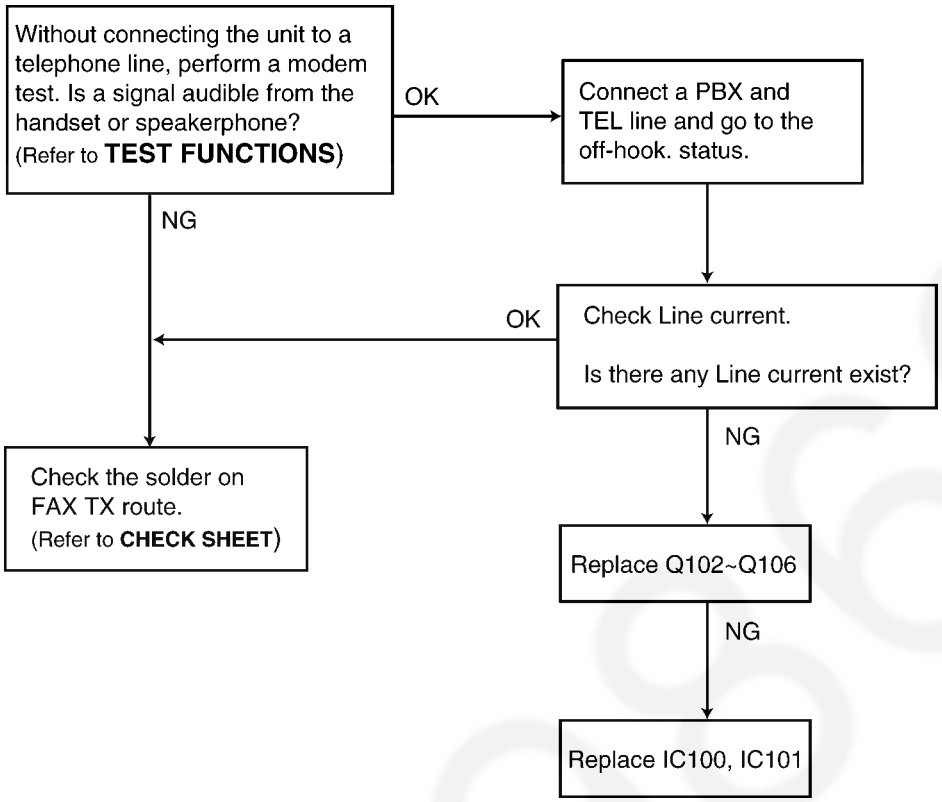
"718: Receive speed select" represents a service code. Refer to the **Service Function Table** (P.123).

For the receiving problem, we have thought of causes other than in the software. Some causes may be when the fax changes to the memory receiving mode (for example, when out of paper). and the memory becomes full of the unprinted fax data. In this case, [MEMORY FULL] and its main cause (for example, "OUT OF PAPER") are displayed on the LCD. Accordingly, by solving the main problem, [MEMORY FULL] can be canceled and the receiving problem can solved.

Please refer to **User Recoverable Errors** (P.133) for the above items.

Also, when it actually becomes a hardware deformity, please check each sensor.

12.3.10.1.4. The Unit Can Copy, But Cannot Transmit/Receive



CROSS REFERENCE:

Test Functions (P.119)
Check Sheet for Signal Route (P.193)

12.3.11. 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 **Program Mode Table** (P.138) 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).

HOW TO READ JOURNAL REPORTS:

Example:

JOURNAL

23 Mar. 2002 09:51

YOUR LOGO :
YOUR FAX NO:

NO.	OTHER FACSIMILE	START TIME	USAGE TIME	MODE	PAGES	RESULT	*CODE
01	3332222	21 JAN. 14:14	00'45	SND	001	OK	
02	9998765	21 JAN 15:17	00'58	SND	002	OK	
03	John	21 JAN 15:18	00'48	RCV	001	OK	
04	555556677	22 JAN. 10:35	02'45	RCV	003	COMMUNICATION ERROR 43	

JOURNAL 2

23 Mar. 2000 09:51

NO.	(1) RCV MODE	(2) SPEED	(3) RESOLUTION	(4) RCV-TRIG.(CNT.)	(5) ERROR->MEMORY
01	TEL	9600BPS	STD.		
02	TEL	9600BPS	FINE		
03	FAX ONLY	7200BPS	STD.	FAX MOD	
04	FAX ONLY	9600BPS	STD.	CNG (0003)	

NO RESPONSE DISAPPEARED ON JOURNAL

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

YOUR LOGO:
YOUR FAX NO:

JOURNAL 3

23 MAR. 2000 09:51

NO.	(6) ENCODE	(7) MSLT	(8) EQM(RX)	(9) ERROR LINE(RX)	(10) 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

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** and **Journal 3**.

12.3.11.1. Journal 2

Refer to JOURNAL 2 in **Printout Example** (P.181).

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.181). 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.181), 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.

12.3.11.2. Journal 3

Refer to JOURNAL 3 in **Printout Example** (P.181).

Description

(6) ENCODE

Compression Code: MH/MR/MMR

(7) MSLT

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

(8) EQM (RX)

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

12.3.11.3. Printout Example

JOURNAL2

01 Jan. 2007 0 : 21

NO.	RCV MODE	SPEED	RESOLUTION	RCV-TRIG.(CNT.)	ERROR->MEMORY
01	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00039)	
02	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00040)	
03	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00041)	
04	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00042)	
05	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00043)	
06	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00044)	
07	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00045)	
08	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00046)	
09	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00047)	
10	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00048)	
11	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00049)	
12	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00050)	
13	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00051)	
14	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00052)	
15	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00053)	
16	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00054)	
17	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00055)	
18	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00056)	
19	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00057)	
20	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00058)	
21	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00059)	
22	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00060)	
23	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00061)	
24	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00062)	
25	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00063)	
26	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00064)	
27	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00065)	
28	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00066)	
29	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00067)	
30	FAX ONLY	V34-336(- 0dBm)	STD.	FAX MOD(00068)	

NO RESPONSE DISAPPEARED ON JOURNAL

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

YOUR LOGO :
YOUR FAX NO. :

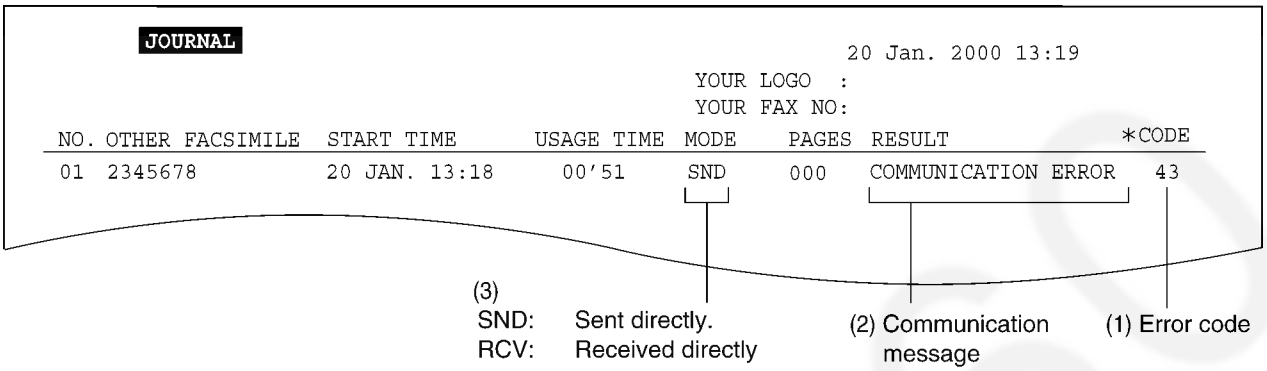
JOURNAL3

09 Sep. 2007 14 : 18

NO.	ENCODE	MSLT	EQM(RX)		ERROR LINE(RX)	MAKER CODE
01	MMR	0msec	0000		00000/00000	0E
02	MMR	0msec	0000		00000/00000	0E
03	MMR	0msec	0000		00000/00000	00
04	MMR	0msec	0000		00000/00000	0E
05	MMR	0msec	0000		00000/00000	0E
06	MH	20msec	0000		00000/00000	00
07	MH	20msec	0000		00000/00000	00
08	MH	20msec	0000		00000/00000	00
09	MH	20msec	0000		00000/00000	00
10	MH	20msec	0000		00000/00000	00
11	MMR	0msec	0000		00000/00000	0E
12	MMR	0msec	0000		00000/00000	0E
13	MMR	0msec	0000		00000/00000	0E
14	MMR	0msec	0000		00000/00000	0E
15	MMR	0msec	0000		00000/00000	0E
16	MMR	0msec	1600	SNR=38dB	00000/04606	0E
17	MMR	0msec	0000		00000/00000	0E
18	MMR	0msec	0000		00000/00000	0E
19	MMR	0msec	0000		00000/00000	0E
20	MMR	0msec	0000		00000/00000	0E
21	MMR	0msec	0000		00000/00000	0E
22	MMR	0msec	0000		00000/00000	0E
23	MMR	0msec	0000		00000/00000	0E
24	MMR	0msec	0000		00000/00000	0E
25	MMR	0msec	0000		00000/00000	0E
26	MMR	0msec	0000		00000/00000	0E
27	MMR	0msec	0000		00000/00000	0E
28	MMR	0msec	0000		00000/00000	0E
29	MMR	0msec	0000		00000/00000	0E
30	MMR	0msec	0000		00000/00000	0E

12.3.11.4. How To Output The Journal Report

1. Press the MENU button 3 times.
2. Press “#”, then “2”.
3. Press the SET button.
4. The report prints out.



CROSS REFERENCE:

Features (P.12)

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	The cover is open.	
	JUNK FAX PROH. REJECT	RCV	The fax was rejected by the junk fax prohibitor feature.	
28	COMMUNICATION ERROR	SND	Invalid signal is received during PHASE-B of PHASE-D.	
40	COMMUNICATION ERROR	SND	Transmission is finished when the T0 TIMER expires.	1
41	COMMUNICATION ERROR	SND	DCN is received after DCS transmission.	2
42	COMMUNICATION ERROR	SND	FTT is received after transmission of a 2400BSP 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
52	COMMUNICATION ERROR	RCV	Reception is finished when the T0 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
75	MEMORY FULL	RCV	The document was not received due to memory full.	
79	CANCELED	SND	The multi-station transmission was rejected by the user.	
FD	COMMUNICATION ERROR	SND & RCV	Modem error. For the DCN, DCN, etc. abbreviations, refer to **NCU Section** (P.39).	12

SND=TRANSMISSION / RCV=RECEPTION

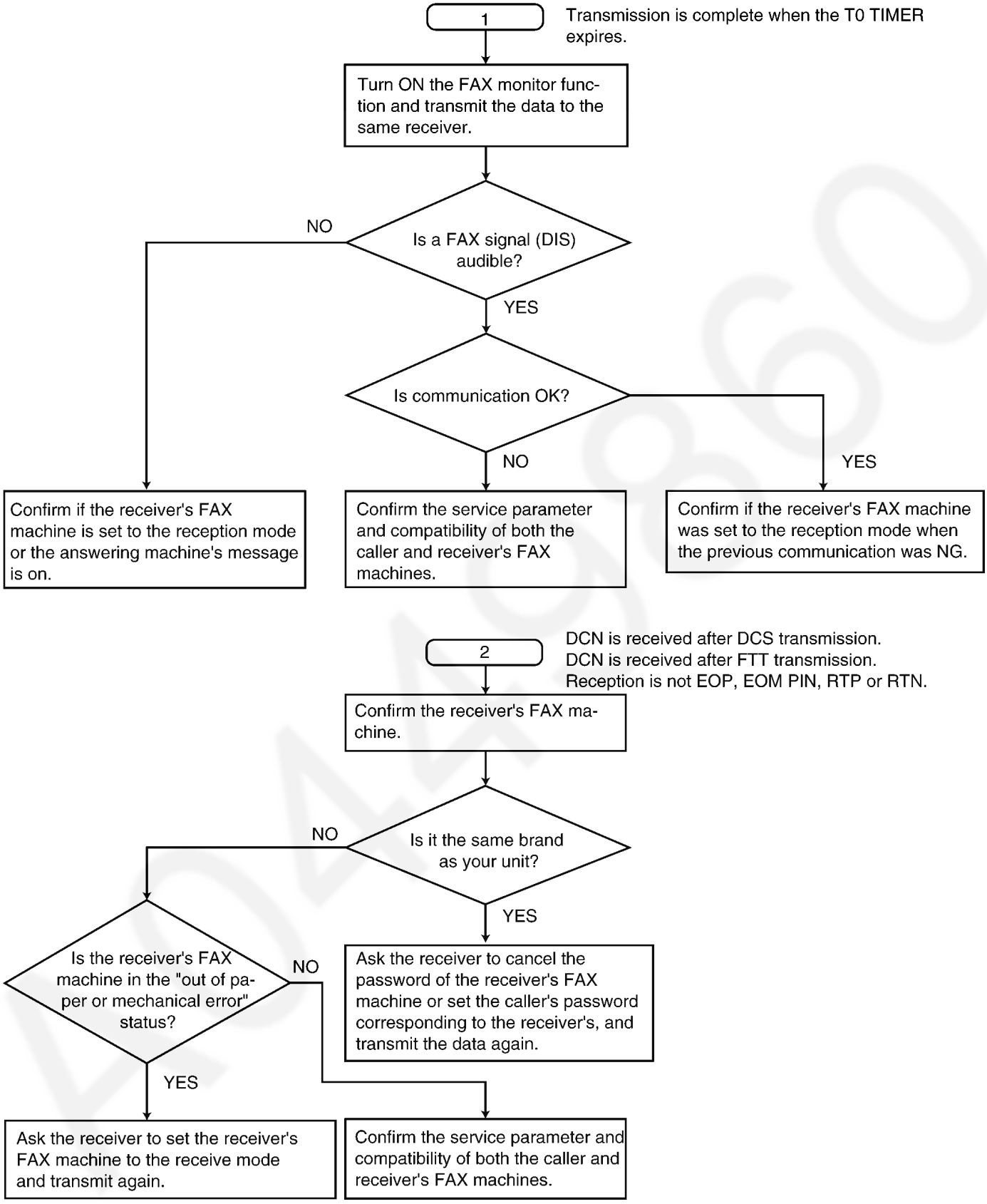
Most fax communication problems can be resolved by the following steps.

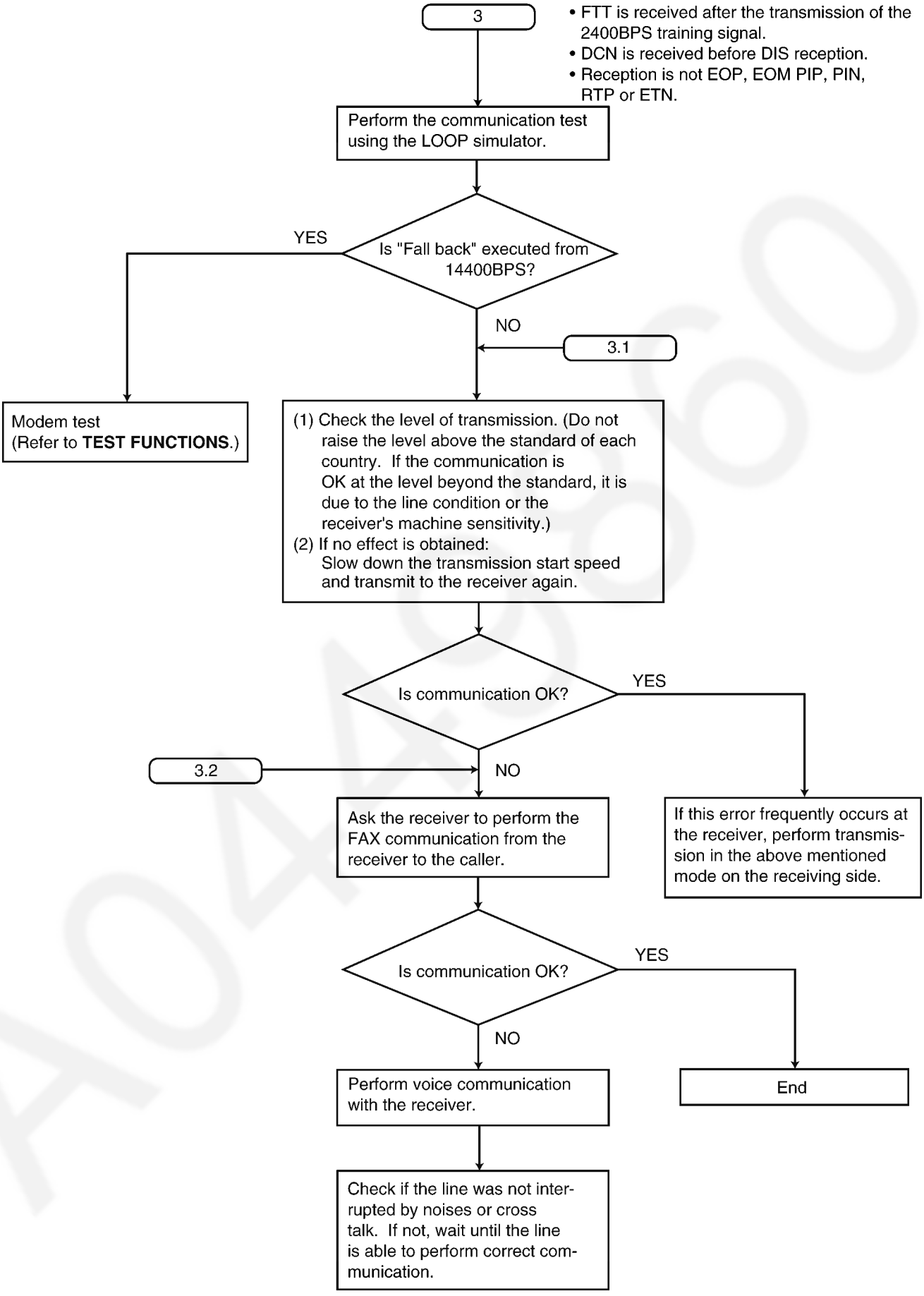
1. Change the transmit level. (Service code: 596, refer to **Service Function Table** (P.123).)
2. Change the TX speed/RX speed. (Service code: 717/718, refer to **Service Function Table** (P.123).)

Note*:

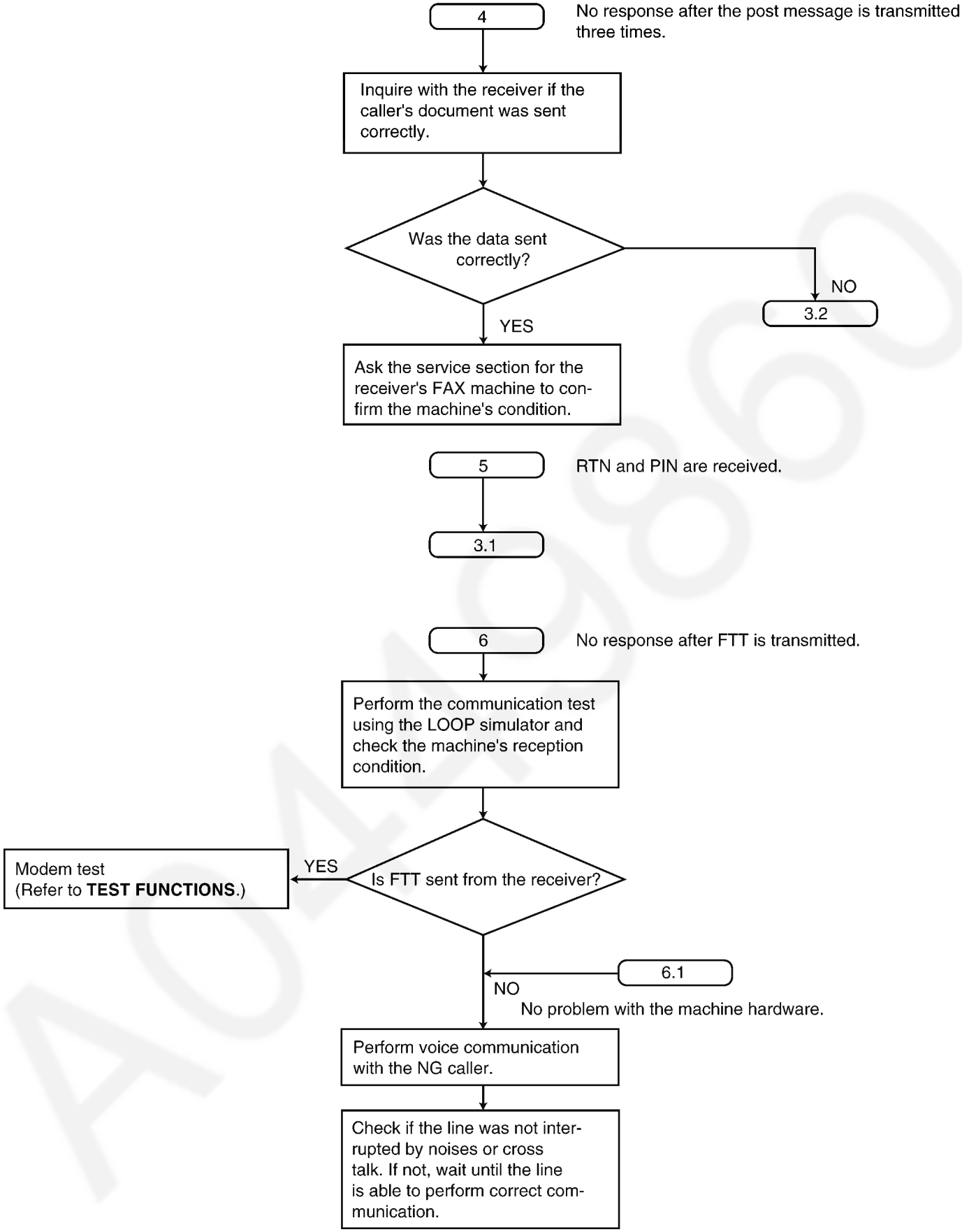
If the problem remains, see the following “**Countermeasure**” flow chart.

Countermeasure

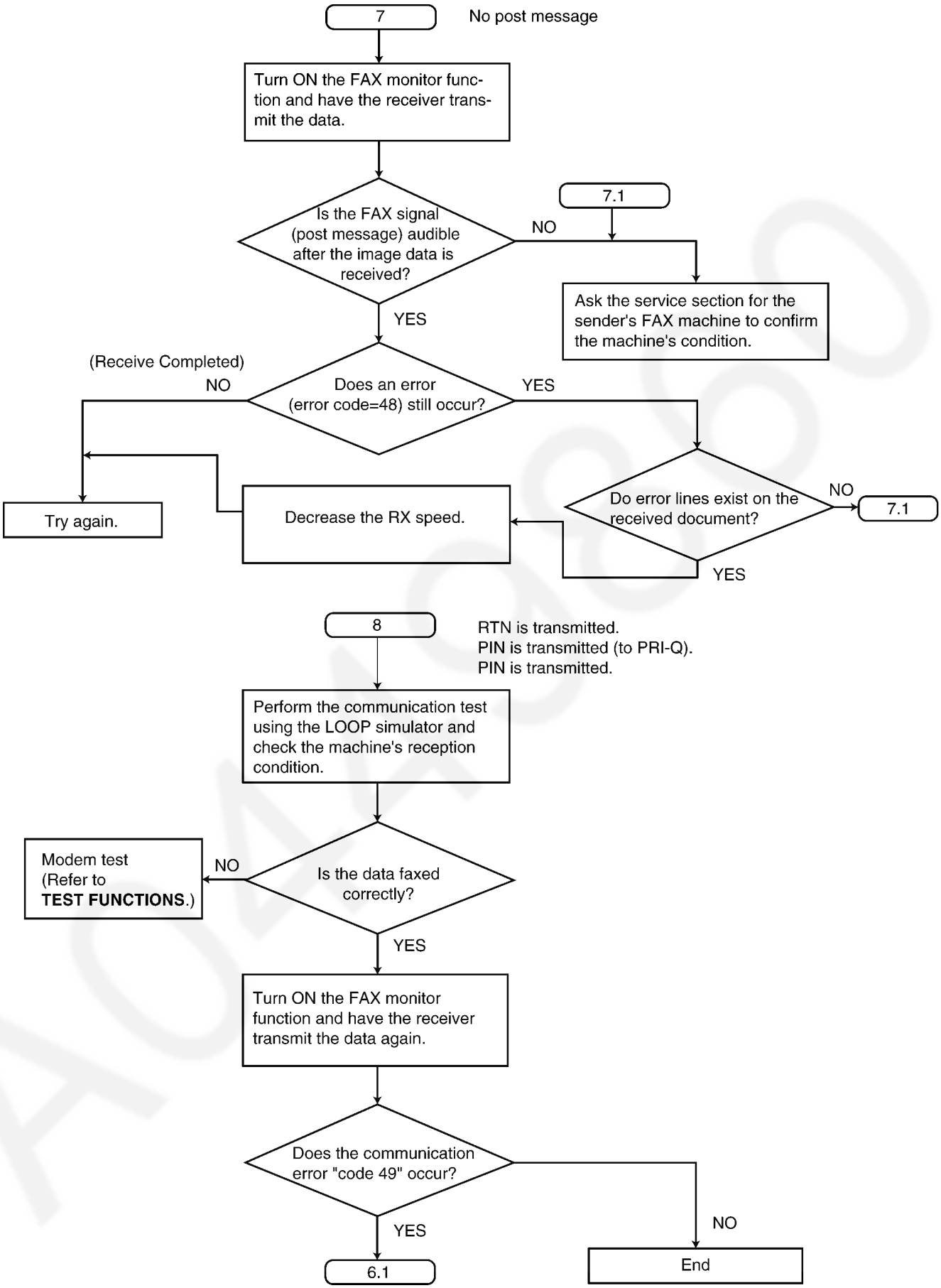




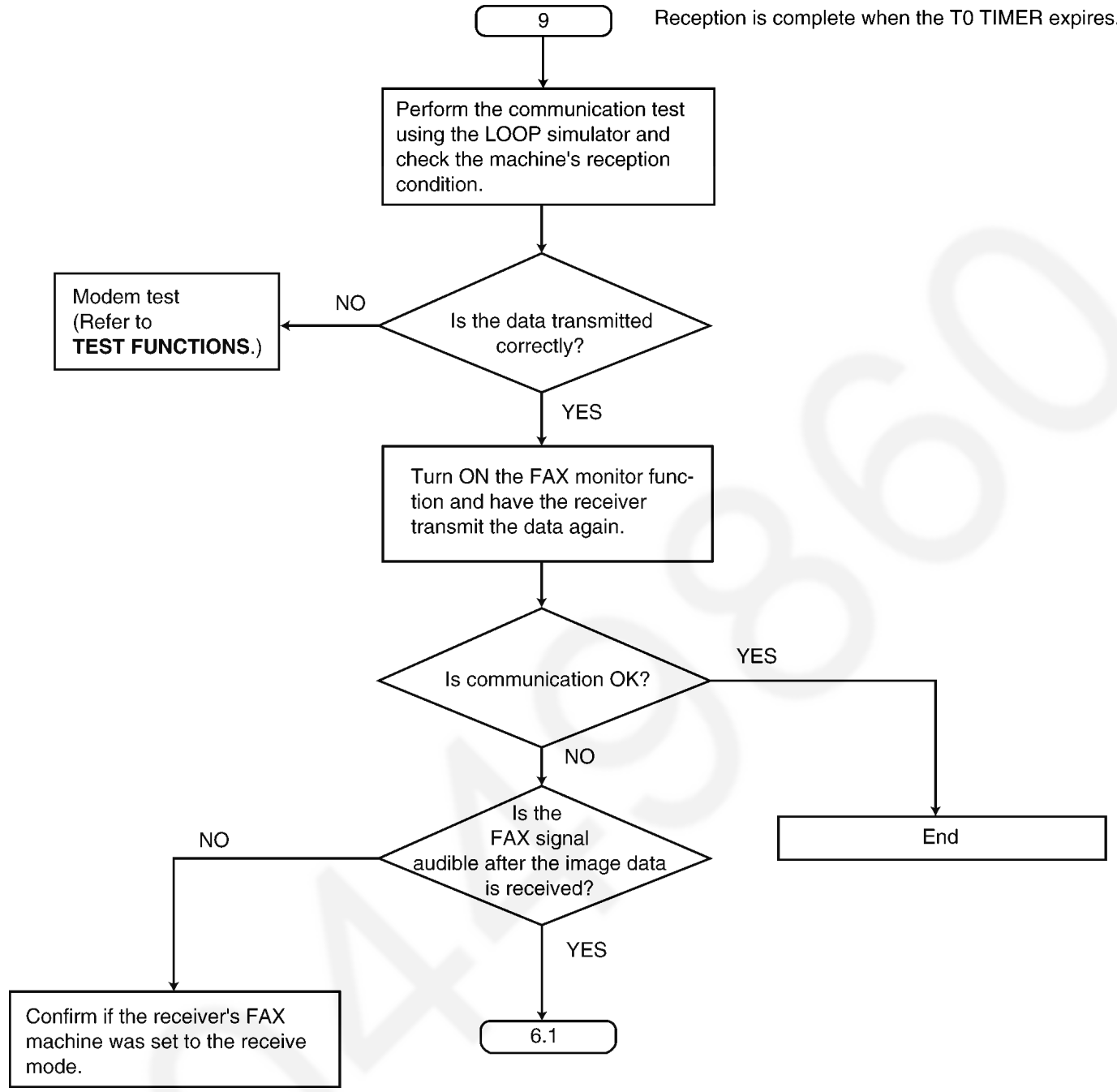
CROSS REFERENCE:
Test Functions (P.119)



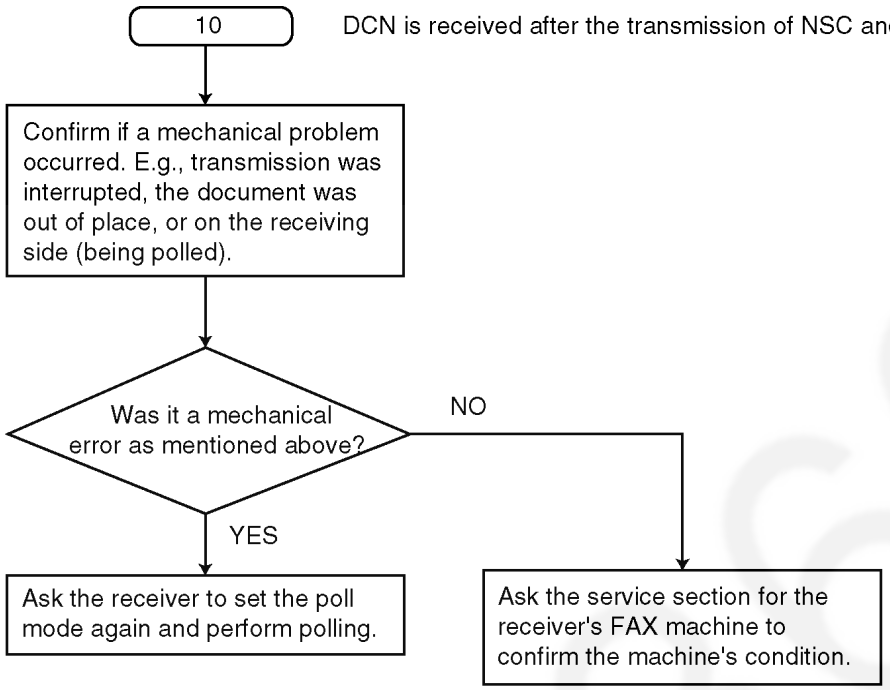
CROSS REFERENCE:
Test Functions (P.119)

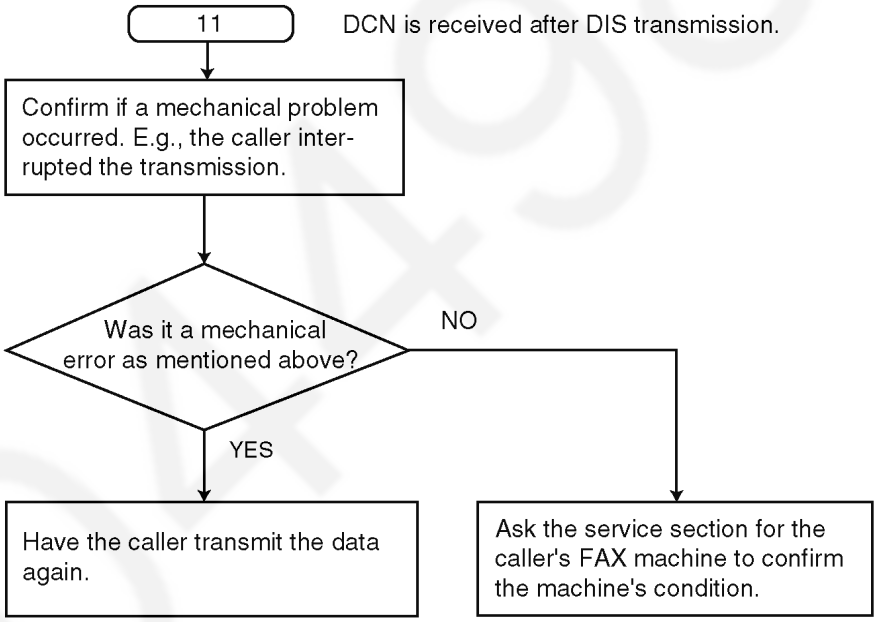


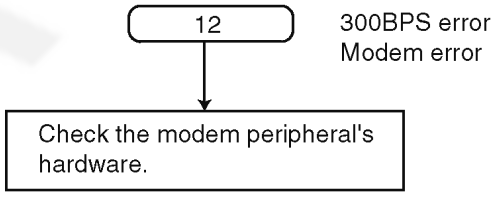
CROSS REFERENCE:
Test Functions (P.119)

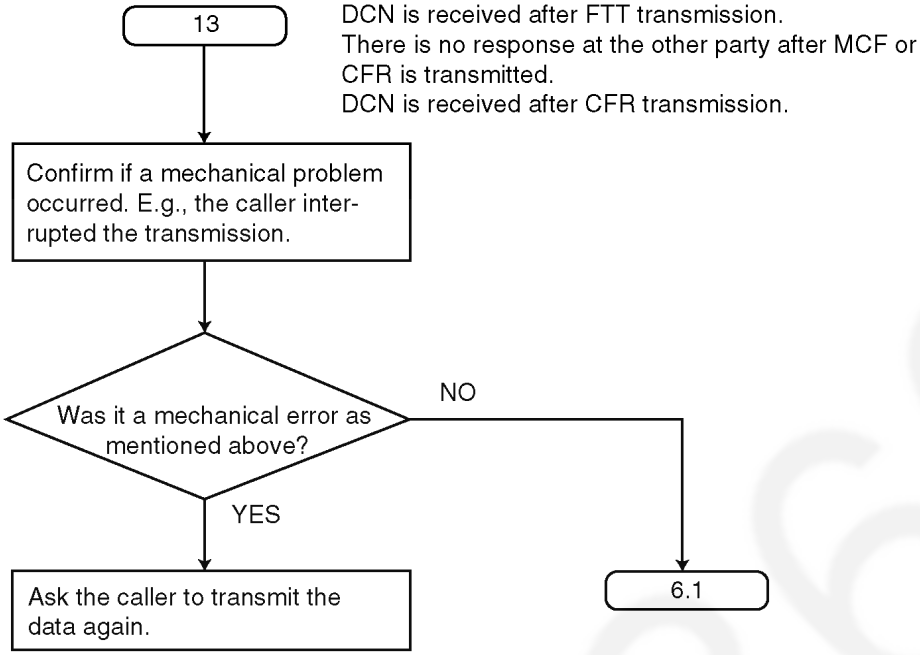


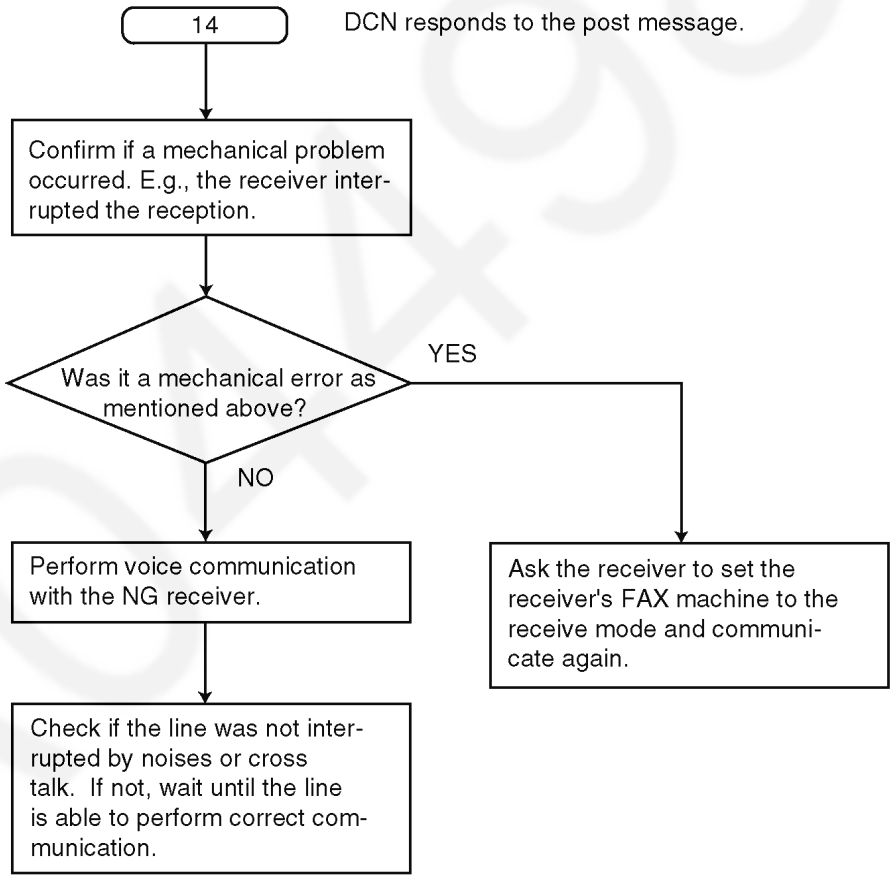
CROSS REFERENCE:
Test Functions (P.119)

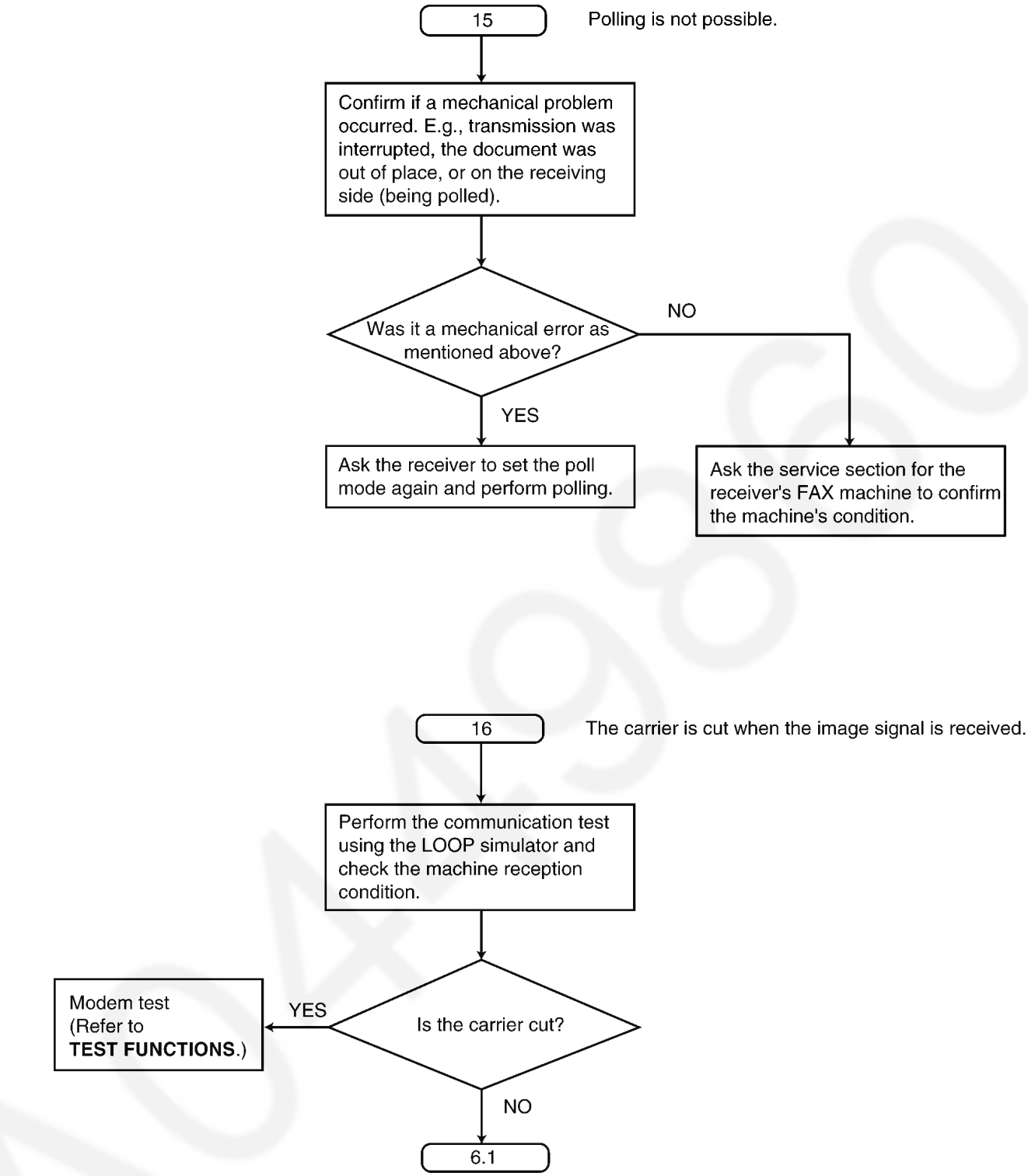

10
DCN is received after the transmission of NSC and DTC.
Confirm if a mechanical problem occurred. E.g., transmission was interrupted, the document was out of place, or on the receiving side (being polled).
Was it a mechanical error as mentioned above?
NO
YES
Ask the receiver to set the poll mode again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


11
DCN is received after DIS transmission.
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.


12
300BPS error
Modem error
Check the modem peripheral's hardware.


13
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.
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

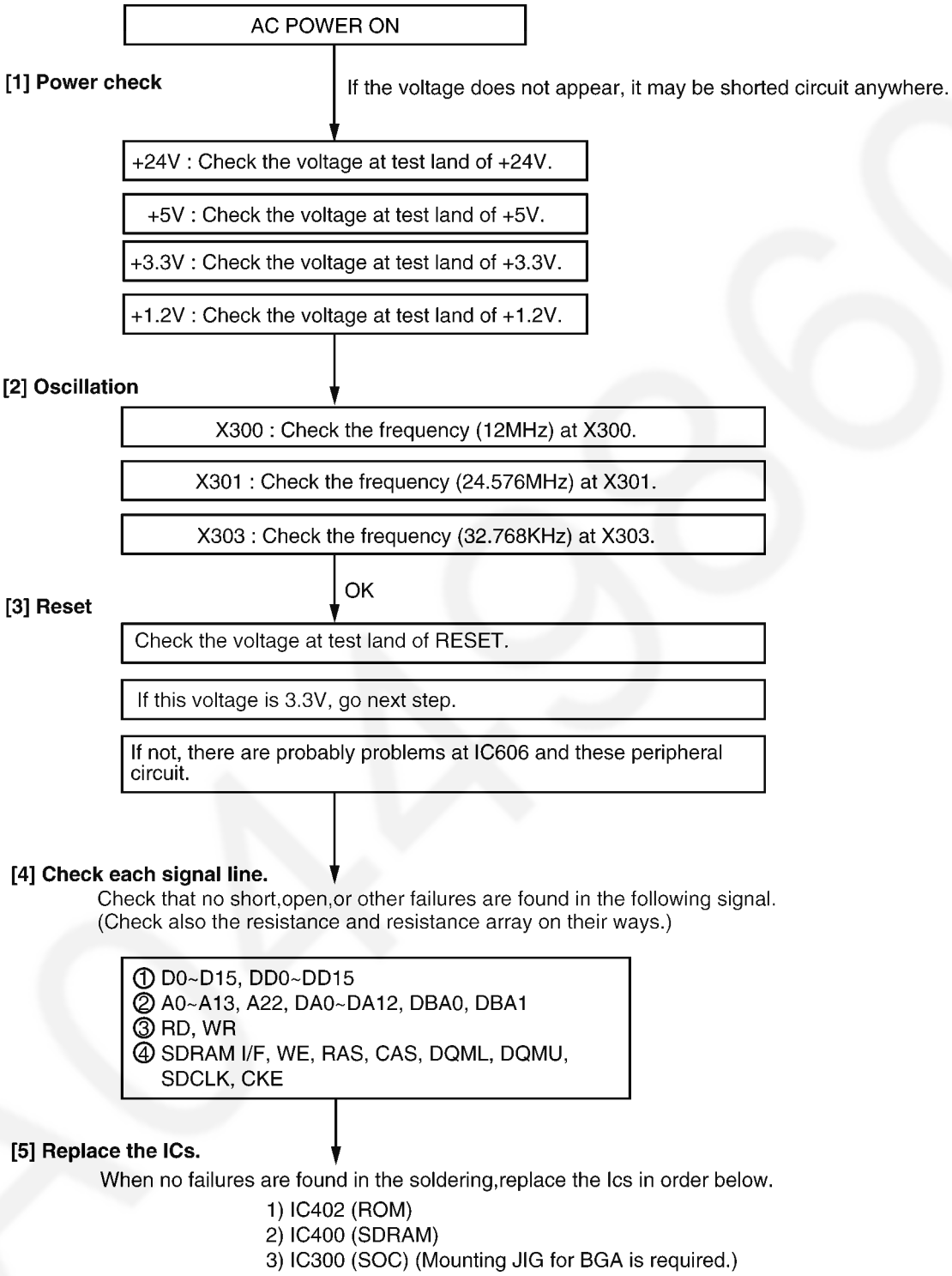

14
DCN responds to the post message.
Confirm if a mechanical problem occurred. E.g., the receiver interrupted the reception.
Was it a mechanical error as mentioned above?
YES
NO
Perform voice communication with the NG receiver.
Ask the receiver to set the receiver's FAX machine to the receive mode and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



CROSS REFERENCE:
Test Functions (P.119)

12.3.12. Initializing Error

After the power is turned on, the SOC (IC300) initializes and checks each IC.
The ROM (IC402) and SDRAM (IC400) are checked.
If initialization fails for the ICs, the system will not boot up.
In this case, please find the cause as follows.



CROSS REFERENCE:

NG Example (P.300)

Power Supply Board Section (P.83)

12.3.13. Analog 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.

12.3.13.1. Check Sheet for Signal Route

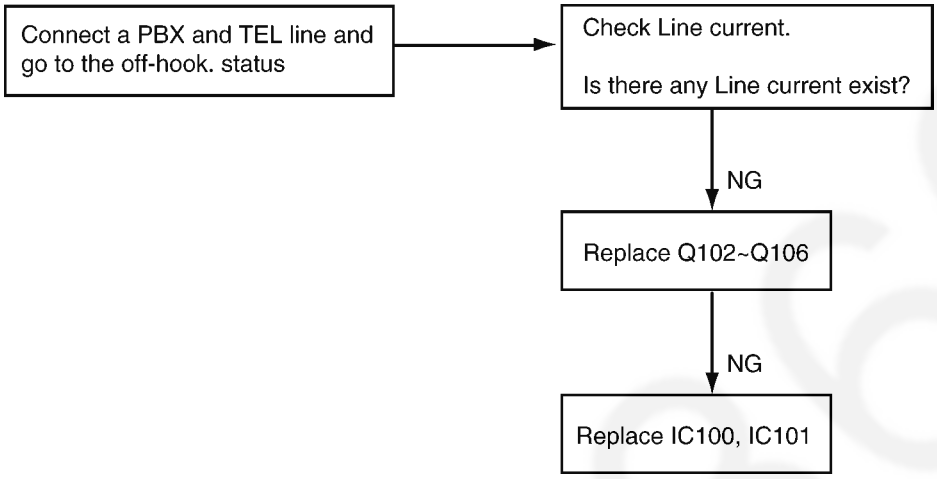
(SYMPTOM) ITEMS TO CHECK	IN → signal ROUTE → OUT
Handset Tx	HS Mic → CN55 → CN58(3,4) → CN71(3,4) → L55 → CN70(3,4) → CN200(3,4) → (L202,L209) → (R206,R243) → (C247,252) → (L207,L203) → IC202(2,3-1) → L206 → R961 → R960 → C937 → L901 → IC902(118-100) → R964 → C205 → R238 → IC202(6-7) → C219 → R256 → R241 → T100 → TEL LINE
Handset RX	TEL LINE → T100 → C256 → R224 → IC201(2-1) → C944 → R928 → C910 → R910 → L902 → IC902(102-110,111) → (L903,L904) → (R953,R954) → (R956,R957) → (L208,L204) → CN200(1,2) → CN70(1,2) → L55 → CN71(1,2) → CN58(1,2) → CN55 → HS Speaker
DTMF for SP	IC902(110) → L903 → C206 → R219 → R229 → C217 → L210 → IC204(4-5,8) → (L201,L205) → CN200(7,8) → CN70(7,8) → L55 → CN71(7,8) → CN58(7,8) → CN57 → Speaker
FAX Tx	IC200(12) → R231 → C223 → C232 → R237 → IC202(6-7) → C219 → R256 → R241 → T100 → TEL LINE
FAX Rx/CNG	TEL LINE → T100 → C256 → R224 → IC201(2-1) → R247 → C207 → IC200(15)
DTMF/OGM/BEEP for TEL LINE	IC902(100) → R964 → C205 → R238 → IC202(6-7) → C219 → R256 → R241 → T100 → TEL LINE
DTMF/VOX Detecton/ICM Record/Russian CID	TEL LINE → T100 → C256 → R224 → IC201(2-1) → C944 → R928 → C910 → R910 → L902 → IC902(102)
Ringing/BEEP/ Alarm/Key Tones	IC902(110) → L903 → C206 → R219 → R229 → C217 → L210 → IC204(4-5,8) → (L201,L205) → CN200(7,8) → CN70(7,8) → L55 → CN71(7,8) → CN58(7,8) → CN57 → Speaker
Caller ID (ON-HOOK)	TEL LINE → T101 → R245 → C202 → C224 → R212 → IC201(6-7) → R277 → R949 → C936 → R905 → IC902(101)
Cordless Handset Tx	On the Air 1.9GHz Radio Frequency → Antenna → (ANT-1,ANT-2) → (C960,C961) → D901(1,2-3) → IC905(31-16) → IC902(26-100) → R964 → C205 → R238 → IC202(6-7) → C219 → R256 → R241 → T100 → TEL LINE
Cordless Handset Rx	TEL LINE → T100 → C256 → R224 → IC201(2-1) → C944 → R928 → C910 → R910 → L902 → IC902(102-28) → R965 → IC905(18-31) → D901(3-1,2) → (C960,C961) → (ANT-1,ANT-2) → Antenna → On the Air 1.9GHz Radio Frequency

12.3.13.2. DEFECTIVE ITS (Integrated Telephone System) Section

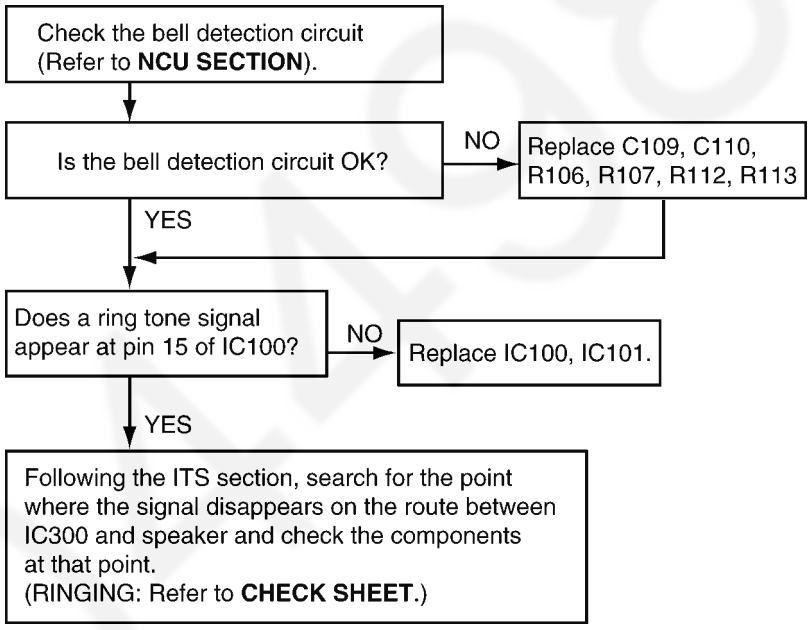
1. No handset and speakerphone transmission / reception

Perform a signal test in the **ITS or the NCU section** and locate a defective point (where the signal disappears) on each route between the handset microphone and telephone line (sending), or between the telephone line and the handset speaker (receiving), or 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.193) is useful for this investigation.

2. No pulse dialing



3. No ring tone (or No bell)

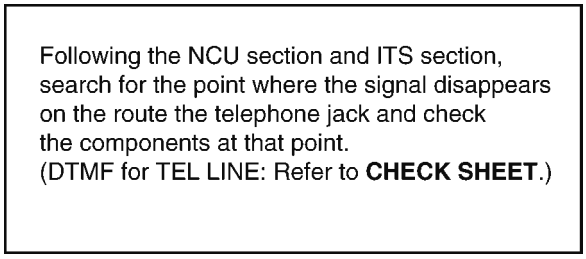


CROSS REFERENCE:

Check Sheet for Signal Route (P.193)

NCU Section (P.39)

4. No tone dialing

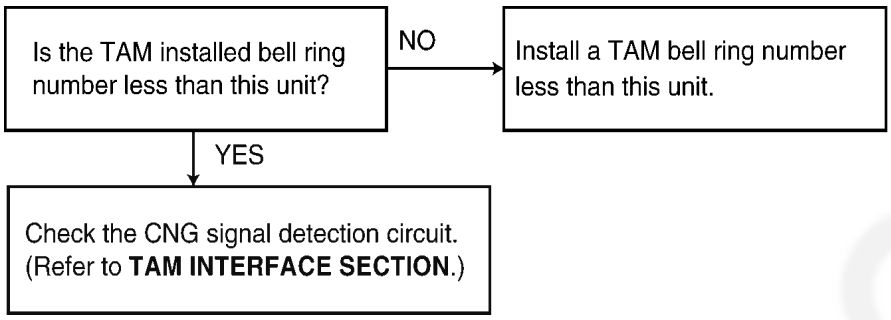


CROSS REFERENCE:

Check Sheet for Signal Route (P.193)

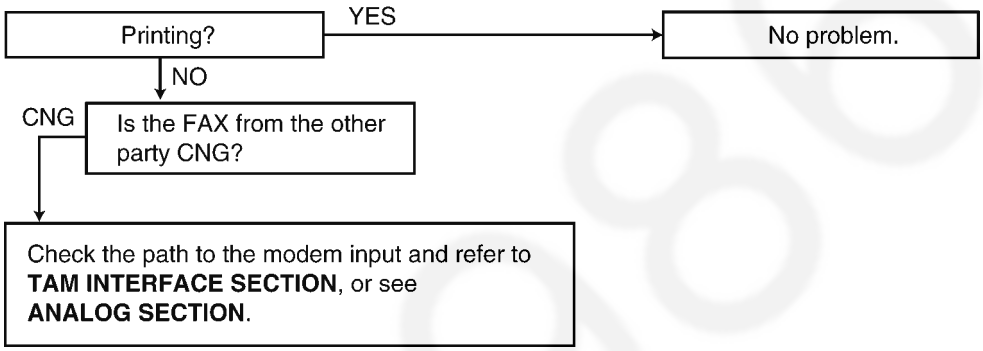
12.3.13.3. Detective TAM Interface Section

1. **The FAX turns on, but does not arrive through TAM.**



CROSS REFERENCE:
TAM Interface Circuit (P.42)

2. **A FAX is received, but won't switch from TAM to FAX.**

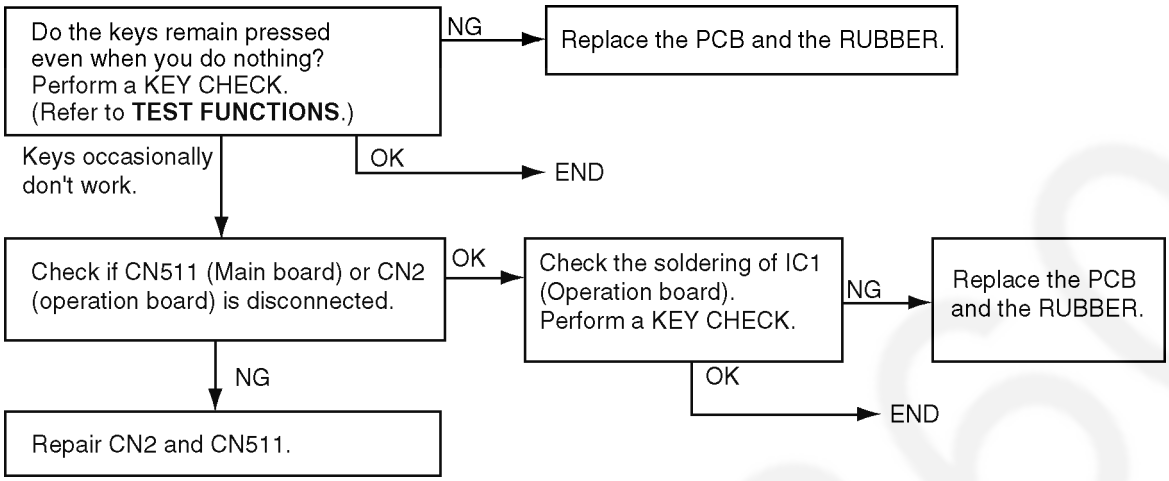


CROSS REFERENCE:
Analog Section (P.193)
TAM Interface Circuit (P.42)

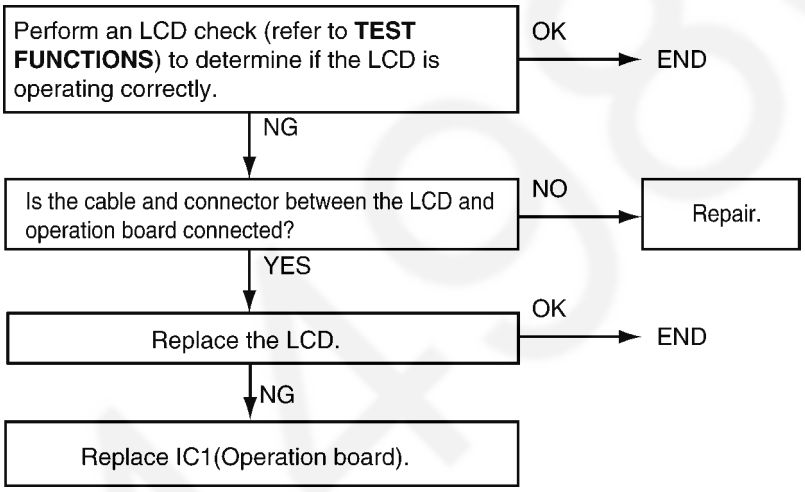
12.3.14. Operation Panel Section

Refer to **Test Functions** (P.119).

1. NO KEY OPERATION



2. NO LCD INDICATION



CROSS REFERENCE:

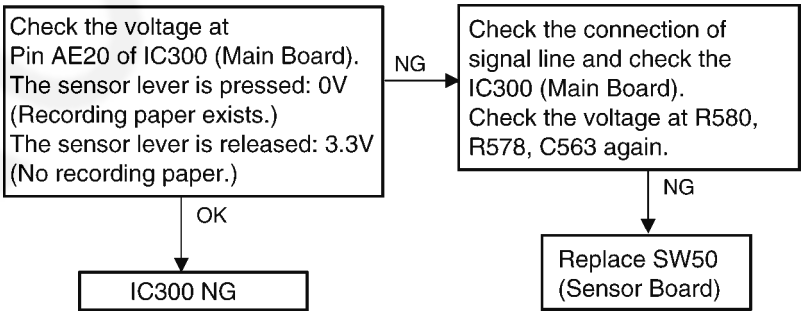
Test Functions (P.119)

12.3.15. Sensor Section

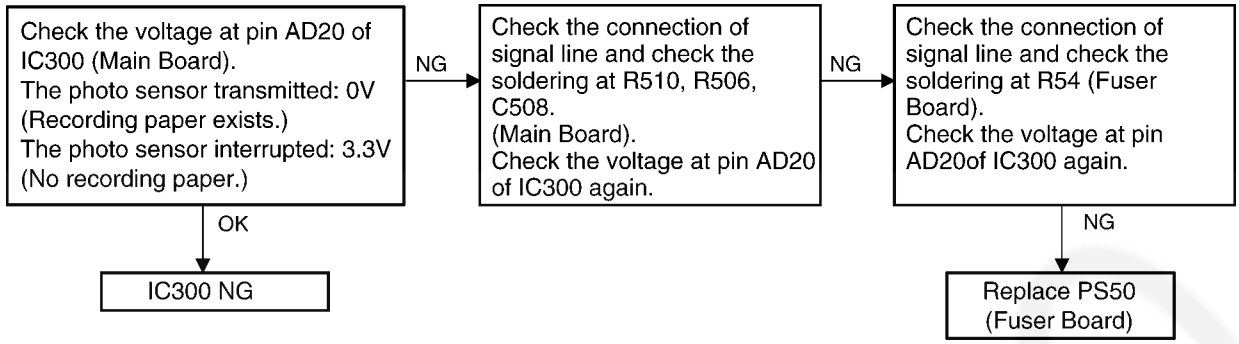
Refer to SENSORS AND SWITCHES for the circuit description.

Perform an SENSOR CHECK to determine if the sensor is operating correctly.

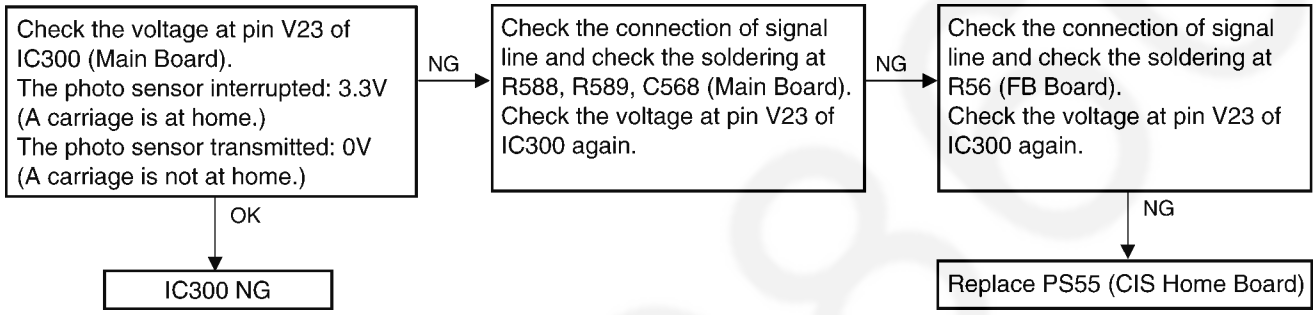
1. Check the pickup sensor ..... "FAILED PICKUP"



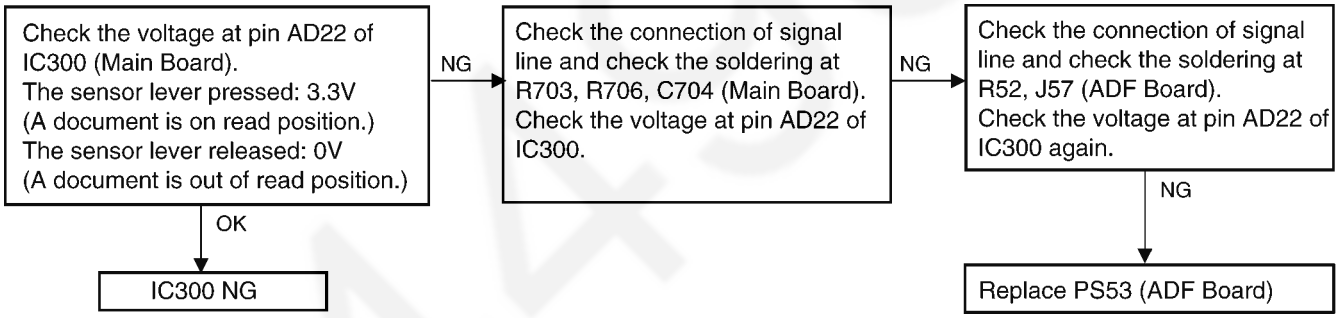
2. Check the paper exit sensor..... "PAPER JAMMED"



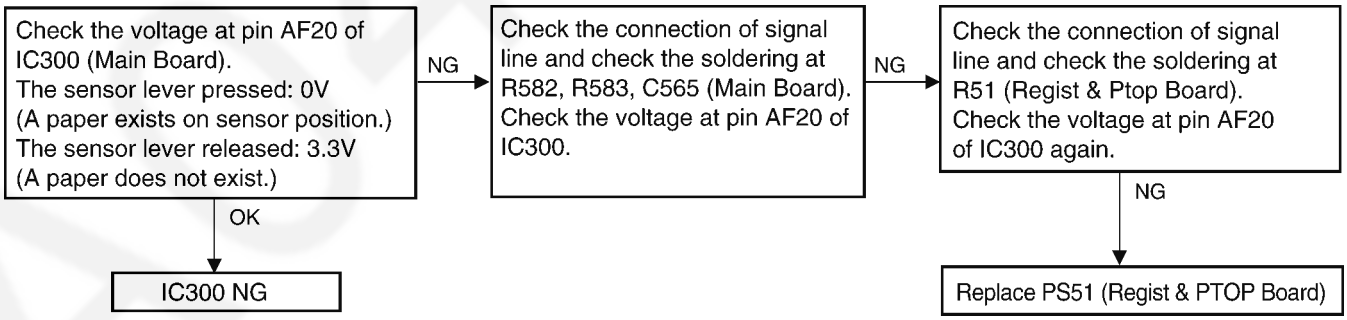
3. Check the home sensor ..... "SCANNER POSITION ERROR"



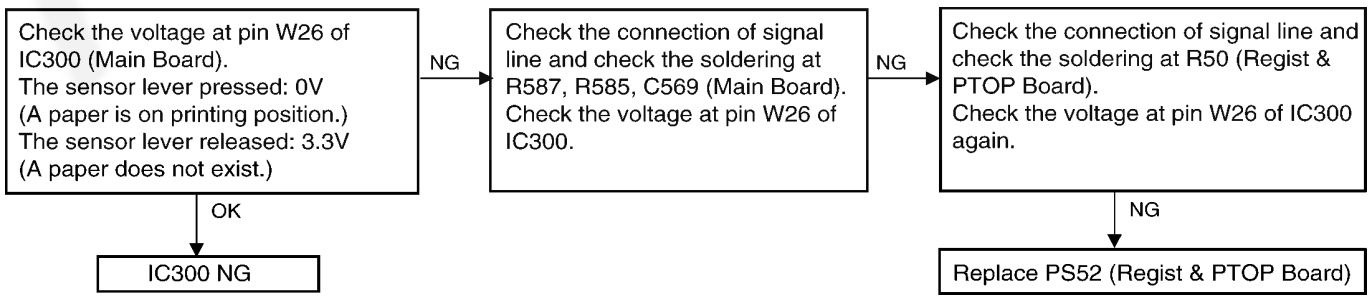
4. Check the read position sensor ..... "CHECK DOCUMENT"



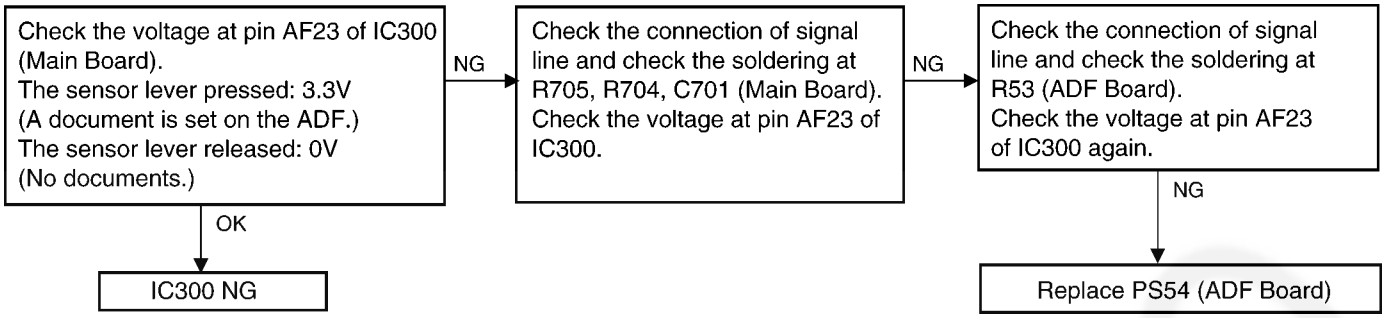
5. Check the registration & manual paper sensor ..... "PAPER JAMMED"



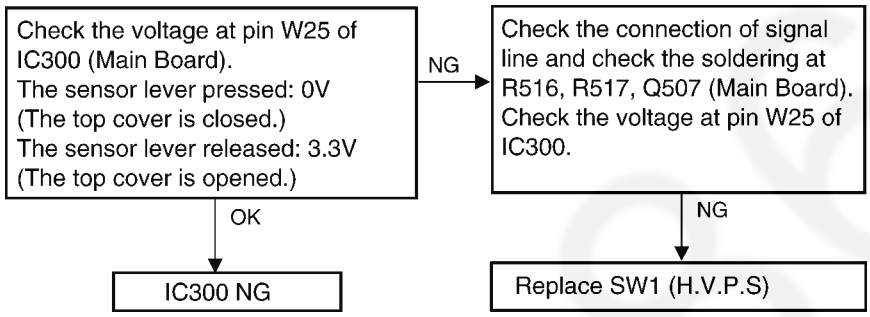
6. Check the print timing sensor ..... "PAPER JAMMED"



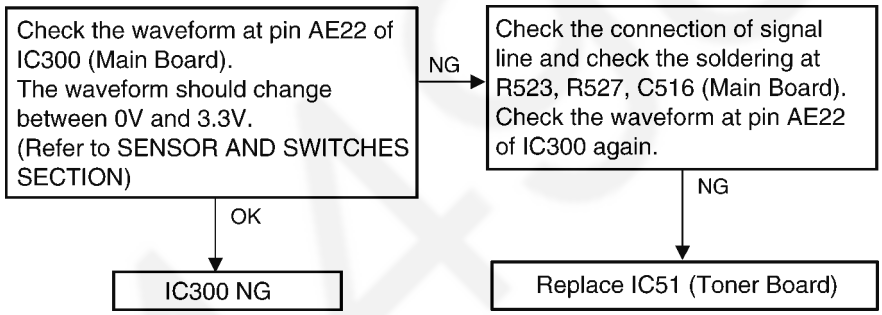
7. Check the document sensor



8. Check the top cover sensor ..... "TOP COVER OPEN"



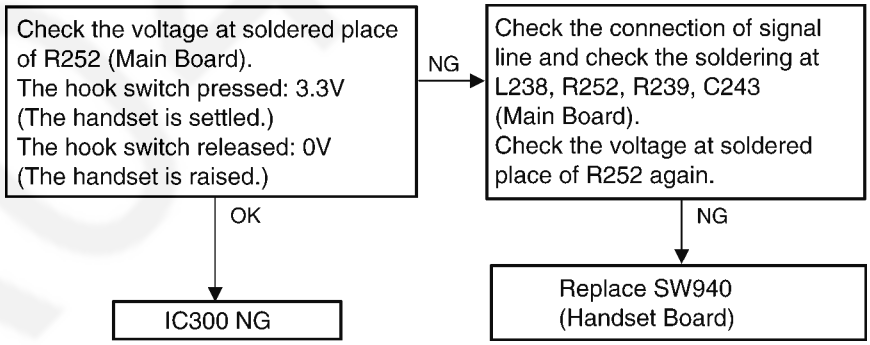
9. Check the toner sensor ..... "TONER LOW", "CHANGE DRUM"



CROSS REFERENCE:

Sensors and Switches Section (P.59)

10. Check the handset hook switch

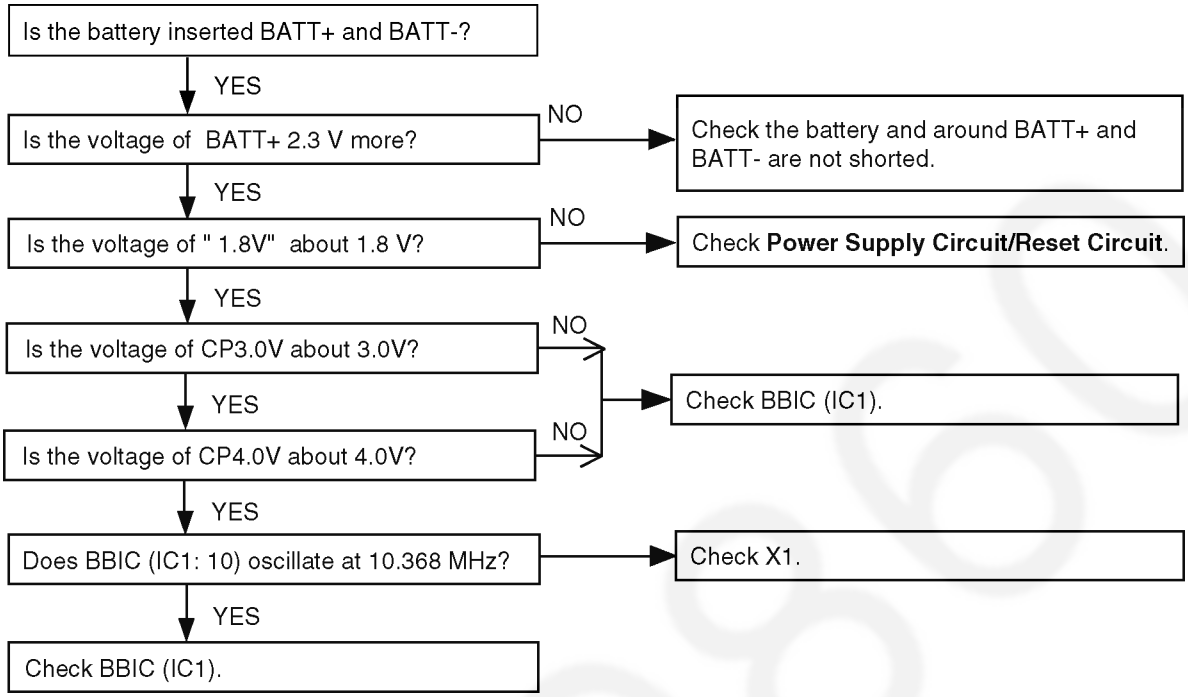


CROSS REFERENCE:

Sensors and Switches Section (P.59)

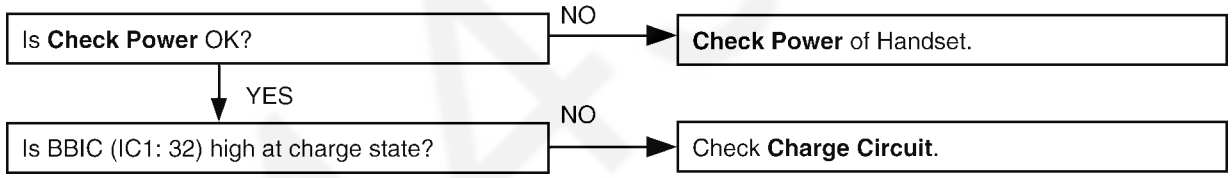
12.3.16. Cordless Section

12.3.16.1. Check Power (Cordless Handset)



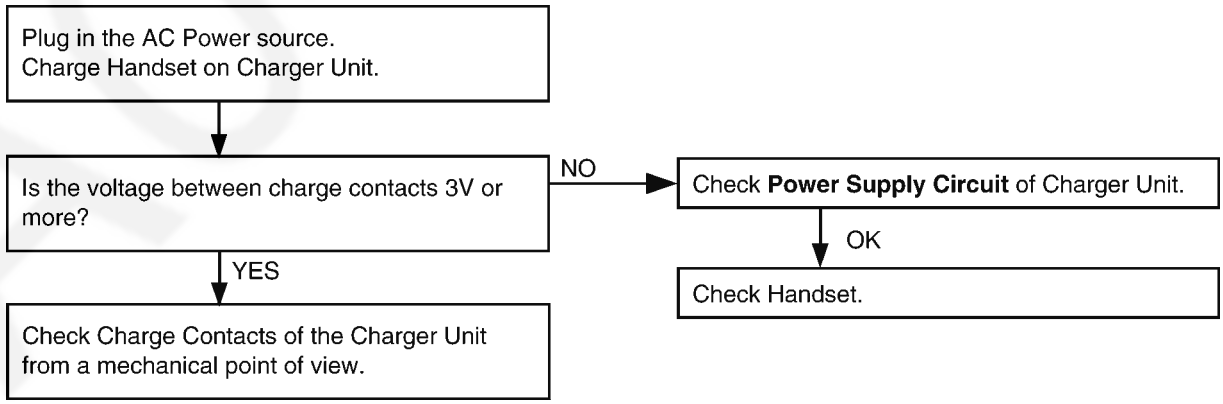
Cross Reference:
Power Supply Circuit/Reset Circuit (P.87)

12.3.16.2. Check Battery Charge (Cordless Handset)



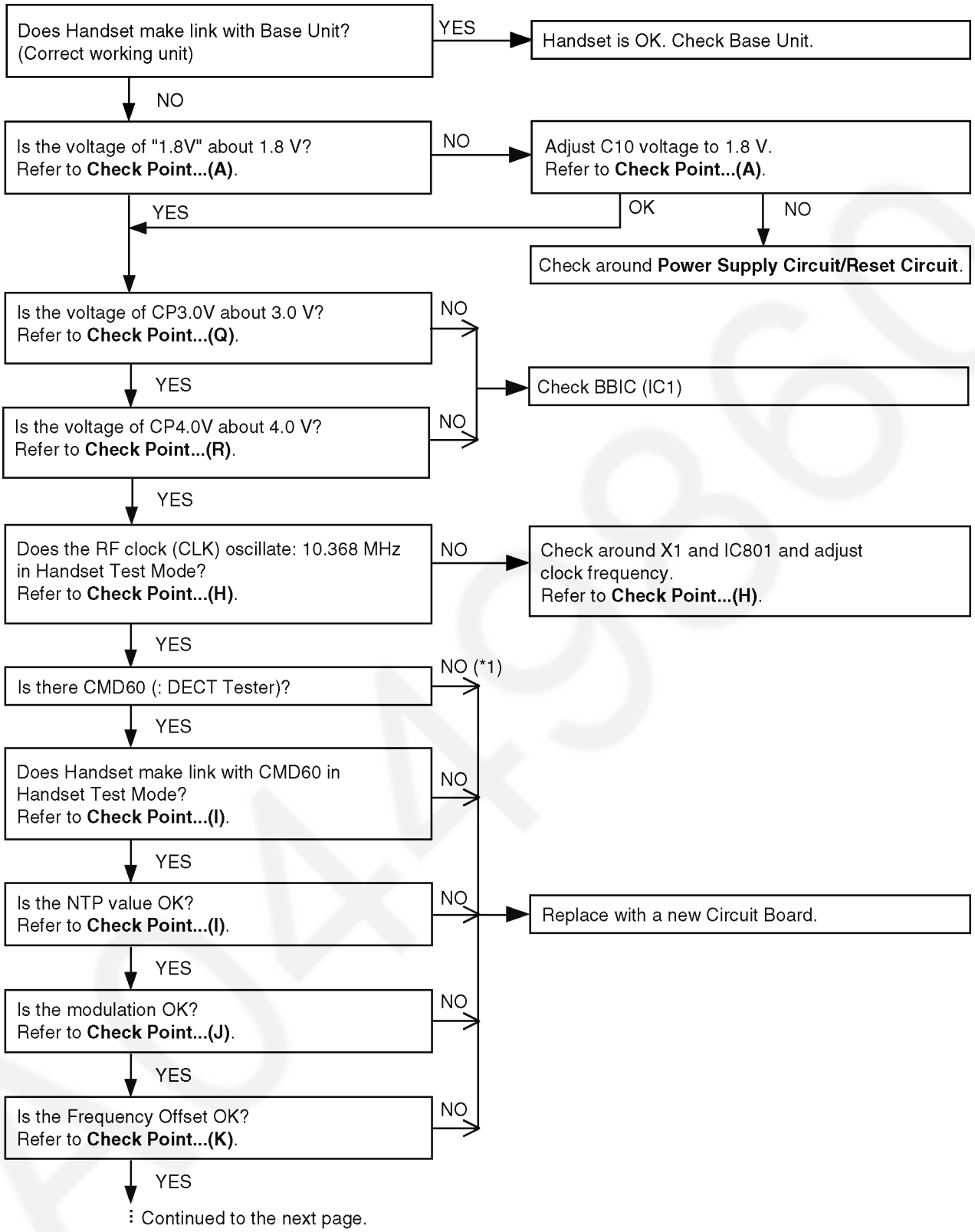
Cross Reference:
Check Power (Cordless Handset) (P.199)
Charge Circuit (P.87)

12.3.16.3. Check Battery Charge (Charger Unit)



Cross Reference:
Power Supply Circuit (P.88)

12.3.16.4. Check Link (Cordless Handset)



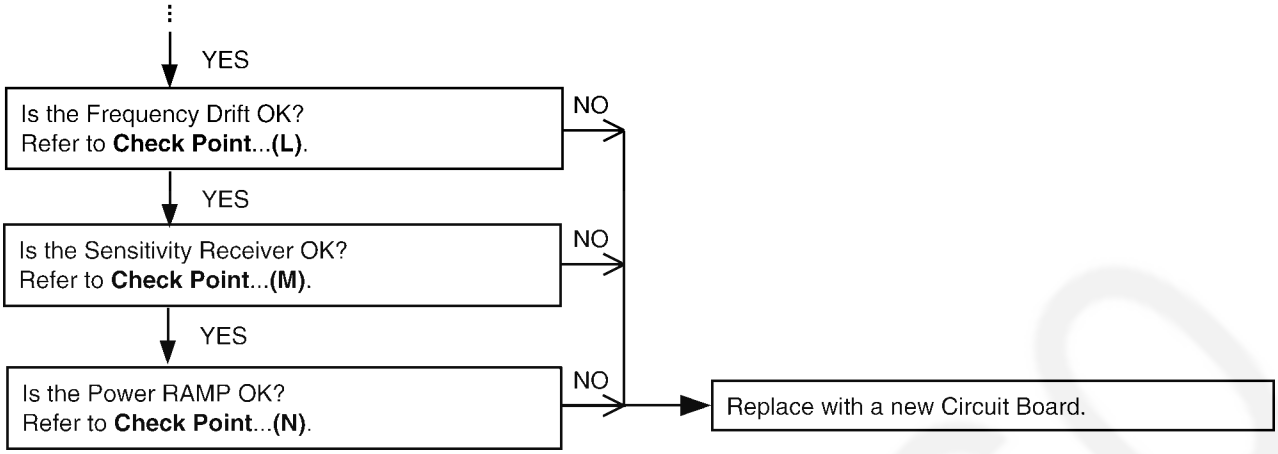
Cross Reference:

Power Supply Circuit/Reset Circuit (P.87)

Check Point (Cordless Handset) (P.202)

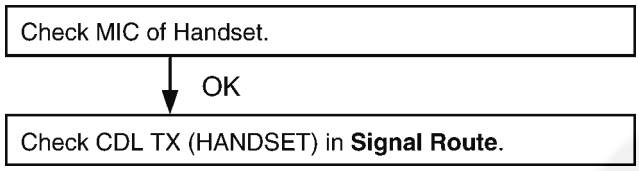
Note:

(*1) Refer to **Troubleshooting by Symptom (Cordless Handset)** (P.202).



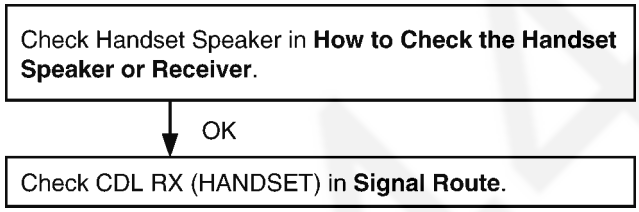
Cross Reference:
Check Point (Cordless Handset) (P.202)

12.3.16.5. Check Cordless Handset Transmission



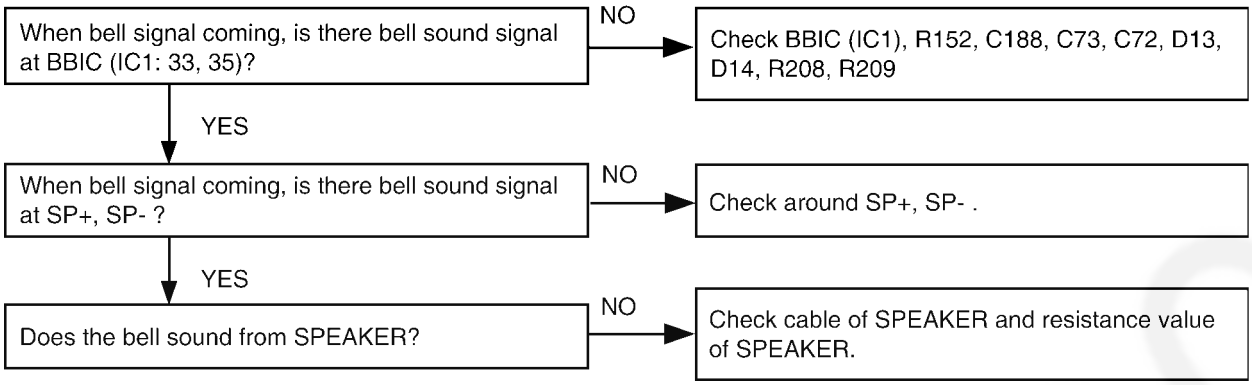
Cross Reference:
Check Sheet for Signal Route (P.193)

12.3.16.6. Check Cordless Handset Reception



Cross Reference:
How to Check the Cordless Handset Speaker or Receiver (P.280).
Check Sheet for Signal Route (P.193)

12.3.16.7. Bell Reception (Cordless Handset)



Cross Reference:
Check Link (Cordless Handset) (P.200)
How to Check the Cordless Handset Speaker or Receiver (P.280)

12.3.17. 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.202)

12.3.17.1. 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.275) is required beforehand.
The connections of simulator equipments are as shown in **Adjustment Standard (Cordless Handset)** (P.277).

	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: 88AE; program number: DBF2BA	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

	Items	Check Point	Procedure	Check or Replace Parts
(**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
(**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

	Items	Check Point	Procedure	Check or Replace Parts
(**J**)*	Modulation Check and Adjustment	-	Follow steps 1 to 3 of **(I)**. 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
(**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 -8.5 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 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

	Items	Check Point	Procedure	Check or Replace Parts
(**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 -9.5 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

12.3.18. Troubleshooting by Symptom (Charger Unit)

12.3.18.1. Check Point (Charger Unit)

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)	Charging Check	-	1. Connect Charge Contact 10Ω/2 W resistor between charge+ and charge-. 2. Measure and confirm voltage across the resistor is 3.1 V ± 0.3 V.	R1, F1

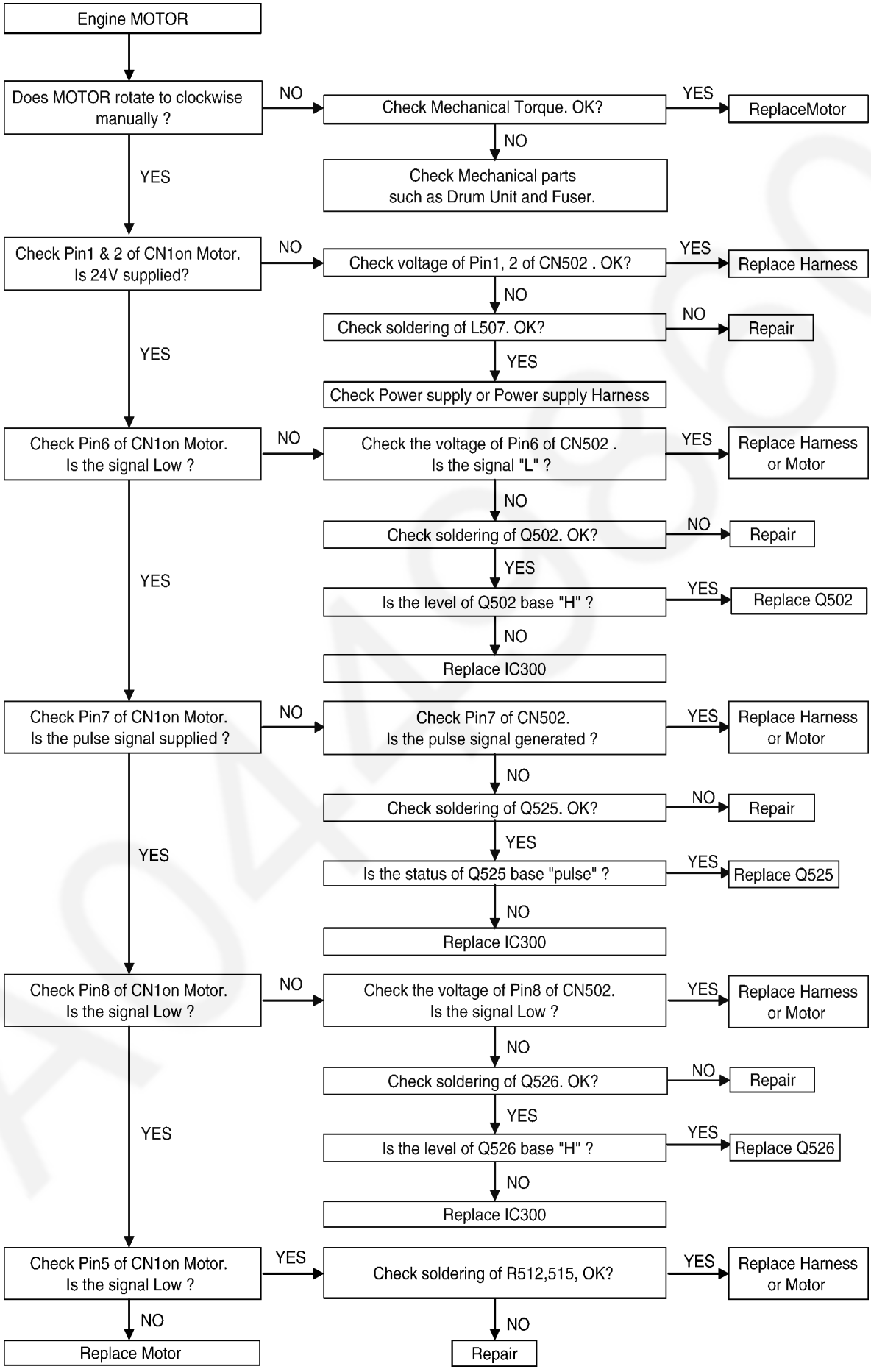
Note:

After the measuring, suck up the solder of TP.

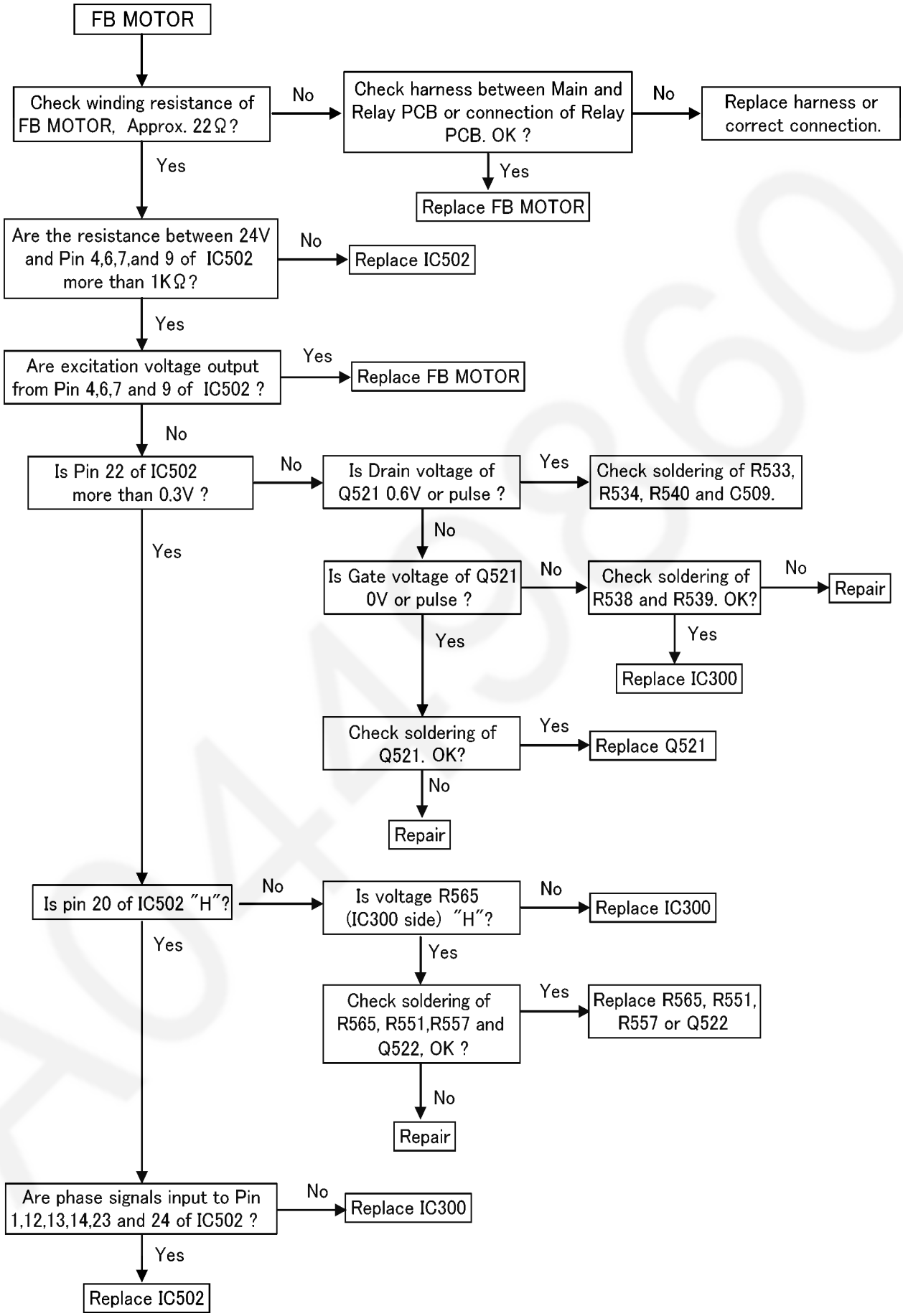
The connection of adjustment equipment is as shown in **Adjustment Standard (Charger Unit)** (P.274).

12.3.19. Motor Section

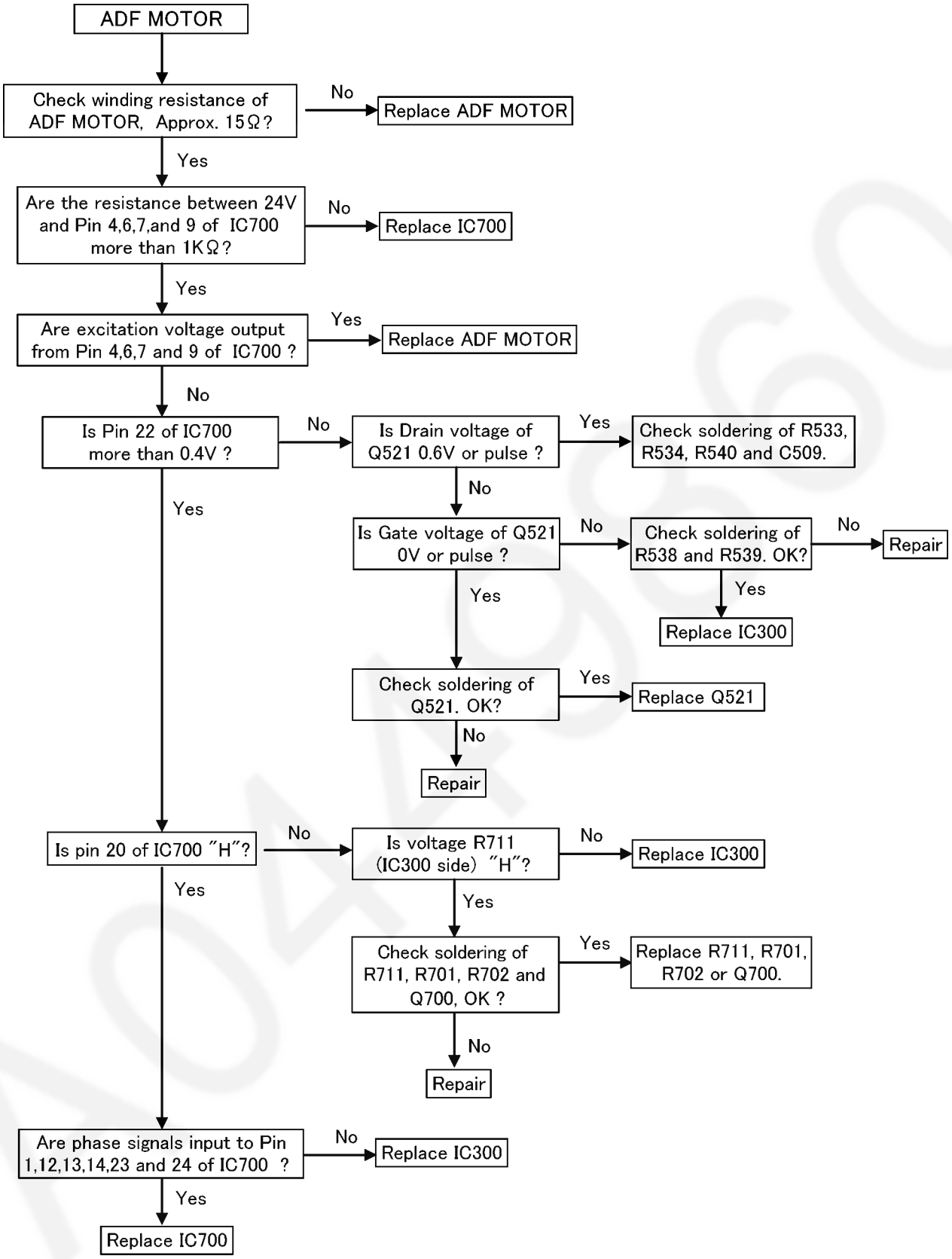
12.3.19.1. Engine Motor



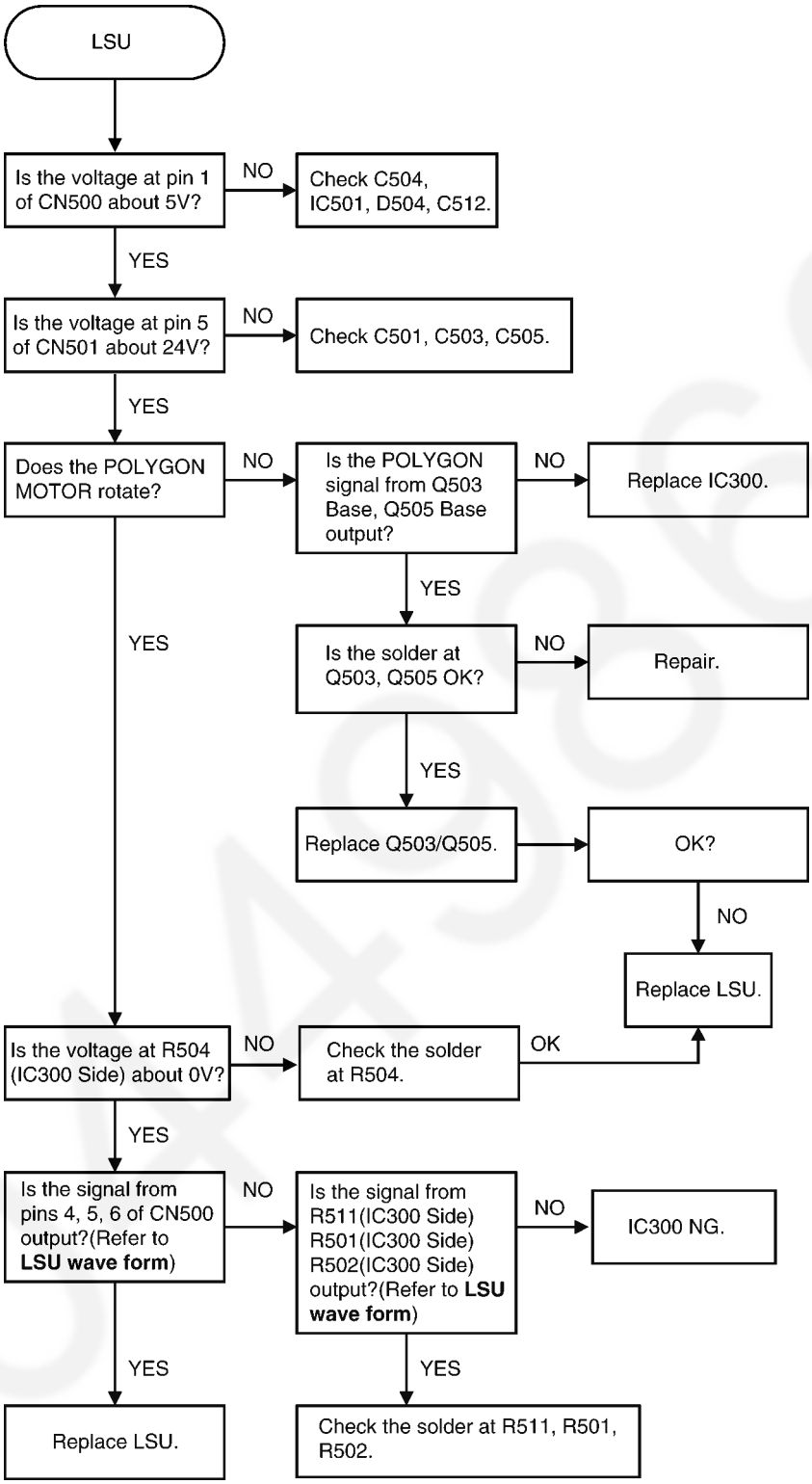
12.3.19.2. FB (Flatbed) Motor



12.3.19.3. ADF Motor



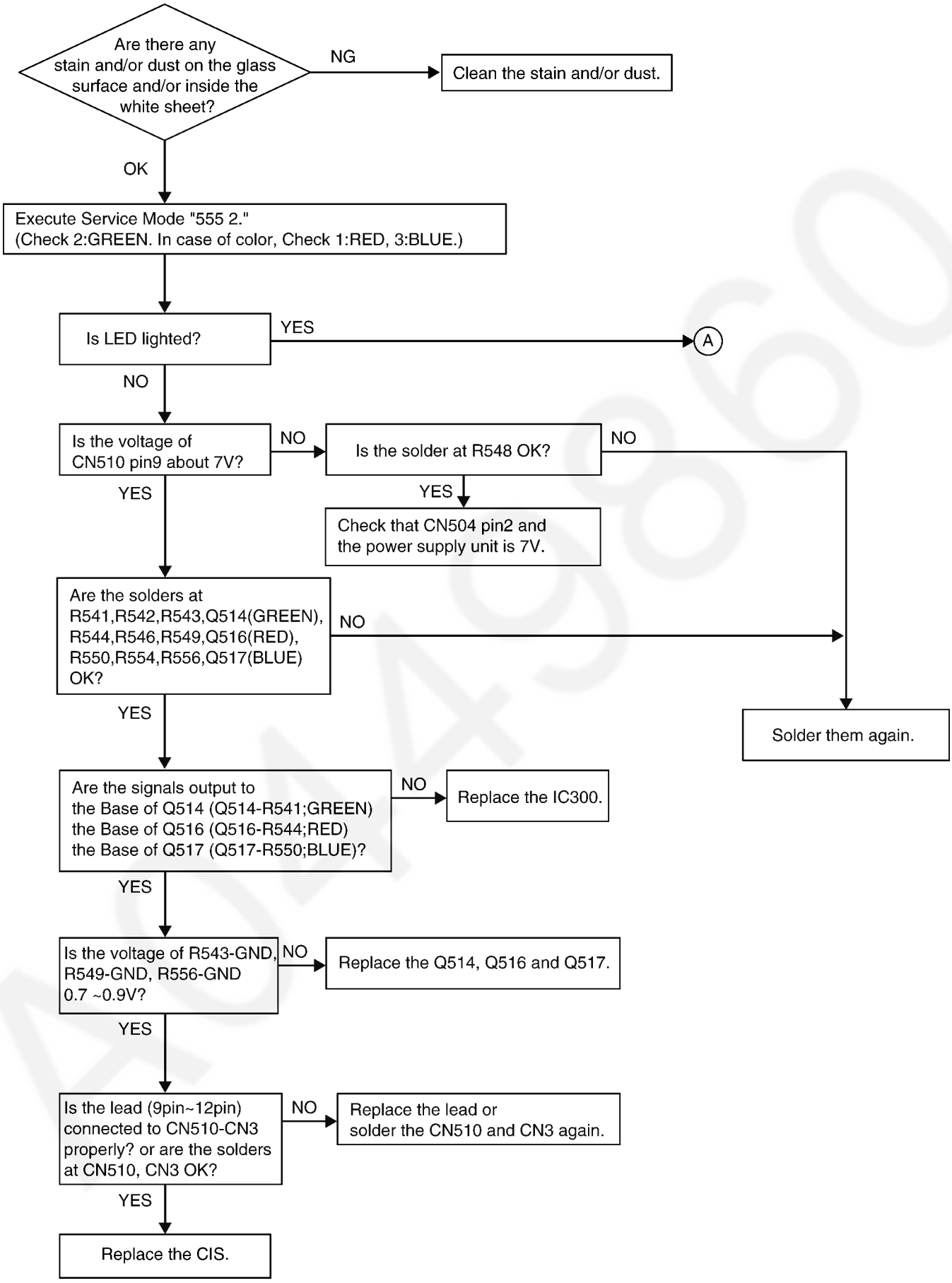
12.3.20. LSU Section

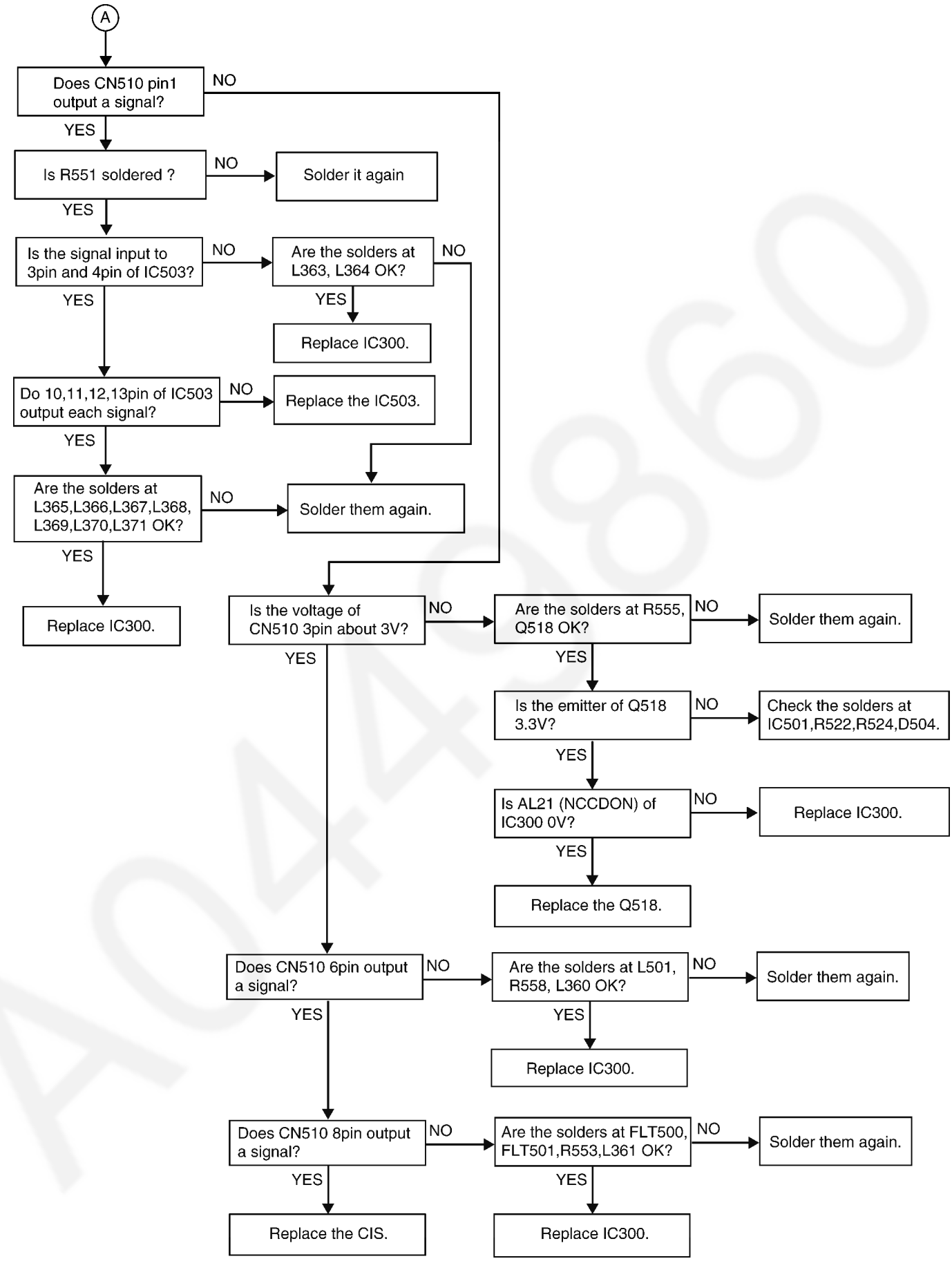


CROSS REFERENCE:

LSU (Laser Scanning Unit) Section (P.57)

12.3.21. CIS Control Section





CROSS REFERENCE:
Test Functions (P.119)

12.3.22. High Voltage Value Check Point

Measurement Procedure

1. Turn Off the unit, and open the unit cover.
2. Remove the developing unit, if it is equipped.
3. Connect the wire to the terminal to be measured (Fig. 2). The wire should be put out of the unit not to interfere in other terminals (Fig. 3). See Fig 4 and 5 for fixing the wire to the terminal No.4.
4. Reinstall the developing unit and close the unit cover.
5. Connect the wire fixed to the terminal to be measured and high voltage probe. Connect the earth of the high voltage probe to the screw located under the bottom plate of the unit without the paper cassette. (Fig.7).
6. Turn On the unit. It causes the unit to start the initial operation. Be careful, high voltage is output at that moment. (Avoid measuring then.)
7. The unit enters the service mode. Then push *556_0.
8. Push the SET button.
   (High voltage will be added to the unit in the hereafter. Avoid touching the wire and the tip of high voltage probe where high voltage is supplied.)
9. When the measurement is finished, push the STOP button.
   (The high voltage output is stopped.)
10. Remove the wire fixed to the output terminal after measuring.

Each terminal's output voltage

No.	BIAS Name	Rated Output	Rated Output Range
1	CHG (Charge)	200μA	200±15μA Output voltage about 4.1~4.6KV
2	GRID (Grid)	475V	475± 10V
3	DEV (Developing)	230V	200~300V
4	TRA (Transfer)	785V	785± 100V

* FLUKE85 (MULTIMETER) + HIOKI (HV PROVE 9014) or the equivalent should be used as the high voltage measuring instrument. (Fig.6)

* As for measuring TRA, start measuring within 4 seconds after pressing the SET button. The output value will be changed in 4 seconds.

Fig. 1 Each terminal and the earth point.

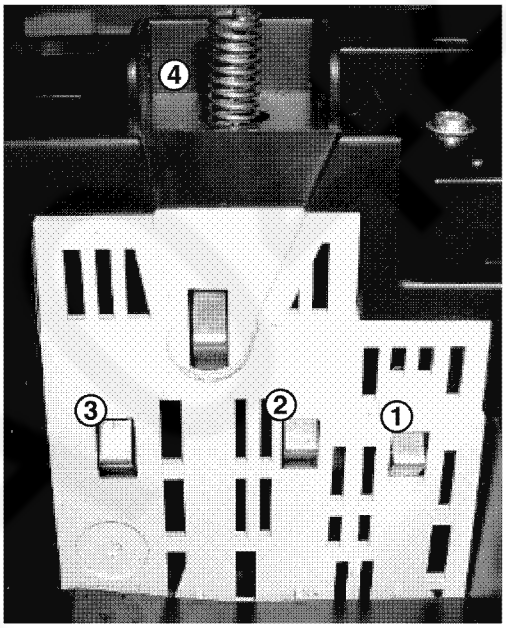


Fig. 2

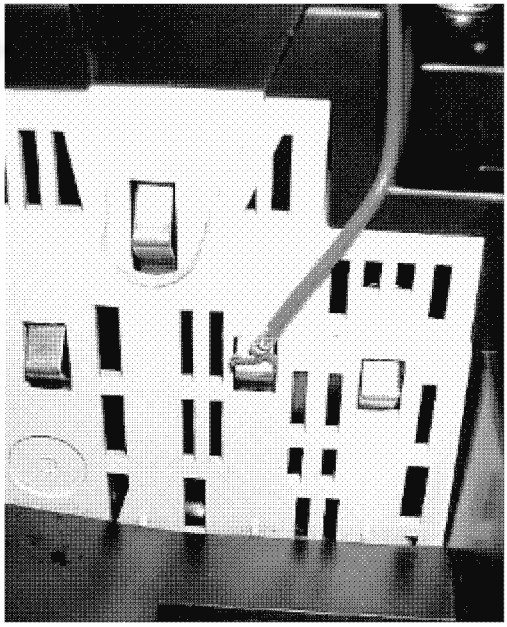


Fig. 3

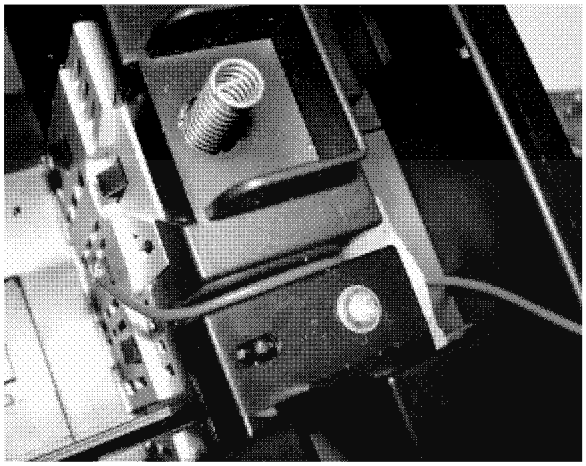


Fig. 4

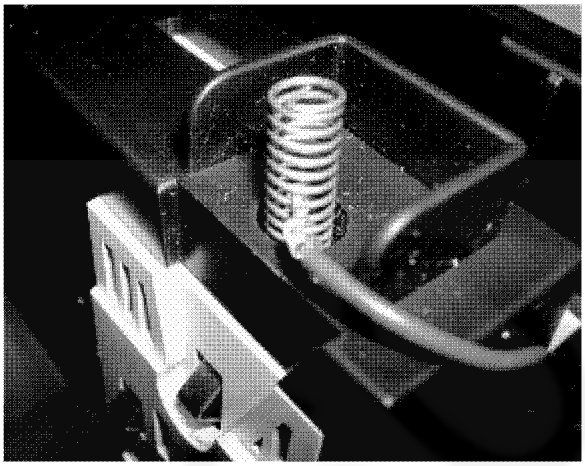


Fig. 5

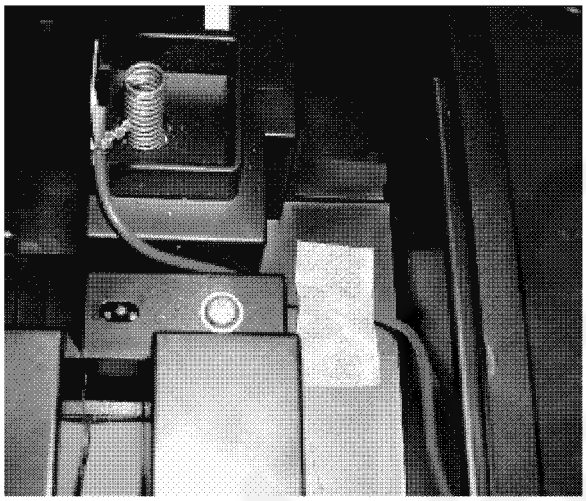


Fig. 6

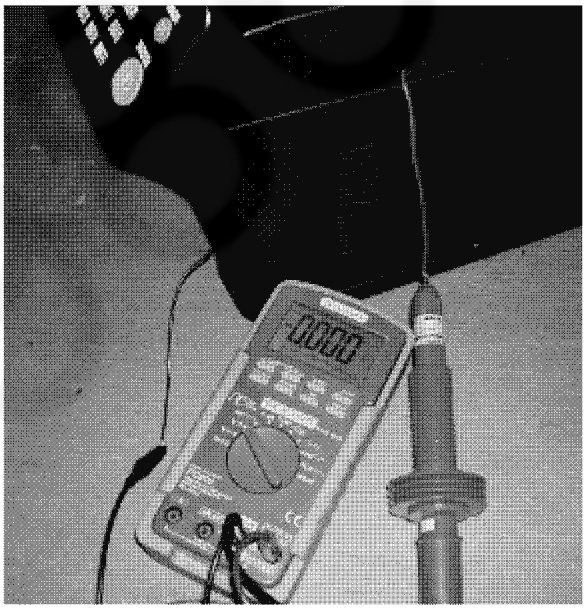
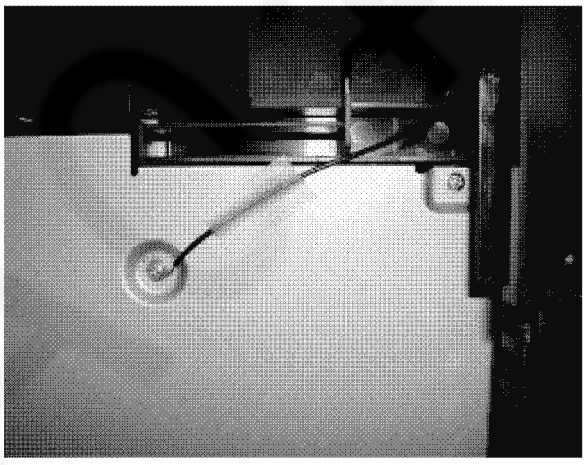
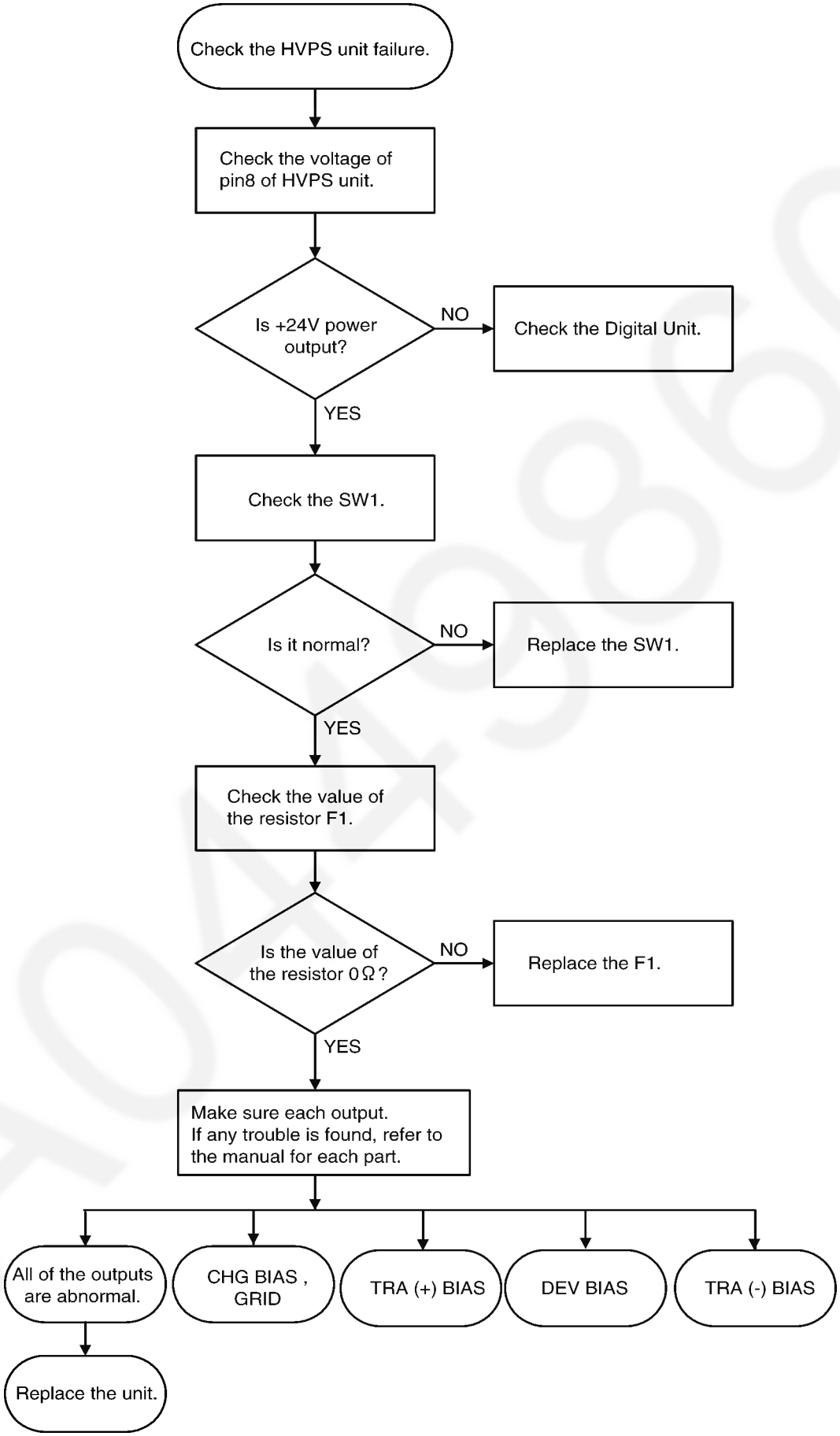


Fig. 7

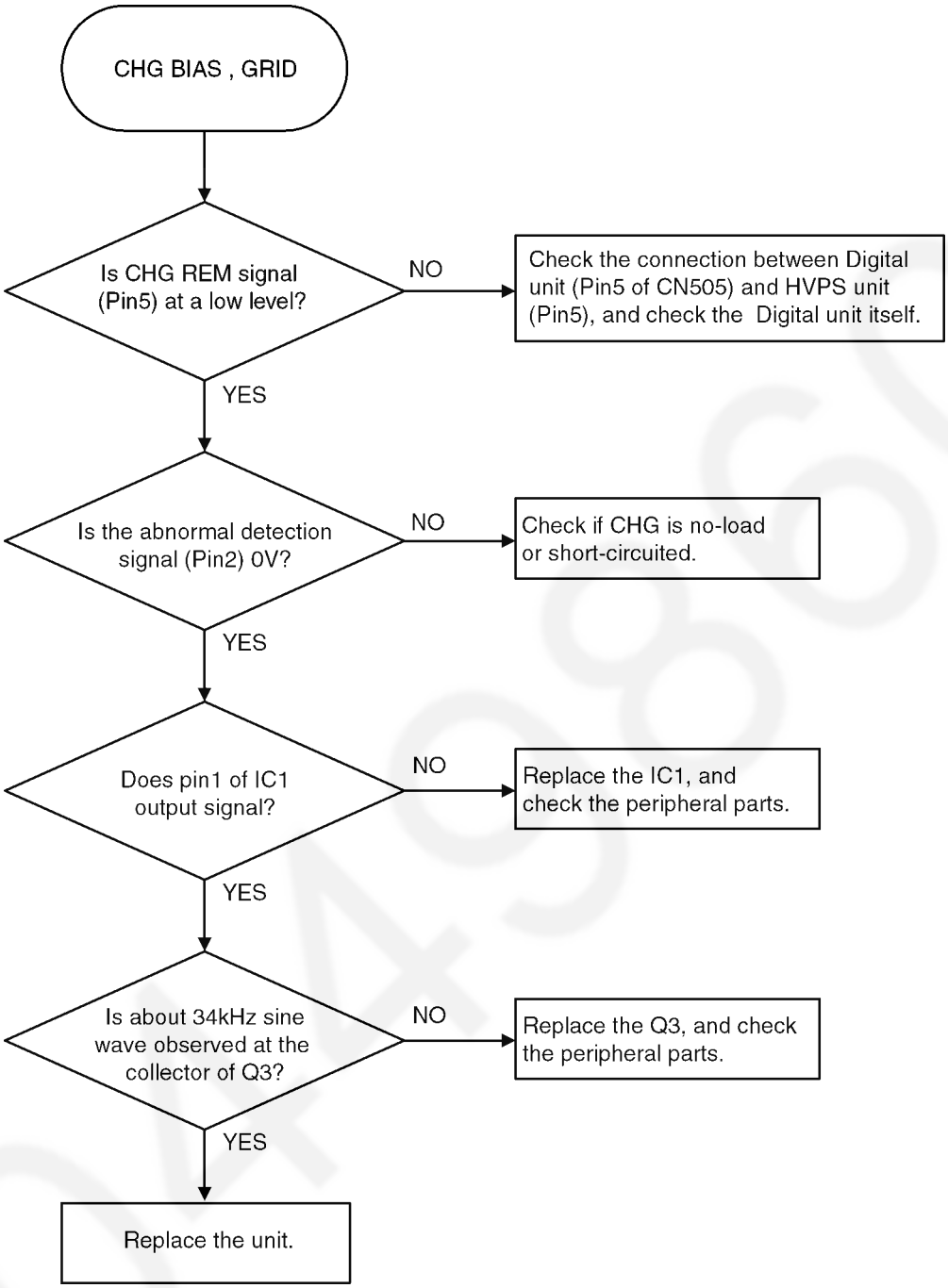


12.3.23. High Voltage Section

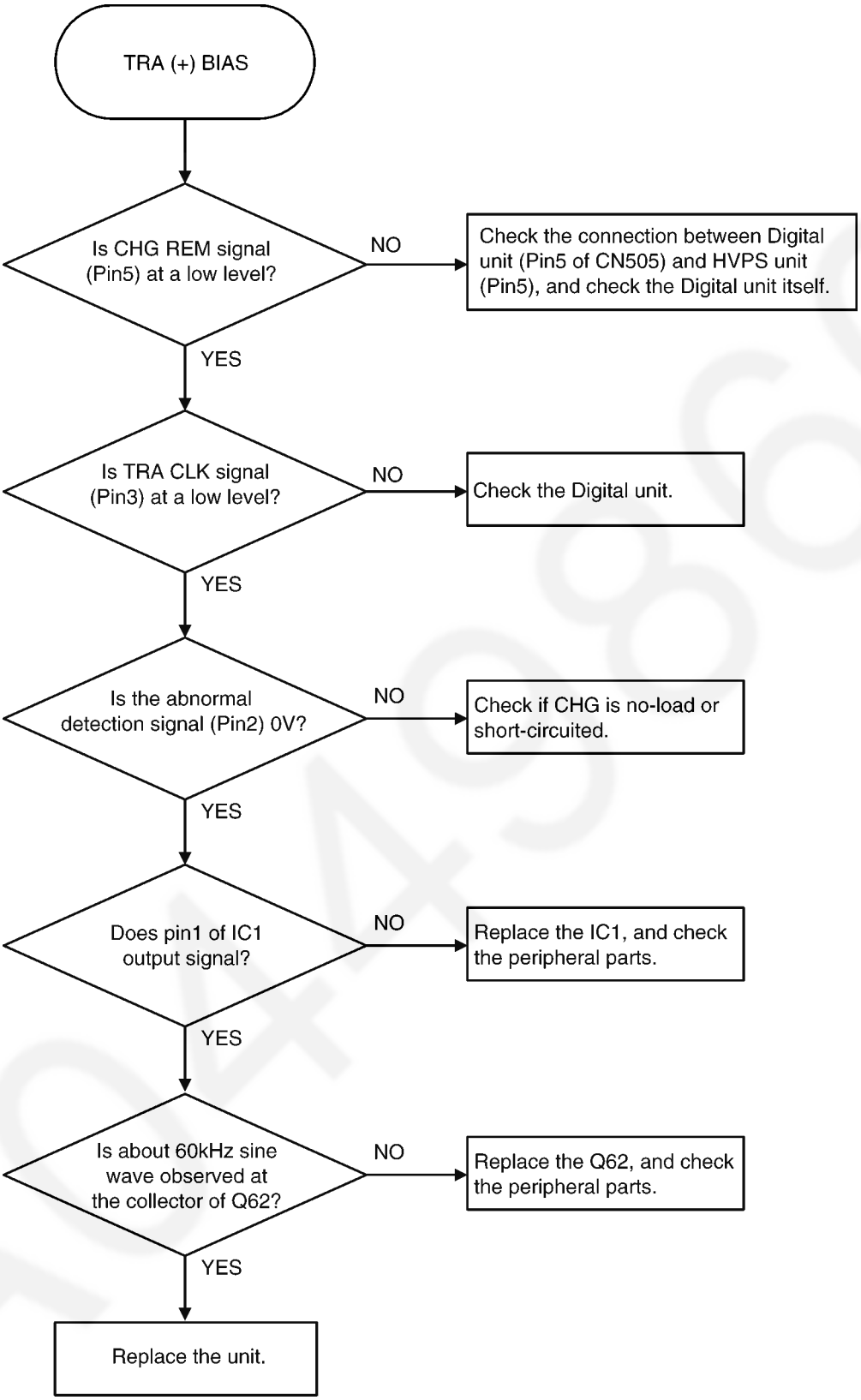
1. Main



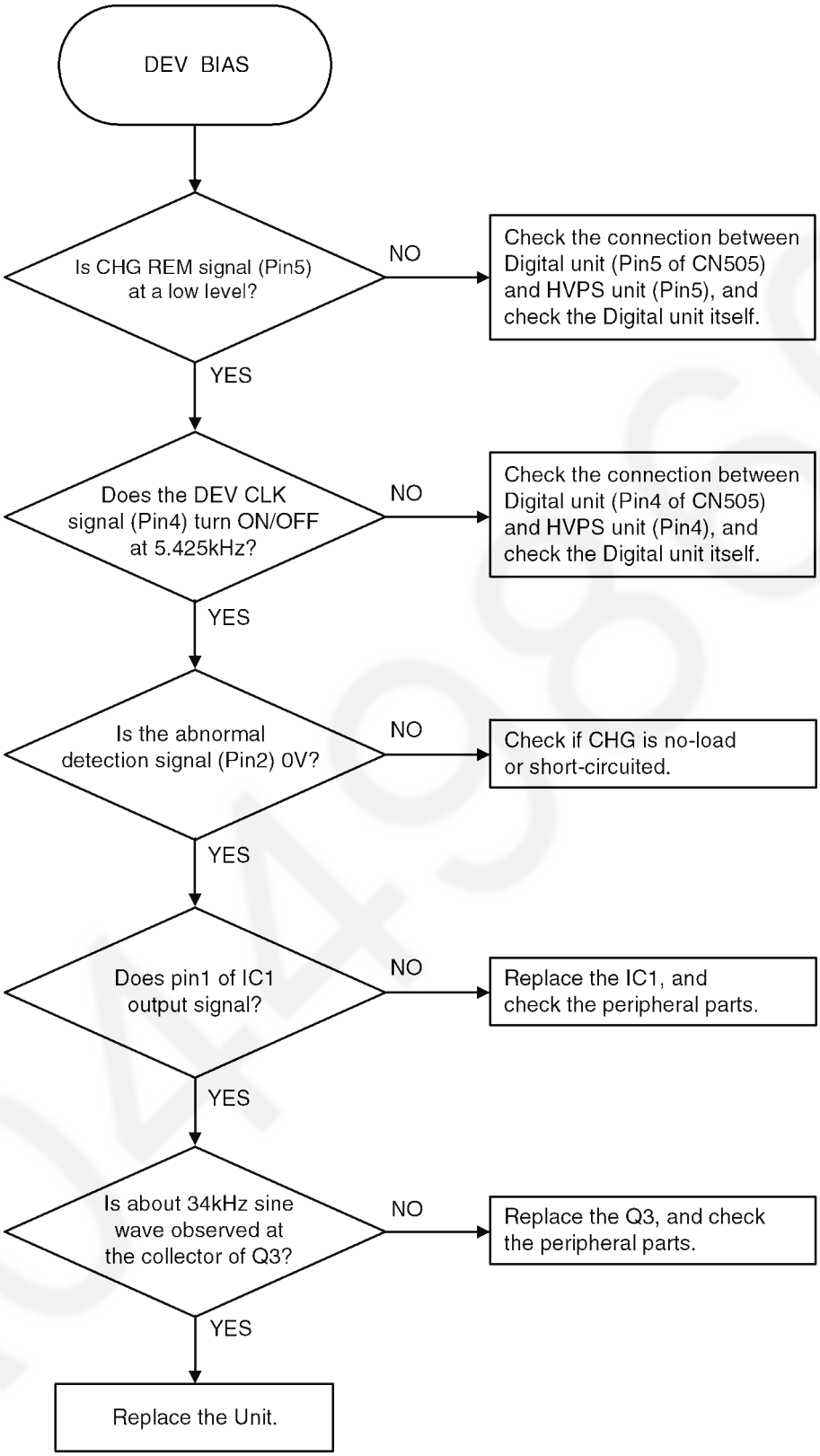
2. CHG, GRID


CHG BIAS , GRID
Is CHG REM signal (Pin5) at a low level?
NO
Check the connection between Digital unit (Pin5 of CN505) and HVPS unit (Pin5), and check the Digital unit itself.
YES
Is the abnormal detection signal (Pin2) 0V?
NO
Check if CHG is no-load or short-circuited.
YES
Does pin1 of IC1 output signal?
NO
Replace the IC1, and check the peripheral parts.
YES
Is about 34kHz sine wave observed at the collector of Q3?
NO
Replace the Q3, and check the peripheral parts.
YES
Replace the unit.

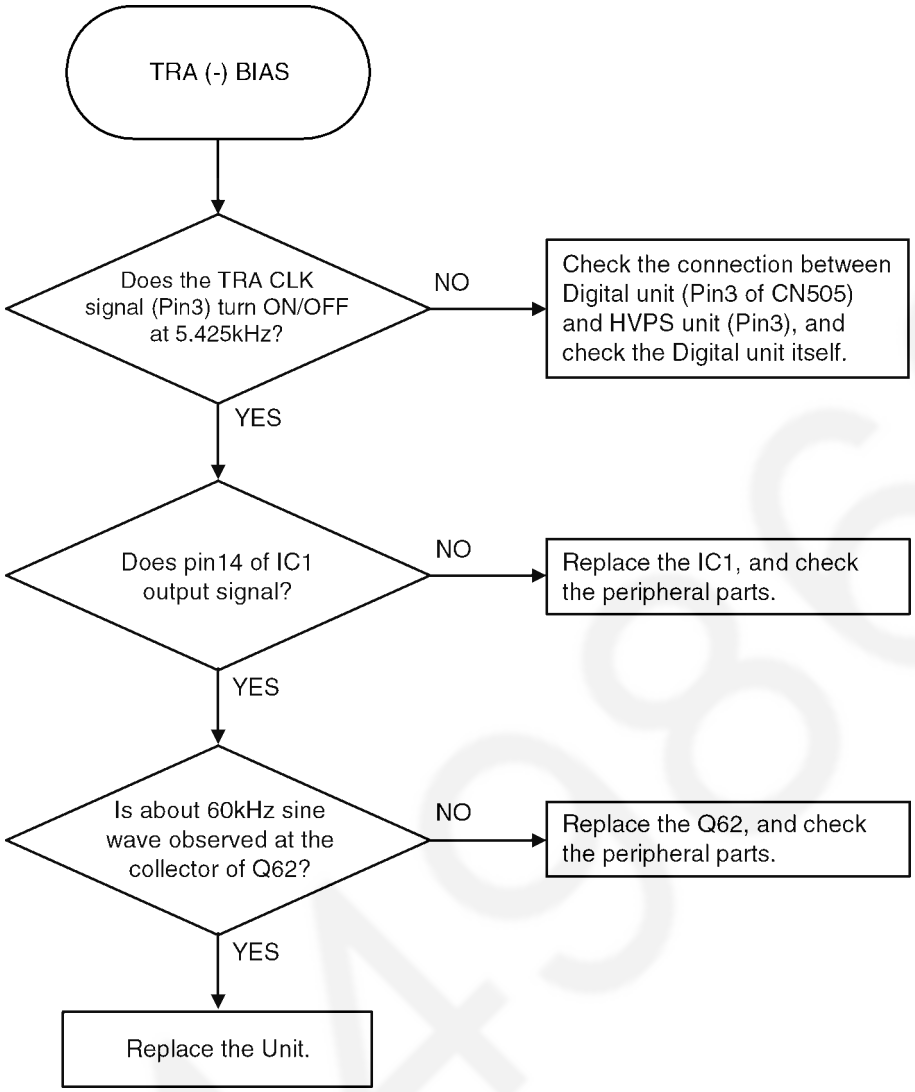
3. TRA (+)


TRA (+) BIAS
Is CHG REM signal (Pin5) at a low level?
NO
Check the connection between Digital unit (Pin5 of CN505) and HVPS unit (Pin5), and check the Digital unit itself.
YES
Is TRA CLK signal (Pin3) at a low level?
NO
Check the Digital unit.
YES
Is the abnormal detection signal (Pin2) 0V?
NO
Check if CHG is no-load or short-circuited.
YES
Does pin1 of IC1 output signal?
NO
Replace the IC1, and check the peripheral parts.
YES
Is about 60kHz sine wave observed at the collector of Q62?
NO
Replace the Q62, and check the peripheral parts.
YES
Replace the unit.

3. DEV DC


DEV BIAS
Is CHG REM signal (Pin5) at a low level?
NO
Check the connection between Digital unit (Pin5 of CN505) and HVPS unit (Pin5), and check the Digital unit itself.
YES
Does the DEV CLK signal (Pin4) turn ON/OFF at 5.425kHz?
NO
Check the connection between Digital unit (Pin4 of CN505) and HVPS unit (Pin4), and check the Digital unit itself.
YES
Is the abnormal detection signal (Pin2) 0V?
NO
Check if CHG is no-load or short-circuited.
YES
Does pin1 of IC1 output signal?
NO
Replace the IC1, and check the peripheral parts.
YES
Is about 34kHz sine wave observed at the collector of Q3?
NO
Replace the Q3, and check the peripheral parts.
YES
Replace the Unit.

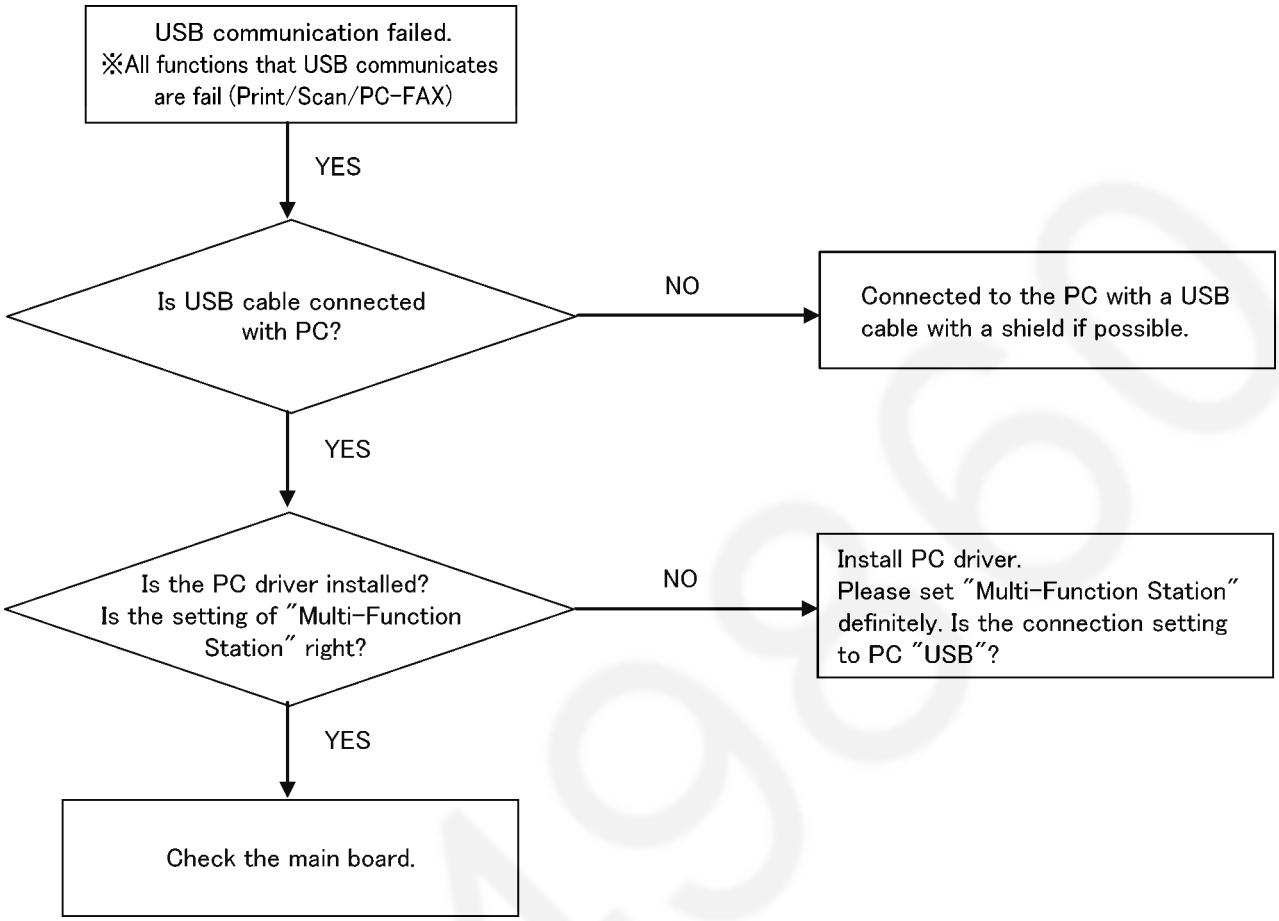
TRA (-)


TRA (-) BIAS
Does the TRA CLK signal (Pin3) turn ON/OFF at 5.425kHz?
NO
Check the connection between Digital unit (Pin3 of CN505) and HVPS unit (Pin3), and check the Digital unit itself.
YES
Does pin14 of IC1 output signal?
NO
Replace the IC1, and check the peripheral parts.
YES
Is about 60kHz sine wave observed at the collector of Q62?
NO
Replace the Q62, and check the peripheral parts.
YES
Replace the Unit.

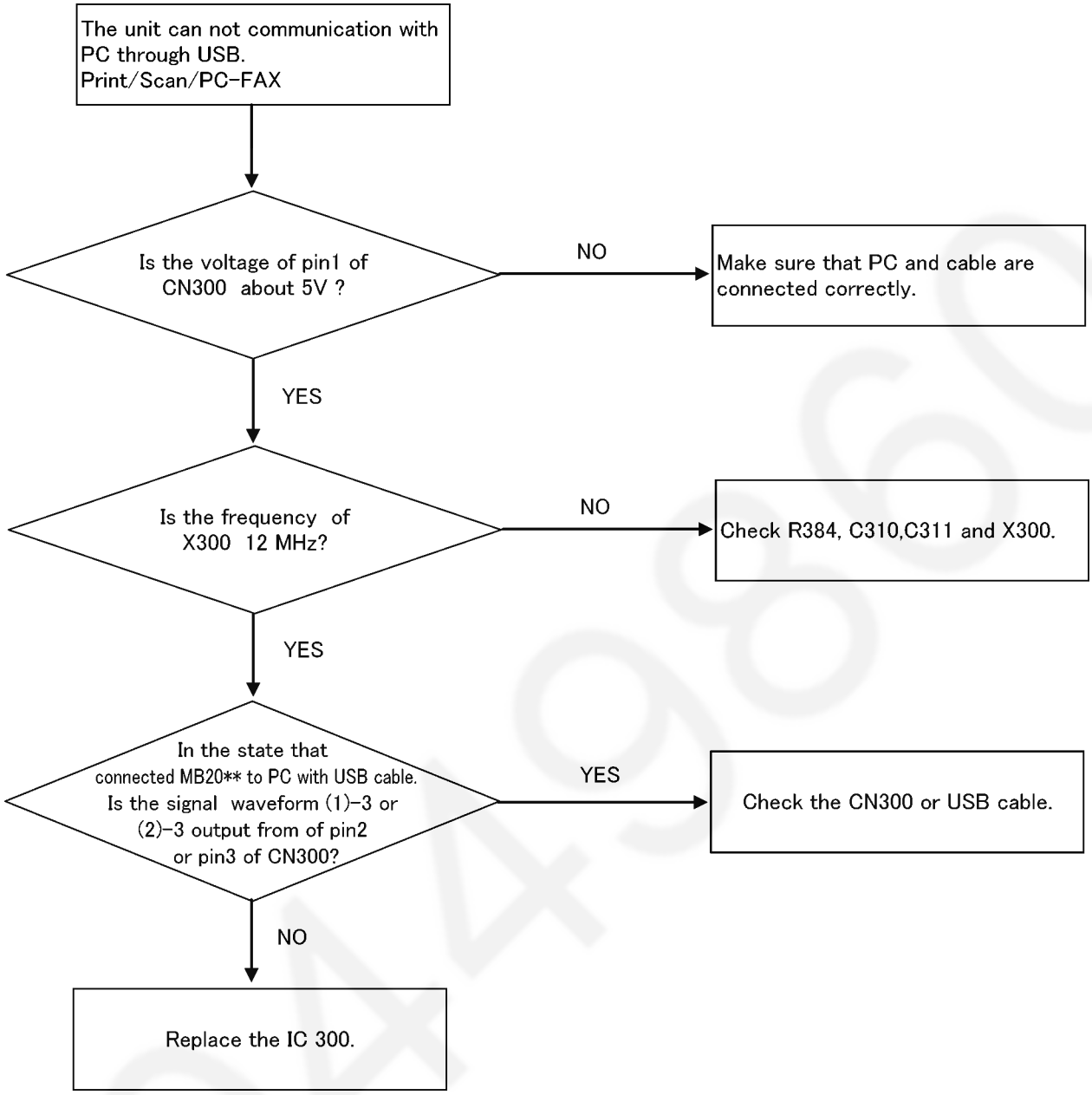
12.3.24. USB Section

Troubleshooting

1. Confirmation of the PC settings



2. Confirmation of the main unit



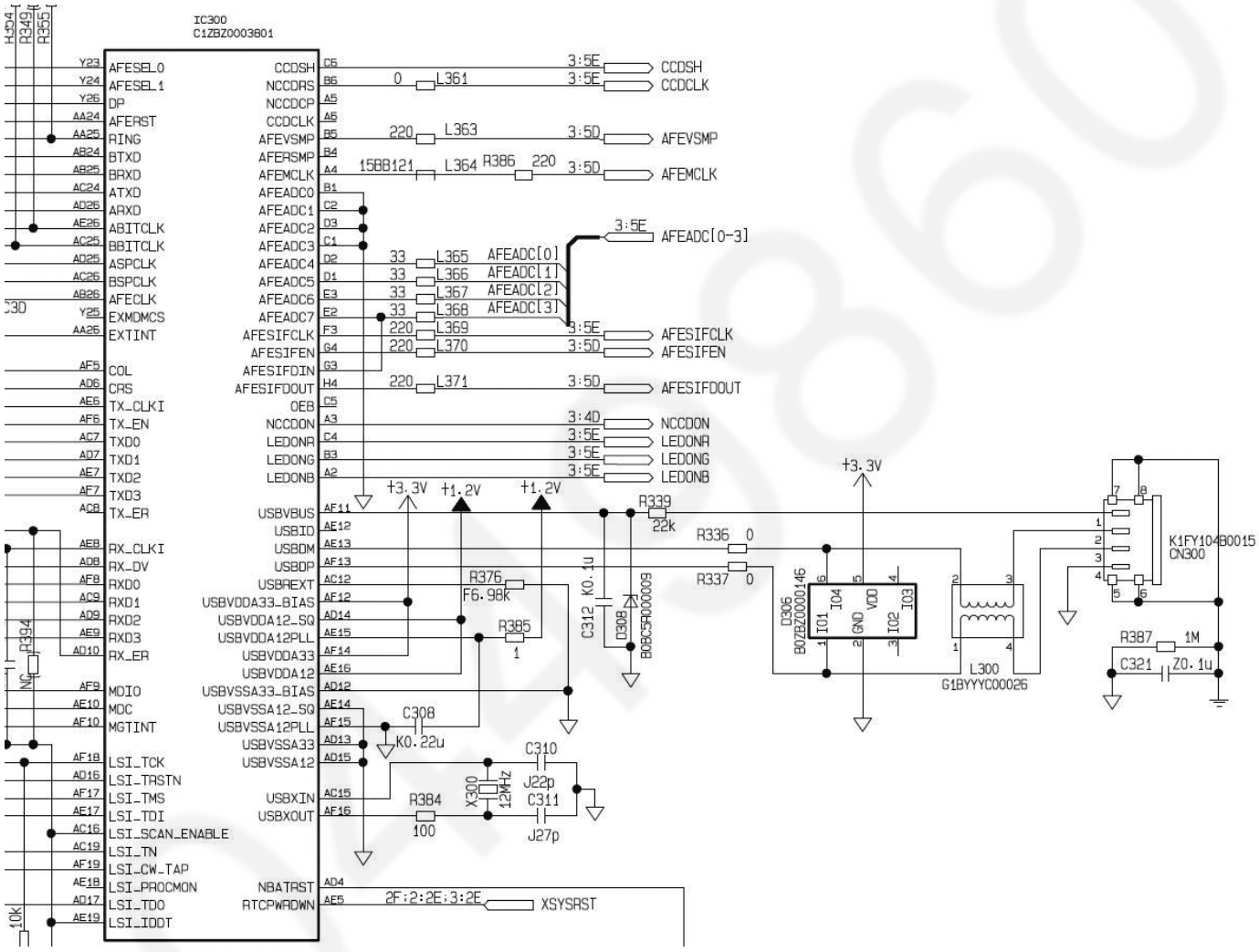
USB (Universal Serial Bus) block

Description

This is a USB block for data communication with PC.
Two signal lines (D+/D-) are differential signals which work in reverse phase.

VBUS: CN300 1pin
D-: CN300 3pin
D+: CN300 2pin
GND: CN300 4pin

Circuit Diagram



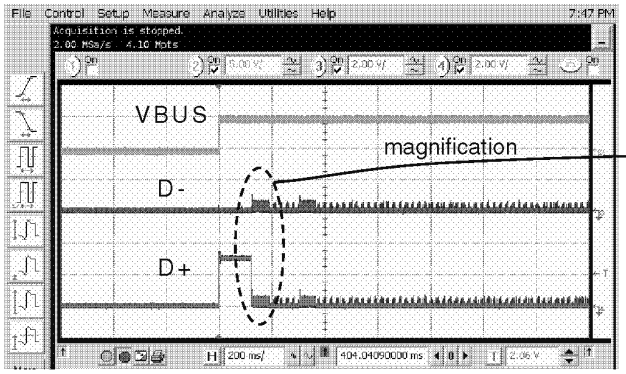
Sequence of normal operation

When USB cable from PC is connected to CN300, VBUS voltage goes up to 5V, and IC300 recognize the connection with PC.
Then D+ becomes about 3V : waveform (1)-1
The D+ becomes 0V, then communication between IC300 and PC is started : waveform (2)-1
When a few seconds elapsed after USB cable was inserted into CN300 ,the unit enters stand-by mode.
When PC is at Hi-Speed , waveforms are (1)-1 ~ (1)-4.
When PC is at Full Speed ,waveforms are (2)-1 ~ (2)-4.

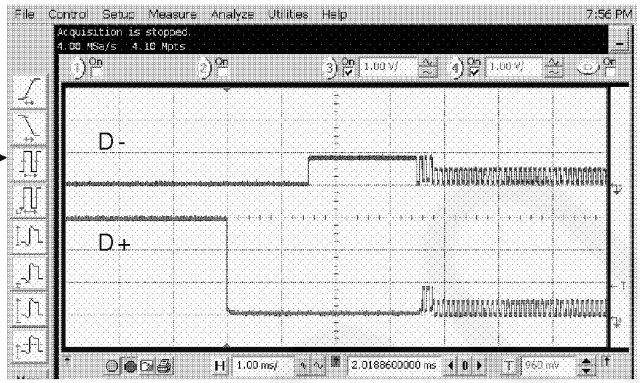
Waveform of normal operation

(1) The condition during communication establishment between PC and Main unit at Hi-Speed.

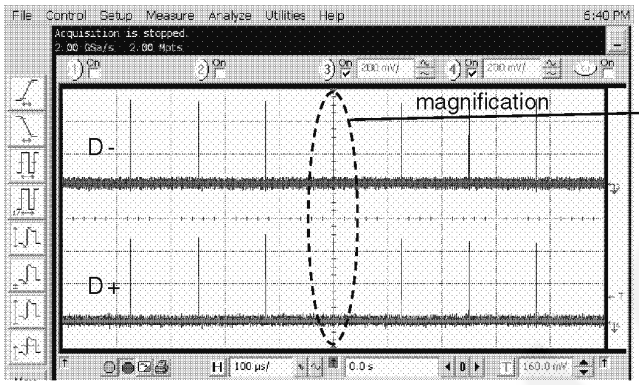
Waveform (1)-1 at Hi-Speed



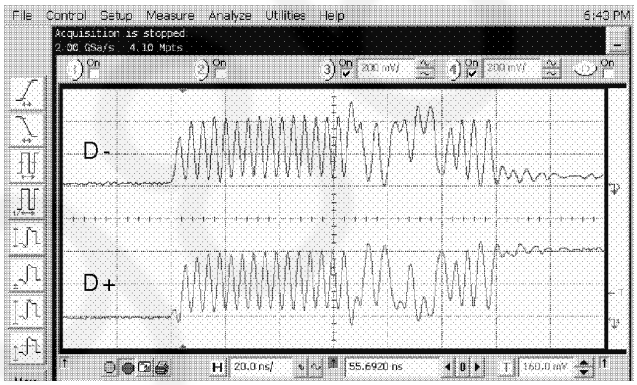
Waveform (1)-2 at Hi-Speed



Waveform (1)- 3 at Hi-Speed

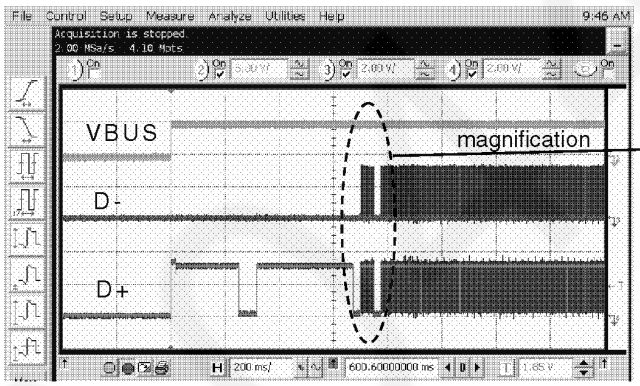


Waveform (1)-4 at Hi-Speed

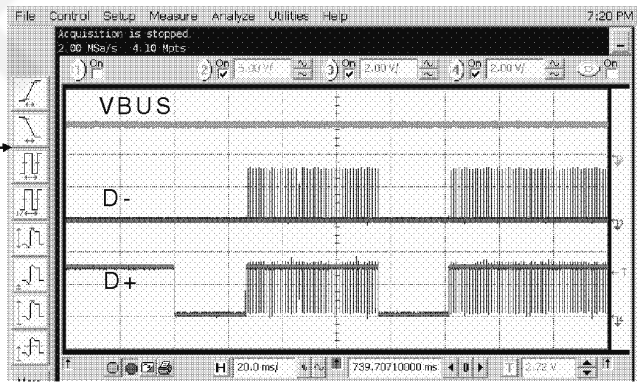


(2) The condition during communication establishment between PC and Main unit at Full Speed.

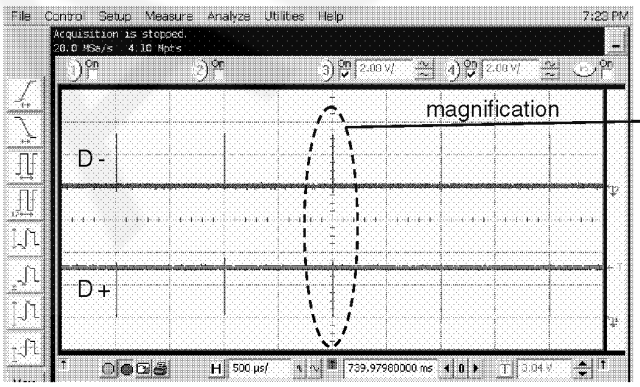
Waveform (2)- 1 at Full Speed



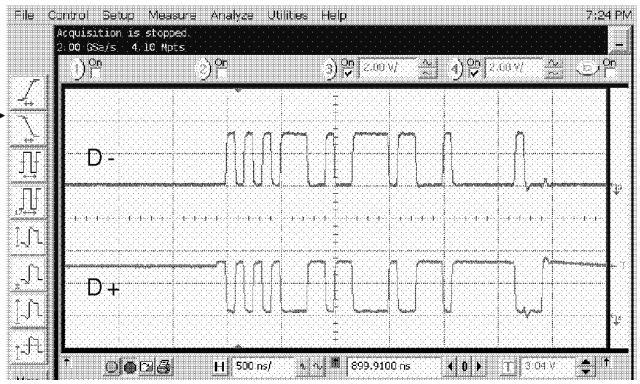
Waveform (2)-2 at Full Speed



Waveform (2)-3 at Full Speed

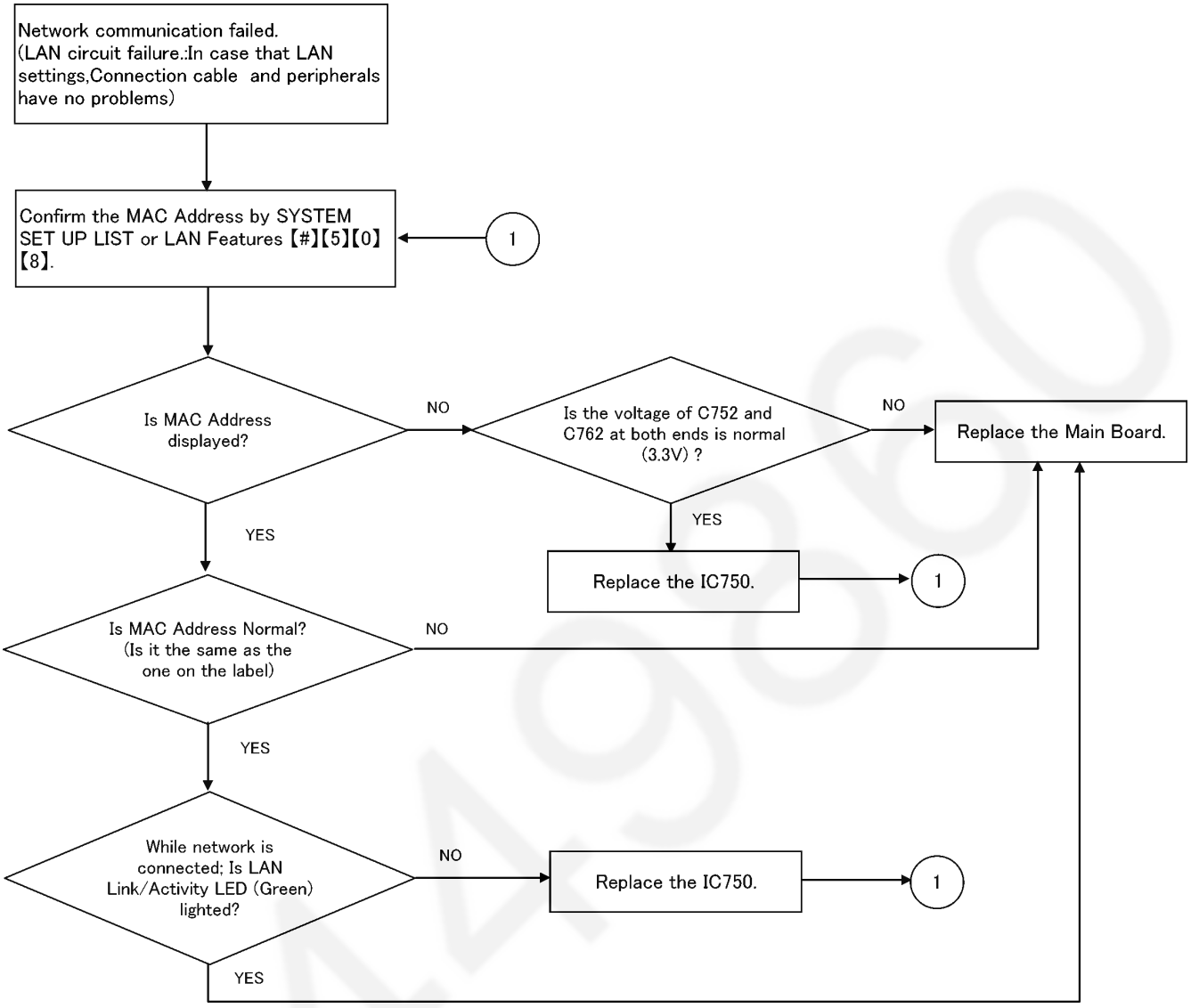


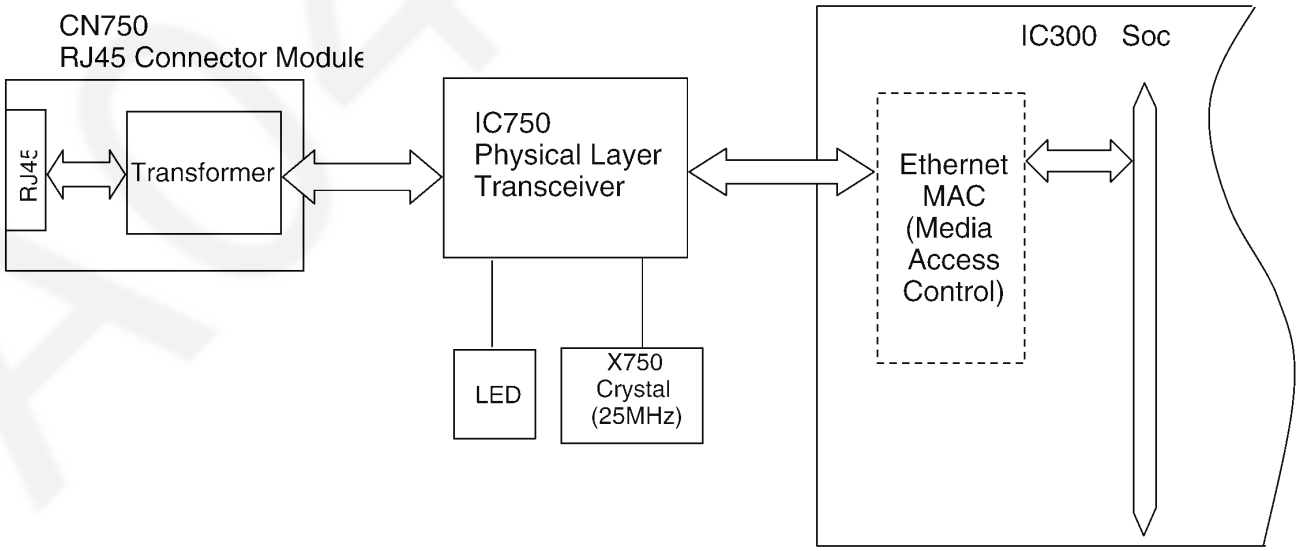
Waveform (2)-4 at Full Speed



12.3.25. LAN SECTION

LAN Block Diagram



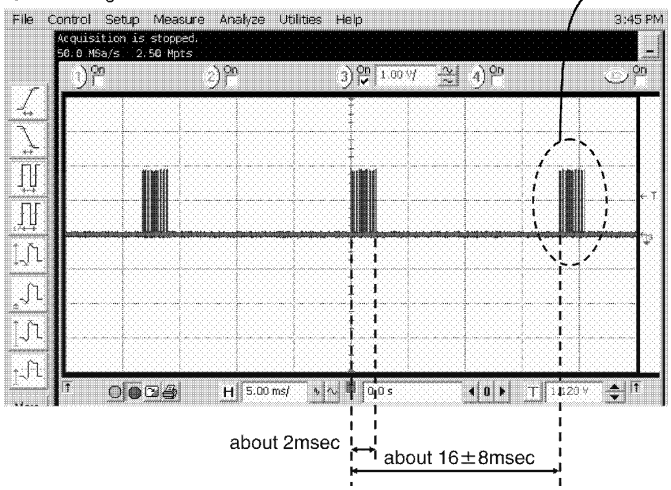


LAN Circuit signal waveform (Normal)

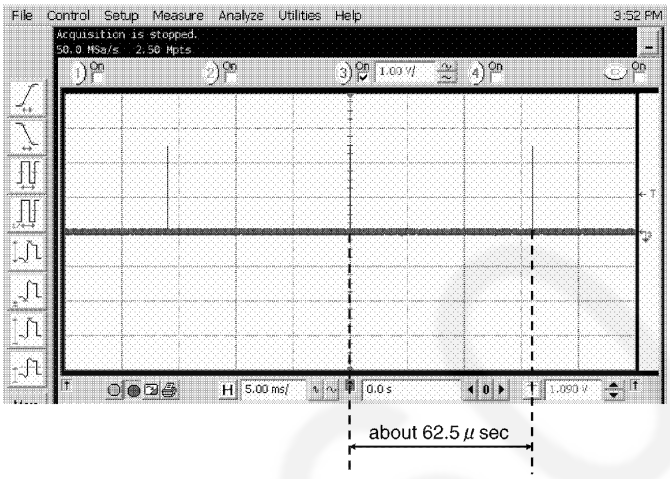
Transmitter waveform [TD+ (CN750 pin1), TD- (CN750 pin2) differential voltage] : Differential probe is used.

1. When network equipment is not connected (LAN cable is not connected);

① Auto negotiation waveform 1

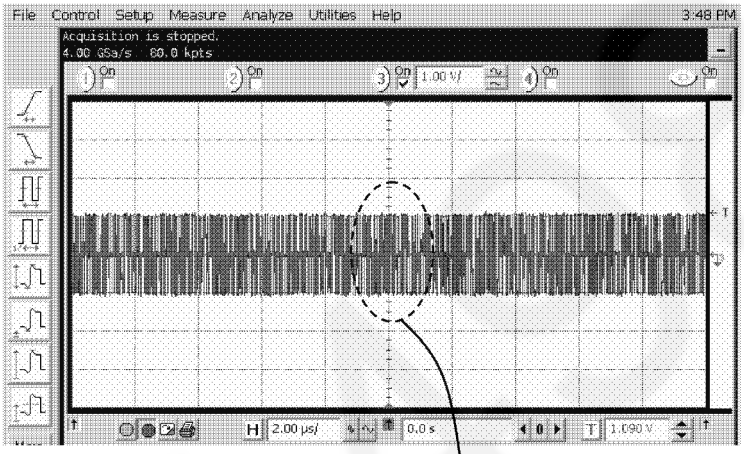


② Auto negotiation waveform 2 （A part of the waveform1 is magnified.)

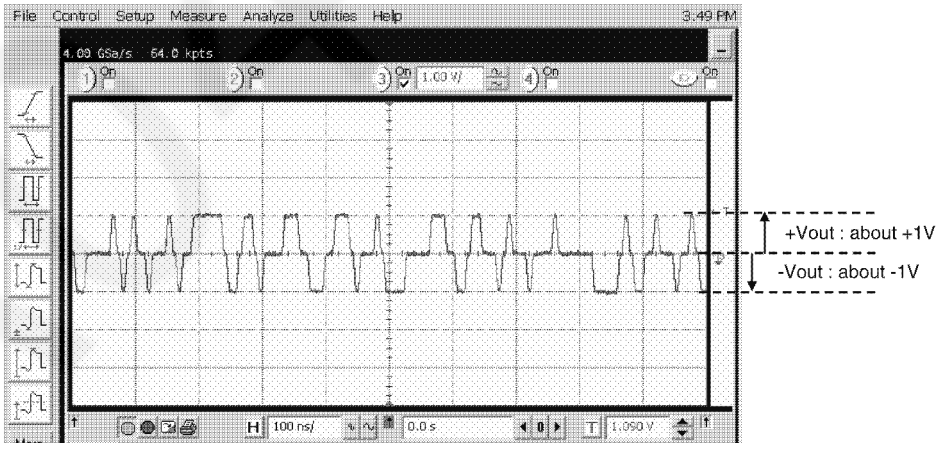


2. When 100Base-TX-enabled device is connected;

① 100Base-TX waveform 1

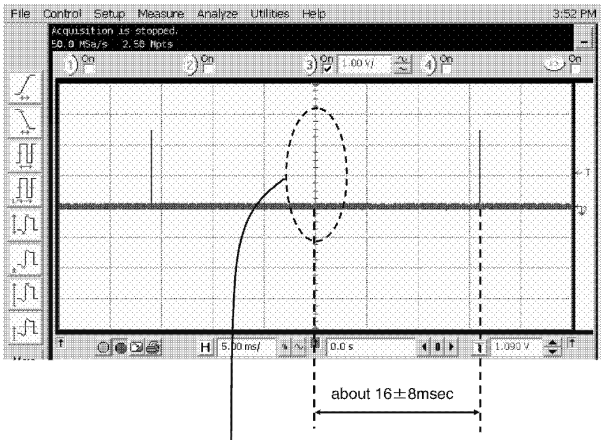


② 100Base-TX waveform 2 (A part of the waveform1 is magnified.)

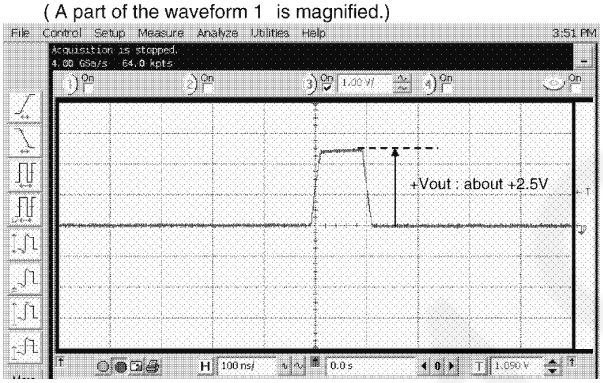


3. When 10Base-T-enabled device is connected.

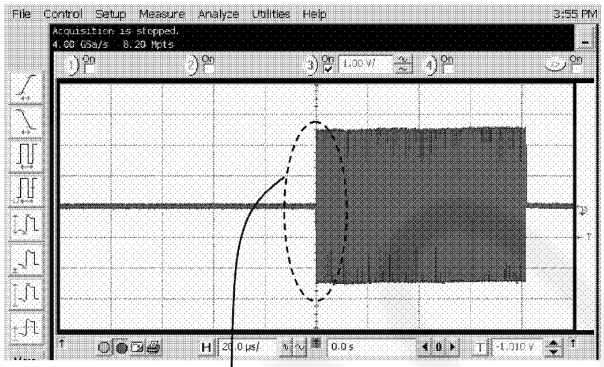
① 10Base-T waveform 1 [Link Pulse]



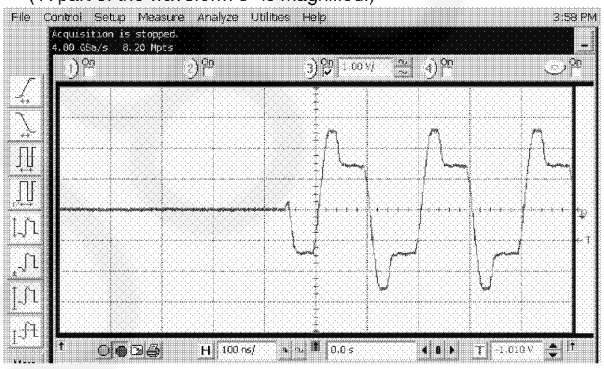
② 10Base-T waveform 2 [Link Pulse]
(A part of the waveform 1 is magnified.)



③ 10Base-T waveform 3 [during data commnication]



④ 10Base-T waveform 4 [during data commnication]
(A part of the waveform 3 is magnified.)



IC750 (C1CB00002566 : 3.3V Single Power Supply) Pin Description

Pin No	Signal Name	Input/Output(*)	Description
1	GND	Gnd	Ground
2	VDDPLL_1.8	P	1.8V analog VDD
3	VDDA_3.3	P	3.3V analog VDD
4	RX-	I/O	Physical receive or transmit signal (- differential)
5	RX+	I/O	Physical receive or transmit signal (+ differential)
6	TX-	I/O	Physical transmit or receive signal (- differential)
7	TX+	I/O	Physical transmit or receive signal (+ differential)
8	XO	O	Crystal feedback This pin is used only in MII mode when a 25 MHz crystal is used. This pin is a no connect if oscillator or external clock source is used, or if RMII mode is selected.
9	XI / REFCLK	I	Crystal / Oscillator / External Clock Input MII Mode: 25MHz +/-50ppm (crystal, oscillator, or external clock) RMII Mode: 50MHz +/-50ppm (oscillator, or external clock only)
10	REXT	I/O	Set physical transmit output current Connect a 6.49KΩ resistor in parallel with a 100pF capacitor to ground on this pin. See KSZ8041NL reference schematics.
11	MDIO	I/O	Management Interface (MII) Data I/O This pin requires an external 4.7KΩ pull-up resistor.
12	MDC	I	Management Interface (MII) Clock Input This pin is synchronous to the MDIO data interface.
13	RXD3 / PHYAD0	Ipu/O	MII Mode: Receive Data Output[3](2) / Config Mode: The pull-up/pull-down value is latched as PHYADDR[0] during power-up / reset. See “Strapping Options” section for details.
14	RXD2 / PHYAD1	Ipd/O	MII Mode: Receive Data Output[2](2) / Config Mode: The pull-up/pull-down value is latched as PHYADDR[1] during power-up / reset. See “Strapping Options“ section for details.
15	RXD1 / RXD[1] / PHYAD2	Ipd/O	MII Mode: Receive Data Output[1](2) / RMII Mode: Receive Data Output[1](3) / Config Mode: The pull-up/pull-down value is latched as PHYADDR[2] during power-up / reset. See “Strapping Options“ section for details.
16	RXD0 / RXD[0] / DUPLEX	Ipu/O	MII Mode: Receive Data Output[0](2) / RMII Mode: Receive Data Output[0](3) / Config Mode: Latched as DUPLEX (register 0h, bit 8) during power-up / reset. See “Strapping Options“ section for details.
17	VDDIO_3.3	P	3.3V digital VDD
18	RXDV / CRSDV / CONFIG2	Ipd/O	MII Mode: Receive Data Valid Output / RMII Mode: Carrier Sense/Receive Data Valid Output / Config Mode: The pull-up/pull-down value is latched as CONFIG2 during power-up / reset. See “Strapping Options“ section for details.
19	RXC	O	MII Mode: Receive Clock Output
20	RXER / RX_ER / ISO	Ipd/O	MII Mode: Receive Error Output / RMII Mode: Receive Error Output / Config Mode: The pull-up/pull-down value is latched as ISOLATE during power-up / reset. See “Strapping Options“ section for details.
21	INTRP	Opu	Interrupt Output: Programmable Interrupt Output Register 1Bh is the Interrupt Control/Status Register for programming the interrupt conditions and reading the interrupt status. Register 1Fh bit 9 sets the interrupt output to active low (default) or active high.
22	TXC	O	MII Mode: Transmit Clock Output
23	TXEN / TX_EN	I	MII Mode: Transmit Enable Input / RMII Mode: Transmit Enable Input
24	TXD0 / TXD[0]	I	MII Mode: Transmit Data Input[0](4) / RMII Mode: Transmit Data Input[0](5)
25	TXD1 / TXD[1]	I	MII Mode: Transmit Data Input[1](4) / RMII Mode: Transmit Data Input[1](5)
26	TXD2	I	MII Mode: Transmit Data Input[2](4) /
27	TXD3	I	MII Mode: Transmit Data Input[3](4) /
28	COL / CONFIG0	Ipd/O	MII Mode: Collision Detect Output / Config Mode: The pull-up/pull-down value is latched as CONFIG0 during power-up / reset. See “Strapping Options“ section for details.
29	CRS / CONFIG1	Ipd/O	MII Mode: Carrier Sense Output / Config Mode: The pull-up/pull-down value is latched as CONFIG1 during power-up / reset. See “Strapping Options“ section for details.

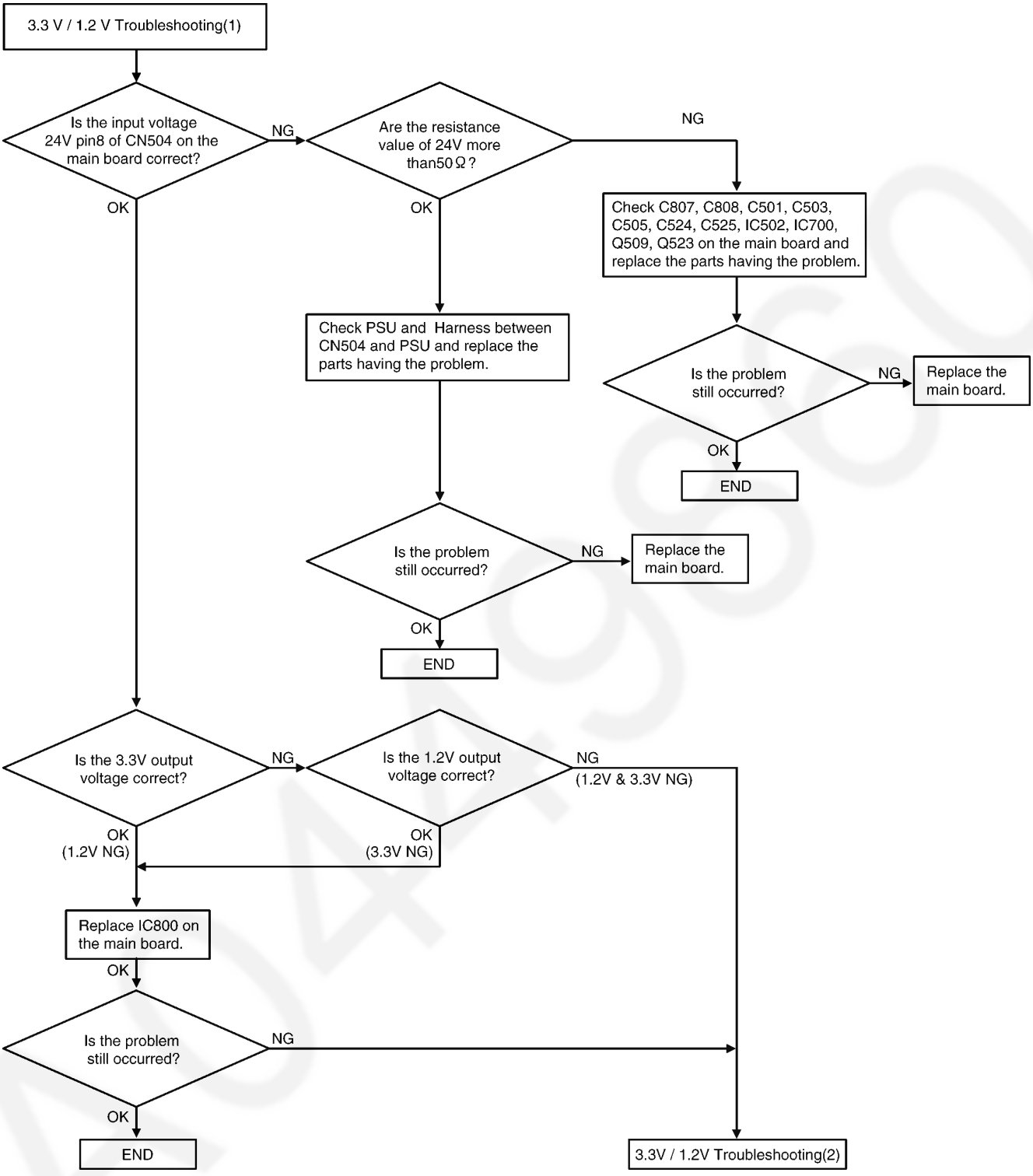
<table>
<tr><th>Pin No</th><th>Signal Name</th><th>Input/Output(*)</th><th>Description</th></tr>
<tr><td>30</td><td>LED0 / NWAYEN</td><td>Ipu/O</td><td>LED Output: Programmable LED0 Output /
Config Mode: Latched as Auto-Negotiation Enable (register 0h, bit 12) during power-up / reset. See “Strapping Options“ section for details.
The LED0 pin is programmable via register 1Eh bits [15:14], and is defined as follows.
<table><tr><th colspan="3">LED mode = [00]</th></tr><tr><th>Link/Activity</th><th>Pin State</th><th>LED Definition</th></tr><tr><td>No Link</td><td>H</td><td>OFF</td></tr><tr><td>Link</td><td>L</td><td>ON</td></tr><tr><td>Activity</td><td>Toggle</td><td>Blinking</td></tr></table>
<table><tr><th colspan="3">LED mode = [01]</th></tr><tr><th>Link</th><th>Pin State</th><th>LED Definition</th></tr><tr><td>No Link</td><td>H</td><td>OFF</td></tr><tr><td>Link</td><td>L</td><td>ON</td></tr></table>
<u>LED mode = [10]</u>
Reserved
<u>LED mode = [11]</u>
Reserved</td></tr>
<tr><td>31</td><td>LED1 / SPEED</td><td>Ipu/O</td><td>LED Output: Programmable LED1 Output /
Config Mode: Latched as SPEED (register 0h, bit 13) during power-up / reset. See “Strapping Options“ section for details.
The LED1 pin is programmable via register 1Eh bits [15:14], and is defined as follows.
<table><tr><th colspan="3">LED mode = [00]</th></tr><tr><th>Speed</th><th>Pin State</th><th>LED Definition</th></tr><tr><td>10BT</td><td>H</td><td>OFF</td></tr><tr><td>100BT</td><td>L</td><td>ON</td></tr></table>
<table><tr><th colspan="3">LED mode = [01]</th></tr><tr><th>Activity</th><th>Pin State</th><th>LED Definition</th></tr><tr><td>No Activity</td><td>H</td><td>OFF</td></tr><tr><td>Activity</td><td>Toggle</td><td>Blinking</td></tr></table>
<u>LED mode = [10]</u>
Reserved
<u>LED mode = [11]</u>
Reserved</td></tr>
<tr><td>32</td><td>RST#</td><td>I</td><td>Chip Reset (active low)</td></tr>
<tr><td>PAD-DLE</td><td>GND</td><td>Gnd</td><td>Ground</td></tr>
</table>

NOTE:

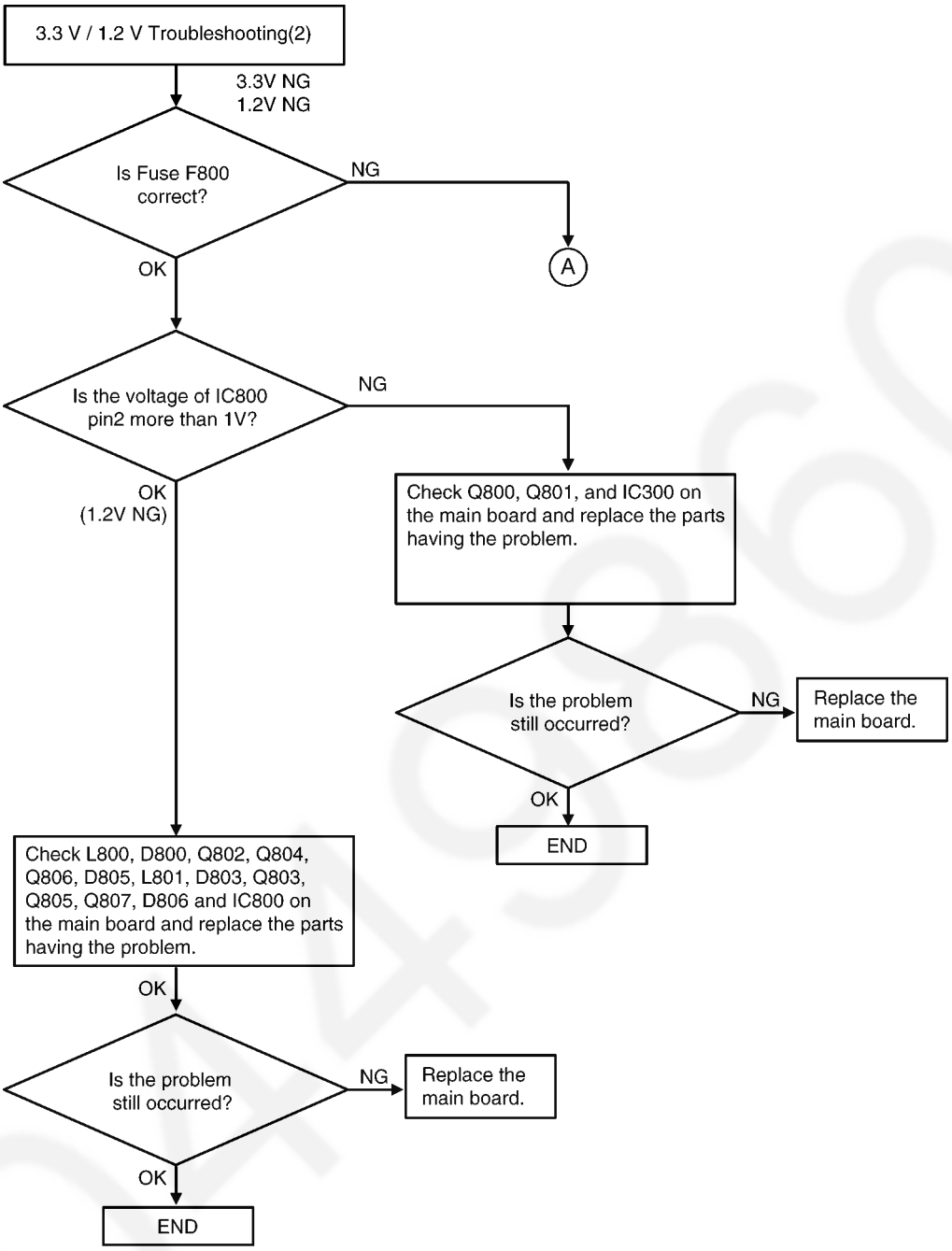
- P = Power supply.
  Gnd = Ground.
  O = Output.
  I/O = Bi-directional.
  Ipd = Input with internal pull-down (40K +/-30%).
  Ipu = Input with internal pull-up (40K +/-30%).
  Opu = Output with internal pull-up (40K +/-30%).
  Ipu/O = Input with internal pull-up (40K +/-30%) during power-up/reset; output pin otherwise.
  Ipd/O = Input with internal pull-down (40K +/-30%) during power-up/reset; output pin otherwise.
- MII Rx Mode: The RXD[3..0] bits are synchronous with RXCLK. When RXDV is asserted, RXD[3..0] presents valid data to MAC through the MII. RXD[3..0] is invalid when RXDV is de-asserted.
- RMII Rx Mode: The RXD[1:0] bits are synchronous with REF_CLK. For each clock period in which CRS_DV is asserted, two bits of recovered data are sent from the PHY.
- MII Tx Mode: The TXD[3..0] bits are synchronous with TXCLK. When TXEN is asserted, TXD[3..0] presents valid data from the MAC through the MII. TXD[3..0] has no effect when TXEN is de-asserted.
- RMII Tx Mode: The TXD[1:0] bits are synchronous with REF_CLK. For each clock period in which TX_EN is asserted, two bits of data are received by the PHY from the MAC.

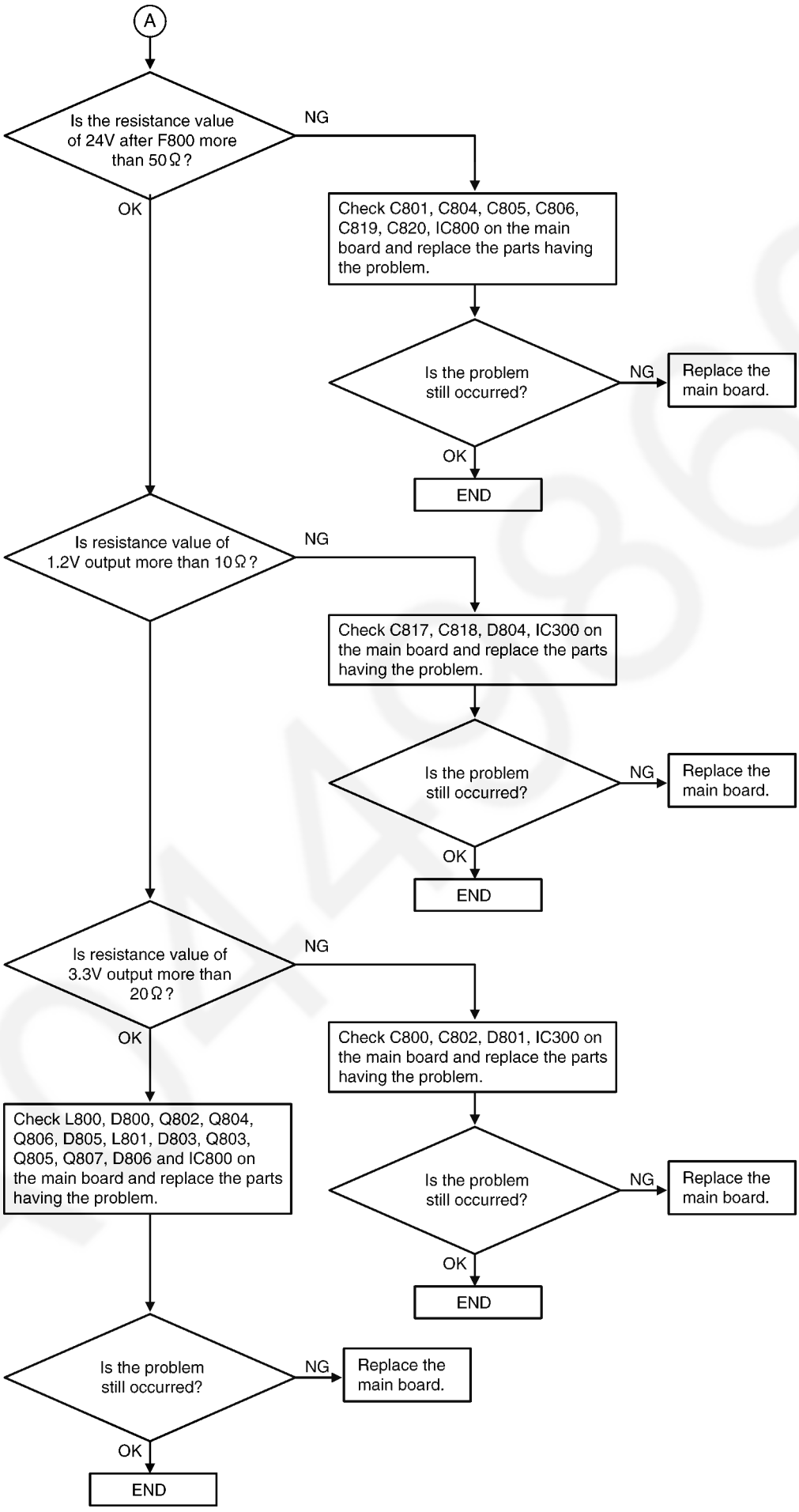
12.3.26. Main Board Section

3.3V / 1.2V Troubleshooting Guide (1)

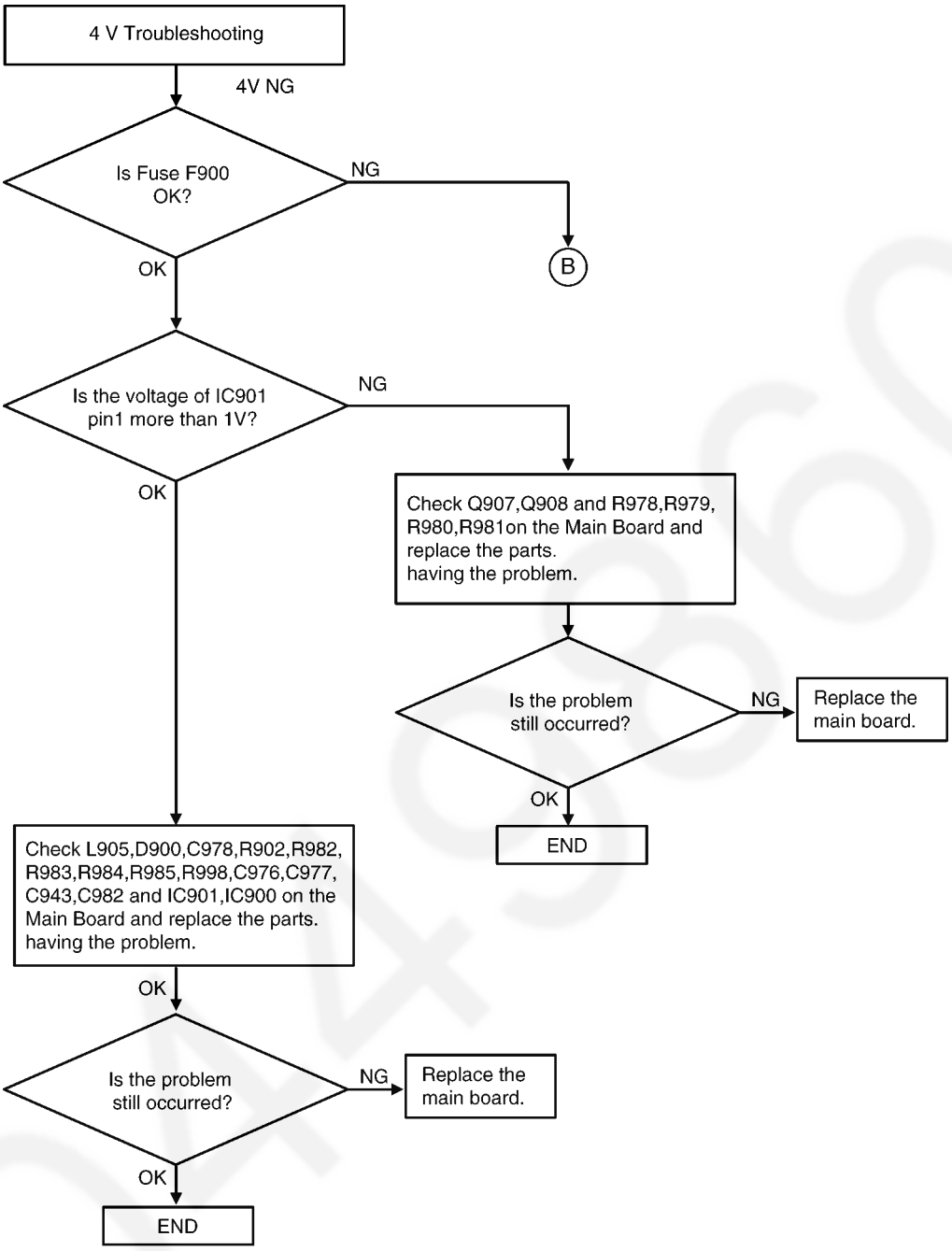


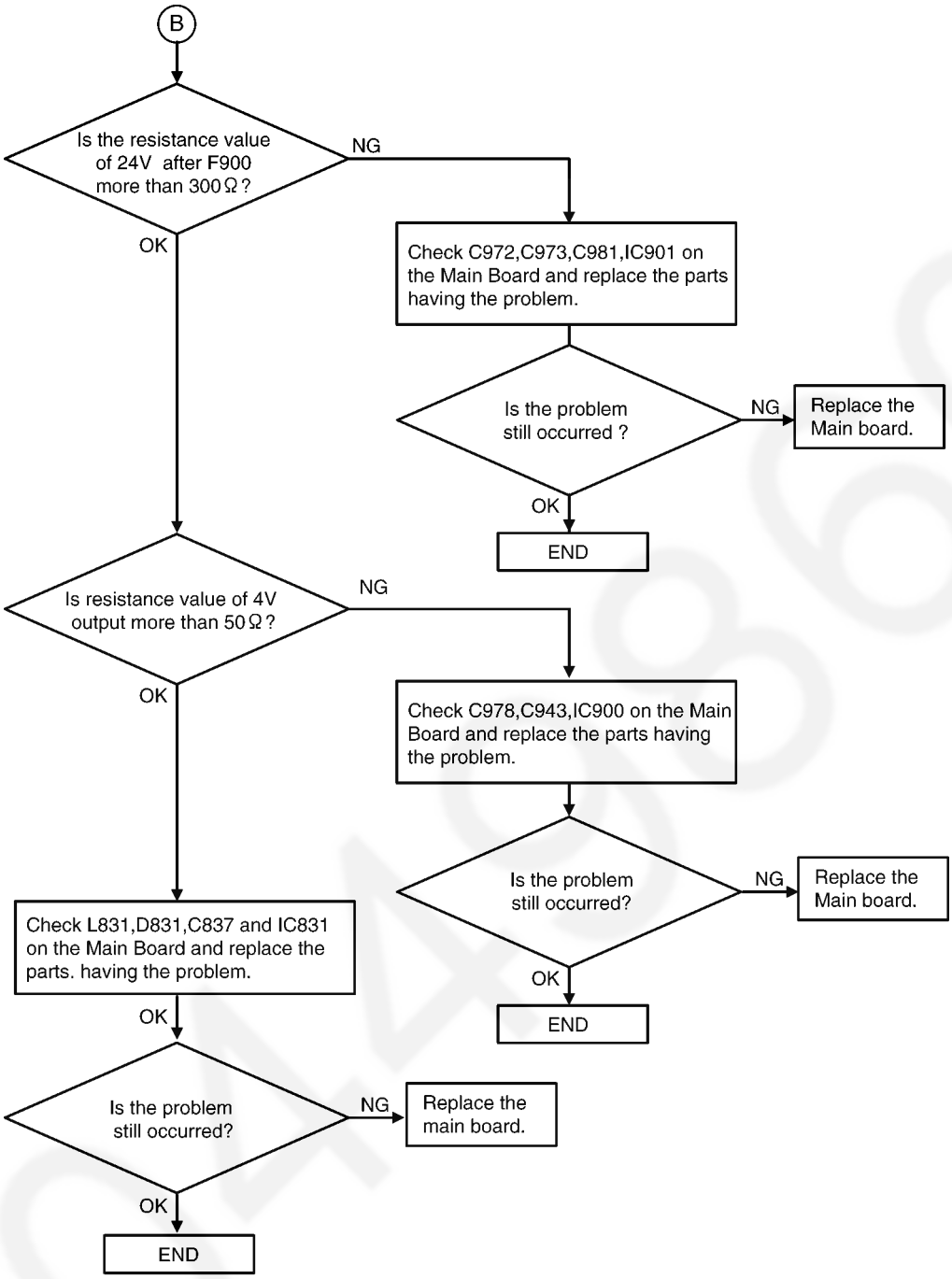
3.3V / 1.2V Troubleshooting Guide (2)




A
Is the resistance value of 24V after F800 more than 50Ω?
NG
OK
Check C801, C804, C805, C806, C819, C820, IC800 on the main board and replace the parts having the problem.
Is the problem still occurred?
NG
Replace the main board.
OK
END
Is resistance value of 1.2V output more than 10Ω?
NG
Check C817, C818, D804, IC300 on the main board and replace the parts having the problem.
Is the problem still occurred?
NG
Replace the main board.
OK
END
Is resistance value of 3.3V output more than 20Ω?
NG
OK
Check C800, C802, D801, IC300 on the main board and replace the parts having the problem.
Check L800, D800, Q802, Q804, Q806, D805, L801, D803, Q803, Q805, Q807, D806 and IC800 on the main board and replace the parts having the problem.
Is the problem still occurred?
NG
Replace the main board.
OK
END
Is the problem still occurred?
NG
Replace the main board.
OK
END

4V Troubleshooting Guide




B
Is the resistance value of 24V after F900 more than 300Ω?
NG
OK
Check C972,C973,C981,IC901 on the Main Board and replace the parts having the problem.
Is the problem still occurred ?
NG
Replace the Main board.
OK
END
Is resistance value of 4V output more than 50Ω?
NG
OK
Check C978,C943,IC900 on the Main Board and replace the parts having the problem.
Is the problem still occurred?
NG
Replace the Main board.
OK
END
Check L831,D831,C837 and IC831 on the Main Board and replace the parts. having the problem.
OK
Is the problem still occurred?
NG
Replace the main board.
OK
END

12.3.27. Power Supply Board Section

12.3.27.1. Key Components For Troubleshooting

Check the following parts first: F1, F2, D1, C5, Q1 and PC1.

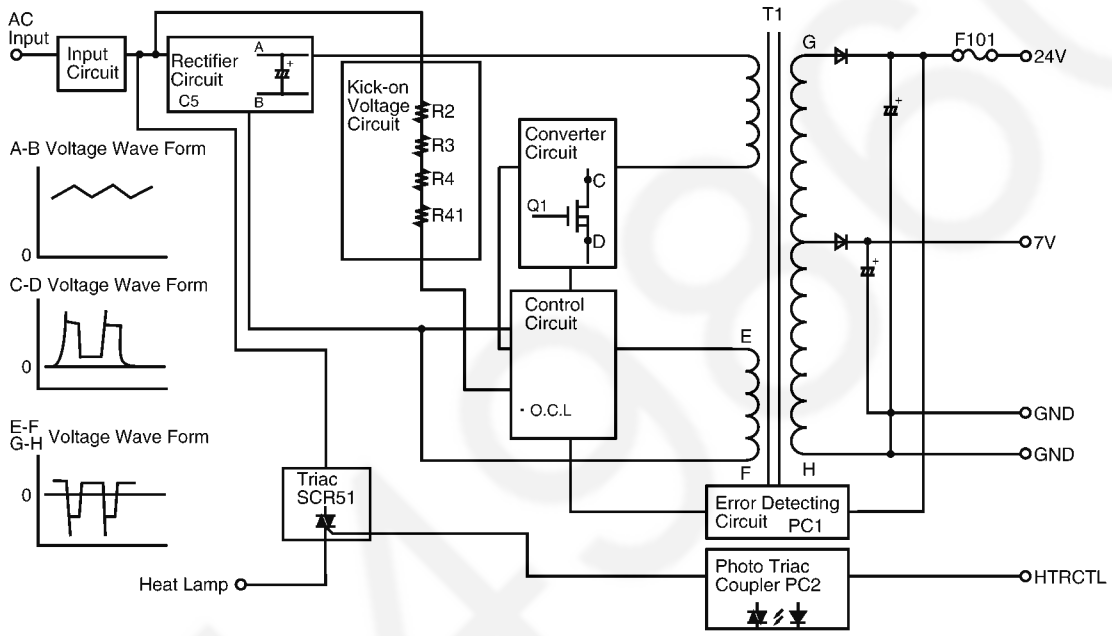
This comes from our experience with experimental test. For example: power supply and lightning surge voltage test, with standing voltage test, intentional short circuit test, etc.

Caution:

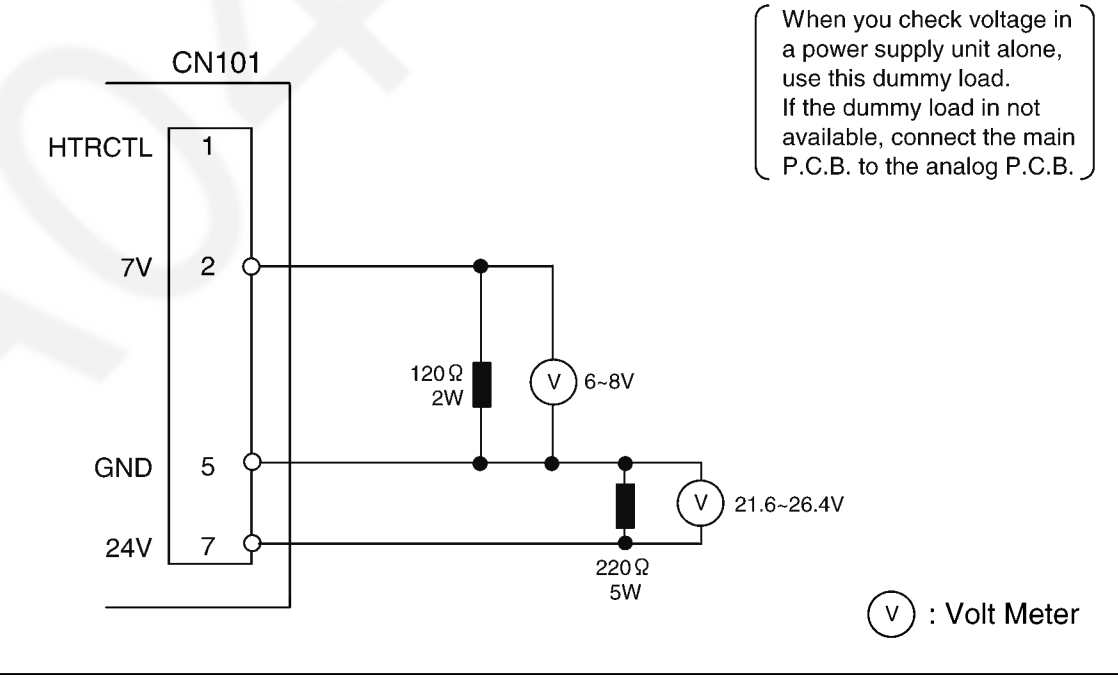
If you find a melted fuse in the unit, do not turn on the power until you located and repair the faulty parts (except for the fuse); otherwise the fuse will melt again and you cannot pinpoint the faulty point.

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.

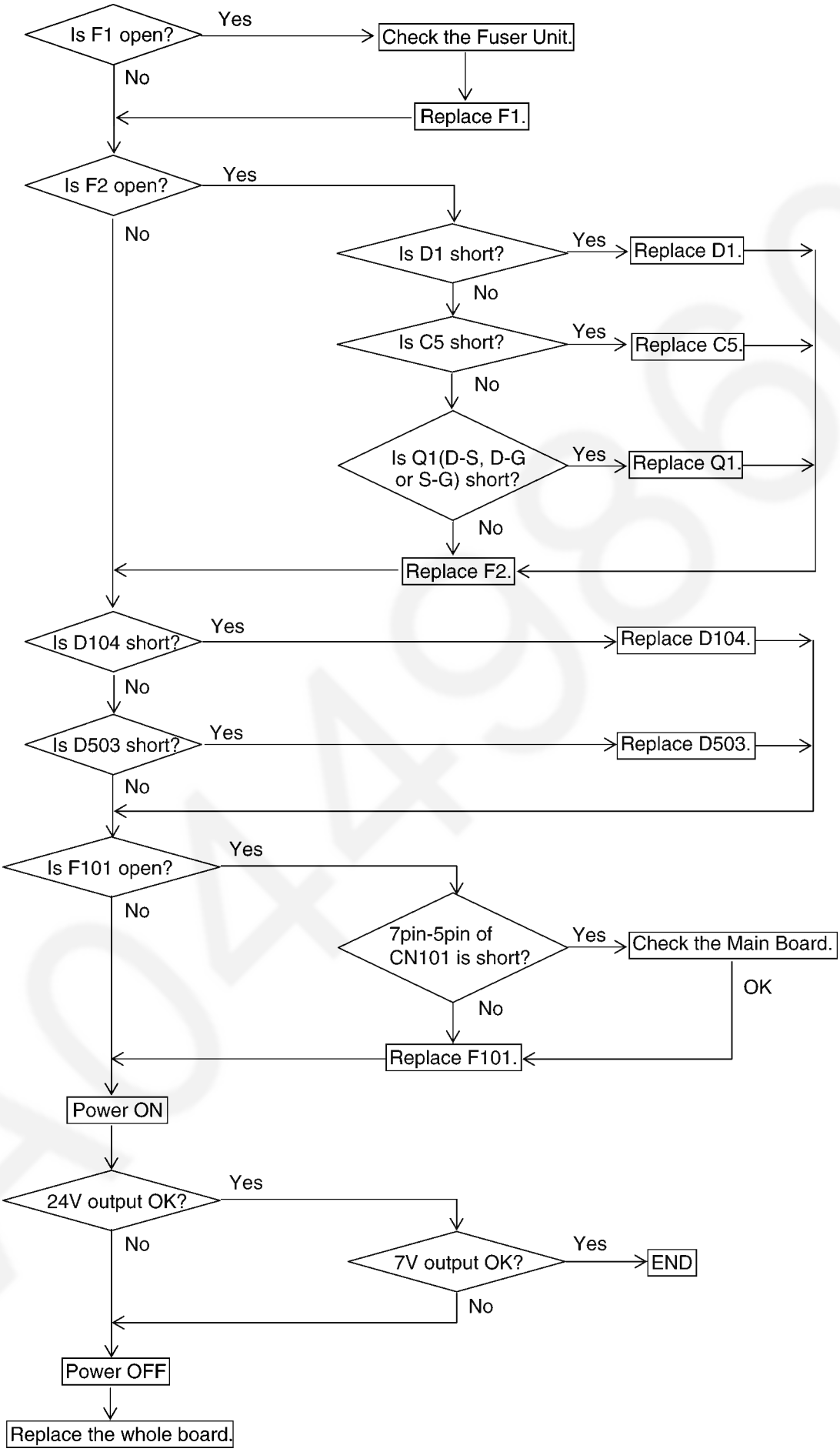
Block Diagram



DUMMY LOAD to check voltage



12.3.27.2. Troubleshooting Flow Chart



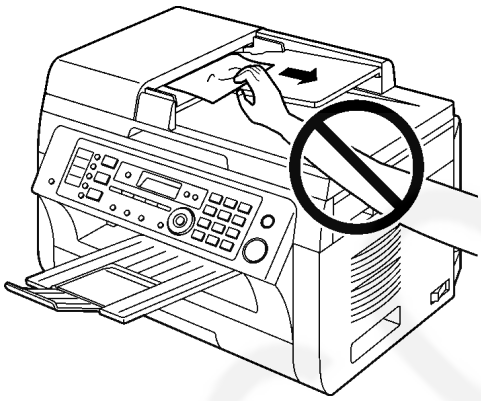
12.3.27.3. Broken Parts Repair Details

(D1)
If D1 is short-circuit, F2 will melt (open).
In this case, replace all of the parts (D1, F2).
(C5)
If overvoltage (Approx. 450V) was supplied for a power supply unit, C5 will be broken.
(Q1)
If Q1 is short-circuit, F2 will melt (open).
In this case, replace all of the parts (F2, Q1,D1).
(F101)
If F101 is melted (open), check the 24 Voltage line of the Main Board and others.

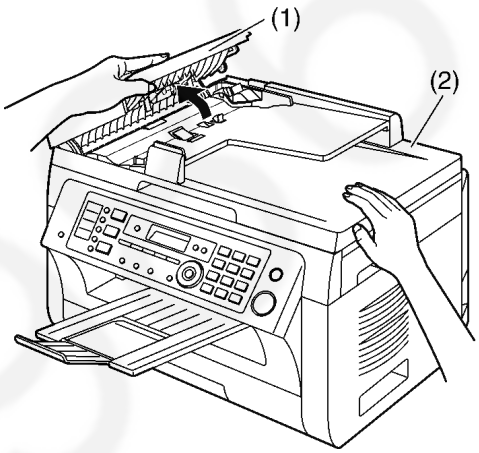
12.4. DOCUMENT JAMS (AUTOMATIC DOCUMENT FEEDER)

Caution:

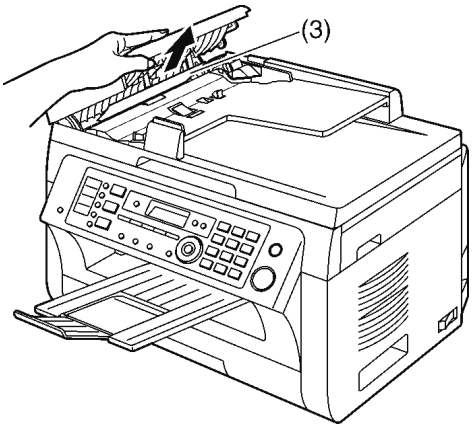
- **Do not pull out the jammed document forcibly before lifting the ADF cover.**



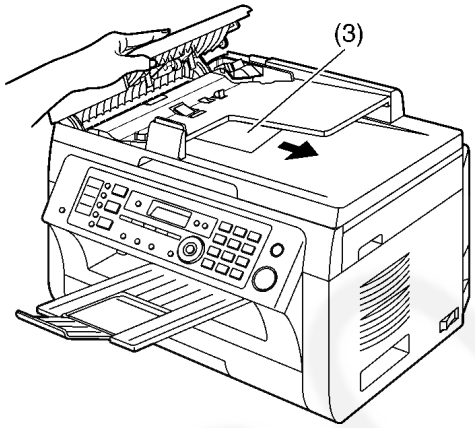
1. Open the ADF cover (1) while holding the document cover (2).



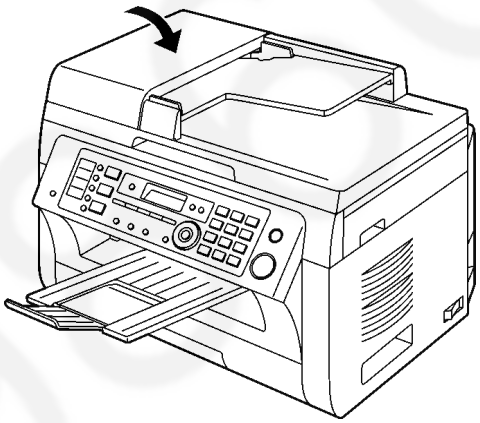
2. Remove the jammed document (3) carefully.
When the document has jammed near the document entrance:



When the document has jammed near the document exit:



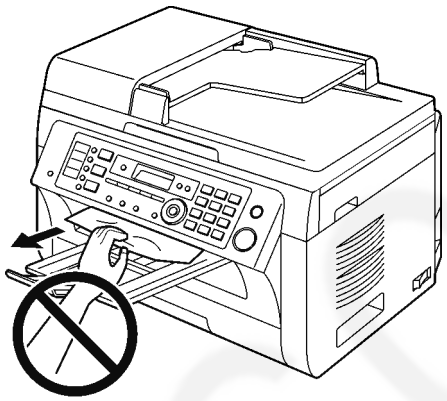
3. Close the ADF cover.



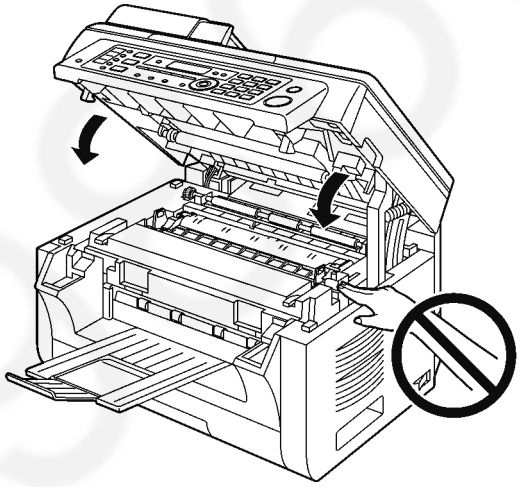
12.5. RECORDING PAPER JAM

Caution:

- Do not pull out the jammed paper forcibly before opening the top cover.



- To prevent injuries, be careful not to put your hands under the top cover.



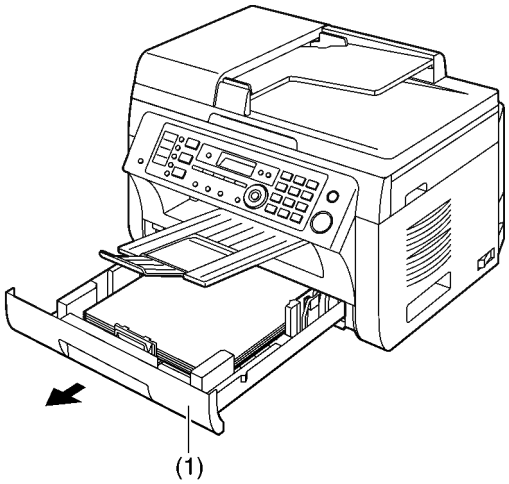
12.5.1. When the recording paper has jammed inside of the unit

The display will show the following.

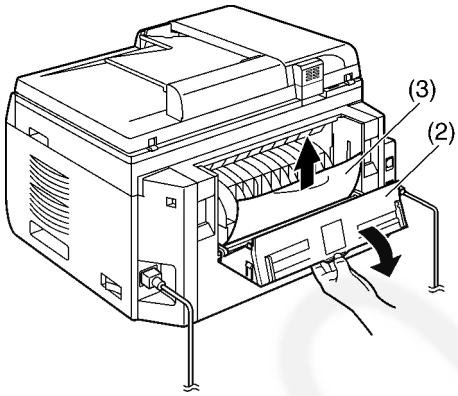
```
PAPER JAMMED
      ↕
OPEN TOP COVER

CHECK REAR COVER
```

Case 1:
When the recording paper has jammed near the manual input tray:

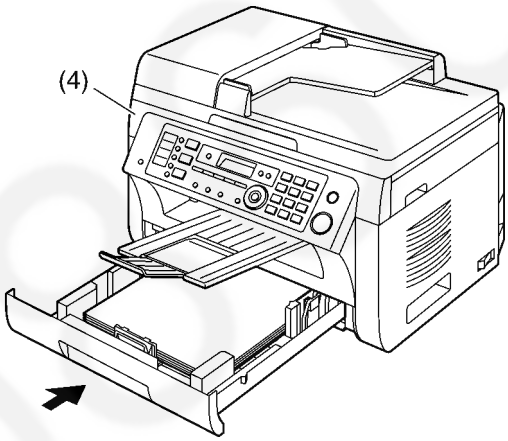
1. Pull open the paper input tray (1).



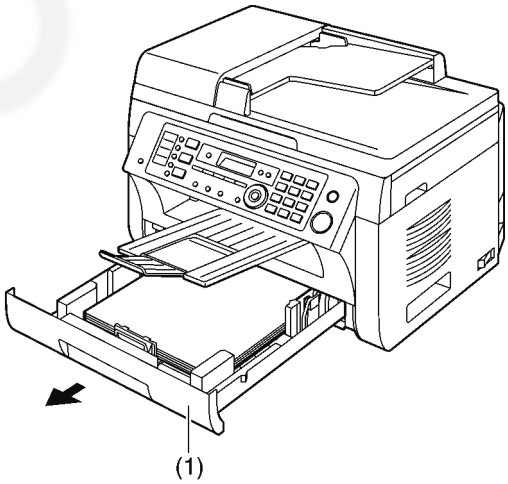
2. Open the manual input tray (2) and remove the jammed paper (3) carefully by pulling it upwards. Then close the manual input tray.



3. Close the paper input tray.
   • Open and close the top cover (4) to clear the message.



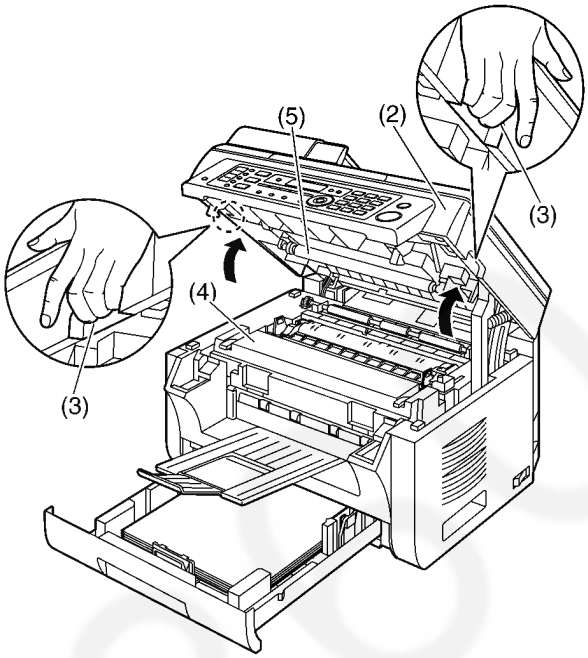
Case 2:
When the recording paper has jammed near the drum and toner cartridge:
1. Pull open the paper input tray (1).



2. Open the top cover (2) by holding the indentations (3) on both sides of the base unit.

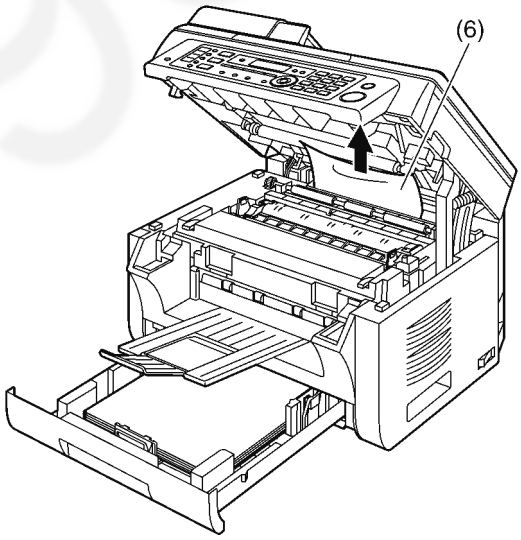
Note:

• Do not touch the transfer roller (5)

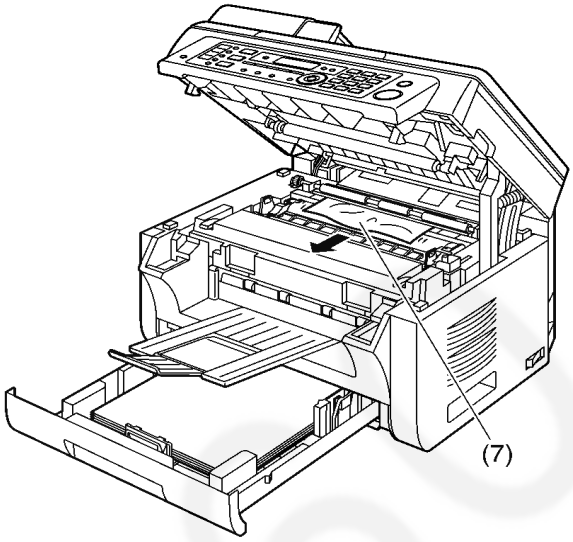


Caution:
The fuser unit (4) gets hot. Do not touch it.

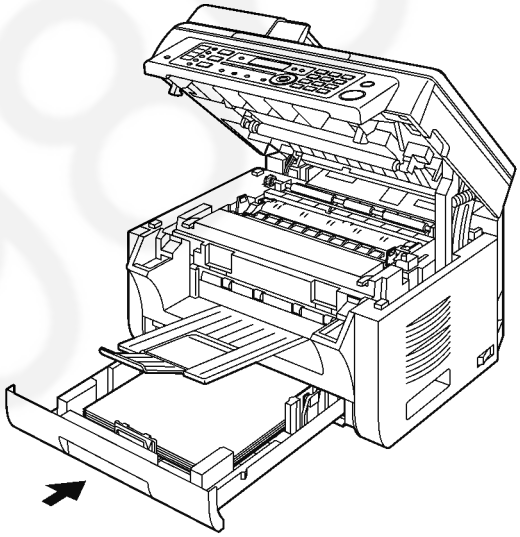
3. Remove the jammed paper (6) carefully by pulling it upwards.



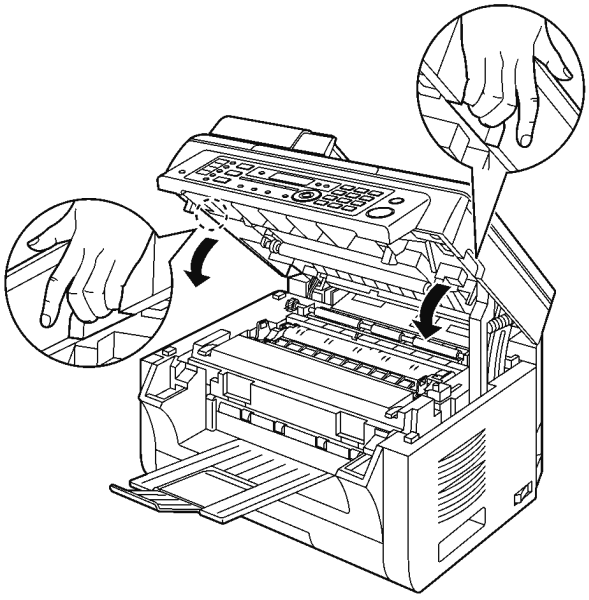
Remove the jammed paper (7) carefully by pulling it toward you.



4. Close the paper input tray.



5. Close the top cover by holding the indentations on both sides of the base unit, until locked.



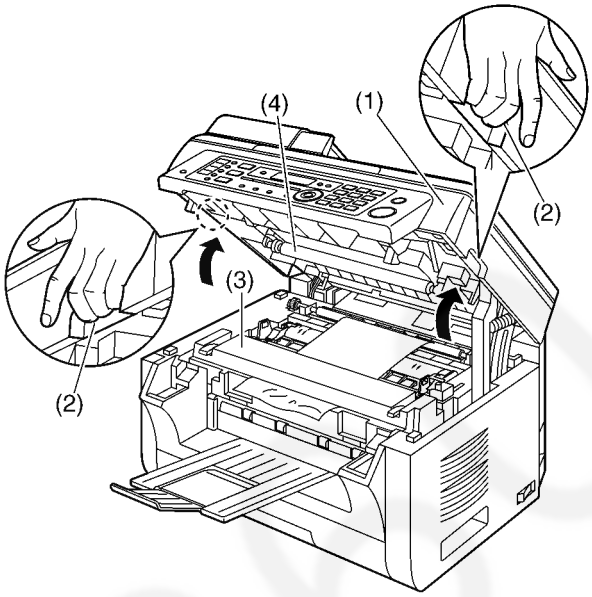
Case 3:

When the recording paper has jammed near the fuser unit:

1. Open the top cover (1) by holding the indentations (2) on both sides of the base unit.

Note:

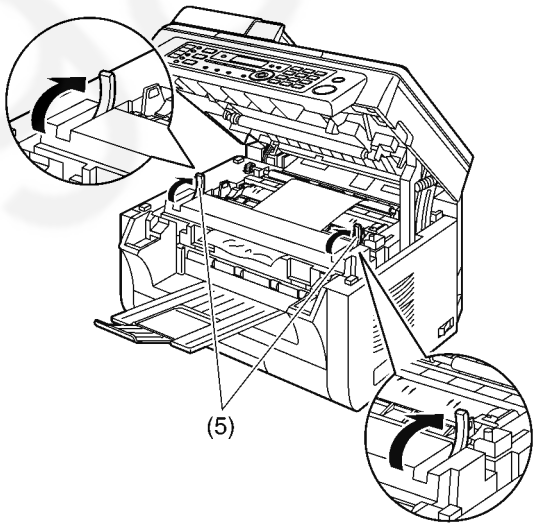
- Do not touch the transfer roller (4).



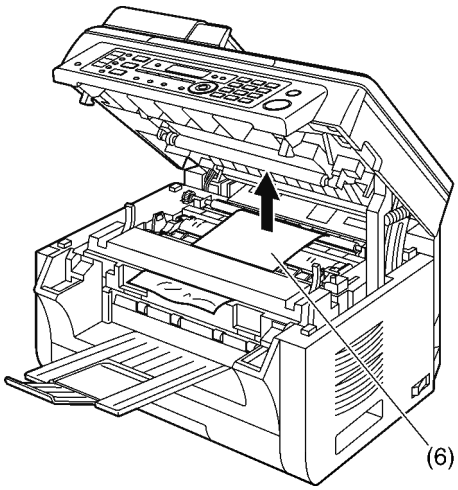
Caution:

The fuser unit (3) gets hot. Do not touch it.

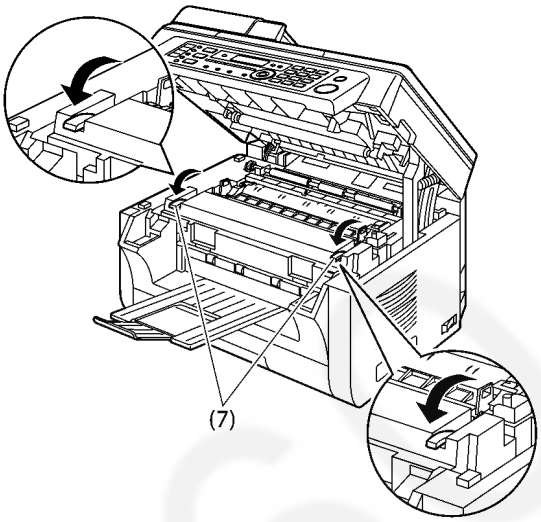
2. Lift both green levers (5) until they stop.



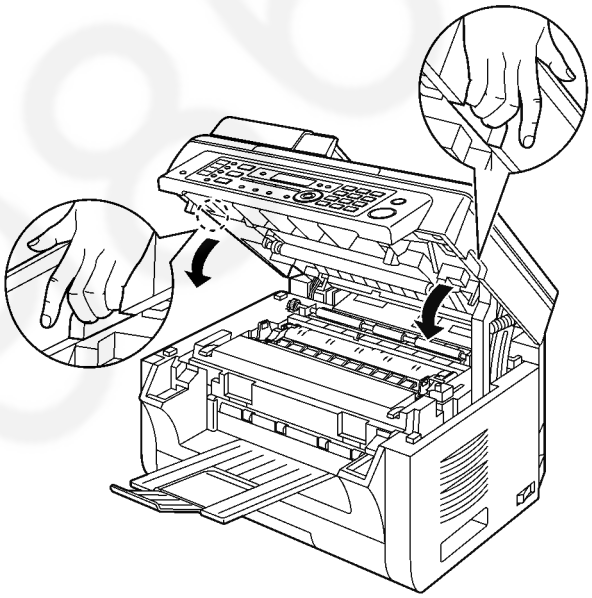
3. Remove the jammed paper (6) carefully by pulling it upwards.



4. Push back the green levers (7) to the original position.



5. Close the top cover by holding the indentations on both sides of the base unit, until locked.

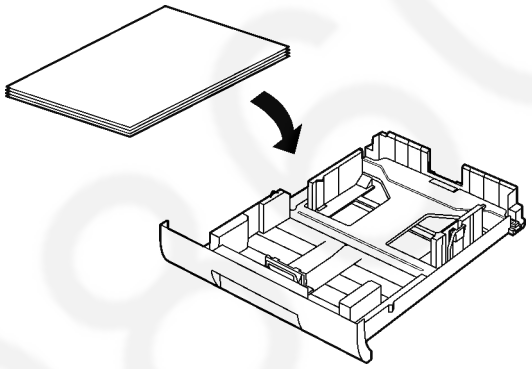


12.5.2. When the recording paper is not fed into the unit properly

The display will show the following.

```
CHECK PAPER #1
PRESS START
```

1. Pull the paper input tray until it clicks into place, then pull it completely out, lifting the front part of the tray. Remove the recording paper and straighten.
2. Re-load the recording paper.



3. Insert the paper input tray into the base unit, lifting the front part of the tray. Then push it completely into the base unit.

Note:

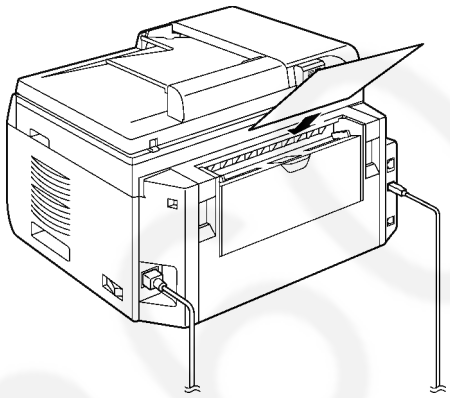
• If the message is still displayed, check the recording paper specifications and load the recording paper again.

12.5.3. When the recording paper in the manual input tray is not fed into the unit properly

The display will show the following.

```
CHECK PICK UP
INPUT TRAY #2
```

1. Remove the recording paper.
2. Re-insert the recording paper.



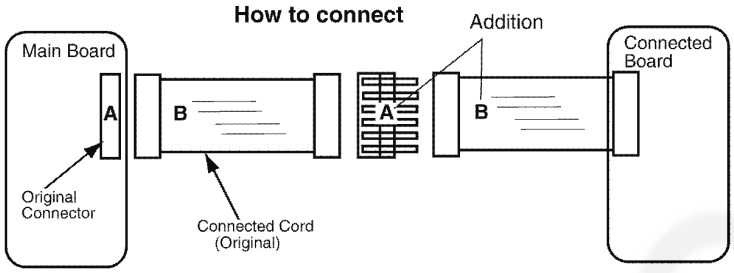
Note:

- If the message is still displayed, check the recording paper specifications and re-install recording paper.

13 Service Fixture & Tools

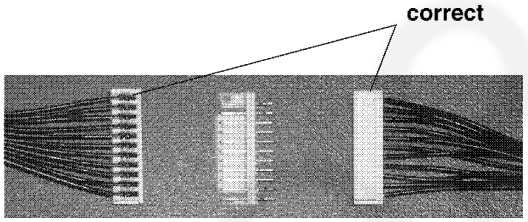
How to extend cords

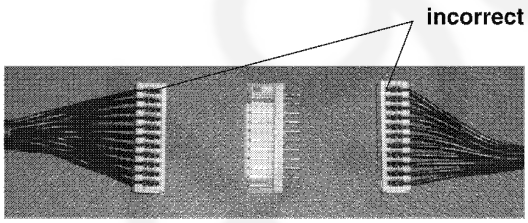
When extending cords, you need 2 pairs of A,B (A=connector,B=cord)
(One pair is connected to the Main board.)
If you do not have 2 pairs, order the necessary parts.

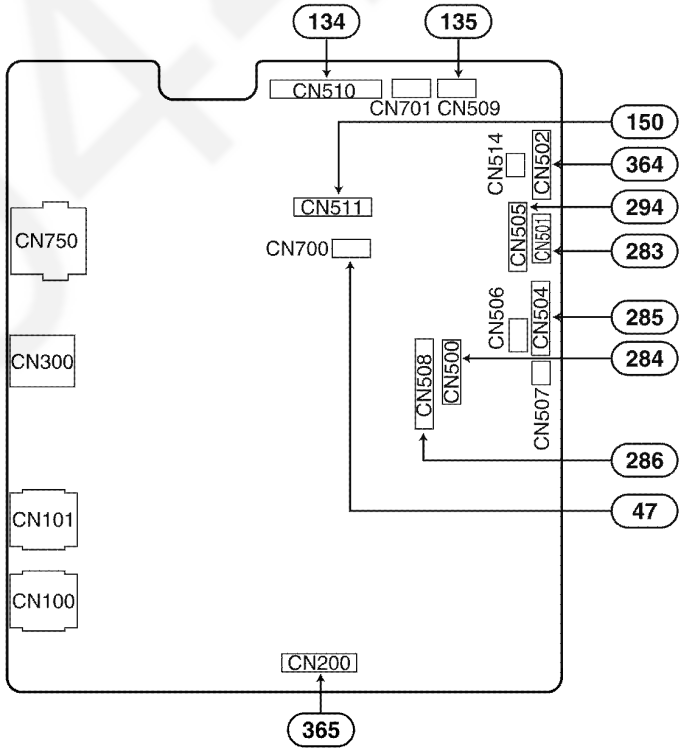


NOTE

Be sure if the direction of the connectors are correct.







14 Disassembly and Assembly Instructions

Note:

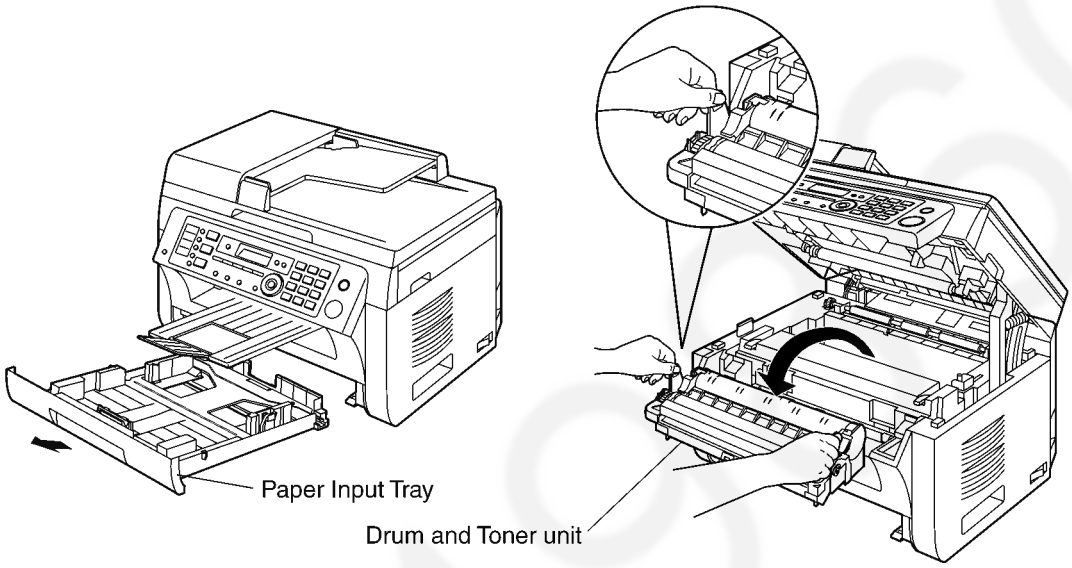
Remove the Document Cover, the Paper Input tray and the drum and toner cartridge before reassembling.

First of all

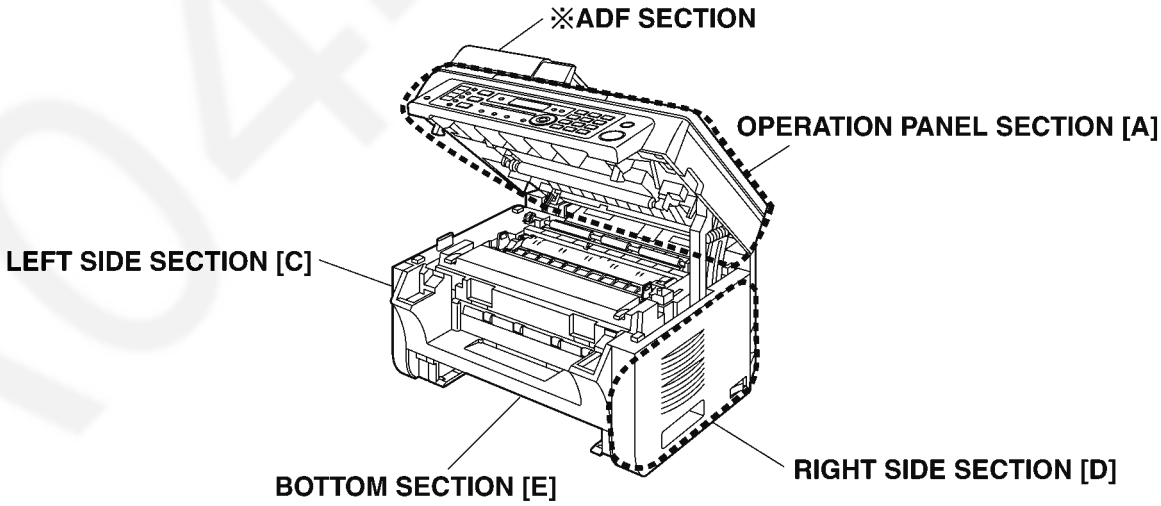
Before disassembling, do the following things.

(1) Pull the Paper Input Tray until it clicks into place, then pull it completely out, lifting the front part of the try.

(2) Take the Drum and Toner unit out by holding the tabs.

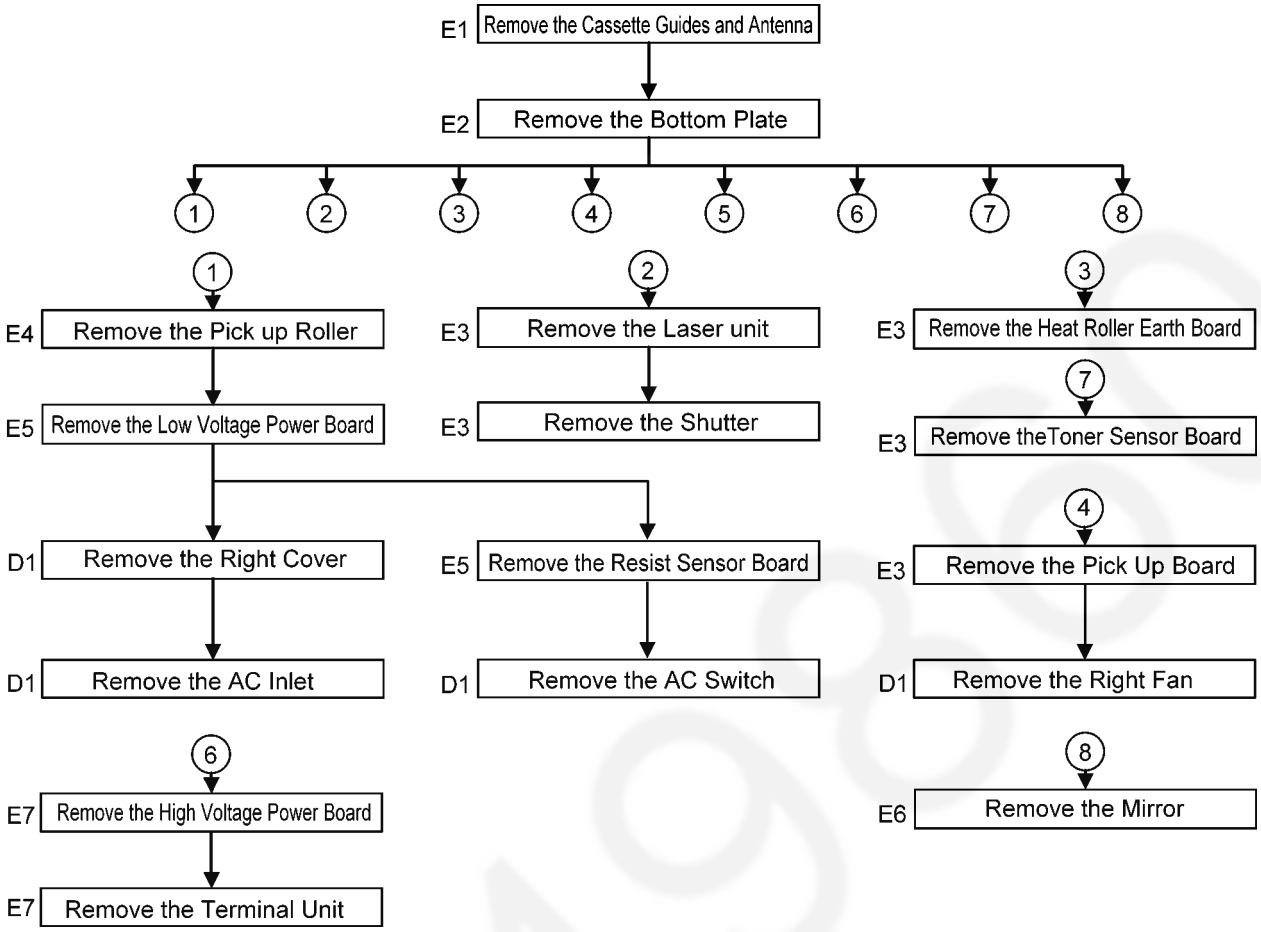


GENERAL SECTION

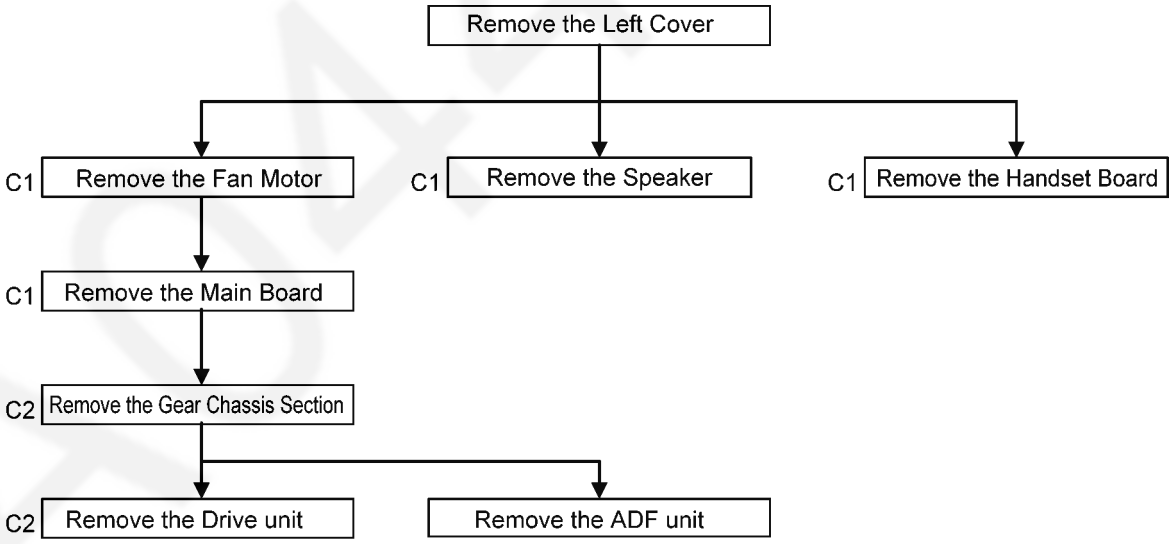


※Regarding ADF SECTION, refer to the service manual for KX-MB781/782/783 series

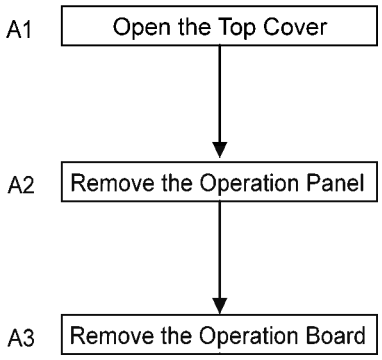
14.1. Bottom Section



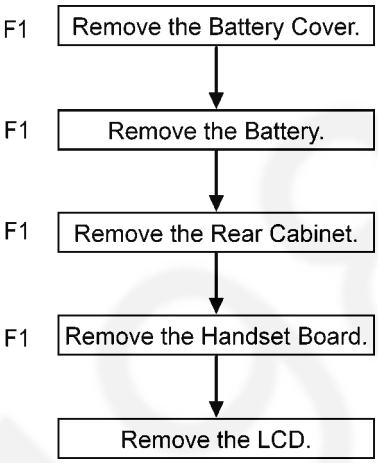
14.2. Left Side Section



14.3. Operation Panel Section



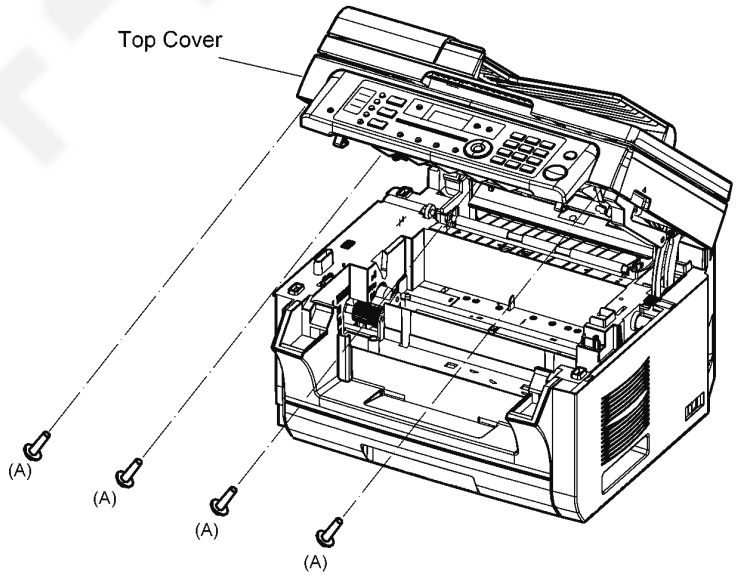
14.4. Cordless Handset Section



14.5. Open Top Cover

A1

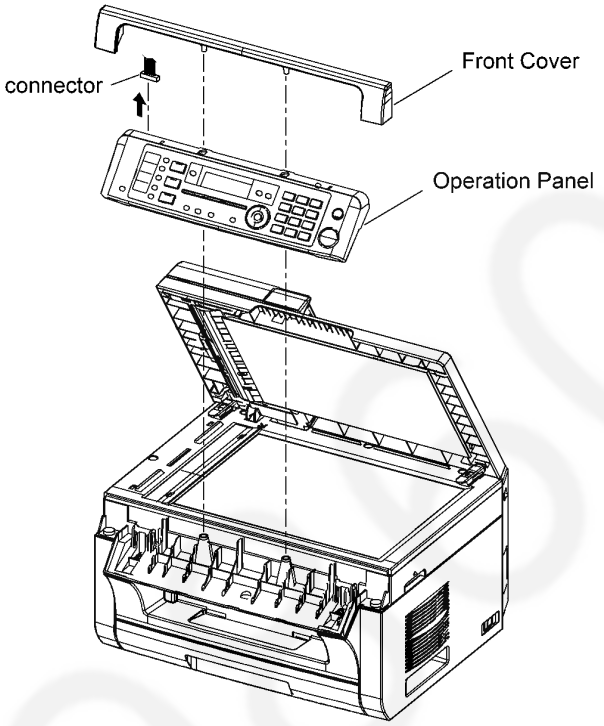
(1) Open the Top Cover.
(2) Remove the 4 screws (A).



14.6. Remove Operation Panel

A2

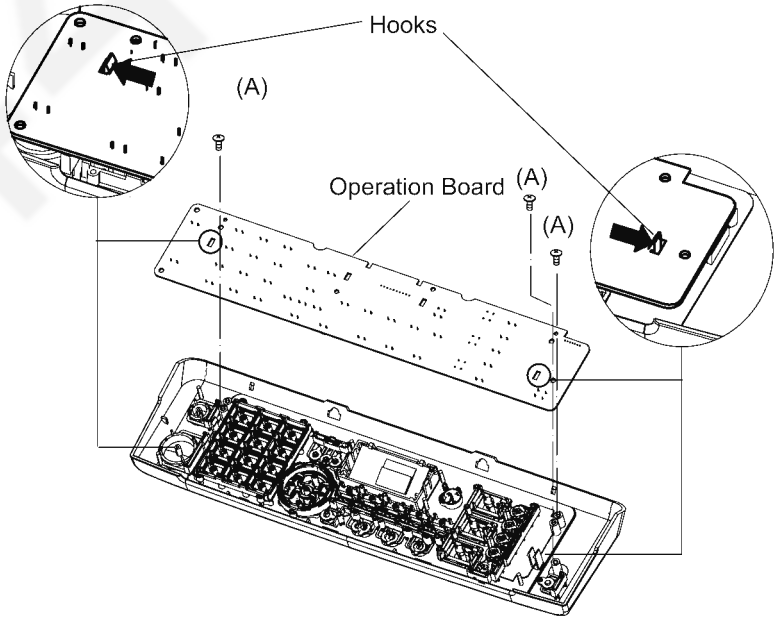
(1) Remove the Front Cover.
(2) Remover the connector.
(3) Remove the Operation Panel.



14.7. Remove Operation Board

A3

(1) Remove the 3 screws (A).
(2) Push the Hooks to remove the Operation Board.
(3) Remove the connector.



14.8. Remove Main Board

C1

Left Cover
(1) Remove the 4 screws (A).
(2) Remove the 3 Hooks (B).
(3) Remove the Speaker Lead.

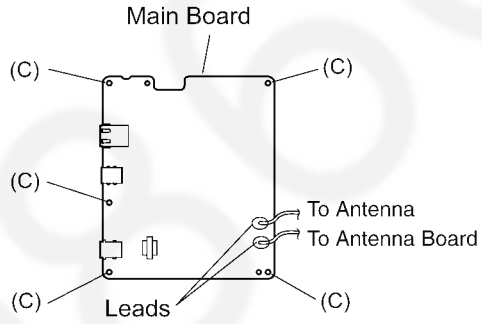
Fan Motor
(4) Remove the Fan Motor.

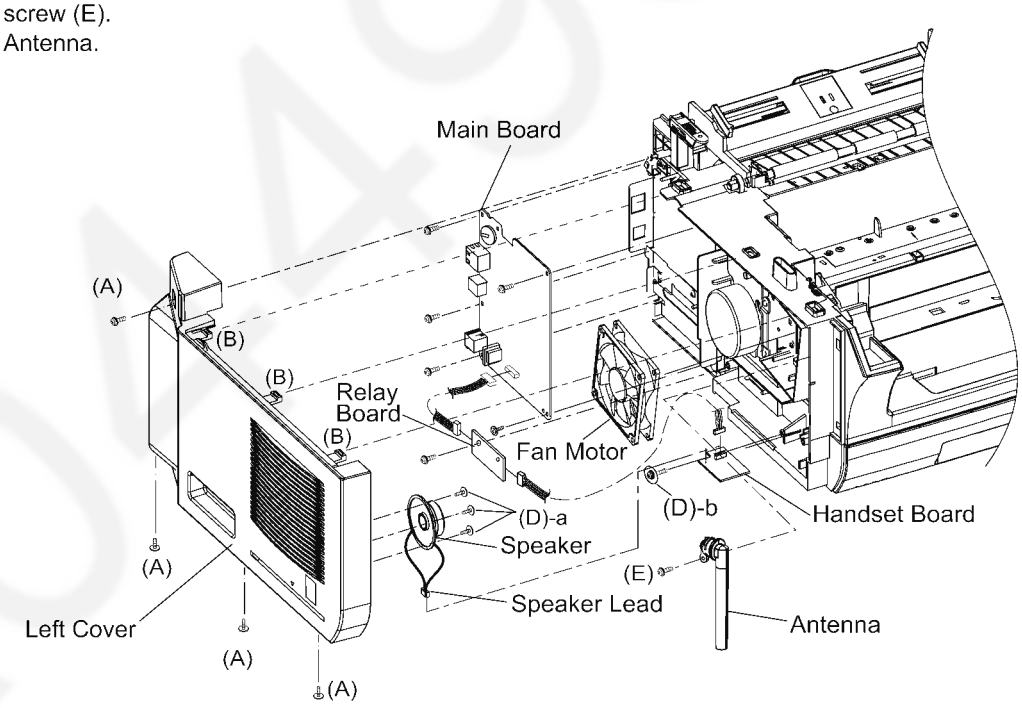
Main Board
(4) Remove the 5 screws (C).
(5) Remove the all connectors on the Main Board.
(6) Unsolder the 2 Leads to remove them.
(7) Remove the Main Board.

Speaker
(4) Remove the 3 screws (D)-a.
(5) Remove the Speaker.

Handset Board
(4) Remove the screw (D)-b.
(5) Remove the Handset Board.

Antenna
(4) Remove the screw (E).
(5) Remove the Antenna.





14.9. Remove Gear Chassis Section

C2

(1) Remove the 4 screws (F)-a.
(2) Remove the Motor unit.
(3) Remove the 2 screws (F)-b.
(4) Remove the Protect Covert.
(5) Remove the 2 screws (F)-c.
(6) Remove the 3 screws (J)-a.
(7) Remove the Cover Plate.
(8) Remove the 2 screws (F)-d.
(9) Remove the 6 screws (J)-b (The CH mark).

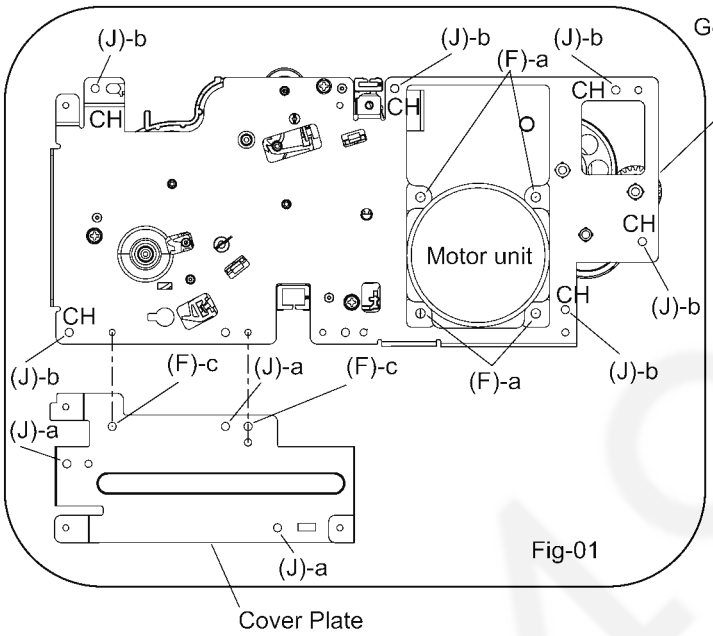
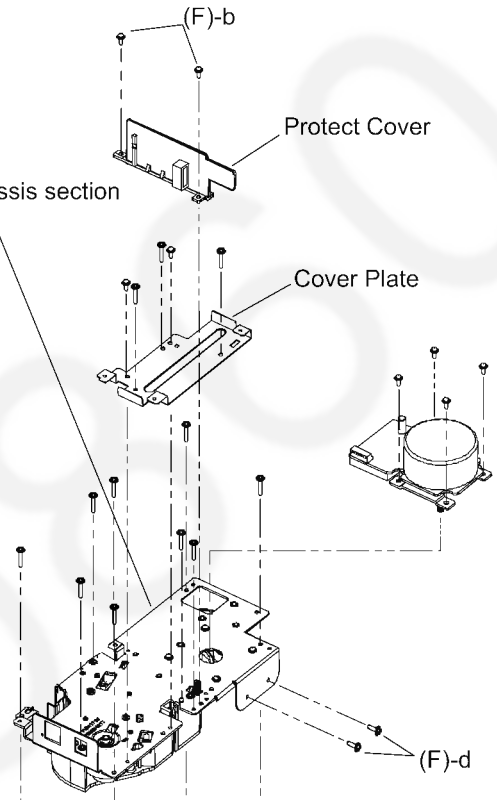


Fig-01



(10) Remove the 3 screws (J)-c (The CS mark).
(11) Remove the Protection Sheet.
(12) Remove the Gear section.

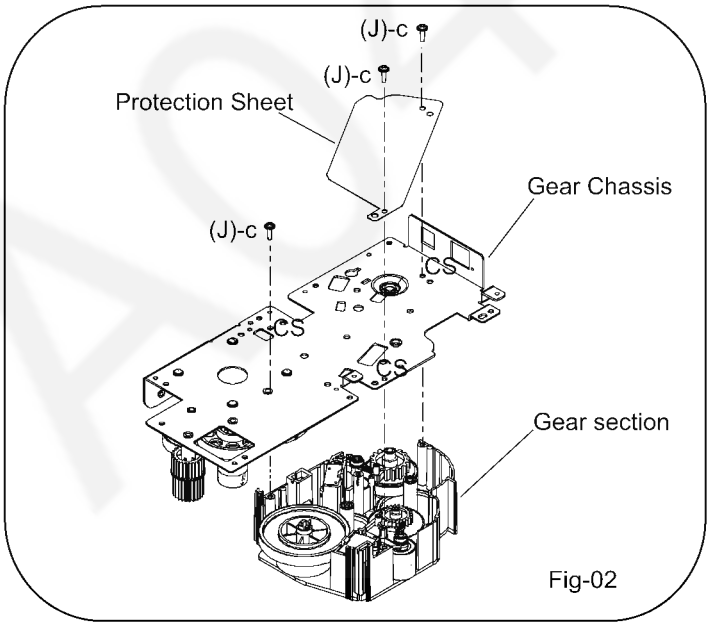
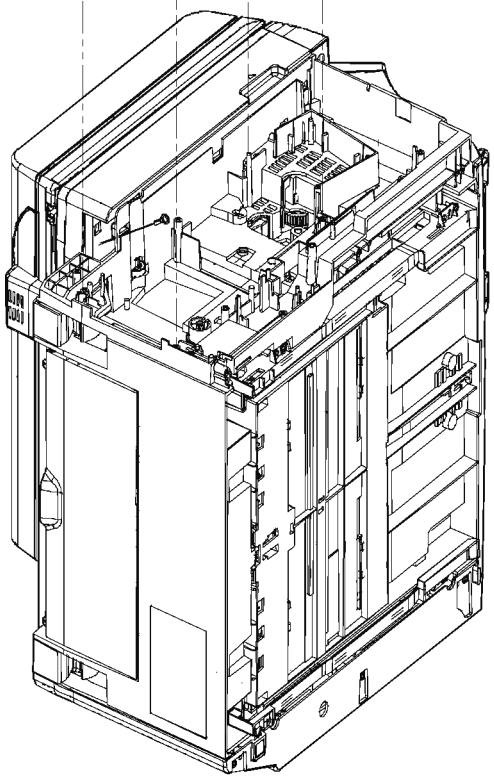


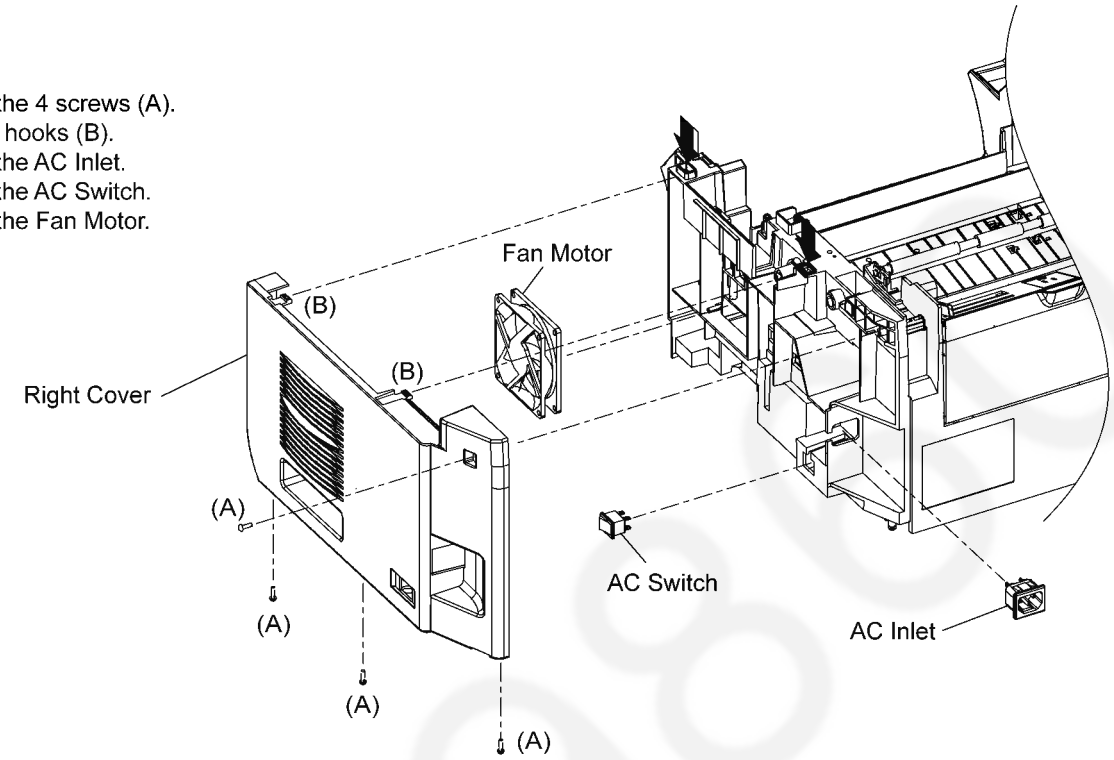
Fig-02



14.10. Remove Right Cover

D1

(1) Remove the 4 screws (A).
(2) Push two hooks (B).
(3) Remove the AC Inlet.
(4) Remove the AC Switch.
(5) Remove the Fan Motor.

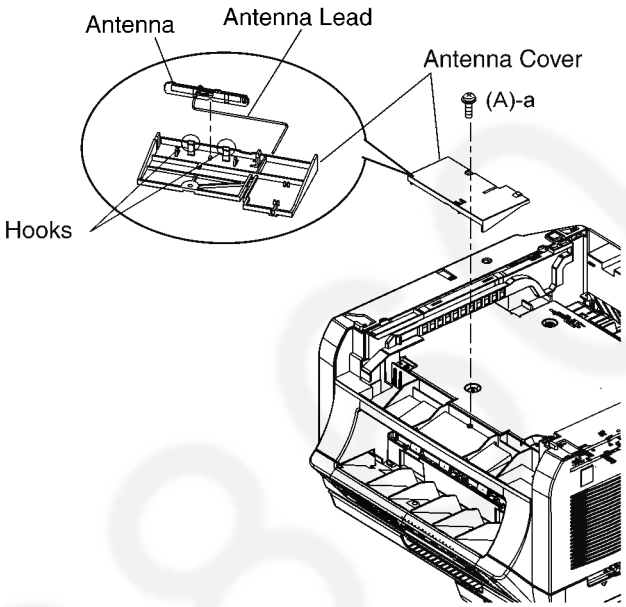


14.11. Remove Cassette Guides and Antenna

E1

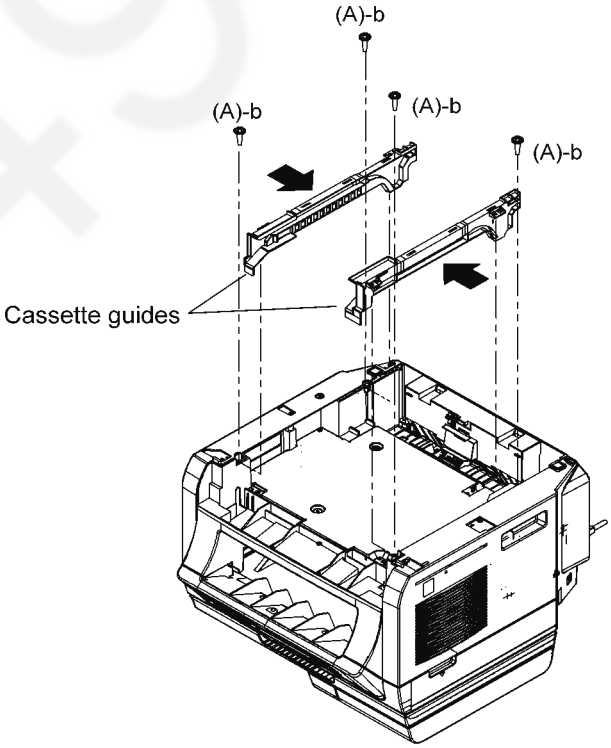
Antenna section

(1) Remove the screw (A)-a.
(2) Remove the Antenna Cover.
(3) Release the Hooks to remove the Antenna with the Antenna Lead.
(4) Disolder the Antenna Lead from Antenna.



Cassette guides

(1) Remove the 4 screws (A)-b.
(2) Remove the Cassette guides.



14.12. Remove Bottom Plate

E2

(1) Remove the 6 screws (A).
(2) Remove the 4 screws (B).
(3) Remove the Bottom Plate.

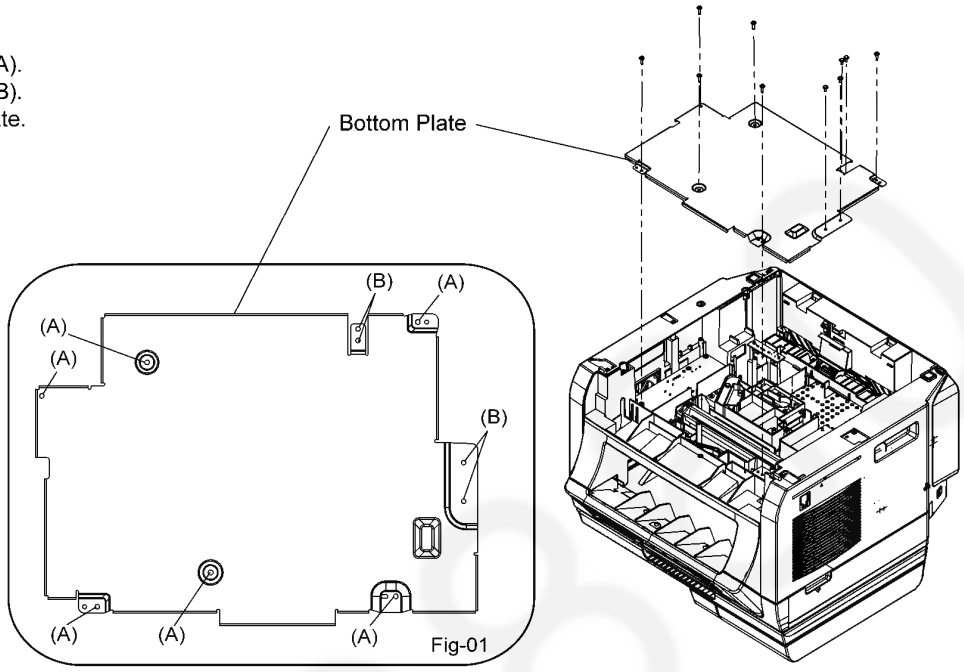


Fig-01

14.13. Remove Laser Unit

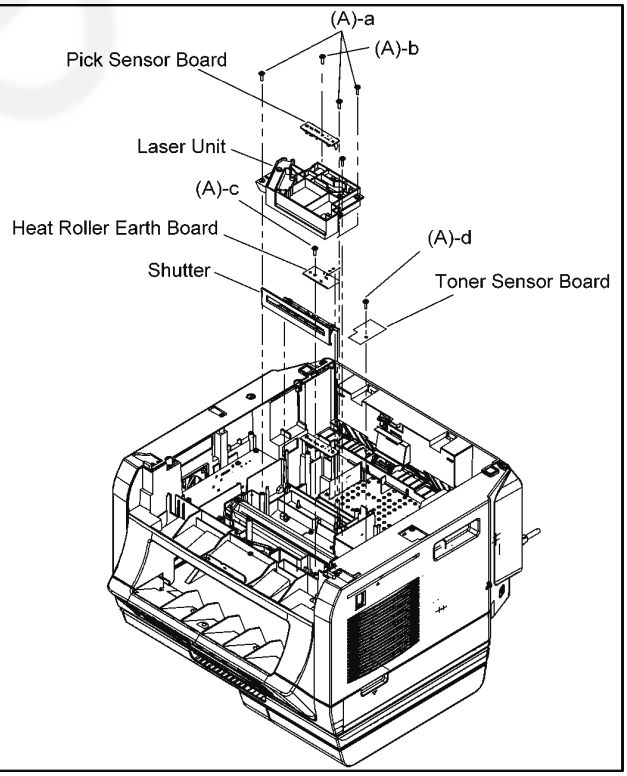
E3

Laser Unit & Shutter
(1) Remove the 3 screws (A)-a.
(2) Remove the leads connecting to Laser unit.
(3) Remove the Laser unit.
(4) Remove the Shutter.

Pick Sensor Board
(1) Remove the screw (A)-b.
(2) Remove all the connectors on the Pick Sensor Board.
(3) Remove the Sensor Board.

Heat Roller Earth Board
(1) Remove the screw (A)-c.
(2) Remove the Heart Roller Earth Board.

Toner Sensor Board
(1) Remove the screw (A)-d.
(2) Remove the Toner Sensor Board.

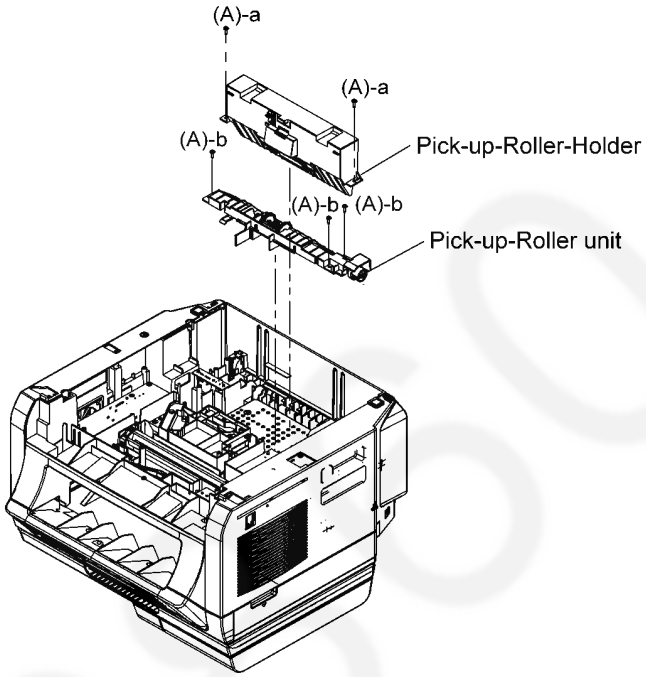


14.14. Remove Pick up Roller

E4

Pick-up-Roller-Holder
(1) Remove the 2 screws (A)-a.
(2) Remove the Pick-up-Roller-Holder.

Pick-up-Roller unit
(3) Remove the 3 screws (A)-b.
(4) Remove the Pick-up-Roller unit.



(5) Remove the Paper Guide unit (Fig-01)
① Open the Paper Guide unit.
② Push the Rib on both sides lightly.
③ Remove the Paper Guide unit.

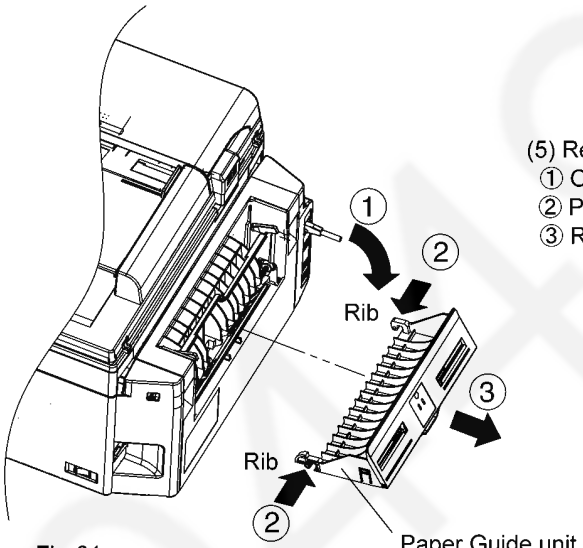


Fig-01

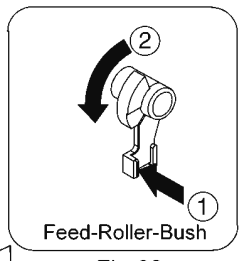
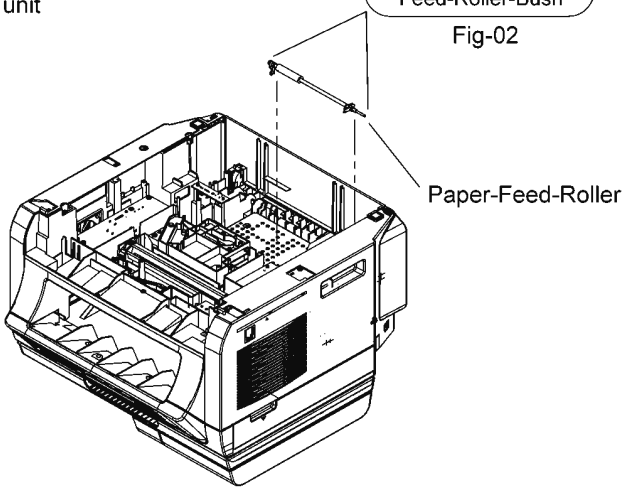


Fig-02

Paper-Feed-Roller
(6) Remove the Paper Tray.
① Remove the Feed-Roller-Bush. (Fig-02)
② Remove the Paper-Feed-Roller.



14.15. Remove Low Voltage Power Board

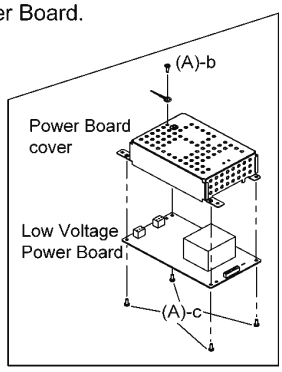
E5

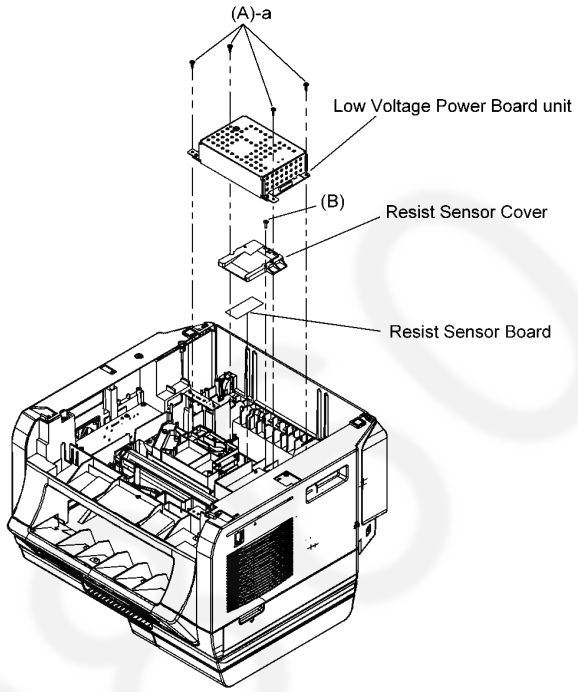
Low Voltage Power unit
(1) Remove the 4 screws (A)-a.
(2) Remove the screw (A)-b.
(3) Remove the each connector.
(4) Remove the Low Voltage Power unit.

(4) --> Remove the 4 screws (A)-c to separate the power Board Cover from the Low Voltage Power Board.

Resist Sensor Cover
(1) Remove the screw (B).
(2) Remove the Resist Sensor Cover.

Resist Sensor Board
(1) Remove the Resist Sensor Board.

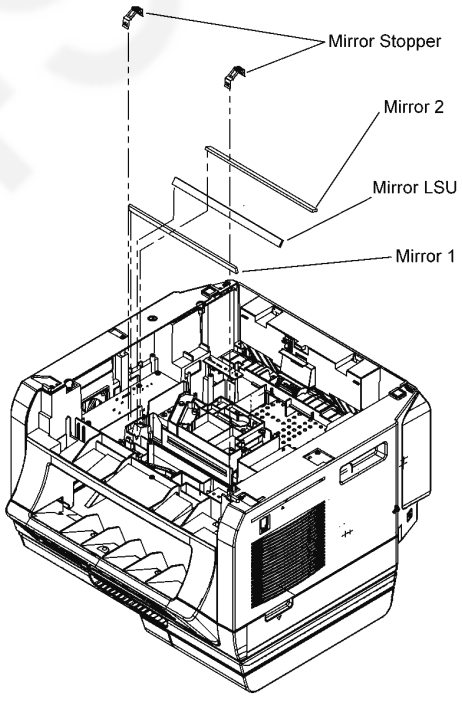




14.16. Remove Mirror

E6

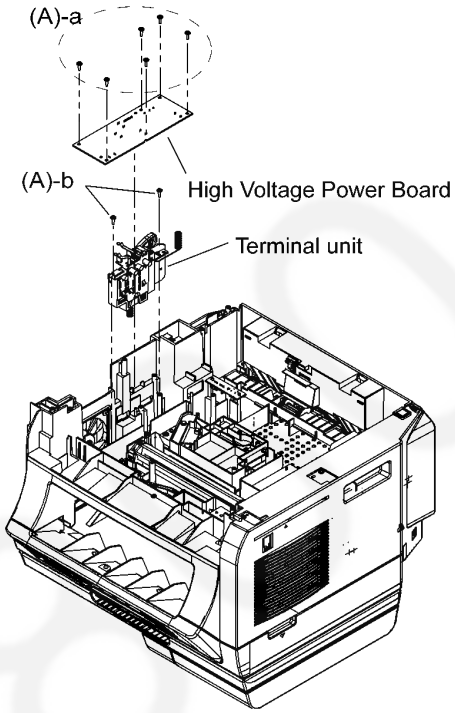
(1) Remove the Mirror Stopper.
(2) Remove the Mirror 2.
(3) Remove the Mirror LSU.
(4) Remove the Mirror 1.



14.17. Remove High Voltage Power Board

E7

(1) Remove the 6 screws (A)-a.
(2) Remove the all the connectors on the High Voltage Power Board.
(3) Remove the High Voltage Power Board.
(4) Remove the 2 screws (A)-b.
(5) Remove the Terminal unit.



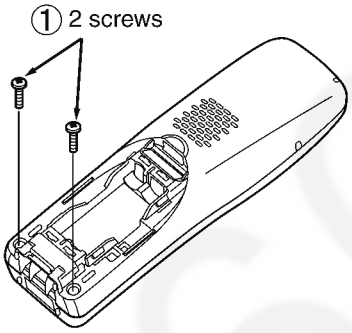
14.18. Cordless Handset

14.18.1. How to Remove the Cordless Handset Board

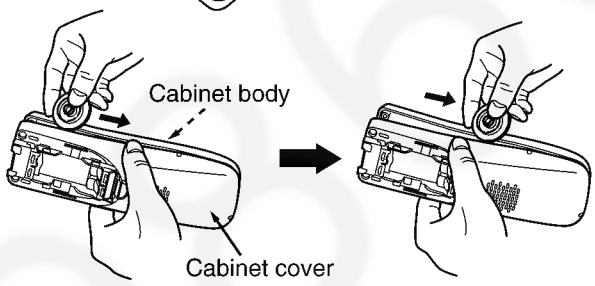
PROCEDURE: F-1

Ref. No. F-1

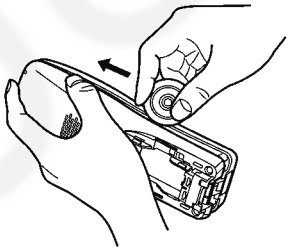
① **Remove the 2 screws.**



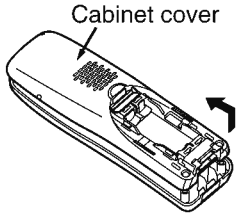
② **Insert a JIG (PQDJ10006Y) between the cabinet body and the cabinet cover, then pull it along the gap to open the cabinet.**



③ **Likewise, open the other side of the cabinet.**



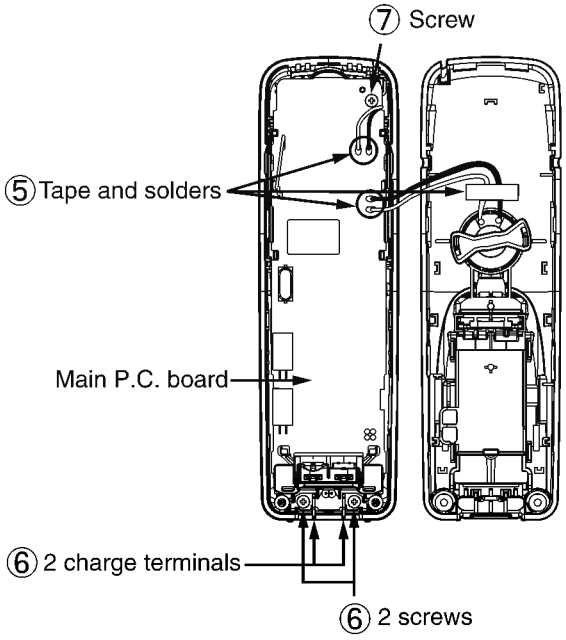
④ **Remove the cabinet cover by pushing it upward.**



⑤ **Remove the tape and solders.**

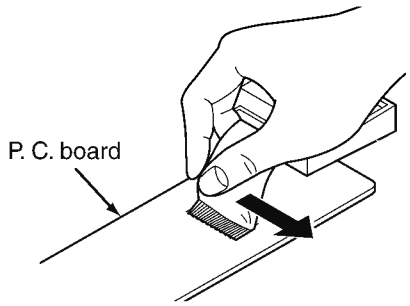
⑥ **Remove the 2 screws to remove the 2 charge terminals.**

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



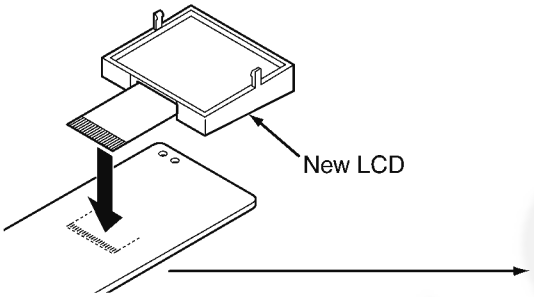
14.18.1.1. How to Replace the LCD

①



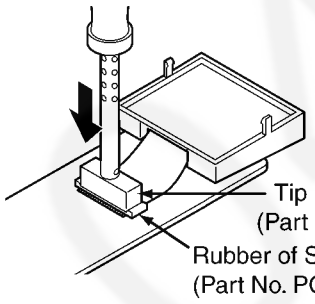
Peel off the FFC (Flexible Flat Cable) from the LCD, in the direction of the arrow. Take care to ensure that the foil on the P.C. board is not damaged.

②

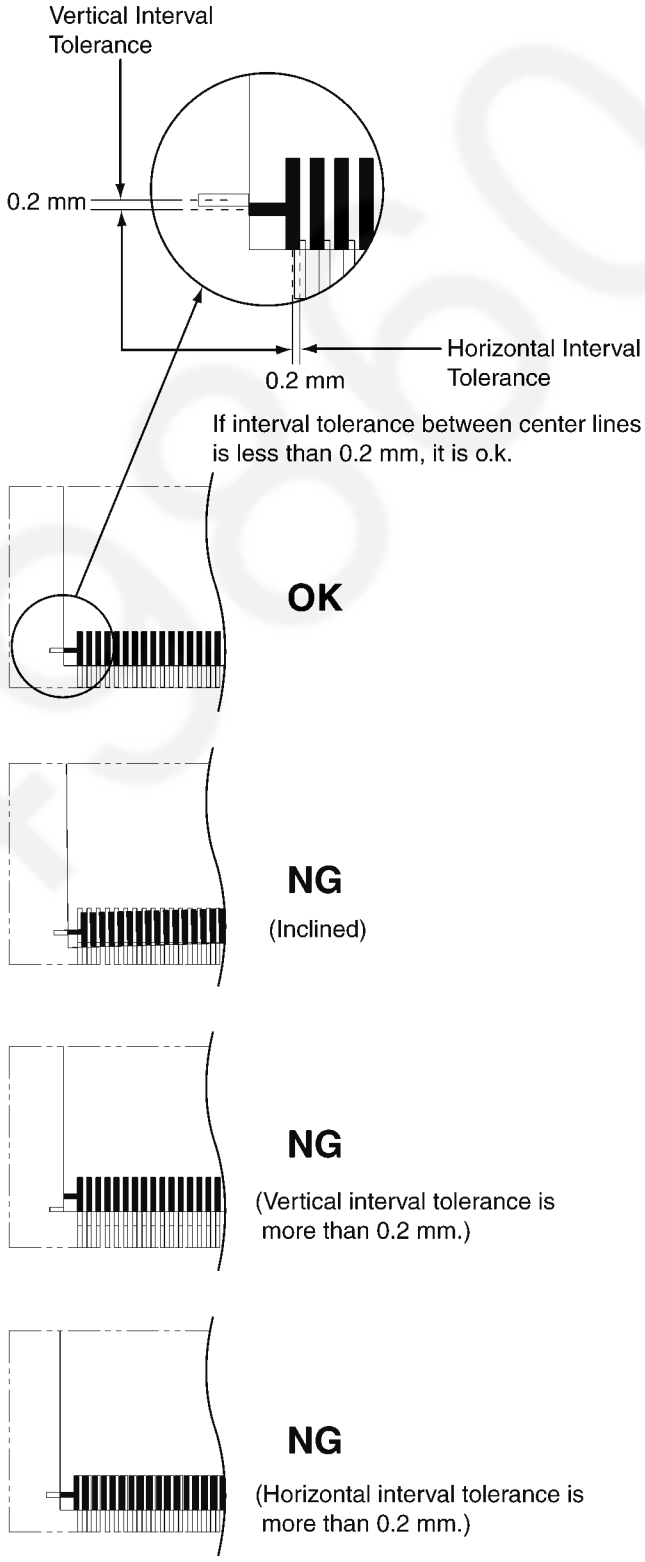


Fit the heatseal of a new LCD.

③



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



14.19. How to Remove the Charger Board

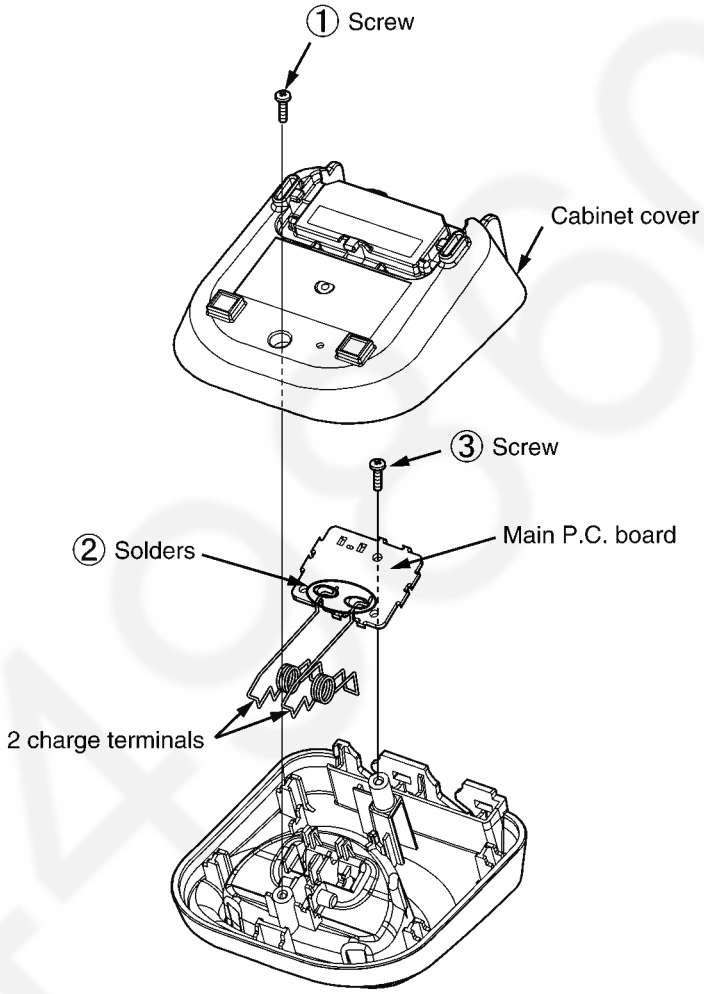
PROCEDURE: G-1

Ref. No. G-1

① Remove the screw to remove the cabinet cover.

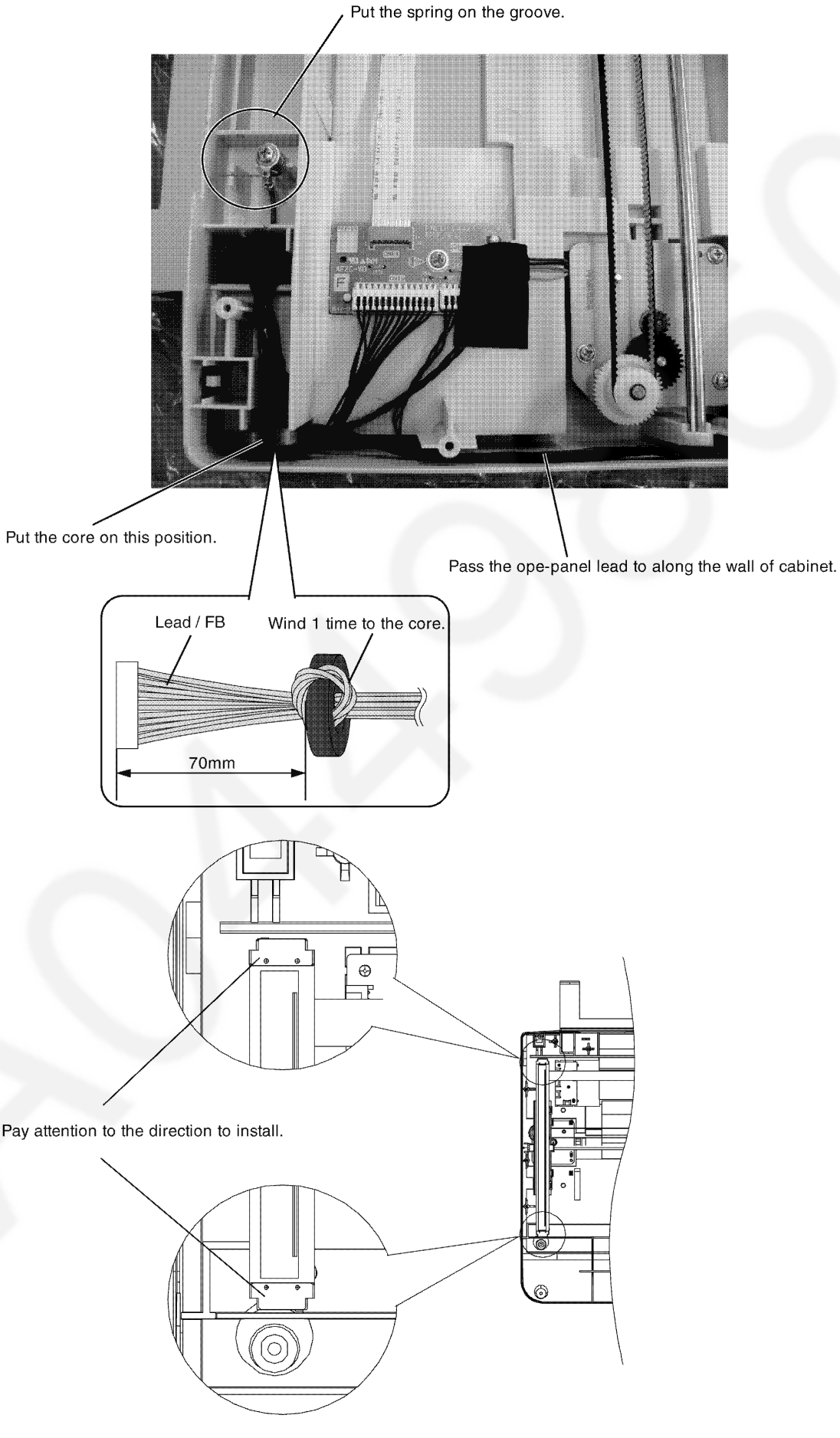
② Remove the solders to remove the 2 charge terminals.

③ Remove the screw to remove the main P.C. board.

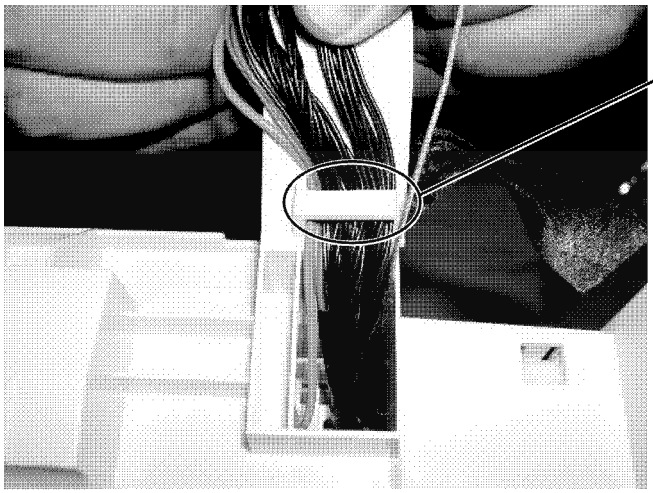


14.20. Installation Position of The Lead

14.20.1. Top Cover Section (1)

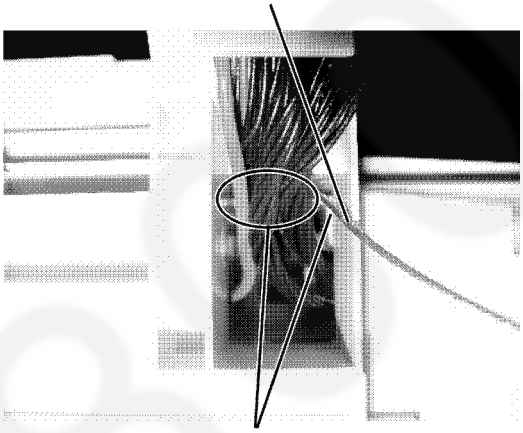


14.20.2. Top Cover Section (2)

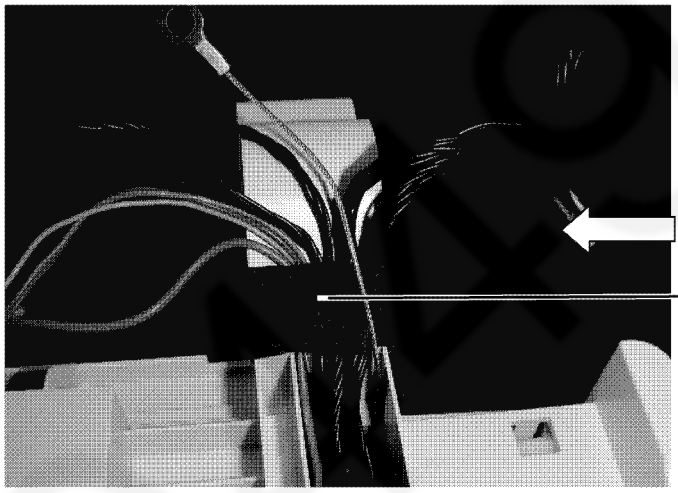


Hook the leads.
(Hook the lead from a little number.)
A wire is not hanging on a hook.

The wire must not twine.

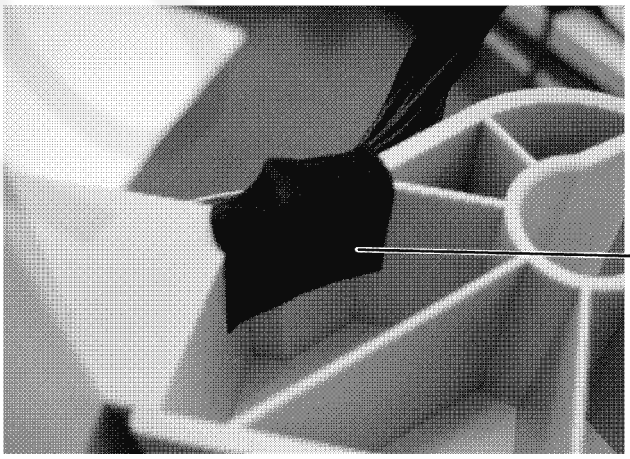


A wire is passing along the bottom of all the leads.



View A

Cover the leads completely with tape.
A wire is not taped together, either.



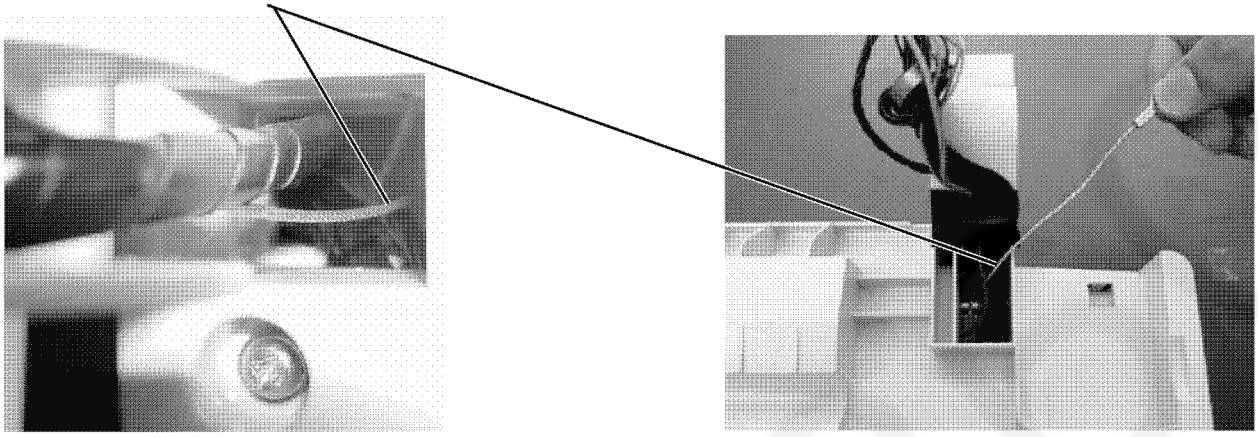
View A

Stick the tape according to the shape.

14.20.3. Top Cover Section (3)

Sample of Harness and Wire Arrangements

When the wire passes on the harness, the power of the shearing is applied to the harness.

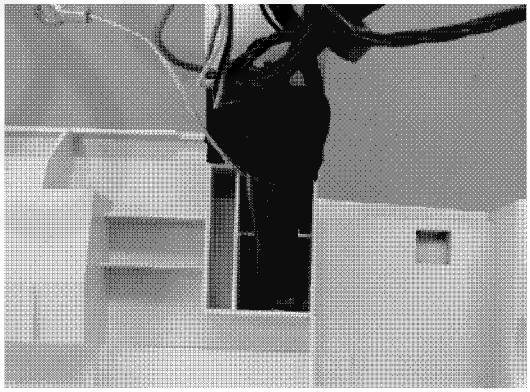


TOP VIEW

BOTTOM VIEW

The wire has come out from the left. If it assembles as it is, a wire will cut a lead.

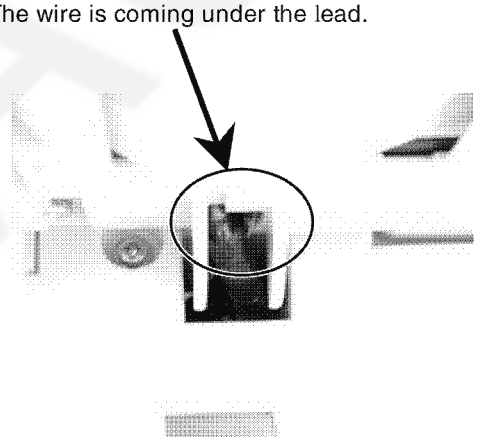
NG



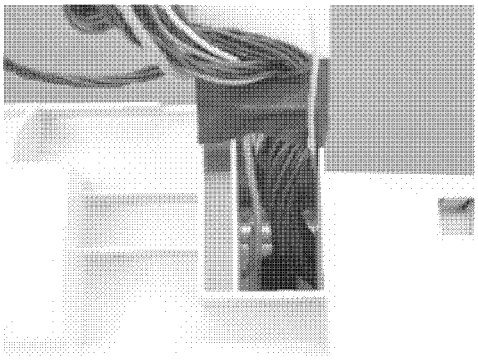
BOTTOM VIEW

OK

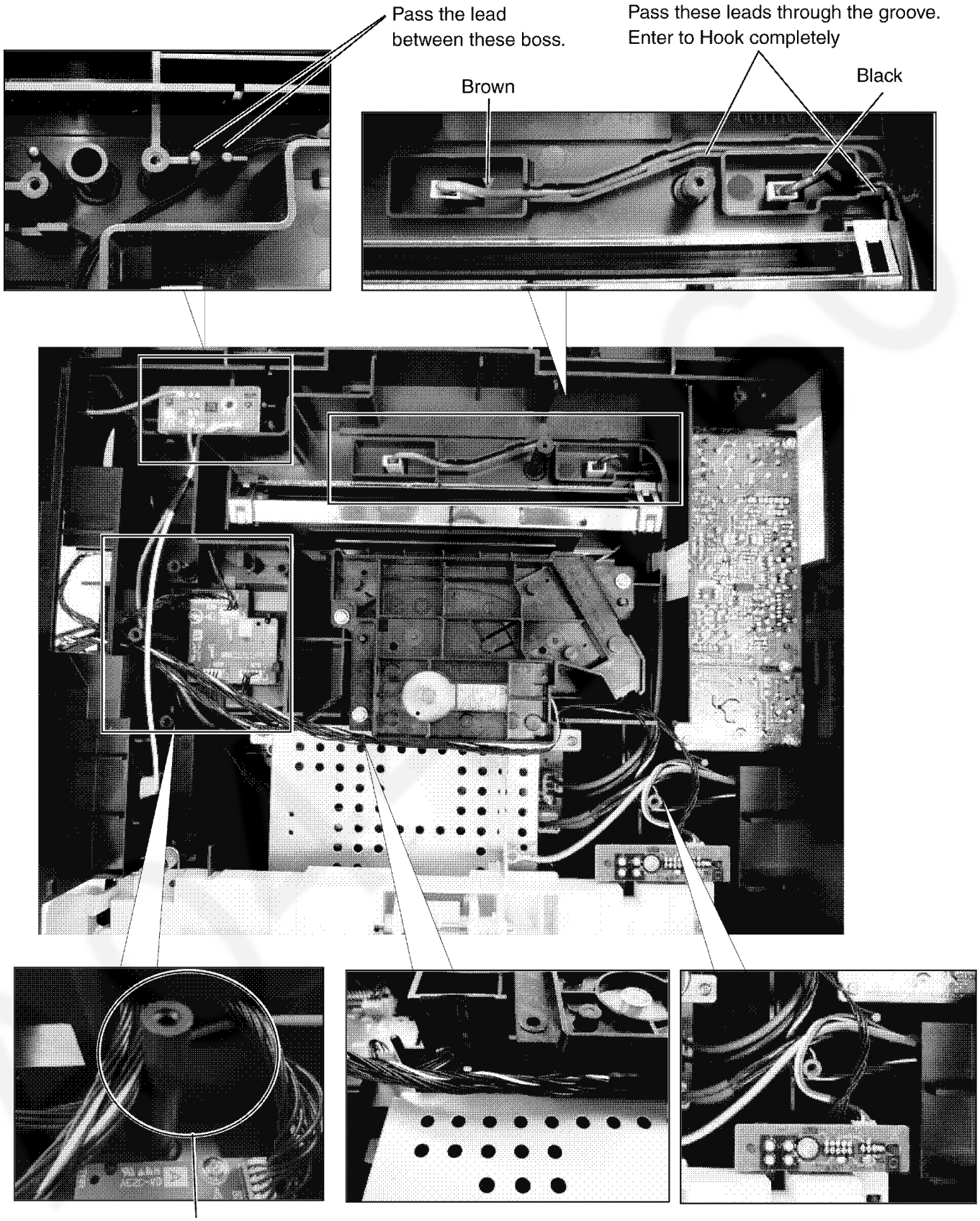
The wire is coming under the lead.



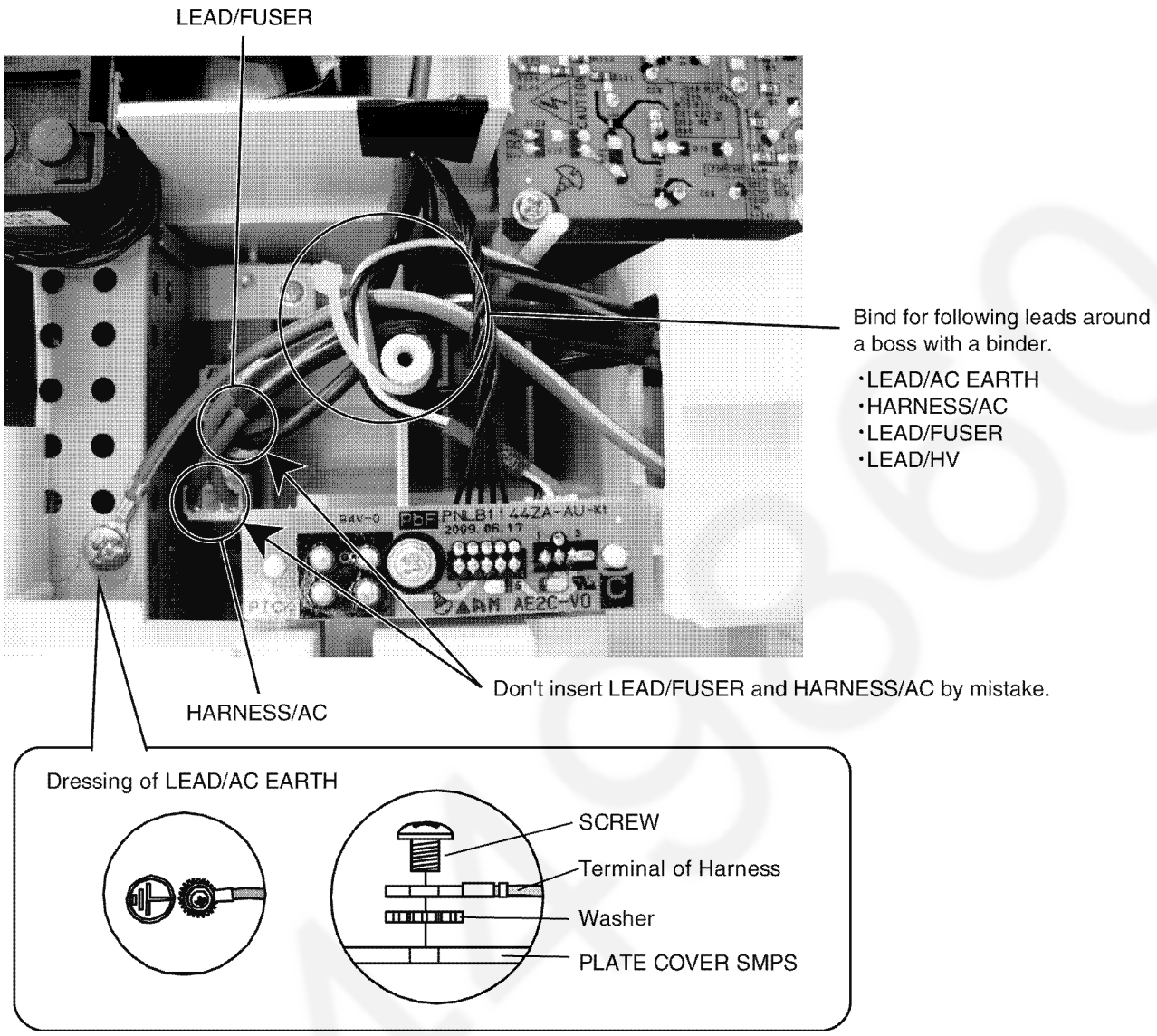
The wire is coming under the lead and the wire has come out from the right.



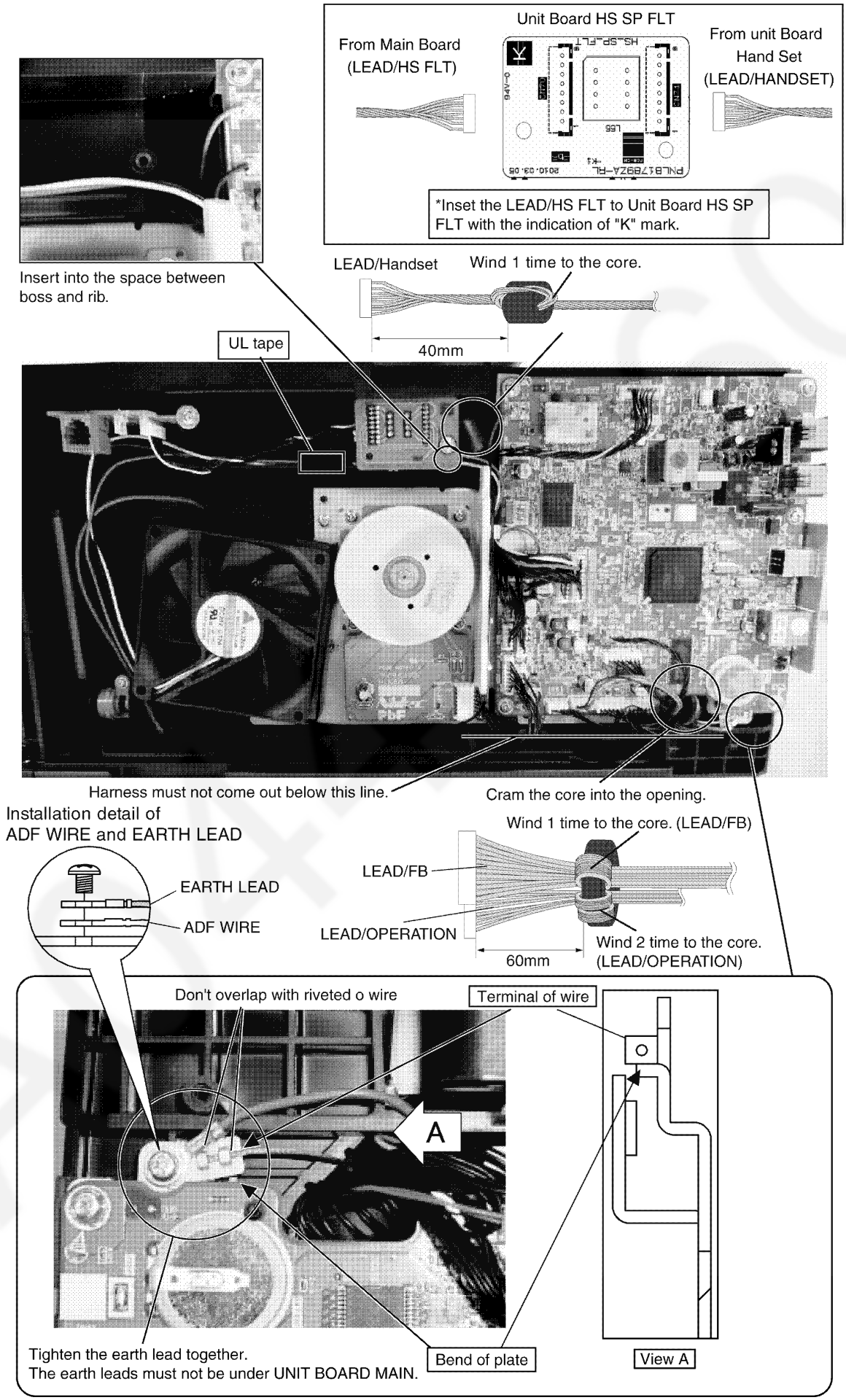
14.20.4. Bottom Part Section (1)



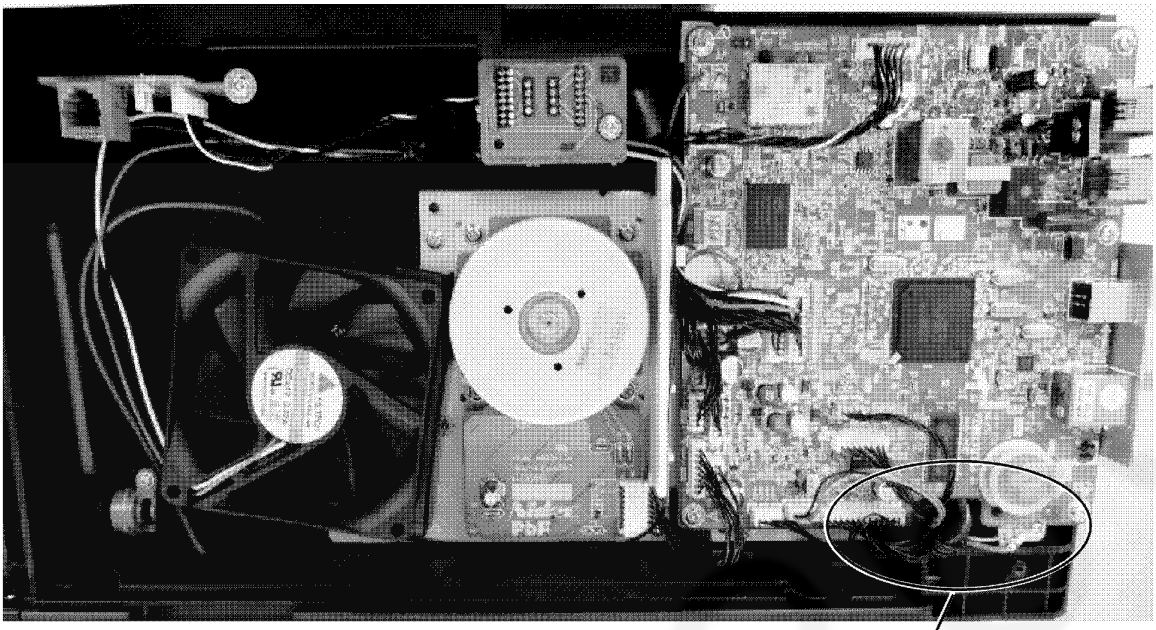
14.20.5. Bottom Part Section (2)



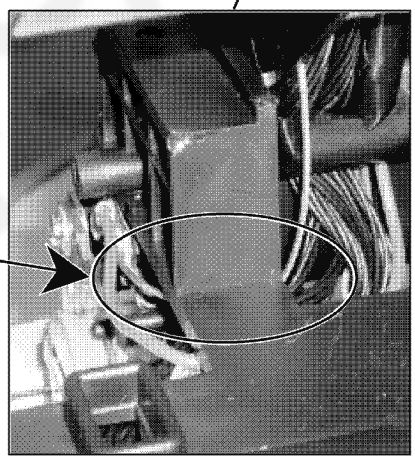
14.20.6. Side Cabinet Section (1)



14.20.7. Side Cabinet Section (2)

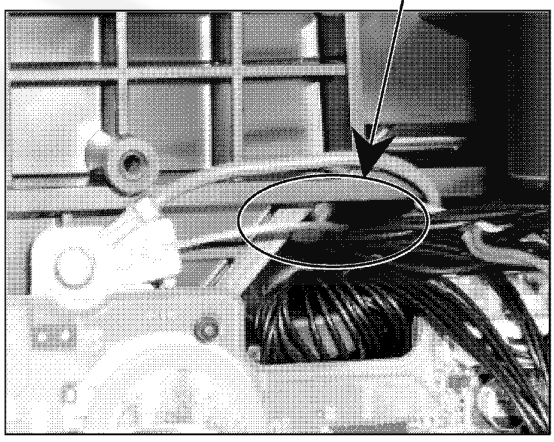


Details of the lead line processing of installation of FB/ASSY

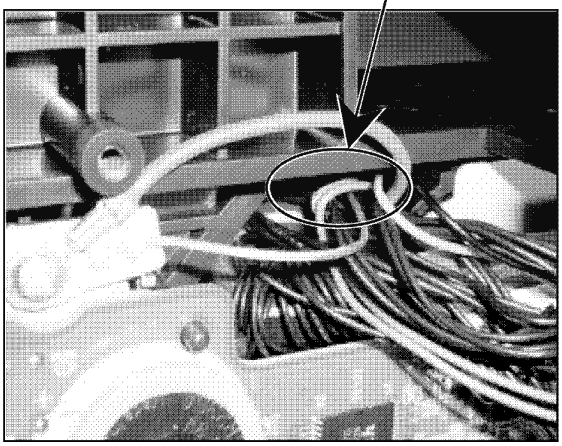


Process the line so that the lead line should not come between Maincabi and the wire.

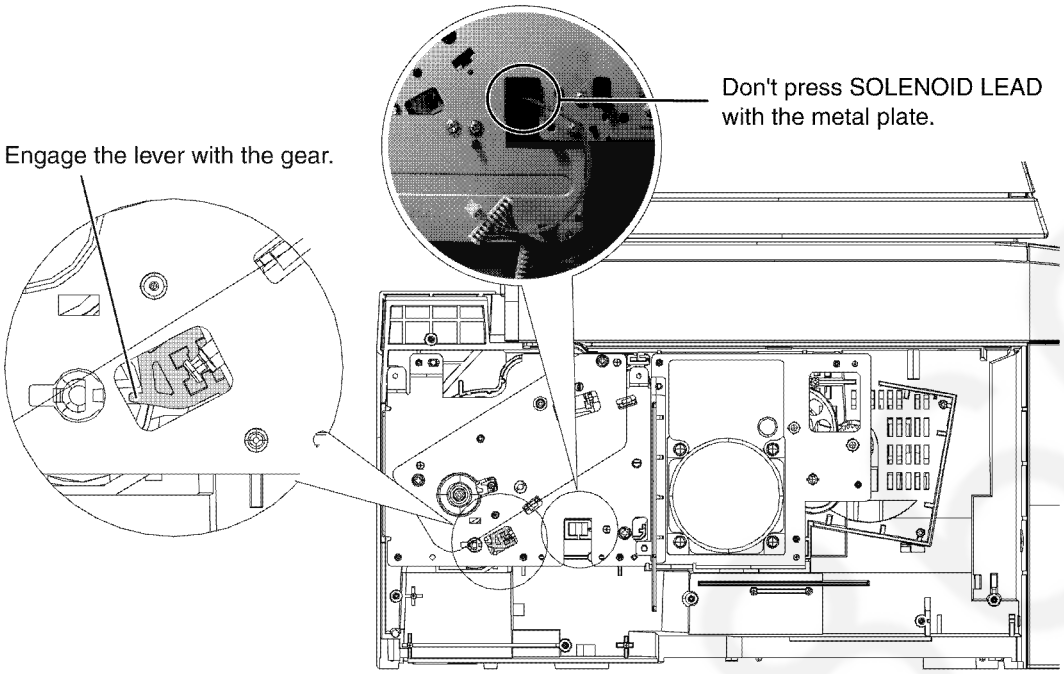
The lead is not coming between Maincabi and a wire. **OK**

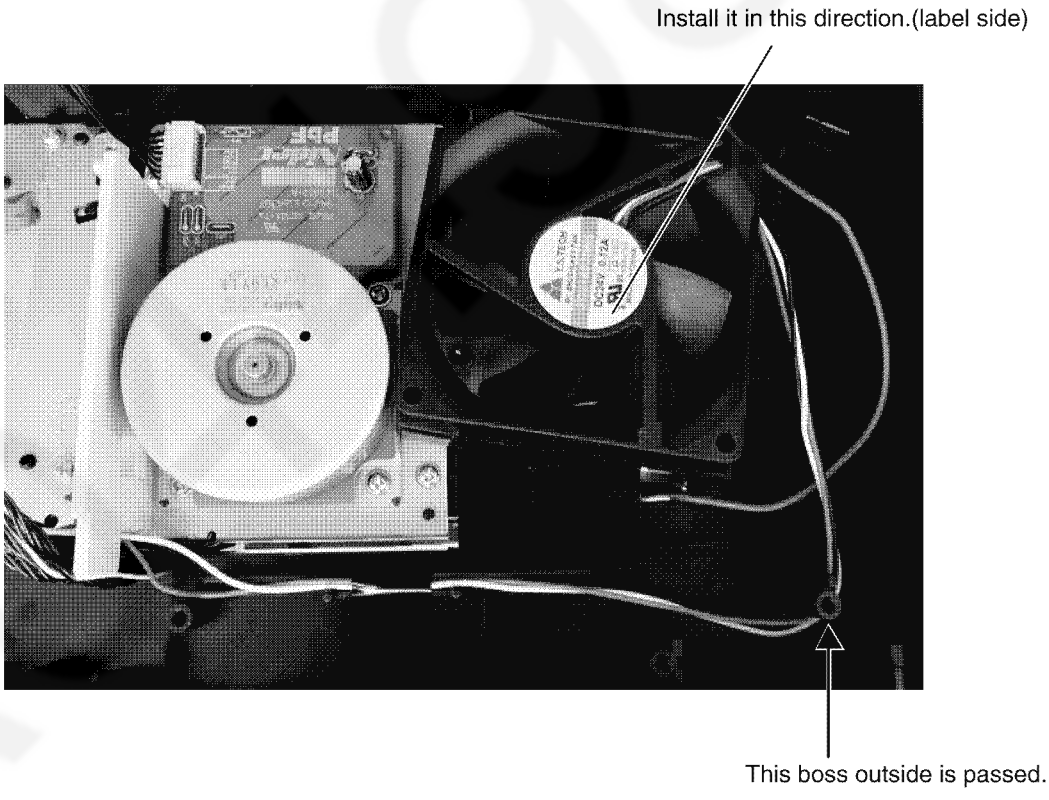


The lead is coming between Maincabi and a wire. **NG**

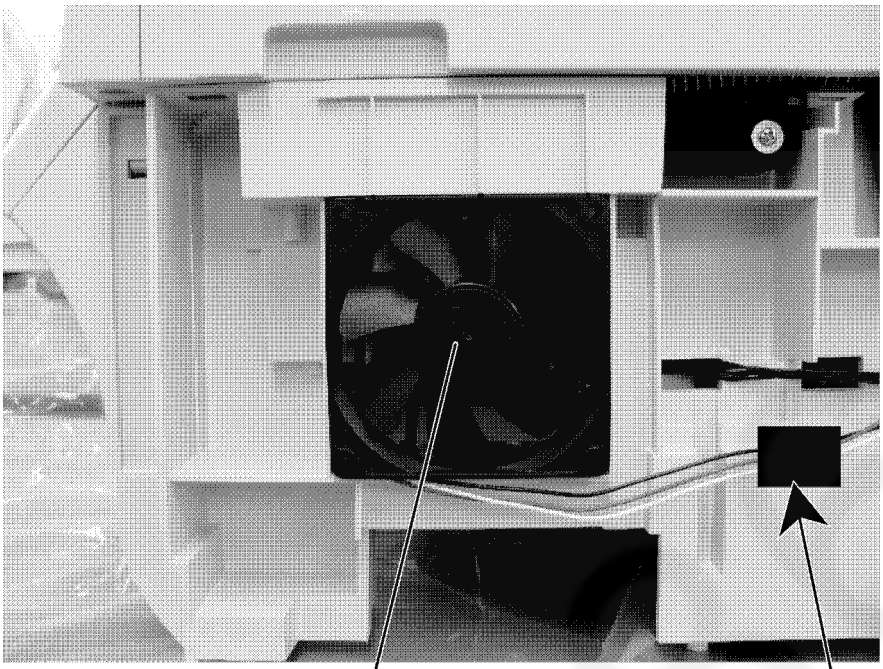


14.20.8. Side Cabinet Section (3)

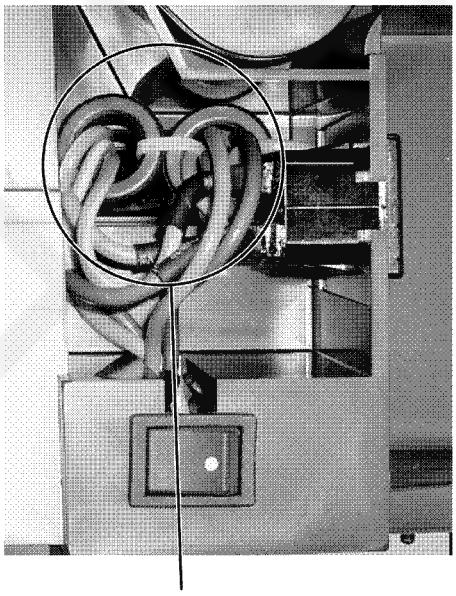




14.20.9. Side Cabinet Section (4)



14.20.10.AC Inlet Section



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. Frequency Counter

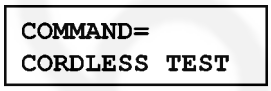
It's to adjust frequncy(10.368000MHz) of BBIC.
It requires an accuracy that can measure 1Hz.
(precise; ±1ppm)

2. Digital multimeter

It's to adjust voltage (1.8V) of BBIC.

15.1.2. How to Adjust

It adjusts it from the operation panel by the command input.
1. Setting to the cordless test mode in the service mode.
2. The corresponding command is input from the following list.



Displayed in LCD

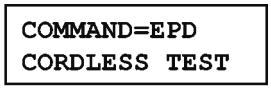
Command	function and how to use
IDR	Read ID number of Base unit.
IDW	Write ID number of Base unit. **: ID number, example if ID number is 007B700000, input 00 7B 70 00 00
EPD	Initialize EEPROM: default vales are written to EEPROM. "F" is put after the command input. (EPD F)
VER	Get Version of BBIC software: you can check Version.
VDD	Read Bandgap (1.8V) value or write it Reading: Only the command input Example; VDD Writing: The command input and Adjustment value Example: VDD ** **:Adjustment value
SFR	Read RF clock value or write it Reading: Only the command input Example:SFR Writing: The command input and Adjustment value Example: SFR ** **:Adjustment value

15.1.2.1. 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. Initialize please input initializing command "EPD" and "F".
2. The command "MIP 0***" is input.
3. Adjust **Frequency** and **Voltage**.
   --> Refer to "**Frequency and Voltage Adjustment**"
4. Confirm ID of Base unit.
   Please check ID number with "IDR" command.
   If ID is 00 00 00 00 00, please replace again.
5. Re-register CDL Handsets <-- Don't forget please.

Ex.)



Displayed in LCD

Caution:
When the following command is input after the command is input, it is necessary to return it with the stop key.

15.1.2.2. In Case of BBIC Replacement

When you replace BBIC, you need to adjust Frequency and Voltage. -->Refer to Frequency and Voltage Adjustment (P.272).

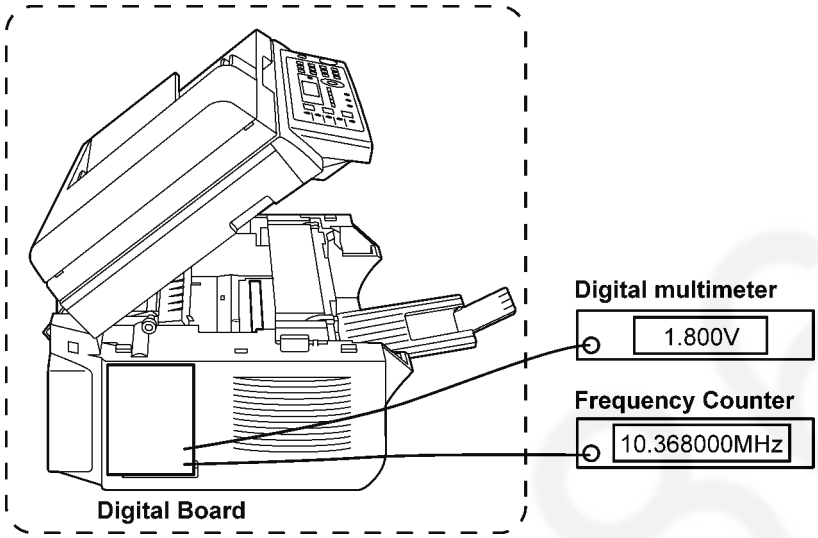
15.1.2.3. In Case of X'tal (X900) Replacement

When you replace X'tal, you need to adjust Frequency. -->Refer to Frequency Adjustment (P.272).

15.1.3. Frequency and Voltage Adjustment

15.1.3.1. Settings and Connecting

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" point on the Digital Board located near the BBIC.
See the Adjustment Standard (Base Unit) (P.273).



15.1.3.2. Frequency Adjustment

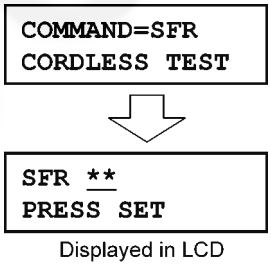
Adjustment value of frequency is the command "SFR". (default value: 75)

After inputting "EPD_F", please check the RF clock and input "SFR".

If Frequency displayed on the frequency counter is lower than 10.368000MHz, please decrease the value. In order to do it, please write a value with "SFR **" command.

If you decrease 1, input "SFR 74".

If frequency is higher, please write increased value to.



Displayed in LCD

Frequency should be

10.367990MHz < frequency < 10.368010MHz

15.1.3.3. Voltage Adjustment

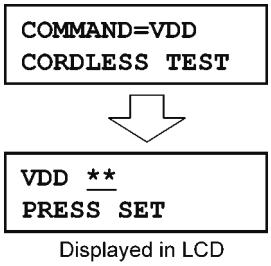
Adjustment value of voltage is the command "VDD". (default value: 08)

If 1.8V_voltage displayed on the Digital multimeter is higher than 1.85V, please decrease the value.

Please write a value with "VDD **" command.

If you decrease 1, input "VDD 07".

If voltage is lower, please write increased value to.



Displayed in LCD

Voltage should be

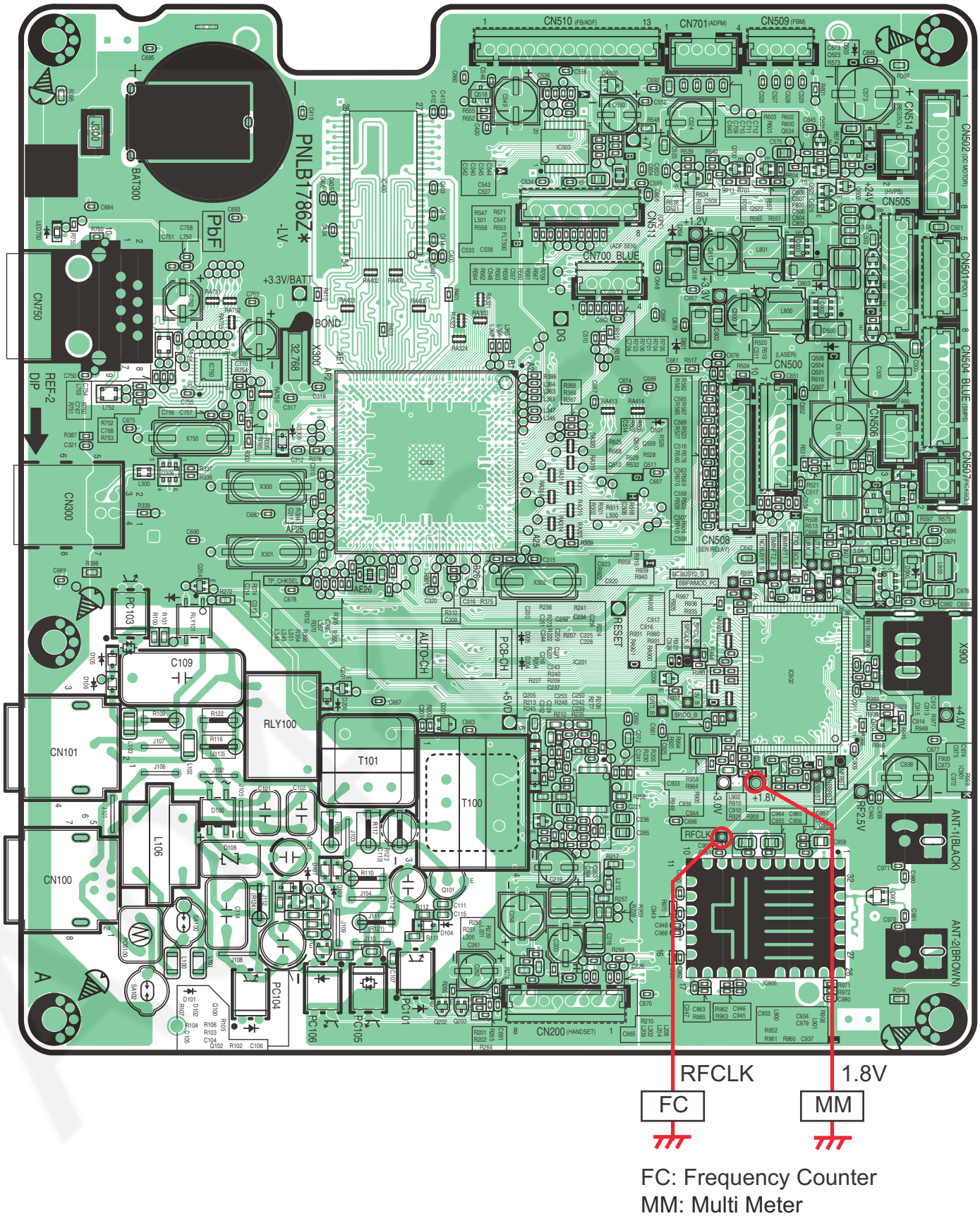
1.75V < Voltage < 1.85V

Note:

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.

15.2. Adjustment Standard (Base Unit)

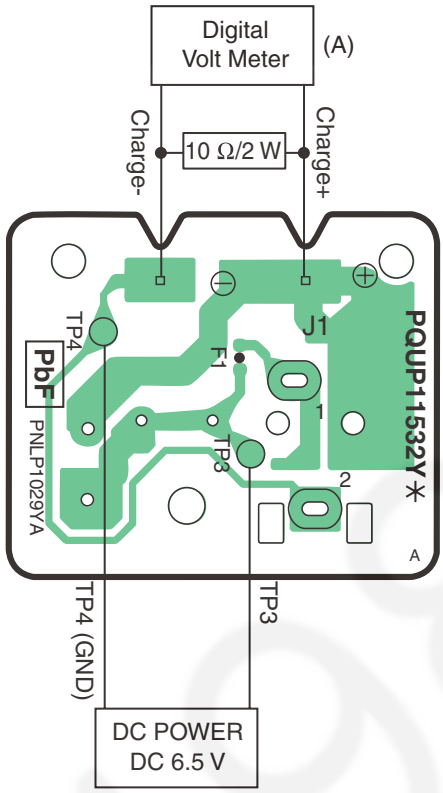
15.2.1. Component View



15.3. Adjustment Standard (Charger Unit)

When connecting the Simulator Equipments for checking, please refer to below.

15.3.1. Bottom View



Note:

(**A**) is referred to **Check Point (Charger Unit)** (P.205)

15.4. The Setting Method of JIG (Cordless Handset)

15.4.1. Preparation

15.4.1.1. 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

15.4.1.2. JIG and PC

- Serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode.
- **Batch file CD-ROM** for setting: PNZZMB2061CX

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

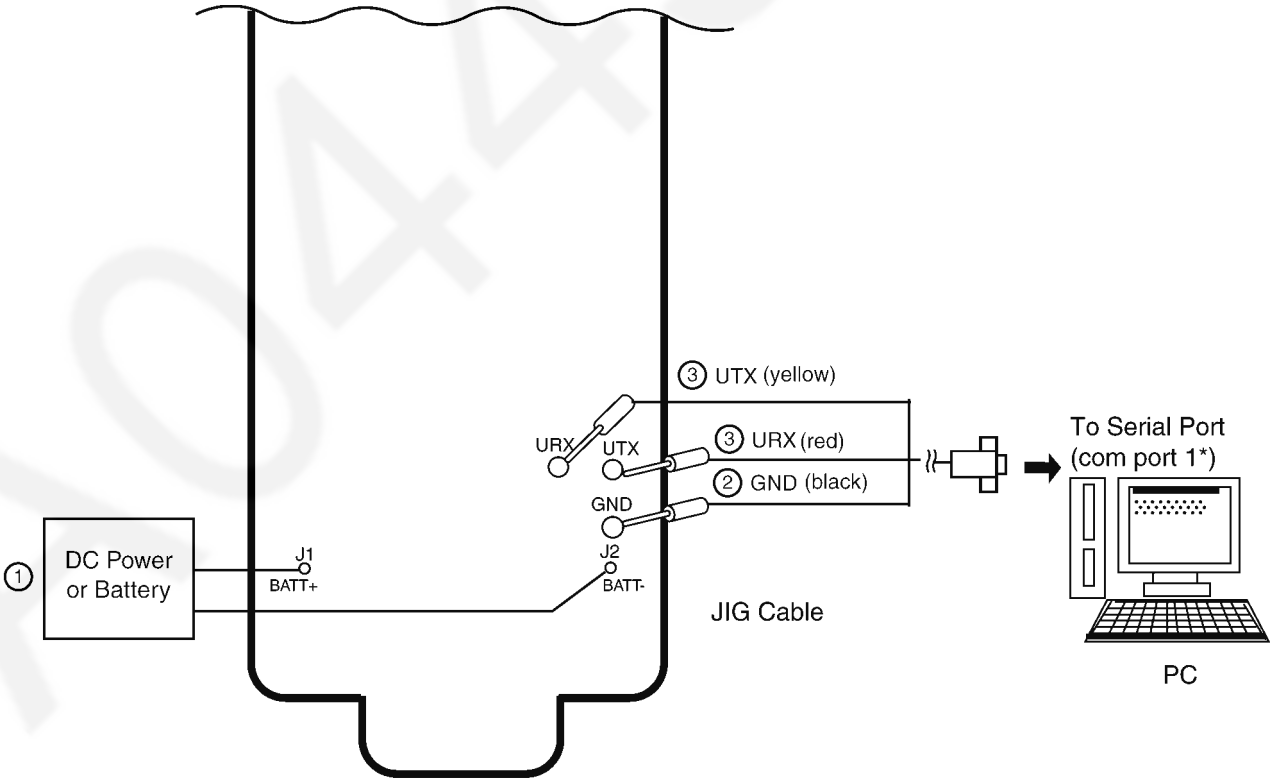
15.4.2. PC Setting

15.4.2.1. Connections

① Connect the DC Power or Battery to BATT+ and BATT- (Handset).

② Connect the JIG Cable GND (black) to GND.

③ Connect the JIG Cable UTX (yellow) and UTX and URX (red) to URX.



Handset P. C. board

Note:

*: COM port names may vary depending on what your PC calls it.

15.4.2.2. 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.

<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****>
```

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: 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.276) for frequently used commands.

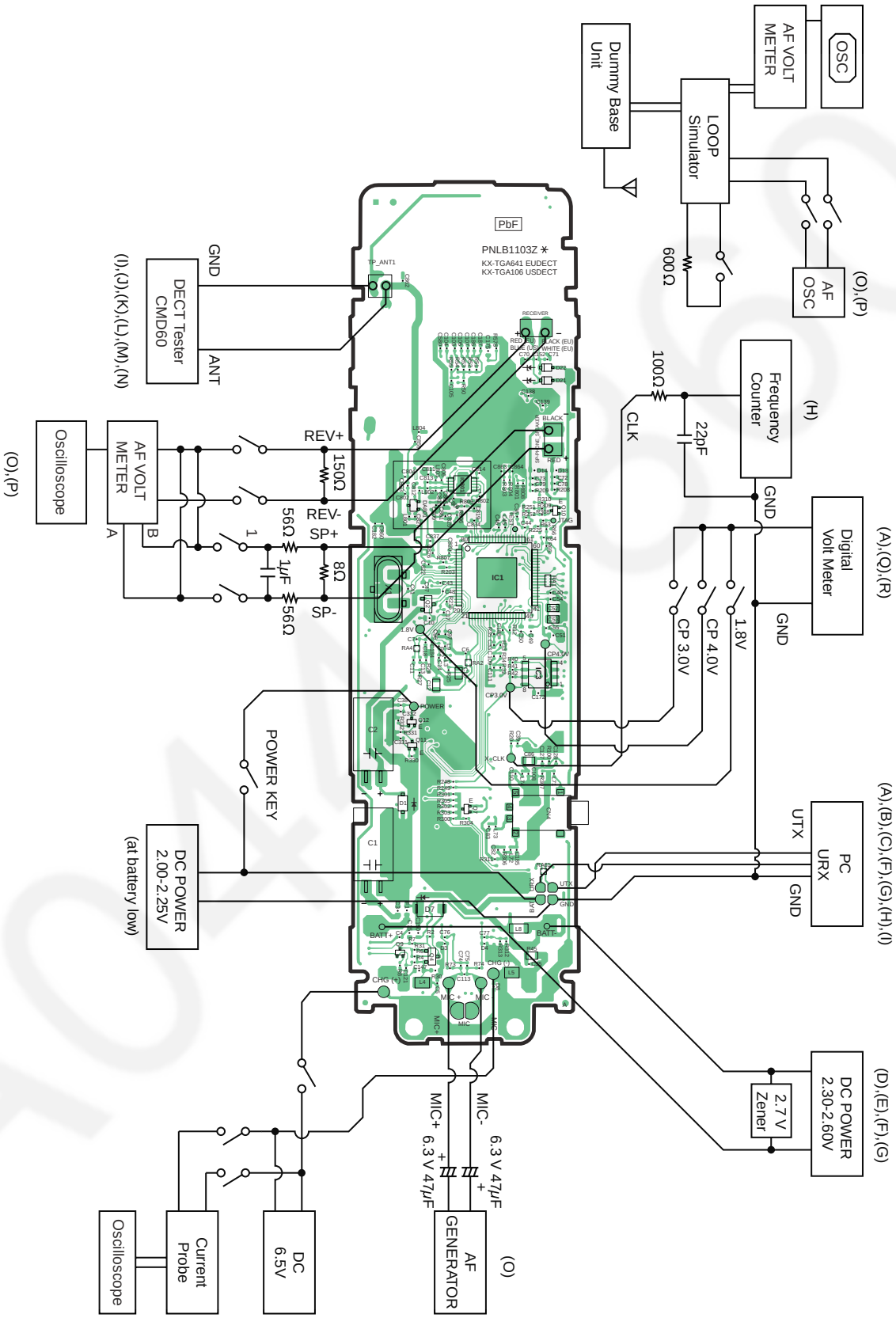
15.4.2.2.1. Commands

Command name	Function	Example
rdeeprom	Read the data of FLASH	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 FLASH	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.

15.5. Adjustment Standard (Cordless Handset)

When connecting the Simulator Equipments for checking, please refer to below.

15.5.1. Component View



Note:

(**A**) - (**T**) is referred to **Check Point (Cordless Handset)** (P.202)

15.6. 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.

15.6.1. Base Unit

IC		Necessary Adjustment
BBIC (IC902)	Programs for Voice processing, interface for RF and EEPROM	1. Initialize: Refer to In Case of BBIC Replacement (P.271). 2. Clock and Voltage adjustment: Refer to **Frequency and Voltage Adjustment** (P.272).
EEPROM (IC904)	Adjustment parameter data (default batch file, etc.)	1. Initialize: Refer to In Case of BBIC Replacement (P.271). 2. Clock and Voltage adjustment: Refer to **Frequency and Voltage Adjustment** (P.272).

15.6.2. Cordless Handset

Before doing the following adjustment, be sure to do **PC Setting** (P.275) 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 “TGA641DEFrevYY.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 “TGA641DEFrevYY.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.275).

(*4) Refer to **Check Point (Cordless Handset)** (P.202)

15.7. RF Specification

15.7.1. Base Unit

Item	Value
TX Power	20 dBm ~ 25 dBm
Modulation	-370±30/+370±30 kHz/div & Modulated width ≧ 690 kHz
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

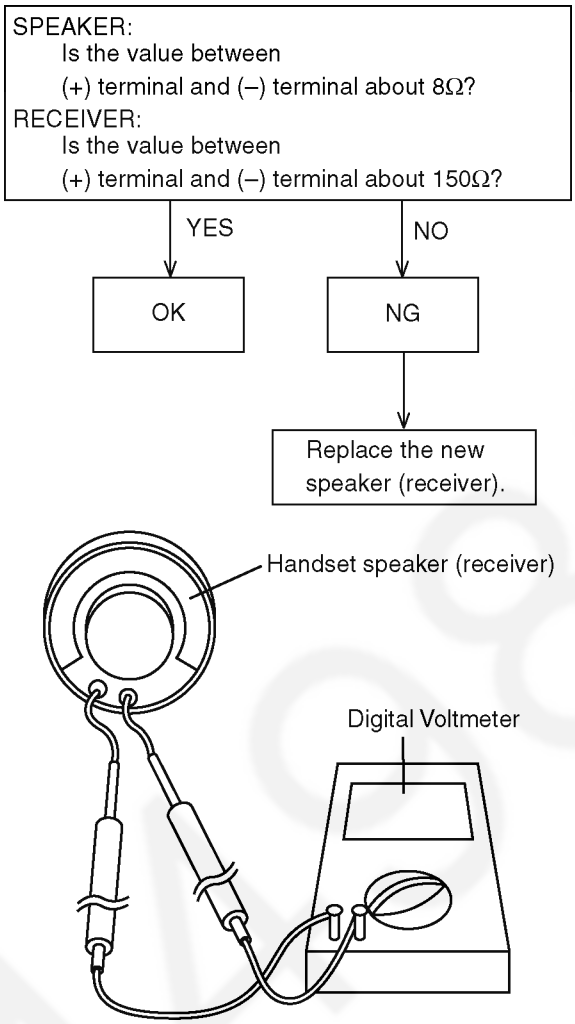
15.7.2. Cordless Handset

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.202)

15.8. 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.



15.9. 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 Handset.

16 Maintenance

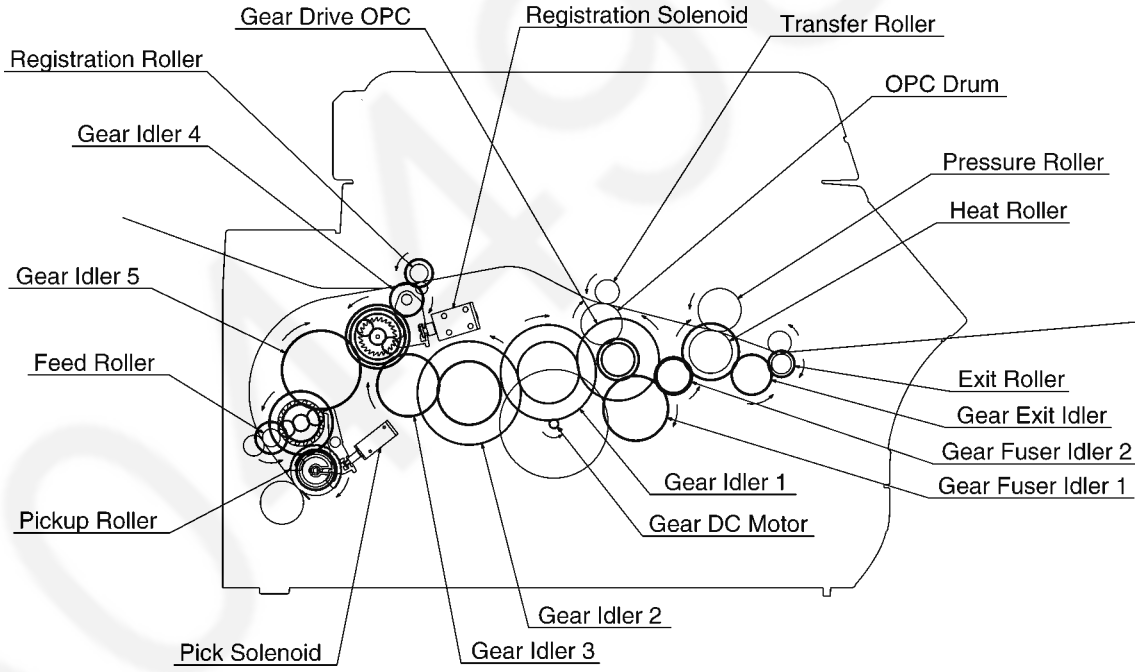
16.1. Maintenance Items and Component Locations

16.1.1. Outline

MAINTENANCE AND REPAIRS ARE PERFORMED 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 troubleshooting.
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



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 **Maintenance Check Items/Component Locations** (P.281)
3	Sensors	Document sensor (PS54), Read position sensor (PS53), registration sensor (PS51), Pickup sensor (SW50), Print timing sensor (PS52), Toner sensor (IC51), Top cover sensor (SW1), Exit sensor (PS50), confirm the operation of the sensors.	See **Maintenance Check Items/Component Locations** (P.281) and **Sensors and Switches Section** (P.59) **Test Functions** (P.119)
4	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to **Maintenance** (P.283).
5	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 (Document & Paper)

No.	Item	Cleaning Cycle
1	ADF Document Feed Roller (Ref.No.46)	3 months
2	ADF Separation Rubber (Ref. No.33)	3 months
3	ADF Eject Roller (Ref.No.56)	3 months
4	Pick up Roller (Ref No.320)	----------
5	Separation Roller (Ref. No.340)	----------
6	Feed Roller (Ref.No.211)	3 months
7	Transfer Roller (Ref.No.161)	----------
8	Registration Roller (Ref.No.196)	3 months
9	Heat Roller (Ref.No.232)	----------
10	Exit Roller (Ref.No.242)	3 months

If each part has got dirty, clean it with a damp cloth then dry thoroughly.

* These values are standard and may vary depending on usage conditions.

16.2. Maintenance

16.2.1. Cleaning the White Plates and Glass

Clean the white plates and glass when a black line, a white line or a dirty pattern appears on:

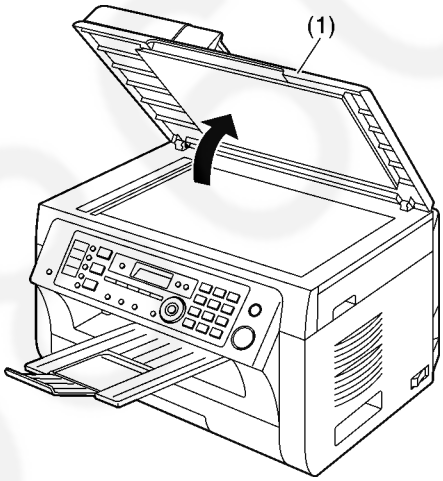
— your recording paper,
— the original document,
— the scanned data, or
— the fax document received by the other party.

Caution:

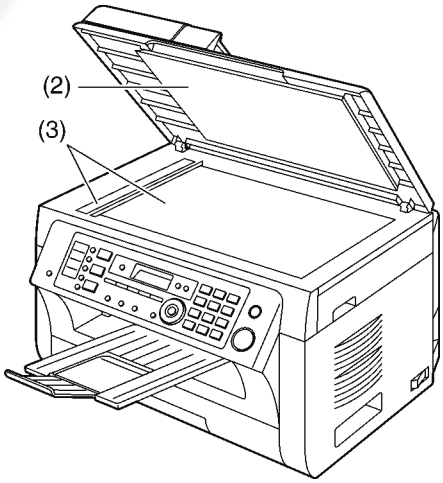
- **Be careful when handling the drum and toner cartridge.**
- **Do not use paper products, such as paper towels or tissues for cleaning.**

16.2.1.1. White plate and scanner glass

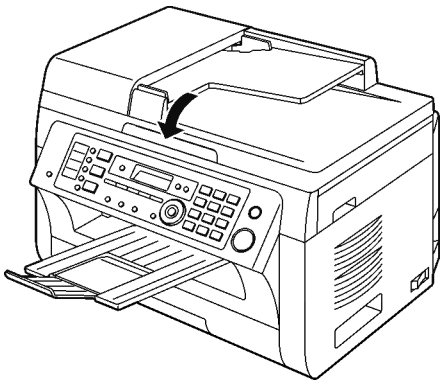
1. Open the document cover (1) .



2. Hold the document cover while cleaning the white plates (2) and the scanner glass (3).



3. Close the document cover.



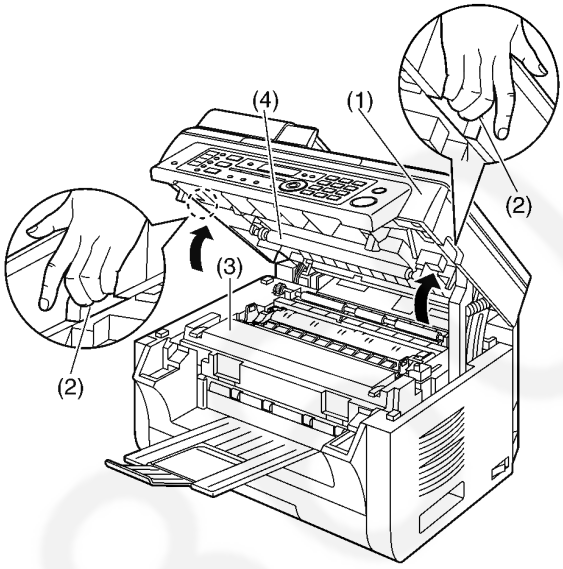
16.2.1.2. Lower glass

1. Turn the power switch OFF.

2. Open the top cover (1) by holding the indentations (2) on both sides of the base unit.

Note:

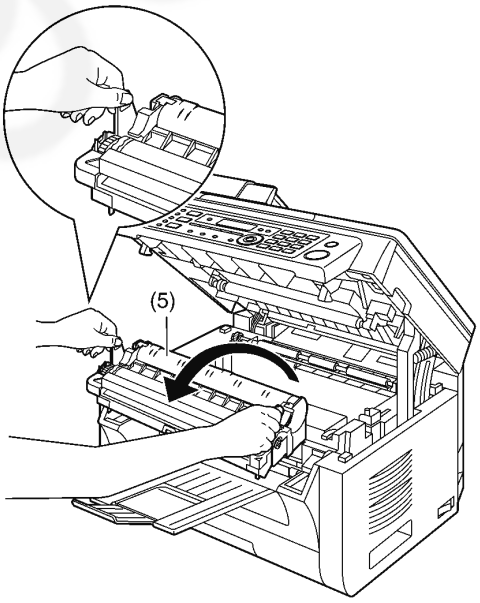
- Do not touch the transfer roller (4).



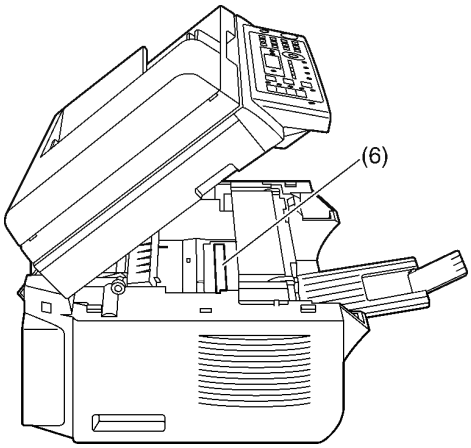
Caution:

The fuser unit (3) gets hot. Do not touch it.

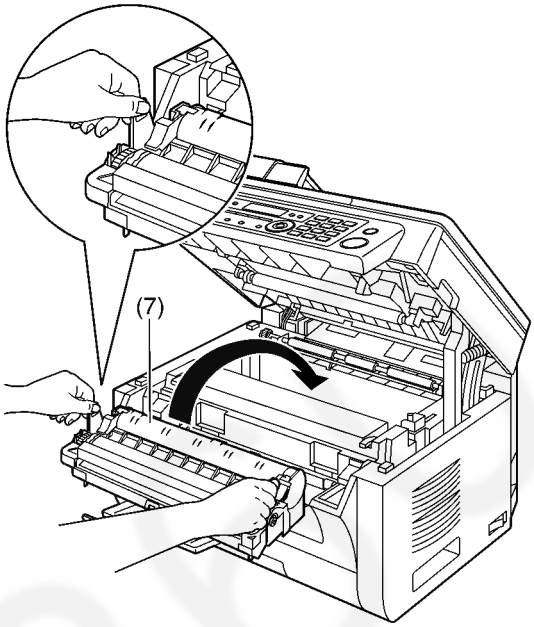
3. Remove the drum and toner cartridge (5) by holding the tabs.



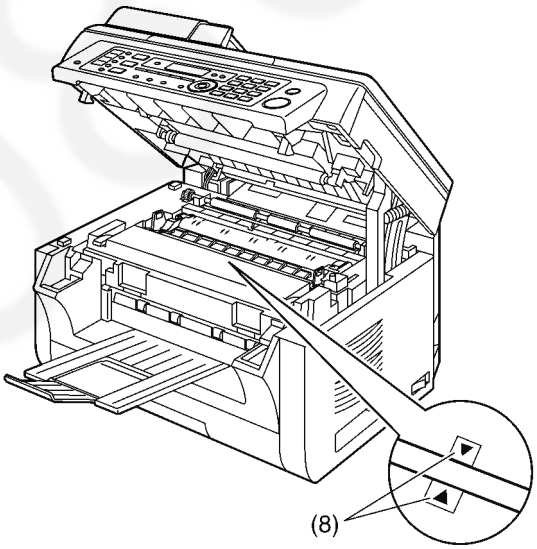
4. Clean the lower glass (6) with a soft and dry cloth.



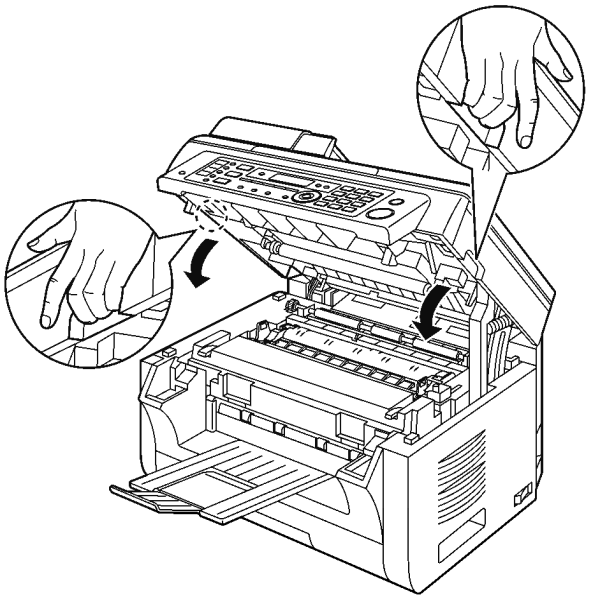
5. Reinstall the drum and toner cartridge (7) by holding the tabs.



• Make sure that the arrows (8) match, to install the drum and toner cartridge correctly.

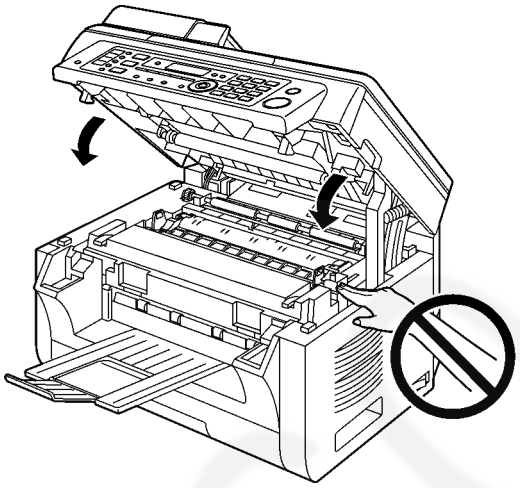


6. Close the top cover by holding the indentations on both sides of the base unit, until locked.



Caution:

- To prevent injuries, be careful not to put your hands under the top cover.



7. Turn the power switch ON.

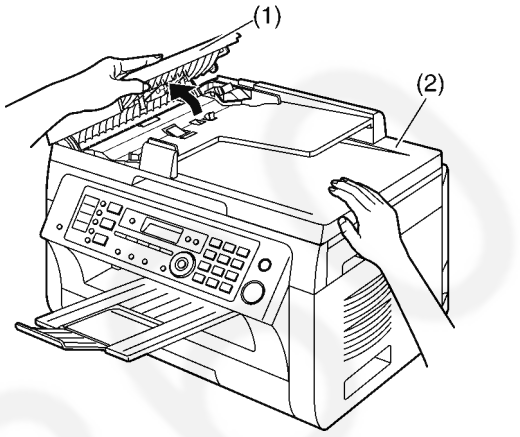
16.2.2. CLEANING THE DOCUMENT FEEDER ROLLERS

Clean the rollers when documents frequently misfeed.

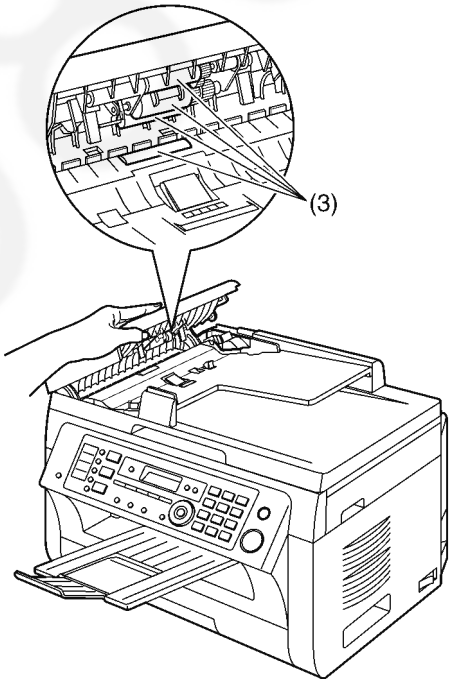
Caution:

- Do not use paper products, such as paper towels or tissues for cleaning.

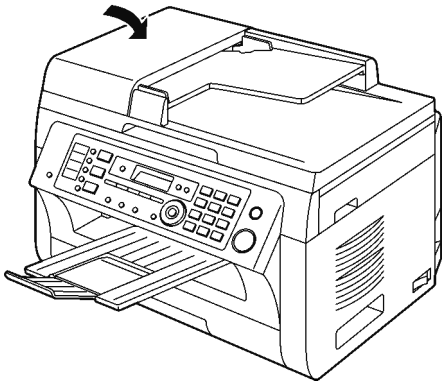
1. Turn the power switch OFF.
2. Open the ADF cover (1) while holding the document cover (2).



3. Clean the document feeder rollers (3) with a cloth moistened with water, and let all parts dry thoroughly.



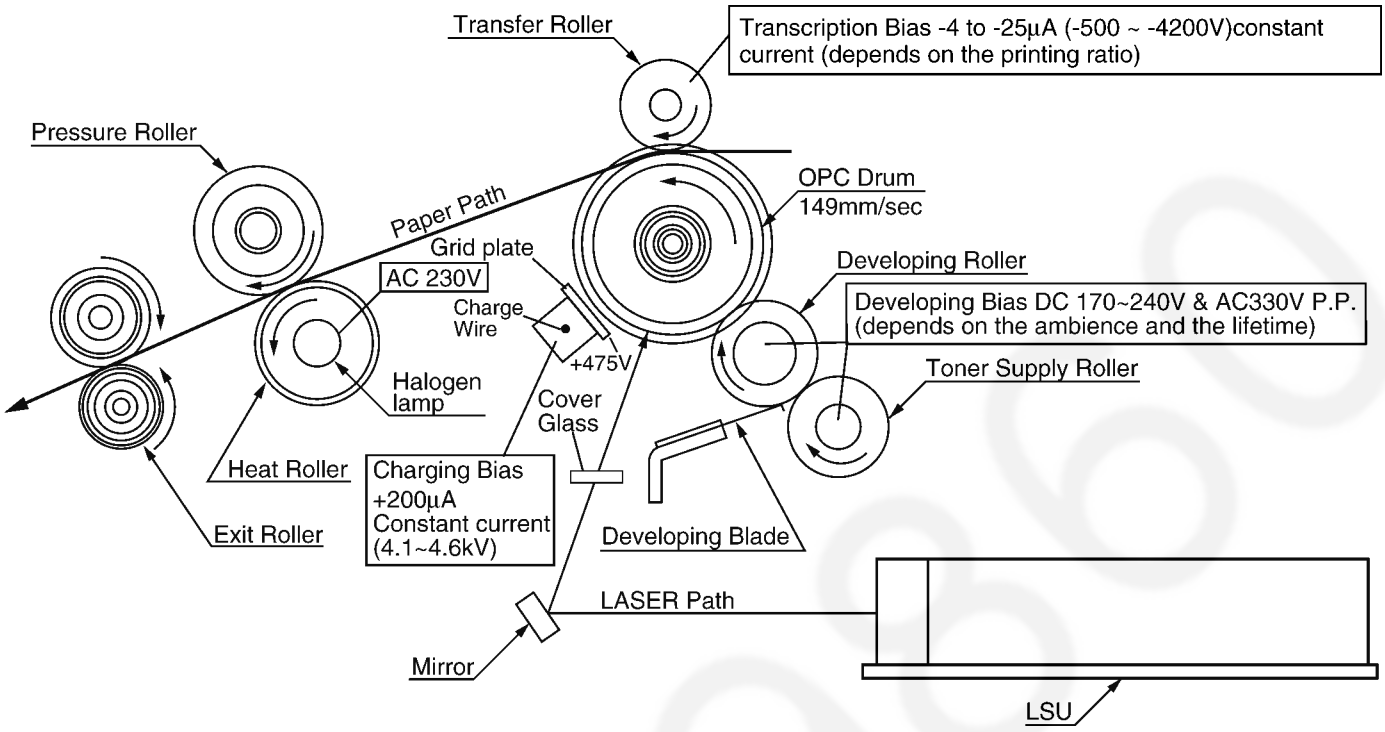
4. Close the ADF cover.



5. Turn the power switch ON.

16.3. Printing Operation Principle

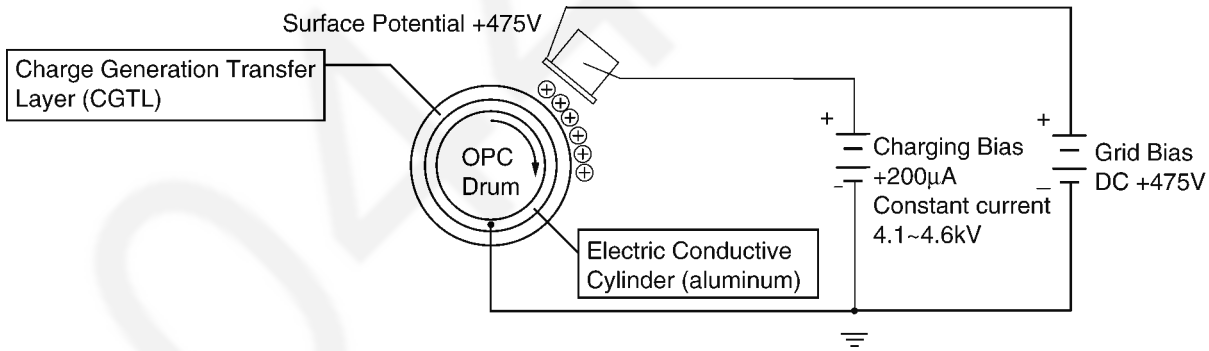
16.3.1. Process Chart and Process BIAS



16.3.2. CHARGING

Charging is the stage that keeps the surface of the sensitive drum a fixed electric potential. The sensitive drum is the Organic Photo Conductor (OPC), which is a electric conductive cylinder whose surface is covered with the Charge Generation Transfer Layer (CGTL).

When the charging bias (DC +4.35kv) is added and the plus charge is supplied to the OPC surface while charging, the whole surface potential of the drum is +475V.

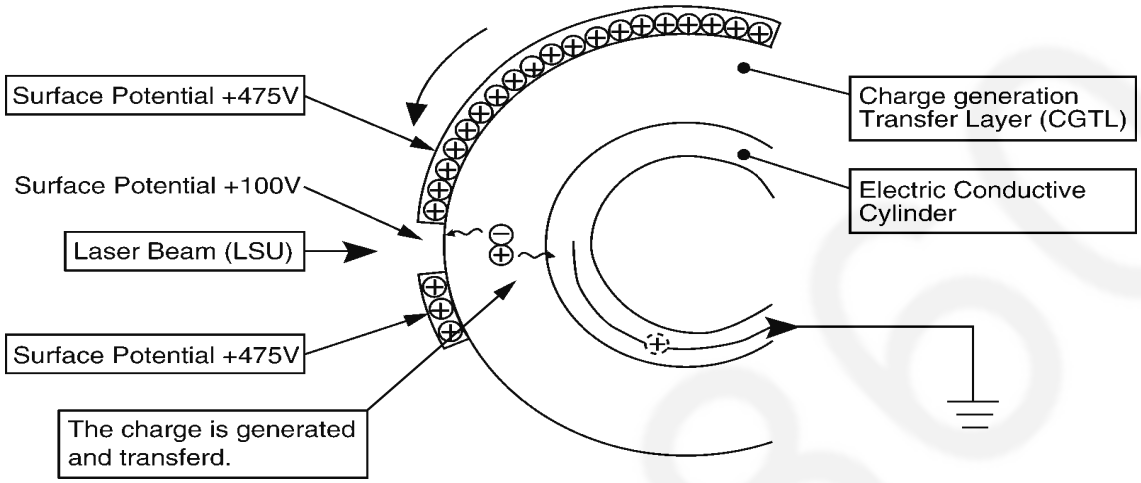


Charging Part

16.3.3. Exposing

When the drum which is charged with the fixed electric charge is irradiated by the laser beam, the plus charge and minus charge are generated at the Charge Generation Transfer Layer. Passing through the Charge Generation Transfer Layer which conducts the minus charge, the plus-charged drum's surface is neutralized to be skipped. Then the plus charge goes to the ground from the electric conductive cylinder. Consequently the charge of the part which is not exposed remains as it is, and the electric potential of the scanned part changes.

At that time an invisible image is created on the drum.

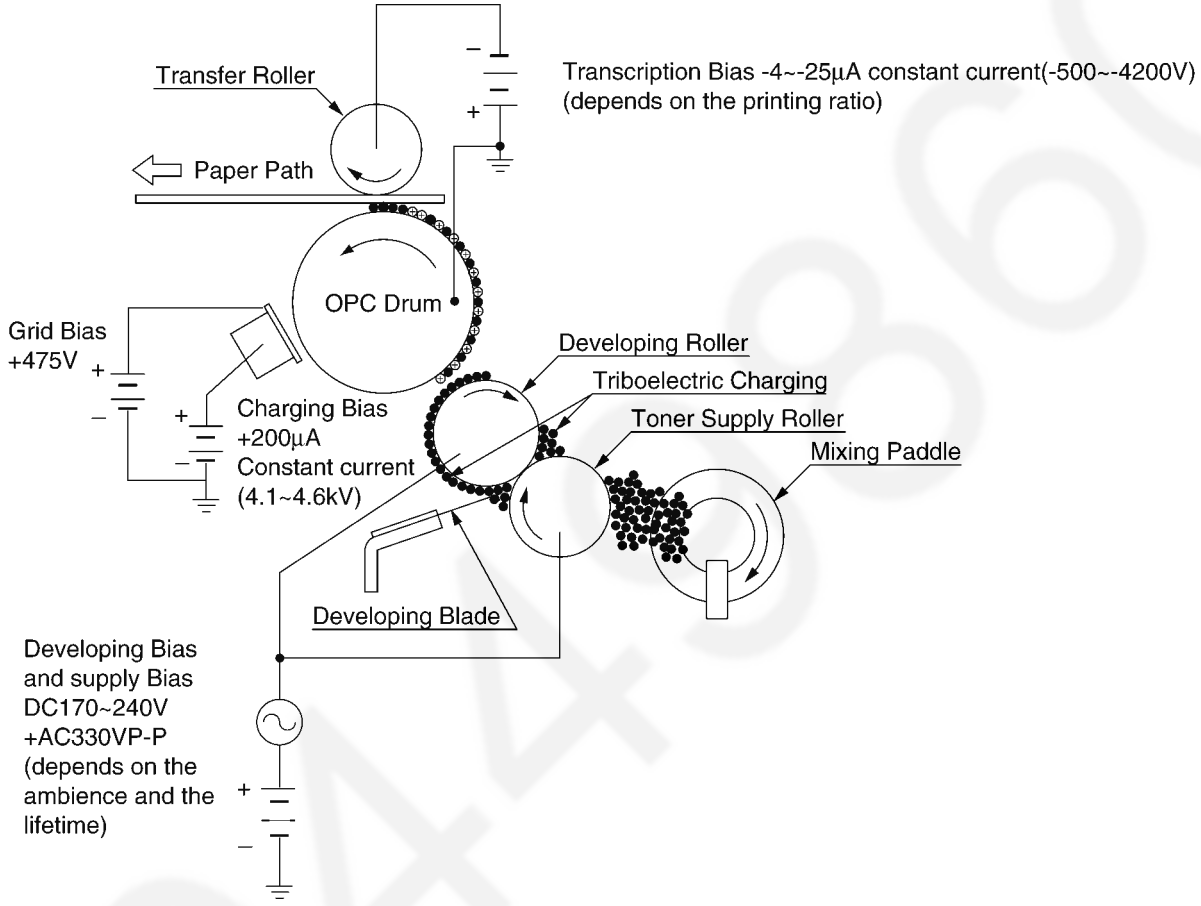


Exposing Part

16.3.4. Developing and Transcription

The developing is the stage that the OPC drum with an invisible image is changed to visible by the toner. The drum cartridge consists of mixing paddle, toner supply roller, developing roller, developing blade, charge wire, grid plate and OPC drum. The bias voltage is added to the developing roller and toner supply roller. Firstly the toner is mixed up in the mixing paddle and plus-charged by triboelectricity, then led to the toner supply roller. Secondly the potential difference causes to send the toner to the developing roller from the toner supply roller. The supplied toner to the developing roller is kept to a certain layer thickness by the developing blade and also it is charged by triboelectricity. Consequently the toner is transferred to the surface of the exposed OPC drum by the potential difference between the developing roller and OPC drum's surface.

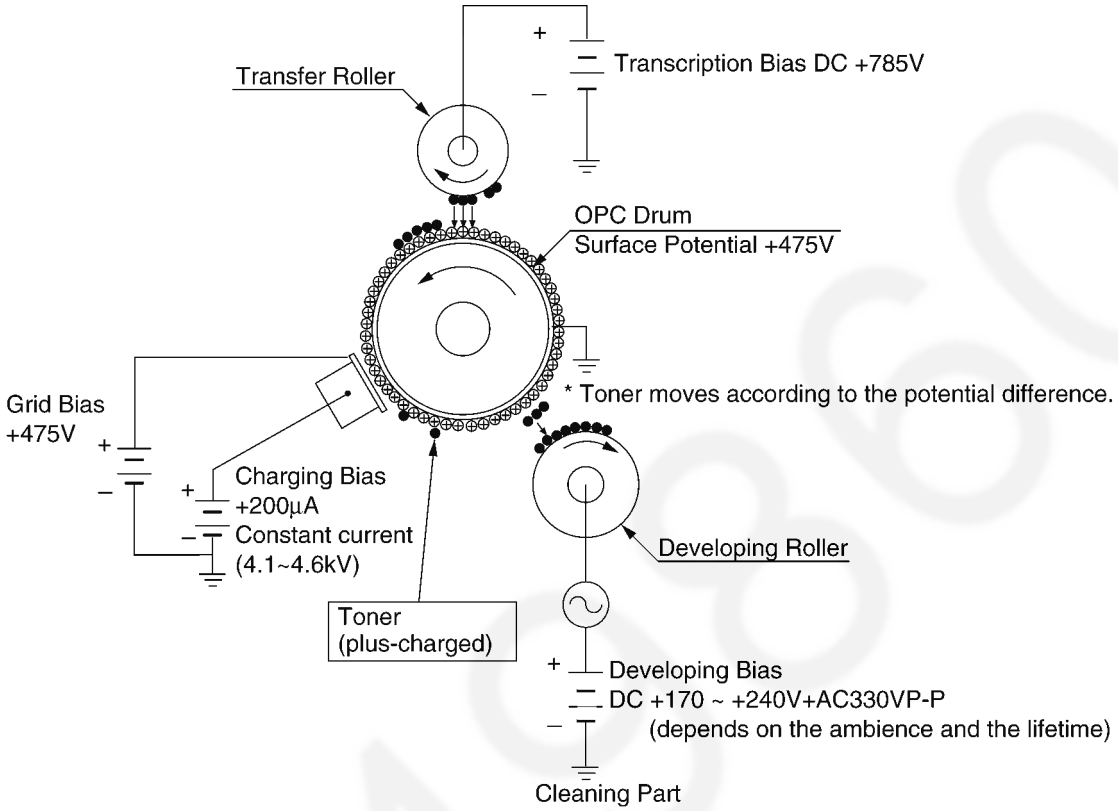
The transfer is the stage that the created image on the OPC drum is transferred to the paper. When the transfer roller is minus-charged with the image, the plus-charged toner particles are gathered on the surface of the drum and transferred to the paper.



Developing and Transcription Part

16.3.5. Cleaning of Transfer Roller

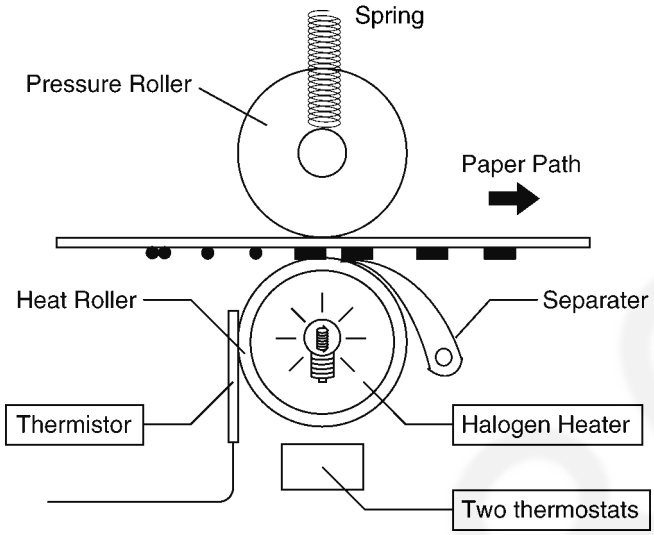
The toner attached to the surface of the OPC drum is transferred to the paper at the transcription stage, but a part of the toner remains. The cleaning is the stage that cleans the remain toner after the transcription stage. The remain toner on the drum and the toner which was attached to the place where the laser beam didn't scan are gathered to the developing roller to be used again. After paper jam or replacing toner and drum cartridge, the transfer roller is plus-charged to eliminate the plus-charged toner.



Cleaning Part

16.3.6. Fixing

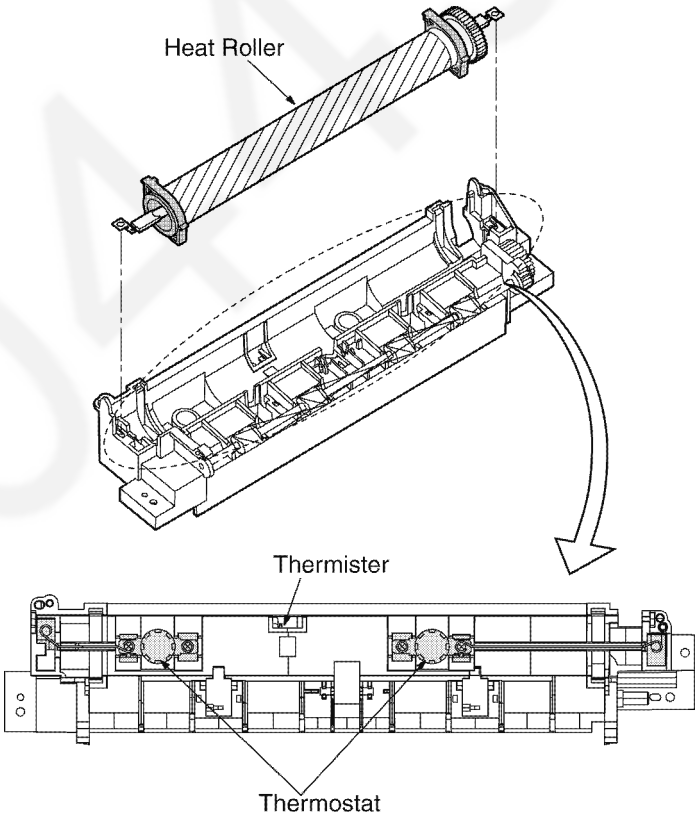
On the process of the transfer, the transferred toner is weakly attached on the paper. Fixing means the process to fix the toner on the paper permanently. The fixing part melts the toner at the high temperature using the halogen heater. The toner is fixed on the paper by the heat and pressure through the fixing part with the image. The surface of the heat roller is rosined by Teflon and lubricated to prevent from attaching the toners. The press roller is made of silicon, and its spring compresses the melted toner.



Fixing Part

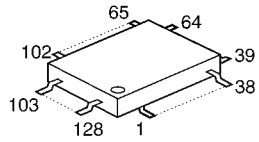
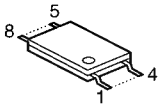
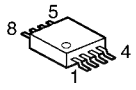
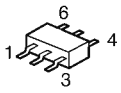
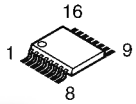
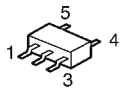
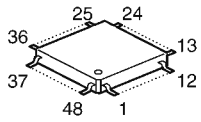
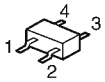
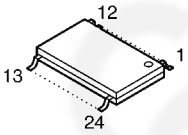
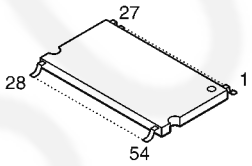
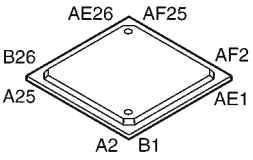
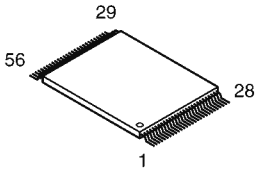
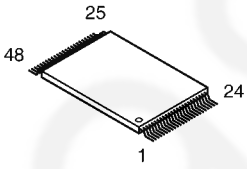
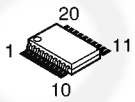
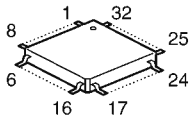
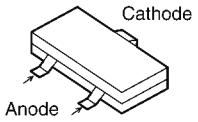
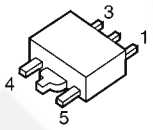
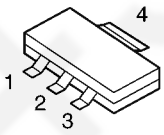
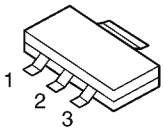
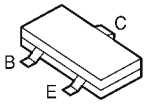
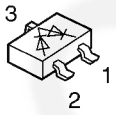
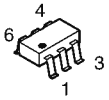
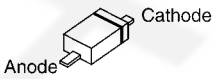
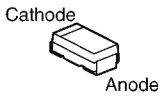
The fixing part becomes high temperature, so the thermistor and the two thermostats are provided.

1. Thermistor
   The thermistor touches the heat roller and check the temperature to feed back to the control circuit. The surface temperature should be kept 195°C while printing.
2. Thermostat
   The thermostat is located near the heat roller, and it turns OFF the power when the temperature around the thermostat becomes over 160°C.

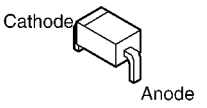


16.4. Terminal Guide of The ICs Transistors and Diodes

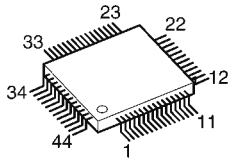
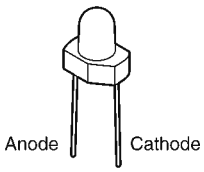
16.4.1. Main Board (1)

 C1CB00001879	 C0BBBA000044	 PNWI3***** C1AB00002556 C0ABEB000023 C0ABEB000083	 C0DBAYY00554	 C0DBAGE00028
 C0EBE0000504	 C1CB00002566	 C0CBAAA00035	 C0GBY0000066	 C3ABRY000039
 C1ZBZ0003801	 PNWI1*****	 PNWI2*****	 C0FBAY000092	 C1CB00003161
 B0DDCD000001	 C0DBGYY00330	 C0CBAYG00016	 2SD1664T100R	 B1ADGE000004 B1ADCF000161 UN9219J B1ABCF000103 B1ABDF000025
 B0ADEJ000026	 B0BC5R600003 B0BC5R000009 B0BC01000014	 B1CHQD000001 B0ZBZ0000146	 B1CHND000004	 B3ABB0000331
 1SS355	 PJVDJADAN202	 B0BC5R900006 B0BC3R800009 B0JCPD000033	 B1GBCFGN0005 B1GBCFYY0014	

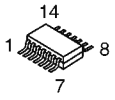
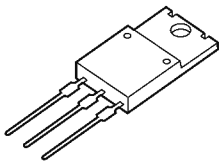
16.4.2. Main Board (2)

 B1ABKD000001 2SB1197KQ 2SK3018	 B0ACEL000004	 UNR9215J0L UNR921LJ0L		

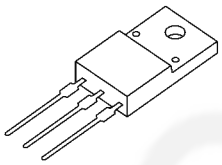
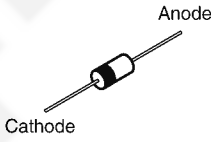
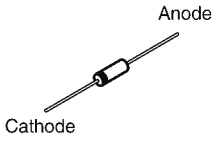
16.4.3. Operation Board

 C1ZBZ0004019	 B3ABA0000633 B3AAA0000534			

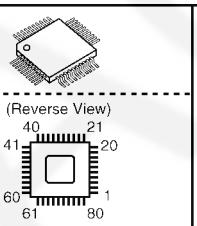
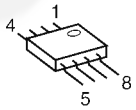
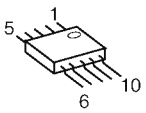
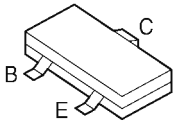
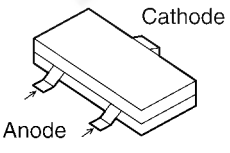
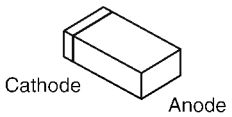
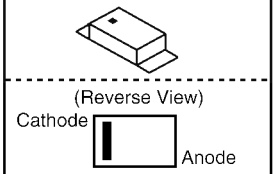
16.4.4. High Voltage Power Supply Board

 PH1193AC001	 PT2394DL001			

16.4.5. Low Voltage Power Supply Board

 PT3565KL001	 PD1146AC001	 PD4145AA005	 PD4068AQ075	

16.4.6. Cordless Handset Board

 C1CB00002906	 PQWIA130EXRR	 C1CB00001842	 2SC6054JSL, B1ADGE000004 B1ADCF000161, UN9219J	
 B0DDCD000001	 MA8043M MA2YD2120L B0JCME000035	 B3ACB0000216		

16.5. 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.

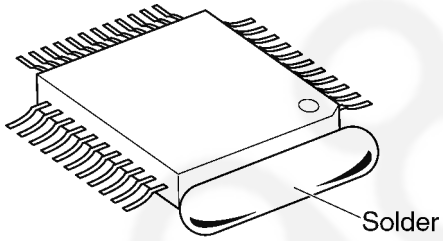
16.5.1. Preparation

- 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.
- Flux
  Recommended Flux: Specific Gravity → 0.82.
  Type → RMA (lower residue, non-cleaning type)

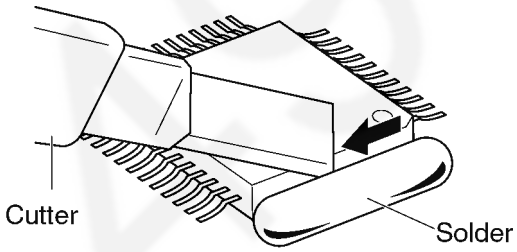
Note: See **About Lead Free Solder (PbF: Pb free)** (P.6)

16.5.2. Flat Package IC Removal Procedure

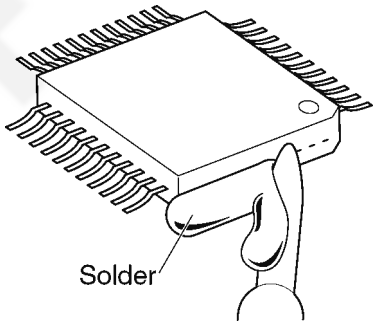
1. Put plenty of solder on the IC pins so that the pins can be completely covered.
   Note:
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.



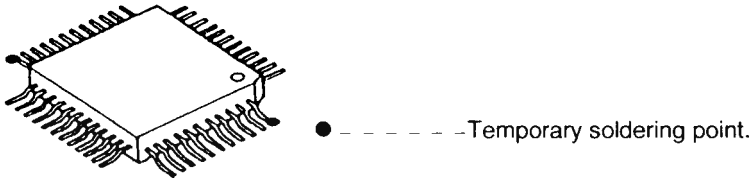
3. While the solder melts, remove it together with the IC pins.



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.

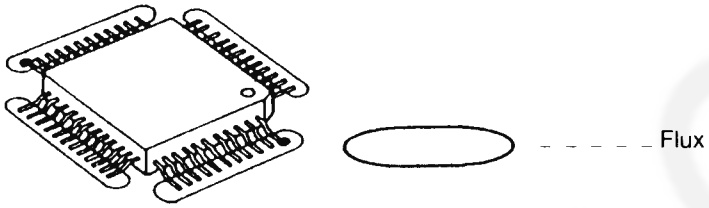
16.5.3. Flat Package IC Installation Procedure

1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.

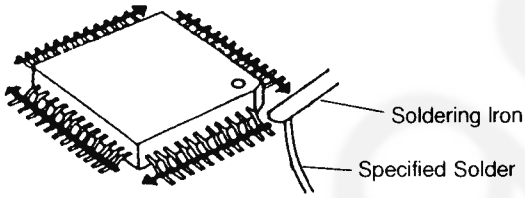


*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux to all pins of the FLAT PACKAGE IC.

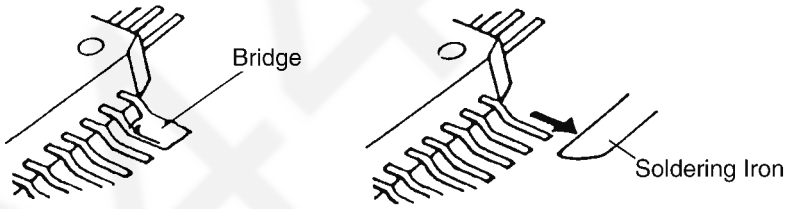


3. Solder the pins, sliding the soldering iron in the direction of the arrow.



16.5.4. 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.



16.6. How to Replace the Shield Case

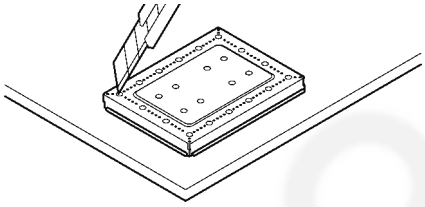
16.6.1. Preparation

- 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.

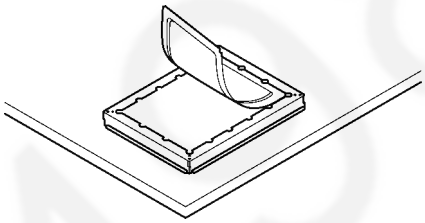
16.6.2. How to Remove the Shield Case

Note:
If you don't have special tools (ex. Hot air disordering tool), conduct the following operations.

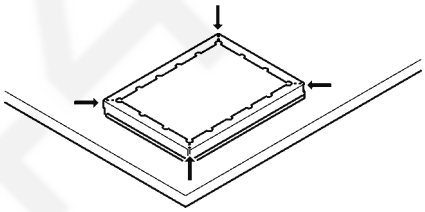
1. Cut the case along perforation.



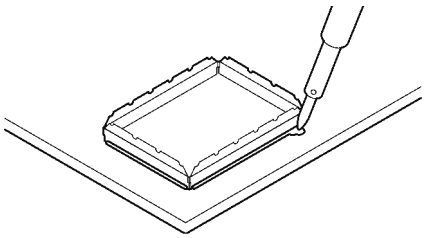
2. Remove the cut part.



3. Cut the four corners along perforation.



4. Remove the reminds by melting solder.

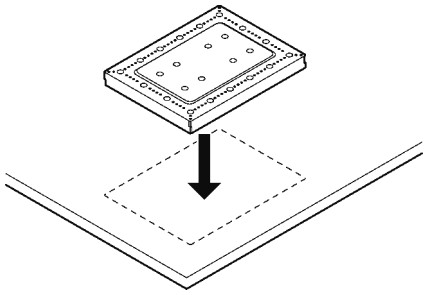


16.6.3. How to Install the Shield Case

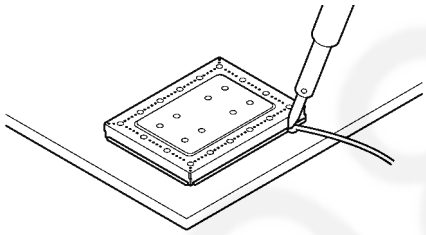
Note:

- 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.

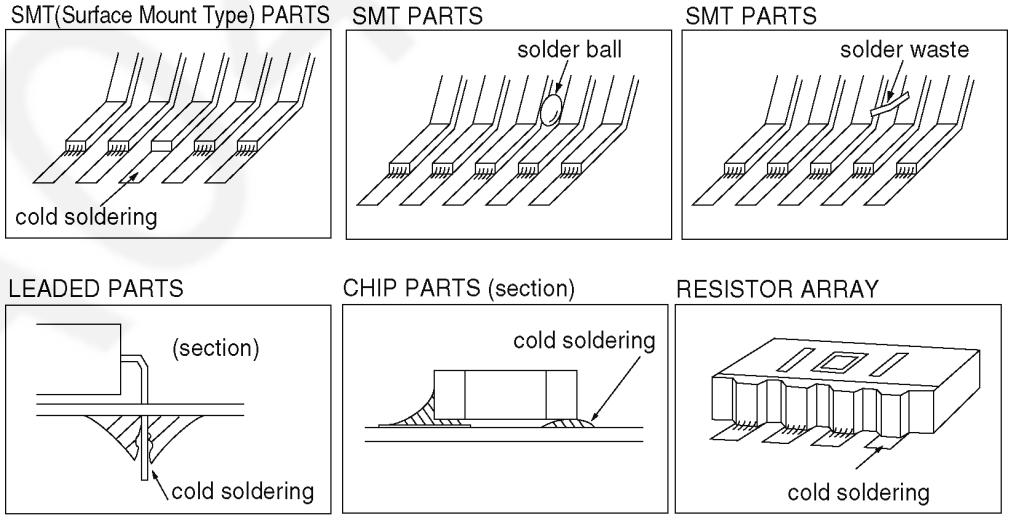


16.7. Main Board Section

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).



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 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.

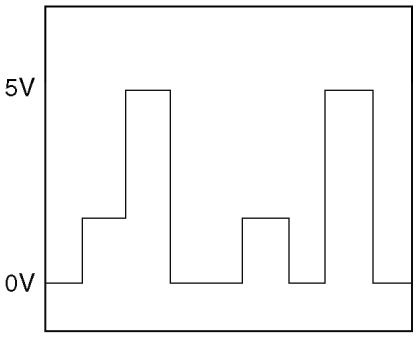
> Don't replace ICs or stop repairing until checking the signal lines.
> An IC malfunction rarely occurs. (By understanding the necessary signals for booting up the unit, the "Not Boot up" display is not a serious problem.)

What are the main signals for booting up the unit?

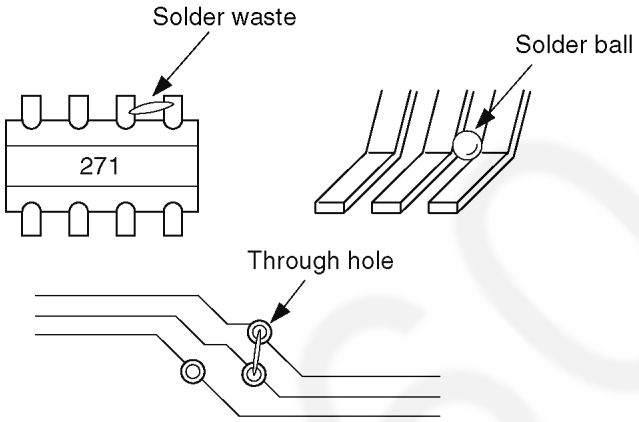
Please refer to **General Block Diagram** (P.14).
The ASIC (IC300) controls all the other digital ICs. When the power is turned on, the ASIC retrieves the operation code stored in the ROM (IC402), then follows the instructions for controlling each IC. All ICs have some inner registers that are assigned 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).

16.7.1. NG Example

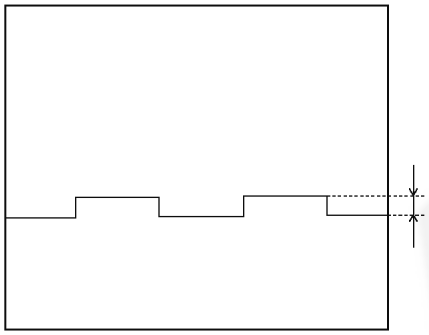
1.



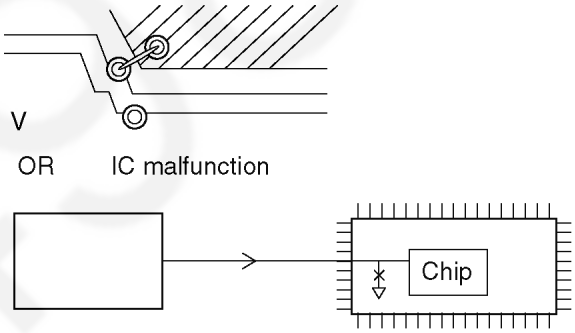
Short circuit from the adjacent signal wires.
Check for a short circuit in the RA and IC leads and the signal wire at the through hole.



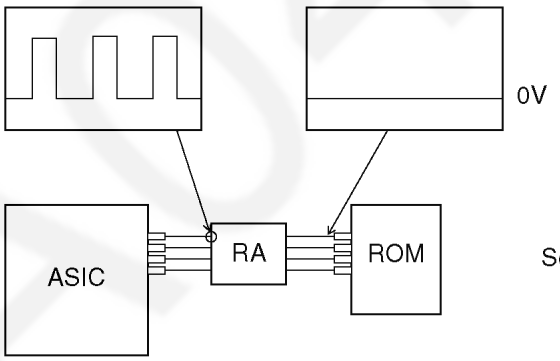
2.



Short between the signal line and GND.



3.



Solder fault on RA.

16.8. Test Chart

16.8.1. 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.

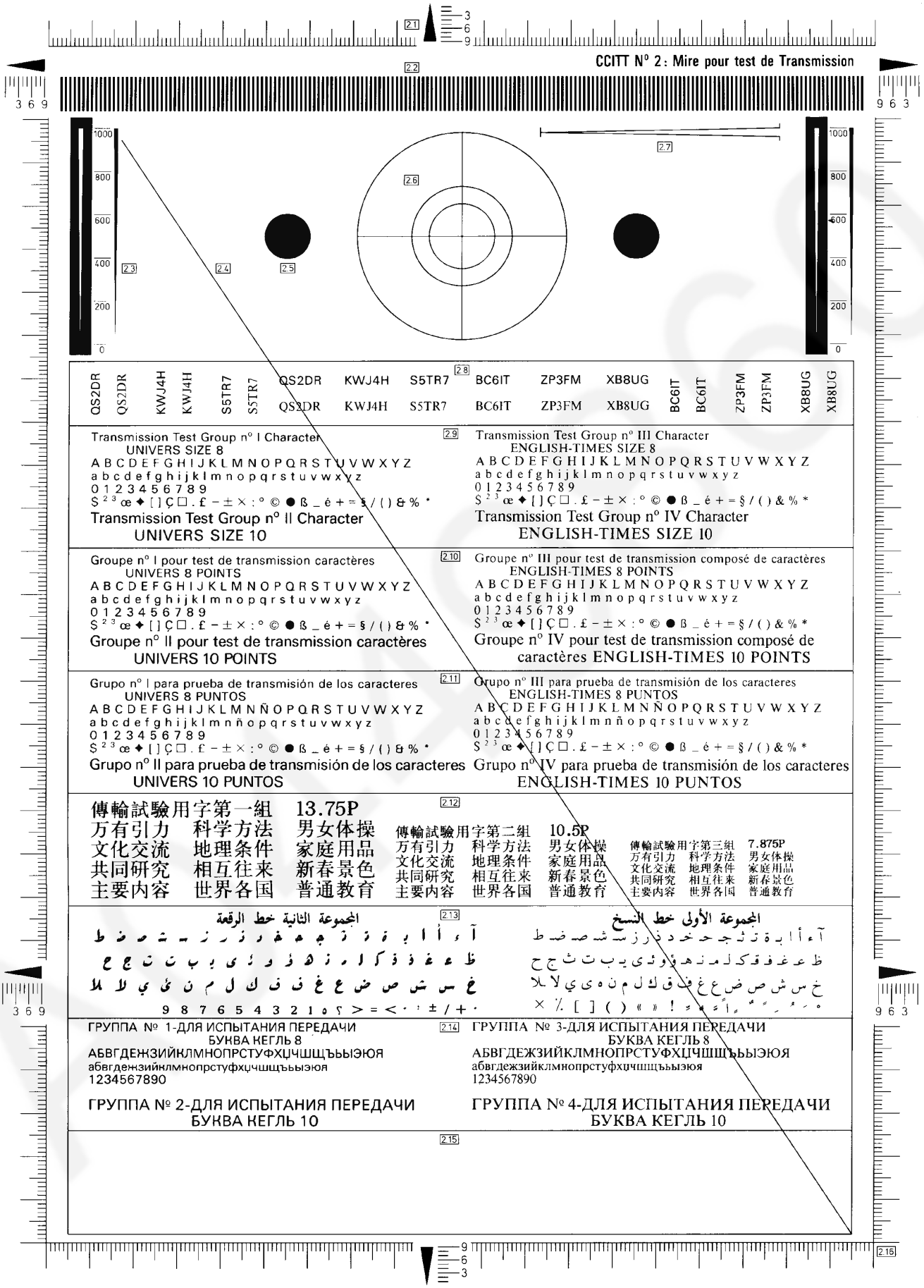
Yours sincerely,

Phil.

P.J. CROSS
Group Leader - Facsimile Research

Registered in England: No. 2038
Registered Office: 60 Vicara Lane, Ilford. Essex.

16.8.2. ITU-T No.2 Test Chart

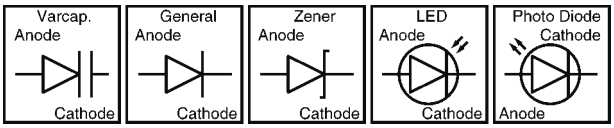


17 Schematic Diagram

17.1. For Schematic Diagram

Note:

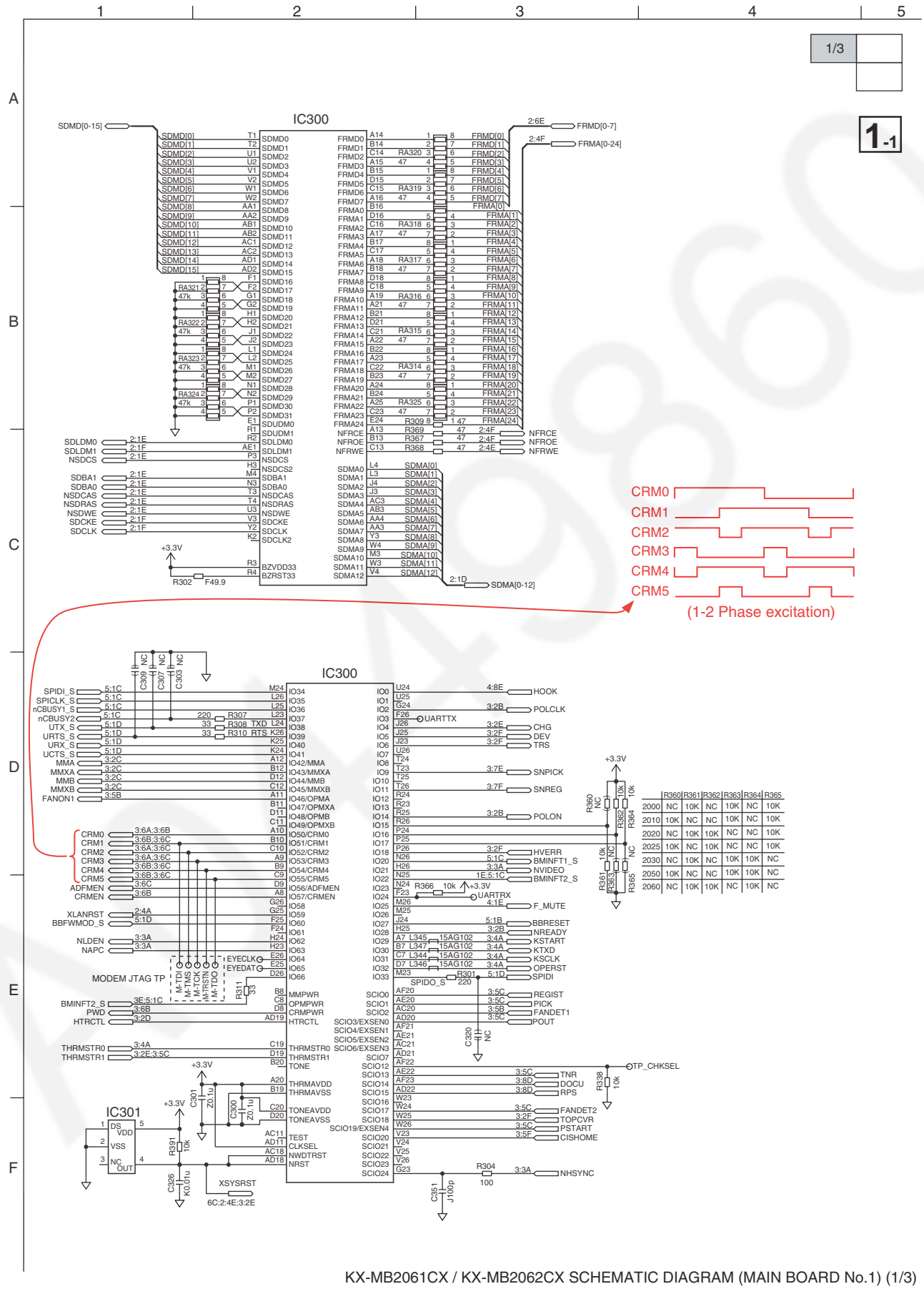
1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

3. 

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.

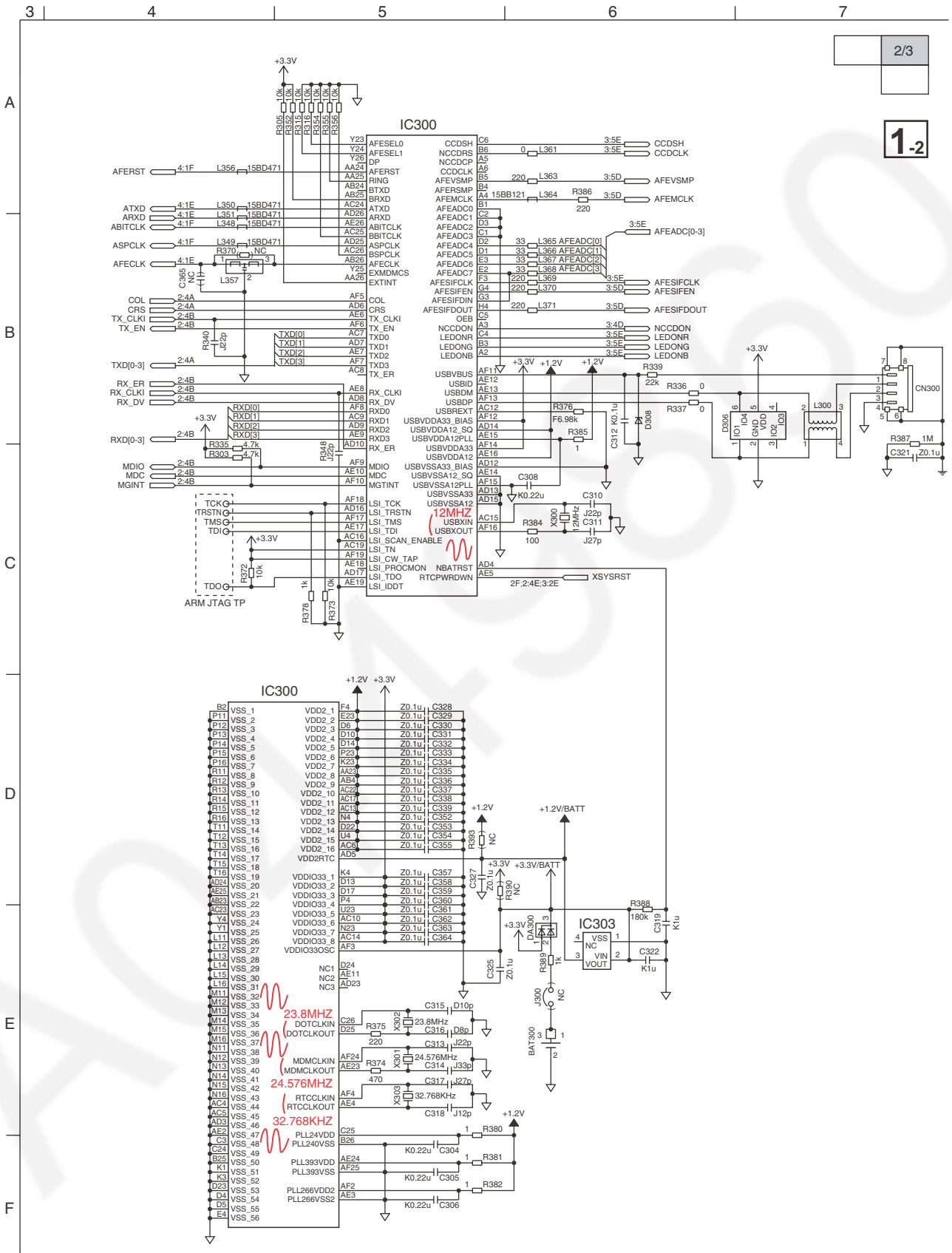
17.2. Main Board

17.2.1. Main Board (1)

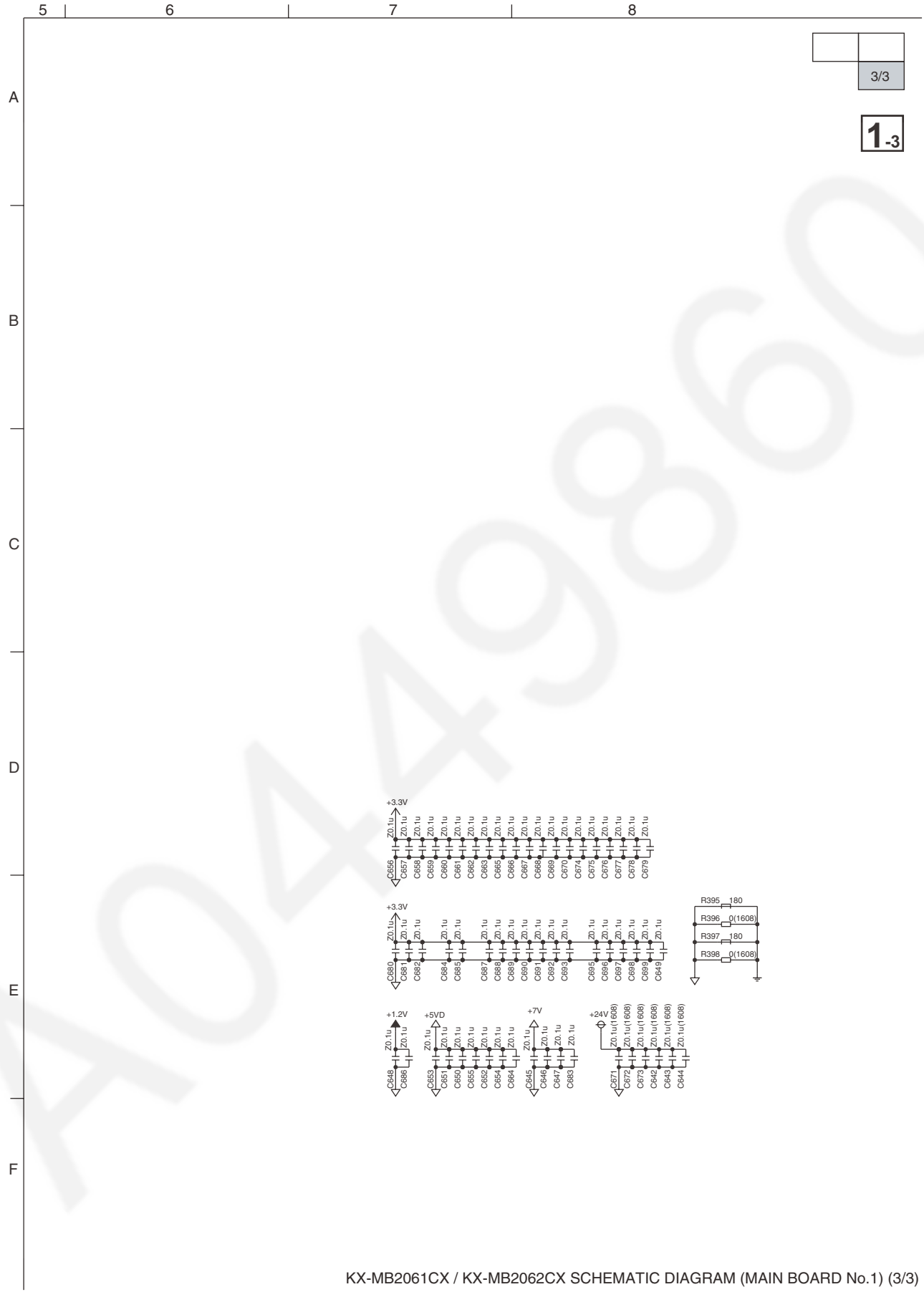


	R360	R361	R362	R363	R364	R365
2000	NC	10K	NC	10K	NC	10K
2010	10K	NC	NC	10K	NC	10K
2020	NC	10K	10K	NC	NC	10K
2025	10K	NC	10K	NC	NC	10K
2030	10K	NC	NC	10K	10K	NC
2050	10K	NC	NC	10K	10K	NC
2060	NC	10K	10K	NC	10K	NC

KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.1) (1/3)



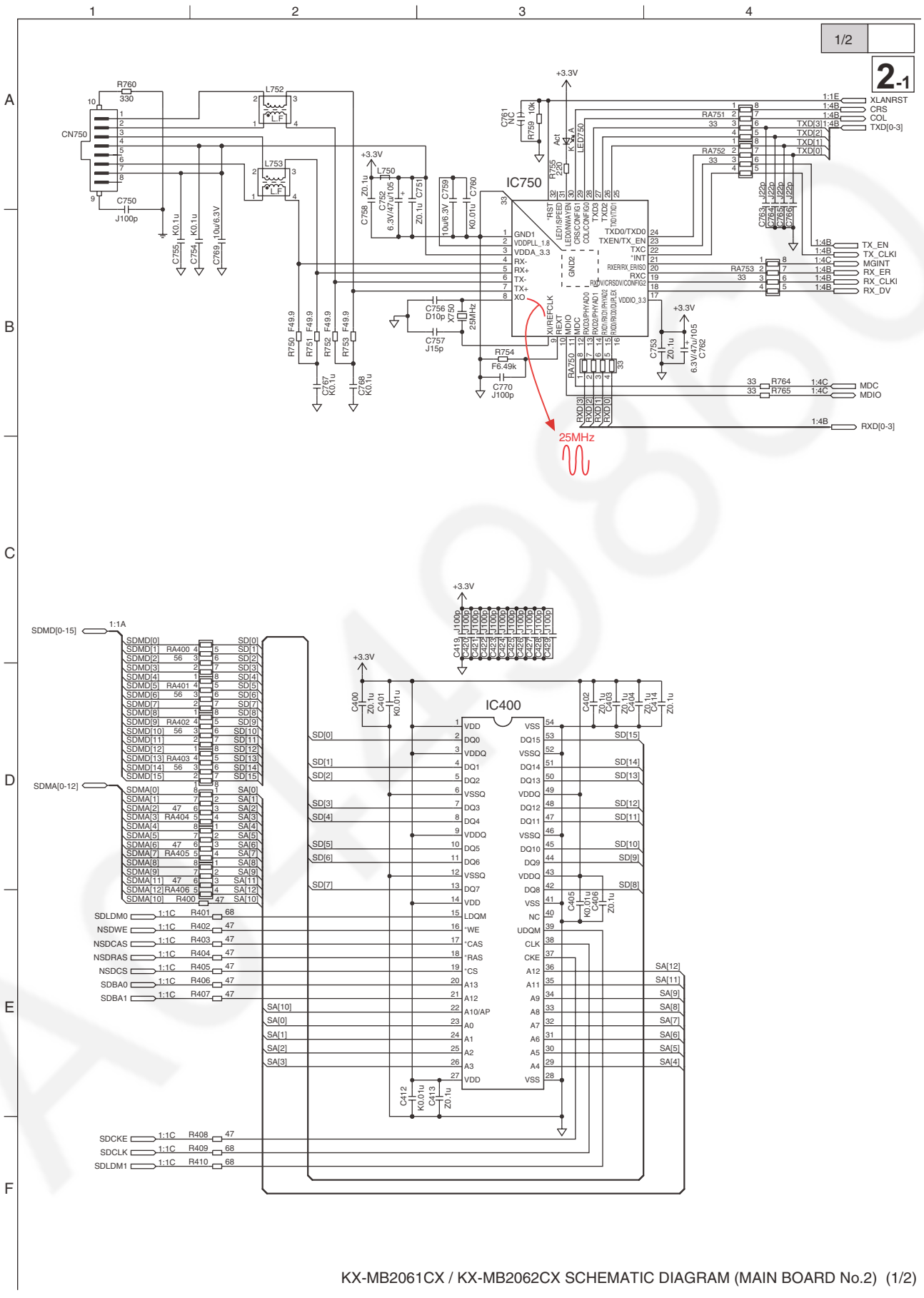
KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.1) (2/3)



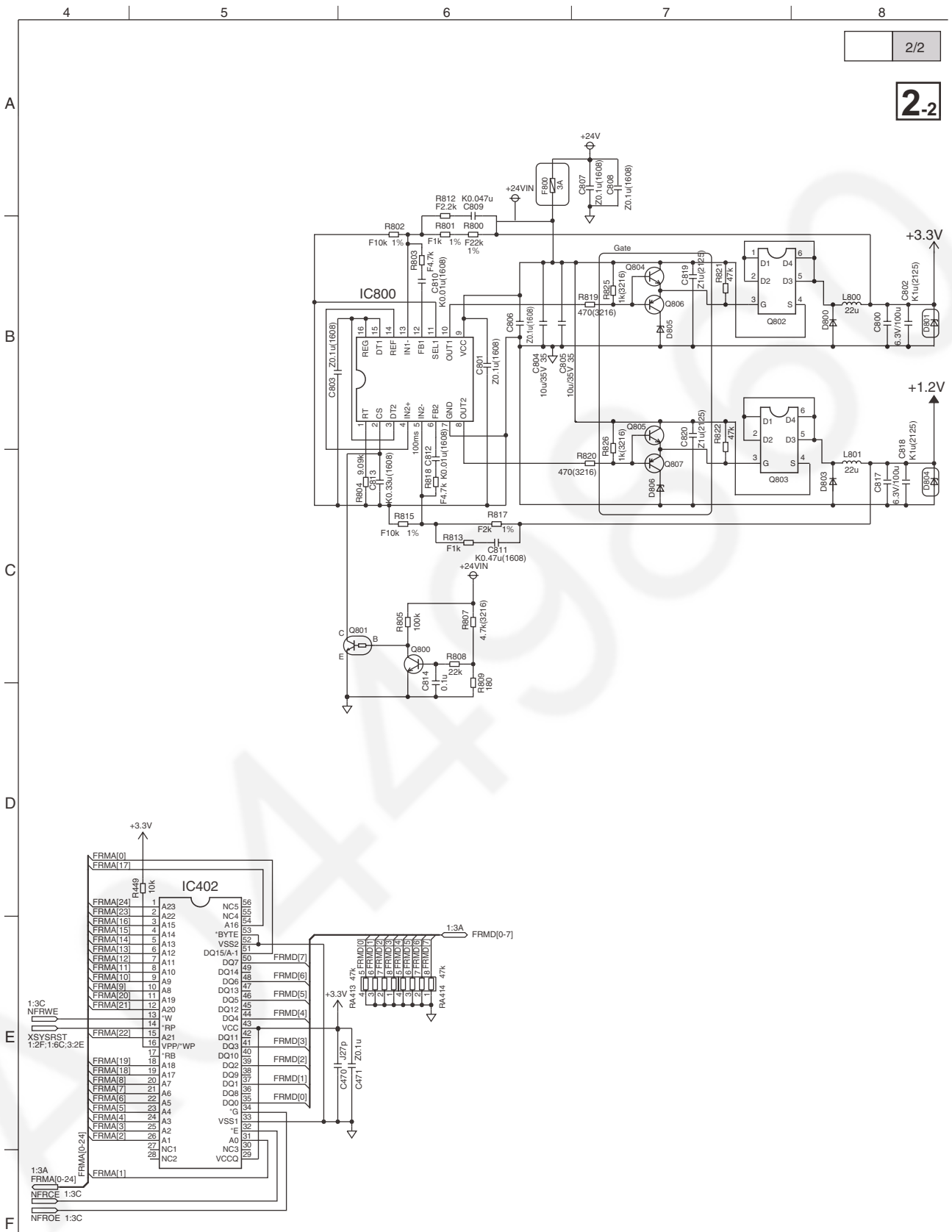
KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.1) (3/3)

Memo

17.2.2. Main Board (2)

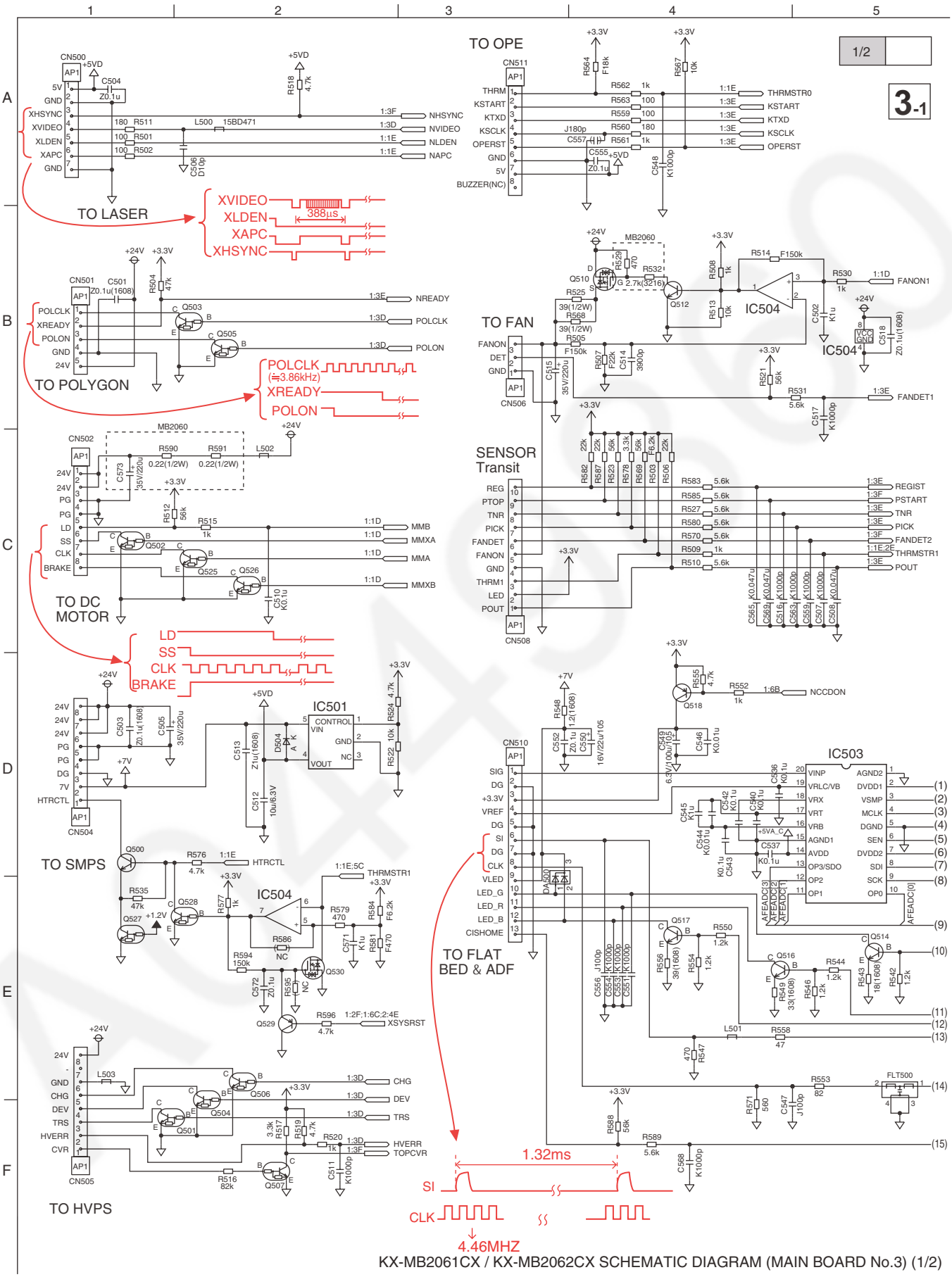


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.2) (1/2)

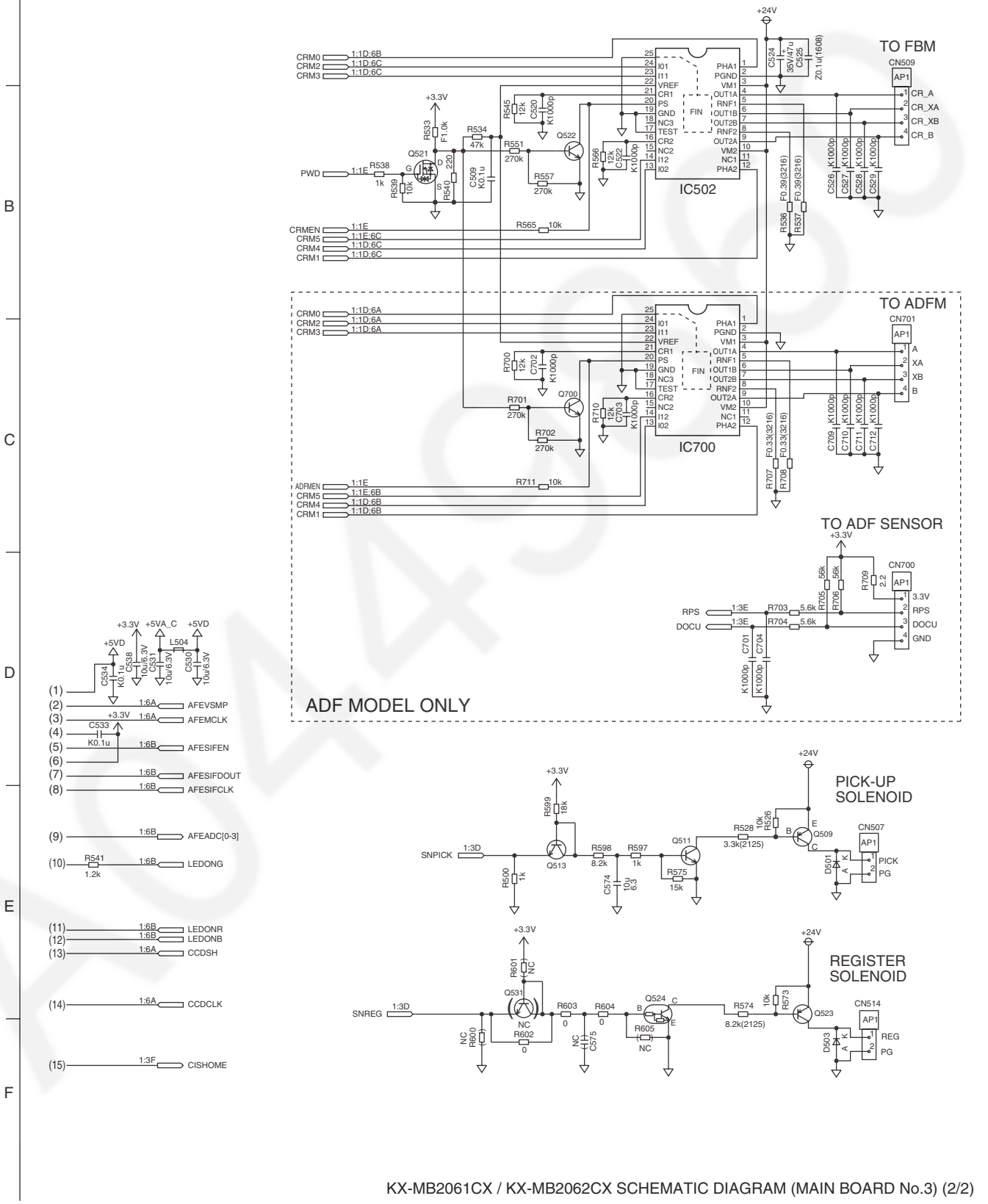


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.2) (2/2)

17.2.3. Main Board (3)

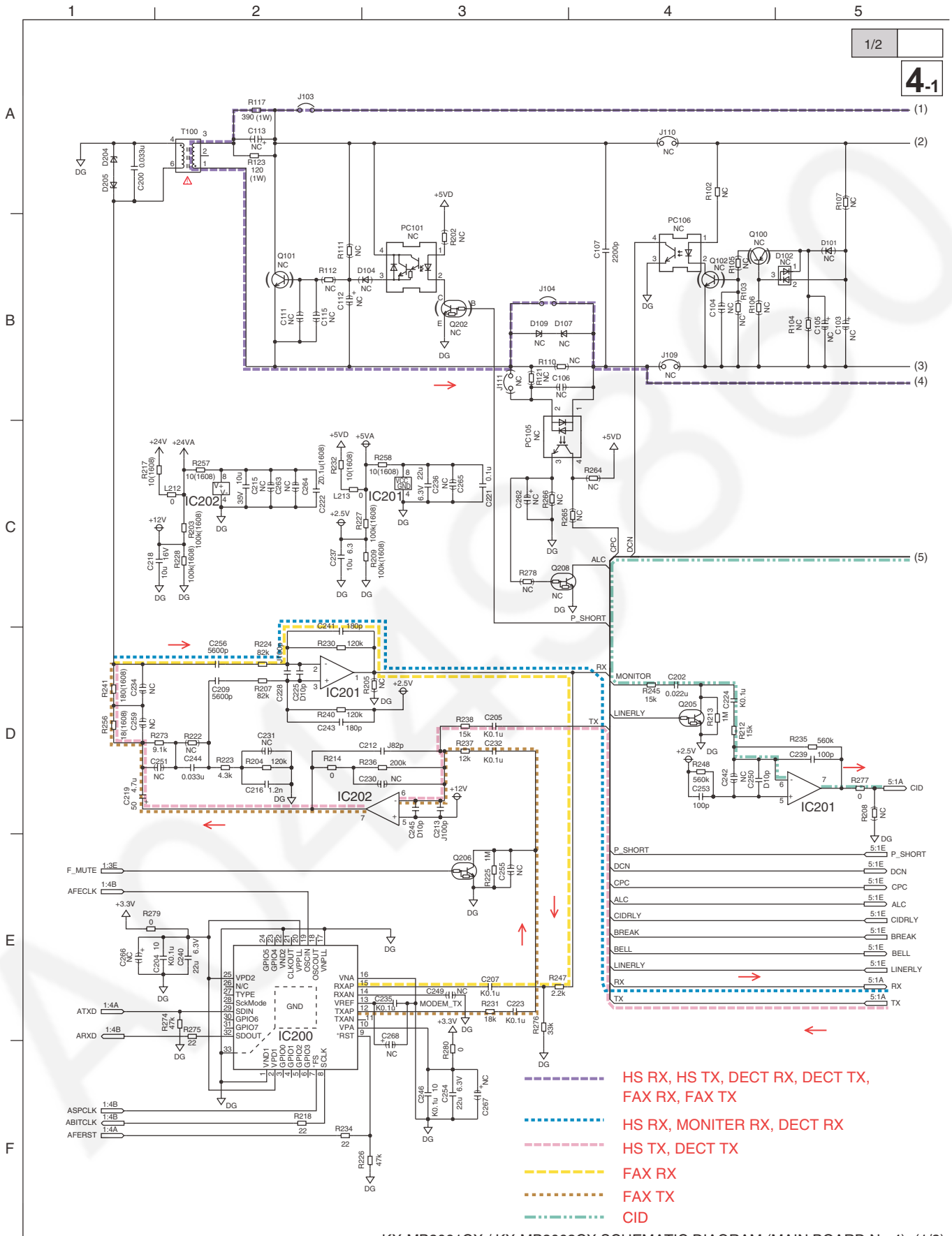


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.3) (1/2)

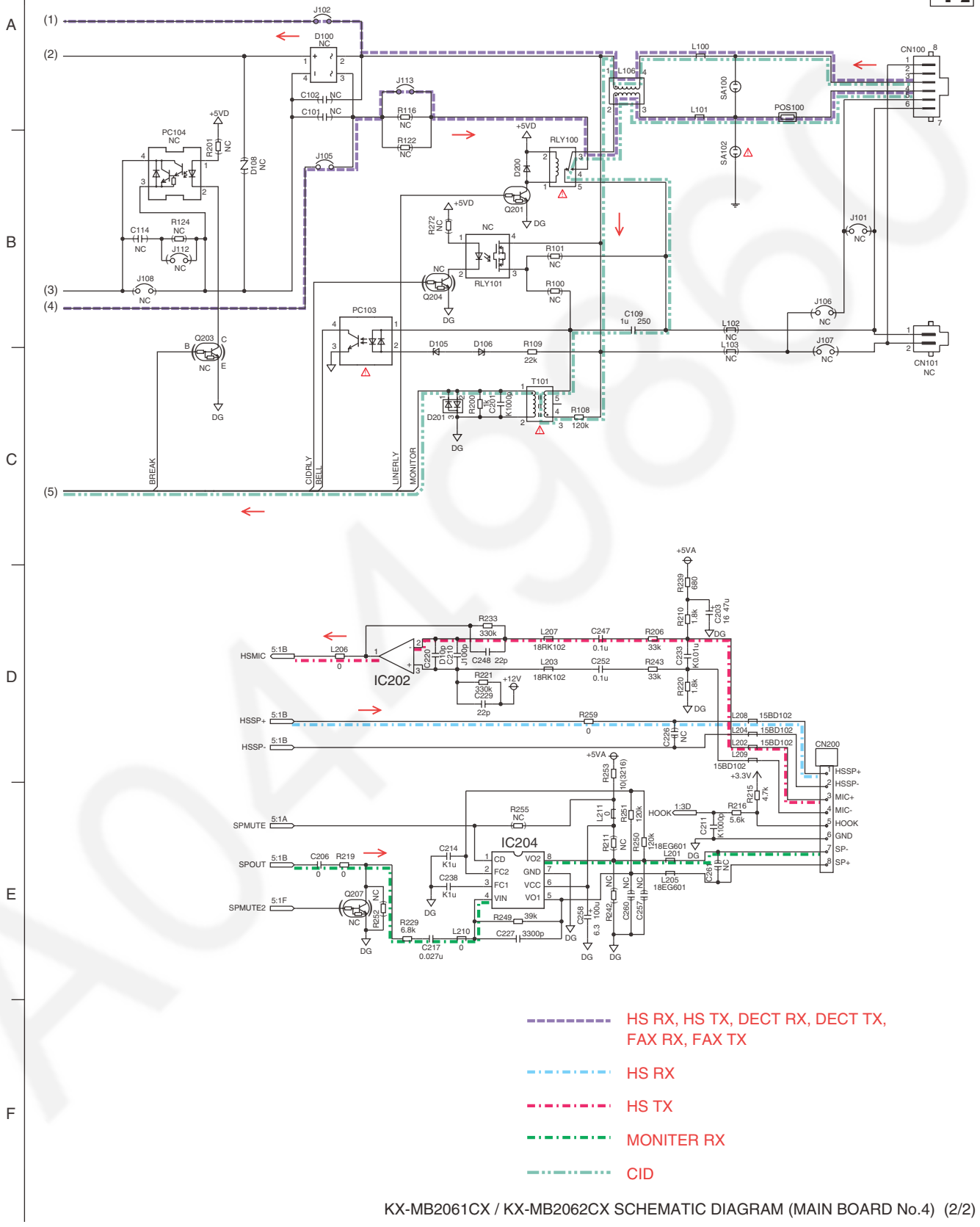


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.3) (2/2)

17.2.4. Main Board (4)



KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.4) (1/2)



HS RX, HS TX, DECT RX, DECT TX, FAX RX, FAX TX

HS RX

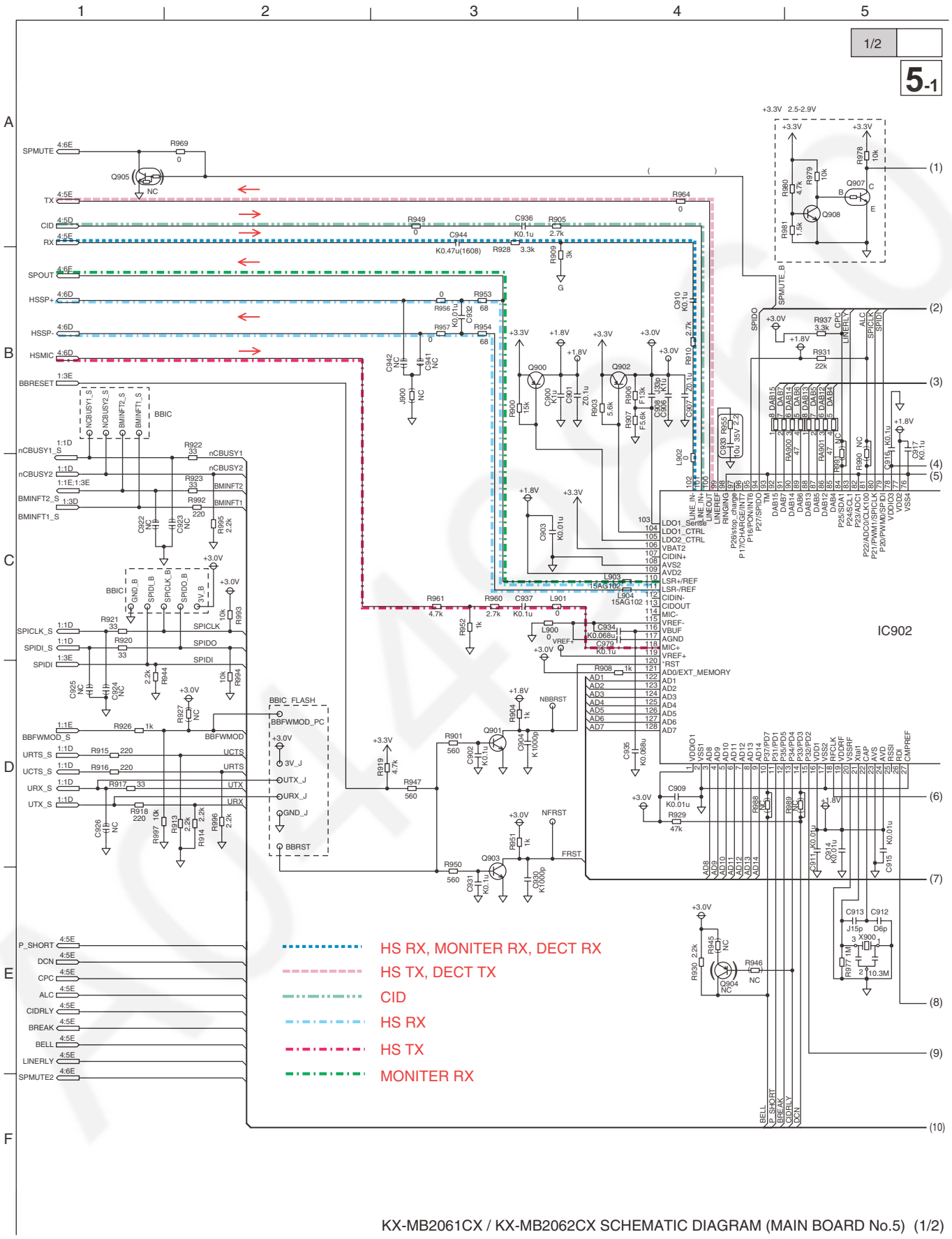
HS TX

MONITER RX

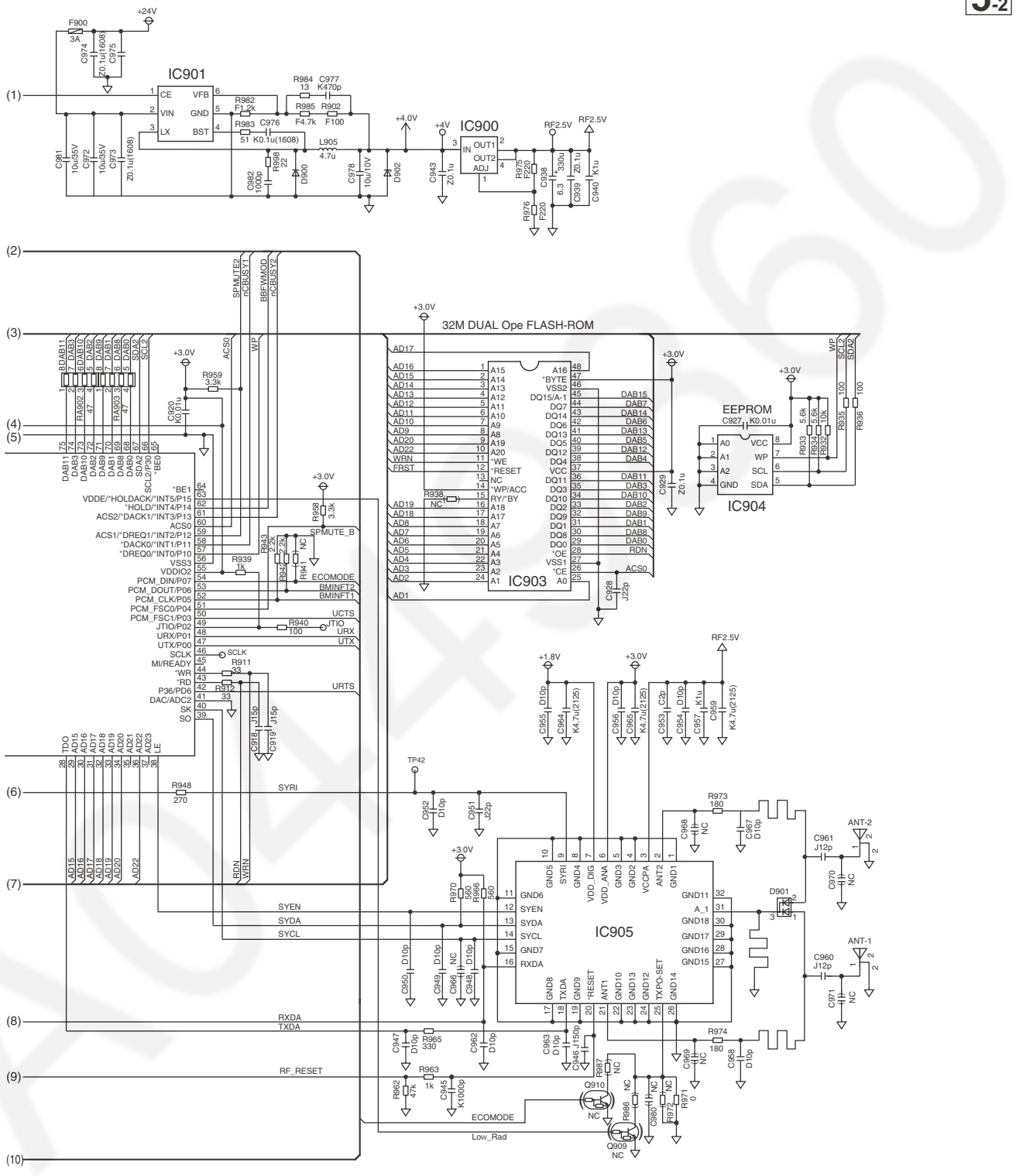
CID

KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.4) (2/2)

17.2.5. Main Board (5)

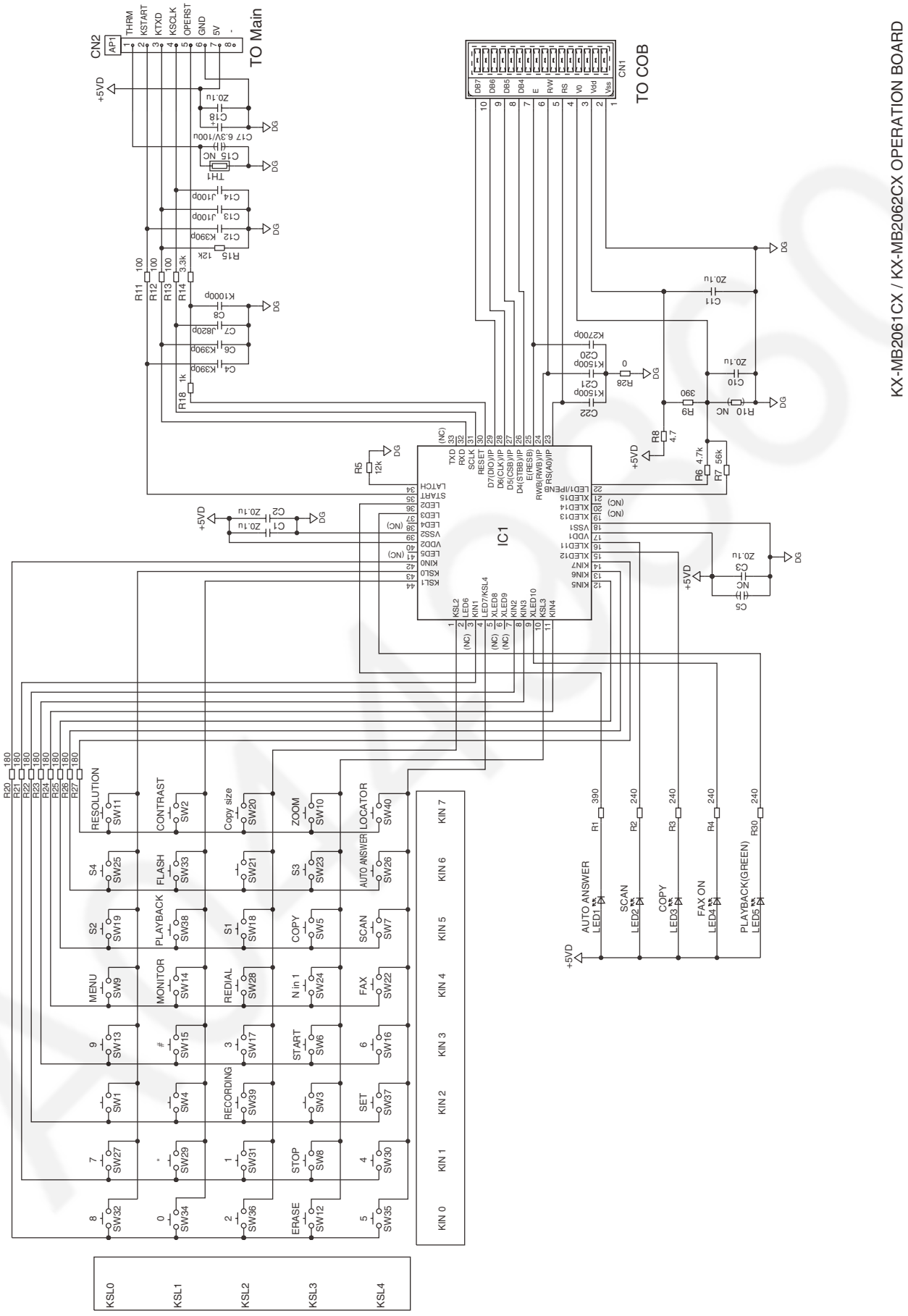


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.5) (1/2)

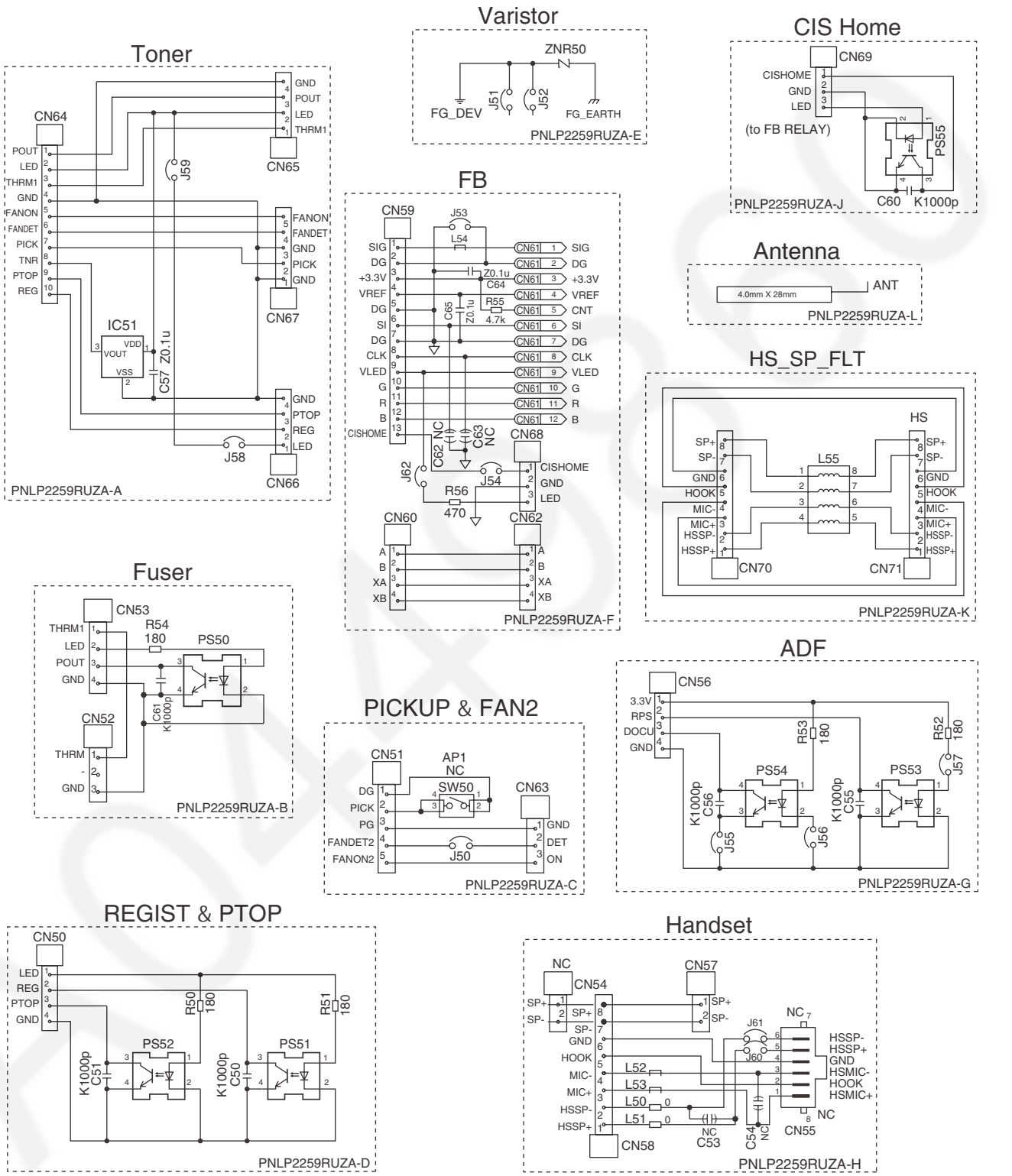


KX-MB2061CX / KX-MB2062CX SCHEMATIC DIAGRAM (MAIN BOARD No.5) (2/2)

17.3. Operation Board

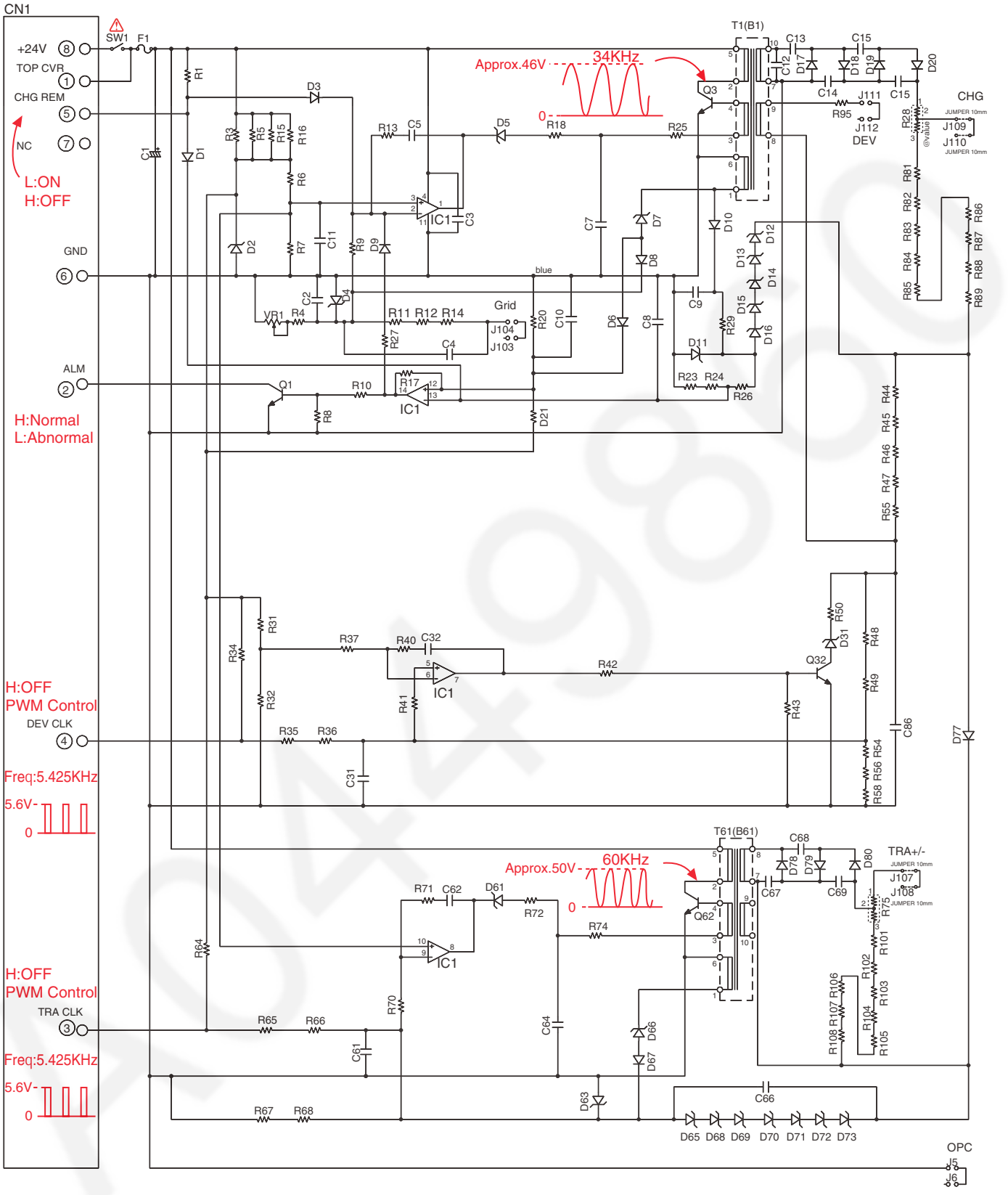


17.4. Sensor Board



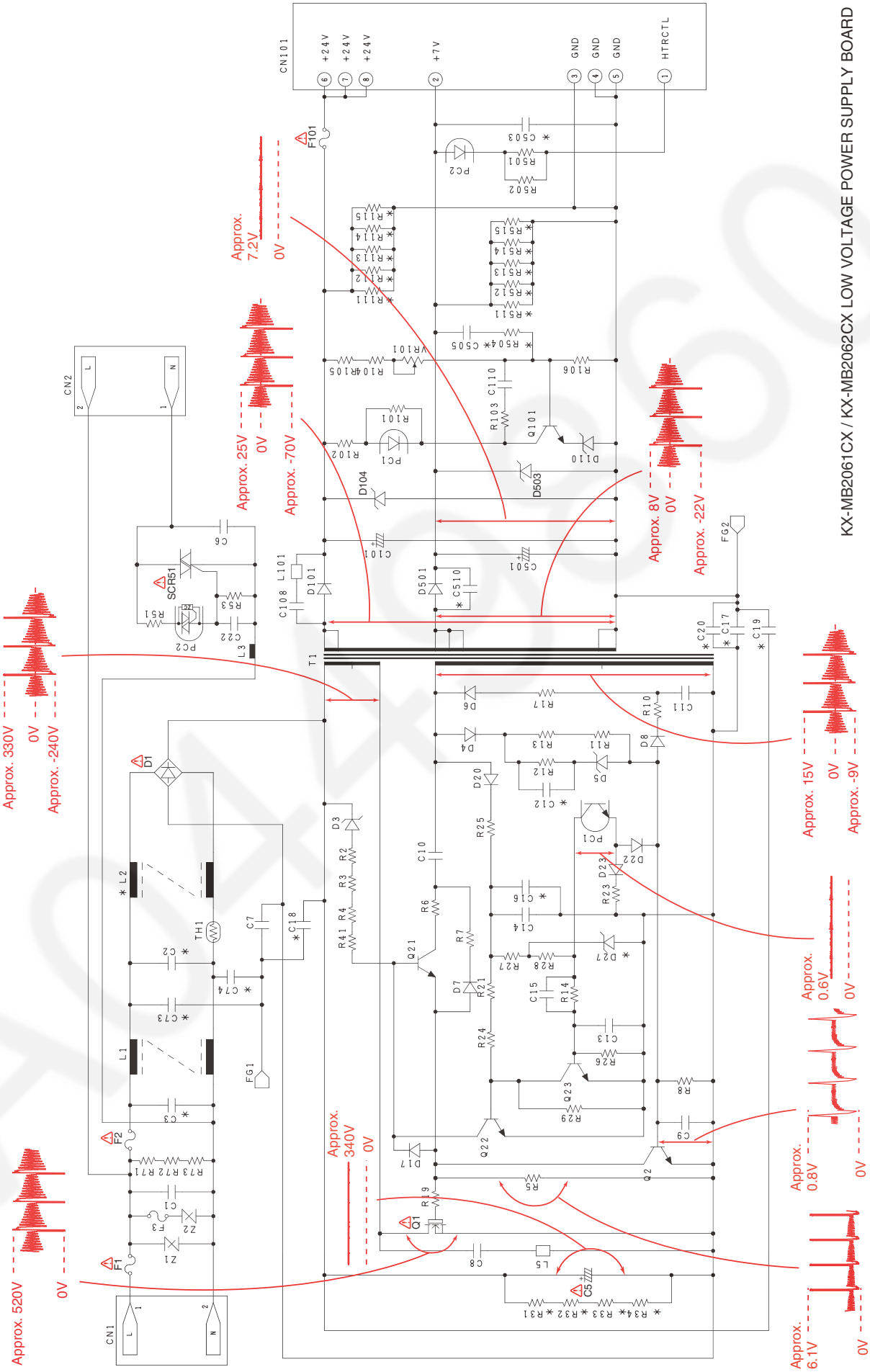
KX-MB2061CX / KX-MB2062CX SENSOR BOARD

17.5. High Voltage Power Supply Board

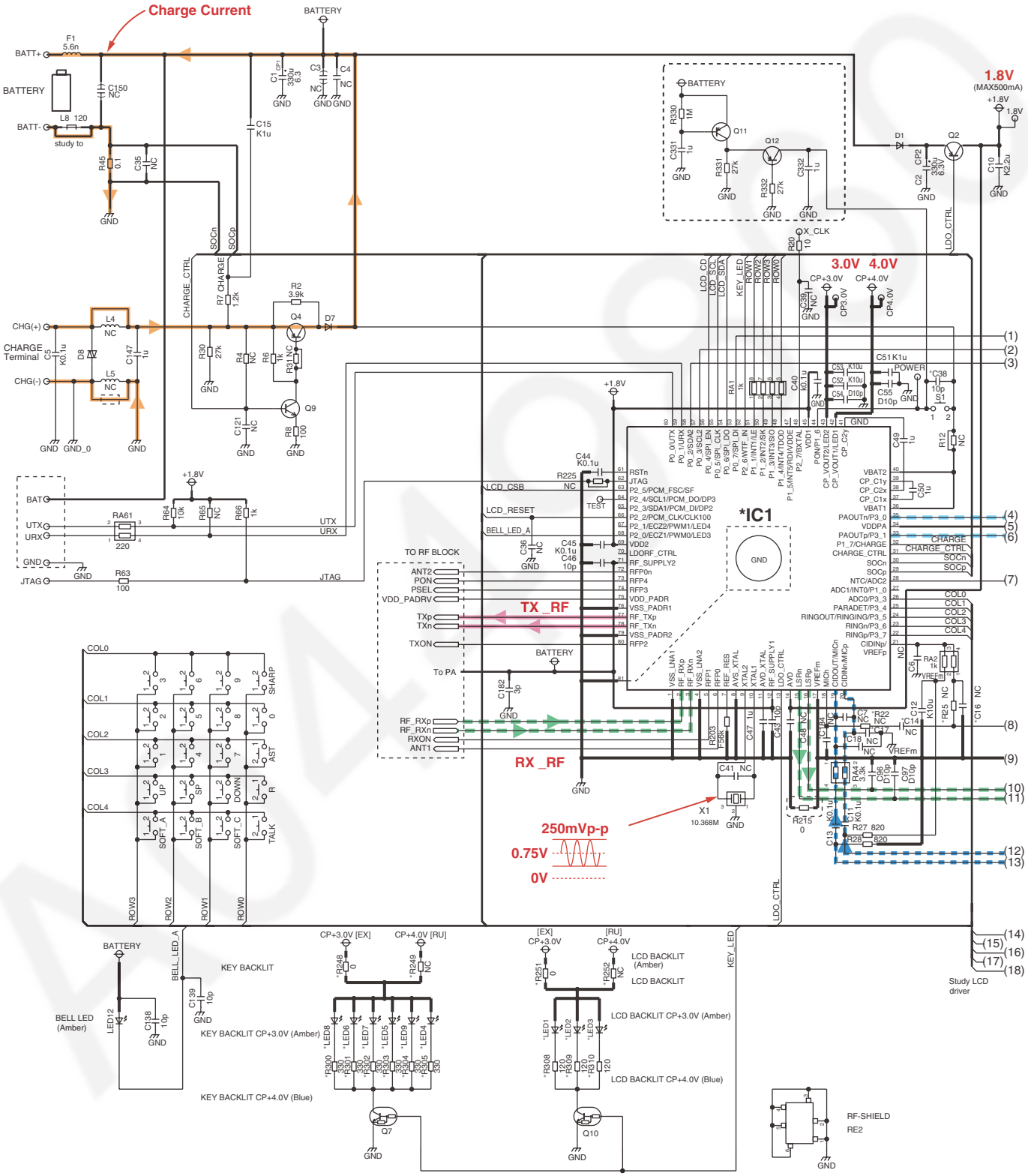


KX-MB2061CX / KX-MB2062CX HIGH VOLTAGE POWER SUPPLY BOARD

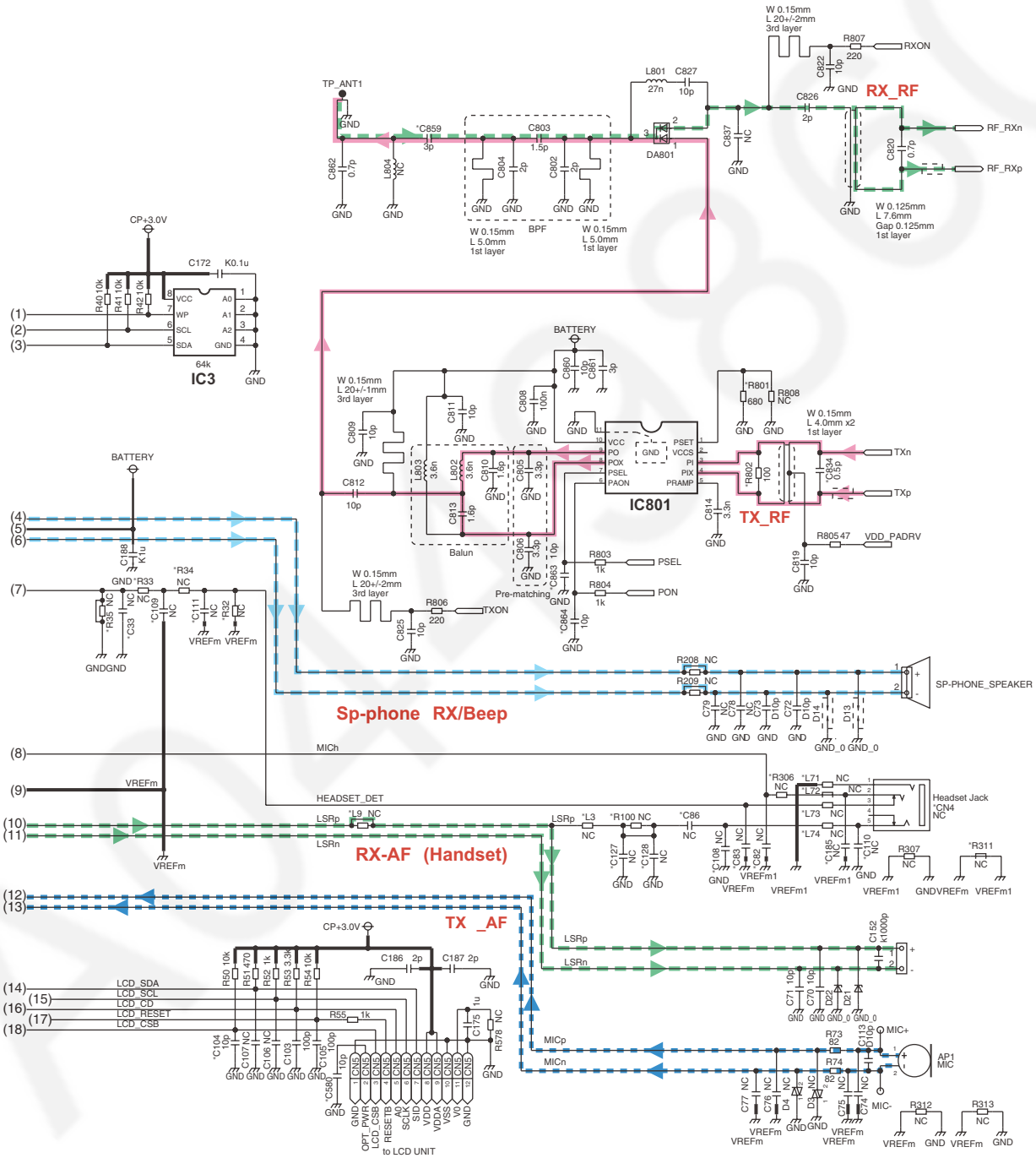
17.6. Low Voltage Power Supply Board



17.7. Cordless Handset Board (PCB100)



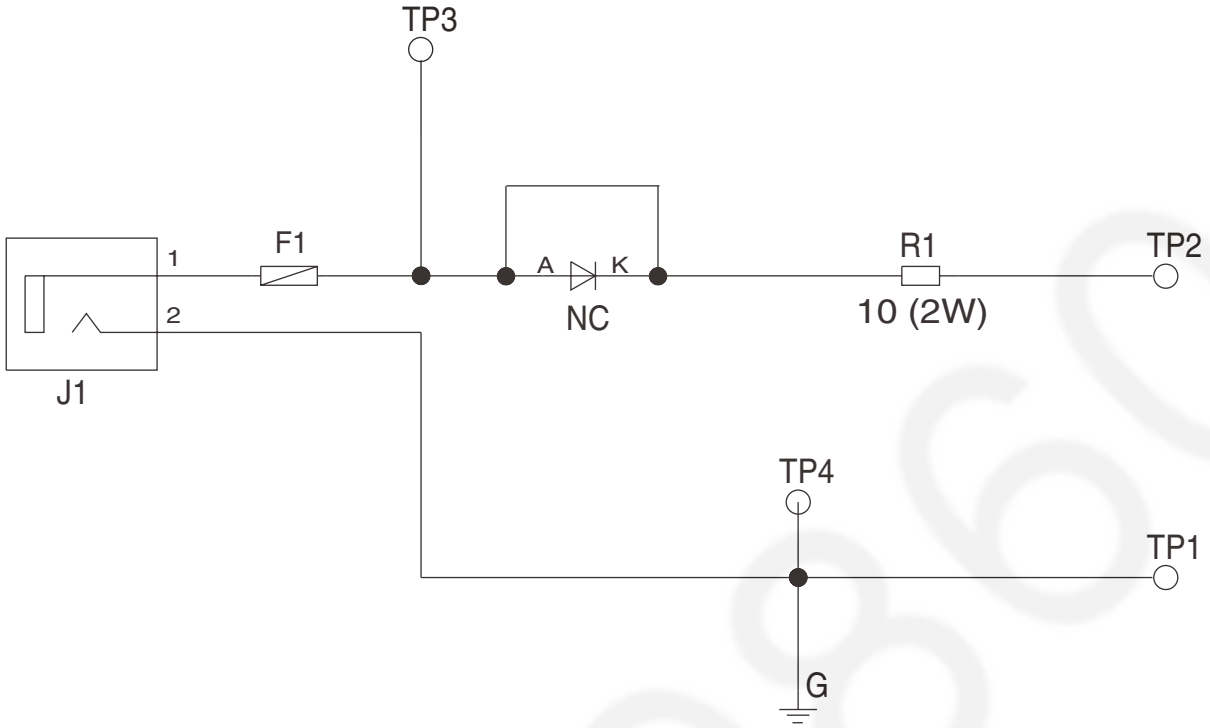
NC: No Components



NC: No Components

KX-MB2061CX / KX-MB2062CX : CORDLESS HANDSET BOARD SCHEMATIC DIAGRAM

17.8. Charger Board (PCB200)

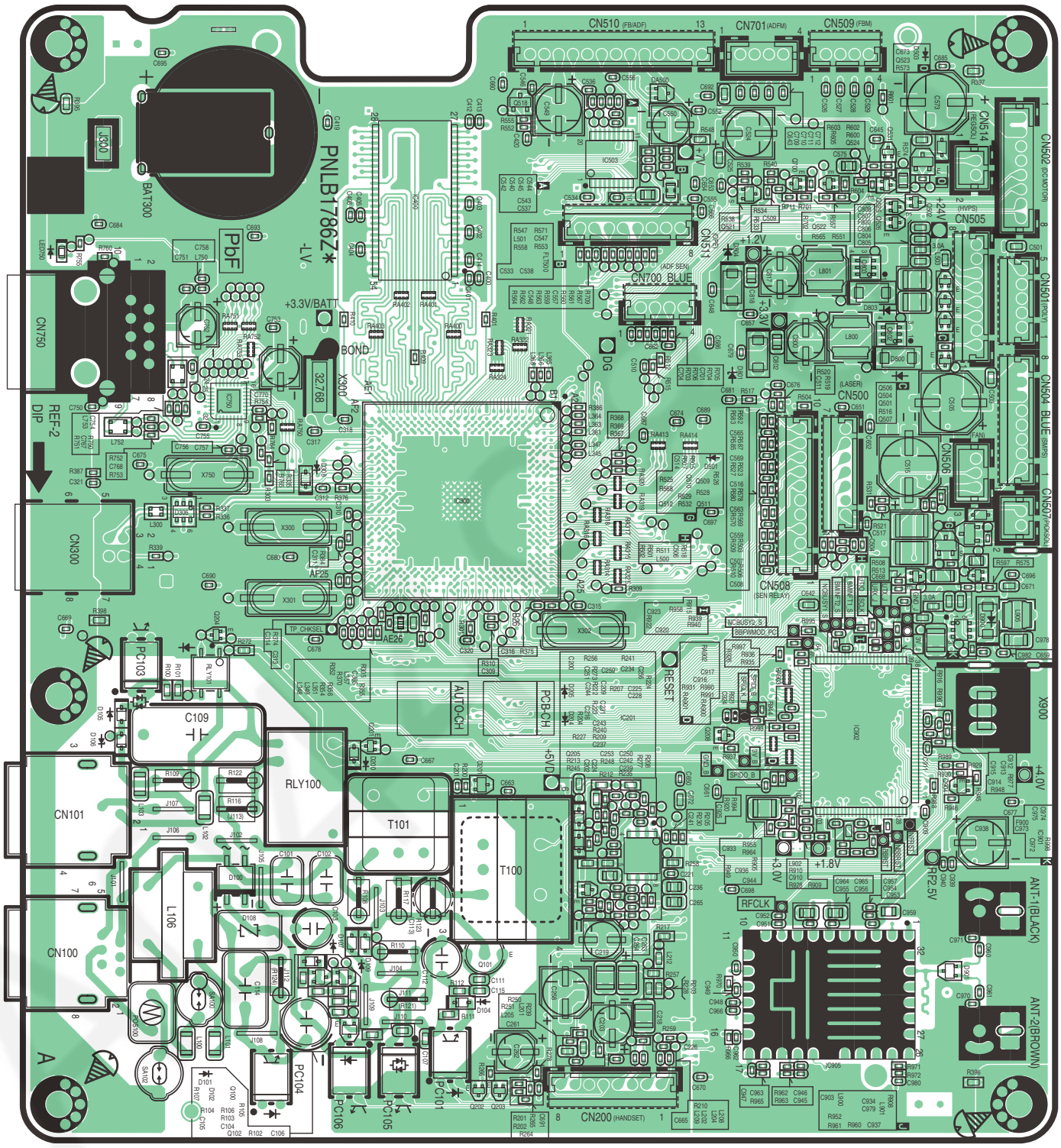


KX-MB2061CX / KX-MB2062CX : CHARGER BOARD SCHEMATIC DIAGRAM

18 Printed Circuit Board

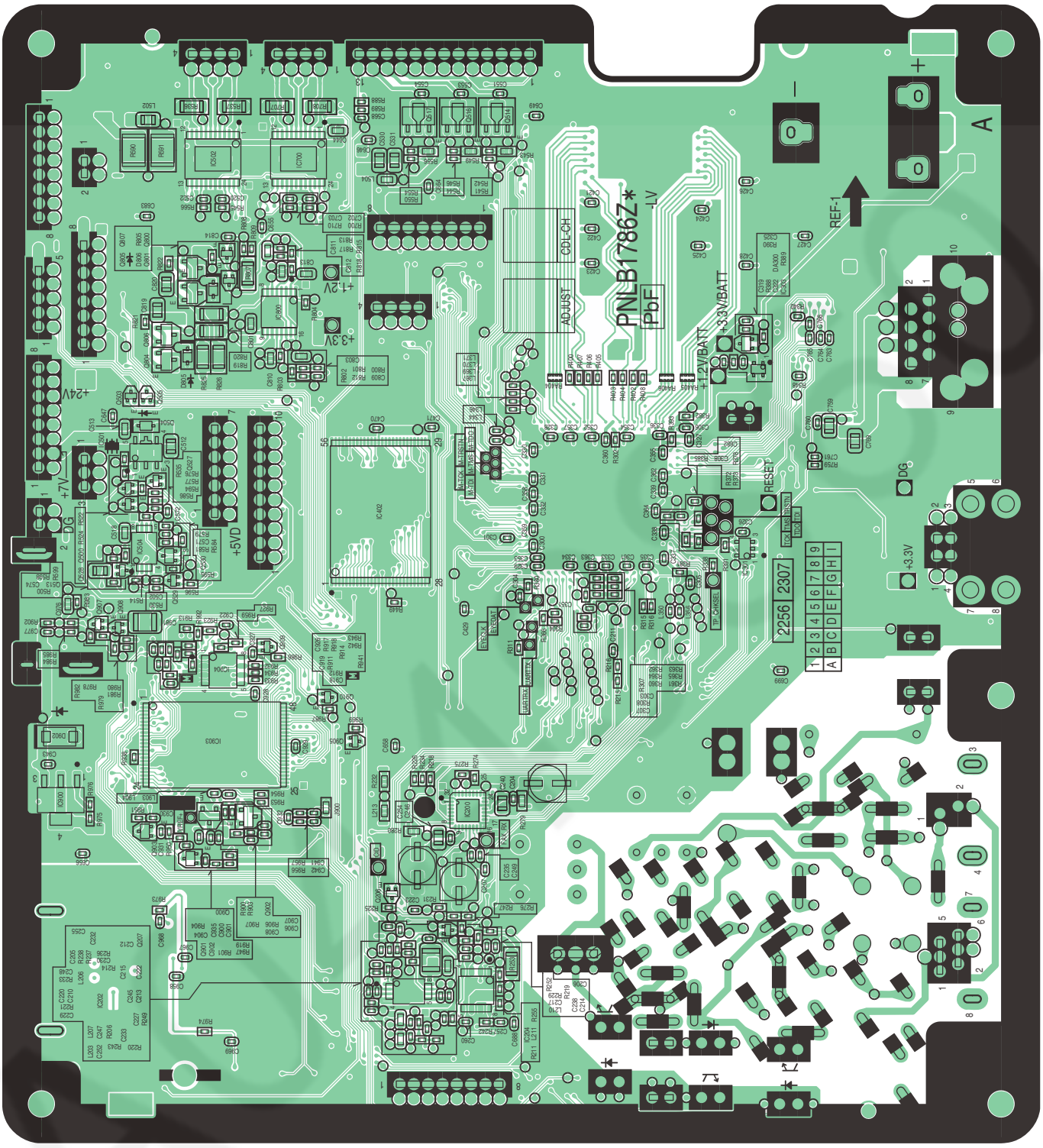
18.1. Main Board

18.1.1. Main Board: Component View



KX-MB2061CX / KX-MB2062CX MAIN BOARD COMPONENT VIEW

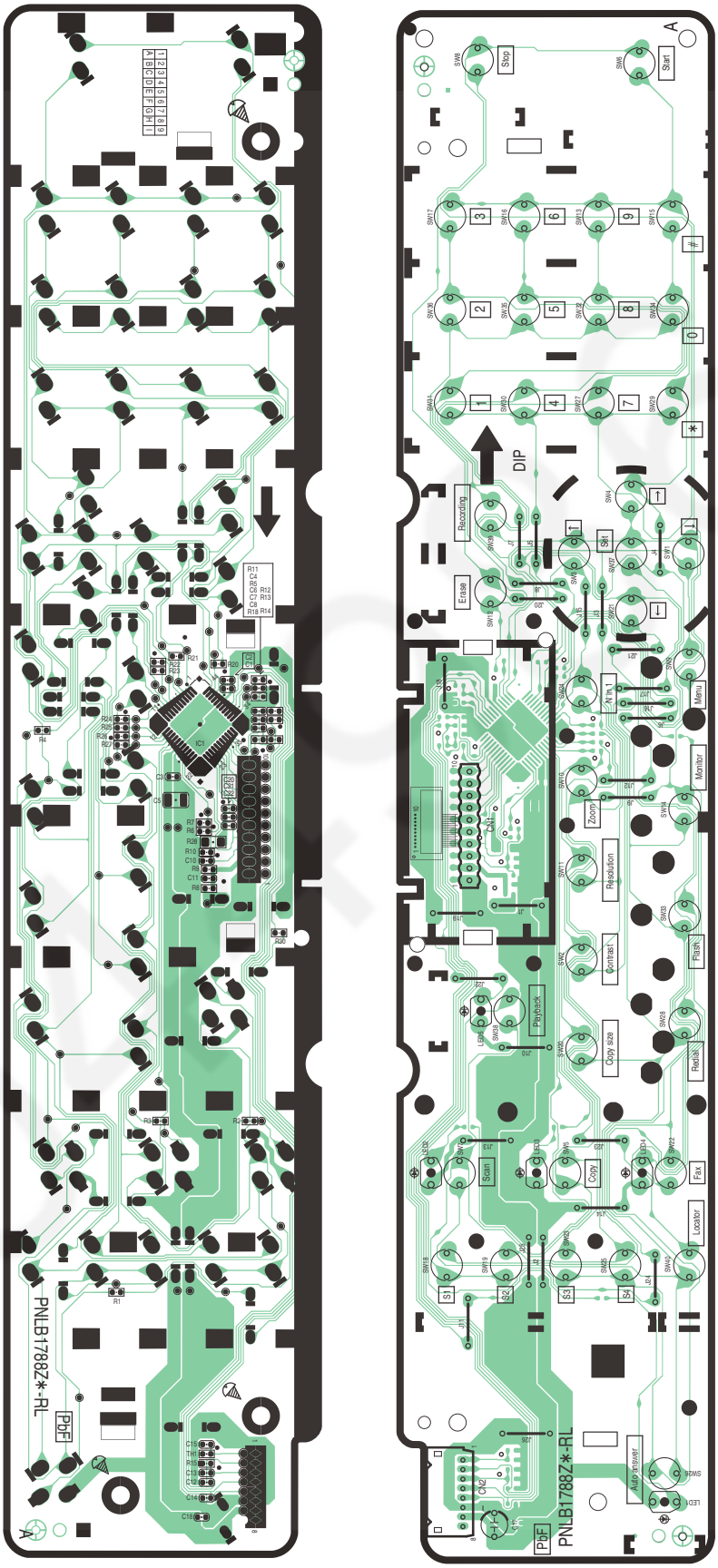
18.1.2. Main Board: Bottom View



KX-MB2061CX / KX-MB2062CX MAIN BOARD BOTTOM VIEW

18.2. Operation Board

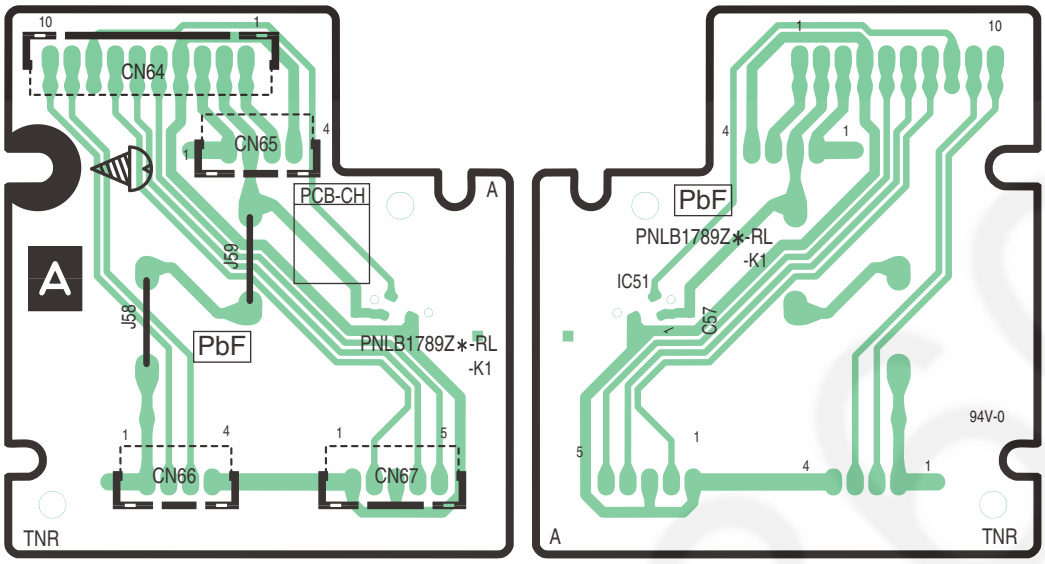
18.2.1. Operation Board



KX-MB2061CX / KX-MB2062CX OPERATION BOARD

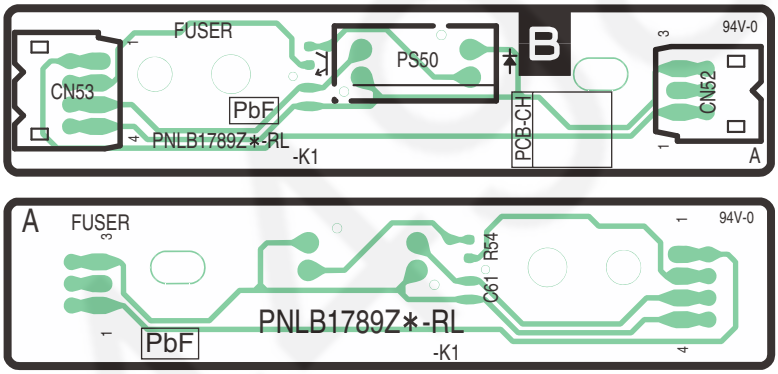
18.3. Sensor Board

18.3.1. Toner Sensor Board



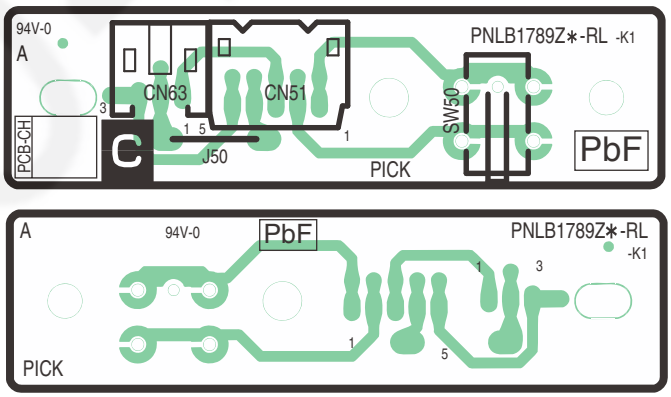
KX-MB2061CX / KX-MB2062CX TONER SENSOR BOARD

18.3.2. Fuser Board



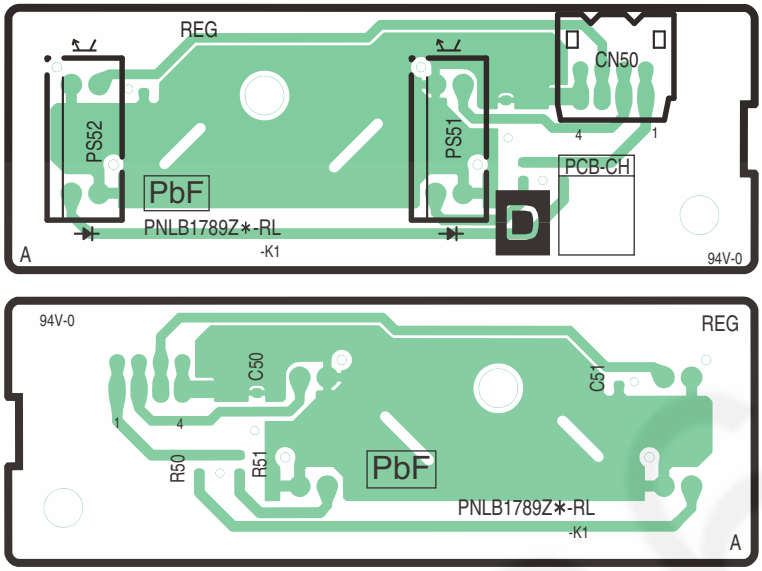
KX-MB2061CX / KX-MB2062CX FUSER SENSOR BOARD

18.3.3. Pickup Sensor Board



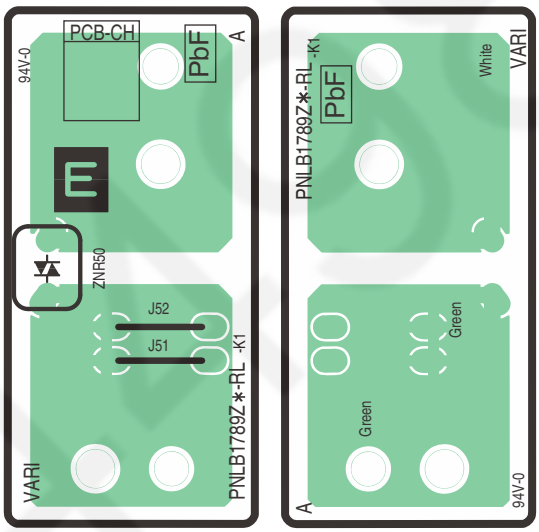
KX-MB2061CX / KX-MB2062CX PICKUP SENSOR BOARD

18.3.4. Registration Sensor Board



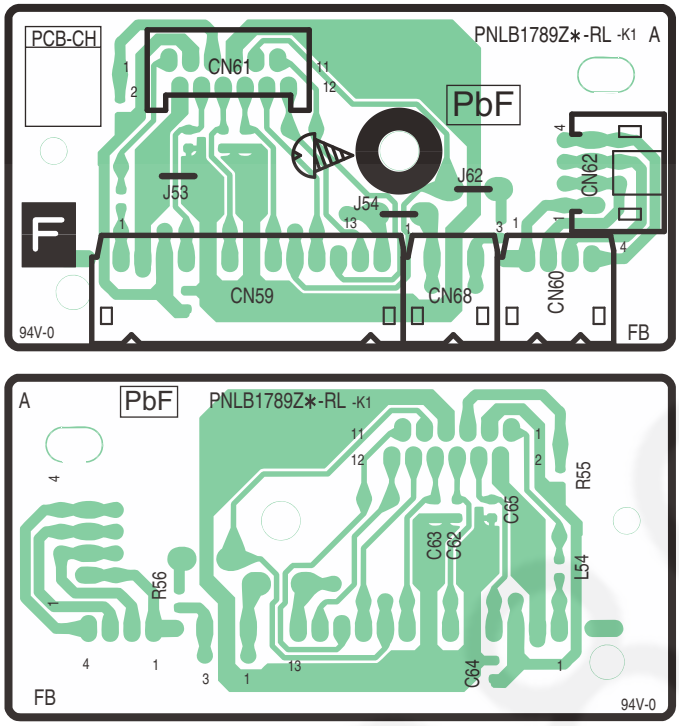
KX-MB2061CX / KX-MB2062CX REGISTRATION SENSOR BOARD

18.3.5. Varistor Sensor Board



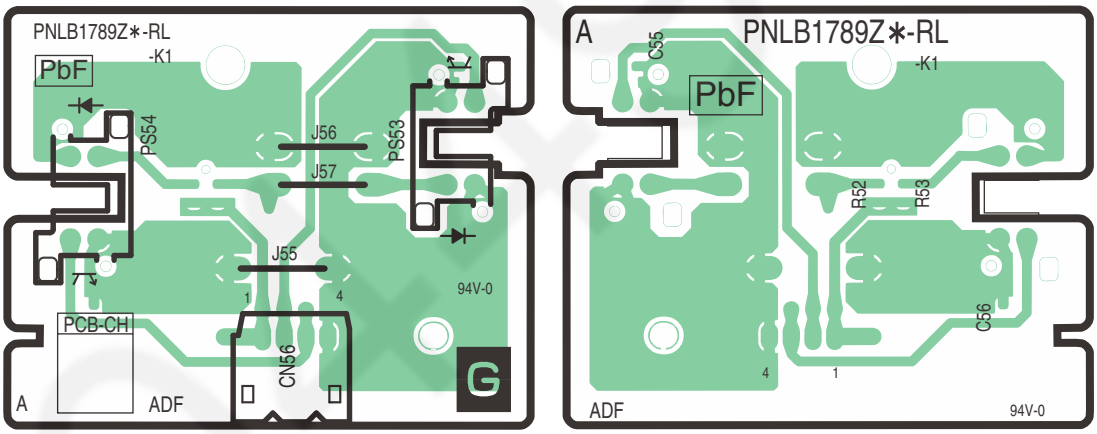
KX-MB2061CX / KX-MB2062CX VARISTOR SENSOR BOARD

18.3.6. Flatbed Relay Board



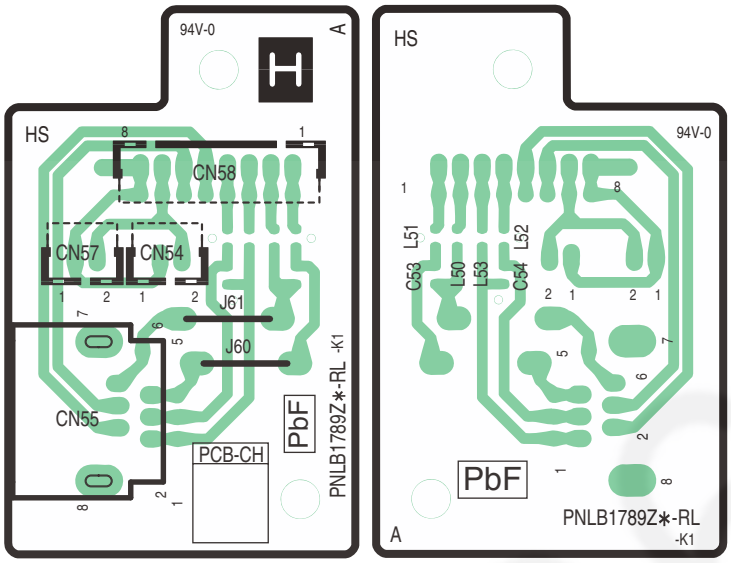
KX-MB2061CX / KX-MB2062CX FLATBED SENSOR BOARD

18.3.7. ADF Sensor Board



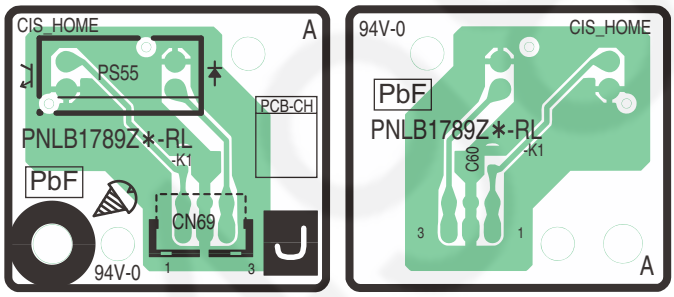
KX-MB2061CX / KX-MB2062CX ADF SENSOR BOARD

18.3.8. Handset Relay Board



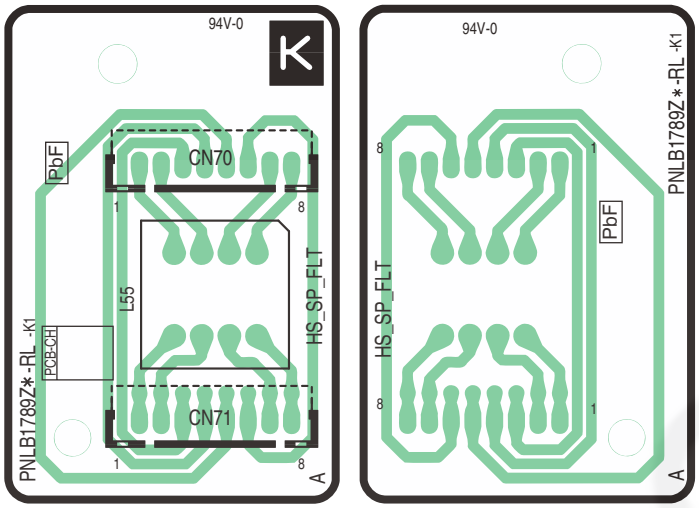
KX-MB2061CX / KX-MB2062CX HANDSET RELAY BOARD

18.3.9. CIS Home Sensor Board



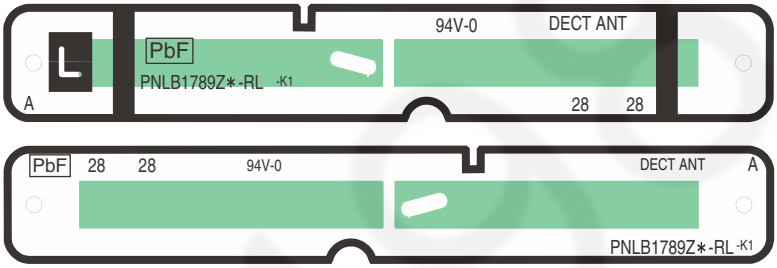
KX-MB2061CX / KX-MB2062CX CIS HOME SENSOR BOARD

18.3.10. Handset/Speaker Filter Board



KX-MB2061CX / KX-MB2062CX HANDSET/SPEAKER FILTER BOARD

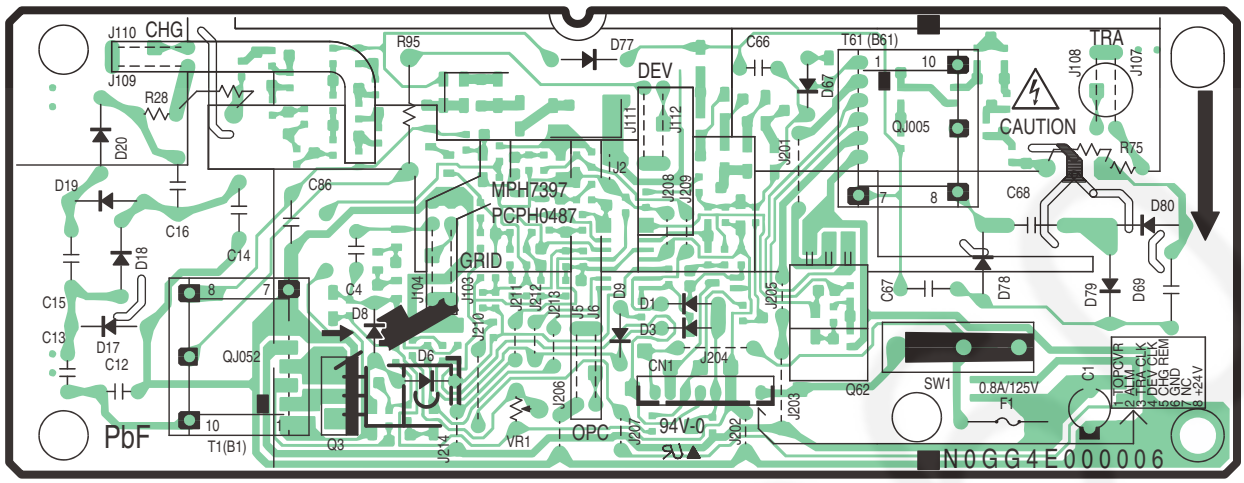
18.3.11. Antenna Board



KX-MB2061CX / KX-MB2062CX ANTENNA BOARD

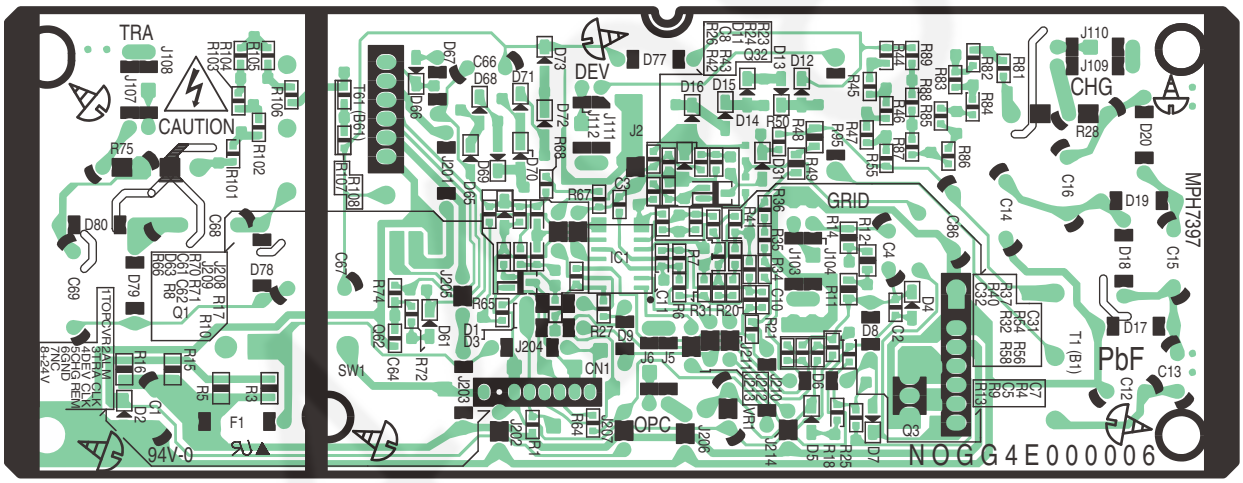
18.4. High Voltage Power Supply Board

18.4.1. HIGH VOLTAGE POWER SUPPLY BOARD: COMPONENT VIEW



KX-MB2061CX / KX-MB2062CX HIGH VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

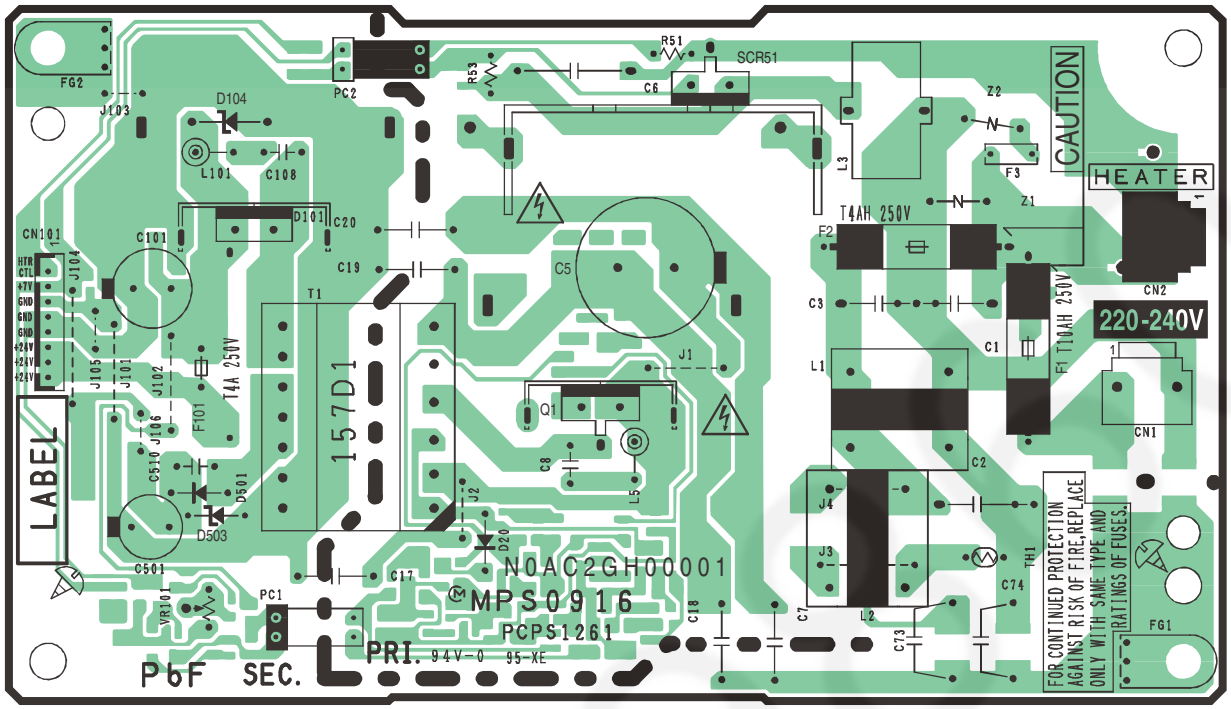
18.4.2. HIGH VOLTAGE POWER SUPPLY BOARD: BOTTOM VIEW



KX-MB2061CX / KX-MB2062CX HIGH VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

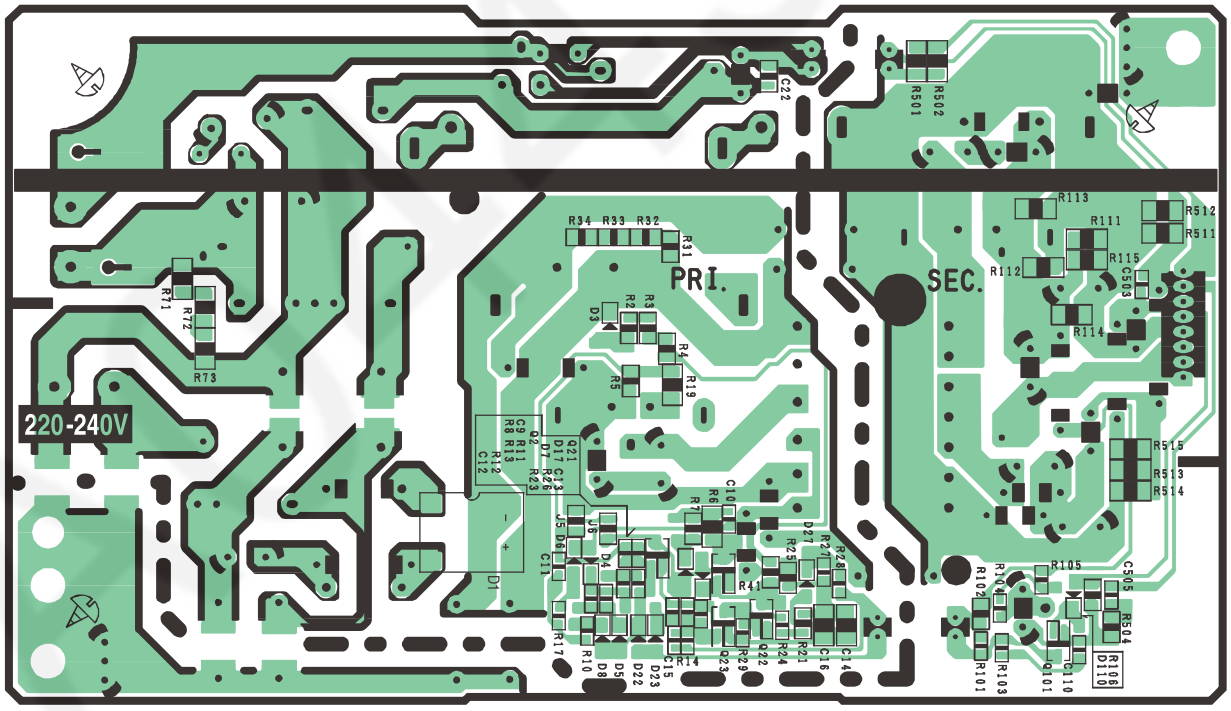
18.5. Low Voltage Power Supply Board

18.5.1. LOW VOLTAGE POWER SUPPLY BOARD: COMPONENT VIEW



KX-MB2061CX / KX-MB2062CX LOW VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

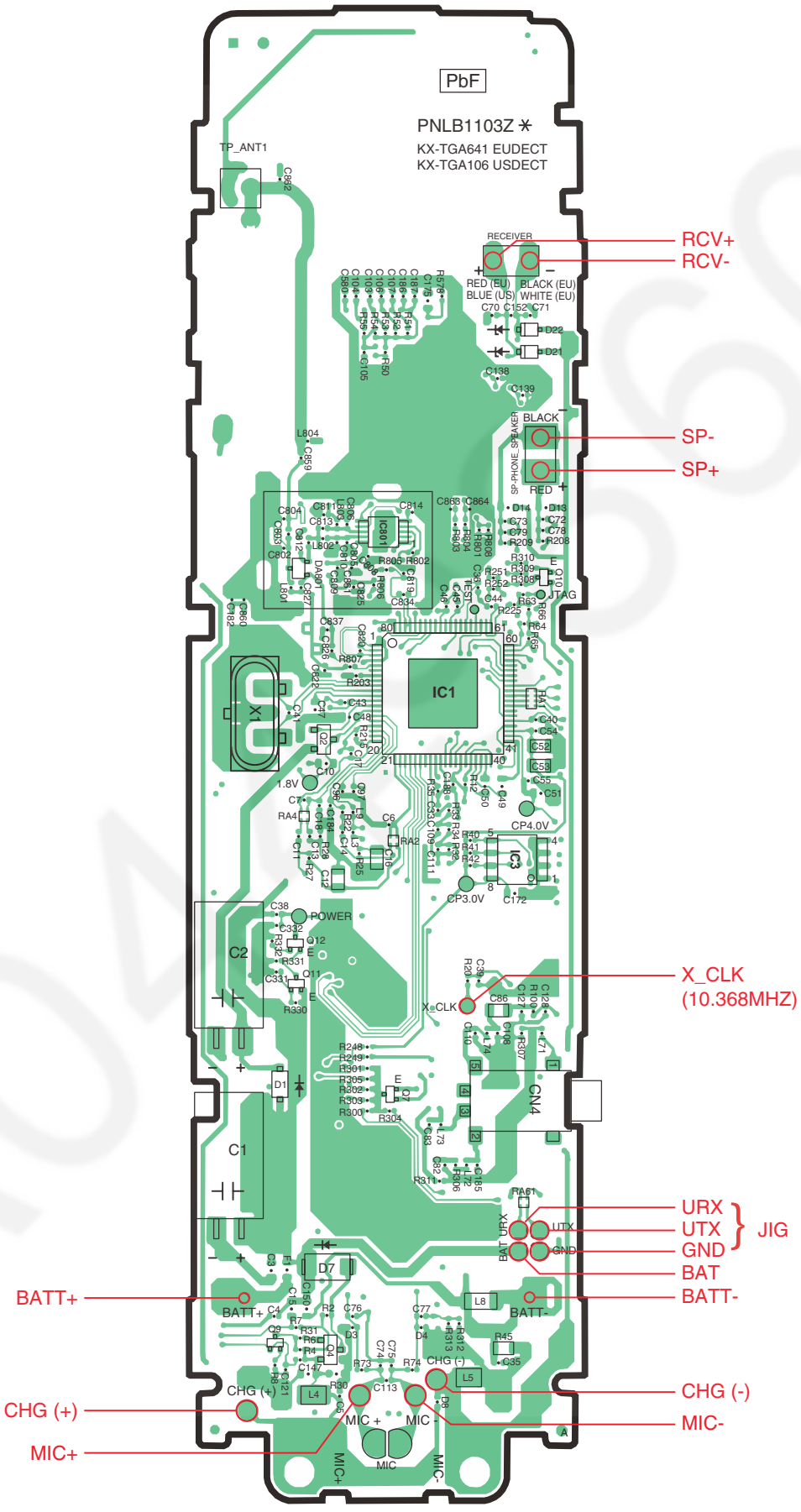
18.5.2. LOW VOLTAGE POWER SUPPLY BOARD: BOTTOM VIEW



KX-MB2061CX / KX-MB2062CX LOW VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

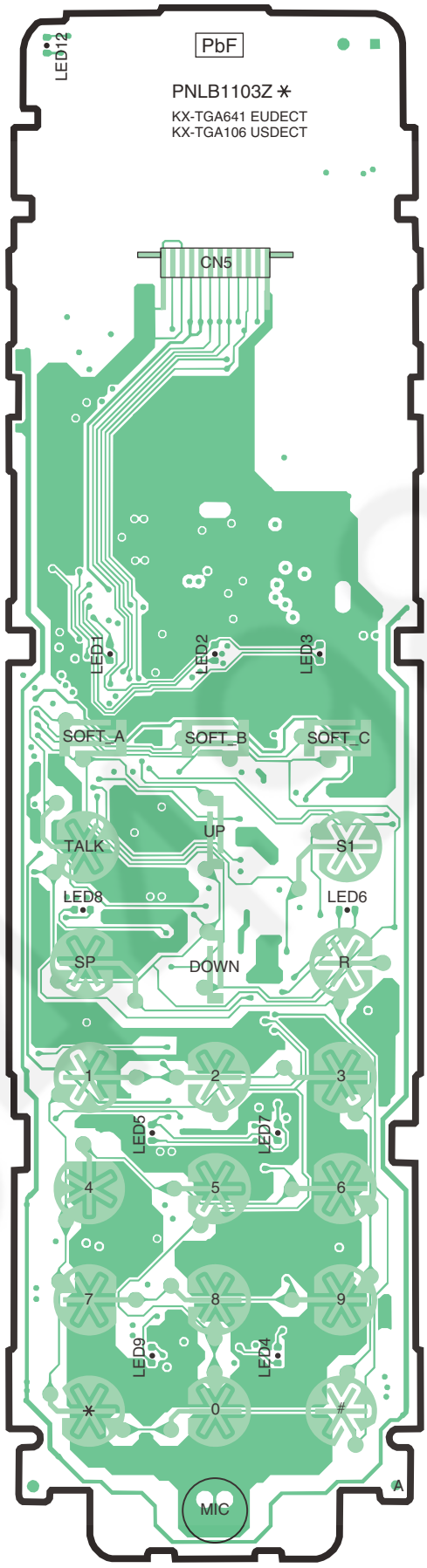
18.6. Cordless Handset Board (PCB100)

18.6.1. CORDLESS HANDSET BOARD: COMPONENT VIEW



KX-MB2061CX / KX-MB2062CX : CORDLESS HANDSET BOARD (COMPONENT VIEW)

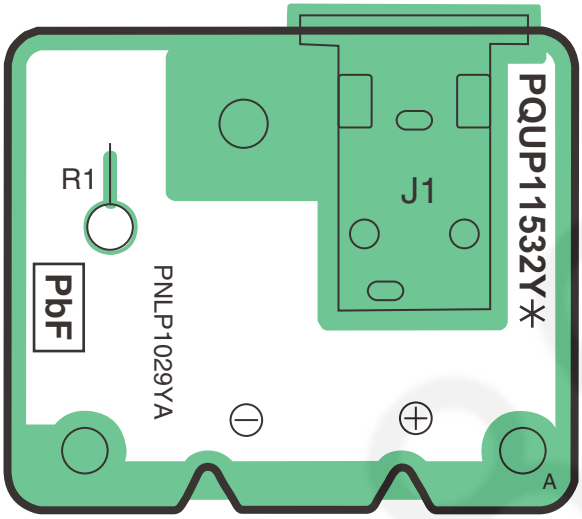
18.6.2. CORDLESS HANDSET BOARD: BOTTOM VIEW



KX-MB2061CX / KX-MB2062CX : CORDLESS HANDSET BOARD (BOTTOM VIEW)

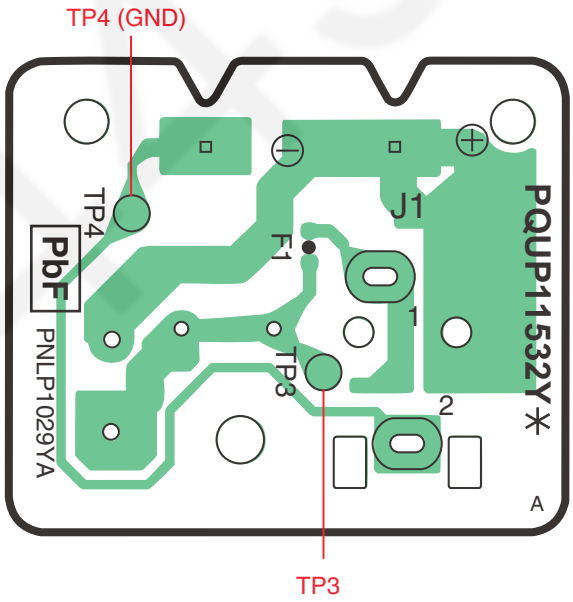
18.7. Charger Board (PCB200)

18.7.1. CHARGER BOARD: COMPONENT VIEW



KX-MB2061CX / KX-MB2062CX : CHARGER BOARD (COMPONENT VIEW)

18.7.2. CHARGER BOARD: BOTTOM VIEW



KX-MB2061CX / KX-MB2062CX : CHARGER BOARD (BOTTOM VIEW)

Memo

19 Exploded View and Replacement Parts List

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

Wattege

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 ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

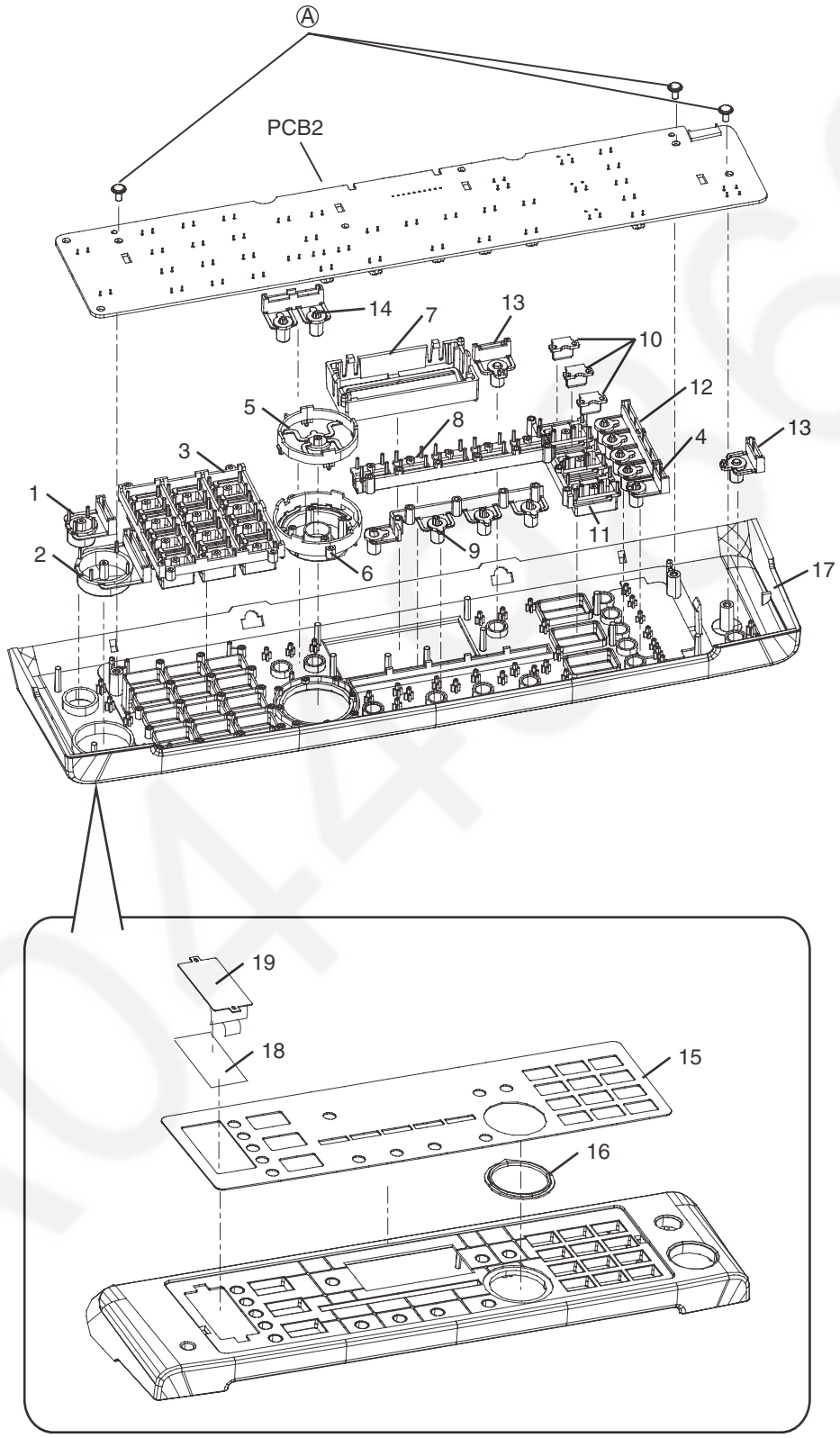
Voltage

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

19.1. Cabinet, Mechanical and Electrical Parts Location

19.1.1. Operation Panel Section

19.1.1.1. Exploded View

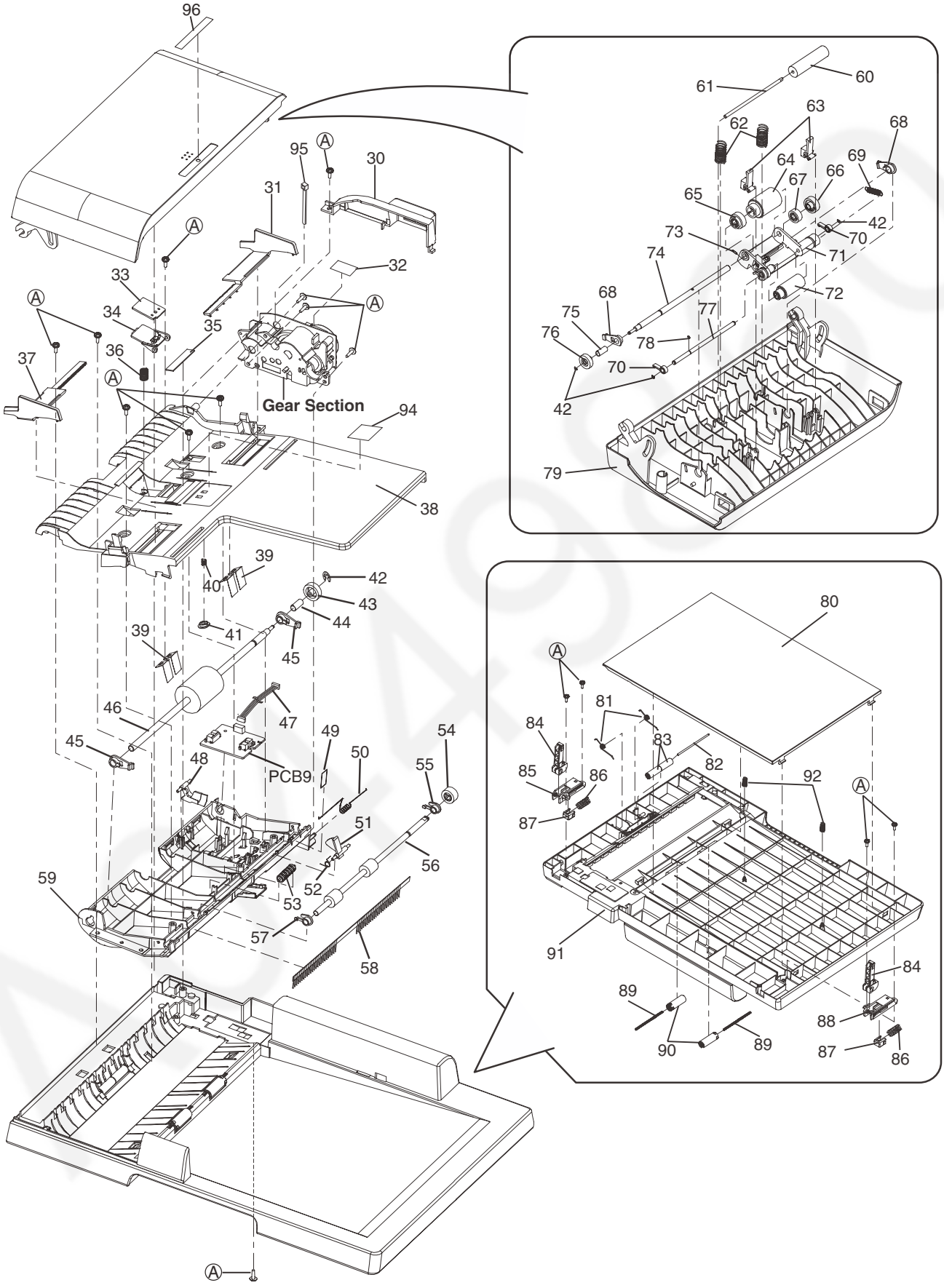


19.1.1.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PNBC1289Z1	PUSH BUTTON, STOP	ABS-HB
	2	PNBC1288Z1	PUSH BUTTON, START	ABS-HB
	3	PNBX1065W1	PUSH BUTTON, 12KEY	ABS-HB
	4	PNBC1295Z1	PUSH BUTTON, MENU	ABS-HB
	5	PNBC1286W1	PUSH BUTTON, SET	ABS-HB
	6	PNBC1285Y1	PUSH BUTTON, CURSOR	ABS-HB
	7	PNHR1200Z	CASE/COVER	ABS-HB
	8	PNBX1069Y1	PUSH BUTTON, 5KEY	ABS-HB
	9	PNBX1090Z1	PUSH BUTTON, MENU AND 3KEY	ABS-HB
	10	PNHR1203Y	CASE/COVER	ABS-HB
	11	PNBX1070W1	PUSH BUTTON, FAX/COPY	ABS-HB
	12	PNBX1068Z1	PUSH BUTTON, 4KEY	ABS-HB
	13	PNBC1287Y1	PUSH BUTTON, AUTO ANSWER	ABS-HB
	14	PNBX1091Z1	PUSH BUTTON E/R 2KEY	PC-HB
	15	PNGP1103W1	PANEL (for KX-MB2061CXB)	PS-HB
	15	PNGP1129W1	PANEL (for KX-MB2062CXB)	PS-HB
	16	PNGX1017Y1	ORNAMENT	PS-HB
	17	PNGG1068W1	OPERATION PANEL	
	18	PNGD1021E	TEL CARD	
	19	PNGV1010Z	COVER/TEL CARD	

19.1.2. ADF Section

19.1.2.1. Exploded View

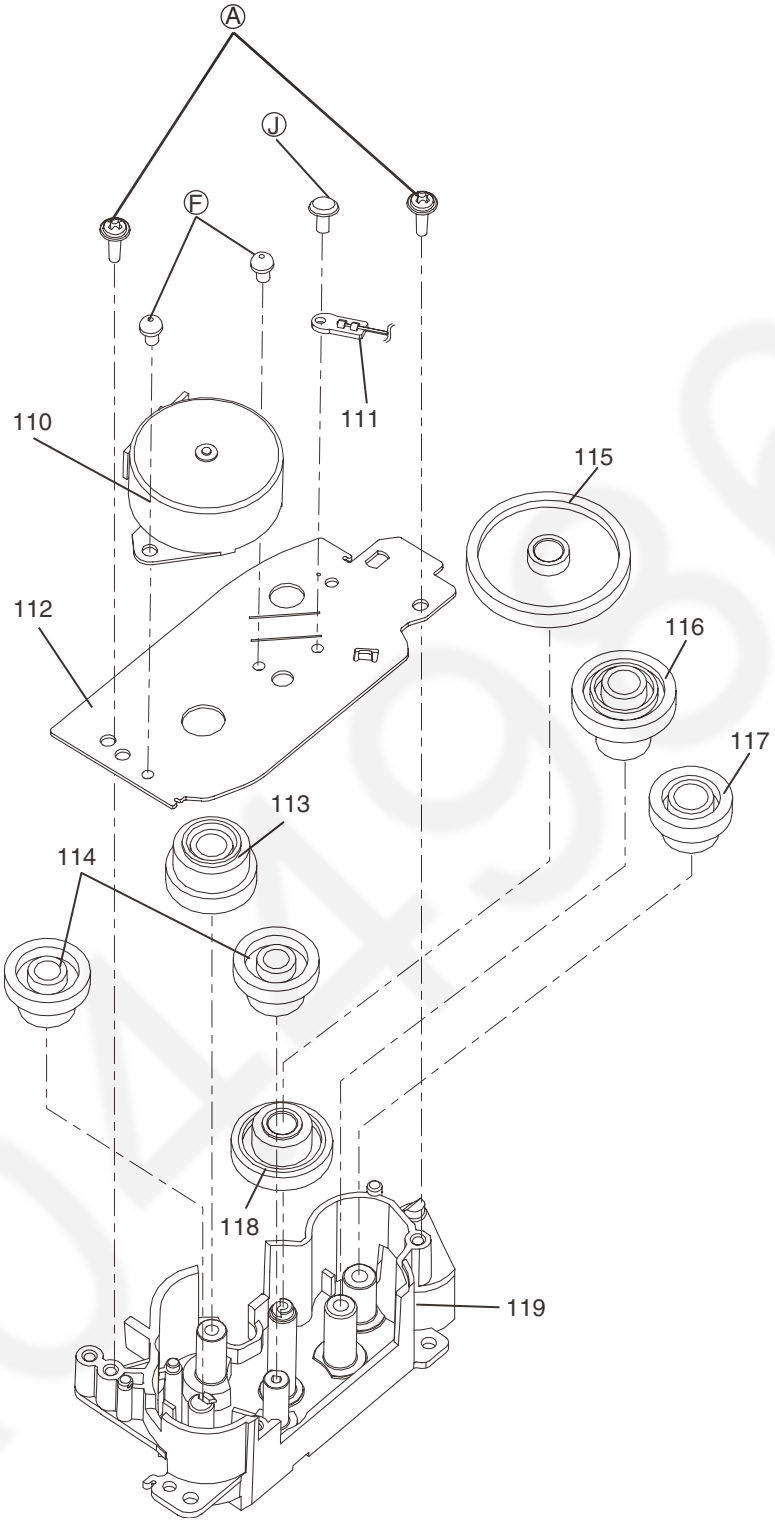


19.1.2.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	30	PFKV1167Z2	COVER	PS-HB
	31	PFKR1110Z2	GUIDE	ABS-HB
	32	PFHX2126Z	PLASTIC PARTS	
	33	PFHG1282Z	RUBBER PARTS	
	34	PFDE1307Z	GUIDE	ABS-HB
	35	PFHG1284Z	RUBBER PARTS	
	36	PFUS1620Z	COIL SPRING	
	37	PFKR1111Z2	GUIDE	ABS-HB
	38	PFKE1084Y2	TRAY	PS-HB
	39	PFHX2130Y	PLASTIC PARTS	
	40	PFUS1918Z	COIL SPRING	
	41	PFDG1015Y	GEAR	POM-HB
	42	XUC2FJP	RETAINING RING	
	43	PFDG1559Z	GEAR	POM-HB
	44	PQUS10038Z	COIL SPRING	
	45	PFDJ1044Z	SPACER	
	46	PFDR1103X	ROLLER	
	47	PNJS041010Z	CONNECTOR, 4PIN	
	48	PFDE1306Z	LEVER	POM-HB
	49	PFHX1937Z	CASE/COVER	
	50	PFUS1824Y	COIL SPRING	
	51	PFDE1308Y	LEVER	POM-HB
	52	PFUS1629Z	TORSION SPRING	
	53	PFDR1062Z	ROLLER	
	54	PFDG1415Y	GEAR	POM-HB
	55	PFDJ1116Y	SPACER	POM-HB
	56	PFDR1104Y	ROLLER	
	57	PFDJ1116Z	SPACER	POM-HB
	58	PFHE1298Y	METAL PARTS	
	59	PFUG1049Y	GUIDE	PS-HB
	60	PQDR9685Y	ROLLER	
	61	PFDF1190Z	SHAFT	
	62	PFUS1822Z	COIL SPRING	
	63	PFDE1247X	LEVER	POM-HB
	64	PFDR1065Y	ROLLER	
	65	PFDG1413Y	GEAR	POM-HB
	66	PFDG1417Z	GEAR	POM-HB
	67	PFDG1416Z	GEAR	POM-HB
	68	PFDJ1044Z	SPACER	
	69	PFUS1826Z	COIL SPRING	
	70	PFDE1244Z	LEVER	POM-HB
	71	PFHR1479Z	GUIDE	POM-HB
	72	PFDR1064Y	ROLLER	
	73	PFDF1095Y	SHAFT	
	74	PNDF1029Z	SHAFT	
	75	PFUS1325Z	COIL SPRING	
	76	PFDG1558Z	GEAR	POM-HB
	77	PNDF1034Z	SHAFT	
	78	XUC3FJP	RETAINING RING	
	79	PFKV1166Z2	COVER	PS-HB
	80	PFUE1048Z	FRAME	PS-HB
	81	PFUS1825Z	TORSION SPRING	
	82	PFDF1191Z	SHAFT	
	83	PFDR1073Z	ROLLER	POM-HB
	84	PFHR1710W	CAM	POM-HB
	85	PFHR1290X	CHASSIS	POM-HB
	86	PFUS1350Z	COIL SPRING	
	87	PFHR1292Z	PLASTIC PARTS	POM-HB
	88	PFHR1289X	CHASSIS	POM-HB
	89	PFUS1621Z	BAR SPRING	
	90	PFDR1066Z	ROLLER	POM-HB
	91	PFKM1229V2	CABINET BODY	PS-HB
	92	PFUS1566Z	COIL SPRING	
	94	PNQT1647Z	LABEL, FACE UP	
	95	PQHR945Z	BAND	
	96	PNQT1648Z	LABEL, LIST TO OPEN	

19.1.3. ADF Gear Section

19.1.3.1. Exploded View

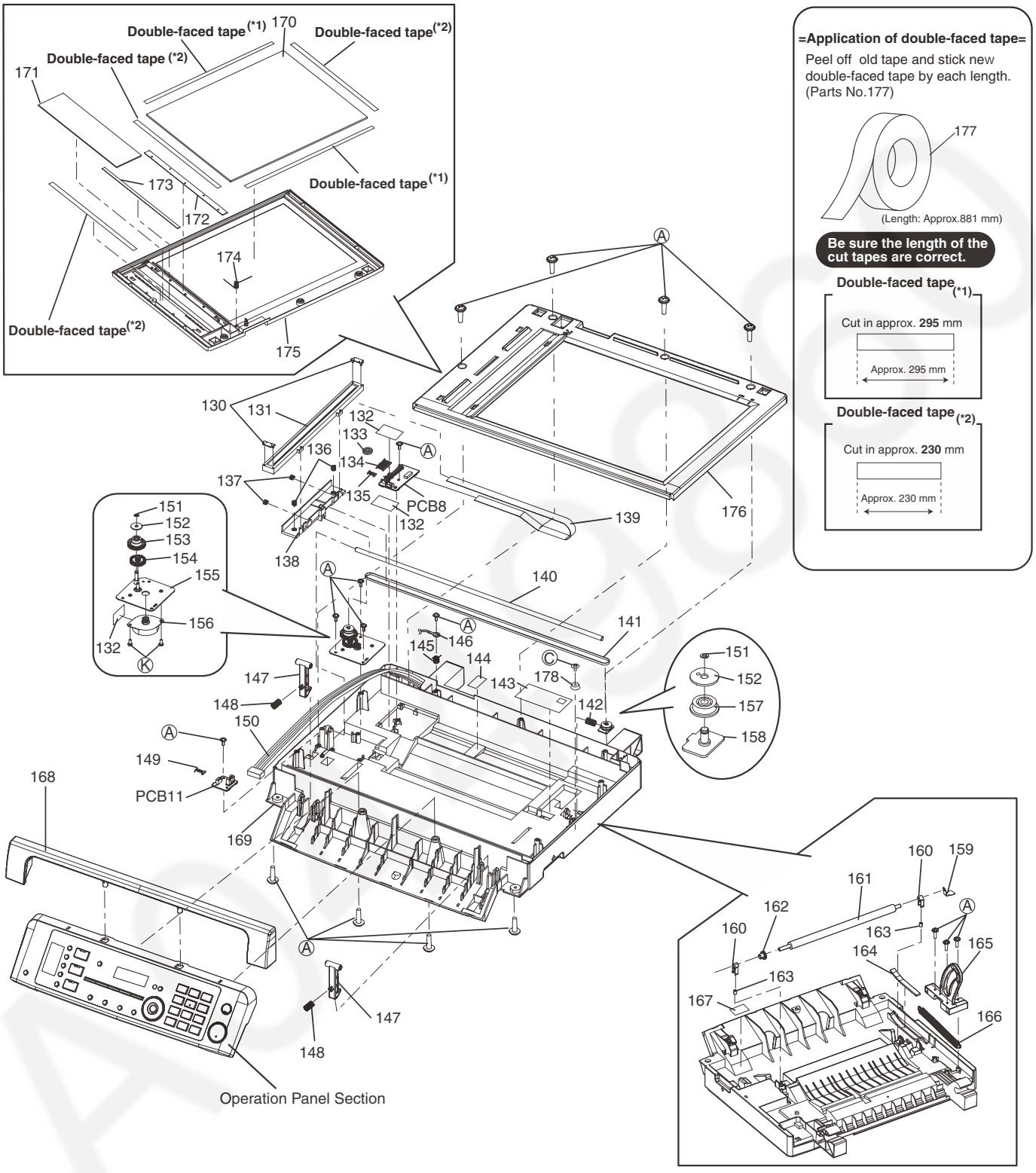


19.1.3.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	110	L6HAYYYK0015	DC MOTOR	
	111	PFDW1001Z	LEAD WIRE	
	112	PFMH1259Z	ANGLE	
	113	PFDG1554Z	GEAR	
	114	PFDG1557Z	GEAR	
	115	PFDG1552Z	GEAR	
	116	PFDG1555Z	GEAR	
	117	PFDG1556Z	GEAR	
	118	PFDG1553Z	GEAR	
	119	PFUA1096Y	CHASSIS	

19.1.4. Top Cover Section

19.1.4.1. Exploded View



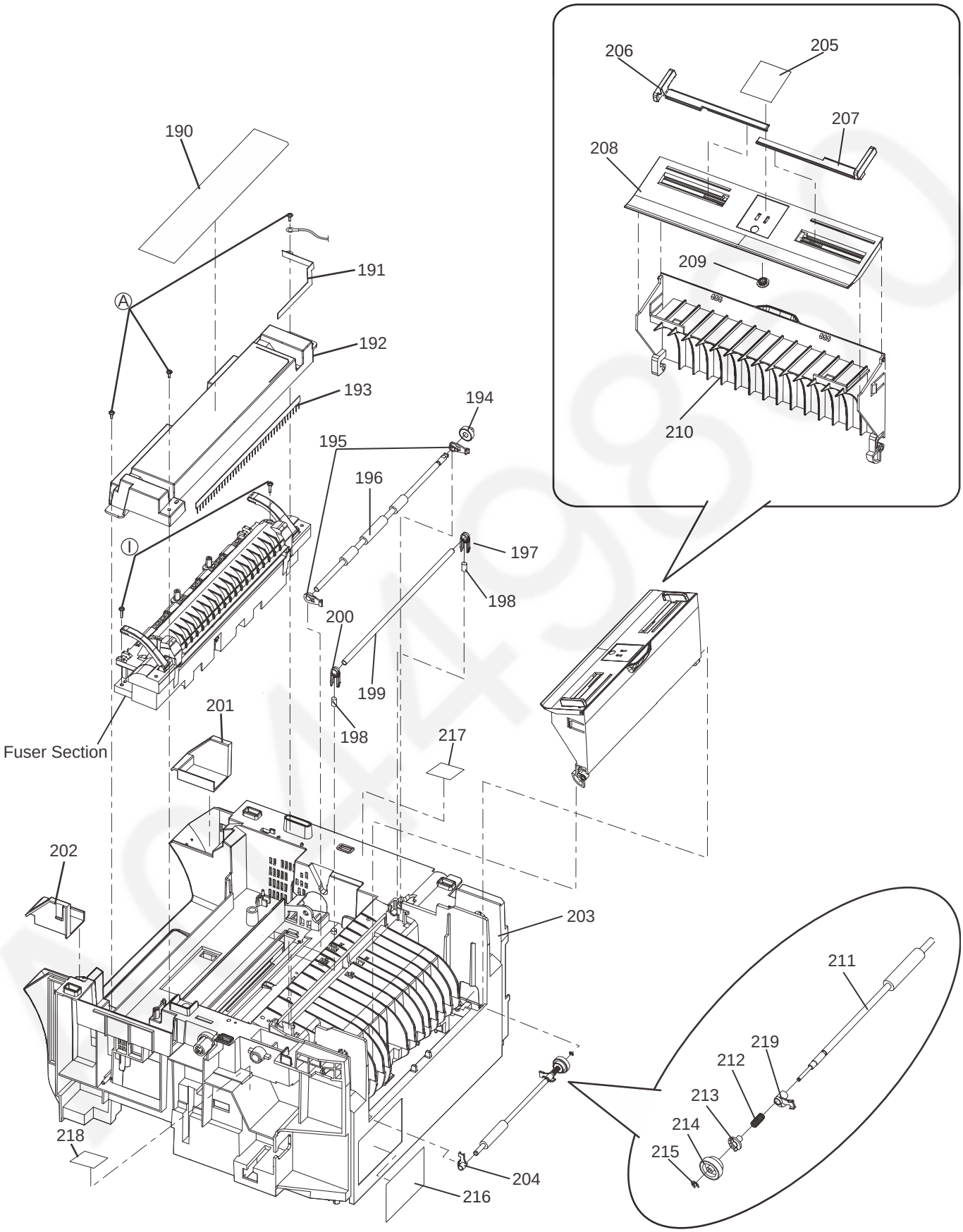
*176 is the Scanner Glass Ass'y.

19.1.4.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	130	PFDE1303W	SPACER	
	131	N2GAYY000002	IMAGE SENSOR	
	132	PFHX2126Z	PLASTIC PARTS	
	133	J0KE00000114	INSULATOR	
	134	PNJS131001Z	CONNECTOR, 13PIN	
	135	PFJS04M74Z	LEAD WIRE	
	136	PFUS1642Y	COIL SPRING	
	137	PFUS1344Z	COIL SPRING	
	138	PFDC1005X	GUIDE	
	139	PFJE1068Z	LEAD WIRE	
	140	PNDF1028Z	SHAFT	
	141	PFDV1005Y	ROUND BELT	
	142	PFUS1817Z	COIL SPRING	
	143	PFHX2134Z	PLASTIC PARTS	
	144	PFHE1319Z	PLASTIC PARTS	
	145	PFUS1819Z	TORSION SPRING	
	146	WLL20YG18M3M	LEAD WIRE	
	147	PNDE1023Z1	LEVER	POM-HB
	148	PNUS1101Z	COIL SPRING	
	149	PNJS031003Z	CONNECTOR, 3PIN	
	150	PNJS081042Z	CONNECTOR, 8PIN	
	151	PFNPD031054C	WASHER	
	152	PFDE1170Z	PULLEY	
	153	PFDE1168Z	PULLEY	
	154	PFDG1551Y	GEAR	
	155	PFMH1258X	PLATE	
	156	L6HAYYYK0013	DC MOTOR	
	157	PFDE1169Z	PULLEY	
	158	PFMH1257Y	PLATE	
	159	PFMH1159Z	METAL PARTS	
	160	PFDJ1042Z	SPACER	
	161	PFDS1032Z	ROLLER	
	162	PFDG1294Z	GEAR	
	163	PFUS1269Y	COIL SPRING	
	164	PNHG1095Z	RUBBER PARTS	
	165	PNDE1022Y1	ARM	PS-HB
	166	PNUS1100Y	COIL SPRING	
	167	PNHS1182Z	FELT PARTS	
	168	PNKV1059Z1	COVER	PS-HB
	169	PNKM1110Y1	CABINET BODY	PS-HB
	170	PF0G1016Z	GLASS/TRANSPARENT PLATE	
	171	PF0G1017Z	GLASS/TRANSPARENT PLATE	
	172	PFMH1256Z	ANGLE	
	173	PFHX1796Z	PLASTIC PARTS	
	174	PFUS1820Z	TORSION SPRING	
	175	PFKF1205Y3	CABINET COVER	PS-HB
	176	PNZXB2030RUB	SCANNER GLASS ASS'Y	
	177	ZT2512-08	TAPE	
	178	PFDG1015Y	GEAR	POM-HB

19.1.5. Main Cabinet Section

19.1.5.1. Exploded View

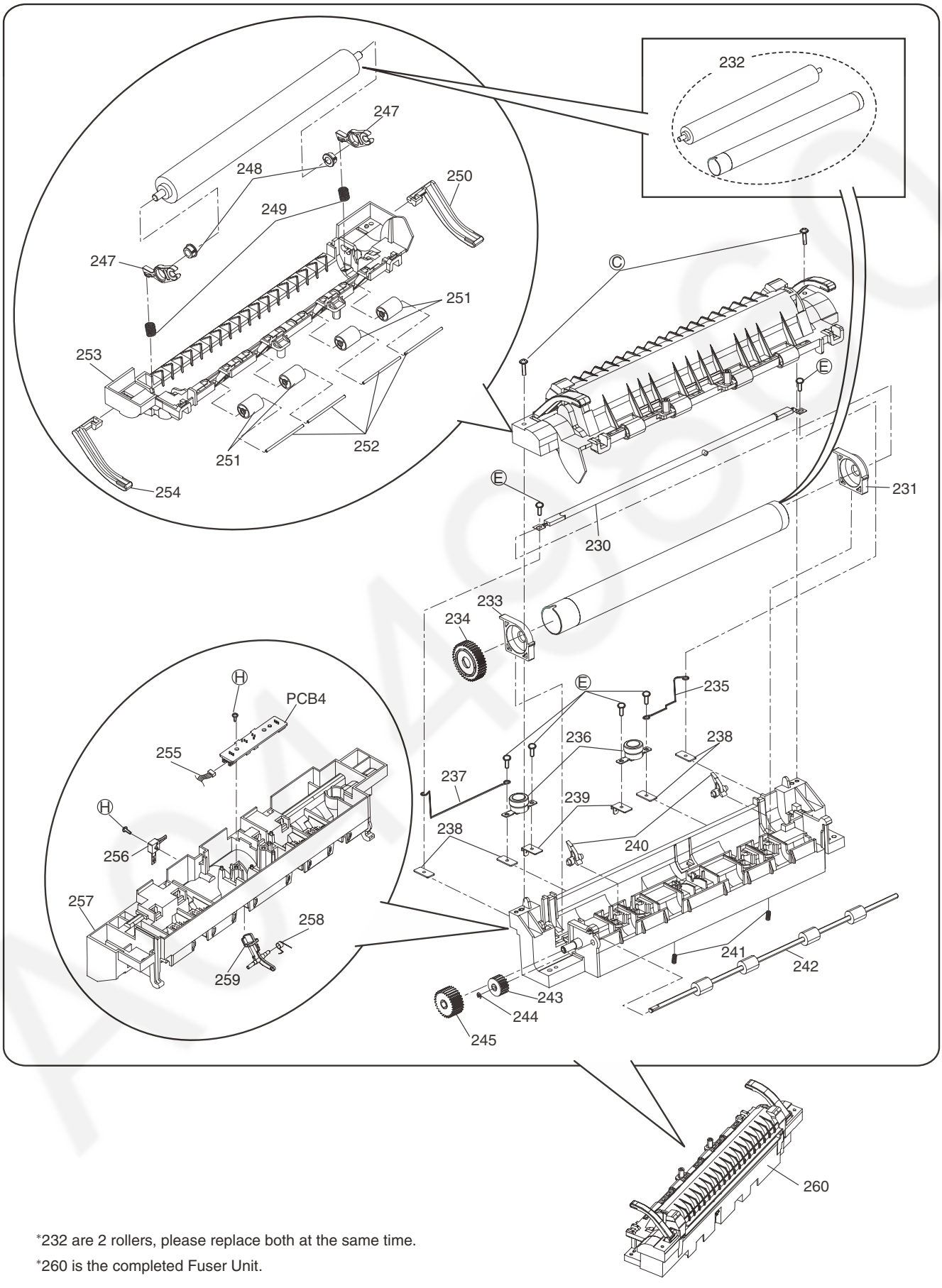


19.1.5.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	190	PNQT1720Z	LABEL, CAUTION	
	191	PFSE1054Z	ANGLE	
	192	PNUE1011Y	AIR DACT	ABS-HB
	193	PFJV1013Z	METAL PARTS	
	194	PFDG1420Y	GEAR	
	195	PFDJ1044Z	SPACER	
	196	PNDN1005Z	ROLLER	
	197	PFDJ1086X	SPACER	
	198	PFUS1613Z	COIL SPRING	
	199	PNDF1020Z	SHAFT	
	200	PFDJ1086Z	SPACER	
	201	PNKE1046Z1	COVER	PS-HB
	202	PNKE1047Z1	COVER	PS-HB
	203	PNKM1109Z1	CABINET BODY	PS-V0
	204	PFDJ1085Z	SPACER	
	205	PFQT2937Y	LABEL, MANUAL	
	206	PFKR1079Z2	GUIDE	
	207	PFKR1080Z2	GUIDE	
	208	PFKE1083Z2	PLASTIC PARTS	
	209	PFDG1015Y	GEAR	
	210	PNKK1037Y1	DOOR-LID	PS-HB
	211	PFDN1091Y	ROLLER	
	212	PFUS1812Z	COIL SPRING	
	213	PFDE1299Z	ROLLER	
	214	PFDG1550Z	GEAR	
	215	XUC2FJP	RETAINING RING	
	216	PNGT5352Z-M	NAME PLATE, AL (for KX-MB2061CXB)	
	216	PNGT6306Z-M	NAME PLATE, AL (for KX-MB2061CX2)	
	216	PNGT5353Z-M	NAME PLATE, AL (for KX-MB2062CXB)	
	217	PNQT1734Z	LABEL, CAUTION DAMPER	
	218	PFHX1884Z	SHEET	
	219	PFDJ1085X	SPACER	

19.1.6. Fuser Section

19.1.6.1. Exploded View



*232 are 2 rollers, please replace both at the same time.

*260 is the completed Fuser Unit.

19.1.6.2. Parts list

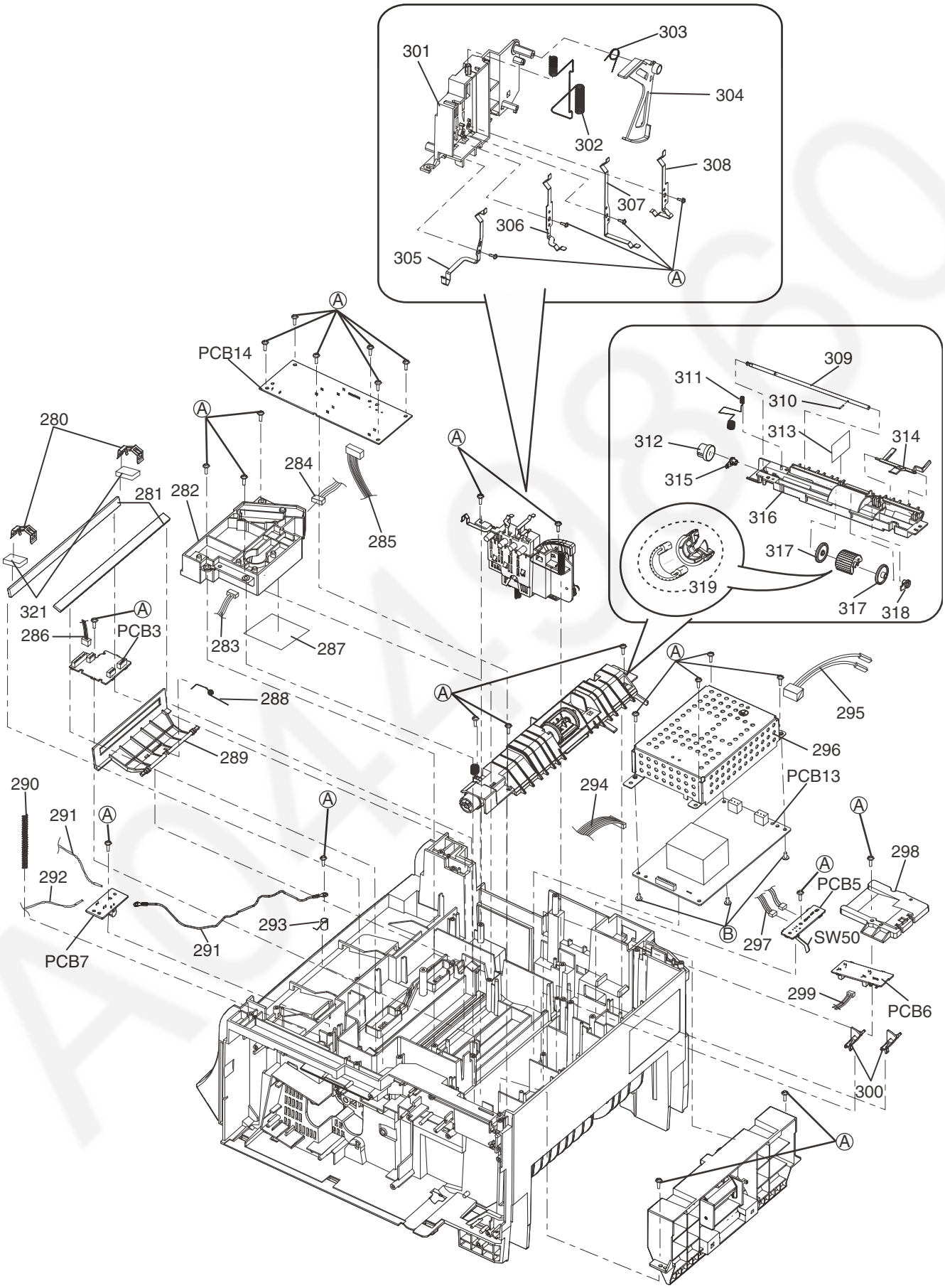
Note:

(*1) After the production of this model is discontinued, this fuser unit can not be supplied.

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	230	A4DYYY000004	COIL HEATER	
	231	PNDJ1012Z	SPACER	Plyami-deim-ide-V0
	232	PNZRMB2030RU	ROLLER SERVICE KIT	
	233	PFDJ1114Z	SPACER	PPS-V0
	234	PFDG1421Z	GEAR	PPS-V0
	235	PNJT1036Z	TERMINAL-TERMINAL PLATE	
⚠	236	K0BDB0000073	THERMOSTAT	
	237	PNJT1037Z	TERMINAL-TERMINAL PLATE	
	238	PFMH1085Z	METAL PARTS	
	239	PFJT1032Z	TERMINAL-TERMINAL PLATE	
	240	PNHR1173Z	PLASTIC PARTS	PPS-V0
	241	PFUS1640Z	COIL SPRING	
	242	PNDR1021Y	ROLLER	
	243	PFDG1422Z	GEAR	Polya-mide-V0
	244	XUC2FJP	RETAINING RING	
	245	PFDG1423Z	GEAR	POM-HB
	246	NOT USED		
	247	PFHR1705Y	ARM	PBT+ABS-GF30-V0
	248	PFDJ1113Z	SPACER	Poly-ether-imide-V0
	249	PFUS1426Z	COIL SPRING	
	250	PFHR1495Z	LEVER	PBT+GF30-V0
	251	PFDR1069Z	ROLLER	POM-HB
	252	PFUS1568Z	BAR SPRING	
	253	PFUA1094Y	CHASSIS	PBT+ABS GF30%-V0
	254	PFHR1496Z	LEVER	PBT+GF30-V0
	255	PFJS04M73Z	LEAD WIRE	
	256	L2AA00000106	THERMISTOR	
	257	PNUA1016X	CHASSIS	PBT+ABS-GF30-V0
	258	PFUS1686Z	TORSION SPRING	
	259	PFDE1310Z	LEVER	
⚠	260	PNWEMB2061RU	FUSER UNIT (*1)	

19.1.7. Bottom Cabinet Section (1)

19.1.7.1. Exploded View

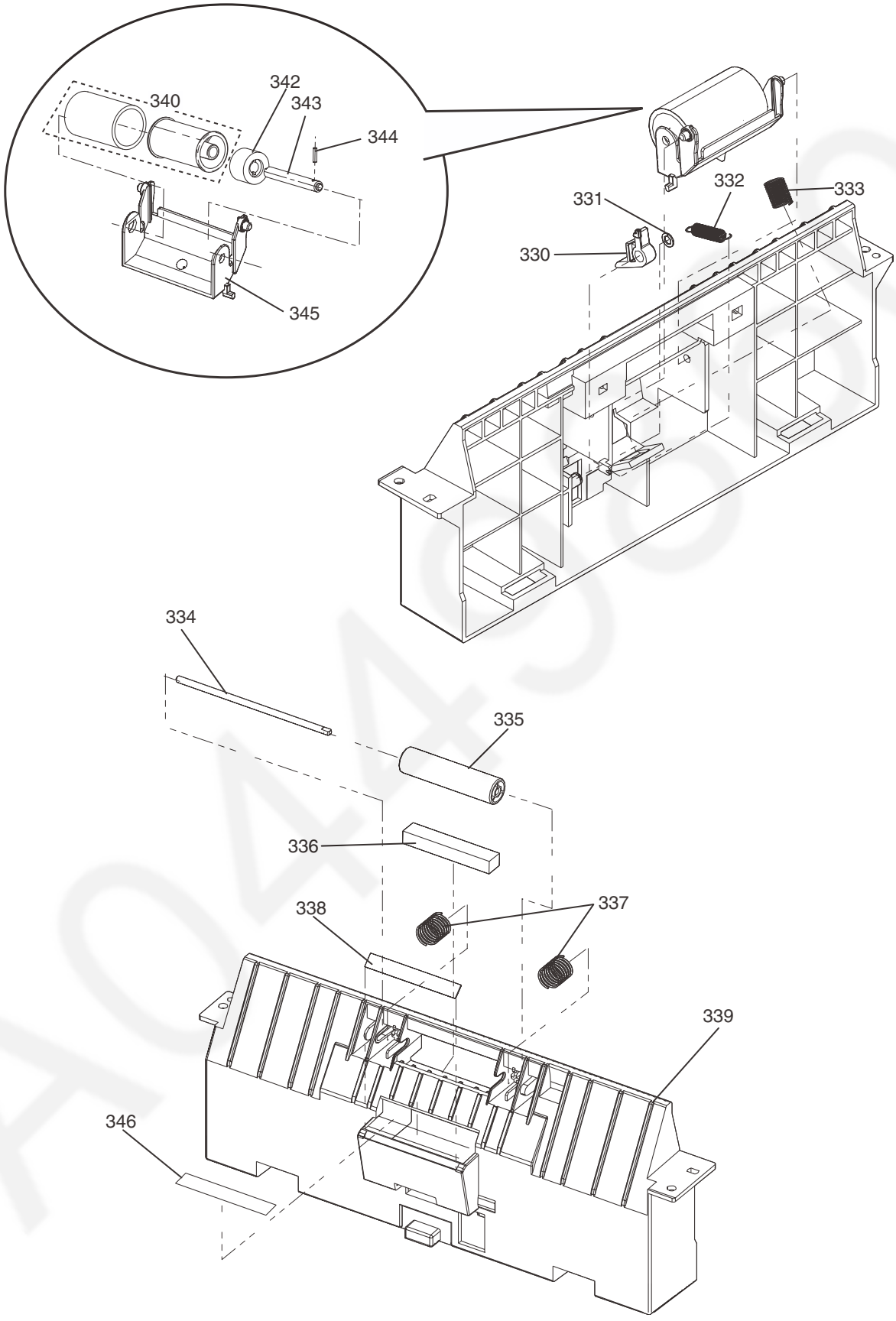


19.1.7.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	280	PNUS1092Y	LEAF SPRING	
	281	PF0M1008Z	MIRROR	
⚠	282	LPA1605K	LASER	
	283	PNJS051015Z	CONNECTOR, 5PIN	
	284	PNJS071017Z	CONNECTOR, 7PIN	
	285	PNJS081036Z	CONNECTOR, 8PIN	
	286	PNJS101002Z	CONNECTOR, 10PIN	
	287	PNQT1506Z	LABEL, LASER CAUTION	
	288	PFUS1592Z	TORSION SPRING	
	289	PNUE1012Z	KEYLOCK	PS-HB
	290	PFUS1811Z	COIL SPRING	
	291	PNVW1010Z	LEAD WIRE	
	292	PNVW1013Z	LEAD WIRE	
	293	PFUS1612Z	COIL SPRING	
	294	PNJS081031Z	CONNECTOR, 8PIN	
⚠	295	PFJS02M95Z	LEAD WIRE	
	296	PFMH1255Z	CASE/COVER	
	297	PFJS05M76Z	LEAD WIRE	
	298	PFUV1111Z	COVER	
	299	PFJS04M72Z	LEAD WIRE	
	300	PFDE1252Z	LEVER	
	301	PFUE1044Z	CHASSIS	
	302	PFUS1809Z	TORSION SPRING	
	303	PFUS1916Z	TORSION SPRING	
	304	PFUE1045Z	LEVER	
	305	PFUS1805Z	BAR SPRING	
	306	PFUS1806Z	BAR SPRING	
	307	PFUS1807Z	BAR SPRING	
	308	PFUS1808Z	BAR SPRING	
	309	PNDF1022Z	SHAFT	
	310	XPL15A10WVW2	COIL SPRING	
	311	PNUS1114Z	TORSION SPRING	
	312	PFDG1418Z	GEAR	
	313	PNHX1252Y	PLASTIC PARTS	
	314	PFDE1300Z	LEVER	
	315	PFDJ1084X	SPACER	
	316	PNUG1018Z	GUIDE	PS-V0
	317	PNDR1019Z	ROLLER	POM-HB
	318	PFDJ1084Z	SPACER	
	319	PNZR2B2030RU	Pickup Roller Ass'y	
	321	PNHS1196Z	FELT PARTS	

19.1.8. Separation (DFP) Roller Section

19.1.8.1. Exploded View

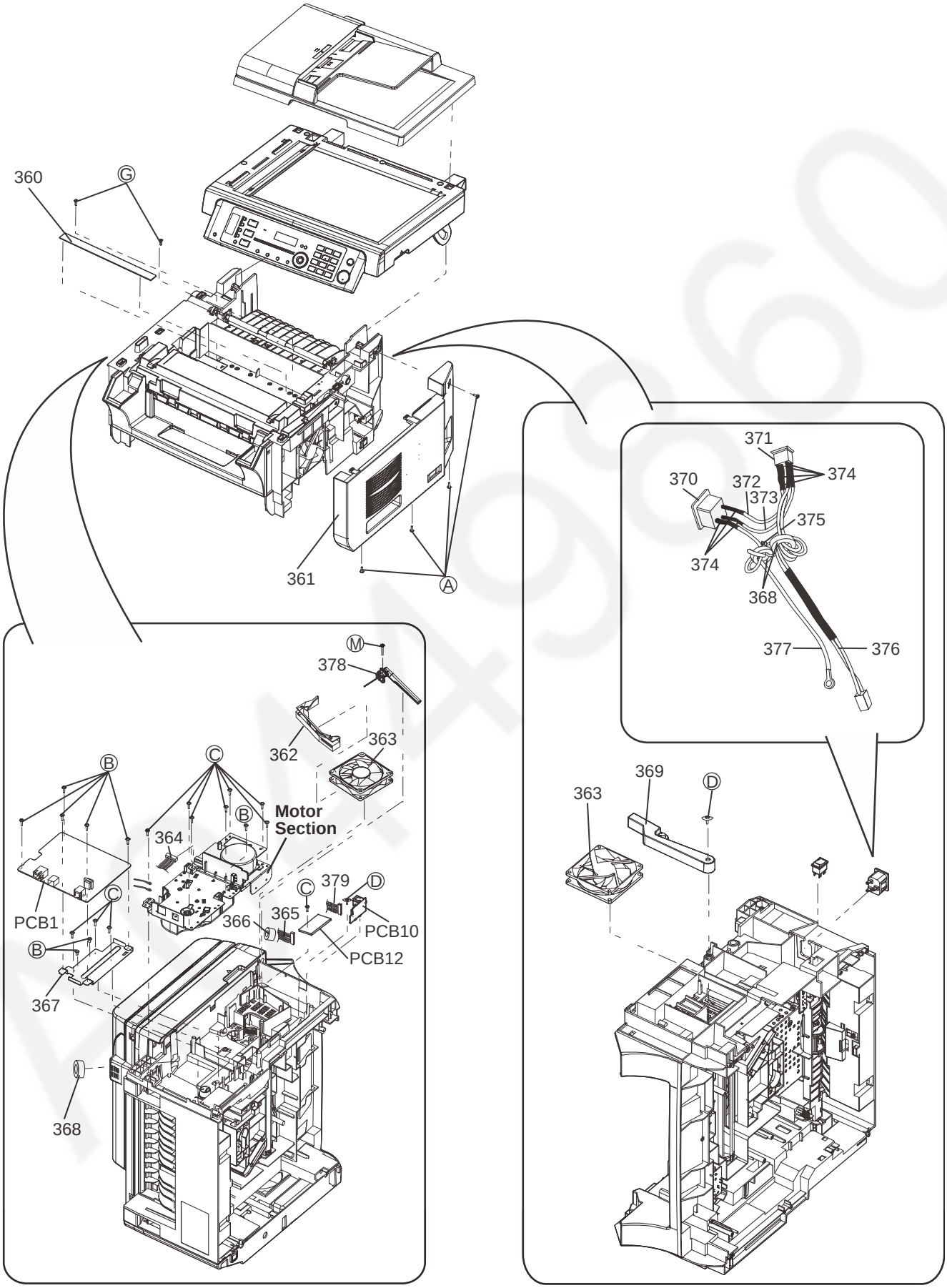


19.1.8.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	330	PNHR1235Z	PLASTIC PARTS	ABS-HB
	331	PFNPD041065C	SPACER	
	332	PNUS1104Z	COIL SPRING	
	333	PFUS1923Z	COIL SPRING	
	334	PNDF1027Z	SHAFT	
	335	PNDR1020Z	ROLLER	POM-HB
	336	PFHR1538Z	CABINET ACCESSORY	
	337	PNUS1102Z	COIL SPRING	
	338	PNHG1088Z	RUBBER PARTS	
	339	PNUG1017W	GUIDE	PS-HB
	340	PNZR3B2030RU	Retard Roller Ass'y	
	342	PFDX1089Z	DRUM	
	343	PFDF1197Y	SHAFT	
	344	XPJ2A8VWM2	KEY-PIN	
	345	PNHR1234Y	CHASSIS	ABS-HB
	346	PNHX1224Z	PLASTIC PARTS	

19.1.9. Side Cabinet Section

19.1.9.1. Exploded View

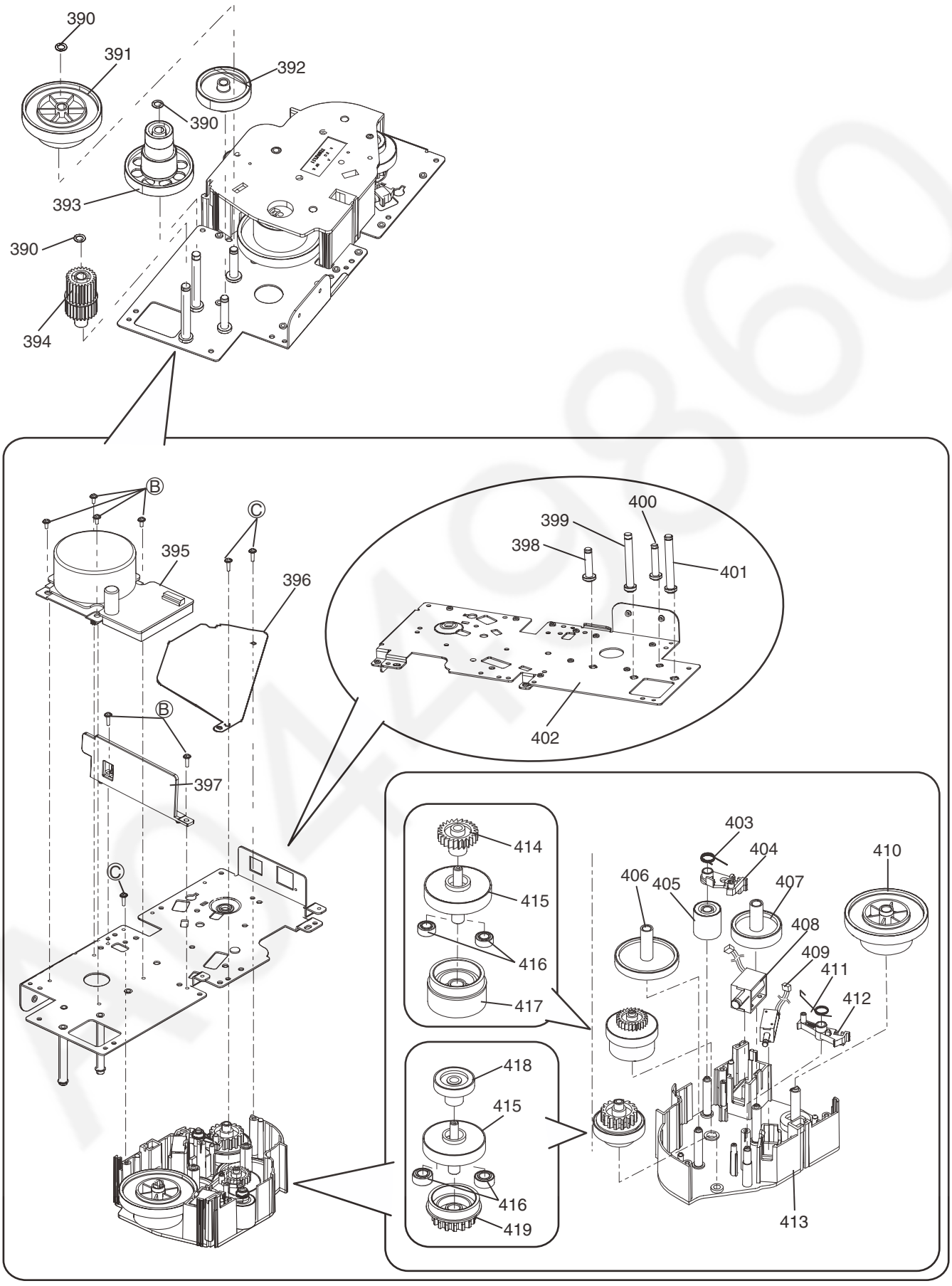


19.1.9.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	360	PF0G1015Z	GLASS/TRANSPARENT PLATE	
	361	PNKV1061Z1	COVER	PS-V0
	362	PNHR1257Z	AIR DACT	
	363	L6FAYYYK0001	DC MOTOR	
	364	PNJS081024Z	CONNECTOR, 8PIN	
	365	PNJS081041Z	CONNECTOR, 8PIN	
	366	J0KE00000119	IC FILTER	
	367	PNMH1094Z	METAL PARTS	
	368	J0KE00000114	INSULATOR	
	369	PNDE1021Z1	LEVER	ABS-HB
⚠	370	K2AH3G000011	JACK/SOCKET	
⚠	371	K0AALE000029	SEESAW SWITCH	
⚠	372	PNWLXC12HHXX	LEAD WIRE	
⚠	373	PNWLXA13HHXX	LEAD WIRE	
	374	PQMX10010Z	CASE/COVER	
	375	PQHR945Z	BAND	
⚠	376	PNJS021038Z	CONNECTOR	
⚠	377	PNVW1012Z	LEAD WIRE	
	378	PFSA1072Z	ANTENNA	
	379	PNJS081039Z	CONNECTOR, 8PIN	

19.1.10. Motor Section

19.1.10.1. Exploded View

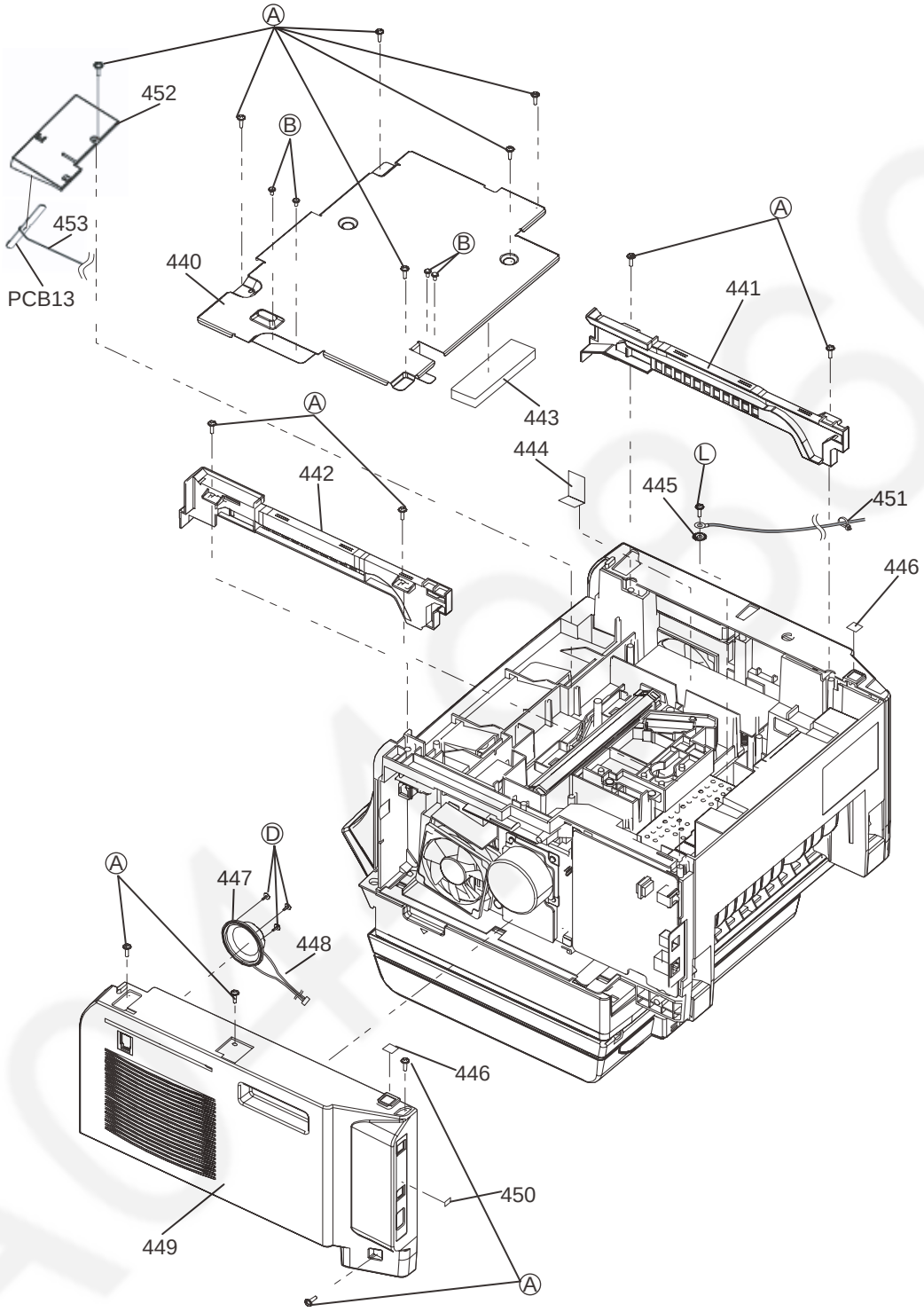


19.1.10.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	390	PFNPD052080	SPACER	
	391	PFDG1544Y	GEAR	
	392	PFDG1548Z	GEAR	
	393	PFDG1543Z	GEAR	
	394	PFDG1549Z	GEAR	
	395	L6CCYYYK0006	DC MOTOR	
	396	PNHX1255Z	PLASTIC PARTS	
	397	PNUV1026Z	PLASTIC PARTS	
	398	PNDF1024Z	SHAFT	
	399	PNDF1023Z	SHAFT	
	400	PNDF1025Z	SHAFT	
	401	PNDF1026Z	SHAFT	
	402	PNMD1027Z	FRAME	
	403	PFUS1803Z	TORSION SPRING	
	404	PFDE1298Y	LEVER	
	405	PFDG1391Z	GEAR	
	406	PFDG1546Z	GEAR	
	407	PFDG1390Z	GEAR	
	408	L9AAAYYB0001	ERECTROMAGNETIC COIL	
	409	L9AAAYYB0006	ERECTROMAGNETIC COIL	
	410	PFDG1545Y	GEAR	
	411	PNUS1014Z	TORSION SPRING	
	412	PFDE1297X	LEVER	
	413	PFUA1092Z	CHASSIS	
	414	PFDG1547Z	GEAR	
	415	PFDG1402Z	GEAR	
	416	PFDG1403Z	GEAR	
	417	PFDG1404Z	GEAR	
	418	PFDG1401Z	GEAR	
	419	PFDG1407Z	GEAR	

19.1.11. Bottom Cabinet Section (2)

19.1.11.1. Exploded View

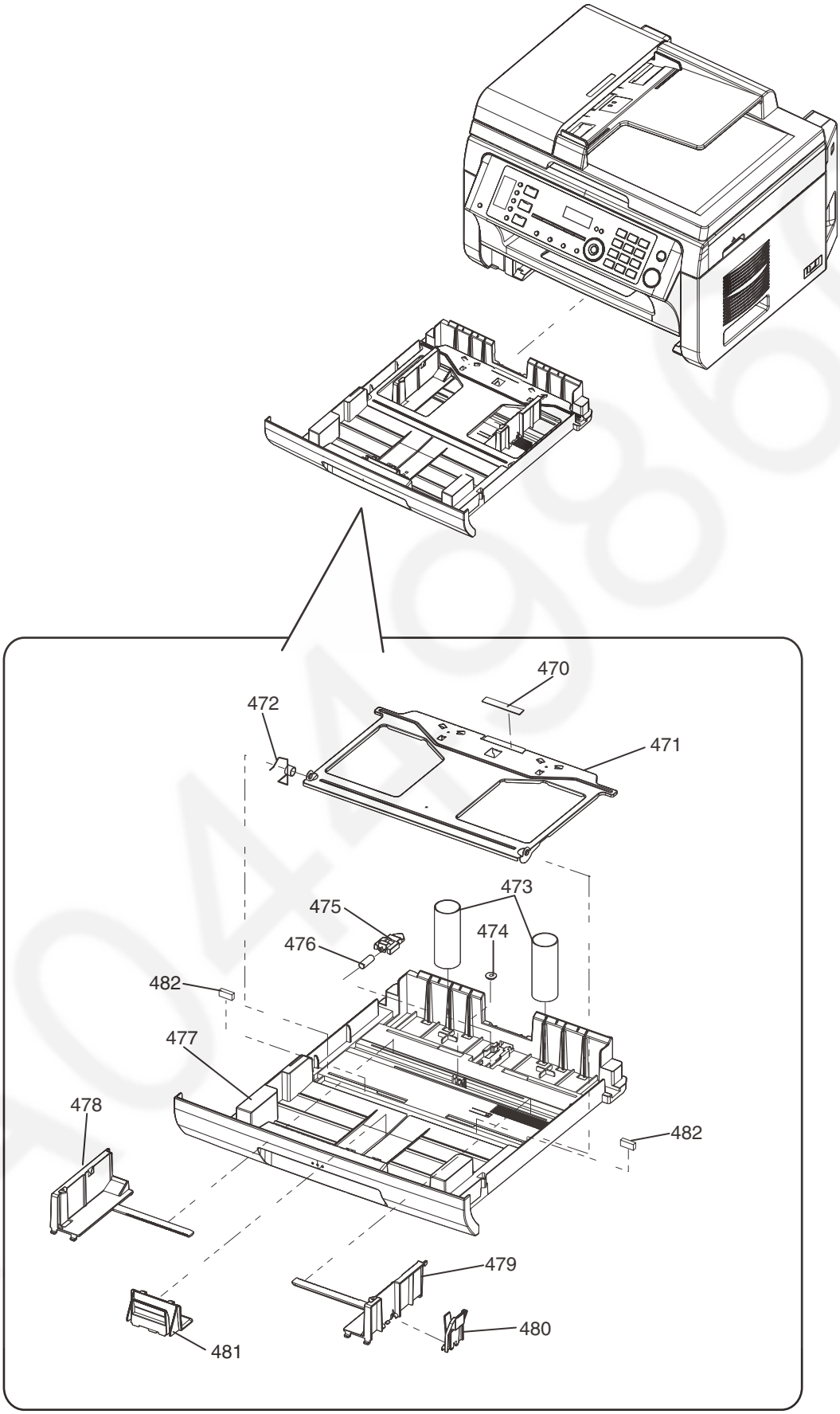


19.1.11.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	440	PFMD1112Z	PLATE	
	441	PNUG1016Z	GUIDE	PS-HB
	442	PNUG1015Z	GUIDE	PS-HB
	443	PNHS1171Z	FELT PARTS	
	444	PNHX1269Y	PLASTIC PARTS	
	445	XWC4BFJ	WASHER	
	446	PFHA1001Z	RUBBER PARTS	
	447	L0AA05A00048	SPEAKER	
	448	PFJS02M47Z	LEAD WIRE	
	449	PNKV1062V1	COVER	PS-V0
	450	PFQT3054Z	LABEL, USB	
	451	PQHR945Z	BAND	
	452	PNKV1077Z1	COVER	S
	453	PNJS011005Z	CONNECTOR, 1PIN	

19.1.12. Output Tray Section

19.1.12.1. Exploded View

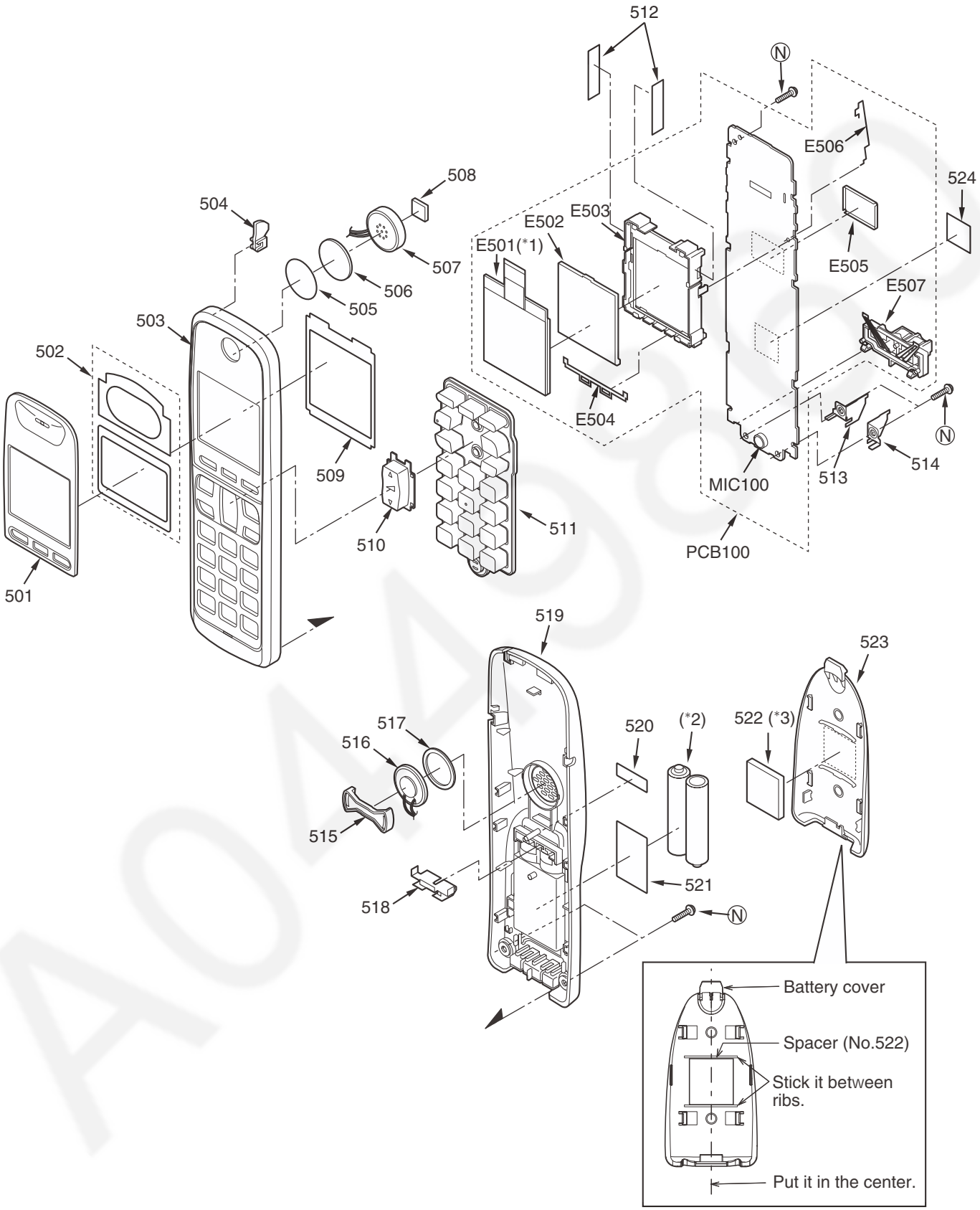


19.1.12.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	470	PFHG1245Z	RUBBER PARTS	
	471	PNMD1022Z	CHASSIS	
	472	PFUS1814Z	TORSION SPRING	
	473	PNUS1103Z	COIL SPRING	
	474	PFDG1015Y	GEAR	
	475	PFHR1491Z	LEVER	
	476	PFUS1608Z	COIL SPRING	
	477	PNKS1007Z1	TRAY	PS-HB
	478	PFKR1108Y	LEVER	
	479	PFKR1109Y	LEVER	
	480	PFHR1707Z	LEVER	
	481	PFKR1085Y	RACK	
	482	PNHS1174Z	FELT PARTS	

19.1.13. Cordless Handset Section

19.1.13.1. Exploded View



Note:

(*1) This cable is fixed by soldering. Refer to **How to Replace the LCD** (P.260).

(*2) The rechargeable Ni-MH battery P03P or HHR-4MRE is available through sales route of Panasonic.

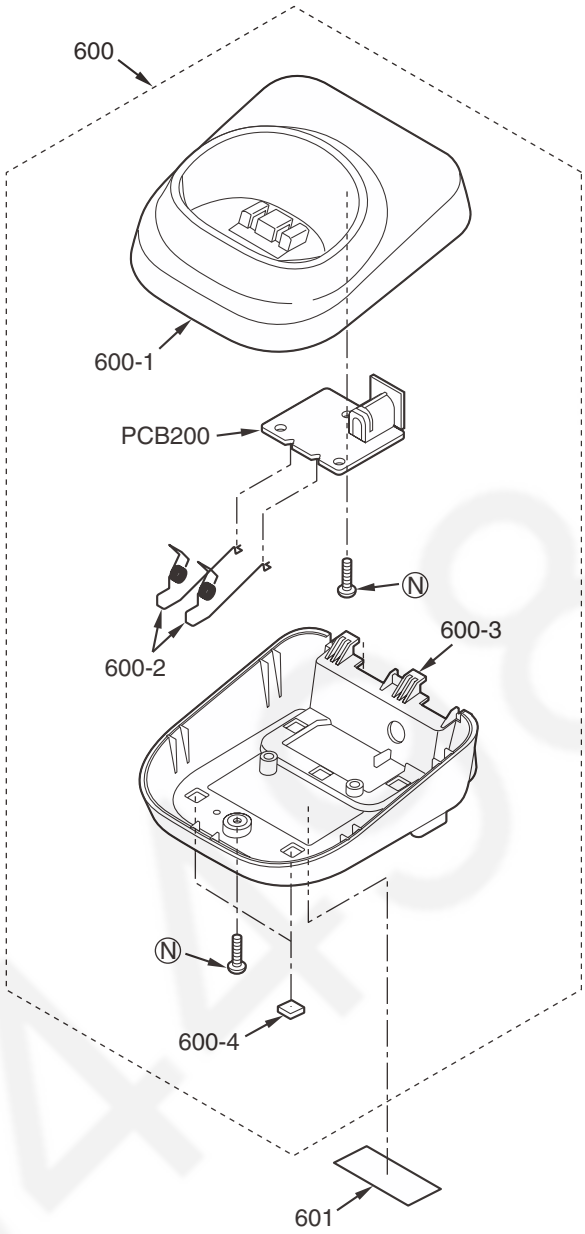
(*3) Attach the spacer (No. 522) to the exact location described above.

19.1.13.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	501	PNGP1048Y1	PANEL, LCD	PMMA-HB
	502	PNYE1008Z	TAPE, DOUBLESIDED	
	503	PNKM1080Y4	CABINET BODY	PS-HB
	504	PNHR1105Z	OPTIC CONDUCTIVE PARTS, LED LENS	PS-HB
	505	PNHS1072Z	SPACER,RECEIVER NET	
	506	PQHS10467Z	COVER, SPEAKER NET	
	507	L0AD02A00028	RECEIVER	
	508	PQHG10729Z	RUBBER PARTS, RECEIVER	
	509	PNYE1009Z	SPACER, CUSHION LCD	
	510	PNBC1265Z1	BUTTON, VOLUME KEY	ABS-HB
	511	PNJK1050T	KEYBOARD SWITCH	
	512	PNHX1165Z	COVER, LCD SHEET	
	513	PNJT1027Z	CHARGE TERMINAL (L)	
	514	PNJT1026Z	CHARGE TERMINAL (R)	
	515	PQHR11315Z	GUIDE, SPEAKER HOLDER	ABS-HB
	516	L0AA02A00095	SPEAKER	
	517	PQHS10784Y	SPACER, SPEAKER NET	
	518	PNJC1014Y	BATTERY TERMINAL	
	519	PNKF1057Z1	CABINET COVER	ABS-HB
	520	PQQT23182Z	LABEL, ATTENTION	
	521	PNGT5343Z-M	NAME PLATE	
	522	PNHS1079Z	SPACER, BATTERY COVER	
	523	PNKK1027Z1	LID, BATTERY COVER	ABS-HB
	524	PNHX1219Z	PET SHEET	

19.1.14. Charger Unit Section

19.1.14.1. Exploded View

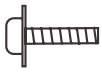


19.1.14.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	600	PNLC1008ZT	CHARGER UNIT ASS'Y without NAME PLATE (RTL)	
	600-1	PNKM1077Z1	CABINET BODY	
	600-2	PNJT1010Z	CHARGE TERMINAL	PS-HB
	600-3	PNKF1012Z1	CABINET COVER	ABS-HB
	600-4	PQHA10023Z	RUBBER PARTS, FOOT CUSHION	
	601	PNGT2652Y-M	NAME PLATE	

19.1.15. Actual Size of Screws and Washer

19.1.15.1. Exploded View

		Illustration
Ⓐ	XTW3+10PFJ7	
Ⓑ	XTW3+6LFJ7	
Ⓒ	XTW3+12PFJ7	
Ⓓ	XTW3+W10PFJ	
Ⓔ	XYC3+FF8FJ	
Ⓕ	XYC3+CF5FJ	
Ⓖ	XTB3+10GFJ	
Ⓗ	XTB3+12JFJ	
Ⓘ	XTW3+20PFJ	
Ⓙ	XTW3+5LFJK7	
Ⓚ	XYN3+C6FJ	
Ⓛ	XSB4+6FJ	
Ⓜ	XTW26+14PFJ7	
Ⓝ	XTB2+8GFJ	

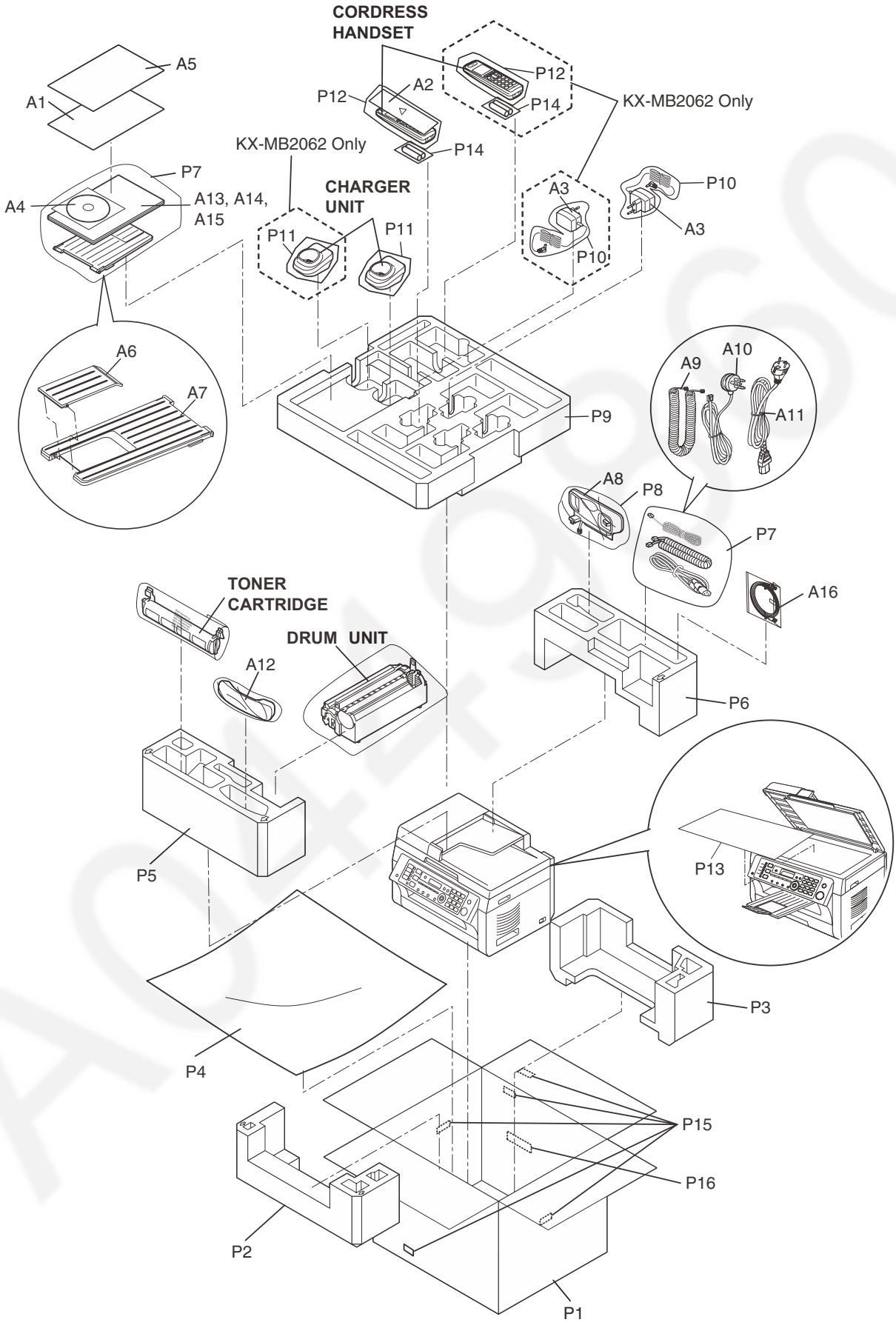
19.1.15.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A	XTW3+10PFJ7	TAPPING SCREW, STEEL	
	B	XTW3+6LFJ7	TAPPING SCREW, STEEL	
	C	XTW3+12PFJ7	TAPPING SCREW, STEEL	
	D	XTW3+W10PFJ	TAPPING SCREW, STEEL	
	E	XYC3+FF8FJ	SCREW WITH WASHER, STEEL	
	F	XYC3+CF5FJ	SCREW WITH WASHER, STEEL	
	G	XTB3+10GFJ	TAPPING SCREW, STEEL	
	H	XTB3+12JFJ	TAPPING SCREW, STEEL	
	I	XTW3+20PFJ	TAPPING SCREW, STEEL	
	J	XTW3+5LFJK7	TAPPING SCREW, STEEL	
	K	XYN3+C6FJ	SCREW WITH WASHER, STEEL	
	L	XSB4+6FJ	SMALL SCREW, STEEL	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	M	XTW26+14PFJ7	SCREW	
	N	XTB2+8GFJ	SCREW	

19.1.16. Accessories and Packing Materials

19.1.16.1. Exploded View



19.1.16.2. Parts list

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A1	PNQW2309Z	LEAFLET, QIG	
	A2	PFQW2538Z	LEAFLET, BATTERY	
⚠	A3	PQLV219BXY	AC ADAPTOR	
	A4	PNJKMB2060Z	MEMORY PARTS (for KX-MB2061CXB) (for KX-MB2062CXB)	
	A4	PNJKMB2061Z	MEMORY PARTS (for KX-MB2061CX2)	
	A5	PNQW2143Z	LEAFLET (for KX-MB2061CXB) (for KX-MB2062CXB)	
	A5	PNQW2967Z	LEAFLET, NOTIFY CHANGE (for KX-MB2061CX2)	
	A6	PNKS1011Z1	TRAY	PS-HB
	A7	PNKS1010Z1	TRAY	PS-HB
	A8	PNYE1018Z	HANDSET, CRADLE	PS-HB
	A9	PQJA212V	CORD, CURL	
	A10	PFJA02B002Y	CORD, TELEPHONE	
⚠	A11	PFJA03A010Z	POWER CORD	
	A12	PNLXE1011Z	HANDSET	
	A13	PNQW2404Z	LEAFLET, IIG (for ENGLISH)	
	A14	PNQW2405Z	LEAFLET, IIG (for ARA-BIC)	
	A15	PNQW2406Z	LEAFLET, IIG (for PRSIA)	
	A16	PNJA1052Z	CORD, USB	
	P1	PNPK3211Z-M	PACKING CASE (for KX-MB2061CXB) (for KX-MB2061CX2)	
	P1	PNPK3212Z-M	PACKING CASE (for KX-MB2062CXB)	
	P2	PNPN1126X	CUSHION	ABS-HB
	P3	PNPN1136Y	CUSHION	ABS-HB
	P4	PFPP1041Z	PROTECTION COVER	
	P5	PNPN1124Y	CUSHION	PC-HB
	P6	PNPN1125Y	CUSHION	ABS-HB
	P7	PFPP1052Z	PROTECTION COVER	
	P8	PFPP1054Z	PROTECTION COVER	
	P9	PNPN1167Y	CUSHION	
	P10	PNPP1032Z	PROTECTION COVER	
	P11	XZB15X25A04	PROTECTION COVER	
	P12	XZB08X22C05	PROTECTION COVER	
	P13	PNPH1027Z	PACKING SHEET	
	P14	XZB05X10A03	PROTECTION COVER	
	P15	PNQA3833Z	LABEL, IDENTIFICATION	
	P16	PNQA3852Z	LABEL, IDENTIFICATION WINDOWS	

19.2. Electrical Parts List

19.2.1. Main Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWP1B2061CX	MAIN BOARD ASS'Y (RTL)	
			(ICs)	
	IC200	C1CB00003161	IC	
	IC201	C0ABEB000083	IC	
	IC202	C0ABEB000023	IC	
	IC204	C1AB00002556	IC	
	IC300	C1ZBZ0003801	IC	
	IC301	C0EBE0000504	IC	
	IC303	C0CBAAA00035	IC	
	IC400	C3ABRY000039	IC	
	IC402	PNWI12061CX1	IC (ROM)	
	IC501	C0DBGYY00330	IC	
	IC502	C0GBY0000066	IC	
	IC503	C0FBAY000092	IC	
	IC504	C0BBBA000044	IC	S
	IC700	C0GBY0000066	IC	
	IC750	C1CB00002566	IC	
	IC800	C0DBAGE00028	IC	
	IC900	C0CBAYG00016	IC	
	IC901	C0DBAYY00554	IC	
	IC902	C1CB00001879	IC	
	IC903	PNWI22061CX	IC (ROM)	
	IC904	PFWI3FC225E	IC (EEPROM)	
			(TRANSISTORS)	
	Q201	B1GBCFYY0014	TRANSISTOR(SI)	
	Q205	UNR921LJ0L	TRANSISTOR(SI)	S
	Q206	UNR921LJ0L	TRANSISTOR(SI)	S
	Q500	B1ABCF000103	TRANSISTOR(SI)	S
	Q501	B1GBCFGN0005	TRANSISTOR(SI)	
	Q502	B1GBCFGN0005	TRANSISTOR(SI)	
	Q503	B1GBCFGN0005	TRANSISTOR(SI)	
	Q504	B1GBCFGN0005	TRANSISTOR(SI)	
	Q505	B1GBCFGN0005	TRANSISTOR(SI)	
	Q506	B1GBCFGN0005	TRANSISTOR(SI)	
	Q507	UNR921LJ0L	TRANSISTOR(SI)	S
	Q509	2SB1197KQ	TRANSISTOR(SI)	S
	Q510	B1CHND000004	TRANSISTOR(SI)	
	Q511	B1ABCF000103	TRANSISTOR(SI)	S
	Q512	B1ABCF000103	TRANSISTOR(SI)	S
	Q513	B1ABCF000103	TRANSISTOR(SI)	S
	Q514	2SD1664T100R	TRANSISTOR(SI)	S
	Q516	2SD1664T100R	TRANSISTOR(SI)	S
	Q517	2SD1664T100R	TRANSISTOR(SI)	S
	Q518	B1ADGE000004	TRANSISTOR(SI)	
	Q521	2SK3018	TRANSISTOR(SI)	S
	Q522	B1ABCF000103	TRANSISTOR(SI)	S
	Q523	B1ADGE000004	TRANSISTOR(SI)	
	Q524	B1GBCFGN0005	TRANSISTOR(SI)	
	Q525	B1GBCFGN0005	TRANSISTOR(SI)	
	Q526	B1GBCFGN0005	TRANSISTOR(SI)	
	Q527	UN9219J	TRANSISTOR(SI)	S
	Q528	B1GBCFGN0005	TRANSISTOR(SI)	
	Q529	B1ADCF000161	TRANSISTOR(SI)	
	Q530	2SK3018	TRANSISTOR(SI)	S
	Q700	B1ABCF000103	TRANSISTOR(SI)	S
	Q800	B1ABCF000103	TRANSISTOR(SI)	S
	Q801	UNR9215J0L	TRANSISTOR(SI)	
	Q802	B1CHQD000001	TRANSISTOR(SI)	
	Q803	B1CHQD000001	TRANSISTOR(SI)	
	Q804	B1ABKD000001	TRANSISTOR(SI)	
	Q805	B1ABKD000001	TRANSISTOR(SI)	
	Q806	2SB1197KQ	TRANSISTOR(SI)	S
	Q807	2SB1197KQ	TRANSISTOR(SI)	S
	Q900	B1ADGE000004	TRANSISTOR(SI)	
	Q901	B1ABDF000025	TRANSISTOR(SI)	
	Q902	B1ADGE000004	TRANSISTOR(SI)	
	Q903	B1ABDF000025	TRANSISTOR(SI)	
	Q907	UNR9215J0L	TRANSISTOR(SI)	
	Q908	B1ABCF000103	TRANSISTOR(SI)	S
			(DIODES)	
	D105	B0BC5R600003	DIODE(SI)	
	D106	B0BC5R600003	DIODE(SI)	
	D200	1SS355	DIODE(SI)	S
	D201	B0ADEJ000026	DIODE(SI)	
	D204	B0BC5R600003	DIODE(SI)	
	D205	B0BC5R600003	DIODE(SI)	
	D306	B0ZBZ0000146	DIODE(SI)	
	D308	B0BC5R000009	DIODE(SI)	
	D501	B0ACEL000004	DIODE(SI)	
	D503	B0ACEL000004	DIODE(SI)	
	D504	B0ACEL000004	DIODE(SI)	
	D800	B0JCPD000033	DIODE(SI)	
	D801	B0BC5R900006	DIODE(SI)	
	D803	B0JCPD000033	DIODE(SI)	
	D804	B0BC3R800009	DIODE(SI)	
	D805	B0BC01000014	DIODE(SI)	
	D806	B0BC01000014	DIODE(SI)	
	D900	B0JCPD000033	DIODE(SI)	
	D901	B0DDCD000001	DIODE(SI)	
	D902	B0BC5R900006	DIODE(SI)	
	DA300	PJVDJADAN202	DIODE(SI)	S
	DA500	PJVDJADAN202	DIODE(SI)	S
	LED750	B3ABB0000331	DIODE(SI)	
			(BATTERY)	
	BAT300	CR-2354/GUFK	BATTERY	
			(CAPACITORS)	
	C107	ECUV1H222KBV	0.0022	
	C109	F0C2E1050004	1	
	C200	ECUV1H333KDV	0.033	S
	C201	ECUE1H102KBQ	0.001	
	C202	ECUE1C223KBQ	0.022	
	C203	F2G1C4700052	47	
	C204	ECUE1A104KBQ	0.1	
	C205	ECUE1A104KBQ	0.1	
	C206	ERJ2GE0R00	0	S
	C207	ECUE1A104KBQ	0.1	
	C209	ECUE1E562KBQ	0.0056	
	C210	ECUE1H101JCQ	100p	
	C211	ECUE1H102KBQ	0.001	
	C212	ECUE1H820JCQ	82p	
	C213	ECUE1H101JCQ	100p	
	C214	ECUE0J105KBQ	1	
	C215	F1L1V1060002	35	
	C216	ECUE1H122KBQ	0.0012	
	C217	ECUE1A273KBQ	0.027	
	C218	F1L1C1060032	10	
	C219	F2G1H4R70008	4.7	
	C220	ECUE1H100DCQ	10p	
	C221	ECUE1C104ZFQ	0.1	
	C222	ECUV1H104ZFV	0.1	
	C223	ECUE1A104KBQ	0.1	
	C224	ECUE1A104KBQ	0.1	
	C225	ECUE1H100DCQ	10p	
	C227	ECUE1H332KBQ	0.0033	
	C228	ECUE1H101JCQ	100p	
	C229	ECUE1H220JCQ	22p	
	C232	ECUE1A104KBQ	0.1	
	C233	ECUE1C103KBQ	0.01	
	C235	ECUE1A104KBQ	0.1	
	C236	F1J0J2260004	22	
	C237	F1J0J1060006	10	
	C238	ECUE0J105KBQ	1	
	C239	ECUE1H101JCQ	100p	
	C240	F1J0J2260004	22	
	C241	ECUE1H181JCQ	180p	
	C243	ECUE1H181JCQ	180p	
	C244	ECUE1C333KBQ	0.033	
	C245	ECUE1H100DCQ	10p	
	C246	ECUE1A104KBQ	0.1	
	C247	ECUE1A104KBQ	0.1	
	C248	ECUE1H220JCQ	22p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C250	ECUE1H100DCQ	10p	
	C252	ECUE1A104KBQ	0.1	
	C253	ECUE1H101JCQ	100p	
	C254	F1J0J2260004	22	
	C256	ECUE1E562KBQ	0.0056	
	C258	F2G0J1010015	100	
	C300	ECUE1C104ZFQ	0.1	
	C301	ECUE1C104ZFQ	0.1	
	C304	ECJ0EB0J224K	0.22	S
	C305	ECJ0EB0J224K	0.22	S
	C306	ECJ0EB0J224K	0.22	S
	C308	ECJ0EB0J224K	0.22	S
	C310	ECUE1H220JCQ	22p	
	C311	ECUE1H270JCQ	27p	
	C312	ECUE1A104KBQ	0.1	
	C313	ECUE1H220JCQ	22p	
	C314	ECUE1H330JCQ	33p	
	C315	ECUE1H100DCQ	10p	
	C316	ECUE1H8R0DCQ	8	
	C317	ECUE1H270JCQ	27p	
	C318	ECUE1H120JCQ	12p	
	C319	ECUE0J105KBQ	1	
	C321	ECUE1C104ZFQ	0.1	
	C322	ECUE0J105KBQ	1	
	C325	ECUE1C104ZFQ	0.1	
	C326	ECUE1C103KBQ	0.01	
	C327	ECUE1C104ZFQ	0.1	
	C328	ECUE1C104ZFQ	0.1	
	C329	ECUE1C104ZFQ	0.1	
	C330	ECUE1C104ZFQ	0.1	
	C331	ECUE1C104ZFQ	0.1	
	C332	ECUE1C104ZFQ	0.1	
	C333	ECUE1C104ZFQ	0.1	
	C334	ECUE1C104ZFQ	0.1	
	C335	ECUE1C104ZFQ	0.1	
	C336	ECUE1C104ZFQ	0.1	
	C337	ECUE1C104ZFQ	0.1	
	C338	ECUE1C104ZFQ	0.1	
	C339	ECUE1C104ZFQ	0.1	
	C351	ECUE1H101JCQ	100p	
	C352	ECUE1C104ZFQ	0.1	
	C353	ECUE1C104ZFQ	0.1	
	C354	ECUE1C104ZFQ	0.1	
	C355	ECUE1C104ZFQ	0.1	
	C357	ECUE1C104ZFQ	0.1	
	C358	ECUE1C104ZFQ	0.1	
	C359	ECUE1C104ZFQ	0.1	
	C360	ECUE1C104ZFQ	0.1	
	C361	ECUE1C104ZFQ	0.1	
	C362	ECUE1C104ZFQ	0.1	
	C363	ECUE1C104ZFQ	0.1	
	C364	ECUE1C104ZFQ	0.1	
	C400	ECUE1C104ZFQ	0.1	
	C401	ECUE1C103KBQ	0.01	
	C402	ECUE1C104ZFQ	0.1	
	C403	ECUE1C104ZFQ	0.1	
	C404	ECUE1C104ZFQ	0.1	
	C405	ECUE1C103KBQ	0.01	
	C406	ECUE1C104ZFQ	0.1	
	C412	ECUE1C103KBQ	0.01	
	C413	ECUE1C104ZFQ	0.1	
	C414	ECUE1C104ZFQ	0.1	
	C419	ECUE1H101JCQ	100p	
	C420	ECUE1H101JCQ	100p	
	C421	ECUE1H101JCQ	100p	
	C422	ECUE1H101JCQ	100p	
	C423	ECUE1H101JCQ	100p	
	C424	ECUE1H101JCQ	100p	
	C425	ECUE1H101JCQ	100p	
	C426	ECUE1H101JCQ	100p	
	C427	ECUE1H101JCQ	100p	
	C428	ECUE1H101JCQ	100p	
	C429	ECUE1H101JCQ	100p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C470	ECUE1H270JCQ	27p	
	C471	ECUE1C104ZFQ	0.1	
	C501	ECUV1H104ZFV	0.1	
	C502	ECUE0J105KBQ	1	
	C503	ECUV1H104ZFV	0.1	
	C504	ECUE1C104ZFQ	0.1	
	C505	F2G1V2210014	220	
	C506	ECUE1H100DCQ	10p	
	C507	ECUE1H102KBQ	0.001	
	C508	ECJ0EB1A473K	0.047	S
	C509	ECUE1A104KBQ	0.1	
	C510	ECUE1A104KBQ	0.1	
	C511	ECUE1H102KBQ	0.001	
	C512	F1J0J1060006	10	
	C513	ECUV1A105ZFV	1	
	C514	ECUE1H392KBQ	0.0039	
	C515	F2G1V2210014	220	
	C516	ECUE1H102KBQ	0.001	
	C517	ECUE1H102KBQ	0.001	
	C518	ECUV1H104ZFV	0.1	
	C520	ECUE1H102KBQ	0.001	
	C522	ECUE1H102KBQ	0.001	
	C524	F2G1V4700028	47	
	C525	ECUV1H104ZFV	0.1	
	C526	ECUE1H102KBQ	0.001	
	C527	ECUE1H102KBQ	0.001	
	C528	ECUE1H102KBQ	0.001	
	C529	ECUE1H102KBQ	0.001	
	C530	F1J0J1060006	10	
	C531	F1J0J1060006	10	
	C533	ECUE1A104KBQ	0.1	
	C534	ECUE1A104KBQ	0.1	
	C536	ECUE1A104KBQ	0.1	
	C537	ECUE1A104KBQ	0.1	
	C538	F1J0J1060006	10	
	C540	ECUE1A104KBQ	0.1	
	C542	ECUE1A104KBQ	0.1	
	C543	ECUE1A104KBQ	0.1	
	C544	ECUE1C103KBQ	0.01	
	C545	ECUE0J105KBQ	1	
	C546	ECUE1C103KBQ	0.01	
	C547	ECUE1H101JCQ	100p	
	C548	ECUE1H102KBQ	0.001	
	C549	F2G0J1010015	100	
	C550	F2G1C2200013	22	
	C551	ECUE1H102KBQ	0.001	
	C552	ECUE1C104ZFQ	0.1	
	C553	ECUE1H102KBQ	0.001	
	C554	ECUE1H102KBQ	0.001	
	C555	ECUE1C104ZFQ	0.1	
	C556	ECUE1H101JCQ	100p	
	C557	ECUE1H181JCQ	180p	
	C559	ECUE1H102KBQ	0.001	
	C563	ECUE1H102KBQ	0.001	
	C565	ECJ0EB1A473K	0.047	S
	C568	ECUE1H102KBQ	0.001	
	C569	ECJ0EB1A473K	0.047	S
	C571	ECUE0J105KBQ	1	
	C572	ECUE1C104ZFQ	0.1	
	C573	F2G1V2210014	220	
	C574	F1J0J106A020	10	
	C642	ECUV1H104ZFV	0.1	
	C643	ECUV1H104ZFV	0.1	
	C644	ECUV1H104ZFV	0.1	
	C645	ECUE1C104ZFQ	0.1	
	C646	ECUE1C104ZFQ	0.1	
	C647	ECUE1C104ZFQ	0.1	
	C648	ECUE1C104ZFQ	0.1	
	C649	ECUE1C104ZFQ	0.1	
	C650	ECUE1C104ZFQ	0.1	
	C651	ECUE1C104ZFQ	0.1	
	C652	ECUE1C104ZFQ	0.1	
	C653	ECUE1C104ZFQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C654	ECUE1C104ZFQ	0.1	
	C655	ECUE1C104ZFQ	0.1	
	C656	ECUE1C104ZFQ	0.1	
	C657	ECUE1C104ZFQ	0.1	
	C658	ECUE1C104ZFQ	0.1	
	C659	ECUE1C104ZFQ	0.1	
	C660	ECUE1C104ZFQ	0.1	
	C661	ECUE1C104ZFQ	0.1	
	C662	ECUE1C104ZFQ	0.1	
	C663	ECUE1C104ZFQ	0.1	
	C664	ECUE1C104ZFQ	0.1	
	C665	ECUE1C104ZFQ	0.1	
	C666	ECUE1C104ZFQ	0.1	
	C667	ECUE1C104ZFQ	0.1	
	C668	ECUE1C104ZFQ	0.1	
	C669	ECUE1C104ZFQ	0.1	
	C670	ECUE1C104ZFQ	0.1	
	C671	ECUV1H104ZFV	0.1	
	C672	ECUV1H104ZFV	0.1	
	C673	ECUV1H104ZFV	0.1	
	C674	ECUE1C104ZFQ	0.1	
	C675	ECUE1C104ZFQ	0.1	
	C676	ECUE1C104ZFQ	0.1	
	C677	ECUE1C104ZFQ	0.1	
	C678	ECUE1C104ZFQ	0.1	
	C679	ECUE1C104ZFQ	0.1	
	C680	ECUE1C104ZFQ	0.1	
	C681	ECUE1C104ZFQ	0.1	
	C682	ECUE1C104ZFQ	0.1	
	C683	ECUE1C104ZFQ	0.1	
	C684	ECUE1C104ZFQ	0.1	
	C685	ECUE1C104ZFQ	0.1	
	C686	ECUE1C104ZFQ	0.1	
	C687	ECUE1C104ZFQ	0.1	
	C688	ECUE1C104ZFQ	0.1	
	C689	ECUE1C104ZFQ	0.1	
	C690	ECUE1C104ZFQ	0.1	
	C691	ECUE1C104ZFQ	0.1	
	C692	ECUE1C104ZFQ	0.1	
	C693	ECUE1C104ZFQ	0.1	
	C695	ECUE1C104ZFQ	0.1	
	C696	ECUE1C104ZFQ	0.1	
	C697	ECUE1C104ZFQ	0.1	
	C698	ECUE1C104ZFQ	0.1	
	C699	ECUE1C104ZFQ	0.1	
	C701	ECUE1H102KBQ	0.001	
	C702	ECUE1H102KBQ	0.001	
	C703	ECUE1H102KBQ	0.001	
	C704	ECUE1H102KBQ	0.001	
	C709	ECUE1H102KBQ	0.001	
	C710	ECUE1H102KBQ	0.001	
	C711	ECUE1H102KBQ	0.001	
	C712	ECUE1H102KBQ	0.001	
	C750	ECUE1H101JCQ	100p	
	C751	ECUE1C104ZFQ	0.1	
	C752	F2G0J4700013	47	
	C753	ECUE1C104ZFQ	0.1	
	C754	ECUE1A104KBQ	0.1	
	C755	ECUE1A104KBQ	0.1	
	C756	ECUE1H100DCQ	10p	
	C757	ECUE1H150JCQ	15p	
	C758	ECUE1C104ZFQ	0.1	
	C759	F1J0J1060006	10	
	C760	ECUE1C103KBQ	0.01	
	C762	F2G0J4700013	47	
	C763	ECUE1H220JCQ	22p	
	C764	ECUE1H220JCQ	22p	
	C765	ECUE1H220JCQ	22p	
	C766	ECUE1H220JCQ	22p	
	C767	ECUE1A104KBQ	0.1	
	C768	ECUE1A104KBQ	0.1	
	C769	F1J0J1060006	10	
	C770	ECUE1H101JCQ	100p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C800	F2H0J1010009	100	
	C801	ECUV1H104ZFV	0.1	
	C802	PQCUV1A105KB	1	
	C803	ECUV1H104ZFV	0.1	
	C804	F1L1V1060002	35	
	C805	F1L1V1060002	35	
	C806	ECUV1H104ZFV	0.1	
	C807	ECUV1H104ZFV	0.1	
	C808	ECUV1H104ZFV	0.1	
	C809	ECJ0EB1A473K	0.047	S
	C810	ECUV1H103KBV	0.01	
	C811	ECUV1A474KBV	0.47	
	C812	ECUV1H103KBV	0.01	
	C813	ECUV1A334KBV	0.33	
	C814	ECUE1A104KBQ	0.1	
	C817	F2H0J1010009	100	
	C818	PQCUV1A105KB	1	
	C819	PQCUV1C105ZF	1	S
	C820	PQCUV1C105ZF	1	S
	C900	ECUE0J105KBQ	1	
	C901	ECUE1C104ZFQ	0.1	
	C902	ECUE1A104KBQ	0.1	
	C903	ECUE1C103KBQ	0.01	
	C904	ECUE1H102KBQ	0.001	
	C906	ECUE0J105KBQ	1	
	C907	ECUE1C104ZFQ	0.1	
	C908	ECUE1H330JCQ	33p	
	C909	ECUE1C103KBQ	0.01	
	C910	ECUE1A104KBQ	0.1	
	C911	ECUE1C103KBQ	0.01	
	C912	ECUE1H6R0DCQ	6	
	C913	ECUE1H150JCQ	15p	
	C914	ECUE1C103KBQ	0.01	
	C915	ECUE1C103KBQ	0.01	
	C916	ECUE1A104KBQ	0.1	
	C917	ECUE1A104KBQ	0.1	
	C918	ECUE1H150JCQ	15p	
	C919	ECUE1H150JCQ	15p	
	C920	ECUE1C103KBQ	0.01	
	C927	ECUE1C103KBQ	0.01	
	C928	ECUE1H220JCQ	22p	
	C929	ECUE1C104ZFQ	0.1	
	C930	ECUE1H102KBQ	0.001	
	C931	ECUE1A104KBQ	0.1	
	C932	ECUE1C103KBQ	0.01	
	C933	F1L1V1060002	35	
	C934	ECUE1A683KBQ	0.068	
	C935	ECUE1A683KBQ	0.068	
	C936	ECUE1A104KBQ	0.1	
	C937	ECUE1A104KBQ	0.1	
	C938	F2G0J3310025	330	
	C939	ECUE1C104ZFQ	0.1	
	C940	ECUE0J105KBQ	1	
	C943	ECUE1C104ZFQ	0.1	
	C944	ECUV1C474KBV	0.47	
	C945	ECUE1H102KBQ	0.001	
	C946	ECUE1H151JCQ	150p	
	C947	ECUE1H100DCQ	10p	
	C948	ECUE1H100DCQ	10p	
	C949	ECUE1H100DCQ	10p	
	C950	ECUE1H100DCQ	10p	
	C951	ECUE1H220JCQ	22p	
	C952	ECUE1H100DCQ	10p	
	C953	ECUE1H2R0CCQ	2	
	C954	ECUE1H100DCQ	10p	
	C955	ECUE1H100DCQ	10p	
	C956	ECUE1H100DCQ	10p	
	C957	ECUE0J105KBQ	1	
	C958	ECUE1H100DCQ	10p	
	C959	PQCUV0J475KB	4.7	
	C960	ECUE1H120JCQ	12p	
	C961	ECUE1H120JCQ	12p	
	C962	ECUE1H100DCQ	10p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C963	ECUE1H100DCQ	10p	
	C964	PQCUV0J475KB	4.7	
	C965	PQCUV0J475KB	4.7	
	C967	ECUE1H100DCQ	10p	
	C972	F1L1V1060002	35	
	C973	ECUV1H104ZFV	0.1	
	C974	ECUV1H104ZFV	0.1	
	C975	ECUV1H104ZFV	0.1	
	C976	ECUV1H104KBV	0.1	
	C977	ECUE1H471KBQ	470p	
	C978	F1K1A106A020	10	
	C979	ECUE1A104KBQ	0.1	
	C981	F1L1V1060002	35	
	C982	ECUE1H102KBQ	0.001	
			(CONNECTORS & JACKS)	
	CN100	K2LB1YYB0002	JACK	
	CN200	K1KA08A00440	CONNECTOR, 8PIN	
	CN300	K1FY104B0015	CONNECTOR, 8PIN	
	CN500	K1KA07A00257	CONNECTOR, 7PIN	
	CN501	K1KA05A00364	CONNECTOR, 5PIN	
	CN502	K1KA08AA0193	CONNECTOR, 8PIN	
	CN504	K1KA08A00498	CONNECTOR, 8PIN	
	CN505	K1KA08A00440	CONNECTOR, 8PIN	
	CN506	K1KA03AA0193	CONNECTOR, 3PIN	
	CN507	K1KA02AA0193	CONNECTOR, 2PIN	
	CN508	K1KA10A00412	CONNECTOR, 10PIN	
	CN509	K1KA04A00527	CONNECTOR, 4PIN	
	CN510	K1KA13A00130	CONNECTOR, 13PIN	
	CN511	K1KA08A00440	CONNECTOR, 8PIN	
	CN514	K1KA02AA0193	CONNECTOR, 2PIN	
	CN700	K1KA04A00644	CONNECTOR, 4PIN	
	CN701	K1KA04AA0193	CONNECTOR, 4PIN	
	CN750	K2LC1YYB0012	JACK	
			(MAGNETIC SHIELD)	
	E1	PNMC1028Z	MAGNETIC SHIELD	
			(FUSES)	
	F800	K5H302Y00003	FUSE	
	F900	K5H302Y00003	FUSE	
			(RF UNIT)	
	IC905	PQLP10293Z	RF UNIT	
			(COILS)	
	L100	PQLQR1E32A07	COIL	S
	L101	PQLQR1E32A07	COIL	S
	L106	G0B862C00003	COIL	
	L201	J0JCC0000288	COIL	
	L205	J0JCC0000288	COIL	
	L300	G1BYYYC00026	COIL	
	L502	PFVF2P221SG	COIL	S
	L800	G1C220MA0291	COIL	
	L801	G1C220MA0291	COIL	
	L905	G1C4R7MA0395	COIL	
			(IC FILTERS)	
	L202	J0JCC0000276	IC FILTER	
	L203	J0JBC0000040	IC FILTER	
	L204	J0JCC0000276	IC FILTER	
	L207	J0JBC0000040	IC FILTER	
	L208	J0JCC0000276	IC FILTER	
	L209	J0JCC0000276	IC FILTER	
	L344	J0JCC0000286	IC FILTER	
	L345	J0JCC0000286	IC FILTER	
	L346	J0JCC0000286	IC FILTER	
	L347	J0JCC0000286	IC FILTER	
	L348	J0JCC0000277	IC FILTER	
	L349	J0JCC0000277	IC FILTER	
	L350	J0JCC0000277	IC FILTER	
	L351	J0JCC0000277	IC FILTER	
	L356	J0JCC0000277	IC FILTER	
	L357	J0MAB0000146	IC FILTER	
	L364	J0JCC0000274	IC FILTER	
	L500	J0JCC0000277	IC FILTER	
	L501	J0JCC0000276	IC FILTER	
	L503	J0JGC0000020	IC FILTER	
	L504	J0JGC0000020	IC FILTER	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L750	J0JCC0000276	IC FILTER	
	L752	J0MAB0000185	IC FILTER	
	L753	J0MAB0000185	IC FILTER	
	L903	J0JCC0000286	IC FILTER	
	L904	J0JCC0000286	IC FILTER	
	R395	J0JGC0000020	IC FILTER	
	R397	J0JGC0000020	IC FILTER	
	FLT500	J0HAAB000021	IC FILTER	
			(PHOTO ELECTRIC TRANS-DUCERS)	
⚠	PC103	B3PAA0000330	PHOTO ELECTRIC TRANS-DUCER	
			(THERMISTOR)	
	POS100	D4DAY220A022	THERMISTOR	
			(RESISTORS)	
	R108	ERDS1TJ124	120k	S
	R109	ERDS1TJ223	22k	S
	R117	ERG1SJ391	390	
	R123	ERG1SJ121	120	
	R200	ERJ2GEJ102	1k	S
	R203	ERJ3GEYJ104	100k	S
	R204	ERJ2GEJ124	120k	S
	R206	ERJ2GEJ333	33k	S
	R207	ERJ2GEJ823	82k	S
	R209	ERJ3GEYJ104	100k	S
	R210	ERJ2GEJ182	1.8k	S
	R212	ERJ2GEJ153	15k	S
	R213	ERJ2GEJ105X	1M	S
	R214	ERJ2GE0R00	0	S
	R215	ERJ2GEJ472X	4.7k	S
	R216	ERJ2GEJ562X	5.6k	S
	R217	ERJ3GEYJ100	10	S
	R218	ERJ2GEJ220	22	S
	R219	ERJ2GE0R00	0	S
	R220	ERJ2GEJ182	1.8k	S
	R221	ERJ2GEJ334	330k	S
	R223	ERJ2GEJ432X	4.3k	S
	R224	ERJ2GEJ823	82k	S
	R225	ERJ2GEJ105X	1M	S
	R226	ERJ2GEJ473	47k	S
	R227	ERJ3GEYJ104	100k	S
	R228	ERJ3GEYJ104	100k	S
	R229	ERJ2GEJ682	6.8k	S
	R230	ERJ2GEJ124	120k	S
	R231	ERJ2GEJ183	18k	S
	R232	ERJ3GEYJ100	10	S
	R233	ERJ2GEJ334	330k	S
	R234	ERJ2GEJ220	22	S
	R235	ERJ2GEJ564	560k	S
	R236	ERJ2GEJ204	200k	S
	R237	ERJ2GEJ123	12k	S
	R238	ERJ2GEJ153	15k	S
	R239	ERJ2GEJ681	680	S
	R240	ERJ2GEJ124	120k	S
	R241	ERJ3GEYJ181	180	S
	R243	ERJ2GEJ333	33k	S
	R245	ERJ2GEJ153	15k	S
	R247	ERJ2GEJ222	2.2k	S
	R248	ERJ2GEJ564	560k	S
	R249	ERJ2GEJ393X	39k	S
	R250	ERJ2GEJ124	120k	S
	R251	ERJ2GEJ124	120k	S
	R253	PQ4R18XJ100	10	S
	R256	ERJ3GEYJ180	18	S
	R257	ERJ3GEYJ100	10	S
	R258	ERJ3GEYJ100	10	S
	R259	ERJ2GE0R00	0	S
	R273	ERJ2GEJ912X	9.1k	S
	R274	ERJ2GEJ473	47k	S
	R275	ERJ2GEJ220	22	S
	R276	ERJ2GEJ333	33k	S
	R277	ERJ2GE0R00	0	S
	R279	ERJ3GEY0R00	0	S
	R280	ERJ3GEY0R00	0	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R301	ERJ2GEJ221	220	S
	R302	ERJ2RKF49R9	49.9	
	R303	ERJ2GEJ472X	4.7k	S
	R304	ERJ2GEJ101	100	S
	R305	ERJ2GEJ103	10k	S
	R307	ERJ2GEJ221	220	S
	R308	ERJ2GEJ330	33	S
	R309	ERJ2GEJ470	47	S
	R310	ERJ2GEJ330	33	S
	R311	ERJ2GEJ330	33	S
	R315	ERJ2GEJ103	10k	S
	R316	ERJ2GEJ103	10k	S
	R335	ERJ2GEJ472X	4.7k	S
	R336	ERJ2GE0R00	0	S
	R337	ERJ2GE0R00	0	S
	R338	ERJ2GEJ103	10k	S
	R339	ERJ2GEJ223	22k	S
	R340	ECUE1H220JCQ	22p	
	R348	ECUE1H220JCQ	22p	
	R352	ERJ2GEJ103	10k	S
	R354	ERJ2GEJ103	10k	S
	R355	ERJ2GEJ103	10k	S
	R356	ERJ2GEJ103	10k	S
	R361	ERJ2GEJ103	10k	S
	R362	ERJ2GEJ103	10k	S
	R364	ERJ2GEJ103	10k	S
	R366	ERJ2GEJ103	10k	S
	R367	ERJ2GEJ470	47	S
	R368	ERJ2GEJ470	47	S
	R369	ERJ2GEJ470	47	S
	R372	ERJ2GEJ103	10k	S
	R373	ERJ2GEJ103	10k	S
	R374	ERJ2GEJ471	470	S
	R375	ERJ2GEJ221	220	S
	R376	ERJ2RKF6981	6.98k	
	R378	ERJ2GEJ102	1k	S
	R380	ERJ2GEJ1R0	1	S
	R381	ERJ2GEJ1R0	1	S
	R382	ERJ2GEJ1R0	1	S
	R384	ERJ2GEJ101	100	S
	R385	ERJ2GEJ1R0	1	S
	R386	ERJ2GEJ221	220	S
	R387	ERJ2GEJ105X	1M	S
	R388	ERJ2GEJ184	180k	S
	R389	ERJ2GEJ102	1k	S
	R391	ERJ2GEJ103	10k	S
	R396	ERJ3GEY0R00	0	S
	R398	ERJ3GEY0R00	0	S
	R400	ERJ2GEJ470	47	S
	R401	ERJ2GEJ680	68	S
	R402	ERJ2GEJ470	47	S
	R403	ERJ2GEJ470	47	S
	R404	ERJ2GEJ470	47	S
	R405	ERJ2GEJ470	47	S
	R406	ERJ2GEJ470	47	S
	R407	ERJ2GEJ470	47	S
	R408	ERJ2GEJ470	47	S
	R409	ERJ2GEJ680	68	S
	R410	ERJ2GEJ680	68	S
	R449	ERJ2GEJ103	10k	S
	R500	ERJ2GEJ102	1k	S
	R501	ERJ2GEJ101	100	S
	R502	ERJ2GEJ101	100	S
	R503	ERJ2RKF6201	6.2k	
	R504	ERJ2GEJ473	47k	S
	R505	ERJ2RKF1503	150k	
	R506	ERJ2GEJ223	22k	S
	R507	ERJ2RKF2202	22k	
	R508	ERJ2GEJ102	1k	S
	R509	ERJ2GEJ102	1k	S
	R510	ERJ2GEJ562X	5.6k	S
	R511	ERJ2GEJ181	180	S
	R512	ERJ2GEJ563	56k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R513	ERJ2GEJ103	10k	S
	R514	ERJ2RKF1503	150k	
	R515	ERJ2GEJ102	1k	S
	R516	ERJ2GEJ823	82k	S
	R517	ERJ2GEJ332	3.3k	S
	R518	ERJ2GEJ472X	4.7k	S
	R519	ERJ2GEJ472X	4.7k	S
	R520	ERJ2GEJ102	1k	S
	R521	ERJ2GEJ563	56k	S
	R522	ERJ2GEJ103	10k	S
	R523	ERJ2GEJ563	56k	S
	R524	ERJ2GEJ472X	4.7k	S
	R525	ERJ12YJ390	39	
	R526	ERJ2GEJ103	10k	S
	R527	ERJ2GEJ562X	5.6k	S
	R528	PQ4R10XJ332	3.3k	S
	R529	ERJ2GEJ471	470	S
	R530	ERJ2GEJ102	1k	S
	R531	ERJ2GEJ562X	5.6k	S
	R532	PQ4R18XJ272	2.7k	S
	R533	ERJ2RKF1001	1k	
	R534	ERJ2GEJ473	47k	S
	R535	ERJ2GEJ473	47k	S
	R536	ERJ8RQFR39	0.39	
	R537	ERJ8RQFR39	0.39	
	R538	ERJ2GEJ102	1k	S
	R539	ERJ2GEJ103	10k	S
	R540	ERJ2GEJ221	220	S
	R541	ERJ2GEJ122	1.2k	S
	R542	ERJ2GEJ122	1.2k	S
	R543	ERJ3GEYJ180	18	S
	R544	ERJ2GEJ122	1.2k	S
	R545	ERJ2GEJ123	12k	S
	R546	ERJ2GEJ122	1.2k	S
	R547	ERJ2GEJ471	470	S
	R548	ERJ3GEYJ1R2	1.2	S
	R549	ERJ3GEYJ330	33	S
	R550	ERJ2GEJ122	1.2k	S
	R551	ERJ2GEJ274	270k	S
	R552	ERJ2GEJ102	1k	S
	R553	ERJ2GEJ820	82	S
	R554	ERJ2GEJ122	1.2k	S
	R555	ERJ2GEJ472X	4.7k	S
	R556	ERJ3GEYJ390	39	S
	R557	ERJ2GEJ274	270k	S
	R558	ERJ2GEJ470	47	S
	R559	ERJ2GEJ101	100	S
	R560	ERJ2GEJ181	180	S
	R561	ERJ2GEJ102	1k	S
	R562	ERJ2GEJ102	1k	S
	R563	ERJ2GEJ101	100	S
	R564	ERJ2RKF1802	18k	
	R565	ERJ2GEJ103	10k	S
	R566	ERJ2GEJ123	12k	S
	R567	ERJ2GEJ103	10k	S
	R568	ERJ12YJ390	39	
	R569	ERJ2GEJ563	56k	S
	R570	ERJ2GEJ562X	5.6k	S
	R571	ERJ2GEJ561	560	S
	R573	ERJ2GEJ103	10k	S
	R574	PQ4R10XJ822	8.2k	S
	R575	ERJ2GEJ153	15k	S
	R576	ERJ2GEJ472X	4.7k	S
	R577	ERJ2GEJ102	1k	S
	R578	ERJ2GEJ332	3.3k	S
	R579	ERJ2GEJ471	470	S
	R580	ERJ2GEJ562X	5.6k	S
	R581	ERJ2RKF4700	470	
	R582	ERJ2GEJ223	22k	S
	R583	ERJ2GEJ562X	5.6k	S
	R584	ERJ2RKF6201	6.2k	
	R585	ERJ2GEJ562X	5.6k	S
	R587	ERJ2GEJ223	22k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R588	ERJ2GEJ563	56k	S
	R589	ERJ2GEJ562X	5.6k	S
	R590	ERJ12RQJR22	0.22	
	R591	ERJ12RQJR22	0.22	
	R594	ERJ2GEJ154	150k	S
	R596	ERJ2GEJ472X	4.7k	S
	R597	ERJ2GEJ102	1k	S
	R598	ERJ2GEJ822	8.2k	S
	R599	ERJ2GEJ183	18k	S
	R602	ERJ2GE0R00	0	S
	R603	ERJ2GE0R00	0	S
	R604	ERJ2GE0R00	0	S
	R700	ERJ2GEJ123	12k	S
	R701	ERJ2GEJ274	270k	S
	R702	ERJ2GEJ274	270k	S
	R703	ERJ2GEJ562X	5.6k	S
	R704	ERJ2GEJ562X	5.6k	S
	R705	ERJ2GEJ563	56k	S
	R706	ERJ2GEJ563	56k	S
	R707	ERJ8RQFR33	0.33	
	R708	ERJ8RQFR33	0.33	
	R709	D0GA222JA015	2.2k	S
	R710	ERJ2GEJ123	12k	S
	R711	ERJ2GEJ103	10k	S
	R750	ERJ2RKF49R9	49.9	
	R751	ERJ2RKF49R9	49.9	
	R752	ERJ2RKF49R9	49.9	
	R753	ERJ2RKF49R9	49.9	
	R754	ERJ2RKF6491	6.49k	
	R755	ERJ2GEJ221	220	S
	R759	ERJ2GEJ103	10k	S
	R760	ERJ2GEJ331	330	S
	R764	ERJ2GEJ330	33	S
	R765	ERJ2GEJ330	33	S
	R800	ERJ2RKF2202	22k	
	R801	ERJ2RKF1001	1k	
	R802	ERJ2RKF1002	10k	
	R803	ERJ2RKF4701	4.7k	
	R804	ERJ2RKF9091	9.09k	
	R805	ERJ2GEJ104	100k	S
	R807	PQ4R18XJ472	4.7k	S
	R808	ERJ2GEJ223	22k	S
	R809	ERJ2GEJ181	180	S
	R812	ERJ2RKF2201X	2.2k	
	R813	ERJ2RKF1001	1k	
	R815	ERJ2RKF1002	10k	
	R817	ERJ2RKF2001	2k	
	R818	ERJ2RKF4701	4.7k	
	R819	PQ4R18XJ471	470	S
	R820	PQ4R18XJ471	470	S
	R821	ERJ2GEJ473	47k	S
	R822	ERJ2GEJ473	47k	S
	R825	PQ4R18XJ102	1k	S
	R826	PQ4R18XJ102	1k	S
	R900	ERJ2GEJ153	15k	S
	R901	ERJ2GEJ561	560	S
	R902	ERJ2RKF1000	100	
	R903	ERJ2GEJ562X	5.6k	S
	R904	ERJ2GEJ102	1k	S
	R905	ERJ2GEJ272	2.7k	S
	R906	ERJ2RKF1302	13k	
	R907	ERJ2RKF5601	5.6k	
	R908	ERJ2GEJ102	1k	S
	R909	ERJ2GEJ302	3k	S
	R910	ERJ2GEJ272	2.7k	S
	R911	ERJ2GEJ330	33	S
	R912	ERJ2GEJ330	33	S
	R913	ERJ2GEJ222	2.2k	S
	R914	ERJ2GEJ222	2.2k	S
	R915	ERJ2GEJ221	220	S
	R916	ERJ2GEJ221	220	S
	R917	ERJ2GEJ330	33	S
	R918	ERJ2GEJ221	220	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R919	ERJ2GEJ472X	4.7k	S
	R920	ERJ2GEJ330	33	S
	R921	ERJ2GEJ330	33	S
	R922	ERJ2GEJ330	33	S
	R923	ERJ2GEJ330	33	S
	R926	ERJ2GEJ102	1k	S
	R928	ERJ2GEJ332	3.3k	S
	R929	ERJ2GEJ473	47k	S
	R930	ERJ2GEJ222	2.2k	S
	R931	ERJ2GEJ223	22k	S
	R932	ERJ2GEJ103	10k	S
	R933	ERJ2GEJ562X	5.6k	S
	R934	ERJ2GEJ562X	5.6k	S
	R935	ERJ2GEJ101	100	S
	R936	ERJ2GEJ101	100	S
	R937	ERJ2GEJ332	3.3k	S
	R939	ERJ2GEJ102	1k	S
	R940	ERJ2GEJ101	100	S
	R942	ERJ2GEJ222	2.2k	S
	R943	ERJ2GEJ222	2.2k	S
	R944	ERJ2GEJ222	2.2k	S
	R947	ERJ2GEJ561	560	S
	R948	ERJ2GEJ271	270	S
	R949	ERJ2GE0R00	0	S
	R950	ERJ2GEJ561	560	S
	R951	ERJ2GEJ102	1k	S
	R952	ERJ2GEJ102	1k	S
	R953	ERJ2GEJ680	68	S
	R954	ERJ2GEJ680	68	S
	R955	D0GA222JA015	2.2k	S
	R956	ERJ2GE0R00	0	S
	R957	ERJ2GE0R00	0	S
	R958	ERJ2GEJ332	3.3k	S
	R959	ERJ2GEJ332	3.3k	S
	R960	ERJ2GEJ272	2.7k	S
	R961	ERJ2GEJ472X	4.7k	S
	R962	ERJ2GEJ473	47k	S
	R963	ERJ2GEJ102	1k	S
	R964	ERJ2GE0R00	0	S
	R965	ERJ2GEJ331	330	S
	R966	ERJ2GEJ561	560	S
	R969	ERJ2GE0R00	0	S
	R970	ERJ2GEJ561	560	S
	R971	ERJ2GE0R00	0	S
	R973	ERJ2GEJ181	180	S
	R974	ERJ2GEJ181	180	S
	R975	ERJ2RKF2200	220	
	R976	ERJ2RKF2200	220	
	R977	ERJ2GEJ105X	1M	S
	R978	ERJ2GEJ103	10k	S
	R979	ERJ2GEJ103	10k	S
	R980	ERJ2GEJ472X	4.7k	S
	R981	ERJ2GEJ152	1.5k	S
	R982	ERJ2RKF1201	1.2k	
	R983	ERJ2GEJ510	51	S
	R984	ERJ2GEJ130	13	S
	R985	ERJ2RKF4701	4.7k	
	R992	ERJ2GEJ221	220	S
	R993	ERJ2GEJ103	10k	S
	R994	ERJ2GEJ103	10k	S
	R995	ERJ2GEJ222	2.2k	S
	R996	ERJ2GEJ222	2.2k	S
	R997	ERJ2GEJ103	10k	S
	R998	ERJ2GEJ220	22	S
	L206	ERJ2GE0R00	0	S
	L210	ERJ2GE0R00	0	S
	L211	ERJ2GE0R00	0	S
	L212	ERJ3GEY0R00	0	S
	L213	ERJ3GEY0R00	0	S
	L361	ERJ2GE0R00	0	S
	L363	ERJ2GEJ221	220	S
	L365	ERJ2GEJ330	33	S
	L366	ERJ2GEJ330	33	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L367	ERJ2GEJ330	33	S
	L368	ERJ2GEJ330	33	S
	L369	ERJ2GEJ221	220	S
	L370	ERJ2GEJ221	220	S
	L371	ERJ2GEJ221	220	S
	L900	ERJ3GEY0R00	0	S
	L901	ERJ2GE0R00	0	S
	L902	ERJ2GE0R00	0	S
			(COMPONENTS PARTS)	
	RA314	EXB28V470JX	RESISTOR ARRAY	
	RA315	EXB28V470JX	RESISTOR ARRAY	
	RA316	EXB28V470JX	RESISTOR ARRAY	
	RA317	EXB28V470JX	RESISTOR ARRAY	
	RA318	EXB28V470JX	RESISTOR ARRAY	
	RA319	EXB28V470JX	RESISTOR ARRAY	
	RA320	EXB28V470JX	RESISTOR ARRAY	
	RA321	EXB28V473JX	RESISTOR ARRAY	
	RA322	EXB28V473JX	RESISTOR ARRAY	
	RA323	EXB28V473JX	RESISTOR ARRAY	
	RA324	EXB28V473JX	RESISTOR ARRAY	
	RA325	EXB28V470JX	RESISTOR ARRAY	
	RA400	EXB28V560JX	RESISTOR ARRAY	
	RA401	EXB28V560JX	RESISTOR ARRAY	
	RA402	EXB28V560JX	RESISTOR ARRAY	
	RA403	EXB28V560JX	RESISTOR ARRAY	
	RA404	EXB28V470JX	RESISTOR ARRAY	
	RA405	EXB28V470JX	RESISTOR ARRAY	
	RA406	EXB28V470JX	RESISTOR ARRAY	
	RA413	EXB28V473JX	RESISTOR ARRAY	
	RA414	EXB28V473JX	RESISTOR ARRAY	
	RA750	EXB28V330	RESISTOR ARRAY	
	RA751	EXB28V330	RESISTOR ARRAY	
	RA752	EXB28V330	RESISTOR ARRAY	
	RA753	EXB28V330	RESISTOR ARRAY	
	RA900	EXB28V470JX	RESISTOR ARRAY	
	RA901	EXB28V470JX	RESISTOR ARRAY	
	RA902	EXB28V470JX	RESISTOR ARRAY	
	RA903	EXB28V470JX	RESISTOR ARRAY	
			(RELAY)	
⚠	RLY100	K6B1CYY00005	RELAY	
			(VARISTORS)	
	SA100	PFRZRA311P6T	VARISTOR	S
⚠	SA102	PFRZRA102P6T	VARISTOR	S
			(TRANSFORMERS)	
⚠	T100	G4AYB0000007	TRANSFORMER	
⚠	T101	G4A1A0000172	TRANSFORMER	
			(CRYSTAL OSCILLATORS)	
	X300	H0J120500055	CRYSTAL OSCILLATOR	
	X301	H0J245500087	CRYSTAL OSCILLATOR	
	X302	H0J238500001	CRYSTAL OSCILLATOR	
	X303	H0A327200147	CRYSTAL OSCILLATOR	
	X750	H0J250500086	CRYSTAL OSCILLATOR	
	X900	H0D103500003	CRYSTAL OSCILLATOR	

19.2.2. Operation Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PNLP2258RUZ	OPERATION BOARD ASS'Y (RTL)	
			(IC)	
	IC1	C1ZBZ0004019	IC	
			(DIODES)	
	LED1	B3AAA0000534	DIODE(SI)	
	LED2	B3ABA0000633	DIODE(SI)	
	LED3	B3ABA0000633	DIODE(SI)	
	LED4	B3ABA0000633	DIODE(SI)	
	LED5	B3ABA0000633	DIODE(SI)	
			(CAPACITORS)	
	C1	ECUV1C104ZFV	0.1	
	C2	ECUV1C104ZFV	0.1	
	C3	ECUV1C104ZFV	0.1	
	C4	ECUV1H391JCV	390p	S
	C6	ECUV1H391JCV	390p	S
	C7	ECUV1H821JCV	820p	
	C8	ECUV1H102KBV	0.001	
	C10	ECUV1C104ZFV	0.1	
	C11	ECUV1C104ZFV	0.1	
	C12	ECUV1H391JCV	390p	S
	C13	ECUV1H101JCV	100p	
	C14	ECUV1H101JCV	100p	
	C17	ECEA1CK101	100	S
	C18	ECUV1C104ZFV	0.1	
	C20	ECUV1H272KBV	0.0027	
	C21	ECUV1H152KBV	0.0015	
	C22	ECUV1H152KBV	0.0015	
			(LIQUID CRYSTAL DISPLAY)	
	CN1	L5DAAYY00002	LIQUID CRYSTAL DISPLAY	
			(CONNECTOR)	
	CN2	K1KA08B00243	CONNECTOR	
			(RESISTORS)	
	R1	ERJ3GEYJ391	390	S
	R2	ERJ3GEYJ241	240	S
	R3	ERJ3GEYJ241	240	S
	R4	ERJ3GEYJ241	240	S
	R5	ERJ3GEYJ123	12k	S
	R6	ERJ3GEYJ472	4.7k	S
	R7	ERJ3GEYJ563	56k	S
	R8	ERJ3GEYJ4R7	4.7	S
	R9	ERJ3GEYJ391	390	S
	R11	ERJ3GEYJ101	100	S
	R12	ERJ3GEYJ101	100	S
	R13	ERJ3GEYJ101	100	S
	R14	ERJ3GEYJ332	3.3k	S
	R15	ERJ3GEYJ123	12k	S
	R18	ERJ3GEYJ102	1k	S
	R20	ERJ3GEYJ181	180	S
	R21	ERJ3GEYJ181	180	S
	R22	ERJ3GEYJ181	180	S
	R23	ERJ3GEYJ181	180	S
	R24	ERJ3GEYJ181	180	S
	R25	ERJ3GEYJ181	180	S
	R26	ERJ3GEYJ181	180	S
	R27	ERJ3GEYJ181	180	S
	R28	ERJ8GEY0R00	0	S
	R30	ERJ3GEYJ241	240	S
			(SWITCHES)	
	SW1	K0H1BA000259	SWITCH	
	SW2	K0H1BA000259	SWITCH	
	SW3	K0H1BA000259	SWITCH	
	SW4	K0H1BA000259	SWITCH	
	SW5	K0H1BA000259	SWITCH	
	SW6	K0H1BA000259	SWITCH	
	SW7	K0H1BA000259	SWITCH	
	SW8	K0H1BA000259	SWITCH	
	SW9	K0H1BA000259	SWITCH	
	SW10	K0H1BA000259	SWITCH	
	SW11	K0H1BA000259	SWITCH	
	SW12	K0H1BA000259	SWITCH	
	SW13	K0H1BA000259	SWITCH	
	SW14	K0H1BA000259	SWITCH	
	SW15	K0H1BA000259	SWITCH	
	SW16	K0H1BA000259	SWITCH	
	SW17	K0H1BA000259	SWITCH	
	SW18	K0H1BA000259	SWITCH	
	SW19	K0H1BA000259	SWITCH	
	SW20	K0H1BA000259	SWITCH	
	SW21	K0H1BA000259	SWITCH	
	SW22	K0H1BA000259	SWITCH	
	SW23	K0H1BA000259	SWITCH	
	SW24	K0H1BA000259	SWITCH	
	SW25	K0H1BA000259	SWITCH	
	SW26	K0H1BA000259	SWITCH	
	SW27	K0H1BA000259	SWITCH	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	SW28	K0H1BA000259	SWITCH	
	SW29	K0H1BA000259	SWITCH	
	SW30	K0H1BA000259	SWITCH	
	SW31	K0H1BA000259	SWITCH	
	SW32	K0H1BA000259	SWITCH	
	SW33	K0H1BA000259	SWITCH	
	SW34	K0H1BA000259	SWITCH	
	SW35	K0H1BA000259	SWITCH	
	SW36	K0H1BA000259	SWITCH	
	SW37	K0H1BA000259	SWITCH	
	SW38	K0H1BA000259	SWITCH	
	SW39	K0H1BA000259	SWITCH	
	SW40	K0H1BA000259	SWITCH	
			(THERMISTOR)	
	TH1	D4CCY1030002	THERMISTOR	

19.2.3. Sensor Board Parts

19.2.3.1. Toner Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB3	PNLP2259RU-A	TONER SENSOR BOARD ASS'Y (RTL)	
			(CAPACITOR)	
	C57	ECUV1C104ZFV	0.1	
			(CONNECTORS)	
	CN64	K1KA10A00412	CONNECTOR, 10PIN	
	CN65	K1KA04A00527	CONNECTOR, 4PIN	
	CN66	K1KA04A00527	CONNECTOR, 4PIN	
	CN67	K1KA05A00364	CONNECTOR, 5PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	IC51	B4ZZ00000021	PHOTO ELECTRIC TRANS-DUCER	

19.2.3.2. Fuser Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB4	PNLP2259RU-B	FUSER BOARD ASS'Y (RTL)	
			(CAPACITOR)	
	C61	ECUV1H102KBV	0.001	
			(CONNECTORS)	
	CN52	K1KA03B00201	CONNECTOR, 3PIN	
	CN53	K1KA04B00225	CONNECTOR, 4PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	PS50	B3NAA0000106	PHOTO ELECTRIC TRANS-DUCER	
			(RESISTOR)	
	R54	ERJ3GEYJ181	180	S

19.2.3.3. Pickup Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB5	PNWP2B2061RU	PICKUP SENSOR BOARD ASS'Y (RTL)	
			(CONNECTORS)	
	CN51	K1KA05B00189	CONNECTOR, 5PIN	
	CN63	K1KA03BA0061	CONNECTOR, 3PIN	
			(SWITCH)	
	SW50	PFSH1A003Z	PUSH SWITCH	S

19.2.3.4. Registration Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB6	PNLP2259RU-D	RESISTRATION SENSOR BOARD ASS'Y (RTL)	
			(CAPACITORS)	
	C50	ECUV1H102KBV	0.001	
	C51	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN50	K1KA04B00225	CONNECTOR, 4PIN	
			(PHOTO ELECTRIC TRANS-DUCERS)	
	PS51	B3NAA0000106	PHOTO ELECTRIC TRANS-DUCER	
	PS52	B3NAA0000106	PHOTO ELECTRIC TRANS-DUCER	
			(RESISTORS)	
	R50	ERJ3GEYJ181	180	S
	R51	ERJ3GEYJ181	180	S

19.2.3.5. Varistor Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB7	PNLP2259RU-E	VARISTOR SENSOR BOARD ASS'Y (RTL)	
			(VARISTOR)	
	ZNR50	ERZVA7D271	VARISTOR	

19.2.3.6. Flatbed Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB8	PNLP2259RU-F	FLATBED RELAY BOARD ASS'Y (RTL)	
			(CAPACITORS)	
	C64	ECUV1C104ZFV	0.1	
	C65	ECUV1C104ZFV	0.1	
			(CONNECTORS)	
	CN59	K1KA13B00063	CONNECTOR, 13PIN	
	CN60	K1KA04B00225	CONNECTOR, 4PIN	
	CN61	K1MN12BA0222	CONNECTOR, 12PIN	
	CN62	K1KA04BA0061	CONNECTOR, 4PIN	
	CN68	K1KA03B00201	CONNECTOR, 3PIN	
			(COIL)	
	L54	PQLQR2KB113T	COIL	S
			(RESISTORS)	
	R55	ERJ3GEYJ472	4.7k	S
	R56	ERJ3GEYJ471	470	S

19.2.3.7. ADF Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB9	PNLP2259RU-G	ADF SENSOR BOARD ASS'Y (RTL)	
			(CAPACITORS)	
	C55	ECUV1H102KBV	0.001	
	C56	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN56	K1KA04B00225	CONNECTOR, 4PIN	
			(PHOTO ELECTRIC TRANS-DUCERS)	
	PS53	B3NAA0000105	PHOTO ELECTRIC TRANS-DUCER	
	PS54	B3NAA0000105	PHOTO ELECTRIC TRANS-DUCER	
			(RESISTORS)	
	R52	ERJ3GEYJ181	180	S
	R53	ERJ3GEYJ181	180	S

19.2.3.8. Handset Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB10	PNLP2259RU-H	HANDSET RELAY BOARD ASS'Y (RTL)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(CONNECTORS & JACKS)	
	CN55	K2LB106B0053	JACK	
	CN57	K1KA02A00587	CONNECTOR, 2PIN	
	CN58	K1KA08A00440	CONNECTOR, 8PIN	
			(IC FILTERS)	
	L52	J0JAC0000008	IC FILTER	
	L53	J0JAC0000008	IC FILTER	
			(RESISTORS)	
	L50	ERJ3GEY0R00	0	S
	L51	ERJ3GEY0R00	0	S

19.2.3.9. CIS Home Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB11	PNLP2259RU-J	CIS HOME SENSOR BOARD ASS'Y (RTL)	
			(CAPACITOR)	
	C60	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN69	K1KA03A00495	CONNECTOR, 3PIN	
			(PHOTO ELECTRIC TRANSDUCER)	
	PS55	B3NAA0000106	PHOTO ELECTRIC TRANSDUCER	

19.2.3.10. Handset/Speaker Filter Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB12	PNLP2259RU-K	HANDSET/SPEAKER FILTER BOARD ASS'Y (RTL)	
			(CONNECTORS)	
	CN70	K1KA08A00440	CONNECTOR, 8PIN	
	CN71	K1KA08A00440	CONNECTOR, 8PIN	
			(COIL)	
	L55	PFLE126	COIL	S

19.2.3.11. Antenna Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB13	PNLP2259RU-L	ANTENNA BOARD ASS'Y (RTL)	

19.2.4. High Voltage Power Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB14	N0GG4E000006	HIGH VOLTAGE POWER BOARD ASS'Y (RTL)	
			(IC)	
	IC1	PH1193AC001	IC	
			(TRANSISTORS)	
	Q3	PT2394DL001	TRANSISTOR(SI)	
	Q62	PT2394DL001	TRANSISTOR(SI)	
			(FUSE)	
	F1	PK7130AA001	FUSE	
			(SWITCHE)	
⚠	SW1	PFSHSS3FLP3D	PUSH SWITCH	S

19.2.5. Low Voltage Power Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB15	N0AC2GH00001	LOW VOLTAGE POWER BOARD ASS'Y (RTL)	
			(TRANSISTOR)	
⚠	Q1	PT3565KL001	TRANSISTOR(SI)	
			(DIODES)	
⚠	D1	PD1146AC001	DIODE(SI)	
	D104	PD4145AA005	DIODE(SI)	
	D503	PD4068AQ075	DIODE(SI)	
			(CAPACITOR)	
⚠	C5	PC3126YS560	ELECTROLYTIC CAPACITOR, AL	
			(FUSES)	
⚠	F1	PK7102AS001	FUSE	
⚠	F2	PK7102AS004	FUSE	
⚠	F101	PK7154AR003	FUSE	
			(THYRISTOR)	
⚠	SCR51	PD5108AL001	THYRISTOR	

19.2.6. Cordless Handset Board Parts

Note:

(*1) 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.

(*2) When replacing IC1, IC3 or X1, make the adjustment using PNZZMB2061CX. Refer to **How to Remove the Cordless Handset Board** (P.259) of **Things to Do after Replacing IC.**

(*3) When you removing E505, use special tools (ex. Hot air disordering tool).

(*4) When replacing the handset LCD, See **How to Replace the LCD**(P.260).

(*5) Backside of this IC has a ground plate.

(*6) Supplied IC is Flat Package Type.

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB100	PNWPGA641BXR	MAIN P.C.BOARD ASS'Y (RTL) (*1)	
			(ICs)	
	IC1	C1CB00002906	IC (BBIC (FLASH)) (*2) (*5) (*6)	
	IC3	PQWIA130EXRR	IC (EEPROM) (*2)	
	IC801	C1CB00001842	IC (*5)	
			(TRANSISTORS)	
	Q2	B1ADGE000004	TRANSISTOR(SI)	
	Q4	B1ADGE000004	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)	
			(COILS)	
	L801	G1C27NJ00010	COIL	
	L802	G1C3N6ZA0063	COIL	
	L803	G1C3N6ZA0063	COIL	
	F1	PQLQR2M5N6K	COIL	S
	L8	J0JHC0000045	COIL	
			(RESISTOR ARRAYS)	
	RA1	D1H810240004	RESISTOR ARRAYS	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	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	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	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	
	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	
	E501	L5DYBYY00001	LIQUID CRYSTAL DISPLAY (*4)	
	E502	PNHR1114Z	TRANSPARENT PLATE, LCD PLATE	
	E503	PNHR1113Z	GUIEDE, LCD HOLDER	
	E504	PNHX1136Z	COVER, LCD COVER SHEET	
	E505	PNMC1013Z	CASE, MAGNETIC SHIELD (*2)	
	E506	PNLA1020Z	ANTENNA	
	E507	PNVE1002Z	BATTERY TERMINAL	
	X1	H0J103500034	CRYSTAL OSCILLATOR (*2)	

19.2.7. Charger Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB200	PNLP1029Y	MAIN P.C.BOARD ASS'Y (RTL)	
			(JACK)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	J1	K2ECYB000001	JACK	S
			(RESISTOR)	
	R1	ERG2SJ120	12	
			(FUSE)	
	F1	K5H302Y00003	FUSE	

19.2.8. Service Fixture and Tools

Note:

- (*7) See **Cordless Base Section (Digital Board) Adjustment** (P.271) and **The Setting Method of JIG (Cordless Handset)** (P.275).
- (*8) When replace the Handset LCD, see **How to Replace the LCD** (P.260).

Ref. No.	Part No.	Part Name & Description	Remarks
	PQZZ1CD300E	JIG CABLE (*7)	
	PNZZMB2061CX	BATCH FILE CD-ROM (*7) (for Cordless Handset)	
	PQZZ430PIR	TIP OF SOLDERING IRON (*8)	
	PQZZ430PRB	RUBBER OF SOLDERING IRON (*8)	

YK
KXMB2061CXB
KXMB2061CX2
KXMB2062CXB