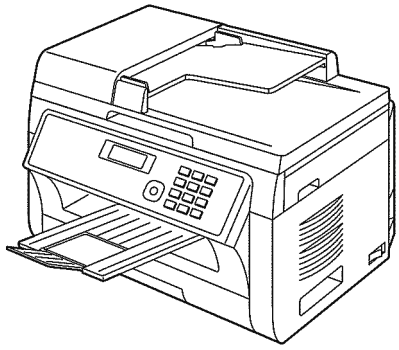
ORDER NO.KMF1311431CE

Service Manual

Multi-Function printer



Model No. KX-MB2085CXW
KX-MB2090CXW

(for Middle East, Asia, Tunisia and Africa)

⚠ 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.

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1 Safety Precautions

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

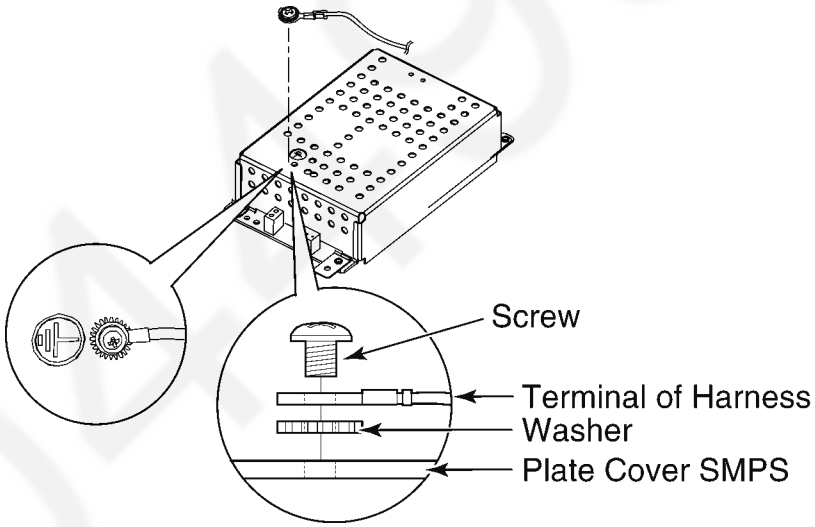
1.1. For Service Technicians

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

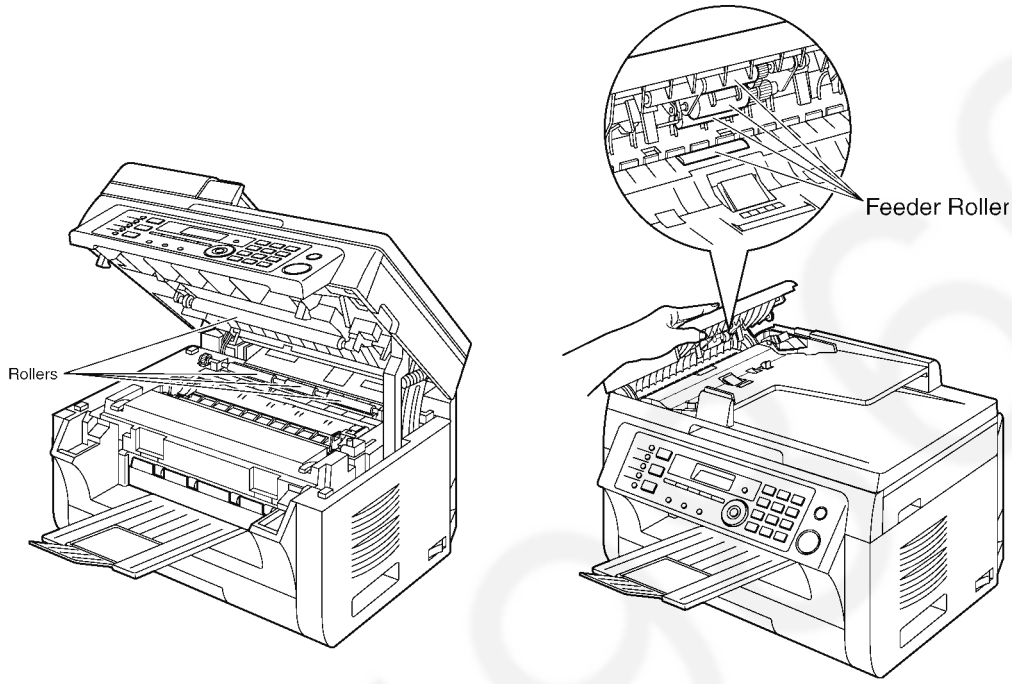
1. The earth lead is fixed with the screw.
2. The AC connector is connected properly.



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.

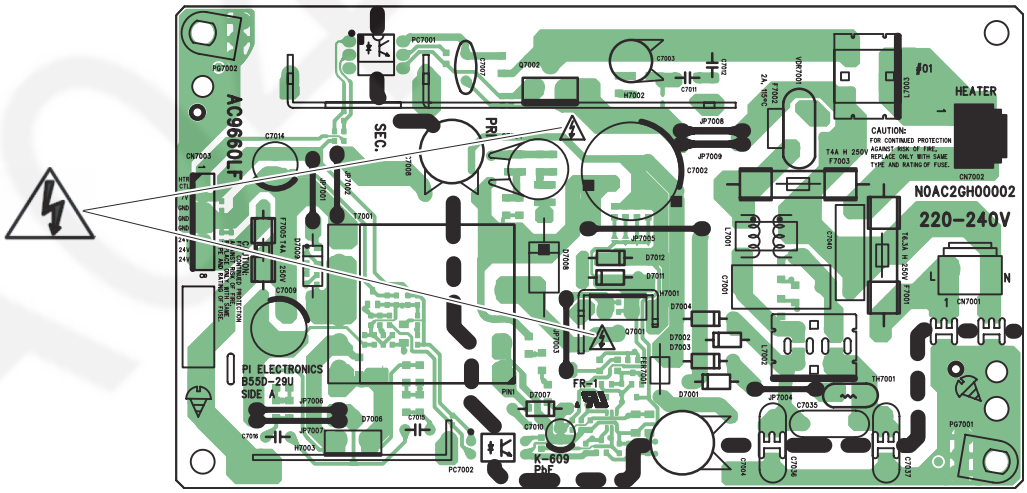


1.3.2. Live Electrical Sections

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.

Discharge the primary electrolytic capacitor before touching the power supply unit.



1.4. Service Precautions

1.4.1. Precautions to Prevent Damage from Static Electricity

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

2 Warning

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

Note:

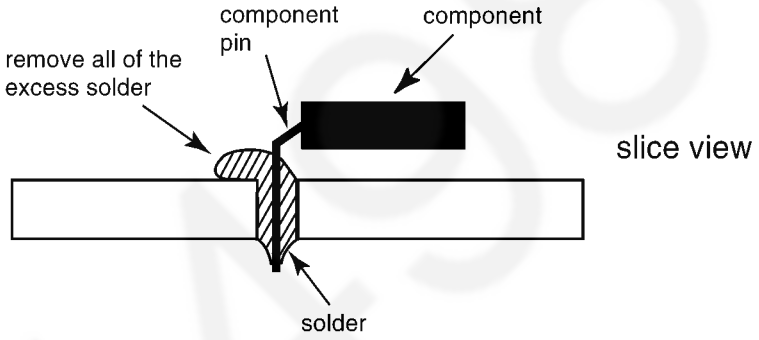
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

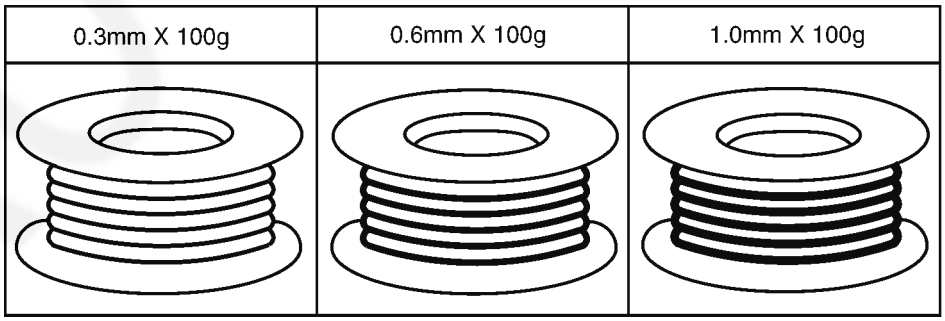
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend 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.

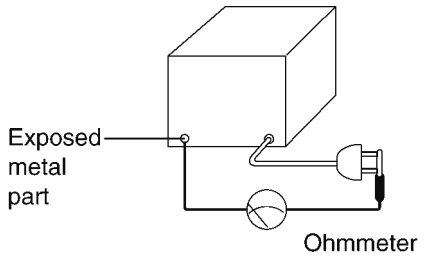


2.2. Discarding of P. C. Board

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

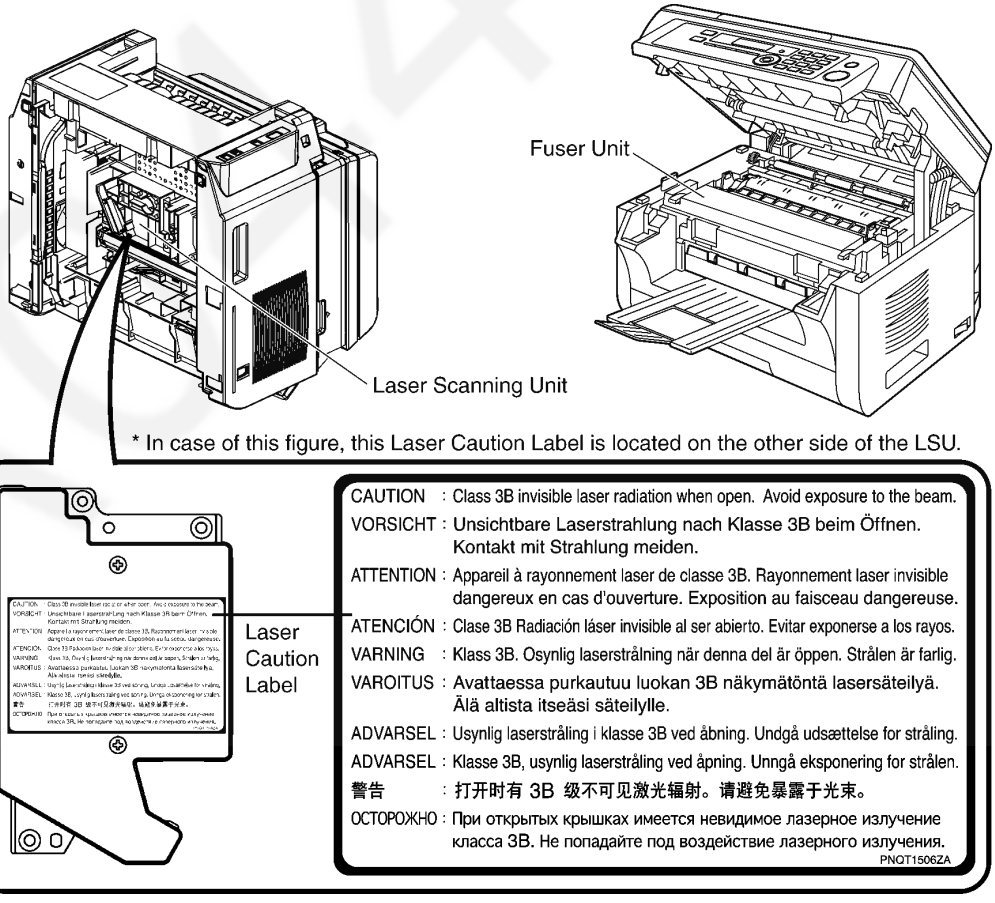
CAUTION

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 litium battery in.

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

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 19,200 × 19,200 dpi (Interpolated) **Copy resolution:** Up to 600 × 600 dpi **FAX resolution[*1]:** 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:	Colour Contact Image Sensor (CIS)
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 handset unit is installed.)
	Mass (Weight): Approx. 12 kg
Power Consumption:	Sleep: Less than 2.7 W [*3] Less than 3.0 W [*4] Standby: 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:	3.5 MB in total Approx. 110 pages of memory reception Approx. 150 pages of memory transmission (Based on the ITU-T No. 1 Test Chart in standard resolution)
Scan to email address memory capacity[*5]:	5 MB in total (including the header and email message)
Scan to FTP server memory capacity[*5]:	5 MB in total
Scan to SMB folder memory capacity[*5]:	5 MB in total
Laser diode properties:	Laser output: Max. 15 mW Wave length: 760 nm—800 nm Emission duration: Continuous
Print Speed:	Approx. 26 ppm (pages per minute)
Printing Resolution:	600 x 600 dpi
LED light of CIS properties:	LED radiation output: Max. 1 mW Wavelength: Red 630 nm typical. Green 520 nm typical. Blue 465 nm typical. Emission duration: Continuous

[*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 with original mode. If the capability of the other party's machine is inferior to your unit, the transmission time may be longer.

[*3] Only when connected via USB interface and LAN mode is OFF.

[*4] Only when connected to a wired LAN.

[*5] KX-MB2090 only

Note:

- Design and specifications are subject to change without notice.
- The accuracy of the clock is approximately ±60 seconds a month.

4 General/Introduction

4.1. Optional Accessories

Replacement accessory

- Toner cartridge
  - Model No. (Part No.): KX-FAT411E
  - Prints approximately 2,000 pages in accordance with ISO/IEC 19752 standard page.
- Drum cartridge
  - Model No. (Part No.): KX-FAD412E

Note:

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

4.2. Translation Lists

Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book).

5 Features

5.1. General Features

General

• LCD (Liquid Crystal Display) readout

Flat-Bed Multifunction Laser Printer

Output tray (approx. 100 sheets)
Letter/A4/Legal
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 very small-sized characters.
PHOTO: For photographs, shaded drawings, etc.
Broadcast

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

Enhanced Copier Function

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

64-Level halftone

5.2. Hardware Requirements for Multi-Function Software

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

Operating System:

Windows 7 / Windows 8 / Windows XP / Windows Vista
Windows Server 2008 / 2012 *1
Mac OS X 10.5 - 10.8 *2
*1 Supported printer driver only
*2 Supported printer driver, scanner driver and PC fax (transmit) only

CPU:

Windows:
Windows 7 / Windows 8 / Windows Vista: Pentium 4 or higher processor
Windows XP: Pentium Ⅲ or higher processor
Mac OS:
Complies with Operating System recommendations

RAM:

Windows:
Windows 7 / Windows 8: 1GB (2GB or more recommended)
Windows XP: 128MB (256MB or more recommended)
Windows Vista: 512MB (1GB or more recommended)
Mac OS:
Complies with Operating System recommendations

Other Hardware:

CD-ROM drive
Windows:
Hard disk drive with at least 600MB of available space
Mac OS:
Hard disk drive with at least 200MB of available space

Web browser (recommendation):

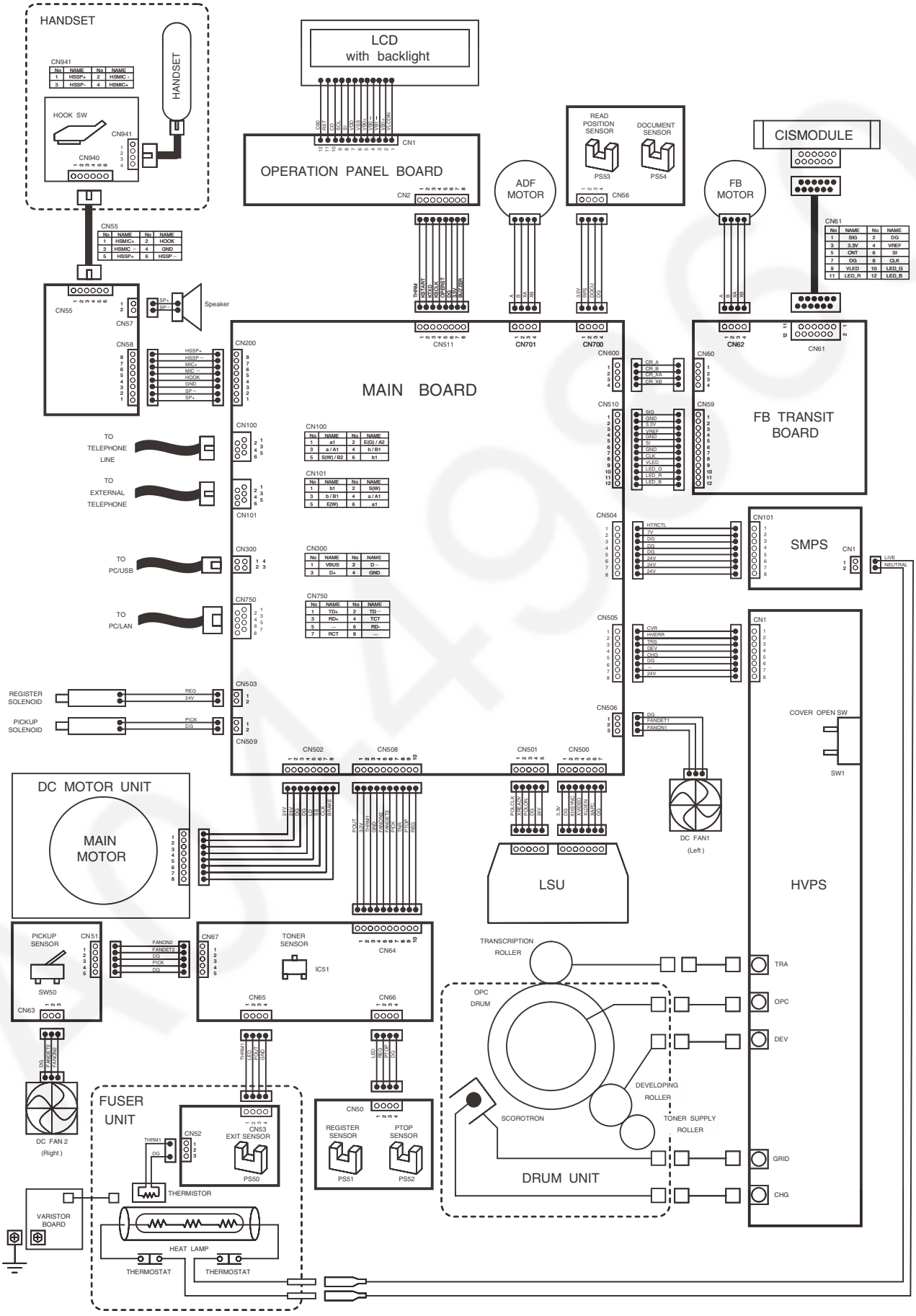
Windows:
Windows Internet Explorer 6/7/8/9
Windows Internet Explorer 10 (with compatible mode recommended)
Mac OS:
Safari 3/4/5/6

Important:

• 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(Cat-5) Ethernet cable) (KX-MB2090 only).
• To protect the unit, use only shielded USB cable in areas where thunderstorms occur.

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. (KX-MB2090 ONLY)

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.
Analog DAA (Direct Access Arrangement) and two AFE (Analog Front End) IC control Telephone line, Speaker, and Handset.

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 drives 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 5 sensors.

POWER SUPPLY BOARD

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

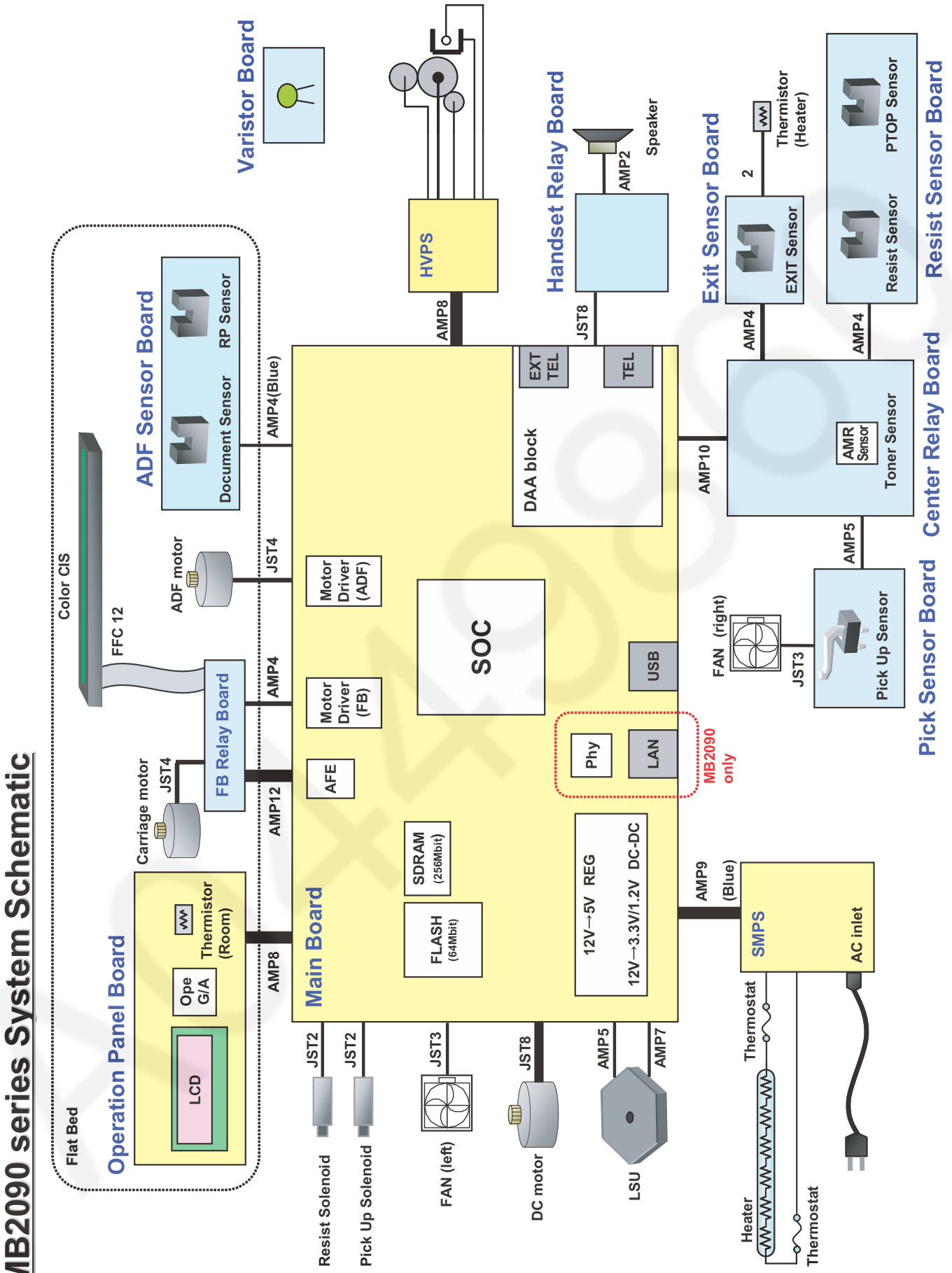
HIGH VOLTAGE POWER SUPPLY BOARD

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

FIXING UNIT

Composed heat lamp, thermistor and thermostats.

MB2090 series System Schematic

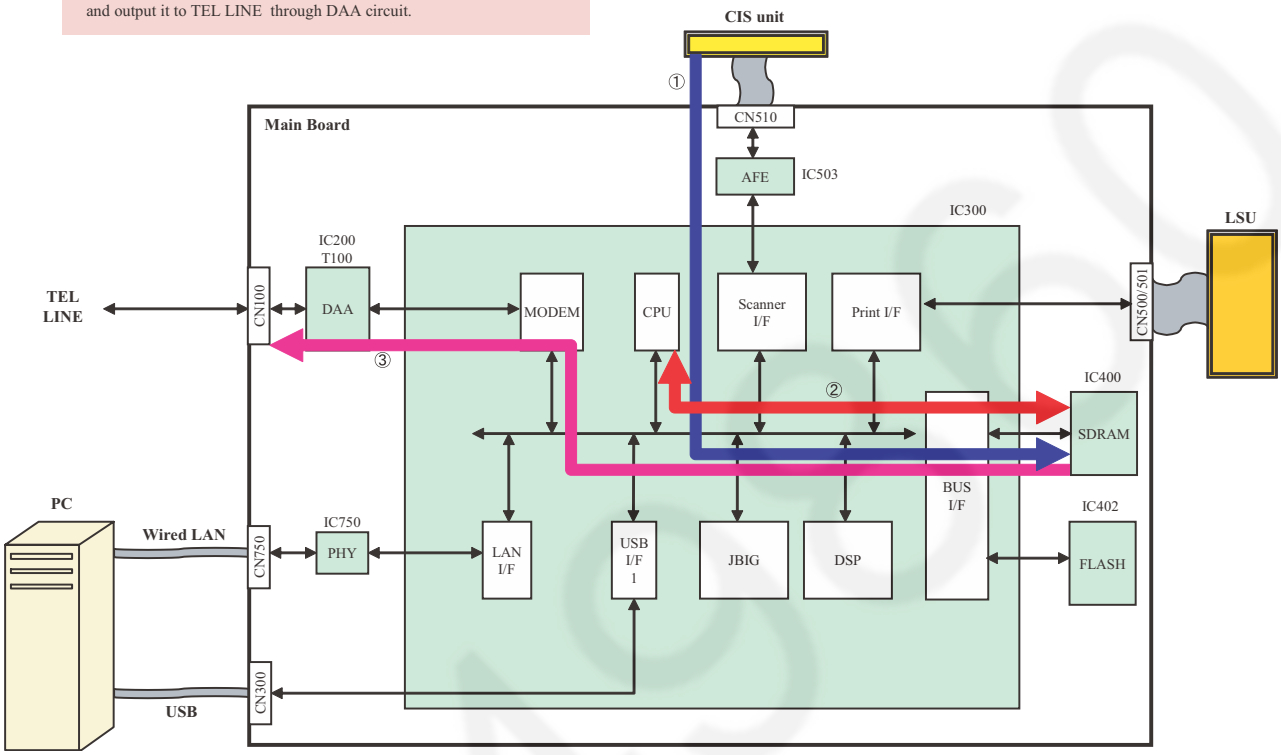


6.3. Main Board Section

6.3.1. Data Flow

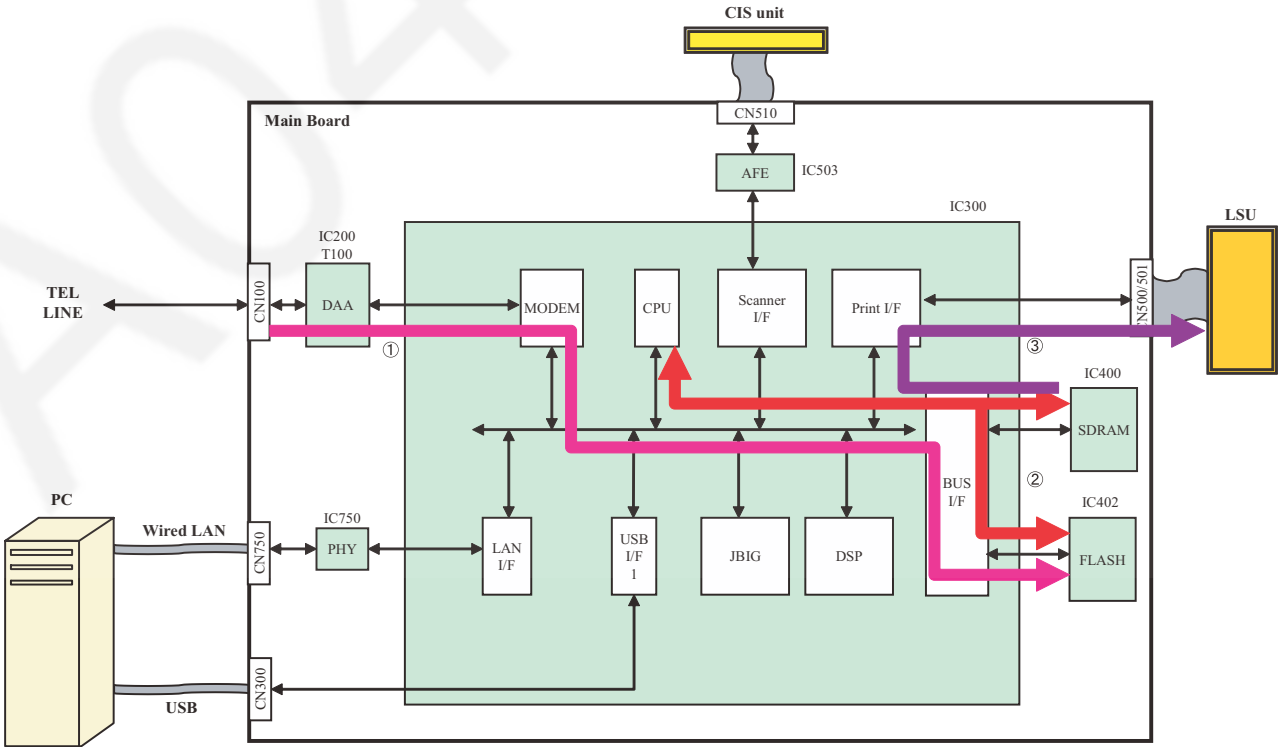
[FAX Tx]

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 IC400/401
   through SDRAM I/F.
2. CPU compress the data in IC400/401.
3. CPU transfer the data to MODEM
   and output it to TEL LINE through DAA circuit.



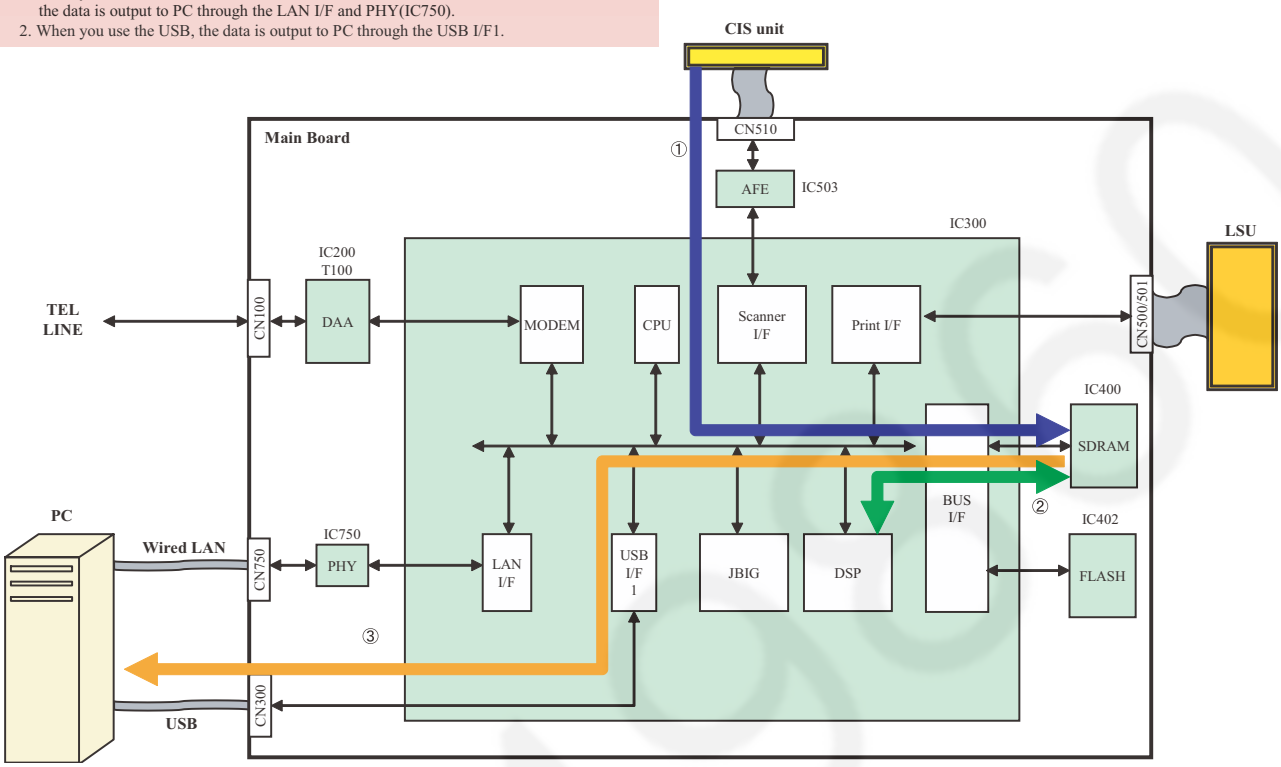
[FAX Rx]

1. FAX data is input from TEL LINE to MODEM in IC300
   through DAA circuit.
   And then store it in IC402 .
2. CPU decompress the data from IC402 to IC400/401.
3. Print I/F retrieve the data from IC400/401 and output it to LSU.



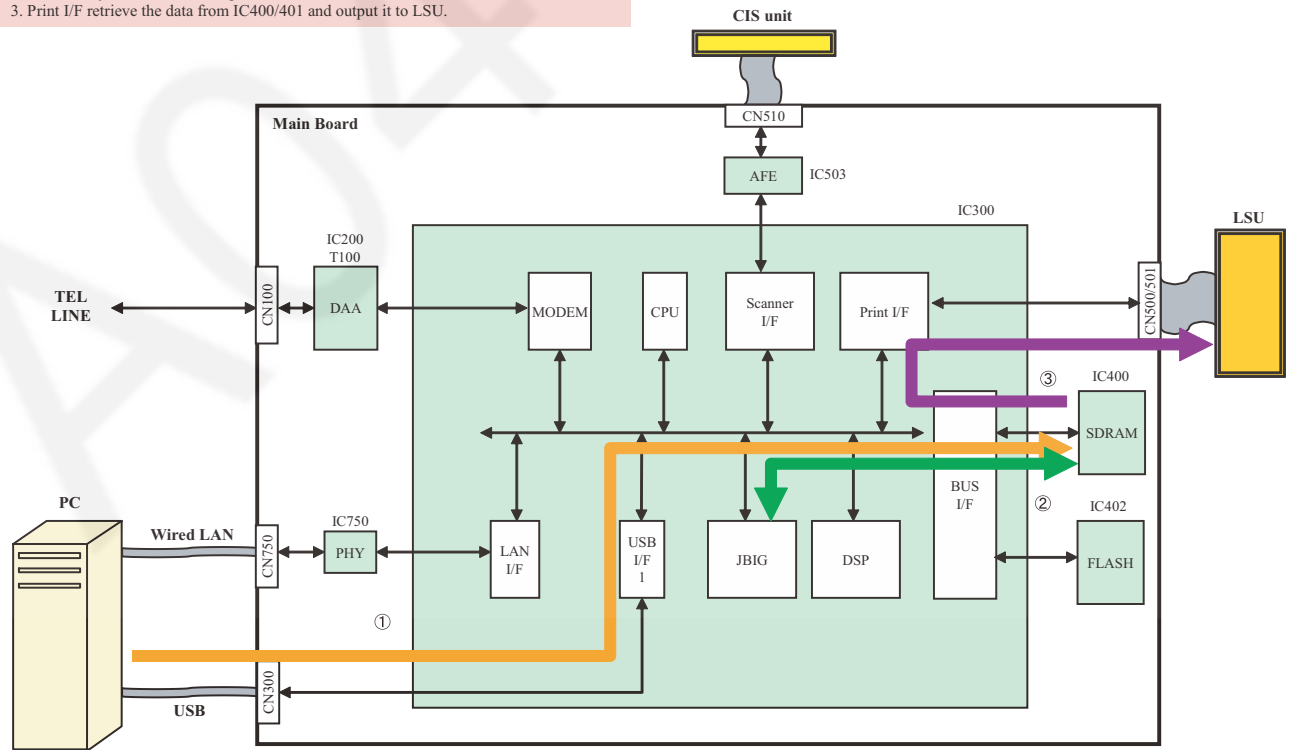
[PC Scan]

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 IC400/401 through SDRAM I/F.
2. If necessary, DSP process image data.
3. 1. When you use the wired-LAN,
      the data is output to PC through the LAN I/F and PHY(IC750).
   2. When you use the USB, the data is output to PC through the USB I/F1.



[PC print]

1.The print data is output from PC:
  ・through Wired-LAN and pass the PHY(IC750) and LAN I/F in IC300.
  ・through USB and pass the USB I/F1 in IC300.
 then the data is stored in IC400/401 through SDRAM I/F.
2. If necessary, the data is decompressed via JBIG.
3. Print I/F retrieve the data from IC400/401 and output it to LSU.



[Copy]

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 IC400/401 through SDRAM I/F.
2. If necessary, the data is compressed/decompressed via JBIG.
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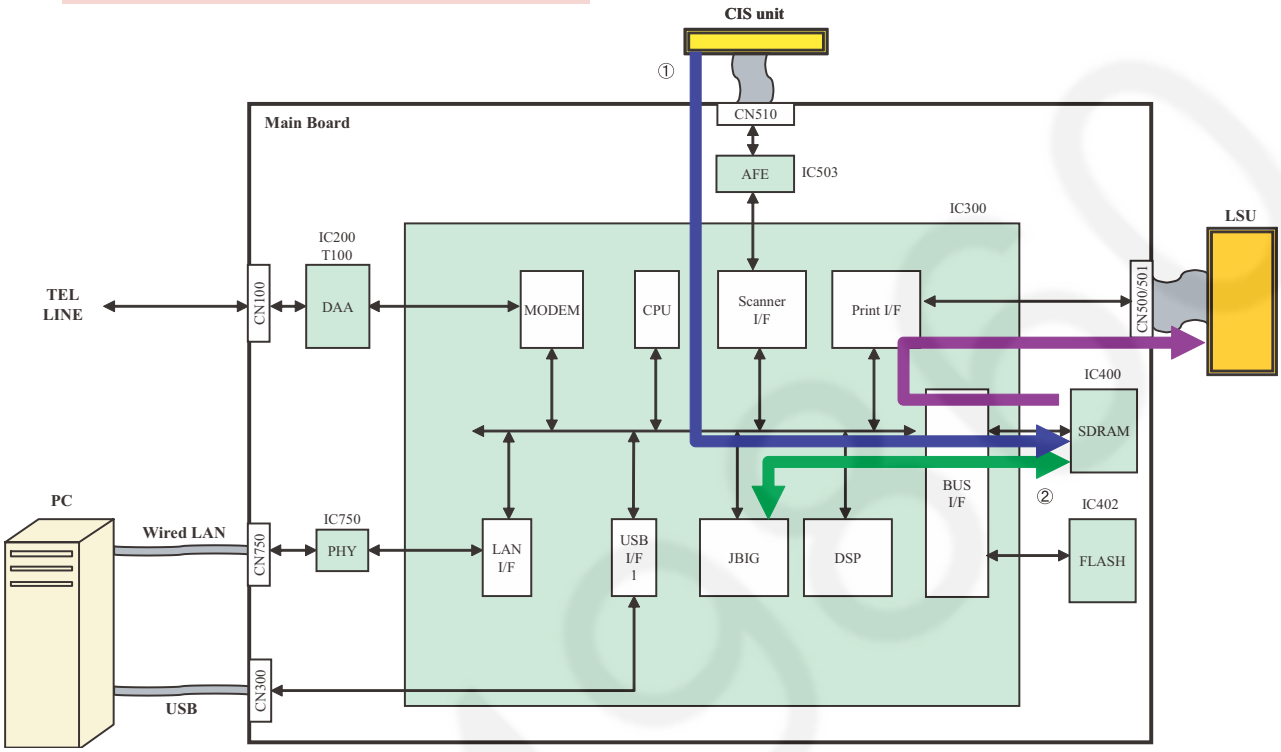


Description of Pin Distribution (IC300) SOC (System On Chip)

Pin No.	Pin Name	I/O	Description
A2	SDCLK	O	SDRAM Clock
G1	SDCKE	O	SDRAM Clock Enable
A9	NSDCS	O	SDRAM Chip Select
A8	NSDRAS	O	SDRAM Row Address Strobe
B8	NSDCAS	O	SDRAM Column Address Strobe
A7	NSDWE	O	SDRAM Write Enable
F1	SDLDM1	O	SDRAM Data Mask For Higher Byte (DQ[15:8])
B7	SDLDM0	O	SDRAM Data Mask For Lower Byte (DQ[7:0])
C5	SDBA1	O	SDRAM Bank Address1
C4	SDBA0	O	SDRAM Bank Address0
C9	ROMCE	O	Flash/Mask ROM Chip Enable
B9	ROMOE	O	Flash/Mask ROM Output Enable
J4	ROMWE	O	Flash ROM Write Enable
M2	ADR25	O	NOT USED
M1	ADR24	O	NOT USED
H3	ADR23	O	NOT USED
H4	ADR22	O	NOT USED
L1	ADR21	O	Flash ROM Address
K2	ADR20	O	Flash ROM Address
K1	ADR19	O	Flash ROM Address
L2	ADR18	O	Flash ROM Address
L3	ADR17	O	Flash ROM Address
M3	ADR16	O	Flash ROM Address
J1	ADR15	O	Flash ROM Address
J2	ADR14	O	Flash ROM Address
J3	ADR13	O	Flash ROM Address
D3	ADR12	O	Flash ROM/SDRAM Address
E3	ADR11	O	Flash ROM/SDRAM Address
C6	ADR10	O	Flash ROM/SDRAM Address
F3	ADR9	O	Flash ROM/SDRAM Address
G2	ADR8	O	Flash ROM/SDRAM Address
G3	ADR7	O	Flash ROM/SDRAM Address
G4	ADR6	O	Flash ROM/SDRAM Address
H1	ADR5	O	Flash ROM/SDRAM Address
H2	ADR4	O	Flash ROM/SDRAM Address
D8	ADR3	O	Flash ROM/SDRAM Address
C8	ADR2	O	Flash ROM/SDRAM Address
D7	ADR1	O	Flash ROM/SDRAM Address
C7	ADR0	O	Flash ROM/SDRAM Address
F2	DAT15	I/O	Flash ROM/SDRAM Data
E1	DAT14	I/O	Flash ROM/SDRAM Data
E2	DAT13	I/O	Flash ROM/SDRAM Data
D1	DAT12	I/O	Flash ROM/SDRAM Data
D2	DAT11	I/O	Flash ROM/SDRAM Data
C1	DAT10	I/O	Flash ROM/SDRAM Data
C2	DAT9	I/O	Flash ROM/SDRAM Data
B1	DAT9	I/O	Flash ROM/SDRAM Data
B3	DAT7	I/O	Flash ROM/SDRAM Data
A3	DAT6	I/O	Flash ROM/SDRAM Data
B4	DAT5	I/O	Flash ROM/SDRAM Data
A4	DAT4	I/O	Flash ROM/SDRAM Data
B5	DAT3	I/O	Flash ROM/SDRAM Data
A5	DAT2	I/O	Flash ROM/SDRAM Data
B6	DAT1	I/O	Flash ROM/SDRAM Data
A6	DAT0	I/O	Flash ROM/SDRAM Data
AF13	USBDP1	I/O	USB Interface
AE13	USBDM1	I/O	USB Interface
AE11	USBVBUS1	I	USB Interface
AF11	USBRES1	I/O	USB Interface
AE14	USBSEL1	I	3.3V
AC1	USBDP2	I/O	NOT USED
AC2	USBDM2	I/O	NOT USED
AB2	USBVBUS2	I	NOT USED
AB1	USBRES2	I/O	GND
AA2	USBSEL2	I	GND

Pin No.	Pin Name	I/O	Description
V1	USBDP3	I/O	NOT USED
V2	USBDM3	I/O	NOT USED
U2	USBVBUS3	O	NOT USED
U1	USBRES3	I/O	GND
T2	USBSEL3	I	3.3V
AF5	REF_CLK	I	Ethernet Clock (pre clock tree)
AE3	TX_EN	O	Ethernet Transmit Enable
AF2	TXD0	O	Ethernet Transmit Data
AF3	TXD1	O	Ethernet Transmit Data
AD4	RX_ER	I	Ethernet Receive Error
AE6	CRS_DV	I	Ethernet Receive Data Valid
AF4	RXD0	I	Ethernet Receive Data
AE4	RXD1	I	Ethernet Receive Data
AD5	MDIO	I/O	Ethernet Management Data In/OUT
AE5	MDC	O	Ethernet Management Data Clock
AD6	MGTINT	I	Ethernet Management INT
AF22	PSCIO0	I	INPUT PORT (RESIST)
AD23	PSCIO1	I	INPUT PORT (PICK)
AE23	PSCIO2	I	INPUT PORT (FANDET1)
AF23	PSCIO3	I	INPUT PORT (POUT)
AF24	PSCIO4	O	NOT USED
AE26	PSCIO5	O	NOT USED
AD25	PSCIO6	O	NOT USED
AD26	PSCIO7	O	NOT USED
AC24	PSCIO12	O	NOT USED
AC25	PSCIO13	I	INPUT PORT (TNR)
AC26	PSCIO14	I	INPUT PORT (DOCU)
AB24	PSCIO15	I	INPUT PORT (RPS)
AB25	PSCIO16	O	NOT USED
AB26	PSCIO17	I	INPUT PORT (FANDET2)
AA24	PSCIO18	I	INPUT PORT (TOPCVR)
AA25	PSCIO19	I	INPUT PORT (PSTART)
AA26	PSCIO20	O	NOT USED
Y24	PSCIO21	O	NOT USED
Y25	PSCIO22	O	NOT USED
Y26	PSCIO23	O	NOT USED
W26	PSCIO24	I	LSU Interface
H23	PIO0	O	NOT USED
J23	PIO1	I	HV ERR
J24	PIO2	O	LSU Interface
J25	PIO3	O	NOT USED
J26	PIO4	O	OUTPUT PORT (CHG)
K23	PIO5	O	OUTPUT PORT (DEV)
K24	PIO6	O	OUTPUT PORT (TRS)
K25	PIO7	O	OUTPUT PORT (FANON1)
K26	PIO8	O	NOT USED
L24	PIO9	O	OUTPUT PORT (SNPICK)
L25	PIO10	O	NOT USED
L26	PIO11	O	OUTPUT PORT (SNRESIST)
M23	PIO12	O	OUTPUT PORT (XLANRST)
M24	PIO13	O	NOT USED
M25	PIO14	O	NOT USED
M26	PIO15	O	OUTPUT PORT (LEDCTL)
N24	PIO16	I	INPUT PORT(MODEL0)
N25	PIO17	I	INPUT PORT(MODEL1)
N26	PIO18	I	NPUT PORT(MODEL2)
P24	PIO20	O	NOT USED
P25	PIO21	O	LSU Interface
P26	PIO22	O	NOT USED
R24	PIO23	O	NOT USED
R25	PIO24	I	3.3V
R26	PIO25	I	LSU Interface
A10	PIO26	O	NOT USED
T24	PIO27	O	NOT USED
T25	PIO28	O	NOT USED
T26	PIO29	O	Operation Panel Interface
U24	PIO30	I/O	Operation Panel Interface

Pin No.	Pin Name	I/O	Description
U25	PIO31	O	Operation Panel Interface
U26	PIO32	O	Operation Panel Interface
V24	PIO33	O	OUTPUT PORT (CNGMUTE)
V25	PIO34	O	OUTPUT PORT (FAX_RX)
V26	PIO35	O	OUTPUT PORT (CID_RX)
W24	PIO36	O	OUTPUT PORT (SPMUTE)
W25	PIO37	I	INPUT PORT (BELL)
B24	PIO38	O	NOT USED
A25	PIO39	I	INPUT PORT (HOOK)
B26	PIO40	O	NOT USED
C25	PIO41	O	NOT USED
C26	PIO42	O	Main Motor Interface
D24	PIO43	O	Main Motor Interface
D25	PIO44	O	Main Motor Interface
D26	PIO45	O	Main Motor Interface
E26	PIO46	O	OUTPUT PORT (F_MUTE)
F24	PIO47	I	INPUT PORT (ALC)
F25	PIO48	O	OUTPUT PORT (BREAK)
F26	PIO48	O	NOT USED
B21	PIO50	O	ADF/Flatbed Motor Interface
A21	PIO51	O	ADF/Flatbed Motor Interface
C22	PIO52	O	ADF/Flatbed Motor Interface
B22	PIO53	O	ADF/Flatbed Motor Interface
A22	PIO54	O	ADF/Flatbed Motor Interface
B23	PIO55	O	ADF/Flatbed Motor Interface
A23	PIO56	O	ADF/Flatbed Motor Interface
A24	PIO57	O	ADF/Flatbed Motor Interface
G23	PIO58	O	OUTPUT PORT (CIDRLY)
B10	PIO59	O	OUTPUT PORT (PWRDWN1)
G24	PIO60	O	OUTPUT PORT (P_SHORT)
G25	PIO61	O	OUTPUT PORT (HSSPMUTE)
G26	PIO62	O	LSU Interface
H24	PIO63	O	LSU Interface
H25	PIO64	O	LSU Interface
H26	PIO65	O	OUTPUT PORT (PWRDWN2)
P23	PIO66	O	OUTPUT PORT (LINERLY)
AE22	HTRCTL	O	Fuser Lamp Control
E24	MMPWR	O	NOT USED
E25	OPMPWR	O	NOT USED
C23	CRMPWR	O	ADF/Flatbed Motor Interface
B11	CCDSH	O	Scanner Interface
B12	NCCDRS	O	Scanner Interface
A12	NCCDCP	O	NOT USED
A11	CCDCLK	O	NOT USED
B15	AFEVSMP	O	Scanner Interface
C15	AFERSMP	O	NOT USED
A15	AFEMCLK	O	Scanner Interface
D14	AFEADC0	I	GND
C14	AFEADC1	I	GND
D13	AFEADC2	I	GND
C13	AFEADC3	I	GND
B14	AFEADC4	I	Scanner Interface
A14	AFEADC5	I	Scanner Interface
B13	AFEADC6	I	Scanner Interface
A13	AFEADC7	I	Scanner Interface
A16	AFESIFCLK	O	Scanner Interface
B16	AFESIFEN	O	Scanner Interface
A17	AFESIFDIN	I	Scanner Interface
B17	AFESIFDOUT	O	Scanner Interface
C12	OEB	O	NOT USED
D12	NCCDON	O	Scanner Interface
D16	LEDONR	O	Scanner Interface
C17	LEDONG	O	Scanner Interface
C16	LEDONB	O	Scanner Interface
AF18	ABITCLK	I	NCU Interface
AE18	ASPCLK	I	NCU Interface
AD18	ATXD	Tri-O	NCU Interface

Pin No.	Pin Name	I/O	Description
AC18	ARXD	I	NCU Interface
AF20	BBITCLK	I	NCU Interface
AE20	BSPCLK	I	NCU Interface
AD20	BTXD	Tri-O	NCU Interface
AC20	BRXD	I	NCU Interface
AE19	AFERST	O	NCU Interface
AF19	AFECLK	O	NCU Interface
AD17	RING	I	NCU Interface
AF21	DP	O	NCU Interface
AF17	EYECLK	O	NOT USED
AE17	EYEDAT	O	NOT USED
AD19	AFESEL0	I	GND
AC19	AFESEL1	I	GND
R4	DBGREQ	I	NOT USED
T3	DBGMOD	O	NOT USED
Y3	MDM_TDO	Tri-O	3.3V
Y2	MDM_TMS	I	3.3V
W4	MDM_TRSTN	I	GND
Y1	MDM_TCK	I	3.3V
AA1	MDM_TDI	I	3.3V
AE12	SCLKIN	I	CRYSTAL(24MHz) INPUT
AF12	SCLKOUT	O	CRYSTAL(24MHz) OUTPUT
AF25	MDMCLKIN	I	GND
AE24	MDMCLKOUT	O	NOT USED
A18	DOTCLKIN	I	CRYSTAL(26MHz) INPUT
B18	DOTCLKOUT	O	CRYSTAL(26MHz) OUTPUT
AE8	RTCCLKIN	I	CRYSTAL(32.768KHz) INPUT
AF8	RTCCLKOUT	O	CRYSTAL(32.768KHz) OUTPUT
AD7	RTCPWRDWN	I	RTC RESET
AF6	NBATRST	I	3.3V Power Supply for RTC
AE15	CPU_TDI	I	NOT USED
AE16	CPU_TMS	I	NOT USED
AF15	CPU_TCK	I	GND
AF16	CPU_TRSTN	I	NOT USED
AD15	CPU_TDO	Tri-O	3.3V
R2	DSP_TDI	I	NOT USED
P2	DSP_TMS	I	NOT USED
R1	DSP_TCK	I	GND
R3	DSP_TRSTN	I	NOT USED
P1	DSP_TDO	Tri-O	3.3V
C21	THRMSTR0	I	Analog Input (THRMISTOR)
C20	THRMSTR1	I	Analog Input (THRMISTOR)
A19	TONE	O	Analog Output (Buzzer)
B20	ADVREF	I	GND
C19	DAVREFP	I	GND
A20	DAVREFN	I	GND
N1	NRST	I	Reset
N2	NWDTRST	Tri-O	Watch Dog Timer Reset Signal
AD16	TEST	I	NOT USED
AC15	TEST_MODE	I	NOT USED
Y23	CLKSEL0	I	GND
W23	CLKSEL1	I	GND
V23	CLKSEL2	I	GND
T23	CLKSEL3	I	3.3V
R23	CLKSEL4	I	GND
AC16	BYPASS	I	GND
N3	BOOTMOD	I	NOT USED
D21	AD_AVDD25	-	2.5VA Power Supply for A/D
D19	DA_AVDD25	-	2.5VA Power Supply for D/A
AF7	BAT_DVDD	-	3.3V Power Supply for RTC
AE7	BAT_VDD	-	1.2V Power Supply for RTC
AC21	PLL2_DVDD	-	2.5VA Power Supply for PLL
D18	PLL3_DVDD	-	2.5VA Power Supply for PLL
AF10	PRG_AVDD	-	3.3V Power Supply
AC9	SSPLL_VDDA	-	1.2VA Power Supply for PLL
AC10	PRG_VOUT12	-	1.2VA output
AC11	PRG_VOUT25	-	2.5VA output

Pin No.	Pin Name	I/O	Description
AC12	USB1_AVDD25	-	2.5VA Power Supply for USB1
AF14	USB1_AVDD33	-	3.3V Power Supply for USB1
AA4	USB2_AVDD25	-	2.5VA Power Supply for USB2
AD1	USB2_AVDD33	-	3.3V Power Supply for USB2
V4	USB3_AVDD25	-	2.5VA Power Supply for USB3
W1	USB3_AVDD33	-	3.3V Power Supply for USB3
AA23	VDD12	-	1.2V Power Supply
AB4	VDD12	-	1.2V Power Supply
AC6	VDD12	-	1.2V Power Supply
AC13	VDD12	-	1.2V Power Supply
AC17	VDD12	-	1.2V Power Supply
AC22	VDD12	-	1.2V Power Supply
D6	VDD12	-	1.2V Power Supply
D10	VDD12	-	1.2V Power Supply
D15	VDD12	-	1.2V Power Supply
D22	VDD12	-	1.2V Power Supply
E23	VDD12	-	1.2V Power Supply
F4	VDD12	-	1.2V Power Supply
L23	VDD12	-	1.2V Power Supply
N4	VDD12	-	1.2V Power Supply
N23	VDD12	-	1.2V Power Supply
T4	VDD12	-	1.2V Power Supply
AC8	VDDIO33	-	3.3V Power Supply
AC14	VDDIO33	-	3.3V Power Supply
D5	VDDIO33	-	3.3V Power Supply
D11	VDDIO33	-	3.3V Power Supply
D17	VDDIO33	-	3.3V Power Supply
F23	VDDIO33	-	3.3V Power Supply
K4	VDDIO33	-	3.3V Power Supply
P4	VDDIO33	-	3.3V Power Supply
U23	VDDIO33	-	3.3V Power Supply
AA3	VSS	-	GND
AB3	VSS	-	GND
AB23	VSS	-	GND
AC3	VSS	-	GND
AC4	VSS	-	GND
AC5	VSS	-	GND
AC23	VSS	-	GND
AD3	VSS	-	GND
AD9	VSS	-	GND
AD11	VSS	-	GND
AD12	VSS	-	GND
AD13	VSS	-	GND
AD14	VSS	-	GND
AD22	VSS	-	GND
AD24	VSS	-	GND
AE2	VSS	-	GND
AE25	VSS	-	GND
B2	VSS	-	GND
B19	VSS	-	GND
B25	VSS	-	GND
C3	VSS	-	GND
C18	VSS	-	GND
C24	VSS	-	GND
D4	VSS	-	GND
D20	VSS	-	GND
D23	VSS	-	GND
E4	VSS	-	GND
L4	VSS	-	GND
L11	VSS	-	GND
L12	VSS	-	GND
L13	VSS	-	GND
L14	VSS	-	GND
L15	VSS	-	GND
L16	VSS	-	GND
M4	VSS	-	GND
M11	VSS	-	GND

Pin No.	Pin Name	I/O	Description
M12	VSS	-	GND
M13	VSS	-	GND
M14	VSS	-	GND
M15	VSS	-	GND
M16	VSS	-	GND
N11	VSS	-	GND
N12	VSS	-	GND
N13	VSS	-	GND
N14	VSS	-	GND
N15	VSS	-	GND
N16	VSS	-	GND
P11	VSS	-	GND
P12	VSS	-	GND
P13	VSS	-	GND
P14	VSS	-	GND
P15	VSS	-	GND
P16	VSS	-	GND
R11	VSS	-	GND
R12	VSS	-	GND
R13	VSS	-	GND
R14	VSS	-	GND
R15	VSS	-	GND
R16	VSS	-	GND
T11	VSS	-	GND
T12	VSS	-	GND
T13	VSS	-	GND
T14	VSS	-	GND
T15	VSS	-	GND
T16	VSS	-	GND
U3	VSS	-	GND
U4	VSS	-	GND
V3	VSS	-	GND
W3	VSS	-	GND
Y4	VSS	-	GND

6.3.2. RTC Backup Circuit

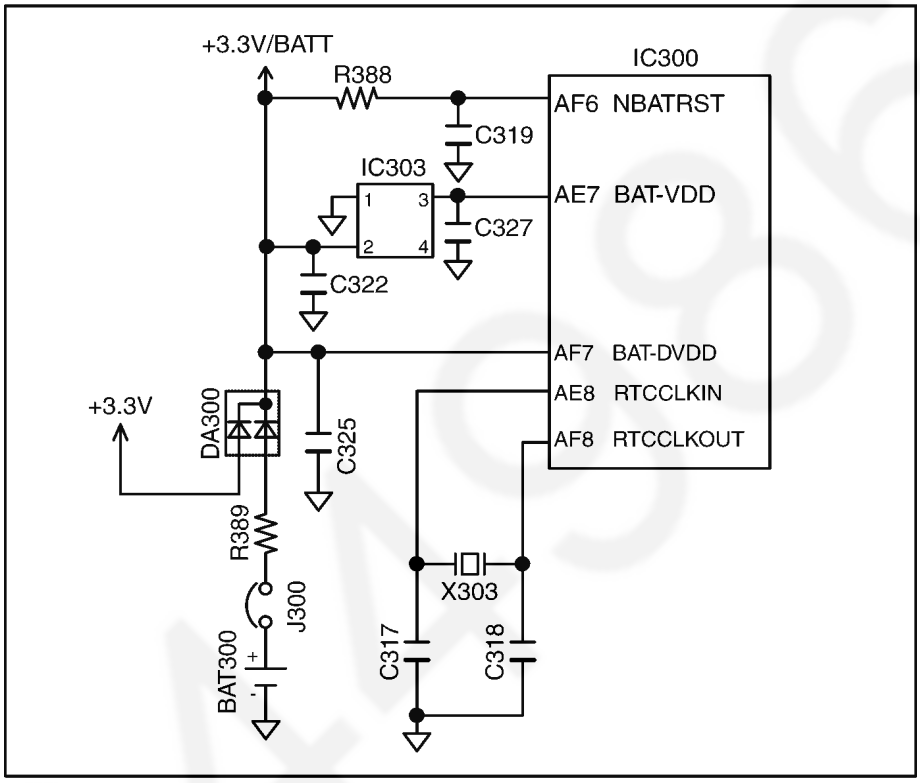
1. **Function**

   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.
   *RTC:(Real Time Clock)
   Chip for the clock mounted on the motherboard.
   Receiving power supply to operate even while the power is off unlike the other chips on the motherboard.

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 AF7 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 AF7 of RTC (IC300) becomes roughly the same voltageas 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/DTMF Line Send

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 SOC (IC300) 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

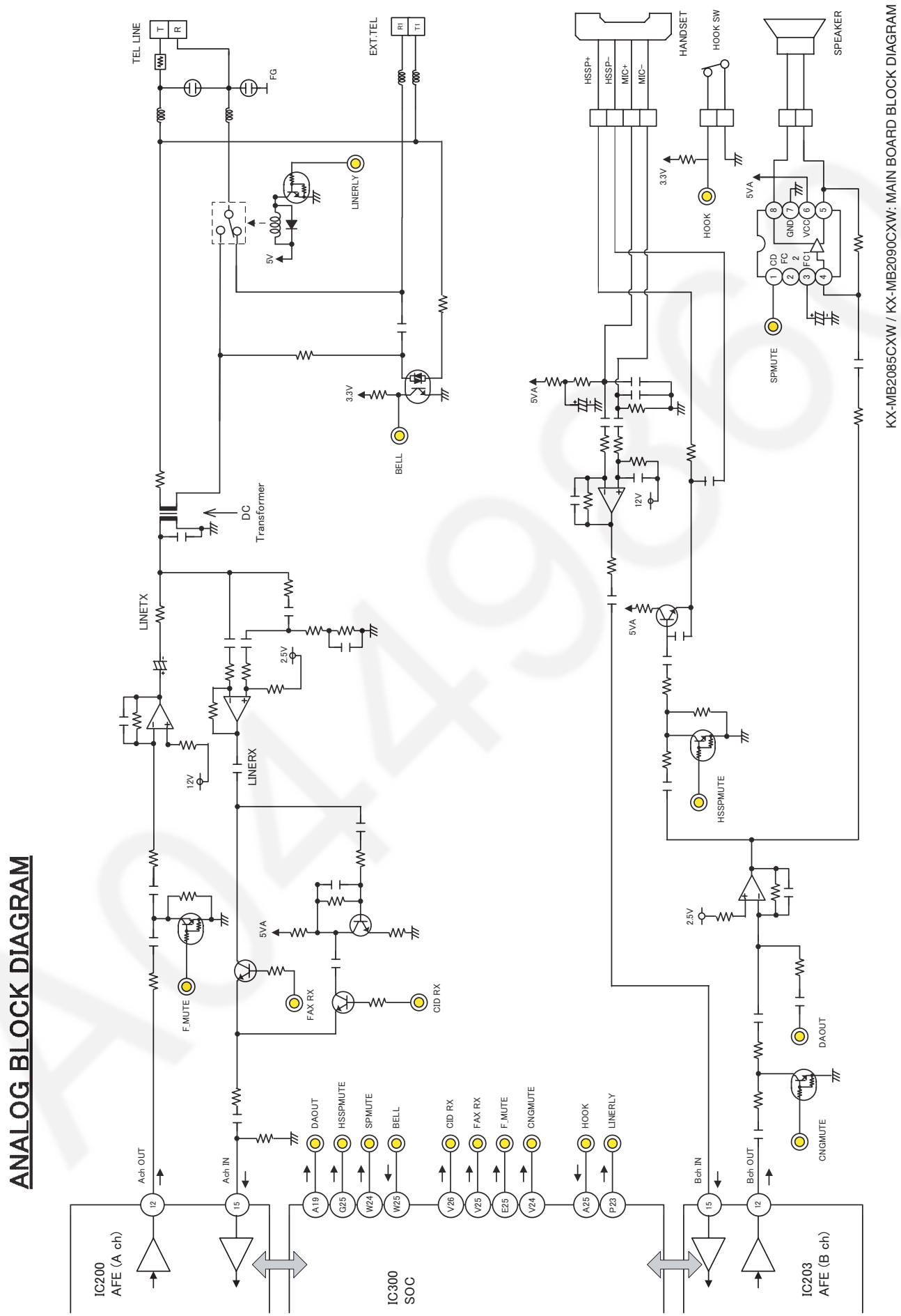
Function

The analog section works as an interface between the telephone line.
DAA control ITS circuit and NCU circuit.
DAA control signals are output from Soc IC300.

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.29) for the details.

6.3.4.2. Block Diagram



6.4. NCU Section

6.4.1. 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.

6.4.2. EXT. TEL. Line Relay (RLY100)

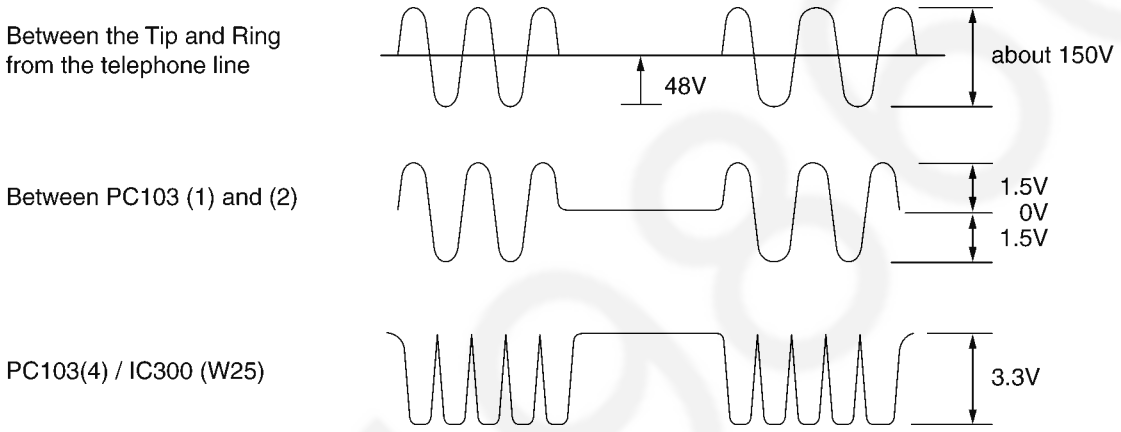
1. **Circuit Operation**

   Normally, this relay switches to the external telephone side and switches to the open side while OFF-HOOK.
   IC300 (P23) High Level→Q201 ON→RLY100 (ON)

6.4.3. Bell Detection Circuit

1. **Circuit Operation**

   The signal waveform for each point is indicated below. The signal (low level section) input to IC300 (W25).
   TEL LINE → PC103 (1, 2 → 4) → IC300 (W25)



6.4.4. Pulse Dial Circuit

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

Make state:

IC300 (P23) High Level → Q201 ON → RLY100 ON

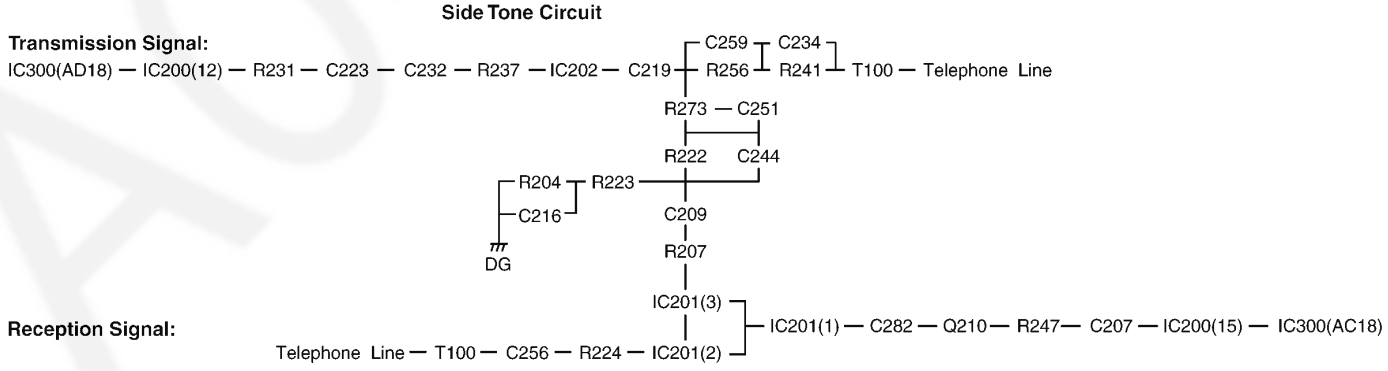
Break state:

IC300(P23) LOW Level → Q201 OFF → PC100 OFF

6.4.5. 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.



6.4.6. 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 FSK (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.
   When there is multiple data in the unit, the name or telephone number are displayed.
2. **Circuit Operation**
   Refer to **Check Sheet** for Signal Route of CNG/DTMF/Caller ID detection detection (P.138).

6.4.7. 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**
   Refer to **Check Sheet** for Signal Route of CNG/DTMF/Caller ID detection detection (P.138).

6.4.8. 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 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**
   Refer to **Check Sheet** for Signal Route of CNG/DTMF/Caller ID detection detection (P.138).

6.4.9. 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**
   Refer to **Check Sheet** for Signal Route of CNG/DTMF detection (P.138).

6.4.10. TAM Interface Circuit

This circuit is to switch between FAX receiving and the external TAM’s message recording automatically.
For details, please refer to **TAM Interface Section** (P.31).

6.5. ITS (Integrated telephone System) and Monitor Section

6.5.1. General

The general ITS operation is performed by IC203 which has a handset circuit. The alarm tone, the key tone, and the beep are output from Soc IC300.

6.5.1.1. 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. **Circuit Operation**
   (Telephone Monitor Signal Path)
   Signals received from the telephone line are output through at the speaker via the following path.
3. **Signal Path**
   Refer to **Check Sheet** for Signal Route of MONITER RX (P.138).

6.5.1.2. Monitor Circuit

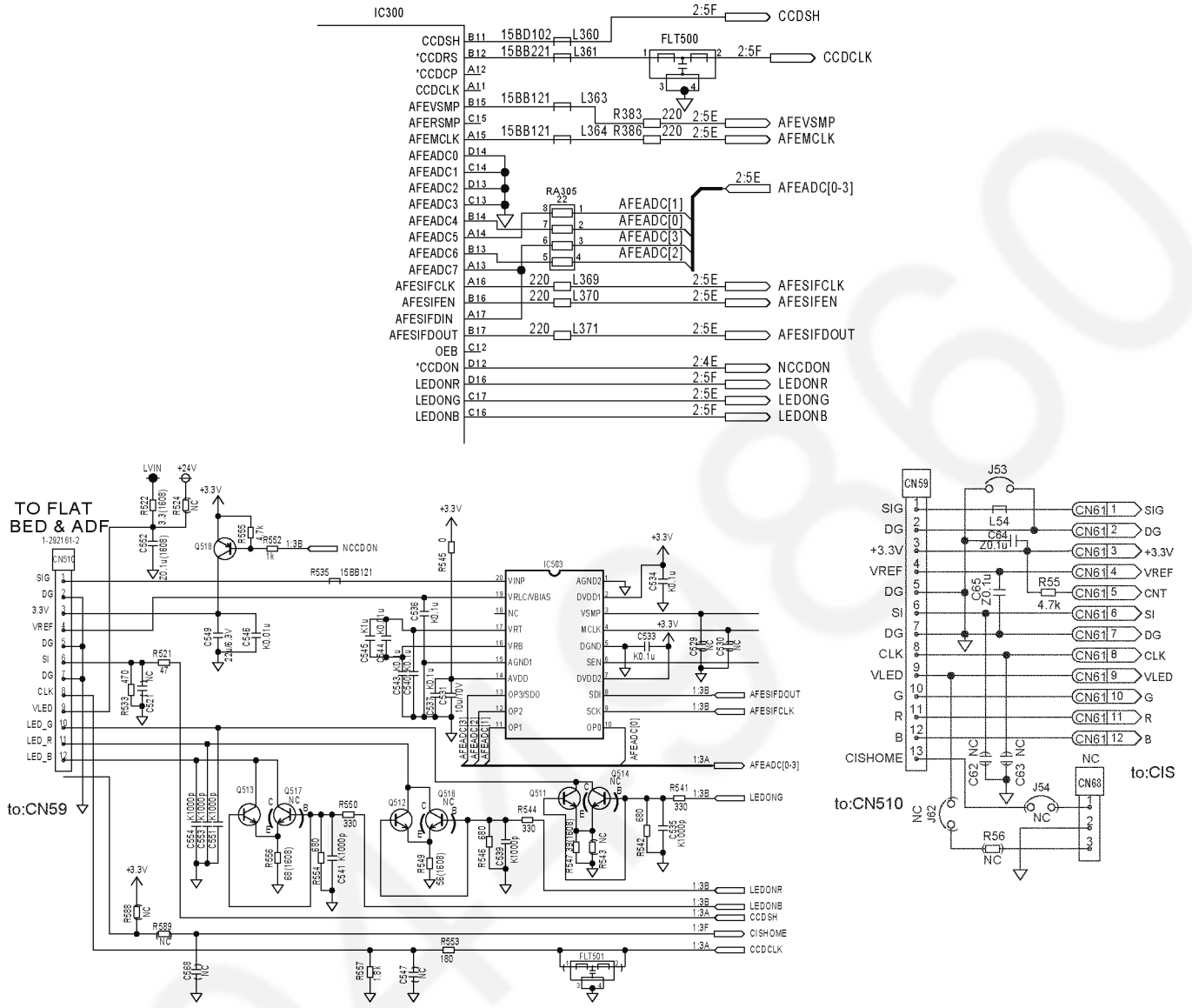
1. **Function**
   This circuit monitors various tones, such as (1) DTMF tone, (2) Alarm/Beep/Key tone/Bell.
2. **Signal Path**
   a. **DTMF MONITOR**
      (Speaker Operation)
      Refer to **Check Sheet** for Signal Route of DTMF Monitor (Speaker) (P.138).
      (Handset Operation)
      Refer to **Check Sheet** for Signal Route of DTMF Monitor (Handset) (P.138).
   b. **ALARM/BEEP/KEY TONE/BELL**
      Refer to **Check Sheet** for Signal Route of Ringing/Alarm/Beep/Key tone (P.138).

6.5.1.3. TAM Interface Section

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)
      Refer to **Check Sheet** for Signal Route of CNG/DTMF detection (P.138).
   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)
      Refer to **Check Sheet** for Signal Route of DTMF detection (ON-Hook) (P.138).

6.6. 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.

6.7. Motor Drive Section

6.7.1. 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**

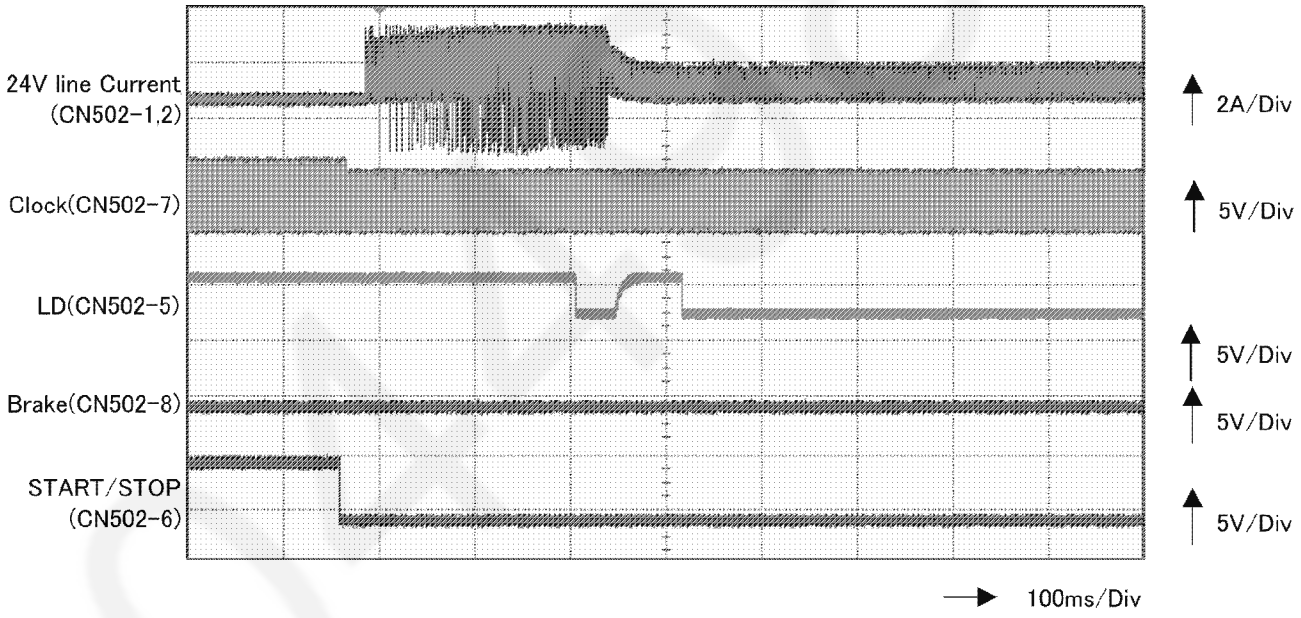
<Start operation>

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

1. SS signal (Output pin: Pin D24/Output Signal: "H")
When this signal is inverted by transistor Q507 and becomes "L", motor recognize this signal as "start" signal.
2. Clock signal (Output pin: Pin C26/Output Signal: Pulse)
Pulse frequency :approx. 2.5KHz (at normal printing speed)
Pulse frequency :approx. 1.2KHz.(at half printing speed)
This signal is also inverted by transistor Q508, and supplied to motor as "clock" signal.
3. Brake signal (Output pin: Pin D26/Output Signal: "H")
When this signal is inverted by transistor Q509 and becomes "L", motor recognize this signal as "brake off" signal.

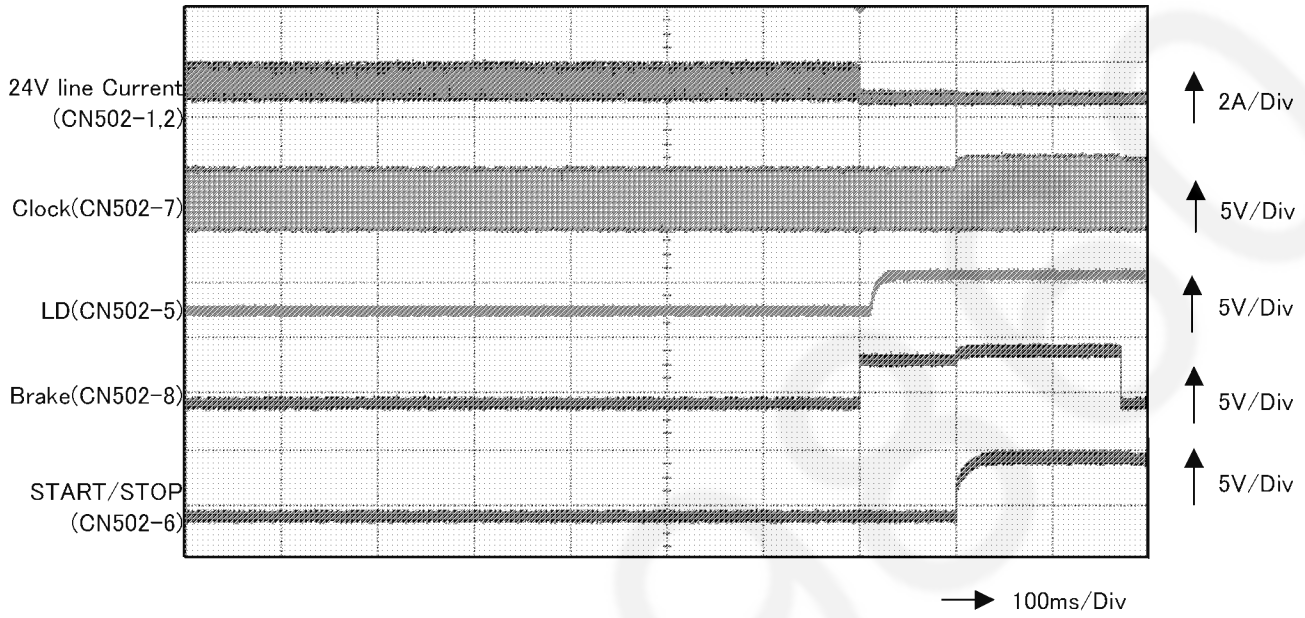
When motor reaches constant speed, "L" signal is supplied from motor to IC300 pin D25 as "Lock detect (LD)" signal.
If "LD" signal does not becomes "L" within predetermined period after "SS" signal becomes "H", or if "LD" signal becomes "H" during rotation, it is judged that motor Error occurred.

Timing Chart of Start operation

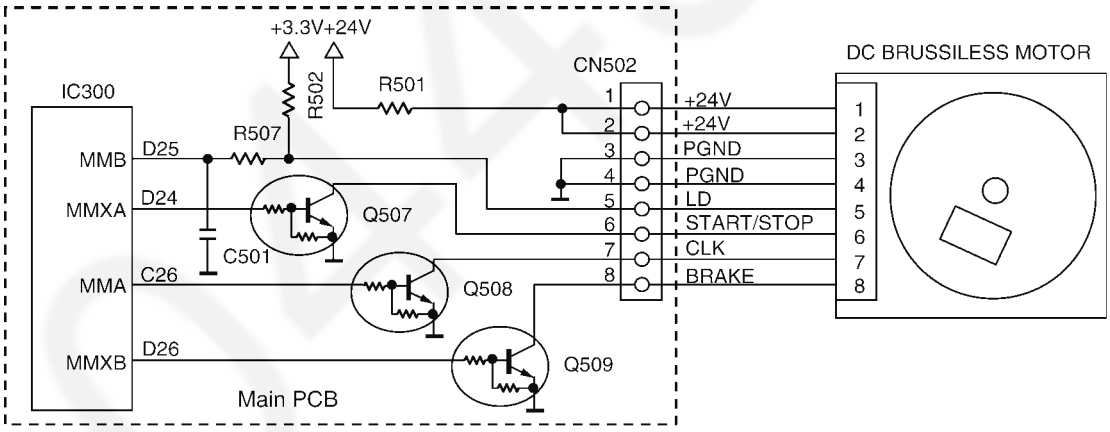


<Stop operation>
In order to stop the motor rotation, following 2 signals are supplied from IC300.
1. SS signal (Output pin: Pin D24/Output Signal: "L")
When this signal is inverted by transistor Q507 and becomes "H", motor recognize this signal as "stop" signal.
2. Brake signal (Output pin: Pin D26/Output Signal: "L")
When this signal is inverted by transistor Q509 and becomes "H", motor recognize this signal as "brake on" signal.

Timing Chart of Stop operation



6.7.1.1. Engine Motor Drive Circuit



6.7.2. 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.

6.7.2.1. Motor current control circuit

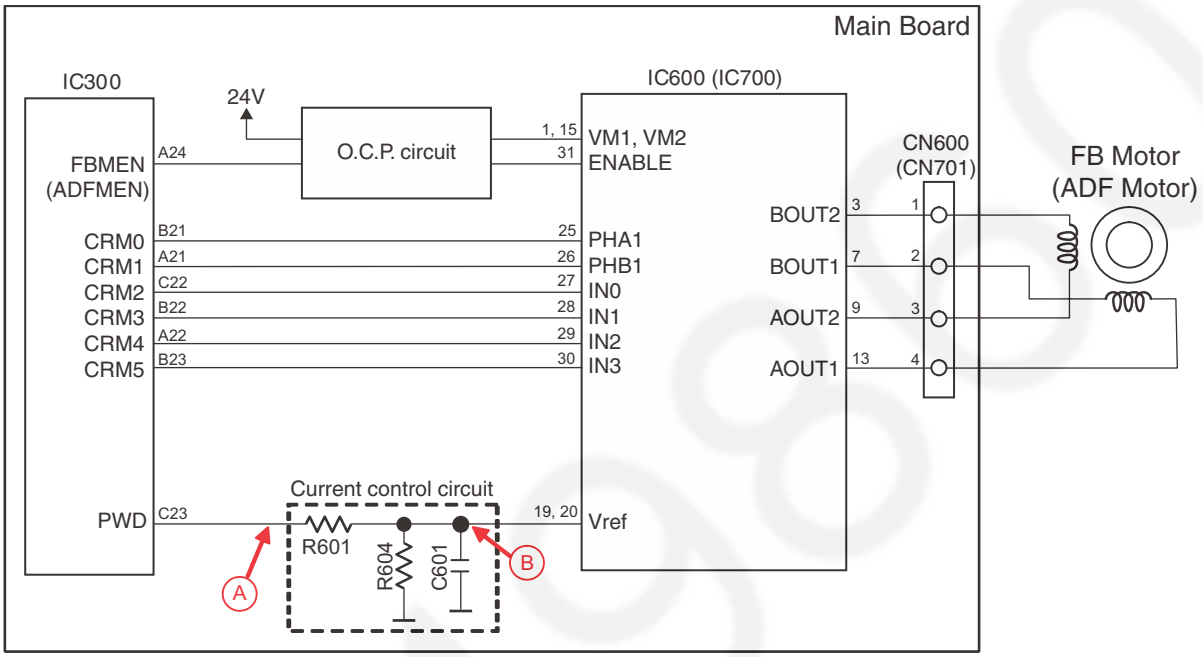
1. **Function**
According to the scan speed, motor current is controlled for appropriate value.
For example, when scan speed is low, motor has enough driving force.
So to prevent the vibration and noise during motor rotation, motor drive current should be reduced.
When scan speed is high, motor needs much driving force. so much current should be supplied.
In order to control the motor current, VREFA and VREFB voltages of IC600 is controlled.
When VREFA and VREFB voltages are high, motor currents are increased, and the voltages are low, motor currents are reduced.

In order to control the Vref voltage, PWM pulse is supplied from IC300 pin C23.
PWM pulse is integrated by R601, R604, and C601, then converted to DC voltage.

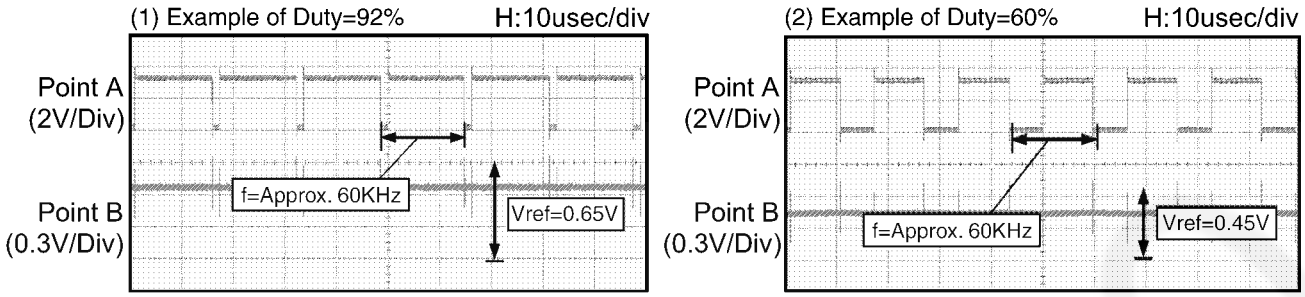
This DC voltage is supplied to Vref pin of each motor drivers.
When duty of PWM pulse is low, Vref voltage is decreased and when duty is high, Vref voltage is increased.

For FB motor, motor current is controlled approx. 0.15A-0.3A.
For ADF motor, motor current is controlled approx. 0.25A-0.35A (ADF equipped model only).

2. **Circuit Diagram**



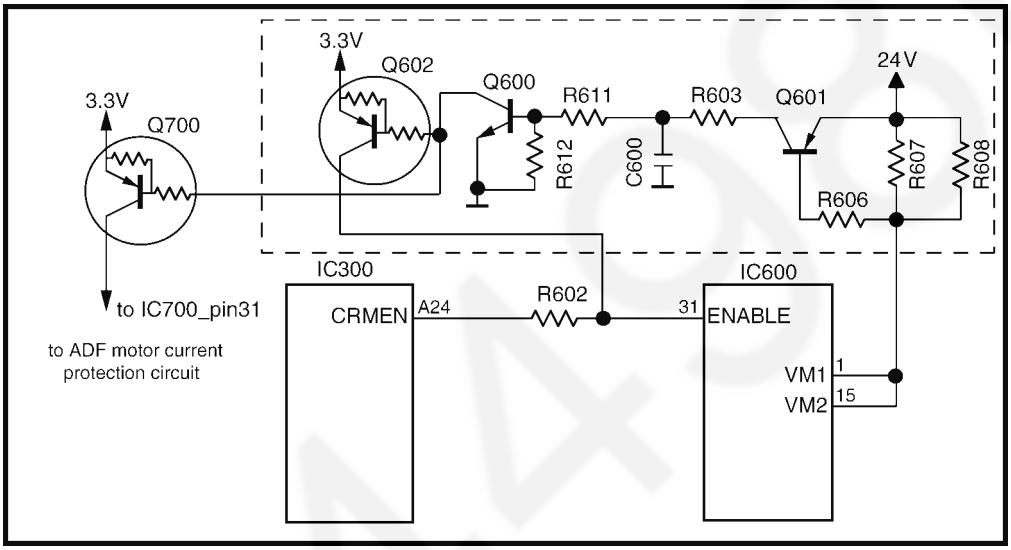
3. **Timing chart of current control**
Following timing charts are the example of Vref voltage corresponding to PWM pulse duty.



6.7.2.2. O.C.P. (Over Current Protection) circuit

1. **Function**
If motor driver can supply more than 15 watts, FB and ADF motors may become fire hazards.
To prevent the risk of fire, this circuit is provided.

2. **Circuit diagram**



3. **Circuit explanation**
When the current supplied from 24V exceeds 0.44A, the voltage between two registers R607 and R608 becomes more than 0.6V (=0.44Ax2.7ohm/2), consequently both Q600, Q601 and Q602 turn on, then "ENABLE" signal (IC600, IC700_pin31) becomes "Low" level.
When "ENABLE" signal becomes "High" level, FB motor drive block of IC600 is deactivated and currents of FB motor are cut off.
So the currents which IC600 can supply are limited to less than 0.44A and the wattage is also limited to less than 10.6W (=0.44Ax24V).
By limiting the wattage less than 15W, risk of fire hazard is eliminated.

This signal is designed to become "High" when software can not control motors properly by some accidents.
When base of Q602 becomes "High", "ENABLE" signal becomes "Low" and FB motor currents are cut off.
Therefore even in the case of software can not control motors, FB motor stops automatically for securing safety.
ADF motor currents are aslo cut off by the same method.

6.7.2.3. Motor driver

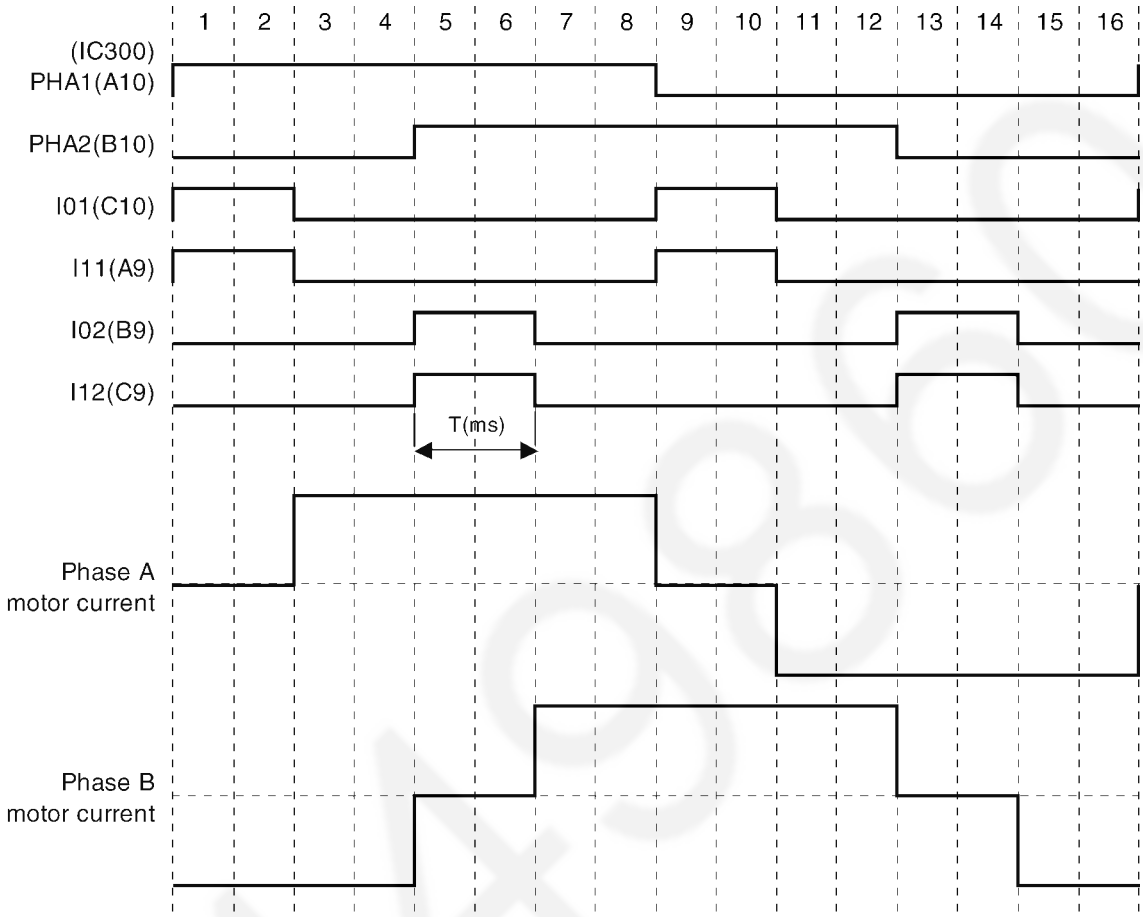
Motor driver IC600 and IC700 can drive motors up to 0.8A/phase and support up to W1-2 phase excitation.
When "ENABLE" signal (IC600 and IC700_pin31) becomes "L", motor driver is activated.
Stepping pulses are output from IC300 pins A21, A22, B21, B22, B23 and C22.
Frequency and pattern of these pulses determine the motor rotation speed and excitation mode respectively.
Corresponding to these pulses, current are supplied from IC600(IC700)_pin3, pin7, pin9 and pin13 to each motor coils.

6.8. Timing chart and wave form of scanner motors

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

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

1. Timing chart



2. Wave form

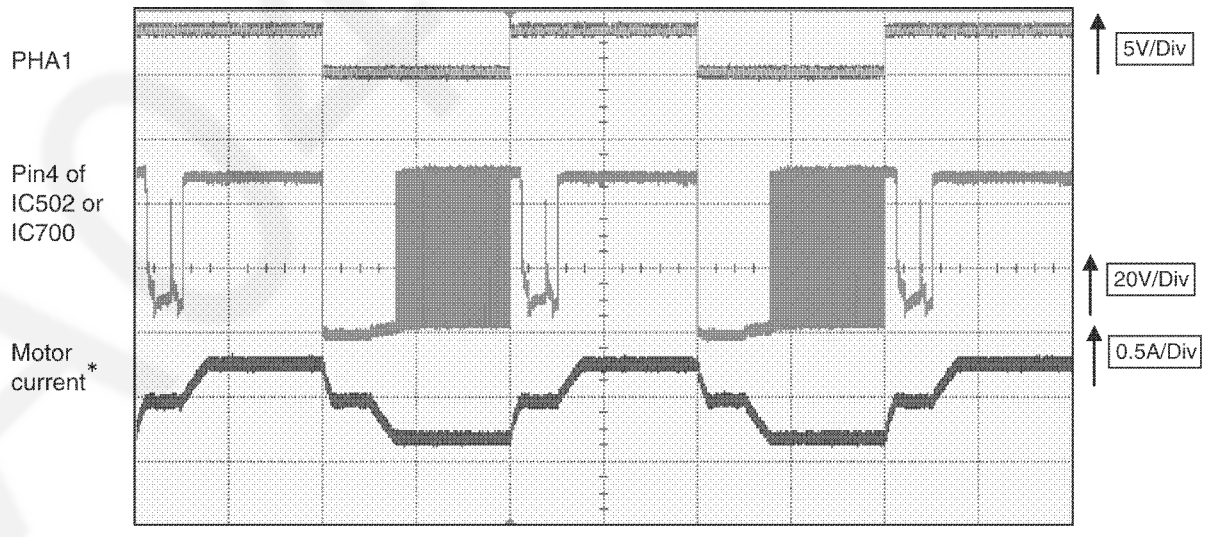
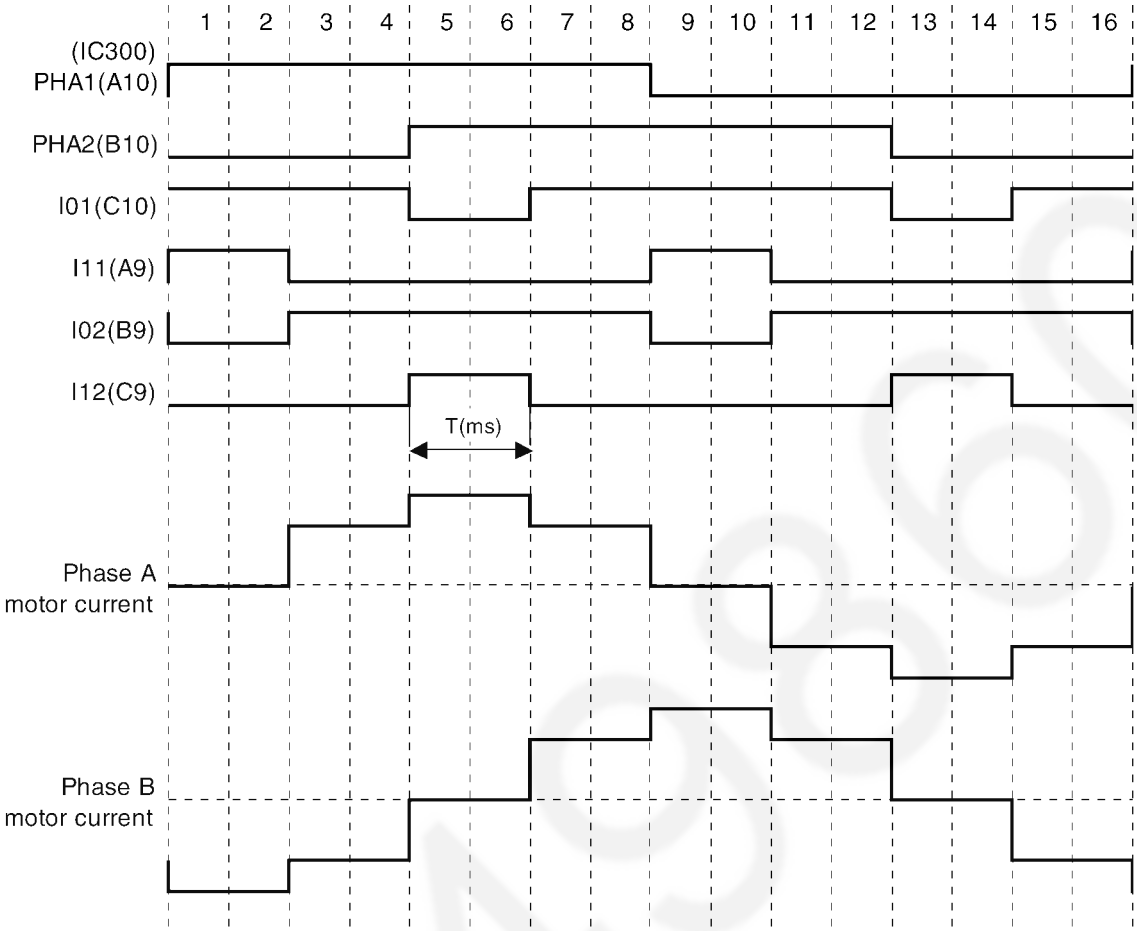


Fig. 1

* Motor current is changed according to the scan speed.

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

1. Timing chart



2. Wave form

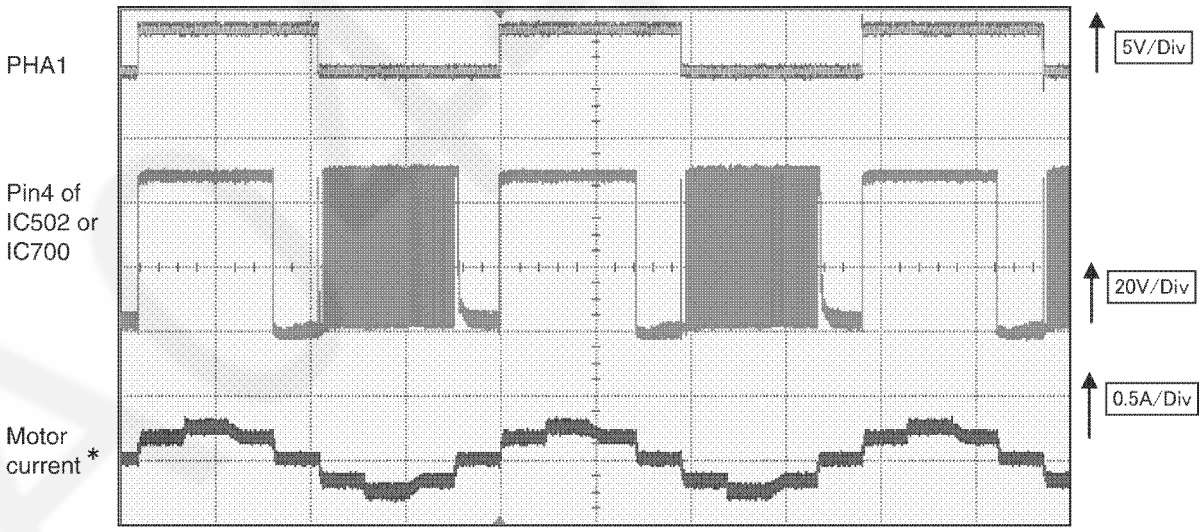
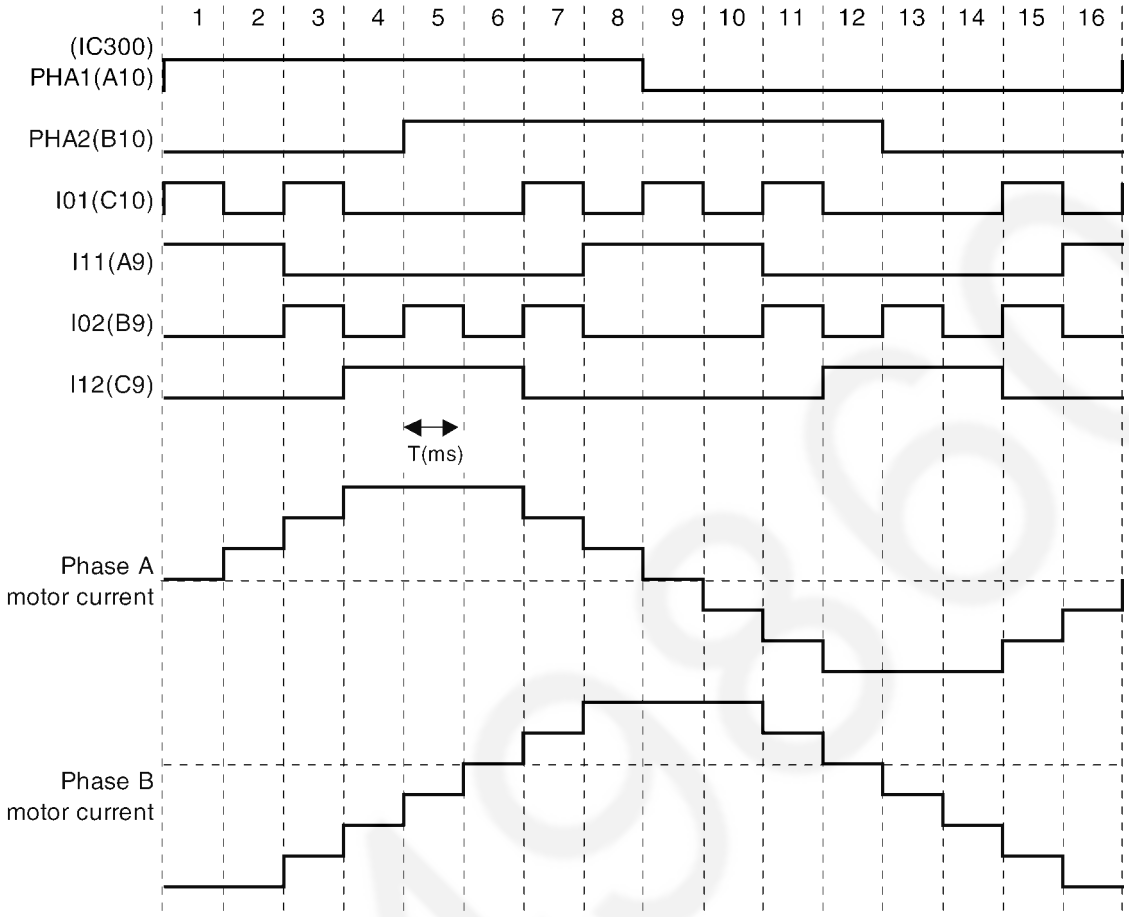


Fig. 2

* Motor current is changed according to the scan speed.

6.8.3. W1-2 phase excitation (Quarter step)

1. Timing chart



2. Wave form

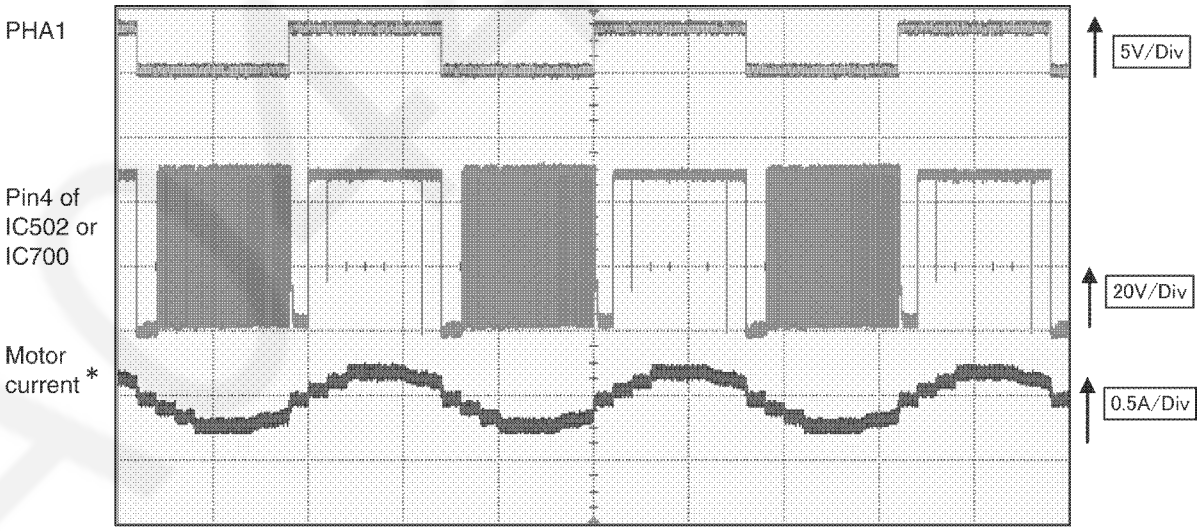


Fig. 3

* Motor current is changed according to the scan speed.

6.8.4. 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 mode \ Copy magnification	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					

6.9. FAN Motor Section

6.9.1. General

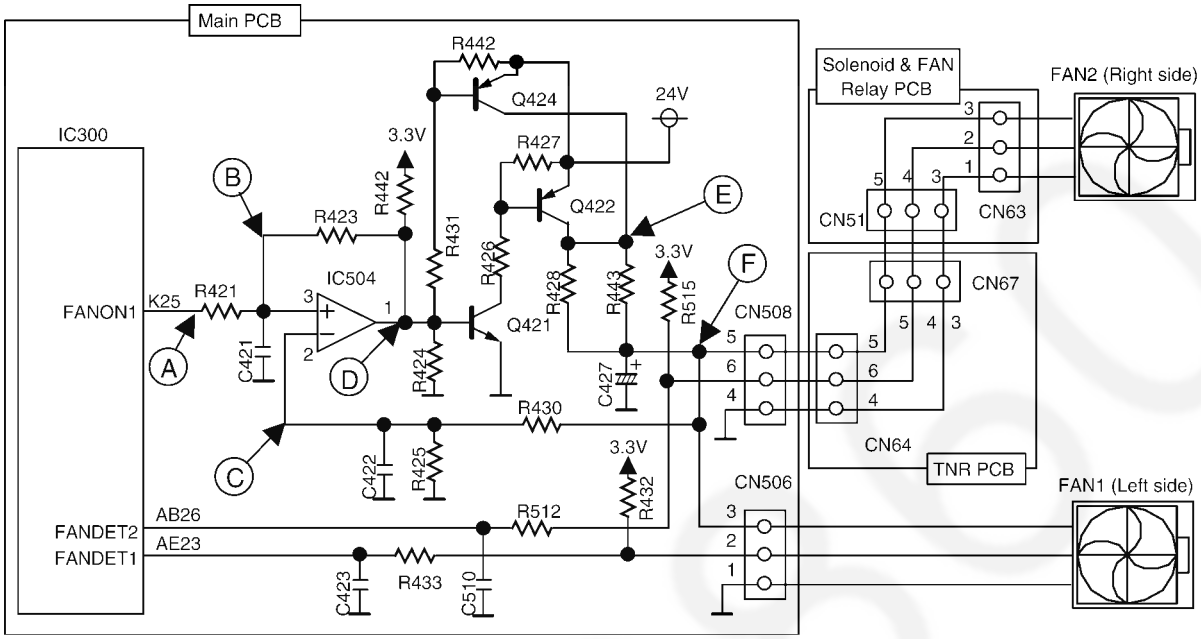
This unit is equipped with two FAN motors to prevent the developing devices, Power Supply Unit (PSU) and other devices from overheating during printing.

The FAN rotates at high speed (Approx. 3000rpm) while printing.

After printing is finished, FAN rotates at low speed (Approx.2200rpm) while predetermined period.

6.9.2. 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.



6.9.3. 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.

6.9.3.1. Half Speed Mode

In half speed mode, Q602 outputs pulse (frequency is about 30KHz, duty is about 37.5%).
This pulse is integrated by R530 and C502 then Pin2_IC504 becomes approx. DC1.24V. Input level of IC504_pin2 is determined by the voltage of between R425.
If voltage between R425 is less than 1.24V, output of pin1_IC504 becomes "H".
Then both Q424, Q421 and Q422 are turned on. So voltage between R425 (=the voltage of IC504_pin2) rises gradually.
When the voltage between R425 exceeds 1.24V, output of pin1_IC504 becomes "L".
Then both Q424, Q421 and Q422 are turned off. So voltage between R507 falls gradually.
By repeating these sequences, voltage between R425 is controlled approx. 1.24V.
On the other hand, if FAN voltage is represented Vo and voltage between R425 is represented VL, VL is determined as below formula.

VL=Vo*R425/(R430+R425) → Vo=VL*(R430+R425)/R425

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

VL=1.24(V), R430=150(Kohm), R425=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.

6.9.3.2. Full Speed Mode

In full speed mode, IC300_pinK25 outputs constant 3.3V.
When Q424, Q421 and Q422 are turned on, Vo becomes approx 20V (approx. 4V drops between R428/R443).
So the voltage between R425 is determined as follows

VL=Vo*R425/(R430+R425)=20*22K/(150K+22K)=2.5(V)

Since IC504_pinA3 is 3.3V and IC504_pinA2 is 2.5V, IC504_pin1 is always "H".
Consequently all Q424, Q421 and Q422 are always turned on, and then approx. 20V is supplied to FAN motors.
Therefore FAN rotates with full speed.

6.9.3.3. FAN stop

When IC300_pinK25 is "L", both Q424, Q421 and Q422 are turned off, then both FAN stop rotation.

6.9.3.4. Rotation detect signal

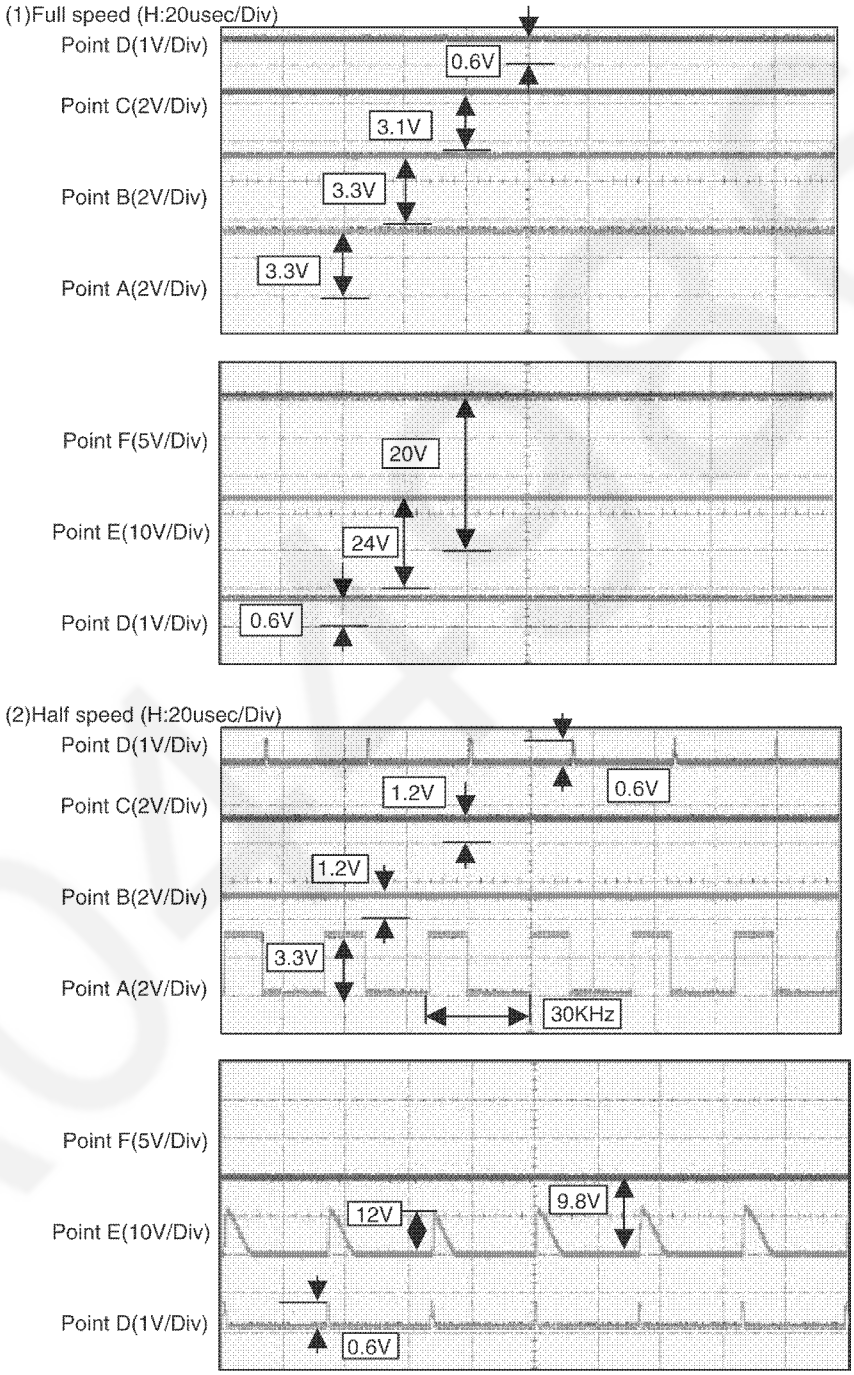
During the FAN rotation, the pulse signal is output from pin 2 of FAN motors as the rotation detects signals.

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.104)).

6.9.4. Control table

FANON1H (IC300_pinK25)	FAN1and FAN2 mode
H	Full speed
Pulse	Half speed
L	Stop

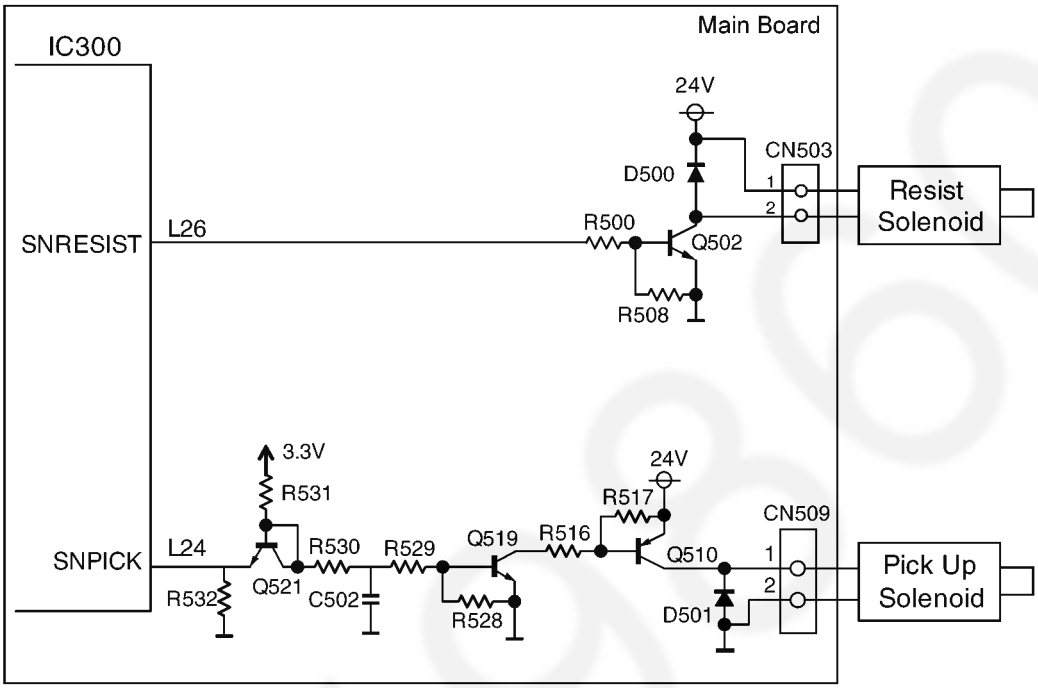
6.9.5. Waveform



6.10. Solenoid Driver Section

The solenoid drive circuit controls Resistor Solenoid and Pickup Solenoid.
These solenoids are designed to be driven 24V.
The diode protect transistors from reverse generated voltage when solenoids are turned off.

1. Circuit Diagram

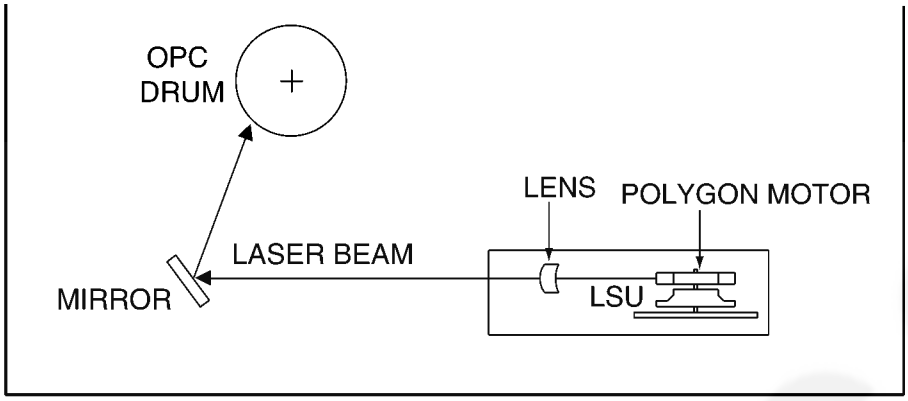


2. Active Logic

RESIST	
MODE	IC300_L26
Solenoid ON	High level
Solenoid OFF	Low level

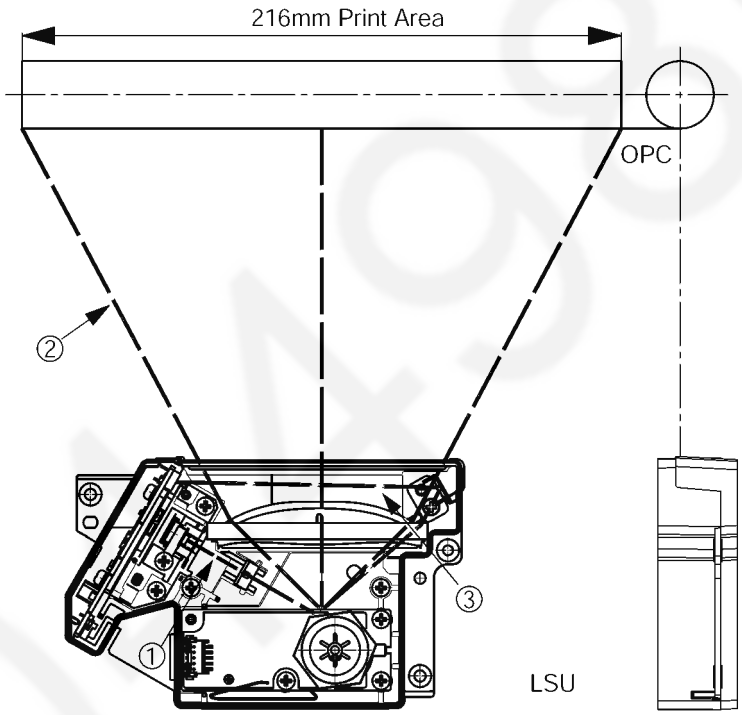
PICKUP	
MODE	IC300_L24
Solenoid ON	High level
Solenoid OFF	Low level

6.11. LSU (Laser Scanning Unit) Section



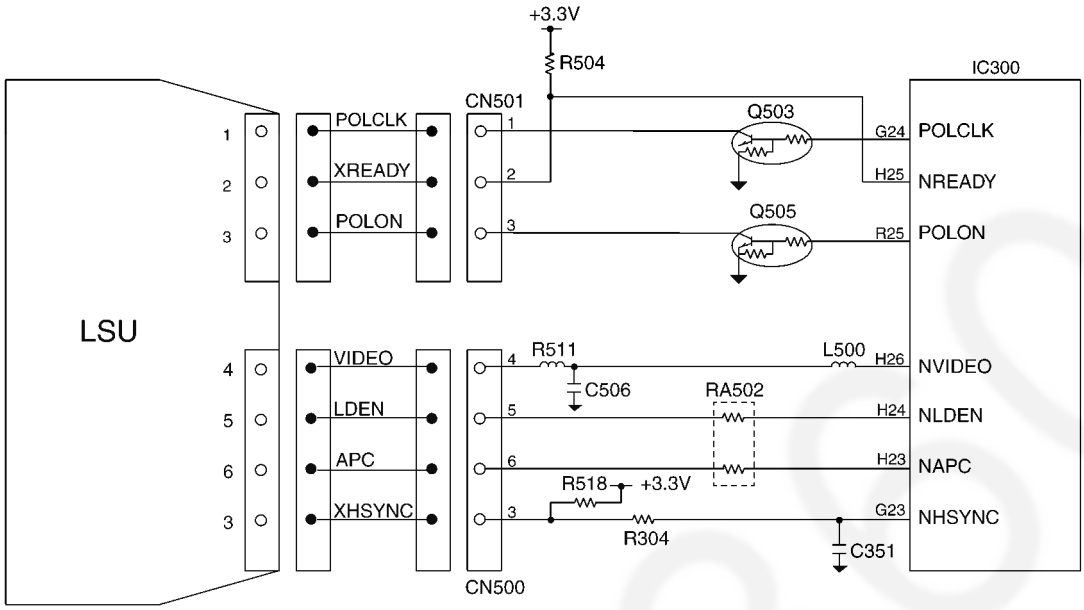
The mechanical shutter will be opened by setting DRUM UNIT properly.

LSU Layout

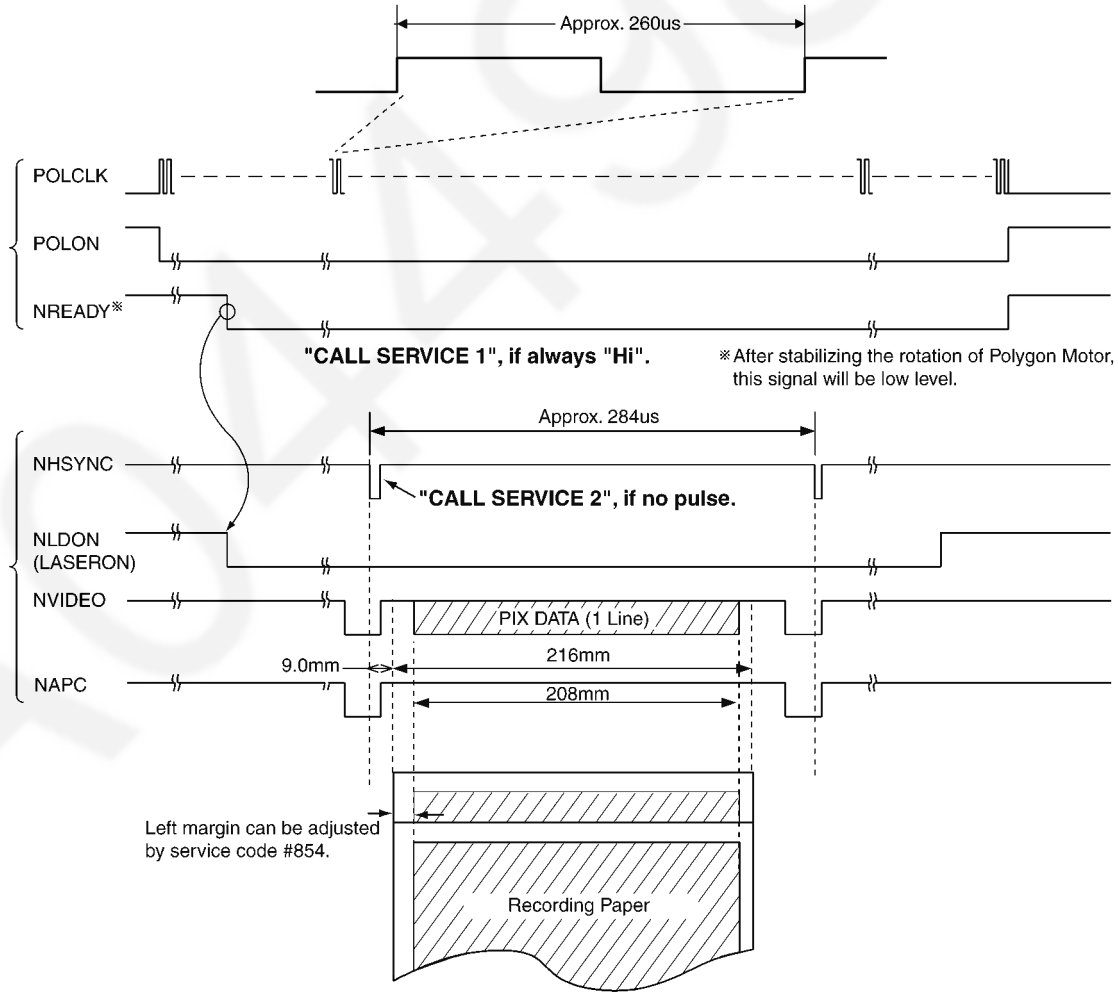


① Laser output
② OPC DRUM is irradiated with a laser.
③ The sensor outside the effective printing area detects the 1-line operation (scanning).

Circuit Diagram



Timing Chart



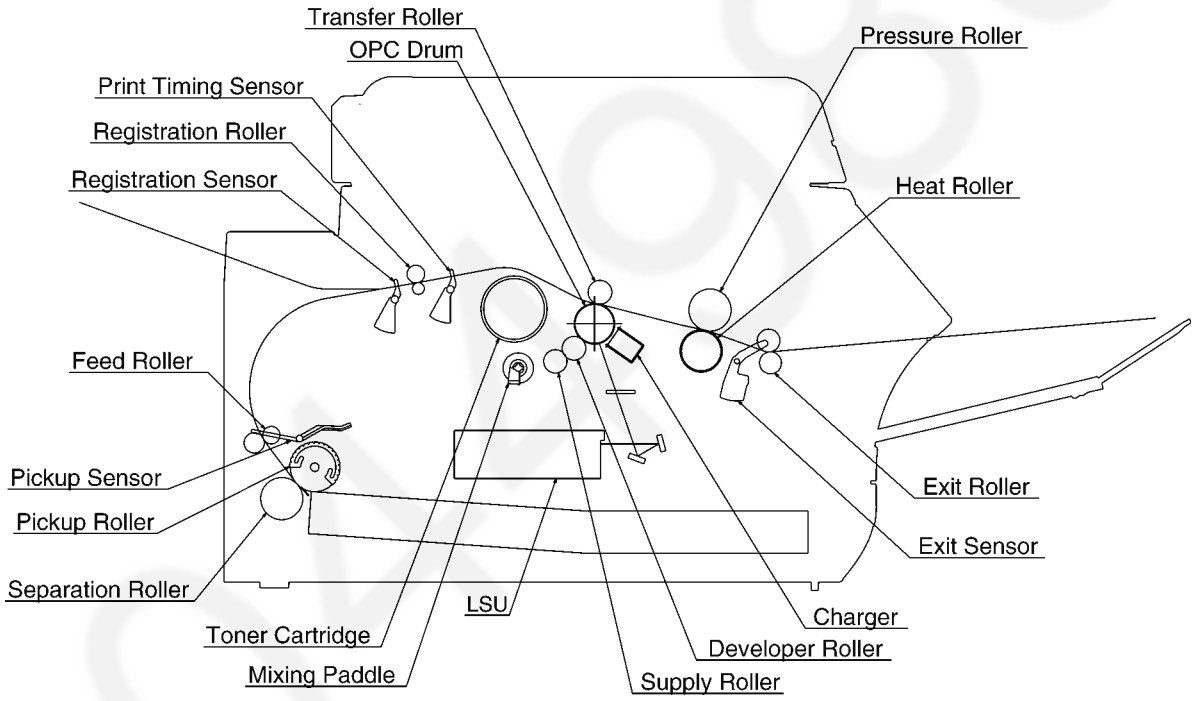
6.12. Sensors and Switches Section

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]
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	-

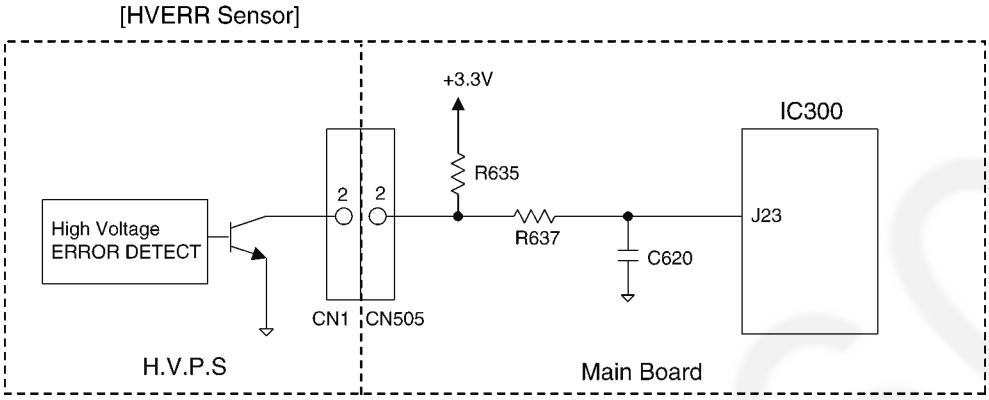
Note:

See TEST FUNCTIONS - SENSOR CHECK SECTION for the sensor test.
(#815 of Service Mode test. Refer to **Test Functions** (P.70).



6.12.1. Drum Detection

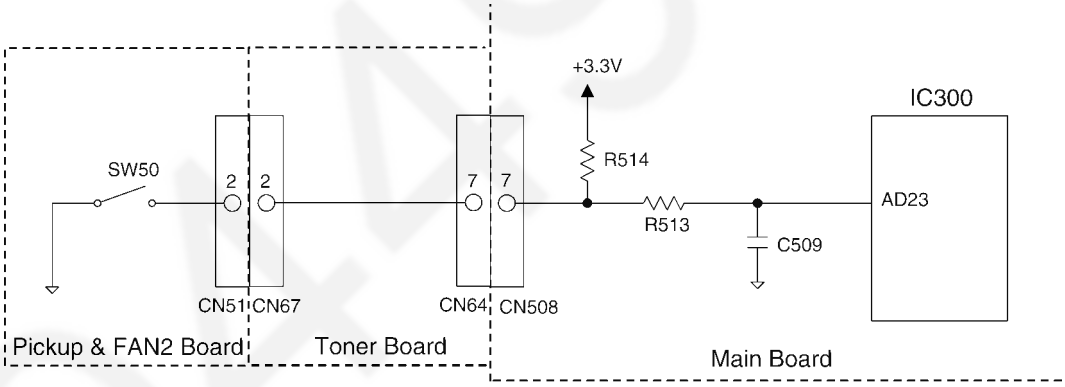
DRUM SENSOR is not arranged.
DRUM cartridge is detected when HVERR SENSOR arranged in H.V.P.S becomes effective.



High Voltage ERROR Status	Drum sensor	Signal (IC300-J23)
Abnormal	DRUM can not be detected	Low level
Normal	DRUM can be detected	High level

6.12.2. Pickup Sensor

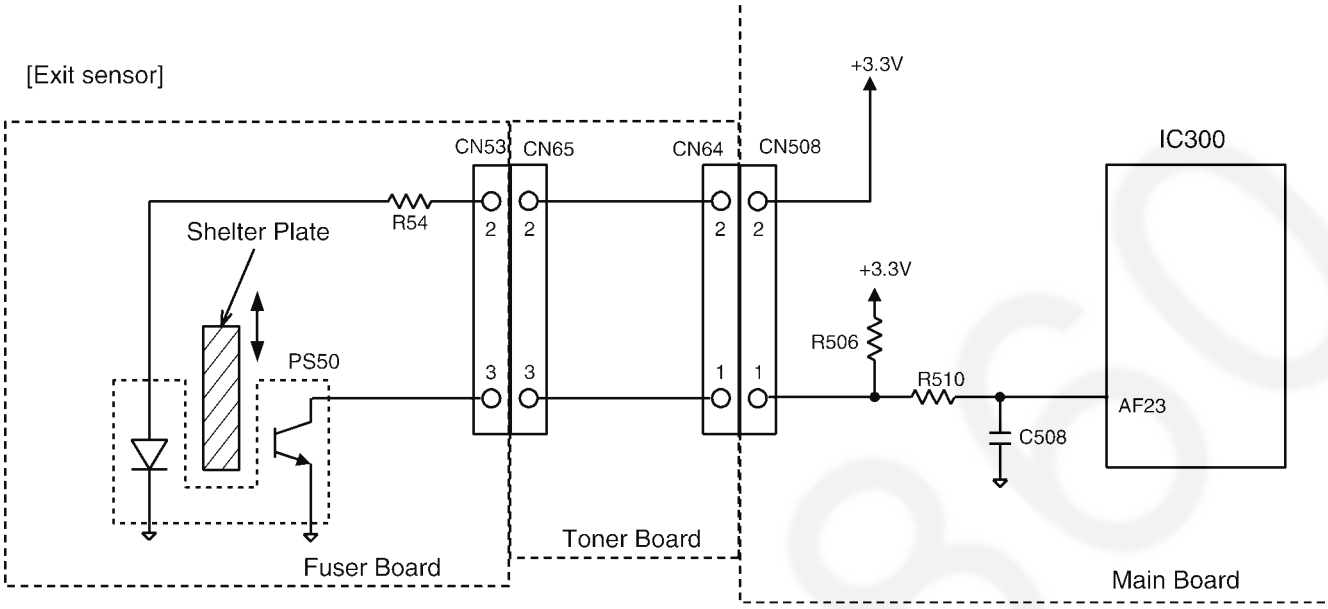
Paper SENSOR is not arranged.
Paper is detected when PICKUP SENSOR described as follows becomes effective.
This Switch detects whether a recording paper is picked up or not, and whether Rear Cover is opened or closed.
When there is a recording paper at the position of the switch, the input signal of IC300-AD23pin becomes low level.
When there is no recording paper at the position of the switch, the input signal of IC300-AD23pin becomes high level.



Pickup status	Idling status	Signal (IC300-AD23pin)
A paper exists	Rear Cover opened	Low level
No papers	Rear Cover closed	High level

6.12.3. 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-AF23pin becomes low level.
When there is no recording paper at the position of the sensor, the input signal of IC300-AF23pin becomes high level.



	Signal (IC300-AF23pin)
A paper exists	Low level
No papers	High level

6.12.4. 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-AB24pin 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-AB24pin becomes low level.
This sensor LED is controlled by IC300-M26pin.

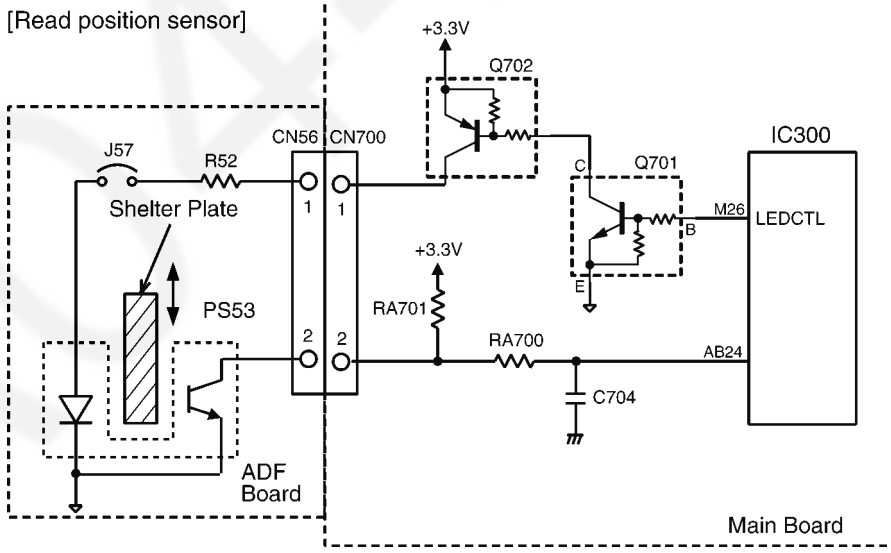


	Photo-transistor	Signal (IC300-AB24pin)
A document exists	OFF	High level
No document	ON	Low level

LED control	Signal (IC300-M26pin)
Sleep	50% duty
Standby	High

6.12.5. 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-AF22pin 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-AF22pin becomes high level.

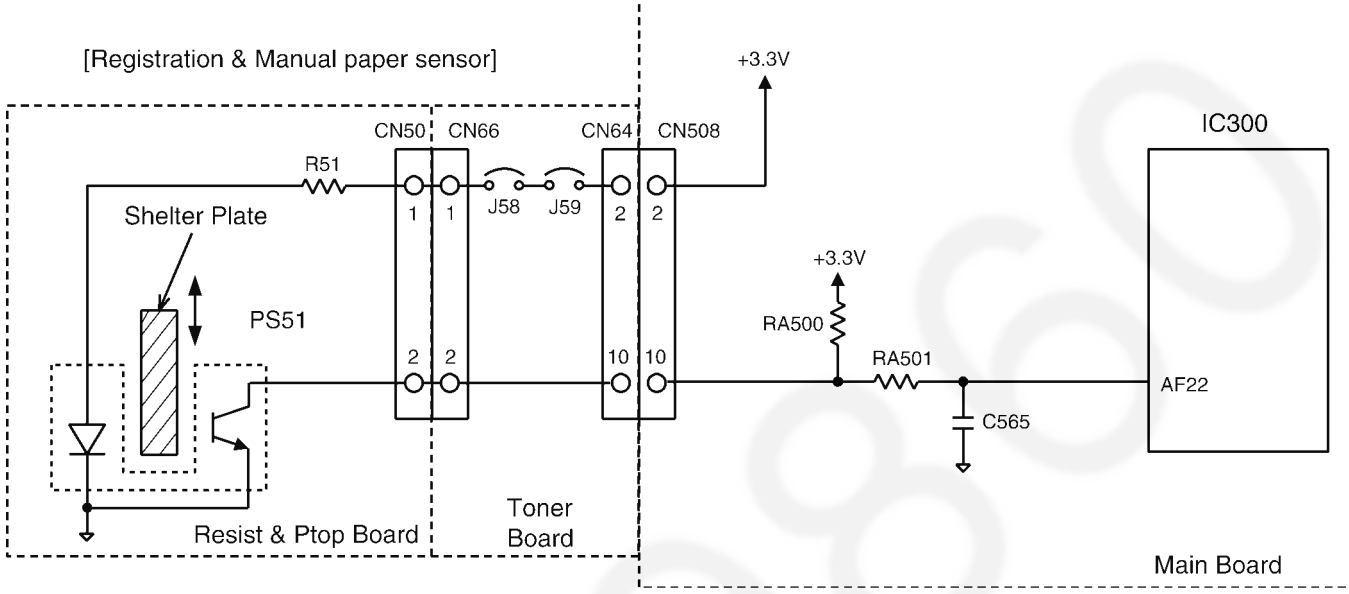


	Photo-transistor	Signal (IC300-AF22pin)
Paper exists	ON	Low level
No paper	OFF	High level

6.12.6. 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-AA25pin 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-AA25pin becomes high level.

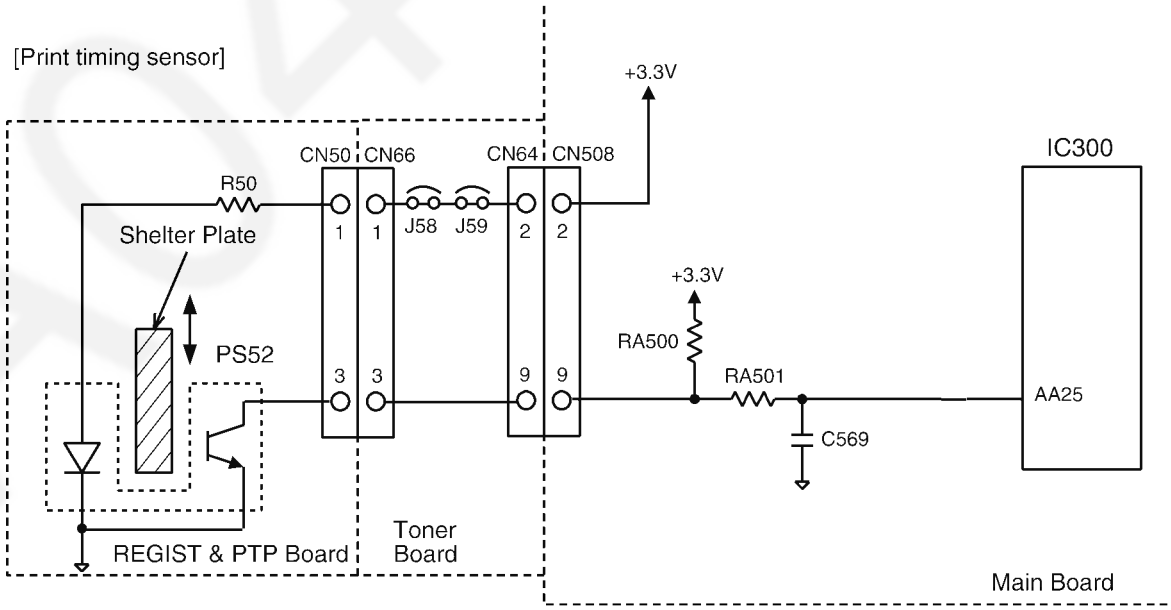


	Photo-transistor	Signal (IC300-AA25pin)
Paper exists	ON	Low level
No paper	OFF	High level

6.12.7. 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-AC26pin 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-AC26pin becomes low level.
This sensor LED is controlled by IC300-M26pin.

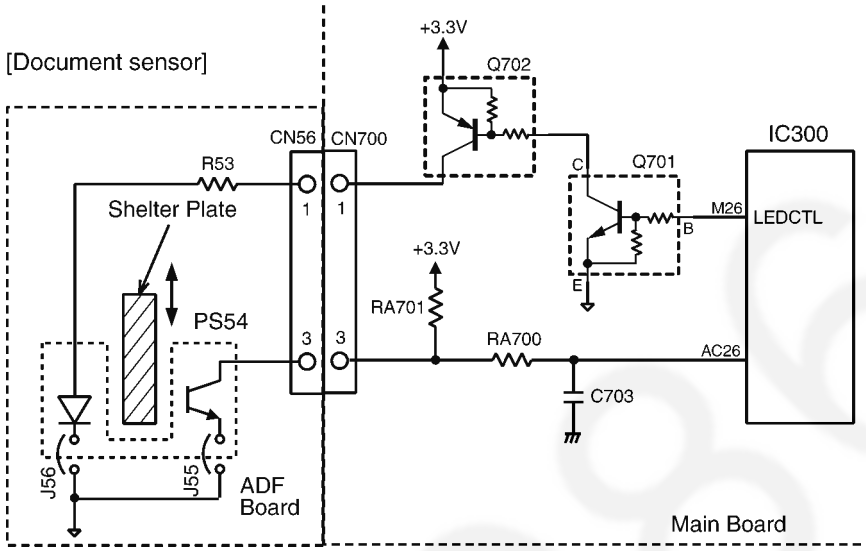
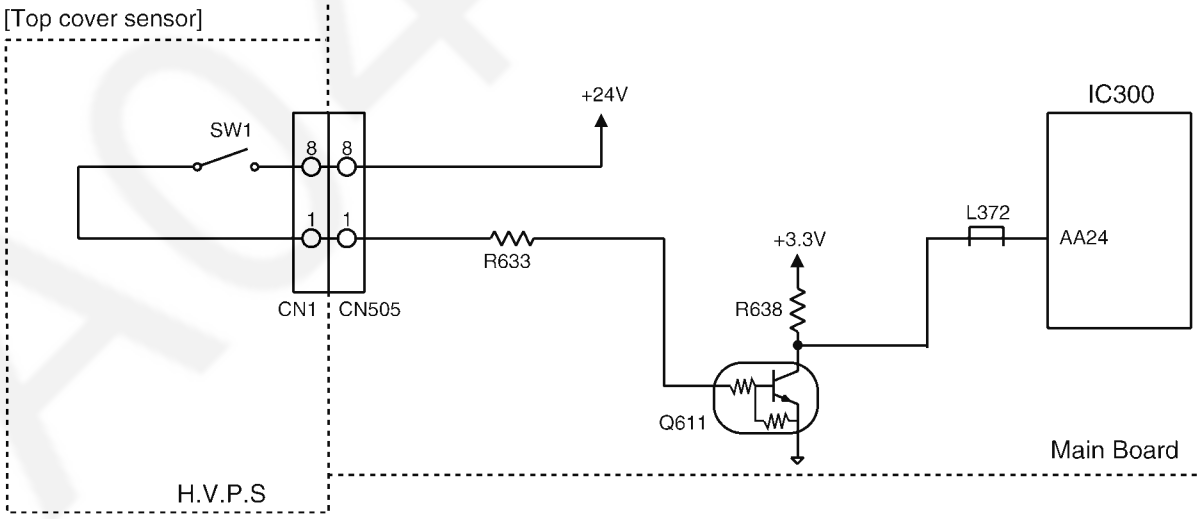


	Photo-transistor	Signal (IC300-AC26)
document exists	OFF	High level
No document	ON	Low level

LED control	Signal (IC300-M26pin)
Sleep	50% duty
Standby	High

6.12.8. 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-AA24pin becomes a low level.
When the top cover is open, the switches turns OFF, and the input signal of IC300-AA24pin becomes a high level.

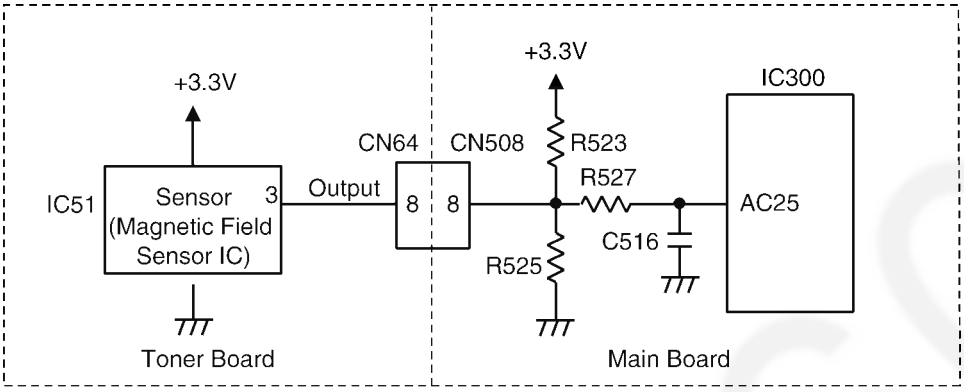


	Switch	Signal (IC300-AA24pin)
Open	OFF	High level
Close	ON	Low level

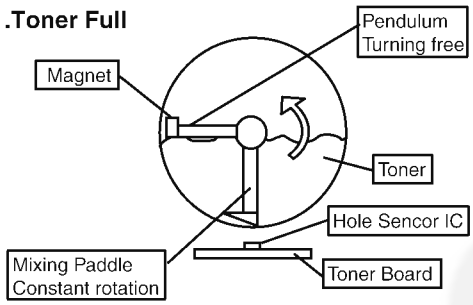
6.12.9. Toner Sensor

This sensor detects whether toner is present.

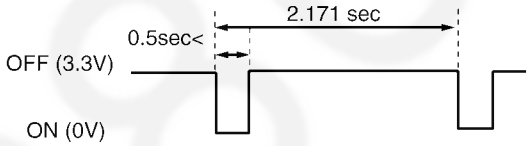
If the time of IC300-AC25pin's Low level is under 0.45s,there is enough toner in Drum cartridge,if not,toner is near empty.



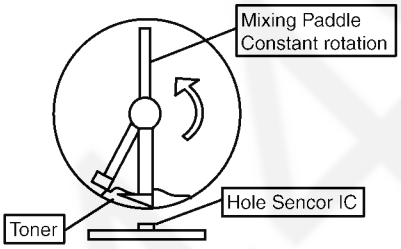
1.Toner Full

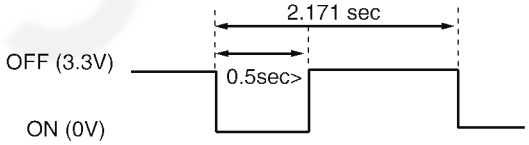


Sensor Signal

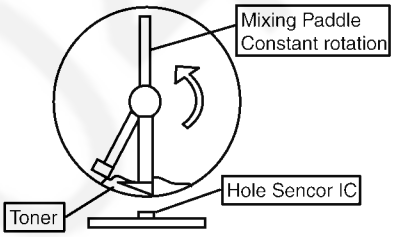


2. Toner Low

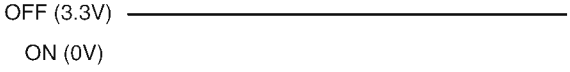




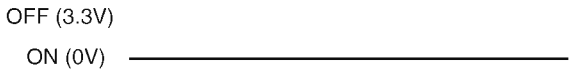
3. In case the Mixing Paddle does not rotate



3.1



3.2

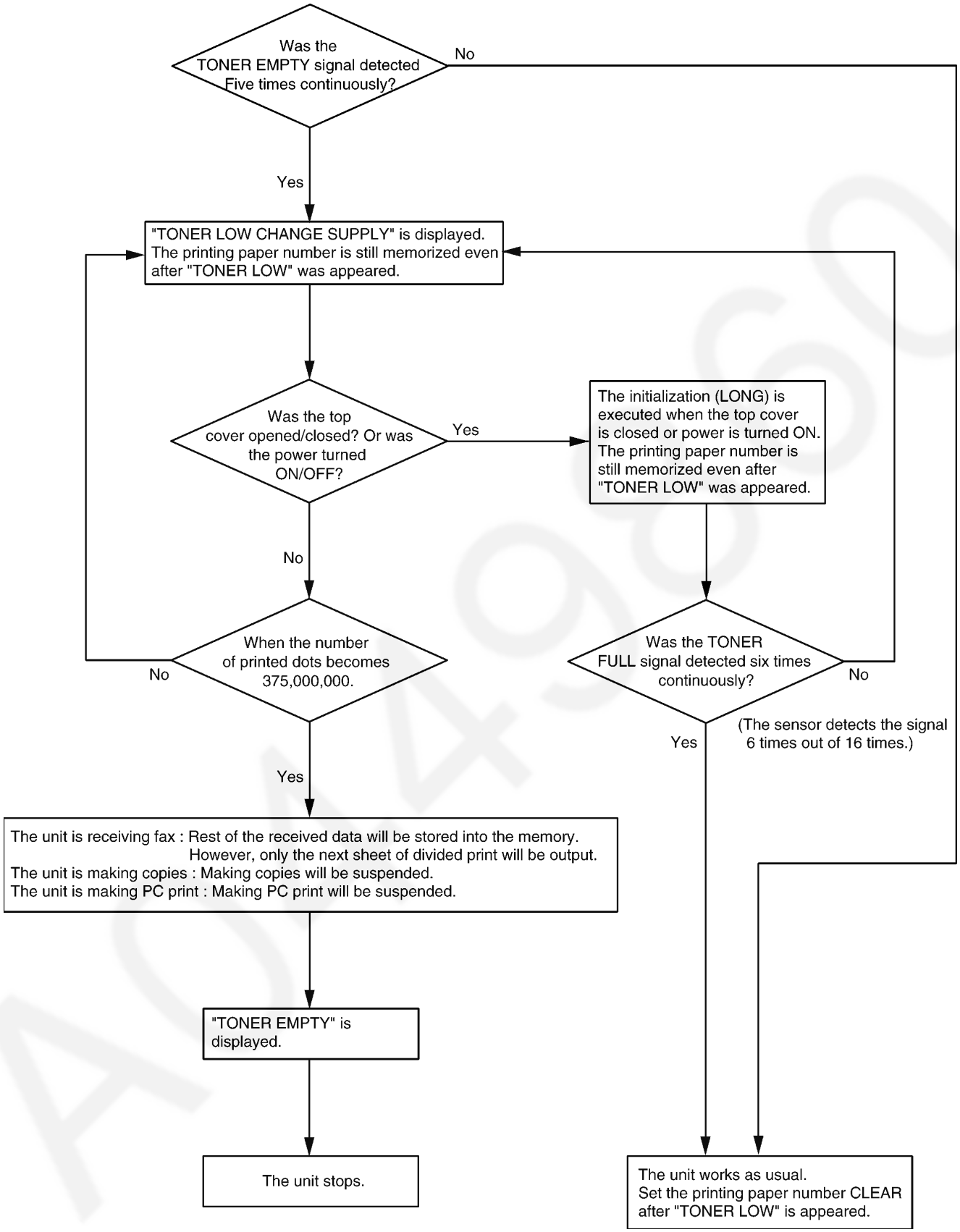


Toner Sensor

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-AC25pin)
Toner full	-	Low level < 0.5s
Near Empty Toner	TONER LOW	Low level > 0.5s
Mixing Paddle does not rotate (“CHANGE DRUM”)	CHANGE DRUM	High level fix or Low level fix

6.12.9.1. Toner Detection Flow

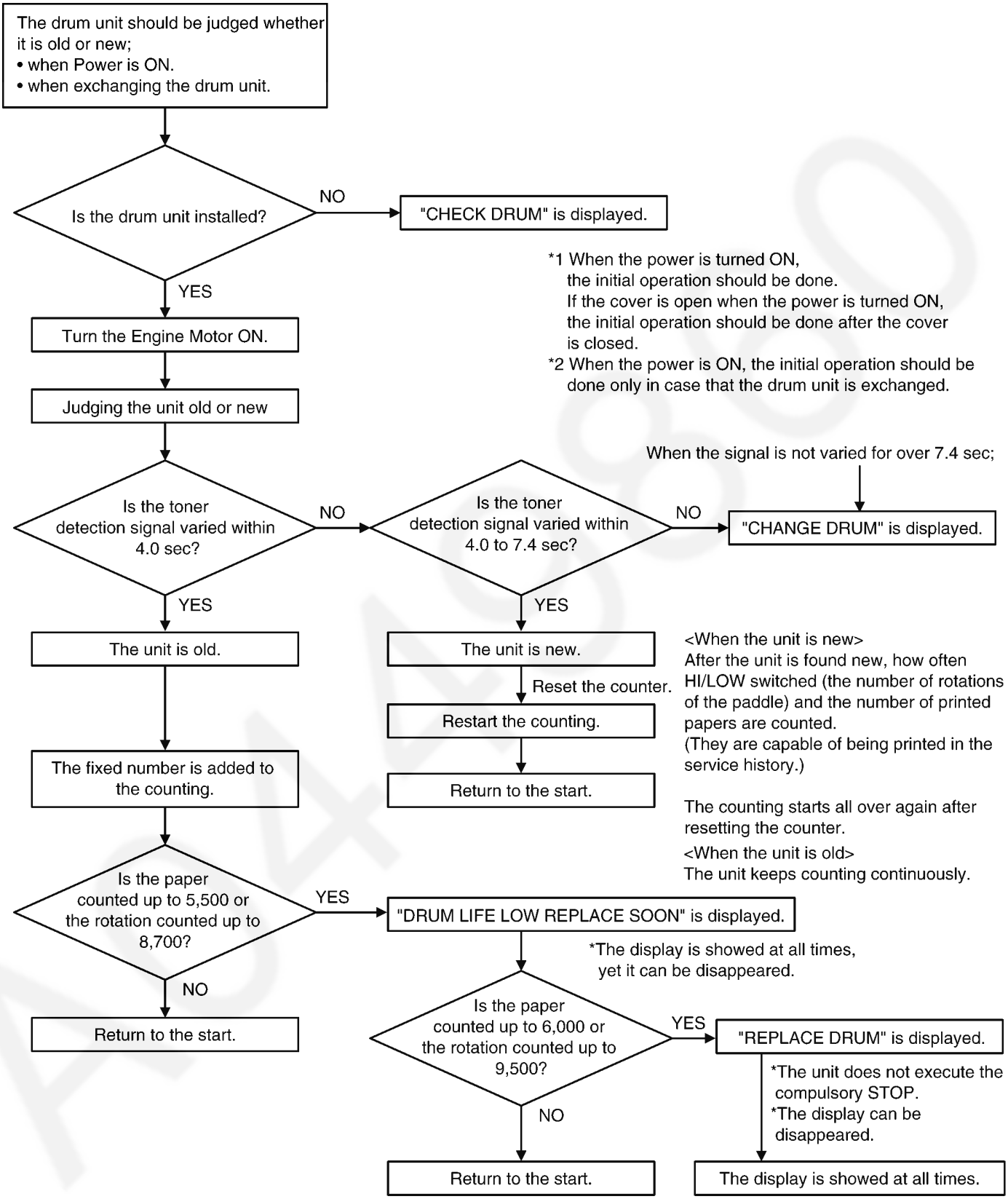


CAUTION:

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.

6.12.9.2. Drum Detection

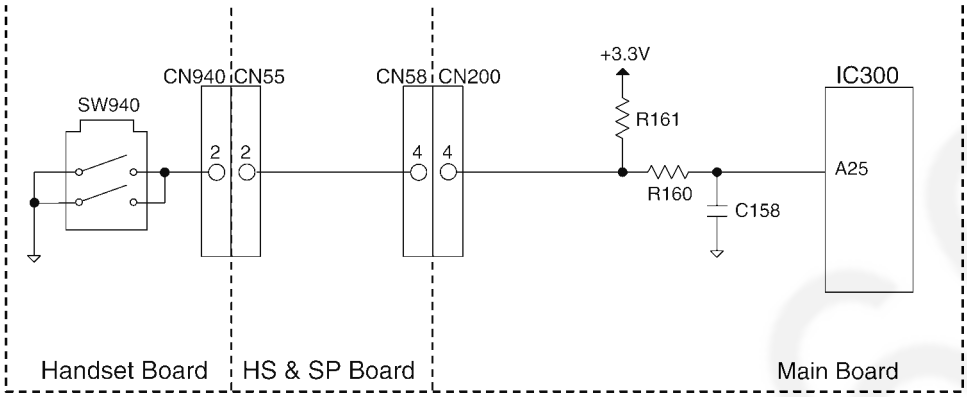
Detection Flowchart



6.12.10. Handset Hook Switch

When the handset is raised, the switch is turned off, and the signal of IC300-A25pin becomes low level.
When the handset is settled, the switch is turned on, and the signal of IC300-A25pin becomes high level.

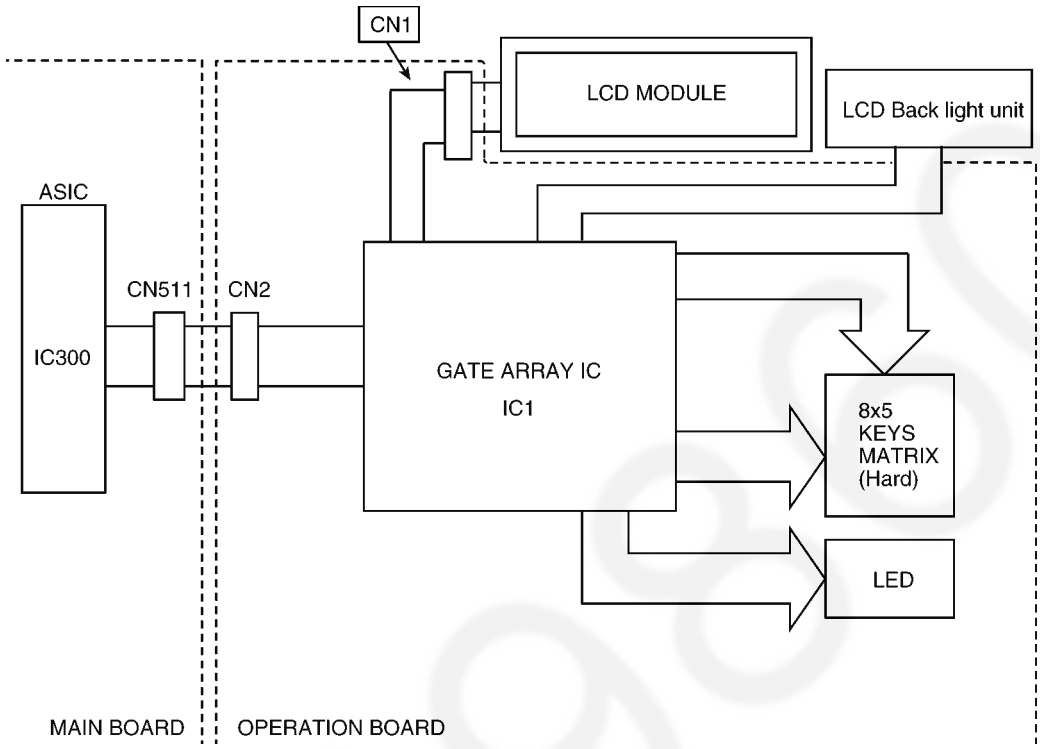
[Handset Hook SW sensor]



	SW940	Signal (IC300-A25pin)
ON HOOK	OPEN	High level
OFF HOOK	CLOSE	Low level

6.13. 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

	KIN0	KIN1	KIN2	KIN3	KIN4	KIN5	KIN6	KIN7
KSL0		7	↓	9	8			REDIAL
KSL1	0	*	→	#	LOWER		S3	FLASH
KSL2	2	1	MENU	3	MONITOR	SCAN	COPY	CONTRAST
KSL3	STOP	←	↑	START	S2	COPY SIZE	FAX	S1
KSL4	5	4	SET	6	AUTO ANSWER	RESOLUTION	ZOOM	PAGE LAYOUT

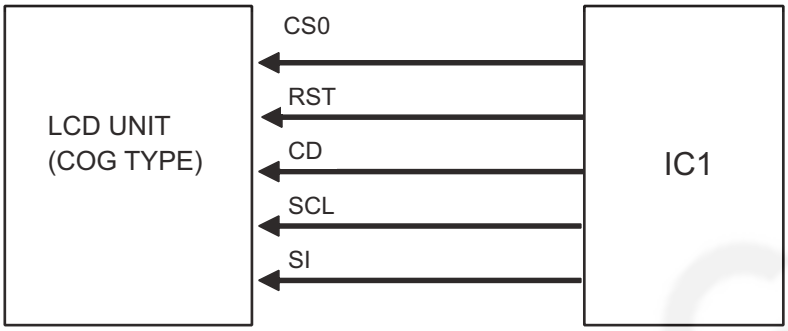
* LED7 shoule be set to KSL4. "8 x 5" key matrix is executed by hardware scanning.

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

6.14. LCD Section

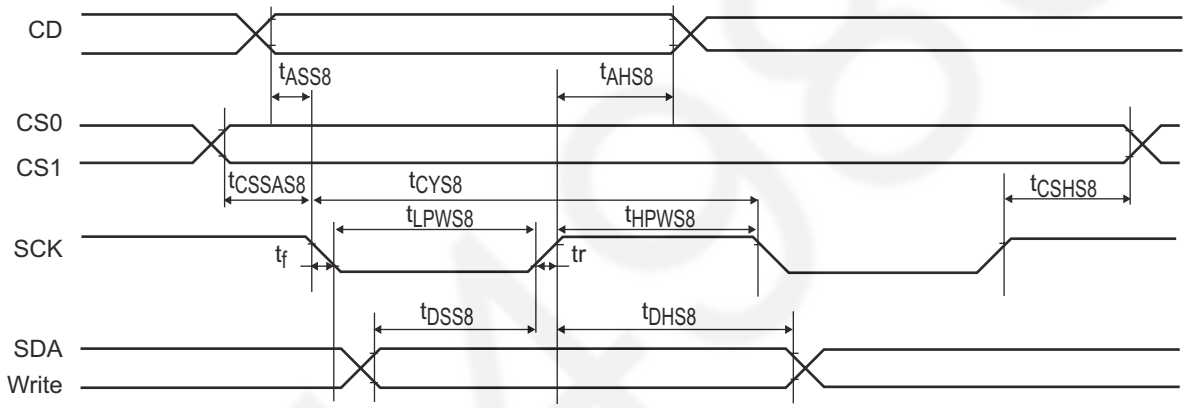
The font data is sent from SOC (Main board) throgh the Gate Array(IC1) by serial interface.
The contrast is controled by Electronic Volume. LCD reset act at Low level.(RST)

Circuit Diagram



COG:Chip on Glass

Timing Chart



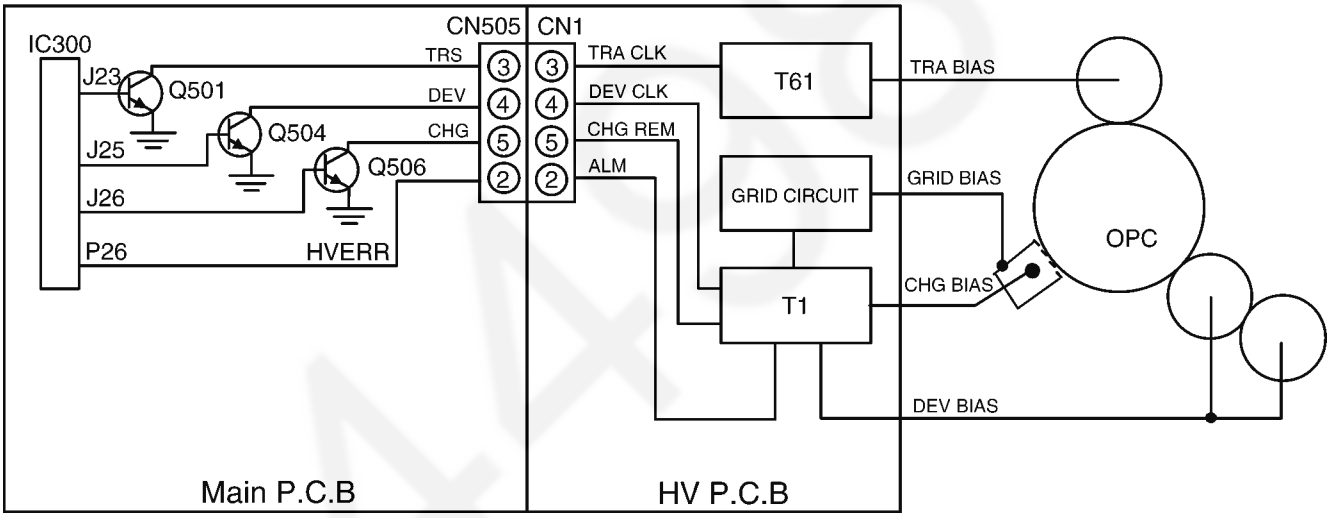
6.15. H.V.P.S. (High Voltage Power Supply) Section

6.15.1. 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



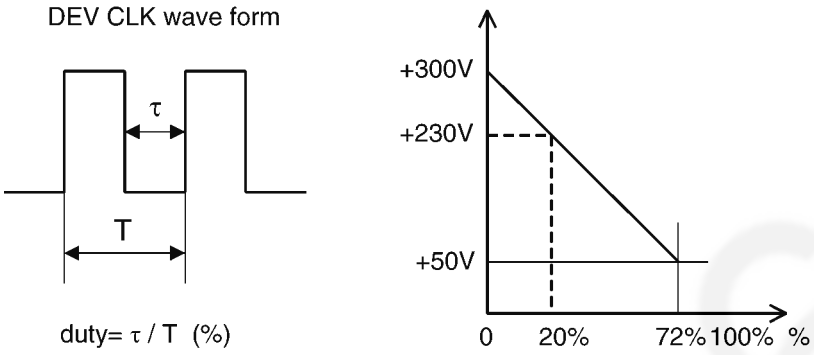
6.15.2. CHG-BIAS (Charge BIAS)/GRID/ UNIT

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.

6.15.3. 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



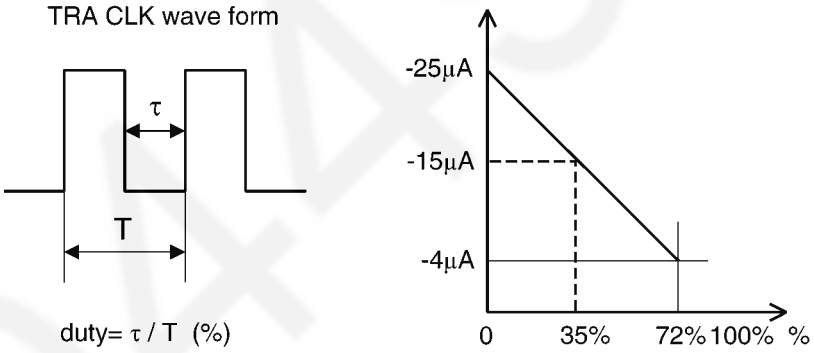
6.15.4. DEV AC BIAS UNIT

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.

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

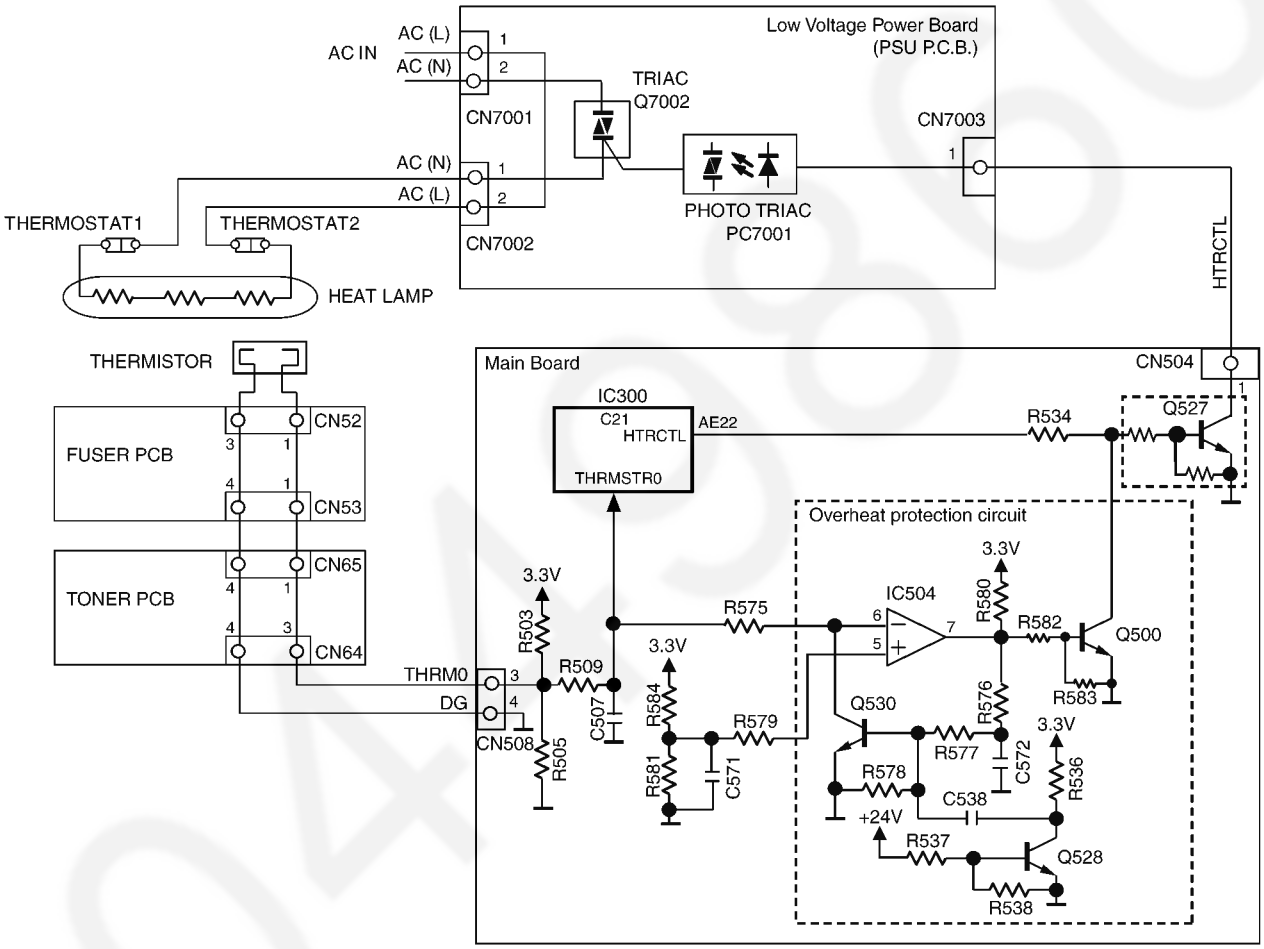
When CHG REM is “L” and TRA CLK is “open”, Charge BIAS (200μA) is output from CHG OUTPUT, and at the same time Transfer (+) BIAS (785V) is output from TRA OUTPUT. When 5.086kHz PWM (Pulse Width Modulation) signal is input to TRA CLK through transistor Q501, Transfer (-) CURRENT BIAS corresponding to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

Transcription current variation corresponding to PWM input

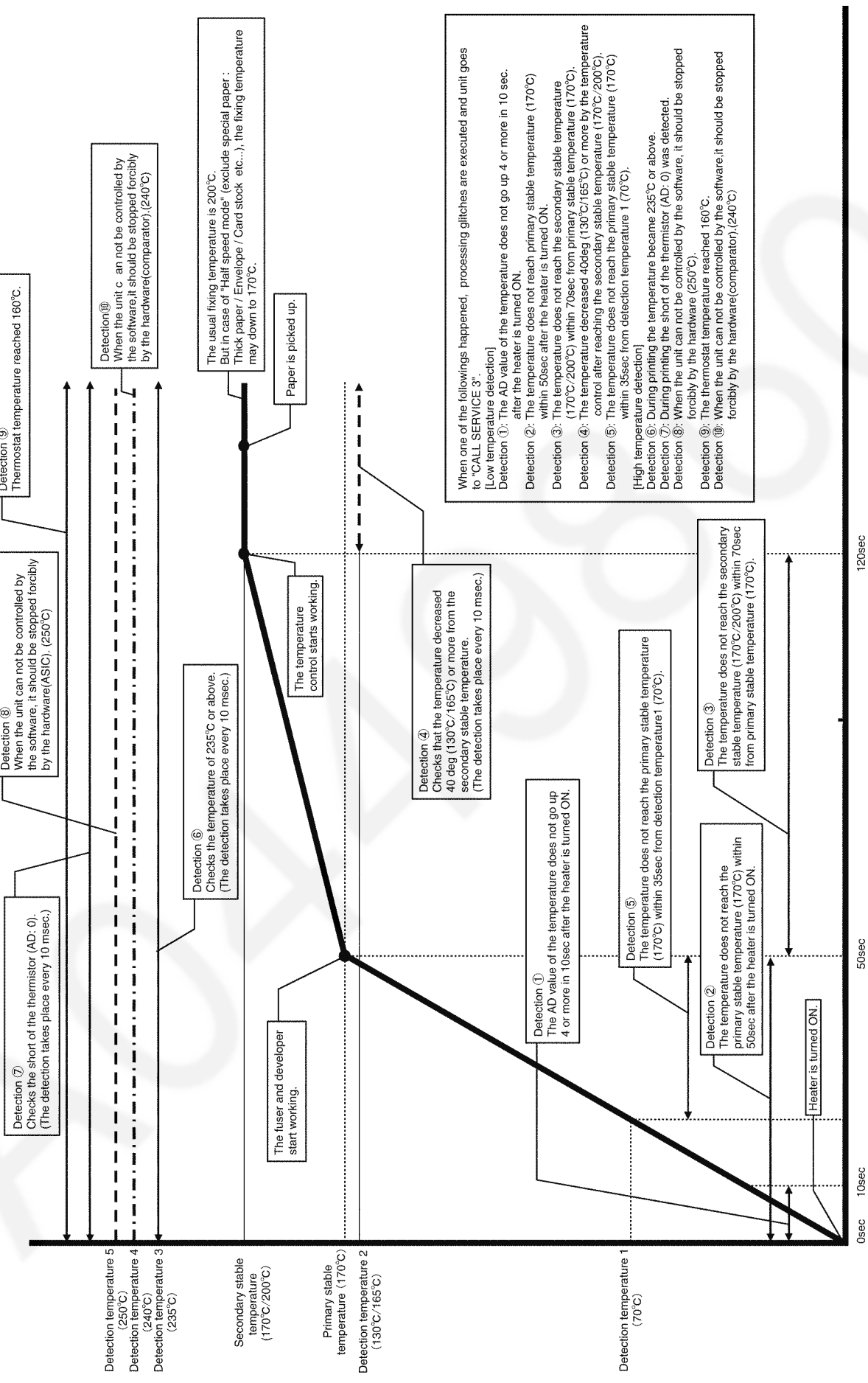


6.16. Heat Lamp Control Circuit

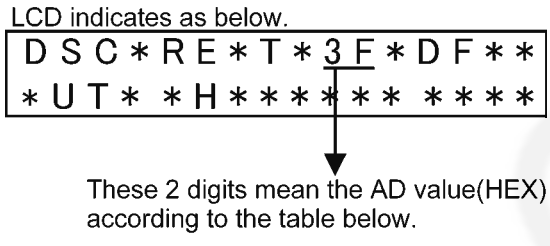
The temperature of the fixing part of the Fuser Unit is converted to a Voltage by THERMISTOR and input to IC300_pinC21.
The heat lamp is turned on/off by the HTRCTL signal (IC300_pinAE22) through the photo triac (PC7001) and the triac (Q7002).
Two thermostats are provided on the AC line as the safety protection devices.
Overheat protection circuit is provided so as to prevent the Fuser unit from overheating when CPU cannot control Fuser by any problem.
IC504 compares Thermistor voltage (THRMSTR0) and predetermined voltage, which is determined by 3.3V, R581 and R584.
If Therm0 voltage becomes lower than this predetermined voltage (this voltage corresponds to about 240°C), output of IC504_pin7 becomes "H", then Q530 turns ON.
Once Q530 turns on, IC507_pin7 keeps "H" even after the THRMSTR0 voltage becomes bigger than the voltage of IC504_pin5.
And when IC507_pin7 keeps "H", both Q500 and Q527 turn off.
As the result, once Fuser temperature exceeds 240°C (this temperature is abnormal condition), no current is supplied to Fuser lamp.

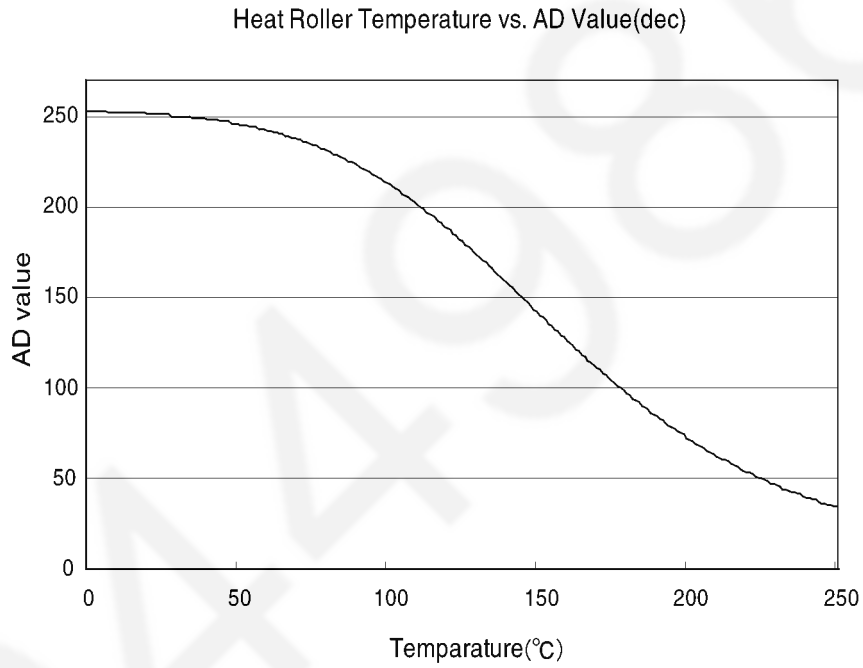


1. **Heater control sequence at printing mode**
   a. After receiving printing data, heater turns on.
   b. When heater temperature reaches to the Primary Stable Temperature (170°C).
   c. When heater temperature reaches to the Secondary Stable Temperature (170°C/200°C), paper feed starts.


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 c an 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.)
The usual fixing temperature is 200°C.
But in case of "Half speed mode" (exclude special paper : Thick paper / Envelope / Card stock etc...), the fixing temperature may down to 170°C.
Paper is picked up.
The fuser and developer start working.
The temperature control starts working.
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.)
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/200°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/200°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 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/200°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/200°C)
Primary stable temperature (170°C)
Detection temperature 2 (130°C/165°C)
Detection temperature 1 (70°C)
0sec
10sec
50sec
120sec
t

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].





The correspondence readings between temperature measured by thermistor and HEX readings

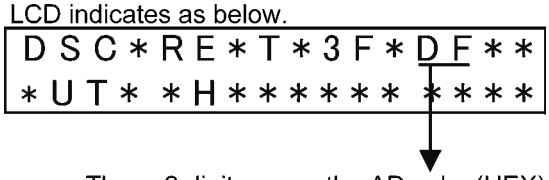
Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
0	255	FF	84	232	E8	168	122	7A
1	255	FF	85	231	E7	169	120	78
2	255	FF	86	231	E7	170	119	77
3	255	FF	87	230	E6	171	117	75
4	255	FF	88	229	E5	172	116	74
5	255	FF	89	228	E4	173	114	72
6	255	FF	90	227	E3	174	113	71
7	254	FE	91	227	E3	175	111	6F
8	254	FE	92	226	E2	176	110	6E
9	254	FE	93	225	E1	177	109	6D
10	254	FE	94	224	E0	178	107	6B
11	254	FE	95	223	DF	179	106	6A
12	254	FE	96	222	DE	180	104	68
13	254	FE	97	221	DD	181	103	67
14	254	FE	98	220	DC	182	102	66
15	254	FE	99	219	DB	183	100	64
16	254	FE	100	218	DA	184	99	63
17	254	FE	101	217	D9	185	98	62
18	254	FE	102	216	D8	186	96	60

Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
19	254	FE	103	215	D7	187	95	5F
20	254	FE	104	214	D6	188	94	5E
21	253	FD	105	213	D5	189	92	5C
22	253	FD	106	212	D4	190	91	5B
23	253	FD	107	211	D3	191	90	5A
24	253	FD	108	210	D2	192	89	59
25	253	FD	109	208	D0	193	87	57
26	253	FD	110	207	CF	194	86	56
27	253	FD	111	206	CE	195	85	55
28	253	FD	112	205	CD	196	84	54
29	253	FD	113	204	CC	197	82	52
30	252	FC	114	202	CA	198	81	51
31	252	FC	115	201	C9	199	80	50
32	252	FC	116	200	C8	200	79	4F
33	252	FC	117	199	C7	201	78	4E
34	252	FC	118	197	C5	202	77	4D
35	252	FC	119	196	C4	203	76	4C
36	252	FC	120	195	C3	204	75	4B
37	251	FB	121	193	C1	205	73	49
38	251	FB	122	192	C0	206	72	48
39	251	FB	123	191	BF	207	71	47
40	251	FB	124	189	BD	208	70	46
41	251	FB	125	188	BC	209	69	45
42	250	FA	126	186	BA	210	68	44
43	250	FA	127	185	B9	211	67	43
44	250	FA	128	184	B8	212	66	42
45	250	FA	129	182	B6	213	65	41
46	249	F9	130	181	B5	214	64	40
47	249	F9	131	179	B3	215	63	3F
48	249	F9	132	178	B2	216	62	3E
49	249	F9	133	176	B0	217	61	3D
50	248	F8	134	175	AF	218	61	3D
51	248	F8	135	173	AD	219	60	3C
52	248	F8	136	172	AC	220	59	3B
53	248	F8	137	170	AA	221	58	3A
54	247	F7	138	169	A9	222	57	39
55	247	F7	139	167	A7	223	56	38
56	247	F7	140	166	A6	224	55	37
57	246	F6	141	164	A4	225	55	37
58	246	F6	142	162	A2	226	54	36
59	246	F6	143	161	A1	227	53	35
60	245	F5	144	159	9F	228	52	34
61	245	F5	145	158	9E	229	51	33
62	244	F4	146	156	9C	230	51	33
63	244	F4	147	155	9B	231	50	32
64	244	F4	148	153	99	232	49	31
65	243	F3	149	151	97	233	48	30
66	243	F3	150	150	96	234	48	30
67	242	F2	151	148	94	235	47	2F
68	242	F2	152	147	93	236	46	2E
69	241	F1	153	145	91	237	46	2E
70	241	F1	154	144	90	238	45	2D
71	240	F0	155	142	8E	239	44	2C
72	240	F0	156	140	8C	240	43	2B
73	239	EF	157	139	8B	241	43	2B
74	239	EF	158	137	89	242	42	2A
75	238	EE	159	136	88	243	42	2A
76	237	ED	160	134	86	244	41	29
77	237	ED	161	133	85	245	40	28
78	236	EC	162	131	83	246	40	28
79	236	EC	163	129	81	247	39	27
80	235	EB	164	128	80	248	39	27
81	234	EA	165	126	7E	249	38	26
82	234	EA	166	125	7D	250	37	25
83	233	E9	167	123	7B			

Note:
The value is displayed on LCD at **Test Functions** (P.70) [#815].

4. **The correspondence readings between room temperature measured bye 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	242	F2	-5	188	BC	30	104	68	65	45	2D	100	19	13
-39	241	F1	-4	186	BA	31	102	66	66	44	2C	101	18	12
-38	240	F0	-3	184	B8	32	100	64	67	43	2B	102	18	12
-37	239	EF	-2	182	B6	33	98	62	68	42	2A	103	17	11
-36	238	EE	-1	179	B3	34	96	60	69	41	29	104	17	11
-35	237	ED	0	177	B1	35	93	5D	70	40	28	105	17	11
-34	236	EC	1	175	AF	36	91	5B	71	39	27	106	16	10
-33	235	EB	2	172	AC	37	89	59	72	38	26	107	16	10
-32	234	EA	3	170	AA	38	87	57	73	37	25	108	15	0F
-31	233	E9	4	168	A8	39	85	55	74	36	24	109	15	0F
-30	232	E8	5	165	A5	40	83	53	75	35	23	110	15	0F
-29	230	E6	6	163	A3	41	81	51	76	34	22	111	14	0E
-28	229	E5	7	161	A1	42	79	4F	77	33	21	112	14	0E
-27	228	E4	8	158	9E	43	77	4D	78	32	20	113	14	0E
-26	226	E2	9	156	9C	44	76	4C	79	31	1F	114	13	0D
-25	225	E1	10	153	99	45	74	4A	80	31	1F	115	13	0D
-24	223	DF	11	151	97	46	72	48	81	30	1E	116	13	0D
-23	222	DE	12	148	94	47	70	46	82	29	1D	117	13	0D
-22	220	DC	13	146	92	48	69	45	83	28	1C	118	12	0C
-21	219	DB	14	143	8F	49	67	43	84	28	1C	119	12	0C
-20	217	D9	15	141	8D	50	65	41	85	27	1B	120	12	0C
-19	215	D7	16	138	8A	51	64	40	86	26	1A	121	11	0B
-18	214	D6	17	136	88	52	62	3E	87	26	1A	122	11	0B
-17	212	D4	18	133	85	53	61	3D	88	25	19	123	11	0B
-16	210	D2	19	131	83	54	59	3B	89	25	19	124	11	0B
-15	208	D0	20	128	80	55	58	3A	90	24	18	125	10	0A
-14	207	CF	21	126	7E	56	56	38	91	23	17			
-13	205	CD	22	123	7B	57	55	37	92	23	17			
-12	203	CB	23	121	79	58	54	36	93	22	16			
-11	201	C9	24	118	76	59	52	34	94	22	16			
-10	199	C7	25	116	74	60	51	33	95	21	15			
-9	197	C5	26	114	72	61	50	32	96	21	15			
-8	195	C3	27	111	6F	62	48	30	97	20	14			
-7	193	C1	28	109	6D	63	47	2F	98	20	14			
-6	190	BE	29	107	6B	64	46	2E	99	19	13			

6.17. Power Saving (Sleep) Function

The system circuit and the power supply circuit have a function which reduces power consumption.
It is performed at the time of not operating condition (Sleep).
The content is as follows.

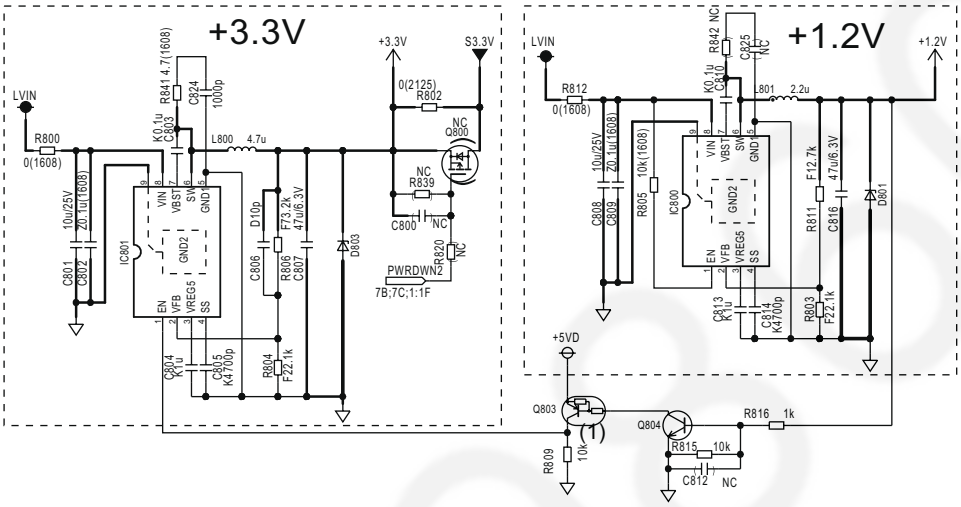
When not operating for a definite period of time, it performs automatically by the following change.

1. SoC (IC300) is changed into sleep mode from normal mode.

6.18. Main Board Power Supply Section

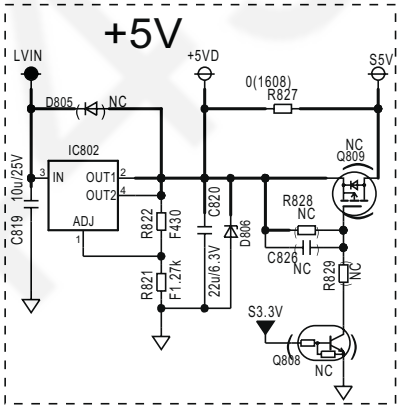
6.18.1. 3.3V and 1.2V Power Supply Descriptions

1. IC800, IC801 is Synchronous Step-Down DC/DC Converter with Auto-Skip Eco-mode to increase light load efficiency.
2. Oscillation frequency is set at approximately 700kHz (Frequency is changed at Light Load.).
3. Q803, Q804, R809, R815, C812, R816 are Sequence circuit. (After 1.2V DC-DC converter is turned on, 3.3V(IC801)'s operation is turned on.)
4. D803, D801 are the Zener Diode for Over voltage protection.
5. Q800, R839, C800, R820 are the switch circuit which turns off a S3.3V power supply at the time of Sleep mode.



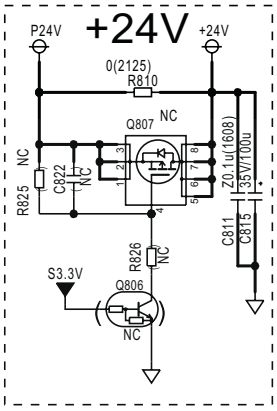
6.18.2. 5V Power Supply Descriptions

IC802 is low dropout three-terminal regulator.



6.18.3. 24V Power Supply Descriptions

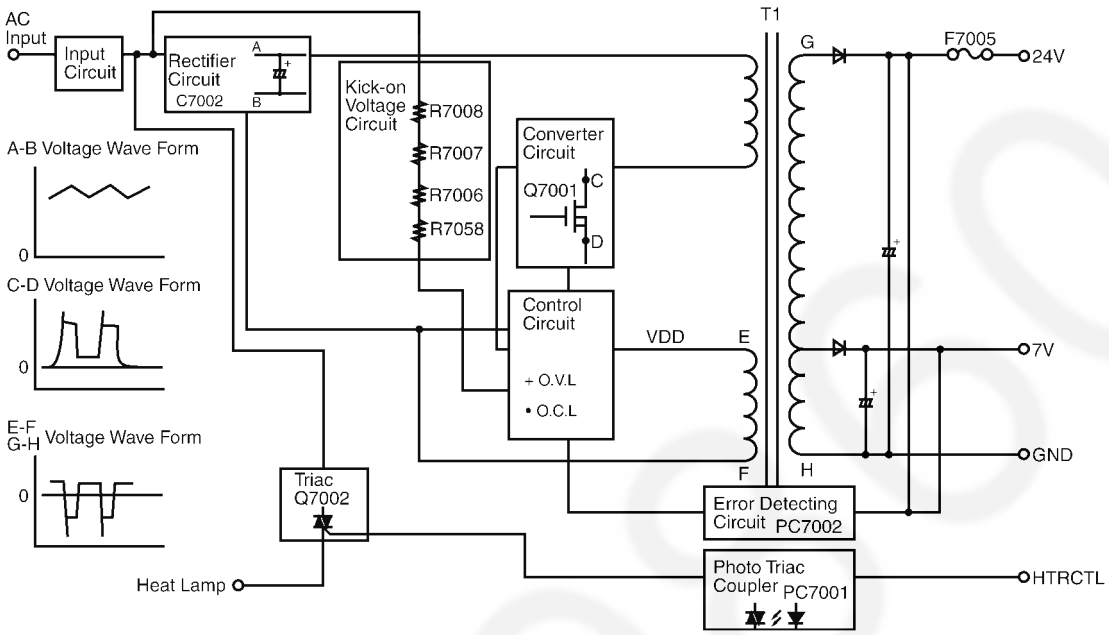
1. Q807, R825, C822, R826, Q806 are the switch circuit which turns off a +24V power supply at the time of Sleep mode.



6.19. 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 D7001, D7002, D7003 and D7004 and charge C7002 to make DC voltage.
Then it supplies power to the converter circuit.

[Kick-on Voltage Circuit]

Bias is applied to the Q7001 gate via this circuit when the AC power is turned on and Q7001 begins operating.

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

The highest drain current of Q7001 is limited by a limit current circuit. The 7V and 24V output is limited by this circuit.

[Over Voltage Circuit]

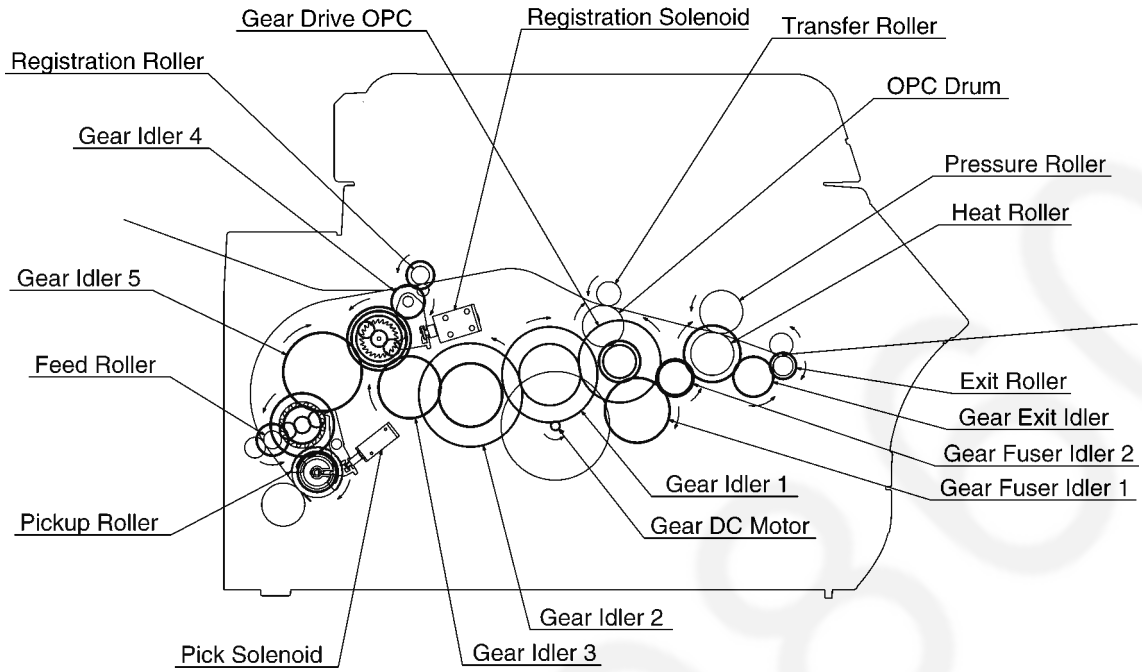
If the 24V output was increased, the VDD of control circuit also was increased.
The control circuit detects the increased VDD and controls it to becomes 0V.

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

Refer to **Power Supply Board Section** (P.167)

6.20. Mechanical Operation

6.20.1. 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.

7 Location of Controls and Components

Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book).

8 Installation Instructions

Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book).

9 Operating Instructions

Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book).

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.
MOTOR TEST	Service Mode	"5" "5" "6" SET	00:printer motor feed 10:auto document feed 20:carriage
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
ROM CHECK	Service Mode	"5" "5" "1" SET	Indicates the version and checks the sum of the ROM.
LCD TEST	Service Mode	"5" "5" "8" SET	Checks the LCD indication. Illuminates all the dots to check if they are normal.
DTMF SINGLE TONE TEST	Service Mode	"5" "5" "2" 1....ON 2....OFF	Outputs the DTMF as single tones. Used to check the frequencies of the individual DTMF tones. Refer to **DTMF Single Tone Transmit Selection** (P.72).
LED TEST	Service Mode	"5" "5" "7"	All LEDs above the operation panel board flash on and off, or are illuminated.
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.72).
SCANNER TEST	Service Mode	"5" "5" "5"	LED lights up, Scanner scanning. 1:RED / 2:GREEN / 3:BLUE / 4:monochrome / 5:Color
LSU TEST	Service Mode	"6" "3" "9"	Laser radiates, Polygon rotates
High Voltage Power Supply Board CHECK	Service Mode	"6" "2" "8" SET	Refer to **High Voltage Value Check Point** (P.150).
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.77).
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.73)

<table>
<tr><th>Test Mode</th><th>Type of Mode</th><th>Code
Operation after code input</th><th>Function</th></tr>
<tr><td>SENSOR CHECK</td><td>Service Mode</td><td>“8” “1” “5”</td><td>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.46).
LCD DISPLAY:
D S C ∗ R E ∗ T ∗ 3 F ∗ D F ∗ ∗
∗U T∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗
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
U: Pickup/Rear Cover
U: Paper detect
-: No paper
T: Print timing
T: Paper detect
-: No paper
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None
∗: None</td></tr>
</table>

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

10.1.1. DTMF Single Tone Transmit Selection

When set to ON (=1), the 12 keys and transmission frequencies are as shown.

key	Low Frequency (Hz)	Key	High Frequency (Hz)
"1"	697	"5"	1209
"2"	770	"6"	1336
"3"	852	"7"	1477
"4"	941	"8"	1633

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

High (Hz) / Low (Hz)	1209	1336	1477
697	"1"	"2"	"3"
770	"4"	"5"	"6"
852	"7"	"8"	"9"
941	"✳"	"0"	"#"

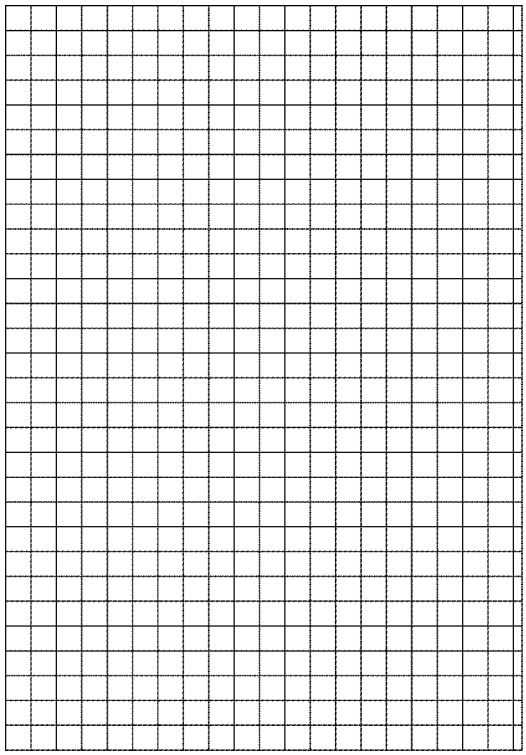
Note:
After performing this check, do not forget to turn the setting off. otherwise, dialing in DTMF signal will not work.

10.1.2. 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 ↓		
39	9	60	FAX MODE		
30	0	61	COPY MODE		
3B	✳	62	SCAN MODE		
3C	#	8C	COPY SIZE		
3D	REDIAL	5D	CONTRAST		
57	FLASH	5C	RESOLUTION		
54	MONITOR				

10.1.3. 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

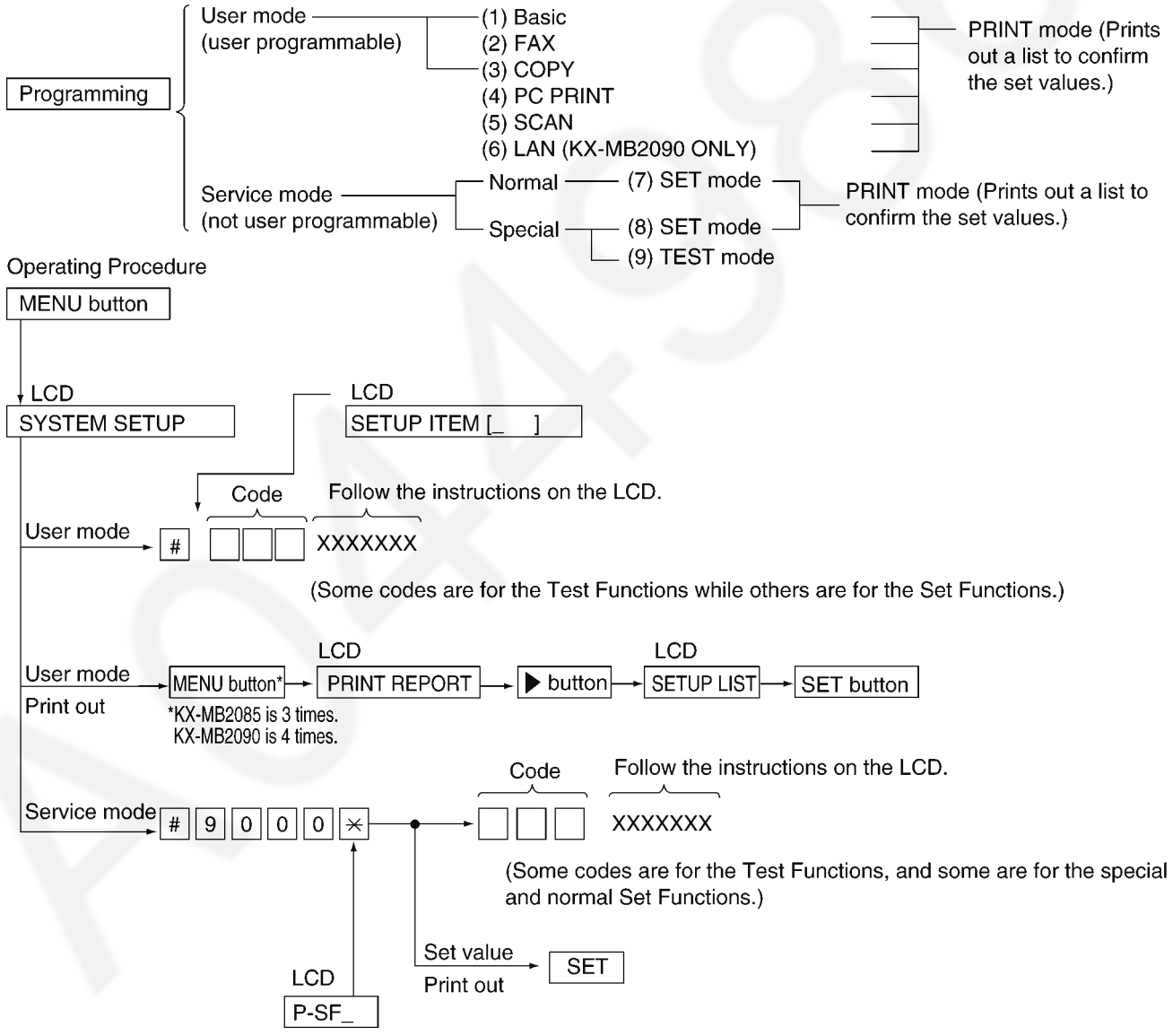
11.1.1. Operation

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	X 100 msec	001~600	030	----------
503	Dial speed select	1:10 pps 2:20 pps	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.
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.127).
521	International mode select	1:ON 2:OFF	1, 2	1	See **How To Output The Journal Report** (P.127).
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.77).
551	ROM check				See **Test Functions** (P.70).
552	DTMF single tone test	1:ON 2:OFF	1, 2	2	See **Test Functions** (P.70).
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.70).
555	Scanner test				See **Test Functions** (P.70).
556	Motor test			0	See **Test Functions** (P.70).
557	LED test				See **Test Functions** (P.70).
558	LCD test				See **Test Functions** (P.70).
561	KEY test				See **Test Functions** (P.70).
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%	1, 2	1*1	Sets the % break of pulse dialing according PBX.
571	ITS auto redial time set	X number of times	00~99	05	Selects the number of times that ITS is redialed (not including the first dial).
572	ITS auto redial line disconnection time set	X second	001~999	185	Sets the interval of ITS redialing.
573	Remote turn-on ring number set	X number of rings	00~99	10	Sets the number of rings before the unit starts to 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).
591	FAX auto redial time disconnection time set	X second	001~999	185	Sets the FAX redial interval during FAX communication.

Code	Function	Set Value	Effective Range	Default	Remarks
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.136).
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.127) and **Receive Problem** (P.137).
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.127) and **Sometime There Is a Transmit Problem** (P.136).
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.136) and **Receive Problem** (P.137).
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.127)
599	ECM frame size	1:256 2:64	1, 2	1	----------
628	H.V.P.S. check				See **Test Functions** (P.70).
639	LSU test				See **Test Functions** (P.70).
655	Cause Distinction Code of Call Service 3				See **CALL SERVICE Troubleshooting Guide** (P.100).
677	FAN test				See **Test Functions** (P.70).
710	Memory clear except History data				Refer to **Memory Clear Specification** (P.77).
711	Dialing mode	1:PULSE 2:TONE	1,2	1	
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.
721	Pause tone detect	1:ON 2:OFF	1, 2	2	Selects the tone detection for pause in dialing.
722	Redial tone detect	1:ON 2:OFF	1, 2	1	Sets the tone detection mode after redialing.
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.
815	Sensor check				See **Test Functions** (P.70).
852	Print test pattern				See **Test Functions** (P.70).
853	Top margin	X 0.5mm	01~11	06	----------
854	Left margin	X 0.5mm	01~11	06	----------
874	DTMF ON time	X msec	060~200	100	----------
875	DTMF OFF time	X msec	060~200	100	----------
880	History list				See **History (Example of a printed out list)** (P.83).
881	Journal 2 list				See **Journal 2** (P.124)
882	Journal 3 list				See **Journal 3** (P.125)

Note:

*1The default value changes depends on Location setting (#114). Refer to the following list for more details. Refer to **Program Mode Table** (P.90).

#114 / Function	MIDDLE EAST(1) AFRICA(4) ASIA(2)	TUNISIA(3)
570	Function Valid default value: 61%	Function Valid default value: 67%

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 Directory	—	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. User Mode (The list below is an example of the SYSTEM SETUP LIST the unit prints out.)

(KX-MB2085)

SETUP LIST

[BASIC FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#101	SET DATE & TIME	01 Jan. 2013 00:00	
#102	YOUR LOGO		
#103	YOUR FAX NUMBER		
#114	LOCATION	MIDDLE EAST	[MIDDLE EAST,ASIA,TUNISIA,AFRICA]
#120	DIALLING MODE	TONE	[TONE,PULSE]
#121	SET FLASH TIME	700ms	[900,700,600,400,300,250, 200,160,110,100,90,80(ms)]
#124	ADSL MODE	OFF	[OFF,ON]
#145	LCD CONTRAST	0	[-2,-1,0,1,2]
#147	SCALE	MILLIMETRES	[MILLIMETRES,INCHES]
#148	DISPLAY INTERVAL	1sec	[1sec,2sec,3sec,4sec,5sec]
#151	ADMIN CODE		
#154	MODE RESTRICTION	OFF	[OFF,ON]
#155	CHANGE PASSWORD		
#158	MAINTENANCE TIME	12:00	
#159	RESTORE DEFAULT		
#161	RINGER PATTERN	A	[A,B,C]
#165	BEEP SOUND	ON	[OFF,ON]
#210	FAX RING COUNT	2	[1...9]
#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]
#403	POWER SAVE	1min	[1min,5min,15min,30min,45min]
#462	CONTRAST HOLD	DISABLED	[DISABLED,ENABLED]
#463	DEFAULT MODE	COPY	[COPY,FAX]
#464	MODE TIMER	1min	[OFF,30s,1min,2min,5min]
#479	DEPT. COUNT VIEW		
#482	TONER SAVE	OFF	[OFF,ON]

Code — Set Value

[FAX FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#212	TEL/FAX DELAYED RING	2	[1...9]
#289	ERASE PHONEBOOK		
#401	PRINT SENDING REPORT	ERROR	[OFF,ON,ERROR]
#402	JOURNAL AUTO PRINT	ON	[OFF,ON]
#404	MANUAL ANSWER MODE	TEL	[TEL,TEL/FAX]
#405	FAX RESOLUTION	STANDARD	[STANDARD,FINE,SUPER FINE,PHOTO]
#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]
#420	CONFIRM FAX NO.	OFF	[OFF,ON]
#421	RESTRICT FAX NO.	OFF	[OFF,ON]
#422	RE-ENTER FAX NO.	OFF	[OFF,ON]
#424	CONFIRM NEXT DOC	OFF	[OFF,ON]
#430	DISTINCTIVE RING	OFF	[OFF,ON]
#431	FAX RING PATTERN	B-D	[B-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	
#436	SILENT FAX RECOGNITION RING	3	[3...9]
#437	MEMORY RECEIVE ALERT	ON	[OFF,ON]
#438	FRIENDLY RECEPTION	ON	[OFF,ON]
#442	PCFAX SETTING	OFF	[OFF,ALWAYS,CONNECTED]
#451	RECEIVE NOTIFY	OFF	[OFF,ON]
#458	ERASE FAX MEMORY		
#459	SET FAX DEFAULT		

[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]

Code

Set Value

[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]
	FIRMWARE VERSION	85CX03	

Code

Set Value

Note:

The above values are the default values.

(KX-MB2090)

SETUP LIST

[BASIC FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#101	SET DATE & TIME	01 Jan. 2013 00:00	
#102	YOUR LOGO		
#103	YOUR FAX NUMBER		
#114	LOCATION	MIDDLE EAST	[MIDDLE EAST,ASIA,TUNISIA,AFRICA]
#120	DIALLING MODE	TONE	[TONE,PULSE]
#121	SET FLASH TIME	700ms	[900,700,600,400,300,250, 200,160,110,100,90,80(ms)]
#124	ADSL MODE	OFF	[OFF,ON]
#145	LCD CONTRAST	0	[-2,-1,0,1,2]
#147	SCALE	MILLIMETRES	[MILLIMETRES,INCHES]
#148	DISPLAY INTERVAL	1sec	[1sec,2sec,3sec,4sec,5sec]
#151	ADMIN CODE		
#154	MODE RESTRICTION	OFF	[OFF,ON]
#155	CHANGE PASSWORD		
#158	MAINTENANCE TIME	12:00	
#159	RESTORE DEFAULT		
#161	RINGER PATTERN	A	[A,B,C]
#165	BEEP SOUND	ON	[OFF,ON]
#210	FAX RING COUNT	2	[1...9]
#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]
#403	POWER SAVE	1min	[1min,5min,15min,30min,45min]
#462	CONTRAST HOLD	DISABLED	[DISABLED,ENABLED]
#463	DEFAULT MODE	COPY	[COPY,FAX]
#464	MODE TIMER	1min	[OFF,30s,1min,2min,5min]
#479	DEPT. COUNT VIEW		
#482	TONER SAVE	OFF	[OFF,ON]

Code

Set Value

[FAX FEATURE LIST]

NO.	FEATURE	CURRENT SETTING	
#212	TEL/FAX DELAYED RING	2	[1...9]
#289	ERASE PHONEBOOK		
#401	PRINT SENDING REPORT	ERROR	[OFF,ON,ERROR]
#402	JOURNAL AUTO PRINT	ON	[OFF,ON]
#404	MANUAL ANSWER MODE	TEL	[TEL,TEL/FAX]
#405	FAX RESOLUTION	STANDARD	[STANDARD,FINE,SUPER FINE,PHOTO]
#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]
#420	CONFIRM FAX NO.	OFF	[OFF,ON]
#421	RESTRICT FAX NO.	OFF	[OFF,ON]
#422	RE-ENTER FAX NO.	OFF	[OFF,ON]
#424	CONFIRM NEXT DOC	OFF	[OFF,ON]
#430	DISTINCTIVE RING	OFF	[OFF,ON]
#431	FAX RING PATTERN	B-D	[B-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	
#436	SILENT FAX RECOGNITION RING	3	[3...9]
#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]
#458	ERASE FAX MEMORY		
#459	SET FAX DEFAULT		

Code

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]

Code

Set Value

[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	MB2090-F0191904	
#508	MAC ADDRESS	00:80:F0:19:19:04	
#513	BONJOUR	ENABLED	[DISABLED,ENABLED]
#526	NETWORK STATUS		
#532	IP FILTERING	DISABLED	[DISABLED,ENABLED]
#533	AUTO IP	DISABLED	[DISABLED,ENABLED]
#534	HTTPD	ENABLED	[DISABLED,ENABLED]
#535	IPv6 PROTOCOL	DISABLED	[DISABLED,ENABLED]
#538	WINS SERVER #1	0.0.0.0	
#539	WINS SERVER #2	0.0.0.0	
#578	ERASE ADDRESS		
#580	LAN MODE	WIRED	[OFF,WIRED]
	FIRMWARE VERSION	90CX03	

Code

Set Value

Note:

The above values are the default values.

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

```
[ SERVICE DATA LIST ]

501 PAUSE TIME              =  030*100ms        [001...600]*100ms
503 DIAL SPEED              =  10pps            [1=10      2=20]pps
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           =  100ms            [060...200]ms


[ SPECIAL SERVICE SETTINGS ]

  507   508   552   553   567   570   573   590   591   592   593   594   595
    1     1     2     1   052     1    10    05   185     2     1     1     2

  596   598   599   717   718   774   775
   10    48     1     1     1    00    00



USAGE TIME = 1 HOURS


Version = 90CX03  81D0
```

Note:
The above values are the default values.

11.4. History (Example of a printed out list)

[HISTORY]

Model	: MB2090CX	Usage Time	: 000033
Rom Version(Main)	: 90CX03	Receive Mode	: FAX
Check SUM	: 81D0	Number of Copy	: 000002
		Number of Receive	: 000244
		Number of Send	: 000000
Your LOGO	:		
Your Fax NO	:	Drum Print Count	: 00256
First Setting Date/Time		Drum Paddle Count	: 01174
Month	: 01	Toner Print Count	: 000007
Day	: 01	Toner Simulated Count	: 000013
Year	: 2013	Toner Paddle Count	: 000000
Hour/Minute	: 0003	Total Print Count	: 0000256
Factory to Customer(Day)	: 00000	Total Simulated Count	: 0000819
Factory to Now(Day)	: 00045	Duplex Count	: 0000000
Power On Count	: 0000019		
USB NO	: 000000000000		
MAC ADDRESS	: 00:80:F0:19:19:04		

(1) 000000	(2) 000033	(3) 000000	(4) 000000	(5) TONE	(6) 00000
(7) 00000	(8) 000048	(9) 000042	(10) 000006	(11) 000038	(12) 0000
(13) 000002	(14) 000	(15) 000	(16) 04C0	(17) 04E1	(18) 0000
(19) 0000	(20) 0003	(21) 0000	(22) 0000	(23) 0000	(24) 000000
(25) 000038		(26) 000002		(27) 000002	
(28) 000	(29) 000	(30) 000	(31) 000000		

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) ~ (31) are corresponding to the listed items in **Descriptions of the History Report** (P.84).

11.4.1. 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) Not used
(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) Number of Pickup Errors in Manual Feed
(22) Not used
(23) Not used
(24) Not used
(25) Not Used
(26) Not Used
(27) Number of Copies
(28) Jam Information 1
(29) Jam Information 2
(30) Jam Information 3
(31) Number of ADF Feed for document reorder exit when cancel when scaning

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	Cause & Solution
CALL SERVICE 1	• Polygon motor error. Refer to **CALL SERVICE 1** (P.101).
CALL SERVICE 2	• Laser beam error. Replace LSU unit. Refer to **CALL SERVICE 2** (P.102).
CALL SERVICE 3	• Fuser unit cannot heat up. Replace fuser unit. Refer to **CALL SERVICE 3** (P.103).
CALL SERVICE 4	• Fan motor error. Replace fan motor. Refer to **CALL SERVICE 4** (P.104).
CALL SERVICE 5	• Print motor error. (only for DC motor) Refer to **CALL SERVICE 5** (P.105).
CALL SERVICE 6	• Detection of charger error Refer to **CALL SERVICE 6** (P.106).
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. • The ADF top cover is not fully closed. Push firmly on the front and rear edges of the ADF top cover, and then feed the document 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 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. • The recording paper size setting 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. • “#2”: Check the manual input tray. The displayed paper size depends on the recording paper size setting.
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 PLEASE WAIT	• The unit is cooling down the fuser unit. Wait for a while.
DRUM LIFE LOW	• The rotation count of the current drum cartridge has exceeded the rotation count for which high-quality printing is guaranteed. Depending on the environment, type of paper used, and usage situation, you may not be able to obtain high print quality for documents containing photographs or halftone patterns. Please check the print quality, and if you are satisfied, it is not necessary to immediately replace the drum cartridge. However, we recommend that you occasionally check the print quality and replace the drum cartridge if the print quality is unacceptable, or replace the drum cartridge when you replace the toner cartridge.
DRUM LIFE OVER	• The drum cartridge’s service life is finished. Please replace the drum cartridge when you replace the toner cartridge. Depending on the environment, type of paper used, and usage situation, printing quality may be affected. Please check the printing quality. We recommend that you replace the drum cartridge soon, as necessary. * If you continue to use the drum cartridge without replacing it, the print quality may suddenly worsen, or the unit may malfunction.
EMAIL SIZE OVER	• When performing scan to email address, the number of scanned pages or the file size of the scanned data has exceeded the limitation. Divide the document into sections.

Display	Cause & Solution
FAX IN MEMORY	• The unit has a document in memory. See the other displayed message instructions to print out the document. For fax memory capacity.
FAX PREVIEW	• If the fax preview mode 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 number of scanned pages or the file size of the scanned data has exceeded the 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.
MODEM ERROR	• There is something wrong with the unit’s modem. Contact our service personnel.
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 tray.
PAPER JAMMED ↕ OPEN TOP COVER	• A recording paper jam occurred. Remove the jammed paper.
PCFAX	• If the PC fax setting is set to “ALWAYS”, - check the connection between the computer and the unit. - check that the computer is turned ON.
PHONEBOOK FULL	• There is no space to store new items in the phonebook. Erase unnecessary items.
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.
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. • The ADF top cover is not fully closed. Push firmly on the front and rear edges of the ADF top cover, and then feed the document 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.
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 is set to “ALWAYS”, - check the connection between the computer and the unit. - check that the computer is turned ON. • If your unit is connected to the computer via the LAN and the fax preview mode is set to “ON”, - view, print or save the received fax documents, and then erase the unnecessary documents. - turn the setting to “OFF”. The fax documents stored in memory will be printed automatically.
SLEEP	• After the unit has been in power save mode for up to 5 minutes, the unit will enter sleep mode. Press a key to standby the unit for the next process. **Note:** • The unit may not enter sleep mode when beeping for alert or displaying an error message.

Display	Cause & Solution
TONER EMPTY	• The toner is empty. Replace the toner cartridge immediately.
TONER LOW	• 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.

Interface messages

Display	Cause & Solution
CONNECT ERROR	• IP address of the server or network configuration is incorrect. Consult your network administrator. • The server is down. Consult your network administrator.
DATA ERROR	• The cable between the unit and the computer is not connected correctly.Check the connections. • IP address of the server or network configuration is incorrect. Consult yournetwork administrator. • Your computer may not have enough memory. Change to a lower resolutionfor scanning and try again. • The email server configuration requires authentication. Check the configuration of the email server. • SMB folder is read only. Consult your network administrator.
LOGIN ERROR	• Login name or password of the server is incorrect or you do not have permission to login to the server. Consult your network administrator.
NAME ERROR	• The server name is incorrect. Consult your network administrator. • The server is down. Consult your network administrator to activate the server.
OFFLINE	• The cable between the unit and the computer is not connected correctly. Check the connections. • Check that the computer is turned ON.
PATH ERROR	• The path of FTP server or SMB folder is incorrect. Consult your network administrator.
PC ACCESS ERROR	• Check that the computer is turned ON. • The Multi-Function station’s scan application is not running correctly on the computer. Restart your computer and try again. • If your computer is busy, close other applications. • Your firewall software is blocking the LAN connection. Disable the firewall software or change the firewall settings to allow the unit access to your computer.
PC FAIL OR BUSY	• The cable between the unit and the computer is not connected correctly. Check the connections. • The computer has some kind of problem. (Example: Make sure that the computer is turned ON.). • The Multi-Function Station’s scan application is not running correctly on the computer. Restart your computer and try again.

12.2. Remote Programming

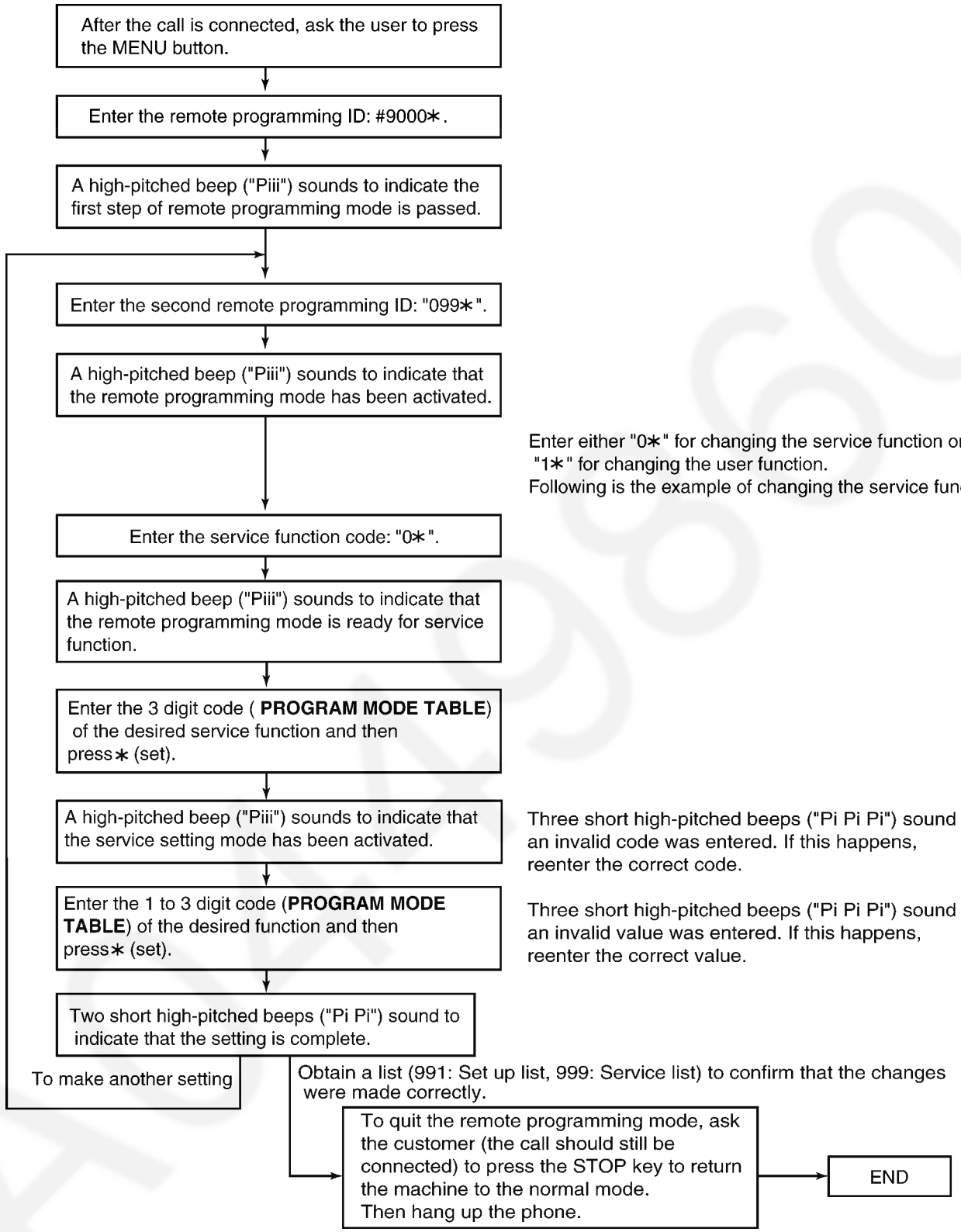
If, after the call is connected, the customer describes the situation and it is determined that the problem can be corrected by making parameter changes, this function makes it possible to change parameters such as the user code and service code from another fax (using DTMF tones). Therefore, travel to the customer's location is not required. However, it is not possible to change all the parameters remotely (**Program Mode Table** (P.90)). 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.89). 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.90)

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	dd/mm/yy hh:mm	01/01/13	NG
102	YOUR LOGO	---------	None	NG
103	YOUR FAX NUMBER	---------	None	NG
114	SET LOCATION	1:MIDDLE EAST / 2:ASIA / 3:TUNISIA /4:AFRICA	MIDDLE EAST	OK
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)	700ms	OK
124	ADSL MODE	1:OFF / 2:ON	OFF	OK
145	LCD CONTRAST	-2, -1, 0, 1, 2	0	NG
147	SCALE	1:MILLIMETERS / 2:INCHES	MILLIMETERS	OK
148	DISPLAY INTERVAL	1:1sec, 2:2sec, 3:3sec, 4:4sec, 5:5sec	1sec	OK
151	ADMIN CODE	---------	DEFAULT=0000	NG
154	MODE RESTRICTION	OFF / ON	OFF	NG
155	CHANGE PASSWORD	---------	DEFAULT=1234	NG
158	MAINTENANCE TIME	---------	12:00	NG
159	RESTORE DEFAULT	YES / NO	NO	NG
161	RINGER PATTERN	A / B / C	A	NG
165	BEEP SOUND	2:ON / 1:OFF	ON	OK
210	FAX RING COUNT	1 to 9 rings (for ext. tam)	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: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[*1]	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
403	POWER SAVE	1:1min / 5:5min / 15:15min / 30:30min / 45:45min	1min	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
479	DEPT, COUNT VIEW	---------	---------	NG
482	TONER SAVE	2:ON / 1:OFF	OFF	OK

Fax features

Code	Function	Set Value	Default	Remote Setting
212	DELAYED RING COUNT	1~9	2	OK
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
404	RECEIVING MODE	1:TEL / 2:TEL/FAX	TEL	OK
405	FAX RESOLUTION	1:STANDARD / 2:FINE / 3:SUPER FINE / 4:PHOTO	STANDARD	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	1:OFF / 2:ALWAYS	OFF	OK
420	CONFIRM FAX NO.	1:OFF / 2:ON	OFF	OK
421	RESTRICT FAX NO.	1:OFF / 2:ON	OFF	OK
422	RE-ENTER FAX NO.	1:OFF / 2:ON	OFF	OK
424	CONFIRM NEXT DOC	1:OFF / 2:ON	OFF	OK
430	DISTINCTIVE RING	1:OFF / 2:ON	OFF[*2]	OK
431	FAX RING PATTERN	1:B-D / 2:A / 3:B / 4:C / 5:D	B-D[*2]	OK
432	AUTO REDUCTION	2:ON / 1:OFF	ON	OK

Code	Function	Set Value	Default	Remote Setting
434	FAX ACTIVATION CODE	ON / OFF	ON CODE=*#9	NG
435	AUTO DISCONNECTION	ON / OFF	ON CODE=*0	NG
436	SILENT FAX RING SETTING	3~9	3	OK
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 (KX-MB2090 only)	---------	USB HOST	NG
448	PREVIEW MODE (KX-MB2090 only)	2:ON / 1:OFF	OFF	NG
450	WEB FAX PREVIEW (KX-MB2090 only)	---------	---------	NG
451	RECEIVE NOTIFY	2:ON / 1:OFF	OFF	OK
452	FAX AUTO EMAIL	1:OFF / 2:ON	OFF	OK
458	ERASE FAX MEMORY	YES / NO	NO	NG
459	SET FAX DEFAULT	YES / NO	NO	NG

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:EMAIL / 4:OCR /5:EMAIL ADDRESS /6:FTP SERVER (KX-MB2090 ONLY) /7:SMB FOLDER (KX-MB2090 ONLY)	VIEWER	OK
494	SCAN PARAM. HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK

LAN features (KX-MB2090 only)

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
513	BONJOUR	1:DISABLED / 2:ENABLED	ENABLED	OK
526	NETWORK STATUS	---------	---------	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
535	IPv6 PROTOCOL	1:DISABLED / 2:ENABLED	DISABLED	OK
538	WINS SERVER #1	---------		NG
539	WINS SERVER #2	---------		NG
578	ERASE EMAIL DIR.	YES / NO	NO	NG
580	LAN MODE	OFF / WIRED	WIRED	NG

*1Choices “4:216 x 330 / 5:216 x 340” change to Inch display when “INCHES” is set on feature #147 setting.

*2The default value changes depends on Location setting (#114). Refer to the following list for more details.

#114 / Function	MIDDLE EAST(1) AFRICA(4) ASIA(2)	TUNISIA(3)
430	Function Valid default value: OFF	Function Invalid (OFF Fixed)
431	Function Valid default value: B-D	Function Invalid (B-D Fixed)

12.2.2.2. Service Function

Code	Function	Set Value	Default	Remote Setting
501	Pause time set	001~600 x 100msec	030	OK
503	Dial speed	1:10pps / 2:20 pps	10pps	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
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
552	DTMF signal tone test	1:ON / 2:OFF	OFF	OK
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%	61%*1	OK
571	ITS auto redial time set	00~99	5	OK
572	ITS auto redial line disconnection time set	001~999sec	185	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
711	Dialing mode	1:PULSE 2:TONE	PULSE	OK
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
721	Pause tone detect	1:ON / 2:OFF	OFF	OK
722	Redial tone detect	1:ON / 2:OFF	ON	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

Code	Function	Set Value	Default	Remote Setting
815	Sensor check	---------	---------	NG
852	Print test pattern	---------	---------	NG
853	Top margin	1~11	6	OK
854	Left margin	1~11	6	OK
874	DTMF ON time	060~200msec	100	OK
875	DTMF OFF time	060~200msec	100	OK
880	History list	---------	---------	NG
881	Journal 2	---------	---------	NG
882	Journal 3	---------	---------	NG

OK means “can set”.

NG means “can not set”.

Note:

Refer to **Service Function Table** (P.75) 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)

Note:

*1The default value changes depends on Location setting (#114). Refer to the following list for more details. Refer to **Program Mode Table** (P.90).

#114 / Function	MIDDLE EAST(1) AFRICA(4) ASIA(2)	TUNISIA(3)
570	Function Valid default value: 61%	Function Valid default value: 67%

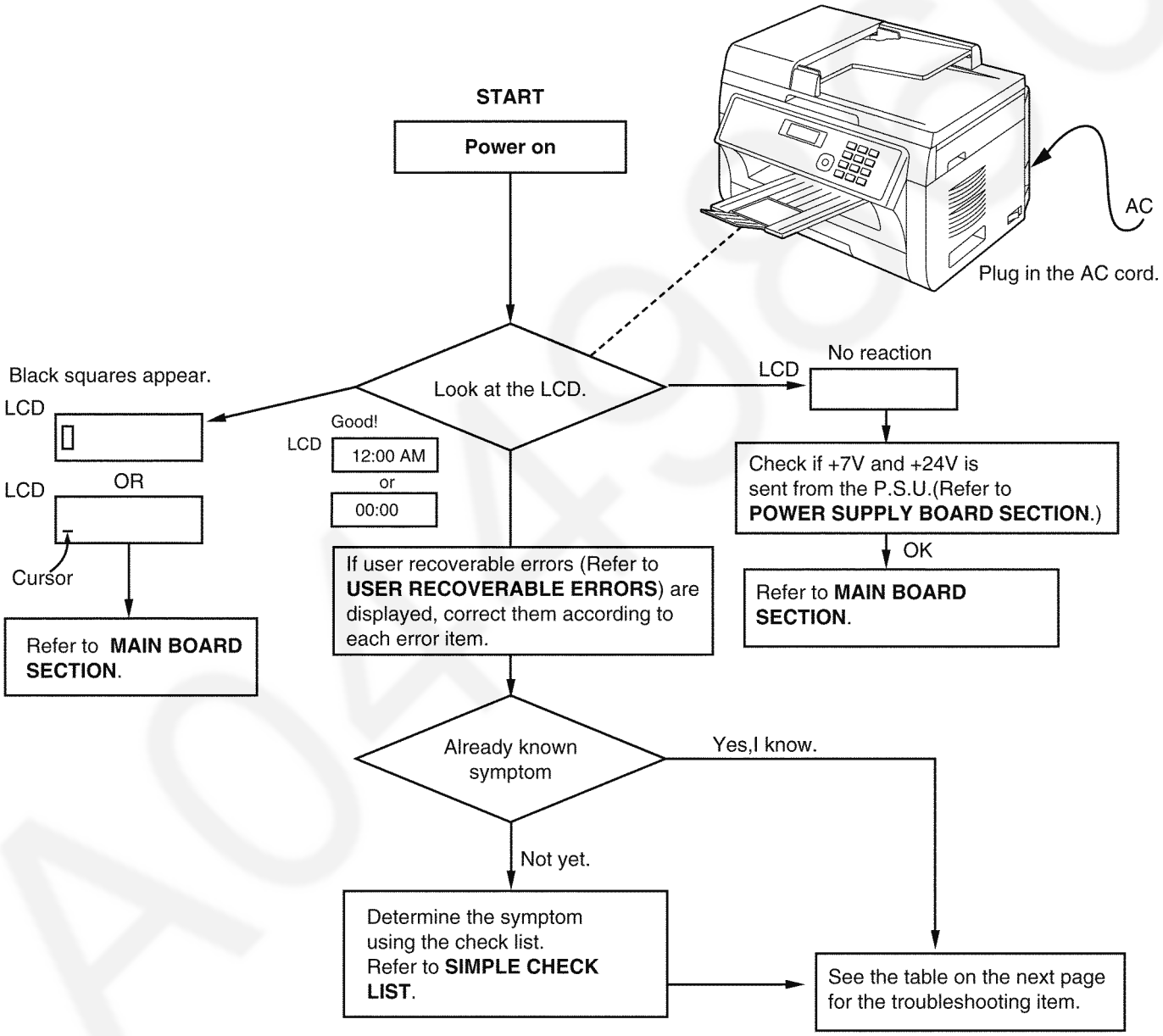
12.3. Troubleshooting Details

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.96). Difficult problems may be hard to determine, so repeated testing is necessary.

12.3.2. Starting Troubleshooting

Determine the symptom and the troubleshooting method.

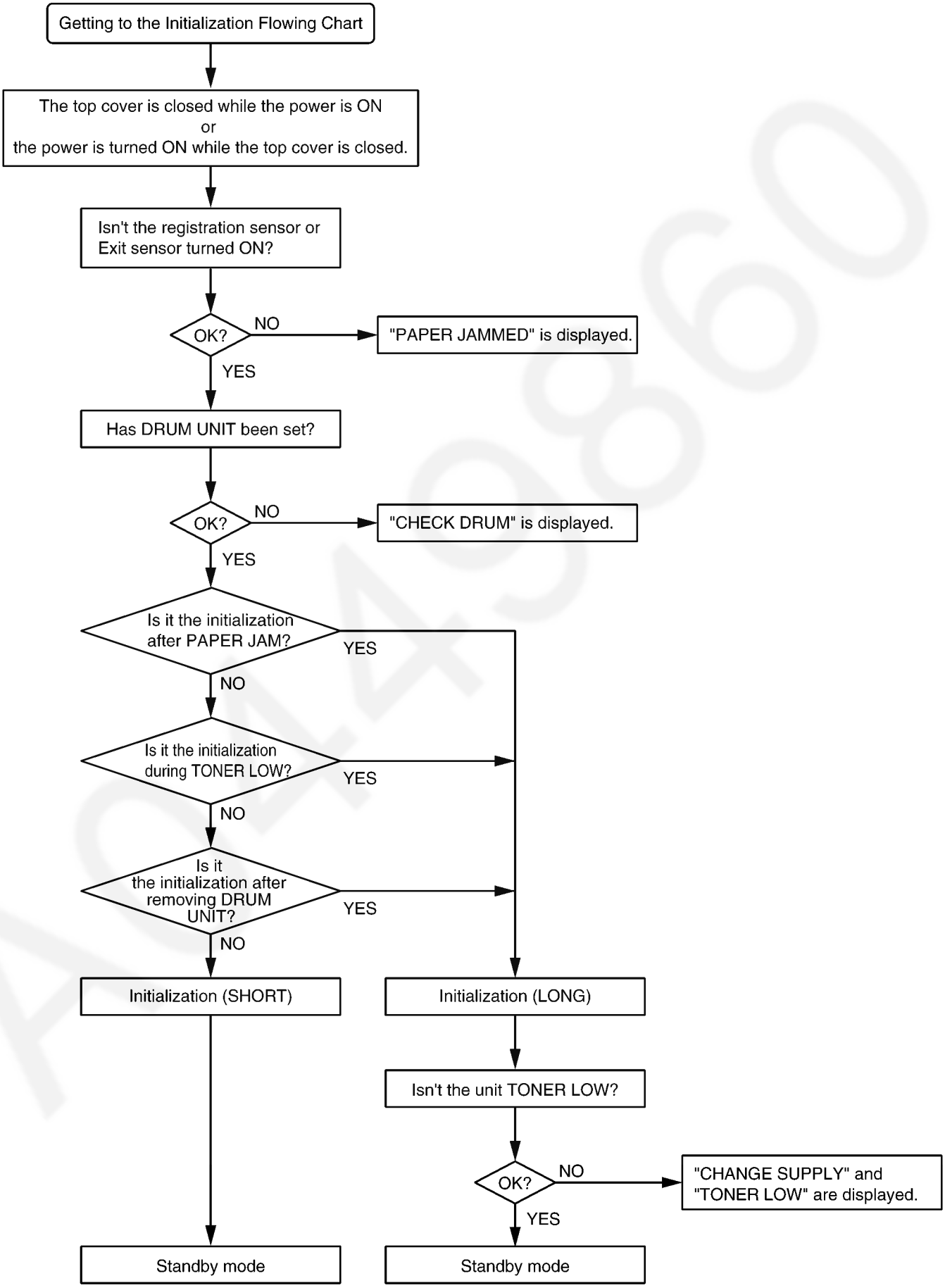


CROSS REFERENCE:

Simple Check List (P.96)
User Recoverable Errors (P.85)
Main Board Section (P.199)
Power Supply Board Section (P.67)

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 (KX-MB2090 ONLY)	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.

Note:
Check according to the service code referring to **Test Functions** (P.70)

12.3.5. Simplified Troubleshooting Guide

12.3.5.1. Printing

No.	Symptom	Cause	Countermeasure
1	**Ghost Image** (P.107)	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.152)
		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.108)	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.44)
3	**Dark or White Horizontal Line** (P.109)	Failed drum cartridge	Replace drum cartridge
		Failed the gear	Check the gear
		Failed the engine motor	Go to **Engine Motor** (P.144)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.152)
		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.110)	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.152)
		Dirty the recording paper path	Clean the recording paper path
5	**Black Print** (P.111)	Failed drum cartridge	Replace drum cartridge
		Failed LSU	Go to **LSU (Laser Scanning Unit) Section** (P.44)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to **High Voltage Section** (P.152)
		Failed the main board	Go to **Main Board Section** (P.17)
		Failed CIS (when copying)	Go to **CIS Control Section** (P.148)
6	**Black Print** (P.111) **OR Light Print** (P.112)	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.152)
		Failed the main board	Go to **Main Board Section** (P.17)
		Failed CIS (when copying)	Go to **CIS Control Section** (P.148)
7	**Black or White Point** (P.113)	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.152)
		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.113)	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.114)	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.115)	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.116)	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.144)
		Failed the pickup sensor lever	Check the pickup sensor lever
		Failed the pickup sensor	Go to **Sensor Section** (P.141)
5	**The Recording Paper Jam** (P.117) ”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.141)
		Failed the registration sensor lever	Check the Registration & Manual paper sensor (paper top sensor) lever
		Failed the registration sensor	Go to **Sensor Section** (P.141)
		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.119)	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.152)

12.3.5.3. Copy

No.	Symptom	Cause	Countermeasure
1	**Dark or White Vertical Line** (P.108)	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.108)
		Failed CIS	Go to **CIS Control Section** (P.148)
2	**An Abnormal Image Is Copied** (P.122)	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.148)
		The cause of printing	Go to **Dark or White Vertical Line** (P.108)

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.44).

- 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.44)

- 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.59)

- *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: 77h) within 50 seconds.
  03: means that it did not reach the second stabilizing temperature (200°C: 4Fh)* within 75 seconds after reaching the first stabilizing temperature (170°C: 77h).
  04: means that it dropped to -40 deg or below by the temperature control after reaching the second stabilizing temperature (200°C: 4Fh)*.
  05: means that it did not reach the first stabilizing temperature (170°C: 77h) within 35 seconds from detection temperature 1 (70°C: F1h).
  06: means that it became 235°C: 2Fh 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: 2Fh 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.40)

- 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.33)

- 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 **H.V.P.S. (High Voltage Power Supply) Section** (P.57)

- 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.

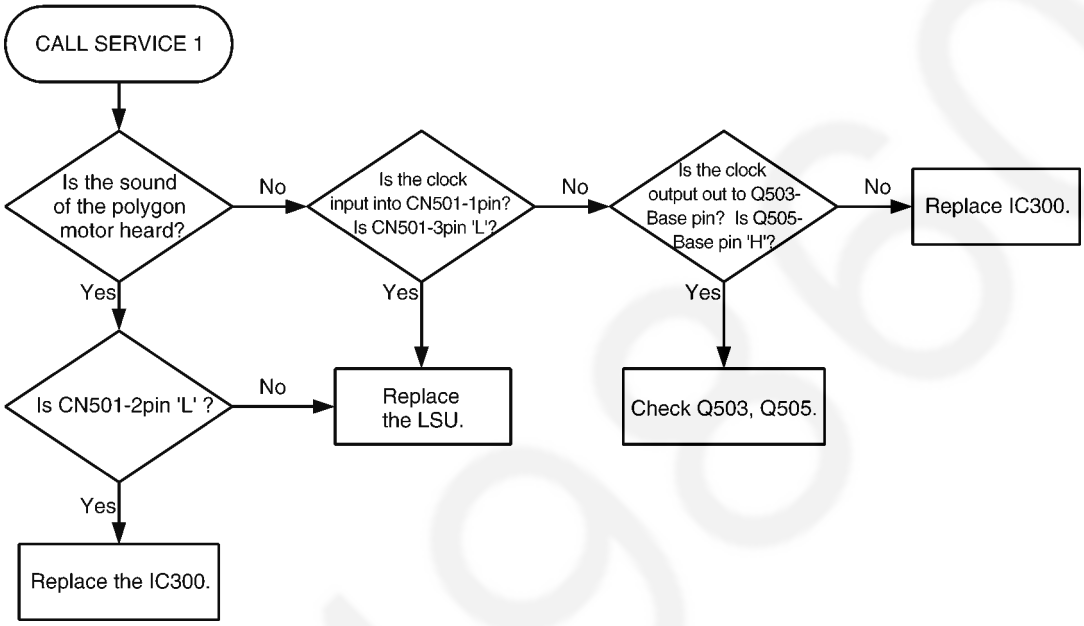
* As for Call Service 1, 2, 4, 5 and 6, turn the power OFF then ON to restart.

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.

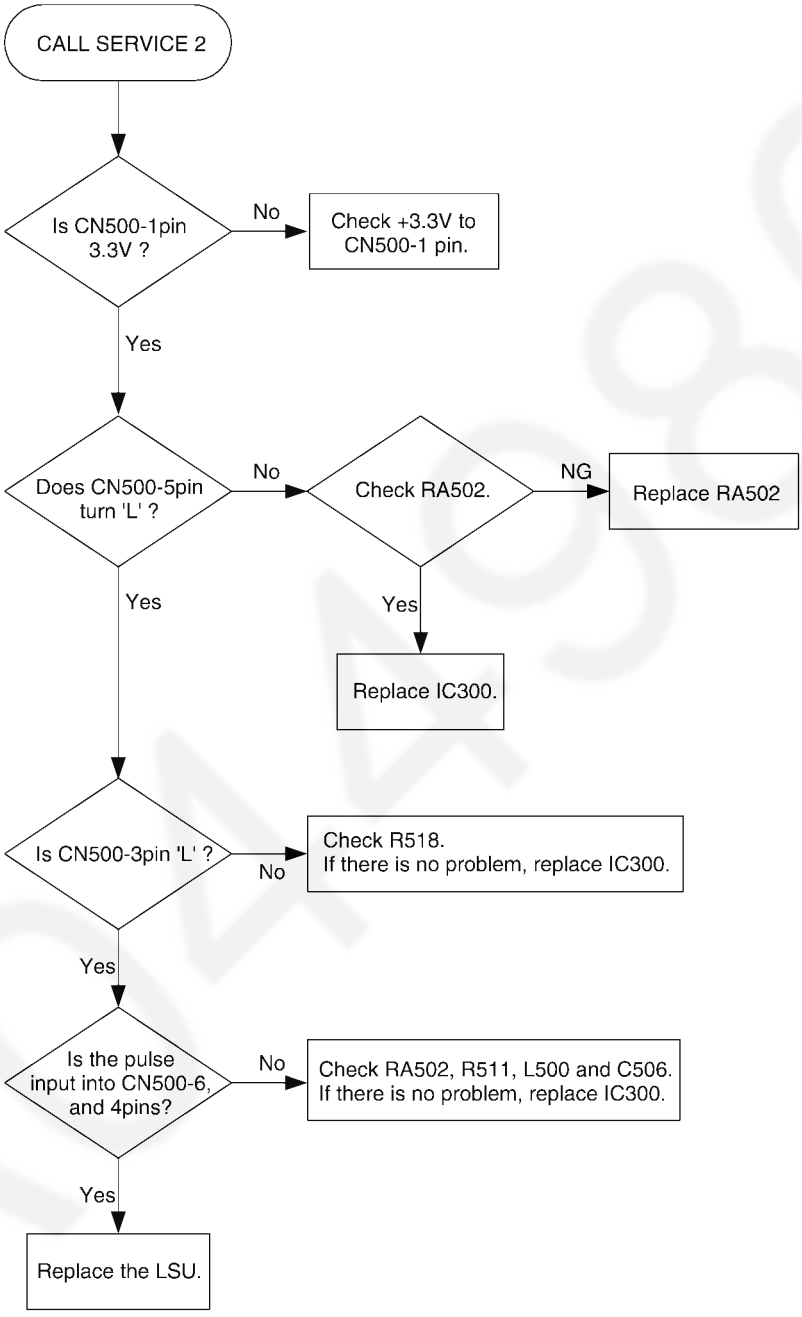


12.3.6.2. CALL SERVICE 2

"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-W26pin. (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.



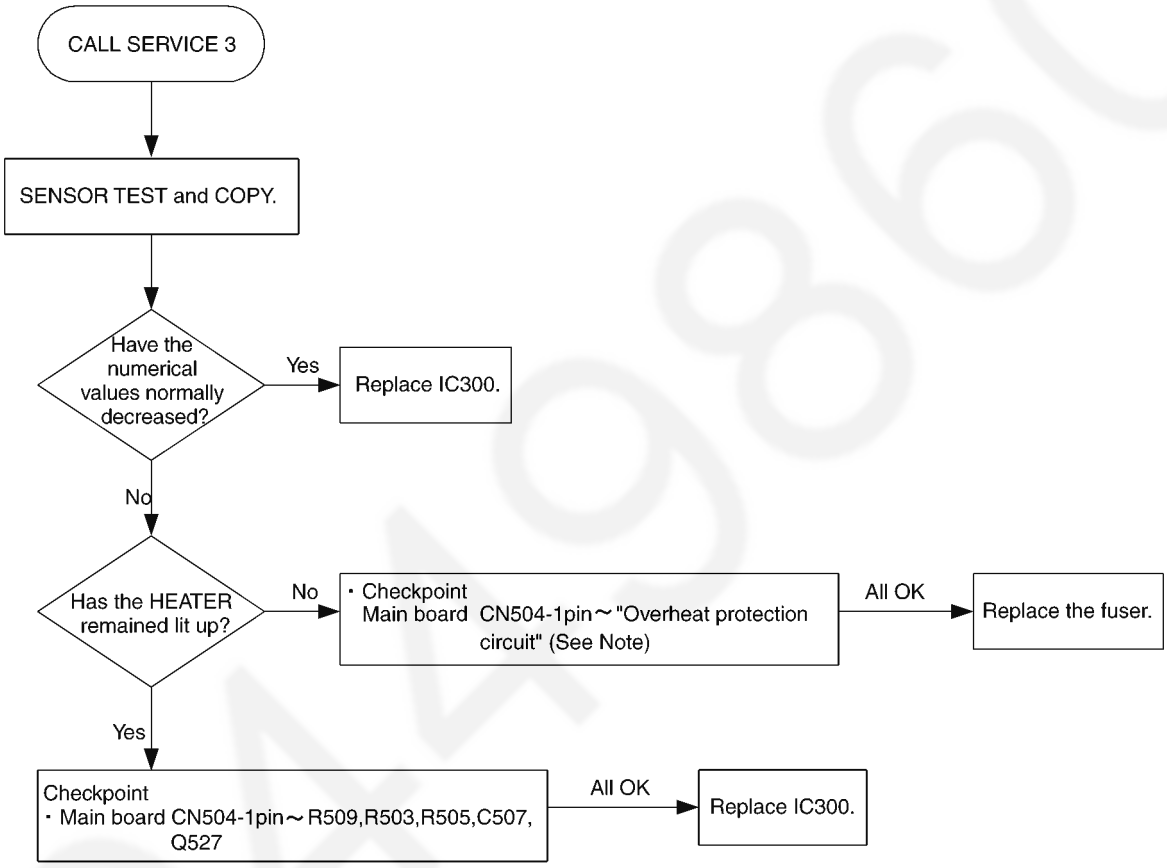
Note:

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-C21.

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, 'FDh(25°C)' is displayed in the waiting state, and '4Fh(200°C)' or its approximate numbers are displayed during printing.

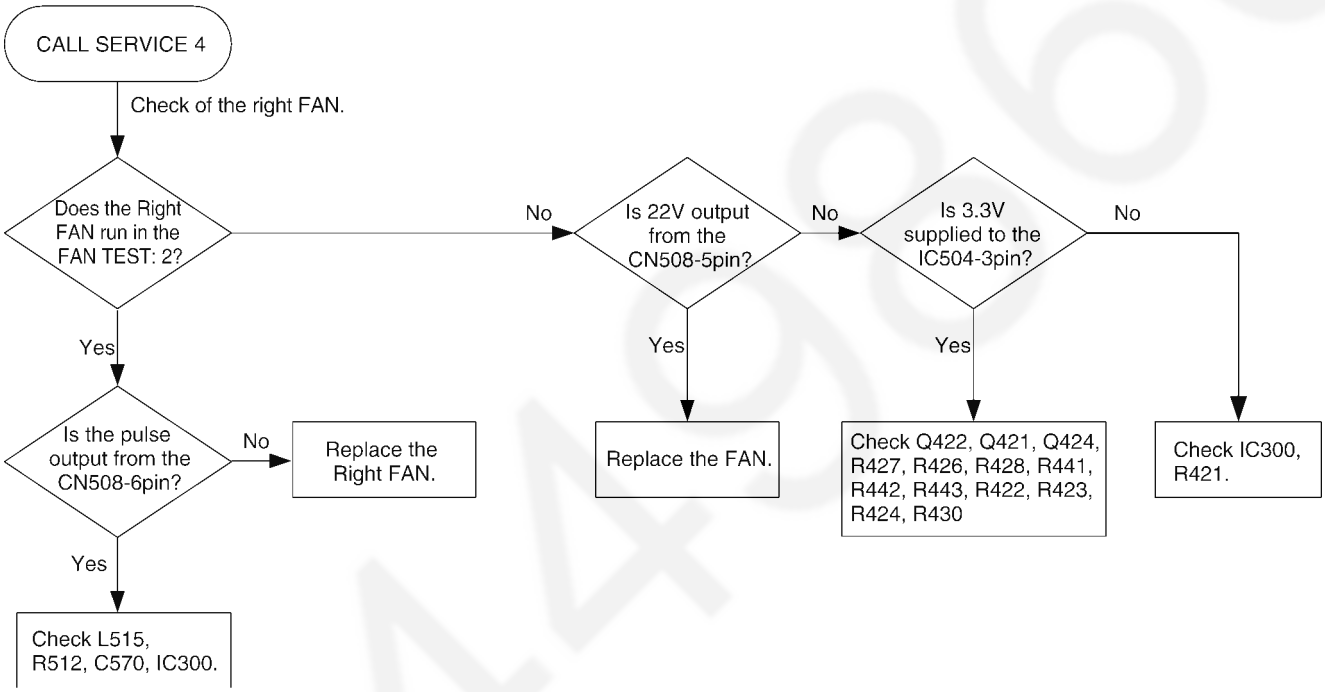


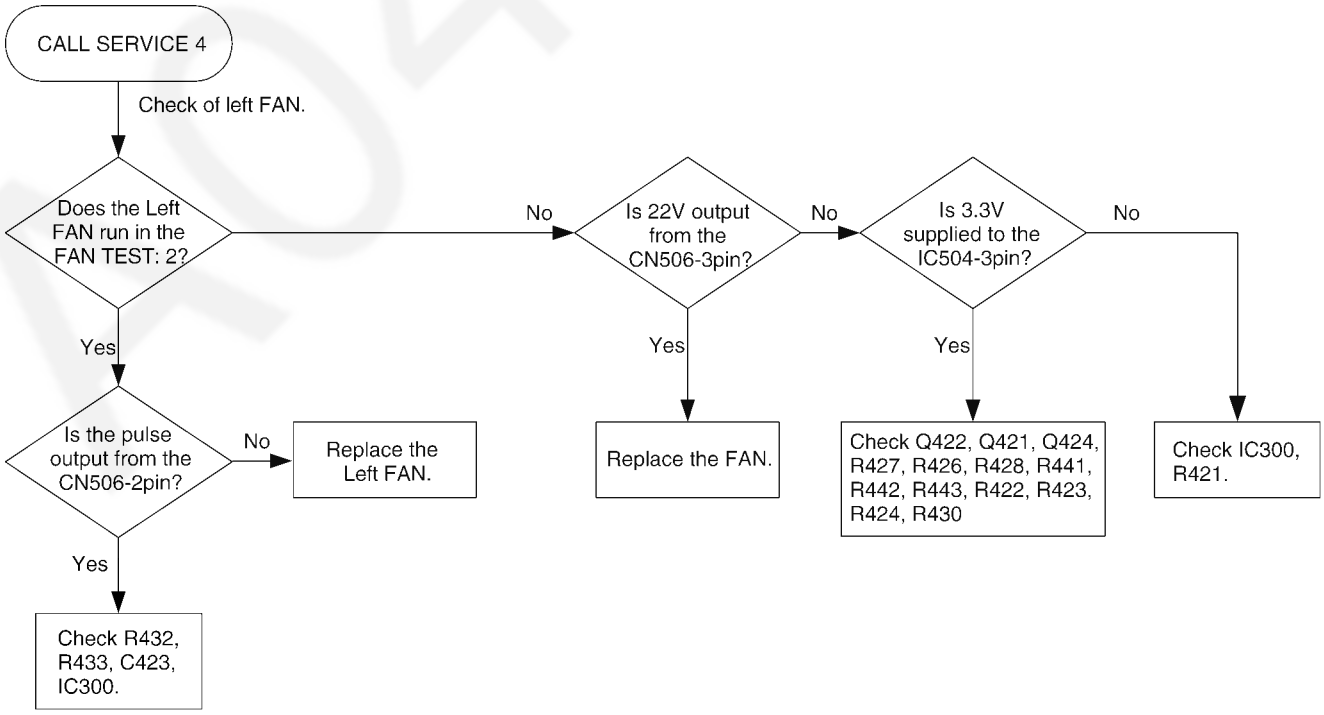
* When Call Service 3 is occurred, the cause can be distinguished by service mode ✳655.
Refer to **CALL SERVICE Troubleshooting Guide** (P.100) for details.

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-AE23 and AB26pin. "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

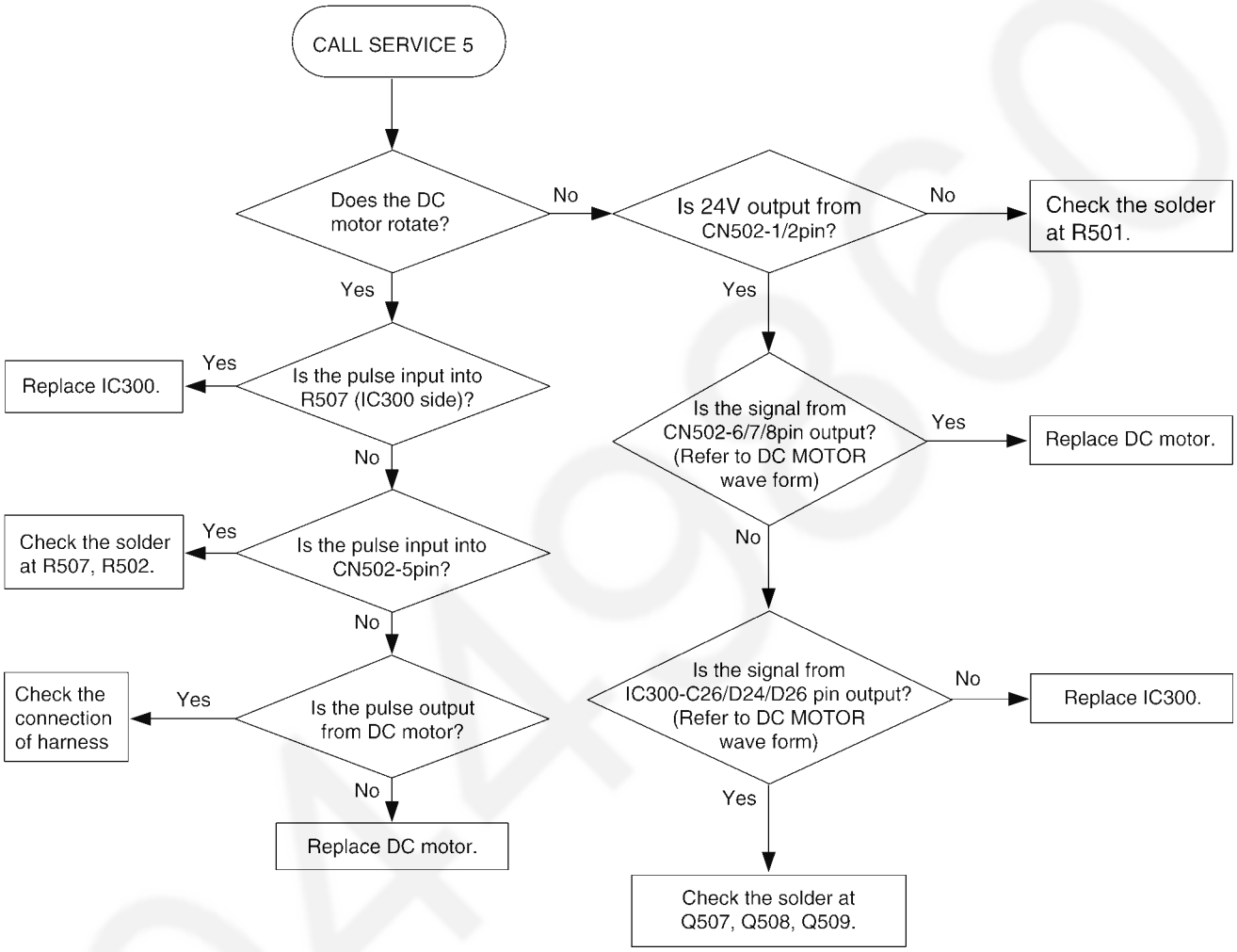




12.3.6.5. CALL SERVICE 5

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

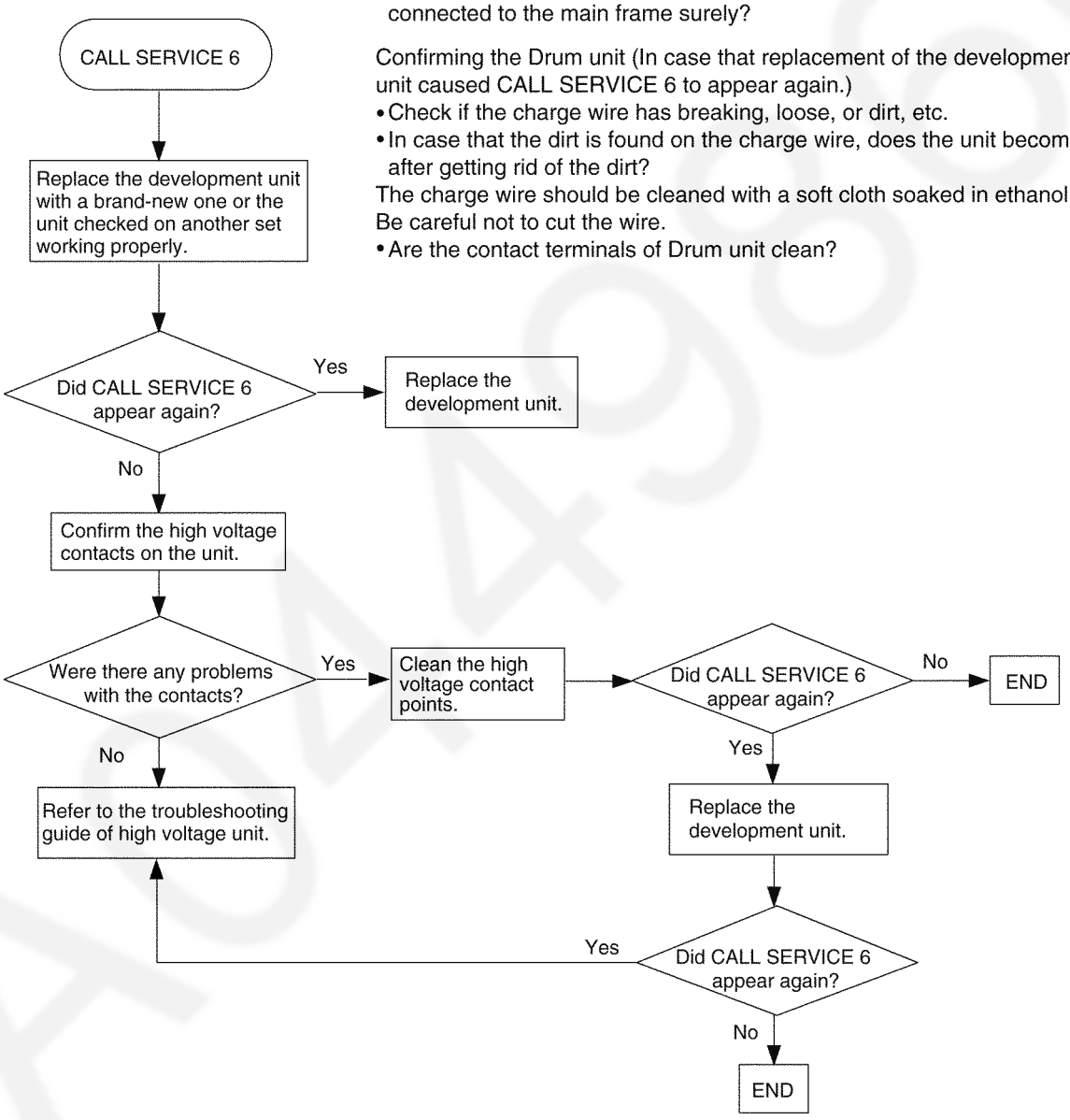
After the LCD indicates "CALL SERVICE 5", turn the power OFF/ON.
Perform the MOTOR TEST in service mode.
MOTOR TEST can be performed by pressing MENU → # → 9000 → *556.
And Press 0 and SET buttons.



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.)



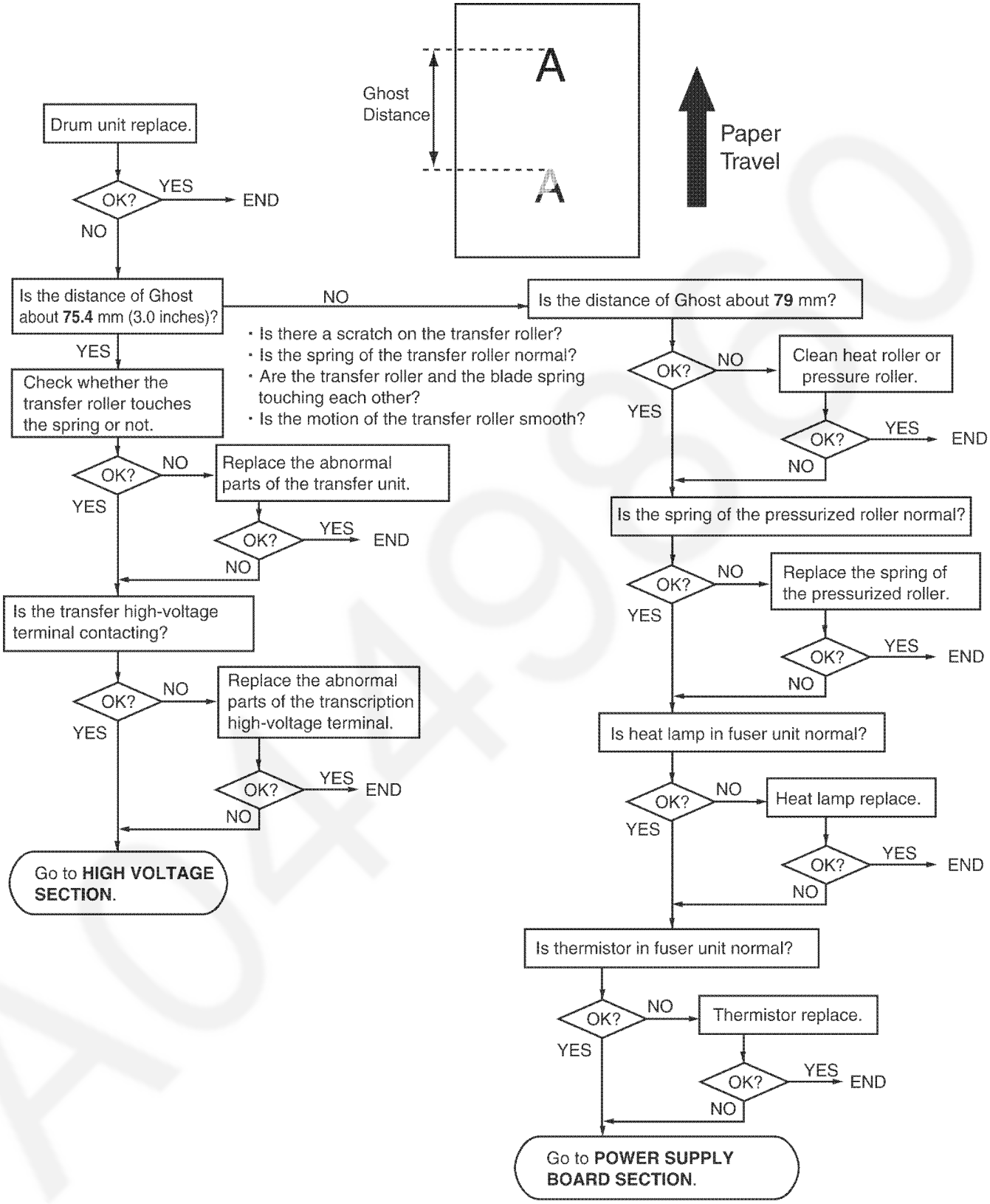
Confirming the contact points of the main frame
- Check the dirt on the high voltage terminals.
- Check if the spring pressure of each high voltage terminal is strong enough. (Isn't it distorted or bent?)
- When a Drum unit is installed on the main frame, are the terminals connected to the main frame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

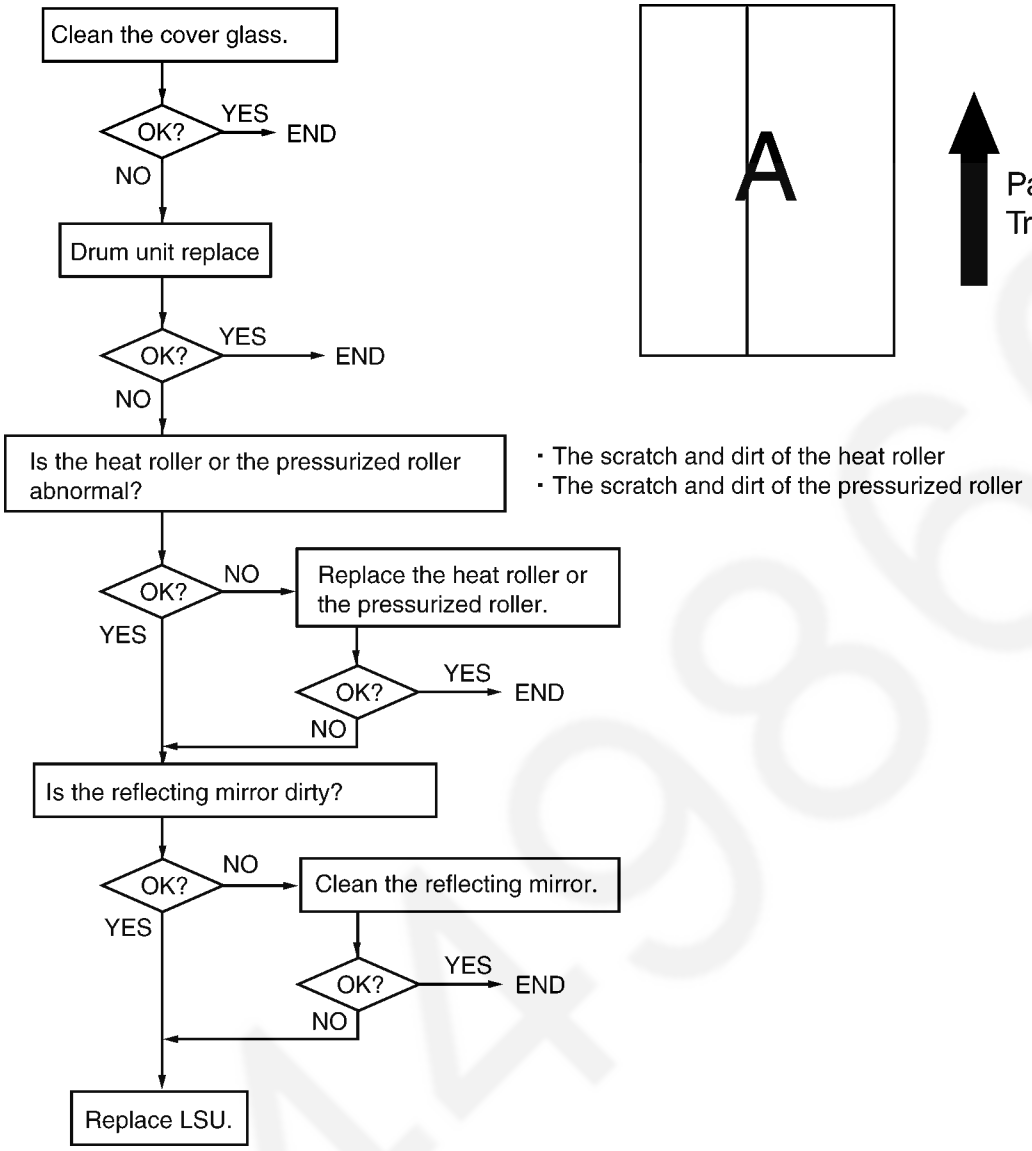


CROSS REFERENCE:

High Voltage Section (P.152)

Power Supply Board Section (P.67)

12.3.7.2. Dark or White Vertical Line

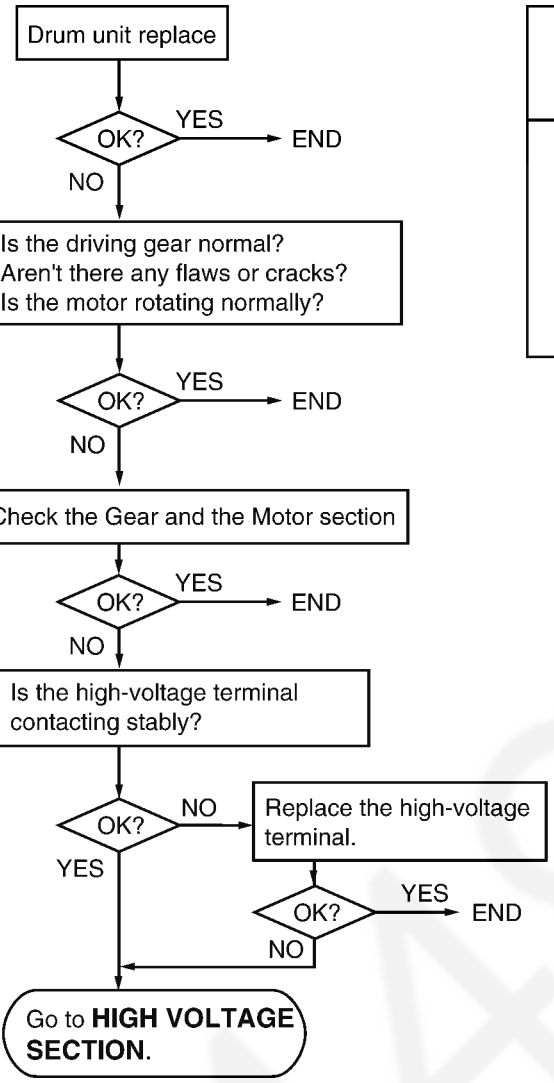


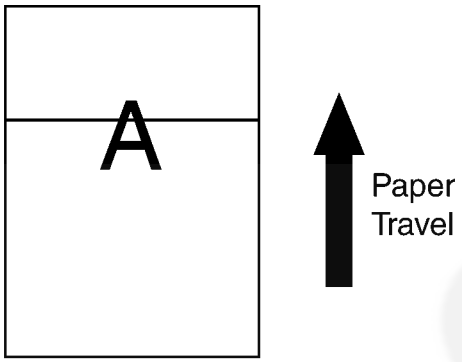
- The scratch and dirt of the heat roller
- The scratch and dirt of the pressurized roller

Note:

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

12.3.7.3. Dark or White Horizontal Line

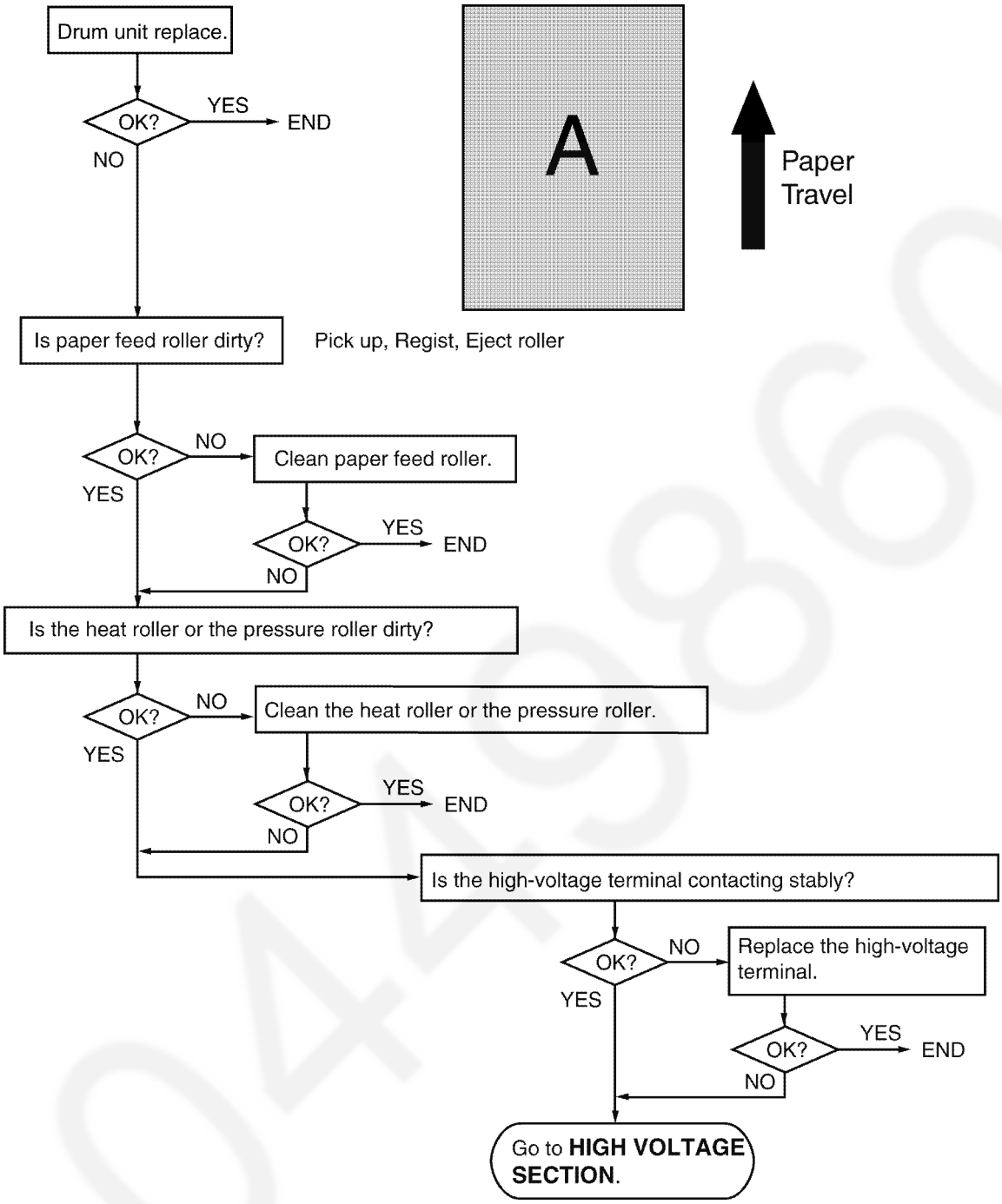




・It is necessary to describe the information about the lines that cannot be troubleshooted in such as halftone.
・When there is the information about the troubleshooted horizontal line, please add the description of it.

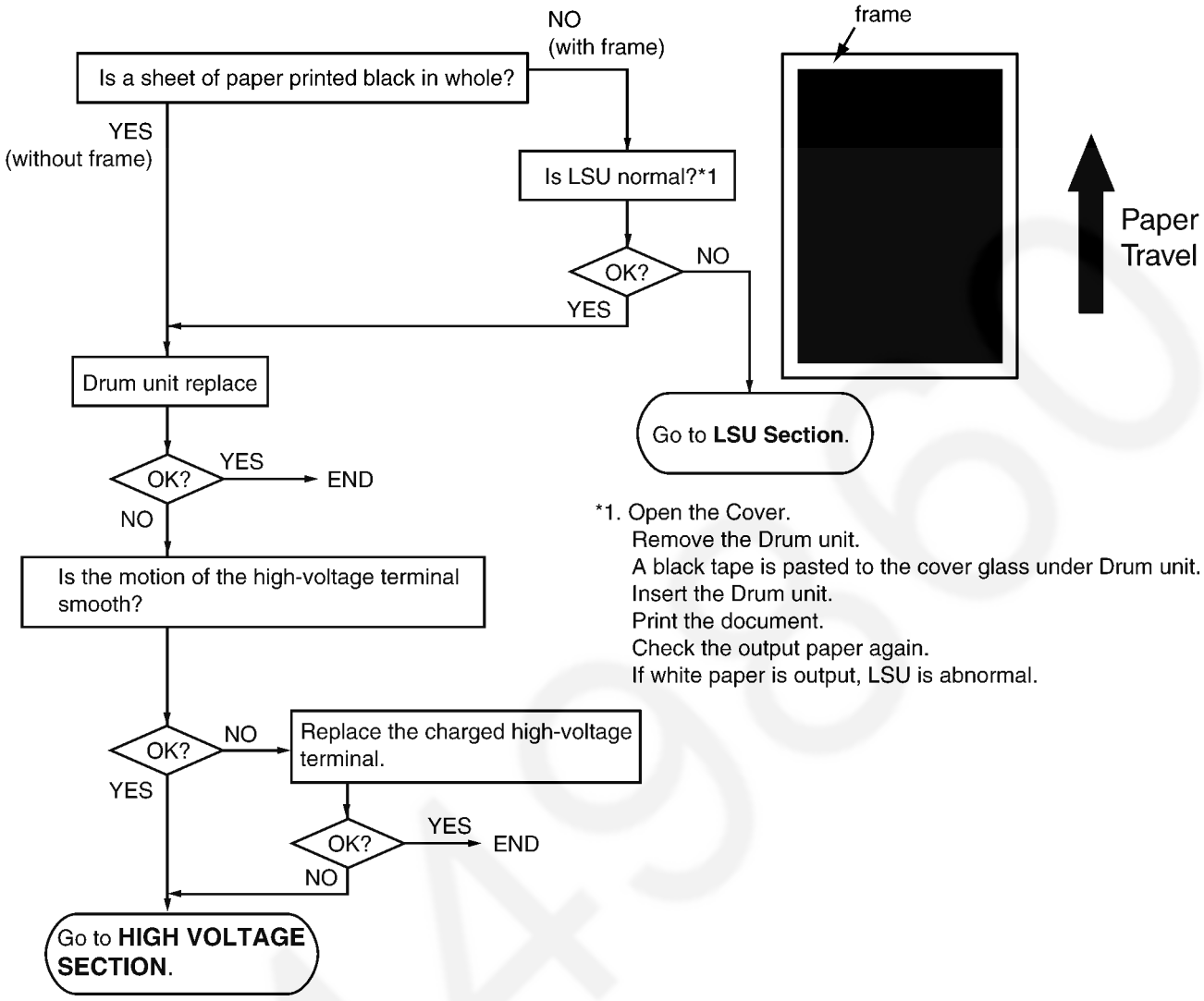
CROSS REFERENCE:
High Voltage Section (P.152)

12.3.7.4. Dirty or Half Darkness Background



CROSS REFERENCE:
High Voltage Section (P.152)

12.3.7.5. Black Print

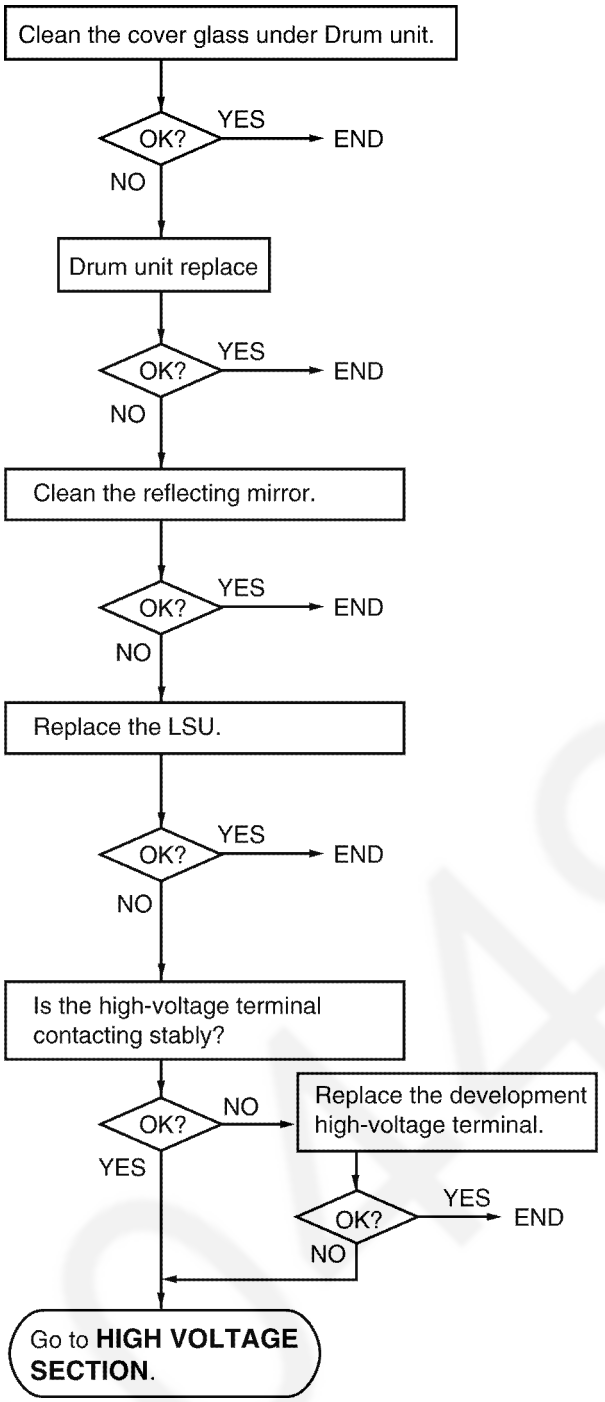


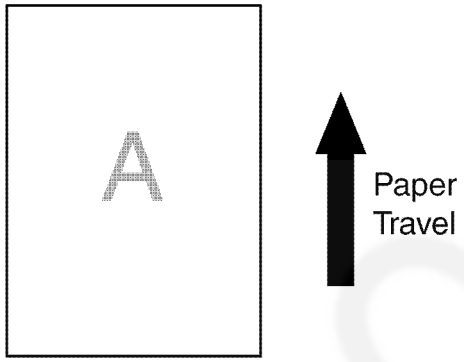
*1. Open the Cover.
Remove the Drum unit.
A black tape is pasted to the cover glass under Drum unit.
Insert the Drum unit.
Print the document.
Check the output paper again.
If white paper is output, LSU is abnormal.

CROSS REFERENCE:

High Voltage Section (P.152)
LSU (Laser Scanning Unit) Section (P.44)

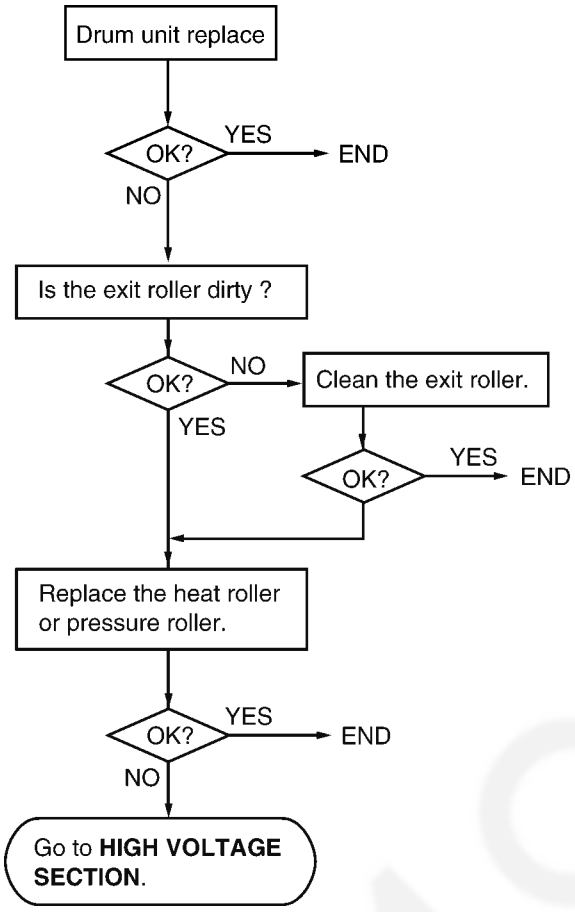
12.3.7.6. Light Print

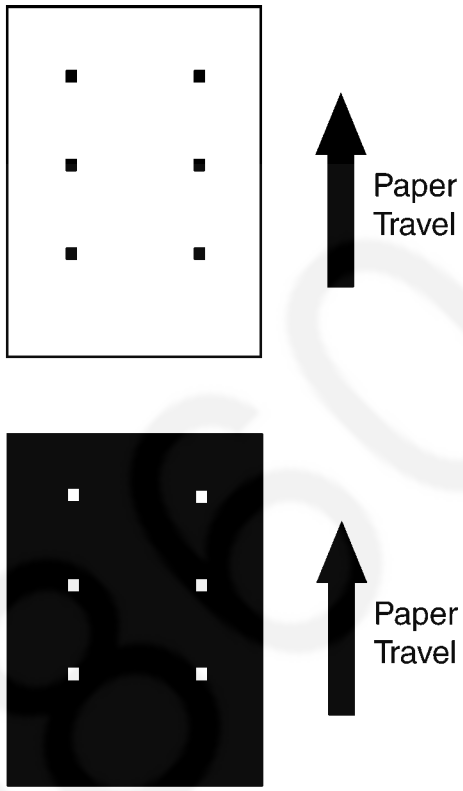




CROSS REFERENCE:
High Voltage Section (P.152)

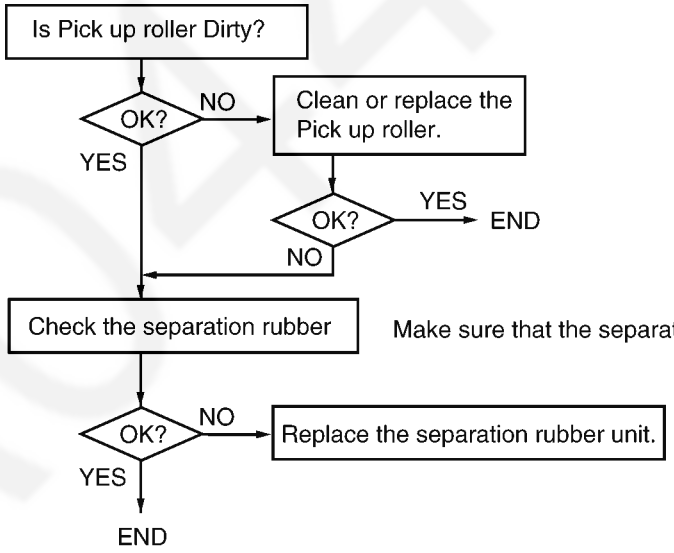
12.3.7.7. Black or White Point



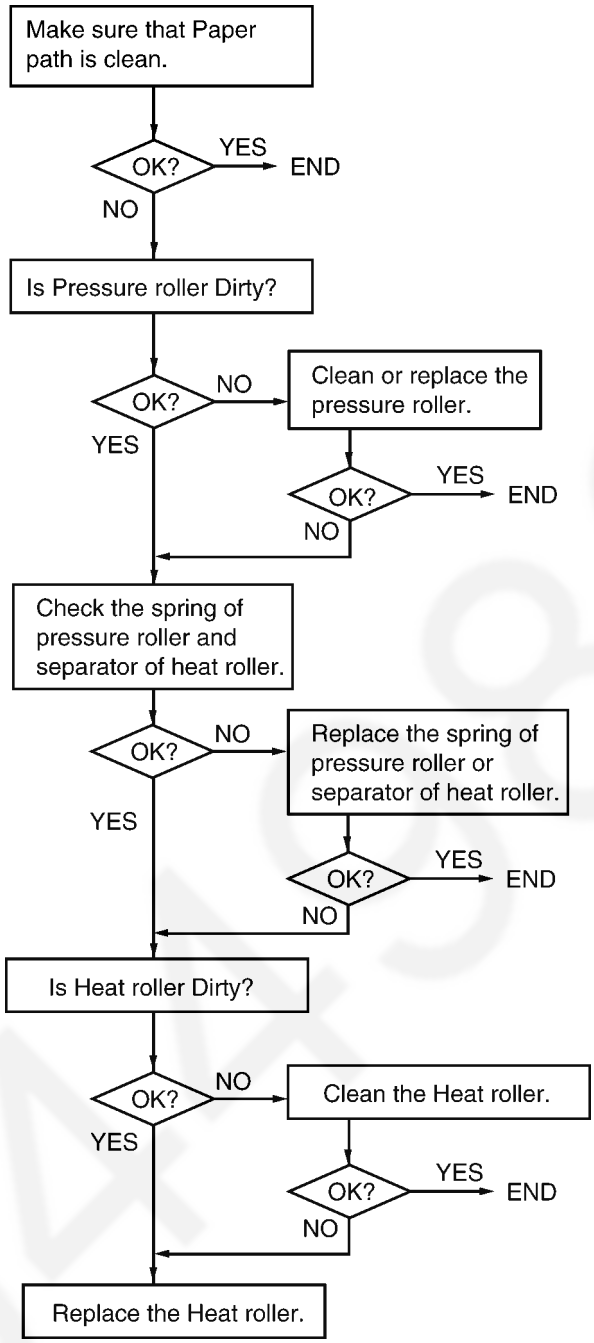


12.3.8. Recording Paper Feed

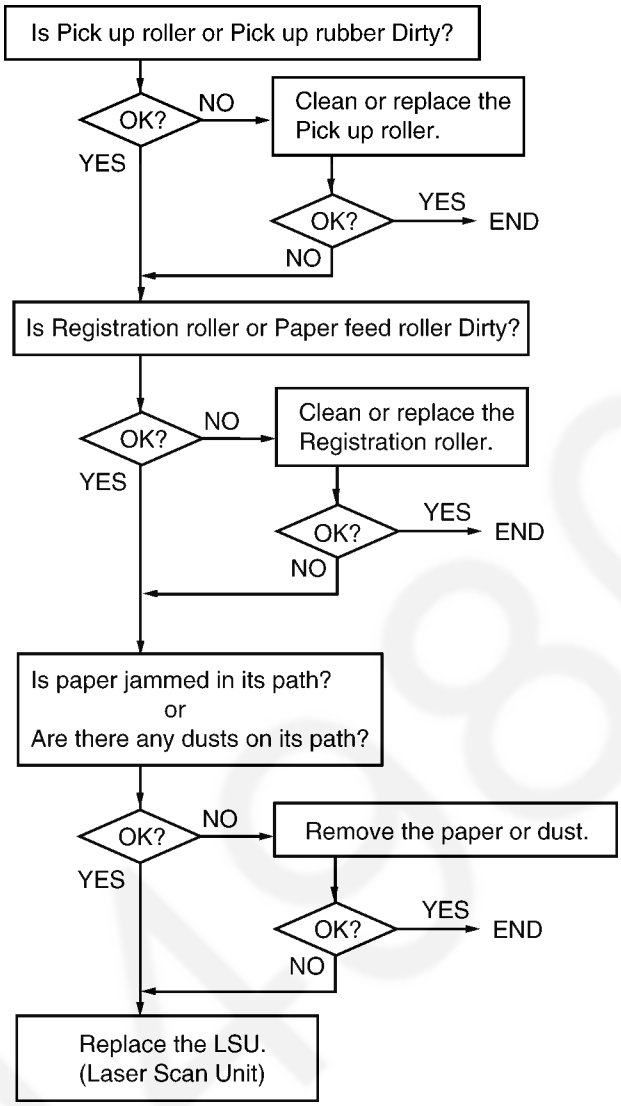
12.3.8.1. Multiple Feed



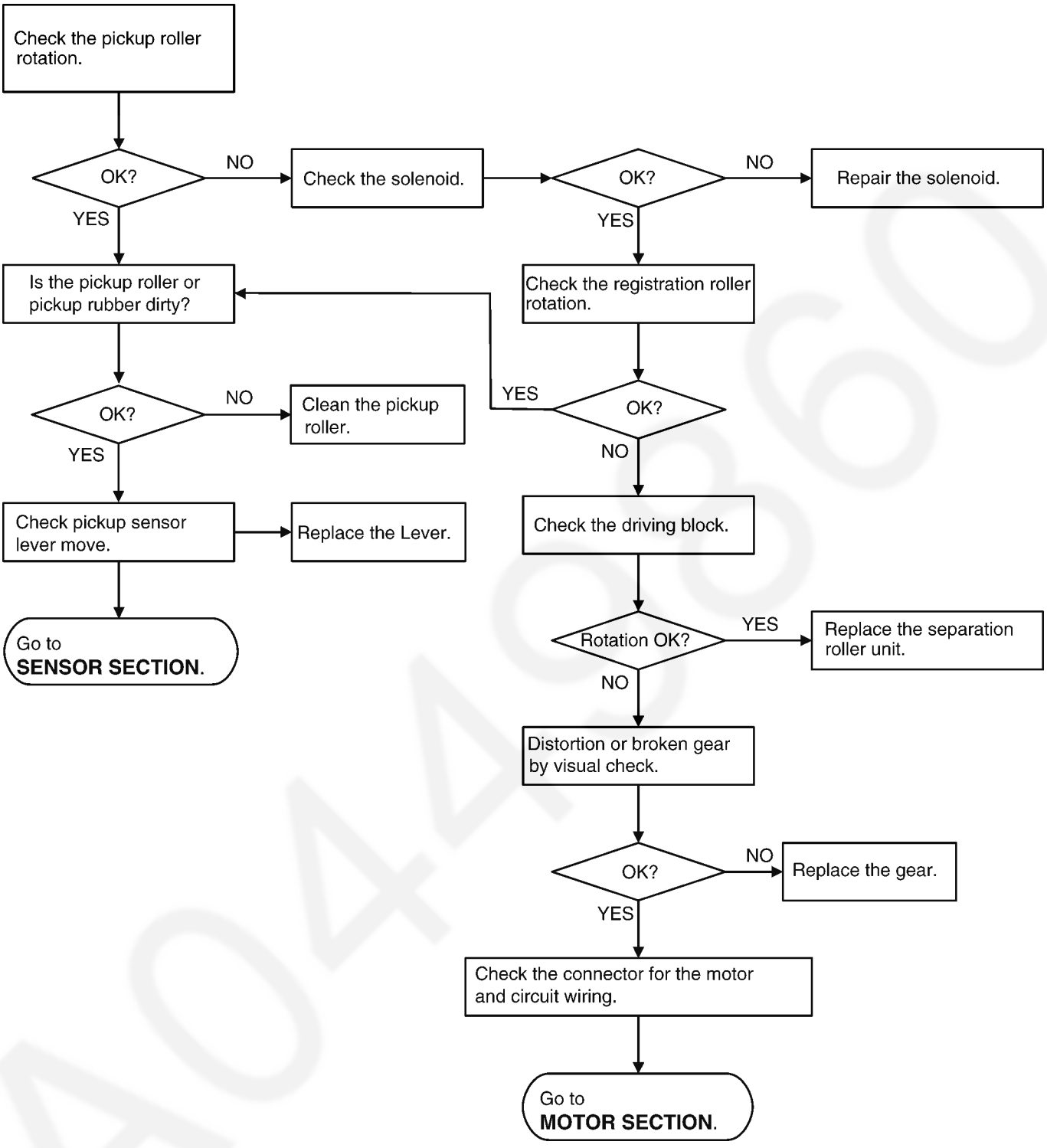
12.3.8.2. The Recording Paper Is Waved or Wrinkled



12.3.8.3. Skew


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

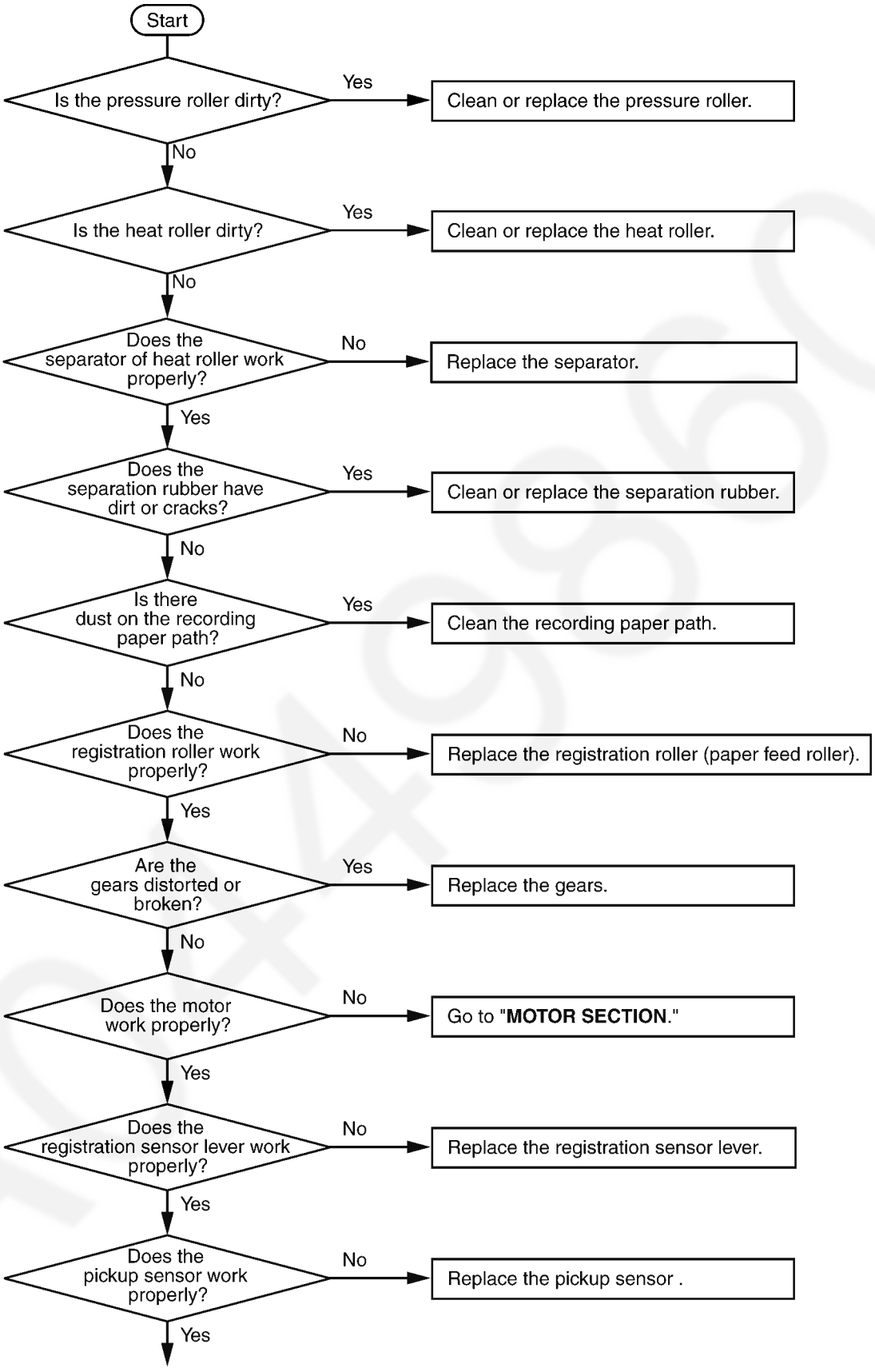
12.3.8.4. The Recording Paper Does Not Feed

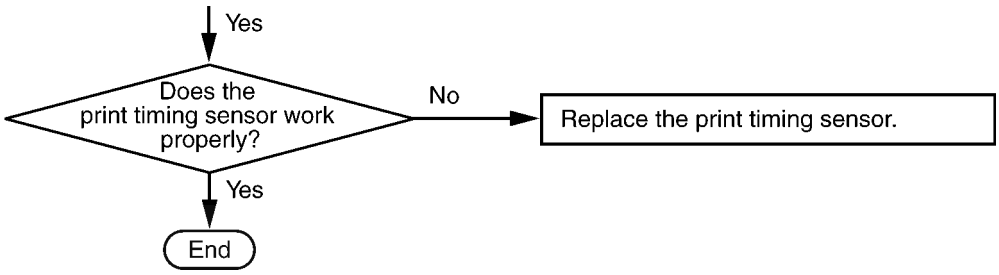


CROSS REFERENCE:

Sensor Section (P.141)
Motor Section (P.144)

12.3.8.5. The Recording Paper Jam





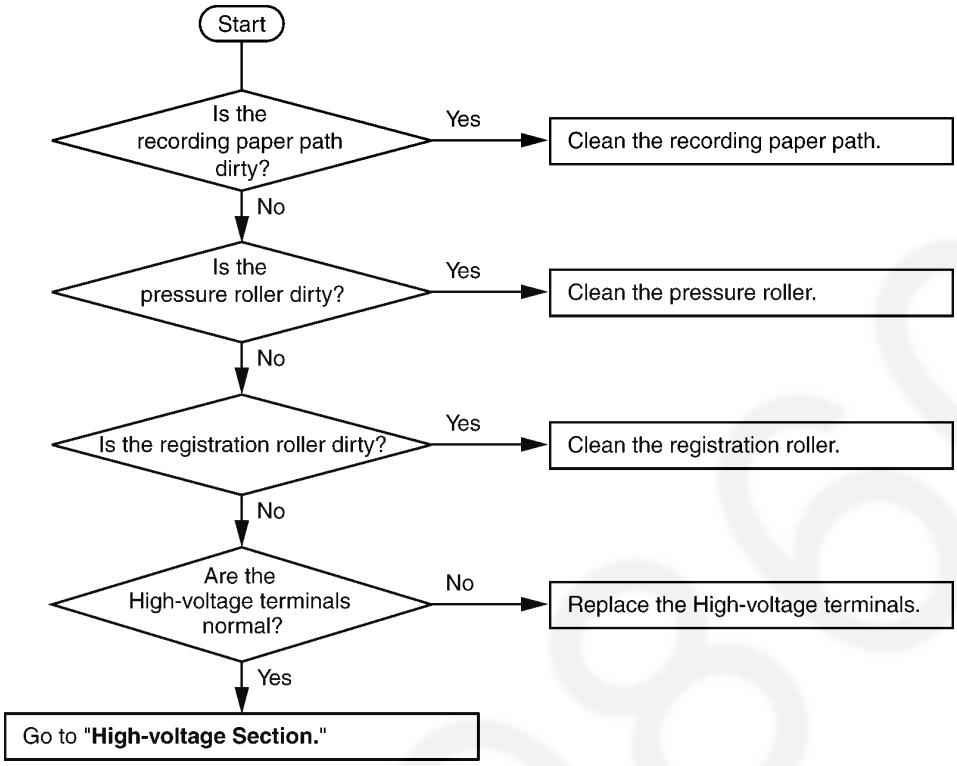
CROSS REFERENCE:

FAN Motor Section (P.40)

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, thugh 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

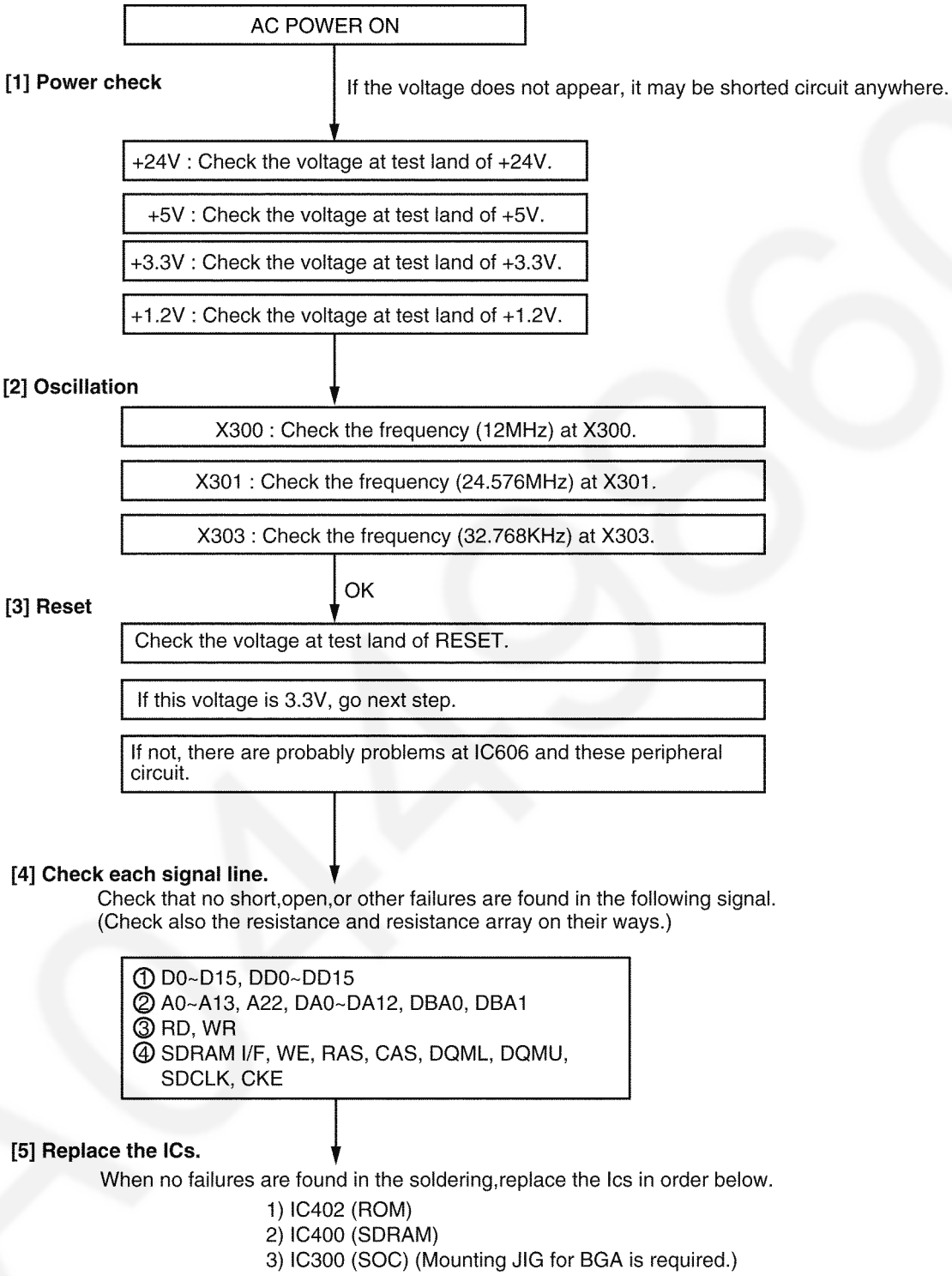


CROSS REFERENCE:

High Voltage Section (P.152)

12.3.9. 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.



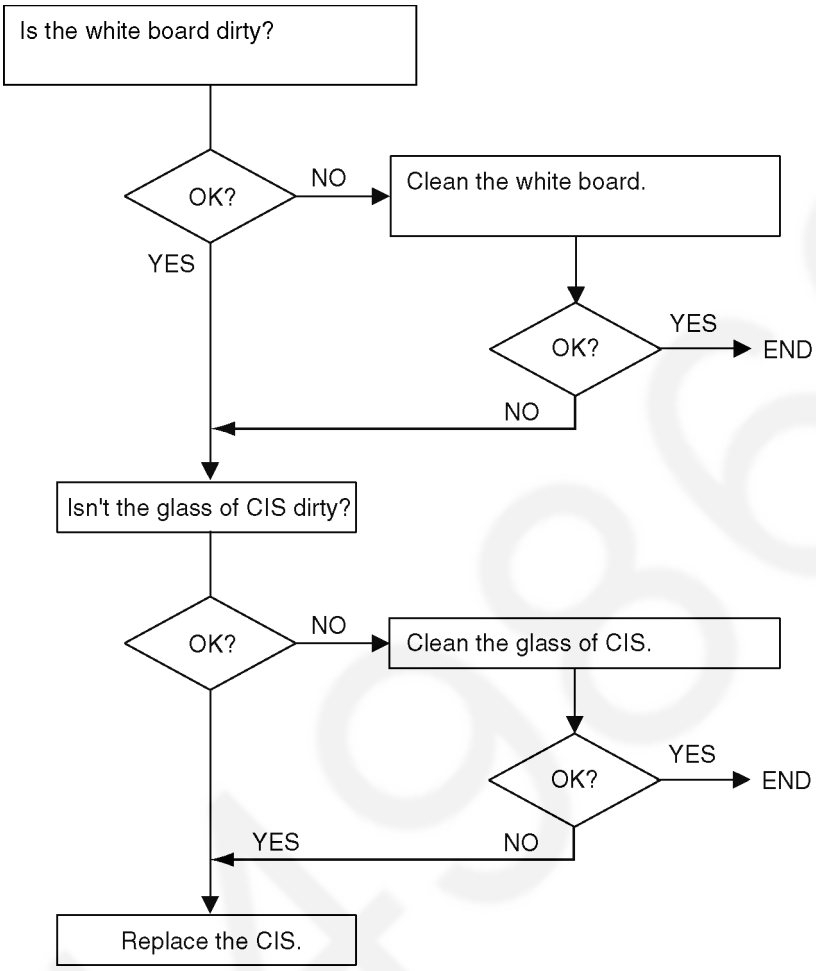
CROSS REFERENCE:

NG Example (P.200)

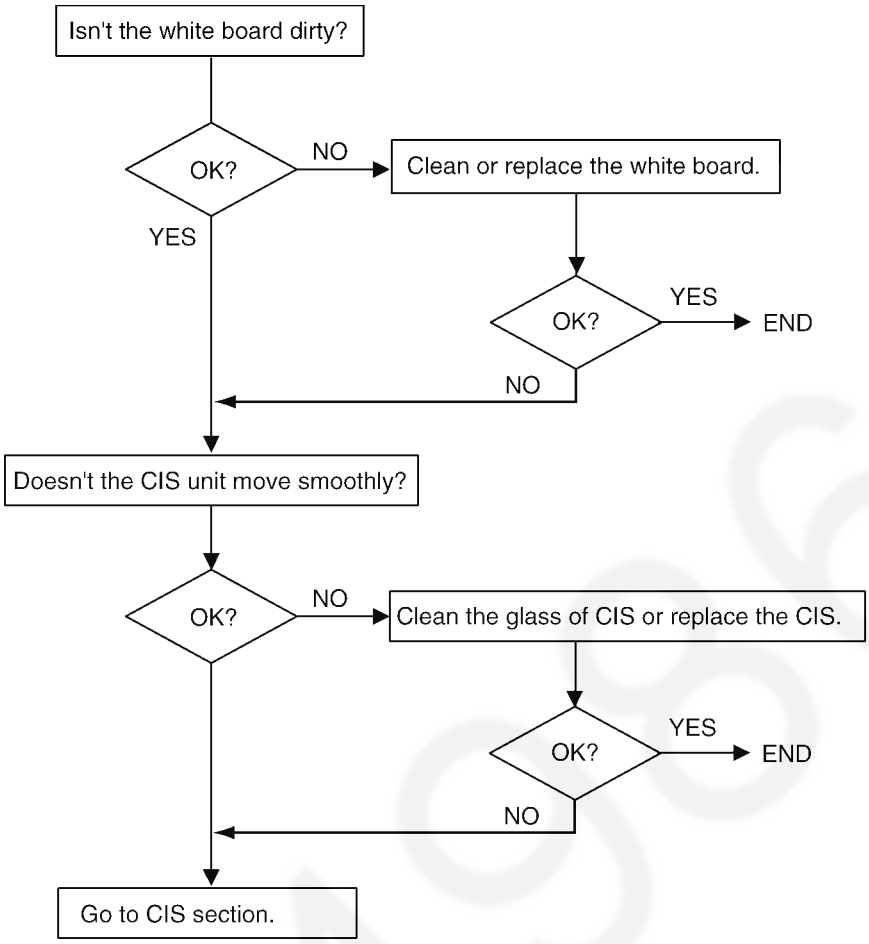
Power Supply Board Section (P.67)

12.3.10. ADF (Auto Document Feeder) Section

12.3.10.1. Black or White Vertical Line Is Copied



12.3.10.2. An Abnormal Image Is Copied



CROSS REFERENCE:

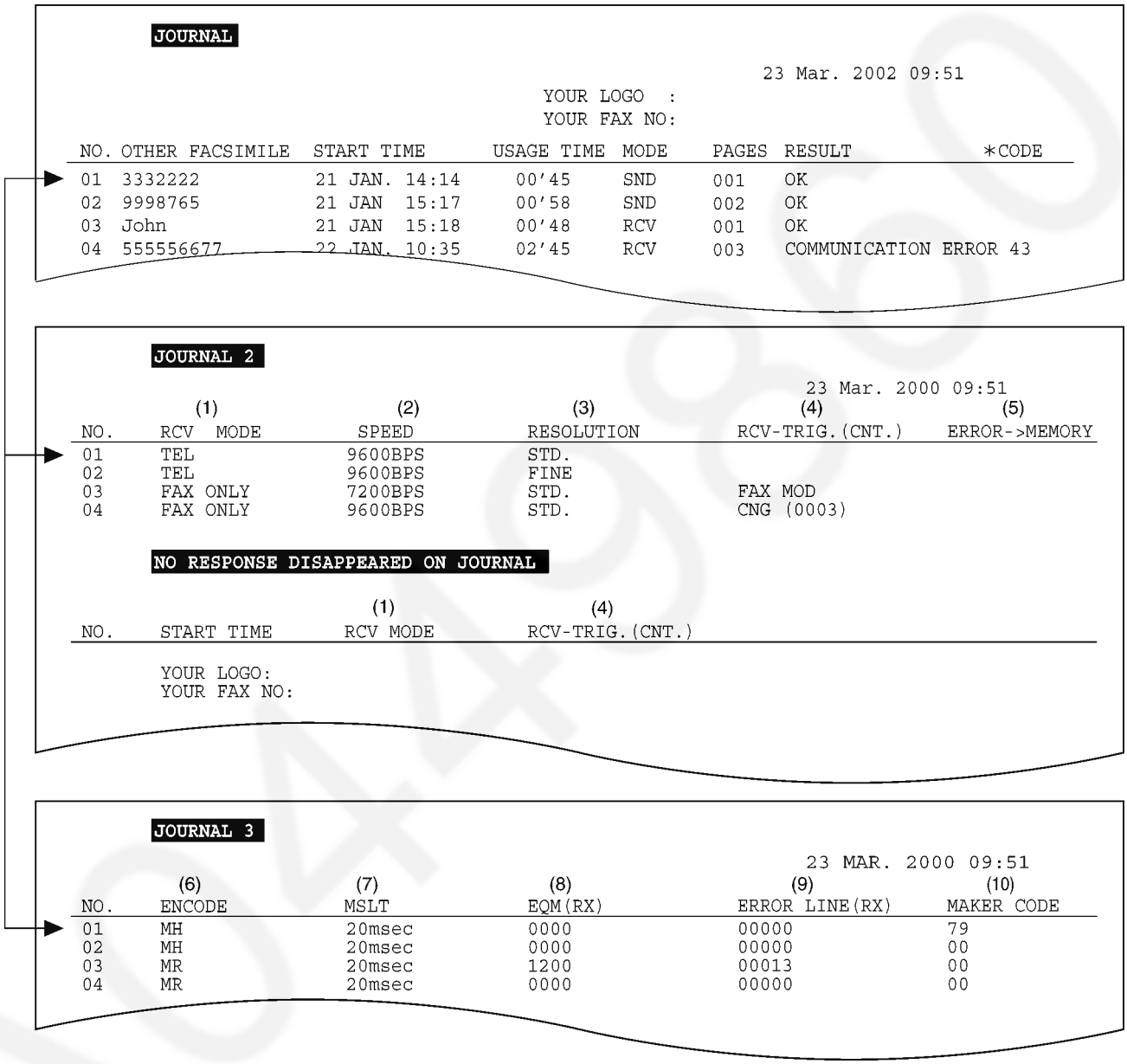
CIS Control Section (P.148)

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.90) 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.125).

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.125). 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	RMT DTMF	Means the unit detected DTMF (Remote Fax activation code) entered remotely.
4	PAL DTMF	Means the unit detected DTMF (Remote Fax activation code) entered by a parallel connected telephone.
5	TURN-ON	Means the unit started to receive after 10 rings. (Remote Turn On: Service Code #573)

(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.125), 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.125).

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. :

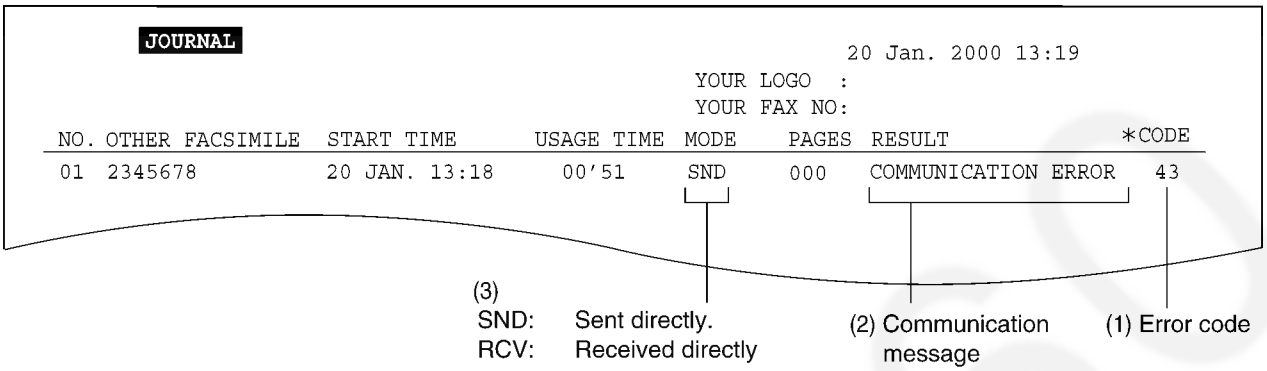
JOURNAL3

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.13)

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.	
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.29). **ITS (Integrated telephone System) and Monitor Section** (P.31).	12

SND=TRANSMISSION / RCV=RECEPTION

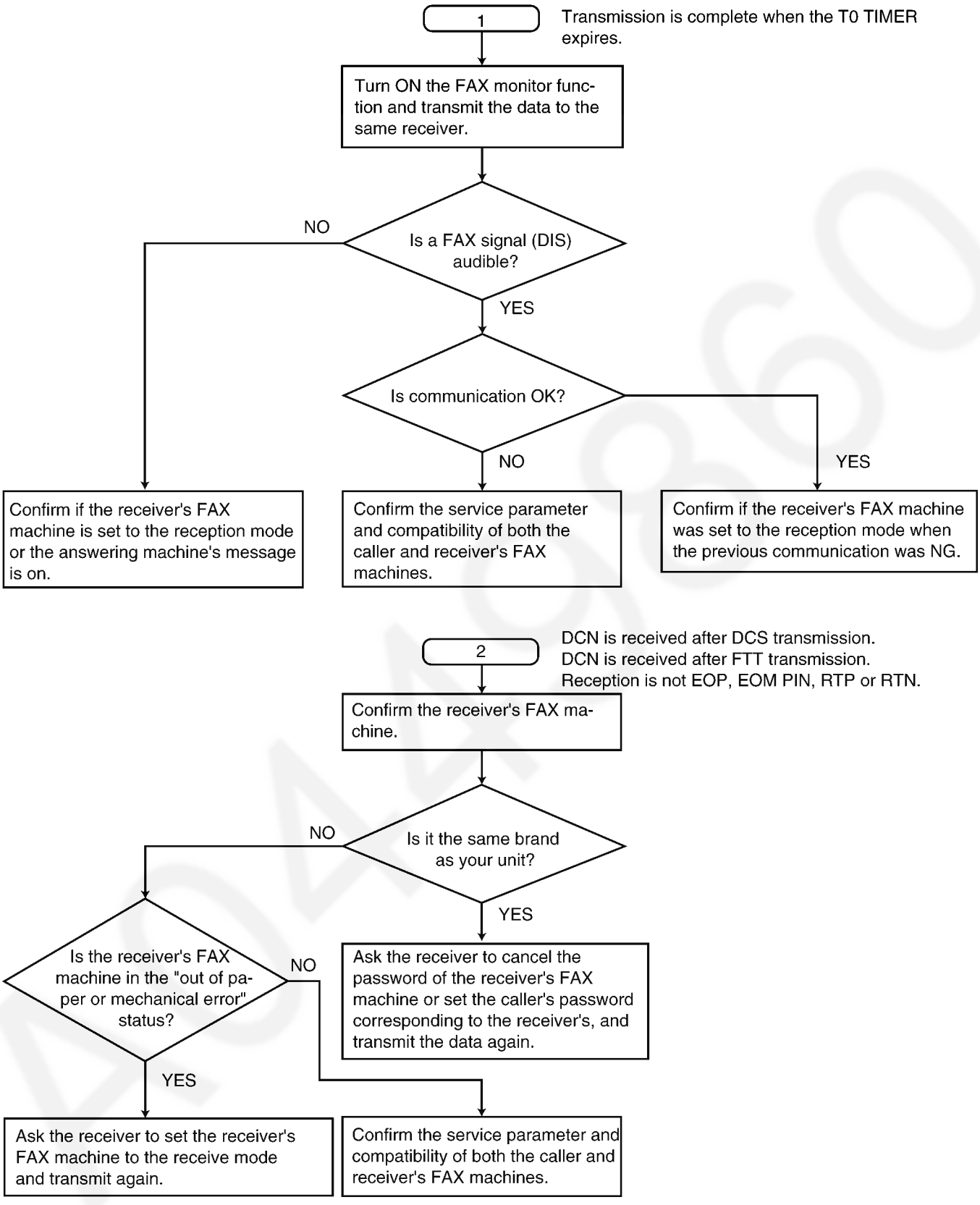
Most fax communication problems can be resolved by the following steps.

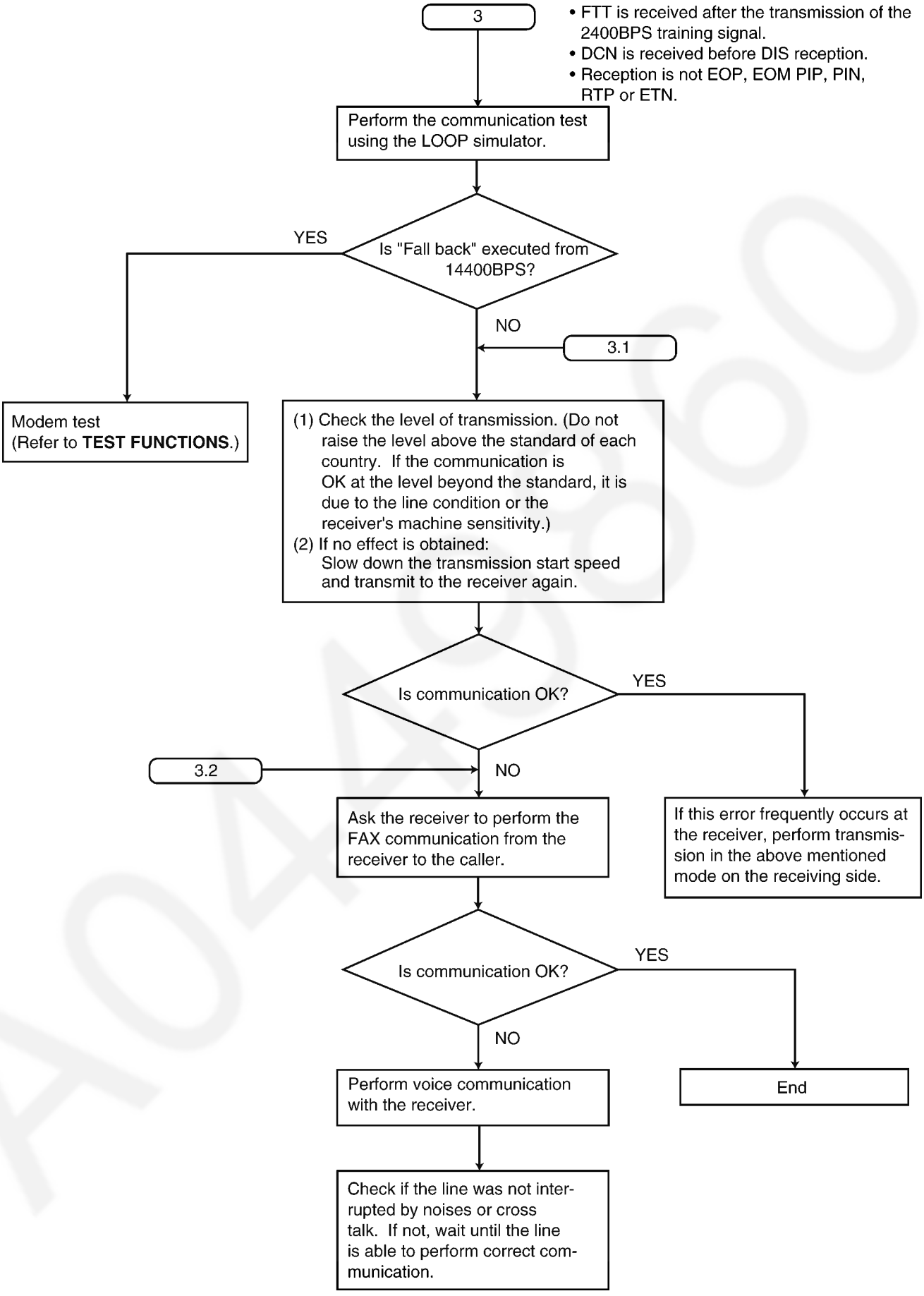
1. Change the transmit level. (Service code: 596, refer to **Service Function Table** (P.75).)
2. Change the TX speed/RX speed. (Service code: 717/718, refer to **Service Function Table** (P.75).)

Note*:

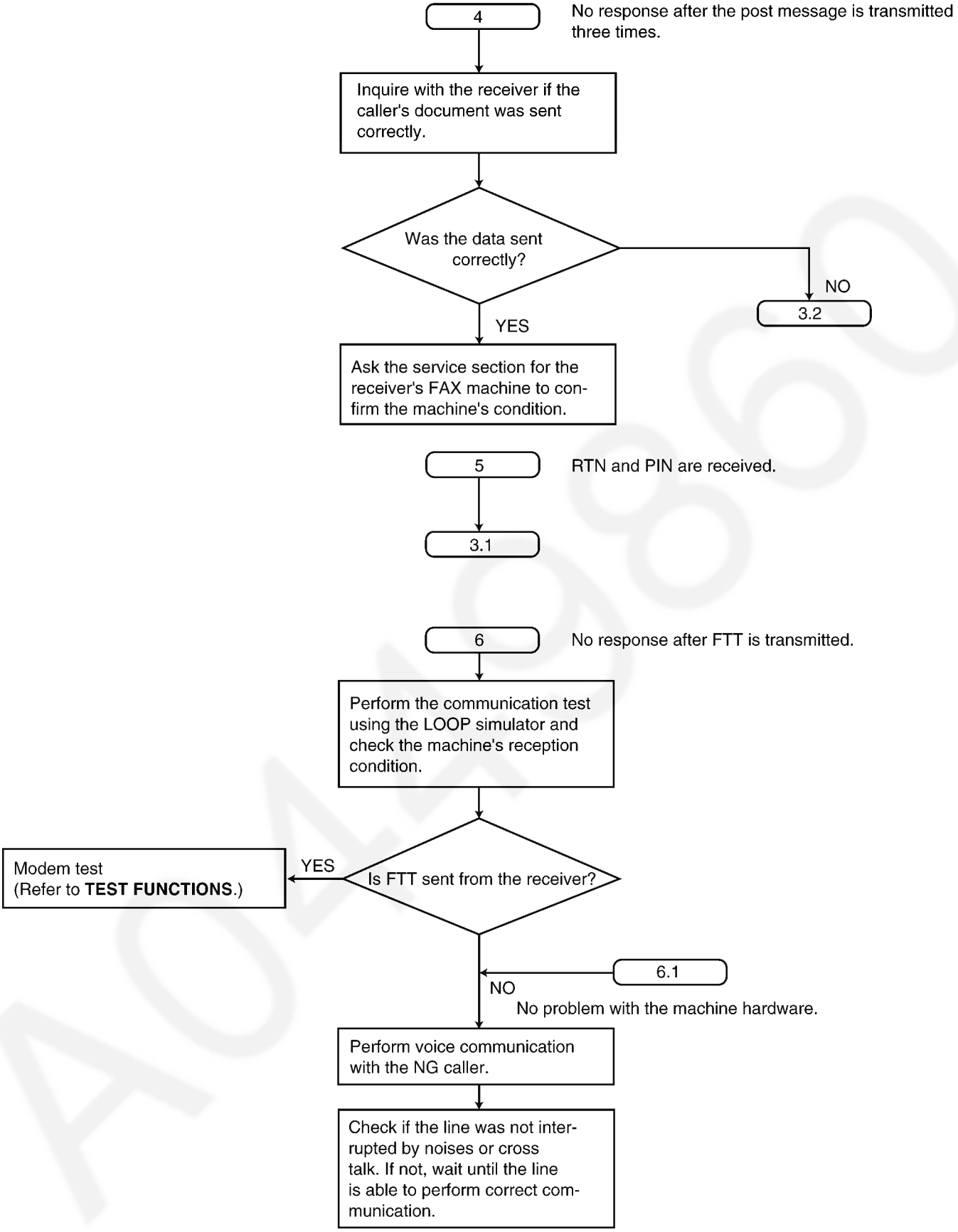
If the problem remains, see the following “**Countermeasure**” flow chart.

Countermeasure

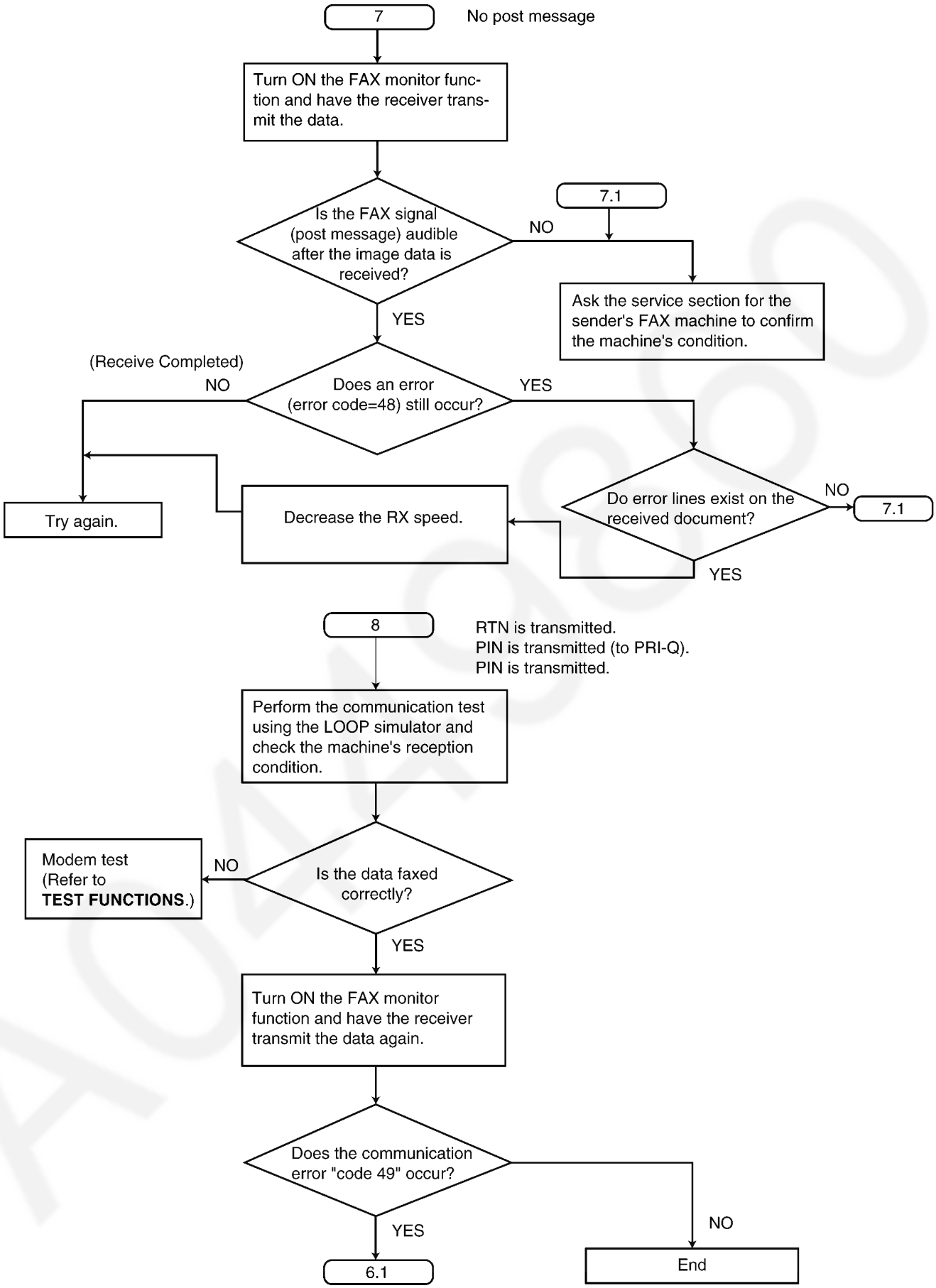




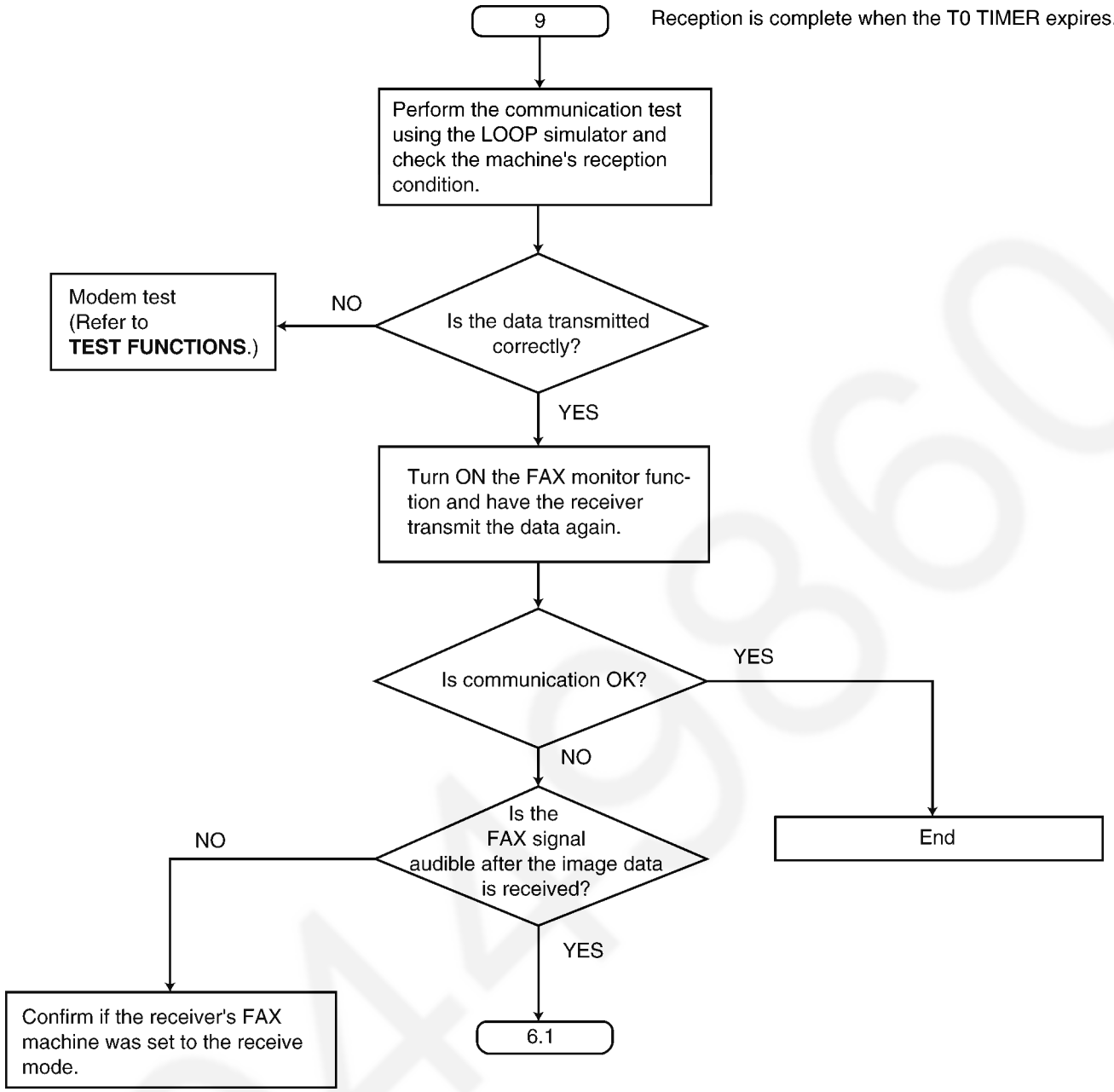
CROSS REFERENCE:
Test Functions (P.70)



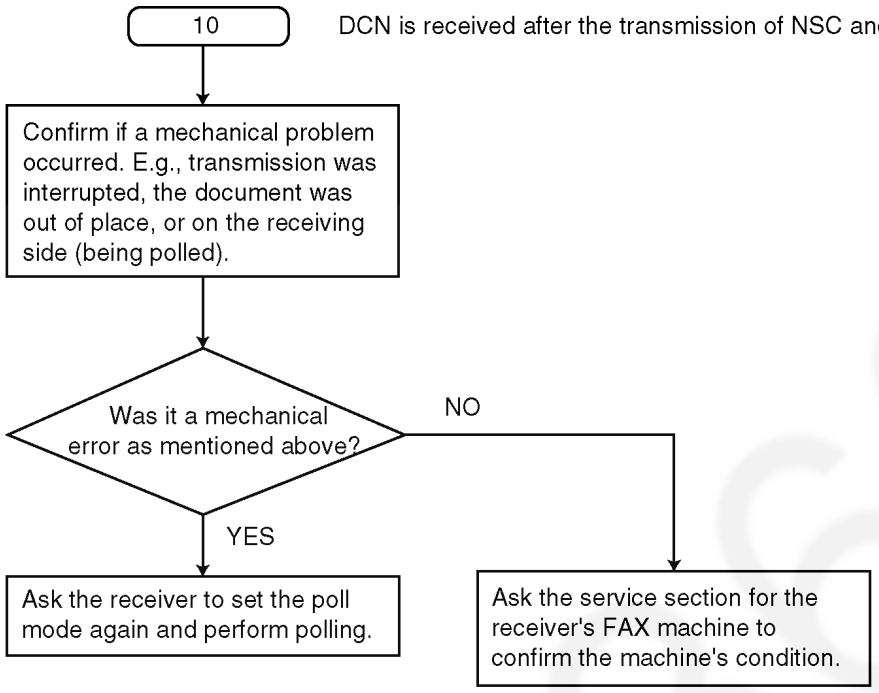
CROSS REFERENCE:
Test Functions (P.70)

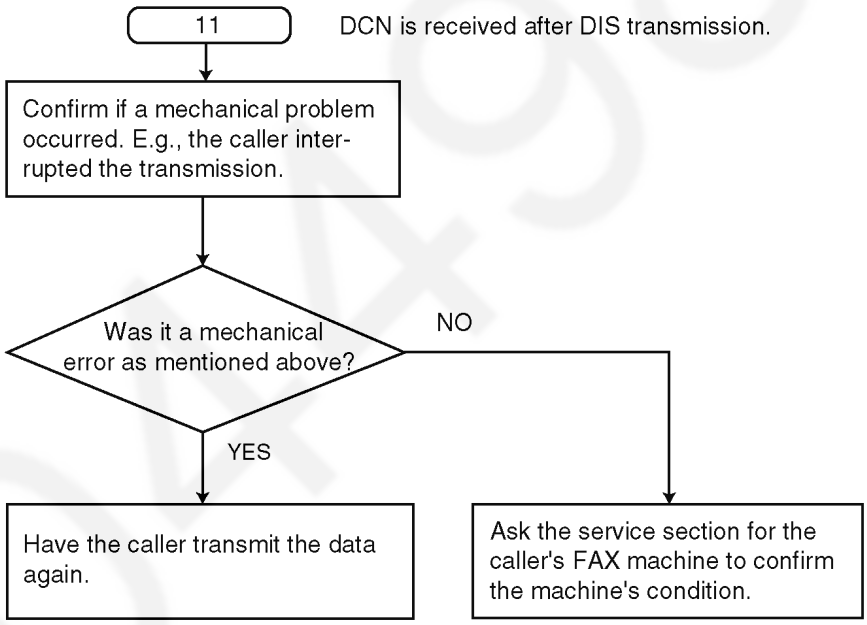


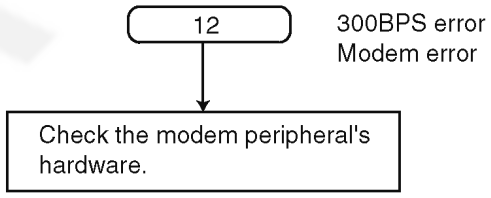
CROSS REFERENCE:
Test Functions (P.70)

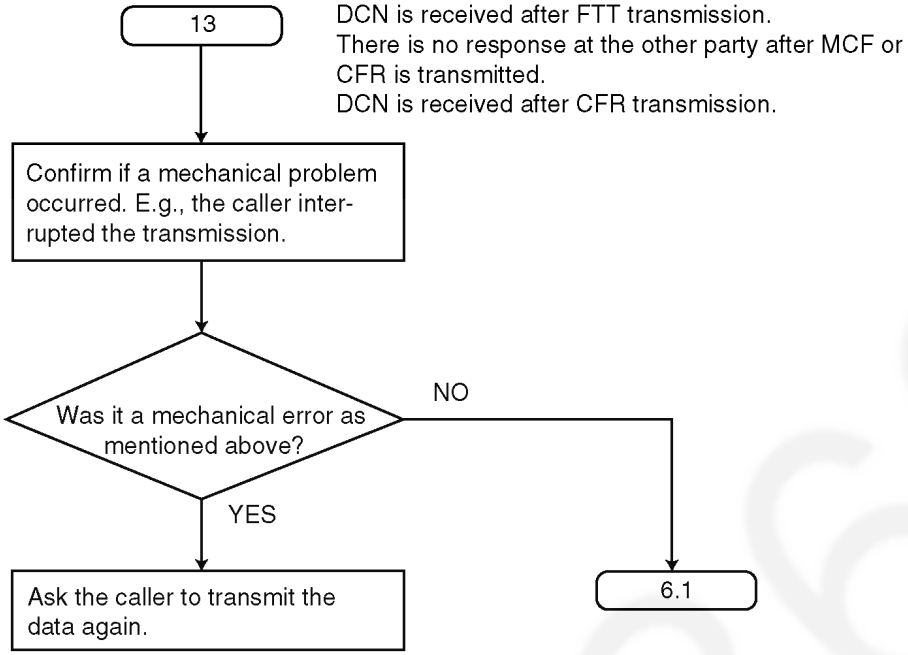


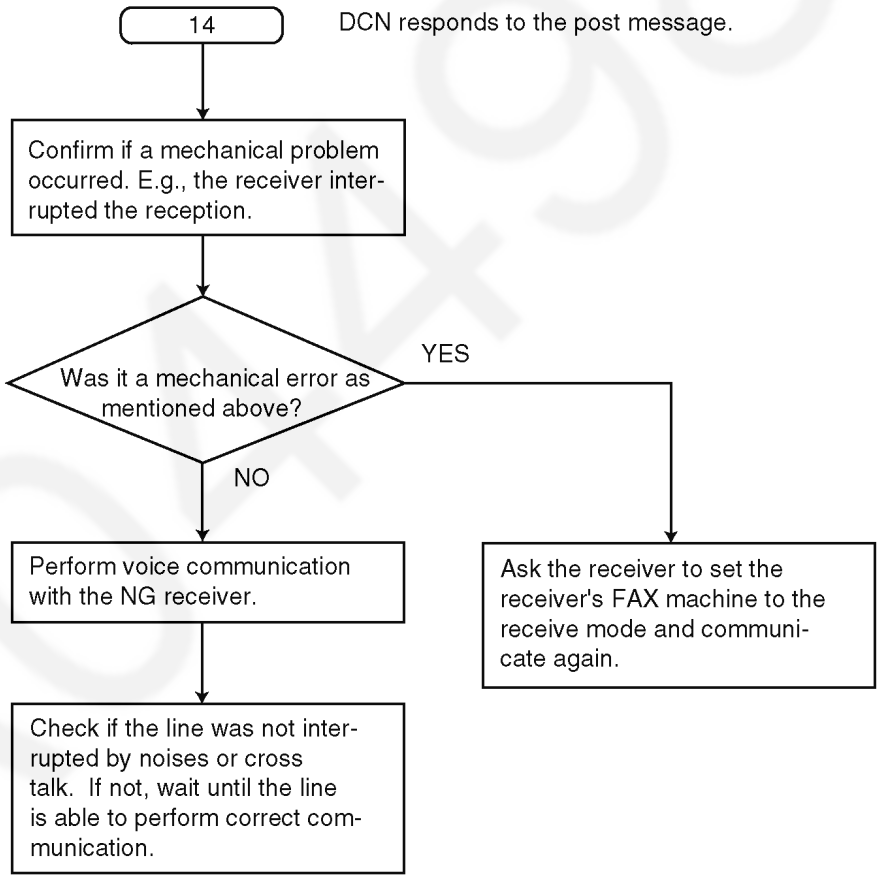
CROSS REFERENCE:
Test Functions (P.70)

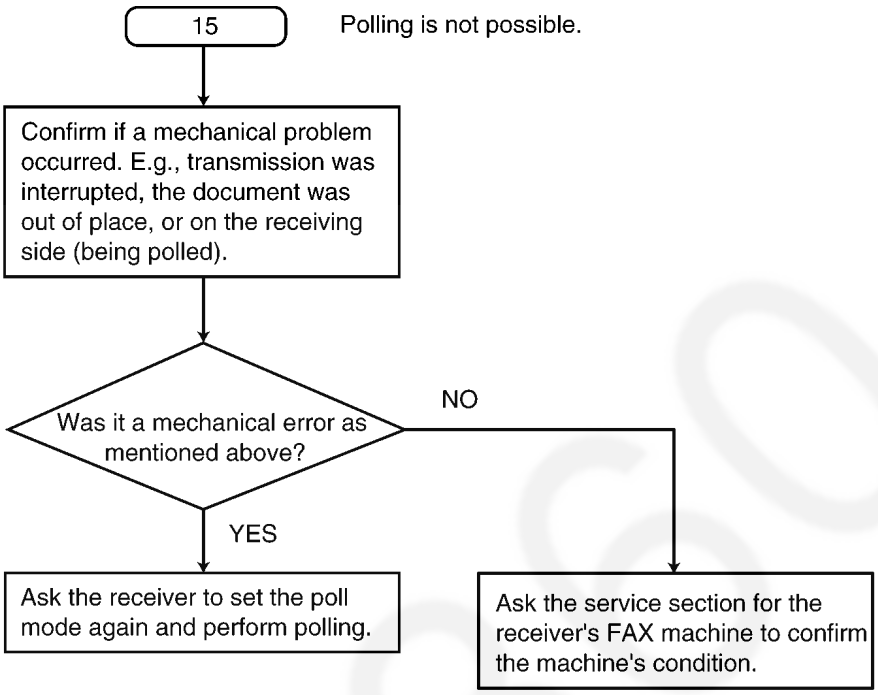

10
DCN is received after the transmission of NSC and DTC.
Confirm if a mechanical problem occurred. E.g., transmission was interrupted, the document was out of place, or on the receiving side (being polled).
Was it a mechanical error as mentioned above?
NO
YES
Ask the receiver to set the poll mode again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

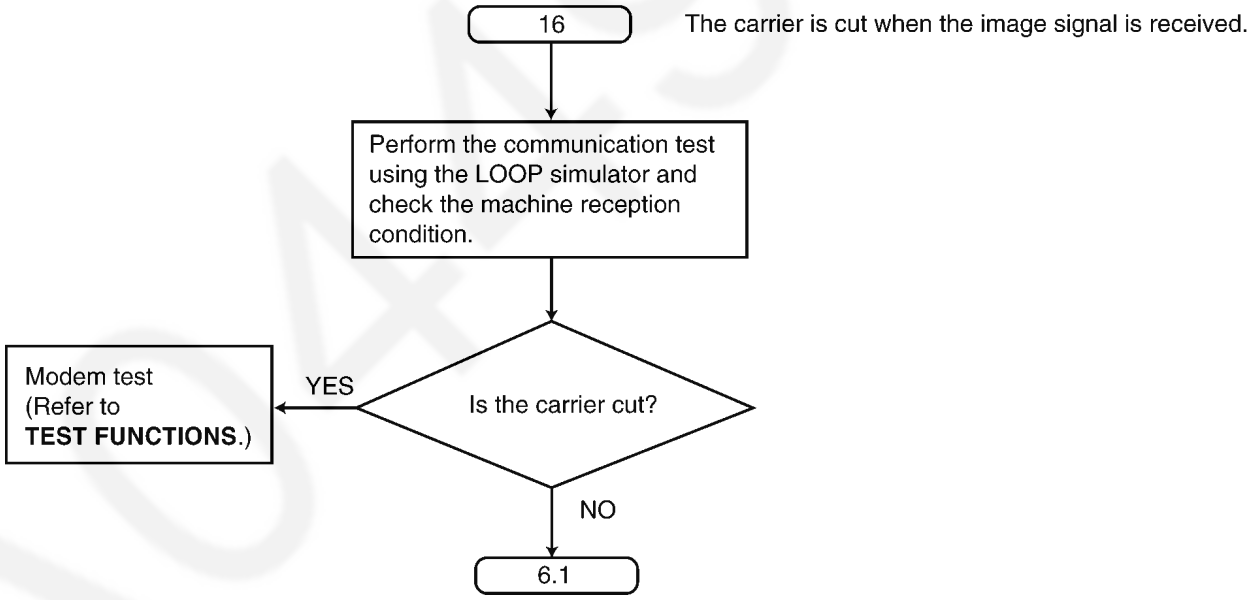

11
DCN is received after DIS transmission.
Confirm if a mechanical problem occurred. E.g., the caller interrupted the transmission.
Was it a mechanical error as mentioned above?
NO
YES
Have the caller transmit the data again.
Ask the service section for the caller's FAX machine to confirm the machine's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

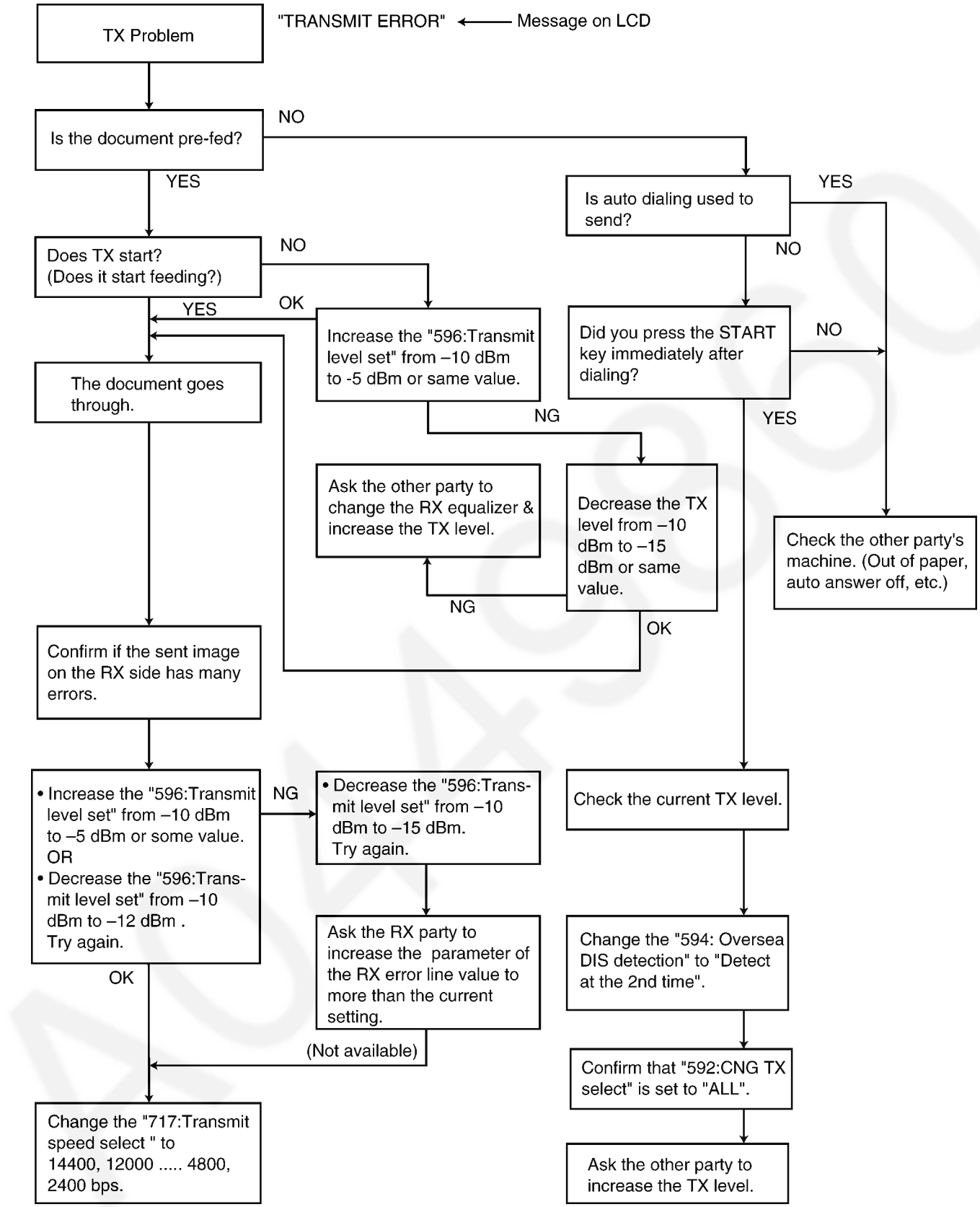

14
DCN responds to the post message.
Confirm if a mechanical problem occurred. E.g., the receiver interrupted the reception.
Was it a mechanical error as mentioned above?
YES
NO
Perform voice communication with the NG receiver.
Ask the receiver to set the receiver's FAX machine to the receive mode and 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.70)

12.3.11.5. Sometime There Is a Transmit Problem



Note:

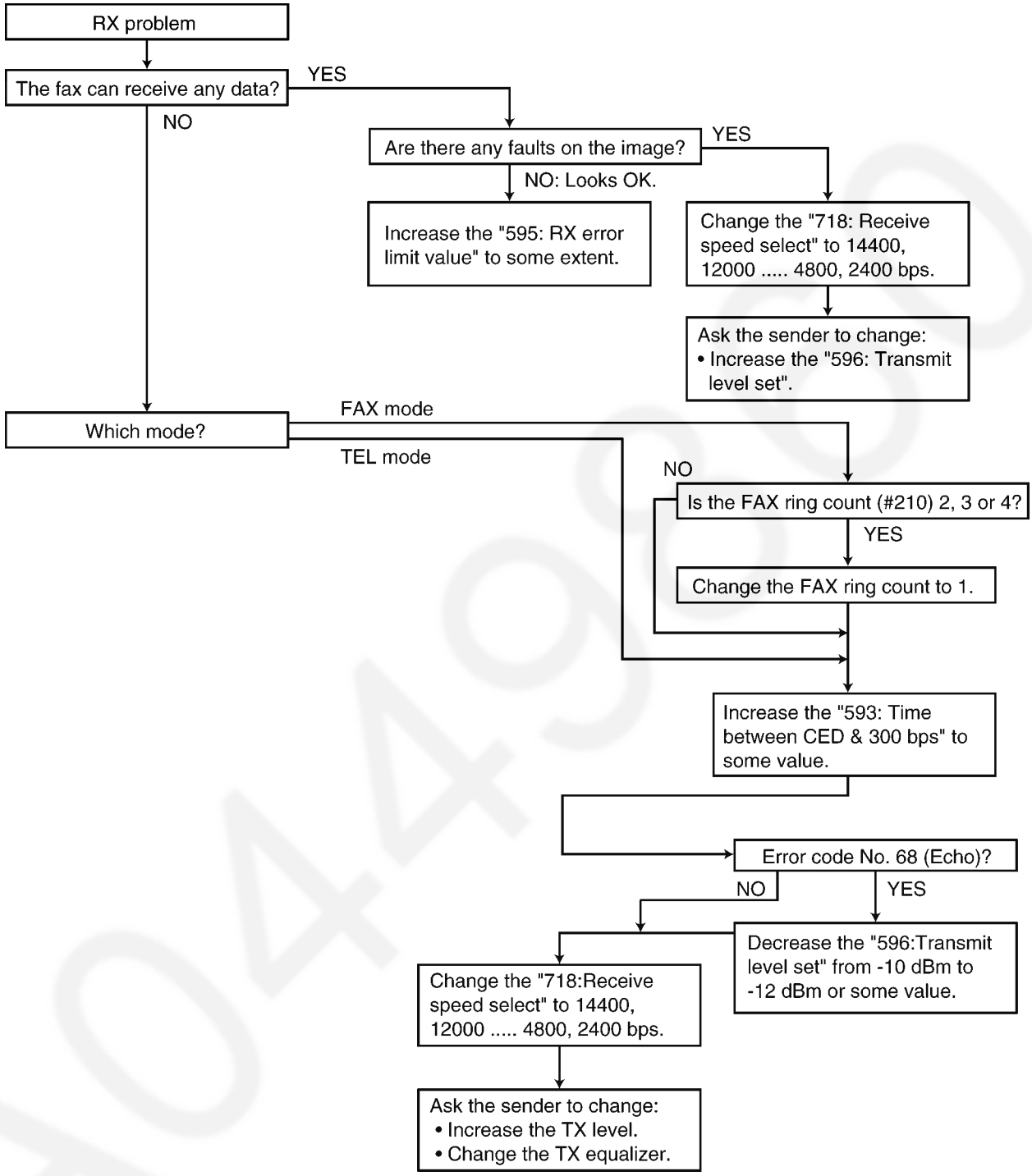
"596: Transmit level set" represents a service code. Refer to the **Service Function Table** (P.75).

"717: Transmit speed select" represents a service code. Refer to the **Service Function Table** (P.75).

12.3.11.6. 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.75).

"718: Receive speed select" represents a service code. Refer to the **Service Function Table** (P.75).

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.85) for the above items.

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

12.3.12. 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.

12.3.12.1. Check Sheet

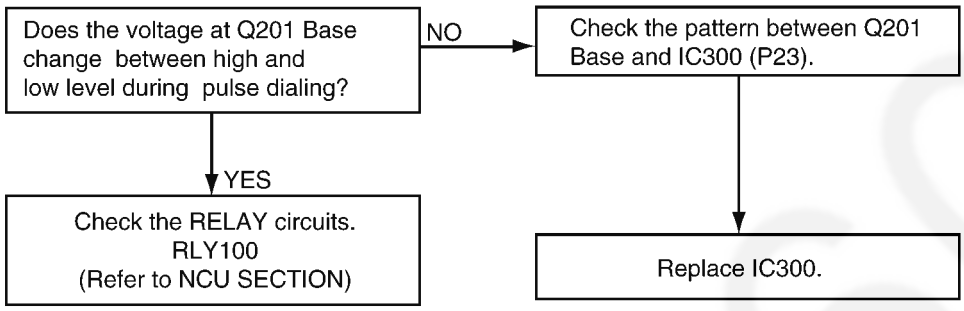
(SYMPTOM) CHECK ITEMS	Signal ROUTE IN → OUT
MONITOR RX	TEL LINE-CN100(3,4)-L100-L106-R117&R123-T100-C256-R224-IC201(2,1)-C282-Q210-R247-C207 -IC200(15,32)-IC300(AC18,AD20)-IC203(29,12)-C224-R212-R271-C283-IC201(6,7)-R229-C217 -L210-IC204(4,5-8)-L201,L205-CN200(1-2)-Speaker
HANDSET Tx	MIC-CN200(5-6)-L202&L209-C247&C252-L207&L203-IC202(2-3,1)-L206-R214-C202 -IC203(15,32)-IC300(AC20,AD18)-IC200(29,12)-R231-C223-C232-R237-IC202(6-5,7)-C219-R256-R241 -T100-R117&R123-L106-L100-CN100(3,4)-TEL LINE
HANDSET Rx	TEL LINE-CN100(3,4)-L100-L106-R117&R123-T100-C256-R224-IC201(2,1)-C282-Q210-R247-C207 -IC200(15,32)-IC300(AC18,AD20)-IC203(29,12)-C224-R212-R271-C283-IC201(6,7)-C150-R150 -R152-C153-Q152-C151-L157-CN200(8)-HS Speaker
DTMF Monitor – Speaker	IC300(AD20)-IC203(29,12)-C224-R212-R271-C283-IC201(6,7)-R229-C217-L210-IC204(4,5-8)- L201,L205-CN200(1,2)-Speaker
DTMF Monitor – Handset	IC300(AD20)-IC203(29,12)-C224-R212-R271-C283-IC201(6,7)-C150-R150-R152-C153-Q152- C151-L157-CN200(8)-HS Speaker
DTMF for TEL Line FAX Tx	IC300(AD18)-IC200(29,12)-R231-C223-C232-R237-IC202(6-5,7)-C219-R256-R241-T100-R117&R123 -L106-L100-CN100(3,4)-TEL LINE
Ringing/Alarm/ Beep/Key tones	IC300(A19)-C279-R289-IC201(6,7)-R229-C217-L210-IC204(4,5-8)-L201,L205-CN200(1-2)-Speaker
CNG/DTMF detection (ON-HOOK) Caller ID detection	TEL LINE-CN100(3,4)-POS100-L100&L101-L106-R117&R123-T100-C256-R224 -IC201(2,1)-C282-R288-C281-R290-Q209-C278-Q211-R247-C207-IC200(15,32) -IC300(AC18,AD20)
BELL detection	TEL LINE-CN100(3,4)-L100-L106-R109-D106-D105-PC103(1-2,4)-IC300(W25)
FAX Rx	TEL LINE-CN100(3,4)-L100-L106-R117&R123-T100-C256-R224-IC201(2,1)-C282-Q210-R247-C207 -IC200(15,32)-IC300(AC18)

12.3.12.2. DEFECTIVE ITS (Integrated Telephone System) Section

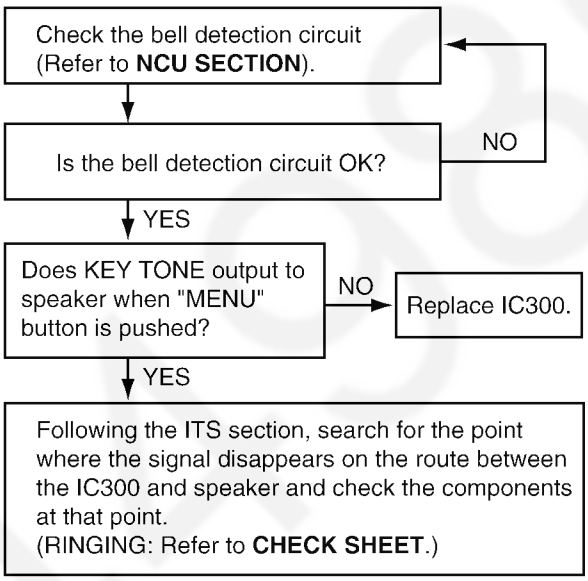
1. No handset and speakerphone transmission / reception

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**(P.138) is useful for this investigation.

2. No pulse dialing



3. No ring tone (or No bell)

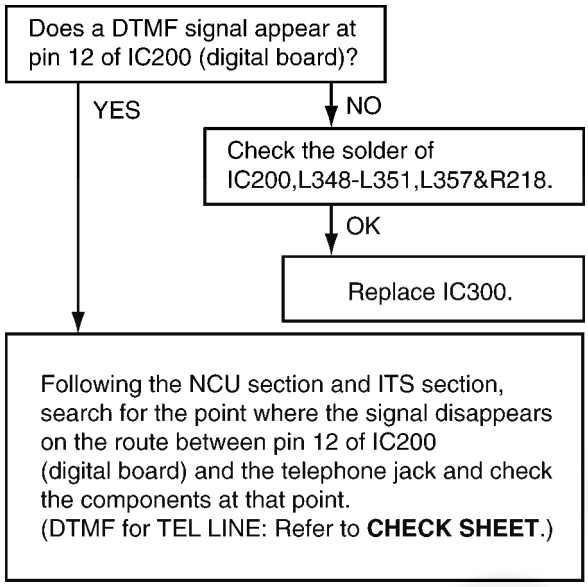


CROSS REFERENCE:

Check Sheet (P.138)

NCU Section (P.29)

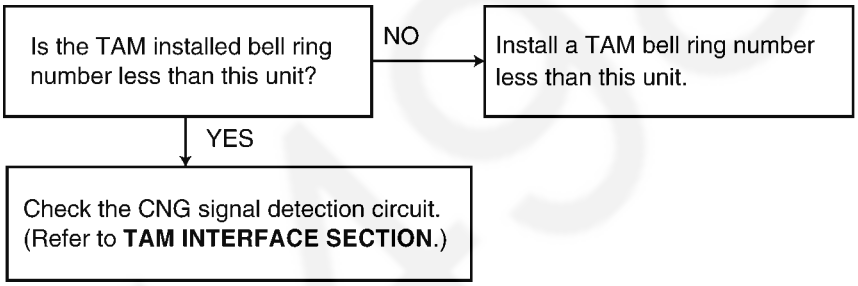
4. No tone dialing



CROSS REFERENCE:
Check Sheet (P.138)

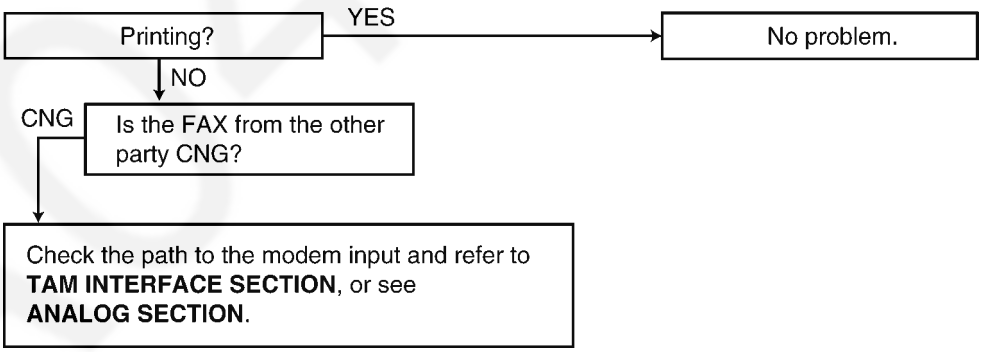
12.3.12.3. Detective TAM Interface Section

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



CROSS REFERENCE:
TAM Interface Circuit (P.30)

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

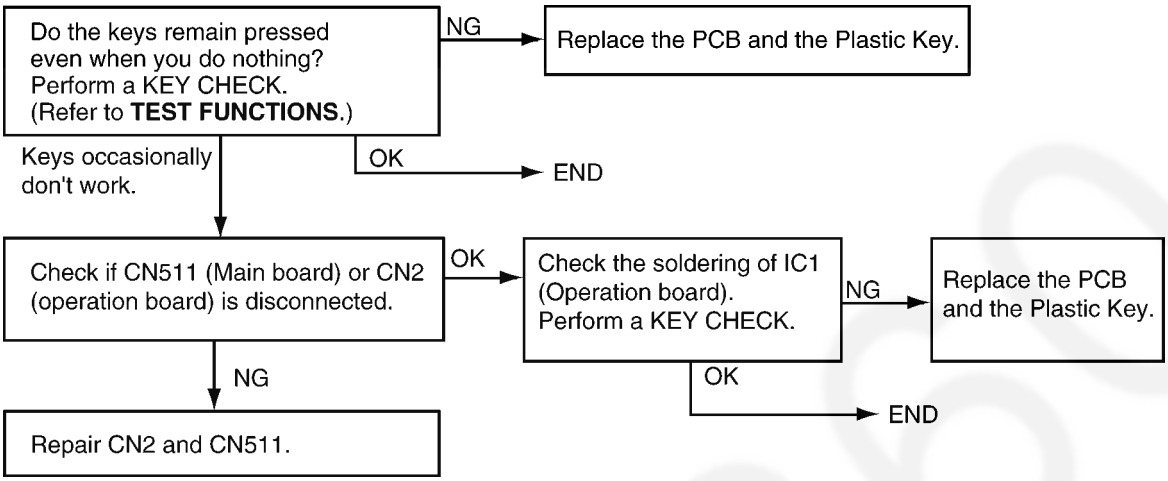


CROSS REFERENCE:
Analog Section (P.138)
TAM Interface Circuit (P.30)

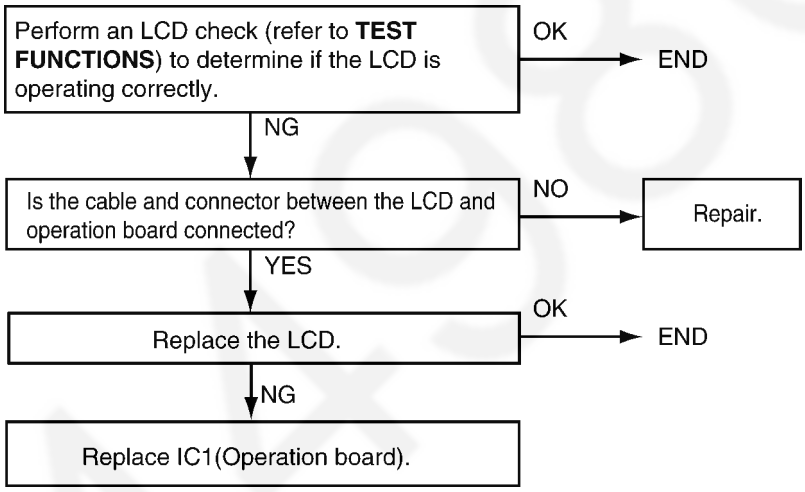
12.3.13. Operation Panel Section

Refer to **Test Functions** (P.70).

1. NO KEY OPERATION



2. NO LCD INDICATION



CROSS REFERENCE:

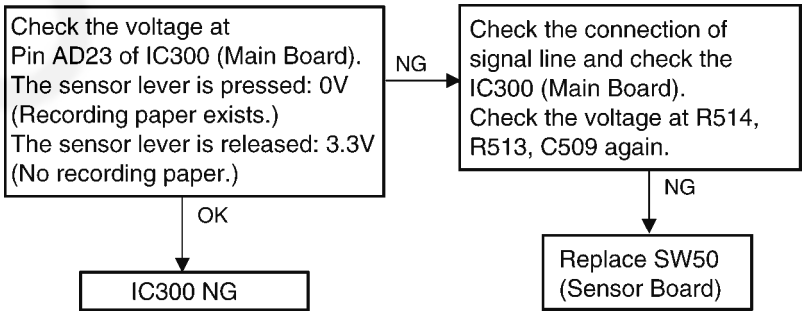
Test Functions (P.70)

12.3.14. Sensor Section

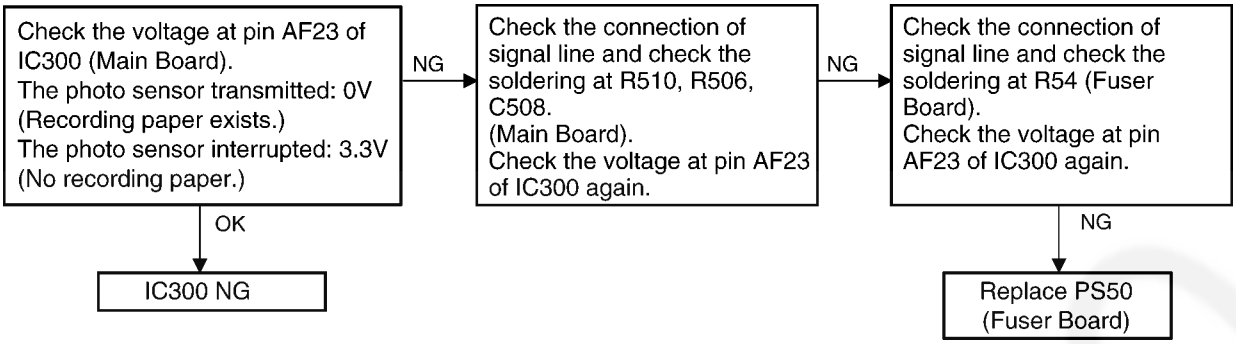
Refer to SENSORS AND SWITCHES for the circuit description.

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

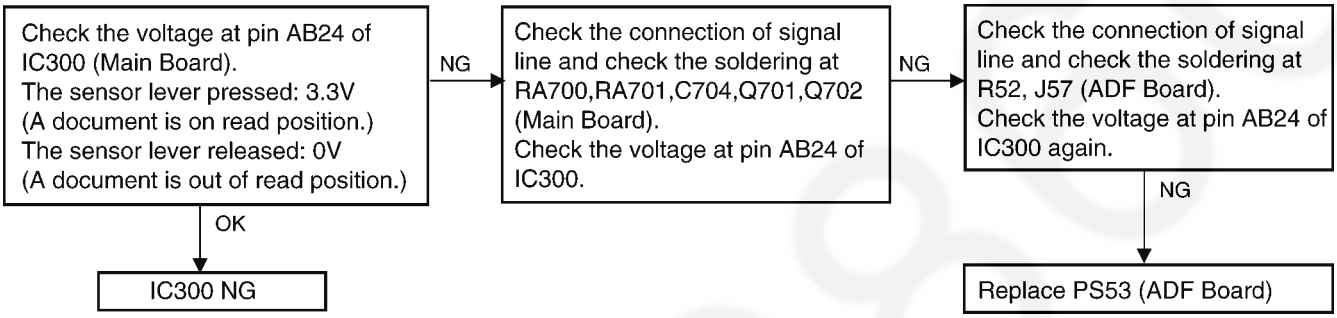
1. Check the pickup sensor ..... "FAILED PICKUP"



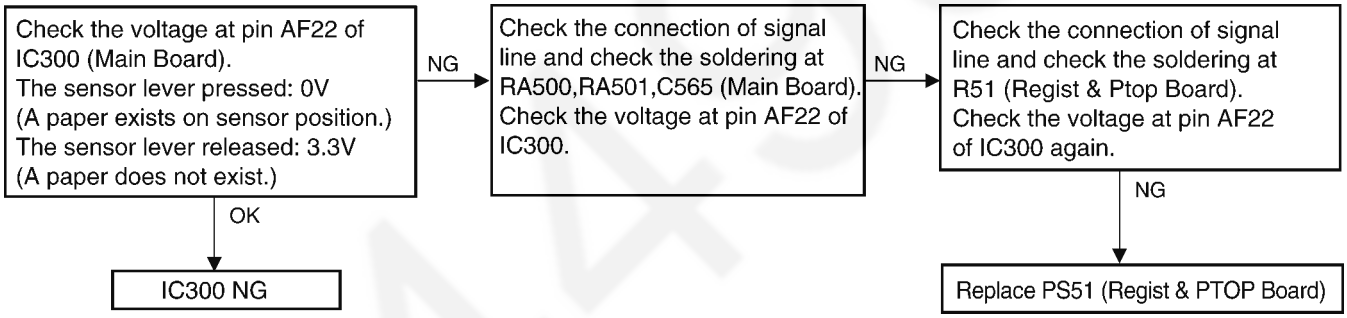
2. Check the paper exit sensor..... "PAPER JAMMED"



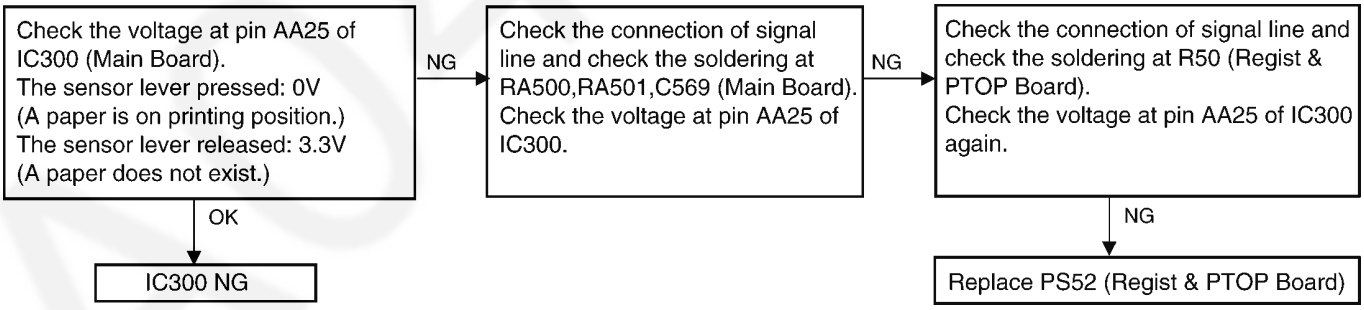
3. Check the read position sensor ..... "CHECK DOCUMENT"



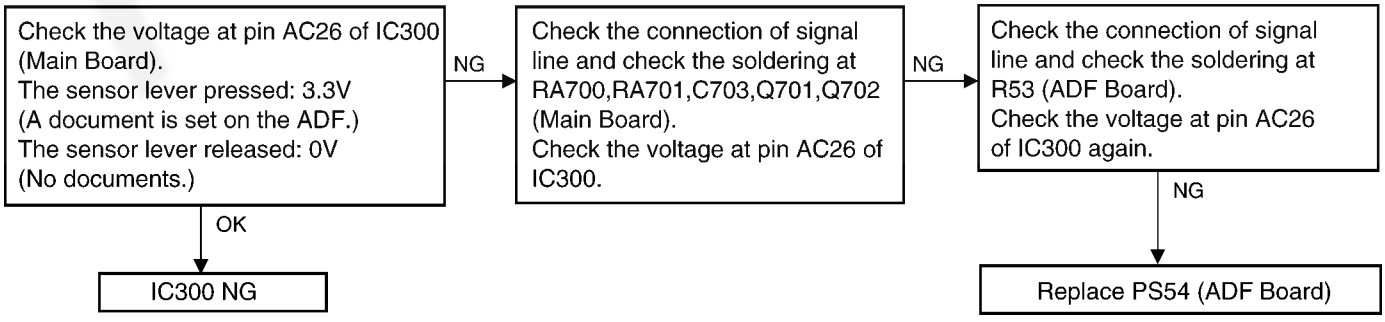
4. Check the registration & manual paper sensor ..... "PAPER JAMMED"



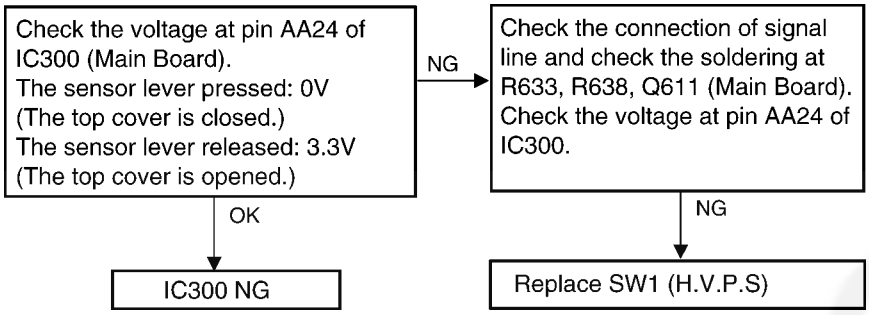
5. Check the print timing sensor ..... "PAPER JAMMED"



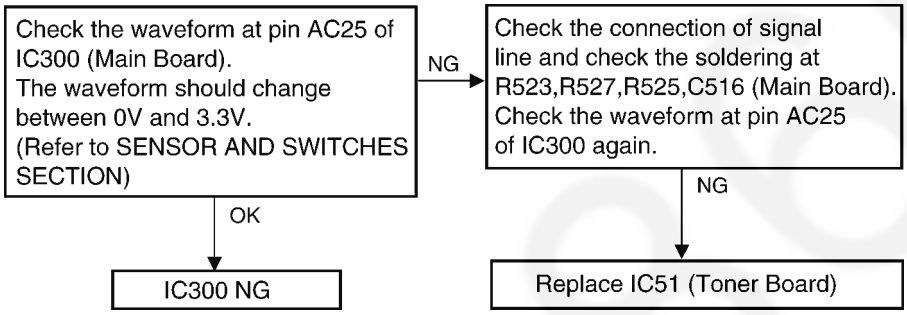
6. Check the document sensor



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



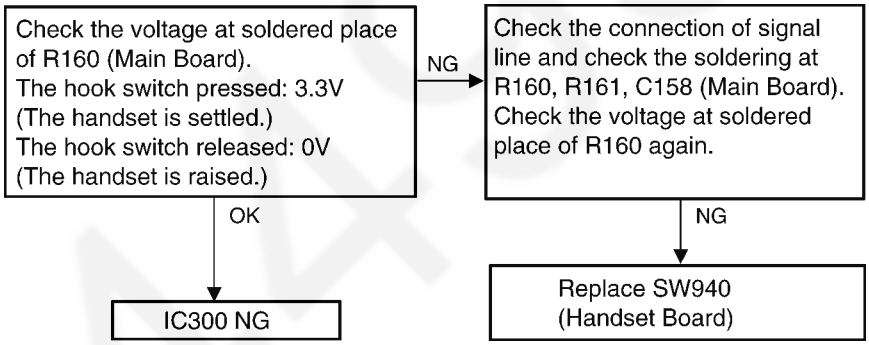
8. Check the toner sensor ..... "TONER LOW", "CHANGE DRUM"



CROSS REFERENCE:

Sensors and Switches Section (P.46)

10. Check the handset hook switch

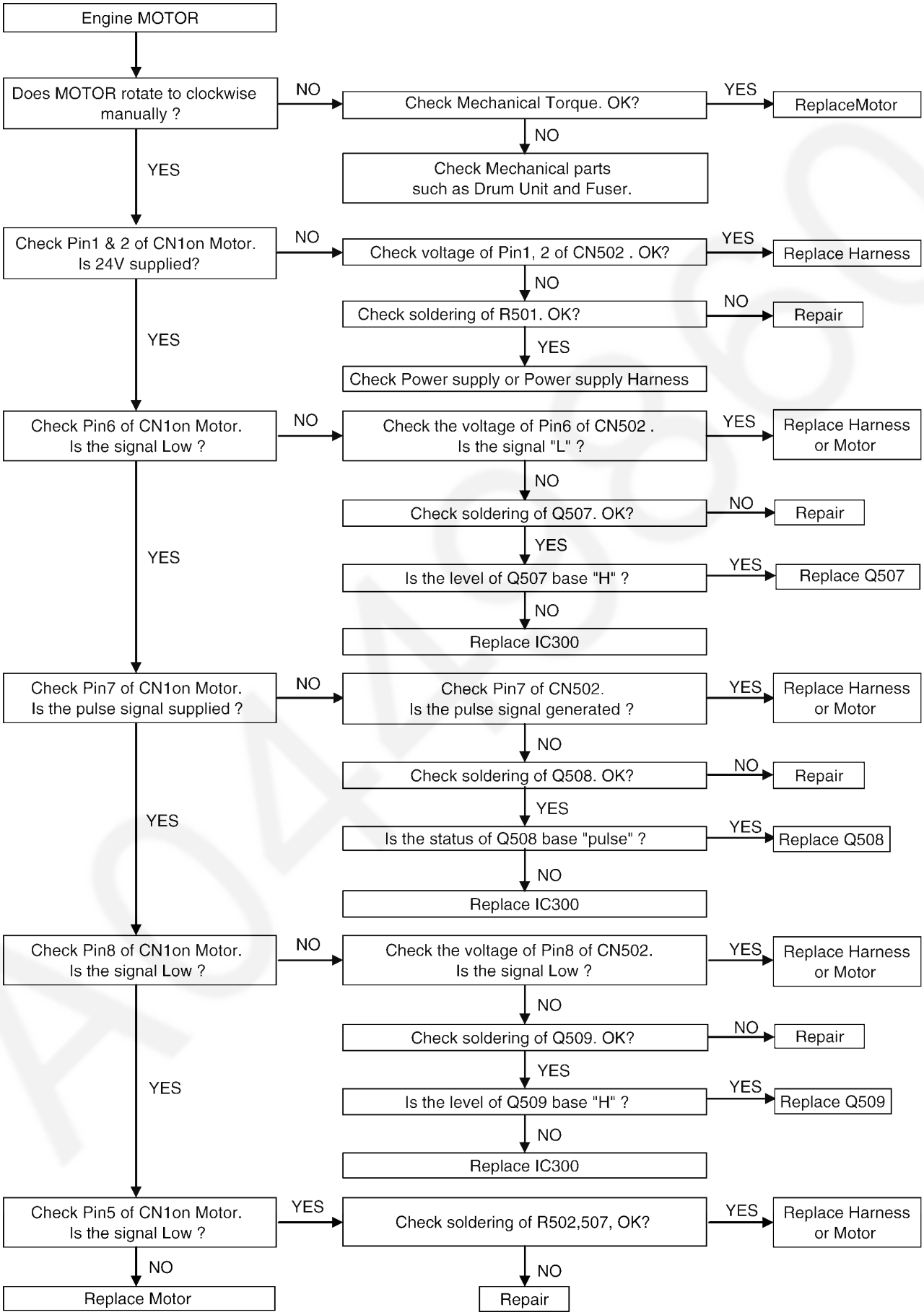


CROSS REFERENCE:

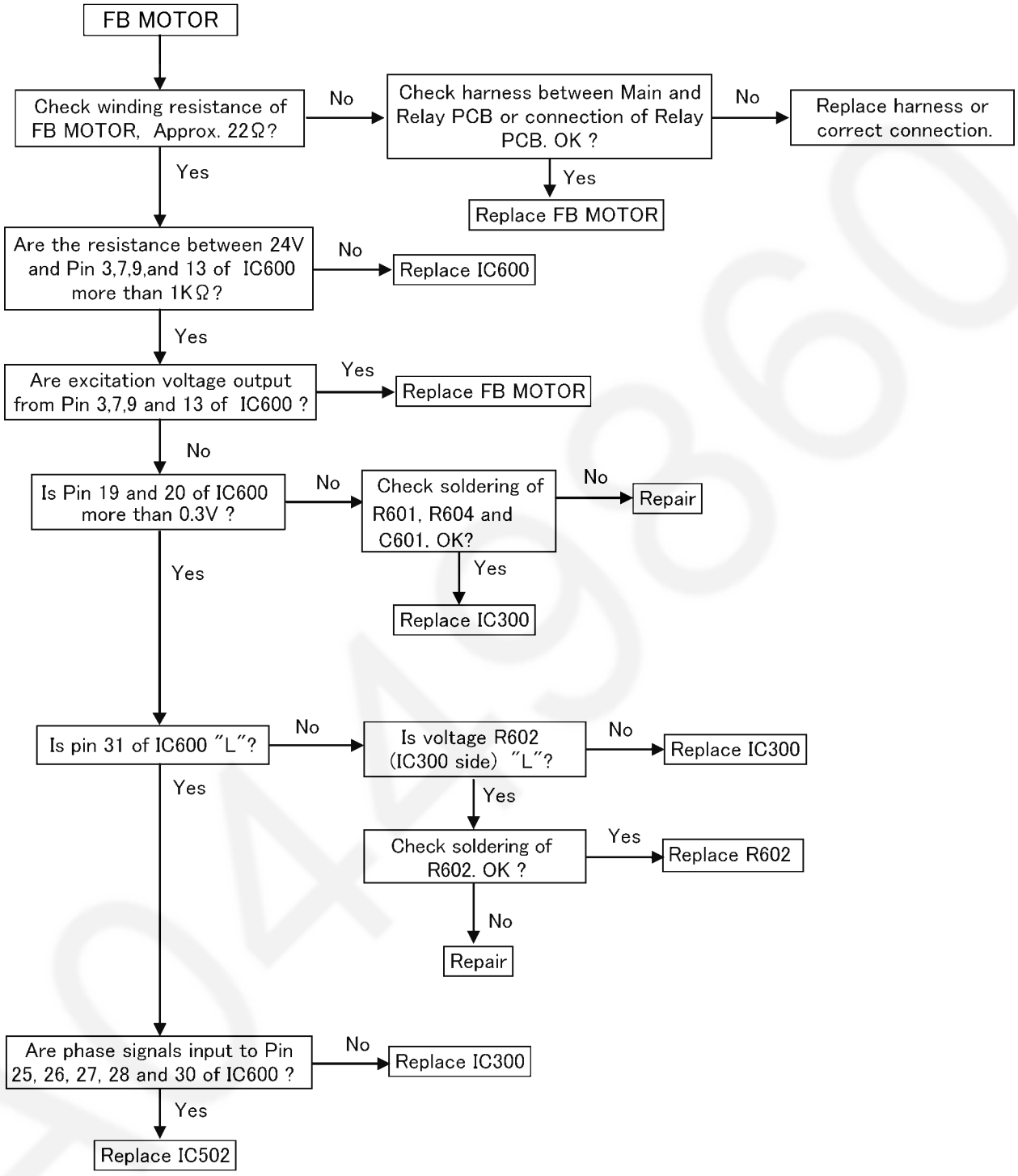
Sensors and Switches Section (P.46)

12.3.15. Motor Section

12.3.15.1. Engine Motor



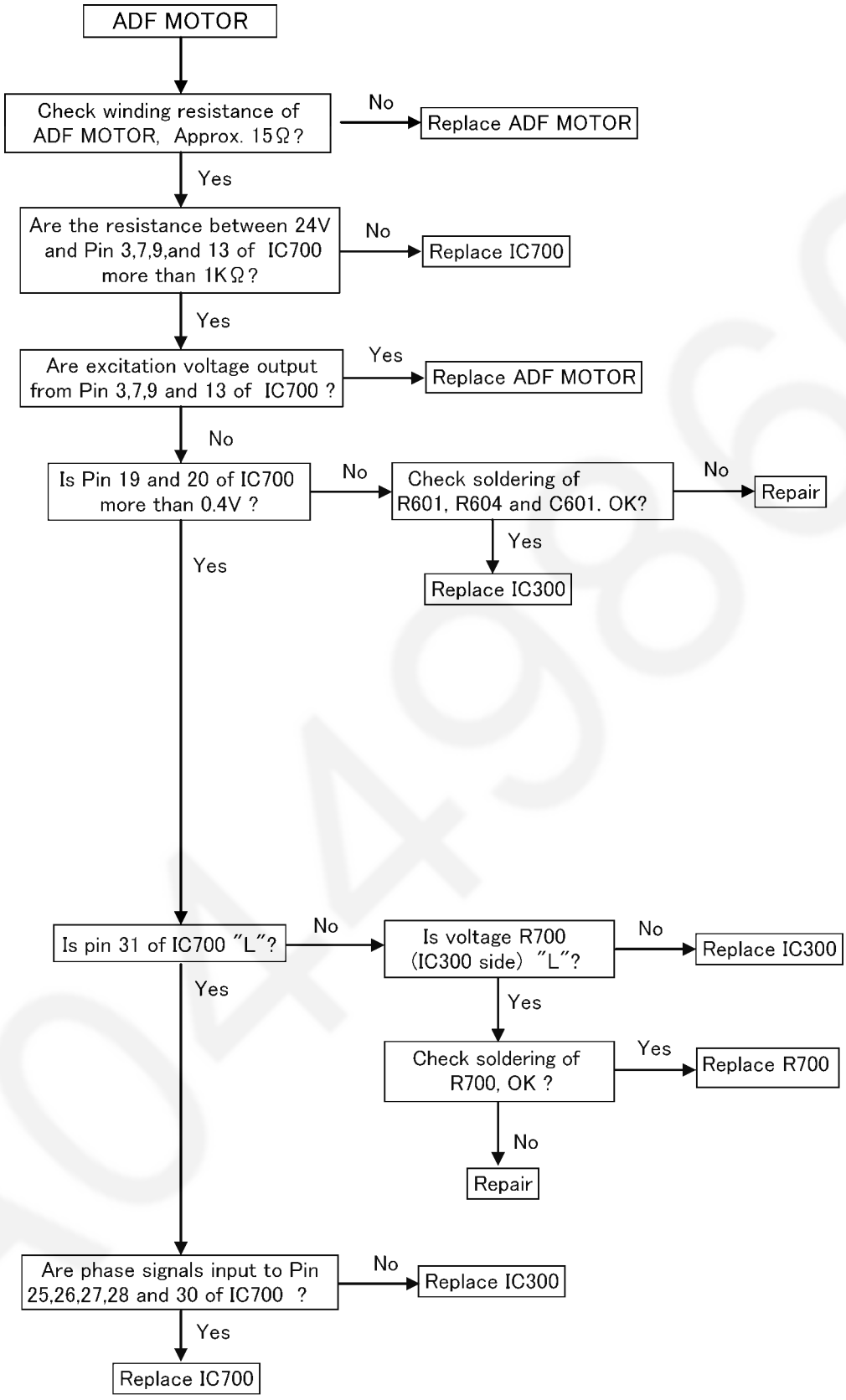
12.3.15.2. FB (Flatbed) Motor



CAUTION:

If F602 (IC Protecter) open, exchange F602 after all repair finish.

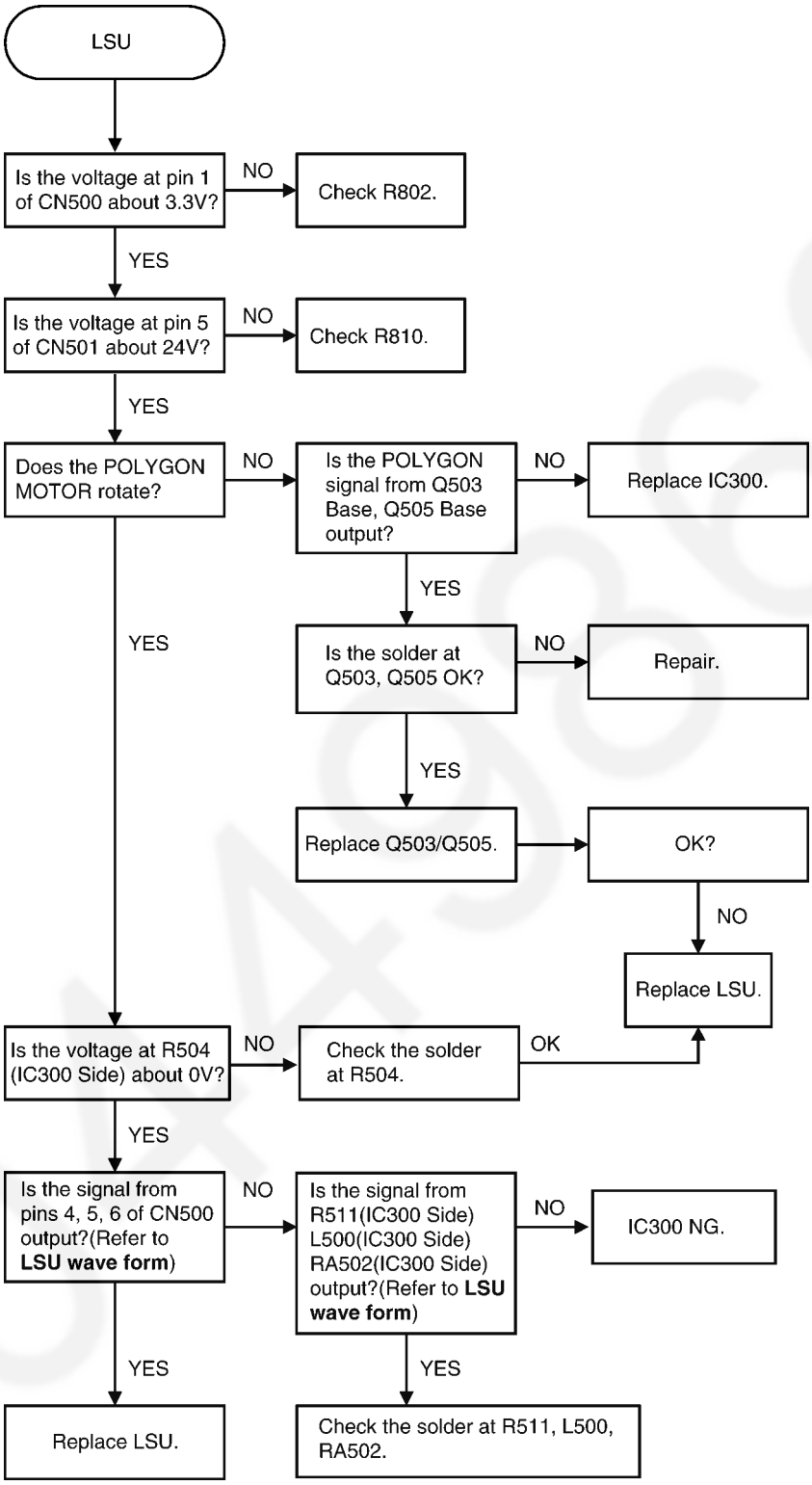
12.3.15.3. ADF Motor



CAUTION:

If F602 (IC Protecter) open, exchange F602 after all repair finish.

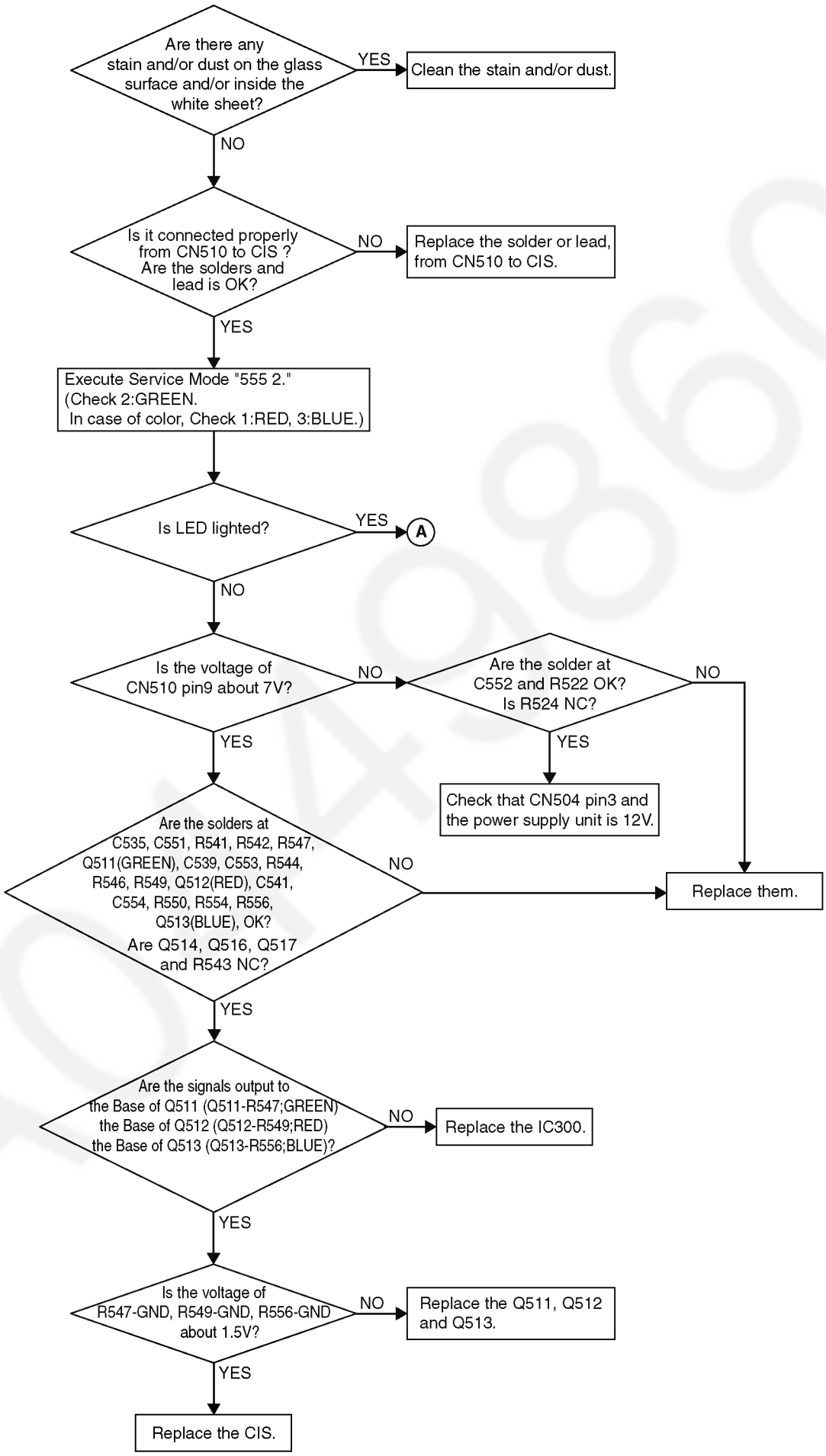
12.3.16. LSU Section

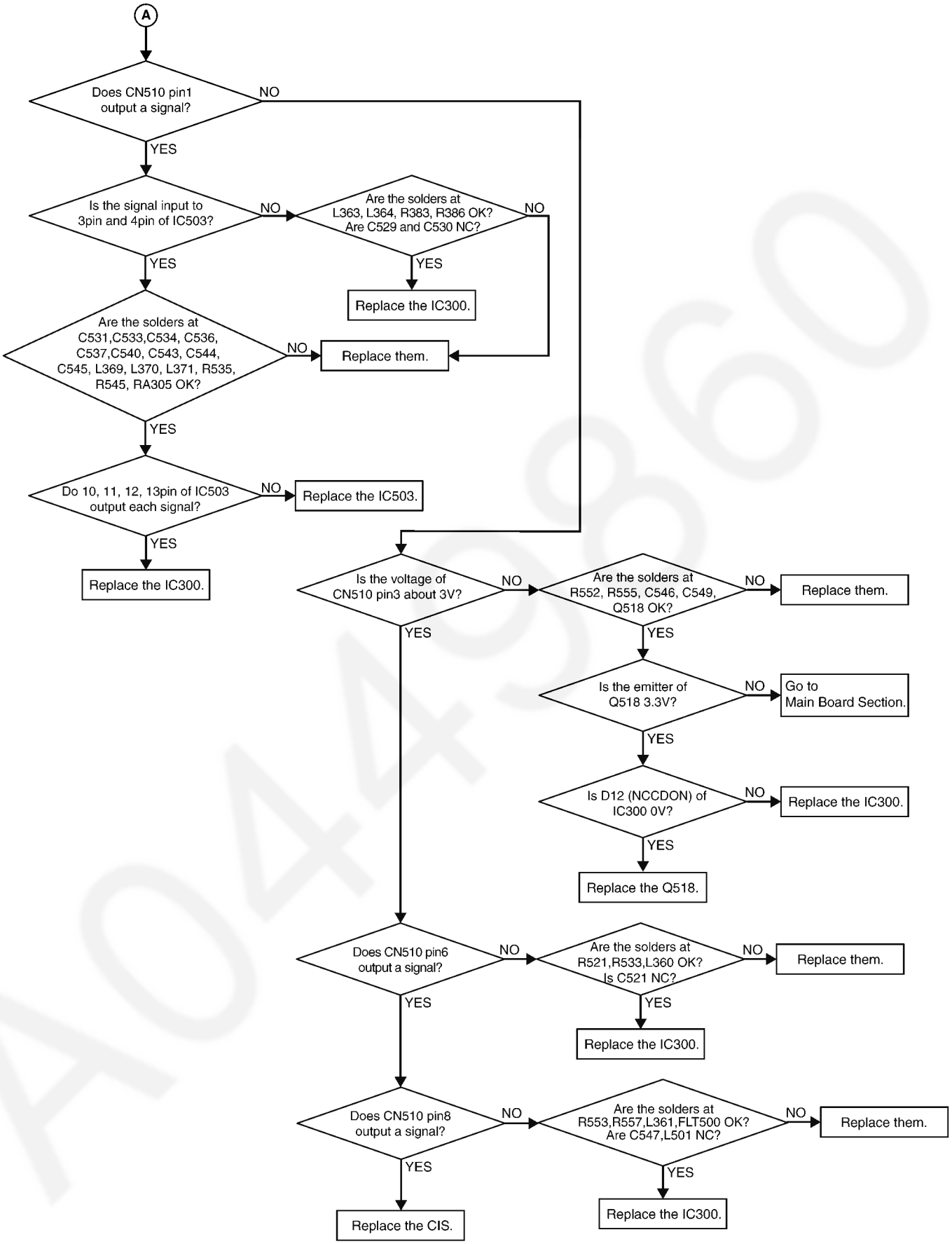


CROSS REFERENCE:

LSU (Laser Scanning Unit) Section (P.44)

12.3.17. CIS Control Section





CROSS REFERENCE:

Test Functions (P.70)

12.3.18. 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±15μAOutput 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.

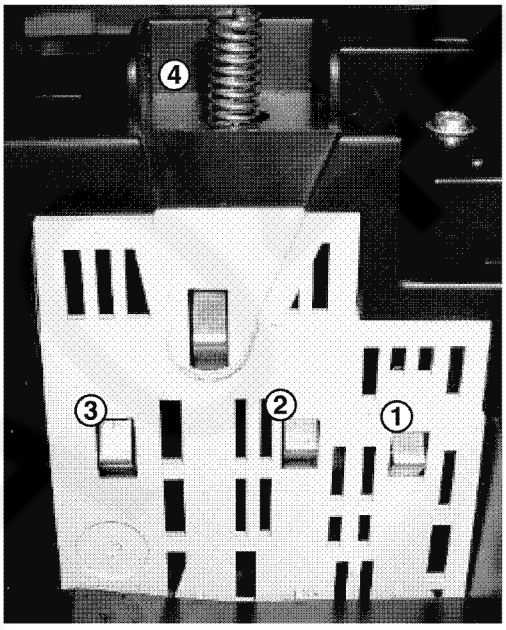


Fig. 2

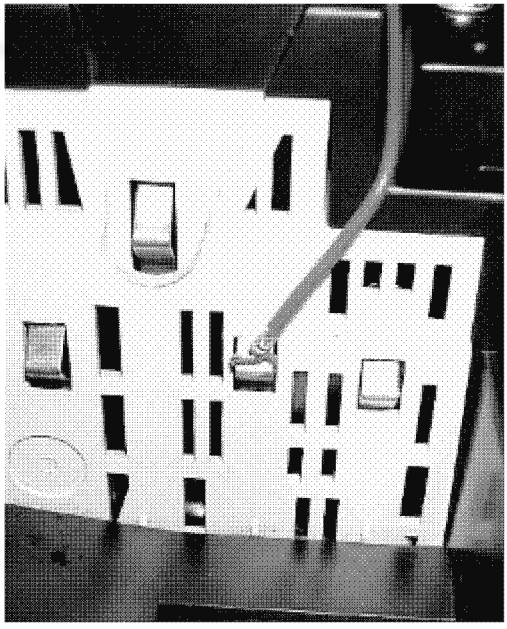


Fig. 3

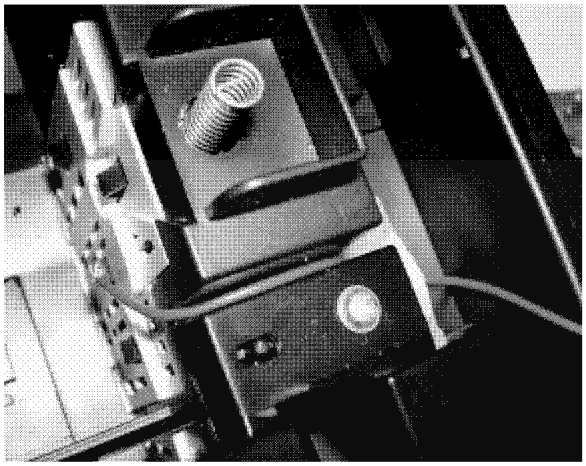


Fig. 4

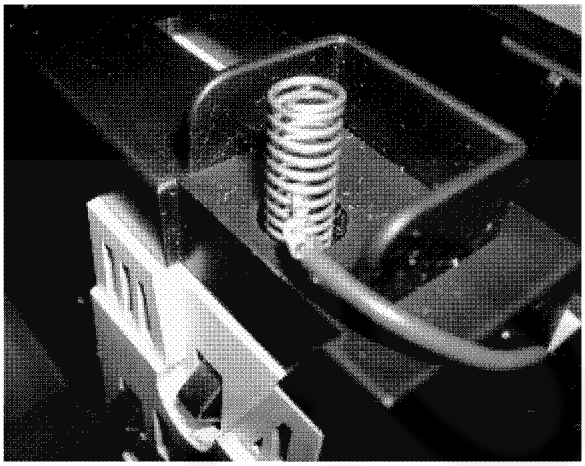


Fig. 5

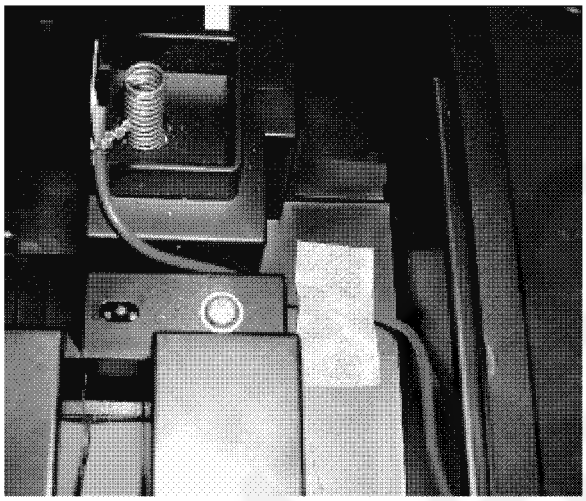


Fig. 6

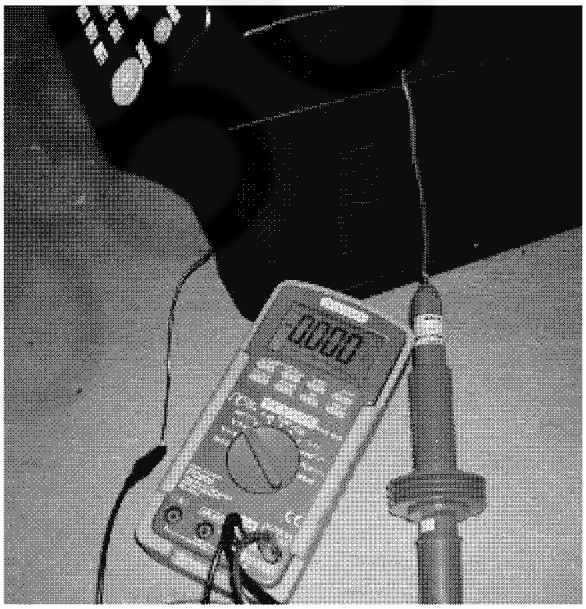
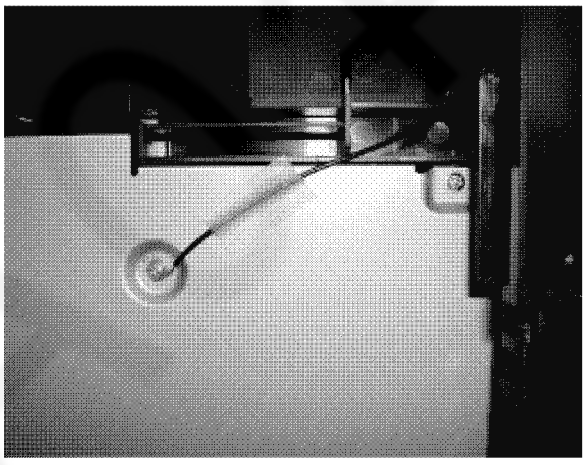
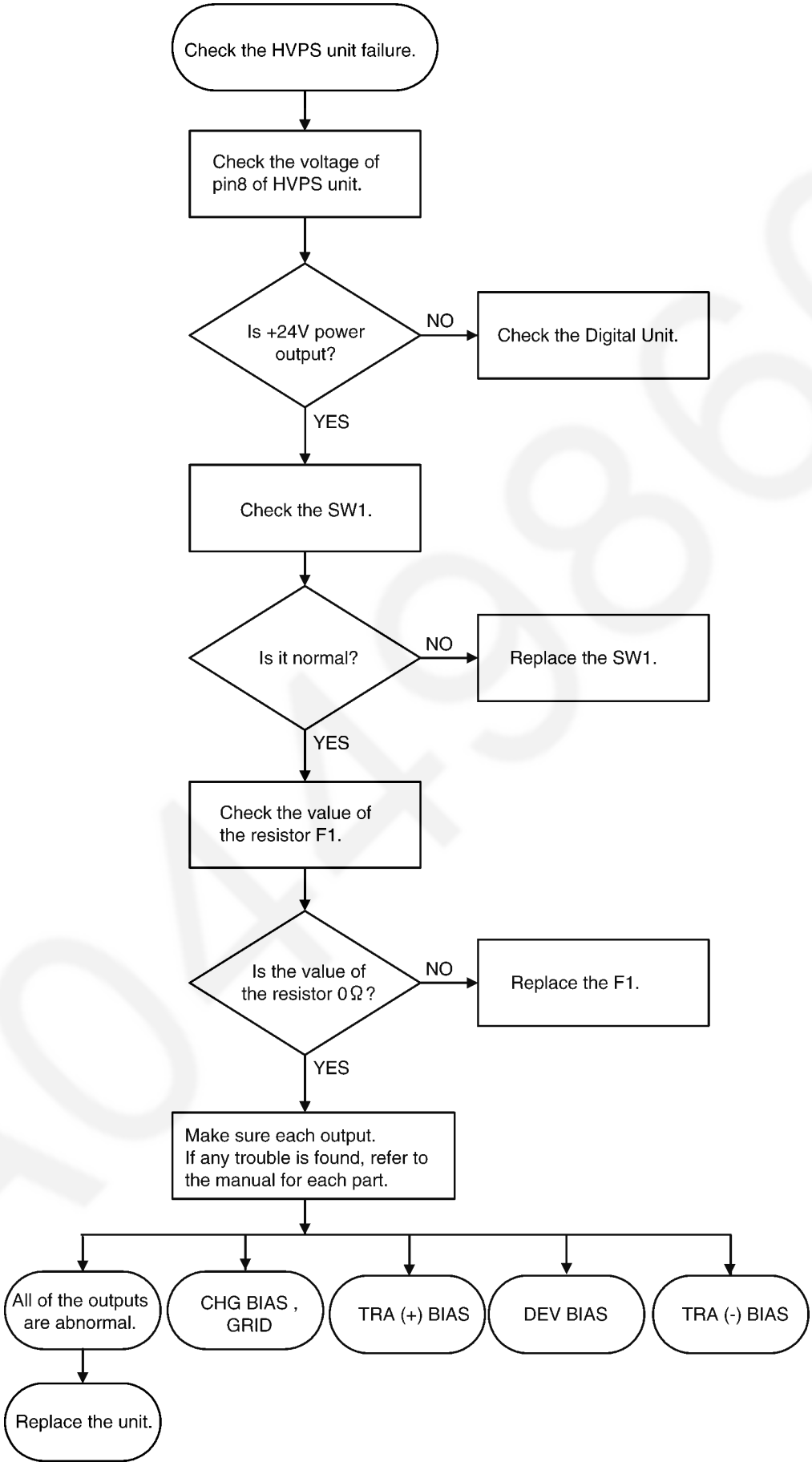


Fig. 7

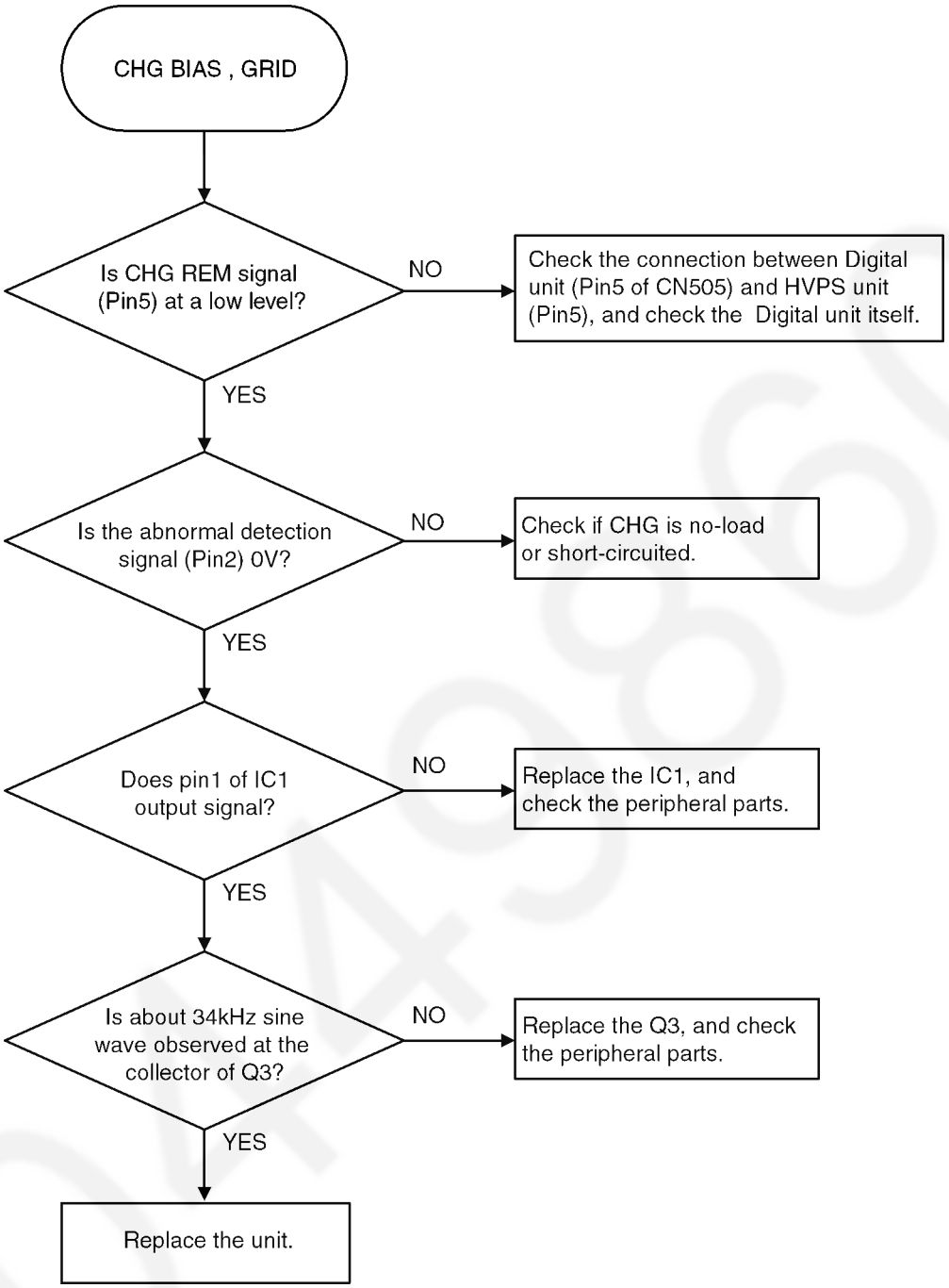


12.3.19. High Voltage Section

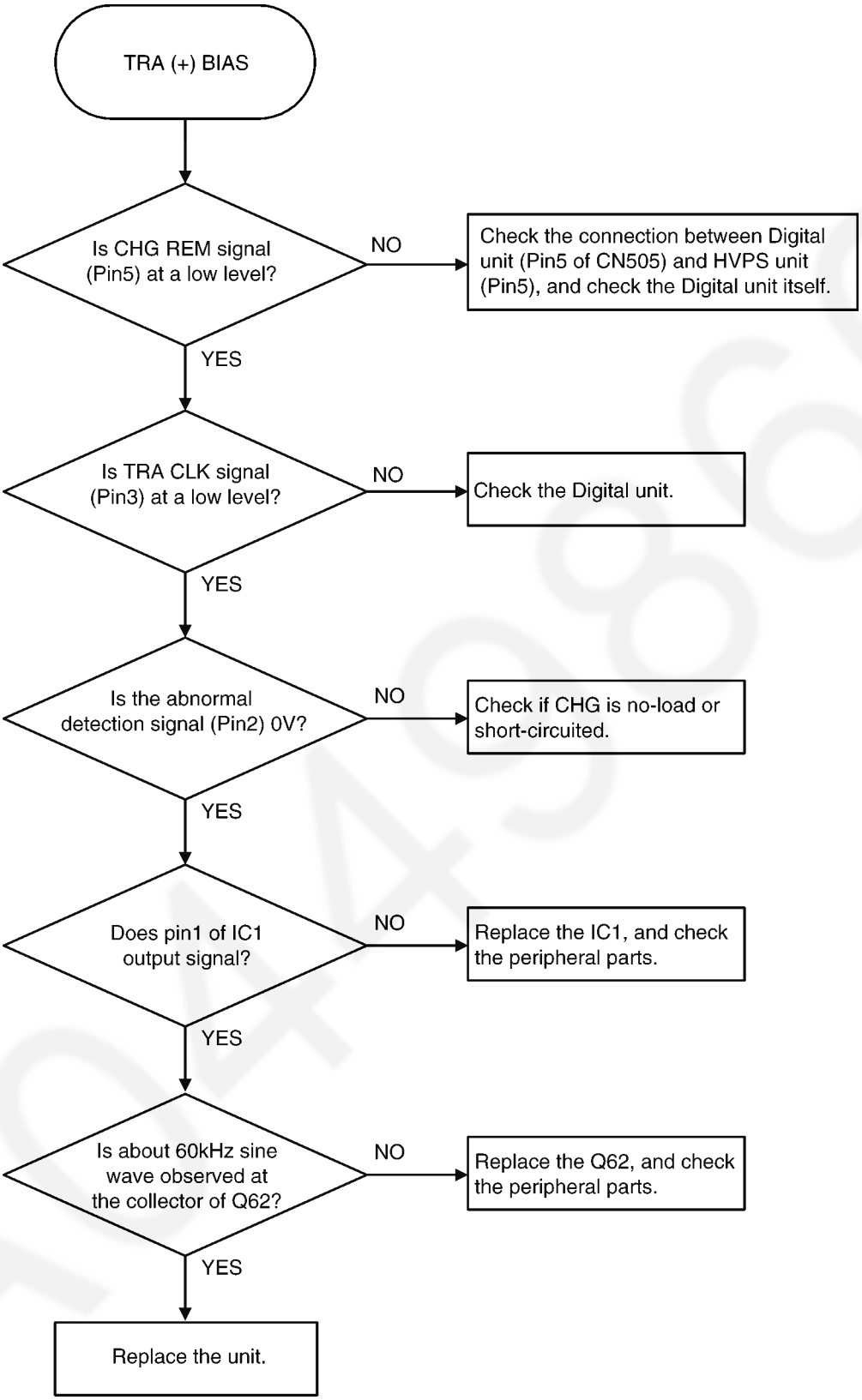
1. Main



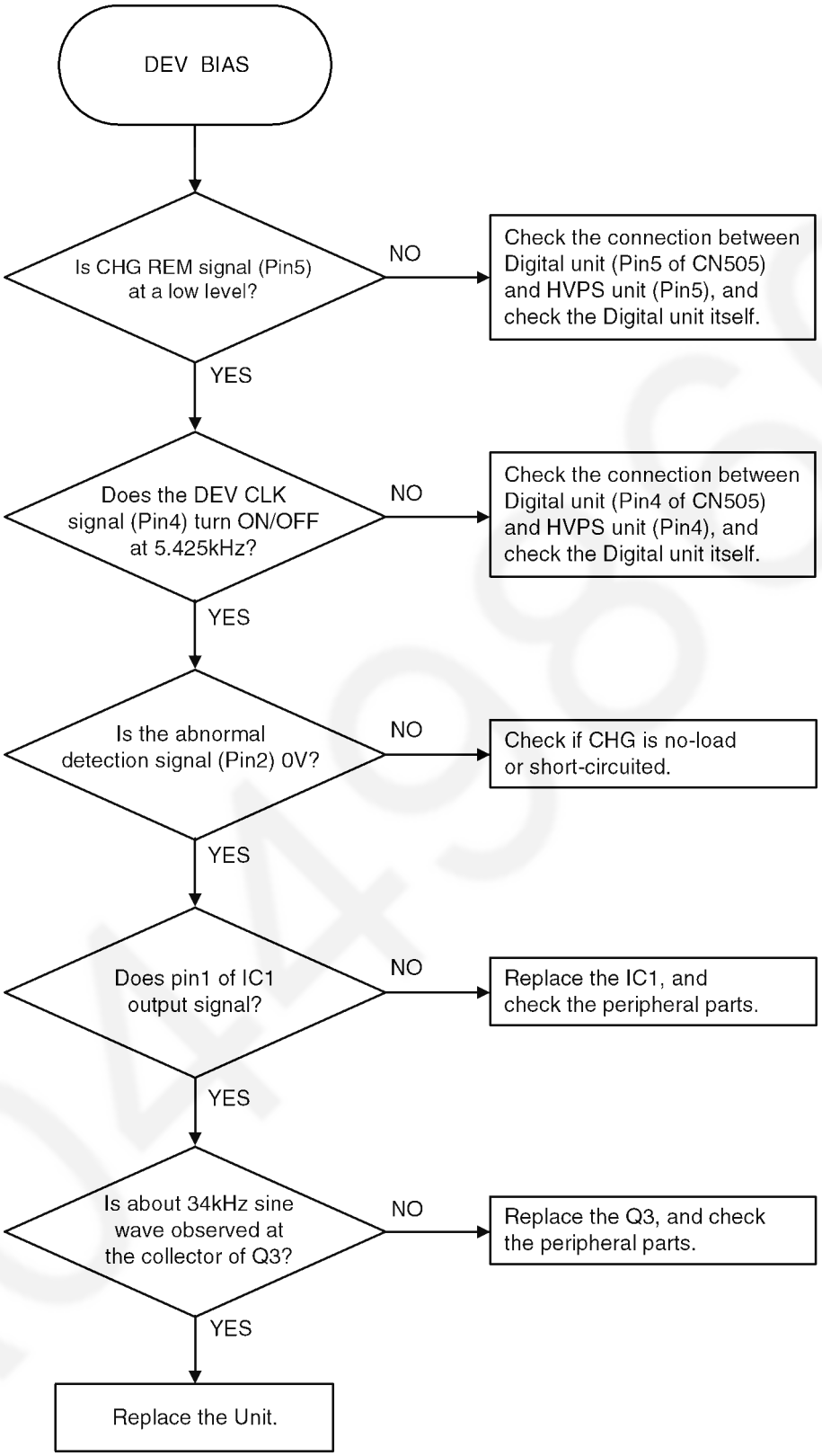
2. CHG, GRID


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.

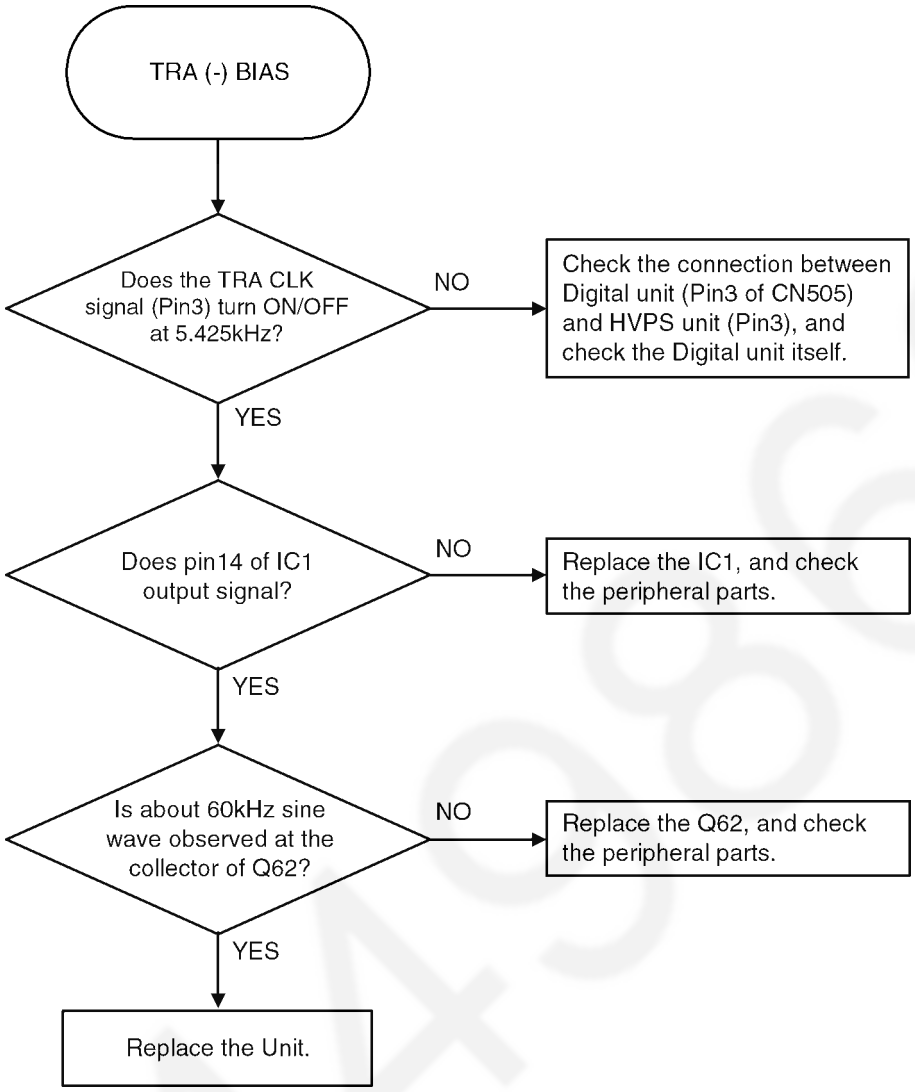
3. TRA (+)


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.

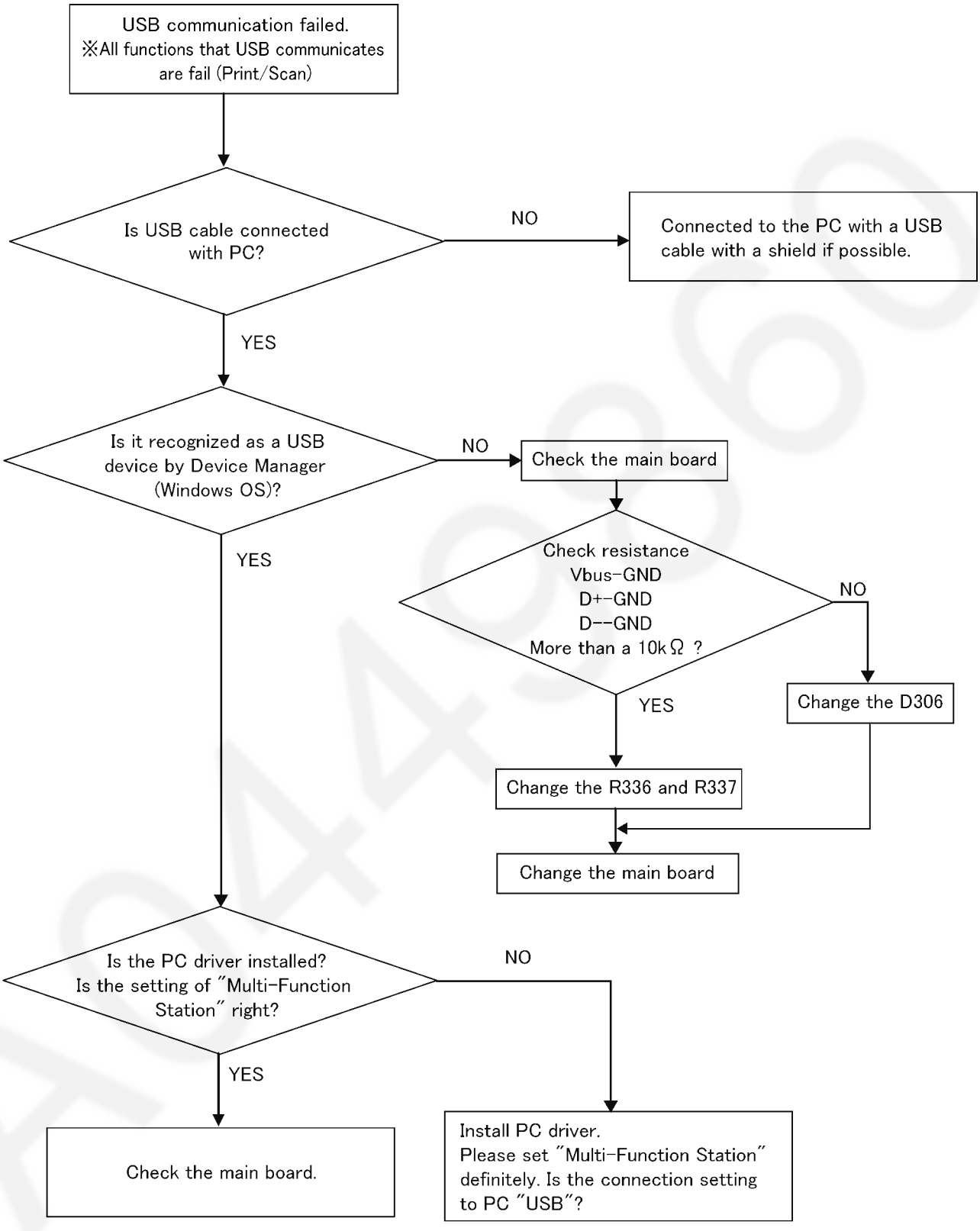
TRA (-)


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.

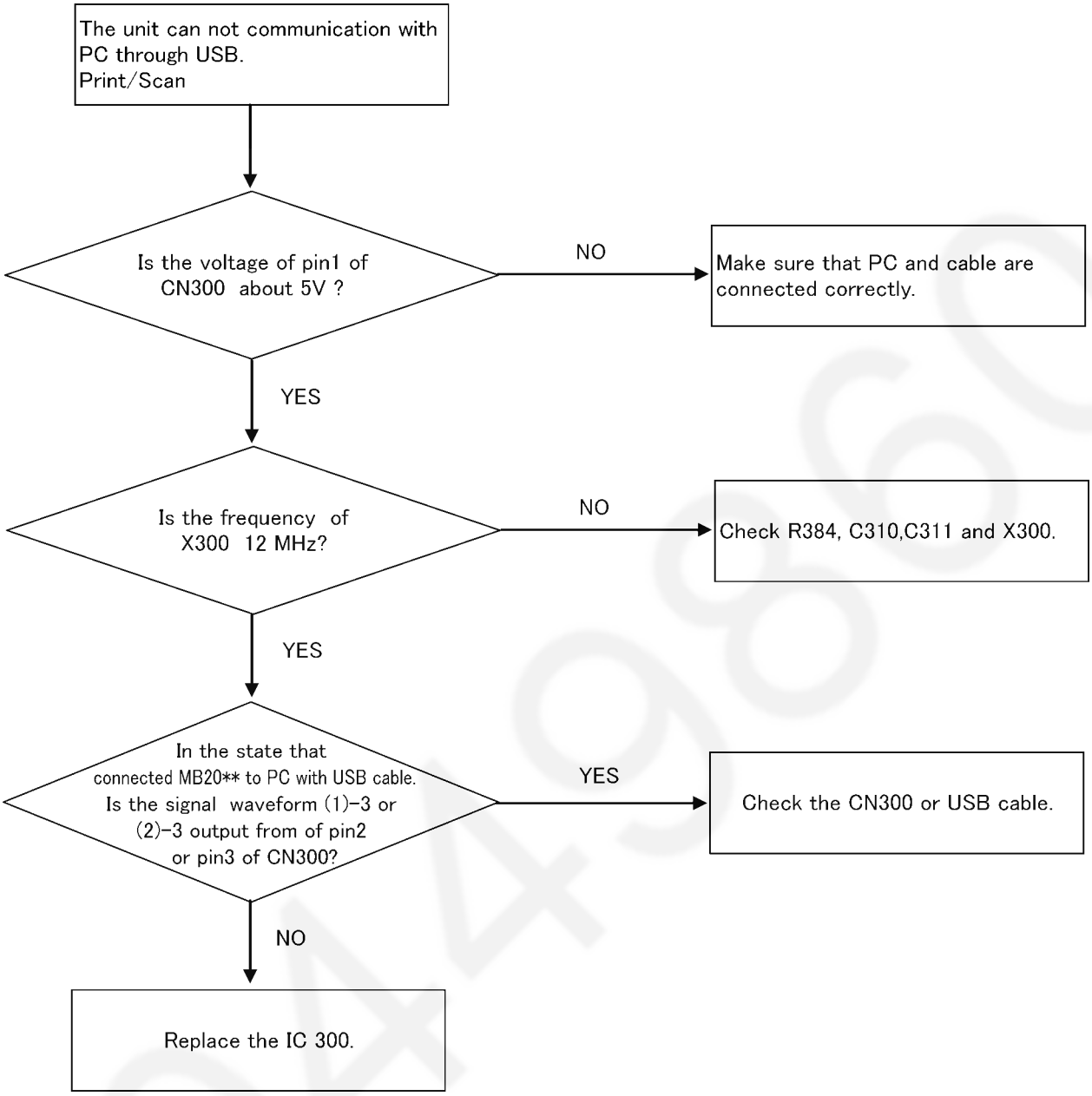
12.3.20. USB Section

Troubleshooting

1. Confirmation of the PC settings



2. Confirmation of the main unit



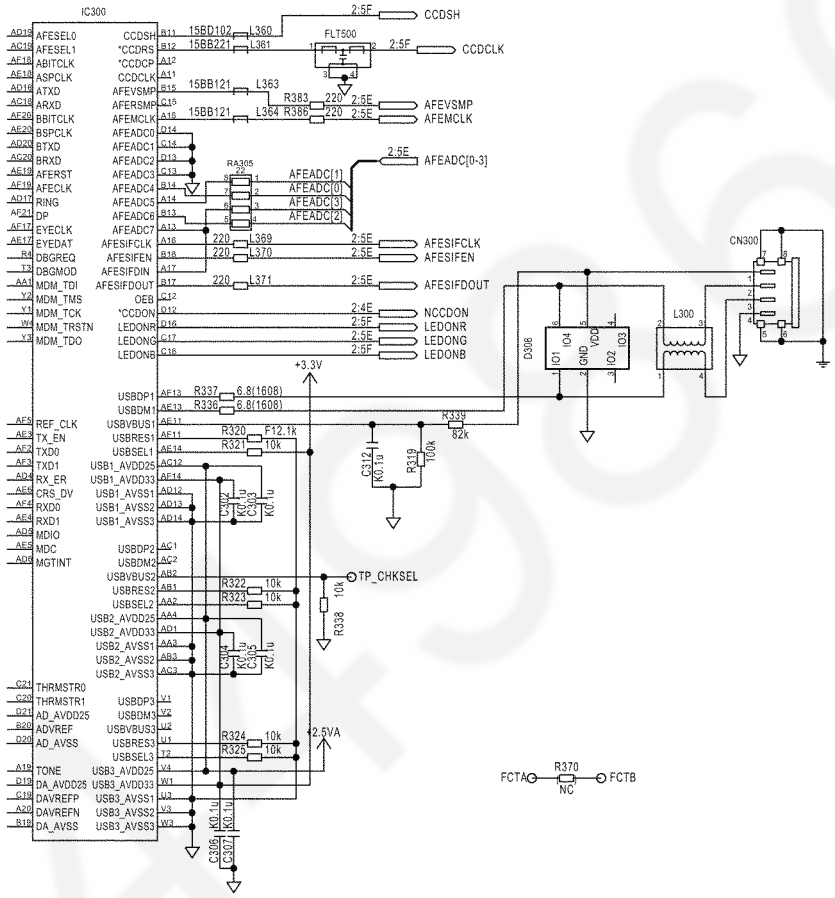
USB (Universal Serial Bus) block

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



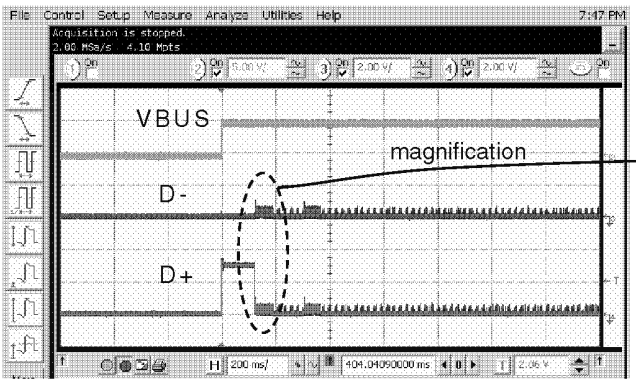
Sequence of normal operation

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.

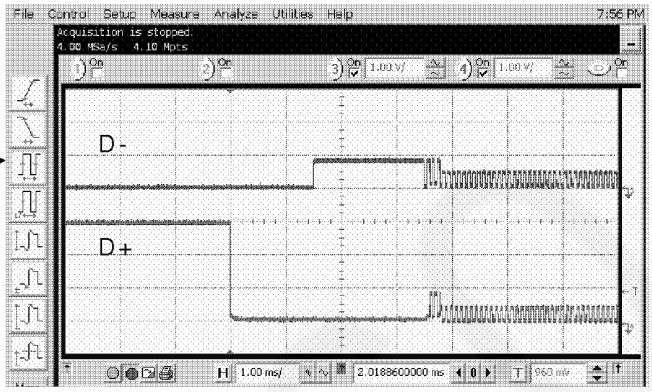
Waveform of normal operation

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

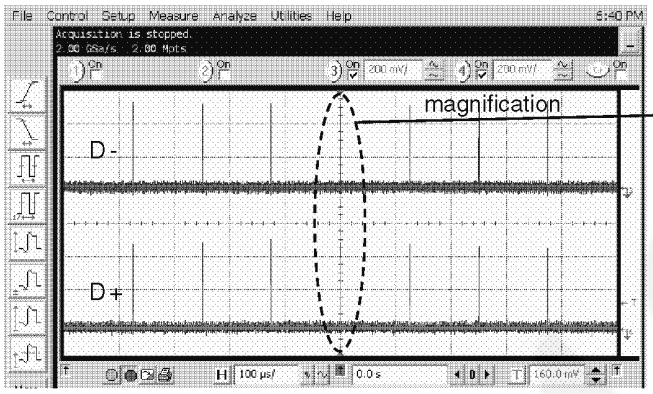
Waveform (1)-1 at Hi-Speed



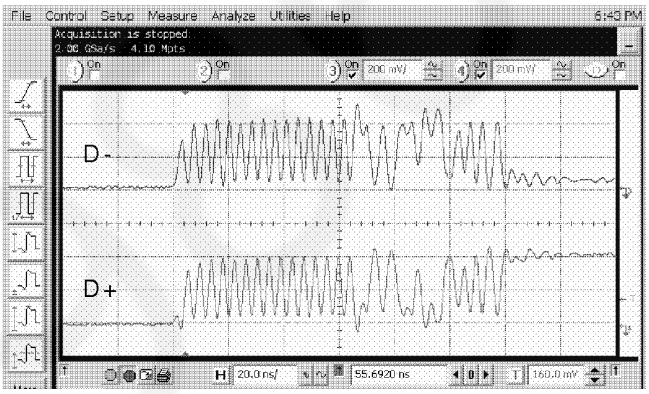
Waveform (1)-2 at Hi-Speed



Waveform (1)- 3 at Hi-Speed

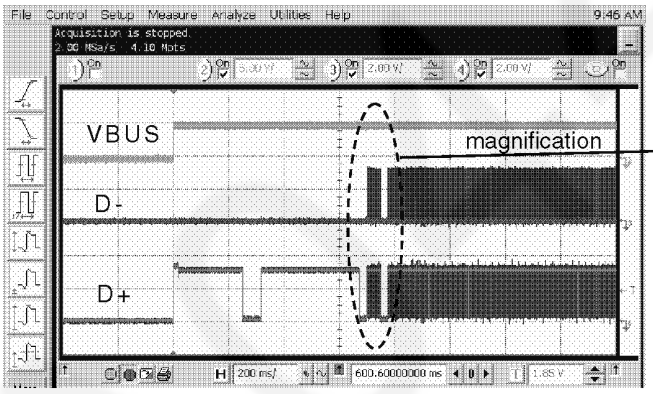


Waveform (1)-4 at Hi-Speed

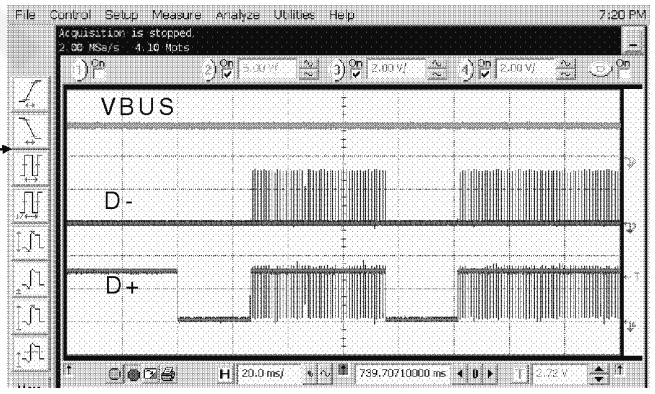


(2) The condition during communication establishment between PC and Main unit at Full Speed.

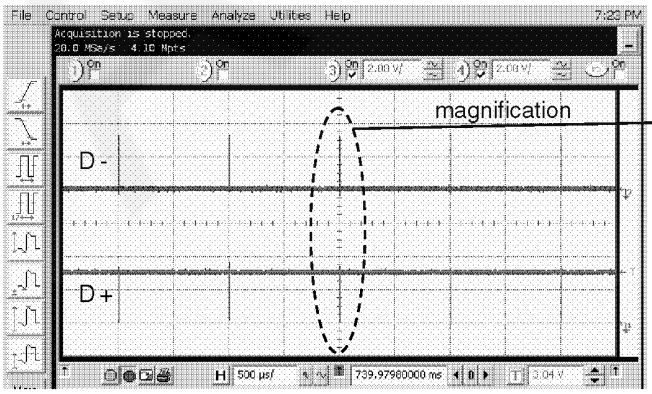
Waveform (2)- 1 at Full Speed



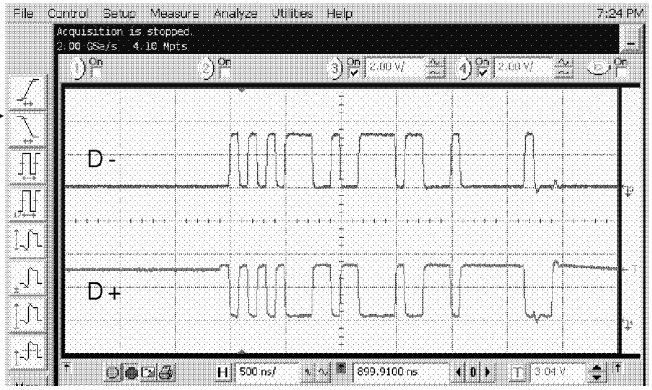
Waveform (2)-2 at Full Speed



Waveform (2)-3 at Full Speed

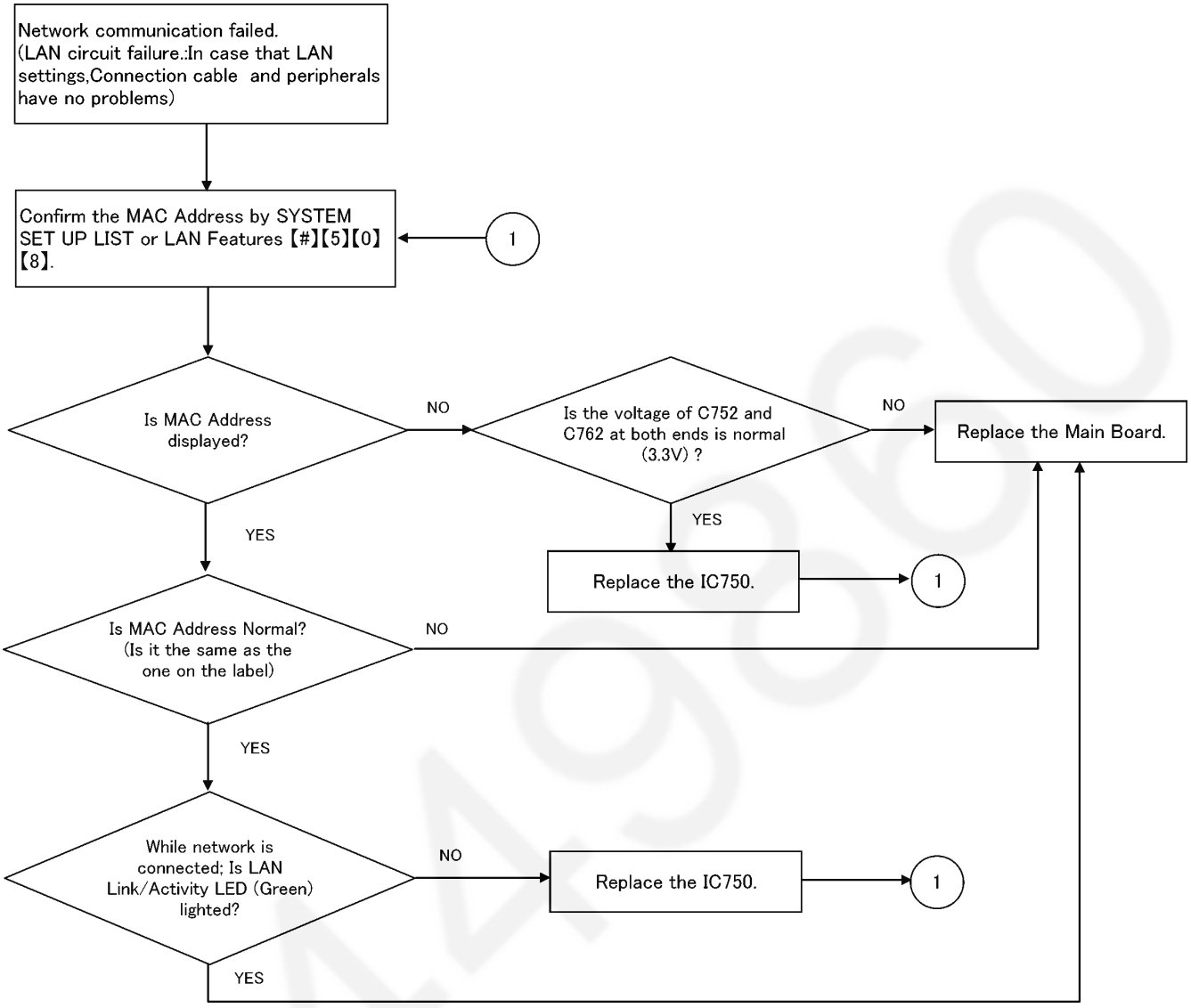


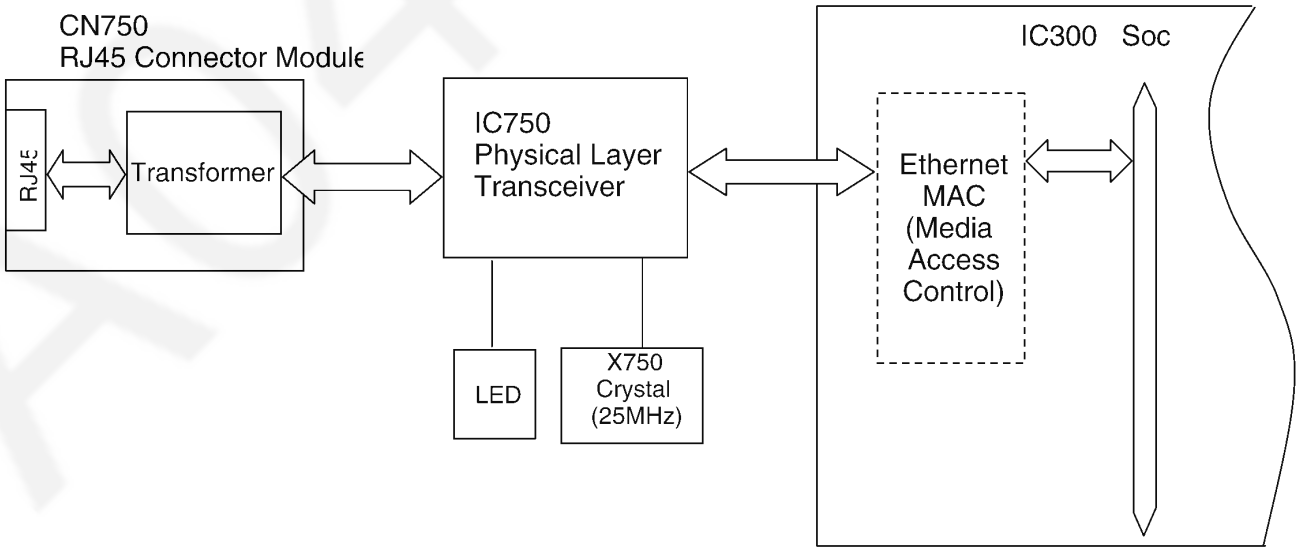
Waveform (2)-4 at Full Speed



12.3.21. LAN SECTION

LAN Block Diagram



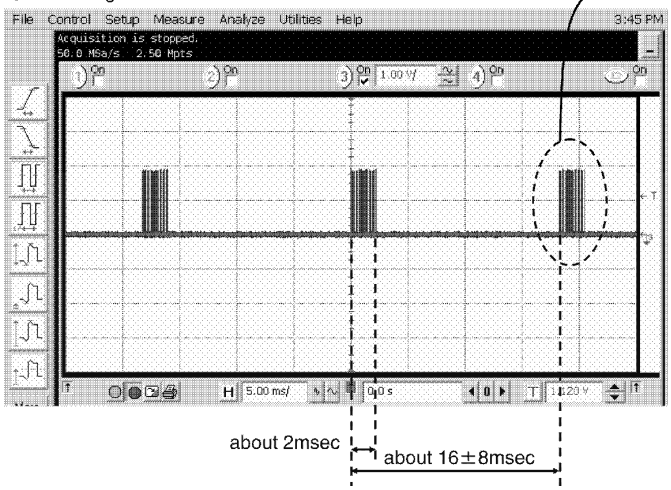


LAN Circuit signal waveform (Normal)

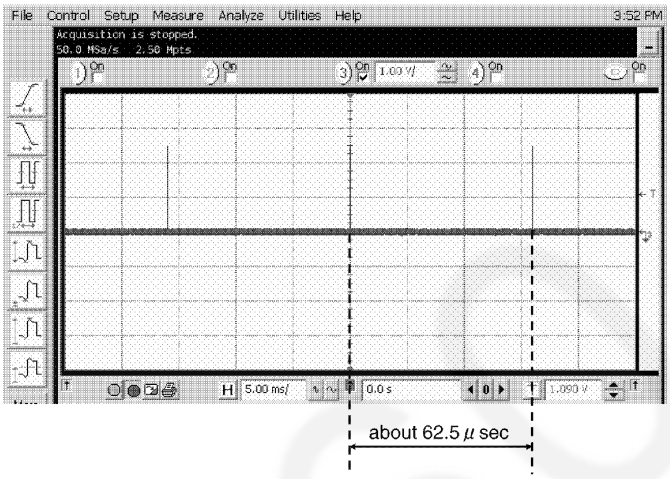
Transmitter waveform [TD+ (CN750 pin1), TD- (CN750 pin2) differential voltage] : Differential probe is used.

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

① Auto negotiation waveform 1

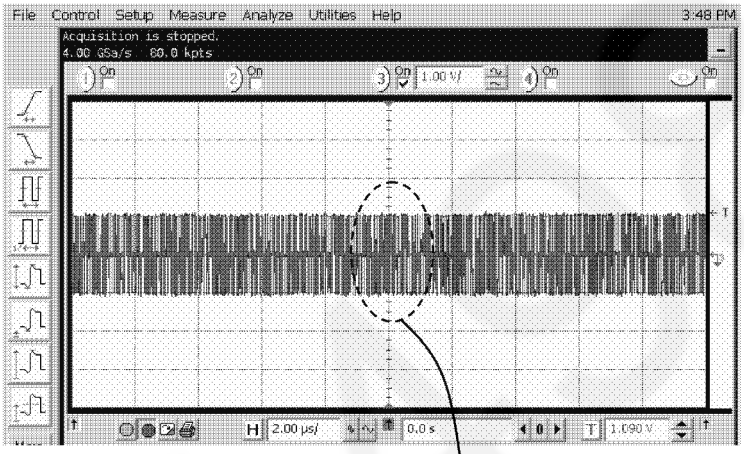


② Auto negotiation waveform 2 （A part of the waveform1 is magnified.)

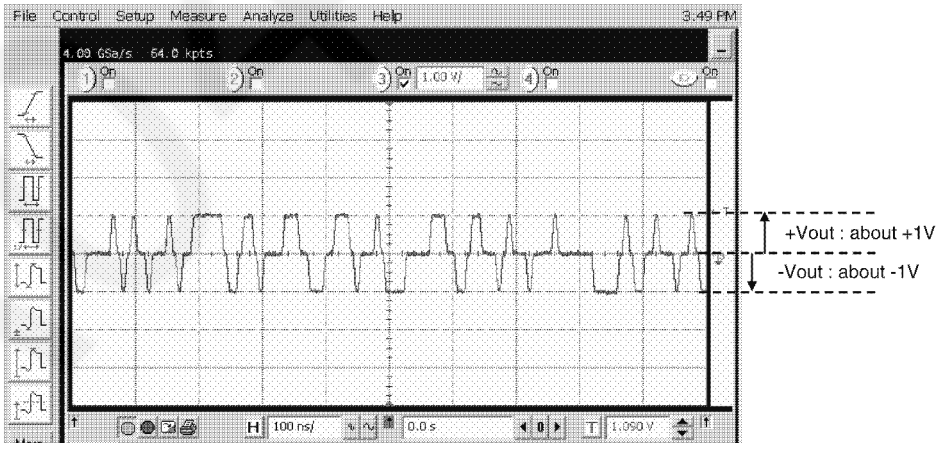


2. When 100Base-TX-enabled deviced is connected;

① 100Base-TX waveform 1

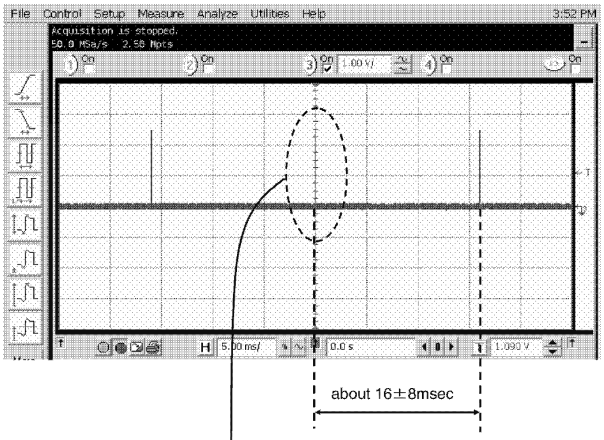


② 100Base-TX waveform 2 (A part of the waveform1 is magnified.)

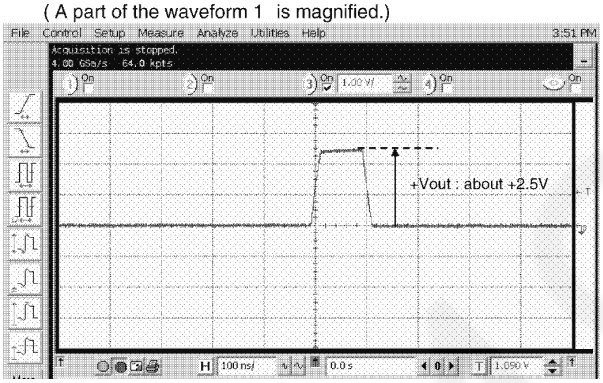


3. When 10Base-T-enabled device is connected.

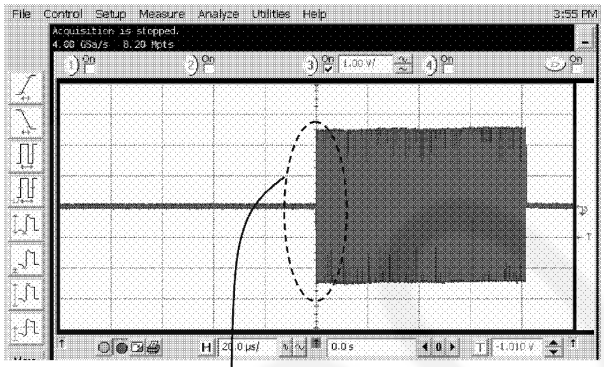
① 10Base-T waveform 1 [Link Pulse]



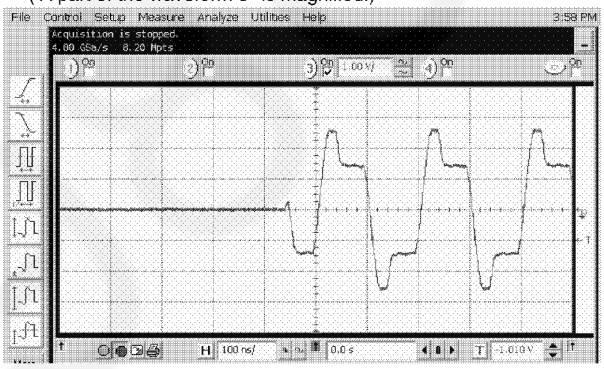
② 10Base-T waveform 2 [Link Pulse]
(A part of the waveform 1 is magnified.)



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.

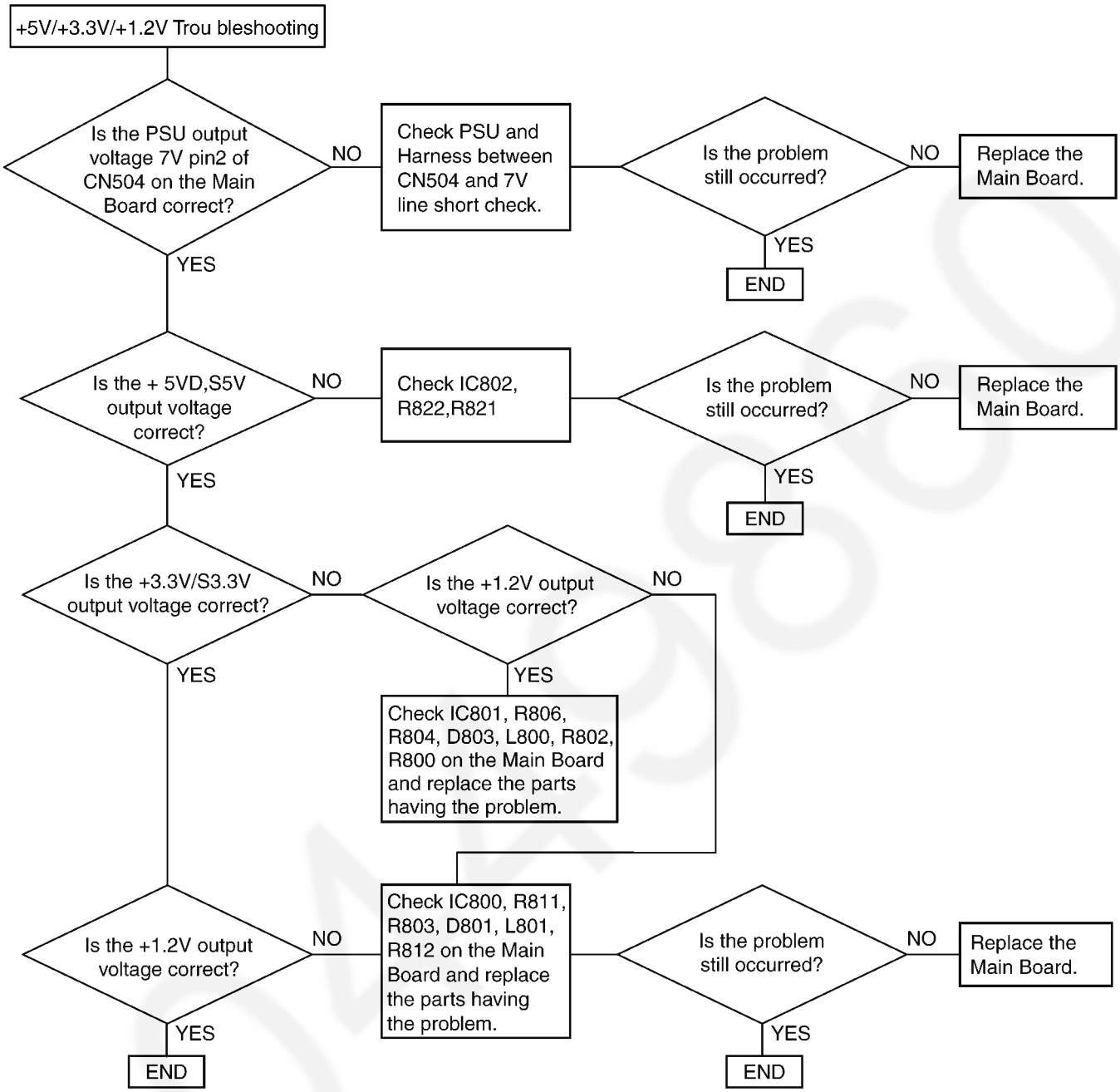
<table>
<tr><th>Pin No</th><th>Signal Name</th><th>Input/Output(*)</th><th>Description</th></tr>
<tr><td>30</td><td>LED0 / NWAYEN</td><td>Ipu/O</td><td>LED Output: Programmable LED0 Output /
Config Mode: Latched as Auto-Negotiation Enable (register 0h, bit 12) during power-up / reset. See “Strapping 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.

12.3.22. Main Board Section

Main Unit Power Supply Troubleshooting Guide



12.3.23. Power Supply Board Section

12.3.23.1. Key Components For Troubleshooting

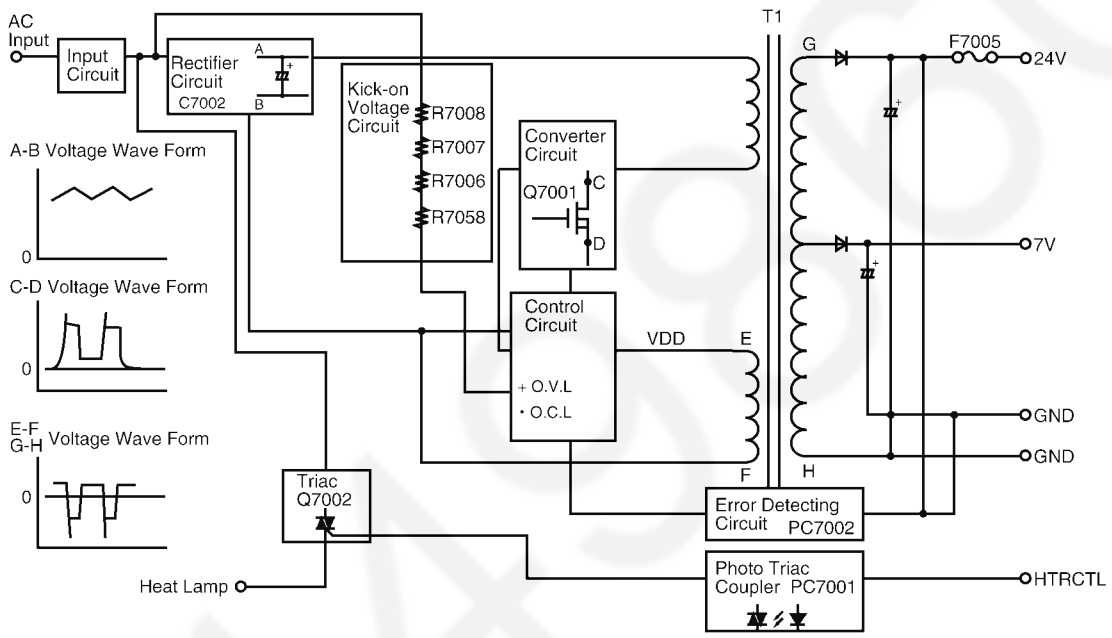
Check the following parts first: F7001, F7003, D7001, D7002, D7003, D7004, C7002, Q7001 and PC7001.
This comes from our experience with experimental test. For example: power supply and lightning surge voltage test, with standing voltage test, intentional short circuit test, etc.

Caution:

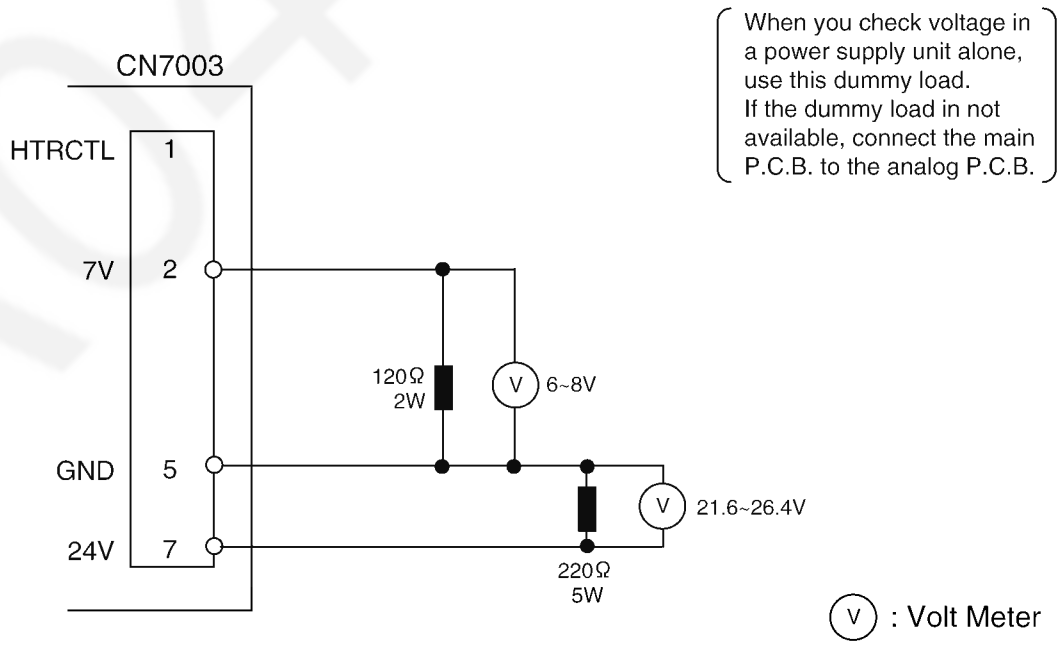
If you find a melted fuse in the unit, do not turn on the power until you located and repair the faulty parts (except for the fuse); otherwise the fuse will melt again and you cannot pinpoint the faulty point.

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.

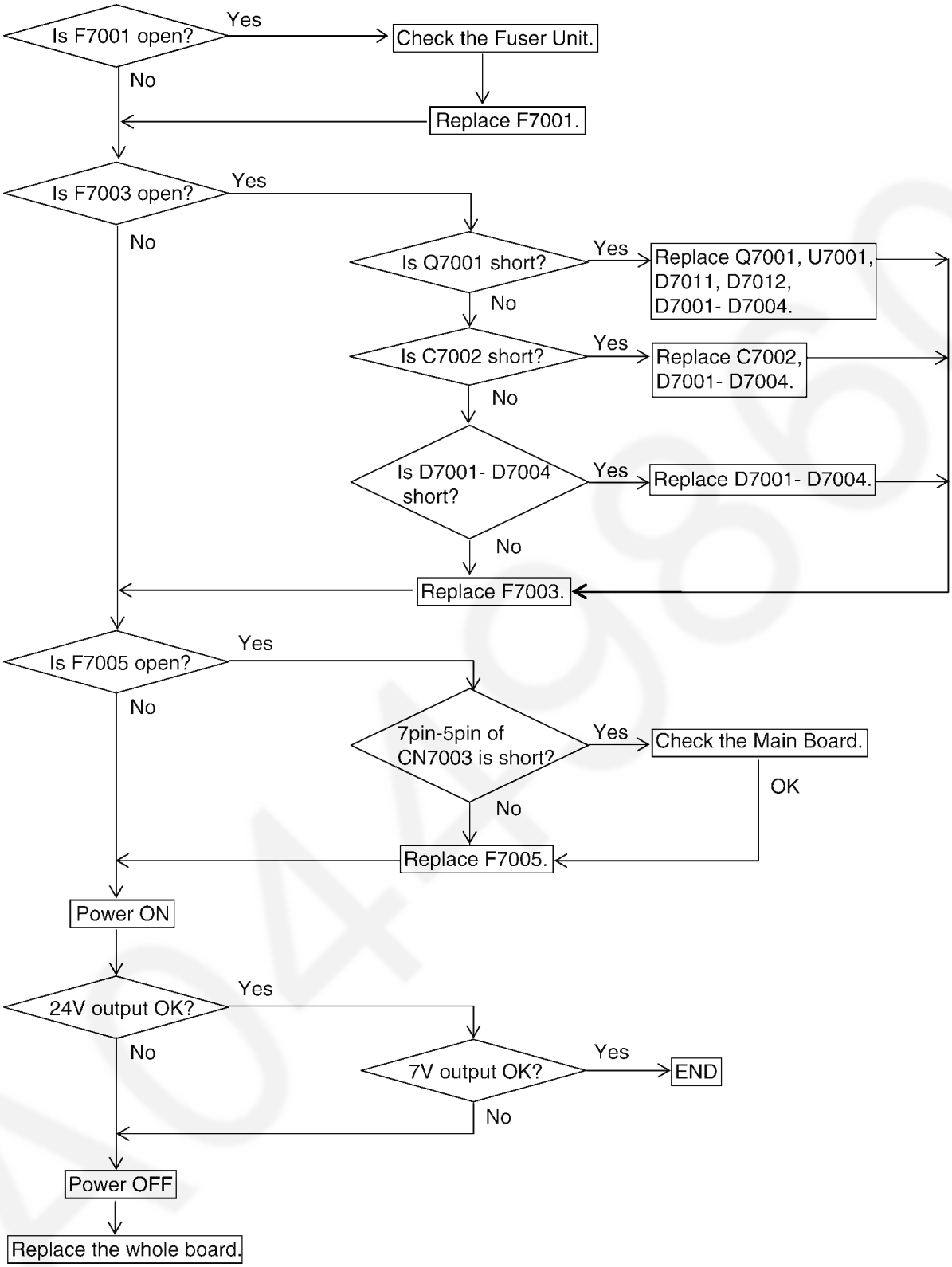
Block Diagram



DUMMY LOAD to check voltage



12.3.23.2. Troubleshooting Flow Chart



12.3.23.3. Broken Parts Repair Details

(Q7001)
The worst case of Q7001 is a short-circuit between the Drain and Gate because damage expands to the peripheral circuit of Q7001. This is due to a very high voltage through the Gate circuit, which is composed of U7001. You should change all of the parts listed as follows.

- Q7001, U7001, D7011, D7012, D7001- D7004

(C7002)
If overvoltage(Approx. 450V) was supplied for a power supply unit, C7002 will be broken.

(D7001- D7004)
If D7001- D7004 are short-circuit, F7003 will melt (open).
In this case, replace all of the parts (D7001- D7004, F7003).

(F7005)
If F7005 is melted (open), check the 24 Voltage line of the Main Board and others.

12.4. RECORDING PAPER JAM

Refer to the Operating Instructions.

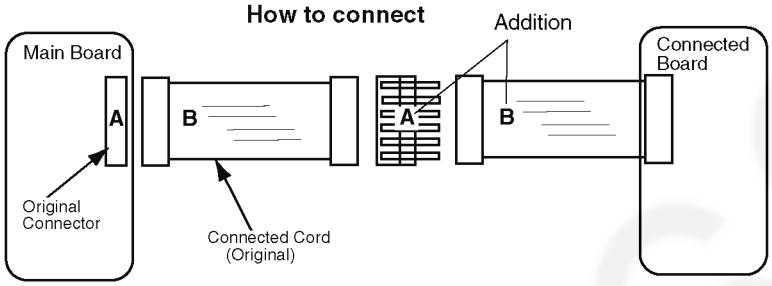
Note:

You can download and refer to the Operating Instructions (Instruction book).

13 Service Fixture & Tools

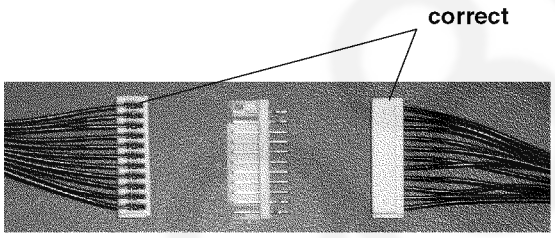
How to extend cords

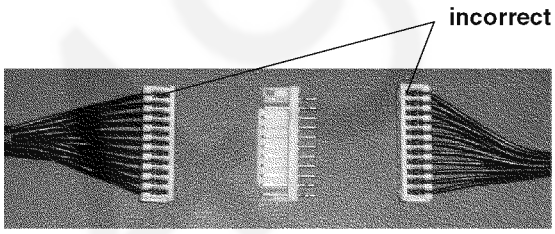
When extending cords, you need 2 pairs of A,B (A=connector,B=cord)
(One pair is connected to the Main board.)
If you do not have 2 pairs, order the necessary parts.

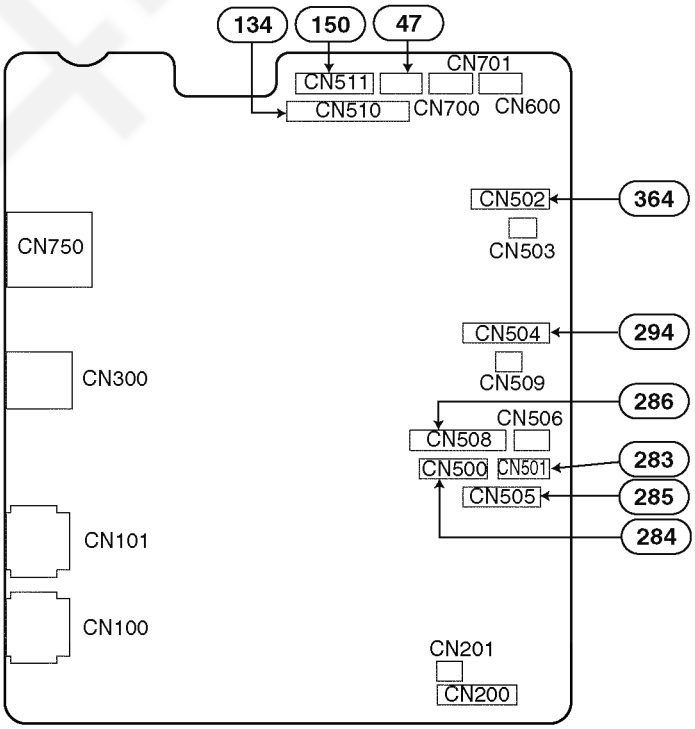


NOTE

Be sure if the direction of the connectors are correct.







14 Disassembly and Assembly Instructions

Note:

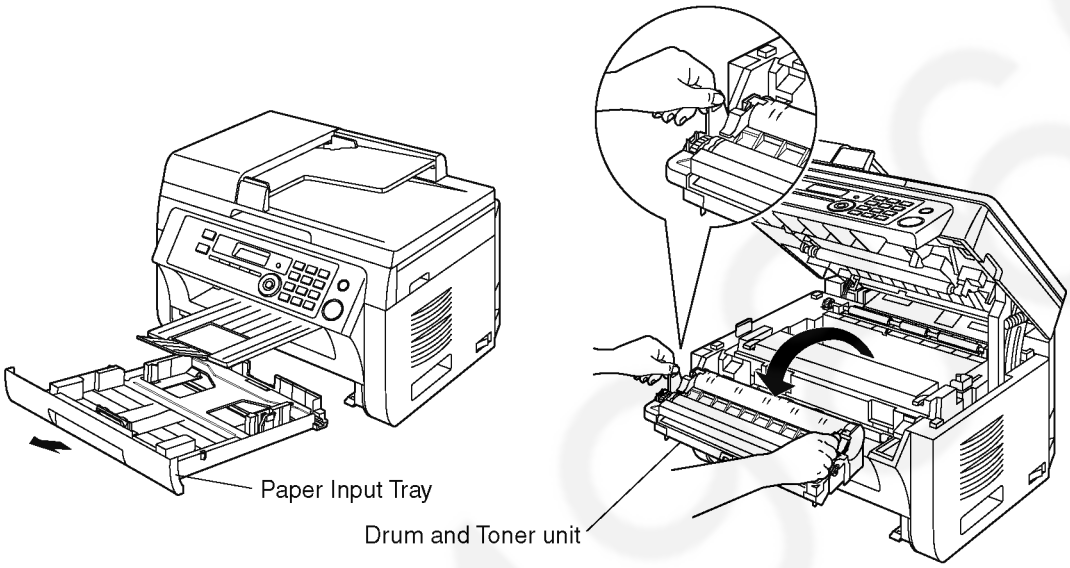
Remove the Document Cover, the Paper Input tray and the drum and toner cartridge before reassembling.

First of all

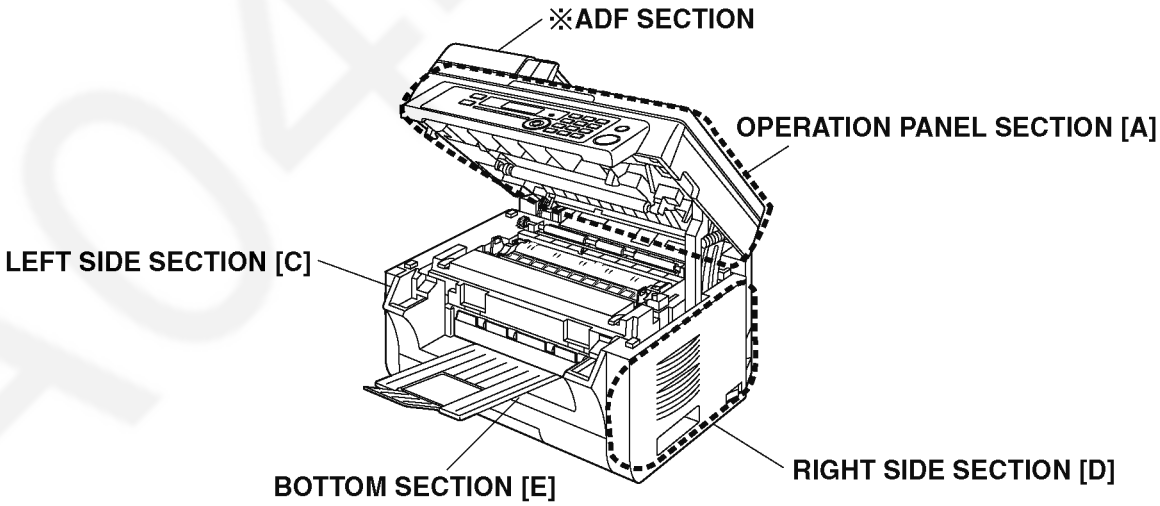
Before disassembling, do the following things.

(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.

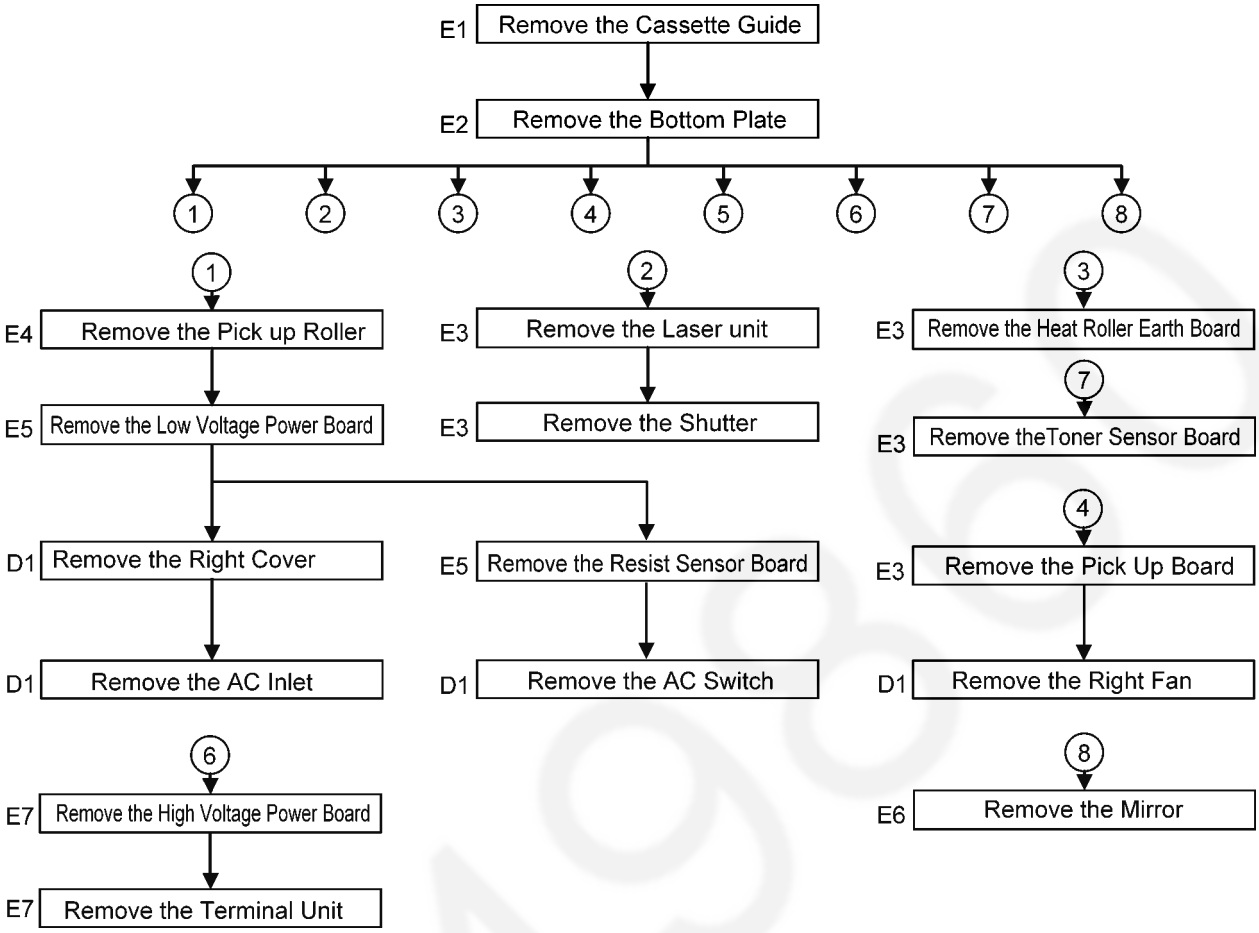


GENERAL SECTION

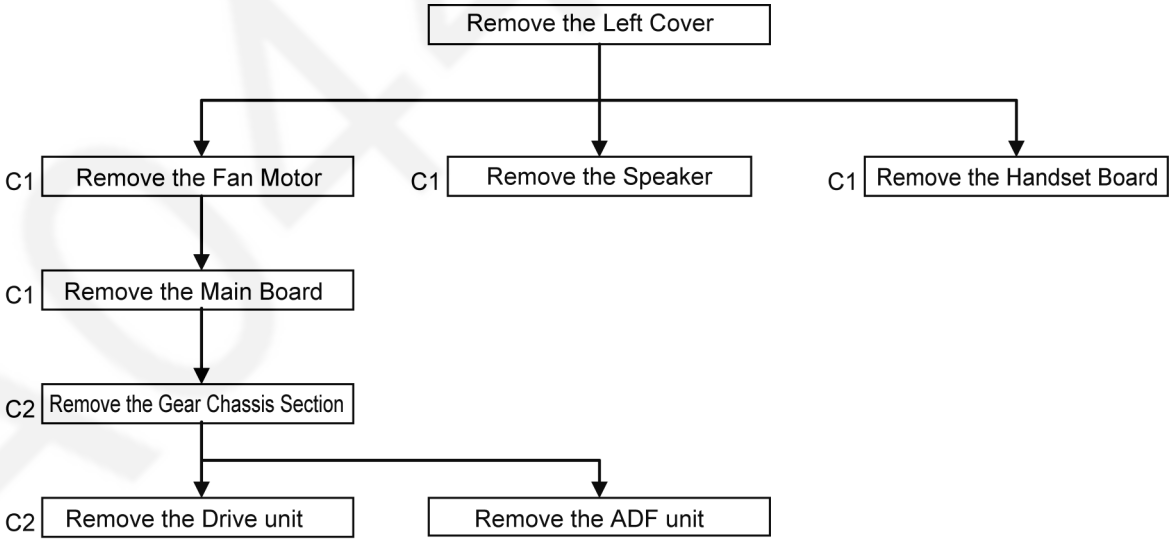


※Regarding ADF SECTION, refer to the service manual for KX-MB781/782/783 series

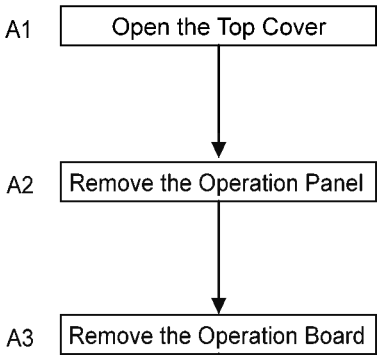
14.1. Bottom Section



14.2. Left Side Section



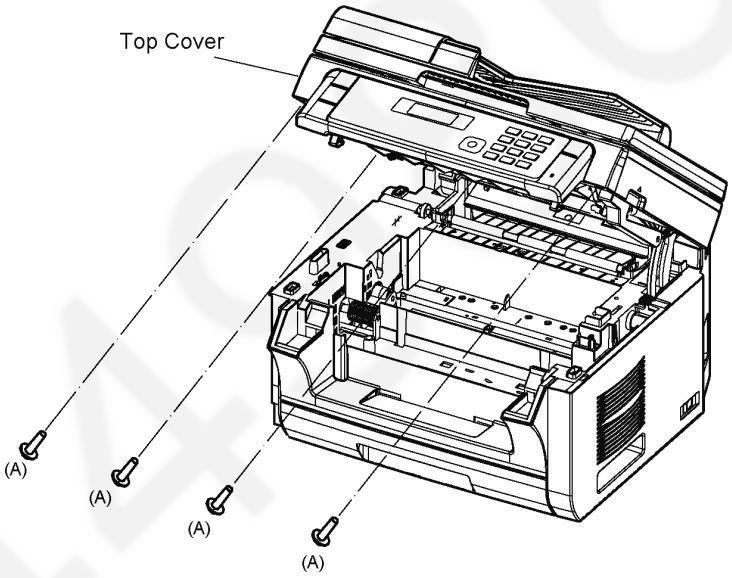
14.3. Operation Panel Section



14.4. Open Top Cover

A1

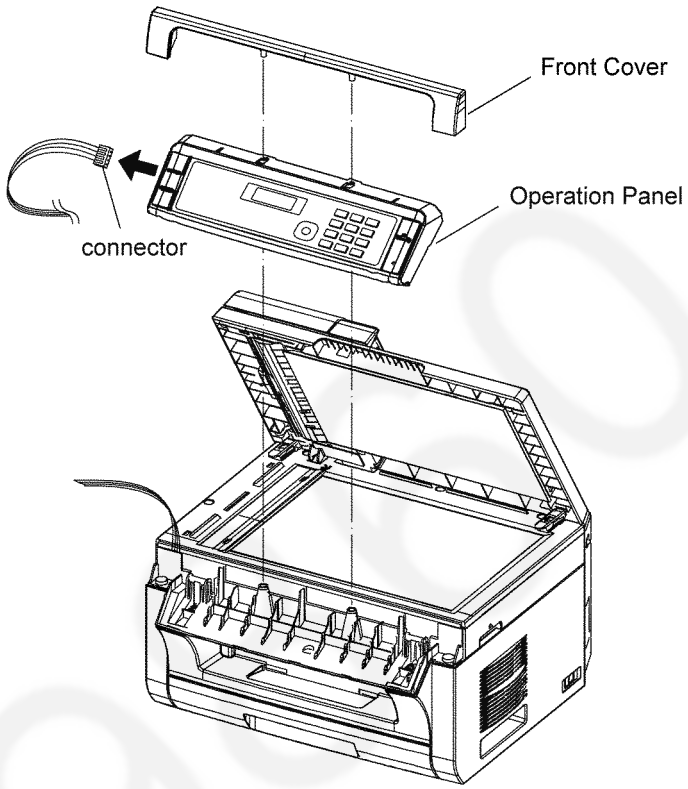
(1) Open the Top Cover.
(2) Remove the 4 screws (A).



14.5. Remove Operation Panel

A2

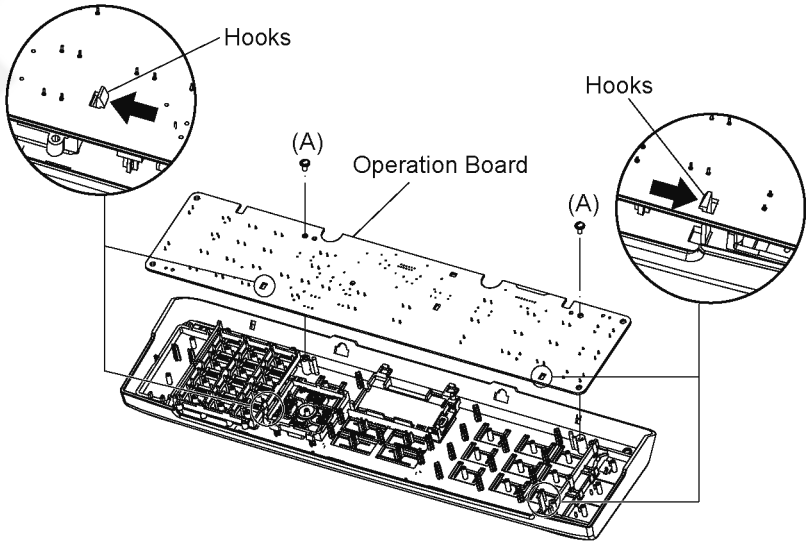
(1) Remove the Front Cover.
(2) Remove the Operation Panel.
(3) Remover the connector.



14.6. Remove Operation Board

A3

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



14.7. Remove Main Board

C1

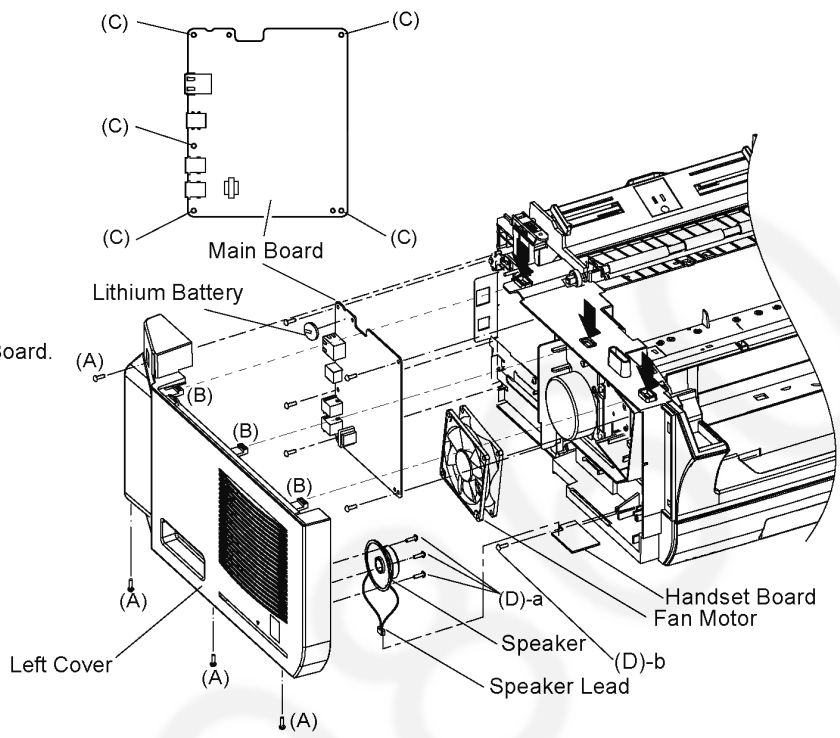
Left Cover
(1) Remove the 4 screws (A).
(2) Remove the 3 Hooks (B).
(3) Remove the Speaker Lead.

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) Remove the Main Board.
(7) Unsolder the Lithium Battery.

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.



14.8. Remove Gear Chassis Section

C2

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

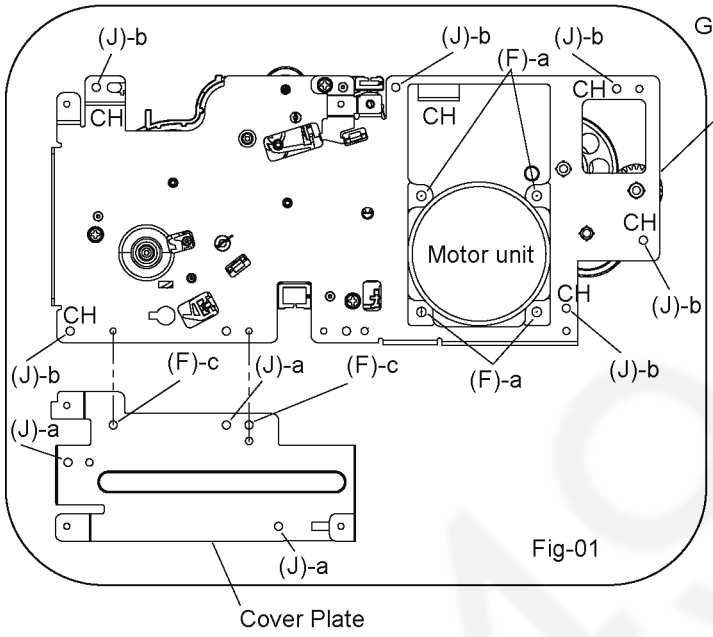
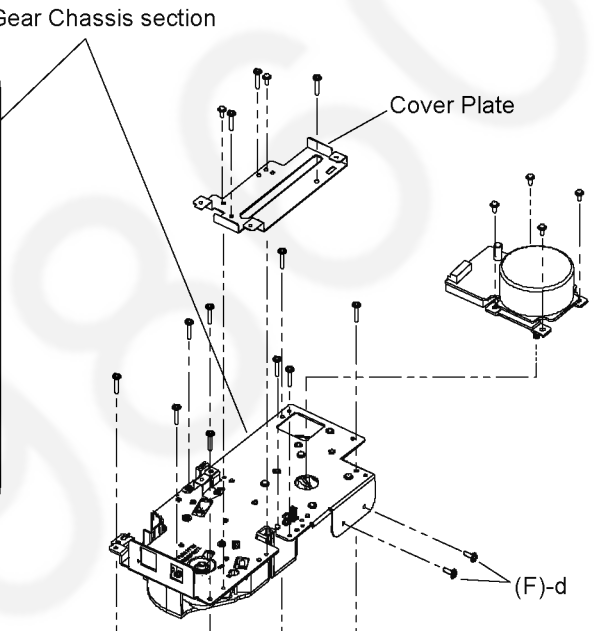


Fig-01



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

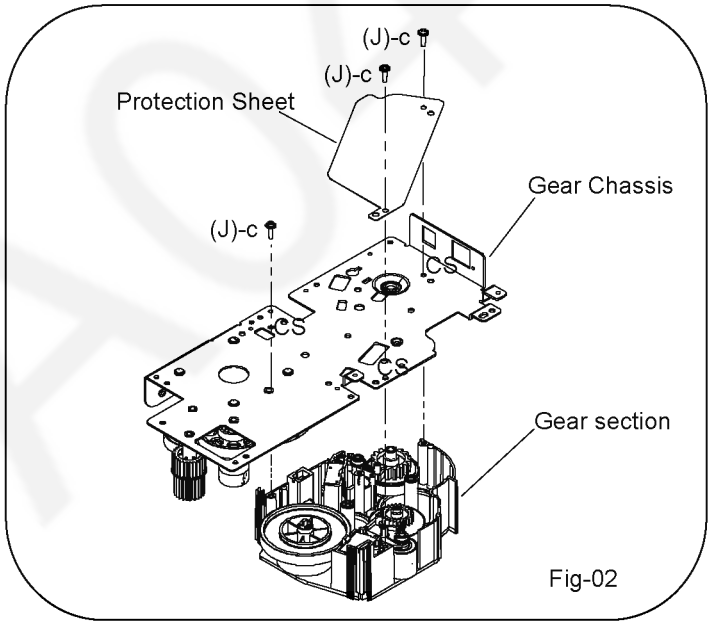
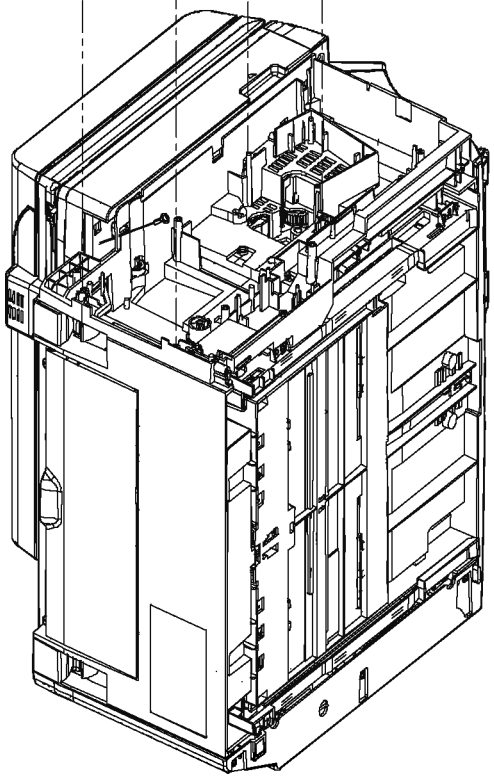


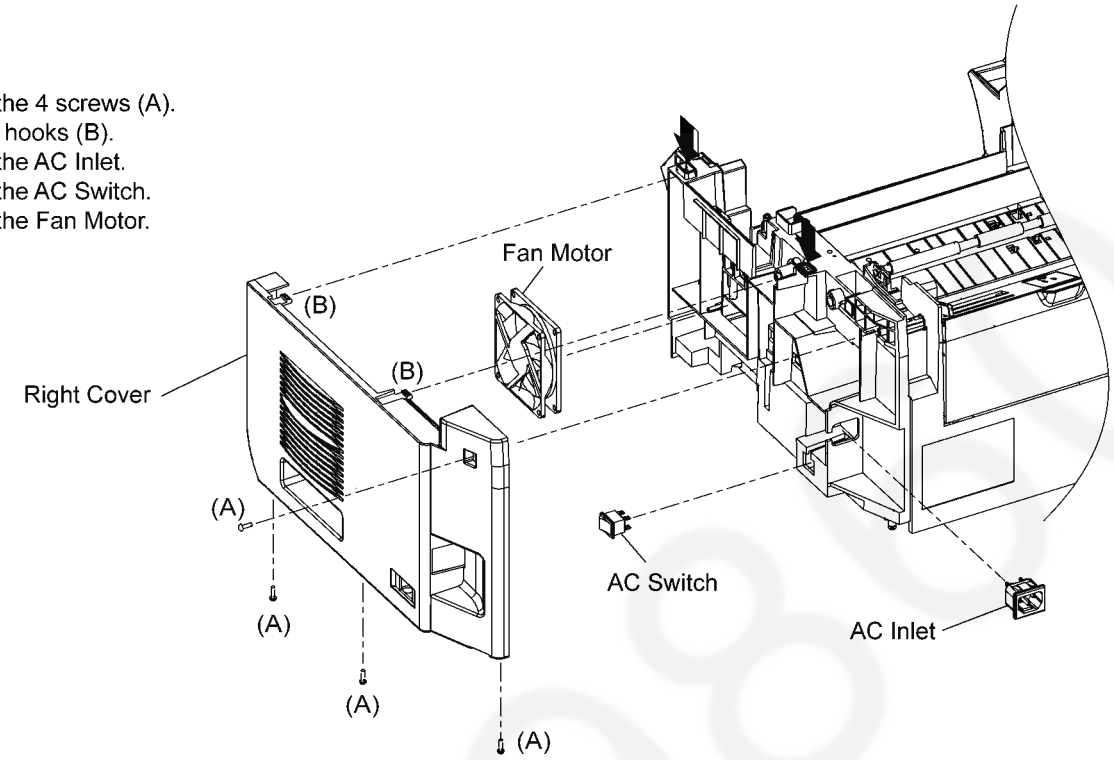
Fig-02



14.9. Remove Right Cover

D1

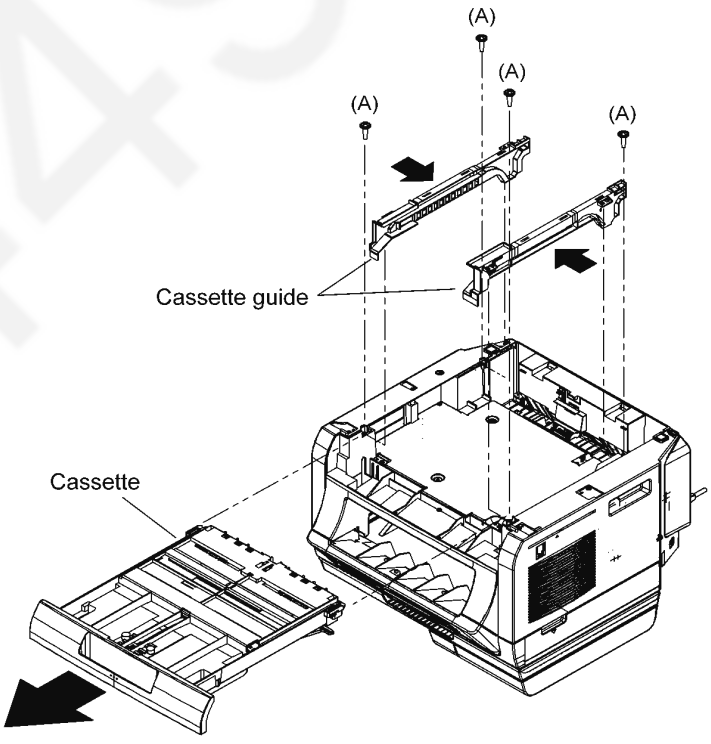
(1) Remove the 4 screws (A).
(2) Push two hooks (B).
(3) Remove the AC Inlet.
(4) Remove the AC Switch.
(5) Remove the Fan Motor.



14.10. Remove Right Cassette Guide

E1

(1) Pull out the Cassette.
(2) Remove the 4 screws (A).
(3) Remove the Cassette guide.



14.11. Remove Bottom Plate

E2

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

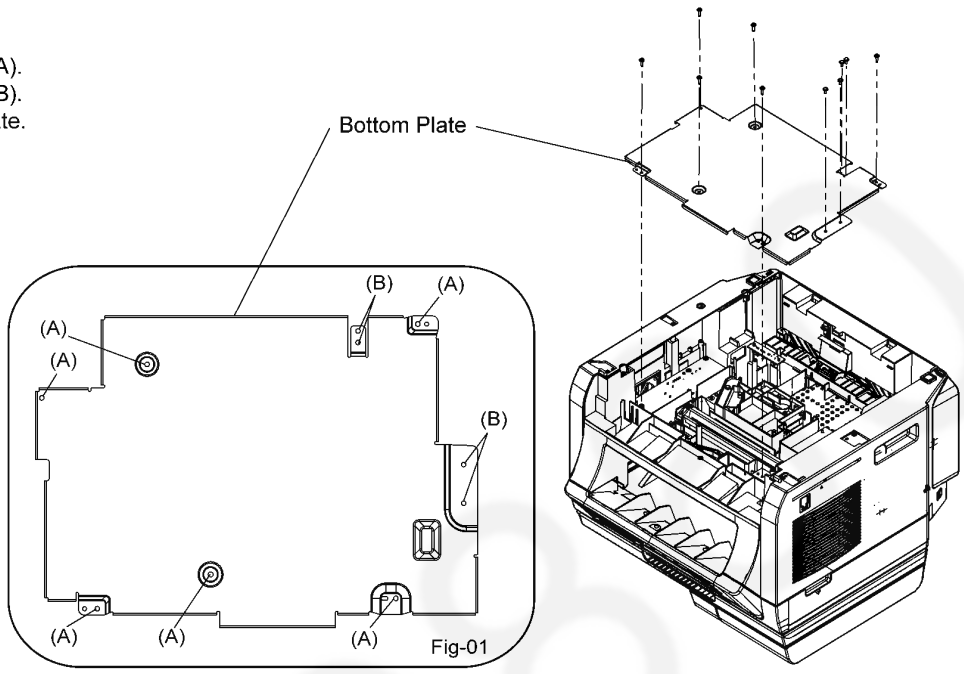


Fig-01

14.12. Remove Laser Unit

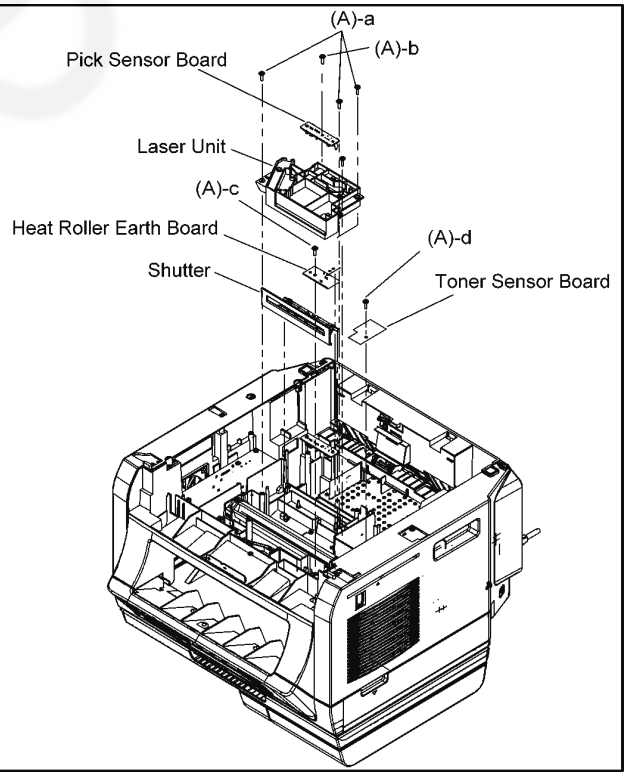
E3

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.

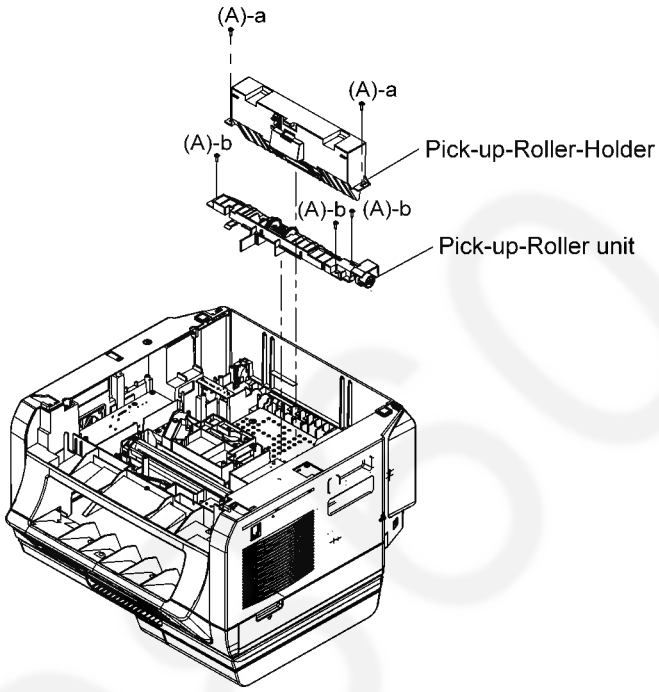


14.13. Remove Pick up Roller

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.

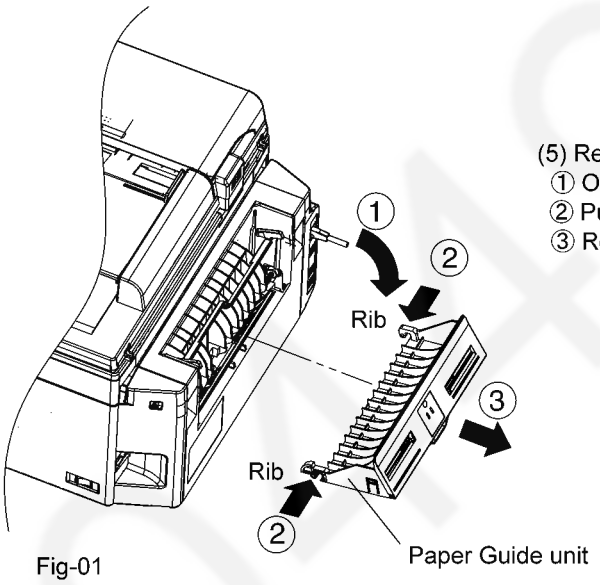


Fig-01

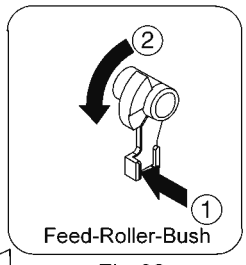
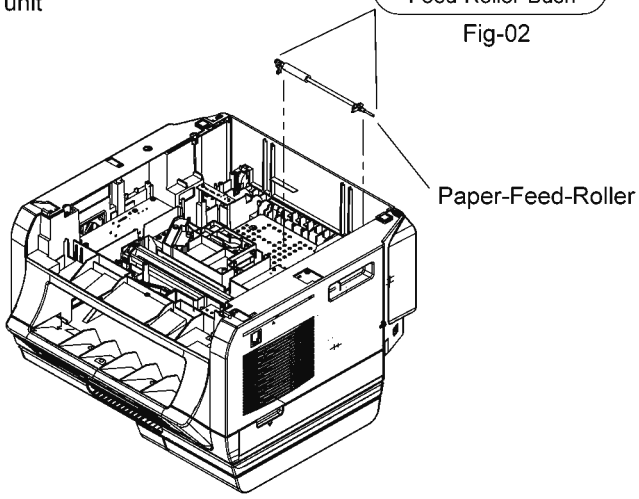


Fig-02

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



14.14. Remove Low Voltage Power Board

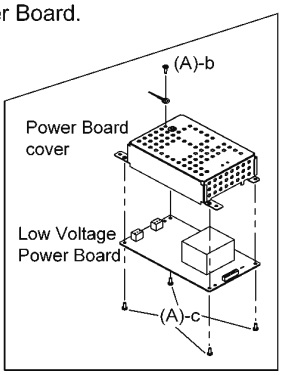
E5

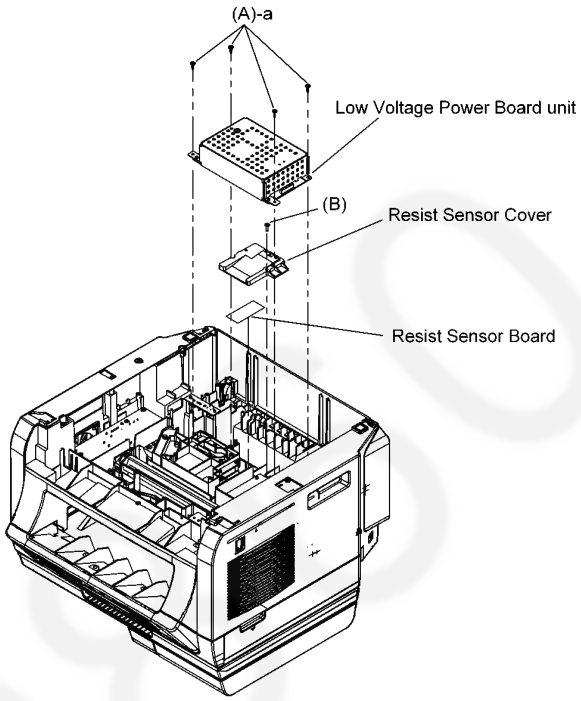
Low Voltage Power unit
(1) Remove the 4 screws (A)-a.
(2) Remove the screw (A)-b.
(3) Remove the each connector.
(4) Remove the Low Voltage Power unit.

(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.

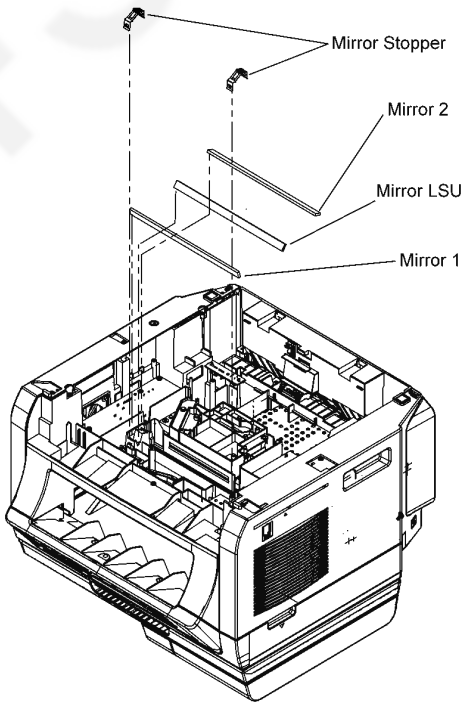




14.15. Remove Mirror

E6

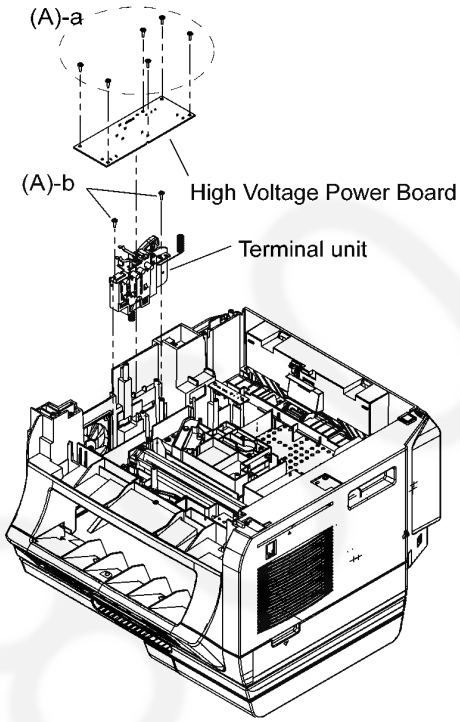
(1) Remove the Mirror Stopper.
(2) Remove the Mirror 2.
(3) Remove the Mirror LSU.
(4) Remove the Mirror 1.



14.16. Remove High Voltage Power Board

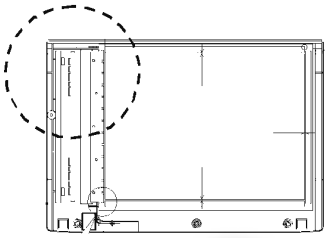
E7

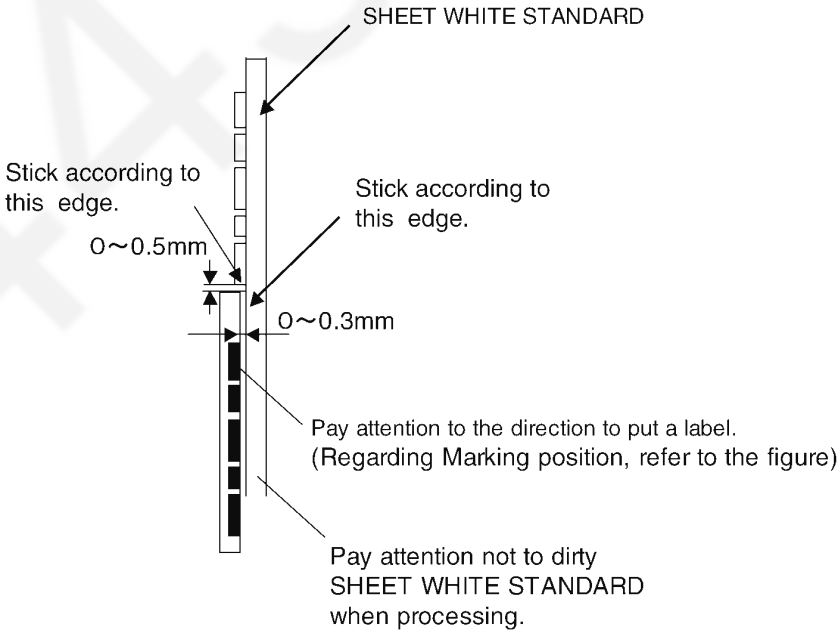
(1) Remove the 6 screws (A)-a.
(2) Remove the all the connectors on the High Voltage Power Board.
(3) Remove the High Voltage Power Board.
(4) Remove the 2 screws (A)-b.
(5) Remove the Terminal unit.



14.17. Note for disassembly

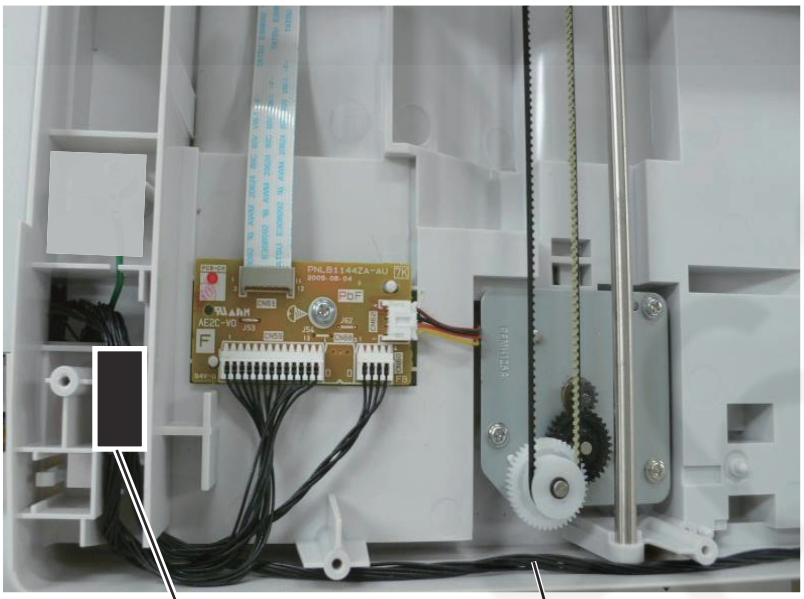
14.17.1. Position of Installing LABEL/CIS HOME



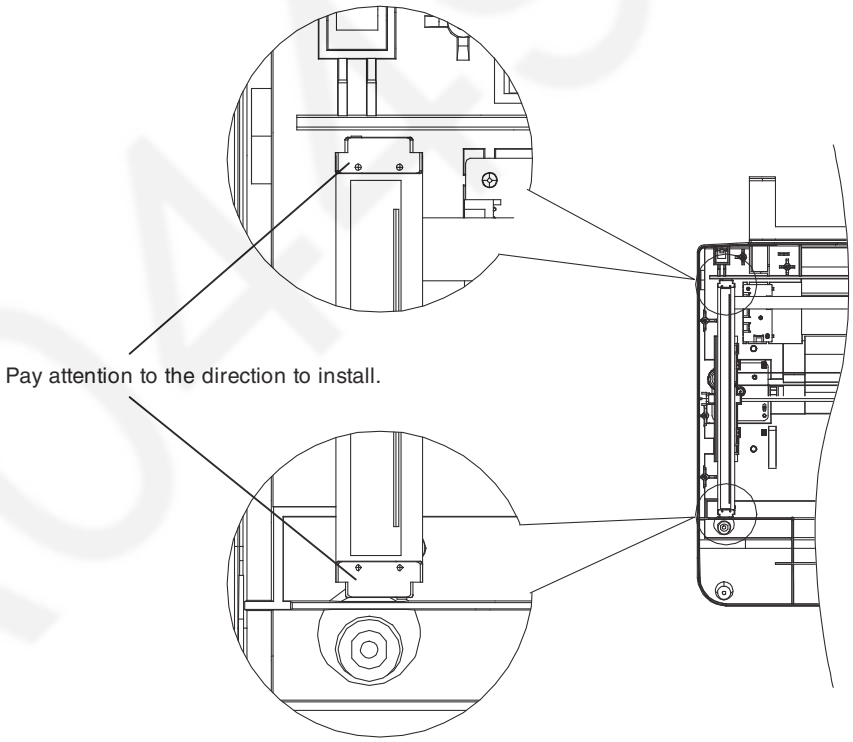


14.18. Installation Position of The Lead

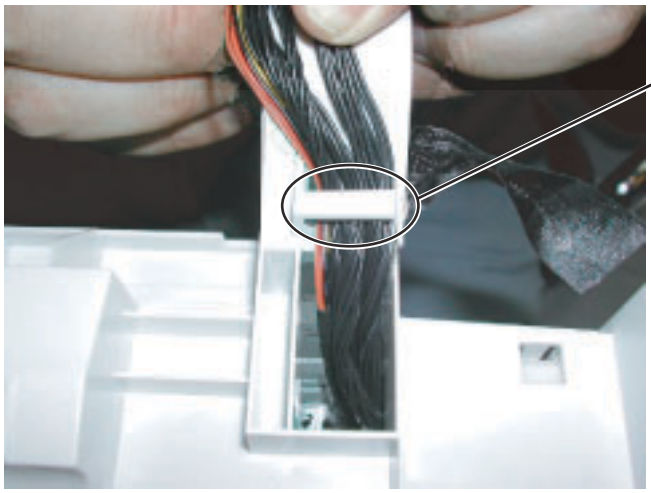
14.18.1. Top Cover Section (1)



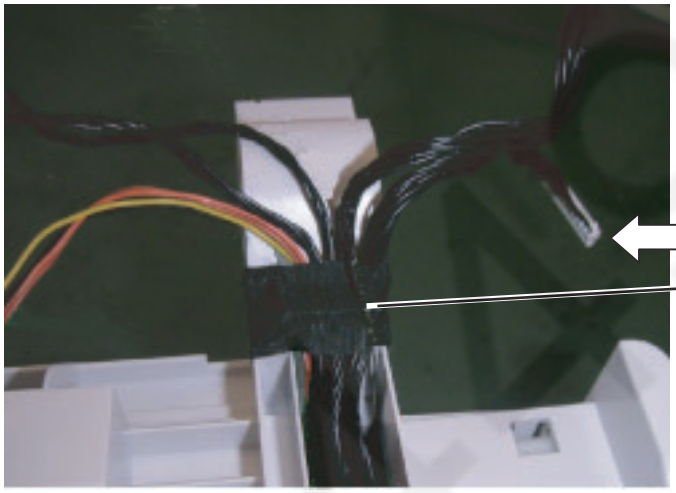
How to install CIS Spacers



14.18.2. Top Cover Section (2)

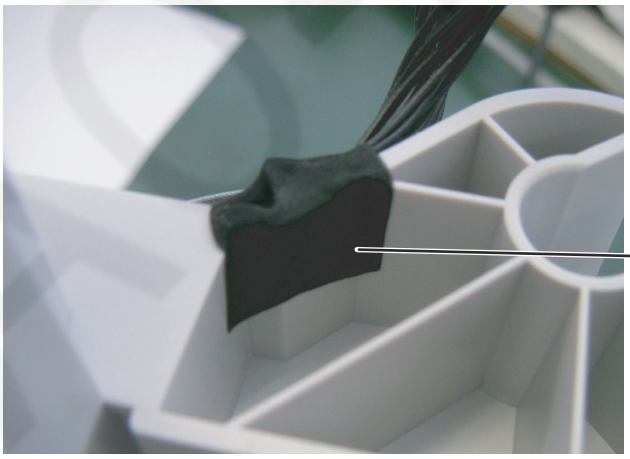


Hook the leads.
(Hook the lead from a little number.)
A wire is not hanging on a hook.



View A

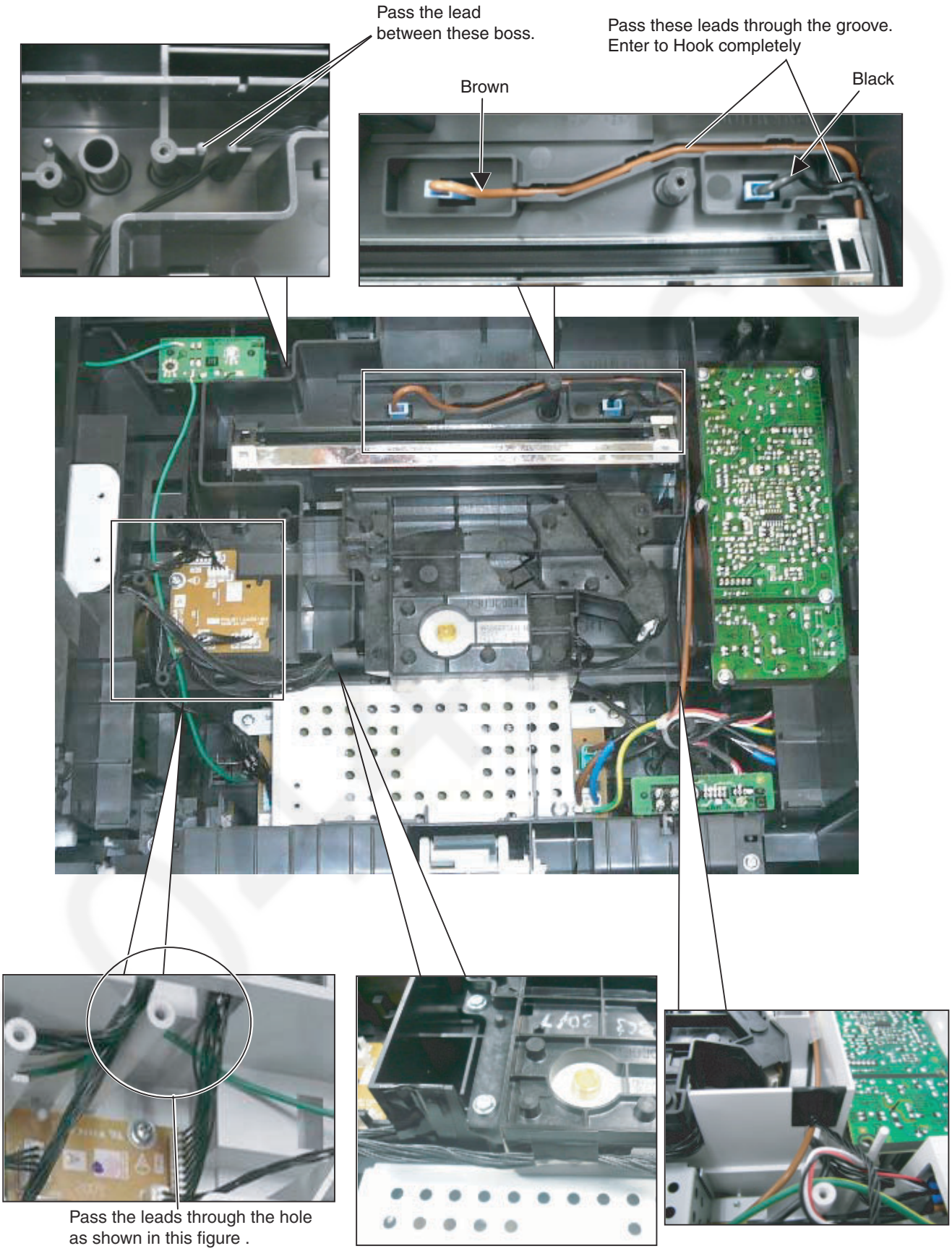
Cover the leads completely with tape.



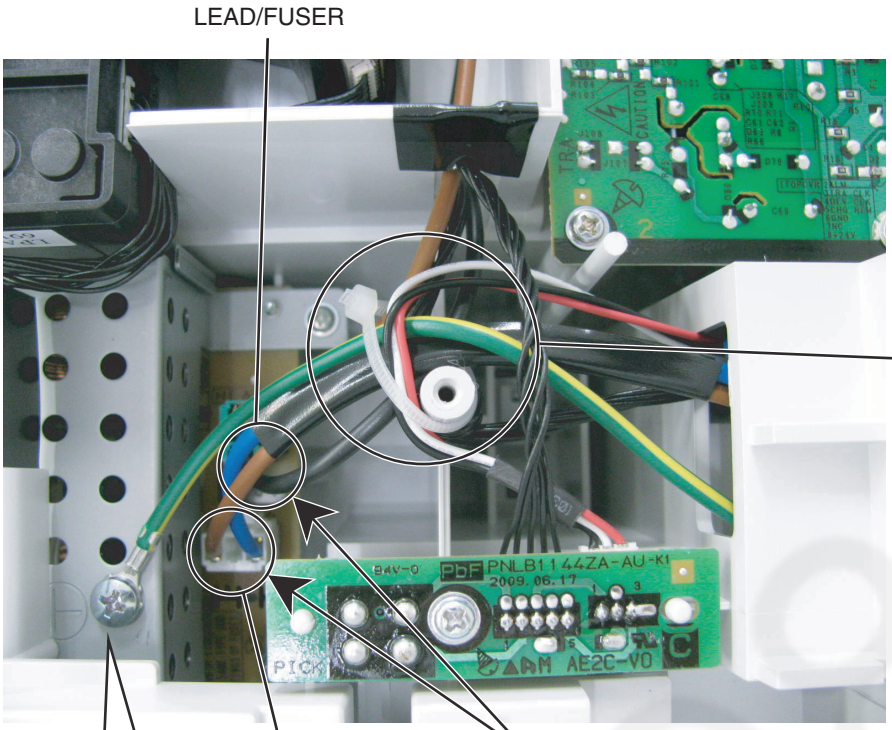
View A

Stick the tape according to the shape.

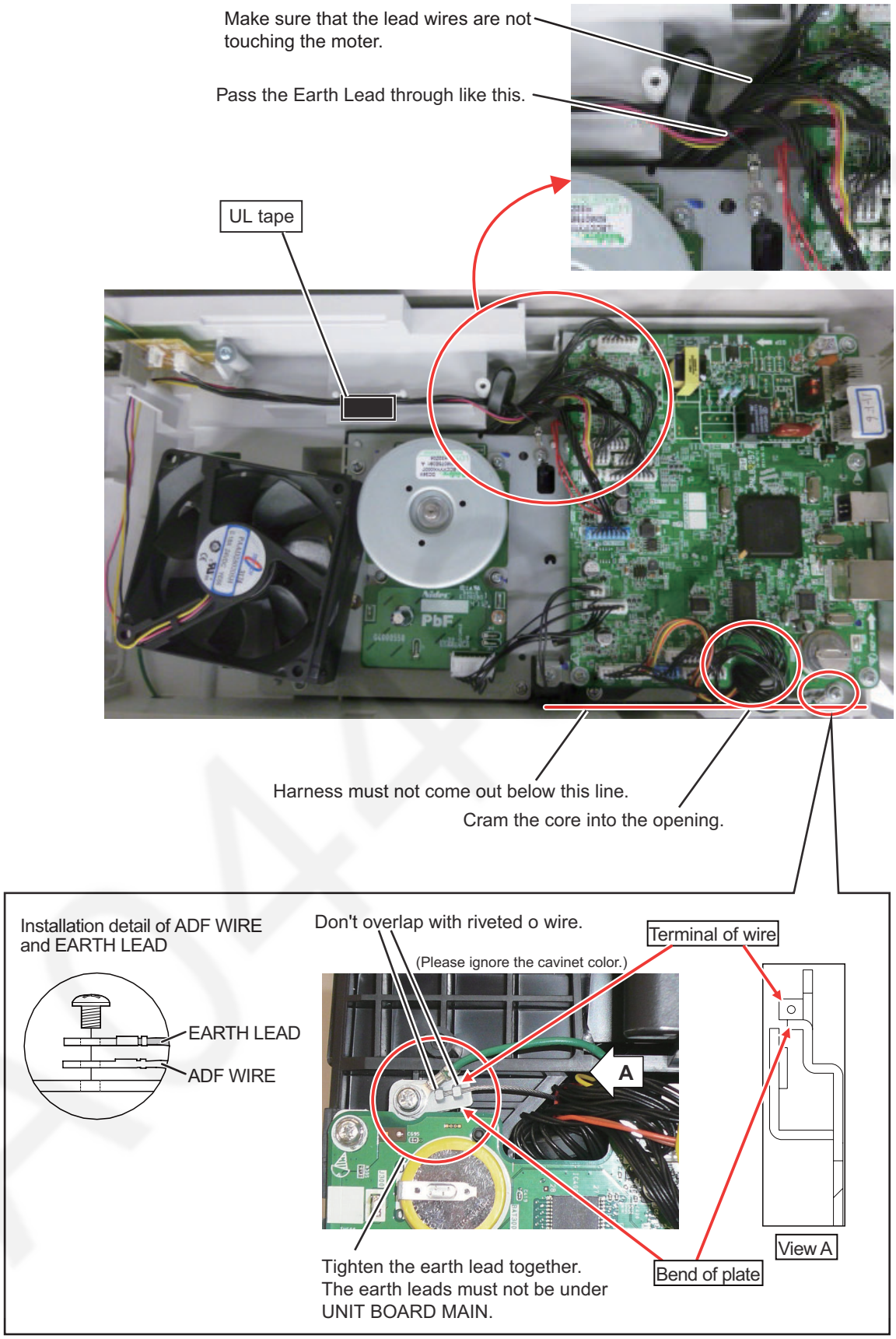
14.18.3. Bottom Part Section (1)



14.18.4. Bottom Part Section (2)



14.18.5. Side Cabinet Section (1)



15 Maintenance

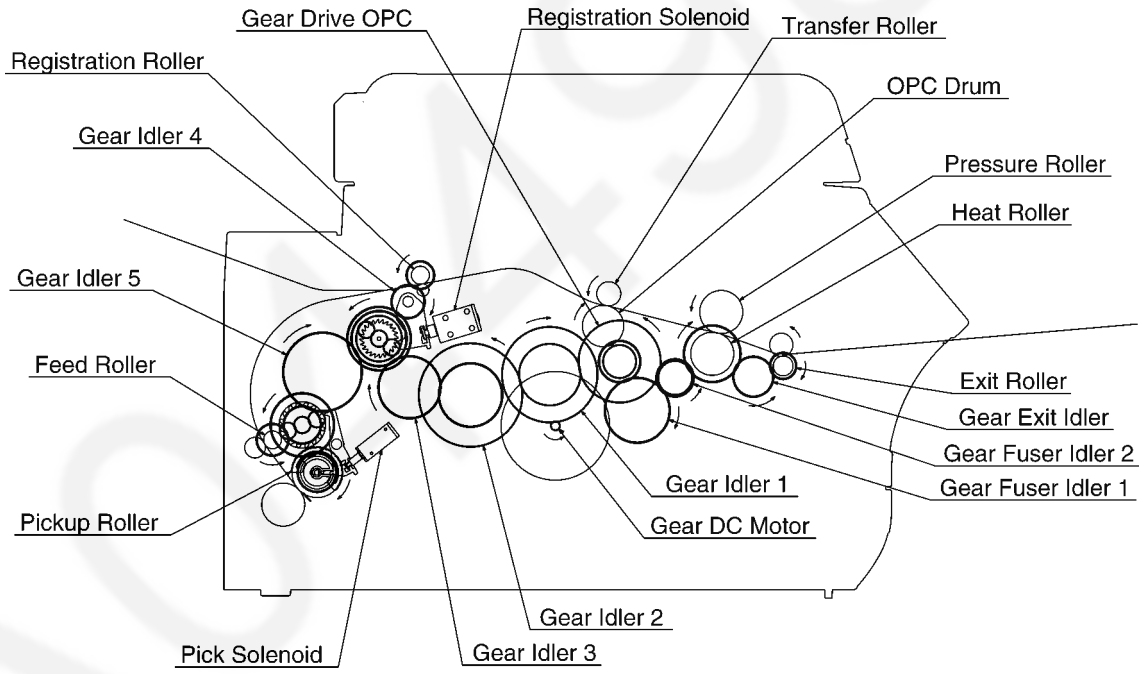
15.1. Maintenance Items and Component Locations

15.1.1. 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.

15.1.2. Maintenance Check Items/Component Locations



15.1.2.1. 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.188)
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.188) and **Sensors and Switches Section** (P.46) **Test Functions** (P.70)
4	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to **Maintenance** (P.188).
5	Abnormal, wear and tear or loose parts	Replace the part. Check if the screws are tight on all parts.	—

15.1.2.2. Maintenance Cycle (Document & Paper)

No.	Item	Cleaning Cycle
1	Pick up Roller (Ref No.320)	----------
2	Separation Roller (Ref. No.340)	----------
3	Feed Roller (Ref.No.211)	3 months
4	Transfer Roller (Ref.No.161)	----------
5	Registration Roller (Ref.No.196)	3 months
6	Heat Roller (Ref.No.232)	----------
7	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.

15.2. Cleaning

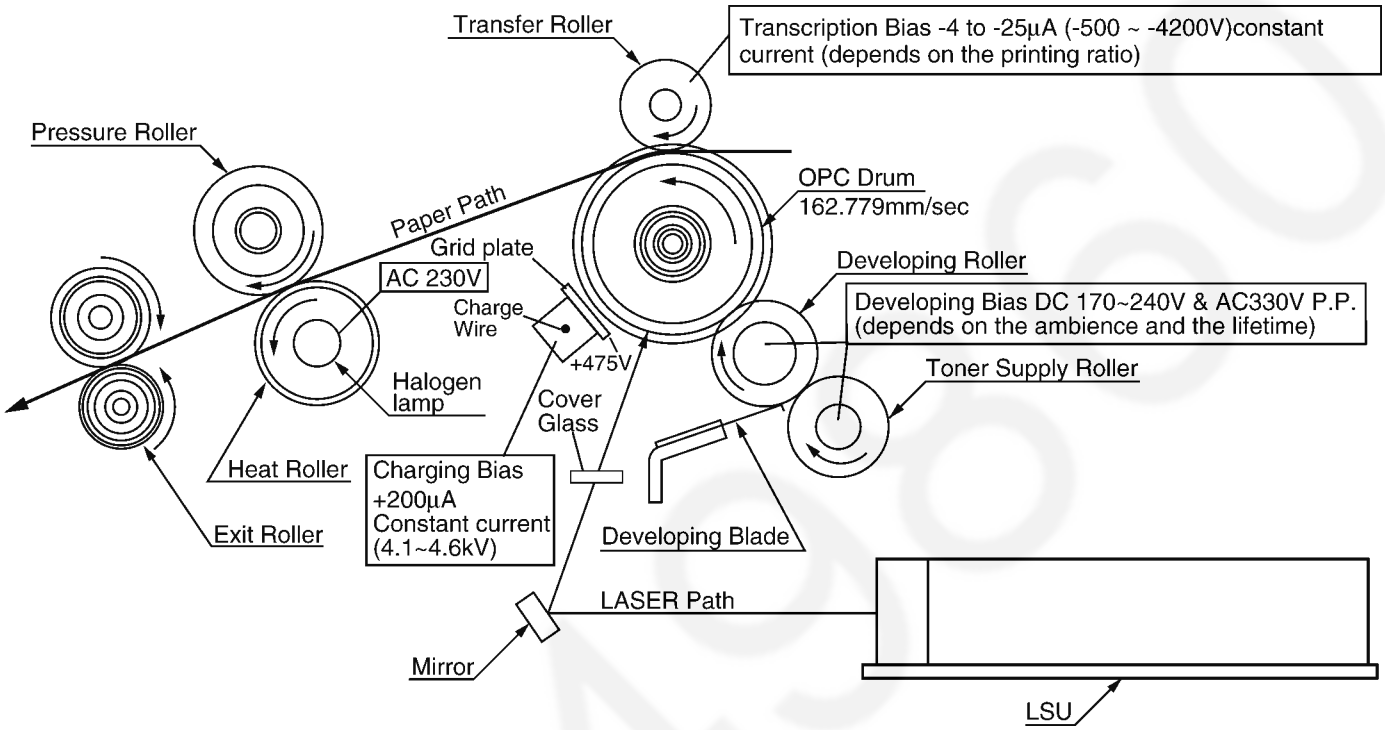
Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book).

15.3. Printing Operation Principle

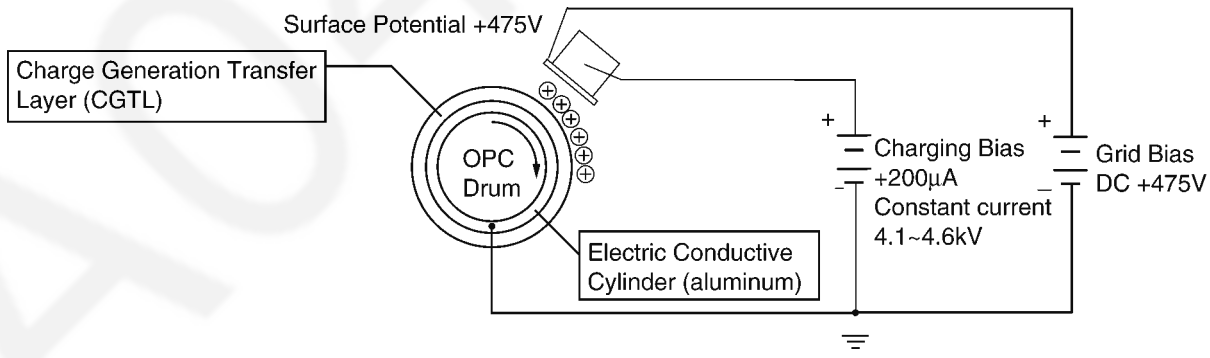
15.3.1. Process Chart and Process BIAS



15.3.2. 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.

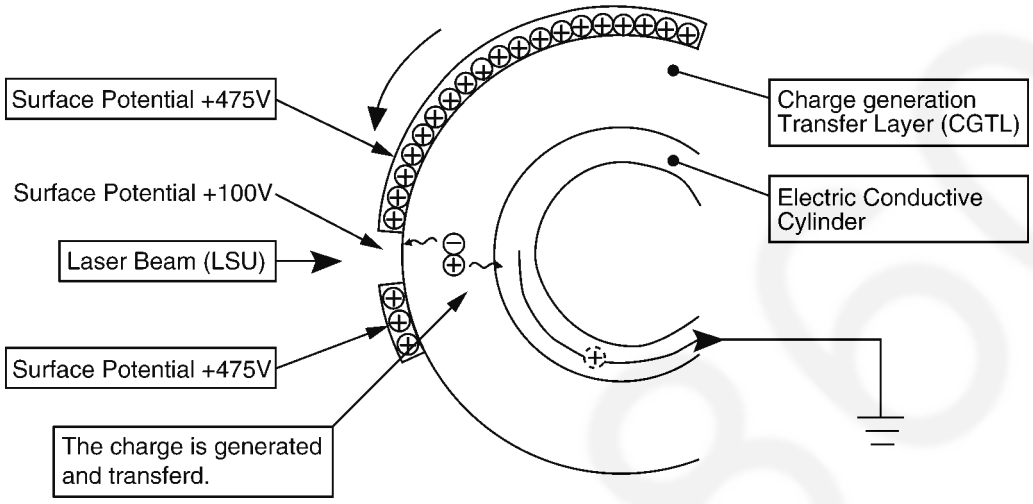


Charging Part

15.3.3. 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.

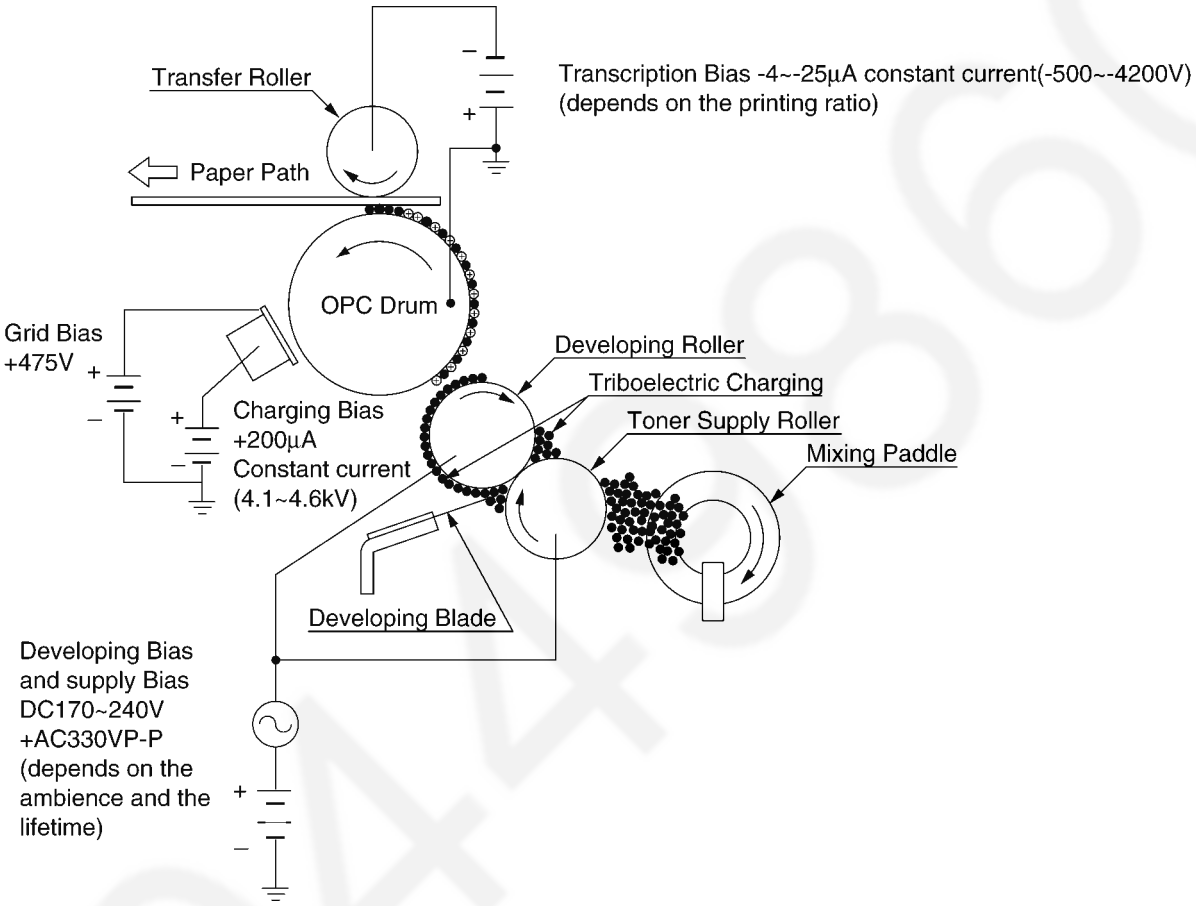


Exposing Part

15.3.4. 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.

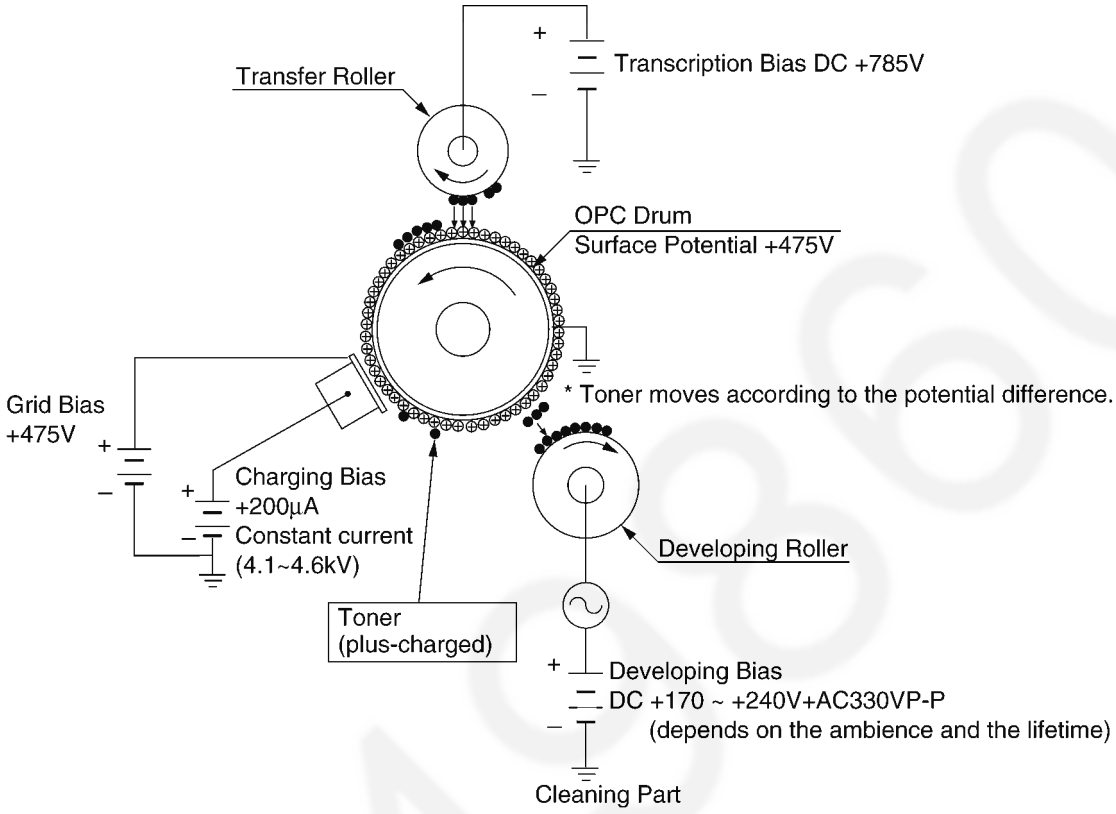
The transfer is the stage that the created image on the OPC drum is transferred to the paper. When the transfer roller is minus-charged with the image, the plus-charged toner particles are gathered on the surface of the drum and transferred to the paper.



Developing and Transcription Part

15.3.5. Cleaning of Transfer Roller

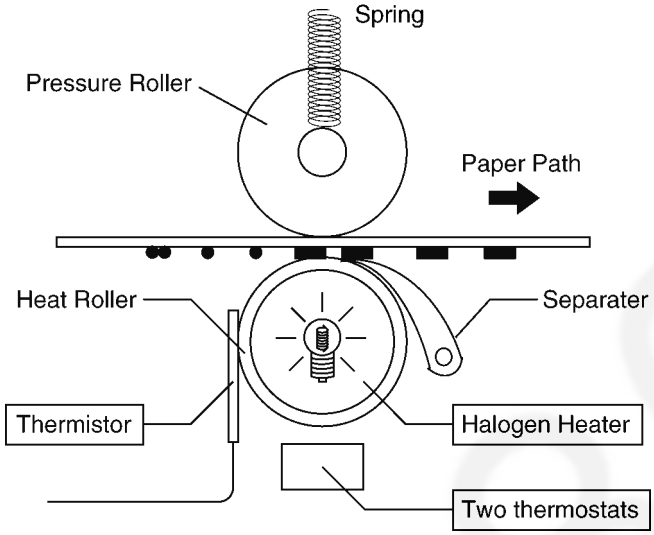
The toner attached to the surface of the OPC drum is transferred to the paper at the transcription stage, but a part of the toner remains. The cleaning is the stage that cleans the remain toner after the transcription stage. The remain toner on the drum and the toner which was attached to the place where 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

15.3.6. Fixing

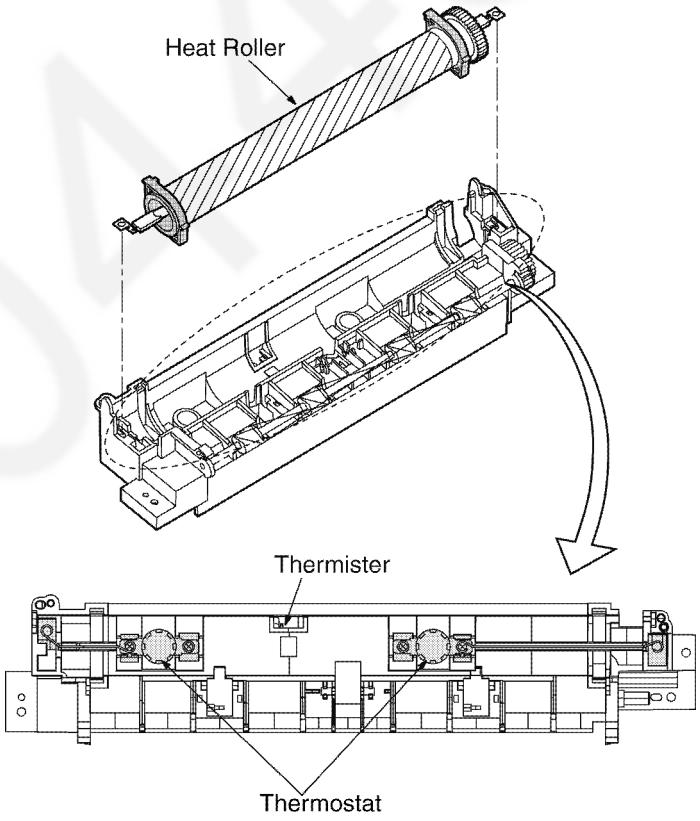
On the process of the transfer, the transferred toner is weakly attached on the paper. Fixing means the process to fix the toner on the paper permanently. The fixing part melts the toner at the high temperature using the halogen heater. The toner is fixed on the paper by the heat and pressure through 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

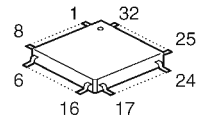
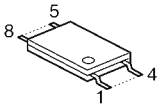
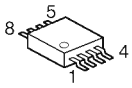
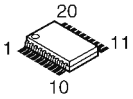
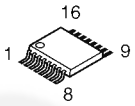
The fixing part becomes high temperature, so the thermistor and the two thermostats are provided.

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 205°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.



15.4. Terminal Guide of The ICs Transistors and Diodes

15.4.1. Main Board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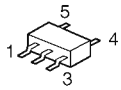	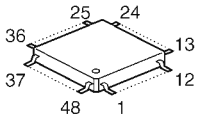	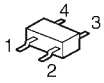	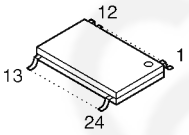	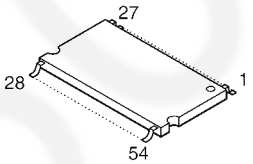
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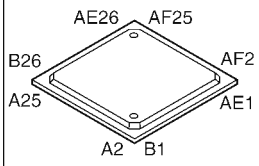	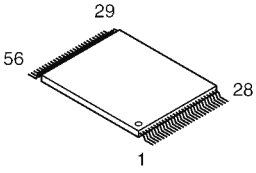	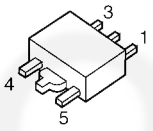		
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	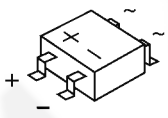	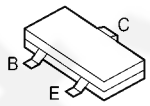	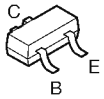	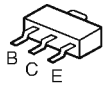
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		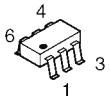	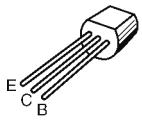	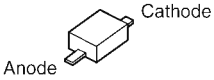
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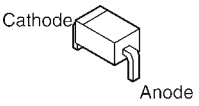
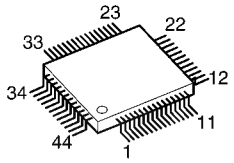
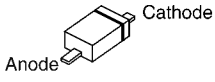
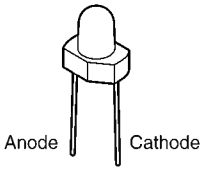
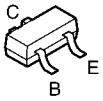
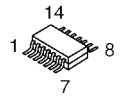
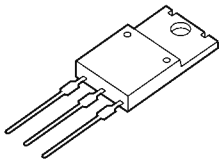
				
1SS355	B0JCND000027	B0ACEL000004		

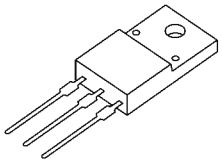
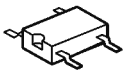
15.4.2. Operation Board

 C1ZBZ0004019	 1SS355	 B3ABA0000633 B3AAA0000534	 B1ABGE000011 DRC5123J0L DRC5144E0L DRA5143E0L	

15.4.3. High Voltage Power Supply Board

 PH1193AC001	 PT2394DL001			

15.4.4. Low Voltage Power Supply Board

 5FNF0005BT05	 51LC000C9AAC			

15.5. 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.

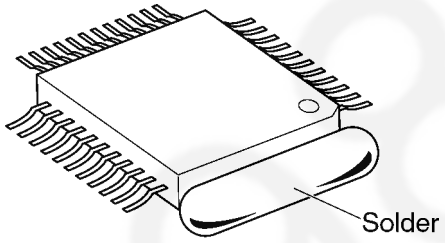
15.5.1. Preparation

- 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)

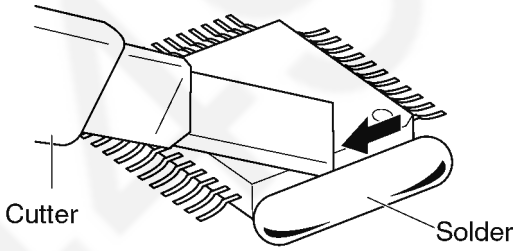
Note: See **About Lead Free Solder (PbF: Pb free)** (P.7)

15.5.2. Flat Package IC Removal Procedure

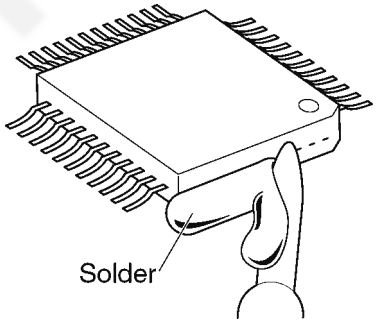
1. Put plenty of solder on the IC pins so that the pins can be completely covered.
   Note:
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



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



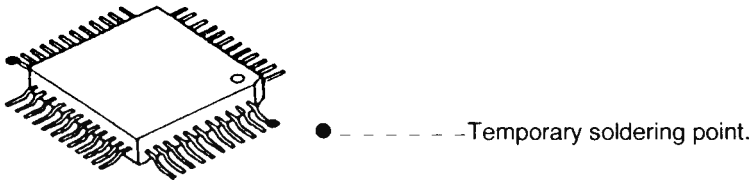
3. While the solder melts, remove it together with the IC pins.



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.

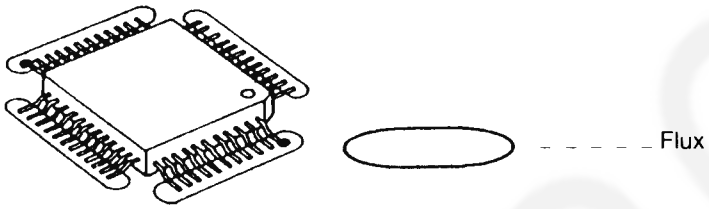
15.5.3. Flat Package IC Installation Procedure

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

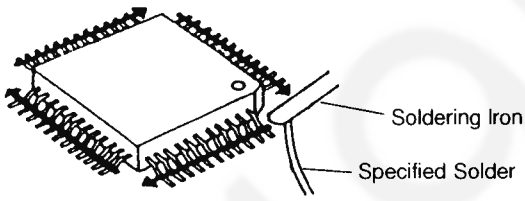


*Check the accuracy of the IC setting with the corresponding soldering foil.

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

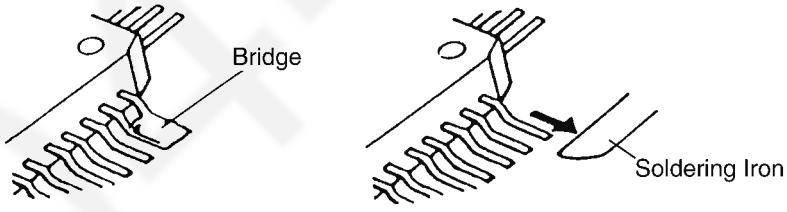


3. Solder the pins, sliding the soldering iron in the direction of the arrow.



15.5.4. 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.

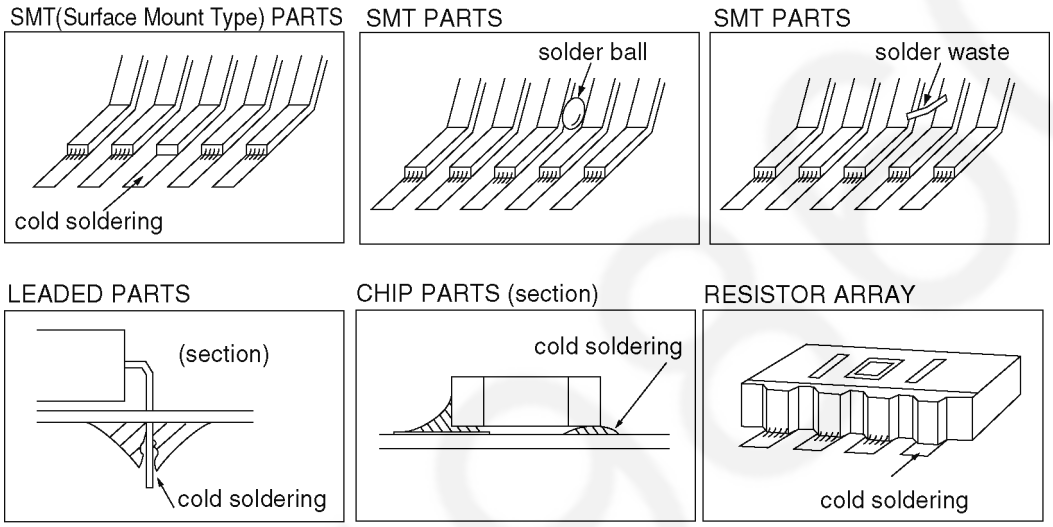


15.6. Main Board Section

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.)

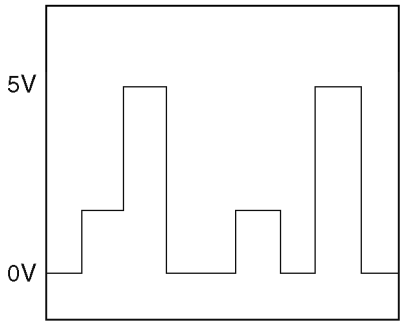
What are the main signals for booting up the unit?

Please refer to **General Block Diagram** (P.15).

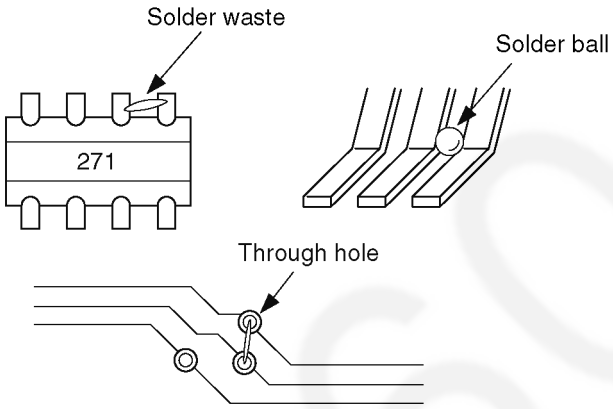
The ASIC (IC300) controls all the other digital ICs. When the power is turned on, the ASIC retrieves the operation code stored in the ROM (IC402), then follows the instructions for controlling each IC. All ICs have some inner registers that are assigned to a certain address.
It is the address bus by 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).

15.6.1. NG Example

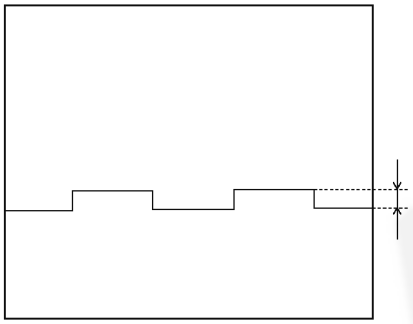
1.



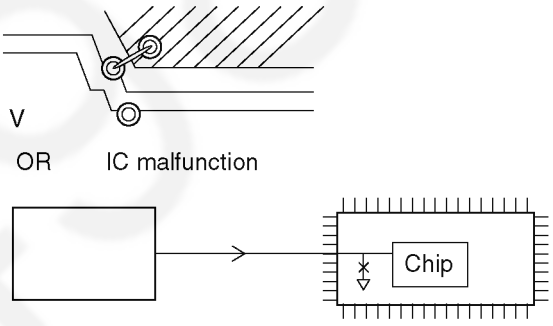
Short circuit from the adjacent signal wires.
Check for a short circuit in the RA and IC leads and the signal wire at the through hole.



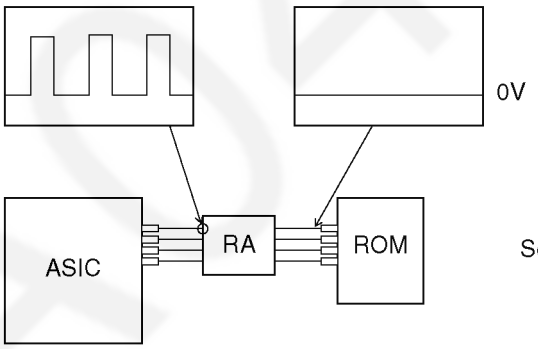
2.



Short between the signal line and GND.



3.



Solder fault on RA.

15.7. Test Chart

15.7.1. 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.

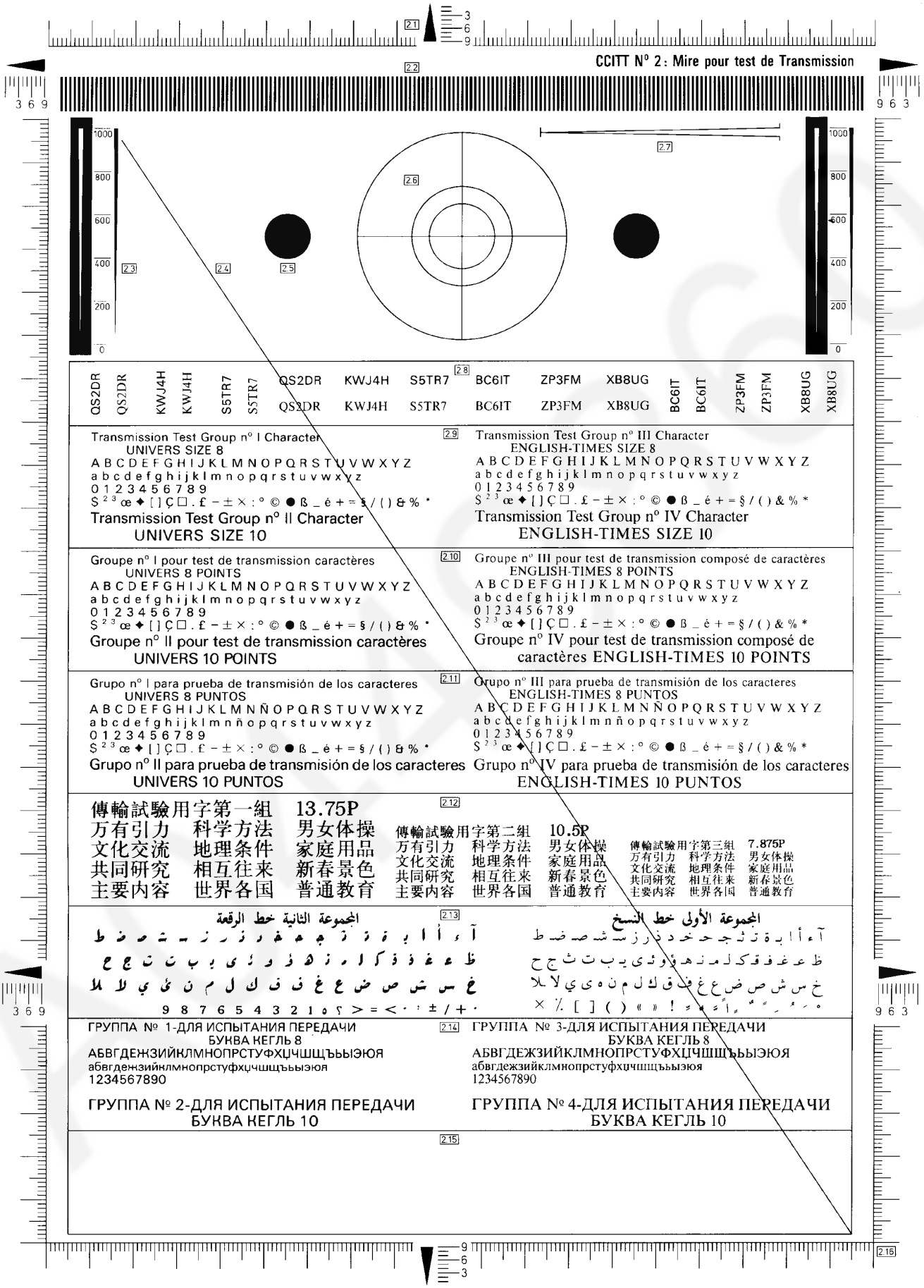
Probably you have uses for this facility in your organisation.

Yours sincerely,

Phil.

P.J. CROSS
Group Leader - Facsimile Research

15.7.2. ITU-T No.2 Test Chart

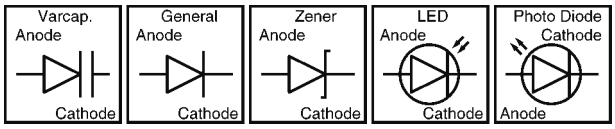


16 Schematic Diagram

16.1. For Schematic Diagram

Note:

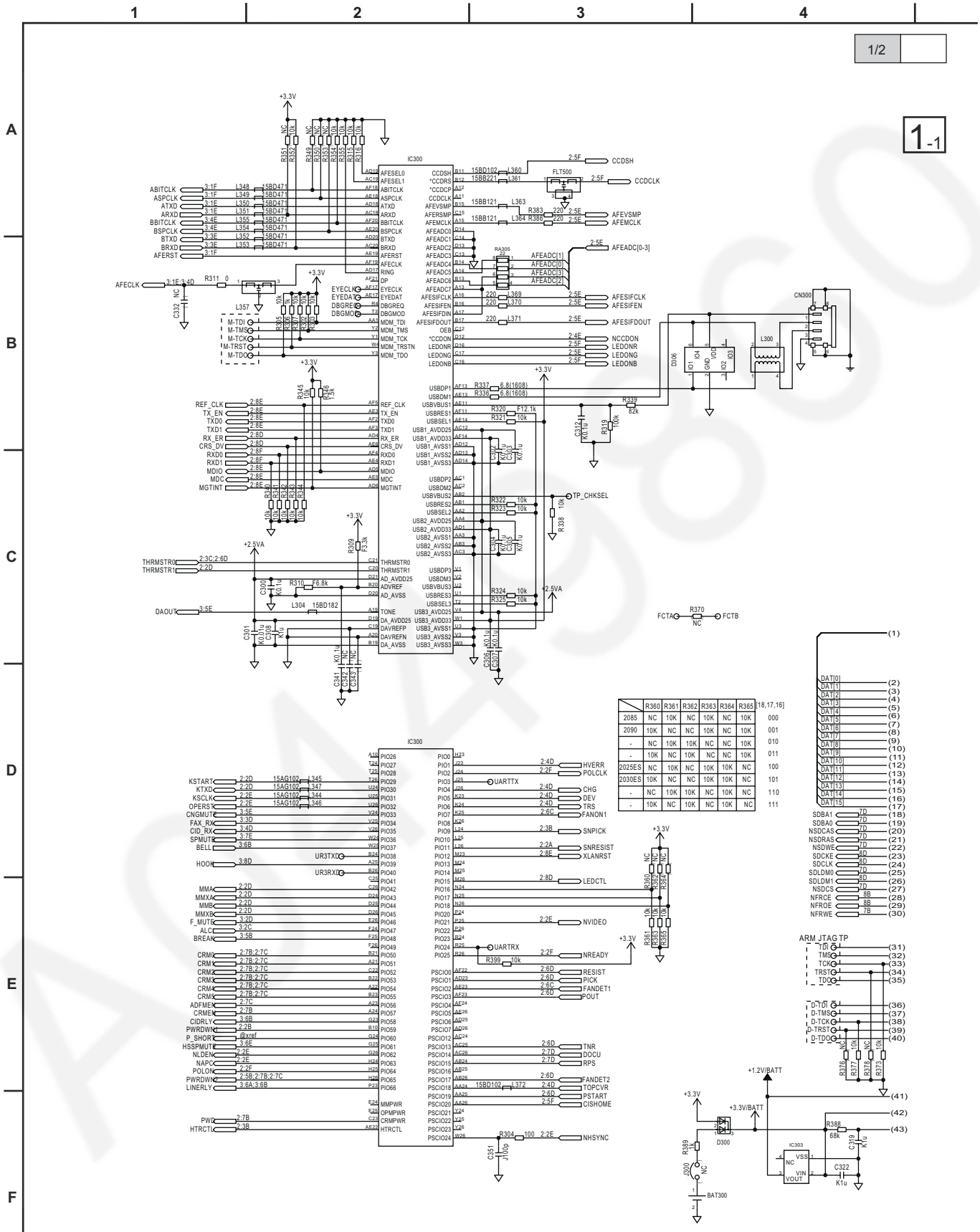
1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.



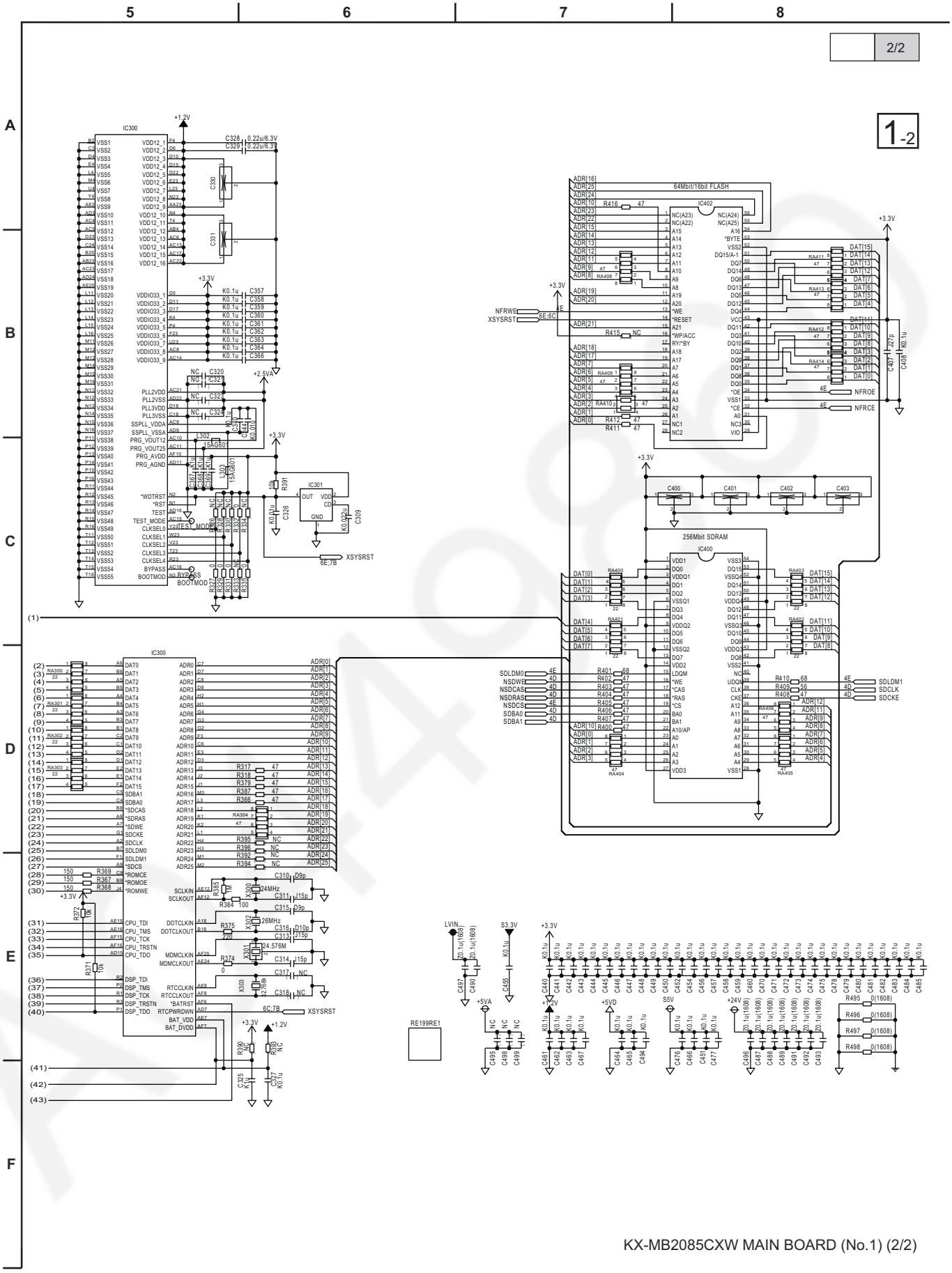
Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

16.2. Main Board (KX-MB2085)

16.2.1. Main Board (1)

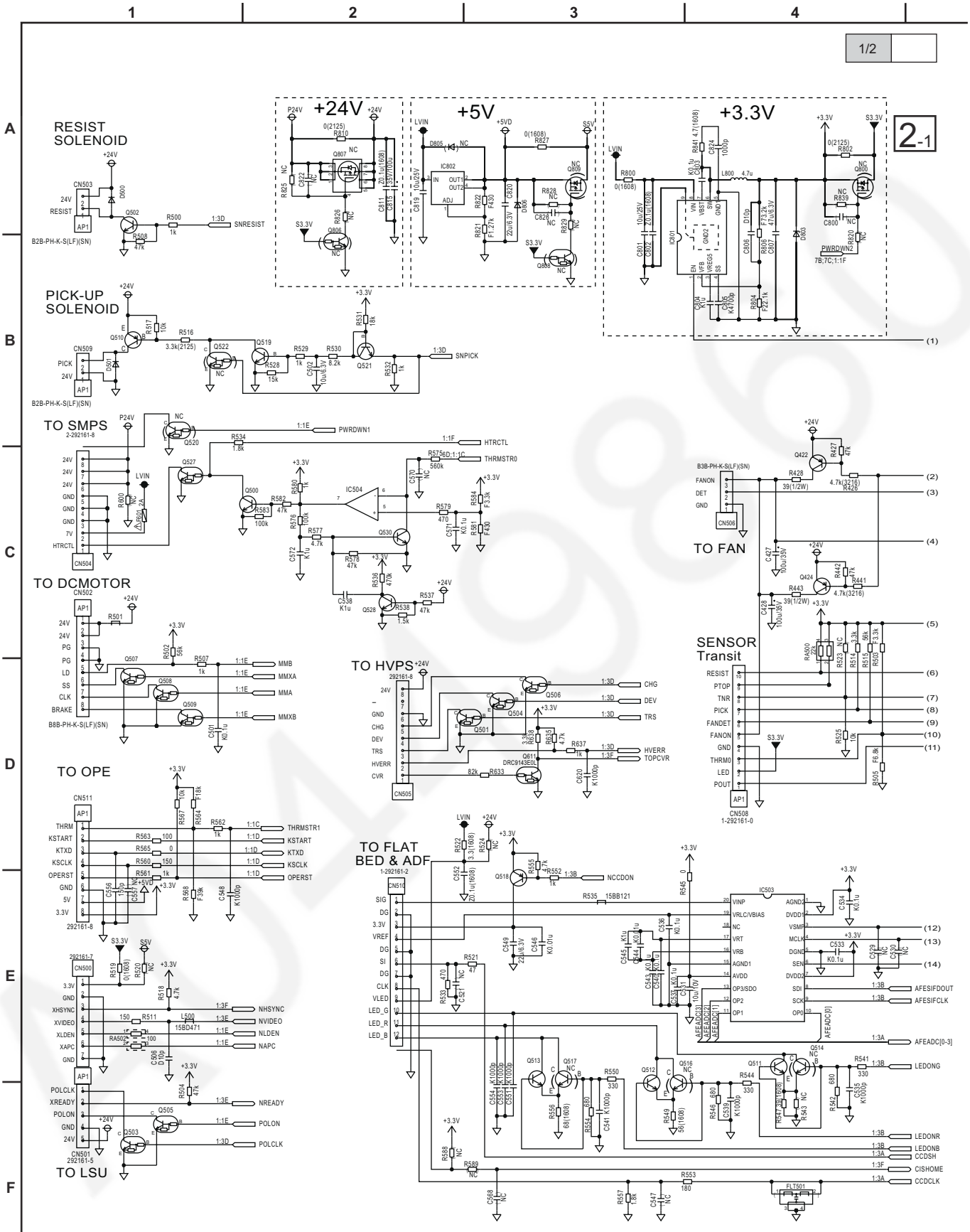


KX-MB2085CXW MAIN BOARD (No.1) (1/2)

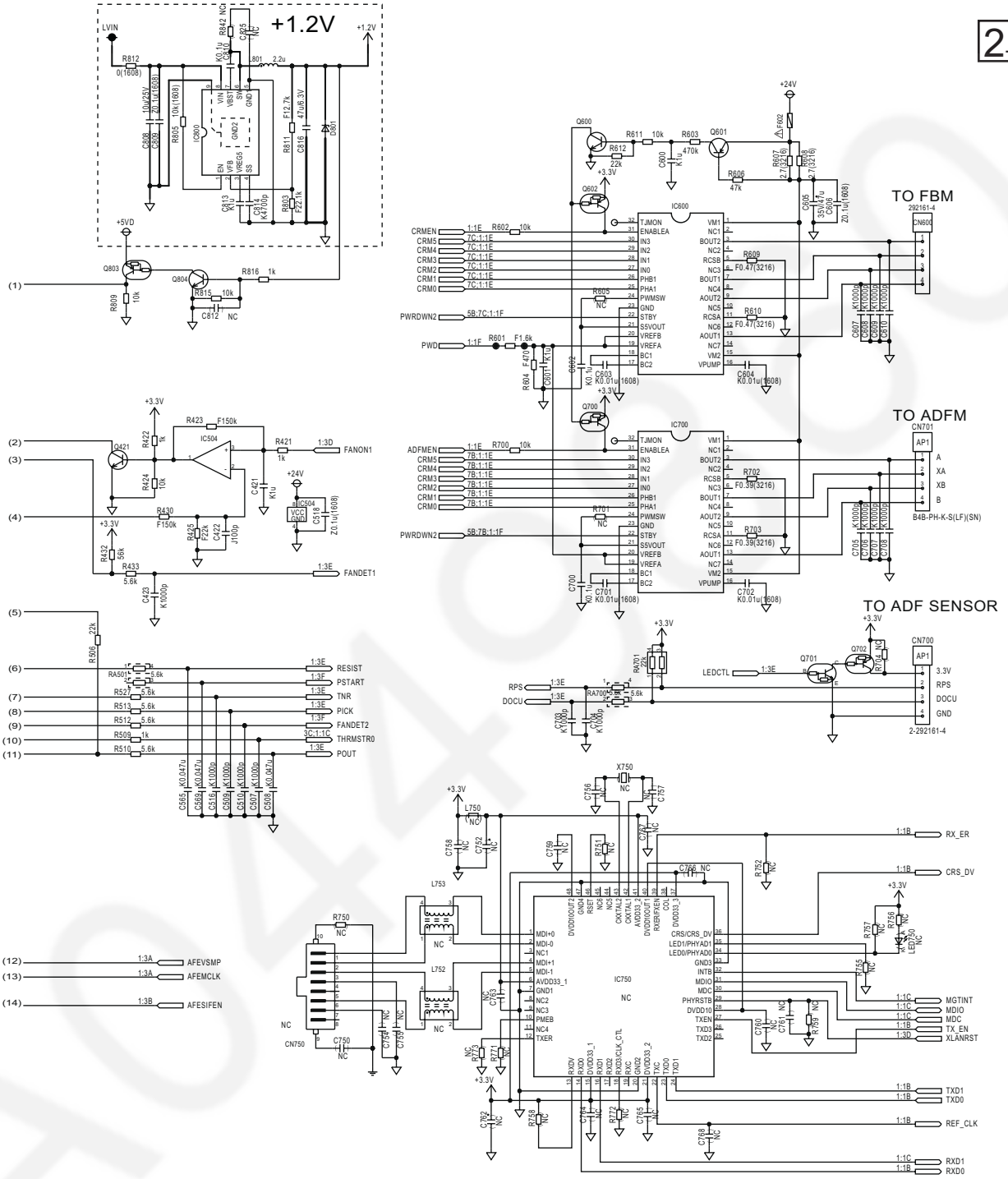


KX-MB2085CXW MAIN BOARD (No.1) (2/2)

16.2.2. Main Board (2)

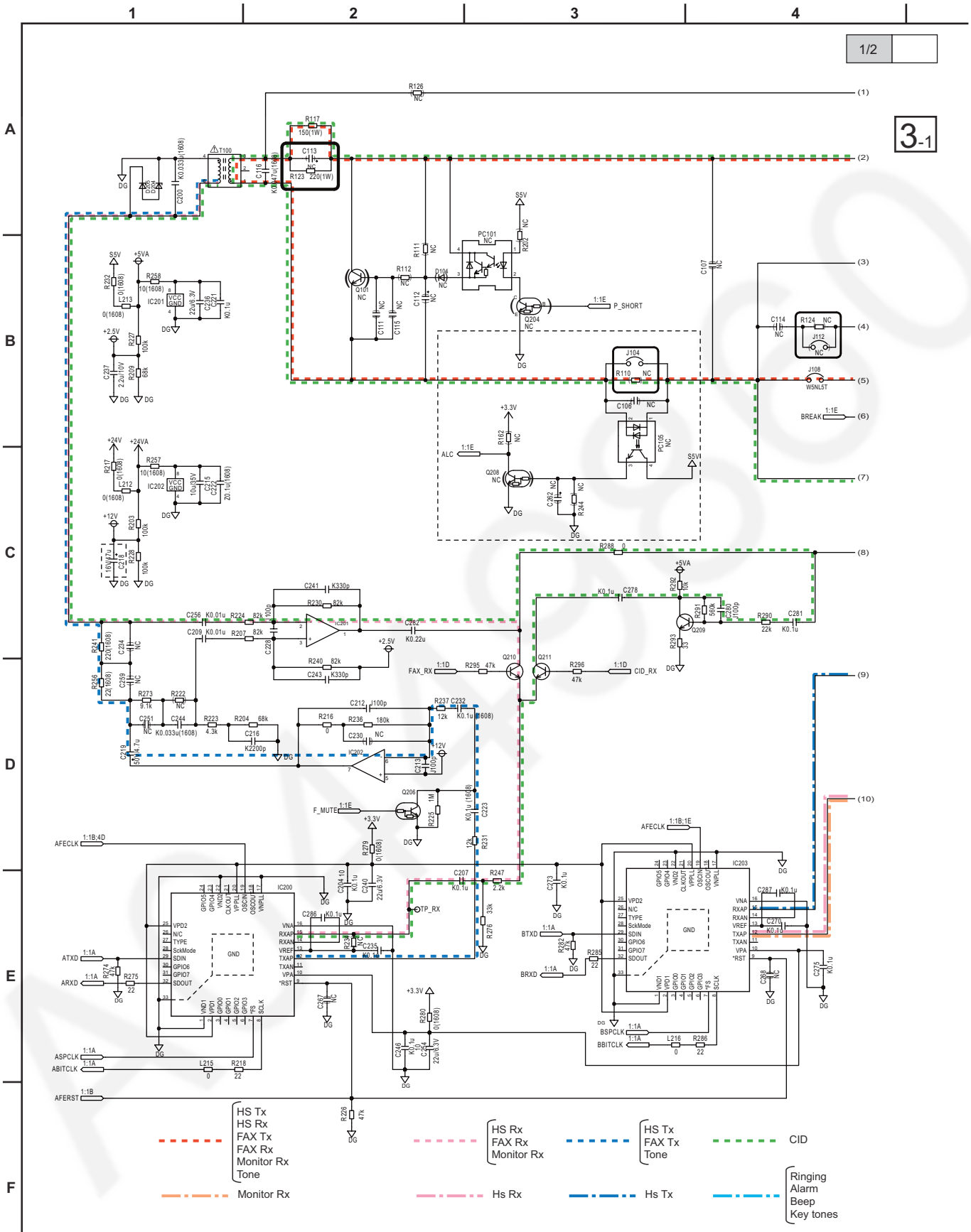


2-2

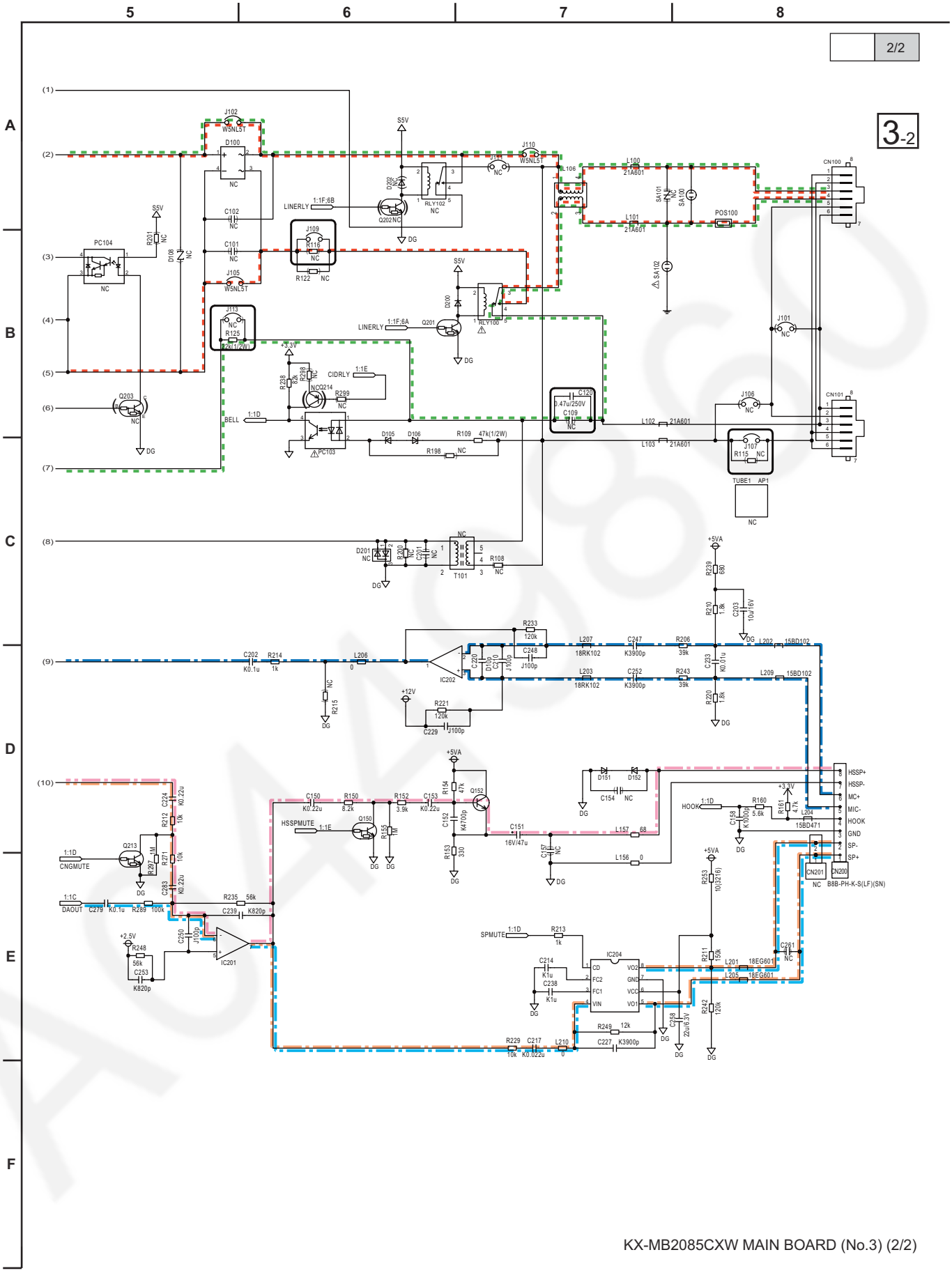


KX-MB2085CXW MAIN BOARD (No.2) (2/2)

16.2.3. Main Board (3)



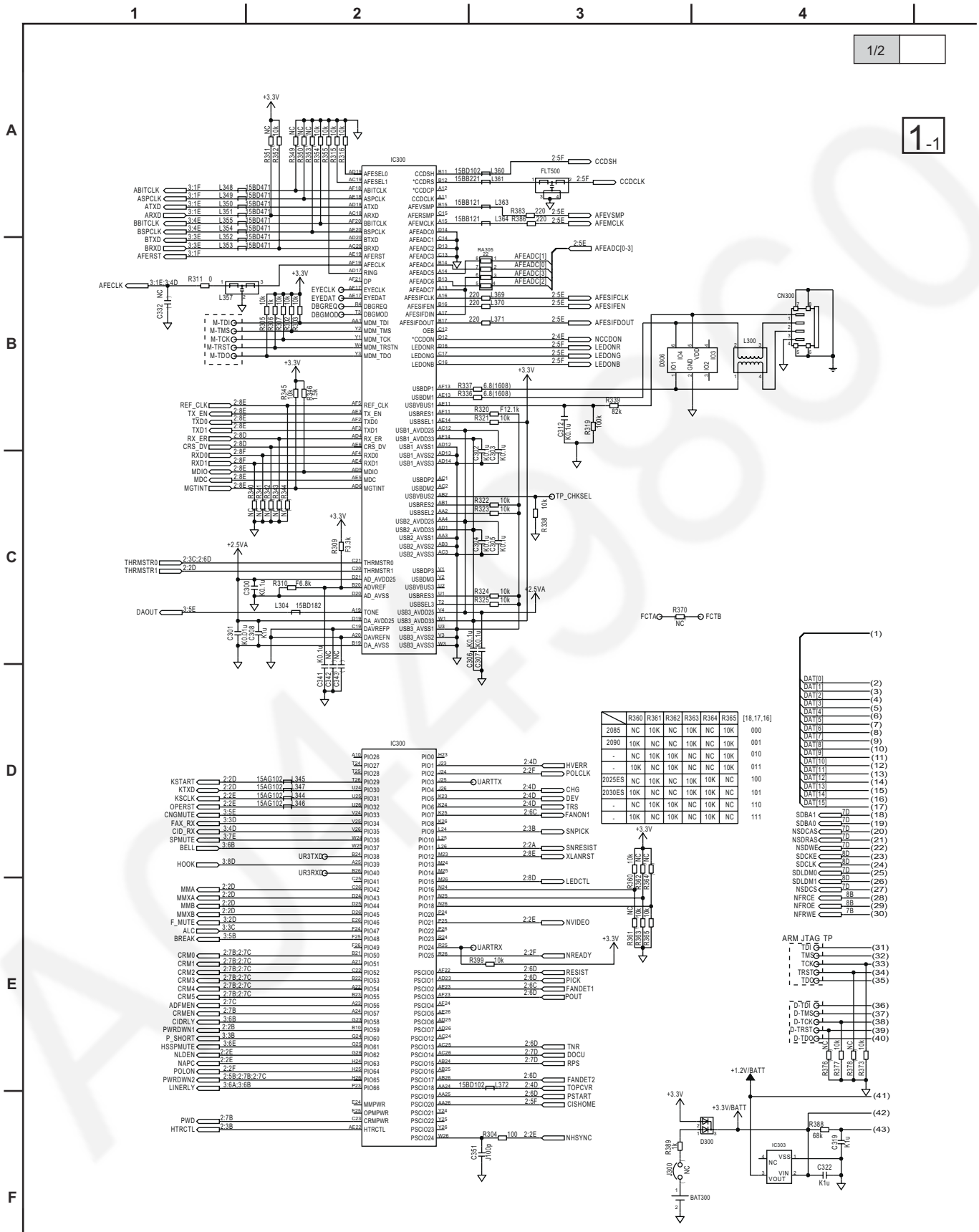
KX-MB2085CXW MAIN BOARD (No.3) (1/2)



KX-MB2085CXW MAIN BOARD (No.3) (2/2)

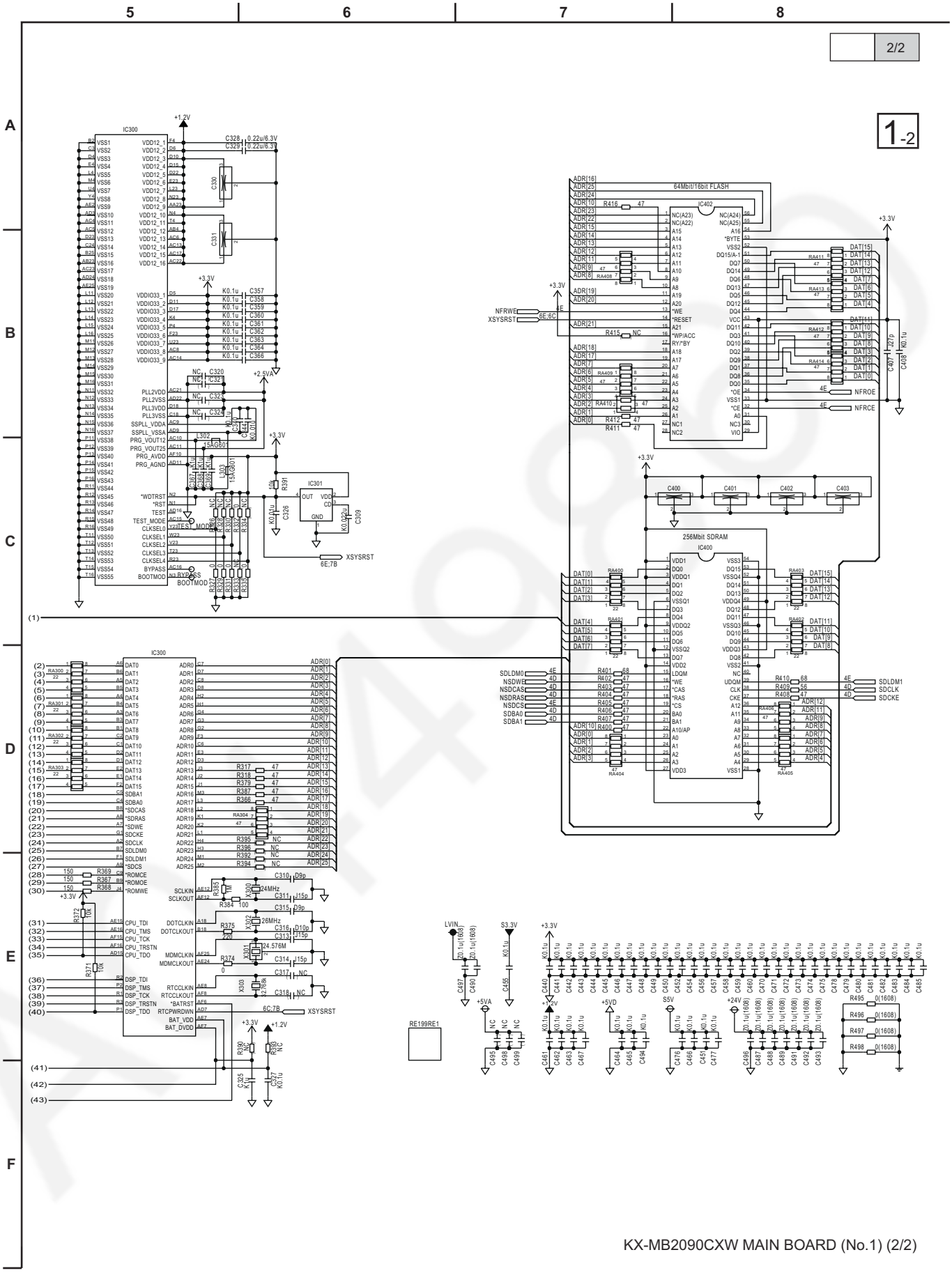
16.3. Main Board (KX-MB2090)

16.3.1. Main Board (1)



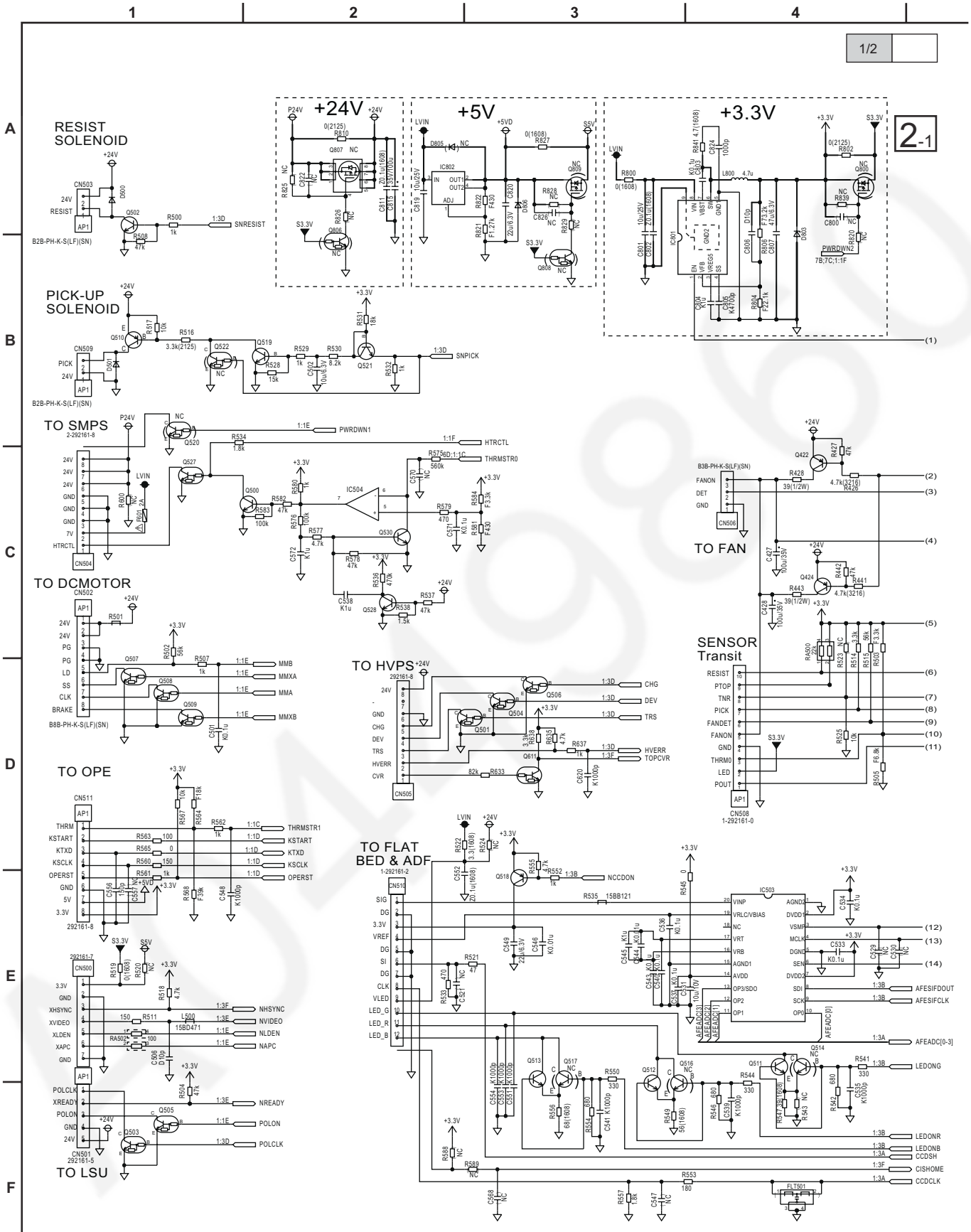
	R360	R361	R362	R363	R364	R365	[18,17,16]
2085	NC	10K	NC	10K	NC	10K	000
2090	10K	NC	NC	10K	NC	10K	001
-	NC	10K	10K	NC	NC	10K	010
-	10K	NC	10K	NC	NC	10K	011
2025ES	NC	10K	NC	10K	10K	NC	100
2030ES	10K	NC	NC	10K	10K	NC	101
-	NC	10K	10K	NC	10K	NC	110
-	10K	NC	10K	NC	10K	NC	111

KX-MB2090CXW MAIN BOARD (No.1) (1/2)

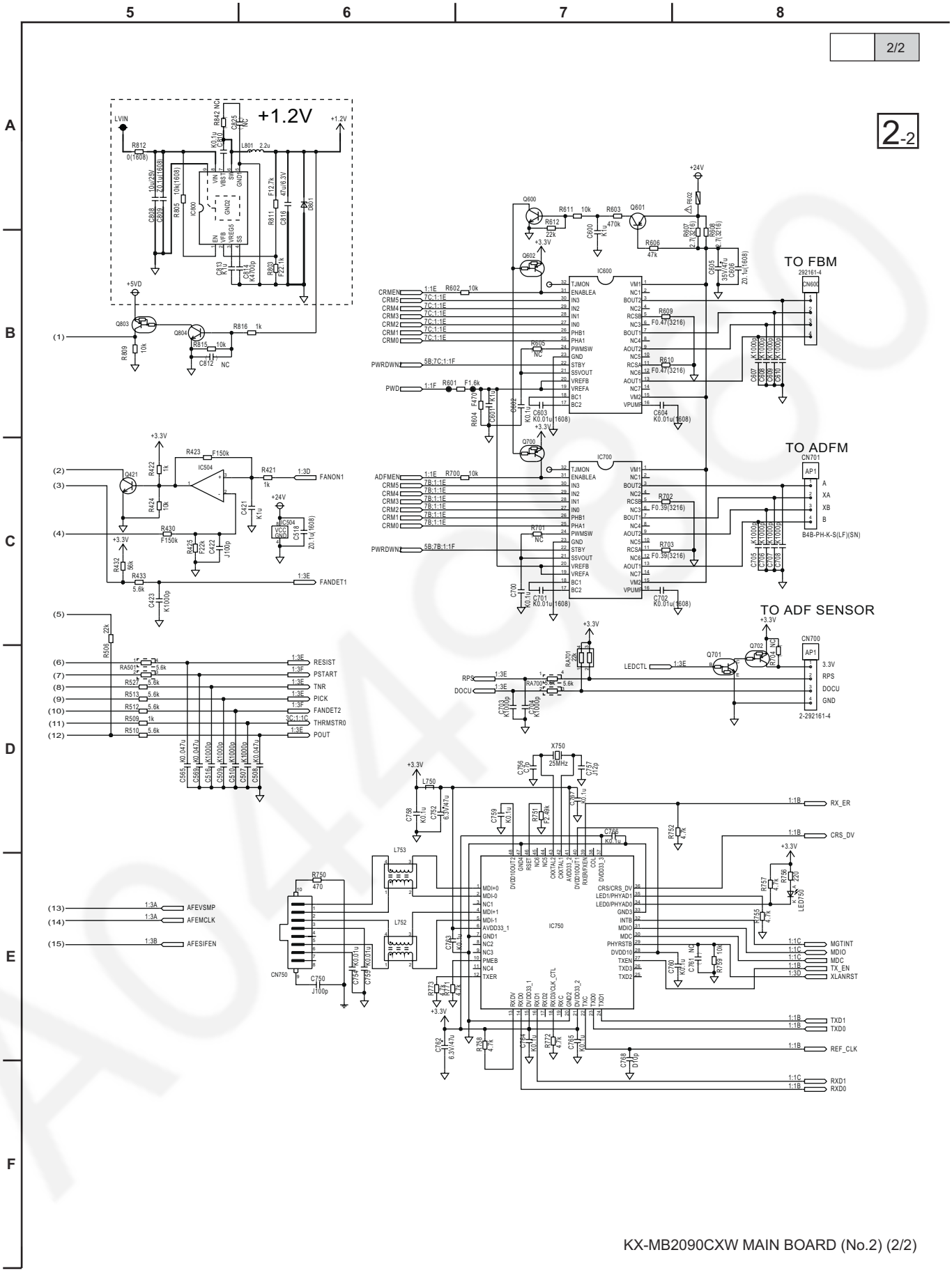


KX-MB2090CXW MAIN BOARD (No.1) (2/2)

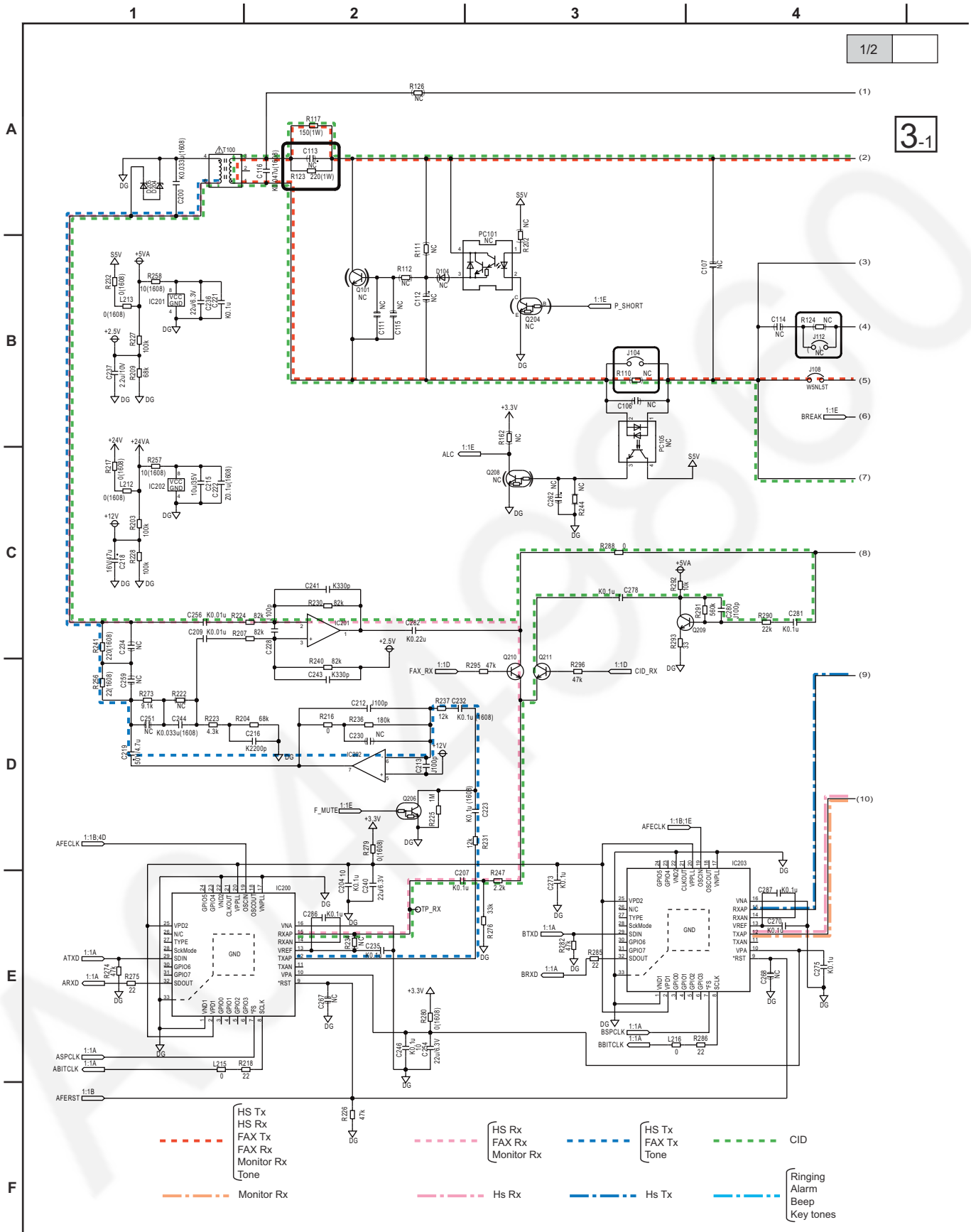
16.3.2. Main Board (2)



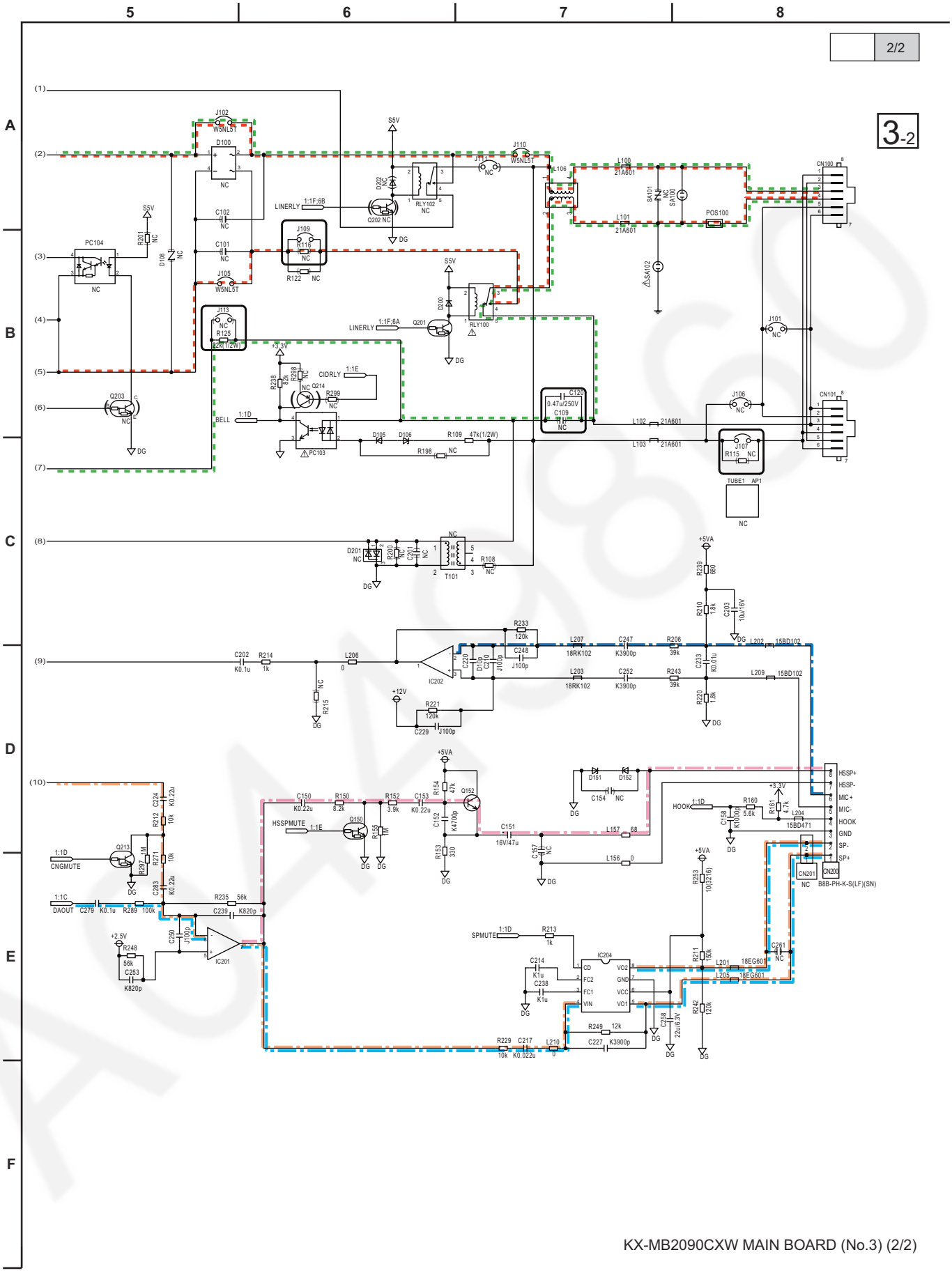
KX-MB2090CXW MAIN BOARD (No.2) (1/2)


5
6
7
8
A
B
C
D
E
F
2/2
2-2
+1.2V
LVIN
+5VD
+3.3V
+24V
TO FBM
TO ADFM
TO ADF SENSOR
IC600
IC700
IC750
IC504
X750
25MHz
CN600
CN701
CN700
AP1
B4B-PH-K-S(LF)(SN)
2-292161-4
FANON1
FANDET1
RESIST
PSTART
TNR
PICK
FANDET2
THRMSTR0
POUT
AFEVSMP
AFEMCLK
AFESIFEN
RX_ER
CRS_DV
MGTINT
MDIO
MDC
TX_EN
XLANRST
TXD1
TXD0
REF_CLK
RXD1
RXD0
RPS
DOCU
LEDCTL
KX-MB2090CXW MAIN BOARD (No.2) (2/2)

16.3.3. Main Board (3)

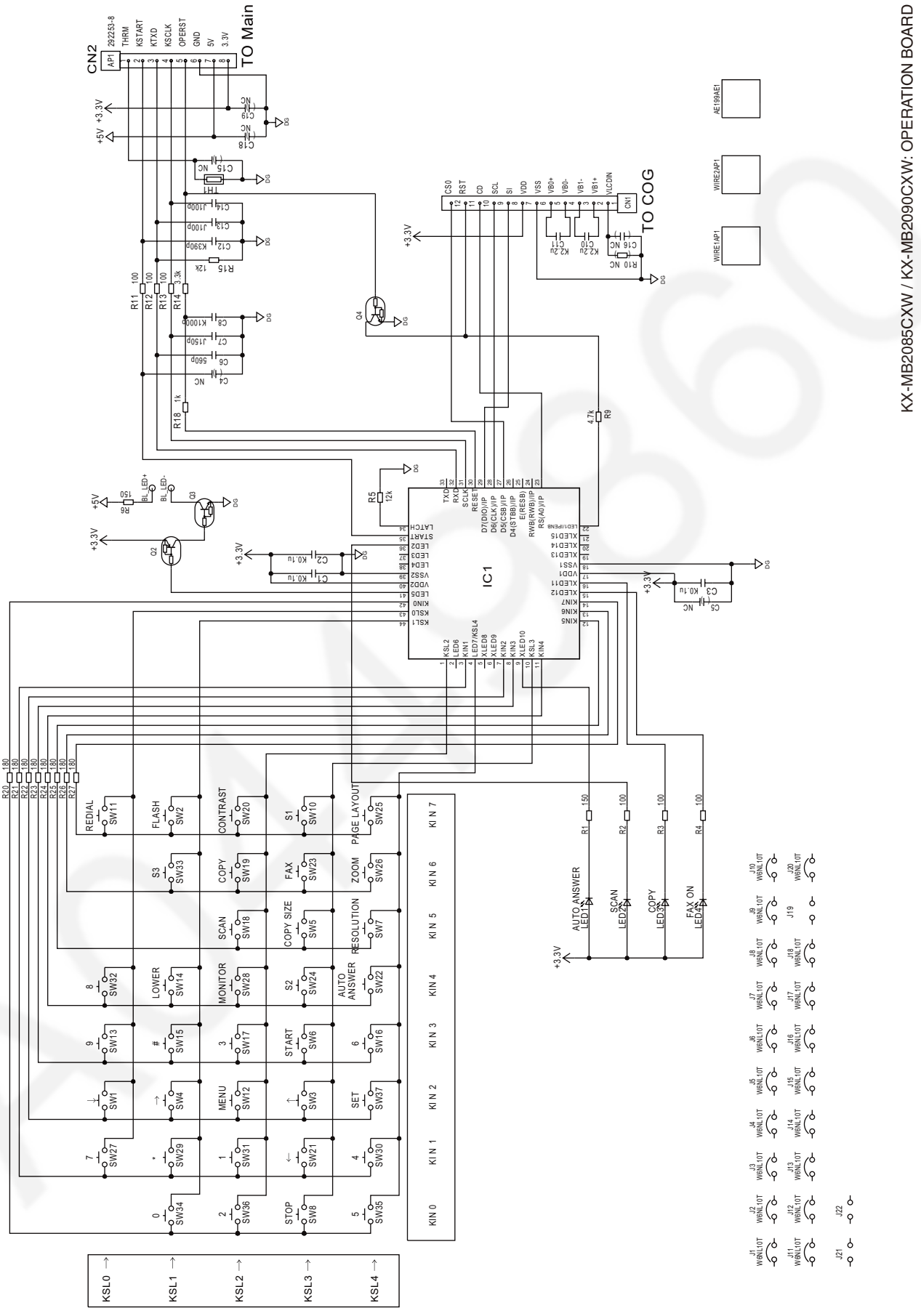


KX-MB2090CXW MAIN BOARD (No.3) (1/2)

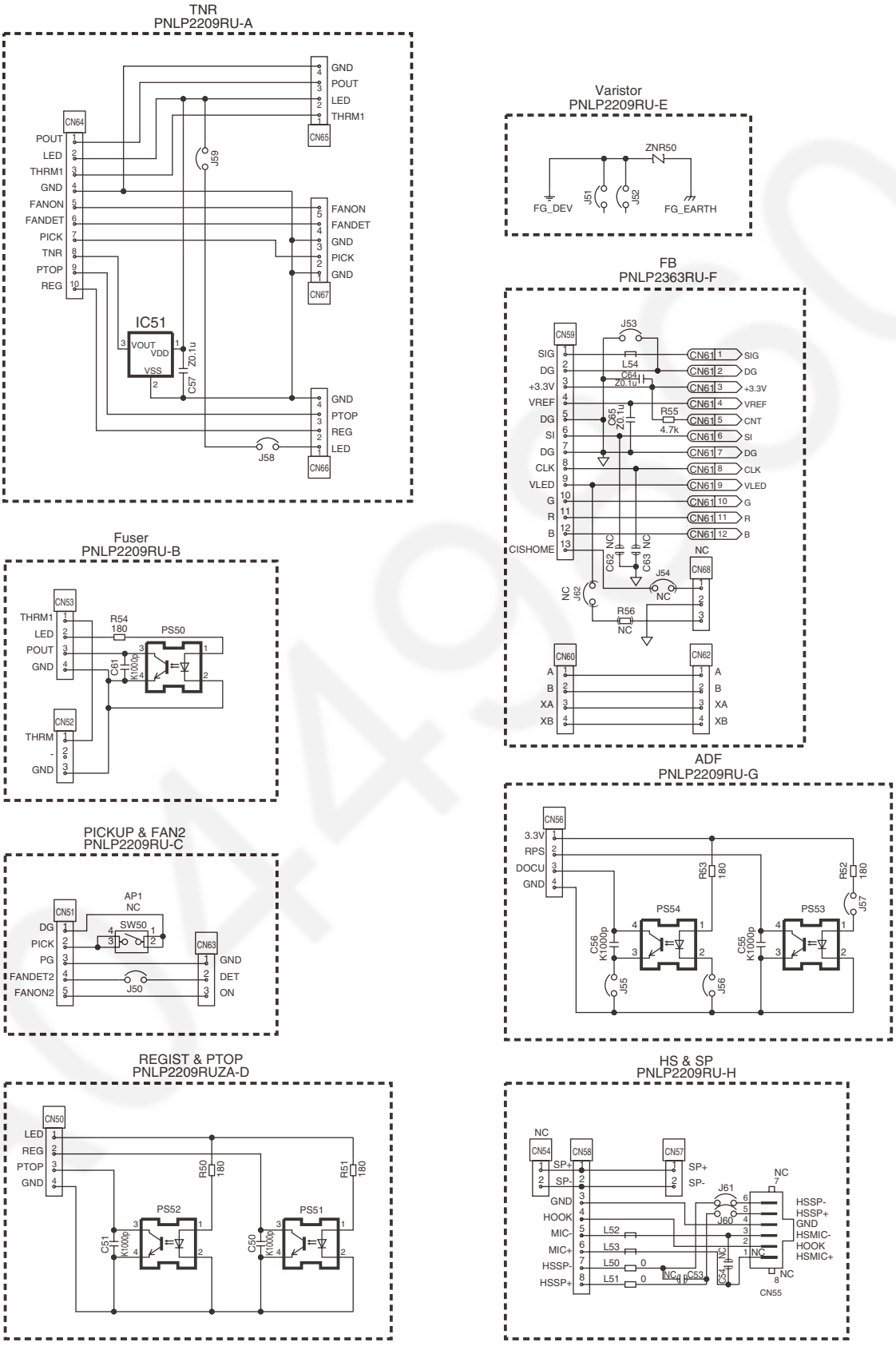


KX-MB2090CXW MAIN BOARD (No.3) (2/2)

16.4. Operation Board

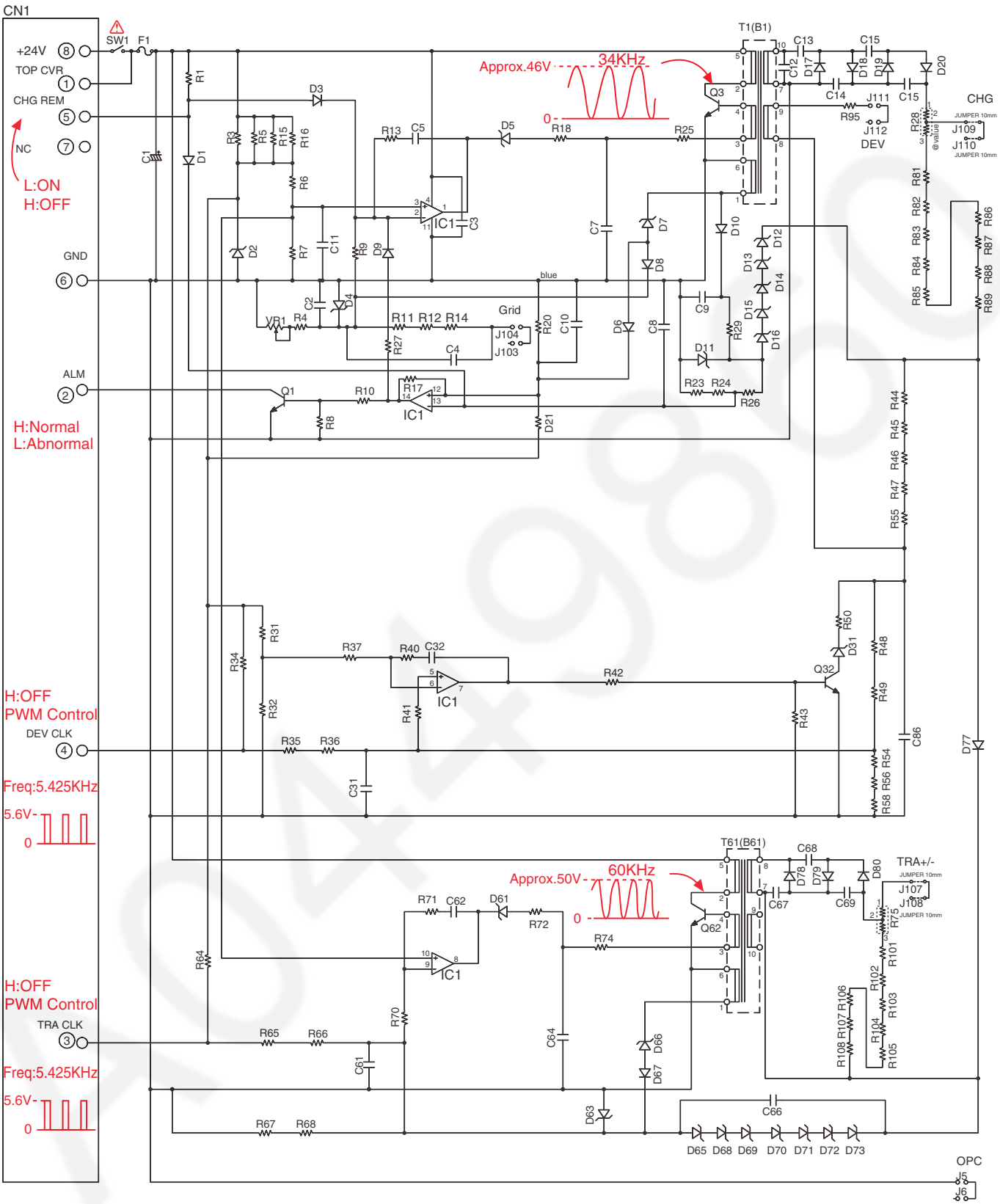


16.5. Sensor Board



KX-MB2085CX / KX-MB2090CX SENSOR BOARD

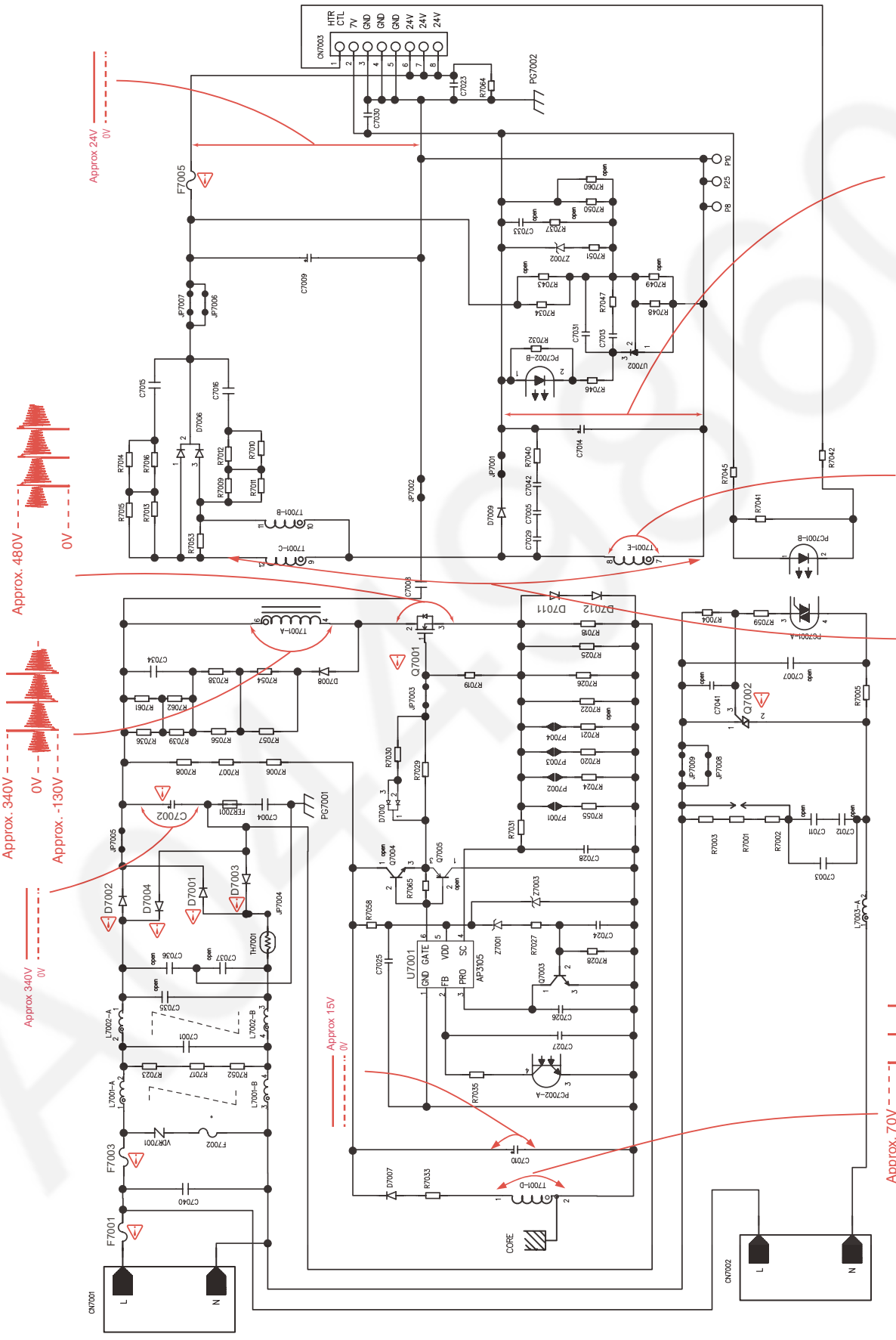
16.6. High Voltage Power Supply Board



KX-MB2085CX/KX-MB2090CX HIGH VOLTAGE POWER SUPPLY BOARD

16.7. Low Voltage Power Supply Board

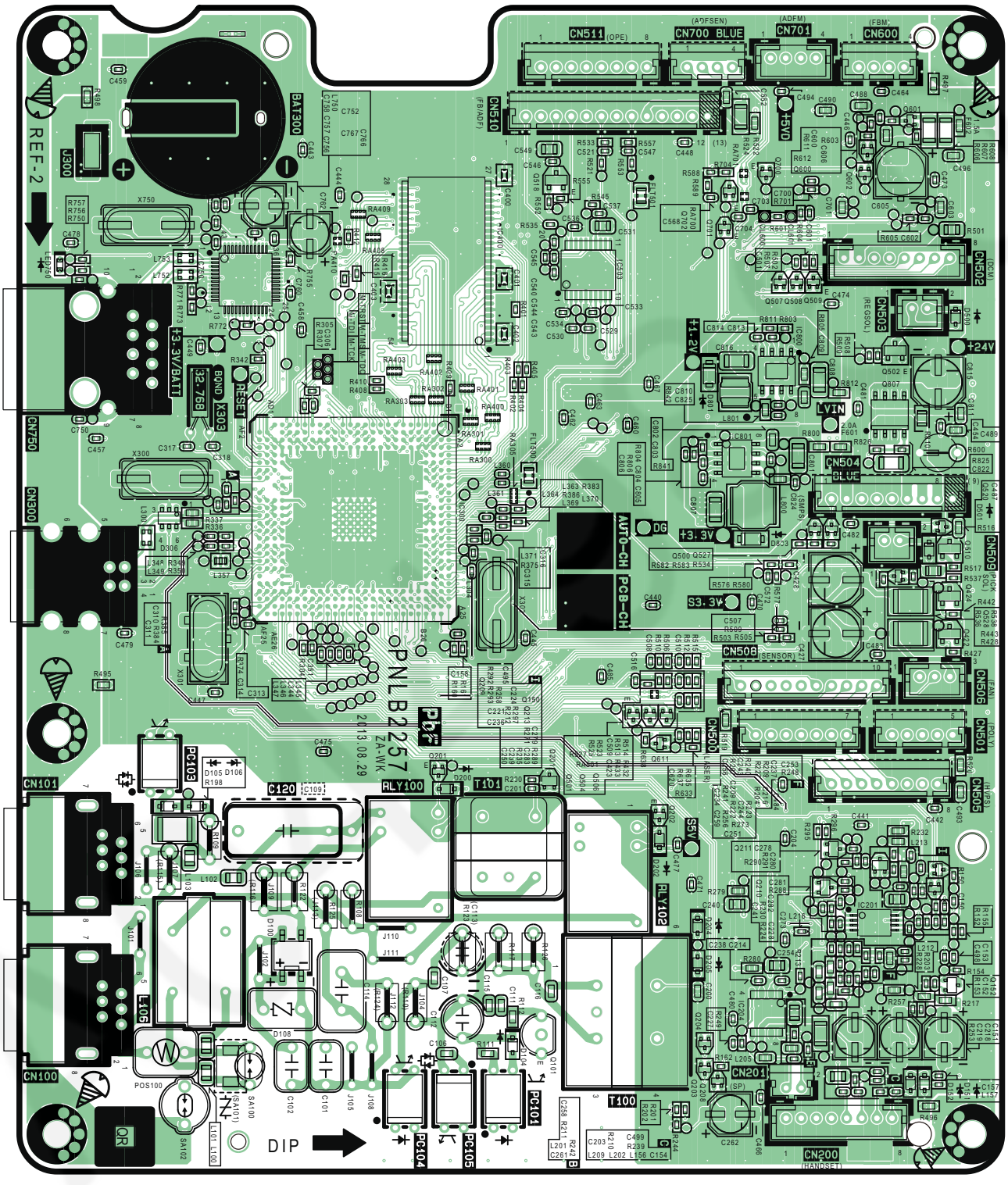
KX-MB2085CX / KX-MB2090CX LOW VOLTAGE POWER SUPPLY BOARD



17 Printed Circuit Board

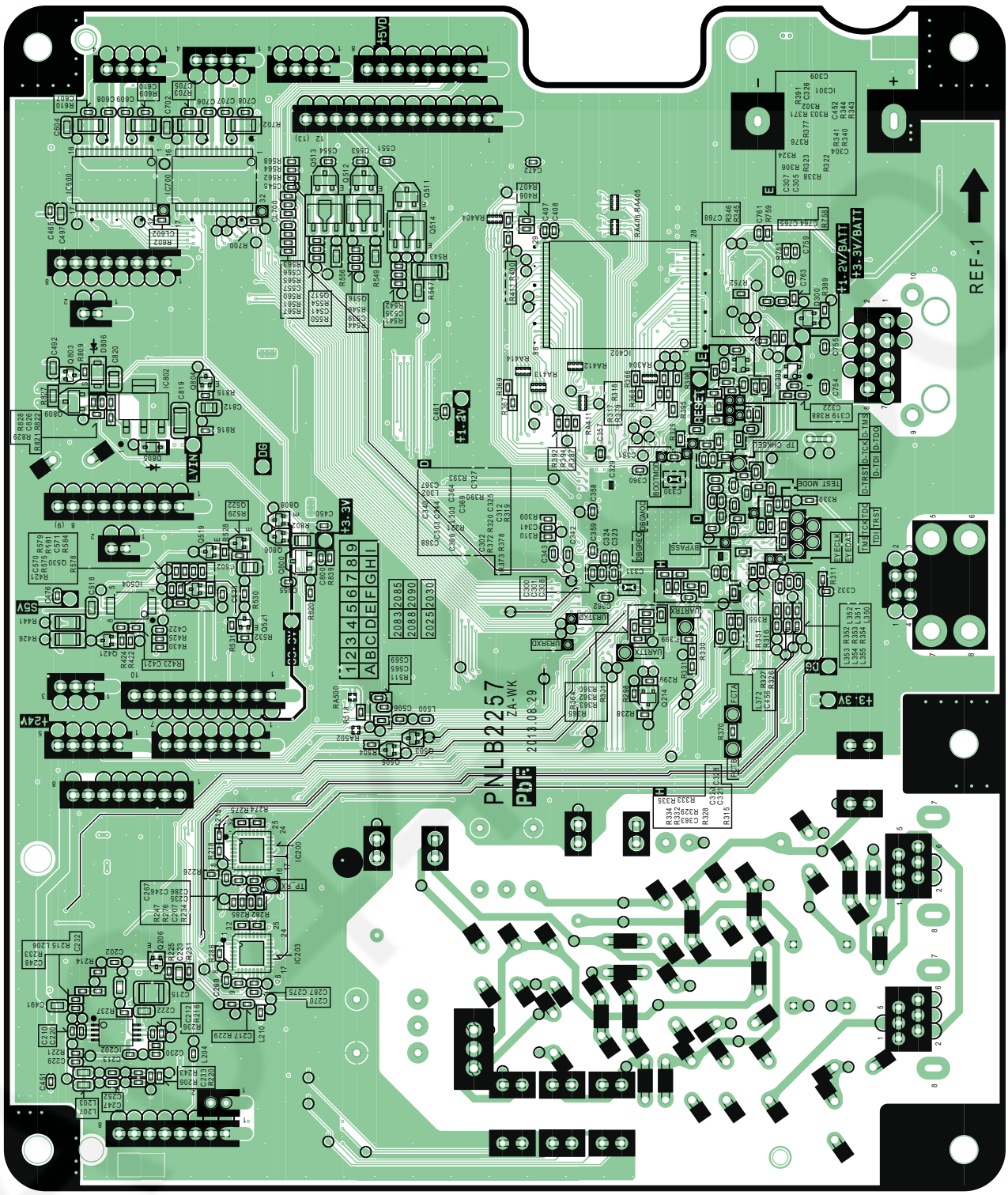
17.1. Main Board

17.1.1. Main Board: Component View



KX-MB2085CXW / KX-MB2090CXW
MAIN BOARD COMPONENT VIEW

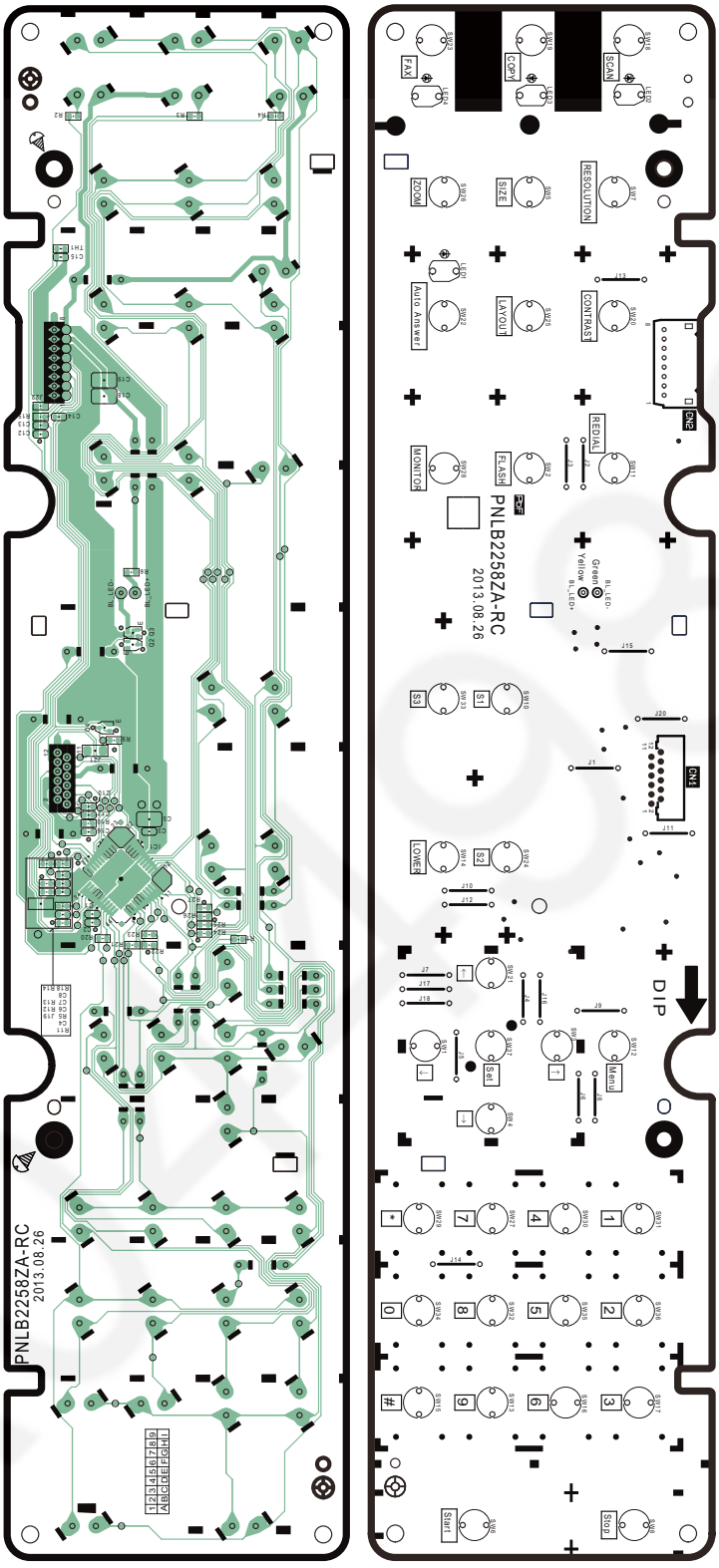
17.1.2. Main Board: Bottom View



KX-MB2085CXW / KX-MB2090CXW
MAIN BOARD BOTTOM VIEW

17.2. Operation Board

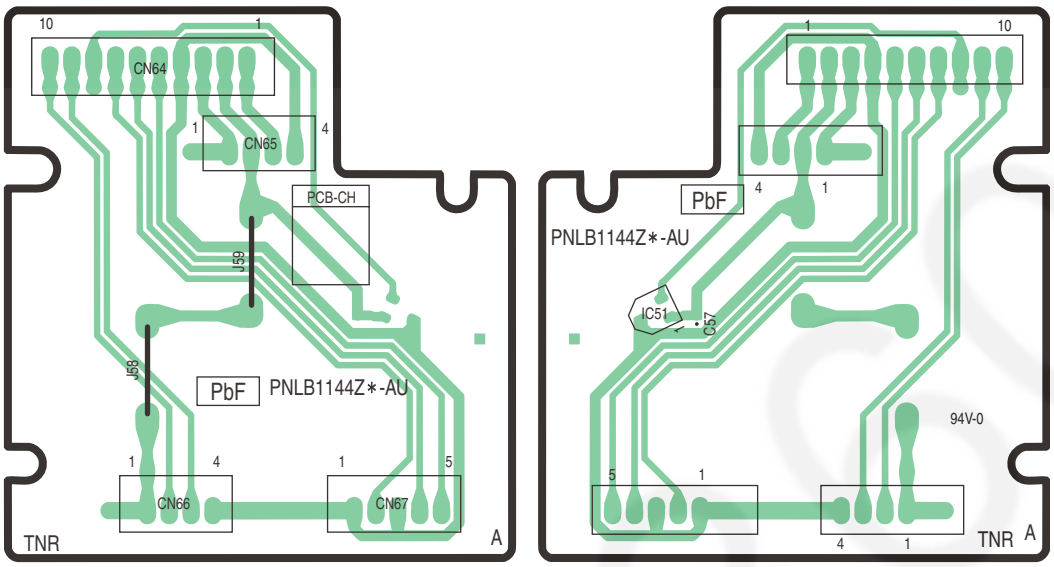
17.2.1. Operation Board



KX-MB2085CXW / KX-MB2090CXW
OPERATION PANEL BOARD

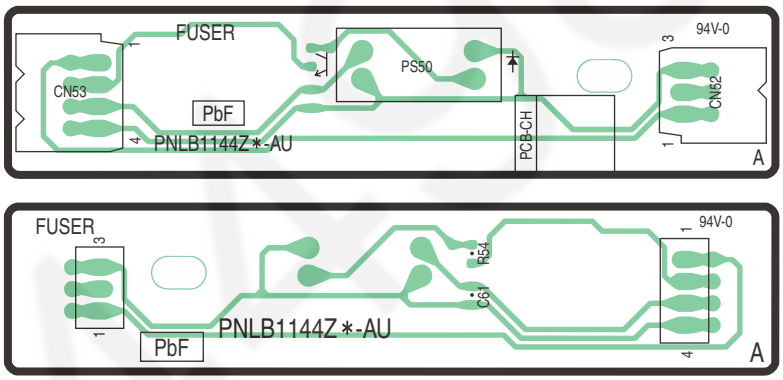
17.3. Sensor Board

17.3.1. Toner Sensor Board



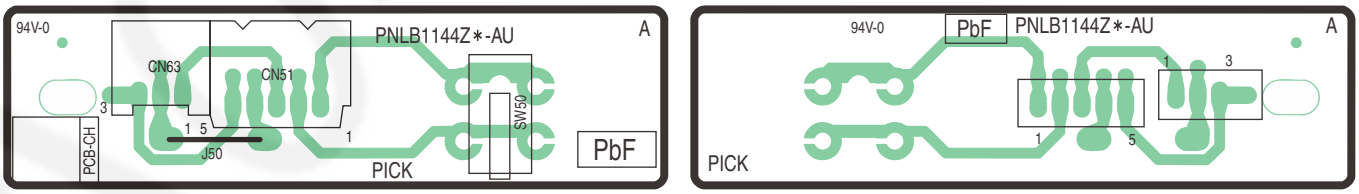
KX-MB2085CXW / KX-MB2090CXW TONER SENSOR BOARD

17.3.2. Fuser Board



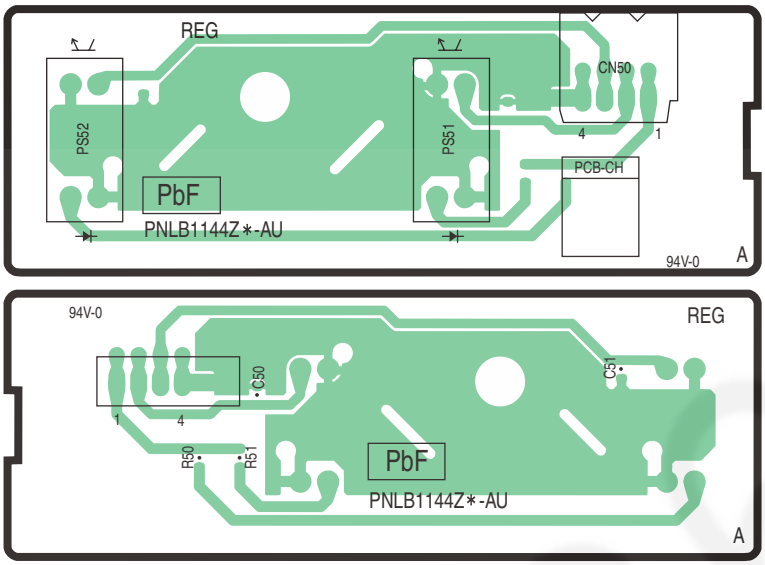
KX-MB2085CXW / KX-MB2090CXW FUSER SENSOR BOARD

17.3.3. Pickup Sensor Board



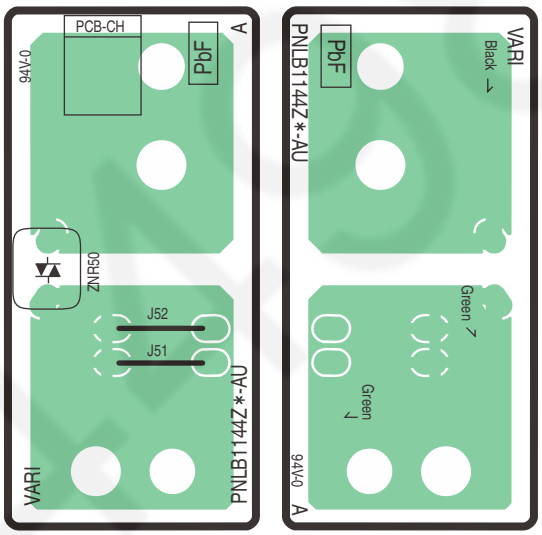
KX-MB2085CXW / KX-MB2090CXW PICK UP SENSOR BOARD

17.3.4. Registration Sensor Board



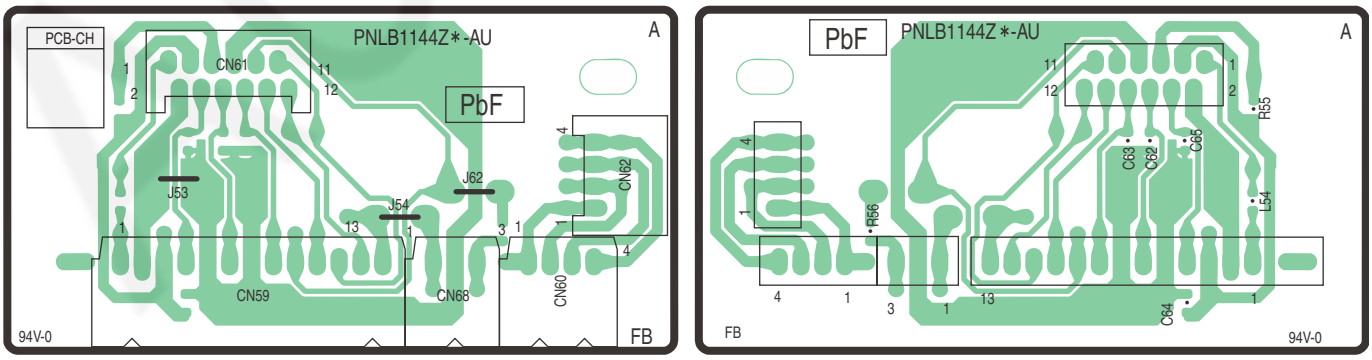
KX-MB2085CXW / KX-MB2090CXW REGISTRATION SENSOR BOARD

17.3.5. Varistor Sensor Board



KX-MB2085CXW / KX-MB2090CXW VARISTOR SENSOR BOARD

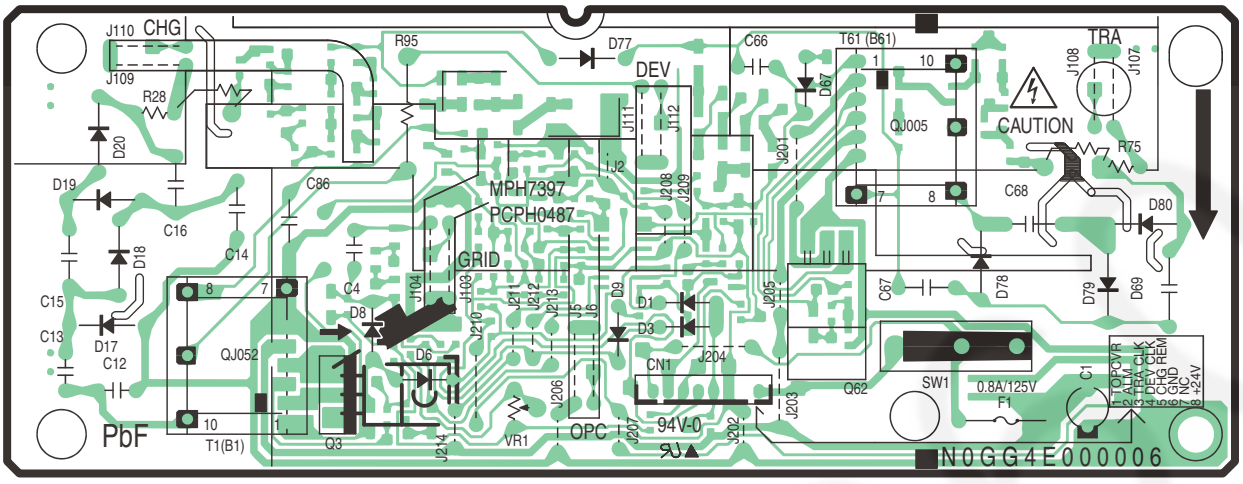
17.3.6. Flatbed Relay Board



KX-MB2085CXW / KX-MB2090CXW FB RELAY BOARD

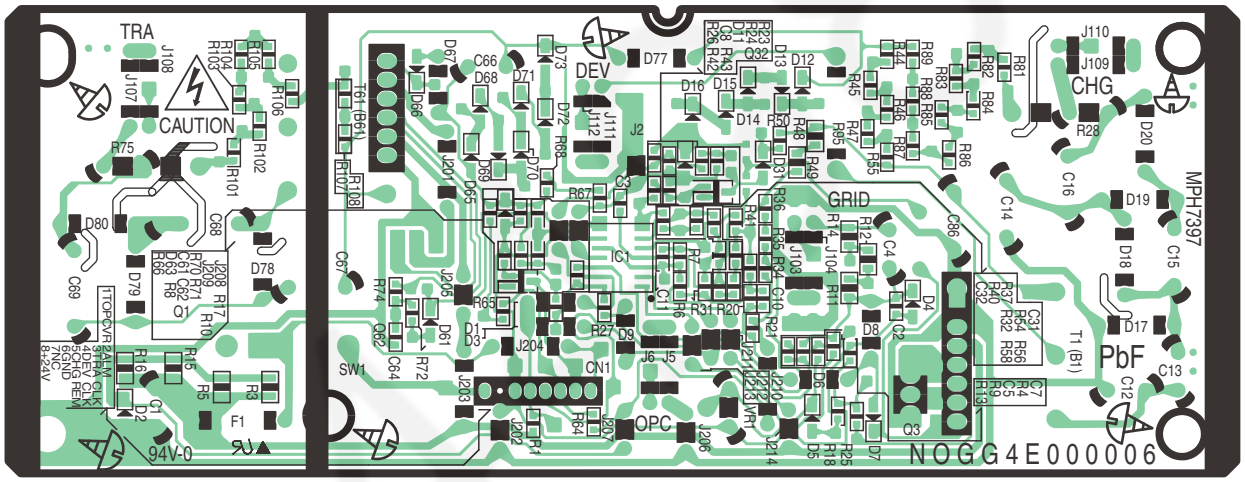
17.4. High Voltage Power Supply Board

17.4.1. HIGH VOLTAGE POWER SUPPLY BOARD: COMPONENT VIEW



KX-MB2085CX/KX-MB2090CX HIGH VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

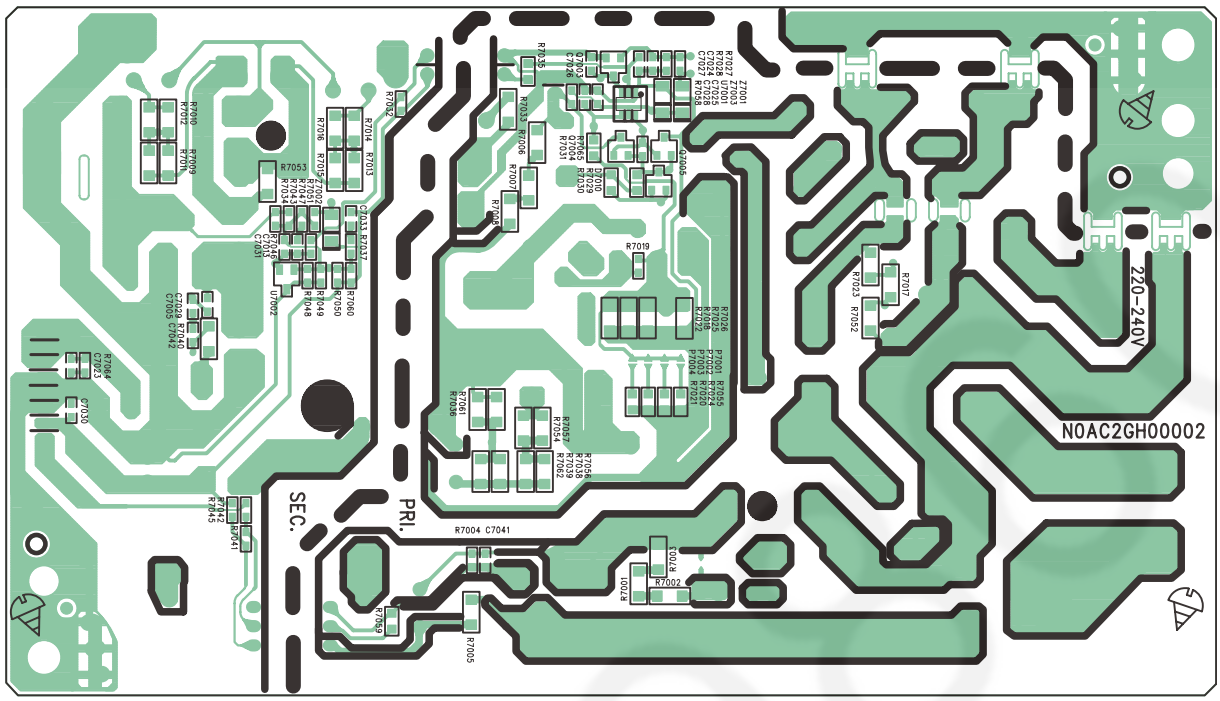
17.4.2. HIGH VOLTAGE POWER SUPPLY BOARD: BOTTOM VIEW



KX-MB2085CX/KX-MB2090CX HIGH VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

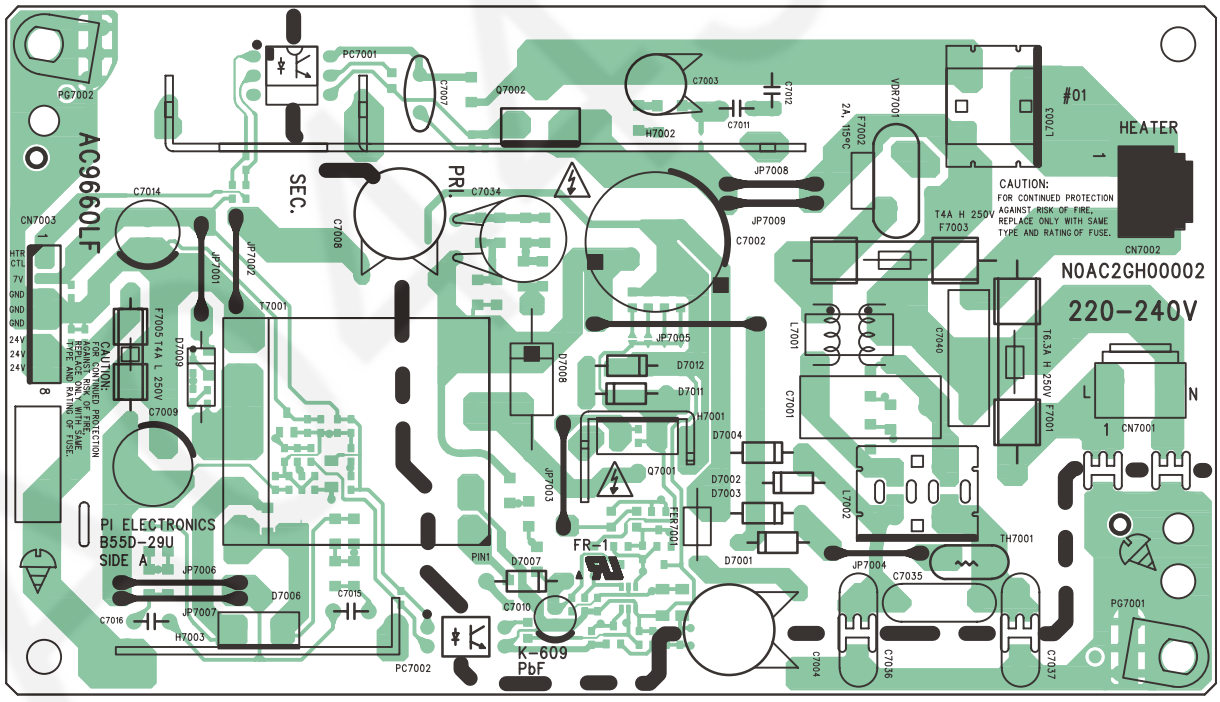
17.5. Low Voltage Power Supply Board

17.5.1. LOW VOLTAGE POWER SUPPLY BOARD: COMPONENT VIEW



KX-MB2085CX / KX-MB2090CX LOW VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

17.5.2. LOW VOLTAGE POWER SUPPLY BOARD: BOTTOM VIEW

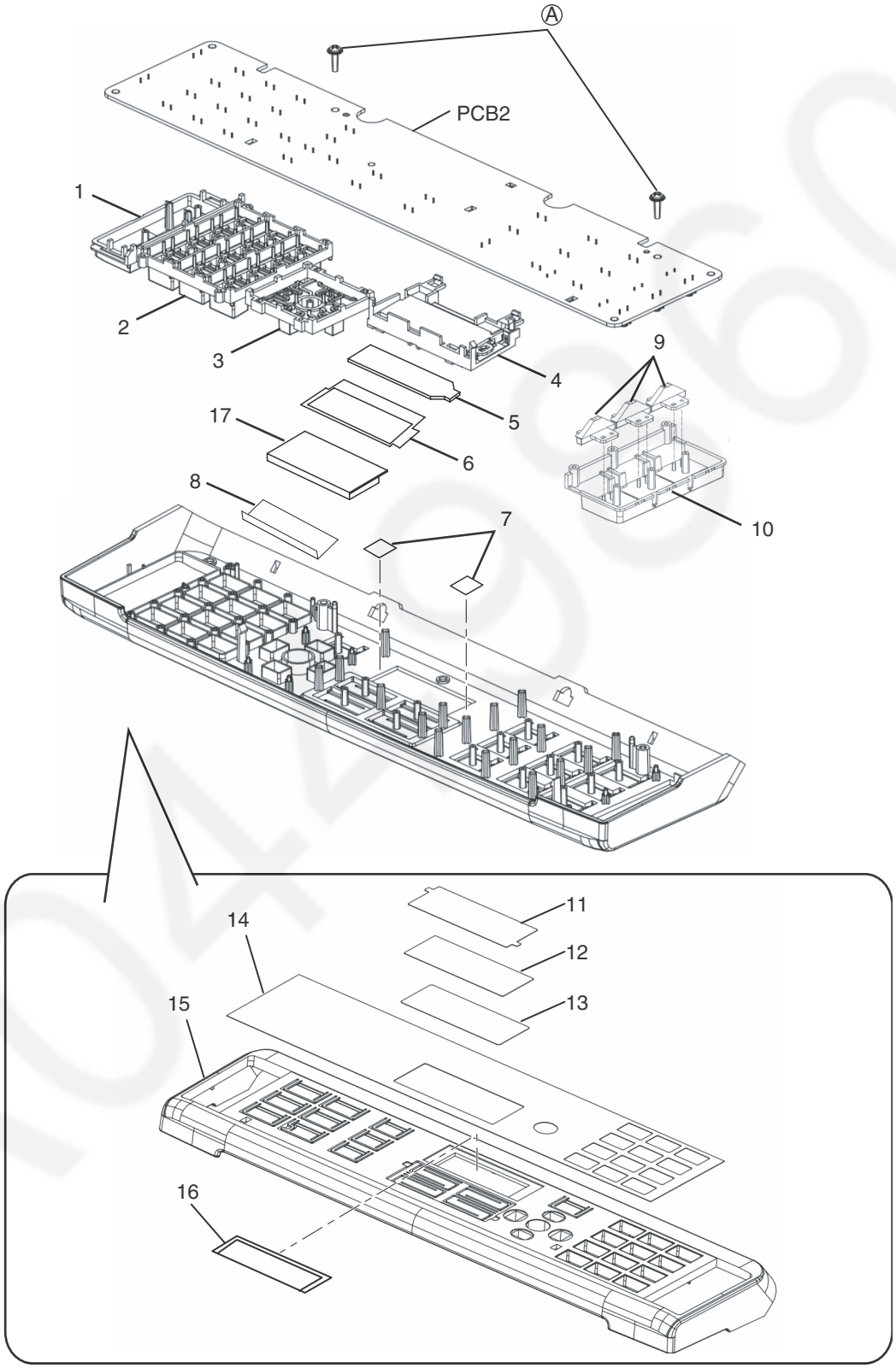


KX-MB2085CX / KX-MB2090CX LOW VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

18 Exploded View and Replacement Parts List

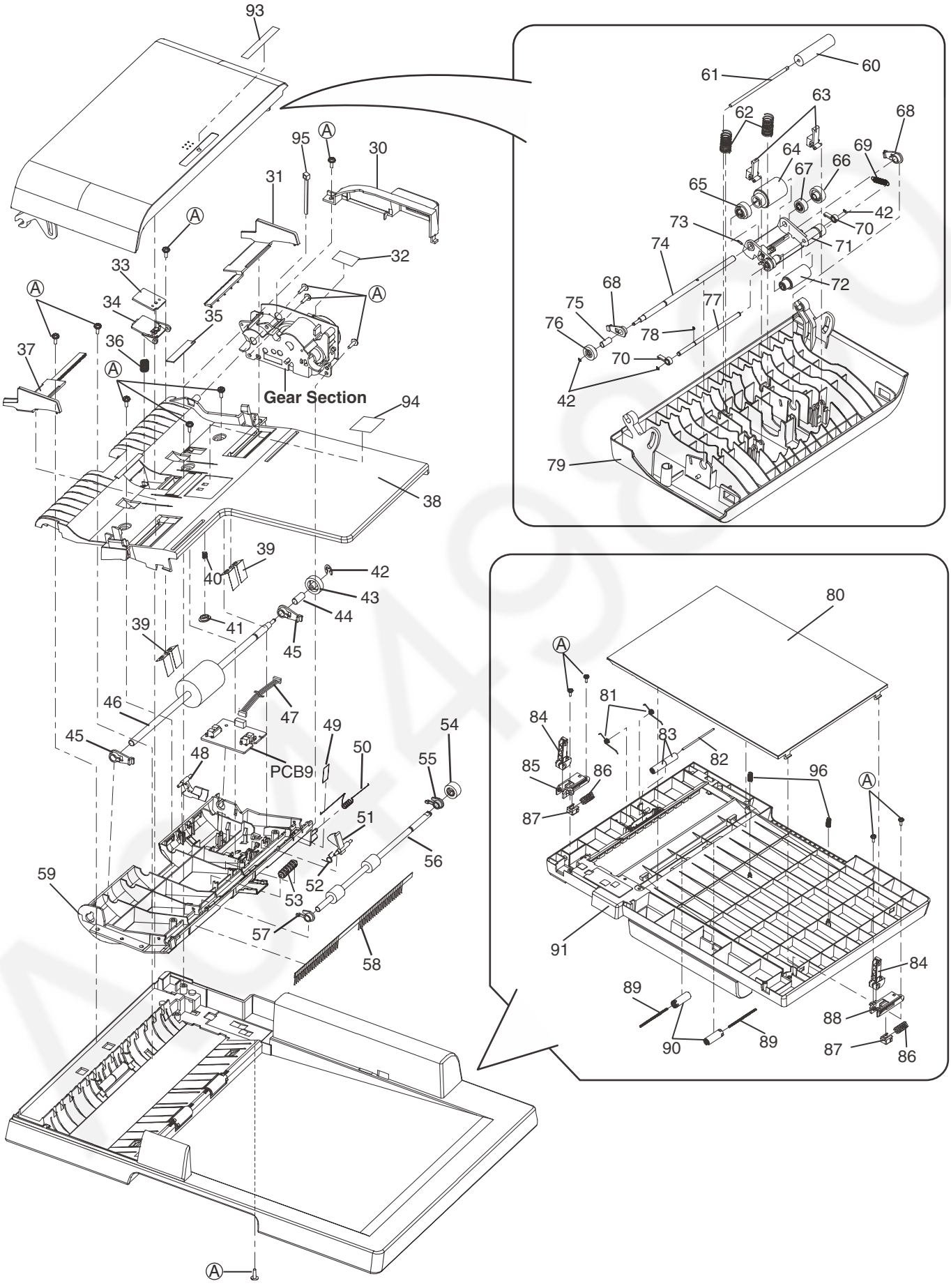
18.1. Cabinet, Mechanical and Electrical Parts Location

18.1.1. Operation Panel Section

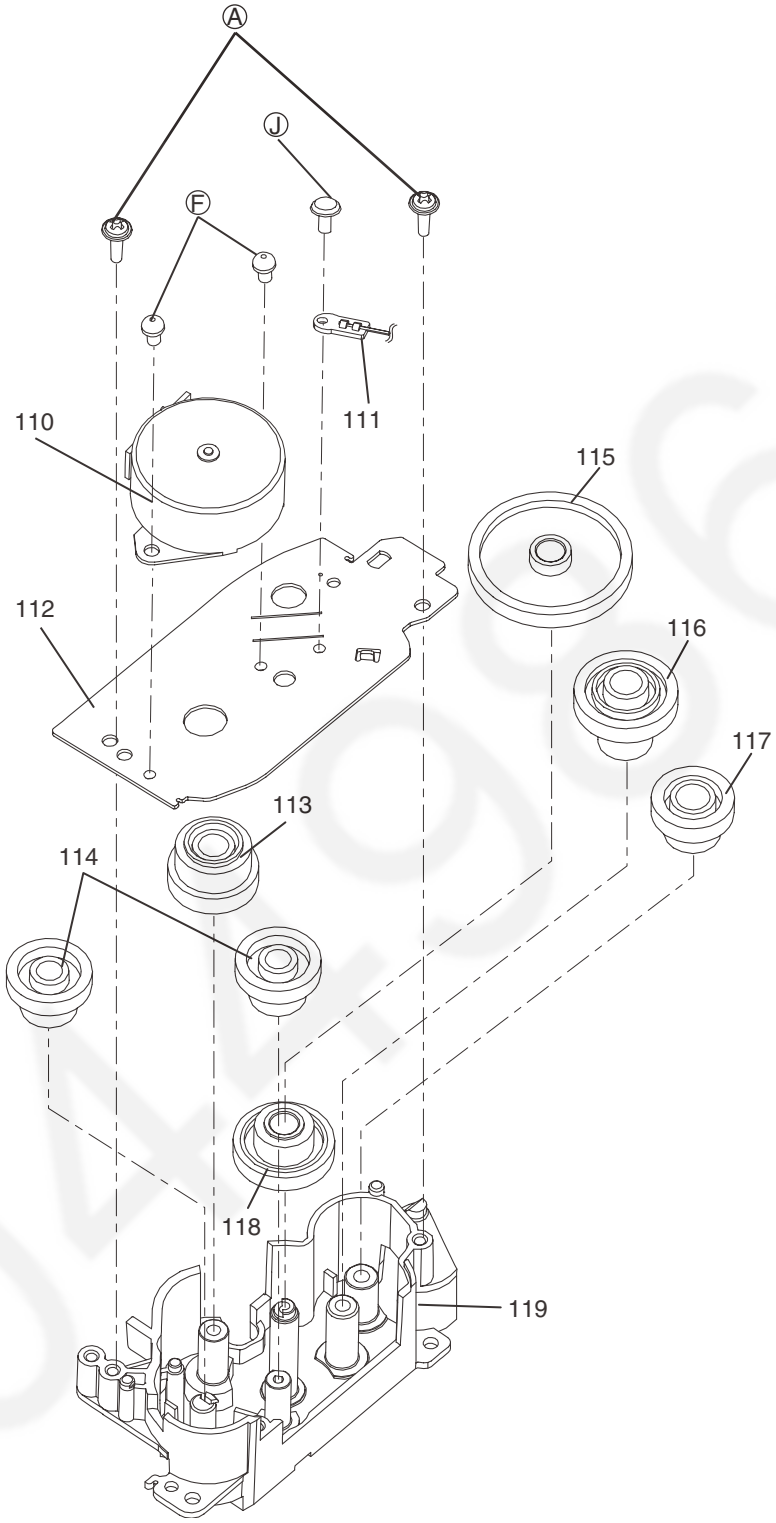


This pictured model is KX-MB2090.

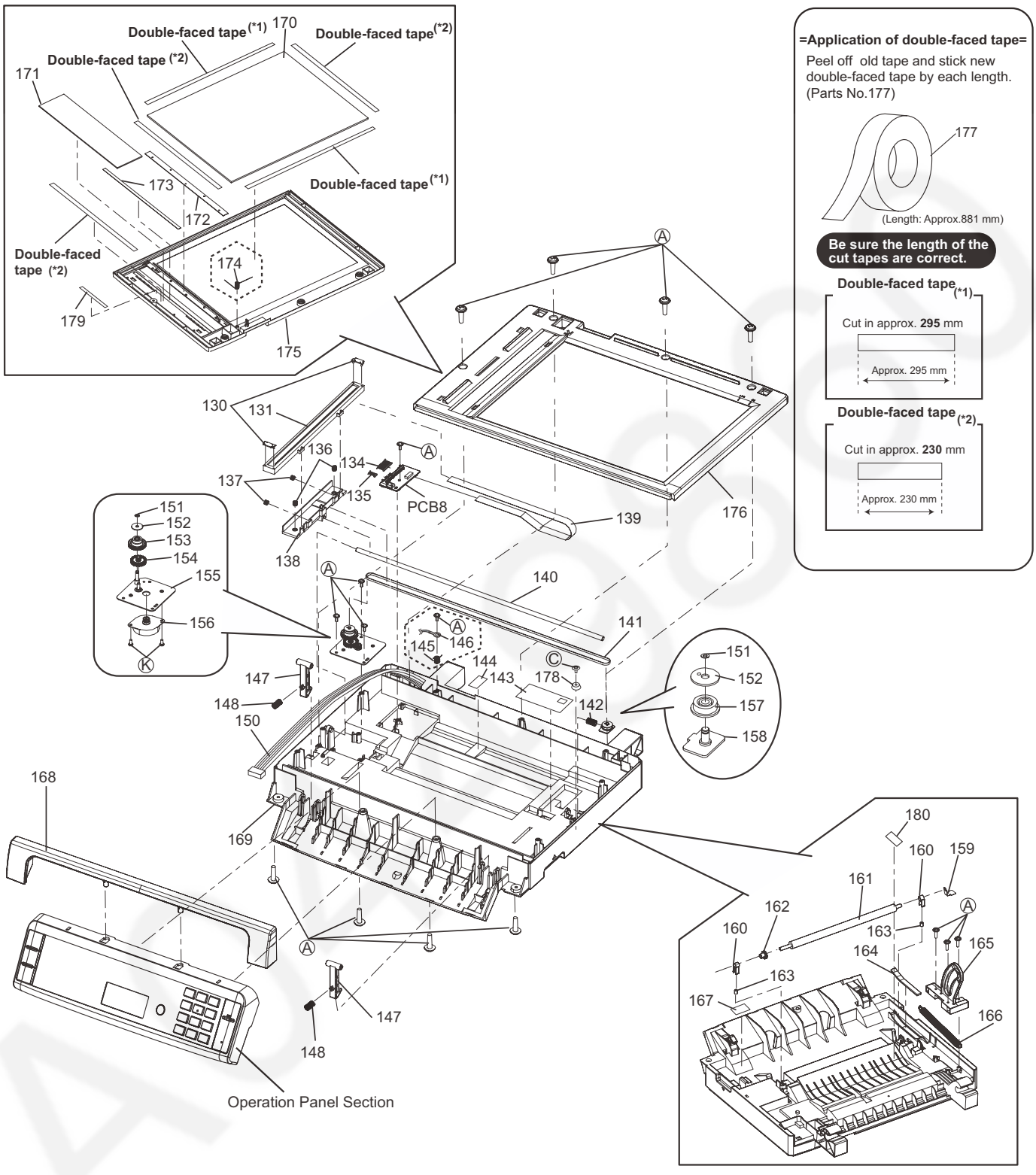
18.1.2. ADF Section



18.1.3. ADF Gear Section



18.1.4. Top Cover Section



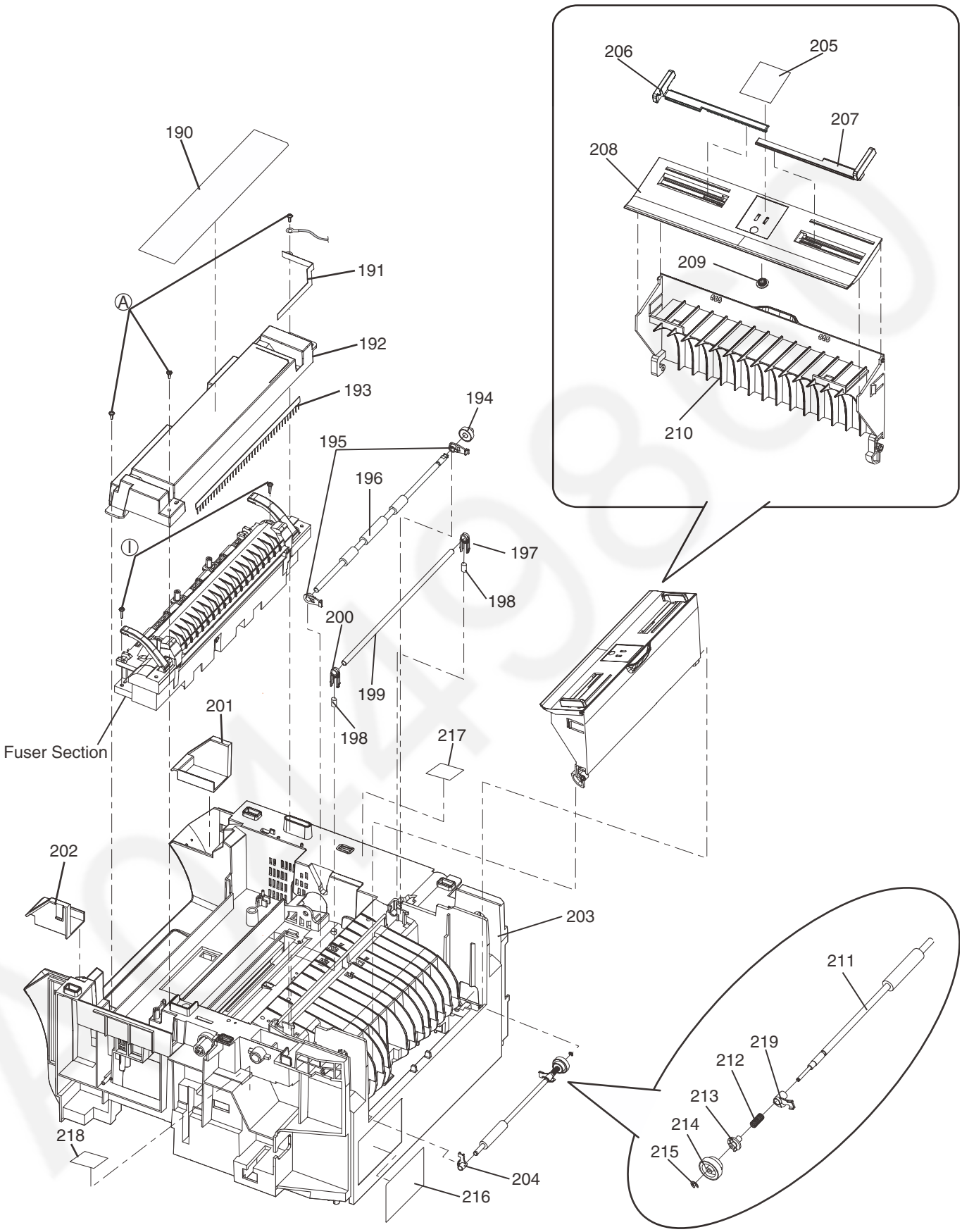
*176 is the Scanner Glass Ass'y.

This pictured model is KX-MB2090.

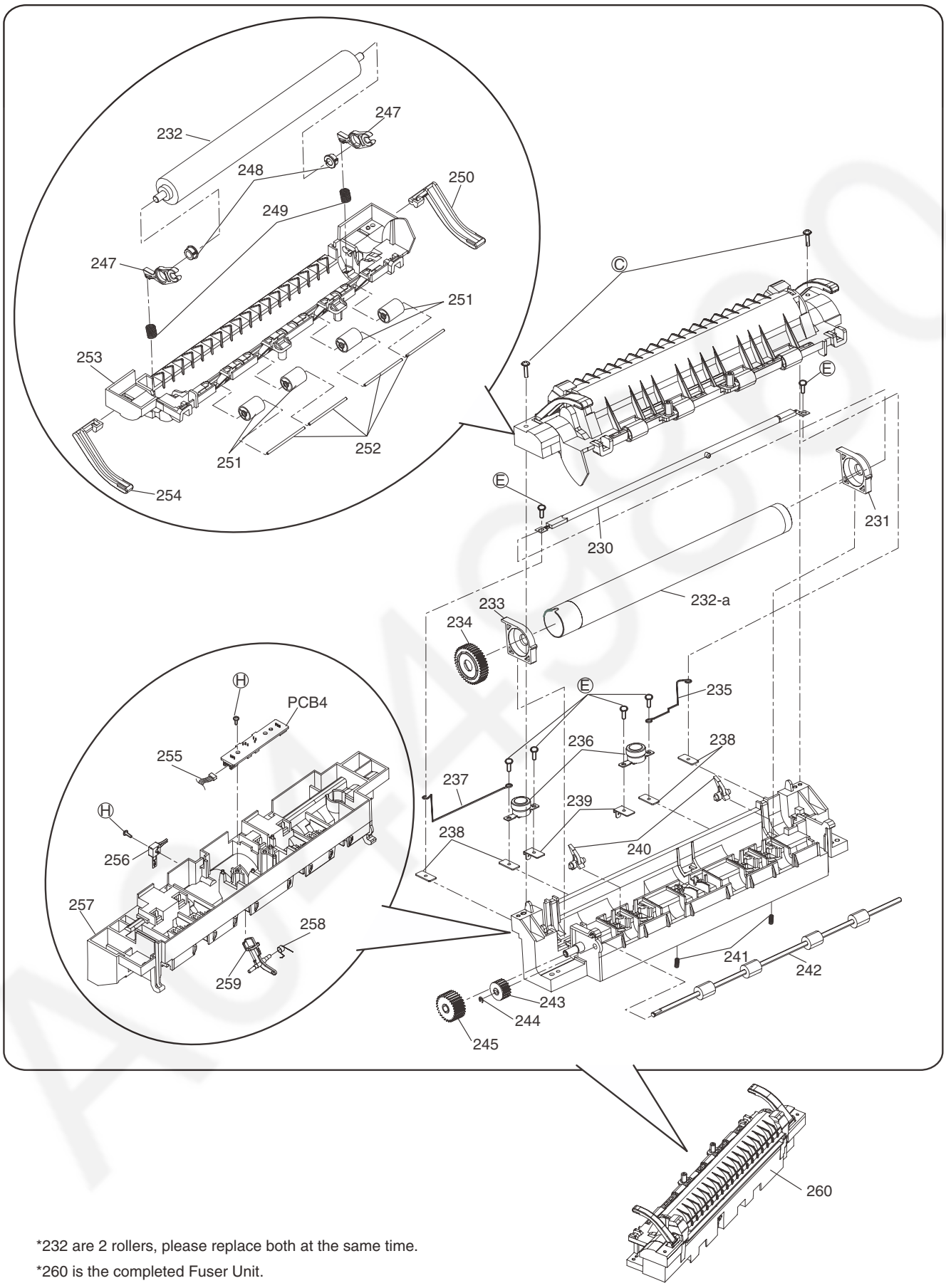
Note:

How to attache the Label/CIS Home refer to **Position of Installing LABEL/CIS HOME** (P.182).

18.1.5. Main Cabinet Section



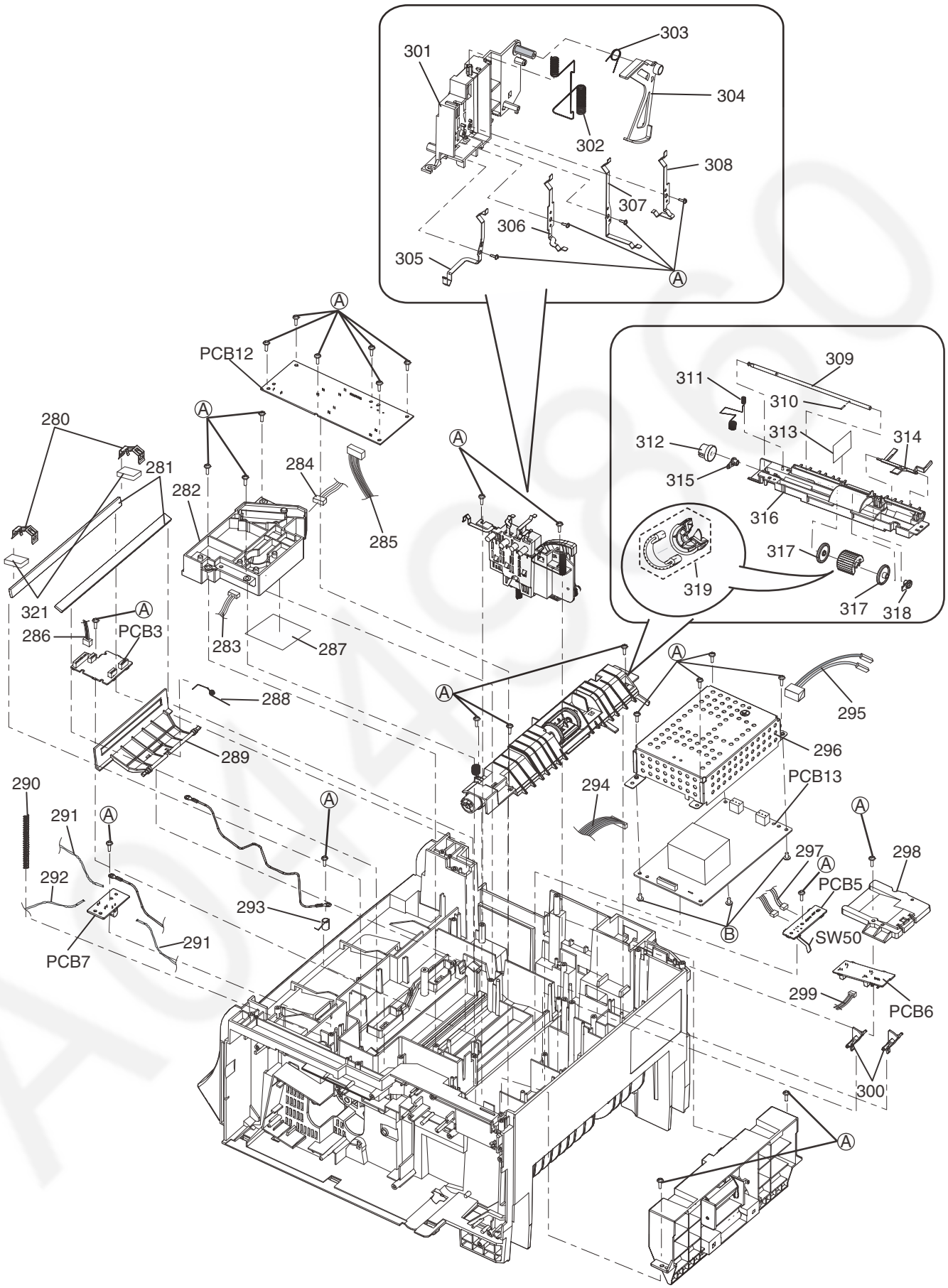
18.1.6. Fuser Section



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

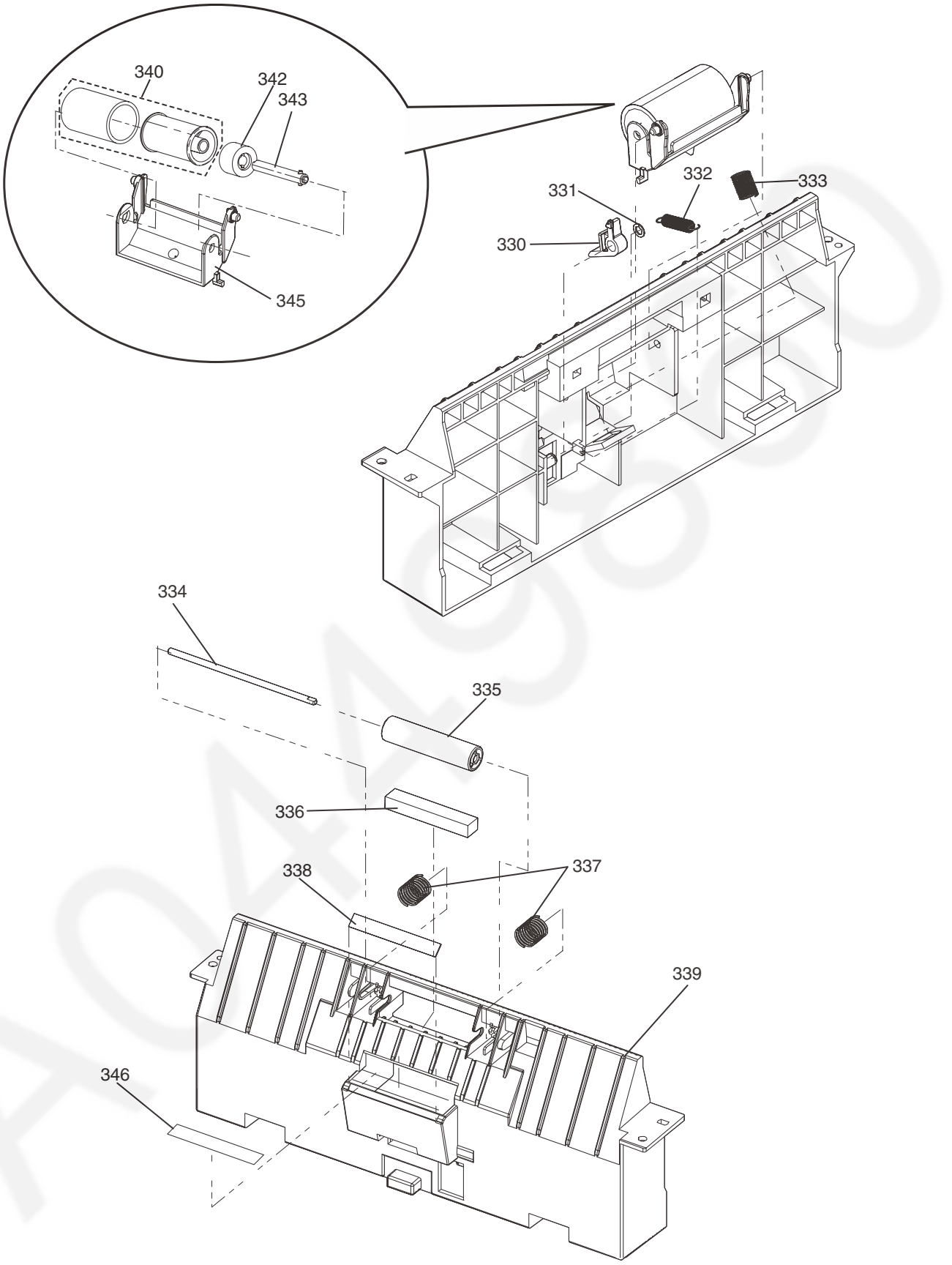
*260 is the completed Fuser Unit.

18.1.7. Bottom Cabinet Section (1)



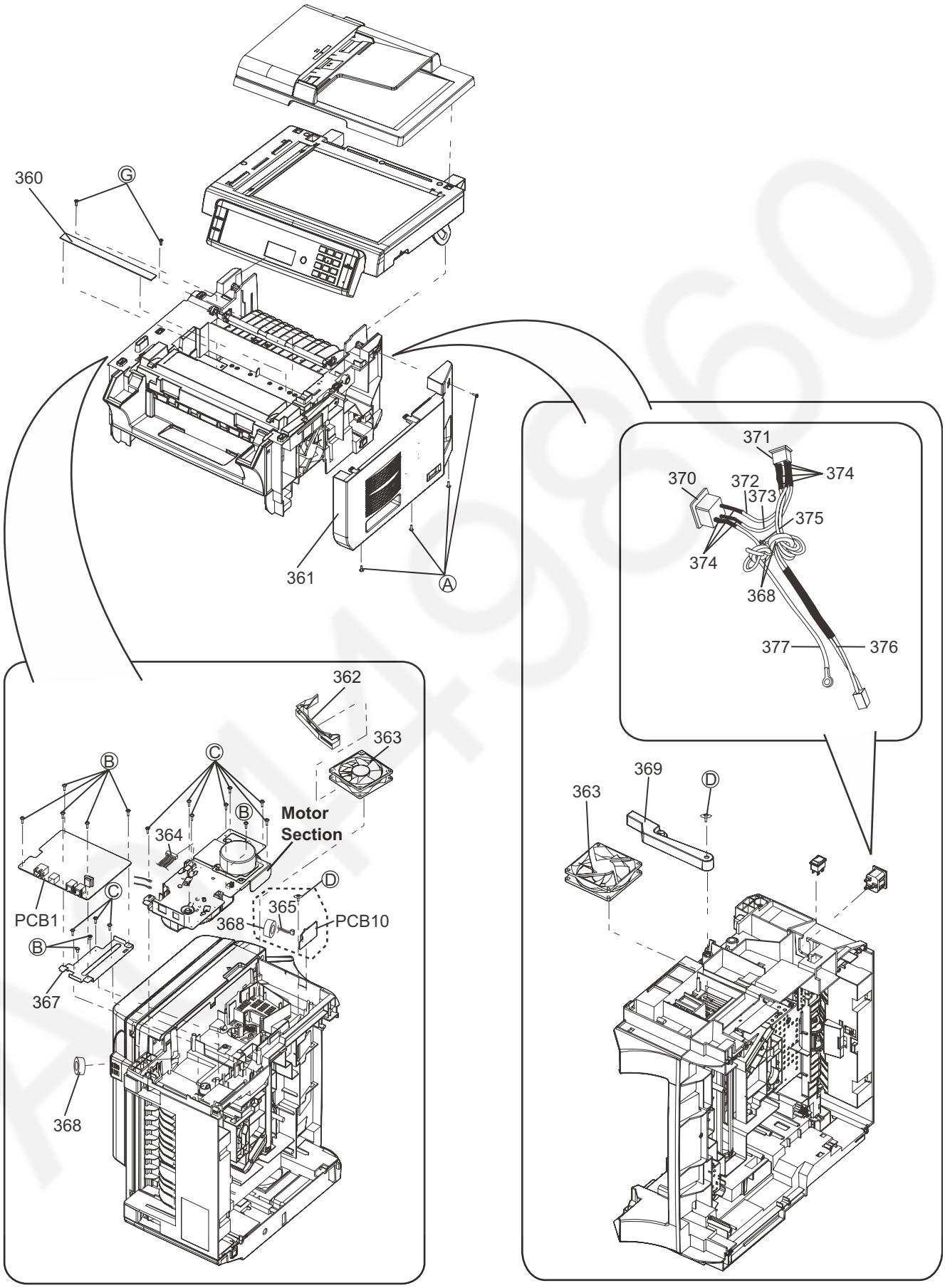
*319 is a kit parts No. of these parts, please replace both at the same time.

18.1.8. Separation (DFP) Roller Section



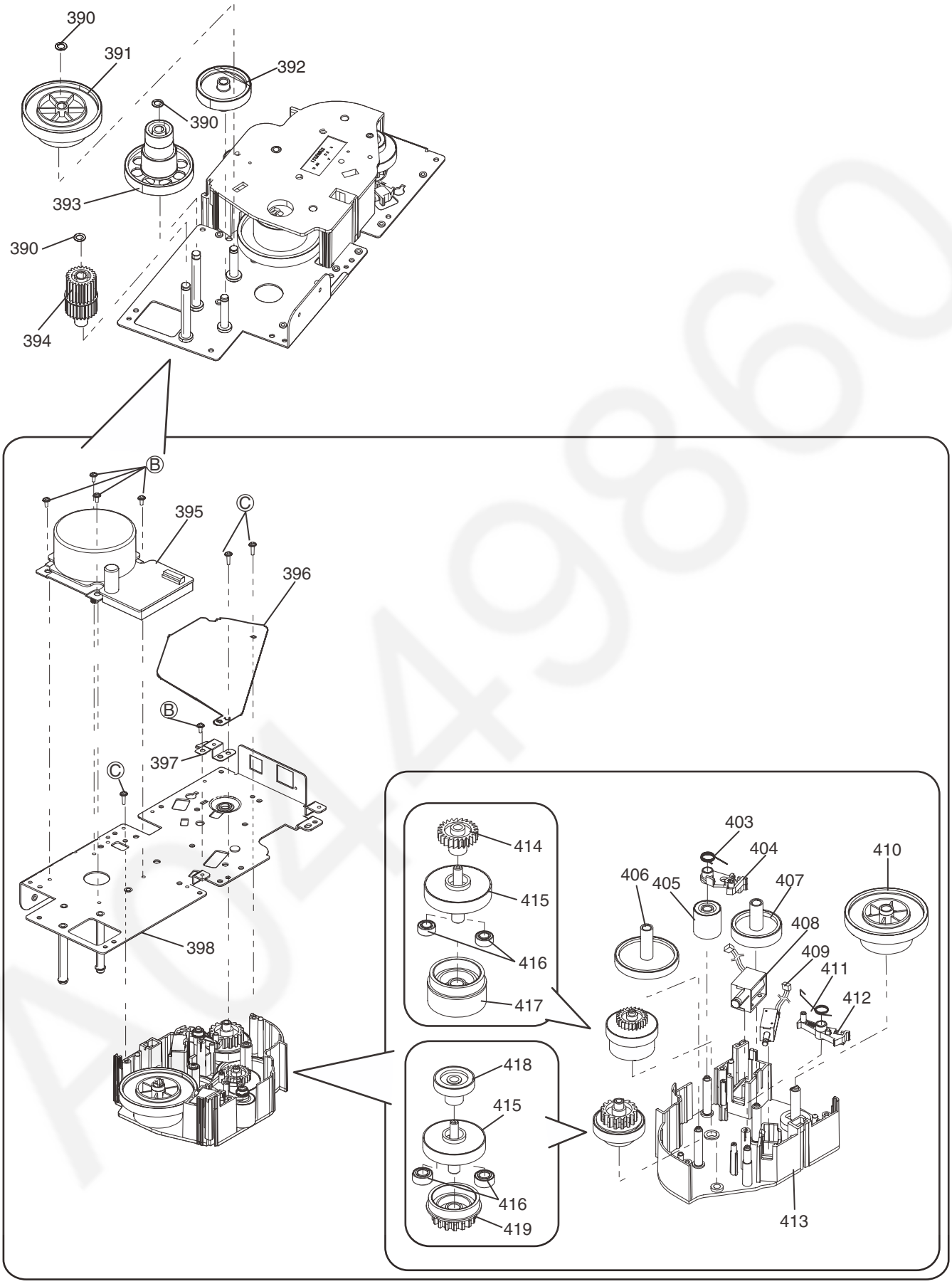
*340 is a kit parts No. of these parts, please replace both at the same time.

18.1.9. Side Cabinet Section

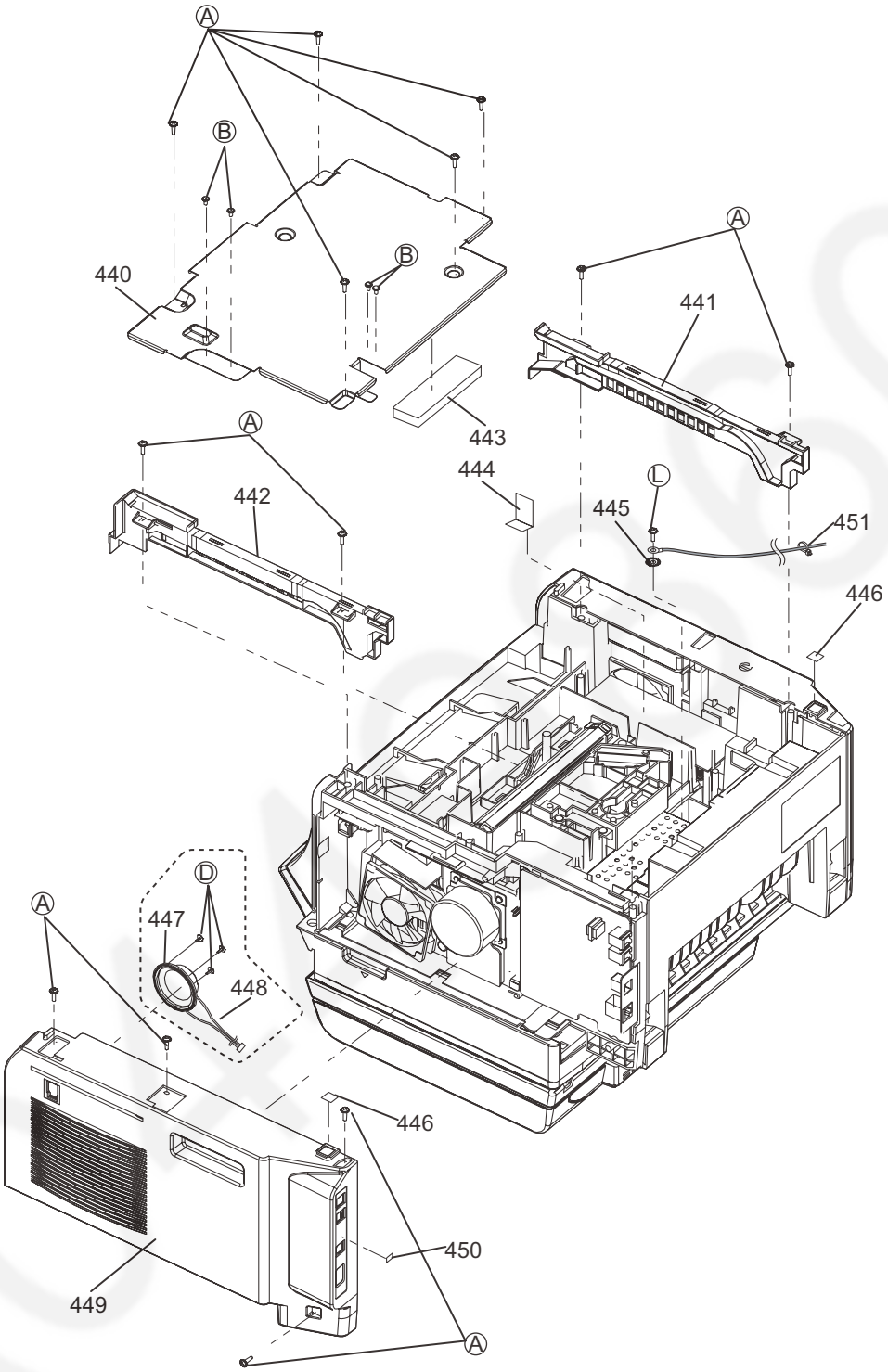


This pictured model is KX-MB2090.

18.1.10. Motor Section

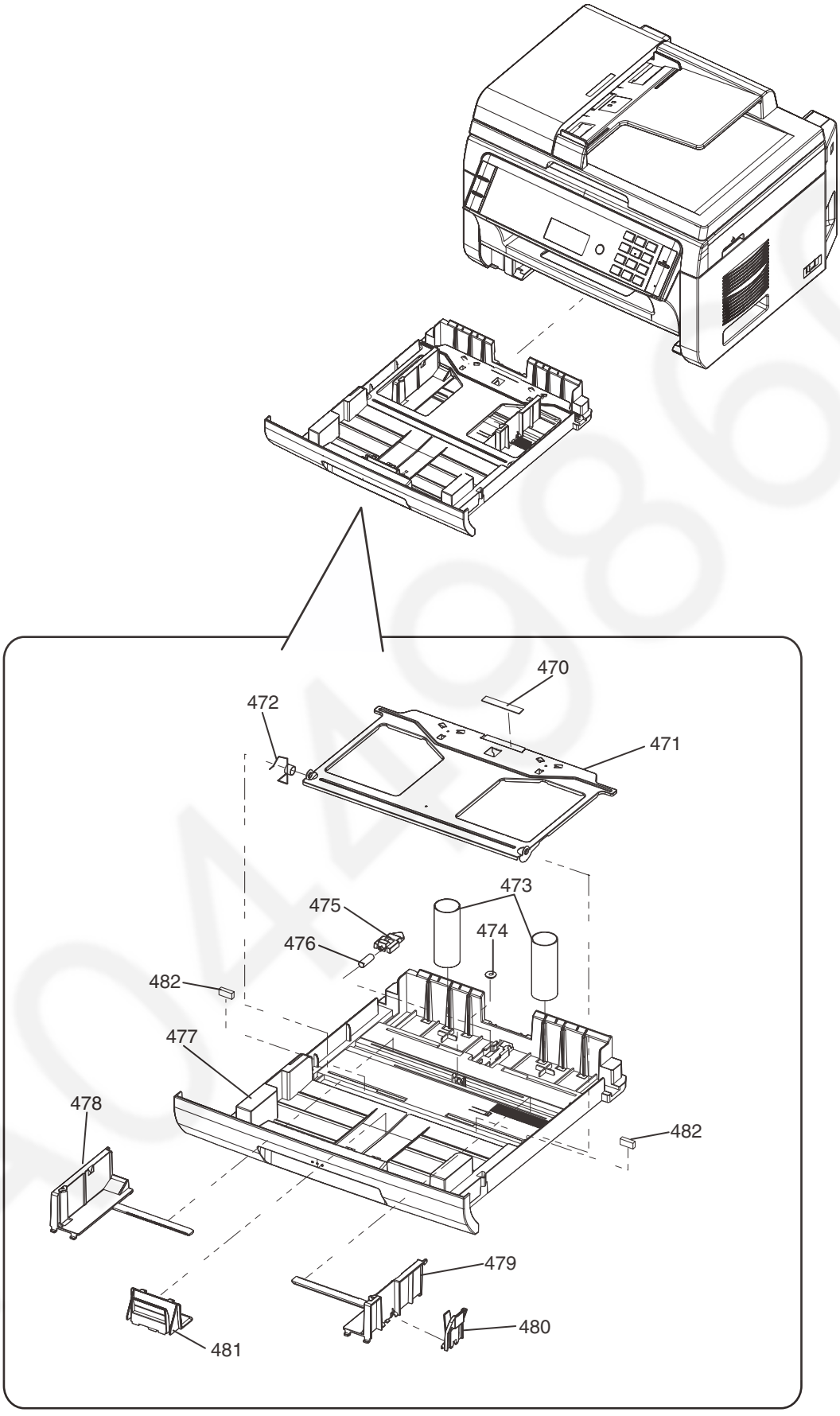


18.1.11. Bottom Cabinet Section (2)



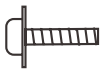
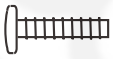
This pictured model is KX-MB2090.

18.1.12. Output Tray Section

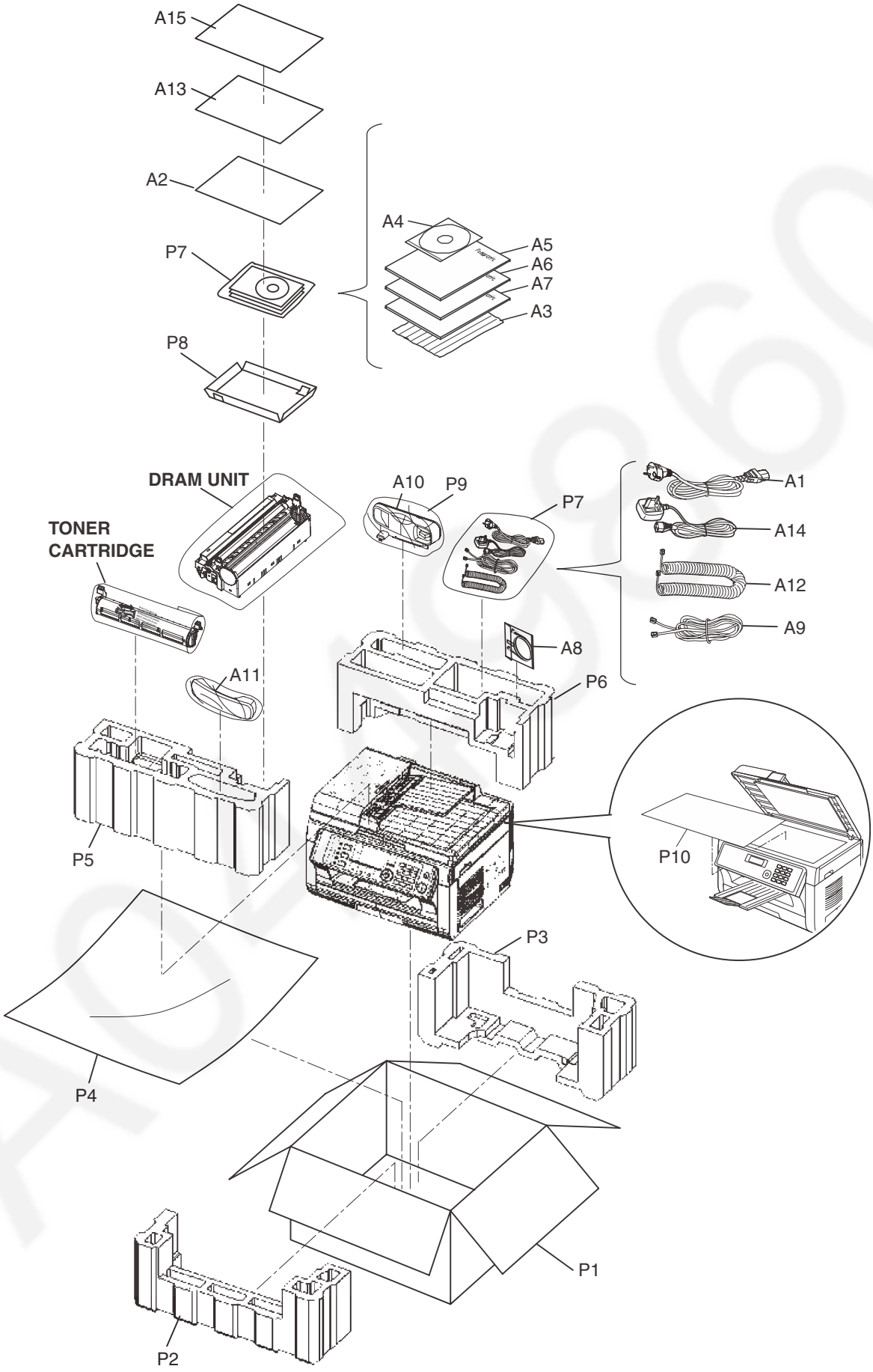


This pictured model is KX-MB2090.

18.1.13. Actual Size of Screws and Washer

		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	

18.1.14. Accessories and Packing Materials



18.2. Electrical Parts

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

18.2.1. Cabinet and Electrical Parts

18.2.1.1. Operation Panel Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PNBC1521Z1	PUSH BUTTON, START/STOP KEY	ABS-HB
	2	PNBX1065S2	PUSH BUTTON, 12KEY	ABS-HB
	3	PNBC1520Z1	PUSH BUTTON, SET KEY	ABS-HB
	4	PNHR1800Y	BL_LCD_HOLDER	
	5	PNHR1811Z	LCD PLATE	
	6	PNHX1695Z	LCD COVER SHEET	
	7	PFHE1319Z	SHEET/DOUBLE SIDE FFC	
	8	PNHX1733Z	COVER LCD	
	9	PNHR1903Z	LED COVER	
	10	PNBX1374Z1	PUSH BUTTON, FAX/COPY/ SCAN KEY	ABS-HB
	11	PNGV1020Z	COVER/TEL/CARD	
	12	PNGD1071Z	TEL CARD	
	13	PNHX1732Z	TEL CARD SHEET	
	14	PNGP1323Z1	LCD PANEL (for KX-MG2090CXW)	
	14	PNGP1314Z1	LCD PANEL (for KX-MG2085CXW)	
	15	PNGG1352Z1	OPERATION PANEL (for KX-MB2090CXW)	PS-HB
	15	PNGG1356Z1	OPERATION PANEL (for KX-MB2085CXW)	
	16	PNGP1288Z	LCD cover	PC
	17	L5DYBYY00054	LIQUID CRYSTAL DISPLAY	

18.2.1.2. ADF Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	30	PFKV1167Z1	COVER	PS-HB
	31	PFKR1110Z1	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	PFKR1111Z1	GUIDE	ABS-HB
	38	PFKE1084X1	TRAY	PS-HB
	39	PFHX2130Y	PLASTIC PARTS	
	40	PFUS1918Z	COIL SPRING	
	41	PFDG1015Y	GEAR	POM-HB
	42	XUC2FJ	RETAINING RING	
	43	PFDG1559Z	GEAR	POM-HB
	44	PQUS10038Z	COIL SPRING	
	45	PFDJ1044Z	SPACER	
	46	PFDR1103X	ROLLER	
	47	PNJS041010Z	CONNECTOR	
	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	PNDR1020Z	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	PFUS1822ZA	COIL SPRING	
	76	PFDG1558Z	GEAR	POM-HB
	77	PNDF1034Z	SHAFT	
	78	XUC3FJP	RETAINING RING	
	79	PFKV1166Z1	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

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	88	PFHR1289X	CHASSIS	POM-HB
	89	PFUS1621Z	BAR SPRING	
	90	PFDR1066Z	ROLLER	POM-HB
	91	PFKM1229V1	CABINET BODY	PS-HB
	92	NOT USED		
	93	PNQT1012Z	LABEL, LIST TO OPEN	
	94	PNQT1731Z	LABEL, FACE UP	
	95	PQHR945Z	BAND	
	96	PFUS1566Z	COIL SPRING	

18.2.1.3. ADF Gear Section

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	

18.2.1.4. TOP Cover Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	130	PFDE1303W	SPACER	
	131	N2GAYY000004	IMAGE SENSOR	
	132	NOT USED		
	133	NOT USED		
	134	PNJS121021Z	CONNECTOR	
	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	WLL22YG18M3M	LEAD WIRE	
	147	PNDE1023Z2	LEVER	POM-HB
	148	PNUS1101Z	COIL SPRING	
	149	NOT USED		
	150	PNJS081100Z	CONNECTOR	
	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	PNDS1053Z	ROLLER	
	162	PFDG1294Z	GEAR	
	163	PFUS1269Y	COIL SPRING	
	164	PNHG1095Z	RUBBER PARTS	
	165	PNDE1022Y1	ARM	PS-HB
	166	PNUS1100X	COIL SPRING	
	167	PNHS1182Y	FELT PARTS	
	168	PNKV1059Z2	COVER	PS-HB
	169	PNKM1110V2	CABINET BODY	PS-HB
	170	PF0G1016Z	GLASS/TRANSPARENT PLATE	
	171	PF0G1017Z	GLASS/TRANSPARENT PLATE	
	172	PFMH1256Z	ANGLE	
	173	PNHX1293Z	PLASTIC PARTS	
	174	PFUS1820Z	TORSION SPRING	
	175	PFKF1205Y1	CABINET COVER	PS-HB
	176	PNZX2030RUVW	SCANNER GLASS ASS'Y	
	177	ZT2512-08	TAPE	
	178	PFDG1015Y	GEAR	
	179	PNHP1024Y	LABEL	
	180	PNHX1606Z	SHEET/BASE FB	

18.2.1.5. Main Cabinet Section

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	PFDJ1044V	SPACER	
	196	PNDN1005Z	ROLLER	
	197	PFDJ1086X	SPACER	
	198	PFUS1613Z	COIL SPRING	
	199	PNDF1020Z	SHAFT	
	200	PFDJ1086Z	SPACER	
	201	PNKE1046Z2	COVER	PS-HB
	202	PNKE1047Z2	COVER	PS-HB
	203	PNKM1109Z2	CABINET BODY	PS-V0
	204	PFDJ1085Z	SPACER	
	205	PFQT2937Z	LABEL, MANUAL	
	206	PFKR1079Z1	GUIDE	
	207	PFKR1080Z1	GUIDE	
	208	PFKE1083Z1	PLASTIC PARTS	
	209	PFDG1015Y	GEAR	
	210	PNKK1037Y2	DOOR-LID	PS-HB
	211	PFDN1091Y	ROLLER	
	212	PFUS1812Z	COIL SPRING	
	213	PFDE1299Z	ROLLER	
	214	PFDG1550Z	GEAR	
	215	XUC2FJ	RETAINING RING	
	216	PNGT7805-M	NAME PLATE, AL (for KX-MB2090CXW)	
	216	PNGT7897-M	NAME PLATE, AL (for KX-MB2085CXW)	
	217	PNQT1734Z	LABEL, CAUTION DAMPER	
	218	PFHX1884Z	MAGNETIC SHIELD	
	219	PFDJ1085X	SPACER	

18.2.1.6. Fuser Section

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	PNDJ1032Z	SPACER	PPS-V1
	232	PNDS1038Z	ROLLER	A5052+PTFE
	232-a	PNDS1036Z	ROLLER	A5052+PTFE
	233	PNDJ1031Z	SPACER	PPS-V1
	234	PFDG1421Z	GEAR	PPS-V0
	235	PNJT1036Z	TERMINAL-TERMINAL PLATE	
⚠	236	K0BDB0000073	THERMOSTAT	
	237	PNJT1037Z	TERMINAL-TERMINAL PLATE	
	238	PFMH1085Y	METAL PARTS	
	239	PFJT1032Z	TERMINAL-TERMINAL PLATE	
	240	PNHR1712Z	PLASTIC PARTS	PPS-V0
	241	PFUS1640Z	COIL SPRING	
	242	PNDR1021Y	ROLLER	
	243	PFDG1422Z	GEAR	POM-HB
	244	XUC2FJ	RETAINING RING	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	245	PFDG1423Z	GEAR	PA-HB
	246	PNZRMB2090CX	Pressure Roller & Heat Roller Kit (Ref.No.232,232-a and Leaflet)	A5052+PTFE
	247	PFHR1705Y	ARM	PBT+ABS-GF30-V0
	248	PNDJ1021Z	SPACER	PBT-HB
	249	PFUS1426Z	COIL SPRING	
	250	PFHR1495Z	LEVER	PBT+GF30-V0
	251	PFDR1069Y	ROLLER	POM-HB
	252	PFUS1568Z	BAR SPRING	
	253	PFUA1094T	CHASSIS	PBT+ABS GF30%-V0
	254	PFHR1496Z	LEVER	PBT+GF30-V0
	255	PFJS04M73Z	LEAD WIRE	
	256	L2AA00000106	THERMISTOR	
	257	PNUA1016T	CHASSIS	PBT+ABS-GF30-V0
	258	PFUS1686Z	TORSION SPRING	
	259	PFDE1310Z	LEVER	
⚠	260	PNWEMB2090CX	FUSER UNIT (*1)	
	261	PNZCMB2030RU	Heat Roller Bearing Kit (Ref.No.231,233 and Leaflet)	PPS-V1

18.2.1.7. Bottom Cabinet Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	280	PNUS1092X	LEAF SPRING	
	281	PF0M1008Z	MIRROR	
⚠	282	LPA1609K-A	LASER	
	283	PNJS051014Z	CONNECTOR	
	284	PNJS071103Z	CONNECTOR	
	285	PNJS081023Z	CONNECTOR	
	286	PNJS101002Z	CONNECTOR	
	287	PNQT1506Z	LABEL, LASER CAUTION	
	288	PFUS1592Z	TORSION SPRING	
	289	PNUE1012Z	KEYLOCK	PS-HB
	290	PFUS1811Z	COIL SPRING	
	291	PNVW1010Z	LEAD WIRE	
	292	PNVW1011Z	LEAD WIRE	
	293	PFUS1612Z	COIL SPRING	
	294	PNJS081099Z	CONNECTOR	
⚠	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	
	320	NOT USED		
	321	PNHS1196Z	FELT PARTS	

18.2.1.8. Separation (DFP) Roller Section

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	PNUG1017V	GUIDE	PS-HB
	340	PNZR3B2030RU	ROLLER	
	341	NOT USED		
	342	PNDX1004Y	DRUM	
	343	PNDE1039Z	SHAFT	
	344	NOT USED		
	345	PNHR1234Y	CHASSIS	ABS-HB
	346	PNHX1224Z	PLASTIC PARTS	

18.2.1.9. Side Cabinet Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	360	PF0G1015Z	GLASS/TRANSPARENT PLATE	
	361	PNKV1061Z2	COVER	PS-V0
	362	PNHR1257Z	AIR DACT	
	363	L6FAYYYK0027	DC MOTOR	
	364	PNJS081024Z	CONNECTOR	
	365	PNJS081029Z	CONNECTOR	
	366	NOT USED		
	367	PNMH1066Z	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	

18.2.1.10. Motor Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	390	PFNPD052080	SPACER	
	391	PFDG1544Y	GEAR	
	392	PFDG1548Z	GEAR	
	393	PFDG1543Z	GEAR	
	394	PFDG1549Y	GEAR	
⚠	395	L6CCYYYK0007	DC MOTOR	
	396	PNHX1255Y	PLASTIC PARTS	
	397	PNMH1067Z	METAL PARTS	
	398	PFMD1111W	GEAR MAIN CHASSIS ASS'Y	
	399	NOT USED		
	400	NOT USED		
	401	NOT USED		
	402	NOT USED		
	403	PFUS1803Z	TORSION SPRING	
	404	PFDE1298Y	LEVER	
	405	PFDG1391Z	GEAR	
	406	PFDG1546Z	GEAR	
	407	PFDG1390Z	GEAR	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	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	

18.2.1.11. Bottom Cabinet Section (2)

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	PNKV1062Z2	COVER (for KX-MB2090CXW)	PS-V0
	449	PNKV1062Y2	COVER (for KX-MB2085CXW)	PS-V0
	450	PFQT3054Z	LABEL, USB	
	451	PQHR945Z	BAND	

18.2.1.12. Output Tray Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	470	PFHG1245Z	RUBBER PARTS	
	471	PNMD1060Y	CHASSIS	
	472	PFUS1814Z	TORSION SPRING	
	473	PNUS1103Z	COIL SPRING	
	474	PFDG1015Y	GEAR	
	475	PFHR1491Z	LEVER	
	476	PFUS1608Z	COIL SPRING	
	477	PNKS1007Z2	TRAY	PS-HB
	478	PFKR1108Y	LEVER	
	479	PFKR1109Y	LEVER	
	480	PFHR1707Z	LEVER	
	481	PFKR1085Y	RACK	
	482	PNHS1174Z	FELT PARTS	

18.2.1.13. Screws

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+FF8FJM4	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	

18.2.1.14. Accessories and Packing Materials

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	A1	PNJA1094Z	POWER CORD	
	A2	PNQW3836Z	LEAFLET	
	A3	PNYE1094Z2	ASSY. STACKER TRAY	PS-HB
	A4	PNJKMB2090Z	MEMORY PARTS	
	A5	PNQW3833Z	LEAFLET	
	A6	PNQW3832Z	LEAFLET	
	A7	PNQW3831Z	LEAFLET	
	A8	PNJA1052Z	CORD, USB	
	A9	PFJA02B002Y	CORD, TELEPHONE	
	A10	PFYE1043Z	HANDSET, CRADLE	
	A11	PNLXE1012Z	HANDSET	
	A12	PFJA1029Z	CORD,CURL	
	A13	PNQW1881U	LEAFLET, QIG	
⚠	A14	K2CT3EH00005	POWER CORD	
	A15	PNQW3138Z	LEAFLET, Hologram	
	P1	PNPK3743001Z	PACKING CASE (for KX-MB2090CXW)	
	P1	PNPK3743002Z	PACKING CASE (for KX-MB2085CXW)	
	P2	PNPN1126W	CUSHION	ABS-HB
	P3	PNPN1136X	CUSHION	ABS-HB
	P4	PFPP1041Z	PROTECTION COVER	
	P5	PNPN1124X	CUSHION	PC-HB
	P6	PNPN1125X	CUSHION	ABS-HB
	P7	PNPP1100Z	PROTECTION COVER	
	P8	PNPD1121Z	CUSHION	
	P9	PNPP1023Z	PROTECTION COVER	
	P10	PNPH1027X	PACKING SHEET	S

18.2.2. Main Board (KX-MB2085)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWP1B2085CX	MAIN BOARD ASS'Y (RTL)	
			(ICs)	
	IC200	C1CB00003161	IC	
	IC201	C0ABBA000025	IC	
	IC202	C0ABBB000179	IC	
	IC203	C1CB00003161	IC	
	IC204	C1AB00002556	IC	
	IC300	C1ZBZ0004649	IC	
	IC301	C0EBY0000665	IC	
	IC303	C0CBAAA00035	IC	
	IC400	C3ABRY000078	IC	
	IC402	PNWI2085CX	IC (ROM)	
	IC503	C0FBAY000127	IC	
	IC504	C0BBBA000024	IC	
	IC600	AN44066A	IC	
	IC700	AN44066A	IC	
	IC800	C0DBAYY01433	IC	
	IC801	C0DBAYY01433	IC	
	IC802	C0DBEYY00102	IC	
			(TRANSISTORS)	
	Q150	DRC9143E0L	TRANSISTOR(SI)	
	Q152	B1ABDF000026	TRANSISTOR(SI)	
	Q201	DRC9123J0L	TRANSISTOR(SI)	
	Q206	DRC9143E0L	TRANSISTOR(SI)	
	Q209	B1ABDF000025	TRANSISTOR(SI)	
	Q210	2SC4081R	TRANSISTOR(SI)	S
	Q211	2SC4081R	TRANSISTOR(SI)	S
	Q213	DRC9143E0L	TRANSISTOR(SI)	
	Q421	DSC9001R0L	TRANSISTOR(SI)	
	Q422	B1ADGE000012	TRANSISTOR(SI)	
	Q424	B1ADGE000012	TRANSISTOR(SI)	
	Q500	DSC9001R0L	TRANSISTOR(SI)	
	Q501	B1GBCFGN0005	TRANSISTOR(SI)	
	Q502	B1ABGE000014	TRANSISTOR(SI)	
	Q503	B1GBCFGN0005	TRANSISTOR(SI)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	Q504	B1GBCFGN0005	TRANSISTOR(SI)	
	Q505	B1GBCFGN0005	TRANSISTOR(SI)	
	Q506	B1GBCFGN0005	TRANSISTOR(SI)	
	Q507	B1GBCFGN0005	TRANSISTOR(SI)	
	Q508	B1GBCFGN0005	TRANSISTOR(SI)	
	Q509	B1GBCFGN0005	TRANSISTOR(SI)	
	Q510	B1ADKE000002	TRANSISTOR(SI)	
	Q511	B1ABGE000011	TRANSISTOR(SI)	
	Q512	B1ABGE000011	TRANSISTOR(SI)	
	Q513	B1ABGE000011	TRANSISTOR(SI)	
	Q518	B1ADGE000012	TRANSISTOR(SI)	
	Q519	DSC9001R0L	TRANSISTOR(SI)	
	Q521	DSC9001R0L	TRANSISTOR(SI)	
	Q527	B1GBCFGN0005	TRANSISTOR(SI)	
	Q528	DSC9001R0L	TRANSISTOR(SI)	
	Q530	DSC9001R0L	TRANSISTOR(SI)	
	Q600	DSC9001R0L	TRANSISTOR(SI)	
	Q601	B1ADCF000020	TRANSISTOR(SI)	
	Q602	DRA9143Z0L	TRANSISTOR(SI)	
	Q611	DRC9143E0L	TRANSISTOR(SI)	
	Q700	DRA9143Z0L	TRANSISTOR(SI)	
	Q701	B1GBCFGN0005	TRANSISTOR(SI)	
	Q702	DRA9143Z0L	TRANSISTOR(SI)	
	Q803	DRA9143Z0L	TRANSISTOR(SI)	
	Q804	DSC9001R0L	TRANSISTOR(SI)	
			(DIODES)	
	D105	DZ2J056M0L	DIODE(SI)	
	D106	DZ2J056M0L	DIODE(SI)	
	D151	DZ2J056M0L	DIODE(SI)	
	D152	DZ2J056M0L	DIODE(SI)	
	D200	1SS355	DIODE(SI)	S
	D204	DZ2J056M0L	DIODE(SI)	
	D205	DZ2J056M0L	DIODE(SI)	
	D300	PJVDJADAN202	DIODE(SI)	S
	D306	B0ZBZ0000146	DIODE(SI)	
	D500	1SS355	DIODE(SI)	S
	D501	1SS355	DIODE(SI)	S
	D801	DZ2W05600L	DIODE(SI)	
	D803	DZ2W05600L	DIODE(SI)	
	D806	B0BC6R5A0541	DIODE(SI)	
			(BATTERY)	
	BAT300	N4BCY32Y0005	BATTERY	S
			(CAPACITORS)	
	C116	F1H1H473A748	0.047	
	C120	F0C2E474A277	0.47	
	C150	F1G0J2240003	0.22	
	C151	F2G1C4700040	47	
	C152	F1G1H472A571	0.0047	
	C153	F1G0J2240003	0.22	
	C158	ECJ0EB1H102K	0.001	
	C200	ECJ1VB1H333K	0.033	
	C202	ECUE1C104KBQ	0.1	S
	C203	F1J1C106A191	10	
	C204	ECUE1A104KBQ	0.1	S
	C207	ECUE1A104KBQ	0.1	S
	C209	ECUE1C103KBQ	0.01	
	C210	F1G1H101A557	100p	
	C212	F1G1H101A557	100p	
	C213	F1G1H101A557	100p	
	C214	ECJ0EB0J105K	1	
	C215	F1L1V1060002	10	
	C216	ECUE1H222KBQ	0.0022	S
	C217	ECUE1C223KBQ	0.022	S
	C218	F2G1C4700040	47	
	C219	EEE1HA4R7SR	4.7	S
	C220	F1G1H100A565	10p	
	C221	ECUE1A104KBQ	0.1	S
	C222	F1H1H104A220	0.1	
	C223	F1H1C104A107	0.1	
	C224	F1G0J2240003	0.22	
	C227	ECJ0EB1H392K	0.0039	
	C228	F1G1H101A557	100p	
	C229	F1G1H101A557	100p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C232	F1H1C104A107	0.1	
	C233	ECUE1C103KBQ	0.01	
	C235	ECUE1A104KBQ	0.1	S
	C236	F1J0J2260004	22	
	C237	F1H1A225A025	2.2	
	C238	ECJ0EB0J105K	1	
	C239	ECUE1H821KBQ	820p	
	C240	F1J0J2260004	22	
	C241	ECUE1H331KBQ	330p	S
	C243	ECUE1H331KBQ	330p	S
	C244	ECUE1C333KBQ	0.033	S
	C246	ECUE1A104KBQ	0.1	S
	C247	ECJ0EB1H392K	0.0039	
	C248	F1G1H101A557	100p	
	C250	F1G1H101A557	100p	
	C252	ECJ0EB1H392K	0.0039	
	C253	ECUE1H821KBQ	820p	
	C254	F1J0J2260004	22	
	C256	ECUE1C103KBQ	0.01	
	C258	F1J0J2260004	22	
	C270	ECUE1A104KBQ	0.1	S
	C273	ECUE1A104KBQ	0.1	S
	C275	ECUE1A104KBQ	0.1	S
	C278	ECUE1A104KBQ	0.1	S
	C279	ECUE1A104KBQ	0.1	S
	C280	F1G1H101A557	100p	
	C281	ECUE1A104KBQ	0.1	S
	C282	F1G1A2240008	0.22	
	C283	F1G0J2240003	0.22	
	C286	ECUE1A104KBQ	0.1	S
	C287	ECUE1A104KBQ	0.1	S
	C300	ECUE1A104KBQ	0.1	S
	C301	ECUE1C103KBQ	0.01	
	C302	ECUE1A104KBQ	0.1	S
	C303	ECUE1A104KBQ	0.1	S
	C304	ECUE1A104KBQ	0.1	S
	C305	ECUE1A104KBQ	0.1	S
	C306	ECUE1A104KBQ	0.1	S
	C307	ECUE1A104KBQ	0.1	S
	C308	ECJ0EB0J105K	1	
	C309	ECUE1C223KBQ	0.022	S
	C310	ECUE1H9R0DCQ	9	
	C311	ECUE1H150JCQ	15p	
	C312	ECUE1A104KBQ	0.1	S
	C313	ECUE1H150JCQ	15p	
	C314	ECUE1H150JCQ	15p	
	C315	ECUE1H9R0DCQ	9	
	C316	F1G1H100A565	10p	
	C319	ECJ0EB0J105K	1	
	C322	ECJ0EB0J105K	1	
	C325	ECJ0EB0J105K	1	
	C326	ECUE1C103KBQ	0.01	
	C327	ECUE1A104KBQ	0.1	S
	C328	F1G0J224A044	0.22	
	C329	F1G0J224A044	0.22	
	C330	F1H0J105A037	1	
	C331	F1H0J105A037	1	
	C340	ECUE1A104KBQ	0.1	S
	C341	ECUE1A104KBQ	0.1	S
	C344	ECUE1C103KBQ	0.01	
	C351	F1G1H101A557	100p	
	C357	ECUE1A104KBQ	0.1	S
	C358	ECUE1A104KBQ	0.1	S
	C359	ECUE1A104KBQ	0.1	S
	C360	ECUE1A104KBQ	0.1	S
	C361	ECUE1A104KBQ	0.1	S
	C362	ECUE1A104KBQ	0.1	S
	C363	ECUE1A104KBQ	0.1	S
	C364	ECUE1A104KBQ	0.1	S
	C366	ECUE1A104KBQ	0.1	S
	C367	ECJ0EB0J105K	1	
	C368	ECJ0EB0J105K	1	
	C369	ECJ0EB0J105K	1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C400	F1H0J105A037	1	
	C401	F1H0J105A037	1	
	C402	F1H0J105A037	1	
	C403	F1H0J105A037	1	
	C407	ECUE1H270JCQ	27p	S
	C408	ECUE1A104KBQ	0.1	S
	C421	ECJ0EB0J105K	1	
	C422	F1G1H101A557	100p	
	C423	ECJ0EB1H102K	0.001	
	C427	F2G1V1010021	100	
	C428	F2G1V1010021	100	
	C440	ECUE1A104KBQ	0.1	S
	C441	ECUE1A104KBQ	0.1	S
	C442	ECUE1A104KBQ	0.1	S
	C443	ECUE1A104KBQ	0.1	S
	C444	ECUE1A104KBQ	0.1	S
	C445	ECUE1A104KBQ	0.1	S
	C446	ECUE1A104KBQ	0.1	S
	C447	ECUE1A104KBQ	0.1	S
	C448	ECUE1A104KBQ	0.1	S
	C449	ECUE1A104KBQ	0.1	S
	C450	ECUE1A104KBQ	0.1	S
	C451	ECUE1A104KBQ	0.1	S
	C452	ECUE1A104KBQ	0.1	S
	C454	ECUE1A104KBQ	0.1	S
	C455	ECUE1A104KBQ	0.1	S
	C456	ECUE1A104KBQ	0.1	S
	C457	ECUE1A104KBQ	0.1	S
	C458	ECUE1A104KBQ	0.1	S
	C459	ECUE1A104KBQ	0.1	S
	C460	ECUE1A104KBQ	0.1	S
	C461	ECUE1A104KBQ	0.1	S
	C462	ECUE1A104KBQ	0.1	S
	C463	ECUE1A104KBQ	0.1	S
	C464	ECUE1A104KBQ	0.1	S
	C465	ECUE1A104KBQ	0.1	S
	C466	ECUE1A104KBQ	0.1	S
	C467	ECUE1A104KBQ	0.1	S
	C470	ECUE1A104KBQ	0.1	S
	C471	ECUE1A104KBQ	0.1	S
	C472	ECUE1A104KBQ	0.1	S
	C473	ECUE1A104KBQ	0.1	S
	C474	ECUE1A104KBQ	0.1	S
	C475	ECUE1A104KBQ	0.1	S
	C476	ECUE1A104KBQ	0.1	S
	C477	ECUE1A104KBQ	0.1	S
	C478	ECUE1A104KBQ	0.1	S
	C479	ECUE1A104KBQ	0.1	S
	C480	ECUE1A104KBQ	0.1	S
	C481	ECUE1A104KBQ	0.1	S
	C482	ECUE1A104KBQ	0.1	S
	C483	ECUE1A104KBQ	0.1	S
	C484	ECUE1A104KBQ	0.1	S
	C485	ECUE1A104KBQ	0.1	S
	C487	F1H1H104A220	0.1	
	C488	F1H1H104A220	0.1	
	C489	F1H1H104A220	0.1	
	C490	F1H1H104A220	0.1	
	C491	F1H1H104A220	0.1	
	C492	F1H1H104A220	0.1	
	C493	F1H1H104A220	0.1	
	C494	ECUE1A104KBQ	0.1	S
	C496	F1H1H104A220	0.1	
	C497	F1H1H104A220	0.1	
	C501	ECUE1A104KBQ	0.1	S
	C502	F1J0J1060006	10	
	C506	F1G1H100A565	10p	
	C507	ECJ0EB1H102K	0.001	
	C508	ECJ0EB1A473K	0.047	
	C509	ECJ0EB1H102K	0.001	
	C510	ECJ0EB1H102K	0.001	
	C516	ECJ0EB1H102K	0.001	
	C518	F1H1H104A220	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C531	F1J1A106A043	10	
	C533	ECUE1A104KBQ	0.1	S
	C534	ECUE1A104KBQ	0.1	S
	C535	ECJ0EB1H102K	0.001	
	C536	ECUE1A104KBQ	0.1	S
	C537	ECUE1A104KBQ	0.1	S
	C538	ECJ0EB0J105K	1	
	C539	ECJ0EB1H102K	0.001	
	C540	ECUE1A104KBQ	0.1	S
	C541	ECJ0EB1H102K	0.001	
	C543	ECUE1A104KBQ	0.1	S
	C544	ECUE1C103KBQ	0.01	
	C545	ECJ0EB0J105K	1	
	C546	ECUE1C103KBQ	0.01	
	C548	ECJ0EB1H102K	0.001	
	C549	F1J0J2260004	22	
	C551	ECJ0EB1H102K	0.001	
	C552	F1H1H104A220	0.1	
	C553	ECJ0EB1H102K	0.001	
	C554	ECJ0EB1H102K	0.001	
	C556	F1G1H151A541	150p	
	C565	ECJ0EB1A473K	0.047	
	C569	ECJ0EB1A473K	0.047	
	C571	ECUE1A104KBQ	0.1	S
	C572	ECJ0EB0J105K	1	
	C600	ECJ0EB0J105K	1	
	C601	ECJ0EB0J105K	1	
	C602	ECUE1A104KBQ	0.1	S
	C603	ECUX1H103KBV	0.01	S
	C604	ECUX1H103KBV	0.01	S
	C605	F2G1V4700028	47	
	C606	F1H1H104A220	0.1	
	C607	ECJ0EB1H102K	0.001	
	C608	ECJ0EB1H102K	0.001	
	C609	ECJ0EB1H102K	0.001	
	C610	ECJ0EB1H102K	0.001	
	C620	ECJ0EB1H102K	0.001	
	C700	ECUE1A104KBQ	0.1	S
	C701	ECUX1H103KBV	0.01	S
	C702	ECUX1H103KBV	0.01	S
	C703	ECJ0EB1H102K	0.001	
	C704	ECJ0EB1H102K	0.001	
	C705	ECJ0EB1H102K	0.001	
	C706	ECJ0EB1H102K	0.001	
	C707	ECJ0EB1H102K	0.001	
	C708	ECJ0EB1H102K	0.001	
	C801	F1K1E1060004	10	
	C802	F1H1H104A220	0.1	
	C803	ECUE1A104KBQ	0.1	S
	C804	ECJ0EB0J105K	1	
	C805	F1G1E472A086	0.0047	
	C806	F1G1H100A565	10p	
	C807	F1K0J476A009	47	
	C808	F1K1E1060004	10	
	C809	F1H1H104A220	0.1	
	C810	ECUE1A104KBQ	0.1	S
	C811	F1H1H104A220	0.1	
	C813	ECJ0EB0J105K	1	
	C814	F1G1E472A086	0.0047	
	C815	F2G1V1010021	100	
	C816	F1K0J476A009	47	
	C819	F1K1E1060004	10	
	C820	F1J0J2260004	22	
	C824	ECJ0EB1H102K	0.001	
			(CONNECTORS & JACKS)	
	CN100	K2LB1YYB0002	JACK/SOCKET	
	CN101	K2LB1YYB0002	JACK/SOCKET	
	CN200	K1KA08AA0193	CONNECTOR,8PIN	
	CN300	K1FY104B0015	CONNECTOR,4PIN	
	CN500	K1KA07A00257	CONNECTOR,7PIN	
	CN501	K1KA05A00364	CONNECTOR,5PIN	
	CN502	K1KA08AA0193	CONNECTOR,8PIN	
	CN503	K1KA02AA0193	CONNECTOR,2PIN	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	CN504	K1KA08A00498	CONNECTOR,8PIN	
	CN505	K1KA08A00440	CONNECTOR,8PIN	
	CN506	K1KA03AA0193	CONNECTOR,3PIN	
	CN508	K1KA10A00412	CONNECTOR,10PIN	
	CN509	K1KA02AA0193	CONNECTOR,2PIN	
	CN510	K1KA12A00315	CONNECTOR,12PIN	
	CN511	K1KA08A00440	CONNECTOR,8PIN	
	CN600	K1KA04A00527	CONNECTOR,4PIN	
	CN700	K1KA04A00644	CONNECTOR,4PIN	
	CN701	K1KA04AA0193	CONNECTOR,4PIN	
			(FUSES)	
⚠	F601	K5H202Y00003	FUSE	
⚠	F602	K5H152Y00001	FUSE	
			(COILS)	
	L100	PQLQR2BT	COIL	S
	L101	PQLQR2BT	COIL	S
	L102	PQLQR2BT	COIL	S
	L103	PQLQR2BT	COIL	S
	L106	G0B862C00003	COIL	
	L300	G1BYYYC00026	COIL	
	L800	G1C4R7MA0445	COIL	
	L801	G1C2R2MA0395	COIL	
	R501	PFVF2P221SG	COIL	S
			(IC FILTERS)	
	L201	J0JCC0000288	IC FILTER	S
	L202	J0JCC0000276	IC FILTER	S
	L203	J0JBC0000040	IC FILTER	S
	L204	J0JCC0000277	IC FILTER	
	L205	J0JCC0000288	IC FILTER	S
	L207	J0JBC0000040	IC FILTER	S
	L209	J0JCC0000276	IC FILTER	S
	L302	J0JCC0000308	IC FILTER	S
	L303	J0JCC0000308	IC FILTER	S
	L304	J0JBC0000118	IC FILTER	
	L344	J0JCC0000286	IC FILTER	S
	L345	J0JCC0000286	IC FILTER	S
	L346	J0JCC0000286	IC FILTER	S
	L347	J0JCC0000286	IC FILTER	S
	L348	J0JCC0000277	IC FILTER	S
	L349	J0JCC0000277	IC FILTER	S
	L350	J0JCC0000277	IC FILTER	S
	L351	J0JCC0000277	IC FILTER	S
	L352	J0JCC0000277	IC FILTER	S
	L353	J0JCC0000277	IC FILTER	S
	L354	J0JCC0000277	IC FILTER	S
	L355	J0JCC0000277	IC FILTER	S
	L357	J0MAB0000144	IC FILTER	
	L360	J0JCC0000276	IC FILTER	S
	L361	J0JCC0000275	IC FILTER	
	L363	J0JCC0000274	IC FILTER	S
	L364	J0JCC0000274	IC FILTER	S
	L372	J0JCC0000276	IC FILTER	S
	L500	J0JCC0000277	IC FILTER	S
	FLT500	J0HAAB000002	IC FILTER	
	R535	J0JCC0000274	IC FILTER	S
			(PHOTO ELECTRIC TRANS-DUCER)	
⚠	PC103	B3PAA0000530	PHOTO ELECTRIC TRANS-DUCER	
			(THERMISTOR)	
	POS100	PFRT002	THERMISTOR	S
			(RESISTORS)	
	R109	ERDS1TJ473	47k	S
	R117	ERG1SJ151E	150	
	R123	ERG1SJ221E	220	
	R125	ERDS1TJ223	22k	S
	R150	D0GA822JA021	8.2k	
	R152	D0GA392JA015	3.9k	
	R153	ERJ2GEYJ331	330	S
	R154	ERJ2GEJ473	47k	
	R155	ERJ2GEJ105X	1m	
	R160	ERJ2GEJ562X	5.6k	
	R161	ERJ2GEJ472X	4.7k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R203	ERJ2GEJ104	100k	
	R204	ERJ2GEYJ683	68k	S
	R206	D0GA393JA021	39k	
	R207	ERJ2GEJ823	82k	
	R209	ERJ2GEYJ683	68k	S
	R210	D0GA182JA015	1.8k	
	R211	ERJ2GEYJ154	150k	S
	R212	ERJ2GEJ103	10k	
	R213	ERJ2GEJ102	1k	
	R214	ERJ2GEJ102	1k	
	R216	ERJ2GE0R00	0	
	R217	ERJ3GEY0R00	0	
	R218	ERJ2GEJ220	22	
	R220	D0GA182JA015	1.8k	
	R221	D0GA124JA015	120k	
	R223	ERJ2GEJ432	4.3k	
	R224	ERJ2GEJ823	82k	
	R225	ERJ2GEJ105X	1m	
	R226	ERJ2GEJ473	47k	
	R227	ERJ2GEJ104	100k	
	R228	ERJ2GEJ104	100k	
	R229	ERJ2GEJ103	10k	
	R230	ERJ2GEJ823	82k	
	R231	D0GA123JA021	12k	
	R232	ERJ3GEY0R00	0	
	R233	D0GA124JA015	120k	
	R235	ERJ2GEJ563	56k	
	R236	ERJ2GEJ184	180k	S
	R237	D0GA123JA021	12k	
	R238	ERJ2GEJ823	82k	
	R239	D0GA681JA021	680	
	R240	ERJ2GEJ823	82k	
	R241	ERJ3GEYJ221	220	
	R242	D0GA124JA015	120k	
	R243	D0GA393JA021	39k	
	R247	D0GA222JA021	2.2k	
	R248	ERJ2GEJ563	56k	
	R249	D0GA123JA021	12k	
	R253	PQ4R18XJ100	10	S
	R256	ERJ3GEYJ220	22	
	R257	ERJ3GEYJ100	10	
	R258	ERJ3GEYJ100	10	
	R271	ERJ2GEJ103	10k	
	R273	ERJ2GEJ912	9.1k	
	R274	ERJ2GEJ473	47k	
	R275	ERJ2GEJ220	22	
	R276	D0GA333JA015	33k	
	R279	ERJ3GEY0R00	0	
	R280	ERJ3GEY0R00	0	
	R282	ERJ2GEJ473	47k	
	R285	ERJ2GEJ220	22	
	R286	ERJ2GEJ220	22	
	R288	ERJ2GE0R00	0	
	R289	ERJ2GEJ104	100k	
	R290	D0GA223JA015	22k	
	R291	ERJ2GEJ564	560k	
	R292	ERJ2GEJ103	10k	
	R293	D0GA330JA015	33	
	R295	ERJ2GEJ473	47k	
	R296	ERJ2GEJ473	47k	
	R297	ERJ2GEJ105X	1m	
	R302	ERJ2GEJ103	10k	
	R303	ERJ2GEJ103	10k	
	R304	ERJ2GEJ101	100	S
	R305	ERJ2GEJ103	10k	
	R306	ERJ2GEJ102	1k	
	R307	ERJ2GEJ103	10k	
	R309	ERJ2RKF3301	3.3k	
	R310	ERJ2RKF6801	6.8k	
	R311	ERJ2GE0R00	0	
	R315	ERJ2GEJ103	10k	
	R316	ERJ2GEJ103	10k	
	R317	D0GA470JA021	47	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R318	D0GA470JA021	47	
	R319	ERJ2GEJ104	100k	
	R320	ERJ2RKF1212	12.1k	
	R321	ERJ2GEJ103	10k	
	R322	ERJ2GEJ103	10k	
	R323	ERJ2GEJ103	10k	
	R324	ERJ2GEJ103	10k	
	R325	ERJ2GEJ103	10k	
	R327	ERJ2GE0R00	0	
	R329	ERJ2GE0R00	0	
	R331	ERJ2GE0R00	0	
	R332	ERJ2GE0R00	0	
	R335	ERJ2GE0R00	0	
	R336	ERJ3GEYJ6R8	6.8	
	R337	ERJ3GEYJ6R8	6.8	
	R338	ERJ2GEJ103	10k	
	R339	ERJ2GEJ823	82k	
	R340	ERJ2GEJ103	10k	
	R341	ERJ2GEJ103	10k	
	R342	ERJ2GEJ103	10k	
	R343	ERJ2GEJ103	10k	
	R344	ERJ2GEJ103	10k	
	R345	ERJ2GEJ103	10k	
	R346	D0GA152JA021	1.5k	
	R352	ERJ2GEJ103	10k	
	R354	ERJ2GEJ103	10k	
	R355	ERJ2GEJ103	10k	
	R361	ERJ2GEJ103	10k	
	R363	ERJ2GEJ103	10k	
	R365	ERJ2GEJ103	10k	
	R366	D0GA470JA021	47	
	R367	D0GA151JA021	150	
	R368	D0GA151JA021	150	
	R369	D0GA151JA021	150	
	R371	ERJ2GEJ103	10k	
	R372	ERJ2GEJ103	10k	
	R373	ERJ2GEJ103	10k	
	R374	ERJ2GE0R00	0	
	R375	ERJ2GEJ221	220	
	R377	ERJ2GEJ103	10k	
	R379	D0GA470JA021	47	
	R383	ERJ2GEJ221	220	
	R384	ERJ2GEJ101	100	S
	R385	ERJ2GEJ105X	1m	
	R386	ERJ2GEJ221	220	
	R387	D0GA470JA021	47	
	R388	ERJ2GEYJ683	68k	S
	R389	ERJ2GEJ102	1k	
	R391	ERJ2GEJ103	10k	
	R399	ERJ2GEJ103	10k	
	R400	D0GA470JA021	47	
	R401	ERJ2GEJ680	68	
	R402	D0GA470JA021	47	
	R403	D0GA470JA021	47	
	R404	D0GA470JA021	47	
	R405	D0GA470JA021	47	
	R406	D0GA470JA021	47	
	R407	D0GA470JA021	47	
	R408	D0GA470JA021	47	
	R409	D0GA560JA015	56	
	R410	ERJ2GEJ680	68	
	R411	D0GA470JA021	47	
	R412	D0GA470JA021	47	
	R416	D0GA470JA021	47	
	R421	ERJ2GEJ102	1k	
	R422	ERJ2GEJ102	1k	
	R423	ERJ2RKF1503	150k	
	R424	ERJ2GEJ103	10k	
	R425	ERJ2RKF2202X	22k	
	R426	PQ4R18XJ472	4.7k	S
	R427	ERJ2GEJ473	47k	
	R428	ERJ12YJ390H	39	S
	R430	ERJ2RKF1503	150k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R432	ERJ2GEJ563	56k	
	R433	ERJ2GEJ562X	5.6k	
	R441	PQ4R18XJ472	4.7k	S
	R442	ERJ2GEJ473	47k	
	R443	ERJ12YJ390H	39	S
	R495	ERJ3GEY0R00	0	
	R496	ERJ3GEY0R00	0	
	R497	ERJ3GEY0R00	0	
	R498	ERJ3GEY0R00	0	
	R500	ERJ2GEJ102	1k	
	R502	ERJ2GEJ563	56k	
	R503	ERJ2RKF3301	3.3k	
	R504	ERJ2GEJ473	47k	
	R505	ERJ2RKF6801	6.8k	
	R506	D0GA223JA015	22k	
	R507	ERJ2GEJ102	1k	
	R508	ERJ2GEJ473	47k	
	R509	ERJ2GEJ102	1k	
	R510	ERJ2GEJ562X	5.6k	
	R511	D0GA151JA021	150	
	R512	ERJ2GEJ562X	5.6k	
	R513	ERJ2GEJ562X	5.6k	
	R514	D0GA332JA015	3.3k	
	R515	ERJ2GEJ563	56k	
	R516	PQ4R10XJ332	3.3k	S
	R517	ERJ2GEJ103	10k	
	R518	ERJ2GEJ472X	4.7k	
	R519	ERJ3GEY0R00	0	
	R521	D0GA470JA021	47	
	R522	ERJ3GEYJ3R3	3.3	
	R525	ERJ2GEJ103	10k	
	R527	ERJ2GEJ562X	5.6k	
	R528	D0GA153JA021	15k	
	R529	ERJ2GEJ102	1k	
	R530	D0GA822JA021	8.2k	
	R531	ERJ2GEJ183	18k	
	R532	ERJ2GEJ102	1k	
	R533	D0GA471JA015	470	
	R534	D0GA182JA015	1.8k	
	R536	D0GA474JA021	470k	
	R537	ERJ2GEJ473	47k	
	R538	D0GA152JA021	1.5k	
	R541	ERJ2GEYJ331	330	S
	R542	D0GA681JA021	680	
	R544	ERJ2GEYJ331	330	S
	R545	ERJ2GE0R00	0	
	R546	D0GA681JA021	680	
	R547	ERJ3GEYJ390	39	
	R549	ERJ3GEYJ560	56	
	R550	ERJ2GEYJ331	330	S
	R552	ERJ2GEJ102	1k	
	R553	D0GA181JA021	180	
	R554	D0GA681JA021	680	
	R555	ERJ2GEJ472X	4.7k	
	R556	ERJ3GEYJ680	68	
	R557	D0GA182JA015	1.8k	
	R560	D0GA151JA021	150	
	R561	ERJ2GEJ102	1k	
	R562	ERJ2GEJ102	1k	
	R563	ERJ2GEJ101	100	S
	R564	ERJ2RKF1802	18k	
	R565	ERJ2GE0R00	0	
	R567	ERJ2GEJ103	10k	
	R568	ERJ2RKF3902	39k	
	R575	ERJ2GEJ564	560k	
	R576	ERJ2GEJ104	100k	
	R577	ERJ2GEJ472X	4.7k	
	R578	ERJ2GEJ473	47k	
	R579	D0GA471JA015	470	
	R580	ERJ2GEJ102	1k	
	R581	ERJ2RKF4300X	430	
	R582	ERJ2GEJ473	47k	
	R583	ERJ2GEJ104	100k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R584	ERJ2RKF3301	3.3k	
	R601	ERJ2RKF1601	1.6k	
	R602	ERJ2GEJ103	10k	
	R603	D0GA474JA021	470k	
	R604	ERJ2RKF4700X	470	
	R606	ERJ2GEJ473	47k	
	R607	ERJ8GEYJ2R7	2.7	S
	R608	ERJ8GEYJ2R7	2.7	S
	R609	ERJ8RQFR47V	0.47	
	R610	ERJ8RQFR47V	0.47	
	R611	ERJ2GEJ103	10k	
	R612	D0GA223JA015	22k	
	R633	ERJ2GEJ823	82k	
	R635	ERJ2GEJ472X	4.7k	
	R637	ERJ2GEJ102	1k	
	R638	D0GA332JA015	3.3k	
	R700	ERJ2GEJ103	10k	
	R702	ERJ8RQFR39	0.39	
	R703	ERJ8RQFR39	0.39	
	R800	ERJ3GEY0R00	0	
	R802	ERJ6GEY0R00	0	
	R803	ERJ2RKF2212	22.1k	
	R804	ERJ2RKF2212	22.1k	
	R805	D0GB103JA057	10k	
	R806	ERJ2RKF7322	73.2k	
	R809	ERJ2GEJ103	10k	
	R810	ERJ6GEY0R00	0	
	R811	ERJ2RKF1272	12.7k	
	R812	ERJ3GEY0R00	0	
	R815	ERJ2GEJ103	10k	
	R816	ERJ2GEJ102	1k	
	R821	ERJ2RKF1271	1.27k	
	R822	ERJ2RKF4300X	430	
	R827	ERJ3GEY0R00	0	
	R841	ERJ3GEYJ4R7	4.7	
	L156	ERJ2GE0R00	0	
	L157	ERJ2GEJ680	68	
	L206	ERJ2GE0R00	0	
	L210	ERJ2GE0R00	0	
	L212	ERJ3GEY0R00	0	
	L213	ERJ3GEY0R00	0	
	L215	ERJ2GE0R00	0	
	L216	ERJ2GE0R00	0	
	L369	ERJ2GEJ221	220	
	L370	ERJ2GEJ221	220	
	L371	ERJ2GEJ221	220	
			(COMPONENTS PARTS)	
	RA300	EXB28V220JX	RESISTOR ARRAY	
	RA301	EXB28V220JX	RESISTOR ARRAY	
	RA302	EXB28V220JX	RESISTOR ARRAY	
	RA303	EXB28V220JX	RESISTOR ARRAY	
	RA304	EXB28V470JX	RESISTOR ARRAY	
	RA305	EXB28V220JX	RESISTOR ARRAY	
	RA400	EXB28V220JX	RESISTOR ARRAY	
	RA401	EXB28V220JX	RESISTOR ARRAY	
	RA402	EXB28V220JX	RESISTOR ARRAY	
	RA403	EXB28V220JX	RESISTOR ARRAY	
	RA404	EXB28V470JX	RESISTOR ARRAY	
	RA405	EXB28V470JX	RESISTOR ARRAY	
	RA406	EXB28V470JX	RESISTOR ARRAY	
	RA408	EXB28V470JX	RESISTOR ARRAY	
	RA409	EXB28V470JX	RESISTOR ARRAY	
	RA410	EXB24V470JX	RESISTOR ARRAY	
	RA411	EXB28V470JX	RESISTOR ARRAY	
	RA412	EXB28V470JX	RESISTOR ARRAY	
	RA413	EXB28V470JX	RESISTOR ARRAY	
	RA414	EXB28V470JX	RESISTOR ARRAY	
	RA500	EXB24V223JX	RESISTOR ARRAY	
	RA501	EXB24V562JX	RESISTOR ARRAY	
	RA502	EXB24V101JX	RESISTOR ARRAY	
	RA700	EXB24V562JX	RESISTOR ARRAY	
	RA701	EXB24V223JX	RESISTOR ARRAY	
			(RELAY)	
⚠	RLY100	K6B1CYY00005	RELAY	
			(VARISTORS)	
	SA100	PFRZRA311P6T	VARISTOR(SURGE ABSORBER)	S
⚠	SA102	PFRZRA102P6T	VARISTOR(SURGE ABSORBER)	S
			(TRANSFORMER)	
⚠	T100	G4AYB0000006	TRANSFORMER	
			(CRYSTAL OSCILLATOR)	
	X300	H0J240500074	CRYSTAL OSCILLATOR	
	X301	H0J245500124	CRYSTAL OSCILLATOR	
	X302	H0J260500022	CRYSTAL OSCILLATOR	
	X303	H0A327200186	CRYSTAL OSCILLATOR	

18.2.3. Main Board (KX-MB2090)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWP1B2090CX	MAIN BOARD ASS'Y (RTL)	
			(ICs)	
	IC200	C1CB00003161	IC	
	IC201	C0ABBA000025	IC	
	IC202	C0ABBB000179	IC	
	IC203	C1CB00003161	IC	
	IC204	C1AB00002556	IC	
	IC300	C1ZBZ0004649	IC	
	IC301	C0EBY0000665	IC	
	IC303	C0CBAAA00035	IC	
	IC400	C3ABRY000078	IC	
	IC402	PNWI2090CX	IC (ROM)	
	IC503	C0FBAY000127	IC	
	IC504	C0BBBA000024	IC	
	IC600	AN44066A	IC	
	IC700	AN44066A	IC	
	IC750	C1CB00003704	IC	
	IC800	C0DBAYY01433	IC	
	IC801	C0DBAYY01433	IC	
	IC802	C0DBEYY00102	IC	
			(TRANSISTORS)	
	Q150	DRC9143E0L	TRANSISTOR(SI)	
	Q152	B1ABDF000026	TRANSISTOR(SI)	
	Q201	DRC9123J0L	TRANSISTOR(SI)	
	Q206	DRC9143E0L	TRANSISTOR(SI)	
	Q209	B1ABDF000025	TRANSISTOR(SI)	
	Q210	2SC4081R	TRANSISTOR(SI)	S
	Q211	2SC4081R	TRANSISTOR(SI)	S
	Q213	DRC9143E0L	TRANSISTOR(SI)	
	Q421	DSC9001R0L	TRANSISTOR(SI)	
	Q422	B1ADGE000012	TRANSISTOR(SI)	
	Q424	B1ADGE000012	TRANSISTOR(SI)	
	Q500	DSC9001R0L	TRANSISTOR(SI)	
	Q501	B1GBCFGN0005	TRANSISTOR(SI)	
	Q502	B1ABGE000014	TRANSISTOR(SI)	
	Q503	B1GBCFGN0005	TRANSISTOR(SI)	
	Q504	B1GBCFGN0005	TRANSISTOR(SI)	
	Q505	B1GBCFGN0005	TRANSISTOR(SI)	
	Q506	B1GBCFGN0005	TRANSISTOR(SI)	
	Q507	B1GBCFGN0005	TRANSISTOR(SI)	
	Q508	B1GBCFGN0005	TRANSISTOR(SI)	
	Q509	B1GBCFGN0005	TRANSISTOR(SI)	
	Q510	B1ADKE000002	TRANSISTOR(SI)	
	Q511	B1ABGE000011	TRANSISTOR(SI)	
	Q512	B1ABGE000011	TRANSISTOR(SI)	
	Q513	B1ABGE000011	TRANSISTOR(SI)	
	Q518	B1ADGE000012	TRANSISTOR(SI)	
	Q519	DSC9001R0L	TRANSISTOR(SI)	
	Q521	DSC9001R0L	TRANSISTOR(SI)	
	Q527	B1GBCFGN0005	TRANSISTOR(SI)	
	Q528	DSC9001R0L	TRANSISTOR(SI)	
	Q530	DSC9001R0L	TRANSISTOR(SI)	
	Q600	DSC9001R0L	TRANSISTOR(SI)	
	Q601	B1ADCF000020	TRANSISTOR(SI)	
	Q602	DRA9143Z0L	TRANSISTOR(SI)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	Q611	DRC9143E0L	TRANSISTOR(SI)	
	Q700	DRA9143Z0L	TRANSISTOR(SI)	
	Q701	B1GBCFGN0005	TRANSISTOR(SI)	
	Q702	DRA9143Z0L	TRANSISTOR(SI)	
	Q803	DRA9143Z0L	TRANSISTOR(SI)	
	Q804	DSC9001R0L	TRANSISTOR(SI)	
			(DIODES)	
	D105	DZ2J056M0L	DIODE(SI)	
	D106	DZ2J056M0L	DIODE(SI)	
	D151	DZ2J056M0L	DIODE(SI)	
	D152	DZ2J056M0L	DIODE(SI)	
	D200	1SS355	DIODE(SI)	S
	D204	DZ2J056M0L	DIODE(SI)	
	D205	DZ2J056M0L	DIODE(SI)	
	D300	PJVDJADAN202	DIODE(SI)	S
	D306	B0ZBZ0000146	DIODE(SI)	
	D500	1SS355	DIODE(SI)	S
	D501	1SS355	DIODE(SI)	S
	D801	DZ2W05600L	DIODE(SI)	
	D803	DZ2W05600L	DIODE(SI)	
	D806	B0BC6R5A0541	DIODE(SI)	
	LED750	B3ABB0000331	DIODE(SI)	
			(BATTERY)	
	BAT300	N4BCY32Y0005	BATTERY	S
			(CAPACITORS)	
	C116	F1H1H473A748	0.047	
	C120	F0C2E474A277	0.47	
	C150	F1G0J2240003	0.22	
	C151	F2G1C4700040	47	
	C152	F1G1H472A571	0.0047	
	C153	F1G0J2240003	0.22	
	C158	ECJ0EB1H102K	0.001	
	C200	ECJ1VB1H333K	0.033	
	C202	ECUE1C104KBQ	0.1	S
	C203	F1J1C106A191	10	
	C204	ECUE1A104KBQ	0.1	S
	C207	ECUE1A104KBQ	0.1	S
	C209	ECUE1C103KBQ	0.01	
	C210	F1G1H101A557	100p	
	C212	F1G1H101A557	100p	
	C213	F1G1H101A557	100p	
	C214	ECJ0EB0J105K	1	
	C215	F1L1V1060002	10	
	C216	ECUE1H222KBQ	0.0022	S
	C217	ECUE1C223KBQ	0.022	S
	C218	F2G1C4700040	47	
	C219	EEE1HA4R7SR	4.7	S
	C220	F1G1H100A565	10p	
	C221	ECUE1A104KBQ	0.1	S
	C222	F1H1H104A220	0.1	
	C223	F1H1C104A107	0.1	
	C224	F1G0J2240003	0.22	
	C227	ECJ0EB1H392K	0.0039	
	C228	F1G1H101A557	100p	
	C229	F1G1H101A557	100p	
	C232	F1H1C104A107	0.1	
	C233	ECUE1C103KBQ	0.01	
	C235	ECUE1A104KBQ	0.1	S
	C236	F1J0J2260004	22	
	C237	F1H1A225A025	2.2	
	C238	ECJ0EB0J105K	1	
	C239	ECUE1H821KBQ	820p	
	C240	F1J0J2260004	22	
	C241	ECUE1H331KBQ	330p	S
	C243	ECUE1H331KBQ	330p	S
	C244	ECUE1C333KBQ	0.033	S
	C246	ECUE1A104KBQ	0.1	S
	C247	ECJ0EB1H392K	0.0039	
	C248	F1G1H101A557	100p	
	C250	F1G1H101A557	100p	
	C252	ECJ0EB1H392K	0.0039	
	C253	ECUE1H821KBQ	820p	
	C254	F1J0J2260004	22	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C256	ECUE1C103KBQ	0.01	
	C258	F1J0J2260004	22	
	C270	ECUE1A104KBQ	0.1	S
	C273	ECUE1A104KBQ	0.1	S
	C275	ECUE1A104KBQ	0.1	S
	C278	ECUE1A104KBQ	0.1	S
	C279	ECUE1A104KBQ	0.1	S
	C280	F1G1H101A557	100p	
	C281	ECUE1A104KBQ	0.1	S
	C282	F1G1A2240008	0.22	
	C283	F1G0J2240003	0.22	
	C286	ECUE1A104KBQ	0.1	S
	C287	ECUE1A104KBQ	0.1	S
	C300	ECUE1A104KBQ	0.1	S
	C301	ECUE1C103KBQ	0.01	
	C302	ECUE1A104KBQ	0.1	S
	C303	ECUE1A104KBQ	0.1	S
	C304	ECUE1A104KBQ	0.1	S
	C305	ECUE1A104KBQ	0.1	S
	C306	ECUE1A104KBQ	0.1	S
	C307	ECUE1A104KBQ	0.1	S
	C308	ECJ0EB0J105K	1	
	C309	ECUE1C223KBQ	0.022	S
	C310	ECUE1H9R0DCQ	9	
	C311	ECUE1H150JCQ	15p	
	C312	ECUE1A104KBQ	0.1	S
	C313	ECUE1H150JCQ	15p	
	C314	ECUE1H150JCQ	15p	
	C315	ECUE1H9R0DCQ	9	
	C316	F1G1H100A565	10p	
	C319	ECJ0EB0J105K	1	
	C322	ECJ0EB0J105K	1	
	C325	ECJ0EB0J105K	1	
	C326	ECUE1C103KBQ	0.01	
	C327	ECUE1A104KBQ	0.1	S
	C328	F1G0J224A044	0.22	
	C329	F1G0J224A044	0.22	
	C330	F1H0J105A037	1	
	C331	F1H0J105A037	1	
	C340	ECUE1A104KBQ	0.1	S
	C341	ECUE1A104KBQ	0.1	S
	C344	ECUE1C103KBQ	0.01	
	C351	F1G1H101A557	100p	
	C357	ECUE1A104KBQ	0.1	S
	C358	ECUE1A104KBQ	0.1	S
	C359	ECUE1A104KBQ	0.1	S
	C360	ECUE1A104KBQ	0.1	S
	C361	ECUE1A104KBQ	0.1	S
	C362	ECUE1A104KBQ	0.1	S
	C363	ECUE1A104KBQ	0.1	S
	C364	ECUE1A104KBQ	0.1	S
	C366	ECUE1A104KBQ	0.1	S
	C367	ECJ0EB0J105K	1	
	C368	ECJ0EB0J105K	1	
	C369	ECJ0EB0J105K	1	
	C400	F1H0J105A037	1	
	C401	F1H0J105A037	1	
	C402	F1H0J105A037	1	
	C403	F1H0J105A037	1	
	C407	ECUE1H270JCQ	27p	S
	C408	ECUE1A104KBQ	0.1	S
	C421	ECJ0EB0J105K	1	
	C422	F1G1H101A557	100p	
	C423	ECJ0EB1H102K	0.001	
	C427	F2G1V1010021	100	
	C428	F2G1V1010021	100	
	C440	ECUE1A104KBQ	0.1	S
	C441	ECUE1A104KBQ	0.1	S
	C442	ECUE1A104KBQ	0.1	S
	C443	ECUE1A104KBQ	0.1	S
	C444	ECUE1A104KBQ	0.1	S
	C445	ECUE1A104KBQ	0.1	S
	C446	ECUE1A104KBQ	0.1	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C447	ECUE1A104KBQ	0.1	S
	C448	ECUE1A104KBQ	0.1	S
	C449	ECUE1A104KBQ	0.1	S
	C450	ECUE1A104KBQ	0.1	S
	C451	ECUE1A104KBQ	0.1	S
	C452	ECUE1A104KBQ	0.1	S
	C454	ECUE1A104KBQ	0.1	S
	C455	ECUE1A104KBQ	0.1	S
	C456	ECUE1A104KBQ	0.1	S
	C457	ECUE1A104KBQ	0.1	S
	C458	ECUE1A104KBQ	0.1	S
	C459	ECUE1A104KBQ	0.1	S
	C460	ECUE1A104KBQ	0.1	S
	C461	ECUE1A104KBQ	0.1	S
	C462	ECUE1A104KBQ	0.1	S
	C463	ECUE1A104KBQ	0.1	S
	C464	ECUE1A104KBQ	0.1	S
	C465	ECUE1A104KBQ	0.1	S
	C466	ECUE1A104KBQ	0.1	S
	C467	ECUE1A104KBQ	0.1	S
	C470	ECUE1A104KBQ	0.1	S
	C471	ECUE1A104KBQ	0.1	S
	C472	ECUE1A104KBQ	0.1	S
	C473	ECUE1A104KBQ	0.1	S
	C474	ECUE1A104KBQ	0.1	S
	C475	ECUE1A104KBQ	0.1	S
	C476	ECUE1A104KBQ	0.1	S
	C477	ECUE1A104KBQ	0.1	S
	C478	ECUE1A104KBQ	0.1	S
	C479	ECUE1A104KBQ	0.1	S
	C480	ECUE1A104KBQ	0.1	S
	C481	ECUE1A104KBQ	0.1	S
	C482	ECUE1A104KBQ	0.1	S
	C483	ECUE1A104KBQ	0.1	S
	C484	ECUE1A104KBQ	0.1	S
	C485	ECUE1A104KBQ	0.1	S
	C487	F1H1H104A220	0.1	
	C488	F1H1H104A220	0.1	
	C489	F1H1H104A220	0.1	
	C490	F1H1H104A220	0.1	
	C491	F1H1H104A220	0.1	
	C492	F1H1H104A220	0.1	
	C493	F1H1H104A220	0.1	
	C494	ECUE1A104KBQ	0.1	S
	C496	F1H1H104A220	0.1	
	C497	F1H1H104A220	0.1	
	C501	ECUE1A104KBQ	0.1	S
	C502	F1J0J1060006	10	
	C506	F1G1H100A565	10p	
	C507	ECJ0EB1H102K	0.001	
	C508	ECJ0EB1A473K	0.047	
	C509	ECJ0EB1H102K	0.001	
	C510	ECJ0EB1H102K	0.001	
	C516	ECJ0EB1H102K	0.001	
	C518	F1H1H104A220	0.1	
	C531	F1J1A106A043	10	
	C533	ECUE1A104KBQ	0.1	S
	C534	ECUE1A104KBQ	0.1	S
	C535	ECJ0EB1H102K	0.001	
	C536	ECUE1A104KBQ	0.1	S
	C537	ECUE1A104KBQ	0.1	S
	C538	ECJ0EB0J105K	1	
	C539	ECJ0EB1H102K	0.001	
	C540	ECUE1A104KBQ	0.1	S
	C541	ECJ0EB1H102K	0.001	
	C543	ECUE1A104KBQ	0.1	S
	C544	ECUE1C103KBQ	0.01	
	C545	ECJ0EB0J105K	1	
	C546	ECUE1C103KBQ	0.01	
	C548	ECJ0EB1H102K	0.001	
	C549	F1J0J2260004	22	
	C551	ECJ0EB1H102K	0.001	
	C552	F1H1H104A220	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C553	ECJ0EB1H102K	0.001	
	C554	ECJ0EB1H102K	0.001	
	C556	F1G1H151A541	150p	
	C565	ECJ0EB1A473K	0.047	
	C569	ECJ0EB1A473K	0.047	
	C571	ECUE1A104KBQ	0.1	S
	C572	ECJ0EB0J105K	1	
	C600	ECJ0EB0J105K	1	
	C601	ECJ0EB0J105K	1	
	C602	ECUE1A104KBQ	0.1	S
	C603	ECUX1H103KBV	0.01	S
	C604	ECUX1H103KBV	0.01	S
	C605	F2G1V4700028	47	
	C606	F1H1H104A220	0.1	
	C607	ECJ0EB1H102K	0.001	
	C608	ECJ0EB1H102K	0.001	
	C609	ECJ0EB1H102K	0.001	
	C610	ECJ0EB1H102K	0.001	
	C620	ECJ0EB1H102K	0.001	
	C700	ECUE1A104KBQ	0.1	S
	C701	ECUX1H103KBV	0.01	S
	C702	ECUX1H103KBV	0.01	S
	C703	ECJ0EB1H102K	0.001	
	C704	ECJ0EB1H102K	0.001	
	C705	ECJ0EB1H102K	0.001	
	C706	ECJ0EB1H102K	0.001	
	C707	ECJ0EB1H102K	0.001	
	C708	ECJ0EB1H102K	0.001	
	C750	F1G1H101A557	100p	
	C752	EEE0JA470SR	47	
	C754	ECUE1C103KBQ	0.01	
	C755	ECUE1C103KBQ	0.01	
	C756	ECUE1H7R0CCQ	7	S
	C757	ECUE1H120JCQ	12p	
	C758	ECUE1A104KBQ	0.1	S
	C759	ECUE1A104KBQ	0.1	S
	C760	ECUE1A104KBQ	0.1	S
	C762	EEE0JA470SR	47	
	C763	ECUE1A104KBQ	0.1	S
	C764	ECUE1A104KBQ	0.1	S
	C765	ECUE1A104KBQ	0.1	S
	C766	ECUE1A104KBQ	0.1	S
	C767	ECUE1A104KBQ	0.1	S
	C768	F1G1H100A565	10p	
	C801	F1K1E1060004	10	
	C802	F1H1H104A220	0.1	
	C803	ECUE1A104KBQ	0.1	S
	C804	ECJ0EB0J105K	1	
	C805	F1G1E472A086	0.0047	
	C806	F1G1H100A565	10p	
	C807	F1K0J476A009	47	
	C808	F1K1E1060004	10	
	C809	F1H1H104A220	0.1	
	C810	ECUE1A104KBQ	0.1	S
	C811	F1H1H104A220	0.1	
	C813	ECJ0EB0J105K	1	
	C814	F1G1E472A086	0.0047	
	C815	F2G1V1010021	100	
	C816	F1K0J476A009	47	
	C819	F1K1E1060004	10	
	C820	F1J0J2260004	22	
	C824	ECJ0EB1H102K	0.001	
			(CONNECTORS & JACKS)	
	CN100	K2LB1YYB0002	JACK/SOCKET	
	CN101	K2LB1YYB0002	JACK/SOCKET	
	CN750	K2LC108B0112	JACK/SOCKET	
	CN200	K1KA08AA0193	CONNECTOR,8PIN	
	CN300	K1FY104B0015	CONNECTOR,4PIN	
	CN500	K1KA07A00257	CONNECTOR,7PIN	
	CN501	K1KA05A00364	CONNECTOR,5PIN	
	CN502	K1KA08AA0193	CONNECTOR,8PIN	
	CN503	K1KA02AA0193	CONNECTOR,2PIN	
	CN504	K1KA08A00498	CONNECTOR,8PIN	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	CN505	K1KA08A00440	CONNECTOR,8PIN	
	CN506	K1KA03AA0193	CONNECTOR,3PIN	
	CN508	K1KA10A00412	CONNECTOR,10PIN	
	CN509	K1KA02AA0193	CONNECTOR,2PIN	
	CN510	K1KA12A00315	CONNECTOR,12PIN	
	CN511	K1KA08A00440	CONNECTOR,8PIN	
	CN600	K1KA04A00527	CONNECTOR,4PIN	
	CN700	K1KA04A00644	CONNECTOR,4PIN	
	CN701	K1KA04AA0193	CONNECTOR,4PIN	
			(FUSES)	
⚠	F601	K5H202Y00003	FUSE	
⚠	F602	K5H152Y00001	FUSE	
			(COILS)	
	L100	PQLQR2BT	COIL	S
	L101	PQLQR2BT	COIL	S
	L102	PQLQR2BT	COIL	S
	L103	PQLQR2BT	COIL	S
	L106	G0B862C00003	COIL	
	L300	G1BYYYC00026	COIL	
	L752	G1BYYYY00010	COIL	
	L753	G1BYYYY00010	COIL	
	L800	G1C4R7MA0445	COIL	
	L801	G1C2R2MA0395	COIL	
	R501	PFVF2P221SG	COIL	S
			(IC FILTERS)	
	L201	J0JCC0000288	IC FILTER	S
	L202	J0JCC0000276	IC FILTER	S
	L203	J0JBC0000040	IC FILTER	S
	L204	J0JCC0000277	IC FILTER	
	L205	J0JCC0000288	IC FILTER	S
	L207	J0JBC0000040	IC FILTER	S
	L209	J0JCC0000276	IC FILTER	S
	L302	J0JCC0000308	IC FILTER	S
	L303	J0JCC0000308	IC FILTER	S
	L304	J0JBC0000118	IC FILTER	
	L344	J0JCC0000286	IC FILTER	S
	L345	J0JCC0000286	IC FILTER	S
	L346	J0JCC0000286	IC FILTER	S
	L347	J0JCC0000286	IC FILTER	S
	L348	J0JCC0000277	IC FILTER	S
	L349	J0JCC0000277	IC FILTER	S
	L350	J0JCC0000277	IC FILTER	S
	L351	J0JCC0000277	IC FILTER	S
	L352	J0JCC0000277	IC FILTER	S
	L353	J0JCC0000277	IC FILTER	S
	L354	J0JCC0000277	IC FILTER	S
	L355	J0JCC0000277	IC FILTER	S
	L357	J0MAB0000144	IC FILTER	
	L360	J0JCC0000276	IC FILTER	S
	L361	J0JCC0000275	IC FILTER	
	L363	J0JCC0000274	IC FILTER	S
	L364	J0JCC0000274	IC FILTER	S
	L372	J0JCC0000276	IC FILTER	S
	L500	J0JCC0000277	IC FILTER	S
	L750	J0JCC0000276	IC FILTER	S
	FLT500	J0HAAB000002	IC FILTER	
	R535	J0JCC0000274	IC FILTER	S
			(PHOTO ELECTRIC TRANS-DUCER)	
⚠	PC103	B3PAA0000530	PHOTO ELECTRIC TRANS-DUCER	
			(THERMISTOR)	
	POS100	PFRT002	THERMISTOR	S
			(RESISTORS)	
	R109	ERDS1TJ473	47k	S
	R117	ERG1SJ151E	150	
	R123	ERG1SJ221E	220	
	R125	ERDS1TJ223	22k	S
	R150	D0GA822JA021	8.2k	
	R152	D0GA392JA015	3.9k	
	R153	ERJ2GEYJ331	330	S
	R154	ERJ2GEJ473	47k	
	R155	ERJ2GEJ105X	1m	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R160	ERJ2GEJ562X	5.6k	
	R161	ERJ2GEJ472X	4.7k	
	R203	ERJ2GEJ104	100k	
	R204	ERJ2GEYJ683	68k	S
	R206	D0GA393JA021	39k	
	R207	ERJ2GEJ823	82k	
	R209	ERJ2GEYJ683	68k	S
	R210	D0GA182JA015	1.8k	
	R211	ERJ2GEYJ154	150k	S
	R212	ERJ2GEJ103	10k	
	R213	ERJ2GEJ102	1k	
	R214	ERJ2GEJ102	1k	
	R216	ERJ2GE0R00	0	
	R217	ERJ3GEY0R00	0	
	R218	ERJ2GEJ220	22	
	R220	D0GA182JA015	1.8k	
	R221	D0GA124JA015	120k	
	R223	ERJ2GEJ432	4.3k	
	R224	ERJ2GEJ823	82k	
	R225	ERJ2GEJ105X	1m	
	R226	ERJ2GEJ473	47k	
	R227	ERJ2GEJ104	100k	
	R228	ERJ2GEJ104	100k	
	R229	ERJ2GEJ103	10k	
	R230	ERJ2GEJ823	82k	
	R231	D0GA123JA021	12k	
	R232	ERJ3GEY0R00	0	
	R233	D0GA124JA015	120k	
	R235	ERJ2GEJ563	56k	
	R236	ERJ2GEJ184	180k	S
	R237	D0GA123JA021	12k	
	R238	ERJ2GEJ823	82k	
	R239	D0GA681JA021	680	
	R240	ERJ2GEJ823	82k	
	R241	ERJ3GEYJ221	220	
	R242	D0GA124JA015	120k	
	R243	D0GA393JA021	39k	
	R247	D0GA222JA021	2.2k	
	R248	ERJ2GEJ563	56k	
	R249	D0GA123JA021	12k	
	R253	PQ4R18XJ100	10	S
	R256	ERJ3GEYJ220	22	
	R257	ERJ3GEYJ100	10	
	R258	ERJ3GEYJ100	10	
	R271	ERJ2GEJ103	10k	
	R273	ERJ2GEJ912	9.1k	
	R274	ERJ2GEJ473	47k	
	R275	ERJ2GEJ220	22	
	R276	D0GA333JA015	33k	
	R279	ERJ3GEY0R00	0	
	R280	ERJ3GEY0R00	0	
	R282	ERJ2GEJ473	47k	
	R285	ERJ2GEJ220	22	
	R286	ERJ2GEJ220	22	
	R288	ERJ2GE0R00	0	
	R289	ERJ2GEJ104	100k	
	R290	D0GA223JA015	22k	
	R291	ERJ2GEJ564	560k	
	R292	ERJ2GEJ103	10k	
	R293	D0GA330JA015	33	
	R295	ERJ2GEJ473	47k	
	R296	ERJ2GEJ473	47k	
	R297	ERJ2GEJ105X	1m	
	R302	ERJ2GEJ103	10k	
	R303	ERJ2GEJ103	10k	
	R304	ERJ2GEJ101	100	S
	R305	ERJ2GEJ103	10k	
	R306	ERJ2GEJ102	1k	
	R307	ERJ2GEJ103	10k	
	R309	ERJ2RKF3301	3.3k	
	R310	ERJ2RKF6801	6.8k	
	R311	ERJ2GE0R00	0	
	R315	ERJ2GEJ103	10k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R316	ERJ2GEJ103	10k	
	R317	D0GA470JA021	47	
	R318	D0GA470JA021	47	
	R319	ERJ2GEJ104	100k	
	R320	ERJ2RKF1212	12.1k	
	R321	ERJ2GEJ103	10k	
	R322	ERJ2GEJ103	10k	
	R323	ERJ2GEJ103	10k	
	R324	ERJ2GEJ103	10k	
	R325	ERJ2GEJ103	10k	
	R327	ERJ2GE0R00	0	
	R329	ERJ2GE0R00	0	
	R331	ERJ2GE0R00	0	
	R332	ERJ2GE0R00	0	
	R335	ERJ2GE0R00	0	
	R336	ERJ3GEYJ6R8	6.8	
	R337	ERJ3GEYJ6R8	6.8	
	R338	ERJ2GEJ103	10k	
	R339	ERJ2GEJ823	82k	
	R345	ERJ2GEJ103	10k	
	R346	D0GA152JA021	1.5k	
	R352	ERJ2GEJ103	10k	
	R354	ERJ2GEJ103	10k	
	R355	ERJ2GEJ103	10k	
	R360	ERJ2GEJ103	10k	
	R363	ERJ2GEJ103	10k	
	R365	ERJ2GEJ103	10k	
	R366	D0GA470JA021	47	
	R367	D0GA151JA021	150	
	R368	D0GA151JA021	150	
	R369	D0GA151JA021	150	
	R371	ERJ2GEJ103	10k	
	R372	ERJ2GEJ103	10k	
	R373	ERJ2GEJ103	10k	
	R374	ERJ2GE0R00	0	
	R375	ERJ2GEJ221	220	
	R377	ERJ2GEJ103	10k	
	R379	D0GA470JA021	47	
	R383	ERJ2GEJ221	220	
	R384	ERJ2GEJ101	100	S
	R385	ERJ2GEJ105X	1m	
	R386	ERJ2GEJ221	220	
	R387	D0GA470JA021	47	
	R388	ERJ2GEYJ683	68k	S
	R389	ERJ2GEJ102	1k	
	R391	ERJ2GEJ103	10k	
	R399	ERJ2GEJ103	10k	
	R400	D0GA470JA021	47	
	R401	ERJ2GEJ680	68	
	R402	D0GA470JA021	47	
	R403	D0GA470JA021	47	
	R404	D0GA470JA021	47	
	R405	D0GA470JA021	47	
	R406	D0GA470JA021	47	
	R407	D0GA470JA021	47	
	R408	D0GA470JA021	47	
	R409	D0GA560JA015	56	
	R410	ERJ2GEJ680	68	
	R411	D0GA470JA021	47	
	R412	D0GA470JA021	47	
	R416	D0GA470JA021	47	
	R421	ERJ2GEJ102	1k	
	R422	ERJ2GEJ102	1k	
	R423	ERJ2RKF1503	150k	
	R424	ERJ2GEJ103	10k	
	R425	ERJ2RKF2202X	22k	
	R426	PQ4R18XJ472	4.7k	S
	R427	ERJ2GEJ473	47k	
	R428	ERJ12YJ390H	39	S
	R430	ERJ2RKF1503	150k	
	R432	ERJ2GEJ563	56k	
	R433	ERJ2GEJ562X	5.6k	
	R441	PQ4R18XJ472	4.7k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R442	ERJ2GEJ473	47k	
	R443	ERJ12YJ390H	39	S
	R495	ERJ3GEY0R00	0	
	R496	ERJ3GEY0R00	0	
	R497	ERJ3GEY0R00	0	
	R498	ERJ3GEY0R00	0	
	R500	ERJ2GEJ102	1k	
	R502	ERJ2GEJ563	56k	
	R503	ERJ2RKF3301	3.3k	
	R504	ERJ2GEJ473	47k	
	R505	ERJ2RKF6801	6.8k	
	R506	D0GA223JA015	22k	
	R507	ERJ2GEJ102	1k	
	R508	ERJ2GEJ473	47k	
	R509	ERJ2GEJ102	1k	
	R510	ERJ2GEJ562X	5.6k	
	R511	D0GA151JA021	150	
	R512	ERJ2GEJ562X	5.6k	
	R513	ERJ2GEJ562X	5.6k	
	R514	D0GA332JA015	3.3k	
	R515	ERJ2GEJ563	56k	
	R516	PQ4R10XJ332	3.3k	S
	R517	ERJ2GEJ103	10k	
	R518	ERJ2GEJ472X	4.7k	
	R519	ERJ3GEY0R00	0	
	R521	D0GA470JA021	47	
	R522	ERJ3GEYJ3R3	3.3	
	R525	ERJ2GEJ103	10k	
	R527	ERJ2GEJ562X	5.6k	
	R528	D0GA153JA021	15k	
	R529	ERJ2GEJ102	1k	
	R530	D0GA822JA021	8.2k	
	R531	ERJ2GEJ183	18k	
	R532	ERJ2GEJ102	1k	
	R533	D0GA471JA015	470	
	R534	D0GA182JA015	1.8k	
	R536	D0GA474JA021	470k	
	R537	ERJ2GEJ473	47k	
	R538	D0GA152JA021	1.5k	
	R541	ERJ2GEYJ331	330	S
	R542	D0GA681JA021	680	
	R544	ERJ2GEYJ331	330	S
	R545	ERJ2GE0R00	0	
	R546	D0GA681JA021	680	
	R547	ERJ3GEYJ390	39	
	R549	ERJ3GEYJ560	56	
	R550	ERJ2GEYJ331	330	S
	R552	ERJ2GEJ102	1k	
	R553	D0GA181JA021	180	
	R554	D0GA681JA021	680	
	R555	ERJ2GEJ472X	4.7k	
	R556	ERJ3GEYJ680	68	
	R557	D0GA182JA015	1.8k	
	R560	D0GA151JA021	150	
	R561	ERJ2GEJ102	1k	
	R562	ERJ2GEJ102	1k	
	R563	ERJ2GEJ101	100	S
	R564	ERJ2RKF1802	18k	
	R565	ERJ2GE0R00	0	
	R567	ERJ2GEJ103	10k	
	R568	ERJ2RKF3902	39k	
	R575	ERJ2GEJ564	560k	
	R576	ERJ2GEJ104	100k	
	R577	ERJ2GEJ472X	4.7k	
	R578	ERJ2GEJ473	47k	
	R579	D0GA471JA015	470	
	R580	ERJ2GEJ102	1k	
	R581	ERJ2RKF4300X	430	
	R582	ERJ2GEJ473	47k	
	R583	ERJ2GEJ104	100k	
	R584	ERJ2RKF3301	3.3k	
	R601	ERJ2RKF1601	1.6k	
	R602	ERJ2GEJ103	10k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R603	D0GA474JA021	470k	
	R604	ERJ2RKF4700X	470	
	R606	ERJ2GEJ473	47k	
	R607	ERJ8GEYJ2R7	2.7	S
	R608	ERJ8GEYJ2R7	2.7	S
	R609	ERJ8RQFR47V	0.47	
	R610	ERJ8RQFR47V	0.47	
	R611	ERJ2GEJ103	10k	
	R612	D0GA223JA015	22k	
	R633	ERJ2GEJ823	82k	
	R635	ERJ2GEJ472X	4.7k	
	R637	ERJ2GEJ102	1k	
	R638	D0GA332JA015	3.3k	
	R700	ERJ2GEJ103	10k	
	R702	ERJ8RQFR39	0.39	
	R703	ERJ8RQFR39	0.39	
	R750	D0GA471JA015	470	
	R751	ERJ2RKF2491X	2.49k	
	R752	ERJ2GEJ472X	4.7k	
	R755	ERJ2GEJ472X	4.7k	
	R756	ERJ2GEJ221	220	
	R757	ERJ2GEJ472X	4.7k	
	R758	ERJ2GEJ472X	4.7k	
	R759	ERJ2GEJ103	10k	
	R771	ERJ2GEJ472X	4.7k	
	R772	ERJ2GEJ472X	4.7k	
	R773	ERJ2GEJ472X	4.7k	
	R800	ERJ3GEY0R00	0	
	R802	ERJ6GEY0R00	0	
	R803	ERJ2RKF2212	22.1k	
	R804	ERJ2RKF2212	22.1k	
	R805	D0GB103JA057	10k	
	R806	ERJ2RKF7322	73.2k	
	R809	ERJ2GEJ103	10k	
	R810	ERJ6GEY0R00	0	
	R811	ERJ2RKF1272	12.7k	
	R812	ERJ3GEY0R00	0	
	R815	ERJ2GEJ103	10k	
	R816	ERJ2GEJ102	1k	
	R821	ERJ2RKF1271	1.27k	
	R822	ERJ2RKF4300X	430	
	R827	ERJ3GEY0R00	0	
	R841	ERJ3GEYJ4R7	4.7	
	L156	ERJ2GE0R00	0	
	L157	ERJ2GEJ680	68	
	L206	ERJ2GE0R00	0	
	L210	ERJ2GE0R00	0	
	L212	ERJ3GEY0R00	0	
	L213	ERJ3GEY0R00	0	
	L215	ERJ2GE0R00	0	
	L216	ERJ2GE0R00	0	
	L369	ERJ2GEJ221	220	
	L370	ERJ2GEJ221	220	
	L371	ERJ2GEJ221	220	
			(COMPONENTS PARTS)	
	RA300	EXB28V220JX	RESISTOR ARRAY	
	RA301	EXB28V220JX	RESISTOR ARRAY	
	RA302	EXB28V220JX	RESISTOR ARRAY	
	RA303	EXB28V220JX	RESISTOR ARRAY	
	RA304	EXB28V470JX	RESISTOR ARRAY	
	RA305	EXB28V220JX	RESISTOR ARRAY	
	RA400	EXB28V220JX	RESISTOR ARRAY	
	RA401	EXB28V220JX	RESISTOR ARRAY	
	RA402	EXB28V220JX	RESISTOR ARRAY	
	RA403	EXB28V220JX	RESISTOR ARRAY	
	RA404	EXB28V470JX	RESISTOR ARRAY	
	RA405	EXB28V470JX	RESISTOR ARRAY	
	RA406	EXB28V470JX	RESISTOR ARRAY	
	RA408	EXB28V470JX	RESISTOR ARRAY	
	RA409	EXB28V470JX	RESISTOR ARRAY	
	RA410	EXB24V470JX	RESISTOR ARRAY	
	RA411	EXB28V470JX	RESISTOR ARRAY	
	RA412	EXB28V470JX	RESISTOR ARRAY	
	RA413	EXB28V470JX	RESISTOR ARRAY	
	RA414	EXB28V470JX	RESISTOR ARRAY	
	RA500	EXB24V223JX	RESISTOR ARRAY	
	RA501	EXB24V562JX	RESISTOR ARRAY	
	RA502	EXB24V101JX	RESISTOR ARRAY	
	RA700	EXB24V562JX	RESISTOR ARRAY	
	RA701	EXB24V223JX	RESISTOR ARRAY	
			(RELAY)	
⚠	RLY100	K6B1CYY00005	RELAY	
			(VARISTORS)	
	SA100	PFRZRA311P6T	VARISTOR(SURGE ABSORBER)	S
⚠	SA102	PFRZRA102P6T	VARISTOR(SURGE ABSORBER)	S
			(TRANSFORMER)	
⚠	T100	G4AYB0000006	TRANSFORMER	
			(CRYSTAL OSCILLATORS)	
	X300	H0J240500074	CRYSTAL OSCILLATOR	
	X301	H0J245500124	CRYSTAL OSCILLATOR	
	X302	H0J260500022	CRYSTAL OSCILLATOR	
	X303	H0A327200186	CRYSTAL OSCILLATOR	
	X750	H0J250500097	CRYSTAL OSCILLATOR	

18.2.4. Operation Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PNLP2090CXZ	OPERATION BOARD ASS'Y (RTL)	
			(IC)	
	IC1	C1ZBZ0004019	IC	
			(TRANSISTORS)	
	Q2	DRA5143E0L	TRANSISTOR(SI)	
	Q3	DRC5123J0L	TRANSISTOR(SI)	
	Q4	DRC5144E0L	TRANSISTOR(SI)	
			(DIODES)	
	LED1	B3AAA0000534	DIODE(SI)	
	LED2	B3ABA0000633	DIODE(SI)	
	LED3	B3ABA0000633	DIODE(SI)	
	LED4	B3ABA0000633	DIODE(SI)	
			(CAPACITORS)	
	C1	F1H1C104A107	0.1	
	C2	F1H1C104A107	0.1	
	C3	F1H1C104A107	0.1	
	C6	ECJ1VB1H561K	560p	
	C7	ECUV1H151JCV	150p	
	C8	ECUV1H102KBV	0.001	
	C10	F1H1A225A025	2.2	
	C11	F1H1A225A025	2.2	
	C12	ECJ1VB1H391K	390p	
	C13	ECUV1H101JCV	100p	
	C14	ECUV1H101JCV	100p	
			(LIQUID CRYSTAL DISPLAY)	
	CN1	K1MY12BA0516	LIQUID CRYSTAL DISPLAY	
			(CONNECTOR)	
	CN2	K1KA08B00243	CONNECTOR_8PIN	
			(RESISTORS)	
	J19	PQ4R18XJ000	0	S
	J21	PQ4R18XJ000	0	S
	J22	D0YBR0000020	0	
	R1	ERJ3GEYJ151	150	
	R2	ERJ3GEYJ101	100	
	R3	ERJ3GEYJ101	100	
	R4	ERJ3GEYJ101	100	
	R5	ERJ3GSYJ123	12k	S
	R6	ERJ3GEYJ151	150	
	R9	ERJ3GEYJ472	4.7k	
	R11	ERJ3GEYJ101	100	
	R12	ERJ3GEYJ101	100	
	R13	ERJ3GEYJ101	100	
	R14	ERJ3GEYJ332	3.3k	
	R15	ERJ3GSYJ123	12k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R18	ERJ3GEYJ102	1k	
	R20	ERJ3GEYJ181	180	
	R21	ERJ3GEYJ181	180	
	R22	ERJ3GEYJ181	180	
	R23	ERJ3GEYJ181	180	
	R24	ERJ3GEYJ181	180	
	R25	ERJ3GEYJ181	180	
	R26	ERJ3GEYJ181	180	
	R27	ERJ3GEYJ181	180	
			(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	
	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	
	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	
			(THERMISTOR)	
	TH1	D4CCY1030002	THERMISTOR	

18.2.5. Sensor Board Parts

18.2.5.1. Toner Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB3	PNLP2209RU-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	

18.2.5.2. Fuser Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB4	PNLP2209RU-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

18.2.5.3. Pickup Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB5	PNWP2B2030RU	PICKUP SENSOR BOARD ASS'Y (RTL)	
			(CONNECTORS)	
	CN51	K1KA05B00189	CONNECTOR, 5PIN	
	CN63	K1KA03BA0061	CONNECTOR, 3PIN	
			(SWITCHE)	
	SW50	PFSH1A003Z	PUSH SWITCH	

18.2.5.4. Registration Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB6	PNLP2209RU-D	RESIST 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

18.2.5.5. Varistor Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB7	PNLP2209RU-E	VARISTOR SENSOR BOARD ASS'Y (RTL)	
			(VARISTOR)	
	ZNR50	ERZVA7D271	VARISTOR	

18.2.5.6. Flatbed Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB8	PNLP2363RU-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	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(COIL)	
	L54	PQLQR2KB113T	COIL	S
			(RESISTORS)	
	R55	ERJ3GEYJ472	4.7k	

18.2.5.7. ADF Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB9	PNLP2209RU-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

18.2.5.8. Handset Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB10	PNLP2209RU-H	HANDSET RELAY BOARD ASS'Y (RTL)	
			(CONNECTORS & JACKS)	
	CN55	K2LB106B0053	JACK	
	CN57	K1KA02A00587	CONNECTOR, 2PIN	
	CN58	K1KA08AA0193	CONNECTOR, 8PIN	
			(IC FILTERS)	
	L52	J0JAC0000008	IC FILTER	
	L53	J0JAC0000008	IC FILTER	
			(RESISTORS)	
	L50	ERJ3GEY0R00	0	S
	L51	ERJ3GEY0R00	0	S

18.2.6. Back Light Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB11	PNLPB257JTB	BACK LIGHT BOARD ASS'Y (RTL)	
			(DIODE)	
	LED99	B3AFB0000370	DIODE(SI)	

18.2.7. High Voltage Power Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB12	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

18.2.8. Low Voltage Power Board

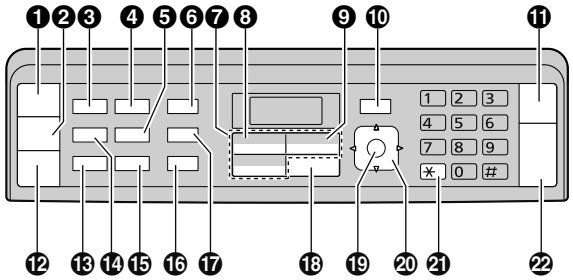
Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB13	N0AC2GH00002	LOW VOLTAGE POWER BOARD ASS'Y (RTL)	
			(IC)	
⚠	U7001	51LC000C9AAC	IC	30V, 350mA
			(TRANSISTOR)	
⚠	Q7001	5FNF0005BT05	TRANSISTOR(SI)	650V, 2.5A
			(DIODES)	
⚠	D7001	5DRA0017760A	DIODE(SI)	1000V, 1A
⚠	D7002	5DRA0017760A	DIODE(SI)	1000V, 1A
⚠	D7003	5DRA0017760A	DIODE(SI)	1000V, 1A
⚠	D7004	5DRA0017760A	DIODE(SI)	1000V, 1A
	D7011	5DRA0016X60A	DIODE(SI)	1000V, 1A
	D7012	5DRA0016X60A	DIODE(SI)	1000V, 1A
			(CAPACITOR)	
⚠	C7002	CE9K560J9NPC	ELECTROLYTIC CAPACI-TOR,AL	56μF, 450V
			(FUSES)	
⚠	F7001	KFU5000HJBTR	FUSE	T6.3AH, 250V
⚠	F7003	KFU5000HKBTR	FUSE	T4H, 250V
⚠	F7005	KFU5000HMBTR	FUSE	T4L, 250V
			(THYRISTOR)	
⚠	Q7002	55TR0000WJL5	THYRISTOR	800V, 16A

PBS
KXMB2085CXW
KXMB2090CXW

Information

The extract from an Operating Instructions.

1.3 Button descriptions



❶ **【SCAN】**
- To switch to the scan mode (page 19, 30).

❷ **【COPY】**
- To switch to the copy mode (page 19, 33).

❸ **【RESOLUTION】**
- To select the resolution when copying (page 33).
- To select the resolution when sending a fax (page 39).

❹ **【CONTRAST】**
- To select the contrast when copying (page 33).
- To select the contrast when sending a fax (page 39).

❺ **【PAGE LAYOUT】**
- To make copies using various page layouts (page 35).

【CALLER ID】
- To use Caller ID features (page 52).

❻ **【REDIAL】**
- 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.

【PAUSE】
- To insert a pause during dialling.

❼ **Station keys**
- To use the one-touch dial feature (page 40, 41).

❽ **【BROADCAST】**
- To send a document to multiple parties (page 42).

❾ **【MANUAL BROAD】**
- To send a document to multiple parties by using the dial keypad (page 42).

❿ **【MENU】**
- To start or exit programming.

⓫ **【STOP】**
- To stop an operation or programming session.
- To erase a character/number.

⓬ **【FAX】**
- To switch to the fax mode (page 19, 39).

⓭ **【ZOOM】**
- To enlarge or reduce a document when copying (page 34).

【QUICK SCAN】
- To store a scanned document into memory, and then send it (page 40).

⓮ **【COPY SIZE】**
- To select the copy size (page 33).

【PHONEBOOK】
- To search for a stored item (page 41).
- To initiate the phonebook (page 40, 43).

⓯ **【FAX AUTO ANSWER】**
- To turn the auto answer setting ON/OFF (page 45).

⓰ **【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.

⓱ **【FLASH】**
- To access special telephone services or for transferring extension calls.

⓲ **【LOWER】**
- To select station 4-6 for the one-touch dial feature (page 40, 41).

⓳ **【SET】**
- To store a setting during programming.

⓴ **Navigator key**
- To select desired settings.
- To adjust the volume (page 21).

【📖】(Phonebook)
- To search for a stored item (page 41).
- To initiate the phonebook (page 40, 43).

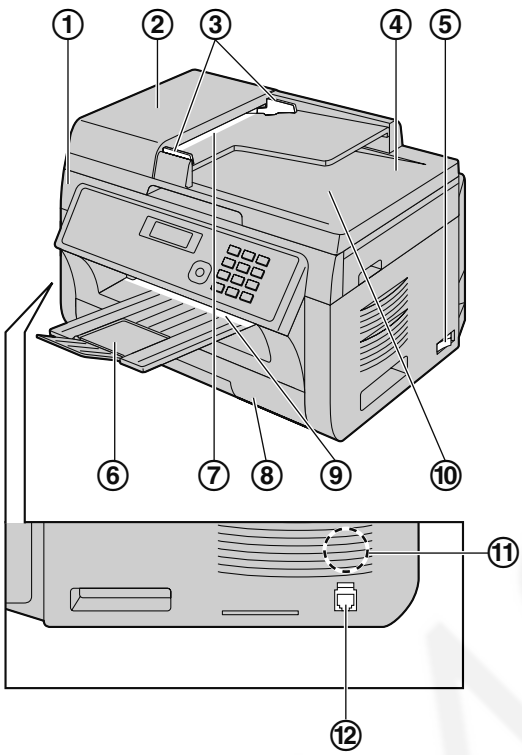
【-∈】(Collate)
- To make a collate copy (page 34).

㉑ **【Tone】**
- To change from pulse to tone temporarily during dialling when your line has rotary/pulse service.

㉒ **【START】**
- To copy a document (page 33).
- To scan a document (push scan) (page 30).
- To send a fax (page 39).

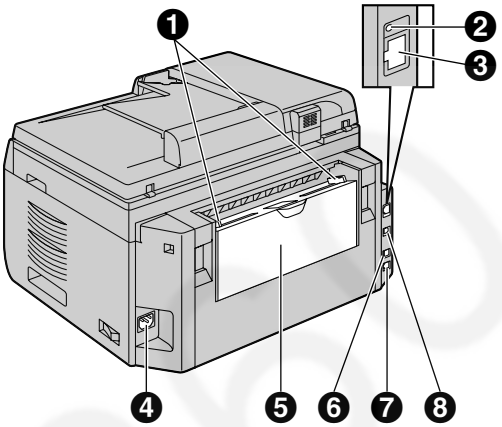
1.4 Overview

1.4.1 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

1.4.2 Rear view



❶ Recording paper guides
❷ LED (KX-MB2090 only)
❸ LAN interface connector (KX-MB2090 only)
- 10Base-T/100Base-TX

❹ Power inlet
❺ Manual input tray (Rear cover)
❻ External telephone jack
❼ Telephone line jack
❽ USB interface connector

1.5 Toner cartridge and drum cartridge

The supplied toner cartridge is a starter toner cartridge.

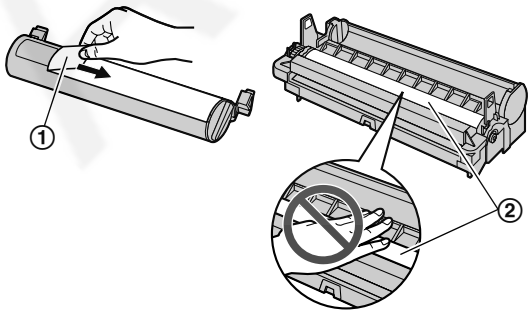
Caution:

- **Read the following instructions before you begin installation. The drum cartridge contains a photosensitive drum. Exposing it to light may damage the drum.**
  - **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 affect the printing quality.**
- **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.**

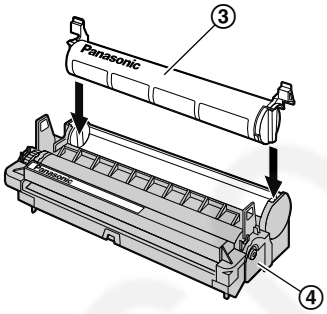
1 Before opening the protective bag of the new toner cartridge, shake it vertically more than 5 times.

2 Remove the toner cartridge and drum cartridge from the protective bags. Peel off the seal (①) from the toner cartridge.

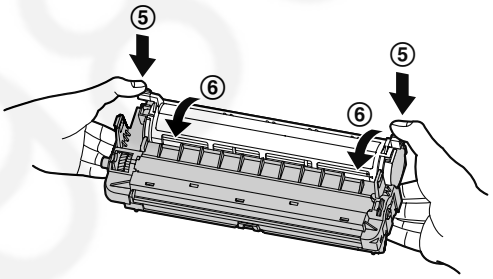
- Do not touch or scratch the black drum surface (②).



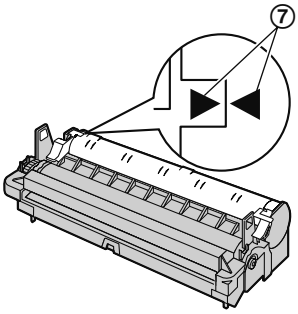
3 Place the toner cartridge (③) into the drum cartridge (④) vertically.



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).

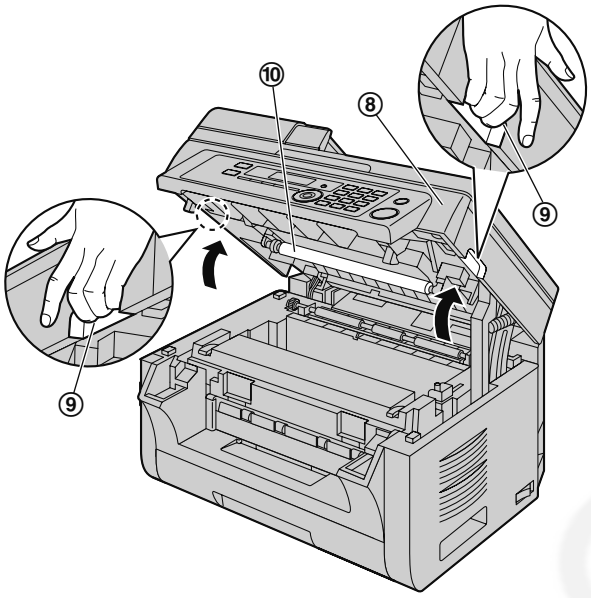


5 Make sure that the arrows (⑦) match, to install the toner cartridge correctly.



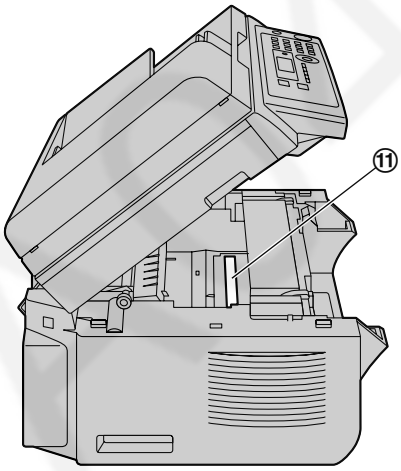
6 Open the top cover (⑧) by holding the indentations (⑨) on both sides of the unit.
When replacing the toner cartridge:

- If the unit is in sleep mode, press a key to standby the unit for the next process.

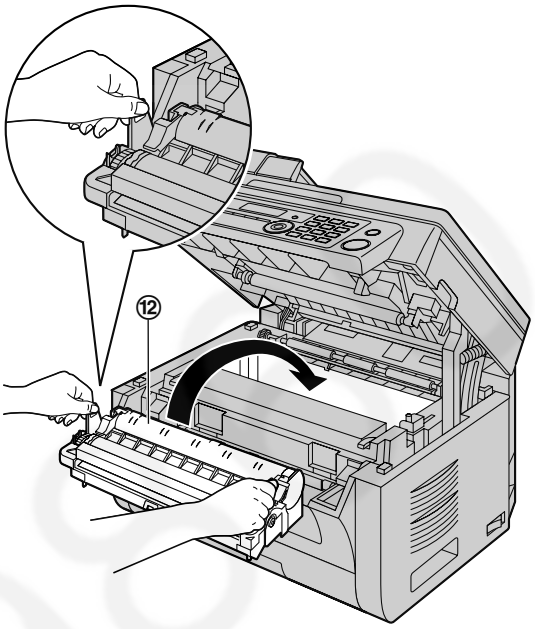


Note:

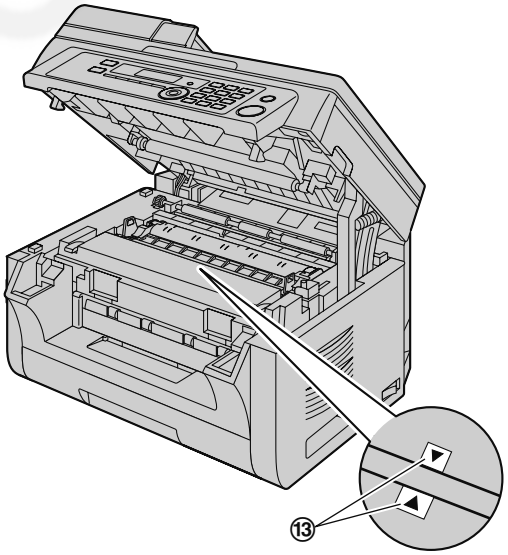
- Do not touch the transfer roller (⑩).
- If the lower glass (⑪) is dirty, clean it with a soft and dry cloth.



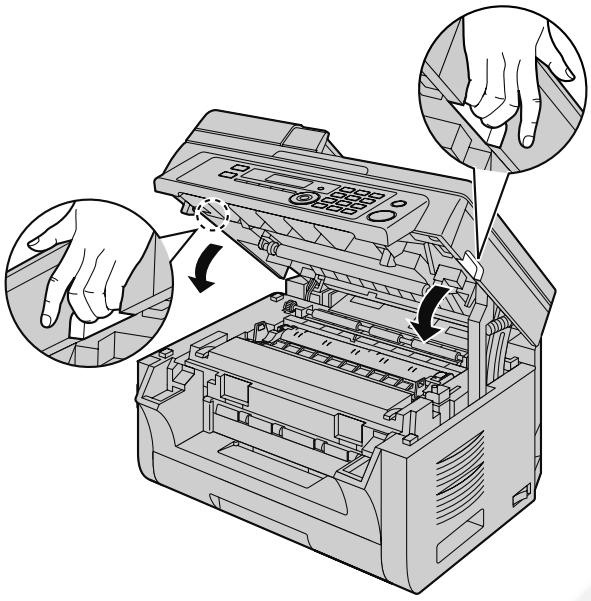
7 Install the drum and toner cartridge (⑫) by holding the tabs.



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

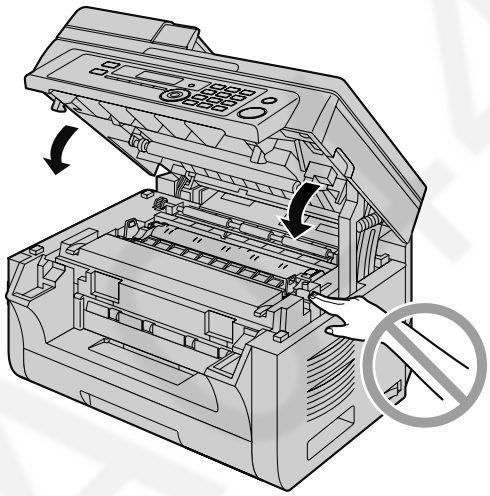


8 Close the top cover by holding the indentations on both sides of the unit, until locked.



Caution:

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



When to replace the toner cartridge and drum cartridge

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

– **"TONER EMPTY"**

When the display shows the following, the toner cartridge is coming to the end of its useful life. Please be prepared to replace the cartridge soon.

– **"TONER LOW"**

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

– **"DRUM LIFE LOW"**

– **"DRUM LIFE OVER"**

Toner cartridge life and drum cartridge life

- See page 111 for information on the toner life and drum life.
- To check the drum life and quality, please print the printer test list (page 109) and refer to page 111 for information on the drum life. If the printing quality is still poor or **"DRUM LIFE OVER"** appears on the display, replace the toner cartridge and drum cartridge.
- To maintain print quality and machine life, we recommend that you clean slots and openings (page 4) and the inside of the unit (page 105, 108) when replacing the toner cartridge and/or drum cartridge.

Note:

- To ensure that the unit operates properly, we recommend the use of **Panasonic toner cartridge and drum cartridge**. See page 7 for accessory information.

Waste disposal method

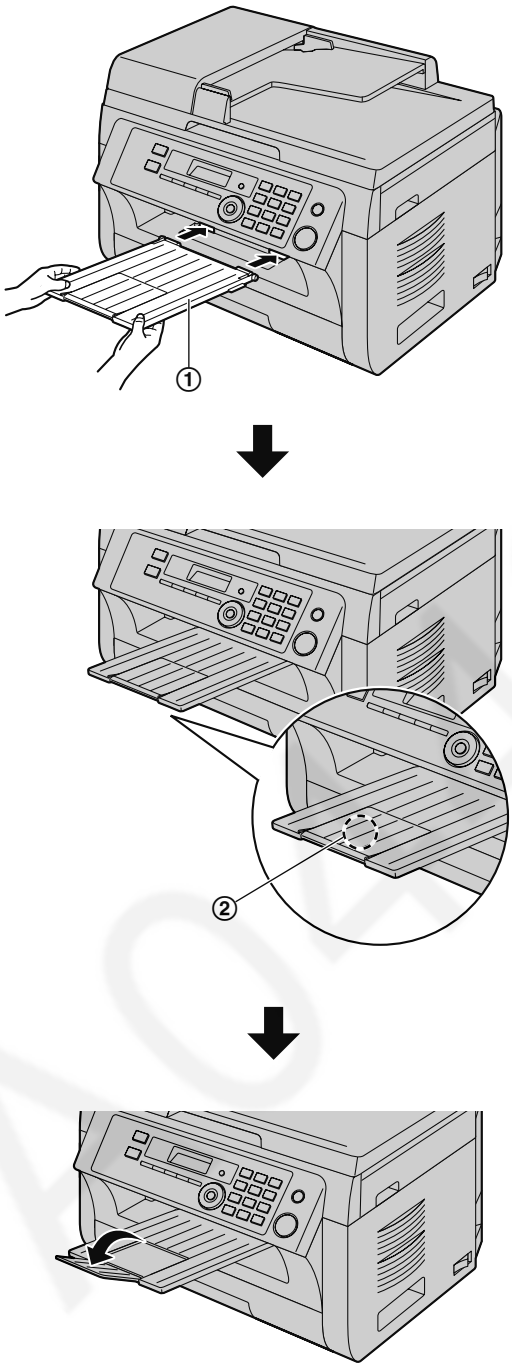
Waste material should be disposed of under conditions which meet all national and local environmental regulations.

Toner save feature

If you want to reduce toner consumption, set the toner save setting to ON (feature #482 on page 59). The toner cartridge will last approximately 20 % longer. This feature may lower the print quality.

1.6 Output tray

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

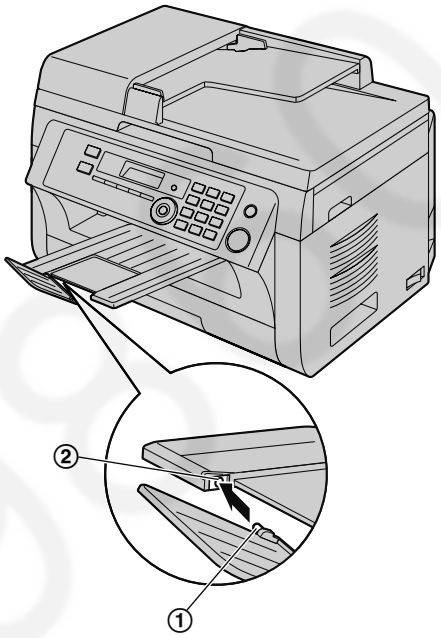


Note:

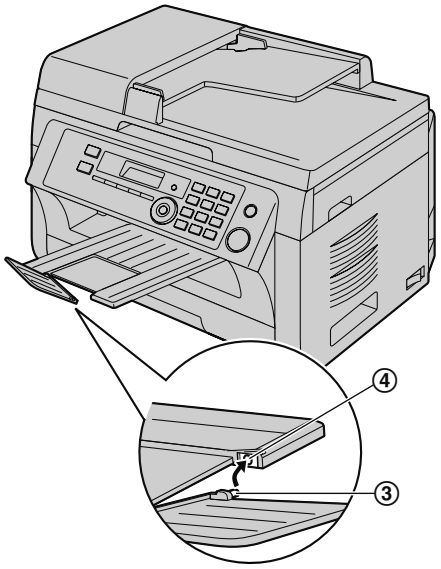
- Do not place the unit in an area where the output tray may be easily bumped into.
- The output tray can hold up to approximately 100 sheets of printed paper (the number of sheets may vary depending on the usage environment). Remove the printed paper before the output tray becomes full.

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.



1.7 Recording paper

The paper input tray unit can hold:

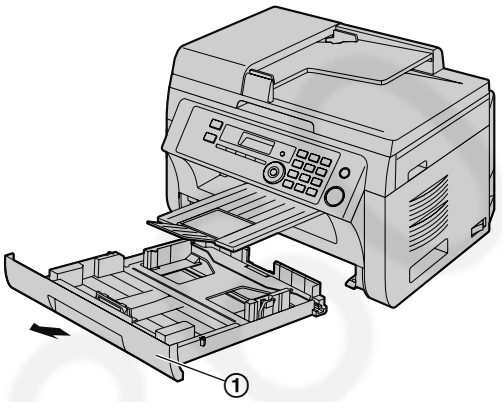
– Up to 250 sheets of 60 g/m² to 75 g/m² paper.
– Up to 230 sheets of 80 g/m² paper.
– Up to 200 sheets of 90 g/m² paper.

- 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.
- Please refer to page 110 for information on recording paper.
- **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 on page 58).**
  – **To use other paper types, change the recording paper type setting (feature #383 on page 58).**

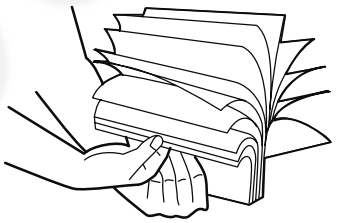
Note for recording paper:

- 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 re-use paper printed from this unit for another printing job (including 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.



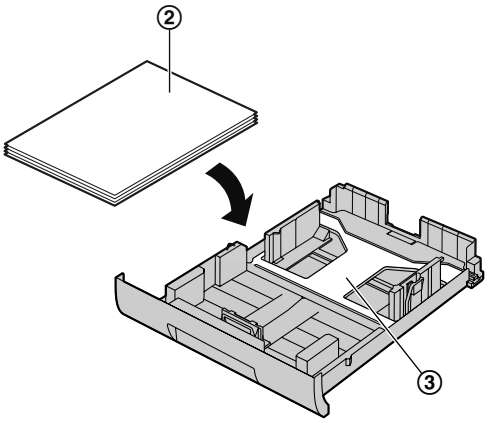
2 Before loading a stack of paper, fan the paper to prevent paper jams.



3 Load the paper, print-side up (②).

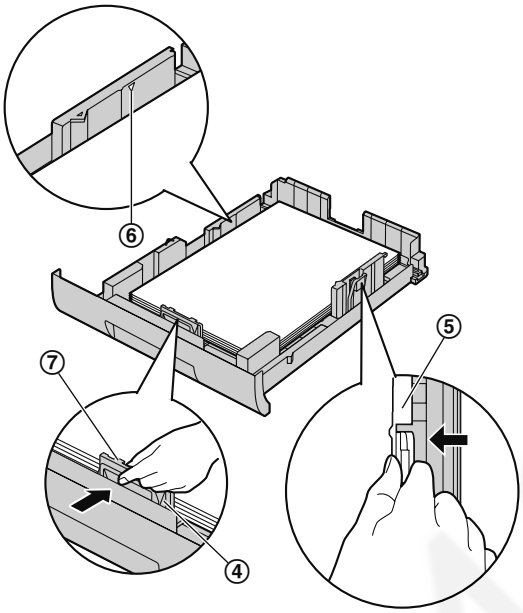
Important:

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

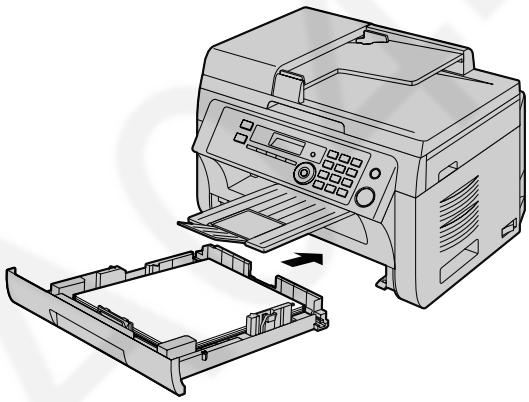


4 Adjust the recording paper guides. Pinch the front side of the recording paper guide (④), then slide it to match the paper size mark. Pinch the right side of the recording paper guide (⑤), then slide it to adjust the width to the size of the recording paper.

- 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 unit, lifting the front part of the tray. Then push it completely into the unit.

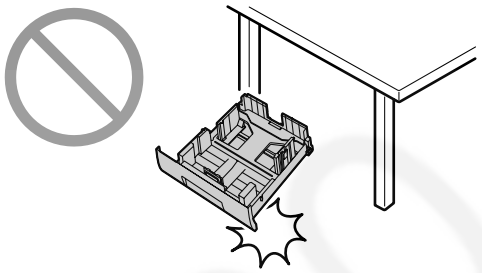


Note:

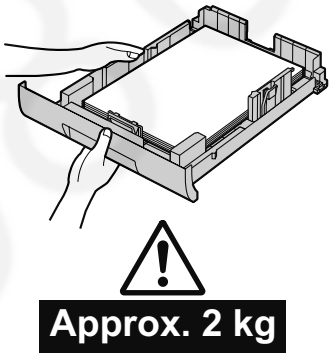
- If the paper is not loaded correctly, re-adjust the paper guides, or the paper may jam.
- If the paper input tray does not close, the plate in the paper input tray may not be in the locked position. Push the paper down and make sure that the paper is laying flat in the paper input tray.

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.**



1.7.1 Manual input tray

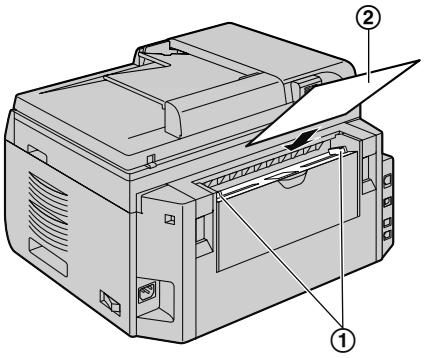
You can use the manual input tray for printing with the computer and for copying. When printing or copying multiple sheets, add the next sheet after the first sheet has been fed into the unit.

- Please refer to page 110 for information on recording paper.
- When printing from a computer, custom size recording paper can also be used (page 28).
- **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 on page 58).**
  - **To use other paper types, change the recording paper type setting (feature #384 on page 58).**

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

- If the unit is in sleep mode, press a key to standby the unit for the next process.

2 Insert the paper, print-side down (②) until the 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 on page 66).

  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.

2.1 Connections

Designed to be used in Middle East, Asia, Tunisia and Africa according to the location setting feature (KX-MB2085CX/KX-MB2090CX only).

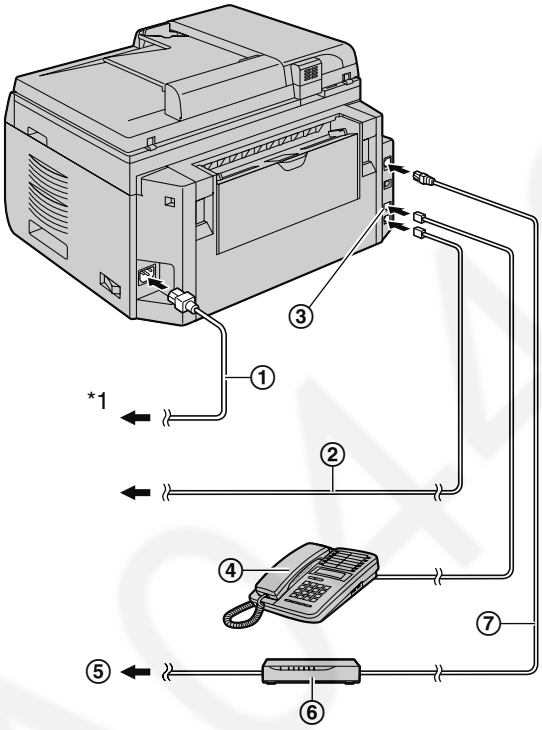
The default setting is Middle East. To change the location setting, see page 55 (feature #114).

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.**

Important:

- **See page 80 to connect the handset 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 **[EXT]** jack
- You can connect an answering machine or an extension telephone. Remove the stopper if attached, and take care of it appropriately.

④ Answering machine (not supplied)

⑤ To the Internet*2

⑥ Network router/Network hub (not supplied)*2
- Also connect networked computers.

⑦ LAN cable (not supplied)*2
- To assure continued emission limit compliance, use only shielded LAN cable (Category 5 (Cat-5) Ethernet cable).

*1 The power cord may differ slightly. Use the appropriate power cord for where you use the unit.

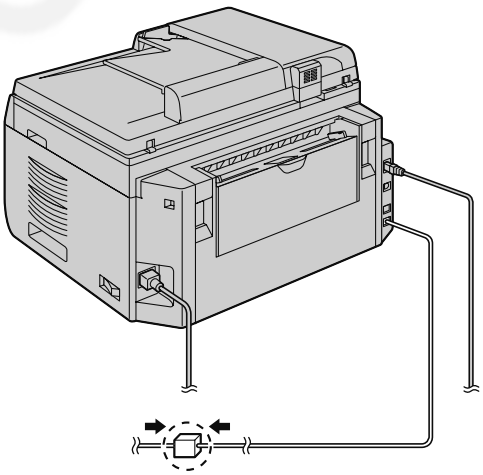
*2 KX-MB2090 only

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 (page 24).

Note:

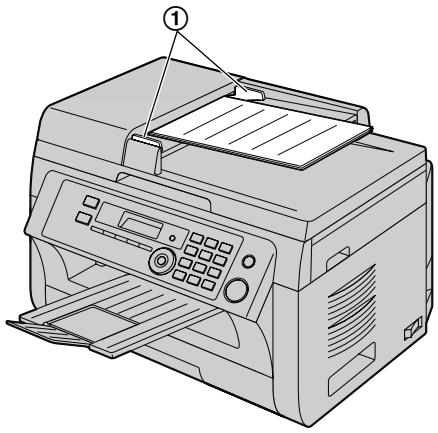
- Do not place any objects within 10 cm of the right, left and back sides of the unit.
- If another device is connected to the same telephone line as this unit, you may experience unexpected problems as this unit is not designed to share a telephone line.
- If you use the unit with a computer and your internet provider instructs you to install a filter, please connect it as follows.



Using network router/network hub (KX-MB2090 only)

- We recommend using network routers/network hubs 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.

2.5.2 Using the automatic document feeder



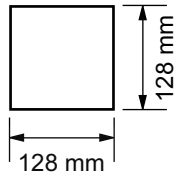
1 Insert the document (up to 20 pages) FACE UP into the feeder until a single beep is heard.

2 Adjust the width of the document guides (①) to fit the actual size of the document.

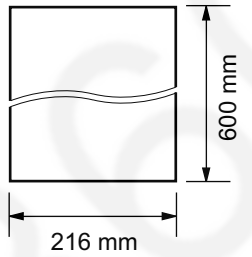
Note:

- 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:

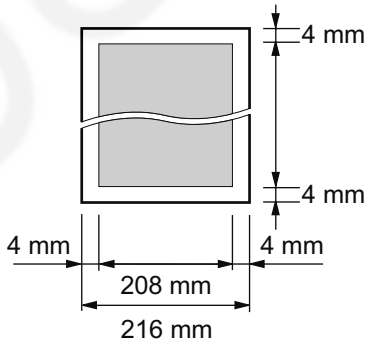
Minimum document size



Maximum document size



Effective scanning area



- Shaded area will be scanned.
- When using the unit as a scanner (page 30, 31), the effective scanning length depends on the selected paper size.

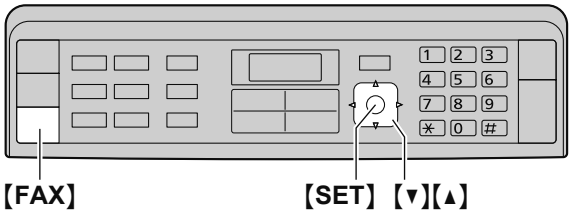
Document weight

- Single sheet:
  60 g/m² to 80 g/m²
- Multiple sheets:
  60 g/m² to 80 g/m²

2.6 Adjusting the volume

Important:

- **Before adjusting the volume, set the operation mode to fax mode. If the [FAX] light is OFF, turn it ON by pressing [FAX].**



Ringer volume

While the unit is idle, press [▼] or [▲].

To turn the ringer OFF

Press [▼] repeatedly to display "RINGER OFF= OK?". → [SET]

- The unit will not ring.
- To turn the ringer back ON, press [▲].

Handset receiver volume

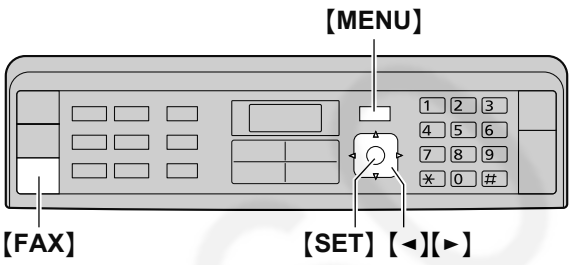
While using the handset, press [▼] or [▲].

Monitor volume

While using the monitor, press [▼] or [▲].

2.7 Date and time

We recommend you to set the date and time. The other party will receive your unit's date and time as the header information.



1 [MENU] → [#][1][0][1] → [SET]

2 Enter the current date/month/year by selecting 2 digits for each.
Example: 3 August, 2013
[0][3] [0][8] [1][3]

3 Enter the current hour/minute by selecting 2 digits for each.
Example: 10:15 PM (12 hour clock format)
1. [1][0] [1][5]
2. Press [*] repeatedly to select "PM".
Press [*] repeatedly to select "AM" or "PM", or 24-hour time entry.

4 [SET]

5 Press [MENU] to exit.

Note:

- To check the current date and time setting, press [FAX] to temporarily change the unit to the fax mode.
- Your unit's date and time will be used as the header information for the following:
  - When sending as an attached file to an email destination directly from this unit (Scan to email address) (page 30) (KX-MB2090 only).
  - When sending faxes (page 39).
- If the date and time is not set correctly, the other party will receive an incorrect date and time as their header. This may confuse the other party.

To correct a mistake

Press [◄] or [►] to move the cursor to the incorrect number, and make the correction.

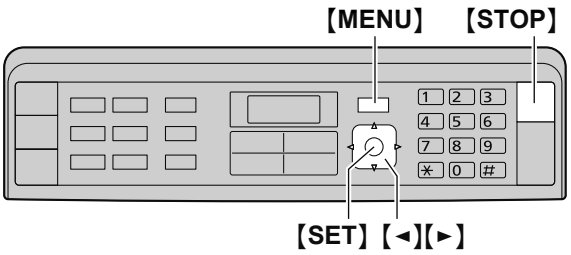
If you have subscribed to a Caller ID service

The date and time will be automatically set according to the received caller information.

- To use this feature, make sure the time adjustment is set to "AUTO" (feature #226 on page 58).
- If the time has not previously been set, Caller ID will not adjust the clock.

2.8 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 page 76 for character entry). →【SET】
3 Press 【MENU】 to exit.

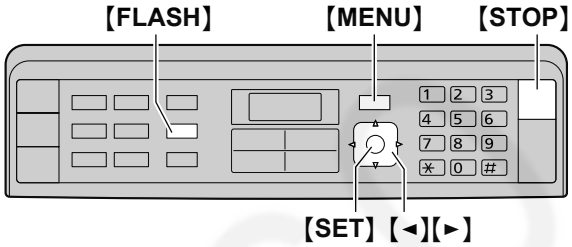
To correct a mistake

Press 【◄】 or 【►】 to move the cursor to the incorrect character, and make the correction.

- To erase all characters, press and hold 【STOP】.

2.9 Your fax number

You can program your fax number so that it appears on the top of each page sent.



1 【MENU】→【#】【1】【0】【3】→【SET】
2 Enter your fax number, up to 20 digits.
- To enter a “+”, press 【*】.
- To enter a space, press 【#】.
- To enter a hyphen, press 【FLASH】.
- To erase a number, press 【STOP】.

3 【SET】
4 Press 【MENU】 to exit.

To correct a mistake

Press 【◄】 or 【►】 to move the cursor to the incorrect number, and make the correction.

- To erase all numbers, press and hold 【STOP】.

2.11 Required computer environment

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

Operating System:

Windows XP/Windows Vista/Windows 7/Windows 8

CPU:

Windows XP: Pentium® III or higher processor

Windows Vista/Windows 7/Windows 8: Pentium 4 or higher processor

RAM:

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

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

Windows 7/Windows 8: 1 GB (2 GB or more recommended)

Other Hardware:

CD-ROM drive

Hard disk drive with at least 600 MB of available space

Web browser (recommendation):

Windows Internet Explorer® 6/7/8/9

Windows Internet Explorer 10 (with compatible mode recommended)

Important:

- **When using Windows Server® 2008/Windows Server 2012, only the printer driver can be supported. Install the printer driver using the Add Printer feature of Windows.**
- **With Mac OS X, only the printer driver, scanner driver (TWAIN/ICA) and PC fax (transmission) are supported. See the setup guide for Mac OS X for details.**
- **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 (Cat-5) Ethernet cable) (KX-MB2090 only).**
- **To protect the unit, use only shielded USB cable in areas where thunderstorms occur.**

2.12 Installing software (including printer, scanner and other drivers)

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

– Printing on plain paper, thin paper and labels

– Displaying the preview of the print image, changing the page order, deleting pages, and changing the print layout etc. before printing (Easy Print Utility)

– Scanning documents and converting an image into text with OCR software

– Scanning from other applications for Microsoft® Windows that support TWAIN scanning and WIA scanning (USB connection only)

– Storing, editing or erasing items in the phonebook using your computer

– Storing, editing or erasing items in the email address book using your computer (KX-MB2090 only)

– Programming the features using your computer

– Sending, receiving fax documents using your 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 [Driver Software Installation] dialogue box may appear. If this dialogue box appears, click [Close].**
- **Software features and appearance are subject to change without notice.**
- **If you are also using KX-MB200/KX-MB700/ KX-FLB880 series, see page 97.**

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]** → **[All Programs]** → **[Accessories]**. 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.

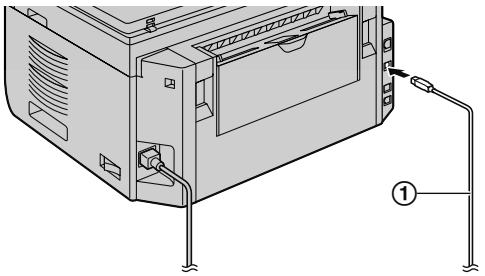
4 When the setup program starts, follow the on-screen instructions.
- The following applications will also be installed.
  – Easy Print Utility (page 28)
  – OCR software (page 30)
  – Device Monitor (page 77)

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 (KX-MB2090 only):

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

When installing using a USB cable connection, a message may appear during the software installation. 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/Windows 8 users**
  "Would you like to install this device software?"

To view or install the operating instructions data

1. Start Windows and insert the supplied CD-ROM into your CD-ROM drive.
2. Click **[Operating Instructions]**, then follow the on-screen instructions to view or install the operating instructions in PDF format.
   - Adobe® Reader® is required to view the operating instructions.

Note:

- If you install the operating instructions, you can view it anytime by clicking **[Help]** on the Multi-Function Station launcher.

To use another unit with the computer

You need to add the printer driver for each unit, as follows.

1. Start Windows and insert the supplied CD-ROM into your CD-ROM drive.
2. **[Modify]** → **[Add Multi-Function Station Driver]**. Then follow the on-screen instructions.

Note:

- You cannot connect more than one unit to the same computer at the same time (USB connection only).

To modify the software (To add or uninstall each component)

You can select the components to install or uninstall anytime after the installation.
You must be logged in as an administrator in order to modify Multi-Function Station.

1. Start Windows and insert the supplied CD-ROM into your CD-ROM drive.
2. **[Modify]** → **[Modify Utilities]**. Then follow the on-screen instructions.

To uninstall the software

You must be logged in as an administrator in order to uninstall Multi-Function Station.
[Start] → **[All Programs]** → **[Panasonic]** → the unit's name → **[Uninstall]**. Then follow the on-screen instructions.

10.5 Storing email address using the unit (KX-MB2090 only)

10.5.1 Storing new email address items

You can register up to 30 email addresses.

1 Press **【MENU】** repeatedly to display **"E-ADDRESS SETUP"**.

2 Press **【◄】** or **【►】** repeatedly to select **"NEW"**. → **【SET】**

3 **To store items for the email address book,** press **【SET】**.
To store items for one-touch dial,
– press the desired station keys (1-3).
– press **【LOWER】**, then press the desired station keys (4-6).

4 Enter the name, up to 15 characters (see page 76 for character entry). → **【SET】**

5 Enter the email address, up to 63 digits. → **【SET】**
- To program other items, repeat steps 2 to 5.

6 **【MENU】**

10.5.2 Editing a stored item

1 Press **【MENU】** repeatedly to display **"E-ADDRESS SETUP"**.

2 Press **【◄】** or **【►】** repeatedly to select **"EDIT"**. → **【SET】**

3 Press **【▼】** or **【▲】** repeatedly to display the desired item. → **【MENU】** → **【✱】**

4 Edit the name if necessary. → **【SET】**

5 Edit the email address if necessary. → **【SET】** → **【MENU】**

10.5.3 Erasing a stored item

1 Press **【MENU】** repeatedly to display **"E-ADDRESS SETUP"**.

2 Press **【◄】** or **【►】** repeatedly to select **"EDIT"**. → **【SET】**

3 Press **【▼】** or **【▲】** repeatedly to display the desired item. → **【MENU】** → **【#】**
- To cancel erasing, press **【STOP】**.

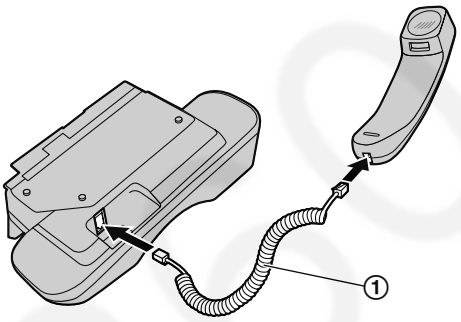
4 **【SET】** → **【STOP】**

10.6 Handset unit

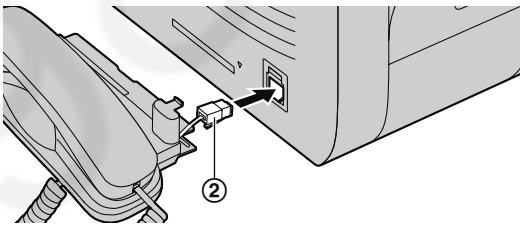
Important:

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

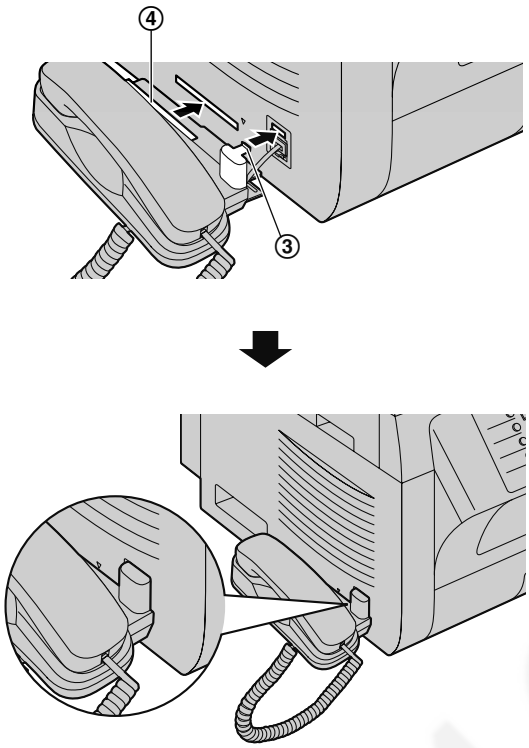
1 Connect the handset cord (①).



2 Connect the handset connector (②).
- Remove the seal from the handset unit connection jack if attached.



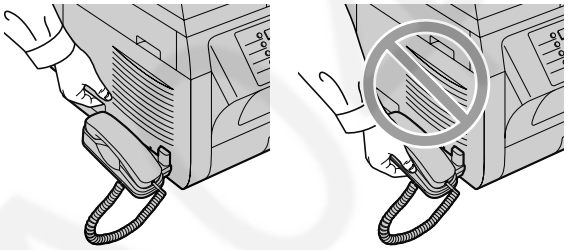
3 Insert the tab (③) and rib (④).



Caution:

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

Correct **Incorrect**

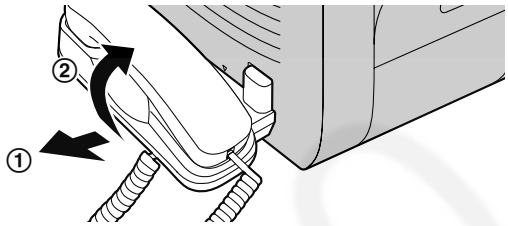


Note:

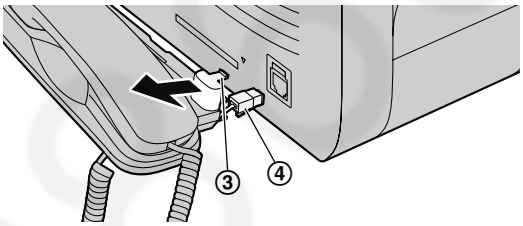
- While talking to the other party, you can send a fax using the scanner glass by pressing **【START】**, and then **【1】** (To receive a fax, press **【2】**).

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).



10.7 Making a phone call using one-touch dial feature or phonebook

Before using this feature, store the desired names and telephone numbers in one-touch dial feature and phonebook (page 40).

- Make sure that the **【FAX】** light is ON.

10.7.1 Using one-touch dial feature

1 Press **【MONITOR】** or lift the handset.

2 Select the desired station key.
For station 1-3:
Press the desired station key.

For station 4-6:
Press **【LOWER】**, then press the desired station key.
- The unit will start dialling automatically.

10.7.2 Using the phonebook

1 Press **【PHONEBOOK】**.

2 Press **【▼】** or **【▲】** repeatedly to display the desired item.

3 Press **【MONITOR】** or lift the handset.
- The unit will start dialling automatically.

To search for a name by initial
Example: "LISA"

1. **【PHONEBOOK】**
2. Press **【▼】** or **【▲】** to initiate the phonebook.

3. Press **【5】** repeatedly to display any name with the initial **"L"** (see page 76 for character entry).
- To search for symbols, press **【✱】**.

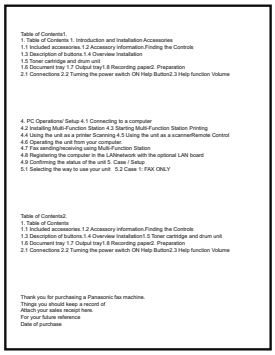
4. Press **【▼】** or **【▲】** repeatedly to display **"LISA"**.
- To stop the search, press **【STOP】**.
- To dial the displayed party, press **【MONITOR】** or lift the handset.

Toner life

Toner cartridge life depends on the amount of content in a printed document. Toner cartridge life varies in actual usage. The following is the approximate number of pages that the toner cartridge can print according to the various printing examples.

Example 1

Approx. 2,000 pages can be printed.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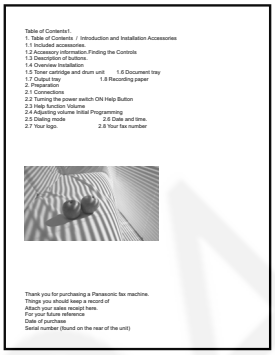
Thank you for purchasing a Panasonic fax machine.
Things you should keep a record of
Attach your sales receipt here.
For your future reference
Date of purchase

Example 2

Approx. 1,000 pages can be printed.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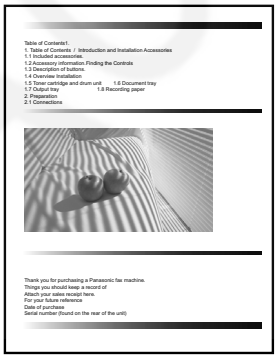
Thank you for purchasing a Panasonic fax machine.
Things you should keep a record of
Attach your sales receipt here.
For your future reference
Date of purchase
Serial number (found on the rear of the unit)

Example 3

Approx. 650 pages can be printed.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Thank you for purchasing a Panasonic fax machine.
Things you should keep a record of
Attach your sales receipt here.
For your future reference
Date of purchase
Serial number (found on the rear of the unit)

Note:

- There are various factors that determine the actual toner cartridge life, such as temperature, humidity, type of paper and how much toner you use for the number of pages per print job. The actual number of pages your toner cartridge will print may be significantly less than this estimate if your unit is often used for printing small number of pages per job. Because many of the factors that determine the actual toner cartridge life cannot be controlled, we cannot guarantee a minimum number of pages that will be printed by your toner cartridge.
- The number of pages changes with the depth, thickness and size of the characters.
- If you turn on the toner save feature, the toner cartridge will last approx. 20 % longer.

Drum life

The drum cartridge needs to be replaced regularly. The maximum drum life is approx. 6,000 pages.

Note:

- There are various factors that determine the actual drum cartridge life, such as temperature, humidity, type of paper and how much toner you use for the number of pages per print job. The actual number of pages your drum cartridge will print may be significantly less than this estimate if your unit is often used for printing small number of pages per job. Because many of the factors that determine the actual drum cartridge life cannot be controlled, we cannot guarantee a minimum number of pages that will be printed by your drum cartridge.

Waste disposal method

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