

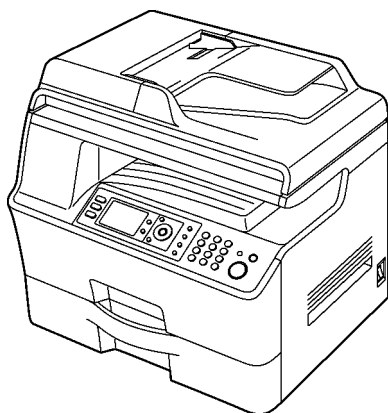
# Service Manual

Multi-Function Printer

Model No. **DP-MB350-C**

**DA-LCB350**

**(Optional lower input tray)**




(for Canada)



## **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.

- **ICs and LSIs are vulnerable to static electricity.**

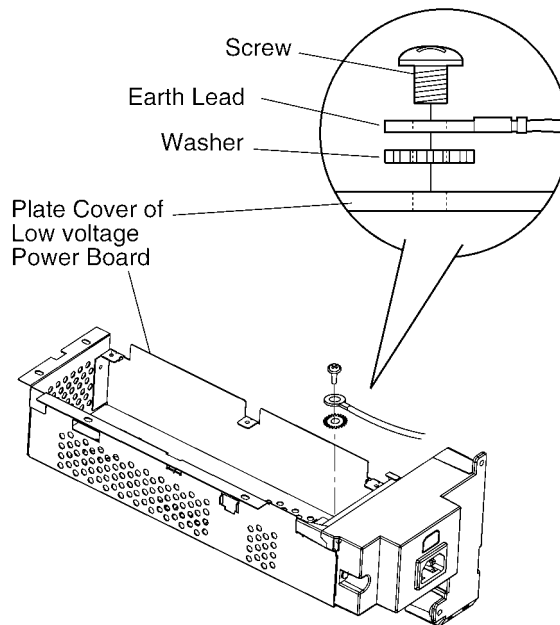
**When repairing, the following precautions will help prevent recurring malfunctions.**

1. Cover plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on worktable.
4. Do not grasp IC or LSI pins with bare fingers.

## 1.2. AC Caution

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

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

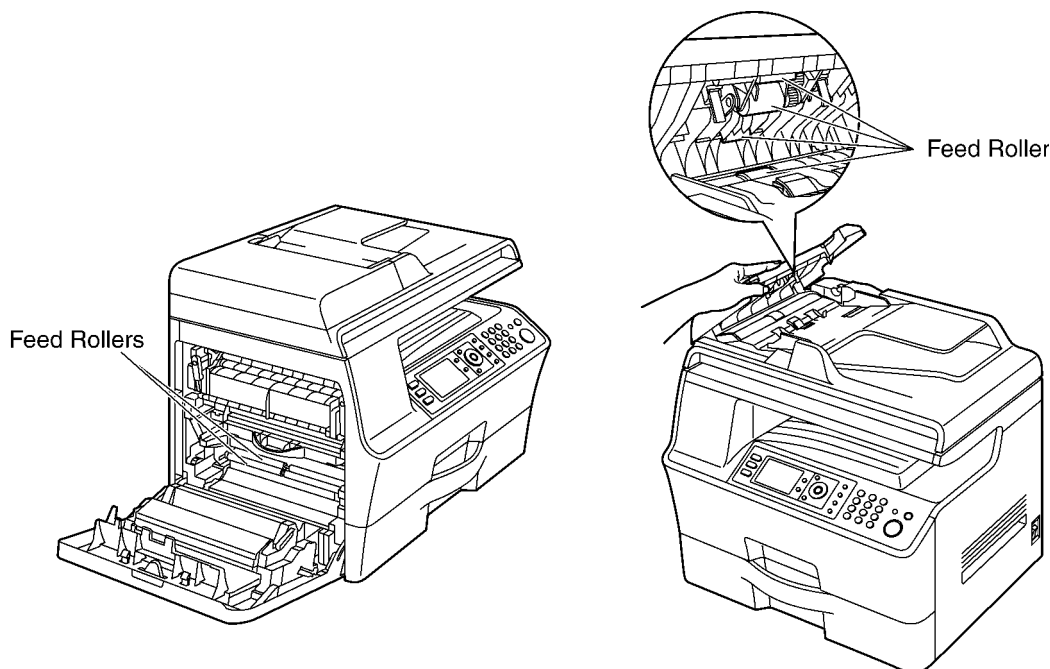


## 1.3. Personal Safety Precautions

### 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.



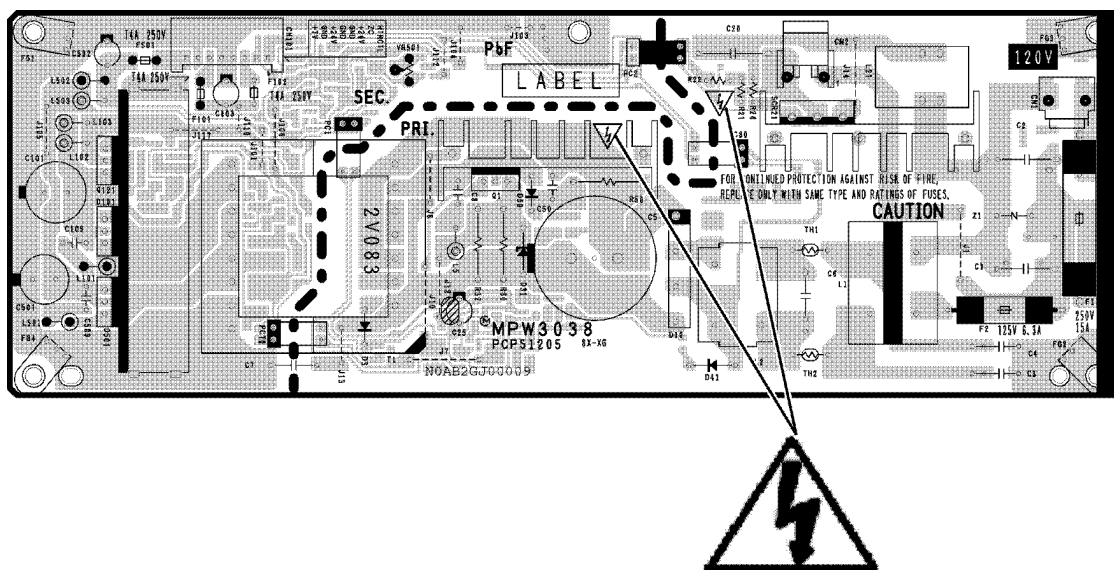
### 1.3.2. Live Electrical Sections

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 low voltage and high voltage power supply unit. Therefore, always unplug the AC power cord before disassembling for service.



## 1.4. Service Precautions

### 1.4.1. Precautions to Prevent Damage from Static Electricity

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

## 2 Warning

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

**Note:**

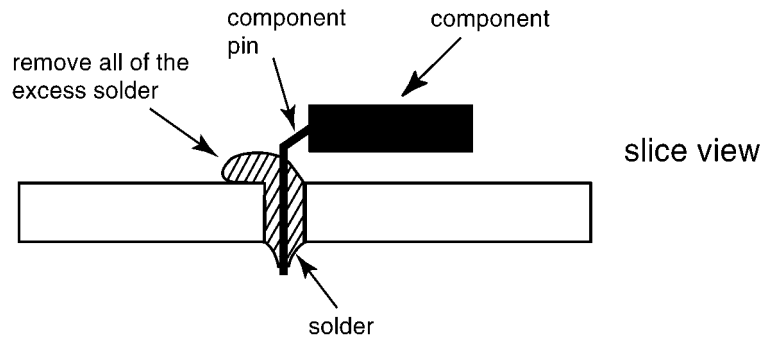
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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

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

**Caution**

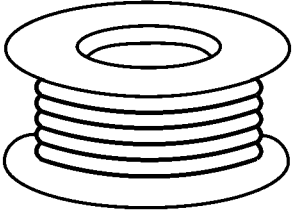
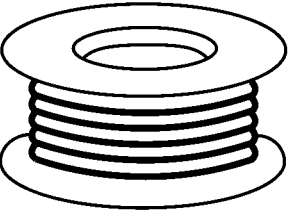
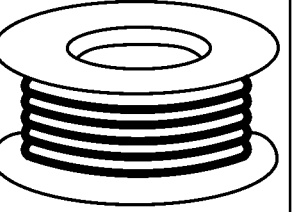
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend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



#### 2.1.1. Suggested PbF Solder

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

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

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

### 2.2. Discarding of P. C. Board

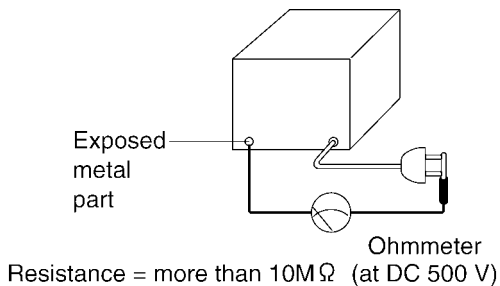
When discarding P. C. Board, delete all personal information such as telephone directory and caller list or scrap P. C. Board.

## 2.3. Insulation Resistance Test

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part (screw heads, control shafts, bottom frame, etc.).

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard.



## 2.4. Battery Caution

### Caution

Danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to following caution:

Disposal of lithium batteries should be performed by permitted, professional disposal firms knowledgeable in state government federal and local hazardous materials and hazardous waste transportation and disposal requirements.

A battery continues to have no transportation limitations as long as it is separated to prevent short circuits and packed in strong packaging.

Commercial firms that dispose of any quantity of lithium cells should have a mechanism in place to account for their ultimate disposition. This is a good practice for all types of commercial or industrial waste.

Recommend Type Number:

CR-2354 (BAT300) Manufactured by MATSUSHITA

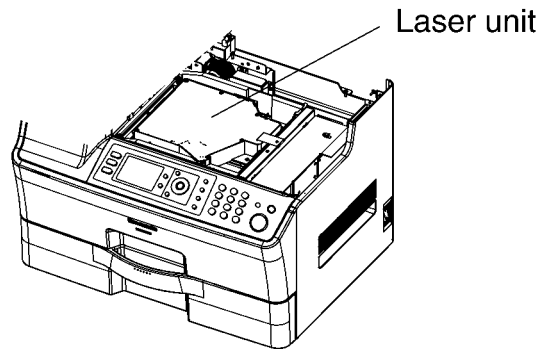
## 2.5. Laser Beam And Fuser Unit Section

- 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.

### Laser radiation



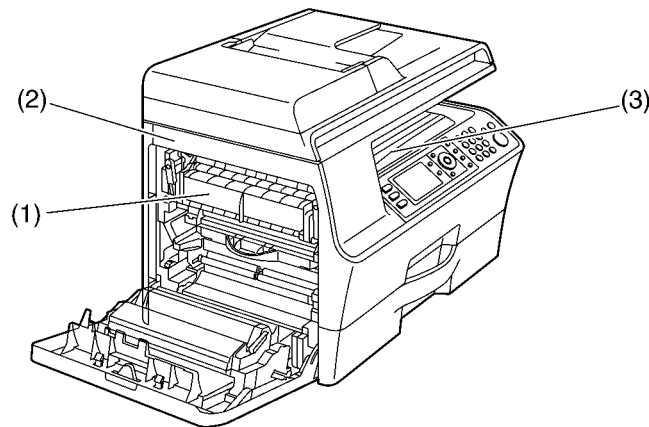
The printer of this unit utilizes a laser. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



### Fuser unit



During or immediately after printing, the fuser unit (1) gets hot. This is normal. Do not touch the fuser unit.



**Note** The area near the recording paper exit (2) also get warm. This is normal.



### 3 Specifications

<b>Applicable Lines:</b>	Public Switched Telephone Network
<b>Document Size:</b>	Max. 216 mm (8 <sup>1</sup> / <sub>12</sub> " ) in width Max. 600 mm (23 <sup>5</sup> / <sub>8</sub> " ) in length
<b>Effective Scanning Width:</b>	208 mm (8 <sup>3</sup> / <sub>16</sub> " )
<b>Effective Printing Width:</b>	Letter/ Legal: 208 mm (8 <sup>3</sup> / <sub>16</sub> " ) A4: 202 mm (7 <sup>15</sup> / <sub>16</sub> " )
<b>Transmission Time*1:</b>	Approx. 4 s/page (ECM-MMR Memory transmission)*2
<b>Scanning Density:</b>	<b>Scanning resolution:</b> Up to 600 × 2,400 dpi (Optical) Up to 9,600 × 9,600 dpi (Interpolated) <b>Copy resolution:</b> Up to 600 × 600 dpi <b>FAX resolution:</b> Horizontal: 8 pels/mm (203 pels/inch) Vertical: 3.85 lines/mm (98 lines/inch)-in standard resolution, 7.7 lines/mm (196 lines/inch)-in fine/photo resolution, 15.4 lines/mm (392 lines/inch)-in super fine resolution 64-level Color Contact Image Sensor
<b>Photo resolution:</b>	Laser printer
<b>Scanner Type:</b>	Modified Huffman (MH), Modified READ (MR), Modified Modified READ (MMR)
<b>Printer Type:</b>	33,600 / 31,200 / 28,800 / 26,400 / 24,000 / 21,600 / 19,200 / 16,800 / 14,400 / 12,000 /
<b>Data Compression System:</b>	9,600 / 7,200 / 4,800 / 2,400 bps; Automatic Fallback
<b>Modem Speed:</b>	10°C—32.5°C (50 °F - 90.5 °F), 20—70% RH (Relative Humidity)
<b>Operating Environment:</b>	Approx. width 530 mm × depth 460 mm × height 480 mm (20 <sup>7</sup> / <sub>8</sub> " × 18 <sup>1</sup> / <sub>8</sub> " × 18 <sup>7</sup> / <sub>8</sub> " )
<b>Dimensions:</b>	Approx. 24 kg (53 lb)
<b>Mass (Weight):</b>	Standby: Approx. 9.0 W
<b>Power Consumption:</b>	Preheat: Approx. 80 W Copy: Approx. 600 W Maximum: Approx. 1,150 W (When the fuser lamp turns on)
<b>Power Supply:</b>	120 V AC, 60 Hz
<b>Memory Capacity:</b>	128 MB
<b>(for operation and storing memory)</b>	10 MB in total
<b>Fax Memory Capacity:</b>	Approx. 630 pages of memory reception (max. 255 pages per one reception) Approx. 150 pages of memory transmission (Based on the ITU-T No. 1 Test Chart in standard resolution, without using the Error Correction Mode.)
<b>Scan to email address memory capacity:</b>	5 MB in total (including the header and email message)
<b>Scan to FTP server memory capacity:</b>	10 MB in total
<b>ity:</b>	
<b>Laser diode properties:</b>	Laser output: Max. 6.5 mW Wave length: 760 nm—800 nm Emission duration: Continuous
<b>Print Speed:</b>	Letter: Approx. 35 ppm (pages per minute) A4: Approx. 32 ppm (pages per minute)
<b>Printing Resolution:</b>	Standard: Up to 2,400 × 600 dpi (True: 600 × 600 dpi) Fine: Up to 2,400 × 600 dpi (True: 1,200 × 600 dpi) Enhance: Up to 2,400 × 1,200 dpi (True: 1,200 × 1,200 dpi)

\*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. (Refer to **ITU-T No.1 Test Chart** (P.288).) If the capability of the other party's machine is inferior to your unit, the transmission time may be longer.

**Note:**

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

## 4 General/Introduction

### 4.1. Optional Accessories

Model No.	Description	Specifications
DQ-TCB008-C	Toner cartridge <sup>*1</sup>	1 toner cartridge
DQ-DCB020-C	Drum unit	1 drum unit
DA-LCB350	Optional lower input tray	1 unit

<sup>\*1</sup>Prints about 8,000 pages at ISO/IEC 19752 standard page.

**Note:**

- ISO/IEC 19752 standard is as follows:
  - Environment: 23 ± 2 °C (73±3 °F) / 50 ± 10% RH
  - Print mode: Continuous printing

### 4.2. Translation Lists

#### 4.2.1. Error Message (Report)

ENGLISH	FRENCH
Communication Error	Erreur de communication
Document Jammed	Bourrage de document
Error-Not Your Unit	Erreur – Autre appareil
Junk Fax Proh. Reject	Rejet courrier-rebut
Memory Full	Mémoire pleine
No Document/Failed Pickup	Document absent/Échec d'entraînement
Other Fax not responding	Pas de réponse
Pressed the 'Stop' key	Touche 'Arrêter' pressée
The cover was opened	Le couvercle a été ouvert
OK	OK

## 4.2.2. Error Message (Display)

ENGLISH	FRENCH
Call Service 1	Contacteur SAV 1
Call Service 2	Contacteur SAV 2
Call Service 3	Contacteur SAV 3
Call Service 4	Contacteur SAV 4
Call Service 5	Contacteur SAV 5
Call Service 6	Contacteur SAV 6
Call Service 7	Contacteur SAV 7
Call Service 11	Contacteur SAV 11
Call Service 17	Contacteur SAV 17
Call Service 20	Contacteur SAV 20
Change Drum	Changer cylindre
Change Supplies Toner Empty	Remp. fourniture Toner vide
	Remplacer fourniture Toner vide
Change Supplies Toner Low	Remp. fourniture Toner bas
	Remplacer fourniture Toner bas
Check Document	Vérifier doc.
	Vérifier document
Check Drum	Vérif. cylindre
Check Install Input Tray #1	Vérif. instal. bac entrée #1
	Vérifier installer bac entrée #1
Check Paper	Vérifier papier
Check Pick Up Input Tray #1	Vérif.entraînem. bac entrée #1
Directory Full	Répert. saturé
Drum Life Low	Près fin cylin.
Email Size Over	Courriel dépassé
Fax in Memory	Télec.en mémoire
File Size Over	Fichier dépassé
Keep Copying	Continuer copie
Left Cover Open	Couv.gauche ouv.
Low Temperature	Basse temp.
	Basse température
Memory Full	Mémoire pleine
Memory Overflow	Mémoire saturée
Modem Error	Erreur modem
No Fax Reply	Aucune réponse
Out of Paper Input Tray #1	Manque papier bac entrée #1
	Manque de papier bac entrée #1
Paper Jammed	Bourrage papier
PC Fail or Busy.	PC-échec/occupé
Please Wait	Attendre svp
Redial Time Out	Fin recomp.

ENGLISH	FRENCH
Remove Document	Retirer doc.
	Retirer document
Replace Drum	Remplacer cylin.
RX Memory Full	Mém.réc.pleine
Scanner Position Error	Position numér. Erreur
	Erreur position numérisation
Transmit Error	Erreur envoi
Tray #2 Left Cover Open	Bac #2 Couv.gauche ouv.
	Bac #2 ou couv.gauche ouvert
Warming Up	Préchauffage

## 5 Features

### 5.1. General Features

#### General

- LCD (Liquid Crystal Display) readout

PHOTO: For photographs, shaded drawings, etc.  
Broadcast

#### Flat-Bed Multifunction Laser Fax

Recording paper exit (approx. 100 sheets)

Letter/A4/Legal, G3 compatible

Automatic document feeder (50 sheets)

Quick scan

Resolution: Standard/Fine/Super fine/Photo (64 level).

STANDARD: For normal-sized characters.

FINE: For small-sized characters.

SUPER FINE: For very small-sized characters.

Large Memory... Performed by Flash ROM

Approx. 150 pages of memory transmission

Approx. 630 pages of memory reception

#### 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 98 / Windows Me / Windows 2000 / Windows XP / Windows Vista

#### CPU:

Windows 98/Windows Me/Windows 2000: Pentium® II or higher processor

Windows XP: Pentium III or higher processor

Windows Vista: Pentium 4 or higher processor

#### RAM:

Windows 98/Windows Me: 64 MB (128 MB or more recommended)

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

Windows Vista: 512 MB (1,024 MB or more recommended)

#### Other Hardware:

CD-ROM drive

Hard disk drive with at least 150 MB of available space

USB interface

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

#### Other:

Internet Explorer® 5.0 or later

#### Warning:

- To assure continued emission limit compliance;
  - use only shielded USB cable (Example: Hi-Speed USB 2.0 certified cable).
  - use only shielded LAN cable (category 5 straight cable).
- To protect the unit, use only shielded USB cable in areas where thunderstorms occur.

#### Note:

- A USB cable is not supplied. Please purchase a shielded Type-A male/Type-B male USB cable.



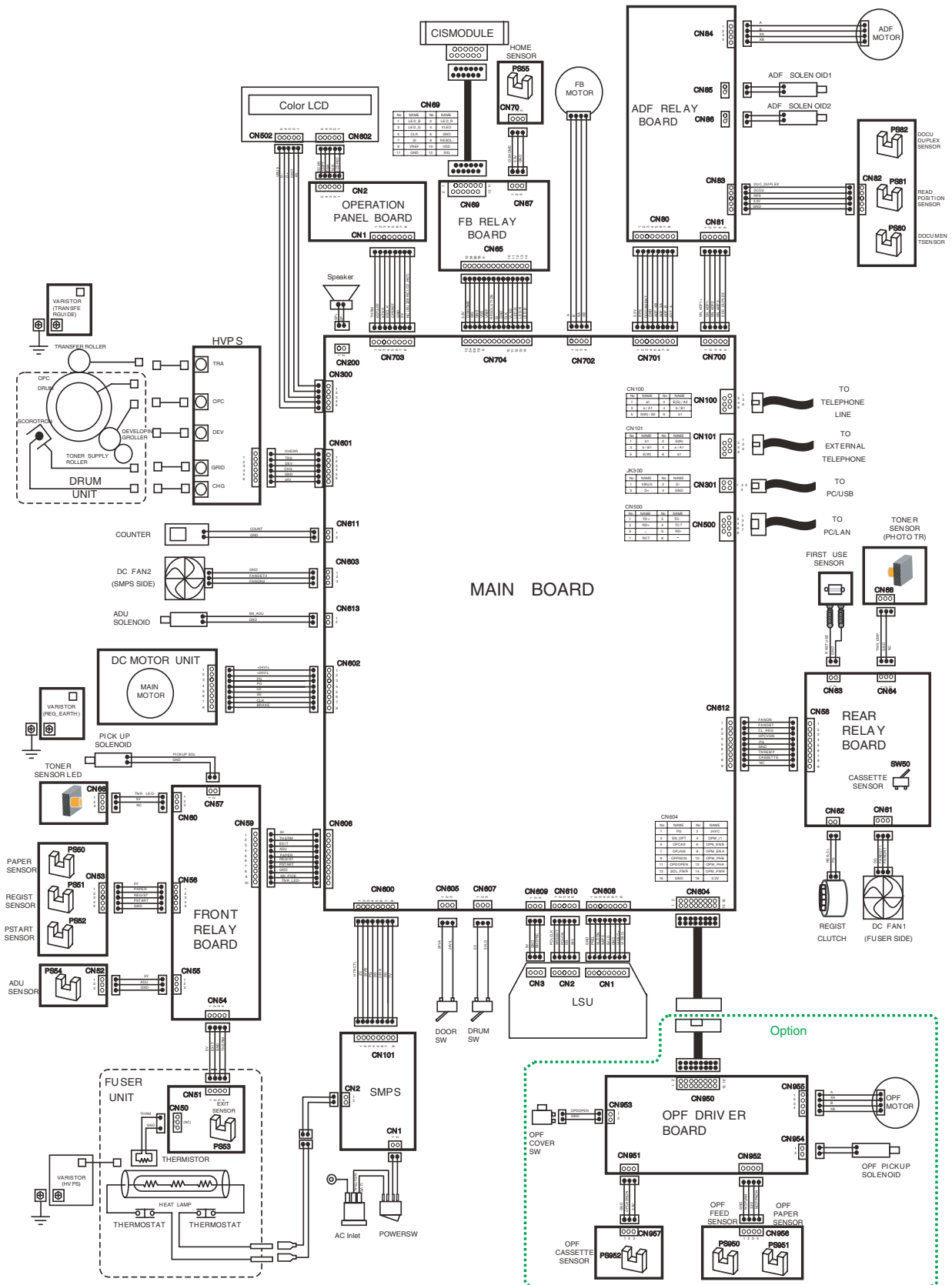
## 6 Technical Descriptions

**Note:**

LOW VOLTAGE POWER SUPPLY BOARD = PSU  
HIGH VOLTAGE POWER SUPPLY BOARD = HVU

### 6.1. Connection Diagram

## CONNECTION DIAGRAM



## 6.2. General Block Diagram

### MAIN UNIT

#### SOC (IC300)

This custom IC is used for general MFP operations.

- |                            |   |
|----------------------------|---|
| 1) CPU                     | ARM11 operating at 400MHz.  |
| 2) DDR SDRAM Controller    | Controls DDR (Double Data Rate) SDRAM Memory.                       |
| 3) USB Controller with PHY | Apply to USB2.0 HS  |
| 4) Scanner I/F             | Controls the CIS and AFE, and process the scan images.              |
| 5) LSU I/F                 | Controls the polygon motor and outputs the VIDEO signal to LSU.     |
| 6) MOTOR I/F               | Controls the DC motor and Stepping Motor.                           |
| 7) FAN I/F                 | Controls FAN MOTOR and detect the rotation of FAN MOTOR.            |
| 8) OPERATION PANEL I/F     | Serial interface with Operation Panel.                              |
| 9) SENSOR I/F              | Detects the sensor signal.  |
| 10) I/O PORT               | I/O Port Interface.   |
| 11) A/D, D/A converter     | Sends beep tones, etc.  |
|                            | Convert the analog signal to the digital signal.                    |
| 12) RTC                    | Real time clock.  |
| 13) MODEM                  | Performs the modulation and the demodulation for FAX communication. |
| 14) Analog Front End I/F   | Controls the DAA device for TEL/FAX function.                       |
| 15) LAN Controller         | Ethernet Control.   |

#### ROM (IC402)

This 16MB FLASH ROM contains all of the program instructions on the unit operations.

And support the backup of user setting and FAX receive data.

#### DOUBLE DATA RATE SYNCHRONOUS DYNAMIC RAM (IC400 and IC401)

These 2pcs of 256Mbit DDR SDRAM are used for CPU work and receiving memory and page memory.

#### POWER SUPPLY

DC-DC converters generate 5V, 3.3V, 2.5V and 1.2V for system power.

Regulator generates 7V for peripheral devices.

Regulator generates 1.25V for termination voltage of DDR-SDRAM.

#### TEL/FAX I/F

Composed of ITS circuit and NCU circuit.

3 ICs called SDAA(Silicon Direct Access Arrangement) control Telephone line, Speaker, and Handset.

#### READ SECTION

CIS Unit to read transmitted documents.

CIS Unit is connected to FLATBED RELAY UNIT.

Scan data is converted by AFE(IC702) in main board.

#### MOTOR

This model has 1 DC motor and 2 stepping motors.

IC300 drives the DC motor for printing.

IC700 drive the stepping motor for Auto Document Feeder motor and CIS carriage.

#### LSU

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

#### SENSORS

Composed of 3 switches and 8 sensors.

#### OPERATION PANEL

##### CPU (IC101)

This CPU is used for Colour LCD operations.

- |                            |  |
|----------------------------|--|
| 1) CPU                     | FR-V operating at 399.6MHz.                |
| 2) SDRAM Controller        | Controls SDRAM Memory.                     |
| 3) USB Controller with PHY | Apply to USB 2.0 FS                        |
| 4) LCD Controller          | Output as the NTSC/PAL video output format |

#### ROM (IC601)

This 4MB(32Mbit) FLASH ROM contains all of the program instructions on the unit operations.

**SYNCHRONOUS DYNAMIC RAM (IC300)**

This 128Mbit SDRAM is used for CPU work .

**Colour LCD**

3.6" IPS-TFT LCD (Approx.230,000 pixels) (Approx. 16,000,000 colours)

**POWER SUPPLY BOARD (PSU)**

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.

**FUSER UNIT**

Composed heat lamp,thermistor and thermostats.

**FAN MOTOR**

This model has 2 FAN motors.

One FAN motor cool down PSU. The other FAN motor cool down Fuser Unit.

**Solenoid**

This model has 2 solenoids.

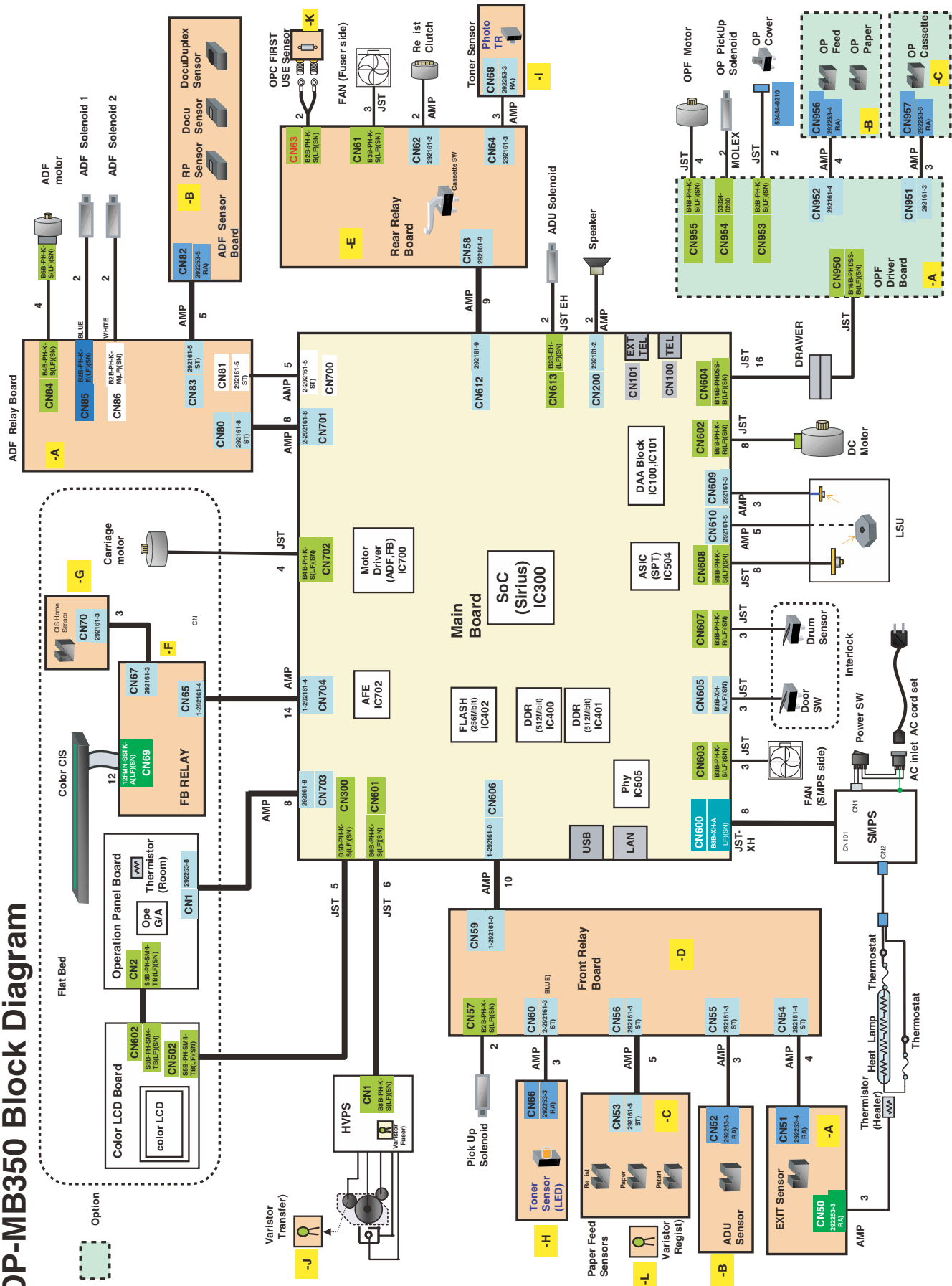
**OPTIONAL LOWER INPUT TRAY**

Composed of 1 switch and 3 sensors of transmission type and 1 stepping motor and 1 solenoid.

**ASIC (SPT, IC504)**

This custom IC is used for laser control.

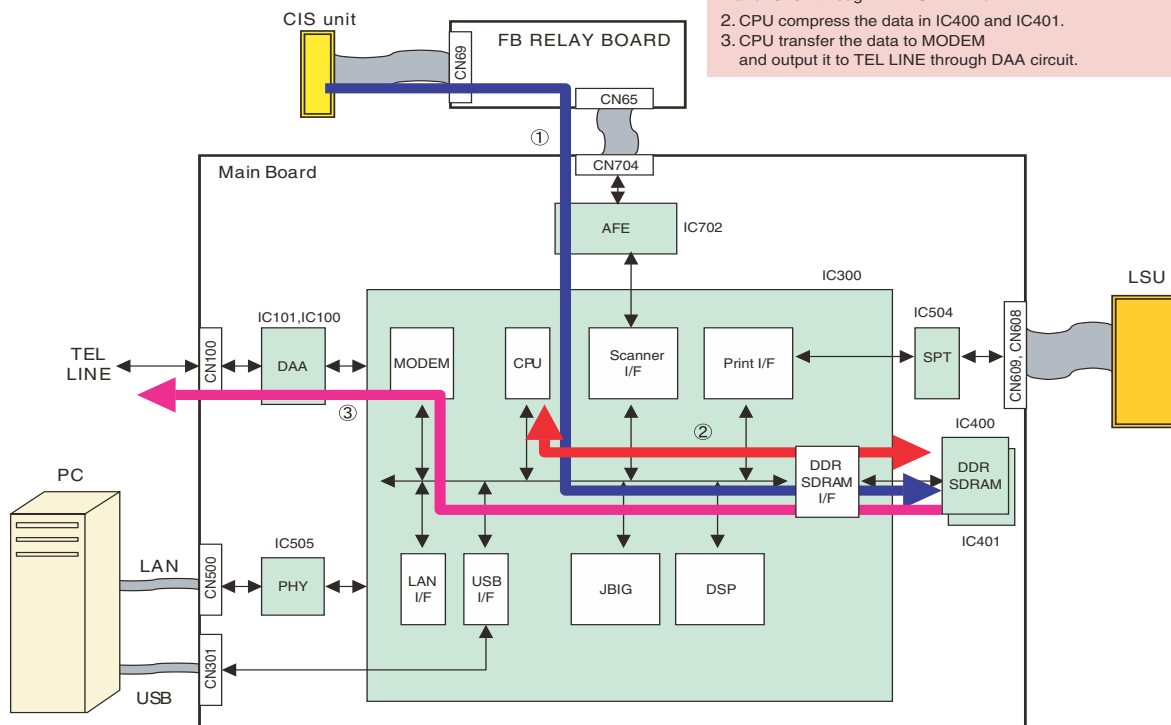
# DP-MB350 Block Diagram



## 6.3. Main Board Section

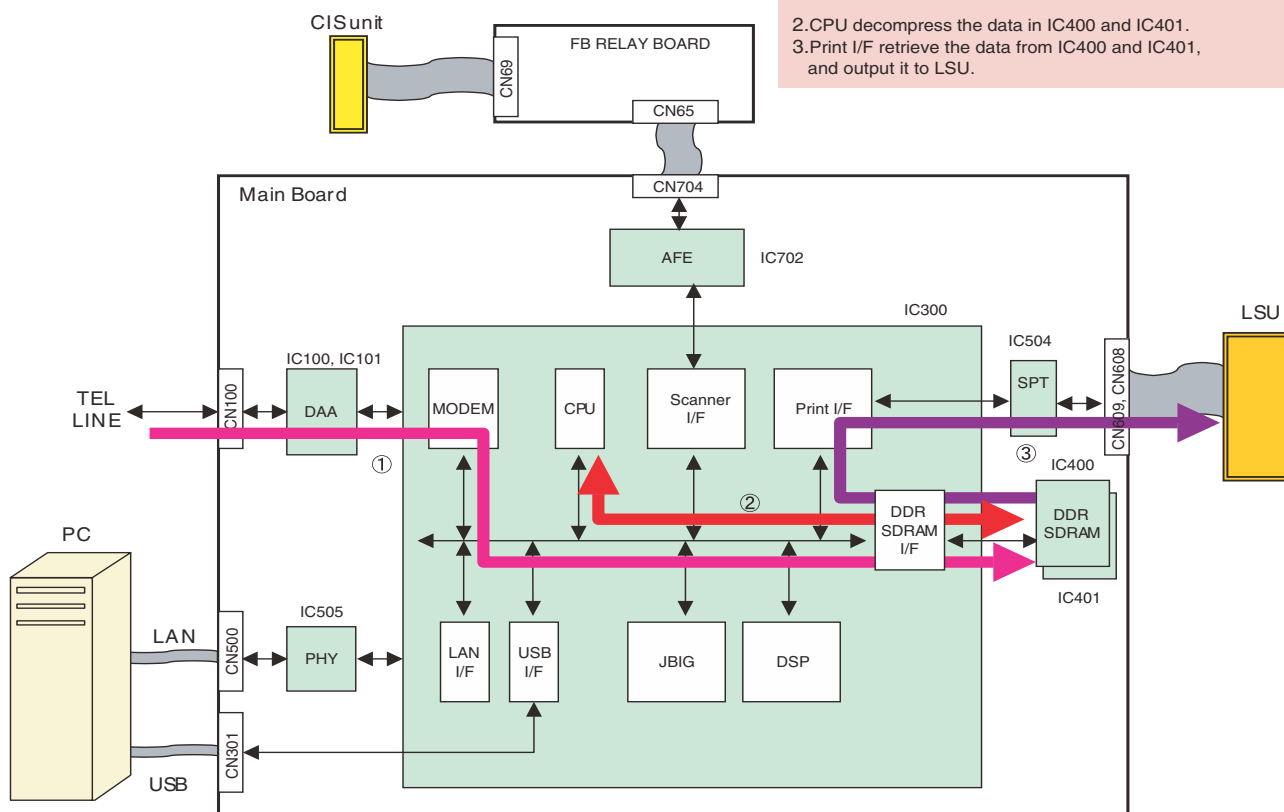
### 6.3.1. Data Flow

#### Data Flow [ FAX Tx ]



1. An analog image data is output from CIS unit to IC702. IC702 decode the analog data to digital data, and output to IC300. Scanner I/F in IC300 process image data and store it in IC400 and IC401 through DDR SDRAM I/F.
2. CPU compress the data in IC400 and IC401.
3. CPU transfer the data to MODEM and output it to TEL LINE through DAA circuit.

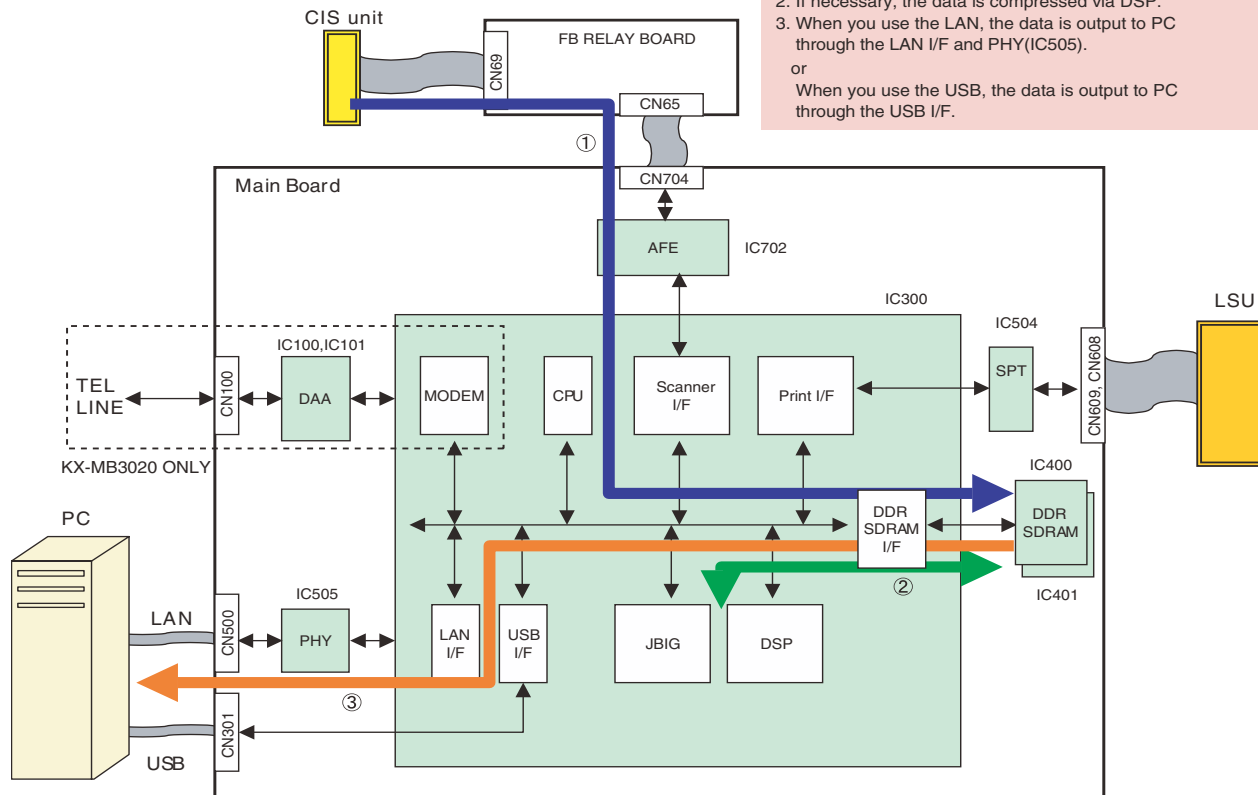
#### Data Flow [ FAX Rx ]



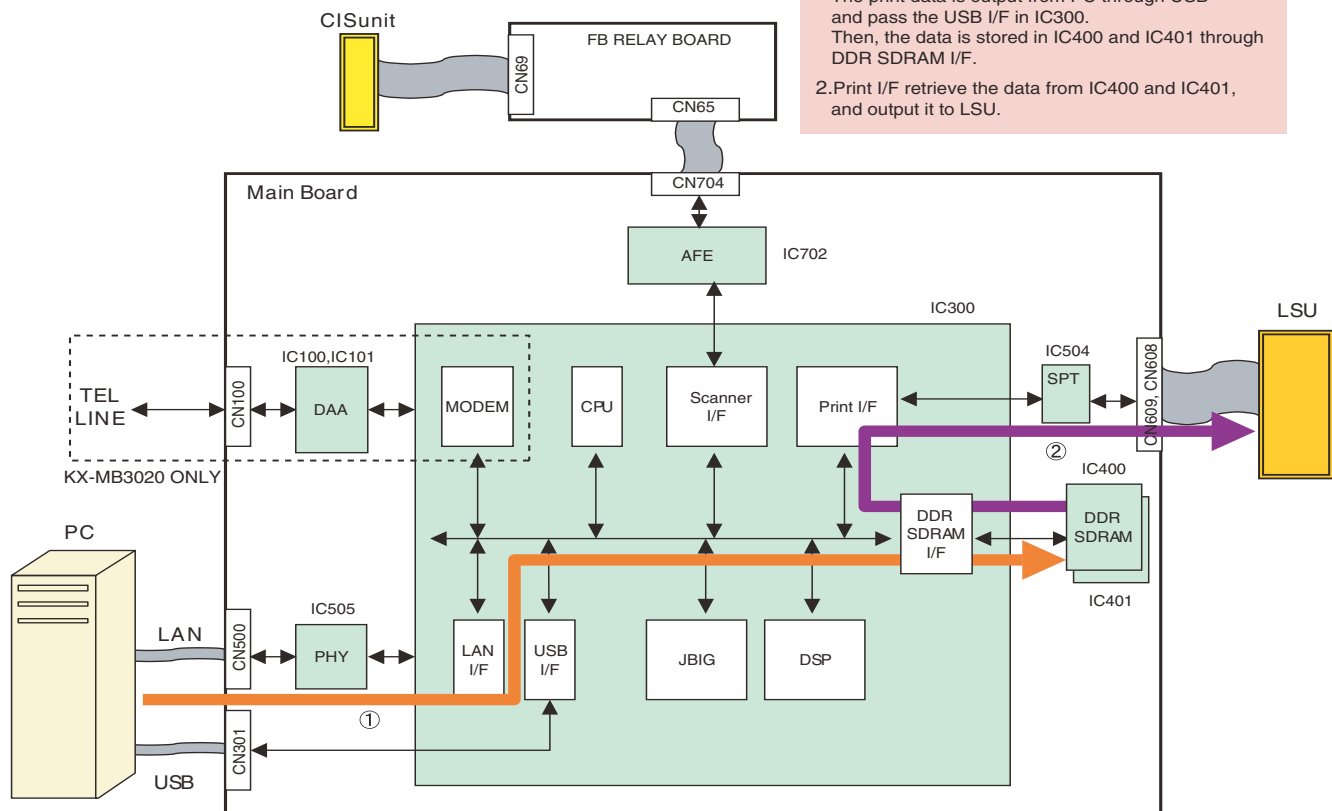
1. FAX data is input from TEL LINE to MODEM in IC300 through DAA circuit. And then store it in IC400 and IC401 through DDR SDRAM I/F.
2. CPU decompress the data in IC400 and IC401.
3. Print I/F retrieve the data from IC400 and IC401, and output it to LSU.



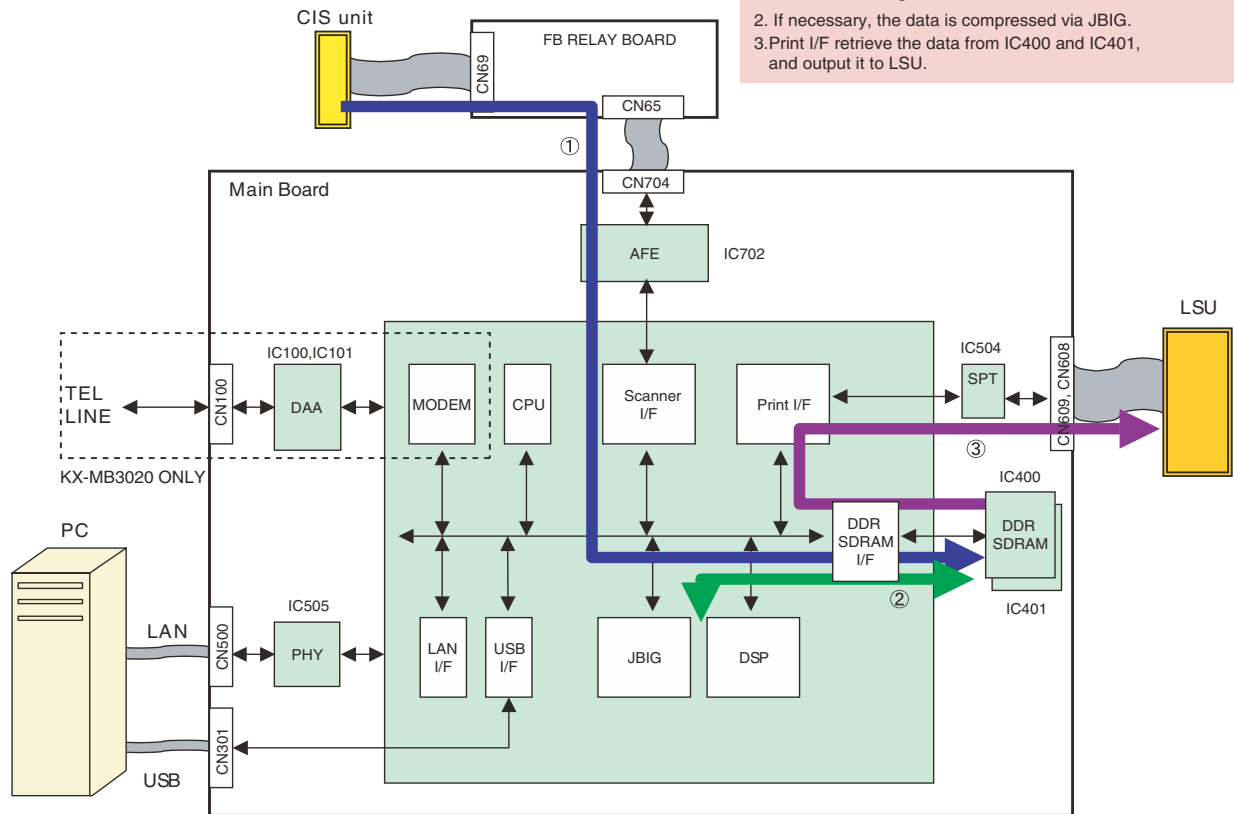
## Data Flow [ PC Scan ]



## Data Flow [ PC print ]



## Data Flow [ Copy ]



1. An analog image data is output from CIS unit to IC702. IC702 decode the analog data to digital data, and output to IC300. Scanner I/F in IC300 process image data and store it in IC400 and IC401 through DDR SDRAM I/F.
2. If necessary, the data is compressed via JBIG.
3. Print I/F retrieve the data from IC400 and IC401, and output it to LSU.

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

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
A02	VSS	-	GND	GND
A03	DOTCLKOUT	O	1.2V	Video Clock (Unused)
A04	PCIAD2	IO	3.3V	PCI Bus Address and Data (Unused)
A05	PCIAD5	IO	3.3V	PCI Bus Address and Data (Unused)
A06	PCIAD9	IO	3.3V	PCI Bus Address and Data (Unused)
A07	PCIAD13	IO	3.3V	PCI Bus Address and Data (Unused)
A08	PCIAD17	IO	3.3V	PCI Bus Address and Data (Unused)
A09	PCIAD20	IO	3.3V	PCI Bus Address and Data (Unused)
A10	PCIAD24	IO	3.3V	PCI Bus Address and Data (Unused)
A11	PCIAD27	IO	3.3V	PCI Bus Address and Data (Unused)
A12	PCIAD31	IO	3.3V	PCI Bus Address and Data (Unused)
A13	NPCIPERR	IO	3.3V	PCI Bus Parity Error
A14	NPCIRDY	IO	3.3V	PCI Bus Initiator Ready
A15	NPCIRST	O	3.3V	PCI Bus Reset (Unused)
A16	VSS	-	GND	GND
A17	NPCICBE3	IO	3.3V	PCI Bus Command and Byte Enable (Unused)
A18	NPCIREQ0	I	3.3V	PCI Bus Request
A19	NPCIGNT1	O	3.3V	PCI Bus Grant (Unused)
A20	BZrst33	I	3.3V	BZ Control
A21	MDMCLKOUT	O	1.2V	24.576MHz (SD, SCNR, MODEM, PCI, GPDMA)
A22	RTCPWRDWN	I	3.3V	RTC Power Down
A23	RTCCLKOUT	O	1.2V	32.768MHz (RTC)
A24	FRMA0	O	3.3V	Flash / Mask ROM Address
A25	FRMA3	O	3.3V	Flash / Mask ROM Address
A26	FRMA7	O	3.3V	Flash / Mask ROM Address
A27	FRMA9	O	3.3V	Flash / Mask ROM Address
A28	FRMA13	O	3.3V	Flash / Mask ROM Address
A29	FRMA17	O	3.3V	Flash / Mask ROM Address
A30	FRMA21	O	3.3V	Flash / Mask ROM Address
A31	FRMA24	O	3.3V	Flash / Mask ROM Address
A32	NFROE	O	3.3V	Flash / Mask ROM Output Enable
A33	FRMD1	IO	3.3V	Flash / Mask ROM Data
AA01	SDMD10	IO	2.5V	SDRAM Data
AA02	SDMD9	IO	2.5V	SDRAM Data
AA03	VSS	-	GND	GND
AA04	SDMD4	IO	2.5V	SDRAM Data
AA31	IO16	IO	3.3V	Laser Power
AA32	IO15	IO	3.3V	Color LCD RESET
AA33	IO17	IO	3.3V	Laser Enable
AA34	IO18	IO	3.3V	Charger Wire Error
AB01	SDMD7	IO	2.5V	SDRAM Data
AB02	SDMD6	IO	2.5V	SDRAM Data
AB03	SDLQSQS0	IO	2.5V	SDRAM Data Strobe for Lower Byte (DQ[7:0])
AB04	VDD2.5	-	2.5V	POWER SUPPLY
AB31	VDD3.3	-	3.3V	POWER SUPPLY
AB32	IO12	IO	3.3V	ADF2 Solenoid
AB33	IO13	IO	3.3V	Duplex Solenoid
AB34	IO14	IO	3.3V	ADF3 Solenoid
AC01	SDMD5	IO	2.5V	SDRAM Data
AC02	SDLDM0	O	2.5V	SDRAM Data Mask For Lower Byte (DQ[7:0])
AC03	VDD2.5	-	2.5V	POWER SUPPLY
AC04	SDMD0	IO	2.5V	SDRAM Data
AC31	IO8	IO	3.3V	FANONIL
AC32	IO9	IO	3.3V	Pick-up Solenoid
AC33	IO10	IO	3.3V	ADF Solenoid
AC34	IO11	IO	3.3V	Regist Solenoid
AD01	SDMD3	IO	2.5V	SDRAM Data
AD02	SDMD2	IO	2.5V	SDRAM Data
AD03	BZVDD25	I	2.5V	BZ Control
AD04	VDD1.2	-	1.2V	POWER SUPPLY
AD31	VDD1.2	-	1.2V	POWER SUPPLY
AD32	IO4	IO	3.3V	Charger Control
AD33	IO6	IO	3.3V	Transfer Control
AD34	IO7	IO	3.3V	FANONIH

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
AE01	SDMD1	IO	2.5V	SDRAM Data
AE02	VSS	-	GND	GND
AE03	BZRST25	I	2.5V	BZ Control
AE04	TXD1	O	2.5V	Ethernet Transmit Data
AE31	EXMDMCS	O	3.3V	Extended Modem CS (Unused)
AE32	DMAD0_POLCLK	IO	3.3V	Polygon Motor Clock
AE33	DMAD1_POLON	IO	3.3V	Polygon Motor Control
AE34	DMAD3_DEV	IO	3.3V	Dev. Bias Control
AF01	TX_EN	O	2.5V	Ethernet Transmit Enable
AF02	TXD0	O	2.5V	Ethernet Transmit Data
AF03	TXD6	O	2.5V	Ethernet Transmit Data
AF04	VSS	-	GND	GND
AF31	VSS	-	GND	GND
AF32	AFESSEL0	I	3.3V	AFE Select
AF33	DBGMOD	O	3.3V	ICE Interface
AF34	EXTINT	I	3.3V	External INT
AG01	TXD2	O	2.5V	Ethernet Transmit Data
AG02	TXD3	O	2.5V	Ethernet Transmit Data
AG03	TXD4	O	2.5V	Ethernet Transmit Data
AG04	RXD0	I	2.5V	Ethernet Receive Data
AG31	DP	O	3.3V	DP (Dial Pulse)
AG32	EYEDAT	O	3.3V	EYE-Monitor
AG33	AFESSEL1	I	3.3V	AFE Select
AG34	NDBGREQ	I	3.3V	ICE Interface
AH01	TXD5	O	2.5V	Ethernet Transmit Data
AH02	TXD7	O	2.5V	Ethernet Transmit Data
AH03	TX_ER	O	2.5V	Ethernet Transmit Coding Error
AH04	VDD2.5	-	2.5V	POWER SUPPLY
AH31	VDD3.3	-	3.3V	POWER SUPPLY
AH32	RING	I	3.3V	RING (Ring Detect)
AH33	AFECLK	O	3.3V	AFE Clock
AH34	EYECLK	O	3.3V	EYE-Monitor
AJ01	RX_DV	I	2.5V	Ethernet Receive Data Valid
AJ02	RXD1	I	2.5V	Ethernet Receive Data
AJ03	RXD2	I	2.5V	Ethernet Receive Data
AJ04	RXD5	I	2.5V	Ethernet Receive Data
AJ31	BBITCLK	IO	3.3V	AFE IF ch B (Bit CLK)
AJ32	BRXD	I	3.3V	AFE IF ch B (Rx Data)
AJ33	BSPCLK	IO	3.3V	AFE IF ch B (Sample CLK)
AJ34	AFERST	O	3.3V	AFE Reset
AK01	RXD3	I	2.5V	Ethernet Receive Data
AK02	RXD4	I	2.5V	Ethernet Receive Data
AK03	RXD6	I	2.5V	Ethernet Receive Data
AK04	MDC	O	2.5V	Ethernet Management Data Clock
AK31	ABITCLK	IO	3.3V	AFE IF ch A (Bit CLK)
AK32	ASPCLK	IO	3.3V	AFE IF ch A (Sample CLK)
AK33	ARXD	I	3.3V	AFE IF ch A (Rx Data)
AK34	BTXD	O	3.3V	AFE IF ch B (Tx Data)
AL01	RXD7	I	2.5V	Ethernet Receive Data
AL02	MDIO	IO	2.5V	Ethernet Management Data In / OUT
AL03	CRS	I	2.5V	Ethernet Carrier Sense
AL04	VSS	-	GND	GND
AL05	SYSPLLVS2	-	GND	PLL w /SSCG (DDR)
AL06	CCDSH	O	3.3V	CCD /CIS Shift Pulse
AL07	VDD3.3	-	3.3V	POWER SUPPLY
AL08	AFEADC3	I	3.3V	AFE Output Data 3
AL09	VSS	-	GND	GND
AL10	AFESIFDIN	I	3.3V	AFE SIF Data In
AL11	VDD1.2	-	1.2V	POWER SUPPLY
AL12	USBOVDDA33	-	3.3V	Transceiver 3.3V POWER
AL13	VDD3.3	-	3.3V	POWER SUPPLY
AL14	USBCVSSA12	-	GND	GND
AL15	VSS	-	GND	GND
AL16	USBREXT	O	3.3V	6.81k external resistor connection
AL17	VDD3.3	-	3.3V	POWER SUPPLY
AL18	VDD1.2	-	1.2V	POWER SUPPLY

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
AL19	USBDVSSA12PLL	-	GND	PLL GND
AL20	VSS	-	GND	GND
AL21	NCCDON	O	3.3V	CCD Power Control
AL22	VDD3.3	-	3.3V	POWER SUPPLY
AL23	IO38	IO	3.3V	UART CH3 TXD
AL24	VDD1.2	-	1.2V	POWER SUPPLY
AL25	IO34	IO	3.3V	TP_CHKSEL
AL26	VSS	-	GND	GND
AL27	MMA	IO	3.3V	Main Motor Clock
AL28	VDD3.3	-	3.3V	POWER SUPPLY
AL29	MMXB	IO	3.3V	Main Motor Break
AL30	OPMXB	IO	3.3V	OPMXB
AL31	VSS	-	GND	GND
AL32	ADFMEN	IO	3.3V	ADF Motor Select
AL33	CRMEN	IO	3.3V	Flatbed Motor Select
AL34	ATXD	O	3.3V	AFE IF ch A (Tx Data)
AM01	VSS	-	GND	GND
AM02	GTX_CLKIN	I	1.2V	125MHz Clock INPUT
AM03	VSS	-	GND	GND
AM04	COL	I	2.5V	Ethernet Collision Detected
AM05	SYSPLLVD1	-	1.2V	PLL w/SSCG (CPU, ZSP)
AM06	AFEADC0	I	3.3V	AFE Output Data 0
AM07	AFEADC1	I	3.3V	AFE Output Data 1
AM08	AFEADC2	I	3.3V	AFE Output Data 2
AM09	AFEADC6	I	3.3V	AFE Output Data 6
AM10	AFEADC7	I	3.3V	AFE Output Data 7
AM11	USBOVSSA33	-	GND	Transceiver GND for USB controller
AM12	USBOVSSA33	-	GND	GND
AM13	USBOVSSA12PLL	-	GND	PLL GND
AM14	USBOVSSA12_SQ	-	GND	Squelch GND
AM15	USBDVBUS	I	5V	USB Device Signal
AM16	USBCVDDA12	-	1.2V	POWER SUPPLY
AM17	USBDVSSA33	-	GND	Transceiver GND
AM18	USBDVDDA33	-	3.3V	Transceiver 3.3V POWER
AM19	OEB	O	3.3V	Output Hi-Z control
AM20	AFESIFEN	O	3.3V	AFE SIF Enable
AM21	SDDAT1	IO	3.3V	SD IF (Unused)
AM22	SDDAT2	IO	3.3V	SD IF (Unused)
AM23	SDCD	I	3.3V	SD IF (Unused)
AM24	IO29	IO	3.3V	Panel KSTART
AM25	IO30	IO	5V	UARTCH1 RTS / Panel KTXD / PCCIO30
AM26	LSI_TDO	O	3.3V	LSI Test (JTAG)
AM27	IO36	IO	3.3V	Counter
AM28	LSI_TMS	I	3.3V	LSI Test (JTAG)
AM29	MMB	IO	3.3V	Main Motor LD
AM30	OPMXA	IO	3.3V	OPMXA
AM31	CRM0	IO	3.3V	ADF / Flatbed Motor Controller
AM32	VSS	-	GND	GND
AM33	CRM4	IO	3.3V	ADF / Flatbed Motor Controller
AM34	CRM5	IO	3.3V	ADF / Flatbed Motor Controller
AN01	GTX_CLKOUT	O	2.5V	GTX Clock
AN02	VSS	-	GND	GND
AN03	RX_CLKI	I	2.5V	Ethernet Receive Byte or Symbol Clock
AN04	MGTINT	I	2.5V	Ethernet Management INT
AN05	SYSPLLVS1	-	GND	PLL w/SSCG (CPU, ZSP)
AN06	CCDRS_N	O	3.3V	CCD Reset Pulse
AN07	CCDCLK	O	3.3V	CCD Transfer CLK
AN08	AFERSMP	O	3.3V	AFE Field Through Level Sampling Pulse
AN09	AFEADC4	I	3.3V	AFE Output Data 4
AN10	AFESIFCLK	O	3.3V	AFE SIF CLK
AN11	USBOVBUS	I	3.3V	USB OTG Signal
AN12	USBOREXT	O	3.3V	6.81k external resistor connection
AN13	USBODM	IO	3.3V	USB OTG Signal
AN14	USBOVDDA12_SQ	-	1.2V	Squelch POWER
AN15	USBCXIN	I	3.3V	USB Signal
AN16	USBDVSSA33_BIAS	-	GND	Bias GND



PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
AN17	USBDDM	IO	3.3V	USB Device Signal
AN18	USBDVDDA12_SQ	-	1.2V	Squelch POWER
AN19	AFESIFDOUT	O	3.3V	AFE SIF Data Out
AN20	LEDONG	O	3.3V	Lamp Controller / GPIO
AN21	SDDAT3	IO	3.3V	SD IF (Unused)
AN22	SDCMD	IO	3.3V	SD IF (Unused)
AN23	SDWP	I	3.3V	SD IF (Unused)
AN24	IO40	IO	3.3V	UART CH3 RXD
AN25	IO31	IO	5V/3.3V	Panel KSCLK
AN26	CBUSY2	IO	3.3V	Cordless IF CBUSY2 / PCCIO37
AN27	IO35	IO	3.3V	V FUSE CUT
AN28	LSI_TRSTN	I	3.3V	LSI Test (JTAG)
AN29	MMXA	IO	3.3V	Main Motor Control
AN30	OPMA	IO	3.3V	OPMA
AN31	OPMPWR	O	3.3V	Option Motor Current Control
AN32	CRM2	IO	3.3V	ADF / Flatbed Motor Controller
AN33	VSS	-	GND	GND
AN34	CRM3	IO	3.3V	ADF / Flatbed Motor Controller
AP02	TX_CLKI	I	2.5V	Ethernet Transmit Clock (pre clock tree)
AP03	VDD2.5	-	2.5V	POWER SUPPLY
AP04	RX_ER	I	2.5V	Ethernet Receive Error
AP05	SYSPLLVD2	-	1.2V	PLL w/SSCG (DDR)
AP06	CCDCP_N	O	3.3V	CCD Clamp Pulse
AP07	AFEMCLK	O	3.3V	AFE Master CLK
AP08	AFEVSMP	O	3.3V	AFE Video Level Sampling Pulse
AP09	AFEADC5	I	3.3V	AFE Output Data 5
AP10	USBOVBUS_CONT	O	3.3V	USB OTG Signal
AP11	USBOID	I	3.3V	USB OTG Signal
AP12	USBOVDDA33_BIAS	-	3.3V	Bias POWER 3.3V
AP13	USBODP	IO	3.3V	USB OTG Signal
AP14	USBOVDDA12PLL	-	1.2V	1.2V PLL POWER
AP15	USBCXOUT	O	3.3V	USB Signal
AP16	USBDVDDA33_BIAS	-	3.3V	Bias POWER 3.3V
AP17	USBDDP	IO	3.3V	USB Device Signal
AP18	USBDVSSA12_SQ	-	GND	Squelch GND
AP19	USBDVDDA12PLL	-	1.2V	1.2V PLL POWER
AP20	LEDONR	O	3.3V	Lamp Controller
AP21	LEDONB	O	3.3V	Lamp Controller / GPIO
AP22	SDDAT0	IO	3.3V	SD IF
AP23	SDIFCLK	O	3.3V	SD IF
AP24	IO39	IO	3.3V	PCCIO39 (Unused)
AP25	IO41	IO	3.3V	OPM_T1
AP26	IO32	IO	3.3V	Panel OPERRST
AP27	IO33	IO	3.3V	PCCIO33 (Unused)
AP28	LSI_TCK	I	3.3V	LSI Test (JTAG)
AP29	LSI_TDI	I	3.3V	LSI Test (JTAG)
AP30	MMPWR	O	3.3V	Main Motor Current Control (Unused)
AP31	OPMB	IO	3.3V	OPMB
AP32	CRM1	IO	3.3V	ADF / Flatbed Motor Controller
AP33	CRMPWR	O	3.3V	ADF / Flatbed Motor Current Controller
B01	SDMA8	O	2.5V	SDRAM Memory Address
B02	VSS	-	GND	GND
B03	DOTPLLVD2	-	1.2V	PLL (Dot)
B04	DOTCLKIN	I	1.2V	35MHz (DOT)
B05	PCIAD3	IO	3.3V	PCI Bus Address and Data (Unused)
B06	PCIAD7	IO	3.3V	PCI Bus Address and Data (Unused)
B07	PCIAD11	IO	3.3V	PCI Bus Address and Data (Unused)
B08	PCIAD15	IO	3.3V	PCI Bus Address and Data (Unused)
B09	PCIAD18	IO	3.3V	PCI Bus Address and Data (Unused)
B10	PCIAD22	IO	3.3V	PCI Bus Address and Data (Unused)
B11	PCIAD25	IO	3.3V	PCI Bus Address and Data (Unused)
B12	PCIAD29	IO	3.3V	PCI Bus Address and Data (Unused)
B13	NPCISERRZ	IO	3.3V	PCI Bus System Error
B14	NPCISTP	IO	3.3V	PCI Bus Stop
B15	NPCIFRM	IO	3.3V	PCI Bus Frame
B16	PCICKOUT	O	3.3V	PCI Bus Clock Output (Unused)

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
B17	NPCICBE1	IO	3.3V	PCI Bus Command and Byte Enable (Unused)
B18	NPCIREQ1	I	3.3V	PCI Bus Request
B19	NPCIINT	I	3.3V	PCI Bus Interrupt
B20	PCICLKSEL	I	3.3V	PCI Bus Clock Select
B21	MDMCLKIN	I	1.2V	24.576MHz (SD, SCNR, MODEM, PCI, GPDMA)
B22	BATRST	I	3.3V	Battery Reset
B23	WDTRST	O	3.3V	Watch Dog Timer Reset Signal
B24	FRMA2	O	3.3V	Flash/Mask ROM Address
B25	FRMA4	O	3.3V	Flash/Mask ROM Address
B26	FRMA8	O	3.3V	Flash/Mask ROM Address
B27	FRMA10	O	3.3V	Flash/Mask ROM Address
B28	FRMA14	O	3.3V	Flash/Mask ROM Address
B29	FRMA18	O	3.3V	Flash/Mask ROM Address
B30	FRMA22	O	3.3V	Flash/Mask ROM Address
B31	FRMA25	O	3.3V	Flash/Mask ROM Address (Unused)
B32	FRMD0	IO	3.3V	Flash/Mask ROM Data
B33	VSS	-	GND	GND
B34	FRMD2	IO	3.3V	Flash/Mask ROM Data
C01	SDMA10	O	2.5V	SDRAM Memory Address
C02	SDMA11	O	2.5V	SDRAM Memory Address
C03	VSS	-	GND	GND
C04	DOTPLLSS	-	GND	PLL (Dot)
C05	PCIAD1	IO	3.3V	PCI Bus Address and Data (Unused)
C06	PCIAD6	IO	3.3V	PCI Bus Address and Data (Unused)
C07	PCIAD10	IO	3.3V	PCI Bus Address and Data (Unused)
C08	PCIAD14	IO	3.3V	PCI Bus Address and Data (Unused)
C09	PCIAD12	IO	3.3V	PCI Bus Address and Data (Unused)
C10	PCIAD21	IO	3.3V	PCI Bus Address and Data (Unused)
C11	PCIAD19	IO	3.3V	PCI Bus Address and Data (Unused)
C12	PCIAD28	IO	3.3V	PCI Bus Address and Data (Unused)
C13	PCIAD26	IO	3.3V	PCI Bus Address and Data (Unused)
C14	NPCIDSEL	IO	3.3V	PCI Bus Device Select
C15	PCIPAR	IO	3.3V	PCI Bus Parity
C16	VDD3.3	-	3.3V	POWER SUPPLY
C17	NPCICBE0	IO	3.3V	PCI Bus Command and Byte Enable (Unused)
C18	NPCICBE2	IO	3.3V	PCI Bus Command and Byte Enable (Unused)
C19	MDMPLLVD	-	1.2V	PLL (SD, SCNR, MODEM, PCI, GPDMA)
C20	MDMPLLSS	-	GND	PLL (SD, SCNR, MODEM, PCI, GPDMA)
C21	vdd2RTC	-	1.2V	POWER SUPPLY
C22	vddio33	-	3.3V	POWER SUPPLY
C23	RST	I	3.3V	Reset
C24	FRMA1	O	3.3V	Flash / Mask ROM Address
C25	FRMA5	O	3.3V	Flash / Mask ROM Address
C26	FRMA11	O	3.3V	Flash / Mask ROM Address
C27	FRMA12	O	3.3V	Flash / Mask ROM Address
C28	FRMA16	O	3.3V	Flash / Mask ROM Address
C29	FRMA20	O	3.3V	Flash / Mask ROM Address
C30	FRMA23	O	3.3V	Flash / Mask ROM Address
C31	NFRWE	O	3.3V	Flash ROM Write Enable
C32	VSS	-	GND	GND
C33	FRMD3	IO	3.3V	Flash / Mask ROM Data
C34	FRMD4	IO	3.3V	Flash / Mask ROM Data
D01	SDMA6	O	2.5V	SDRAM Memory Address
D02	SDMA9	O	2.5V	SDRAM Memory Address
D03	SDMA12	O	2.5V	SDRAM Memory Address
D04	VSS	-	GND	GND
D05	PCIAD0	IO	3.3V	PCI Bus Address and Data (Unused)
D06	PCIAD4	IO	3.3V	PCI Bus Address and Data (Unused)
D07	VDD3.3	-	3.3V	POWER SUPPLY
D08	PCIAD8	IO	3.3V	PCI Bus Address and Data (Unused)
D09	VSS	-	GND	GND
D10	PCIAD16	IO	3.3V	PCI Bus Address and Data (Unused)
D11	VDD1.2	-	1.2V	POWER SUPPLY
D12	PCIAD23	IO	3.3V	PCI Bus Address and Data (Unused)
D13	VDD3.3	-	3.3V	POWER SUPPLY
D14	PCIAD30	IO	3.3V	PCI Bus Address and Data (Unused)

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
D15	VSS	-	GND	GND
D16	NPCITRDY	IO	3.3V	PCI Bus Target Ready
D17	VDD1.2	-	1.2V	POWER SUPPLY
D18	VDD3.3	-	3.3V	POWER SUPPLY
D19	NPCIGNT0	O	3.3V	PCI Bus Grant (Unused)
D20	VSS	-	GND	GND
D21	BZVDD33	I	3.3V	BZ Control
D22	VDD3.3	-	3.3V	POWER SUPPLY
D23	RTCCLKIN	I	1.2V	32.768MHz (RTC)
D24	VDD1.2	-	1.2V	POWER SUPPLY
D25	FRMA6	O	3.3V	Flash/Mask ROM Address
D26	VSS	-	GND	GND
D27	FRMA15	O	3.3V	Flash/Mask ROM Address
D28	VDD3.3	-	3.3V	POWER SUPPLY
D29	FRMA19	O	3.3V	Flash/Mask ROM Address
D30	NFRCE	O	3.3V	Flash/Mask ROM Chip Enable
D31	VSS	-	GND	GND
D32	FRMD6	IO	3.3V	Flash/Mask ROM Data
D33	FRMD7	IO	3.3V	Flash/Mask ROM Data
D34	IO61	IO	3.3V	SP MUTE
E01	SDMA3	O	2.5V	SDRAM Memory Address
E02	SDMA4	O	2.5V	SDRAM Memory Address
E03	SDMA7	O	2.5V	SDRAM Memory Address
E04	SDMA5	O	2.5V	SDRAM Memory Address
E31	FRMD5	IO	3.3V	Flash/Mask ROM Data
E32	IO59	IO	3.3V	LAN RST
E33	IO27	IO	3.3V	Option Cassette
E34	HTRCTL	O	3.3V	Fuser Lamp Control
F01	SDBA1	O	2.5V	SDRAM Bank Address1
F02	SDMA0	O	2.5V	SDRAM Memory Address
F03	SDMA2	O	2.5V	SDRAM Memory Address
F04	SDMA1	O	2.5V	SDRAM Memory Address
F31	IO60	IO	3.3V	ADF4 solenoid
F32	SCIO22	IO	3.3V	LED ON
F33	SCIO21	IO	3.3V	ADU sensor
F34	SCIO19	IO	3.3V	P START
G01	NSDCAS	O	2.5V	SDRAM Column Address Strobe
G02	NSDCS0	O	2.5V	SDRAM Chip Select 0
G03	NSDCS1	O	2.5V	SDRAM Chip Select 1 (Unused)
G04	VDD2.5	-	2.5V	POWER SUPPLY
G31	VDD3.3	-	3.3V	POWER SUPPLY
G32	SCIO18	IO	3.3V	Top Cover Sensor
G33	SCIO17	IO	3.3V	FAN DET2
G34	SCIO15	IO	3.3V	ADF Read Position Sensor
H01	NSDCLK2	O	2.5V	SDRAM Clock 2
H02	VSS	-	GND	GND
H03	NSDCKE	O	2.5V	SDRAM Clock Enable
H04	SDBA0	O	2.5V	SDRAM Bank Address 0
H31	IO26	IO	3.3V	EXTROM CS
H32	SCIO14	IO	3.3V	Document Set Sensor
H33	SCIO13	IO	3.3V	Toner Empty Sensor
H34	SCIO12	IO	3.3V	First Use Detect
J01	VDD2.5	-	2.5V	POWER SUPPLY
J02	SDCLK2	O	2.5V	SDRAM Clock 2
J03	NSDRAS	O	2.5V	SDRAM Row Address Strobe
J04	VSS	-	GND	GND
J31	VSS	-	GND	GND
J32	SCIO20	IO	3.3V	Home Position Sensor
J33	SCIO10	IO	3.3V	Option Cassette paper
J34	SCIO9	IO	3.3V	Option Cassette Sensor
K01	SDMD28	IO	2.5V	SDRAM Data
K02	SDMD29	IO	2.5V	SDRAM Data
K03	SDMD31	IO	2.5V	SDRAM Data
K04	NSDWE	O	2.5V	SDRAM Write Enable
K31	SCIO16	IO	3.3V	LED ERROR
K32	SCIO8	IO	3.3V	Drum Sensor

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
K33	SCIO6	IO	3.3V	Document Duplex
K34	SCIO5	IO	3.3V	IEROX Detect
L01	VSS	-	GND	GND
L02	SDUDM1	O	2.5V	SDRAM Data Mask For Upper Byte (DQ[31:24])
L03	SDMD30	IO	2.5V	SDRAM Data
L04	VDD1.2	-	1.2V	POWER SUPPLY
L31	VDD1.2	-	1.2V	POWER SUPPLY
L32	SCIO11	IO	3.3V	Option Cassette Feed Sensor
L33	SCIO4	IO	3.3V	Paper Exit Sensor
L34	SCIO3	IO	3.3V	FAN DET1
M01	SDMD25	IO	2.5V	SDRAM Data
M02	SDMD26	IO	2.5V	SDRAM Data
M03	SDMD27	IO	2.5V	SDRAM Data
M04	SDUDQS1	IO	2.5V	SDRAM Date Strobe for Upper Byte (DQ[31:24])
M31	SCIO7	IO	3.3V	Paper Sensor
M32	SCIO2	IO	3.3V	Cassette Sensor
M33	IO25	IO	3.3V	CNG MUTE
M34	PTOP	I	3.3V	Top of page
N01	SDMD23	IO	2.5V	SDRAM Data
N02	VDD2.5	-	2.5V	POWER SUPPLY
N03	SDMD24	IO	2.5V	SDRAM Data
N04	VDD2.5	-	2.5V	POWER SUPPLY
N31	VDD3.3	-	3.3V	POWER SUPPLY
N32	SCIO4	IO	3.3V	Option Cassette door
N33	NAPC	OZ	3.3V	APC Control
N34	NLDEN	OZ	3.3V	LD Enable (Unused)
P01	SDUDM0	O	2.5V	SDRAM Data Mask For Upper Byte (DQ[23:16])
P02	SDMD21	IO	2.5V	SDRAM Data
P03	SDMD22	IO	2.5V	SDRAM Data
P04	SDMD20	IO	2.5V	SDRAM Data
P31	SCIO0	IO	3.3V	Regist Sensor
P32	IO58	IO	3.3V	VIDEO ENABLE
P33	IO28	IO	3.3V	VIDEO CLK
P34	IO0	IO	3.3V	DAMUTE
R01	SDMD19	IO	2.5V	SDRAM Data
R02	VSS	-	GND	GND
R03	SDUDQS0	IO	2.5V	SDRAM Date Strobe for Upper Byte (DQ[23:16])
R04	VSS	-	GND	GND
R15	VSS	-	GND	GND
R16	VSS	-	GND	GND
R17	VSS	-	GND	GND
R18	VSS	-	GND	GND
R19	VSS	-	GND	GND
R20	VSS	-	GND	GND
R31	VSS	-	GND	GND
R32	IO24	IO	3.3V	Polygon Motor LD
R33	EXTRLY_EEPDATA	IO	3.3V	External Tel Relay
R34	LSI_PROCMON	O	3.3V	LSI Test
T01	SDMD16	IO	2.5V	SDRAM Data
T02	SDMD17	IO	2.5V	SDRAM Data
T03	SDMD18	IO	2.5V	SDRAM Data
T04	PAD_DDR_VREF1	I	1.25V	DDR_VREF
T15	VSS	-	GND	GND
T16	VSS	-	GND	GND
T17	VSS	-	GND	GND
T18	VSS	-	GND	GND
T19	VSS	-	GND	GND
T20	VSS	-	GND	GND
T31	NHSYNC	I	5V	Horizontal Sync.
T32	LSI_CW_TAP	I	3.3V	JTAG (Select Pin)
T33	LSI_TN	I	3.3V	LSI Test
T34	LSI_SCAN_ENABLE	I	3.3V	LSI Test
U01	SDCLK	O	2.5V	SDRAM Clock
U02	VDD2.5	-	2.5V	POWER SUPPLY
U03	SDMD15	IO	2.5V	SDRAM Data
U04	VDD2.5	-	2.5V	POWER SUPPLY

PIN NO.	PinName	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
U15	VSS	-	GND	GND
U16	VSS	-	GND	GND
U17	VSS	-	GND	GND
U18	VSS	-	GND	GND
U19	VSS	-	GND	GND
U20	VSS	-	GND	GND
U31	VDD1.2	-	1.2V	POWER SUPPLY
U32	LSI_IDDT	I	3.3V	LSI Test
U33	THRMVSS	-	GND	A/D
U34	THRMSTR1	I	3.3V	A/D
V01	NSDCLK	O	2.5V	SDRAM Clock
V02	VSS	-	GND	GND
V03	SDMD13	IO	2.5V	SDRAM Data
V04	VDD1.2	-	1.2V	POWER SUPPLY
V15	VSS	-	GND	GND
V16	VSS	-	GND	GND
V17	VSS	-	GND	GND
V18	VSS	-	GND	GND
V19	VSS	-	GND	GND
V20	VSS	-	GND	GND
V31	VDD3.3	-	3.3V	POWER SUPPLY
V32	THRMSTR0	I	3.3V	A/D
V33	TONEAVSS	-	GND	D/A_GND
V34	THRMVDD	-	3.3V	A/D_POWER
W01	SDMD14	IO	2.5V	SDRAM Data
W02	SDMD12	IO	2.5V	SDRAM Data
W03	SDLDM1	O	2.5V	SDRAM Data Mask For Lower Byte (DQ[15:8])
W04	SDLDS1	IO	2.5V	SDRAM Data Strobe for Lower Byte (DQ[15:8])
W15	VSS	-	GND	GND
W16	VSS	-	GND	GND
W17	VSS	-	GND	GND
W18	VSS	-	GND	GND
W19	VSS	-	GND	GND
W20	VSS	-	GND	GND
W31	TONEAVDD	-	3.3V	D/A POWER SUPPLY
W32	IO22	IO	3.3V	FANON2H
W33	IO31	IO	3.3V	VIDEO Data
W34	TONE	O	3.3V	D /A
Y01	VDD2.5	-	2.5V	POWER SUPPLY
Y02	SDMD11	IO	2.5V	SDRAM Data
Y03	SDMD8	IO	2.5V	SDRAM Data
Y04	VSS	-	GND	GND
Y15	VSS	-	GND	GND
Y16	VSS	-	GND	GND
Y17	VSS	-	GND	GND
Y18	VSS	-	GND	GND
Y19	VSS	-	GND	GND
Y20	VSS	-	GND	GND
Y31	VSS	-	GND	GND
Y32	IO19	IO	3.3V	CIO RELAY
Y33	IO20	IO	3.3V	Option Cassette Solenoid
Y34	IO23	IO	3.3V	FANON2L

### 6.3.2. RTC Backup Circuit

#### 1. Function

This unit has a lithium battery (BAT300) which works for the Real Time Clock IC (RTC: inside IC300).

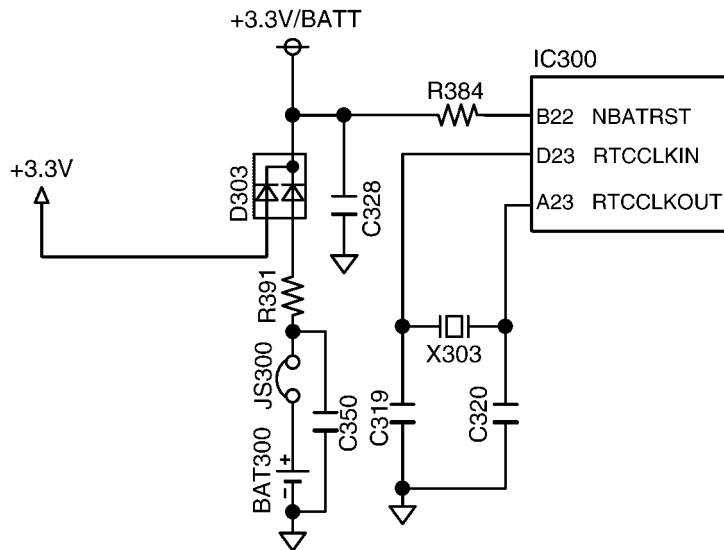
The RTC continues to work, backed up by a lithium battery even when the power switch is OFF.

#### 2. RTC Inside (IC300) Backup Circuit Operation

When the power switch is turned ON, power is supplied to the RTC (inside IC300). At this time, the voltage at pin B22 of the IC300 is +3.3V. When the power switch is turned OFF, the BAT300 supplies power to RTC through D303.

When the power switch is OFF and the voltage of +3.3V decreases, pin B22 of RTC (IC300) becomes roughly the same voltage as the battery voltage. RTC goes into the backup mode, in which the power consumption is lower.

**Circuit Diagram**



### 6.3.3. Modem Circuit Operation

The modem (Included IC300) has all the hardware satisfying the CCITT standards mentioned previously.

ALL processing is controlled by the SOC (IC300) according to CCITT procedures.

This modem (Included IC300) has an automatic application equalizer. With training signal 1 or 2 at the time of G3 reception, it can automatically establish the optimum equalizer.

#### Facsimile Transmission/DTMF Line Send

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

DAA IC100(6→9,10), Lineside DAA IC101 and the NCU section to the telephone line.

#### Facsimile Reception

The analog image data which is received from the telephone line passes through the NCU section and enters lineside DAA\*<sup>1</sup> IC101. The signals are changed to digital data in IC101 (5,6) ,IC100(9,10→5) 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.

\*<sup>1</sup> 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.

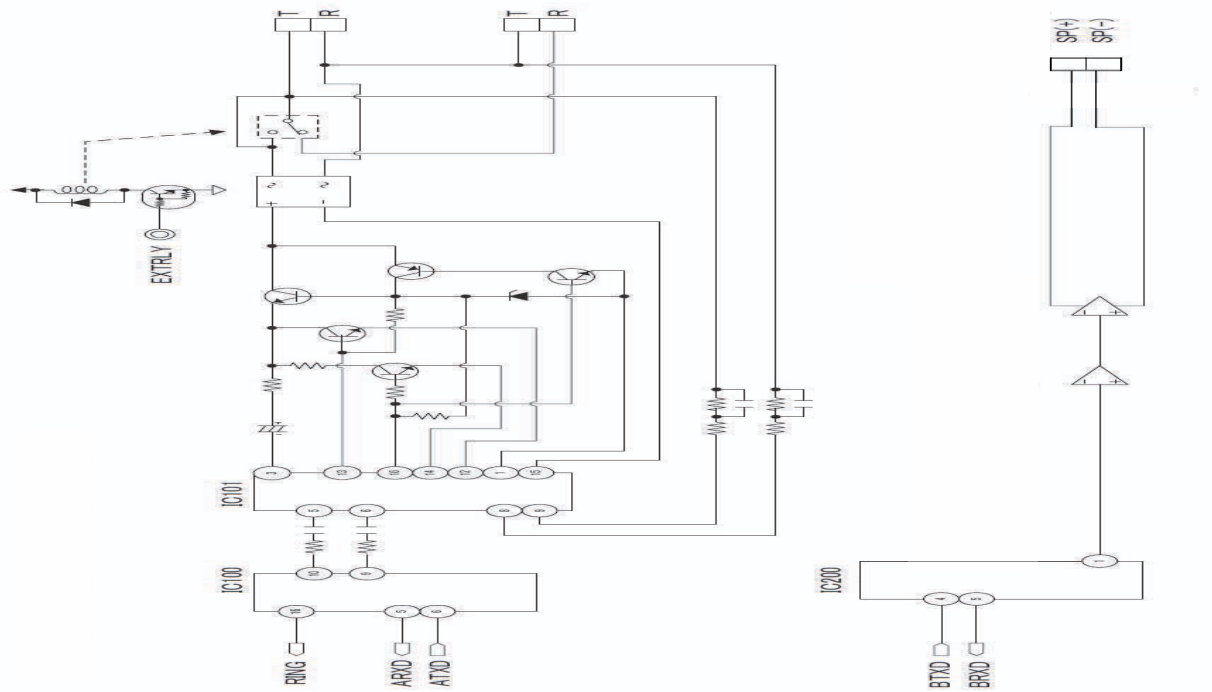
##### Circuit Operation

[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.33) for the details.

#### 6.3.4.2. Block Diagram





## 6.4. NCU Section

### 6.4.1. General

This section is the interface between the telephone line and external telephone. It is composed of an EXT. TEL line relay (RLY100), bell detection circuit, TAM interface circuit and line amplifier.

### 6.4.2. EXT. TEL. Line Relay (RY100)

#### 1. Circuit Operation

Normally, this relay switches to the external telephone side and switches to the open side while OFF-HOOK.

IC300 (R33) High Level→Q100 ON→RY100 (ON)

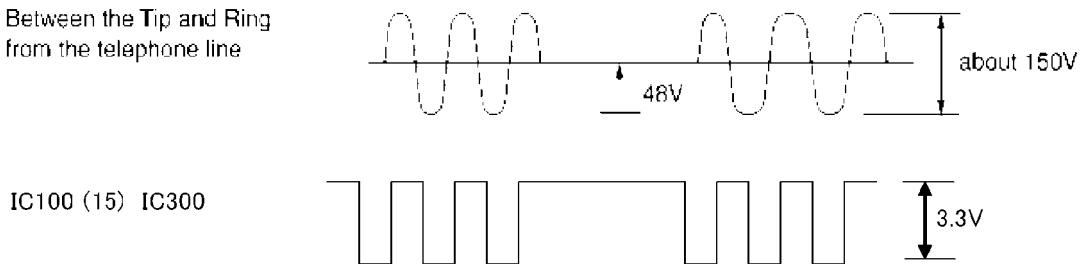
### 6.4.3. Bell Detection Circuit

#### 1. Circuit Operation

The signal waveform is indicated below. The bell signal input to IC101 and ring detected signal output from pin 15 of IC100. IC300 monitor this signal and judged as bell.

TEL LINE→IC101 (8,9 - 5,6)→IC100 (9,10 - 15)→IC300(AH32 and AN26)

Between the Tip and Ring  
from the telephone line



### 6.4.4. Calling Line Identification Circuit

#### 1. Function

This unit is compatible with the Caller ID service offered by your local telephone company. To use this feature, you must subscribe to a Caller ID service. The data for the caller ID from the telephone exchange is sent during the interval between the first and second rings of the bell signal. The data from the telephone exchange is a modem signal which is modulated in an FSK (Frequency Shift Keying) format. Data "0" is a 1200 Hz sine wave, and data 1 a 2200 Hz sine wave.

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

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

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

#### 2. Circuit Operation

The caller ID signal input from TEL LINE is processed with Soc (IC300).

TEL LINE→IC101 (8,9 - 5,6)→IC100 (9,10 - 5)→IC300(AK33)

### 6.4.5. Remote FAX Activation Circuit

#### 1. Function

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

#### 2. Signal Path

TEL LINE→IC101 (8,9 - 5,6)→IC100 (9,10 - 5)→IC300(AK33)

### 6.4.6. 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.34).

## 6.5. Monitor Section

### 6.5.1. General

The Monitor operation is performed by IC200. 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 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

TEL LINE→D103→Q104→C106→IC101(3-5,6)→IC100(9,10-5)→IC300(AK33-AK34)→IC200(4-1)→IC202(2-1)  
→IC204(4-5,8)→CN200(1,2)→SPEAKER

#### 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)

IC300(AK34)→IC200(4-1)→IC202(2-1)→IC204(4-5,8)→CN200(1,2)→SPEAKER

###### b. ALARM/BEEP/KEY TONE/BELL

IC300(W34)→IC202(2-1)→IC204(4-5,8)→CN200(1,2)→SPEAKER

#### 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)

TEL LINE→IC101 (8,9 - 5,6)→IC100 (9,10 - 5)→IC300(AK33)

###### b. Remote receiving

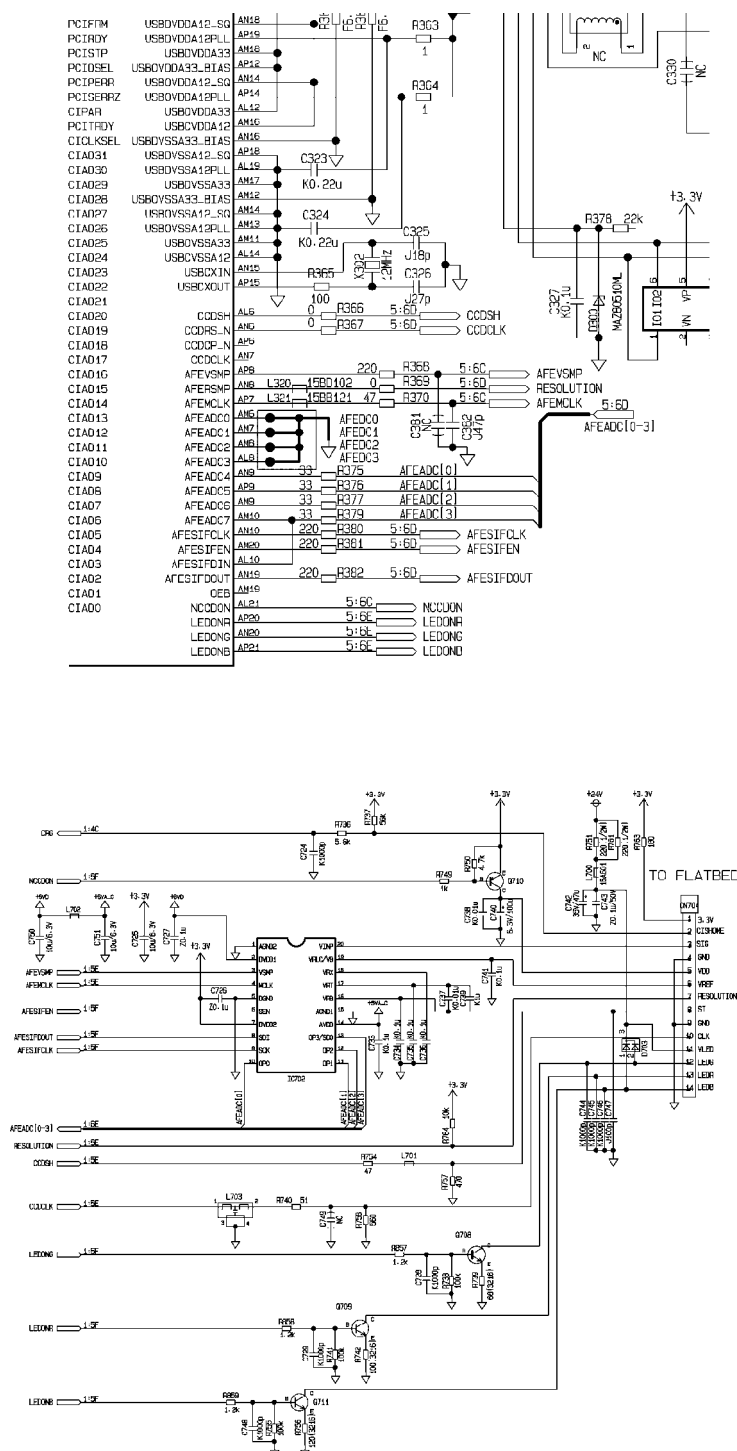
This is the parallel-connected DTMF signal for the TEL or EXT.TEL mode between T and R. When the other party is a FAX, the unit switches to FAX receiving.

(Signal Path)

TEL LINE→IC101 (8,9 - 5,6)→IC100 (9,10 - 5)→IC300(AK33)

## 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 Q710 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 IC702) and converted into 16-bit data by the A/D converter inside IC702. 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. Function

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 AN29/Output Signal: "H")

When this signal is inverted by transistor Q600 and becomes "L", motor recognize this signal as "start" signal.

2. Clock signal (Output pin: Pin AL27/Output Signal: Pulse)

Pulse frequency :approx. 1.77KHz (at normal printing speed,)

Pulse frequency :approx. 0.89KHz.(at half printing speed)

This signal is also inverted by transistor Q610, and supplied to motor as "clock" signal.

3. Brake signal (Output pin: Pin AL29/Output Signal: "H")

When this signal is inverted by transistor Q614 and becomes "L", motor recognize this signal as "brake off" signal.

When motor reaches constant speed, "L" signal is supplied from pin 5/CN602 as "Lock detect (LD)" signal.

This signal is delayed by R601 and C608, then conducted to Q604 and Q608 so as to sharpen the signal transition.

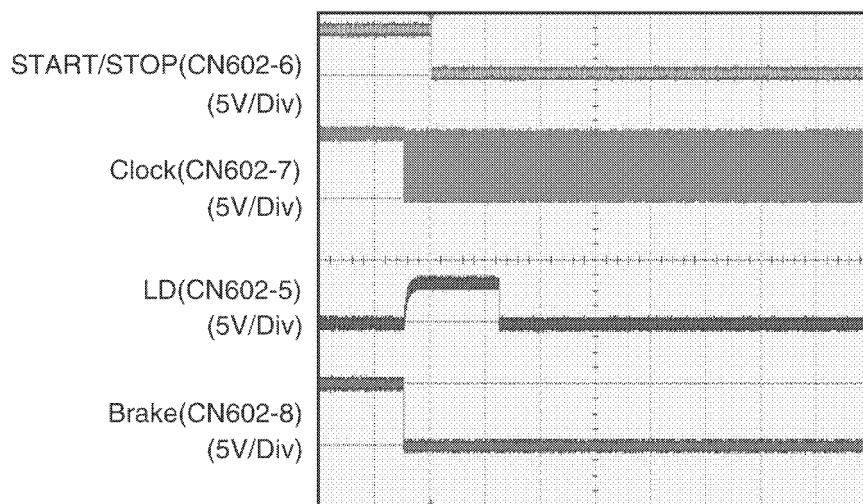
After that, LD signal is supplied to IC300 pin AM29.

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

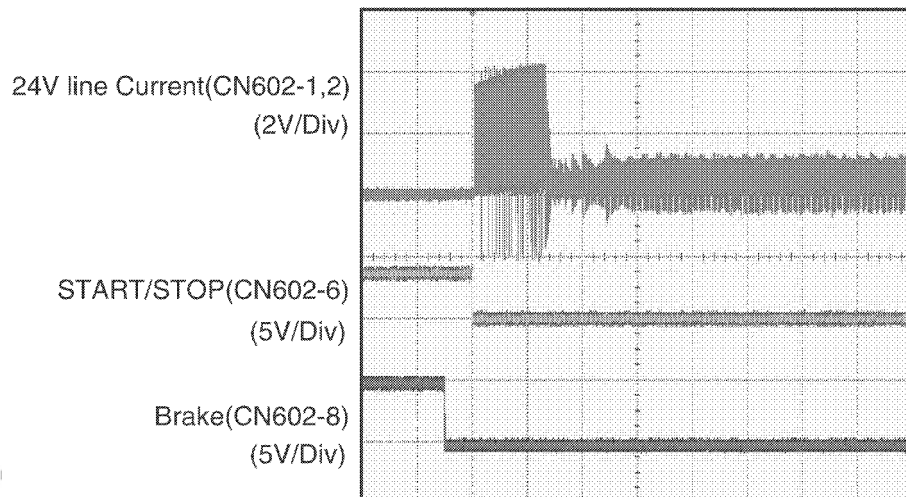
(1) Signals

H:100msec/Div



(2) Current Waveform

H:100msec/Div



## &lt;Stop operation&gt;

In order to stop the motor rotation, following 2 signals are supplied from IC300.

1. SS signal (Output pin: Pin AN29/Output Signal: "L")

When this signal is inverted by transistor Q600 and becomes "H", motor recognize this signal as "stop" signal.

2. Brake signal (Output pin: Pin AL29/Output Signal: "L")

When this signal is inverted by transistor Q614 and becomes "H", motor recognize this signal as "brake on" signal.

## Timing Chart of Stop operation

(1) Signals

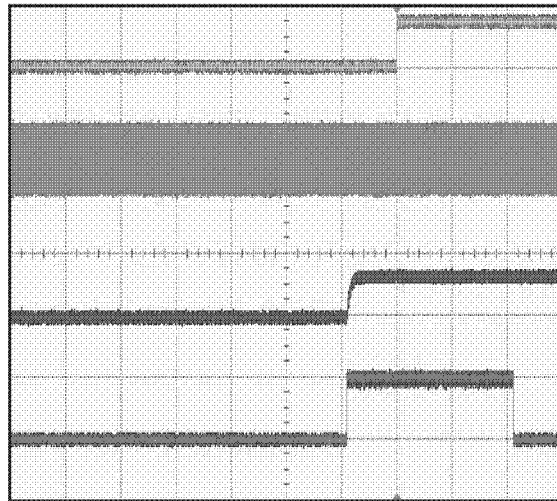
H:100msec/Div

START/STOP(CN602-6)  
(5V/Div)

Clock(CN602-7)  
(5V/Div)

LD(CN602-5)  
(5V/Div)

(5V/Div)



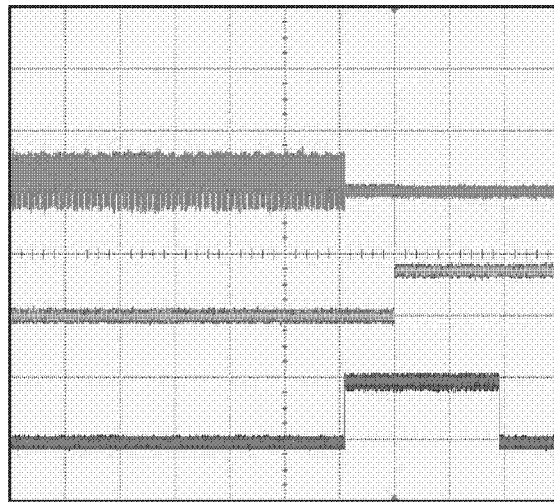
(2) Current Waveform

H:100msec/Div

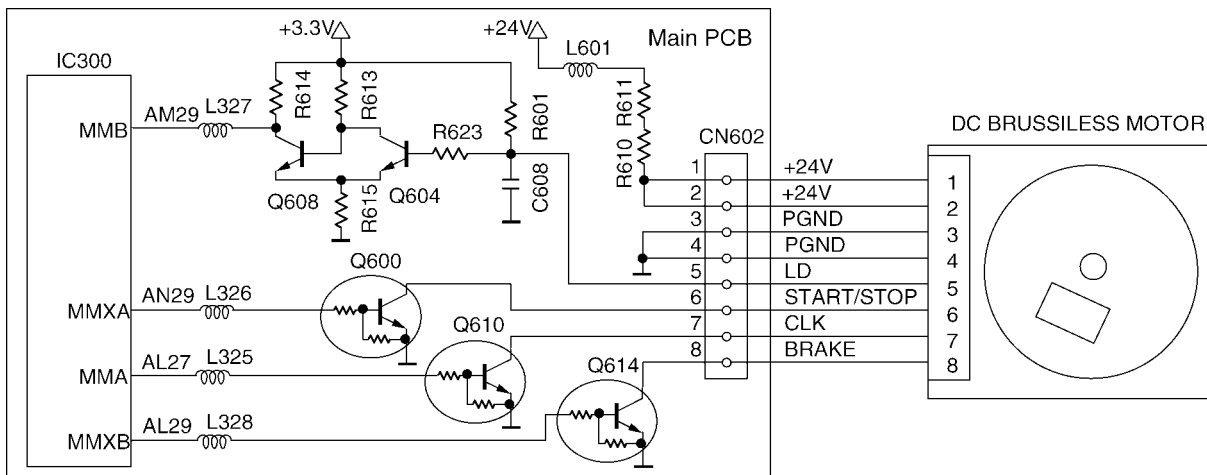
24V line Current(CN602-1,2)  
(2V/Div)

START/STOP(CN602-6)  
(5V/Div)

Brake(CN602-8)  
(5V/Div)



## 6.7.1.1. Engine Motor Drive Circuit



## 6.7.2. Scanner Motor Drive Circuit

### 6.7.2.1. General

Scanner motor drive circuit is consist of motor driver, motor current control circuit , over current protection circuit and Relay drive circuit.

One motor driver IC controls both FB (Flat Bed) and ADF (Auto Document Feeder) motors.

Output of motor driver is alternatively selected by the relay circuit.

#### (1) FB Motor

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

This motor feeds CIS unit with synchronizing for scanning.

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

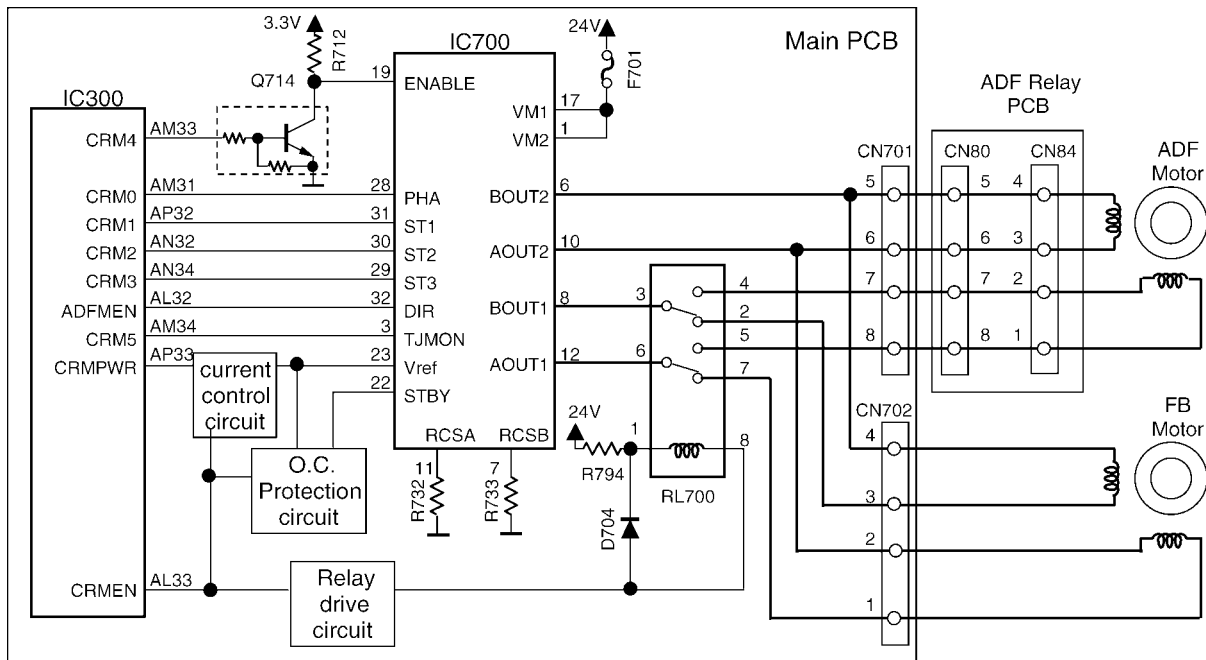
#### (2) ADF Motor

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

This motor feeds document which are set to ADF with synchronizing for scanning.

A 1-step rotation of this motor feeds 0.042mm of document.

### 6.7.2.2. Block Diagram of Scanner motor Drive circuit



### 6.7.2.3. Explanation of each circuit

#### 6.7.2.3.1. Motor driver

IC700 is the motor driver AN44067A.

This IC can drive up to 2.6A/phase and support up to 2W1-2 phase excitation.

When "enable" signal (IC700\_pin19) becomes "L", motor driver is activated, and motor current are supplied from IC700\_pin6, pin8, pin10 and pin12 to drive the motor coil.

Type of excitation is selected by the logic level of "ST1"(IC700\_pin31), "ST2"(pin30) and "ST3"(pin29).

The operation of IC700 is shown in below table corresponding to each logic level of enable, ST1, ST2 and ST3.

Table1:Motor driver operation mode

Enable (IC700_ pin19)	ST1 (IC700_ pin31)	ST2 (IC700_ pin30)	ST3 (IC700_ pin29)	Operation Mode
H	-	-	-	Motor stop
L	L	L	L	2Phase Excitation (Not used)
L	L	H	L	N1-2 Excitation
L	H	L	L	F1-2 Excitation
L	H	H	L	W1-2 Excitation
L	L	L	H	2W1-2 Excitation

IC700\_pin32 determines the direction of motor rotation.  
For the direction of motor rotation, refer to the below table.

Table2:Motor rotation direction

Mode	Dir(IC700_pin32)	Operation Mode
FB	H	Scan
	L	Return
ADF	H	Reverse (Feed Roller UP)
	L	Feed

After setting the above signals, clock signal is supplied from IC300\_pinAM31 to PHA(IC700\_pin28).  
Whenever clock signal is supplied, IC700 output current value and direction are changed according to the above signal levels.  
The frequency of clock signal also determines the motor speed.  
"TJMON" signal is supplied from IC700\_pin3 which informs IC300 the stability point of motor excitation.  
When this signal "L", IC300 recognizes that current status is motor stability point.

#### 6.7.2.3.2. Motor current control circuit

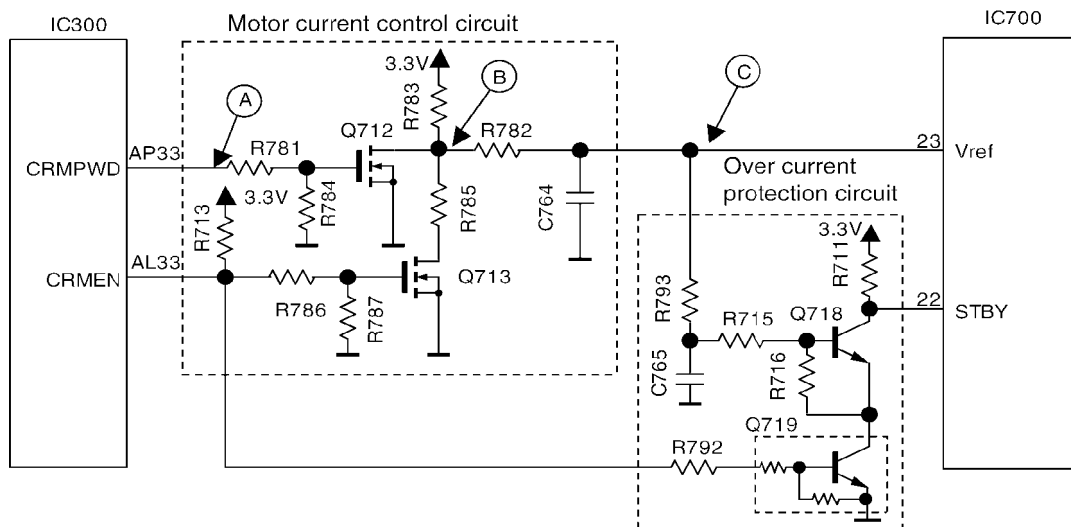
According to the scan speed, motor current is controlled for appropriate value.  
For example, when scan speed is low, motor has enough driving force.  
So to prevent the vibration and noise during motor rotation, motor drive current should be reduced.  
When scan speed is high, motor needs much driving force. so much current should be supplied.

In order to control the motor current, Vref voltage of IC700 is controlled.  
When Vref voltage is high, motor current is increased, and the voltage is low, motor current is reduced.

For the control of Vref voltage, PWM pulse is supplied from IC300\_pinAP33 .  
PWM pulse is inverted by FET Q712 and integrated by R783, R782, and C764.  
Consequently PWM pulse is converted to DC voltage.  
When duty of PWM pulse is high, Vref voltage is decreased and when duty is low, Vref voltage is increased.

"CRMEN(IC300\_pinAL33)" is the select signal of FB and ADF.  
In ADF mode, this signal is "L" and FET Q713 turns OFF. Then the max voltage of Vref become 3.3V.  
In FB mode, since FB motor need less current than ADF motor, this signal is "H" and FET Q713 turns On.  
Then the max Vref voltage is divided by R783 and R785, makes max Vref voltage approx 1.1V

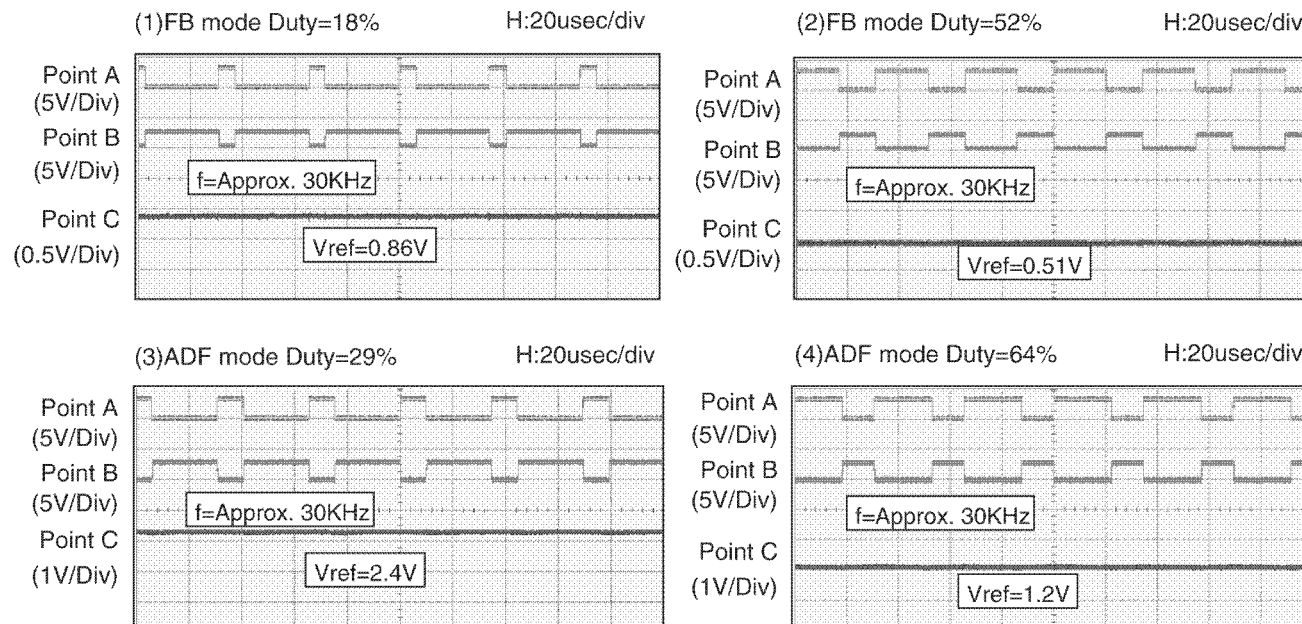
#### 6.7.2.4. Circuit diagram of motor current control and Over current protection circuit





### 6.7.2.5. Timing chart of current control

Following timing charts are the example of Vref voltage corresponding to PWM pulse duty.



### 6.7.2.6. Over Current protection circuit

#### 6.7.2.6.1. Function

By parts failure or other reason, if Vref voltage exceeds 1.2V, extreme current is supplied to the FB motor. This may cause FB motor over heat and damage.

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

In FB mode, if Vref voltage becomes over 1.2V, Q718 turns on. Then STBY (IC700\_pin22) becomes "L" and IC700 stops output the motor current.

Q719 is provided to operate this protection circuit only in FB mode.

#### 6.7.2.6.2. Circuit diagram

Refer to the circuit diagram (Circuit diagram of motor current control and Over current protection circuit (P.39).)

### 6.7.2.7. Relay Drive circuit

#### 6.7.2.7.1. Function

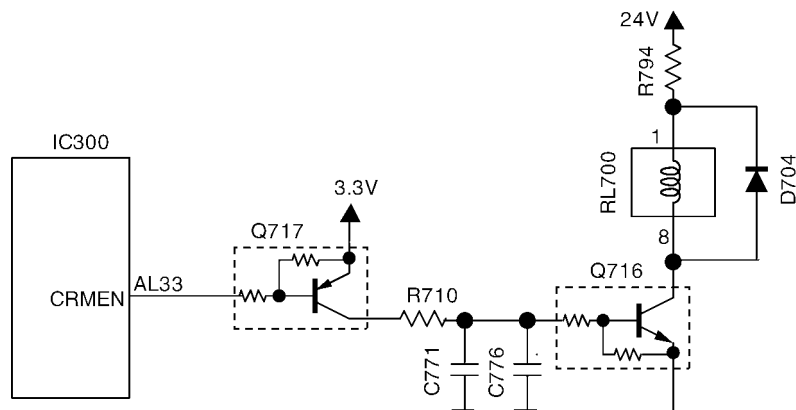
A relay is used to select which motors should be supplied the motor control current from IC700.

When relay is off, FB motor is selected, and when relay is on, ADF motor is selected.

In case of IC300\_pinAL33 is "H", since both Q717 and Q715 are turned off, the relay RL700 is not activated (FB motor is selected).

On the other hand, IC300\_pinAL33 is "L", since both Q717 and Q715 are turned on, the relay RL700 is activated (ADF motor is selected).

#### 6.7.2.7.2. Circuit diagram





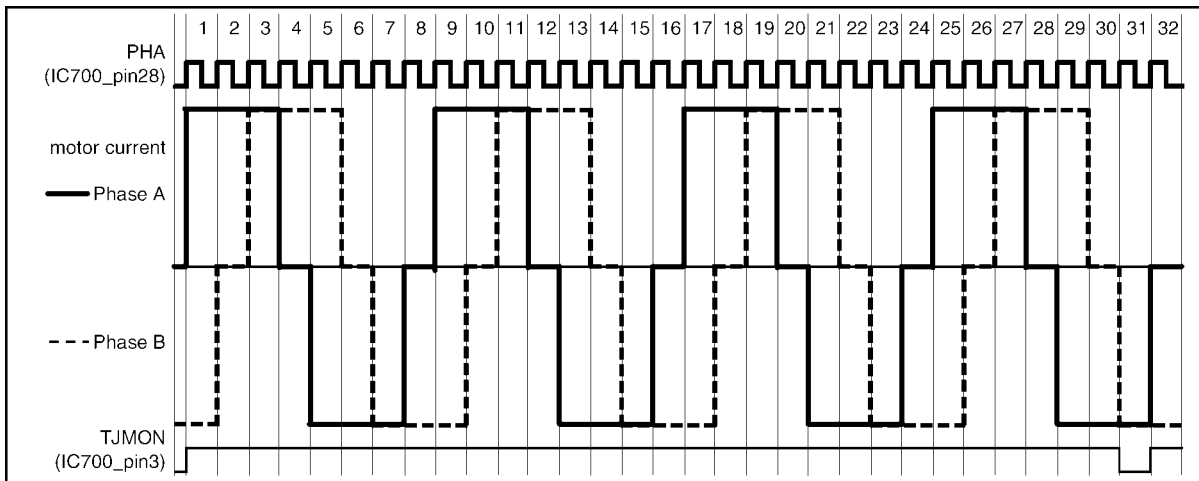
### 6.7.2.8. Timing chart and wave form of scanner motors

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

#### 6.7.2.8.1. Normal 1-2 phase excitation (half step)

ST1="L",ST2="H",ST3="L"

(1) Timing chart



(2) Wave form

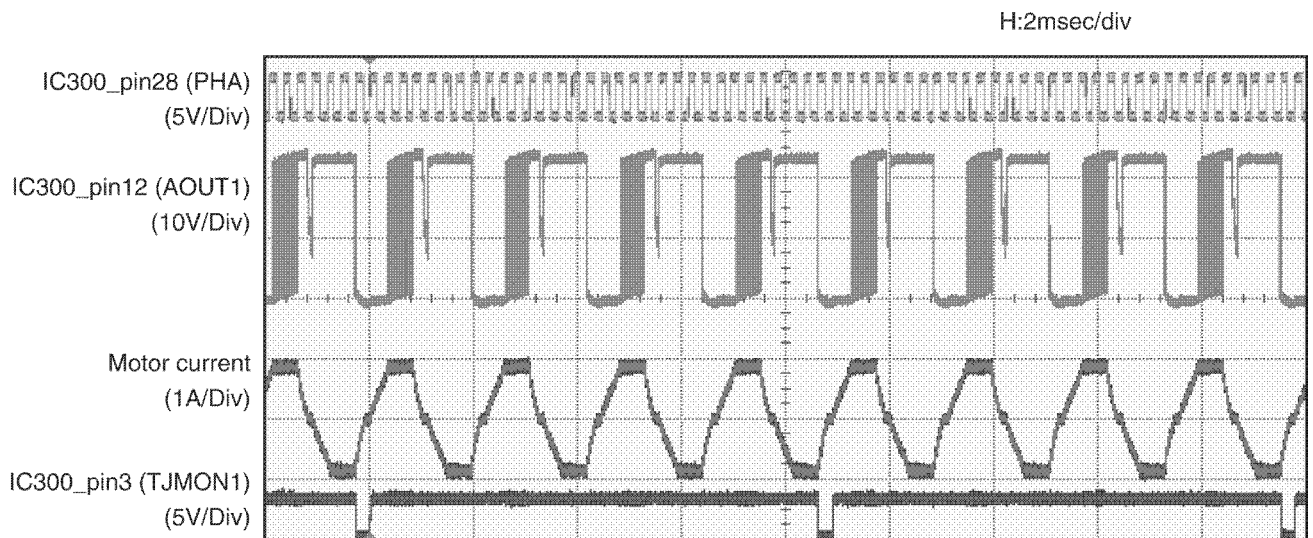
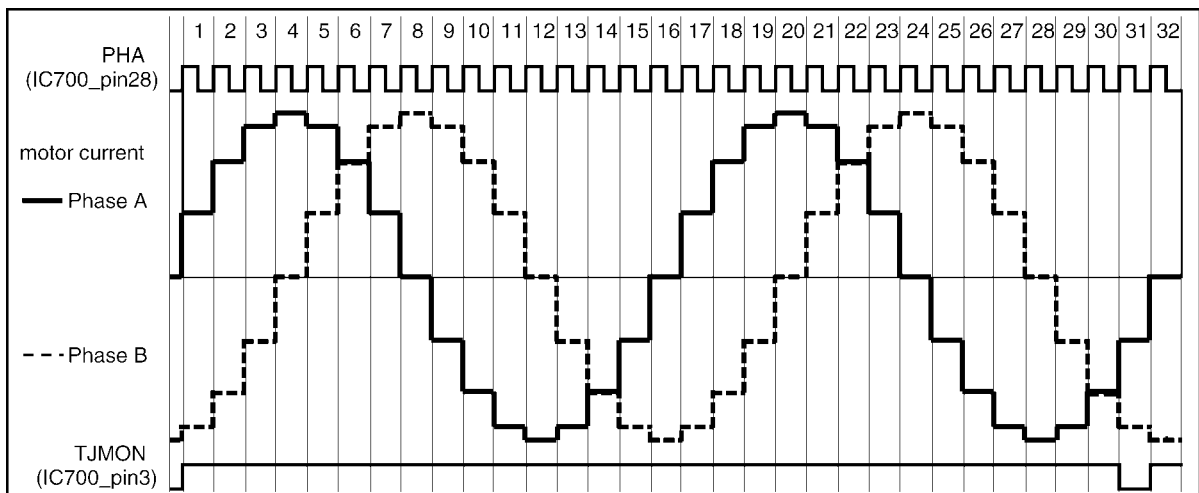


Fig. 1

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

ST1="H",ST2="L",ST3="L"

(1) Timing chart



## (2) Wave form

H:2msec/div

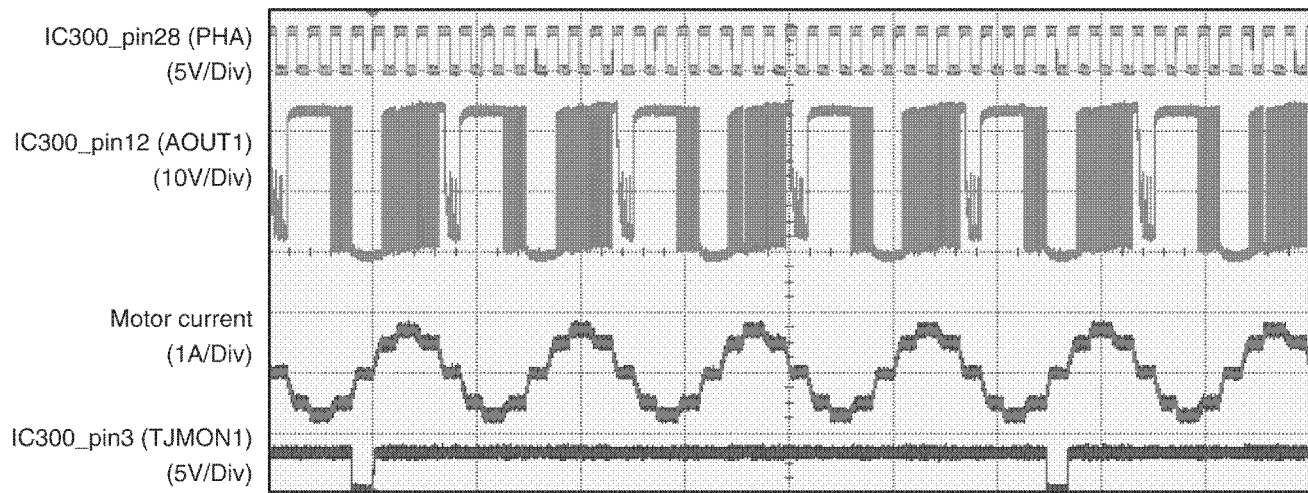
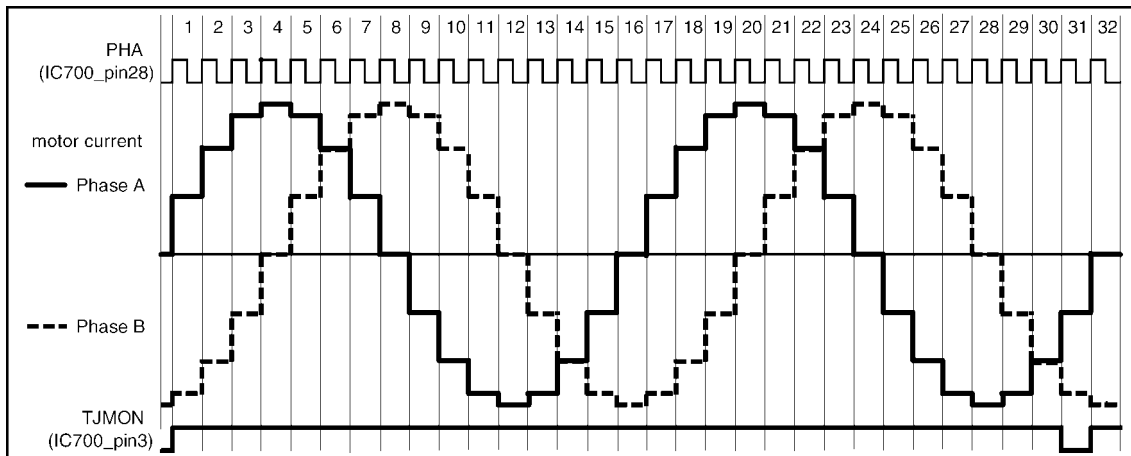


Fig. 2

**6.7.2.8.3. W1-2 phase excitation (Quarter step)**

ST1="H",ST2="H",ST3="L"

## (1) Timing chart



## (2) Wave form

H:2msec/div

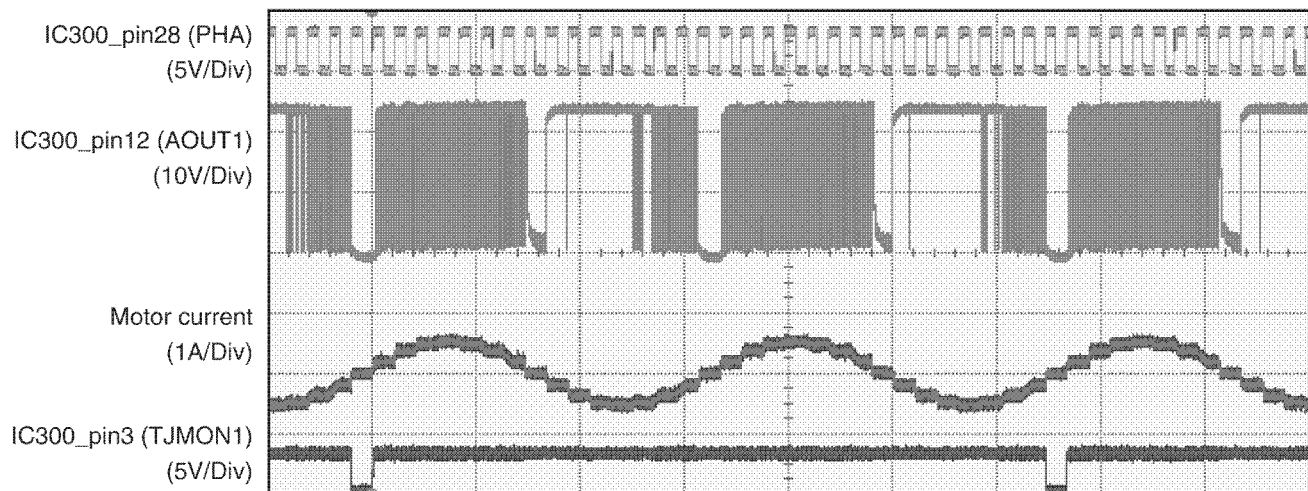
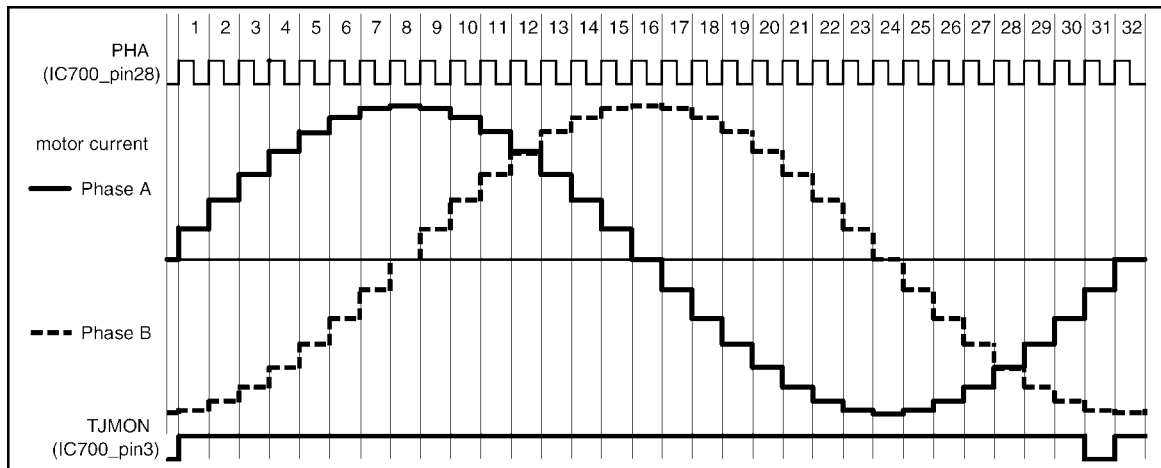


Fig. 3

#### 6.7.2.8.4. 2W1-2 phase excitation (Octal step)

ST1="L",ST2="L",ST3="H"

(1) Timing chart



(2) Wave form

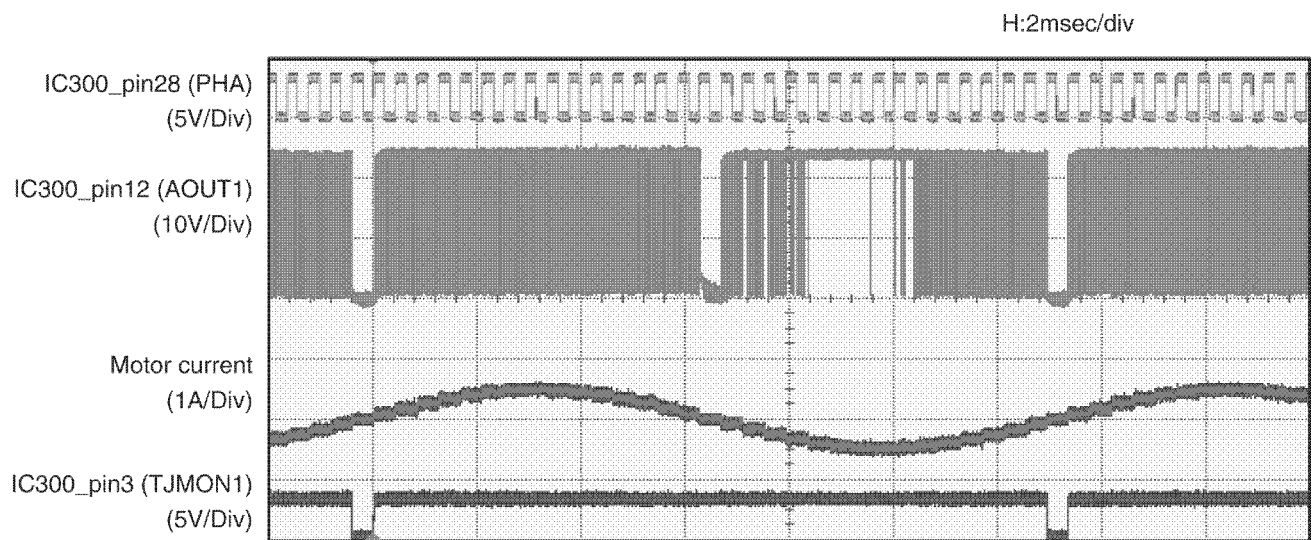


Fig. 4

## 6.7.2.9. Drive mode of FB and ADF motor

### 6.7.2.9.1. Correspondent table of operation

				Resolution (dpi)									
Operation	Color mode	ADF/FB	Time & Figure	Pre Scan	75	100	150	200	300	400	600	1200	>2400
					x	x	x	x	x	x	x	x	
					75	100	150	200	300	400	600	1200	
PC scan	Color	ADF	T(msec)	0.42						0.63			
			Figure	①	③						④		
		FB	T(msec)	0.28			0.42			0.31		0.56	1.25
			Figure	①			②			④			
	Black & White	ADF	T(msec)	0.28					0.42				
			Figure	①					③				
		FB	T(msec)	0.21					0.42		0.31		
			Figure	①					②		③	④	

				Copy magnification					
				Copy mode					
Operation	Color mode	ADF/FB	Time & Figure	Text	Text/Photo	Photo	Text	Text/Photo	Photo
Copy	Black & White	ADF (non Sort)	T(msec)	0.29		0.58	0.29		0.58
			Figure	①			①		
		ADF (Sort)	T(msec)	0.29		0.58	0.29		0.58
			Figure	①			①		
		FB	T(msec)	0.21		0.42	0.21		0.42
			Figure	①			①		

FAX mode				Standard	Fine	Super Fine	Photo
Operation	Color mode	ADF/FB	Time & Figure				
FAX(*)	Black & White	ADF	T(msec)	0.42			
			Figure	③			
		FB	T(msec)	0.42			
			Figure	②			

"T" represents the PHA period.  
 "Figure" shows the waveform  
 No. in "6.7.2.8 Timing chart and  
 wave form of scanner motors"

## 6.7.3. Optional Lower input Tray Motor (OPF Motor) Drive circuit

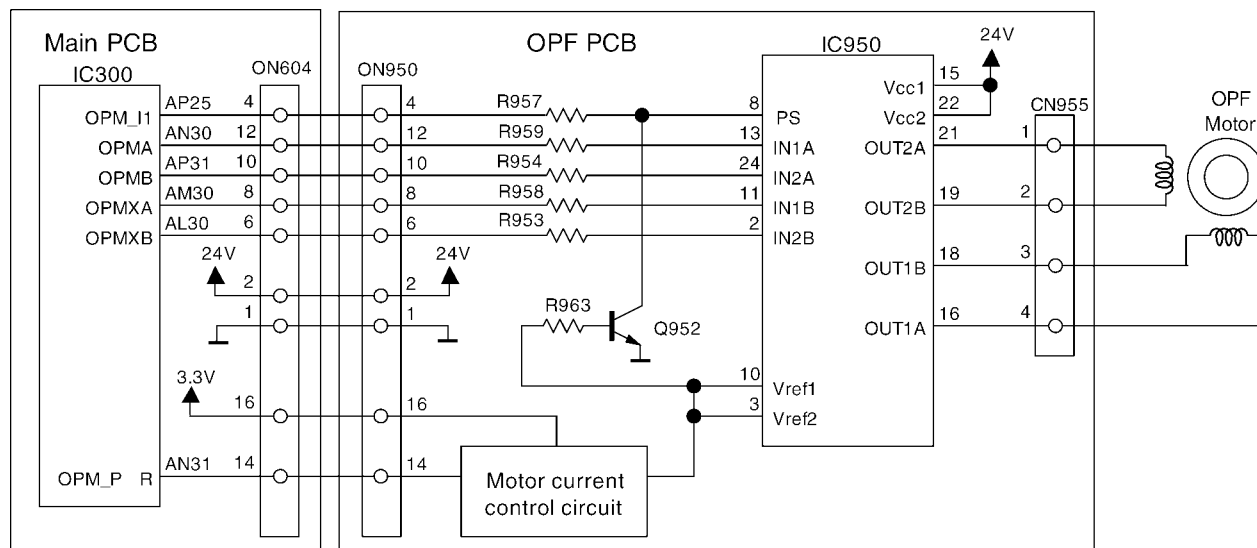
### 6.7.3.1. General

This MFP can add Optional Lower input Tray for improving the performance.

OPF motor feed the paper in this tray to the registration roller.

OPF motor drive circuit is consist of motor drive IC (IC950), current control circuit, and over current protection circuit.

### 6.7.3.2. Circuit Diagram



### 6.7.3.3. Explanation of each circuit

#### 6.7.3.3.1. Motor driver IC

IC950 is the motor driver BD6396EFV.

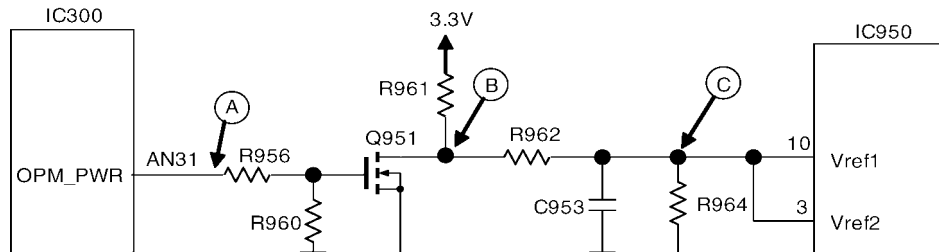
This IC can drive up to 1.5A/phase and support 2 phase and 1-2 phase excitation.

During motor driving, IC300\_pin AN25 becomes "H" then motor driver IC950 is activated.

Stepping pulses are output from IC300\_pin AN30, AP31, AM30, and AL30. and motor current are supplied from IC950\_pin 16, 18, 19 and 21 to drive the motor coil.

Rotation speed of this motor is 950pps/2 phase excitation at high speed printing mode, and 950pps/1-2 phase excitation at half speed printing mode.

#### 6.7.3.3.2. Motor current control circuit



#### 6.7.3.3.3. Circuit explanation

According to the print speed, motor current is controlled for appropriate value.

When print 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 print speed is high, motor needs much driving force. so much current should be supplied.

In order to control the motor current, Vref voltage of motor driver is controlled.

When Vref voltage is high, motor current is increased, and the voltage is low, motor current is reduced.

For the control of Vref voltage, PWM pulse is supplied from IC300\_pin AN31.

PWM pulse is inverted by FET Q951 and integrated by R961, R962, and C953.

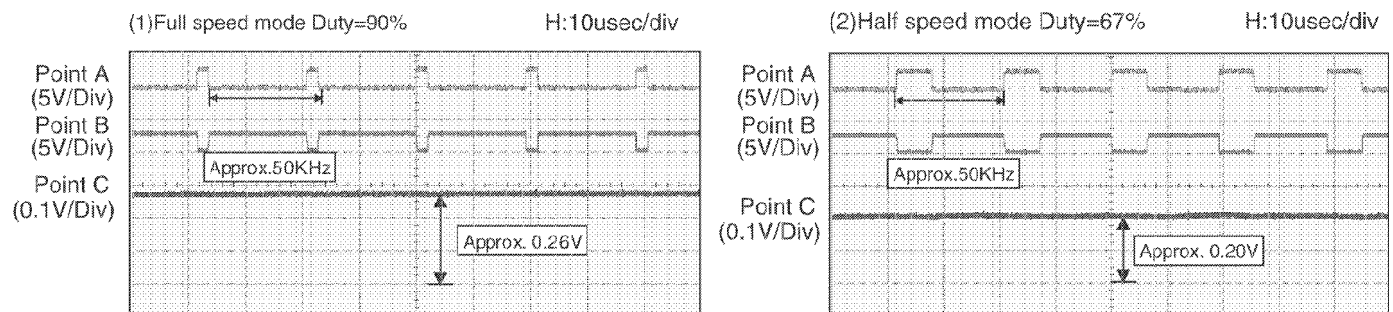
Thus PWM pulse is converted to DC voltage, and is supplied to Vref pin of motor driver IC950.

When duty of PWM pulse is high, Vref voltage is decreased and when duty is low, Vref voltage is increased.

In full speed printing mode, motor current is controlled approx. 1A, and in half speed mode, motor current is controlled approx. 0.8A.

#### 6.7.3.3.4. Timing chart of current control

Following timing charts are the example of Vref voltage corresponding to PWM pulse duty.



#### 6.7.3.3.5. Over current protection circuit

By parts failure or other reason, if Vref voltage exceeds 0.8V, extreme current is supplied to the OPF motor and may cause some damage to OPF motor.

To prevent this problem, Q952 and R963 are provided for over current protection.

If Vref voltage exceeds 0.8V, Q952 turns on. Then PS signal (IC950\_pin8) becomes "L".

As the result, IC950 stops output the motor current.

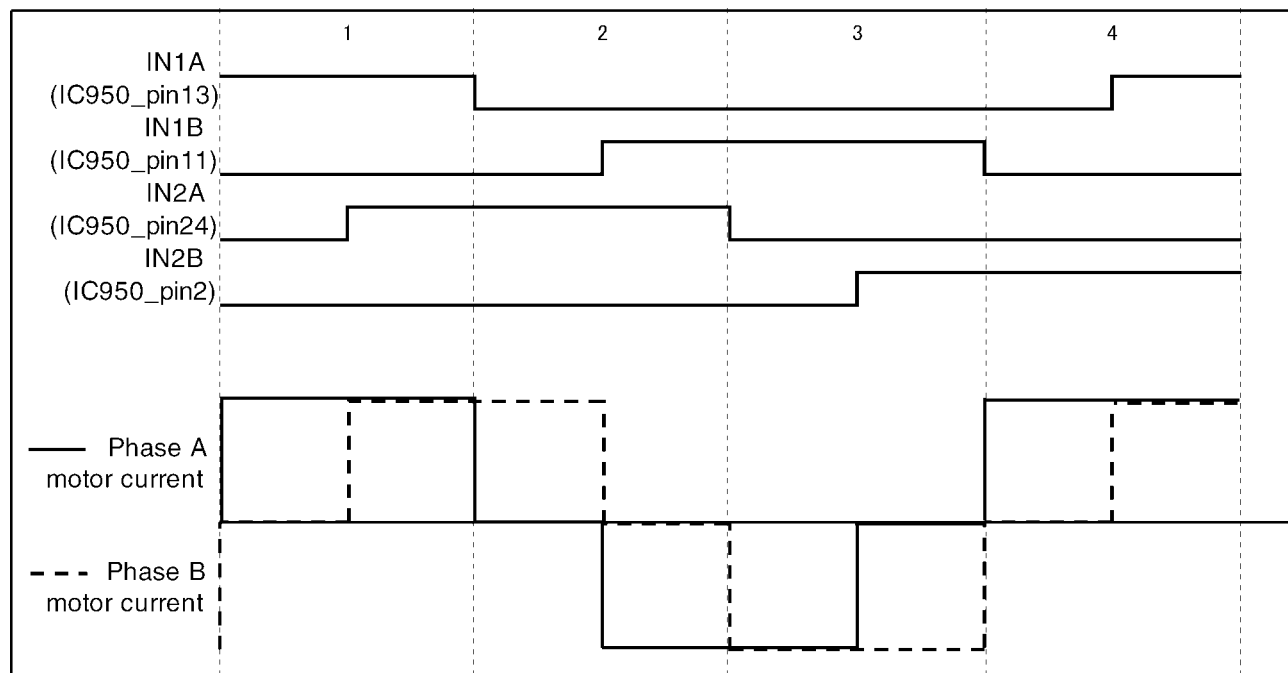


### 6.7.3.4. Timing chart and waveform of OPF motor

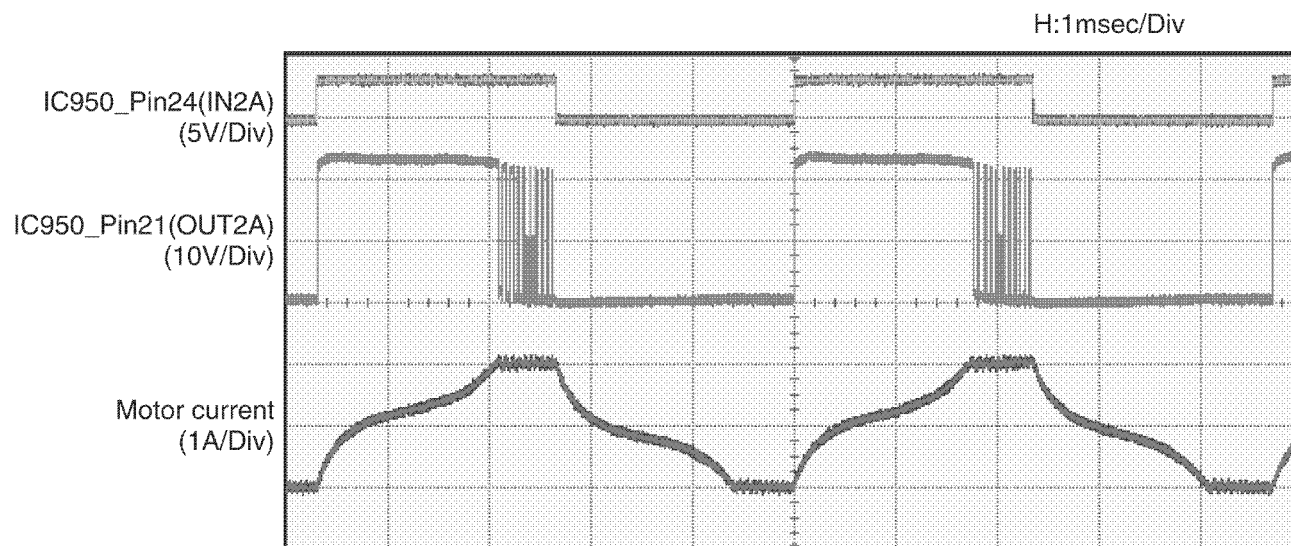
Control sequence and waveform of OPF motor are as follows.

#### 6.7.3.4.1. 2 phase excitation

(1) Timing chart

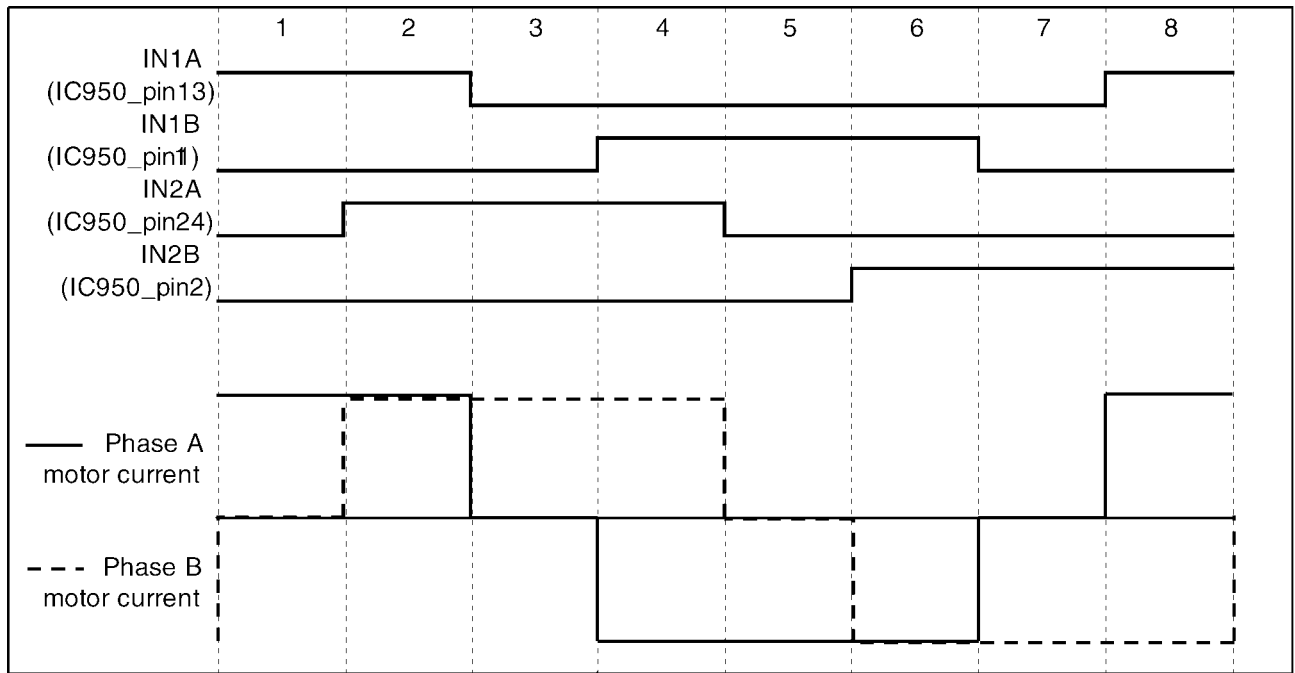


(2) Wave form

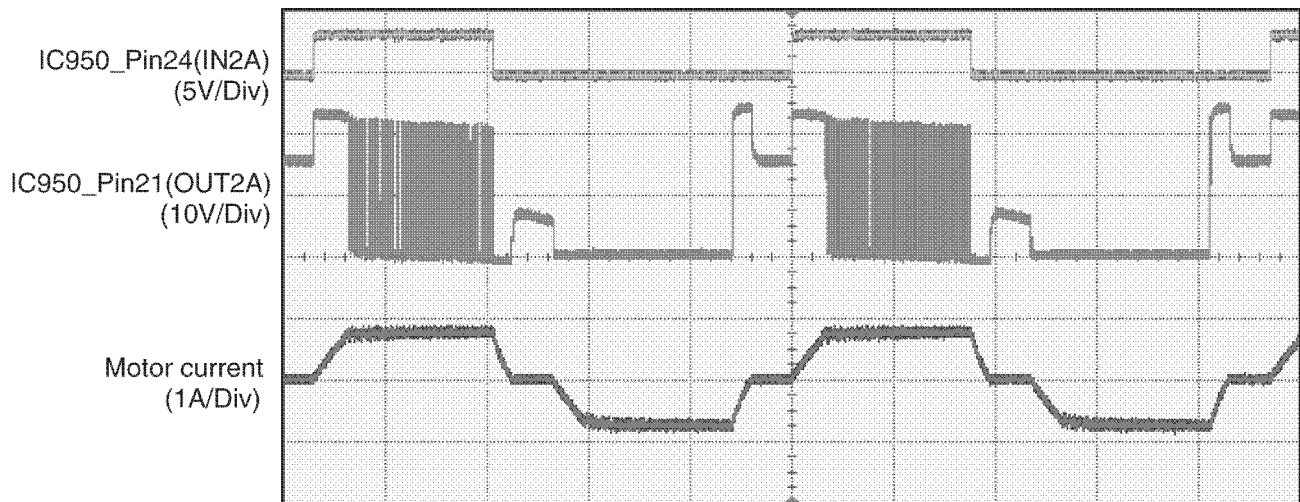


### 6.7.3.4.2. 1-2 phase excitation

(1) Timing chart



(2) Wave form



## 6.8. FAN Motor Section

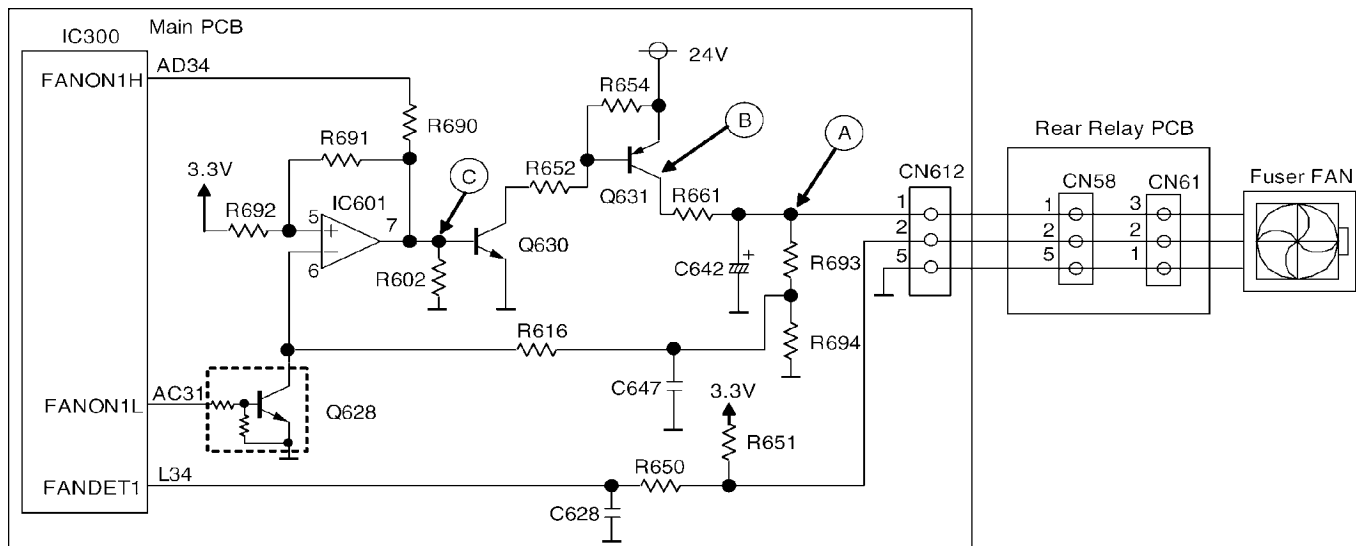
### 6.8.1. General

This unit is equipped with two FANs to prevent the developing devices and Power Supply Unit (PSU) 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.

## 6.8.2. Circuit Diagram of FAN1 (Fuser FAN)



### 6.8.3. FAN1 Control

For the control of FAN speed, comparator IC (IC601) 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.

#### 6.8.3.1. Full Speed Mode

When IC300\_pinAC31 is "H", Q628 turned on and input level of IC601\_pin6 becomes almost 0V.

And since IC601\_pin5 is 3.3V, output of IC601\_pin7 becomes "OPEN".

When IC300\_pinAD34 is "H", both Q630 and Q631 are turned on, then 24V is supplied to FAN through R661.

Therefore FAN rotates with full speed.

#### 6.8.3.2. Half Speed Mode

When IC300\_pinAC31 is "L", Q628 turned off and input level of IC601\_pin6 is determined by the voltage of between R694.

If voltage between R694 is less than 3.3V, and when IC300\_pinAD34 is "H", output of IC601\_pin7 becomes "H".

Then both Q630 and Q631 are turned on. So voltage between R694 rises gradually.

When the voltage of R694 exceeds 3.3V, output of IC601\_pin7 becomes "L".

Then both Q630 and Q631 are turned off. So voltage between R694 falls gradually.

By repeating these sequence, voltage between R694 is controlled almost 3.3V.

On the other hand, if FAN voltage is represented  $V_o$  and voltage between R694 is represented  $V_L$ ,  $V_L$  is shown as below formula.

$$V_L = V_o \cdot R_{694} / (R_{693} + R_{694}) \rightarrow V_o = V_L \cdot (R_{693} + R_{694}) / R_{694}$$

Since each values are as follows,  $V_o$  is determined almost 10(V).

$$V_L = 3.3(V), R_{693} = 160(Kohm), R_{694} = 75(Kohm)$$

$$V_o = 3.3 \cdot (160K + 75K) / 75K = 10.3(V)$$

Therefore FAN rotates with half speed.

#### 6.8.3.3. FAN stop

When IC300\_pinAD34 is "L", both Q630 and Q631 are turned off, then FAN stops.

#### 6.8.3.4. Rotation detect signal

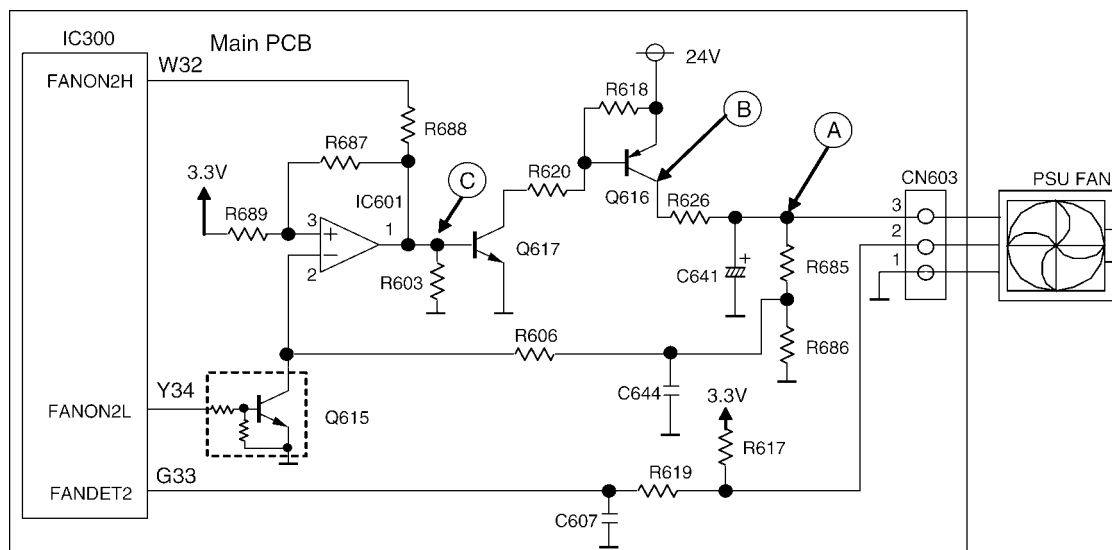
During the FAN rotation, the pulse signal is output from pin 2 of FAN1 as the rotation detect signal.

If the period of the pulse is wider than prescribed value, it is judged that FAN error occurred.

Then display shows "Call Service 4"(Fuser FAN Error) **CALL SERVICE 4** (P.153).



### 6.8.4. Circuit Diagram of FAN2 (PSU FAN)



### 6.8.5. FAN2 Control

The control sequence is same as FAN1. Please refer to the explanation in **FAN1 Control** (P.48).

If FAN error is occurred, display shows "Call Service 11"(PSU FAN Error) **CALL SERVICE 11** (P.158).

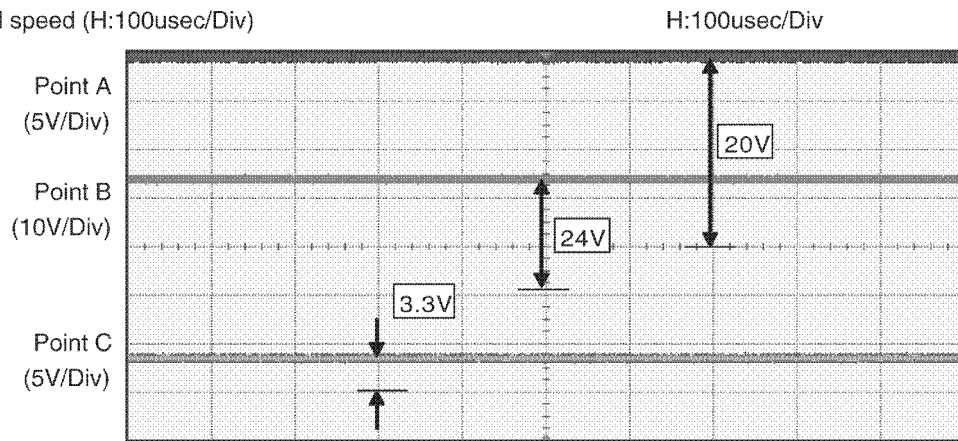
### 6.8.6. Control table

FANON1H (IC300_pinAD34)	FANON1L (IC300_pinAC31)	FAN1 mode
H	H	Full speed
L	H	stop
H	L	Half speed
L	L	Stop

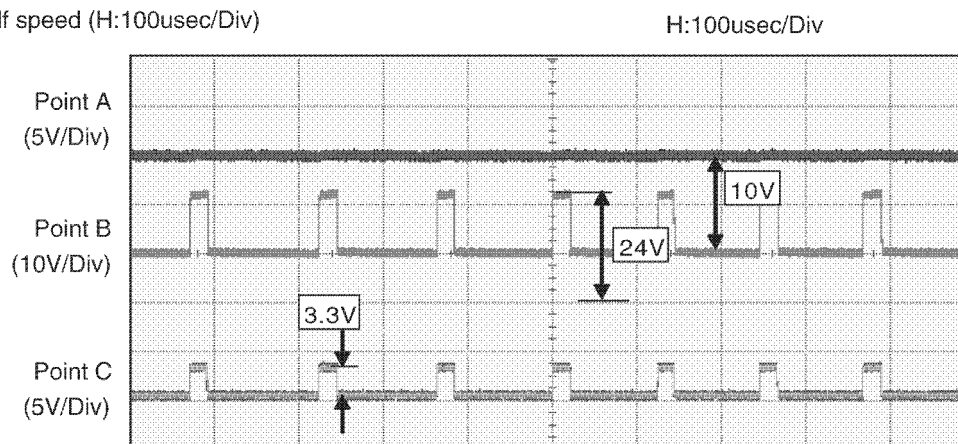
FANON2H (IC300_pinW32)	FANON2L (IC300_pinY34)	FAN2 mode
H	H	Full speed
L	H	stop
H	L	Half speed
L	L	Stop

## 6.8.7. Waveform

(1) Full speed (H:100usec/Div)



(2) Half speed (H:100usec/Div)



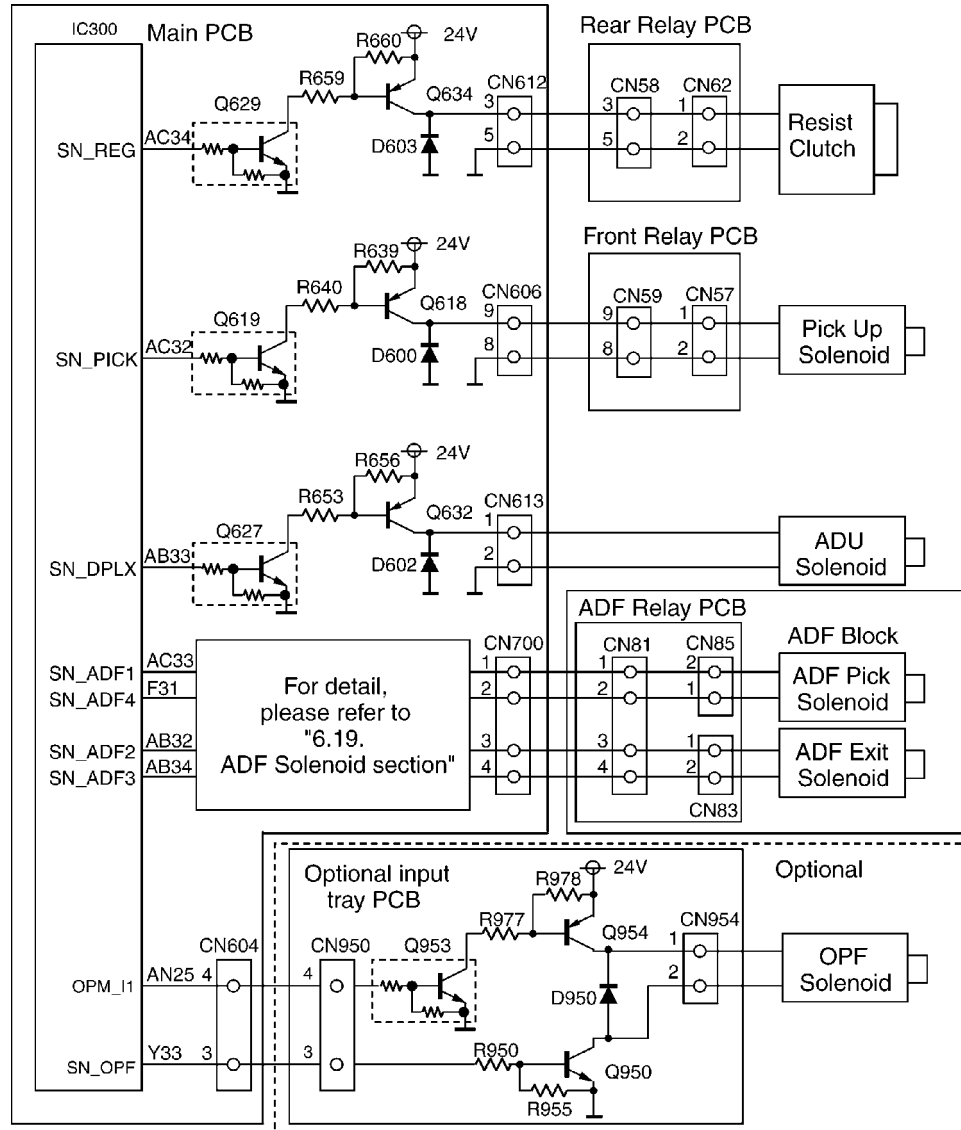
## 6.9. Solenoid and clutch Driver Section

The solenoid and clutch drive circuit controls Resist Clutch, Pick solenoid, ADU solenoid, and ADF solenoids.

These solenoids and clutch are designed to be driven 24V.

The diodes protect transistors from reverse generated voltage when solenoids are turned off.

### 6.9.1. Circuit Diagram

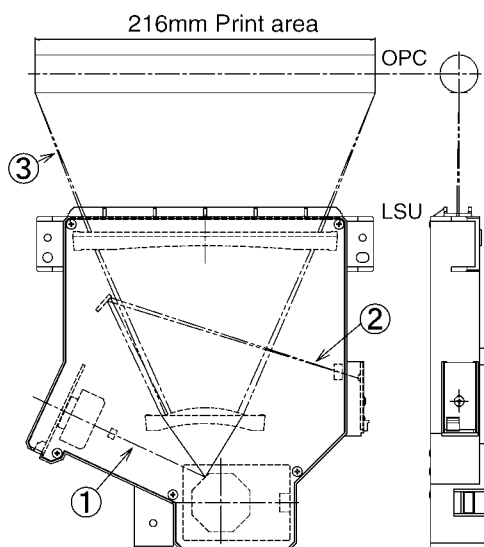


### 6.9.2. Active Logic

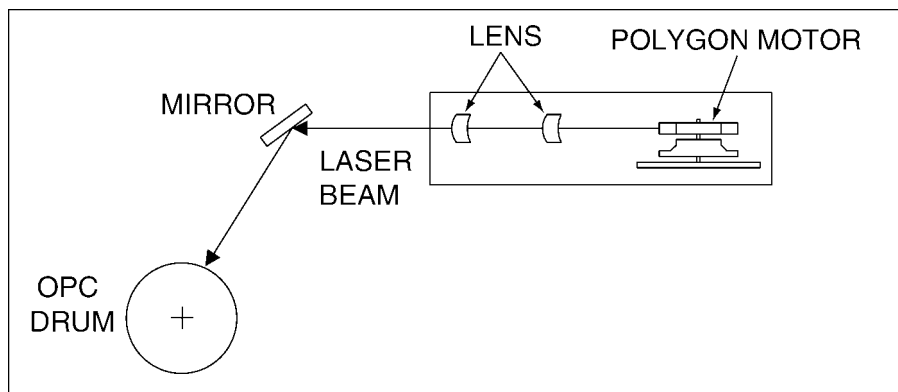
Name	Control port & Logic			Function
Resist clutch	Port	IC300_AC34		-
	Logic	H		ON
		L		OFF
PickUP Solenoid	Port	IC300_AC32		-
	Logic	H		ON
		L		OFF
ADU Solenoid	Port	IC300_ACB33		-
	Logic	H		ON
		L		OFF
OPF Solenoid	Port	IC300_AN25	IC300_Y33	-
	Logic	L	L	OFF
		H	L	OFF
		L	H	OFF
		H	H	ON

## 6.10. LSU (Laser Scanning Unit) Section

### 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).



### 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.

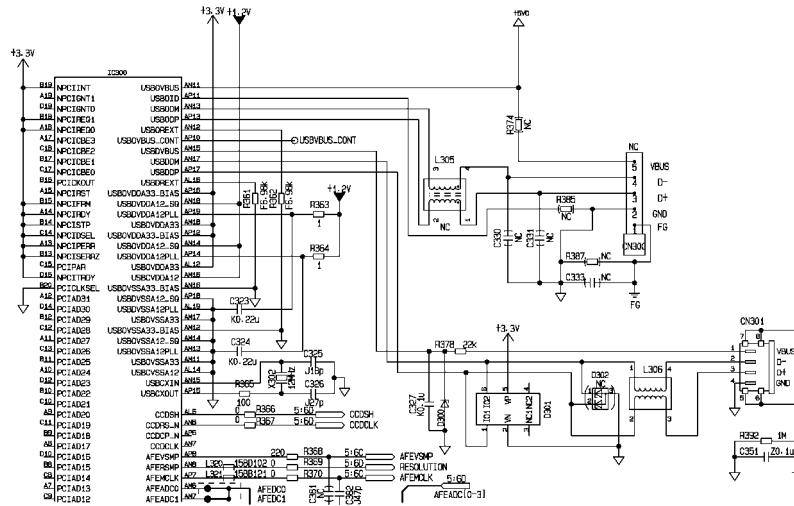
VBUS: CN301 1pin

D+: CN301 3pin

D-: CN301 2pin

GND: CN301 4pin

### Circuit Diagram



### Sequence of normal operation

When USB cable from PC is connected to CN301, VBUS voltage goes up to 5V, and IC300 recognizes 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 CN301 ,the unit enters stand-by mode.

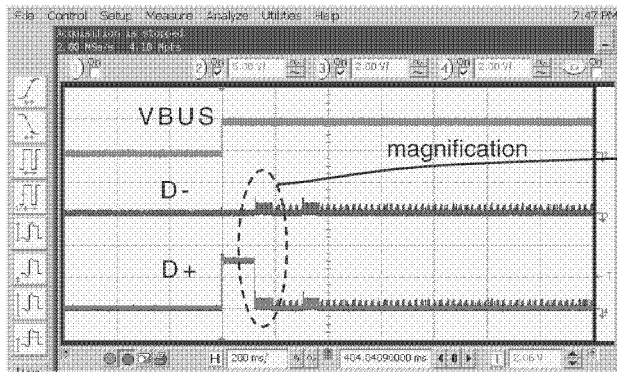
When PC is at Hi-Speed , waveforms are (1)-1 ~ (1)-4.

When PC is at Full Speed ,waveforms are (2)-1 ~ (2)-4.

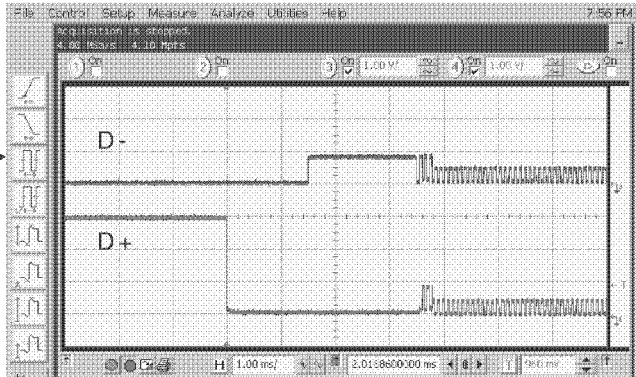
## Waveform of normal operation

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

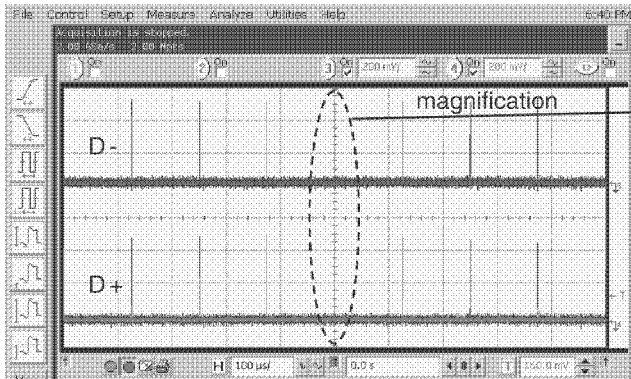
Waveform (1)-1 at Hi-Speed



Waveform (1)-2 at Hi-Speed



Waveform (1)-3 at Hi-Speed

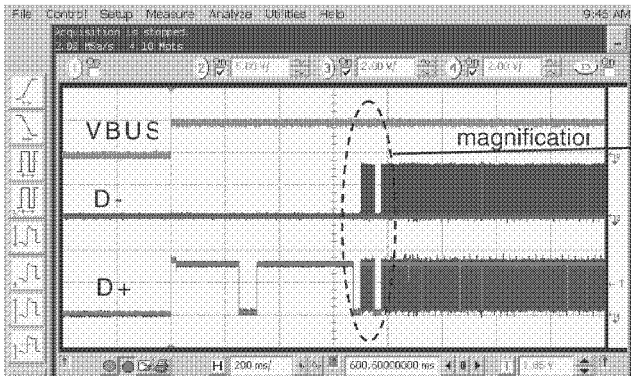


Waveform (1)-4 at Hi-Speed

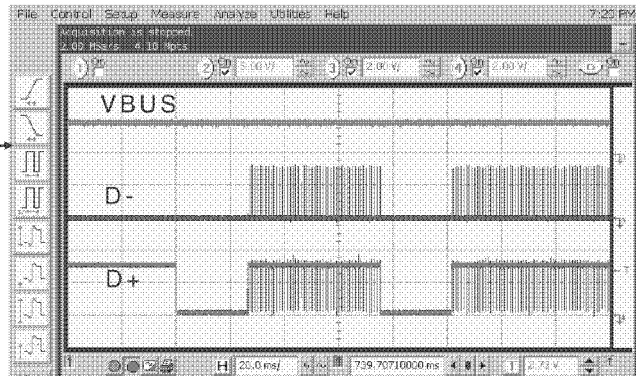


(2) The condition during communication establishment between PC and Main unit at Full Speed.

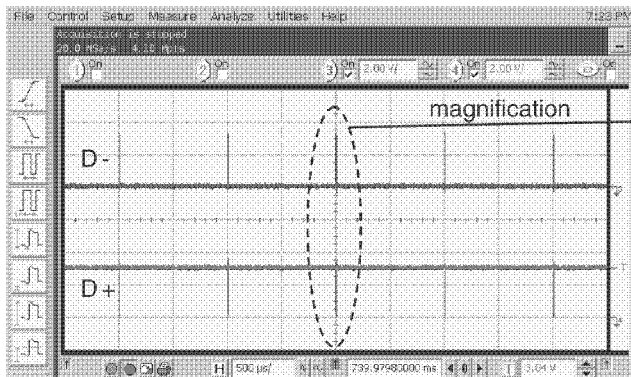
Waveform (2)-1 at Full Speed



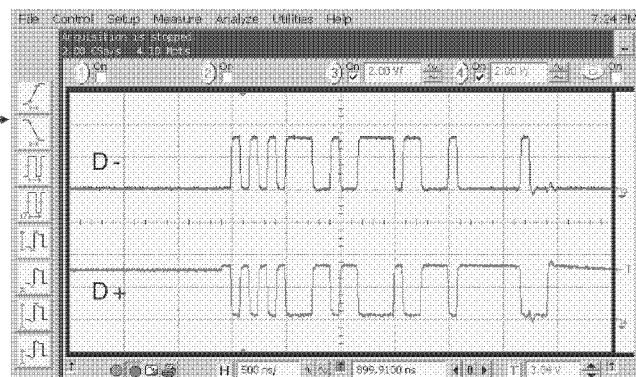
Waveform (2)-2 at Full Speed



Waveform (2)-3 at Full Speed

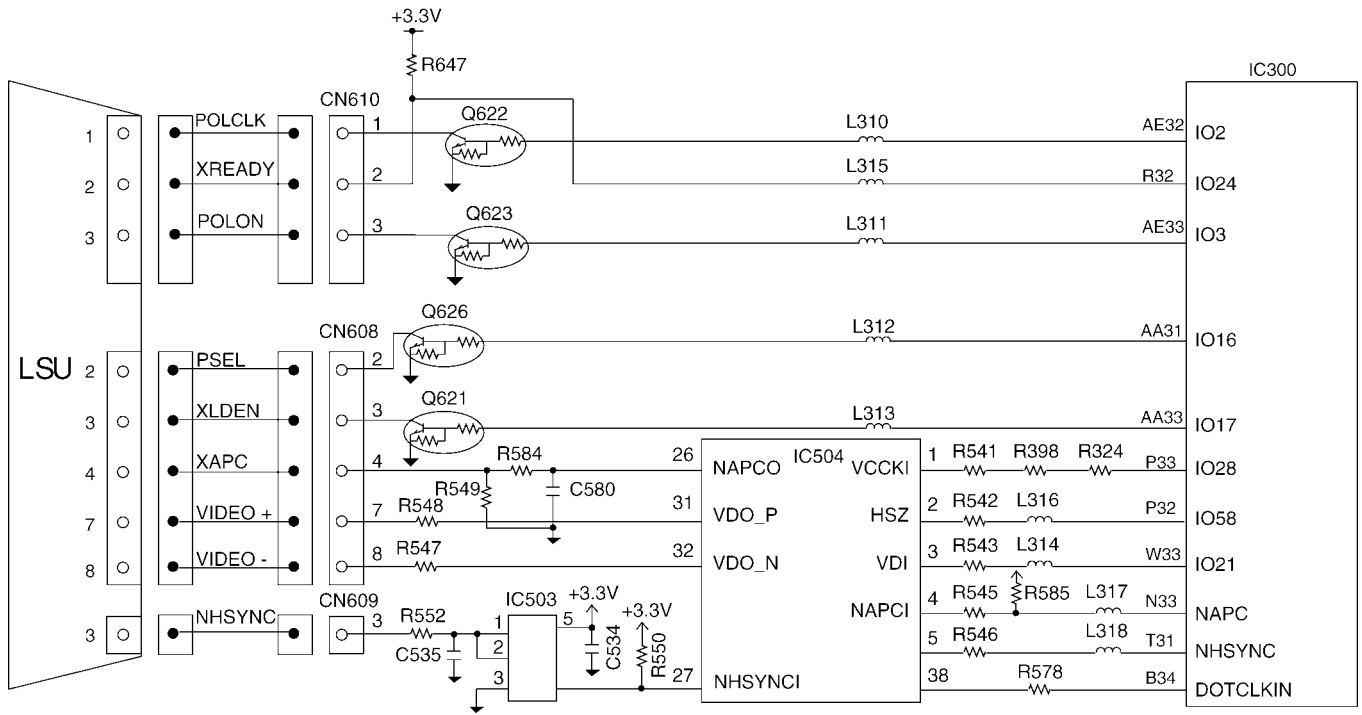


Waveform (2)-4 at Full Speed

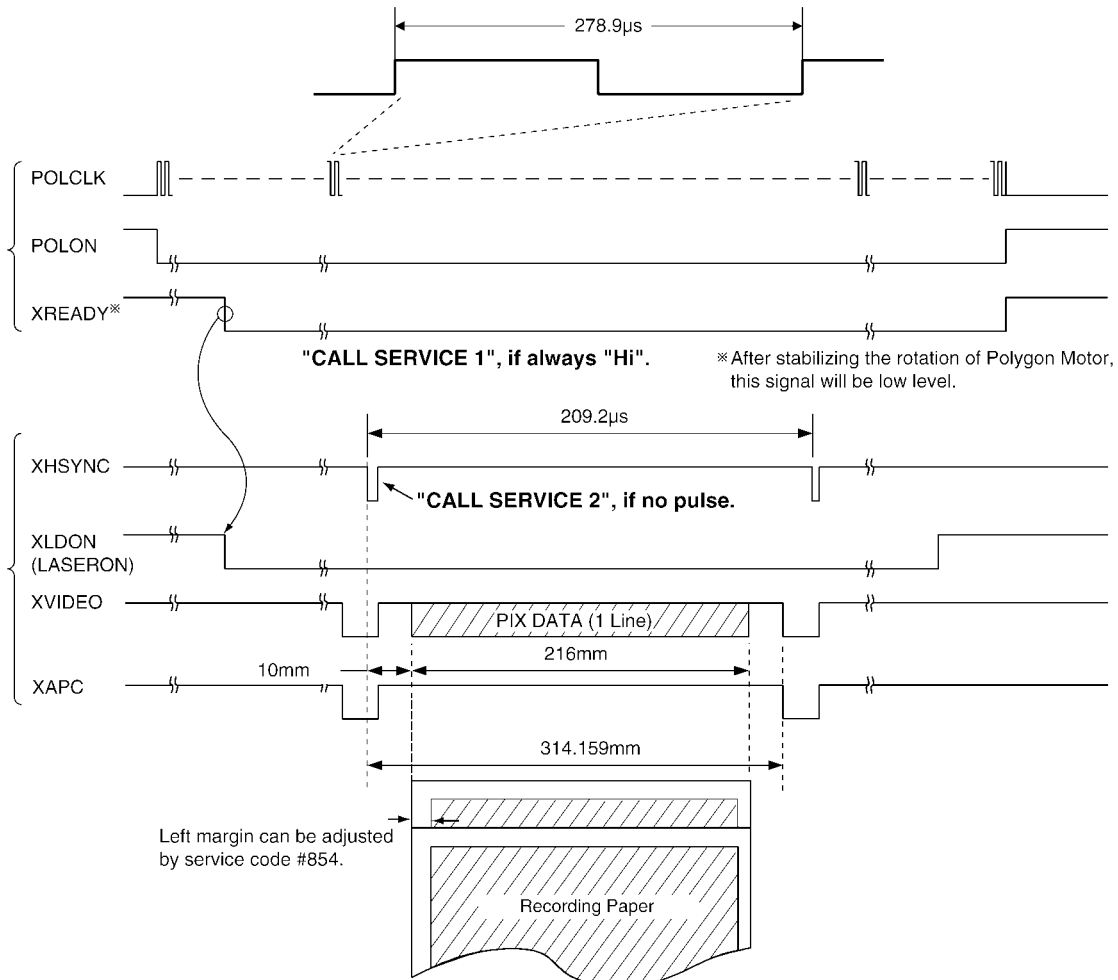




## Circuit Diagram



## Timing Chart



## 6.11. Sensors and Switches Section

All of the sensor and switches are shown below.

Sensor Name	Sensor Location	Reference number	Message Error
Drum sensor		1JE1	[CHECK DRUM]
Paper sensor	Sensor PCB	PS50	[OUT OF PAPER INPUT TRAY #1]
ADU Jam sensor	Sensor PCB	PS54	
Exit sensor	Sensor PCB	PS53	[PAPER JAMMED]
Home sensor	Sensor PCB	PS55	[SCANNER POSITION ERROR]
Read position sensor	Sensor PCB	PS81	[REMOVE DOCUMENT]
Registration sensor	Sensor PCB	PS51	[PAPER JAMMED]
Print timing sensor	Sensor PCB	PS52	[PAPER JAMMED]
Document sensor	Sensor PCB	PS80	-
Cassette sensor	Sensor PCB	SW50	[CHECK INSTALL INPUT TRAY #1]
Left cover sensor		2JE1	[LEFT COVER OPEN]
Duplex sensor	Sensor PCB	PS82	[REMOVE DOCUMENT]
Toner sensor	Relay PCB		[TONER EMPTY] [TONER LOW] [CHECK DRUM]
Optional OPF Paper sensor	Sensor PCB	PS951	[OUT OF PAPER INPUT TRAY #2]
Optional OPF Jam sensor	Sensor PCB	PS950	[PAPER JAMMED]
Optional OPF Cassete sensor	OPF Cas. PCB	PS952	[CHECK INSTALL INPUT TRAY #2]
Optional OPF Cover switch	OPF	-	[TRAY #2 LEFT COVER OPEN]

### Note:

See TEST FUNCTIONS - SENSOR CHECK SECTION for the sensor test.

(#815 of Service Mode test. Refer to **Test Functions** (P.121).

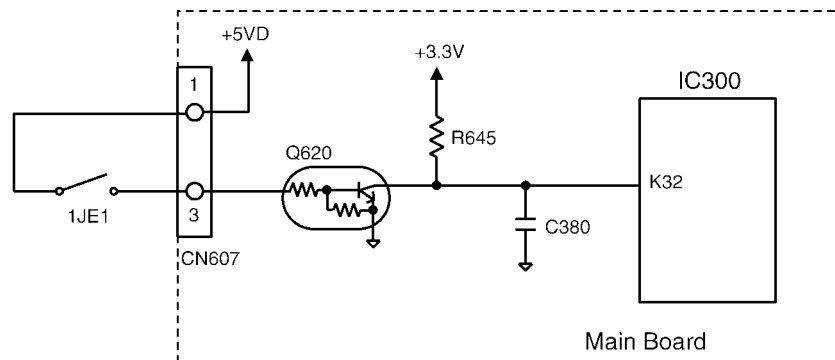
### 6.11.1. Drum Sensor

This Switch detects whether the DRUM unit is set or not.

When there is the unit, the input signal of IC300-K32pin becomes low level.

When there is not the unit, the input signal of IC300-K32pin becomes high level.

[Drum sensor]



	Signal (IC300-K32pin)
Drum Set	Low level
No Drum	High level

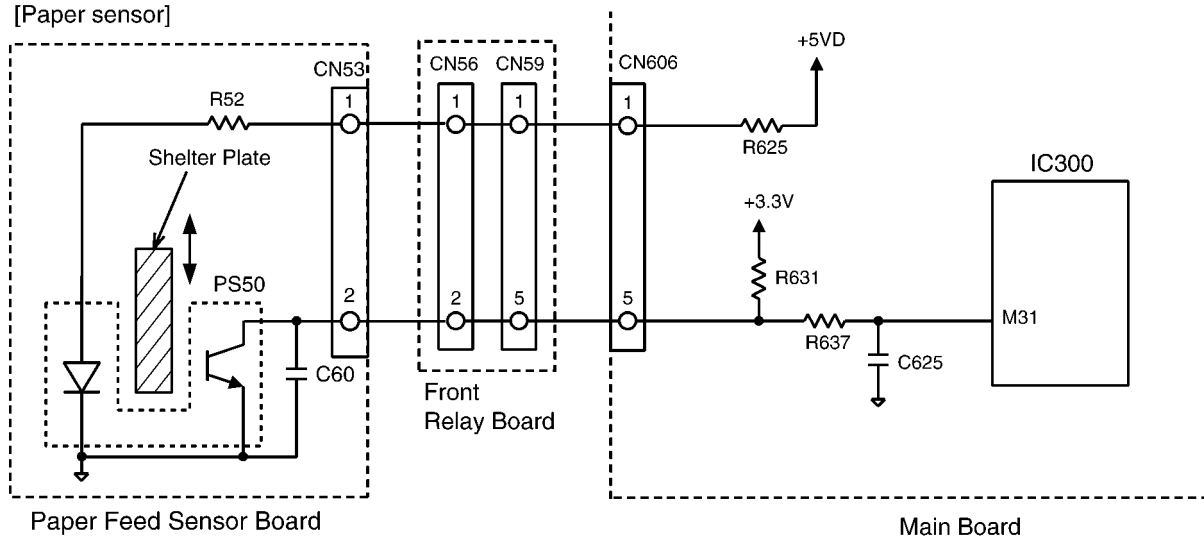


### 6.11.2. Paper Sensor

This Switch detects whether there are recording papers in the paper tray #1 or not.

When there are recording papers in the tray, the input signal of IC300-M31pin becomes high level.

When there no recording papers in the tray, the input signal of IC300-M31pin becomes low level.



	Signal (IC300-M31pin)
Paper exist	High level
No papers	Low level

### 6.11.3. ADU Jam Sensor

This sensor detects whether the paper is at the ADU sensor position.

When the recording paper is detected, the shelter plate lets the sensor light pass.

So the photo-transistor turns on and the input signal of IC300-F33pin becomes low level.

When the recording paper is not detected, the shelter plate closes the sensor light.

So the photo-transistor turns off and the input signal of IC300-F33pin becomes high level.

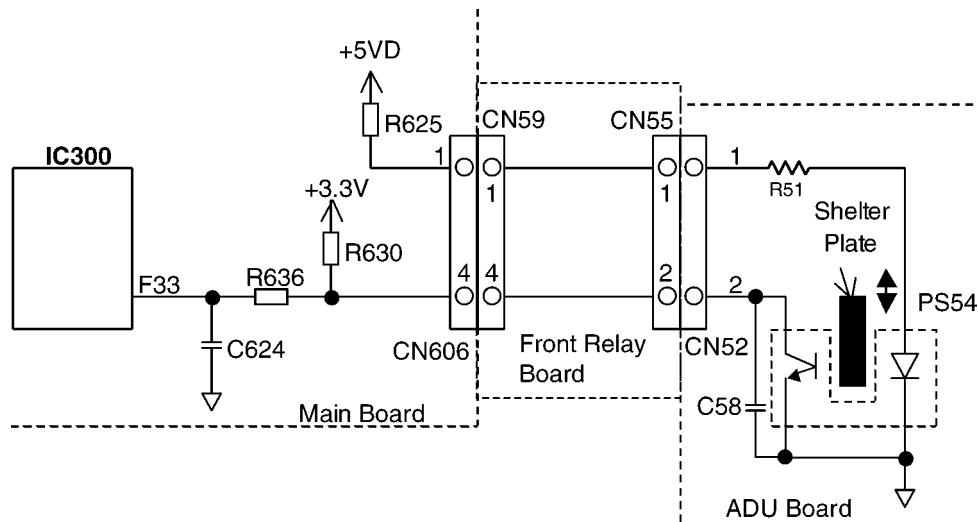


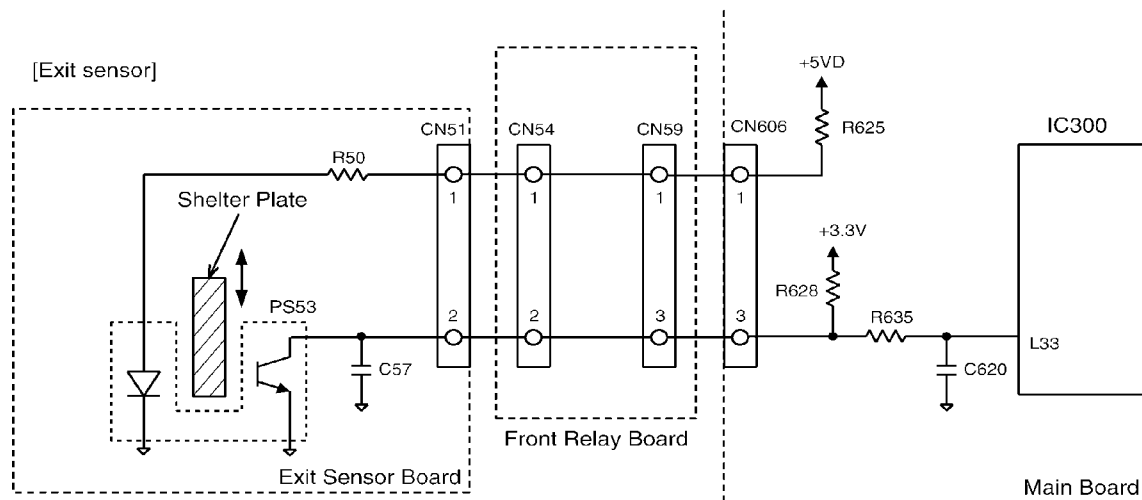
	Photo-transistor	Signal (IC300-F33Pin)
Paper Exist	ON	Low Level
No Paper	OFF	High Level

### 6.11.4. 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-L33pin becomes low level.

When there is no recording paper at the position of the sensor, the input signal of IC300-L33pin becomes high level.



	Signal (IC300-L33pin)
A paper exists	Low level
No papers	High level

### 6.11.5. Home Sensor

This sensor detects whether the carriage is at it's home position or not.

When the carriage is at it's home position, a shelter plate closes the sensor light.

So the photo-transistor turns off and the input signal of IC300-J32pin becomes high level.

When the carriage is not at it's home position, a shelter plate lets the sensor light pass.

So the photo-transistor turns on and the input signal of IC300-J32pin becomes low level.

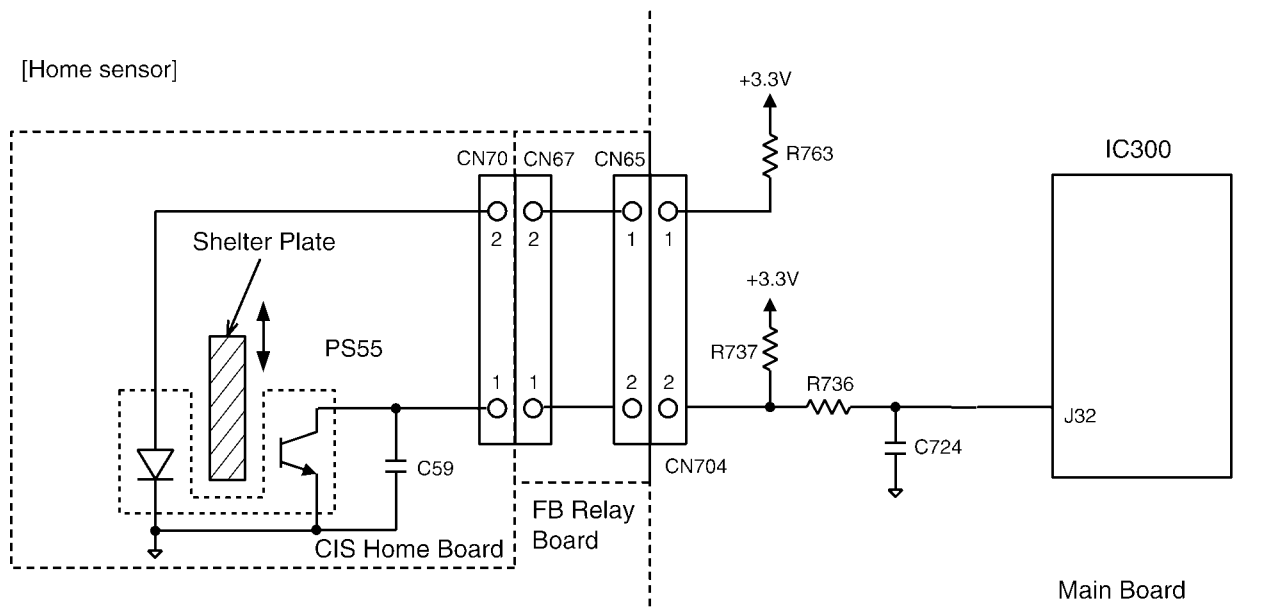


	Photo-transistor	Signal (IC300-J32pin)
A carriage is at home.	OFF	High level
A carriage is not at home.	ON	Low level

### 6.11.6. 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-G34pin 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-G34pin becomes low level.

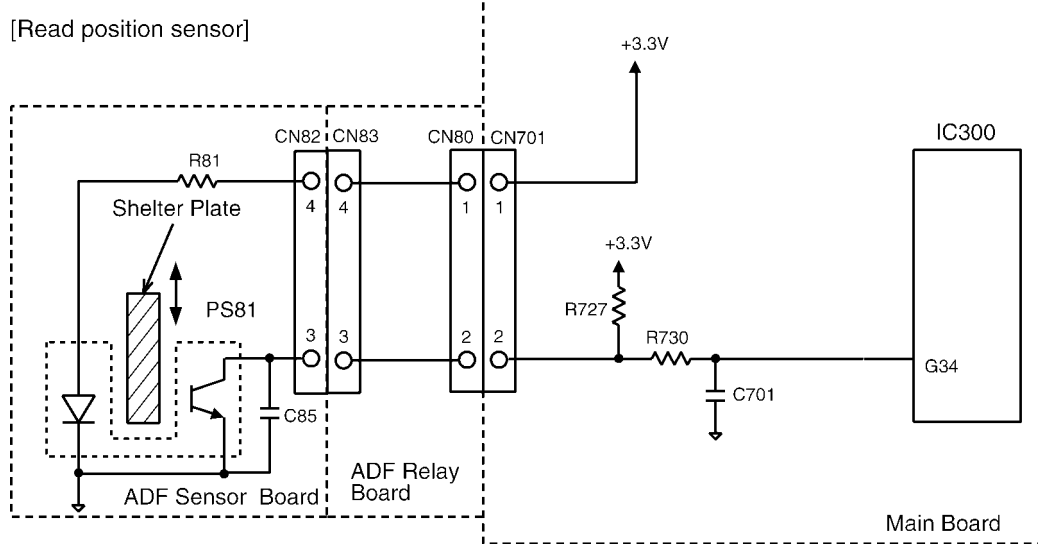


	Photo-transistor	Signal (IC300-G34pin)
A document exits	OFF	High level
No document	ON	Low level

### 6.11.7. Registration 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-P31pin 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-P31pin becomes high level.

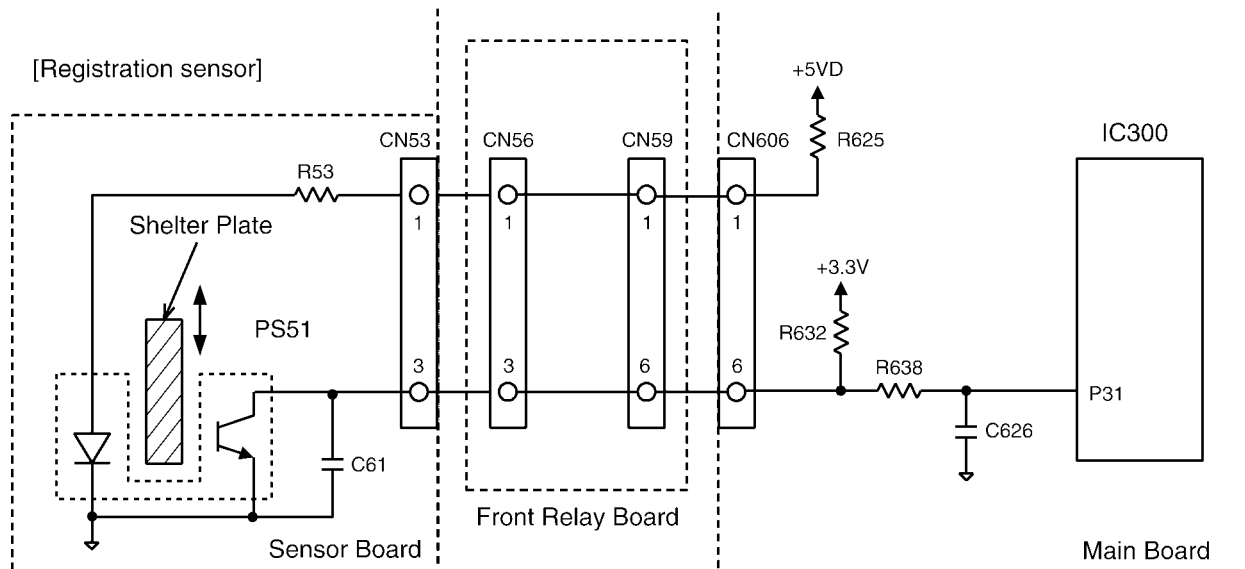


	Photo-transistor	Signal (IC300-P31pin)
Paper exits	ON	Low level
No paper	OFF	High level

### 6.11.8. 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-F34pin 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-F34pin becomes high level.

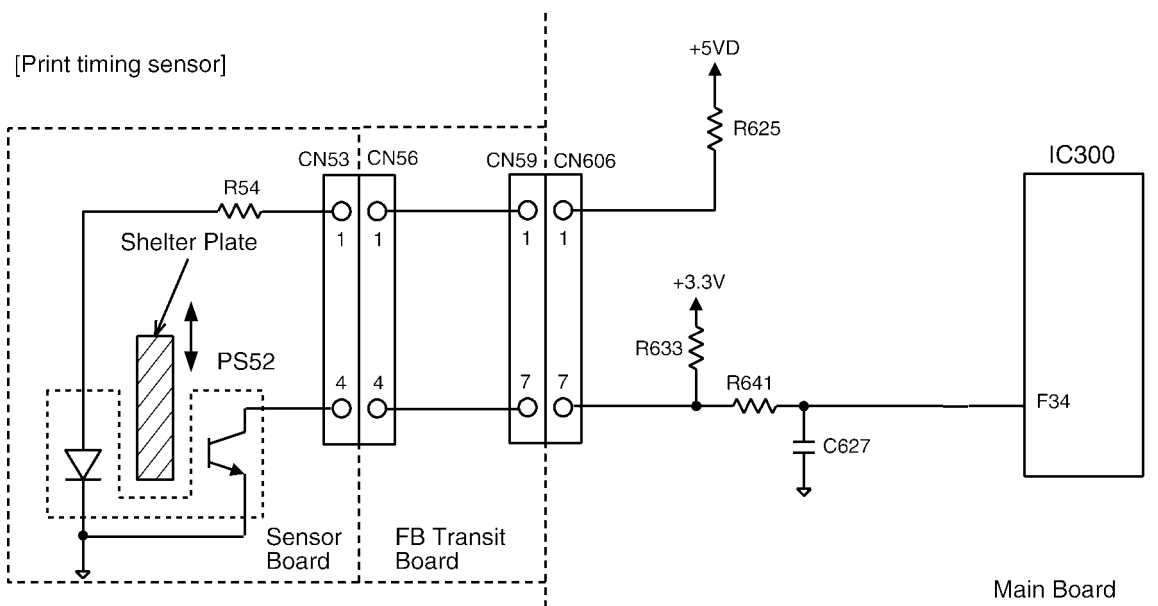


	Photo-transistor	Signal (IC300-F34pin)
Paper exits	ON	Low level
No paper	OFF	High level

### 6.11.9. 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-H32pin 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-H32pin becomes low level.

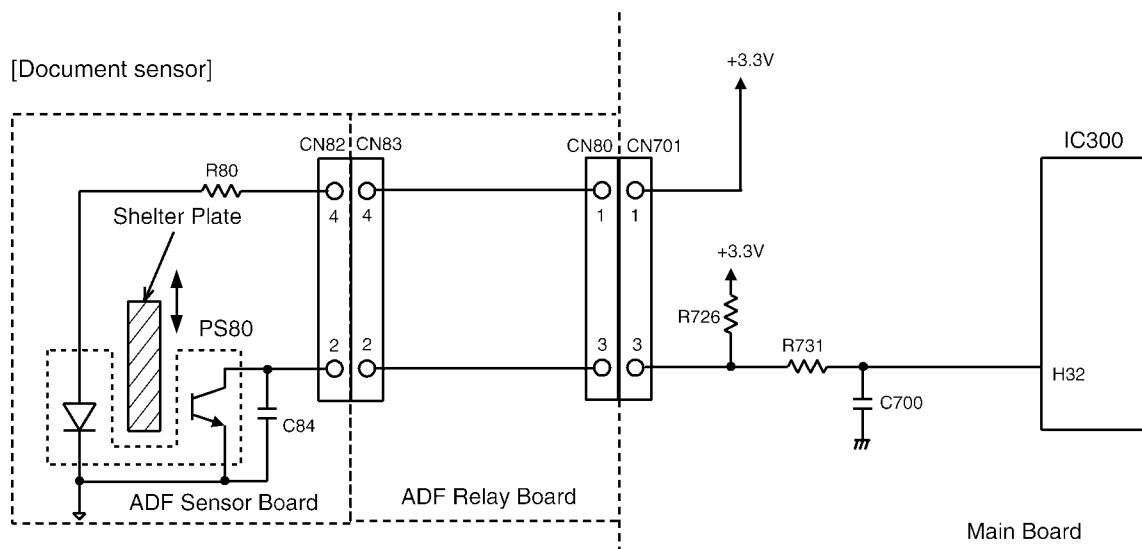


	Photo-transistor	Signal (IC300-H32pin)
document exits	OFF	High level
No document	ON	Low level

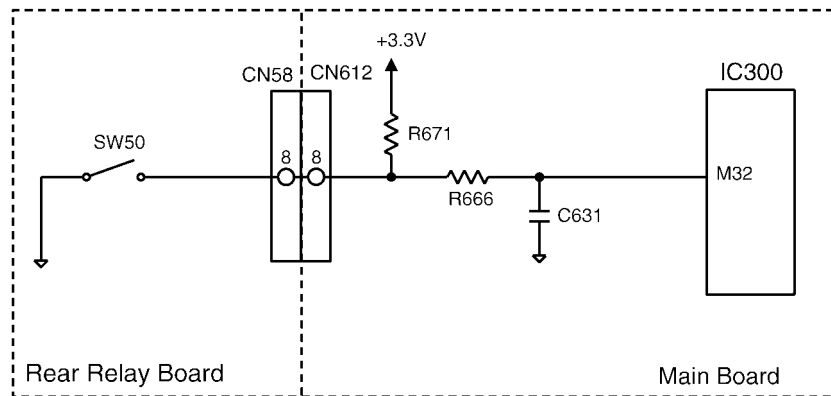
### 6.11.10. Cassette Sensor

This switch detects whether the paper tray is set or not.

When there is not the paper tray, the input signal of IC300-M32pin becomes high level.

When there is the paper tray, the input signal of IC300-M32pin becomes low level.

[Cassette sensor]



Cassette	Signal (IC300-M32pin)
No Tray	High level
Tray Set	Low level

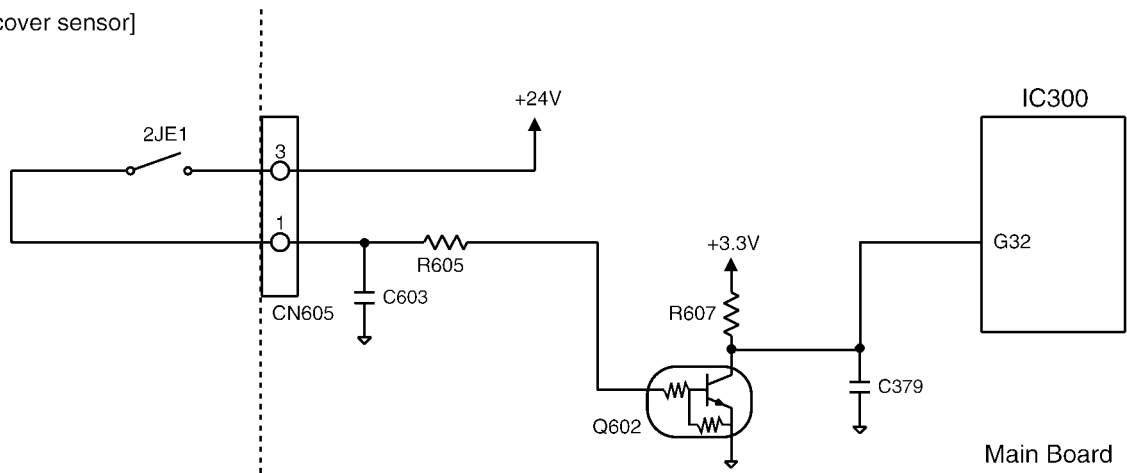
### 6.11.11. Left Cover Sensor

The Switches detect whether the printer cover is open or closed.

When the printer cover is closed, the switches turn ON, and the input signal of IC300-G32pin becomes a low level.

When the printer cover is open, the switches turns OFF, and the input signal of IC300-G32pin becomes a high level.

[Top cover sensor]



Left Cover	Switch	Signal (IC300-G32pin)
Open	OFF	High level
Close	ON	Low level

### 6.11.12. Duplex Sensor

This sensor detects whether a document is at ADF during duplex read.

When a document is detected, the shelter plate closes the sensor light.

So the photo-transistor turns off, and input signal of IC-K33pin becomes high level.

When a document is not detected, the shelter plate lets the sensor light pass.

So the photo-transistor turns on, and input signal of IC300-K33pin becomes low level.

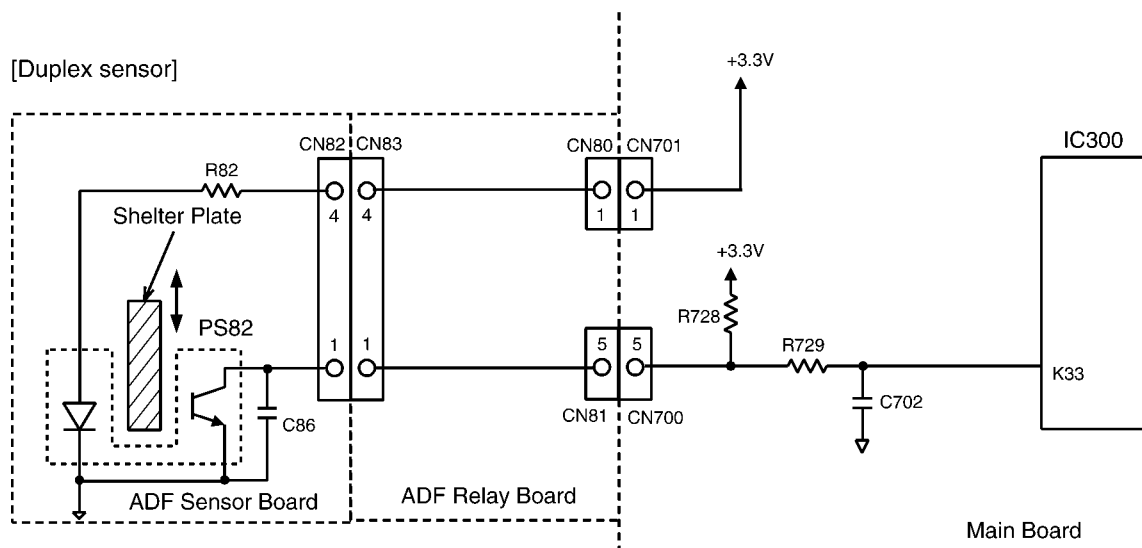


	Photo-transistor	Signal (IC300-K33Pin)
A Document Exits	OFF	High Level
No Document	ON	Low Level

### 6.11.13. Toner Sensor

#### 6.11.13.1. General

This sensor detects the amount of remaining toner.

The toner level is detected by LED light through the cartridge lenses when the toner is decreased to a certain level.

When the phototransistor detects the light pulses, it causes the pulse signals.

When toner is full, LED light does not reach to the phototransistor. But when remaining of toner is low, LED light pulses begin to reach to the phototransistor. Then phototransistor emits the pulse signals.

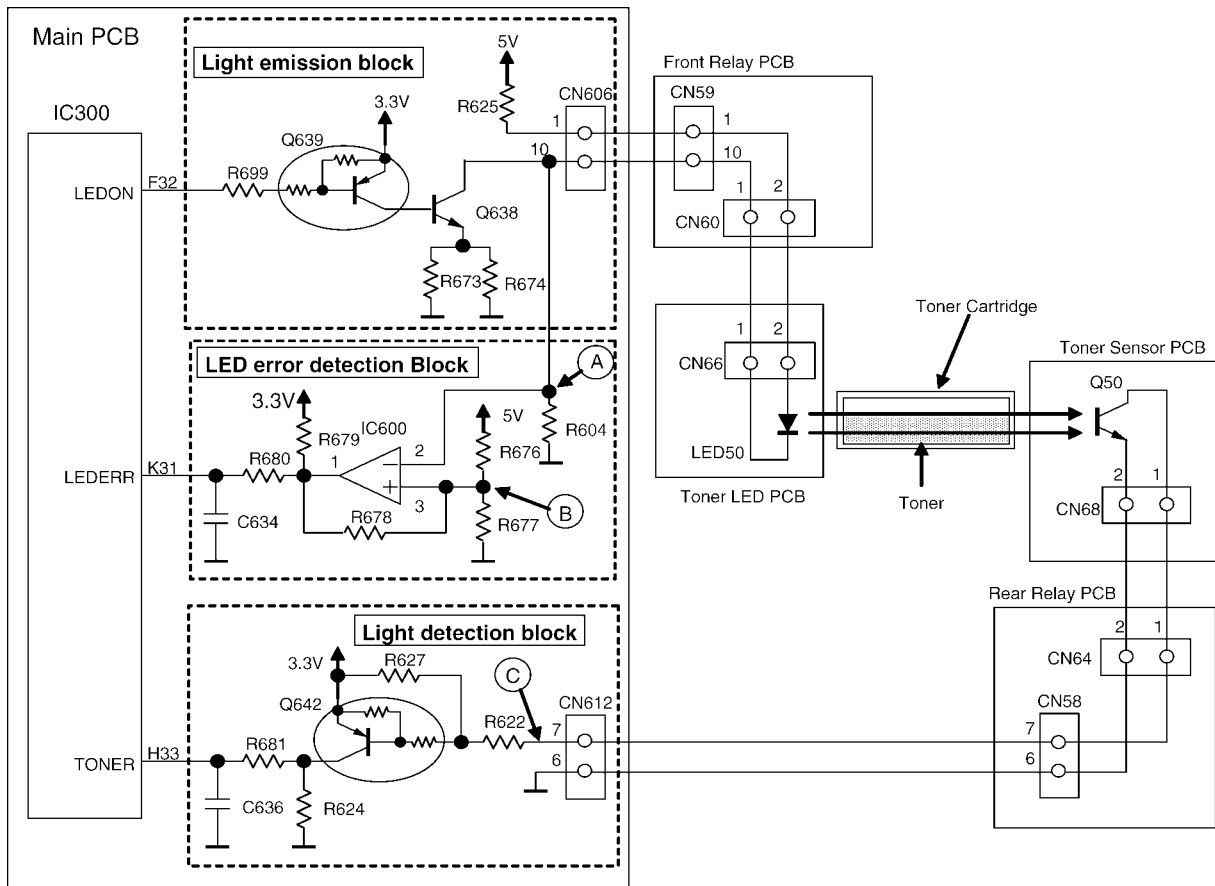
By counting the number of these pulses, IC300 can recognize that the remaining toner reaches to lower level.

After the number of pulses is reaching to the certain value, printed pixels counting is started.

When counting is reached to a certain number, "Toner empty" message is appeared on the display.

Toner sensor circuit consists of "Light emission block", "Light detection block" and "LED error detection block".

#### 6.11.13.2. Circuit diagram



#### 6.11.13.3. Explanation of "Light emission block"

During Main motor rotating, LEDON pulses are output from IC300\_pinF32.

Q638 and Q639 works to make the LED current constant.

When pulse is supplied to Q639, Q638 drives the current of LED50 almost 100mA during the pulse is ON.

#### 6.11.13.4. Explanation of "Light detecting block"

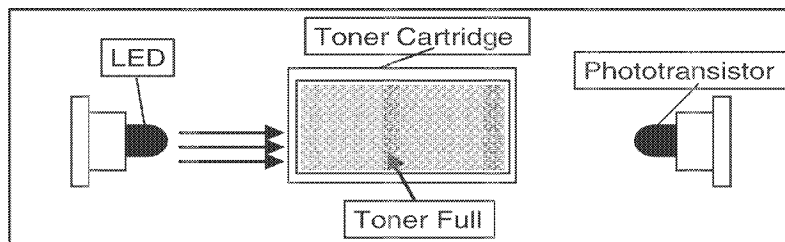
When LED50 emits the light and the light reaches to a phototransistor (Q50), Q50 generates some pulses.

These pulses are inverted by Q642 and sent to IC300\_pinH33 as toner detection signal.

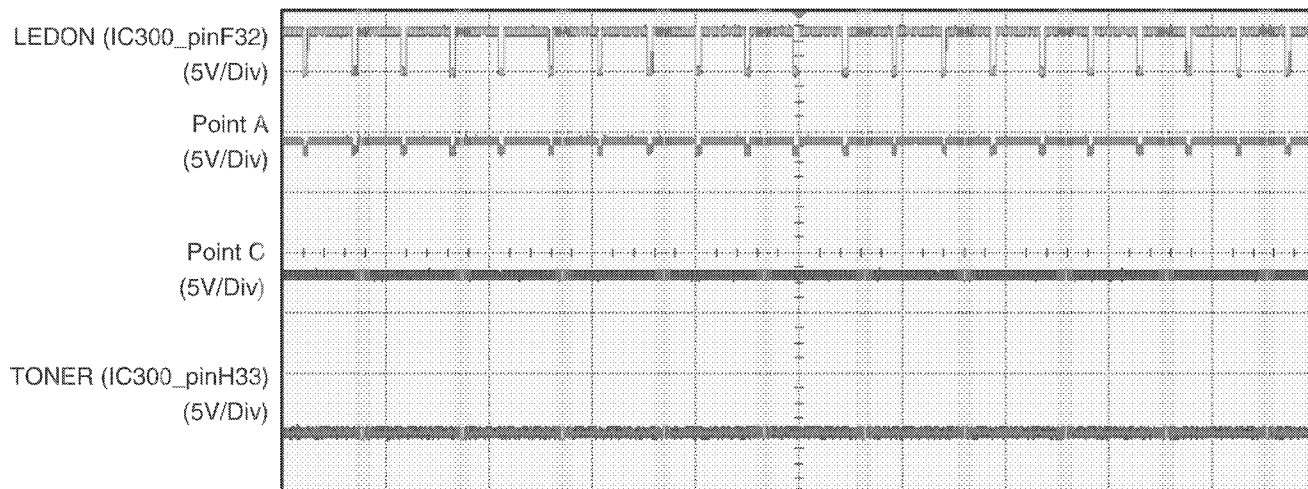


### 6.11.13.5. Waveform of each toner remaining status

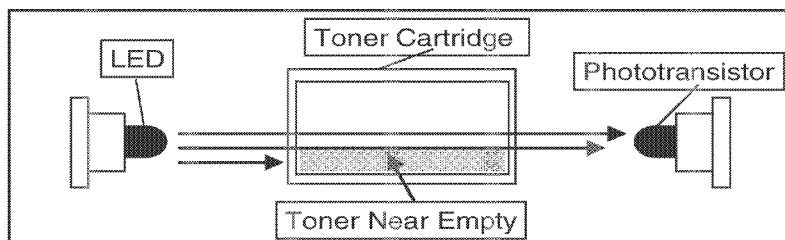
#### (1) Toner Full



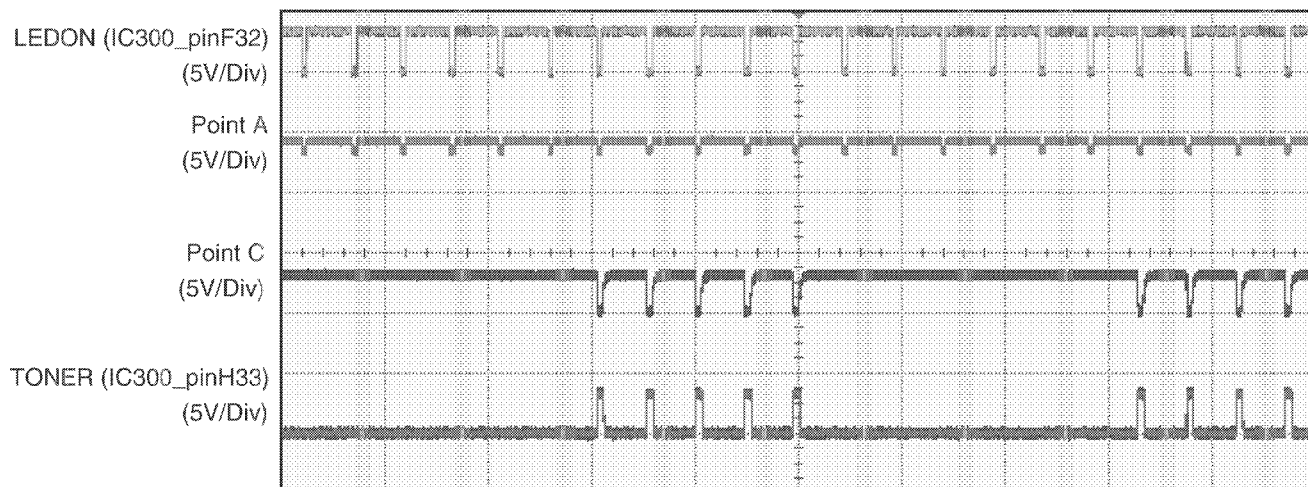
H:200msec/Div



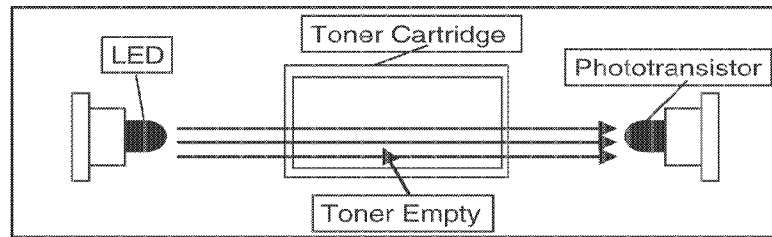
#### (2) Toner near empty



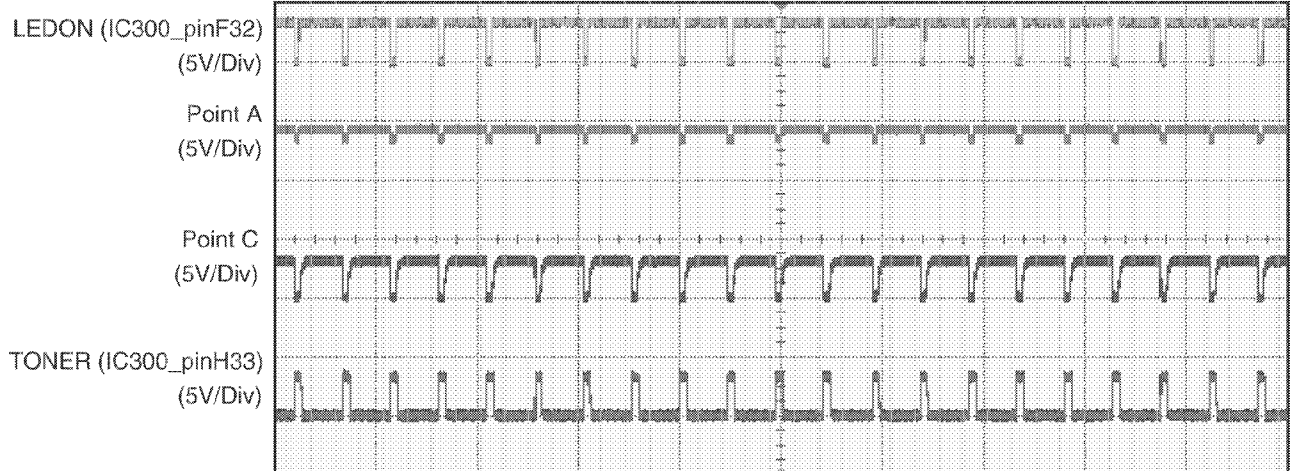
H:200msec/Div



(3) Toner empty



H:200msec/Div



#### 6.11.13.6. Explanation of "LED error detection block"

If LED50 is broken (normally with open condition), light is not emitted and misjudged that toner is full even after toner is wasted. In order to prevent this problem, LED error detecting block is provided.

When LED is normal, the voltage of point A is always bigger than the voltage of point B.

Then output of comparator IC (IC600\_pin1) is "L".

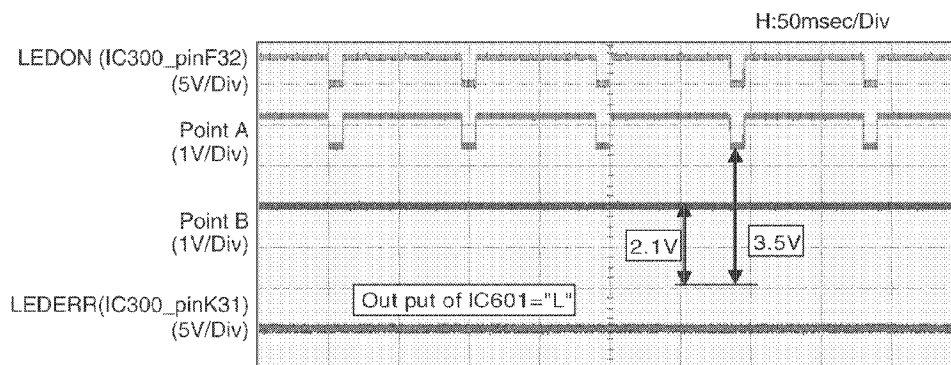
When LED is abnormal, the voltage of point A becomes less than the voltage of point B.

Then output of comparator IC (IC600\_pin1) is "H".

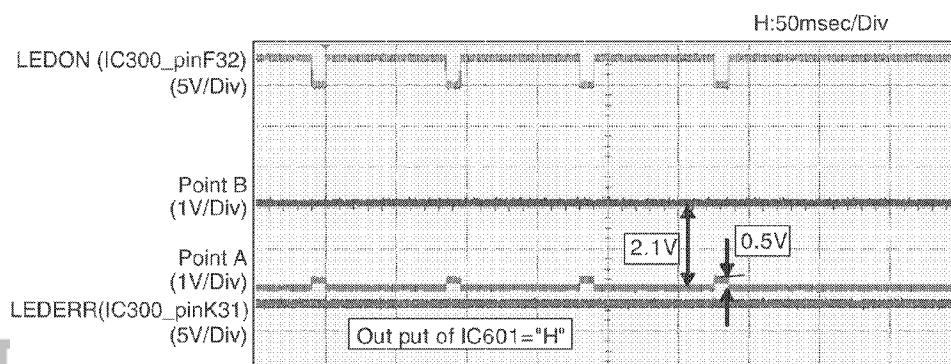
When LED error is detected, "Call Service 20" is shown on the display.

#### 6.11.13.7. Waveform of normal LED and abnormal LED

(1) LED normal condition



(2) LED abnormal condition



### 6.11.13.8. Drum Life sensor circuit

#### 6.11.13.8.1. General

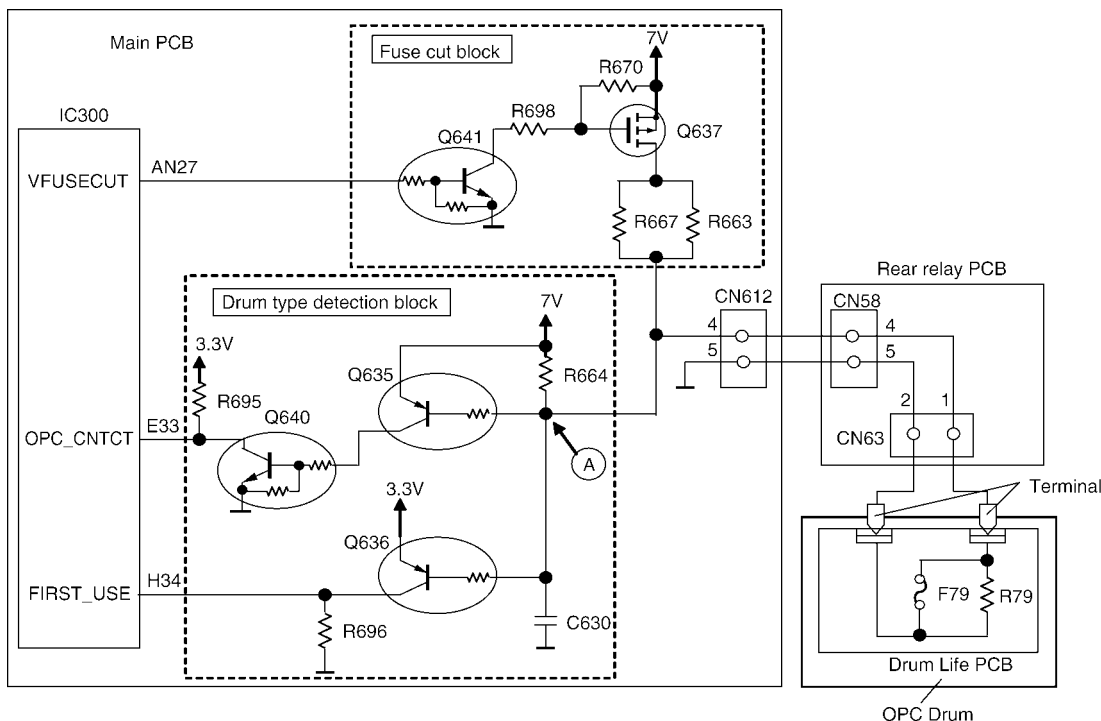
This circuit detects whether the drum cartridge is brand-new or secondhand.

And if Drum cartridge is detected as brand-new, after predetermined printing, Fuse, which is installed inside of the Drum cartridge is cut.

By cutting the fuse, the Drum cartridge is judged as secondhand, and Drum life counting starts.

This circuit is consist of Fuse cut block and Drum type detection block.

#### 6.11.13.8.2. Circuit diagram



#### 6.11.13.8.3. Circuit Explanation of Fuse cut block

When IC300\_pinAN27 is "H", both Q641 and Q637 are turned on. Then fuse cut current flows through F79(Fuse), R663 and R667. Consequently Fuse is cut within 1 second.

R663/R667 is supplied to restrict the fuse cut current to protect Q637.

#### 6.11.13.8.4. Circuit Explanation of Drum type detection block

This block detects whether OPC Drum is brand-new or secondhand.

And also detect if the contact of the terminal is normal or not (contact error).

(1) In case of Brand-new Drum

Since Fuse is not open, resistance between the fuse is nearly zero.

So the voltage level of point A in the above circuit diagram is almost 0V.

Then Q635, Q640 and Q636 are all turned on.

(2) In case of secondhand Drum

Since Fuse is open, resistance between the fuse is determined by the resistance of R79 (10Kohm).

And since the resistance of R664 is 3.9Kohm, the voltage level of point A in the above circuit diagram is 5~6V.

Then Q635 and Q640 are turned on, and Q636 is turned off.

(3) In case of contact error of the terminal

Since both Fuse and R79 are open, resistance between the fuse is infinite.

So the voltage level of point A in the above circuit diagram is almost 7V.

Then Q635, Q640 and Q636 are all turned off.

By the above transistor condition, the logic level of IC300\_pinE33 and H34 are changed as below table.

Thus by checking these 2 signal level, OPC drum condition can be detected.

OPC_CNTCT (IC300_pinE33)	FIRST_USE (IC300_pinH34)	Drum status
L	L	Secondhand
H	L	contact error
L	H	Brand-new
H	H	-

### 6.11.14. Optional OPF Paper Sensor

This sensor detects whether there are recording papers in the Optional lower input tray or not.  
 When there are recording papers in the tray, a shelter plate closes the sensor light.  
 So the photo-transistor turns off and the input signal of IC300-J33pin becomes high level.  
 When there no recording papers in the tray, a shelter plate lets the sensor light pass.  
 So the photo-transistor turns on and the input signal of IC300-J33pin becomes low level.

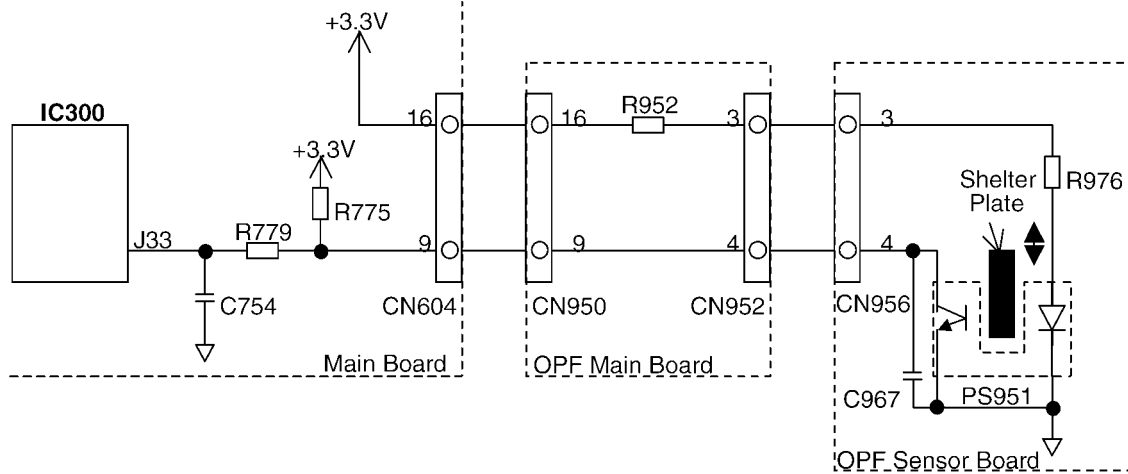


	Photo-transistor	Signal (IC300-J33Pin)
Paper Exist	OFF	High Level
No Paper	ON	Low Level

### 6.11.15. Optional OPF Jam Sensor

This sensor detects whether the paper is at the OPF sensor position.  
 When the recording paper is detected, the shelter plate lets the sensor light pass.  
 So the photo-transistor turns on and the input signal of IC300-L32pin becomes low level.  
 When the recording paper is not detected, the shelter plate closes the sensor light.  
 So the photo-transistor turns off and the input signal of IC300-L32pin becomes high level.

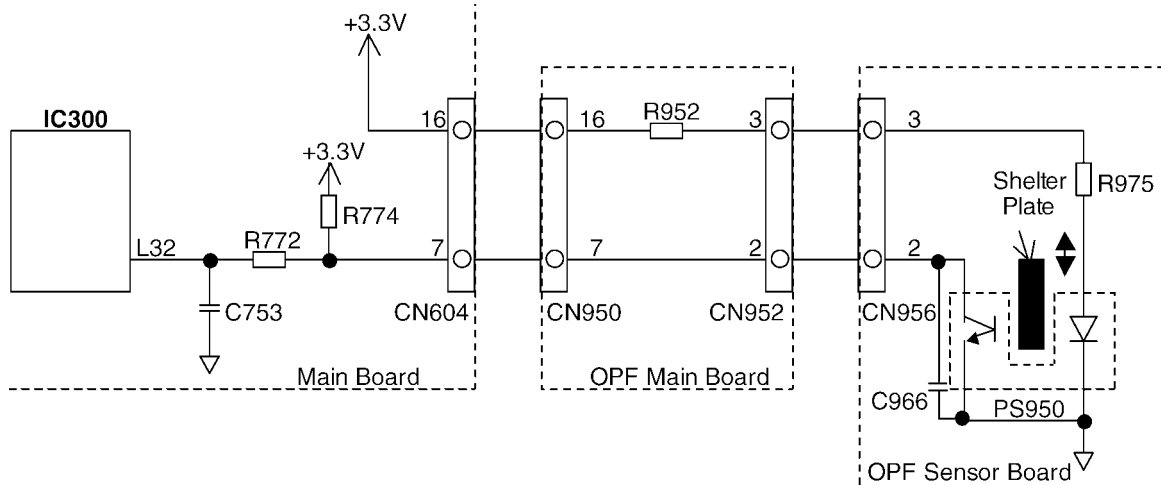


	Photo-transistor	Signal (IC300-L32Pin)
Paper Exist	ON	Low Level
No Paper	OFF	High Level

### 6.11.16. Optional OPF Cassette Sensor

This sensor detects whether the Optional lower input tray is set or not.

When there is the Optional lower input tray, a shelter plate closes the sensor light.

So the photo-transistor turns off and the input signal of IC300-J34pin becomes high level.

When there is not the Optional lower input tray, a shelter plate lets the sensor light pass.

So the photo-transistor turns on and the input signal of IC300-J34pin becomes low level.

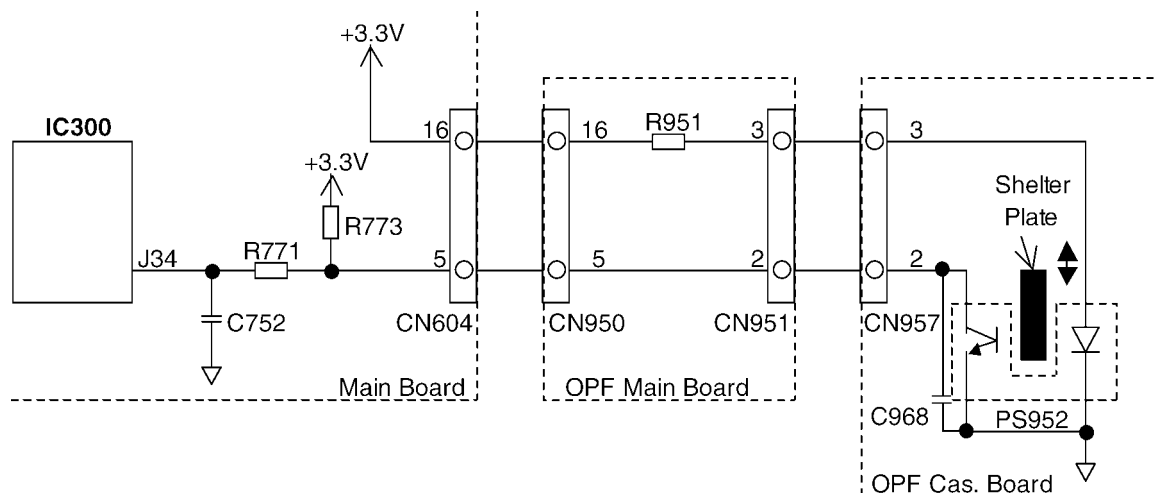


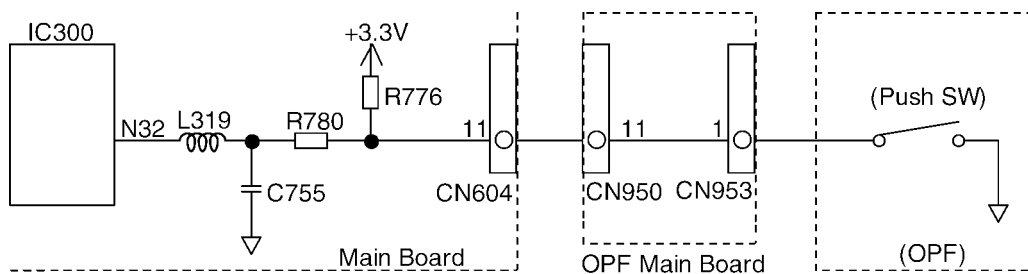
	Photo-transistor	Signal (IC300-J34Pin)
Paper Tray Set	OFF	High Level
No Paper Tray	ON	Low Level

### 6.11.17. Optional OPF Cover Switch

This switch detects whether the OPF cover is open or closed.

When the cover is closed, the input signal of IC300-N32pin becomes low level.

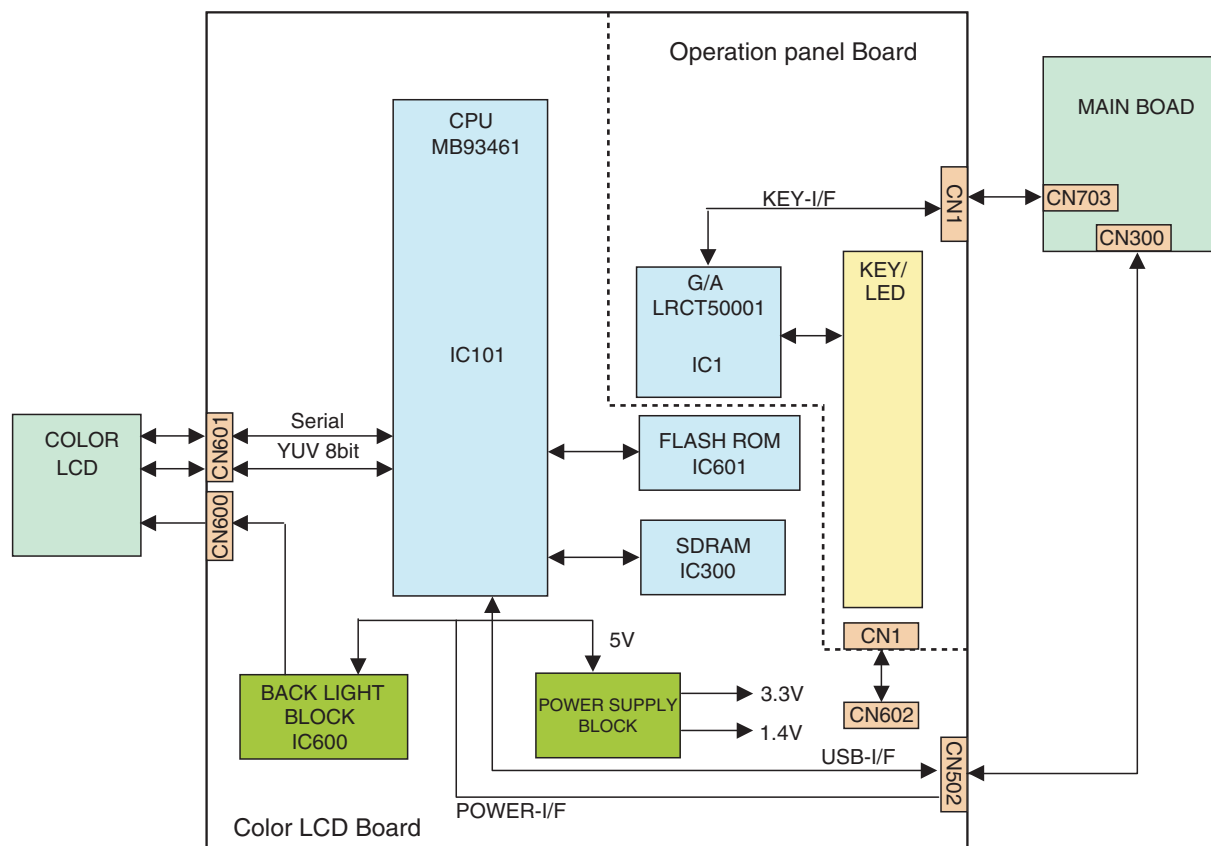
When the cover is open, the input signal of IC300-N32pin becomes high level.



	Signal (IC300-N32Pin)
Cover Close	Low Level
Cover Open	High Level

## 6.12. Operation Board Section

### 6.12.1. Electric Block Diagram



#### Principal parts

##### CPU (IC101)

Core CPU MB93461(FR-V)、operating frequency 399.6MHz

##### ROM (IC601)

Flash Rom、capacity 32Mbit

##### RAM (IC300)

SDRAM、capacity 128Mbit

##### G/A (IC1)

dedicated IC for key scanning

##### POWER SUPPLY BLOCK

+3.3V DC-DC converter  
+1.4V regulator

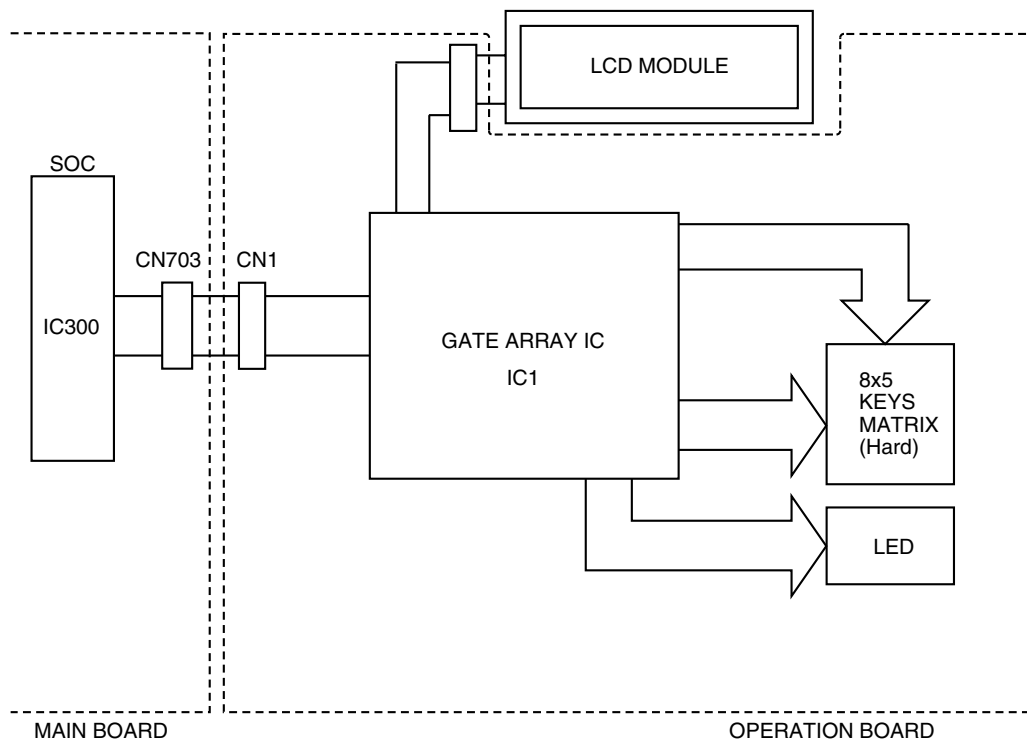
##### BACK LIGHT BLOCK

+20V DC-DC converter

### 6.12.2. Key Matrix

The unit consists of a LCD (Liquid crystal display), KEYs and LEDs (light-emitting diodes). They are controlled by the Gate Array (IC1) and SOC (IC300: on the MAIN BOARD).

The key matrix table is shown below.



#### 1. Key Matrix

##### a. Hard Scan

	KIN0	KIN1	KIN2	KIN3	KIN4	KIN5	KIN6	KIN7
KSL0	2	3	1	MENU	REDIAL	COLLATE	DUPLEX	LAYOUT
KSL1	5	6	4	↑	FLASH	CONTRAST	-	ZOOM
KSL2	8	9	7	→	S5	RESOLUTION	SCAN	←
KSL3	START	STOP	S4	↓	Auto Answer	S1	FAX	LOWER
KSL4 (LED7)	0	#	*	SET	MONITOR	S2	COPY	S3

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

#### 2. LED

- AUTO ANSWER LED ON/OFF port---XLED12
- FAX MODE LED ON/OFF port---XLED11
- COPY MODE LED ON/OFF port---XLED8
- SCAN MODE LED ON/OFF port---XLED9



## 6.13. LCD Panel Section

### 6.13.1. Description of Pin Distribution(IC101)

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
253	F24	A[10]	Local Bus Address	Local bus address signal	CPA[10]	ROM address	out
332	F23	A[11]	Local Bus Address	Local bus address signal	CPA[11]	ROM address	out
403	F22	A[12]	Local Bus Address	Local bus address signal	CPA[12]	ROM address	out
72	E26	A[13]	Local Bus Address	Local bus address signal	CPA[13]	ROM address	out
167	E25	A[14]	Local Bus Address	Local bus address signal	CPA[14]	ROM address	out
254	E24	A[15]	Local Bus Address	Local bus address signal	CPA[15]	ROM address	out
168	D25	A[16]	Local Bus Address	Local bus address signal	CPA[16]	ROM address	out
255	D24	A[17]	Local Bus Address	Local bus address signal	CPA[17]	ROM address	out
334	D23	A[18]	Local Bus Address	Local bus address signal	CPA[18]	ROM address	out
257	C23	A[19]	Local Bus Address	Local bus address signal	CPA[19]	ROM address	out
251	H24	A[2]	Local Bus Address	Local bus address signal	CPA[2]	ROM address	out
335	D22	A[20]	Local Bus Address	Local bus address signal	CPA[20]	ROM address	out
258	C22	A[21]	Local Bus Address	Local bus address signal	CPA[21]	ROM address	out
173	B22	A[22]	Local Bus Address	Local bus address signal	N.C.	Not used	out
80	A22	A[23]	Local Bus Address	Local bus address signal	N.C.	Not used	out
259	C21	A[24]	Local Bus Address	Local bus address signal	N.C.	Not used	out
174	B21	A[25]	Local Bus Address	Local bus address signal	N.C.	Not used	out
81	A21	A[26]	Local Bus Address	Local bus address signal	N.C.	Not used	out
406	E20	A[27]	Local Bus Address	Local bus address signal	N.C.	Not used	out
337	D20	A[28]	Local Bus Address	Local bus address signal	N.C.	Not used	out
260	C20	A[29]	Local Bus Address	Local bus address signal	N.C.	Not used	out
330	H23	A[3]	Local Bus Address	Local bus address signal	CPA[3]	ROM address	out
175	B20	A[30]	Local Bus Address	Local bus address signal	N.C.	Not used	out
177	B18	A[31]	Local Bus Address	Local bus address signal	N.C.	Not used	out
401	H22	A[4]	Local Bus Address	Local bus address signal	CPA[4]	ROM address	out
70	G26	A[5]	Local Bus Address	Local bus address signal	CPA[5]	ROM address	out
165	G25	A[6]	Local Bus Address	Local bus address signal	CPA[6]	ROM address	out
252	G24	A[7]	Local Bus Address	Local bus address signal	CPA[7]	ROM address	out
71	F26	A[8]	Local Bus Address	Local bus address signal	CPA[8]	ROM address	out
166	F25	A[9]	Local Bus Address	Local bus address signal	CPA[9]	ROM address	out
369	AA5	BCKI	Bit clock input	Input the bit clock used for audio input	Low GND	Not used	in
295	AB4	BCKO/MCLK	Bit clock output	Bit clock output for audio input and output	N.C.	Not used	out
69	H26	BCLKO	Bus Clock Out (unusable)	Terminal that is prohibited from being used	N.C.	Not used	out
68	J26	BE[0]	Byte Enable	BE[0] → D[31:24] When RSTOUT# is asserted, the value of BE[0] is reflected to LGCR.BED.	33k Pull_Down input low at rest	Not used	in/out
163	J25	BE[1]		BE[1] → D[23:16]	N.C.	Not used	out
250	J24	BE[2]		BE[2] → A[1] BE[2] → D[15:08]	CPA[1]	ROM address	out
164	H25	BE[3]		BE[3] → A[0] BE[3] → D[07:00]	N.C.	Not used	out
264	C16	BGNT#	Bus GraNT	This is a signal to indicate that the local bus is open.	N.C.	Not used	out
261	C19	BREQ#	Bus REQuest	This is a signal to input the request to open the bus from the bus master device.	High 33k Pul_UP	Not used	in
85	A17	BS#	Bus cycle Start	Indicate the start of the bus cycle	N.C.	Not used	out
84	A18	BSTACK#	BurST ACKnowledge	Input and output the burst transfer permission	High 33k Pul_UP	Not used	out
83	A19	BSTREQ#	BurST REQuest	Input and output the burst transfer request for the signal	High 33k Pul_UP	Not used	in
154	V25	CLKIN	CLock Input	Supply the clock from the outside	44.4MHz (SSCG)	CPU clock (44.4MHz)	in
319	W23	CMODE[0]	Clock MODE	Determine the operating frequency ratio of the each part inside LSI	Low	Set the inside frequency (L)	in

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
240	W24	CMODE[1]	Clock MODE	Determine the operating frequency ratio of the each part inside LSI	High	Set the inside frequency (H)	in
153	W25	CMODE[2]	Clock MODE	Determine the operating frequency ratio of the each part inside LSI	High	Set the inside frequency (H)	in
58	W26	CMODE[3]	Clock MODE	Determine the operating frequency ratio of the each part inside LSI	High	Set the inside frequency (H)	in
181	B14	CPUHOLD	CPU Hold	This is a signal to indicate that CPU has stopped at HOLD status.	N.C.	Not used	out
179	B16	CS#[0]	Chip Select	Selection signal to select the slave device	ROMCS#: FROM Select	Selection of the ROM chip	out
86	A16	CS#[1]	Chip Select	Selection signal to select the slave device	N.C.	Not used	out
411	E15	CS#[2]	Chip Select	Selection signal to select the slave device	N.C.	Not used	out
342	D15	CS#[3]	Chip Select	Selection signal to select the slave device	N.C.	Not used	out
265	C15	CS#[4]/IRQ#[4]	Chip Select/Interrupt ReQuest	Selection signal to select the device/interruption input signal	N.C. 10k_Pull_UP	Not used	in
180	B15	CS#[5]/IRQ#[5]	Chip Select/Interrupt ReQuest	Selection signal to select the device/interruption input signal	N.C. 10k_Pull_UP	Not used	in
87	A15	CS#[6]/IRQ#[6]	Chip Select/Interrupt ReQuest	Selection signal to select the device/interruption input signal	N.C. 10k_Pull_UP	Not used	in
266	C14	CS#[7]/IRQ#[7]	Chip Select/Interrupt ReQuest	Selection signal to select the device/interruption input signal	N.C. 10k_Pull_UP	Not used	in
242	U24	D[0]	Local Bus Data	Local bus data	N.C.	Not used	I/O
155	U25	D[1]	Local Bus Data	Local bus data	N.C.	Not used	I/O
62	R26	D[10]	Local Bus Data	Local bus data	N.C.	Not used	I/O
395	P22	D[11]	Local Bus Data	Local bus data	N.C.	Not used	I/O
324	P23	D[12]	Local Bus Data	Local bus data	N.C.	Not used	I/O
245	P24	D[13]	Local Bus Data	Local bus data	N.C.	Not used	I/O
158	P25	D[14]	Local Bus Data	Local bus data	N.C.	Not used	I/O
63	P26	D[15]	Local Bus Data	Local bus data	N.C.	Not used	I/O
64	N26	D[16]	Local Bus Data	Local bus data	CPD[0]	Local bus data	I/O
159	N25	D[17]	Local Bus Data	Local bus data	CPD[1]	Local bus data	I/O
246	N24	D[18]	Local Bus Data	Local bus data	CPD[2]	Local bus data	I/O
65	M26	D[19]	Local Bus Data	Local bus data	CPD[3]	Local bus data	I/O
60	U26	D[2]	Local Bus Data	Local bus data	N.C.	Not used	I/O
160	M25	D[20]	Local Bus Data	Local bus data	CPD[4]	Local bus data	I/O
247	M24	D[21]	Local Bus Data	Local bus data	CPD[5]	Local bus data	I/O
326	M23	D[22]	Local Bus Data	Local bus data	CPD[6]	Local bus data	I/O
397	M22	D[23]	Local Bus Data	Local bus data	CPD[7]	Local bus data	I/O
66	L26	D[24]	Local Bus Data	Local bus data	CPD[8]	Local bus data	I/O
161	L25	D[25]	Local Bus Data	Local bus data	CPD[9]	Local bus data	I/O
248	L24	D[26]	Local Bus Data	Local bus data	CPD[10]	Local bus data	I/O
67	K26	D[27]	Local Bus Data	Local bus data	CPD[11]	Local bus data	I/O
162	K25	D[28]	Local Bus Data	Local bus data	CPD[12]	Local bus data	I/O
249	K24	D[29]	Local Bus Data	Local bus data	CPD[13]	Local bus data	I/O
393	T22	D[3]	Local Bus Data	Local bus data	N.C.	Not used	I/O
328	K23	D[30]	Local Bus Data	Local bus data	CPD[14]	Local bus data	I/O
399	K22	D[31]	Local Bus Data	Local bus data	CPD[15]	Local bus data	I/O
322	T23	D[4]	Local Bus Data	Local bus data	N.C.	Not used	I/O
243	T24	D[5]	Local Bus Data	Local bus data	N.C.	Not used	I/O
156	T25	D[6]	Local Bus Data	Local bus data	N.C.	Not used	I/O
61	T26	D[7]	Local Bus Data	Local bus data	N.C.	Not used	I/O
244	R24	D[8]	Local Bus Data	Local bus data	N.C.	Not used	I/O
157	R25	D[9]	Local Bus Data	Local bus data	N.C.	Not used	I/O
38	AF13	DA[0]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[0]	Address for SDRAM	out
39	AF14	DA[1]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[1]	Address for SDRAM	out
138	AE16	DA[10]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[10]	Address for SDRAM	out

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
139	AE17	DA[11]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[11]	Address for SDRAM	out
228	AD17	DA[12]	sDram multiplexed Address	Multiplex address for SDRAM	N.C.	Not used	out
136	AE14	DA[2]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[2]	Address for SDRAM	out
225	AD14	DA[3]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[3]	Address for SDRAM	out
40	AF15	DA[4]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[4]	Address for SDRAM	out
137	AE15	DA[5]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[5]	Address for SDRAM	out
226	AD15	DA[6]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[6]	Address for SDRAM	out
307	AC15	DA[7]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[7]	Address for SDRAM	out
380	AB15	DA[8]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[8]	Address for SDRAM	out
41	AF16	DA[9]	sDram multiplexed Address	Multiplex address for SDRAM	SDA[9]	Address for SDRAM	out
227	AD16	DBA[0]	sDram Bank Address	Bank address output is produced	SDBA0	Bank address for SDRAM	out
42	AF17	DBA[1]	sDram Bank Address	Bank address output is produced	SDBA1	Bank address for SDRAM	out
35	AF10	DCAS#	sDram Column Address Strobe	Column address strobe signal	SDCAS#	CAS signal for SDRAM	out
309	AC17	DCKE	sDram Clock Enable	Clock enable signal	SDCKE	Clock enable signal for SDRAM	out
304	AC12	DCLK	sDram CLock	SDRAM clock	SDCLK	SDRAM clock	out
134	AE12	DCLKFB	FeedBack for sDram CLock	feedback input for adjusting the phase of DCLK	SDCLKFB	feedback input for adjusting the phase of DCLK	in
222	AD11	DCS#[0]	sDram Chip Select	Selection of SDRAM	SDCS0#	Selection of SDRAM	out
133	AE11	DCS#[1]	sDram Chip Select	Selection of SDRAM	N.C.	Not used	
36	AF11	DCS#[2]	sDram Chip Select	Exclusively for connecting 168-pin registered DIMM	N.C.	Not used	out
224	AD13	DCS#[3]	sDram Chip Select	Exclusively for connecting 168-pin registered DIMM	N.C.	Not used	out
217	AD6	DDQ[0]	sDram Data	SDRAM data	SDD[0]	SDRAM data	I/O
128	AE6	DDQ[1]	sDram Data	SDRAM data	SDD[1]	SDRAM data	I/O
374	AB9	DDQ[10]	sDram Data	SDRAM data	SDD[10]	SDRAM data	I/O
301	AC9	DDQ[11]	sDram Data	SDRAM data	SDD[11]	SDRAM data	I/O
220	AD9	DDQ[12]	sDram Data	SDRAM data	SDD[12]	SDRAM data	I/O
131	AE9	DDQ[13]	sDram Data	SDRAM data	SDD[13]	SDRAM data	I/O
34	AF9	DDQ[14]	sDram Data	SDRAM data	SDD[14]	SDRAM data	I/O
221	AD10	DDQ[15]	sDram Data	SDRAM data	SDD[15]	SDRAM data	I/O
140	AE18	DDQ[16]	sDram Data	SDRAM data	SDD[16]	SDRAM data	I/O
44	AF19	DDQ[17]	sDram Data	SDRAM data	SDD[17]	SDRAM data	I/O
141	AE19	DDQ[18]	sDram Data	SDRAM data	SDD[18]	SDRAM data	I/O
230	AD19	DDQ[19]	sDram Data	SDRAM data	SDD[19]	SDRAM data	I/O
31	AF6	DDQ[2]	sDram Data	SDRAM data	SDD[2]	SDRAM data	I/O
311	AC19	DDQ[20]	sDram Data	SDRAM data	SDD[20]	SDRAM data	I/O
384	AB19	DDQ[21]	sDram Data	SDRAM data	SDD[21]	SDRAM data	I/O
45	AF20	DDQ[22]	sDram Data	SDRAM data	SDD[22]	SDRAM data	I/O
142	AE20	DDQ[23]	sDram Data	SDRAM data	SDD[23]	SDRAM data	I/O
231	AD20	DDQ[24]	sDram Data	SDRAM data	SDD[24]	SDRAM data	I/O
46	AF21	DDQ[25]	sDram Data	SDRAM data	SDD[25]	SDRAM data	I/O
143	AE21	DDQ[26]	sDram Data	SDRAM data	SDD[26]	SDRAM data	I/O
232	AD21	DDQ[27]	sDram Data	SDRAM data	SDD[27]	SDRAM data	I/O
313	AC21	DDQ[28]	sDram Data	SDRAM data	SDD[28]	SDRAM data	I/O
386	AB21	DDQ[29]	sDram Data	SDRAM data	SDD[29]	SDRAM data	I/O
372	AB7	DDQ[3]	sDram Data	SDRAM data	SDD[3]	SDRAM data	I/O
47	AF22	DDQ[30]	sDram Data	SDRAM data	SDD[30]	SDRAM data	I/O
144	AE22	DDQ[31]	sDram Data	SDRAM data	SDD[31]	SDRAM data	I/O
299	AC7	DDQ[4]	sDram Data	SDRAM data	SDD[4]	SDRAM data	I/O
218	AD7	DDQ[5]	sDram Data	SDRAM data	SDD[5]	SDRAM data	I/O
129	AE7	DDQ[6]	sDram Data	SDRAM data	SDD[6]	SDRAM data	I/O
32	AF7	DDQ[7]	sDram Data	SDRAM data	SDD[7]	SDRAM data	I/O

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
130	AE8	DDQ[8]	sDram Data	SDRAM data	SDD[8]	SDRAM data	I/O
33	AF8	DDQ[9]	sDram Data	SDRAM data	SDD[9]	SDRAM data	I/O
376	AB11	DDQM[0]	sDram Data Mask	DDQM[0] → DDQ[31:24]	SDDM[0]	Selection of byte lane	out
303	AC11	DDQM[1]	sDram Data Mask	DDQM[1] → DDQ[23:16]	SDDM[1]	Selection of byte lane	out
382	AB17	DDQM[2]	sDram Data Mask	DDQM[2] → DDQ[15:08]	SDDM[2]	Selection of byte lane	out
43	AF18	DDQM[3]	sDram Data Mask	DDQM[3] → DDQ[07:00]	SDDM[3]	Selection of byte lane	out
409	E17	DIR	bus DIRection	Indicate the transfer direction of D[31:00] L: (read), H: (write)	N.C.	Not used	out
120	AA2	DISABLE	Video output disable	High: the video output signal becomes High-Z	Low 10kPull_Down	Not used	in
135	AE13	DRAS#	sDram Row Address Strobe	Low address strobe signal	SDRAS#	RAS signal for SDRAM	out
132	AE10	DWE#	sDram Write Enable	Write enable signal	SDWE#	Write signal for SDRAM	out
389	Y22	ECLK	Esb CLock	Clock signal for ICE interface	ECLK	Not used	out
388	AA22	ECV	Esb Command Valid	Command valid signal for CE interface	ECV	Not used	in
151	AA25	ED	Esb Data	Data input and output signal for ICE interface		Not used	I/O
20	Y1	ENABLE/ ENABLE#	Pixel output enable	Signal indicating the valid pixel data output is produced. The polarity is programmable		Not used	out
338	D19	ERR#	ERRor	This is sampled at the end of bus cycle, and the error notification input from the slave device is produced	High 33k Pull_UP	Not used	in
238	AA24	ERST#	Esb ReSeT	Reset the signal for ICE interface: Open when not used		Not used	in
211	AA3	FSCKI	Basic clock input for audio output	Bit clock input for audio output	Low GND	Not used	in
354	F5	HOVRCUR#	USB Over Current Detection	Vbus over-current detection input	High 33k Pull_UP	Not used	in
5	E1	HPWREN	USB Port Power Enable	Vbus power supply control output		Not used	out
317	AA23	HRST#	Hard ReSeT	Reset input exclusively when the ICE is in use	33k Pull_UP	Not used	in
176	B19	IBW	Initial Bus Width	The data bus width of the boot ROM connected to CS#[0] (L:16bit H:32bit)	LOWAF16bit	ROMAF16bit	in
212	AB3	LRCKI/FS1	LR clock input/CH1 synchronous signal output	LR clock input/CH1 synchronous signal output	Low 33k Pull_Down	Not used	-
370	AB5	LRCKO/FS0	LR clock output/CH0 synchronous signal	LR clock output/CH0 synchronous signal	N.C.	Not used	out
418	E8	MSDIRP	Direction output for input and output of MSDIO[3:1]	H: Output, L: Input		Not used	out
315	AC23	MTESTMODE	UITEST MODE Input	Fixed to the "L" level on the board	Low GND	Not used	in
1	A1	N.C	No Connection		N.C.	N.C.	
2	B1	N.C	No Connection		N.C.	N.C.	
3	C1	N.C	No Connection		N.C.	N.C.	
4	D1	N.C	No Connection		N.C.	N.C.	
23	AC1	N.C	No Connection		N.C.	N.C.	
24	AD1	N.C	No Connection		N.C.	N.C.	
25	AE1	N.C	No Connection		N.C.	N.C.	
26	AF1	N.C	No Connection		N.C.	N.C.	
27	AF2	N.C	No Connection		N.C.	N.C.	
28	AF3	N.C	No Connection		N.C.	N.C.	
29	AF4	N.C	No Connection		N.C.	N.C.	
48	AF23	N.C	No Connection		N.C.	N.C.	
49	AF24	N.C	No Connection		N.C.	N.C.	
50	AF25	N.C	No Connection		N.C.	N.C.	
51	AF26	N.C	No Connection		N.C.	N.C.	
52	AE26	N.C	No Connection		N.C.	N.C.	
53	AD26	N.C	No Connection		N.C.	N.C.	
54	AC26	N.C	No Connection		N.C.	N.C.	

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
73	D26	N.C	No Connection		N.C.	N.C.	
74	C26	N.C	No Connection		N.C.	N.C.	
75	B26	N.C	No Connection		N.C.	N.C.	
76	A26	N.C	No Connection		N.C.	N.C.	
77	A25	N.C	No Connection		N.C.	N.C.	
78	A24	N.C	No Connection		N.C.	N.C.	
79	A23	N.C	No Connection		N.C.	N.C.	
98	A4	N.C	No Connection		N.C.	N.C.	
99	A3	N.C	No Connection		N.C.	N.C.	
100	A2	N.C	No Connection		N.C.	N.C.	
101	B2	N.C	No Connection		N.C.	N.C.	
102	C2	N.C	No Connection		N.C.	N.C.	
103	D2	N.C	No Connection		N.C.	N.C.	
122	AC2	N.C	No Connection		N.C.	N.C.	
123	AD2	N.C	No Connection		N.C.	N.C.	
124	AE2	N.C	No Connection		N.C.	N.C.	
125	AE3	N.C	No Connection		N.C.	N.C.	
146	AE24	N.C	No Connection		N.C.	N.C.	
147	AE25	N.C	No Connection		N.C.	N.C.	
148	AD25	N.C	No Connection		N.C.	N.C.	
149	AC25	N.C	No Connection		N.C.	N.C.	
169	C25	N.C	No Connection		N.C.	N.C.	
170	B25	N.C	No Connection		N.C.	N.C.	
171	B24	N.C	No Connection		N.C.	N.C.	
172	B23	N.C	No Connection		N.C.	N.C.	
192	B3	N.C	No Connection		N.C.	N.C.	
193	C3	N.C	No Connection		N.C.	N.C.	
214	AD3	N.C	No Connection		N.C.	N.C.	
235	AD24	N.C	No Connection		N.C.	N.C.	
256	C24	N.C	No Connection		N.C.	N.C.	
88	A14	PP[00]/IREQ#[0]	Interrupt ReQuest 0/ GPIO 0	Common terminal for the interruption input and the general-purpose input and output port (GPIO)		Not used	out
89	A13	PP[01]/IREQ#[1]	Interrupt ReQuest 1/ GPIO 1	Common terminal for the interruption input and the general-purpose input and output port (GPIO)		Not used	out
182	B13	PP[02]/IREQ#[2]	Interrupt ReQuest 2/ GPIO 2	Common terminal for the interruption input and the general-purpose input and output port (GPIO)		Not used	out
267	C13	PP[03]/IREQ#[3]	Interrupt ReQuest 3/ GPIO 3	Common terminal for the interruption input and the general-purpose input and output port (GPIO)		Not used	out
90	A12	PP[04]/TOUT [0]/ GATE [0]	Timer ch.0 OUTput/ timer ch.0 GATE/ GPIO 4	Common terminal for the timer ch.0 terminal and the general-purpose input and output port (GPIO)		Not used	out
183	B12	PP[05]/TOUT [1]/ GATE [1]	Timer ch.1 OUTput/ timer ch.1 GATE/ GPIO 5	Common terminal for the timer ch.1 terminal and the general-purpose input and output port (GPIO)		Not used	out
268	C12	PP[06]/RXD [0]	uart ch.0 Receive Data/GPIO 6	Common terminal for the received data on UART ch.0 and the general-purpose input and output port (GPIO)		Not used	out
345	D12	PP[07]/TXD [0]	uart ch.0 Transmit Data/GPIO 7	Common terminal for the transmitted data on UART ch.0 and the general-purpose input and output port (GPIO)		Not used	out
414	E12	PP[08]/CTS#[0]	uart ch.0 Clear To Send/GPIO 8	Common terminal for the CTS signal on UART ch.0 and the general-purpose input and output port (GPIO)		Not used	out

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
91	A11	PP[09]/RTS#[0]	uart ch.0 Request To Send/GPIO 9	Common terminal for the RTS signal on UART ch.0 and the general-purpose input and output port (GPIO)	USB_F_ENB#	USB_F Connection Acknowledge (D+ pull-up)	out
184	B11	PP[10]/RXD [1]	uart ch.1 Receive Data/GPIO 10	Common terminal for the received data on UART ch.1 and the general-purpose input and output port (GPIO)		Not used	out
269	C11	PP[11]/TXD [1]	uart ch.1 Transmit Data/GPIO 11	Common terminal for the transmitted data on UART ch.1 and the general-purpose input and output port (GPIO)		Not used	out
92	A10	PP[12]/DREQ#[0]	Dmac ch.0 REQuest/GPIO 12	Common terminal for the transmission request on DMAC ch.0 and the general-purpose input and output port (GPIO)		Not used	out
94	A8	PP[13]/DACK#[0]	Dmac ch.0 ACKnowledge/GPIO 13	Common terminal for the transmission acknowledge on DMAC ch.0 and the general-purpose input and output port (GPIO)		Not used	out
416	E10	PP[14]/DONE#[0]/DREQ#[4]	Dmac ch.0 transfer DONE/Dmac ch.4 transfer REQuest/GPIO 14	Common terminal for the end of transmission signal on DMAC ch.0, the transmission request on DMAC ch.4, and the general-purpose input and output port (GPIO)		Not used	out
185	B10	PP[15]/DREQ#[1]	Dmac ch.1 transfer REQuest/GPIO 15	Common terminal for the transmission request on DMAC ch.1 and the general-purpose input and output port (GPIO)		Not used	out
187	B8	PP[16]/DACK#[1]	Dmac ch.1 ACKnowledge/GPIO 16	Common terminal for the transmission acknowledge on DMAC ch.1 and the general-purpose input and output port (GPIO)		[COPY] LED control	out
93	A9	PP[17]/DONE#[1]/DREQ#[5]	Dmac ch.1 transfer DONE/Dmac ch.5 transfer REQuest/GPIO 17	Common terminal for the end of transmission signal on DMAC ch.1, the transmission request on DMAC ch.5 and the general-purpose input and output port (GPIO)		[SCAN] LED control	out
270	C10	PP[18]/DREQ#[2]	Dmac ch.2 transfer REQuest/GPIO 18	Common terminal for the transmission request on DMAC ch.2 and the general-purpose input and output port (GPIO)		[FAX] LED control	out
347	D10	PP[19]/DREQ#[3]	Dmac ch.3 transfer REQuest/GPIO 19	Common terminal for the transmission request on DMAC ch.3 and the general-purpose input and output port (GPIO)		Not used	out
186	B9	PP[20]/DACK#[2]/DREQ#[6]	Dmac ch.2 ACKnowledge/Dmac ch.6 transfer REQuest/GPIO 20	Common terminal for the transmission acknowledge on DMAC ch.2, the transmission request on DMAC ch.6, and the general-purpose input and output port (GPIO)		Not used	out
271	C9	PP[21]/DACK#[3]/DREQ#[7]	Dmac ch.3 ACKnowledge/Dmac ch.7 transfer REQuest/GPIO 21	The transfer acknowledge on DMAC ch.3, the transmission request on DMAC ch.7, and the general-purpose input and output port (GPIO)		Not used	out
57	Y26	PRST#	Power-on ReSeT	Reset signal (16 CLKIN clock cycles)	FR_RST#	Reset input	in



pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
239	Y24	RAMBOOT#	RAM BOOT	A software reset is caused by applying the 'L' level. At the time of power on reset, reflection to the SA bit of HSR0 is made. In the case of 'L' level: 0x00000000 In the case of 'H' level: 0xFF000000	'H' 33k Pull_UP	Not used	in
263	C17	RD#	ReaD	An assertion is made after the second cycle of the read cycle.	CPRD# FROM_*OE	ROM readout	out
340	D17	RDY#	ReaDY	The bus cycle completion notification is input. When RSTOUT# is asserted, the value of RDY# is reflected to LCR0.RC	33k Pull_UP	Not used	in
321	U23	RSTOUT#	ReSeT OUTput	RESET output	33k Pull_UP	Not used	out
297	AC5	SCL[0]	I2C clock: channel [0]	I2C clock: channel [0]	N.C.	Not used	out
216	AD5	SCL[1]	I2C clock: channel[1]	I2C clock: channel[1]	N.C.	Not used	out
215	AD4	SDA[0]	I2C data: Channel [0]	I2C data: Channel [0]	N.C.	Not used	I/O
126	AE4	SDA[1]	I2C data: Channel [1]	I2C data: Channel [1]	N.C.	Not used	out
351	D6	SDCD	SD insertion and extraction signal	SD insertion and extraction signal	N.C. 100k Pull_UP	Not used	in
189	B6	SDCKI	Clock input for SD	Clock input for SD	N.C. 33k Pull_UP	Not used	in
272	C8	SDCLK	Transfer clock output for SD and memory stick	Transfer clock output for SD and memory stick	N.C.	Not used	out
95	A7	SDCMD	Input and output of the SD command	Bus state of the serial interface	N.C. 33k Pull_UP	Not used	I/O
188	B7	SDDAT[0]	Data signal for SD	Data signal for SD	N.C. 100k Pull_UP	Not used	I/O
273	C7	SDDAT[1]	Data signal for SD	Data signal for SD	N.C. 100k Pull_UP	Not used	I/O
350	D7	SDDAT[2]	Data signal for SD	Data signal for SD	N.C. 100k Pull_UP	Not used	I/O
419	E7	SDDAT[3]	Data signal for SD	Data signal for SD	N.C. 47k Pull_UP	Not used	I/O
294	AA4	SDI/DR	Audio data input	Input the audio serial data	Low GND	Not used	in
420	E6	SDMSSELECT	SD/memory stick selection signal input	H:SD L:MS	High	Select the SD function (fixed to SD)	in
213	AC3	SDO/DX	Audio data output	Audio serial data output is produced	N.C.	Not used	out
349	D8	SDWP	SD card write protect input	Input the SD card write enable	N.C. 10k Pull_UP	Not used	in
316	AB23	TCK	Test Clock	Test clock terminal	Low GND	Not used	in
234	AD23	TDC	Test Input	Fixed to the "L" level on the board	Low GND	Not used	in
237	AB24	TDI	Test Data Input	Test data input terminal	N.C.	Not used	in
236	AC24	TDO	Test Data Output	Test data output terminal	N.C.	Not used	out
145	AE23	TESTMODE	TEST MODE Input	Fixed to the "L" level on the board	Low GND	Not used	in
150	AB25	TMS	Test Mode Select	Test mode selection terminal	N.C.	Not used	in
119	Y2	TOPFIELD/ TOPFIELD#	Top field	Indicate that the top field is being displayed. The polarity is programmable	N.C.	Not used	out
55	AB26	TRST#	Test ReSeT	Input the same signal with PRST# when not using the JTAG function	FR_RST# CPU_*PRST	Not used (ICE function)	in
191	B4	UDM	USB(F) D -signal	Differential signal of the USB function (-)	USB(F) D- UDM_F	USB-F (device) data	I/O
278	E4	UDM1	USB(Host) D- signal	Differential signal of the USB host (-)	N.C.	Not used	I/O
276	C4	UDP	USB(F) D+ signal	Differential signal of the USB function (+)	USB(F) D+ UDP_F	USB-F (device) data	I/O
353	E5	UDP1	USB (Host) D+signal	Differential signal of the USB host (+)	N.C.	Not used	I/O
190	B5	USCKI	USB clock input	Input the clock for the USB interface	USB_CLK 48MHz	USB_CLK 48MHz	in



pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
110	L2	VCB[0]/AVPP[24]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
11	L1	VCB[1]/AVPP[25]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
360	M5	VCB[2]/AVPP[26]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
285	M4	VCB[3]/AVPP[27]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
202	M3	VCB[4]/AVPP[28]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
111	M2	VCB[5]/AVPP[29]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
12	M1	VCB[6]/AVPP[30]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
112	N2	VCB[7]/AVPP[31]	B component input/C component input/Cb component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	N.C. High 33k Pull_UP	Not used	out
357	J5	VCDCLKIN	Capture pixel clock input	Sampling clock for capturing	Low	Not used	in
6	F1	VCG[0]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
355	G5	VCG[1]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
280	G4	VCG[2]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
197	G3	VCG[3]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
106	G2	VCG[4]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
7	G1	VCG[5]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
356	H5	VCG[6]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
281	H4	VCG[7]	G component input/Y component input/YC multiplex input	Input of the video data for capturing	Low	Not used	in
198	H3	VCHSYNC/VCH-SYNC#	Horizontal synchronous signal input	Synchronous signal input for capturing. The polarity is programmable.	Low	Not used	in
108	J2	VCR[0]/AVPP[8]	R component input/Cr component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	LCD_CS	CS signal for LCD serial control	out
9	J1	VCR[1]/AVPP[9]	R component input/Cr component input/GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	LCD_SCL	Clock signal for LCD serial control	out

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
358	K5	VCR[2]/AVPP[10]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	LCD_SDI	Data signal for LCD serial control	out
283	K4	VCR[3]/AVPP[11]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.	LCD_BL	For controlling LCD backlight	out
200	K3	VCR[4]/AVPP[12]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.		Not used	out
109	K2	VCR[5]/AVPP[13]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.		Not used	out
10	K1	VCR[6]/AVPP[14]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.		Not used	out
201	L3	VCR[7]/AVPP[15]	R component input/ Cr component input/ GPIO	Input of the video data for capturing. Common terminal with GPIO. Input of GPIO after a reset.		Not used	out
107	H2	VCVSYNC/ VCVSYNC#	Vertical synchronous signal input	Synchronous signal input for capturing. The polarity is programmable.	Low	Not used	in
207	U3	VDB/CX/[0]/ AVPP[32]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
18	V1	VDB/CX/[1]/ AVPP[33]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
117	V2	VDB/CX/[2]/ AVPP[34]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
208	V3	VDB/CX/[3]/ AVPP[35]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
291	V4	VDB/CX/[4]/ AVPP[36]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
366	V5	VDB/CX/[5]/ AVPP[37]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
19	W1	VDB/CX/[6]/ AVPP[38]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
118	W2	VDB/CX/[7]/ AVPP[39]	B component output/ C component output/ Cb component output/ GPIO	In the 16-bit YC mode, the Cb component and the Cr component outputs are produced in the time division system/Common terminal with GPIO	N.C. High 33k Pull_UP	Not used	out
209	W3	VDCLKOUT	Display pixel clock output	The Pixel data output is produced in sync with this signal	Video_VDCLK	Video data Clock	out
30	AF5	VDD	1.4V		1.4v	1.4v	
59	V26	VDD	1.4V		1.4v	1.4v	
97	A5	VDD	1.4V		1.4v	1.4v	
104	E2	VDD	1.4V		1.4v	1.4v	
105	F2	VDD	1.4V		1.4v	1.4v	

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
199	J3	VDD	1.4V		1.4v	1.4v	
210	Y3	VDD	1.4V		1.4v	1.4v	
219	AD8	VDD	1.4V		1.4v	1.4v	
275	C5	VDD	1.4V		1.4v	1.4v	
339	D18	VDD	1.4V		1.4v	1.4v	
377	AB12	VDD	1.4V		1.4v	1.4v	
378	AB13	VDD	1.4V		1.4v	1.4v	
383	AB18	VDD	1.4V		1.4v	1.4v	
387	AB22	VDD	1.4V		1.4v	1.4v	
390	W22	VDD	1.4V		1.4v	1.4v	
391	V22	VDD	1.4V		1.4v	1.4v	
404	E22	VDD	1.4V		1.4v	1.4v	
407	E19	VDD	1.4V		1.4v	1.4v	
417	E9	VDD	1.4V		1.4v	1.4v	
21	AA1	VDE	3.3V		3.3v	3.3v	
121	AB2	VDE	3.3V		3.3v	3.3v	
152	Y25	VDE	3.3V		3.3v	3.3v	
194	D3	VDE	3.3V		3.3v	3.3v	
196	F3	VDE	3.3V		3.3v	3.3v	
262	C18	VDE	3.3V		3.3v	3.3v	
274	C6	VDE	3.3V		3.3v	3.3v	
277	D4	VDE	3.3V		3.3v	3.3v	
282	J4	VDE	3.3V		3.3v	3.3v	
284	L4	VDE	3.3V		3.3v	3.3v	
286	N4	VDE	3.3V		3.3v	3.3v	
296	AC4	VDE	3.3V		3.3v	3.3v	
298	AC6	VDE	3.3V		3.3v	3.3v	
300	AC8	VDE	3.3V		3.3v	3.3v	
302	AC10	VDE	3.3V		3.3v	3.3v	
310	AC18	VDE	3.3V		3.3v	3.3v	
314	AC22	VDE	3.3V		3.3v	3.3v	
323	R23	VDE	3.3V		3.3v	3.3v	
336	D21	VDE	3.3V		3.3v	3.3v	
341	D16	VDE	3.3V		3.3v	3.3v	
343	D14	VDE	3.3V		3.3v	3.3v	
363	R5	VDE	3.3V		3.3v	3.3v	
365	U5	VDE	3.3V		3.3v	3.3v	
379	AB14	VDE	3.3V		3.3v	3.3v	
381	AB16	VDE	3.3V		3.3v	3.3v	
385	AB20	VDE	3.3V		3.3v	3.3v	
392	U22	VDE	3.3V		3.3v	3.3v	
396	N22	VDE	3.3V		3.3v	3.3v	
398	L22	VDE	3.3V		3.3v	3.3v	
400	J22	VDE	3.3V		3.3v	3.3v	
402	G22	VDE	3.3V		3.3v	3.3v	
413	E13	VDE	3.3V		3.3v	3.3v	
415	E11	VDE	3.3V		3.3v	3.3v	
205	R3	VDG/Y/X[0]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[0]	Video data output for display	out
16	T1	VDG/Y/X[1]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[1]	Video data output for display	out
115	T2	VDG/Y/X[2]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[2]	Video data output for display	out
206	T3	VDG/Y/X[3]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[3]	Video data output for display	out
289	T4	VDG/Y/X[4]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[4]	Video data output for display	out
364	T5	VDG/Y/X[5]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[5]	Video data output for display	out

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
17	U1	VDG/Y/X[6]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[6]	Video data output for display	out
116	U2	VDG/Y/X[7]	G component output/ Y component output/ YC multiplex output	Video data output for display	VDYC[7]	Video data output for display	out
292	W4	VDHSYNC	Horizontal synchronous signal output	Synchronous signal output for display	Video_VDHSY NC	Vertical Synchronous signal	out
368	Y5	VDPCLKIN	Display pixel clock input	Input the basic clock to generate the display pixel clock output	Video CLK_44.4MHz	44.4MHz input (for Video)	in
13	N1	VDR[0]/AVPP[16]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
14	P1	VDR[1]/AVPP[17]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
113	P2	VDR[2]/AVPP[18]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
204	P3	VDR[3]/AVPP[19]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
287	P4	VDR[4]/AVPP[20]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
362	P5	VDR[5]/AVPP[21]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
15	R1	VDR[6]/AVPP[22]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
114	R2	VDR[7]/AVPP[23]	R component output/ Cr component output/ GPIO	Video data output for display/ common use with GPIO		Not used	out
367	W5	VDVSYNC	Vertical synchronous signal output	Synchronous signal output for display	Video_VDVSY NC	Video VSYNC signal	out
8	H1	VSS	GND		GND	GND	
22	AB1	VSS	GND		GND	GND	
37	AF12	VSS	GND		GND	GND	
56	AA26	VSS	GND		GND	GND	
82	A20	VSS	GND		GND	GND	
96	A6	VSS	GND		GND	GND	
127	AE5	VSS	GND		GND	GND	
195	E3	VSS	GND		GND	GND	
203	N3	VSS	GND		GND	GND	
223	AD12	VSS	GND		GND	GND	
229	AD18	VSS	GND		GND	GND	
233	AD22	VSS	GND		GND	GND	
241	V24	VSS	GND		GND	GND	
279	F4	VSS	GND		GND	GND	
288	R4	VSS	GND		GND	GND	
290	U4	VSS	GND		GND	GND	
293	Y4	VSS	GND		GND	GND	
305	AC13	VSS	GND		GND	GND	
306	AC14	VSS	GND		GND	GND	
308	AC16	VSS	GND		GND	GND	
312	AC20	VSS	GND		GND	GND	
318	Y23	VSS	GND		GND	GND	
320	V23	VSS	GND		GND	GND	
325	N23	VSS	GND		GND	GND	
327	L23	VSS	GND		GND	GND	
329	J23	VSS	GND		GND	GND	
331	G23	VSS	GND		GND	GND	
333	E23	VSS	GND		GND	GND	
344	D13	VSS	GND		GND	GND	
346	D11	VSS	GND		GND	GND	

pin No.	pin assignment	Name of the CPU terminal	VDE	VDD	Signal name of the CPU (IC101) on the main board	Purpose of the signal	I/O
348	D9	VSS	GND		GND	GND	
352	D5	VSS	GND		GND	GND	
359	L5	VSS	GND		GND	GND	
361	N5	VSS	GND		GND	GND	
371	AB6	VSS	GND		GND	GND	
373	AB8	VSS	GND		GND	GND	
375	AB10	VSS	GND		GND	GND	
394	R22	VSS	GND		GND	GND	
405	E21	VSS	GND		GND	GND	
408	E18	VSS	GND		GND	GND	
410	E16	VSS	GND		GND	GND	
412	E14	VSS	GND		GND	GND	
178	B17	WE#	Write Enable	Assertion is made during the write cycle	CPWE# FROM_*WE(W E#)	for Flash ROM writing	out

### 6.13.2. Description of functions

This unit has following functions.

- 1) Communication function
- 2) Colour LCD display function

- 1) Communication function

MAIN BOARD (IC300) communicates with PANEL BOARD (IC101) through USB I/F.

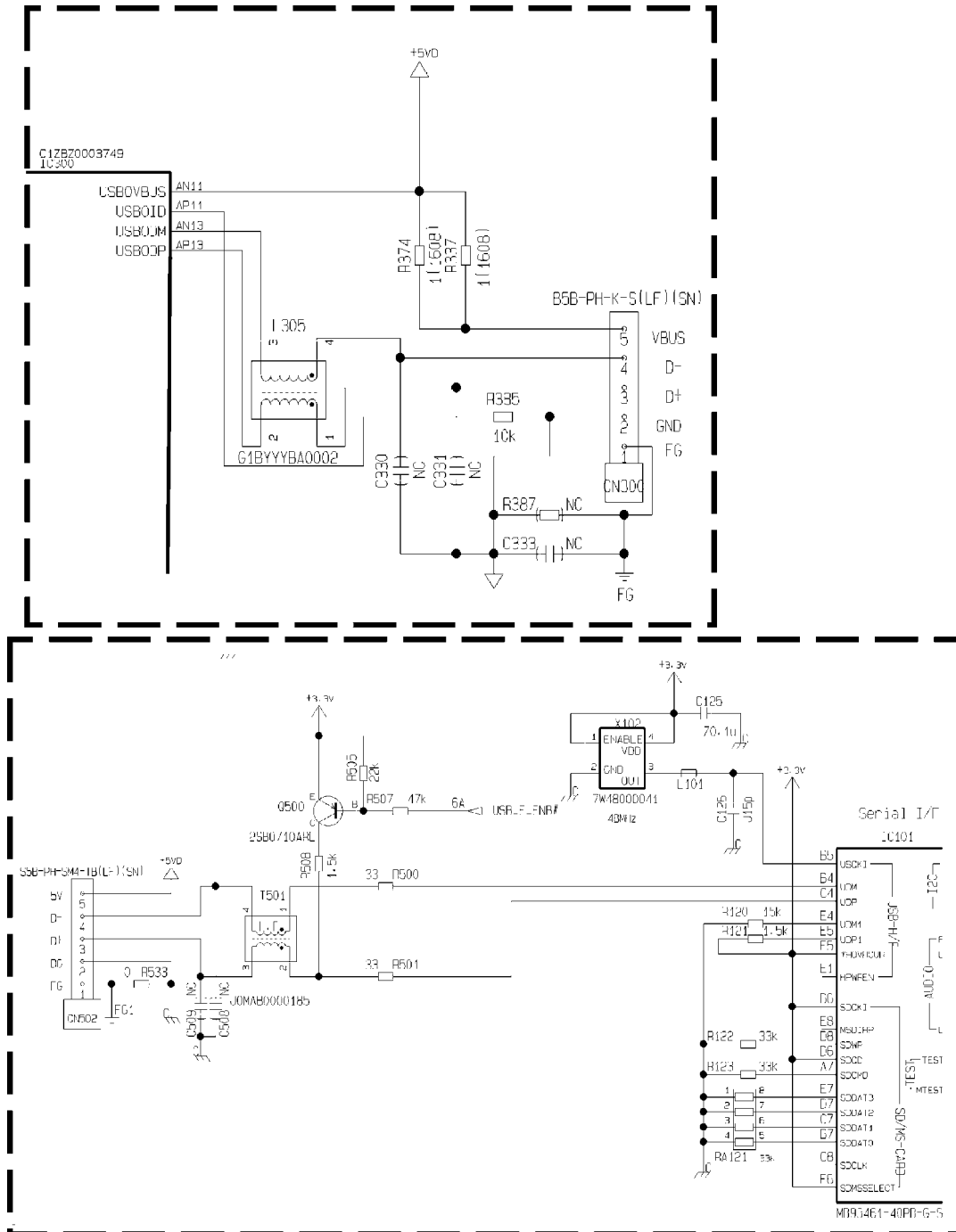
- 2) Colour LCD display function

3.6-inch colour TFT is driven for panel display.

### 6.13.3. Circuit description

#### 6.13.3.1. USB interface

- USB 2.0 Full-Speed (Transfer rate 12Mbit/s)
- The isochronous transfer is not supported.

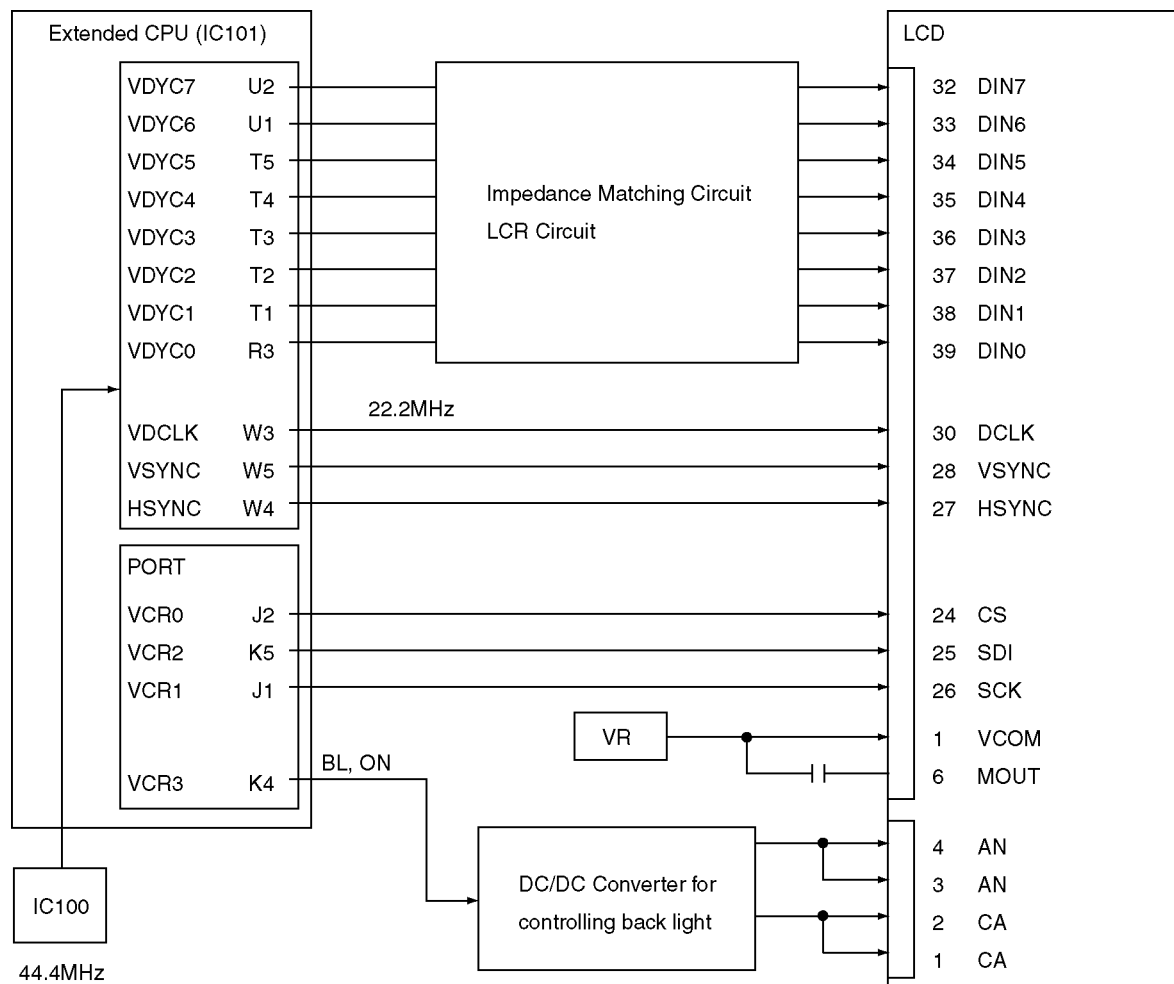


#### <Flow of operation>

After MFP is turned ON, CPU(IC101) detect the condition that CPU (IC300) of MAIN BOARD is ready for communication. At the same time, CPU(IC101) turns ON USB\_F\_ENB# to make D+ line of USB pull-up. This allows CPU(IC300) of MAIN BOARD to confirm the condition that CPU(IC300) of MAIN BOARD is ready for communication. Then the communication is started.

### 6.13.3.2. LCD interface

- The LCD interface uses the video controller circuit(VDC)inside the CPU(IC101).  
The data and control signals outputs is produced through the video control circuit in accordance with the interface specifications of the LCD interface. the serial control signal for accessing to the inside registers of LCD uses the port of CPU(IC101).  
This equipment has a DC/DC converter IC(IC600)for controlling the back light of LCD.
- Block diagram



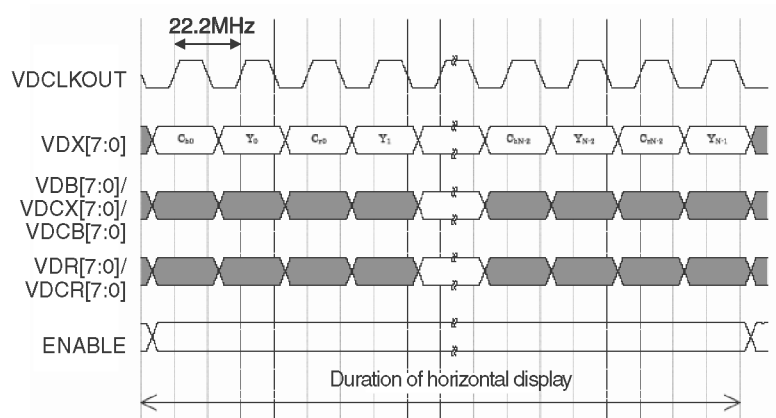
- Descriptions of the signals

Signal Name	Description
CS	These are the LCD serial control signal.
SDI	The LCD serial cotrol signal is a communication line to set the inside registers of the LCD.
SCK	The register settings of the LCD is initialized when the power is turned on.
VSYNC	Vsync(Vertical synchronous signal)
HSYNC	Hynsc(Horizontal synchronous signal)
VCOM/MOUT	The signal.which are adjusted to 2.0V by the VR, is integrated with the alternating current from the MOUT and are outputted to the VCOM of LTD.
AN	Power for LCD back light LED(20mA)
CA	



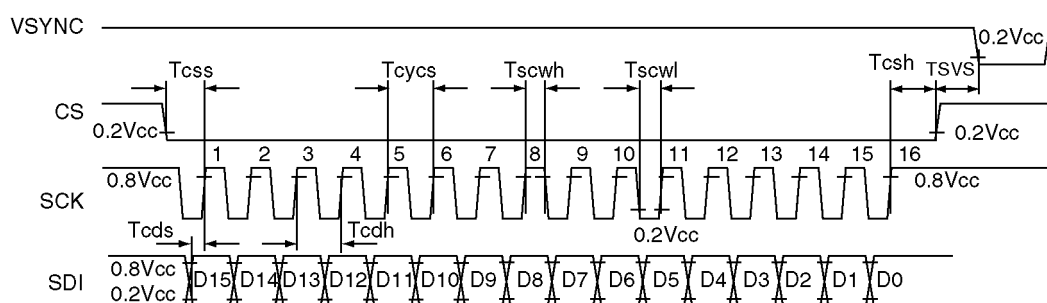
- LCD data signal timing

Transfer timing of data output from the CPU(IC101) to the LCD <YUV> 8-bit transfer method



- LCD serial control communication

Communications waveform when the CPU(IC101) makes settings in the inside registers of the LCD



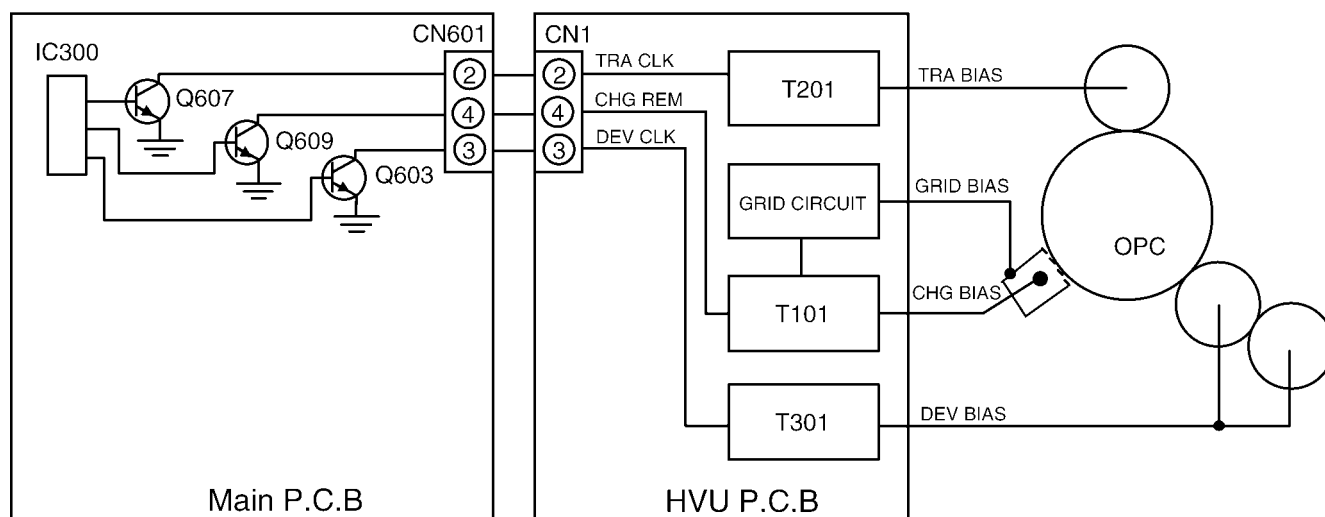
## 6.14. HVU (High Voltage Power Supply) Section

### 6.14.1. HVU SPECIFICATION for EUK1MN81H

	Charge (CHG)	Grid	Developing DC	Developing AC	Transfer (TRA) -	Transfer (TRA) +
Output Characteristics	Constant Current	Constant voltage	Constant voltage (Variable)	Rectangular Wave	Constant current (Variable)	Constant voltage
Nominal Output Voltage	5.2KV	500±18V	246V±15V PWM20% (at220pF//100MΩ)	330V±40V (p-p) f=38KHz±6KHz (at220pF//100MΩ)	100MΩ (1400V)	750V±70V (at 1000MΩ)
Nominal Output Current	250±15μA	(250μA)	-----	-----	-16.0μA±1μA PWM 35% (at 100MΩ)	(0.75μA)
Load Range	(18.8MΩ)	-----	220pF//100MΩ~ 220pF//2000MΩ	220pF//100MΩ~ 220pF//2000MΩ	30MΩ~300MΩ	10MΩ~1000MΩ
Constant Current Range	5.025KV~5.65KV	-----	-----	-----	500V ~ 7000V	-----

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.

**HVU (High Voltage Power Supply) Circuit Diagram**



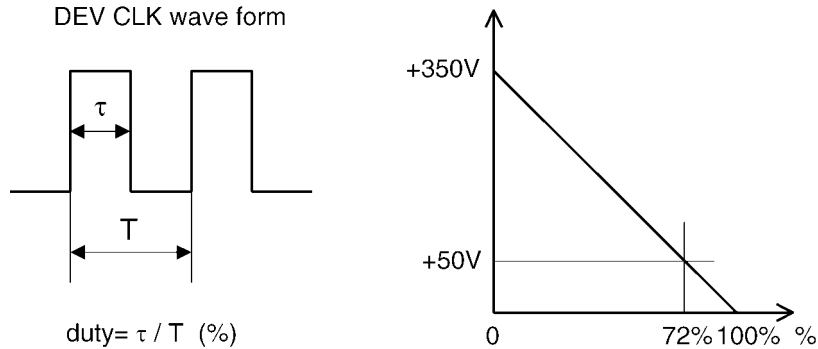
### 6.14.2. CHG-BIAS (Charge BIAS)/GRID/ UNIT

When IC300 turns on the transistor Q609, CHG REM becomes "L", and Charge BIAS (250μA) is output from CHG OUTPUT. GRID BIAS is generated by the current flowing in the GRID circuit via charge wire and GRID.

### 6.14.3. DEV DC BIAS UNIT

When CHG REM is "L", 5.425kHz PWM (Pulse Width Modulation) is input from IC300 to DEV CLK through Q603, 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**



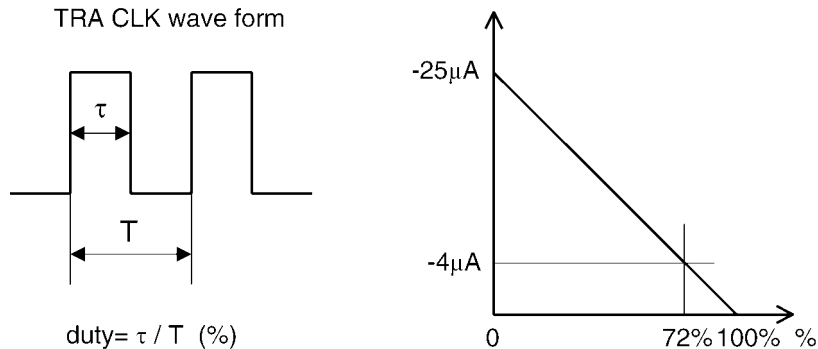
### 6.14.4. DEV AC BIAS UNIT

When CHG REM is "L", DEV AC is also output from DEV OUTPUT at the same time with CHG REM. DEV AC is Vp-p330V 38KHz of sine wave. This voltage is overlapped with developing DC voltage and output as AC voltage that includes the development DC voltage.

### 6.14.5. TRA (+) BIAS (Transfer (+) BIAS)/TRA (-) BIAS (Transfer (-) BIAS) UNIT

When CHG REM is "L" and TRA CLK is "open", Charge BIAS (250 $\mu$ A) is output from CHG OUTPUT, and at the same time Transfer (+) BIAS (750V) is output from TRA OUTPUT. When 5.425kHz PWM (Pulse Width Modulation) signal is input to TRA CLK through transistor Q607, Transfer (-) CURRENT BIAS corresponding to PWM signal is output from TRA OUTPUT.

**Transcription current variation corresponding to PWM input**



## 6.15. 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-U34pin. The heat lamp is turned on/off by the HTRCTL signal (IC300-E34pin) through the photo triac (PC2) and the triac (SCR21). And two thermostats are set on the AC line as the safety devices.

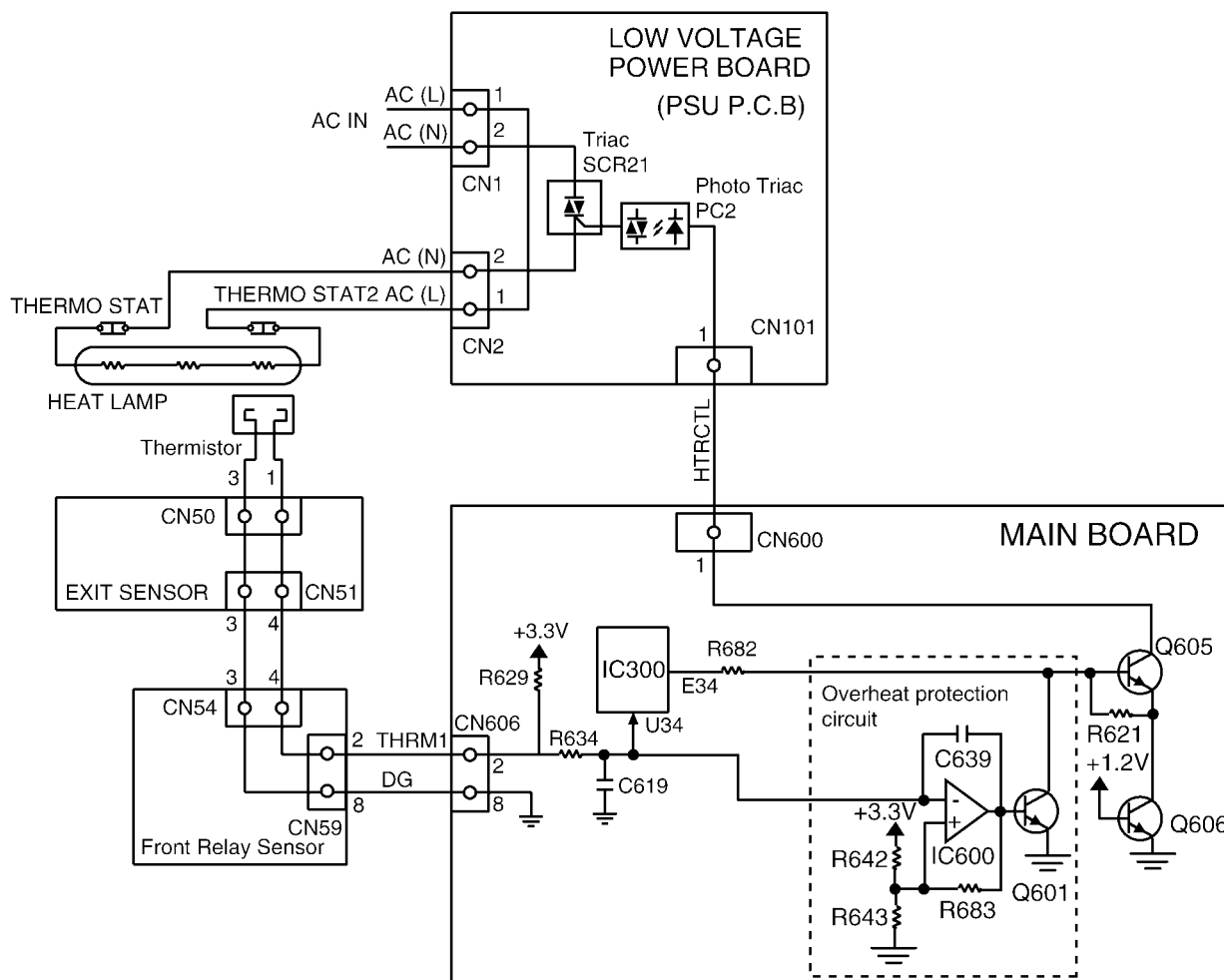
Overheat protection circuit is provided in order to prevent the Fuser unit from overheating when CPU cannot control Fuser by some problem.

IC600 compares Thermistor voltage and fixed voltage, which is determined by R642 and R643.

If Thermistor voltage becomes lower than this fixed voltage (this voltage corresponds to about 240 degree C), output of IC600 become "H", then Q601 turns ON, and Q605 is turned Off.

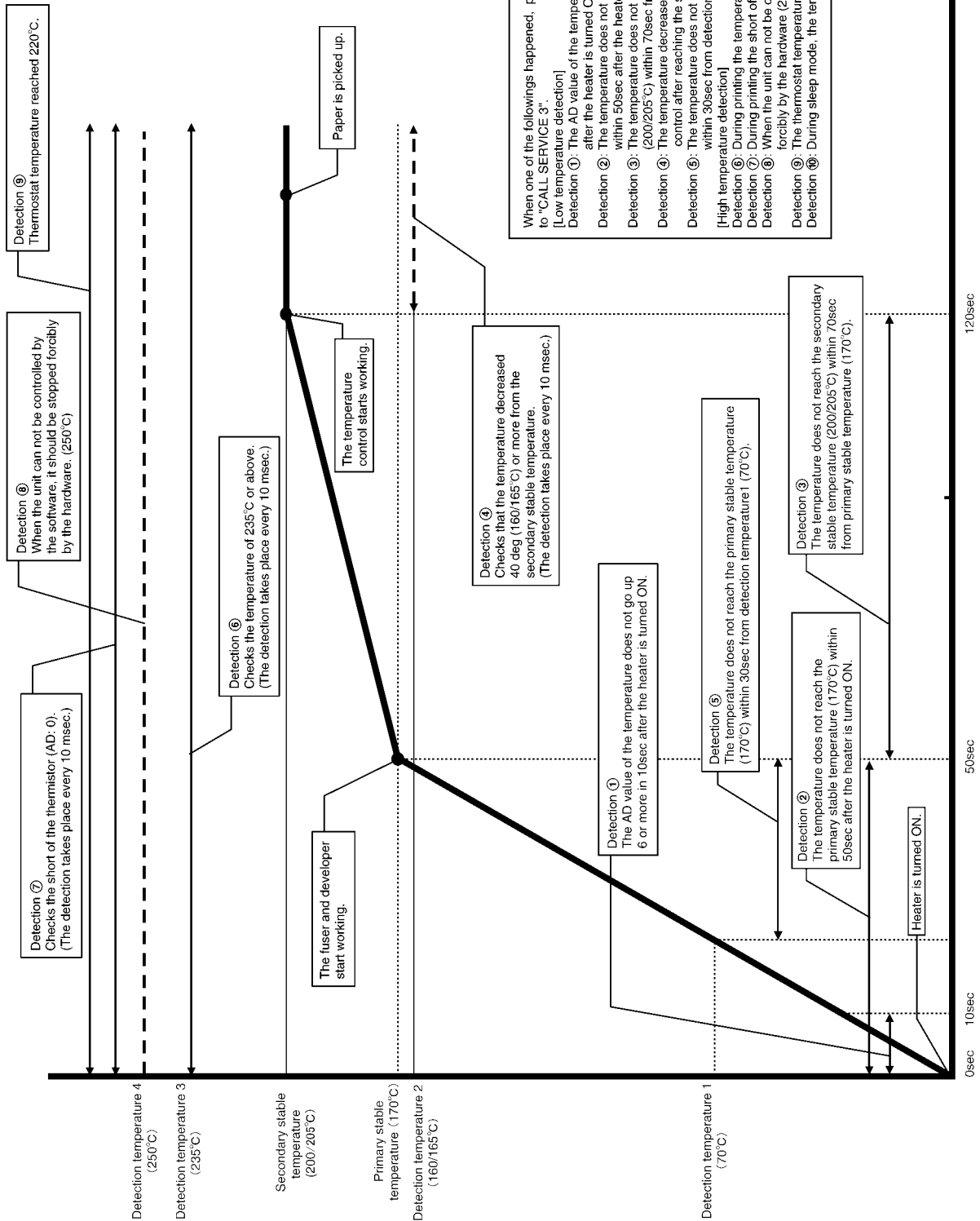
As the result, no current is supplied to Fuser lamp.

**Circuit Diagram**



### 1. Control at Printing

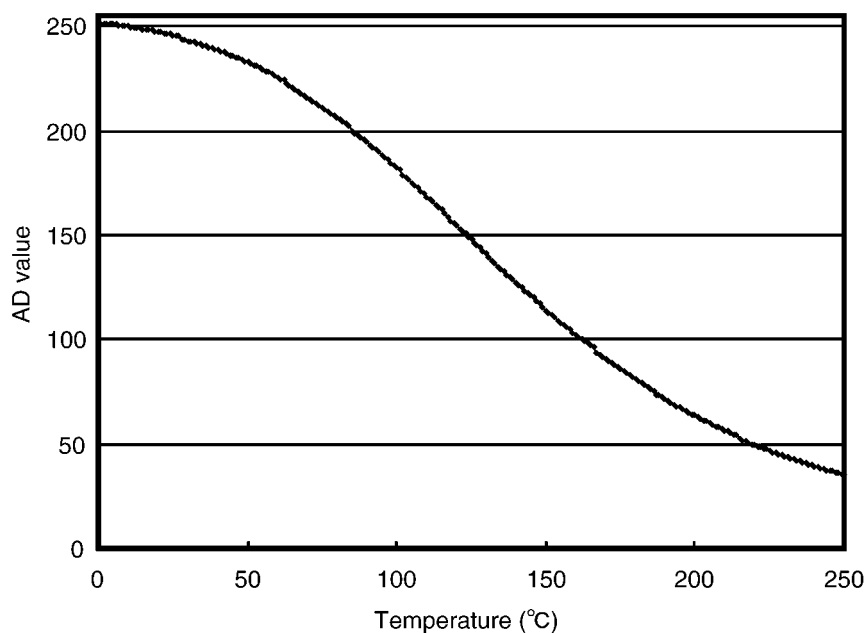
- After the printing signal is received, turn ON the heater.
- After that, turn ON the motor at the Primary Stable Temperature (160°C).
- After that, control at the Secondary Stable temperature (185°C), and feed papers.



## 2. Safety Protection

- 2 thermostats are provided with the unit, and the heater circuit is shut down when their surface temperatures became over 220°C.
- The heater control circuit of IC300 has the built-in function that the software turns off the heater control automatically if the heater is not turned ON every a fixed time.
- When the temperature became over 250°C, the heater control circuit of IC300 is turned off forcedly and system reset (IC300 pin B23 becomes Low) will be executed.

Heat Roller Temperature - Voltage



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	252	FC	84	202	CA	168	93	5D
1	251	FB	85	200	C8	169	92	5C
2	251	FB	86	199	C7	170	91	5B
3	251	FB	87	198	C6	171	90	5A
4	251	FB	88	197	C5	172	89	59
5	251	FB	89	196	C4	173	88	58
6	251	FB	90	195	C3	174	87	57
7	250	FA	91	193	C1	175	86	56
8	250	FA	92	192	C0	176	85	55
9	250	FA	93	191	BF	177	84	54
10	250	FA	94	190	BE	178	83	53
11	249	F9	95	188	BC	179	82	52
12	249	F9	96	187	BB	180	81	51
13	249	F9	97	186	BA	181	80	50
14	249	F9	98	184	B8	182	79	4F
15	248	F8	99	183	B7	183	78	4E
16	248	F8	100	182	B6	184	77	4D
17	248	F8	101	181	B5	185	76	4C
18	248	F8	102	179	B3	186	75	4B
19	247	F7	103	178	B2	187	74	4A
20	247	F7	104	177	B1	188	74	4A
21	247	F7	105	175	AF	189	73	49
22	246	F6	106	174	AE	190	72	48
23	246	F6	107	173	AD	191	71	47
24	246	F6	108	171	AB	192	70	46
25	245	F5	109	170	AA	193	69	45
26	245	F5	110	168	A8	194	68	44
27	245	F5	111	167	A7	195	68	44
28	244	F4	112	166	A6	196	67	43
29	244	F4	113	164	A4	197	66	42
30	243	F3	114	163	A3	198	65	41
31	243	F3	115	162	A2	199	64	40

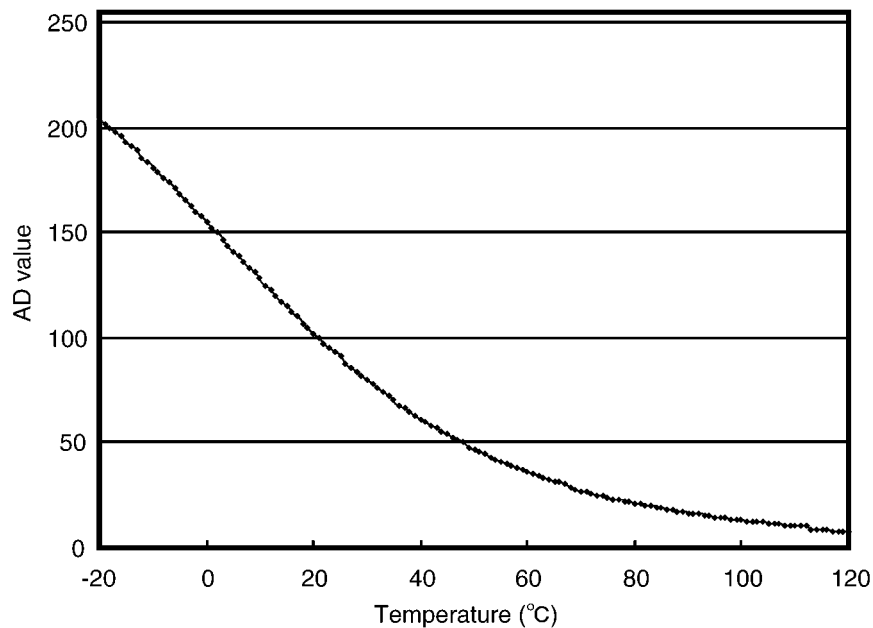
Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
32	243	F3	116	160	A0	200	64	40
33	242	F2	117	159	9F	201	63	3F
34	242	F2	118	157	9D	202	62	3E
35	241	F1	119	156	9C	203	61	3D
36	241	F1	120	155	9B	204	61	3D
37	240	F0	121	153	99	205	60	3C
38	240	F0	122	152	98	206	59	3B
39	239	EF	123	151	97	207	58	3A
40	239	EF	124	149	95	208	58	3A
41	238	EE	125	148	94	209	57	39
42	238	EE	126	146	92	210	56	38
43	237	ED	127	145	91	211	56	38
44	236	EC	128	144	90	212	55	37
45	236	EC	129	142	8E	213	54	36
46	235	EB	130	141	8D	214	54	36
47	235	EB	131	139	8B	215	53	35
48	234	EA	132	138	8A	216	52	34
49	233	E9	133	137	89	217	52	34
50	233	E9	134	135	87	218	51	33
51	232	E8	135	134	86	219	50	32
52	231	E7	136	133	85	220	50	32
53	231	E7	137	131	83	221	49	31
54	230	E6	138	130	82	222	49	31
55	229	E5	139	129	81	223	48	30
56	228	E4	140	127	7F	224	48	30
57	228	E4	141	126	7E	225	47	2F
58	227	E3	142	125	7D	226	46	2E
59	226	E2	143	123	7B	227	46	2E
60	225	E1	144	122	7A	228	45	2D
61	224	E0	145	121	79	229	45	2D
62	224	E0	146	120	78	230	44	2C
63	223	DF	147	118	76	231	44	2C
64	222	DE	148	117	75	232	43	2B
65	221	DD	149	116	74	233	43	2B
66	220	DC	150	114	72	234	42	2A
67	219	DB	151	113	71	235	42	2A
68	218	DA	152	112	70	236	41	29
69	217	D9	153	111	6F	237	41	29
70	216	D8	154	109	6D	238	40	28
71	215	D7	155	108	6C	239	40	28
72	214	D6	156	107	6B	240	39	27
73	213	D5	157	106	6A	241	39	27
74	212	D4	158	105	69	242	38	26
75	211	D3	159	103	67	243	38	26
76	210	D2	160	102	66	244	37	25
77	209	D1	161	101	65	245	37	25
78	208	D0	162	100	64	246	37	25
79	207	CF	163	99	63	247	36	24
80	206	CE	164	98	62	248	36	24
81	205	CD	165	97	61	249	35	23
82	204	CC	166	96	60	250	35	23
83	203	CB	167	94	5E			

**Note:**

The value is displayed on LCD at **Test Functions** (P.121) [#815].



Room Temperature - Voltage



The correspondence readings between temperature measured by fixing thermistor and HEX readings

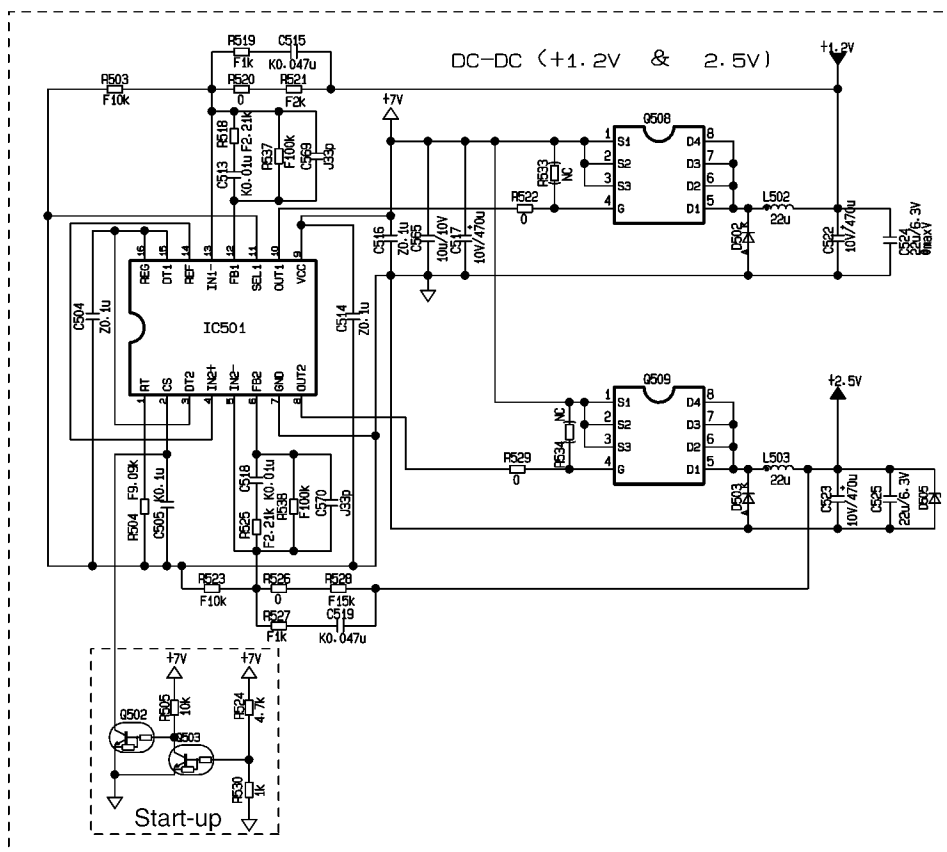
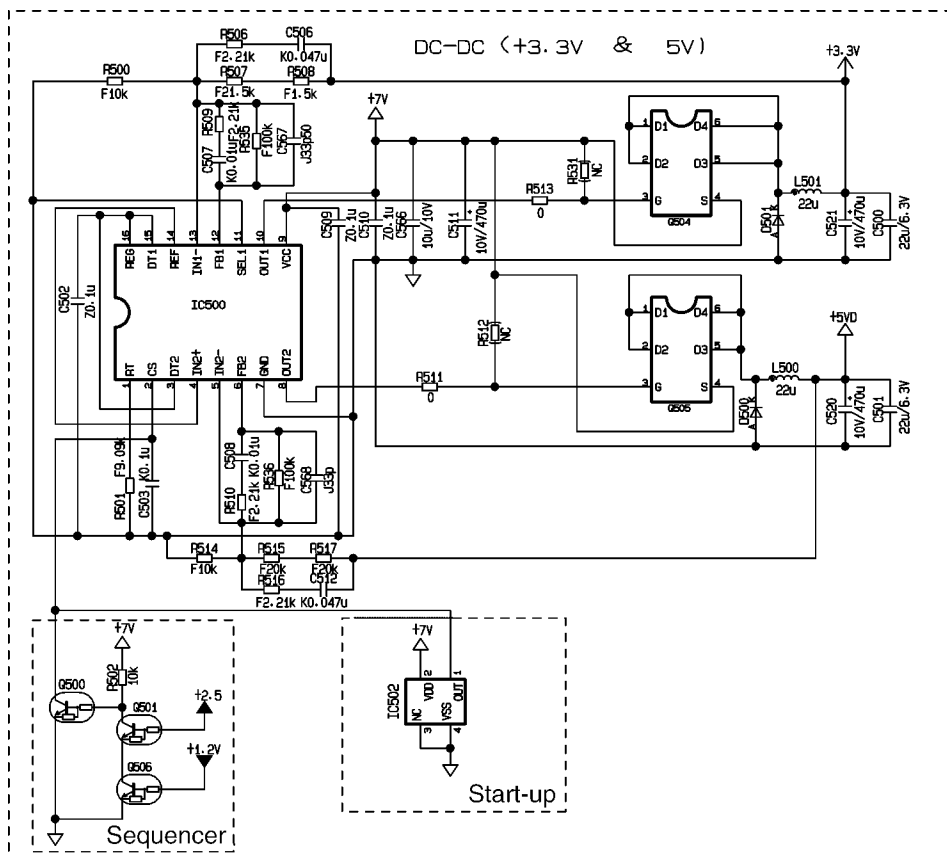
Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
-20	204	CC	27	86	56	74	25	19
-19	202	CA	28	84	54	75	24	18
-18	200	C8	29	82	52	76	23	17
-17	198	C6	30	80	50	77	23	17
-16	196	C4	31	78	4E	78	22	16
-15	193	C1	32	76	4C	79	22	16
-14	191	BF	33	74	4A	80	21	15
-13	189	BD	34	72	48	81	21	15
-12	186	BA	35	70	46	82	20	14
-11	184	B8	36	68	44	83	20	14
-10	181	B5	37	67	43	84	19	13
-9	179	B3	38	65	41	85	19	13
-8	176	B0	39	63	3F	86	18	12
-7	174	AE	40	61	3D	87	18	12
-6	171	AB	41	60	3C	88	17	11
-5	168	A8	42	58	3A	89	17	11
-4	166	A6	43	57	39	90	16	10
-3	163	A3	44	55	37	91	16	10
-2	160	A0	45	54	36	92	16	10
-1	158	9E	46	52	34	93	15	0F
0	155	9B	47	51	33	94	15	0F
1	152	98	48	50	32	95	14	0E
2	150	96	49	48	30	96	14	0E
3	147	93	50	47	2F	97	14	0E
4	144	90	51	46	2E	98	13	0D
5	141	8D	52	45	2D	99	13	0D
6	139	8B	53	43	2B	100	13	0D
7	136	88	54	42	2A	101	12	0C
8	133	85	55	41	29	102	12	0C
9	131	83	56	40	28	103	12	0C
10	128	80	57	39	27	104	12	0C
11	125	7D	58	38	26	105	11	0B
12	123	7B	59	37	25	106	11	0B
13	120	78	60	36	24	107	11	0B
14	117	75	61	35	23	108	10	0A
15	115	73	62	34	22	109	10	0A
16	112	70	63	33	21	110	10	0A
17	110	6E	64	32	20	111	10	0A
18	107	6B	65	31	1F	112	10	0A
19	105	69	66	31	1F	113	9	09

Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
20	102	66	67	30	1E	114	9	09
21	100	64	68	29	1D	115	9	09
22	97	61	69	28	1C	116	9	09
23	95	5F	70	27	1B	117	8	08
24	93	5D	71	27	1B	118	8	08
25	91	5B	72	26	1A	119	8	08
26	88	58	73	25	19	120	8	08

## 6.16. Main Board Section

### DC-DC Power Supply Circuit (5V / 3.3V / 2.5V / 1.2V)

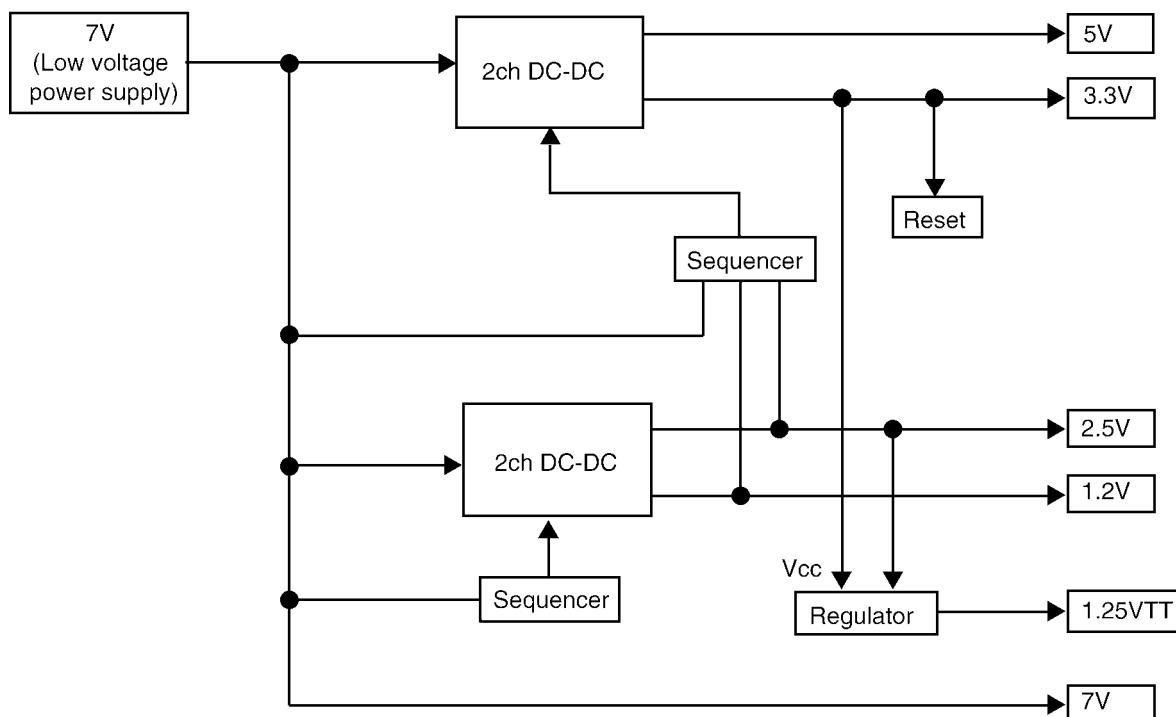
IC501 and IC502 are 2ch-output PWM type DC-DC converter controllers, which make up step down type DC-DC converter circuit with Pch power MOSFET Q504, Q505, Q508 and Q509, coil of L500, L501, L502 and L503 and Schottky diode of D500, D501, D502, and D503. The oscillation frequency in operation of the converter is set to about 430kHz.



### Main Unit Power Supply Circuit Block Diagram

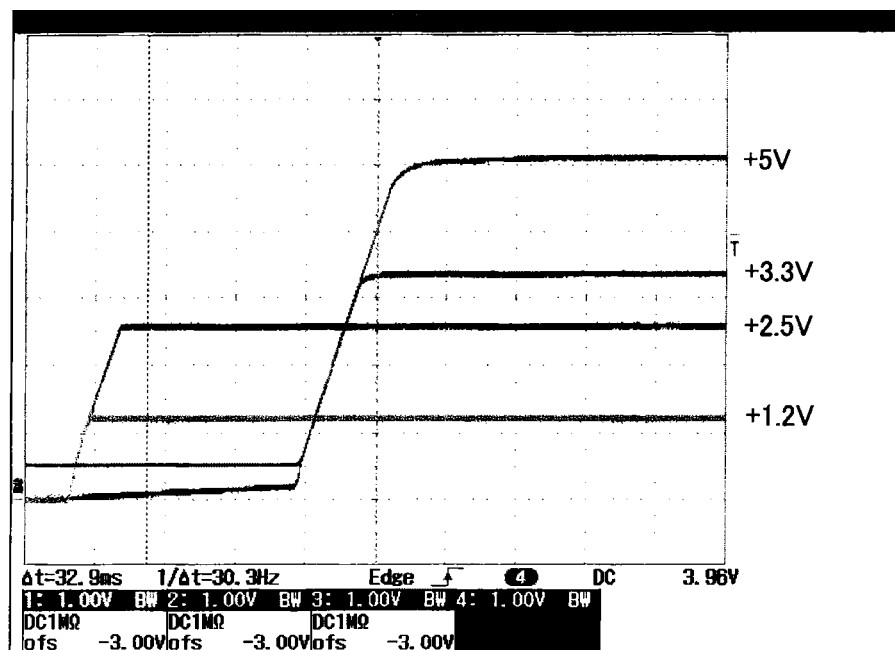
DC-DC and regulator generate desired voltage from 7V output of low voltage power supply. (Refer to the block diagram shown below.)

### Power Supply Diagram

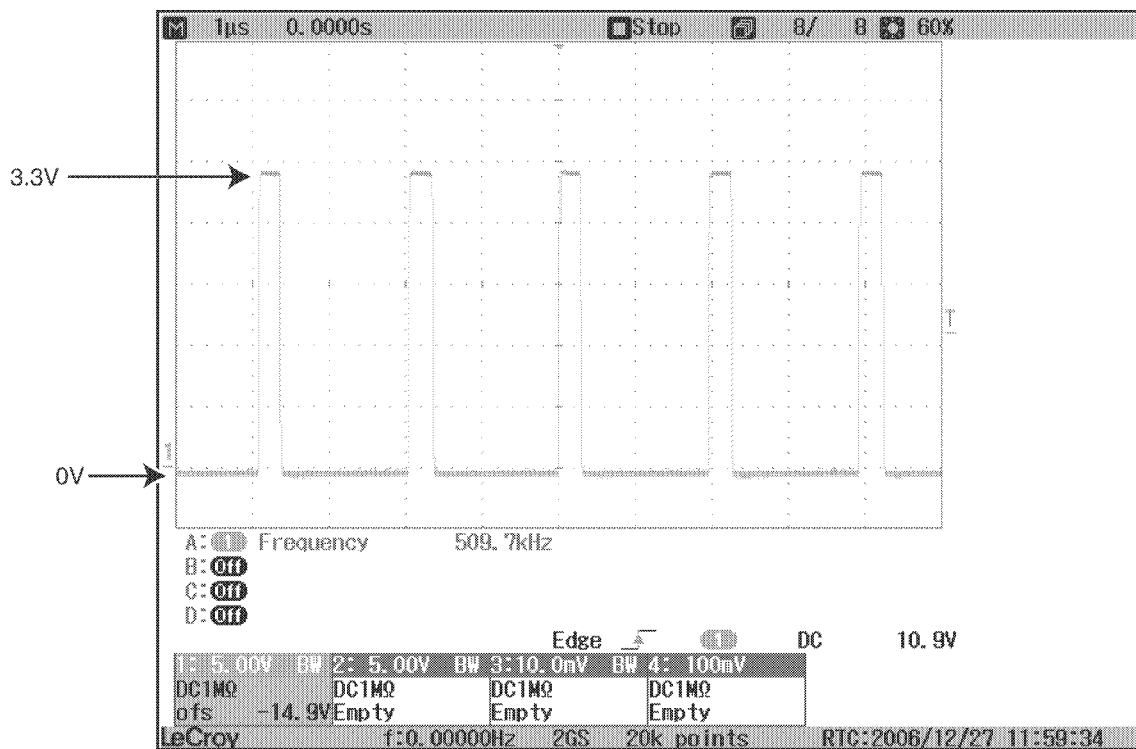


### Waveform

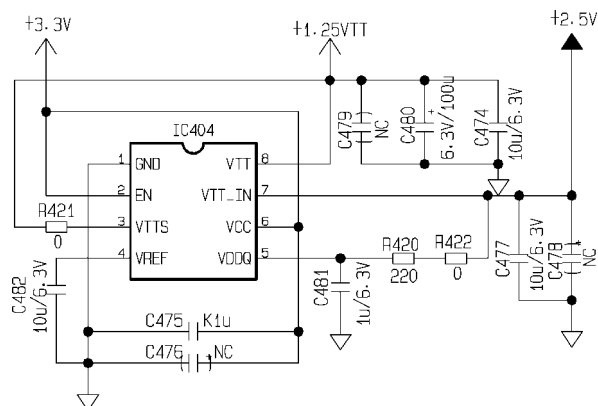
### 5V/3.3V/2.5V/1.2V booting waveform example



wave form

**Regulator Circuit (1.25V)**

IC404 generates termination voltage 1.25V for DDR\_SDRAM (IC400, IC401)



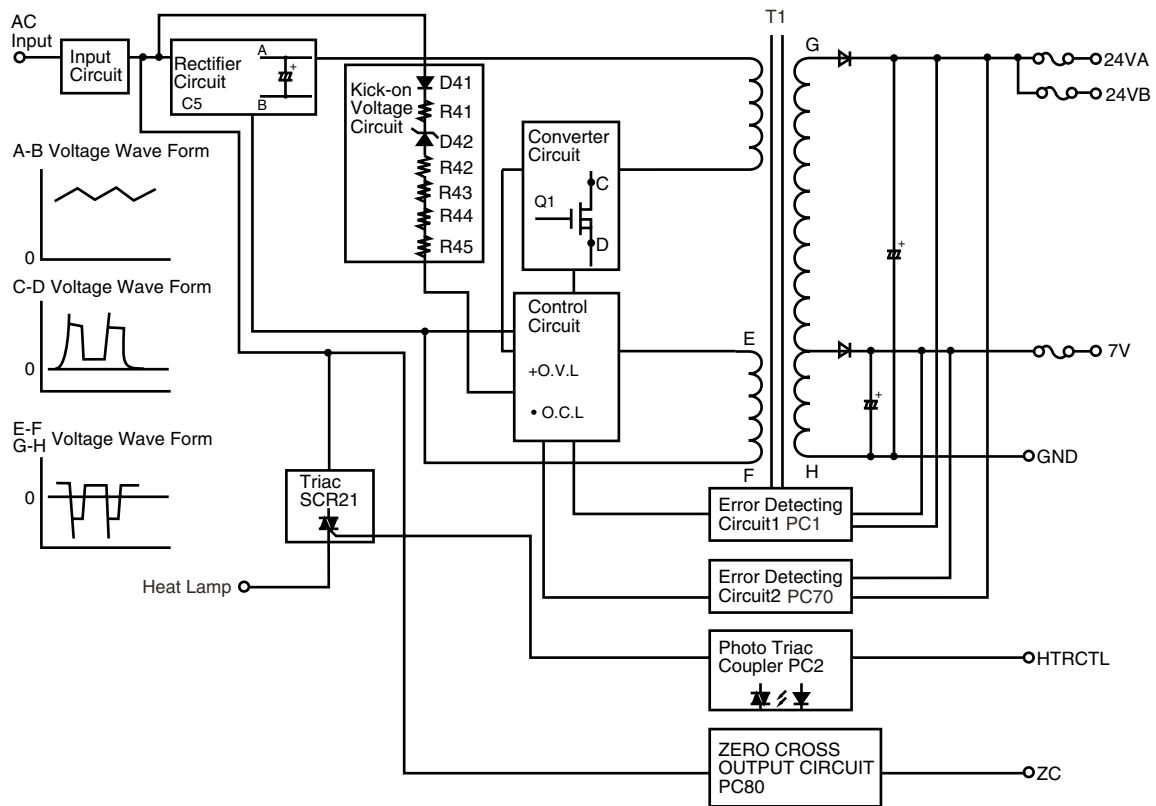
## 6.17. PSU (Low Voltage Power Supply Board) Section

The low voltage power supply board circuit generates +7V and +24Vdc.

It also supplies AC voltage to the halogen heat lamp in the fuser unit.

The low voltage 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 D10 and charge C5 to make DC voltage.

Then it supplies power to the converter circuit.

### [Kick-on Voltage Circuit]

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

### [Control Circuit and Error Detecting Circuit 1]

The control circuit detects the voltage that increased in an error detect circuit 1 and controls it to become the predetermined output voltage.

This is shown as follows.

When the output voltage of the 7V circuit increases, the current of the photo coupler PC1 increases, the pulse width of the output control IC becomes narrower and the ON period of Q1 becomes shorter.

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

The highest drain current of Q1 is limited by a limit current circuit. The 7V and 24V output is limited by this circuit.

### [Over Voltage Circuit (O.V.L.) and Error Detecting Circuit 2]

The control circuit detects the voltage that the 24V or 7V output increased in an error detect circuit 2 and controls it to become 0V.

### [Zero Cross Output Circuit]

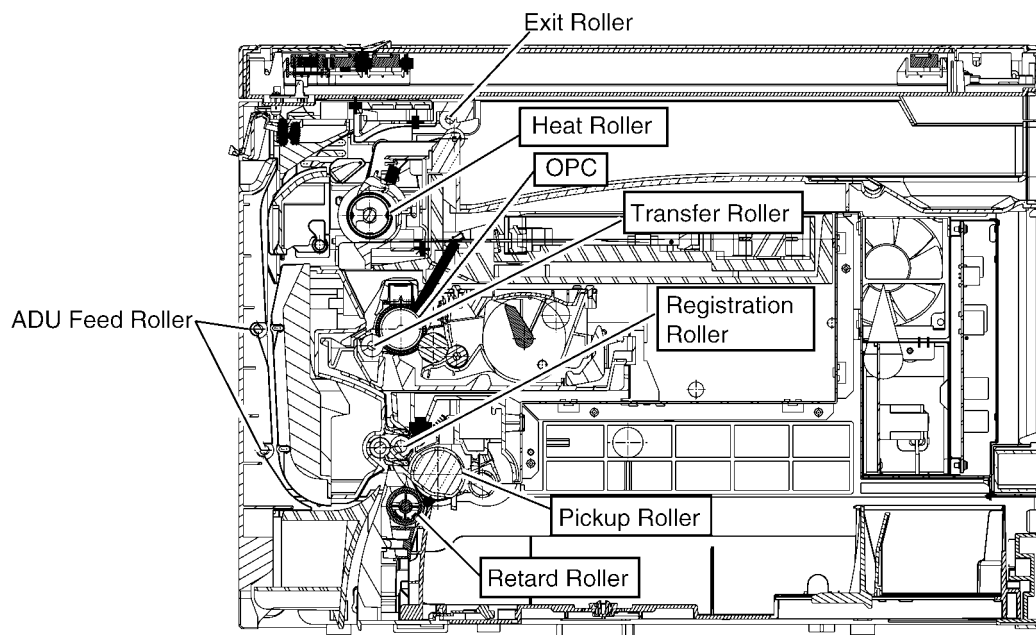
The circuit outputs 0V point of the AC power line.

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

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

## 6.18. Mechanical Operation

### 6.18.1. Print Process



This Laser Printer creates an image on paper using a technique called laser electrophotography. The printer uses the electrographic process known as Discharged Area Development, or “write black”. In this process, a digitally modulated laser scans laterally across a rotating OPC (Organic Photo Conductive) drum that has been positively charged. Wherever the OPC drum is exposed by laser beam, the image is written and toner is transferred.

To generate a image, the OPC drum suitably rotate to the image length. During each successive pass, the laser exposes the portions of OPC drum that correspond to component of the image. Toner is attracted to the laser-exposed portions of the OPC drum.

The paper advances to the fuser, where heat and pressure permanently bond the toner to the paper. From the fuser, the paper is driven to the output tray.



## 6.18.2. Scanning (ADF)

### 6.18.2.1. General

This Auto Document Feeder (ADF) can read double side documents as well as single side documents.

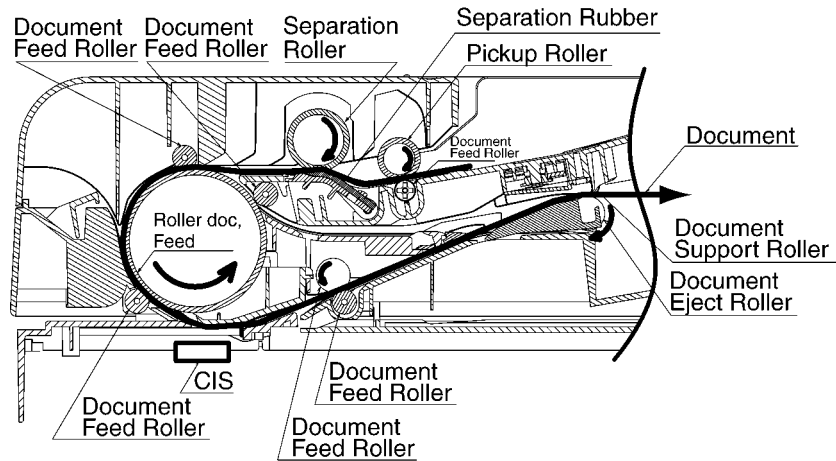
ADF motor supplies all power to rotate the rollers.

Pick solenoid is provided to transmit the ADF motor force to Separation Roller,

and Exit solenoid is provided to change the rotation direction of Exit Roller.

When Exit solenoid is ON, Exit roller rotates toward the paper eject, and when OFF, rotates reverse direction.

### 6.18.2.2. Single side scanning



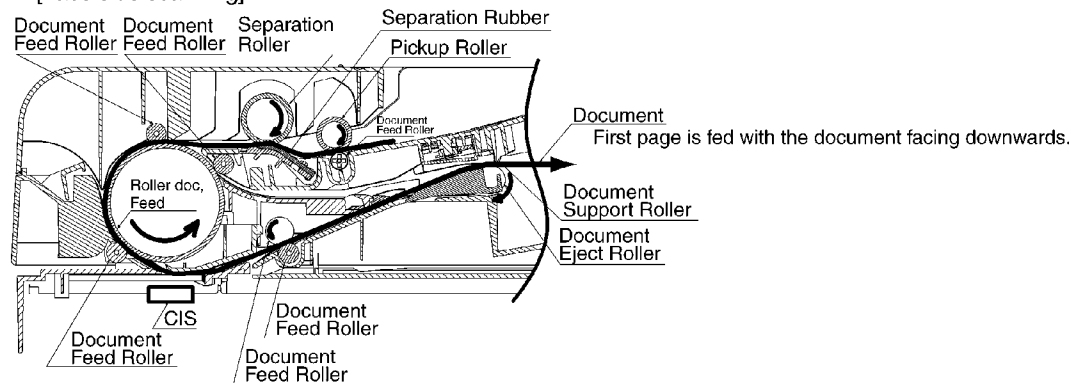
During single side scanning, both Pick and Exit solenoids become ON.

When the Documents are set to ADF, the friction force between Separation Roller and Separation rubber makes Pickup Roller move downward from standby position to pick up paper position so that Documents are fed toward ADF glass under which CIS is positioned.

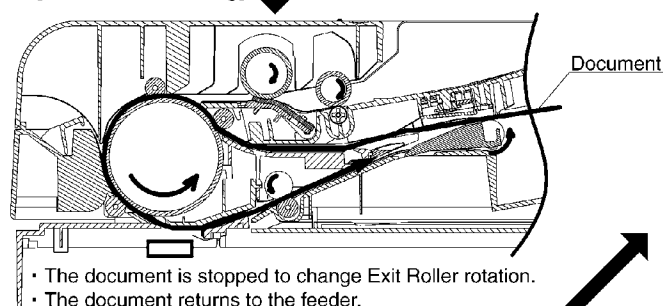
After being read by CIS, Documents are fed out by Exit roller.

### 6.18.2.3. Double side scanning

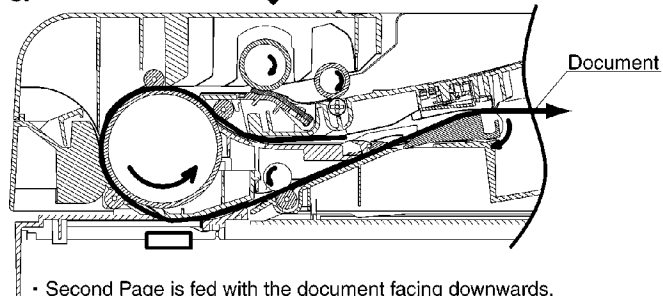
#### 1. [Face side scanning]



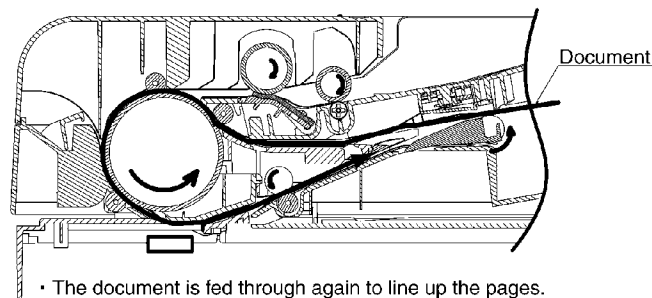
#### 2. [Back side scanning]



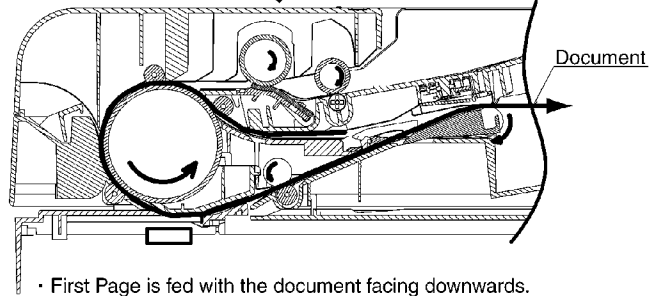
#### 3.



#### 4.



#### 5.



1. When documents are set to ADF, both Pick and Exit solenoids become "ON", then Document is fed to the feeder toward the ADF glass.

After predetermined timing, Pick solenoid becomes "OFF" to feed the document one by one.

2. After scanning the face (top) side, and end edge of the document reaches to the Exit roller, Exit solenoid becomes "OFF" so that the document is returned to the feeder in order to read the back (bottom) side of the document.

3. During the back (bottom) side scanning, Exit solenoid becomes "ON" in order to change the direction of Exit roller rotation and after scanning bottom (back) side, the document is fed toward the ADF tray.

4. When the end edge of the document reaches to the Exit roller, Exit solenoid becomes "OFF" and the document is returned to the feeder in order to line up the pages.

5. When the end edge of the document passes the Exit roller, Exit solenoid becomes "ON" to change the Exit roller rotation direction, then the document is finally ejected.

## 6.19. ADF Solenoid Section

### 6.19.1. General

Double side scanning ADF is provided 2 solenoids.

One is called "Pick solenoid" which transfers the ADF motor force to the document pick up mechanism.

The other is called "Exit solenoid" which controls the exit direction of the document.

When single side continuous scanning, both solenoids are driven continuously.

When double side continuous scanning, each solenoids are controlled ON and OFF with proper timing.

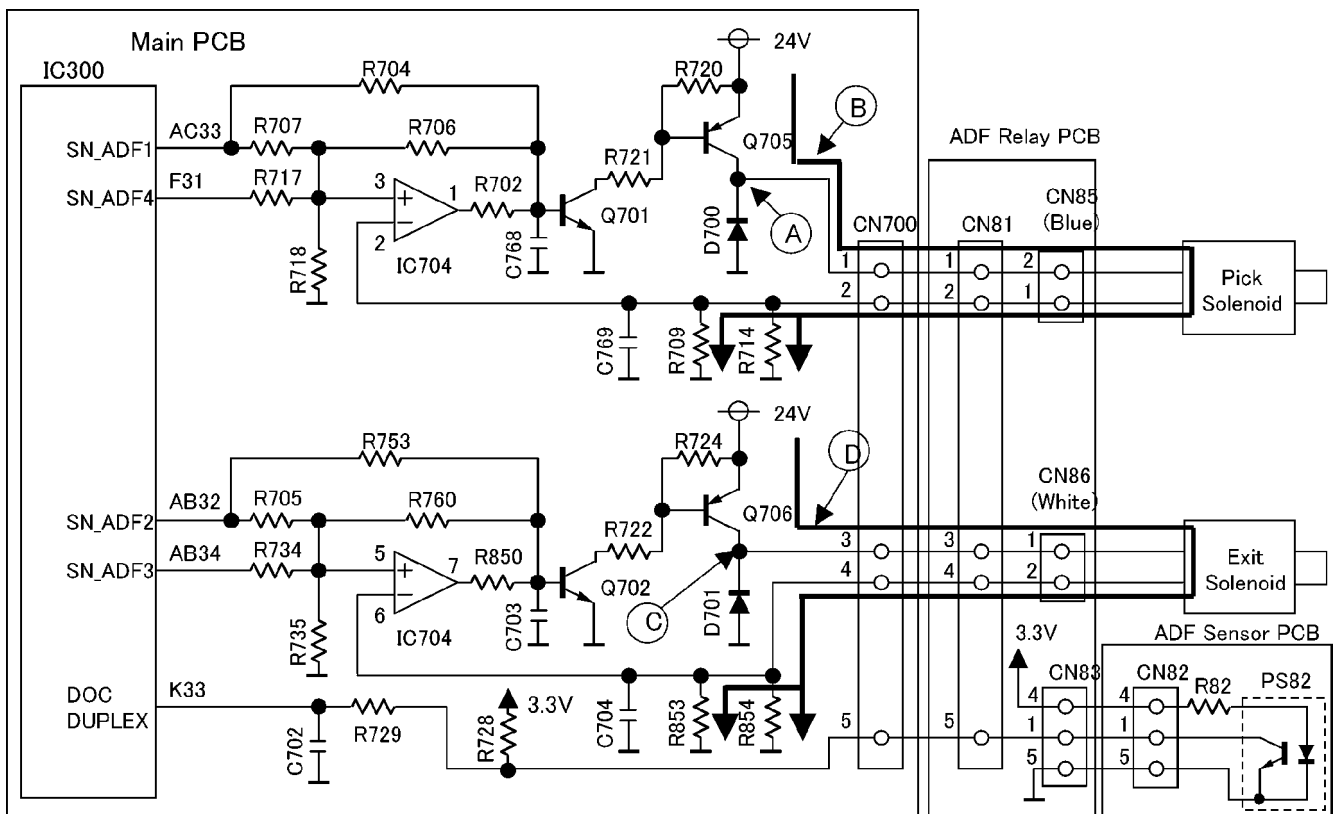
At first, both solenoids are driven by full power (constant voltage; 24V), but when ON time of each solenoids is long (especially single side continuous scanning) and full power driving is continued, solenoids are over heated and may be caused some damage.

In order to prevent the solenoids from over heating, current of the solenoids are reduced and kept constant current (approx. 0.09A-0.1A) according to the following timing (refer to Timing Chart (P.103)).

Single side scanning: Current of both solenoids are reduced after the signal of "read position sensor" becomes "H".

Double side scanning: Current of Exit solenoid is reduced after the signal of "read position sensor" becomes "H".

### 6.19.2. Circuit Diagram of ADF solenoids



### 6.19.3. ADF solenoid control

For the control of ADF solenoid current, comparator IC (IC704) 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 "H".

If (+) side input level is less than (-) side input level, it outputs "L" level.

#### 6.19.3.1. Pick solenoid Full power Mode

In order to drive Pick solenoid with full power mode, both IC300\_pinAC33 and F31 become 3.3V.

So IC704\_pin3 and IC704\_pin2 become almost 3.3V and 0V respectively.

Then IC601\_pin1 becomes "H", and both transistors Q701 and Q705 turn on.

When Q701 and Q705 turn on, current of Pick solenoid begins to flow through Q705, Pick solenoid, and R709/R714, which causes the voltage between R709/R714 increase.

Since the winding resistance of Pick solenoid is approx. 140ohm and combination resistance of R709/R714 is 4.1ohm, the current of Pick solenoid finally reaches to 0.167A ( $=24V/(140+4.1)ohm$ ).

Since the voltage between R709/R714 becomes approx.0.69V ( $=0.167A \times 4.1\Omega$ ), the voltage of IC704\_pin2 becomes also approx. 0.69V.

Therefore IC704\_pin1 is kept "H", and both transistors Q701 and Q705 are maintained turning on.

### 6.19.3.2. Pick solenoid reduced current (constant current) Mode

In order to reduce the current of Pick solenoid, IC300\_pinAC33 and IC300\_pinF31 become 3.3V and 0V respectively.

When IC300\_pinF31 is 0V, the voltage of IC704\_pin3 is determined by resistance value of R717( $=1.1k\Omega$ ), R707( $=8.2k\Omega$ ) and becomes approx.0.39V ( $=3.3V \times 1.1k\Omega / (1.1+8.2)k\Omega$ ).

On the other hand, since IC704\_pin2 is approx. 0.69V at full power mode, IC704\_pin3 becomes "L".

So both transistors Q701 and Q705 turn off, then current of Pick solenoid is reduced gradually.

And when the voltage between R709/R714 reaches less than 0.39V, IC704\_pin3 becomes "H",

Then both transistors Q701 and Q705 turn on, and the voltage between R709/R714 rises gradually .

By repeating these sequence, voltage between R709/R714 is controlled almost 0.39V.

Since the combination resistance value of R709/R714 is 4.1ohm, Pick solenoid current is kept approx. 0.095A ( $=0.39V/4.1\Omega$ ).

### 6.19.3.3. Exit solenoid Full power Mode

In order to drive Pick solenoid with full power mode, both IC300\_pinAB32 and AB34 become 3.3V.

So IC704\_pin5 and IC704\_pin6 become almost 3.3V and 0V respectively.

Then IC601\_pin7 becomes "H", and both transistors Q702 and Q706 turn on.

When Q702 and Q706 turn on, current of Exit solenoid begins to flow through Q706, Exit solenoid, and R853/R854, which causes the voltage between R853/R854 increase.

Since the winding resistance of Exit solenoid is approx. 140ohm and combination resistance of R853/R854 is 4.1ohm, the current of Exit solenoid finally reaches to 0.167A ( $=24V/(140+4.1)\Omega$ ).

Since the voltage between R853/R854 becomes approx.0.69V ( $=0.167A \times 4.1\Omega$ ), the voltage of IC704\_pin6 becomes also approx. 0.69V.

Therefore IC704\_pin7 is kept "H", and both transistors Q702 and Q706 are maintained turning on.

### 6.19.3.4. Exit solenoid reduced current (constant current) Mode

In order to reduce the current of Exit solenoid, IC300\_pinAB32 and IC300\_pinAB34 become 3.3V and 0V respectively.

When IC300\_pinAB34 is 0V, the voltage of IC704\_pin5 is determined by resistance value of R734( $=1.5k\Omega$ ) and R705( $=12k\Omega$ ) and becomes approx.0.37V( $=3.3V \times 1.5k\Omega / (1.5K+12K)\Omega$ ).

On the other hand, since IC704\_pin6 is approx. 0.69V at full power mode, IC704\_pin7 becomes "L".

So both transistors Q702 and Q706 turn off, then current of Exit solenoid is reduced gradually.

And when the voltage between R853/R854 reaches less than 0.37V, IC704\_pin7 becomes "H",

Then both transistors Q702 and Q706 turn on and the voltage between R853/R854 rises gradually .

By repeating these sequence, voltage between R853/R854 is controlled almost 0.37V.

Since the combination resistance value of R853/R854 is 4.1ohm, Exit solenoid current is kept approx. 0.09A ( $=0.37V/4.1\Omega$ ).

### 6.19.3.5. Pick and Exit solenoid off mode

When IC300\_pinAC33 and IC300\_pinAB32 are "L", IC300\_pin3 and pin7 becomes "L" then all transistors Q701, Q705, Q702 and Q706 are turned off, then Pick and Exit solenoids turn off.

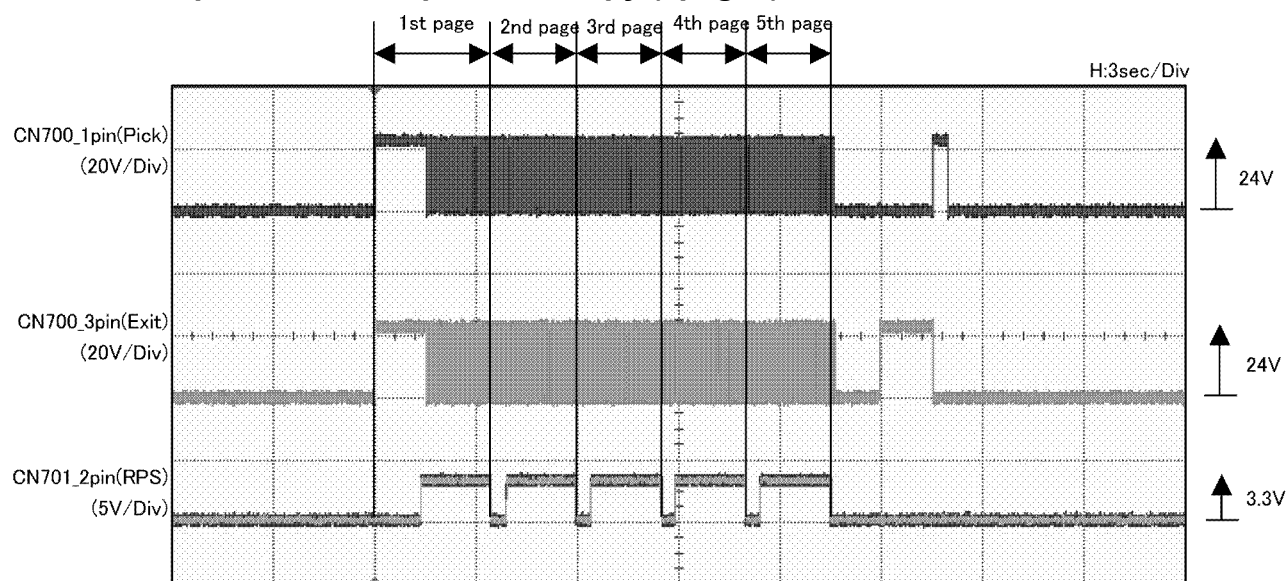
## 6.19.4. Control table

SN_ADF1 (IC300_pinAC33)	SN_ADF4 (IC300_pinF31)	Pick Solenoid operation
H	H	Full power
L	H	stop
H	L	reduced current
L	L	Stop

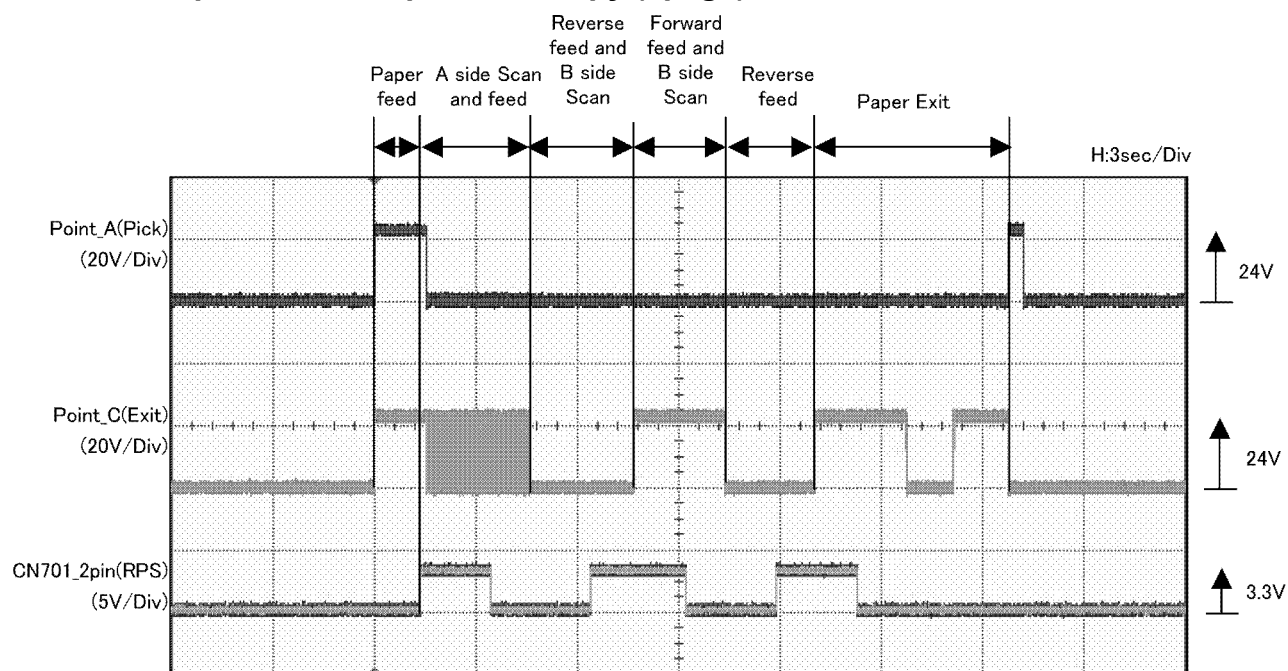
SN_ADF2 (IC300_pinAB32)	SN_ADF3 (IC300_pinAB34)	Exit Solenoid operation
H	H	Full power
L	H	stop
H	L	reduced current
L	L	Stop

## 6.19.5. Timing Chart

### 6.19.5.1. Example of ADF Simplex Text copy (5pages)

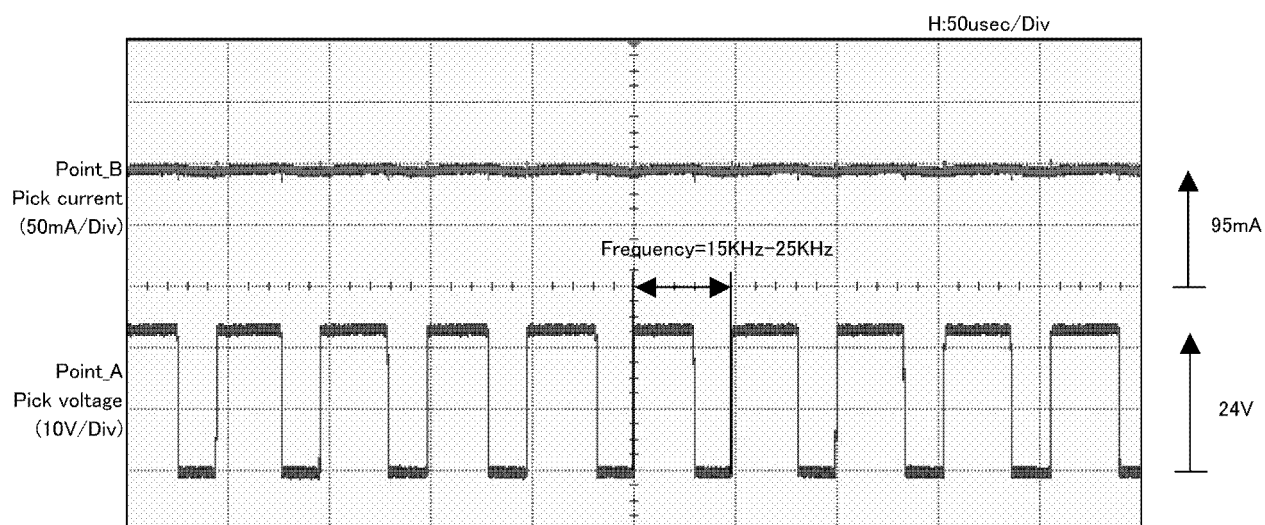


### 6.19.5.2. Example of ADF Duplex Text copy (1page)

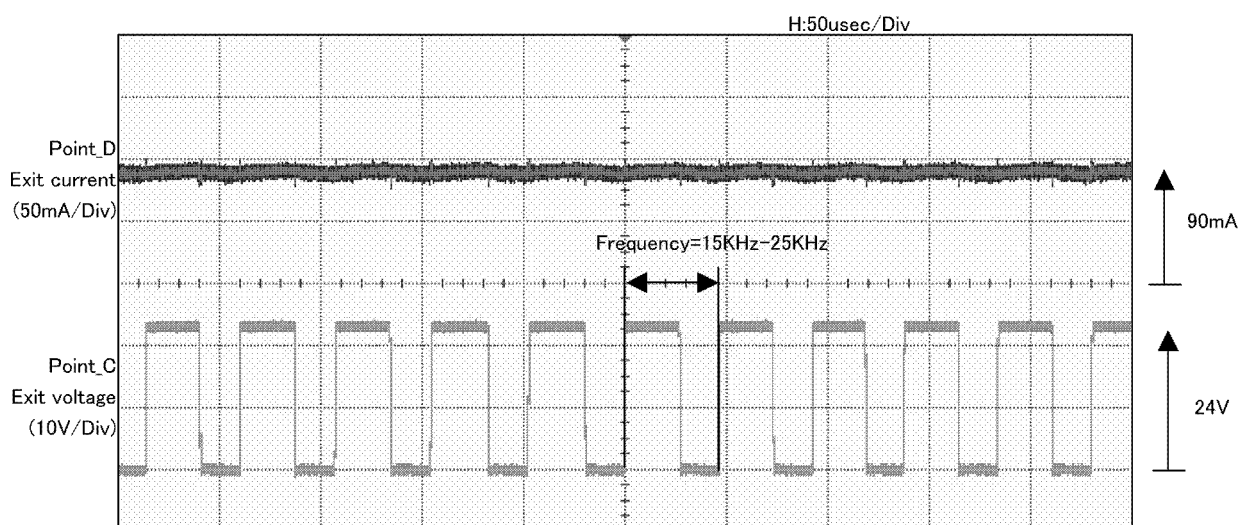


## 6.19.6. Waveform

### 6.19.6.1. Pick solenoid



### 6.19.6.2. Exit solenoid

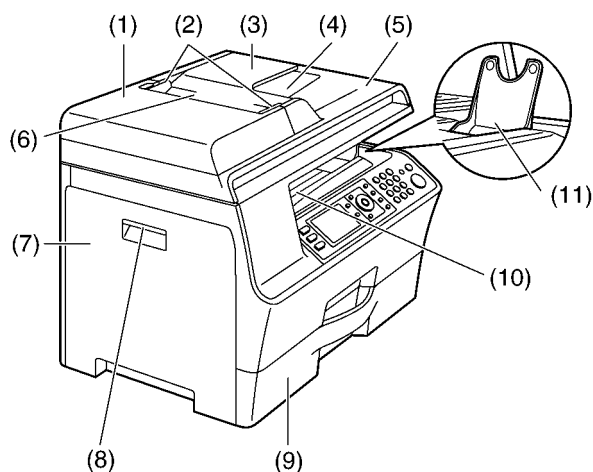




## 7 Location of Controls and Components

### 7.1. Overview

#### 7.1.1. Front view



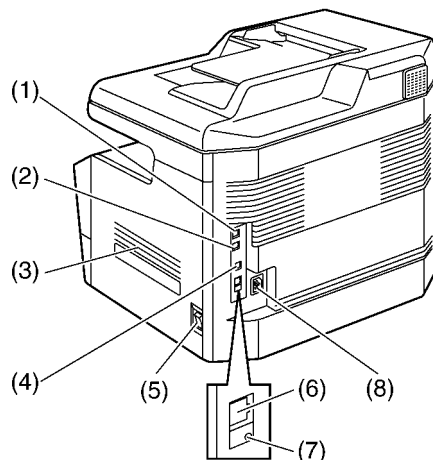
- (1) ADF (Automatic Document Feeder) cover
- (2) Document guides
- (3) Document tray
- (4) Document exit
- (5) Document cover
- (6) Document entrance
- (7) Left cover
- (8) Left cover open lever
- (9) Standard input tray
- (10) Recording paper exit

- The paper exit area of this unit 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 recording paper exit becomes full.

(11) A4/letter paper stacker

- We recommend opening the A4/letter paper stacker when using A4 or letter-size recording paper. Do not open it when using legal-size recording paper.
- For A4-size, slide the stacker to the rightmost position, then open it.  
For letter-size, just open the stacker (no need to slide it).
- The A4/letter paper stacker may not be shown in all illustrations.

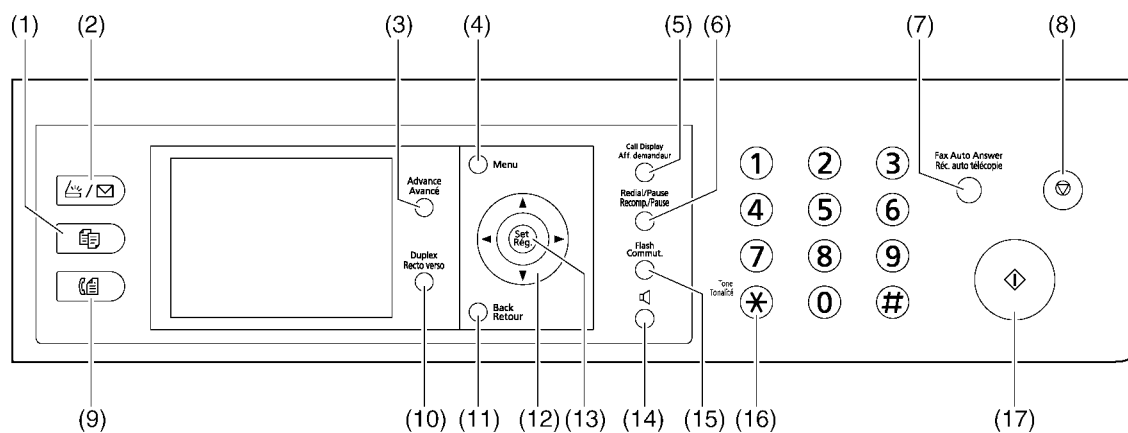
#### 7.1.2. Rear view



- (1) Telephone line jack
- (2) External telephone jack
- (3) Speaker
- (4) USB interface connector
- (5) Power switch
- (6) LAN interface connector  
•10Base-T/100Base-TX
- (7) LED
- (8) Power inlet



## 7.2. Control Panel



- (1) (Copy)
- (2) (Scan)
- (3) Advance
- (4) Menu
- (5) Call Display
- (6) Redial / Pause
- (7) Fax Auto Answer
- (8) (Stop)
- (9) (Fax)
- (10) Duplex
- (11) Back
- (12) Navigator key
- (13) Set
- (14) (Monitor)
- (15) Flash
- (16) Tone
- (17) (Start)

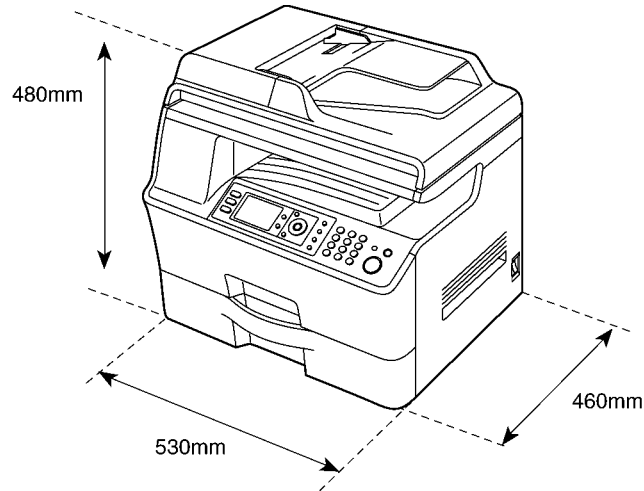
## 8 Installation Instructions

### 8.1. Installation

#### 8.1.1. Installation Space

The space required to install the unit is shown below.

The dimensions given are necessary for the unit to operate efficiently.



**Note:**

- Avoid excessive heat or humidity.
- Use the unit within the following ranges of temperature and humidity.
- Ambient temperature: 10°C to 32.5°C
- Relative humidity: 20% to 80% (without condensation)
- Power cord length should be less than 5 meters. Using a longer cord may reduce the voltage or cause malfunctions.
- Avoid direct sunlight.
- Do not install near devices which contain magnets or generate magnetic fields.
- Do not subject the unit to strong physical shock or vibration.
- Keep the unit clean. Dust accumulation can prevent the unit from functioning properly.
- To protect the unit from damage, hold both sides when you move it.
- Do not place the unit in an area where the paper tray may be obstructed (i.e., by a wall, etc.)
- Keep this surface (ⓘ) away from walls etc. more than 50 mm to let the unit cool down.

## 8.1.2. Recording Paper

The standard input tray unit can hold:

- Up to 520 sheets of 75 g/m<sup>2</sup> (20 lb) paper.
- Up to 470 sheets of 80 g/m<sup>2</sup> (21 lb) paper.
- Up to 410 sheets of 90 g/m<sup>2</sup> (24 lb) paper.
- Up to 100 sheets of 105 g/m<sup>2</sup> (28 lb) paper.
- Up to 25 transparencies<sup>\*1</sup>
- Up to 25 labels<sup>\*1</sup>

<sup>\*1</sup>Only when using the unit as a printer.

• **The unit is set for printing letter-size plain paper by default.**

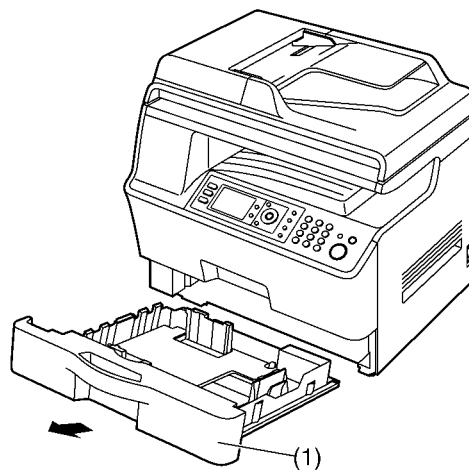
- To use other paper sizes, change the recording paper size setting (feature #380) : (Refer to Program Mode Table (P.138)).
- To use thin or thick paper, change the recording paper type setting (feature #383) : (Refer to Program Mode Table (P.138)).

**Note for recording paper:**

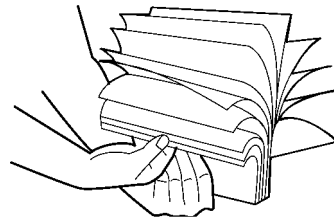
- We recommend that you test paper (especially special sizes and types of paper) on the unit before purchasing large quantities.
- Do not use the following types of paper:
  - Paper with cotton and/or fibre content that is over 20 %, such as letterhead paper or paper used for resumes
  - Extremely smooth or shiny paper, or paper that is highly textured
  - Coated, damaged or wrinkled paper
  - Paper with foreign objects attached, such as tabs or staples
  - Paper that has dust, lint or oil stains
  - Paper that will melt, vaporize, discolour, scorch or emit dangerous fumes near 200 °C (392 °F), 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.
- Do not use paper printed from this unit for doublesided printing with other copiers or printers. This may cause paper jams.
- To avoid curling, do not open paper packs until you are ready to use the paper. Store unused paper in the original packaging, in a cool and dry location.
- For customers who live in high humidity areas:
 

Please be sure to store paper in an air-conditioned room at all times. If you print using moist paper, it may cause paper jam.

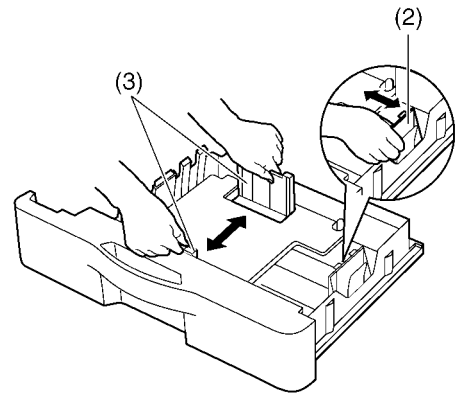
1. Pull the standard input tray (1) until it clicks into place, then pull it completely out, lifting the front part of the tray.



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



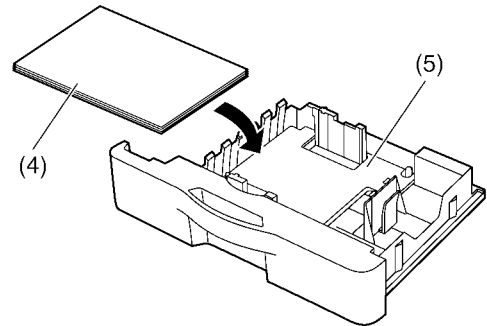
3. Pinch the right side of the recording paper guide (2), then slide it to match the paper size mark. Pinch the front and back recording paper guides (3) at the same time, then slide them together to match the paper size mark.



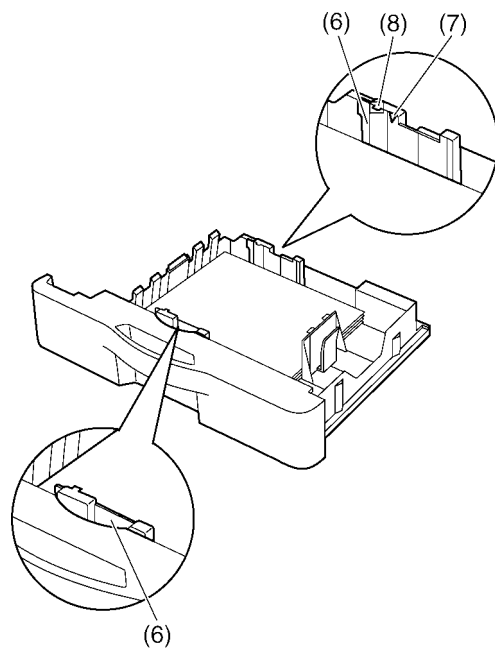
4. Load the paper, print-side up (4).

**Important:**

- Push down to lock the plate (5) in the standard input tray, if it has come up.



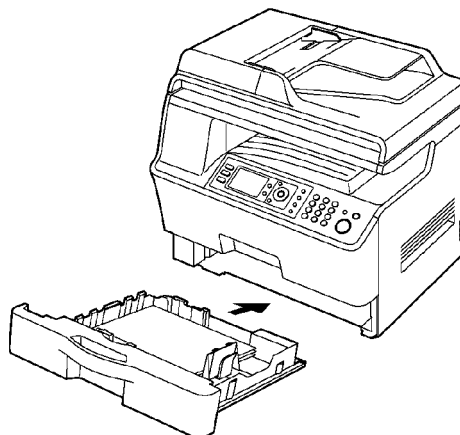
- Make sure that the recording paper guides (6) are at the paper size mark and the recording paper is under the paper limit mark (7). The paper should not be loaded over the tab (8).



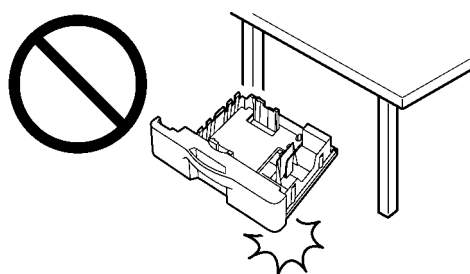
5. Insert the standard input tray into the unit, lifting the front part of the tray. Then push it completely into the unit.

**Note:**

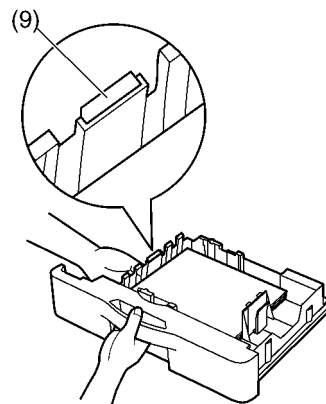
- If the paper is not loaded correctly, re-adjust the paper guides, or the paper may jam.
- If the standard input tray does not close, the plate in the standard input tray may not be in the locked position. Push the paper down and make sure that the paper is lying flat in the standard input tray.

**Caution for the standard input tray**

- Do not drop the standard input tray.



- Hold the standard input tray with both hands when removing or installing. The standard input tray weighs approximately 4.8 kg (10.6 lb) when fully loaded with recording paper. Do not touch the plate (9) on the left side of the standard input tray.



**Approx. 4.8 kg (10.6lb)**

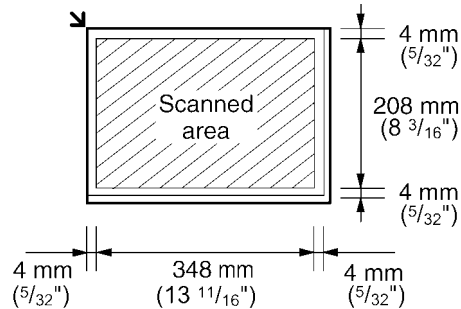
### 8.1.3. Documents the Unit Can Send

#### 8.1.3.1. Using the scanner glass

**Note:**

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

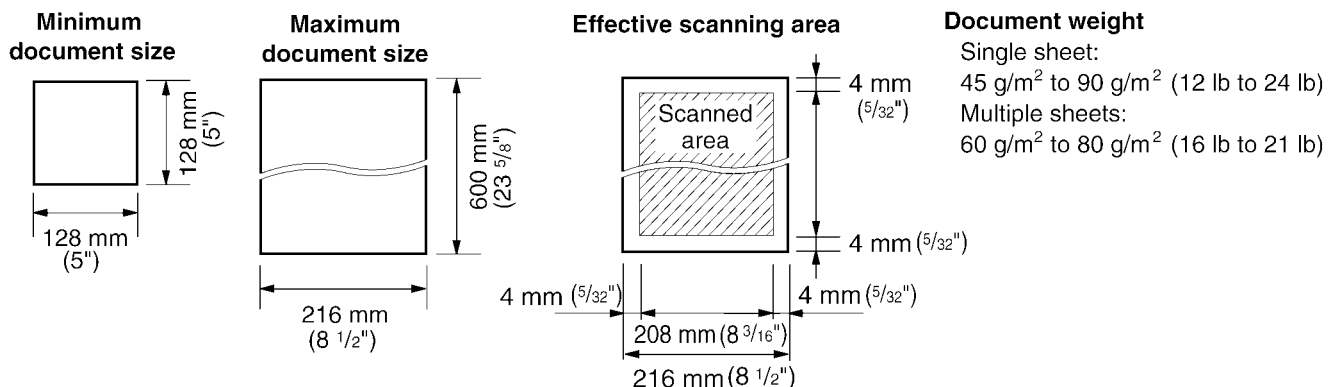
**Effective scanning area**



#### 8.1.3.2. Using the auto document feeder

**Note:**

- Confirm that there are no documents on the scanner glass.
- Confirm that any ink, paste or correction fluid has dried completely.
- Remove clips, staples or other fasteners.
- Do not insert the following types of documents: (Make a copy of the document using the scanner glass and set the copy instead.)
  - Chemically treated paper such as carbon or carbonless duplicating paper
  - Electrostatically charged paper
  - Badly curled, creased or torn paper
  - Paper with a coated surface
  - Paper with printing on the opposite side that can be seen through the other side, such as newsprint
- The total height of the documents when laid flat, must be less than 5 mm (3/16"). 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 (8 1/4"), 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:



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

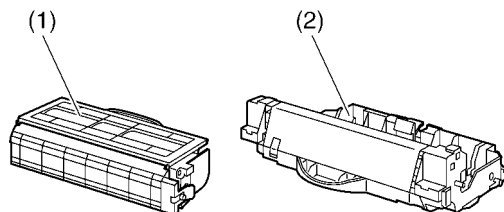
### 8.1.4. Replacing the Toner Cartridge and the Drum Unit

The supplied toner cartridge is a starter toner cartridge.

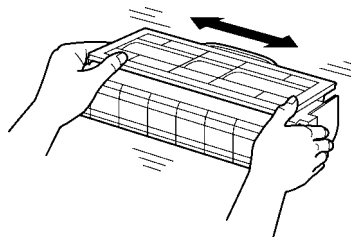
**Caution:**

- Read the following instructions before you begin installation. After you have read them, open the drum cartridge protective bag. The drum cartridge contains a photosensitive drum. Exposing it to light may damage the drum. Once you have opened the protective bag:
  - Do not expose the drum cartridge to light for more than 3 minutes.
  - Do not touch or scratch the black drum surface inside of the drum cartridge.
  - Do not place the drum cartridge near dust or dirt, or in a high humidity area.
  - Do not expose the drum cartridge to direct sunlight.
- Do not leave the toner cartridge out of the protective bag for a long time. It will decrease the toner life.
- We cannot be responsible for any damage to the unit or degradation of print quality which may occur from the use of a non-Panasonic toner cartridge and drum cartridge.
- Do not add toner to the toner cartridge.

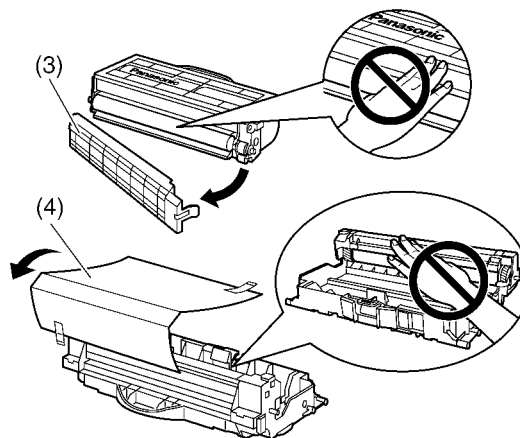
1. Remove the toner cartridge (1) and drum cartridge (2) from the protective bags.



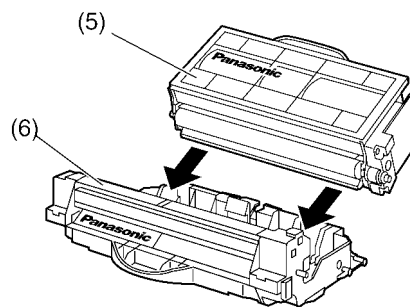
2. Shake the toner cartridge horizontally more than 5 times.



3. Detach the protective cover (3) from the toner cartridge, and remove the protective sheet (4) from the drum cartridge.
  - Do not touch or scratch the black drum or toner surfaces.

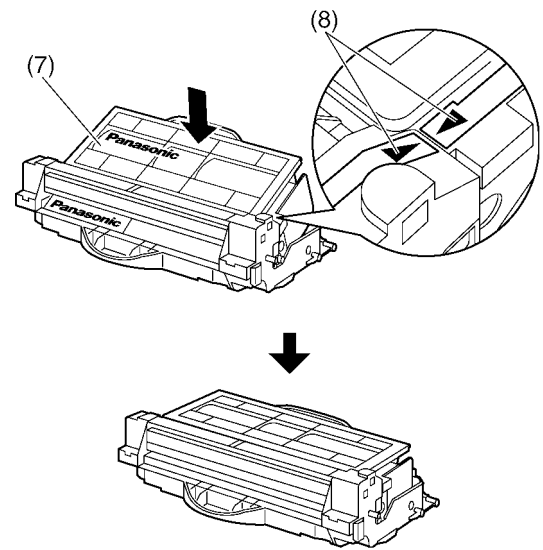


4. Insert the toner cartridge (5) into the drum cartridge (6) from the upper angle.

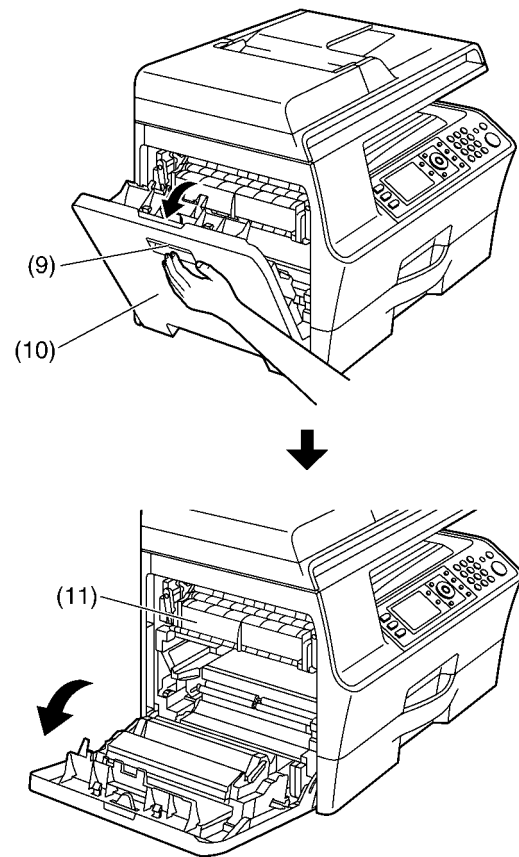




5. Push down the toner cartridge (7) to lock into place.
- Make sure that the triangles (8) match to install the toner cartridge correctly.



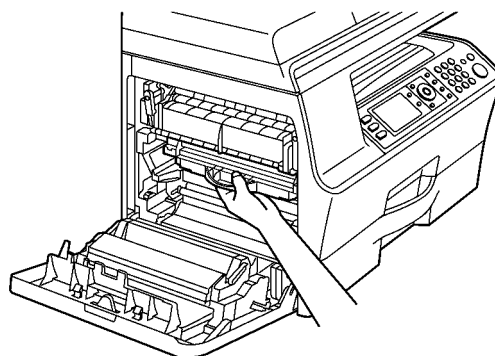
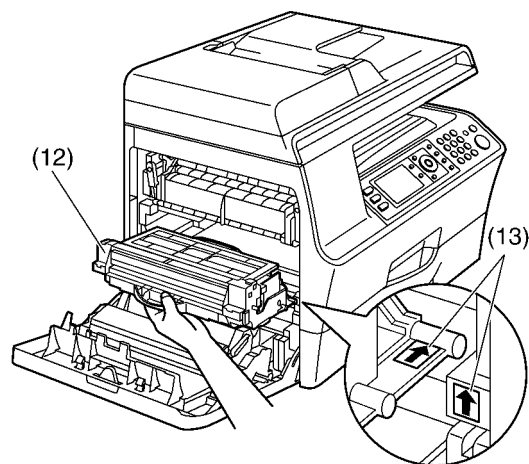
6. Hold the left cover release lever (9), and then pull open the left cover (10).



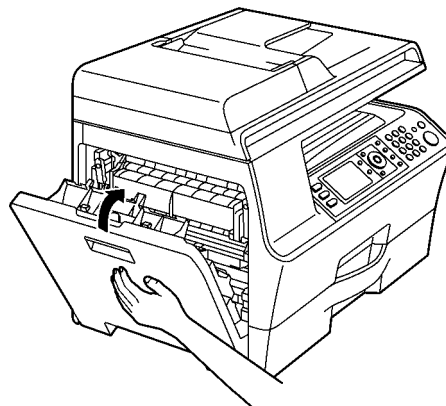
**Caution:**

- During or immediately after printing, the fuser unit (11) gets hot. Wait until the fuser unit cools down.

7. Install the drum and toner unit (12) by holding the centre handle.
- Make sure that the arrows (13) match to install the drum and toner unit correctly.



8. Close the left cover.



#### When to replace the toner cartridge and the drum cartridge

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

“Change Supplies Toner Low”  
 “Change Supplies Toner Empty”

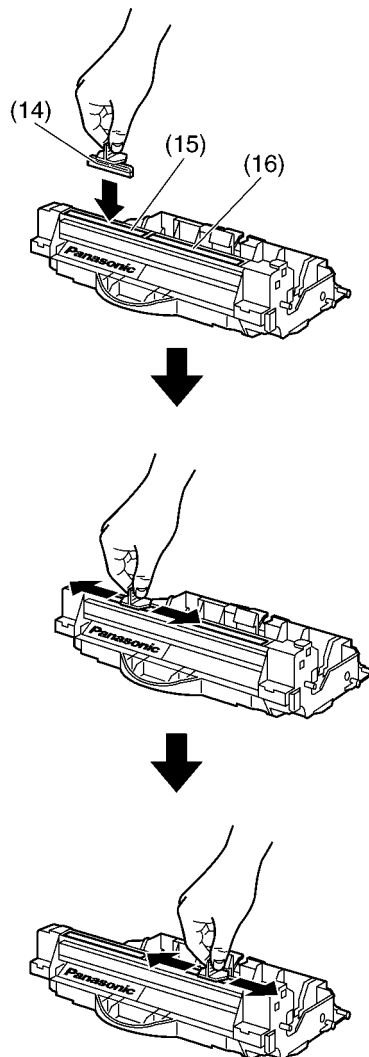
#### Note:

- To check the drum life and quality, please print the printer test list. If printing quality is still poor or “Replace Drum” appears on the display, replace the toner cartridge and drum cartridge.
- To ensure that the unit operates properly, we recommend the use of Panasonic toner cartridge and drum cartridge. (Refer to **Optional Accessories** (P.11).)

## Cleaning the drum cartridge

### Important:

- If the groove of the drum cartridge is dirty, lines or dirty patterns may appear on printed sheets.  
Be sure to remove any toner remaining on the inside of the drum cartridge to maintain the print quality.
- A cleaner for the drum cartridge is supplied with the replacement toner cartridge. If you replace only the toner cartridge, clean the drum cartridge using the cleaner.
- Insert the cleaner (14) into the left groove (15) and move it from side to side at least 3 times to clean the inside of the drum cartridge. Repeat this for the right groove (16).



### Note:

- Be sure to clean all the way to the edge of each groove.

### Waste disposal method

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

### Toner save feature

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

### 8.1.5. Connecting to a computer

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

- Printing on plain paper, thin and thick paper, transparencies and labels
- Scanning documents and converting an image into text with Readiris OCR software
- Scanning from other applications for Microsoft® Windows® that support TWAIN scanning and WIA scanning (Windows XP/Windows Vista®, USB connection only)
- Storing, editing or erasing items in directories using your computer
- Programming the features using your computer
- Sending, receiving fax documents using your computer

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

#### Operating System:

Windows 98 / Windows Me / Windows 2000 / Windows XP / Windows Vista

#### CPU:

Windows 98/Windows Me/Windows 2000: Pentium® II or higher processor

Windows XP: Pentium III or higher processor

Windows Vista: Pentium 4 or higher processor

#### RAM:

Windows 98/Windows Me: 64 MB (128 MB or more recommended)

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

Windows Vista: 512 MB (1,024 MB or more recommended)

#### Other Hardware:

CD-ROM drive

Hard disk drive with at least 150 MB of available space

USB interface

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

#### Other:

Internet Explorer® 5.0 or later

#### Warning:

- To assure continued emission limit compliance;
  - use only shielded USB cable (Example: Hi-Speed USB 2.0 certified cable).
  - use only shielded LAN cable (category 5 straight cable).
- To protect the unit, use only shielded USB cable in areas where thunderstorms occur.

#### Note:

- A USB cable is not supplied. Please purchase a shielded Type-A male/Type-B male USB cable.

### 8.1.6. Installing Multi-Function Station

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

**1** Start Windows and exit all other applications.

- For Windows2000, Windows XP and Windows Vista users, you must be logged in as an administrator in order to install Multi-Function Station.

**2** Insert the supplied CD-ROM into your CD-ROM drive.

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

**3 [Easy Installation]**

- The installation will start automatically.

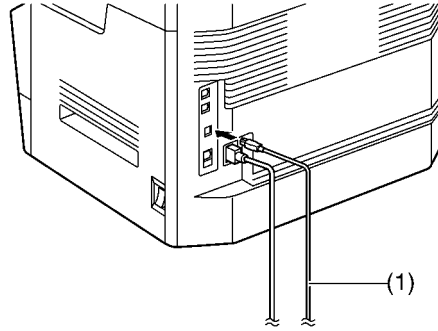
**4** When the setup program starts, follow the on-screen instructions.

- Readiris OCR software and Device Monitor will also be installed.

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

**For USB connection:**

1. **[Connect directly with a USB cable.]** → **[Next]**
  - The **[Connect Device]** dialogue box will appear.
2. Connect the unit to a computer with the USB cable (1), then click **[Next]**.



- If the unit is connected to your computer, the model name will be automatically detected.
  - You can change the name of the unit if necessary.
3. Click **[Install]**, then follow the on-screen instructions.
    - The files will be copied to your computer.

**For LAN connection:**

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

**Important notice**

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

- **For Windows XP users**

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

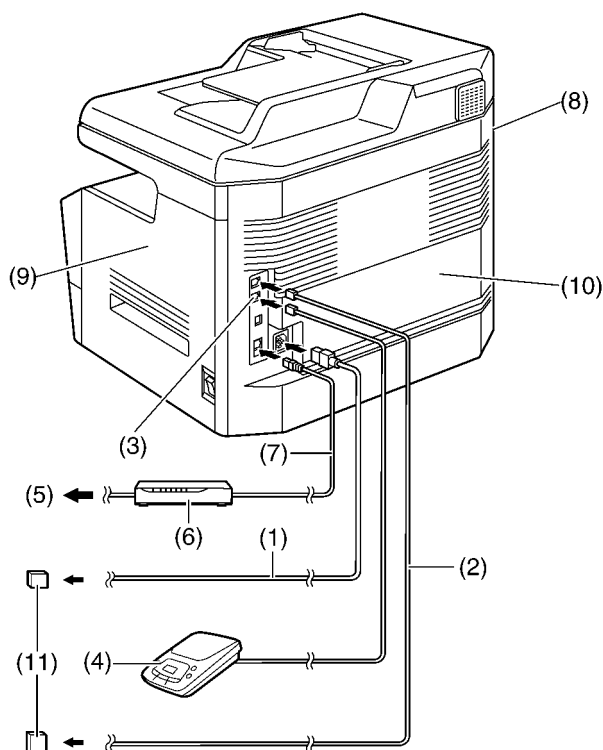
- **For Windows Vista users**

"Would you like to install this device software?"

## 8.2. Connections

**Caution:**

- **When you operate this product, the power outlet should be near the product and easily accessible.**
  - (1) Power cord
- Connect to a power outlet (120 V, 60 Hz).
  - (2) Telephone line cord
- Connect to a single telephone line jack (RJ11C).
  - (3) **[EXT]** jack
- You can connect an answering machine or an extension telephone. Remove the stopper if attached.
  - (4) Answering machine (not supplied)
  - (5) To the internet
  - (6) Network router/Network hub (not supplied)
- Also connect networked computers.
  - (7) LAN cable (not supplied)
- To assure continued emission limit compliance, use only shielded LAN cable (category 5 straight cable).



## IMPORTANT NOTICE FOR THE USB CONNECTION

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

**Note:**

- Do not place any objects within the following distance:
  - Left side (8): 40 cm (15<sup>3</sup>/<sub>4</sub> inches)
  - Right side (9) and back side (10): 10 cm (4 inches)
- If any other device is connected to the same telephone line, this unit may disturb the network condition of the device.
- A telephone handset cannot be connected directly to this unit. To talk to the other party, please connect an extension telephone.

### Using surge protectors

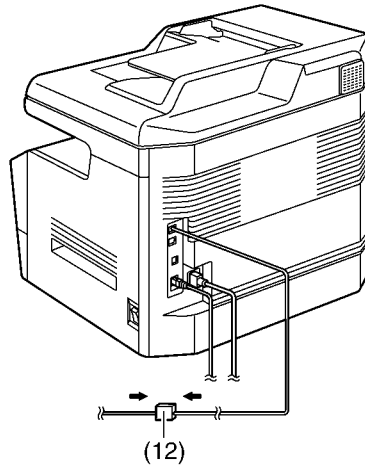
- The warranty does not cover damage due to power line surges or lightning. For additional protection, we recommend using a surge protector (11).

### Using network router/network hub

- We recommend using network routers/network hubs (6) 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.

### If the unit shares a single telephone line with a DSL service

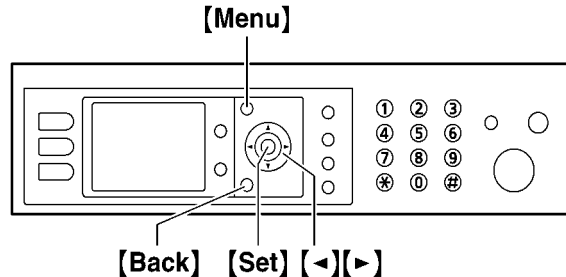
- Fax transmission/reception may be unreliable, noise interference may be heard during telephone conversations, or Call Display may not function properly. Please attach a DSL filter (12) to the telephone line cord of the unit to prevent this. A DSL filter may be available from your DSL service provider.



## 9 Operating Instructions

### 9.1. Your Logo

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



1 [Menu] → [✚][1][0][2] → [Set]

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

3 Press [Menu] to exit.

#### To correct a mistake

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

- To erase all characters, press and hold [Back].

### 9.1.1. To Select Characters with the Dial Keypad

The dial keypad is used to enter characters and numbers.

- Press [◀] or [▶] to move the cursor.
- Press dial keys to enter characters and numbers.
- Press **[Back]** to erase the character or number highlighted by the cursor. Press and hold **[Back]** to erase all characters or numbers.
- To enter another character located on the same dial key, press [▶] to move the cursor to the next space, then press the appropriate dial key.

Keypad	Characters
<b>[1]</b>	1 . _ - [ ] { } + / = , ` : ; ?
<b>[2]</b>	A B C a b c 2
<b>[3]</b>	D E F d e f 3
<b>[4]</b>	G H I g h i 4
<b>[5]</b>	J K L j k l 5
<b>[6]</b>	M N O m n o 6
<b>[7]</b>	P Q R S p q r s 7
<b>[8]</b>	T U V t u v 8
<b>[9]</b>	W X Y Z w x y z 9
<b>[0]</b>	0 @ ( ) < > ! " # \$ % & ¥ * ^ ' →
<b>[⇄]</b>	To switch between uppercase and lowercase letters.
<b>[Flash]</b>	Hyphen
<b>[Call Display]</b>	To insert a space.
<b>[Back]</b>	To delete a character.

### 9.1.2. To Select Characters Using [▼] or [▲]

Instead of pressing the dial keys, you can select characters using [▼] or [▲].

1. Press [▼] repeatedly to display the desired character.  
Characters will be displayed in the following order:
  - ① Uppercase letters
  - ② Numbers
  - ③ Symbols
  - ④ Lowercase letters
  - If you press [▲], the order will be reversed.
2. Press [▶] to insert the displayed character.
3. Return to step 1 to enter the next character.



# 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	Function
		Operation after code input	
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 (single side) 20: carriage 30: auto document feed (double side)
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 7200 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"  	Checks the LCD indication. Change the display by using up and down arrow keys (Navi Keys). Press STOP key to return the display.
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.123).
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"  	Checks the button operation. Indicates the button code on the LCD while the button is pressed. Refer to <b>Button Code Table</b> (P.123).
SCANNER TEST	Service Mode	"5" "5" "5" SET	LED lights up, Scanner scanning. 1: RED 2: GREEN 3: BLUE
LSU TEST	Service Mode	"6" "3" "9" SET	Laser radiates, Polygon rotates
FAN TEST	Service Mode	"6" "7" "7" SET	01: Normal operation 02: Fuser Fan ON (High speed) 03: Fuser Fan ON (Low speed) 04: PSU Fan ON (High speed) 05: PSU Fan ON (Low speed) 06: Both Fan OFF
MEMORY CLEAR (except History data)	Service Mode	"7" "1" "0" SET	Refer to <b>Memory Clear Specification</b> (P.128).

Test Mode	Type of Mode	Code	Function
		Operation after code input	
SENSOR CHECK	Service Mode	"8" "1" "5"	<p>First of all, press the copy button, and confirm the action of ON/OFF. For each sensor's operation, refer to <b>Sensors and Switches Section</b> (P.56). LCD DISPLAY:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> D S C P R E D T * 3 F * D F * *  C * T * * H D * A N C * L C P U </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><b>D: Document</b> D: Document set -: No document</p> <p><b>S: Read position</b> S: Docu detect -: No document</p> <p><b>C: Left cover</b> C: Cover open -: Cover close</p> <p><b>P: Paper (Standard input tray)</b> P: Recording paper set -: No recording paper</p> <p><b>R: Registration</b> R: Paper detect -: No paper</p> <p><b>E: Paper ejection sensor</b> E: Paper detect -: No paper</p> <p><b>D: Drum</b> D: DRUM set -: No DRUM</p> <p><b>T: Toner</b> T: Toner detect -: No toner</p> <p><b>*: None</b></p> <p><b>3F: Fuser thermistor</b> 3F: 00 (high temp.) - FF (low temp.)</p> <p><b>*: None</b></p> <p><b>DF: Fuser thermistor</b> DF: 00 (high temp.) - FF (low temp.)</p> <p><b>*: None</b></p> <p><b>*: None</b></p> </div> <div style="width: 48%;"> <p><b>C: Standard input tray</b> C: Tray open -: Tray close</p> <p><b>*: None</b></p> <p><b>T: Print timing</b> T: Paper detect -: No paper</p> <p><b>*: None</b></p> <p><b>*: None</b></p> <p><b>H: Carriage</b> H: Carriage detect -: No carriage</p> <p><b>D: ADF duplex sensor</b> D: Document detect -: No document</p> <p><b>*: None</b></p> <p><b>A: ADU sensor</b> A: Paper detect -: No paper</p> <p><b>N: First use sensor</b> N: New -: Secondhand</p> <p><b>C: Drum contact sensor</b> C: Contact -: Noncontact</p> <p><b>*: None</b></p> <p><b>L: Left cover (Optional lower input tray)</b> L: Cover open -: Cover close</p> <p><b>C: Optional lower input tray</b> C: Tray open -: Tray close</p> <p><b>P: Paper (Optional lower input tray)</b> P: Recording paper set -: No recording paper</p> <p><b>U: Pick up (Optional lower input tray)</b> U: Paper detect -: No paper</p> </div> </div>
PRINT TEST PAT- TERN	Service Mode	"8" "5" "2"	<p>1: As "PATNO. =" is displayed on the LCD, enter the test pattern No. and press the SET key.</p> <p>2: When "No. =" is displayed on the LCD, enter the printing number and press the SET key. (Press "00" for the infinite printing.)</p> <p>3: "MODE" is displayed on the LCD. Press "0" to start printing or press "1" to go to the next screen.</p> <p>4: When "1" is pressed at MODE, "INTVL =" is displayed on the LCD. Enter the printing interval (000~999 sec).</p> <p>5: The printing repeats the designated number of times at the programmed printing intervals.</p>

**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	"*" (X)	"0"	"#" (#)

**Note:**

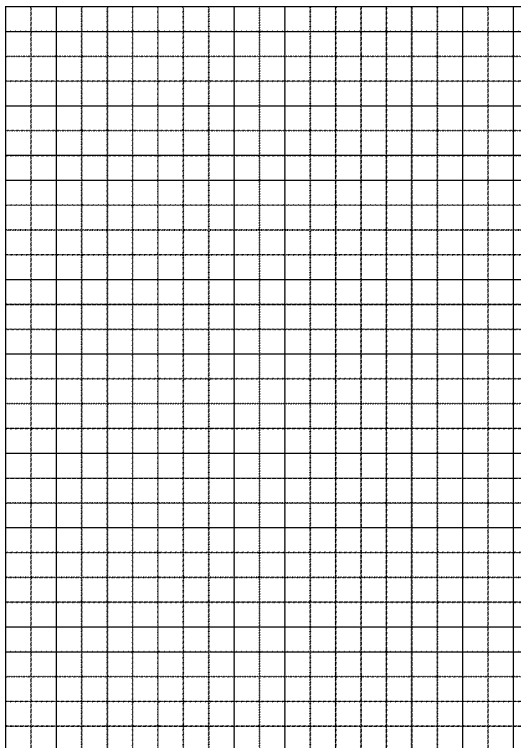
After performing this check, do not forget to turn the setting off.  
otherwise, dialing in DTMF signal will not work.

### 10.1.2. Button Code Table

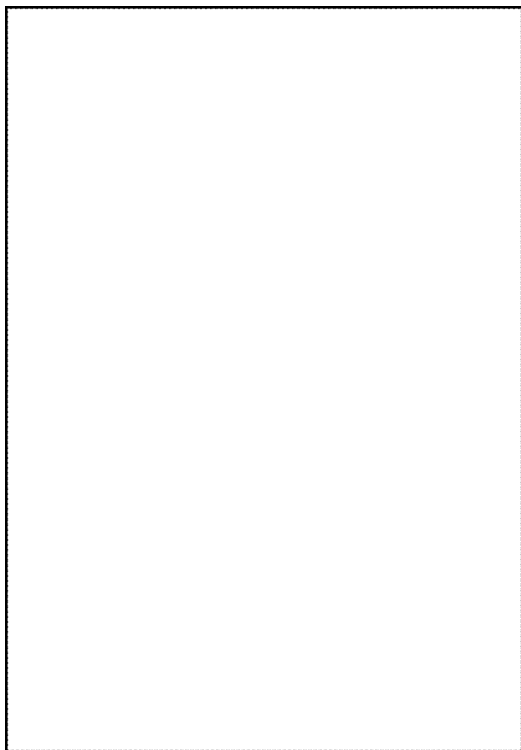
Code	Button Name	Code	Button Name
31	1	41	START
32	2	-	STOP
33	3	40	SET
34	4	44	MENU
35	5	66	NAVIGATOR ←
36	6	65	NAVIGATOR →
37	7	46	NAVIGATOR ↑
38	8	47	NAVIGATOR ↓
39	9	51	AUTO ANSWER
30	0	62	SCAN MODE
3B	* (X)	61	COPY MODE
3C	#	60	FAX MODE
3D	REDIAL	71	ADVANCE
57	FLASH	72	BACK
54	MONITOR	58	CALL DISPLAY
		8B	DUPLEX

### 10.1.3. Print Test Pattern

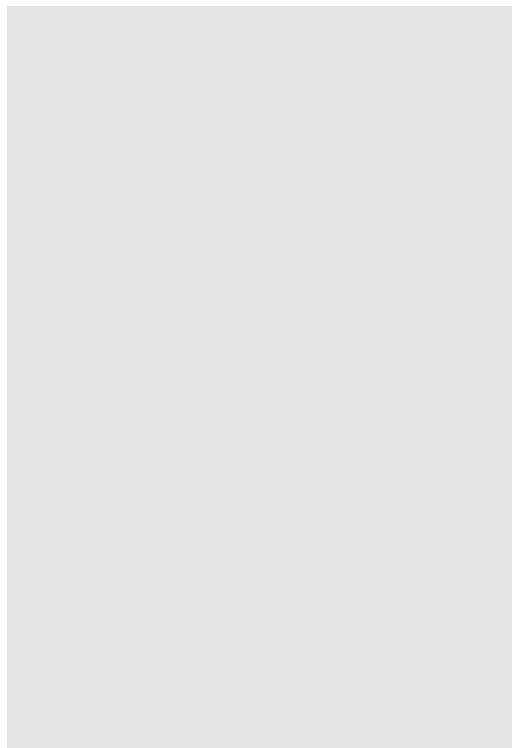
1. NO.01



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

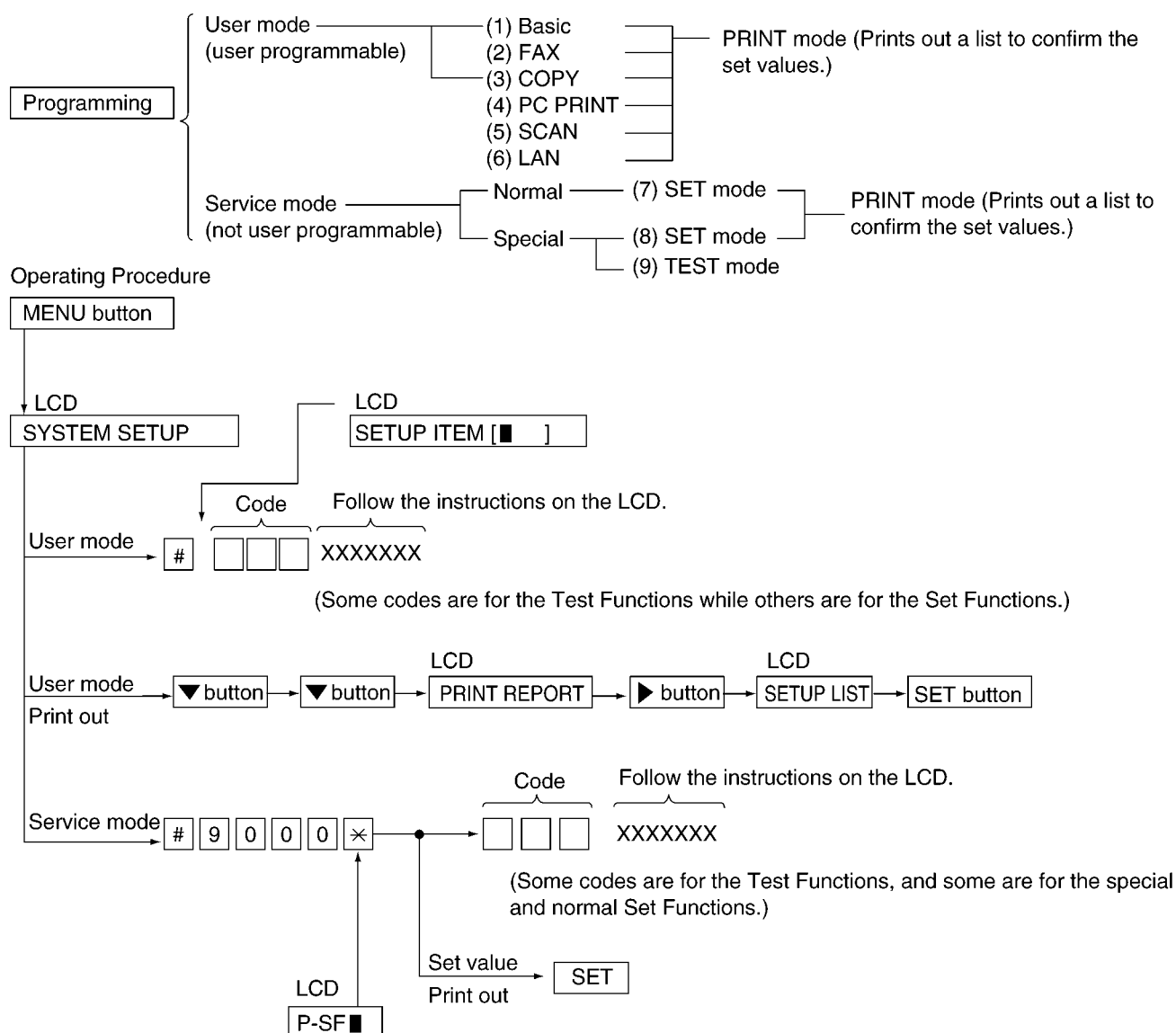
The programming functions are used to program the various features and functions of the machine, and to test the machine. This facilitates communication between the user and the service man while programming the unit.

## 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.

### 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	
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	
514	Bell signal detect time	X 100msec	1~9	6	-----
520	CED frequency select	1:2100 Hz 2:1100 Hz	1, 2	1	See Symptom/Countermeasure Table for long distance and international calls in (P.187).
521	International mode select	1:ON 2:OFF	1, 2	1	See Symptom/Countermeasure Table for long distance and international calls in (P.187).
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	
529	Call Service Clear				
550	Memory clear				Refer to <b>Memory Clear Specification</b> (P.128).
551	ROM check				See (P.121).
552	DTMF single tone test	1:ON 2:OFF	1, 2	2	See (P.121).
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 (P.121).
555	Scanner test				See (P.121).
556	Motor test			00	See (P.121).
557	LED test				See (P.121).
558	LCD test				See (P.121).
561	KEY test				See (P.121).
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	Sets the % break of pulse dialing according PBX.
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	01	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	065	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 (P.181).
593	Time between CED and 300bps	1:75 msec 2:500 msec 3:1 sec	1~3	1	See <b>Symptom/Countermeasure Table</b> for long distance and international calls in (P.187). Refer to (P.182) and (P.187).
594	Overseas DIS detection select	1:detects at the 1st time 2:detects at the 2nd time	1, 2	1	See <b>Symptom/Countermeasure Table</b> for long distance and international calls in (P.187). Refer to (P.181) and (P.187).
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 (P.181) and (P.182).
598	Receiving sensitivity	43= -43 dBm	20~48	48	Used when there is an error problem. Refer to (P.187).
599	ECM frame size	1:256 2:64	1, 2	1	-----
639	LSU test				See (P.121).
655	Cause Distinction Code of Call Service 3				See (P.148).
677	FAN test				See (P.121).
710	Memory clear except History data				Use this function when delay occurs in the line and communication (ex. Mobile comm) does not work well.
717	Transmit speed select	1:14400BPS 2:12000BPS 3:9600BPS 4:7200BPS 5:4800BPS 6:2400BPS	1~6	1	Adjusts the speed to start training during FAX transmission. Refer to (P.181) and
718	Receive speed select	1:14400BPS 2:12000BPS 3:9600BPS 4:7200BPS 5:4800BPS 6:2400BPS	1~6	1	Adjusts the speed to start training during FAX reception. Refer to (P.182) and
729	Fixing temperature	X °C	000~255	200	Use this function when the printing papers are severely curled. At first, we recommend setting Media type to [Thin Paper]. If the result is not enough, press "190" then SET key and set Media type to [Thin Paper]. [Attention] Do not set over 200 or less than 190. Because it may cause Call Service 3 or the unsatisfactory fixing performance.
774	Receiving T4 timer	X 100 sec	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 (P.121).
852	Print test pattern				See (P.121).
853	Top margin	X 0.5mm	1~11	6	-----
854	Left margin	X 0.5mm	1~11	6	-----
856	Top margin (Duplex)	X 0.5mm	1~11	6	-----
870	Left margin (OPF)	X 0.5mm	1~11	6	-----
871	Left margin (Duplex)	X 0.5mm	1~11	6	-----
874	DTMF ON time	X msec	060~200	100	-----
875	DTMF OFF time	X msec	060~200	100	-----
880	History list				See (P.132).
881	Journal 2 list				See (P.185).
882	Journal 3 list				See (P.186).

### 11.1.4. Memory Clear Specification

Item	Status after Memory Clear	
	Service Mode #550 <sup>*1</sup>	Service Mode #710 <sup>*2</sup>
Date and time (user mode #101)	—	Default
Your logo (user mode #102)	—	Default
Your Fax Number (user mode #103)	—	Default
Directory	—	Default
History	—	—
Top margin (service mode #853)	—	—
Left margin (service mode #854)	—	—
TOP MARGIN(DUPLEX) (service mode #856)	—	—
LEFT MARGIN(OPF) (service mode #870)	—	—
LEFT MARGIN(DUPLEX) (service mode #871)	—	—
Other Setting data (User setting and Service setting data)	Default	Default

— : Not changed

<sup>\*1</sup> Execute Service Mode #550 when you want to reset the all setting data keeping the user information.

<sup>\*2</sup> 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.

(Page1)

### Liste du paramétrage °

#### [ Liste des fonctions de base ]

N°	Paramètres	Réglages actuels	
#101	Prog.date/heure	Jan. 01 2009 00:00	
#102	Votre logo		
#103	Votre numéro de télécopieur		
#110	Langue	Français	[Anglais,Français]
#120	Type composition	Tonalité	[Tonalité,impulsions]
#121	Touche commut.	700ms	[900,700,600,400,300,250,200,160,110,100,90,80(ms)]
#155	Modif. mot passe		
#158	Heure entretien	00:00	
#159	Restaurer défaut		
#161	Sonnerie mélodie	A	[A,B,C]
#210	Nb. sonn. téléc.	3	[1...5] *5 Pour répondeur externe
#216	Liste des demandeurs auto	Non	[Non,Oui]
#226	Ajust.horodateur	Auto	[Auto,Manuel]
#380	Format papier #1	Lettre	[Lettre,A4,Légal]
#383	Type de papier	Ordinaire	[Ordinaire,Mince,Épais]
#403	Économie énergie	15min	[5min,15min,30min,1h]
#463	Mode par défaut	Copie	[Copie,Télécopie]
#464	Minut. mode déf.	lmin	[Non,30s,1min,2min,5min]
#482	Écono-toner	Non	[Non,Oui]
#484	Aff. compteur		

Code

Set Value

#### [ Liste des fonctions d'impression PC ]

N°	Paramètres	Réglages actuels	
#762	Copies PCL	1	[1...999]
#763	Format impres.	Lettre	[Lettre,A4,Légal]
#764	Réduction image	Oui	[Non,Oui]
#765	Orientation PCL	Portrait	[Portrait,Paysage]
#766	A4 grand rormat	Non	[Non,Oui]
#767	Lignes par page	60	[5...128]
#768	Source police	Résidente	[Résidente,Police téléch.]
#769	Numéro de police	0	[0...54]
#770	Pas/point police	10.00	[0.44...99.99]
#771	Jeu symboles	PC-8	
#772	RC/SL/AP	RC/SL/AP	[RC/SL/AP,RC+SL/SL/AP,RC/RC+SL/RC+AP]
#773	Poursuite Impres	Non	[Non,20s,30s,60s,90s,120s]
#774	Délai données	60s	[5...600(s)]
#776	Mutuelle A4/Ltr	Oui	[Non,Oui]

Code

Set Value

#### [ Liste des fonctions de réseau ]

N°	Paramètres	Réglages actuels	
#500	DHCP	Activé	[Désactivé,Activé]
#501	Adresse IP	0.0.0.0	
#502	Masq.sous réseau	0.0.0.0	
#503	Passerel. défaut	0.0.0.0	
#504	Serveur DNS #1	0.0.0.0	
#505	Serveur DNS #2	0.0.0.0	
#507	Nom d'appareil	MB350-C_A8AECC	
#508	Adresse MAC	00:80:F0:A8:AE:CC	
#532	Filtrage IP	Désactivé	[Désactivé,Activé]
#533	IP auto	Désactivé	[Désactivé,Activé]
#534	HTTPD	Activé	[Désactivé,Activé]
#535	Protocole IPv6	Désactivé	[Désactivé,Activé]
#578	Eff.adres.courr.		

## Liste des paramètres avancés

## [ Liste des fonctions de copie ]

N°	Paramètres	Réglages actuels	
#461	Résolution copie	Texte/Photo	[Texte/Photo, Texte, Photo]
#462	Contraste fixe	Désactivé	[Désactivé, Activé]
#467	Mise/page fixe	Désactivé	[Désactivé, Activé]
#468	Zoom fixe	Désactivé	[Désactivé, Activé]
#469	Tri fixe	Désactivé	[Désactivé, Activé]
#470	Recto verso fixe	Désactivé	[Désactivé, Activé]

## [ Liste des fonctions de télécopie ]

N°	Paramètres	Réglages actuels	
#289	Eff.toute adres.		
#401	Impression du relevé d'envoi	Envoi inc.	[Non, Oui, Envoi inc.]
#402	Impression auto - Registre des comm.	Oui	[Non, Oui]
#411	Mode outre-mer	Envoi inc.	[Télécopie suiv., Envoi inc., Non]
#412	Envoi différé	Non	[Non, Oui]
	Destination =		
	Heure début =	00:00	
#413	Sél.corr.erreur	Oui	[Non, Oui]
#416	Tonalité liaison	Oui	[Non, Oui]
#418	Vit. max. téléc.	33,6 Kbit/s	[33,6 Kbit/s, 14,4 Kbit/s]
#430	Son. distinctive	Non	[Non, Oui]
#431	Motif sonnerie télécopieur	B-D	[B-D, A, B, C, D]
#432	Réduction auto	Oui	[Non, Oui]
#434	Activation téléc.	Non	[Non, Oui]
	Code activation =	*#9	
#437	Avis de réception en mémoire	Oui	[Non, Oui]
#438	Réception conviviale	Oui	[Non, Oui]
#442	Réglages PC-FAX	Non	[Non, Toujours, Connecté]
#443	Réception PC-FAX	Prise USB	
#445	Téléc. lég. plat	Non	[Non, Télécopie suiv., Toujours]
#448	Mode aperçu	Non	[Non, Oui]
#449	Suppression auto	Oui	[Non, Oui]
#450	Aperçu téléc.Web		
#459	Réin. télécopieur		

## [ Liste des fonctions de numérisation ]

N°	Paramètres	Réglages actuels	
#493	Mode numér.	Visualiseur	[Visualiseur, Fichier, Courriel, ROC]
#494	Param.numé. fixe	Désactivé	[Désactivé, Activé]
	Version de micrologiciel	GCB1CB	
		GCB2AA	

Pour de l'aide, composez le 1-800-263-5008.

## 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			
856	Top Margin(Duplex)	=	06*0.5mm	[01...11]*0.5mm			
870	Left Margin(OPF)	=	06*0.5mm	[01...11]*0.5mm			
871	Left Margin(Duplex)	=	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	01	065	2	1	1	2
596	598	599	717	718	774	775						
10	48	1	1	1	00	00						

Usage Time = 0 Hours

Version = GCB1CB A06F

#### Note:

The above values are the default values.

## 11.4. History (Example of a printed out list)

### [ HISTORY ]

Model	: MB350	Usage Time	: 000000
Rom Version(Main)	: GCB1AB	Receive Mode	: FAX
Check SUM	: B9D3	Number of Copy	: 000000
Rom Version(LCD)	: GCB2AA	Number of Receive	: 000000
Check SUM	: 89DE	Number of Send	: 000000
Your LOGO	:		
Your Fax NO	:	Drum Print Count	: 00001
First Setting Date/Time		Drum Paddle Count	: 00016
Month	: 01	Toner Print Count	: 000000
Day	: 01	Toner Paddle Count	: 000016
Year	: 2009	Total Print Count	: 0000001
Hour/Minute	: 0000	Duplex Count	: 0000000
Factory to Customer(Day)	: 00000		
Factory to Now(Day)	: 00000		

(1) 0 0 0 0 0 0	(2) 0 0 0 0 0 0	(3) 0 0 0 0 0 0	(4) 0 0 0 0 0 0	(5) T O N E	(6) 0 0 0 0 0
(7) 0 0 0 0 0	(8) 0 0 0 0 0 0	(9) 0 0 0 0 0 0	(10) 0 0 0 0 0 0	(11) 0 0 0 0 0 0	(12) 0 0 0 0
(13) 0 0 0 0 0 0	(14) 0 0 0	(15) 0 0 0	(16) 0 0 0 0	(17) 0 0 0 0	(18) 0 0 0 0
(19) 0 0 0 0	(20) 0 0 0 0	(21) 0 0 0 0	(22) 0 0 0 0	(23) 0 0 0 0	(24) 0 0 0 0 0 0
(25) 0 0 0 0 0 0		(26) 0 0 0 0 0 0		(27) 0 0 0 0 0 0	

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.

### 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) Not used
- (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) Not used
- (22) Number of Pickup Errors in Option
- (23) Not used
- (24) Not used
- (25) Not Used
- (26) Not Used
- (27) Number of Copies

# 12 Troubleshooting Guide

## Note:

LOW VOLTAGE POWER SUPPLY BOARD = PSU

HIGH VOLTAGE POWER SUPPLY BOARD = HVU

## 12.1. User Recoverable Errors

If the unit detects a problem, one or more of the following messages will appear on the display.

The explanations given in the [ ] are for servicemen only.

DISPLAY MESSAGE	CAUSE AND REMEDY
"Call Service 1"	<ul style="list-style-type: none"> <li>Polygon motor error. Refer to <b>CALL SERVICE 1</b> (P.150).</li> </ul>
"Call Service 2"	<ul style="list-style-type: none"> <li>Laser beam error. Replace LSU unit. Refer to <b>CALL SERVICE 2</b> (P.151).</li> </ul>
"Call Service 3"	<ul style="list-style-type: none"> <li>Fuser unit cannot heat up. Replace fuser unit. Refer to <b>CALL SERVICE 3</b> (P.152).</li> </ul>
"Call Service 4"	<ul style="list-style-type: none"> <li>Fuser fan motor error. Replace fan motor. Refer to <b>CALL SERVICE 4</b> (P.153).</li> </ul>
"Call Service 5"	<ul style="list-style-type: none"> <li>Print motor error. (only for DC motor) Refer to <b>CALL SERVICE 5</b> (P.155).</li> </ul>
"Call Service 6"	<ul style="list-style-type: none"> <li>Charge unit error (An error occurred in the Charge unit including High voltage unit. (Also the Charger went wrong.)) Refer to <b>CALL SERVICE 6</b> (P.156).</li> </ul>
"Call Service 7"	<ul style="list-style-type: none"> <li>ZERO CROSS error Refer to <b>CALL SERVICE 7</b> (P.157).</li> </ul>
"Call Service 11"	<ul style="list-style-type: none"> <li>PSU fan motor error Refer to <b>CALL SERVICE 11</b> (P.158).</li> </ul>
"Call Service 17"	<ul style="list-style-type: none"> <li>Fuse error of monochrome drum cartridge Refer to <b>CALL SERVICE 17</b> (P.160).</li> </ul>
"Call Service 20"	<ul style="list-style-type: none"> <li>Toner LED error Refer to <b>CALL SERVICE 20</b> (P.161).</li> </ul>
"Change Drum"	<ul style="list-style-type: none"> <li>There is something wrong with the drum cartridge. Replace the drum cartridge.</li> </ul>
"Change Supplies Toner Empty"	<ul style="list-style-type: none"> <li>The toner is empty. Replace the toner cartridge immediately.</li> </ul>
"Change Supplies Toner Low"	<ul style="list-style-type: none"> <li>The toner is reaching the end of its life. You will need to replace the toner cartridge soon.</li> </ul>
"Check Document"	<ul style="list-style-type: none"> <li>The document was not fed into the unit properly. Remove the document, and then press [⏏] to clear the message. Re-insert the document. If misfeeding occurs frequently, clean the document feeder rollers and try again.</li> </ul>
"Check Drum"	<ul style="list-style-type: none"> <li>The drum cartridge is not inserted properly. Re-insert it correctly.</li> </ul>
"Check Install Input Tray #1"	<p>The paper input tray is not installed correctly. Pull out the paper input tray and re-insert it.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>"#1": Standard input tray</li> <li>"#2": Optional lower input tray</li> <li>"#1+#2": Standard input tray and Optional lower input tray</li> </ul>
"Check Paper"	<ul style="list-style-type: none"> <li>The recording paper size setting and/or the loaded recording paper is not appropriate.               <ul style="list-style-type: none"> <li>The recording paper size is not the same as the size selected for copy.</li> <li>The recording paper size is not the same as the size selected when printing from the PC.</li> <li>The recording paper size is not the same as the size selected for receiving a fax.</li> </ul> </li> </ul> <p>Change the recording paper size setting (feature #380 or feature #382), and load the appropriate recording paper.</p> <p>Refer to <b>User Function</b> (P.138).</p>
"Check Pick Up Input Tray #1"	<ul style="list-style-type: none"> <li>Recording paper was not fed into the unit properly. Load the paper again.</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>"#1": Standard input tray</li> <li>"#2": Optional lower input tray</li> </ul>
"Directory Full"	<ul style="list-style-type: none"> <li>There is no space to store new items in navigator directory. Erase unnecessary items.</li> </ul>
"Drum Life Low"	<ul style="list-style-type: none"> <li>The drum is reaching the end of its life. Replace the drum cartridge as soon as possible.</li> </ul>
"Email Size Over"	<ul style="list-style-type: none"> <li>When performing scan to email address, the total file size of scanned data exceeded the file size limitation. Divide the document into sections.</li> </ul>

DISPLAY MESSAGE	CAUSE AND REMEDY
"Fax In Memory"	<ul style="list-style-type: none"> <li>The unit has a document in memory. See the other displayed message instructions to print out the document.</li> <li>If the PC fax setting (feature #442) is set to "Always", <ul style="list-style-type: none"> <li>check the connection between the computer and the unit.</li> <li>check that the computer is turned ON.</li> </ul> </li> <li>If the fax preview mode (feature #448) is set to "On", <ul style="list-style-type: none"> <li>view, print or save the received fax documents, and then erase the unnecessary documents.</li> <li>turn the setting to "Off". The fax documents stored in memory will be printed automatically.</li> <li>set feature #449 to "On", and then print the received fax documents.</li> </ul> </li> </ul> <p>Refer to <b>User Function</b> (P.138).</p>
"File Size Over"	<ul style="list-style-type: none"> <li>When performing scan to FTP server, the total file size of scanned data exceeded the file size limitation. Divide the document into sections.</li> </ul>
"Keep Copying"	<ul style="list-style-type: none"> <li>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.</li> </ul>
"Left Cover Open"	<ul style="list-style-type: none"> <li>The left cover is open. Close it.</li> </ul>
"Low Temperature"	<ul style="list-style-type: none"> <li>The inside of the unit is extremely cold and cannot be operated. Use the unit in a warmer area.</li> </ul>
"Memory Full"	<ul style="list-style-type: none"> <li>When performing memory transmission, the document being stored exceeded the memory capacity of the unit. Send the entire document manually.</li> <li>When making a copy, the document being stored exceeded the memory capacity of the unit. Press [⏏] to clear the message. Divide the document into sections.</li> </ul>
"Memory Overflow"	<ul style="list-style-type: none"> <li>When printing a file, the document being stored exceeded the memory capacity of the unit. Press [⏏] to clear the message. Change the printer settings.</li> </ul>
"Modem Error"	<ul style="list-style-type: none"> <li>There is something wrong with the unit's modem.</li> </ul>
"No Fax Reply"	<ul style="list-style-type: none"> <li>The other party's fax machine is busy or has run out of recording paper. Try again.</li> </ul>
"Out of Paper Input Tray #1"	<ul style="list-style-type: none"> <li>Recording paper is not loaded or the paper input tray has run out of paper. Load paper.</li> <li>Recording paper was not fed into the unit properly. Load the paper again.</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>"#1": Standard input tray</li> <li>"#2": Optional lower input tray</li> <li>"#1+#2": Standard input tray and Optional lower input tray</li> </ul>
"Paper Jammed"	<ul style="list-style-type: none"> <li>A recording paper jam occurred. See the other displayed message instructions to remove the jammed paper.</li> </ul>
"PC Fail or Busy."	<ul style="list-style-type: none"> <li>The cable or the computer power cord is not connected correctly. Check the connections</li> <li>The software is not running on the computer. Restart the software and try again.</li> </ul>
"Please Wait"	<ul style="list-style-type: none"> <li>The unit is warming up. Wait for a while.</li> </ul>
"Redial Time Out"	<ul style="list-style-type: none"> <li>The other party's fax machine is busy or has run out of recording paper. Try again.</li> </ul>
"Remove Document"	<ul style="list-style-type: none"> <li>The document is jammed. Remove the jammed document.</li> <li>Attempted to send or copy a document longer than 600 mm (23<sup>5</sup>/<sub>8</sub>") of 1- sided document / 360 mm (14<sup>3</sup>/<sub>16</sub>") of 2-sided document using the automatic document feeder. Press [⏏] to remove the document. Divide the document into two or more sheets and try again.</li> </ul>
"Replace Drum"	<ul style="list-style-type: none"> <li>The drum cartridge's service life is finished. Replace the drum cartridge immediately.</li> </ul>
"RX Memory Full"	<ul style="list-style-type: none"> <li>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.</li> <li>If the PC fax setting (feature #442 ) is set to "Always", <ul style="list-style-type: none"> <li>check the connection between the computer and the unit.</li> <li>check that the computer is turned ON.</li> </ul> </li> <li>If the fax preview mode (feature #448) is set to "On", <ul style="list-style-type: none"> <li>view, print or save the received fax documents, and then erase the unnecessary documents.</li> <li>turn the setting to "Off". The fax documents stored in memory will be printed automatically.</li> <li>set feature #449 to "On", and then print the received fax documents.</li> </ul> </li> </ul> <p>Refer to <b>User Function</b> (P.138).</p>
"Scanner Position Error"	<ul style="list-style-type: none"> <li>There is something wrong with the scanner position. Turn the power switch OFF, then ON.</li> </ul>
"Transmit Error"	<ul style="list-style-type: none"> <li>A transmission error occurred. Try again.</li> </ul>
"Tray #2 Left Cover Open"	<ul style="list-style-type: none"> <li>The left cover of the Optional lower input tray is open. Close it.</li> </ul>
"Warming Up"	<ul style="list-style-type: none"> <li>The inside of the unit is cold. Let the unit warm up. Wait for a while.</li> </ul>

## 12.2. Remote Programming

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

First, in order to check the current status of the service code parameter, print out the setup list (code: 991) and the service list (code: 999) from the customer's fax machine.

Based on this, the parameters for the desired codes can be changed.

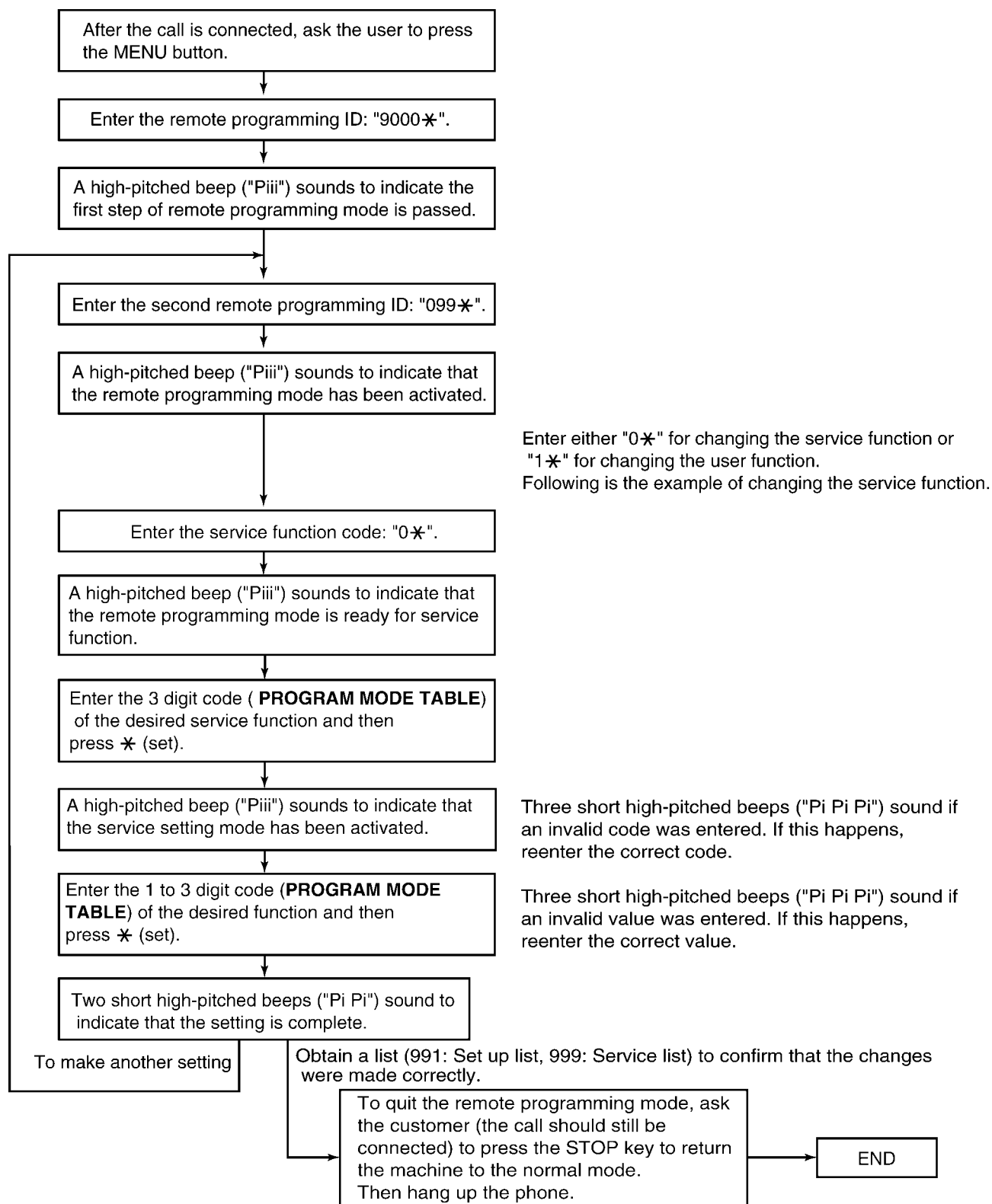
The procedure for changing and listing parameters is described on **Entering the Remote Programming Mode and Changing Service Codes**(P.137). Also, before exiting the remote programming mode, it is advisable to obtain a new list to confirm that the changes were made correctly.

**Hint:**

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



## 12.2.1. Entering the Remote Programming Mode and Changing Service Codes



### CROSS REFERENCE:

Program Mode Table (P.138)

## 12.2.2. Program Mode Table

### 12.2.2.1. User Function

#### Basic features

Code	Function	Set Value	Default	Remote Setting
101	SET DATE & TIME	mm/dd/yy hh:mm	01/01/09 12:00AM	NG
102	YOUR LOGO	-----	None	NG
103	YOUR FAX NUMBER	-----	None	NG
110	LANGUAGE	1:ENGLISH / 2:FRENCH	FRENCH	OK
120	DIALING MODE	1:Pulse / 2:Tone	Tone	OK
121	SET FLASH TIME	8:80ms / 9:90ms / 10:100ms / 11:110ms / 16:160ms / 20:200ms / 25:250ms / 30:300ms / 40:400ms / 60:600ms / 70:700ms / 90:900ms	700ms	OK
155	CHANGING THE PASSWORD	-----	DEFAULT=1234	NG
158	TONER MAINTENANCE TIME	-----	00:00	NG
159	RESTORE DEFAULT	NO / YES	NO	NG
161	RINGER PATTERN	A / B / C	A	NG
210	FAX RING COUNT	1 to 5 rings (for ext. tam)	3	OK
216	AUTO CALLER ID LIST	1:OFF / 2:ON	OFF	OK
226	TIME ADJUSTMENT	1:MANUAL / 2:AUTO	AUTO	OK
380	PAPER SIZE FOR STANDARD INPUT TRAY	1:LETTER / 2:A4 / 3:LEGAL	LETTER	OK
382	PAPER SIZE FOR LOWER INPUT TRAY	1:LETTER / 2:A4 / 3:LEGAL	LETTER	OK
383	PAPER TYPE	1:PLAIN PAPER / 2:THIN PAPER / 3:THICK PAPER	PLAIN PAPER	OK
390	PAPER INPUT TRAY FOR LISTS AND REPORTS PRINTING	1:#1 / 3:#2 / 4:#1+#2	#1	OK
403	POWER SAVE	5:5min / 15:15min / 30:30min / 60:1h	15min	OK
463	DEFAULT MODE	1:COPY / 2:FAX	COPY	OK
464	MODE TIMER	0:OFF / 1:30S / 2:1min / 3:2min / 4:5min	1min	OK
482	TONER SAVE	1:OFF / 2:ON	OFF	OK
484	COUNTER VIEW	-----		NG

#### Fax features

Code	Function	Set Value	Default	Remote Setting
289	ERASE ALL DIR.	YES / NO	NO	NG
401	PRINT SENDING REPORT	1:ERROR / 2:ON / 3:OFF	ERROR	OK
402	JOURNAL AUTO PRINT	1:OFF / 2:ON	ON	OK
411	OVERSEAS MODE	1:NEXT FAX / 2:ERROR / 3:OFF	ERROR	OK
412	DELAYED SEND	OFF / ON	OFF	NG
413	ECM SELECTION	1:OFF / 2:ON	ON	OK
416	CONNECTING TONE	1:OFF / 2:ON	ON	OK
418	FAX SPEED	1:14.4 Kbps / 2:33.6 Kbps	33.6 Kbps	OK
430	DISTINCTIVE RING	1:OFF / 2:ON	OFF	OK
431	FAX RING PATTERN	1:B-D / 2:A / 3:B / 4:C / 5:D	B-D	OK
432	AUTO REDUCTION	1:OFF / 2:ON	ON	OK
434	Remote FAX activation code	OFF / ON	OFF CODE=*#9	NG
437	MEMORY RECEPTION ALERT	1:OFF / 2:ON	ON	OK
438	FRIENDLY RECEPTION	1:OFF / 2:ON	ON	OK
440	FAX INPUT TRAY	1:#1/3:#2/4:Auto	Auto	OK
442	PC FAX SETTING	1:OFF / 2:ALWAYS / 3:CONNECTED	OFF	OK
443	PC FAX RECEPTION	-----	-----	NG
445	FLATBED LEGAL FAX	1:OFF / 2:NEXT FAX / 3:ALWAYS	OFF	OK
448	FAX PREVIEW	1:OFF / 2:ON	OFF	OK
449	AUTO DELETE	OFF / ON	ON	NG
450	WEB PREVIEW	-----		NG
459	SET FAX DEFAULT	YES / NO	NO	NG

#### Copy features

Code	Function	Set Value	Default	Remote Setting
460	COPY INPUT TARY	1:#1 / 3:#2 / 4:#1+#2	#1	OK
461	COPY RESOLUTION	1:TEXT/PHOTO / 2:TEXT / 3:PHOTO	TEXT/PHOTO	OK
462	CONTRAST SAVE	1:DISABLED / 2:ENABLED	DISABLED	OK

Code	Function	Set Value	Default	Remote Setting
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
470	DUPLEX HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK
471	COPY INPUT TRAY PROMPT	1:OFF / 2:AUTO / 3:ALWAYS	AUTO	OK

### PC Print features

Code	Function	Set Value	Default	Remote Setting
760	PCL PAPER SOURCE	1:#1 / 3:#2 / 4:#1+#2	#1	OK
762	PCL COPIES	1~999	1	NG
763	PRINT FORMAT	1:LETTER / 2:A4 / 3:LEGAL	LETTER	OK
764	IMAGE REDUCTION	1:OFF / 2:ON	ON	OK
765	PCL ORIENTATION	1:PORTRAIT / 2:LANDSCAPE	PORTRAIT	OK
766	A4 WIDE	1:OFF / 2:ON	OFF	OK
767	LINES PER PAGE	5~128	60	NG
768	FONT SOURCE	RESIDENT / DOWNLOAD FONT	RESIDENT	NG
769	FONT NUMBER	0~54	0	NG
770	FONT PITCH / POINT	PITCH:0.44~99.99 / POINT:4.00~999.75	PITCH:10.00 POINT:12.00	NG
771	SYMBOL SET	-----	PC-8	NG
772	CR/LF/FF	CR/LF/FF / CR+LF/LF/FF / CR/CR+LF/ CR+FF	CR/LF/FF	NG
773	AUTO CONTINUE	1:OFF / 2:20s / 3:30s / 4:60s / 5:90s / 6:120s	OFF	OK
774	DATA TIMEOUT	5~600s	60s	NG
776	MUTUAL A4/LETTER	1:OFF / 2:ON	ON	OK

### Scan features

Code	Function	Set Value	Default	Remote Setting
493	SCAN MODE SETTING	1:VIEWER / 2:FILE / 3:E-MAIL / 4:OCR	VIEWER	OK
494	SCANNING PARAMETER HOLD	1:DISABLED / 2:ENABLED	DISABLED	OK

### LAN features

Code	Function	Set Value	Default	Remote Setting
500	LAN SETTING WITH DHCP	1:DISABLED / 2:ENABLED	ENABLED	OK
501	IP ADDRESS SETTING	-----		NG
502	SUBNET MASK SETTING	-----		NG
503	DEFAULT GATEWAY SETTING	-----		NG
504	PRIMARY DNS SERVER SETTING	-----		NG
505	SECONDARY DNS SERVER SETTING	-----		NG
507	DISPLAYING THE MACHINE NAME	-----		NG
508	DISPLAYING THE MAC ADDRESS	-----		NG
532	IP ACCESS FILTER	1:DISABLED / 2:ENABLED	DISABLED	OK
533	AUTOMATICAL IP SETTING	1:DISABLED / 2:ENABLED	DISABLED	OK
534	HTTPD SETTING	1:DISABLED / 2:ENABLED	ENABLED	OK
535	IPv6 PROTOCOL	1:DISABLED / 2:ENABLED	DISABLED	OK
565	E-MAIL INPUT TRAY	1:#1 / 3:#2 / 4:#1+#2	#1	OK
578	ERASE EMAIL DIR.	YES / NO	NO	NG

## 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
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%	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	01	OK
591	FAX auto redial line disconnection time set	001~999sec	065	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
639	LSU test	-----	-----	NG
655	Cause distinction code of call service 3	-----	-----	NG
677	FAN test	-----	-----	NG
710	Memory clear except History data	-----	-----	NG
717	Transmit speed select	1: 14400bps / 2:12000bps / 3:9600bps / 4:7200bps / 5:4800bps / 6:2400bps	14400bps	OK
718	Receive speed select	1: 14400bps / 2:12000bps / 3:9600bps / 4:7200bps / 5:4800bps / 6:2400bps	14400bps	OK
729	Fixing temperature	X °C	200	NG
774	Receiving T4 timer	00~99 x 100msec	00	OK
775	Transmission T4 timer	00~99 x 100msec	00	OK
815	Sensor check	-----	-----	NG
852	Print test pattern	-----	-----	NG
853	Top margin	1~11	6	OK
854	Left margin	1~11	6	OK
856	Top margin (Duplex)	1~11	6	OK
870	Left margin (OPF)	1~11	6	OK
871	Left margin (Duplex)	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
991	Setup list	1:Start	-----	OK
994	Journal list	1:Start	-----	OK
995	Journal 2 list	1:Start	-----	OK
996	Journal 3 list	1:Start	-----	OK
998	History list	1:Start	-----	OK

Code	Function	Set Value	Default	Remote Setting
999	Service list	1:Start	-----	OK

OK means “can set”.

NG means “can not set”.

**Note:**

Refer to **Service Function Table** (P.126) for descriptions of the individual codes.

**Example:**

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

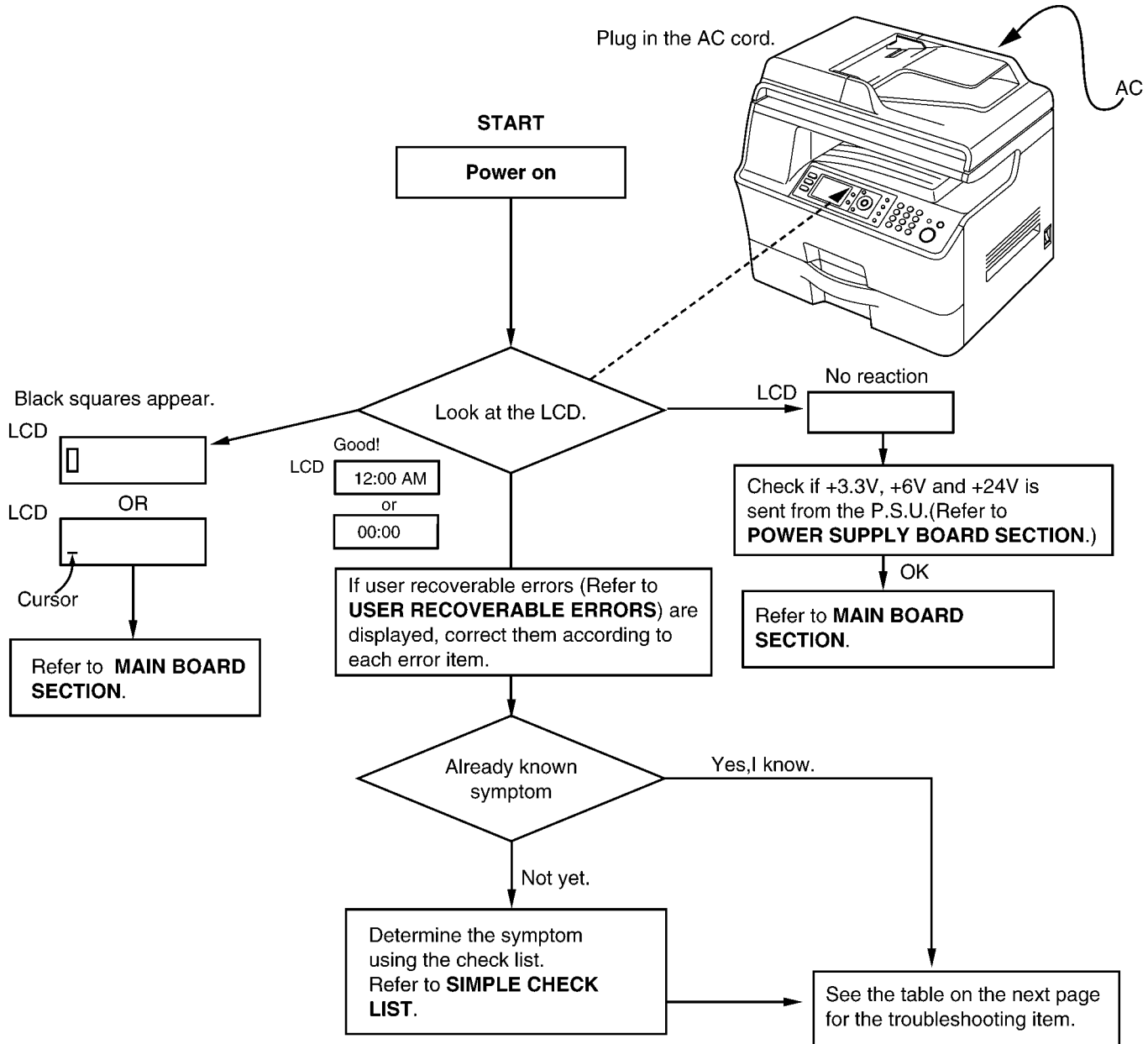
## 12.3. Troubleshooting Details

### 12.3.1. Outline

Troubleshooting is for recovering quality and reliability by determining the broken component and replacing, adjusting or cleaning it as required. First, determine the problem then decide the troubleshooting method. If you have difficulty finding the broken part, determine which board is broken. (For example: the Main PCB, Analog PCB, etc.) The claim tag from a customer or dealer may use different expressions for the same problem, as they are not a technician or engineer. Using your experience, test the problem area corresponding to the claim. Also, returns from a customer or dealer often have a claim tag. For these cases as well, you need to determine the problem. Test the unit using the simple check list on **Simple Check List**(P.144). 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:

User Recoverable Errors(P.134)

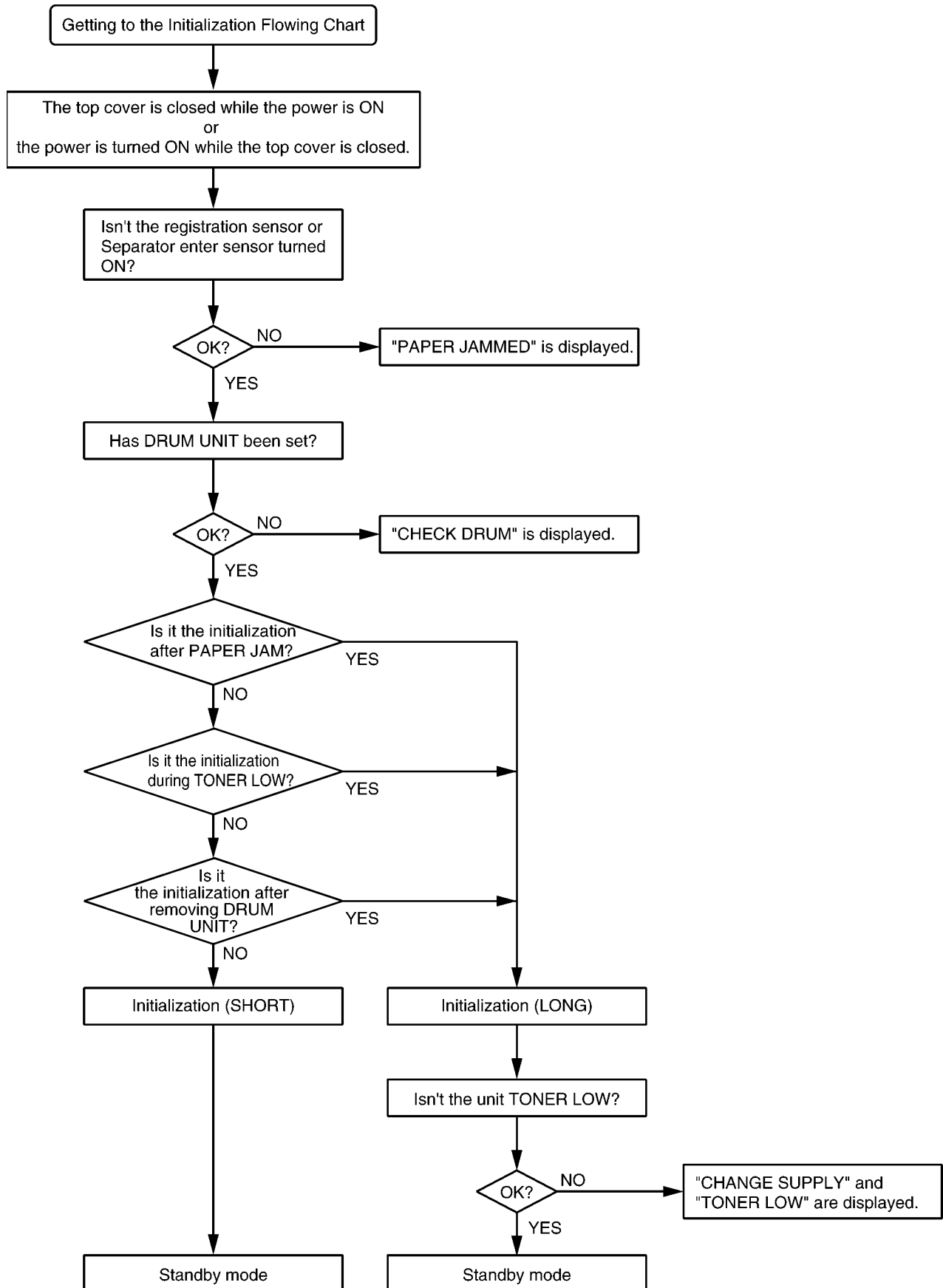
Simple Check List(P.144)

Main Board Section(P.286)

PSU (Low Voltage Power Supply Board) Section(P.97)

### 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 Color Scan	OK / NG	
Telephone operation	Handset transceiver/ receiver (With optional Handset)	OK / NG	
	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.
EXT-TAM	Handset transceiver/receiver	OK / NG	
	Remote control	OK / NG	

**Note:**

 Check according to the service code referring to **Test Functions** (P.121)



## 12.3.5. Simplified Troubleshooting Guide

### 12.3.5.1. Printing

No.	Symptom	Cause	Countermeasure
1	<b>Ghost Image</b> (P.162)	Failed drum unit	Replace drum unit
		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 <b>High Voltage Section</b> (P.218)
		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	<b>Dark or White Vertical Line</b> (P.163)	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 unit	Replace drum unit
		Failed the heat roller or the pressurized roller	Check the heat roller and the pressurized roller
		Failed LSU	Go to <b>LSU (Laser Scanning Unit) Section</b> (P.52)
3	<b>Dark or White Horizontal Line</b> (P.164)	Failed drum unit	Replace drum unit
		Failed the gear	Check the gear
		Failed the engine motor	Go to <b>Scanner (ADF &amp; FB) motor</b> (P.206)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to <b>High Voltage Section</b> (P.218)
		Scratch on the OPC drum	Replace drum unit
		Static electricity on the documents (when copying)	Check the connection between the parts around CIS and earth
4	<b>Dirty or Half Darkness Background</b> (P.165)	Failed drum unit	Replace drum unit
		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 <b>High Voltage Section</b> (P.218)
		Dirty the recording paper path	Clean the recording paper path
5	<b>Black Print</b> (P.166)	Failed drum unit	Replace drum unit
		Failed LSU	Go to <b>LSU (Laser Scanning Unit) Section</b> (P.52)
		Failed the high-voltage terminal	Check the high-voltage terminal
		Failed the high voltage power supply board	Go to <b>High Voltage Section</b> (P.218)
		Failed the main board	Check the main board
		Failed CIS (when copying)	Go to <b>CIS Control Section</b> (P.213)
6	<b>Light Print</b> (P.167) <b>OR</b> <b>Black Print</b> (P.166)	Short toner	Supply toner
		Failed drum unit	Replace drum unit
		Life of drum unit is over	Replace drum unit
		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 <b>High Voltage Section</b> (P.218)
		Failed the main board	Check the main board
		Failed CIS (when copying)	Go to <b>CIS Control Section</b> (P.213)
7	<b>Black or White Point</b> (P.168)	Failed the developer roller (33mm pitch)	Replace drum unit
		Failed the OPC drum (75mm pitch)	Replace drum unit
		Failed the heat roller (79mm pitch)	Check the heat roller
		Failed the high voltage power supply board	Go to <b>High Voltage Section</b> (P.218)
		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	<b>Multiple Feed</b> (P.168)	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	<b>The Recording Paper Is Waved or Wrinkled</b> (P.169)	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	<b>Skew</b> (P.170)	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 150 sheets
		Too thick or too thin recording paper	Use the recording paper from 16lb to 24lb
4	<b>The Recording Paper Does Not Feed</b> (P.171)	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 <b>Scanner (ADF &amp; FB) motor</b> (P.206)
		Failed the pickup sensor lever	Check the pickup sensor lever
		Failed the pickup sensor	Go to <b>Sensor Section</b> (P.201)
5	<b>The Recording Paper Jam</b> (P.172) "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 <b>Sensor Section</b> (P.201)
		Failed the Regist sensor lever	Check the Registration & Manual paper sensor (paper top sensor) lever
		Failed the Regist sensor	Go to <b>Sensor Section</b> (P.201)
		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	<b>Back Side of The Recording Paper Is Dirty</b> (P.173)	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 <b>High Voltage Section</b> (P.218)

### 12.3.5.3. Copy and FAX

No.	Symptom	Cause	Countermeasure
1	<b>NO DOCUMENT FEED</b> (No Document Feed, Document Jam and Multiple Document Feed.) (P.174)	Failed the document sensor lever	Replace the document sensor lever
		Failed the document sensor	Go to <b>Sensor Section</b> (P.201)
		Dirty or failed the separation roller	Clean or replace the separation roller
		Dirty or failed the separation rubber	Clean or replace the separation rubber
	<b>DOCUMENT JAM</b> (No Document Feed, Document Jam and Multiple Document Feed.) (P.174)	Failed the separation spring	Replace the separation spring
		Dust or scratch on the document paper path	Clean the document paper path
		Failed the gear	Check the gear
	<b>MULTIPLE DOCUMENT FEED</b> (No Document Feed, Document Jam and Multiple Document Feed.) (P.174)	Failed the ADF motor	Go to <b>Optional lower input Tray Motor (OPF Motor)</b> (P.211)
		Failed the ADF cover open switch lever	Replace the ADF cover open switch lever
		Dirty or failed the separation roller	Clean or replace the separation roller
2	<b>Skew (ADF)</b> (P.176)	Dirty or failed the separation rubber	Clean or replace the separation rubber
		Failed the separation spring	Replace the separation spring
		Dust or scratch on the document paper path	Clean the document paper path
3	<b>The Sent FAX Data Is Skewed</b> (P.177)	Failed the document feed roller	Replace the document feed roller
		Failed the document guide	Replace the document guide
		The cause of ADF	Go to Skew (ADF)(P.176)
4	<b>The Received FAX Data Is Skewed</b> (P.177)	The cause of scanner glass	-----
		Problem with the other FAX machine	
		The cause of printing	Go to Skew (ADF)(P.176)
5	<b>The Received or Copied Data Is Expanded</b> (P.177)	Problem with the other FAX machine	
		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
6	<b>Black or White Vertical Line Is Copied</b> (P.178)	Failed CIS movement (at SG)	Replace the belt or the gear or the shaft or the FB motor
		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 <b>Dark or White Vertical Line</b> (P.163)
7	<b>An Abnormal Image Is Copied</b> (P.179)	Failed CIS	Go to <b>CIS Control Section</b> (P.213)
		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 <b>CIS Control Section</b> (P.213)
		The cause of printing	Go to <b>Dark or White Vertical Line</b> (P.163)

### 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.52).

- 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.52)

- 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.88)

- \*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 6 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 (160°C: 5Bh) within 50 seconds.

03: means that it did not reach the second stabilizing temperature (185°C: 3Ch) within 70 seconds after reaching the first stabilizing temperature (160°C: 5Bh).

04: means that it dropped to 165°C: 61h (-40 deg) or below by the temperature control after reaching the second stabilizing temperature (185°C: 3Ch).

05: means that it did not reach the first stabilizing temperature (160°C: 5Bh) within 30 seconds from detection temperature 1 (70°C: D8h).

06: means that it became 235°C: 2Ah 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) and open (AD: FFh or over) were detected.

#### <Note>

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

Call Service 4 ----- Rotation error of Fuser Fan..... Refer to **FAN Motor Section** (P.47)

- 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... Fuser Fan ON (High speed)

:3... Fuser Fan ON (Low speed)

:4... PSU Fan ON (High speed)

:5... PSU Fan ON (Low speed)

:6... Both Fan OFF

Call service 5 ----- Rotation of Engine motor..... Refer to **Motor Drive Section** (P.36)

- Engine motor's rotation detection signal LD did not become Low within rated speed  $\pm 6.25\%$ .
- 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 **HVU (High Voltage Power Supply) Section** (P.86)

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

Call service 7 ----- Detection of ZERO CROSS error..... Refer to the **PSU (Low Voltage Power Supply Board) Section** (P.97)

- PSU cannot OUTPUT ZERO CROSS signal.
- Check the waveform at CN101\_2pin of PSU, confirm the frequency must be 100Hz or 120Hz.

Call Service 11 ----- Rotation error of PSU Fan..... Refer to **FAN Motor Section** (P.47)

- 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... Fuser Fan ON (High speed)  
 :3... Fuser Fan ON (Low speed)  
 :4... PSU Fan ON (High speed)  
 :5... PSU Fan ON (Low speed)  
 :6... Both Fan OFF

Call service 17 ----- Fuse error of monochrome drum cartridge..... Refer to **Drum Life sensor circuit** (P.66).

- When 250 pages are printed after installing new DC, Fuse resistor for First use sensor is cut to show the DC is not new any more. Call service 17 appears when this process doesn't work properly in monochrome DC.
- Check the contact between DC and main unit, or check if Fuse is set in DC properly.

Call service 20 ----- Toner LED error..... Refer to **Toner Sensor** (P.63)

- Call service 20 appears when all of the toner sensor LEDs do not light properly.
- Check if the toner sensor is broken in service mode of \*815.

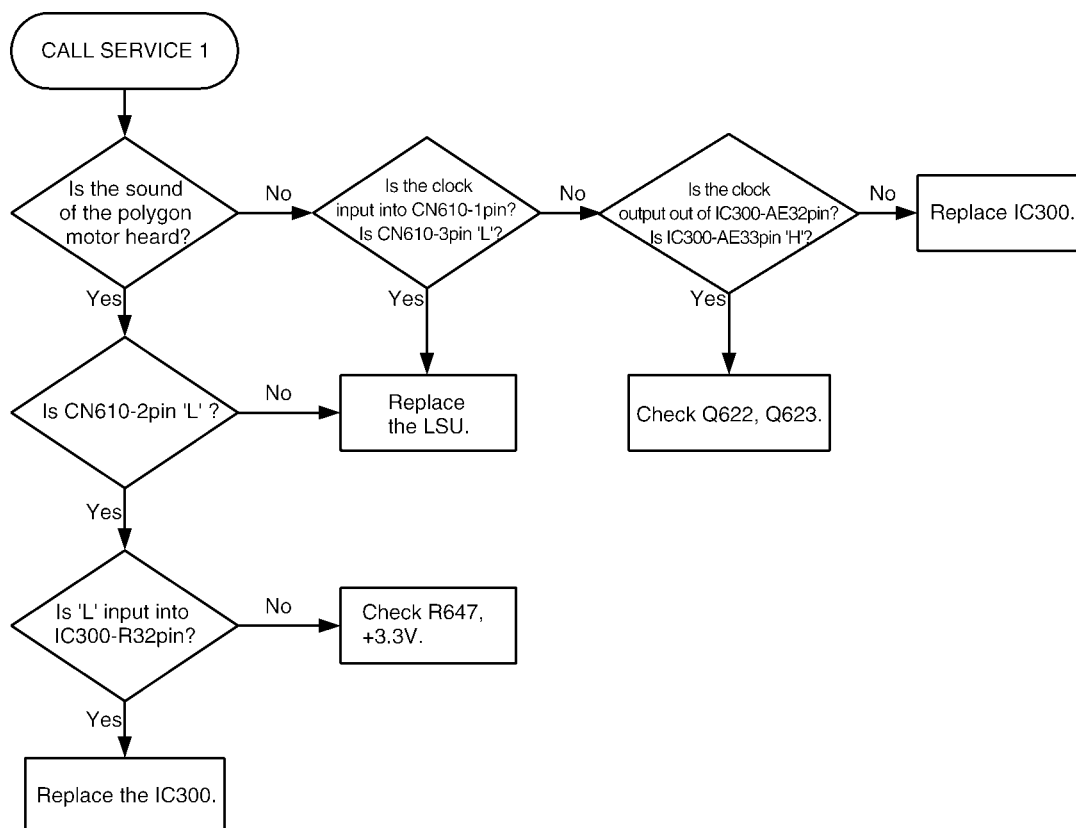
\* As for Call Service 1, 2, 4, 5 and 6, turn the power OFF then ON to restart.

### 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-R32pin (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.

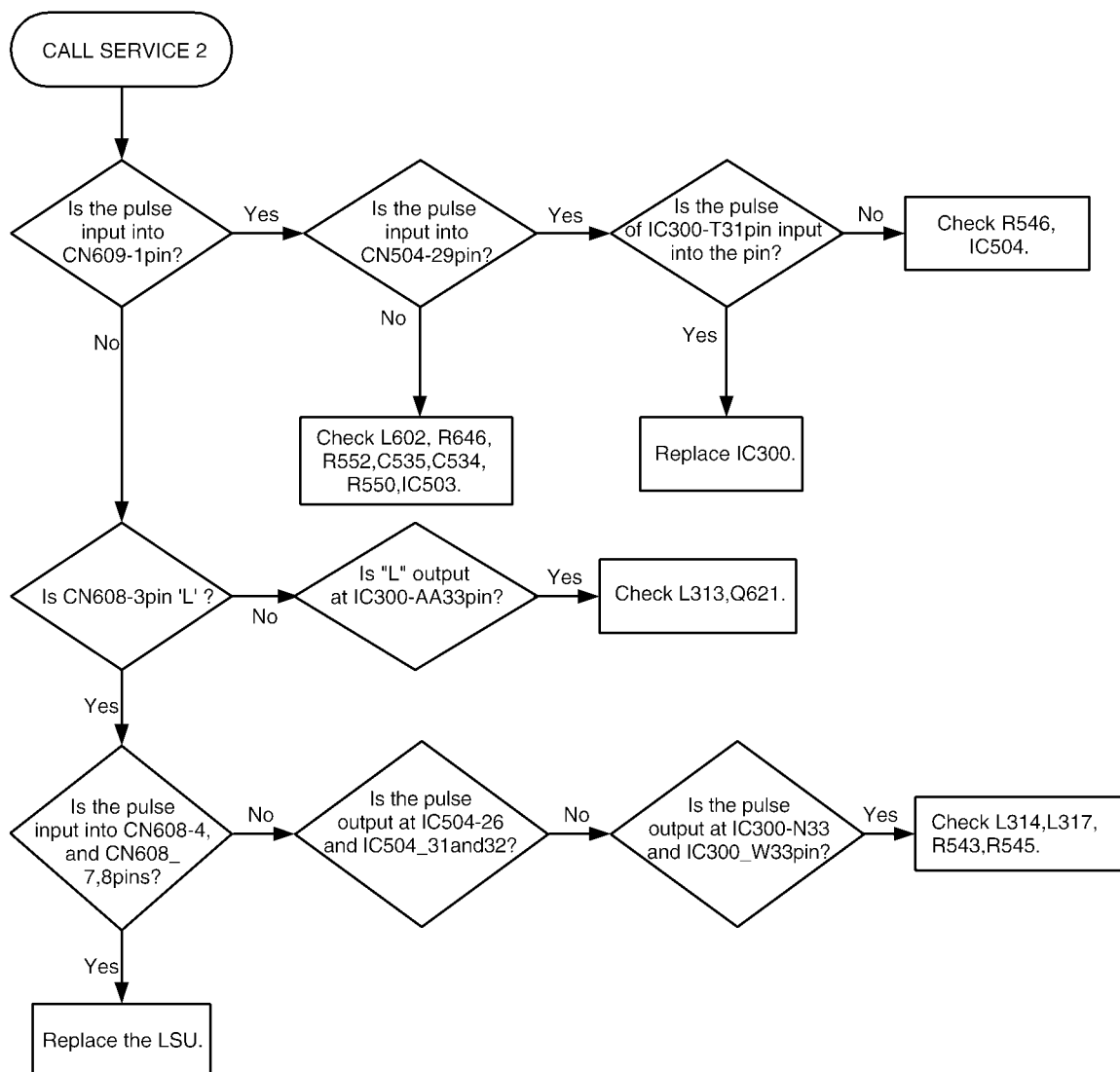


### 12.3.6.2. CALL SERVICE 2

"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 IC300-T31pin. (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.



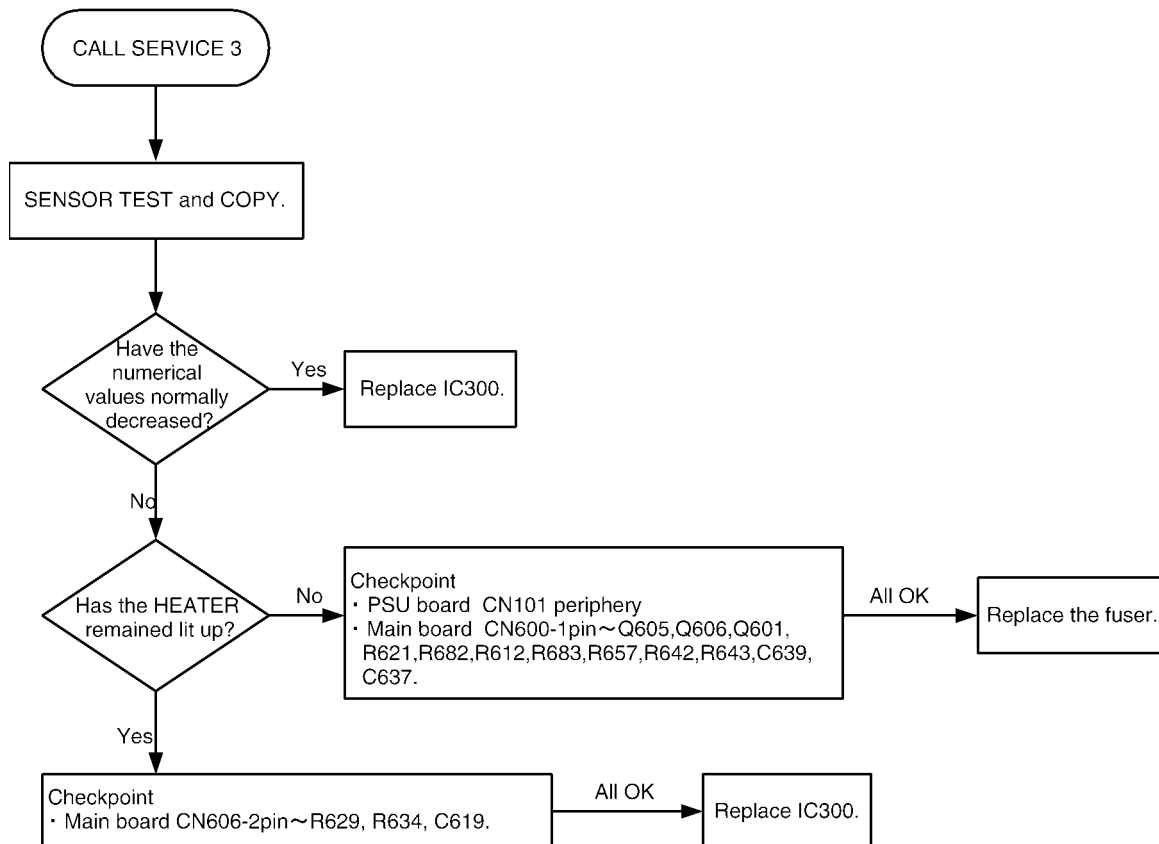
**Note:**

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 IC300-U34pin.

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, 'F5h(25°C)' is displayed in the waiting state, and '40h(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" for details. (P.148)



### 12.3.6.4. CALL SERVICE 4

"CALL SERVICE 4" means that the Fuser FAN does not rotate or the rotation of the Fuser FAN cannot be detected normally. The rotation of the Fuser FAN is detected by IC300\_L34. "CALL SERVICE 4" is displayed when NG is detected consecutive 3 times.

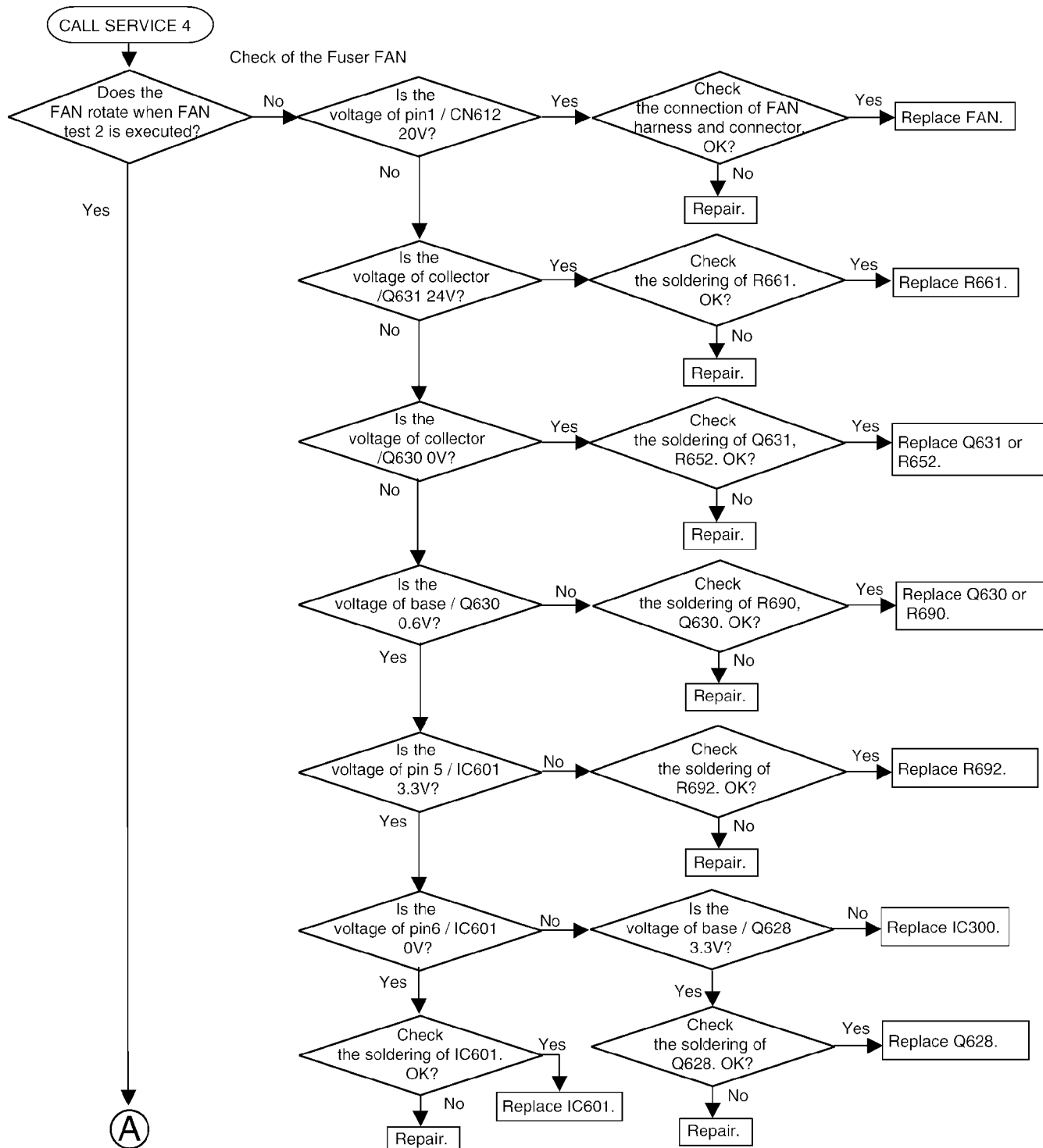
After repairing, copy 3 times. If "CALL SERVICE 4" is displayed, check again.

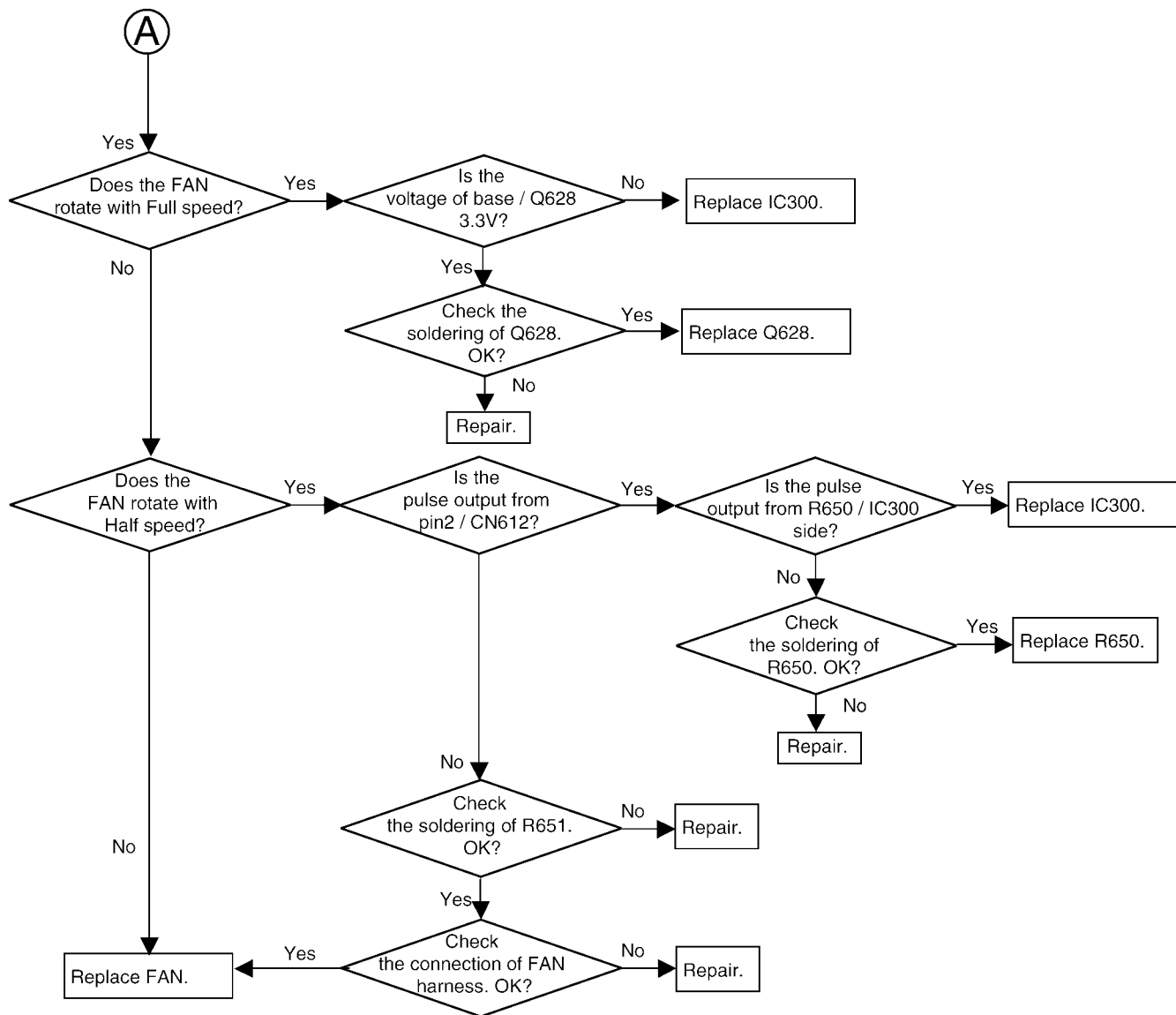
After the display indicates "CALL SERVICE 4", turn the power OFF/ON.

Then perform the FAN TEST in service mode.

FAN TEST can be performed by pressing MENU → # → 9000 → \*677.

- 1 Normal operation (default)
- 2 FUSER FAN ON (Full Speed)
- 3 FUSER FAN ON (Half Speed)
- 4 PSU FAN ON (Full Speed)
- 5 PSU FAN ON (Half Speed)
- 6 Both FAN OFF

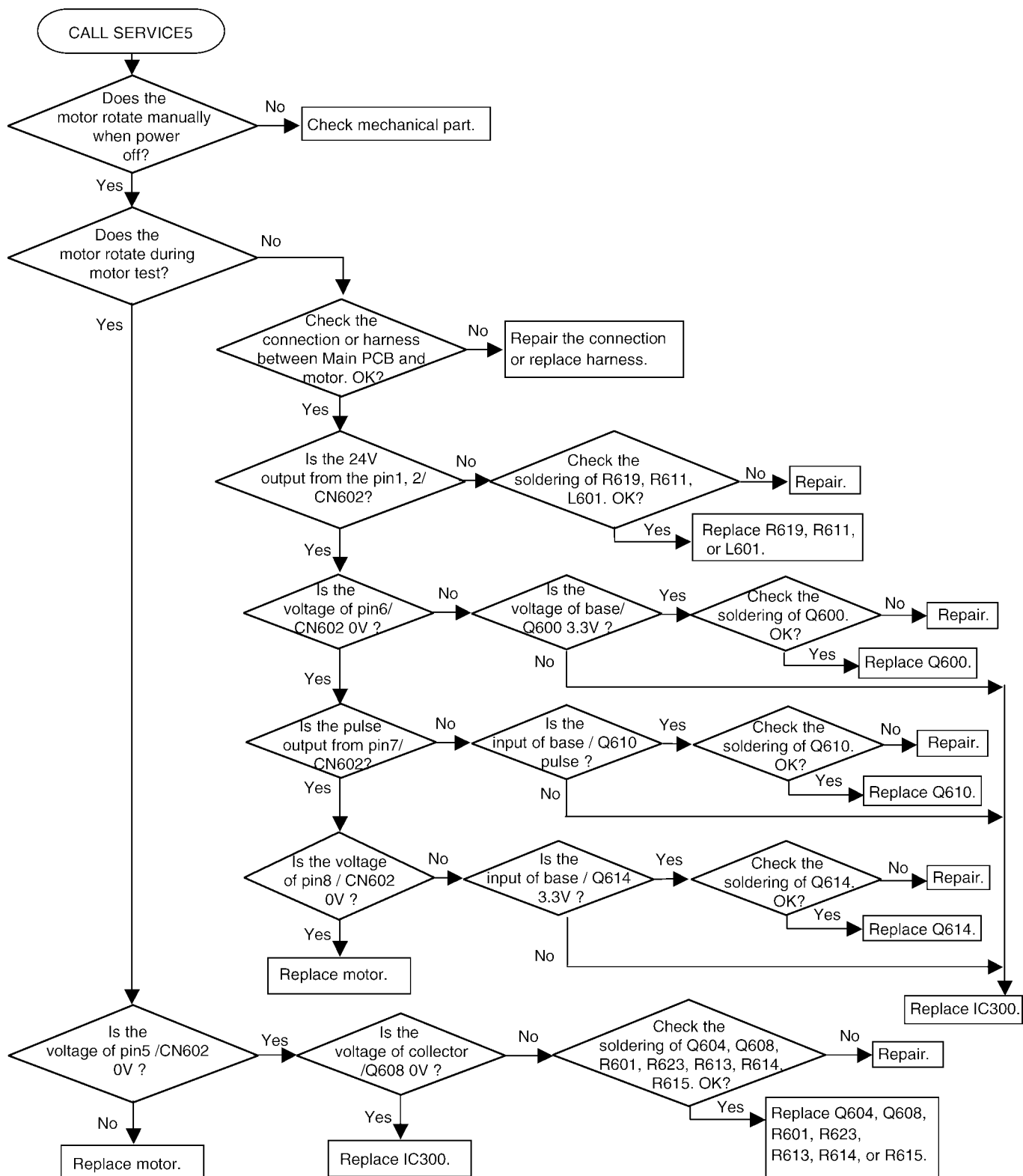




### 12.3.6.5. CALL SERVICE 5

"CALL SERVICE 5" means that the main DC motor does not rotate properly or the rotation detection signal (LD signal) is not detected during motor rotation.

After the display indicates "CALL SERVICE 5", turn the power OFF/ON.  
Then perform the MOTOR TEST in service mode.  
MOTOR TEST can be performed by pressing MENU → # → 9000 → \*556 → 0  
Then press "Set" key.



### 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 unit 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 is output from pin 2 of CN1.

When the main unit 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 unit

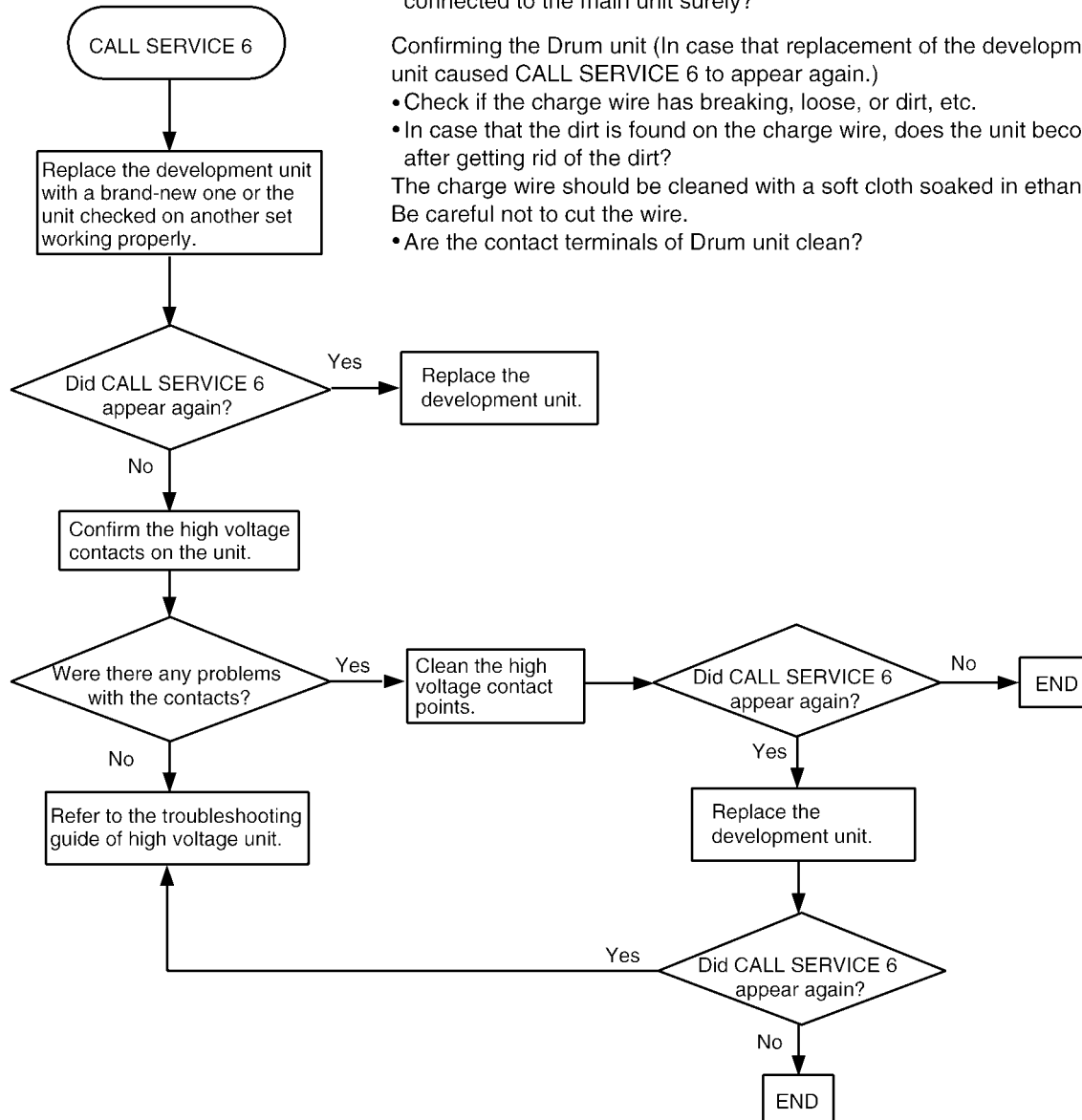
- Check the dirt on the high voltage terminals.
- Check if the spring pressure of each high voltage terminal is strong enough. (Isn't it distorted or bent?)
- When a Drum unit is installed on the main unit, are the terminals connected to the main unit surely?

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?

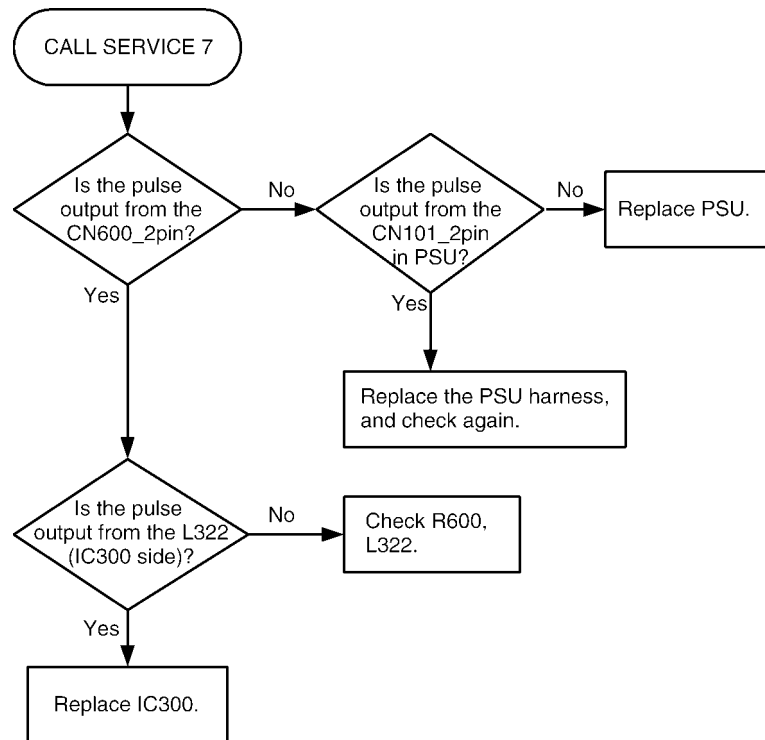
The charge wire should be cleaned with a soft cloth soaked in ethanol. Be careful not to cut the wire.

- Are the contact terminals of Drum unit clean?



### 12.3.6.7. CALL SERVICE 7

"CALL SERVICE 7" means that PSU does not output ZERO CROSS signal, ZERO CROSS signal is detected by IC300\_K34pin.



### 12.3.6.8. CALL SERVICE 11

"CALL SERVICE 11" means that the PSU FAN does not rotate or the rotation of the PSU FAN cannot be detected normally.

The rotation of the PSU FAN is detected by IC300\_L34. "CALL SERVICE 11" is displayed when NG is detected consecutive 3 times.

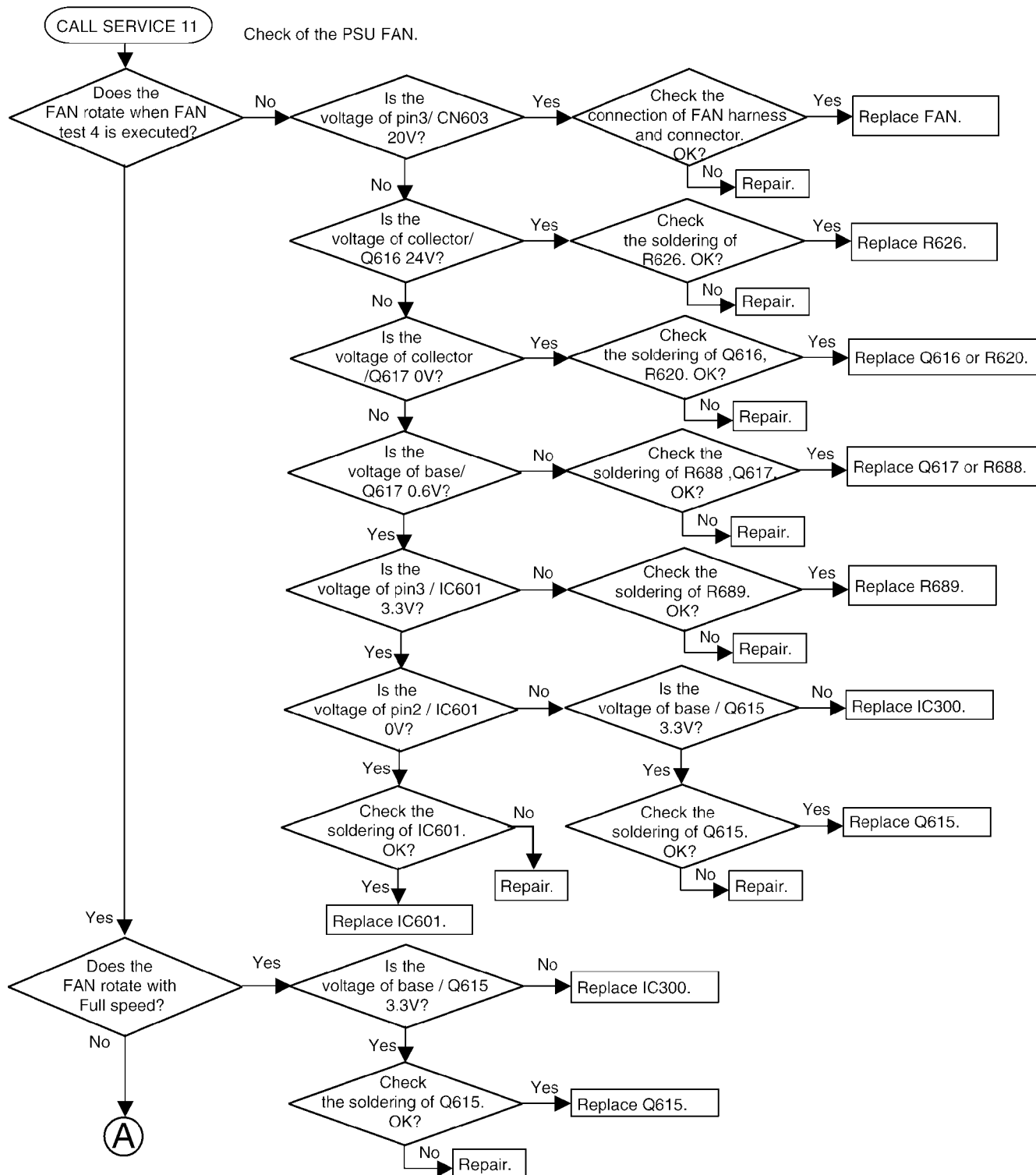
After repairing, copy 3 times. If "CALL SERVICE 11" is displayed, check again.

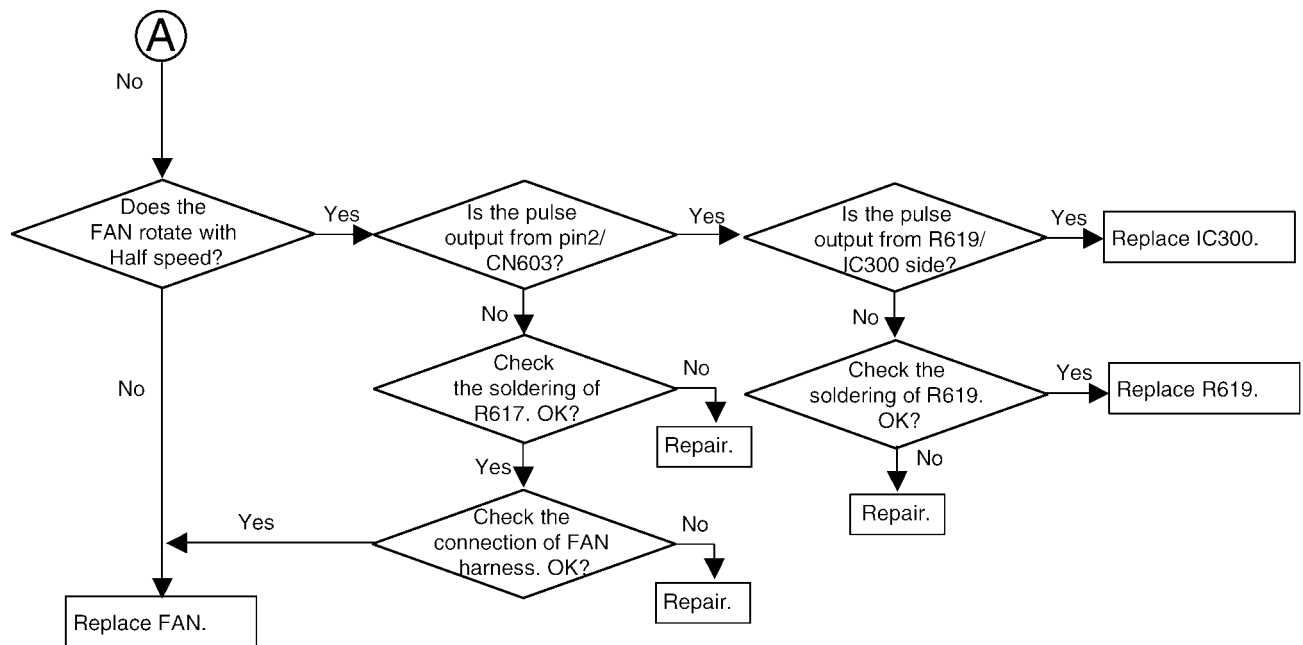
After the display indicates "CALL SERVICE 11", turn the power OFF/ON.

Then perform the FAN TEST in service mode.

FAN TEST can be performed by pressing MENU→#→9000→\*677.

- 1 Normal operation (default)
- 2 FUSER FAN ON (Full Speed)
- 3 FUSER FAN ON (Half Speed)
- 4 PSU FAN ON (Full Speed)
- 5 PSU FAN ON (Half Speed)
- 6 Both FAN OFF

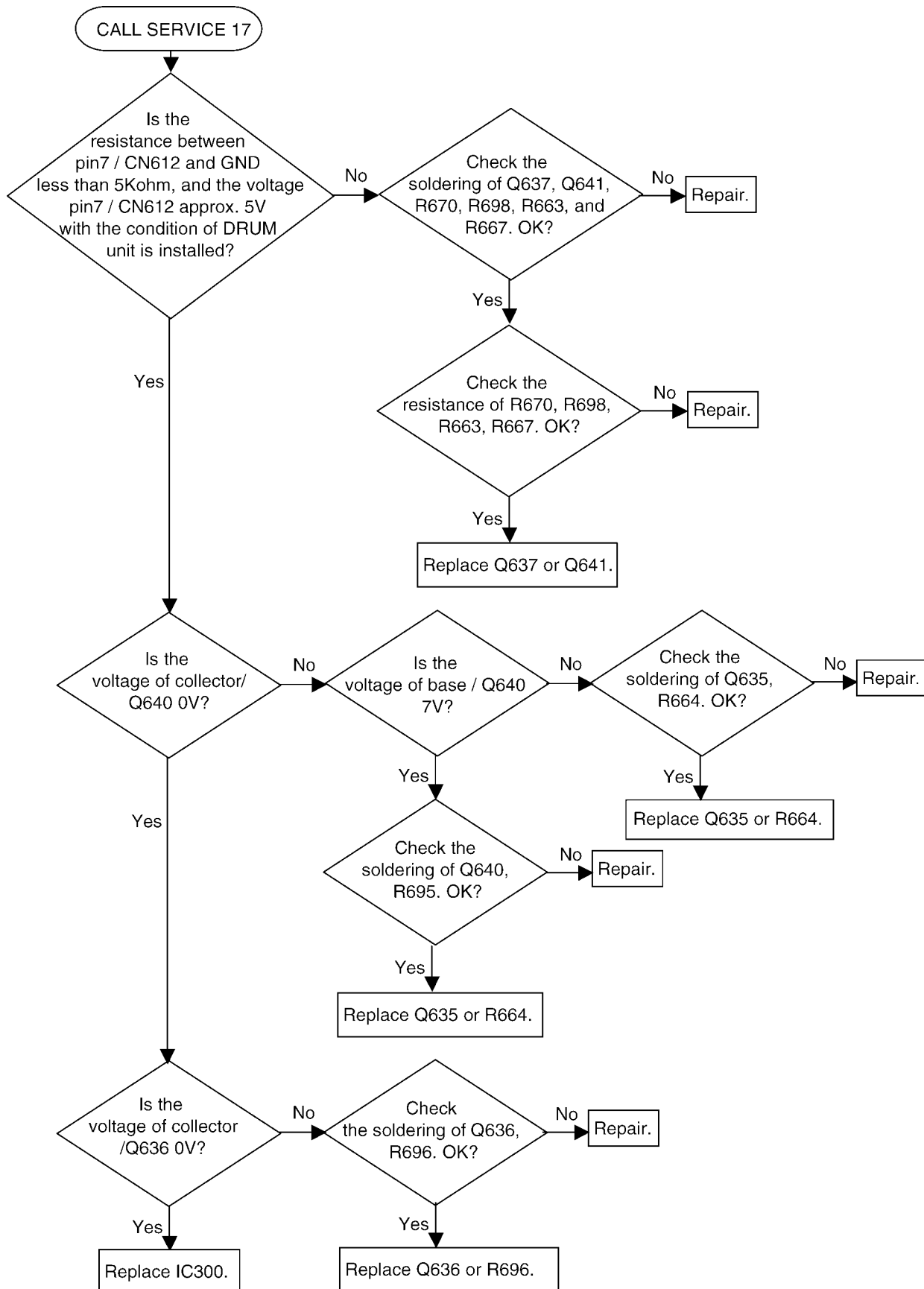




### 12.3.6.9. CALL SERVICE 17

"CALL SERVICE 17" means that the First use sensor problem.

Especially "CALL SERVICE 17" is appeared when the fuse which is installed in the Drum Unit PCB is not blown out within a specific time.

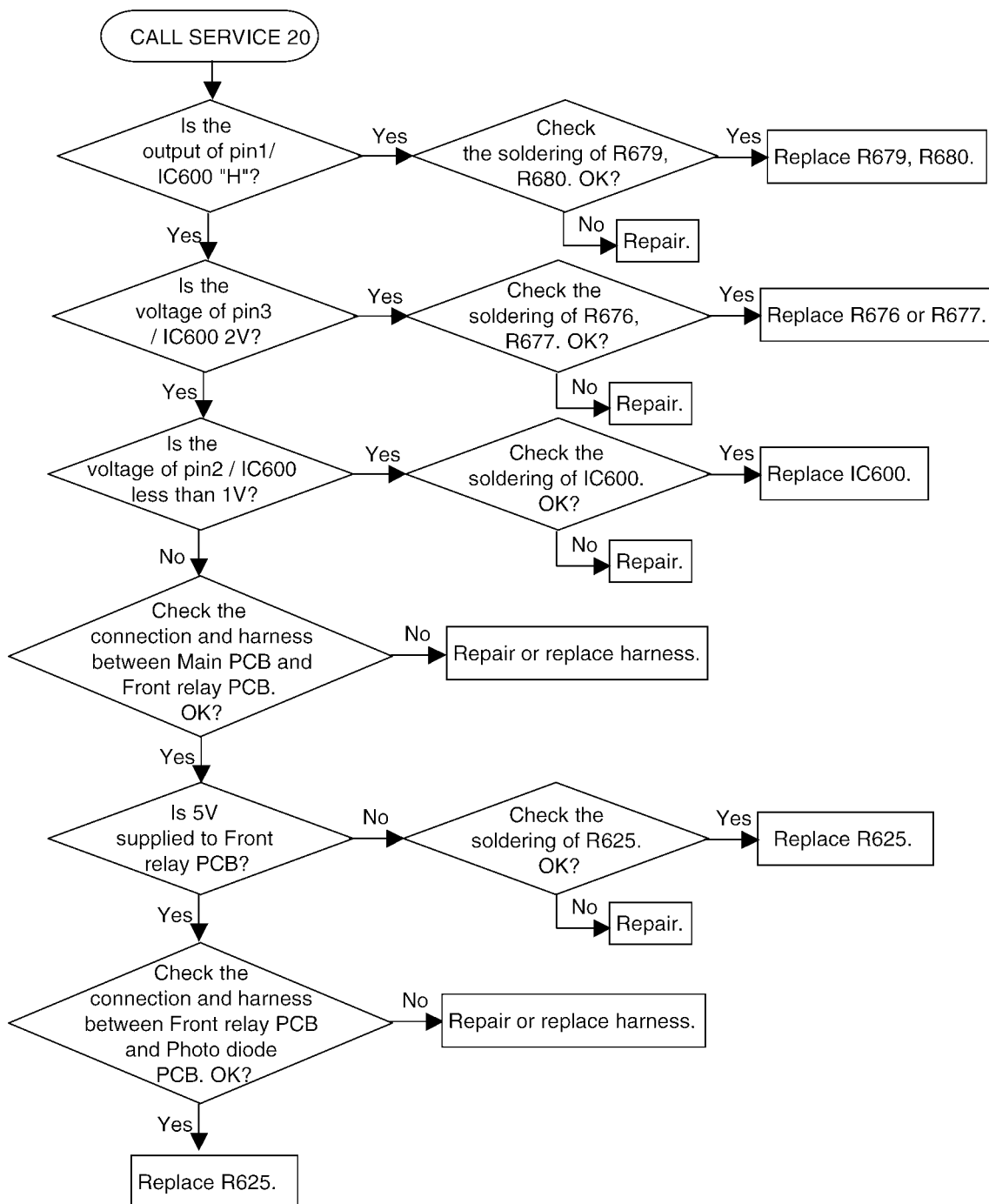




### 12.3.6.10. CALL SERVICE 20

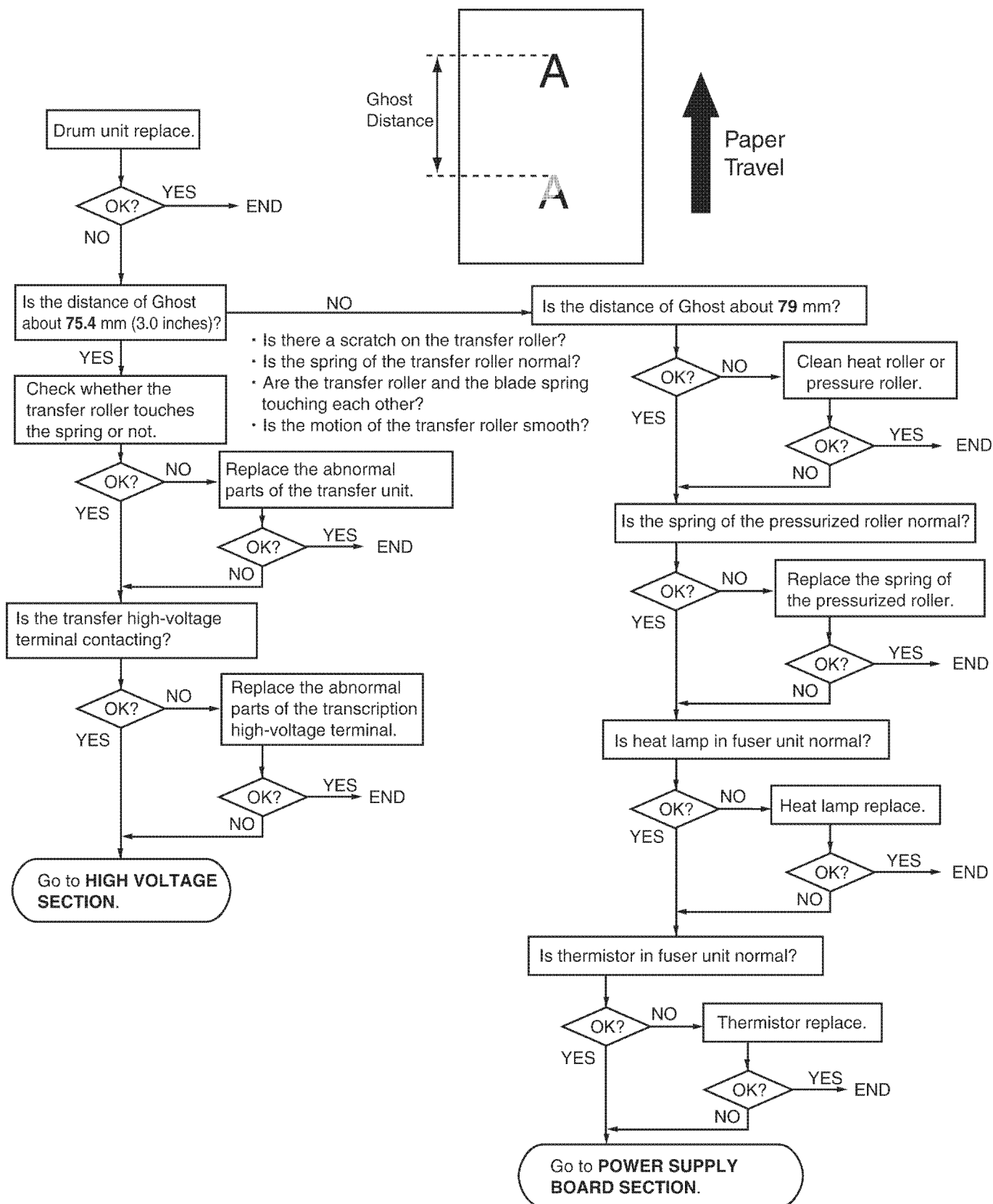
"CALL SERVICE 20" means that the toner empty detect sensor problem.  
Especially "CALL SERVICE 20" appears when following problems occur.

1. Photo diode is broken by open mode.
2. Connection problem between Main PCB and photo diode PCB.
3. 5V is not supplied to photo diode.



## 12.3.7. Print

### 12.3.7.1. Ghost Image

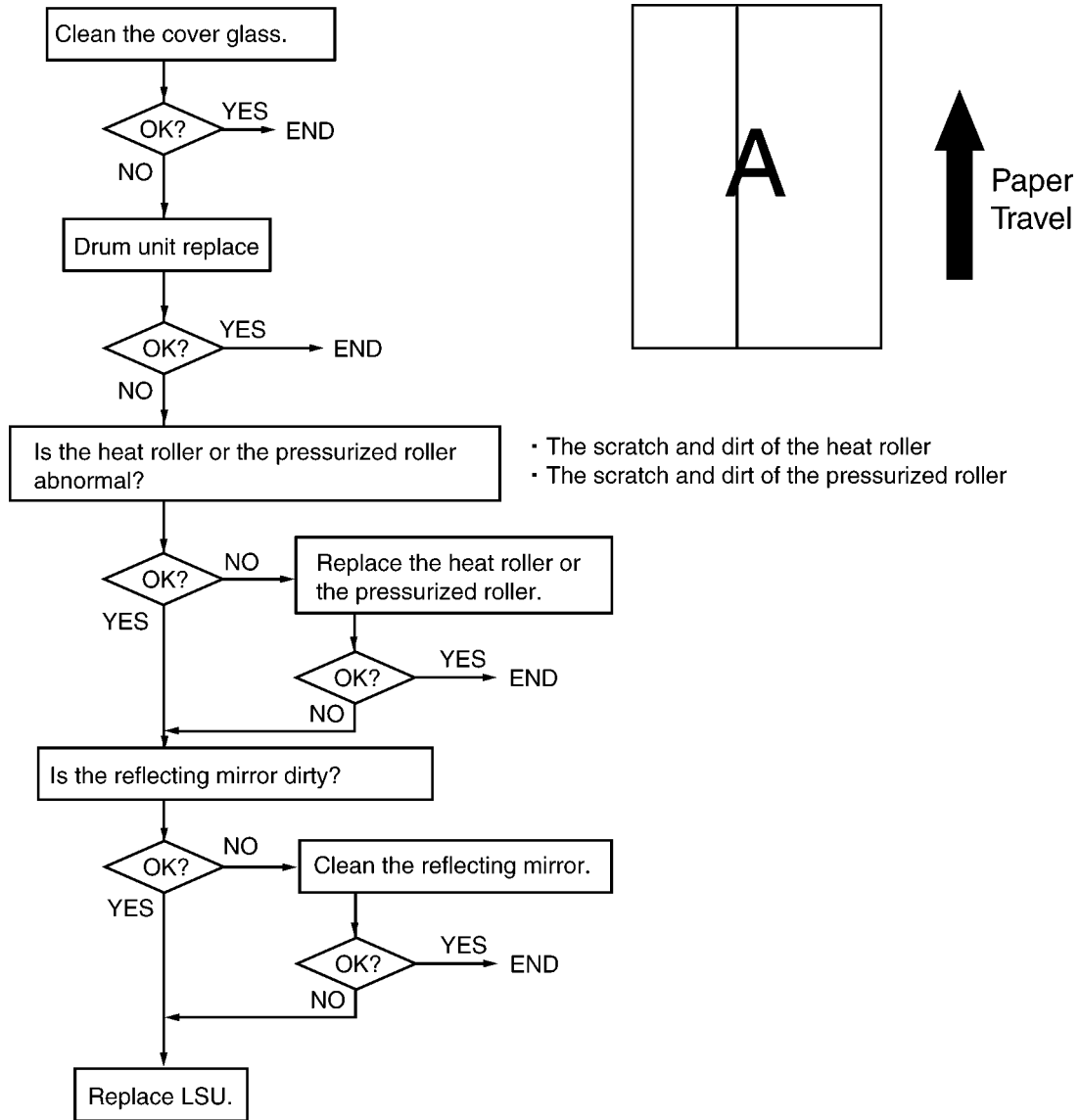


#### CROSS REFERENCE:

High Voltage Section(P.218)

PSU (Low Voltage Power Supply Board) Section(P.97)

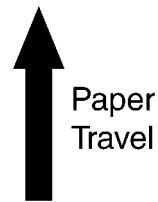
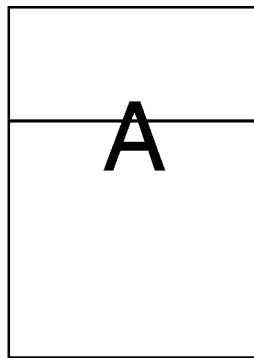
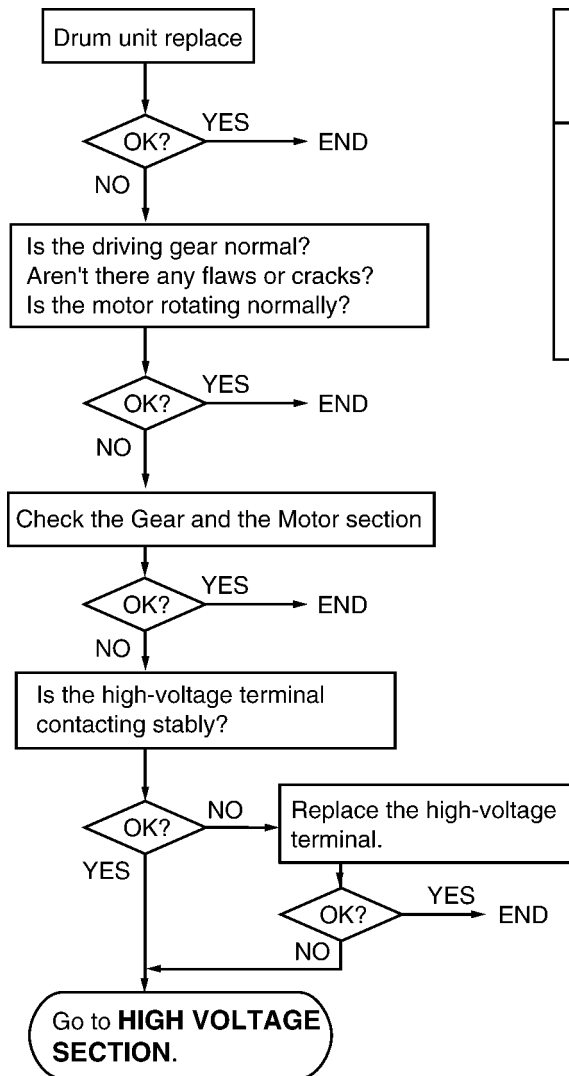
### 12.3.7.2. Dark or White Vertical Line



**Note:**

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

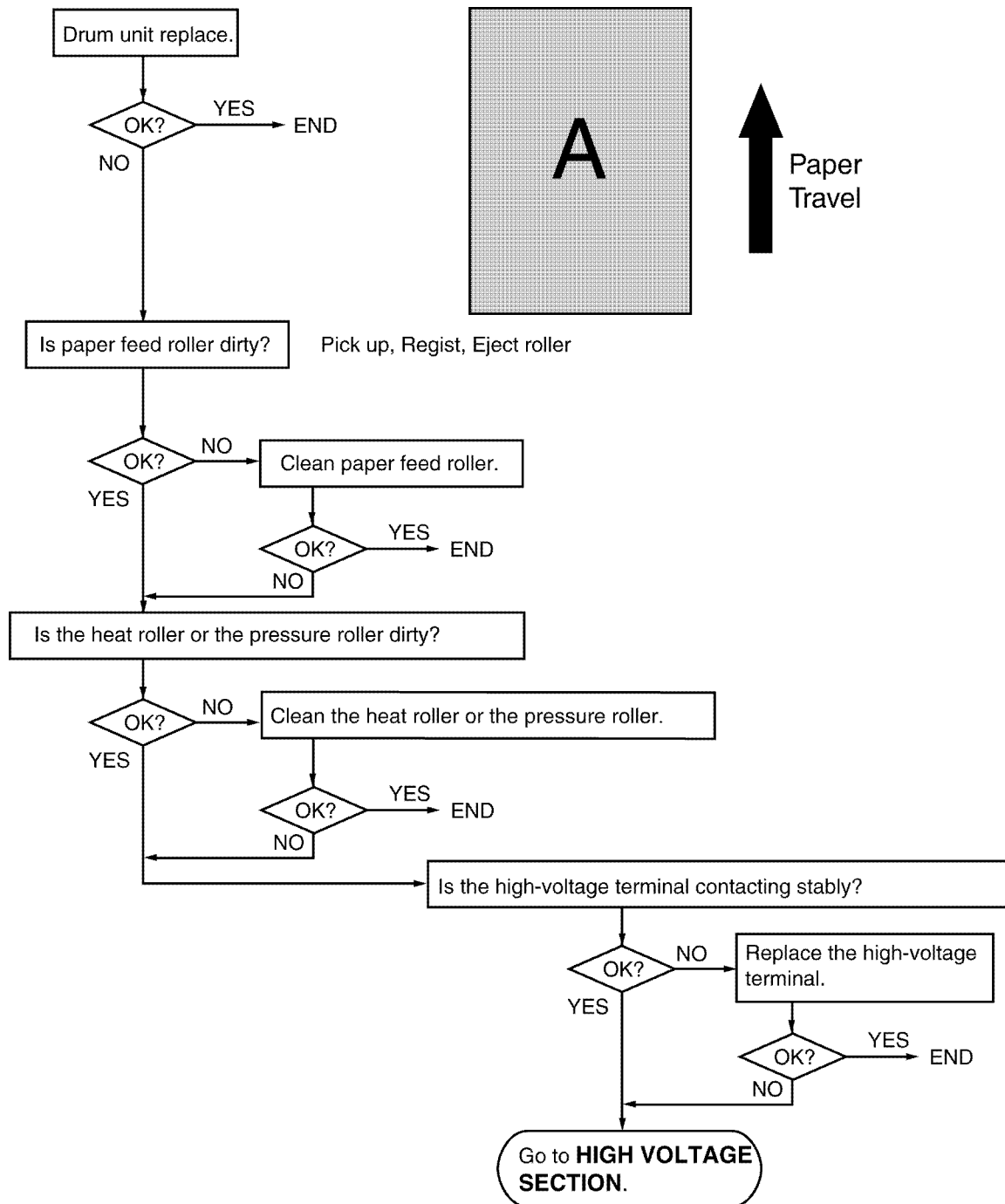
### 12.3.7.3. Dark or White Horizontal Line



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

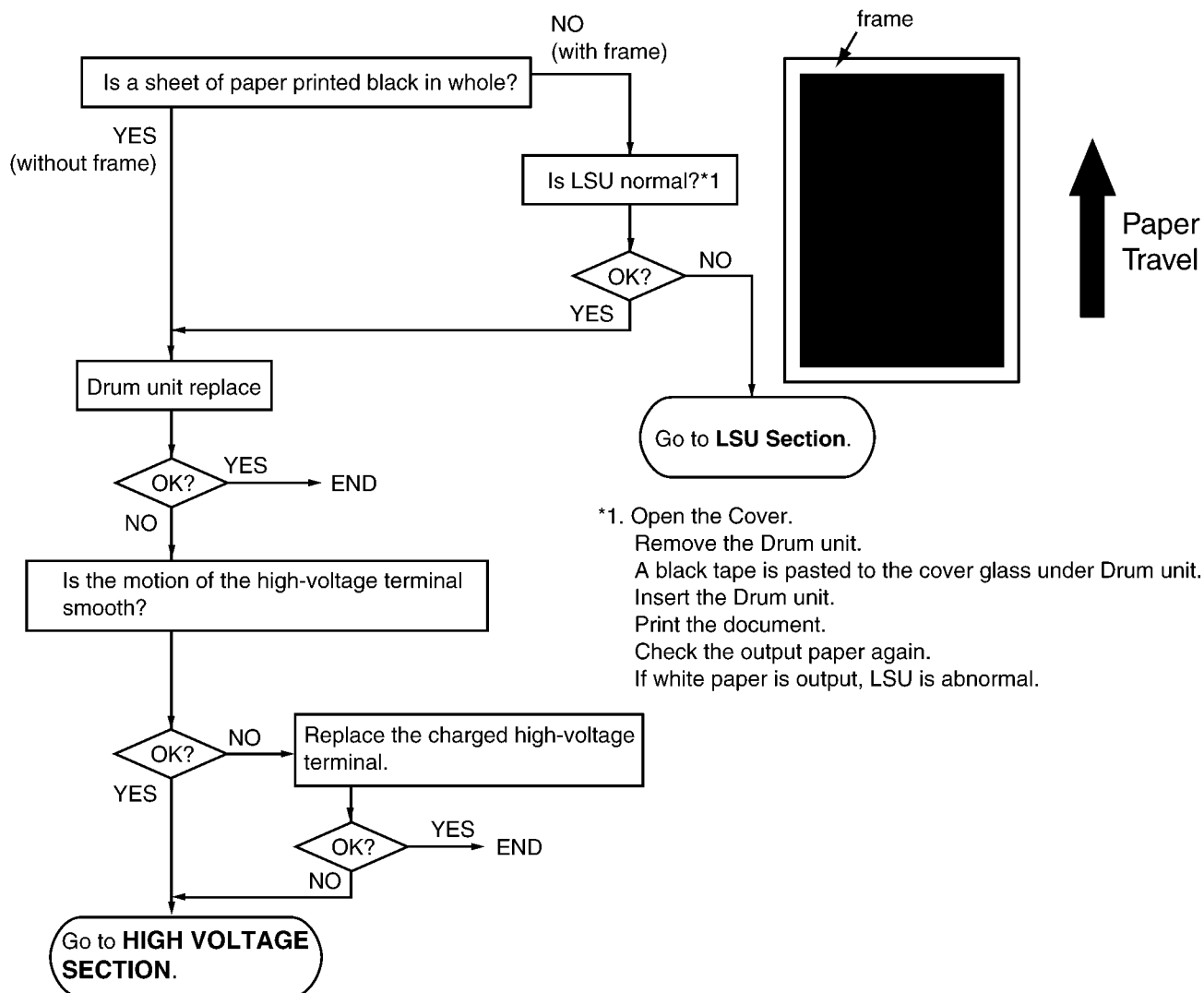
**CROSS REFERENCE:**  
High Voltage Section (P.218)

### 12.3.7.4. Dirty or Half Darkness Background



**CROSS REFERENCE:**  
**High Voltage Section (P.218)**

### 12.3.7.5. Black Print

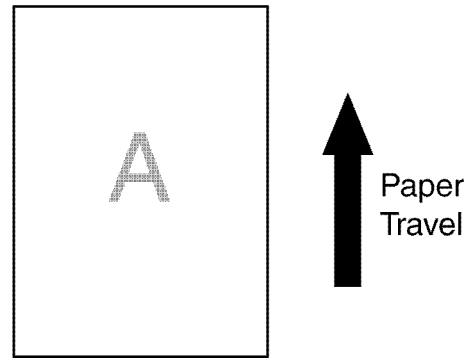
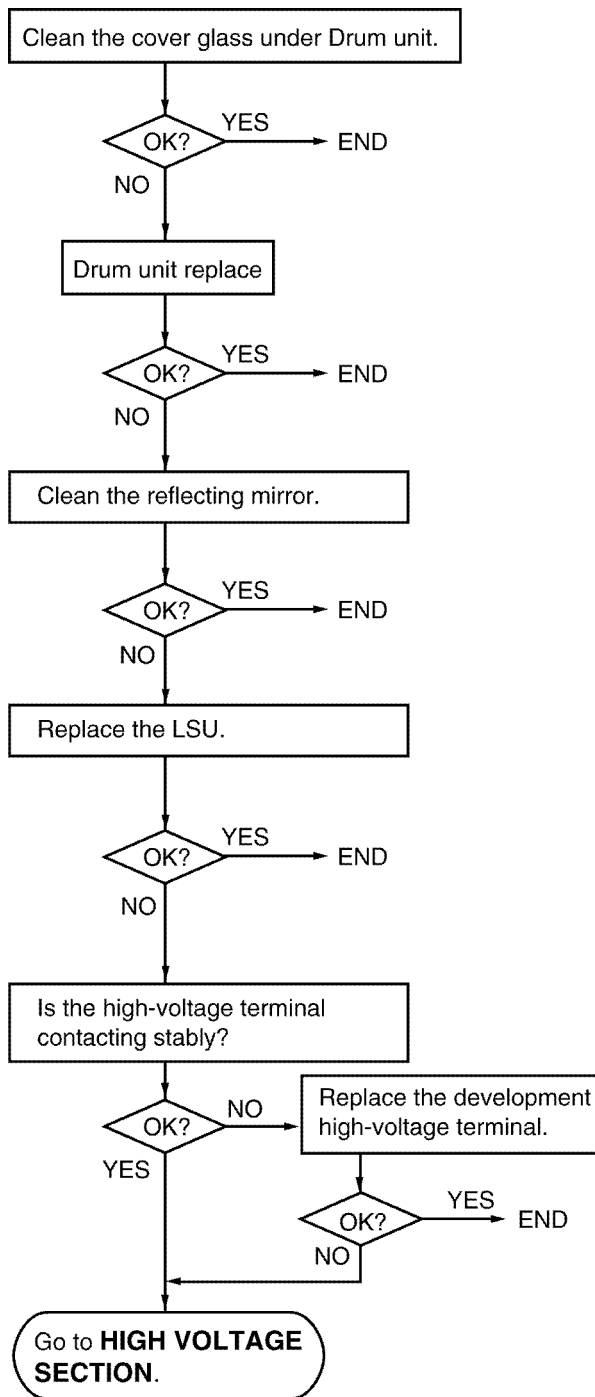


#### CROSS REFERENCE:

High Voltage Section (P.218)

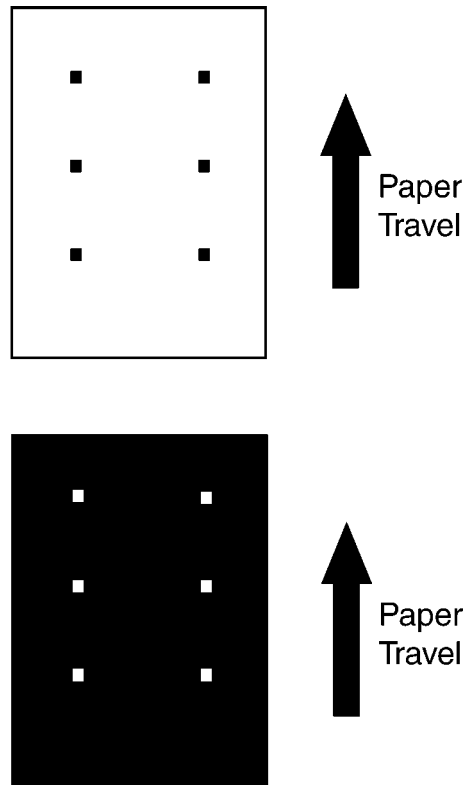
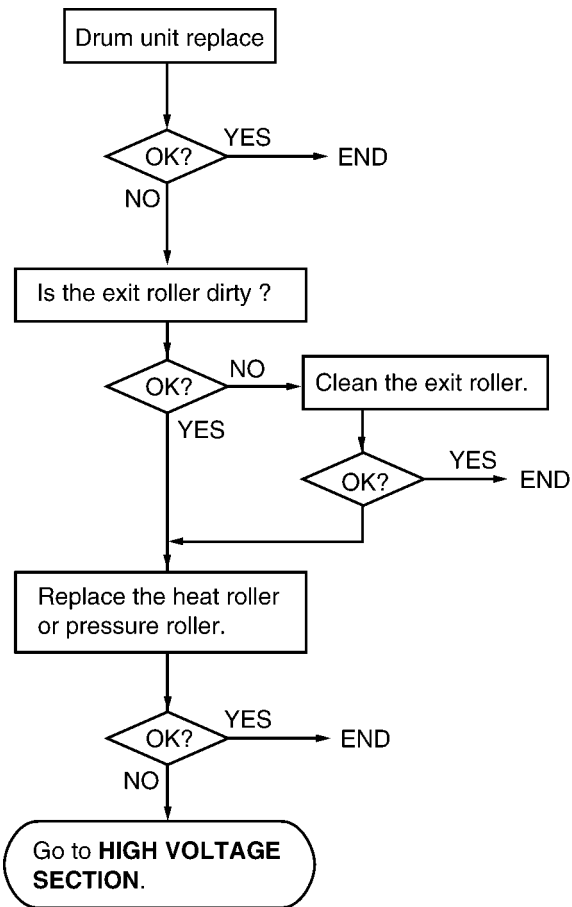
LSU (Laser Scanning Unit) Section (P.52)

### 12.3.7.6. Light Print



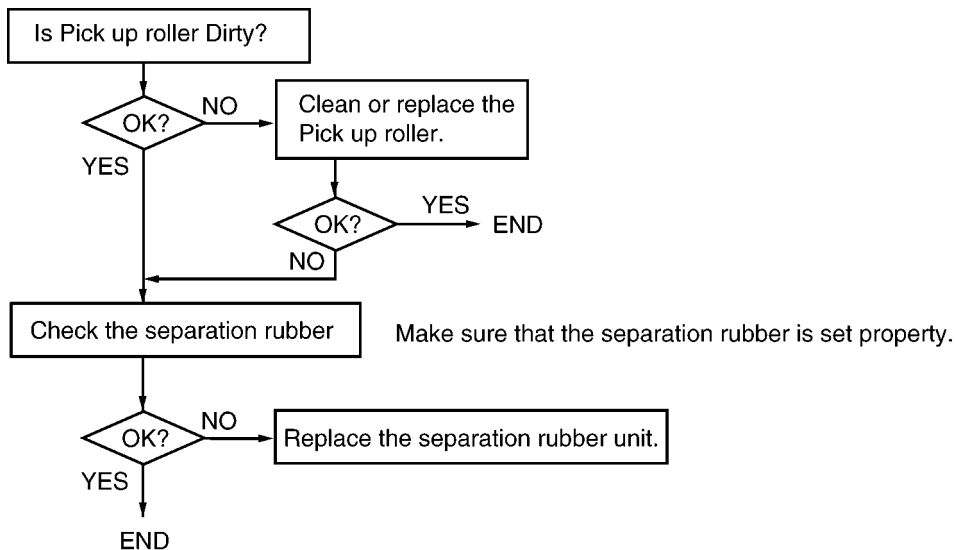
**CROSS REFERENCE:**  
High Voltage Section (P.218)

### 12.3.7.7. Black or White Point



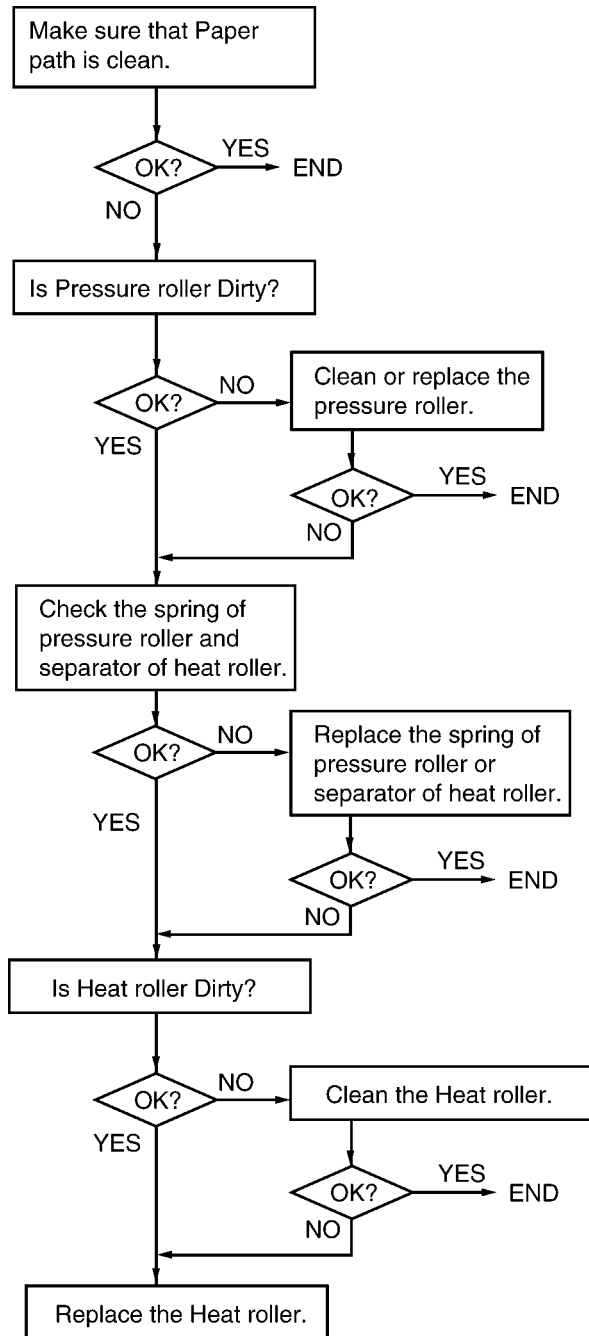
### 12.3.8. Recording Paper Feed

#### 12.3.8.1. Multiple Feed

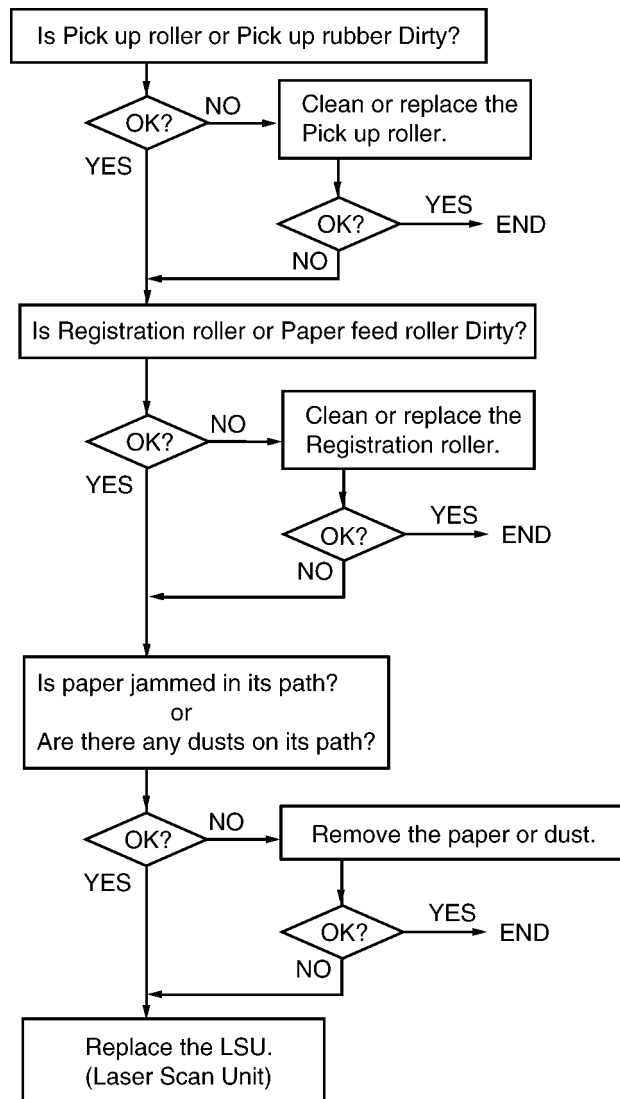




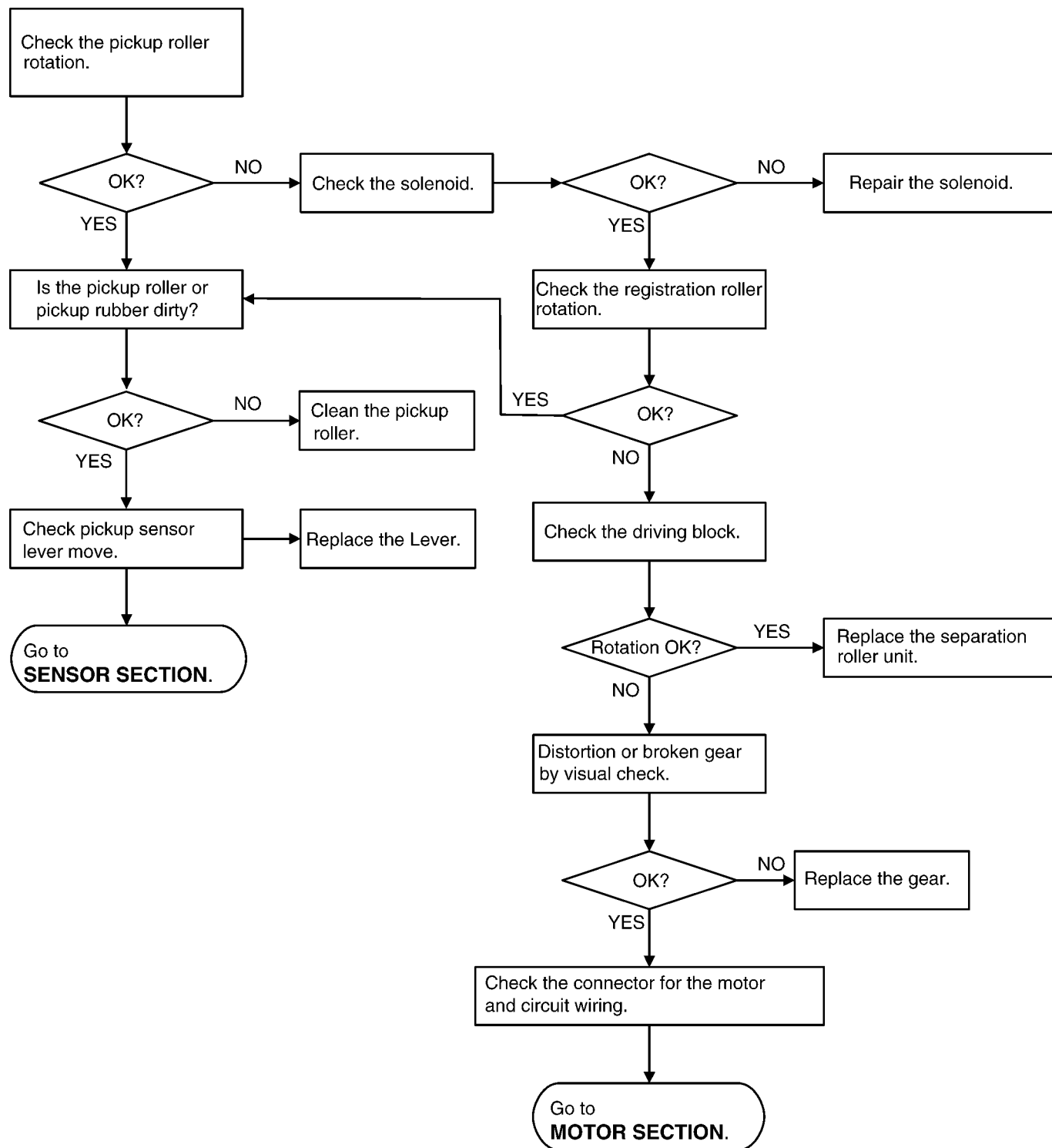
### 12.3.8.2. The Recording Paper Is Waved or Wrinkled



## 12.3.8.3. Skew

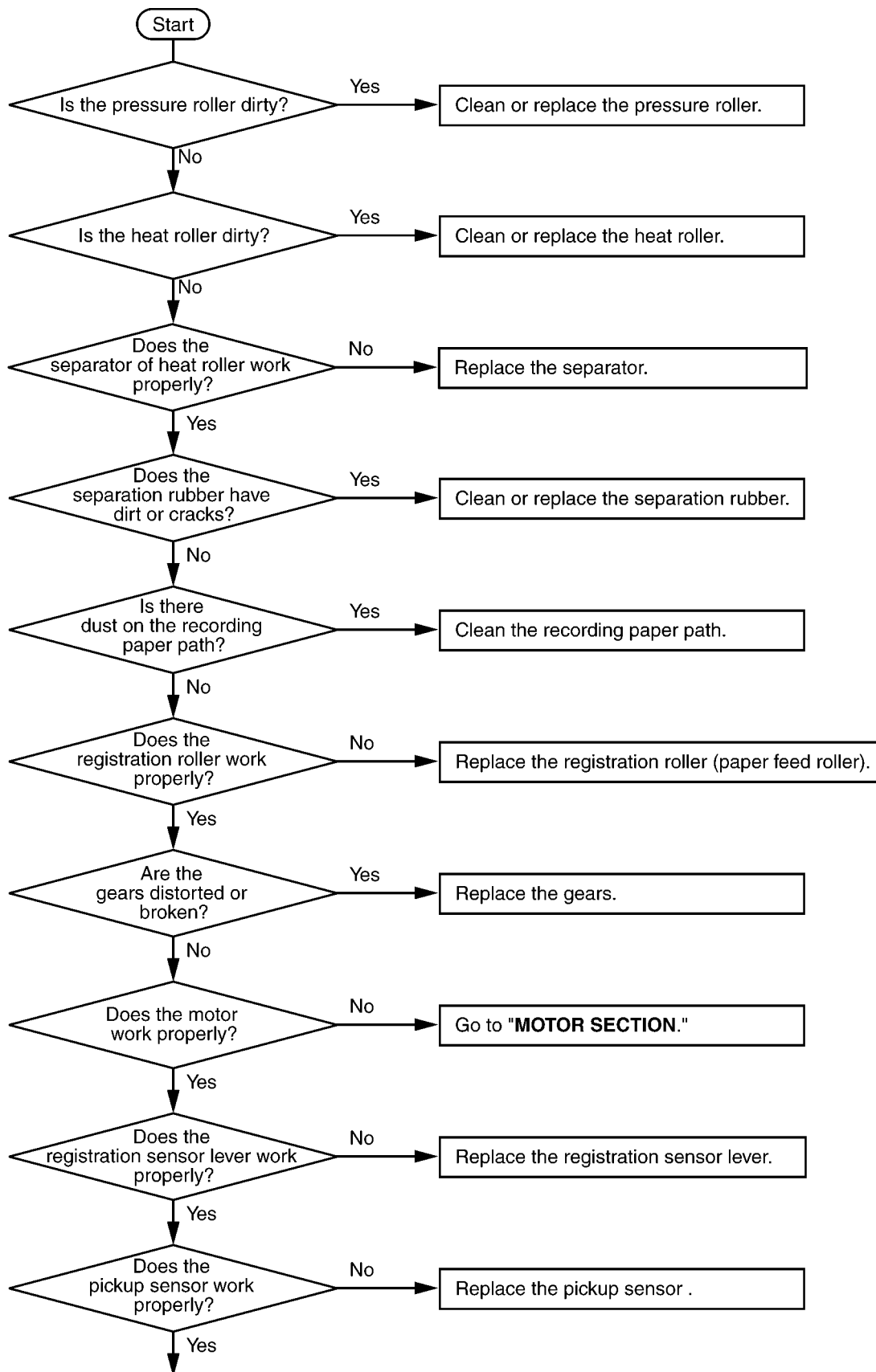


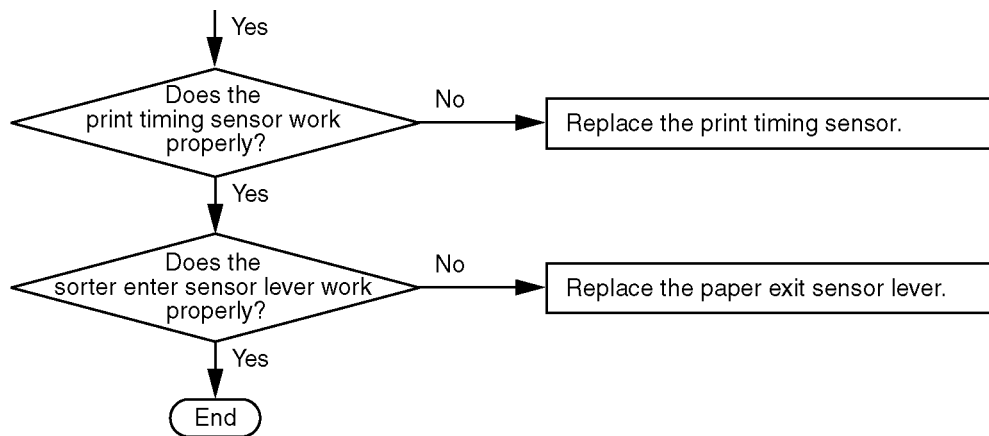
### 12.3.8.4. The Recording Paper Does Not Feed



**CROSS REFERENCE:**  
**Sensor Section (P.201)**  
**Motor Section (P.205)**

### 12.3.8.5. The Recording Paper Jam



**CROSS REFERENCE:****FAN Motor Section (P.47)**

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

0:No Paper Jam

1:The paper was pulled into the unit.

2:The paper was longer than the maximum length of the register sensor.

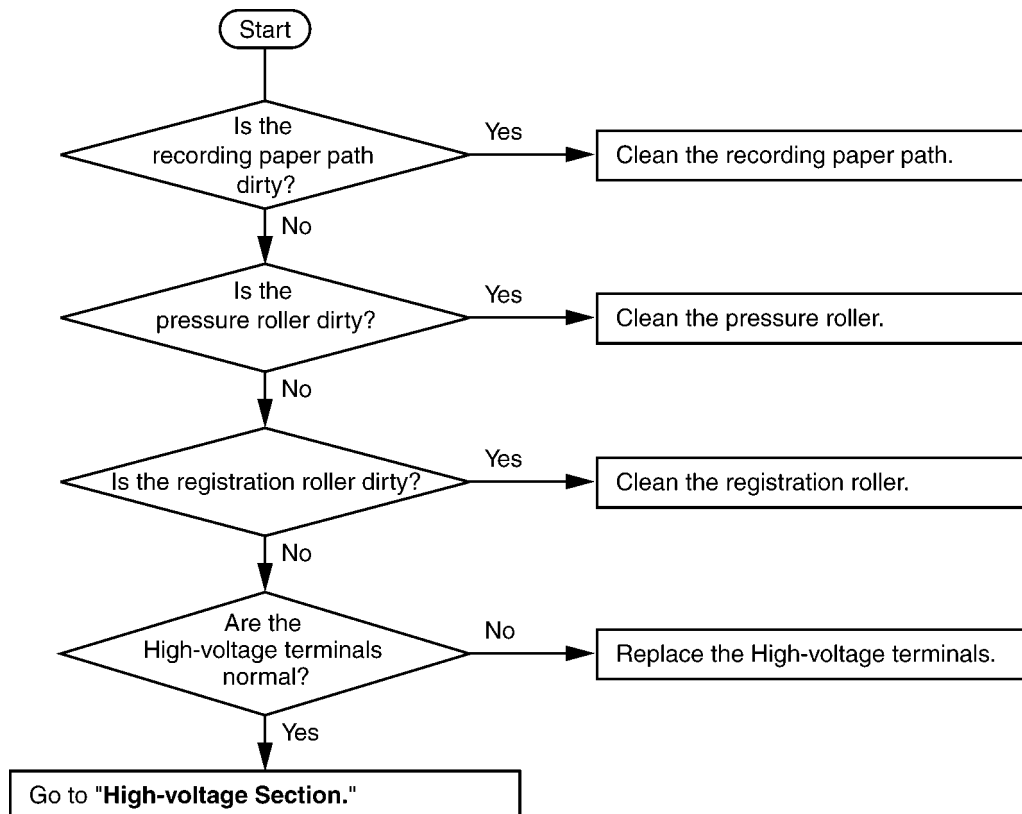
3:The paper exit was not detected after the registration.

4:The paper was longer than the maximum length of the paper exit sensor.

5:The Registration & Manual paper sensor or paper exit sensor was turned ON before the motor started to rotate.

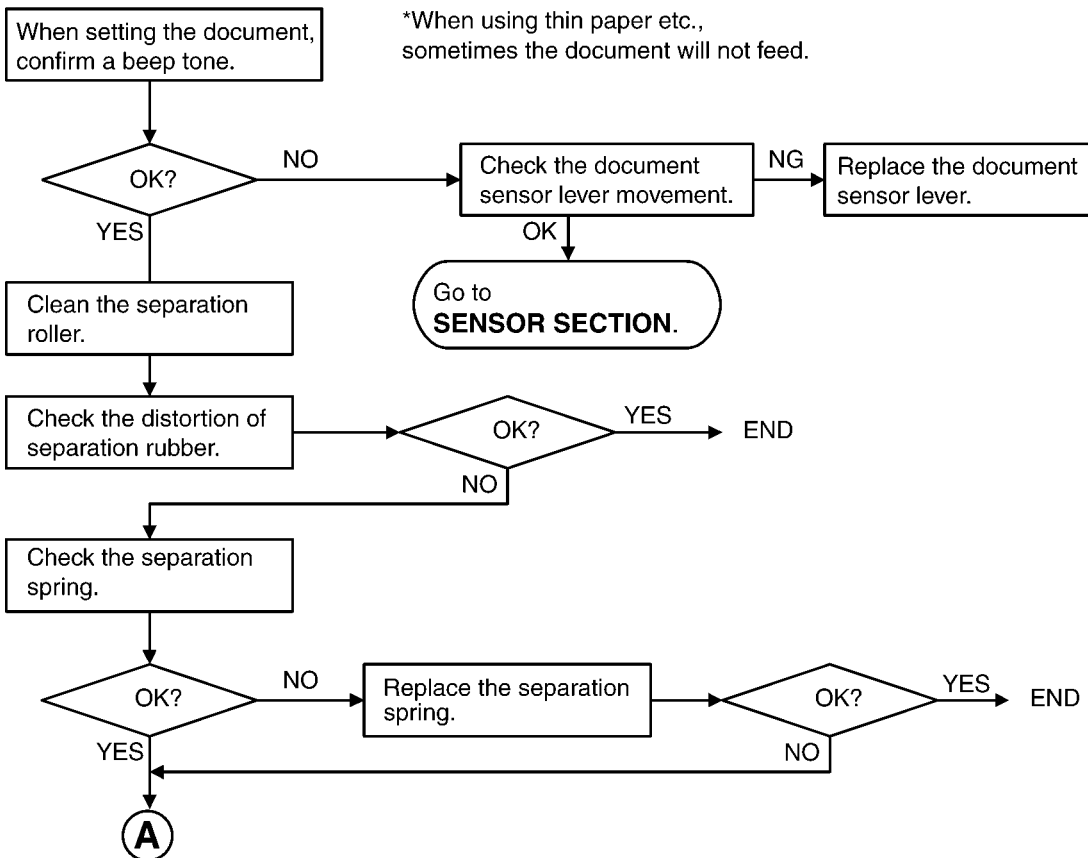
6:The Registration & Manual paper sensor chattered.

7:The sorter enter sensor chattered.

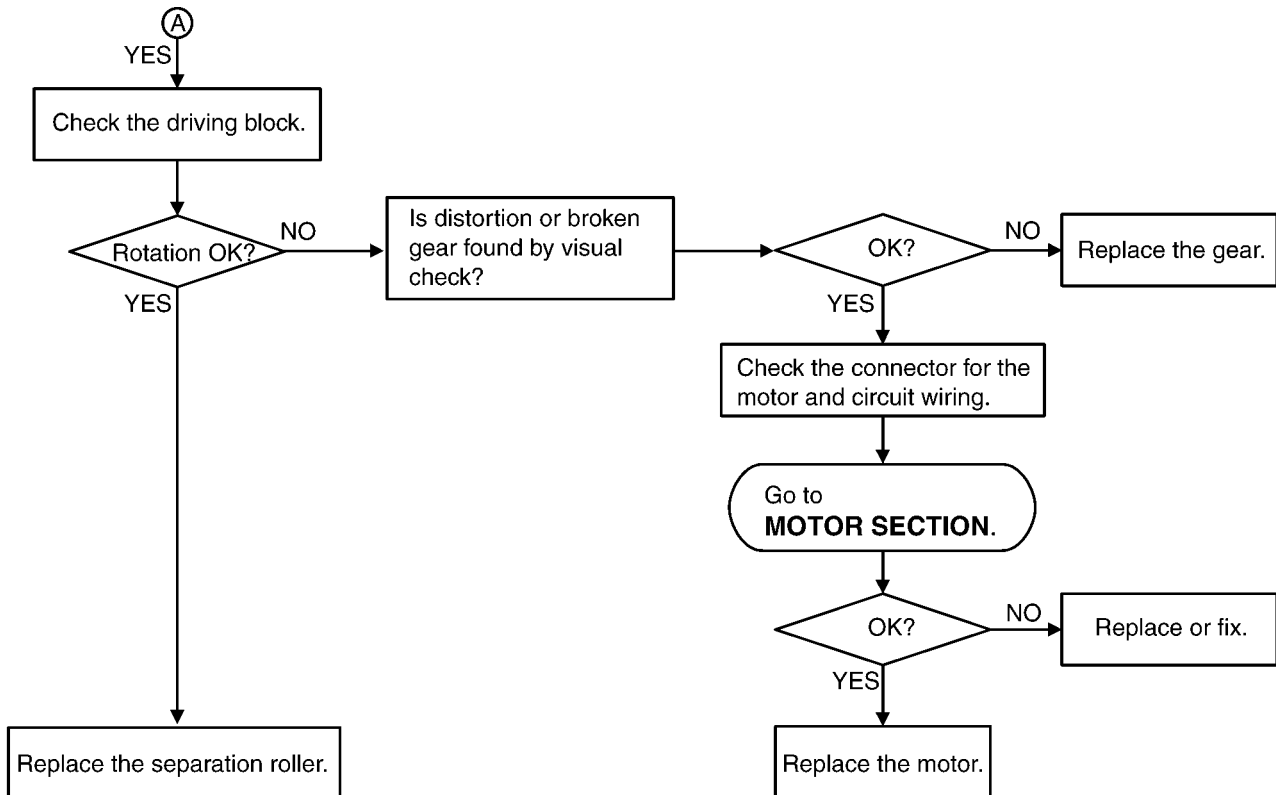
**12.3.8.6. Back Side of The Recording Paper Is Dirty****CROSS REFERENCE:****High Voltage Section (P.218)**

## 12.3.9. ADF (Auto document feed) Section

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



#### CROSS REFERENCE: Sensor Section (P.201)



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

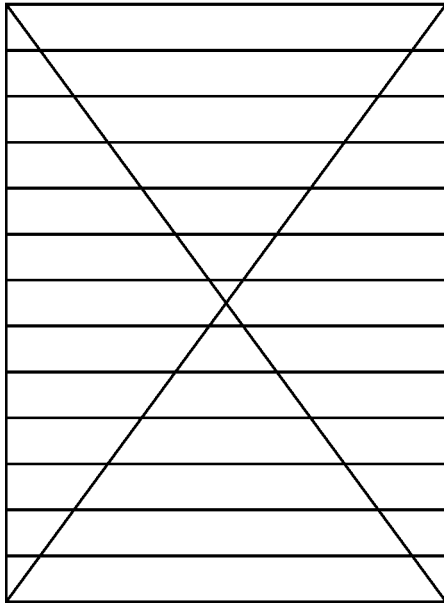
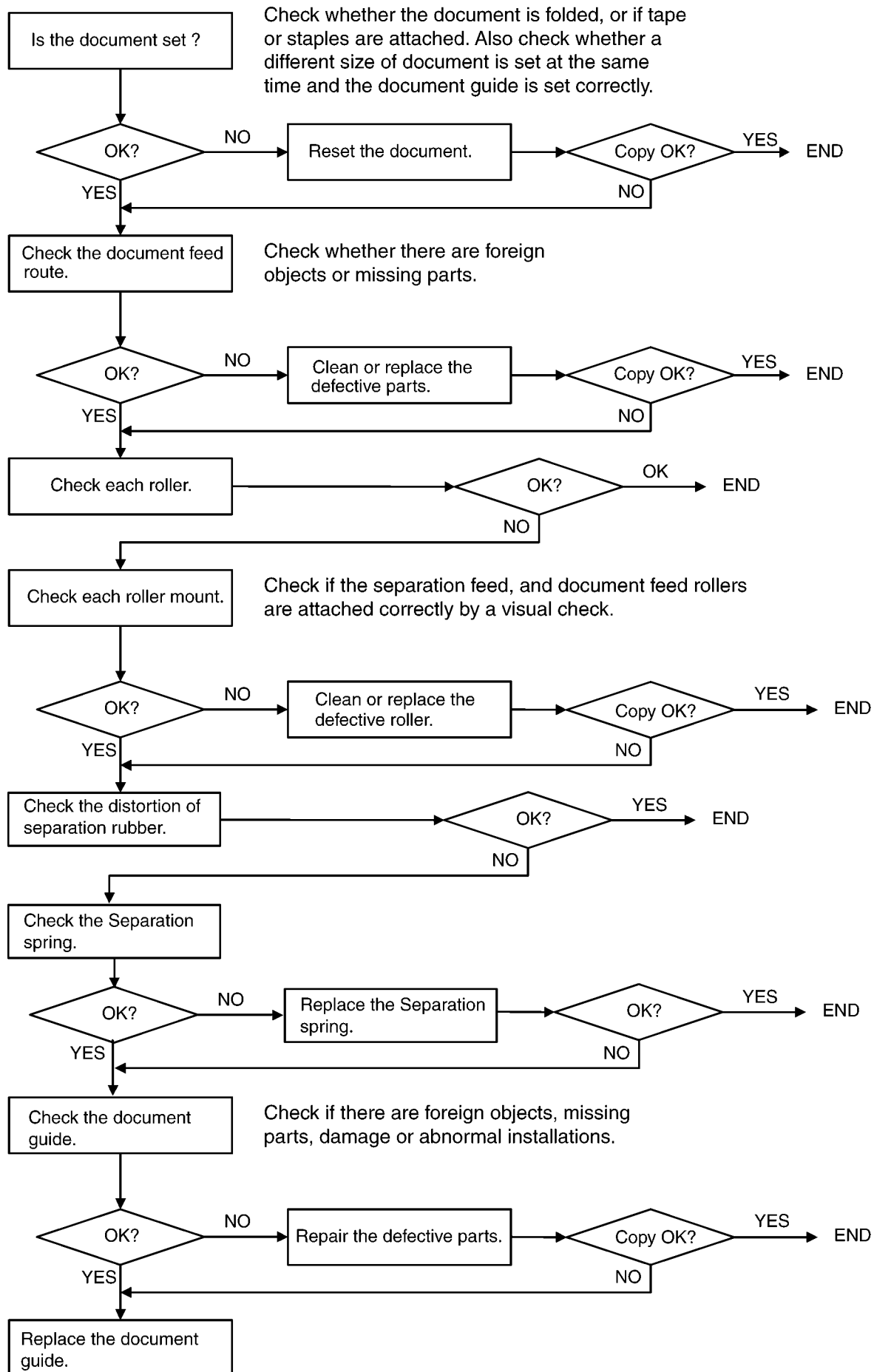


Fig. b

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

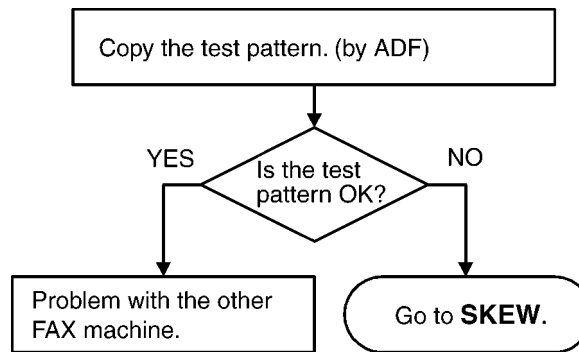
**CROSS REFERENCE:**  
**Motor Section (P.205)**

### 12.3.9.2. Skew (ADF)



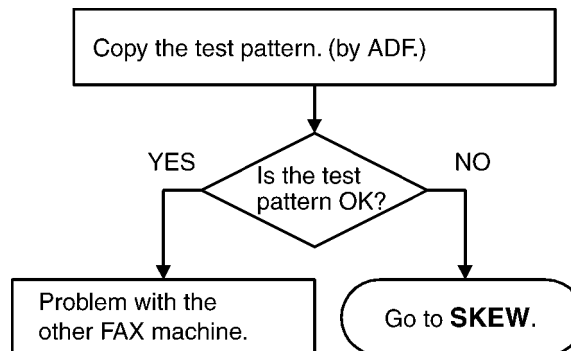


### 12.3.9.3. The Sent FAX Data Is Skewed



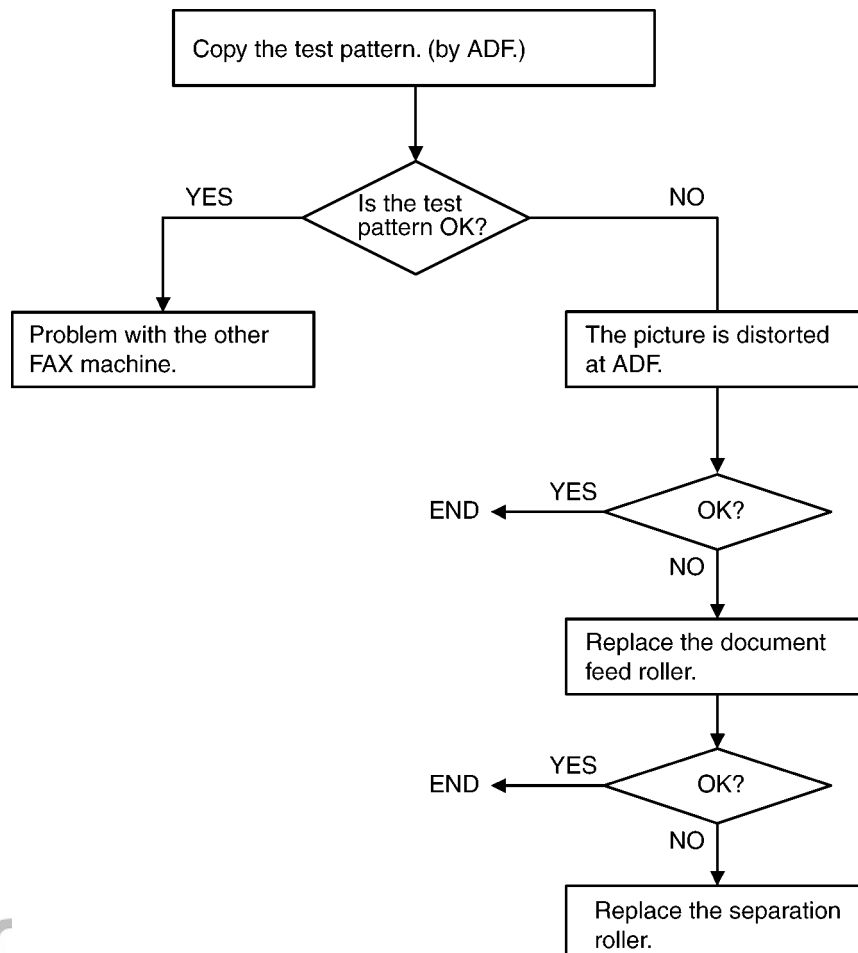
**CROSS REFERENCE:**  
**Skew (ADF) (P.176)**

### 12.3.9.4. The Received FAX Data Is Skewed

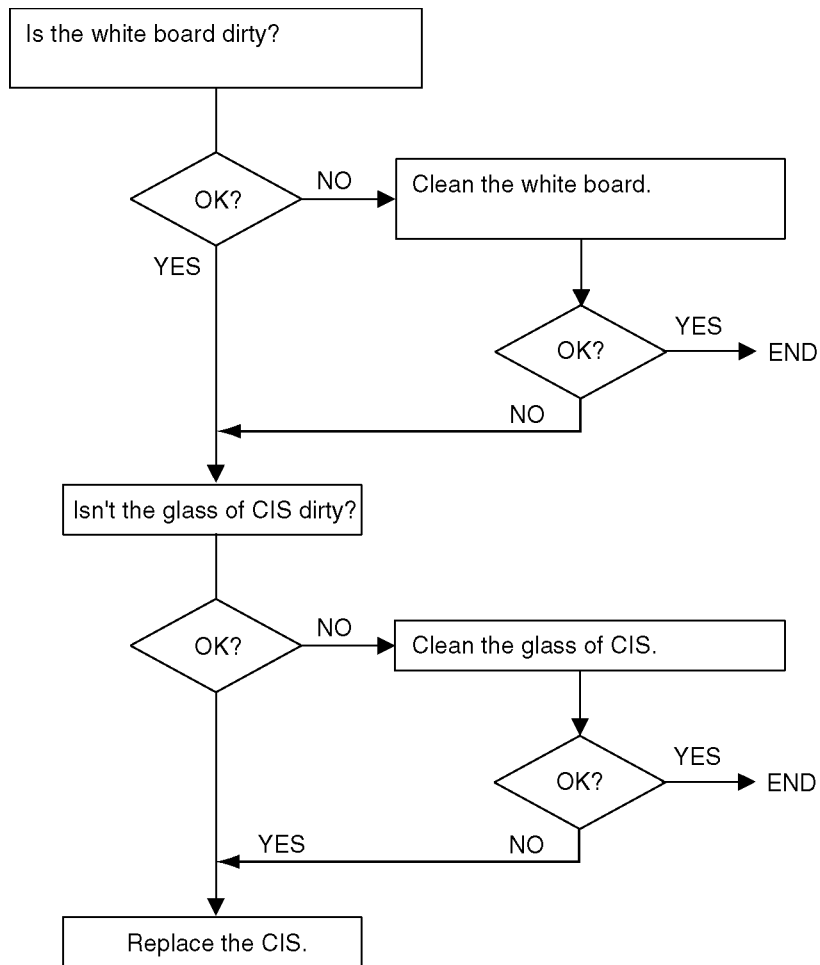


**CROSS REFERENCE:**  
**Skew (P.170)**

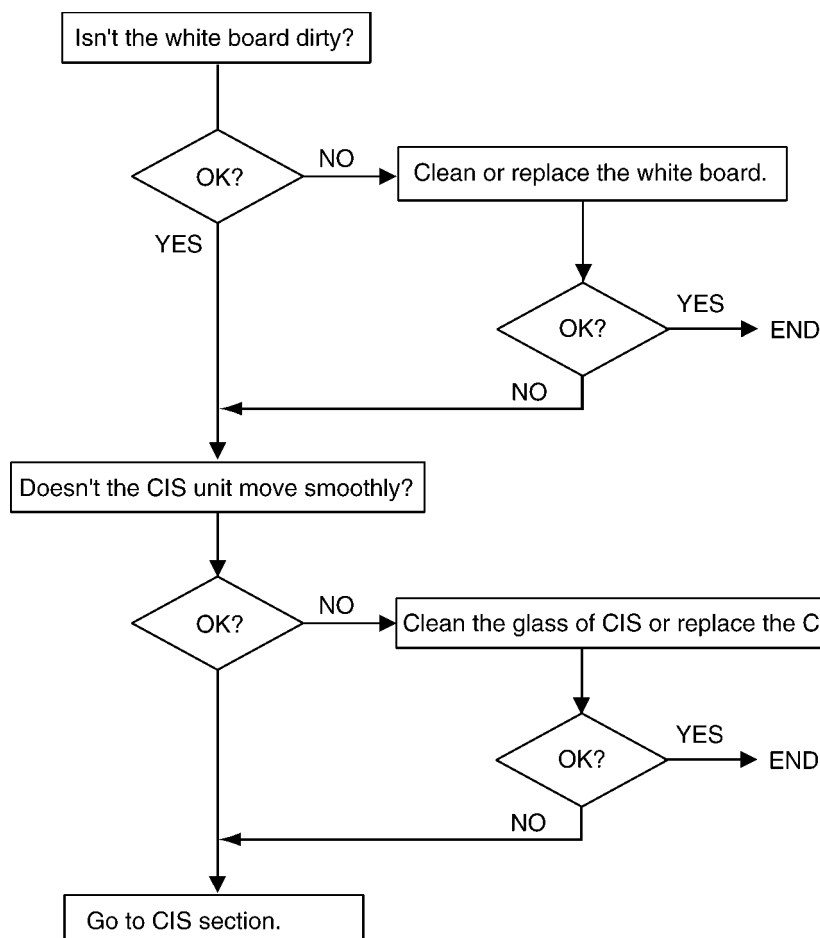
### 12.3.9.5. The Received or Copied Data Is Expanded



### 12.3.9.6. Black or White Vertical Line Is Copied



### 12.3.9.7. An Abnormal Image Is Copied



#### CROSS REFERENCE:

CIS Control Section (P.213)

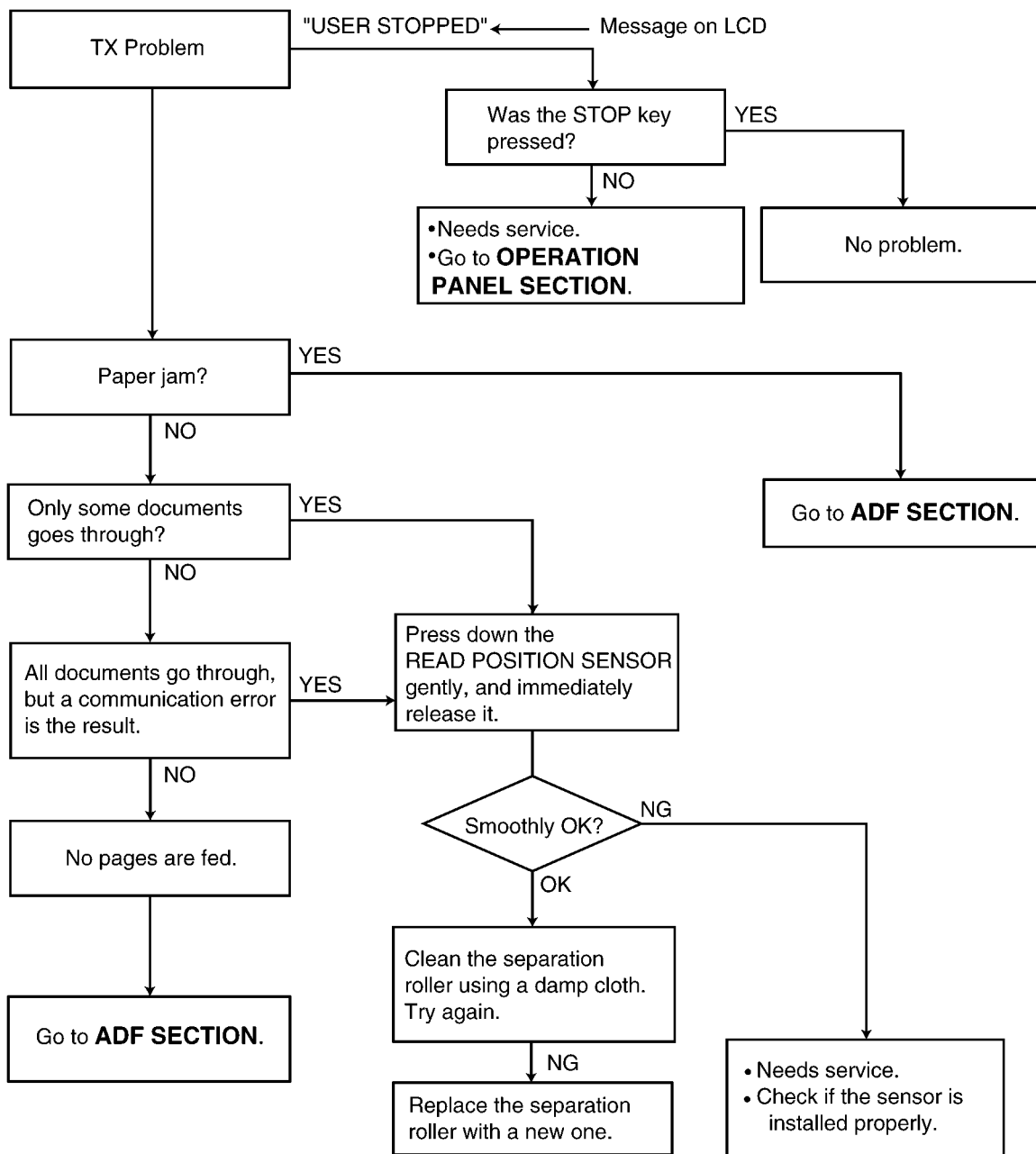
### 12.3.10. Communication Section

Find the problem in the table shown below, and refer to the corresponding troubleshooting procedure in **Defective Facsimile Section** (P.180).

No.	Symptom	Content	Possible cause
1	The paper dose not feed properly when faxing. (Copying is also not possible.)	Troubleshooting	Problem with the feeding mechanism. (Refer to <b>Transmit Problem</b> (P.180))
2	The fax transmits successfully one time and fails another. (Copying is also possible.)	Troubleshooting	Problem with the service line or with the receiver's fax. (Refer to <b>Sometime There Is A Transmit Problem</b> (P.181))
3	The fax receives successfully one time and fails another. (Copying is also possible.)	Troubleshooting	Problem with the service line or with the transmitter's fax. (Refer to <b>Receive Problem</b> (P.182))
4	The fax completely fails to transmit or receive. (Copying is also possible.)	Troubleshooting	Problem with the electric circuit. (Refer to <b>The Unit Can Copy, But Cannot Transmit/Receive</b> (P.183))
5	The fax fails either to transmit or receive when making a long distance or an international call. (Copying is also possible.)	Detailed description of the possible causes (Similar to troubleshooting items No.2 and No.3.)	Problem with the service line.
6	The fax image is poor when transmitting or receiving during a long distance or international call.		
7	No.1-No.5	The troubleshooting procedure for each error code will be printed on the communication result report.	(Refer to <b>How To Output The Journal Report</b> (P.187))

## 12.3.10.1. Defective Facsimile Section

### 12.3.10.1.1. Transmit Problem



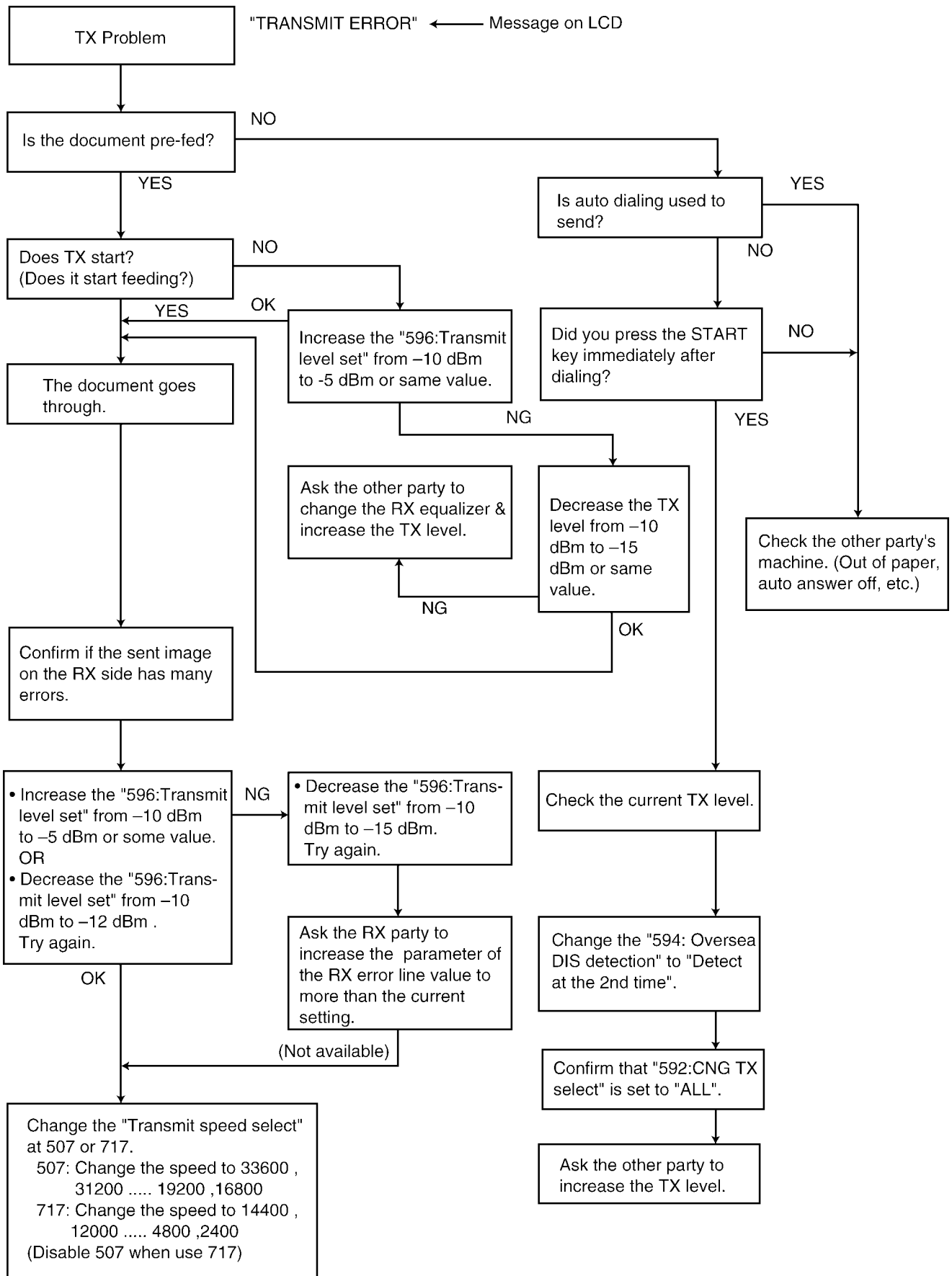
#### CROSS REFERENCE:

Cleaning the White Plates and Glasses (P.273)

ADF (Auto document feed) Section (P.174)

Operation Panel Section (P.200)

### 12.3.10.1.2. Sometime There Is A Transmit Problem



#### Note:

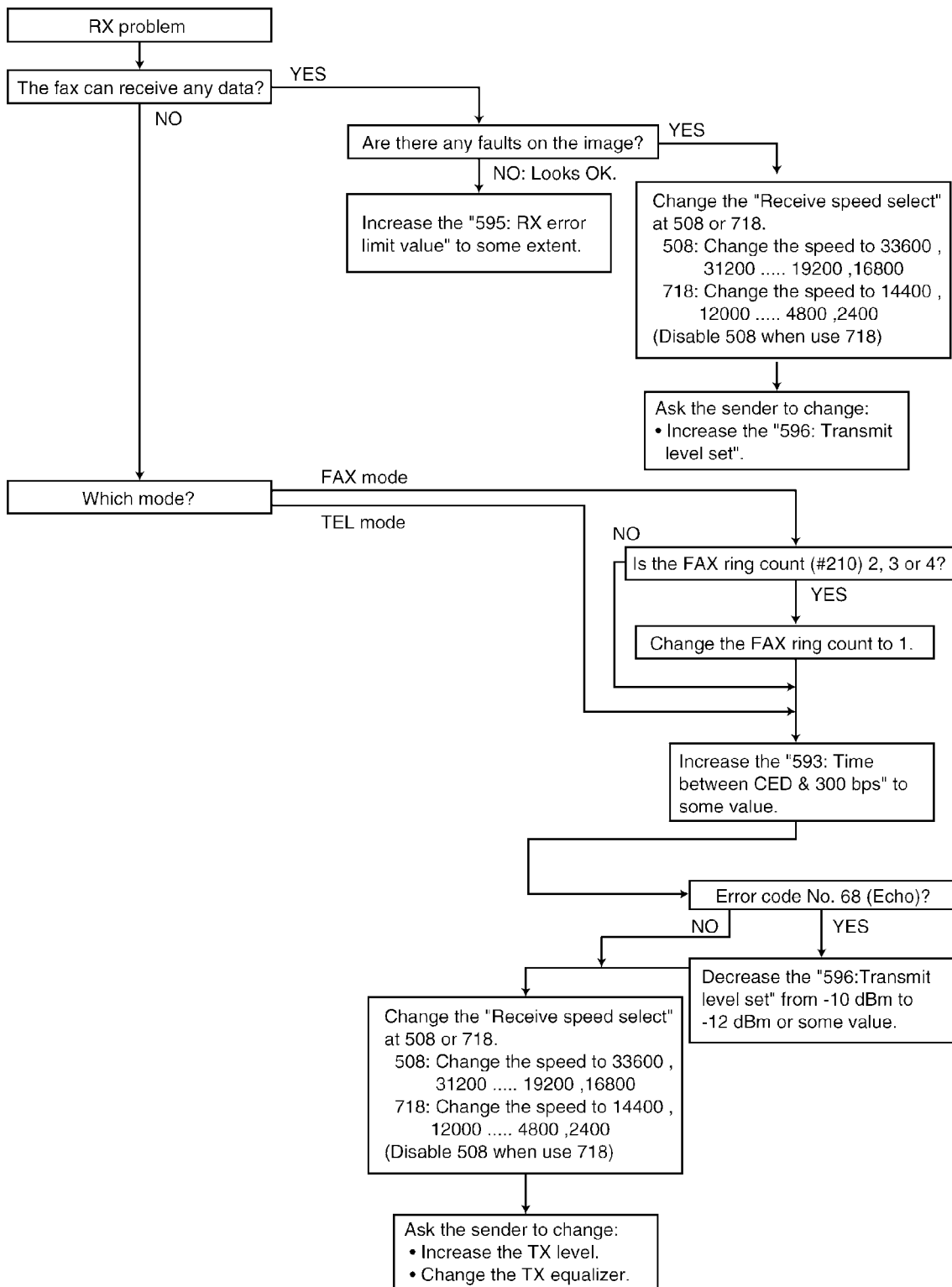
"596: Transmit level set" represents a service code. Refer to the **Service Function Table** (P.126).

"717: Transmit speed select" represents a service code. Refer to the **Service Function Table** (P.126).

### 12.3.10.1.3. Receive Problem

Confirm the following before starting troubleshooting.

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



**Note:**

"596: Transmit level set" represents a service code. Refer to the **Service Function Table** (P.126).

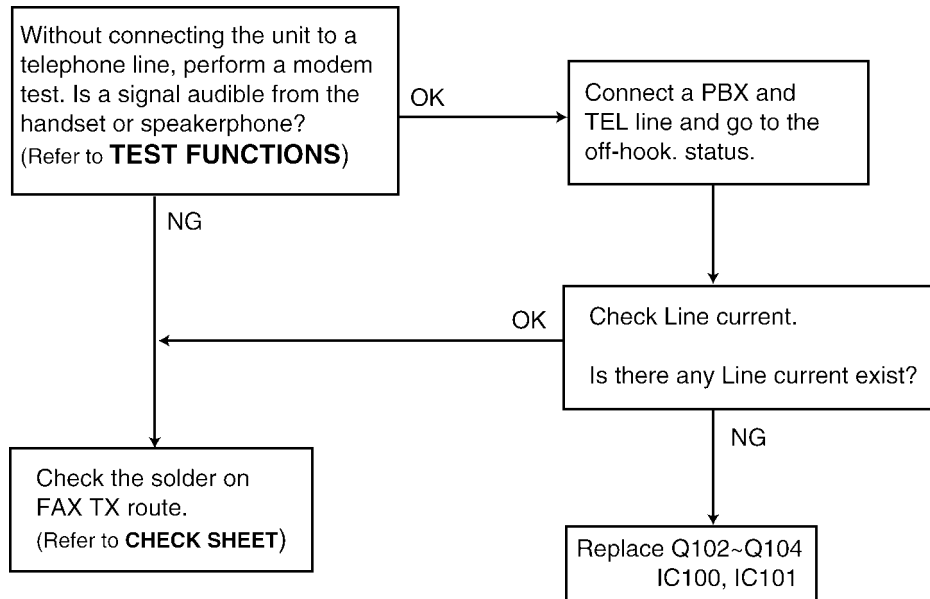
"718: Receive speed select" represents a service code. Refer to the **Service Function Table** (P.126).

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 be solved.

Please refer to **User Recoverable Errors** (P.134) for the above items.

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

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



**CROSS REFERENCE:**  
**Test Functions (P.121)**

## 12.3.11. Special Service Journal Reports

Journal 2 and Journal 3 shown below, which are special journals giving the additional detailed information about the latest 35 communications, can be printed by Service Code 881 or 882. Remote printing function for the journal reports (JOURNAL, JOURNAL 2 and JOURNAL 3) is also available for service technicians. (Refer to **Program Mode Table**(P.138).) The JOURNAL report only gives you basic information about a communication, but the other two journal reports provide different information on the same item (communication).

JOURNAL							
				Mar. 23 2002 09:51AM			
				YOUR LOGO:			
				YOUR FAX NO.:			
NO.	OTHER FACSIMILE	START TIME	USAGE TIME	MODE	PAGES	RESULT	*CODE
01	333222	Jan. 21 02:14PM	00'45	SND	001	OK	
02	9998765	Jan. 21 03:17PM	00'58	SND	002	OK	
03	John	Jan. 21 05:18PM	00'48	RCV	001	OK	
04	5555555	Jan. 21 06:18PM	00'45	RCV	003	COMMUNICATION ERROR	46

JOURNAL2						
Mar. 23 2002 09:51AM						
NO.	RCV. MODE	SPEED	RESOLUTION	RCV-TRIG.(CNT.)	ERROR → MEMORY	
01	TEL	V29-96 (-17dBm)	STD.			
02	TEL	V29-96 (-17dBm)	FINE			
03	FAX ONLY	V29-72 (-18dBm)	STD.	FAX MOD (00002)	PAPER OUT	
04	FAX ONLY	V29-96 (-17dBm)	STD.	CNG (00003)		

NO RESPONSE DISAPPEARED ON JOURNAL			
NO.	START TIME	RCV MODE	RCV-TRIG (CNT.)
YOUR LOGO :			
YOUR FAX NUMBER :			

JOURNAL3					
Mar. 23 2002 09:51AM					
NO.	ENCODE	MSLT	EQM(R X)	ERROR LINE(RX)	MAKER CODE
01	MH	20msec	0000	00000/01056	79
02	MH	20msec	0000	00000/01130	00
03	MR	20msec	1200	00013/01083	00
04	MR	20msec	0000	00000/01047	00

### HOW TO READ JOURNAL REPORTS:

#### Example:

- 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

- 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.186).

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.186). 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.3 in the JOURNAL 2 in **Special Service Journal Reports** (P.184), 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.186).

#### Description

##### (6) ENCODE

Compression Code: MH/MR/MMR

##### (7) MSLT

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

##### (8) EQM

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

##### (9) ERROR LINE (RX)

The first 5 digits show the number of error lines and the last 5 digits show the number of the total received 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

Mar. 23 2002 09:51AM

NO.	RCV. MODE	SPEED	RESOLUTION	RCV-TRIG.(CNT.)	ERROR → MEMORY
01	TEL	V29-96 (-17dBm)	STD.		
02	TEL	V29-96 (-17dBm)	FINE .		
03	FAX ONLY	V29-72 (-18dBm)	STD.	FAX MOD (00002)	PAPER OUT
04	FAX ONLY	V29-96 (-17dBm)	STD.	CNG (00 003)	

#### NO RESPONSE DISAPPEARED ON JOURNAL

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

YOUR LOGO :

YOUR FAX NUMBER :

#### JOURNAL3

Mar. 23 2002 09:51AM

NO.	ENCODE	MSLT	EQM(R X)	ERROR LINE(RX)	MAKER CODE
01	MH	20msec	0000	00000/01056	79
02	MH	20msec	0000	00000/01130	00
03	MR	20msec	1200	00013/01083	00
04	MR	20msec	0000	00000/01047	00

### 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.

JOURNAL							
				Mar. 23 2002 09:51AM			
				YOUR LOGO:			
				YOUR FAX NO.:			
NO.	OTHER FACSIMILE	START TIME	USAGE TIME	MODE	PAGES	RESULT	*CODE
01	333222	Jan. 21 02:14PM	00'45	SND	001	OK	
02	9998765	Jan. 21 03:17PM	00'58	SND	002	OK	
03	John	Jan. 21 05:18PM	00'48	RCV	001	OK	
04	55556677	Jan. 21 06:18PM	00'45	RCV	003	COMMUNICATION ERROR	(46)

SND: (3) Sent directly.  
 RCV: Received directly

(2) Communication message  
 (1) Error code message

#### CROSS REFERENCE:

Features(P.14)

#### 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 <b>NCU Section (P.33).Monitor Section (P.34).</b>	12
FF	POWER DOWN	RCV	Power is down when receiving.	

SND=TRANSMISSION / RCV=RECEPTION

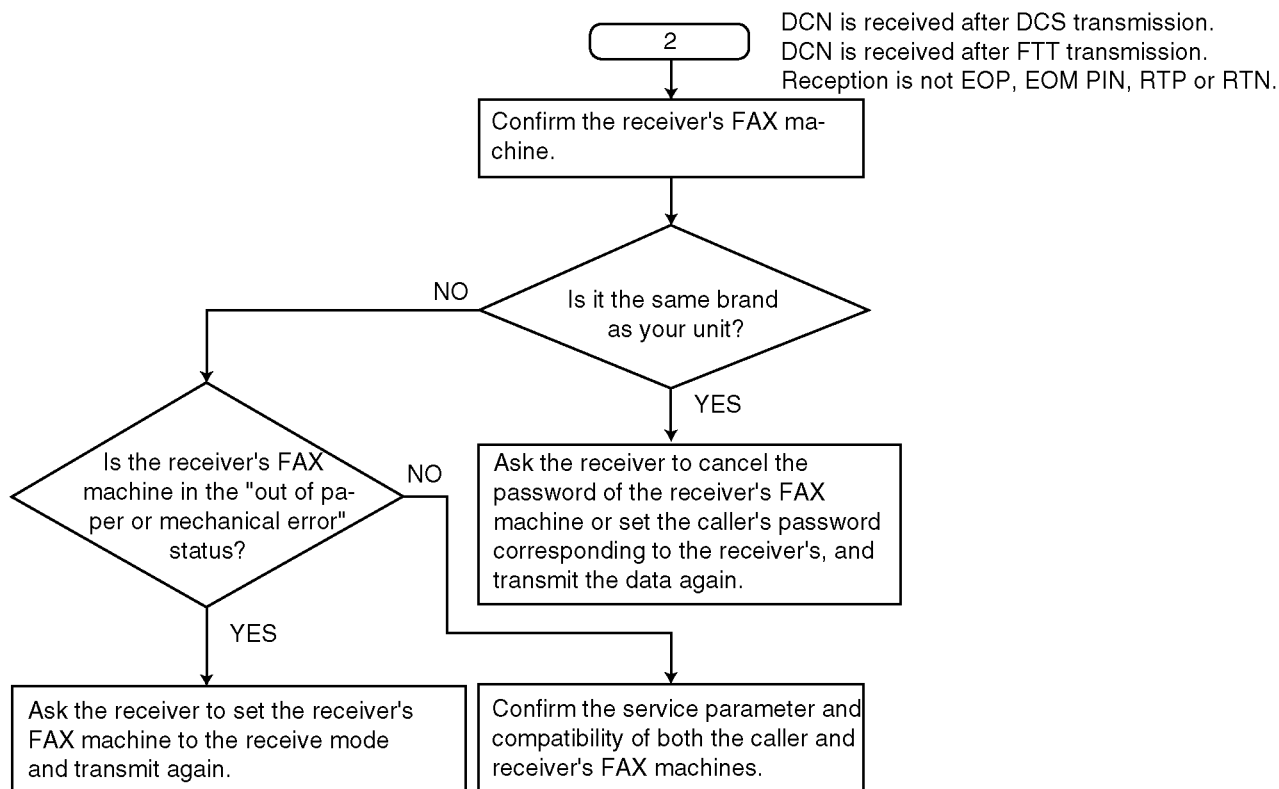
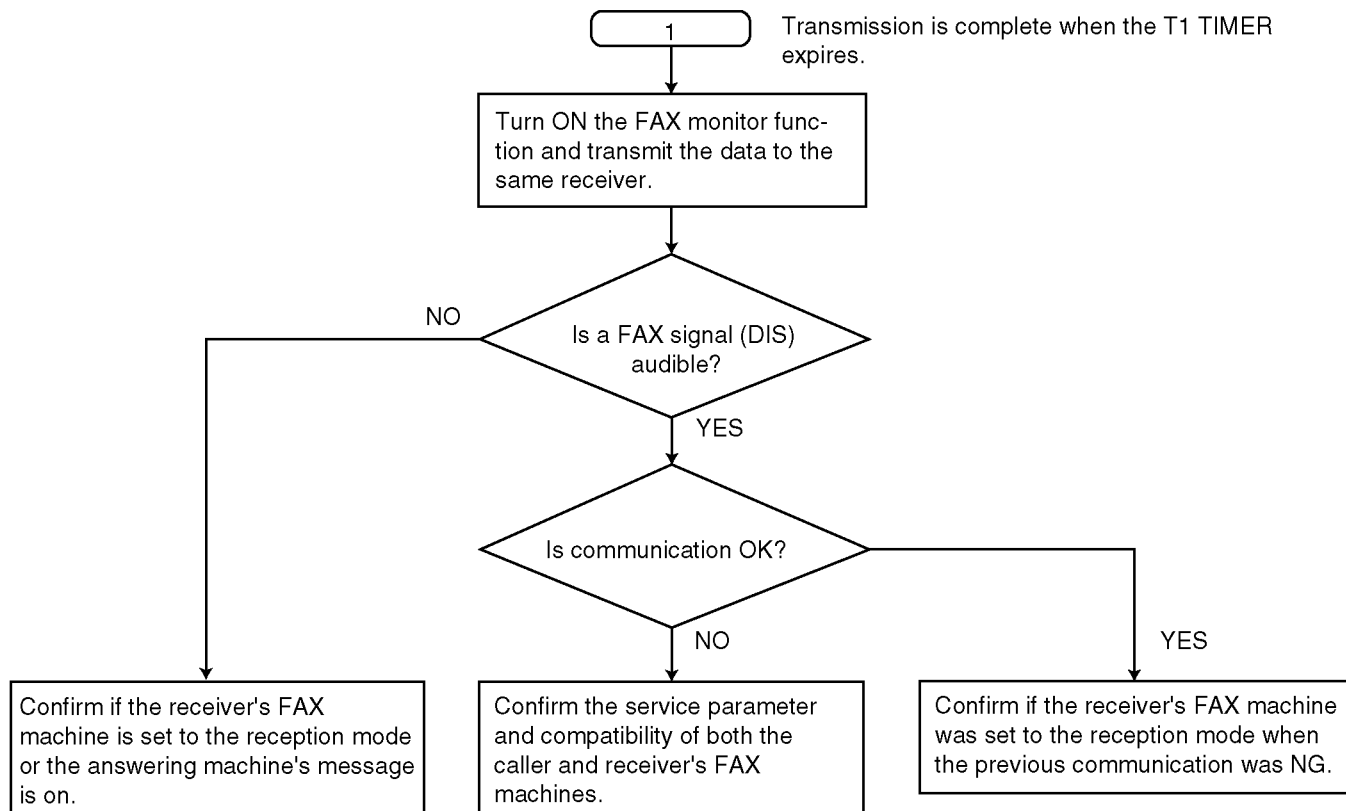
Most fax communication problems can be resolved by the following steps.

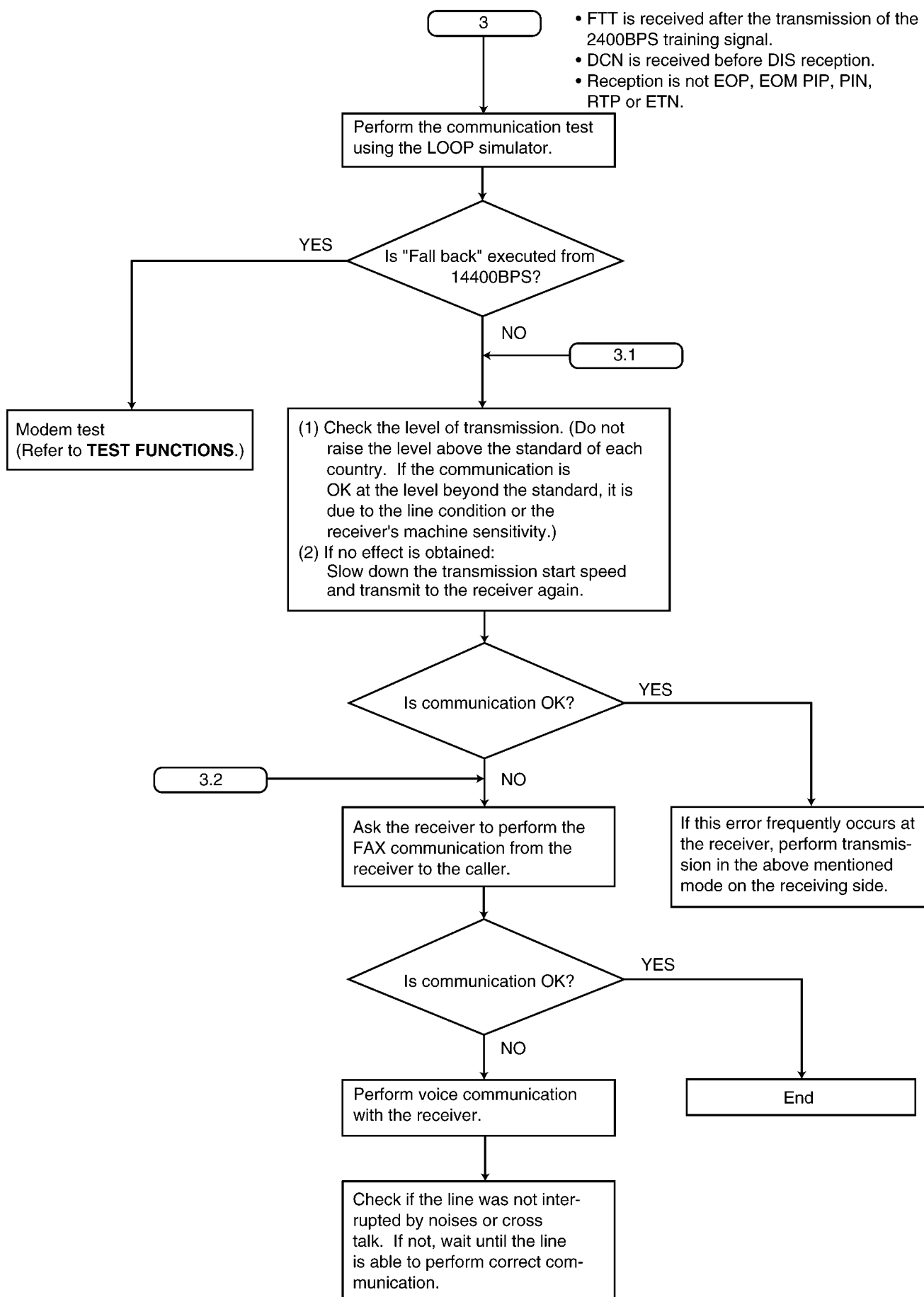
1. Change the transmit level. (Service code: 596, refer to **Service Function Table(P.126).**)
2. Change the TX speed/RX speed. (Service code: 507/508/717/718, refer to **Service Function Table(P.126).**)

#### Note\*:

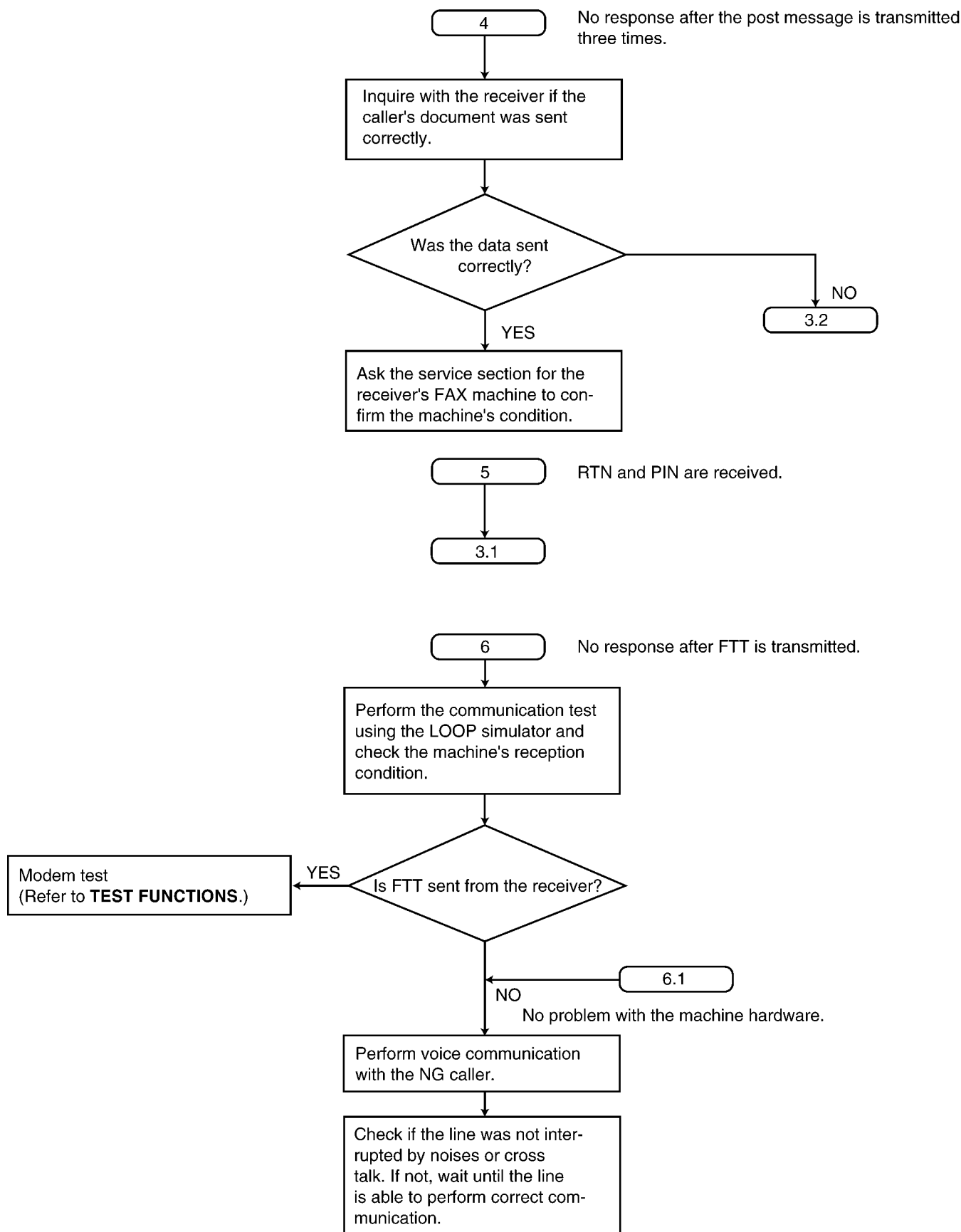
If the problem remains, see the following "Countermeasure" flow chart.

## Countermeasure

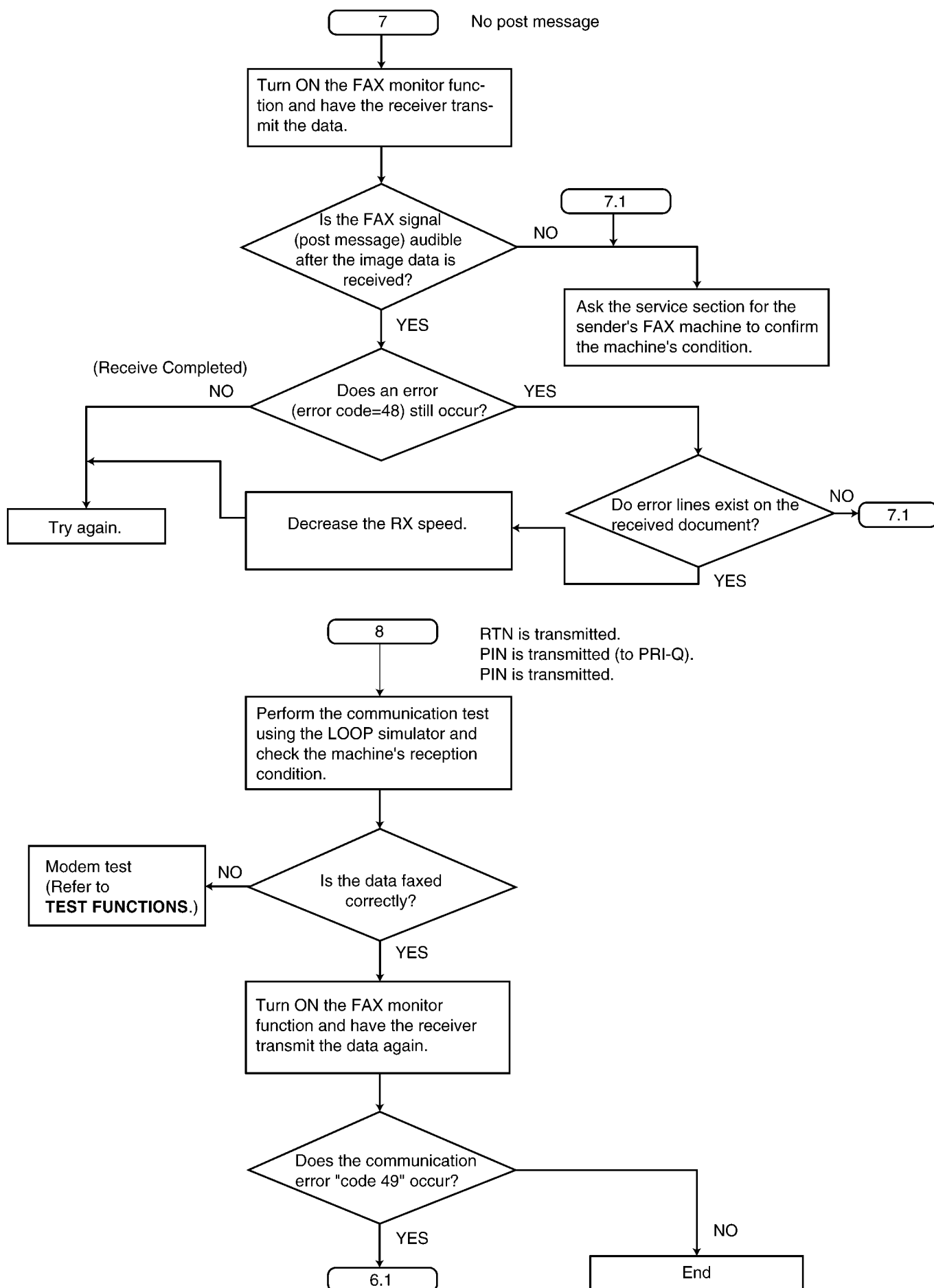




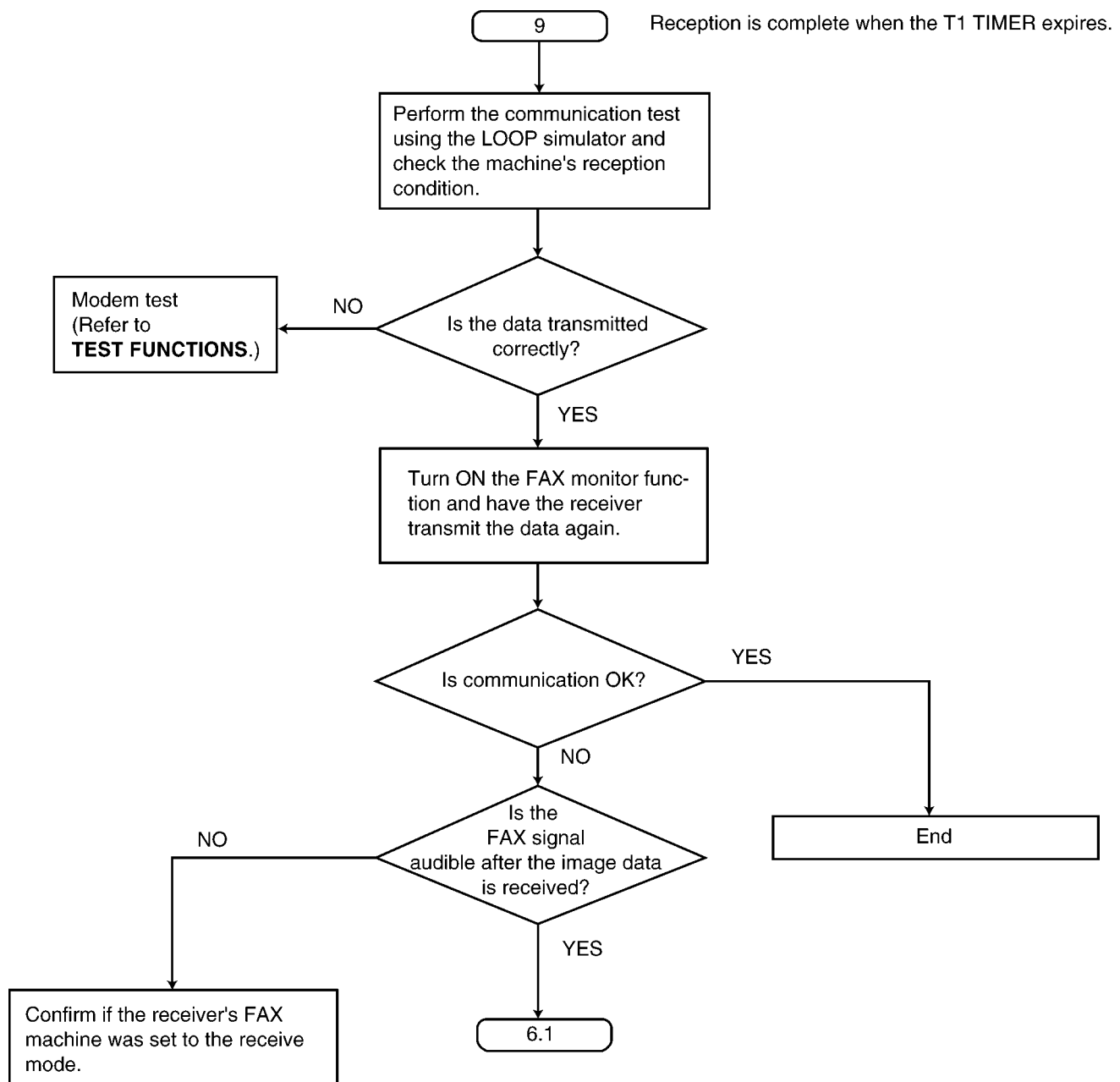
**CROSS REFERENCE:**  
Test Functions (P.121)



**CROSS REFERENCE:**  
**Test Functions (P.121)**

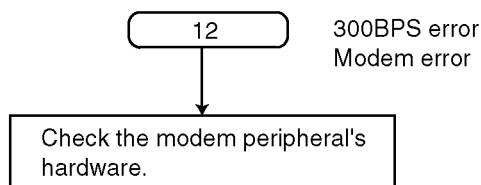
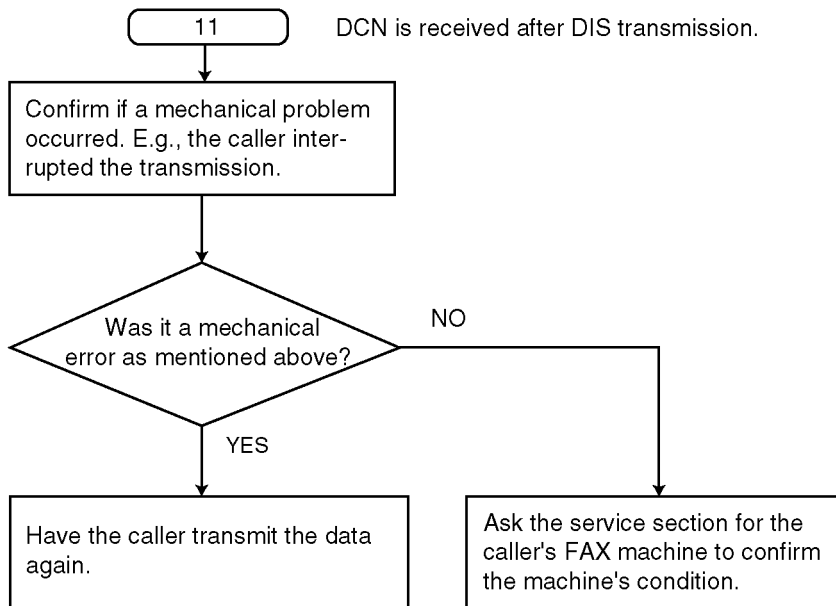
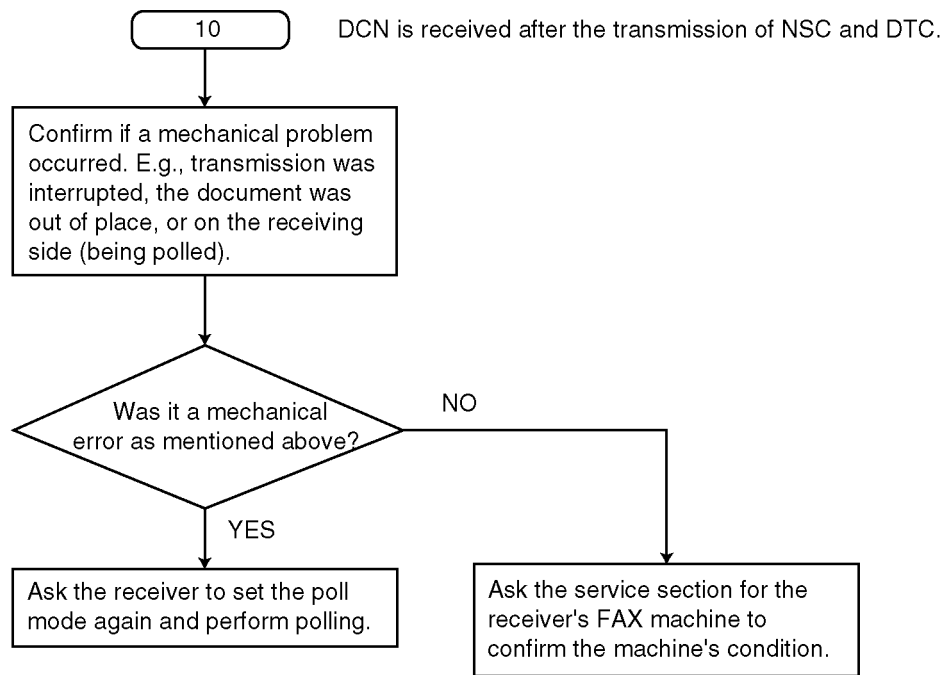


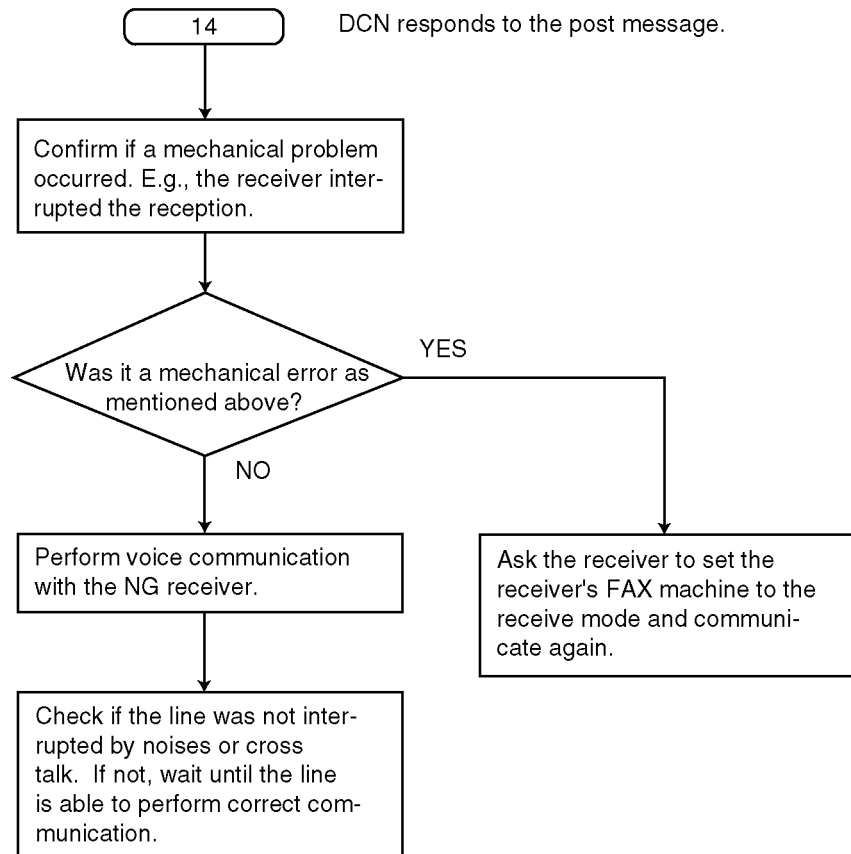
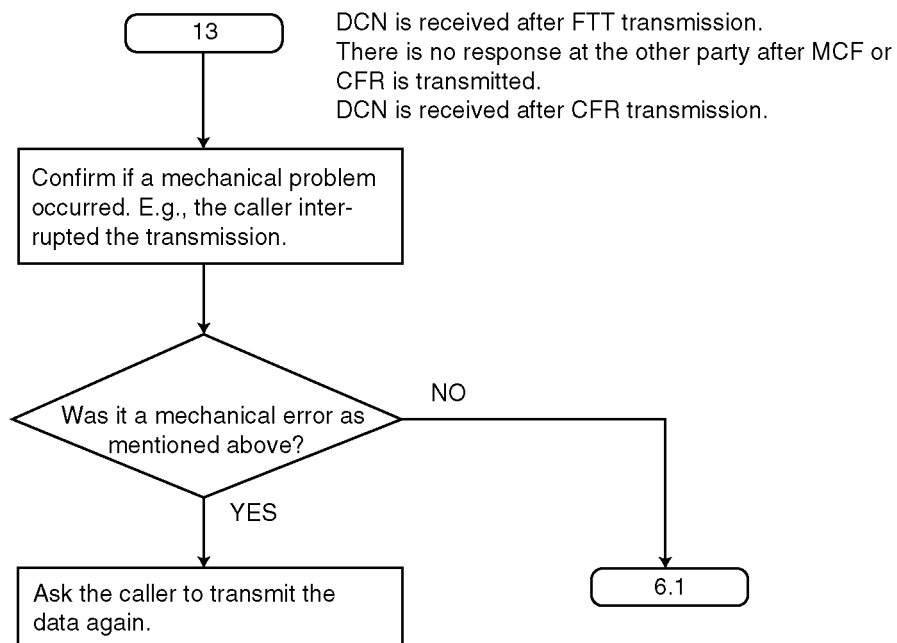
**CROSS REFERENCE:**  
Test Functions (P.121)

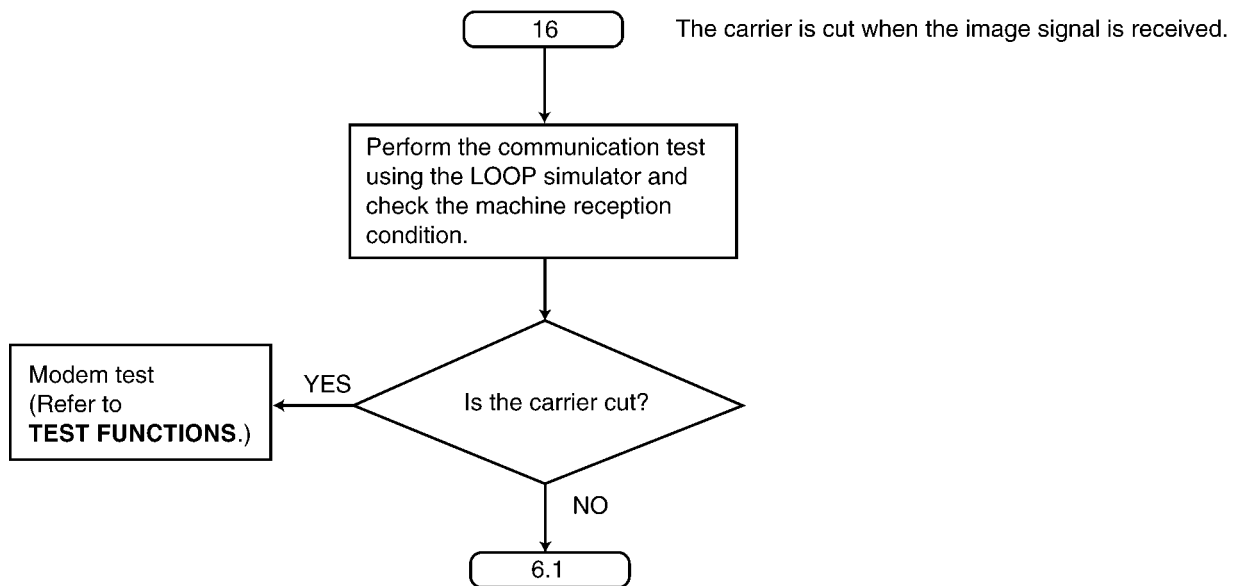
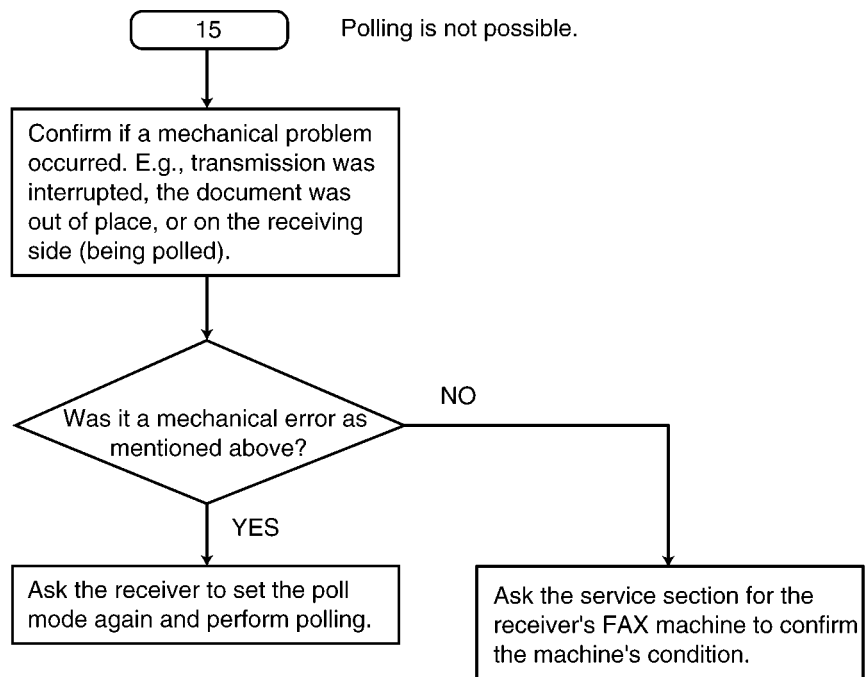


**CROSS REFERENCE:**  
**Test Functions** (P.121)









**CROSS REFERENCE:**  
**Test Functions (P.121)**

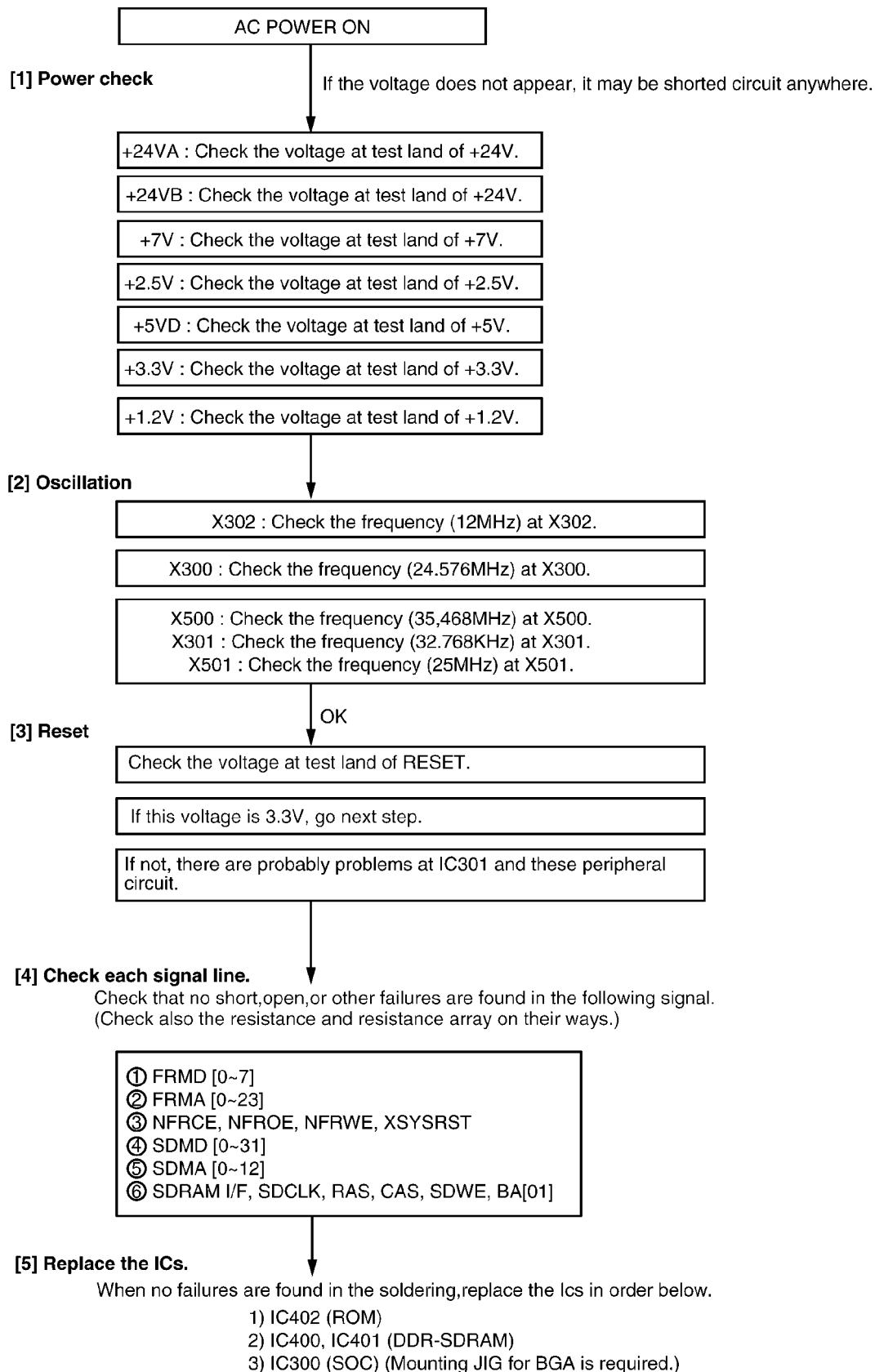
## 12.3.12. Initializing Error

After the power is turned on, the SOC (IC300) initializes and checks each IC.

The ROM (IC402) and DDR-SDRAM (IC400, 401) 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.287)

PSU (Low Voltage Power Supply Board) Section (P.97)

### 12.3.13. Analog Section

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

#### 12.3.13.1. Check Sheet

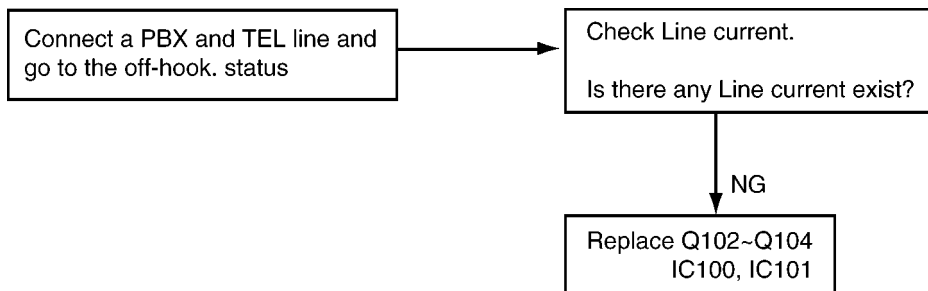
(SYMPTOM) CHECK ITEMS	Signal ROUTE	
	IN	OUT
MONITOR RX	TEL LINE-CN100(3,4)-F100-L106-L111-L100-D103-Q104-R114-C106-IC101(3-5,6)-IC100(9,10)-IC300-IC200(1)-C203-R210-R253-C247-L210-IC202(2-1)-R235-C231-L220-IC204(4-5,8)-CN200(1,2)-speaker	
DTMF Monitor Speaker	IC300-IC200(1)-C203-R210-R253-C247-L210-IC202(2-1)-R235-C231-L220-IC204(4-5,8)-CN200(1,2)-Speaker	
DTMF for TEL Line FAX Tx	IC300-IC100(9,10)-IC101(5,6-3)-C106-R114-Q104-D103-L100-L111-L106-F100-CN100(3,4)-TEL LINE	
Ringing/Alarm/ Beep/Key tones	IC300(W34)-R205-C205-R212-R257-C252-L210-IC202(2-1)-R235-C231-L220-IC204(4-5,8)-CN200(1,2)-Speaker	
CNG/DTMF/Caller ID detection	TEL LINE-CN100(3,4)-F100-L106-L108,L109-R112,R113-R106,R107-IC101(8,9-5,6)-IC100(9,10)-IC300	
DTMF detection (ON-HOOK)	EXT TEL LINE-CN101(3,4)-L108,L109-R112,R113-R106,R107-IC101(8,9-5,6)-IC100(9,10)-IC300	
Bell detection	TEL LINE-CN100(3,4)-F100-L106-L108,L109-R112,R113-R106,R107-IC101(8,9-5,6)-IC100(9,10-15)-IC300(AH32 and AN26)	

### 12.3.13.2. DEFECTIVE ITS (Integrated Telephone System) SECTION

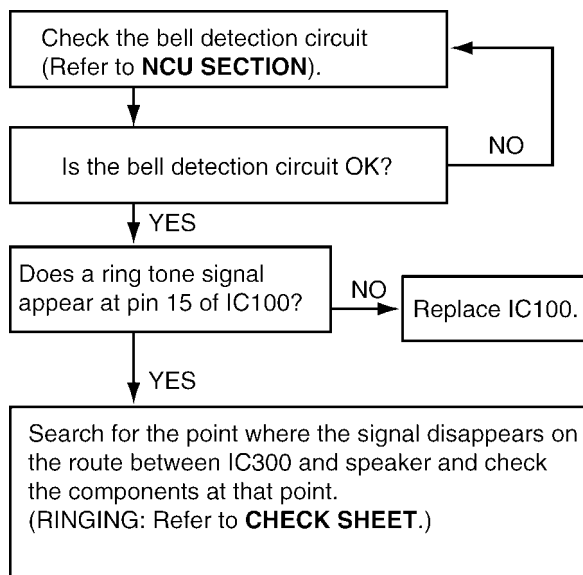
#### 1. No handset and speakerphone transmission / reception

Perform a signal test in the **NCU section** and locate a defective point (where the signal disappears) on each route between the telephone line and the speaker (receiving). Check the components at that point. **Check Sheet**(P.197) is useful for this investigation.

#### 2. No pulse dialing



#### 3. No ring tone (or No bell)



#### CROSS REFERENCE:

Check Sheet (P.197)

NCU Section (P.33)

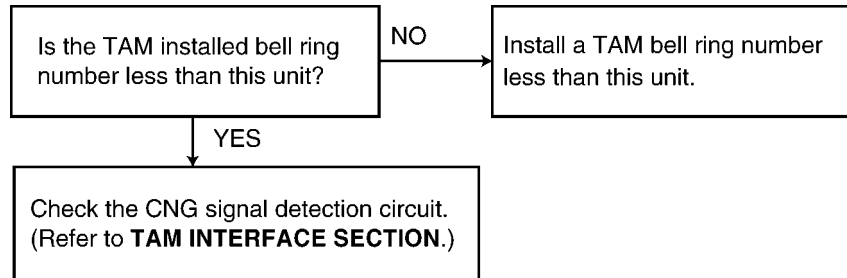
#### 4. No tone dialing

Following the NCU section and ITS section, search for the point where the signal disappears on the route the telephone jack and check the components at that point.  
(DTMF for TEL LINE: Refer to **CHECK SHEET.**)

**CROSS REFERENCE:**  
Check Sheet (P.197)

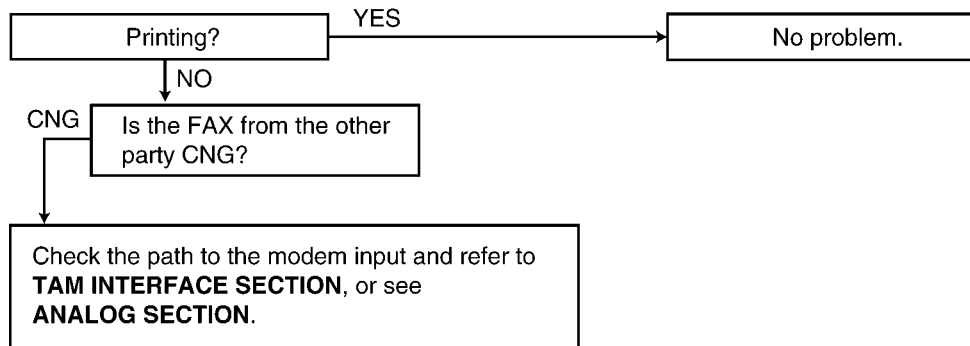
### 12.3.13.3. DETECTIVE TAM INTERFACE SECTION

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



**CROSS REFERENCE:**  
TAM Interface Section (P.34)

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

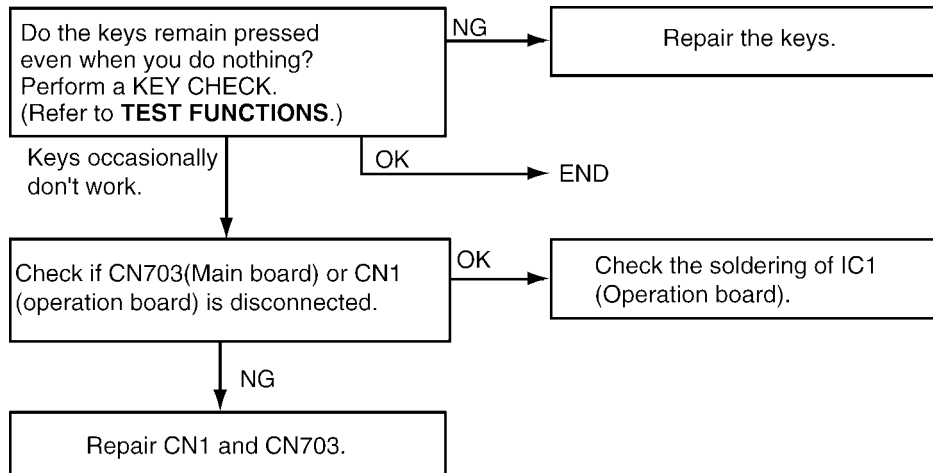


**CROSS REFERENCE:**  
Analog Section (P.197)  
TAM Interface Section (P.34)

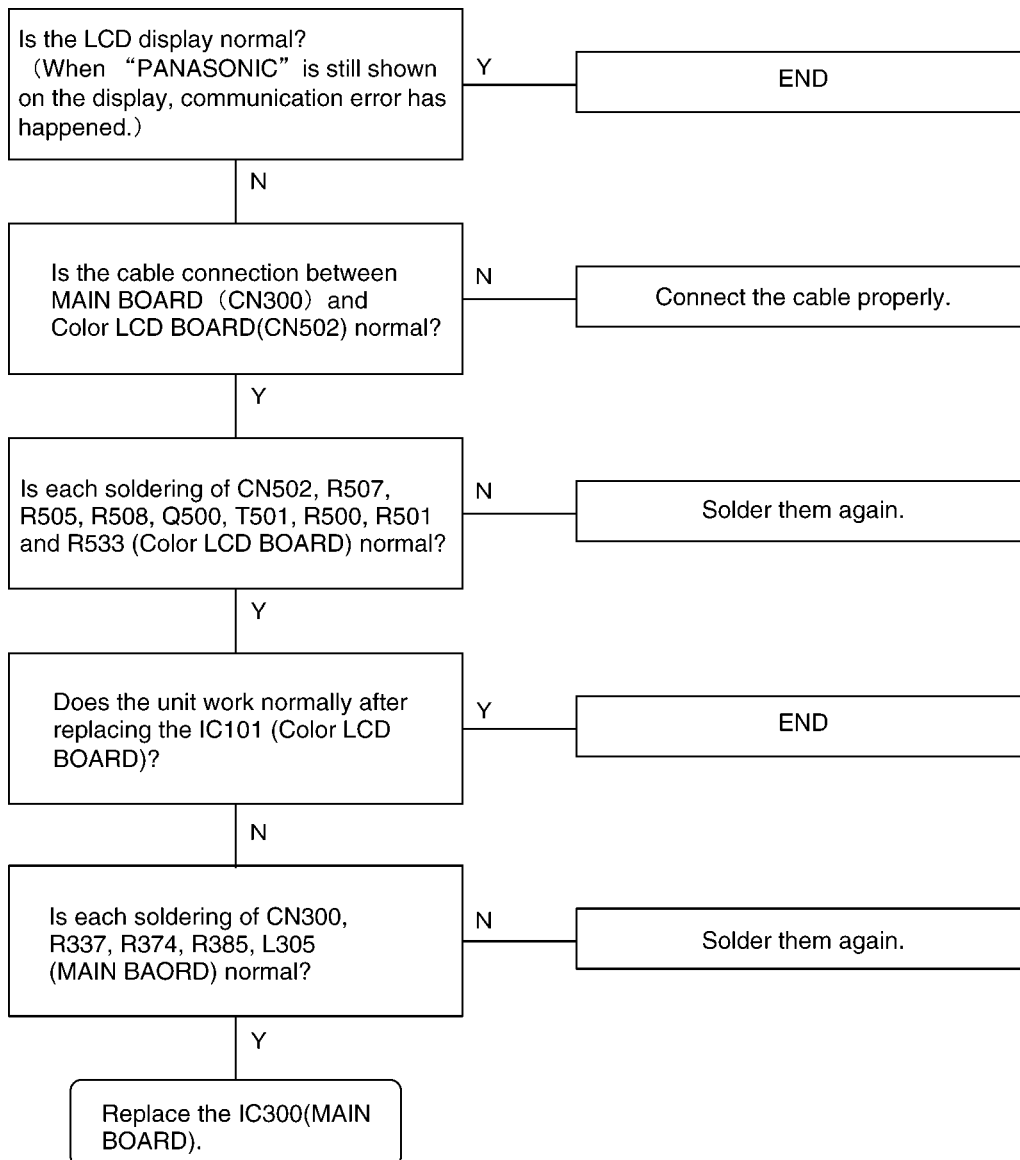
### 12.3.13.4. Operation Panel Section

Refer to **Test Functions** (P.121).

#### 1. NO KEY OPERATION



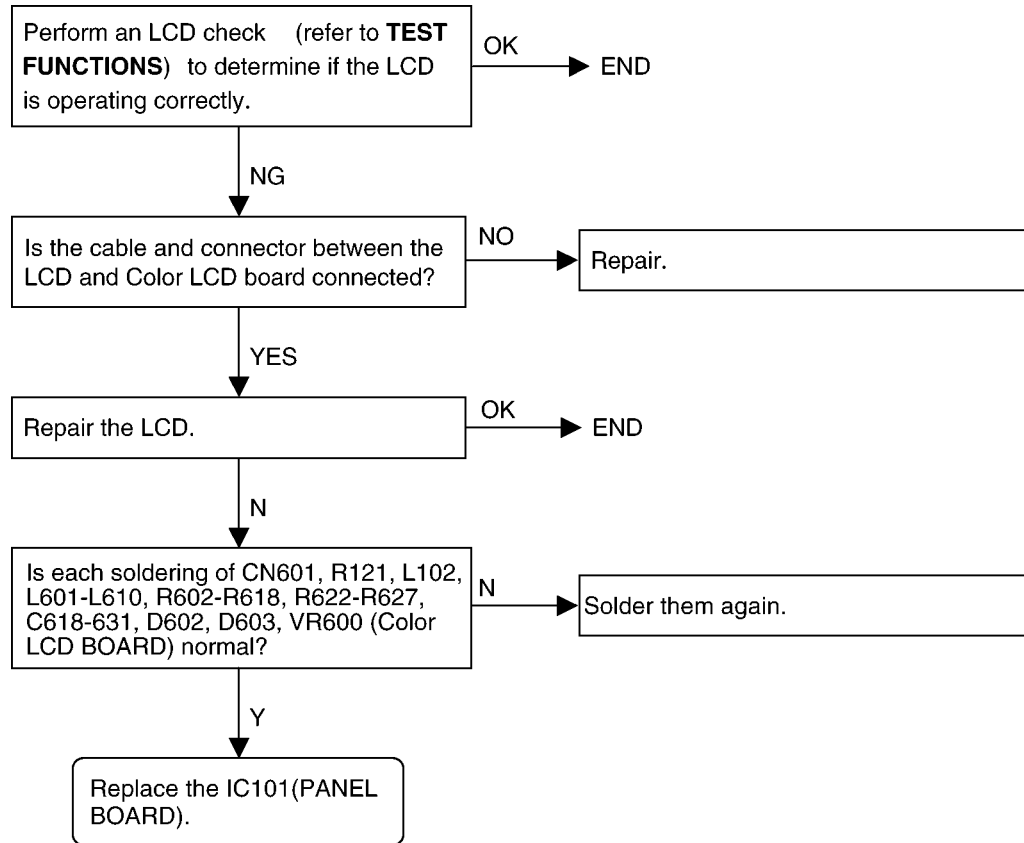
#### 2.Communication with MAIN BOARD can not be established.



**CROSS REFERENCE:**  
**Test Functions** (P.121)



### 3. No LCD Indication

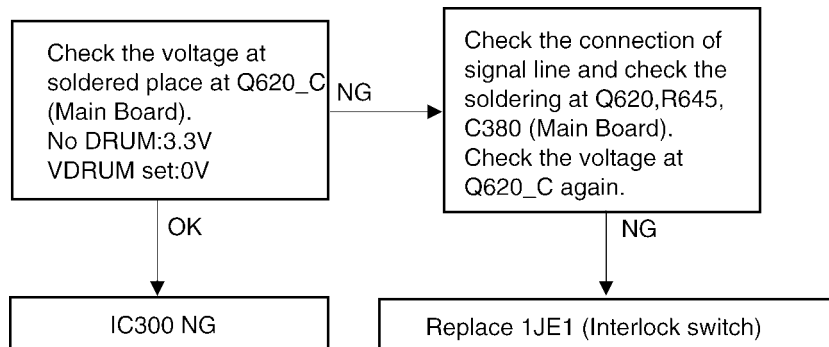


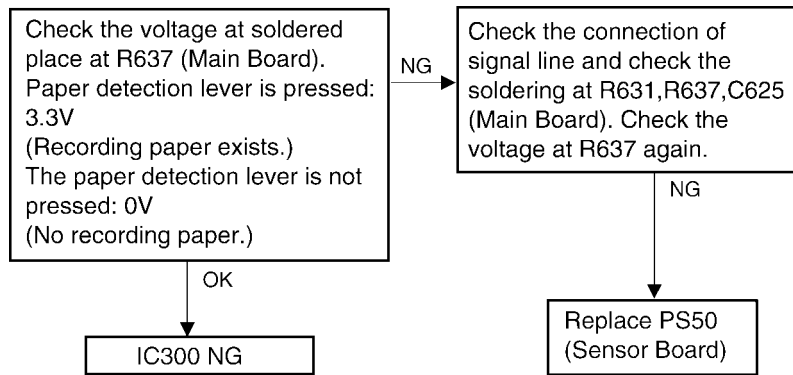
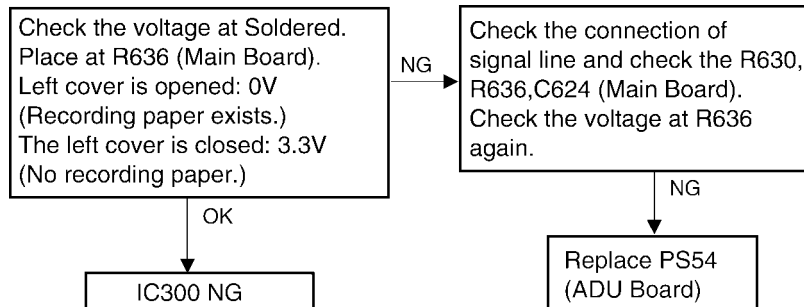
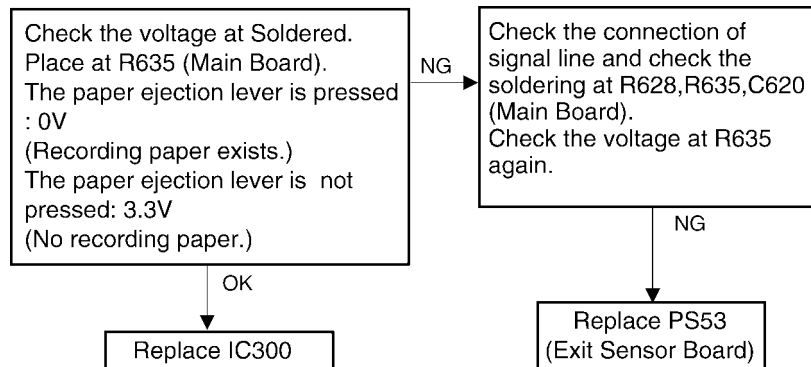
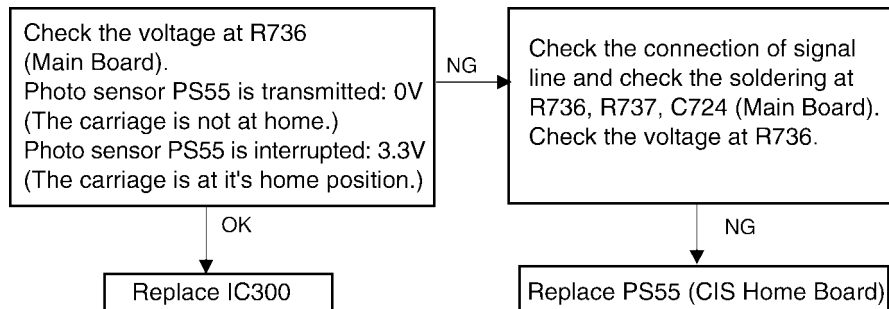
### 12.3.13.5. Sensor Section

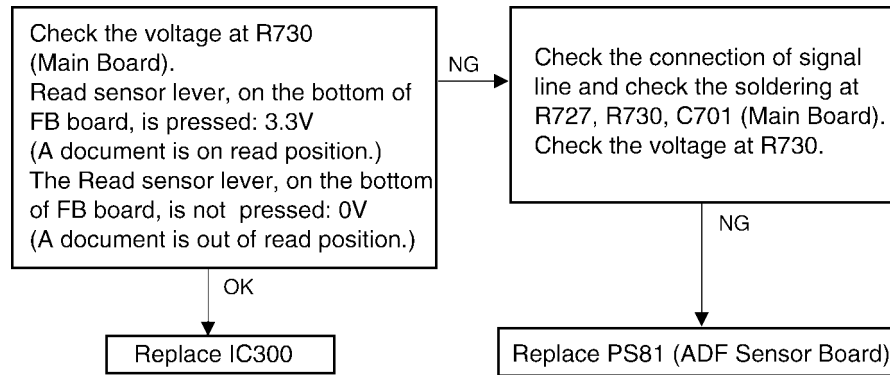
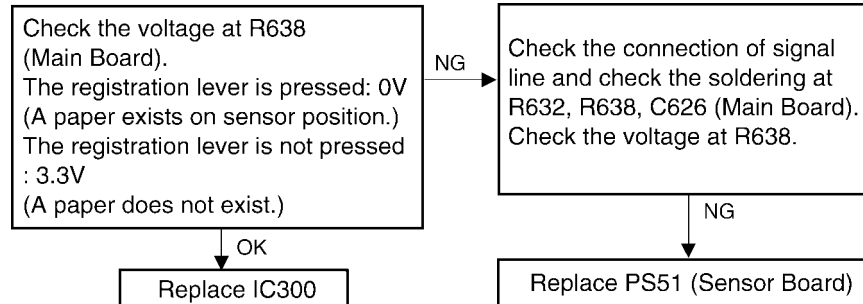
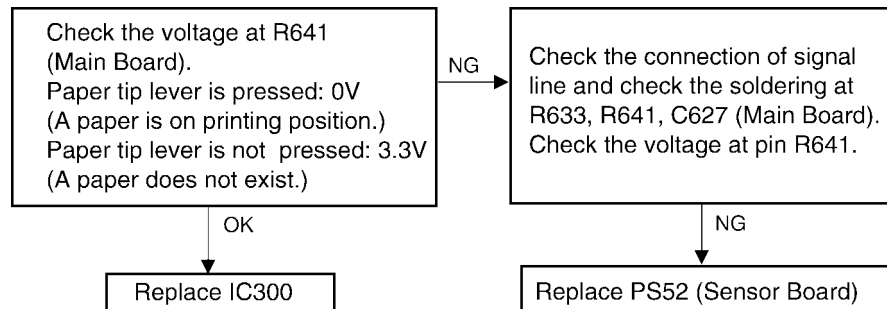
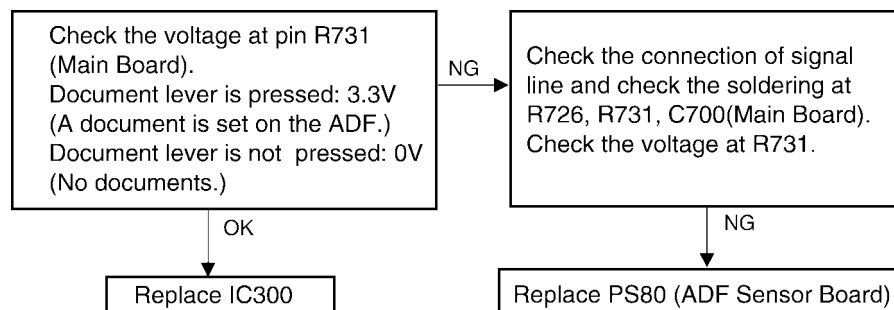
Refer to SENSORS AND SWITCHES for the circuit description.

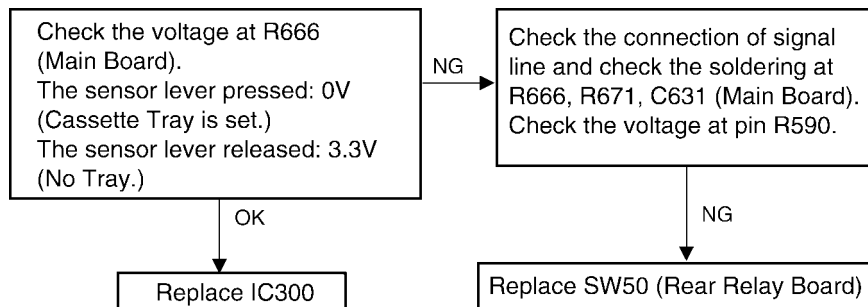
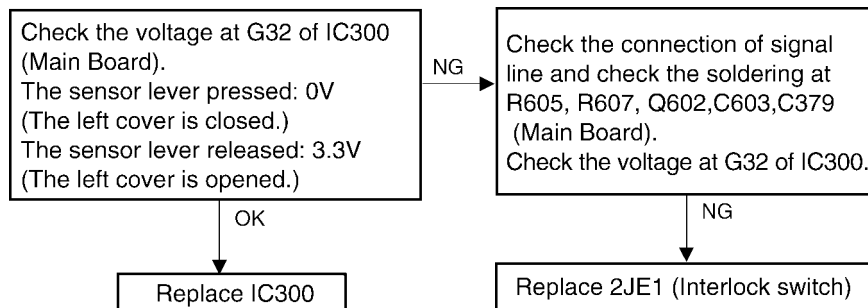
Perform an SENSOR CHECK to determine if the sensor is operating correctly.

#### 1. Check the DRUM sensor ..... “CHECK DRUM”



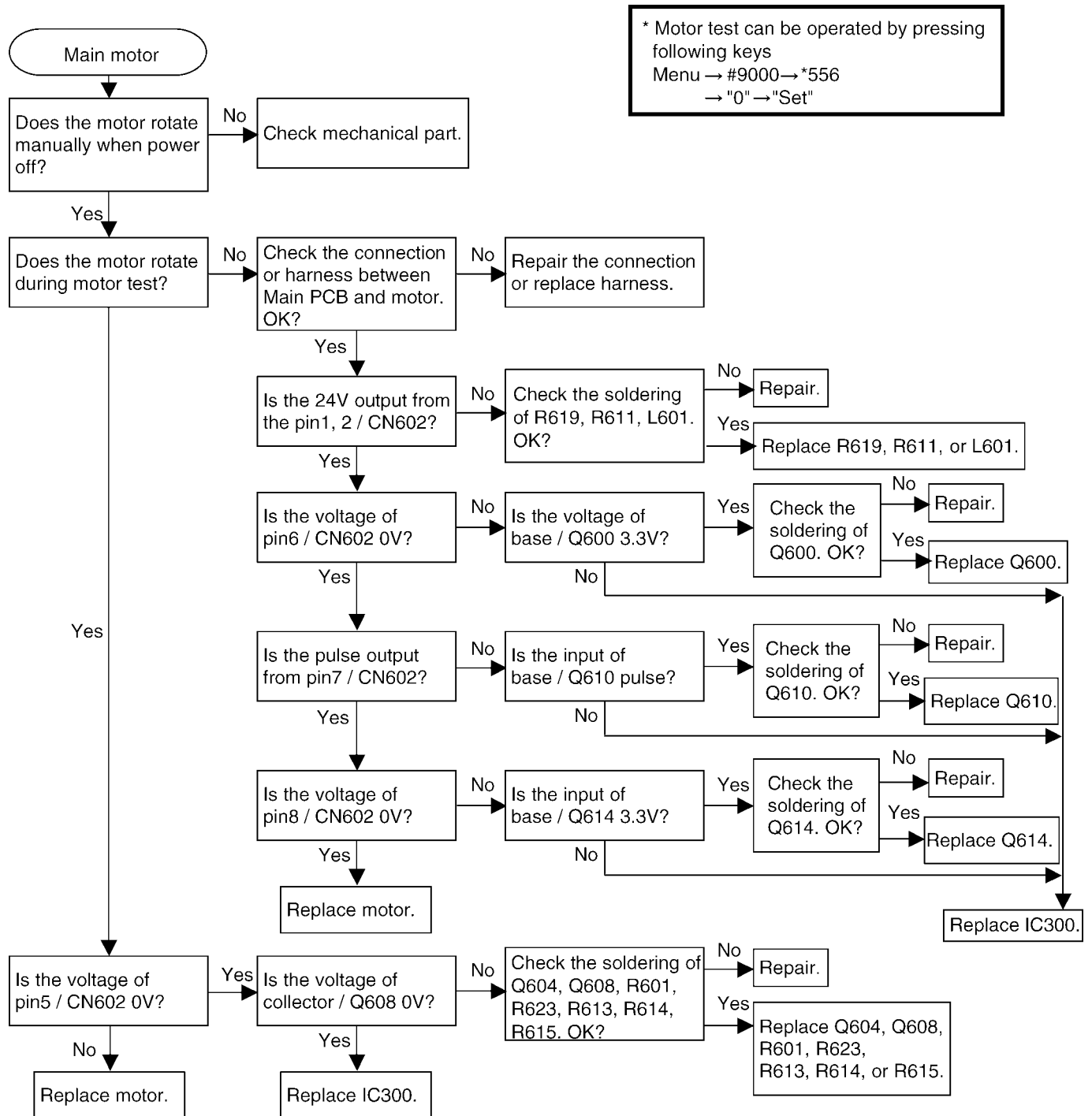
**2. Check the paper sensor ..... “OUT OF PAPER” INPUT TRAY #1****3. Check the ADU sensor ..... “PAPER JAMMED”****4. Check the paper exit sensor ..... “PAPER JAMMED”****5. Check the home sensor ..... “SCANNER POSITION ERROR”**

**6. Check the read position sensor ..... “CHECK DOCUMENT”****7. Check the registration sensor ..... “PAPER JAMMED”****8. Check the print timing sensor ..... “PAPER JAMMED”****9. Check the document sensor**

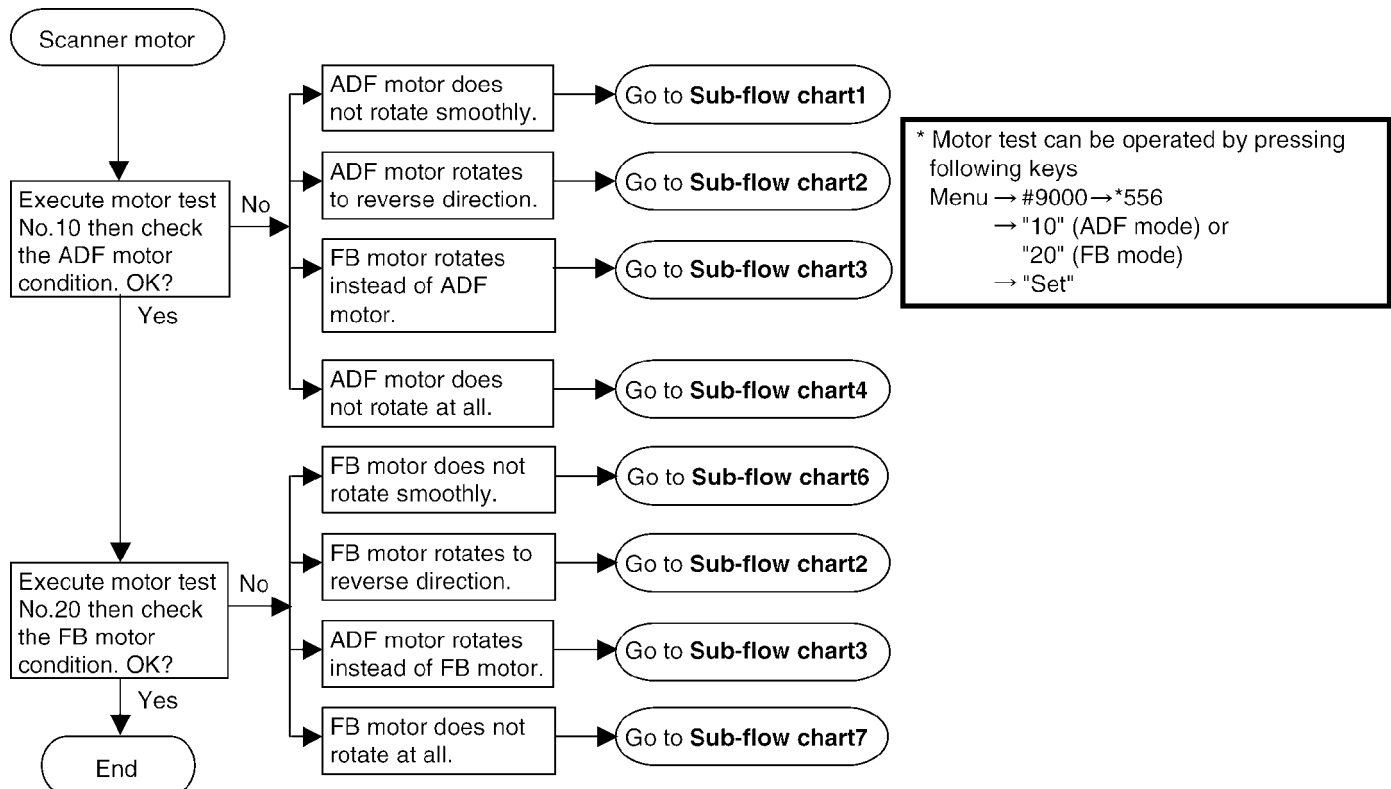
**10. Check the cassette sensor ..... “CHECK INSTALL INPUT TRAY #1”****11. Check the left cover sensor ..... “LEFT COVER OPEN”**

## 12.3.13.6. Motor Section

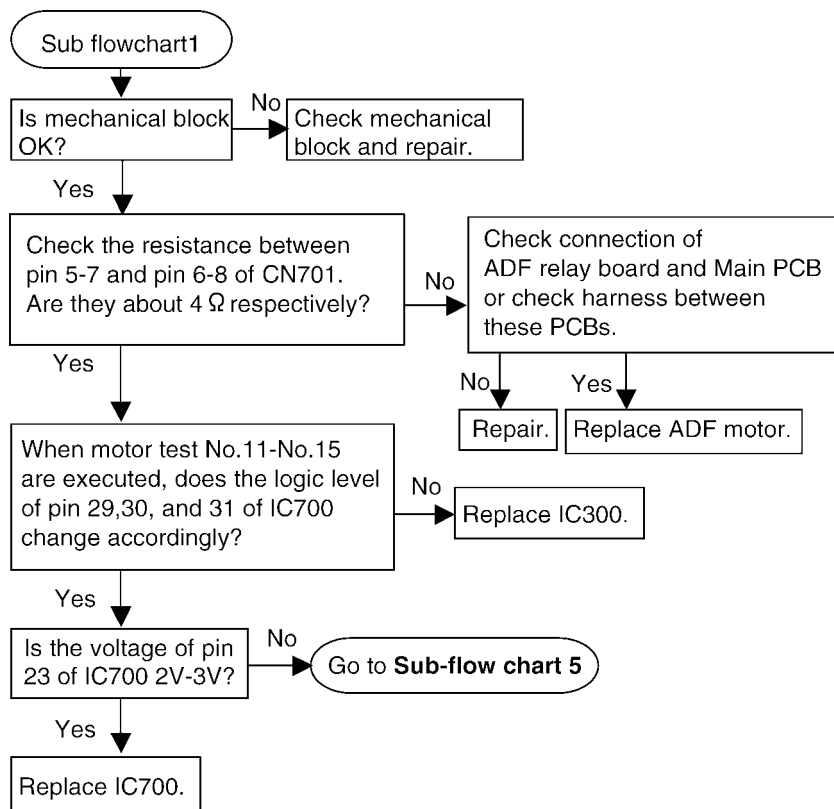
### 12.3.13.6.1. Main Motor



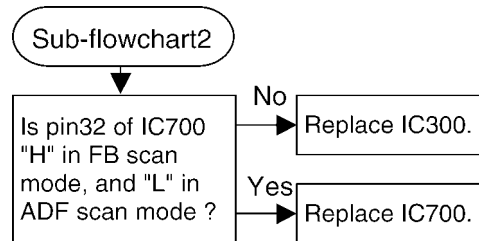
### 12.3.13.6.2. Scanner (ADF & FB) motor



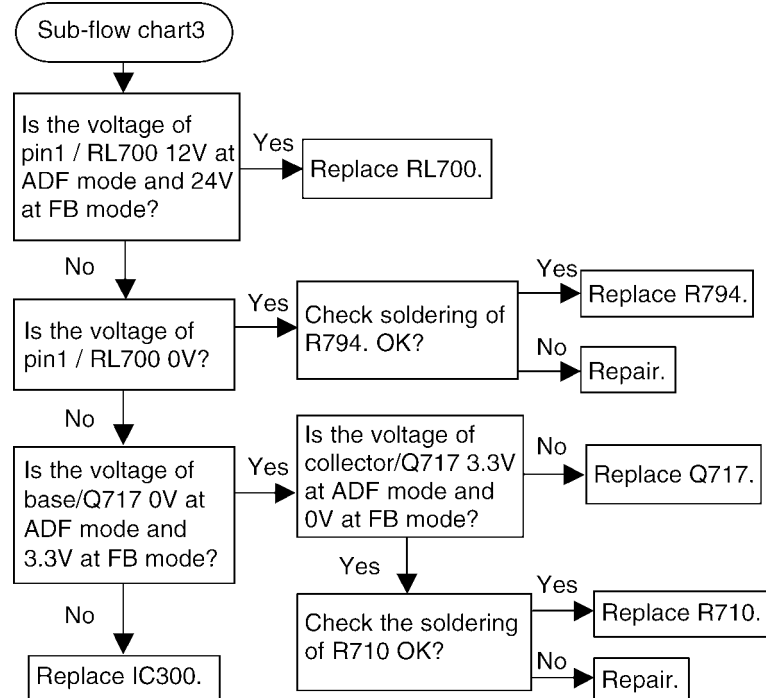
1. Sub flow chart 1



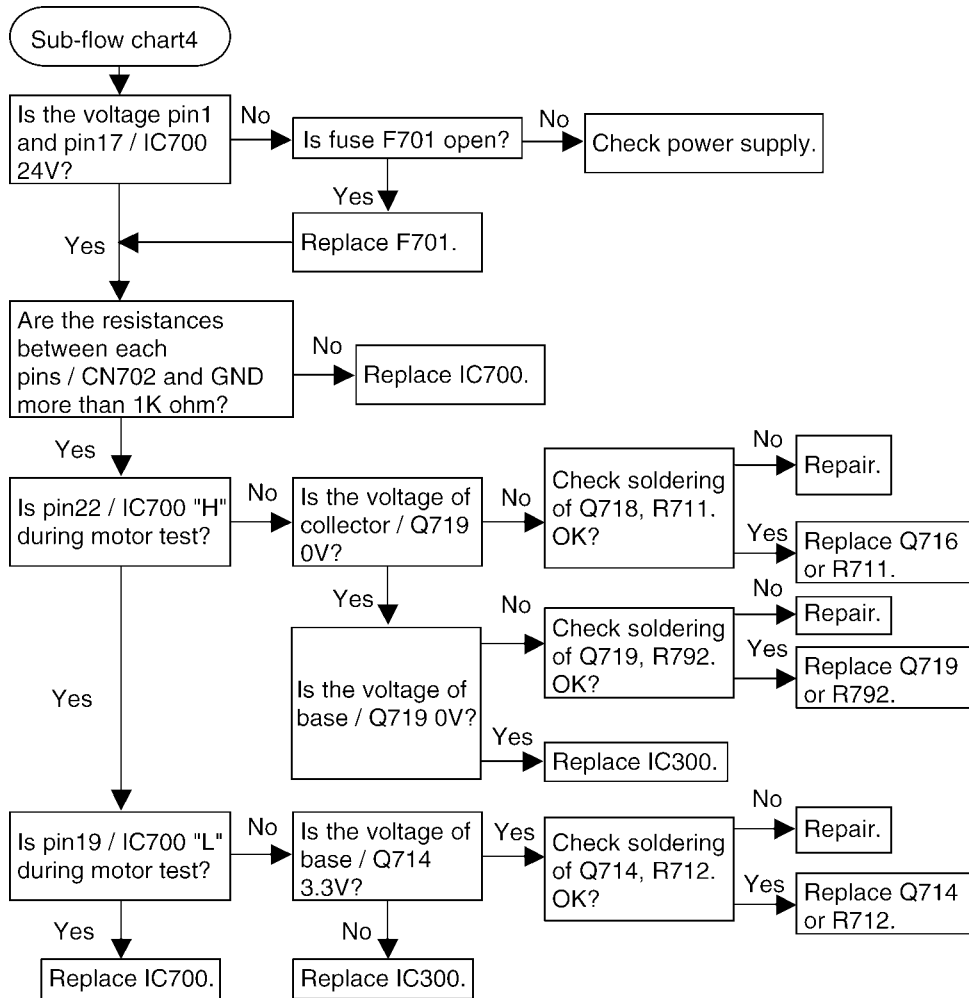
## 2. Sub flow chart 2



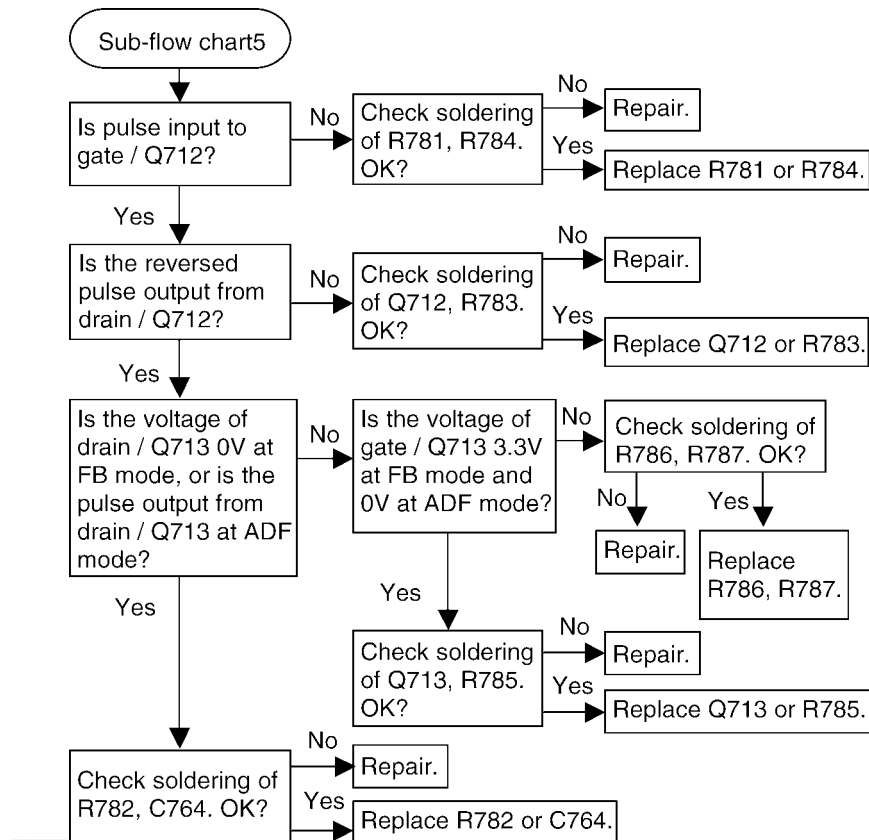
## 3. Sub flow chart 3



## 4. Sub flow chart 4

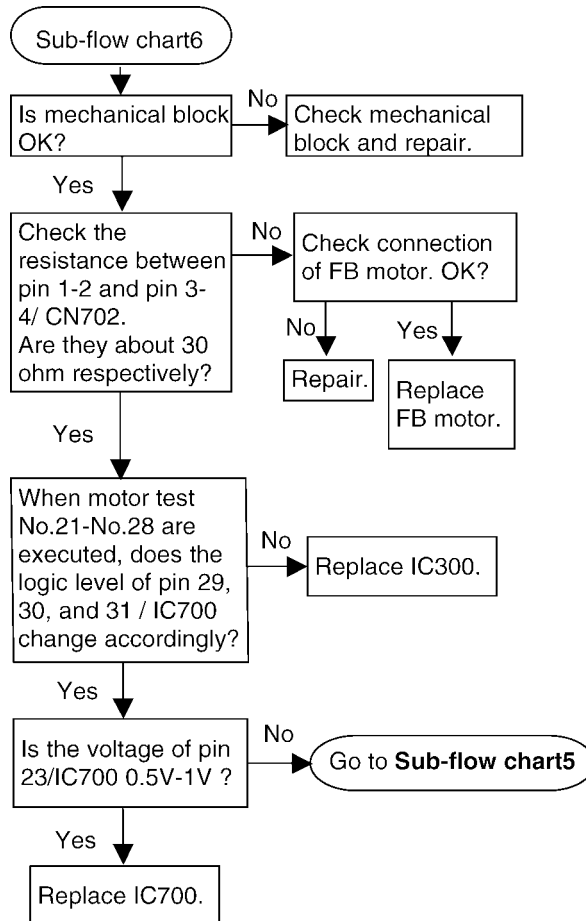


## 5. Sub flow chart 5

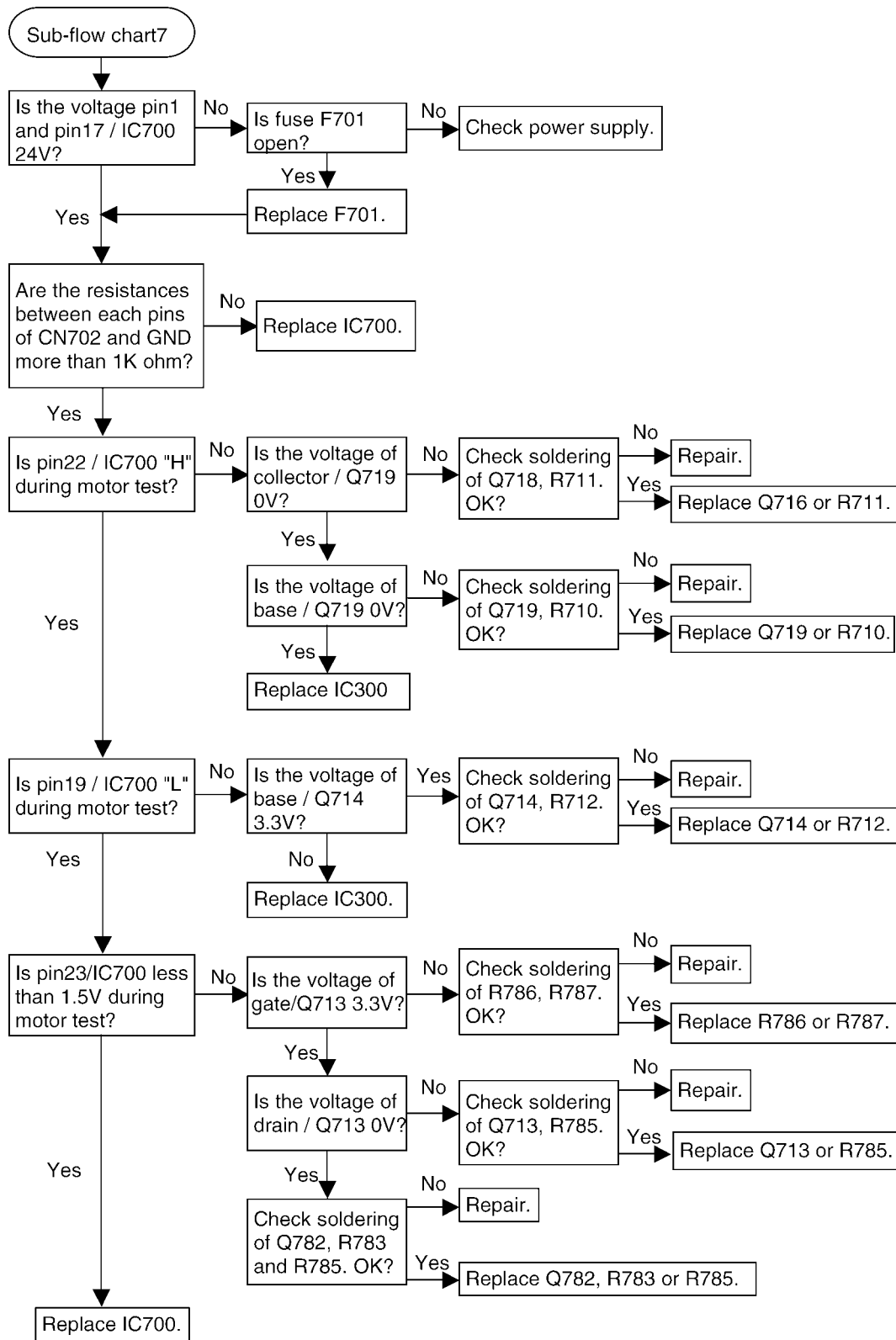




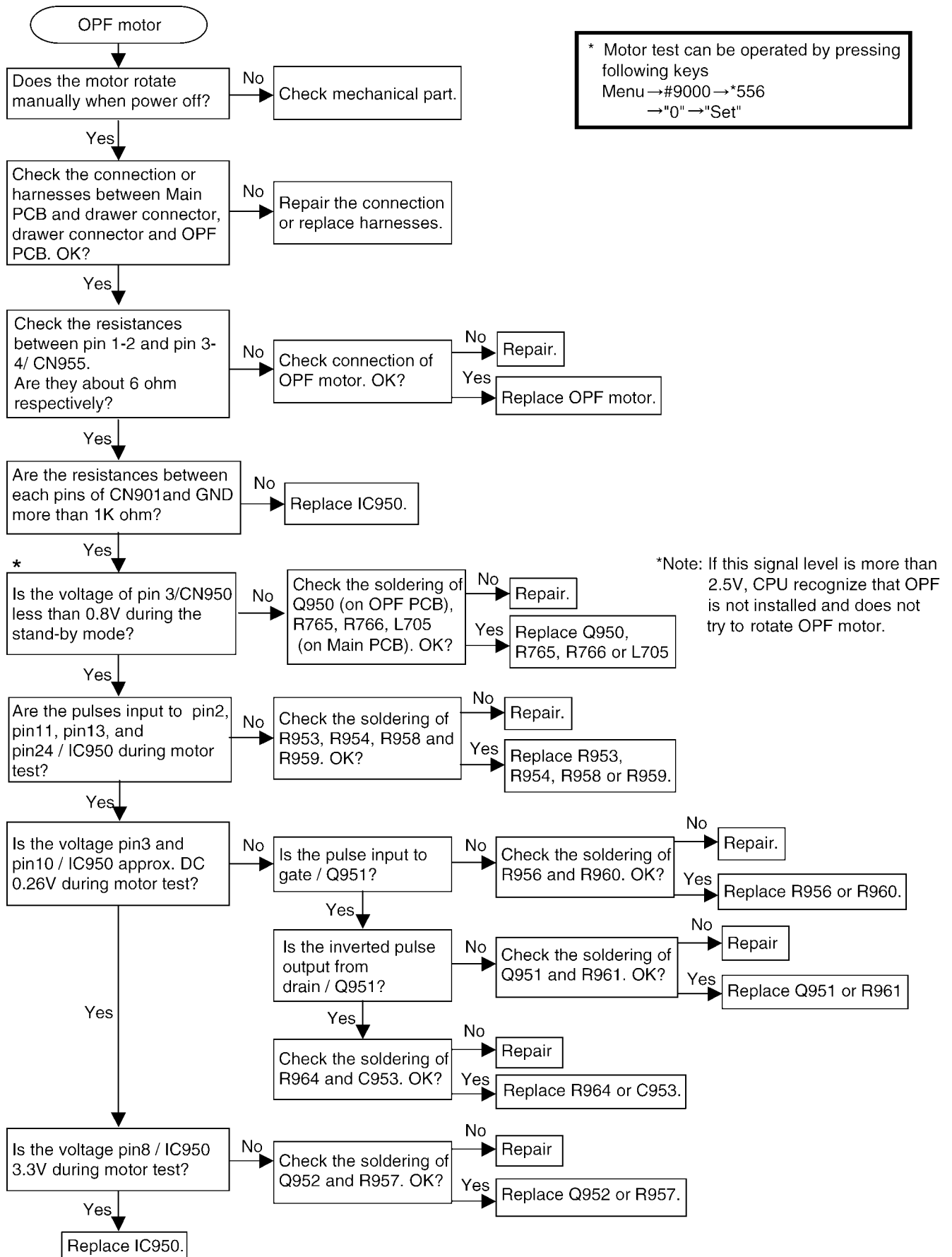
## 6. Sub flow chart 6



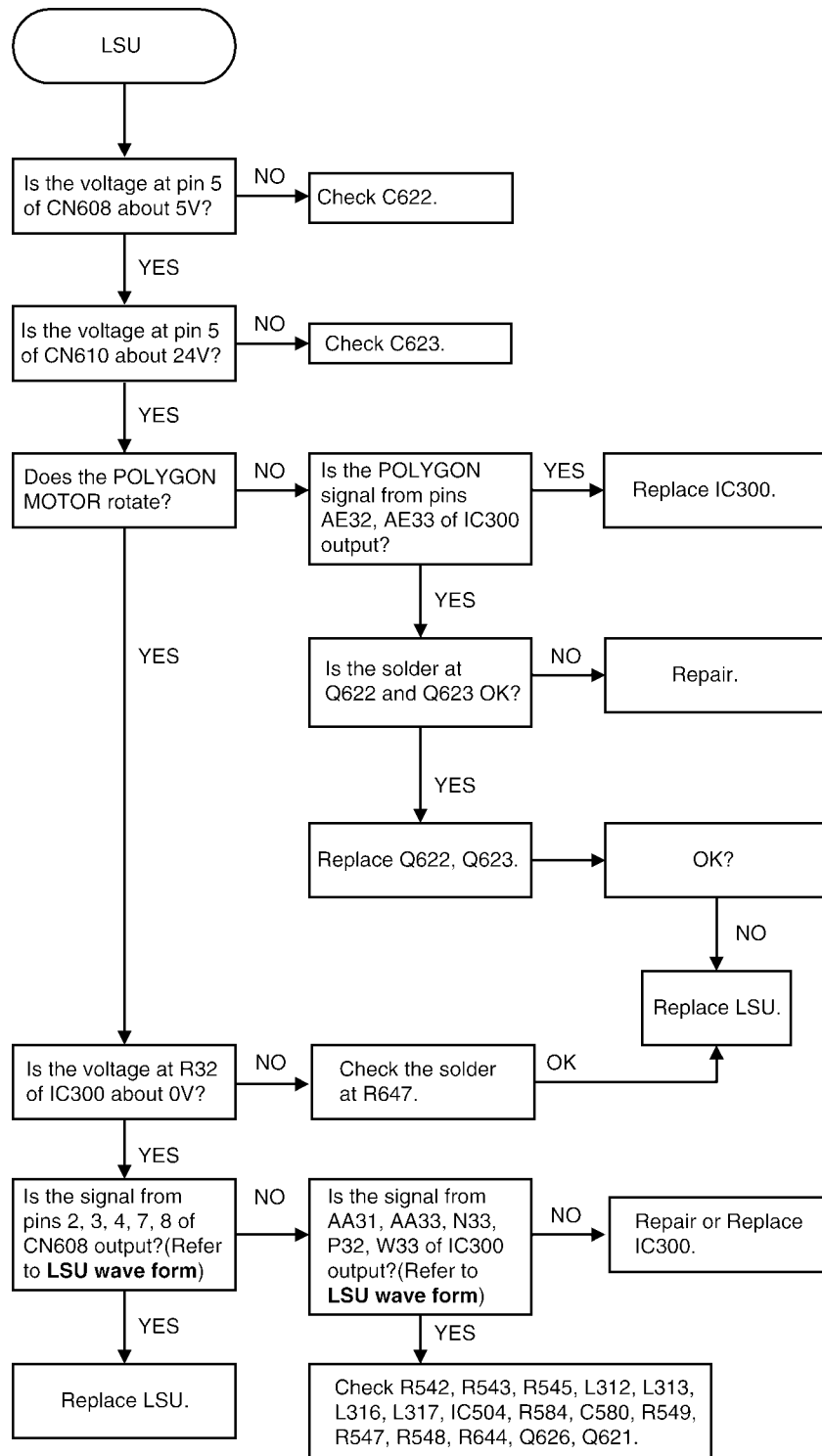
## 7. Sub flow chart 7



### 12.3.13.6.3. Optional lower input Tray Motor (OPF Motor)

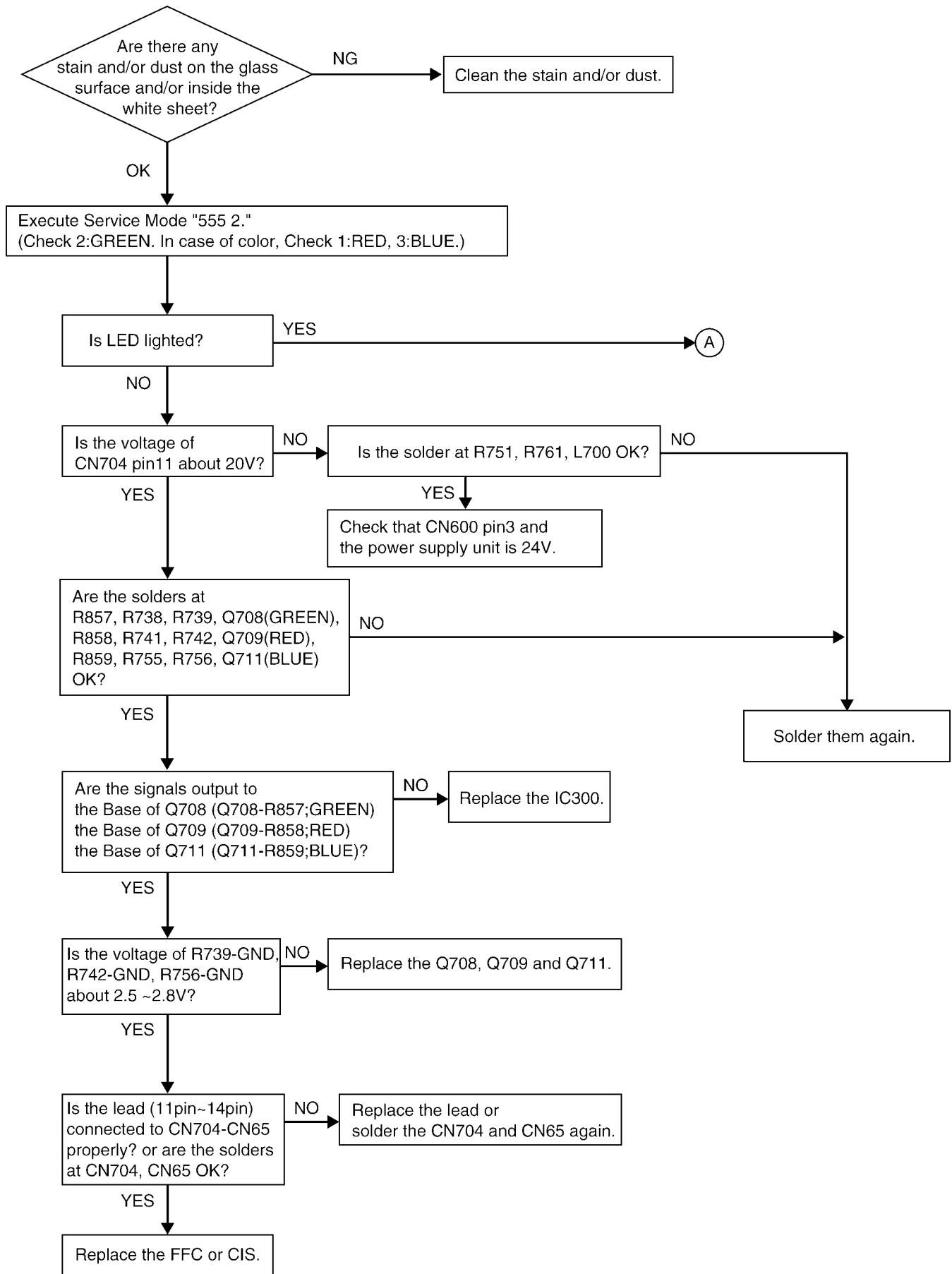


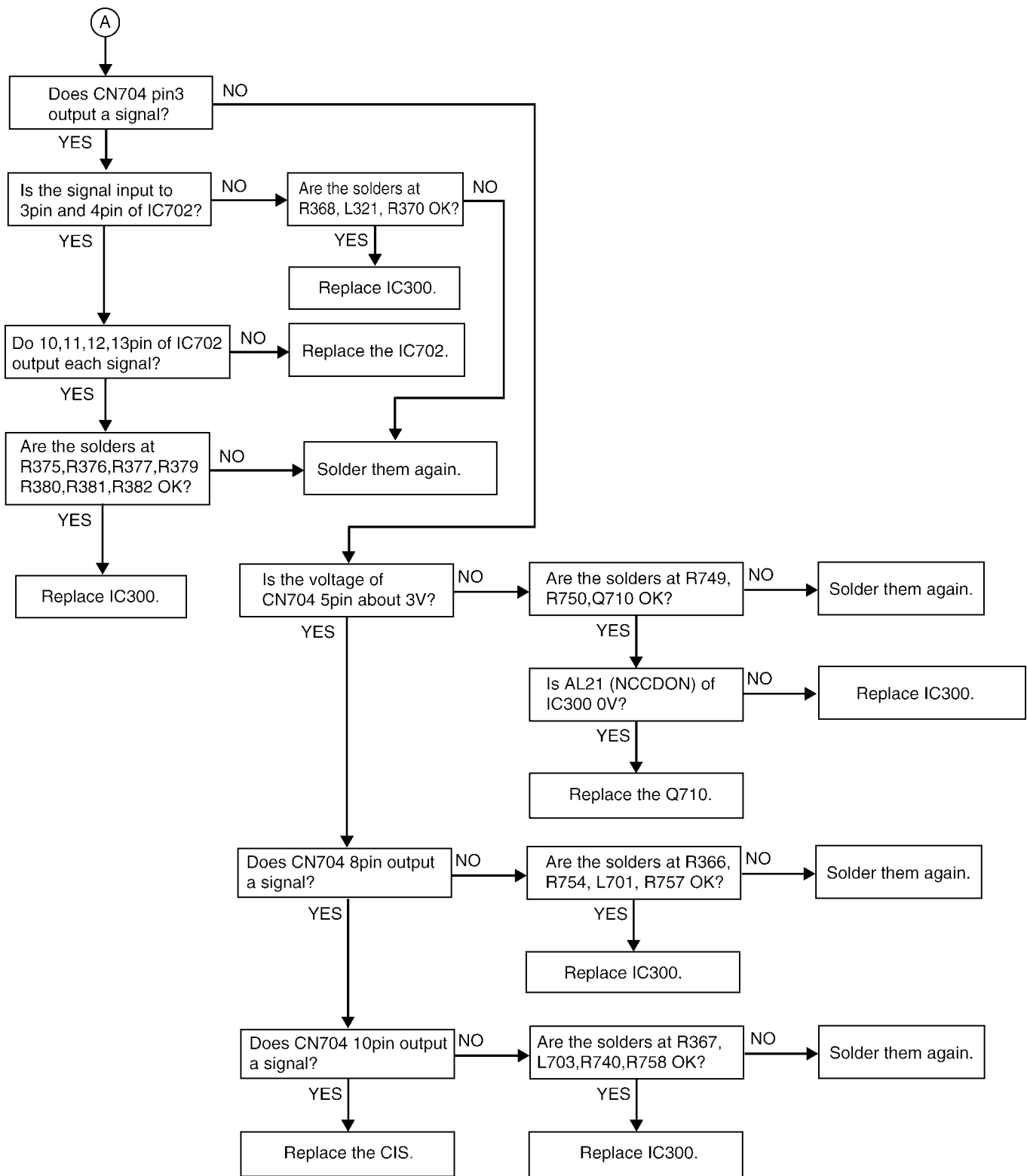
## 12.3.13.7. LSU Section



**CROSS REFERENCE:**  
**LSU (Laser Scanning Unit) Section (P.52)**

## 12.3.14. CIS Control Section





**CROSS REFERENCE:**  
**Test Functions (P.121)**

## 12.3.15. High Voltage Value Check Point

### Measurement Procedure

1. Turn off the power supply and remove the front cover of the main unit so that the HVU is revealed.  
(To remove the front cover, remove the rear and right cover in advance. (Refer to Covers(P.249).))
2. Remove the HVU and apply measuring lead wires to contact coils of CHG and TRA. Refer to fig 1. GRID and DEV can be measured directly but CHG and TRA need to apply a measuring lead wire to measure.
3. Be careful not to nip lead wires when installing the HVU. Refer to figure 3.
4. Install a developing machine in the main unit and close the left cover of the main unit.
5. Turn on the power supply. The initial operation starts when the power is turned on. Be careful that the high voltage will be output. Especially be careful of the measuring lead wires. Do not measuring during the initial operation.
6. After initial operation, apply a high voltage probe to desired terminals and the lead wires.  
Refer to figure 3 and 5 for the applying points of high voltage probe. Refer to fig 4 for the earth of high voltage probe.
7. The main unit enters the service mode and the push \*556\_00. (Don't push the SET button.)
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. Change the measuring points and repeat step 4~7.
11. Remove the lead wire when the measurement is finished.

### Each terminal's output voltage

No.	BIAS Name	Rated Output	Rated Output Range
1	CHG (Charge)	250 $\mu$ A	Output voltage about 4.7~5.7KV
2	GRID (Grid)	500V	500 $\pm$ 18V
3	DEV (Developing)	270V	270 $\pm$ 15V
4	TRA (Transfer)	750V	750 $\pm$ 70V

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

\* As for measuring TRA, start measuring within 9 seconds after pressing the SET button. The output value will be changed in 9 seconds.

\* The high voltage is output from each terminal during measurement. Be careful not touch the terminals and leads or not let the leads touch anything.



Fig. 1

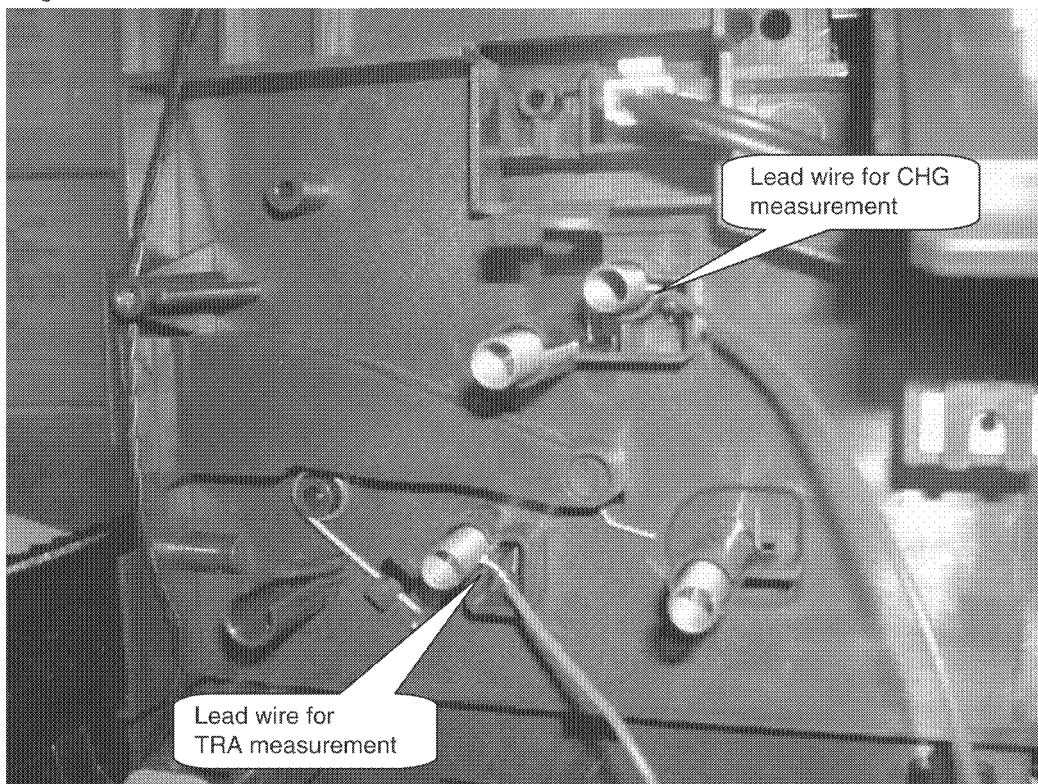


Fig. 2

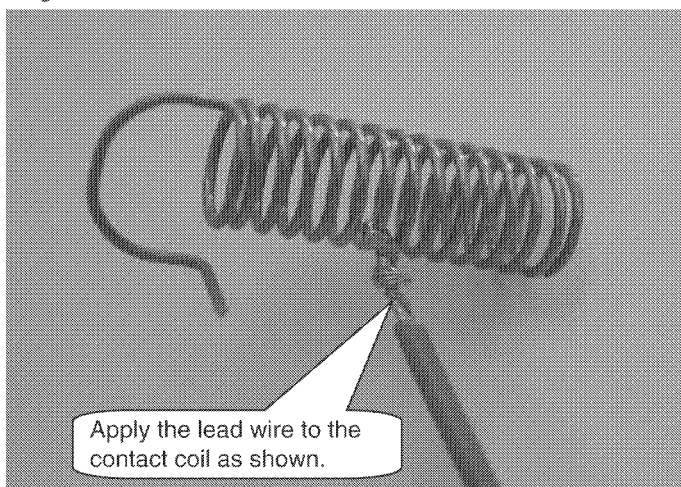




Fig. 3

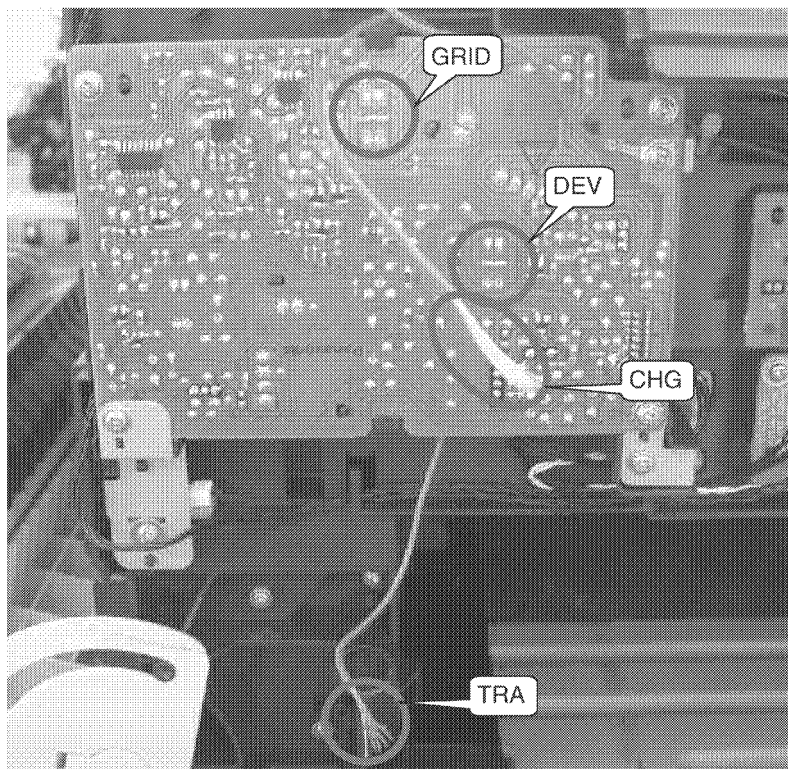


Fig. 4

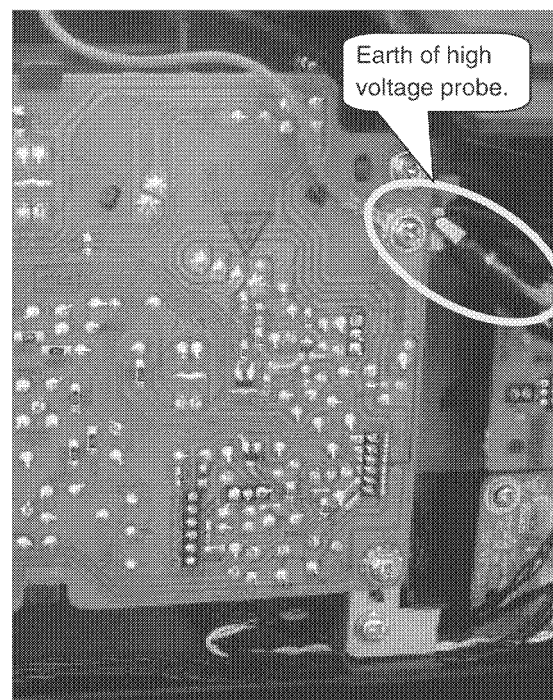
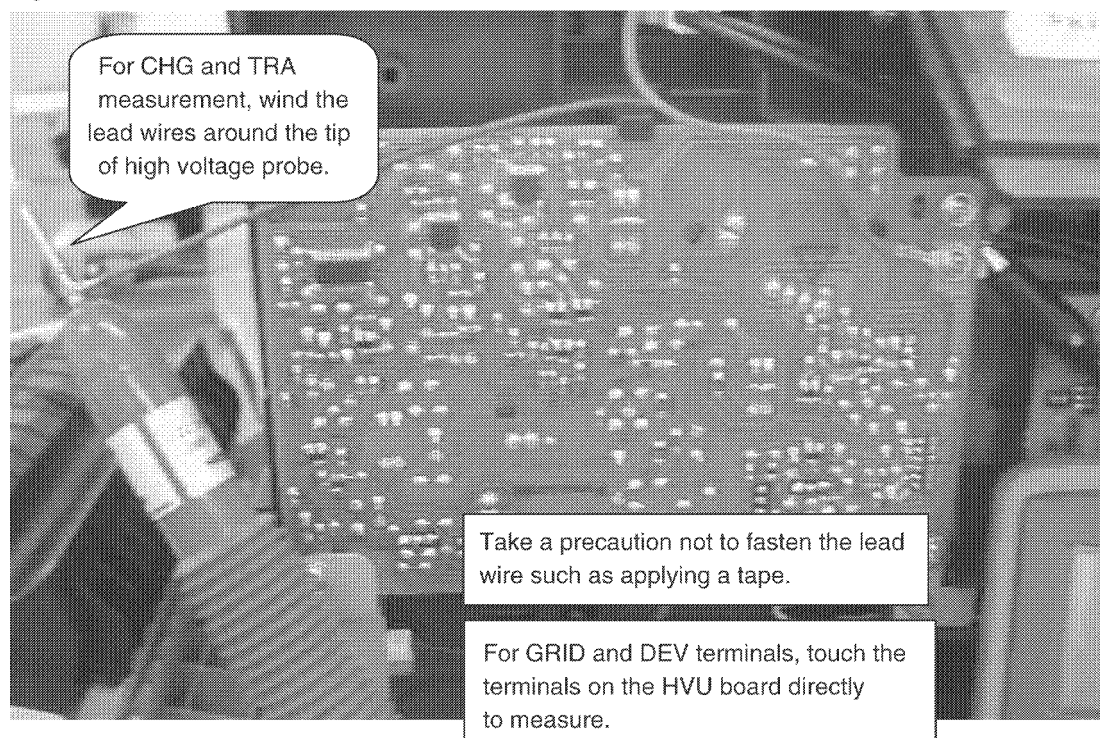
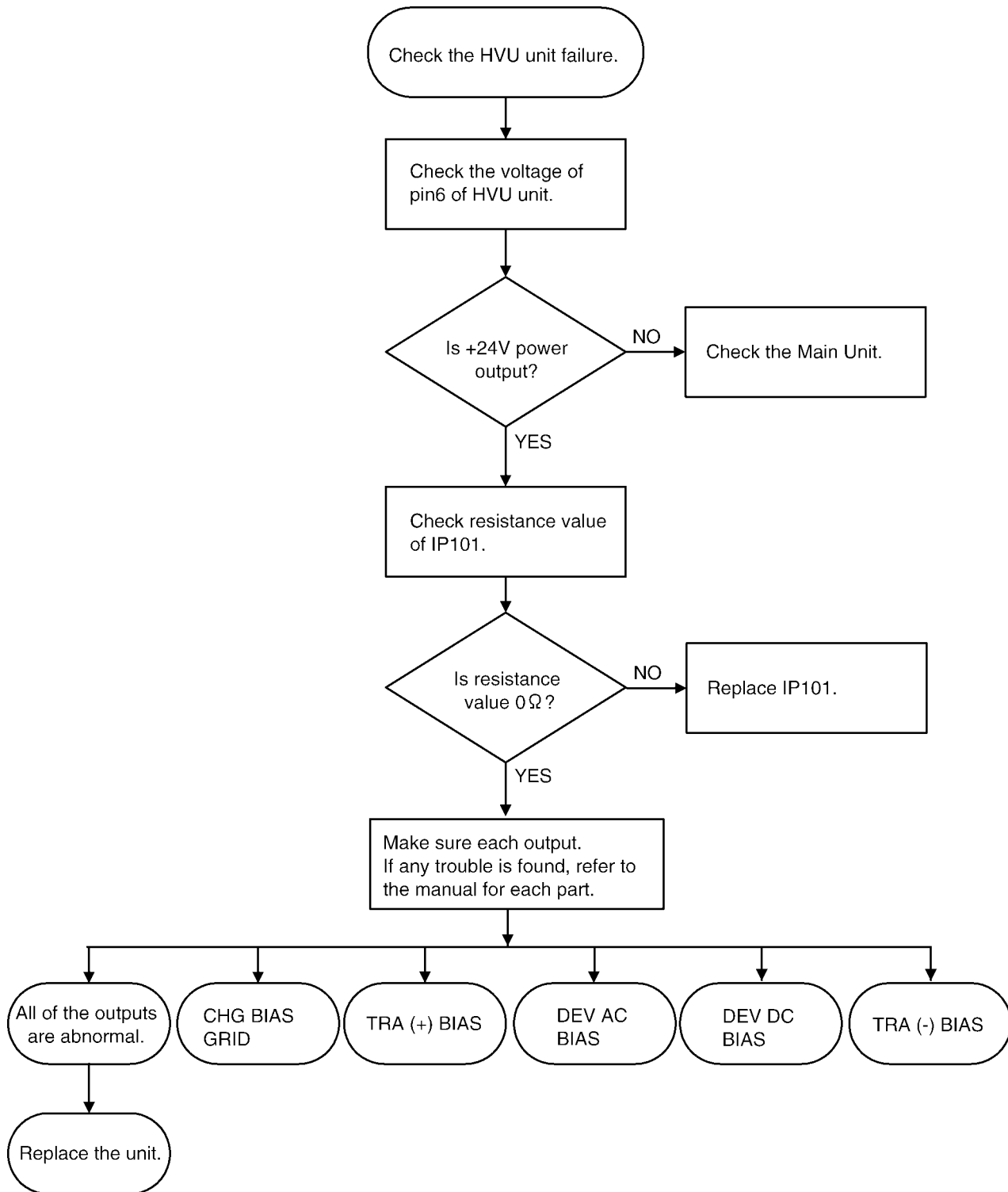


Fig. 5

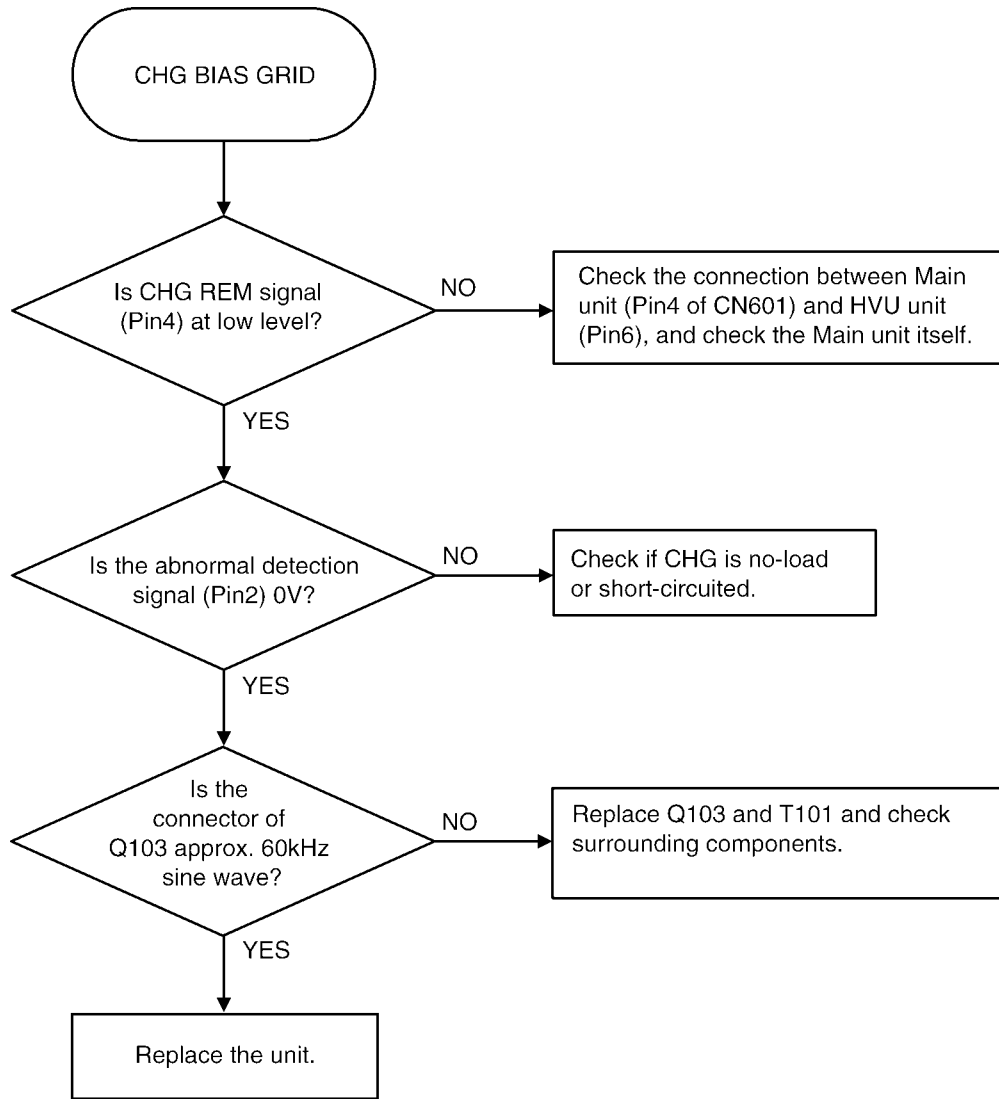


## 12.3.16. High Voltage Section

### 1. Main

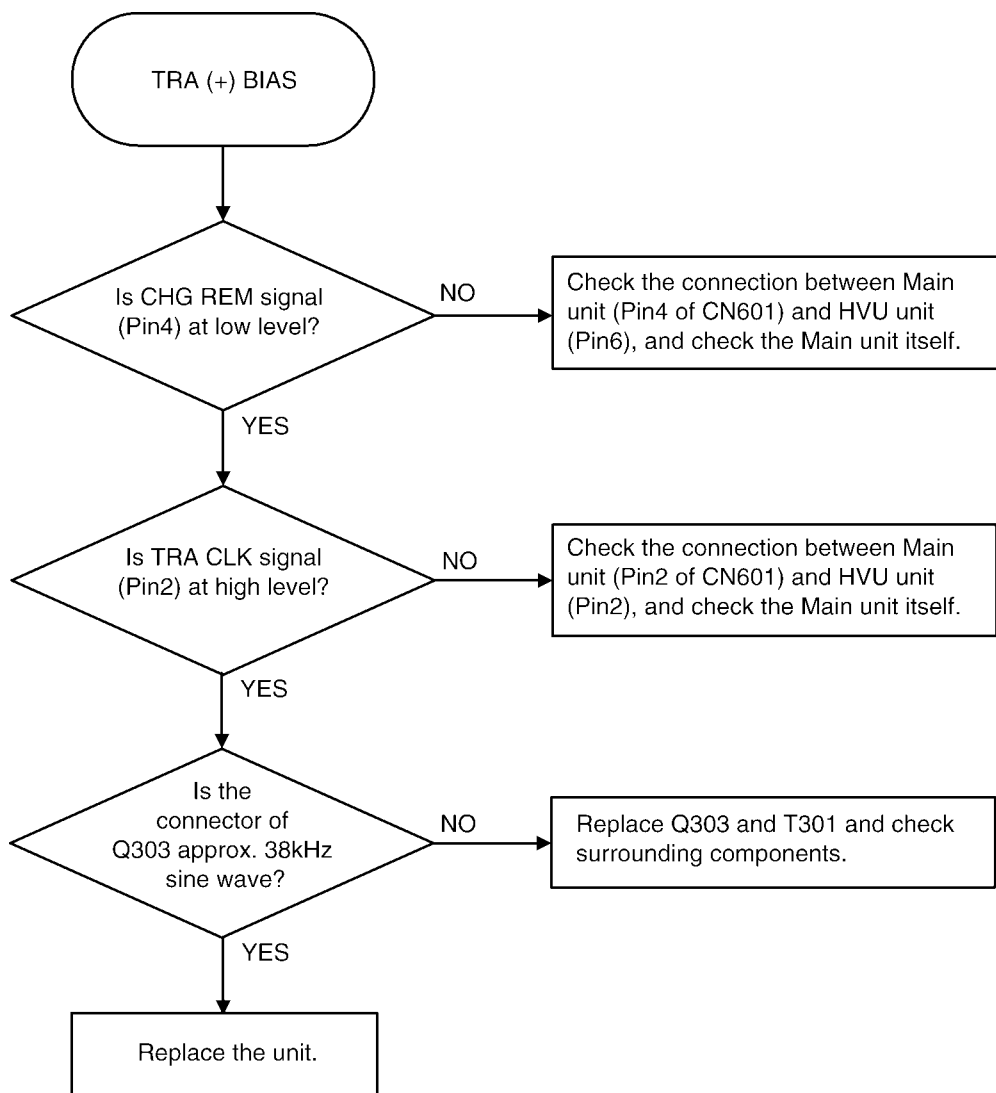


## 2. CHG, GRID

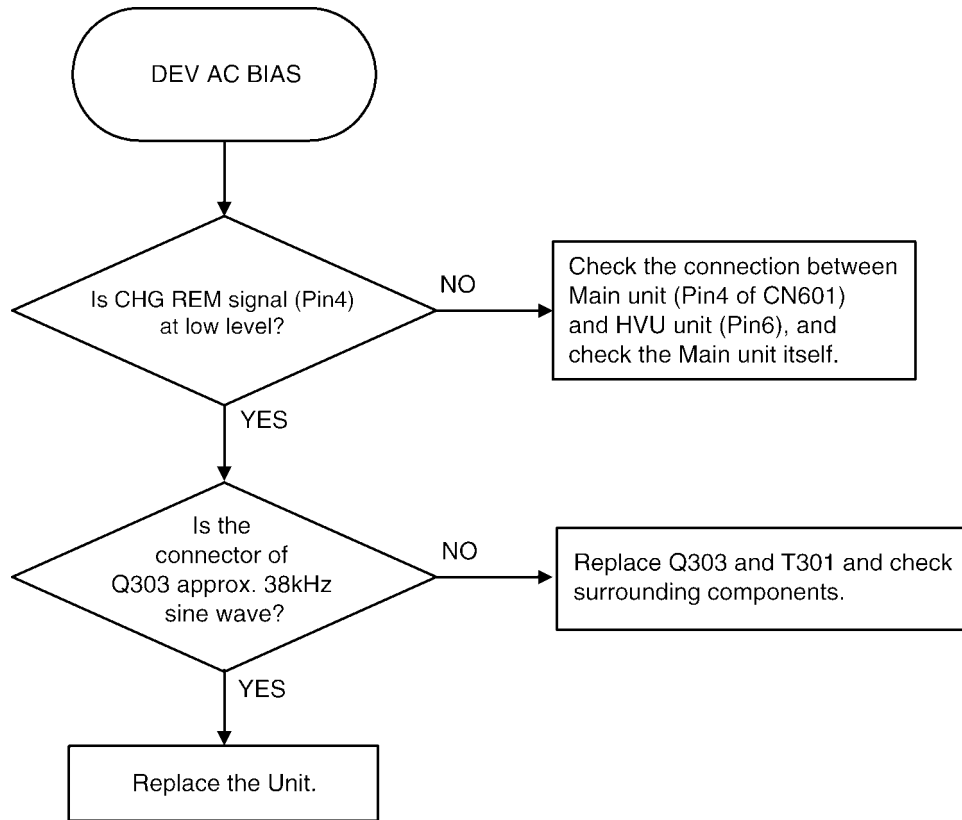




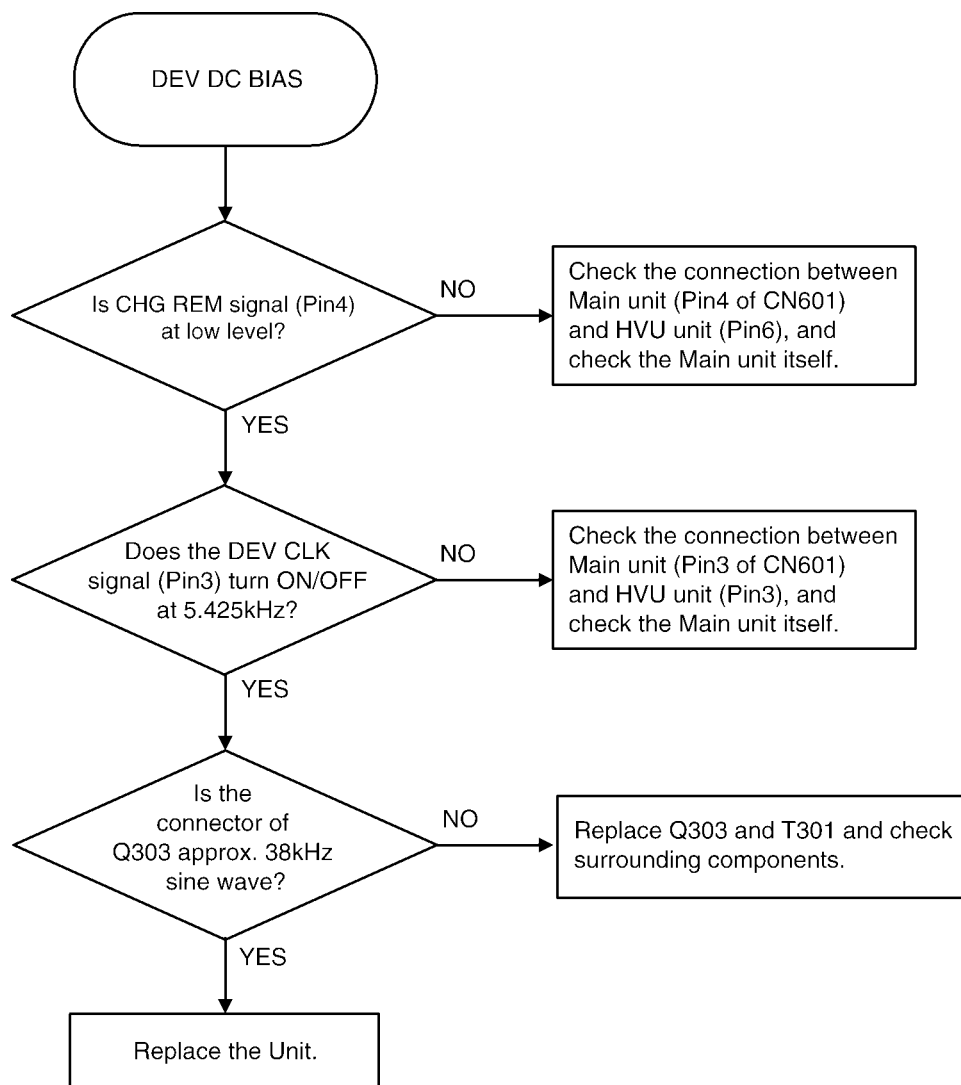
## 3. TRA (+)



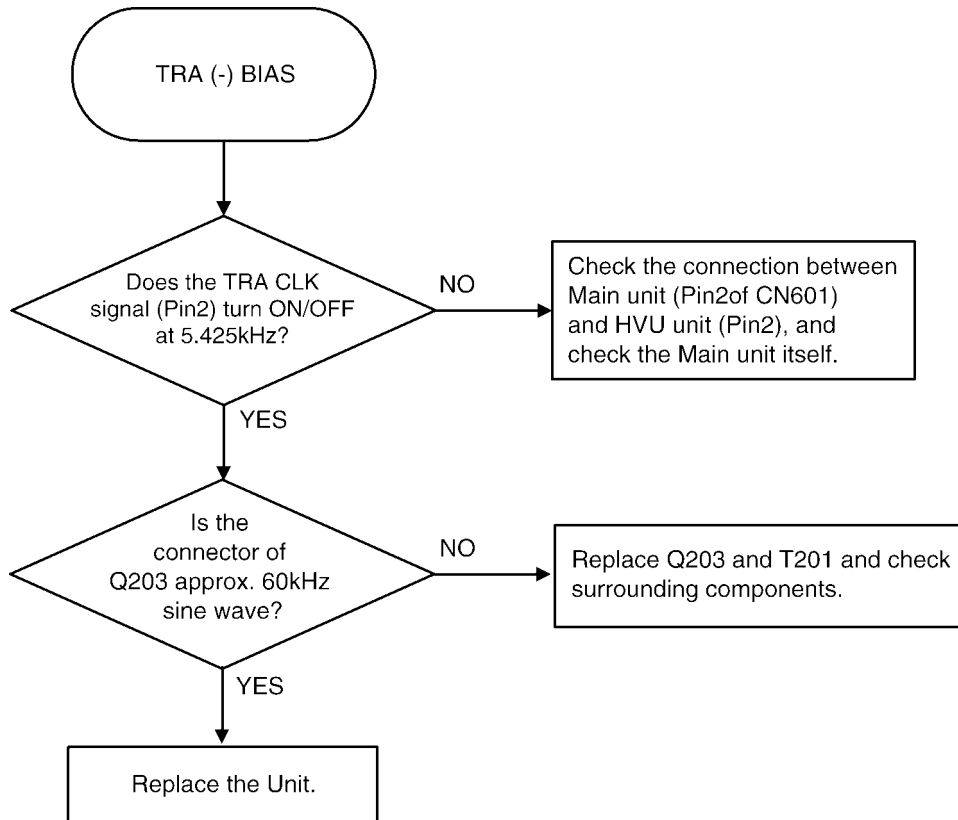
## 4. DEV AC



## 5. DEV DC



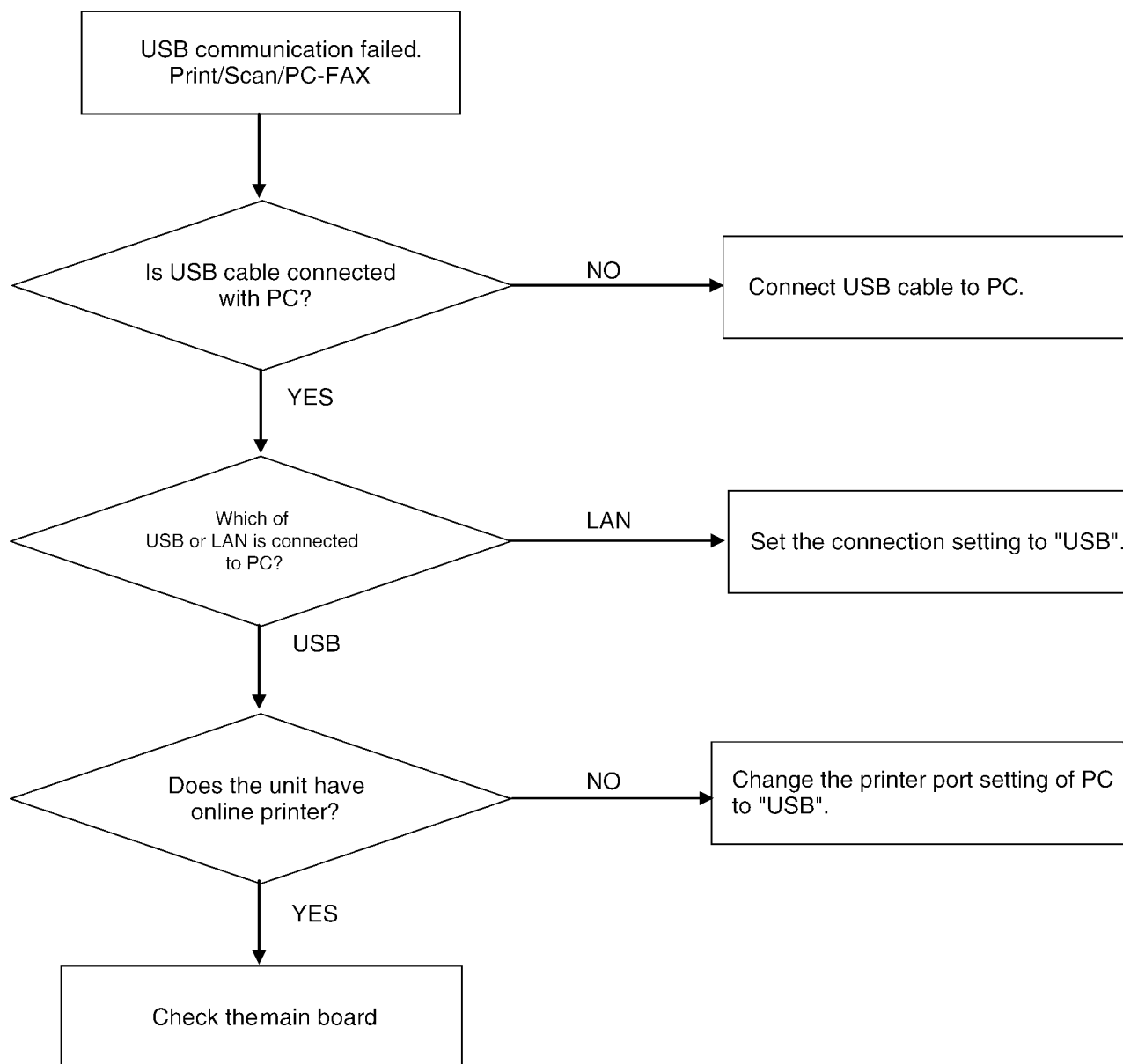
## 6. TRA (-)



## 12.3.17. USB Section

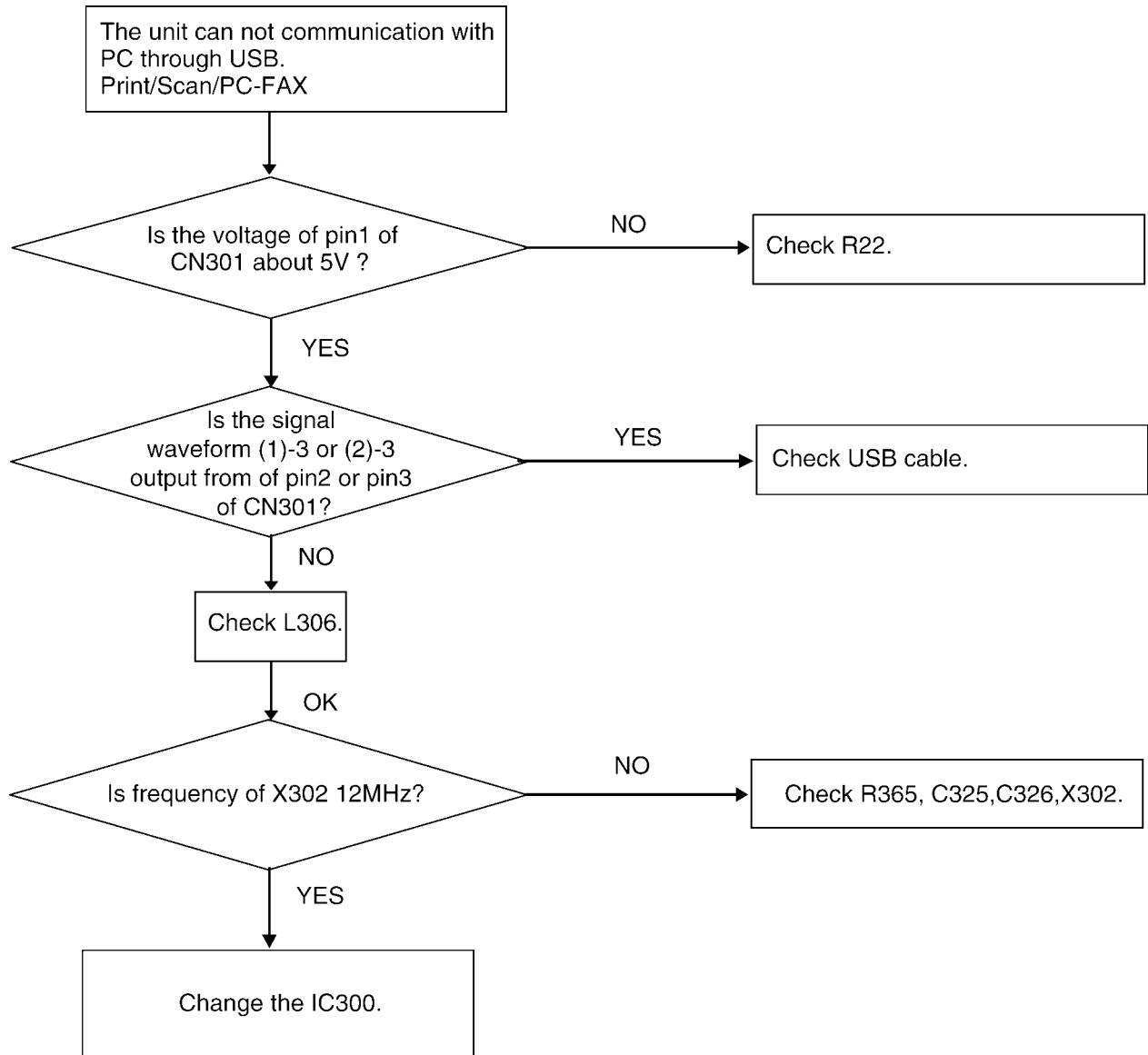
### Troubleshooting

#### 1. Confirmation of the PC settings

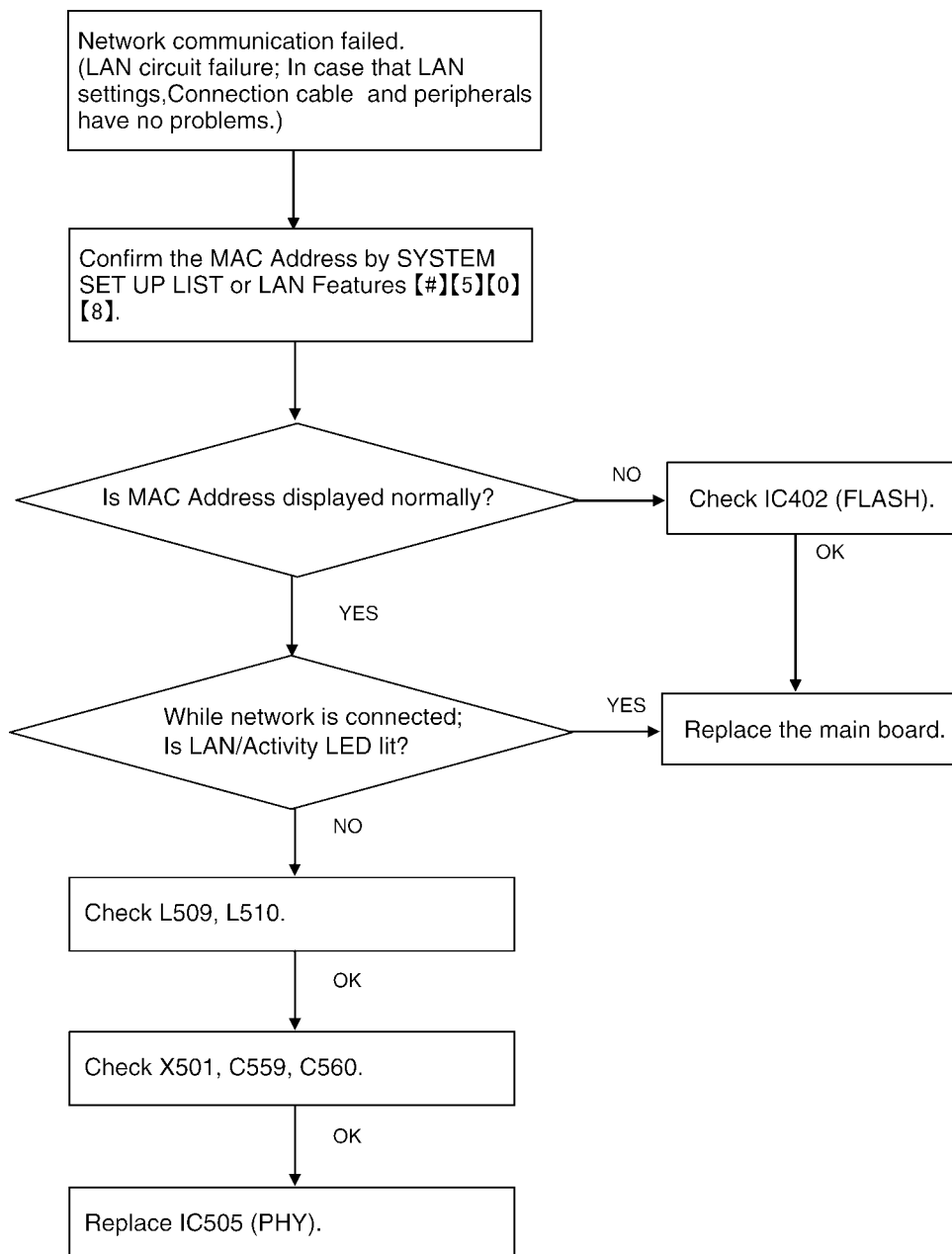




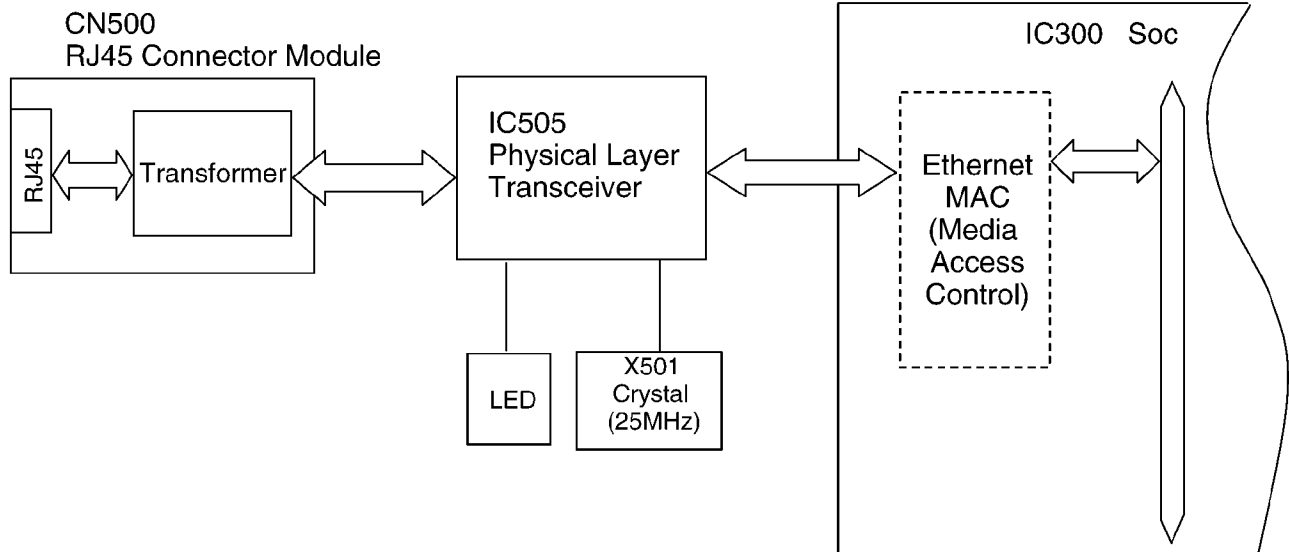
## 2. Confirmation of the main unit



## 12.3.18. LAN Section



## LAN Block Diagram

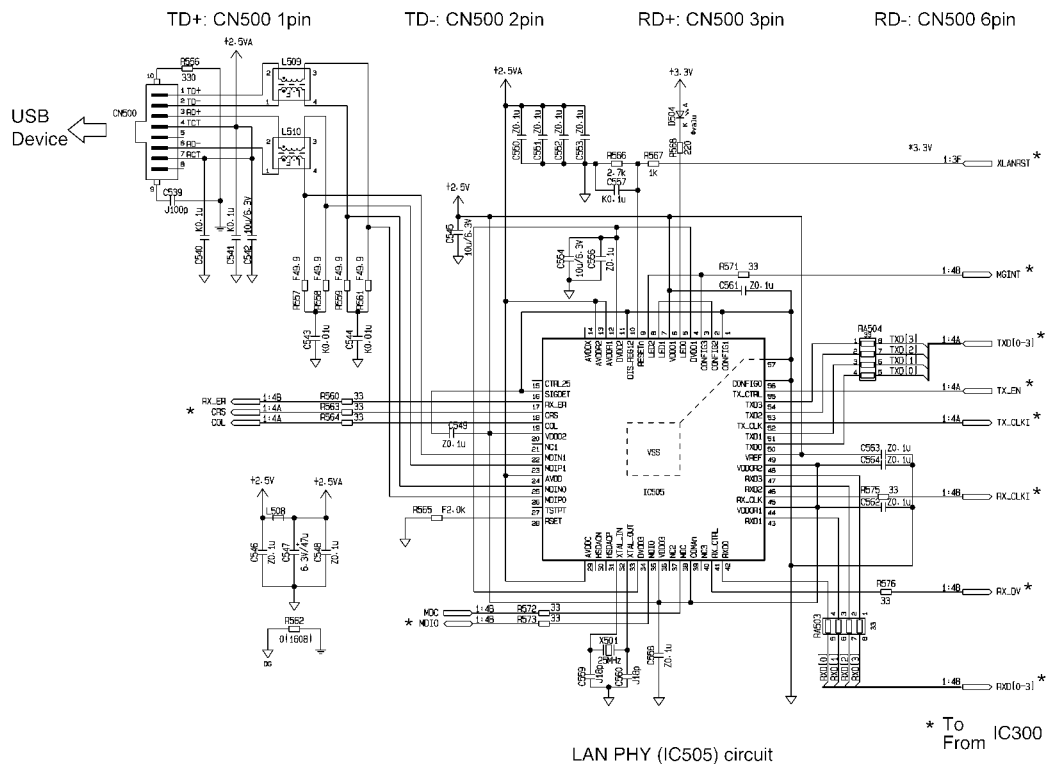


The PHY gives an FLP signal to decide transmission rate of connected USB device. (Figure 1-1,2)

When transmission rate was decided on 100Base-T, PHY transmits a wave pattern of a figure 2-1.

When transmission rate was decided on 10Base-T, the PHY transmits the wave pattern of the figure 3-1,3.

- The state that does not transmit data. (3-1)
- The state that transmits data. (3-3)



LAN PHY (IC505) circuit

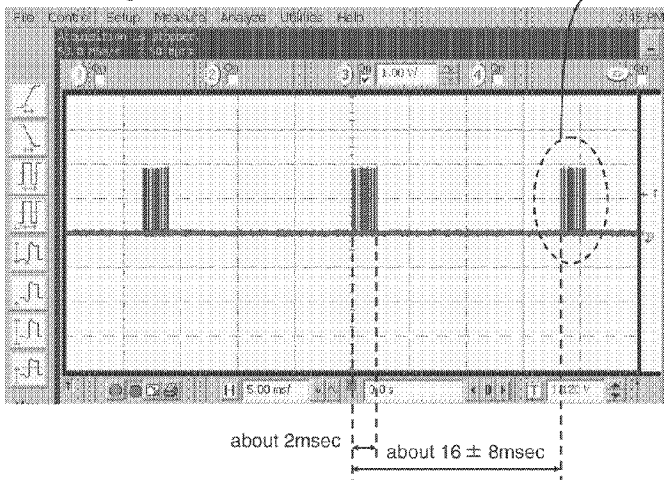
\* To  
From IC300

**LAN Circuit signal waveform (Normal)**

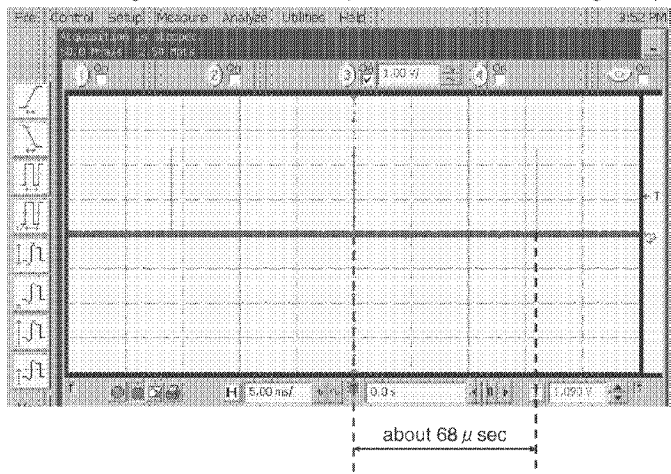
Transmitter waveform [TD+ ( CN500 pin1), TD- ( CN500 pin2) differential voltage] : Differential probe is used.

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

1-① Auto negotiation waveform 1

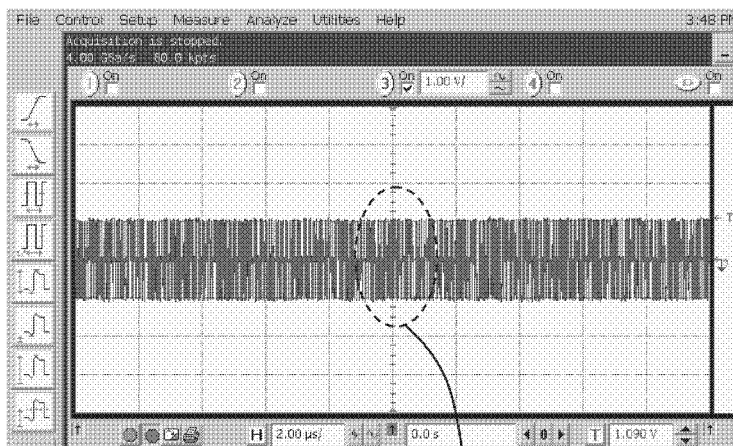


1-② Auto negotiation waveform 2 (A part of the waveform1 is magnified.)

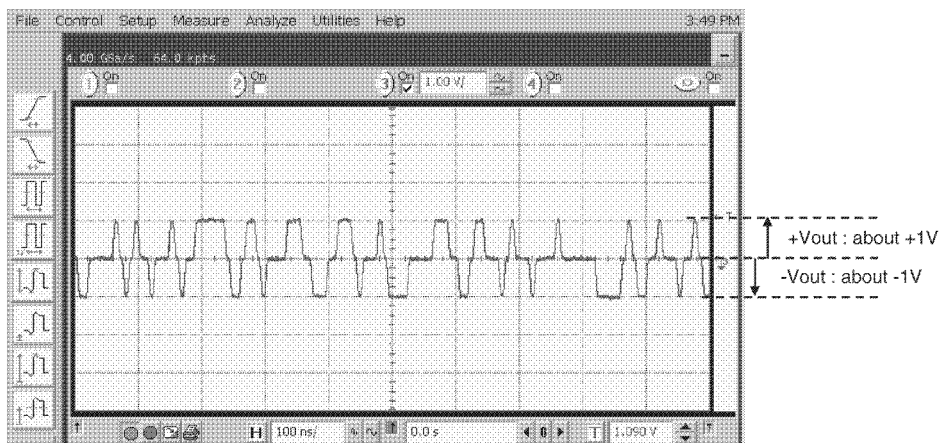


2. When 100Base-TX-enabled device is connected;

2-① 100Base-TX waveform 1

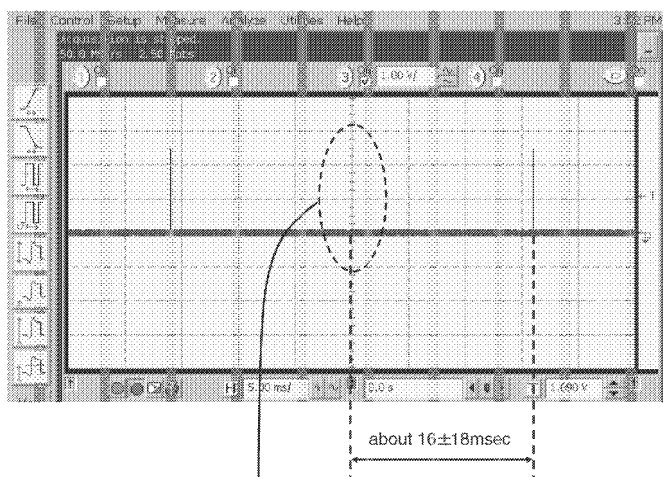
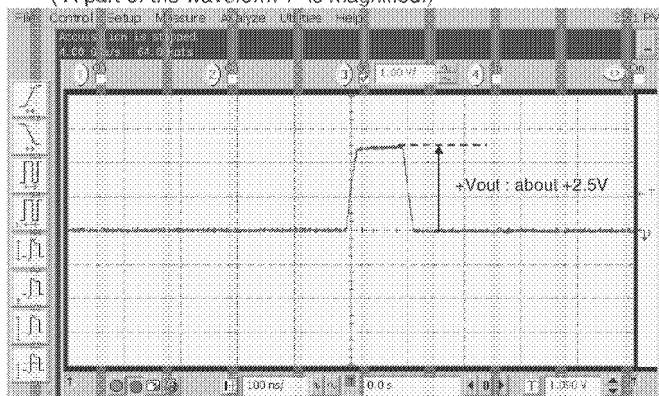


2-② 100Base-TX waveform 2 (A part of the waveform1 is magnified.)

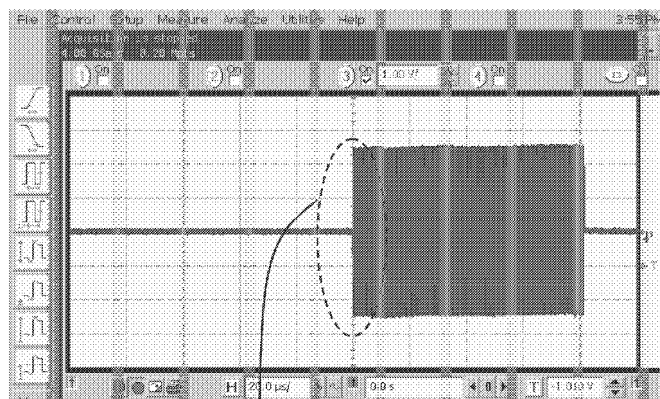
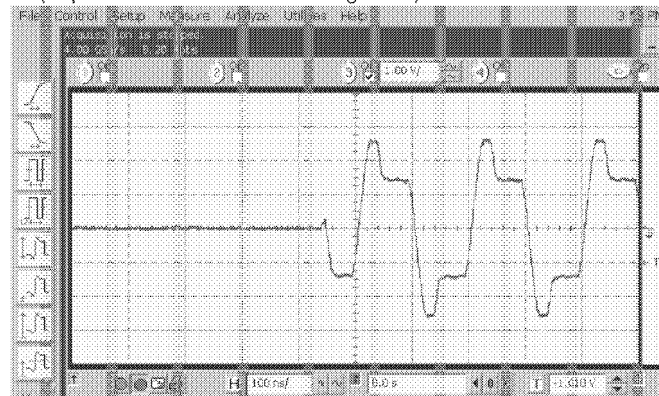


## 3. When 10Base-T-enabled device is connected.

## 3-① 10Base-T waveform 1 [ Link Pulse ]

3-② 10Base-T waveform 2 [ Link Pulse ]  
(A part of the waveform 1 is magnified.)

## 3-③ 10Base-T waveform 3 [ during data communication ]

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



## IC505(C1CB00003084) Pin Description

Pin No	Signal Name	Type	Description
1	CONFIG[1]	I	Hardware Configuration
2	CONFIG[2]	I	Hardware Configuration
3	CONFIG[3]	I	Hardware Configuration
4	DVDD		Digital core supply 1.2V
5	LED[0]	O	Parallel LED outputs
6	VDDO	Power	2.5V or 3.3V non-MAC Interface digital I/O supply
7	LED[1]	O	Parallel LED outputs
8	LED[2]/Interrupt	O	Parallel LED outputs
9	RESETn	I	Hardware reset
10	DIS_REG12	I	1.2V Regulator Disable
11	DVDD		Digital core supply 1.2V
12	AVDDR	Power	1.2V Regulator supply 2.5V
13	AVDDR	Power	1.2V Regulator supply 2.5V
14	AVDDX	Power	2.5V Regulator supply 3.3V
15	CTRL25	O	2.5V Regulator Control
16	SIGDET	I	tied either high or low
17	RX_ER	I/O, Z	MII Receive Error
18	CRS	O, Z	MII Carrier Sense
19	COL	O, Z	MII Collision
20	VDDO	Power	2.5V or 3.3V non-MAC Interface digital I/O supply
21	NC		No Connect
22	MOIN[1]	I/O	Media Dependent Interface[1]
23	MDIP[1]	I/O	Media Dependent Interface[1]
24	AVDD	Power	Analog supply. 2.5V
25	MDIN[0]	I/O	Media Dependent Interface[0]
26	MDIP[0]	I/O	Media Dependent Interface[0]
27	TSTPT	O	Test point
28	RSET	I	Constant voltage reference
29	AVDDC	Power	Analog supply 2.5V
30	HSDACN	O	Test Pin
31	HSDACP	O	Test Pin
32	XTAL_IN	I	Reference Clock 25MHz
33	XTAL_OUT	O	Reference Clock 26MHz
34	DVDD		Digital core supply 1.2V
35	MDIO	I/O	management data
36	VDDO	Power	2.5V or 3.3V non-MAC Interface digital I/O supply
37	NC		No Connect
38	MDC	I	clock reference for the serial management interface
39	COMAn	I	COMA Control
40	NC		No Connect
41	RX_CTR/RX_DV		MII Receive Data Valid
42	RXD[0]	O, Z	MII Receive Data
43	RXD[1]	O, Z	MII Receive Data
44	VDDOR	Power	2.5V or 3.3V MAC Interface digital I/O supply
45	RX_CLK	O, Z	MII Receive Clock
46	RXD[2]	O, Z	MII Receive Data
47	RXD[3]	O, Z	MII Receive Data
48	VDDOR	Power	2.5V or 3.3V MAC Interface digital I/O supply
49	VREF	I	MAC Interface input voltage reference
50	TXD[0]	I	MII Transmit Data
51	TXD[1]	I	MII Transmit Data
52	TX_CLK	I/O, Z	MII Transmit Clock
53	TXD[2]	I	MII Transmit Data
54	TXD[3]	I	MII Transmit Data
55	TX_CTRL/TX_EN		MII Transmit Enable
56	CONFIG[0]	I	Hardware Configuration

## NOTE:

I/O:Input and Output

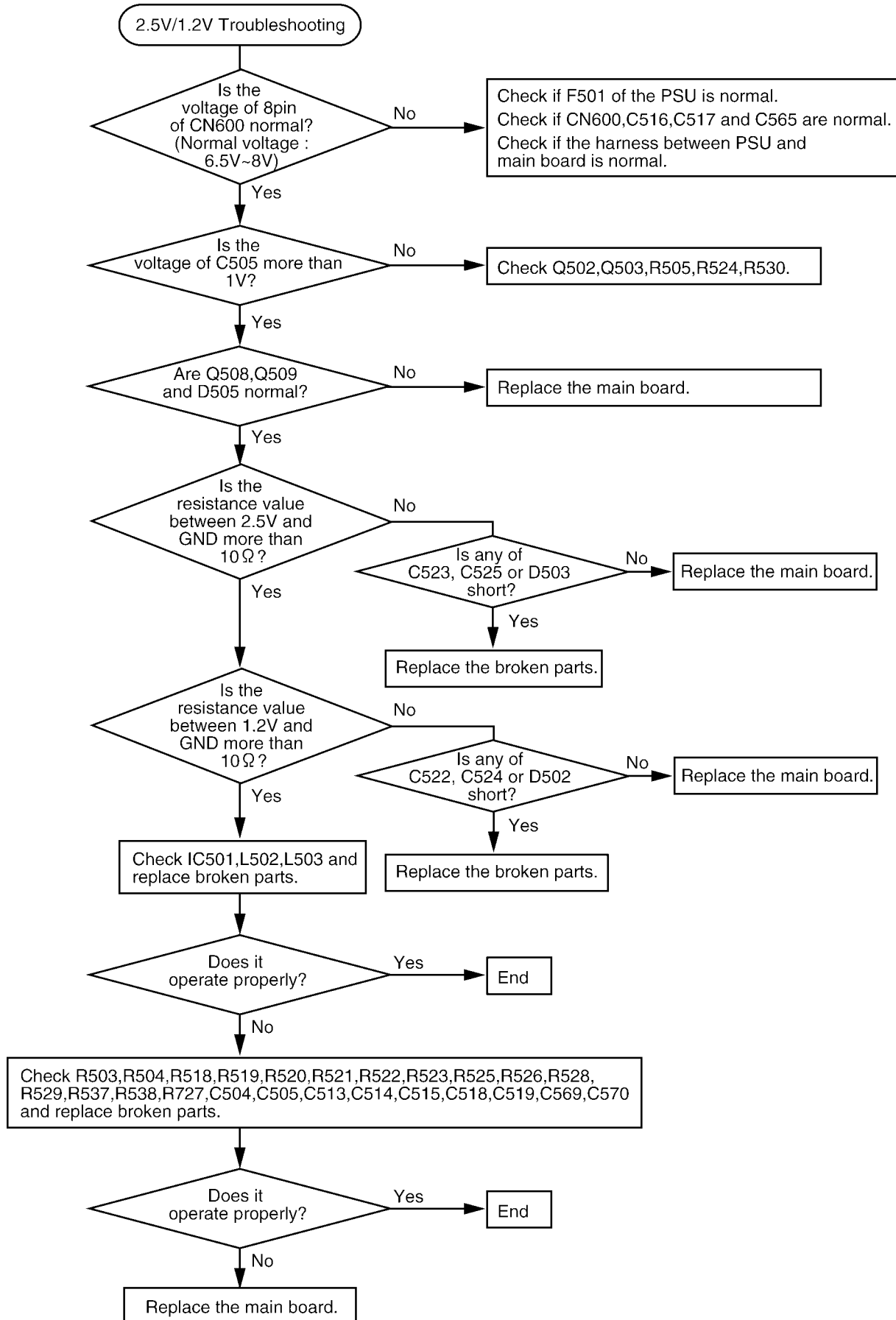
I:Input only

O:Output only

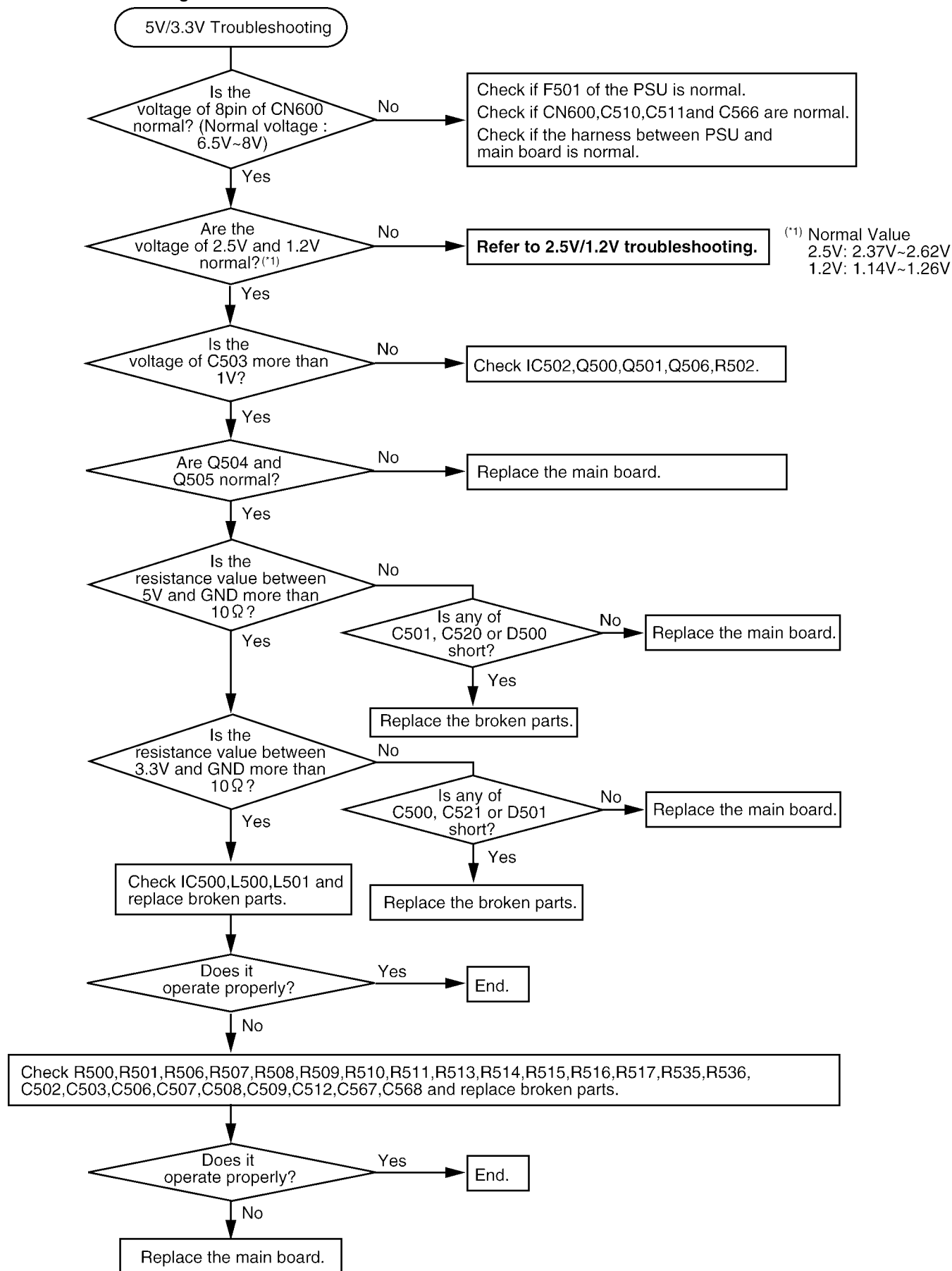
Z:Tri-state output

## 12.3.19. Main Board Section

### 2.5V/1.2V Troubleshooting Guide



## 5V/3.3V Troubleshooting Guide





## 12.3.20. Power Supply Board Section

### 12.3.20.1. KEY COMPONENTS FOR TROUBLESHOOTING

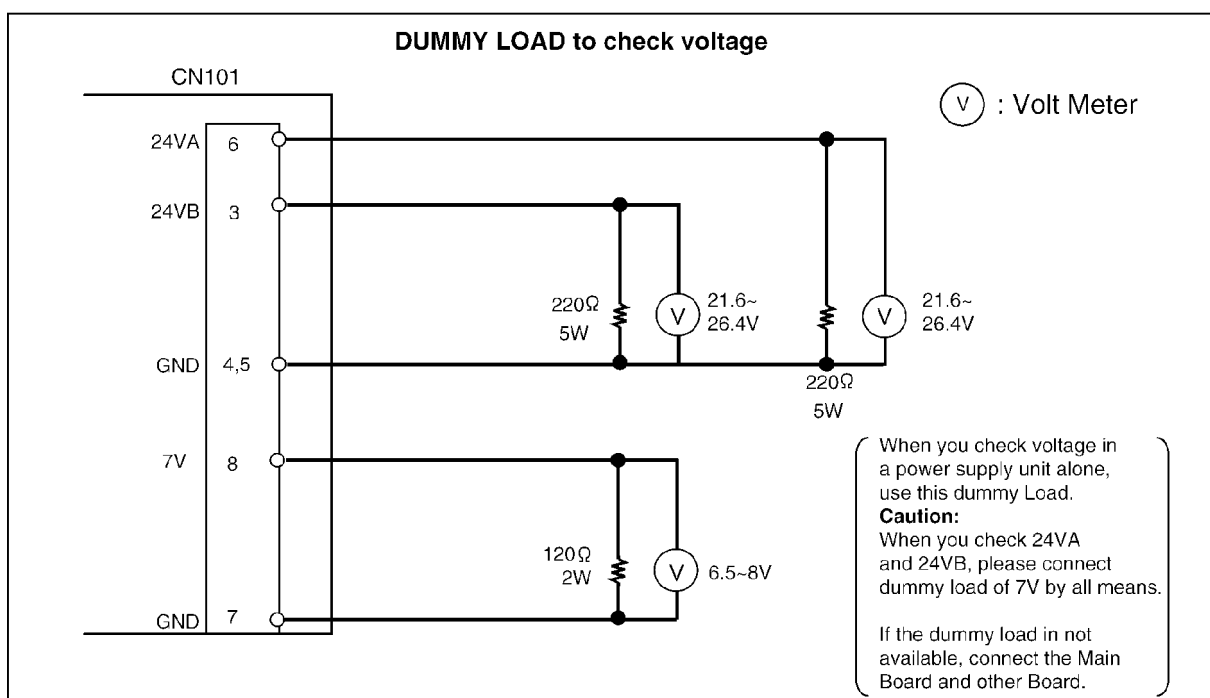
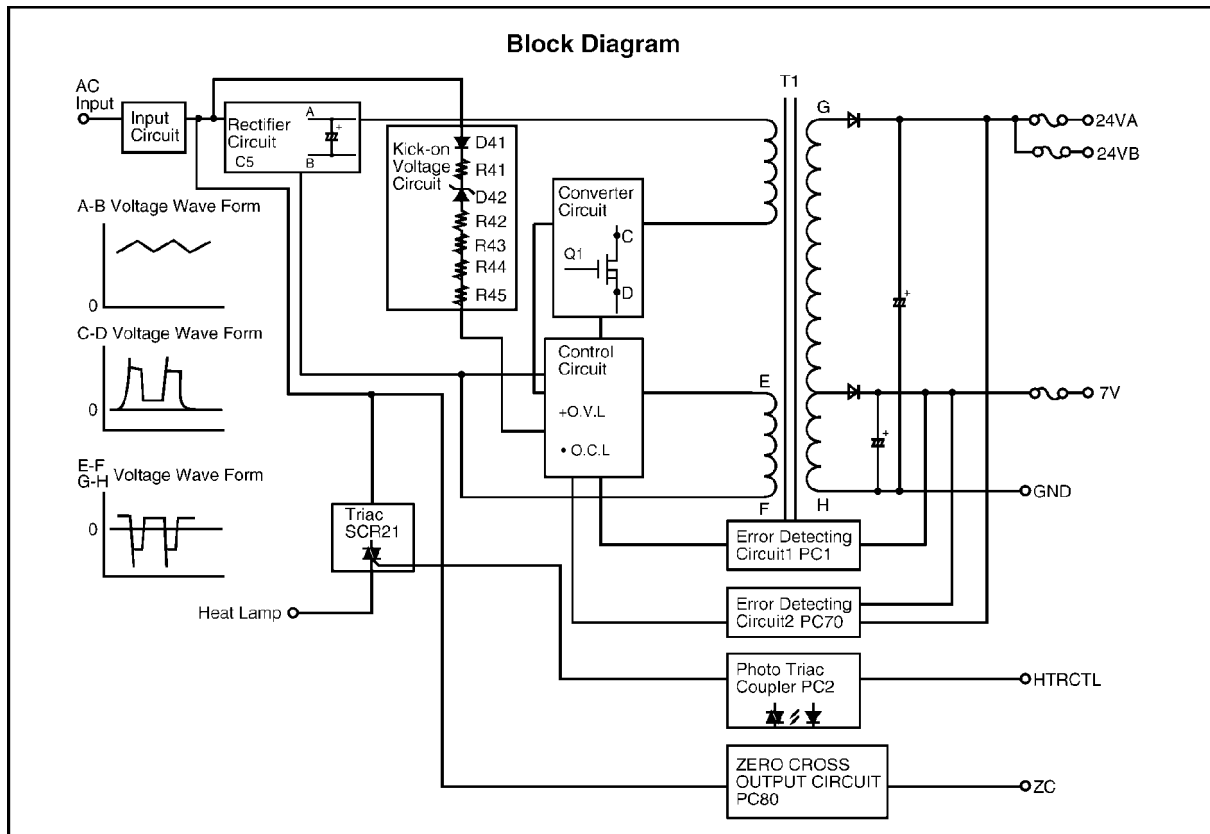
Check the following parts first: F1, F2, D10, C5, Q1 and IC1.

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.

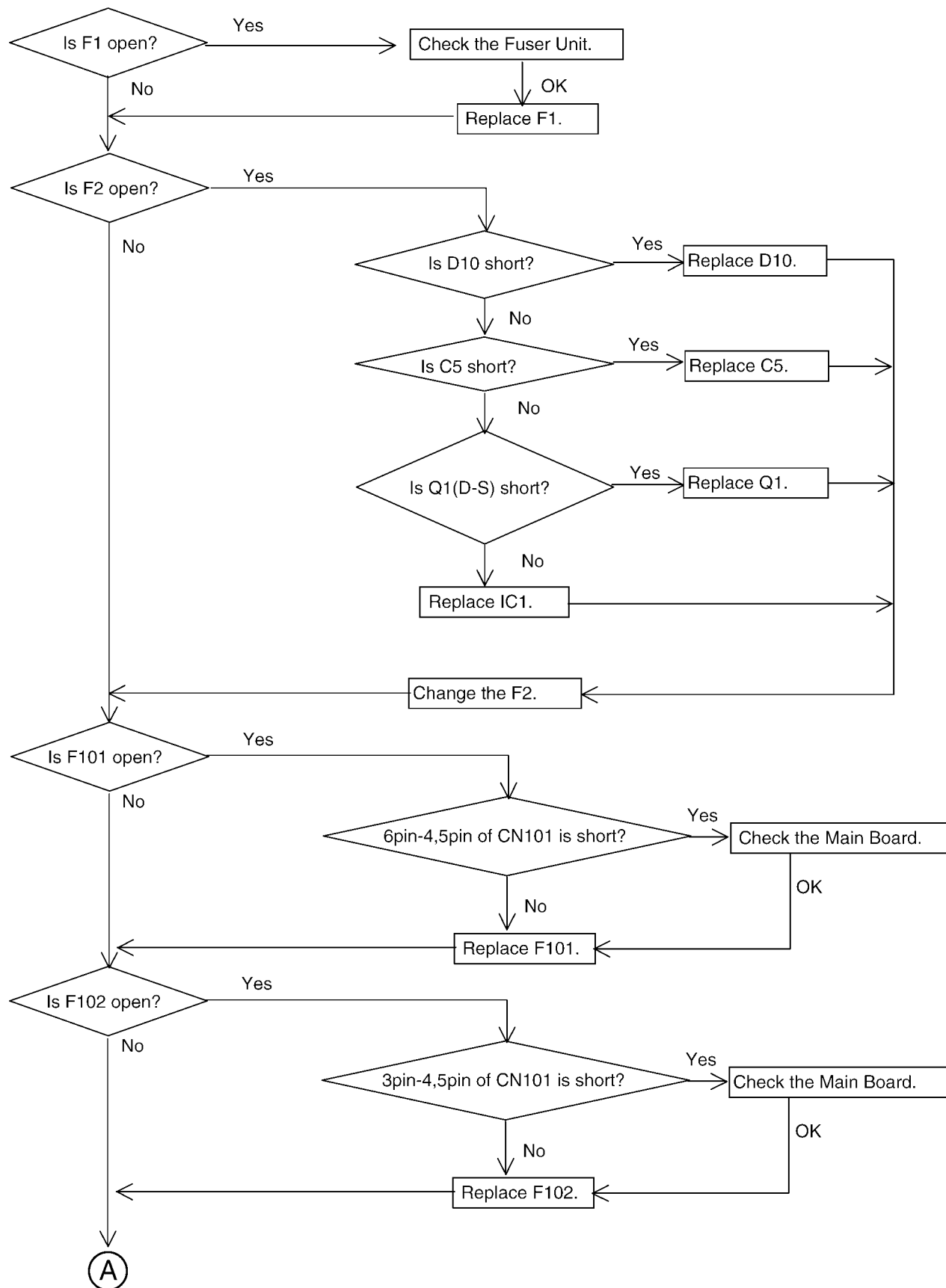
#### Caution:

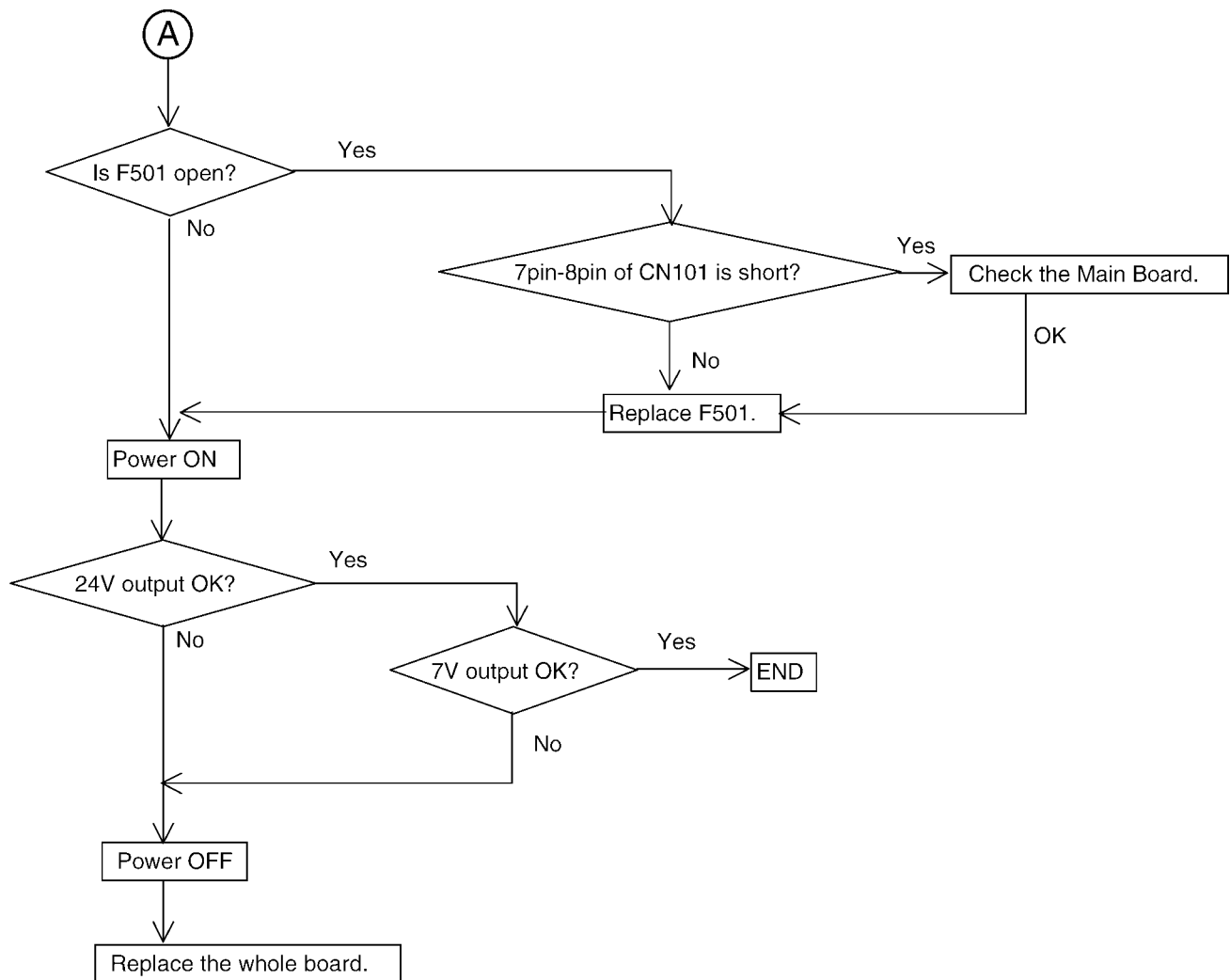
If you find a melted fuse in the unit, do not turn on the power until you located and repair the faulty parts (except for the fuse); otherwise the fuse will melt again and you cannot pinpoint the faulty point.

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.



## 12.3.20.2. Troubleshooting Flow Chart





### 12.3.20.3. Broken Parts Repair Details

(D10)

If D10 is short-circuit, F2 will melt (open).

In this case, replace all of the parts (D10, F2).

(Q1)

The worst case of Q1 is a short-circuit between the Drain and Gate because damage expands to the peripheral circuit of Q1.

This is due to a very high voltage through the Gate circuit, which is composed of IC1. You should change all of the parts listed as follows.

- F2, Q1, IC1

(C5)

If over voltage (Approx 150V) was supplied for a power supply unit, C5 will be broken.

(F101)

If F101 is melted (open), check the 24 Voltage lines of the Main Board and others.

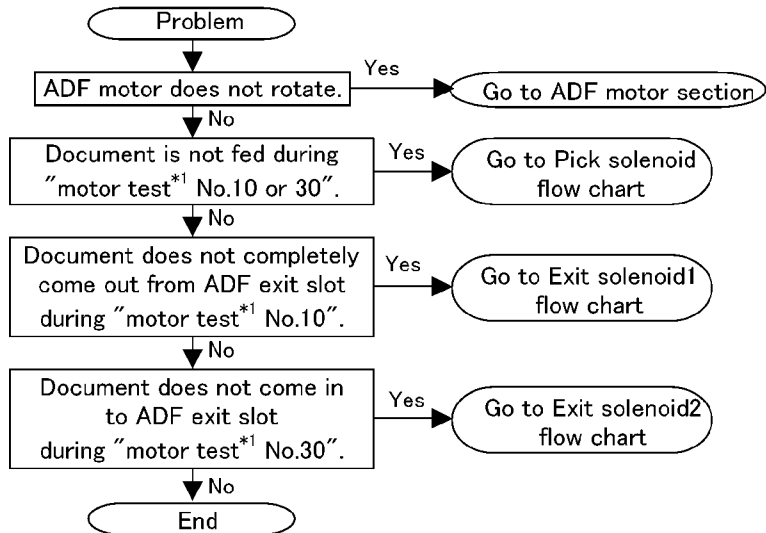
(F102)

If F102 is melted (open), check the 24 Voltage lines of the Main Board and others.

(F501)

If F501 is melted (open), check the 7 Voltage lines of the Main Board and others.

## 12.3.21. ADF Solenoid Section

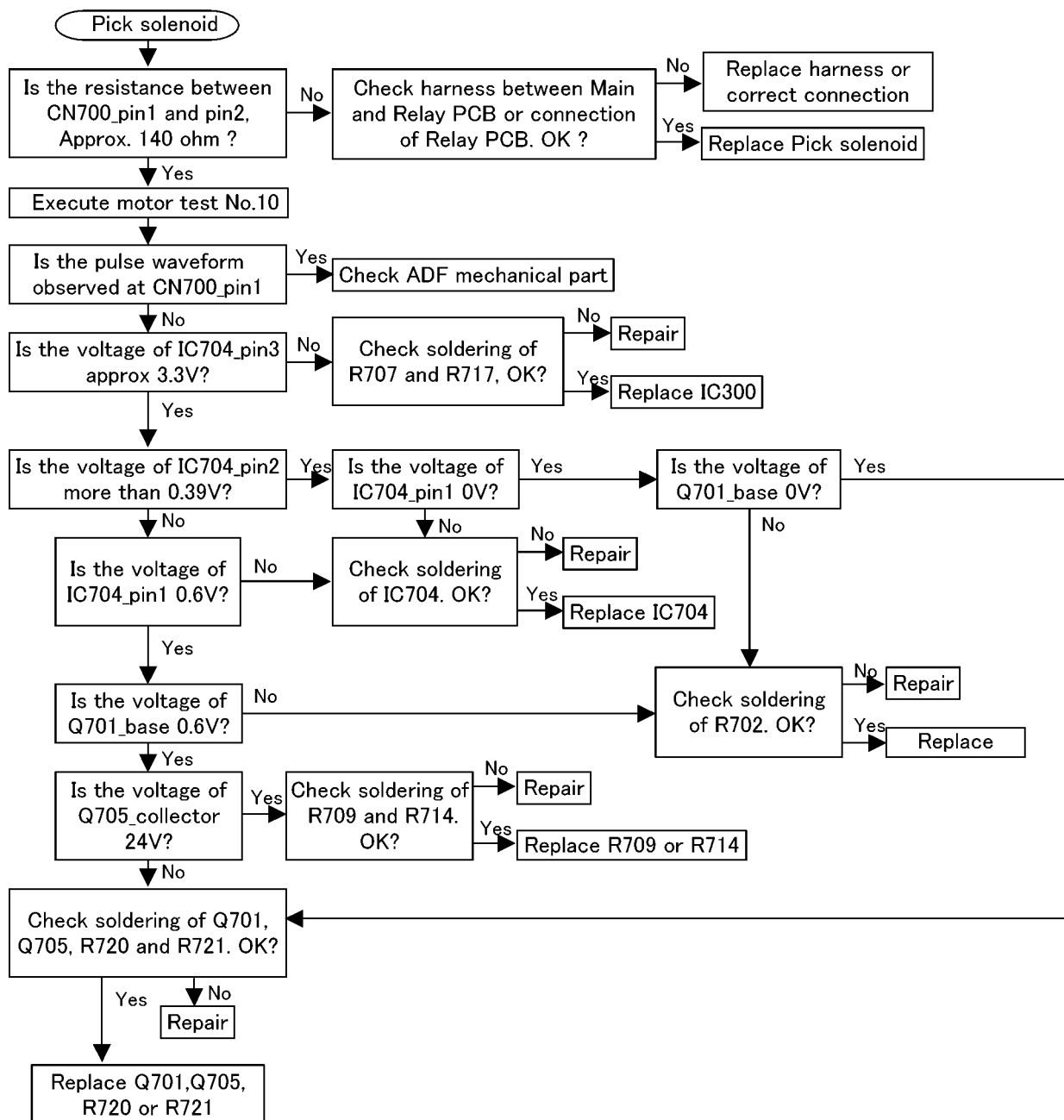


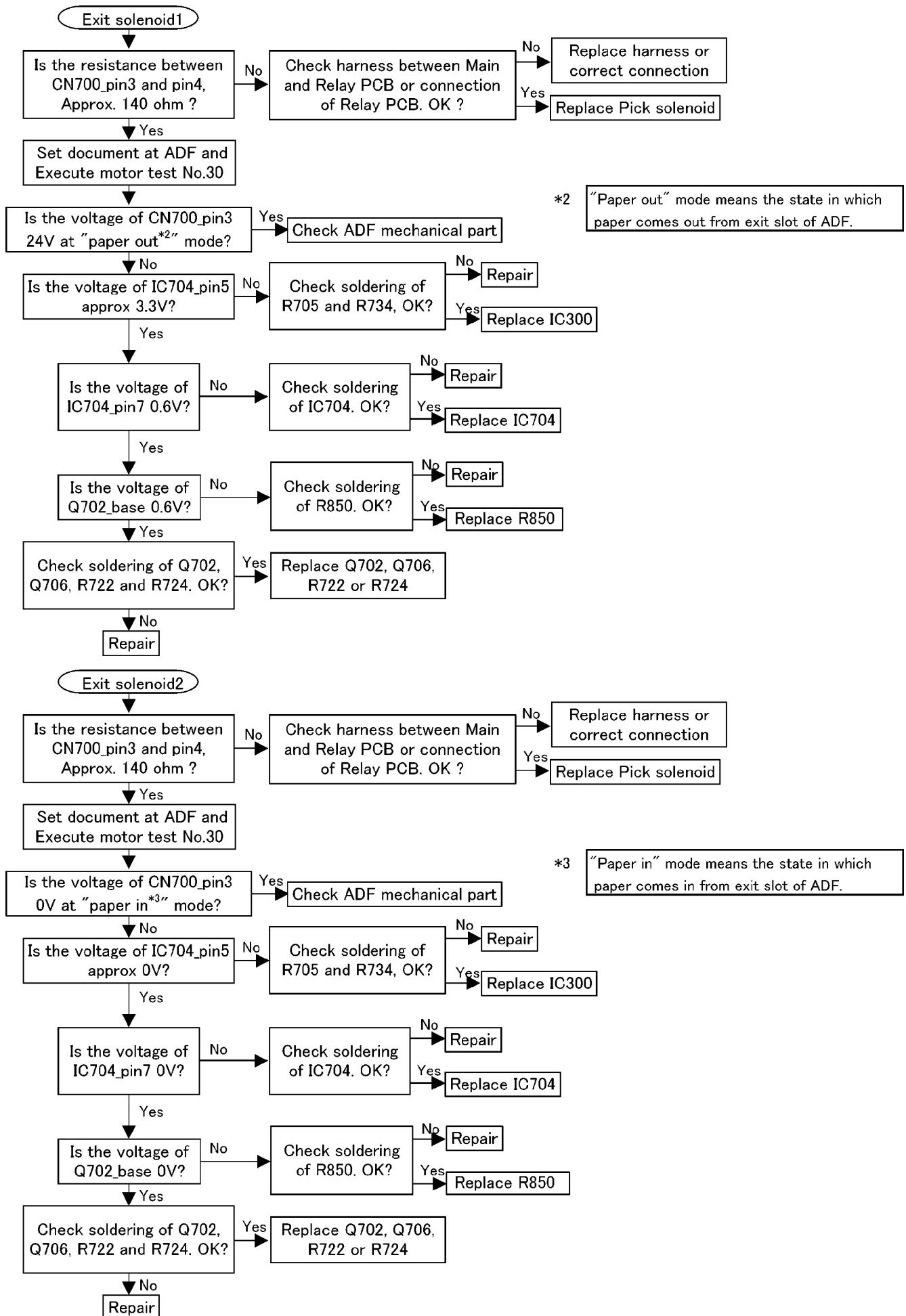
\*1

Motor test can be executed by pushing following keys.

"Menu" → "9", "0", "0", "0" → "\*" → "5" "5" "6"  
 → "1", "0"  
 (single side continuous paper feed mode)  
 or → "3", "0"  
 (double side paper feed mode)

At motor test N.30, document must be set to ADF.

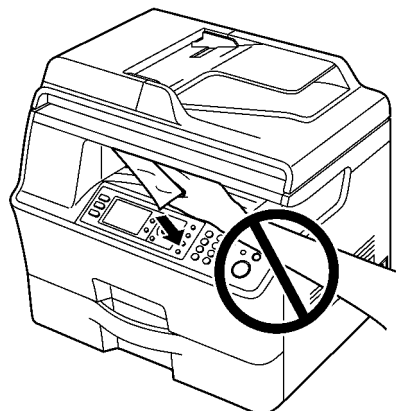




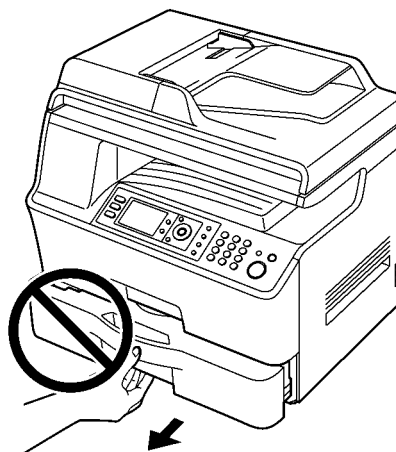
## 12.4. Recording Paper Jam

**Caution:**

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



- Do not open the paper input tray before opening the left cover as the jammed paper may be pulled and the jam may get worse.

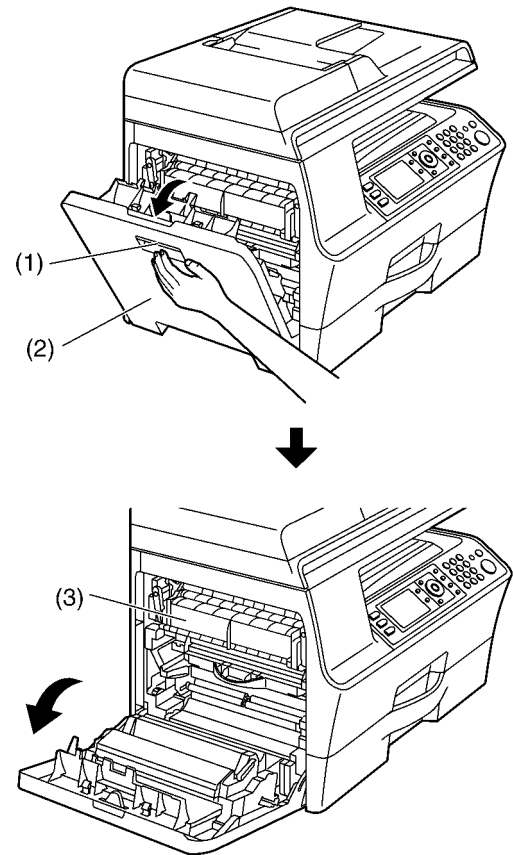


### 12.4.1. When the recording paper has jammed inside of the unit

The display will show the following.

- "Paper Jammed"
- "Open Left Cover"
- "Hot Caution"
- "Paper Jammed"
- ↑
- "Open Left Cover Hot Caution"

1. • Hold the left cover open lever (1), and then pull open the left cover (2).



**Caution:**

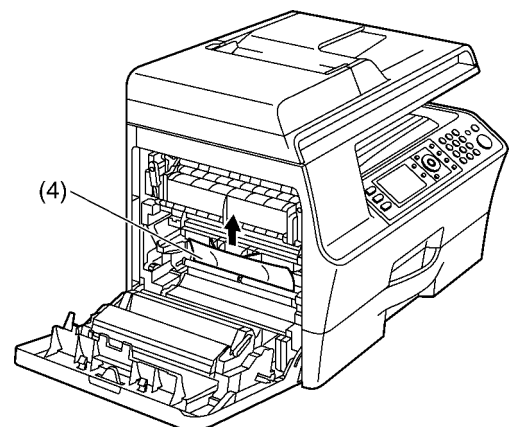
- During or immediately after printing, the fuser unit (3) gets hot. Wait until the fuser unit cools down before removing the jammed paper.

2. Remove the jammed paper.
  - If paper is jammed inside the left cover, see case 1 to case 5.
  - If paper is not jammed inside the left cover, see case 6.

**Case 1:**

When the recording paper has jammed near the rollers:

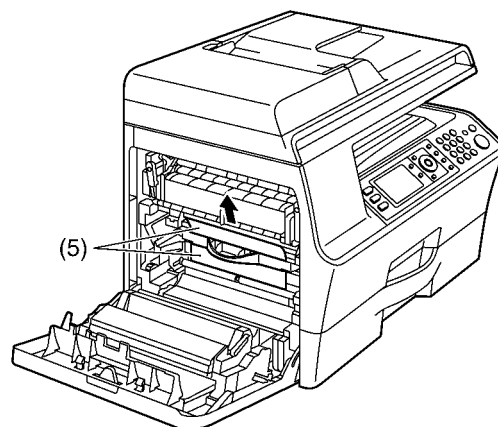
Remove the jammed paper (4) carefully by pulling it upward.



**Case 2:**

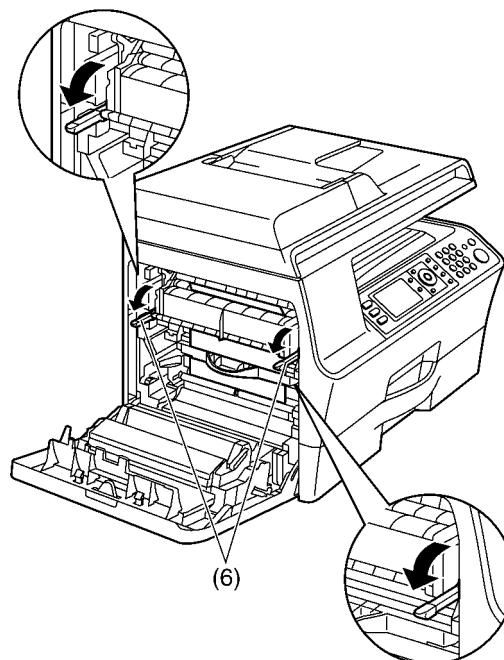
When the recording paper has jammed near the drum and toner unit:

Remove the jammed paper (5) carefully by pulling it upward.

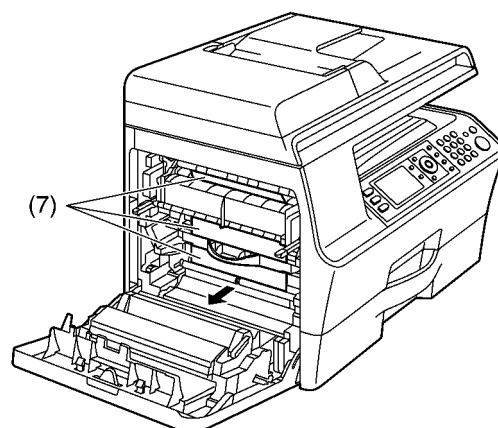
**Case 3:**

When the recording paper has jammed near the fuser unit:

1. Push down both green levers (6) until they stop.

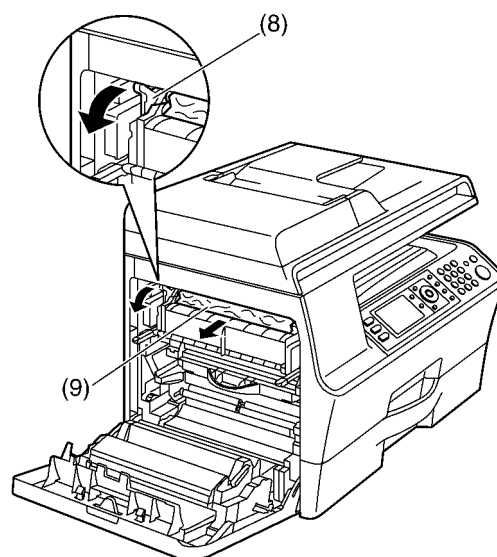
**2. When the recording paper has jammed inside the fuser unit:**

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

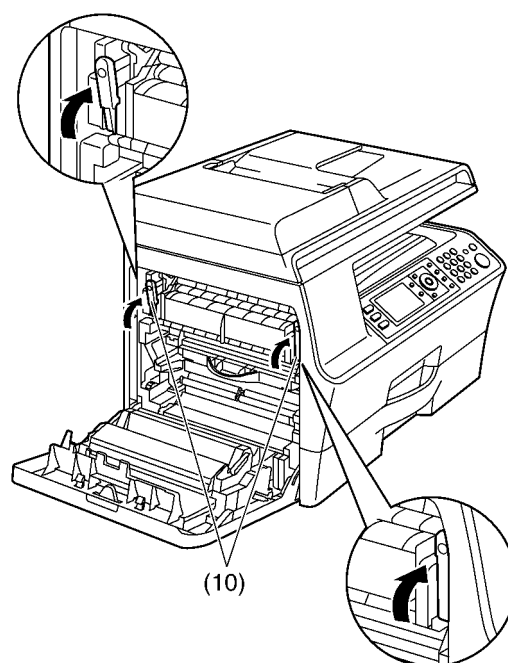




**When the recording paper has jammed over the fuser unit:**  
Push down the upper green lever (8), and remove the jammed paper (9) carefully by pulling it toward you.

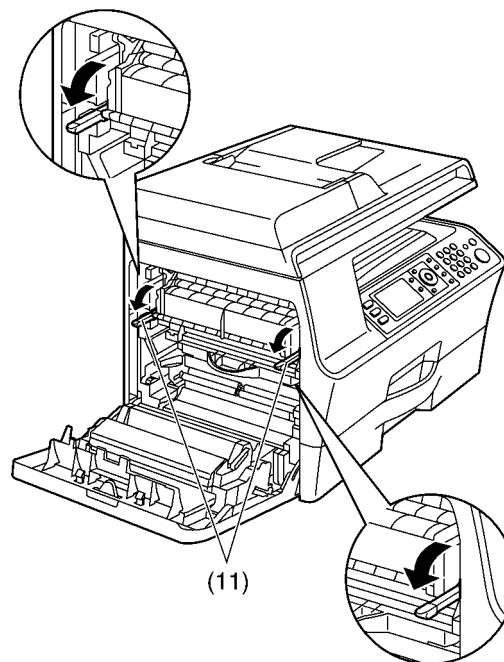


3. Push up the green levers (10) to the original position.

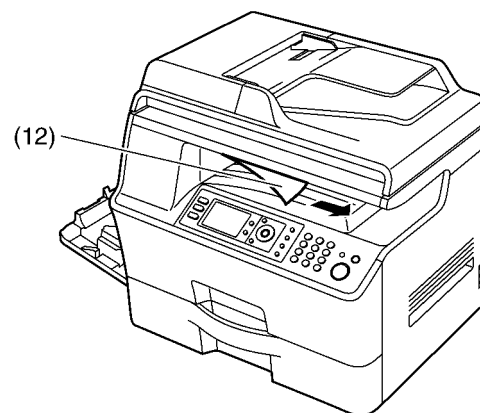


**Case 4:**  
**When the recording paper has jammed near the recording paper exit:**

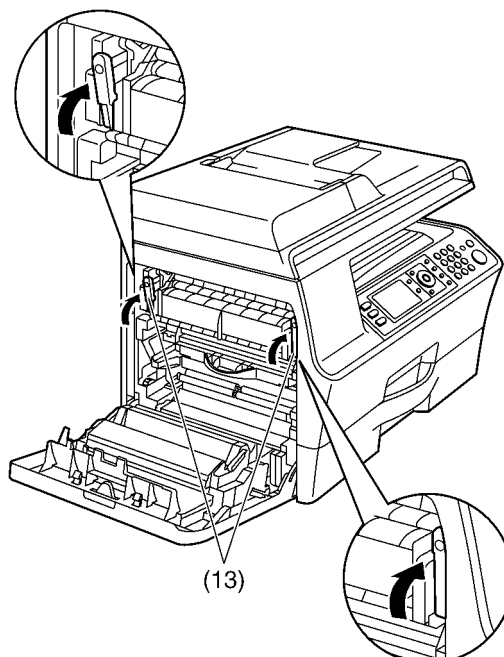
1. Push down both green levers (11) until they stop.



2. Remove the jammed paper (12) carefully by pulling it rightward.



3. Push up the green levers (13) to the original position.

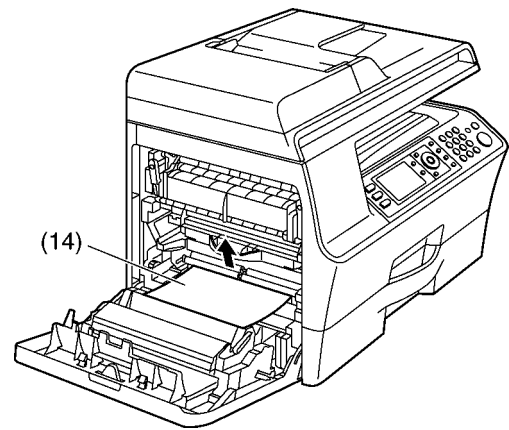


**Case 5:**

**When the recording paper has jammed inside of the automatic duplex unit:**

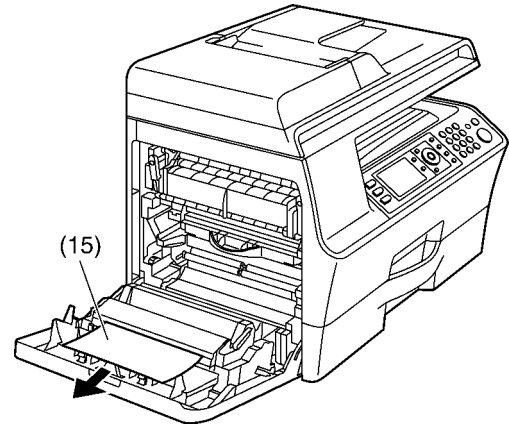
**When the recording paper has jammed near the roller:**

Remove the jammed paper (14) carefully by pulling it upward.



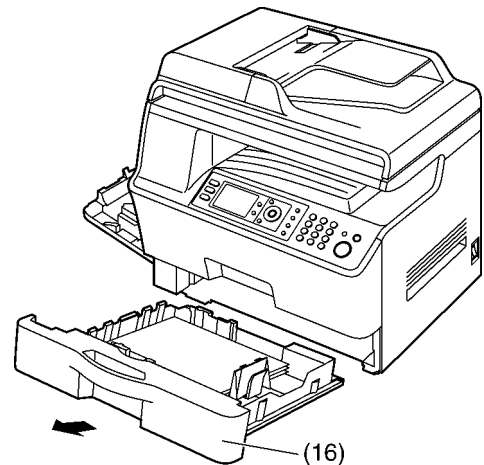
**When the recording paper has jammed near the automatic duplex unit:**

Remove the jammed paper (15) carefully by pulling it toward you.

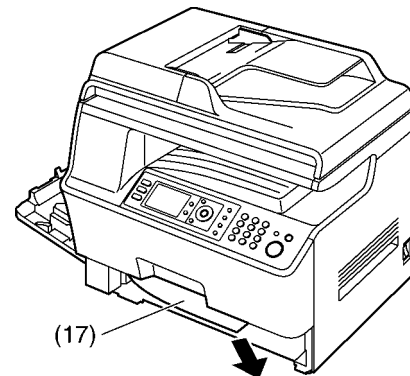
**Case 6:**

**When the recording paper has jammed near the standard input tray:**

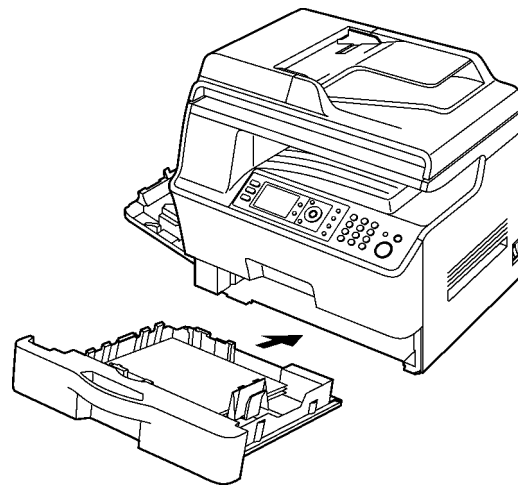
1. Pull the standard input tray (16) until it clicks into place, then pull it completely out, lifting the front part of the tray.



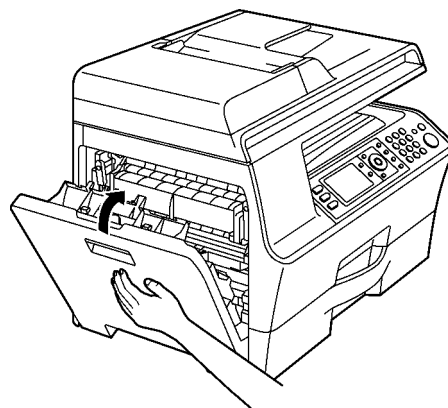
2. Remove the jammed paper (17) carefully by pulling it toward you.



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



3. Close the left cover.

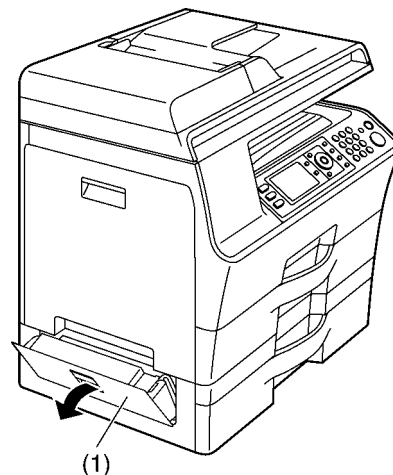


### 12.4.2. When the recording paper has jammed near the optional lower input tray

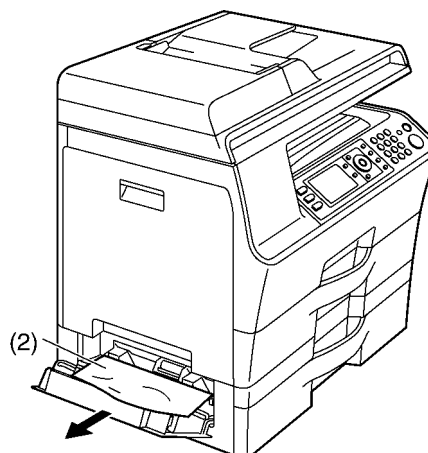
The display will show the following.

- "Paper Jammed"
- "Open Tray #2"
- "Left Cover"
- "Paper Jammed"
- ↑
- "Open Tray #2 Left Cover"

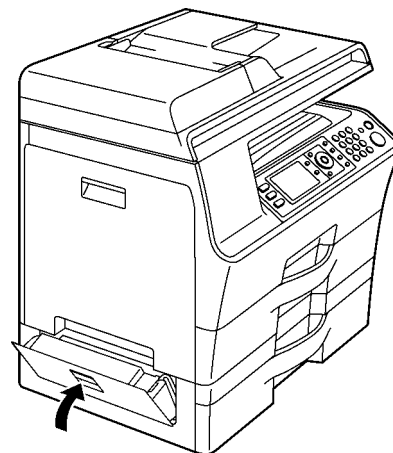
1. Open the cover (1) at the left side of the optional lower input tray.



2. Remove the jammed paper (2).



3. Close the cover at the left side of the optional lower input tray.



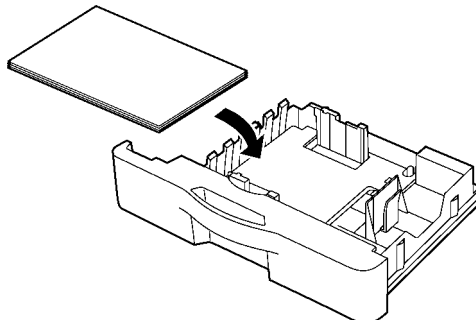
### 12.4.3. When the recording paper is not fed into the unit properly

The display will show the following.

“Check Pick Up Input Tray #1”  
(standard input tray)

“Check Pick Up Input Tray #2”  
(optional lower input tray)

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



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

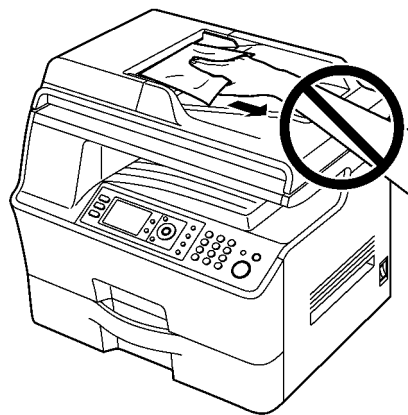
**Note:**

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

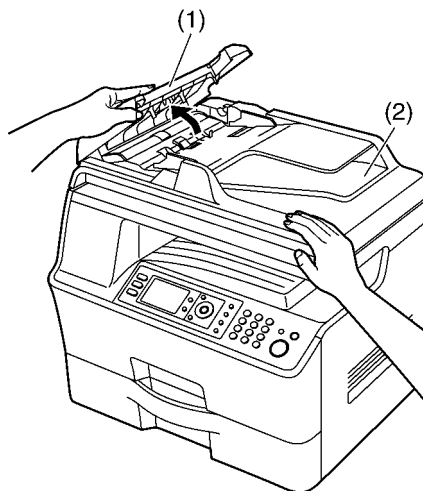
### 12.5. Document Jams (Automatic Document Feeder)

**Caution:**

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

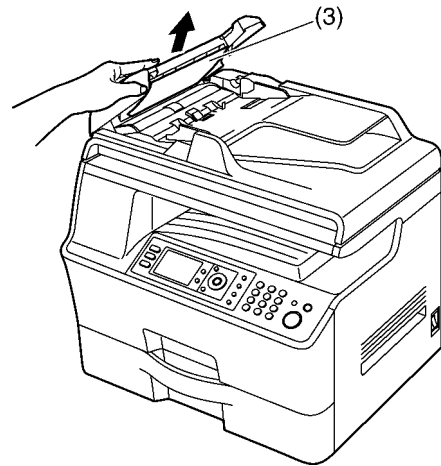


1. Open the ADF cover (1) while holding the document cover (2).

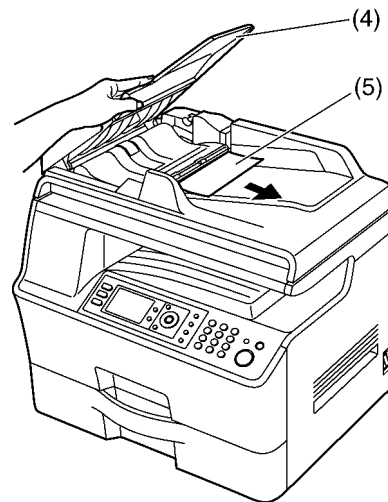


**2. When the document has jammed near the document entrance:**

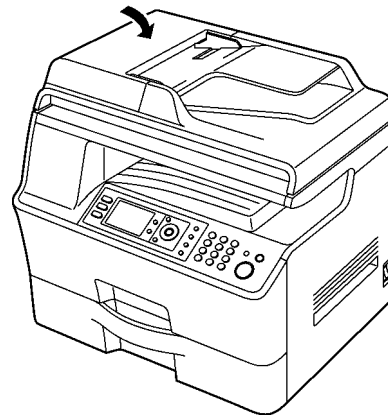
Remove the jammed document (3) carefully.



**When the document has jammed near the document exit:**  
Open the document tray (4) and remove the jammed document (5) carefully.



**3. Close the ADF cover.**

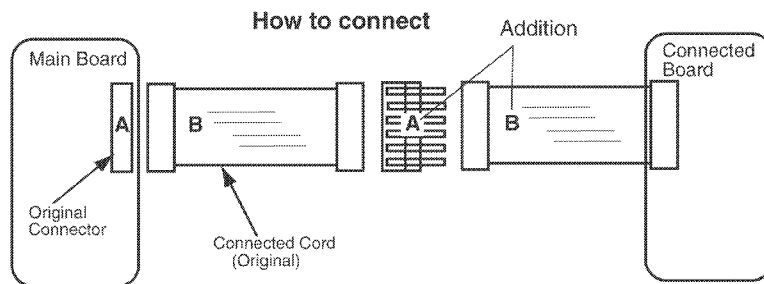


**4. • Press [ ] to clear the message.**

# 13 Service Fixture & Tools

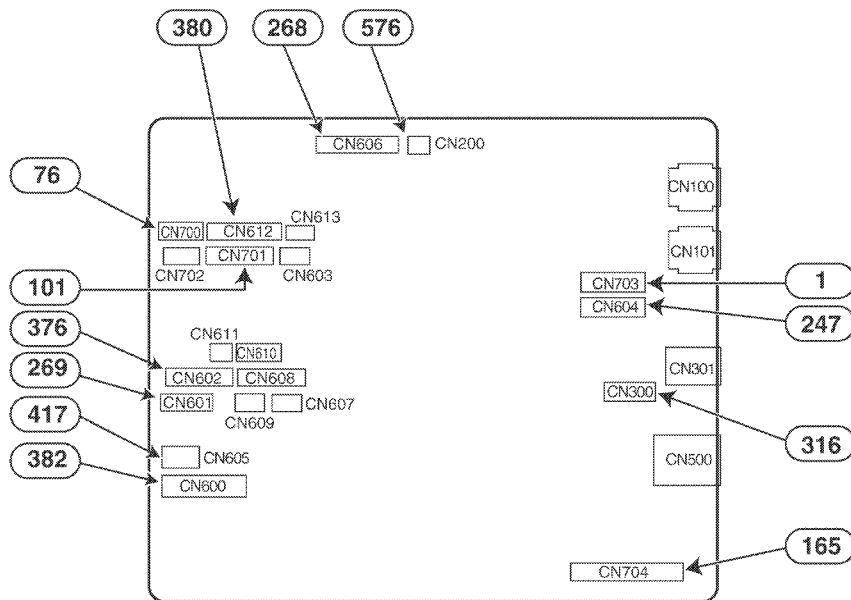
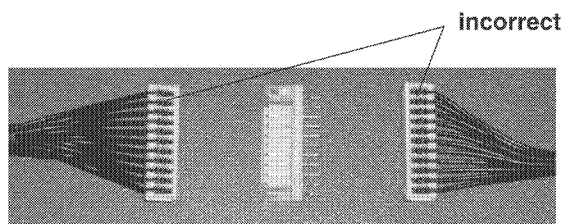
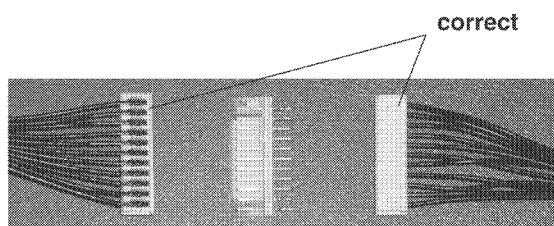
## How to extend cords

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 is correct.





# 14 Disassembly and Assembly Instructions

## Note:

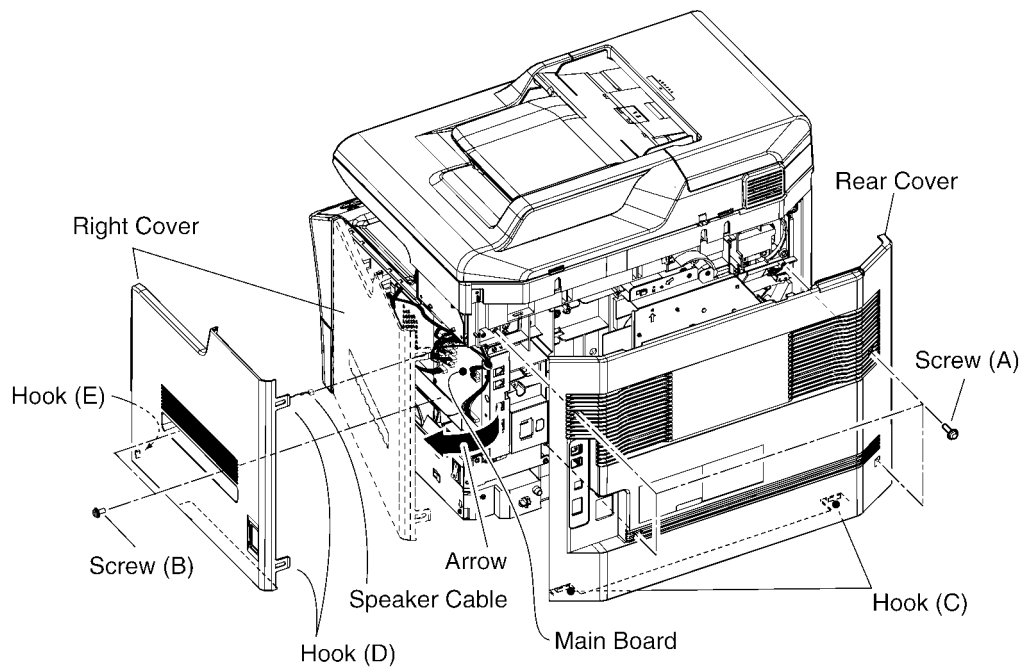
LOW VOLTAGE POWER SUPPLY BOARD = PSU  
HIGH VOLTAGE POWER SUPPLY BOARD = HVU

## 14.1. Covers

### 14.1.1. Rear and Right Covers

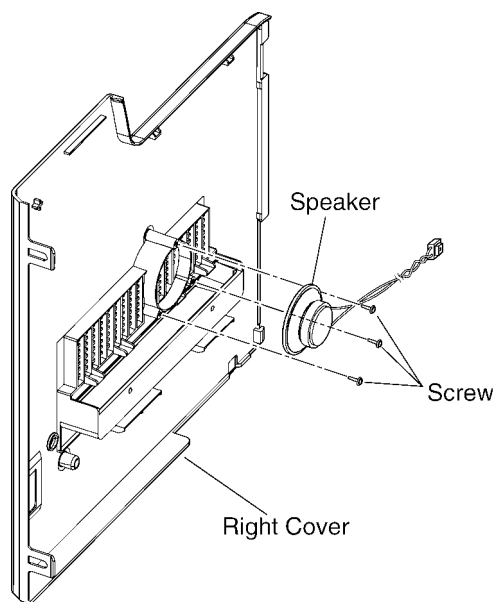
1. Remove the 4 screws (A).
2. Remove the rear cover while releasing the hook (C).
3. Remove the 2 screws (B).
4. Separate the right cover from the main body by rotating the right cover in the direction of the arrow while releasing the hook (D).
5. Disconnect the speaker cable from the connector CN200 on the main board.

Note: The hook (E) will be released automatically by rotating the right cover in the direction of the arrow as shown below.



### 14.1.1.1. Disassembly of the Right Cover

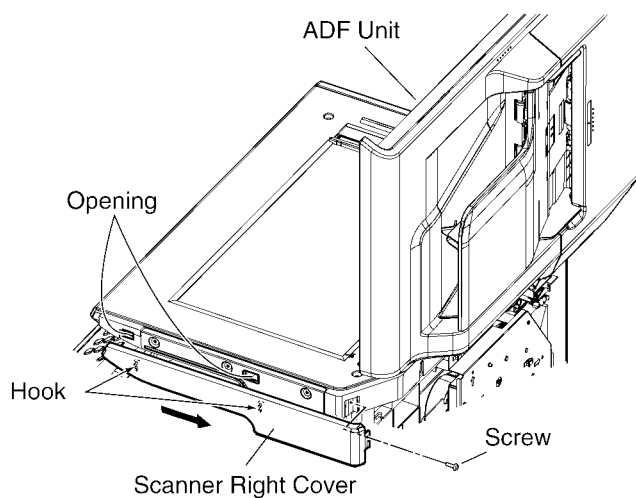
1. Remove the 3 screws.
2. Remove the speaker



### 14.1.2. Scanner Right Cover

Before performing the following steps, remove the rear and right covers. (Refer to section 14.1.1 “Rear and Right Covers”.)

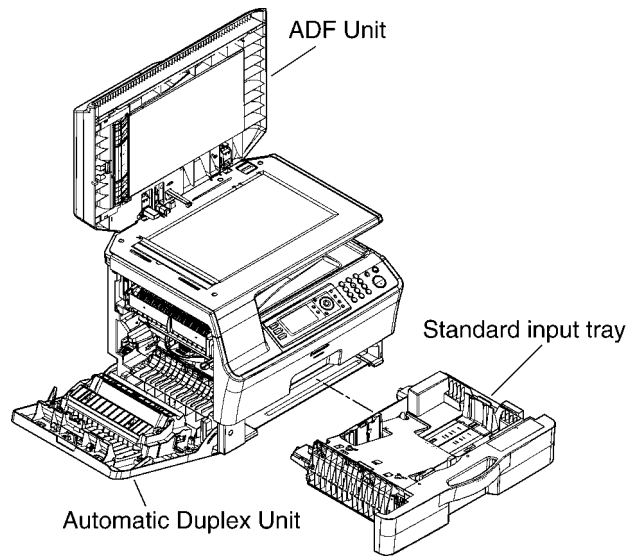
1. Remove the screw.
2. Open the ADF unit.
3. Remove the scanner right cover while sliding the scanner right cover in the direction of the arrow to release the 2 hooks from the opening.



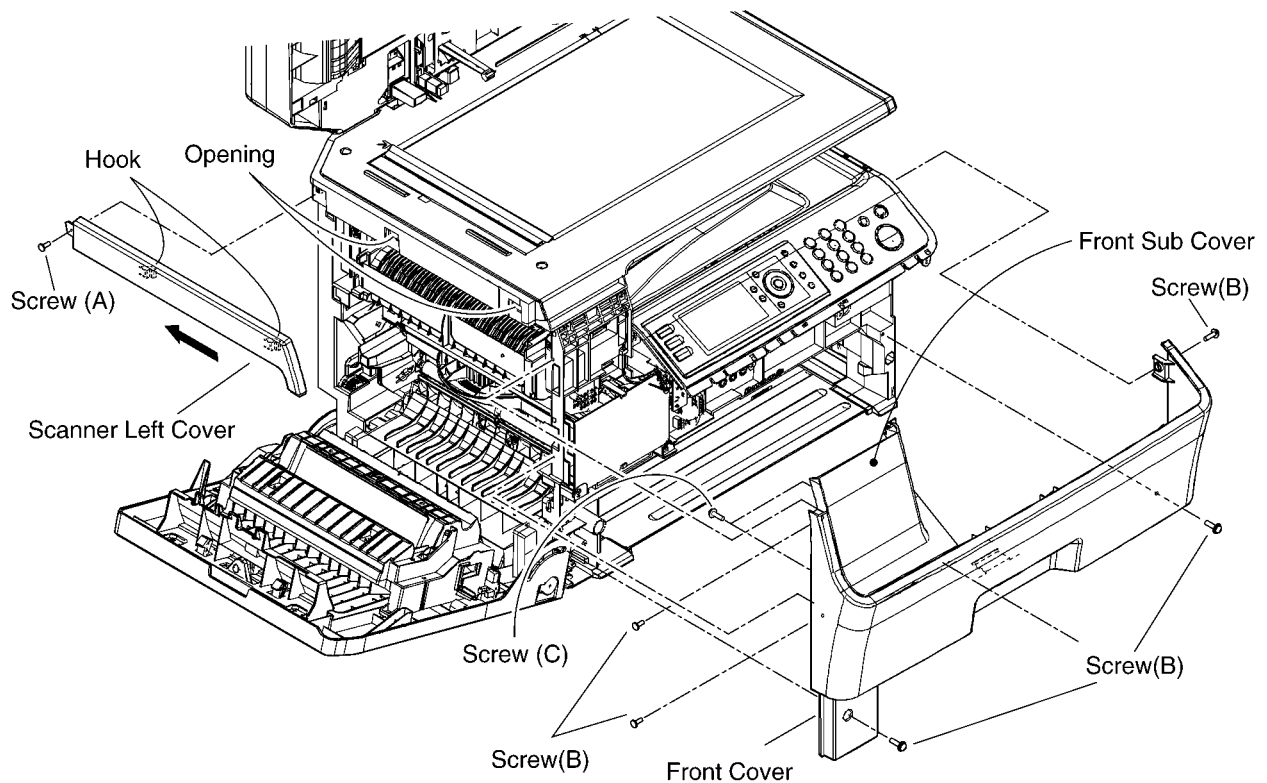
### 14.1.3. Scanner Left Cover and Front Cover

Before performing the following steps, remove the rear and right covers. (Refer to section 14.1.1 "Rear and Right Covers".)

1. Open the ADF unit and automatic duplex unit.
2. Remove the Standard input tray.



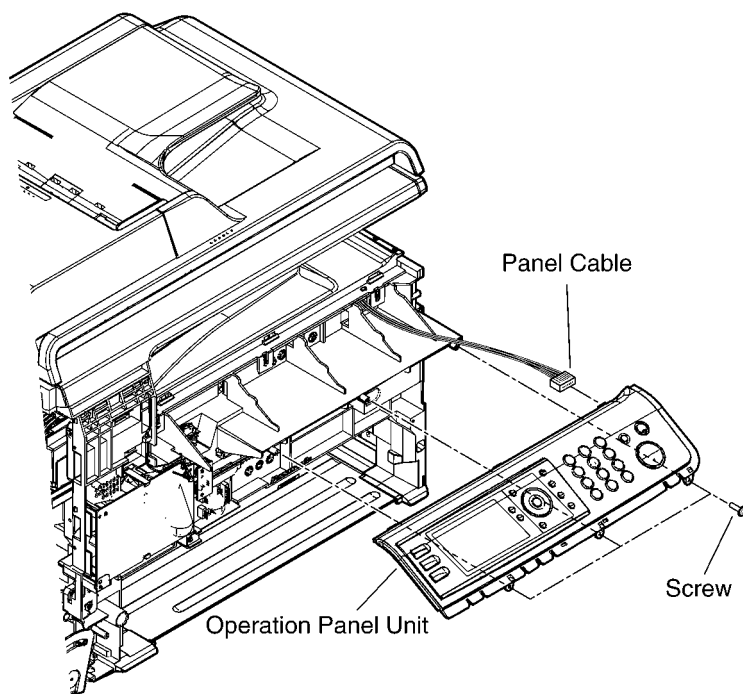
3. If necessary, remove the screw (A) and scanner left cover. When removing the scanner left cover, slide the scanner left cover in the direction of the arrow to release the 2 hooks from the openings.
4. Remove the 5 screws (B) and front cover.
5. If necessary, remove the 2 screws (C), then separate the front sub cover from the front cover.



## 14.2. Operation Panel Unit

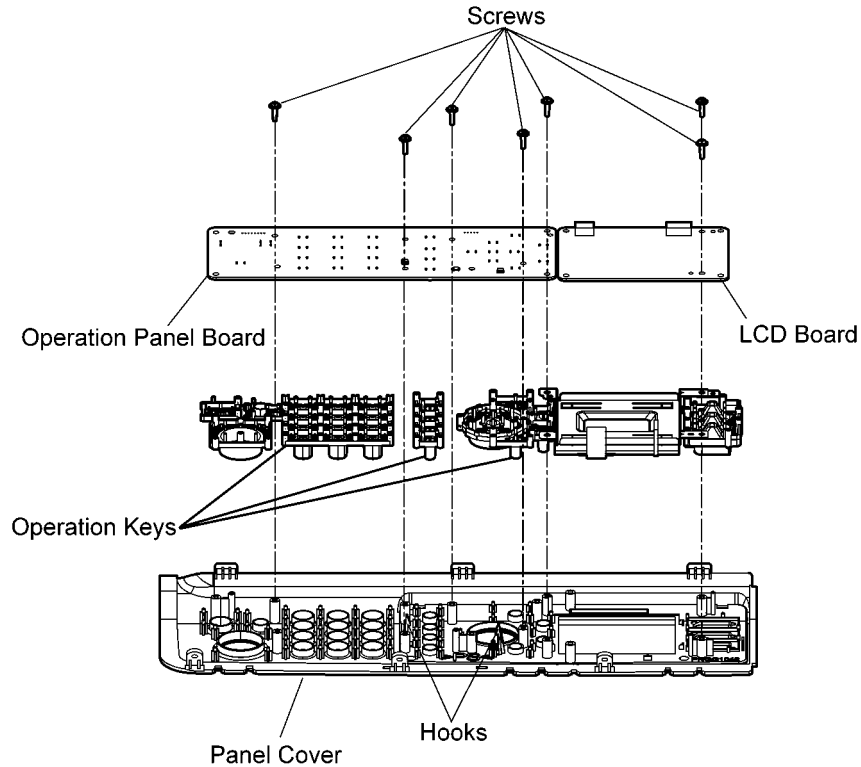
Before performing the following steps, remove the rear, right and front covers. (Refer to section 14.1.1 “Rear and Right Covers”.)

1. Remove the 3 screws.
2. Remove the operation panel unit.
3. Disconnect the panel cable.



### 14.2.1. Disassembly of Operation Panel Unit

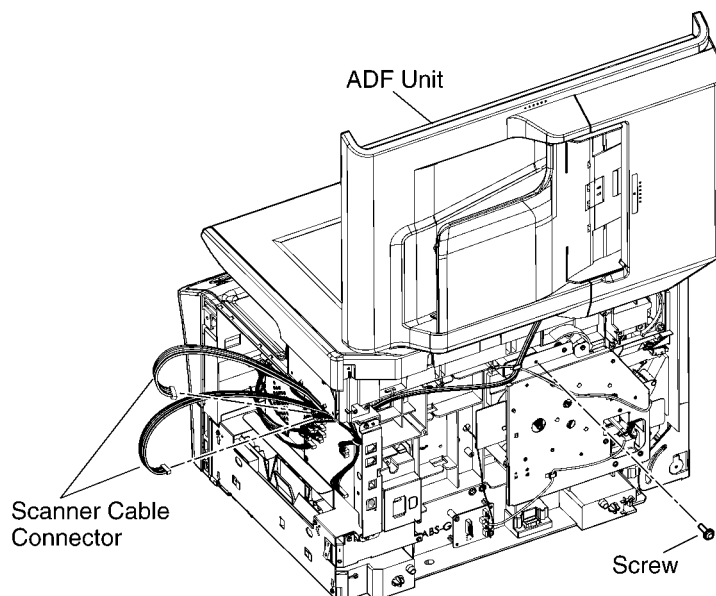
1. Remove the 7 screws.
2. Separate the panel cover while releasing the 2 hooks the operation panel board.
3. Separate the operation keys.



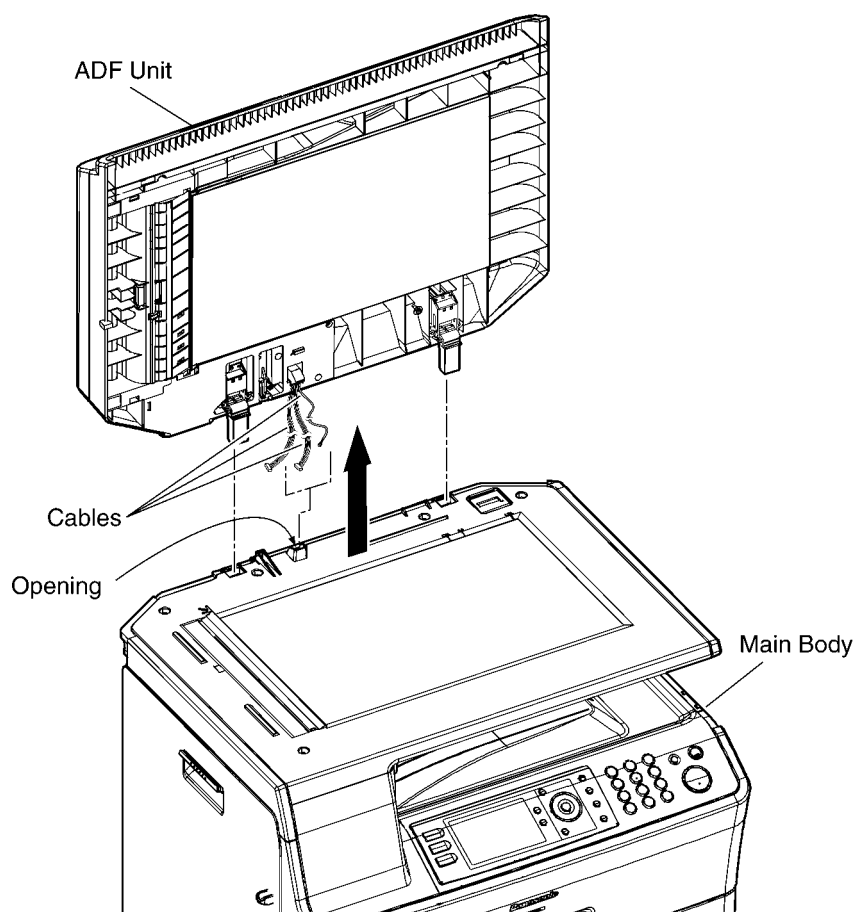
## 14.3. Automatic Document Feeder (ADF) Unit

Before performing the following steps, remove the rear and right covers. (Refer to section 14.1.1 “Rear and Right Covers”).

1. Remove the screw.
2. Disconnect the scanner cable connectors (CN700, CN701) on the main board.
3. Open the ADF unit.

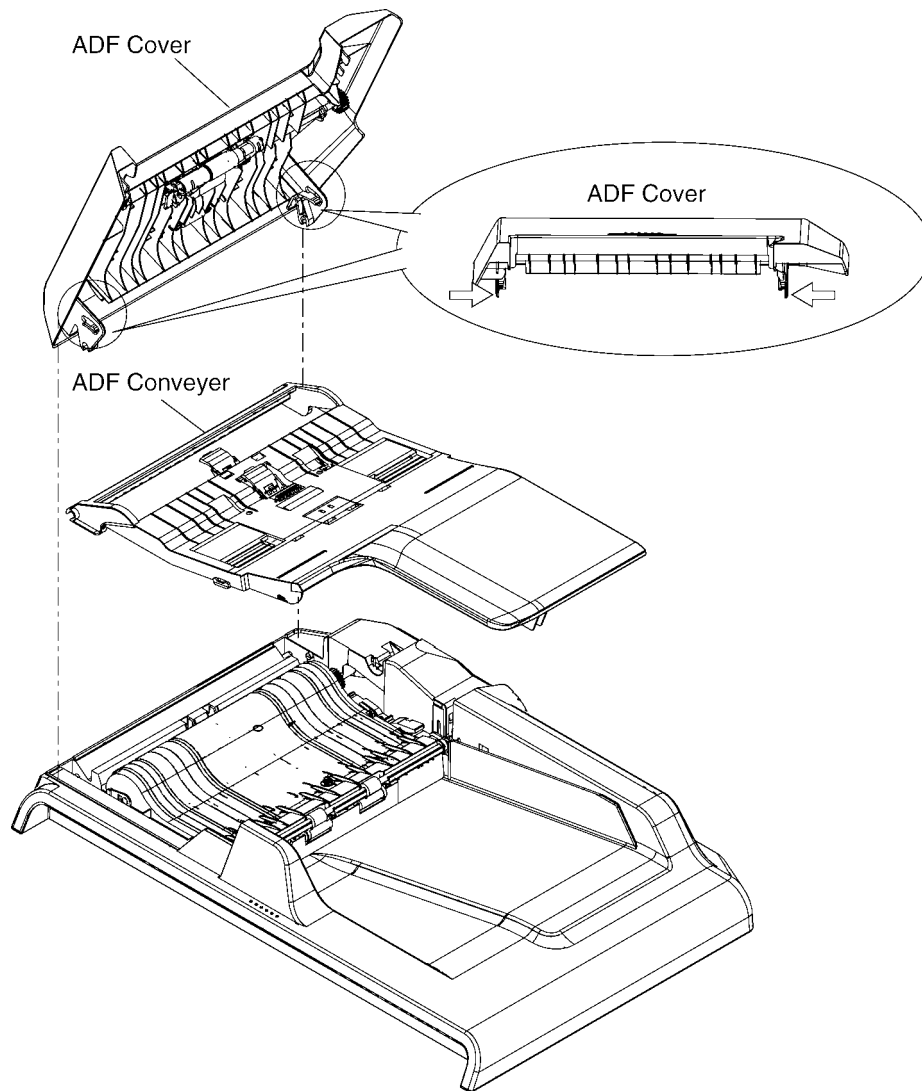


4. Remove the ADF unit from the main body while pulling up the ADF unit.
5. Draw the cables out from the opening.



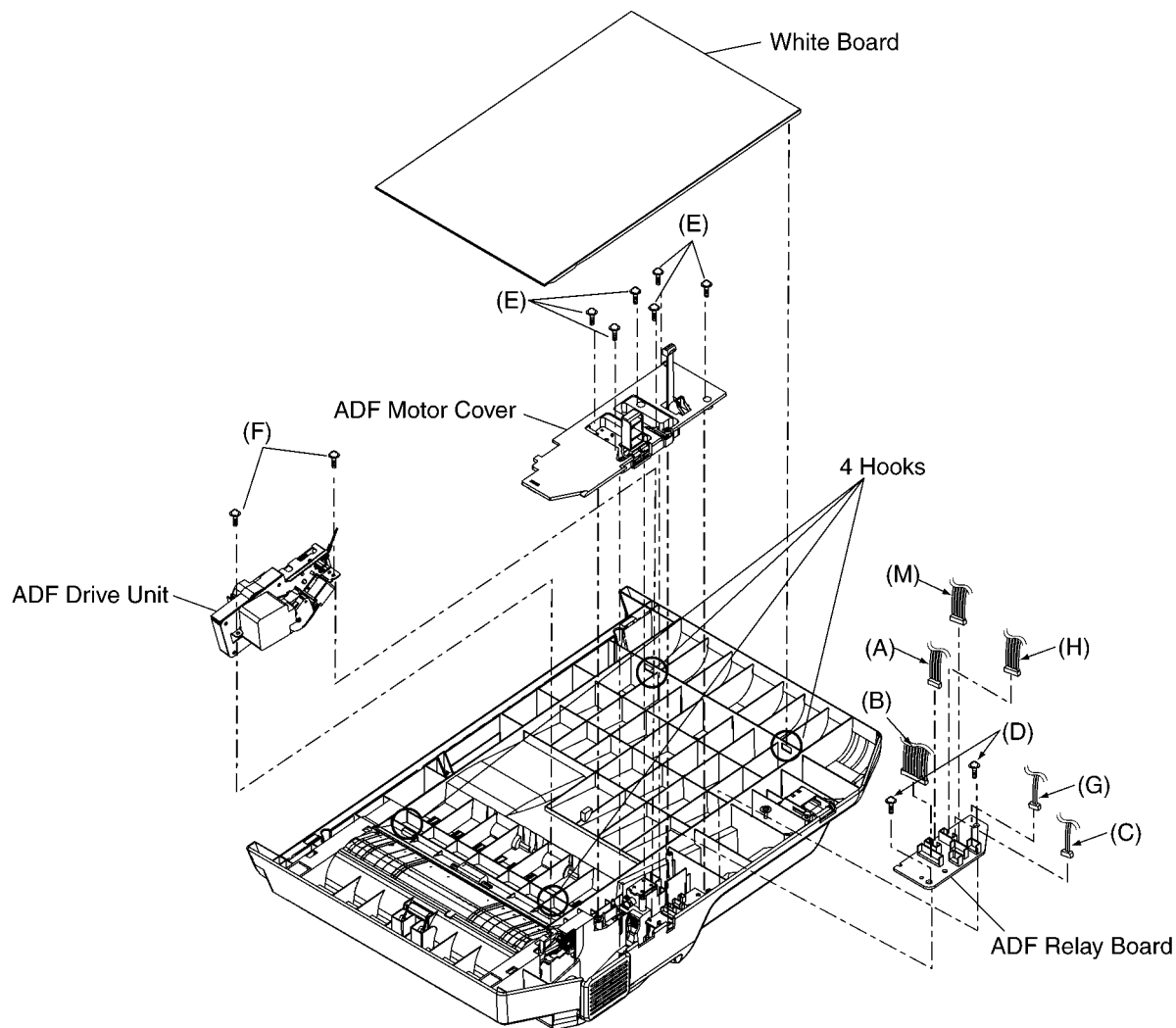
### 14.3.1. Upper ADF Section (1)

1. Push the both side hooks in the direction of the arrow to lease the hooks.
2. Remove the ADF Cover.
3. Remove the ADF Conveyer.



## 14.3.2. ADF Bottom Section

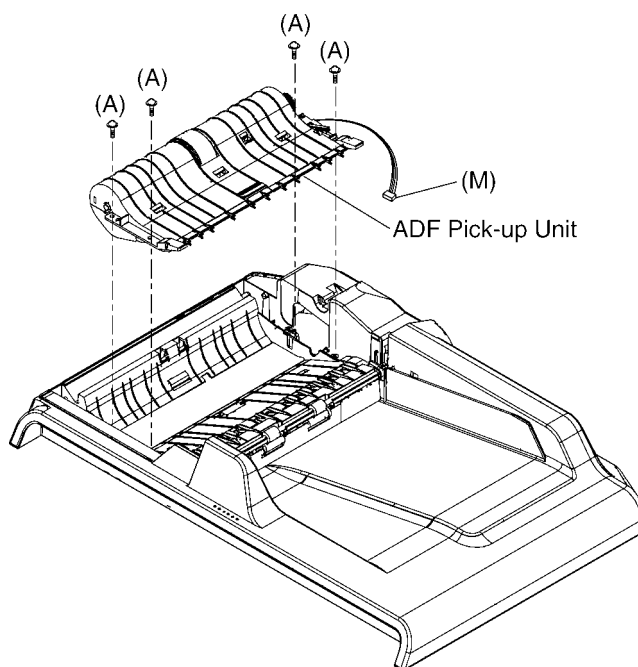
1. Release the 4 Hooks to remove the White Board.
2. Remove the 6 screws (E).
3. Remove the 6 connectors (A),(B),(C),(G),(H),(M).
4. Remove the ADF Motor Cover.
5. Remove the 2 screws (D).
6. Remove the ADF Relay Board.
7. Remove the 2 screws (F).
8. Remove the ADF Drive Unit.





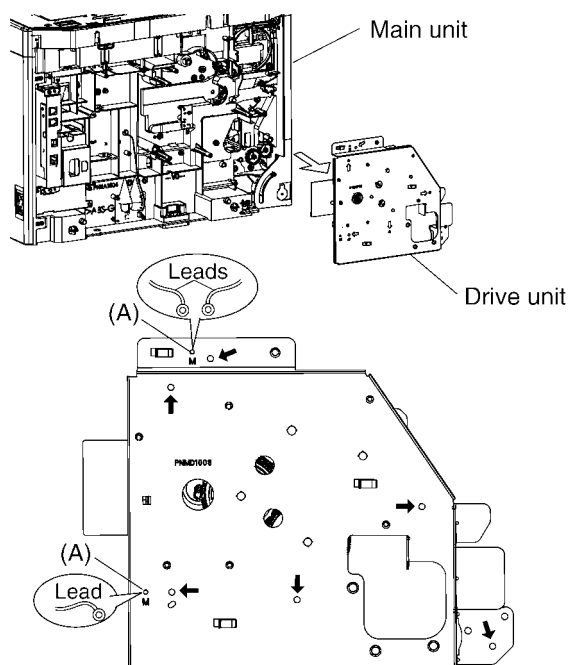
### 14.3.3. Upper ADF Section (2)

1. Remove the connector (M) in the ADF Bottom Section.
2. Remove the 4 screws (A).
3. Remove the ADF Pick-up Unit.



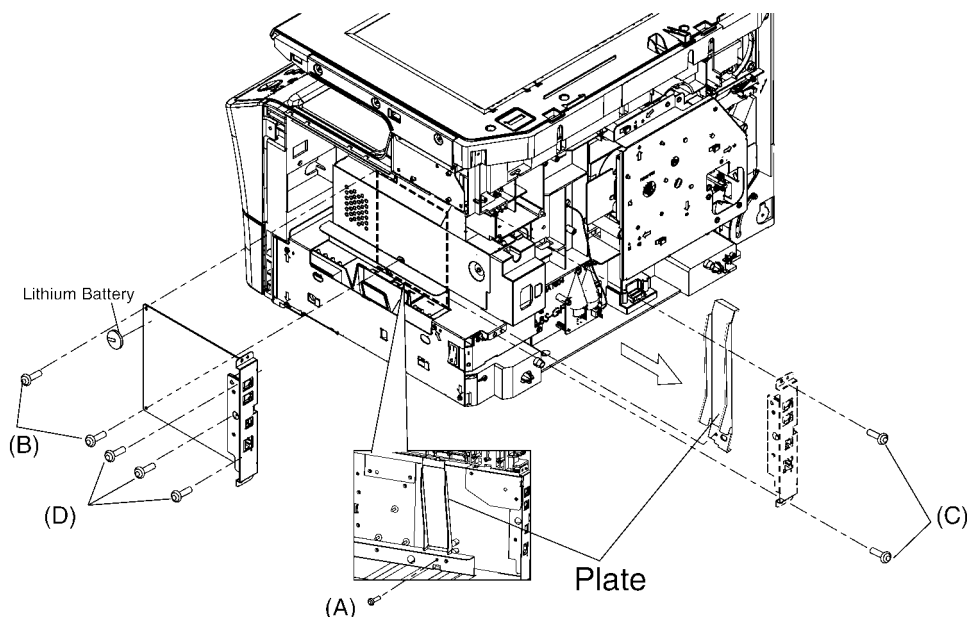
### 14.4. Drive Unit Section

1. Remove the 2 screws (A) to remove the 3 leads.
2. Remove the 6 screws which are pointed out by the black arrows.
3. Pull out the Drive unit in the direction of the white arrow from the Main unit.



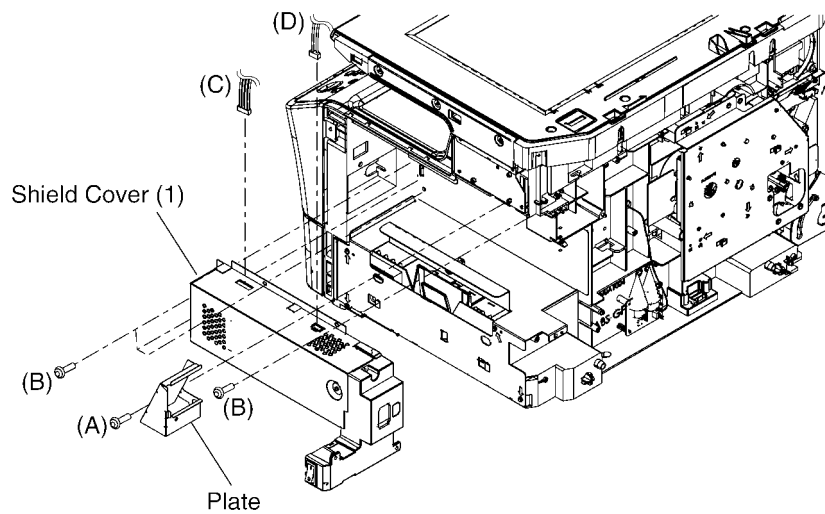
## 14.5. Main Board Section

1. Remove the screw (A).
2. Remove the Plate.
3. Remove the 2 screws (B).
4. Remove the 5 screws (C).
5. Remove the 3 screws (D).
6. Remove the all connectors on the Main Board.
7. Remove the Main board.
8. Unsolder the Lithium Battery.



## 14.6. Low Voltage Power Supply Board Section

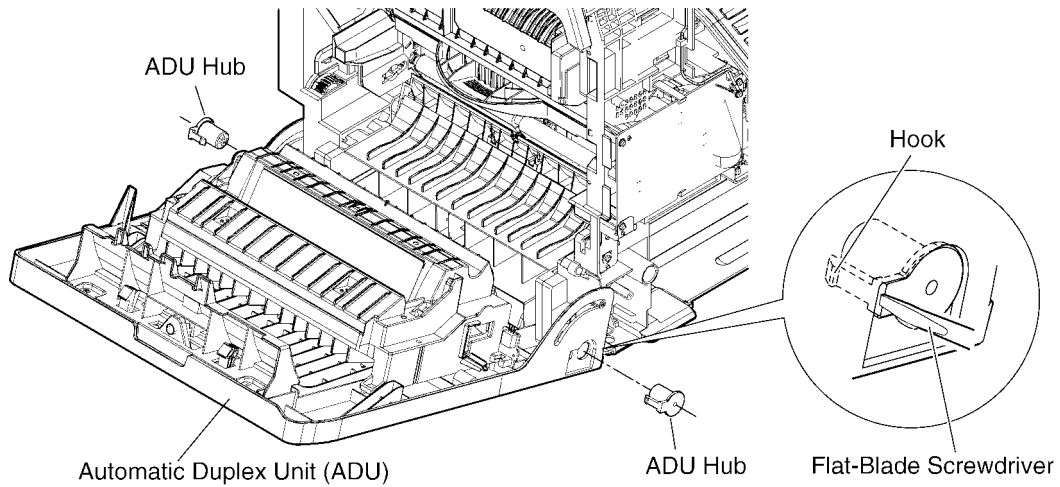
1. Remove the screw (A).
2. Remove the Plate.
3. Remove the 4 screws (B).
4. Remove the Lead (C) and (D).
5. Remove the Shield Cover.



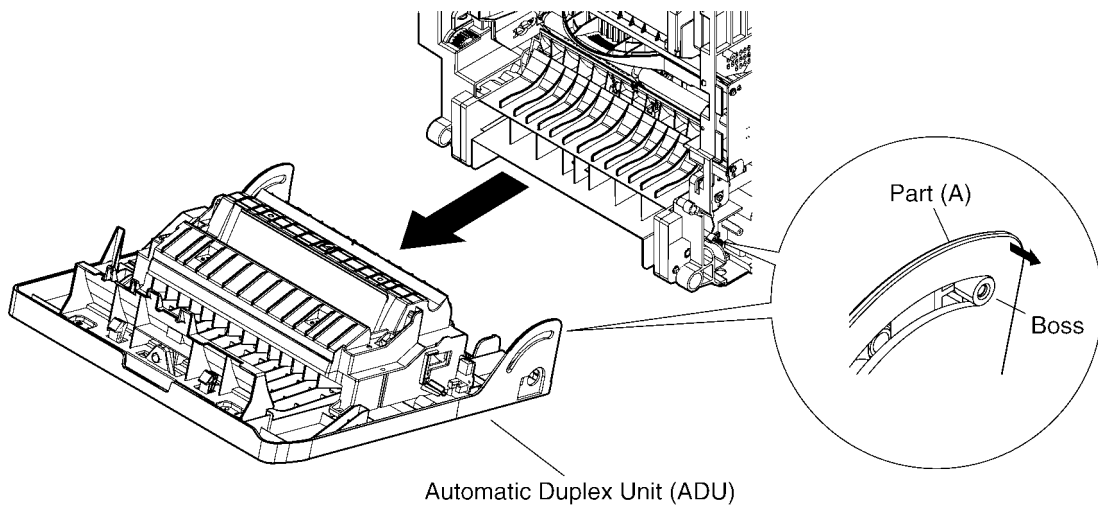
## 14.7. Automatic Duplex Unit (ADU)

Before performing the following steps, remove the rear and front covers. (Refer to section 14.1.1 "Rear and Right Covers".)

1. Open the automatic duplex unit (ADU).
2. Remove the ADU hubs from the left and right sides while releasing the hook using a small flat-blade screwdriver.

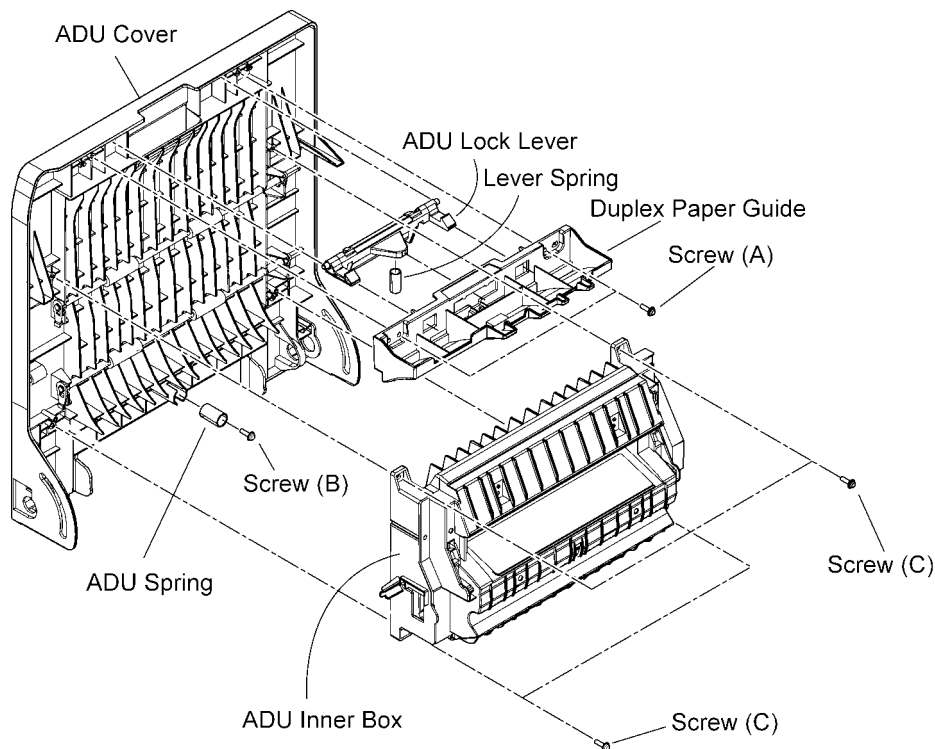


3. Remove the ADU while releasing the parts (A) from the bosses on left and right sides of main body.



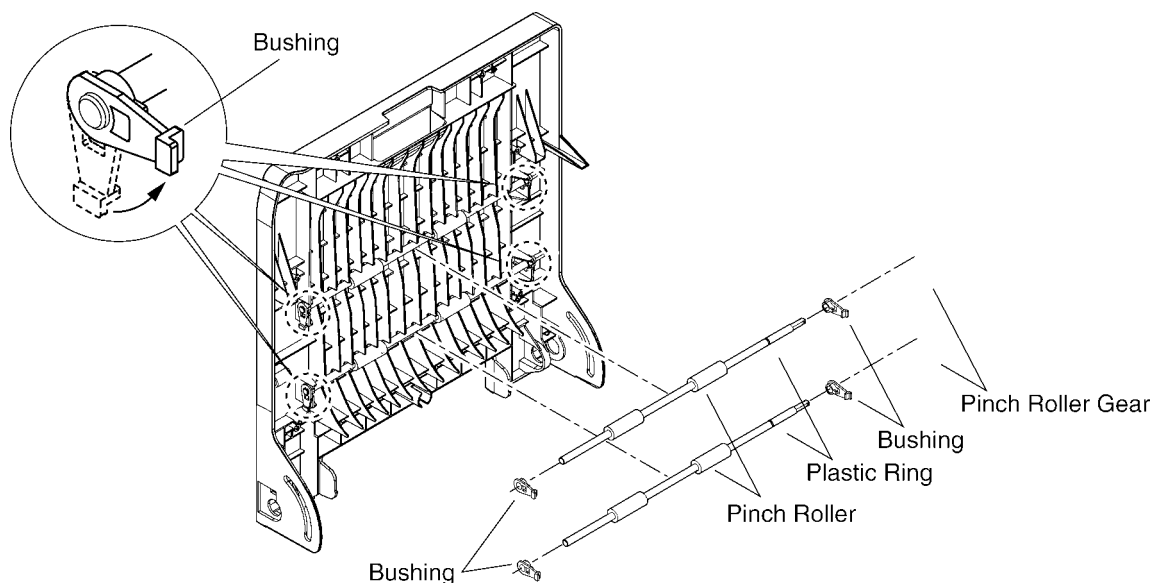
### 14.7.1. Disassembly of the Automatic Duplex Unit (ADU)

1. Remove the 2 screws (A).
2. Remove the duplex paper guide, ADU lock lever and lever spring.
3. If necessary, remove the screw (B) and ADU spring.
4. Remove the 4 screws (C).
5. Remove the ADU inner box from the ADU cover.



#### 14.7.1.1. Disassembly of the ADU Cover

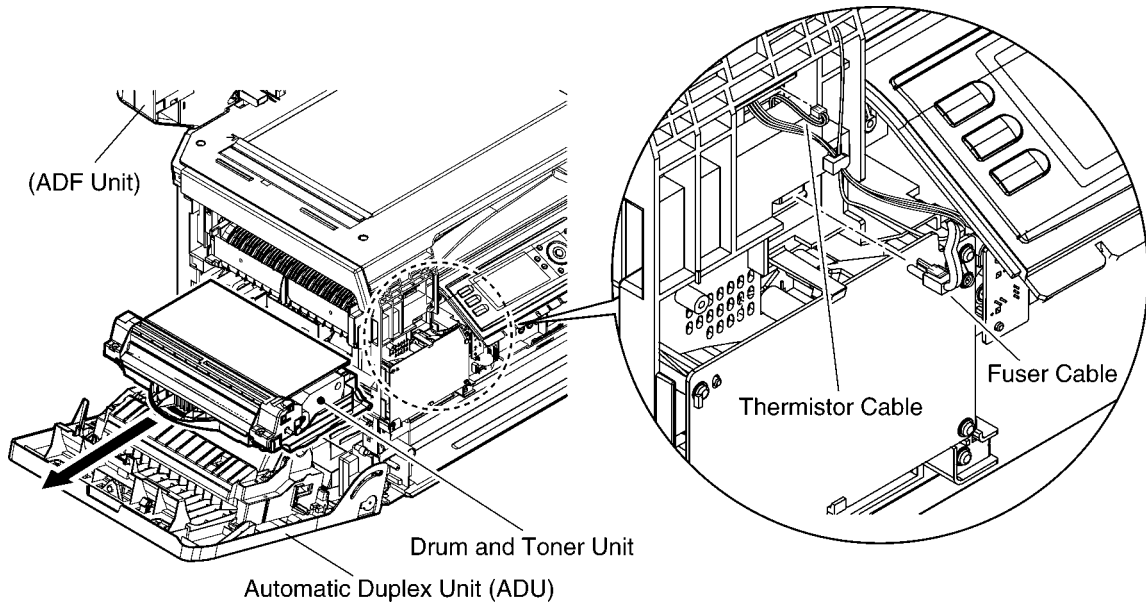
1. Release the 4 bushing (see the figure-1).
2. Remove the pinch roller with the bushings, plastic rings and pinch roller gears.
3. If necessary, remove the plastic ring and pinch roller gear from the pinch roller.



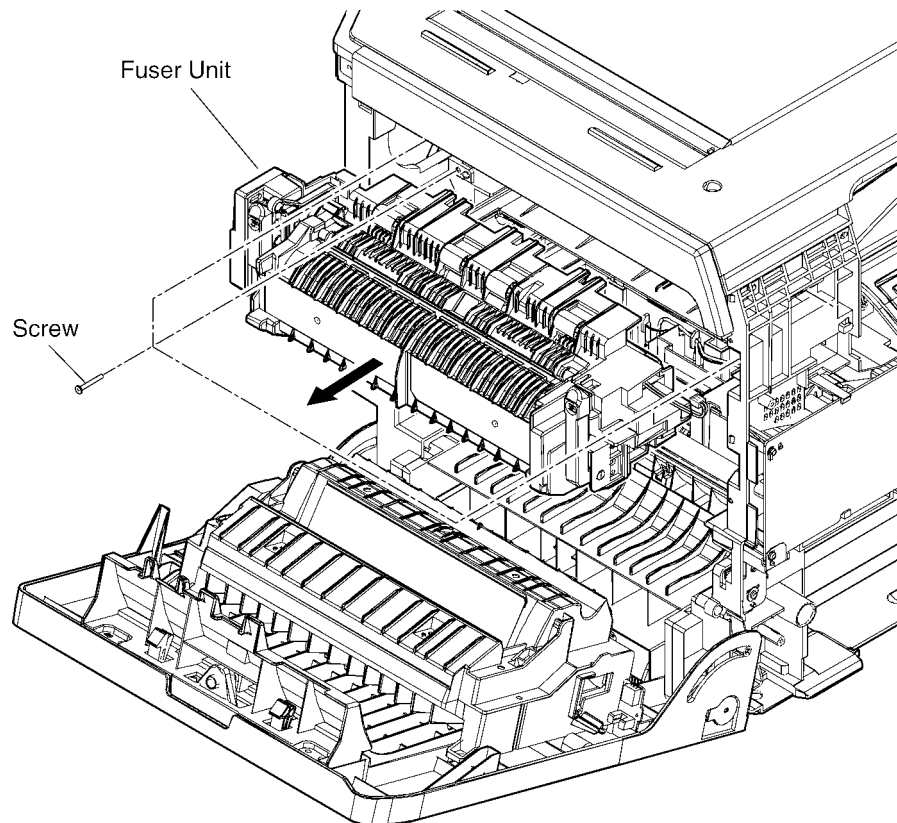
## 14.8. Fuser Unit

Before performing the following steps, remove the rear, right and front covers. (Refer to 4.1.1. Rear and Right Covers .)

1. Open the automatic duplex unit (ADU).
2. Pull the drum and toner unit out in the direction of the arrow.
3. Disconnect the thermistor and fuser cables.



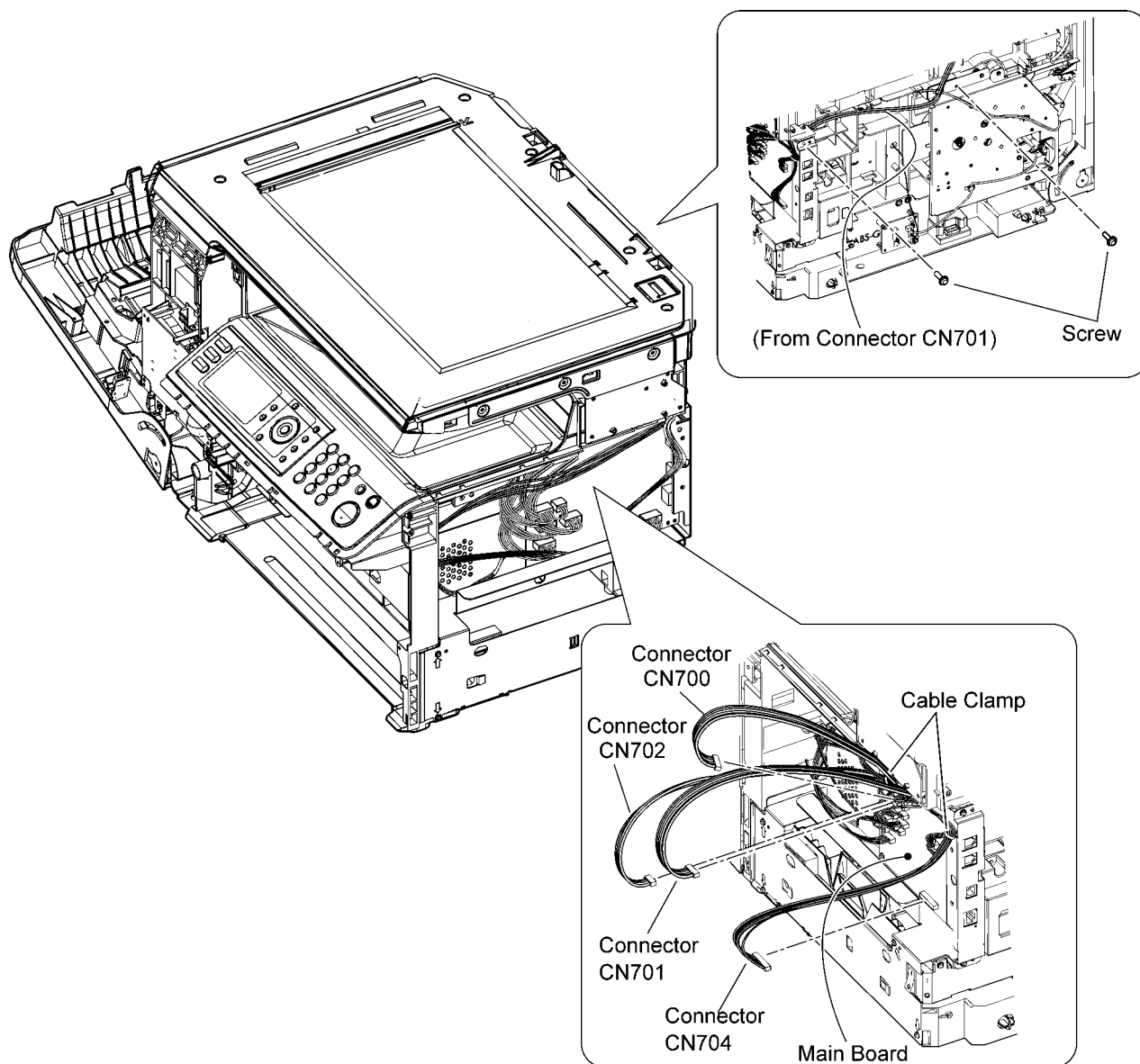
4. Remove the 3 screws.
5. Pull the fuser unit out in the direction of the arrow.



## 14.9. Scanner Unit

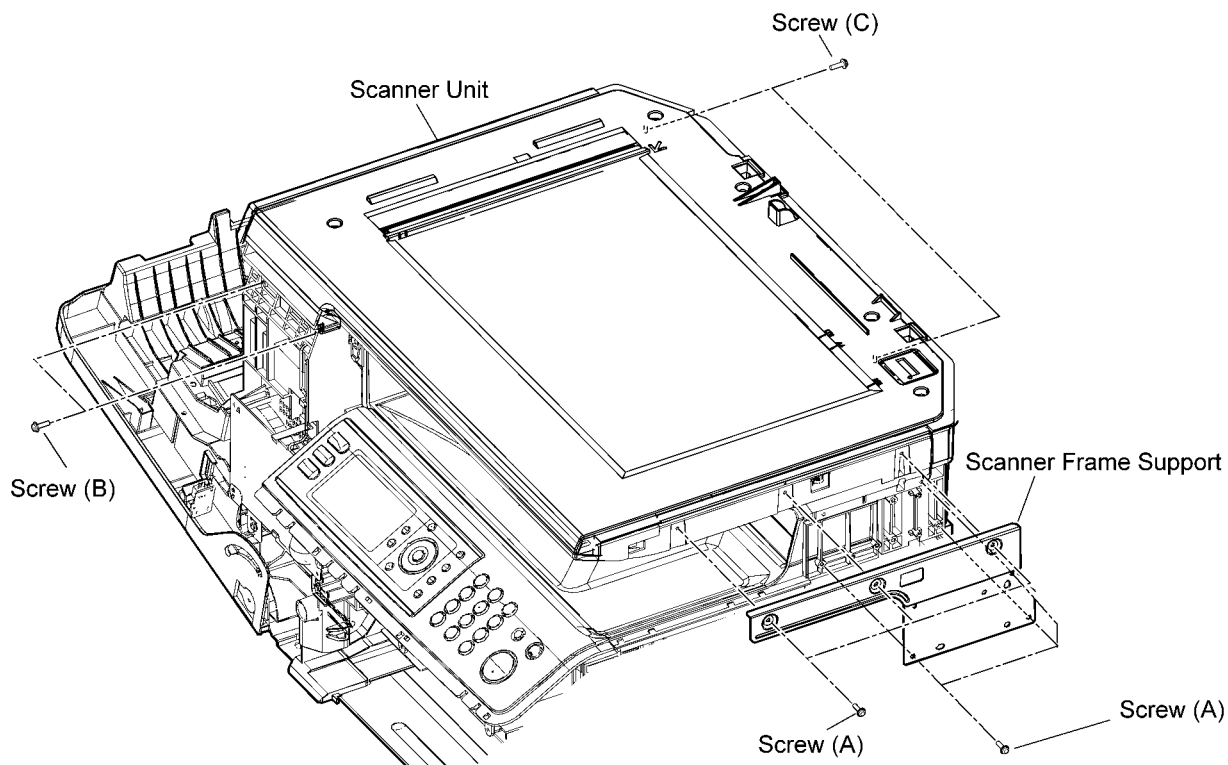
Before performing the following steps, remove the rear, right, scanner right, scanner left and front covers. (Refer to section 14.1.1 "Rear and Right Covers".)

1. Release the 2 screws from the rear side of the main body.
2. Disconnect the 4 connectors CN700, CN701, CN702 and CN704 on the main board.
3. Cut the 2 cable clamps.

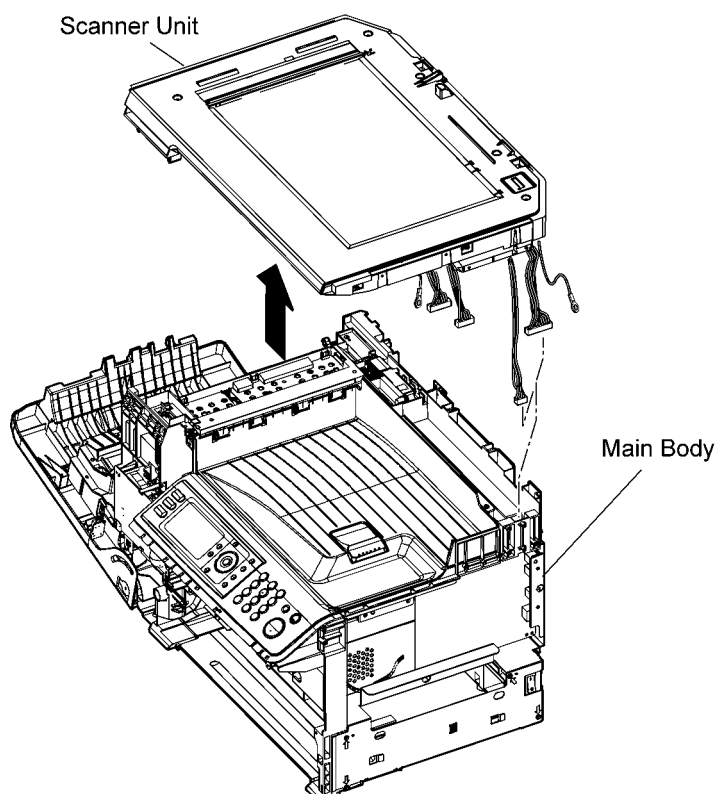




4. Remove the 6 screws (A) and scanner frame support.
5. Remove the 2 screws (B) and 2 screws (C).

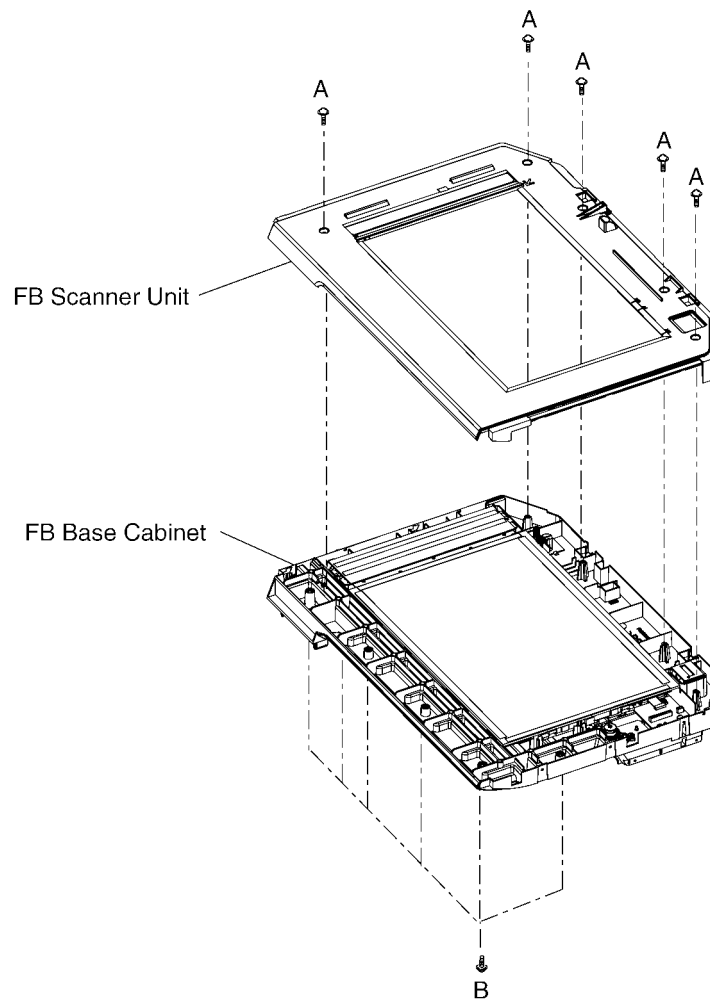


6. Separate the scanner unit from the main body by lifting up the scanner unit in the direction of the arrow.



### 14.9.1. FB Scanner Unit

1. Remove the 5 screws (A).
2. Remove the 6 screws (B).
3. Separate the FB Scanner Unit from the FB Base Cabinet.

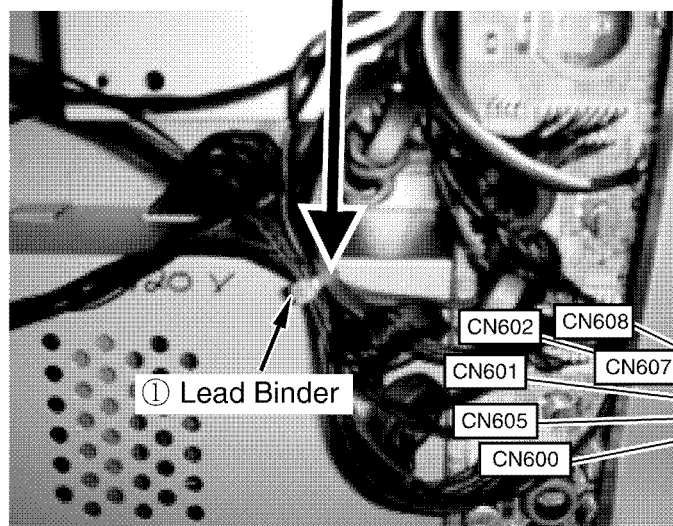
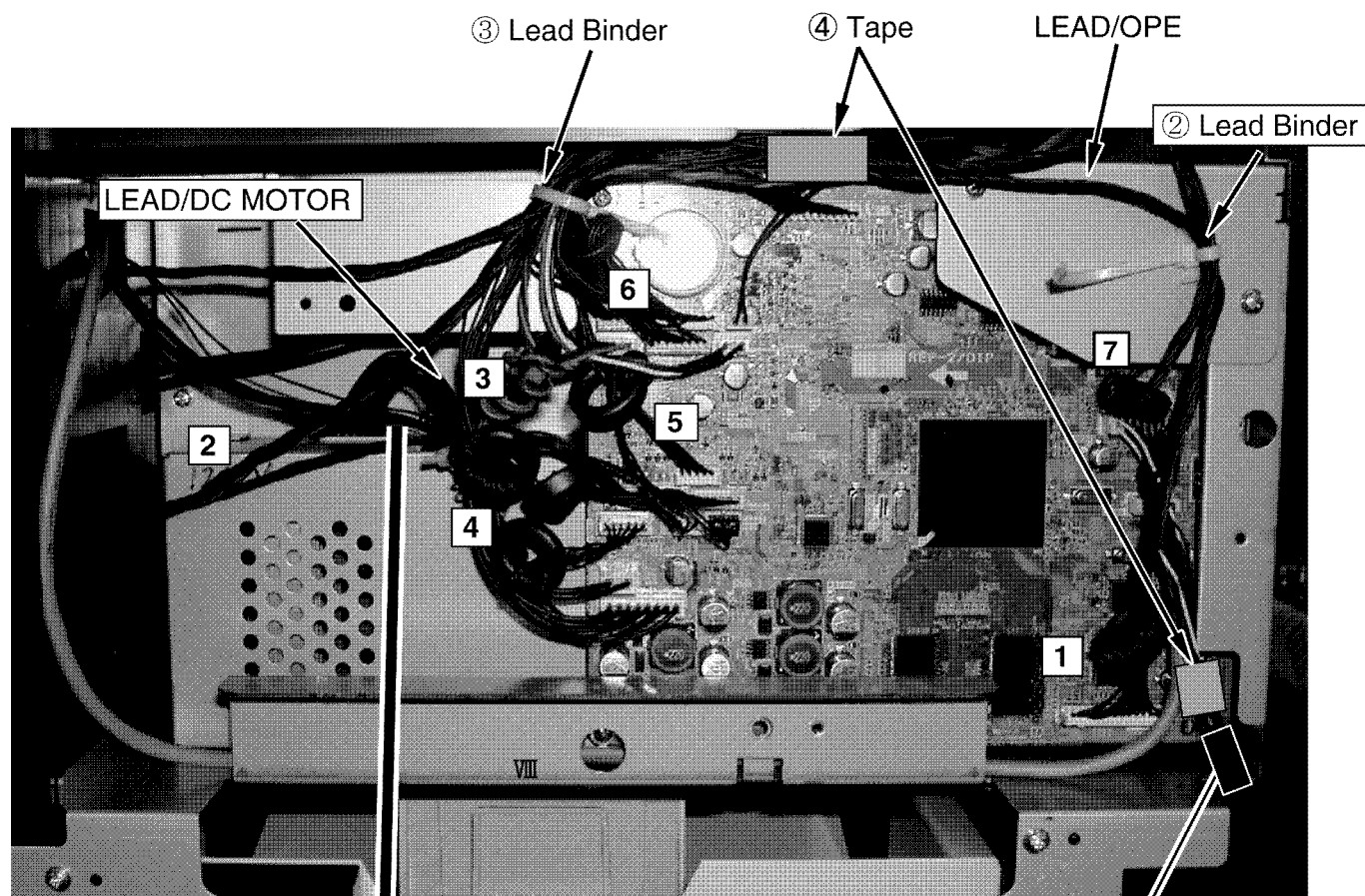




## 14.10. Installation Position of The Lead

### 14.10.1. Main Board Section (1)

Bind and apply ①→②→③→④ in order.



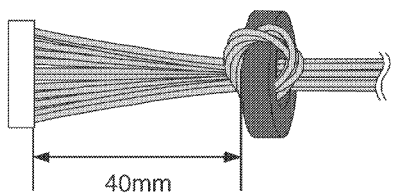
Adjust the UL tape position to the edge of plate.

Bind six lead wires (CN600,CN605, CN601,CN607,CN602,CN608) together.

## 14.10.2. Main Board Section (2)

**1** LEAD / FB RELAY: Wind 2 times to the core.

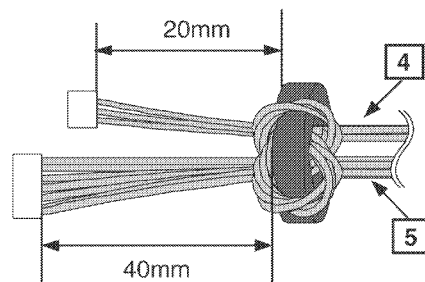
**2** LEAD / HVU: Wind 2 times to the core.



Main Board side

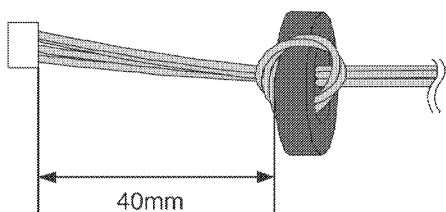
**4** LEAD/BD: Wind 1 time to the core.

**5** LEAD/POLYGON: Wind 2 times to the core.



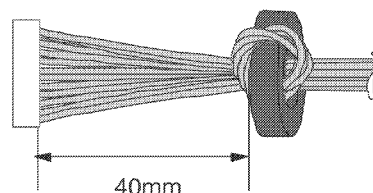
Main Board side

**3** STEPPING MOTOR: Wind 6 times to the core.



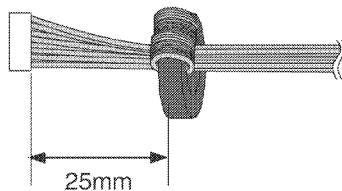
Main Board side

**6** LEAD/ADF RELAY1: Wind 2 time to the core.

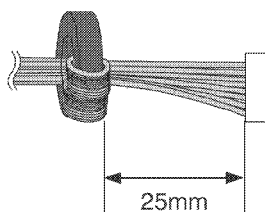


Main Board side

**7** Lead/OPE: Wind 2 times to the core.



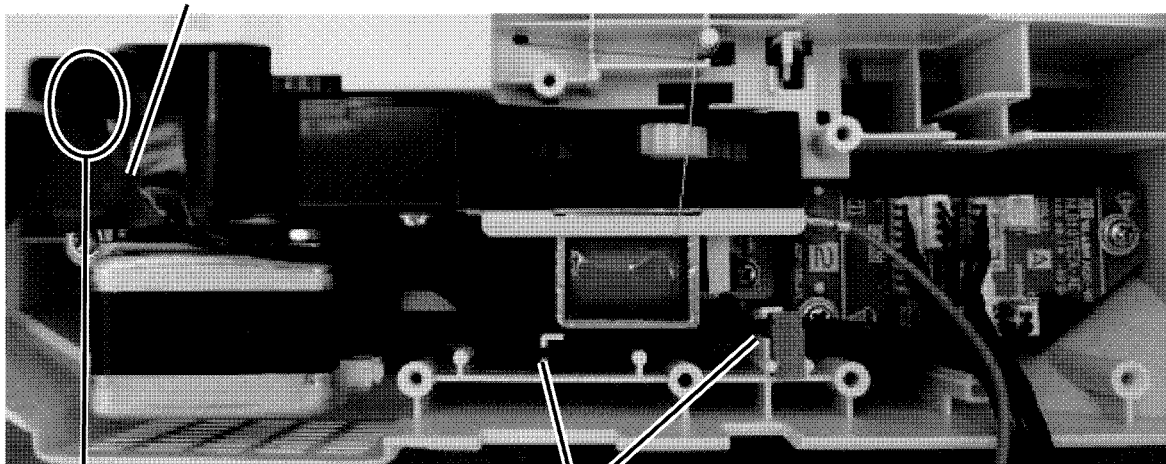
Operation Board side



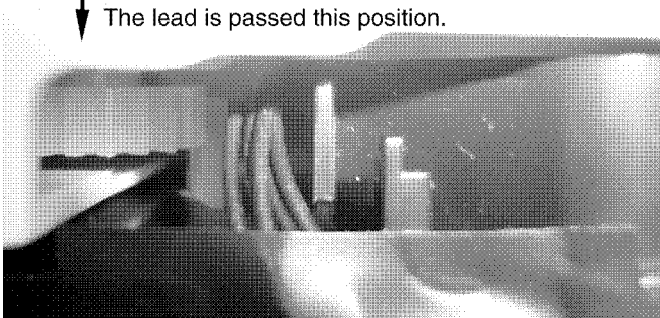
Main Board side

### 14.10.3. ADF Section

Apply tape on the lead wires.

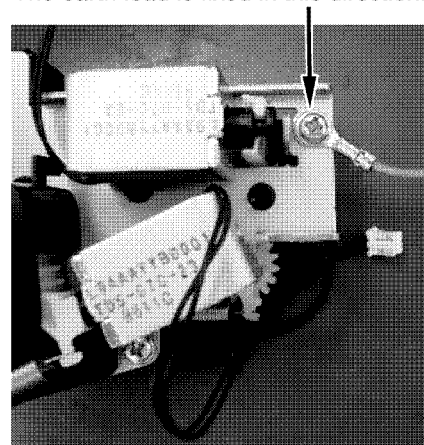


Pass the lead wires to this slit and fix them by a rubber part. (PNHG1072Z)



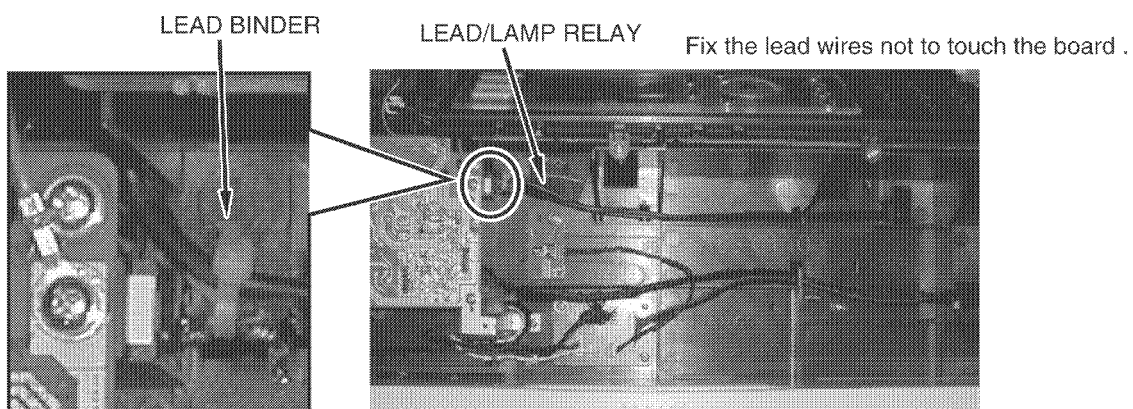
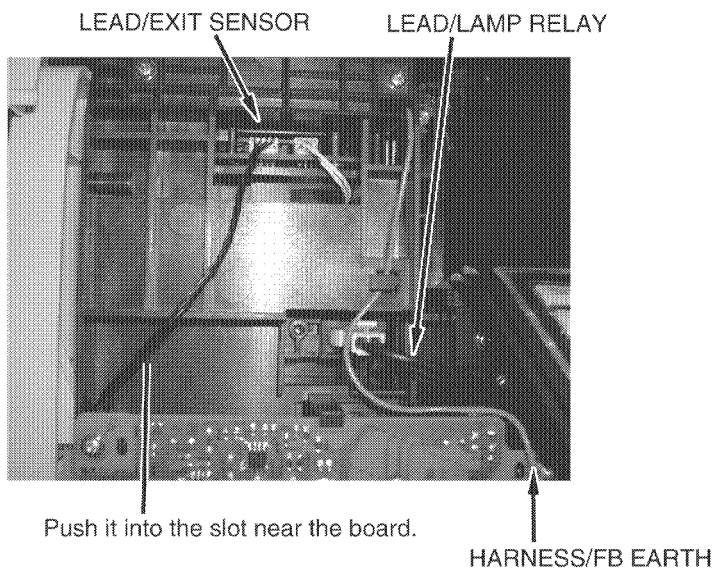
The lead is passed this position.

The earth lead is fixed in this direction.

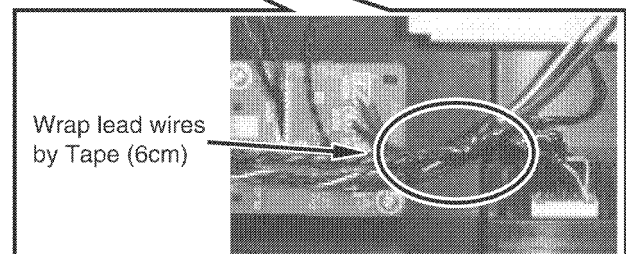
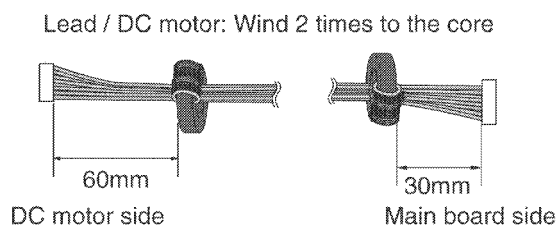
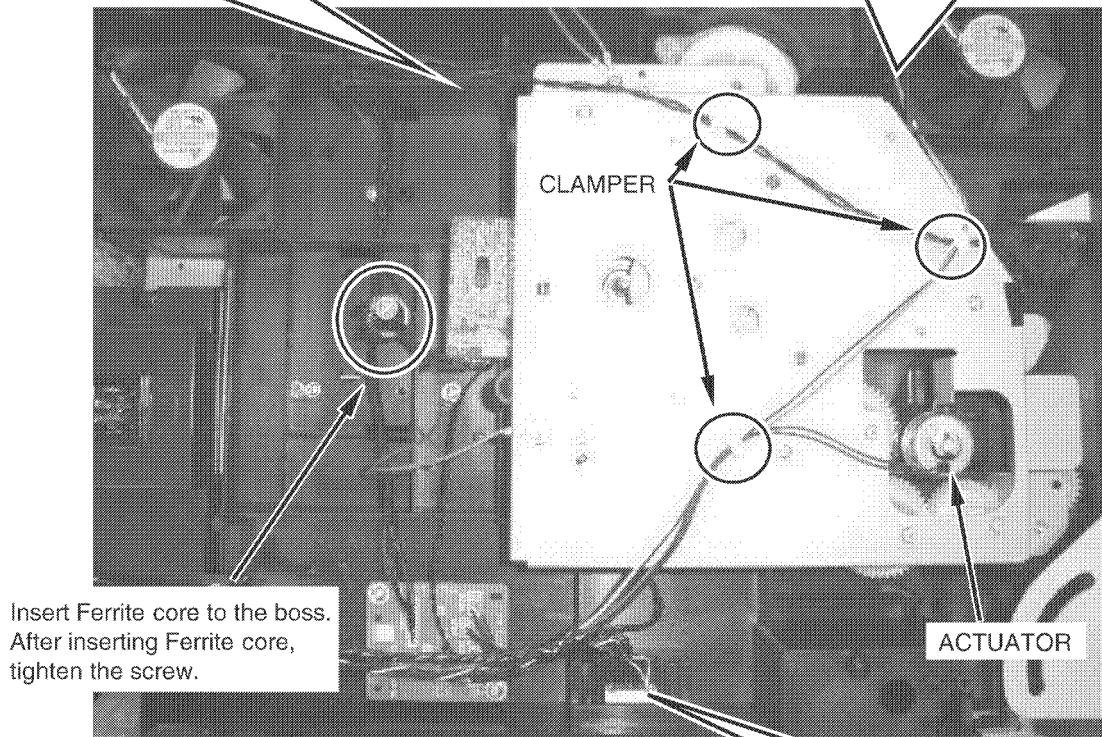
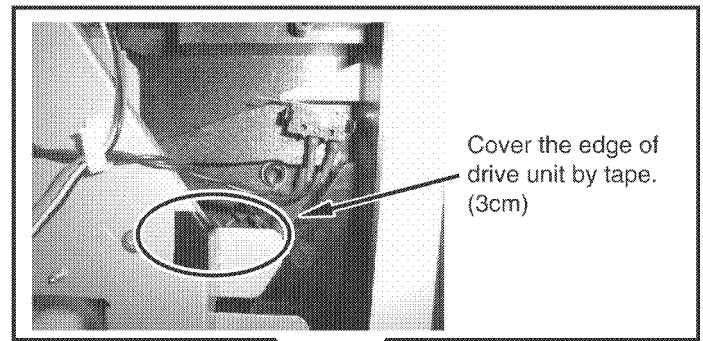
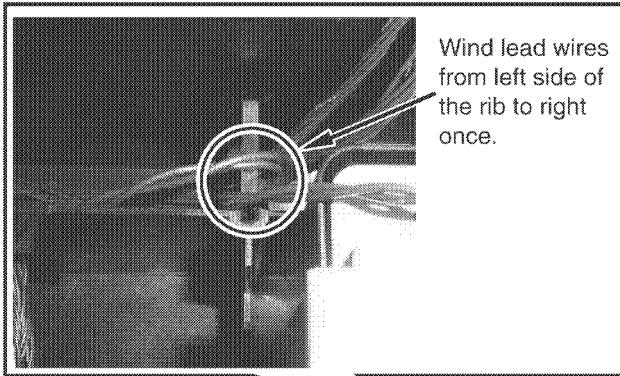




## 14.10.4. Main Cabinet Section

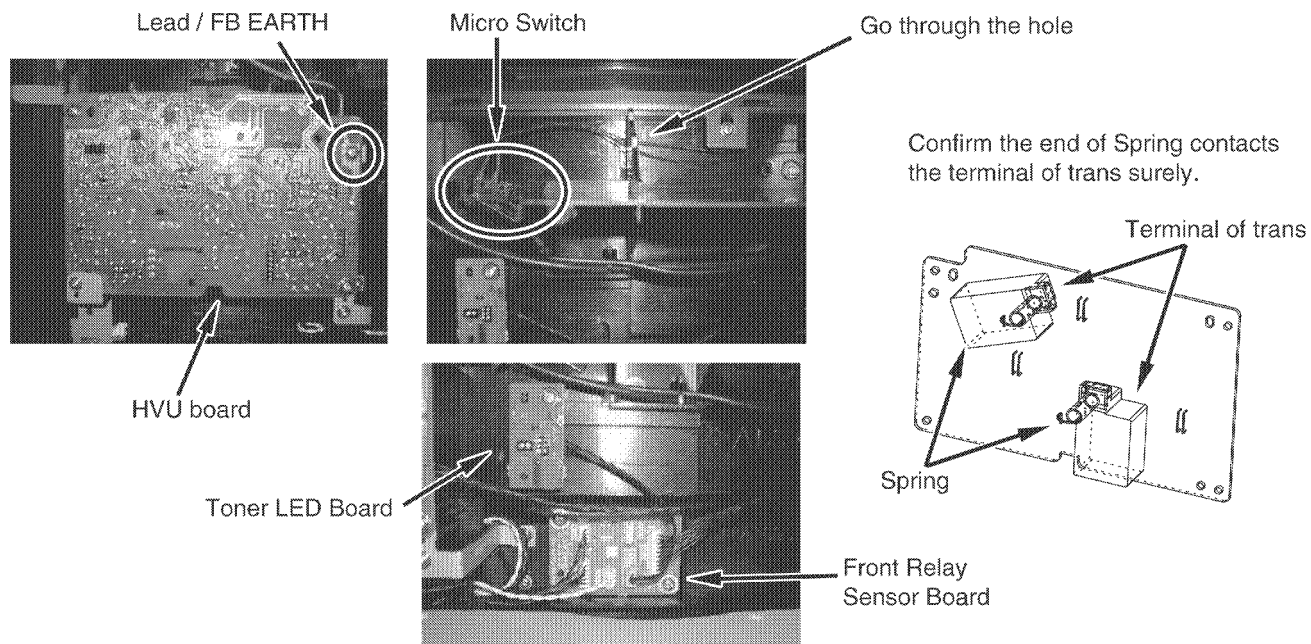


## 14.10.5. Drive Unit Section





## 14.10.6. High Voltage Power Supply Board Section



# 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.

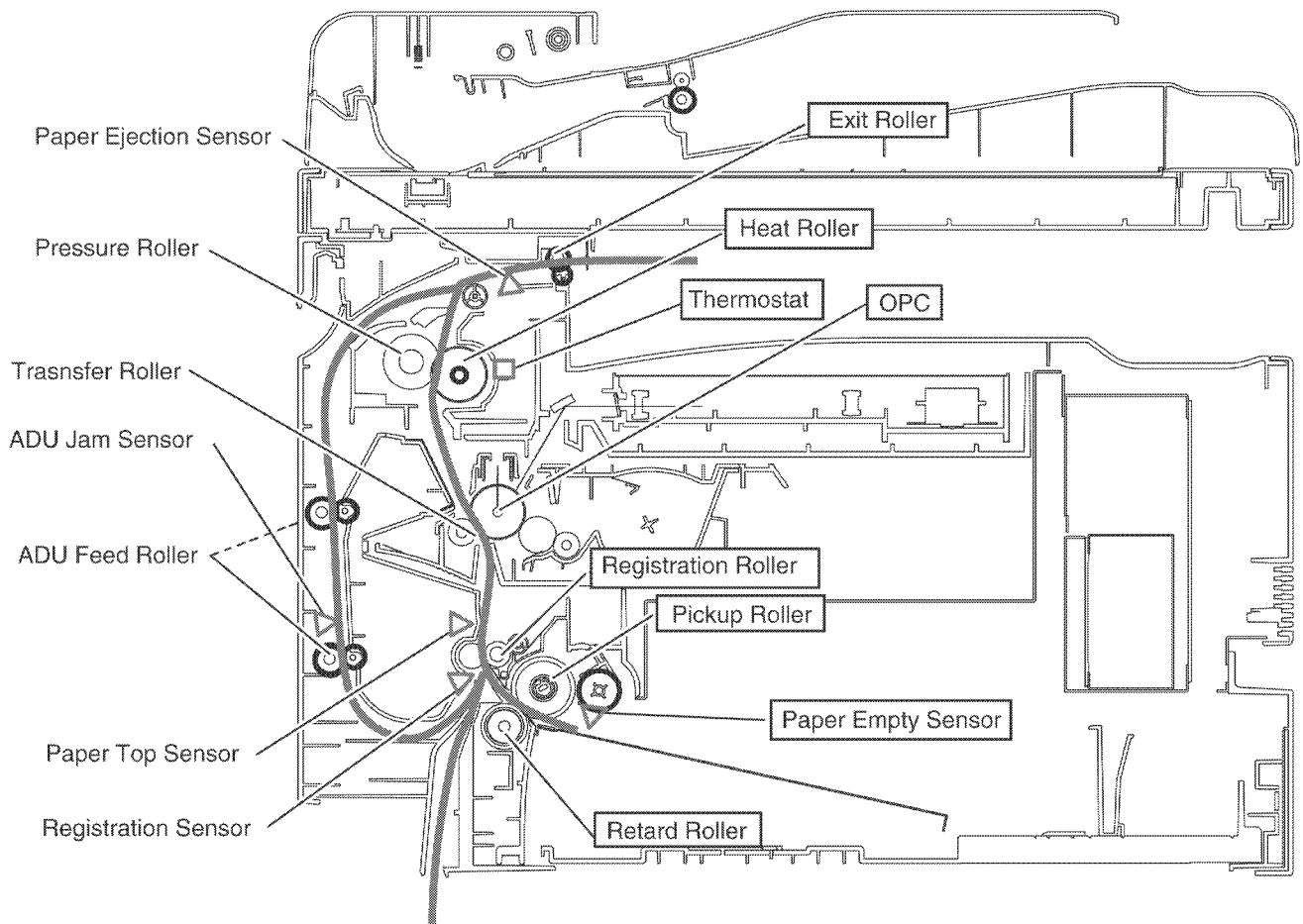
#### 6. Confirm normal operation of the equipment

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 <b>Maintenance Check Items/Component Locations</b> (P.271)
3	Sensors	Drum sensor (1JE1), Paper sensor (PS50), ADU Jam Sensor (PS54), Exit sensor (PS53), Home sensor (PS55), Read Position Sensor (PS81), Registration Sensor (PS51), Print Timing Sensor (PS52), Document Sensor (PS80), Cassette Sensor (SW50), Left Cover Sensor (2JE1).	See <b>Maintenance Check Items/Component Locations</b> (P.271) and <b>Sensors and Switches Section</b> (P.56) <b>Test Functions</b> (P.121)
4	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to <b>Maintenance</b> (P.273).
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	ADF Document Feed Roller (Ref.No.82)	3 months
2	ADF Separation Rubber (Ref. No.30)	3 months
3	ADF Eject Roller (Ref.No.45)	3 months
4	Pick up Roller (Ref No.322)	-----
5	Feed Roller (Ref.No.329)	3 months
6	Registration Roller (Ref.No.306)	3 months
7	Heat Roller (Ref.No.518)	-----
8	Exit (Eject) Roller (Ref.No.439)	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. Maintenance

### 15.2.1. Cleaning the White Plates and Glasses

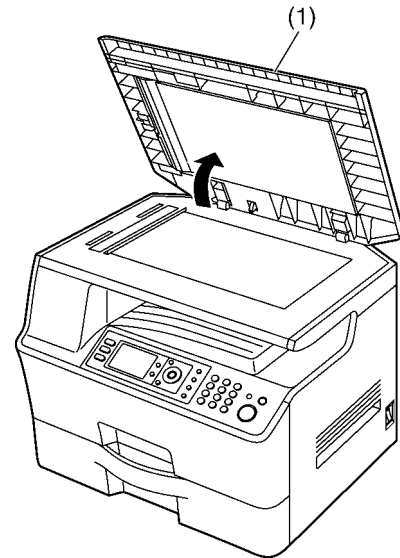
Clean the white plates and glass when a black line, a white line or a dirty pattern appears on:

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

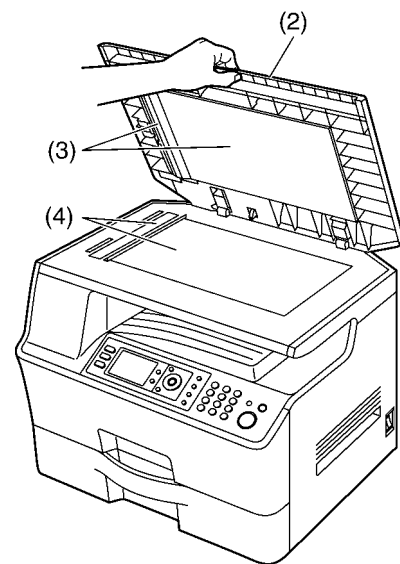
**Caution:**

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

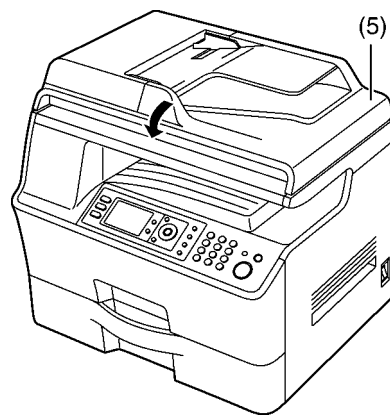
1. Open the document cover (1).



2. Hold the document cover (2) while cleaning the white plates (3) and the scanner glass (4).



3. Close the document cover (5).



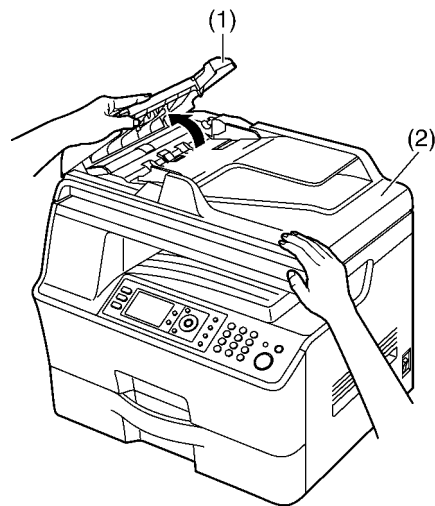
### 15.2.2. Cleaning the Document Feeder Rollers

Clean the rollers when documents frequently misfeed.

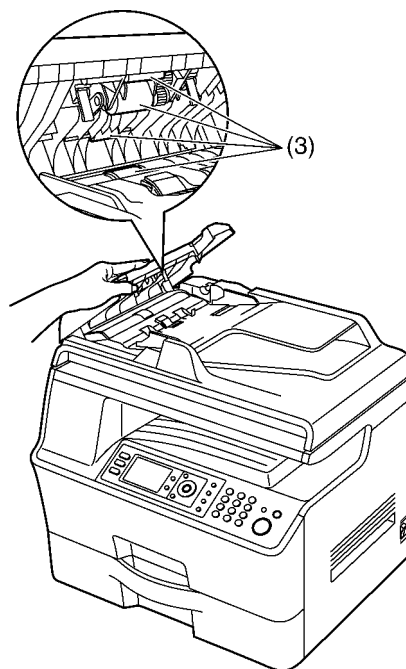
**Caution:**

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

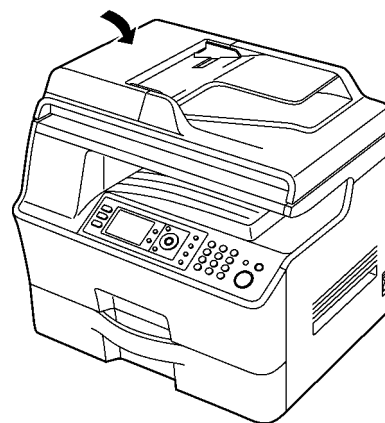
1. Turn the power switch OFF.
2. Open the ADF cover (1) while holding the document cover (2).



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



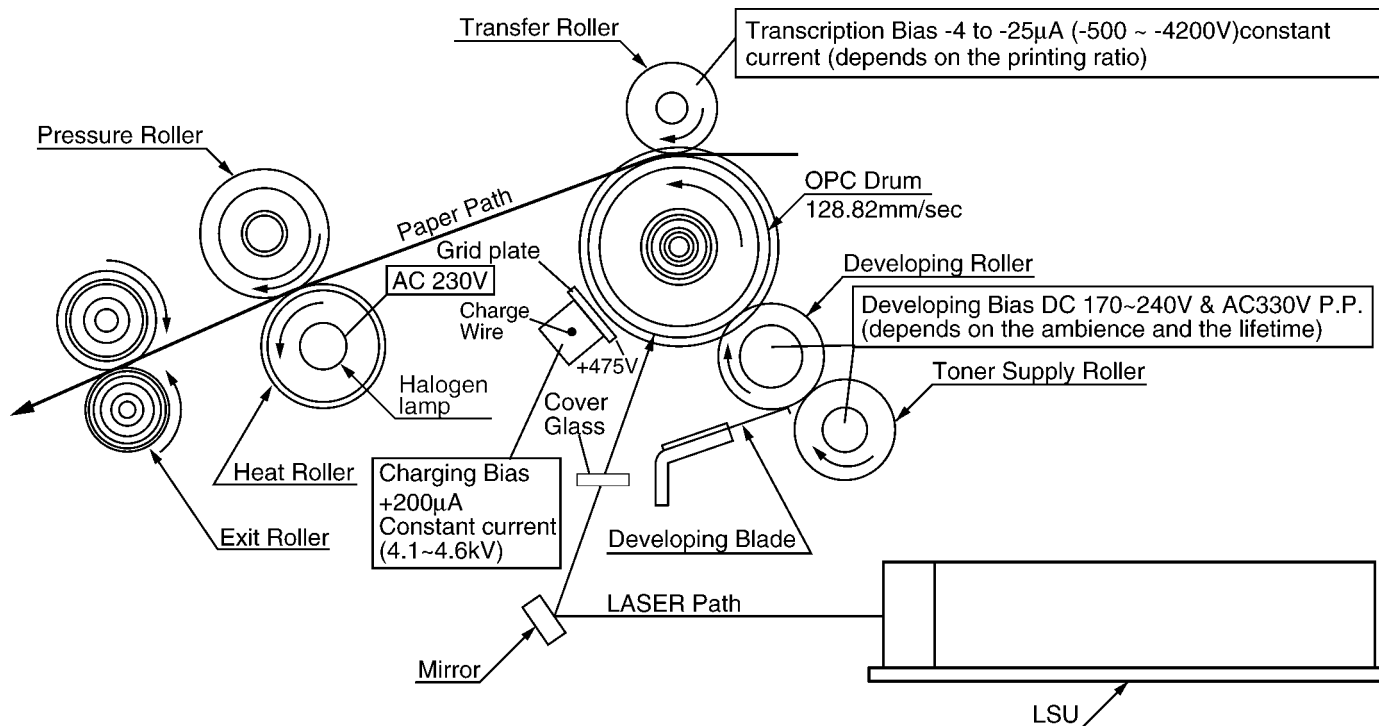
4. Close the ADF cover.



5. Turn the power switch ON.

## 15.3. Printing Operation Principle

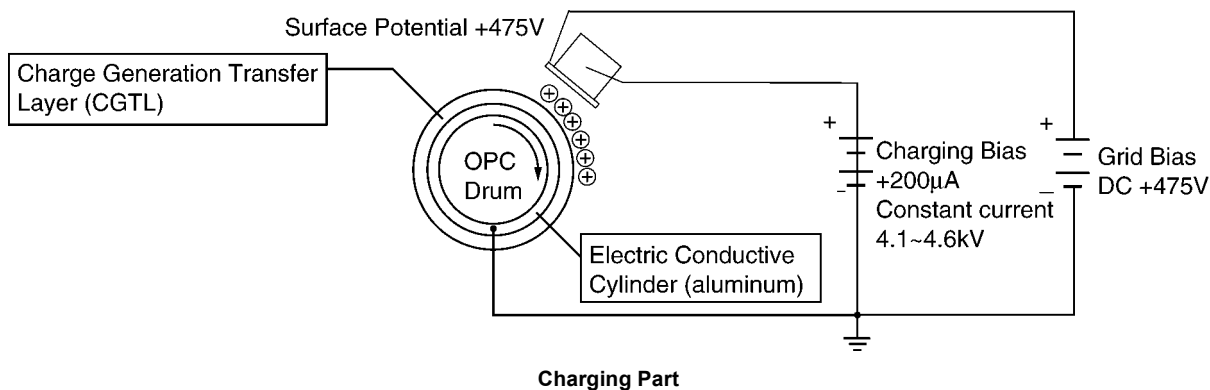
### 15.3.1. Process Chart and Process BIAS



### 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).

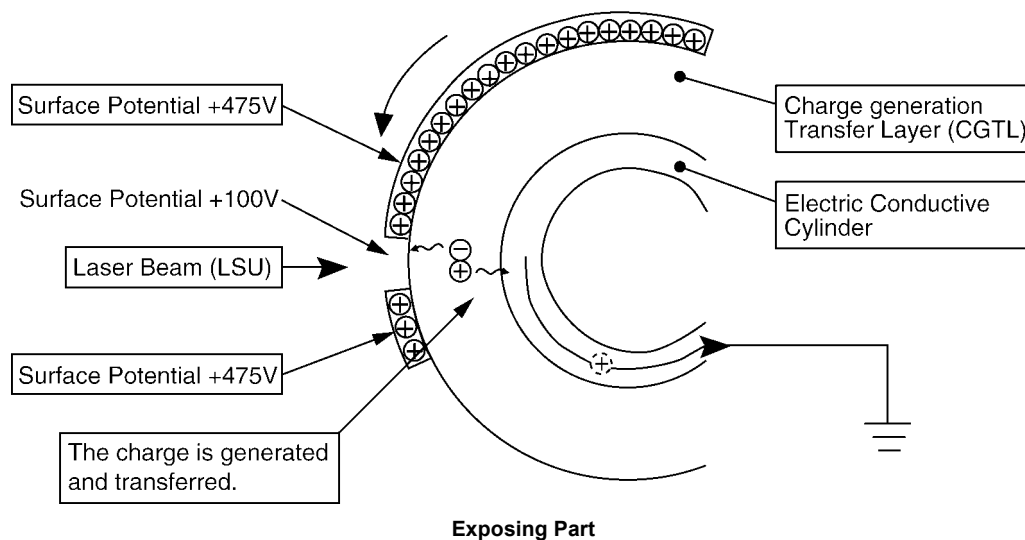
When the charging bias (DC +4.35kv) is added and the plus charge is supplied to the opc surface while charging, the whole surface potential of the drum is +475V.



### 15.3.3. Exposing

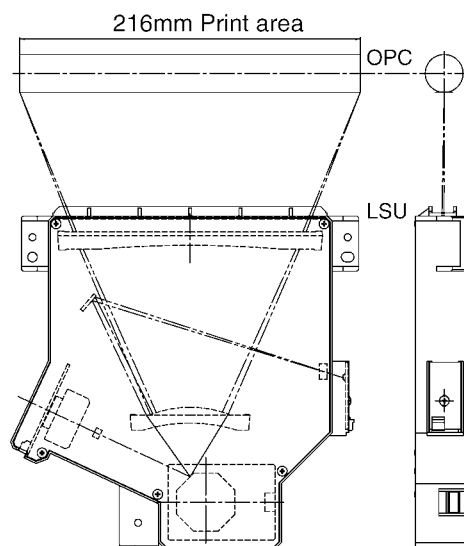
When the drum which is charged with the fixed electric charge is irradiated by the laser beam, the plus charge and minus charge are generated at the Charge Generation Transfer Layer. Passing through the Charge Generation Transfer Layer which conducts the minus charge, the plus-charged drum's surface 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.



### 15.3.4. Laser Scanning Unit Locations

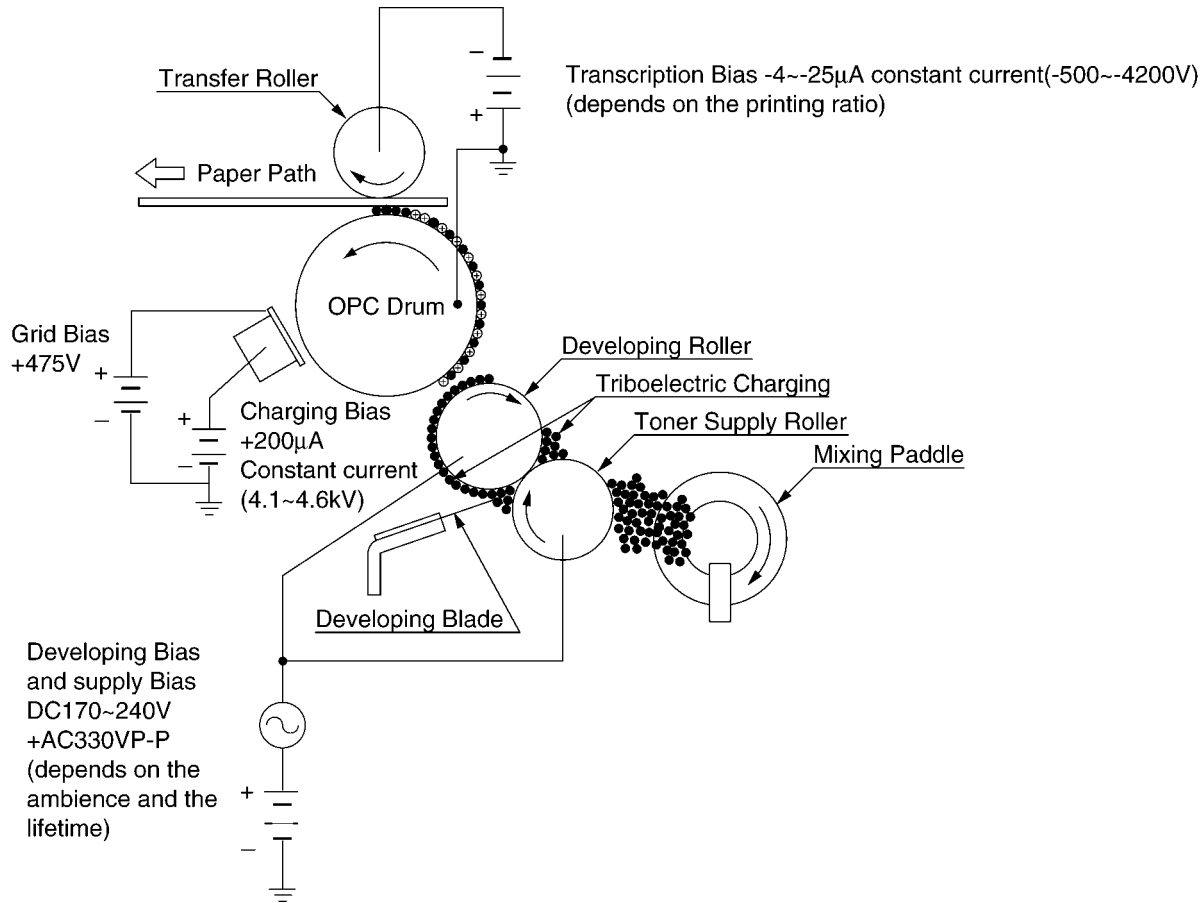
#### LSU Layout



### 15.3.5. 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 unit 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.

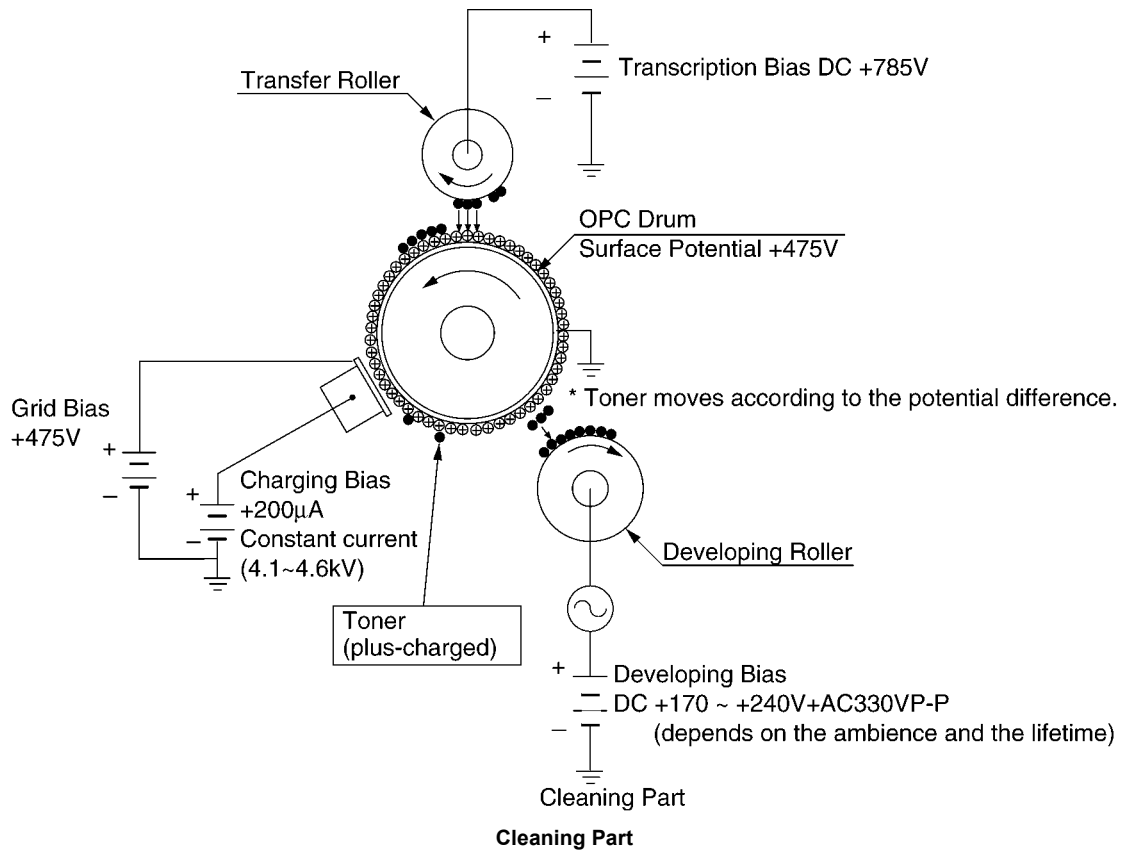
The transfer is the stage that the created image on the OPC drum is transferred to the paper. When the transfer roller is minus-charged with the image, the plus-charged toner particles are gathered on the surface of the drum and transferred to the paper.



Developing and Transcription Part

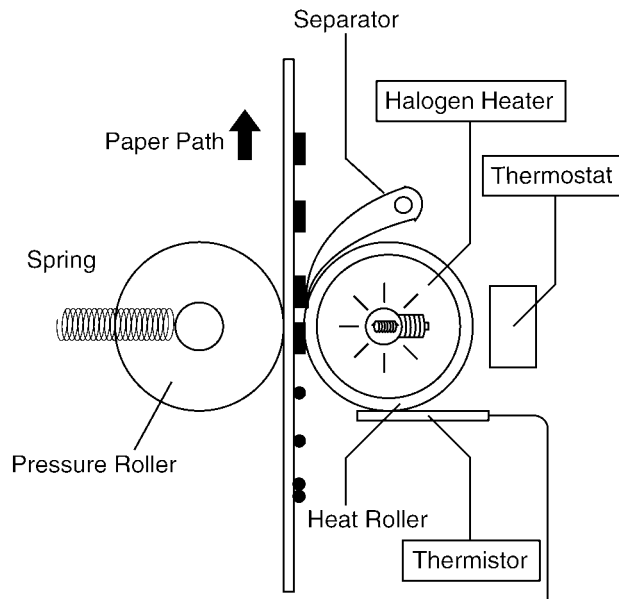
### 15.3.6. Cleaning of Transfer Roller

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 unit, the transfer roller is plus-charged to eliminate the plus-charged toner.



### 15.3.7. 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**

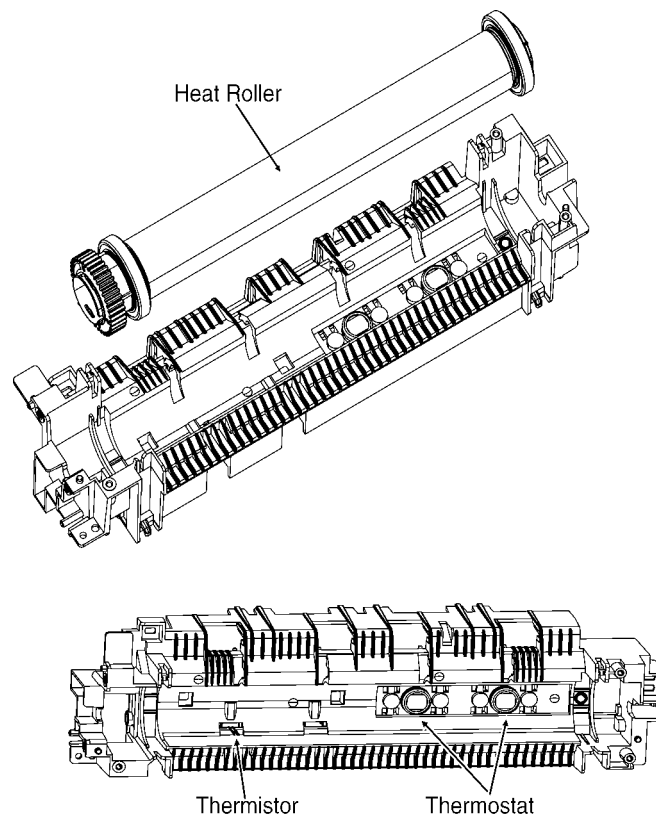
The fixing part becomes high temperature, so the thermistor and the thermal fuse are provided.

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 200°C while printing.

2. Thermostat

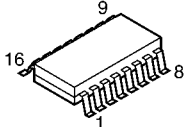
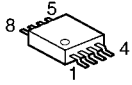
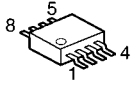
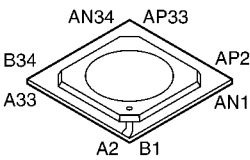
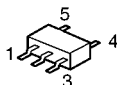
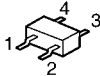
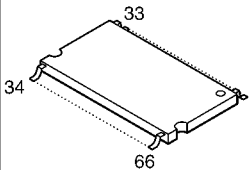
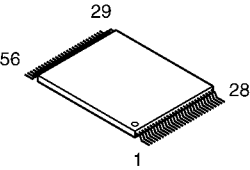
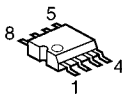
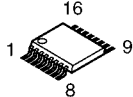
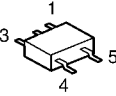
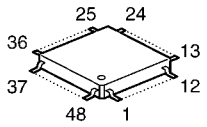
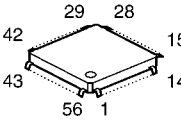
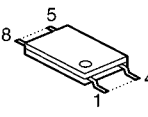
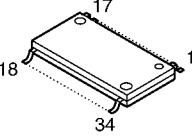
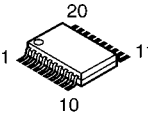



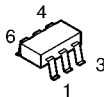
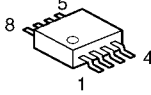





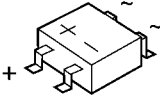



The thermostat is located near the heat roller, and it turns OFF the power when the temperature around the thermostat becomes over 220°C.



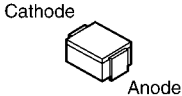
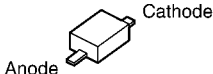
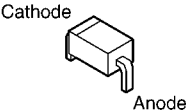


## 15.4. Terminal Guide of The ICs Transistors and Diodes

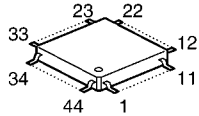
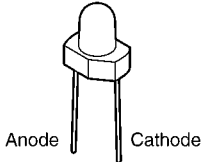
### 15.4.1. Main Board (1)

 <p>C1CB00002689 C1CB00002690 C1CB00001769</p>	 <p>C0ABEB000083</p>	 <p>C1AB00002556</p>	 <p>C1ZBZ0003749</p>	 <p>C0EBE0000504</p>
 <p>C0CBAAA00035 C0EBM0000020</p>	 <p>C3ABSY000034</p>	 <p>PNWIMB****</p>	 <p>C0DBEFH00002</p>	 <p>C0DBAGE00028</p>
 <p>C0JBAA000362</p>	 <p>C1ZBZ0003879</p>	 <p>C1CB00003084</p>	 <p>C0BBBA000044</p>	 <p>AN44067A</p>
 <p>C1DB00001173</p>	 <p>UNR92ANJ0L UNR921LJ0L 2SD2216J0L 2SD2216R UNR92A8J0L UNR91A0J0L UNR91ANJ0L</p>	 <p>B1ABFJ000001 B1BBAP000021 2SD0874AS</p>	 <p>B1ADGP000008</p>	 <p>B1CHQD000001</p>
 <p>B1CDRE000001</p>	 <p>2SB1197KQ</p>	 <p>B1CHND000004</p>	 <p>B1ABDF000026 2SK3018</p>	 <p>MA111 MAZ80560ML MA8051</p>
 <p>MAZY43000L</p>	 <p>B0EDER000009</p>	 <p>B0ZBZ0000068</p>	 <p>MA142WKTX</p>	 <p>B0JCRC000006 B0BC3R800009</p>

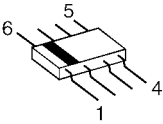
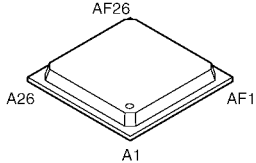
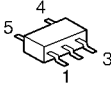
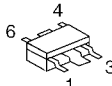
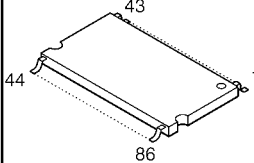
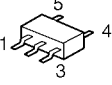
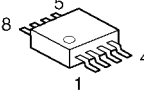
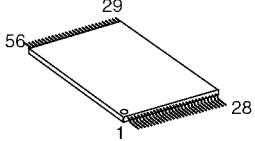



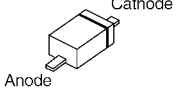
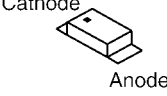
### 15.4.2. Main Board (2)

 <p>B0JCRD000012</p>	 <p>B3ABB0000331</p>	 <p>B0ACEL000004</p>		
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### 15.4.3. Operation Board

 <p>C1ZBZ0004019</p>	 <p>B3AAA0000534</p>			
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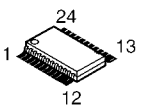




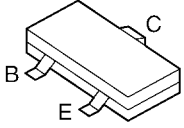
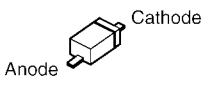
### 15.4.4. LCD Board

 <p>C0ZBZ0001490</p>	 <p>C2GBC0000277</p>	 <p>C0DBAYY00111</p>	 <p>C0DBZYY00029</p>	 <p>C3ABQJ000024</p>
 <p>C0EBE0000504</p>	 <p>C0DBAYY00064</p>	 <p>C3FBNY000034</p>	 <p>B1DHCD000019</p>	 <p>2SB1197KQ</p>
 <p>UNR92ANJ0L UNR921LJ0L</p>	 <p>MAZS2400ML</p>	 <p>LNJ326W83RA</p>		

### 15.4.5. Toner LED Board

 <p>B3EA00000053</p>				
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## 15.4.6. Driver Board

 <p>C0GBY0000059</p>	 <p>B1ABKD000001</p>	 <p>UNR92ANJ0L</p>	 <p>2SB1197KQ</p>	 <p>2SK3018</p>
 <p>B1ABDF000025</p>	 <p>B0JCDD000001</p>			

## 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)

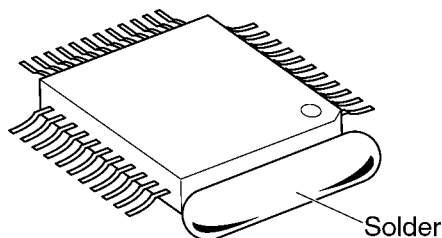
**Note:** See **About Lead Free Solder (PbF: Pb free)** (P.7.)

### 15.5.2. Flat Package IC Removal Procedure

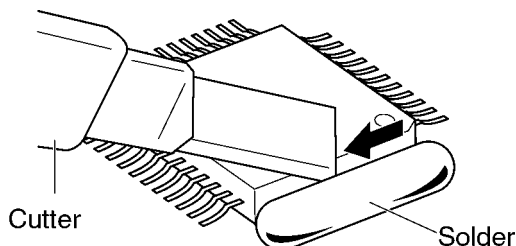
1. Put plenty of solder on the IC pins so that the pins can be completely covered.

**Note:**

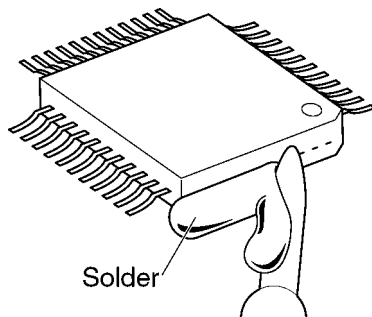
If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



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



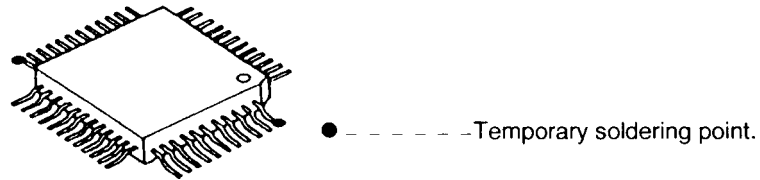
3. While the solder melts, remove it together with the IC pins.



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.

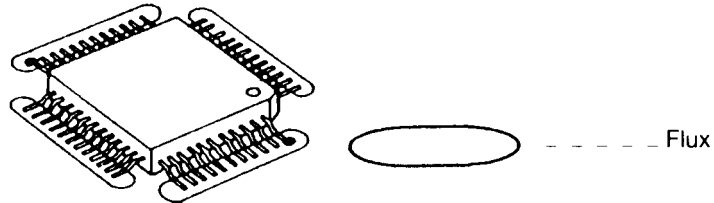
### 15.5.3. Flat Package IC Installation Procedure

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

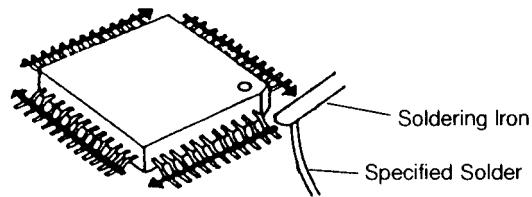


\*Check the accuracy of the IC setting with the corresponding soldering foil.

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

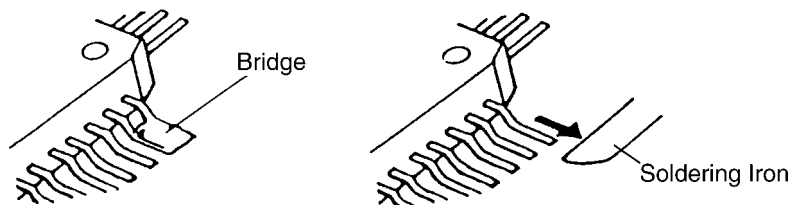


3. Solder the pins, sliding the soldering iron in the direction of the arrow.



### 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

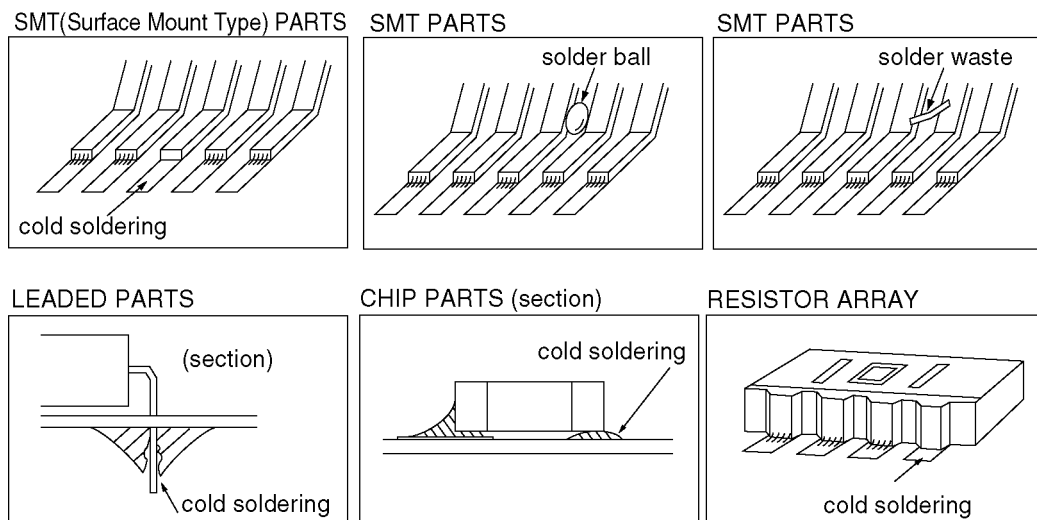
When the unit fails to boot up the system, take the troubleshooting procedures very carefully. It may have a serious problem.

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.16).

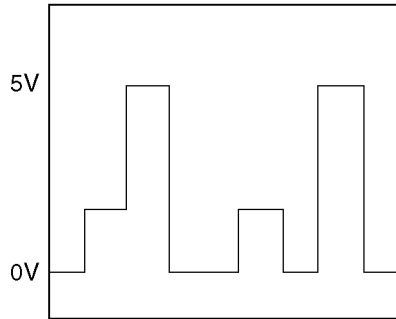
The ASIC (IC300) controls all the other digital ICs. When the power is turned on, the ASIC retrieves the operation code stored in the ROM (IC402), then follows the instructions for controlling each IC. All ICs have some inner registers that are assigned to a certain address.

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).

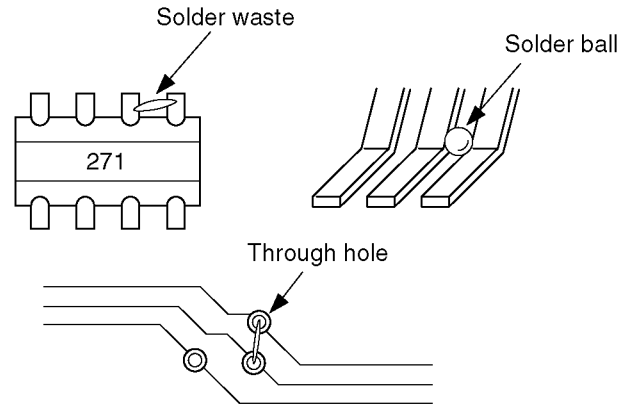
### 15.6.1. NG Example

1.

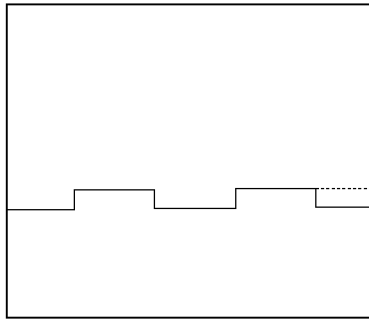


Short circuit from the adjacent signal wires.

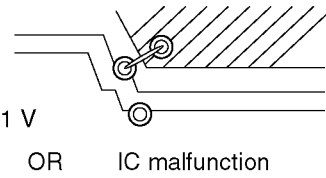
Check for a short circuit in the RA and IC leads and the signal wire at the through hole.



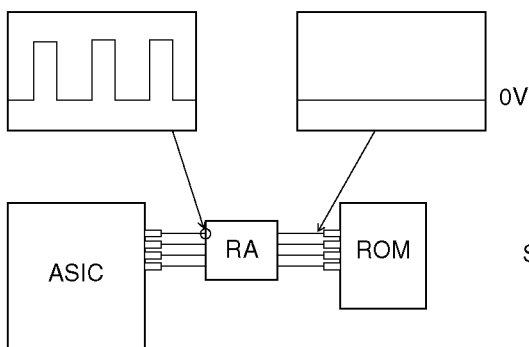
2.



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.

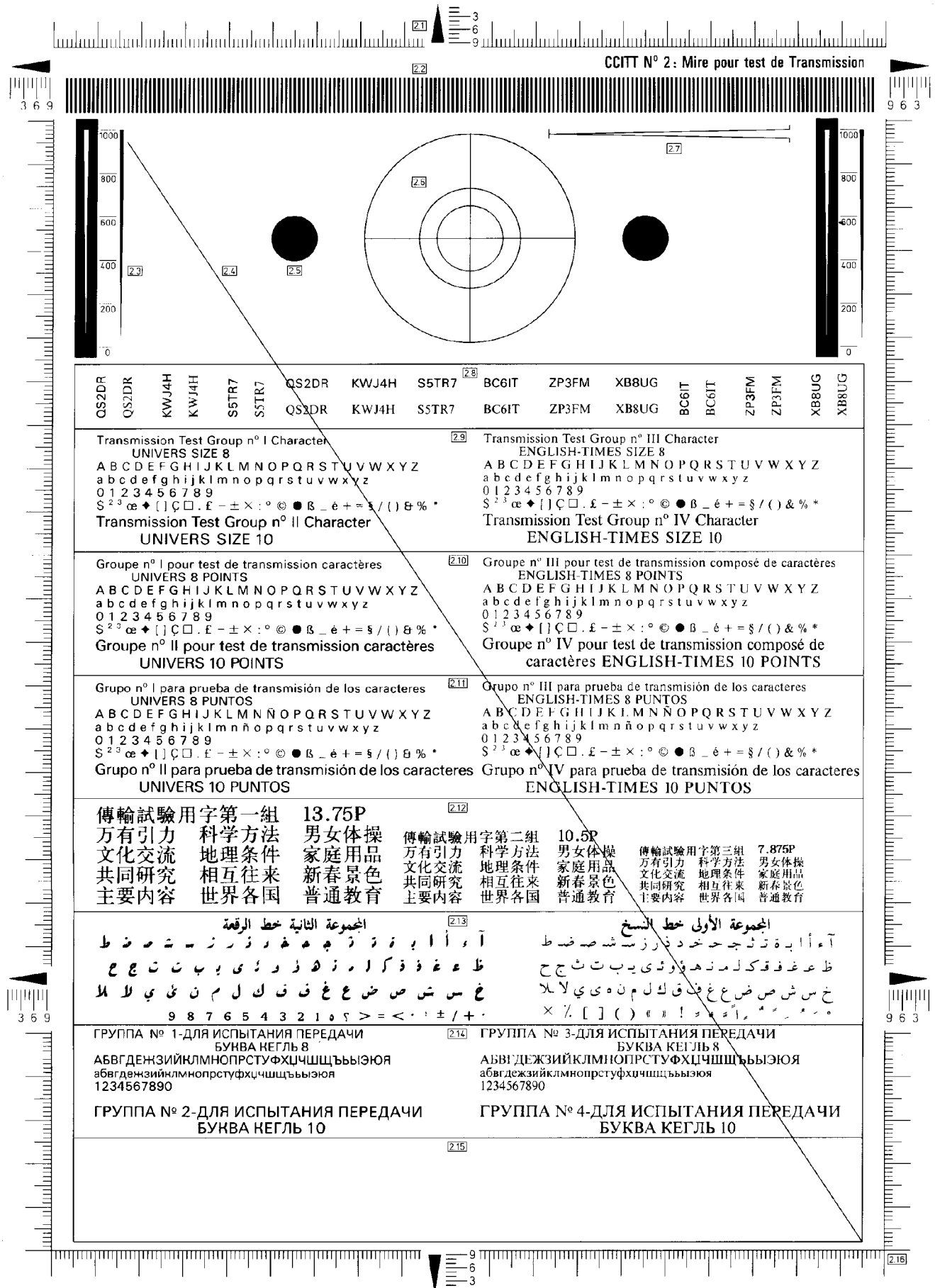
Yours sincerely,

P.J. CROSS  
Group Leader - Facsimile Research

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



### 15.7.2. ITU-T No.2 Test Chart



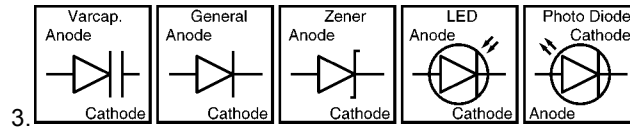
## Memo

# 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.

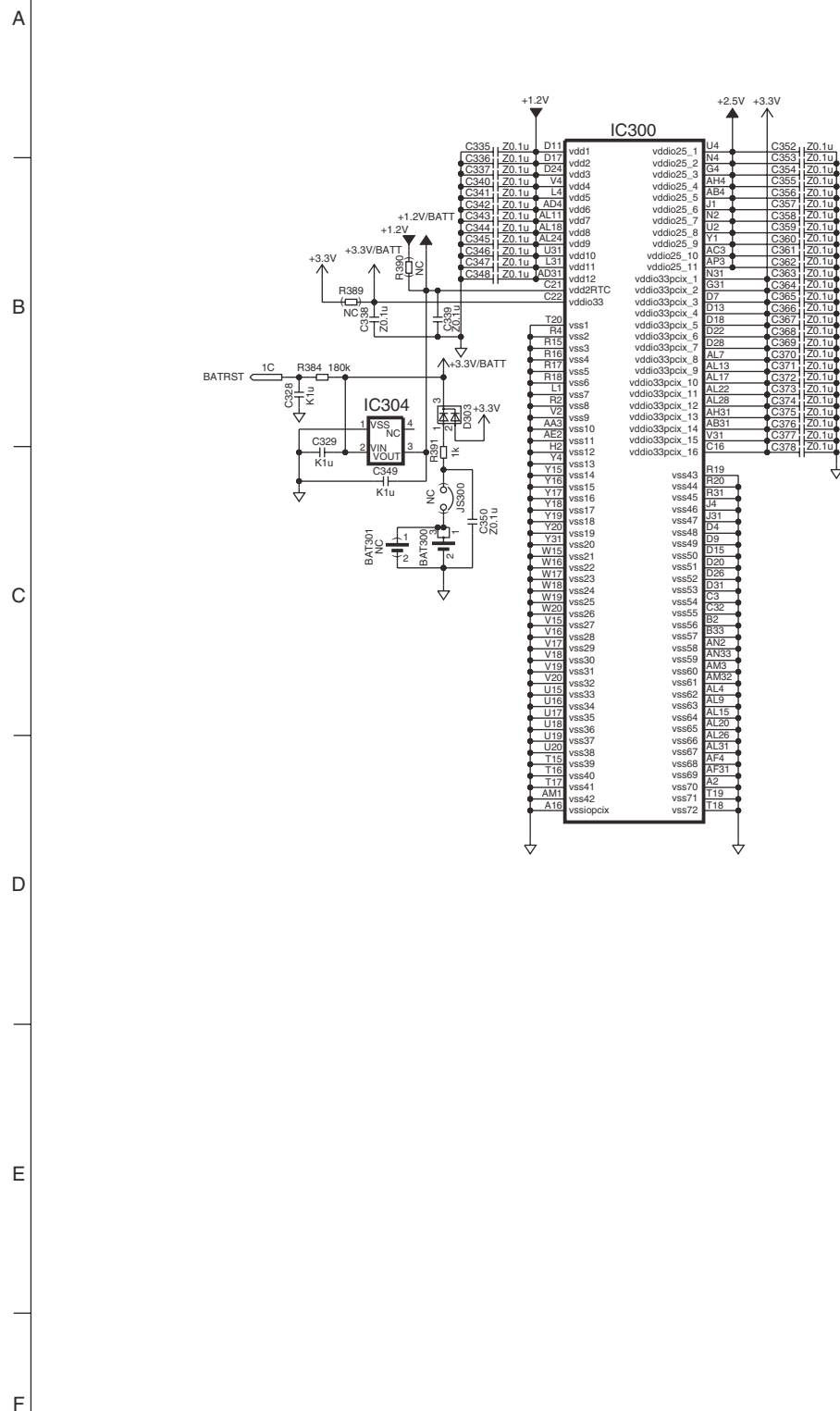


### Important safety notice

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



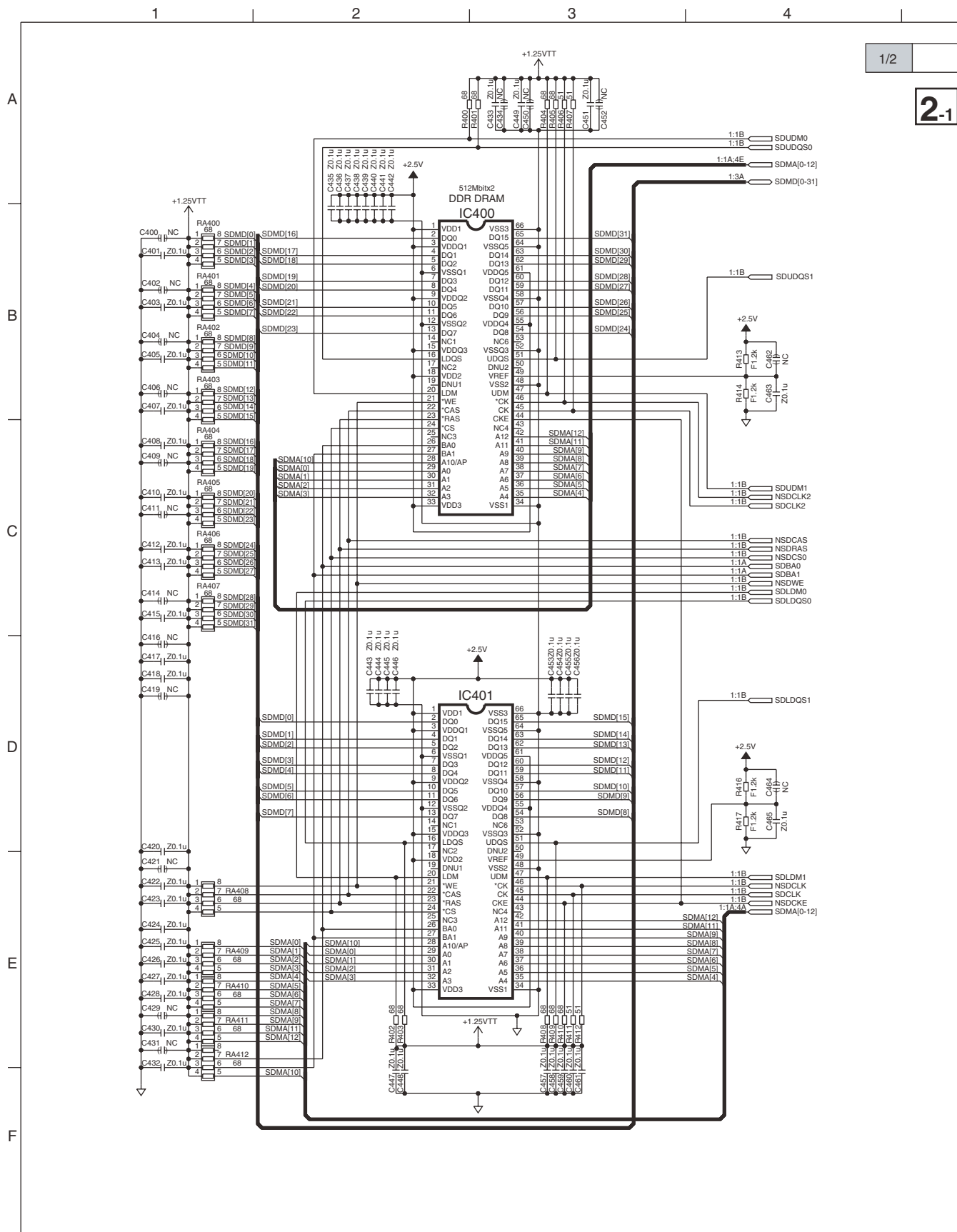




DP-MB350-C SCHEMATIC DIAGRAM (MAIN BOARD No.1) (3/3)

Memo

### 16.2.2. Main Board (2)

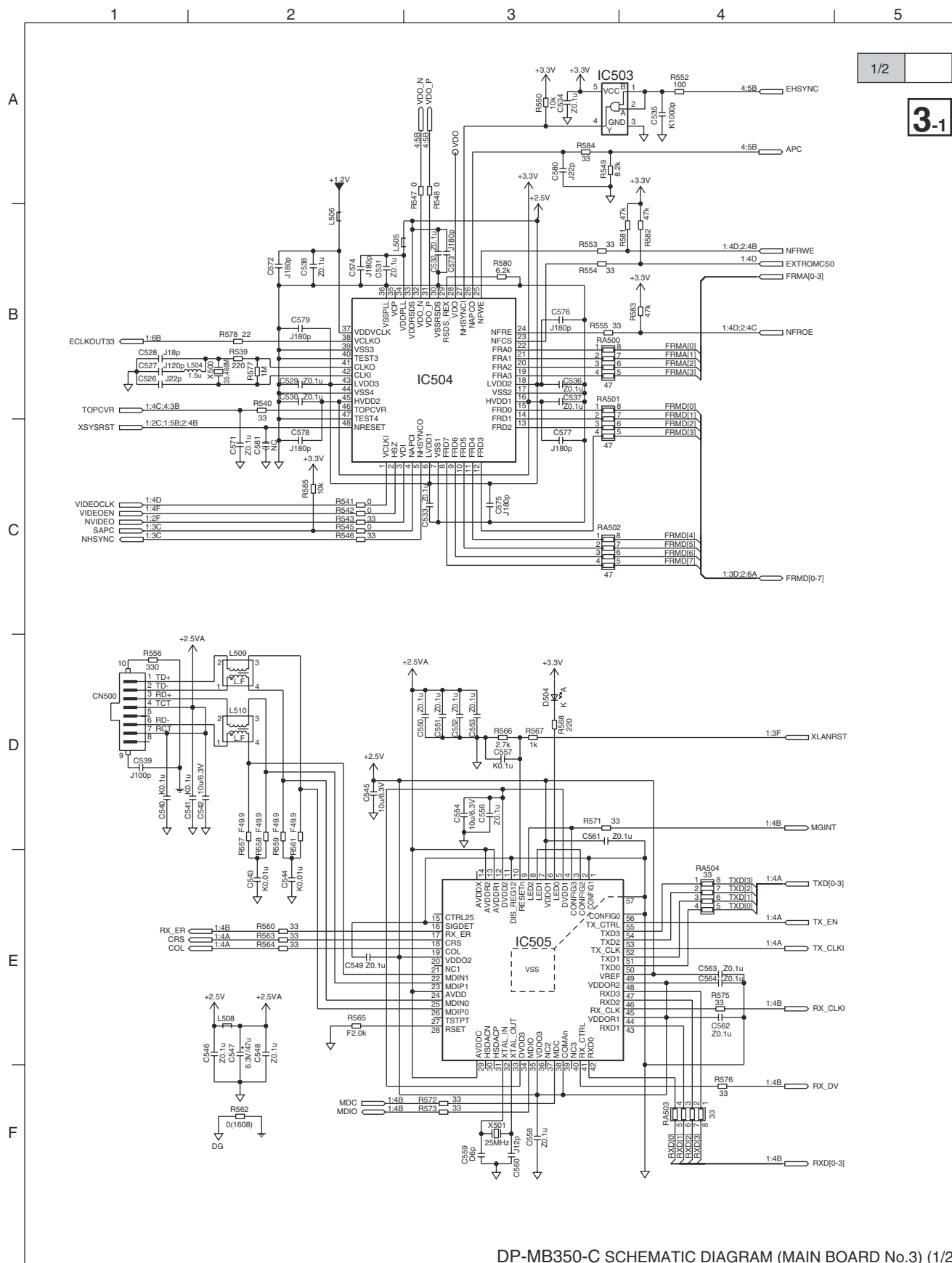


DP-MB350-C SCHEMATIC DIAGRAM (MAIN BOARD No.2) (1/2)



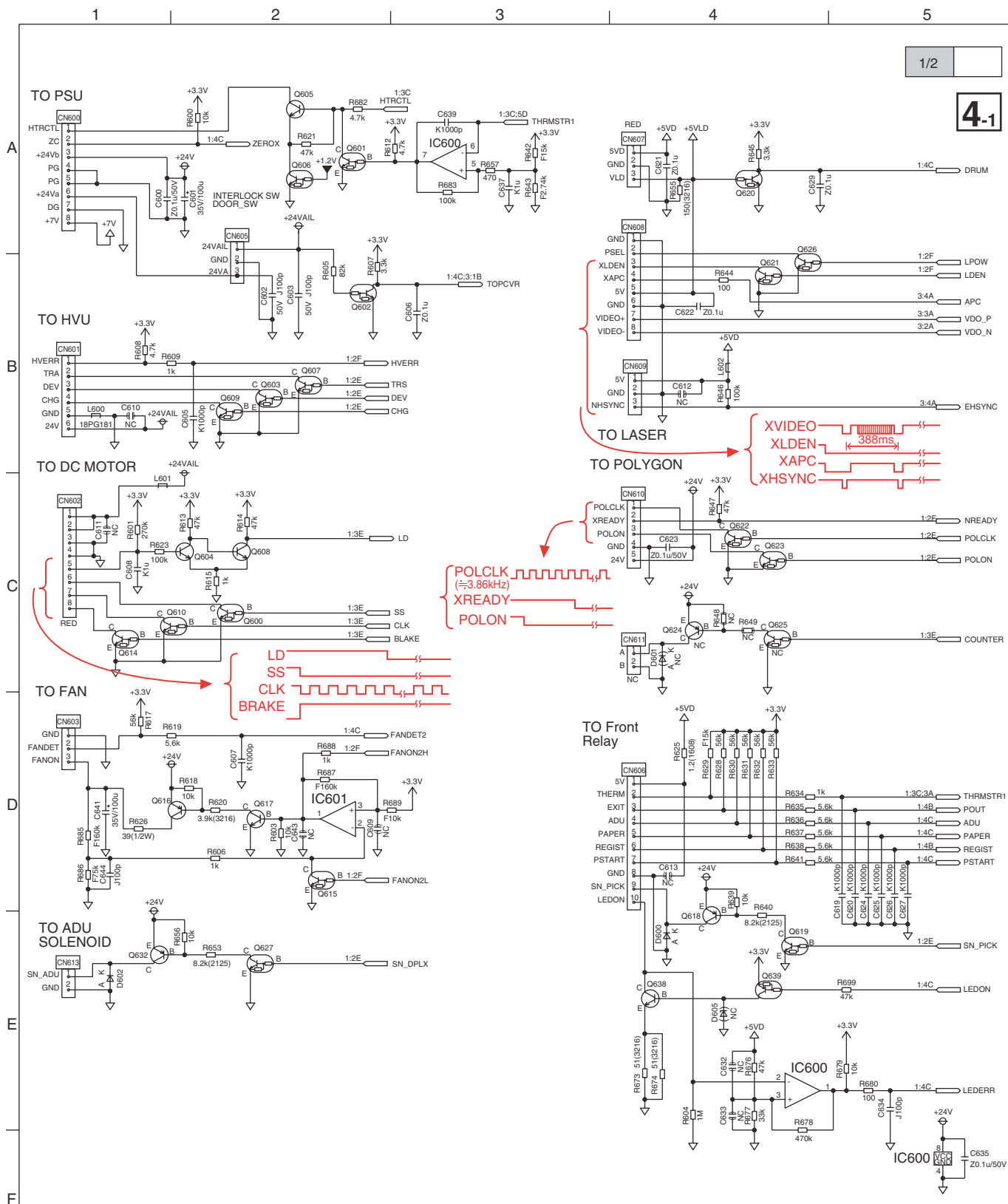


### 16.2.3. Main Board (3)



DP-MB350-C SCHEMATIC DIAGRAM (MAIN BOARD No.3) (1/2)





A

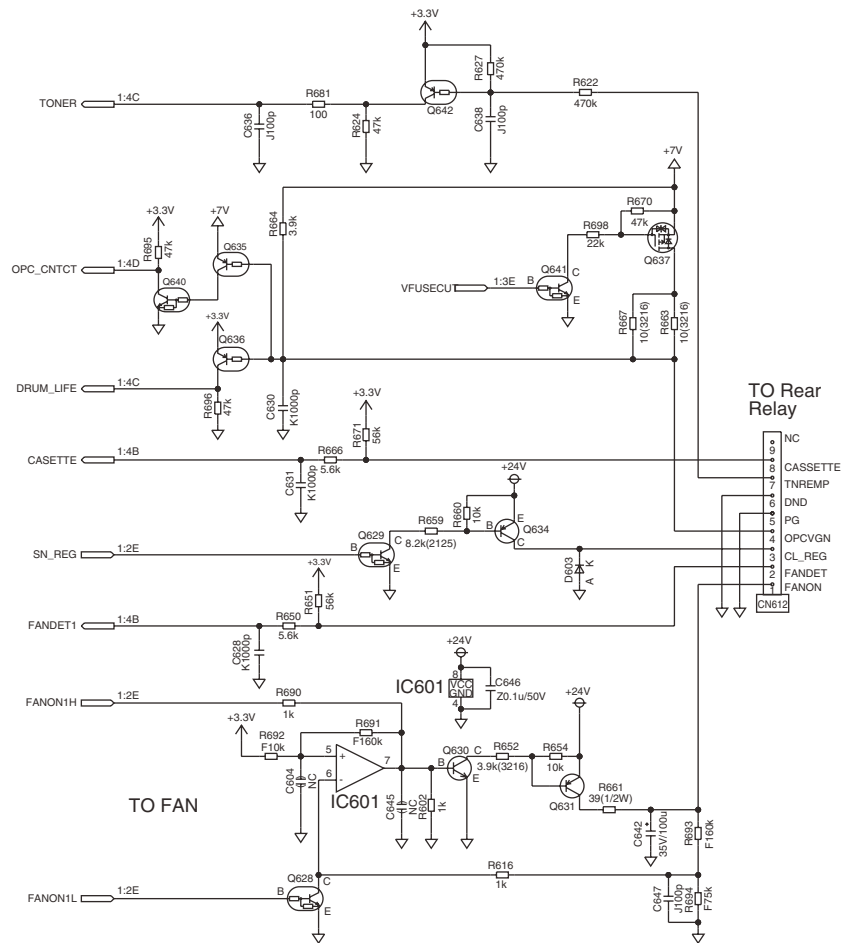
B

C

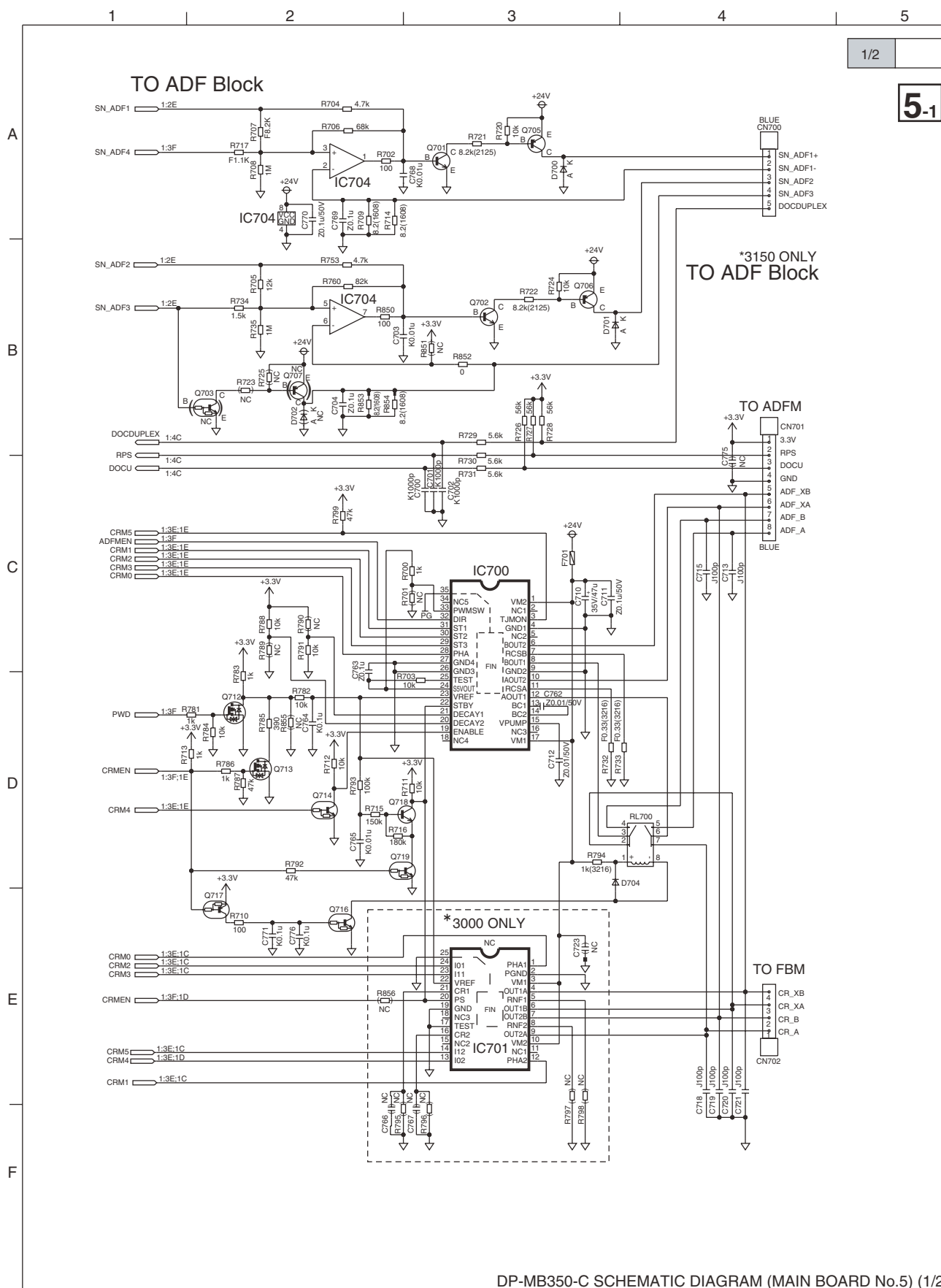
D

E

F

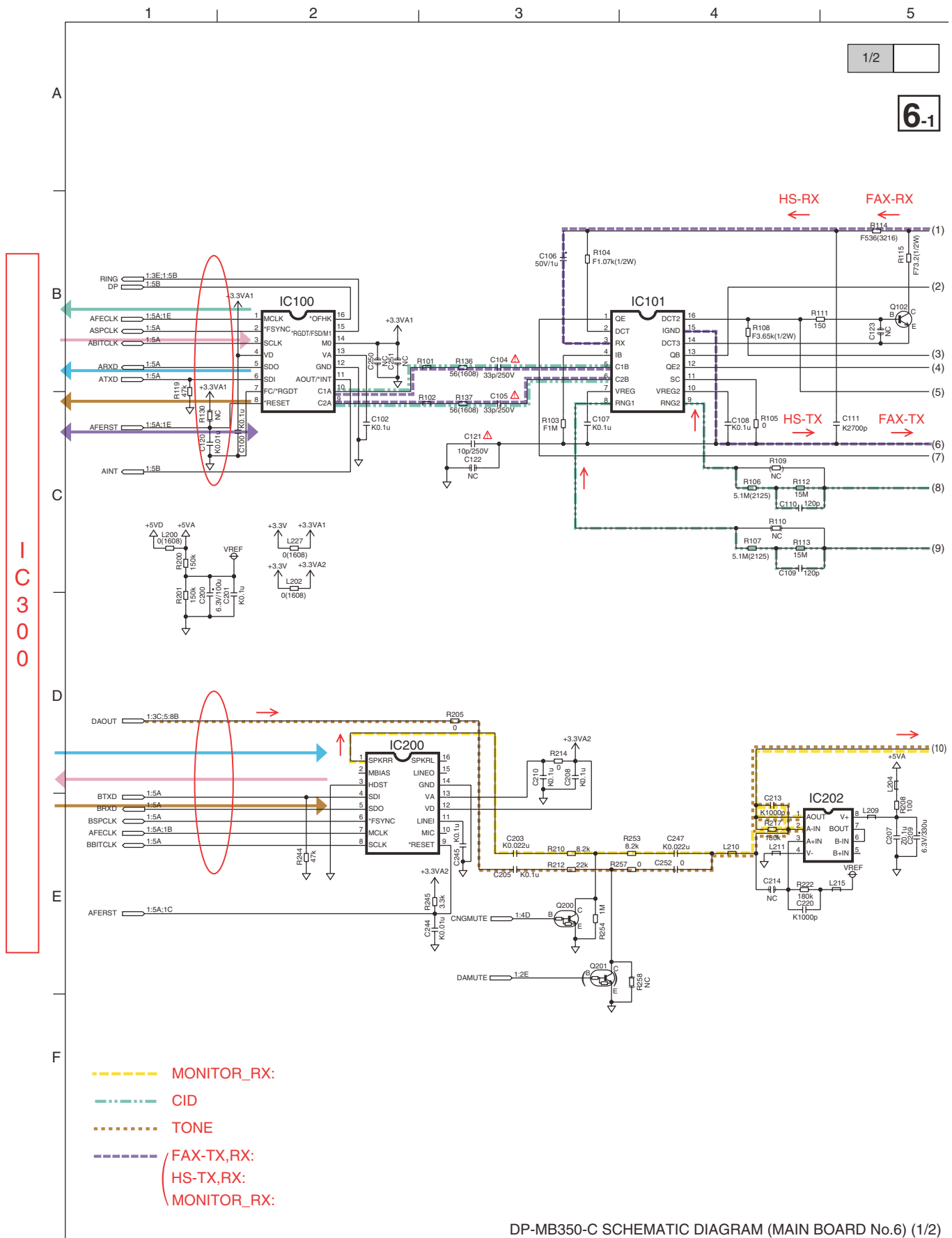


DP-MB350-C SCHEMATIC DIAGRAM (MAIN BOARD No.4) (2/2)

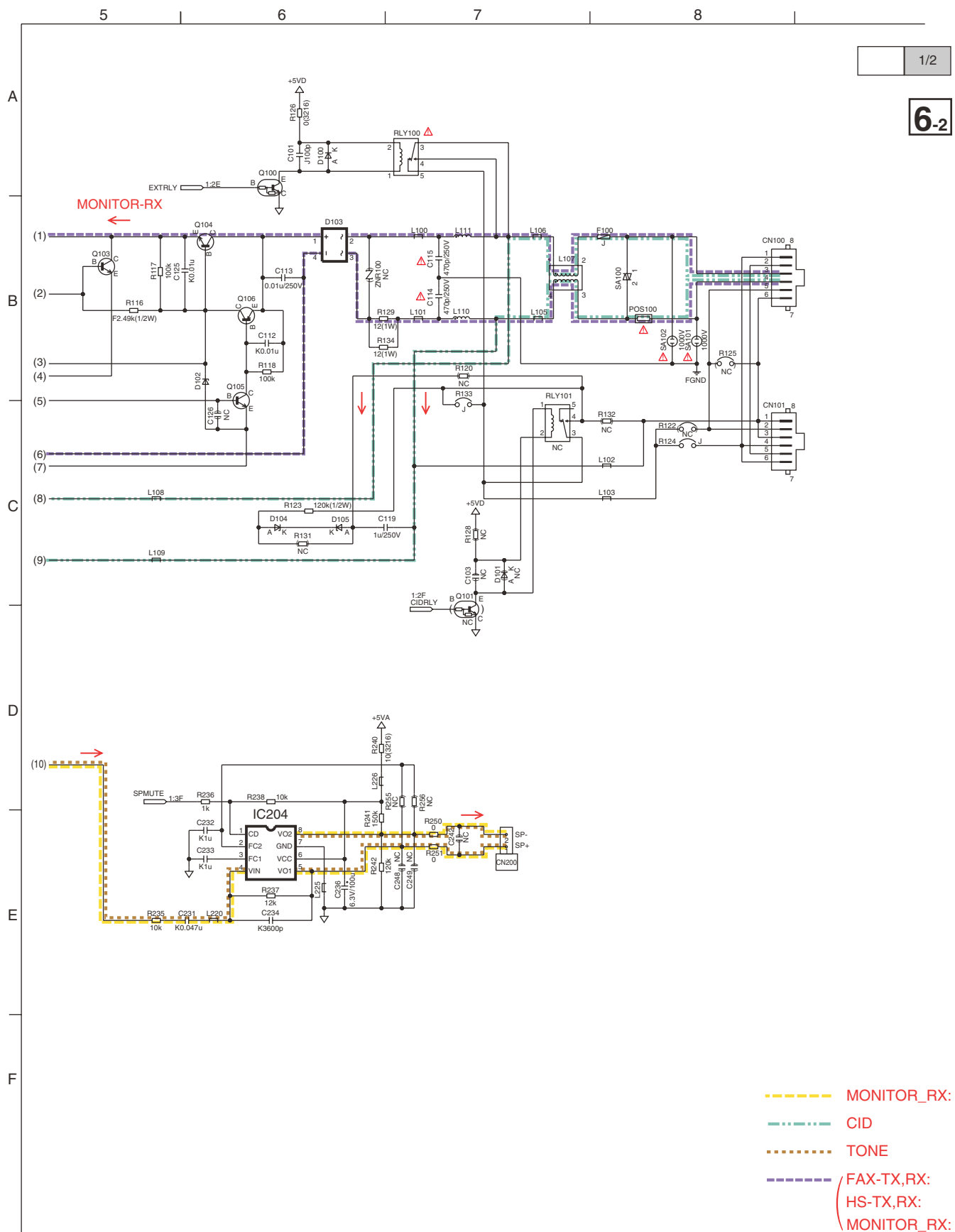




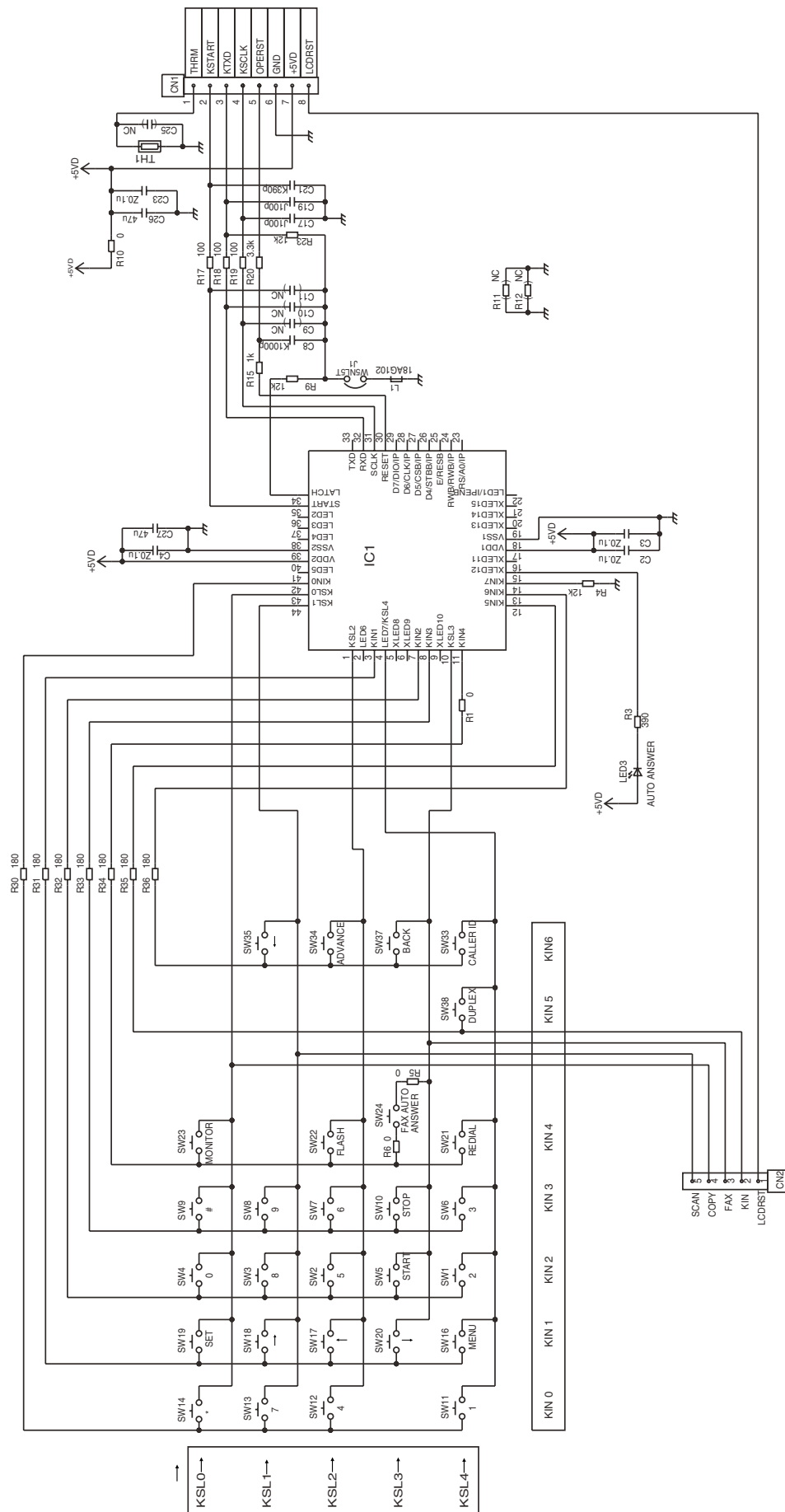
## 16.2.6. Main Board (6)







# 16.3. Operation Board

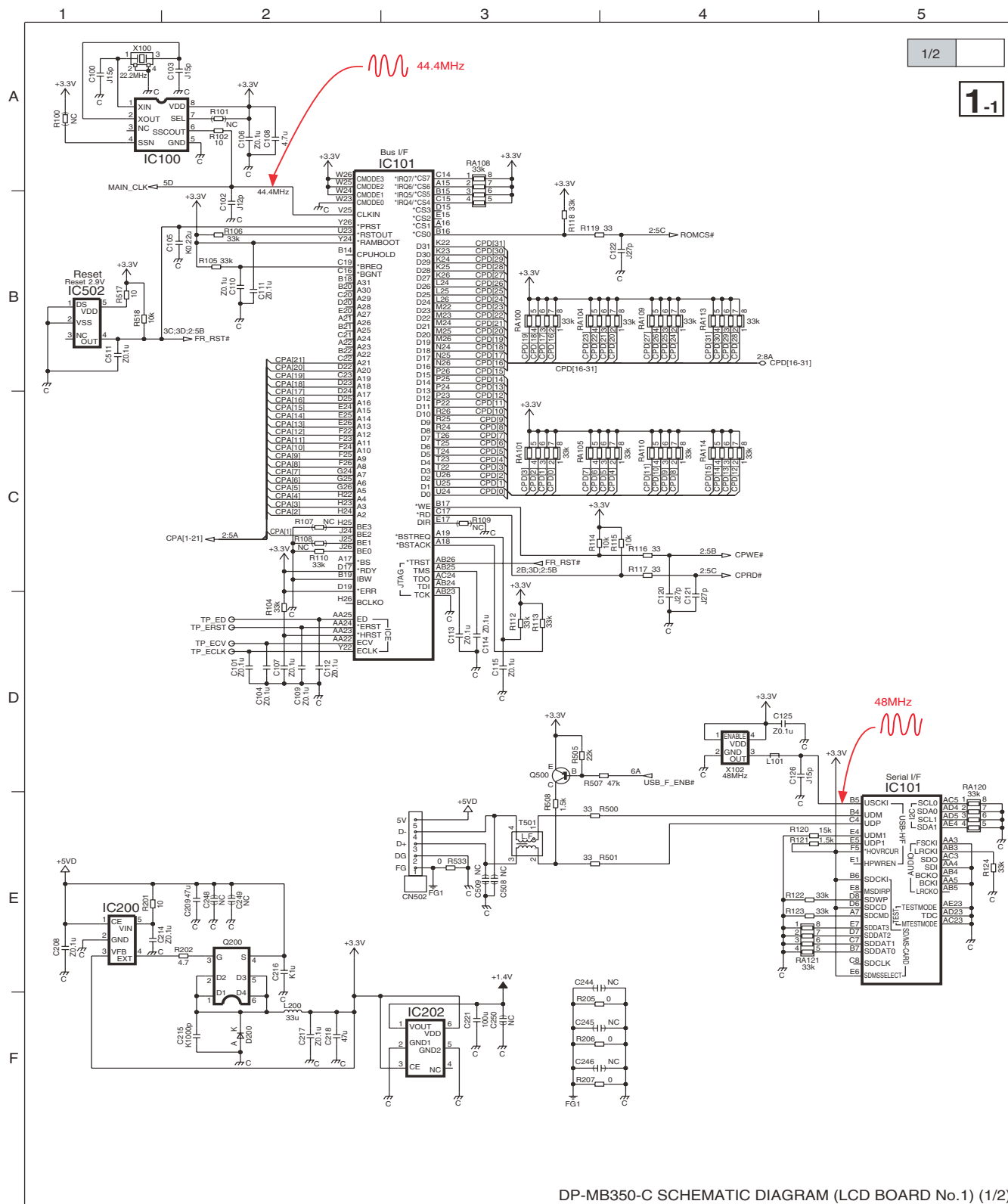


DP-MB350-C SCHEMATIC DIAGRAM OPERATION BOARD

Memo

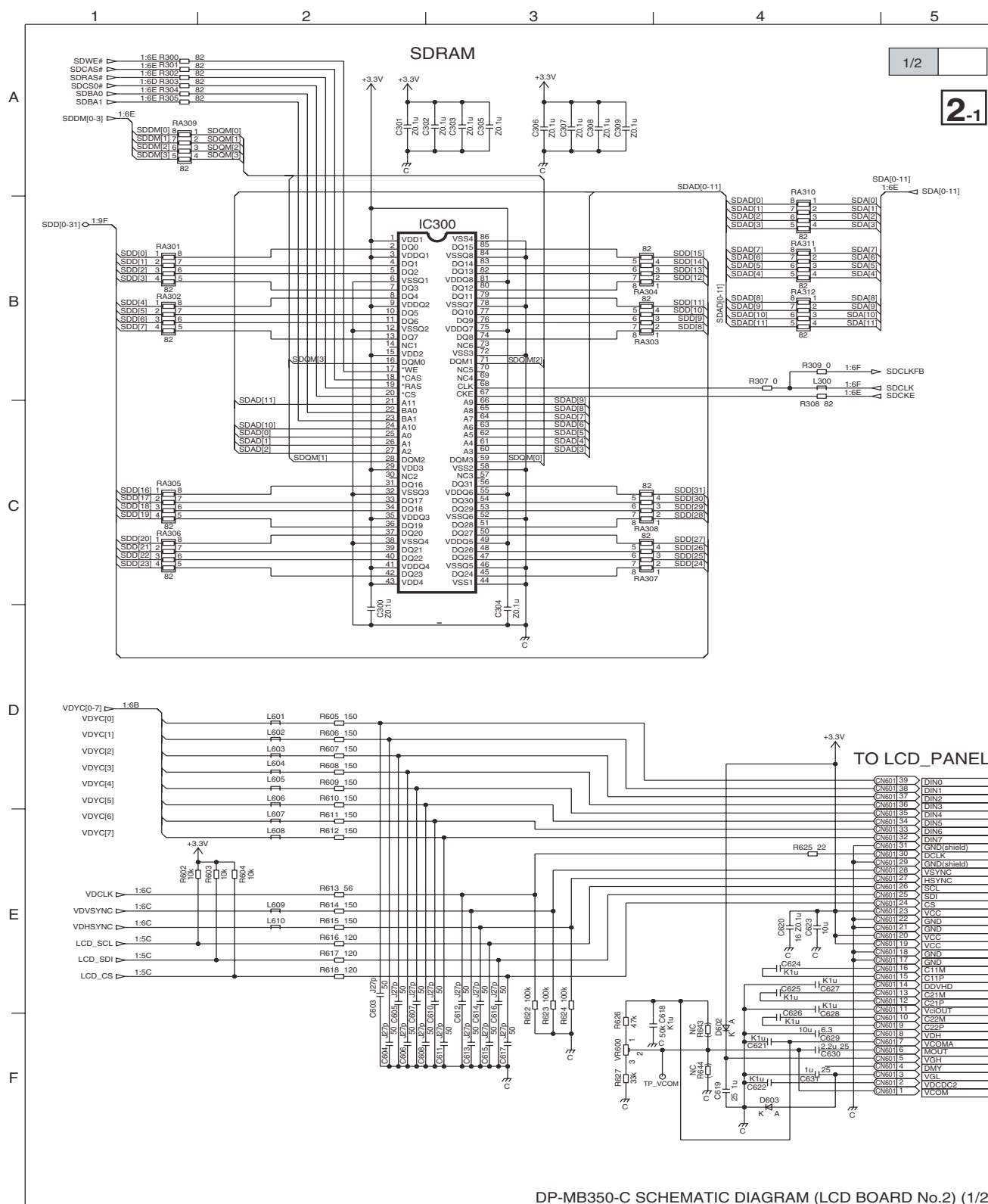
## 16.4. LCD Board

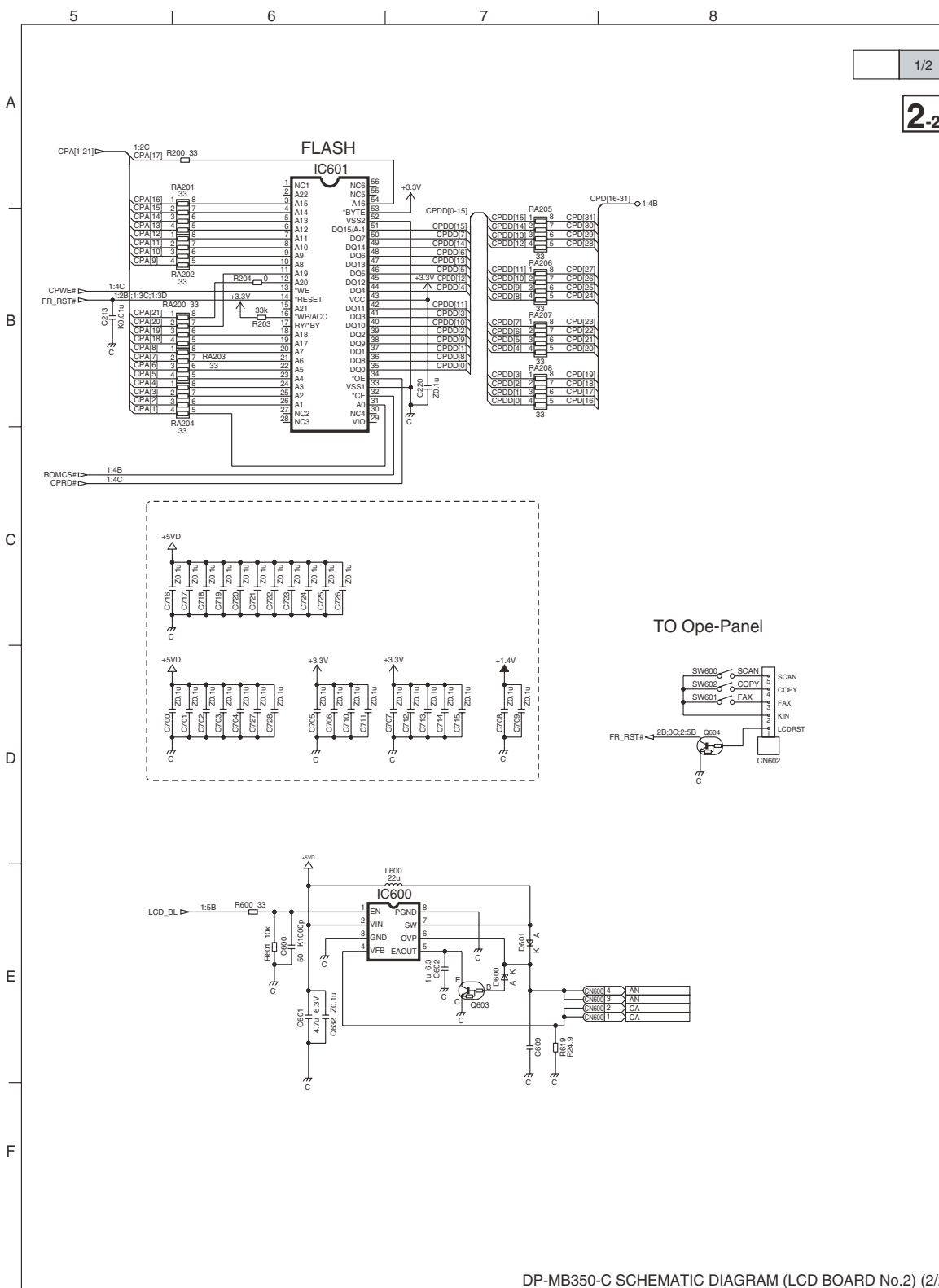
### 16.4.1. LCD Board (1)



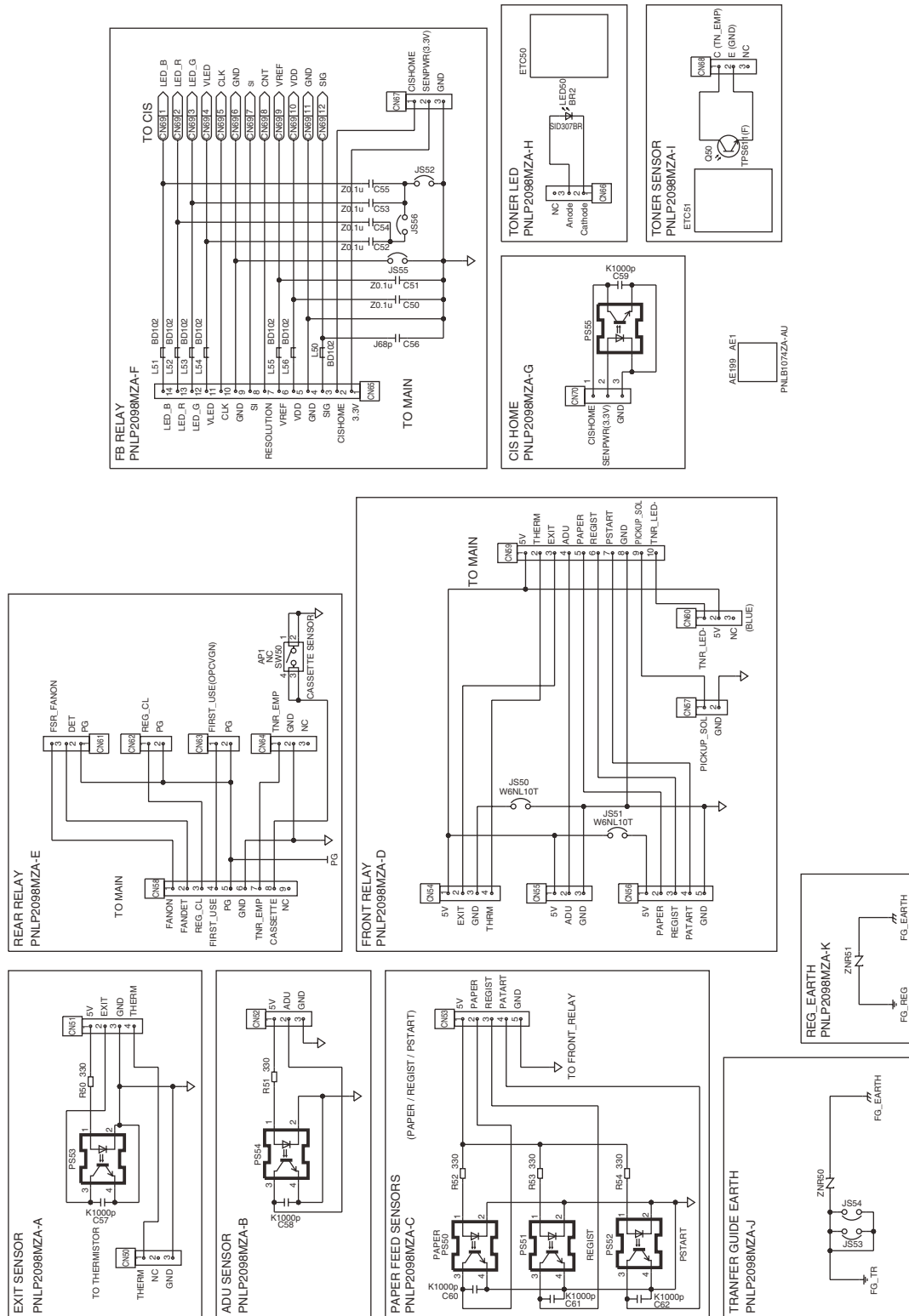
DP-MB350-C SCHEMATIC DIAGRAM (LCD BOARD No.1) (1/2)





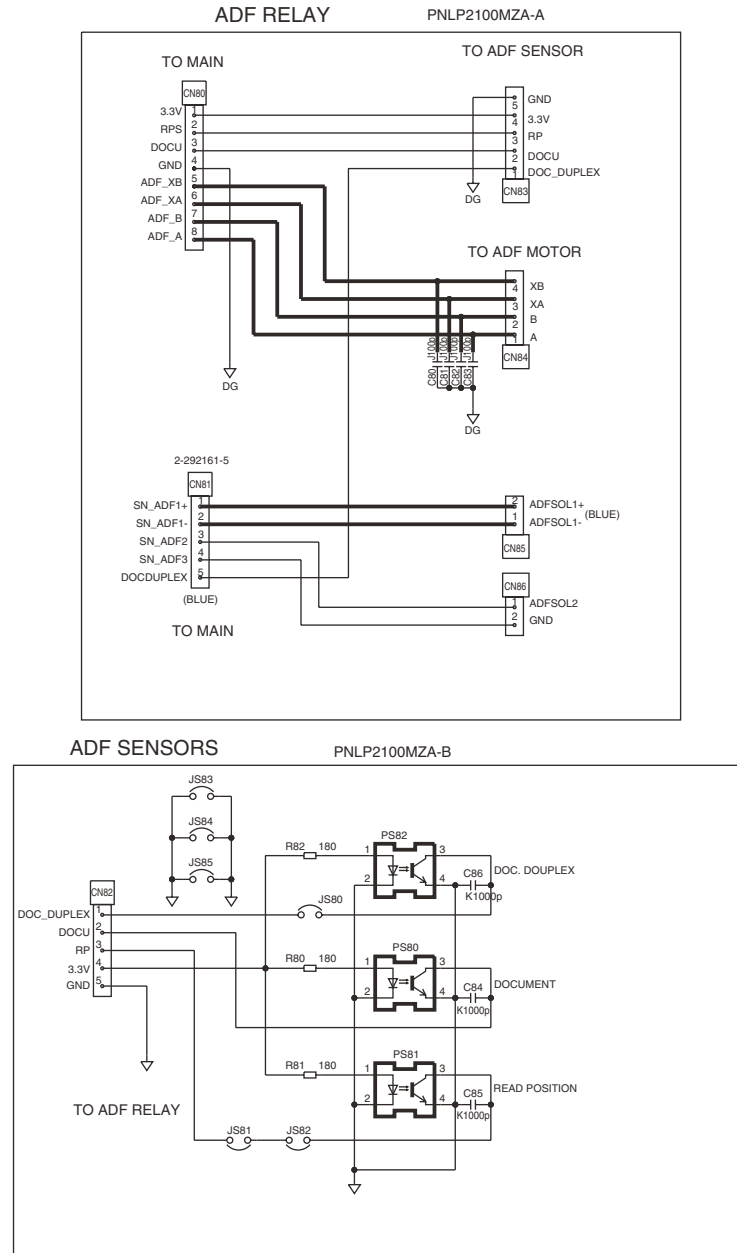


## 16.5. Sensor Board



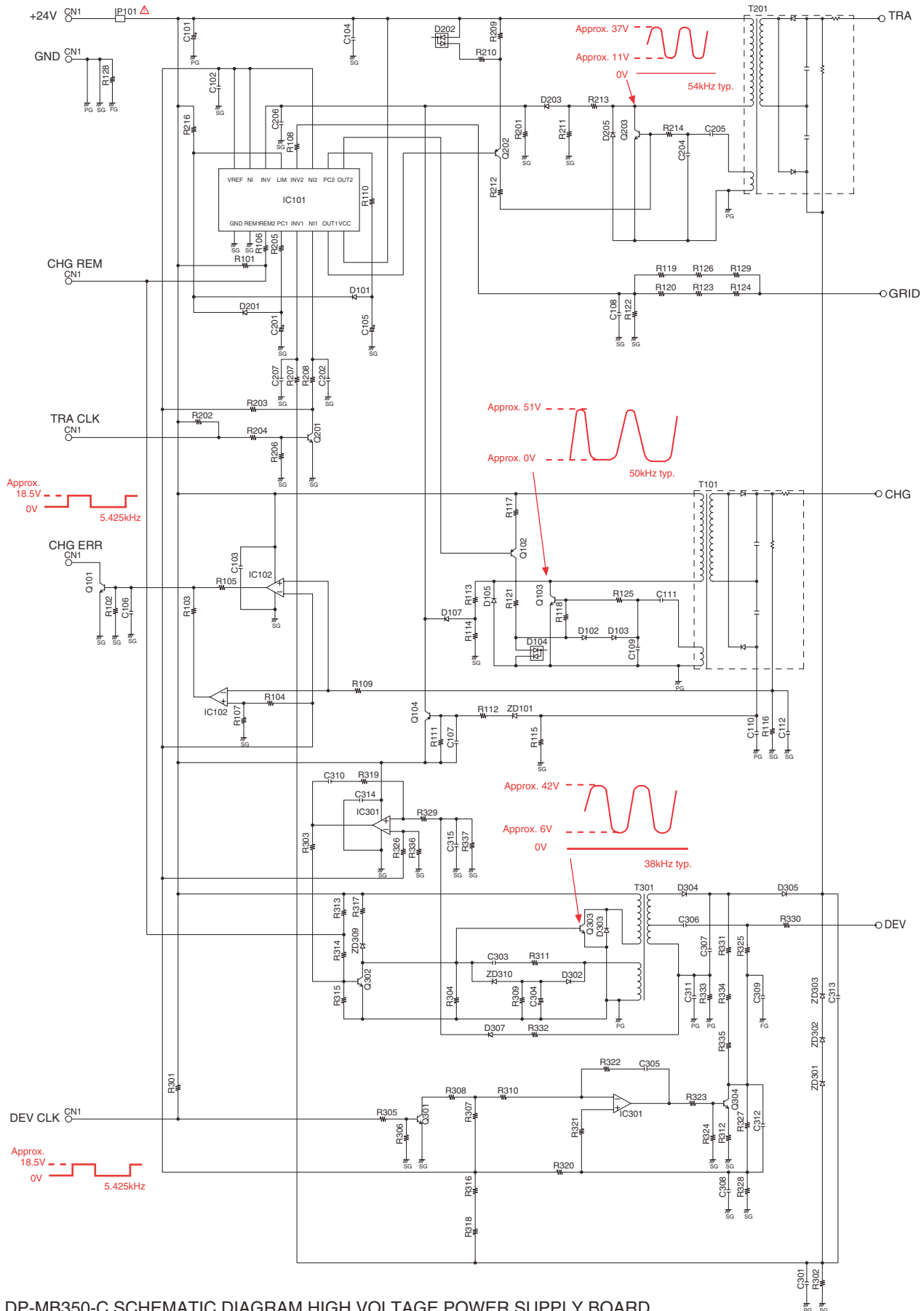


## 16.6. ADF Relay Board

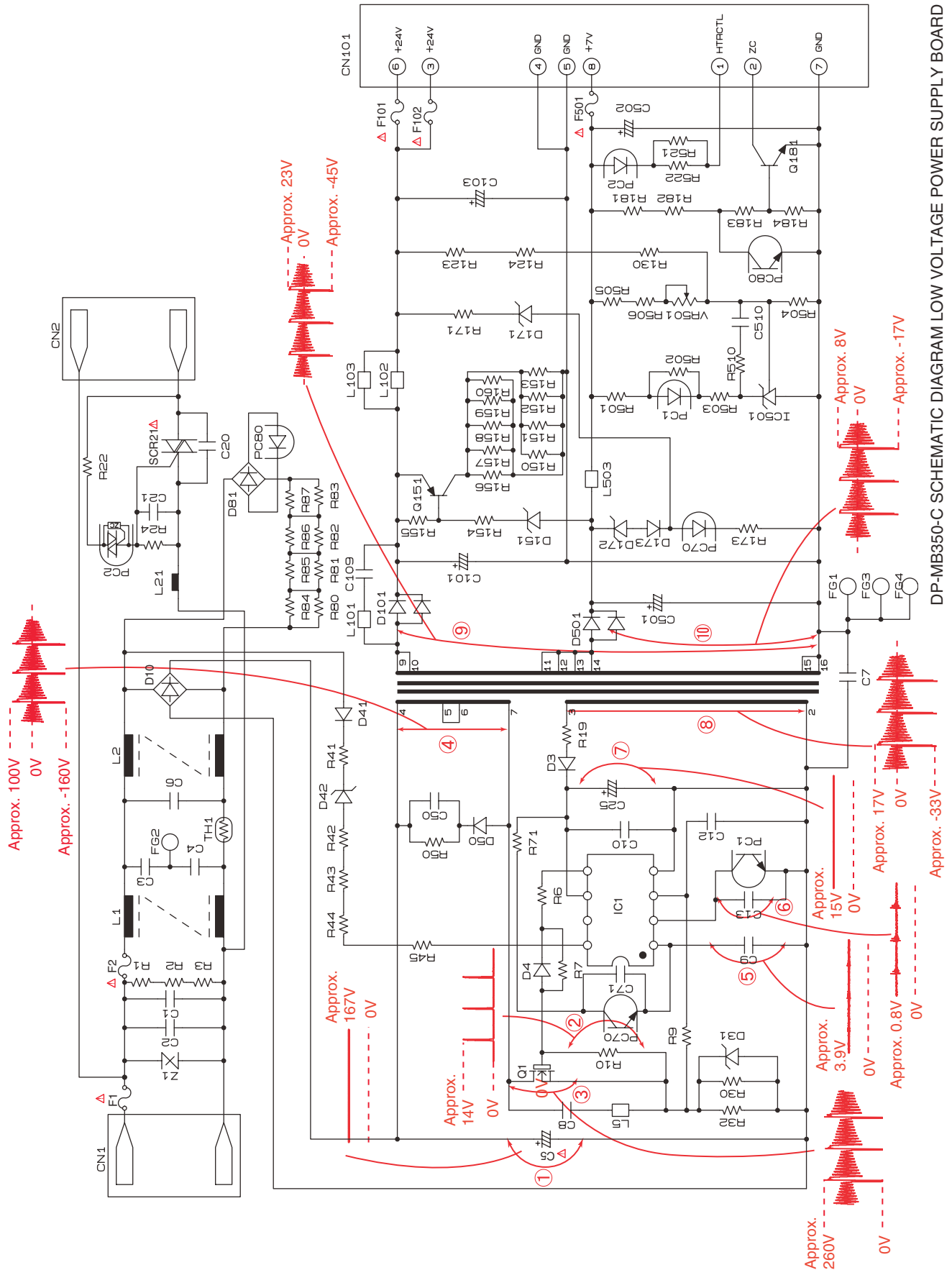


DP-MB350-C SCHEMATIC DIAGRAM ADF BOARD

## 16.7. High Voltage Power Supply Board



## 16.8. Low Voltage Power Supply Board



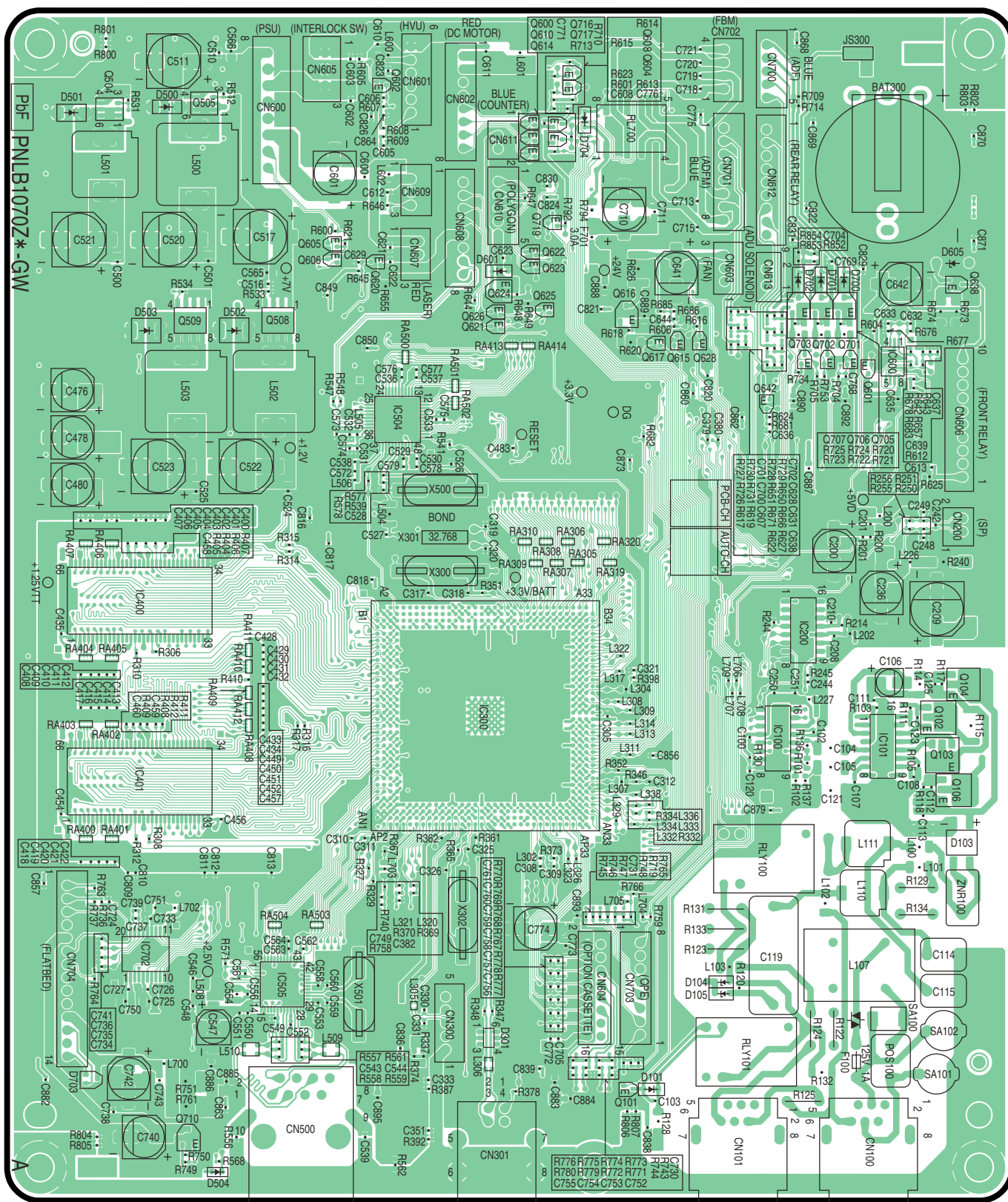
DP-MB350-C SCHEMATIC DIAGRAM LOW VOLTAGE POWER SUPPLY BOARD



## 17 Printed Circuit Board

## 17.1. Main Board

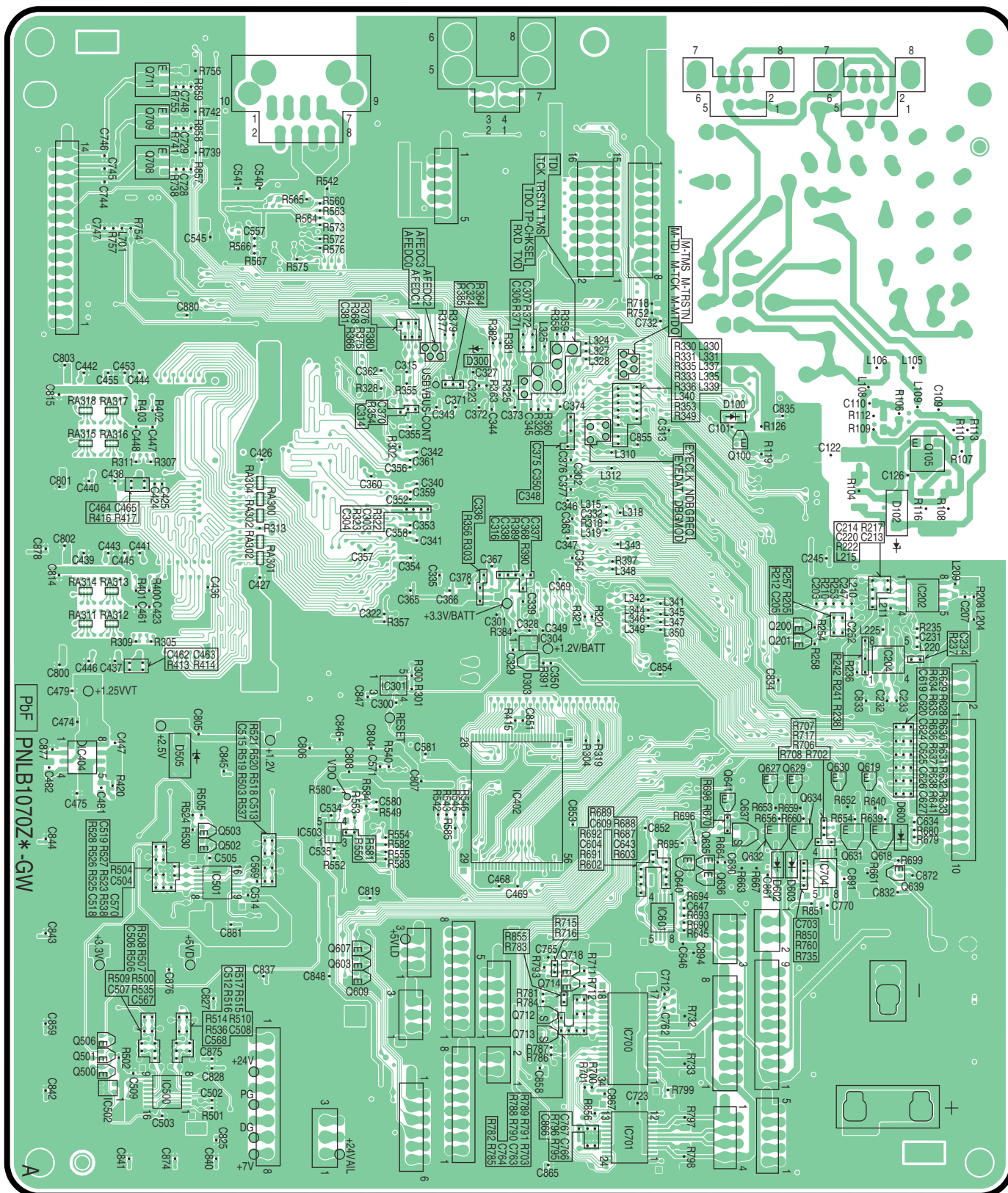
### 17.1.1. Main Board: Component View



DP-MB350-C MAIN BOARD COMPONENT VIEW



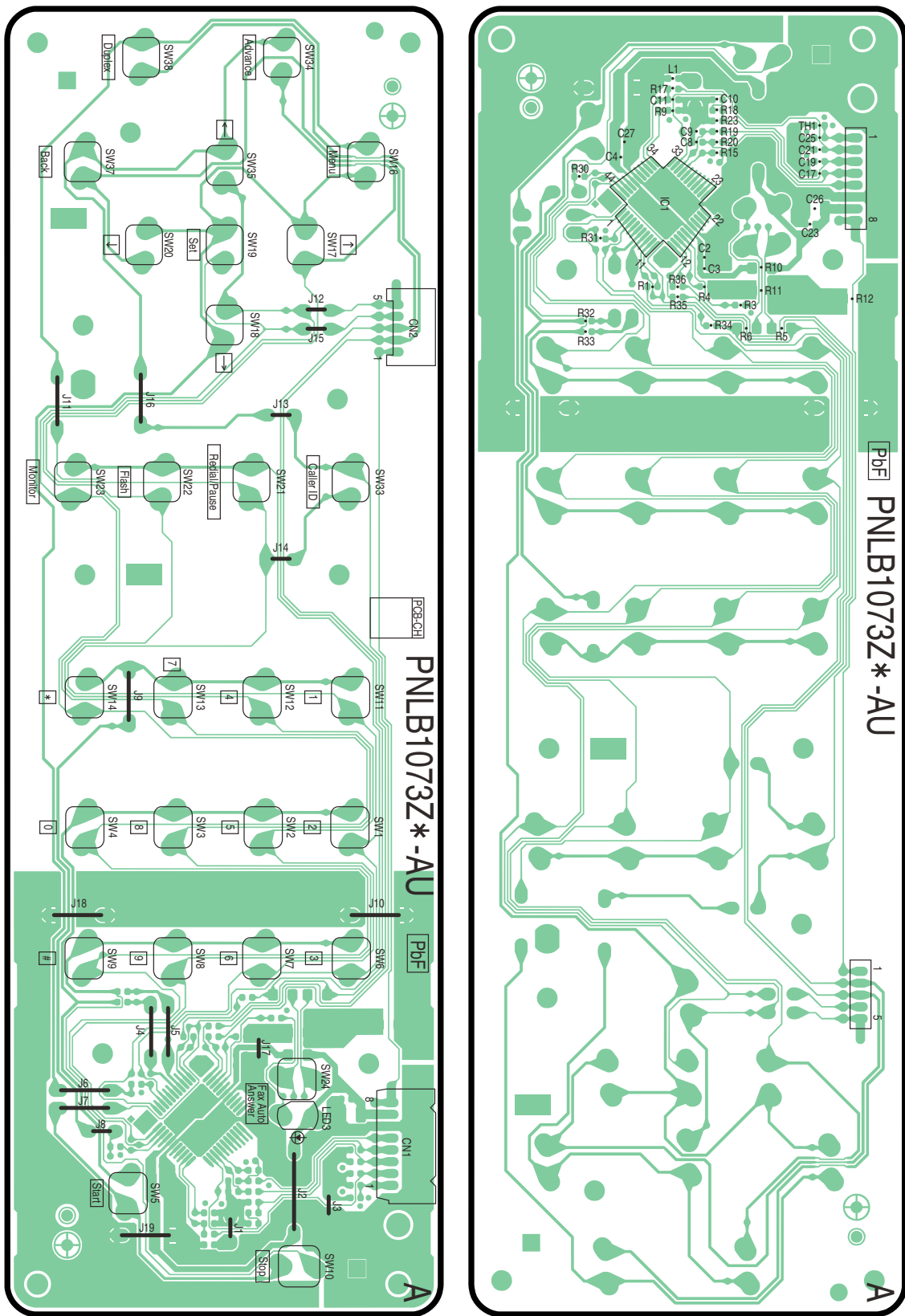
## 17.1.2. Main Board: Bottom View



DP-MB350-C MAIN BOARD BOTTOM VIEW

## 17.2. Operation Board

### 17.2.1. Operation Board:



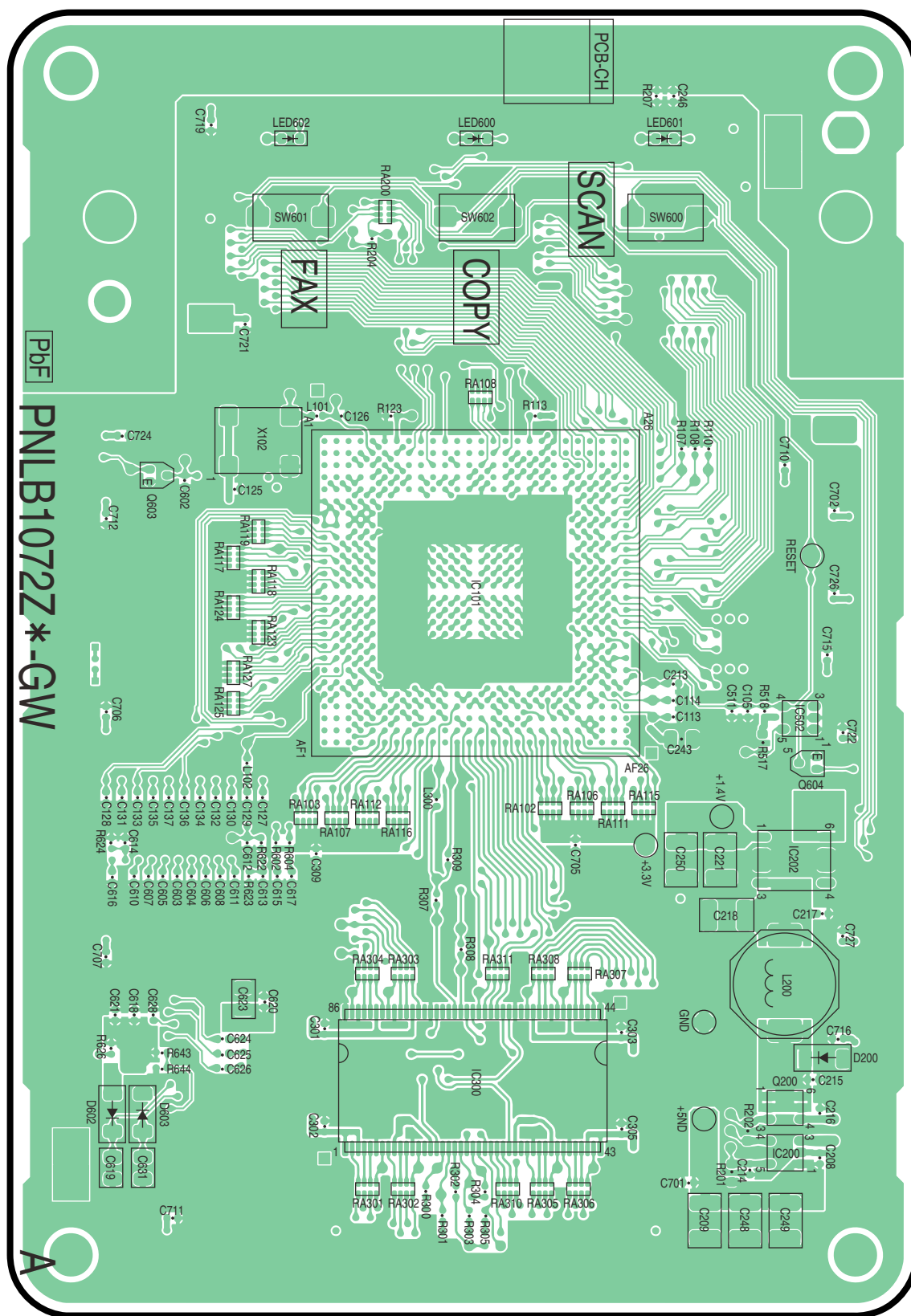
DP-MB350-C OPERATION BOARD

## Memo

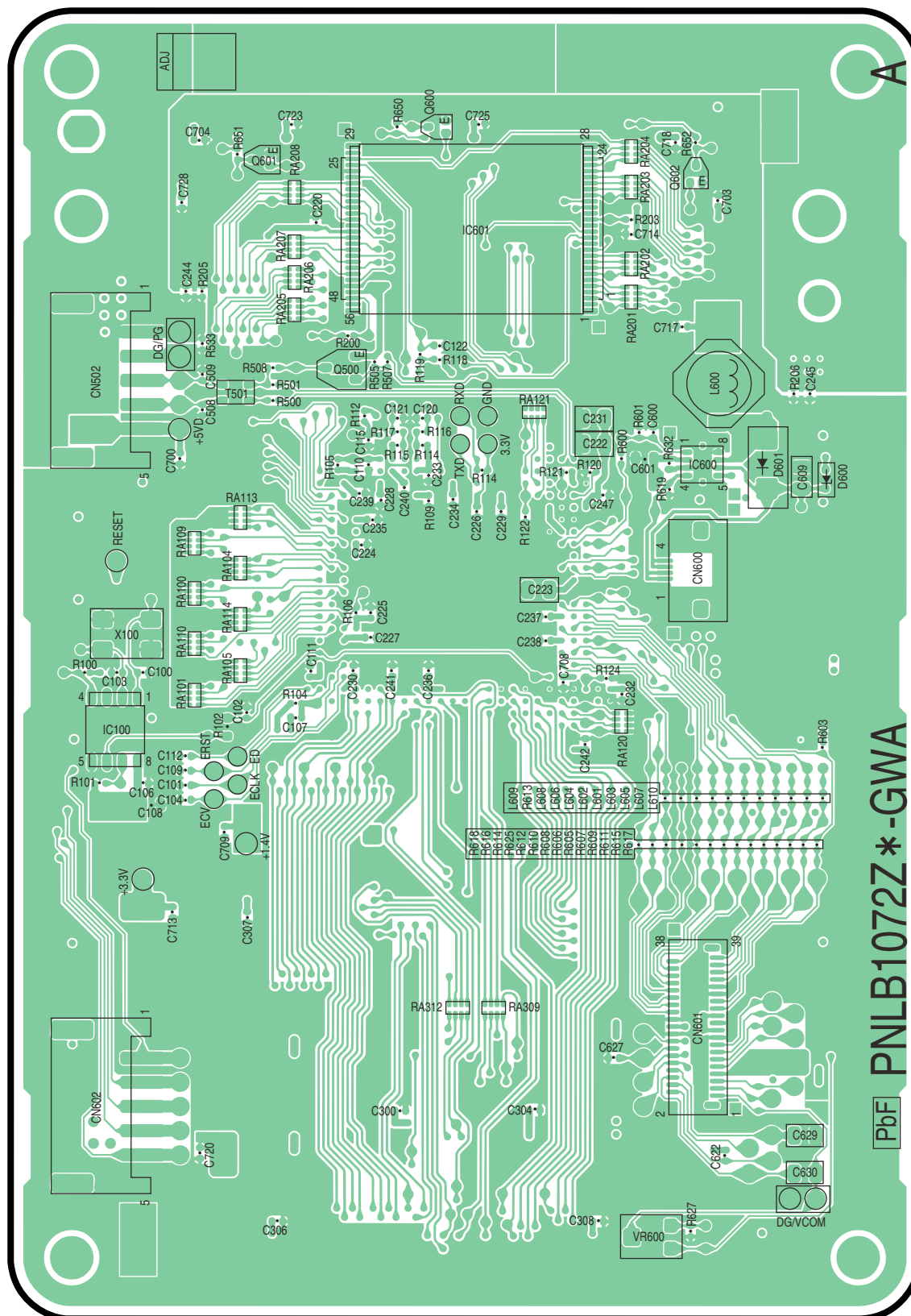


### 17.3. LCD Board

### 17.3.1. LCD Board: Component View



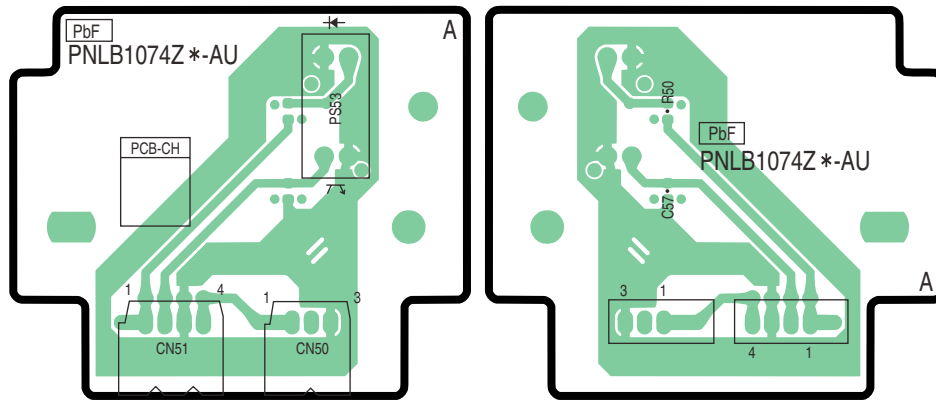
DP-MB350-C LCD BOARD COMPONENT VIEW



DP-MB350-C LCD BOARD BOTTOM VIEW

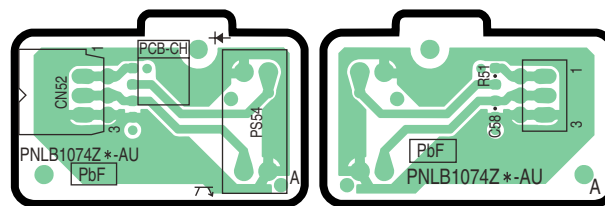
## 17.4. Sensor Board

### 17.4.1. EXIT SENSOR BOARD



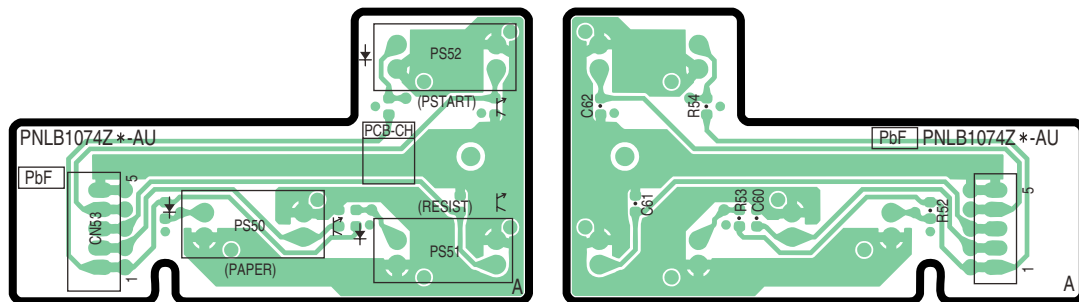
DP-MB350-C EXIT SENSOR BOARD

### 17.4.2. ADU SENSOR BOARD



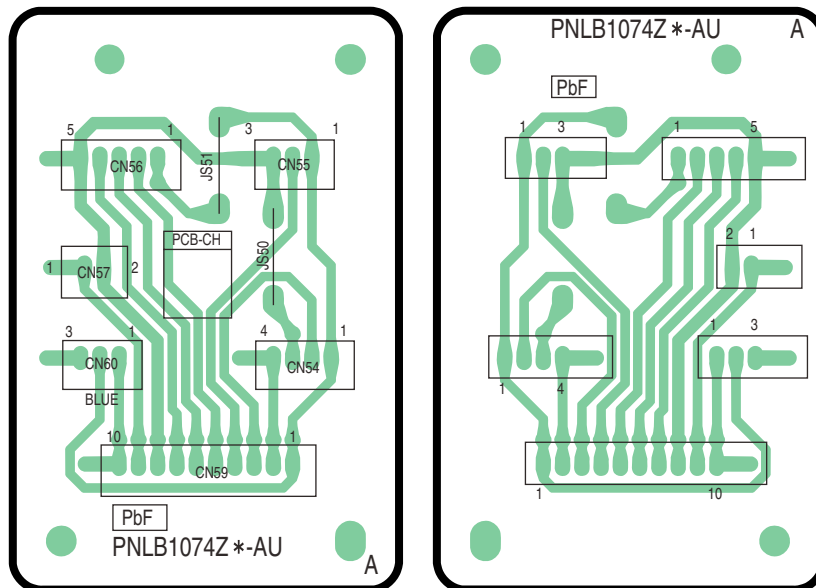
DP-MB350-C ADU SENSOR BOARD

### 17.4.3. PAPER FEED SENSOR BOARD



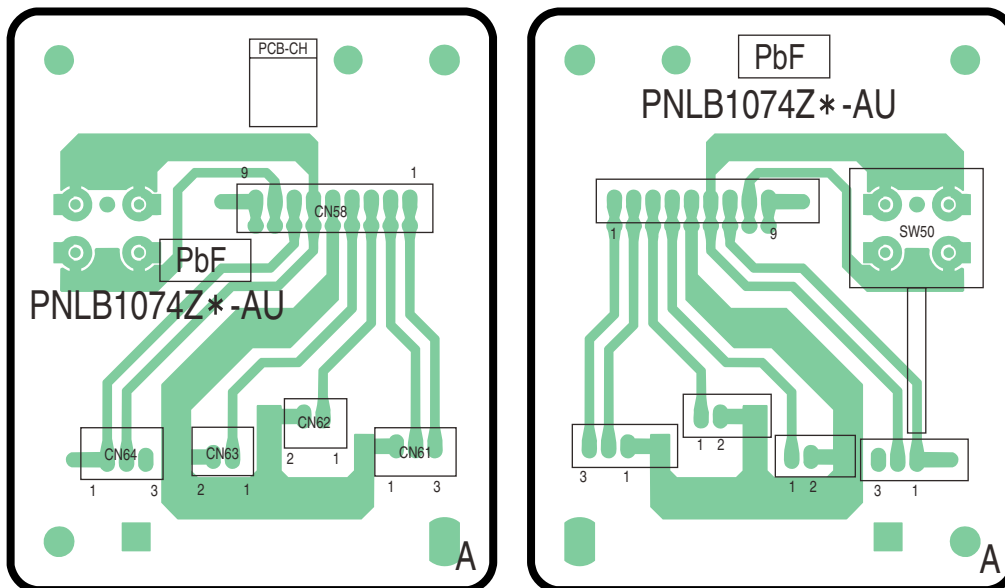
DP-MB350-C PAPER FEED SENSOR BOARD

#### 17.4.4. FRONT RELAY SENSOR BOARD



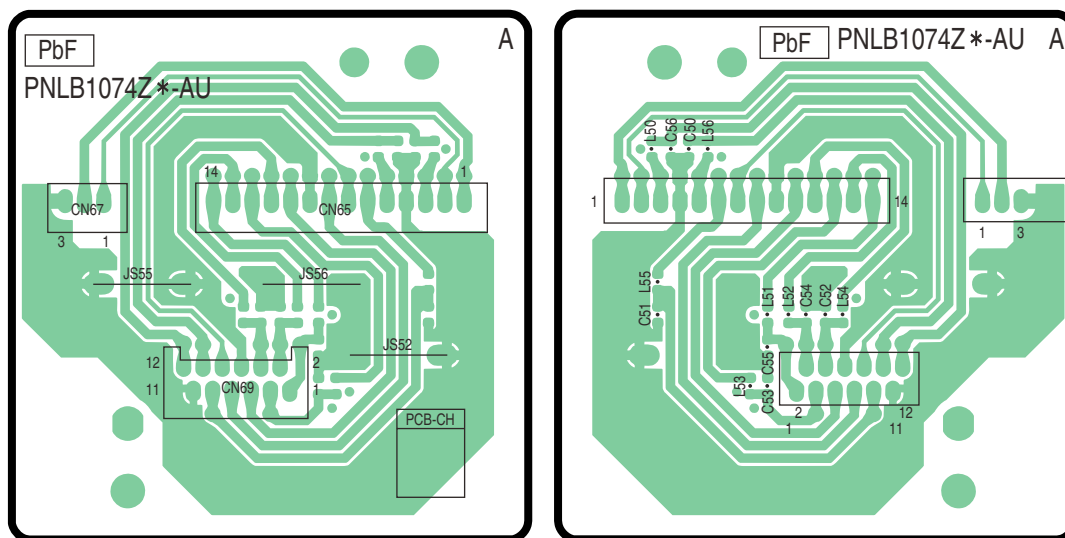
DP-MB350-C FRONT RELAY SENSOR BOARD

#### 17.4.5. REAR RELAY SENSOR BOARD



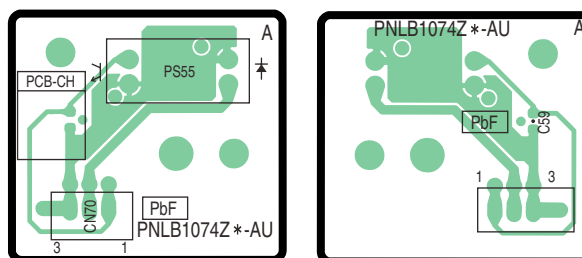
DP-MB350-C REAR RELAY SENSOR BOARD

### 17.4.6. FB RELAY BOARD



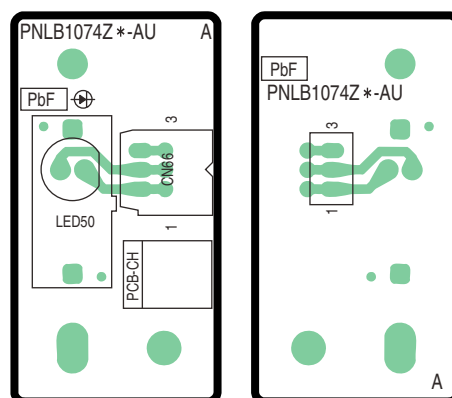
DP-MB350-C FB RELAY BOARD

### 17.4.7. CIS HOME POSITION SENSOR BOARD



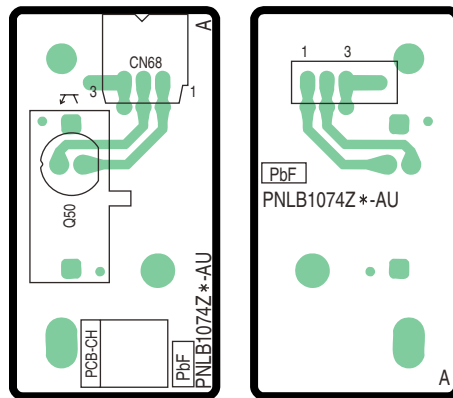
DP-MB350-C CIS HOME POSITION SENSOR BOARD

### 17.4.8. TONER LED BOARD



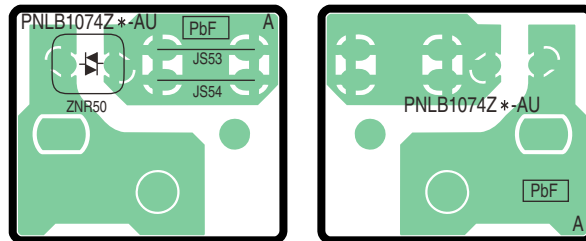
DP-MB350-C TONER LED BOARD

### 17.4.9. TONER SENSOR BOARD



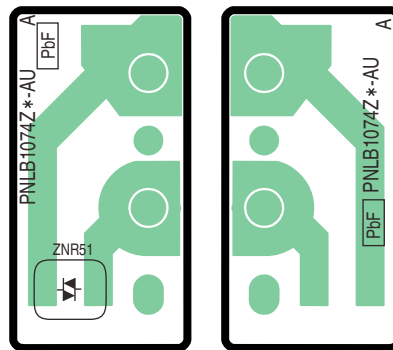
DP-MB350-C TONER SENSOR BOARD

### 17.4.10. VARISTOR BOARD (1)



DP-MB350-C VARISTOR BOARD ASS'Y (1)

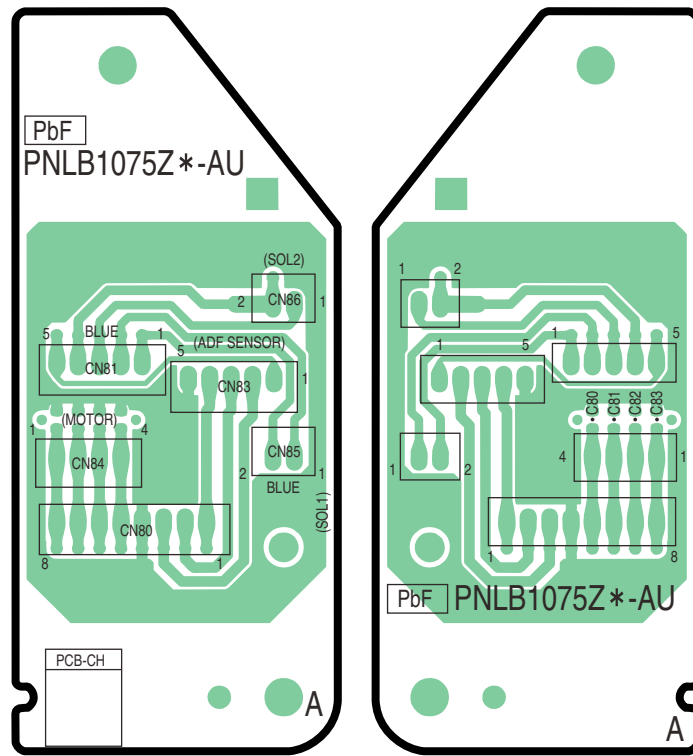
### 17.4.11. VARISTOR BOARD (2)



DP-MB350-C VARISTOR BOARD ASS'Y (2)

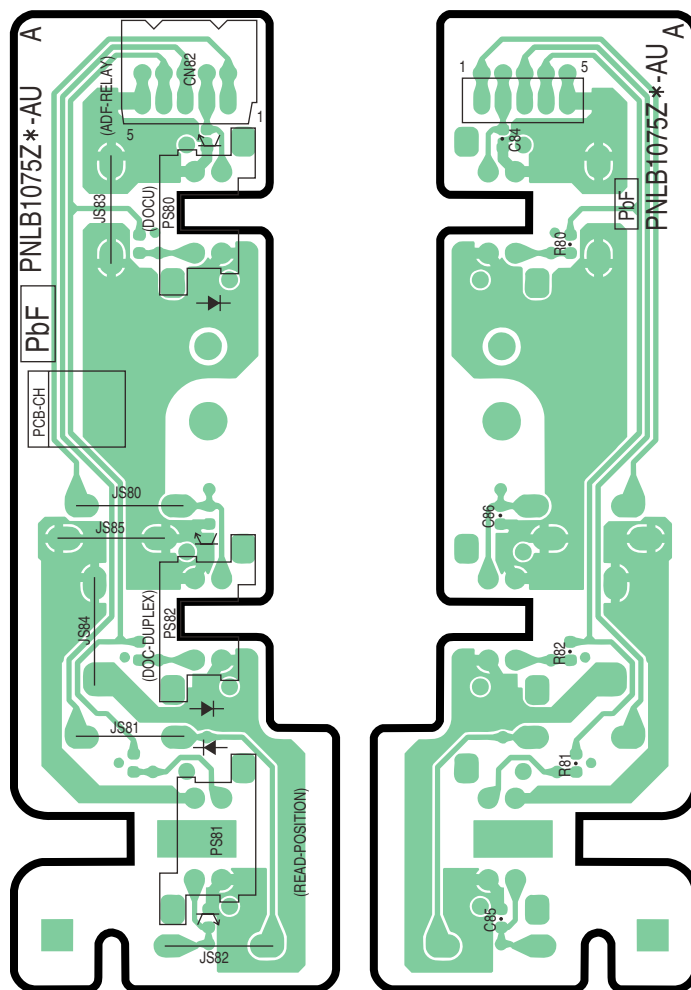
## 17.5. ADF RERAY BOARD

### 17.5.1. ADF RELAY BOARD



DP-MB350-C ADF RELAY BOARD

## 17.5.2. ADF SENSOR BOARD

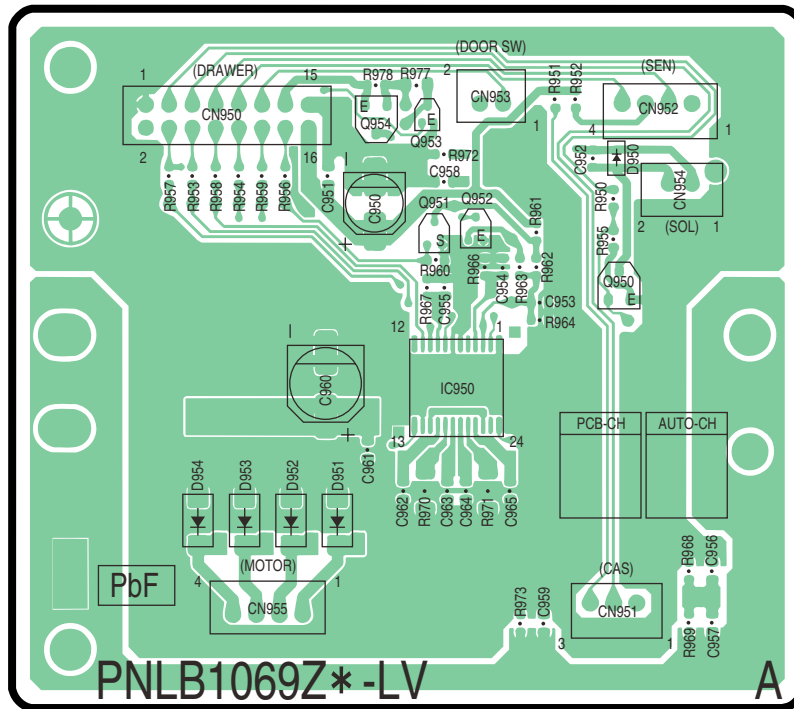


DP-MB350-C ADF SENSOR BOARD



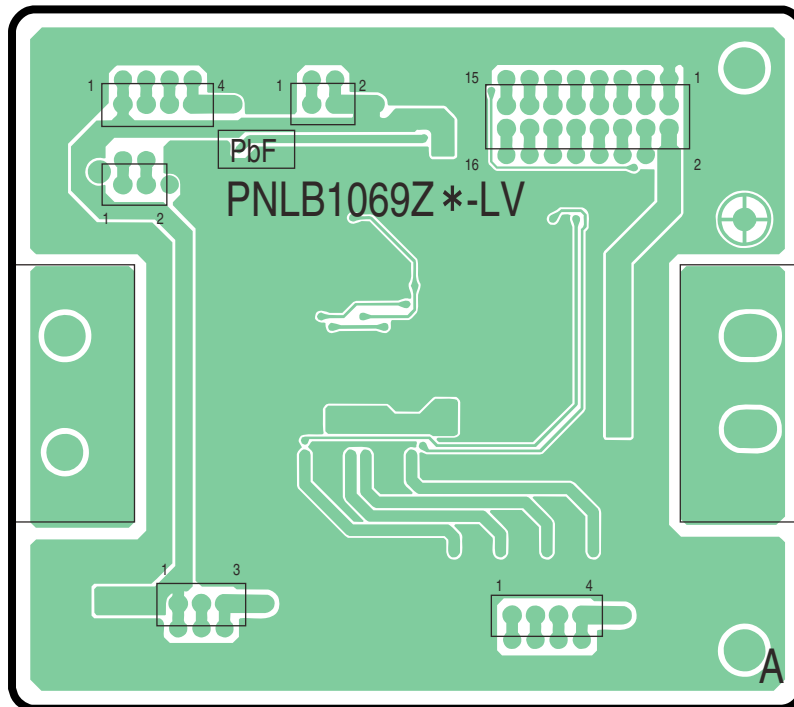
## 17.6. OPF BOARD

### 17.6.1. Driver Board: Component View



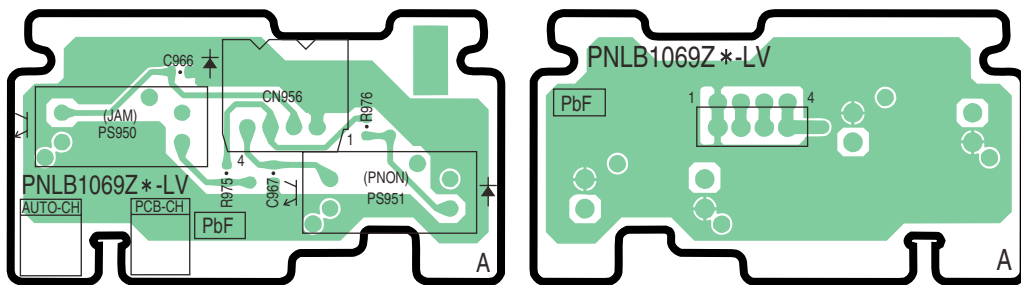
DP-MB350-C DRIVER BOARD COMPONENT VIEW

### 17.6.2. Driver Board: Bottom View



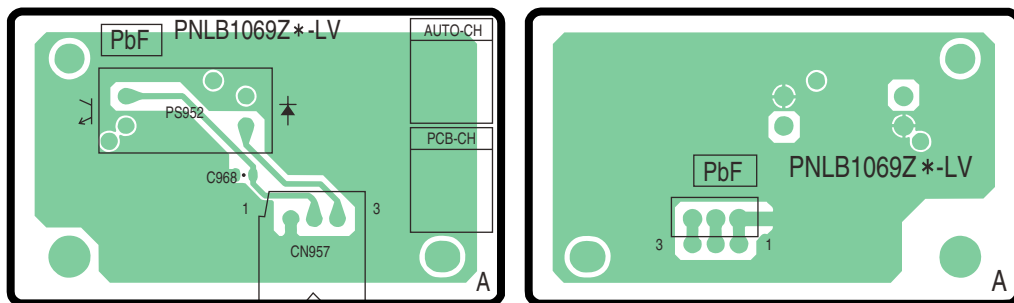
DP-MB350-C DRIVER BOARD BOTTOM VIEW

### 17.6.3. Feeder BOARD



DP-MB350-C FEEDER BOARD

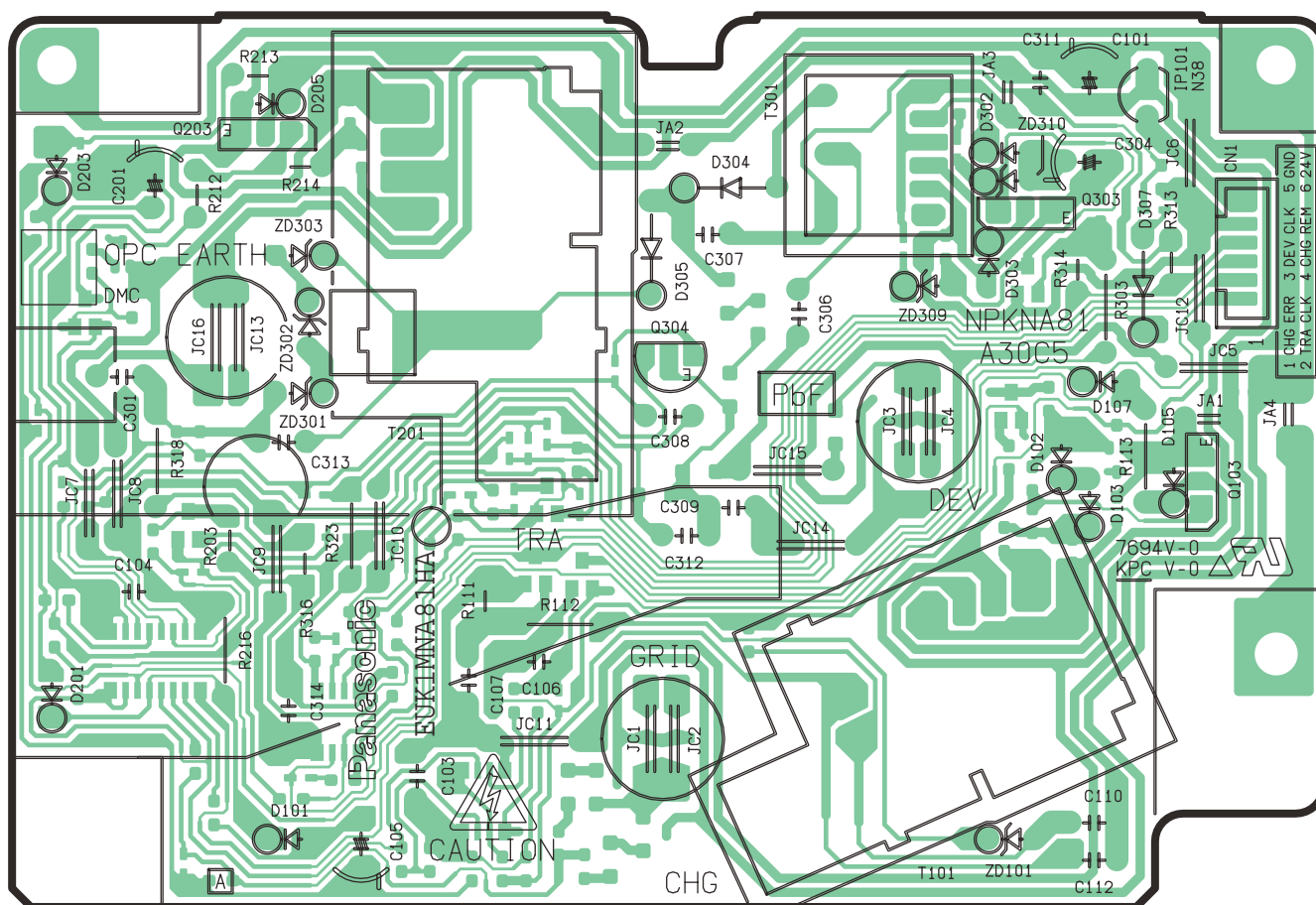
### 17.6.4. Cassette BOARD



DP-MB350-C CASSETTE BOARD

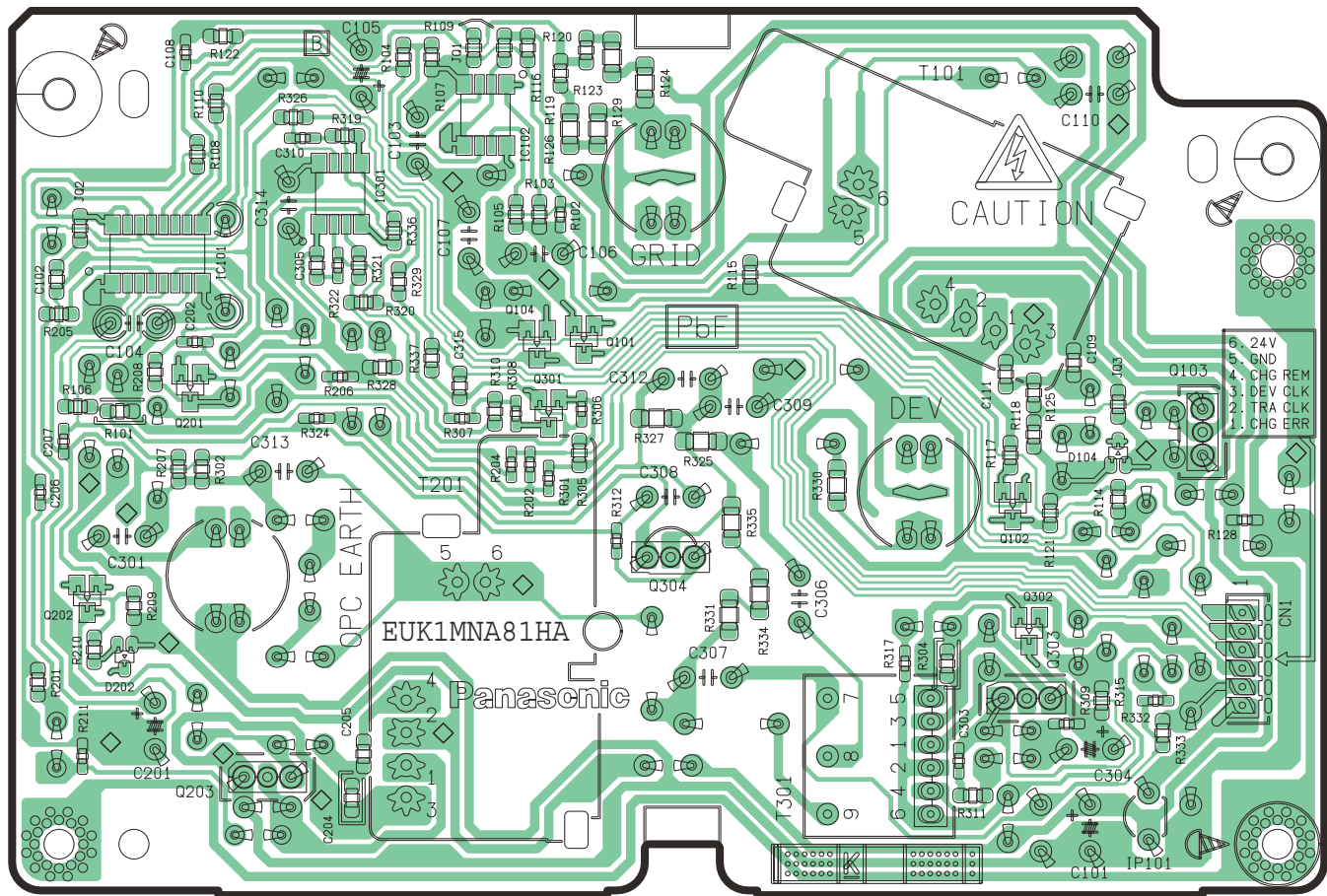
### 17.7. High Voltage Power Supply Board

### 17.7.1. High Voltage Power Supply Board: Component View



DP-MB350-C HIGH VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

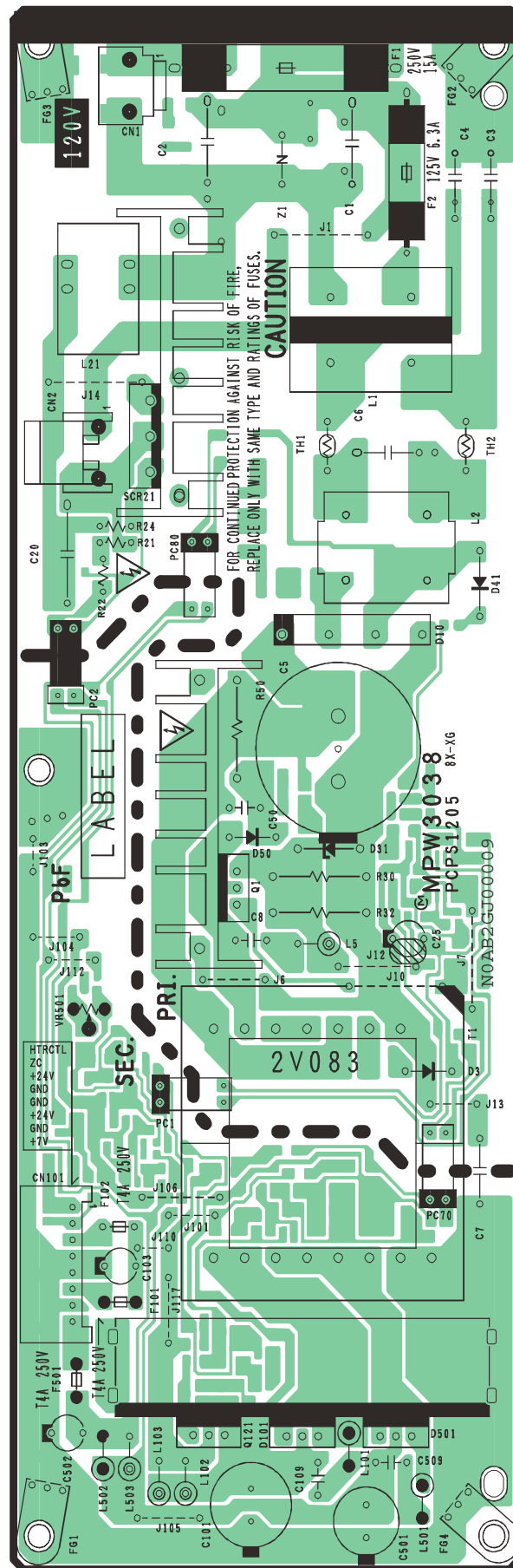
## 17.7.2. High Voltage Power Supply Board: Bottom View



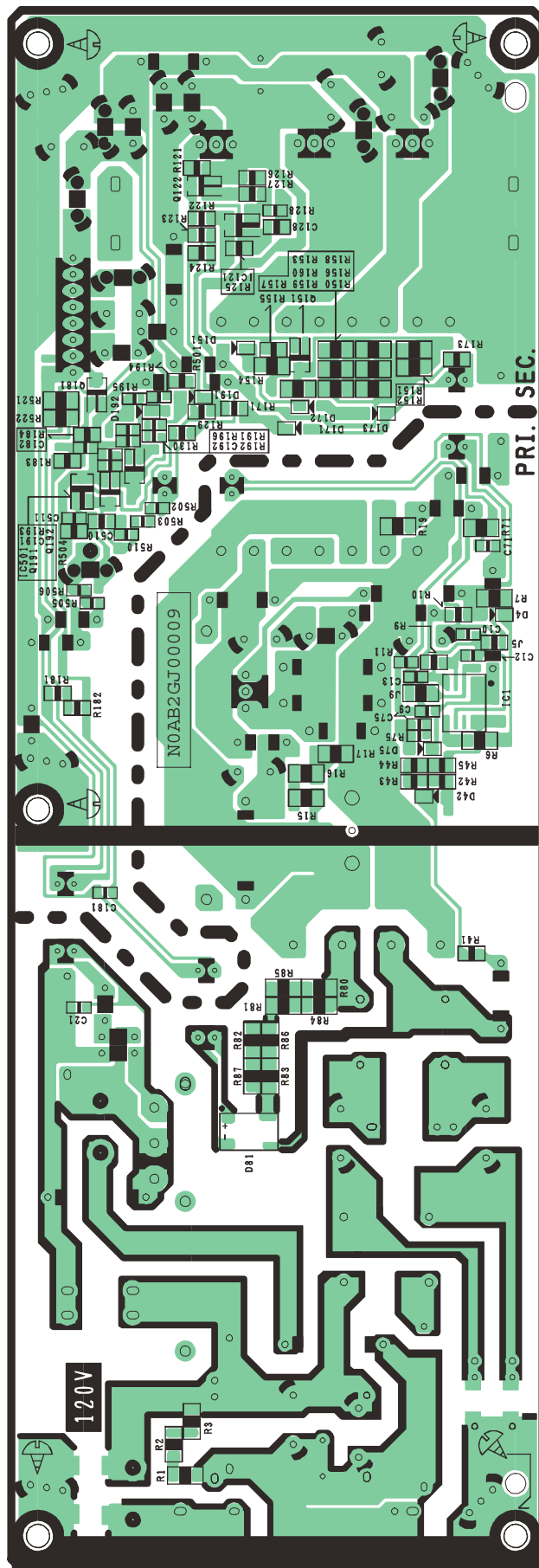
DP-MB350-C HIGH VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

## 17.8. Low Voltage Power Supply Board

### 17.8.1. Low Voltage Power Supply Board: Component View



## 17.8.2. Low Voltage Power Supply Board: Bottom View

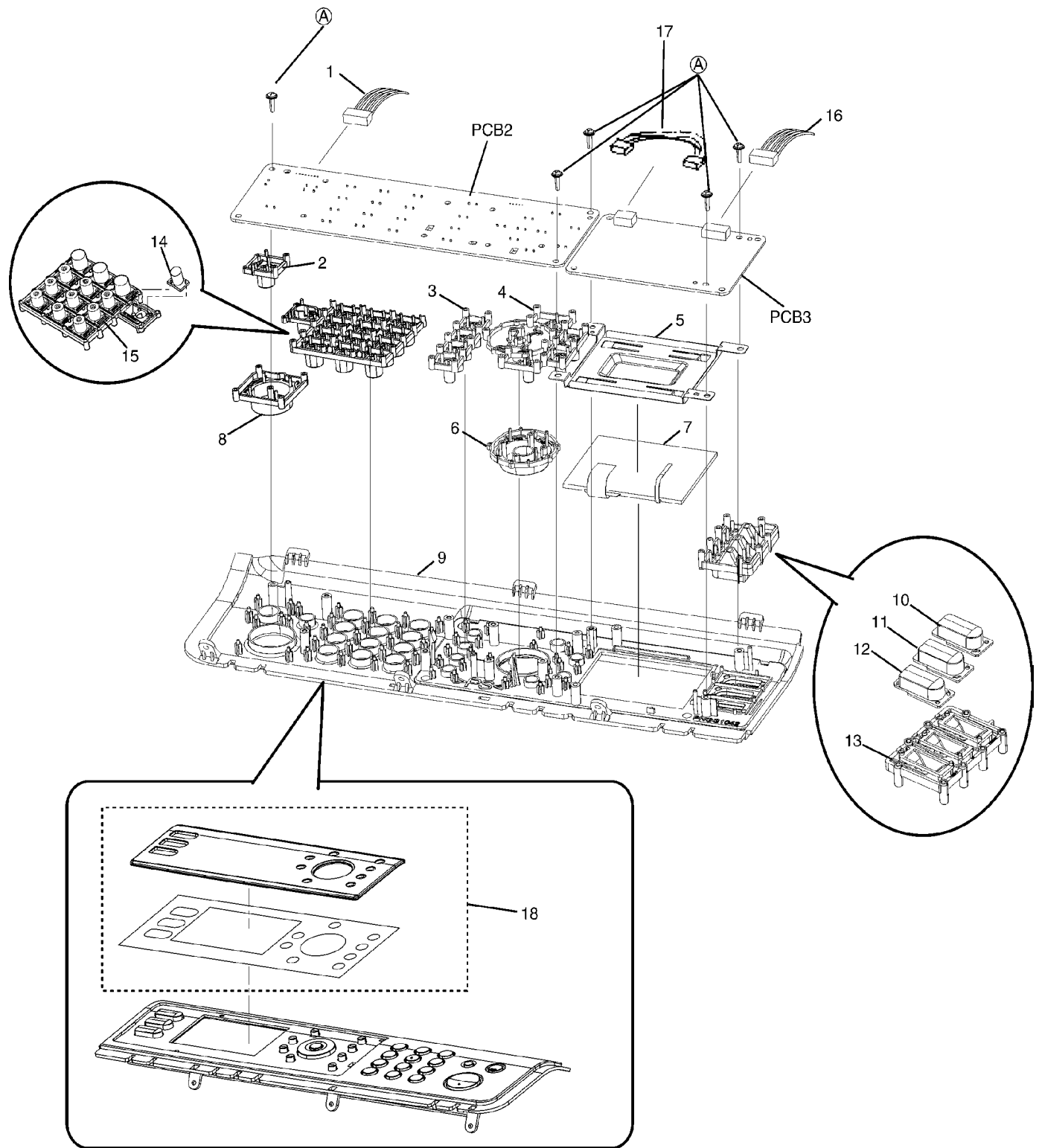


DP-MB350-C LOW VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

# 18 Exploded View and Replacement Parts List

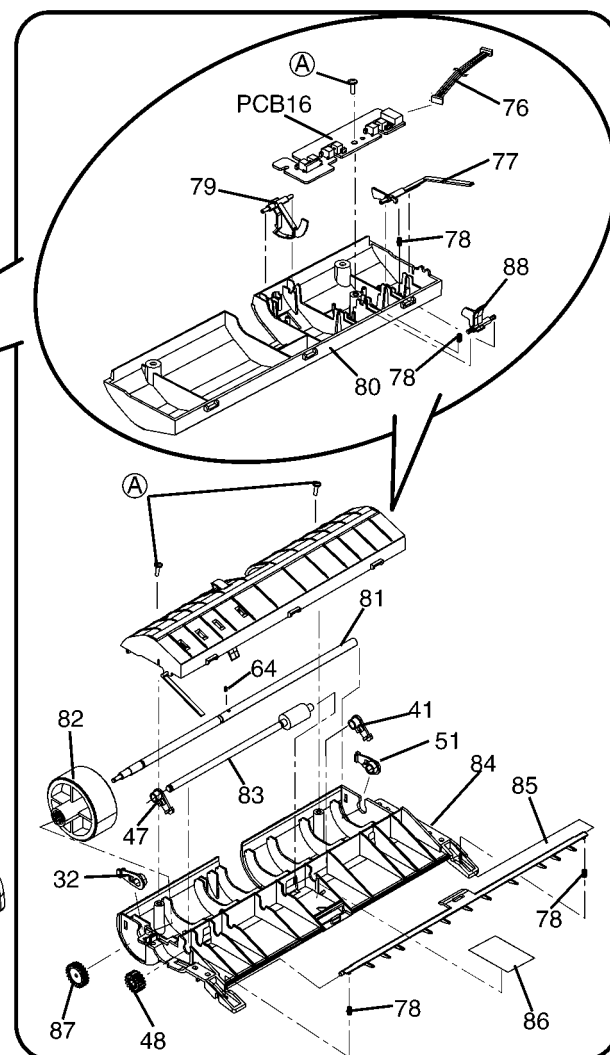
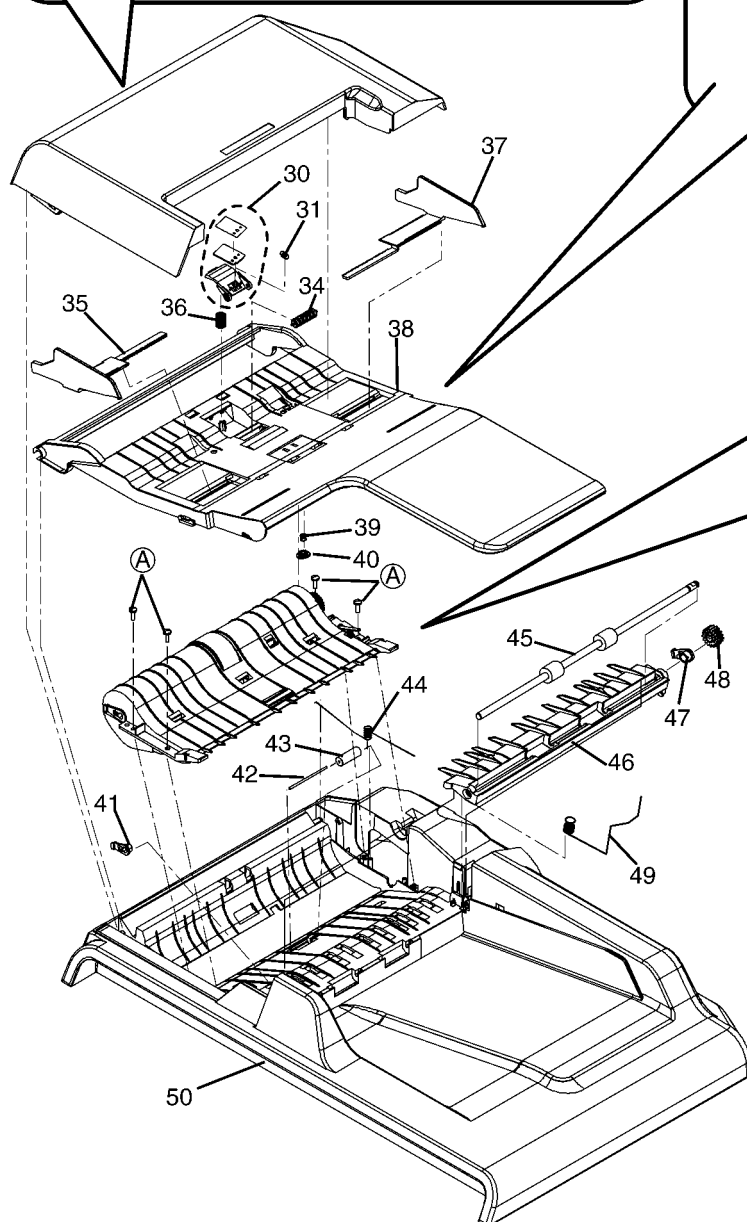
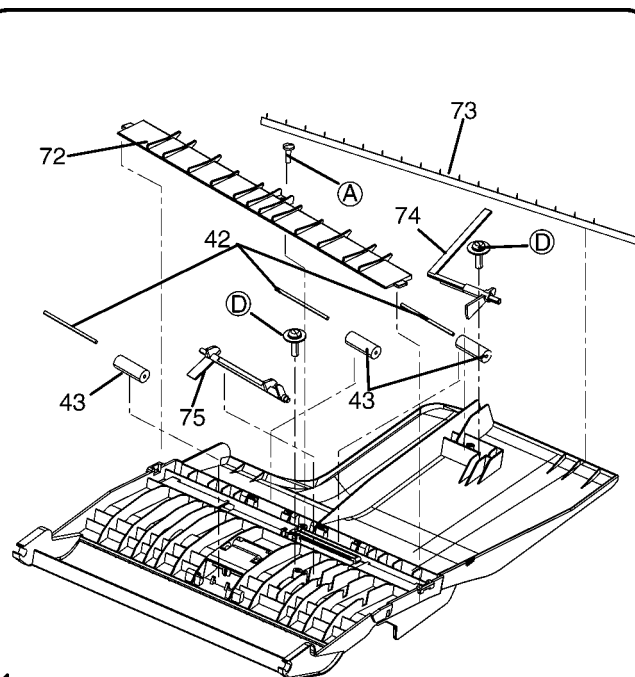
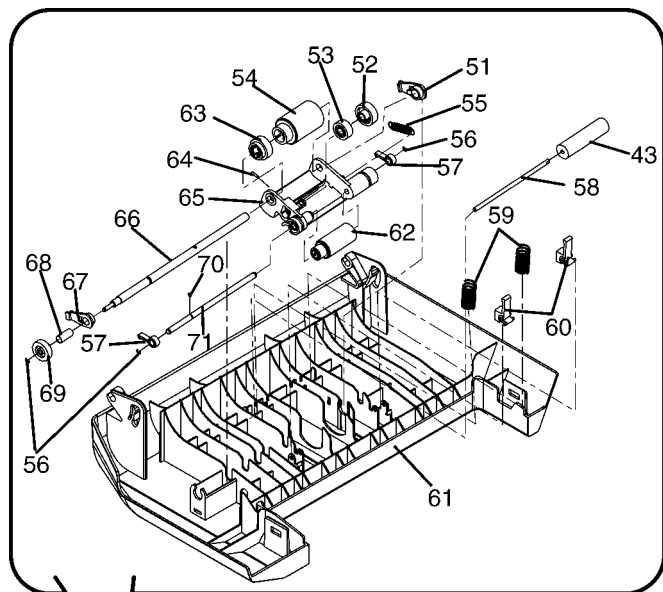
## 18.1. Cabinet, Mechanical and Electrical Parts Location

### 18.1.1. Operation Panel Section



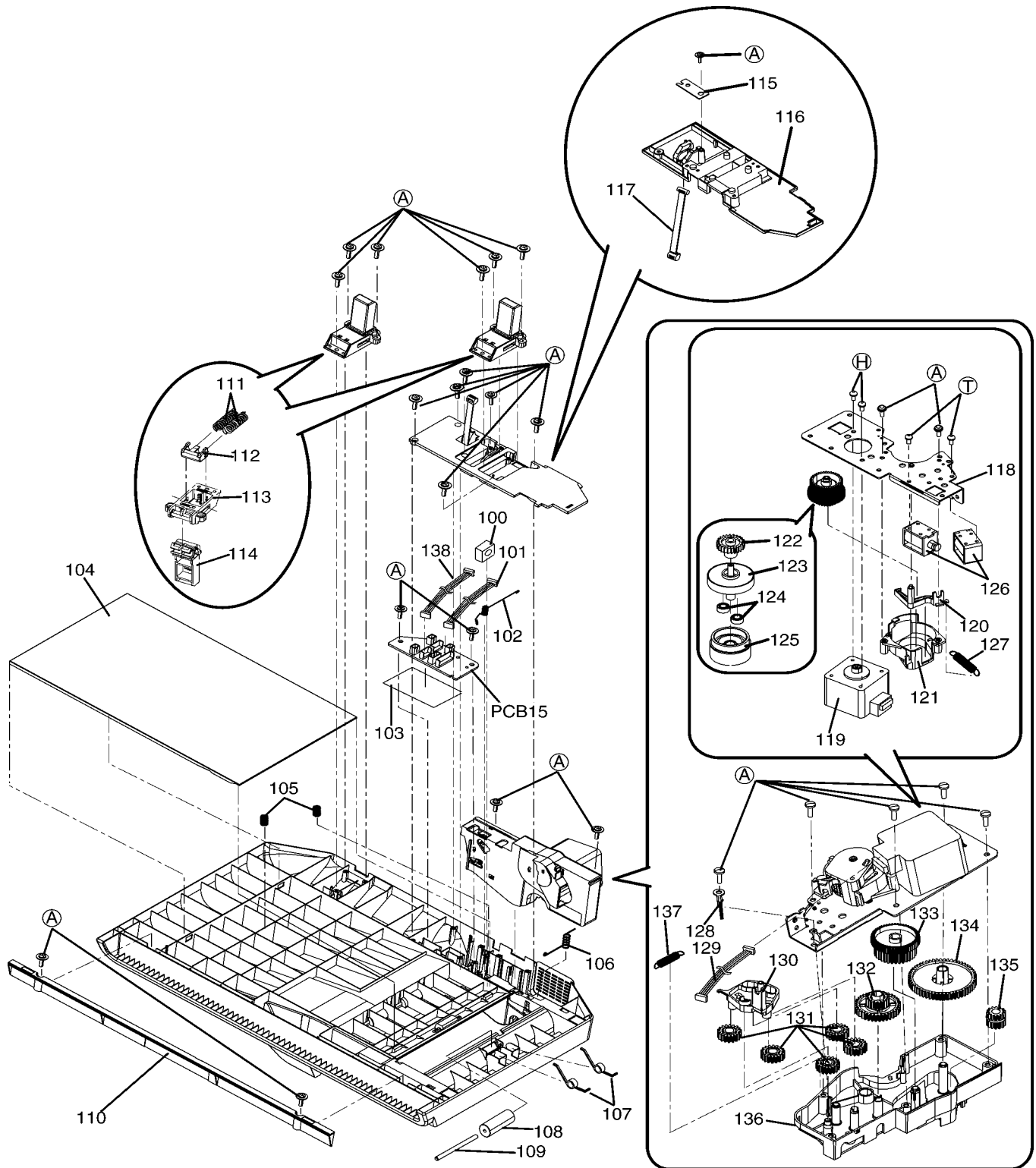


## 18.1.2. ADF Section (1)



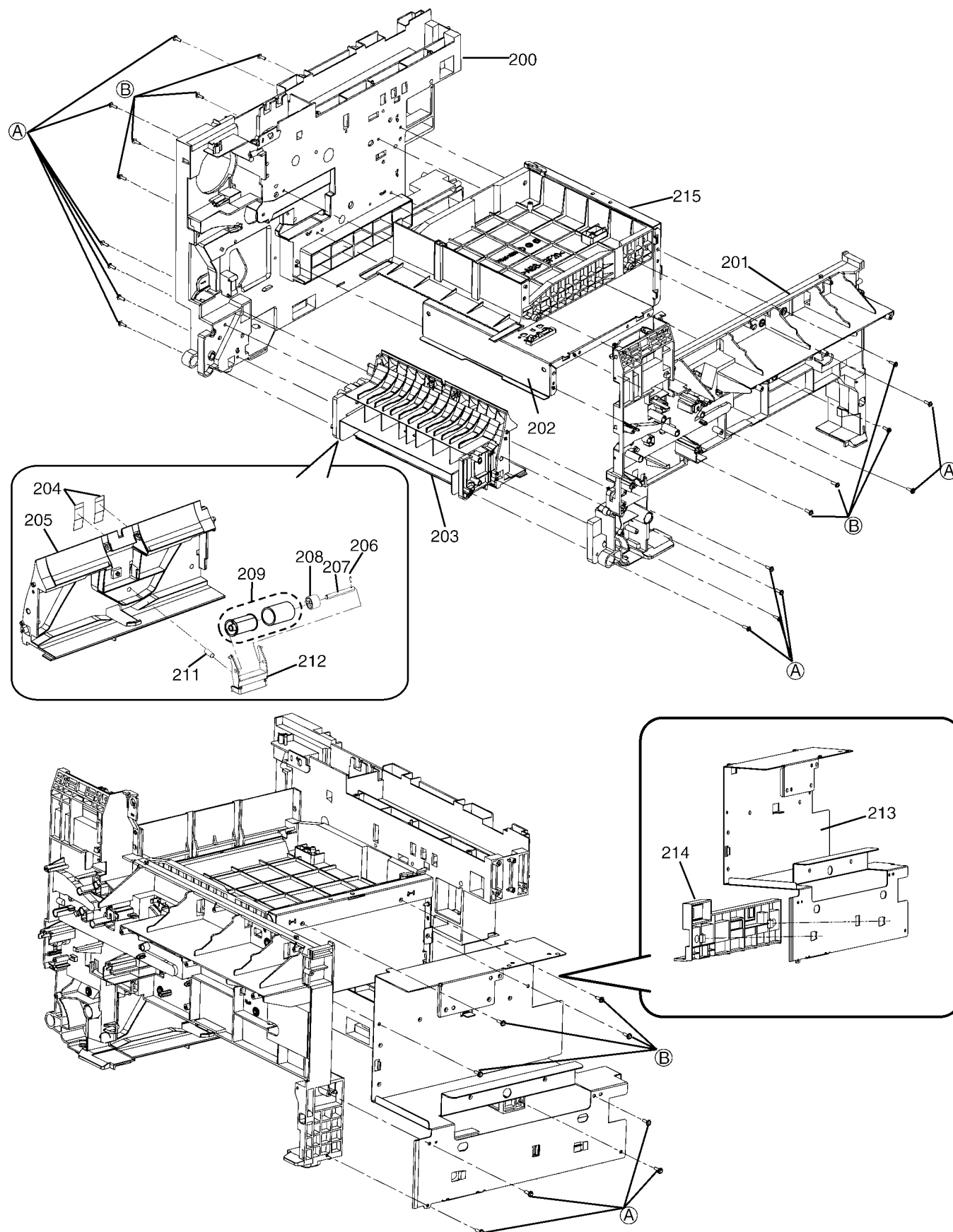


## 18.1.3. ADF Section (2)

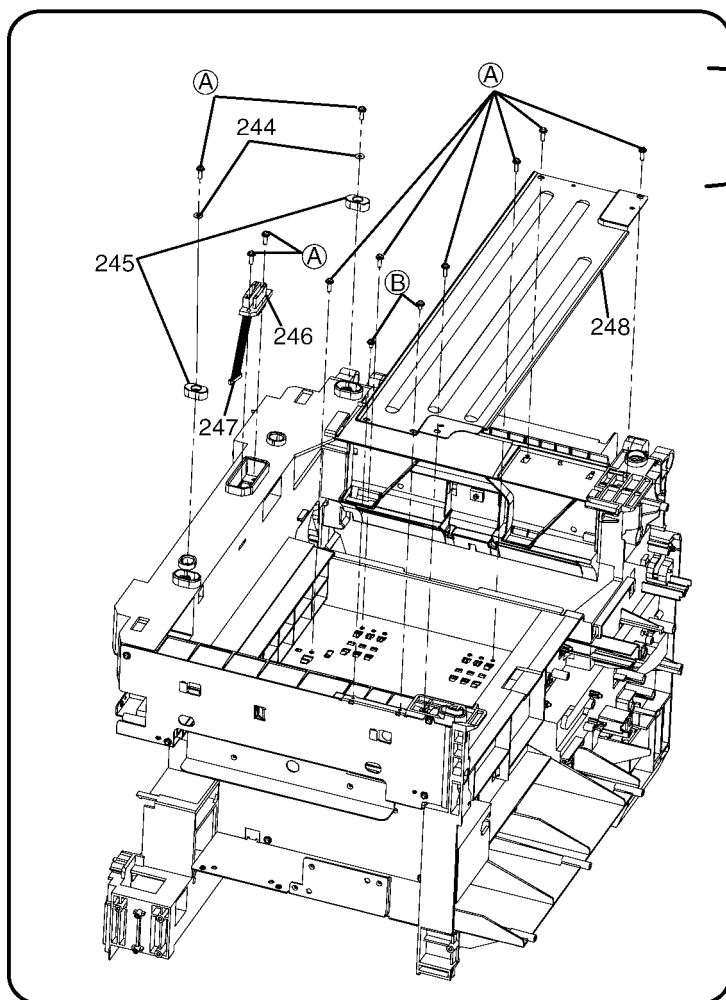
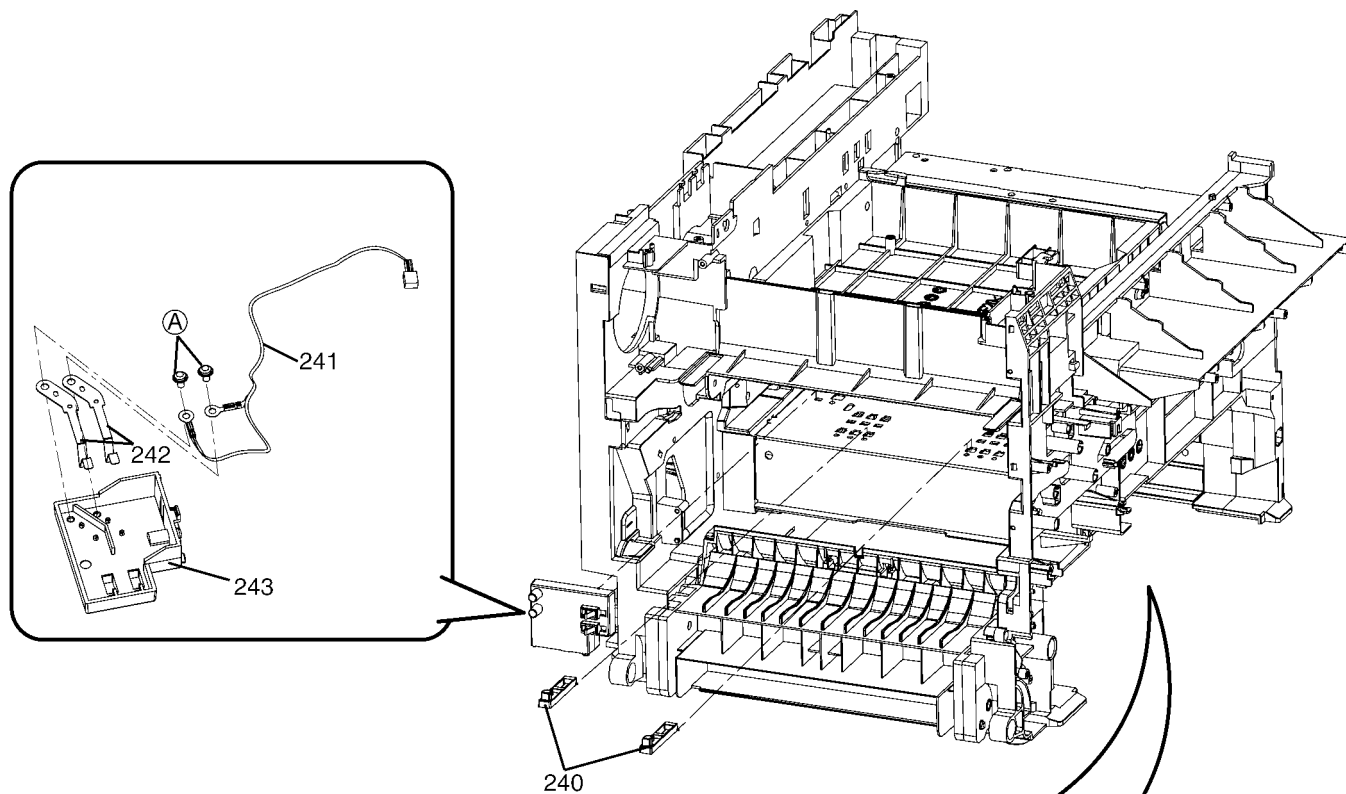




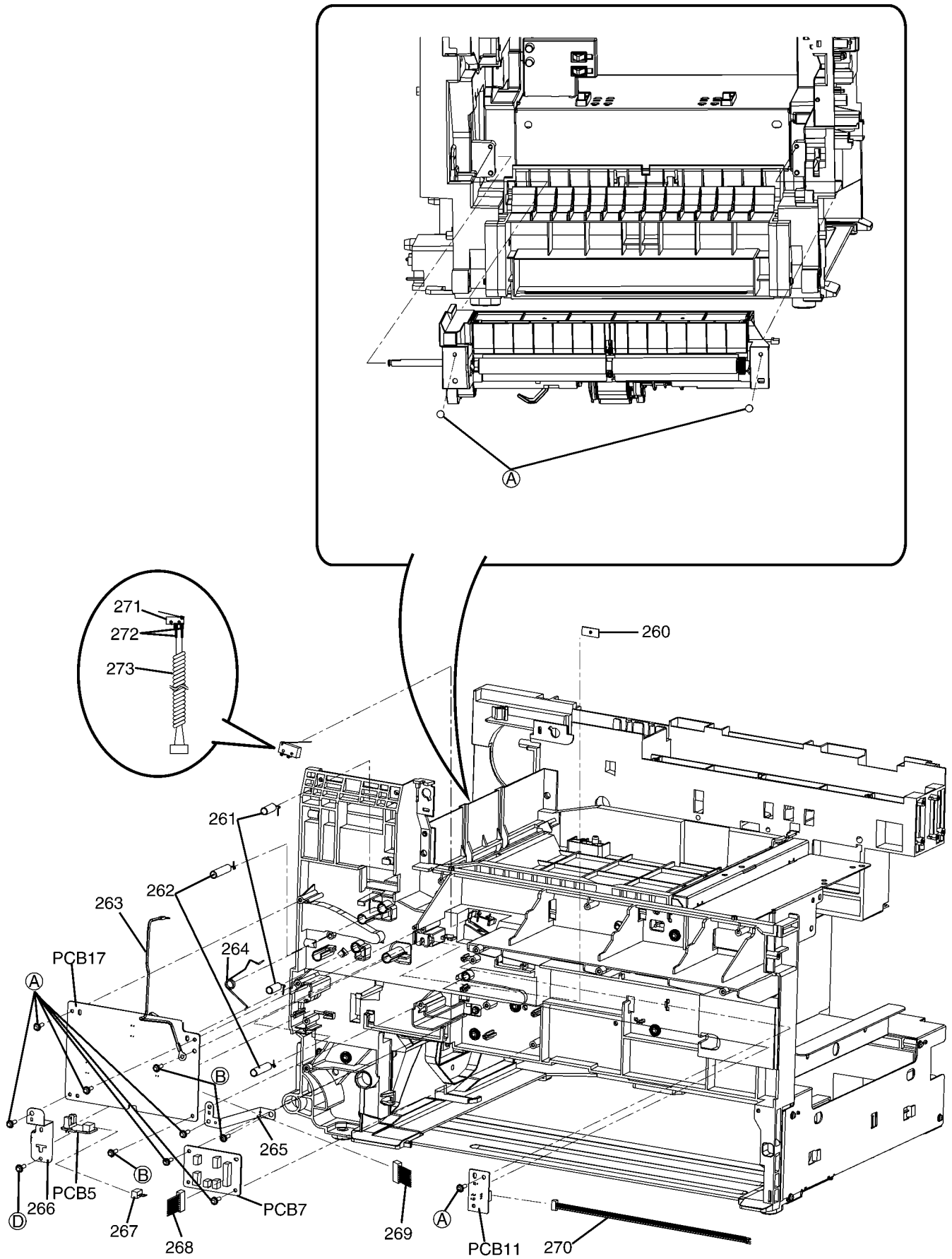
### 18.1.5. Main Cabinet Section (1)



## 18.1.6. Bottom Cabinet Section

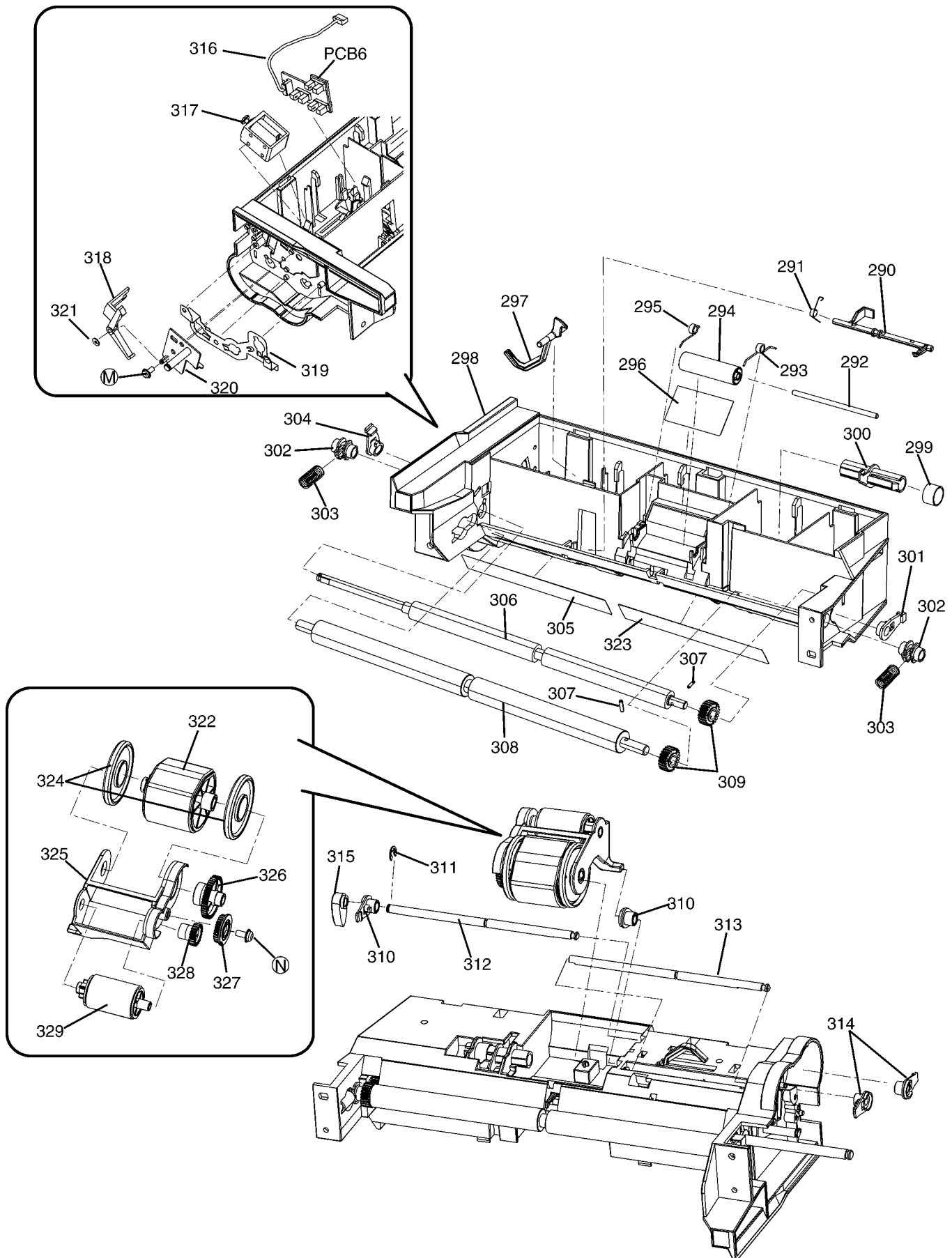


### 18.1.7. Front Cabinet Section

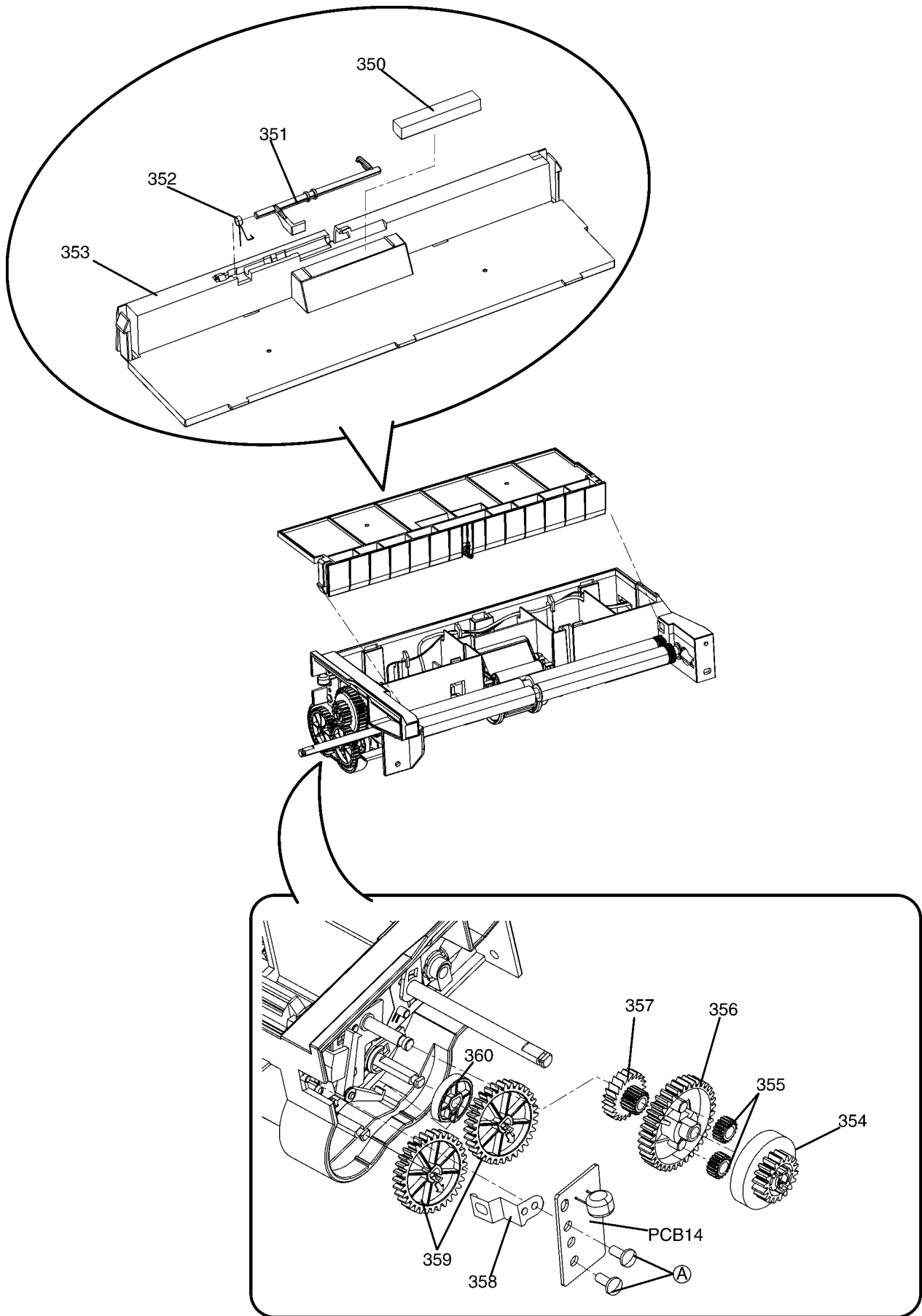




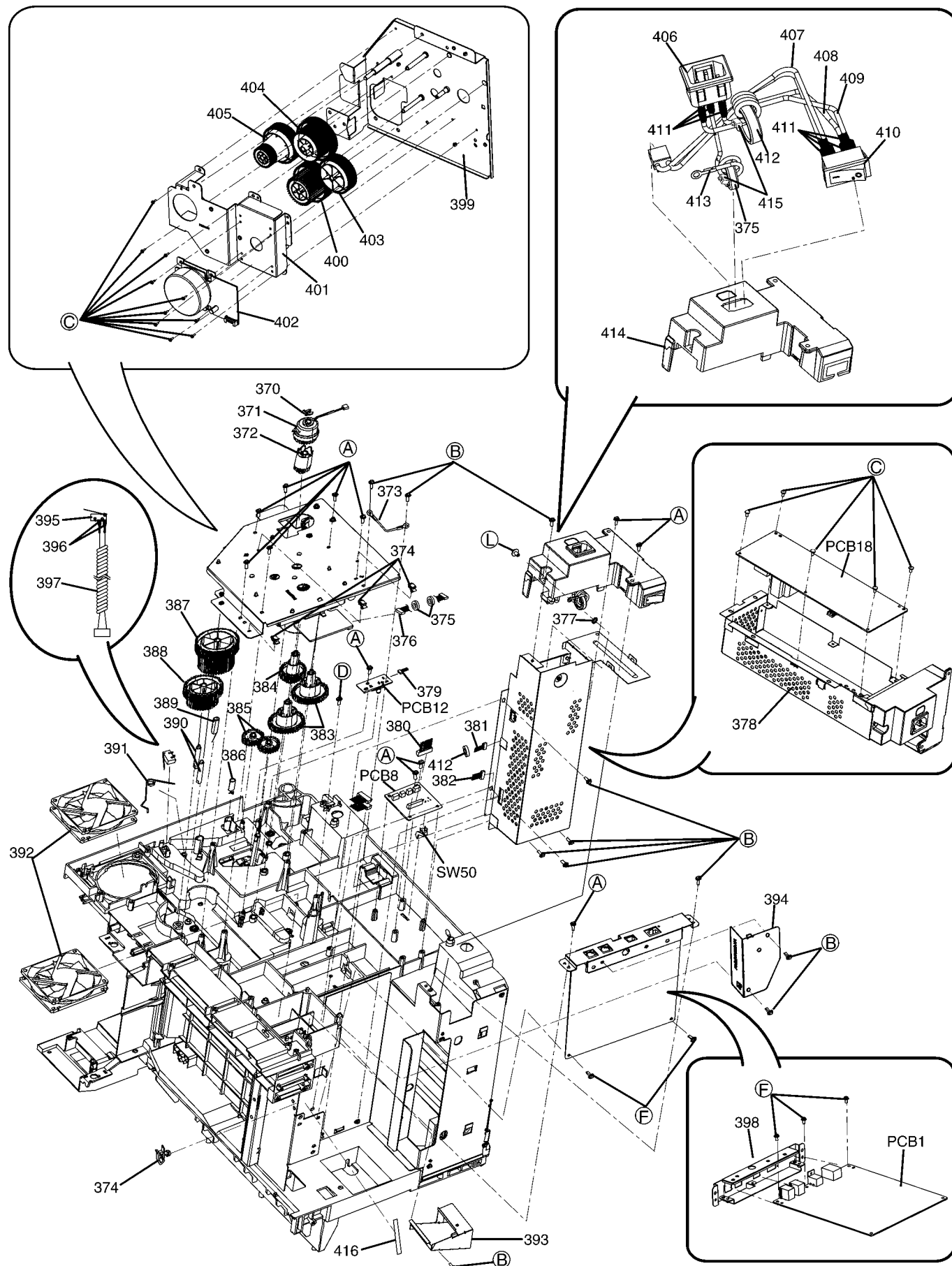
## 18.1.8. Separation Roller Section (1)



### 18.1.9. Separation Roller Section (2)

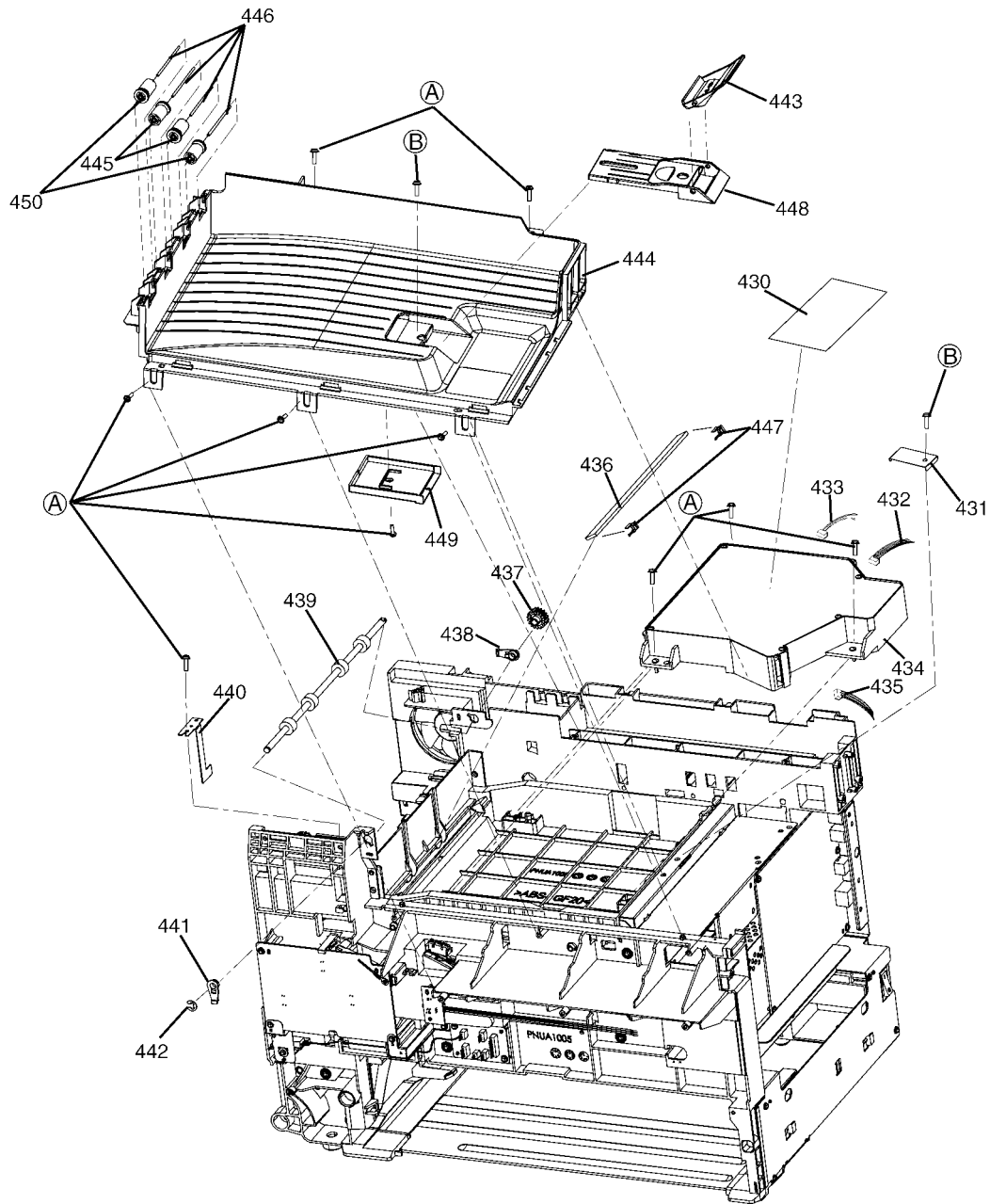


## 18.1.10. Rear Cabinet Section

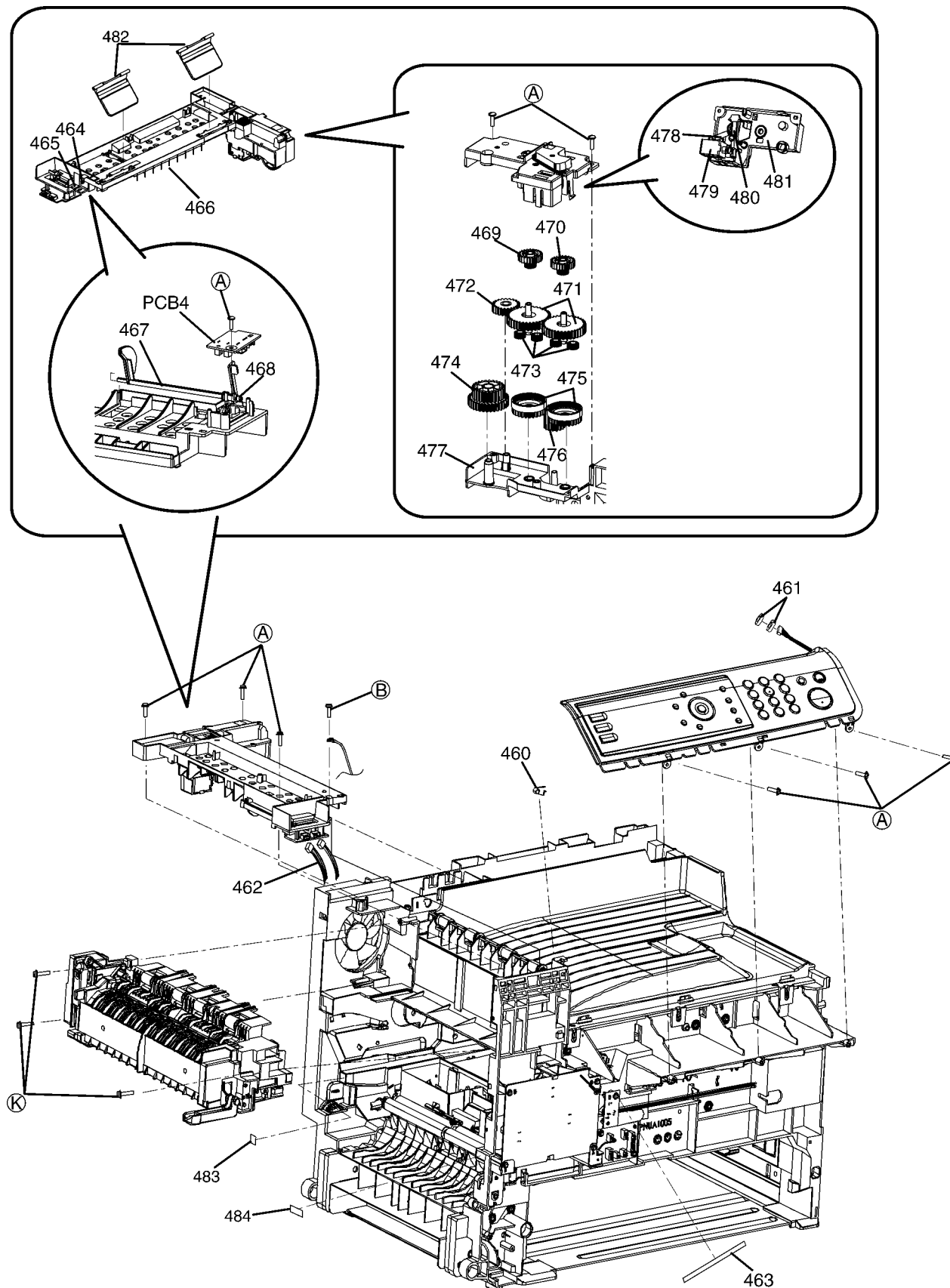




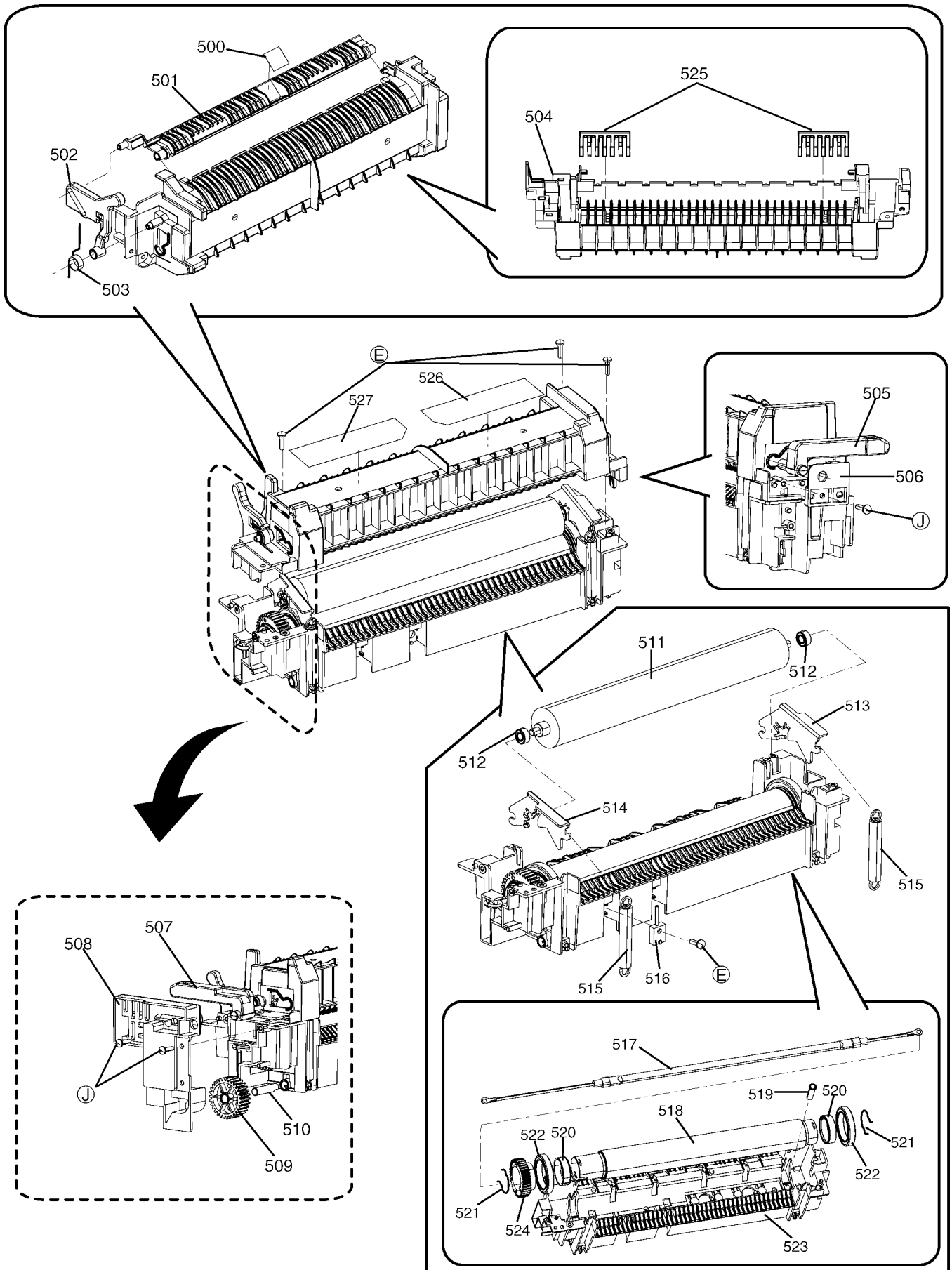
## 18.1.11. Top Cabinet Section



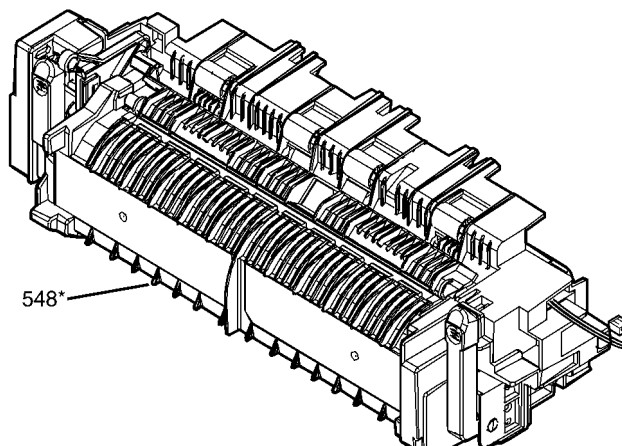
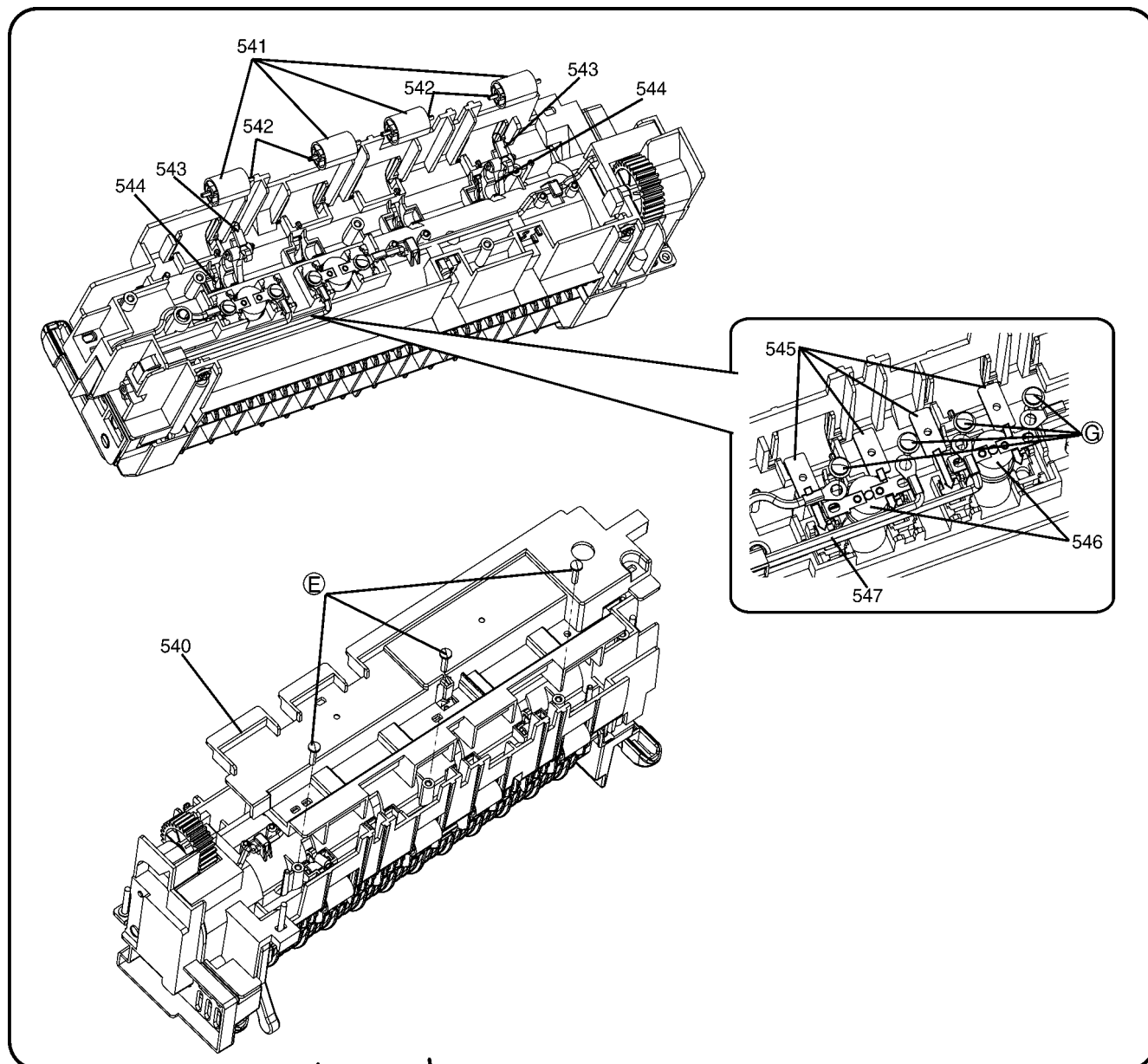
## 18.1.12. Left Cabinet Section



### 18.1.13. Fuser Section (1)

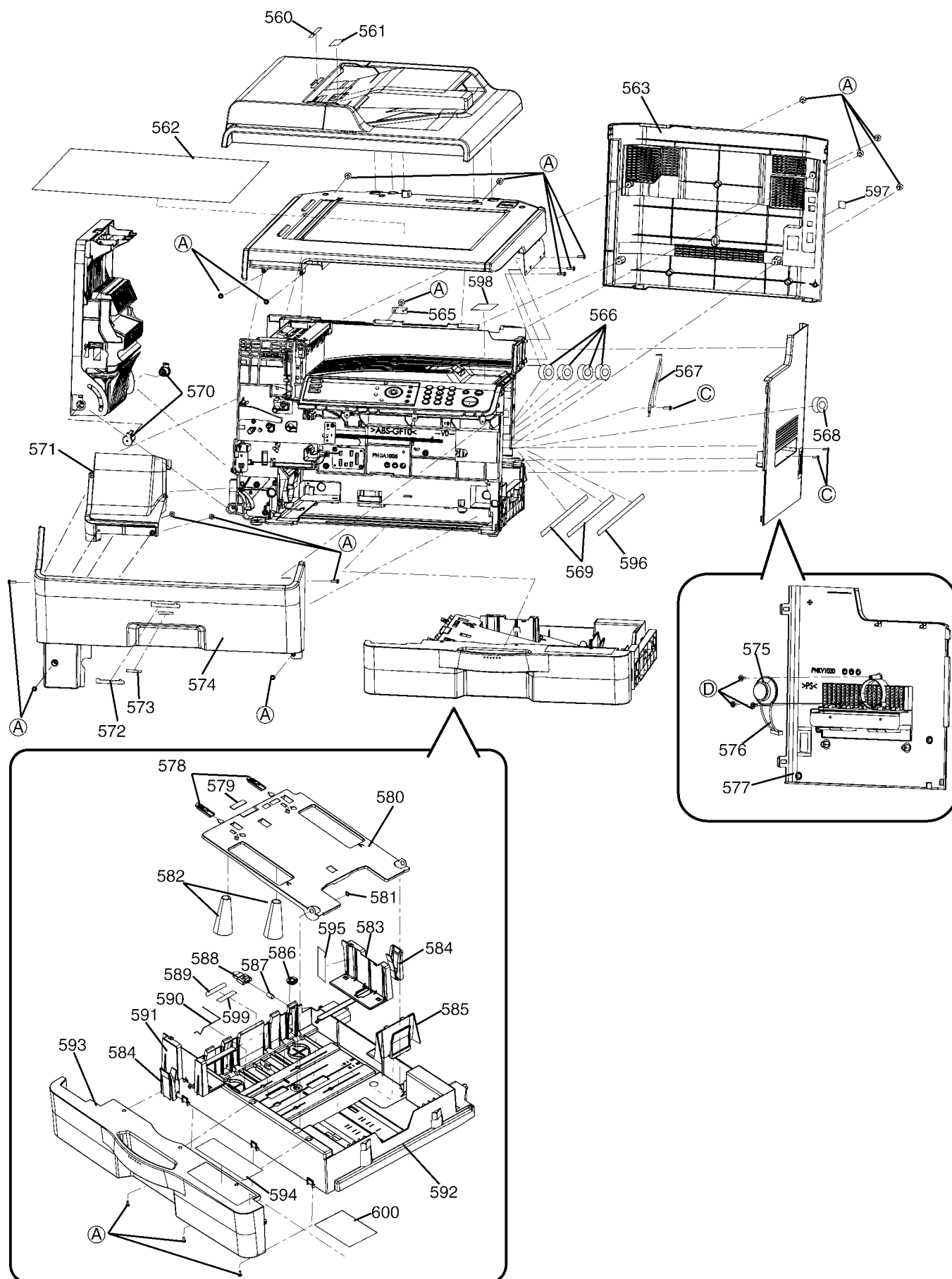


## 18.1.14. Fuser Section (2)



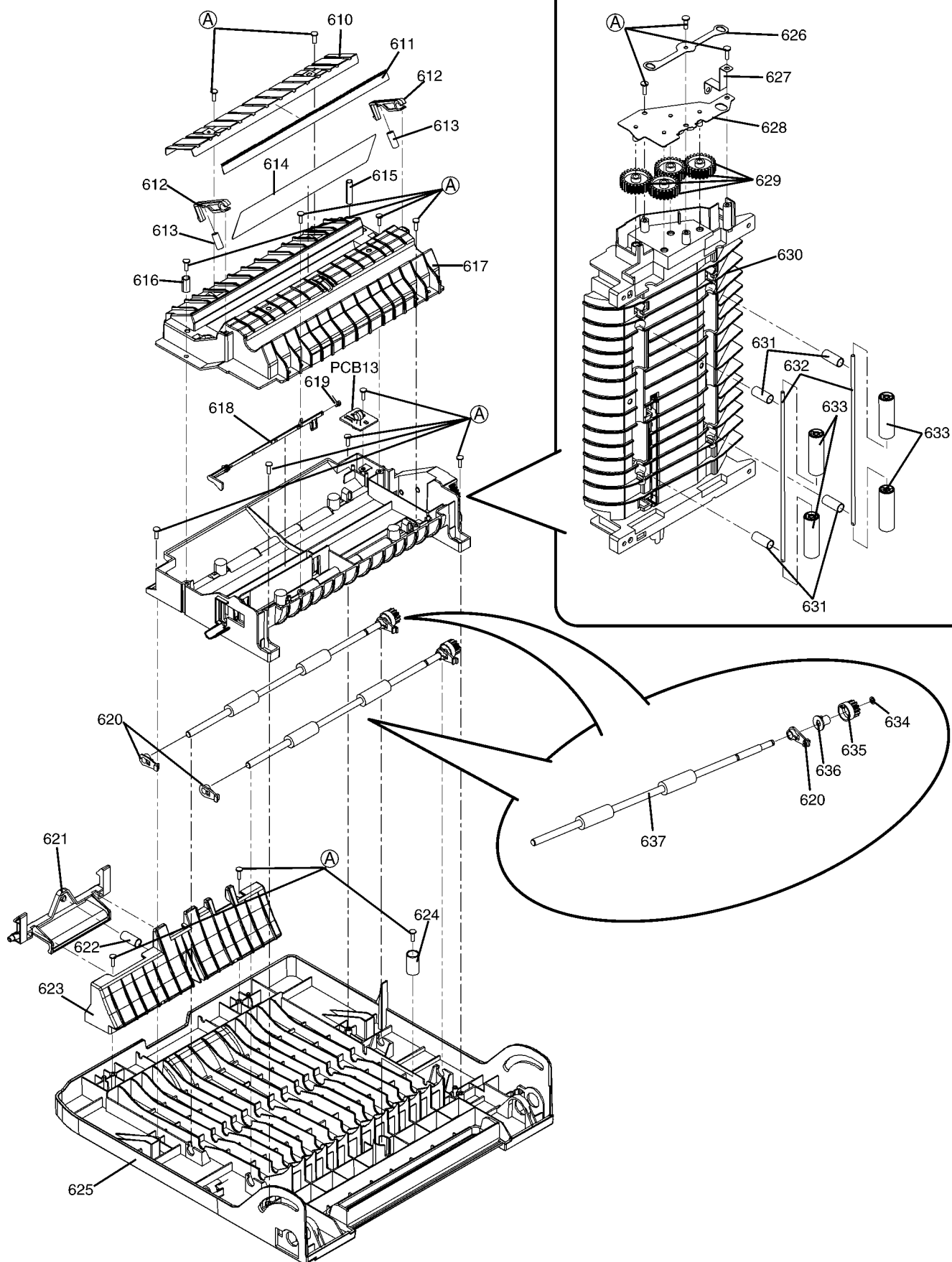
\*548 is the completed Fuser Unit.

## 18.1.15. Main Cabinet Section (2)

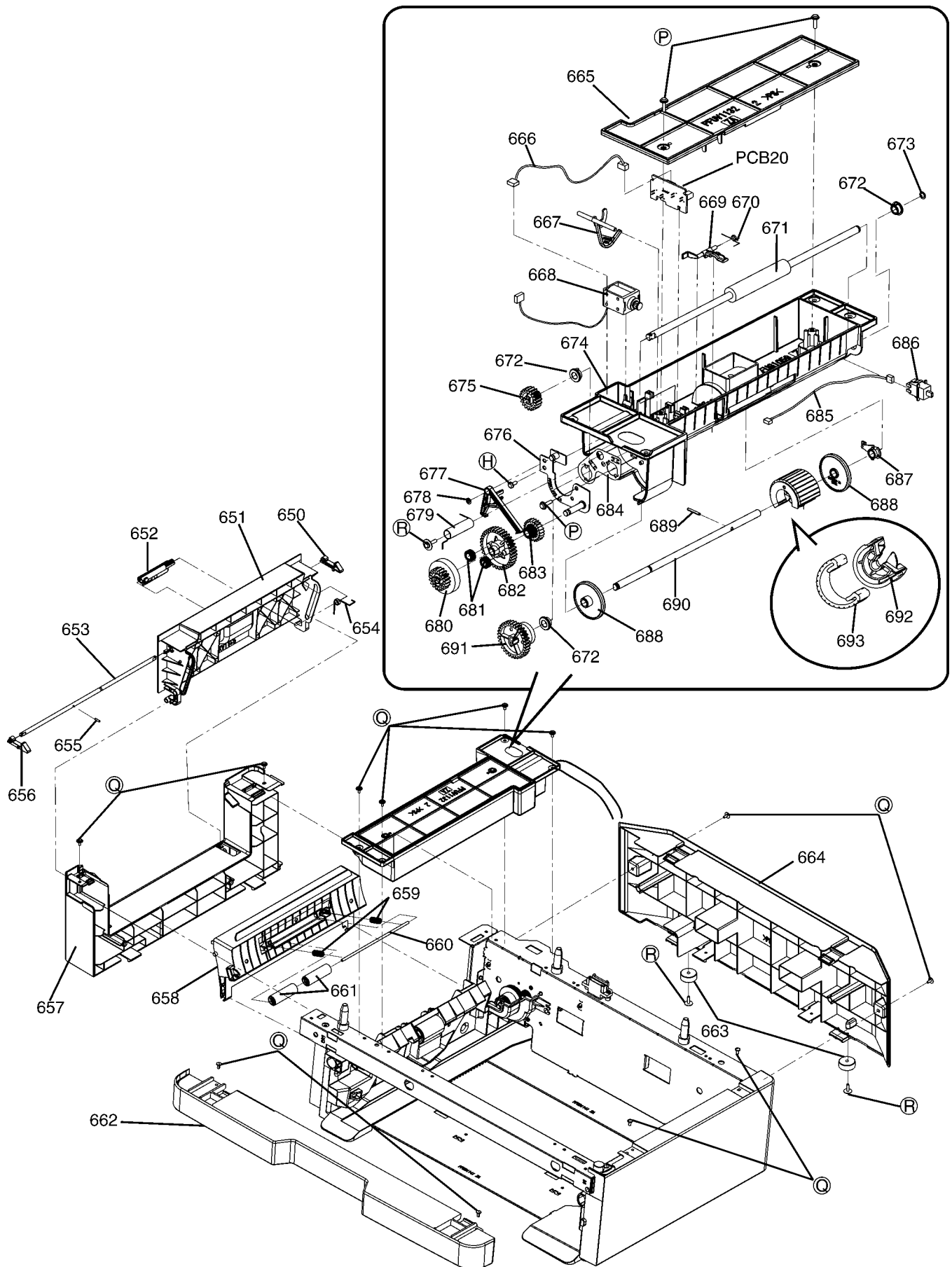




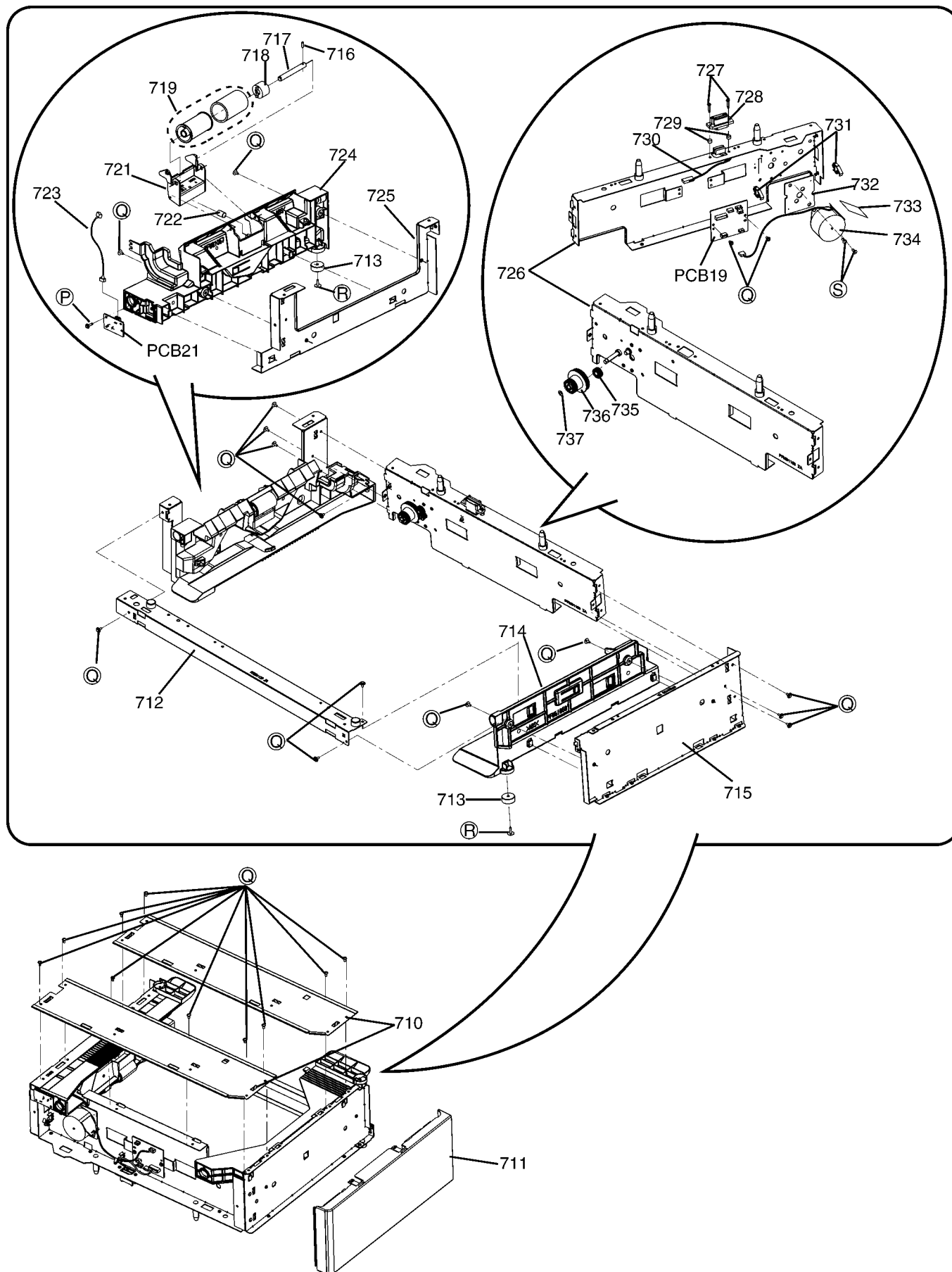
## 18.1.16. ADU Section



# 18.1.17. Optional Lower Input Tray (OPF) Section 1

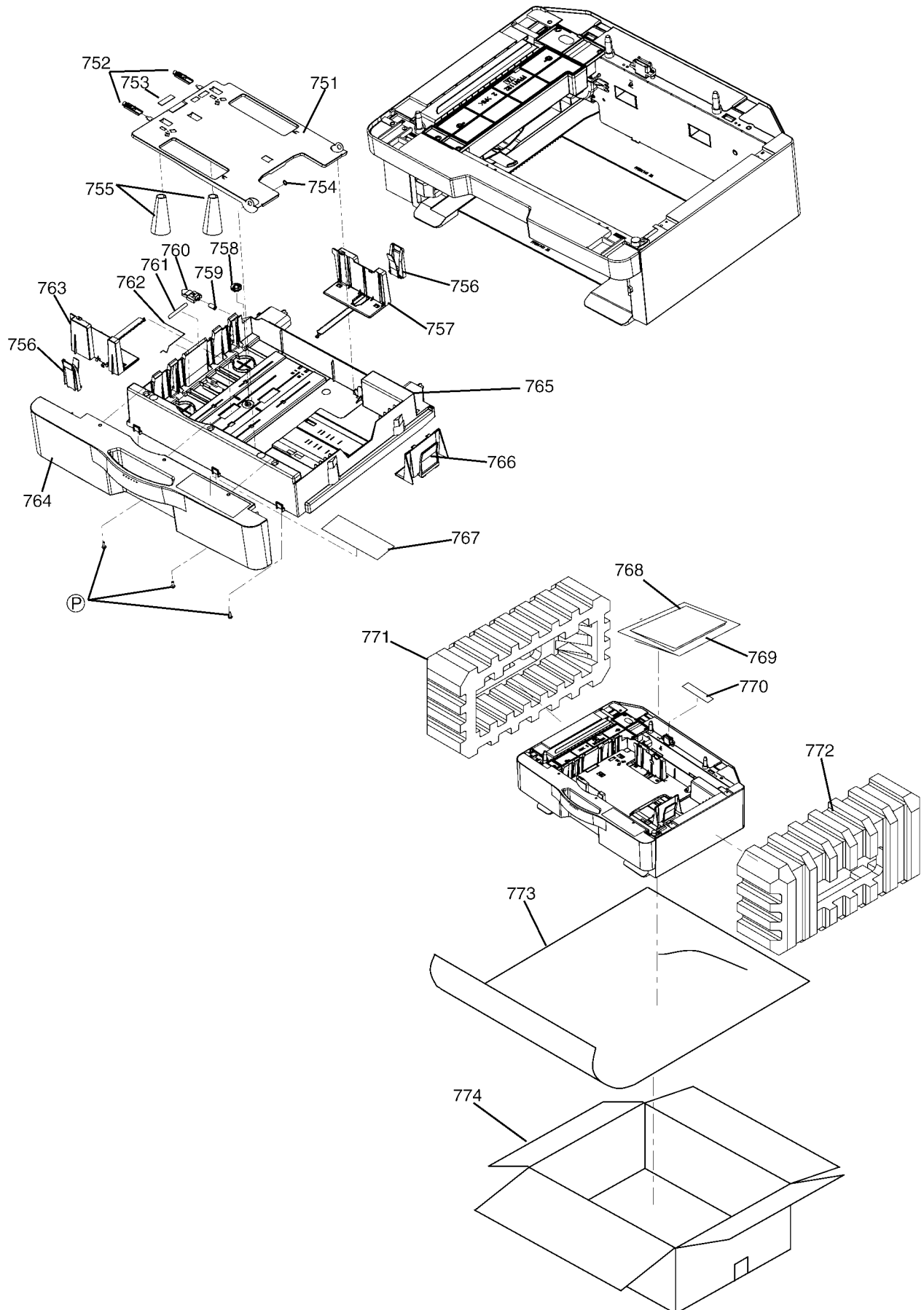


## 18.1.18. Optional Lower Input Tray (OPF) Section 2

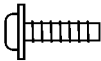


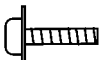
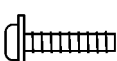



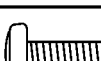
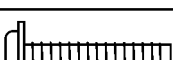





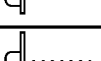






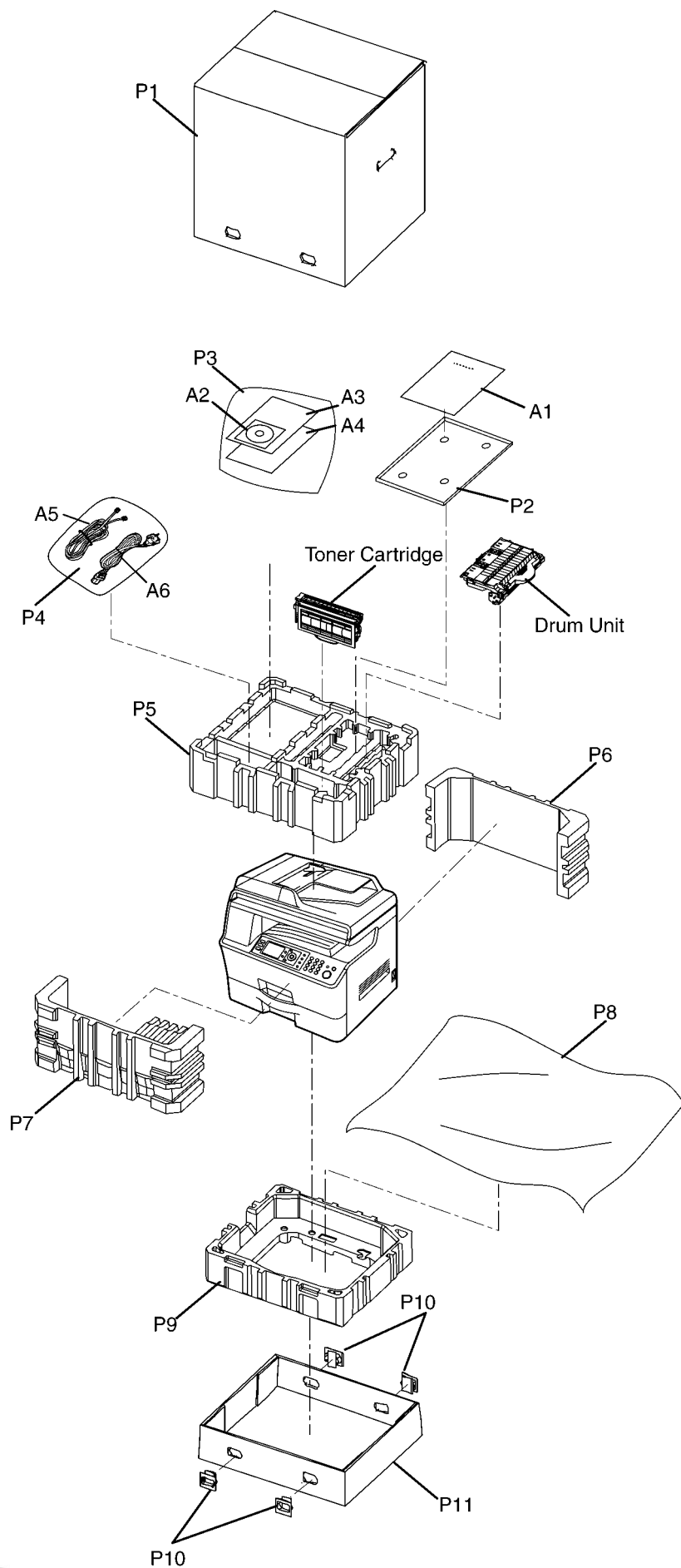
### 18.1.19. Optional Lower Input Tray (OPF) Section 3



## 18.1.20. Actual Size of Screws and Washers

		Illustration
Ⓐ	XTW3+10PFJ7	
Ⓑ	XTW3+8LFJ7	
Ⓒ	XTW3+6LFJ7	
Ⓓ	XTW3+W10PFJ	
Ⓔ	XTW3+12PFJ7	
Ⓕ	XYN3+F6FJ	
Ⓖ	XYC3+FF8FJ	
Ⓗ	XYN3+C6FJ	
Ⓙ	XTB4+10GFJ	
Ⓚ	XTW3+20PFJ	
Ⓛ	XSB4+6FJ	
Ⓜ	XSN3+6FJ	
Ⓝ	XTW3+6PFJ7	
Ⓟ	XTW3+S10SFJ	
Ⓠ	XTW3+6LFJ	
Ⓡ	XTW3+W10SFJ	
Ⓢ	XTW3+5LFJK7	
Ⓣ	XYN3+C4FJ	

## 18.1.21. Accessories and Packing Materials



## 18.2. Replacement Parts List

RTL (Retention Time Limited)

Notes:

- 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.

- Important safety notice

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

- The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

- ISO code (Example : ABS-HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

- RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms ( $\Omega$ ) k=1000 $\Omega$ , M=1000k $\Omega$

All capacitors are in MICRO FARADS ( $\mu$ F) P= $\mu$ mF

\*Type & Wattage of Resistor

Type

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

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W
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\*Type & Voltage of Capacitor

Type

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

Voltage

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

### 18.2.1. Cabinet and Electrical Parts

#### 18.2.1.1. Operation Panel Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PNJS081011Z	CONNECTOR, 8PIN	
	2	PFBC1216Z1	PUSH BUTTON, STOP	ABS-HB
	3	PNBX1051Y1	PUSH BUTTON, REDIAL	ABS-HB
	4	PNBX1052N1	PUSH BUTTON, FUNCTION	ABS-HB
	5	PNUV1019Z	COVER, SHIELD	
	6	PFBC1215Z2	PUSH BUTTON, NAVI	ABS-HB
	7	L5EDDY00067	LCD	
	8	PNBC1245Z1	PUSH BUTTON, START	ABS-HB
	9	PNGG1042N1	GRILLE	PS-HB
	10	PFBC1220E1	PUSH BUTTON, SCAN	PS-HB
	11	PFBC1221E1	PUSH BUTTON, COPY	PS-HB
	12	PFBC1222E1	PUSH BUTTON, FAX	PS-HB
	13	PNHR1190Z	FRAME	ABS-HB
	14	PFBC1217Z1	PUSH BUTTON, AUTO ANSWER	PS-HB
	15	PFBX1303Z2	PUSH BUTTON, DIAL	ABS-HB
	16	PNJS051008Z	CONNECTOR, 5PIN	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	17	PNJS051009Z	CONNECTOR, 5PIN	
	18	PNYPMB350C	PANEL	

#### 18.2.1.2. ADF Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	30	PFZCFLB851M	PARTS KIT, ADF Separation	
	31	PFNPB031054	WASHER	
	32	PFDJ1044X	SPACER	
	33	NOT USED		
	34	PFDR1062Z	ROLLER	POM-HB
	35	PNKR1002Z1	GUIDE	ABS-HB
	36	PFUS1620Z	COIL SPRING	
	37	PNKR1001Z1	GUIDE	ABS-HB
	38	PNKE1022X1	CHASSIS	PS-HB
	39	PFUS1222Z	COIL SPRING	
	40	PFDG1015Y	GEAR, SLIDER	POM-HB
	41	PFDJ1083Z	SPACER	POM-HB
	42	PFUS1568Z	BAR SPRING	
	43	PFDR1073Z	ROLLER	POM-HB
	44	PNUS1052X	TORSION SPRING	
	45	PNDRI1005Z	ROLLER, ADF Eject	
	46	PNUG1012Z	GUIDE	ABS-HB
	47	PFDJ1083Y	SPACER	POM-HB
	48	PNDG1031Z	GEAR, ADF EJECT	POM-HB
	49	PNUS1051Z	TORSION SPRING	
	50	PNKM1051X1	CABINET BODY	PS-HB
	51	PFDJ1044Z	SPACER	POM-HB
	52	PFDG1417Z	GEAR, ADF IDLER	POM-HB
	53	PFDG1416Z	GEAR, ADF IDLER	POM-HB
	54	PFDR1065Z	ROLLER	POM-HB
	55	PNUS1064Z	COIL SPRING	
	56	XUC2FJP	RETAINING RING	
	57	PFDE1244Z	LEVER	POM-HB
	58	PFDF1191Z	SHAFT	
	59	PFUS1822Z	COIL SPRING	
	60	PFDE1247X	LEVER	POM-HB
	61	PNKV1034Y1	COVER	PS-HB
	62	PFDR1064Z	ROLLER	POM-HB
	63	PFDG1413Z	GEAR, DOC. SEP ROLLER	POM-HB
	64	PFDF1095Z	SHAFT	
	65	PFHR1479Z	GUIDE	POM-HB
	66	PNDF1017Z	SHAFT	
	67	PFDJ1044X	SPACER	POM-HB
	68	PFUS1325Z	COIL SPRING	
	69	PNDG1033Z	GEAR, DOC. SEP	POM-HB
	70	XUC3FJP	RETAINING RING	
	71	PFDF1125Z	SHAFT	
	72	PNUV1016Z	CASE	PS-HB
	73	PNJV1003Z	BRUSH	
	74	PNDE1014Y	LEVER	POM-HB
	75	PNDE1015Z	LEVER	POM-HB
	76	PNJS051006Z	CONNECTOR, 5PIN	
	77	PNDE1014Z	LEVER	POM-HB
	78	PNUS1055Z	COIL SPRING	
	79	PFDE1245Z	LEVER	POM-HB
	80	PNUE1008Y	CHASSIS	PS-HB
	81	PNDF1016Y	SHAFT	
	82	PFDR1063X	ROLLER, ADF Document Feed	PS-HB
	83	PNDRI1007Z	ROLLER	
	84	PNUV1015X	CASE	PS-HB
	85	PNUG1013Y	GUIDE	ABS-HB
	86	PNHX1183Z	SHEET PAPER	
	87	PNDG1032Y	GEAR, DOC. FEED	POM-HB
	88	PNDE1013Z	LEVER, DOC. DUPLEX	

### 18.2.1.3. ADF Section (2)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	100	PNHG1072Z	RUBBER PARTS	
	101	PNJS081010Z	CONNECTOR, 8PIN	
	102	PNUS1053Y	TORSION SPRING	
	103	PNHX1108Z	PLASTIC PARTS	
	104	PFUE1051Z	FRAME	PS-HB
	105	PFUS1566Z	COIL SPRING	
	106	PNUS1054Z	TORSION SPRING	
	107	PFUS1618X	TORSION SPRING	
	108	PFDR1073Z	ROLLER	POM-HB
	109	PFDF1149Z	SHAFT	
	110	PNKV1045Y	COVER	PS-HB
	111	PFUS1350Z	COIL SPRING	
	112	PFHR1806Z	CASE	POM-HB
	113	PFHR1804Z	CASE	POM-HB
	114	PFHR1805X	HINGE-STAY	POM-HB
	115	PFMH1181Z	METAL PARTS	
	116	PNKV1032Y1	COVER	PS-HB
	117	PNHR1070Z	HINGE-STAY	PA-V2
	118	PNMD1013Z	FRAME	
	119	L6HBYCYC0004	DC MOTOR	
	120	PNDE1017Z	LEVER	POM-HB
	121	PNUA1012Z	COVER	ABS-HB
	122	PFDG1547Z	GEAR, RESIST CLUTCH	POM-HB
	123	PFDG1402Z	GEAR, PICK CLUTCH	POM-HB
	124	PFDG1403Z	GEAR, PICK CLUTCH PLANET	POM-HB
	125	PFDG1404Z	GEAR, RESIST CLUTCH	POM-HB
	126	L9AAAYB0001	ERECTROMAGNETIC COIL	
	127	PNUS1065Z	COIL SPRING	
	128	WLL20YG20M3M	LEAD WIRE	
	129	PNJS061009Z	CONNECTOR, 6PIN	
	130	PNDE1016Z	LEVER	POM-HB
	131	PNDG1038Z	GEAR, IDLER	POM-HB
	132	PNDG1036Z	GEAR, IDLER	POM-HB
	133	PNDG1037Z	GEAR, IDLER	POM-HB
	134	PNDG1035Z	GEAR, IDLER	POM-HB
	135	PNDG1034Z	GEAR, IDLER	POM-HB
	136	PNUA1011Z	CHASSIS	ABS-HB
	137	PNUS1084Z	COIL SPRING	
	138	PNJS051005Z	CONNECTOR, 5PIN	

### 18.2.1.4. Printer Cover Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	150	PFDE1303X	SPACER	POM-HB
	151	PNKE1021Z1	COVER	PS-HB
	152	PNMD1010Z	FRAME	
	153	PNKE1020Z1	COVER	PS-HB
	154	PNZMB3020M	GLASS	
	155	PFNPD031054C	WASHER	
	156	PFDE1170Z	PULLEY	POM-HB
	157	PFDE1169Z	PULLEY	POM-HB
	158	PFMH1104Y	CHASSIS	
	159	PFDE1168Z	PULLEY	POM-HB
	160	PFJE1119Z	LEAD WIRE	
	161	PFDV1006Z	FLAT BELT	
	162	PFDF1202Y	SHAFT	
	163	JOKE00000114	INSULATOR	
	164	PNJS031006Z	CONNECTOR, 3PIN	
	165	PNJS141004Z	CONNECTOR, 14PIN	
	166	PFLB1K003	INSULATOR	
	167	PFUS1817Z	COIL SPRING	
	168	N2GAYY000002	IMAGE SENSOR	
	169	PFHX2148Z	CASE	
	170	PFUS1642Y	COIL SPRING	
	171	PFDC1005X	GUIDE	POM-HB
	172	PFHE1292Z	SPACER	
	173	WLL20YG30M3M	LEAD WIRE	
	174	PFUS1819Z	TORSION SPRING	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	175	PFHE1319Z	PLASTIC PARTS	
	176	PFUS1344Z	COIL, SPRING	
	177	PNKM1050Y1	CABINET BODY	PS-HB
	178	PNHX1064Z	TAPE	
	179	PNHX1096Z	PLASTIC PARTS	
	180	PFDG1551Y	GEAR, CARRIAGE	POM-HB
	181	PFMH1258Y	FRAME	
	182	PFHX2126Z	PLASTIC PARTS	
	183	L6HAYYK0019	DC MOTOR	

### 18.2.1.5. Main Cabinet Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	200	PNUA1004X	CHASSIS	ABS-GF10-V0
	201	PNUA1005X	CHASSIS	ABS-GF10-V0
	202	PNUA1007Y	CHASSIS	
	203	PNUG1009Z	GUIDE	PS-HB
	204	PNHX1198X	TAPE	
	205	PNUG1003V	GUIDE	ABS-HB
	206	XPJ2A8VWM2	KEY-PIN	
	207	PFDF1197Y	SHAFT	
	208	PNDX1005Z	MECHANISM CASE	
	209	PNZR1MB3020M	ROLLER	
	210	NOT USED		
	211	PFUS1923Z	COIL SPRING	
	212	PNHR1052Z	HOLDER	ABS-HB
	213	PNUA1008Y	CHASSIS	
	214	PNUG1004Y	GUIDE	ABS-HB
	215	PNUA1006Y	CHASSIS	ABS-GF20-HB

### 18.2.1.6. Bottom Cabinet Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	240	PNUE1009Z	KEYLOCK	PS-HB
	241	PNJS021023Z	CONNECTOR, 2PIN	
	242	PNMH1021Z	METAL PARTS	
	243	PNUE1007Y	CASE	PS-HB
	244	XWG3FJ	WASHER	
	245	PFHA1012Z	RUBBER PARTS	
	246	KILY16AA0022	CONNECTOR, 16PIN	
	247	PNJS161001Y	CONNECTOR, 16PIN	
	248	PNMD1009Z	FRAME	

### 18.2.1.7. Front Cabinet Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	260	PFMH1085Z	METAL PARTS	
	261	PNUS1040Z	COIL SPRING	
	262	PNUS1043Z	COIL SPRING	
	263	WLL20YG20M3M	LEAD WIRE	
	264	PNUS1042Z	TORSION SPRING	
	265	PNMH1022Z	METAL PARTS	
	266	PNMH1023Z	METAL PARTS	
	267	PNJS031003Z	CONNECTOR, 3PIN	
	268	PNJS101001Z	CONNECTOR, 10PIN	
	269	PNJS061008Z	CONNECTOR, 6PIN	
	270	PNJS031004Z	CONNECTOR, 3PIN	
	271	KOKACF000064	MICRO SWITCH	
	272	WSB2R5-15-F2	INSULATOR	
	273	PNJS031008Z	CONNECTOR, 3PIN	

### 18.2.1.8. Separation Roller Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	290	PNDE1008Z	LEVER	POM-HB
	291	PNUS1032Z	TORSION SPRING	
	292	PNDF1002Z	SHAFT	
	293	PFUS1619X	TORSION SPRING	
	294	PNDRI001Z	ROLLER	PP-HB
	295	PFUS1618X	TORSION SPRING	
	296	PNHX1063Z	TAPE	
	297	PNDE1007Z	LEVER	POM-HB
	298	PNUG1001X	GUIDE	PS-HB
	299	PFUS1610Z	COIL SPRING	
	300	PFDJ1098Z	SPACER	POM-HB
	301	PFDJ1044Z	SPACER	POM-HB
	302	PFDJ1130Z	SPACER	POM-HB
	303	PNUS1031Z	COIL SPRING	
	304	PFDJ1044X	SPACER	POM-HB
	305	PNHX1062W	TAPE	
	306	PNDRI003Z	ROLLER, REGISTRATION	
	307	XPJ2A8VVM2	KEY-PIN	
	308	PNDF1004Z	SHAFT	
	309	PNDG1005Y	GEAR, REGIST ROLLER	POM-HB
	310	PFDJ1084Z	SPACER	POM-HB
	311	XUC3FJP	RETAINING RING	
	312	PNDF1005Z	SHAFT	
	313	PNDF1003Y	SHAFT	
	314	PFDJ1084Y	SPACER	POM-HB
	315	PNDG1008Z	GEAR, PRE FEED ROLLER	POM-HB
	316	PNJS051007Z	CONNECTOR, 5PIN	
	317	L9AAAYB0008	ERECTROMAGNETIC COIL	
	318	PFHR1797Z	ARM	POM-HB
	319	PNUS1028Y	METAL PARTS	
	320	PNZF1002Y	METAL PARTS	
	321	PNNPD021060C	WASHER	
	322	PNZR2MB3020M	ROLLER, PICK UP	
	323	PNHX1184X	TAPE	
	324	PNDRI002Z	ROLLER	POM-HB
	325	PNHR1049Y	CHASSIS	ABS-HB
	326	PNDG1003Y	GEAR, PICKUP ROLLER	POM-HB
	327	PNDG1004Z	GEAR, JOINT SUB ROLLER	POM-HB
	328	PNDG1002Z	GEAR, PRE FEED ROLLER	POM-HB
	329	PNZR3MB3020M	ROLLER, FEED	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	377	XWC4BFJ	WASHER	
	378	PNUV1009Y	CASE	
	379	PNJS031005Z	CONNECTOR, 3PIN	
	380	PNJS091002Z	CONNECTOR, 9PIN	
△	381	PNJS021025Z	CONNECTOR, 2PIN	
	382	PNJS081013Z	CONNECTOR, 8PIN	
	383	PNDG1017Z	GEAR	POM-HB
	384	PNDG1018Z	GEAR	POM-HB
	385	PNDG1030Z	GEAR, ADU IDLER	POM-HB
	386	PNUS1040Z	COIL SPRING	
	387	PNDG1013Z	GEAR	POM-HB
	388	PNDG1014Z	GEAR, FUSER DRIVE	POM-HB
	389	PNUS1044Z	COIL SPRING	
	390	PNDF1012Z	SHAFT	
	391	PNUS1041Z	TORSION SPRING	
	392	L6FAYYYK0001	DC MOTOR	
	393	PNMH1050Z	METAL PARTS	
	394	PNMH1062Z	METAL PARTS	
	395	K0KACF000064	MICRO SWITCH	
	396	WSB3R5-15-F2	INSULATOR	
	397	PNJS031009Y	CONNECTOR, 3PIN	
	398	PNMD1011Z	FRAME	
	399	PNZFMB3020M	SHAFT	
	400	PNDG1016Z	GEAR	POM-HB
	401	PNMD1007Z	FRAME	
	402	L6CCYYK0005	DC MOTOR	
	403	PNDG1015Z	GEAR	POM-HB
	404	PNDG1012Z	GEAR	POM-HB
	405	PNDG1011Z	GEAR, OPC DRIVE	POM-HB
△	406	K2AH3G000011	JACK	
△	407	PNJS031010Z	CONNECTOR, 3PIN	
△	408	PNWLDC28HX	LEAD WIRE	
△	409	PNWLDA28HX	LEAD WIRE	
△	410	K0AAKE000053	SEESAW SWITCH	
	411	PQMX10010Z	CASE	
	412	J0KE00000116	INSULATOR	
△	413	PNVW1001Z	LEAD WIRE	
	414	PNHR1060Z	CASE	ABS-5V
	415	PQHR945Z	BAND	PP-HB
	416	PQHR10708Z	BAND	PP-HB

### 18.2.1.11. Top Cabinet Section

### 18.2.1.9. Separation Roller Section (2)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	350	PFHR1538Z	CABINET ACCESSORY	
	351	PNDE1008Z	LEVER	POM-HB
	352	PNUS1030Z	TORSION SPRING	
	353	PNUG1002Z	GUIDE	ABS-HB
	354	PFDG1573Z	GEAR, INNER	POM-HB
	355	PFDG1576Z	GEAR, PLANET	POM-HB
	356	PFDG1574Z	GEAR, CARRIER	POM-HB
	357	PFDG1572Z	GEAR, SUN	POM-HB
	358	PNUS1029Z	METAL PARTS	
	359	PNDG1007Z	GEAR, SUPPORT CAM	POM-HB
	360	PNDG1001Z	GEAR, PICKUP	POM-HB

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	430	PNQT1506Z	LABEL, LASER CAUTION	
	431	PNUS1047Z	BAR SPRING	
	432	PNJS051004Z	CONNECTOR, 5PIN	
	433	PNJS031002Z	CONNECTOR' 3PIN	
△	434	PNSL1002Z	LSU UNIT	
	435	PNJS081014Z	CONNECTOR' 8PIN	
	436	PNOM1002Z	MIRROR	
	437	PFDG1627Z	GEAR, OPF FEED ROLLER	
	438	PFDJ1044Z	SPACER	POM-HB
	439	PNDRI004Z	ROLLER, Exit (Eject)	
	440	PNMH1018Z	METAL PARTS	
	441	PFDJ1044X	SPACER	POM-HB
	442	XUC5VVM3	RETAINING RING	
	443	PNKS1009Z1	TRAY	PS-HB
	444	PNKV1027W1	COVER	PS-HB
	445	PNDRI009Z	ROLLER	POM-HB
	446	PFUS1435Z	COIL SPRING	
	447	PFUS1028Z	LEAF SPRING	
	448	PNHR1204Y	GUIDE	PS-HB
	449	PNHR1205Z	COVER	PS-HB
	450	PNDRI017Z	ROLLER	POM-HB

### 18.2.1.10. Rear Cabinet Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	370	PJHRA0784Z	SPACER	POM-HB
	371	L9EAAAY000001	CLUTCH	
	372	PNDG1006Z	GEAR, JOINTREGIST ROLLER	POM-HB
	373	WLL20YG15M3M	LEAD WIRE	
	374	PFHR1847Z	PARTING PLATE	PA-V0
	375	J0KE00000114	INSULATOR	
	376	PNJS081015Z	CONNECTOR, 8PIN	



### 18.2.1.12. Left Cabinet Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	460	PNUS1037Z	TORSION SPRING	
	461	J0KE00000115	INSULATOR	
	462	PNJS041004Z	CONNECTOR ,4PIN	
	463	PQHR945Z	BAND	PP-HB
	464	PFHX1937Z	CASE	
	465	PNMC1012Y	MAGNETIC SHIELD	
	466	PNJV1002Y	BRUSH	
	467	PNDE1010Y	LEVER	PC-GF30-V0
	468	PNUS1038Z	TORSION SPRING	
	469	PJDBG0166Z	GEAR-DOWN, RATCHET	POM-HB
	470	PJDBG0167Z	GEAR-DOWN, RATCHET	POM-HB
	471	PJDBG0168Z	GEAR	POM-HB
	472	PFDG1622Z	GEAR	POM-HB
	473	PFDG1606Z	GEAR, PLANETARY	POM-HB
	474	PNDG1028Z	GEAR,EJECT	POM-HB
	475	PFDG1605Z	GEAR,EXIT	POM-HB
	476	PNDG1027Z	GEAR,EJECT IDLER	POM-HB
	477	PNUG1007Y	GUIDE	ABS-GF20-HB
	478	PNUS1079Z	COIL SPRING	
	479	L9AAAYB0007	ERECTROMAGNETIC COIL	
	480	PNDE1009Z	LEVER	POM-HB
	481	PNUV1013Z	CASE	ABS-HB
	482	PNHR1201Z	LEVER	ABS-GF20-HB
	483	PNQT1111Z	LABEL,ARROW	
	484	PNQT1110Z	LABEL,ARROW	

### 18.2.1.13. Fuser Section (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	500	PNQT1229Z	LABEL,HOT CAUTION	
	501	PNUG1006Z	GUIDE	PBT+ABS-GF30 FR (17) - V0
	502	PNHR1079Z	LEVER	PBT+ABS-GF30 FR (17) - V0
	503	PNUS1036Z	TORSION SPRING	
	504	PNUA1010Y	CHASSIS	PET-(GF+MD) 40 FR (17) - 5V
	505	PNHR1057Z	LEVER	PBT+ABS-GF30 FR (17) - V0
	506	PNHR1071Z	HOLDER	ABS-GF20-HB
	507	PNHR1058Z	LEVER	PBT+ABS-GF30 FR (17) - V0
	508	PNUV1011Z	CASE	PET-(GF+MD) 40 FR (17) - 5V
	509	PNDG1026Z	GEAR,HEAT ROLLER IDLER	PBT-V0
	510	PNDF1008Z	SHAFT	
	511	PNDS1003Z	ROLLER	
	512	PNDJ1011Z	SPACER	
	513	PNMH1016Z	METAL PARTS	
	514	PNMH1017Z	METAL PARTS	
	515	PNUS1035Z	COIL SPRING	
	516	D4CCY3640001	THERMISTOR	
△	517	A4DYYY000020	HALOGEN LAMP	
	518	PNDS1002Z	ROLLER,Heat	
	519	PNUS1059Z	COIL SPRING	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	520	PNDE1011Z	COVER	PAI-V0
	521	PNUS1039Y	LEAF SPRING	
	522	PNDJ1010Z	SPACER	
	523	PNUA1009X	CHASSIS	PET-(GF+MD) 40 FR (17) - 5V
	524	PNDG1025Z	GEAR,HEAT ROLLER	PPS-GF30-V0
	525	PNHR1223Z	PLASTIC PARTS	PBT+ABS-GF30 FR (17) - V0
	526	PNQT1115Z	LABEL, FUSER CAUTION	
	527	PNQT1116Z	LABEL,CLEAR JAM	

### 18.2.1.14. Fuser Section (2)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	540	PNUV1010Z	CASE	PET-(GF+MD) 40 FR (17) - 5V
	541	PFDR1069Z	ROLLER	POM-HB
	542	PFDF1149Z	SHAFT	
	543	PNUS1060Z	COIL SPRING	
	544	PNHR1173Z	PLASTIC PARTS	PPS-V0
	545	PFMH1085Z	METAL PARTS	
△	546	KOMB11000007	THERMOSTAT	
△	547	PNJS021024Z	CONNECTOR, 2PIN	
	548	PNWEMB3020M	FUSER UNIT (*1)	

#### Note:

(\*1) After the production of this model is discontinued, we cannot supply this fuser unit.

### 18.2.1.15. Main Cabinet Section (2)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	560	PNQT1012X	LABEL, LIFT UP TO OPEN	
	561	PNQT1612Z	LABEL, FACE UP	
	562	PFPH1046Y	PROTECTION COVER	
	563	PNKV1031V1	COVER	PS-HB
	564	NOT USED		
	565	PFMH1181Z	METAL PARTS	
	566	J0KE00000114	INSULATOR	
	567	PNMD1021X	HINGE-STAY	
	568	J0KE00000115	INSULATOR	
	569	PQHR10708Z	BAND	PA-V0
	570	PFHR1827Z	PLASTIC PARTS	PS-HB
	571	PNKV1028E1	COVER	PS-HB
	572	PNGB1002Y1	BADGE	
	573	PNQT1642Z	LABEL,MODEL	
	574	PNKV1029Z1	COVER	PS-HB
	575	L0AA05A00048	SPEAKER	
	576	PNJS021017Z	CONNECTOR, 2PIN	
	577	PNKV1030Z1	COVER	PS-HB
	578	PFHR1859Z	COVER	POM-HB
	579	PFHG1292Z	RUBBER PARTS	
	580	PFMD1140Y	CHASSIS	
	581	PFNPD062095C	WASHER	
	582	PNUS1085Y	COIL SPRING	
	583	PFKR1116Y	GUIDE	ABS-HB
	584	PFHR1862Y	LEVER	POM-HB
	585	PFKR1090X	GUIDE	POM-HB
	586	PFDG1569Z	GEAR, PINION	POM-HB
	587	PFUS1608Z	COIL SPRING	
	588	PFHR1491Z	LEVER	POM-HB
	589	PNHG1052X	RUBBER PARTS	
	590	PFUS1926Z	BAR SPRING	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	591	PFKR1115Y	GUIDE	ABS-HB
	592	PFKS1161U	TRAY	PS-HB
	593	PNKV1023Y1	COVER	PS-HB
	594	PNQT1657Z	LABEL, CASSETTE CAUTION	
	595	PNQT1580Z	LABEL, PAPER LIMIT	
	596	PQHR945Z	BAND	PP-HB
	597	PNQT1087Z	LABEL, INTERFACE	
	598	PNQT1499Z	LABEL, TRAY STACKER	
	599	PNHX1224Z	TAPE	
	600	PFPB1003Z	PAT	

### 18.2.1.16. ADU Section

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	610	PNMD1012Z	GUIDE	
	611	PNJV1001Z	BRUSH	
	612	PNHR1062Z	LEVER	POM-HB
	613	PNUS1062Z	COIL SPRING	
	614	PNQT1663Z	LABEL, DRUM INSTALLATION	
	615	PFUS1639Z	COIL SPRING	
	616	PFUS1851Z	COIL SPRING	
	617	PNUG1011Y	CABINET BODY	PS-HB
	618	PNHR1061Z	LEVER	POM-HB
	619	PNUS1050Z	TORSION SPRING	
	620	PFDJ1044Z	SPACER	POM-HB
	621	PNBS1001Z1	KNOB	ABS-HB
	622	PNUS1048Z	COIL SPRING	
	623	PNUG1008Z	GUIDE	ABS-GF20-HB
	624	PNUS1061Z	COIL SPRING	
	625	PNKK1008Z1	COVER	PS-HB
	626	PNMH1025Z	METAL PARTS	
	627	PNMH1026Z	METAL PARTS	
	628	PNMH1024Z	METAL PARTS	
	629	PNDG1030Z	GEAR, ADU IDLER	POM-HB
	630	PNUG1010Z	CHASSIS	PS-HB
	631	PNUS1049Z	COIL SPRING	
	632	PNDG1014Z	SHAFT	
	633	PFDR1120Z	ROLLER	
	634	PFNPD041065C	SPACER	
	635	PNDG1029Z	GEAR, ADU ROLLER	POM-HB
	636	PNDE1012Z	LEVER	POM-HB
	637	PNDR1006Z	ROLLER	

### 18.2.1.17. Optional Lower Input Tray (OPF) Section 1

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	650	PFHR1860Z	LEVER	
	651	PFKV1185Z1	COVER	
	652	PFKE1209Z1	KNOB	
	653	PFDF1245Y	SHAFT	
	654	PFUS1921Z	TORSION SPRING	
	655	XPJ2A8VWM2	KEY-PIN	
	656	PFHR1861Z	LEVER	
	657	PFKV1183Z1	COVER	POM-HB
	658	PFUG1060W	GUIDE	
	659	PNUS1093Z	COIL SPRING	
	660	PFDF1246Y	SHAFT	
	661	PFDR1120Z	ROLLER	
	662	PNKV1025Y1	COVER	
	663	PFHA1013Z	RUBBER PARTS	
	664	PFKV1182Z1	COVER	
	665	PFUV1132Z	COVER	
	666	PFJS04L55Z	CORD	
	667	PFDE1329Z	LEVER	
	668	PJDPB0004Y	PLUNGER	
	669	PFDE1328Z	LEVER	
	670	PFUS1920Z	TORSION SPRING	
	671	PFDN1095Y	ROLLER	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	672	PFDJ1133Z	SPACER	
	673	PFNPD041080C	WASHER	
	674	PFUG1059Y	FRAME	
	675	PFDG1627Z	GEAR, OPF FEED ROLLER	
	676	PNZF1013Y	METAL PARTS	
	677	PFDE1327Z	LEVER	
	678	PFNPD031054C	WASHER	
	679	PFUS1925Z	TORSION SPRING	
	680	PFDG1573Z	GEAR, INNER	POM-HB
	681	PFDG1576Z	GEAR, PLANET	POM-HB
	682	PFDG1574Z	GEAR, CARRIER	POM-HB
	683	PFDG1572Z	GEAR, SUN	POM-HB
	684	PFMH1304Z	METAL PARTS	
	685	PFJS02L56Z	CORD	
	686	K0F111E00096	PUSH SWITCH	
	687	PFDJ1129Z	SPACER	
	688	PFDR1110Z	ROLLER	
	689	XPL2A14WVWM2	KEY-PIN	
	690	PFDF1244Y	SHAFT	
	691	PFDG1626Z	GEAR, OPF PICK UP ROLLER	
	692	PFHR1803Z	CASE	
	693	PNDRI1013Z	ROLLER	

### 18.2.1.18. Optional Lower Input Tray (OPF) Section 2

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	710	PFMD1141Z	METAL PARTS	
	711	PNKV1026Z1	COVER	
	712	PNZF1012Y	FRAME	
	713	PFHA1013Z	RUBBER PARTS	
	714	PFUG1058Y	GUIDE	
	715	PFMD1138Z	FRAME	
	716	XPJ2A8VWM2	KEY-PIN	
	717	PFDF1197Y	SHAFT	
	718	PNDX1005Z	MECHANISM ASS Y	
	719	PNZR1MB3020M	ROLLER	
	720	NOT USED		
	721	PFHR1858Z	HOLDER	
	722	PFUS1923Z	COIL SPRING	
	723	PFJS03L57Z	CORD	
	724	PFUG1057Y	CABINET BODY	
	725	PFMD1137Z	FRAME	
	726	PNZF1015Z	FRAME	
	727	PFHD1040Z	SMALL SCREW, STEEL	
	728	K1LY16AA0022	CONNECTOR, 16PIN	
	729	PFUS1927Z	COIL SPRING	
	730	PFJS16L54Z	CORD	
	731	PFHR1848Z	CLAMPER	
	732	PNMH1015Z	METAL PARTS	
	733	PNHX1108Z	PLASTIC PARTS	
	734	L6HAYYK0025	DC MOTOR	
	735	PNDG1010Z	GEAR, OP IDLE	
	736	PNDG1009Z	GEAR, OP IDLE	
	737	PFNPD041080C	WASHER	

### 18.2.1.19. Optional Lower Input Tray (OPF) Section 3

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	750	NOT USED		
	751	PFMD1140Y	CHASSIS	
	752	PFHR1859Z	COVER	POM-HB
	753	PFHG1292Z	RUBBER PARTS	
	754	PFNPD062095C	WASHER	
	755	PNUS1085Y	COIL SPRING	
	756	PFHR1862Y	LEVER	POM-HB
	757	PFKR1116Y	GUIDE	ABS-HB
	758	PFDG1569Z	GEAR, PINION	POM-HB



Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	759	PFUS1608Z	COIL SPRING	
	760	PFHR1491Z	LEVER	POM-HB
	761	PNHG1052X	RUBBER PARTS	
	762	PFUS1926Z	BAR SPRING	
	763	PFKR1115Y	GUIDE	ABS-HB
	764	PNKV1024Z1	COVER	
	765	PFKS1161U	TRAY	PS-HB
	766	PFKR1090X	GUIDE	POM-HB
	767	PNQT1657Z	LABEL, CASSETTE CAUTION	
	768	PNQW1842Z	LEAFLET	
	769	PFPP1053Z	PROTECTION COVER	
	770	PFPE1487Z	PROTECTION PAPER	
	771	PNPN1091Z	CUSHION, LEFT	
	772	PNPN1092Z	CUSHION, RIGHT	
	773	PNPH1009Z	PACKING SHEET	
	774	PNPK2680Z-M	PACKING CASE	

### 18.2.1.20. Accessories and Packing Materials

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A1	PNQW1933Z	LEAFLET	
	A2	PNJMB300Z	MEMORY PARTS	
	A3	PNQW1855Z	LEAFLET, ENGLISH	
	A4	PNQW1856Z	LEAFLET, FRENCH	
	A5	PFJA02B002Y	CORD	
△	A6	PNJA1021Z	POWER CORD	
	P1	PNPK2593Z-M	PACKING CASE, TOP	
	P2	PNPD1142Z	CUSHION	
	P3	PFPP1053Z	PROTECTION COVER	
	P4	PFPP1052Z	PROTECTION COVER	
	P5	PNPN1071Y	CUSHION, TOP	
	P6	PNPN1074Z	CUSHION, REAR	
	P7	PNPN1073Z	CUSHION, FRONT	
	P8	PNPH1005Z	PACKING SHEET	
	P9	PNPN1072Y	CUSHION, BOTTOM	
	P10	PNPE1007Z	STRAP-STAPLER CLAMPER	
	P11	PNPK1838Z	PACKING CASE, BOTTOM	

### 18.2.1.21. Screws

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A	XTW3+10PFJ7	TAPPING SCREW, STEEL	
	B	XTW3+8LFJ7	TAPPING SCREW, STEEL	
	C	XTW3+6LFJ7	TAPPING SCREW, STEEL	
	D	XTW3+W10PFJ	TAPPING SCREW, STEEL	
	E	XTW3+12PFJ7	TAPPING SCREW, STEEL	
	F	XYN3+F6FJ	SCREW WITH WASHER, STEEL	
	G	XYC3+FF8FJ	SCREW WITH WASHER, STEEL	
	H	XYN3+C6FJ	SCREW WITH WASHER, STEEL	
	J	XTB4+10GFJ	TAPPING SCREW, STEEL	
	K	XTW3+20PFJ	TAPPING SCREW, STEEL	
	L	XSB4+6FJ	SMALL SCREW, STEEL	
	M	XSN3+6FJ	SMALL SCREW, STEEL	
	N	XTW3+6PFJ7	TAPPING SCREW, STEEL	
	P	XTW3+S10SFJ	TAPPING SCREW, STEEL	
	Q	XTW3+6LFJ	TAPPING SCREW, STEEL	
	R	XTW3+W10SFJ	TAPPING SCREW, STEEL	
	S	XTW3+5LFJ7	TAPPING SCREW, STEEL	
	T	XYN3+C4FJ	SMALL SCREW, STEEL	

### 18.2.2. Main Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWP1MB350C	Main Board Ass'y (RTL)	
			(ICs)	
	IC100	C1CB00002689	IC	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	IC101	C1CB00002690	IC	
	IC200	C1CB00001769	IC	
	IC202	C0ABEB000083	IC	
	IC204	C1AB00002556	IC	
	IC300	C1ZBZ0003749	IC	
	IC301	C0EBE0000504	IC	
	IC304	C0CBAAA00035	IC	
	IC400	C3ABSY000034	IC	
	IC401	C3ABSY000034	IC	
	IC402	PNWIMB350C1	IC (ROM)	
	IC404	C0DBEFH00002	IC	
	IC500	C0DBAGE00028	IC	
	IC501	C0DBAGE00028	IC	
	IC502	C0EBM0000020	IC	
	IC503	C0JBAA000362	IC	
	IC504	C1ZBZ0003879	IC	
	IC505	C1CB00003084	IC	
	IC600	C0BBBA000044	IC	S
	IC601	C0BBBA000044	IC	S
	IC700	AN44067A	IC	
	IC702	C1DB00001173	IC	
	IC704	C0BBBA000044	IC	
			(TRANSISTORS)	
	Q100	UNR92ANJ0L	TRANSISTOR (SI)	
	Q102	B1ABFJ000001	TRANSISTOR (SI)	
	Q103	B1ABFJ000001	TRANSISTOR (SI)	
	Q104	B1BBAP000021	TRANSISTOR (SI)	
	Q105	B1BBAP000021	TRANSISTOR (SI)	
	Q106	B1BDAP000015	TRANSISTOR (SI)	S
	Q200	UNR92ANJ0L	TRANSISTOR (SI)	
	Q500	UNR92ANJ0L	TRANSISTOR (SI)	
	Q501	UNR92ANJ0L	TRANSISTOR (SI)	
	Q502	UNR92ANJ0L	TRANSISTOR (SI)	
	Q503	UNR92ANJ0L	TRANSISTOR (SI)	
	Q504	B1CHQD000001	TRANSISTOR (SI)	
	Q505	B1CHQD000001	TRANSISTOR (SI)	
	Q506	UNR92ANJ0L	TRANSISTOR (SI)	
	Q508	B1CDRE000001	TRANSISTOR (SI)	
	Q509	B1CDRE000001	TRANSISTOR (SI)	
	Q600	UNR92ANJ0L	TRANSISTOR (SI)	
	Q601	UNR92ANJ0L	TRANSISTOR (SI)	
	Q602	UNR921LJ0L	TRANSISTOR (SI)	S
	Q603	UNR92ANJ0L	TRANSISTOR (SI)	
	Q604	2SD2216J0L	TRANSISTOR (SI)	
	Q605	2SD2216R	TRANSISTOR (SI)	S
	Q606	UNR92A8J0L	TRANSISTOR (SI)	
	Q607	UNR92ANJ0L	TRANSISTOR (SI)	
	Q608	2SD2216J0L	TRANSISTOR (SI)	
	Q609	UNR92ANJ0L	TRANSISTOR (SI)	
	Q610	UNR92ANJ0L	TRANSISTOR (SI)	
	Q614	UNR92ANJ0L	TRANSISTOR (SI)	
	Q615	UNR92ANJ0L	TRANSISTOR (SI)	
	Q616	2SB1197KQ	TRANSISTOR (SI)	S
	Q617	2SD2216R	TRANSISTOR (SI)	S
	Q618	2SB1197KQ	TRANSISTOR (SI)	S
	Q619	UNR92ANJ0L	TRANSISTOR (SI)	
	Q620	UNR92ANJ0L	TRANSISTOR (SI)	
	Q621	UNR92ANJ0L	TRANSISTOR (SI)	
	Q622	UNR92ANJ0L	TRANSISTOR (SI)	
	Q623	UNR92ANJ0L	TRANSISTOR (SI)	
	Q626	UNR92ANJ0L	TRANSISTOR (SI)	
	Q627	UNR92ANJ0L	TRANSISTOR (SI)	
	Q628	UNR92ANJ0L	TRANSISTOR (SI)	
	Q629	UNR92ANJ0L	TRANSISTOR (SI)	
	Q630	2SD2216R	TRANSISTOR (SI)	S
	Q631	2SB1197KQ	TRANSISTOR (SI)	S
	Q632	2SB1197KQ	TRANSISTOR (SI)	S
	Q634	2SB1197KQ	TRANSISTOR (SI)	S
	Q635	UNR91A0J0L	TRANSISTOR (SI)	
	Q636	UNR91A0J0L	TRANSISTOR (SI)	
	Q637	B1CHND000004	TRANSISTOR (SI)	
	Q638	B1ABDF000026	TRANSISTOR (SI)	
	Q639	UNR91ANJ0L	TRANSISTOR (SI)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	Q640	UNR92ANJ0L	TRANSISTOR (SI)	
	Q641	UNR92ANJ0L	TRANSISTOR (SI)	
	Q642	UNR91A0J0L	TRANSISTOR (SI)	
	Q701	2SD2216R	TRANSISTOR (SI)	S
	Q702	2SD2216R	TRANSISTOR (SI)	S
	Q705	2SB1197KQ	TRANSISTOR (SI)	S
	Q706	2SB1197KQ	TRANSISTOR (SI)	S
	Q708	2SD0874AS	TRANSISTOR (SI)	
	Q709	2SD0874AS	TRANSISTOR (SI)	
	Q710	2SB1197KQ	TRANSISTOR (SI)	S
	Q711	2SD0874AS	TRANSISTOR (SI)	
	Q712	2SK3018	TRANSISTOR (SI)	S
	Q713	2SK3018	TRANSISTOR (SI)	S
	Q714	UNR92ANJ0L	TRANSISTOR (SI)	
	Q716	UNR92ANJ0L	TRANSISTOR (SI)	
	Q717	UNR91ANJ0L	TRANSISTOR (SI)	
	Q718	2SD2216R	TRANSISTOR (SI)	S
	Q719	UNR92ANJ0L	TRANSISTOR (SI)	
			(DIODES)	
	D100	MA111	DIODE (SI)	S
	D102	MAZY43000L	DIODE (SI)	
	D103	BOEDER000009	DIODE (SI)	
	D104	MAZ80560ML	DIODE (SI)	
	D105	MAZ80560ML	DIODE (SI)	
	D300	MA8051	DIODE (SI)	S
	D301	BOZBZ0000068	DIODE (SI)	
	D303	MA142WKTX	DIODE (SI)	S
	D500	BOJCRC000006	DIODE (SI)	
	D501	BOJCRC000006	DIODE (SI)	
	D502	BOJCRC000012	DIODE (SI)	
	D503	BOJCRC000012	DIODE (SI)	
	D504	B3ABB0000331	DIODE (SI)	
	D505	B0BC3R800009	DIODE (SI)	
	D600	BOACEL000004	DIODE (SI)	
	D602	BOACEL000004	DIODE (SI)	
	D603	BOACEL000004	DIODE (SI)	
	D700	BOACEL000004	DIODE (SI)	
	D701	BOACEL000004	DIODE (SI)	
	D703	MA142WKTX	DIODE (SI)	S
	D704	BOACEL000004	DIODE (SI)	
			(BATTERY)	
	BAT300	CR-2354/GUFK	BATTERY	
			(CAPACITORS)	
	C100	ECUE1A104KBQ	0.1	
	C101	ECUE1H101JCQ	100p	
	C102	ECUE1A104KBQ	0.1	
▲	C104	F1LAF3300002	33p	
▲	C105	F1LAF3300002	33p	
	C106	EEE1HA010SR	1	S
	C107	ECUE1A104KBQ	0.1	
	C108	ECUE1A104KBQ	0.1	
	C109	F1J2E121A023	120p	
	C110	F1J2E121A023	120p	
	C111	ECUE1H272KBQ	0.0027	
	C112	ECUE1C103KBQ	0.01	
	C113	F1LAF1030001	0.01	
▲	C114	F1BAF471A049	470p	
▲	C115	F1BAF471A049	470p	
	C119	F0C2E1050004	1	
	C120	ECUE1C103KBQ	0.01	
▲	C121	F1LAF100A009	10	
	C125	ECUE1C103KBQ	0.01	
	C200	F2G0J1010014	100	
	C201	ECUE1A104KBQ	0.1	
	C203	ECUE1C223KBQ	0.022	
	C205	ECUE1A104KBQ	0.1	
	C207	ECUE1C104ZFK	0.1	
	C208	ECUE1A104KBQ	0.1	
	C209	F2G0J3310015	330	
	C210	ECUE1A104KBQ	0.1	
	C213	ECUE1H102KBQ	0.001	
	C220	ECUE1H102KBQ	0.001	
	C231	ECJ0EB1A473K	0.047	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C232	ECUE0J105KBQ	1	
	C233	ECUE0J105KBQ	1	
	C234	ECUE1H392KBQ	0.0036	
	C236	F2G0J1010014	100	
	C244	ECUE1C103KBQ	0.01	
	C245	ECUE1A104KBQ	0.1	
	C247	ECUE1C223KBQ	0.022	
	C252	ERJ2GE0R00	0	
	C300	ECUE1C103KBQ	0.01	
	C302	ECUE1C104ZFK	0.1	
	C304	ECUE1C104ZFK	0.1	
	C305	ECUE1C104ZFK	0.1	
	C312	ECUE1H5R0BCQ	5	
	C313	ECUE1H5R0BCQ	5	
	C314	ECJ0EB0J224K	0.22	S
	C315	ECJ0EB0J224K	0.22	S
	C316	ECJ0EB0J224K	0.22	S
	C317	ECUE1H180JCQ	18p	
	C318	ECUE1H330JCQ	33p	
	C319	ECUE1H120JCQ	12p	
	C320	ECUE1H300JCQ	30p	
	C322	ECJ0EB0J224K	0.22	S
	C323	ECJ0EB0J224K	0.22	S
	C324	ECJ0EB0J224K	0.22	S
	C325	ECUE1H180JCQ	18p	
	C326	ECUE1H270JCQ	27p	
	C327	ECUE1A104KBQ	0.1	
	C328	ECUE0J105KBQ	1	
	C329	ECUE0J105KBQ	1	
	C332	ECUE1H330JCQ	33p	
	C335	ECUE1C104ZFK	0.1	
	C336	ECUE1C104ZFK	0.1	
	C337	ECUE1C104ZFK	0.1	
	C338	ECUE1C104ZFK	0.1	
	C339	ECUE1C104ZFK	0.1	
	C340	ECUE1C104ZFK	0.1	
	C341	ECUE1C104ZFK	0.1	
	C342	ECUE1C104ZFK	0.1	
	C343	ECUE1C104ZFK	0.1	
	C344	ECUE1C104ZFK	0.1	
	C345	ECUE1C104ZFK	0.1	
	C346	ECUE1C104ZFK	0.1	
	C347	ECUE1C104ZFK	0.1	
	C348	ECUE1C104ZFK	0.1	
	C349	ECUE0J105KBQ	1	
	C350	ECUE1C104ZFK	0.1	
	C352	ECUE1C104ZFK	0.1	
	C353	ECUE1C104ZFK	0.1	
	C354	ECUE1C104ZFK	0.1	
	C355	ECUE1C104ZFK	0.1	
	C356	ECUE1C104ZFK	0.1	
	C357	ECUE1C104ZFK	0.1	
	C358	ECUE1C104ZFK	0.1	
	C359	ECUE1C104ZFK	0.1	
	C360	ECUE1C104ZFK	0.1	
	C361	ECUE1C104ZFK	0.1	
	C362	ECUE1C104ZFK	0.1	
	C363	ECUE1C104ZFK	0.1	
	C364	ECUE1C104ZFK	0.1	
	C365	ECUE1C104ZFK	0.1	
	C366	ECUE1C104ZFK	0.1	
	C367	ECUE1C104ZFK	0.1	
	C368	ECUE1C104ZFK	0.1	
	C369	ECUE1C104ZFK	0.1	
	C370	ECUE1C104ZFK	0.1	
	C371	ECUE1C104ZFK	0.1	
	C372	ECUE1C104ZFK	0.1	
	C373	ECUE1C104ZFK	0.1	
	C374	ECUE1C104ZFK	0.1	
	C375	ECUE1C104ZFK	0.1	
	C376	ECUE1C104ZFK	0.1	
	C377	ECUE1C104ZFK	0.1	
	C378	ECUE1C104ZFK	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C382	ECUE1H470JCQ	47p	
	C401	ECUE1C104ZFQ	0.1	
	C403	ECUE1C104ZFQ	0.1	
	C405	ECUE1C104ZFQ	0.1	
	C407	ECUE1C104ZFQ	0.1	
	C408	ECUE1C104ZFQ	0.1	
	C410	ECUE1C104ZFQ	0.1	
	C412	ECUE1C104ZFQ	0.1	
	C413	ECUE1C104ZFQ	0.1	
	C415	ECUE1C104ZFQ	0.1	
	C417	ECUE1C104ZFQ	0.1	
	C418	ECUE1C104ZFQ	0.1	
	C420	ECUE1C104ZFQ	0.1	
	C422	ECUE1C104ZFQ	0.1	
	C423	ECUE1C104ZFQ	0.1	
	C424	ECUE1C104ZFQ	0.1	
	C425	ECUE1C104ZFQ	0.1	
	C426	ECUE1C104ZFQ	0.1	
	C427	ECUE1C104ZFQ	0.1	
	C428	ECUE1C104ZFQ	0.1	
	C430	ECUE1C104ZFQ	0.1	
	C432	ECUE1C104ZFQ	0.1	
	C433	ECUE1C104ZFQ	0.1	
	C435	ECUE1C104ZFQ	0.1	
	C436	ECUE1C104ZFQ	0.1	
	C437	ECUE1C104ZFQ	0.1	
	C438	ECUE1C104ZFQ	0.1	
	C439	ECUE1C104ZFQ	0.1	
	C440	ECUE1C104ZFQ	0.1	
	C441	ECUE1C104ZFQ	0.1	
	C442	ECUE1C104ZFQ	0.1	
	C443	ECUE1C104ZFQ	0.1	
	C444	ECUE1C104ZFQ	0.1	
	C445	ECUE1C104ZFQ	0.1	
	C446	ECUE1C104ZFQ	0.1	
	C447	ECUE1C104ZFQ	0.1	
	C448	ECUE1C104ZFQ	0.1	
	C449	ECUE1C104ZFQ	0.1	
	C451	ECUE1C104ZFQ	0.1	
	C453	ECUE1C104ZFQ	0.1	
	C454	ECUE1C104ZFQ	0.1	
	C455	ECUE1C104ZFQ	0.1	
	C456	ECUE1C104ZFQ	0.1	
	C457	ECUE1C104ZFQ	0.1	
	C458	ECUE1C104ZFQ	0.1	
	C459	ECUE1C104ZFQ	0.1	
	C460	ECUE1C104ZFQ	0.1	
	C461	ECUE1C104ZFQ	0.1	
	C463	ECUE1C104ZFQ	0.1	
	C465	ECUE1C104ZFQ	0.1	
	C468	ECUE1H270JCQ	27p	
	C469	ECUE1C104ZFQ	0.1	
	C474	FLJ0J1060006	10	
	C475	ECUE0J105KBQ	1	
	C477	FLJ0J1060006	10	
	C480	F2G0J1010014	100	
	C481	ECUV0J105KBV	1	
	C482	FLJ0J1060006	10	
	C500	FLJ0J2260002	22	
	C501	FLJ0J2260002	22	
	C502	ECUE1C104ZFQ	0.1	
	C503	ECUE1A104KBQ	0.1	
	C504	ECUE1C104ZFQ	0.1	
	C505	ECUE1A104KBQ	0.1	
	C506	ECJ0EB1A473K	0.047	S
	C507	ECUE1C103KBQ	0.01	
	C508	ECUE1C103KBQ	0.01	
	C509	ECUE1C104ZFQ	0.1	
	C510	ECUE1C104ZFQ	0.1	
	C511	F2G1A4710013	470	
	C512	ECJ0EB1A473K	0.047	S
	C513	ECUE1C103KBQ	0.01	
	C514	ECUE1C104ZFQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C515	ECJ0EB1A473K	0.047	S
	C516	ECUE1C104ZFQ	0.1	
	C517	F2G1A4710013	470	
	C518	ECUE1C103KBQ	0.01	
	C519	ECJ0EB1A473K	0.047	S
	C520	F2G1A4710013	470	
	C521	F2G1A4710013	470	
	C522	F2G1A4710013	470	
	C523	F2G1A4710013	470	
	C524	FLJ0J2260002	22	
	C525	FLJ0J2260002	22	
	C526	ECUE1H220JCQ	22p	
	C527	ECUE1H121JCQ	120p	
	C528	ECUE1H180JCQ	18p	
	C529	ECUE1C104ZFQ	0.1	
	C530	ECUE1C104ZFQ	0.1	
	C531	ECUE1C104ZFQ	0.1	
	C532	ECUE1C104ZFQ	0.1	
	C533	ECUE1C104ZFQ	0.1	
	C534	ECUE1C104ZFQ	0.1	
	C535	ECUE1H102KBQ	0.001	
	C536	ECUE1C104ZFQ	0.1	
	C537	ECUE1C104ZFQ	0.1	
	C538	ECUE1C104ZFQ	0.1	
	C539	ECUE1H101JCQ	100p	
	C540	ECUE1A104KBQ	0.1	
	C541	ECUE1A104KBQ	0.1	
	C542	FLJ0J1060006	10	
	C543	ECUE1C103KBQ	0.01	
	C544	ECUE1C103KBQ	0.01	
	C545	FLJ0J1060006	10	
	C546	ECUE1C104ZFQ	0.1	
	C547	F2G0J4700013	47	
	C548	ECUE1C104ZFQ	0.1	
	C549	ECUE1C104ZFQ	0.1	
	C550	ECUE1C104ZFQ	0.1	
	C551	ECUE1C104ZFQ	0.1	
	C552	ECUE1C104ZFQ	0.1	
	C553	ECUE1C104ZFQ	0.1	
	C554	FLJ0J1060006	10	
	C556	ECUE1C104ZFQ	0.1	
	C557	ECUE1A104KBQ	0.1	
	C558	ECUE1C104ZFQ	0.1	
	C559	ECUE1H6R0DCQ	6	
	C560	ECUE1H120JCQ	12p	
	C561	ECUE1C104ZFQ	0.1	
	C562	ECUE1C104ZFQ	0.1	
	C563	ECUE1C104ZFQ	0.1	
	C564	ECUE1C104ZFQ	0.1	
	C565	FLJ1A106A024	10	
	C566	FLJ1A106A024	10	
	C567	ECUE1H330JCQ	33p	
	C568	ECUE1H330JCQ	33p	
	C569	ECUE1H330JCQ	33p	
	C570	ECUE1H330JCQ	33p	
	C571	ECUE1C104ZFQ	0.1	
	C572	ECUE1H181JCQ	180p	
	C573	ECUE1H181JCQ	180p	
	C574	ECUE1H181JCQ	180p	
	C575	ECUE1H181JCQ	180p	
	C576	ECUE1H181JCQ	180p	
	C577	ECUE1H181JCQ	180p	
	C578	ECUE1H181JCQ	180p	
	C579	ECUE1H181JCQ	180p	
	C580	ECUE1H220JCQ	22p	
	C600	ECUV1H104ZFY	0.1	
	C601	F2G1V1010021	100	
	C602	ECUE1H101JCQ	100p	
	C603	ECUE1H101JCQ	100p	
	C605	ECUE1H102KBQ	0.001	
	C606	ECUE1C104ZFQ	0.1	
	C607	ECUE1H102KBQ	0.001	
	C608	ECUE0J105KBQ	1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C619	ECUE1H102KBQ	0.001	
	C620	ECUE1H102KBQ	0.001	
	C621	ECUE1C104ZFQ	0.1	
	C622	ECUE1C104ZFQ	0.1	
	C623	ECUV1H104ZFY	0.1	
	C624	ECUE1H102KBQ	0.001	
	C625	ECUE1H102KBQ	0.001	
	C626	ECUE1H102KBQ	0.001	
	C627	ECUE1H102KBQ	0.001	
	C628	ECUE1H102KBQ	0.001	
	C629	ECUE1C104ZFQ	0.1	
	C630	ECUE1H102KBQ	0.001	
	C631	ECUE1H102KBQ	0.001	
	C634	ECUE1H101JCQ	100p	
	C635	ECUV1H104ZFY	0.1	
	C636	ECUE1H101JCQ	100p	
	C637	ECUE0J105KBQ	1	
	C638	ECUE1H101JCQ	100p	
	C641	F2G1V1010021	100	
	C642	F2G1V1010021	100	
	C644	ECUE1H101JCQ	100p	
	C646	ECUV1H104ZFY	0.1	
	C647	ECUE1H101JCQ	100p	
	C700	ECUE1H102KBQ	0.001	
	C701	ECUE1H102KBQ	0.001	
	C702	ECUE1H102KBQ	0.001	
	C703	ECUE1C103KBQ	0.01	
	C704	ECUE1C104ZFQ	0.1	
	C710	F2G1V4700028	47	
	C711	ECUV1H104ZFY	0.1	
	C712	ECUE1H103ZFQ	0.01	
	C713	ECUE1H101JCQ	100p	
	C715	ECUE1H101JCQ	100p	
	C718	ECUE1H101JCQ	100p	
	C719	ECUE1H101JCQ	100p	
	C720	ECUE1H101JCQ	100p	
	C721	ECUE1H101JCQ	100p	
	C724	ECUE1H102KBQ	0.001	
	C725	FLJ0J1060006	10	
	C726	ECUE1C104ZFQ	0.1	
	C727	ECUE1C104ZFQ	0.1	
	C728	ECUE1H102KBQ	0.001	
	C729	ECUE1H102KBQ	0.001	
	C730	ECUE1H102KBQ	0.001	
	C732	ECUE1C104ZFQ	0.1	
	C733	ECUE1A104KBQ	0.1	
	C734	ECUE1A104KBQ	0.1	
	C735	ECUE1A104KBQ	0.1	
	C736	ECUE1A104KBQ	0.1	
	C737	ECUE1C103KBQ	0.01	
	C738	ECUE1C103KBQ	0.01	
	C739	ECUE0J105KBQ	1	
	C740	F2G0J1010014	100	
	C741	ECUE1A104KBQ	0.1	
	C742	F2G1V4700028	47	
	C743	ECUV1H104ZFY	0.1	
	C744	ECUE1H102KBQ	0.001	
	C745	ECUE1H102KBQ	0.001	
	C746	ECUE1H102KBQ	0.001	
	C747	ECUE1H101JCQ	100p	
	C748	ECUE1H102KBQ	0.001	
	C750	FLJ0J1060006	10	
	C751	FLJ0J1060006	10	
	C752	ECUE1H102KBQ	0.001	
	C753	ECUE1H102KBQ	0.001	
	C754	ECUE1H102KBQ	0.001	
	C755	ECUE1H102KBQ	0.001	
	C756	ECUE1H102KBQ	0.001	
	C757	ECUE1H102KBQ	0.001	
	C758	ECUE1H102KBQ	0.001	
	C759	ECUE1H102KBQ	0.001	
	C760	ECUE1H102KBQ	0.001	
	C761	ECUE1H102KBQ	0.001	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C762	ECUE1H103ZFQ	0.01	
	C763	ECUE1C104ZFQ	0.1	
	C764	ECUE1A104KBQ	0.1	
	C765	ECUE1C103KBQ	0.01	
	C768	ECUE1C103KBQ	0.01	
	C769	ECUE1C104ZFQ	0.1	
	C770	ECUV1H104ZFY	0.1	
	C771	ECUE1A104KBQ	0.1	
	C772	ECUE1C104ZFQ	0.1	
	C773	ECUV1H104ZFY	0.1	
	C774	F2G1V4700028	47	
	C776	ECUE1A104KBQ	0.1	
	C800	ECUE1C104ZFQ	0.1	
	C801	ECUE1C104ZFQ	0.1	
	C802	ECUE1C104ZFQ	0.1	
	C803	ECUE1C104ZFQ	0.1	
	C804	ECUE1C104ZFQ	0.1	
	C805	ECUE1C104ZFQ	0.1	
	C806	ECUE1C104ZFQ	0.1	
	C807	ECUE1C104ZFQ	0.1	
	C808	ECUE1C104ZFQ	0.1	
	C809	ECUE1C104ZFQ	0.1	
	C810	ECUE1C104ZFQ	0.1	
	C811	ECUE1C104ZFQ	0.1	
	C812	ECUE1C104ZFQ	0.1	
	C813	ECUE1C104ZFQ	0.1	
	C814	ECUE1C104ZFQ	0.1	
	C815	ECUE1C104ZFQ	0.1	
	C816	ECUE1C104ZFQ	0.1	
	C817	ECUE1C104ZFQ	0.1	
	C818	ECUE1C104ZFQ	0.1	
	C819	ECUE1C104ZFQ	0.1	
	C820	ECUE1C104ZFQ	0.1	
	C821	ECUE1C104ZFQ	0.1	
	C822	ECUE1C104ZFQ	0.1	
	C823	ECUE1C104ZFQ	0.1	
	C824	ECUE1C104ZFQ	0.1	
	C825	ECUE1C104ZFQ	0.1	
	C826	ECUE1C104ZFQ	0.1	
	C827	ECUE1C104ZFQ	0.1	
	C828	ECUE1C104ZFQ	0.1	
	C829	ECUE1C104ZFQ	0.1	
	C830	ECUE1C104ZFQ	0.1	
	C831	ECUE1C104ZFQ	0.1	
	C832	ECUE1C104ZFQ	0.1	
	C833	ECUE1C104ZFQ	0.1	
	C834	ECUE1C104ZFQ	0.1	
	C835	ECUE1C104ZFQ	0.1	
	C836	ECUE1C104ZFQ	0.1	
	C837	ECUE1C104ZFQ	0.1	
	C838	ECUE1C104ZFQ	0.1	
	C839	ECUE1C104ZFQ	0.1	
	C840	ECUE1C104ZFQ	0.1	
	C841	ECUE1C104ZFQ	0.1	
	C842	ECUE1C104ZFQ	0.1	
	C843	ECUE1C104ZFQ	0.1	
	C844	ECUE1C104ZFQ	0.1	
	C845	ECUE1C104ZFQ	0.1	
	C846	ECUE1C104ZFQ	0.1	
	C847	ECUE1C104ZFQ	0.1	
	C848	ECUE1C104ZFQ	0.1	
	C849	ECUE1C104ZFQ	0.1	
	C850	ECUE1C104ZFQ	0.1	
	C851	ECUE1C104ZFQ	0.1	
	C852	ECUE1C104ZFQ	0.1	
	C853	ECUE1C104ZFQ	0.1	
	C854	ECUE1C104ZFQ	0.1	
	C855	ECUE1C104ZFQ	0.1	
	C856	ECUE1C104ZFQ	0.1	
	C857	ECUE1C104ZFQ	0.1	
	C858	ECUE1C104ZFQ	0.1	
	C859	ECUE1C104ZFQ	0.1	
	C860	ECUE1C104ZFQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C861	ECUE1C104ZFQ	0.1	
	C862	ECUE1C104ZFQ	0.1	
	C863	ECUE1C104ZFQ	0.1	
	C864	ECUE1C104ZFQ	0.1	
	C865	ECUE1C104ZFQ	0.1	
	C866	ECUE1C104ZFQ	0.1	
	C867	ECUE1C104ZFQ	0.1	
	C868	ECUE1C104ZFQ	0.1	
	C869	ECUE1C104ZFQ	0.1	
	C870	ECUE1C104ZFQ	0.1	
	C871	ECUE1C104ZFQ	0.1	
	C872	ECUE1C104ZFQ	0.1	
	C873	ECUE1C104ZFQ	0.1	
	C874	ECUE1C104ZFQ	0.1	
	C875	ECUE1C104ZFQ	0.1	
	C876	ECUE1C104ZFQ	0.1	
	C877	ECUE1C104ZFQ	0.1	
	C878	ECUE1C104ZFQ	0.1	
	C879	ECUE1C104ZFQ	0.1	
	C880	ECUE1C104ZFQ	0.1	
	C881	ECUE1C104ZFQ	0.1	
	C882	ECUE1C104ZFQ	0.1	
	C883	ECUV1H104ZFY	0.1	
	C884	ECUV1H104ZFY	0.1	
	C885	ECUV1H104ZFY	0.1	
	C886	ECUV1H104ZFY	0.1	
	C887	ECUV1H104ZFY	0.1	
	C888	ECUV1H104ZFY	0.1	
	C889	ECUV1H104ZFY	0.1	
	C890	ECUV1H104ZFY	0.1	
	C891	ECUV1H104ZFY	0.1	
	C892	ECUV1H104ZFY	0.1	
	C893	ECUV1H104ZFY	0.1	
	C894	ECUV1H104ZFY	0.1	
	C895	ECUV1H104ZFY	0.1	
			(CONNECTORS and JACKS)	
	CN100	K2LB1YYB0002	JACK	
	CN101	K2LB1YYB0002	JACK	
	CN500	K2LC108B0045	JACK	
	CN200	K1KA02A00587	CONNECTOR, 2PIN	
	CN300	K1KA05AA0193	CONNECTOR, 5PIN	
	CN301	K1FY104B0015	CONNECTOR, 4PIN	
	CN600	K1KA08AA0186	CONNECTOR, 8PIN	
	CN601	K1KA06A00452	CONNECTOR, 6PIN	
	CN602	K1KA08AA0223	CONNECTOR, 8PIN	
	CN603	K1KA03AA0193	CONNECTOR, 3PIN	
	CN604	K1KA16AA0202	CONNECTOR, 16PIN	
	CN605	K1KA03AA0186	CONNECTOR, 3PIN	
	CN606	K1KA10A00412	CONNECTOR, 10PIN	
	CN607	K1KA03A00557	CONNECTOR, 3PIN	
	CN608	K1KA08AA0193	CONNECTOR, 8PIN	
	CN609	K1KA03A00495	CONNECTOR, 3PIN	
	CN610	K1KA05A00364	CONNECTOR, 5PIN	
	CN612	K1KA09A00204	CONNECTOR, 9PIN	
	CN613	K1KA02AA0258	CONNECTOR, 2PIN	
	CN700	K1KA05A00452	CONNECTOR, 5PIN	
	CN701	K1KA08A00498	CONNECTOR, 8PIN	
	CN702	K1KA04AA0193	CONNECTOR, 4PIN	
	CN703	K1KA08A00440	CONNECTOR, 8PIN	
	CN704	K1KA14A00238	CONNECTOR, 14PIN	
			(FUSE)	
	F701	K5H302Y00003	FUSE	
			(COILS)	
	L100	PQLQR1E32A07	COIL	S
	L101	PQLQR1E32A07	COIL	S
	L102	PQLQR1E32A07	COIL	S
	L103	PQLQR1E32A07	COIL	S
	L105	PQLQR1E32A07	COIL	S
	L106	PQLQR1E32A07	COIL	S
	L107	G0B862C00003	COIL	
	L110	G1A102BA0002	COIL	
	L111	G1A102BA0002	COIL	
	L305	G1BYYYBA0002	COIL	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L306	G1BYYYC00026	COIL	
	L500	G1C220M00032	COIL	
	L501	G1A220G00006	COIL	
	L502	G1C220M00032	COIL	
	L503	G1C220M00032	COIL	
	L504	G1C1R5JA0036	COIL	
	L601	PFVF2P221SG	COIL	S
			(FILTERS)	
	L602	PFVF1B601ST	CERAMIC FILTER	S
	R101	J0JCC0000002	CERAMIC FILTER	
	R102	J0JCC0000002	CERAMIC FILTER	
	L108	J0JBC0000040	IC FILTER	
	L109	J0JBC0000040	IC FILTER	
	L204	J0JCC0000276	IC FILTER	
	L209	J0JCC0000276	IC FILTER	
	L210	J0JCC0000276	IC FILTER	
	L211	J0JCC0000276	IC FILTER	
	L215	J0JCC0000276	IC FILTER	
	L220	J0JCC0000276	IC FILTER	
	L225	J0JCC0000276	IC FILTER	
	L226	J0JCC0000276	IC FILTER	
	L302	J0JCC0000286	IC FILTER	
	L304	J0JDC0000053	IC FILTER	
	L307	J0MAB0000144	IC FILTER	
	L309	J0JAC0000059	IC FILTER	
	L315	J0JAC0000059	IC FILTER	
	L317	J0JAC0000059	IC FILTER	
	L319	J0JAC0000059	IC FILTER	
	L320	J0JCC0000276	IC FILTER	
	L321	J0JCC0000274	IC FILTER	
	L322	J0JAC0000059	IC FILTER	
	L323	J0JAC0000059	IC FILTER	
	L324	J0JAC0000059	IC FILTER	
	L325	J0JAC0000059	IC FILTER	
	L326	J0JAC0000059	IC FILTER	
	L327	J0JAC0000059	IC FILTER	
	L328	J0JAC0000059	IC FILTER	
	L329	J0JAC0000059	IC FILTER	
	L330	J0JCC0000277	IC FILTER	
	L331	J0JCC0000277	IC FILTER	
	L332	J0JCC0000277	IC FILTER	
	L333	J0JCC0000277	IC FILTER	
	L334	J0JCC0000277	IC FILTER	
	L335	J0JCC0000277	IC FILTER	
	L336	J0JCC0000277	IC FILTER	
	L337	J0JCC0000277	IC FILTER	
	L338	J0JCC0000277	IC FILTER	
	L339	J0JCC0000277	IC FILTER	
	L340	J0JCC0000277	IC FILTER	
	L341	J0JAC0000059	IC FILTER	
	L342	J0JAC0000059	IC FILTER	
	L343	J0JAC0000059	IC FILTER	
	L344	J0JAC0000059	IC FILTER	
	L345	J0JAC0000059	IC FILTER	
	L346	J0JAC0000059	IC FILTER	
	L347	J0JAC0000059	IC FILTER	
	L348	J0JAC0000059	IC FILTER	
	L349	J0JAC0000059	IC FILTER	
	L350	J0JAC0000059	IC FILTER	
	L505	J0JCC0000276	IC FILTER	
	L506	J0JCC0000276	IC FILTER	
	L508	J0JCC0000276	IC FILTER	
	L509	J0MAB0000185	IC FILTER	
	L510	J0MAB0000185	IC FILTER	
	L600	J0JGC0000020	IC FILTER	
	L700	J0JCC0000308	IC FILTER	
	L701	J0JCC0000276	IC FILTER	
	L702	J0JGC0000020	IC FILTER	
	L703	J0HAB0000002	IC FILTER	
	L704	J0JCC0000278	IC FILTER	
	L705	J0JAC0000059	IC FILTER	
			(THERMISTOR)	
Δ	POS100	PFRT002	THERMISTOR	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(RESISTORS)	
	R103	ERJ2RKF1004	1M	
	R104	ERJ12SF1071	1.07k	
	R105	ERJ2GE0R00	0	
	R106	ERJ6GEYJ515	5.1M	
	R107	ERJ6GEYJ515	5.1M	
	R108	ERJ12SF3651	3.65k	
	R111	ERJ2GEJ151	150	
	R112	D0GF156JA051	15M	
	R113	D0GF156JA051	15M	
	R114	ERJ8ENF5360	536	
	R115	ERJ12SF73R2	73.2	
	R116	ERJ12SF2491	2.49k	
	R117	ERJ2GEJ104	100k	
	R118	ERJ2GEJ104	100k	
	R119	ERJ2GEJ473	47k	
	R123	ERDS1TJ124	120k	S
	R126	ERJ8GEY0R00	0	
	R129	ERG1SJ120E	12	
	R134	ERG1SJ120E	12	
	R136	ERJ3GEYJ560	56	
	R137	ERJ3GEYJ560	56	
	R200	ERJ2GEJ154	150k	
	R201	ERJ2GEJ154	150k	
	R205	ERJ2GE0R00	0	
	R208	ERJ2GEJ101	100	
	R210	ERJ2GEJ822	8.2k	
	R212	ERJ2GEJ223	22k	
	R214	ERJ2GE0R00	0	
	R217	ERJ2GEJ184	180k	
	R222	ERJ2GEJ184	180k	
	R235	ERJ2GEJ103	10k	
	R236	ERJ2GEJ102	1k	
	R237	ERJ2GEJ123	12k	
	R238	ERJ2GEJ103	10k	
	R240	PQ4R18XJ100	10	S
	R241	ERJ2GEJ154	150k	
	R242	ERJ2GEJ124	120k	
	R244	ERJ2GEJ473	47k	
	R245	ERJ2GEJ332	3.3k	
	R250	ERJ2GE0R00	0	
	R251	ERJ2GE0R00	0	
	R253	ERJ2GEJ822	8.2k	
	R254	ERJ2GEJ105X	1M	
	R257	ERJ2GE0R00	0	
	R300	ERJ2GEJ100	10	
	R301	ERJ2GEJ103	10k	
	R302	ERJ2RKF49R9	49.9	
	R303	ERJ2RKF49R9	49.9	
	R304	ERJ2GEJ470	47	
	R305	ERJ2GEJ330	33	
	R306	ERJ2GEJ330	33	
	R307	ERJ2GEJ330	33	
	R308	ERJ2GEJ330	33	
	R309	ERJ2GEJ330	33	
	R310	ERJ2GEJ330	33	
	R311	ERJ2GEJ330	33	
	R312	ERJ2GEJ330	33	
	R313	ERJ2GEJ100	10	
	R314	ERJ2GEJ100	10	
	R315	ERJ2GEJ100	10	
	R316	ERJ2GEJ100	10	
	R317	ERJ2GEJ100	10	
	R318	ERJ2GEJ330	33	
	R319	ERJ2GEJ470	47	
	R320	ERJ2GEJ470	47	
	R321	ERJ2GEJ470	47	
	R322	ERJ2RKF1201	1.2k	
	R323	ERJ2RKF1201	1.2k	
	R325	ERJ2GEJ103	10k	
	R326	ERJ2GEJ103	10k	
	R327	ERJ2GEJ472X	4.7k	
	R328	ERJ2GEJ472X	4.7k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R329	ERJ2GEJ103	10k	
	R333	ERJ2GEJ473	47k	
	R335	ERJ2GEJ473	47k	
	R336	ERJ2GEJ473	47k	
	R337	ERJ3GEYJ1R0	1	
	R346	ERJ2GEJ470	47	
	R347	ERJ2GE0R00	0	
	R348	ERJ2GE0R00	0	
	R349	ERJ2GEJ103	10k	
	R350	ERJ2GEJ103	10k	
	R351	ERJ2GEJ471	470	
	R352	ERJ2GEJ472X	4.7k	
	R353	ERJ2GEJ103	10k	
	R354	ERJ2GEJ1R0	1	
	R355	ERJ2GEJ1R0	1	
	R356	ERJ2GEJ1R0	1	
	R357	ERJ2GEJ1R0	1	
	R358	ERJ2GEJ103	10k	
	R359	ERJ2GEJ102	1k	
	R360	ERJ2GEJ103	10k	
	R361	ERJ2RKF6981	6.98k	
	R362	ERJ2RKF6981	6.98k	
	R363	ERJ2GEJ1R0	1	
	R364	ERJ2GEJ1R0	1	
	R365	ERJ2GEJ101	100	
	R366	ERJ2GE0R00	0	
	R367	ERJ2GE0R00	0	
	R368	ERJ2GEJ221	220	
	R369	ERJ2GE0R00	0	
	R370	ERJ2GEJ470	47	
	R371	ERJ2GEJ101	100	
	R372	ERJ2GEJ101	100	
	R373	ERJ2GEJ101	100	
	R374	ERJ3GEYJ1R0	1	
	R375	ERJ2GEJ330	33	
	R376	ERJ2GEJ330	33	
	R377	ERJ2GEJ330	33	
	R378	ERJ2GEJ223	22k	
	R379	ERJ2GEJ330	33	
	R380	ERJ2GEJ221	220	
	R381	ERJ2GEJ221	220	
	R382	ERJ2GEJ221	220	
	R384	ERJ2GEJ184	180k	
	R385	ERJ2GEJ103	10k	
	R391	ERJ2GEJ102	1k	
	R397	ERJ2GEJ470	47	
	R398	ERJ2GEJ820	82	
	R400	ERJ2GEJ680	68	
	R401	ERJ2GEJ680	68	
	R402	ERJ2GEJ680	68	
	R403	ERJ2GEJ680	68	
	R404	ERJ2GEJ680	68	
	R405	ERJ2GEJ680	68	
	R406	ERJ2GEJ510	51	
	R407	ERJ2GEJ510	51	
	R408	ERJ2GEJ680	68	
	R409	ERJ2GEJ680	68	
	R410	ERJ2GEJ680	68	
	R411	ERJ2GEJ510	51	
	R412	ERJ2GEJ510	51	
	R413	ERJ2RKF1201	1.2k	
	R414	ERJ2RKF1201	1.2k	
	R415	ERJ2GEJ103	10k	
	R416	ERJ2RKF1201	1.2k	
	R417	ERJ2RKF1201	1.2k	
	R420	ERJ2GEJ221	220	
	R500	ERJ2RKF1002	10k	
	R501	ERJ2RKF9091	9.09k	
	R502	ERJ2GEJ103	10k	
	R503	ERJ2RKF1002	10k	
	R504	ERJ2RKF9091	9.09k	
	R505	ERJ2GEJ103	10k	
	R506	ERJ2RKF2211	2.21k	



Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R507	ERJ2RKF2152	21.5k	
	R508	ERJ2RKF1501	1.5k	
	R509	ERJ2RKF2211	2.21k	
	R510	ERJ2RKF2211	2.21k	
	R514	ERJ2RKF1002	10k	
	R515	ERJ2RKF2002	20k	
	R516	ERJ2RKF2211	2.21k	
	R517	ERJ2RKF2002	20k	
	R518	ERJ2RKF2211	2.21k	
	R519	ERJ2RKF1001	1k	
	R520	ERJ2GE0R00	0	
	R521	ERJ2RKF2001	2k	
	R523	ERJ2RKF1002	10k	
	R524	ERJ2GEJ472X	4.7k	
	R525	ERJ2RKF2211	2.21k	
	R526	ERJ2GE0R00	0	
	R527	ERJ2RKF1001	1k	
	R528	ERJ2RKF1502	15k	
	R530	ERJ2GEJ102	1k	
	R535	ERJ2RKF1003	100k	
	R536	ERJ2RKF1003	100k	
	R537	ERJ2RKF1003	100k	
	R538	ERJ2RKF1003	100k	
	R539	ERJ2GEJ221	220	
	R540	ERJ2GEJ330	33	
	R541	ERJ2GE0R00	0	
	R542	ERJ2GE0R00	0	
	R543	ERJ2GEJ330	33	
	R545	ERJ2GE0R00	0	
	R546	ERJ2GEJ330	33	
	R547	ERJ2GE0R00	0	
	R548	ERJ2GE0R00	0	
	R549	ERJ2GEJ822	8.2k	
	R550	ERJ2GEJ103	10k	
	R552	ERJ2GEJ101	100	
	R553	ERJ2GEJ330	33	
	R554	ERJ2GEJ330	33	
	R555	ERJ2GEJ330	33	
	R556	ERJ2GEJ331	330	
	R557	ERJ2RKF49R9	49.9	
	R558	ERJ2RKF49R9	49.9	
	R559	ERJ2RKF49R9	49.9	
	R560	ERJ2GEJ330	33	
	R561	ERJ2RKF49R9	49.9	
	R562	ERJ3GEY0R00	0	
	R563	ERJ2GEJ330	33	
	R564	ERJ2GEJ330	33	
	R565	ERJ2RKF2001	2k	
	R566	ERJ2GEJ272	2.7k	
	R567	ERJ2GEJ102	1k	
	R568	ERJ2GEJ221	220	
	R571	ERJ2GEJ330	33	
	R572	ERJ2GEJ330	33	
	R573	ERJ2GEJ330	33	
	R575	ERJ2GEJ330	33	
	R576	ERJ2GEJ330	33	
	R577	ERJ2GEJ105X	1M	
	R578	ERJ2GEJ220	22	
	R580	ERJ2GEJ622X	6.2k	
	R581	ERJ2GEJ473	47k	
	R582	ERJ2GEJ473	47k	
	R583	ERJ2GEJ473	47k	
	R584	ERJ2GEJ330	33	
	R585	ERJ2GEJ103	10k	
	R600	ERJ2GEJ103	10k	
	R601	ERJ2GEJ274	270k	
	R602	ERJ2GEJ102	1k	
	R603	ERJ2GEJ103	10k	
	R604	ERJ2GEJ105X	1M	
	R605	ERJ2GEJ823	82k	
	R606	ERJ2GEJ102	1k	
	R607	ERJ2GEJ332	3.3k	
	R608	ERJ2GEJ472X	4.7k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R609	ERJ2GEJ102	1k	
	R612	ERJ2GEJ472X	4.7k	
	R613	ERJ2GEJ473	47k	
	R614	ERJ2GEJ473	47k	
	R615	ERJ2GEJ102	1k	
	R616	ERJ2GEJ102	1k	
	R617	ERJ2GEJ563	56k	
	R618	ERJ2GEJ103	10k	
	R619	ERJ2GEJ562X	5.6k	
	R620	PQ4R18XJ392	3.9k	S
	R621	ERJ2GEJ473	47k	
	R622	ERJ2GEYJ474	470k	S
	R623	ERJ2GEJ104	100k	
	R624	ERJ2GEJ473	47k	
	R625	ERJ3GEYJ1R2	1.2	
	R626	ERJ12YJ390	39	
	R627	ERJ2GEYJ474	470k	S
	R628	ERJ2GEJ563	56k	
	R629	ERJ2RKF1502	15k	
	R630	ERJ2GEJ563	56k	
	R631	ERJ2GEJ563	56k	
	R632	ERJ2GEJ563	56k	
	R633	ERJ2GEJ563	56k	
	R634	ERJ2GEJ102	1k	
	R635	ERJ2GEJ562X	5.6k	
	R636	ERJ2GEJ562X	5.6k	
	R637	ERJ2GEJ562X	5.6k	
	R638	ERJ2GEJ562X	5.6k	
	R639	ERJ2GEJ103	10k	
	R640	PQ4R10XJ822	8.2k	S
	R641	ERJ2GEJ562X	5.6k	
	R642	ERJ2RKF1502	15k	
	R643	ERJ2RKF2741	2.74k	
	R644	ERJ2GEJ101	100	
	R645	ERJ2GEJ332	3.3k	
	R646	ERJ2GEJ104	100k	
	R647	ERJ2GEJ473	47k	
	R650	ERJ2GEJ562X	5.6k	
	R651	ERJ2GEJ563	56k	
	R652	PQ4R18XJ392	3.9k	S
	R653	PQ4R10XJ822	8.2k	S
	R654	ERJ2GEJ103	10k	
	R655	PQ4R18XJ151	150	S
	R656	ERJ2GEJ103	10k	
	R657	ERJ2GEJ471	470	
	R659	PQ4R10XJ822	8.2k	S
	R660	ERJ2GEJ103	10k	
	R661	ERJ12YJ390	39	
	R663	PQ4R18XJ100	10	S
	R664	ERJ2GEJ392	3.9k	
	R666	ERJ2GEJ562X	5.6k	
	R667	PQ4R18XJ100	10	S
	R670	ERJ2GEJ473	47k	
	R671	ERJ2GEJ563	56k	
	R673	ERJ8GEYJ510	51	
	R674	ERJ8GEYJ510	51	
	R676	ERJ2GEJ473	47k	
	R677	ERJ2GEJ333	33k	
	R678	ERJ2GEYJ474	470k	S
	R679	ERJ2GEJ103	10k	
	R680	ERJ2GEJ101	100	
	R681	ERJ2GEJ101	100	
	R682	ERJ2GEJ472X	4.7k	
	R683	ERJ2GEJ104	100k	
	R685	ERJ2RKF1603	160k	
	R686	ERJ2RKF7502	75k	
	R687	ERJ2RKF1603	160k	
	R688	ERJ2GEJ102	1k	
	R689	ERJ2RKF103X	10k	
	R690	ERJ2GEJ102	1k	
	R691	ERJ2RKF1603	160k	
	R692	ERJ2RKF103X	10k	
	R693	ERJ2RKF1603	160k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R694	ERJ2RKF7502	75k	
	R695	ERJ2GEJ473	47k	
	R696	ERJ2GEJ473	47k	
	R698	ERJ2GEJ223	22k	
	R699	ERJ2GEJ473	47k	
	R700	ERJ2GEJ102	1k	
	R702	ERJ2GEJ101	100	
	R703	ERJ2GEJ103	10k	
	R704	ERJ2GEJ472X	4. 7k	
	R705	ERJ2GEJ123	12k	
	R706	ERJ2GEJ683	68k	
	R707	ERJ2RKF8201	8. 2K	
	R708	ERJ2GEJ105X	1M	
	R709	ERJ3GEYJ8R2	8. 2	
	R710	ERJ2GEJ101	100	
	R711	ERJ2GEJ103	10k	
	R712	ERJ2GEJ103	10k	
	R713	ERJ2GEJ102	1k	
	R714	ERJ3GEYJ8R2	8. 2	
	R715	ERJ2GEJ154	150k	
	R716	ERJ2GEJ184	180k	
	R717	ERJ2RKF1101	1. 1k	
	R718	ERJ3GEYJ1R0	1	
	R719	ERJ2GEJ103	10k	
	R720	ERJ2GEJ103	10k	
	R721	PQ4R10XJ822	8. 2k	S
	R722	PQ4R10XJ822	8. 2k	S
	R724	ERJ2GEJ103	10k	
	R726	ERJ2GEJ563	56k	
	R727	ERJ2GEJ563	56k	
	R728	ERJ2GEJ563	56k	
	R729	ERJ2GEJ562X	5. 6k	
	R730	ERJ2GEJ562X	5. 6k	
	R731	ERJ2GEJ562X	5. 6k	
	R732	ERJ8RQFR33	0. 33	
	R733	ERJ8RQFR33	0. 33	
	R734	ERJ2GEJ152	1. 5k	
	R735	ERJ2GEJ105X	1M	
	R736	ERJ2GEJ562X	5. 6k	
	R737	ERJ2GEJ563	56k	
	R738	ERJ2GEJ104	100k	
	R739	ERJ8GEYJ680	68	
	R740	ERJ2GEJ510	51	
	R741	ERJ2GEJ104	100k	
	R742	PQ4R18XJ101	100	S
	R743	ERJ2GEJ102	1k	
	R744	ERJ2RKF1802	18k	
	R745	ERJ2GE0R00	0	
	R746	ERJ2GE0R00	0	
	R747	ERJ2GEJ181	180	
	R748	ERJ2GE0R00	0	
	R749	ERJ2GEJ102	1k	
	R750	ERJ2GEJ472X	4. 7k	
	R751	ERJ12YJ221	220	
	R752	ERJ3GEYJ1R0	1	
	R753	ERJ2GEJ472X	4. 7k	
	R754	ERJ2GEJ470	47	
	R755	ERJ2GEJ104	100k	
	R756	ERJ8GEYJ121V	120	
	R757	ERJ2GEJ471	470	
	R758	ERJ2GEJ561	560	
	R760	ERJ2GEJ823	82k	
	R761	ERJ12YJ221	220	
	R763	ERJ2GEJ181	180	
	R764	ERJ2GEJ103	10k	
	R765	ERJ2GEJ473	47k	
	R766	ERJ2GEJ331	330	
	R767	ERJ2GEJ103	10k	
	R768	ERJ2GEJ103	10k	
	R769	ERJ2GEJ103	10k	
	R770	ERJ2GEJ103	10k	
	R771	ERJ2GEJ562X	5. 6k	
	R772	ERJ2GEJ562X	5. 6k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R773	ERJ2GEJ563	56k	
	R774	ERJ2GEJ563	56k	
	R775	ERJ2GEJ563	56k	
	R776	ERJ2GEJ563	56k	
	R777	ERJ2GEJ103	10k	
	R778	ERJ2GEJ103	10k	
	R779	ERJ2GEJ562X	5. 6k	
	R780	ERJ2GEJ562X	5. 6k	
	R781	ERJ2GEJ102	1k	
	R782	ERJ2GEJ103	10k	
	R783	ERJ2GEJ102	1k	
	R784	ERJ2GEJ103	10k	
	R785	ERJ2GEJ391	390	
	R786	ERJ2GEJ102	1k	
	R787	ERJ2GEJ473	47k	
	R788	ERJ2GEJ103	10k	
	R791	ERJ2GEJ103	10k	
	R792	ERJ2GEJ473	47k	
	R793	ERJ2GEJ104	100k	
	R794	PQ4R18XJ102	1k	S
	R799	ERJ2GEJ473	47k	
	R800	ERJ2GE0R00	0	
	R801	ERJ2GE0R00	0	
	R802	ERJ2GE0R00	0	
	R803	ERJ2GE0R00	0	
	R804	ERJ2GE0R00	0	
	R805	ERJ2GE0R00	0	
	R806	ERJ2GE0R00	0	
	R807	ERJ2GE0R00	0	
	R850	ERJ2GEJ101	100	
	R852	ERJ2GE0R00	0	
	R853	ERJ3GEYJ8R2	8. 2	
	R854	ERJ3GEYJ8R2	8. 2	
	R857	ERJ2GEJ122	1. 2k	
	R858	ERJ2GEJ122	1. 2k	
	R859	ERJ2GEJ122	1. 2k	
	L200	ERJ3GEY0R00	0	
	L202	ERJ3GEY0R00	0	
	L227	ERJ3GEY0R00	0	
	L310	ERJ2GE0R00	0	
	L311	ERJ2GE0R00	0	
	L312	ERJ2GE0R00	0	
	L313	ERJ2GE0R00	0	
	L314	ERJ2GE0R00	0	
	L318	ERJ2GE0R00	0	
	L706	ERJ2GE0R00	0	
	L707	ERJ2GE0R00	0	
	L708	ERJ2GE0R00	0	
	L709	ERJ2GE0R00	0	
			(COMPONENTS PARTS)	
	RA300	EXB28V100JX	COMPONENTS PARTS	
	RA301	EXB28V100JX	COMPONENTS PARTS	
	RA302	EXB28V100JX	COMPONENTS PARTS	
	RA303	EXB28V100JX	COMPONENTS PARTS	
	RA304	EXB28V100JX	COMPONENTS PARTS	
	RA305	EXB28V470JX	COMPONENTS PARTS	
	RA306	EXB28V470JX	COMPONENTS PARTS	
	RA307	EXB28V470JX	COMPONENTS PARTS	
	RA308	EXB28V470JX	COMPONENTS PARTS	
	RA309	EXB28V470JX	COMPONENTS PARTS	
	RA310	EXB28V470JX	COMPONENTS PARTS	
	RA311	EXB28V330	COMPONENTS PARTS	
	RA312	EXB28V330	COMPONENTS PARTS	
	RA313	EXB28V330	COMPONENTS PARTS	
	RA314	EXB28V330	COMPONENTS PARTS	
	RA315	EXB28V330	COMPONENTS PARTS	
	RA316	EXB28V330	COMPONENTS PARTS	
	RA317	EXB28V330	COMPONENTS PARTS	
	RA318	EXB28V330	COMPONENTS PARTS	
	RA319	EXB28V470JX	COMPONENTS PARTS	
	RA320	EXB28V470JX	COMPONENTS PARTS	
	RA400	EXB28V680JX	COMPONENTS PARTS	
	RA401	EXB28V680JX	COMPONENTS PARTS	



Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	RA402	EXB28V680JX	COMPONENTS PARTS	
	RA403	EXB28V680JX	COMPONENTS PARTS	
	RA404	EXB28V680JX	COMPONENTS PARTS	
	RA405	EXB28V680JX	COMPONENTS PARTS	
	RA406	EXB28V680JX	COMPONENTS PARTS	
	RA407	EXB28V680JX	COMPONENTS PARTS	
	RA408	EXB28V680JX	COMPONENTS PARTS	
	RA409	EXB28V680JX	COMPONENTS PARTS	
	RA410	EXB28V680JX	COMPONENTS PARTS	
	RA411	EXB28V680JX	COMPONENTS PARTS	
	RA412	EXB28V680JX	COMPONENTS PARTS	
	RA413	EXB28V103	COMPONENTS PARTS	
	RA414	EXB28V103	COMPONENTS PARTS	
	RA500	EXB28V470JX	COMPONENTS PARTS	
	RA501	EXB28V470JX	COMPONENTS PARTS	
	RA502	EXB28V470JX	COMPONENTS PARTS	
	RA503	EXB28V330	COMPONENTS PARTS	
	RA504	EXB28V330	COMPONENTS PARTS	
			(RELAY)	
△	RLY100	K6B1CY00005	RELAY	
	RL700	K6B4CGA00010	RELAY	
			(VARISTORS)	
	SA100	J0LY00000063	VARISTOR	
△	SA101	PFRZRA102P6T	VARISTOR	S
△	SA102	PFRZRA102P6T	VARISTOR	S
			(CRYSTAL OSCILLATORS)	
	X300	H0J245500087	CRYSTAL OSCILLATOR	
	X301	H0A327200147	CRYSTAL OSCILLATOR	
	X302	H0J120500055	CRYSTAL OSCILLATOR	
	X500	H0J354500001	CRYSTAL OSCILLATOR	
	X501	H0J250500086	CRYSTAL OSCILLATOR	

### 18.2.3. Operation Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PNLP2097MZ	Operation Board Ass'y (RTL)	
			(IC)	
	IC1	C1ZBZ0004019	IC	
			(DIODE)	
	LED3	B3AAA0000534	DIODE (SI)	
			(CAPACITORS)	
	C2	ECUV1H104ZFV	0.1	
	C3	ECUV1H104ZFV	0.1	
	C4	ECUV1H104ZFV	0.1	
	C8	ECUV1H102KBV	0.001	
	C17	ECUV1H101JCV	100p	
	C19	ECUV1H101JCV	100p	
	C21	ECUV1H391JCV	390p	S
	C23	ECUV1H104ZFV	0.1	
	C26	F1L0J476A017	47	
	C27	F1L0J476A017	47	
			(CONNECTORS)	
	CN1	K1KA08B00243	CONNECTOR, 8PIN	
	CN2	K1KA05BA0061	CONNECTOR, 5PIN	
			(COIL)	
	L1	PQLQR2KA113	COIL	S
			(RESISTORS)	
	R1	ERJ3GEY0R00	0	
	R3	ERJ3GEYJ391	390	
	R4	ERJ3GEYJ123	12k	
	R5	ERJ8GEY0R00	0	
	R6	ERJ8GEY0R00	0	
	R9	ERJ3GEYJ123	12k	
	R10	ERJ8GEY0R00	0	
	R15	ERJ3GEYJ102	1k	
	R17	ERJ3GEYJ101	100	
	R18	ERJ3GEYJ101	100	
	R19	ERJ3GEYJ101	100	
	R20	ERJ3GEYJ332	3.3k	
	R23	ERJ3GEYJ123	12k	
	R30	ERJ3GEYJ181	180	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R31	ERJ3GEYJ181	180	
	R32	ERJ3GEYJ181	180	
	R33	ERJ3GEYJ181	180	
	R34	ERJ3GEYJ181	180	
	R35	ERJ3GEYJ181	180	
	R36	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	
	SW9	K0H1BA000259	SWITCH	
	SW10	K0H1BA000259	SWITCH	
	SW11	K0H1BA000259	SWITCH	
	SW12	K0H1BA000259	SWITCH	
	SW13	K0H1BA000259	SWITCH	
	SW14	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	
	SW33	K0H1BA000259	SWITCH	
	SW34	K0H1BA000259	SWITCH	
	SW35	K0H1BA000259	SWITCH	
	SW37	K0H1BA000259	SWITCH	
	SW38	K0H1BA000259	SWITCH	
			(THERMISTOR)	
	TH1	D4CCY1030002	THERMISTOR	

### 18.2.4. LCD Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB3	PNLP2096MZ	LCD Board Ass'y (RTL)	
			(ICs)	
	IC100	C0ZBZ0001490	IC	
	IC101	C2GBC0000277	IC	
	IC200	C0DBAYY00111	IC	
	IC202	C0DBZYY00029	IC	
	IC300	C3ABQJ000024	IC	
	IC502	C0EBE0000504	IC	
	IC600	C0DBAYY00064	IC	
	IC601	C3FBNY000034	IC	
			(TRANSISTORS)	
	Q200	B1DHCD000019	TRANSISTOR (SI)	
	Q500	2SB1197KQ	TRANSISTOR (SI)	S
	Q600	UNR92ANJ0L	TRANSISTOR (SI)	
	Q601	UNR92ANJ0L	TRANSISTOR (SI)	
	Q602	UNR92ANJ0L	TRANSISTOR (SI)	
	Q603	UNR921LJ0L	TRANSISTOR (SI)	
	Q604	UNR92ANJ0L	TRANSISTOR (SI)	
			(DIODES)	
	D200	B0JCMD000042	DIODE (SI)	
	D600	MAZS2400ML	DIODE (SI)	
	D601	PSVDRB160LT	DIODE (SI)	S
	D602	B0JCMD000042	DIODE (SI)	
	D603	B0JCMD000042	DIODE (SI)	
	LED600	LNJ326W83RA	DIODE (SI)	
	LED601	LNJ326W83RA	DIODE (SI)	
	LED602	LNJ326W83RA	DIODE (SI)	
			(CAPACITORS)	
	C100	ECUE1H150JCQ	15p	
	C101	ECUE1C104ZFQ	0.1	
	C102	ECUE1H120JCQ	12p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C103	ECUE1H150JCQ	15p	
	C104	ECUE1C104ZFQ	0.1	
	C105	ECJ0EB0J224K	0.22	S
	C106	ECUE1C104ZFQ	0.1	
	C107	ECUE1C104ZFQ	0.1	
	C108	FIH0J4750002	4.7	
	C109	ECUE1C104ZFQ	0.1	
	C110	ECUE1C104ZFQ	0.1	
	C111	ECUE1C104ZFQ	0.1	
	C112	ECUE1C104ZFQ	0.1	
	C113	ECUE1C104ZFQ	0.1	
	C114	ECUE1C104ZFQ	0.1	
	C115	ECUE1C104ZFQ	0.1	
	C120	ECUE1H270JCQ	27p	
	C121	ECUE1H270JCQ	27p	
	C122	ECUE1H270JCQ	27p	
	C125	ECUE1C104ZFQ	0.1	
	C126	ECUE1H150JCQ	15p	
	C127	ECUE1H270JCQ	27p	
	C128	ECUE1H270JCQ	27p	
	C129	ECUE1H270JCQ	27p	
	C130	ECUE1H270JCQ	27p	
	C131	ECUE1H270JCQ	27p	
	C132	ECUE1H270JCQ	27p	
	C133	ECUE1H270JCQ	27p	
	C134	ECUE1H270JCQ	27p	
	C135	ECUE1H270JCQ	27p	
	C136	ECUE1H270JCQ	27p	
	C137	ECUE1H270JCQ	27p	
	C208	ECUE1C104ZFQ	0.1	
	C209	FIL1C476A044	47	S
	C213	ECUE1C103KBQ	0.01	
	C214	ECUE1C104ZFQ	0.1	
	C215	ECUE1H102KBQ	0.001	
	C216	ECUE0J105KBQ	1	
	C217	ECUE1C104ZFQ	0.1	
	C218	FIL1C476A044	47	S
	C220	ECUE1C104ZFQ	0.1	
	C221	FIL0J107A017	100	S
	C222	ECJ2FB0J106M	10	
	C223	ECJ2FB0J106M	10	
	C224	ECUE1C104ZFQ	0.1	
	C225	ECUE1C104ZFQ	0.1	
	C226	ECUE1C104ZFQ	0.1	
	C227	ECUE1C104ZFQ	0.1	
	C228	ECUE1C104ZFQ	0.1	
	C229	ECUE1C104ZFQ	0.1	
	C230	ECUE1C104ZFQ	0.1	
	C231	ECJ2FB0J106M	10	
	C232	ECUE1C104ZFQ	0.1	
	C233	ECUE1C104ZFQ	0.1	
	C234	ECUE1C104ZFQ	0.1	
	C235	ECUE1C104ZFQ	0.1	
	C236	ECUE1C104ZFQ	0.1	
	C237	ECUE1C104ZFQ	0.1	
	C238	ECUE1C104ZFQ	0.1	
	C239	ECUE1C104ZFQ	0.1	
	C240	ECUE1C104ZFQ	0.1	
	C241	ECUE1C104ZFQ	0.1	
	C242	ECUE1C104ZFQ	0.1	
	C243	ECJ2FB0J106M	10	
	C247	ECUE1C104ZFQ	0.1	
	C300	ECUE1C104ZFQ	0.1	
	C301	ECUE1C104ZFQ	0.1	
	C302	ECUE1C104ZFQ	0.1	
	C303	ECUE1C104ZFQ	0.1	
	C304	ECUE1C104ZFQ	0.1	
	C305	ECUE1C104ZFQ	0.1	
	C306	ECUE1C104ZFQ	0.1	
	C307	ECUE1C104ZFQ	0.1	
	C308	ECUE1C104ZFQ	0.1	
	C309	ECUE1C104ZFQ	0.1	
	C511	ECUE1C104ZFQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C600	ECUE1H102KBQ	0.001	
	C601	FIH0J4750002	4.7	
	C602	ECUE0J105KBQ	1	
	C603	ECUE1H270JCQ	27p	
	C604	ECUE1H270JCQ	27p	
	C605	ECUE1H270JCQ	27p	
	C606	ECUE1H270JCQ	27p	
	C607	ECUE1H270JCQ	27p	
	C608	ECUE1H270JCQ	27p	
	C609	ECJ2FB1E225K	2.2	
	C610	ECUE1H270JCQ	27p	
	C611	ECUE1H270JCQ	27p	
	C612	ECUE1H270JCQ	27p	
	C613	ECUE1H270JCQ	27p	
	C614	ECUE1H270JCQ	27p	
	C615	ECUE1H270JCQ	27p	
	C616	ECUE1H270JCQ	27p	
	C617	ECUE1H270JCQ	27p	
	C618	ECUE0J105KBQ	1	
	C619	ECJ2FB1E105K	1	
	C620	ECUE1C104ZFQ	0.1	
	C621	ECUE0J105KBQ	1	
	C622	ECUE0J105KBQ	1	
	C623	ECJ2FB0J106M	10	
	C624	ECUE0J105KBQ	1	
	C625	ECUE0J105KBQ	1	
	C626	ECUE0J105KBQ	1	
	C627	ECUE0J105KBQ	1	
	C628	ECUE0J105KBQ	1	
	C629	ECJ2FB0J106M	10	
	C630	ECJ2FB1E225K	2.2	
	C631	ECJ2FB1E105K	1	
	C632	ECUE1C104ZFQ	0.1	
	C700	ECUE1C104ZFQ	0.1	
	C701	ECUE1C104ZFQ	0.1	
	C702	ECUE1C104ZFQ	0.1	
	C703	ECUE1C104ZFQ	0.1	
	C704	ECUE1C104ZFQ	0.1	
	C705	ECUE1C104ZFQ	0.1	
	C706	ECUE1C104ZFQ	0.1	
	C707	ECUE1C104ZFQ	0.1	
	C708	ECUE1C104ZFQ	0.1	
	C709	ECUE1C104ZFQ	0.1	
	C710	ECUE1C104ZFQ	0.1	
	C711	ECUE1C104ZFQ	0.1	
	C712	ECUE1C104ZFQ	0.1	
	C713	ECUE1C104ZFQ	0.1	
	C714	ECUE1C104ZFQ	0.1	
	C715	ECUE1C104ZFQ	0.1	
	C716	ECUE1C104ZFQ	0.1	
	C717	ECUE1C104ZFQ	0.1	
	C718	ECUE1C104ZFQ	0.1	
	C719	ECUE1C104ZFQ	0.1	
	C720	ECUE1C104ZFQ	0.1	
	C721	ECUE1C104ZFQ	0.1	
	C722	ECUE1C104ZFQ	0.1	
	C723	ECUE1C104ZFQ	0.1	
	C724	ECUE1C104ZFQ	0.1	
	C725	ECUE1C104ZFQ	0.1	
	C726	ECUE1C104ZFQ	0.1	
	C727	ECUE1C104ZFQ	0.1	
	C728	ECUE1C104ZFQ	0.1	
			(CONNECTORS)	
	CN502	K1KA05BA0050	CONNECTOR, 5PIN	
	CN600	K1MY04BA0105	CONNECTOR, 4PIN	
	CN601	K1MN39BA0166	CONNECTOR, 39PIN	
	CN602	K1KA05BA0050	CONNECTOR, 5PIN	
			(COILS)	
	L200	G1C330ZA0128	COIL	
	L600	G1C220MA0176	COIL	
			(IC FILTERS)	
	L101	J0JDC0000048	IC FILTER	
	L102	J0JDC0000048	IC FILTER	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L300	J0JDC0000048	IC FILTER	
	L601	J0JCC0000277	IC FILTER	
	L602	J0JCC0000277	IC FILTER	
	L603	J0JCC0000277	IC FILTER	
	L604	J0JCC0000277	IC FILTER	
	L605	J0JCC0000277	IC FILTER	
	L606	J0JCC0000277	IC FILTER	
	L607	J0JCC0000277	IC FILTER	
	L608	J0JCC0000277	IC FILTER	
	L609	J0JCC0000277	IC FILTER	
	L610	J0JCC0000277	IC FILTER	
	T501	J0MAB0000185	IC FILTER	
			(RESISORS)	
	R102	ERJ3GEYJ100	10	
	R104	ERJ2GEJ333	33k	
	R105	ERJ2GEJ333	33k	
	R106	ERJ2GEJ333	33k	
	R110	ERJ2GEJ333	33k	
	R112	ERJ2GEJ333	33k	
	R113	ERJ2GEJ333	33k	
	R114	ERJ2GEJ103	10k	
	R115	ERJ2GEJ103	10k	
	R116	ERJ2GEJ330	33	
	R117	ERJ2GEJ330	33	
	R118	ERJ2GEJ333	33k	
	R119	ERJ2GEJ330	33	
	R120	ERJ2GEJ153	15k	
	R121	ERJ2GEJ152	1.5k	
	R122	ERJ2GEJ333	33k	
	R123	ERJ2GEJ333	33k	
	R124	ERJ2GEJ333	33k	
	R200	ERJ2GEJ330	33	
	R201	ERJ3GEYJ100	10	
	R202	ERJ3GEYJ4R7	4.7	
	R203	ERJ2GEJ333	33k	
	R204	ERJ2GE0R00	0	
	R205	ERJ2GE0R00	0	
	R206	ERJ2GE0R00	0	
	R207	ERJ2GE0R00	0	
	R300	ERJ2GEJ820	82	
	R301	ERJ2GEJ820	82	
	R302	ERJ2GEJ820	82	
	R303	ERJ2GEJ820	82	
	R304	ERJ2GEJ820	82	
	R305	ERJ2GEJ820	82	
	R307	ERJ2GE0R00	0	
	R308	ERJ2GEJ820	82	
	R309	ERJ2GE0R00	0	
	R500	ERJ2GEJ330	33	
	R501	ERJ2GEJ330	33	
	R505	ERJ2GEJ223	22k	
	R507	ERJ2GEJ473	47k	
	R508	ERJ2GEJ152	1.5k	
	R517	ERJ3GEYJ100	10	
	R518	ERJ2GEJ103	10k	
	R533	ERJ2GE0R00	0	
	R600	ERJ2GEJ330	33	
	R601	ERJ2GEJ103	10k	
	R602	ERJ2GEJ103	10k	
	R603	ERJ2GEJ103	10k	
	R604	ERJ2GEJ103	10k	
	R605	ERJ2GEJ151	150	
	R606	ERJ2GEJ151	150	
	R607	ERJ2GEJ151	150	
	R608	ERJ2GEJ151	150	
	R609	ERJ2GEJ151	150	
	R610	ERJ2GEJ151	150	
	R611	ERJ2GEJ151	150	
	R612	ERJ2GEJ151	150	
	R613	ERJ2GEJ560X	56	
	R614	ERJ2GEJ151	150	
	R615	ERJ2GEJ151	150	
	R616	ERJ2GEJ121	120	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R617	ERJ2GEJ121	120	
	R618	ERJ2GEJ121	120	
	R619	ERJ2RKF24R9	24.9	
	R622	ERJ2GEJ104	100k	
	R623	ERJ2GEJ104	100k	
	R624	ERJ2GEJ104	100k	
	R625	ERJ2GEJ220	22	
	R626	ERJ2GEJ473	47k	
	R627	ERJ2GEJ333	33k	
	R650	ERJ2GEJ241	240	
	R651	ERJ2GEJ241	240	
	R652	ERJ2GEJ241	240	
			(COMPONENTS PARTS)	
	RA100	EXB28V333	RESISTOR ARRAY	
	RA101	EXB28V333	RESISTOR ARRAY	
	RA102	EXB28V333	RESISTOR ARRAY	
	RA103	EXB28V333	RESISTOR ARRAY	
	RA104	EXB28V333	RESISTOR ARRAY	
	RA105	EXB28V333	RESISTOR ARRAY	
	RA106	EXB28V333	RESISTOR ARRAY	
	RA107	EXB28V333	RESISTOR ARRAY	
	RA108	EXB28V333	RESISTOR ARRAY	
	RA109	EXB28V333	RESISTOR ARRAY	
	RA110	EXB28V333	RESISTOR ARRAY	
	RA111	EXB28V333	RESISTOR ARRAY	
	RA112	EXB28V333	RESISTOR ARRAY	
	RA113	EXB28V333	RESISTOR ARRAY	
	RA114	EXB28V333	RESISTOR ARRAY	
	RA115	EXB28V333	RESISTOR ARRAY	
	RA116	EXB28V333	RESISTOR ARRAY	
	RA117	EXB28V333	RESISTOR ARRAY	
	RA118	EXB28V333	RESISTOR ARRAY	
	RA120	EXB28V333	RESISTOR ARRAY	
	RA121	EXB28V333	RESISTOR ARRAY	
	RA125	EXB28V333	RESISTOR ARRAY	
	RA127	EXB28V333	RESISTOR ARRAY	
	RA200	EXB28V330	RESISTOR ARRAY	
	RA201	EXB28V330	RESISTOR ARRAY	
	RA202	EXB28V330	RESISTOR ARRAY	
	RA203	EXB28V330	RESISTOR ARRAY	
	RA204	EXB28V330	RESISTOR ARRAY	
	RA205	EXB28V330	RESISTOR ARRAY	
	RA206	EXB28V330	RESISTOR ARRAY	
	RA207	EXB28V330	RESISTOR ARRAY	
	RA208	EXB28V330	RESISTOR ARRAY	
	RA301	EXB28V820	RESISTOR ARRAY	
	RA302	EXB28V820	RESISTOR ARRAY	
	RA303	EXB28V820	RESISTOR ARRAY	
	RA304	EXB28V820	RESISTOR ARRAY	
	RA305	EXB28V820	RESISTOR ARRAY	
	RA306	EXB28V820	RESISTOR ARRAY	
	RA307	EXB28V820	RESISTOR ARRAY	
	RA308	EXB28V820	RESISTOR ARRAY	
	RA309	EXB28V820	RESISTOR ARRAY	
	RA310	EXB28V820	RESISTOR ARRAY	
	RA311	EXB28V820	RESISTOR ARRAY	
	RA312	EXB28V820	RESISTOR ARRAY	
			(SWITCHES)	
	SW600	K0H1BA000418	SWITCH	
	SW601	K0H1BA000418	SWITCH	
	SW602	K0H1BA000418	SWITCH	
			(VARIABLE RESISTOR)	
	VR600	EVM3YSX50B54	VARIABLE RESISTOR	
			(CRYSTAL OSCILLATORS)	
	X100	H0J222500004	CRYSTAL OSCILLATOR	
	X102	H1A4805B0023	CRYSTAL OSCILLATOR	

## 18.2.5. Sensor Board Parts

### 18.2.5.1. Exit Sensor Board Ass'y

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB4	PNLP2098MZ-A	Exit Sensor Board Ass'y (RTL)	
			(CAPACITOR)	
	C57	ECUV1H102KBV	0.001	
			(CONNECTORS)	
	CN50	K1KA03B00201	CONNECTOR, 3PIN	
	CN51	K1KA04B00225	CONNECTOR, 4PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	PS53	B3NAA0000106	PHOTO SENSOR	
			(RESISTOR)	
	R50	ERJ3GEYJ331	330	

### 18.2.5.2. ADU Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB5	PNLP2098MZ-B	ADU Sensor Board Ass'y (RTL)	
			(CAPACITOR)	
	C58	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN52	K1KA03B00201	CONNECTOR, 3PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	PS54	B3NAA0000106	PHOTO SENSOR	
			(RESISTOR)	
	R51	ERJ3GEYJ331	330	

### 18.2.5.3. Paper Feed Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB6	PNLP2098MZ-C	Paper Feed Sensor Board Ass'y (RTL)	
			(CAPACITORS)	
	C60	ECUV1H102KBV	0.001	
	C61	ECUV1H102KBV	0.001	
	C62	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN53	K1KA05A00364	CONNECTOR, 5PIN	
			(PHOTO ELECTRIC TRANS-DUCERS)	
	PS50	B3NAA0000106	PHOTO SENSOR	
	PS51	B3NAA0000106	PHOTO SENSOR	
	PS52	B3NAA0000106	PHOTO SENSOR	
			(RESISTORS)	
	R52	ERJ3GEYJ331	330	
	R53	ERJ3GEYJ331	330	
	R54	ERJ3GEYJ331	330	

### 18.2.5.4. Front Relay Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB7	PNLP2098MZ-D	Front Relay Sensor Board Ass'y (RTL)	
			(CONNECTORS)	
	CN54	K1KA04A00527	CONNECTOR, 4PIN	
	CN55	K1KA03A00495	CONNECTOR, 3PIN	
	CN56	K1KA05A00364	CONNECTOR, 5PIN	
	CN57	K1KA02AA0193	CONNECTOR, 2PIN	
	CN59	K1KA10A00412	CONNECTOR, 10PIN	
	CN60	K1KA03A00612	CONNECTOR, 3PIN	

## 18.2.5.5. Rear Relay Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB8	PNWP2MB3020M	Rear Relay Sensor Board Ass'y (RTL)	
			(SWITCH)	
	SW50	PFSH1A003Z	PUSH SWITCH	
			(CONNECTORS)	
	CN58	K1KA09A00204	CONNECTOR, 9PIN	
	CN61	K1KA03AA0193	CONNECTOR, 3PIN	
	CN62	K1KA02A00587	CONNECTOR, 2PIN	
	CN63	K1KA02AA0193	CONNECTOR, 2PIN	
	CN64	K1KA03A00495	CONNECTOR, 3PIN	

### 18.2.5.6. FB Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB9	PNLP2098MZ-F	FB Relay Board Ass'y (RTL)	
			(CAPACITORS)	
	C50	ECUV1C104ZFV	0.1	
	C51	ECUV1C104ZFV	0.1	
	C52	ECUV1C104ZFV	0.1	
	C53	ECUV1C104ZFV	0.1	
	C54	ECUV1C104ZFV	0.1	
	C55	ECUV1C104ZFV	0.1	
	C56	ECUV1H680JCV	68p	
			(CONNECTORS)	
	CN65	K1KA14A00238	CONNECTOR, 14PIN	
	CN67	K1KA03A00495	CONNECTOR, 3PIN	
	CN69	K1MN12BA0222	CONNECTOR, 12PIN	
			(COILS)	
	L50	PQLQR2KB113T	COIL	S
	L51	PQLQR2KB113T	COIL	S
	L52	PQLQR2KB113T	COIL	S
	L53	PQLQR2KB113T	COIL	S
	L54	PQLQR2KB113T	COIL	S
	L55	PQLQR2KB113T	COIL	S
	L56	PQLQR2KB113T	COIL	S

### 18.2.5.7. CIS Home Position Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB10	PNLP2098MZ-G	CIS Home position Sensor Board Ass'y (RTL)	
			(CAPACITOR)	
	C59	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN70	K1KA03A00495	CONNECTOR, 3PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	PS55	B3NAA0000106	PHOTO SENSOR	

### 18.2.5.8. Toner LED Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB11	PNLP2098MZ-H	Toner LED Board Ass'y (RTL)	
			(DIODE)	
	LED50	B3EA00000053	DIODE (SI)	
			(CONNECTOR)	
	CN66	K1KA03B00201	CONNECTOR, 3PIN	
			(SPACER)	
	ETC50	PFHR1875Z	SPACER	

### 18.2.5.9. Toner Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB12	PNLP2098MZ-I	Toner Sensor Board Ass'y (RTL)	
			(CONNECTOR)	
	CN68	K1KA03B00201	CONNECTOR, 3PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	Q50	B3HAA0000042	PHOTO SENSOR	
			(SPACER)	
	ETC51	PFHR1875Z	SPACER	

### 18.2.5.10. Varistor Board (1)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB13	PNLP2098MZ-J	Varistor Board Ass'y (1) (RTL)	
			(VARISTOR)	
	ZNR50	PFRV271NS05K	VARISTOR	

### 18.2.5.11. Varistor Board (2)

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB14	PNLP2098MZ-K	Varistor Board Ass'y (2) (RTL)	
			(VARISTOR)	
	ZNR51	PFRV271NS05K	VARISTOR	

## 18.2.6. ADF Sensor Board Parts

### 18.2.6.1. ADF Relay Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB15	PNLP2100MZ-A	ADF Relay Board Ass'y (RTL)	
			(CONNECTORS)	
	CN80	K1KA08A00440	CONNECTOR, 8PIN	
	CN81	K1KA05A00452	CONNECTOR, 5PIN	
	CN83	K1KA05A00364	CONNECTOR, 5PIN	
	CN84	K1KA04AA0193	CONNECTOR, 4PIN	
	CN85	K1KA02AA0224	CONNECTOR, 2PIN	
	CN86	K1KA02AA0193	CONNECTOR, 2PIN	
			(CAPACITORS)	
	C80	ECUV1H101JCV	100p	
	C81	ECUV1H101JCV	100p	
	C82	ECUV1H101JCV	100p	
	C83	ECUV1H101JCV	100p	

### 18.2.6.2. ADF Sensor Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB16	PNLP2100MZ-B	ADF Sensor Board Ass'y (RTL)	
			(CONNECTOR)	
	CN82	K1KA05B00189	CONNECTOR, 5PIN	
			(CAPACITORS)	
	C84	ECUV1H102KBV	0.001	
	C85	ECUV1H102KBV	0.001	
	C86	ECUV1H102KBV	0.001	
			(RESISTORS)	
	R80	ERJ3GEYJ181	180	
	R81	ERJ3GEYJ181	180	
	R82	ERJ3GEYJ181	180	
			(PHOTO ELECTRIC TRANS-DUCERS)	
	PS80	B3NAA0000105	PHOTO SENSOR	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PS81	B3NAA0000105	PHOTO SENSOR	
	PS82	B3NAA0000105	PHOTO SENSOR	

### 18.2.7. High Voltage Power Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
△	PCB17	EUK1MNA81HA	High Voltage Power Board Ass'y (RTL)	
			(ICs)	
	IC101	AN6742S	IC	
	IC102	NJM2904M	IC	
	IC301	NJM2904M	IC	
			(TRANSISTORS)	
	Q103	2SD2137A	TRANSISTOR (SI)	
	Q203	2SD2137A	TRANSISTOR (SI)	
	Q303	2SD2137A	TRANSISTOR (SI)	
			(IC PROTECTOR)	
△	IP101	PFBAICPN38	FUSE	S

### 18.2.8. Low Voltage Power Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
△	PCB18	N0AB2GJ00009	Low Voltage Power Board Ass'y (RTL)	
			(IC)	
	IC1	PH3202AC005	IC	
			(TRANSISTOR)	
	Q1	PT3654KL001	TRANSISTOR (SI)	
			(DIODE)	
	D10	PD1014AQ604	DIODE (SI)	
			(CAPACITOR)	
△	C5	PC30M6KQ561	ELECTROLYTIC CAPACITOR, AL	
			(FUSES)	
△	F1	PK7127AS015	FUSE	
△	F2	PK7138AS005	FUSE	
△	F101	PK7154AR003	FUSE	
△	F102	PK7154AR003	FUSE	
△	F501	PK7154AR003	FUSE	
			(THYRISTOR)	
△	SCR21	PD5111AL001	THYRISTOR, TRIAC	

## 18.2.9. OPF BOARD PARTS

### 18.2.9.1. Driver Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB19	PNLP2089MZ-A	Driver Board Ass'y (RTL)	
			(IC)	
	IC950	C0GBY0000059	IC	
			(TRANSISTORS)	
	Q950	B1ABKD000001	TRANSISTOR (SI)	
	Q951	2SK3018	TRANSISTOR (SI)	S
	Q952	B1ABDF000025	TRANSISTOR (SI)	
	Q953	UNR92ANJOL	TRANSISTOR (SI)	
	Q954	2SB1197KQ	TRANSISTOR (SI)	S
			(DIODE)	
	D950	B0JCDD000001	DIODE (SI)	
			(CAPACITORS)	
	C951	ECUV1H104ZFV	0.1	
	C953	ECUV0J105KBV	1	
	C954	ECUV1H102KBV	0.001	
	C955	ECUV1H102KBV	0.001	
	C960	F2G1V1010021	100	
	C961	ECUV1H104ZFV	0.1	
	C962	ECUV1H103KBV	0.01	
	C963	ECUV1H103KBV	0.01	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C964	ECUV1H103KBV	0.01	
	C965	ECUV1H103KBV	0.01	
			(CONNECTORS)	
	CN950	K1KA16AA0202	CONNECTOR, 16PIN	
	CN951	K1KA03A00495	CONNECTOR, 3PIN	
	CN952	K1KA04A00527	CONNECTOR, 4PIN	
	CN953	K1KA02AA0193	CONNECTOR, 2PIN	
	CN954	K1KA02AA0035	CONNECTOR, 2PIN	
	CN955	K1KA04AA0193	CONNECTOR, 4PIN	
			(RESISTORS)	
	R950	ERJ3GEYJ330	33	
	R951	ERJ3GEYJ181	180	
	R952	ERJ3GEYJ1R0	1	
	R953	ERJ3GEYJ330	33	
	R954	ERJ3GEYJ330	33	
	R955	ERJ3GEYJ472	4.7k	
	R956	ERJ3GEYJ102	1k	
	R957	ERJ3GEYJ103	10k	
	R958	ERJ3GEYJ330	33	
	R959	ERJ3GEYJ330	33	
	R960	ERJ3GEYJ103	10k	
	R961	ERJ3EKF1001	1k	
	R962	ERJ3EKF6491	6.49k	
	R963	ERJ3GEYJ104	100k	
	R964	ERJ3EKF7320	732	
	R966	ERJ3GEYJ393	39k	
	R967	ERJ3GEYJ393	39k	
	R970	ERJ8RQFR22	0.22	
	R971	ERJ8RQFR22	0.22	
	R977	PQ4R10XJ392	3.9k	S
	R978	ERJ3GEYJ103	10k	
	R968	ERJ3GEY0R00	0	
	R969	ERJ3GEY0R00	0	
	R972	ERJ3GEY0R00	0	
	R973	ERJ3GEY0R00	0	

### 18.2.9.2. Feeder Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB20	PNLP2089MZ-B	Feeder Board Ass'y (RTL)	
			(CAPACITORS)	
	C966	ECUV1H102KBV	0.001	
	C967	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN956	K1KA04B00225	CONNECTOR, 4PIN	
			(PHOTO ELECTRIC TRANS-DUCERS)	
	PS950	B3NAA0000106	PHOTO SENSOR	
	PS951	B3NAA0000106	PHOTO SENSOR	
			(RESISTORS)	
	R975	ERJ3GEYJ181	180	
	R976	ERJ3GEYJ181	180	

### 18.2.9.3. Cassette Board

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB21	PNLP2089MZ-C	Cassette Board Ass'y (RTL)	
			(CAPACITOR)	
	C968	ECUV1H102KBV	0.001	
			(CONNECTOR)	
	CN957	K1KA03B00201	CONNECTOR, 3PIN	
			(PHOTO ELECTRIC TRANS-DUCER)	
	PS952	B3NAA0000106	PHOTO SENSOR	

