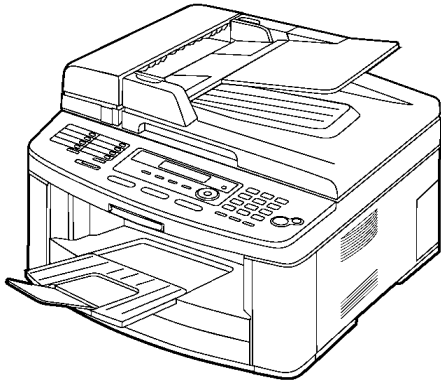


# Service Manual

KX-FLB802



All in One Flatbed Laser Fax with

**KX-FLB802CX**

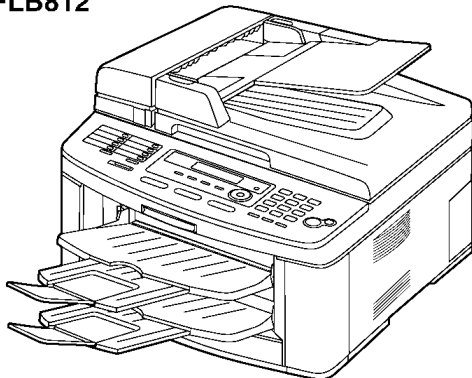
**KX-FLB812CX**

**KX-FLB802CXS**

**KX-FLB812CXS**

(With Document Separator)  
(for Asia and Middle Near East)

KX-FLB812



## **⚠ 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.

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

**Panasonic®**

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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

ICs and LSIs are vulnerable to static electricity.

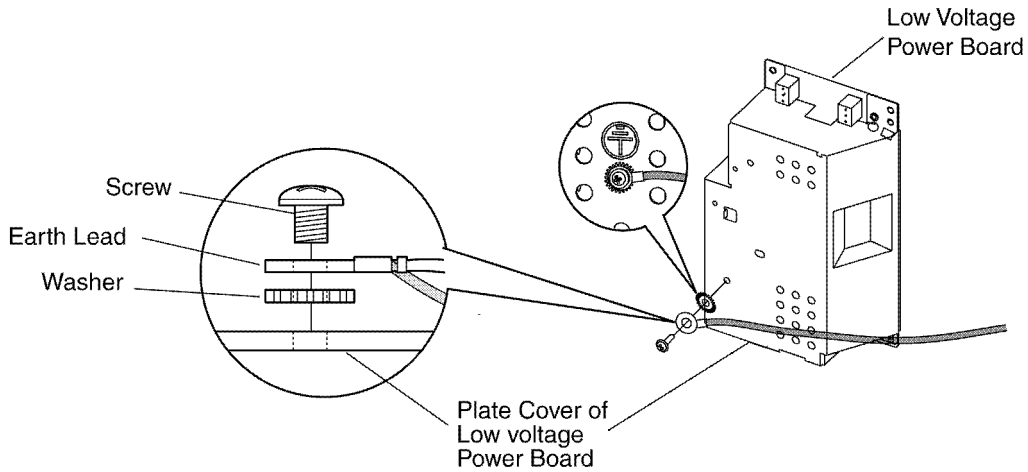
When repairing, the following precautions will help prevent recurring malfunctions.

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

## 1.2. AC CAUTION

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

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



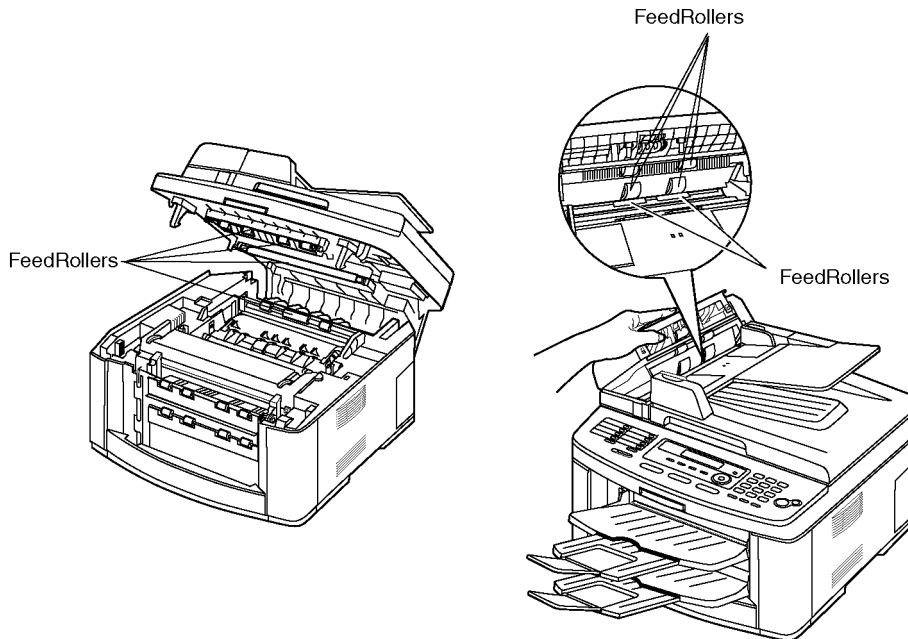


## 1.3. PERSONAL SAFETY PRECAUTIONS

### 1.3.1. MOVING SECTIONS OF THE UNIT

Be careful not to let your hair, clothes, fingers, accessories, etc., become caught in any moving sections of the unit.

The moving sections of the unit are the rollers and a gear. There is a separation roller and a document feed roller which are rotated by the document feed motor. A gear rotates the two rollers. Be careful not to touch them with your hands, especially when the unit is operating.



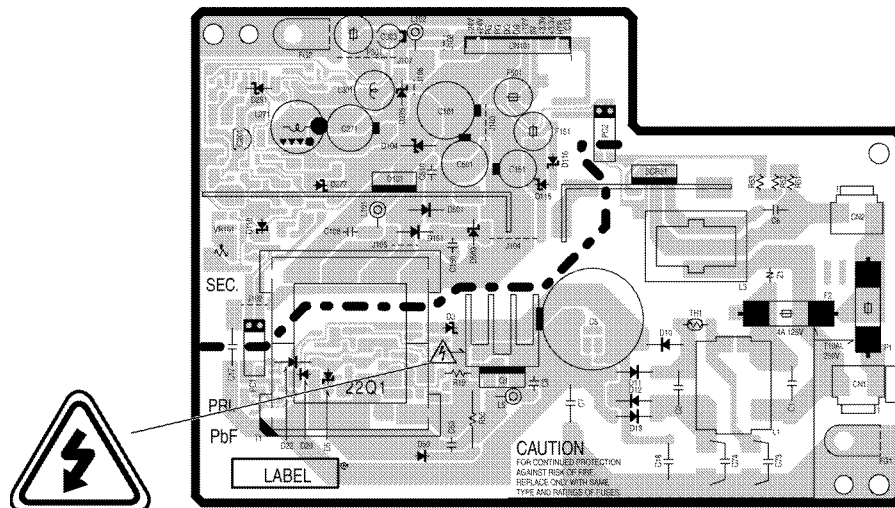
### 1.3.2. LIVE ELECTRICAL SECTIONS

All the electrical sections of the unit supplied with AC power by the AC power cord are live.

Never disassemble the unit for service with the AC power supply plugged in.

#### CAUTION:

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



Low voltage Power Supply board

## 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:**

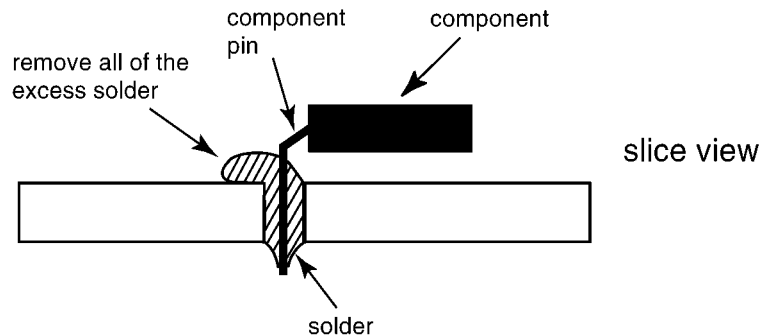
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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.

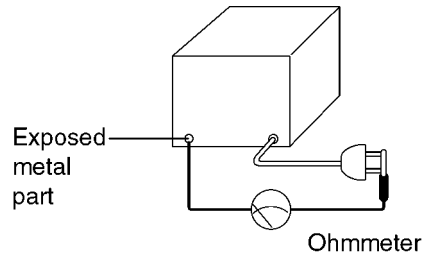
0.3mm X 100g	0.6mm X 100g	1.0mm X 100g

## 2.2. INSULATION RESISTANCE TEST

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

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

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



Resistance = more than  $10M\Omega$  (at DC 500 V)

## 2.3. BATTERY CAUTION

### CAUTION

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

The lithium battery is a critical component (type No.CR2032). Please observe for the proper polarity and exact location when replacing it and the soldering the replacement lithium battery in

# 3 Specifications

<b>Applicable Lines:</b>	Public Switched Telephone Network
<b>Document Size:</b>	Max. 216 (8 <sup>1</sup> / <sub>2</sub> " ) mm 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*:</b>	Approx. 4 s/page (ECM-MMR Memory transmission)**
<b>Scanning Density:</b>	<b>FAX resolution:</b> Horizontal: 8 pels/mm (203 pels/inch) Vertical: 3.85 lines/mm (98 lines/inch)-STANDARD 7.7 lines/mm (196 lines/inch)-FINE/PHOTO 15.4 lines/mm (392 lines/inch)-SUPER FINE
<b>Photo resolution:</b>	<b>Copy resolution:</b> Up to 600 × 600 dpi
<b>Scanner Type:</b>	<b>Scanning resolution:</b> Up to 600 × 1200 dpi (Optical) Up to 9600 × 9600 dpi (interpolated)
<b>Printer Type:</b>	64-level Colour Contact Image Sensor
<b>Data Compression System:</b>	Laser printer
<b>Modem Speed:</b>	Modified Huffman (MH), Modified READ (MR), Modified Modified READ (MMR) 33,600 / 31,200 / 28,800 / 26,400 / 24,000 / 21,600 / 19,200 / 16,800 / 14,400 / 12,000 / 9,600 / 7,200 / 4,800 / 2,400 bps; Automatic Fallback
<b>Operating Environment:</b>	10°C—32.5°C (50°F—90.5°F), 20—80% RH (Relative Humidity)
<b>Dimensions (H×W×D):</b>	Approx. height 318 mm × width 440 mm × depth 445 mm (12 <sup>1</sup> / <sub>2</sub> " x 17 <sup>5</sup> / <sub>16</sub> " x 17 <sup>1</sup> / <sub>2</sub> " )
<b>Mass (Weight):</b>	Approx. 16kg (35.3lb)
<b>Power Consumption:</b>	Standby: Approx. 9.5 W Preheat: Approx. 70 W Copy: Approx. 430 W Maximum: Approx. 900 W (When the fuser lamp turns on)
<b>Power Supply:</b>	220-240 V AC, 50/60 Hz
<b>Fax Memory Capacity:</b>	2 MB in total Approx. 170 pages of memory reception Approx. 150 pages of memory transmission (Based on the ITU-T No. 1 Test Chart in standard resolution.)
<b>Laser diode properties:</b>	Laser output: Max. 5 mW Wave length: 760 nm—800 nm Emission duration: Continuous
<b>Print Speed:</b>	18 ppm (page per minute)
<b>Printing Resolution:</b>	600 × 600 dpi

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

\*\* Transmission speed is based upon the ITU-T No. 1 Test Chart. (Refer to **ITU-T No.1 TEST CHART (P.255)**.) 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.

# 4 General/Introduction

## 4.1. OPTIONAL ACCESSORIES

Model No.	Description	Specifications
KX-FA87A/KX-FA87E/ KX-FA85A/KX-FA85E	Toner cartridge	1 toner cartridge
KX-FA86A/KX-FA86E	Drum unit	1 drum unit

## 5 Features

### 5.1. General Features

#### General

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

#### Plain Paper Facsimile Machine

Output tray (approx. 100+50 sheets) (KX-FLB812CX/KX-FLB812CXS)  
 Output tray (approx. 150 sheets) (KX-FLB802CX/KX-FLB802CXS)  
 Letter/A4/Legal, G3 compatible  
 Automatic document feeder (40 sheets)  
 Quick scan  
 Resolution: Standard/Fine/Super fine/Photo (64 level).  
 STANDARD: For printed or typewritten originals with normal-sized characters.  
 FINE: For originals with small printing.

SUPER FINE: For originals with very small printing.  
 PHOTO: For originals containing photographs, shaded drawing, etc.  
 Broad cast  
 250-sheet paper capacity (60 g/m<sup>2</sup> ~ 75 g/m<sup>2</sup> [16 lb ~ 20 lb.])  
 Distinctive ring detection.  
 Separator

Large Memory... Performed by DRAM  
 Approx. 150 pages of memory transmission  
 Approx. 170 pages of memory reception

#### Phone Line Monitor

On-hook dialing  
 Monitor speaker  
 Redialing function  
 314-Station telephone directory

#### Enhanced Copier Function

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

Works with Windows 98/Me/2000/XP<sup>\*1)</sup>

#### CPU:

Windows 98: Pentium® 90 MHz or faster  
 Windows Me: Pentium 150 MHz or faster  
 Windows 2000: Pentium 166 MHz or faster  
 Windows XP<sup>\*1)</sup>: Pentium 300 MHz or faster

#### RAM:

Windows 98: 24 MB (32 MB or more recommended)  
 Windows Me: 32 MB (64 MB or more recommended)  
 Windows 2000: 64 MB or more  
 Windows XP<sup>\*1)</sup>: 128 MB or more

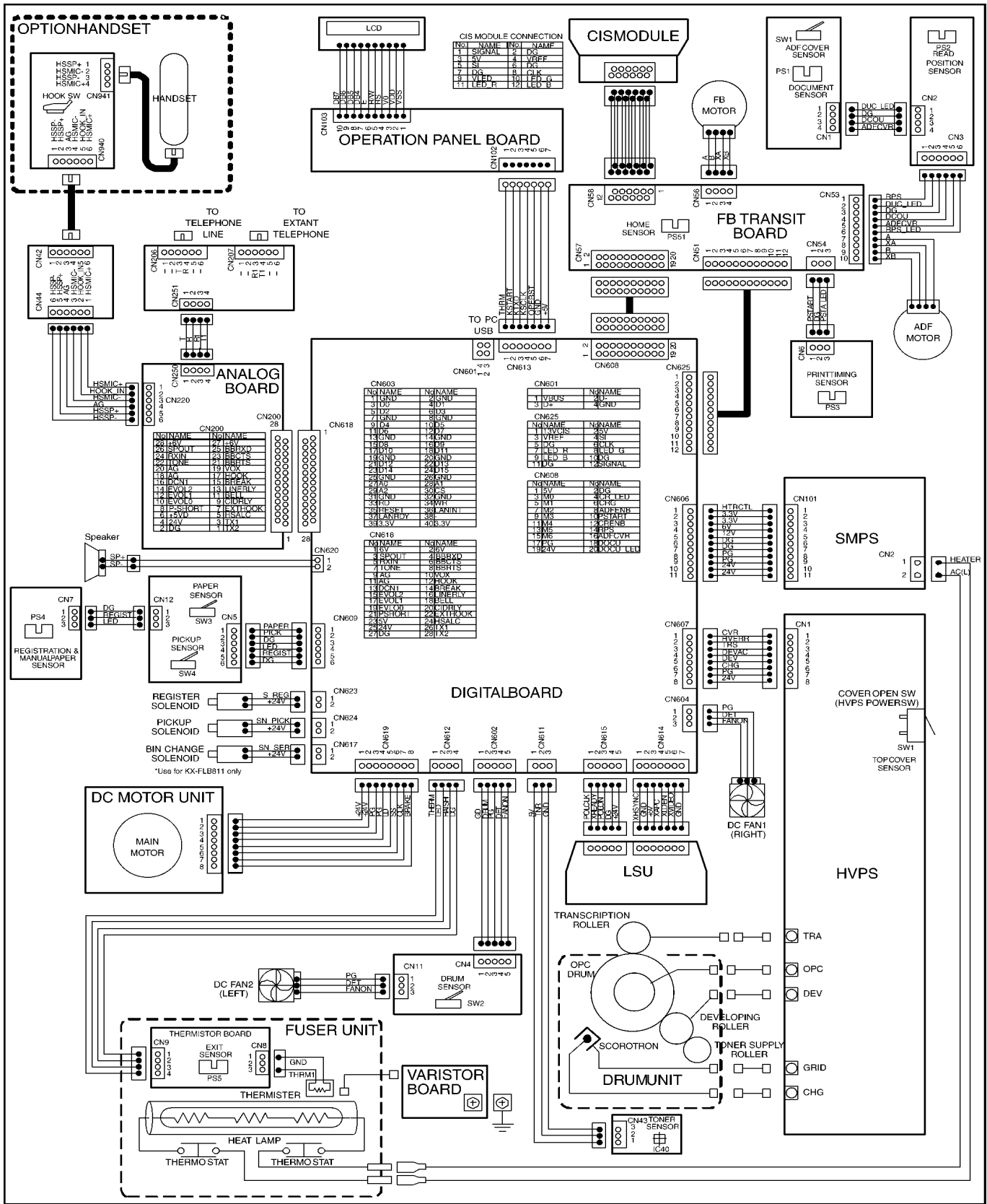
#### Other Hardware:

CD-ROM drive  
 Hard disk drive with at least 100 MB of available space  
 USB interface

<sup>\*1)</sup> Multi-Function Station software does not work with Windows XP Professional x64 Edition (64bit) that was released in and after April, 2005.

# 6 Technical Descriptions

## 6.1. CONNECTION DIAGRAM



## 6.2. GENERAL BLOCK DIAGRAM

The following is an outline of each device IC on the digital board.

SOC(IC600)

Mainly Performing program working and the image processing.

CPU:ARM9 DSP:Quatro DMA Function

Main Function

- 1) SDRAM Controller
- 2) USB Controller with PHY.
- 3) SCANNER I/F
- 4) Printer I/F
- 5) I/O Port
- 6) System Bus I/F
- 7) Serial I/F

G/A (IC604)

Controls the operation panel I/F.

Controls the LSU I/F.

Controls FANs, LEDs and Sensors and analog I/F.

Control the motor (DC motor and Stepping Motor)

Real Time Clock circuit

Controls the high Voltage Unit control

Contains A/D converter

Flash ROM (IC602)

This 64 Mbit FLASH ROM contains all of the program instructions on the unit operations.

Synchronous Dynamic RAM (IC601)

This memory is used for Program working and Image processing.

Modem (IC607)

Performs the modulation and the demodulation for FAX communication.

Detect the CALLED ID signal.

Read Section

CIS Unit to read transmitted documents.

CIS Unit connected to FLATBED transit Unit.

Scan data is converted by Analog Front End on Digital Board.

Motor Driver

Drives the DC motor for Printing.

Drives the Stepping Motor for Auto Document Feeder and CIS carriage.

LSU (Laser Scanning Unit)

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

Analog Board

Composed of ITS circuit and NCU circuit.

Sensor Section

Composed of 13 sensors (switches). (contains optional parts)

Power Supply Board Section

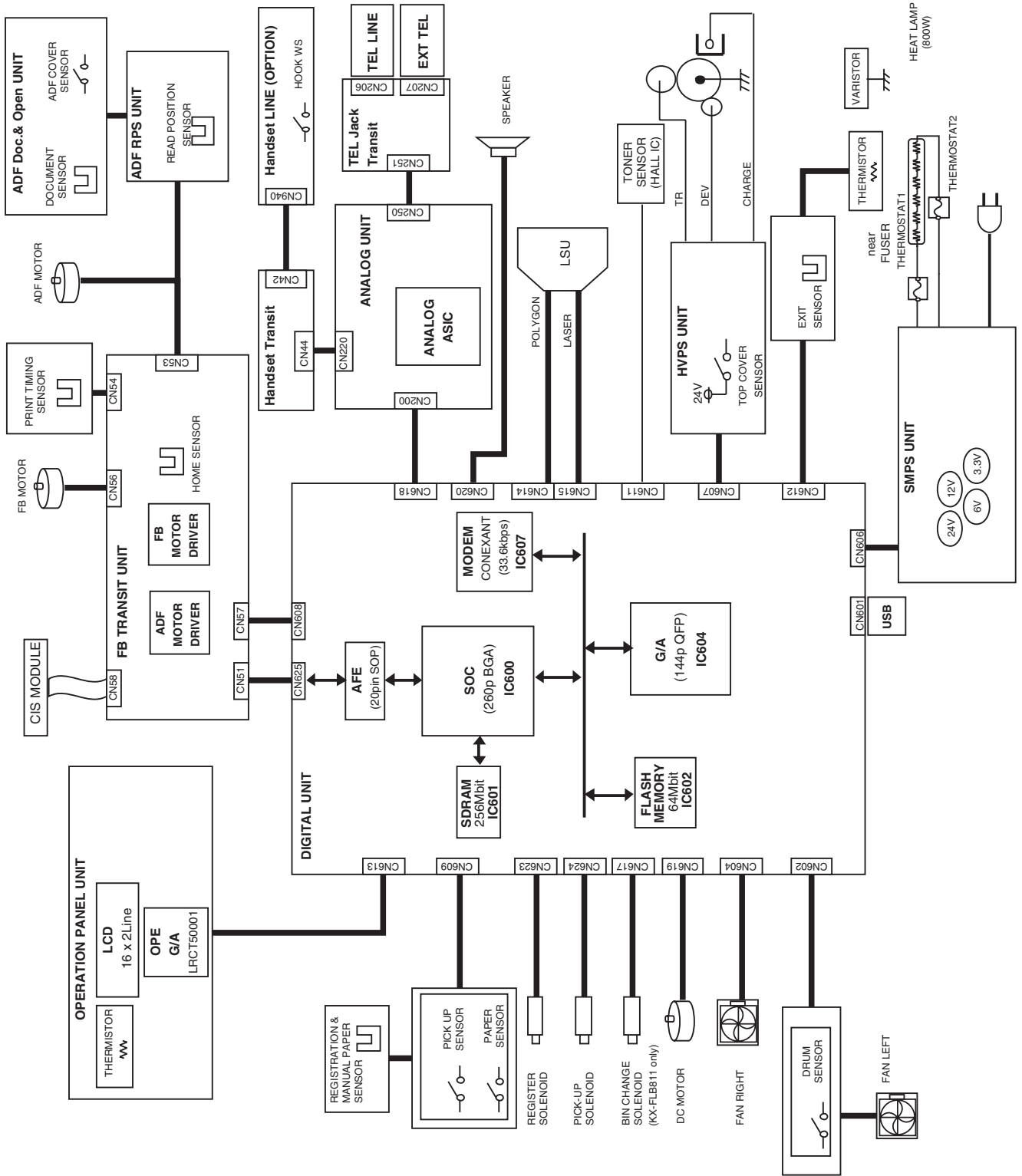
Supplies +3.3V, +6V, 12V and +24V to the digital unit and controls the Heat Lamp.

High Voltage Power Supply Board

Supplies bias need for the printing operation: bias of the Drum, developing and transcription.

Fixing Unit

Composed heat lamp, thermistor and thermostats.

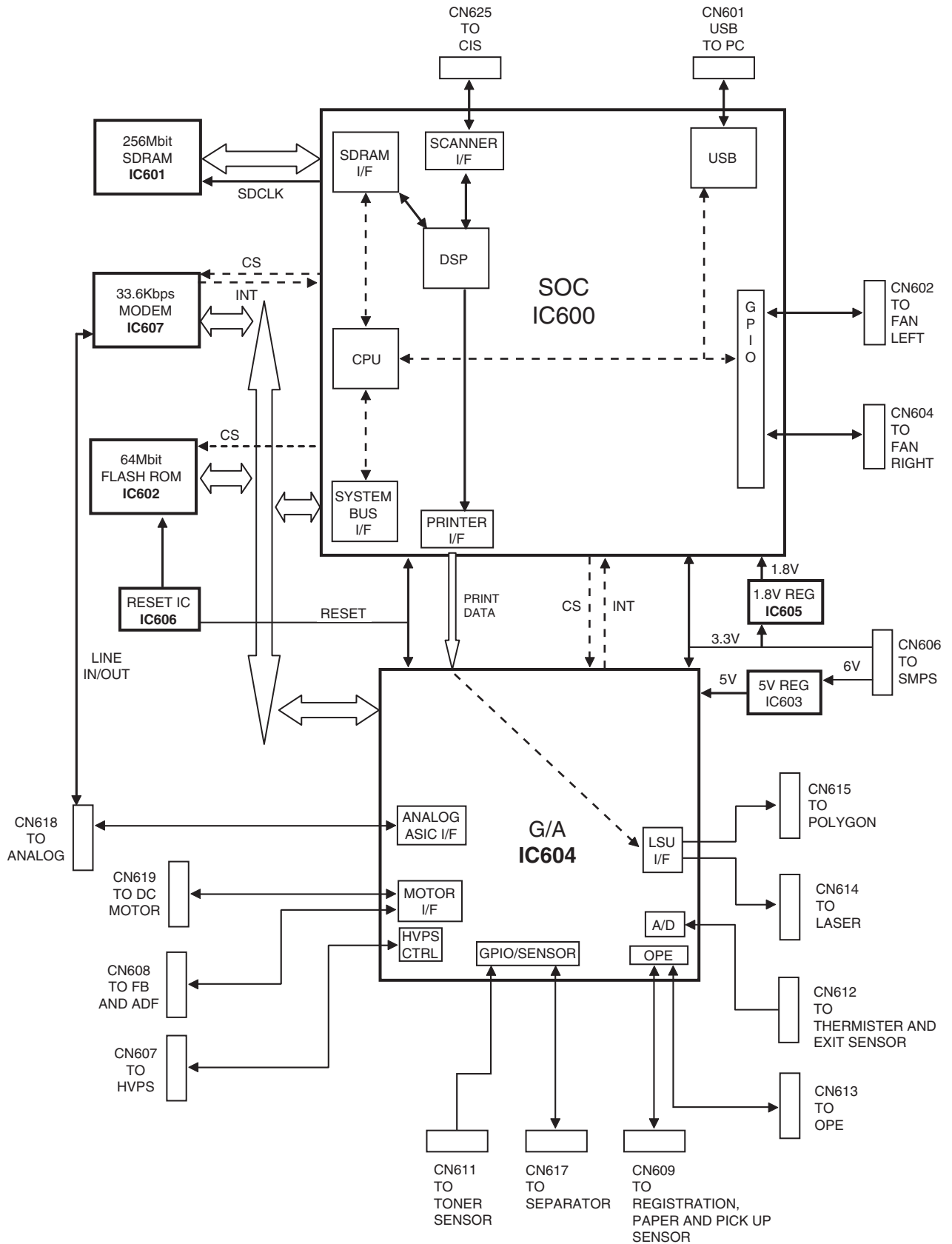




### 6.3. FACSIMILE SECTION

#### 6.3.1. DIGITAL SECTION

##### 6.3.1.1. DIGITAL BLOCK DIAGRAM



## Descriptions of Pin Distribution (IC600)

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
A1	SBA[2]	O	3.3V	SYSTEM ADDRESS BUS 2
A2	SBA[1]	O	3.3V	SYSTEM ADDRESS BUS 1
A3	SBA[0]	O	3.3V	SYSTEM ADDRESS BUS 0
A4	SBACK	O	3.3V	LAN READY SIGNAL INPUT
A5	SBD[13]	I/O	3.3V	SYSTEM DATA BUS 13/FROM ADDRESS 18
A6	SBD[10]	I/O	3.3V	SYSTEM DATA BUS 10/FROM ADDRESS 15
A7	SBD[7]	I/O	3.3V	SYSTEM DATA BUS 7
A8	SBD[4]	I/O	3.3V	SYSTEM DATA BUS 4
A9	SBD[1]	I/O	3.3V	SYSTEM DATA BUS 1
A10	SBRD	O	3.3V	RD SIGNAL
A11	GPIO[47]	O	3.3V	NOT USED
A12	SPIDI	I	3.3V(5V torelant)	CIS INTERFACE
A13	SPICLK	O	3.3V	CIS INTERFACE
A14	GPIO[5]	I	3.3V(5V torelant)	INPUT PORT(USBPWR)
A15	GPIO[2]	O	3.3V	NOT USED
A16	GPIO[35]	O	3.3V	NOT USED
A17	GPIO[34]	O	3.3V	NOT USED
A18	TCK	I	3.3V(5V torelant)	JTAG INTERFACE
B1	SBA[5]	O	3.3V	SYSTEM ADDRESS BUS 5
B2	SBA[4]	O	3.3V	SYSTEM ADDRESS BUS 4
B3	SBA[3]	O	3.3V	SYSTEM ADDRESS BUS 3
B4	SBD[15]	I/O	3.3V	SYSTEM DATA BUS 15/FROM ADDRESS 20
B5	SBD[12]	I/O	3.3V	SYSTEM DATA BUS 12/FROM ADDRESS 17
B6	SBD[9]	I/O	3.3V	SYSTEM DATA BUS 9/FROM ADDRESS 14
B7	SBD[6]	I/O	3.3V	SYSTEM DATA BUS 6
B8	SBD[3]	I/O	3.3V	SYSTEM DATA BUS 3
B9	SBD[0]	I/O	3.3V	SYSTEM DATA BUS 0
B10	GPIO[82]	O	3.3V	NOT USED
B11	SBCS[2]	O	3.3V	MODEM CHIP SELECT OUTPUT
B12	SPIDO	O	3.3V	CIS INTERFACE
B13	GPIO[7]	O	3.3V	NOT USED
B14	GPIO[4]	O	3.3V	NOT USED
B15	GPIO[1]	I	3.3V(5V torelant)	MODEM INTERRUPT INPUT
B16	GPIO[36]	O	3.3V	NOT USED
B17	TDI	I	3.3V(5V torelant)	JTAG INTERFACE
B18	TRST	I	3.3V(5V torelant)	JTAG INTERFACE
C1	SBA[8]	O	3.3V	SYSTEM ADDRESS BUS 8
C2	SBA[7]	O	3.3V	SYSTEM ADDRESS BUS 7
C3	SBA[6]	O	3.3V	SYSTEM ADDRESS BUS 6
C4	SBD[14]	I/O	3.3V	SYSTEM DATA BUS 14/FROM ADDRESS 19
C5	SBD[11]	I/O	3.3V	SYSTEM DATA BUS 11/FROM ADDRESS 16
C6	SBD[8]	I/O	3.3V	SYSTEM DATA BUS 8/FROM ADDRESS 13
C7	SBD[5]	I/O	3.3V	SYSTEM DATA BUS 5
C8	SBD[2]	I/O	3.3V	SYSTEM DATA BUS 2
C9	SBWR	O	3.3V	WR SIGNAL
C10	SBCS[4]	O	3.3V	LAN CHIP SELECT OUTPUT
C11	SBCS[1]	O	3.3V	ASIC CHIP SELECT OUTPUT
C12	SBCS[0]	O	3.3V	FLASH CHIP SELECT OUTPUT
C13	GPIO[6]	O	3.3V	FROM ADDRESS 21
C14	GPIO[3]	I	3.3V(5V torelant)	LAN INTERRUPT INPUT
C15	GPIO[0]	I	3.3V(5V torelant)	ASIC INTERRUPT INPUT
C16	GPIO[37]	O	3.3V	NOT USED
C17	TDO	O	3.3V	JTAG INTERFACE
C18	TMS	I	3.3V(5V torelant)	JTAG INTERFACE
D1	SBA[11]	O	3.3V	SYSTEM ADDRESS BUS 11
D2	SBA[10]	O	3.3V	SYSTEM ADDRESS BUS 10
D3	SBA[9]	O	3.3V	SYSTEM ADDRESS BUS 9
D4	VDD18	-	1.8V	POWER SOURCE
D5	VDD18	-	1.8V	POWER SOURCE
D6	VDD33	-	3.3V	POWER SOURCE
D7	VDD33	-	3.3V	POWER SOURCE
D8	VDD18	-	1.8V	POWER SOURCE
D9	VDD33	-	3.3V	POWER SOURCE
D10	VSS33	-	GND	GND
D11	VDD18	-	1.8V	POWER SOURCE

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
D12	VDD33	-	3.3V	POWER SOURCE
D13	VDD33	-	3.3V	POWER SOURCE
D14	VDD18	-	1.8V	POWER SOURCE
D15	VDD18	-	1.8V	POWER SOURCE
D16	PRI0[0]	O	3.3V	OUTPUT PORT(PVCLK)
D17	TEST	I	3.3V(5V torelant)	NOT USED
D18	RESET	I	3.3V(5V torelant)	RESET INPUT
E1	SBA[13]	O	3.3V	SYSTEM ADDRESS BUS 13
E2	SBA[12]	O	3.3V	SYSTEM ADDRESS BUS 12
E3	GPIO[30]	I	3.3V(5V torelant)	INPUT PORT(LANRDY)
E4	VDD18	-	1.8V	POWER SOURCE
E15	VDD18	-	1.8V	POWER SOURCE
E16	PRI0[1]	O	3.3V	OUTPUT PORT(WP)
E17	PRI0[2]	I	3.3V(5V torelant)	INPUT PORT(R/B)
E18	PRI0[3]	O	3.3V	OUTPUT PORT(DEVAC)
F1	GPIO[33]	O	3.3V	OUTPUT PORT(XLANRST)
F2	GPIO[32]	O	3.3V	NOT USED
F3	GPIO[31]	O	3.3V	OUTPUT PORT(XMDMRST1)
F4	VDD33	-	3.3V	POWER SOURCE
F15	VDD33	-	3.3V	POWER SOURCE
F16	PRI0[4]	O	3.3V	OUTPUT PORT(PVDATA0)
F17	PRI0[5]	O	3.3V	OUTPUT PORT(PVDATA1)
F18	PRI0[6]	O	3.3V	OUTPUT PORT(PVDATA2)
G1	SMOT[2]	O	3.3V	NOT USED
G2	SMOT[1]	O	3.3V	OUTPUT PORT(FAN1FULL)
G3	SMOT[0]	O	3.3V	OUTPUT PORT(FAN1HALF)
G4	VDD33	-	3.3V	POWER SOURCE
G7	VSS18	-	GND	GND
G8	VSS33	-	GND	GND
G9	VSS33	-	GND	GND
G10	VSS33	-	GND	GND
G11	VSS33	-	GND	GND
G12	VSS18	-	GND	GND
G15	VDD33	-	3.3V	POWER SOURCE
G16	PRI0[7]	O	3.3V	OUTPUT PORT(PVDATA3)
G17	PRI0[8]	O	3.3V	OUTPUT PORT(CIDRLY)
G18	PRI0[9]	O	3.3V	OUTPUT PORT(SPMUTE)
H1	SMOT[5]	O	3.3V	OUTPUT PORT(SN_REG)
H2	SD[3]	O	3.3V	NOT USED
H3	SMOT[4]	O	3.3V	NOT USED
H4	VSSA33	-	GND	GND
H7	VSS33	-	GND	GND
H8	VSS18	-	GND	GND
H9	VSS18	-	GND	GND
H10	VSS18	-	GND	GND
H11	VSS18	-	GND	GND
H12	VSS33	-	GND	GND
H15	VDD18	-	1.8V	POWER SOURCE
H16	PRI0[10]	O	3.3V	OUTPUT PORT(LINELRY1)
H17	PRI0[11]	I	3.3V(5V torelant)	INPUT PORT(BELL1)
H18	PRI0[12]	O	3.3V	OUTPUT PORT(P-SHORT1)
J1	VDDA33	-	3.3V	POWER SOURCE
J2	SD[5]	I	3.3V(5V torelant)	CIS INTERFACE
J3	SMOT[3]	O	3.3V	OUTPUT PORT(SN_ST)
J4	VDD18	-	1.8V	POWER SOURCE
J7	VSS33	-	GND	GND
J8	VSS18	-	GND	GND
J9	VSS18	-	GND	GND
J10	VSS18	-	GND	GND
J11	VSS18	-	GND	GND
J12	VSS33	-	GND	GND
J15	VDD33	-	3.3V	POWER SOURCE
J16	PRI0[13]	O	3.3V	NOT USED
J17	PRI0[14]	O	3.3V	NOT USED
J18	PRI0[15]	O	3.3V	NOT USED
K1	SD[7]	I	3.3V(5V torelant)	CIS INTERFACE
K2	SD[1]	O	3.3V(5V torelant)	NOT USED

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
K3	SD[2]	O	3.3V(5V torelant)	NOT USED
K4	VDD33	-	3.3V	POWER SOURCE
K7	VSS33	-	GND	GND
K8	VSS18	-	GND	GND
K9	VSSDIG18	-	GND	GND
K10	VSS18	-	GND	GND
K11	VSS18	-	GND	GND
K12	VSS33	-	GND	GND
K15	VSS33	-	GND	GND
K16	PRI0[16]	I	3.3V(5V torelant)	INPUT PORT(HOOK)
K17	PRI0[17]	I	3.3V(5V torelant)	INPUT PORT(EXHOOK)
K18	PRI0[18]	I	3.3V(5V torelant)	INPUT PORT(DCN1)
L1	VSSUA33	-	GND	GND
L2	RDM	I/O	3.3V(5V torelant)	USB INTERFACE
L3	VDDUA33	-	3.3V	POWER SOURCE
L4	VDD18	-	1.8V	POWER SOURCE
L7	VSS33	-	GND	GND
L8	VSS18	-	GND	GND
L9	VSS18	-	GND	GND
L10	VSS18	-	GND	GND
L11	VSS18	-	GND	GND
L12	VSS33	-	GND	GND
L15	VDD18	-	1.8V	POWER SOURCE
L16	PRI0[19]	I	3.3V(5V torelant)	INPUT PORT(HSALC1)
L17	PRI0[20]	O	3.3V	NOT USED
L18	PRI0[21]	O	3.3V	NOT USED
M1	RDP	I/O	3.3V(5V torelant)	USB INTERFACE
M2	RPUDP	I	3.3V(5V torelant)	USB INTERFACE
M3	DDM	I/O	3.3V(5V torelant)	USB INTERFACE
M4	VDD33	-	3.3V	POWER SOURCE
M7	VSS33	-	GND	GND
M8	VSS33	-	GND	GND
M9	VSS33	-	GND	GND
M10	VSS33	-	GND	GND
M11	VSS33	-	GND	GND
M12	VSS18	-	GND	GND
M15	VDD33	-	3.3V	POWER SOURCE
M16	PRI0[22]	O	3.3V	NOT USED
M17	PRI0[23]	I	3.3V(5V torelant)	INPUT PORT(VOX)
M18	PRI0[24]	I	3.3V(5V torelant)	INPUT PORT(DRUM)
N1	DDP	I/O	3.3V(5V torelant)	USB INTERFACE
N2	VDDUA18	-	1.8V	POWER SOURCE
N3	VSSUA18	-	GND	GND
N4	VSSSW	-	GND	GND
N15	VDD33	-	3.3V	POWER SOURCE
N16	PRI0[25]	I	3.3V(5V torelant)	INPUT PORT(PAPER)
N17	PRI0[26]	I	3.3V(5V torelant)	INPUT PORT(PVREQ)
N18	PRI0[27]	O	3.3V	OUTPUT PORT(PVACK)
P1	VDDUC33	-	3.3V	POWER SOURCE
P2	XOUT	O	5V	NOT USED
P3	VDDUC18	-	1.8V	POWER SOURCE
P4	VDDDIG18	-	1.8V	POWER SOURCE
P15	VDD18	-	1.8V	POWER SOURCE
P16	PRI0[28]	I	3.3V(5V torelant)	INPUT PORT(FAN1DET)
P17	PRI0[29]	O	3.3V	OUTPUT PORT(FAN2HALF)
P18	PRI0[30]	I	3.3V(5V torelant)	INPUT PORT(FAN2DET)
R1	RREF	-	3.3V(5V torelant)	USB INTERFACE
R2	SD[0]	O	3.3V	NOT USED
R3	SMOT[6]	O	3.3V	OUTPUT PORT(SN_PICK)
R4	VDD33	-	3.3V	POWER SOURCE
R5	VDD18	-	1.8V	POWER SOURCE
R6	VDD33	-	3.3V	POWER SOURCE
R7	VDD33	-	3.3V	POWER SOURCE
R8	VDD18	-	1.8V	POWER SOURCE
R9	VSS33	-	GND	GND
R10	VDD33	-	3.3V	POWER SOURCE
R11	VDD18	-	1.8V	POWER SOURCE

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
R12	VDD33	-	3.3V	POWER SOURCE
R13	VDD33	-	3.3V	POWER SOURCE
R14	VDD18	-	1.8V	POWER SOURCE
R15	VDD18	-	1.8V	POWER SOURCE
R16	PRIO[31]	O	3.3V(5V torelant)	OUTPUT PORT(FAN2FULL)
R17	DD[1]	I/O	3.3V	SDRAM DATA BUS 1
R18	DD[0]	I/O	3.3V	SDRAM DATA BUS 0
T1	XIN	I	5V	CRYSTAL(48MHz) INPUT
T2	VSSA33	-	GND	GND
T3	SSEN	O	3.3V	CIS INTERFACE
T4	CCDILL[1]	O	3.3V	CIS INTERFACE
T5	CCDCLK[3]	O	3.3V	CIS INTERFACE
T6	CCDCLK[0]	O	3.3V	CIS INTERFACE
T7	DA[6]	O	3.3V	SDRAM ADDRESS BUS 6
T8	DA[9]	O	3.3V	SDRAM ADDRESS BUS 9
T9	DCKE	O	3.3V	SDRAM CKE SIGNAL
T10	DD[8]	I/O	3.3V	SDRAM DATA BUS 8
T11	DD[10]	I/O	3.3V	SDRAM DATA BUS 10
T12	DD[11]	I/O	3.3V	SDRAM DATA BUS 11
T13	DD[12]	I/O	3.3V	SDRAM DATA BUS 12
T14	DD[13]	I/O	3.3V	SDRAM DATA BUS 13
T15	DD[14]	I/O	3.3V	SDRAM DATA BUS 14
T16	DD[15]	I/O	3.3V	SDRAM DATA BUS 15
T17	DD[3]	I/O	3.3V	SDRAM DATA BUS 3
T18	DD[2]	I/O	3.3V	SDRAM DATA BUS 2
U1	VSSUC	-	GND	GND
U2	SD[4]	I	3.3V(5V torelant)	CIS INTERFACE
U3	SCLK1	O	3.3V	CIS INTERFACE
U4	CCDILL[2]	O	3.3V	CIS INTERFACE
U5	CCDCLK[4]	O	3.3V	CIS INTERFACE
U6	CCDCLK[1]	O	3.3V	CIS INTERFACE
U7	DA[5]	O	3.3V	SDRAM ADDRESS BUS 5
U8	DA[8]	O	3.3V	SDRAM ADDRESS BUS 8
U9	DA[12]	O	3.3V	SDRAM ADDRESS BUS 12
U10	DQM[1]	O	3.3V	SDRAM DQMU SIGNAL
U11	DD[9]	I/O	3.3V	SDRAM DATA BUS 9
U12	DA[1]	O	3.3V	SDRAM ADDRESS BUS 1
U13	DA[10]	O	3.3V	SDRAM ADDRESS BUS 10
U14	DBA[0]	O	3.3V	SDRAM BANK ADDRESS BUS 0
U15	DCAS	O	3.3V	SDRAM CAS SIGNAL
U16	DQM[0]	O	3.3V	SDRAM DQML SIGNAL
U17	DD[6]	I/O	3.3V	SDRAM DATA BUS 6
U18	DD[4]	I/O	3.3V	SDRAM DATA BUS 4
V1	VDDA33	-	3.3V	POWER SOURCE
V2	SD[6]	I	3.3V(5V torelant)	CIS INTERFACE
V3	SCLK2	O	3.3V	NOT USED
V4	SADCLK	O	3.3V	CIS INTERFACE
V5	CCDILL[0]	O	3.3V	CIS INTERFACE
V6	CCDCLK[2]	O	3.3V	NOT USED
V7	DA[4]	O	3.3V	SDRAM ADDRESS BUS 4
V8	DA[7]	O	3.3V	SDRAM ADDRESS BUS 7
V9	DA[11]	O	3.3V	SDRAM ADDRESS BUS 11
V10	DCLK	O	3.3V	SDRAM CLOCK
V11	DA[3]	O	3.3V	SDRAM ADDRESS BUS 3
V12	DA[2]	O	3.3V	SDRAM ADDRESS BUS 2
V13	DA[0]	O	3.3V	SDRAM ADDRESS BUS 0
V14	DBA[1]	O	3.3V	SDRAM BANK ADDRESS BUS 1
V15	DRAS	O	3.3V	SDRAM RAS SIGNAL
V16	DWE	O	3.3V	SDRAM WR SIGNAL
V17	DD[7]	I/O	3.3V	SDRAM DATA BUS 7
V18	DD[5]	I/O	3.3V	SDRAM DATA BUS 5

## Descriptions of Pin Distribution (IC604)

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
1	VSS		GND	GND
2	ADR0	I	3.3V	ADDRESS BUS 0
3	ADR1	I	3.3V	ADDRESS BUS 1
4	ADR2	I	3.3V	ADDRESS BUS 2
5	ADR3	I	3.3V	ADDRESS BUS 3
6	ADR4	I	3.3V	ADDRESS BUS 4
7	ADR5	I	3.3V	ADDRESS BUS 5
8	ADR6	I	3.3V	ADDRESS BUS 6
9	ADR7	I	3.3V	ADDRESS BUS 7
10	XCS	I	3.3V	CHIP SELECT INPUT
11	PVREQ	O	3.3V	PRINT DATA INTERFACE
12	PVACK	I	3.3V	PRINT DATA INTERFACE
13	PVDATA0	I	3.3V	PRINT DATA INTERFACE
14	PVDATA1	I	3.3V	PRINT DATA INTERFACE
15	PVDATA2	I	3.3V	PRINT DATA INTERFACE
16	PVDATA3	I	3.3V	PRINT DATA INTERFACE
17	PVCLK	I	3.3V	PRINT DATA INTERFACE
18	3.3V	-	3.3V	POWER SOURCE(3.3V)
19	VSS	-	GND	GND
20	VSSA	A	GND	GND(ANALOG)
21	AIN0	A	3.3V	ANALOG INPUT(THERMISTOR)
22	AIN1	A	3.3V	ANALOG INPUT(THERMISTOR)
23	TONE	A	3.3V	ANALOG OUTPUT(TONE)
24	VDDA	A	3.3V	POWER SOURCE(ANALOG)
25	TEST0	I	3.3V	NOT USED
26	SENCTL0/IOP00	O	3.3V	OUTPUT PORT(POUT_LED)
27	SENIN0/IOP10	I	3.3V	INPUT PORT(POUT)
28	SENIN1/IOP11	O	3.3V	NOT USED
29	SENIN2/IOP12	O	3.3V	NOT USED
30	SENIN3/IOP13	O	3.3V	NOT USED
31	OMT0/OP60	O	3.3V	NOT USED
32	OMT1/OP61	O	3.3V	NOT USED
33	OMT2/OP62	O	3.3V	NOT USED
34	OMT3/OP63	O	3.3V	NOT USED
35	OMT4/OP64	O	3.3V	NOT USED
36	VSS	-	GND	GND
37	3.3V	-	3.3V	POWER SOURCE(3.3V)
38	XIN_PLL	I	3.3V	CRYSTAL(25MHz) INPUT
39	XOUT_PLL	O	3.3V	CRYSTAL(25MHz) OUTPUT
40	TEST1	I	3.3V	NOT USED
41	HTRCTL	O	3.3V	HEATER CONTROL
42	IOP07	I	3.3V	INPUT PORT(HVERR)
43	CHG	O	3.3V	HIGH VOLTAGE CONTROL
44	DEV	O	3.3V	HIGH VOLTAGE CONTROL
45	TRS	O	3.3V	HIGH VOLTAGE CONTROL
46	POLCLK	O	3.3V	LSU CONTROL
47	POLON	O	3.3V	LSU CONTROL
48	XREADY	I	3.3V	LSU CONTROL
49	VDDPLL	PLL	3.3V	POWER SOURCE(PLL)
50	VSSPLL	PLL	GND	GND(PLL)
51	VCNT	PLL	3.3V	PLL INTERFACE
52	R	PLL	3.3V	PLL INTERFACE
53	PO	PLL	3.3V	PLL INTERFACE
54	5V	-	5V	POWER SOURCE(5V)
55	VSS	-	GND	GND
56	XVIDEO	O	5V	LSU CONTROL
57	XAPC	O	5V	LSU CONTROL
58	XLDEN	O	5V	LSU CONTROL
59	XHSYNC	I	5V	LSU CONTROL
60	PWRDWN	O	5V	POWER DOWN CONTROL
61	OPERST	O	5V	OPERATION PANEL CONTROL
62	KTXD	I/O	5V	OPERATION PANEL CONTROL
63	KSCLK	O	5V	OPERATION PANEL CONTROL
64	KSTART	O	5V	OPERATION PANEL CONTROL
65	IOP30	O	5V	NOT USED

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
66	IOP31	O	5V	NOT USED
67	IOP32	O	5V	NOT USED
68	IOP33	I	5V	NOT USED
69	MILAT/IOP52	O	5V	ANALOG ASIC CONTROL
70	MIDAT/IOP51	O	5V	ANALOG ASIC CONTROL
71	MICLK/IOP50	O	5V	ANALOG ASIC CONTROL
72	VSS	-	GND	GND
73	5V	-	5V	POWER SOURCE(5V)
74	SWCLK/IOP54	O	5V	NOT USED
75	SWDAT/IOP55	O	5V	NOT USED
76	SWLAT/IOP56	O	5V	NOT USED
77	IOP34	O	5V	NOT USED
78	IOP35	O	5V	NOT USED
79	IOP36	O	5V	NOT USED
80	IOP45	O	3.3V	VOLUME CONTROL
81	IOP46	O	3.3V	VOLUME CONTROL
82	IOP47	O	3.3V	VOLUME CONTROL
83	TXD/CSO/IOP40	O	3.3V	NOT USED
84	RXD/CSI/IOP41	O	3.3V	NOT USED
85	RTS/CCLK/IOP42	O	3.3V	NOT USED
86	CTS/CBUSY1/IOP43	O	3.3V	NOT USED
87	CBUSY2/IOP44	O	3.3V	NOT USED
88	SENIN4/IOP14	O	3.3V	NOT USED
89	SENIN5/IOP15	I	3.3V	NOT USED
90	3.3V	-	3.3V	POWER SOURCE(3.3V)
91	VSS	-	GND	GND
92	XIN_22M	I	3.3V	CRYSTAL(22.222MHz) INPUT
93	XOUT_22M	O	3.3V	CRYSTAL(22.222MHz) OUTPUT
94	TEST2	I	3.3V	NOT USED
95	SENIN6/IOP16	I	3.3V	INPUT PORT(TONER)
96	SENIN7/IOP17	I	3.3V	INPUT PORT(PICK)
97	SENCTL1/IOP01	I	3.3V	INPUT PORT(TOPCVR)
98	IOP05	O	3.3V	OUTPUT PORT(ADFMEN)
99	IOP06	O	3.3V	OUTPUT PORT(CRMEN)
100	SMT0/OP70	O	3.3V	SCANNER MOTOR CONTROL
101	SMT1/OP71	O	3.3V	SCANNER MOTOR CONTROL
102	SMT2/OP72	O	3.3V	SCANNER MOTOR CONTROL
103	SMT3/OP73	O	3.3V	SCANNER MOTOR CONTROL
104	SMT4/OP74	O	3.3V	SCANNER MOTOR CONTROL
105	SMT5/OP75	O	3.3V	SCANNER MOTOR CONTROL
106	SMT6/OP76	O	3.3V	SCANNER MOTOR CONTROL
107	SENCTL2/IOP02	O	3.3V	OUTPUT PORT(SEN_LED)
108	VSS	-	GND	GND
109	3.3V	-	3.3V	POWER SOURCE(3.3V)
110	SENIN8/IOP20	I	3.3V	INPUT PORT(CRG)
111	SENIN9/IOP21	I	3.3V	INPUT PORT(RPS)
112	SENIN10/IOP22	I	3.3V	INPUT PORT(REGIST)
113	SENIN11/IOP23	I	3.3V	INPUT PORT(PSTART)
114	SENCTL3/IOP03	O	3.3V	OUTPUT PORT(DOCU_LED)
115	SENIN12/IOP24	I	3.3V	INPUT PORT(DOCU)
116	SENIN13/IOP25	I	3.3V	NOT USED
117	SENIN14/IOP26	I	3.3V	INPUT PORT(ADFCVR)
118	SENIN15/IOP27	I	3.3V	NOT USED
119	PMT0/LD	I	3.3V	ENGIN MOTOR CONTROL
120	PMT1/SS	O	3.3V	ENGIN MOTOR CONTROL
121	PMT2/DCCLK	O	3.3V	ENGIN MOTOR CONTROL
122	PMT3/BREAK	O	3.3V	ENGIN MOTOR CONTROL
123	PMT4	O	3.3V	NOT USED
124	IOP04/EXTCLK	I	3.3V	ENGIN MOTOR CONTROL
125	XRESET	I	3.3V	RESET INPUT
126	3.3V	-	3.3V	POWER SOURCE(3.3V)
127	VSS	-	GND	GND
128	VDDRTC	-	3.3V/BAT	POWER SOURCE(3.3V/BATT)
129	PWRCTL	I	3.3V/BAT	RESET INPUT
130	XIN_RTC	I	3.3V/BAT	CRYSTAL(32.768KHz) INPUT
131	XOUT_RTC	O	3.3V/BAT	CRYSTAL(32.768KHz) OUTPUT
132	VSSRTC	-	GND	GND

PIN No.	SIGNAL	I/O	POWER SUPPLY VOLTAGE	EXPLANATION
133	XINTOUT	O	3.3V	INTERRUPT OUTPUT
134	XRD	I	3.3V	RD SIGNAL
135	XWR	I	3.3V	WR SIGNAL
136	DB0	I/O	3.3V	DATA BUS 0
137	DB1	I/O	3.3V	DATA BUS 1
138	DB2	I/O	3.3V	DATA BUS 2
139	DB3	I/O	3.3V	DATA BUS 3
140	DB4	I/O	3.3V	DATA BUS 4
141	DB5	I/O	3.3V	DATA BUS 5
142	DB6	I/O	3.3V	DATA BUS 6
143	DB7	I/O	3.3V	DATA BUS 7
144	3.3V	-	3.3V	POWER SOURCE(3.3V)

### 6.3.2. RTC BACKUP CIRCUIT

#### 1. Function

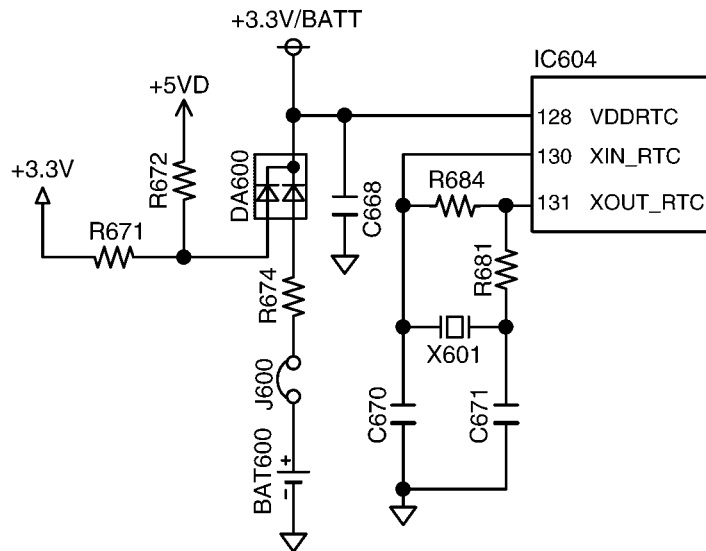
This unit has a lithium battery (BAT600) which works for the Real Time Clock IC (RTC: inside IC604). The RTC continues to work, backed up by a lithium battery even when the power switch is OFF.

#### 2. RTC Inside (IC604) Backup Circuit Operation

When the power switch is turned ON, power is supplied to the RTC (inside IC604). At this time, the voltage at pin 128 of the IC604 is +3.3V. When the power switch is turned OFF, the BAT600 supplies power to RTC through DA600.

When the power switch is OFF and the voltage of +3.3V decreases, pin 128 of RTC (IC604) 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 (IC607) has all the hardware satisfying the CCITT standards mentioned previously.

When the SOC (IC600) is brought to a low level, the modem (IC607) is chip-selected and the resistors inside IC are selected by the select signals from SOC (IC600) A[0]-A[5]. Commands are written through the data bus, and all processing is controlled by the SOC (IC600) according to CCITT procedures. Here, the INT signal dispatched from IRQ (pin 1 of IC607) to the SOC (IC600) implements post processing.

This modem (IC607) has an automatic application equalizer. With training signal 1 or 2 at the time of G3 reception, it can automatically establish the optimum equalizer. The modem (IC607) operates using the 28.224MHz clock (X604).

#### Facsimile Transmission/DTMF Line Send

The digital image data on the data bus is modulated in the modem (IC607), and sent from pin 25, 26 via modem IC607, Analog gate array IC209(24→22), amplifier IC204(6→7) and the NCU section to the telephone line.

Refer to **CHECK SHEET**(P.165).

#### Facsimile Reception

The analog image data which is received from the telephone line passes through the NCU section and enters pin 29 of the modem (IC607). The signals that enter pin 29 of the modem (IC607) are demodulated in the board to digital image signals, then placed on the data bus.

In this case, the image signals from the telephone line are transmitted serially. Hence, they are placed on the bus in 8 bit units. Here, the internal equalizer circuit reduces the image signals to a long-distance receiving level.

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

It can be set in the service mode.

Refer to **CHECK SHEET**(P.165).

#### Busy/Dial Tone Detection

The path is the same as FAX receiving. When it is detected, the carrier detect bit of the resistor in the modem (IC607) becomes 1, and this status is monitored by SOC (IC600).

#### Call Tone Transmission

This is the call signal which is generated the ASIC (IC604) and sent to the speaker.

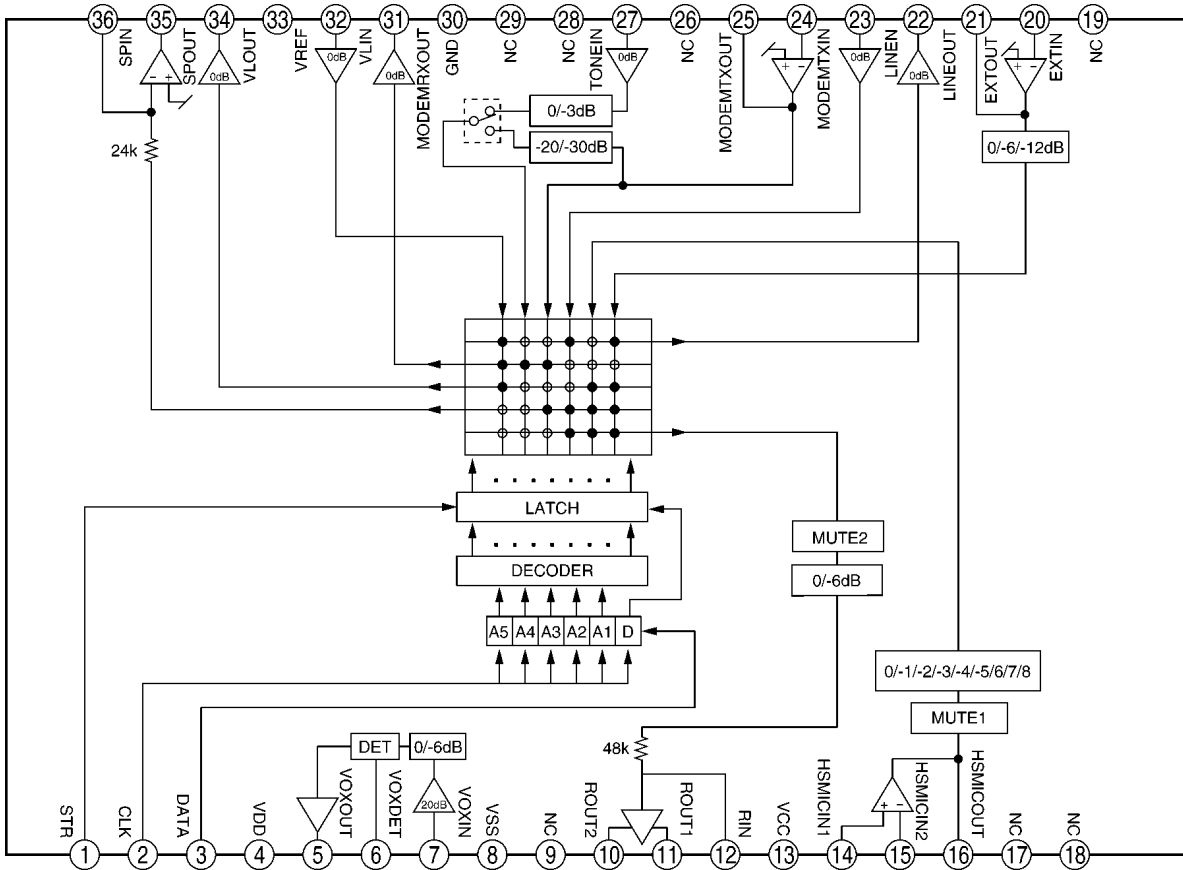
### 6.3.4. ANALOG SECTION

Composed of ITS circuit and NCU circuit.

#### 6.3.4.1. ANALOG GATE ARRAY (IC209)

The cross-point switch installed in this IC makes it possible to change the circuit configuration for any analog signals such as the fax signals sent from the digital board. In addition, this analog gate array integrates a handset circuit, input/output ports, etc.

This IC is controlled by SOC (IC600) through GATE ARRAY (IC604) on the digital board.



Explanation of ANALOG GATE ARRAY (IC209 on the ANALOG Board)

No.	Name	Function	No.	Name	Function
1	STR	Strobe input	19	NC	Not used
2	CLOCK	Clock input	20	EXTIN	Ext amp output
3	DATA	Data input	21	EXTOUT	Ext amp input
4	VDD	Logic power supply	22	LINEOUT	Line amp output
5	VOXOUT	VOX output	23	LINEIN	Line amp input
6	VOXDET	VOX detection adjustment	24	MODEMTXIN	MODEM TX amp input
7	VOXIN	VOX input	25	MODEMTXOUT	MODEM TX amp output
8	VSS	Logic ground	26	NC	Not used
9	NC	Not used	27	TONEIN	Tone amp input
10	ROUT2	HS receiver amp output 2	28	NC	Not used
11	ROUT1	HS receiver amp output 1	29	NC	Not used
12	RIN	HS receiver amp input	30	GND	Analog ground
13	VCC	Analog ground	31	MODEMRXOUT	MODEM RX amp output
14	HSMICIN1	HS mic amp input 1	32	VLIN	Volume amp input
15	HSMICIN2	HS mic amp input 2	33	VREF	Reference voltage output
16	HSMICOUT	HS mic amp output	34	VLOUT	Volume amp output
17	NC	Not used	35	SPOUT	Speaker amp output
18	NC	Not used	36	SPIN	Speaker amp input

### 6.3.4.2. DESCRIPTION OF BLOCK DIAGRAM IN ANALOG SECTION

#### Function

The analog section works as an interface between the telephone line.

The analog ASIC (IC209) on the analog board exchanges FAX TX and RX signals between the MODEM (IC607) and the analog section.

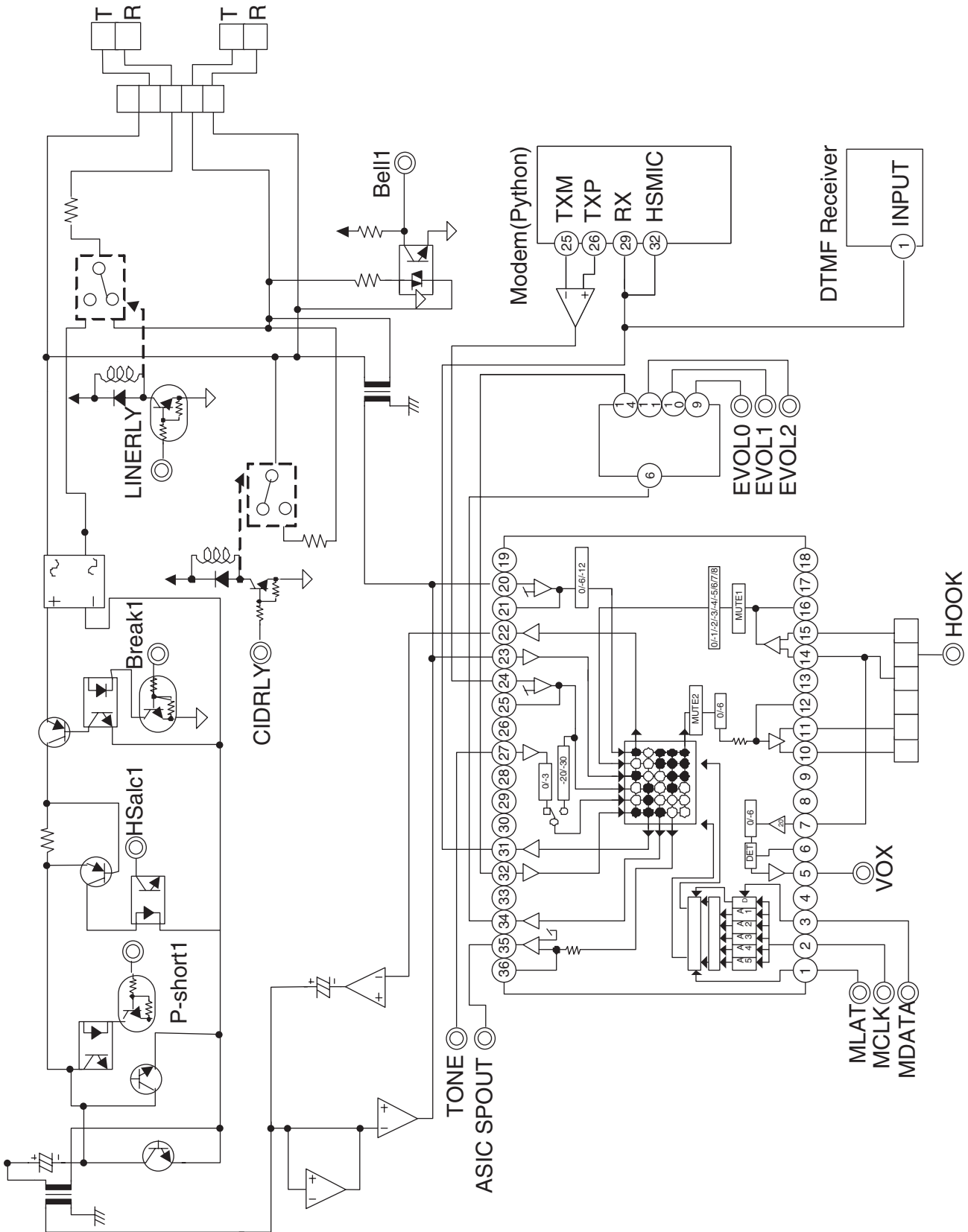
The control signals transmitted to the analog section are output mainly from G/A IC604, and the analog status is stored as data in G/A IC604.

#### 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; Side tone circuit; Remote fax activation circuit.

Refer to **NCU SECTION** (P.31) for the details.

### 6.3.4.3. BLOCK DIAGRAM



KX-FLB802/812: ANALOG BOARD:BLOCK DIAGRAM

## 6.4. MODEM SECTION

### 6.4.1. FUNCTION

The unit uses MODEM (IC600) that serves as an interface between the control section for FAX transmission and reception and the telephone line. During a transmitting operation, the digital image signals are modulated and sent to the telephone line. During a receiving operation, the analog image signals which are received via the telephone line are demodulated and converted into digital image signals. The communication format and procedures for FAX communication are standardized by ITU-T. MODEM has hardware which sends and detects all of the necessary signals for FAX communication.

It can be controlled by writing commands from the SOC (IC600).

This MODEM also sends DTMF signals, generates a call tone (from the speaker), and detects a busy tone and dial tones.

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

#### 1. ON CCITT (International Telegraph and Telephone Consultative Committee)

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

#### 2. Definition of Each Group

- Group I (G1)

Official A-4 size documents without using formats which reduce the band width of a signal are sent over telephone lines. Determined in 1968.

Transmission for about 6 minutes at a scanning line density of 3.85 lines/mm.

- Group II (G2)

Using reduction technology in the modulation/demodulation format, an A-4 size document is sent at an official scanning line density of 3.85 lines/mm for about 3 minutes.

Methods to suppress redundancy are not used.

Determined in 1976.

- Group III (G3)

Method of suppressing redundancy in the image signal prior to modulation is used. An A-4 size document is sent within about one minute.

Determined in 1980.

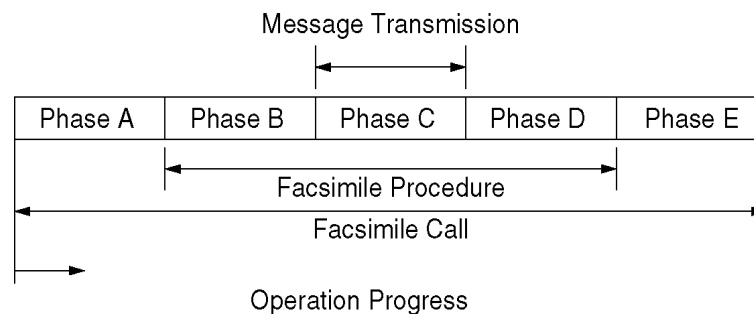
- Group IV (G4)

Transmission is via the data network. A method is provided for suppressing redundancy in signals prior to transmission, and error-free reception of transmission is possible.

The scope of these facsimile applications is not limited simply to transmission of written statements. Through symbiotic linkages with other communication methods, it can be expected to expand to include integrated services.

#### 3. Facsimile Call Time Series

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



##### Phase A: Call setting

Call setting can be manual/automatic.

##### Phase B: Pre-message procedure

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

##### Phase C: Message transmission

Phase C is the procedure for the transmitting facsimile messages.

##### Phase D: Post message procedure

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

##### Phase E: Call retrieval

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

**4. Concerning Transmission Time**

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

Transmission time consists of the following.

**Control time:**

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

**Image transmission time:**

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

**Hold time:**

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

**5. Facsimile Standards**

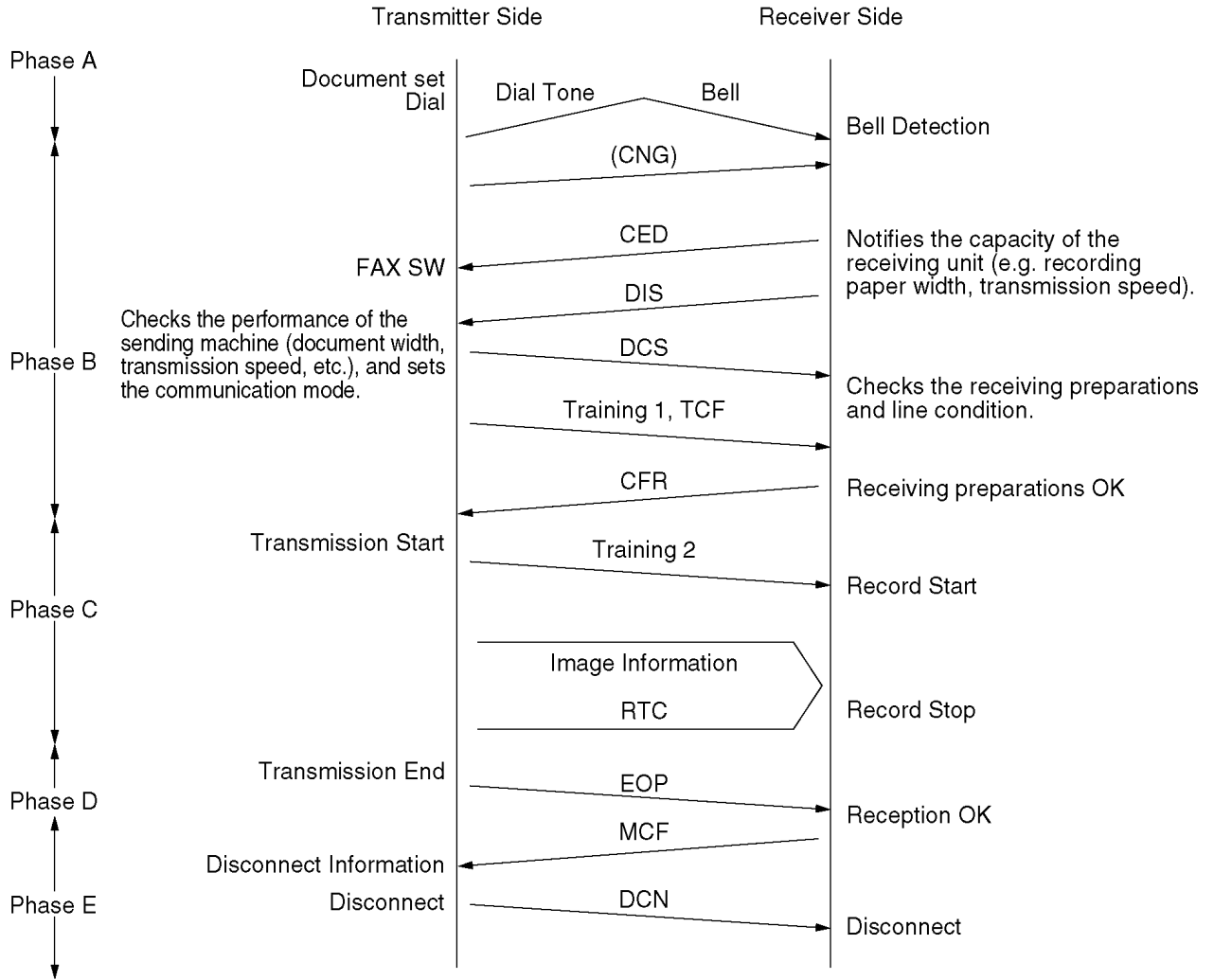
Item	Telephone Network Facsimile
	G3 Machine
Connection Control Mode	Telephone Network Signal Mode
Terminal Control Mode	T. 30 Binary
Facsimile Signal Format	Digital
Modulation Mode	PSK (V. 27 ter) or QAM (V. 29)
Transmission Speed	300 bps (Control Signal)  2400, 4800, 7200, 9600, 12000, 14400 bps (FAX Signal)
Redundancy Compression	1 dimension: MH Mode
Process  (Coding Mode)	2 dimension: MR Mode (K=2.4)
Resolution	Main Scan: 8 pel/mm  Sub Scan: 3.85, 7.7l/mm
Line Synchronization Signal	EOL Signal
1 Line Transmission Time  [ms/line]	Depends on the degree of data reduction.  Minimum Value: 10, 20  Can be recognized in 40ms.

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

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

For G3 Facsimile communication, this is the procedure for exchanging control signals between the sending and receiving

machines both before and after transmission of image signals.  
 Control signals at 300 bps FSK are: 1850 Hz...0, 1650Hz...1.  
 An example of a binary process in G3 communication is shown below.



**Explanation of Signals**

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

Signal.....DIS (Digital Identification Signal)  
 Identification Signal Format.....00000001

**Function:**

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

Signal.....DCS (Digital Command Signal)  
 Identification Signal Format.....X1000001

**Example**

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

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

Bit No.	DIS/DTC	DCS
11,12,13,14	Data signaling rate	Data signaling rate
0,0,0,0	V.27 ter fall back mode	2400 bit/s, V.27 ter
0,1,0,0	V.27 ter	4800 bit/s, V.27 ter
1,0,0,0	V.29	9600 bit/s, V.29
1,1,0,0	V.27 ter and V.29	7200 bit/s, V.29
0,0,1,0	Not used	14400 bit/s, V.33
0,1,1,0	Reserved	12000 bit/s, V.33
1,0,1,0	Not used	Reserved
1,1,1,0	V.27 ter and V.29 and V.33	Reserved
0,0,0,1	Not used	14400 bit/s, V.17
0,1,0,1	Reserved	12000 bit/s, V.17
1,0,0,1	Not used	9600 bit/s, V.17
1,1,0,1	V.27 ter and V.29 and V.33 and V.17	7200 bit/s, V.17
0,0,1,1	Not used	Reserved
0,1,1,1	Reserved	Reserved
1,0,1,1	Not used	Reserved
1,1,1,1	Reserved	Reserved
15	R8×7.7 lines/mm and/or 200×200 pels/25.4mm	R8×7.7 lines/mm and/or 200×200 pels/25.4mm
16	Two-dimensional coding capability	Two-dimensional coding capability
17, 18	Recording width capabilities	Recording width
(0, 0)	1728 picture elements along scan line length of 215 mm ± 1%	1728 picture elements along scan line length of 215 mm ± 1%
(0, 1)	1728 picture elements along scan line length of 215 mm ± 1%	2432 picture elements along scan line length of 303 mm ± 1%
	2048 picture elements along scan line length of 255 mm ± 1%	
	2432 picture elements along scan line length of 303 mm ± 1%	
(1, 0)	1728 picture elements along scan line length of 215 mm ± 1%	2048 picture elements along scan line length of 255 mm ± 1%
	2048 picture elements along scan line length of 255 mm ± 1%	
(1, 1)	Invalid	Invalid
19, 20	Maximum recording length capability	Maximum recording length
(0, 0)	A4 (297 mm)	A4 (297 mm)
(0, 1)	Unlimited	Unlimited
(1, 0)	A4 (297 mm) and B4 (364 mm)	B4 (364 mm)
(1, 1)	Invalid	Invalid



Bit No.	DIS/DTC	DCS
21, 22, 23	Minimum scan line time capability of the receiver	Minimum scan line time
(0, 0, 0)	20 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	20 ms
(0, 0, 1)	40 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	40 ms
(0, 1, 0)	10 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	10 ms
(1, 0, 0)	5 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	5 ms
(0, 1, 1)	10 ms at 3.85 l/mm: $T_{7.7} = 1/2 T_{3.85}$	
(1, 1, 0)	20 ms at 3.85 l/mm: $T_{7.7} = 1/2 T_{3.85}$	
(1, 0, 1)	40 ms at 3.85 l/mm: $T_{7.7} = 1/2 T_{3.85}$	
(1, 1, 1)	0 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$	0 ms
24	Extend field	Extend field
25	2400 bit/s handshaking	2400 bit/s handshaking
26	Uncompressed mode	Uncompressed mode
27	Error correction mode	Error correction mode
28	Set to "0".	Frame size 0 = 256 octets 1 = 64 octets
29	Error limiting mode	Error limiting mode
30	Reserved for G4 capability on PSTN	Reserved for G4 capability on PSTN
31	T.6 coding capability	T.6 coding enabled
32	Extend field	Extend field
33	Validity of bits 17, 18	Recording width
(0)	Bits 17, 18 are valid	Recording width indicated by bits 17, 18
(1)	Bits 17, 18 are invalid	Recording width indicated by this field bit information
34	Recording width capability 1216 picture elements along scan line length of $151 \pm 1\%$	Middle 1216 elements of 1728 picture elements
35	Recording width capability 864 picture elements along scan line length of $107 \pm 1\%$	Middle 864 elements of 1728 picture elements
36	Recording width capability 1728 picture elements along scan line length of $151 \pm 1\%$	Invalid
37	Recording width capability 1728 picture elements along scan line length of $107 \pm 1\%$	Invalid
38	Reserved for future recording width capability.	
39	Reserved for future recording width capability.	
40	Extend field	Extend field
41	R8×15.4 lines/mm	R8×15.4 lines/mm
42	300×300 pels/25.4 mm	300×300 pels/25.4 mm
43	R16×15.4 lines/mm and/or 400×400 pels/25.4 mm	R16×15.4 lines/mm and/or 400×400 pels/25.4 mm
44	Inch based resolution preferred	Resolution type selection "0": neuritic based resolution "1": inch based resolution
45	Metric based resolution preferred	Don't care
46	Minimum scan line time capability for higher resolutions "0": $T_{15.4} = T_{7.7}$ "1": $T_{15.4} = 1/2 T_{7.7}$	Don't care
47	Selective Polling capability	Set to "0".
48	Extend field	Extend field

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

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

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

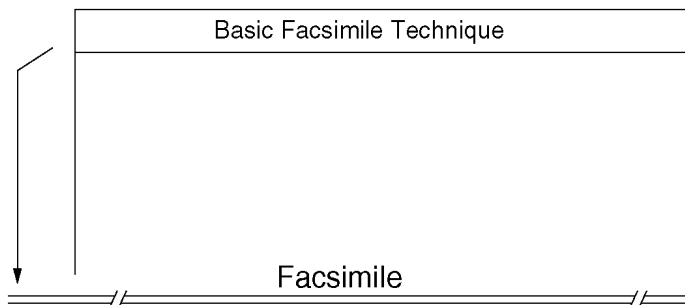
Signal	Identification Signal Format	Function
Training 1		A fixed pattern is transmitted to the receiving side at a speed (2400 to 14400 bps) designated by DCS, and the receiving side optimizes the automatic equalizer, etc., according to this signal.

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

**b. Redundancy Compression Process Coding Mode**

This unit uses one-dimensional MH format.

(a) Document



(b) Part of document

(c) Run length and image signals equivalent to (b)



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

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

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

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

(c) Total bit number before MH codification (497 bit)

(d) Total bit number after MH codification (63 bit)

## 6.5. NCU SECTION

### 6.5.1. GENERAL

This section is the interface between the telephone line and external telephone. It is composed of an EXT. TEL line relay (RLY200), bell detection circuit, TAM interface circuit, line amplifier and side tone circuits and a multiplexer.

### 6.5.2. EXT. TEL. LINE RELAY (RY200)

#### 1. Circuit Operation

Normally, this relay switches to the external telephone side (break) and switches to the open side (make) while OFF-HOOK.  
 { IC600 (H16) High Level→CN618 (11) High Level} →CN200 (11) High Level→Q210 ON→RY200 (ON)→(make)

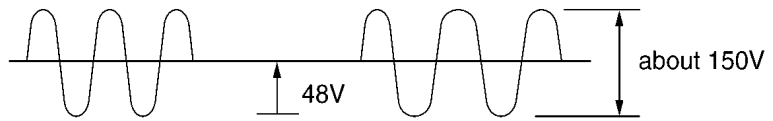
### 6.5.3. BELL DETECTION CIRCUIT

#### 1. Circuit Operation

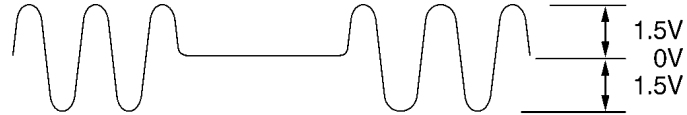
The signal waveform for each point is indicated below. The signal (low level section) input to pin 6 of gate array IC605 on the digital board is read by ASIC and judged as a bell.

TEL LINE→PC205 (1, 2 - 4)→IC600 (H17)

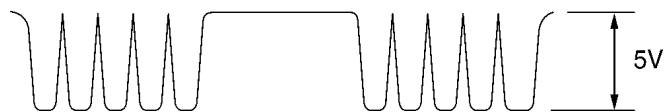
Between the Tip and Ring  
from the telephone line



Between PC205 (1) and (2)



PC205 (4) ASIC IC6 (H17)



### 6.5.4. 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 MODEM (IC607).

Refer to **CHECK SHEET** (P.165) for the route of caller ID signal.

## 6.5.5. LINE AMPLIFIER AND SIDE TONE CIRCUIT

### 1. Circuit Operation

The reception signal output from the line transformer T200 is input to pin (2) of IC204 via C244, R237 and then the signal is amplified at pin (1) of IC204 and sent to the reception system.

The transmission signal goes through C240, R238 and enters IC204-pin (6), where the signal is amplified. Then, it is output from pin (7) of IC204 and transmitted to T200 via, C248, R245. Without a side tone circuit, the transmission signal will return to the reception amplifier via C234, R229. When the side tone circuit is active, the signal output from IC204 pin (7) passes through C236, R241, R233, C234, and R229 and goes into the amplifier IC204 pin (3). This circuit is used to cancel the transmission return signal.

The TX signal is output to the circuit analog the route from the IC204 7 pin→C248→R245→T200→TEL LINE.

However, if balance is lost in the bridge, a voltage occurs between the IC204 2 pin and 3 pin and a side tone results, because the balance cannot be maintained completely at all frequencies in the audio range some side tone always occur.

## 6.5.6. REMOTE FAX ACTIVATION CIRCUIT

### 1. Function

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

### 2. Signal Path

Refer to **CHECK SHEET** (P.165).

## 6.5.7. TAM INTERFACE CIRCUIT

This circuit is to switch between FAX receiving and the external TAM's message recording automatically. This circuit consists of an EXT.TAM OFF-HOOK detect circuit, transformer, amplifier, Analog ASIC and MODEM.

For details, please refer to **TAM INTERFACE SECTION** (P.33).

## 6.6. ITS (Integrated telephone System) and MONITOR SECTION

### 6.6.1. GENERAL

The general ITS operation is performed by the special IC209 which has a handset circuit. The alarm tone, the key tone, and the beep are output from the ASIC IC606 (digital board).

#### 6.6.1.1. TELEPHONE MONITOR

##### 1. Function

This is the function when you are not holding the handset and can hear the caller's voice from the line.

##### 2. Circuit Operation

(Telephone Monitor Signal Path)

Signals received from the telephone line are output through at the speaker via the following path.

##### 3. Signal Path

Refer to **CHECK SHEET**.

#### 6.6.1.2. HANDSET CIRCUIT

##### 1. Function

This circuit controls the conversation over the handset, i.e. the transmitted and received voices to and from the handset.

##### 2. Signal Path (Transmission signal)

Refer to **CHECK SHEET**.

##### 3. Signal path (Reception signal)

Refer to **CHECK SHEET**.

### 6.6.1.3. MONITOR CIRCUIT

#### 1. Function

This circuit monitors various tones, such as (1) DTMF tone, (2) Alarm/Beep/Key tone/Bell.

#### 2. Signal Path

##### a. DTMF MONITOR

(Speaker Operation)

Refer to **CHECK SHEET**.

(Handset Operation)

Refer to **CHECK SHEET**.

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

Refer to **CHECK SHEET**.

### 6.6.1.4. 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 transformer (T200), amplifier (IC204) analog ASIC (IC209), MODEM (IC600) to detect the other party CNG signal, and RLY200 to separate EXT.TAM.

##### a. CNG signal detection circuit

The CNG signal from the other party's FAX is detected in MODEM IC607 (digital board).

(Signal path)

Refer to **CHECK SHEET**(P.165).

##### b. Remote receiving

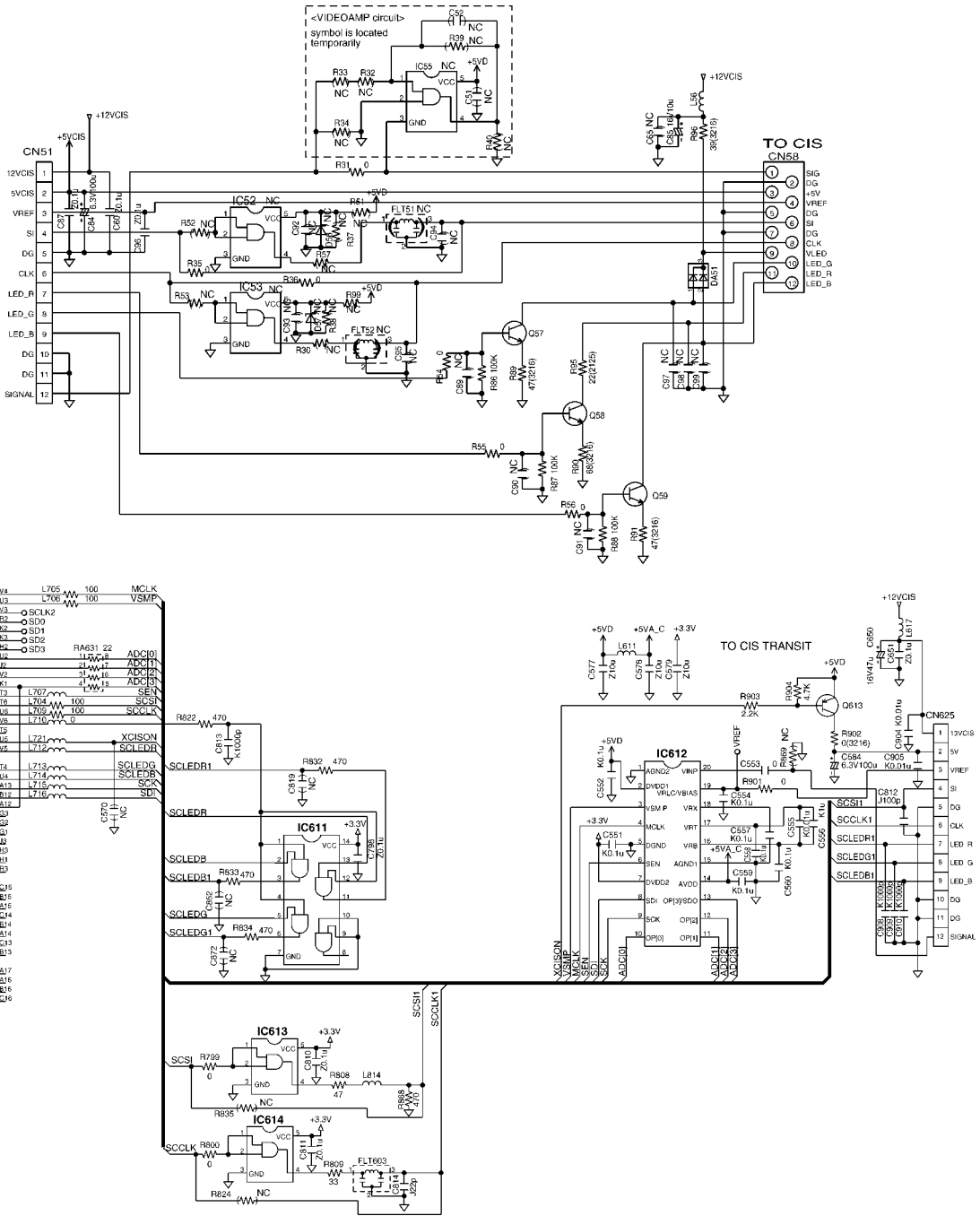
This is the parallel-connected DTMF signal for the TEL or EXT.TEL mode between T and R. When the other party is a FAX, the unit switches to FAX receiving.

(Signal Path)

Refer to **CHECK SHEET**(P.165).

## 6.7. 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 U5 of IC600 goes to a low level and the transistor Q613 turns on. This applies voltage to the CIS. The CIS is driven by each of the SCSI, SCCLK signals output from IC600, 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 IC612) and converted into 16-bit data by the A/D converter inside IC612. Then this signal undergoes digital processing in order to obtain a high-quality image.

## 6.8. MOTOR DRIVE SECTION

### 6.8.1. Engine Motor Control Circuit

#### 1. Functions

All driving force of printer engine part is supplied by this engine motor. Engine motor is controlled to rotate at constant speed during printing and copying mode.

#### 2. Motor operation

<Start operation>

In order to start the motor rotation, following 3 signals are supplied from IC604.

##### 1. SS signal

Output pin: Pin 120/Output Signal: "H"

This signal is inverted by transistor Q634, and supplied to motor as "Start/Stop" signal.

##### 2. Clock signal

Output pin: Pin 121/Output Signal: Pulse

Pulse frequency: approx. 1.9 KHz (at the normal printing speed)

Pulse frequency: approx. 0.5 KHz (at the half printing speed)

##### 3. Break signal

Output pin: Pin 122/Output Signal: "L"

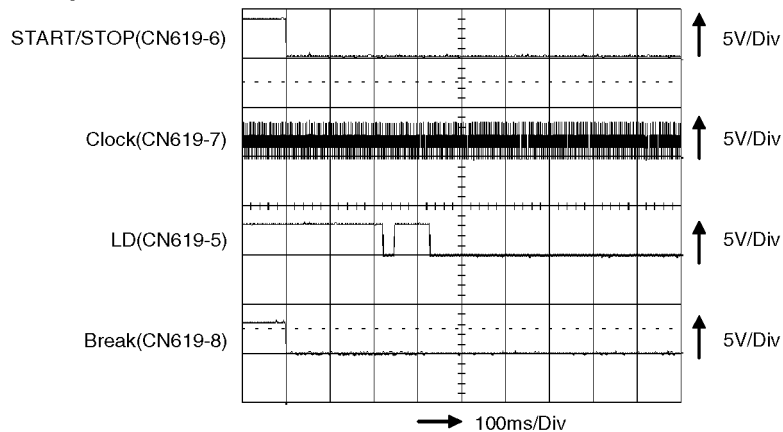
When motor reaches constant speed, low level signal is output from the motor.

as "Lock detect" signal.

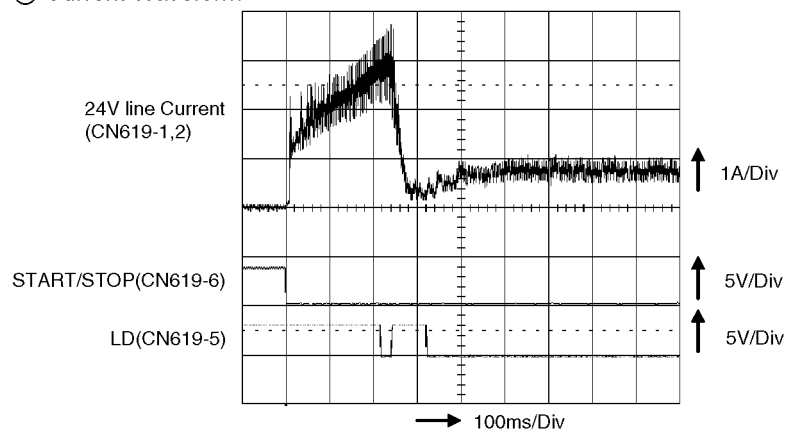
if this "Lock detect" signal does not become low level within predetermined period after "SS" signal becomes "H" level, or if "Lock detect" signal becomes "H" level during rotating, it is judged that "Motor Error" occurred.

Timing Chart of Start operation

#### ① Signals



#### ② Current Waveform



<Stop operation>

In order to stop the motor rotation, following 2 signals are supplied from IC604.

1. SS signal

Output pin: Pin 120/Output Signal: "L"

Consequently "Start/Stop" signal becomes "H".

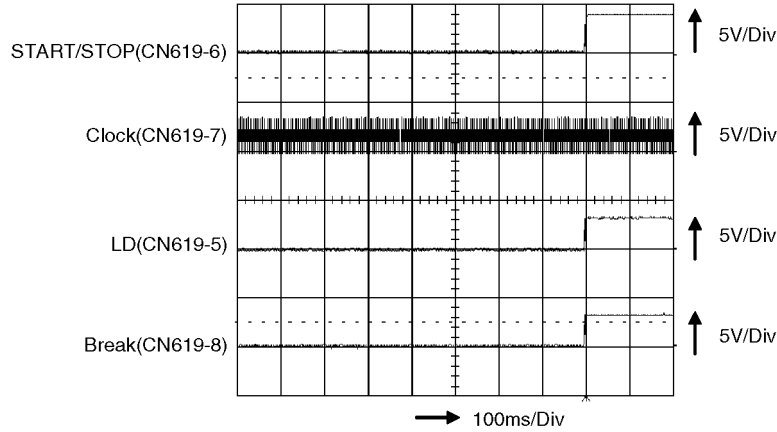
2. Break signal

Output pin: Pin 122/Output Signal: "H"

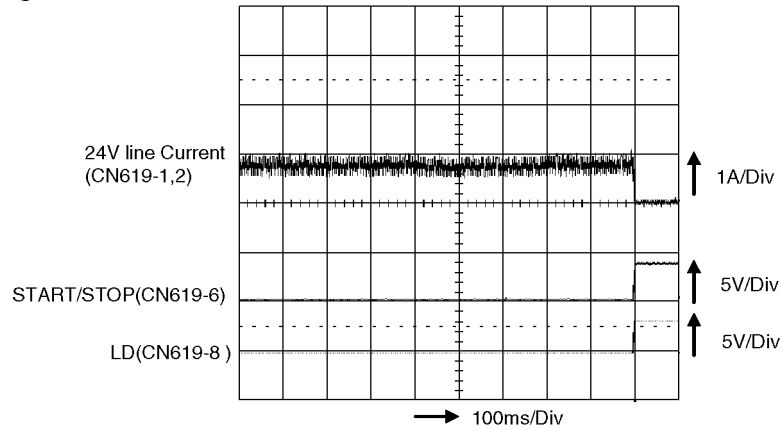
Motor stops rapidly by changing the "Break" signal from "L" to "H".

Timing Chart of Stop operation

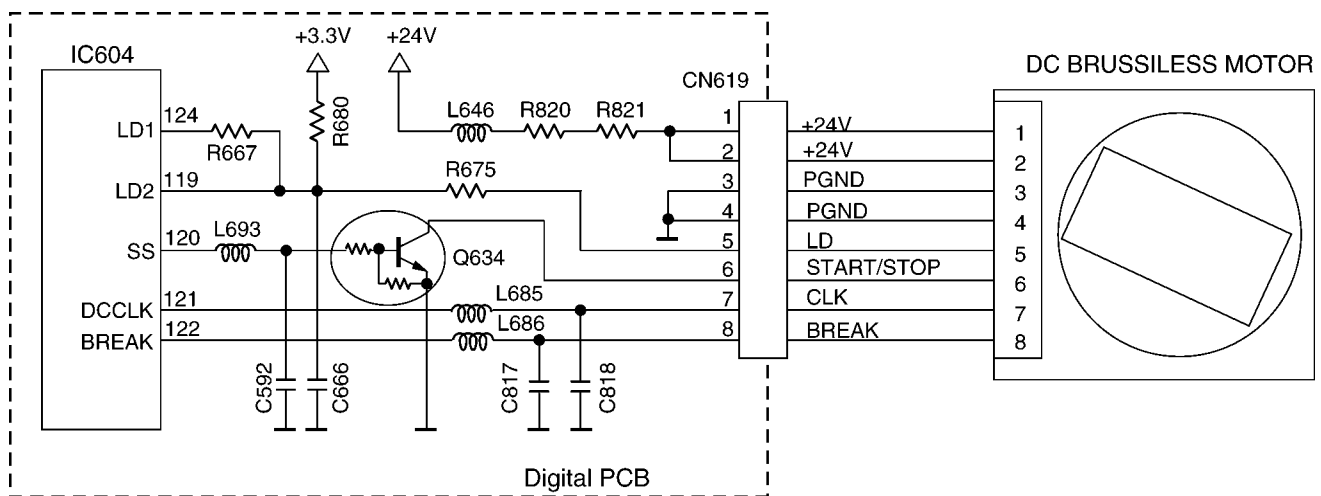
① Signals



② Current Waveform

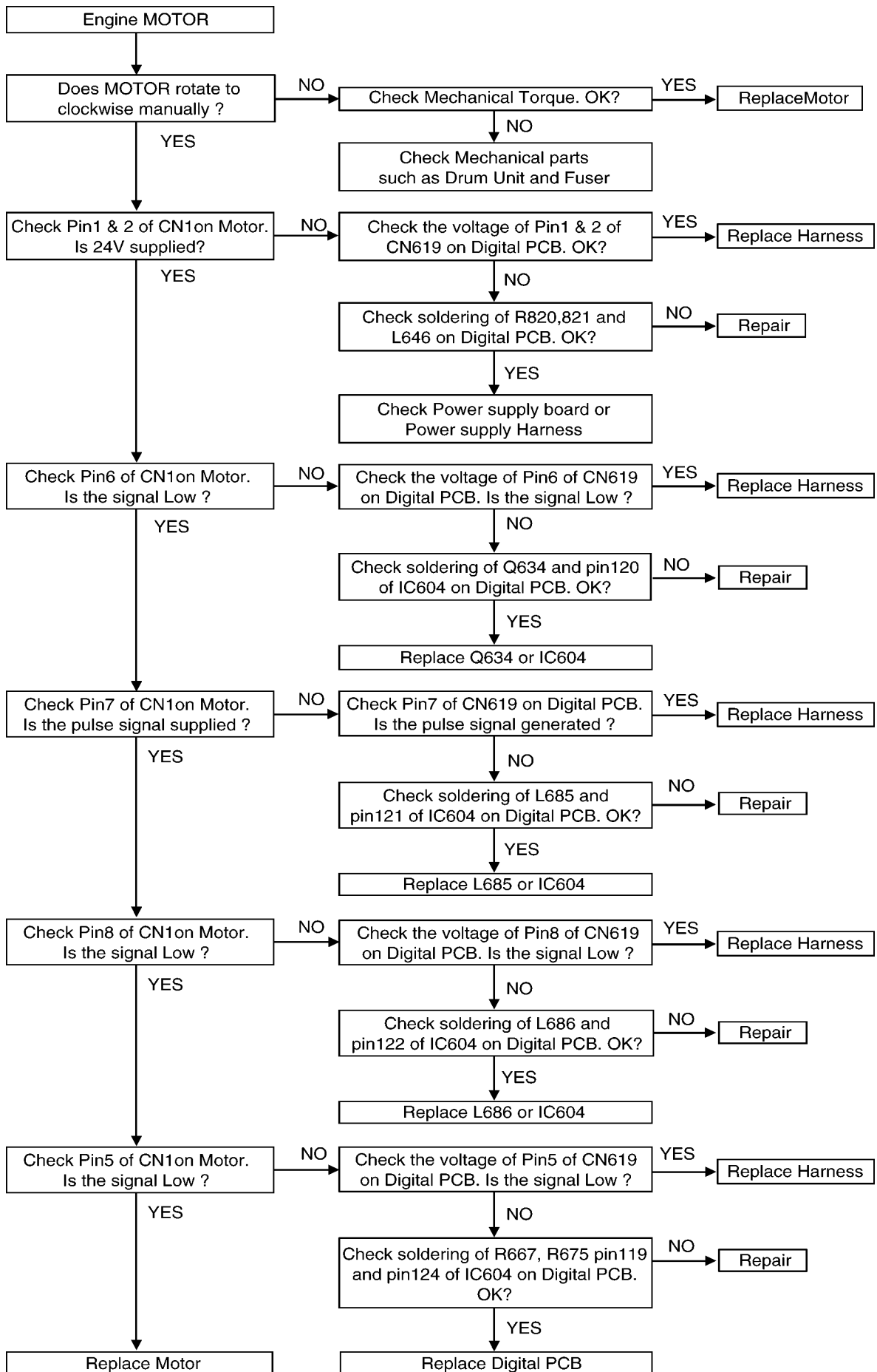


6.8.1.1. ENGINE MOTOR DRIVE CIRCUIT





### 6.8.1.2. ENGINE MOTOR



## 6.8.2. ADF (Auto Document Feed) MOTOR DRIVE CIRCUIT

### 1. Functions

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

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

### 2. Motor operation

During motor driving, pin 98 of ASIC IC604 becomes a high level, motor driver IC51 becomes active mode.

Stepping pulses are output from ASIC IC604 pins, 100 ~ 105 causing driver IC51 pins 4, 6, 7 and 9 to drive the motor coil.

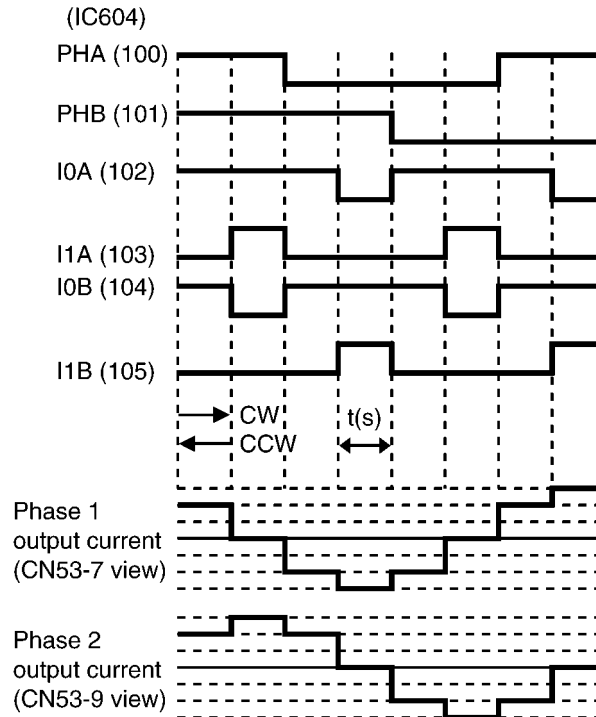
The motor coil is energized sequentially in 2 phase increments, which causes a 1-step rotation.

A 1-step rotation feeds 0.042mm of document paper.

### 6.8.2.1. TIMING CHART

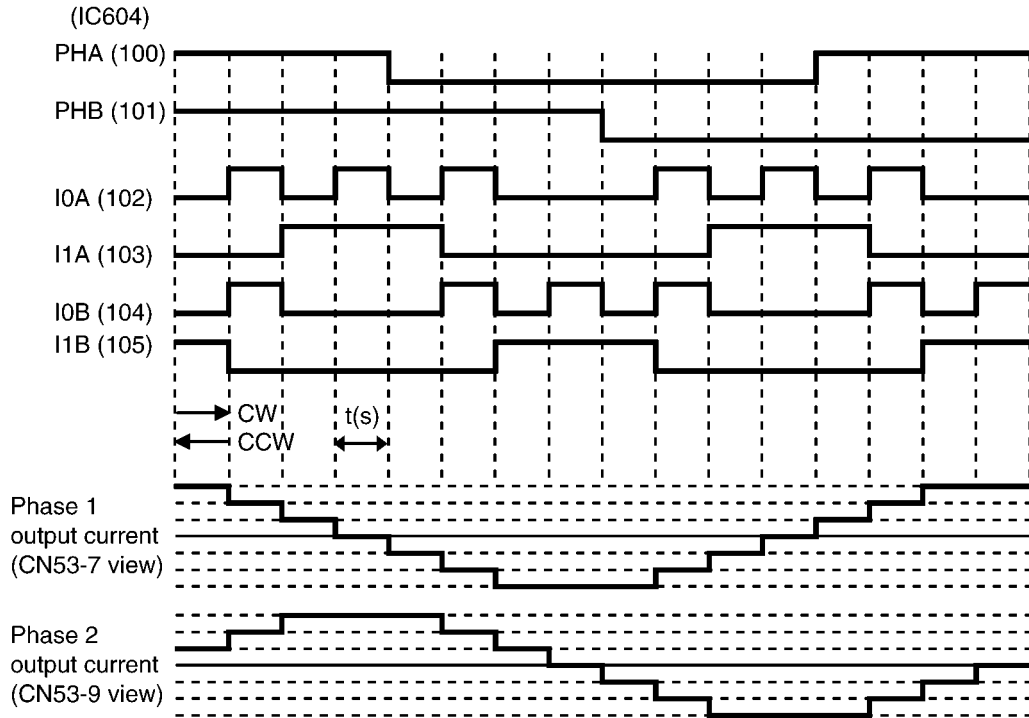
1) 1-2 phase excitation (Half step)

① Control Sequence

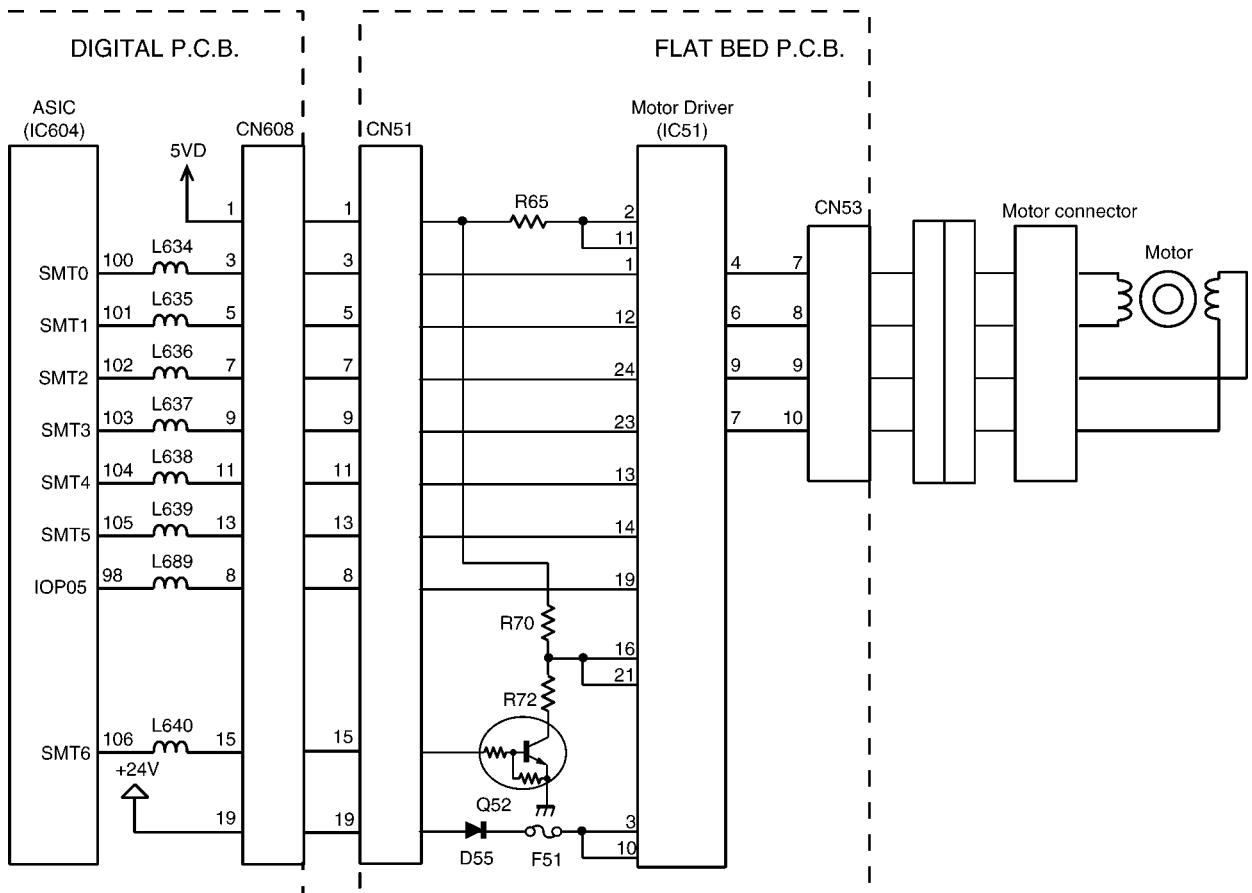


1)W 1-2 phase excitation (Quarter step)

① Control Sequence



6.8.2.2. ADF (Auto Document Feed) MOTOR DRIVE CIRCUIT



### 6.8.3. FB (Flatbed) MOTOR DRIVE CIRCUIT

#### 1. Functions

This motor functions for main operations including FAX transmission, FB copy and PC scan.  
 This motor feeds CIS unit with synchronizing for reading.

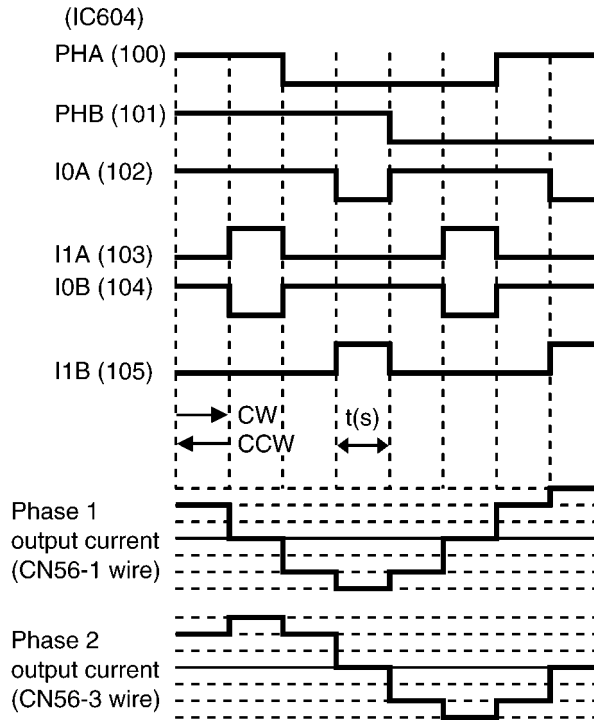
#### 2. Motor operation

During motor driving, pin 99 of ASIC IC604 becomes high level, motor driver IC54 becomes active mode.  
 Stepping pulses are output from ASIC IC604 pins, 100 ~ 105, causing driver IC54 pins 4, 6, 9 and 7 to drive the motor coil.  
 The motor coil is energized sequentially in 2 phase increments, which causes a 1-step rotation.  
 A 1-step rotation feeds 0.021mm of CIS unit.

#### 6.8.3.1. TIMING CHART

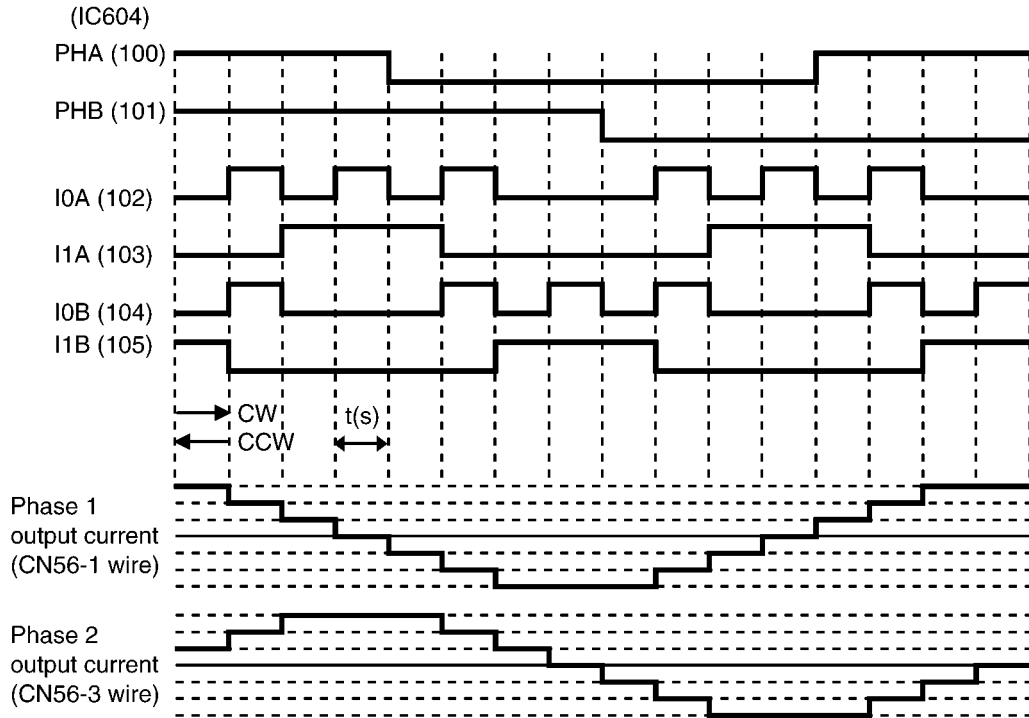
1) 1-2 phase excitation (Half step)

① Control Sequence



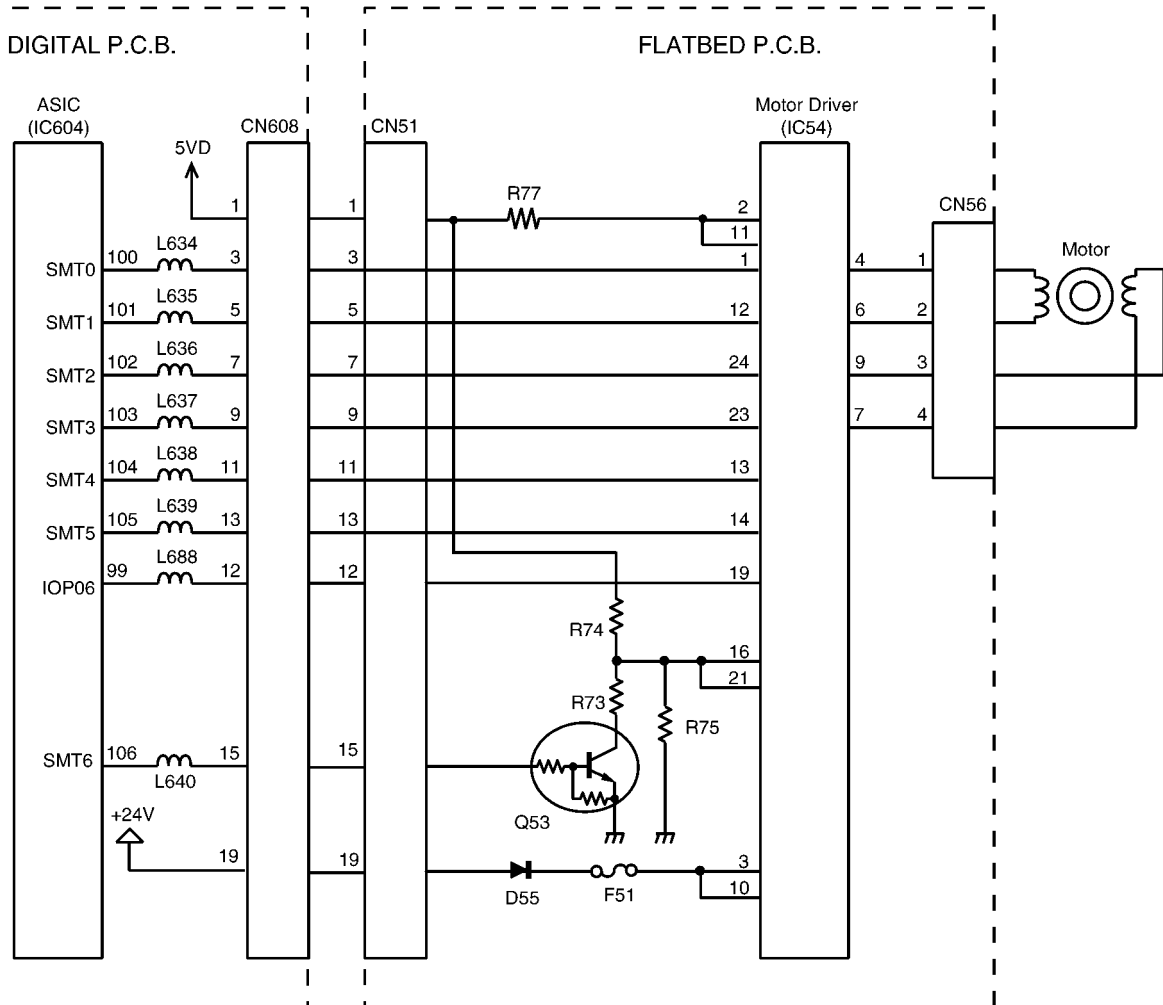
1)W 1-2 phase excitation (Quarter step)

① Control Sequence



6.8.3.2. FB (Flatbed) MOTOR DRIVE CIRCUIT

(1) Circuit Diagram



## 6.9. DRIVE MODE AND WAVEFORM OF ADF AND FB MOTOR

(1) Correspondent table of operation mode and waveform

				Resolution (dpi)									
Operation	Color mode	ADF/FB	Time & Figure	Pre	75	100	150	200	300	400	600	1200	
				Scan	X	X	X	X	X	X	X	X	X
PC scan	Color	ADF	T(msec)	0.83								1.67	
			Figure	①									②
		FB	T(msec)	0.56									1.67
			Figure						①				
	Black & White	ADF	T(msec)	0.56									1.11
			Figure							①			
		FB	T(msec)	0.28									1.11
			Figure	③									

				Copy magnification					
Operation	Color mode	ADF/FB	Time & Figure	Copy mode					
				Photo/Text	Text	Photo	Photo/Text	Text	Photo
Copy	Black & White	ADF (non Sort)	T(msec)	100%			other than 100%		
			Figure	0.39			1.11		
		ADF (Sort)	T(msec)	0.39			1.11		
			Figure	③			①		
		FB	T(msec)	0.56					
			Figure	①					

				FAX mode			
Operation	Color mode	ADF/FB	Time & Figure	Standard	Fine	Super Fine	Photo
				FAX	Black & White	ADF	T(msec)
Figure	①						
FB	T(msec)	1.11					
	Figure	①					

(2) Waveform

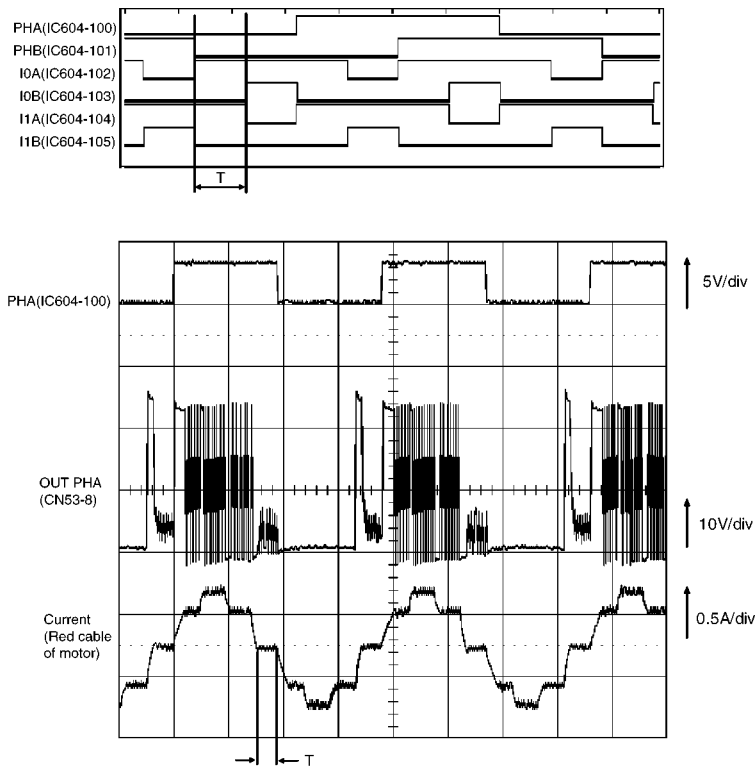


Figure (1) (phase pattern : Flat torque 1-2 phase excitation)

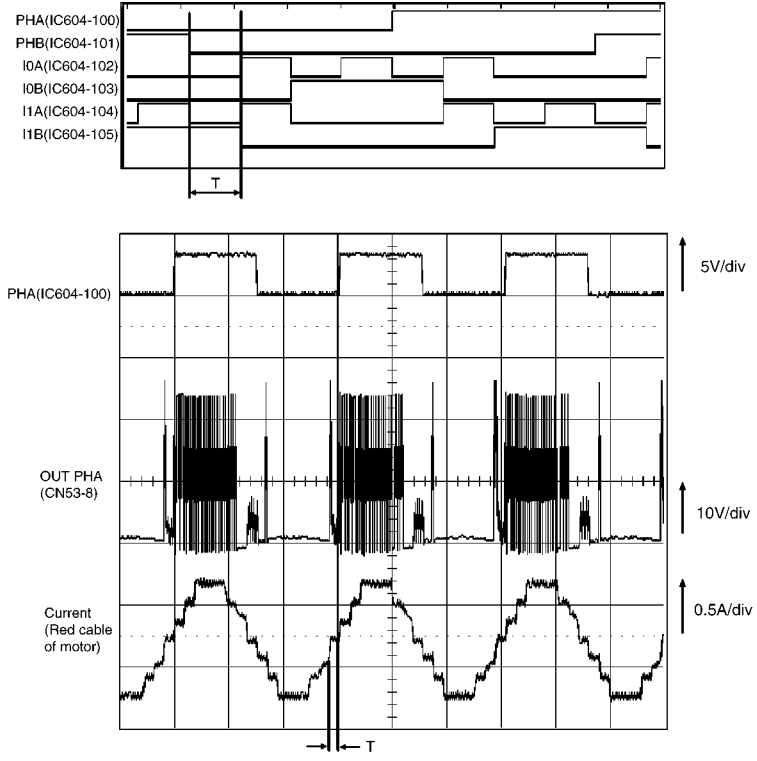


Figure (2) (phase pattern : W1-2 phase excitation)

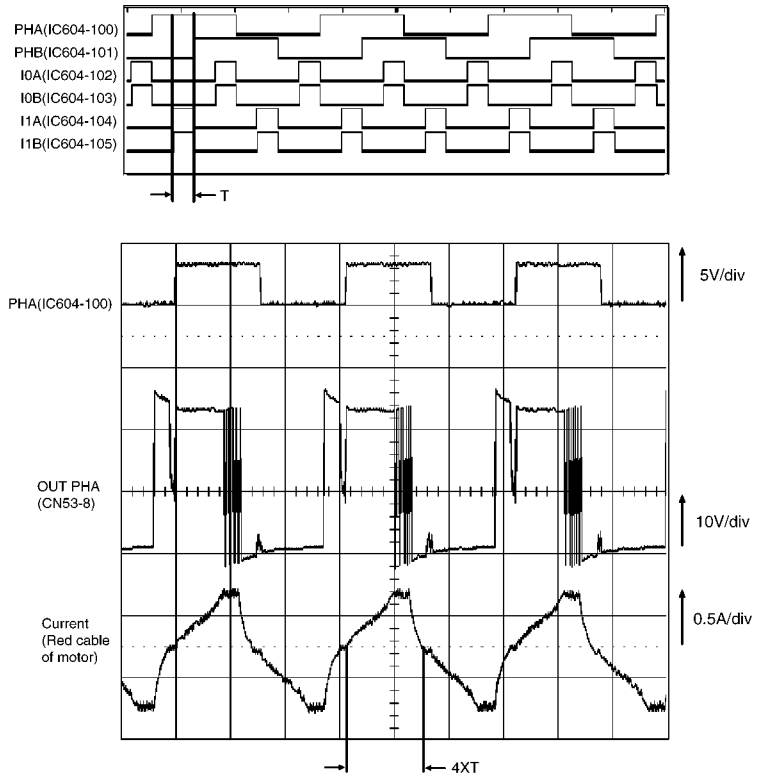


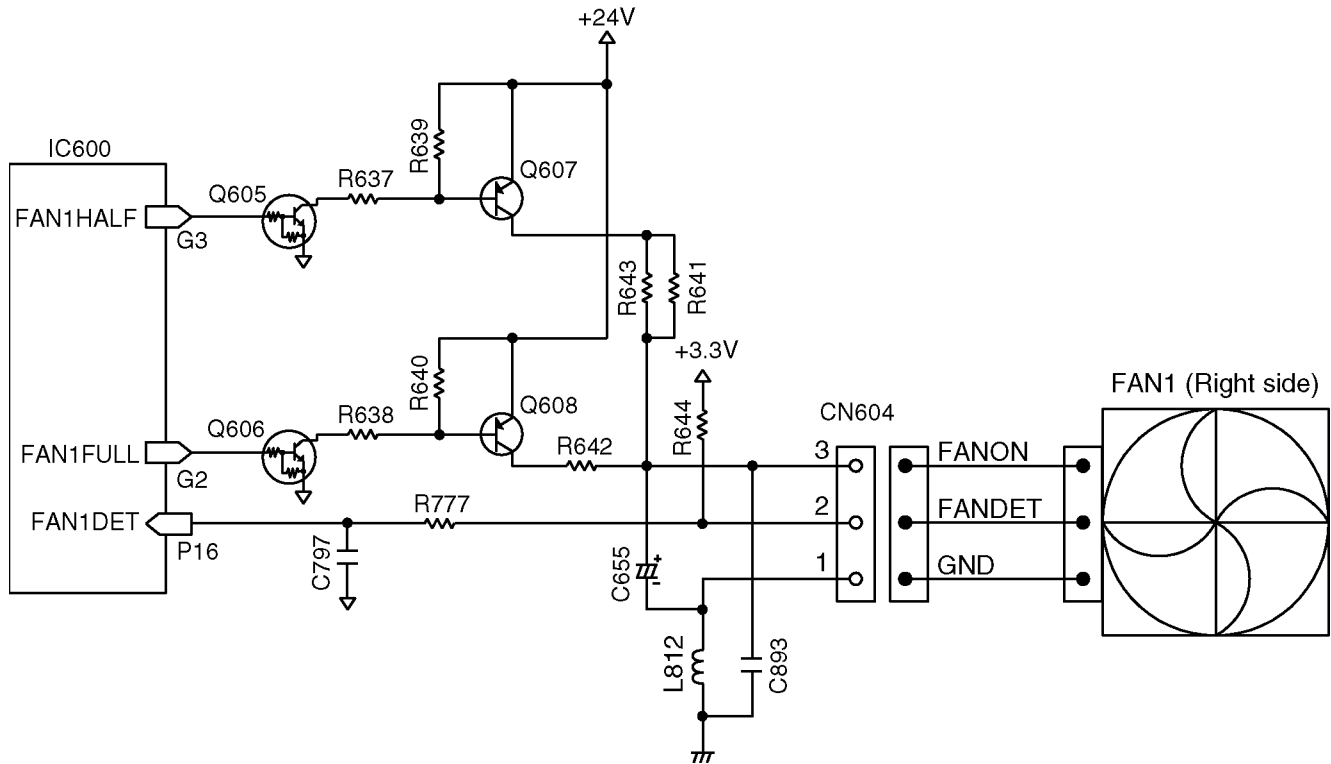
Figure (3) (phase pattern : Normal torque 1-2 phase excitation)

## 6.10. FAN MOTOR SECTION

These FAN are used to radiate heat in the unit.

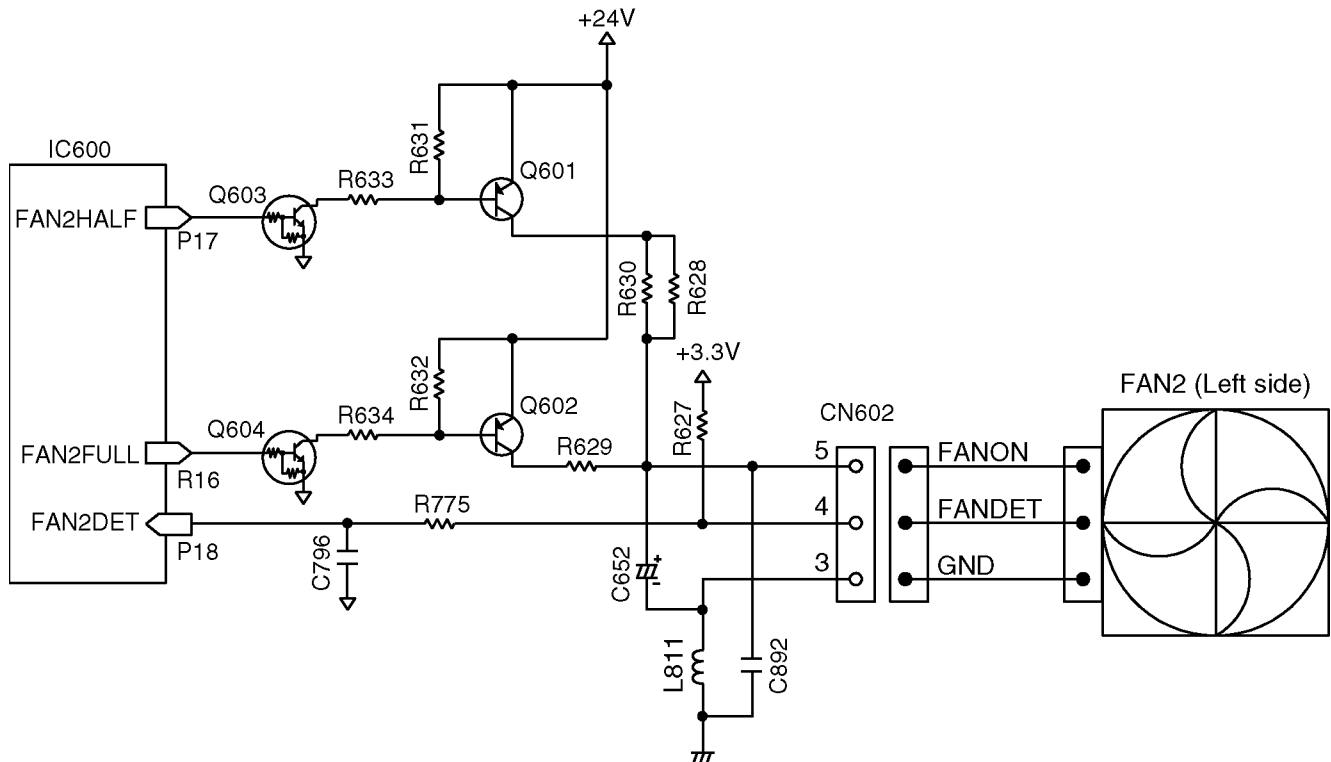
### 6.10.1. Right side FAN (FAN1)

The signal level at pin G2/G3 of IC600 becomes high, the FAN is activated. In this case, the pulse signal as shown next page input to pin P16 of IC600 and the rotation of the FAN is detected.



### 6.10.2. Left side FAN (FAN2)

The signal level at pin P17/R16 becomes high, the FAN is activated. In this case, the pulse signal as shown next page input to pin P18 of IC600 and the rotation of the FAN is detected.



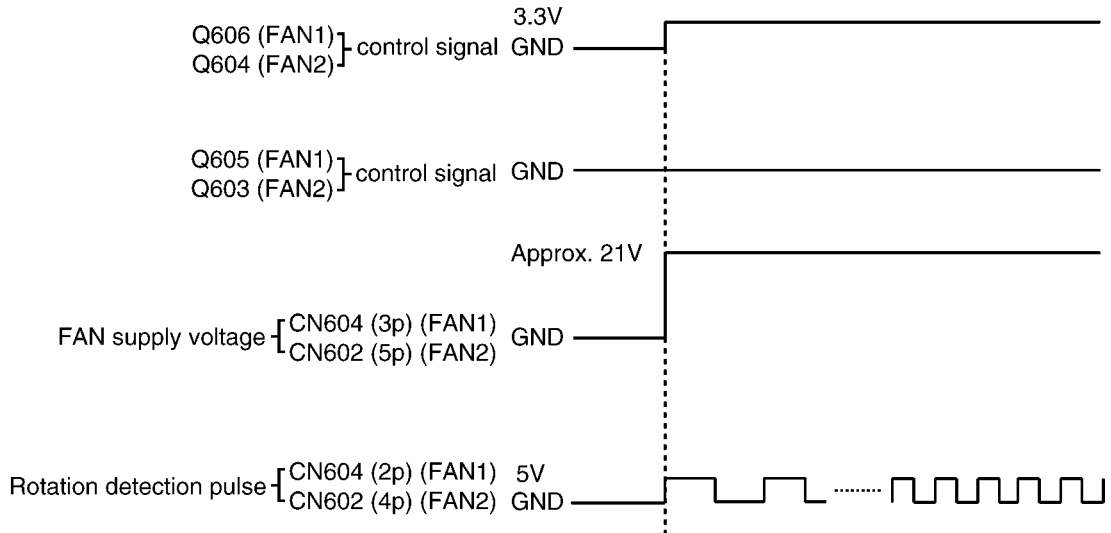


### 6.10.3. FAN CONTROL

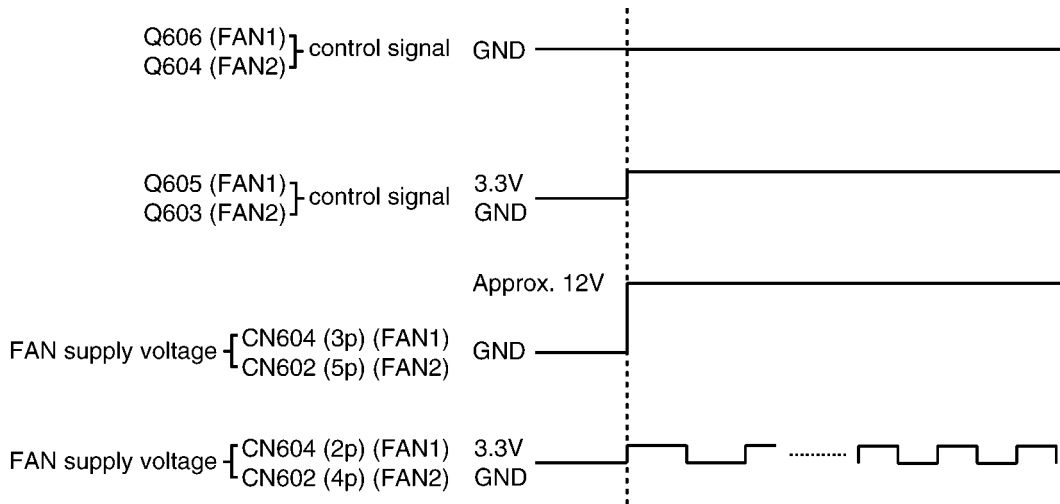
This unit is equipped with fan to prevent the developing device from rising in temperature while printing.  
 The fan rotates at high speed (Approx. 3000 rpm) while printing (controlling the developing device). After printing is finished, it rotates at low speed (Approx. 2200 rpm) when the temperature of the unit goes up over a fixed one or depending on the number of printed papers (frequency).  
 While the fan is rotating at high speed, the voltage of Approx. 21 V is supplied to the fan, however, while rotating at low speed, the supply voltage is decreased to Approx. 12V.

**Each signal wave is as follows:**

1. High-speed rotation (typ. 3000 rpm)



2. Low-speed rotation (typ. 2200 rpm)

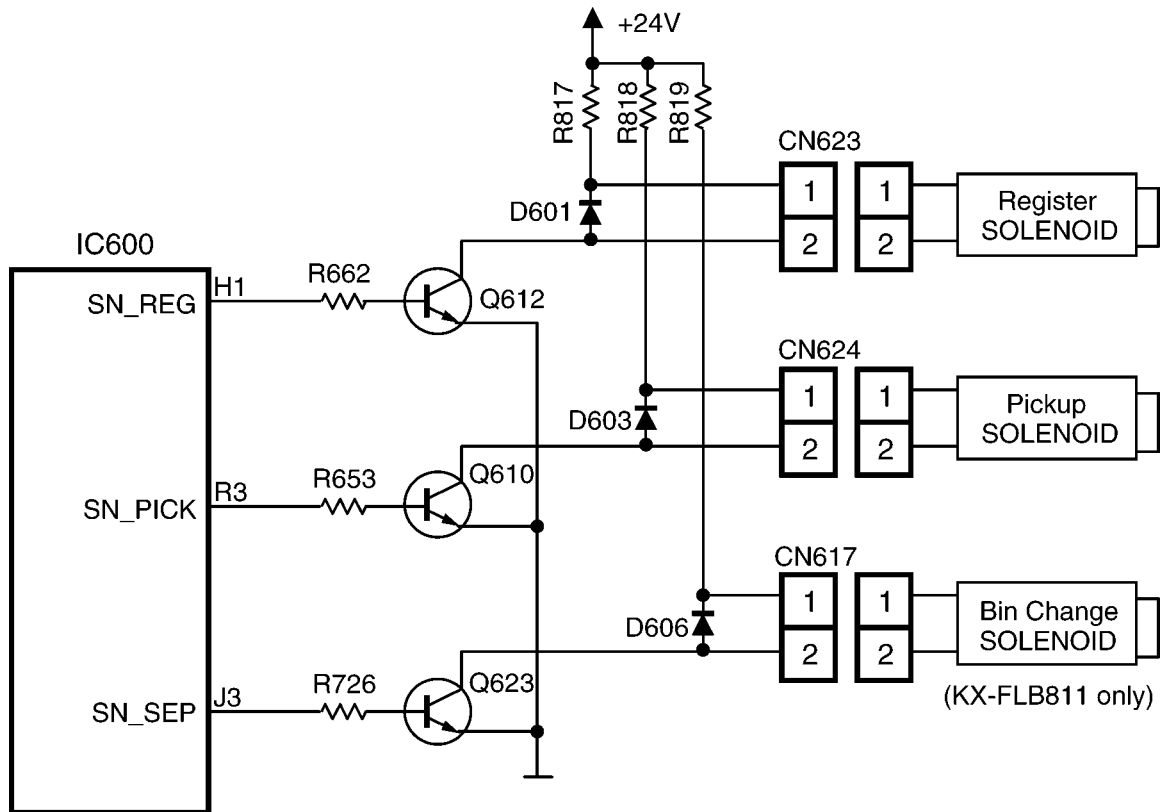


## 6.11. SOLENOID DRIVE SECTION

The solenoid drive circuit controls Register Solenoid, Pickup Solenoid and Bin Change Solenoid.

The solenoids are designed to be driven by +24V.

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



REGISTER

MODE	IC600_H1
Solenoid ON	High level
Solenoid OFF	Low level

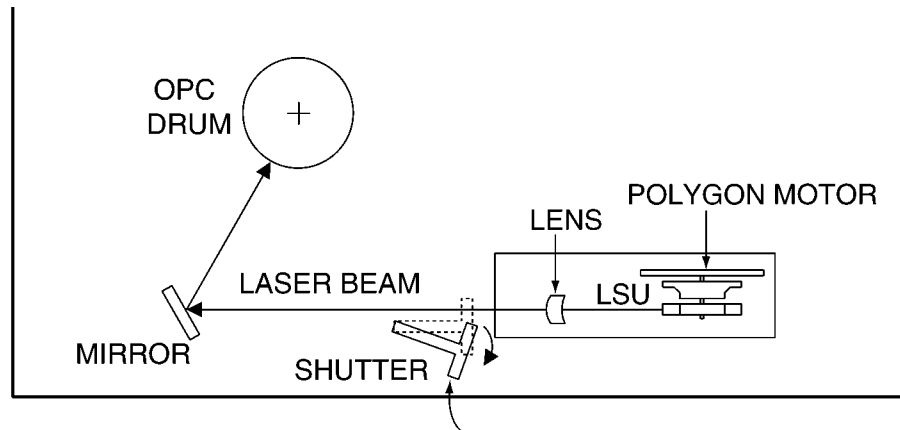
PICKUP

MODE	IC600_R3
Solenoid ON	High level
Solenoid OFF	Low level

BIN CHANGE

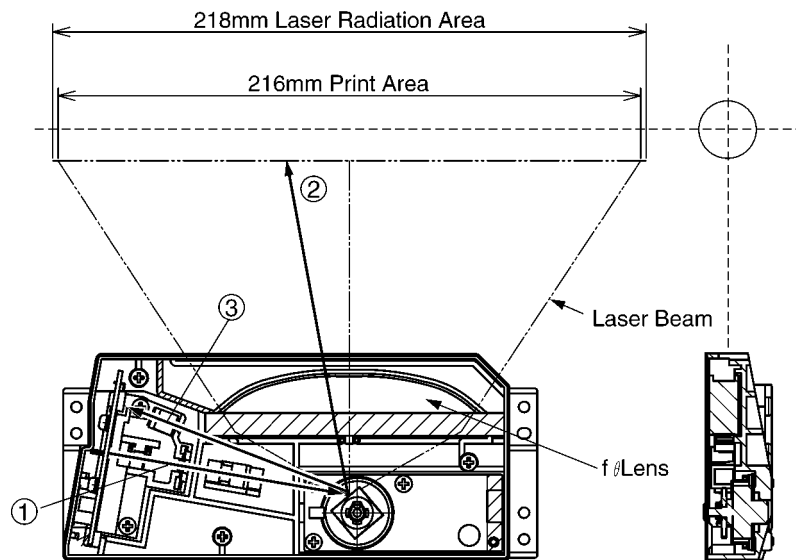
MODE	IC600_J3
Solenoid ON	High level
Solenoid OFF	Low level

## 6.12. LSU (Laser Scanning Unit) SECTION



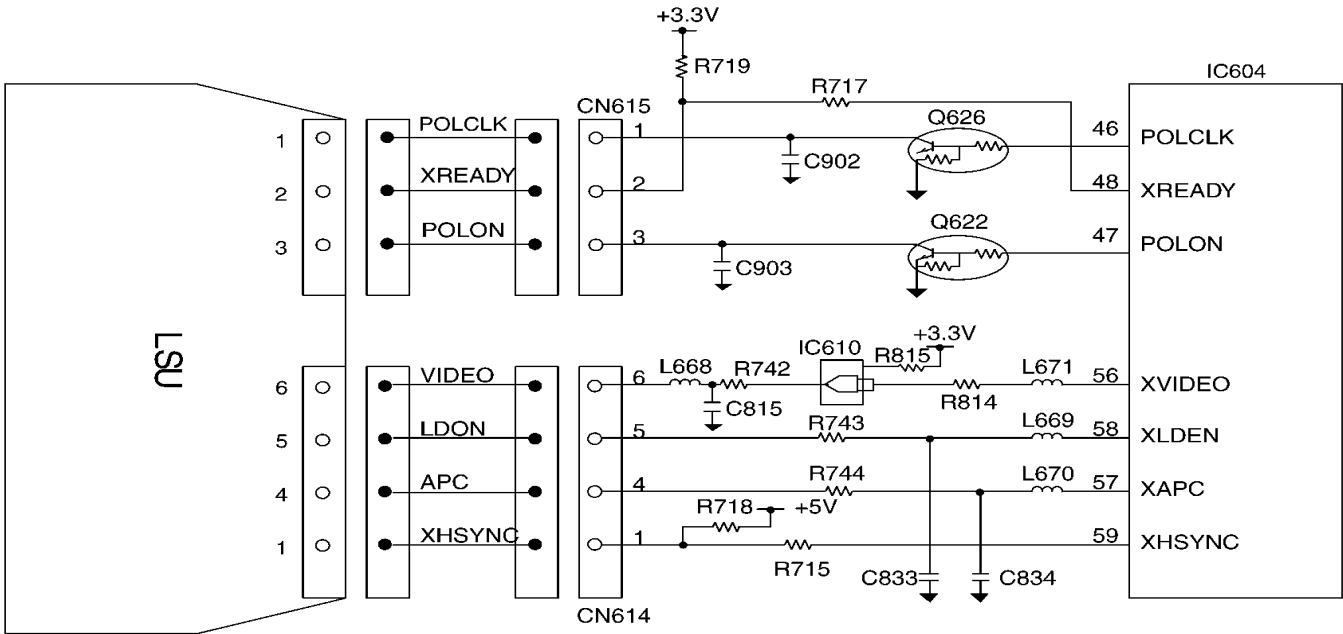
The mechanical shutter will be opened by setting DRUM UNIT properly.

### LSU Layout

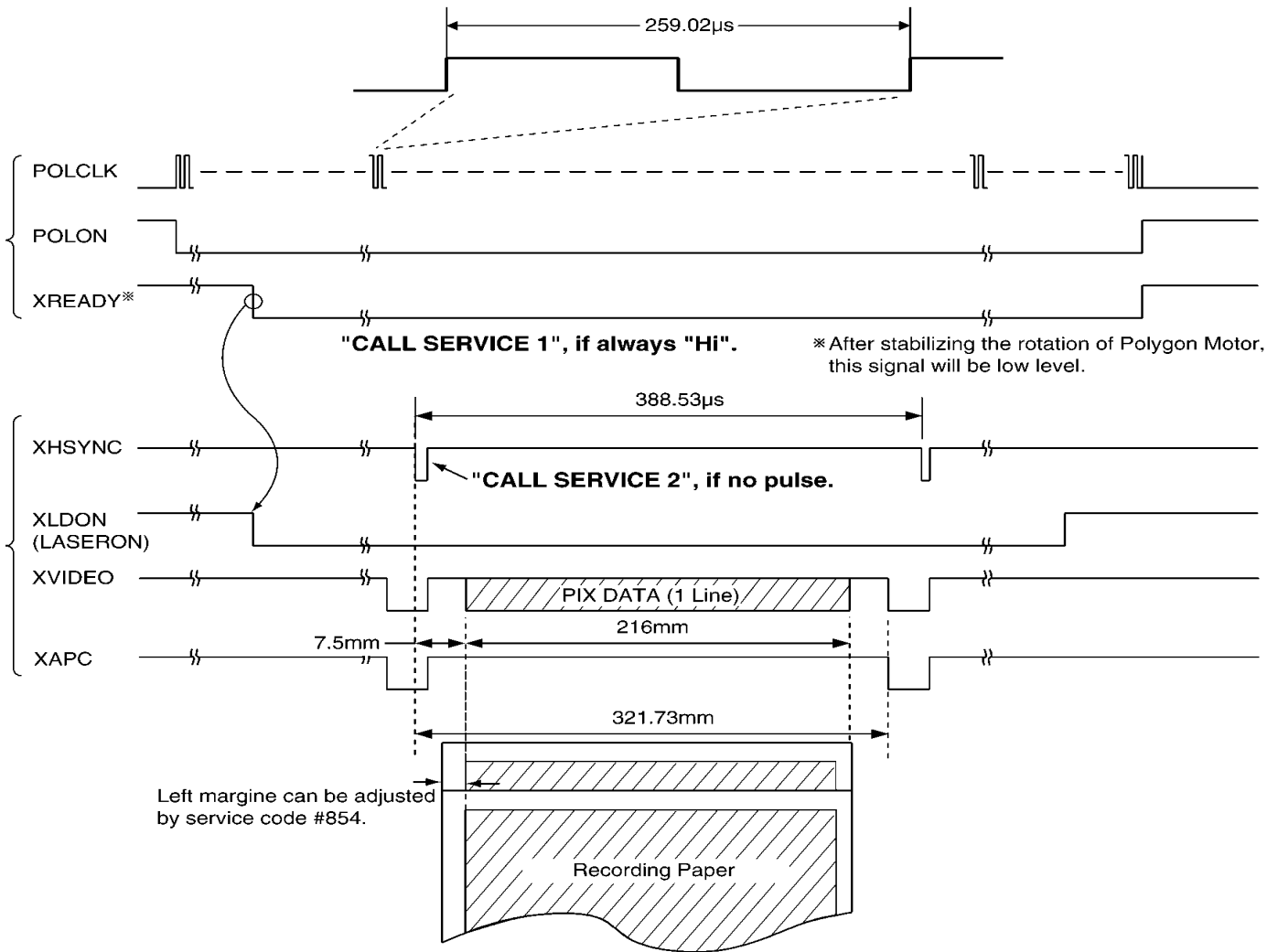


- ① Laser output
- ② OPC DRUM is irradiated with a laser.
- ③ The sensor outside the effective printing area detects the 1-line operation (scanning).

### Circuit Diagram



### Timing Chart



## 6.13. SENSORS AND SWITCHES SECTION

All of the sensor and switches are shown below.

Sensor Name	Sensor Location	Reference number	Message Error
Drum sensor	Sensor PCB	SW2	[CHECK DRUM]
Paper sensor	Sensor PCB	SW3	[OUT OF PAPER INPUT TRAY #1]
Pickup sensor	Sensor PCB	SW4	
Exit sensor	Thermistor PCB	PS5	[PAPER JAMMED]
Home sensor	FB Transit PCB	PS51	[CARRIAGE ERROR]
Read position sensor	Sensor PCB	PS2	[CHECK DOCUMENT]
Registration & Manual paper sensor	Sensor PCB	PS4	[PAPER JAMMED]
Print timing sensor	Sensor PCB	PS3	[PAPER JAMMED]
Document sensor	Sensor PCB	PS1	-
ADF cover sensor	Sensor PCB	SW1	[CLOSE ADF COVER]
Top cover sensor	H.V.P.S	SW1	[TOP COVER OPEN]
Toner sensor	Sensor PCB	IC40	[TONER EMPTY] [TONER LOW] [CHECK DRUM]
Option handset hook switch	Op handset PCB	SW940	-

**Note:**

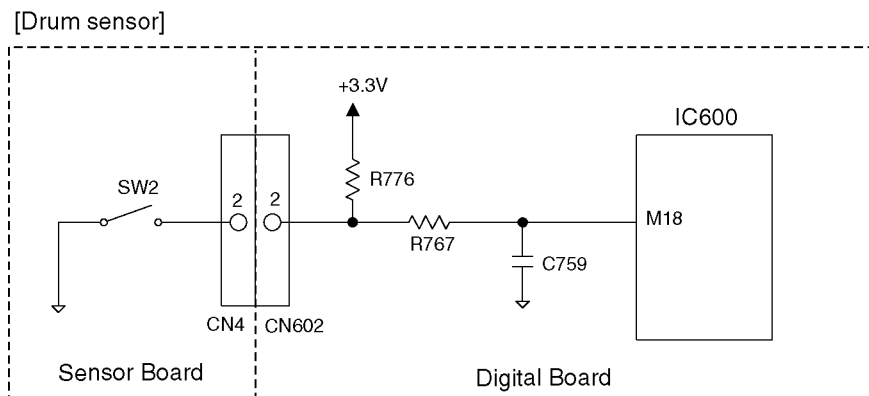
See TEST FUNCTIONS - SENSOR CHECK SECTION for the sensor test.  
(#815 of Service Mode test. Refer to **TEST FUNCTIONS** (P.92).

### 6.13.1. DRUM SENSOR

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

When there is the unit, the input signal of IC600-M18pin becomes low level.

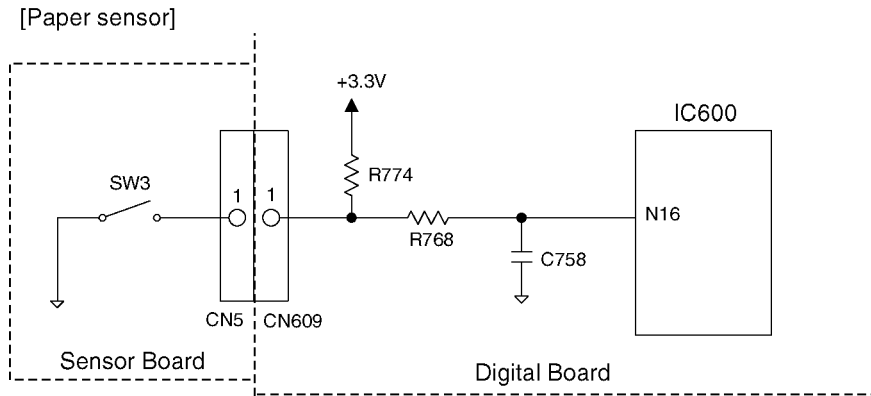
When there is not the unit, the input signal of IC600-M18pin becomes high level.



	Signal (IC600-M18pin)
Drum Set	Low level
No Drum	High level

### 6.13.2. PAPER SENSOR

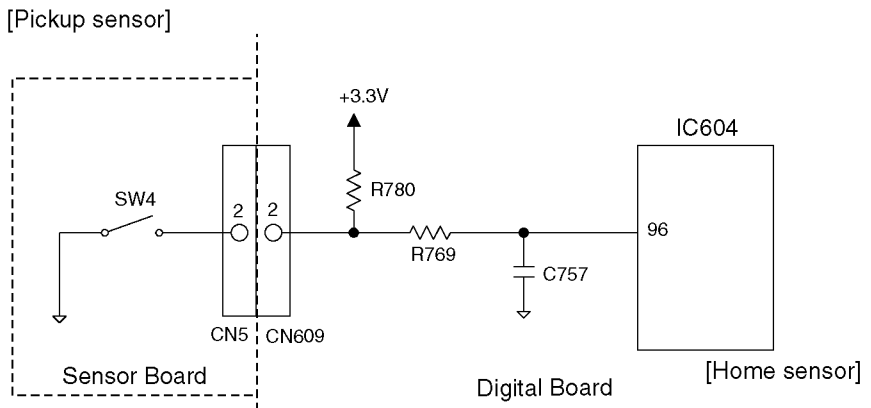
This Switch detects whether there are recording papers in the paper tray #1 or not.  
 When there are recording papers in the tray, the input signal of IC600-N16pin becomes low level.  
 When there no recording papers in the tray, the input signal of IC600-N16pin becomes high level.



	Signal (IC600-N16pin)
Paper exist	Low level
No papers	High level

### 6.13.3. PICKUP SENSOR

This Switch detects whether a recording paper is picked up or not.  
 When there is a recording paper at the position of the switch, the input signal of IC604-96pin becomes low level.  
 When there is no recording paper at the position of the switch, the input signal of IC604-96pin becomes high level.



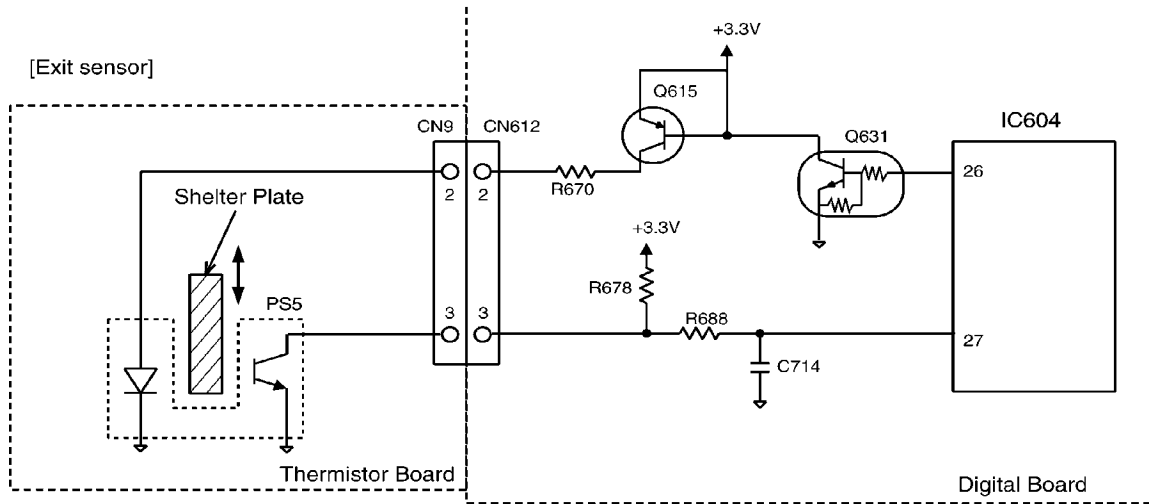
	Signal (IC604-96pin)
A paper exists	Low level
No papers	High level

### 6.13.4. 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 IC604-27pin becomes low level.

When there is no recording paper at the position of the sensor, the input signal of IC604-27pin becomes high level.



	Signal (IC604-27pin)
A paper exists	Low level
No papers	High level

### 6.13.5. 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 IC604-110pin 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 IC604-110pin becomes low level.

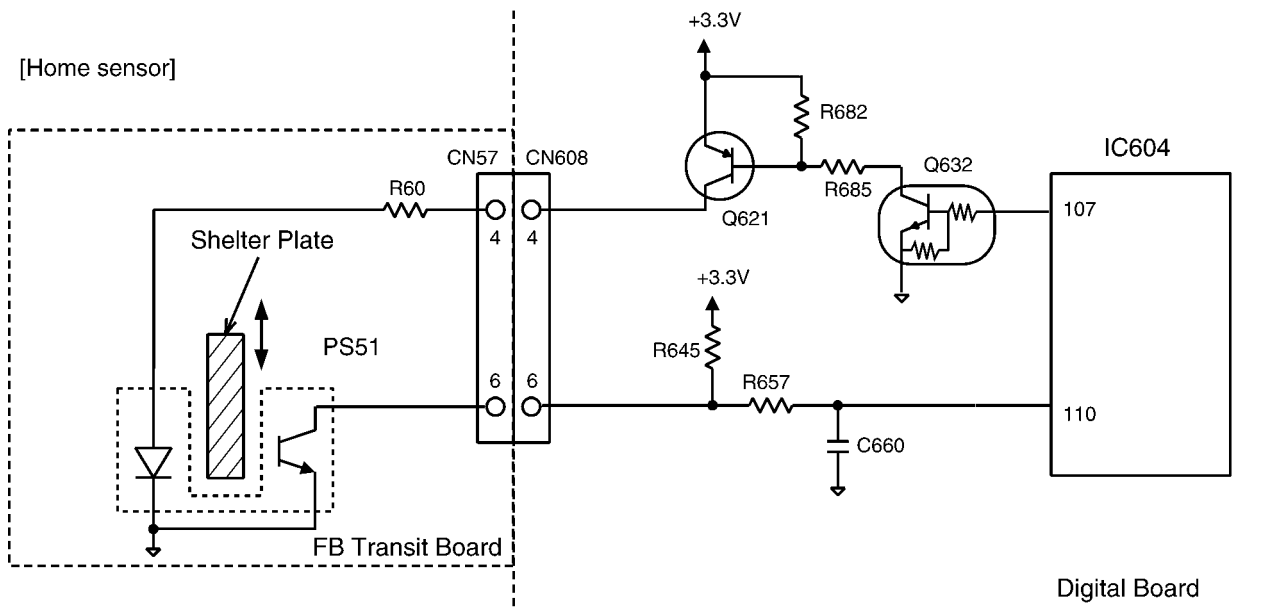


	Photo-transistor	Signal (IC604-110pin)
A carriage is at home.	OFF	High level
A carriage is not at home.	ON	Low level

### 6.13.6. 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 IC604-111pin 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 IC604-111pin becomes low level.

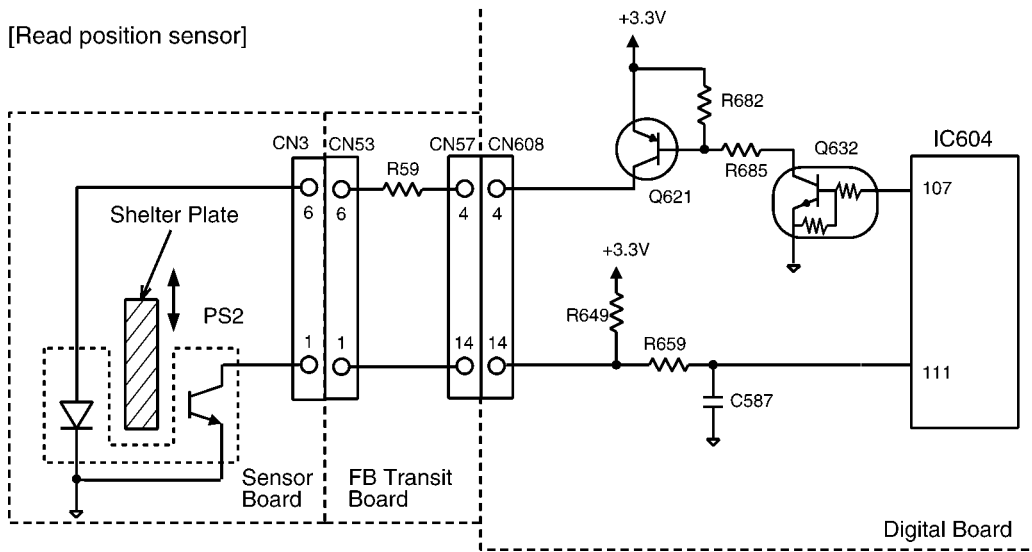


	Photo-transistor	Signal (IC604-111pin)
A document exits	OFF	High level
No document	ON	Low level

### 6.13.7. REGISTRATION & MANUAL PAPER SENSOR

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

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

So the photo-transistor turns on, and input signal of IC604-112pin 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 IC604-112pin becomes high level.

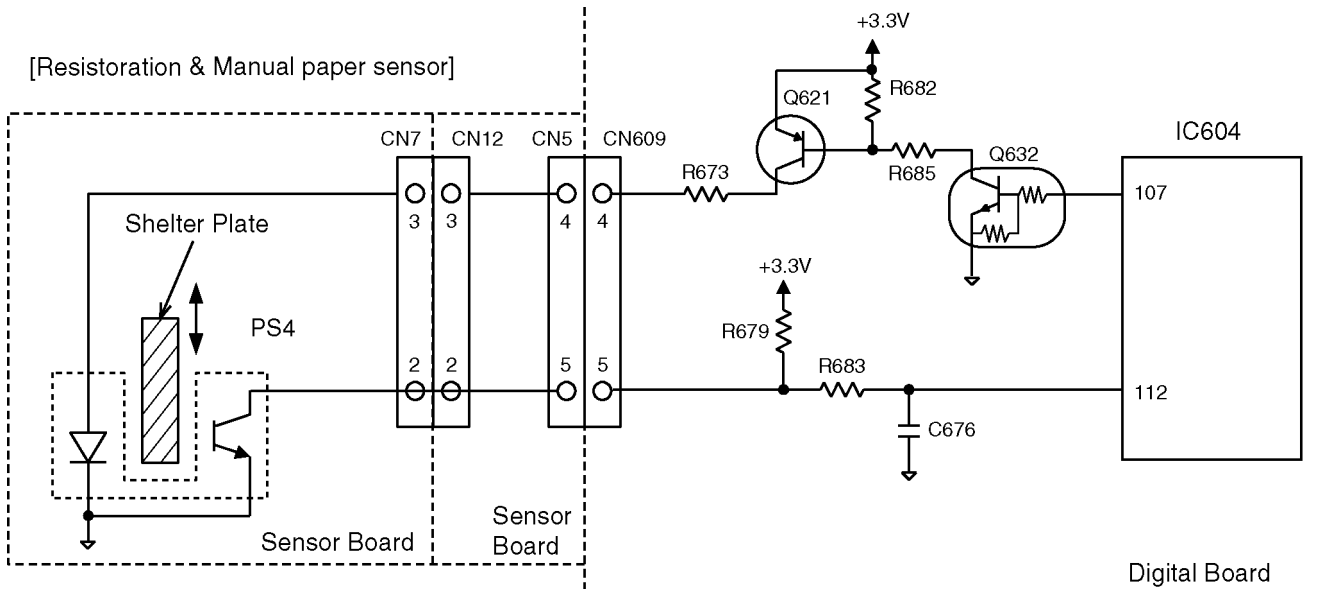


	Photo-transistor	Signal (IC604-112pin)
Paper exits	ON	Low level
No paper	OFF	High level



### 6.13.8. 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 IC604-113pin 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 IC604-113pin becomes high level.

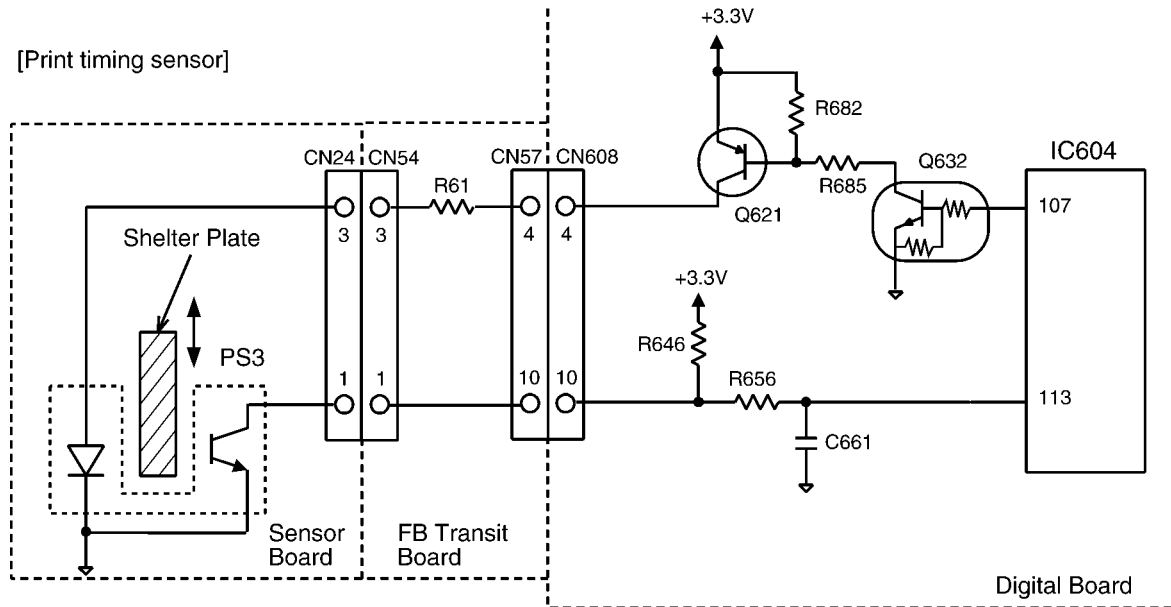


	Photo-transistor	Signal (IC604-113pin)
Paper exits	ON	Low level
No paper	OFF	High level

### 6.13.9. 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 IC604-115pin 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 IC604-115pin becomes low level.

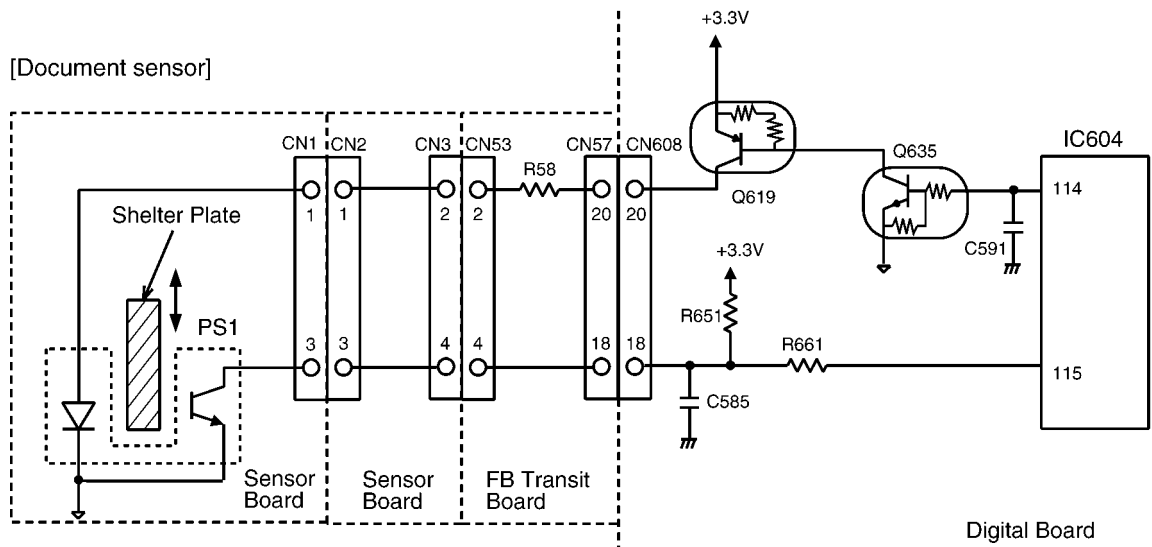


	Photo-transistor	Signal (IC604-115pin)
document exits	OFF	High level
No document	ON	Low level

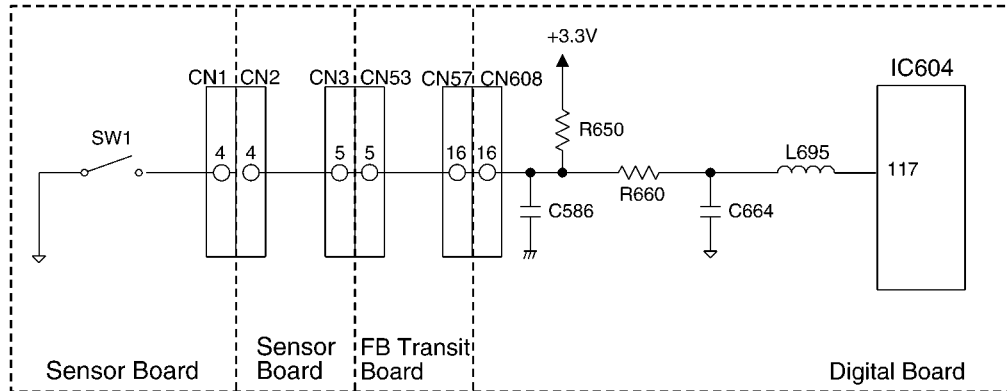
### 6.13.10. ADF COVER SENSOR

This switch detects whether ADF cover is opened or closed.

When ADF cover is opened, the input signal of IC604-117pin becomes high level.

When ADF cover is closed, the input signal of IC604-117pin becomes low level.

[ADF Cover sensor]



	Signal (IC604-117pin)
Cover open	High level
Cover close	Low level

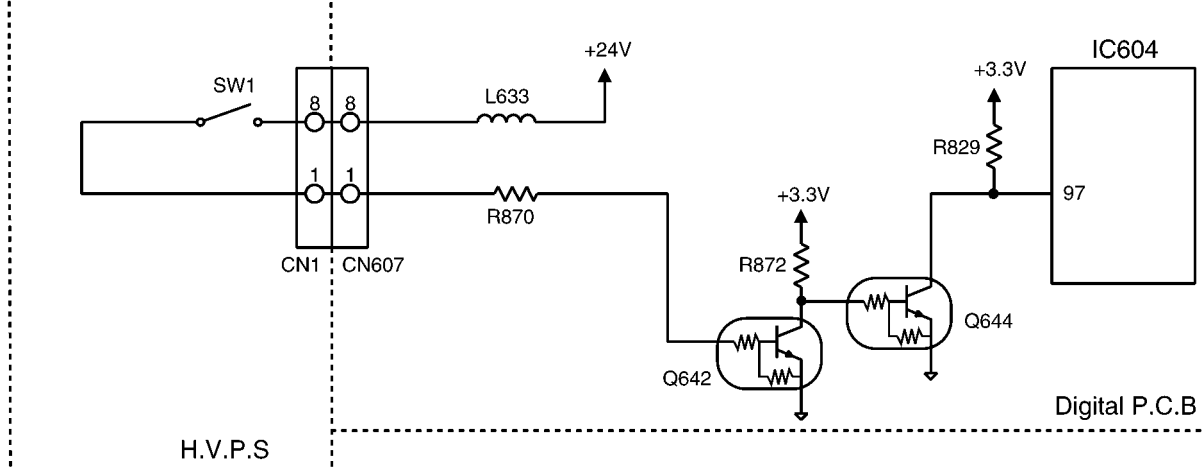
### 6.13.11. TOP COVER SENSOR

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 IC604-97pin becomes a high level.

When the printer cover is open, the switches turns OFF, and the input signal of IC604-97pin becomes a low level.

[Top cover sensor]

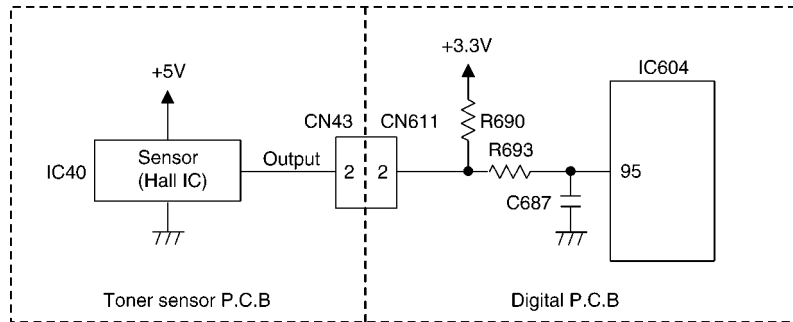


	Switch	Signal (IC604-97pin)
Open	OFF	Low level
Close	ON	High level

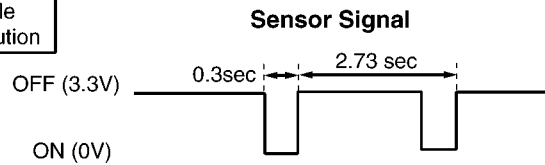
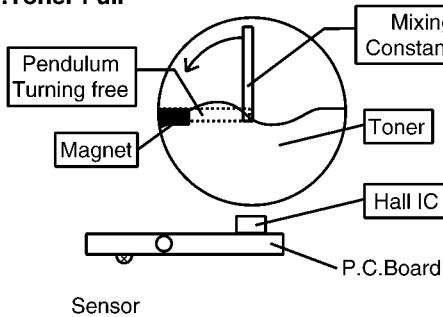
### 6.13.12. TONER SENSOR.... “TONER EMPTY”, “TONER LOW”, “CHANGE DRUM”

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

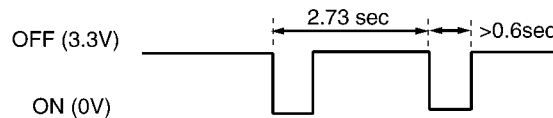
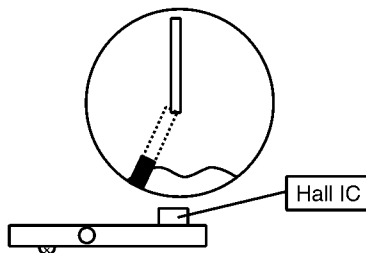
When there is not Drum unit, Hall IC (IC40) turns off, and the input signal of IC604-95pin (Digital P.C.B) becomes a High level over 9s. When the Drum unit is set, Hall IC (IC40) turns ON/OFF. If the time of IC604-95pin's Low level is under 600ms, there is enough toner in Drum unit, if not, toner is near empty.



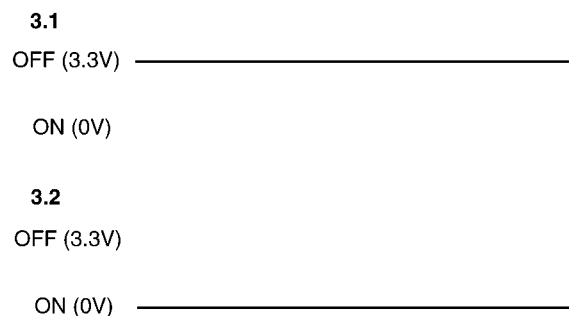
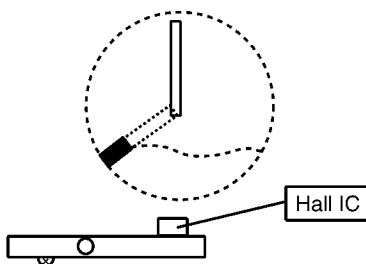
#### 1. Toner Full



#### 2. Toner Low



#### 3. In case the Mixing Paddle does not rotate

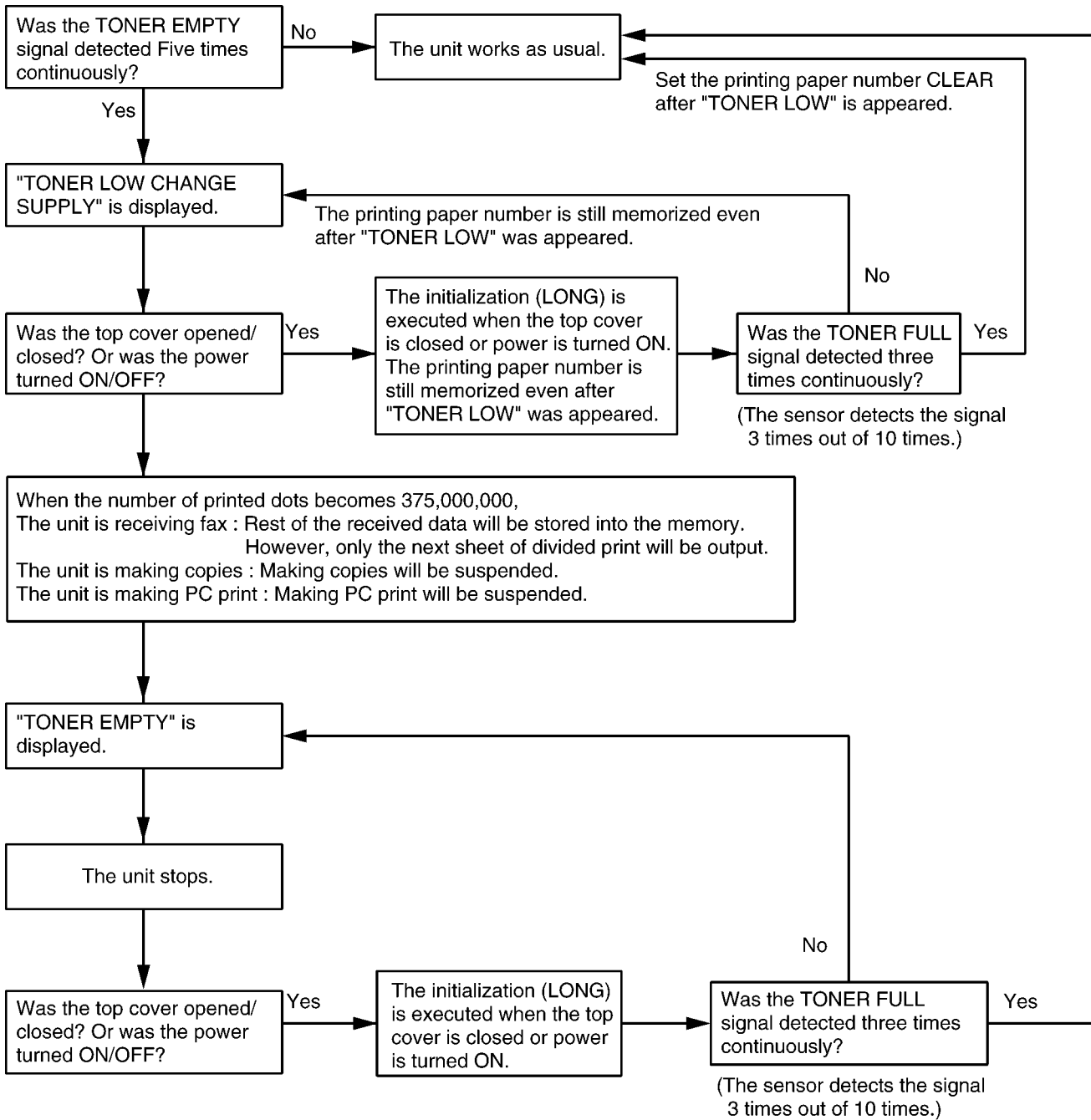


#### Toner Sensor

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

State	Display	Signal (IC604-95pin)
Toner Set (full)	-	Low level = about 0.3s
Near Empty Toner	TONER LOW	Low level > 0.6s
Mixing Paddle does not rotate ("CHANGE DRUM")	CHANGE DRUM	High level fix or Low level fix

### 6.13.12.1. TONER DETECTION FLOW

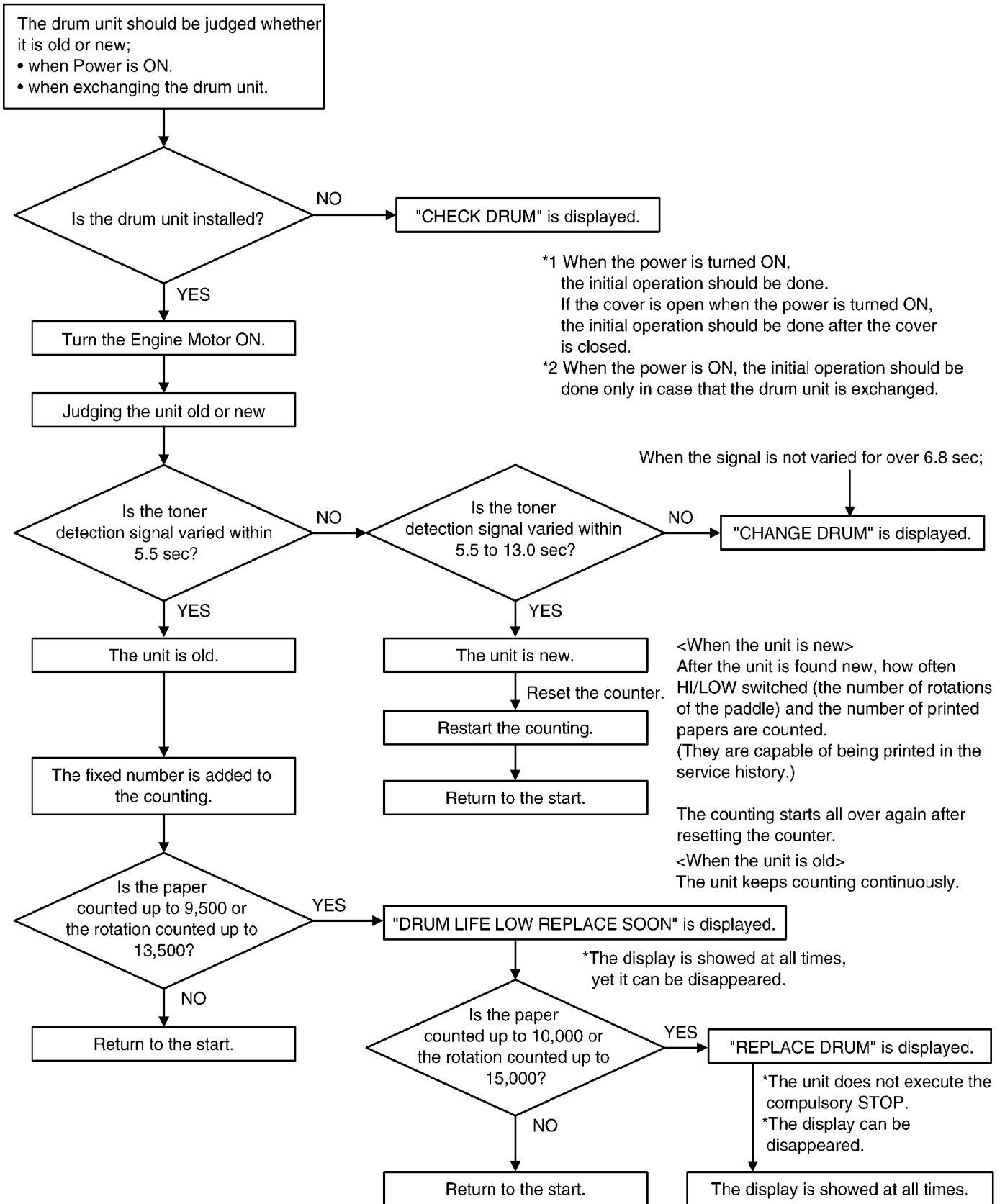


**CAUTION:**

1. Toner low can be judged by continuous 5-times TONER LOW signal at only printing.  
(It is not executed at.)
2. Toner full can be judged by continuous 3-times TONER FULL signal at initialization.  
(It is not executed at printing.)
3. In the ordinal operation, "CHECK DRUM" is displayed when TONER EMPTY sensor does not generate a signal for 2.73 seconds.

### 6.13.12.2. Drum Detection

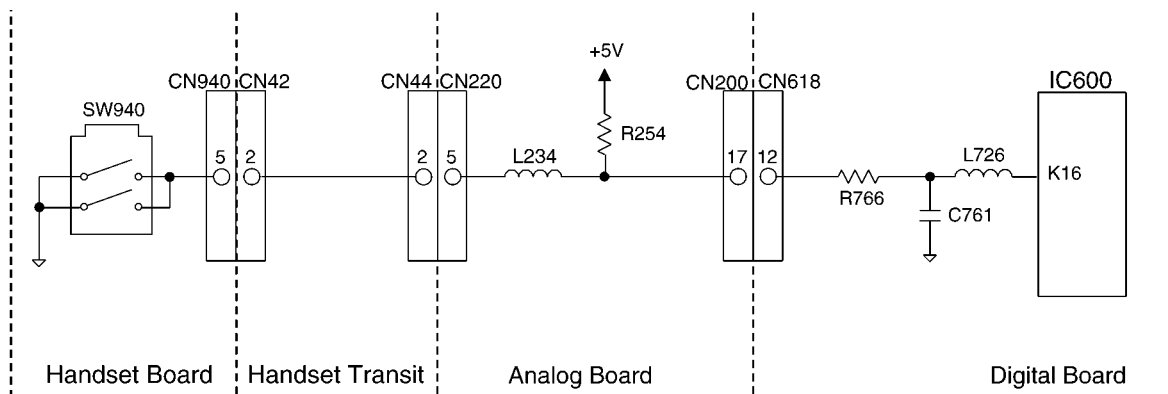
Detection Flowchart



### 6.13.13. OPTION HANDSET HOOK SWITCH

When the option handset is raised, the switch is turned off, and the signal of IC600-K16pin becomes low level.  
 When the option handset is settled, the switch is turned on, and the signal of IC600-K16pin becomes high level.

[Option Handset Hook SW sensor]

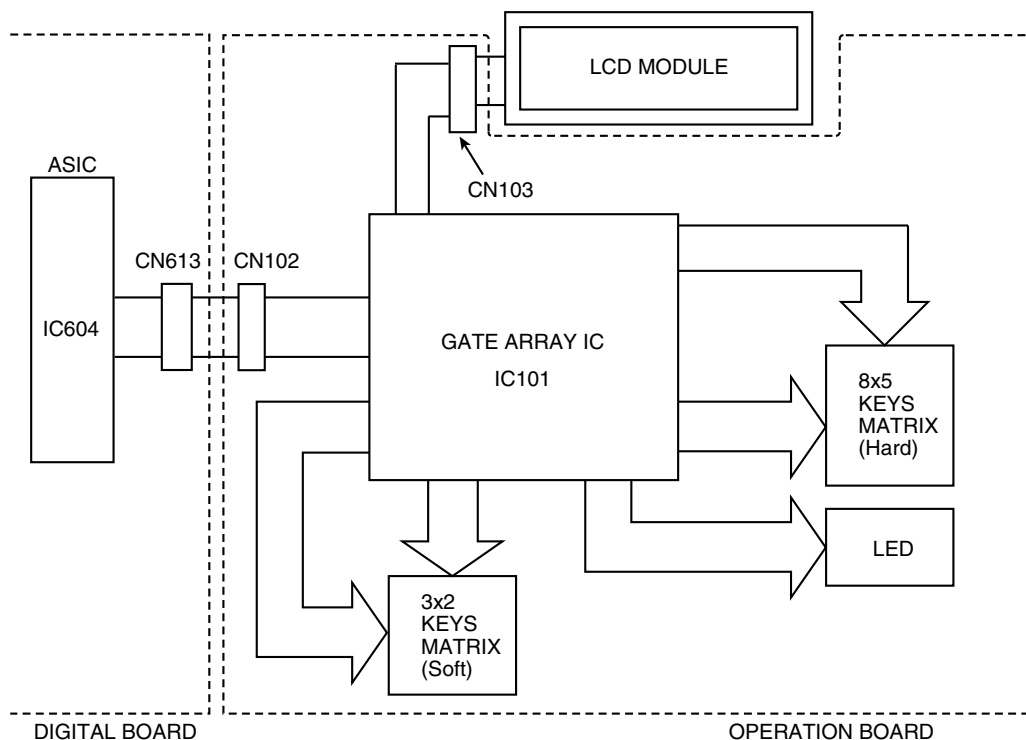


	Signal (IC600-K16pin)
ON HOOK	High level
OFF HOOK	Low level

### 6.14. OPERATION BOARD SECTION

The unit consists of a LCD (Liquid crystal display), KEYS and LEDs (light-emitting diodes). They are controlled by the Gate Array (IC101) and G/A (IC604: on the DIGITAL BOARD).

The key matrix table is shown below.



#### 1. Key Matrix

a. Hard Scan

	KIN0	KIN1	KIN2	KIN3	KIN4	KIN5	KIN6	KIN7
KSL0	2	1	3	→	STOP	FAX	MENU	Caller ID
KSL1	5	4	6	↑		←	HELP	Auto Answer
KSL2	8	7	9	SET	COPY	S1		S6
KSL3	FLASH	REDIAL	MONITOR	↓	START	S2	ZOOM	S7
KSL4 (LED7)	0	*	#	RESOLUTION	SCAN		CONTRAST	

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

b. Soft Scan

	SKIN0 (XLED11)	KIN1 (XLED12)	KIN2 (XLED13)
SKS0 (XLED9)	-----	S5	S3
SKS1 (XLED10)	S8	S4	-----

2. LED

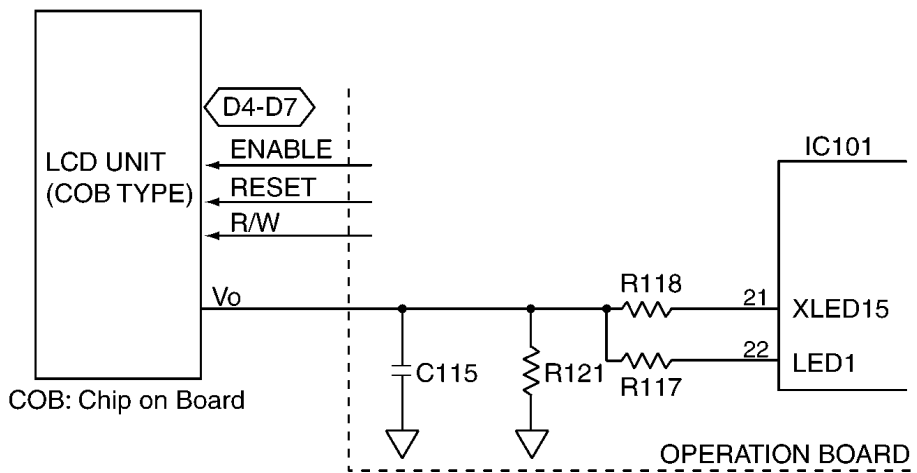
- AUTO ANSWER LED ON/OFF port--LED6
- FAX MODE LED ON/OFF port---XLED8
- COPY MODE LED ON/OFF port--LED5
- SCAN MODE LED ON/OFF port--LED2

6.15. LCD SECTION

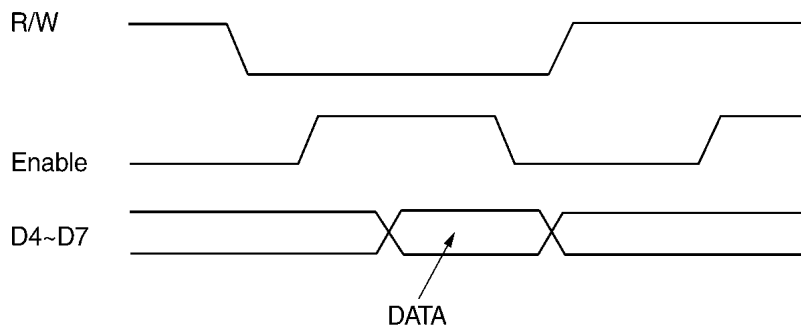
The Gate Array (IC101) works only for writing the ASCII code from the data bus (D4~D7). V0 is supplied for the LCD drive. R118 and R117 are density control resistors.

Consequently, in this unit, the timing (positive clock) is generated by the LCD interface circuitry in the gate array (IC101).

Circuit Diagram



Timing Chart



<Density>

Display mode	User setting	XLED15	LED1
2 LINE	NORMAL	H	L
	DARKER	L	L
Large	NORMAL	H	H
	DARKER	H	L

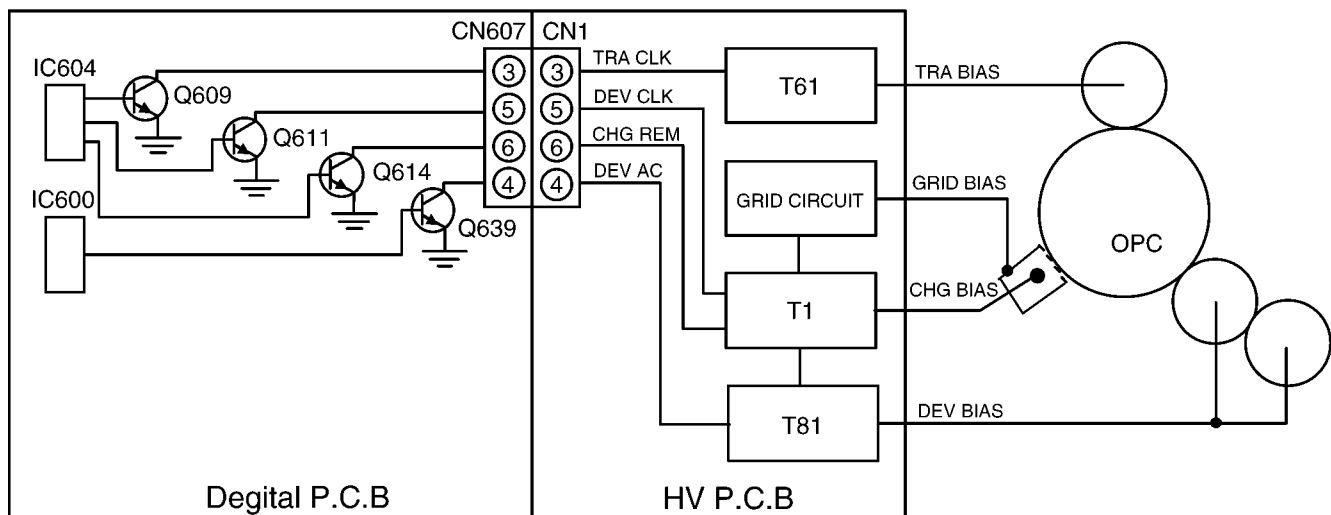
## 6.16. HVPS (High Voltage Power Supply) SECTION

### 6.16.1. HVPS SPECIFICATION

	Charge (CHG)	Grid	Developing DC	Developing AC	Transfer (TRA) -	Transfer (TRA) +
Output Characteristics	Constant current	Constant voltage	Constant voltage	Rectangular Wave	Constant current (Variable)	Constant voltage
Nominal Output Voltage	4.35KV	4.75±10V	230V±15V (50~300V) PWM20%	300V±15Vp-p 17.5KHz	100MΩ (1400V)	800V±100V
Nominal Output Current	200±15μA	200μA	300MΩ		-14.8μA±1μA (0μA~25μA) PWM 35%	1000MΩ (1.25μA)
Load Range	(19.4MΩ)		100MΩ~2000MΩ	100MΩ~2000MΩ	33.8MΩ~284MΩ	10MΩ~1000MΩ
Constant Current Range	4.1~4.6KV				500V~4200V	

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

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



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

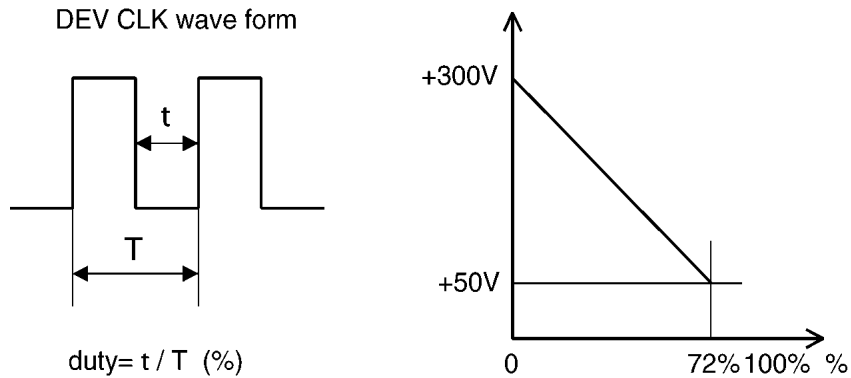
When IC604 turns on the transistor Q614, CHG REM becomes "L", and Charge BIAS (200μA) is output from CHG OUTPUT. GRID BIAS is generated by the current flowing in the GRID circuit via charge wire and GRID.



### 6.16.3. DEV DC BIAS UNIT

When CHG REM is “L”, 5.425kHz PWM (Pulse Width Modulation) is input from IC604 to DEV CLK through Q611, 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**



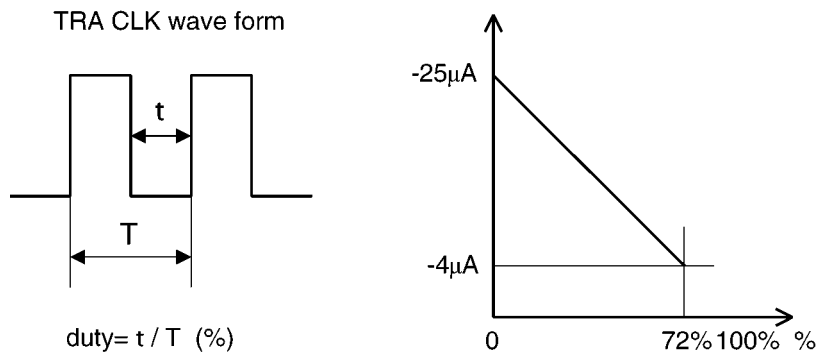
### 6.16.4. DEV AC BIAS UNIT

When 17.5kHz rectangular wave signal is input from IC600 to DEV AC through transistor Q639, 325 Vp-p 17.5 kHz rectangular wave of developing AC voltage is output from DEV OUTPUT. This voltage is overlapped with developing DC voltage and output as AC voltage that includes the development DC voltage.

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

When CHG REM is “L” and TRA CLK is “open”, Charge BIAS (200 $\mu$ A) is output from CHG OUTPUT, and at the same time Transfer (+) BIAS (800V) is output from TRA OUTPUT. When 5.425kHz PWM (Pulse Width Modulation) signal is input to TRA CLK through transistor Q609, Transfer (-) CURRENT BIAS corresponding to PWM signal is output from TRA OUTPUT.

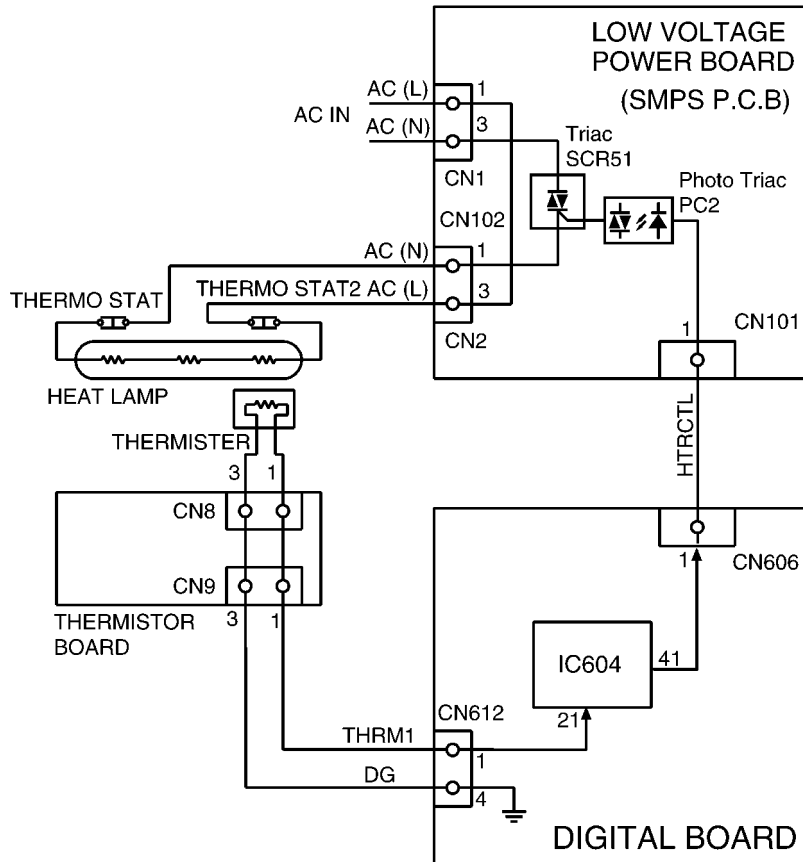
**Transcription current variation corresponding to PWM input**



## 6.17. HEAT LAMP CONTROL CIRCUIT

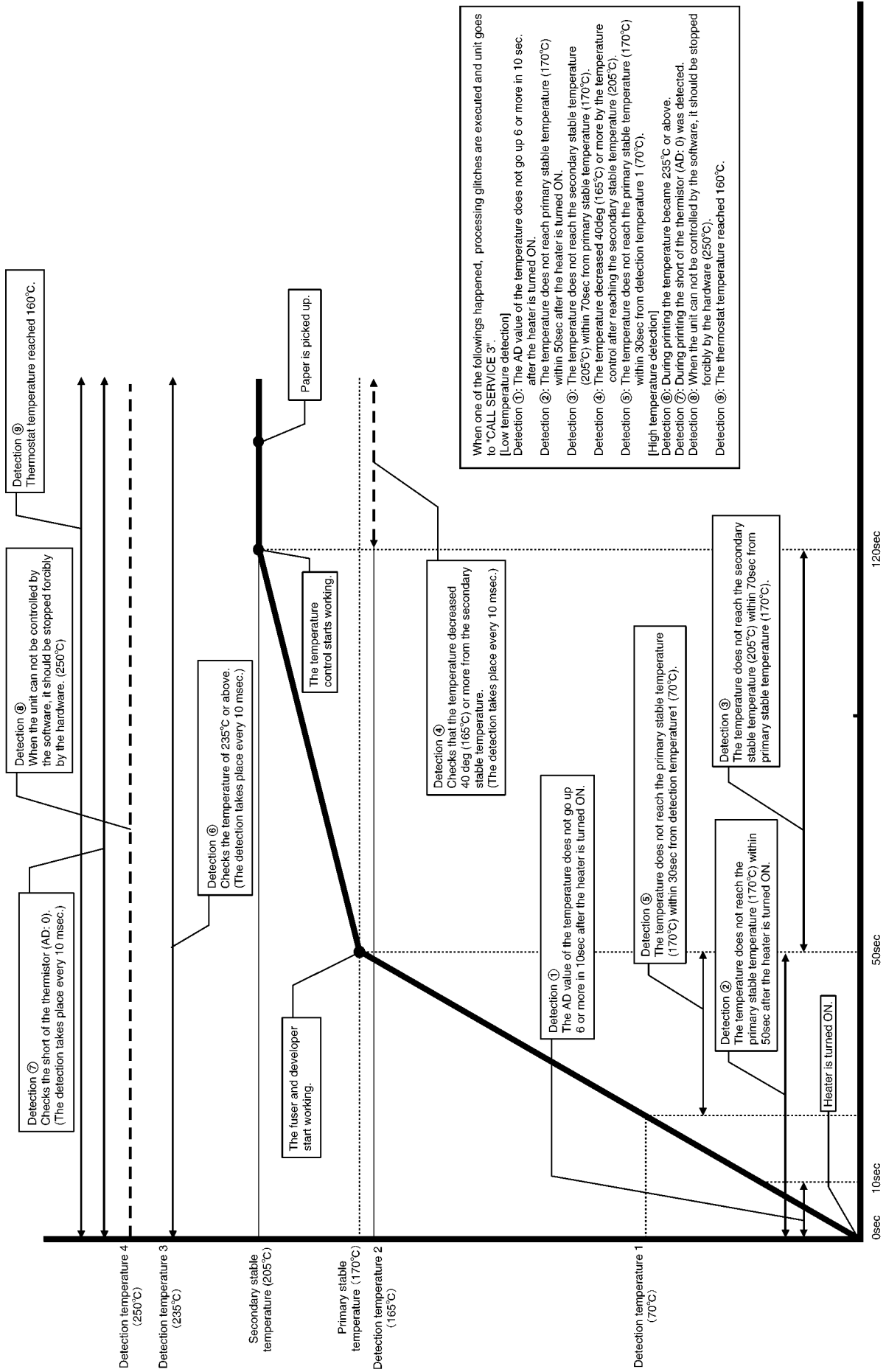
The temperature of the fixing part of the Fuser Unit is converted to a voltage by THERMISTOR and input to IC604-21pin. The heat lamp is turned on/off by the HTRCTL signal (IC604-41pin) through the photo triac (PC2) and the triac (SCR51). And two thermostats are set on the AC line as the safety devices.

**Circuit Diagram**



### 1. Control at Printing

- a. After the printing signal is received, turn ON the heater.
- b. After that, turn ON the motor at the Primary Stable Temperature (170°C).
- c. After that, control at the Secondary Stable temperature (205°C), and feed papers.



When one of the followings happened, processing glitches are executed and unit goes to "CALL\_SERVICE 3".

[Low temperature detection]

Detection ①: The AD value of the temperature does not go up 6 or more in 10 sec. after the heater is turned ON.

Detection ②: The temperature does not reach primary stable temperature (170°C) within 50sec after the heater is turned ON.

Detection ③: The temperature does not reach the secondary stable temperature (205°C) within 70sec from primary stable temperature (170°C).

Detection ④: The temperature decreased 40deg (165°C) or more by the temperature control after reaching the secondary stable temperature (205°C).

Detection ⑤: The temperature does not reach the primary stable temperature (170°C) within 30sec from detection temperature 1 (70°C).

[High temperature detection]

Detection ⑥: During printing the temperature became 235°C or above.

Detection ⑦: During printing the short of the thermistor (AD: 0) was detected.

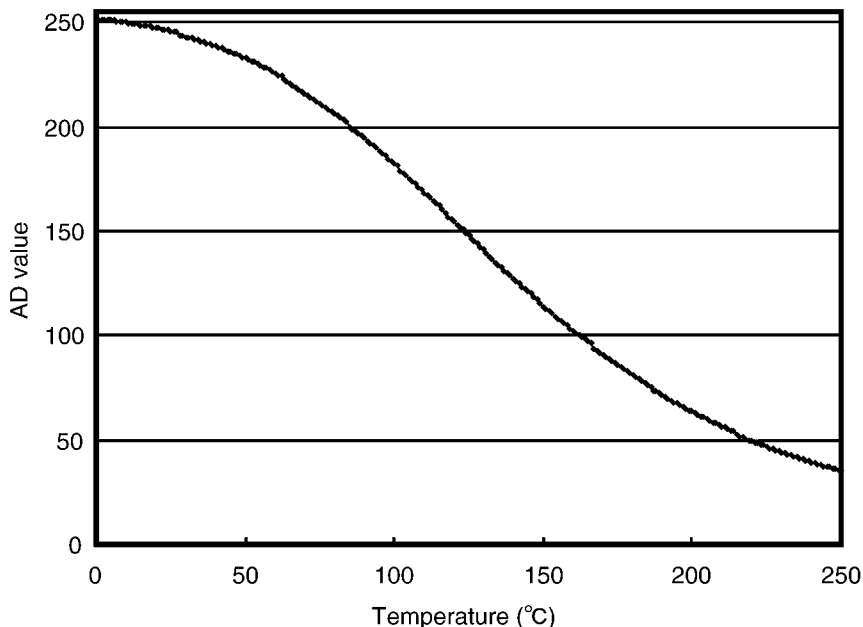
Detection ⑧: When the unit can not be controlled by the software, it should be stopped forcibly by the hardware (250°C).

Detection ⑨: The thermostat temperature reached 160°C.

2. Safety Protection

- a. 2 thermostats are provided with the unit, and the heater circuit is shut down when their surface temperatures became over 160°C.
- b. The heater control circuit of IC604 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.
- c. When the temperature became over 250°C, the heater control circuit of IC604 is turned off forcedly and system reset (IC604 pin 125 becomes Low) will be executed.

Heat Roller Temperature - Voltage



The correspondence readings between temperature measured by thermistor and HEX readings

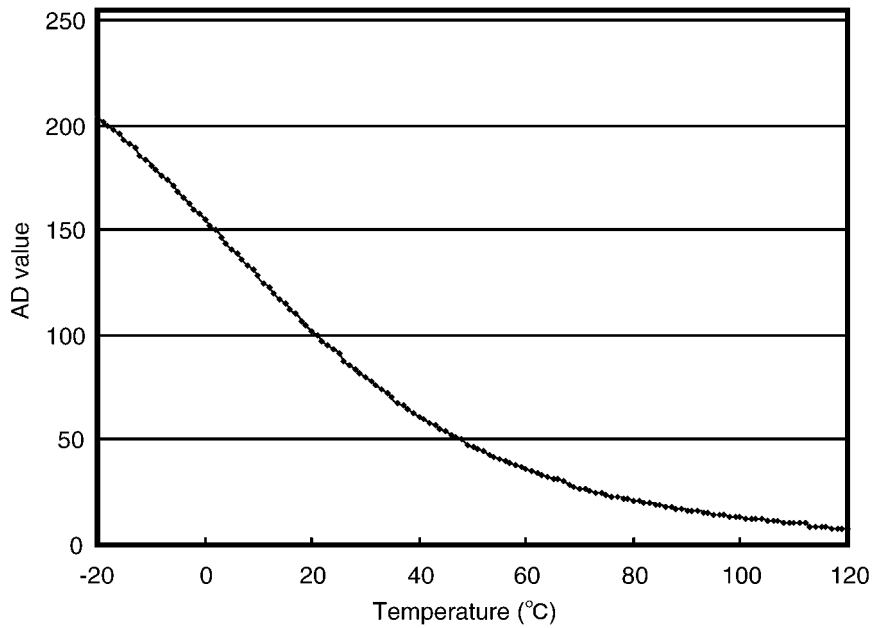
Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
0	252	FC	84	202	CA	168	93	5D
1	251	FB	85	200	C8	169	92	5C
2	251	FB	86	199	C7	170	91	5B
3	251	FB	87	198	C6	171	90	5A
4	251	FB	88	197	C5	172	89	59
5	251	FB	89	196	C4	173	88	58
6	251	FB	90	195	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.92) [#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

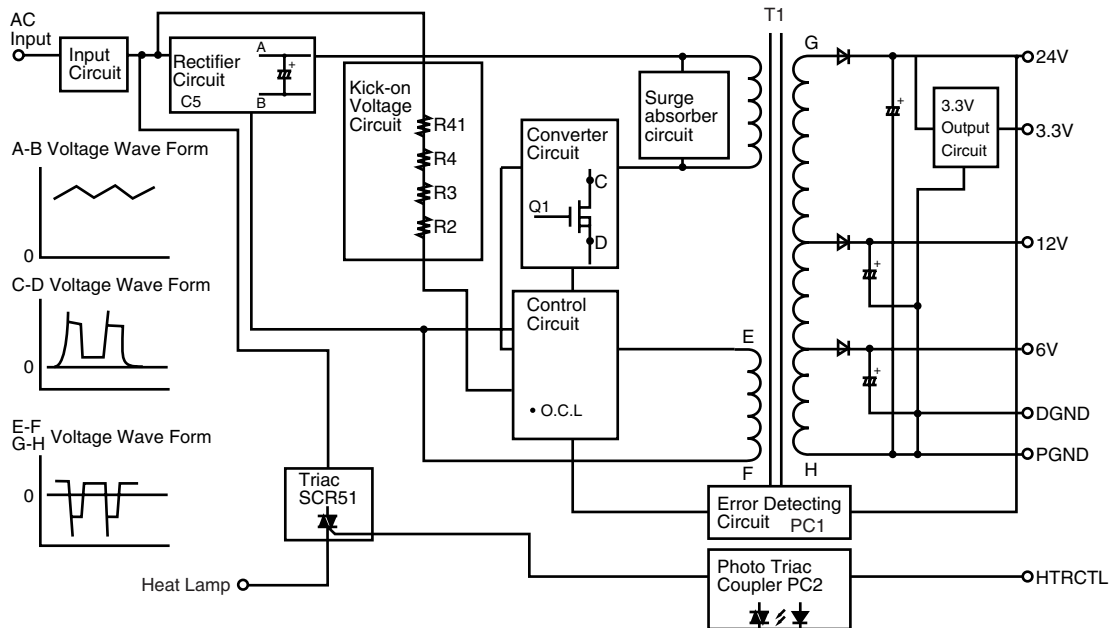
Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading	Temperature [C°]	AD value	HEX reading
20	102	66	67	30	1E	114	9	09
21	100	64	68	29	1D	115	9	09
22	97	61	69	28	1C	116	9	09
23	95	5F	70	27	1B	117	8	08
24	93	5D	71	27	1B	118	8	08
25	91	5B	72	26	1A	119	8	08
26	88	58	73	25	19	120	8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

## 6.18. POWER SUPPLY BOARD SECTION

The power supply board circuit generates +3.3V, +6V, +12V and +24Vdc. It also supplies AC voltage to the halogen heat lamp in the fuser unit.

The power supply board uses the switching regulator method.

### Block Diagram



#### [Input Circuit]

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

#### [Rectifier Circuit]

The input circuit is rectified by D10 to D13 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.

#### [Surge Absorber Circuit]

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

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

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

#### [Over Voltage Circuit]

If the 24V output increases because the error detecting circuit or control circuit is broken, Control circuit will recognize this signal and output becomes 0V. D104, D275 and D503 also prevent over voltage.

#### [3.3V Output Circuit]

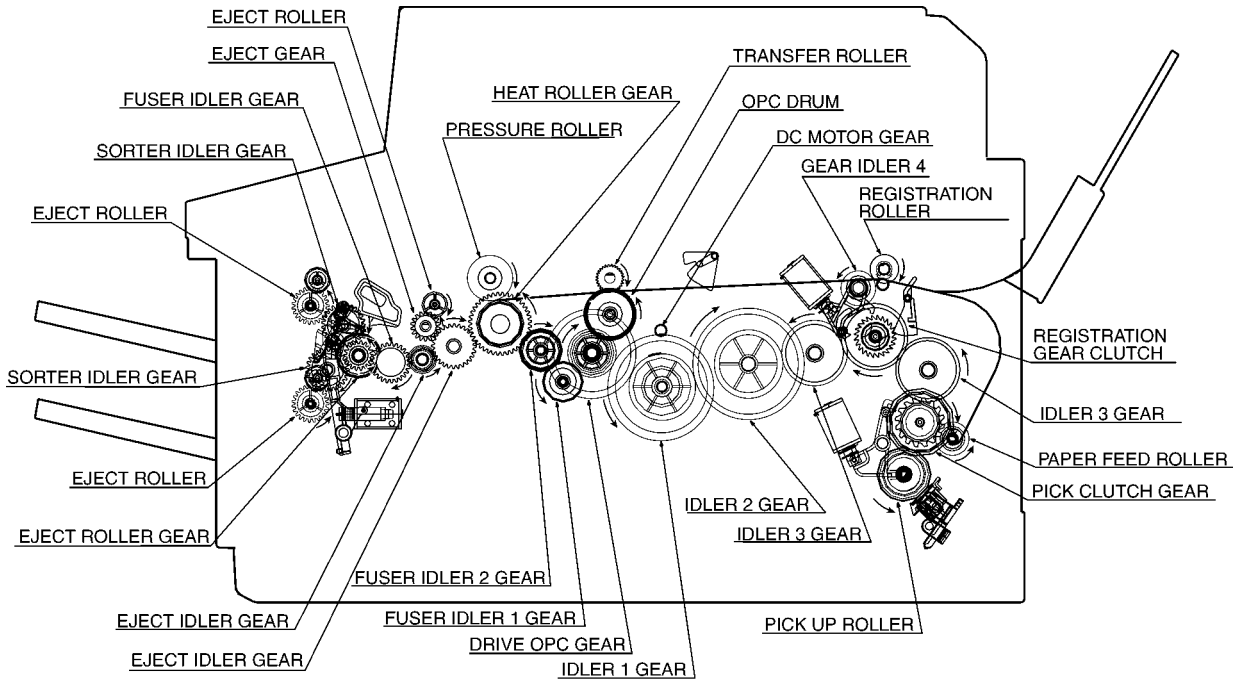
This circuit is composed of DC-DC converter method.

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

Refer to **POWER SUPPLY BOARD SECTION** (P.189).

## 6.19. Mechanical Operation

### 6.19.1. PRINTING



The main motor gear rotates as shown in figure.

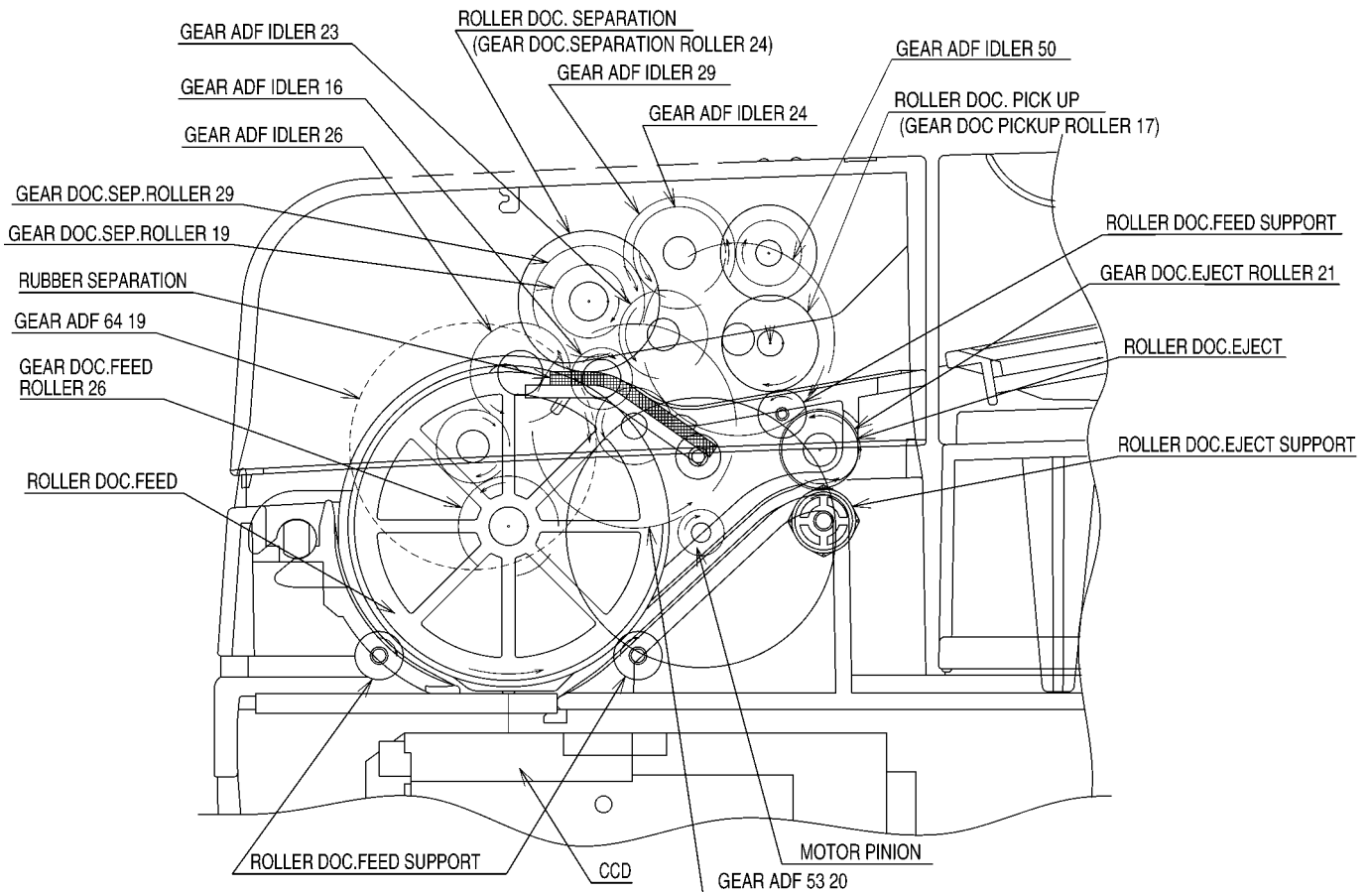
GEAR DRIVE OPC drives each part of fixing and developing.

When paper is fed from the standard cassette, the plunger of solenoid is pulled to drive PICK UP ROLLER (STANDARD), then the roller starts feeding paper.

When paper is fed manually, it is kept in the registration roller once, then the roller starts feeding paper.



## 6.19.2. SCANNING (ADF)



- DOCUMENT TRANSMISSION (ADF)

The frictional force between ROLLER DOC SEPARATION and RUBBER SEPARATION makes ROLLER DOC PICK UP move downward from standby position to pick up paper.

Pick-upped paper is separated by ROLLER DOC SEPARATION and RUBBER SEPARATION, and then fed by ROLLER DOC FEED.

After being read by CIS, the paper is discharged by ROLLER DOC EJECT.

- DOCUMENT TRANSMISSION (SCANNER GLASS)

CIS Module is carried by the belt timing along the shaft carriage to the reading start position.

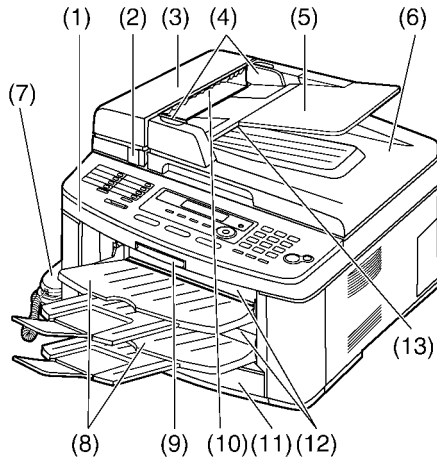
Then it goes back to the home position reading the document through the glass.

# 7 Location of Controls and Components

## 7.1. OVERVIEW

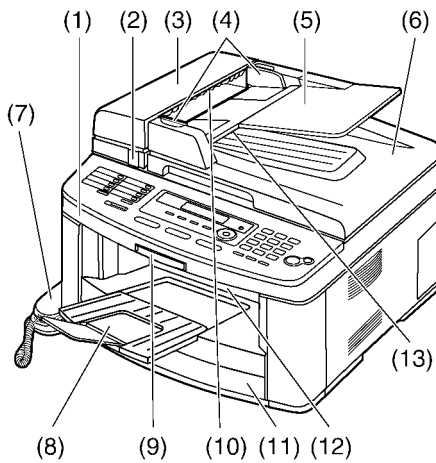
### 7.1.1. Front view

KX-FLB812

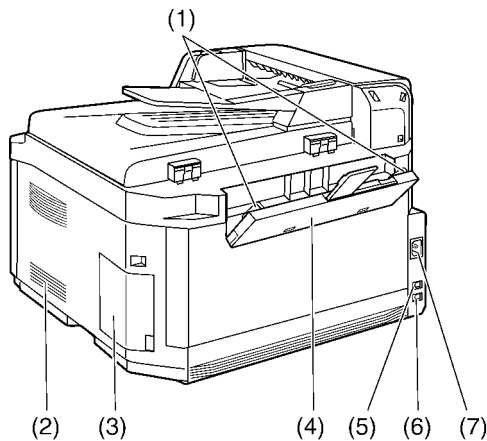


- (1) Top cover
- (2) ADF (Auto Document Feeder) cover release button
- (3) ADF (Auto Document Feeder) cover
- (4) Document guides
- (5) Document tray
- (6) Document cover
- (7) Handset
- (8) Output tray
- (9) Top cover release lever
- (10) Document entrance
- (11) Paper input tray
- (12) Recording paper exit
- (13) Document exit

KX-FLB802

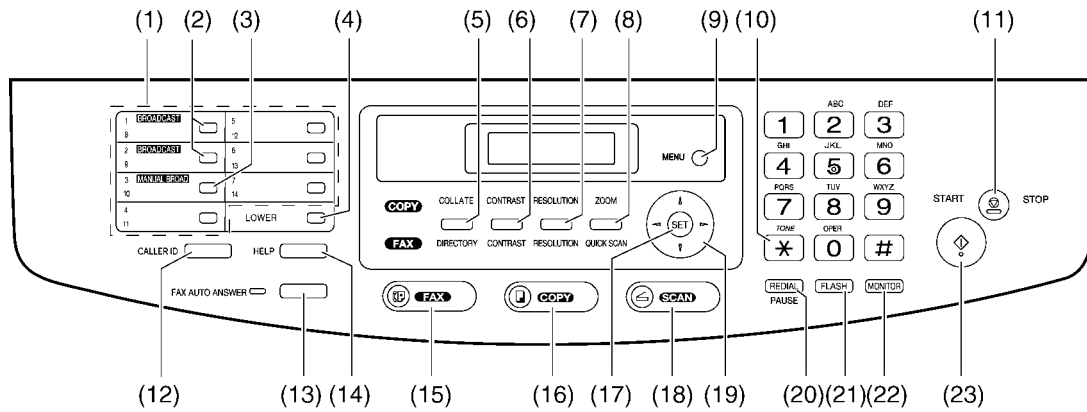


### 7.1.2. Rear view



- (1) Recording paper guides
- (2) Speaker
- (3) USB interface cover
- (4) Manual input tray
- (5) Telephone line jack
- (6) External telephone jack
- (7) Power inlet

## 7.2. CONTROL PANEL



- (1) Station keys
- (2) BROADCAST
- (3) MANUAL BROAD
- (4) LOWER
- (5) COLLATE / DIRECTORY
- (6) CONTRAST
- (7) RESOLUTION
- (8) ZOOM / QUICK SCAN
- (9) MENU
- (10) TONE
- (11) STOP
- (12) CALLER ID
- (13) FAX AUTO ANSWER
- (14) HELP
- (15) FAX
- (16) COPY
- (17) SET
- (18) SCAN
- (19) Navigator key
- (20) PAUSE / REDIAL
- (21) FLASH
- (22) MONITOR
- (23) START

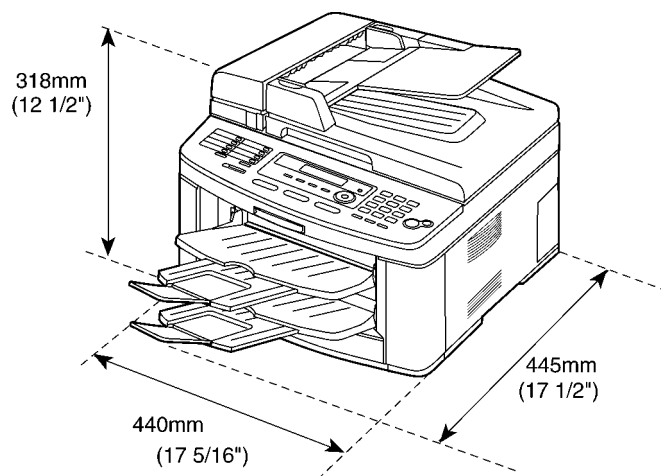
## 8 Installation Instructions

### 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.

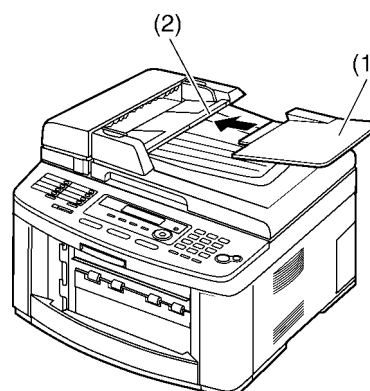


**Note:**

- 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 (16.4 feet). 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 (1 31/32") to let the unit cool down.

#### 8.1.2. DOCUMENT TRAY

Insert the document tray (1) into the slot (2) on the unit.



#### 8.1.3. OUTPUT TRAY

KX-FLB812 has 2 pieces of output tray and KX-FLB802 has 1 output tray pre-installed.

**Note:**

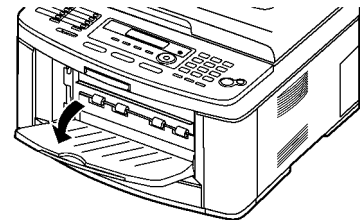
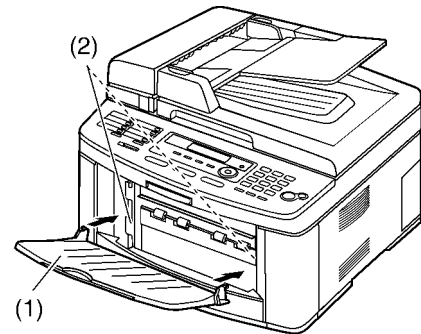
- Do not place the unit in an area where the output tray may be easily bumped into.

### 8.1.3.1. For KX-FLB812 users

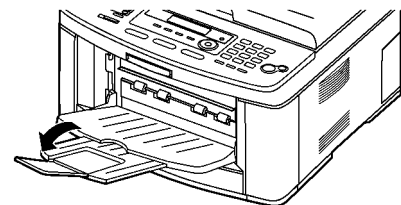
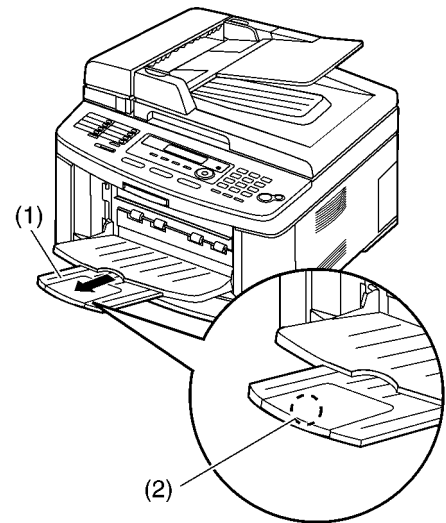
As a default setting, printed paper is stacked on the output tray as follows.

- Upper output tray (“#1”): Printed document by using the computer and copied document.
  - Lower output tray (“#2”): Received fax document.
- You can change the output tray setting for faxing (feature #441) and for copying (feature #466). To change the output tray from the computer, set the printer properties.

1. Insert the output tray (1) into the slots (2), then push the tray down until it latches into place.



2. Pull the output tray extender (1) forward gently until it clicks into place, then press the center part of the extender (2) to open.
  - Repeat from step 1 to install the upper output tray.

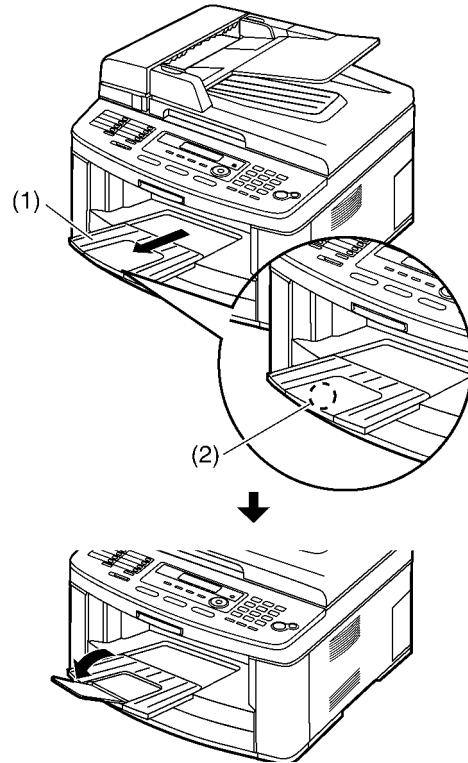


#### Note:

- The upper output tray can hold up to approximately 100 sheets of printed paper. The lower output tray can hold up to approximately 50 sheets of printed paper. Remove the printed paper before the output tray becomes full.

### 8.1.3.2. For KX-FLB802 users

Pull the output tray extender (1) forward gently until it clicks into place, then press the center part of the extender (2) to open.

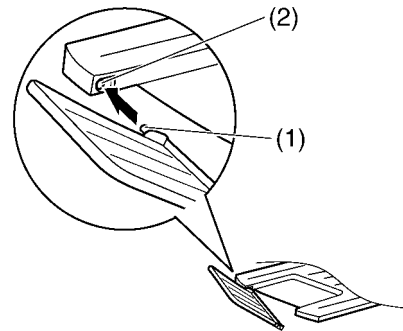


**Note:**

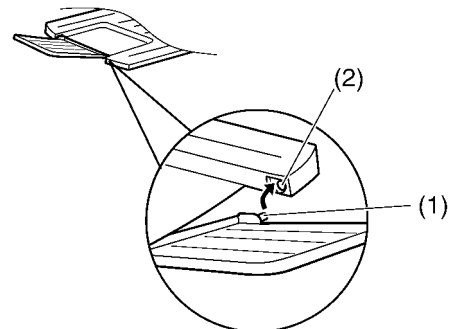
- The output tray can hold up to approximately 150 sheets of printed paper. Remove the printed paper before the output tray becomes full.

**If the top part of the extender is detached**

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



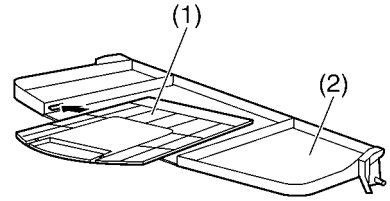
2. Slide the other tab (1) into the right hole (2) of the extender from below until it clicks into place.



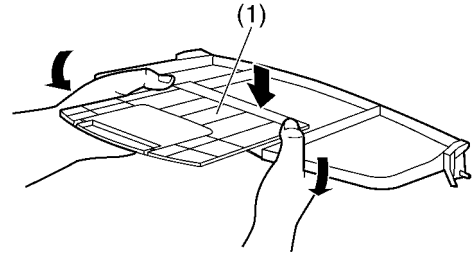
## If the extender is detached

### KX-FLB812

1. Line up the extender (1) underneath the output tray (2), and insert the left side of the extender into the output tray.

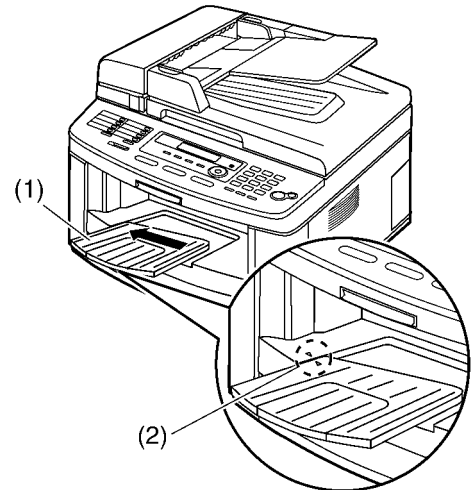


2. Attach the extender (1) by bending the side of the output tray downward slightly and pressing the right side of the extender.

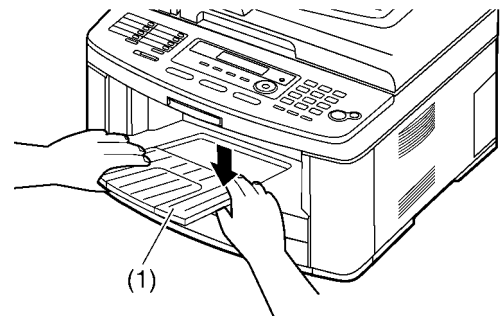


### KX-FLB802

1. Line up the extender (1) with the left side of the output tray. Make sure that the triangles (2) match to attach the extender correctly.



2. Snap the extender (1) into the unit by pushing down the right side of the extender.



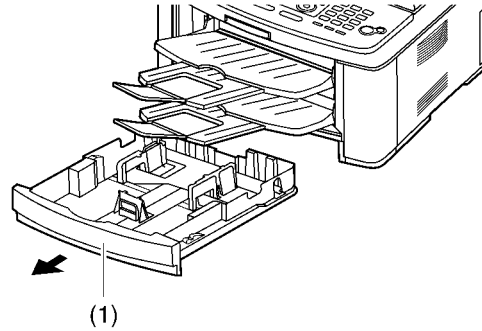
## 8.1.4. RECORDING PAPER

### 8.1.4.1. Using the paper input tray

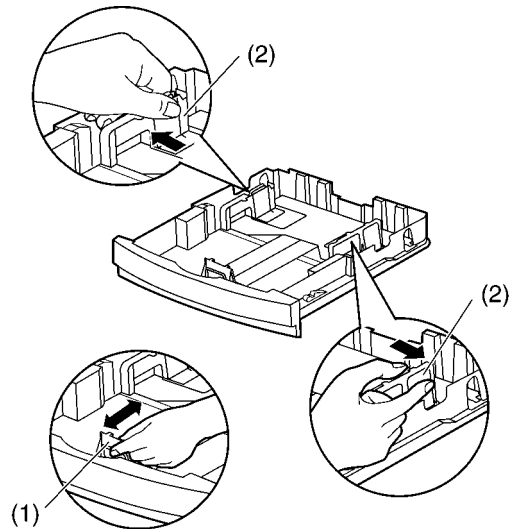
A4, letter or legal size recording paper can be used. The paper input tray unit can hold:

- Up to 250 sheets of 60 g/m<sup>2</sup> to 75 g/m<sup>2</sup> (16 lb. to 20 lb.) paper.
- Up to 230 sheets of 80 g/m<sup>2</sup> (21 lb.) paper.
- Up to 200 sheets of 90 g/m<sup>2</sup> (24 lb.) paper.
- The unit is set for A4 size paper by default. If you want to use Letter or legal size paper, change the setting: (Refer to **PROGRAM MODE TABLE** (P.111).)

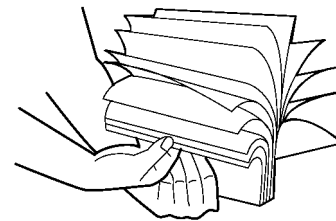
1. Pull the paper input tray (1) completely out.



2. Pinch the front side of the recording paper guide (1), then slide it to match the paper size mark. Pinch the both sides of the recording paper guides (2), then slide them to match the paper size mark.



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

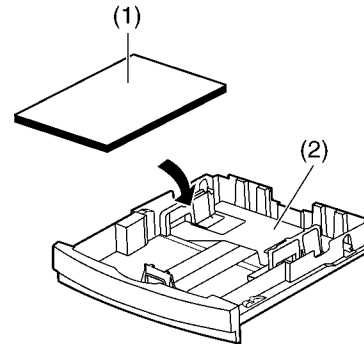




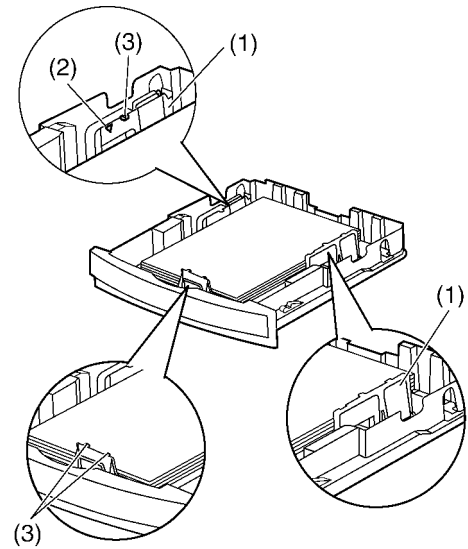
4. Load the paper, print-side up (1).

**Important:**

- Push and lock the plate (2) in the paper input tray, if it is lifted.



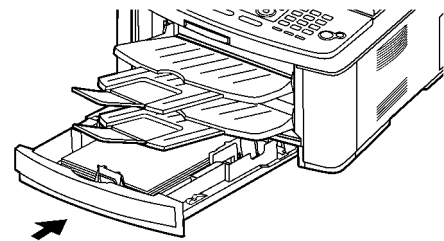
- Make sure that the recording paper guides (1) are at the paper size mark and the recording paper is under the paper limit mark (2). The paper should not be over the snubbers.(3)



5. Insert the paper input tray into the unit.

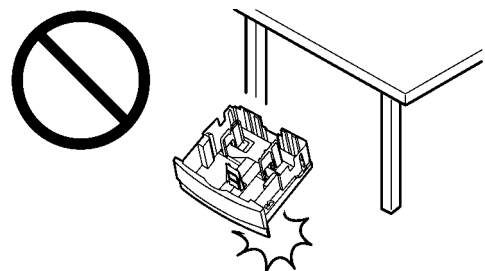
**Note:**

- If the paper is not loaded correctly, re-adjust the paper guides, or the paper may jam.
- If the paper input tray dose not close, the plate in the paper input tray may be lifted. Push the paper and check that the paper is flat in the paper input tray.

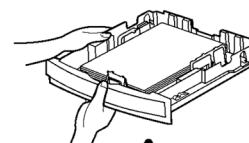


**Caution for the paper input tray**

- Do not drop the input tray.



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



**Approx. 2 kg**

### 8.1.4.2. Using the manual input tray

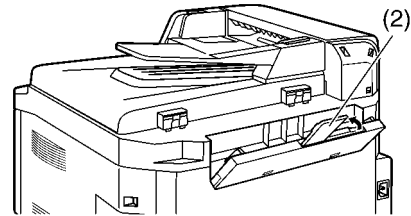
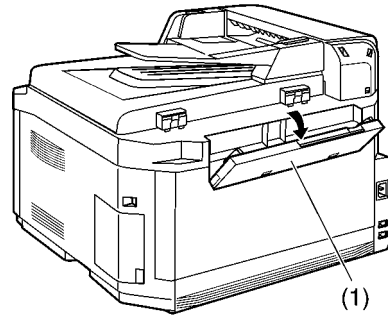
You can print not only on plain paper but also on special media (transparencies / labels / envelopes).

The manual input tray is used only for printing with the computer and can hold 1 sheet per time. If multiple pages are needed to be printed, add a next page after the first page is fed into the unit.

- Please refer to page 91 in Operating Instructions.

Load the recording paper after you start printing with the computer.

1. Pull open the manual input tray (1) to the front, then raise the extender (2) gently until it clicks into place.

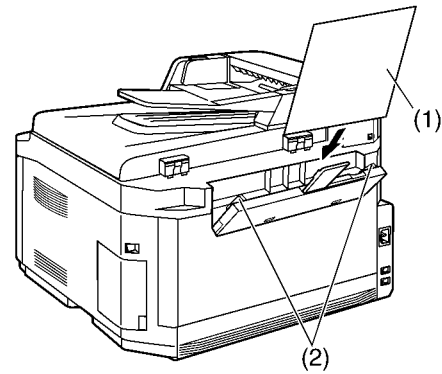


2. Insert the paper, print-side down (1) until the unit grasps the paper and a single beep is heard.
  - Adjust the width of the guides (2) to the size of the recording paper.

**Note:**

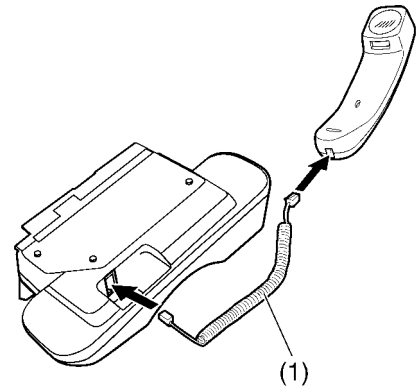
- If the paper is not inserted correctly, re-adjust the paper, or the paper may jam.
- Make sure the unit grasps the recording paper in step 2. The display shows the following.

PAPER IN TRAY #2  
FOR PC PRINTING

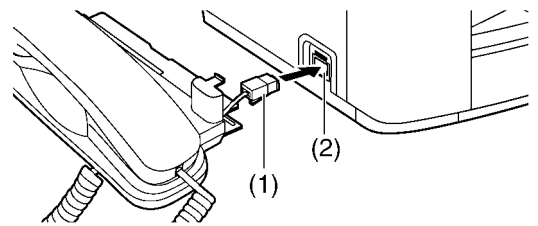


## 8.1.5. HANDSET UNIT

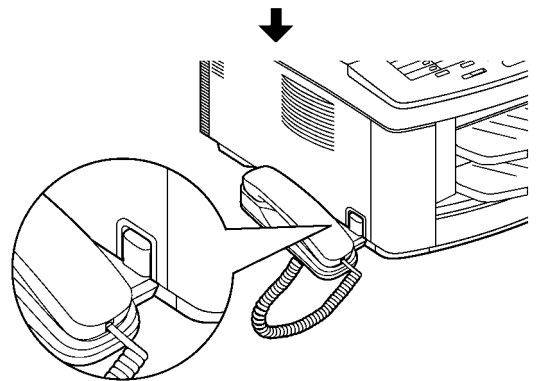
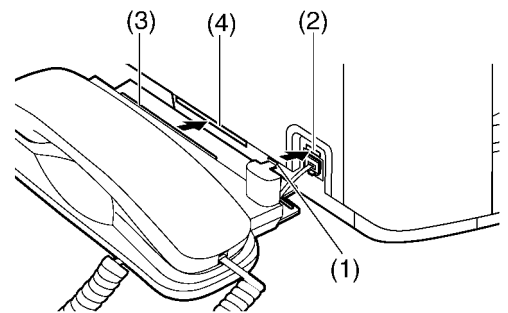
1. Connect the handset cord (1) to the handset and the handset cradle.



2. Connect the handset connector (1) to the handset unit connection jack (2).

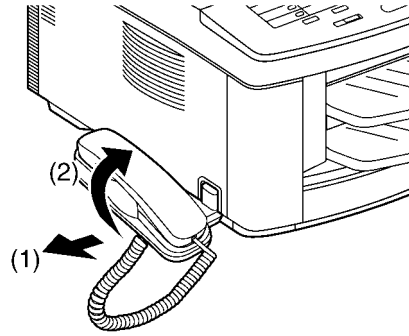


3. Insert the tab (1) into the slot (2) on the unit and insert the rib (3) of the handset cradle into the bottom groove (4).

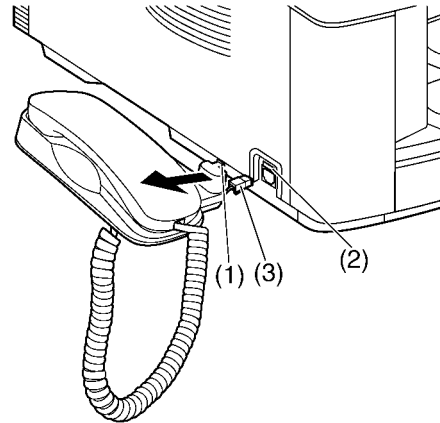


**To remove the handset unit**

1. Pull the handset unit slightly forward (1), and then remove the rib of the handset cradle by lifting the handset unit in the direction of the arrow (2).

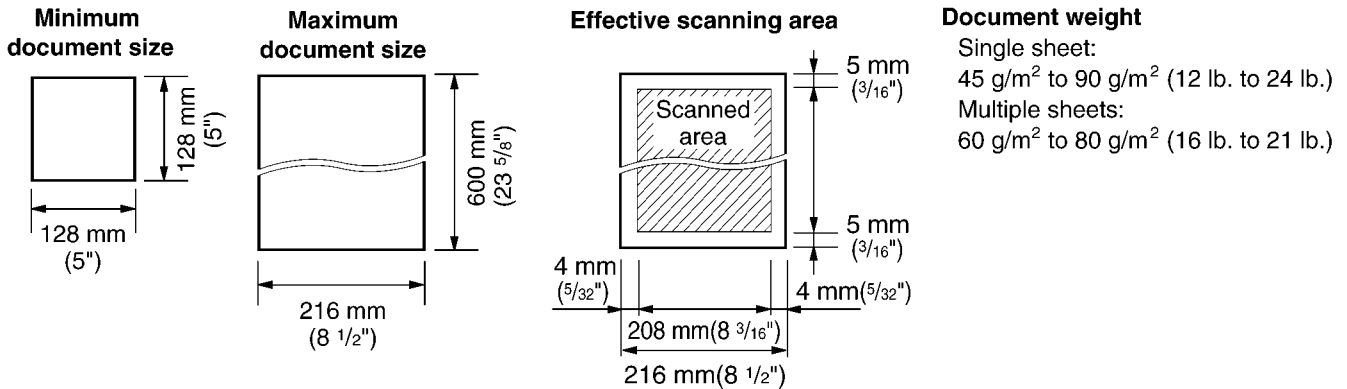


2. Remove the tab (1) from the slot (2) on the unit and disconnect the handset connector (3).



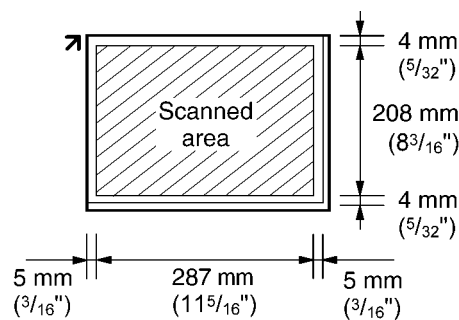
## 8.1.6. DOCUMENTS THE UNIT CAN SEND

### 8.1.6.1. Using the auto document feeder



### 8.1.6.2. Using the scanner glass

#### Effective scanning area



#### Note for the auto document feeder and the scanner glass

- Check that ink, paste or correction fluid has dried completely.
- To set a document with a width of less than 210 mm (8 1/4") when using the auto document feeder, we recommend using the scanner glass to copy the original document onto A4 or letter-sized paper, then setting the copied document.
- Do not set documents that do not satisfy the requirements of size and weight when using the auto document feeder. Make a copy of the document using the scanner glass and set the copy.
- Remove clips, staples or other fasteners when using the auto document feeder.
- When using the auto document feeder, the total height of the documents when laid flat, must be less than 10mm (3/8"). If the documents exceed the capacity of the auto document feeder, they may fall or cause a jam in the feeder.
- Do not set the following types of documents when using the auto document feeder: (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

## 8.1.7. REPLACING THE TONER CARTRIDGE AND THE DRUM UNIT

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

Display:

TONER LOW

or

TONER EMPTY

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 unit. To ensure that the unit operates properly, we recommend the use of **Panasonic toner cartridge (Model No. KX-FA87A/KX-FA87E/KX-FA85A/KX-FA85E) and drum unit (Model No. KX-FA86A/KX-FA86E).**

To maintain print quality and machine life, we recommend you to clean slots and openings and the inside of the unit when replacing the toner cartridge and/or drum unit.

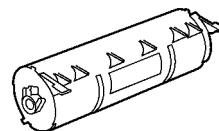
### Caution:

- 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 unit.
- The drum unit contains a photosensitive drum. Exposing it to light may damage the drum. Once you have opened the protection bag:
  - Do not expose the drum unit to light for more than 5 minutes.
  - Do not touch or scratch the black drum surface.
  - Do not place the drum unit near dust or dirt, or in a high humidity area.
  - Do not expose the drum unit to direct sunlight.
- Do not disconnect the power cord. Loss of fax documents in memory may occur.
- Do not leave the toner cartridge out of the protection bag for a long time. It will decrease the toner life.
- Do not add toner to the toner cartridge.

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



2. Remove the new toner cartridge from the protection bag.



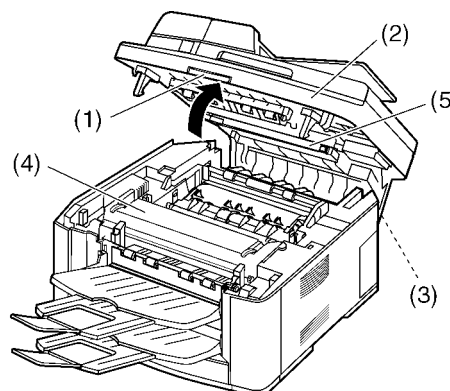
3. Lift the cover release lever (1) and open the top cover (2).

### Important:

- Close the multi-purpose input tray (3) before opening the top cover.

### NOTE:

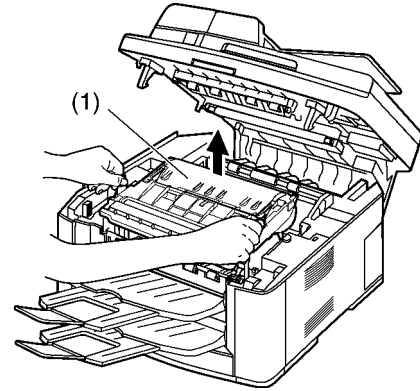
- Do not touch the transfer roller (5)



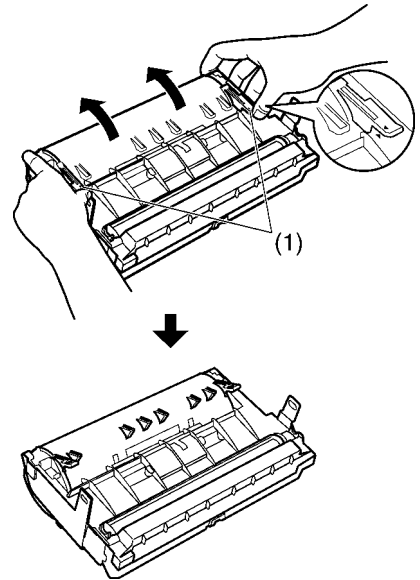
### Caution:

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

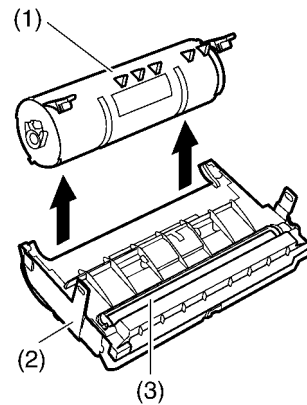
4. Remove the drum and toner unit (1) by holding the tabs.
- If you replace the toner cartridge and the drum unit at the same time, skip to step 7.



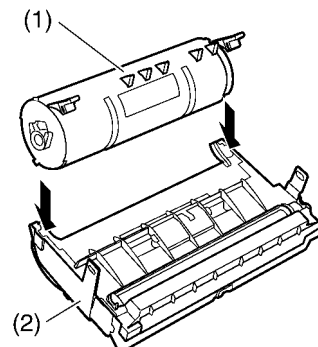
5. Turn the two green levers (1) on the used toner cartridge firmly.



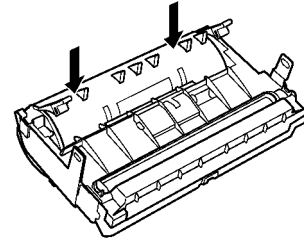
6. Remove the used cartridge (1) from the drum unit (2).
- The toner may stick to the cartridge and the drum unit. Be careful when handling.
  - Do not drop the toner on the black drum surface (3).
  - Put the used toner cartridge into the protection bag.



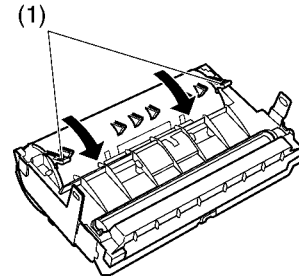
7. If you replace the drum unit at the same time, remove the new drum unit from the protection bag. Place the new toner cartridge (1) into the drum unit (2).



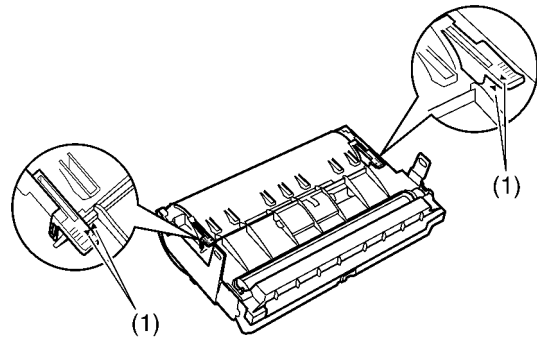
8. Firmly press down the toner cartridge to snap into position.



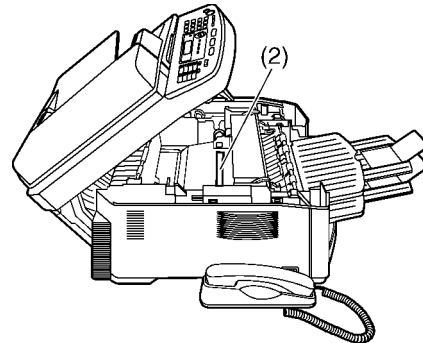
9. Turn the two green levers (1) on the toner cartridge firmly.



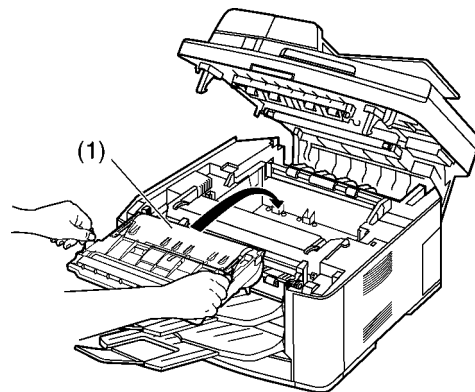
10. Make sure that the triangles (1) match to install the toner cartridge correctly.



• If the lower glass (2) is dirty, clean it with a soft and dry cloth.

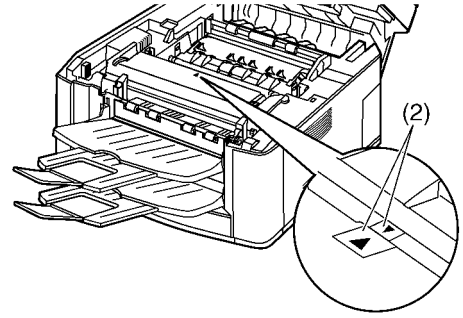


11. Install the drum and toner unit (1) by holding the tabs.





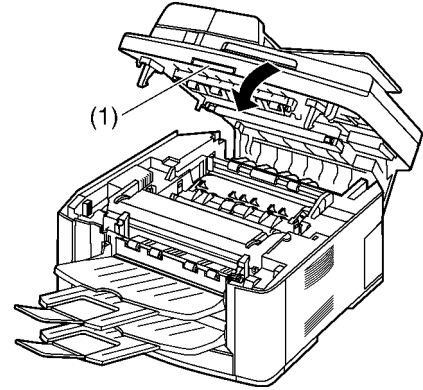
- Make sure that the triangles (2) match to install the drum and toner unit correctly.



12. Close the top cover, holding the cover release lever (1) until locked.

**Caution:**

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



**Note:**

- While the unit displays "PLEASE WAIT", do not open the top cover, or disconnect the power cord.

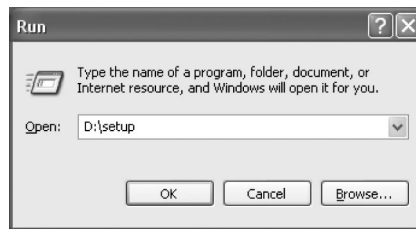
**Waste disposal method**

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

### 8.1.8. INSTALLING MULTI-FUNCTION STATION

- 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 Windows XP and Windows 2000 users, you must be logged in as an administrator in order to install Multi-Function Station.
  - **Install Multi-Function Station before connecting the unit to a computer. If the unit is connected to a computer before installing Multi-Function Station, the [Found New Hardware Wizard] dialog box will appear. Click [Cancel] to close it.**
2. Insert the included CD-ROM into your CD-ROM drive.
  - The **[Choose Setup Language]** dialog box will appear. Select the desired language that you want to use with this software from the drop-down list. Click **[OK]**. The installation will automatically start.
  - If the **[Choose Setup Language]** dialog box does not appear:  
The installation will automatically start.
  - If the installation does not start automatically:  
Click **[Start]**. Choose **[Run...]**. Type "**D:\setup**" (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.)



The installation will start.

3. When the setup program starts, follow the on-screen instructions.
4. When the **[Setup Type]** dialog box appears, select **[Standard]**, then click **[Next]**.
  - Readiris OCR software and Device Monitor will also be installed.
5. When the **[Connect Type]** dialog box appears, select **[Connect directly with a USB cable.]**, then click **[Next]**.
  - The **[Connect Device]** dialog box will appear.
6. Connect the unit with the USB cable, then click **[Next]**.
  - If the unit is connected to your computer, the model name will be automatically detected.
  - You can change the names for the printer, PC fax, and scanner if necessary.
7. Click **[Install]**, then follow the on-screen instructions.
  - The files will be copied to your computer.

#### Important notice for Windows XP users

- If you use Windows XP, the following message may appear after step 6:  
"The software you are installing for this hardware has not passed Windows Logo testing to verify its compatibility with Windows XP"  
This is normal and the software will not cause any difficulties with your operating system. You can continue the installation with no problem.

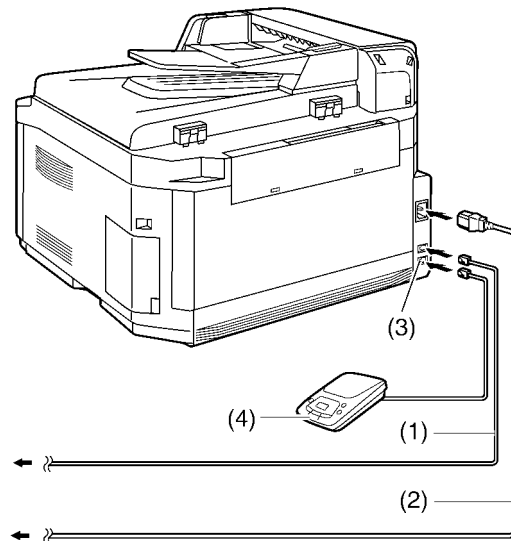
#### Note:

- If the screen prompts to insert the CD-ROM for operating system when installing Multi-Function Station, insert it into your CD-ROM drive.

## 8.2. CONNECTIONS

### Caution:

- When you operate this product, the power outlet should be near the product and easily accessible.
- Be sure to use the telephone line cord included in this unit.
- Do not extend the telephone line cord.
  - (1) Telephone line cord
- Connect to a single telephone line jack.
  - (2) Power cord
- Connect to the power outlet (220-240V, 50/60 Hz).
  - (3) [EXT] jack
- You can connect an answering machine or an extension telephone. Remove the stopper if attached.
  - (4) Answering machine (not included)

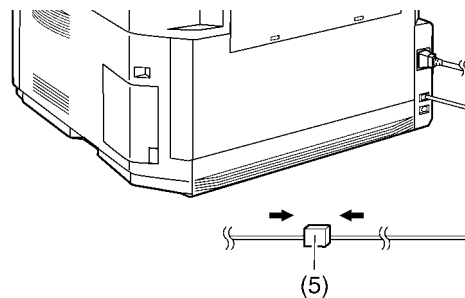


### Note:

- To avoid malfunction, do not position the unit near appliances such as TVs or speakers which generate an intense magnetic field.
- If any other device is connected to the same telephone line, this unit may disturb the network condition of the device.

### 8.2.1. If the FAX machine shares a single telephone line with a DSL service

- If you use the unit with a computer and your internet provider instructs you to install a filter (5), please connect it as follows.



### 8.2.2. Connecting to a computer

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

- Printing on plain paper, transparencies, labels and envelopes
- Scanning documents and converting an image into text with Readiris OCR software
- Scanning from other applications for Microsoft® Windows® that support TWAIN scanning
- 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:

Works with Windows 98/Me/2000/XP\*1

#### CPU:

Windows 98: Pentium® 90 MHz or faster

Windows Me: Pentium 150 MHz or faster  
Windows 2000: Pentium 166 MHz or faster  
Windows XP\*1: Pentium 300 MHz or faster

**RAM:**

Windows 98: 24 MB (32 MB or more recommended)  
Windows Me: 32 MB (64 MB or more recommended)  
Windows 2000: 64 MB or more  
Windows XP\*1: 128 MB or more

**Other Hardware:**

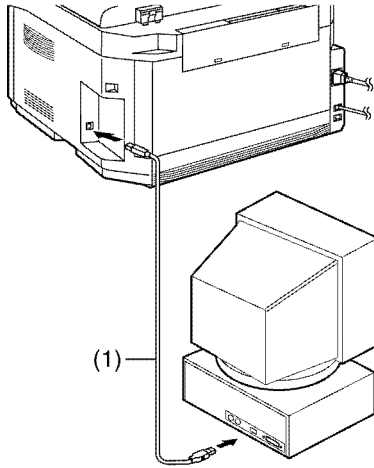
CD-ROM drive  
Hard disk drive with at least 100 MB of available space  
USB interface

\*1 Multi-Function Station software does not work with Windows XP Professional x64 Edition (64bit) that was released in and after April, 2005.

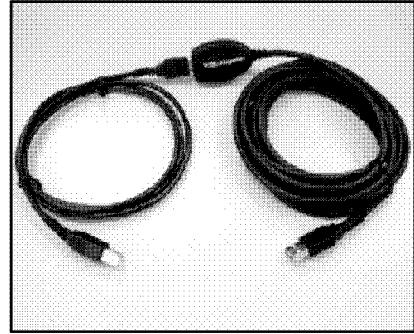
**Important notice for the connection**

Do not connect the USB cable before installing Multi-Function Station. Be sure to connect the USB cable in step 6

- (1) USB cable
- Connect to the USB port.



If you need a more than 2m USB cable,  
Order an extension USB cable kit by  
service parts route.



**Note:**

- Shielded USB cable (2 m or less in length) must be purchased separately. Be sure to use a USB 2.0 certified cable.
- To assure continued emission limit compliance, use only shielded USB cable.

# 9 Operation Instructions

## 9.1. YOUR LOGO

The logo can be your name or the name of your company.

- 1 Press **[MENU]**.

SYSTEM SETUP  
PRESS [◀ ▶]

- 2 Press **[⇄]**, then **[1][0][2]**.

YOUR LOGO  
PRESS SET

- 3 Press **[SET]**.

- The cursor (█) will appear on the display.

LOGO=█

- 4 Enter your logo, up to 30 characters.  
See the following character table for details.

- 5 Press **[SET]**.

SETUP ITEM [ ]

- 6 Press **[MENU]** to exit.

### To enter your logo

Example: "BILL"

1. Press **[2]** 2 times.

LOGO=█

2. Press **[4]** 3 times.

LOGO=B█

3. Press **[5]** 3 times.

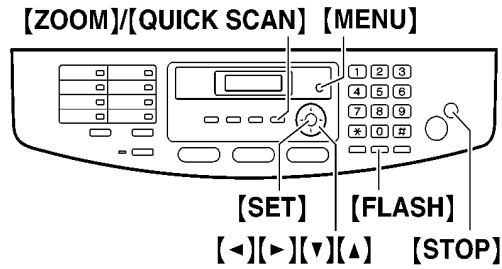
LOGO=BI█

4. Press **[▶]** to move the cursor to the next space and press **[5]** 3 times.

LOGO=BIL█

### Note:

- Your logo will be printed on the top of each page sent from your unit.



### To change uppercase or lowercase letters

Pressing the **[⇄]** key will change to uppercase or lowercase alternately.

1. Press **[2]** 2 times.

LOGO=█

2. Press **[4]** 3 times.

LOGO=B█

3. Press **[⇄]**.

LOGO=Bi█

4. Press **[5]** 3 times.

LOGO=Bi█

### To correct a mistake

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

### To delete a character

Press **[◀]** or **[▶]** to move the cursor to the character you want to delete and press **[STOP]**.

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

### To insert a character

1. Press **[◀]** or **[▶]** to move the cursor to the position to the right of where you want to insert the character.
2. Press **[ZOOM]/[QUICK SCAN]** to insert a space and enter the character.

### 9.1.1. TO SELECT CHARACTERS WITH THE DIAL KEYPAD

Pressing the dial keys will select a character as shown below.

Keys	Characters
[1]	1 [ ] { } + - / = , . _ ` : ; ?
[2]	A B C a b c 2
[3]	D E F d e f 3
[4]	G H I g h i 4
[5]	J K L j k l 5
[6]	M N O m n o 6
[7]	P Q R S p q r s 7
[8]	T U V t u v 8
[9]	W X Y Z w x y z 9
[0]	0 ( ) < > ! " # \$ % & ¥ * @ ^ ' →
[#]	To change capital or lower case letter.
[FLASH]	To enter a hyphen.
[ZOOM]/ [QUICK SCAN]	To insert a space.
[STOP]	To delete a digit.

**Note:**

- To enter another character that is located on the same dial key, press [▶] to move the cursor to the next space

### 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 Number
  - ③ Symbol
  - ④ Lowercase letters
    - If you press [▲], the order will be reversed.
2. Press [▶] to insert the 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"	Clear the memory where the users can store data.
MOTOR TEST & High Voltage Power Supply Board CHECK	Service Mode	"5" "5" "6"	0:printer motor feed 4:auto document feed 6:carriage
		SET	Refer to <b>HIGH VOLTAGE VALUE CHECK POINT</b> (P.177).
MODEM TEST	Service Mode	"5" "5" "4"	Telephone line circuit is connected automatically, output the following signals on the circuit line.
		SET	1) OFF 2) V21 ter 300bps 3) V27 ter 2400bps 4) V27 ter 4800bps 5) V29 7200 6)V29 9600bps 7) V17 7200bps 8) V17 9600bps 9) V17 12000bps 10) V17 14400bps 11) V34 2400bps 12) V34 4800bps 13)V34 7200bps 14)V24 9600bps 15) V34 12000bps 16) V34 14400bps 17)V34 16800bps 18)V34 19200bps 19) V34 21600bps 20) V34 24000bps 21)V34 26400bps 22)V34 28800bps 23) V34 31200bps 24) V34 33600bps 25)1100Hz 22)2100Hz
ROM CHECK	Service Mode	"5" "5" "1"	Indicates the version and checks the sum of the ROM.
		SET	
LCD TEST	Service Mode	"5" "5" "8"	Checks the LCD indication.
		SET	Illuminates all the dots to check if they are normal.
DTMF SINGLE TONE TEST	Service Mode	"5" "5" "2"	Outputs the DTMF as single tones. Used to check the frequencies of the individual DTMF tones. Refer to <b>DTMF SINGLE TONE TRANSMIT SELECTION</b> (P.94).
		1...ON 2...OFF	
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.
		START (any key)	Indicates the button code on the LCD while the button is pressed. Refer to <b>BUTTON CODE TABLE</b> (P.94).
SCANNER TEST	Service Mode	"5" "5" "5"	LED lights up, Scanner scanning. 1:RED / 2:GREEN / 3:BLUE / 4:monochrome / 5:color
LSU TEST	Service Mode	"6" "3" "9"	Laser radiates, Polygon rotates
FAN TEST	Service Mode	"6" "7" "7"	1:TEST OFF
			2:High-speed rotation (Right FAN) 3:Low-speed rotation (Right FAN) 4:High-speed rotation (LEFT FAN ) 5:Low-speed rotation (LEFT FAN)
MEMORY CLEAR (except History data)	Service Mode	"7" "1" "0"	Refer to <b>Memory Clear Specification</b> (P.99).
		SET	



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.49). LCD DISPLAY:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>D S C P R E D T * 3 F * D F * V * U T F A H * * * * * * * * * *</p> </div> <p><b>D: Document</b> D: Document set -: No document <b>S: Read position</b> S: Docu detect -: No document <b>C: Top cover</b> C: Cover open -: Cover close <b>P: Paper</b> P: Paper set -: No paper <b>R: Registration</b> R: Paper detect -: No paper <b>E: Sorter enter</b> E: Paper detect -: No paper <b>D: Drum</b> D: DRUM set -: No DRUM <b>T: Toner</b> T: Toner detect -: No toner <b>*: None</b> <b>3F: Fuser thermistor</b> 3F: 00 (high temp.) - FF (low temp.) <b>*: None</b> <b>DF: Fuser thermistor</b> DF: 00 (high temp.) - FF (low temp.) <b>*: None</b> <b>V: VOX</b> V: VOX detect -: No VOX</p> <p><b>*: None</b> <b>U: Pickup</b> U: Paper detect -: No paper <b>T: Print timing</b> T: Paper detect -: No paper <b>F: FB cover</b> F: Cover open -: Cover close <b>A: ADF cover</b> A: Cover open -: Cover close <b>H: Home</b> H: CIS at Home position -: CIS not at Home position <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b> <b>*: None</b></p>
PRINT TEST PAT- TERN	Service Mode	"8" "5" "2"	<ol style="list-style-type: none"> <li>1. Press "852" then the SET key in the service mode.</li> <li>2. As "PATNO =" is displayed on the LCD, enter the test pattern No. and press the SET key.</li> <li>3. When "No. =" is displayed on the LCD, enter the printing number and press the SET key. (Press "00" for the infinite printing.)</li> <li>4. "MODE" is displayed on the LCD. Press "0" to start printing or press "1" to go to the next screen.</li> <li>5. When "1" is pressed at MODE, "INTVL =" is displayed on the LCD. Enter the printing interval (00~99 sec).</li> <li>6. The printing repeats the designated number of times at the programmed printing intervals.</li> </ol>

**Note:**

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

### 10.1.1. DTMF SINGLE TONE TRANSMIT SELECTION

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

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

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

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

**Note:**

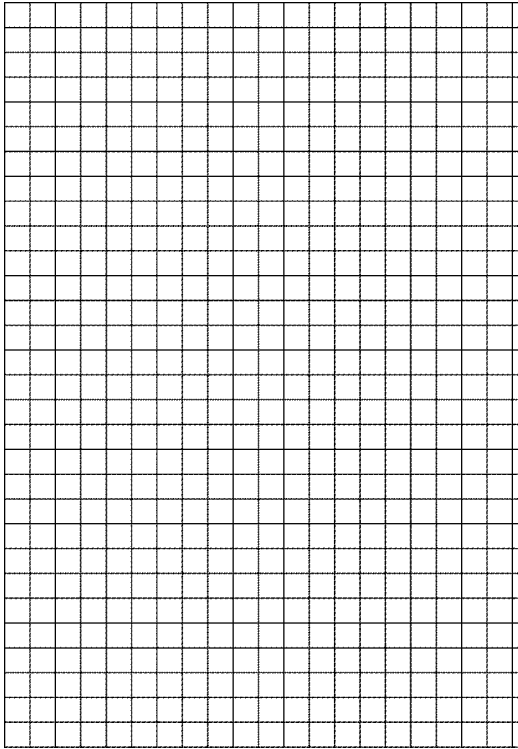
After performing this check, do not forget to turn the setting off. otherwise, dialing in DTMF signal will not work.

### 10.1.2. BUTTON CODE TABLE

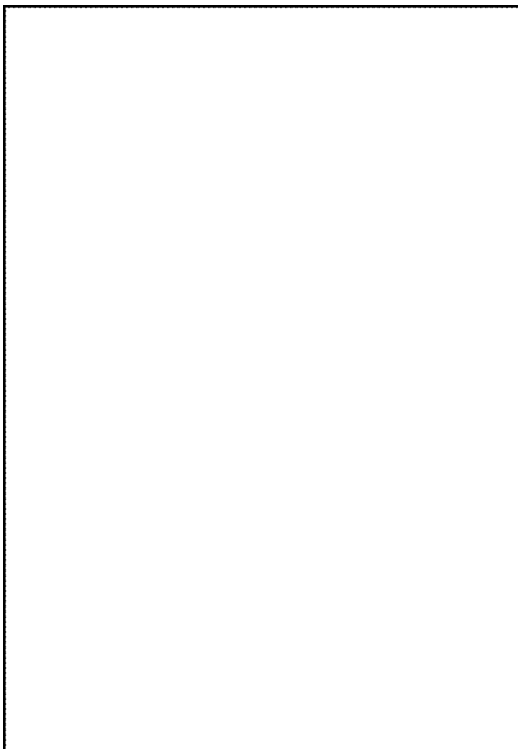
Code	Button Name	Code	Button Name	Code	Button Name
31	1	41	START	5C	RESOLUTION
32	2	-	STOP	5F	ZOOM
33	3	40	SET	51	AUTO ANSWER
34	4	44	MENU	48	STATION 1
35	5	53	HELP	49	STATION 2
36	6	58	CALLER ID	4A	STATION 3
37	7	66	NAVIGATOR ←	4B	STATION 4
38	8	65	NAVIGATOR →	4C	STATION 5
39	9	46	NAVIGATOR ↑	4D	STATION 6
30	0	47	NAVIGATOR ↓	4E	STATION 7
3B	* (X)	60	FAX MODE	67	LOWER
3C	#	61	COPY MODE		
3D	REDIAL	62	SCAN MODE		
57	FLASH	5E	COLLATE		
54	MONITOR	5D	CONTRAST		

### 10.1.3. PRINT TEST PATTERN

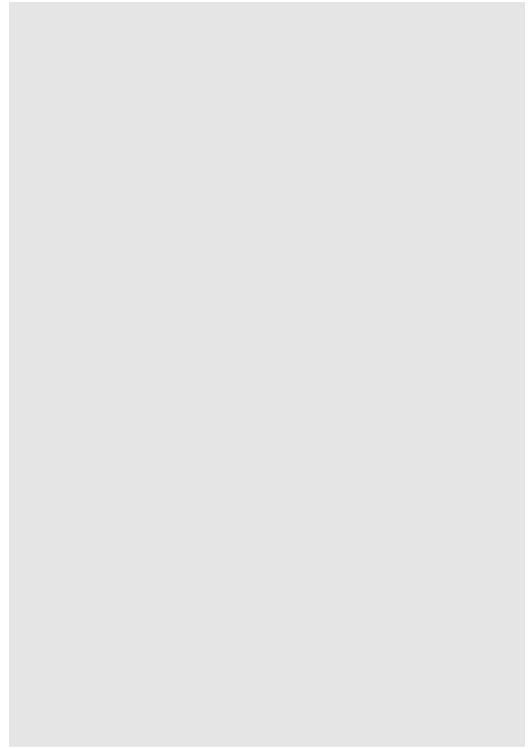
1. NO.01



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

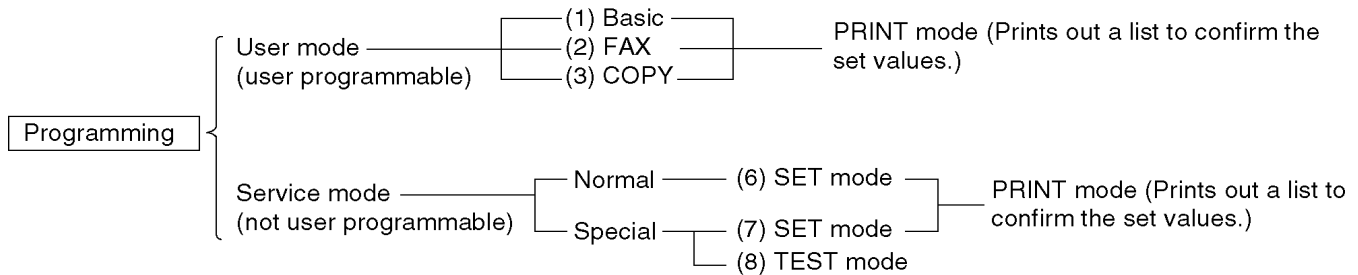
The programming functions are used to program the various features and functions of the machine, and to test the machine. This facilitates communication between the user and the service man while programming the unit.

## 11.1. PROGRAMMING AND LISTS

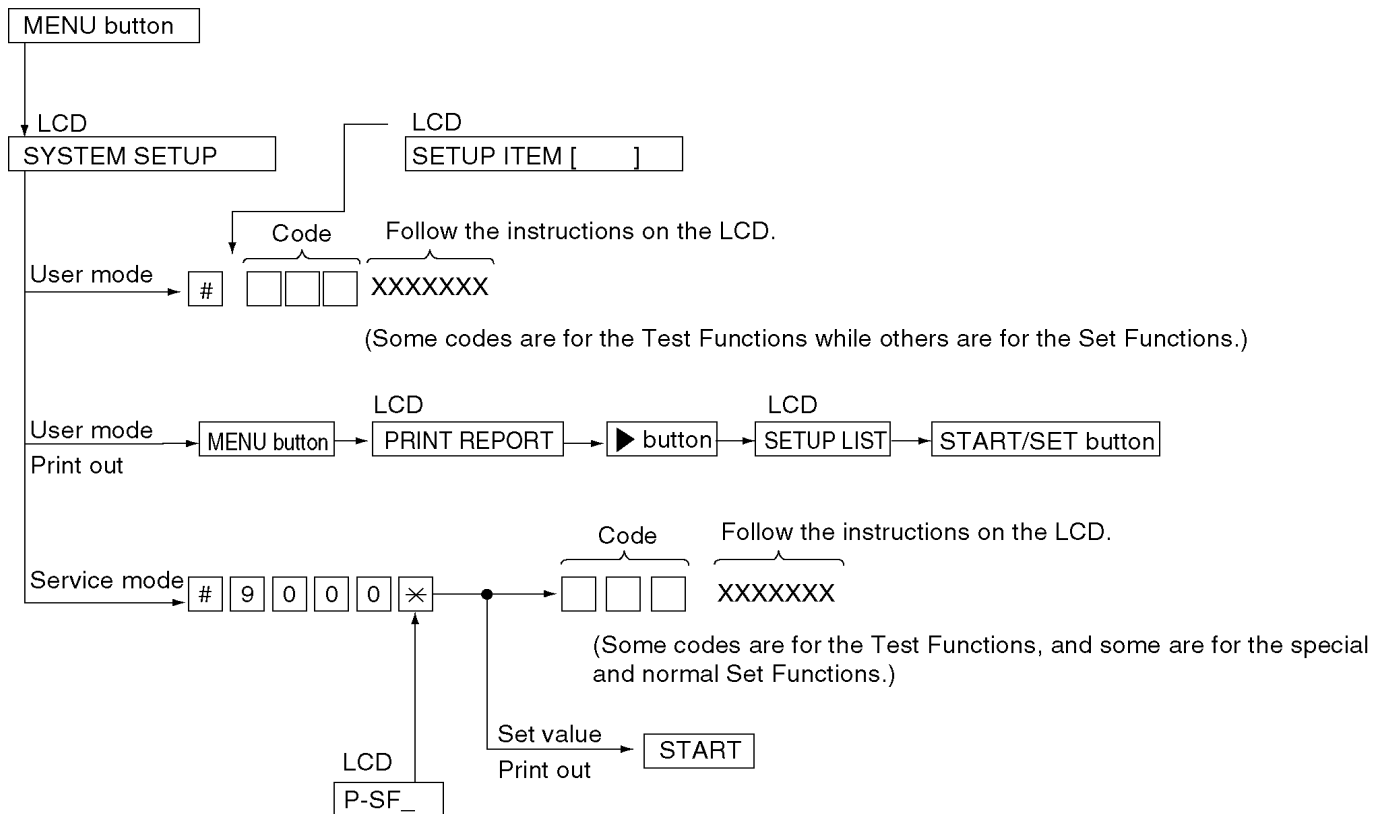
### 11.1.1. OPERATION

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



#### Operating Procedure



## 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.155).
521	International mode select	1:ON 2:OFF	1, 2	1	See Symptom/Countermeasure Table for long distance and international calls in (P.155).
522	Auto standby select	1:ON 2:OFF	1, 2	1	The resolution reverts to the default when transmission is complete.
523	Receive equalizer select	1: 0 km 2: 1.8 km 3: 3.6 km 4: 7.2 km	1~4	1	Set RX equalizer to automatic mode.
524	Transmission equalizer select	1: 0 km 2: 1.8 km 3: 3.6 km 4: 7.2 km	1~4	1	
527	V.8 function select	1:OFF 2:ON	1, 2	2	
529	Call Service Clear				
550	Memory clear				Refer to <b>Memory Clear Specification</b> (P.99).
551	ROM check				See (P.92).
552	DTMF single tone test	1:ON 2:OFF	1, 2	2	See (P.92).
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.92).
555	Scanner test				See (P.92).
556	Motor test & H.V.P.S. check			0	See (P.92).
557	LED test				See (P.92).
558	LCD test				See (P.92).
561	KEY test				See (P.92).
570	BREAK % select	1:61% 2:67%	1, 2	1	Sets the % break of pulse dialing according PBX.
571	ITS auto redial time set	X number of times	00~99	05	Selects the number of times that ITS is redialed (not including the first dial).
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.
590	FAX auto redial time set	X number of times	00~99	05	Selects the number of redial times during FAX communication (not including the first dial).
591	FAX auto redial time disconnection time set	X second	001~999	065	Sets the FAX redial interval during FAX communication.
592	CNG transmit select	1:OFF 2:ALL 3:AUTO	1~3	2	Lets you select the CNG output during FAX transmission. ALL: CNG is output at phase A. AUTO: CNG id output only when automatic dialing is performed. OFF: CNG id not output at phase A. Refer to (P.147).

Code	Function	Set Value	Effective Range	Default	Remarks
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.155). Refer to (P.148) and (P.155).
594	Overseas DIS detection select	1:detects at the 1st time 2:detects at the 2st time	1, 2	1	See <b>Symptom/Countermeasure Table</b> for long distance and international calls in (P.155). Refer to (P.147) and (P.155).
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.147) and (P.148).
598	Receiving sensitivity	43= -43 dBm	20~48	43	Used when there is an error problem. Refer to (P.155).
599	ECM frame size	1:256 2:64	1, 2	1	-----
639	LSU test				See (P.92).
655	Cause Distinction Code of Call Service 3				See (P.120).
677	FAN test				See (P.92).
710	Memory clear except History data				Refer to <b>Memory Clear Specification</b> (P.99).
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.147) 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.148) and
721	Pause tone detect	1:ON 2:OFF	1, 2	2	Selects the tone detection for pause in dialing.
722	Redial tone detect	1:ON 2:OFF	1, 2	1	Sets the tone detection mode after redialing.
763	CNG detect time for friendly reception	1:10 sec 2:20 sec 3:30 sec	1~3	3	Selects the CNG detection tone of friendly reception.
771	T1 timer	1:35 sec 2:60 sec	1, 2	1	Sets a higher value when the response from the other party needs more time during FAX transmission.
774	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.
793	LED color change	1:Green 2:Blue 3:Red	1~3	1	-----
815	Sensor check				See (P.92).
852	Print test pattern				See (P.92).
853	Top margin		1~5	3	-----
854	Left margin		1~7	4	-----
874	DTMF ON time	X msec	060~200	090	-----
875	DTMF OFF time	X msec	060~200	090	-----
880	History list				See (P.104).
881	Journal 2 list				See (P.151).
882	Journal 3 list				See (P.152).

### 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
One touch dial and Directory	—	Default
History	—	—
Top margin (service mode #853)	—	—
Left margin (service mode #854)	—	—
Other Setting data (User setting and Service setting data)	Default	Default

— : Not changed

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

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

**Note:**

Please restart a power supply after clearing a memory.

## 11.2. USER MODE (The list below is an example of the SYSTEM SETUP LIST the unit prints out.)

(KX-FLB802)

### SETUP LIST

#### [ BASIC FEATURE LIST ]

NO.	FEATURE	CURRENT SETTING
#101	SET DATE & TIME	Jan. 01 2006 12:01AM
#102	YOUR LOGO	
#103	YOUR FAX NUMBER	
#120	DIALLING MODE	TONE [TONE, PULSE]
#121	SET FLASH TIME	700ms [900, 700, 600, 400, 300, 250, 200, 160, 110, 100, 90, 80(ms)]
#145	LCD CONTRAST	NORMAL [NORMAL, DARKER]
#161	RINGER PATTERN	A [A, B, C]
#210	FAX RING COUNT	2 [1..9]
#216	AUTO CALLER ID LIST	OFF [OFF, ON]
#380	PAPER SIZE	A4 [LETTER, A4, LEGAL]
#403	POWER SAVE	15min [5min, 15min, 30min, 1h]
#462	CONTRAST SAVE	OFF [OFF, ON]
#463	DEFAULT MODE	COPY [COPY, FAX]
#464	MODE TIMER	1min [OFF, 30s, 1min, 2min, 5min]
#482	TONER SAVE	OFF [OFF, ON]

Code

#### [ FAX FEATURE LIST ]

NO.	FEATURE	CURRENT SETTING
#212	TEL/FAX DELAYED RING	2 [1..9]
#401	PRINT SENDING REPORT	ERROR [OFF, ON, ERROR]
#402	JOURNAL AUTO PRINT	ON [OFF, ON]
#404	MANUAL ANSWER MODE	TEL [TEL, TEL/FAX]
#411	OVERSEAS MODE	ERROR [NEXT FAX, ERROR, OFF]
#412	DELAYED TRANSMISSION	OFF [OFF, ON]
		DESTINATION =
		START TIME = 12:00AM
#413	ECM SELECTION	ON [OFF, ON]
#416	CONNECTING TONE	ON [OFF, ON]
#430	DISTINCTIVE RING	OFF [OFF, ON]
#431	FAX RING PATTERN	B-D [B-D, A, B, C, D]
#432	AUTO REDUCTION	ON [OFF, ON]
#434	FAX ACTIVATION CODE	ON [OFF, ON]
		CODE = *#9
#435	AUTO DISCONNECT	ON [OFF, ON]
		CODE = *0
#436	SILENT FAX RECOGNITION RING	3 [3..9]
#437	MEMORY RECEIVE ALERT	ON [OFF, ON]
#438	FRIENDLY RECEPTION	ON [OFF, ON]
#442	PCFAX SETTING	OFF [OFF, ALWAYS, CONNECTED]
#459	SET FAX DEFAULT	

Code

#### [ COPY FEATURE LIST ]

NO.	FEATURE	CURRENT SETTING
#461	COPY RESOLUTION	TEXT [TEXT/PHOTO, TEXT, PHOTO]
	FIRMWARE VERSION	G631CN

#### Note:

The above values are the default values.



(KX-FLB812)

**SETUP LIST****[ BASIC FEATURE LIST ]**

NO.	FEATURE	CURRENT SETTING
#101	SET DATE & TIME	Jan. 01 2006 12:00AM
#102	YOUR LOGO	
#103	YOUR FAX NUMBER	
#120	DIALLING MODE	TONE [TONE,PULSE]
#121	SET FLASH TIME	700ms [900,700,600,400,300,250,200,160,110,100,90,80(ms)]
#145	LCD CONTRAST	NORMAL [NORMAL,DARKER]
#161	RINGER PATTERN	A [A,B,C]
#210	FAX RING COUNT	2 [1..9]
#216	AUTO CALLER ID LIST	OFF [OFF,ON]
#380	PAPER SIZE	A4 [LETTER,A4,LEGAL]
#403	POWER SAVE	15min [5min,15min,30min,1h]
#462	CONTRAST SAVE	OFF [OFF,ON]
#463	DEFAULT MODE	COPY [COPY,FAX]
#464	MODE TIMER	1min [OFF,30s,1min,2min,5min]
#482	TONER SAVE	OFF [OFF,ON]

Code

**[ FAX FEATURE LIST ]**

NO.	FEATURE	CURRENT SETTING
#212	TEL/FAX DELAYED RING	2 [1..9]
#401	PRINT SENDING REPORT	ERROR [OFF,ON,ERROR]
#402	JOURNAL AUTO PRINT	ON [OFF,ON]
#404	MANUAL ANSWER MODE	TEL [TEL,TEL/FAX]
#411	OVERSEAS MODE	ERROR [NEXT FAX,ERROR,OFF]
#412	DELAYED TRANSMISSION	OFF [OFF,ON]
	DESTINATION =	
	START TIME = 12:00AM	
#413	ECM SELECTION	ON [OFF,ON]
#416	CONNECTING TONE	ON [OFF,ON]
#430	DISTINCTIVE RING	OFF [OFF,ON]
#431	FAX RING PATTERN	B-D [B-D,A,B,C,D]
#432	AUTO REDUCTION	ON [OFF,ON]
#434	FAX ACTIVATION CODE	ON [OFF,ON]
	CODE = *#9	
#435	AUTO DISCONNECT	ON [OFF,ON]
	CODE = *0	
#436	SILENT FAX RECOGNITION RING	3 [3..9]
#437	MEMORY RECEIVE ALERT	ON [OFF,ON]
#438	FRIENDLY RECEPTION	ON [OFF,ON]
#441	FAX OUTPUT TRAY	#2 [#1,#2]
#442	PCFAX SETTING	OFF [OFF,ALWAYS,CONNECTED]
#459	SET FAX DEFAULT	

Code

Set Value

Set Value

**[ COPY FEATURE LIST ]**

NO.	FEATURE	CURRENT SETTING
#461	COPY RESOLUTION	TEXT [TEXT/PHOTO,TEXT,PHOTO]
#466	COPY OUTPUT TRAY	#1 [#1,#2]
	FIRMWARE VERSION	G731CN

**Note:**

The above values are the default values.

### 11.3. SERVICE MODE SETTINGS (Example of a printed out list)

(KX-FLB802)

[ SERVICE DATA LIST ]

	501 PAUSE TIME	=	030*100ms	[001...600]*100ms				
	514 BELL DETECT TIME	=	06*100ms	[01...99]*100ms				
	520 CED FREQUENCY	=	2100Hz	[1=2100 2=1100]Hz				
Code	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	=	3*0.5mm	[1...5]*0.5mm				
	854 LEFT MARGIN	=	4*0.677mm	[1...7]*0.677mm				
	874 DTMF ON TIME	=	90ms	{60...200}ms				
	875 DTMF OFF TIME	=	90ms	{60...200}ms				

[ SPECIAL SERVICE SETTINGS ]

	552	553	573	590	591	592	593	594	595	596	598	599	717
	2	1	10	05	065	2	1	1	2	10	43	1	01
Code	718	771	774										
	01	1	00										

USAGE TIME = 0 HOURS

Version = G631CN 7DA5

**Note:**

The above values are the default values.

(KX-FLB812)

[ SERVICE DATA LIST ]

	501	PAUSE TIME	=	030*100ms	[001...600]*100ms				
	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				
Code	853	TOP MARGIN	=	3*0.5mm	[1...5]*0.5mm				
	854	LEFT MARGIN	=	4*0.677mm	[1...7]*0.677mm				
	874	DTMF ON TIME	=	90ms	[60...200]ms				
	875	DTMF OFF TIME	=	90ms	[60...200]ms				

[ SPECIAL SERVICE SETTINGS ]

	552	553	573	590	591	592	593	594	595	596	598	599	717
	2	1	10	05	065	2	1	1	2	10	43	1	01
	718	771	774										
Code	01	1	00										

USAGE TIME = 0 HOURS

Version = G731CN 6995

**Note:**

The above values are the default values.

# 11.4. HISTORY

[ HISTORY ]

I 0 1 7 A	9 0 A 5	N O N E	N O N E
(1)	(2)	(48)	(49)
(3)			
(4)			
N O N E			
(5)			
0 0 0 0 0	0 1	0 1	2 0 0 5
(6)	(7)	(8)	(9)
			0 0 0 0
			(10)
0 0 0 0 2	0 0 0 0 0		
(11)	(12)		
0 0 0 0 0	0 0 0 0 2	N O N E	N O N E
(13)	(14)	(15)	(16)
	(for factory)	T O N E	O N
0 0 0 0 0	0 0 0 0 0	(18)	(19)
0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0
(22)	(23)	(24)	
N O N E	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0
		(28)	(29)
			N O N E
0 0 0	0 0 0	0 0 0 0 0	C O M P L E T E
(30)	(31)	(32)	(33)
0 0 0 0 4	0 0 0 0 3	0 0 0 0 0	0 0 0 0 0
(36)	(37)	(38)	(39)
0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0
(42)	(43)	(44)	(45)
0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
(52)	(53)	(54)	
0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
(55)	(56)	(57)	
0 0 0 0 0 2	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
(60)	(61)	(62)	
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
(26)	(27)	(21)	

NAME \_\_\_\_\_ DATE \_\_\_\_\_ DEALER \_\_\_\_\_  
 CUSTOMER COMPLAINT \_\_\_\_\_

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

**Note:**  
 See the following descriptions of this report. Item No. (1) ~ (49) are corresponding to the listed items in **DESCRIPTIONS OF THE HISTORY REPORT**(P.105).

## 11.4.1. DESCRIPTIONS OF THE HISTORY REPORT

- (1) ROM VERSION  
FLASH ROM version
- (2) SUM  
FLASH ROM internal data calculation.
- (3) YOUR LOGO  
The user logo recorded in the unit. If it is not recorded, NONE will be displayed.
- (4) YOUR TELEPHONE NUMBER  
The user telephone number recorded in the unit. If it is not recorded, NONE will be displayed.
- (5) Not used
- (6) FACTORY - CUSTOMER  
This shows how many days from factory production until the user turns ON the unit.
- (7) MONTH  
The shows the very first month, date, year and time set by the user after they purchased the unit.
- (8) DAY  
The shows the very first month, date, year and time set by the user after they purchased the unit.
- (9) YEAR  
The shows the very first month, date, year and time set by the user after they purchased the unit.
- (10) TIME  
The shows the very first month, date, year and time set by the user after they purchased the unit.
- (11) USAGE TIME  
The amount of time the unit has been powered ON.
- (12) FACTORY - NOW  
This shows how many days from factory production until the user prints out this history list.
- (13) TEL MODE  
The amount of time the TEL mode setting was used.
- (14) FAX MODE  
The amount of time the FAX mode setting was used.
- (15) Not used
- (16) Not used
- (17) FINAL RECEIVE MODE  
The last set receiving mode by the user.
- (18) TONE/PULSE SELECTION  
The most recently used setting used, either TONE or PULSE.
- (19) RECEIVE REDUCTION  
The compression rate when receiving.
- (20) SETTING NO. OF DIRECTORY  
The recorded directory stations (one touch dial).
- (21) NUMBER OF COPY  
The number of pages copied.
- (22) NUMBER OF RECEIVE  
The number of pages received.
- (23) NUMBER OF SENDING  
The number of pages sent.
- (24) NUMBER OF CALLER ID  
The number of times Caller ID was received.
- (25) Not used
- (26) NUMBER OF PC SCAN  
The number of times multifunction was used for the Scanner. (The number of pages scanned. If the unit does not have a PC interface, NONE will be printed.)
- (27) NUMBER OF PC-PRINT  
The number of times multifunction was used for the Printer. (The number of pages printed. If the unit does not have a PC interface, NONE will be printed.)
- (28) NUMBER OF RECEIVING TO PC  
The number of times received in the PC through the USB cable. (The number of pages received. If the unit does not have a PC interface, NONE will be printed.)
- (29) NUMBER OF SENDING FROM PC  
The number of times transmitted from the PC through the USB cable. (The number of pages transmitted. If the unit does not have a PC interface, NONE will be printed.)
- (30) Not used
- (31) NUMBER OF PRINTING HELP  
The number of help lists printed until now.
- (32) NUMBER OF DIVIDED PRINTING IN FAX RECEPTION  
The number of faxes received that were divided into more than one sheet since the unit was purchased.
- (33) Not used.
- (34), (35) Not used.
- (36) FAX MODE  
Means the unit received a fax message in the FAX mode.
- (37) MAN RCV  
Means the unit received a fax message by manual operation.
- (38) FRN RCV  
Means the unit received a fax message by friendly signal detect.
- (39) Not used
- (40) RMT DTMF  
Means the unit detected DTMF (Remote Fax activation code) entered remotely.
- (41) PAL DTMF  
Means the unit detected DTMF (Remote Fax activation code) entered by a parallel connected telephone.
- (42) TURN-ON  
Means the unit started to receive after 10 rings. (Remote Turn On: Service Code #573)
- (43) Not used
- (44) IDENT  
Means the unit detected Ring Detection.
- (45) Not used
- (46) Not used
- (47) Not used
- (48) Not Used
- (49) Not Used
- (50) Printing number of the drum unit
- (51) Paddle rotation number of the drum unit
- (52) CALL SERVICE 3 failure cause record (the latest)
- (53) CALL SERVICE 3 failure cause record (the last time)
- (54) CALL SERVICE 3 failure cause record (the second last time)
- (55) NUMBER OF DOCUMENT JAM
- (56) NUMBER OF PAPER JAM
- (57) NUMBER OF PICK UP ERROR OF RECORDING PAPER TRAY #1
- (58) NUMBER OF PICK UP ERROR OF RECORDING PAPER TRAY #2

(59) NUMBER OF PICK UP ERROR OF RECORDING PAPER TRAY #3

(60) Total number of printing (The number of printed papers including copy, reception printing, report, etc.)

(61) The printing number at the most recent maintenance kit replacement (The condition is the same as #60.)


(62) The replacement number of the maintenance kit (The number is counted based on the service #670.)

# 12 Troubleshooting Guide

## 12.1. USER RECOVERABLE ERRORS

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

DISPLAY MESSAGE	CAUSE AND REMEDY
CALL SERVICE 1	<ul style="list-style-type: none"> <li>• Polygon motor error. Refer to <b>CALL SERVICE 1</b> (P.121).</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.122).</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.123).</li> </ul>
CALL SERVICE 4	<ul style="list-style-type: none"> <li>• Fan motor error. Replace fan motor. Refer to <b>CALL SERVICE 4</b> (P.124).</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.126).</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.127).</li> </ul>
CARRIAGE ERROR	<ul style="list-style-type: none"> <li>• There is something wrong with the Home sensor.</li> </ul>
CHANGE DRUM	<ul style="list-style-type: none"> <li>• There is something wrong with the drum unit. Replace the drum unit and the toner cartridge.</li> </ul>
CHECK DOCUMENT ↑ PRESS STOP TO CLEAR	<ul style="list-style-type: none"> <li>• The document was not fed into the unit properly. Re-insert the document. If misfeeding occurs frequently, clean the document feeder rollers and try again.</li> </ul>
CHECK DRUM	<ul style="list-style-type: none"> <li>• The drum unit is not inserted properly. Re-insert it correctly.</li> </ul>
CHECK MEMORY	<ul style="list-style-type: none"> <li>• The memory (telephone numbers, parameters, etc.) has been erased. Re-program.</li> </ul>
CHECK PICK UP INPUT TRAY #1	<ul style="list-style-type: none"> <li>- "#1": Paper input tray</li> <li>- "#2": Manual input tray</li> <li>• Recording paper was not fed into the unit properly. Re-insert the recording paper.</li> <li>• The cover at the left side of the optional input tray is open. Close it.</li> </ul>
CLOSE ADF COVER	<ul style="list-style-type: none"> <li>• The ADF cover is open. Close it.</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 REPLACE SOON	<ul style="list-style-type: none"> <li>• The drum life is near to an end. Replace the drum unit as soon as possible.</li> </ul>
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 you select the computer that will be used for receiving a fax in feature #443, and feature #442 is set to "ALWAYS", check the connection between the computer and the unit.</li> </ul>
KEEP COPYING	<ul style="list-style-type: none"> <li>• Copying has stopped due to a lack of recording paper or paper being fully stacked on the output tray. See the other displayed message instructions to continue copying. If copying is not restarted within few minutes, copying will be canceled.</li> </ul>
LOW TEMP.	<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. While the unit cannot be operated, the received documents are temporarily stored into the memory, and will be printed out automatically when the unit warms up.</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 <b>[STOP]</b> to clear the message. Divide the document into sections.</li> </ul>

DISPLAY MESSAGE	CAUSE AND REMEDY
<div style="border: 1px solid black; padding: 5px; text-align: center;">MODEM ERROR</div>	<ul style="list-style-type: none"> <li>• There is something wrong with the unit's modem.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">NO FAX REPLY</div>	<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>
<div style="border: 1px solid black; padding: 5px; text-align: center;">OUT OF PAPER INPUT TRAY #1</div>	<ul style="list-style-type: none"> <li>- "#1": Paper input tray</li> <li>- "#2": Manual input tray</li> <li>• Recording paper is not installed or the input tray has run out of paper. Install paper.</li> <li>• Recording paper is not fed into the unit properly. Reinstall paper.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">PAPER JAMMED</div> <div style="text-align: center; margin: 5px 0;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">OPEN TOP COVER</div>	<ul style="list-style-type: none"> <li>• A recording paper jam occurred inside of the optional input tray. Clear the jammed paper.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">PC FAIL OR BUSY</div>	<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>
<div style="border: 1px solid black; padding: 5px; text-align: center;">PLEASE WAIT</div>	<ul style="list-style-type: none"> <li>• The unit is warming up. Wait for a while.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">REDIAL TIME OUT</div>	<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>
<div style="border: 1px solid black; padding: 5px; text-align: center;">REMOVE DOCUMENT</div>	<ul style="list-style-type: none"> <li>• The document is jammed. Remove the jammed document.</li> <li>• Attempted to send a document longer than 600 mm (23<sup>5</sup>/<sub>8</sub>" ). Press <b>[STOP]</b> to remove the document. Divide the document into two or more sheets and try again.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">REMOVE PAPER IN INPUT TRAY #2</div>	<ul style="list-style-type: none"> <li>• The recording paper is installed in the manual input tray when trying to copy, receive faxes or print reports. Remove the recording paper from manual input tray.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">REPLACE DRUM</div>	<ul style="list-style-type: none"> <li>• The drum life is complete. Replace the drum unit immediately.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">RX MEMORY FULL</div>	<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. Install paper or clear the jammed paper.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">TONER EMPTY</div>	<ul style="list-style-type: none"> <li>• The toner life is complete. Replace the toner cartridge immediately.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">TONER LOW</div>	<ul style="list-style-type: none"> <li>• The toner life is near to an end. Replace the toner cartridge as soon as possible.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">TOP COVER OPEN</div>	<ul style="list-style-type: none"> <li>• The top cover is open. Close it.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">TRANSMIT ERROR</div>	<ul style="list-style-type: none"> <li>• A transmission error occurred. Try again.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">WARMING UP</div>	<ul style="list-style-type: none"> <li>• The inside of the unit is too cold. Let the unit warm up. Wait for a while.</li> <li>• The unit is warming up before operation starts. Wait for a while.</li> </ul>
<div style="border: 1px solid black; padding: 5px; text-align: center;">WRONG PAPER</div>	<ul style="list-style-type: none"> <li>• The fax message was printed on paper which is shorter than letter size paper. Use the appropriate size paper.</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.111)). 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.

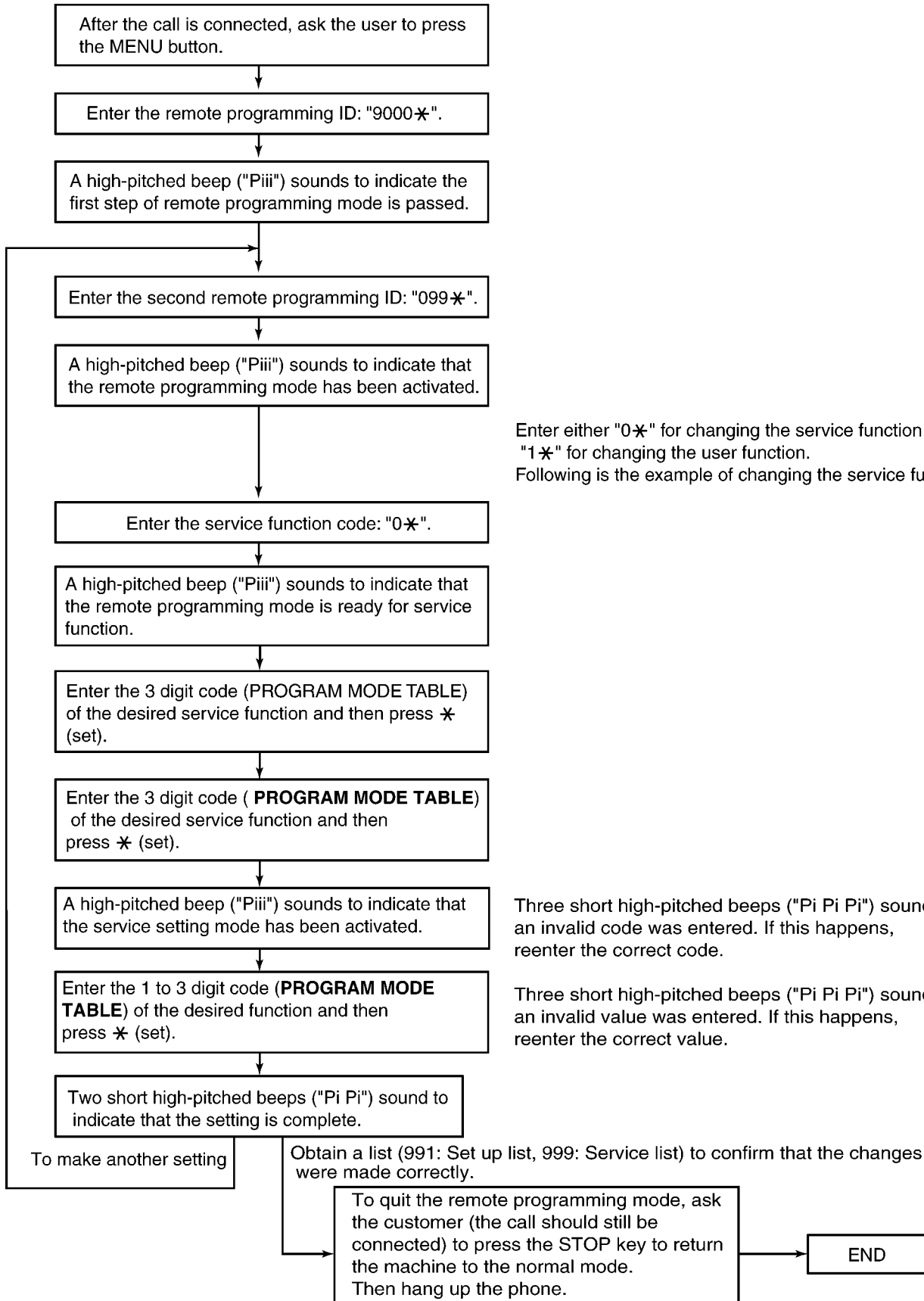
Based on this, the parameters for the desired codes can be changed.

The procedure for changing and listing parameters is described on **ENTERING THE REMOTE PROGRAMMING MODE AND CHANGING SERVICE CODES**(P.110). 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.111)

## 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	Jan/01/2006	NG
102	YOUR LOGO	-----	None	NG
103	YOUR FAX NUMBER	-----	None	NG
120	DIALING MODE	1:Pulse / 2:Tone	Tone	OK
121	SET FLASH TIME	90:900 / 70:700 / 60:600 / 40:400 / 30:300 / 25:250 / 20:200 / 16:160 / 11:110 / 10:100 / 09:90 / 08:80(ms)	700ms	OK
145	LCD CONTRAST	Normal / Darker	Normal	NG
161	RINGER PATTERN	1:A / 2:B / 3:C	A	NG
210	FAX RING COUNT	1 to 9 rings (for ext. tam)	2	OK
216	AUTO CALLER ID LIST	1:ON / 2:OFF	OFF	OK
380	PAPER SIZE	1:LETTER / 2:A4 / 3:LEGAL	A4	OK
403	POWER SAVE	5:5min / 15:15min / 30:30min / 60:1h	15min	OK
462	CONTRAST SAVE	1:OFF / 2:ON	OFF	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:ON / 2:OFF	OFF	OK

#### Fax features

Code	Function	Set Value	Default	Remote Setting
212	TEL / FAX DELAYED RING	1 to 9 rings	2	OK
401	PRINT CONFIRMATION REPORT	1:Error / 2:ON / 3:OFF	Error	OK
402	JOURNAL AUTO PRINT	1:ON / 2:OFF	ON	OK
404	MANUAL ANSWER MODE	1:TEL / 2:TEL / FAX	TEL	OK
411	OVERSEAS MODE	1:NEXT FAX / 2:ERROR / 3:OFF	ERROR	OK
412	DELAYED SEND	1:ON / 0:OFF	OFF	NG
413	ECM SELECTION	1:ON / 2:OFF	ON	OK
416	CONNECTING TONE	1:ON / 2:OFF	ON	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:ON / 2:OFF	ON	OK
434	Remote FAX activation code	1:ON / 0:OFF	ON CODE=*#9	NG
435	AUTO DISCONNECT	1:ON / 2:OFF	ON CODE=*0	NG
436	SILENT FAX RECOGNITION	3 to 9 rings	3	OK
437	MEMORY RECEPTION ALERT	1:ON / 2:OFF	ON	OK
438	FRIENDLY RECEPTION	1:ON / 2:OFF	ON	OK
441	FAX OUTPUT TRAY (KX-FLB812 only)	1:#1 / 2:#2	#2	OK
442	PCFAX SETTING	1:OFF / 2:ALWAYS / 3:CONNECTED	OFF	OK
459	SET FAX DEFAULT	YES / NO	NO	NG

#### Note:

FAX OUTPUT TRAY (441) is available only with KX-FLB812.

#### Copy features

Code	Function	Set Value	Default	Remote Setting
461	COPY RESOLUTION	1:TEXT/PHOTO / 2:TEXT / 3:PHOTO	TEXT	OK
466	COPY OUTPUT TRAY (KX-FLB812 only)	1:#1 / 2:#2	#1	OK

#### Note:

COPY OUTPUT TRAY (466) is available only with KX-FLB812.

## 12.2.2.2. SERVICE FUNCTION

Code	Function	Set Value	Default	Remote Setting
501	Pause time set	001~600 x 100msec	030	OK
503	Dial speed	1:10pps / 2:20 pps	10pps	OK
507	V34 transmission start speed	(0:Disable/1:33.6/2:31.2/3:28.8/4:26.4/ 5:24.0/6:21.6/7:19.2/8:16.8/)	33600bps	OK
508	V34 reception start speed	(0:Disable/1:33.6/2:31.2/3:28.8/4:26.4/ 5:24.0/6:21.6/7:19.2/8:16.8/)	33600bps	OK
514	Bell signal detect time	1~9 x 100msec	6	OK
520	CED frequency select	1:2100Hz / 2:1100Hz	2100	OK
521	International mode select	1:ON / 2:OFF	ON	OK
522	Auto standby select	1:ON / 2:OFF	ON	OK
523	Receive equalizer select	1:0kms / 2:1.8km / 3:3.6km / 4:7.2km	0 km	OK
524	Transmission equalizer select	1:0kms / 2:1.8km / 3:3.6km / 4:7.2km	0 km	OK
527	V8 function select	1:OFF / 2:ON	ON	OK
529	Memory clear for Call Service	-----	-----	NG
550	Memory clear	-----	-----	NG
551	ROM check	-----	-----	NG
552	DTMF signal tone test	1:ON / 2:OFF	OFF	OK
553	Monitor on FAX communication select	1:OFF / 2:Phase B / 3:ALL	OFF	OK
554	Modem test	-----	-----	NG
555	Scanner test	-----	-----	NG
556	Motor test & H.V.P.S check	-----	-----	NG
557	LED test	-----	-----	NG
558	LCD test	-----	-----	NG
561	Key test	-----	-----	NG
570	Break % select	1:61% / 2:67%	61%	OK
571	ITS auto redial time set	00~99	05	OK
573	Remote turn-on ring number set	00~99	10	OK
590	FAX auto redial time set	00~99	05	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	43	OK
599	ECM Frame size	1:256 / 2:64	256byte	OK
639	LSU test	-----	-----	NG
655	Cause distinction code of call service 3	-----	-----	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
721	Pause tone detect	1:ON / 2:OFF	OFF	OK
722	Redial tone detect	1:ON / 2:OFF	ON	OK
763	CNG detect time for friendly reception	1:10s / 2:20s / 3:30s	30s	OK
771	T1 timer	1:35s / 2:60s	35s	OK
774	T4 timer	00~99 x 100msec	0	OK
793	LED color change	1:Green / 2:blue / 3:Red	Green	OK
815	Sensor check	-----	-----	NG
852	Print test pattern	-----	-----	NG
853	Top margin	1~5	3	OK
854	Left margin	1~7	4	OK
874	DTMF ON time	060~200msec	90	OK
875	DTMF OFF time	060~200msec	90	OK
880	History list	1:Start	-----	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
999	Service list	1:Start	-----	OK

OK means "can set".

NG means "can not set".

**Note:**

Refer to **SERVICE FUNCTION TABLE** (P.97) for descriptions of the individual codes.

**Example:**

If you want to set value in the "401 PRINT CONFIRMATION 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

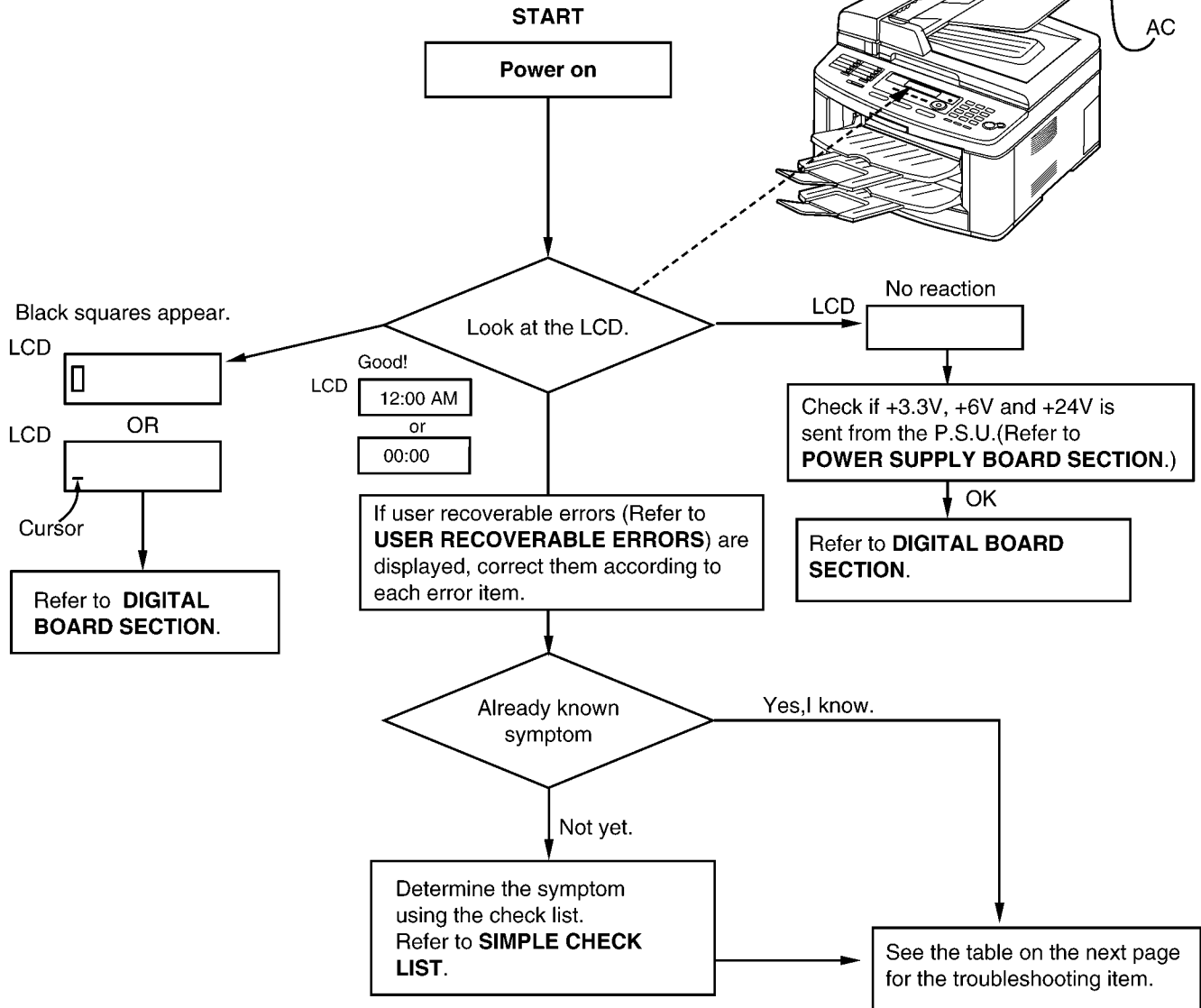
### 12.3.1. OUTLINE

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 Digital PCB, Analog PCB, etc.) The claim tag from a customer or dealer may use different expressions for the same problem, as they are not a technician or engineer. Using your experience, test the problem area corresponding to the claim. Also, returns from a customer or dealer often have a claim tag. For these cases as well, you need to determine the problem. Test the unit using the simple check list on **SIMPLE CHECK LIST**(P.116). Difficult problems may be hard to determine, so repeated testing is necessary.

### 12.3.2. STARTING TROUBLE SHOOTING

Determine the symptom and the troubleshooting method.

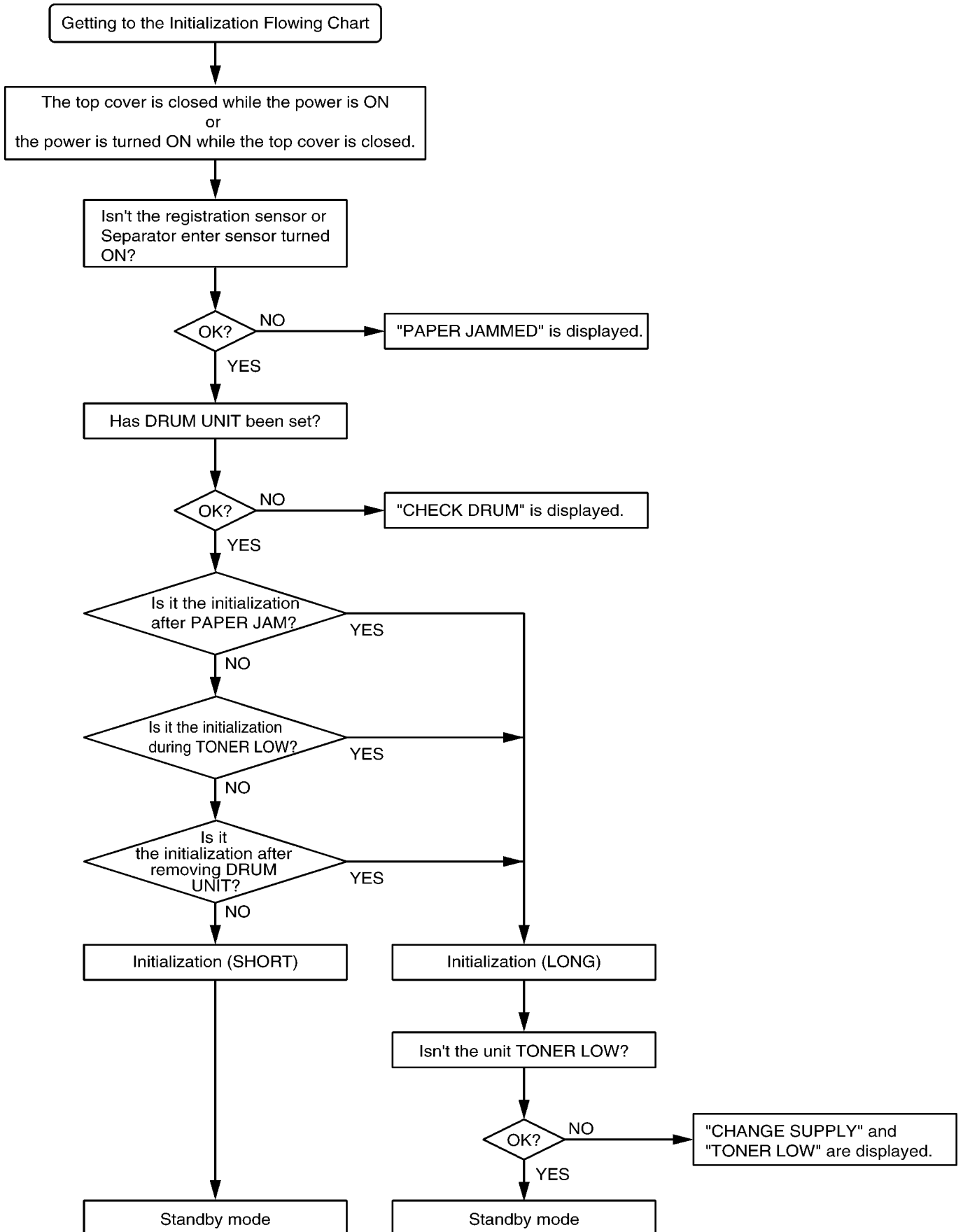
Plug in the AC cord.



- CROSS REFERENCE:**  
 USER RECOVERABLE ERRORS(P.107)  
 SIMPLE CHECK LIST(P.116)  
 DIGITAL BOARD SECTION(P.253)  
 POWER SUPPLY BOARD SECTION(P.67)

### 12.3.3. INITIALIZATION

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



**12.3.4. SIMPLE CHECK LIST**

SERIAL NO. \_\_\_\_\_

DATE \_\_\_\_\_

FUNCTION		JUDGEMENT	REFERENCE
FAX operation	Transmission	OK / NG	
	Receiving	OK / NG	
Copy operation	Copy by ADF	OK / NG	
	Copy by Flat Bed	OK / NG	
PC operation	USB PC print	OK / NG	
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.92)



## 12.3.5. SIMPLIFIED TROUBLESHOOTING GUIDE

### 12.3.5.1. PRINTING

No.	Symptom	Cause	Countermeasure
1	<b>GHOST IMAGE</b> (P.128)	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.179)
		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.129)	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
3	<b>DARK OR WHITE HORIZONTAL LINE</b> (P.130)	Failed LSU	Go to <b>LSU (Laser Scanning Unit) SECTION</b> (P.47)
		Failed drum unit	Replace drum unit
		Failed the gear	Check the gear
		Failed the engine motor	Go to <b>FB (FlatbedFlatbed) MOTOR</b> (P.172)
		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.179)
		Scratch on the OPC drum	Replace drum unit
Static electricity on the documents (when copying)	Check the connection between the parts around CIS and earthing)		
4	<b>DIRTY OR HALF DARKNESS BACKGROUND</b> (P.131)	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.179)
		Dirty the recording paper path	Clean the recording paper path
5	<b>BLACK PRINT</b> (P.132)	Failed drum unit	Replace drum unit
		Failed LSU	Go to <b>LSU (Laser Scanning Unit) SECTION</b> (P.47)
		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.179)
		Failed the digital board	Check the digital board
		Failed CIS (when copying)	Go to <b>CIS CONTROL SECTION</b> (P.175)
6	<b>LIGHT PRINT (P.133) OR BLACK PRINT (P.132)</b>	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.179)
		Failed the digital board	Check the digital board
		Failed CIS (when copying)	Go to <b>CIS CONTROL SECTION</b> (P.175)
7	<b>BLACK OR WHITE POINT</b> (P.134)	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.179)
		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.134)	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.135)	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.136)	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.137)	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>FB (FlatbedFlatbed) MOTOR</b> (P.172)
		Failed the pickup sensor lever	Check the pickup sensor lever
		Failed the pickup sensor	Go to <b>SENSOR SECTION</b> (P.168)
5	<b>THE RECORDING PAPER JAM</b> (P.138) "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.168)
		Failed the resist sensor lever	Check the Registration & Manual paper sensor (paper top sensor) lever
		Failed the resist sensor	Go to <b>SENSOR SECTION</b> (P.168)
		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.139)	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.179)

## 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.140)	Failed the document sensor lever	Replace the document sensor lever
		Failed the document sensor	Go to <b>SENSOR SECTION</b> (P.168)
		Dirty or failed the separation roller	Clean or replace the separation roller
		Dirty or failed the separation rubber	Clean or replace the separation rubber
	<b>DOCUMENT JAM</b> (NO DOCUMENT FEED, DOCUMENT JAM and MULTIPLE DOCUMENT FEED.) (P.140)	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
		Failed the ADF motor	Go to <b>ADF MOTOR</b> (P.173)
	<b>MULTIPLE DOCUMENT FEED</b> (NO DOCUMENT FEED, DOCUMENT JAM and MULTIPLE DOCUMENT FEED.) (P.140)	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
Dirty or failed the separation rubber		Clean or replace the separation rubber	
2	<b>SKEW (ADF)</b> (P.142)	Failed the separation spring	Replace the separation spring
		Dust or scratch on the document paper path	Clean the document paper path
		Failed the document feed roller	Replace the document feed roller
3	<b>THE SENT FAX DATA IS SKEWED</b> (P.143)	Failed the document guide	Replace the document guide
		The cause of ADF	Go to <b>SKEW (ADF)</b> (P.142)
		The cause of scanner glass	----
4	<b>THE RECEIVED FAX DATA IS SKEWED</b> (P.143)	Problem with the other FAX machine	
		The cause of printing	Go to <b>SKEW (ADF)</b> (P.142)
5	<b>THE RECEIVED OR COPIED DATA IS EXPANDED</b> (P.143)	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.144)	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.129)
7	<b>AN ABNORMAL IMAGE IS COPIED</b> (P.145)	Failed CIS	Go to <b>CIS CONTROL SECTION</b> (P.175)
		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.175)		
		The cause of printing	Go to <b>DARK OR WHITE VERTICAL LINE</b> (P.129)

## 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.47).

- 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.47)

- 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.62)

- \*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 (170°C: 5Bh) within 50 seconds.

03: means that it did not reach the second stabilizing temperature (205°C: 3Ch) within 70 seconds after reaching the first stabilizing temperature (170°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 (205°C: 3Ch).

05: means that it did not reach the first stabilizing temperature (170°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 unit 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 of Fan..... Refer to **FAN MOTOR SECTION** (P.44)

- Connector isn't inserted firmly, dust is caught in and the fan is broken.
- Rotation of the Fan can be confirmed by following Test Mode.

Service mode \*677

:1... Normal operation (default)

:2... Right Fan ON (High speed)

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

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

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

Call service 5 ----- Rotation of Engine motor..... Refer to **MOTOR DRIVE SECTION** (P.35)

- 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 **HVPS (High Voltage Power Supply) SECTION** (P.60)

- 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.

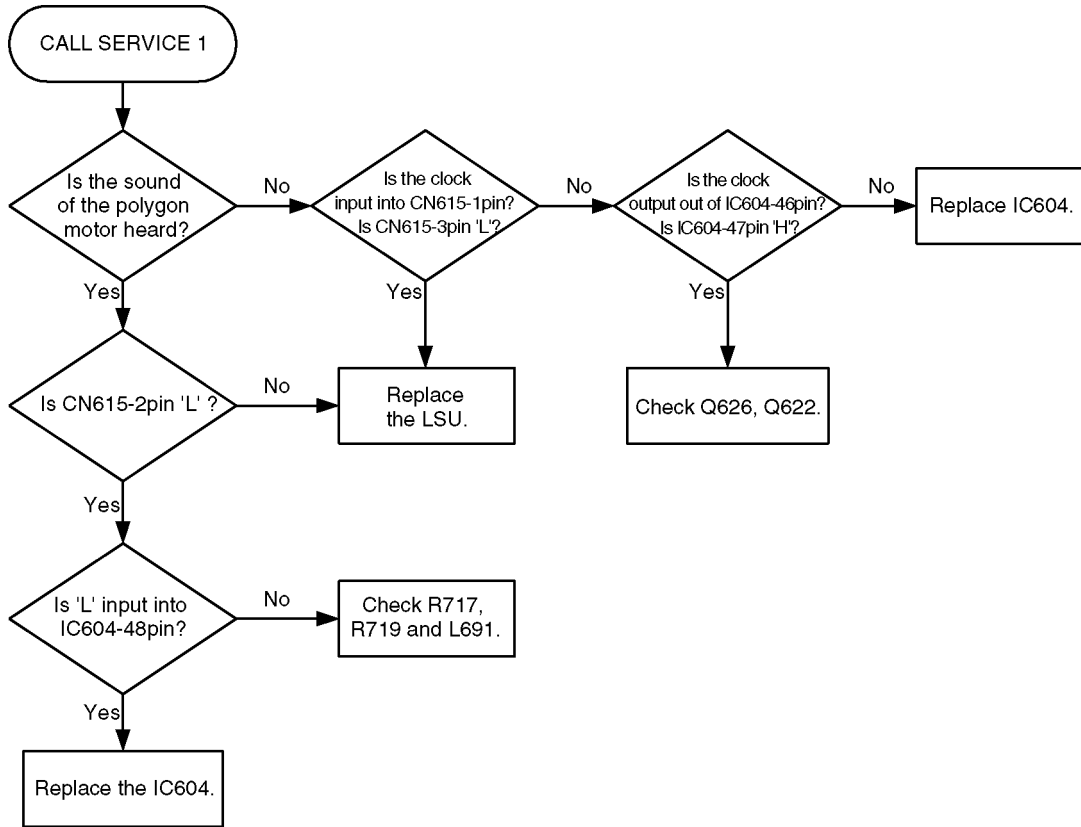
\* As for Call Service 1, 2, 4, 5 and 6, turn the power OFF then ON to restart.

### 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 IC604-48pin (XREADY).

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

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

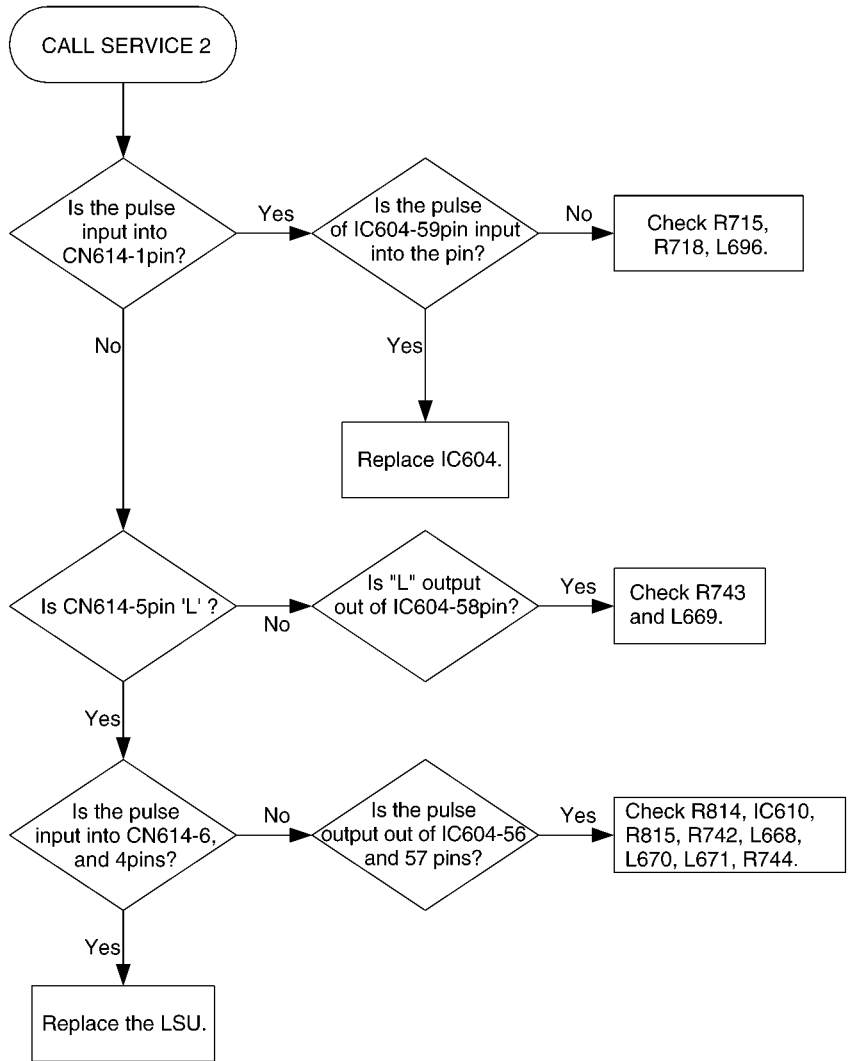


### 12.3.6.2. CALL SERVICE 2

"CALL SERVICE 2" means that the synchronous signal out of the LSU cannot be detected.  
The synchronous signal out of the LSU is detected by IC 604-59pin. (XHSYNC)

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

\* You can check the LSU function by service mode №639.



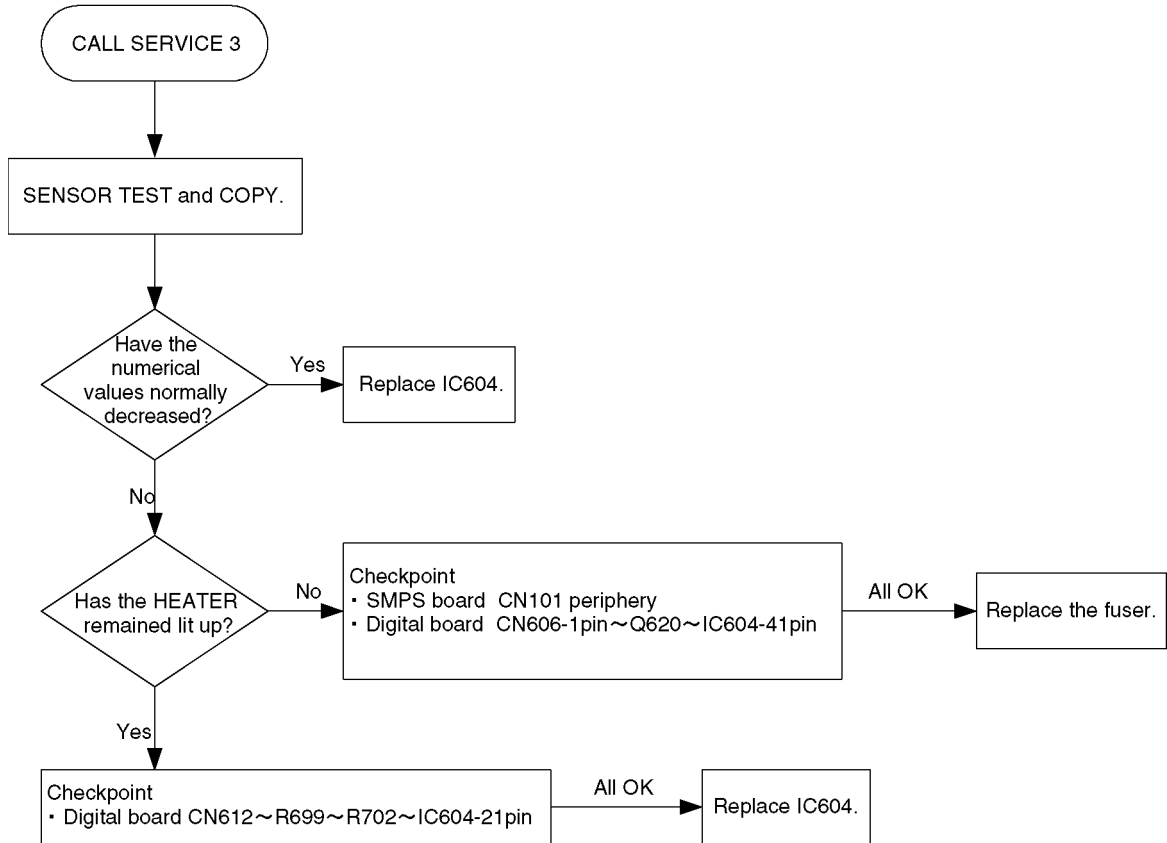
**Note:**

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

### 12.3.6.3. CALL SERVICE 3

"CALL SERVICE 3" means that the temperature of the fuser does not rise up to or exceed a constant temperature. The temperature is monitored with the thermistor inside the fuser and detected with the voltage input into IC 604-21pin.

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, 'F5(25°C)' is displayed in the waiting state, and '3ch(205°C)' or its approximate numbers are displayed during printing.



\* When Call Service 3 is occurred, the cause can be distinguished by service mode ✕655. Refer to P.120 for details.

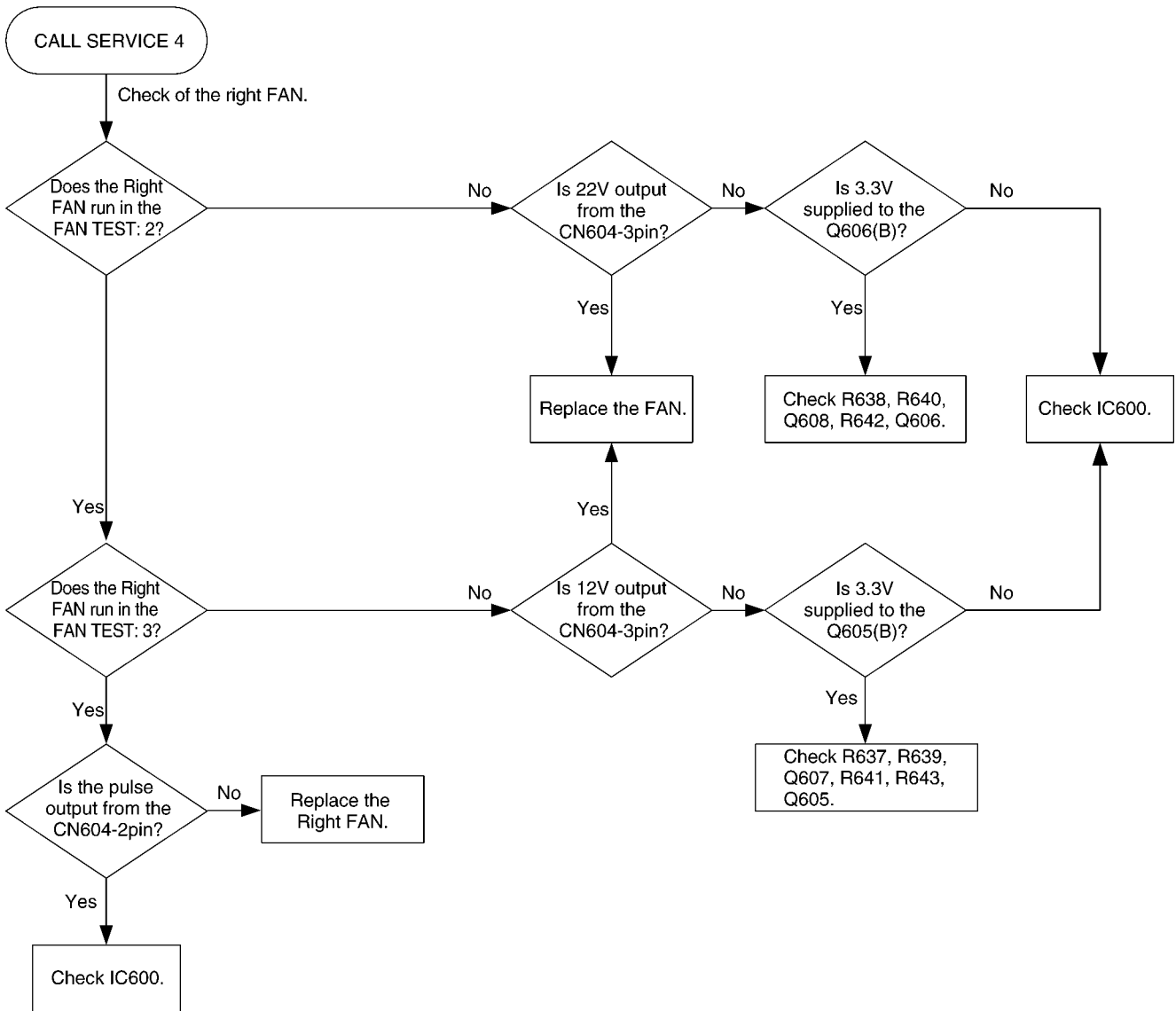
### 12.3.6.4. CALL SERVICE 4

"CALL SERVICE 4" means that the FAN does not run or the running of the FAN cannot be detected normally. The running of the FAN is detected by IC600-16 and 18pin. "CALL SERVICE 4" is displayed when it detects NG three times continuously.

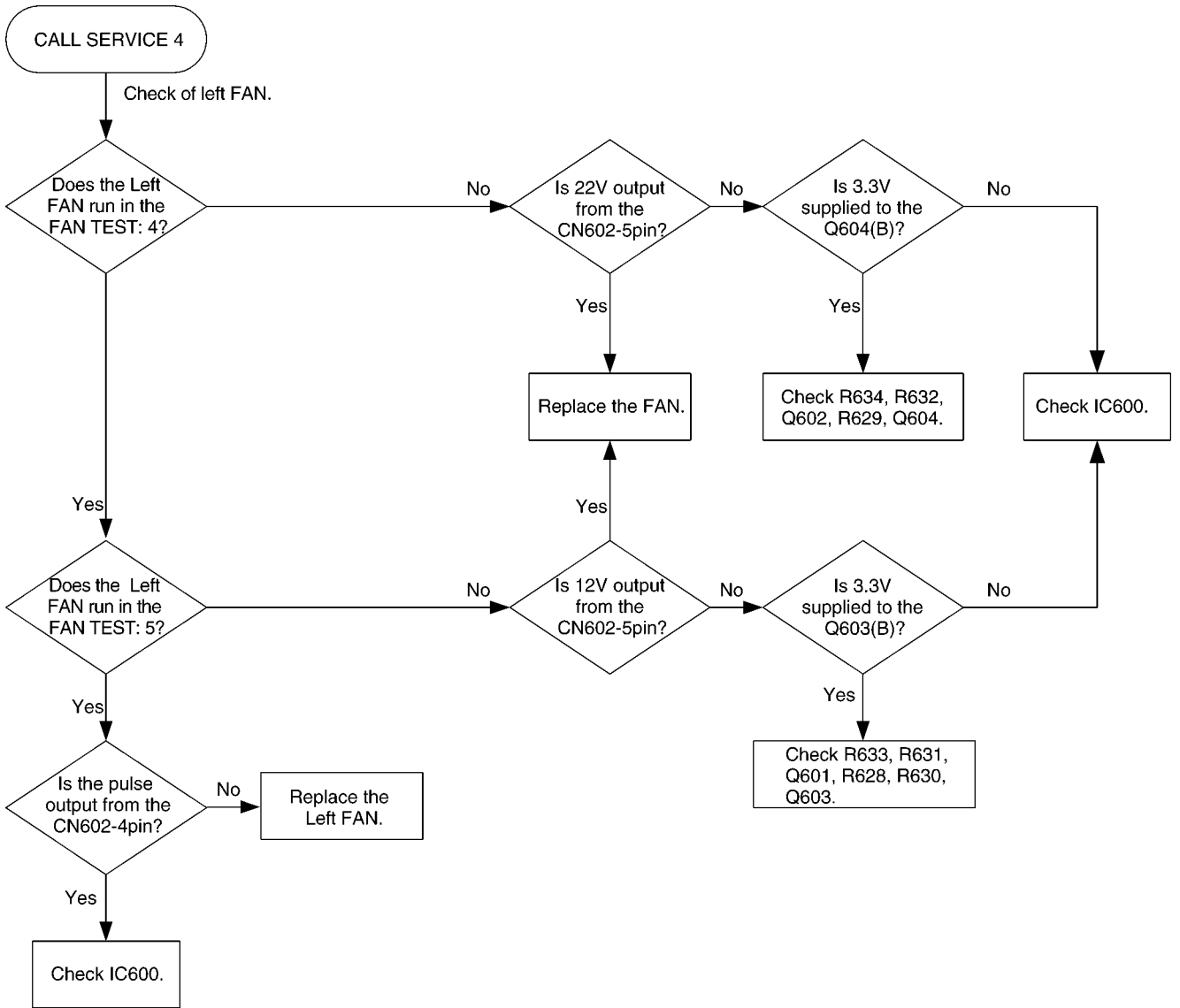
After repairing, copy three times.If "CALL SERVICE 4 " is displayed,check again.

After the LCD indicates "CALL SERVICE 4 " , turn the power OFF/ON. Then, perform the FAN TEST in service mode. This can be performed by pressing MENU→#→9000→\*677.

- 1: OFF (Default)
- 2: Right FAN: ON (High Speed)
- 3: Right FAN: ON (Low Speed)
- 4: Left FAN: ON (High Speed)
- 5: Left FAN: ON (Low Speed)



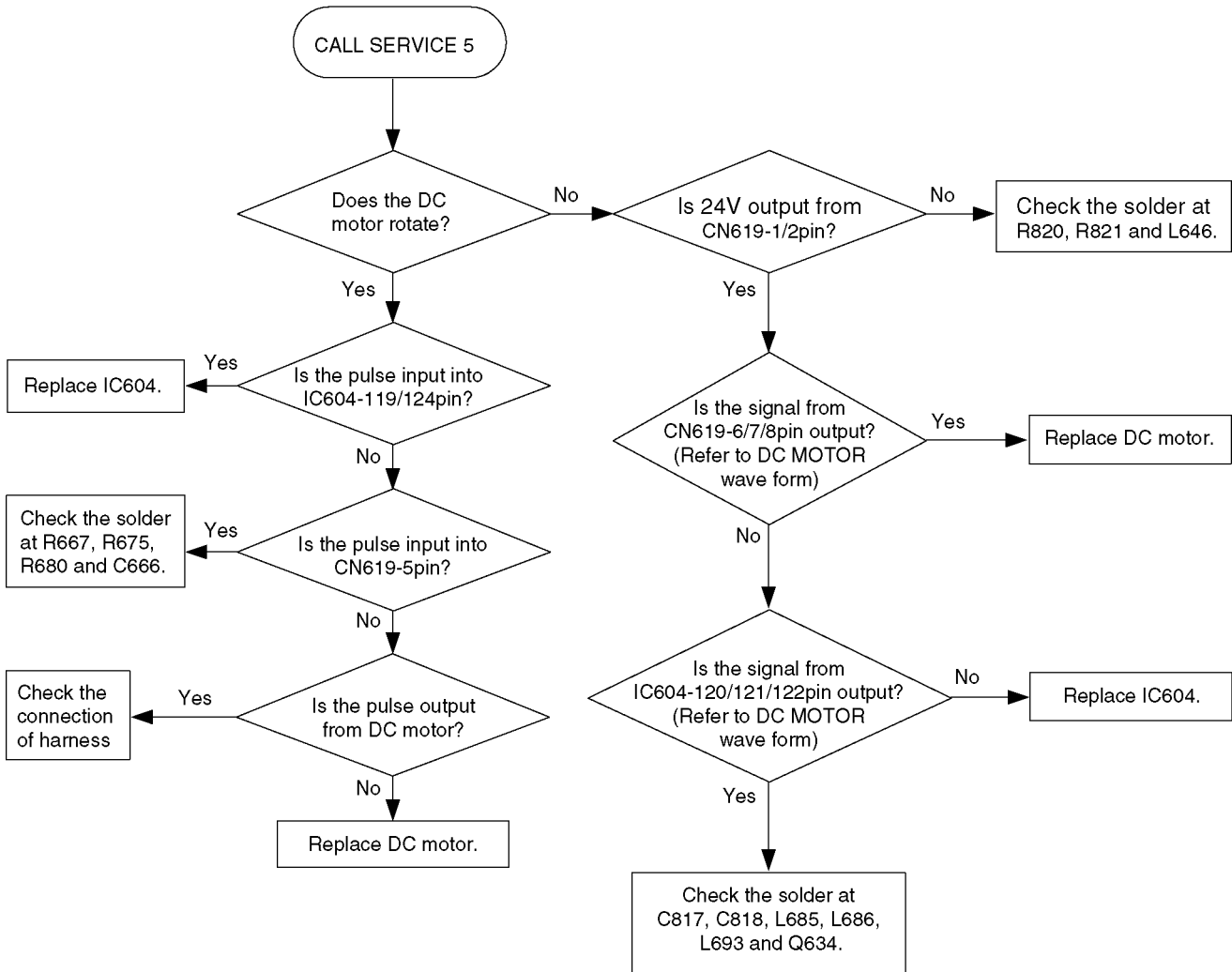




### 12.3.6.5. CALL SERVICE 5

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

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



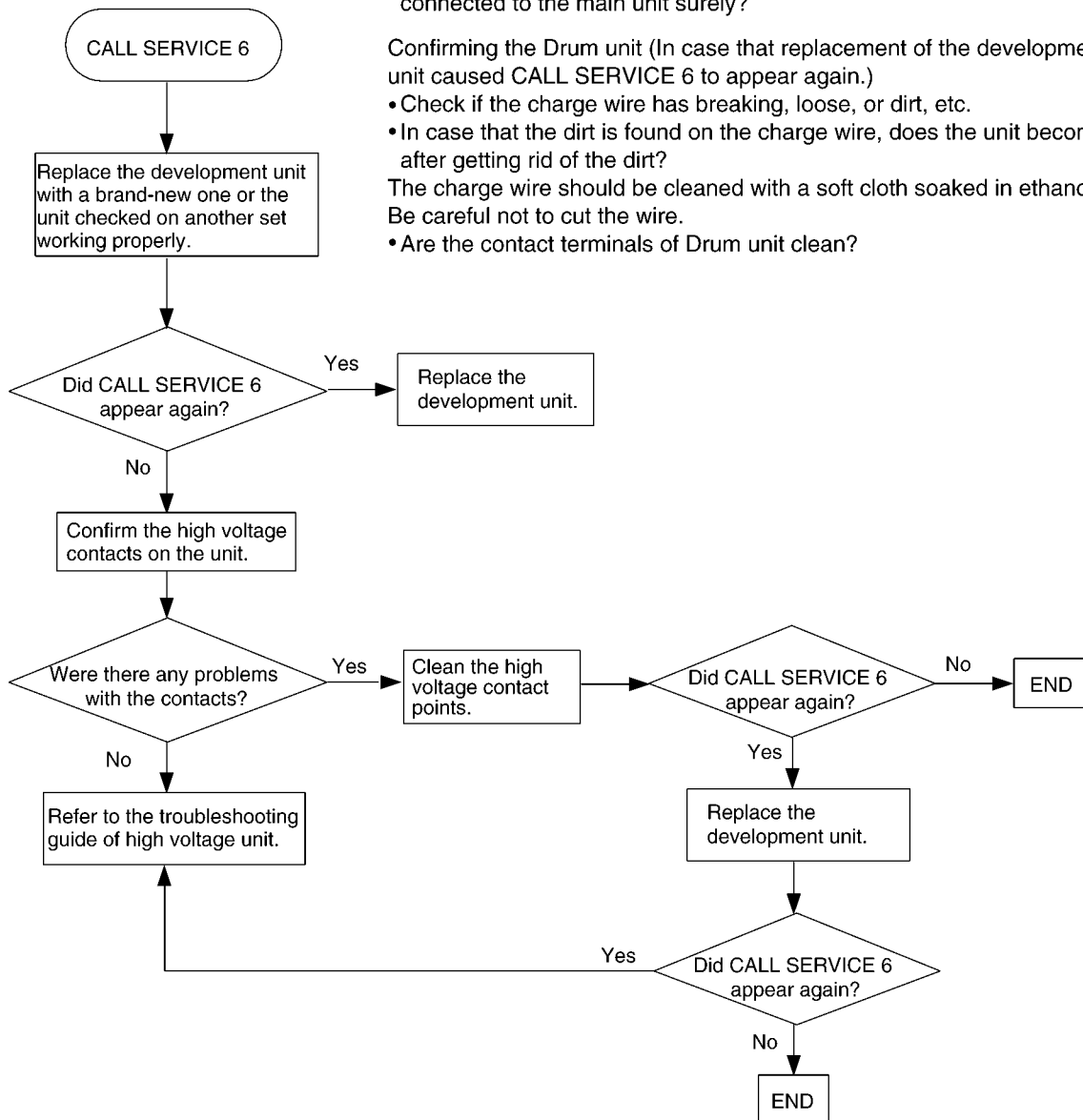
### 12.3.6.6. CALL SERVICE 6

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

CALL SERVICE 6 appears when the charge voltage turns into abnormal voltage caused by charge wire breaking, short circuit, defect, and contact failure between Drum unit and main 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 digital 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.)

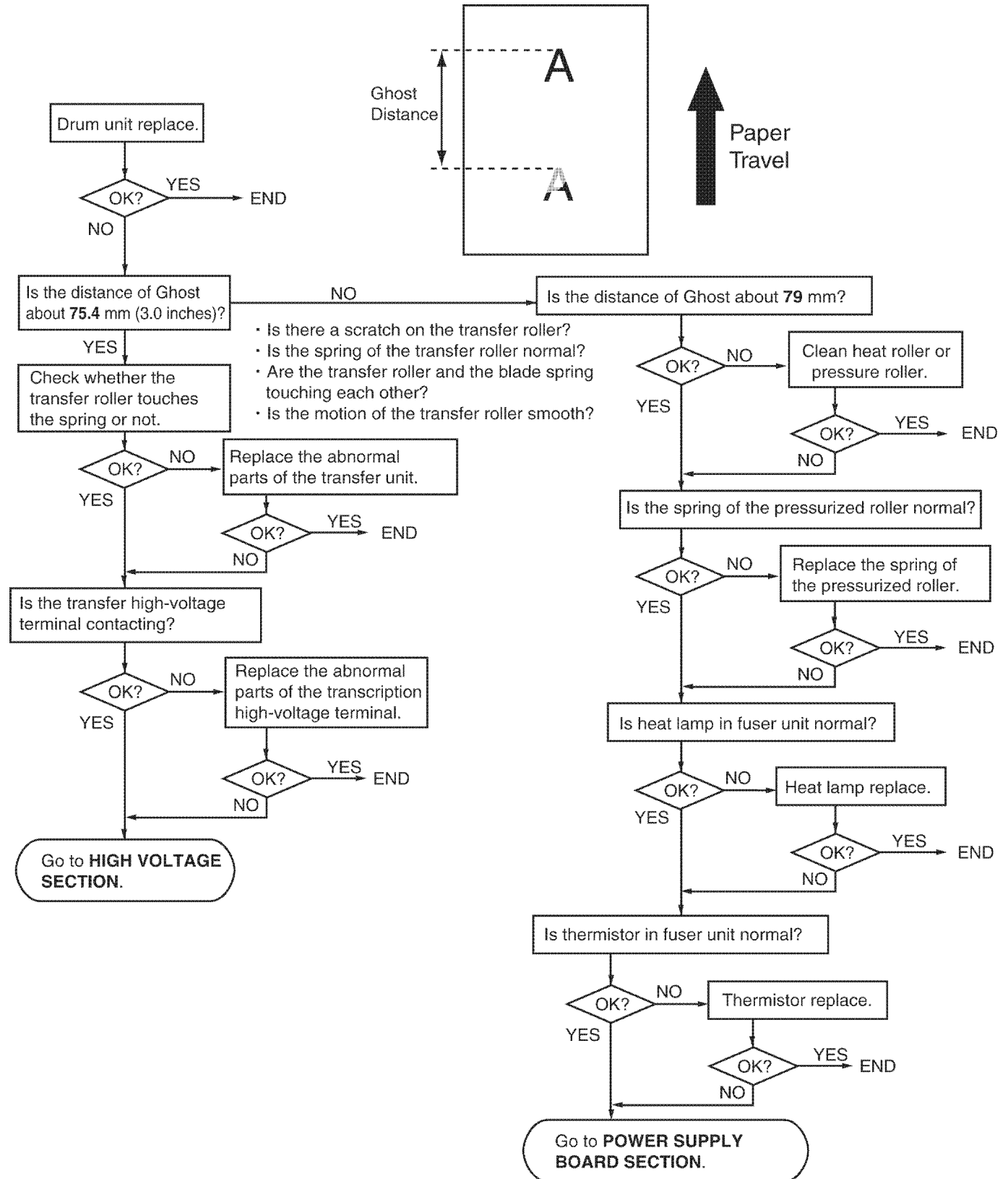
- Confirming the contact points of the main unit
- Check the dirt on the high voltage terminals.
  - Check if the spring pressure of each high voltage terminal is strong enough. (Isn't it distorted or bent?)
  - When a Drum unit is installed on the main unit, are the terminals connected to the main unit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

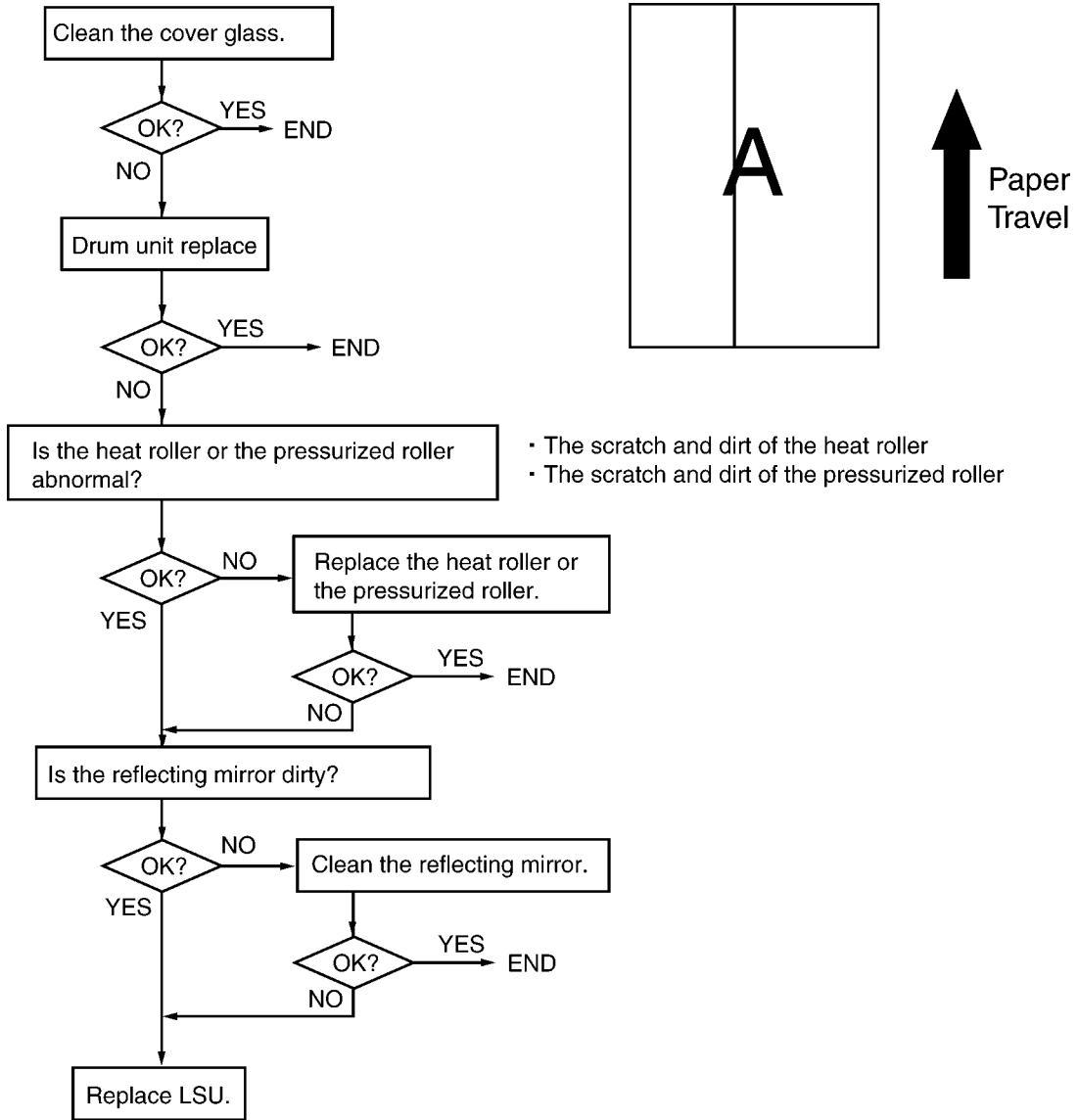


## 12.3.7. PRINT

### 12.3.7.1. GHOST IMAGE

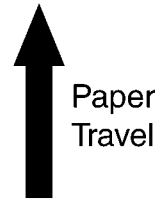
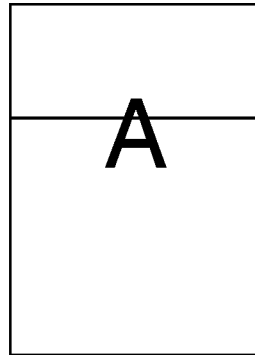
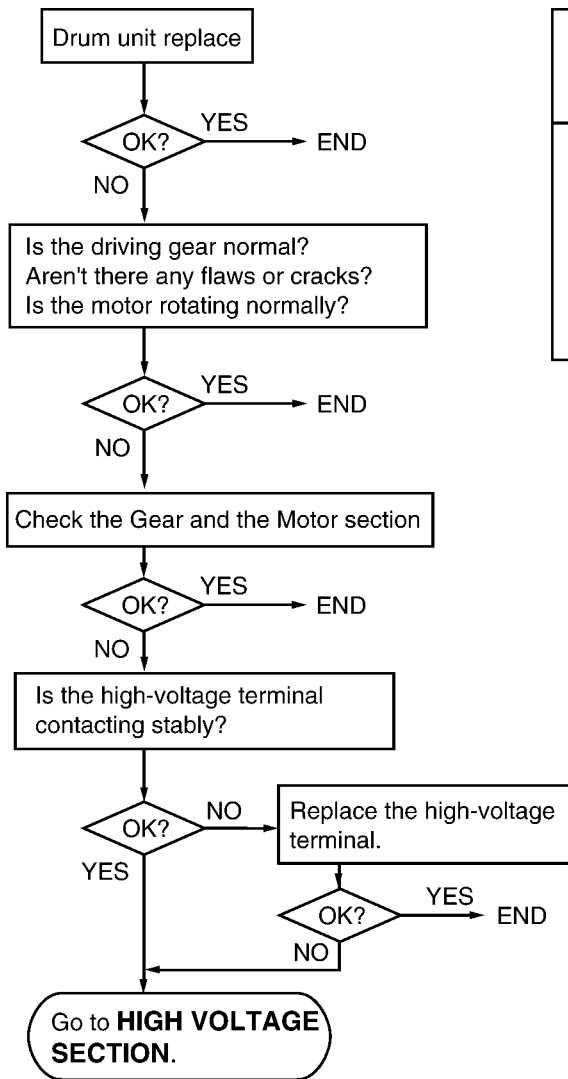


### 12.3.7.2. DARK OR WHITE VERTICAL LINE



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

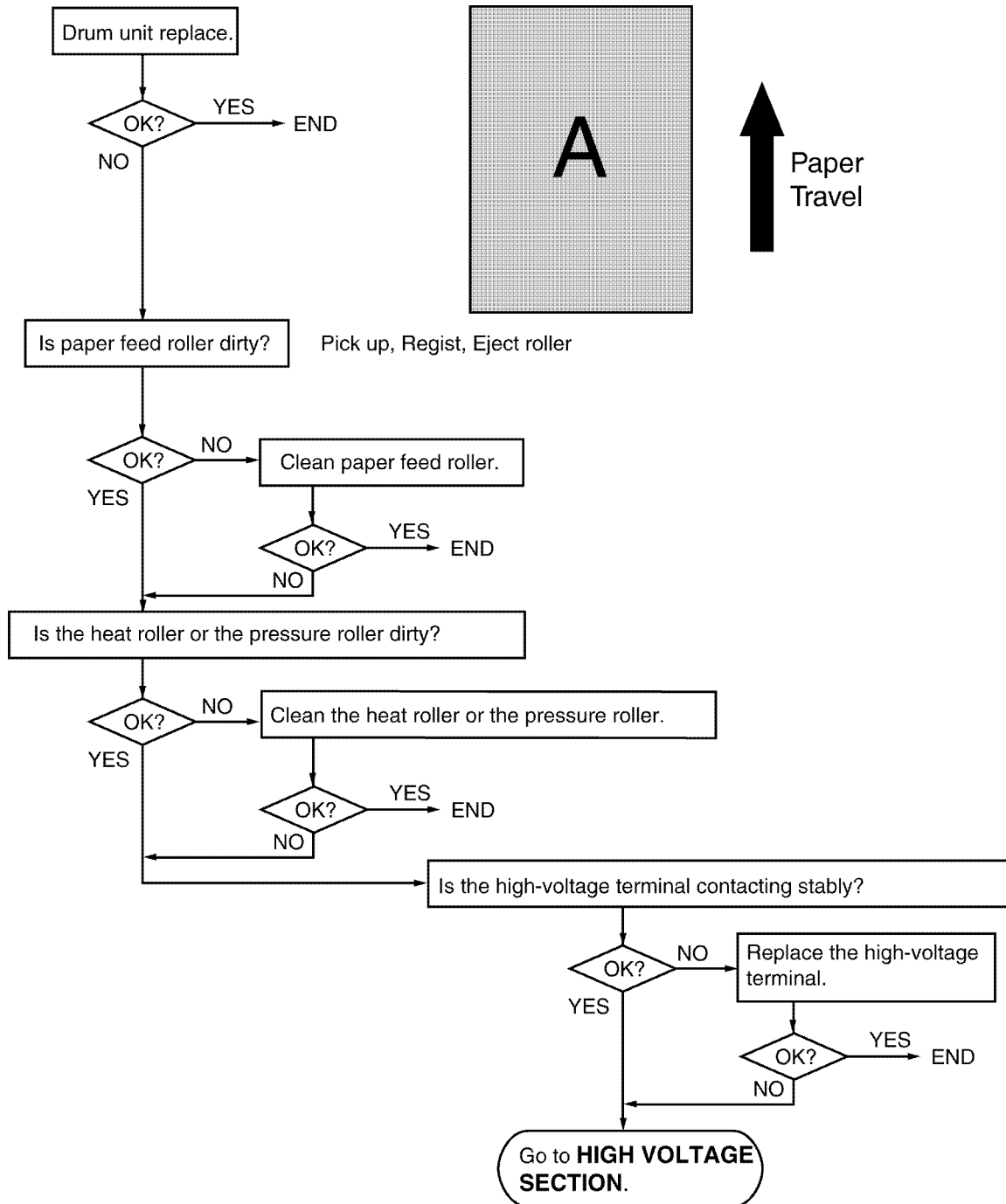
### 12.3.7.3. DARK OR WHITE HORIZONTAL LINE



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

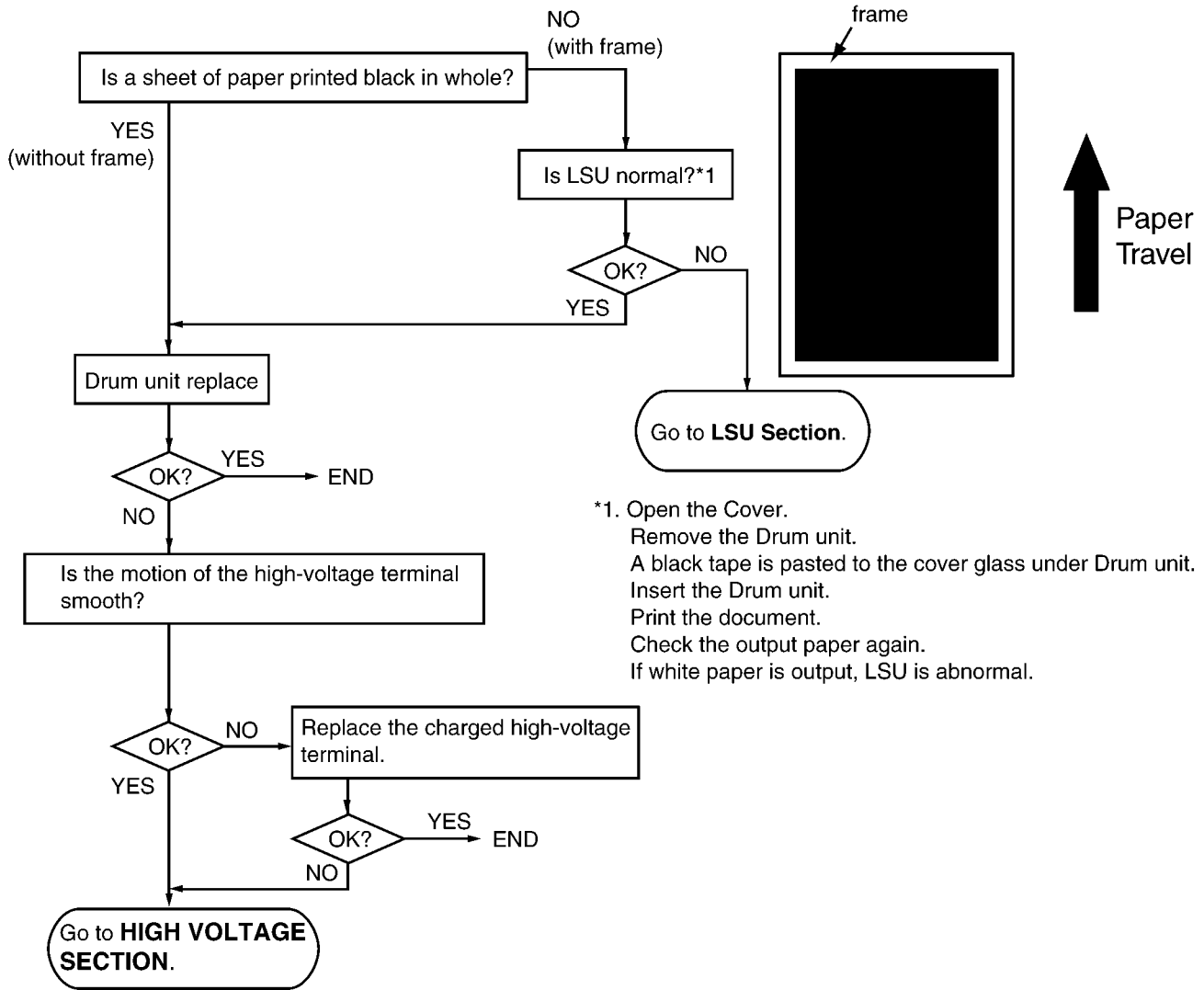
**CROSS REFERENCE:**  
HIGH VOLTAGE SECTION (P.179)

### 12.3.7.4. DIRTY OR HALF DARKNESS BACKGROUND



**CROSS REFERENCE:**  
**HIGH VOLTAGE SECTION (P.179)**

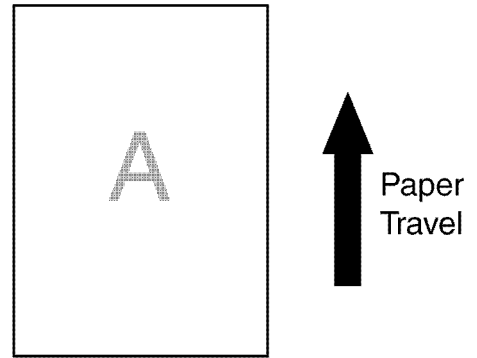
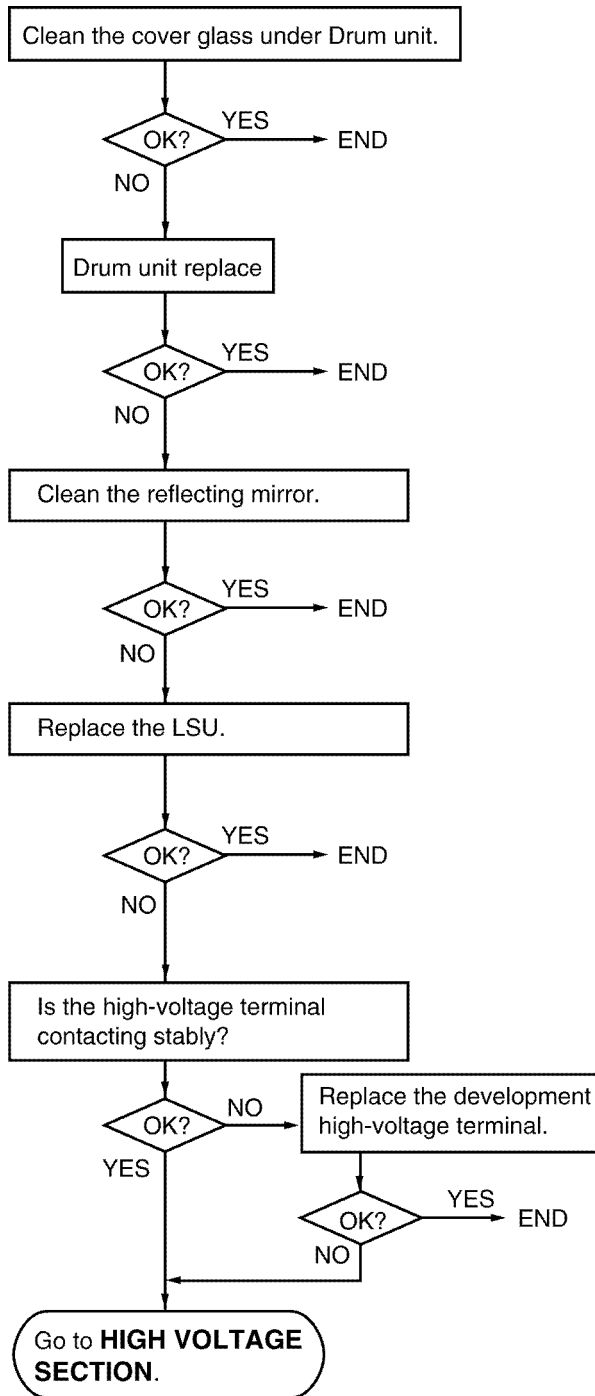
### 12.3.7.5. BLACK PRINT



**CROSS REFERENCE:**  
**HIGH VOLTAGE SECTION (P.179)**  
**LSU (Laser Scanning Unit) SECTION (P.47)**

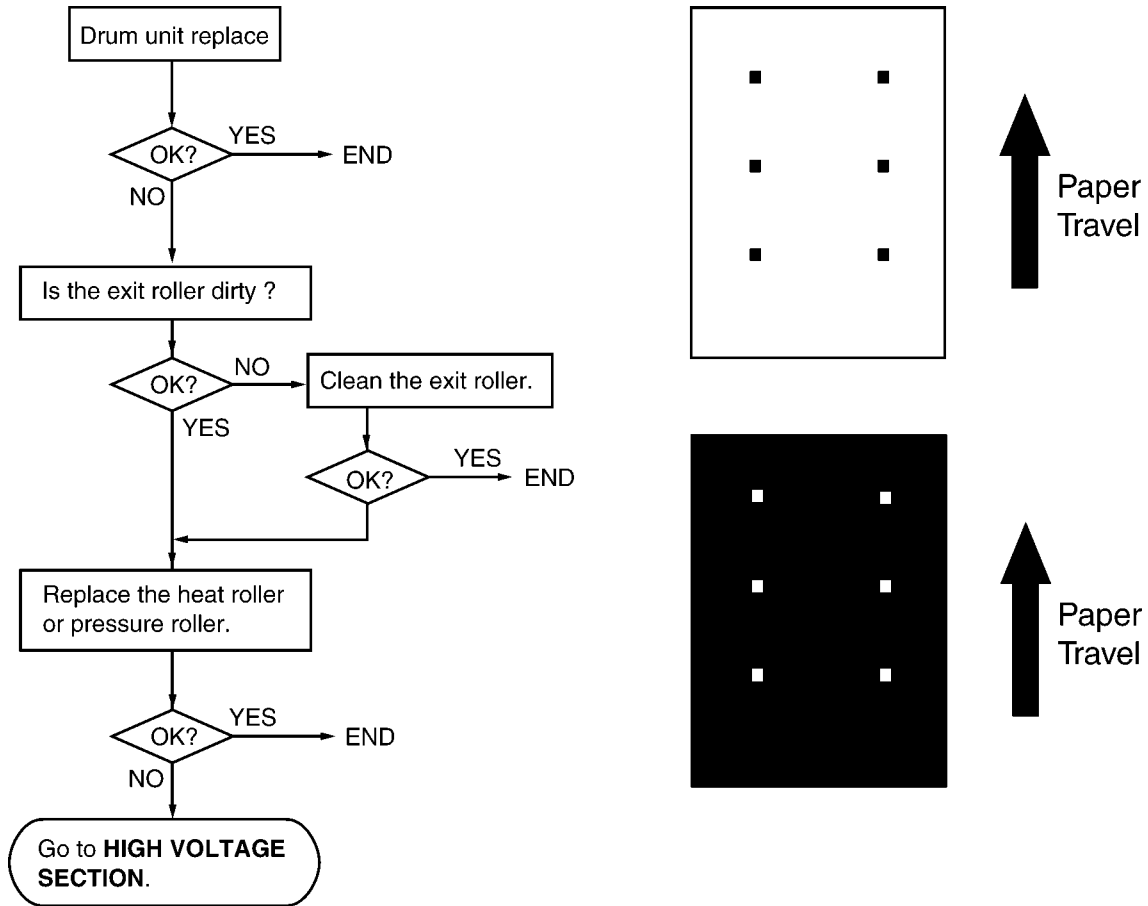


### 12.3.7.6. LIGHT PRINT



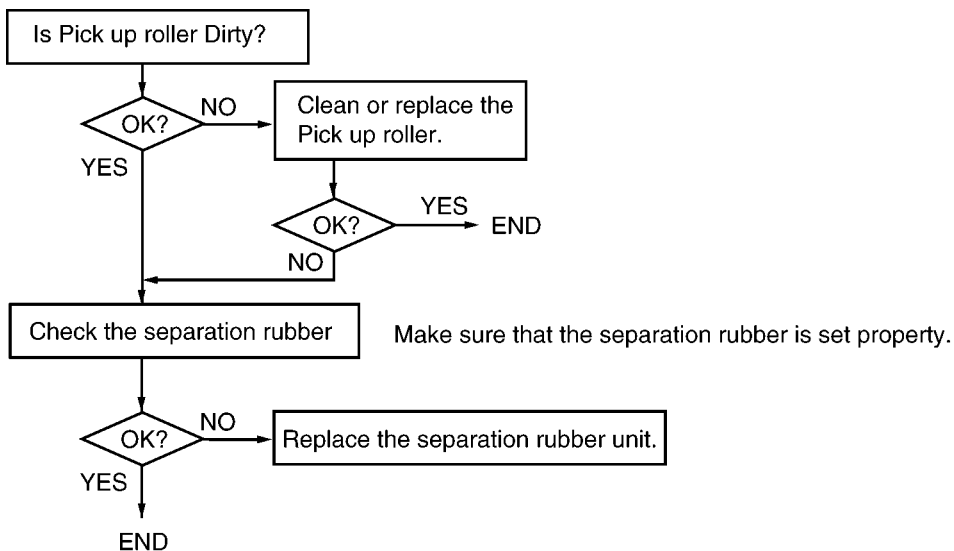
**CROSS REFERENCE:**  
**HIGH VOLTAGE SECTION (P.179)**

### 12.3.7.7. BLACK OR WHITE POINT

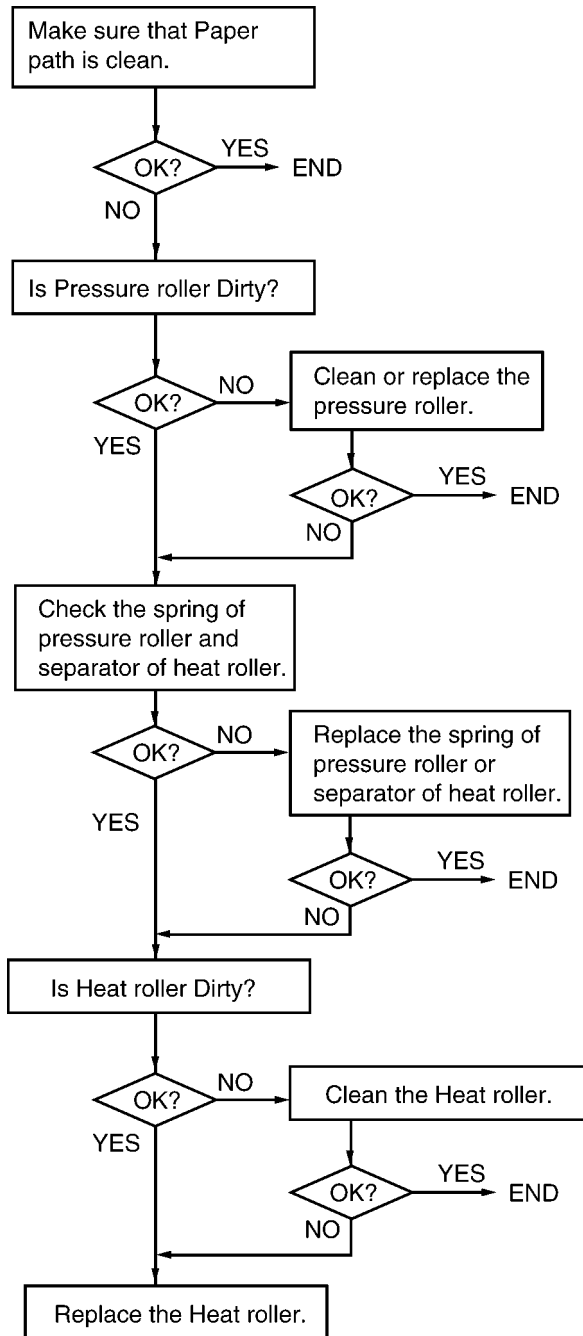


### 12.3.8. RECORDING PAPER FEED

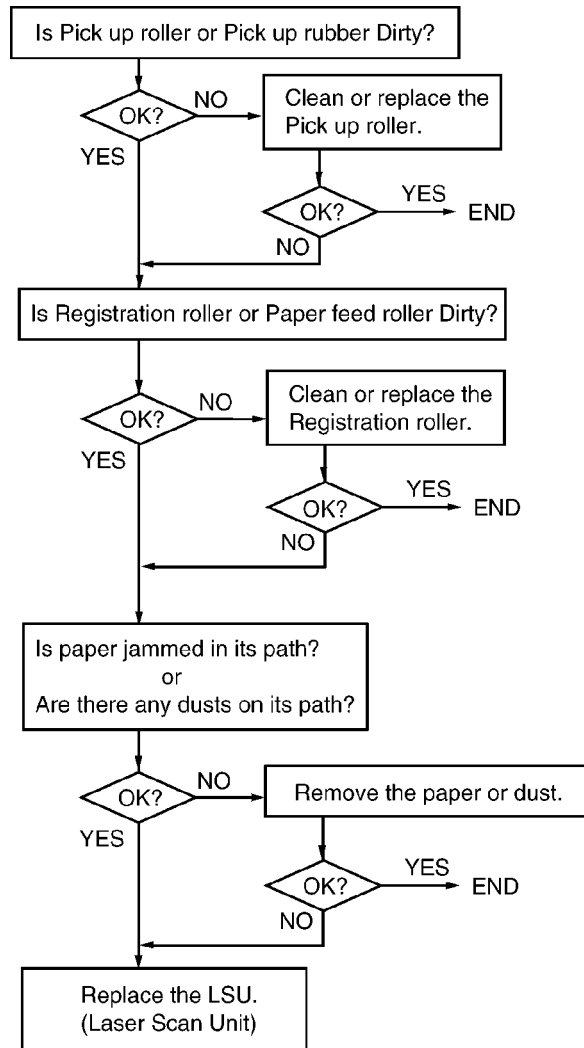
#### 12.3.8.1. MULTIPLE FEED



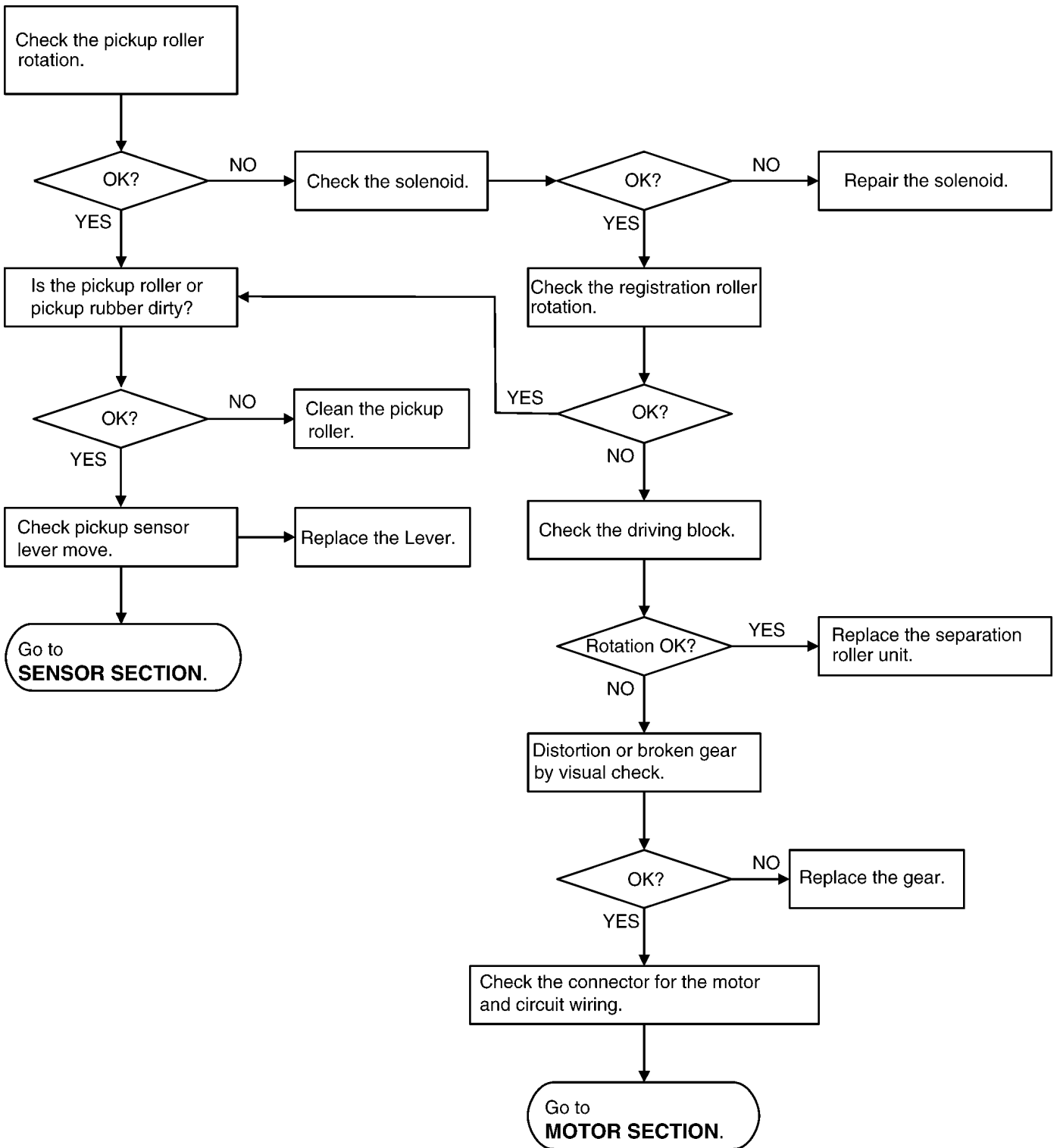
### 12.3.8.2. THE RECORDING PAPER IS WAVED OR WRINKLED



### 12.3.8.3. SKEW

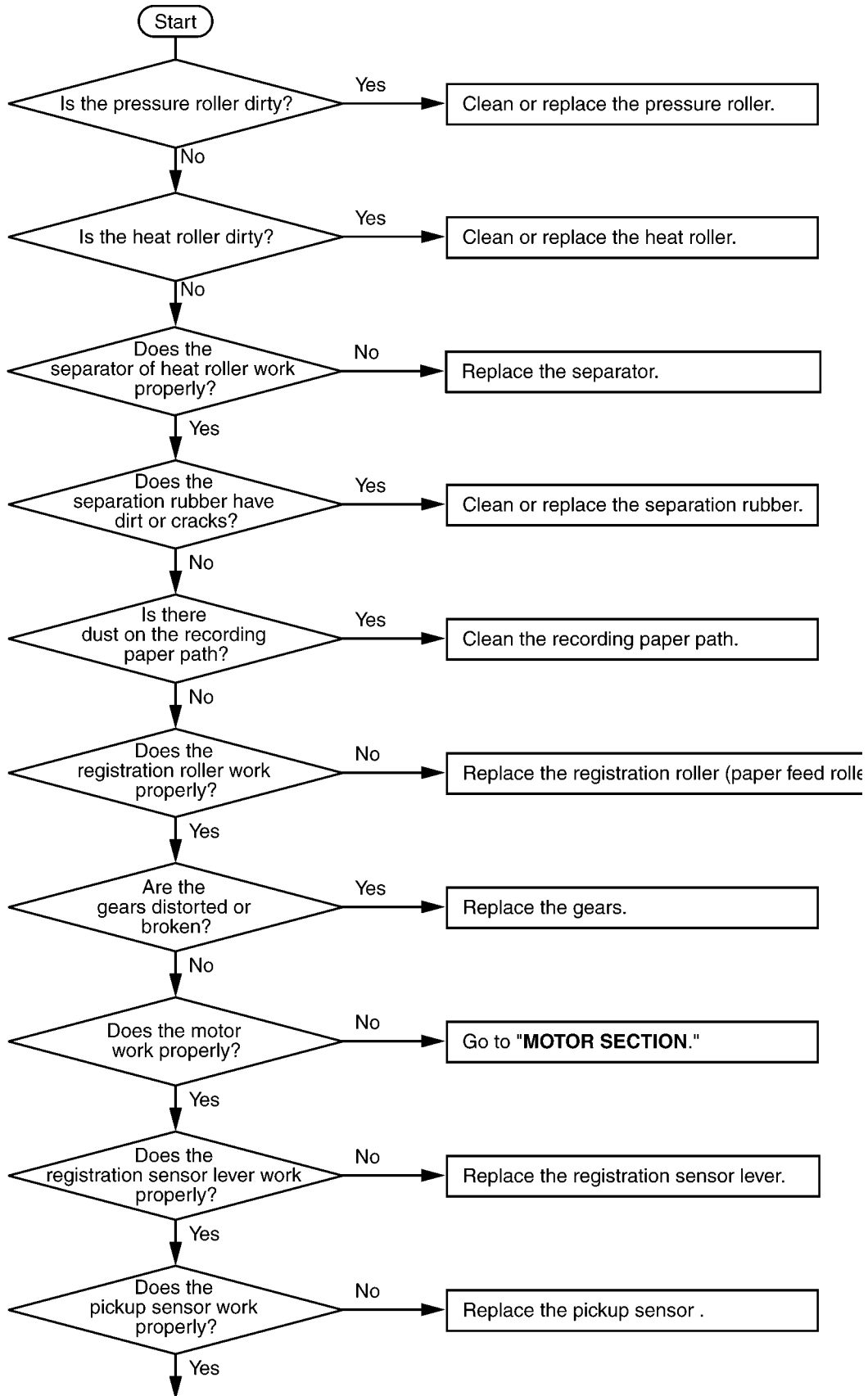


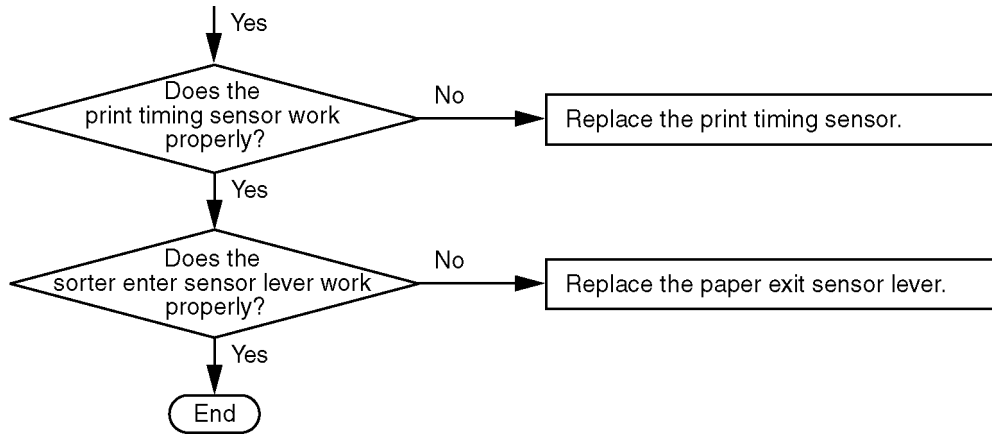
### 12.3.8.4. THE RECORDING PAPER DOES NOT FEED



**CROSS REFERENCE:**  
**SENSOR SECTION (P.168)**  
**MOTOR SECTION (P.172)**

### 12.3.8.5. THE RECORDING PAPER JAM





**CROSS REFERENCE:**

**FAN MOTOR SECTION (P.44)**

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.

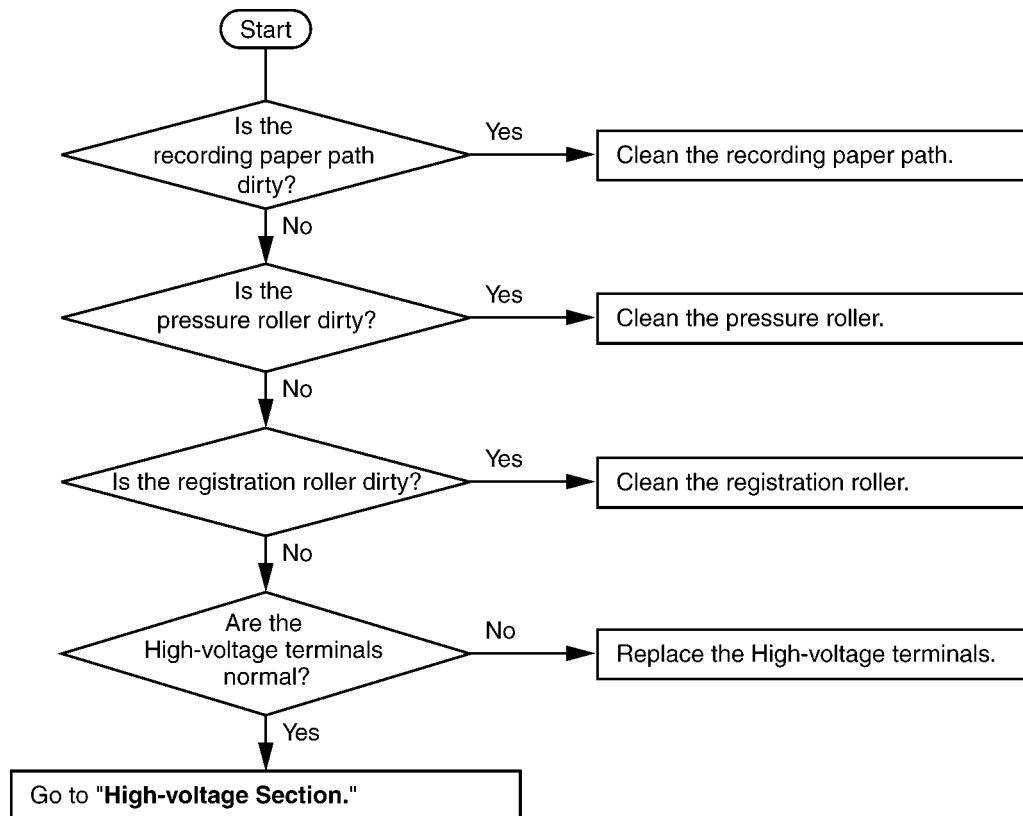
4:The paper was longer than the maximum length of the paper exit sensor.

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**

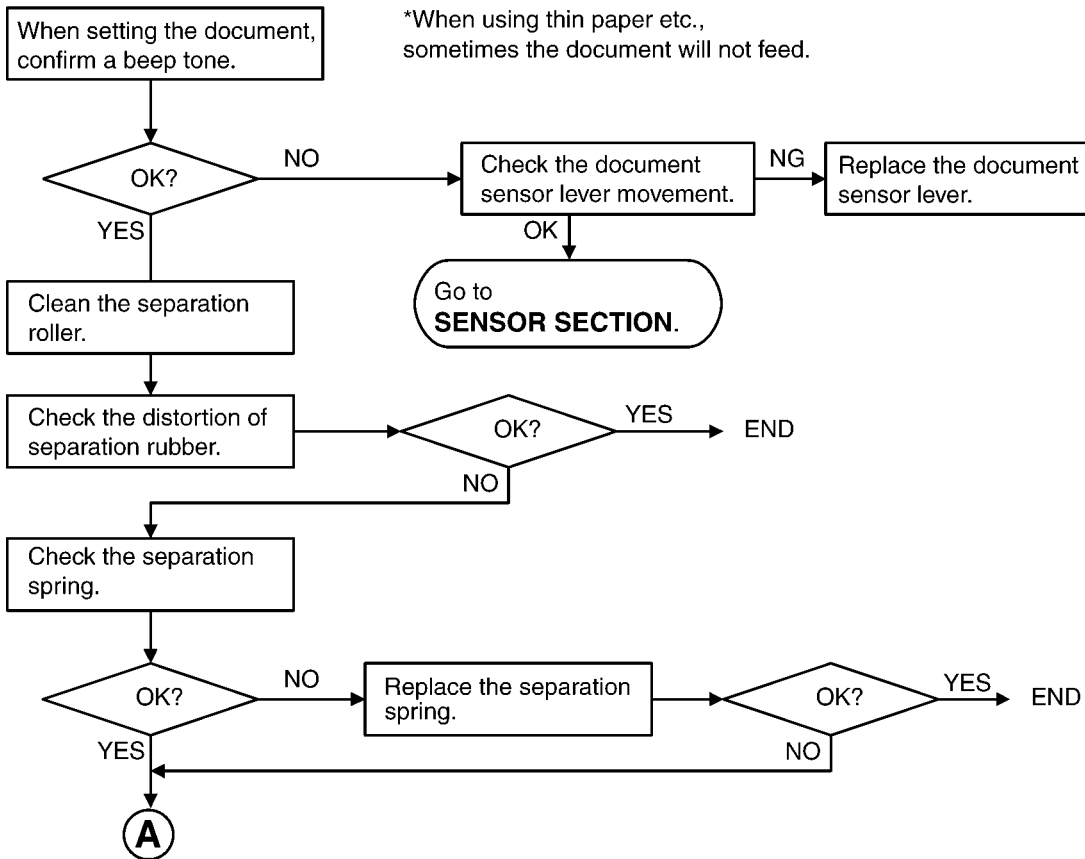


**CROSS REFERENCE:**

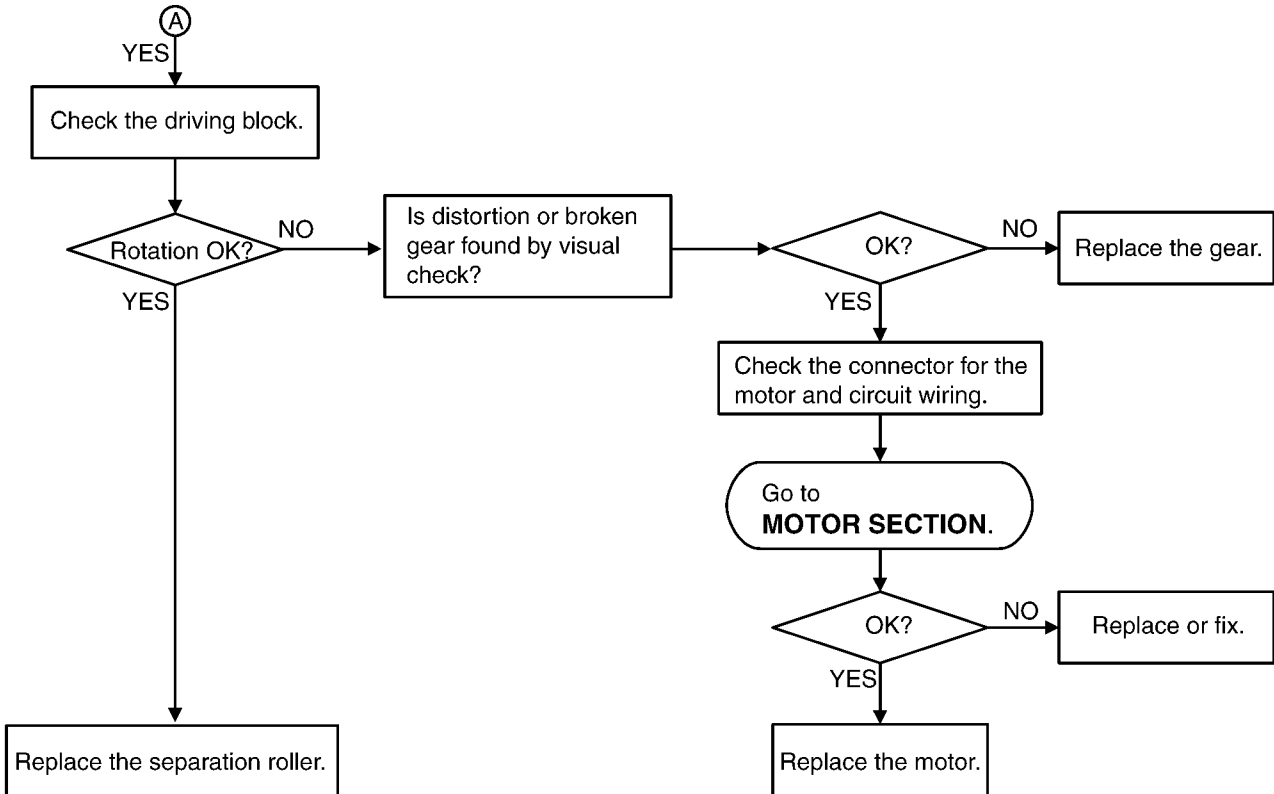
**HIGH VOLTAGE SECTION (P.179)**

### 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.168)



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



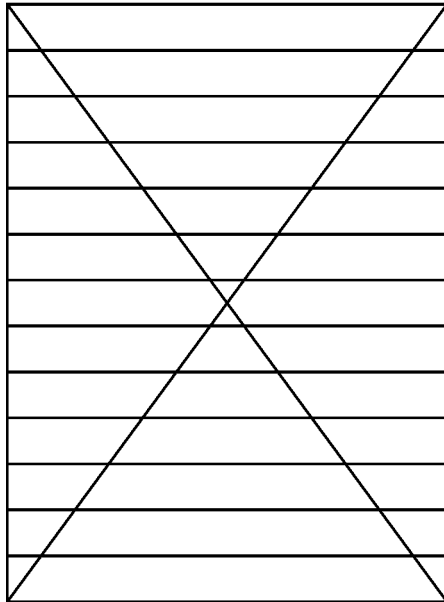
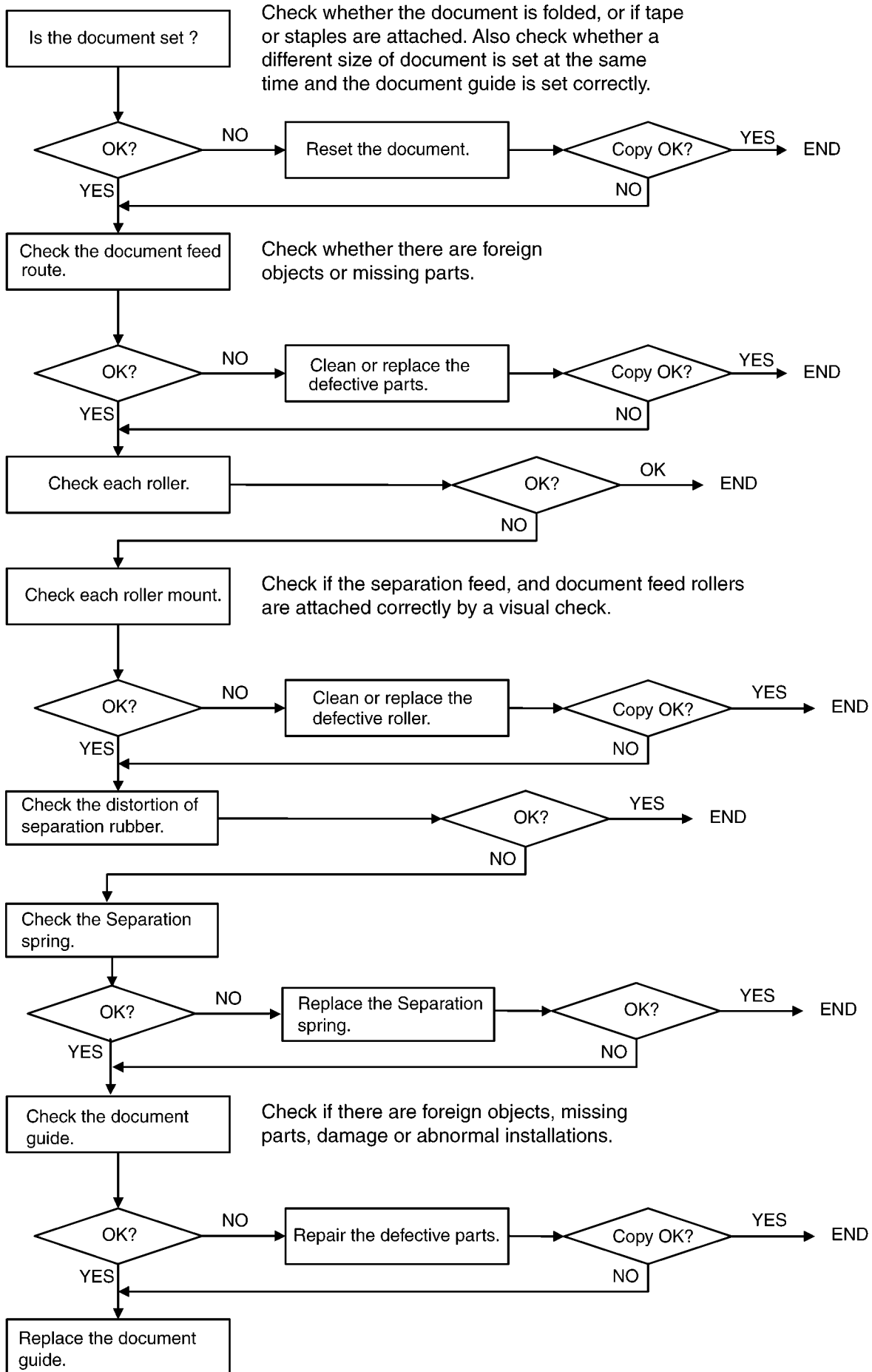


Fig. b

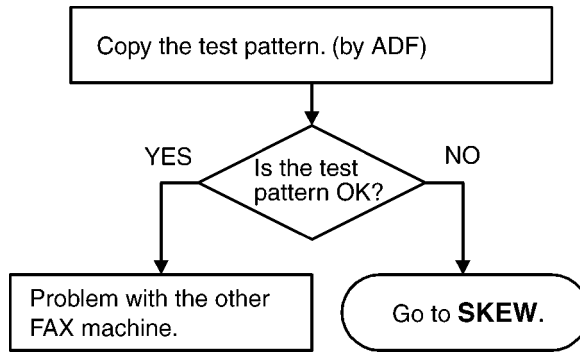
When confirming if the characters are extended or distorted on,if the feed problem occurs,use this test chart. (Fig b)

**CROSS REFERENCE:**  
**MOTOR SECTION (P.172)**

### 12.3.9.2. SKEW (ADF)

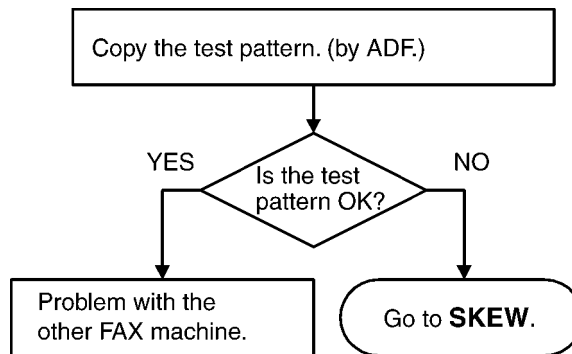


**12.3.9.3. THE SENT FAX DATA IS SKEWED**



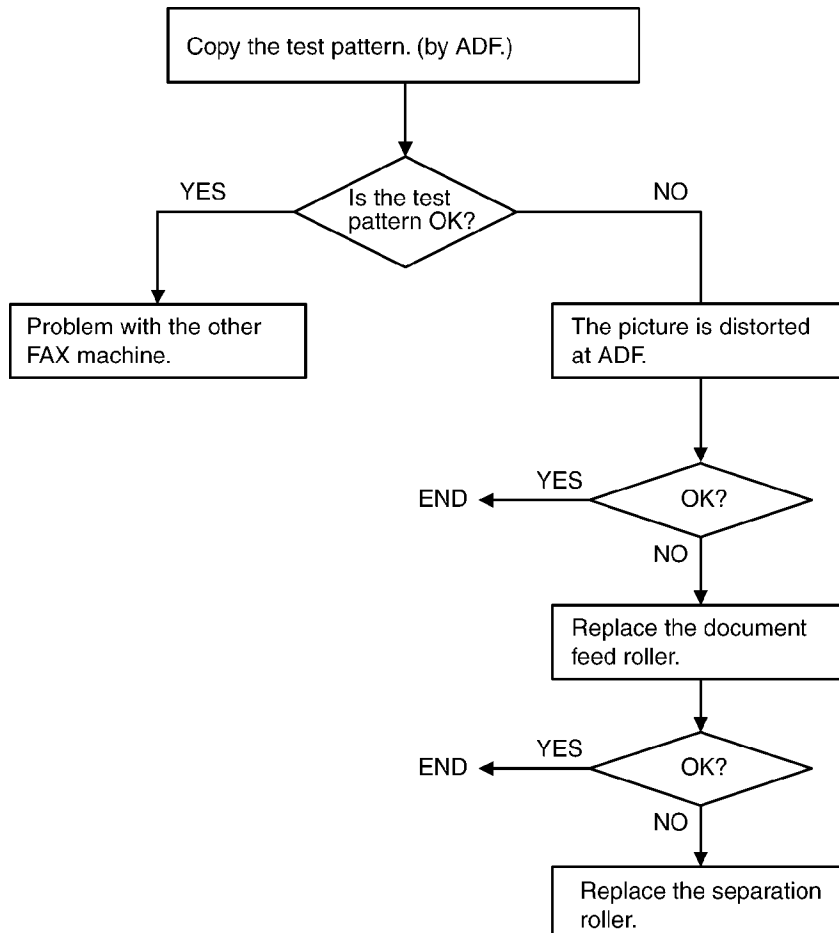
**CROSS REFERENCE:**  
**SKEW (ADF) (P.142)**

**12.3.9.4. THE RECEIVED FAX DATA IS SKEWED**

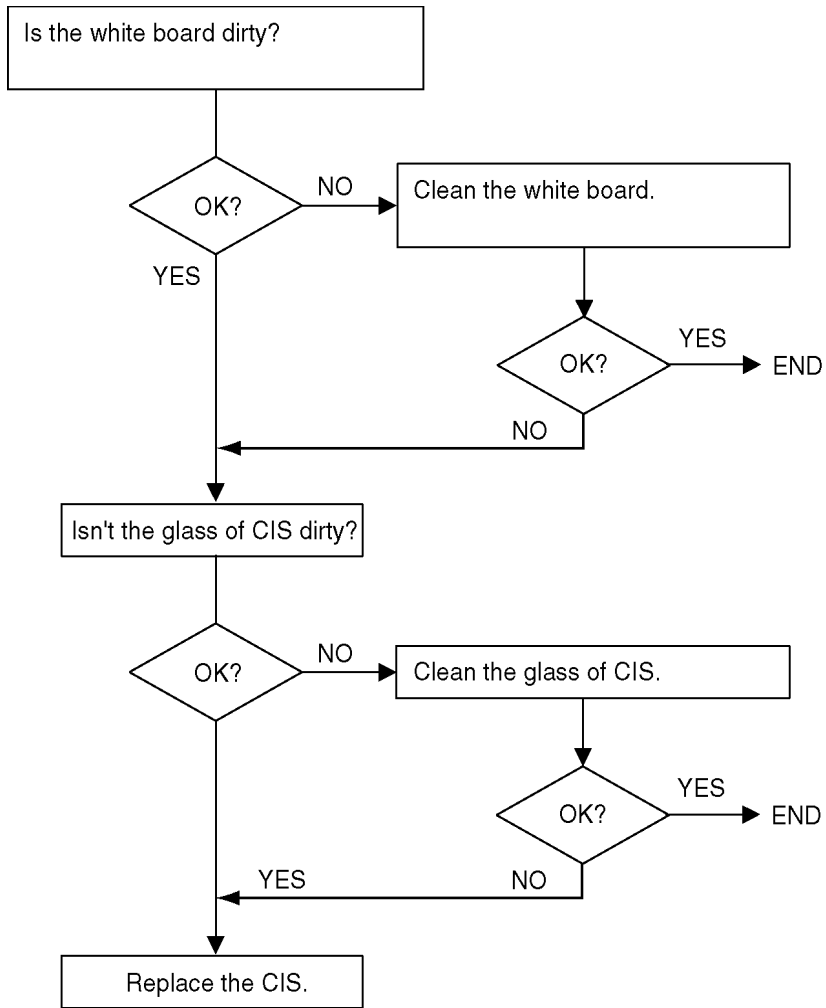


**CROSS REFERENCE:**  
**SKEW (P.136)**

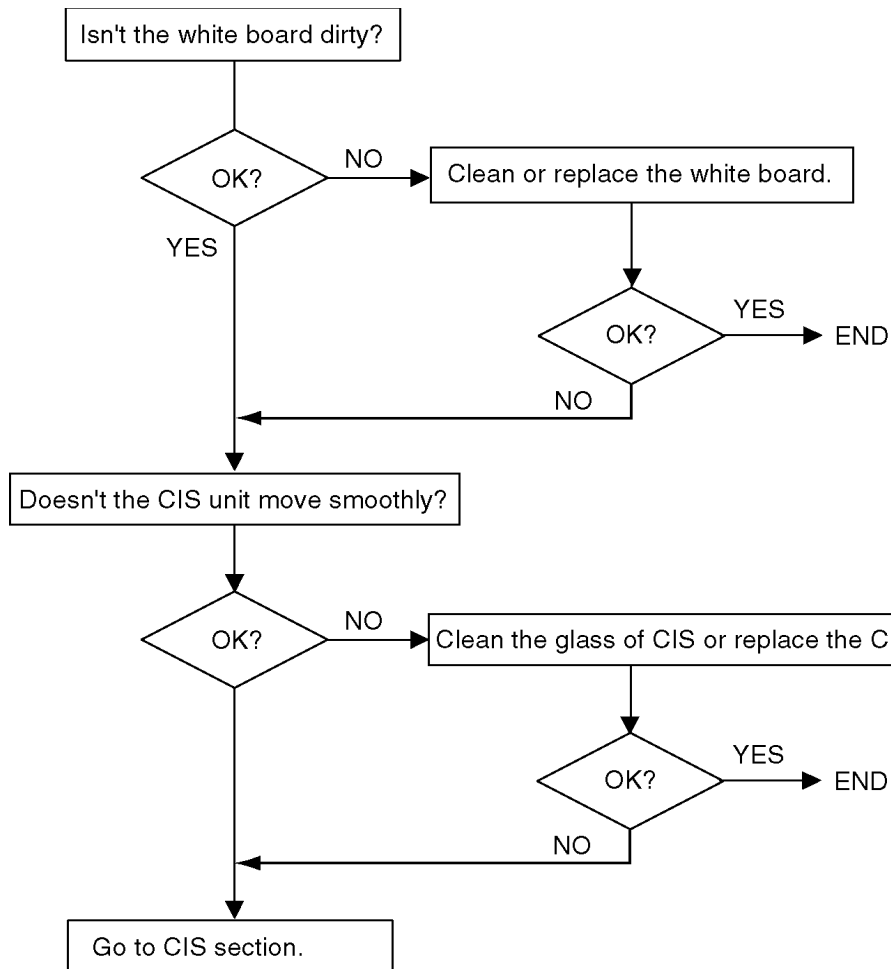
**12.3.9.5. THE RECEIVED OR COPIED DATA IS EXPANDED**



### 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.175)

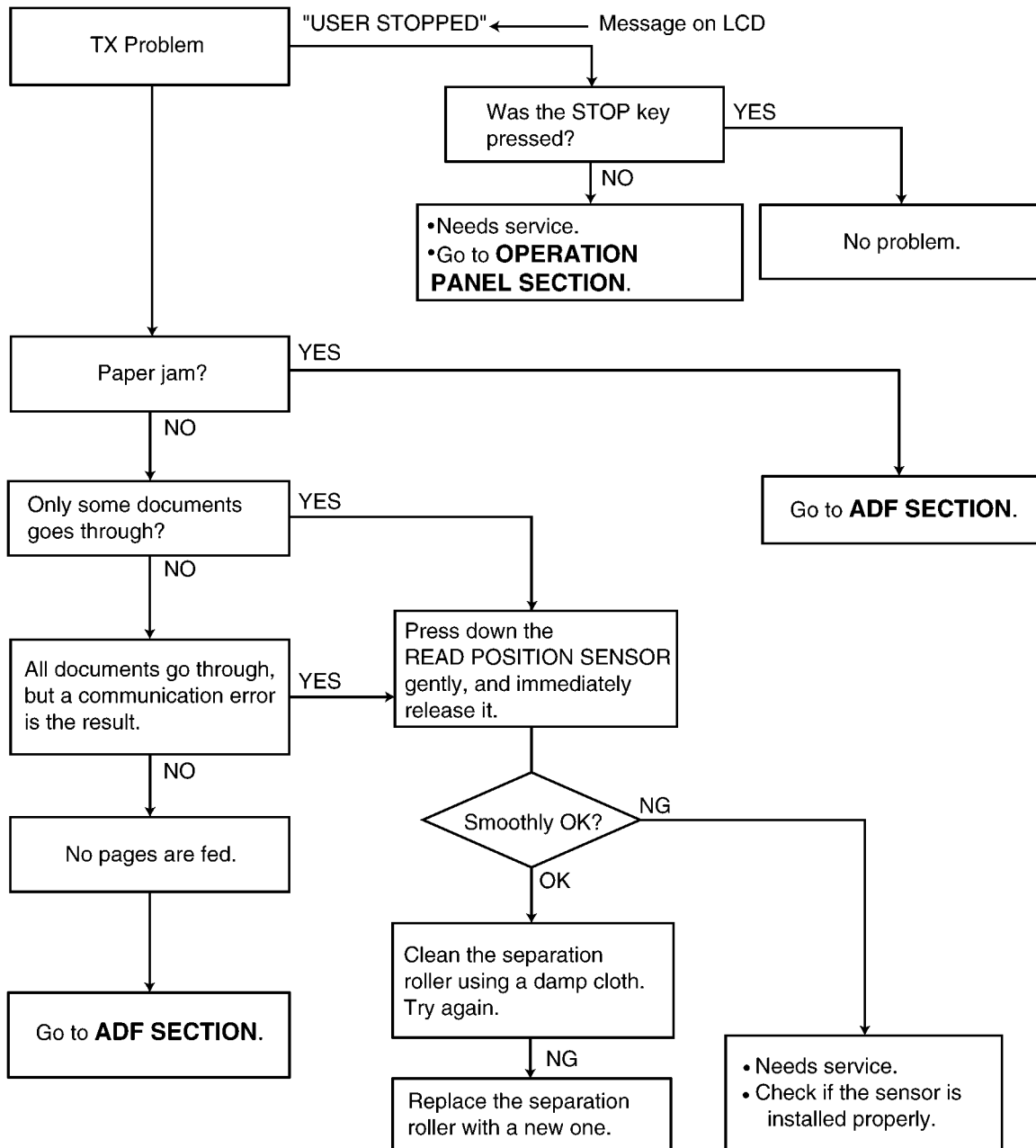
### 12.3.10. COMMUNICATION SECTION

Find the problem in the table shown below, and refer to the corresponding troubleshooting procedure in **DEFECTIVE FACSIMILE SECTION** (P.146).

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.146))
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.147))
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.148))
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.149))
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.155))

## 12.3.10.1. DEFECTIVE FACSIMILE SECTION

### 12.3.10.1.1. TRANSMIT PROBLEM



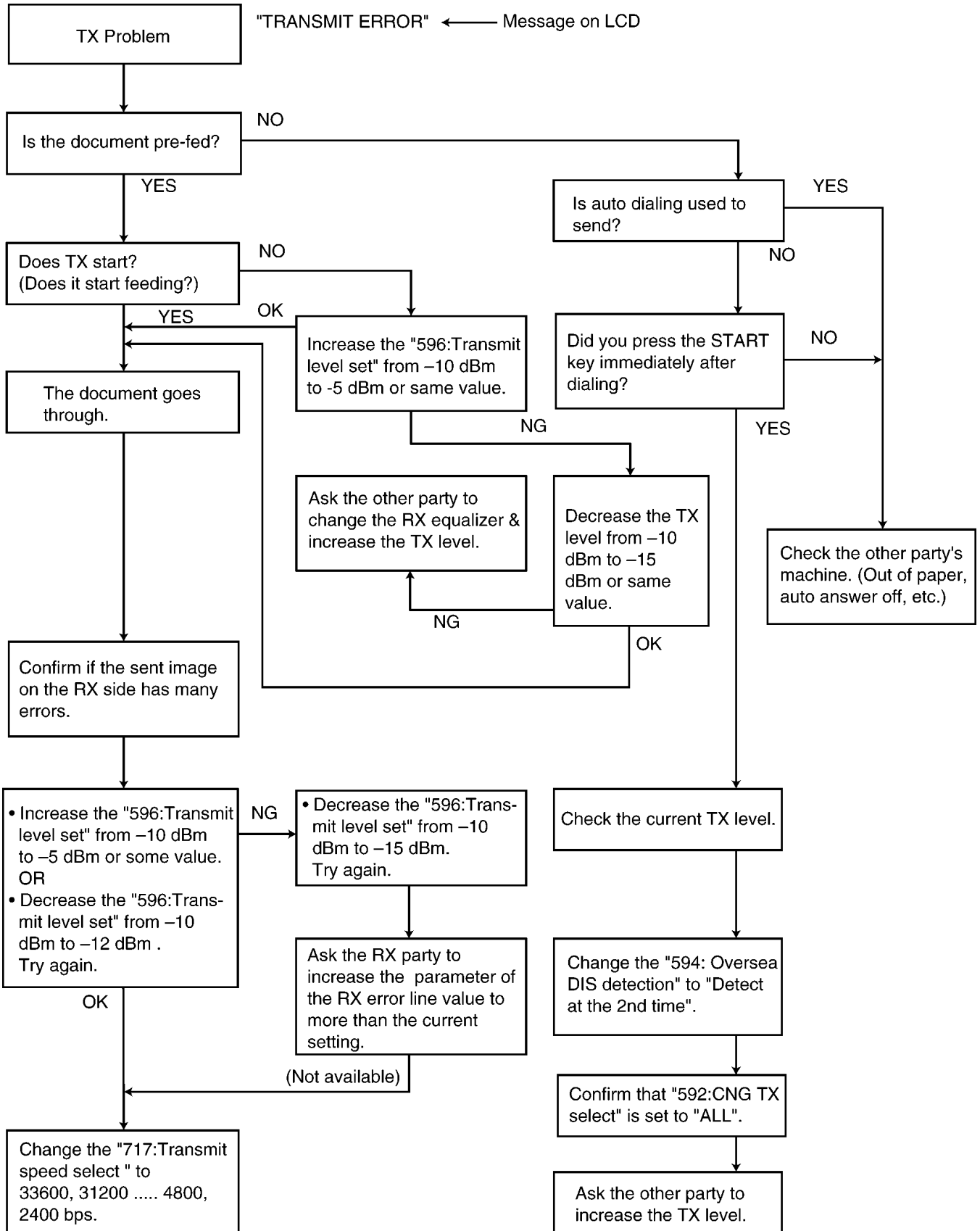
**CROSS REFERENCE:**

**CLEANING THE WHITE PLATE AND GLASSES (P.238)**

**ADF (Auto document feed) SECTION (P.140)**

**OPERATION PANEL SECTION (P.168)**

### 12.3.10.1.2. SOMETIME THERE IS A TRANSMIT PROBLEM



**Note:**

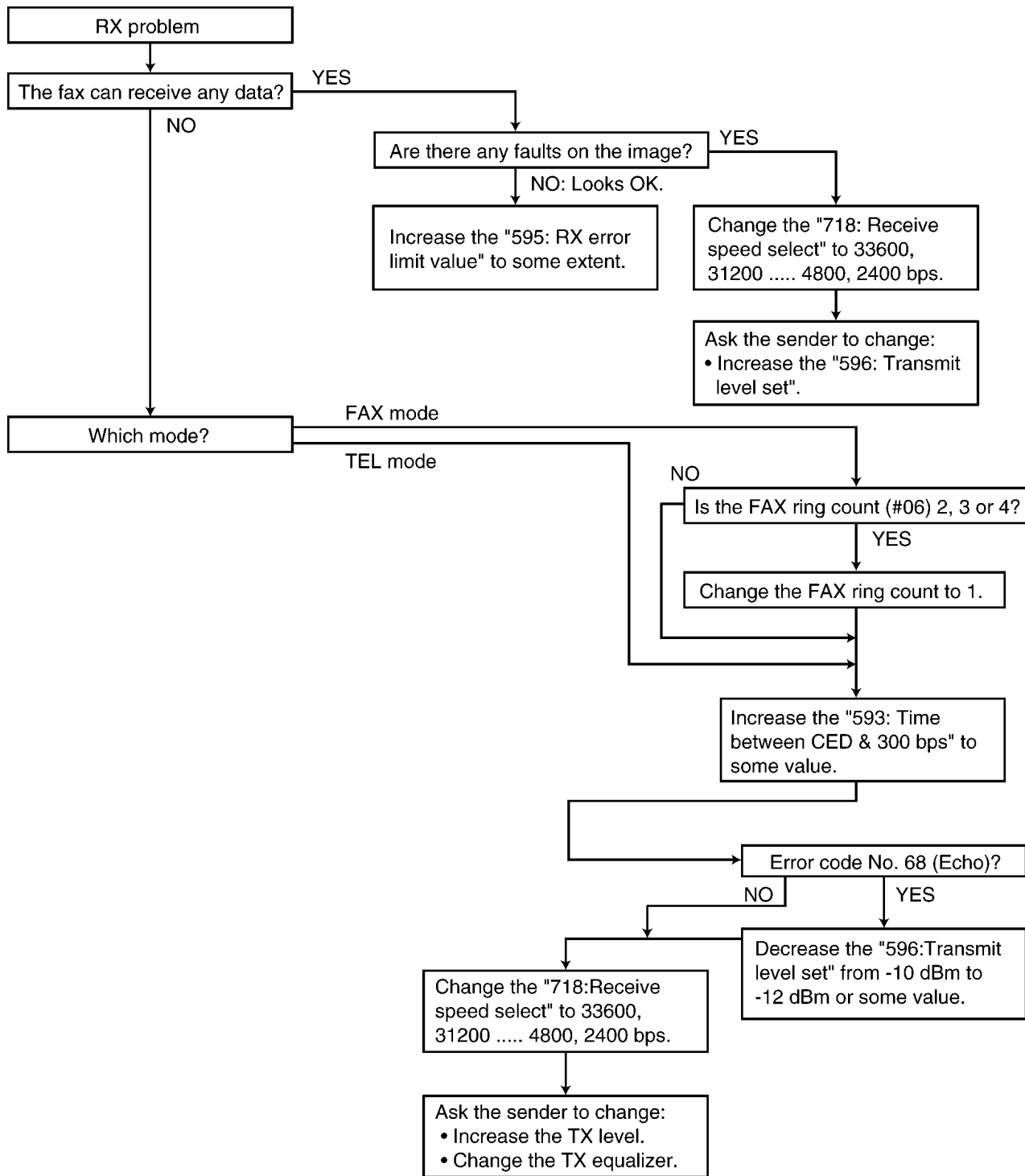
"596: Transmit level set" represents a service code. Refer to the **SERVICE FUNCTION TABLE (P.97)**.

"717: Transmit speed select" represents a service code. Refer to the **SERVICE FUNCTION TABLE (P.97)**.

### 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.97)**.

"718: Receive speed select" represents a service code. Refer to the **SERVICE FUNCTION TABLE (P.97)**.

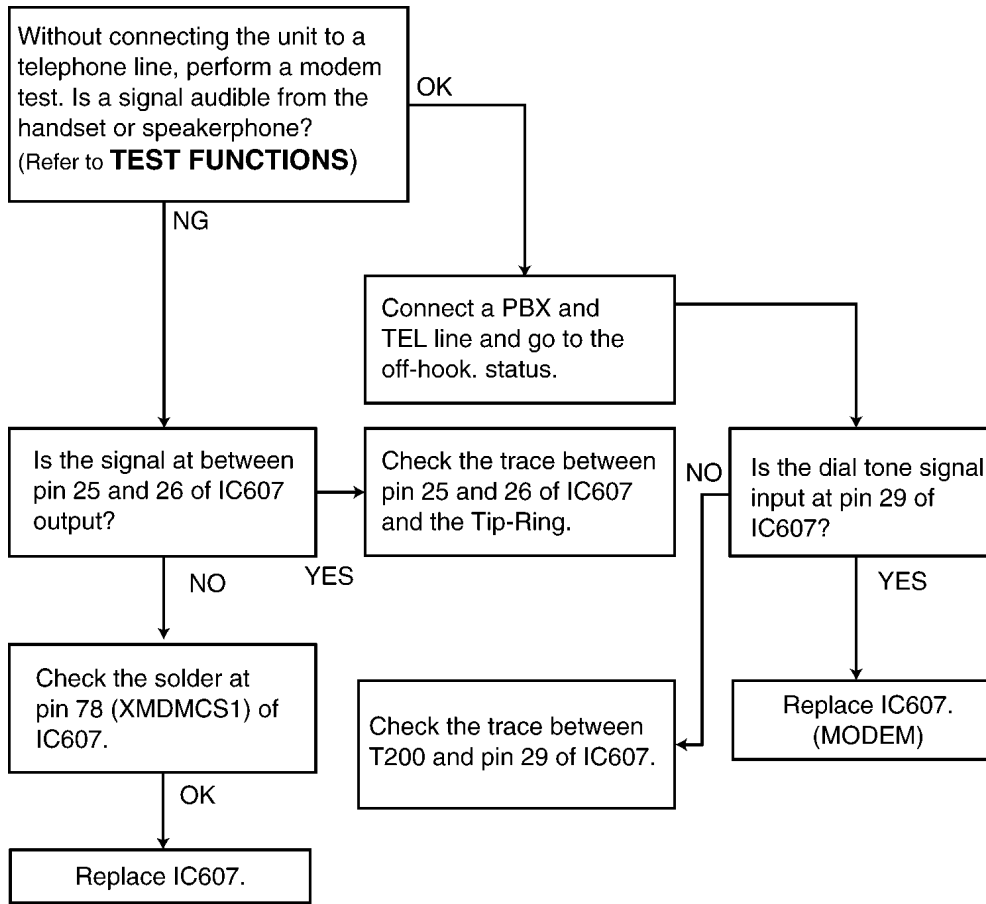
For the receiving problem, we have thought of causes other than in the software. Some causes may be when the fax changes to the memory receiving mode (for example, when out of paper). and the memory becomes full of the unprinted fax data. In this case, [MEMORY FULL] and its main cause (for example, "OUT 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.107)** 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.92)**

### 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.111).) 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).

Mar. 23 2002 09:51AM

YOUR LOGO :  
YOUR FAX NO:

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

Mar. 23 2000 09:51AM

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

**NO RESPONSE DISAPPEARED ON JOURNAL**

NO.	START TIME	(1) RCV MODE	(4) RCV-TRIG (CNT.)
YOUR LOGO			
YOUR FAX NUMBER			

Mar. 23 2000 09:51AM

NO.	(6) ENCODE	(7) MSLT	(8) EQM(RX)	(9) ERROR LINE(RX)	(10) MAKER CODE
01	MH	20msec	0000	00000	79
02	MH	20msec	0000	00000	00
03	MR	20msec	1200	00013	00
04	MR	20msec	0000	00000	00

**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.153).

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.153). The values in parentheses indicate how many times the trigger has been used. (For example, "0003" means three times.)

No.	Display	Function
1	FAX MODE	Means the unit received a fax message in the FAX mode.
2	MAN RCV	Means the unit received a fax message by manual operation.
3	RMT DTMF	Means the unit detected DTMF (Remote Fax activation code) entered remotely.
4	PAL DTMF	Means the unit detected DTMF (Remote Fax activation code) entered by a parallel connected telephone.
5	TURN-ON	Means the unit started to receive after 10 rings. (Remote Turn On: Service Code #573)

##### (5) ERROR→MEMORY

Indicates the reason why the unit received a fax message in memory.

If you look at No.11 in the JOURNAL 2 in **PRINTOUT EXAMPLE**(P.153), 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.153).

### 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)

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

#### (10) MAKER CODE

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

0E: "KX" model

00: Unknown

79: "UF" model

19: "Xerox" model

## 12.3.11.3. PRINTOUT EXAMPLE

**JOURNAL2**

Mar. 25 2000 01:59PM

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

**NO RESPONSE DISAPPEARED ON JOURNAL**

NO.	START TIME	RCU MODE	RCU-TRIG. (CNT.)
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**JOURNAL3**

Mar. 25 2000 01:58PM

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

### 12.3.11.4. HOW TO OUTPUT THE JOURNAL REPORT

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

JOURNAL		Jan. 20 2000 01:19PM						
		YOUR LOGO :						
		YOUR FAX NO:						
NO.	OTHER FACSIMILE	START TIME	USAGE TIME	MODE	PAGES	RESULT	*CODE	
01	2345678	Jan. 20 01:18PM	00'51	SND	00	COMMUNICATION ERROR	(43)	

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

(2) Communication message

(1) Error code message

#### CROSS REFERENCE:

Features(P.9)

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 T1 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 T1 TIMER expires.	9
54	ERROR-NOT YOUR UNIT	RCV	DCN is received after DIS transmission.	11
58	COMMUNICATION ERROR	RCV	DCN is received after FTT transmission.	13
59	ERROR-NOT YOUR UNIT	SND	DCN responds to the post message.	14
65	COMMUNICATION ERROR	SND	DCN is received before DIS reception.	2
65	COMMUNICATION ERROR	RCV	Reception is not EOP, EOM PIP, PIN, RTP or RTN.	2
68	COMMUNICATION ERROR	RCV	No response at the other party after MCF or CFR is transmitted.	13
70	ERROR-NOT YOUR UNIT	RCV	DCN is received after CFR transmission.	13
72	COMMUNICATION ERROR	RCV	Carrier is cut when the image signal is received.	16
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.	
FF	COMMUNICATION ERROR	SND & RCV	Modem error. For the DCN, DCN, etc. abbreviations, refer to <b>MODEM SECTION</b> (P.25).	12

SND=TRANSMISSION / RCV=RECEPTION

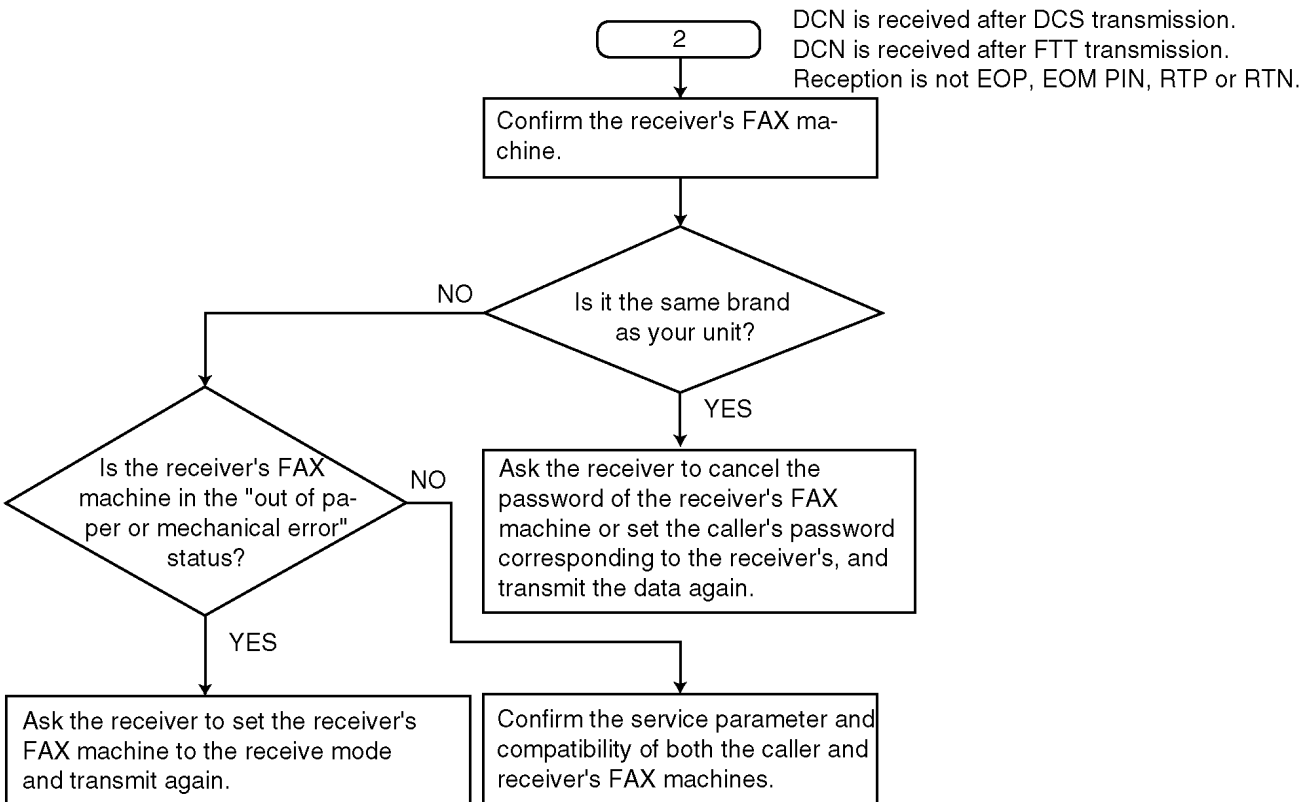
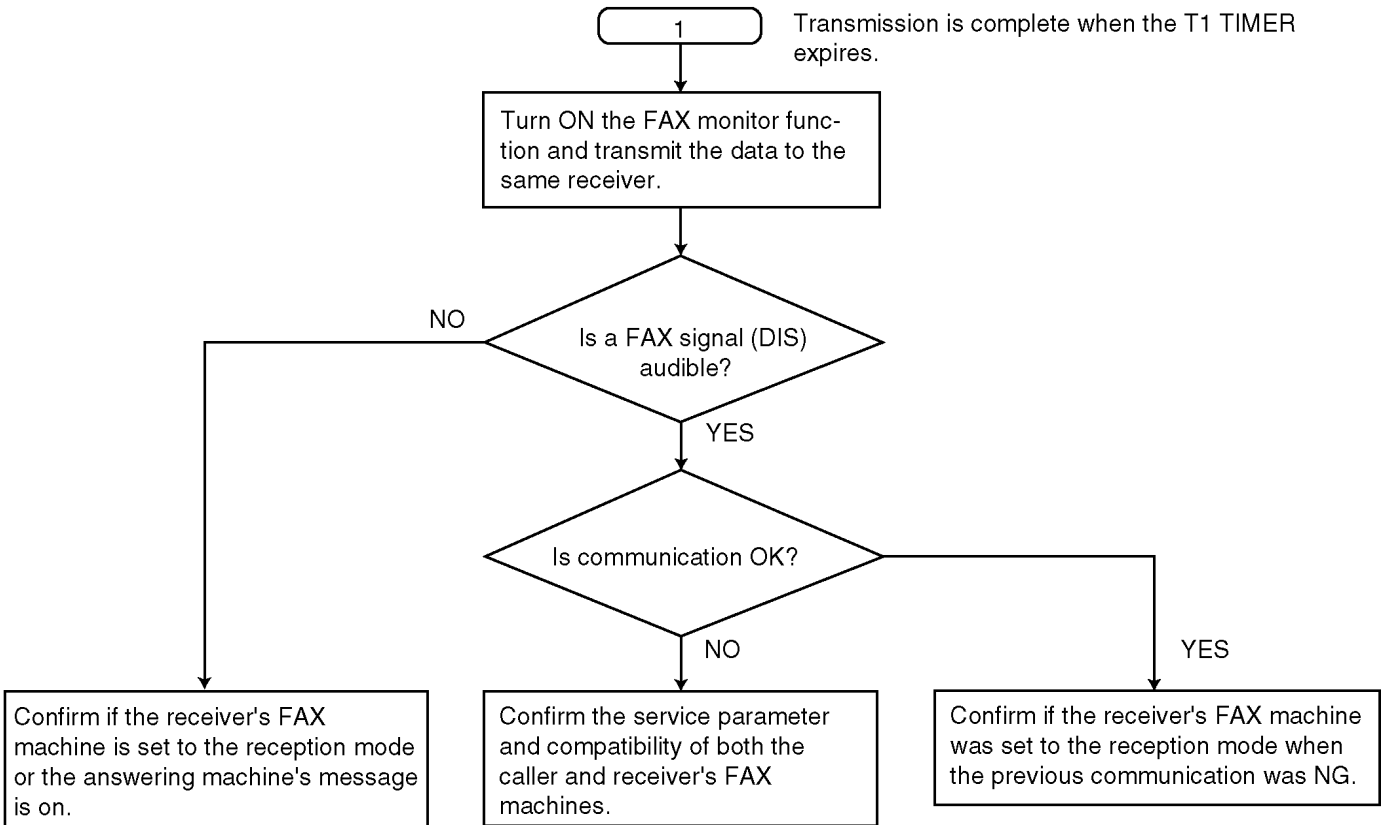
Most fax communication problems can be resolved by the following steps.

1. Change the transmit level. (Service code: 596, refer to **SERVICE FUNCTION TABLE**(P.97).)
2. Change the TX speed/RX speed. (Service code: 717/718, refer to **SERVICE FUNCTION TABLE**(P.97).)

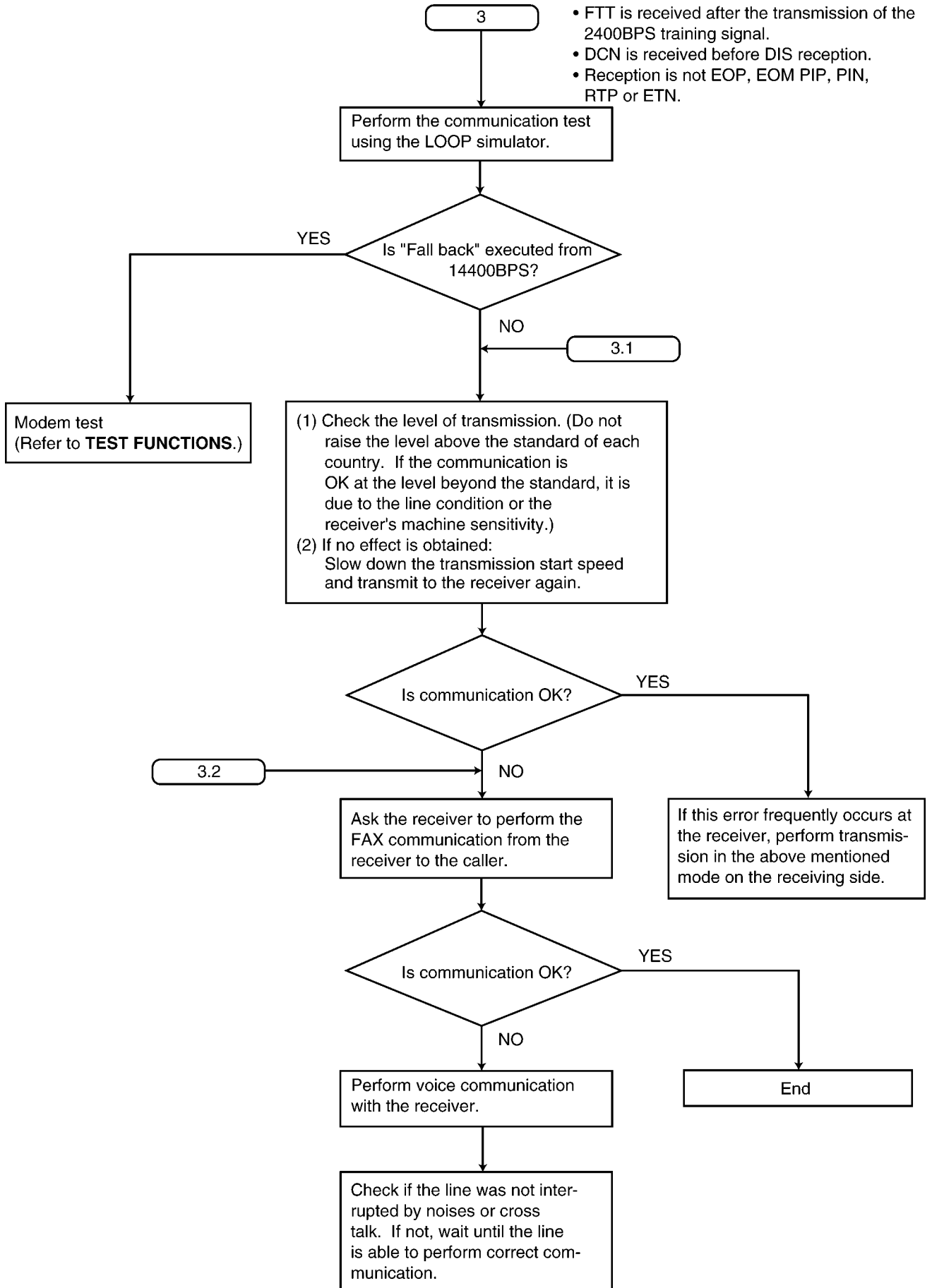
#### Note\*:

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

Countermeasure







**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**

4 No response after the post message is transmitted three times.

Inquire with the receiver if the caller's document was sent correctly.

Was the data sent correctly?

NO  
3.2

YES  
Ask the service section for the receiver's FAX machine to confirm the machine's condition.

5 RTN and PIN are received.

3.1

6 No response after FTT is transmitted.

Perform the communication test using the LOOP simulator and check the machine's reception condition.

Modem test  
(Refer to **TEST FUNCTIONS.**)

Is FTT sent from the receiver?

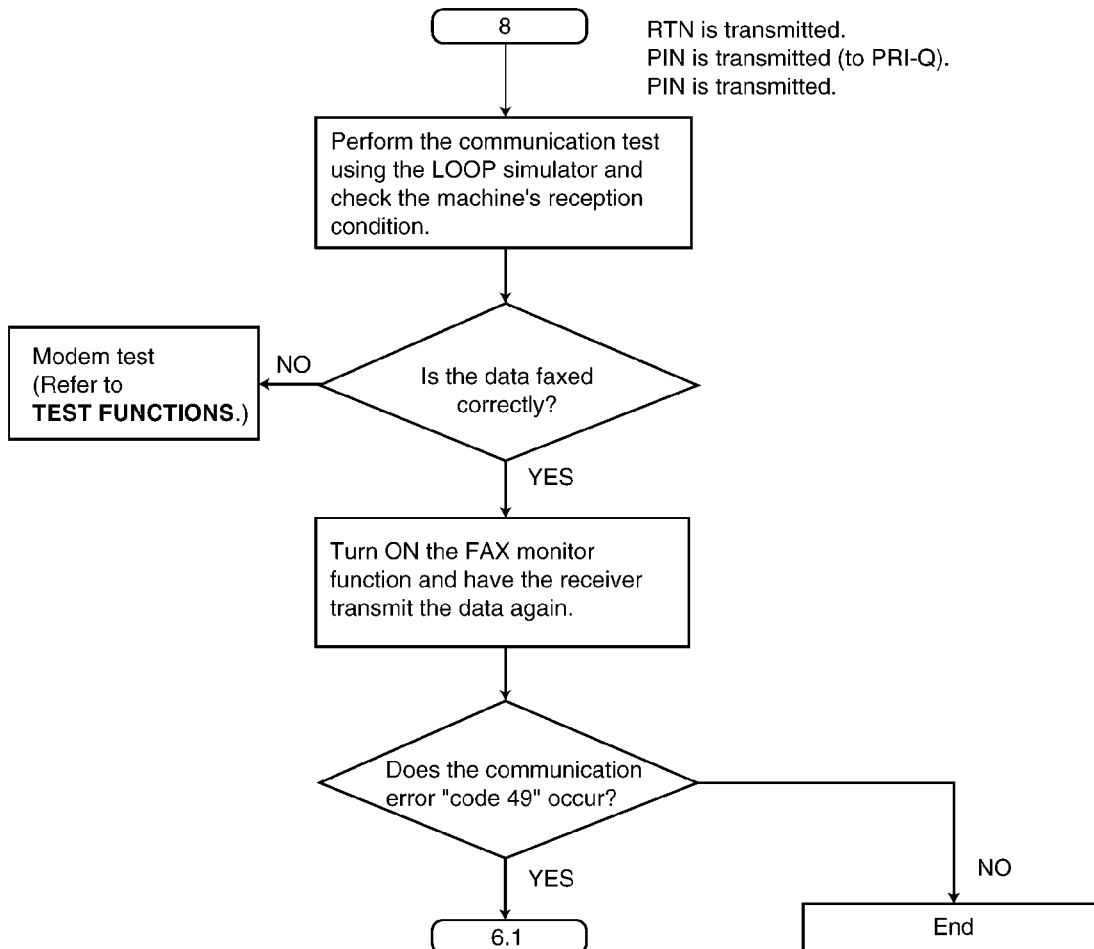
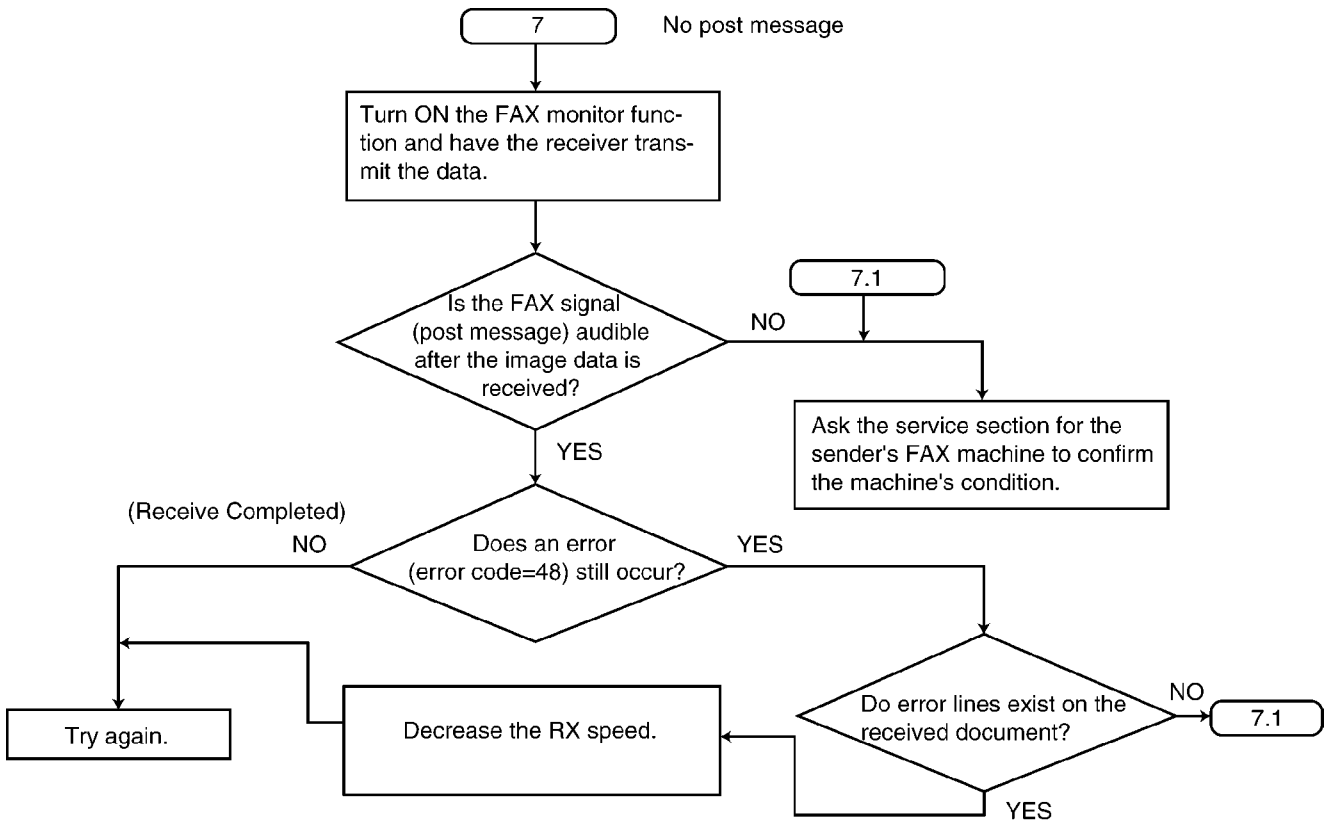
6.1

NO  
No problem with the machine hardware.

Perform voice communication with the NG caller.

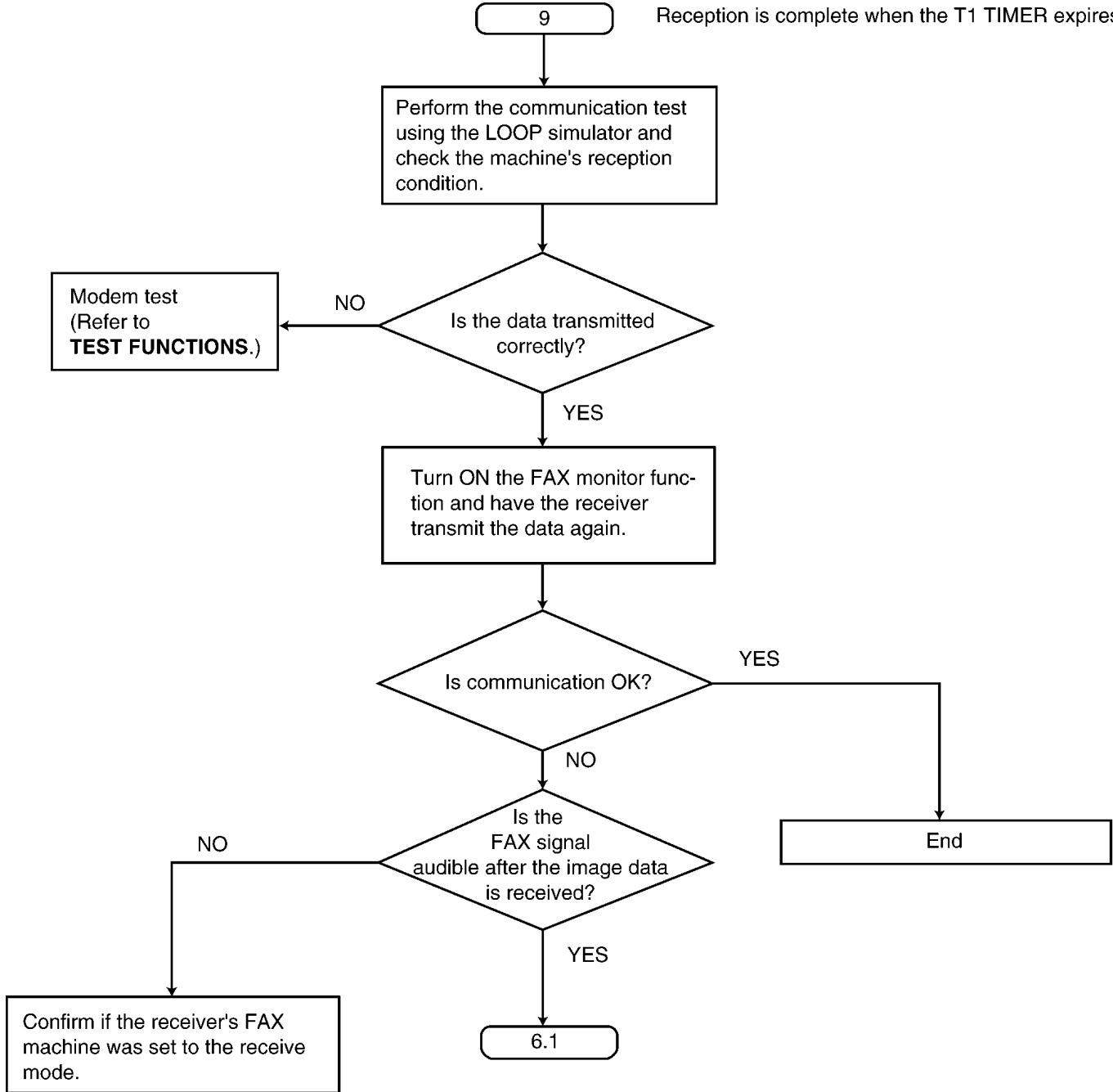
Check if the line was not interrupted by noises or cross talk. If not, wait until the line is able to perform correct communication.

**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**

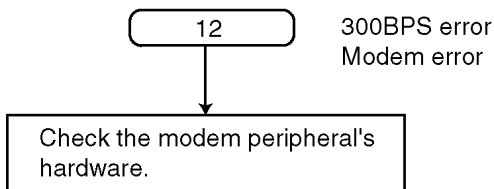
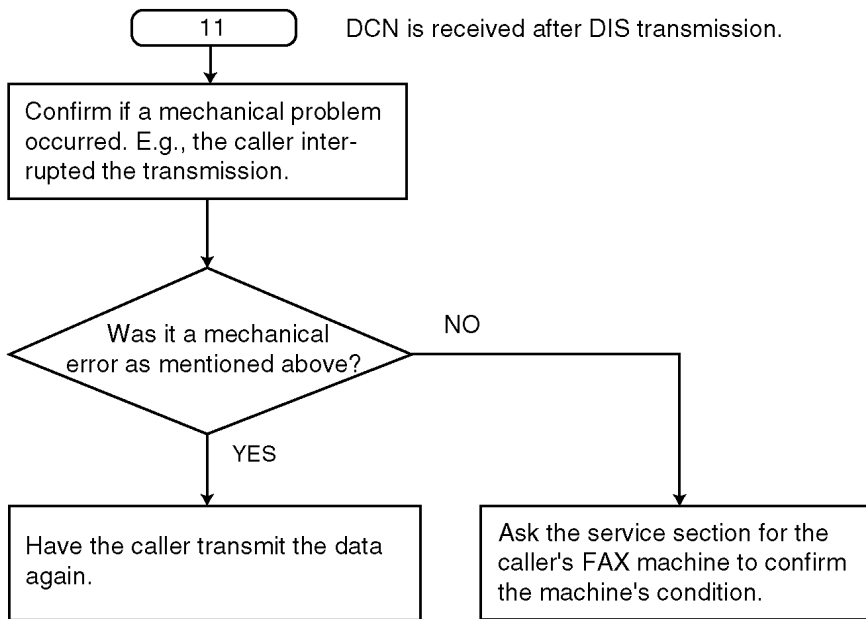
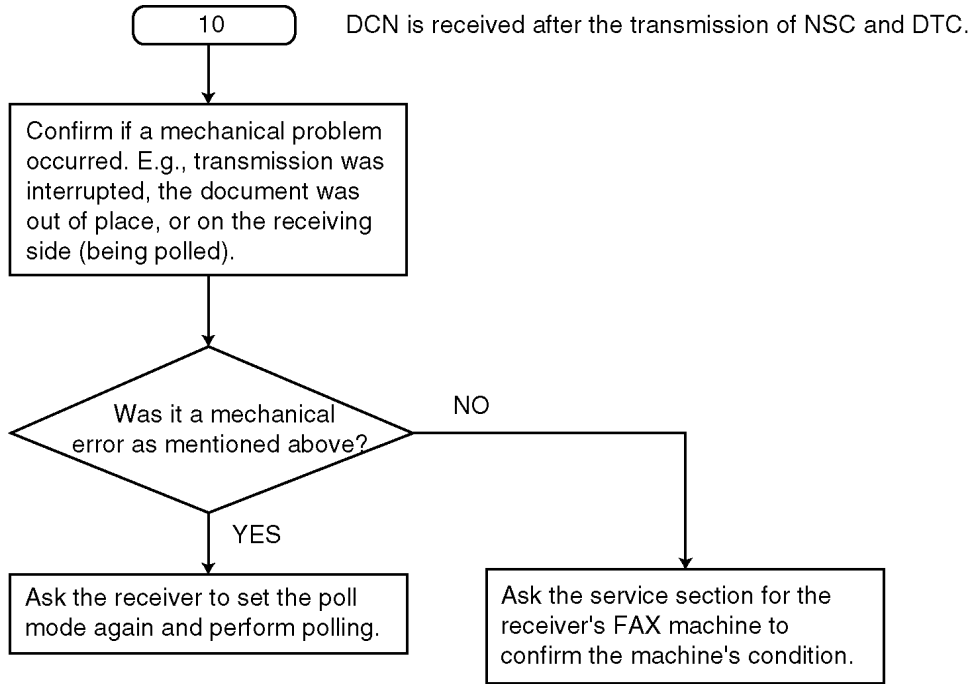


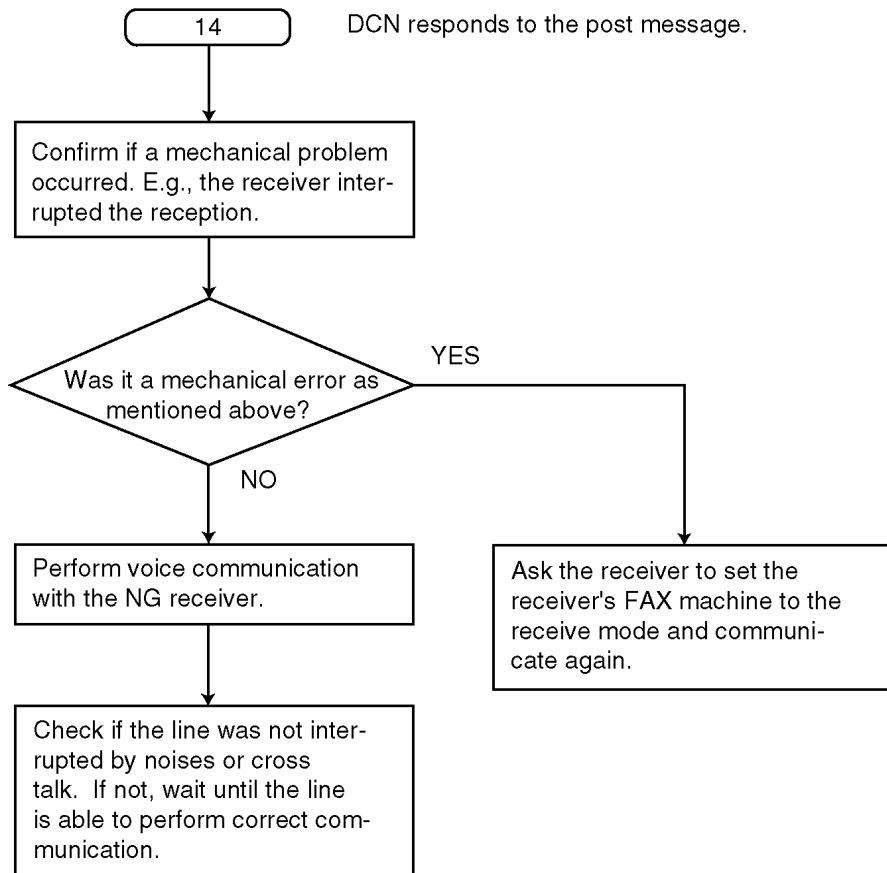
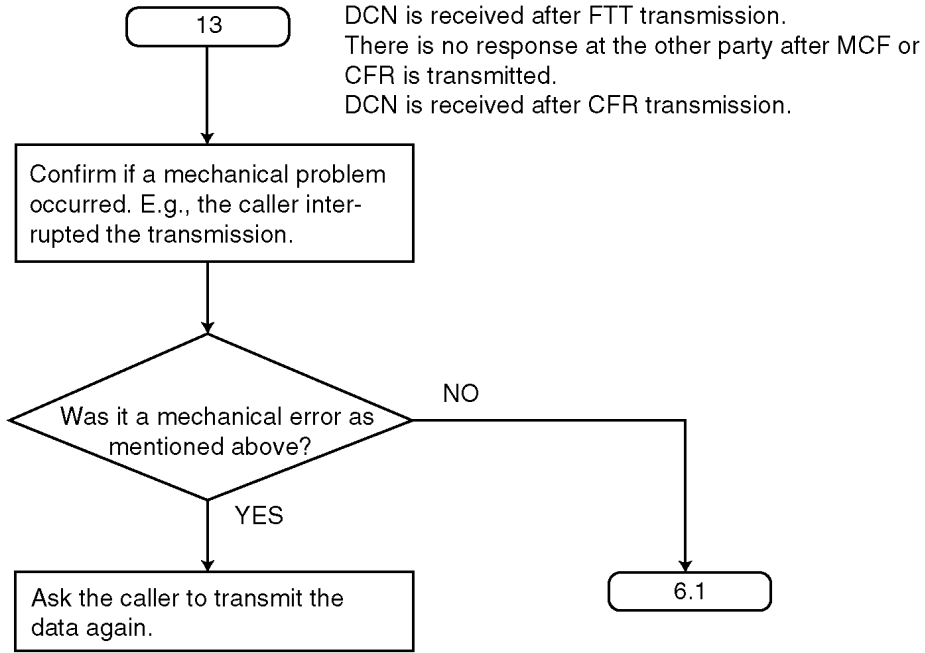
**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**

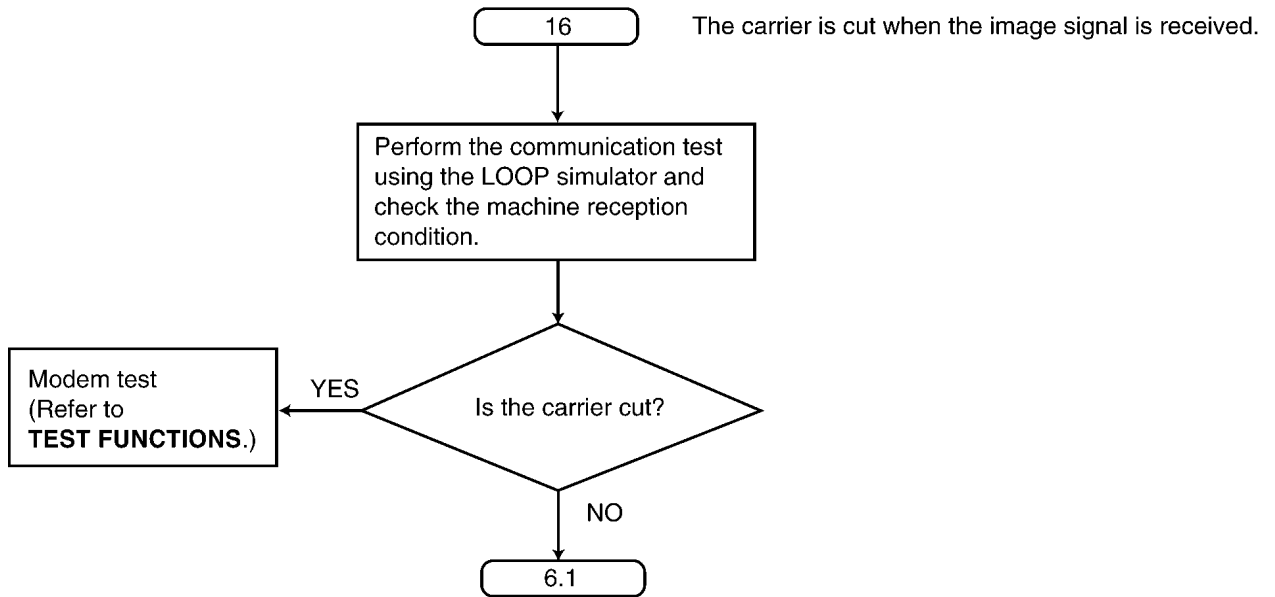
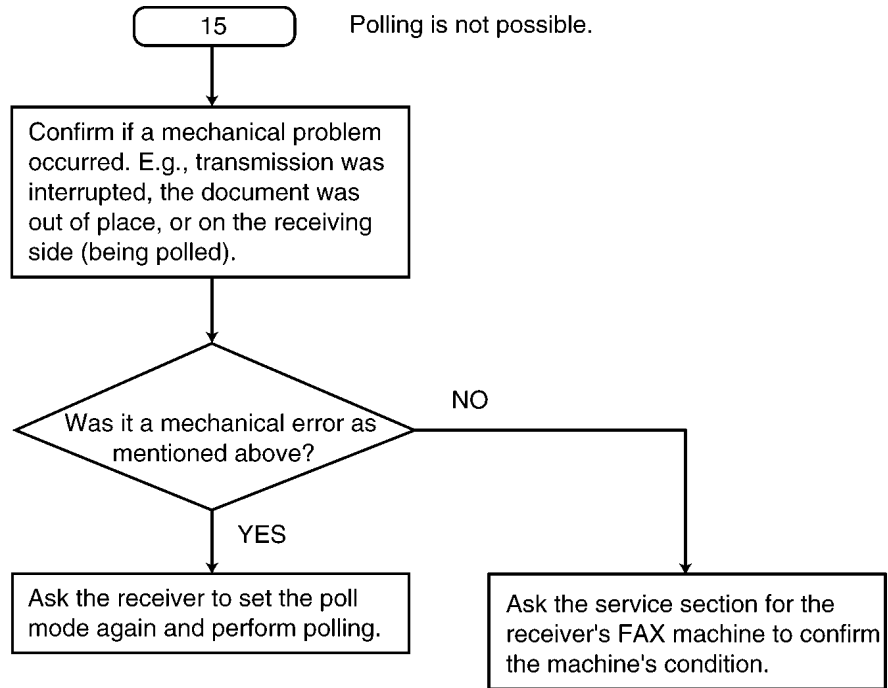
9 Reception is complete when the T1 TIMER expires.



**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**



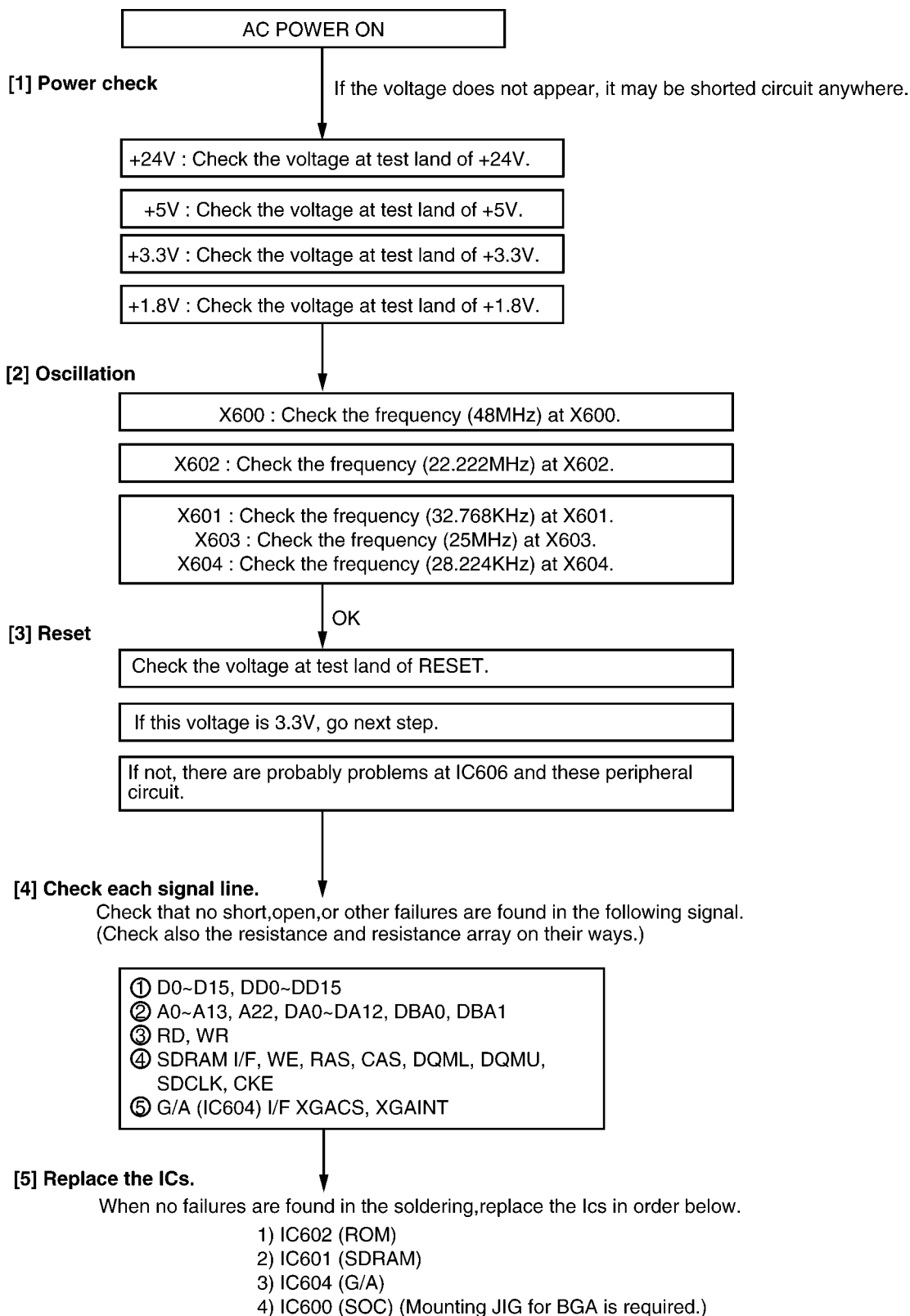




**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**

## 12.3.12. INITIALIZING ERROR

After the power is turned on, the SOC (IC600) initializes and checks each IC. The ROM (IC602), SDRAM (IC601), G/A (IC604) and MODEM (IC607) 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.254)

POWER SUPPLY BOARD SECTION (P.67)



### 12.3.13. ANALOG BOARD SECTION

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

#### 12.3.13.1. CHECK SHEET

(SYMPTOM) CHECK ITEMS	Signal ROUTE
	IN → OUT
MONITOR	TEL LINE-CN206(3)-CN251(1)-CN250(1)-F200-L262-L258-D209-Q206-R273-C266-T201--C244-R237-IC204(2-1)-R217-R218-C220-L252-IC209(23-34)-C293-L244-R(286 `289 or 300 `303 )-IC207(X→3 )-R293-C289-L253-IC209(32-35)-CN200(3)-CN618(3)-R796-C808-L664-IC609(4-5,8)-CN620(1,2)-speaker
HANDSET Tx	Handset MIC-CN42(1,3)-L40,L41-CN44(1,3)-CN220(1,3)-L269,L267-C275,C268-R272,R264-L237,L235-IC206(5,6-7)-C267-R261-R247-L257-IC209(15-22)-C240-R238-L225-IC204(6-7)-C248-R245-R244-T201-C266-R273-Q206-D209-L258-L262-F200-CN206(3)-TEL LINE
HANDSET Rx	TEL LINE-CN206(3)-CN251(1)-CN250(1)-F200-L262-L258-D209-Q206-R273-C266-T201--C244-R237-IC204(2-1)-R217-R218-C220-L252-IC209(23-34)-C293-L244-R(286 `289 or 300 - 303 )-IC207(X→3 )-R293-C289-L253-IC209(32-10,11)-C317,R333-L270,L268-CN220(5,6)-CN44(5,6)-L42,L43-CN42(5,6)-HANDSET SPEAKER
DTMF Monitor	Speaker
	Handset
DTMF for TEL Line FAX Tx	C607(25,26)-L678,L679-CN618(26,28)-CN200(1,3)-C260,C256-R255,R251-IC206(2,3-1)-C281-R282-IC209(24-34)-C293-L244-R(286 `289 or 300 - 303 )-IC207(X→3 )-R293-C289-253-IC209(32-35)-CN200(3)-CN618(3)-R796-C808-L664-IC609(4-5,8)-CN620(1,2)-speaker
DTMF for TEL Line FAX Tx	IC607(25,26)-L678,L679-CN618(26,28)-CN200(1,3)-C260,C256-R255,R251-IC206(2,3-1)-C281-R282-IC209(24-22)-C240-R238-L225-IC204(6-7)-C248-R245-R244-T201-C266-R273-Q206-D209-L258-L262-F200-CN206(3)-TEL LINE
Ringing/Alarm/ Beep/Key tones	IC604(23)-L677-CN618(7)-CN200(22)-R356-R357-R358-R211-C222-IC209(27-34)-C293-L244-R(286 - 289 or 300 - 303)-IC207(X→3 )-R293-C289-L253-IC209(32-35)-CN200(3)-CN618(3)-R796-C808-L664-IC609(4-5,8)-CN620(1,2)-speaker
CNG/DTMF/Caller ID detection	TEL LINE-CN206(3)-CN251(1)-CN250(1)-F200-L262-R322-T202-R334-C315-R306-IC209(20-31)-C325-CN200(24)-CN618(5)-L676-C746-R756-IC607(29)
DTMF detection (ON-HOOK)	EXT TEL LINE - CN207(4)-CN251(4)-CN250(4)-R322-T202-R334-C315-R306-IC209(20-31)-C325-CN200(24)-CN618(5)-L676-C746-R756-IC607(29)

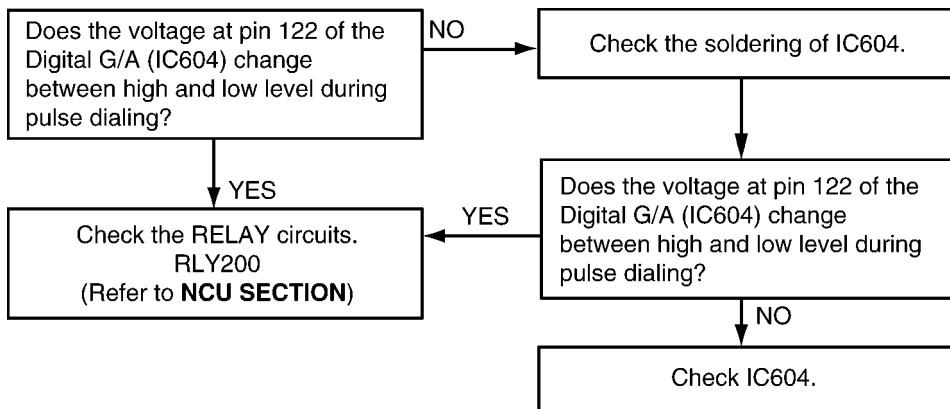
**Note:** { }: Inside the digital board

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

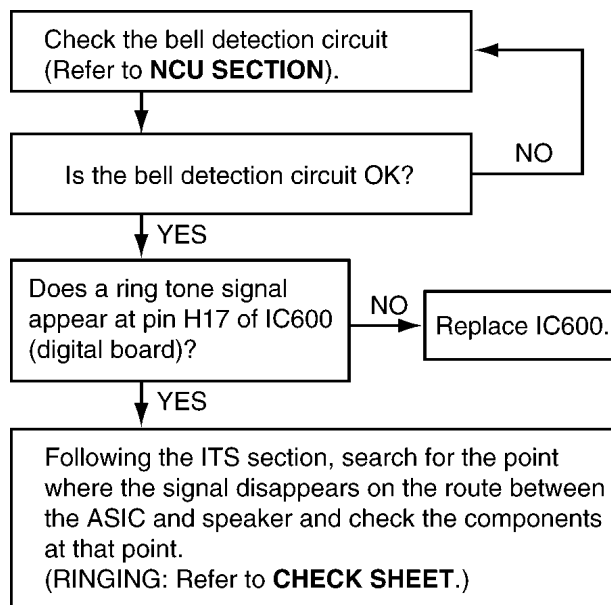
#### 1. No handset and speakerphone transmission / reception

Perform a signal test in the **ITS or the NCU section** and locate a defective point (where the signal disappears) on each route between the handset microphone and telephone line (sending), or between the telephone line and the handset speaker (receiving), or between the microphone and the telephone line (sending), or between the telephone line and the speaker (receiving). Check the components at that point. **CHECK SHEET**(P.165) is useful for this investigation.

#### 2. No pulse dialing

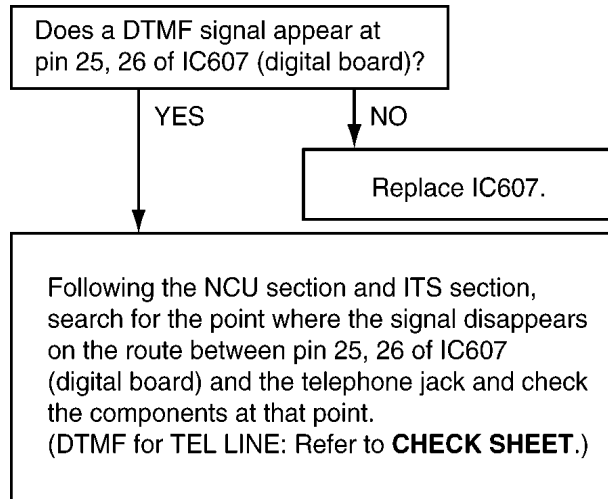


#### 3. No ring tone (or No bell)



**CROSS REFERENCE:**  
**CHECK SHEET** (P.165)  
**NCU SECTION** (P.31)

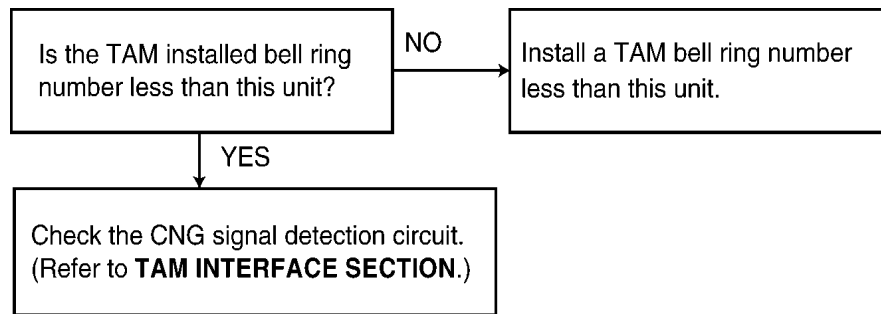
4. No tone dialing



**CROSS REFERENCE:**  
CHECK SHEET (P.165)

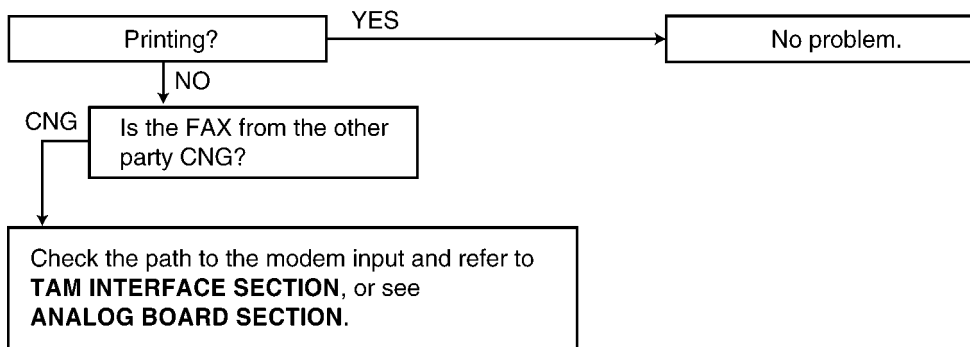
12.3.13.3. DETECTIVE TAM INTERFACE SECTION

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



**CROSS REFERENCE:**  
TAM INTERFACE SECTION (P.33)

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

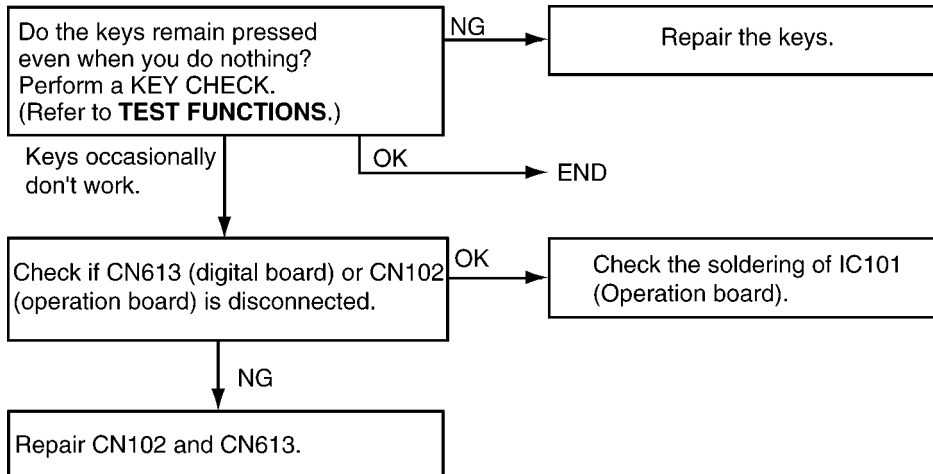


**CROSS REFERENCE:**  
ANALOG BOARD SECTION (P.165)  
TAM INTERFACE SECTION (P.33)

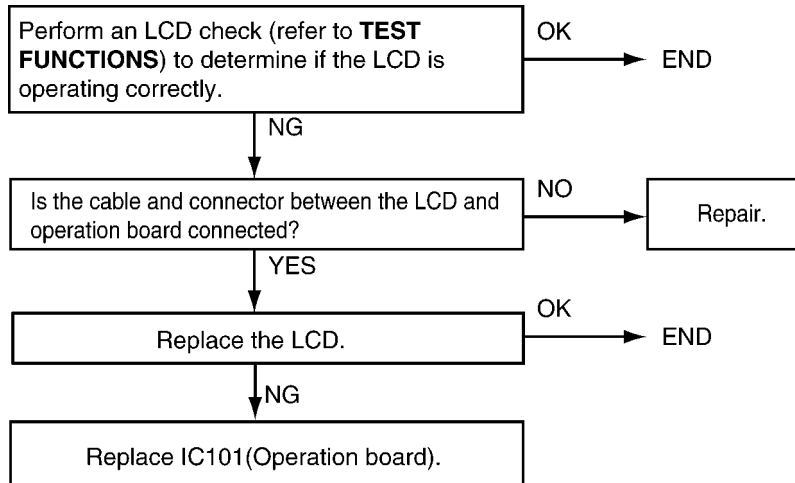
### 12.3.13.4. OPERATION PANEL SECTION

Refer to **TEST FUNCTIONS** (P.92).

#### 1. NO KEY OPERATION



#### 2. NO LCD INDICATION



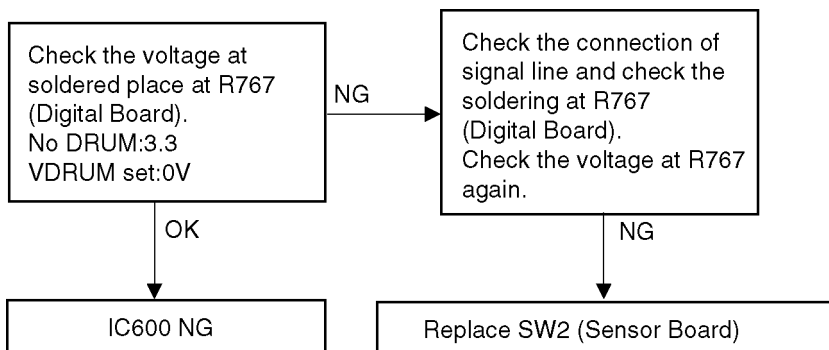
**CROSS REFERENCE:**  
**TEST FUNCTIONS** (P.92)

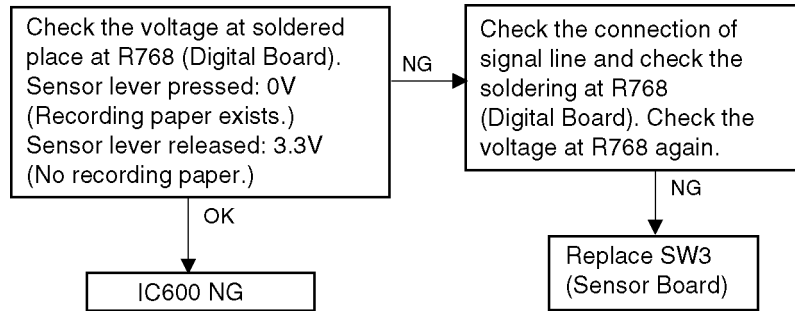
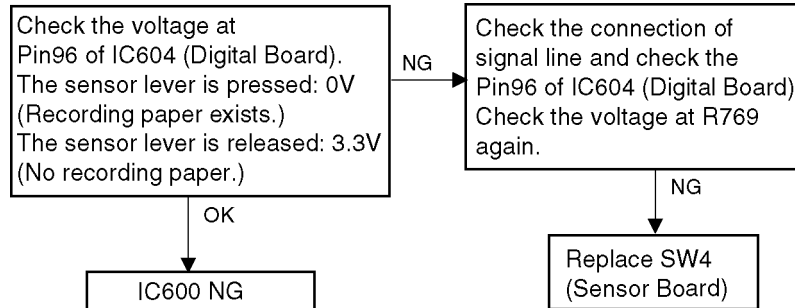
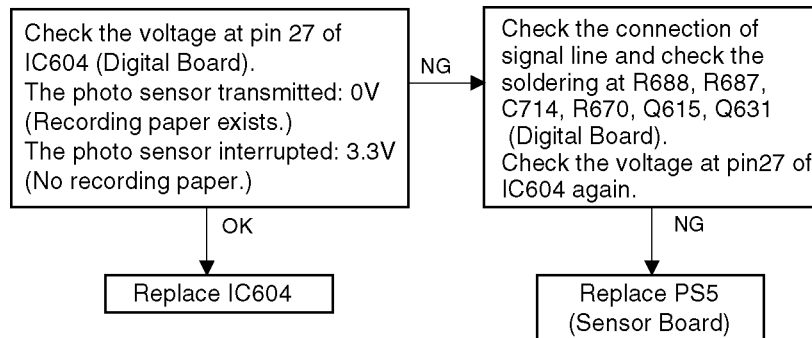
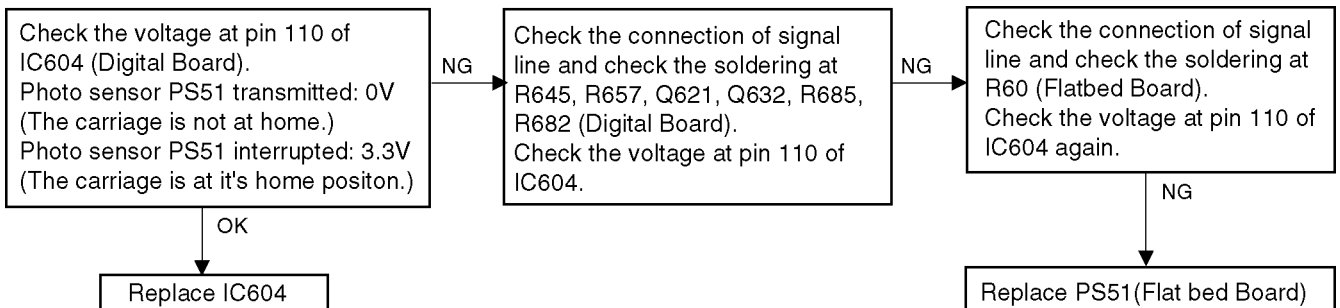
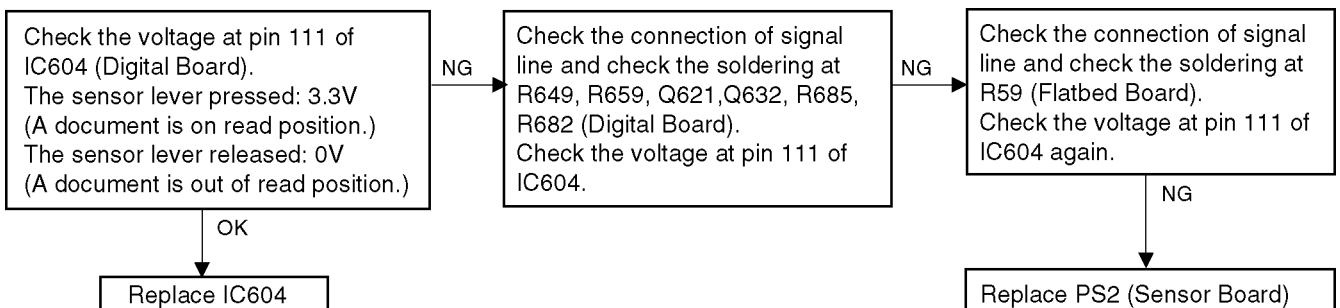
### 12.3.13.5. SENSOR SECTION

Refer to **SENSORS AND SWITCHES** for the circuit description.

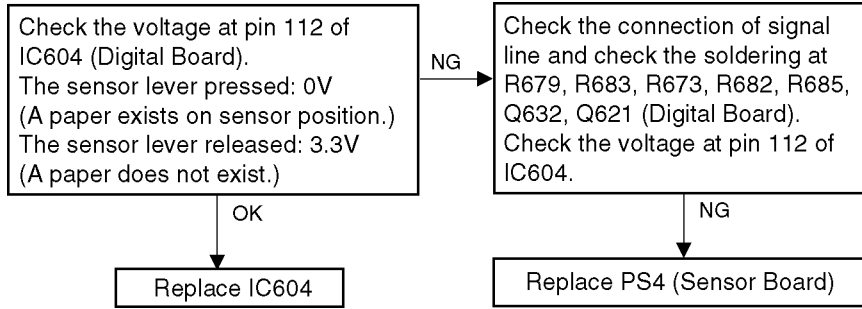
Perform an **SENSOR CHECK** to determine if the sensor is operating correctly.

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

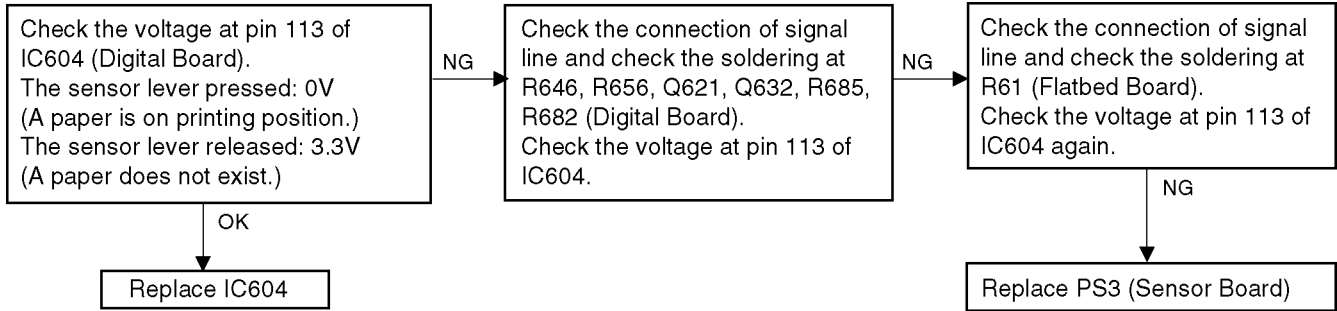


**2. Check the paper sensor ..... “OUT OF PAPER” INPUT TRAY #1****3. Check the pickup sensor ..... “FAILED PICKUP”****4. Check the paper exit sensor ..... “PAPER JAMMED”****5. Check the home sensor ..... “CARRIAGE ERROR”****6. Check the read position sensor ..... “CHECK DOCUMENT”**

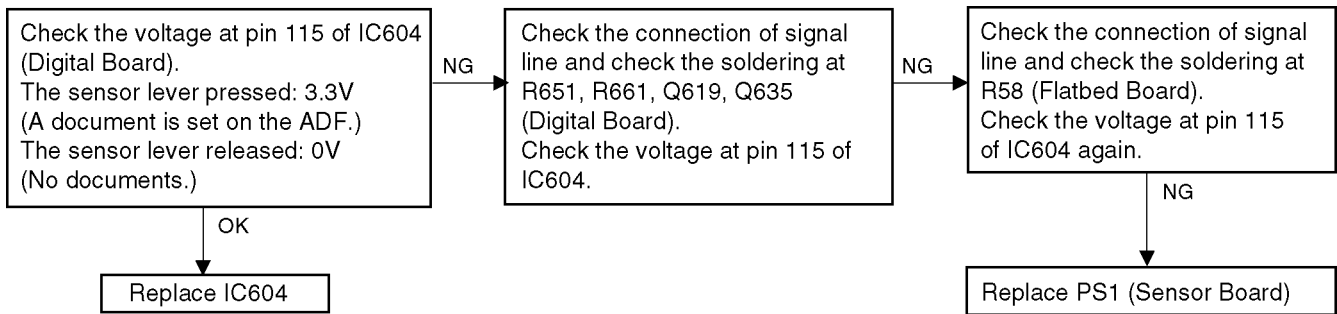
**7. Check the registration & manual paper sensor ..... “PAPER JAMMED”**



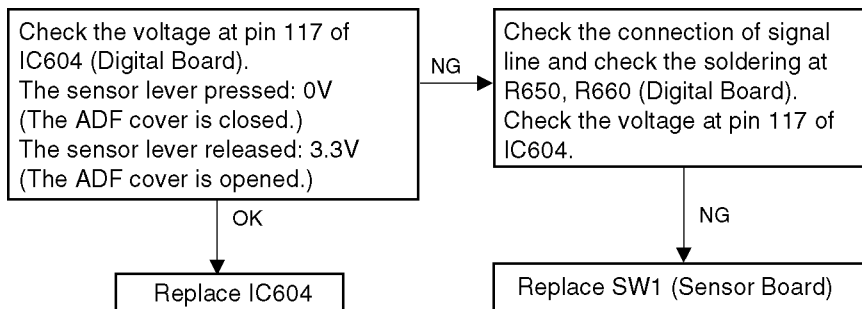
**8. Check the print timing sensor ..... “PAPER JAMMED”**



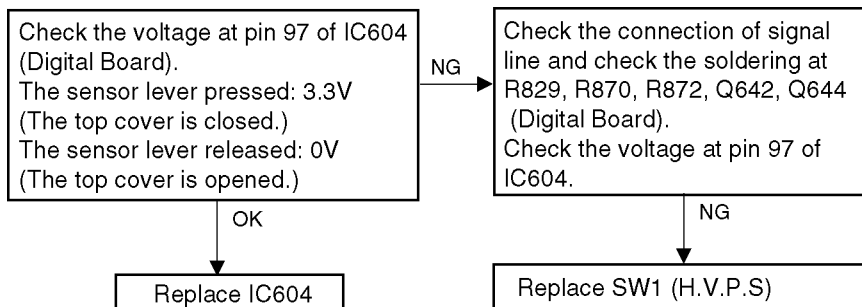
**9. Check the document sensor**



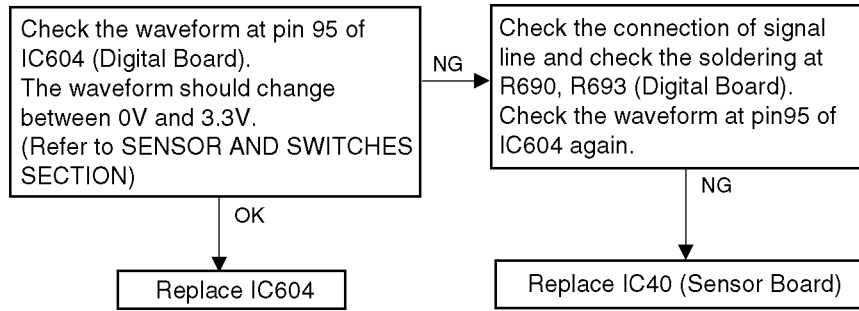
**10. Check the ADF cover sensor ..... “CLOSE ADF COVER”**



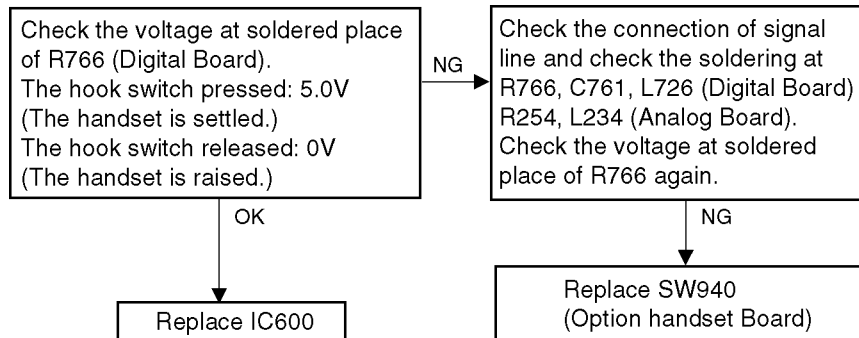
**11. Check the top cover sensor ..... “TOP COVER OPEN”**



**12. Check the toner sensor ..... “TONER LOW”, “CHANGE DRUM”**



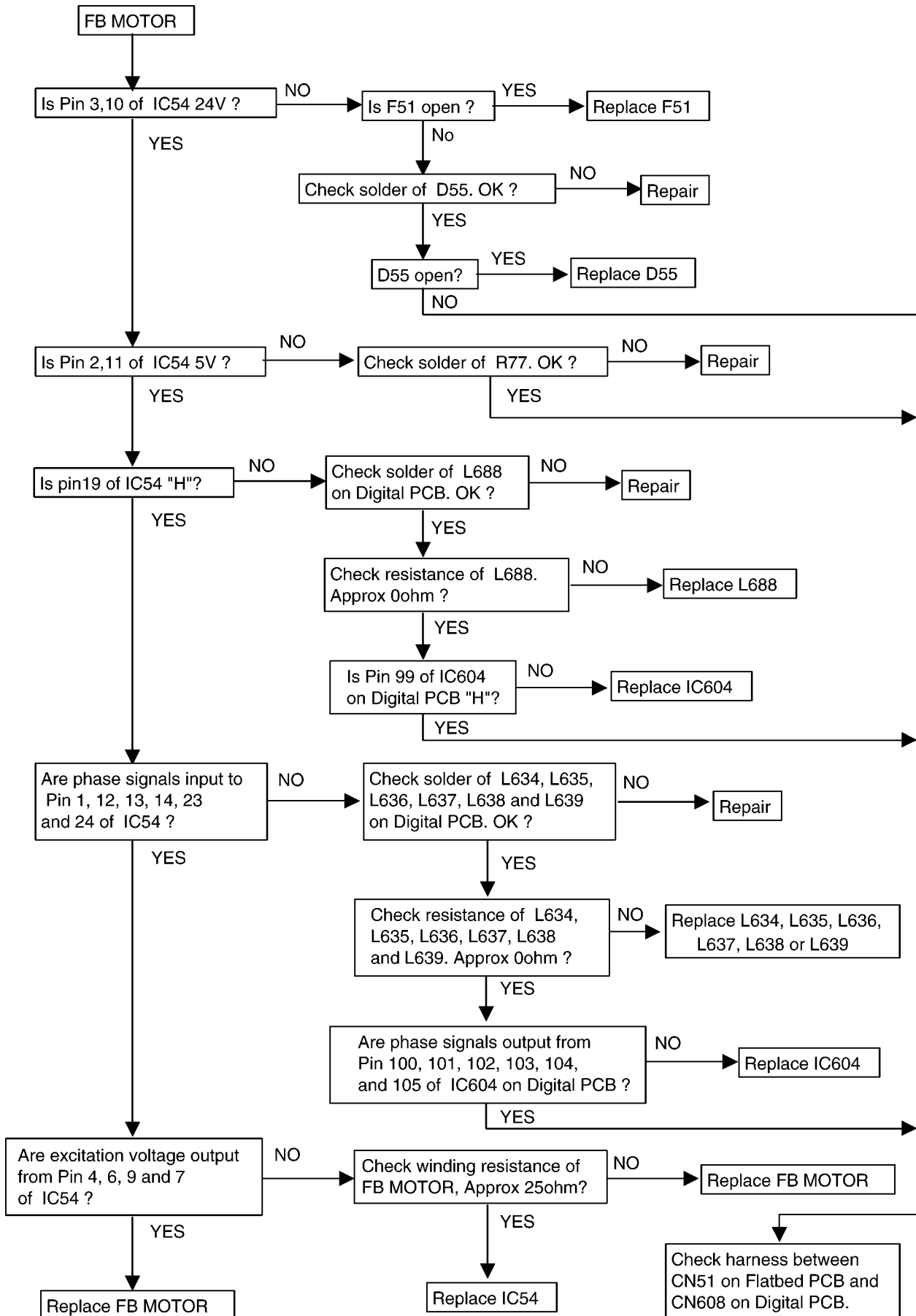
**13. Check the option handset hook switch**



**CROSS REFERENCE:**  
**SENSORS AND SWITCHES SECTION (P.49)**

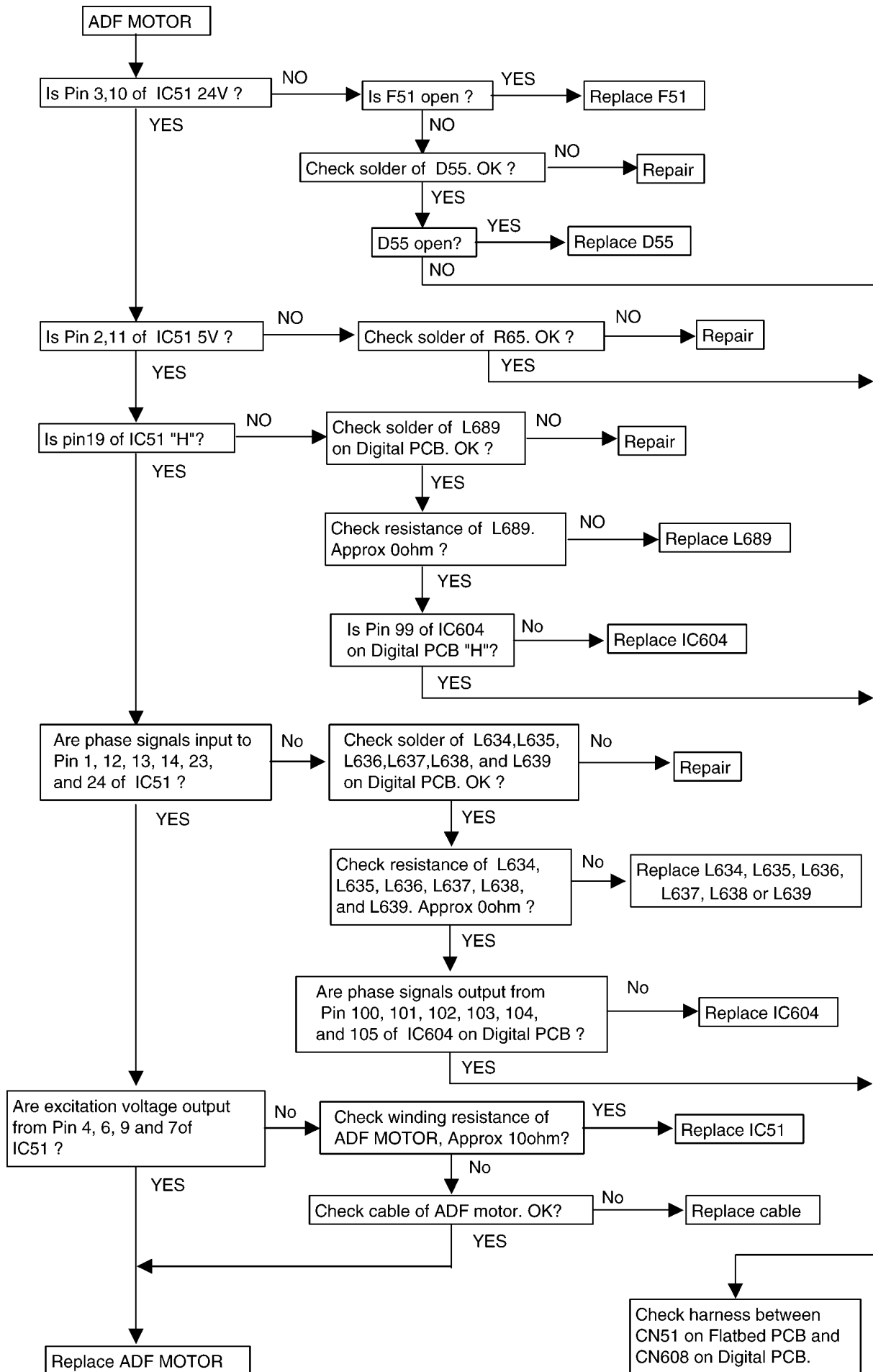
### 12.3.13.6. MOTOR SECTION

#### 12.3.13.6.1. FB (FlatbedFlatbed) MOTOR

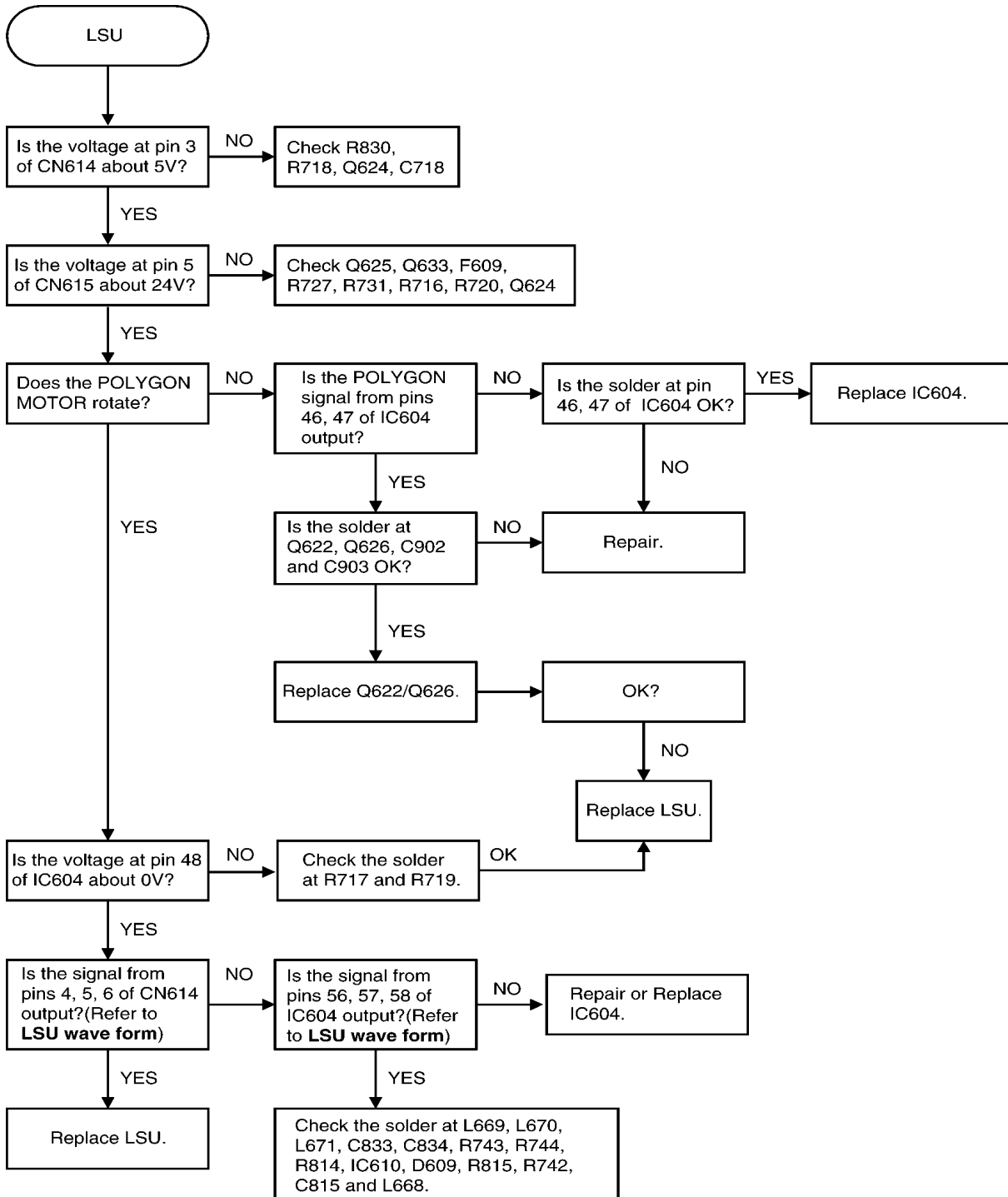




### 12.3.13.6.2. ADF MOTOR

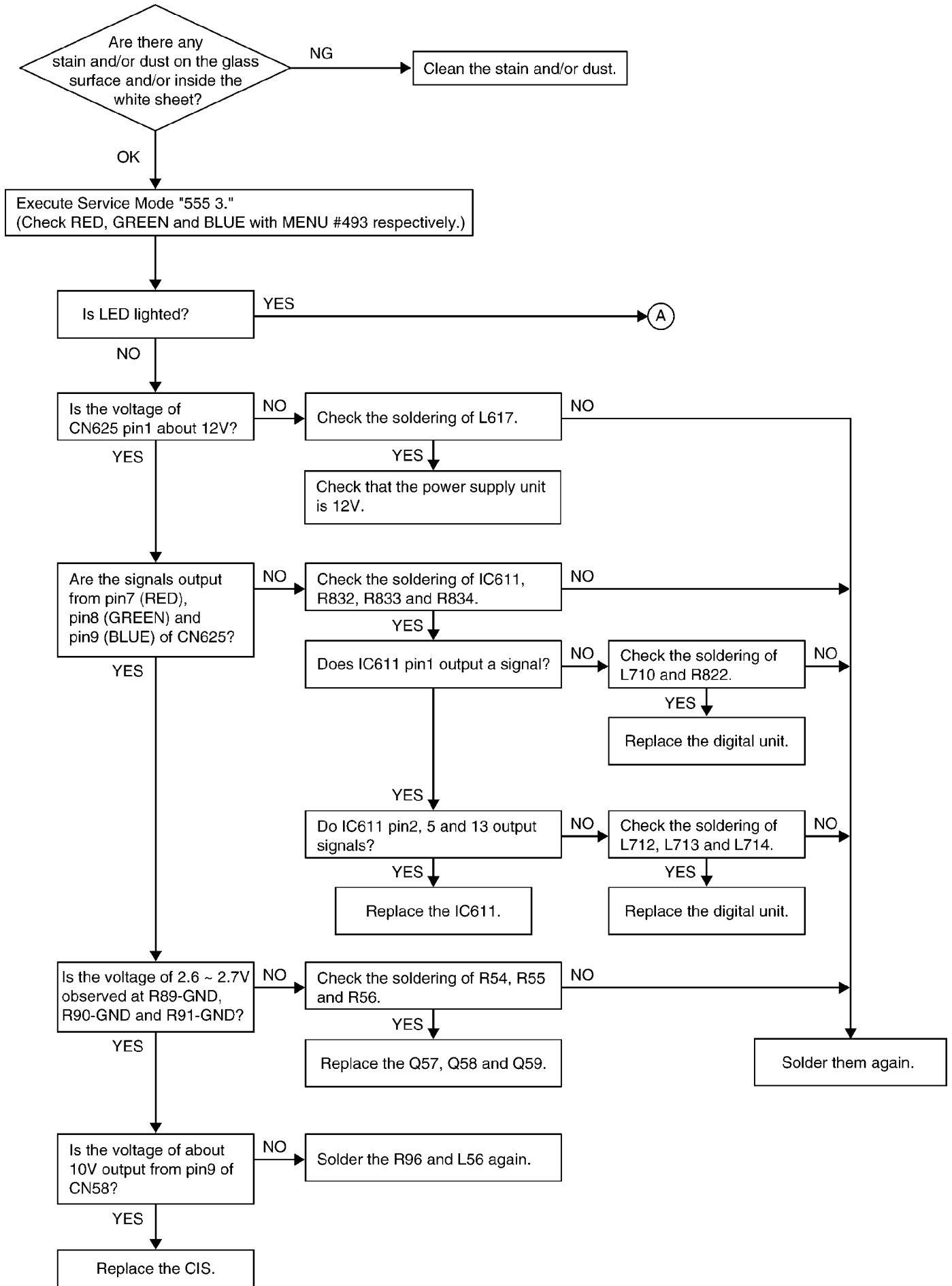


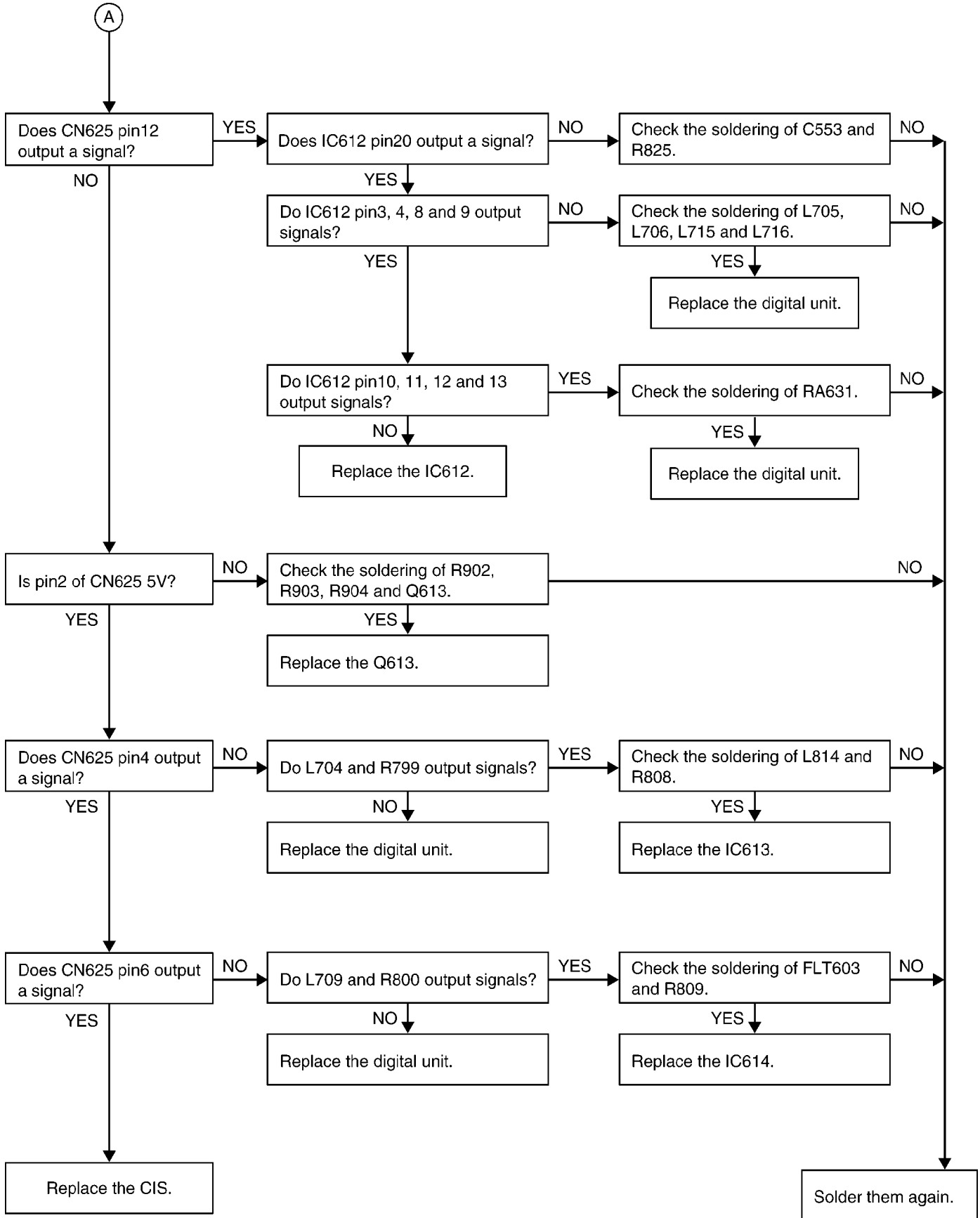
### 12.3.13.7. LSU SECTION



**CROSS REFERENCE:**  
 LSU (Laser Scanning Unit) SECTION (P.47)

### 12.3.14. CIS CONTROL SECTION





**CROSS REFERENCE:**  
**TEST FUNCTIONS (P.92)**

### 12.3.15. HIGH VOLTAGE VALUE CHECK POINT

#### Measurement Procedure

1. Turn Off the unit, and open the unit cover.
2. Remove the developing unit, if it is equipped.
3. Connect the wire to the terminal to be measured (Fig. 2). The wire should be put out of the unit not to interfere in other terminals (Fig. 3). See Fig 4 and 5 for fixing the wire to the terminal No.4.
4. Reinstall the developing unit and close the unit cover.
5. Connect the wire fixed to the terminal to be measured and high voltage probe. Connect the earth of the high voltage probe to the screw located under the USB connector on the rear of the unit.
6. Turn On the unit. It causes the unit to start the initial operation. Be careful, high voltage is output at that moment. (Avoid measuring then.)
7. The unit enters the service mode. Then push \*556\_0. (Do not 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. Remove the wire fixed to the output terminal after measuring.

#### Each terminal's output voltage

No.	BIAS Name	Rated Output	Rated Output Range
1	CHG (Charge)	200 $\mu$ A	Output voltage about 4.1~4.6KV
2	GRID (Grid)	475V	475 $\pm$ 10V
3	DEV (Developing)	170~240V	170~240V
4	TRA (Transfer)	800V	800 $\pm$ 100V

\* FLUKE85 (MULTIMETER) + HIOKI (HV PROBE 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.

Fig. 1

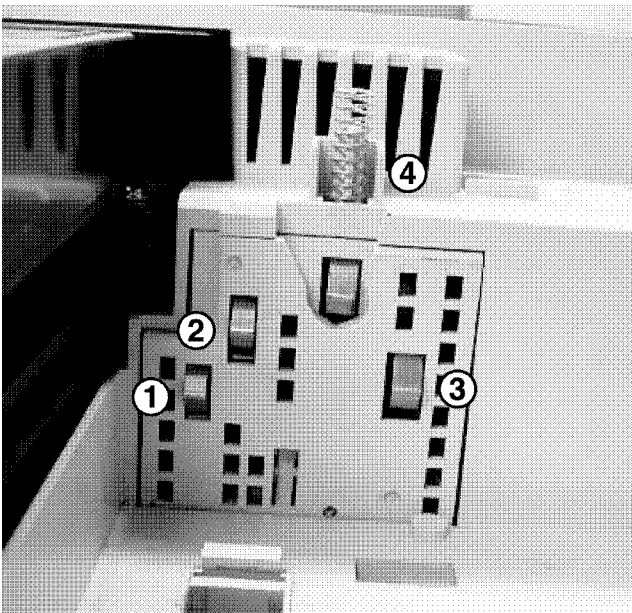


Fig. 2

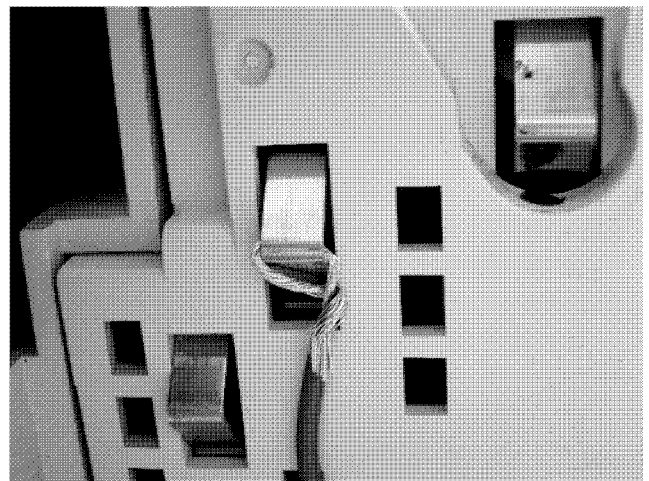


Fig. 3

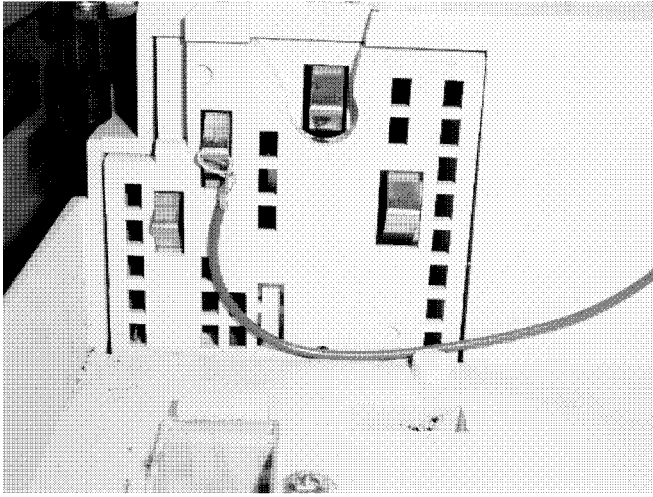


Fig. 4

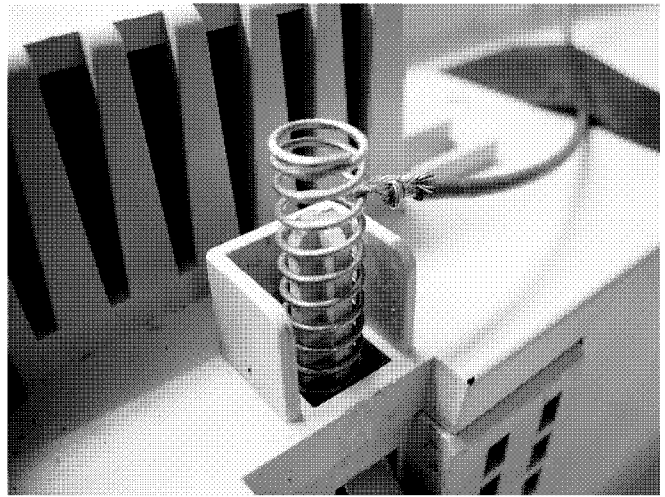
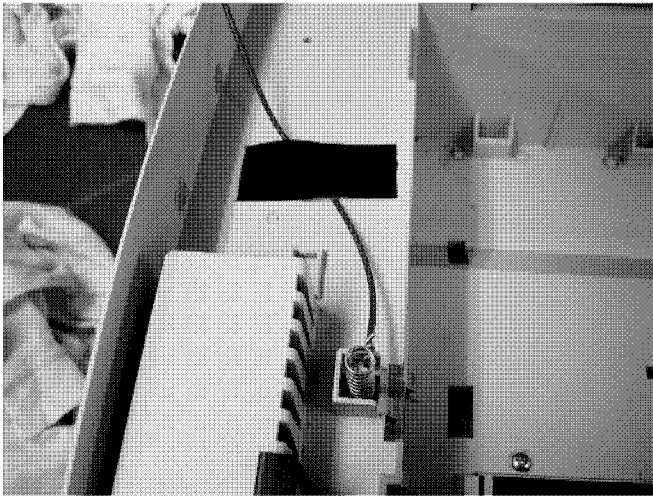
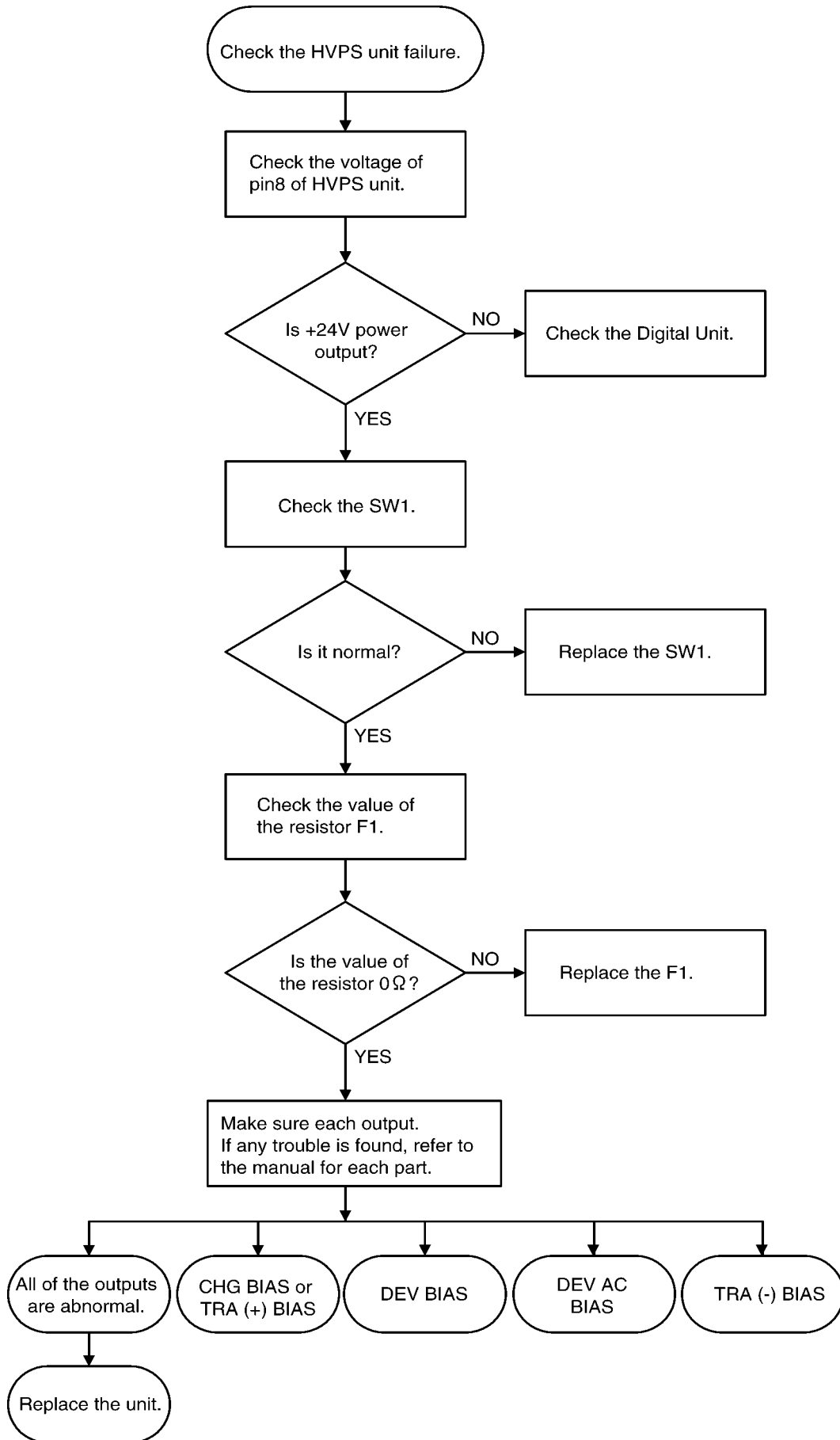


Fig. 5

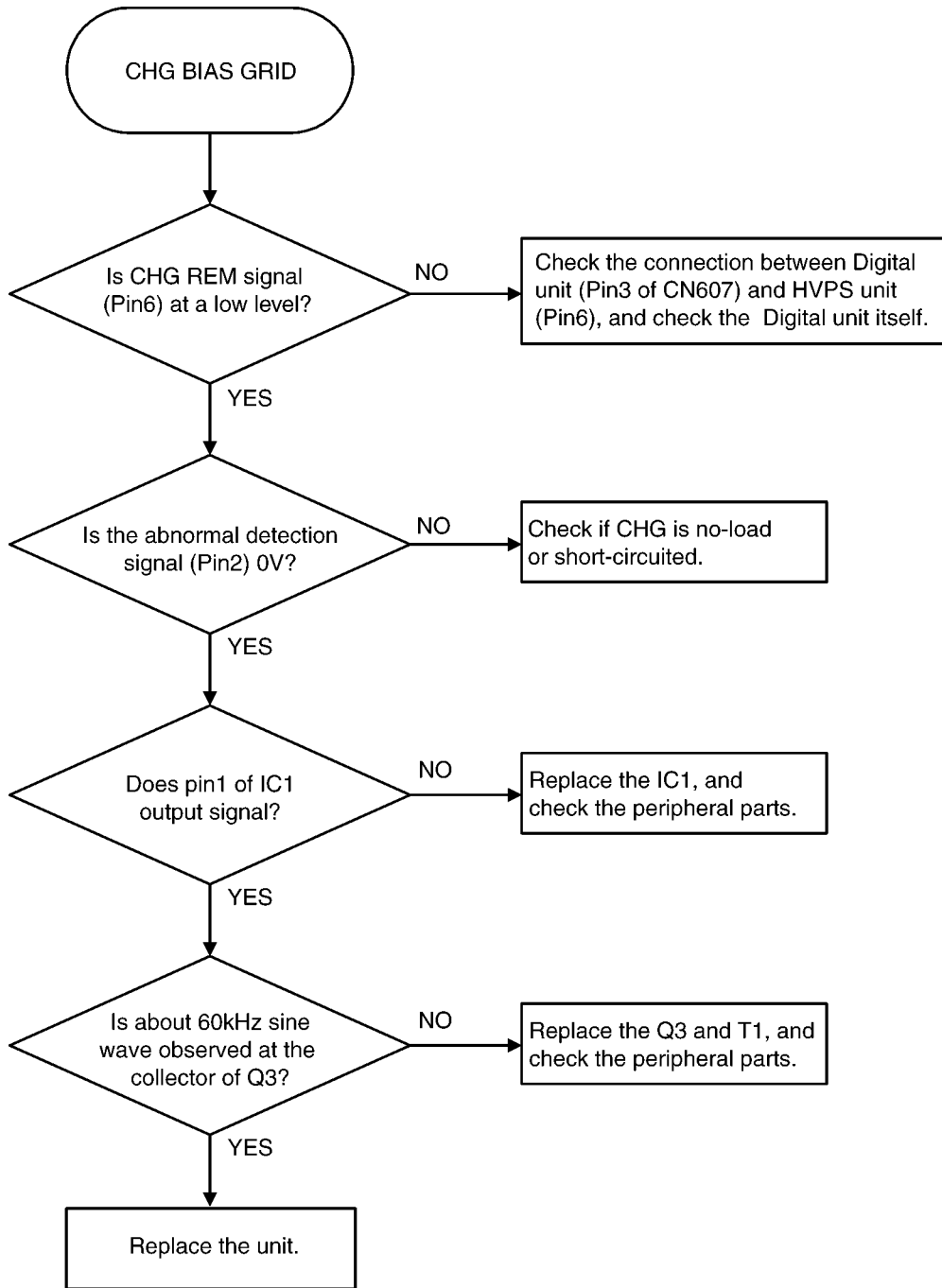


### 12.3.16. HIGH VOLTAGE SECTION

#### 1. Main

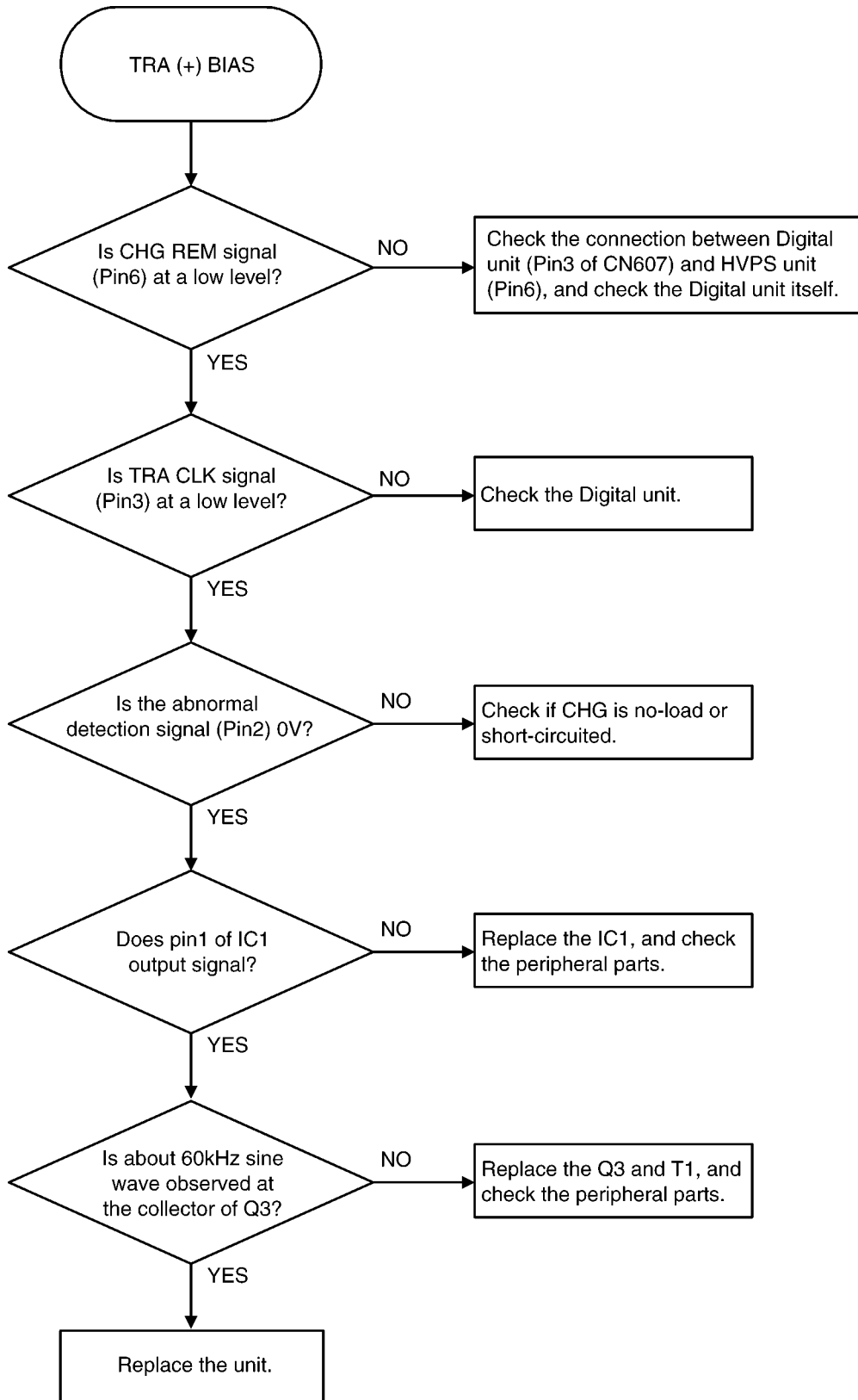


## 2. CHG, GRID

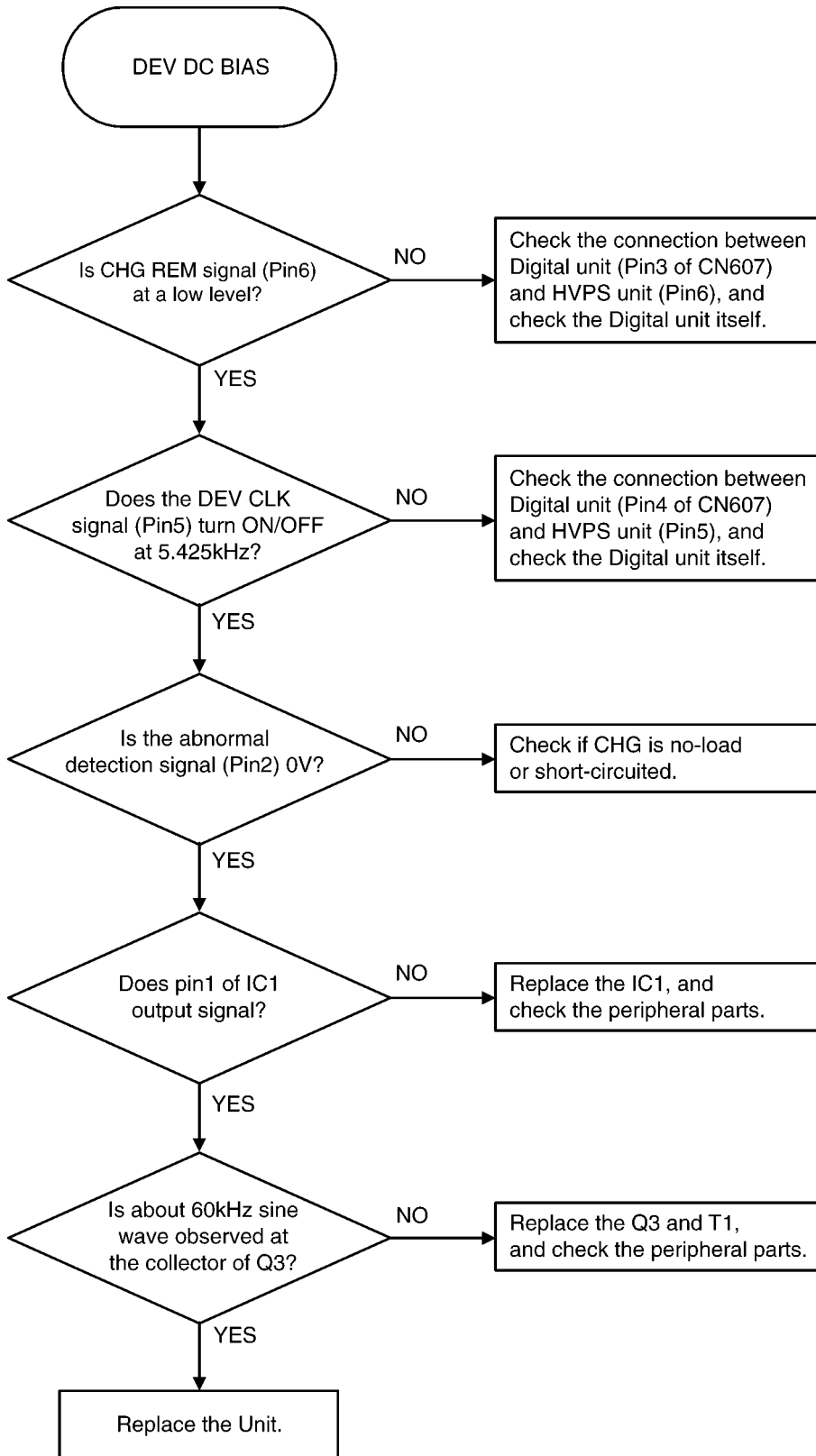




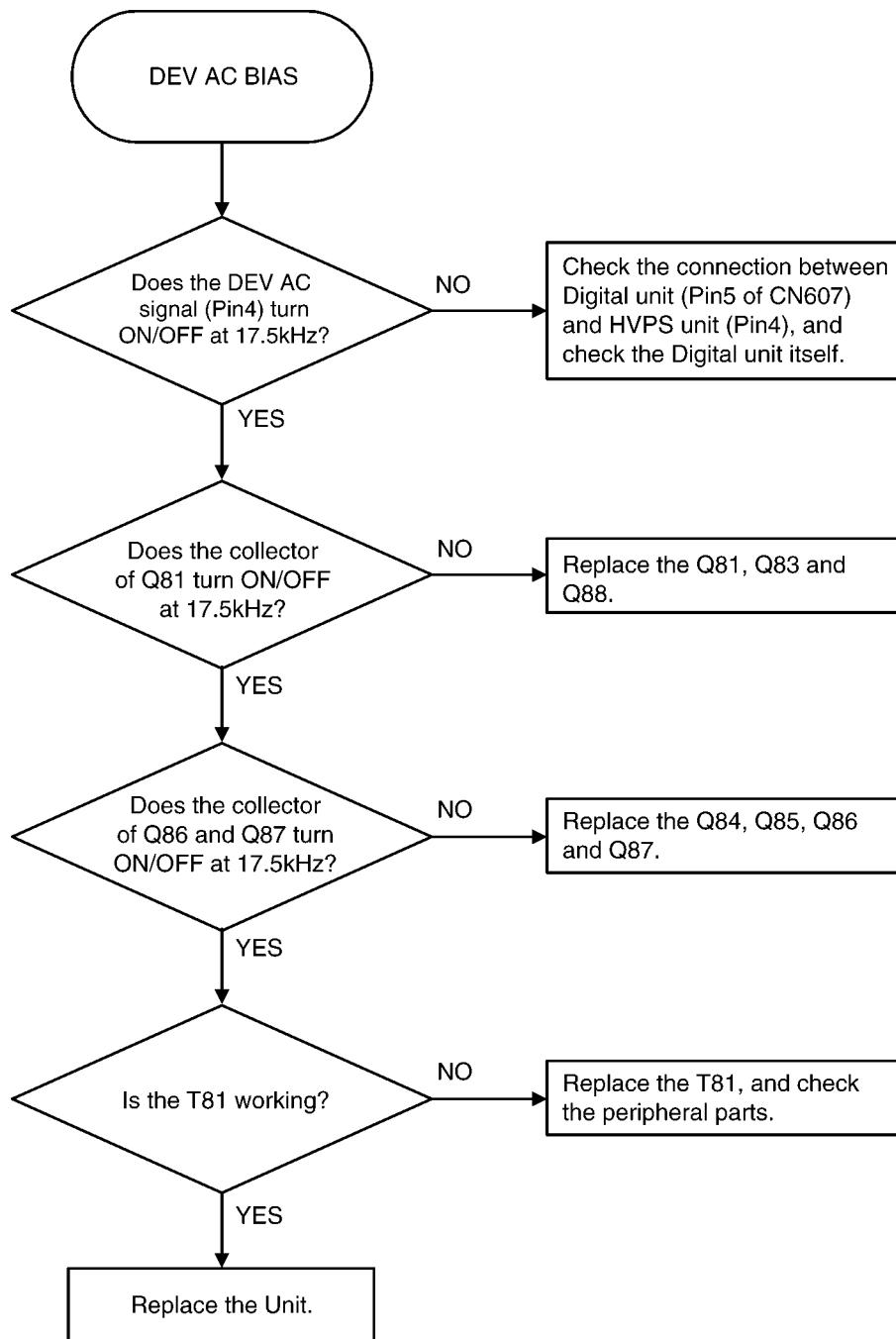
3. TRA (+)



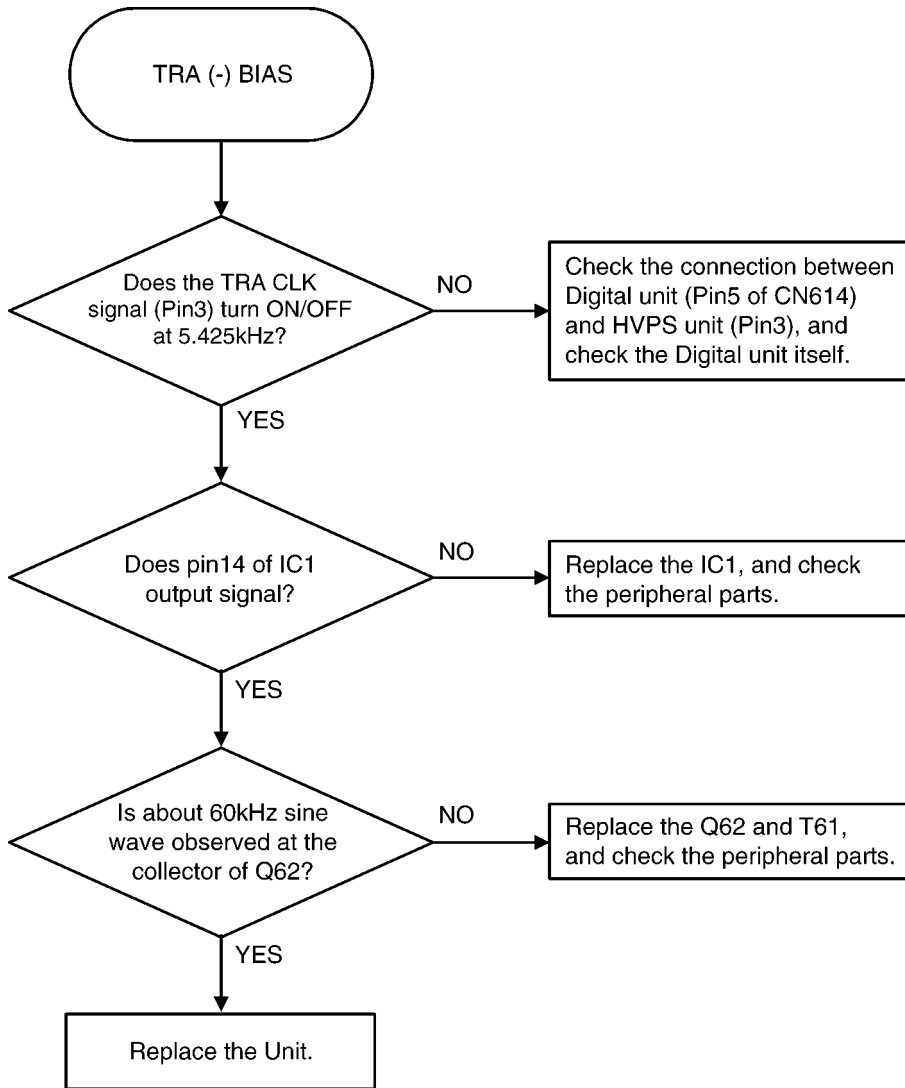
3. DEV DC



## 4. DEV AC



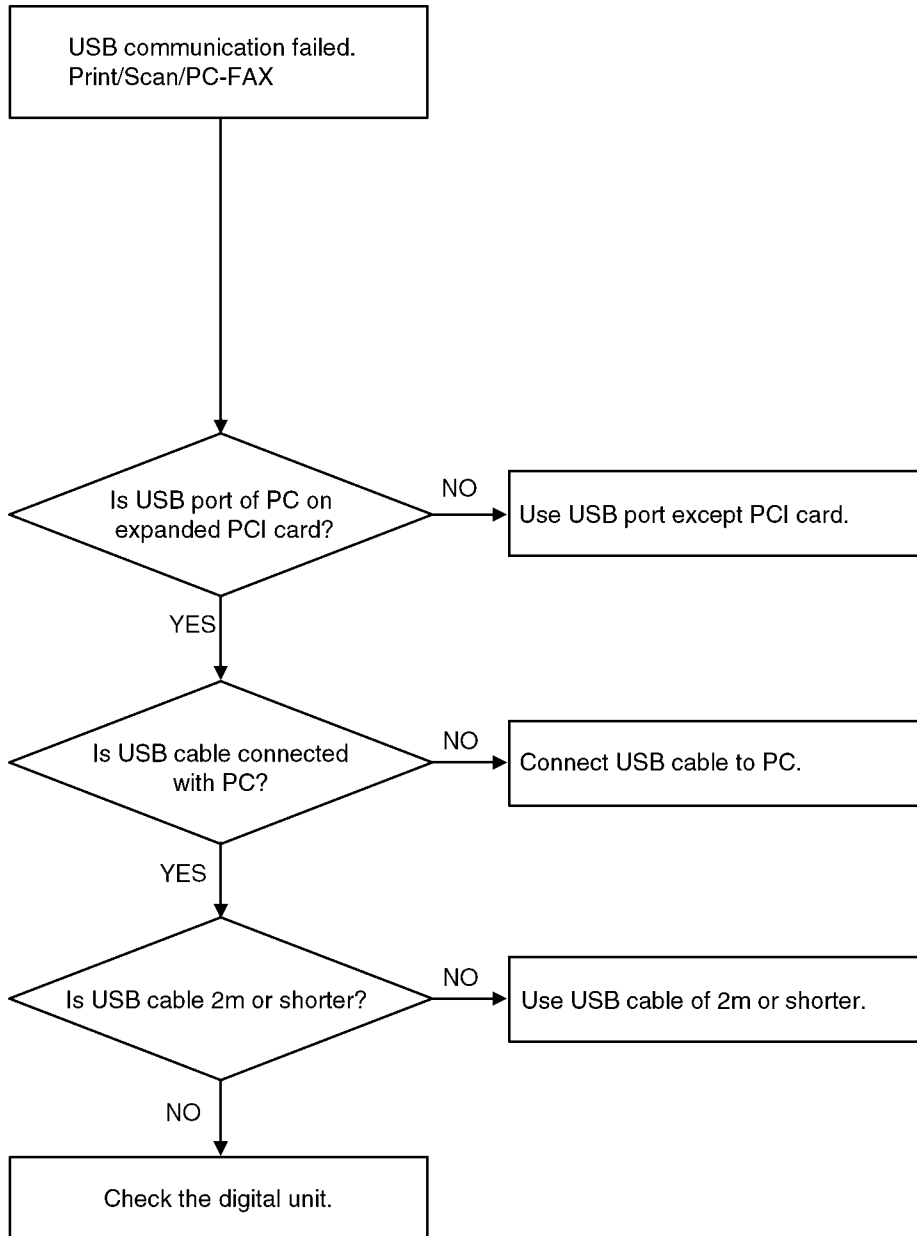
TRA (-)



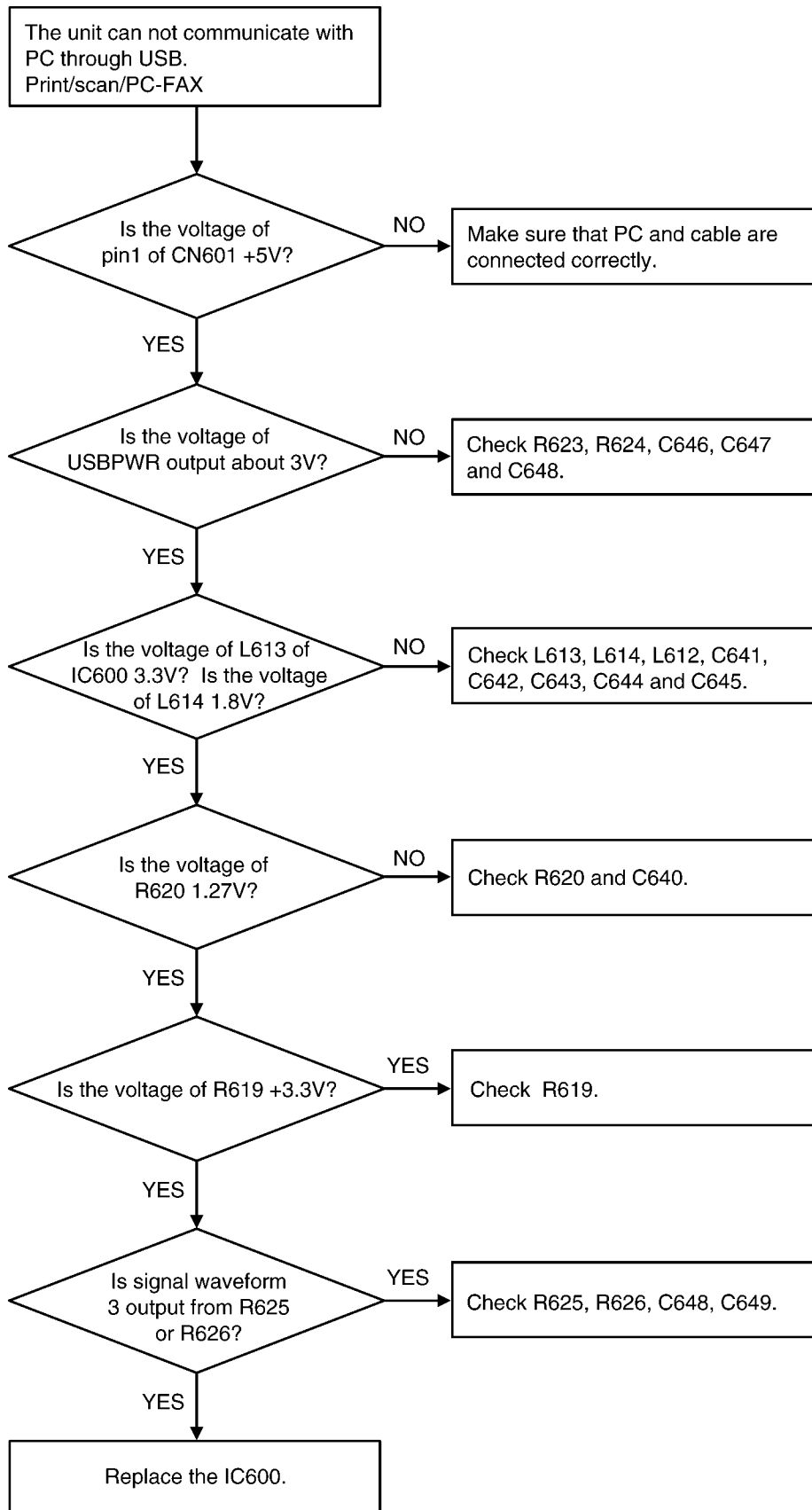
## 12.3.17. USB SECTION

### Troubleshooting

#### 1. Confirmation of the PC settings



2. Confirmation of the digital unit



**USB (Universal Serial Bus) block**

**Description**

This is a USB block for data communication with PC.

Two signal lines (D+/D-) are differential signals which work in reverse phase.

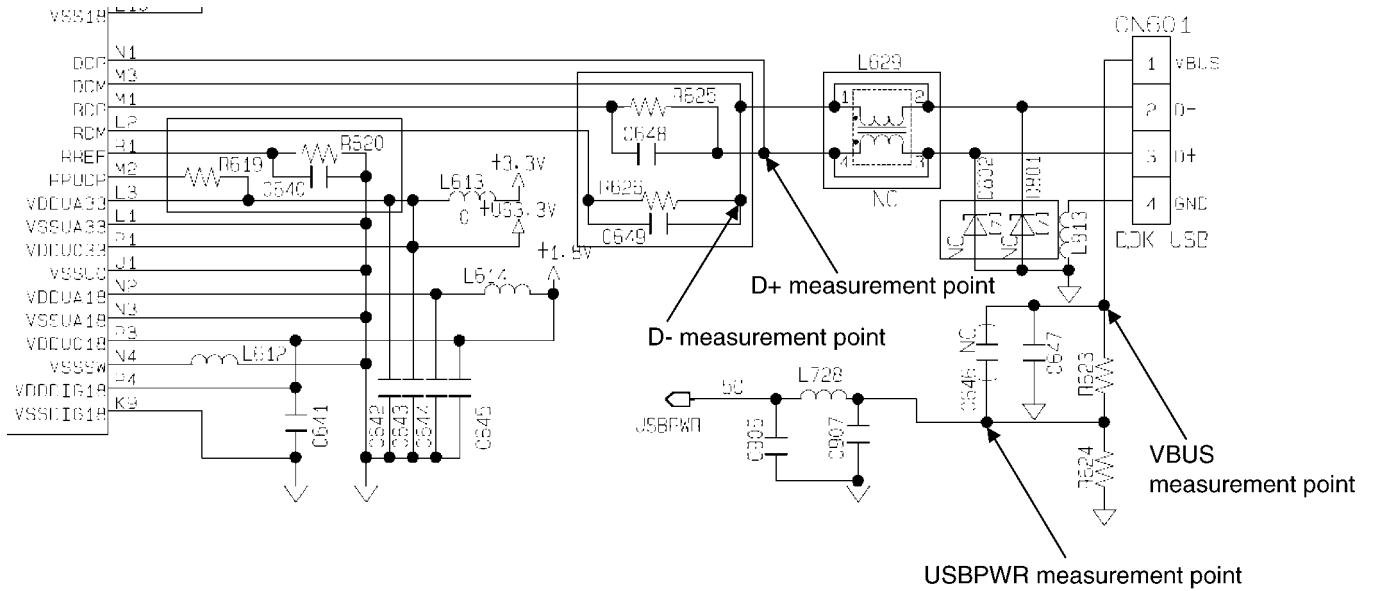
VBUS: CN601 1pin

D+: CN601 3pin

D-: CN601 2pin

GND: CN601 4pin

**Circuit Diagram**



**Sequence of normal operation**

When USB cable from PC is connected to CN601, Vbus voltage goes up to 5V.

USBPWR becomes about 3V, and IC600 recognizes the connection with PC. Then D+ becomes about 3V: waveform 1

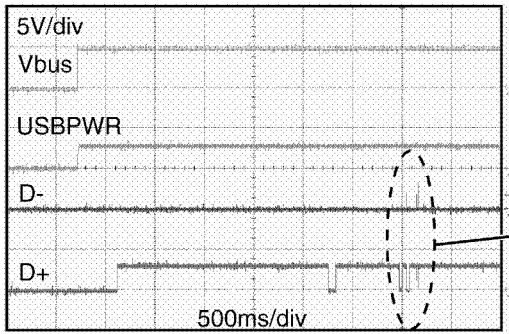
The D+ becomes 0V, the D- voltage increases, then communication between IC 600 and PC is started: waveform 2

When a few seconds elapsed after USB cable was inserted into CN601, the unit enters stand-by mode: waveform 3 and 4

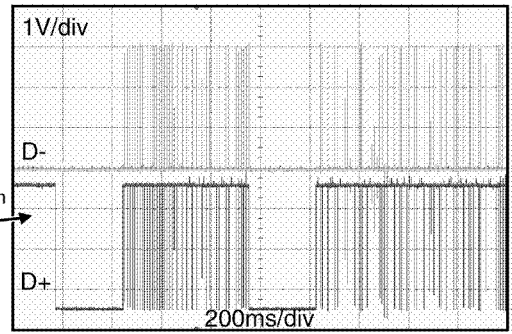
### Waveform of normal operation

The condition during communication establishment between PC and FLB801.

Waveform 1

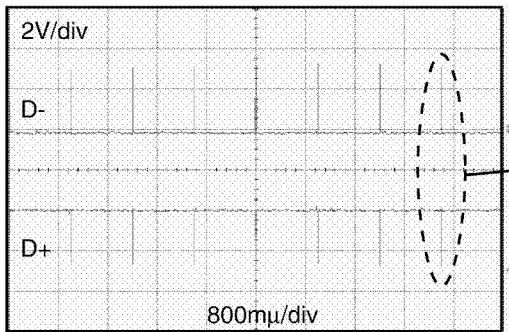


Waveform 2

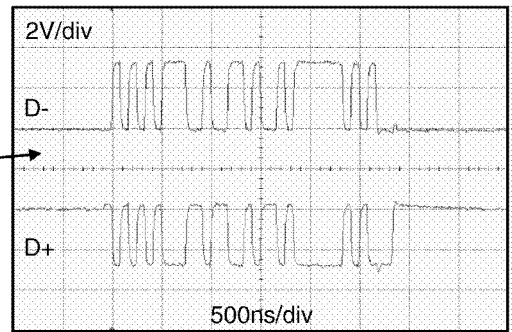


Standby mode after establishing the communication between PC and FLB801.

Waveform 3



Waveform 4



Stand-by signal (at Full Speed) is about 3V/1ms.



### 12.3.18. POWER SUPPLY BOARD SECTION

#### 12.3.18.1. KEY COMPONENTS FOR TROUBLESHOOTING

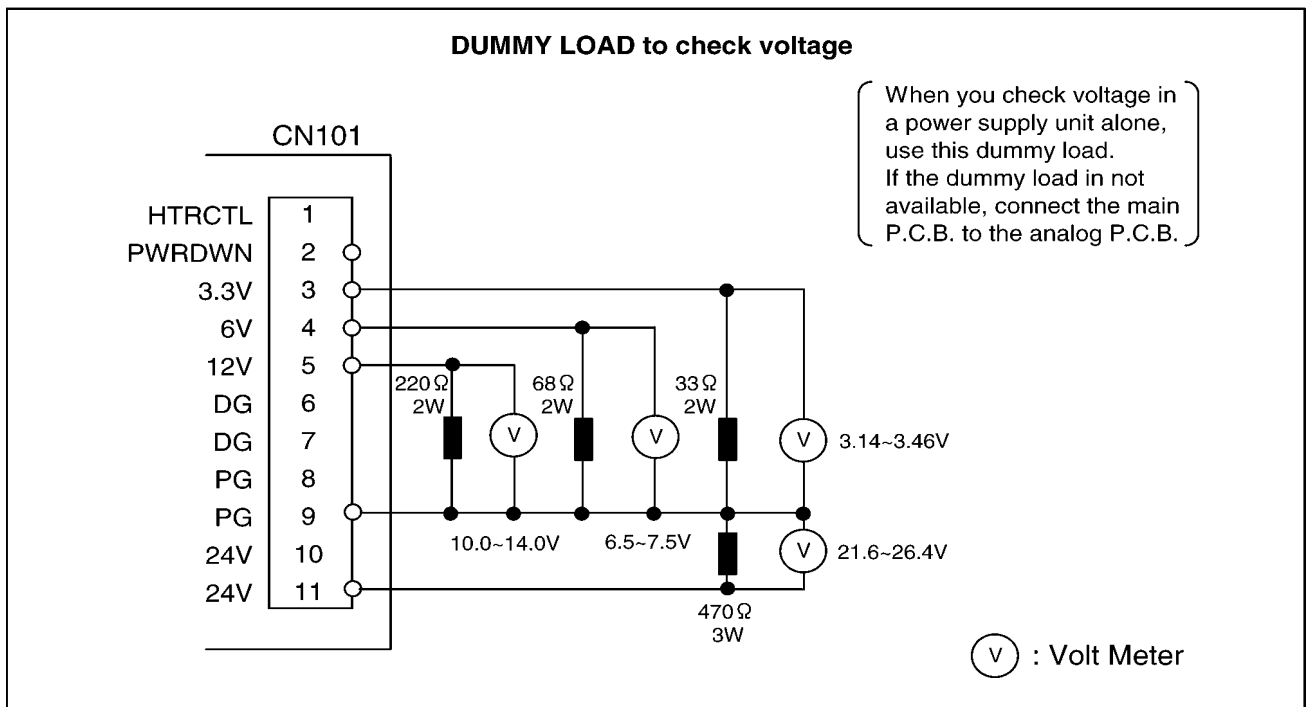
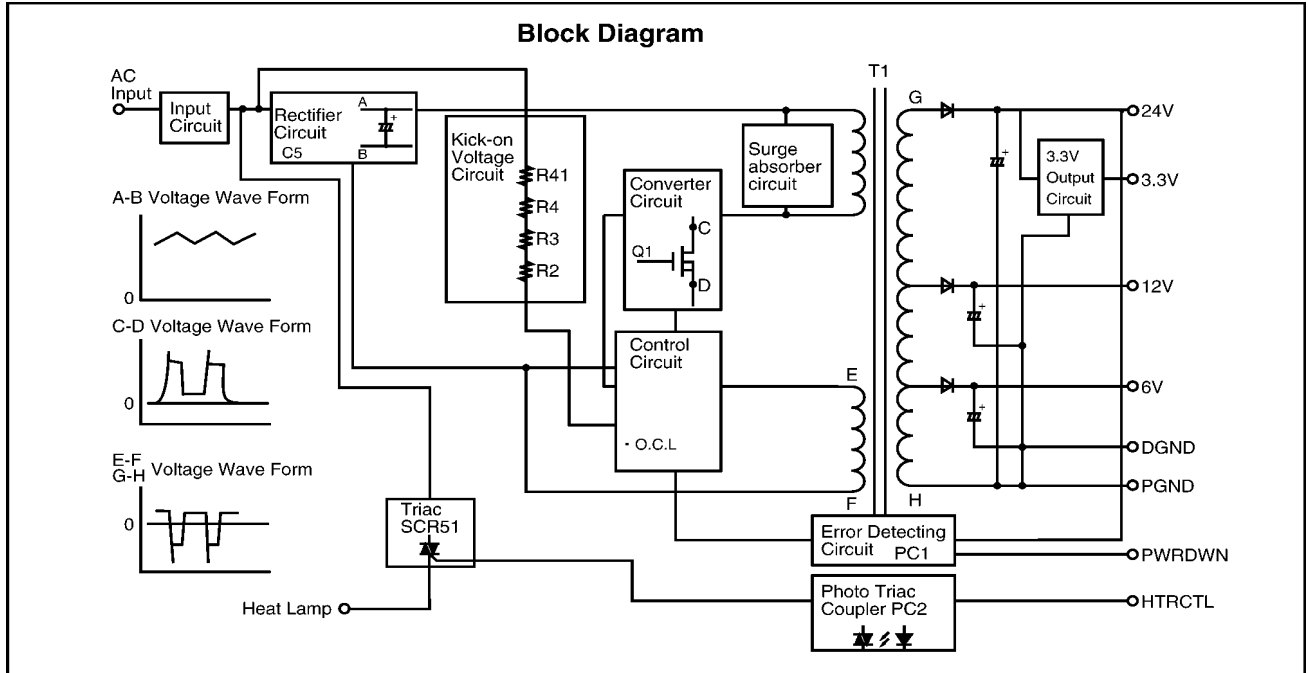
Check the following parts first: F1, F2, D10-D13, C5, Q1 and PC1.

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

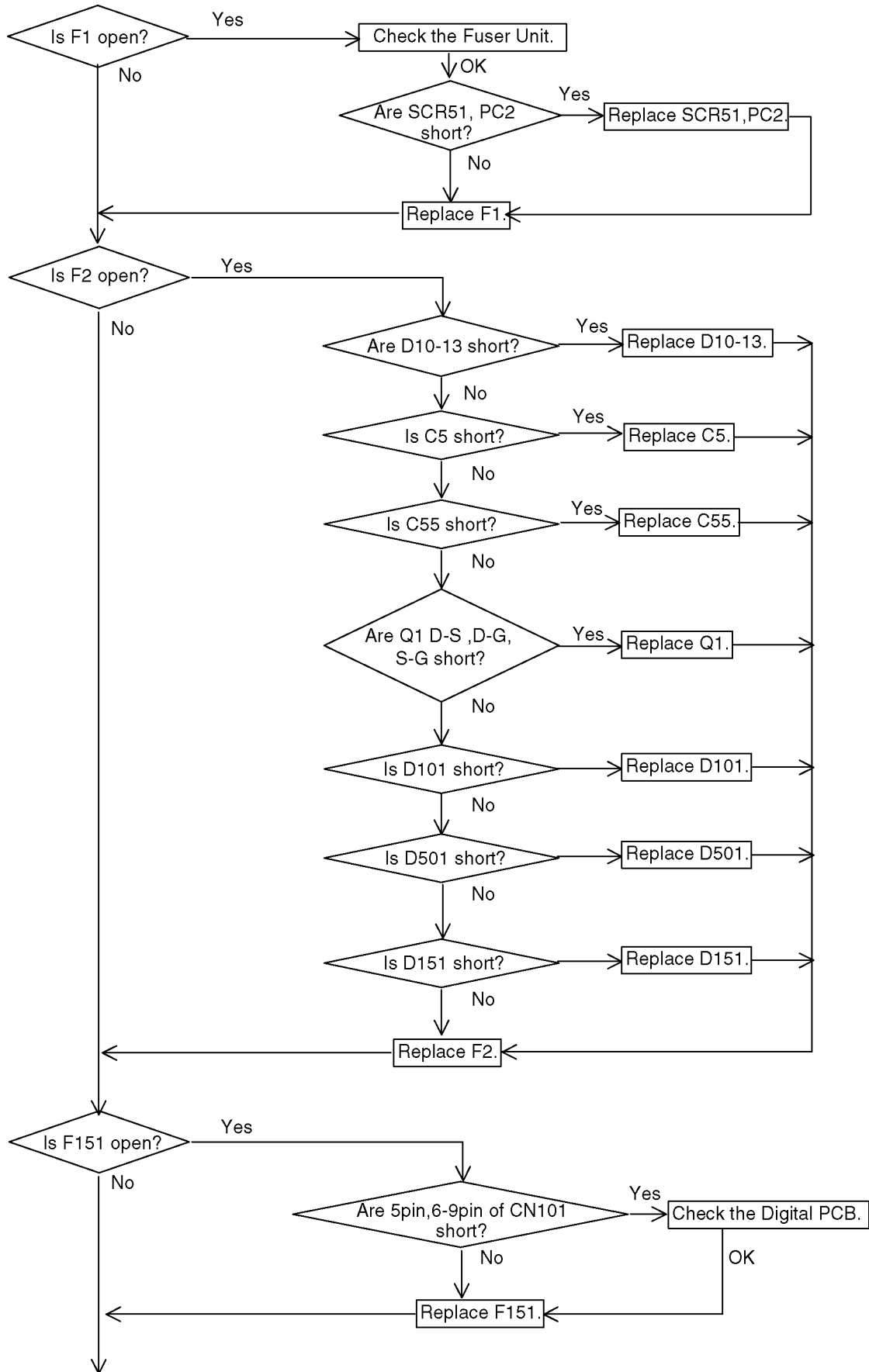
**Caution:**

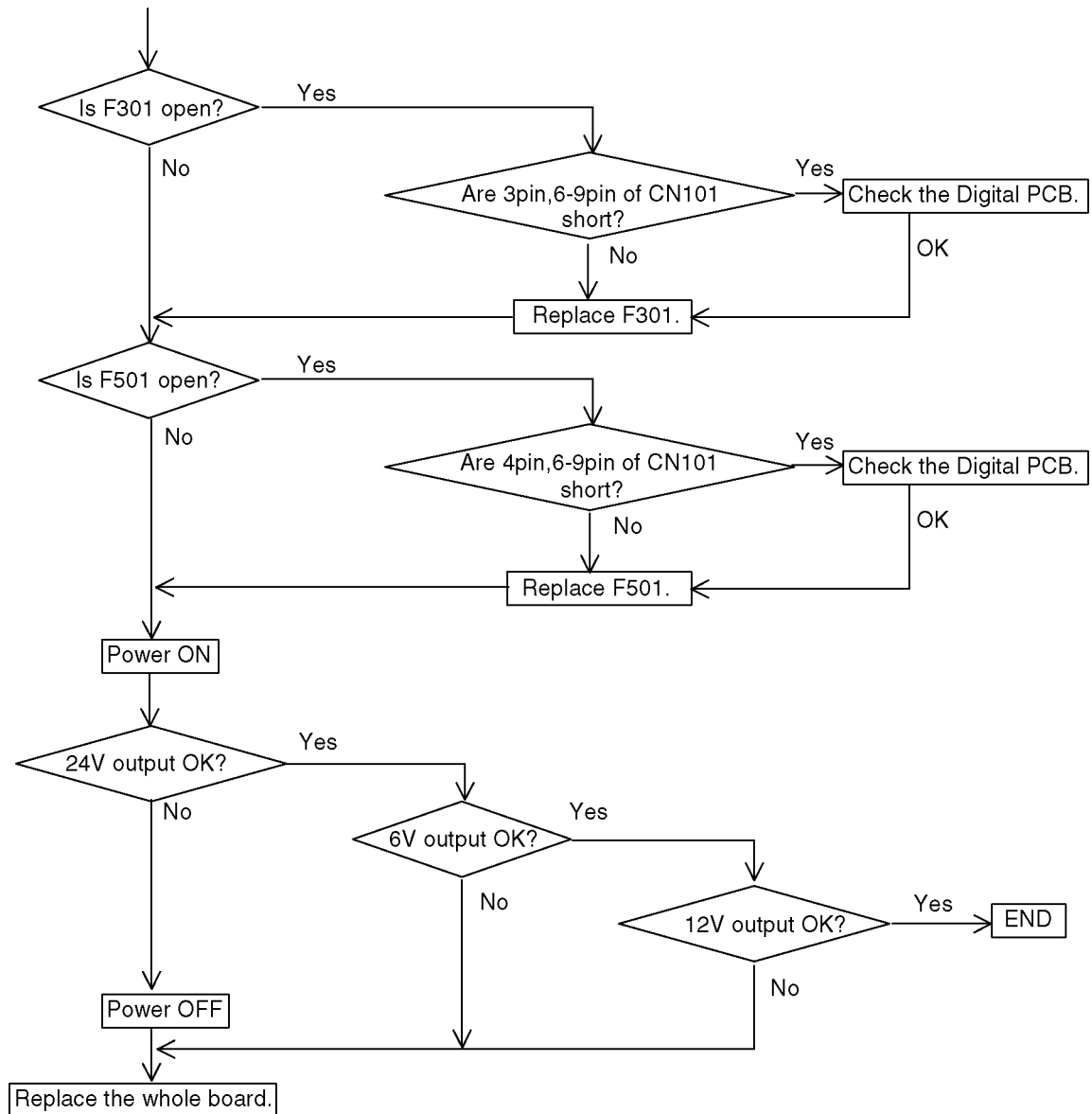
If you find a melted fuse in the unit, do not turn on the power until you located and repair the faulty parts (except for the fuse); otherwise the fuse will melt again and you cannot pinpoint the faulty point.

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



### 12.3.18.2. TROUBLESHOOTING FLOW CHART





### 12.3.18.3. BROKEN PARTS REPAIR DETAILS

(D10~D13)

Check for a short-circuit in terminal 4. If D10~D13 is short-circuit, F2 will melt (open).

In this case, replace all of the parts (D10 - D13, F2).

(D101)

If D101 is broken, the oscillation circuit in the power supply cannot operate. Check it with an electric tester.

(F151)

If F151 is melted (open), check the 12 Voltage line of the Digital PCB and others.

(F301)

If F301 is melted (open), check the 3.3 Voltage line of the Digital PCB and others.

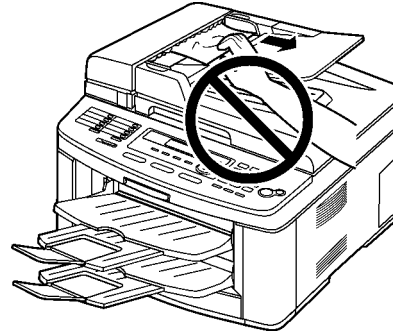
(F501)

If F501 is melted (open), check the 6 Voltage line of the Digital PCB and others.

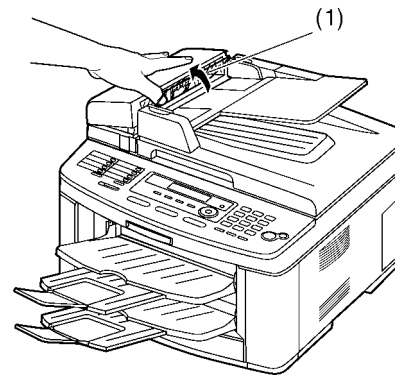
## 12.4. DOCUMENT JAMS (AUTO DOCUMENT FEEDER)

**Caution:**

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

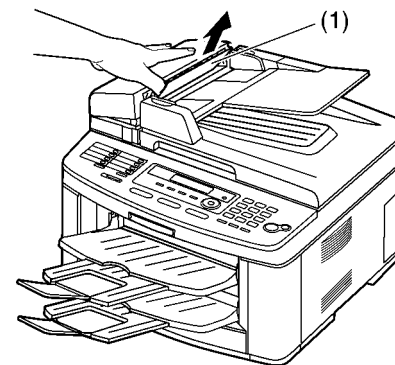


1. Hold the ADF cover (1) firmly and lift it to open.



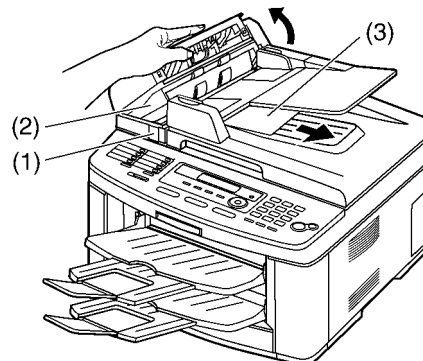
2. When the document has jammed near the document entrance:

Remove the jammed document (1) carefully.

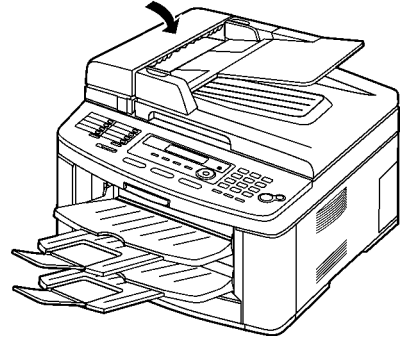


**When the document has jammed near the document exit:**

Press the ADF cover release button (1) and open the ADF cover (2). Remove the jammed document (3) carefully.



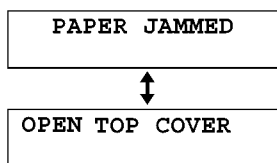
3. Close the ADF cover.



## 12.5. RECORDING PAPER JAM

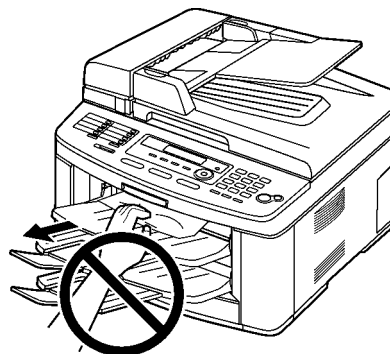
### 12.5.1. When the recording paper has jammed inside of the unit

The display will show the following.

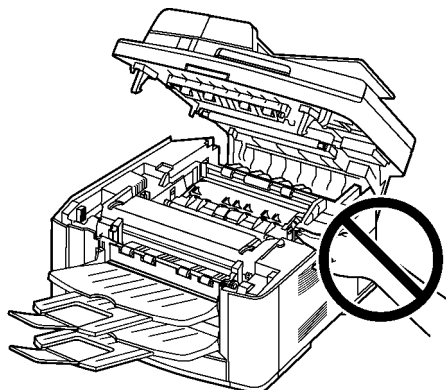


**Caution:**

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



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



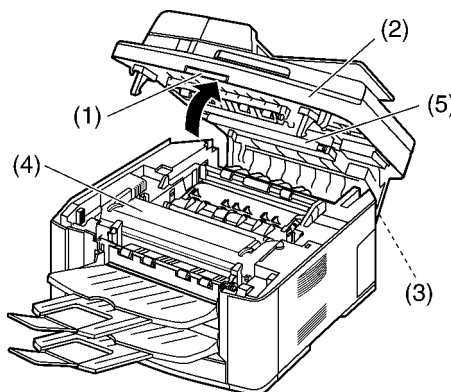
1. Lift the cover release lever (1) and open the top cover (2).

**Important:**

- Close the manual input tray (3) before opening the top cover.

**Note:**

- Do not touch the transfer roller (5).



**Caution:**

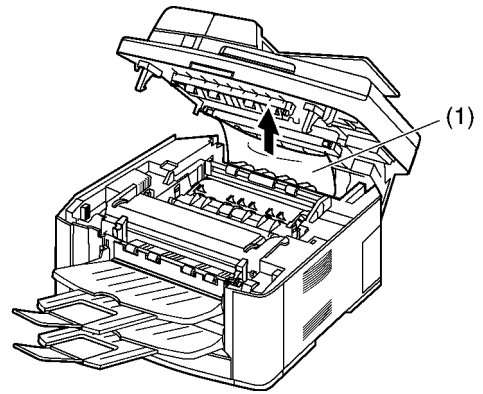
The fuser unit (4) gets hot.  
Do not touch it.

2. Remove the jammed paper.

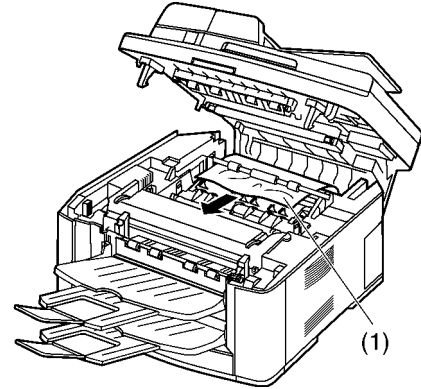
**Case 1:**

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

1. Pull the paper input tray completely out.
2. Remove the jammed paper (1) carefully by pulling it upwards.



Remove the jammed paper (1) carefully by pulling it toward you.

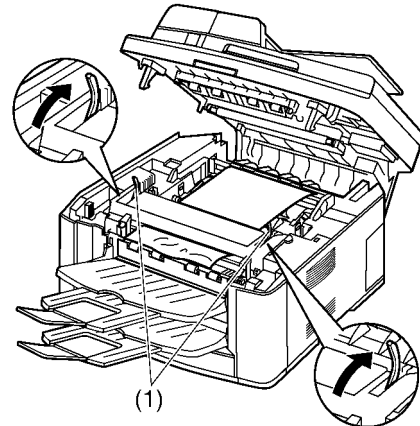


3. Insert the paper input tray into the unit.

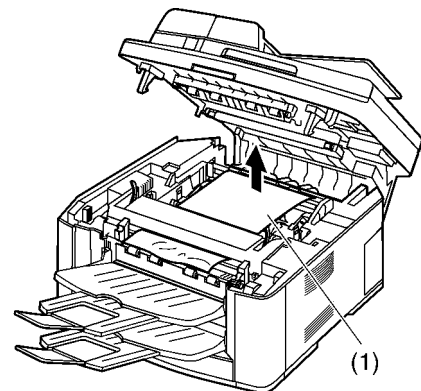
**Case 2:**

When the recording paper has jammed near the fuser unit:

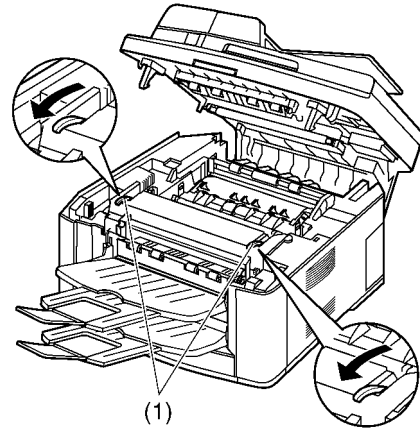
1. Lift both green levers (1) until they stop.



2. Remove the jammed paper (1) carefully by pulling it upwards.



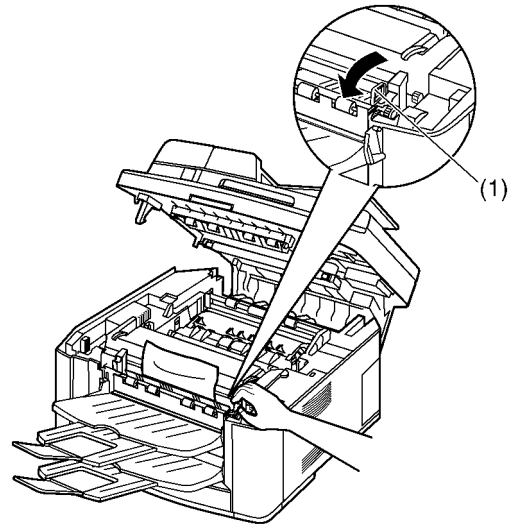
3. Push back the green levers (1) to the original position.



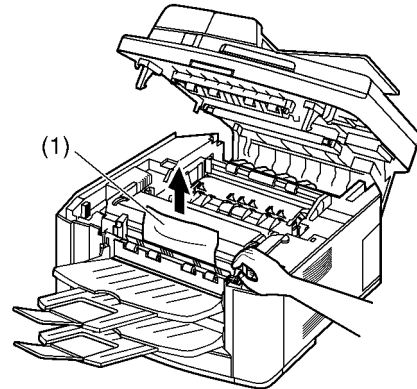
**Case 3:**

When the recording paper has jammed near the output tray (KX-FLB812CX/KX-FLB812CXS only):

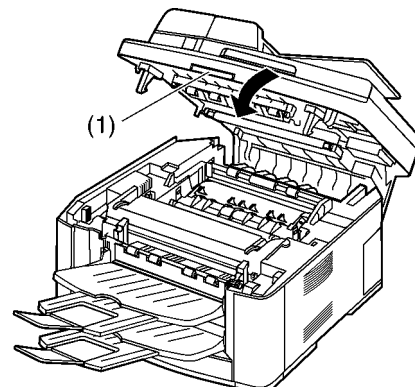
1. Pull and hold the lever (1) to release the jammed paper.



2. Remove the jammed paper (1) carefully by pulling it upwards.



3. Close the top cover, holding the cover release lever (1) until locked.



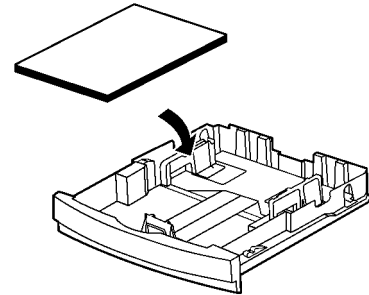


## 12.5.2. When the recording paper is not fed into the unit properly

The display will show the following.

CHECK PICK UP INPUT TRAY #1
--------------------------------

1. Pull the paper input tray completely out, then remove the recording paper and straighten.
2. Re-load the recording paper.



3. insert the paper unit tray into the unit.

**Note:**

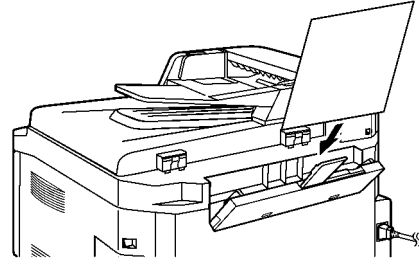
- If the error message is still displayed, check the recording paper specifications and re-install recording paper.

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

The display will show the following.

CHECK PICK UP INPUT TRAY #2
--------------------------------

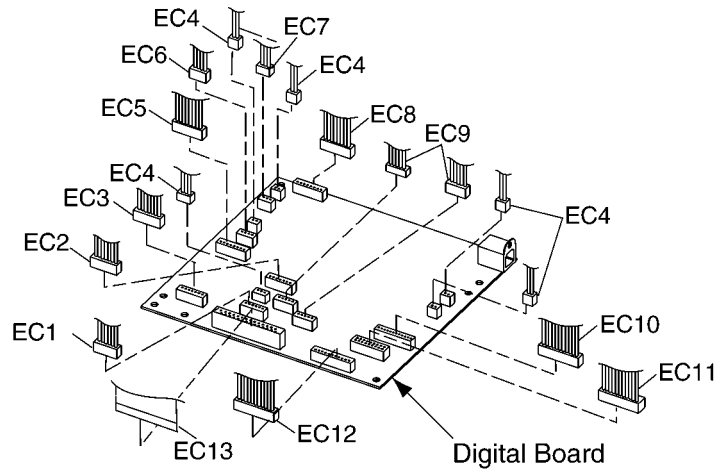
1. Remove the recording paper.
2. Re-insert the recording paper.



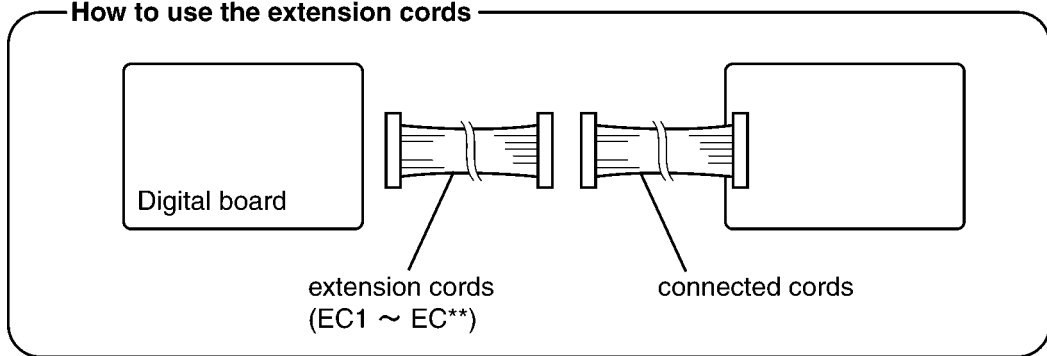
**Note:**

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

# 13 Service Fixture & Tools



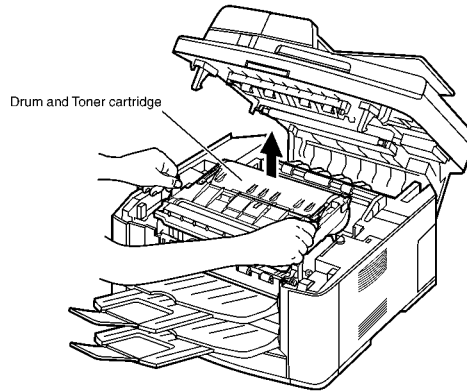
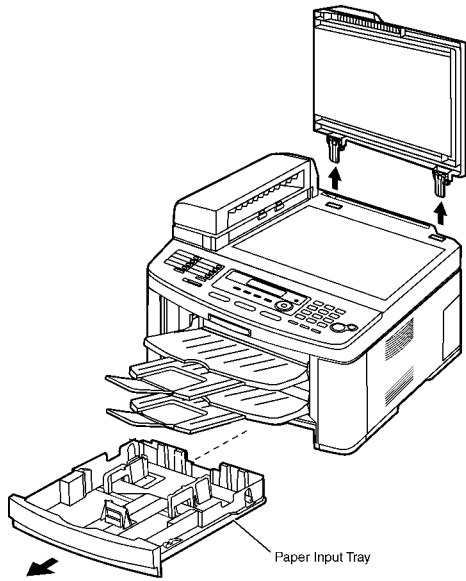
## How to use the extension cords



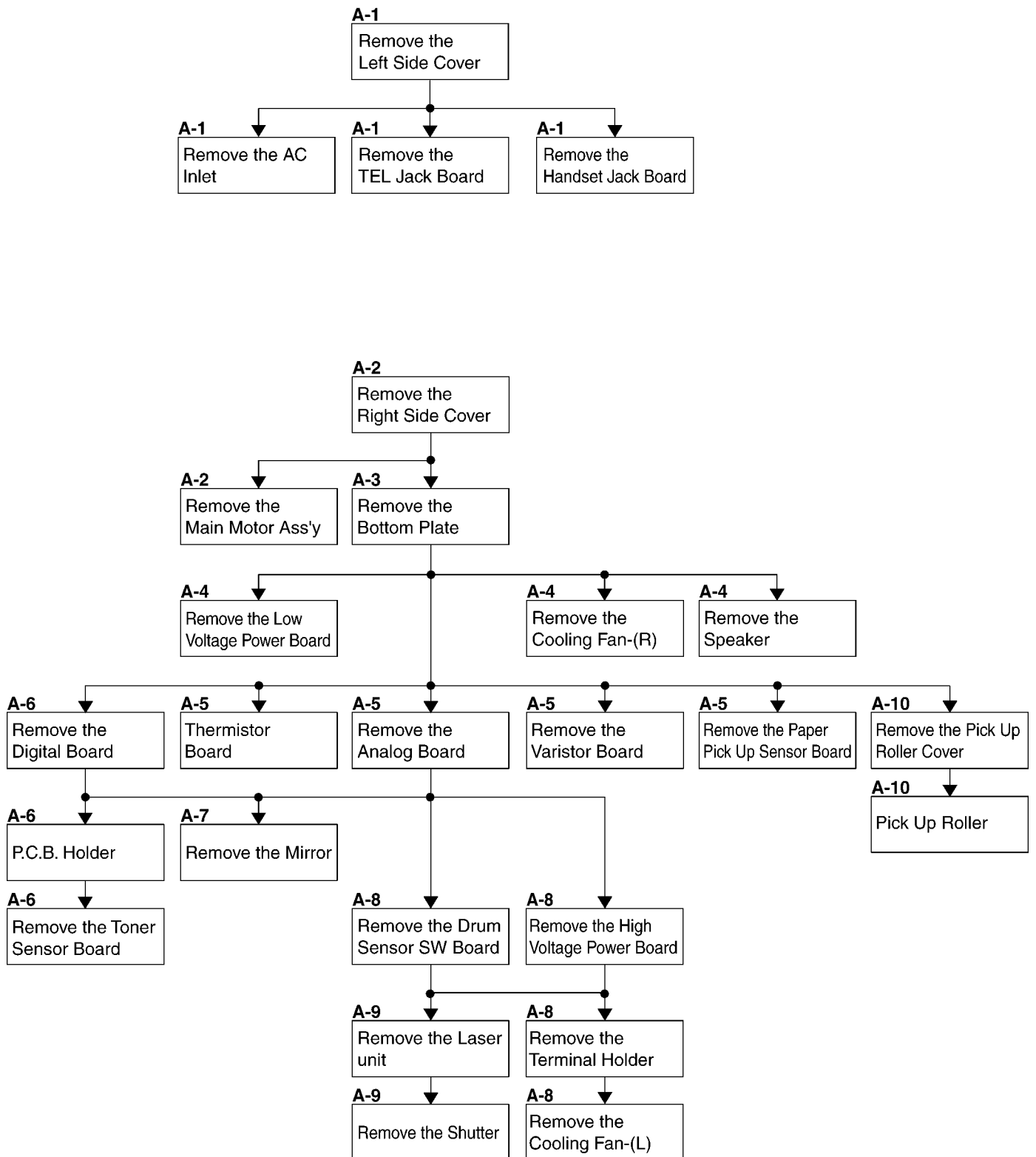
# 14 Disassembly and Assembly Instructions

**Note:**

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



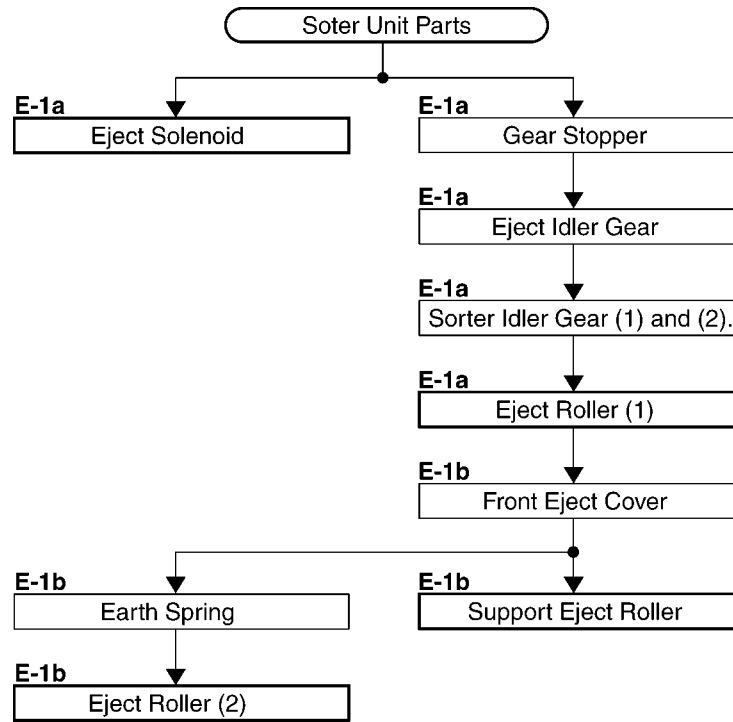
## 14.1. LOWER CABINET SECTION



## 14.2. PRINTER COVER SECTION



### 14.3. SORTER SECTION



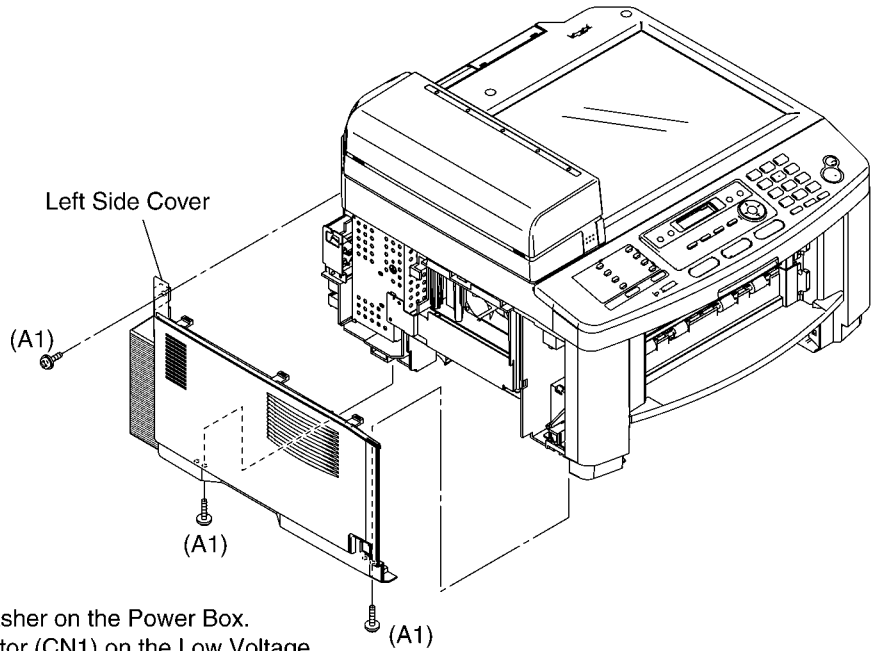
## 14.4. REMOVE THE BOTH SIDE CABINET SECTION

### PROCEDURE: A-1

#### REF.NO.A-1

#### A-1-1 Left Side Cover

- 1) Remove the 3 screws (A1).
- 2) Remove the Left Side Cover.

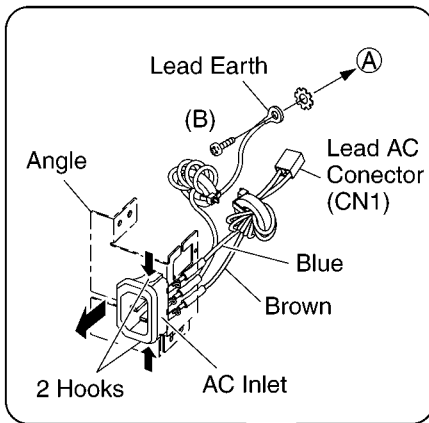


#### A-1-2 AC Inlet

- 1) Remove the 2 screws (A2).
- 2) Remove the 1 screw (B) with washer on the Power Box.
- 3) Disconnect the Lead AC connector (CN1) on the Low Voltage Power Board.
- 4) Remove the AC Inlet Ass'y.
- 5) Release the 2 hooks and pull out the AC Inlet in the direction of the arrow.

#### Reassembling Note:

Make sure Spring Earth FG is in place before attaching AC Inlet Ass'y. to this main unit. (See Fig.D1)

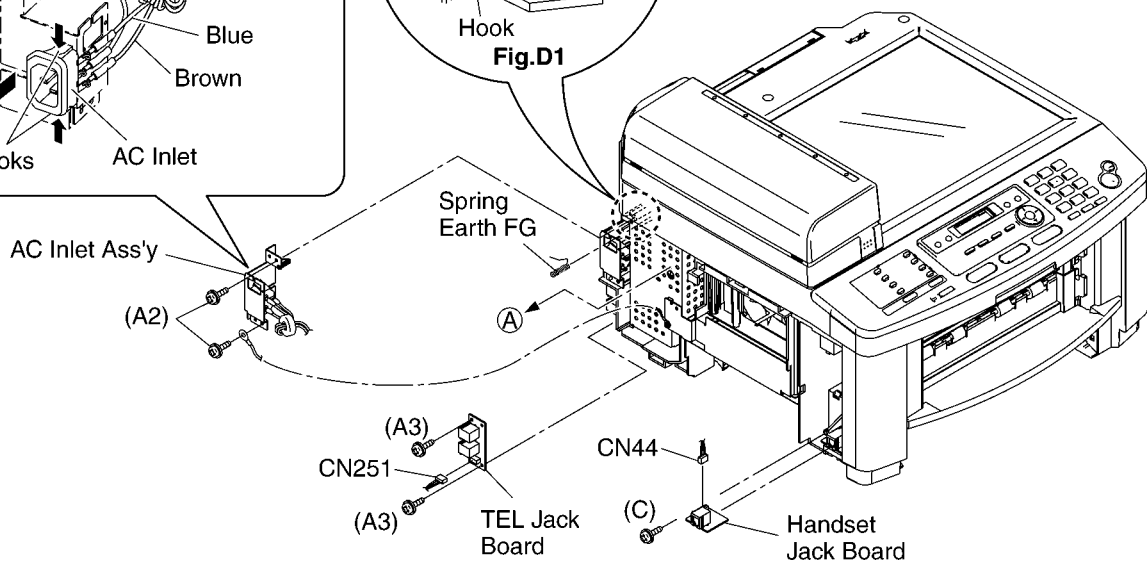


#### A-1-3 TEL Jack Board

- 1) Remove the 2 screws (A3).
- 2) Disconnect 1 connector (CN251) and remove the TEL Jack Board.

#### A-1-4 Handset Jack Board

- 1) Remove the 1 screw (C).
- 2) Disconnect 1 connector (CN44) and remove the Handset Jack Board.





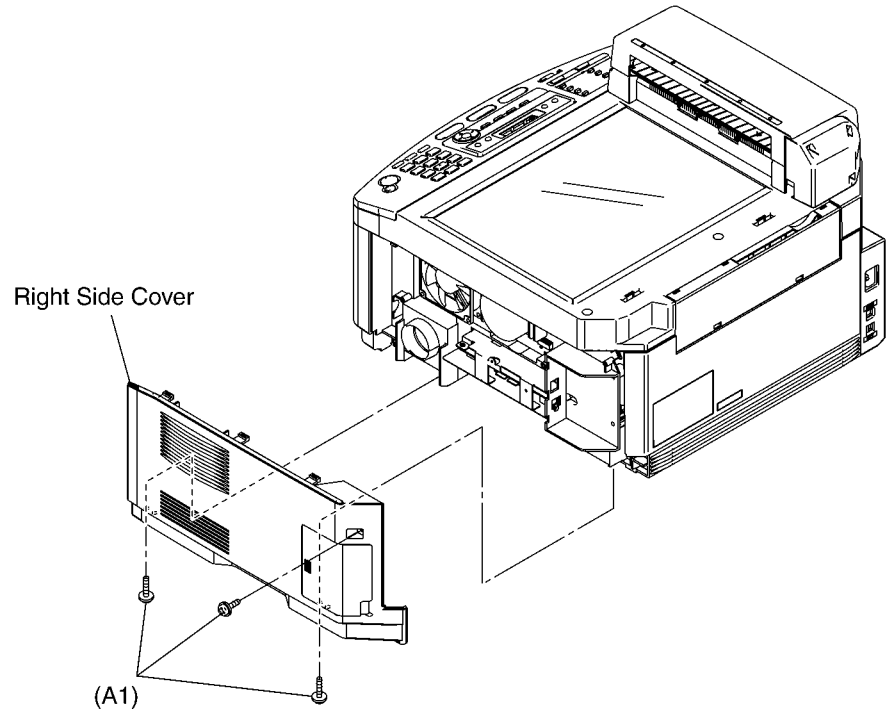
## 14.5. REMOVE THE LEFT SIDE CABINET SECTION

### PROCEDURE: A-2

#### REF.NO.A-2

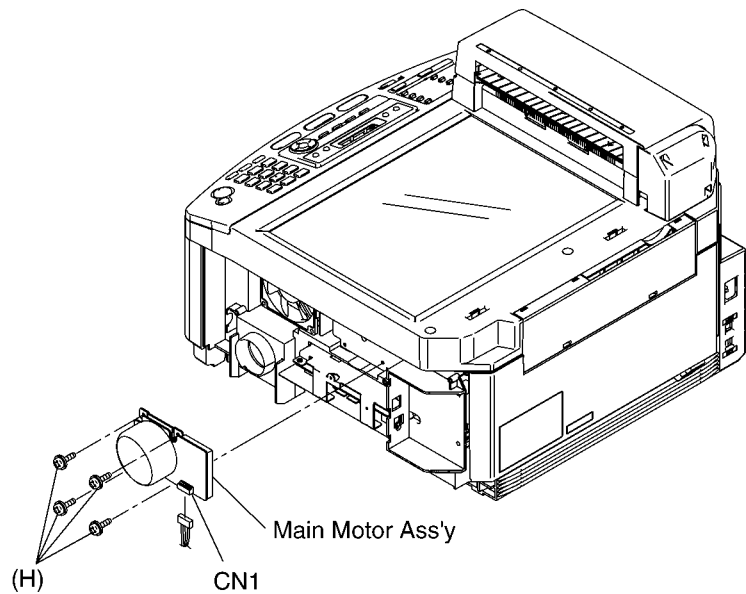
##### A-2-1 Right Side Cover

- 1) Remove the 3 screws (A1).
- 2) Remove the Right Side Cover.



##### A-2-2 Main Motor Ass'y

- 1) Remove the 4 screws (H).
- 2) Disconnect 1 connector (CN1) and remove the Main Motor Ass'y.

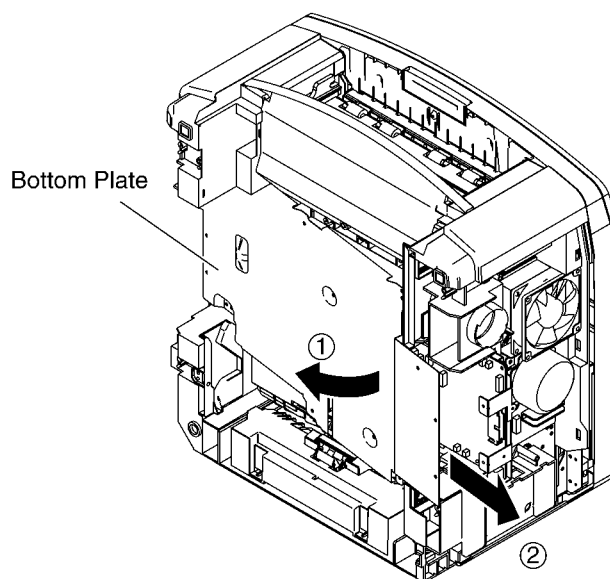
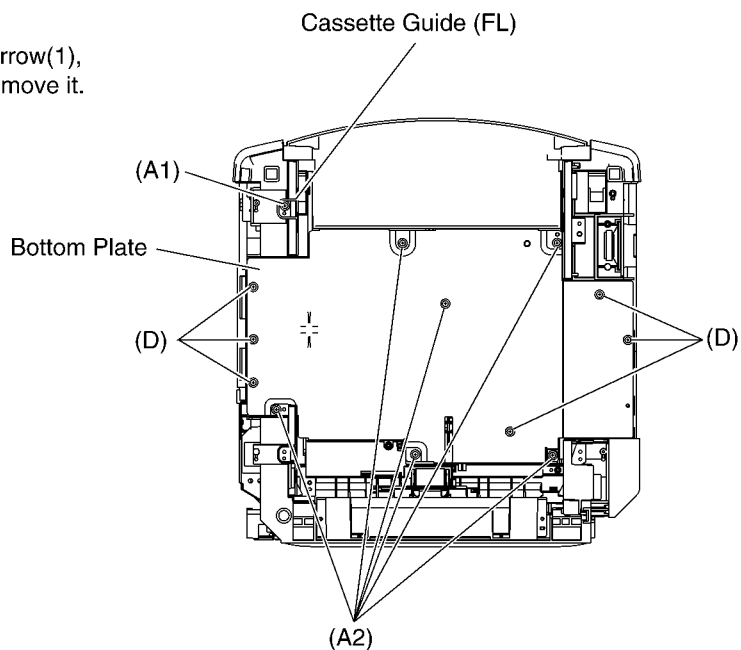


## 14.6. REMOVE THE BOTTOM PLATE

PROCEDURE: A-1-->A-2-->A-3

REF.NO.A-3

- 1) Remove the 1 screw (A1) and remove the Cassette Guide (FL).
- 2) Remove the 6 screws (A2).
- 3) Remove the 6 screws (D).
- 4) Lift the Bottom Plate in the direction of the arrow(1), and slide it in the direction of the arrow(2) remove it.



## 14.7. REMOVE THE RIGHT SIDE CABINET SECTION

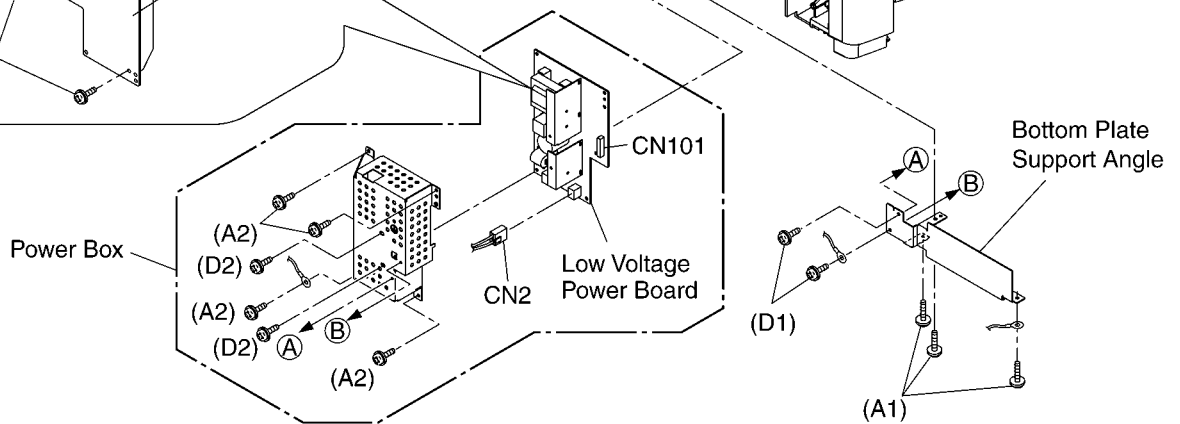
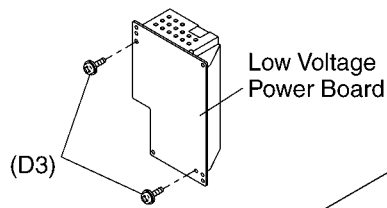
PROCEDURE: A-1--> A-2--> A-3--> A-4

REF.NO.A-4

### A-4-1 Low Voltage Power Board

- 1) Remove the 3 screws (A1) and 2 screws (D1).
- 2) Remove the Bottom Plate Support Angle.
- 3) Remove the 4 screws (A2) and 2 screws (D2).
- 4) Remove the Power Box.
- 5) Remove the 2 screws (D3).
- 6) Disconnect 2 connectors (CN2,CN101).
- 7) Remove the Low Voltage Power Board.

#### Back Side View

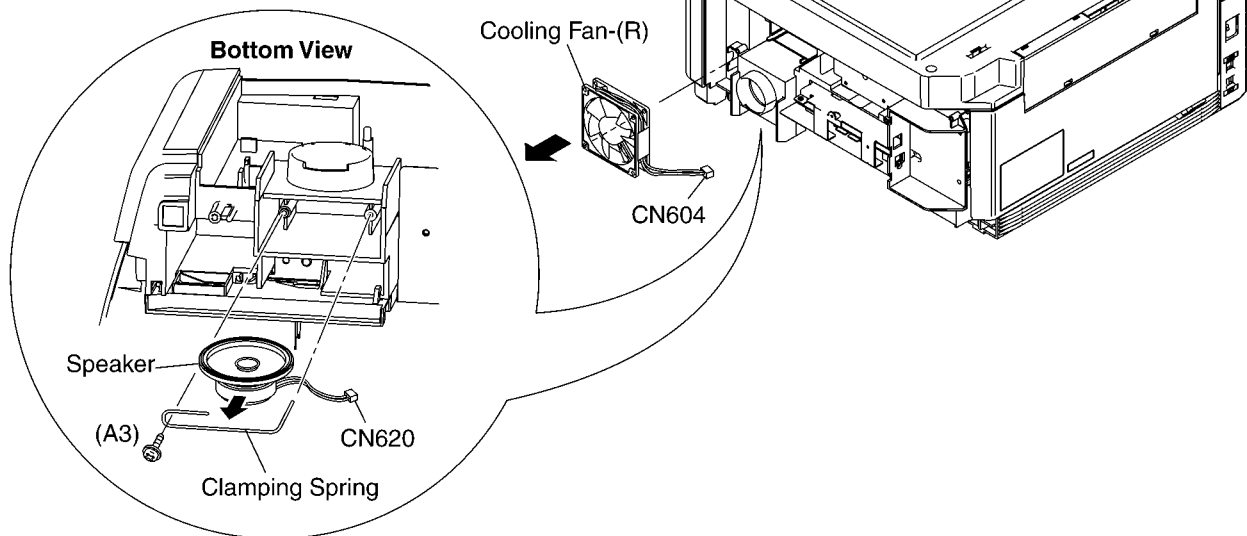


### A-4-2 Cooling Fan-(R)

- 1) Disconnect the 1 connector (CN604) on the Digital Board.
- 2) Pull out the Cooling Fan-(R) in the direction of the arrow.

### A-4-3 Speaker

- 1) Disconnect the 1 connector (CN620) on the Digital Board.
- 2) Remove the 1 screw (A3).
- 3) Remove the Clamping Spring.
- 4) Pull out the Speaker in the direction of the arrow.



## 14.8. REMOVE THE ALALOG BOARD

PROCEDURE: A-1--> A-2--> A-3--> A-5

REF.NO.A-5

### A-5-1 Analog Board

- 1) Remove the 2 screws (A1).
- 2) Disconnect 2 connectors (CN220,CN250) and FFC.
- 3) Remove the Analog Board.

### A-5-2 Thermistor Board

- 1) Remove the 2 screws (A2).
- 2) Disconnect the 2 connectors (CN8,CN9) and remove the Thermistor Board.

### A-5-3 Varistor Board

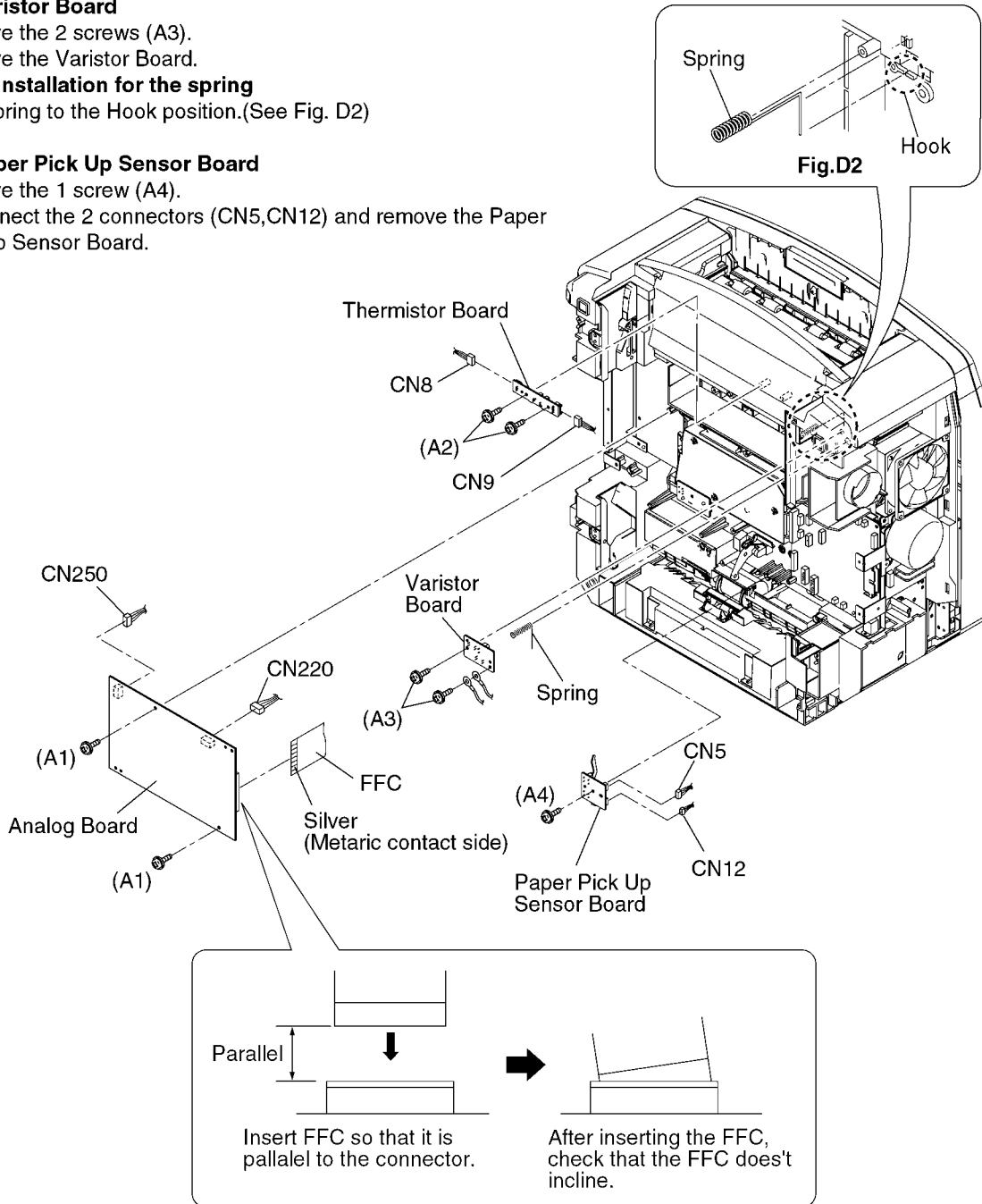
- 1) Remove the 2 screws (A3).
- 2) Remove the Varistor Board.

#### Caution:Installation for the spring

Set the spring to the Hook position.(See Fig. D2)

### A-5-4 Paper Pick Up Sensor Board

- 1) Remove the 1 screw (A4).
- 2) Disconnect the 2 connectors (CN5,CN12) and remove the Paper Pick Up Sensor Board.



## 14.9. REMOVE THE DIGITAL BOARD

PROCEDURE: A-1--> A-2--> A-3--> A-6

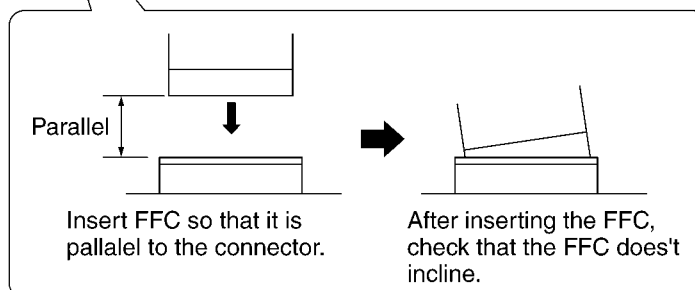
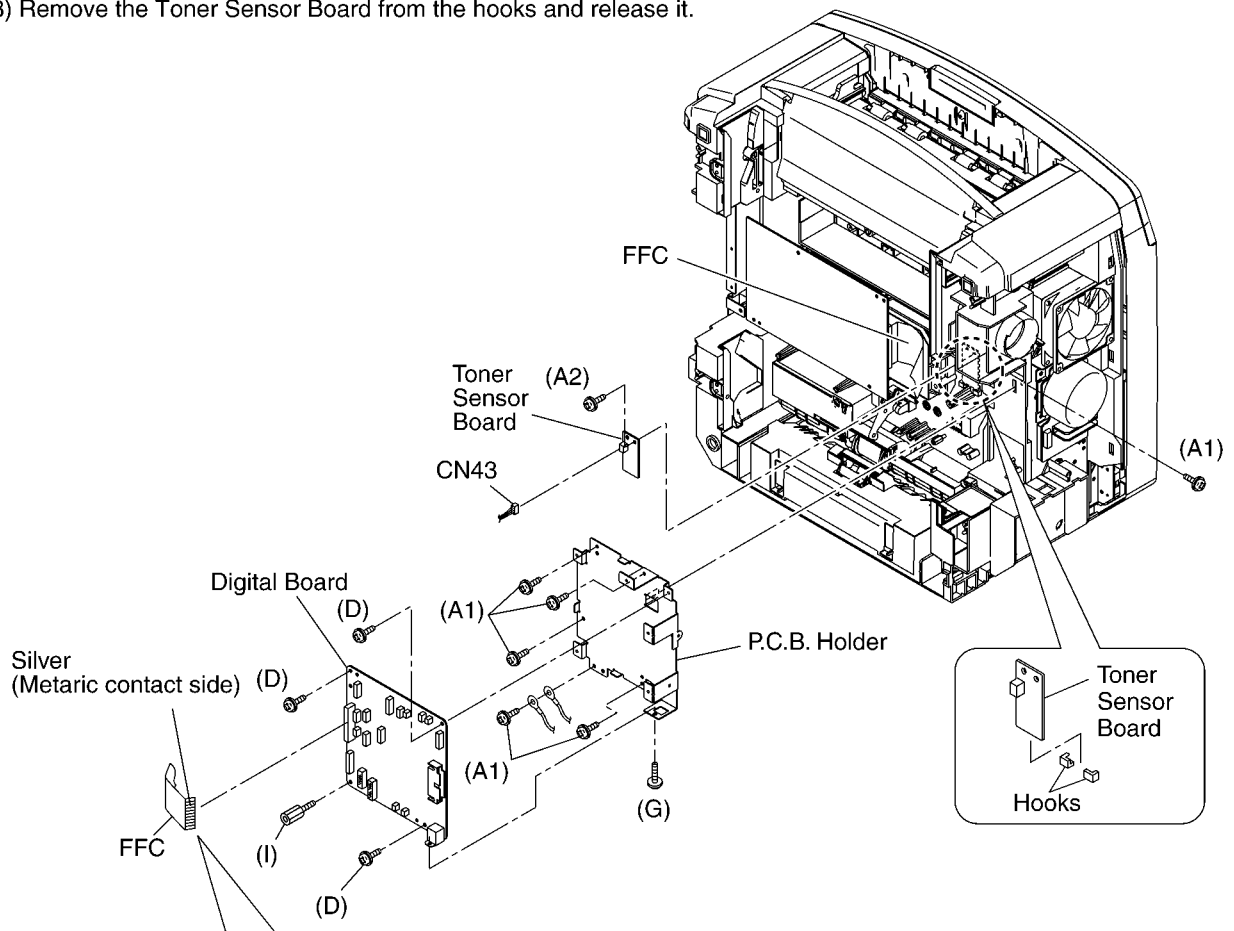
REF.NO.A-6

### A-6-1 Digital Board and P.C.B. Holder

- 1) Remove the 3 screws (D) and 1 screw (I), 1 screw (G).
- 2) Disconnect the FFC and all connectors on the Digital Board.
- 3) Remove the 6 screws (A1).
- 4) Remove the P.C.B. Holder.

### A-6-2 Toner Sensor Board

- 1) Remove the 1 screw (A2).
- 2) Disconnect the 1 connector (CN43).
- 3) Remove the Toner Sensor Board from the hooks and release it.

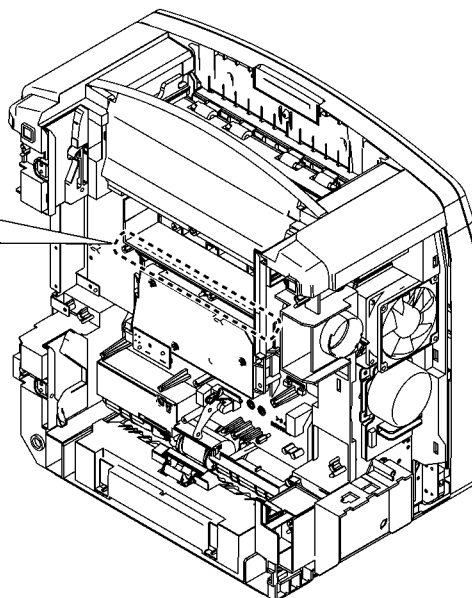
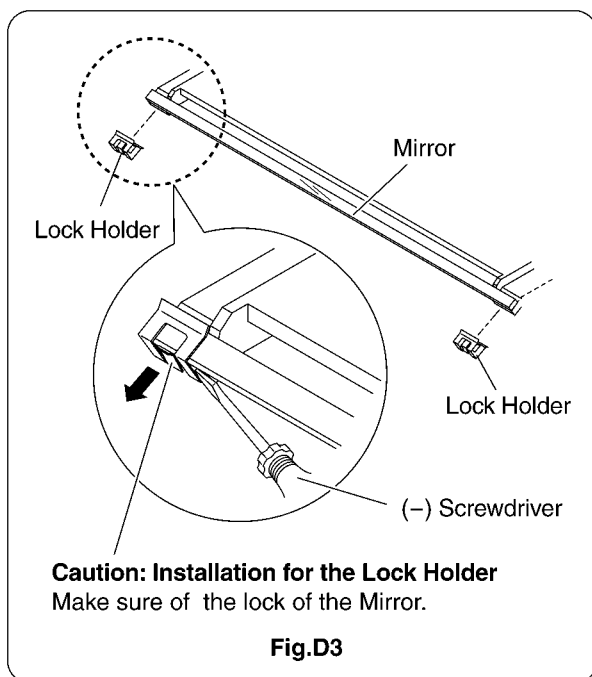


## 14.10. REMOVE THE MIRROR

PROCEDURE: A-1--> A-2--> A-3--> A-5--> A-6--> A-7

REF.NO.A-7

- 1) Remove the Analog Board. (Refer to A-5-1)
- 2) Remove the Digital Board and P.C.B. Holder. (Refer to A-6-1)
- 3) Remove the 2 Lock Holders.(See Fig.D3)
- 4) Remove the Mirror.



## 14.11. REMOVE THE HIGH VOLTAGE POWER BOARD

PROCEDURE: A-1--> A-2--> A-3--> A-5--> A-8

REF.NO.A-8

### A-8-1 High Voltage Power Board

- 1) Remove the 5 screws (A1).
- 2) Disconnect the connector (CN1).
- 3) Remove the High Voltage Power Board.

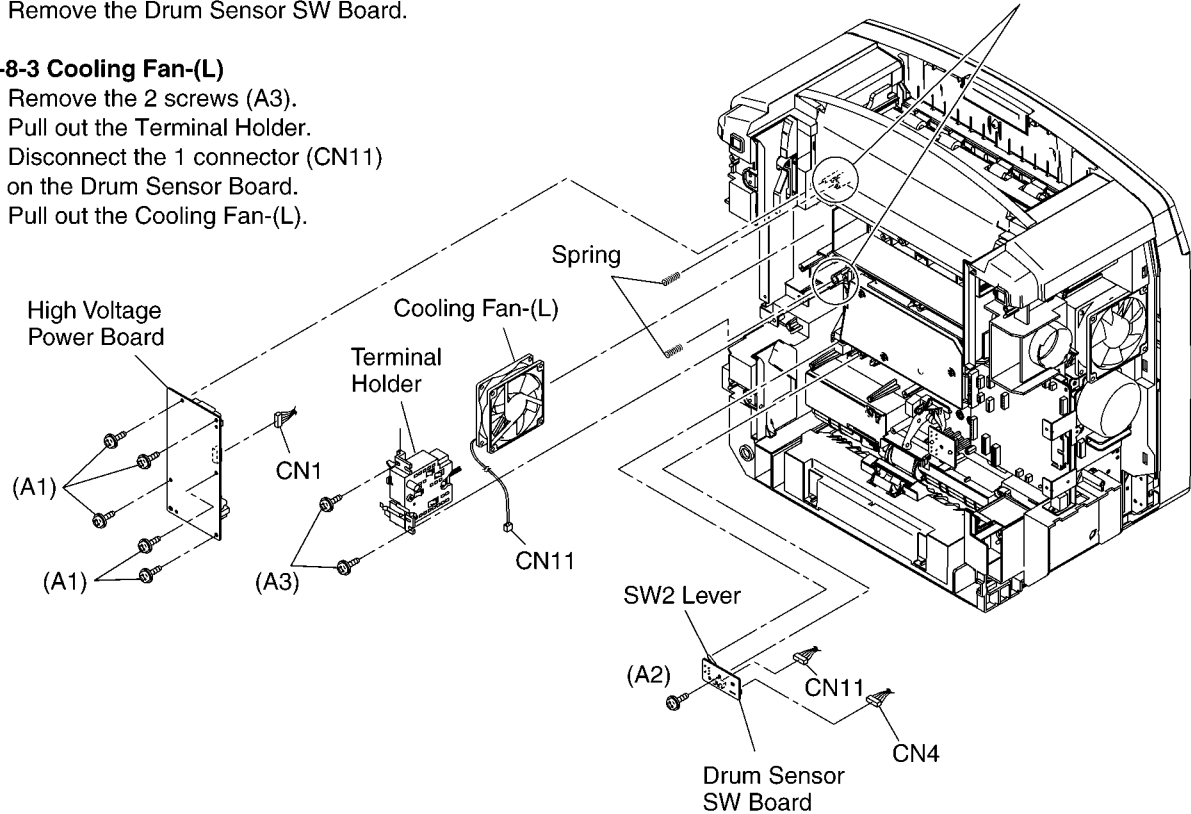
### A-8-2 Drum Sensor Board

- 1) Remove the 1 screw (A2).
- 2) Disconnect the 2 connectors (CN4,CN11).
- 3) Remove the Drum Sensor SW Board.

### A-8-3 Cooling Fan-(L)

- 1) Remove the 2 screws (A3).
- 2) Pull out the Terminal Holder.
- 3) Disconnect the 1 connector (CN11) on the Drum Sensor Board.
- 4) Pull out the Cooling Fan-(L).

**Caution:Installation for the Spring**  
Insert the Springs in the boss on the Main Unit.



## 14.12. REMOVE THE LASER UNIT

PROCEDURE: A-1--> A-2--> A-3--> A-5--> A-8--> A-9

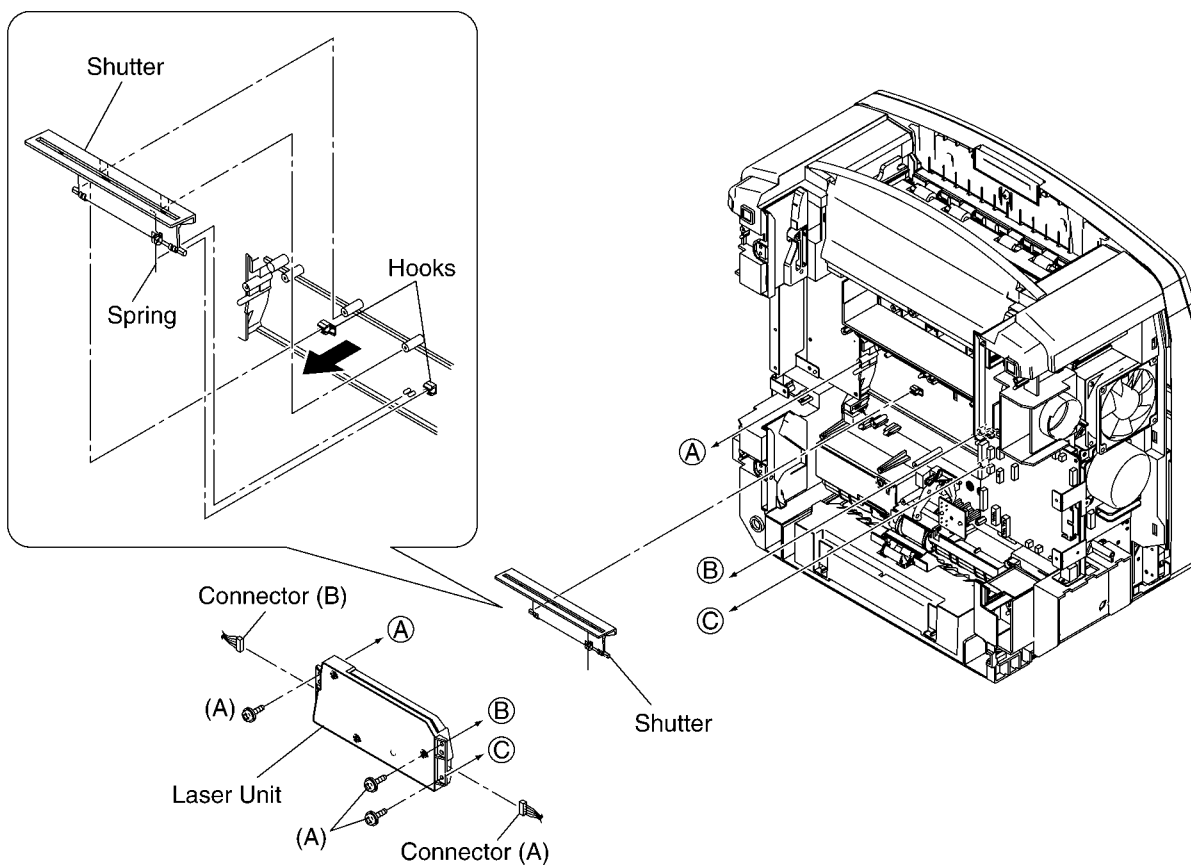
### REF.NO.A-9

#### A-9-1 Laser unit

- 1) Remove the 3 screws (A).
- 2) Disconnect the 2 connectors (A) and (B).
- 3) Remove the Laser Unit.

#### A-9-2 Shutter

- 1) Pull out the Shutter in the direction of the arrow.





## 14.13. REMOVE THE PICK UP ROLLER

PROCEDURE: A-1--> A-2--> A-3--> A-10

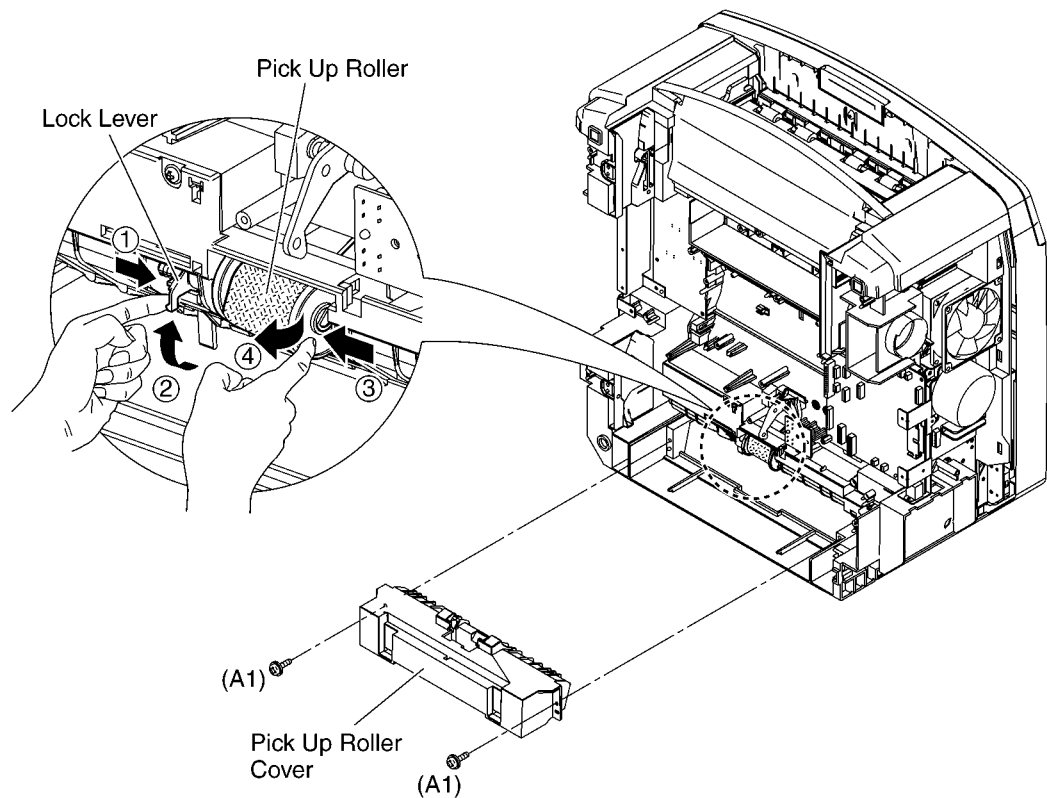
REF.NO.A-10

### A-10-1 Pick Up Roller Cover

- 1) Remove the Paper Pick Up Sensor Board. (Refer to A-5-4)
- 2) Remove the 2 screws(A1).
- 3) Remove the Pick Up Roller Cover.

### A-10-2 Pick Up Roller

- 1) Unlock the Lock Lever in the direction of the arrow(1) to (2).
- 2) Push the Pick Up Roller in the direction of the arrow(3), and pull out the direction arrow(4) remove it.



# 14.14. REMOVE THE FUSER UNIT AND THE SORTER UNIT

PROCEDURE: A-1--> A-2--> A-3--> A-5 --> B-1

REF.NO.B-1

### B-1-1 Open the Printer Cover

Push the Printer Cover Release to open the Printer Cover.

### B-1-2 Registration Roller

- 1) Remove the 2 spacers.(See Fig. D4 and D5).
- 2) Remove the Pinch Roller.

### B-1-3 Fuser Unit

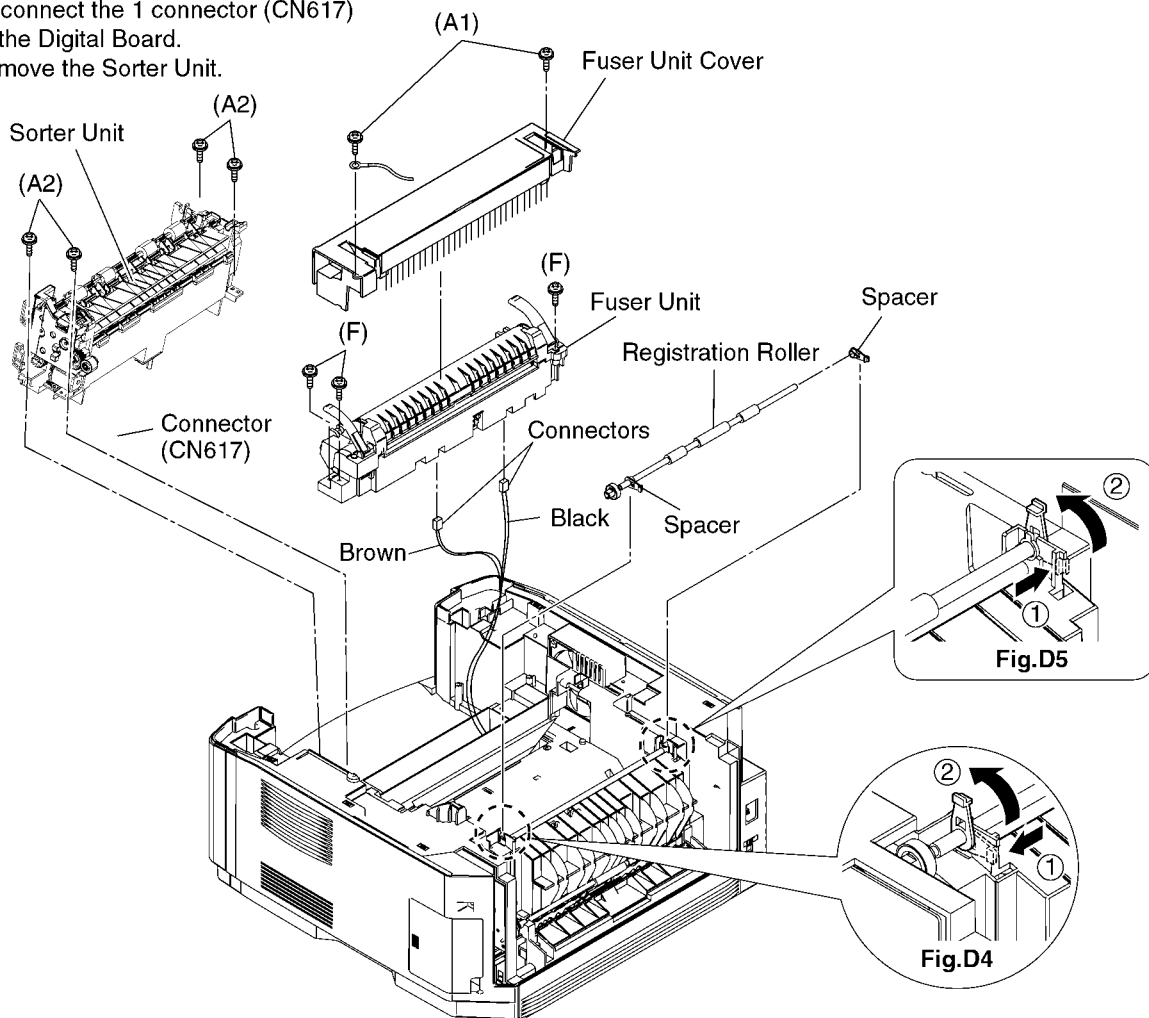
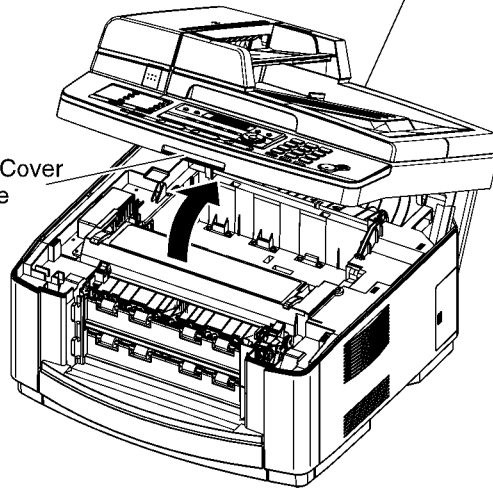
- 1) Remove the Left Side and Right Side Cover. (Refer to A-1 and A-2)
- 2) Remove the Bottom Plate. (Refer to A-3)
- 3) Disconnect the 2 connectors (Brown and Black).
- 4) Remove the Thermistor Board. (Refer to A-5-2)
- 5) Remove the 2 screws (A1).
- 6) Remove the Fuser Unit Cover.
- 7) Remove the 3 screws (F).
- 8) Remove the Fuser Unit.

### B-1-4 Sorter Unit

- 1) Remove the 4 screws (A2).
- 2) Disconnect the 1 connector (CN617) on the Digital Board.
- 3) Remove the Sorter Unit.

Open the Printer Cover

Printer Cover Release



## 14.15. REMOVE THE FUSER UNIT PARTS

PROCEDURE: H-1--> H-2

REF.NO.H-2

### Heat Roller and Halogen Lamp

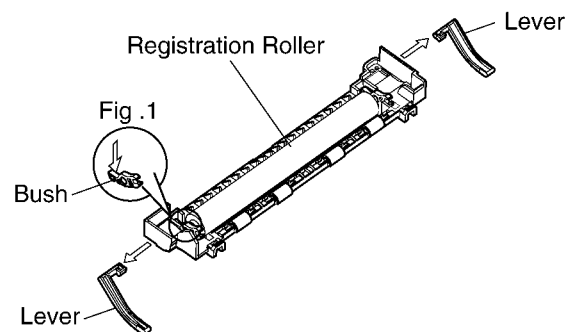
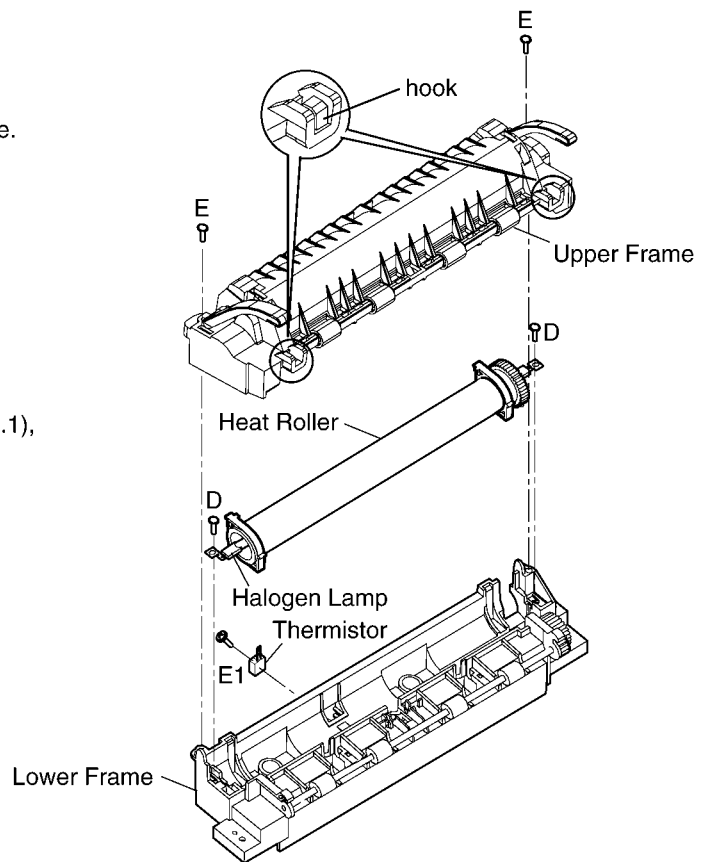
- 1) Release the 2 screws (E).
- 2) Release the 2 hooks.
- 3) Separate the Upper Frame from the Lower Frame.
- 4) Remove the 2 screws (D).
- 5) Lift up the Heat Roller.
- 6) Pull out the Halogen Lamp from the Heat Roller.

### Thermistor

- 1) Remove the screw (E1).
- 2) Remove the Thermistor.

### Fuser Lever and Registration Roller

- 1) Pushing the Bush in a direction of the arrow (Fig .1), pull out the lever.
- 2) Remove the Resistoration Roller.

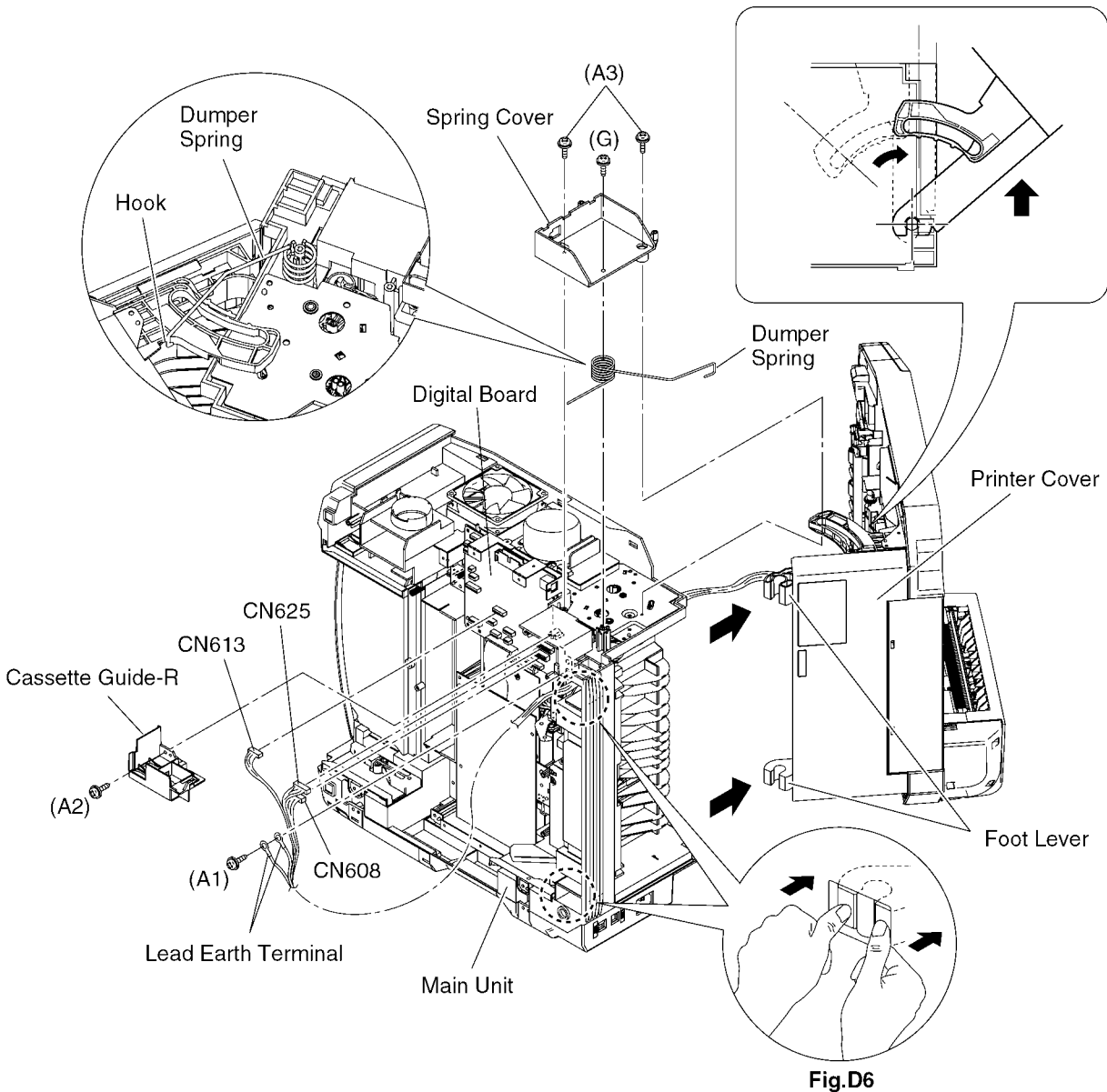
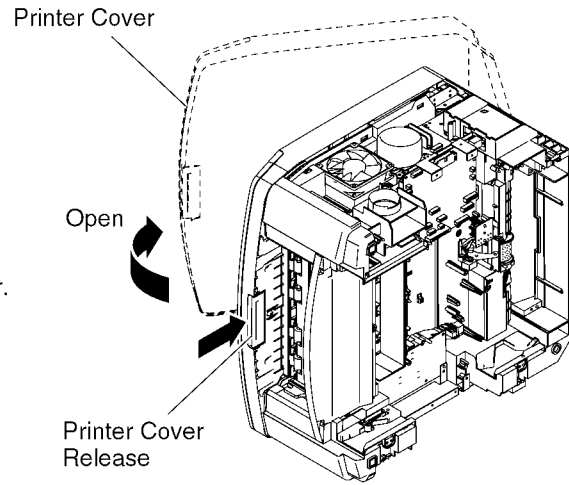


## 14.16. REMOVE THE RIGHT SIDE CABINET SECTION

PROCEDURE: A-3--> A-10--> C-1

REF.NO.C-1

- 1) Remove the Bottom Plate.(Refer to A-3)
- 2) Remove the Cassette Guide-R.(Refer to A-10-2)
- 3) Disconnect the 3 connectors (CN608, CN613, CN625) on the Digital Board.
- 4) Remove the 1 screw (A1) and remove the Lead Earth Terminal.
- 5) Remove the 2 screws (A3) and 1 screw (G).
- 6) Remove the Spring Cover.
- 7) Push the Printer Cover Release to open the Printer Cover.
- 8) Release the 2 hooks and pull out the Dumper Spring.
- 9) Press Foot Levers on both sides with thumbs to release the Hook.(See Fig.D6)
- 10) Remove the Printer Cover in the direction of the arrow to release it from the Main Unit.



# 14.17. REMOVE THE OPERATION PANEL AND BOARD

PROCEDURE: A-1--> A-2--> A-3--> C-1--> C-2

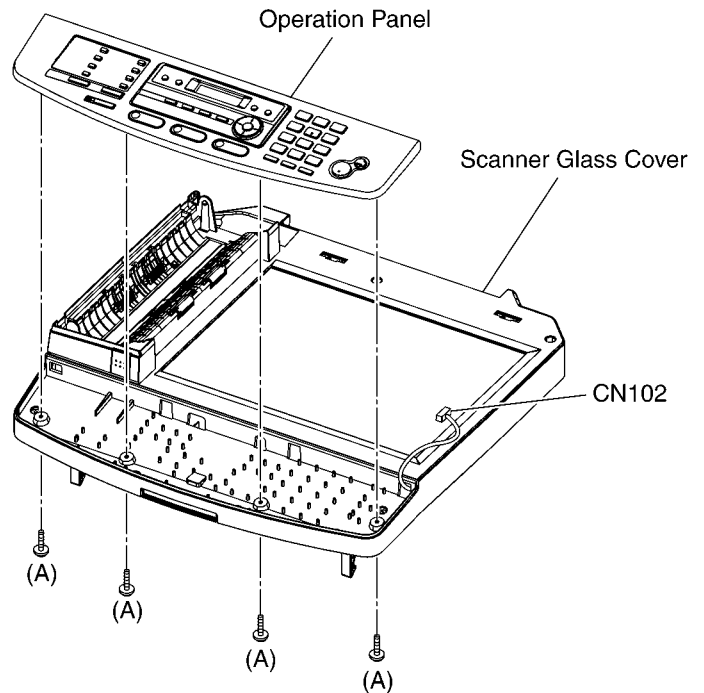
REF.NO.C-2

### C-2-1 Operation Panel

- 1) Remove the 4 screws (A).
- 2) Disconnect the 1 connector (CN102).
- 3) Remove the Operation Panel.

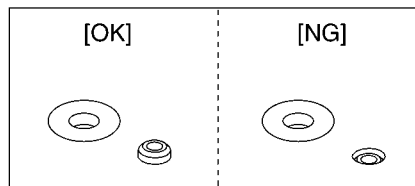
### C-2-2 Operation Board

- 1) Release the 2 hooks.
- 2) Pull out the Operation Board in the direction of the arrow.



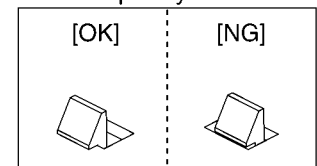
### Reassembling Note 1)

The assembling method of Operation Board.

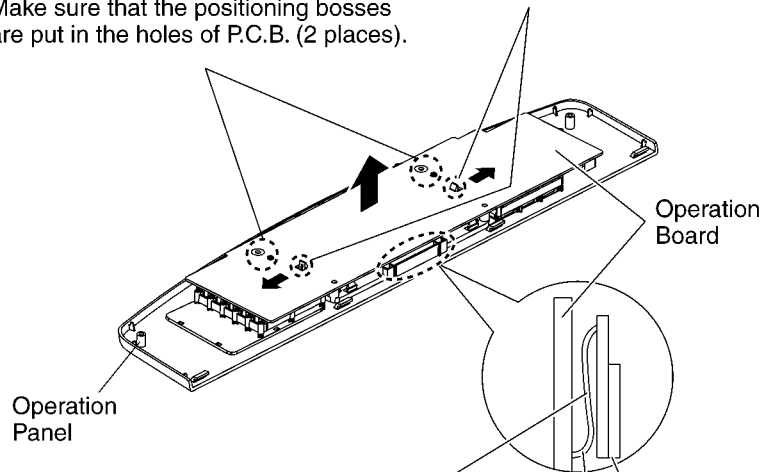


Make sure that the positioning bosses are put in the holes of P.C.B. (2 places).

Lock completely.



Hooks



### Reassembling Note 2)

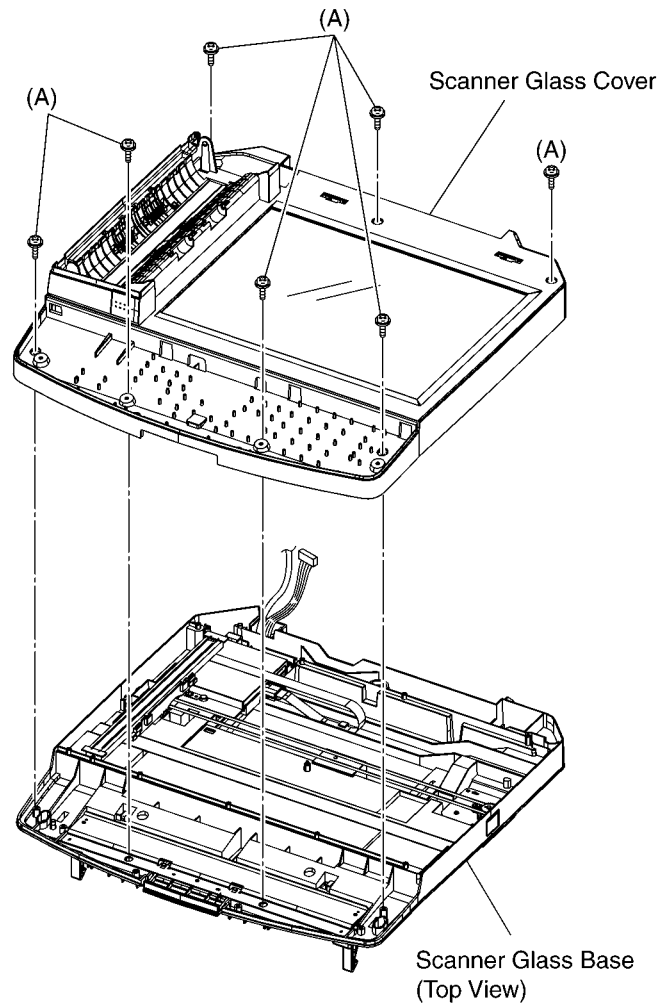
Make sure that the flexible harness of LCD is dressed in the S-shaped without being pressed.

## 14.18. REMOVE THE SCANNER GLASS COVER

PROCEDURE: A-1--> A-2--> A-3--> C-1--> C-2--> C-3

REF.NO.C-3

- 1) Remove the 7 screws (A).
- 2) Remove the Scanner Glass Cover.



## 14.19. REMOVE THE SCANNER SECTION

PROCEDURE: A-3--> C-1--> C-2-->C-3--> C-4

REF.NO.C-4

### CIS Unit

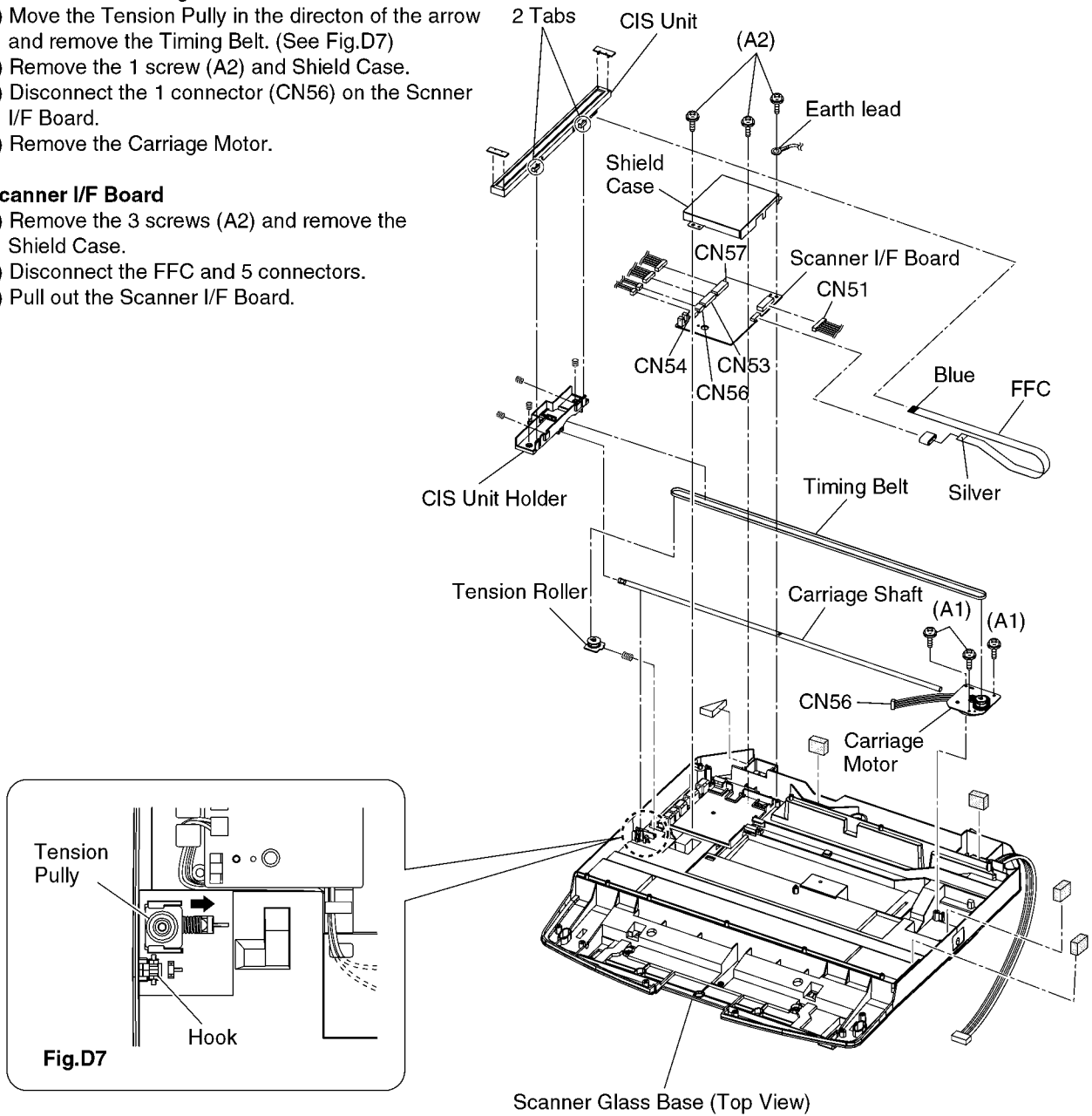
- 1) Disconnect the FFC on the CIS Unit.
- 2) Remove the 2 Tabs.
- 3) Remove the CIS Unit.

### Carriage Shaft, Timing Belt and Carriage Motor

- 1) Remove the 3 screws (A1).
- 2) Release the Hook.(See Fig.D7)
- 3) Pull out the Carriage Shaft with CIS Unit Holder.
- 4) Move the Tension Pulley in the direction of the arrow and remove the Timing Belt. (See Fig.D7)
- 5) Remove the 1 screw (A2) and Shield Case.
- 6) Disconnect the 1 connector (CN56) on the Scanner I/F Board.
- 7) Remove the Carriage Motor.

### Scanner I/F Board

- 1) Remove the 3 screws (A2) and remove the Shield Case.
- 2) Disconnect the FFC and 5 connectors.
- 3) Pull out the Scanner I/F Board.

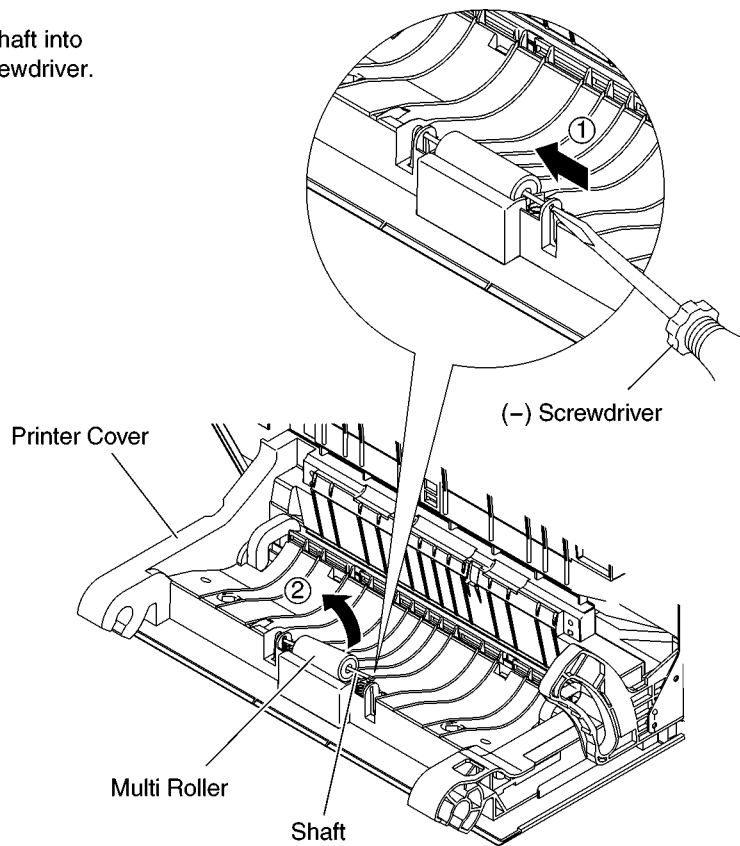


## 14.20. REMOVE THE MULTI ROLLER

PROCEDURE: A-1--> A-2--> A-3--> C-1--> C-5

REF.NO.C-5

- 1) Remove the Multi Roller by pushing the Shaft into the arrow direction (1) to (2) with a (-) screwdriver.





## 14.21. REMOVE THE TRANSFER ROLLER UNIT

PROCEDURE: A-1--> A-2--> A-3--> C-1--> C-6

REF.NO.C-6

### C-6-1 Transfer Roller

- 1) Remove the 4 screws (A1).
- 2) Remove the Transfer Roller Ass'y.
- 3) Remove the 2 spacers. (See Fig. D8)

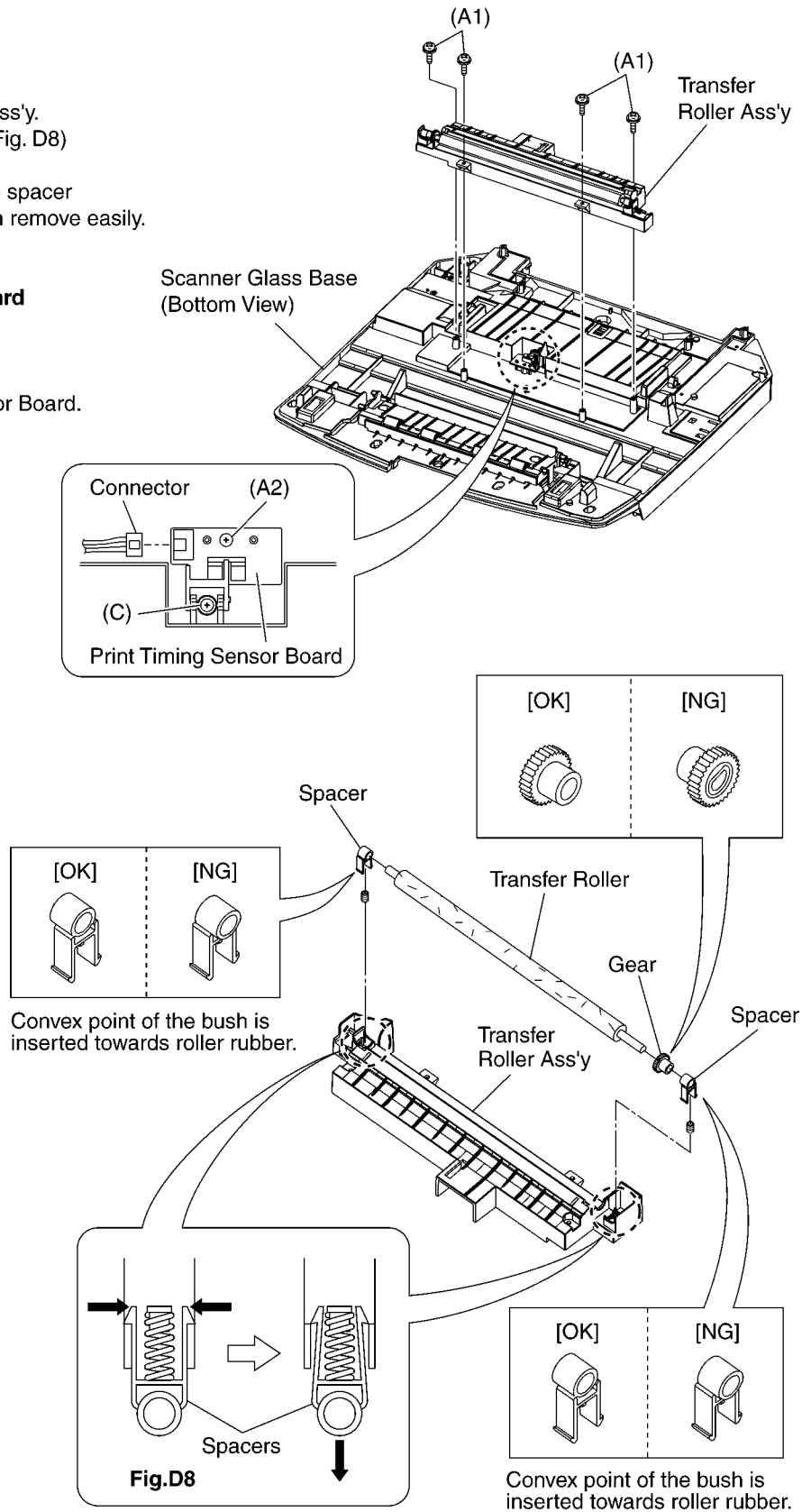
#### Caution:

If the leg of both the sides of the spacer is pinched using tweezers, it can remove easily.

- 4) Remove the Transfer Roller.

### C-6-2 Print Timing Sensor Board

- 1) Remove the 1 screw (A2).
- 2) Remove the 1 screw (C).
- 3) Disconnect the 1 connector.
- 4) Remove the Print Start Sensor Board.

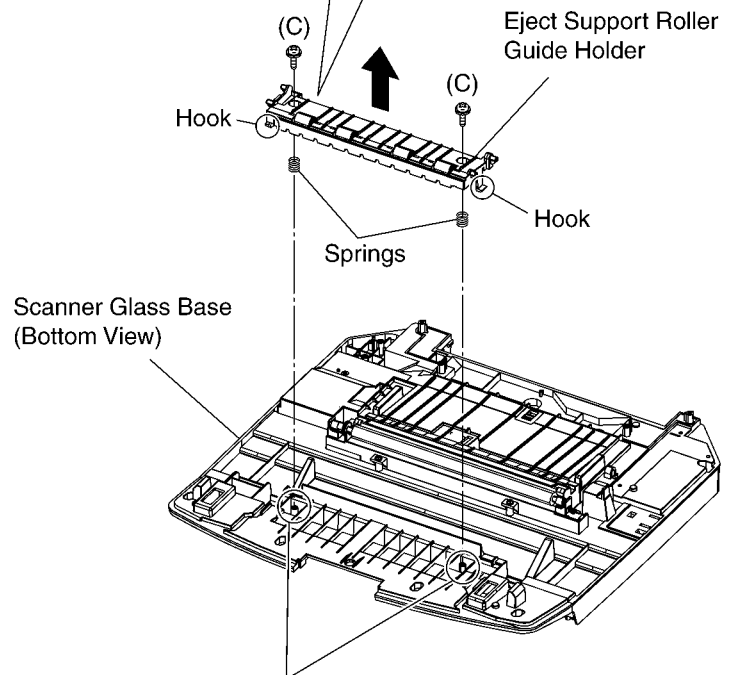
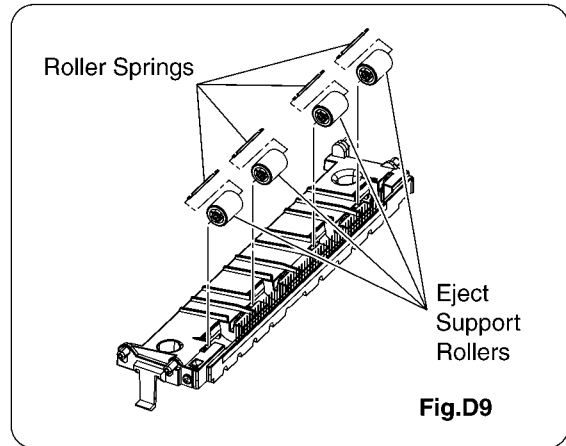


## 14.22. REMOVE THE EJECT SUPPORT ROLLER GUIDE HOLDER

PROCEDURE: A-1--> A-2--> A-3--> C-1--> C-7

REF.NO.C-7

- 1) Remove the 2 screws (C).
- 2) Release the 2 Hooks.
- 3) Pull out the Eject Support Roller Guide Holder in the direction arrow.
- 4) Pull out and remove the Eject Support Roller.  
(See Fig. D9)



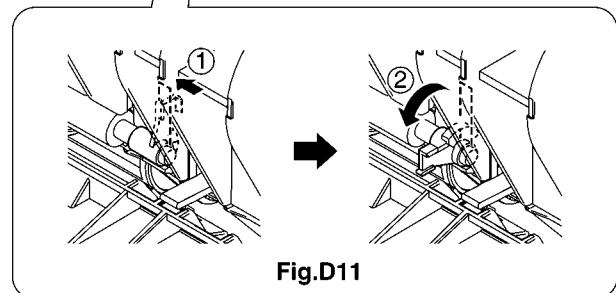
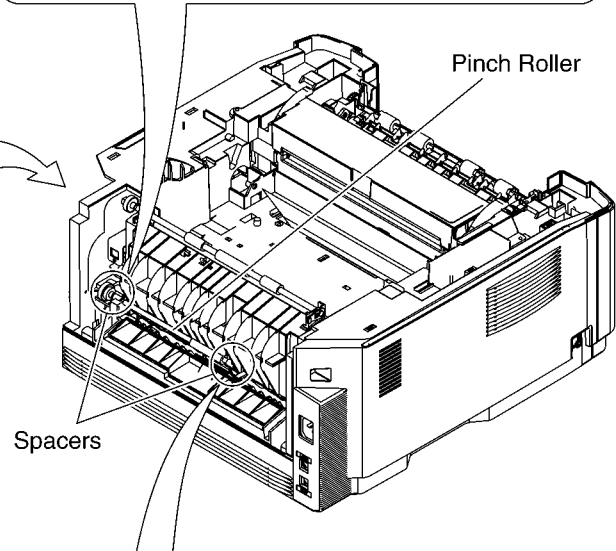
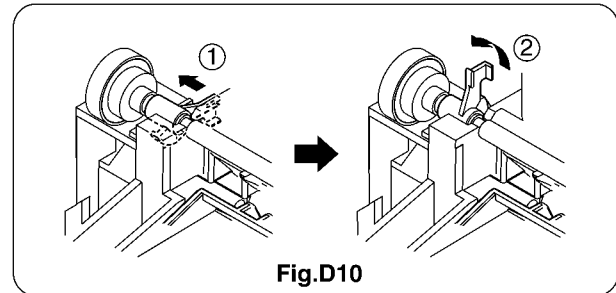
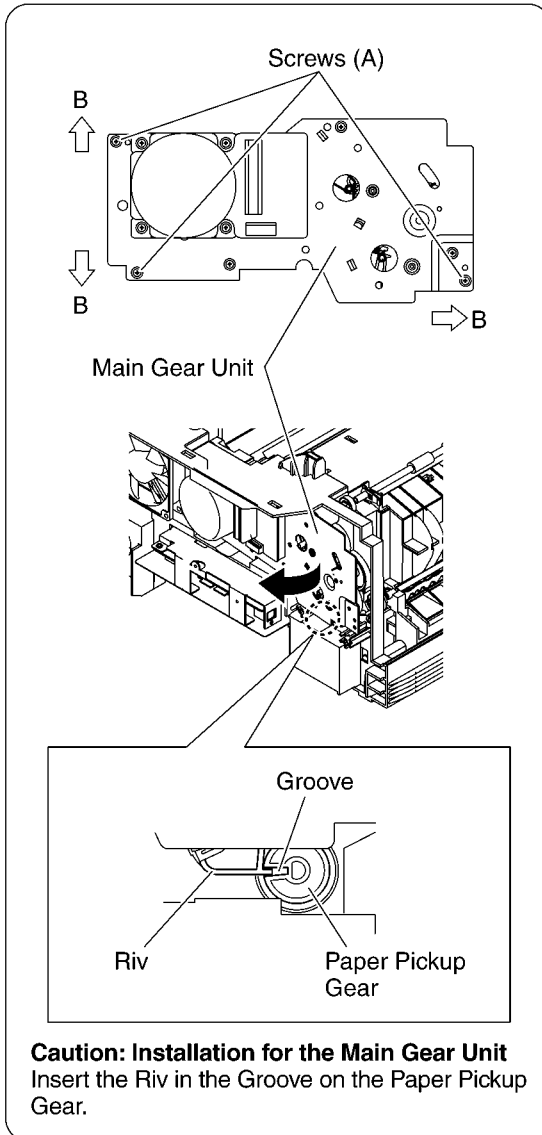
**Caution: Installation for the Springs**  
Insert the Springs in the boss on the Scanner Glass Base.

## 14.23. REMOVE THE MAIN GEAR UNIT

PROCEDURE: A-1--> A-2--> A-3--> C-1-->C-8

REF.NO.C-8

- 1) Remove the 3 screws (A) (⇒B).
- 2) Remove the Main Gear Unit right side in the direction of the arrow.
- 3) Remove the 2 Spacers.(See Fig.D10 and D11)
- 4) Remove the Pinch Roller.



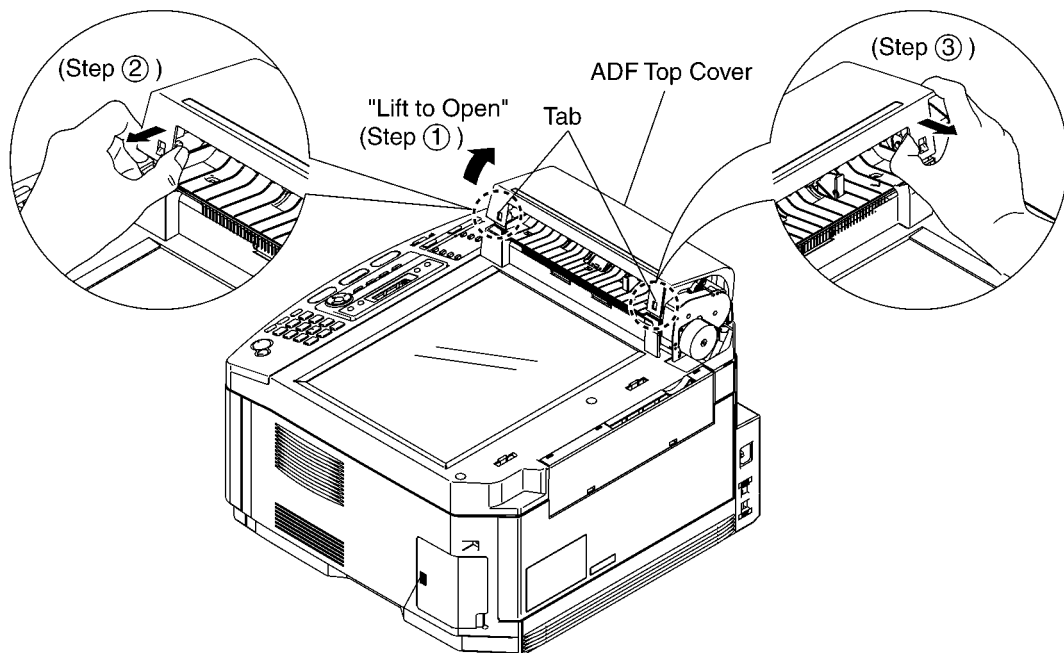
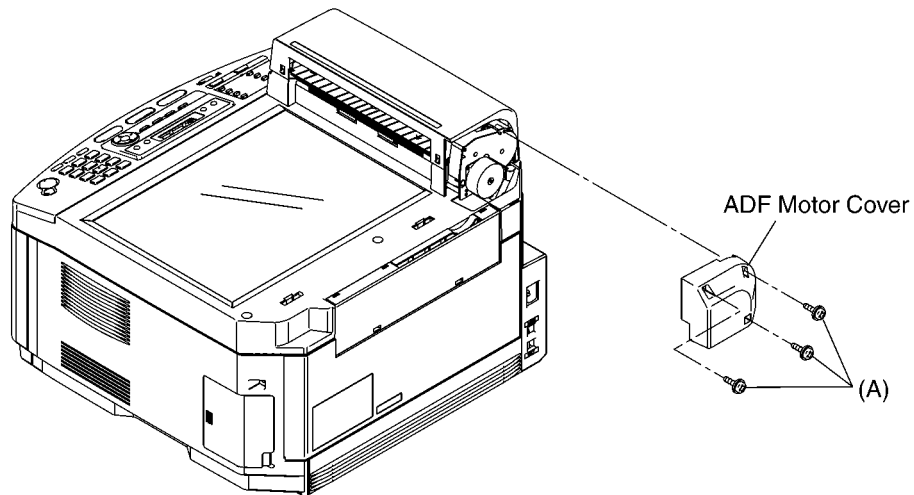
## 14.24. REMOVE THE ADF TOP COVER

### PROCEDURE: D

REF.NO.D-1a

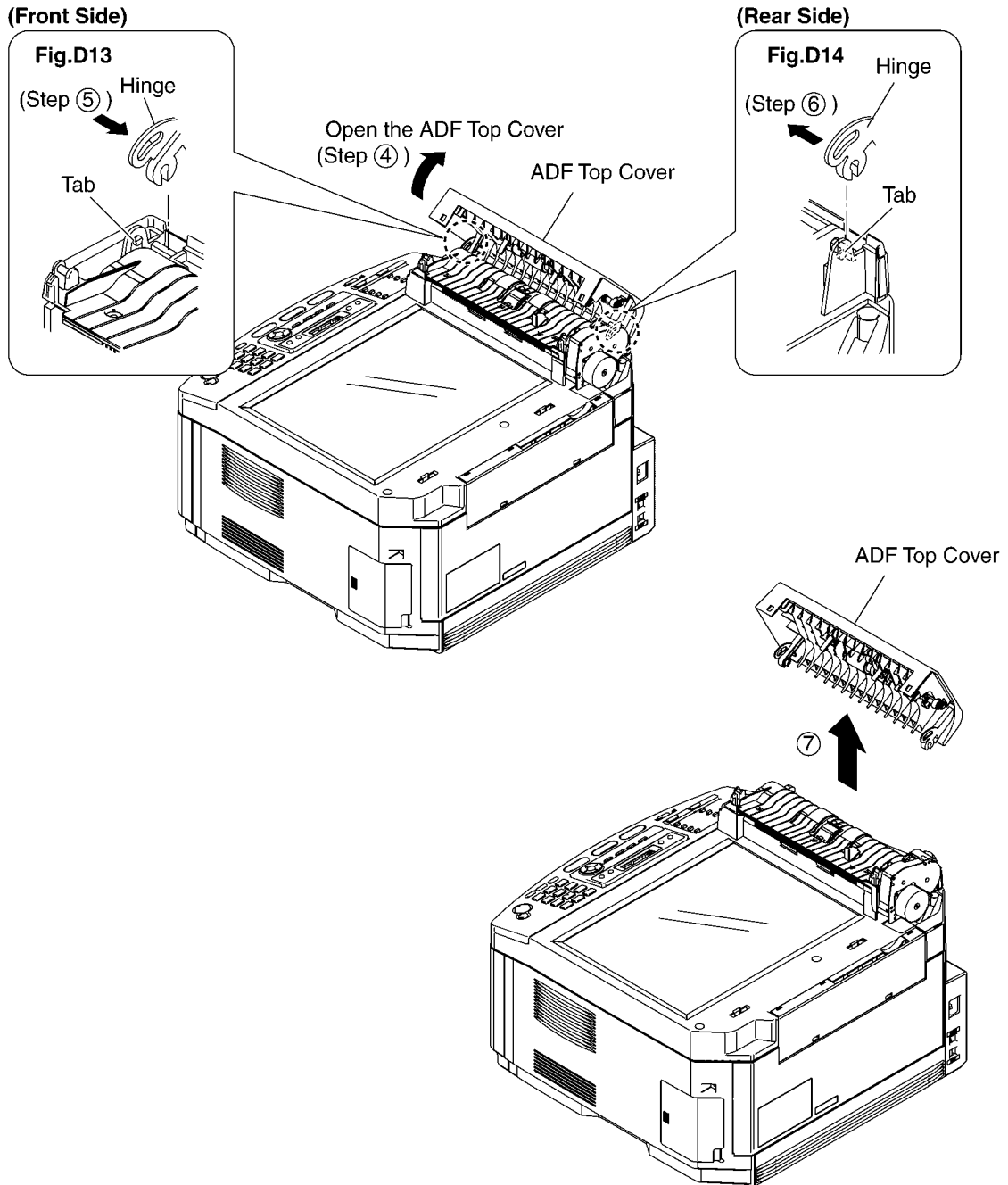
#### D-1 ADF Top Cover

- 1) Remove the 3 screws (A) to the ADF Motor Cover.
- 2) Remove the ADF Motor Cover by pulling straight out.
- 3) Pull up from the "Lift to Open", to prop open the ADF Top Cover. (Step ①)
- 4) Separate the ADF Top Cover from the 2 Tabs by slightly bending the ADF Top Cover hooks to open fully. (Step ② or ③ ⇒ ④)



**PROCEDURE: D****REF.NO.D-1b**

- 5) Push the front hinge inward, in the direction of the arrow, to release the catch from the hinge tab.  
(Step ⑤ See Fig.13)
- 6) Push the rear hinge inward, in the direction of the arrow, to release the catch from the hinge tab.  
(Step ⑥ See Fig.14)
- 7) Carefully pull the ADF Top Cover in an upward direction, to remove from the chamfered shaft.  
(Step ⑦)



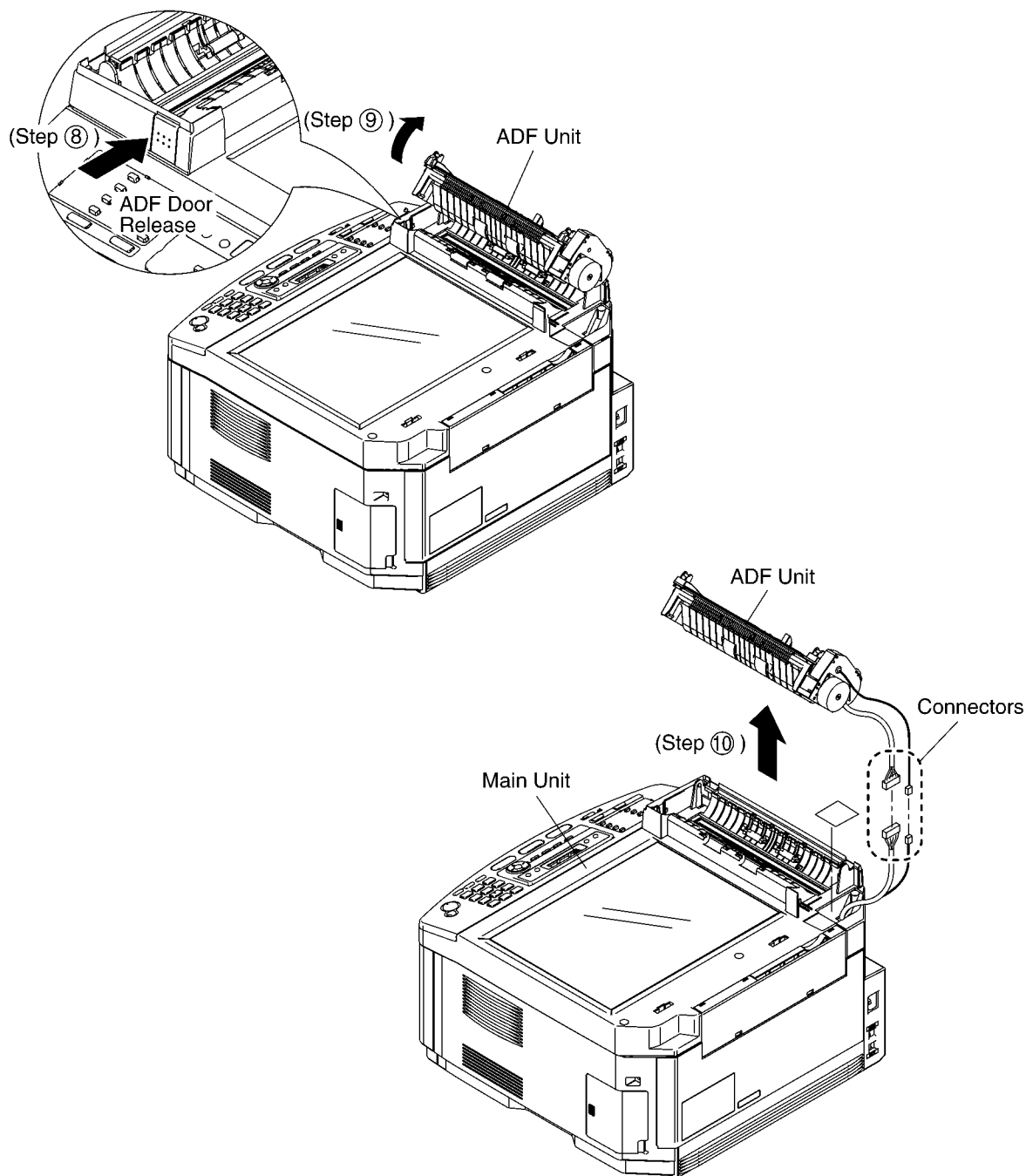
## 14.25. REMOVE THE ADF UNIT

### PROCEDURE: D

REF.NO.D-2

#### D-2 ADF Unit

- 1) Push the ADF Door Release to open the ADF Unit. (Step ⑧ ⇒ ⑨)
- 2) Remove the film on the Main Unit to access the connectors to the ADF Unit.
- 3) Pull out the connectors of the ADF Unit from the Main Unit. (Step ⑩)
- 4) Disconnect the 2 connectors of the ADF Unit from the connectors of the Main Unit, and remove the ADF Unit. (Step ⑩)



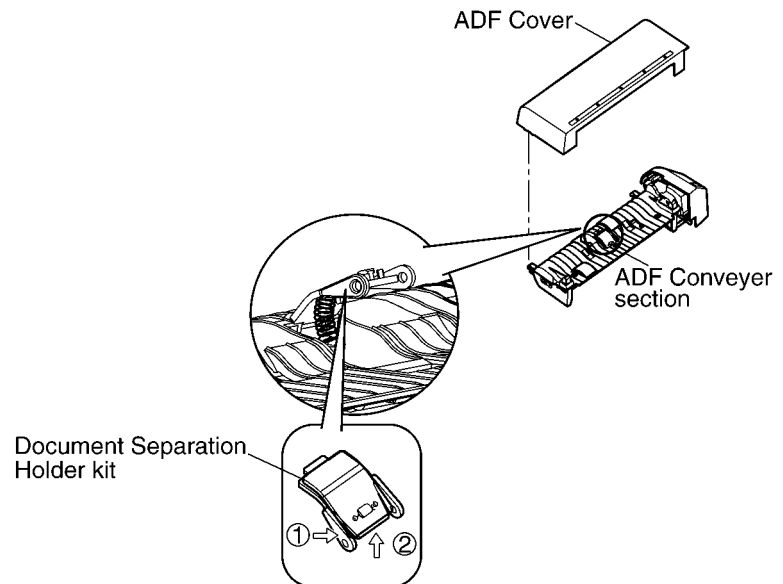
## 14.26. REMOVE THE ADF PARTS

PROCEDURE: A-1--> G-1

REF.NO.G-1

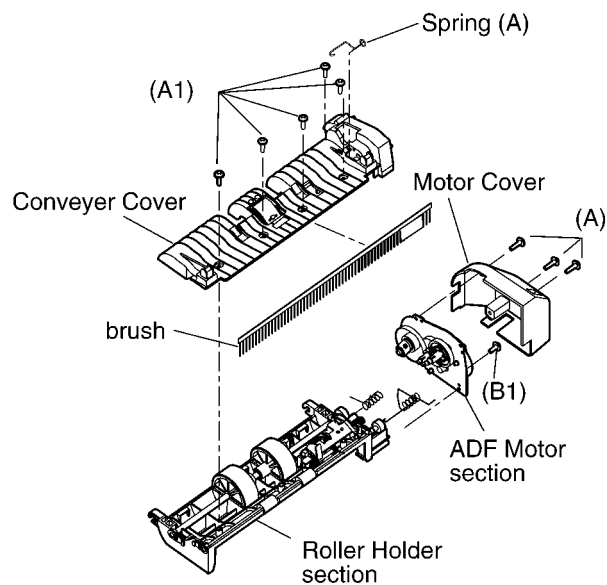
### Separation Holder and Separiton Rubber

- 1) Separate the ADF Cover from the ADF Conveyer section.
- 2) Remove the Separation Holder (Push in the direction of arrows to remove ① and lift up ②)
- 3) Remove the Separation rubber from the Separation Holder



### ADF Motor

- 1) Separate the ADF Cover from the ADF Conveyer section.
- 2) Remove the 3 screws (A).
- 3) Remove the Motor Cover.
- 4) Remove the screw (B1).
- 5) Remove the Spring (A).
- 6) Remove the ADF Motor section.
- 7) Remove the brush.
- 8) Remove the 5 screws (A1).
- 9) Separate the Conveyer Cover from the Roller Holder section.



## 14.27. REMOVE THE SORTER UNIT PARTS

PROCEDURE: B-1--> E-1

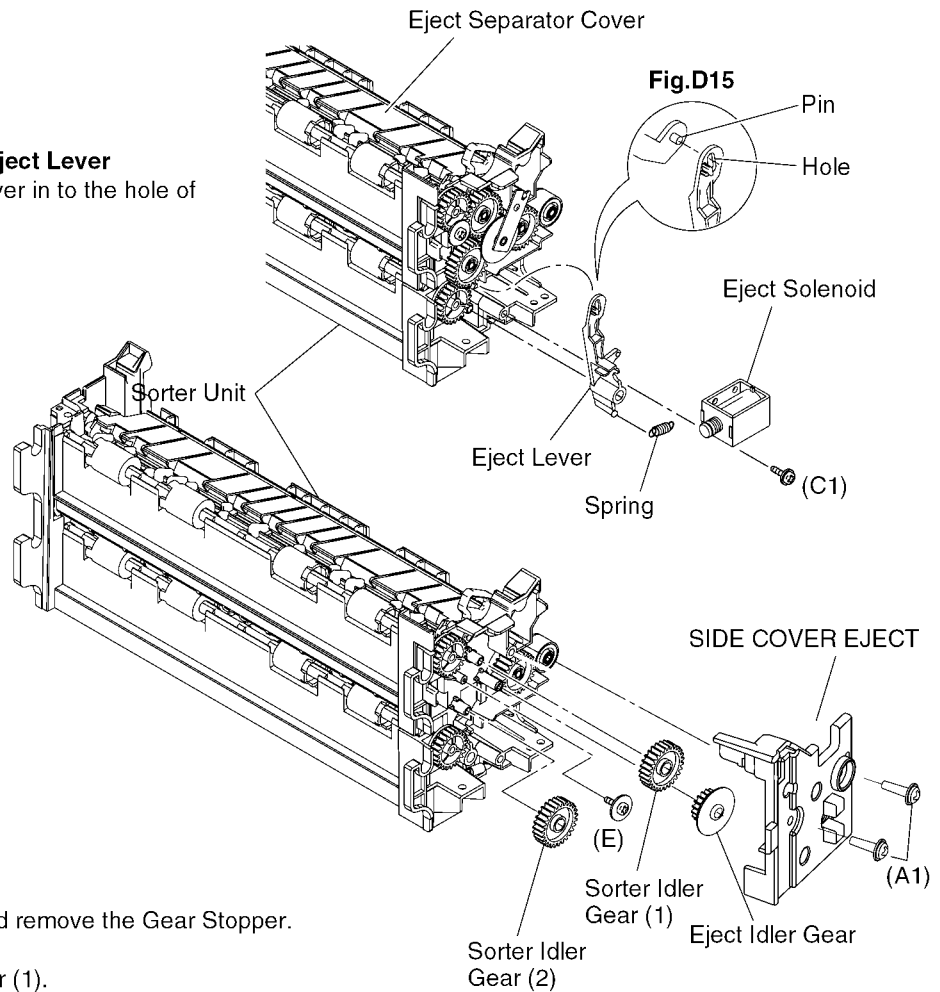
REF.NO.E-1a

### E-1-1 Eject Solenoid

- 1) Remove the 1 screw (C1).
- 2) Remove the Eject Solenoid.

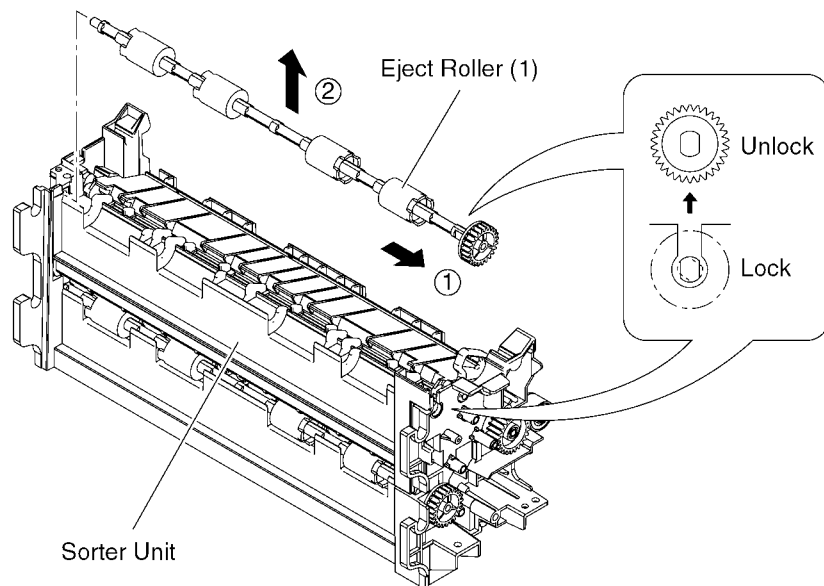
#### Caution: Installation for the Eject Lever

Pass pin of Eject Separator Cover in to the hole of Eject Lever.(See Fig.D15)



### E-1-2 Eject Roller (1)

- 1) Remove the 1 screw (A1) and remove the Gear Stopper.
- 2) Remove the Eject Idler Gear.
- 3) Remove the Sorter Idler Gear (1).
- 4) Remove the 1 screw (E) and Sorter Idler Gear (2).
- 5) Slide Eject Roller (1) in the direction of the arrow (1), and lift it in the direction of the arrow (2) remove it.



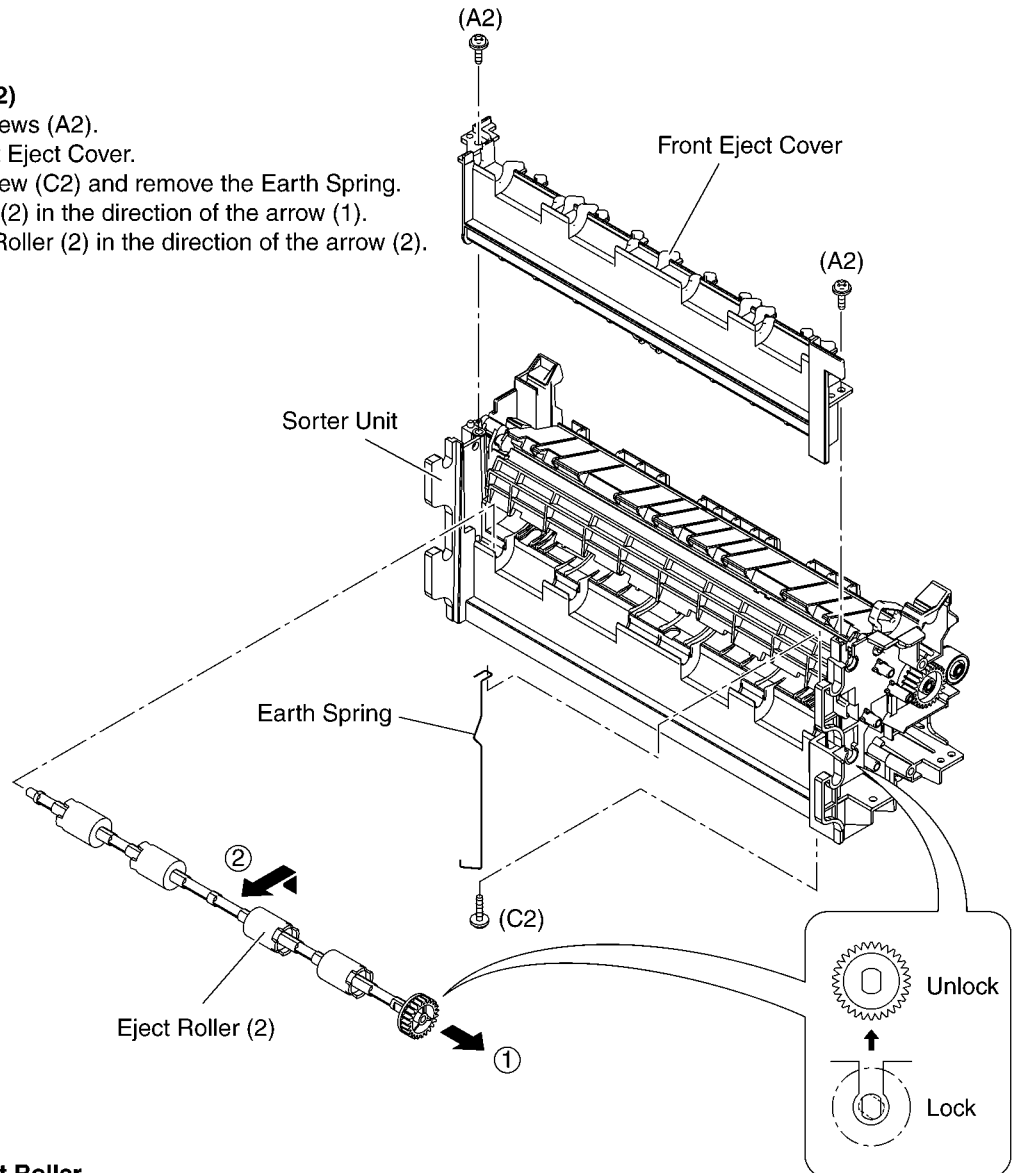


## PROCEDURE: B-1--&gt; E-1

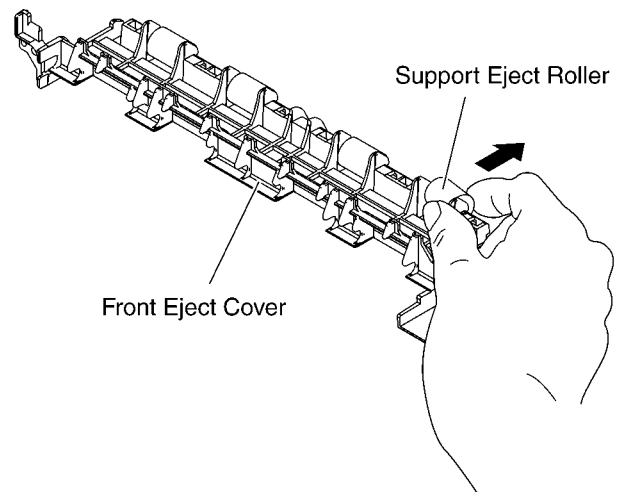
REF.NO.E-1b

**E-1-3 Eject Roller (2)**

- 1) Remove the 2 screws (A2).
- 2) Remove the Front Eject Cover.
- 3) Remove the 1 screw (C2) and remove the Earth Spring.
- 4) Slide Eject Roller (2) in the direction of the arrow (1).
- 5) Pull up the Eject Roller (2) in the direction of the arrow (2).

**E-1-4 Support Eject Roller**

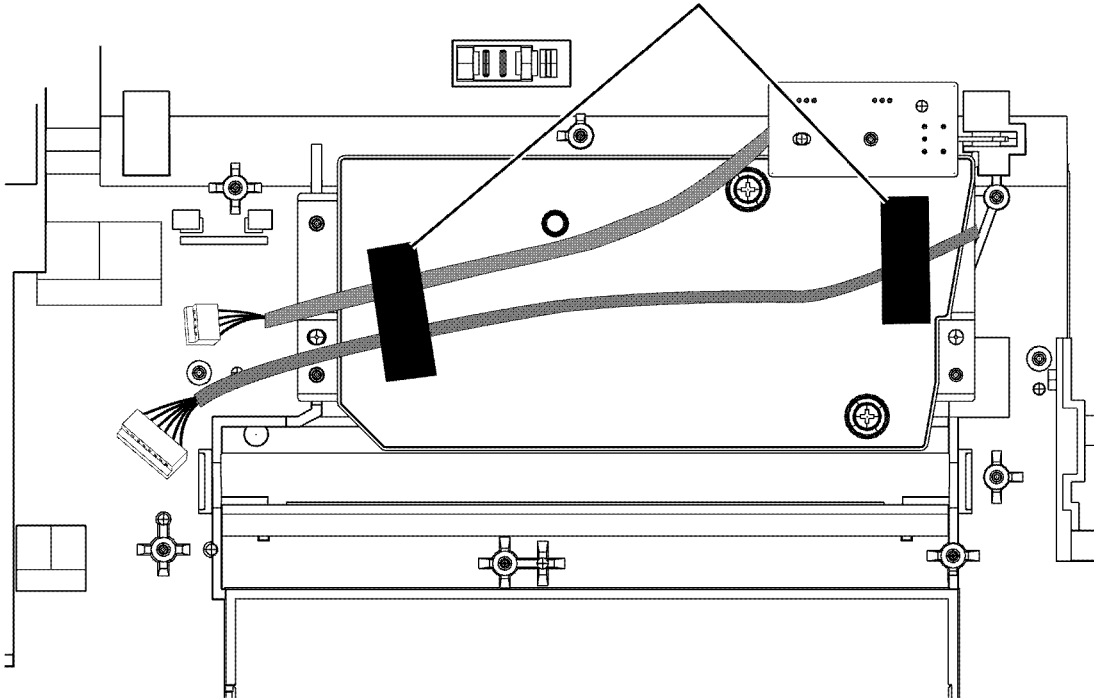
- 1) Remove the Front Eject Cover.
- 2) Pick up the Support Eject Roller with fingers and take it out.



## 14.28. INSTALLATION POSITION OF THE LEAD

### 14.28.1. LSU SECTION

The harness on LSU is taped in these two places.



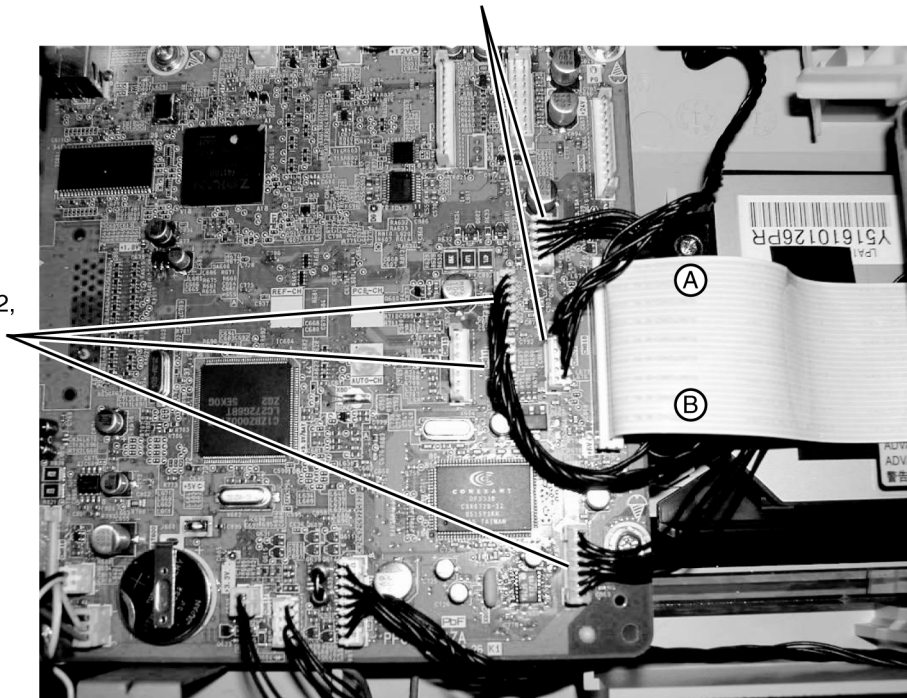
**Note:**

Tape must be stuck so as to prevent the floating of harness from the metal surface of LSU.

### 14.28.2. DIGITAL BOARD SECTION (1)

These 2 harnesses connected to CN609 and CN615 are routed so as to come from (A) side of the shown in the figure.

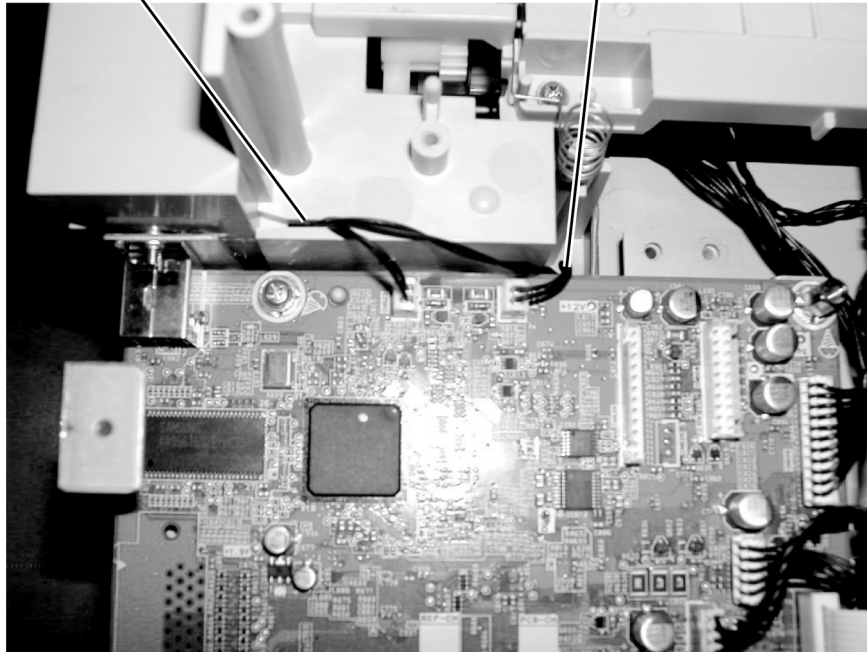
These 3 harnesses connected to CN602, CN611 and CN614 are routed so as to come from (B) side of the shown in the figure.



### 14.28.3. DIGITAL BOARD SECTION (2)

Place the lead properly to avoid catching in.

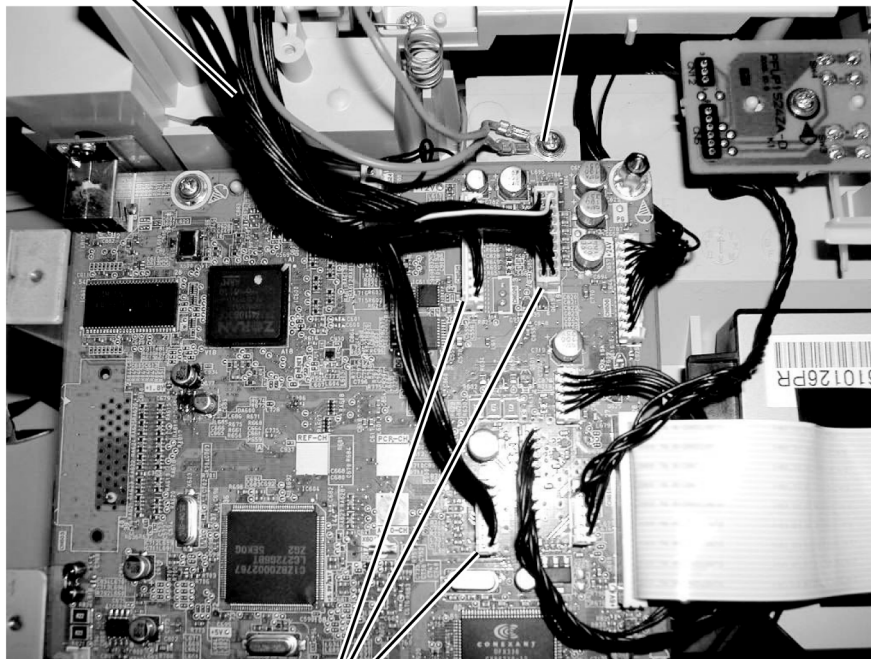
An extra line should be twisted and bundled together. Push them under the substrate.



### 14.28.4. DIGITAL BOARD SECTION (3)

Harness from HB side.

Two earth cables are tightened Together in this direction.

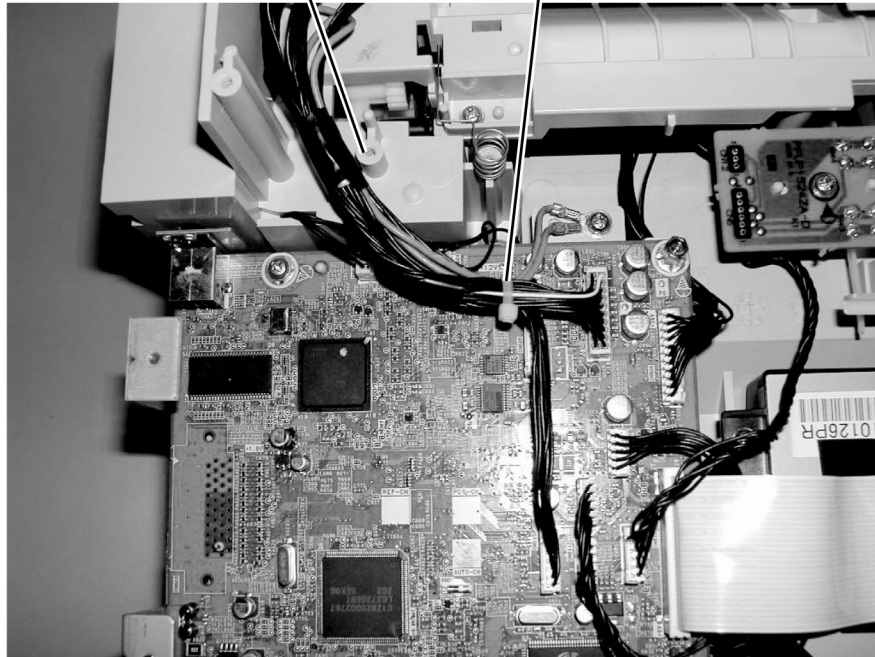


The FB harnesses from the FB side are connected to CN608, CN613 and CN625.

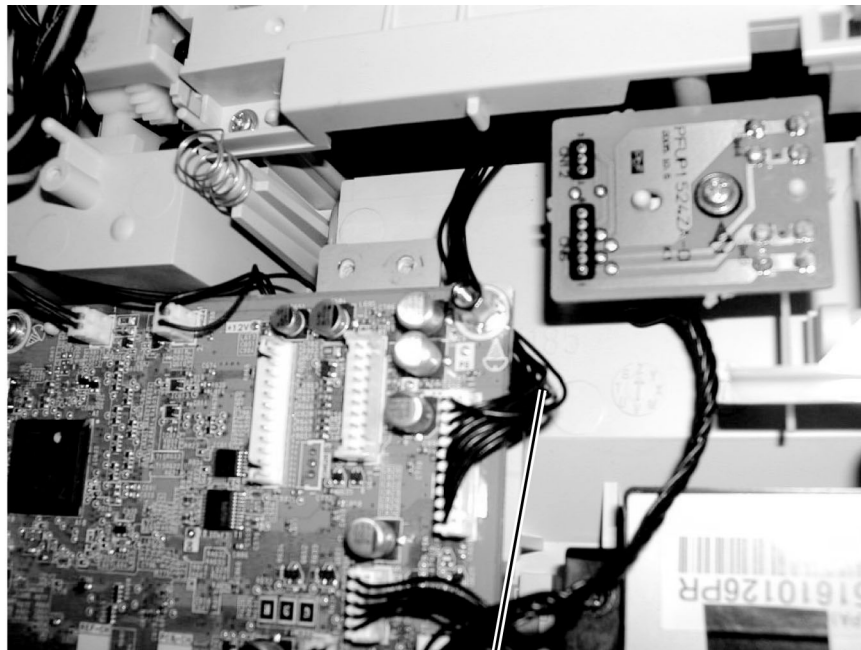
### 14.28.5. DIGITAL BOARD SECTION (4)

Harness are wrapped by the tape near this boss so as not to loosen the PCB side of the harnesses. (FB side of the harnesses must have some slack.)

Bind 3 harnesses from the FB side together by a binder near CN625 as shown in the figure.



### 14.28.6. DIGITAL BOARD SECTION (5)



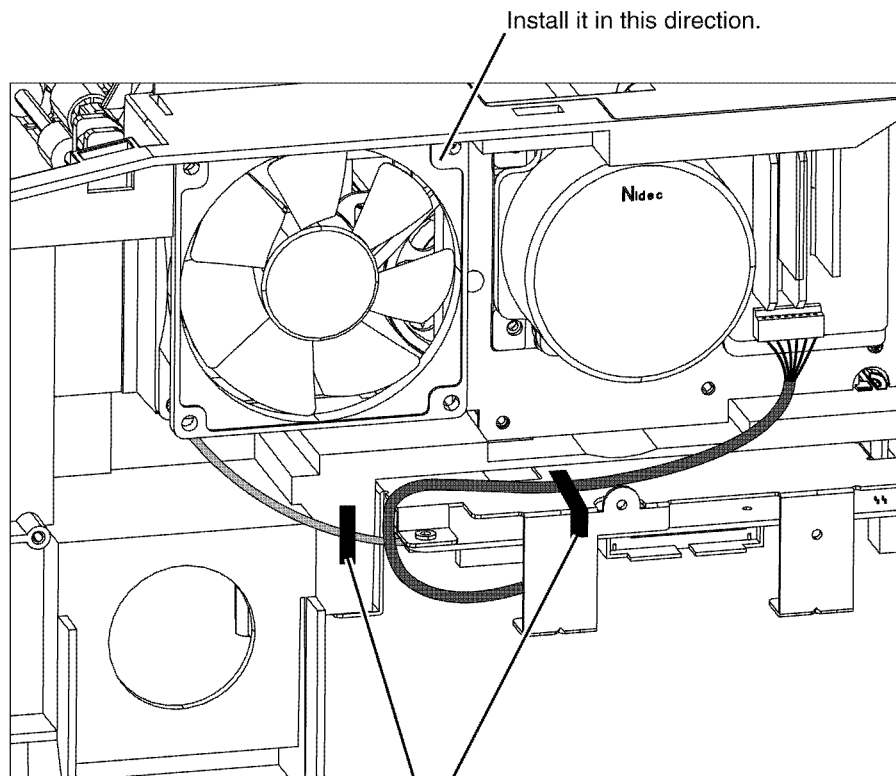
Push this harness under the PCB after inserting to CN606.

### 14.28.7. HANDSET SECTION



Lead handset must be through these ribs so as not to touch the LSU shutter.

### 14.28.8. FAN (RIGHT) MOTOR SECTION

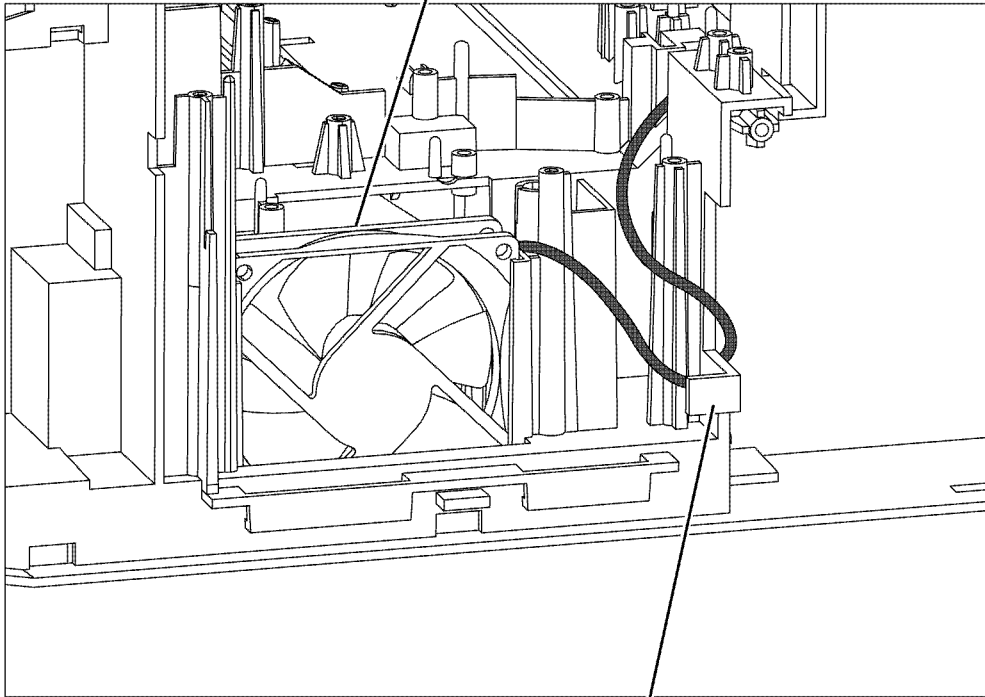


Install it in this direction.

The tape is pasted, and fixed.  
3cm x 2

### 14.28.9. FAN (LEFT) MOTOR SECTION

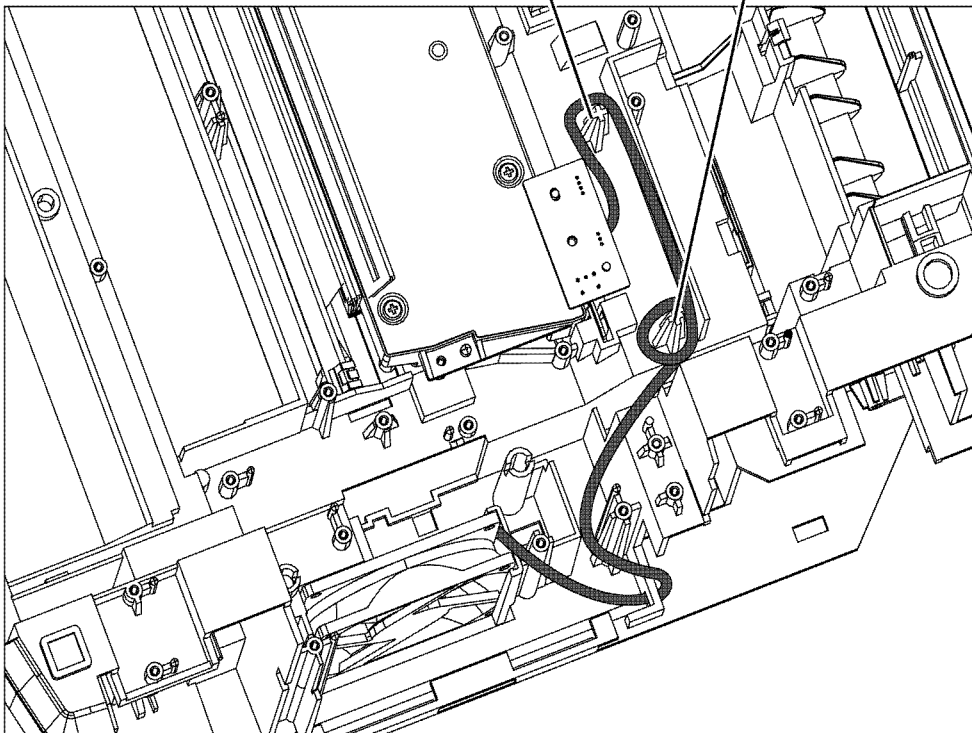
Insert it in this direction.



Hook this rib.

Hook the FAN motor lead on this rib so as not to loosen the lead.

Wind the FAN motor lead once around this rib.

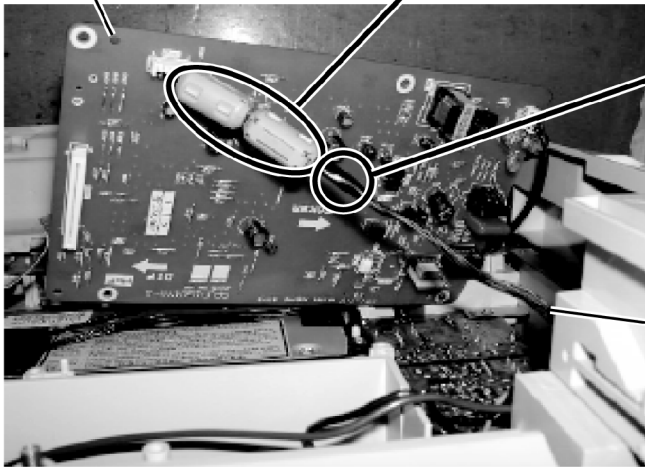


### 14.29. HOW TO INSTALL FERRITE CORE

Method of installing the FERRITE CORE

PCB/Analog

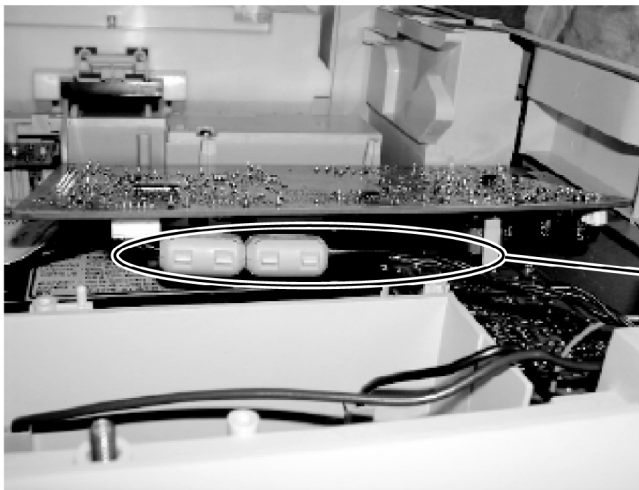
CORE is installed in the root of the connector as shown in figure.



The tape ARVK0190M20UL (3cm) is wrapped around the harness, and CORE is fixed as in figure.

LEAD HANDSET RELAY

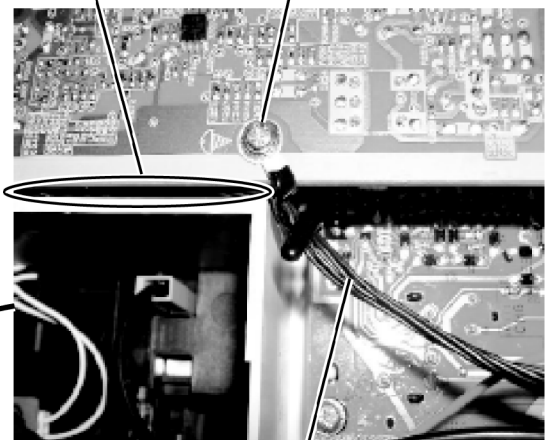
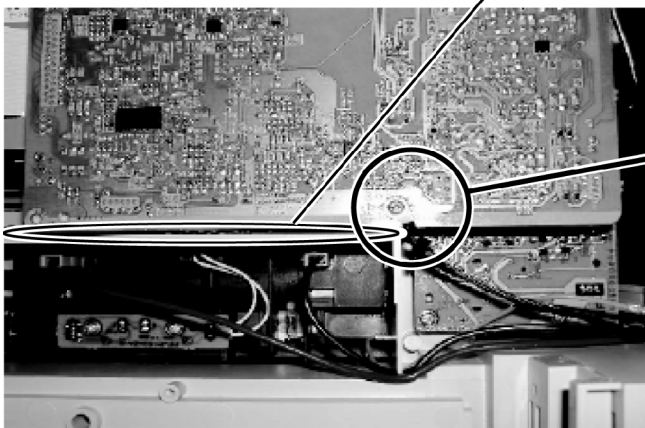
When PCB / ANALOG is installed



Be tight to this part of harness.

The harness is fixed by installing CLAMPER here as shown in figure

Method of installing the CLAMPER



The harness must not touch the solder side of high voltage PCB.

# 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.

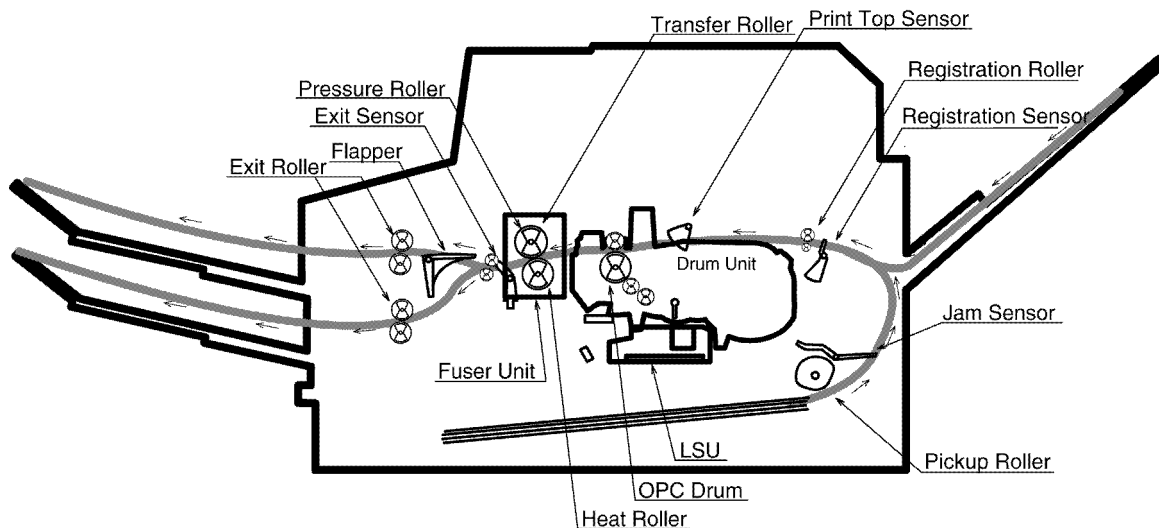
**6. Confirm normal operation of the equipment**

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.236)
3	Sensors	Document sensor (PS22), Read position sensor (PS21), Home sensor (PS51), Registration sensor (PS1), Pickup sensor (SW201), Print timing sensor (PS23), Paper sensor (SW202), Drum sensor (SW203), Toner sensor (IC40), FB cover sensor (SW23), ADF cover sensor (SW21), Top cover sensor (SW1), Option cassette paper sensor (SW951), confirm the operation of the sensors.	See <b>MAINTENANCE CHECK ITEMS/ COMPONENT LOCATIONS</b> (P.236) and <b>SENSORS AND SWITCHES SECTION</b> (P.49) <b>TEST FUNCTIONS</b> (P.92)
4	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to <b>MAINTENANCE</b> (P.238).
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	Replacement	
			Cycle	Procedure
1	ADF Document Feed Roller (Ref.No.121)	3 months	7 years* (100,000 documents)	Refer to <b>REMOVE THE ADF PARTS</b> (P.227).
2	ADF Separation Rubber (Ref. No.110)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE ADF PARTS</b> (P.227).
3	ADF Eject Roller (Ref.No.143)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE ADF PARTS</b> (P.227).
4	Pick up Roller (Ref No.521)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE PICK UP ROLLER</b> (P.213).
5	Separation Rubber (Ref. No.463)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE PICK UP ROLLER</b> (P.213).
6	Feed Roller (Ref.No.311)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE MAIN GEAR UNIT</b> (P.223)
7	Transfer Roller (Ref.No.205)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE TRANSFER ROLLER UNIT</b> (P.221).
8	Registration Roller (Ref.No.304)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE FUSER UNIT AND THE SORTER UNIT</b> (P.214).
9	Heat Roller (Ref.No.341)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE FUSER UNIT PARTS</b> (P.215).
10	Exit Roller (Ref.No.260)	3 months	7 years (100,000 documents)	Refer to <b>REMOVE THE SORTER UNIT PARTS</b> (P.228).

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 PLATE AND GLASSES

Clean the white plate and glasses when a black line, a white line or a dirty pattern appears on:

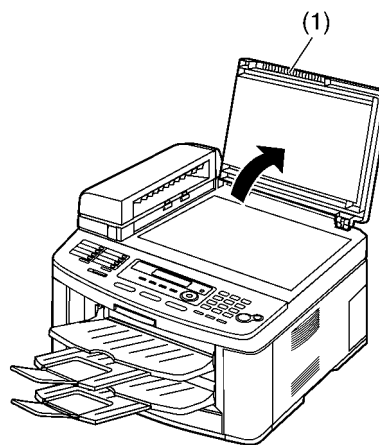
- your recording paper,
- the original document,
- the data scanned by the computer, or
- the fax document received by the other party.

**Caution:**

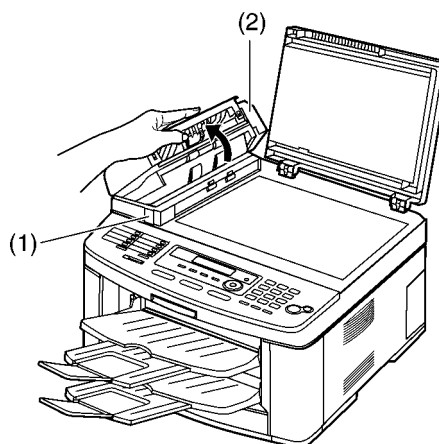
- Be careful when handling the drum and toner unit.
- Do not use paper products, such as paper towels or tissues, to clean the inside of the unit.

#### 15.2.1.1. White plate and scanner glasses

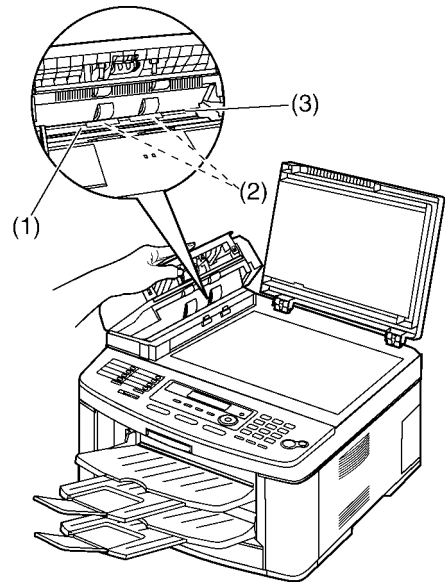
1. Disconnect the power cord.
2. Open the document cover (1).



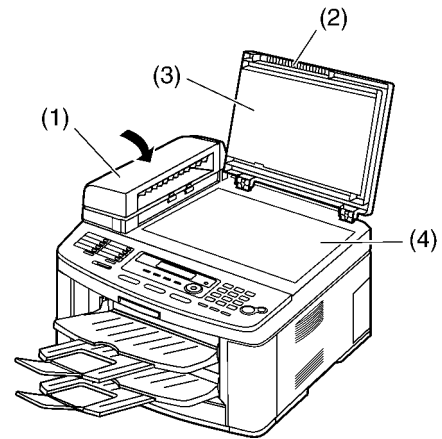
3. Press the ADF cover release button (1) and open the middle part (2) of the ADF cover.



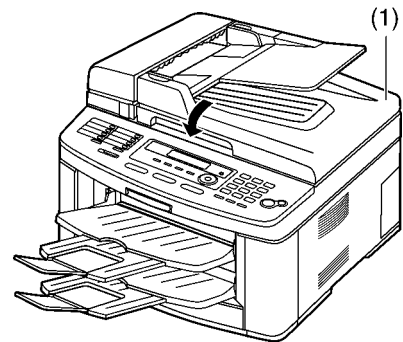
4. Clean the scanner glass (1) and the white cover sheet (2) and its circumference (3) with a soft and dry cloth.
  - Clean the white cover sheet carefully to avoid damaging it



5. Close the ADF cover (1), then hold the document cover (2) while cleaning the white plate (3) and the scanner glass (4).



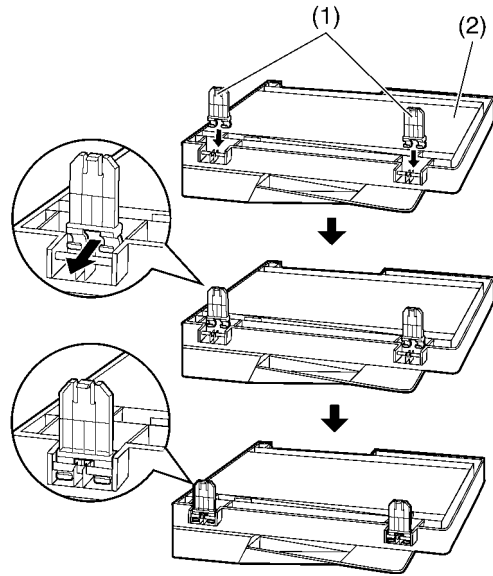
6. Close the document cover (1)



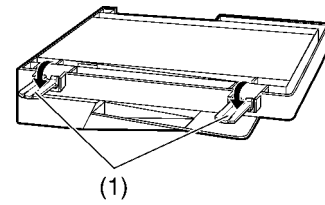
7. Re-connect the power cord.

**If the document cover comes off from the unit**

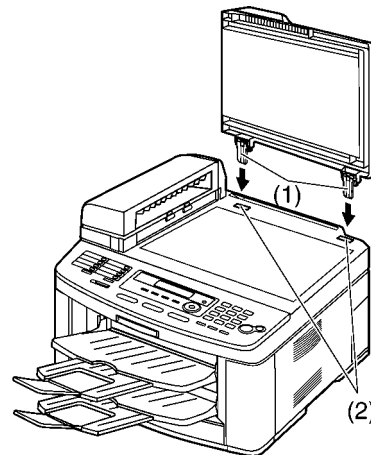
1. Attach the hinges (1) to the document cover (2).
  - Make sure that the inserted direction is correct. Otherwise, the hinges cannot be inserted into the slots in step 3.



2. Lay down the hinges (1).



3. Insert the hinges (1) into the slots (2) on the unit.



4. Close the document cover.

### 15.2.1.2. Lower glass

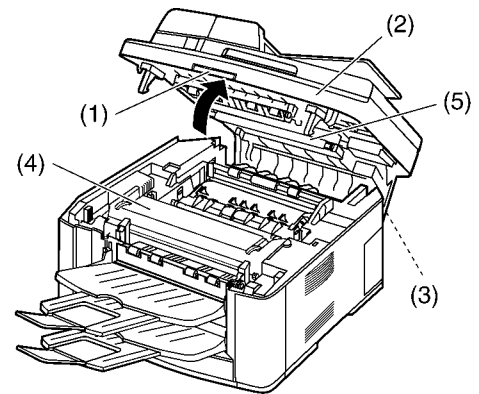
1. Disconnect the power cord.
2. Lift the cover release lever (1) and open the top cover (2).

**Important:**

- Close the manual input tray (3) before opening the top cover.

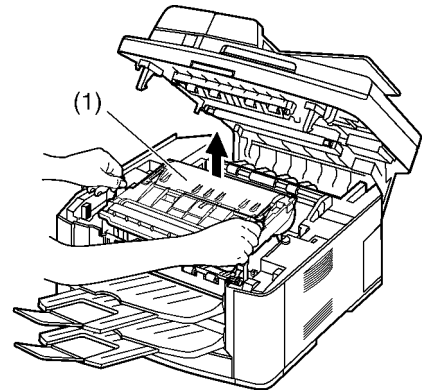
**Note:**

- Do not touch the transfer roller (5).

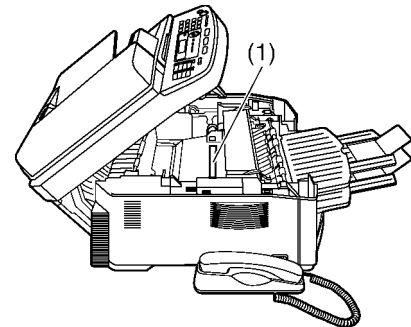


**Caution:**  
The fuser unit (4) gets hot.  
Do not touch it.

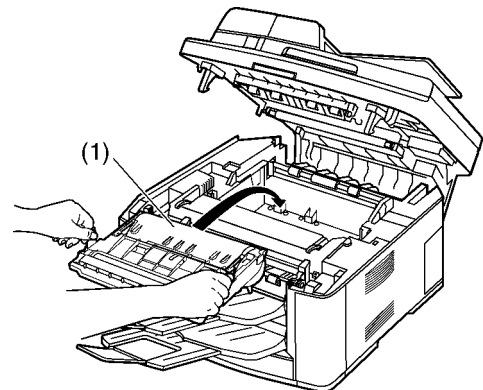
3. Remove the drum and toner unit (1) by holding the tabs.



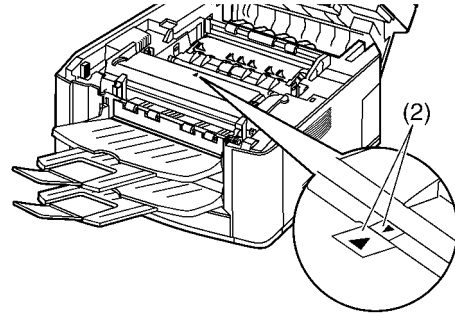
4. Clean the lower glass (1) with a soft and dry cloth.



5. Reinstall the drum and toner unit (1) by holding the tabs.



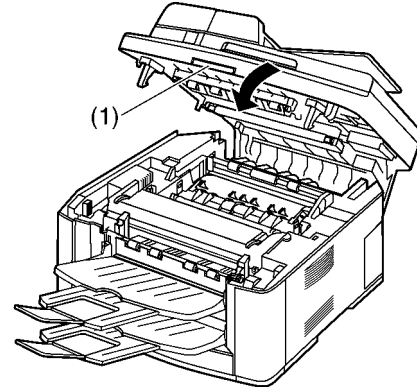
- Make sure that the triangles (2) match to install the drum and toner unit correctly.



6. Close the top cover, holding the cover release lever (1) until locked.

**Caution:**

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

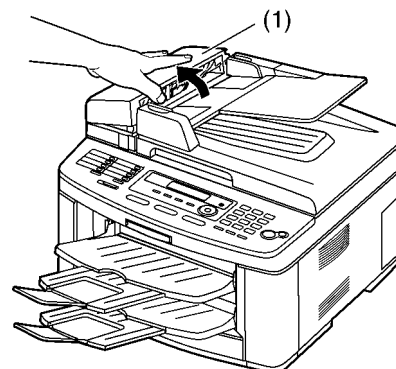


7. Re-connect the power cord.

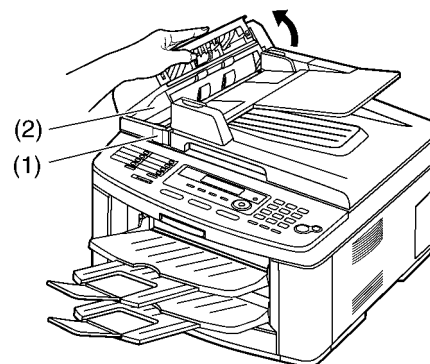
## 15.2.2. CLEANING THE DOCUMENT FEEDER ROLLERS

Clean the rollers when the document or recording paper frequently misfeeds.

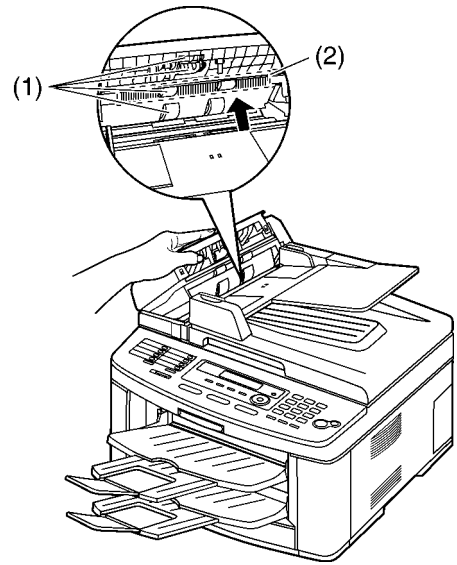
1. Disconnect the power cord.
2. Hold the ADF cover firmly and lift it to open the upper part (1) of the ADF cover.



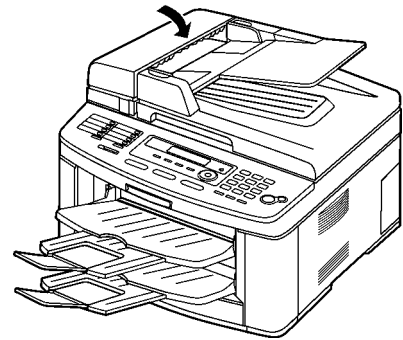
3. Press the ADF cover release button (1) and open the ADF cover (2).



4. Clean the document feeder rollers (1) with a cloth moistened with isopropyl rubbing alcohol, and let all parts dry thoroughly.
  - Clean the rollers in the direction of the arrow to avoid the discharge brush (2) from being pulled.



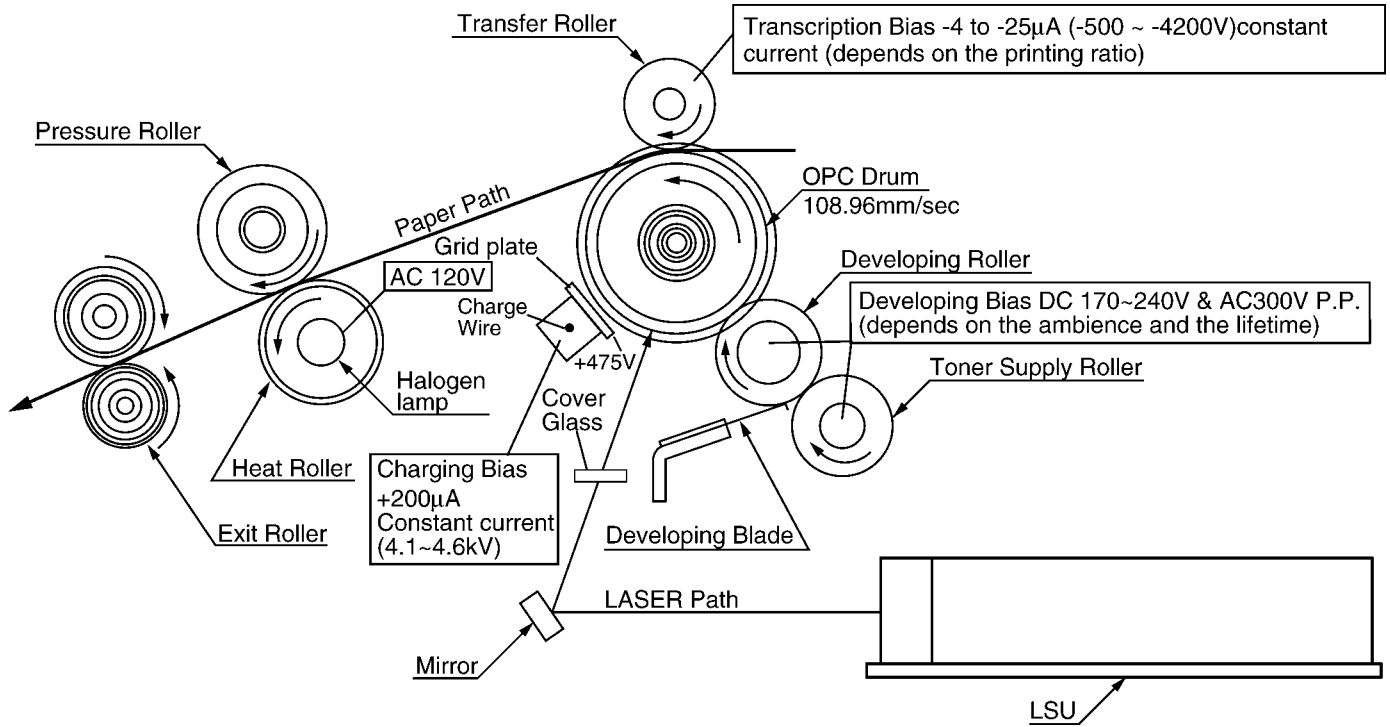
5. Close the ADF cover.



6. Re-connect the power cord.

### 15.3. PRINTING OPERATION PRINCIPLE

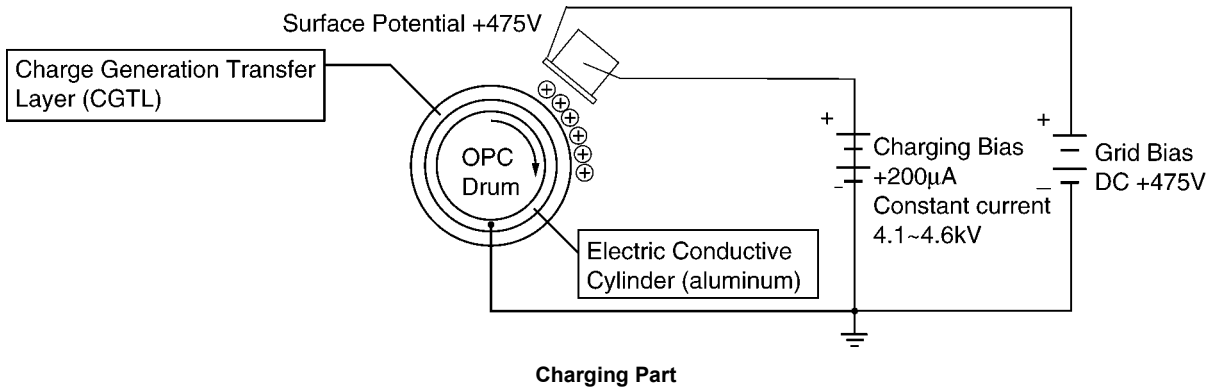
#### 15.3.1. PROCESS CHART AND PROCESS BIAS



#### 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.

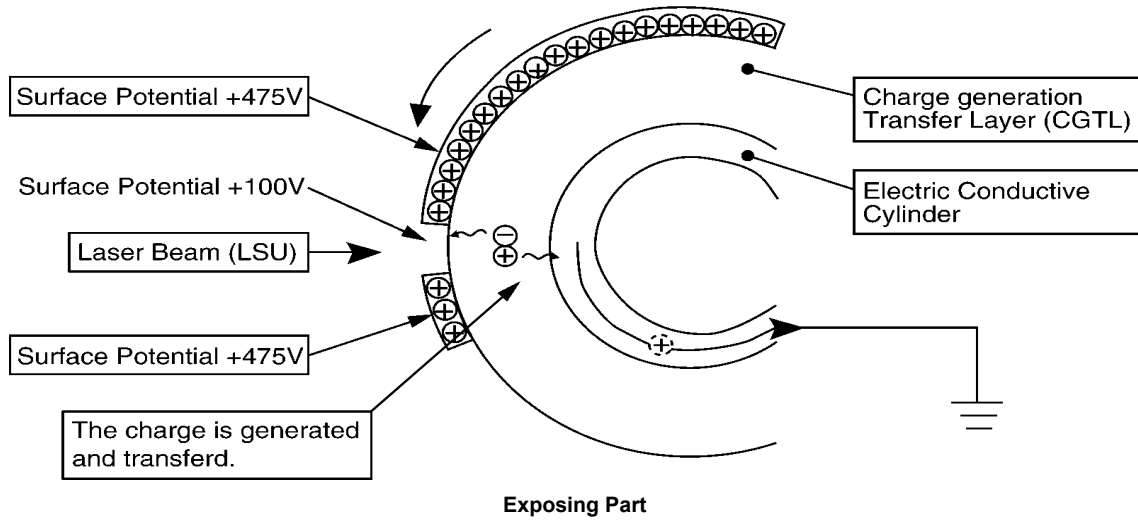




### 15.3.3. EXPOSING

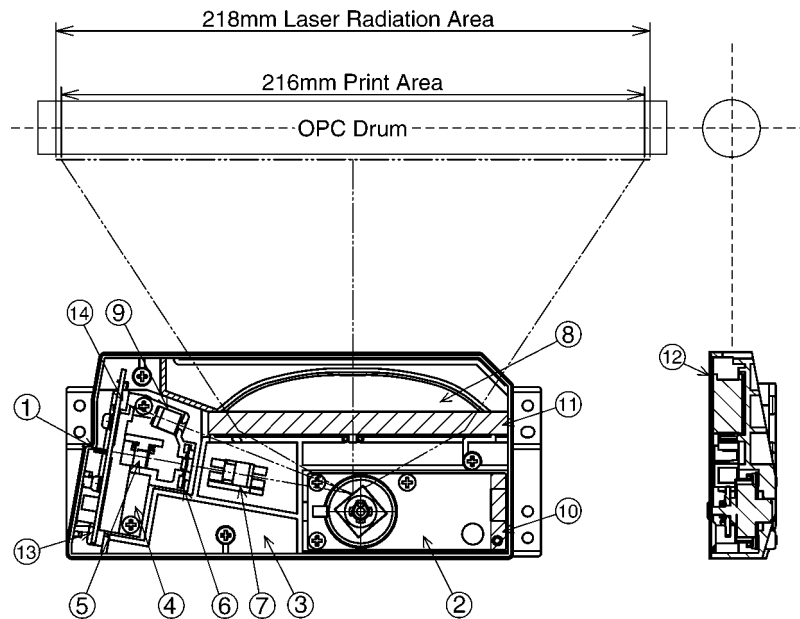
When the drum which is charged with the fixed electric charge is irradiated by the laser beam, the plus charge and minus charge are generated at the Charge Generation Transfer Layer. Passing through the Charge Generation Transfer Layer which conducts the minus charge, the plus-charged drum's surface 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 & Parts List

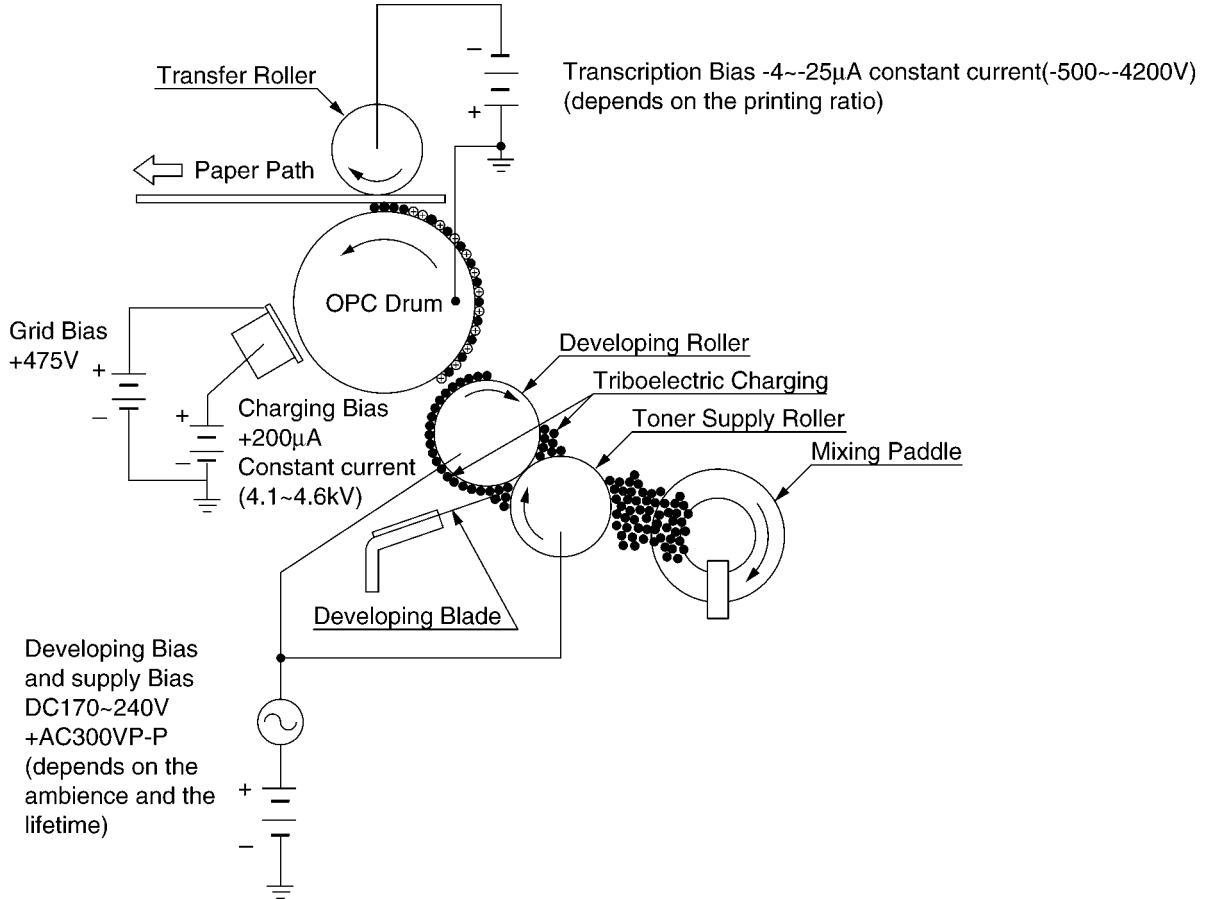


Parts Name		Parts Name	
1	Laser Diode	8	f $\phi$ Lens
2	Polygon Motor Unit	9	BD Lens
3	Frame	10	Sponge
4	LD Block	11	Sponge
5	Collimator Lens	12	Cover
6	Aperture	13	LD PCB
7	Cy Lens	14	Pin Photodiode

### 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.

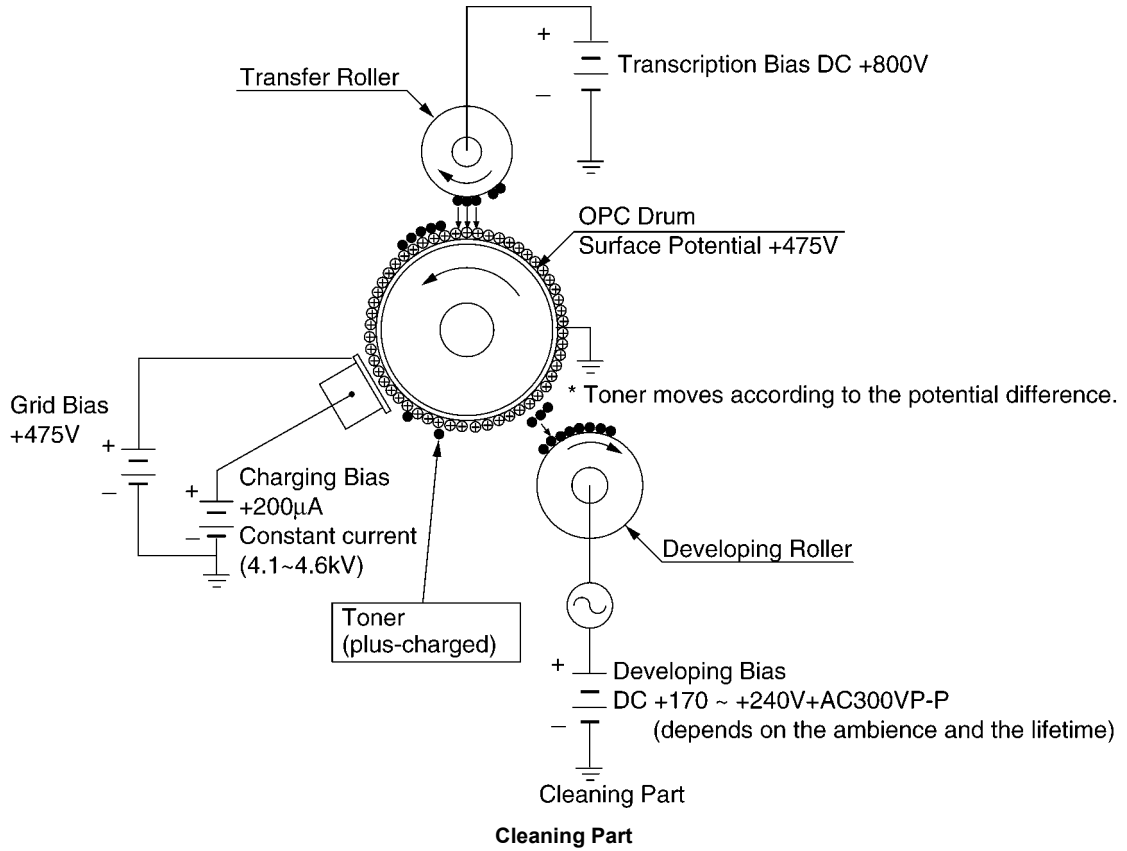
The transfer is the stage that the created image on the OPC drum is transferred to the paper. When the transfer roller is minus-charged with the image, the plus-charged toner particles are gathered on the surface of the drum and transferred to the paper.



Developing and Transcription Part

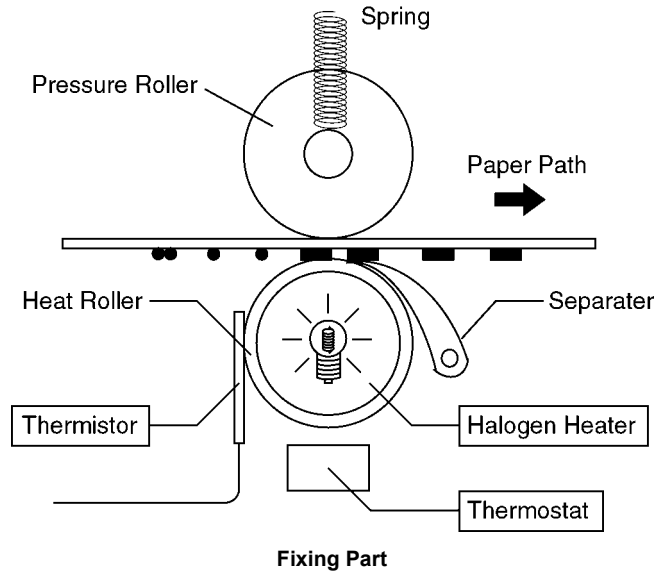
### 15.3.6. CLEANING OF TRANSFER ROLLER

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.



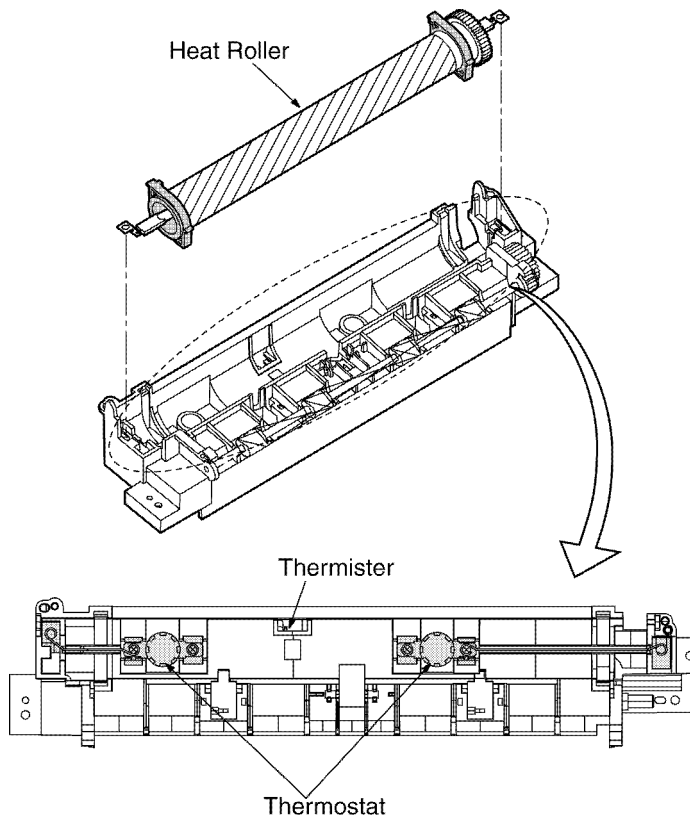
The fixing part becomes high temperature, so the thermistor and the thermal fuse are provided.

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 195°C while printing.

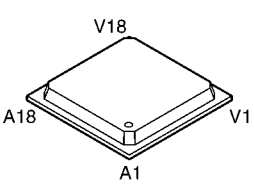
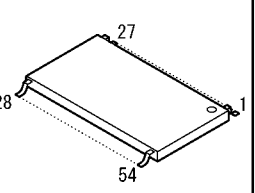
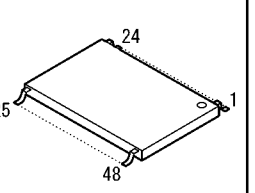
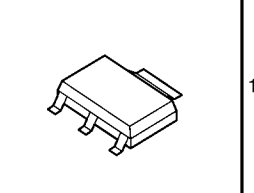
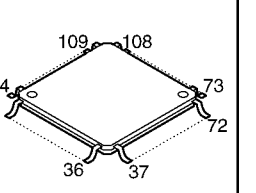
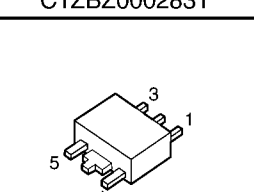
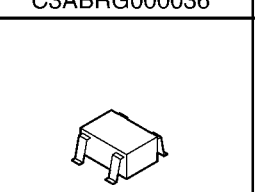
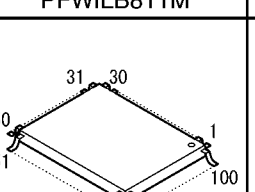
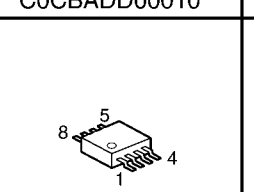
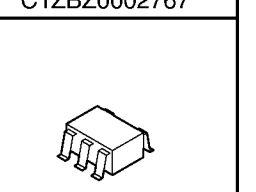
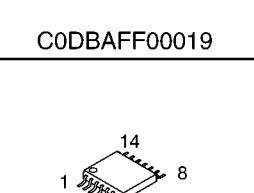
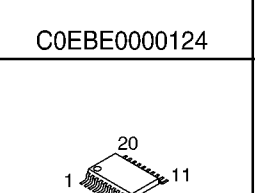
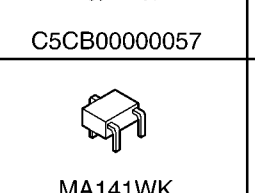
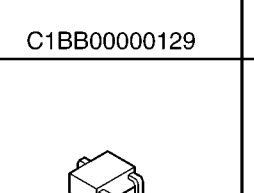

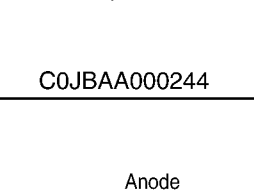
2. Thermostat

The thermostat is located near the heat roller, and it turns OFF the power when the temperature around the thermostat becomes over 160°C.

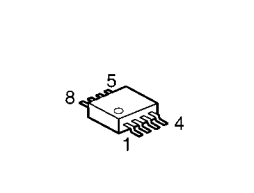
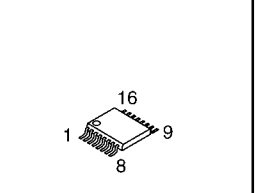
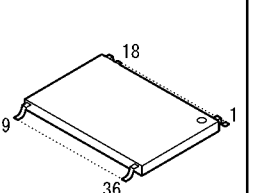
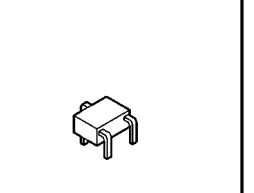
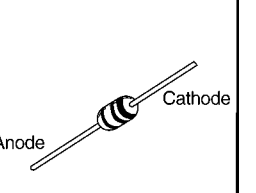
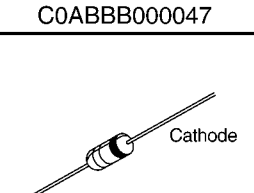


## 15.4. TERMINAL GUIDE OF THE ICs TRANSISTORS AND DIODES

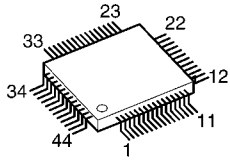
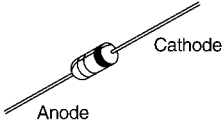
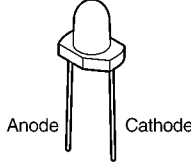
### 15.4.1. DIGITAL BOARD

 <p>V18 A18 V1 A1</p> <p>C1ZBZ0002831</p>	 <p>27 28 1 54</p> <p>C3ABRG000036</p>	 <p>24 25 1 48</p> <p>PFWILB811M</p>	 <p>C0CBADD00010</p>	 <p>109 108 144 1 73 72 36 37</p> <p>C1ZBZ0002767</p>
 <p>3 5 1 4</p> <p>C0DBAFF00019</p>	 <p>C0EBE0000124</p>	 <p>31 30 50 1 51 100 80 81</p> <p>C5CB00000057</p>	 <p>8 5 1 4</p> <p>C1BB00000129</p>	 <p>C0JBAA000362</p>
 <p>14 1 8 7</p> <p>C0JBAA000244</p>	 <p>20 1 11 10</p> <p>C1DB0001173</p>	 <p>MA141WK PQVDTA143ZU 2SD1820A PQVTD143Z106 B1ABDF000025</p>	 <p>2SB1197KQ</p>	 <p>B1CHND000004</p>
 <p>Anode Cathode</p> <p>B0BC2R5A0006 PQVDRLS73T</p>				

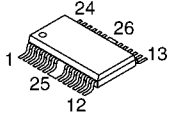

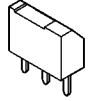

### 15.4.2. ANALOG BOARD

 <p>8 5 1 4</p> <p>C0ABBA000024 C0ABBB000047</p>	 <p>16 1 9 8</p> <p>C0JBAR000386</p>	 <p>18 19 1 36</p> <p>AN6383SBE1V</p>	 <p>PQVTDTC143E</p>	 <p>Anode Cathode</p> <p>MA4056</p>
 <p>Cathode Anode</p> <p>1SS133</p>				

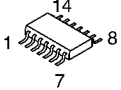

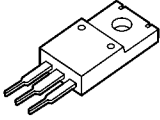
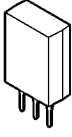


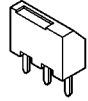
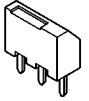
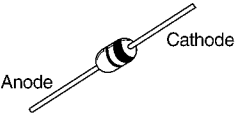
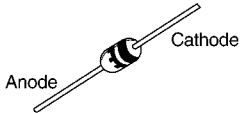
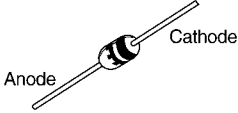
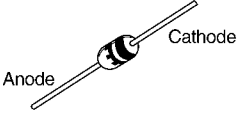
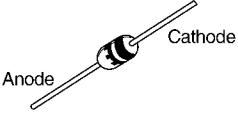


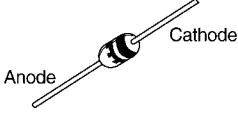
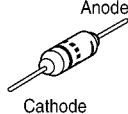
### 15.4.3. OPERATION BOARD

 <p>C1ZBZ0002089</p>	 <p>1SS133</p>	 <p>PQVDR325CA47</p>		
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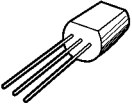
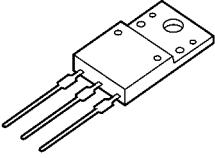

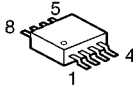

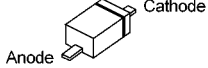
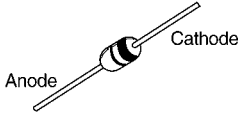
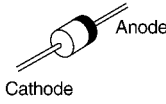
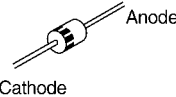
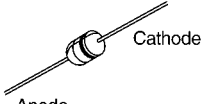
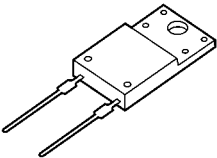
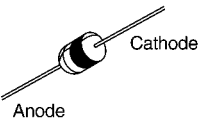
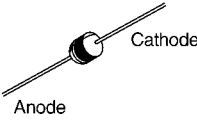
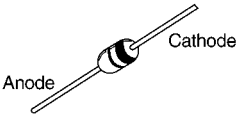
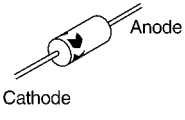

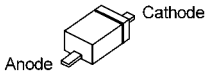
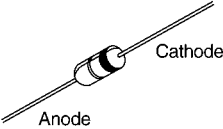
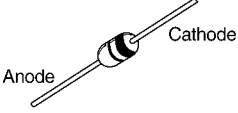
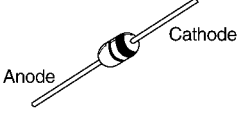
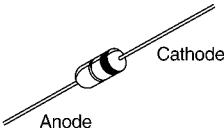
### 15.4.4. AFE BOARD

 <p>COGBF0000026</p>	 <p>MA142WKT PQVTD143Z106</p>	 <p>2SD1991A</p>	 <p>BOJCND000009</p>	
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### 15.4.5. HIGH VOLTAGE POWER SUPPLY BOARD

 <p>LM224DR</p>	 <p>2SD1819A</p>	<p>Q3</p>  <p>2SD2394</p>	<p>Q62</p>  <p>D2525</p>	<p>Q32</p> 
 <p>2SB1218A</p>	 <p>2SA2073TV2</p>	 <p>2SC5826TV2</p>	<p>D1, D3, D6, D8, D9</p> 	<p>D2, D83</p> 
<p>D4, D31, D63</p> 	<p>D5, D61</p> 	<p>D7</p> 	<p>D11, D14, D15</p> 	<p>D12, D13</p> 
<p>D66</p> 	<p>D77</p> 			

### 15.4.6. LOW VOLTAGE POWER SUPPLY BOARD

				
TA76431	2SK3561	2SC4097, 2SC4081, 2SA1577, 2SA1576	PFVTFDS6685	PFVFXP4601
				
MA111	MTZJ10	PSVDERA1506	PFVDERA2210	1SS133
				
PFVDYG911S2	PFVDTZPT8130	PFVDHZS7L	MTZJ6.8	PFVDERB83006
				
PFVDEC31QS04	MA8047	PFVDHZ4	MTZJ5.1	MTZJ22
				
PFVDHZ9				

## 15.5. HOW TO REPLACE A FLAT PACKAGE IC

### 15.5.1. PREPARATION

- PbF (: Pb free) Solder

- Soldering Iron

Tip Temperature of 662°F ± 50°F (350°C ± 10°C)

**Note:** We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

- Flux

Recommended Flux: Specific Gravity → 0.82.

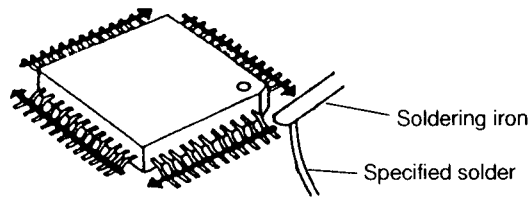
Type → RMA (lower residue, non-cleaning type)

**Note:**

See **ABOUT LEAD FREE SOLDER (PbF: Pb free)** (P.6).

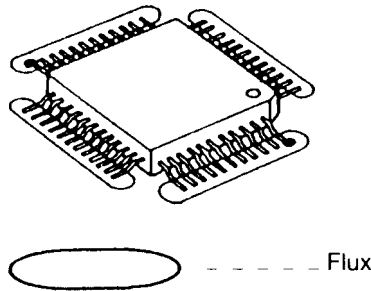
### 15.5.2. PROCEDURE

1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.

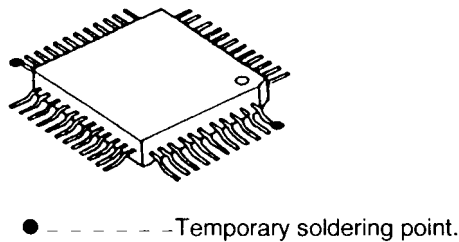


Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.

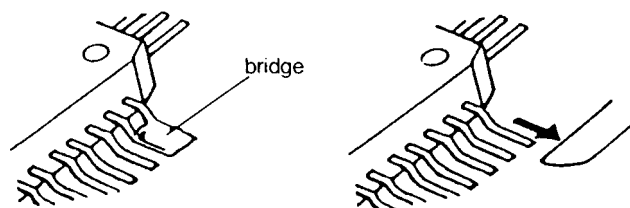


3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.



### 15.5.3. REMOVING SOLDER FROM BETWEEN PINS

1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.





## 15.6. DIGITAL BOARD SECTION

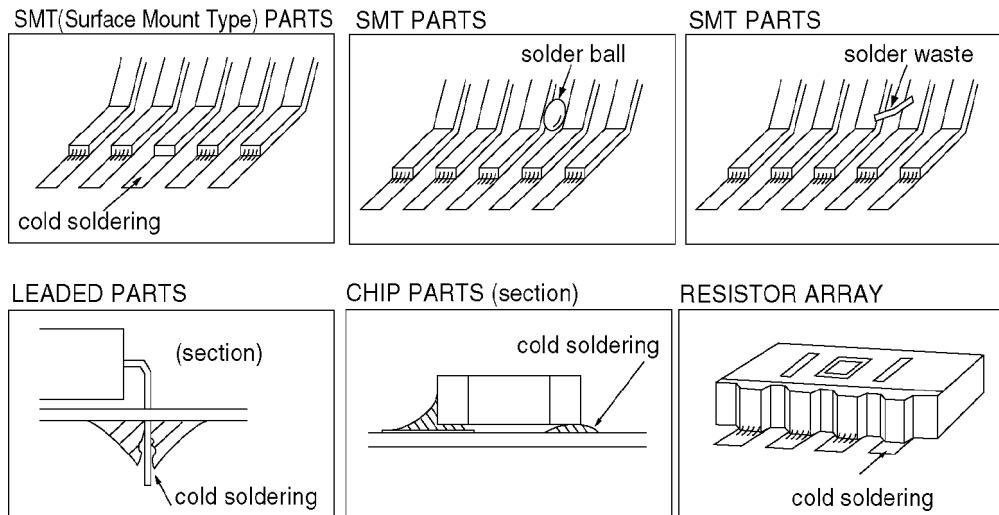
When the unit fails to boot up the system, take the troubleshooting procedures very carefully. It may have a serious problem.

The symptom: No response when the power is turned on. (No LCD display, and keys are not accepted.)

The first step is to check the power source. If there is no problem with the power supply unit, the problem may lie in the digital unit (main board).

As there are many potential causes in this case (ASIC, DRAM, etc.), it may be difficult to specify what you should check first. If a mistake is made in the order of checks, a normal part may be determined faulty, wasting both time and money.

Although the tendency is to regard the problem as a serious one (IC malfunction, etc.), usually most cases are caused by solder faults (poor contact due to a tunnel in the solder, signal short circuit due to solder waste).



### 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?

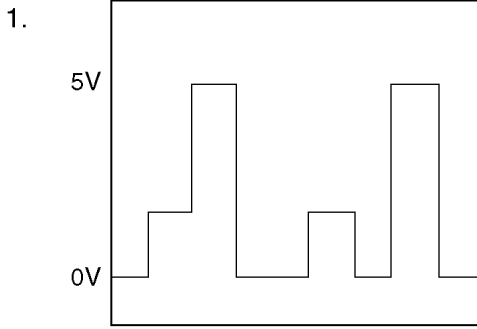
Please refer to **DIGITAL BLOCK DIAGRAM** (P.13).

The ASIC (IC600) controls all the other digital ICs. When the power is turned on, the ASIC retrieves the operation code stored in the ROM (IC602), then follows the instructions for controlling each IC. All ICs have some inner registers that are assigned to a certain address.

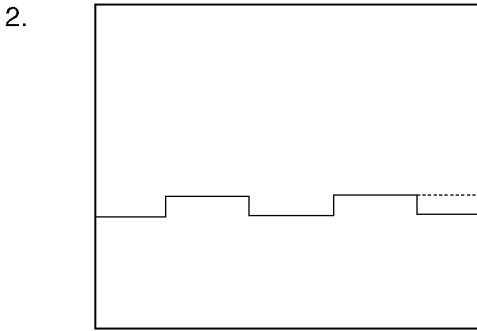
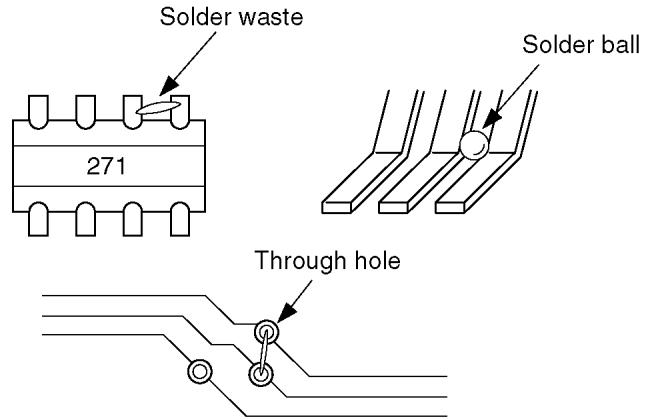
It is the address bus by which the ASIC designates the location inside each IC. And the data bus reads or writes the data in order to transmit the instructions from the ASIC to the ICs.

These signal lines are all controlled by voltages of 3.3V (H) or 0V (L).

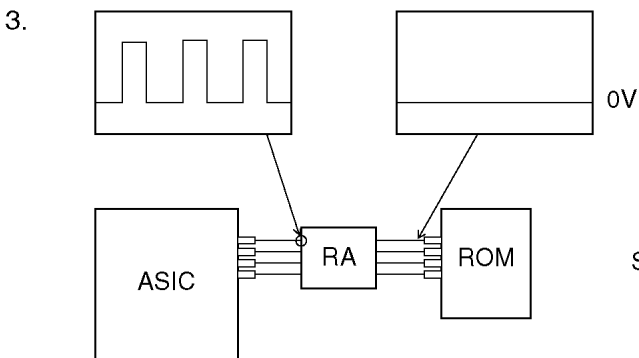
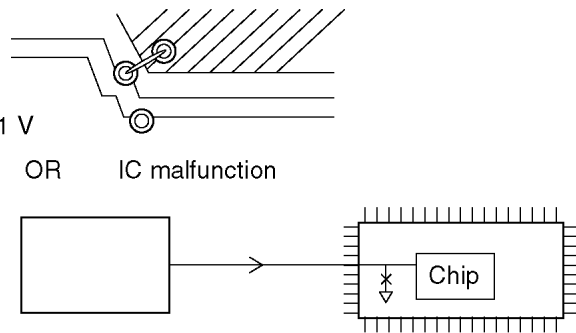
### 15.6.1. NG EXAMPLE



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.



Short between the signal line and GND.



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.

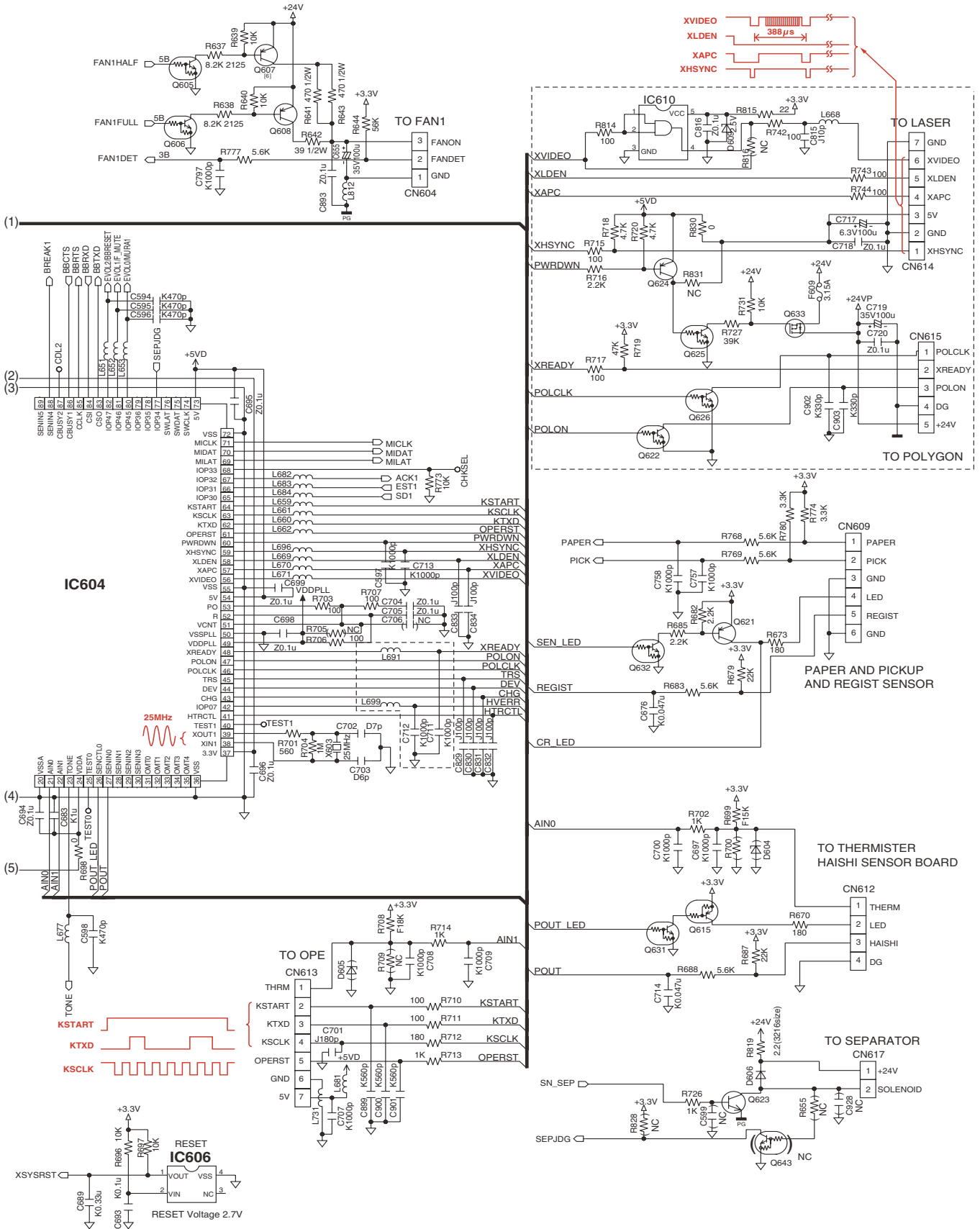
Probably you have uses for this facility in your organisation.

Yours sincerely,

P.J. CROSS  
Group Leader - Facsimile Research

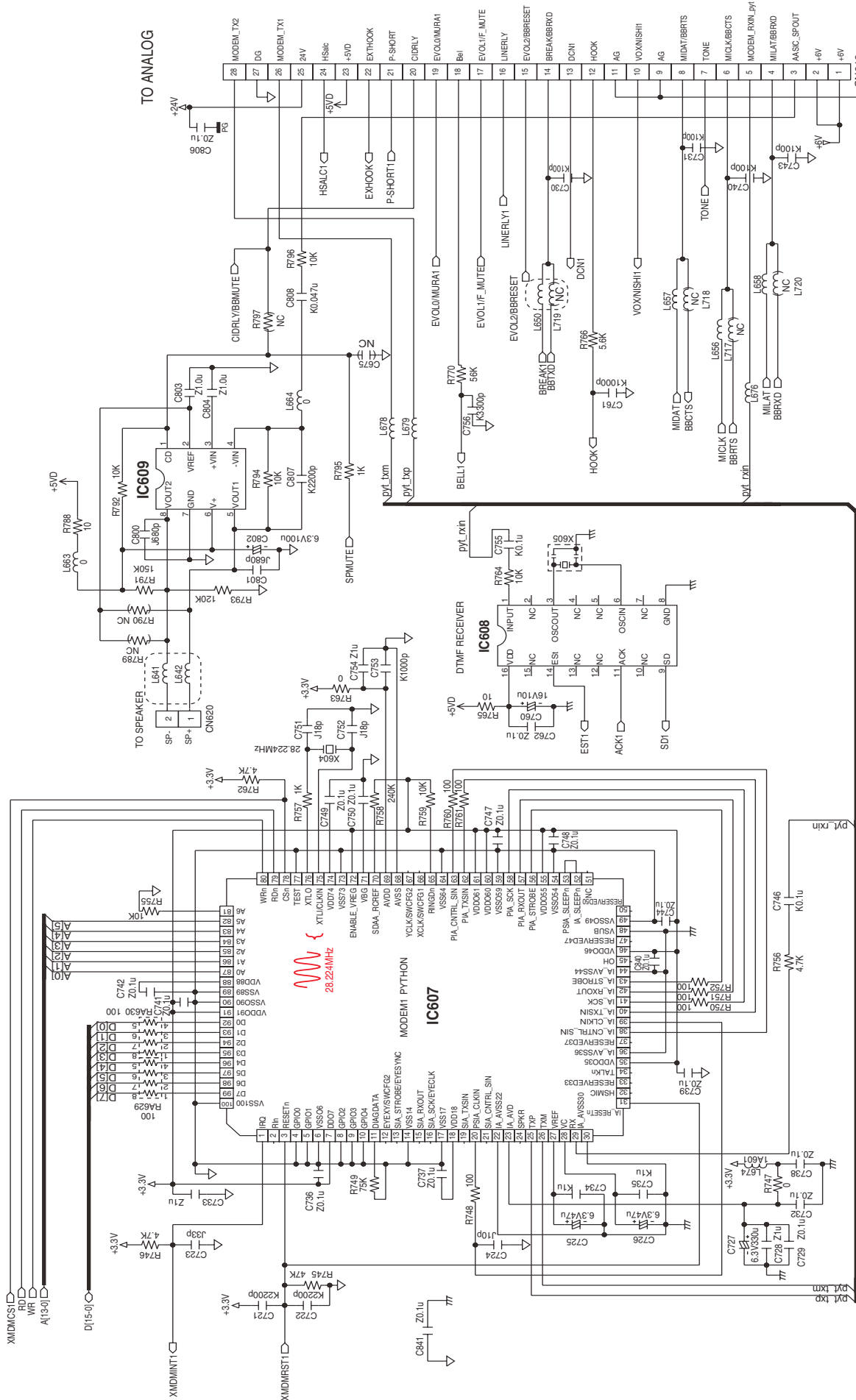






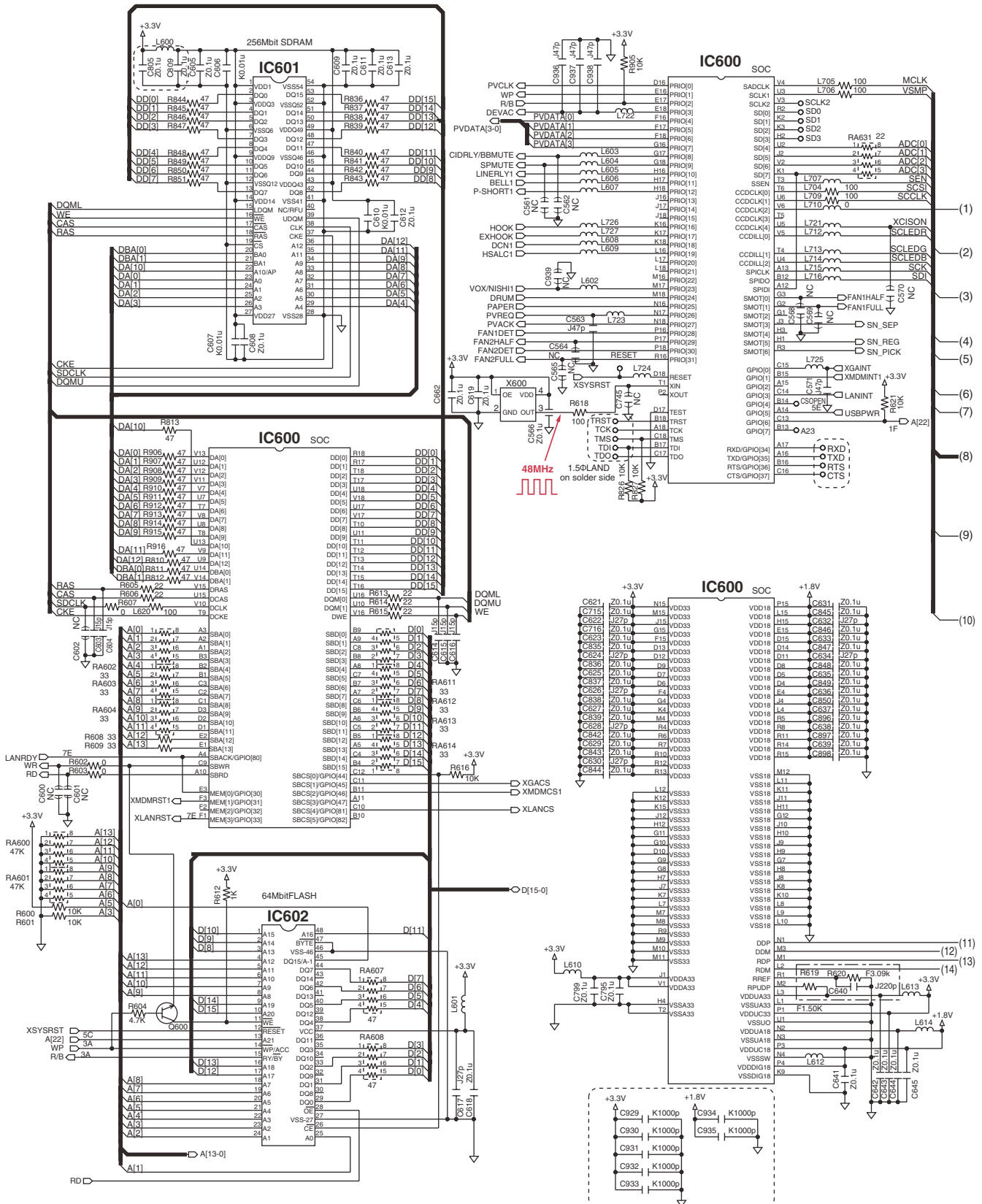
KX-FLB802CX/KX-FLB802CXS NC : No Components  
 KX-FLB812CX/KX-FLB812CXS SCHEMATIC DIAGRAM (Digital Unit 01) (1/2)

# 16.2. DIGITAL BOARD (2)



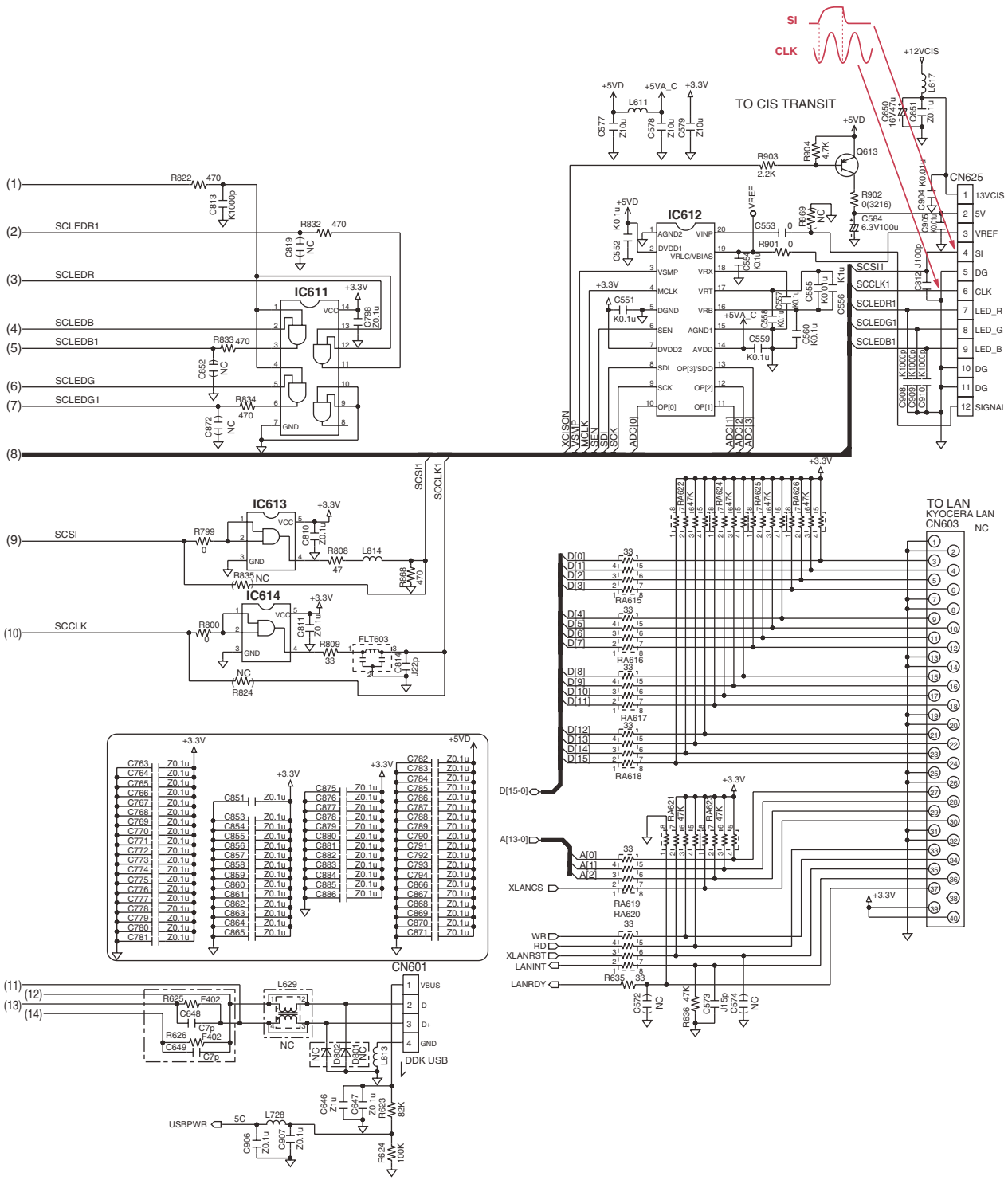
KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS SCHEMATIC DIAGRAM (Digital Unit 02)

# 16.3. DIGITAL BOARD (3)



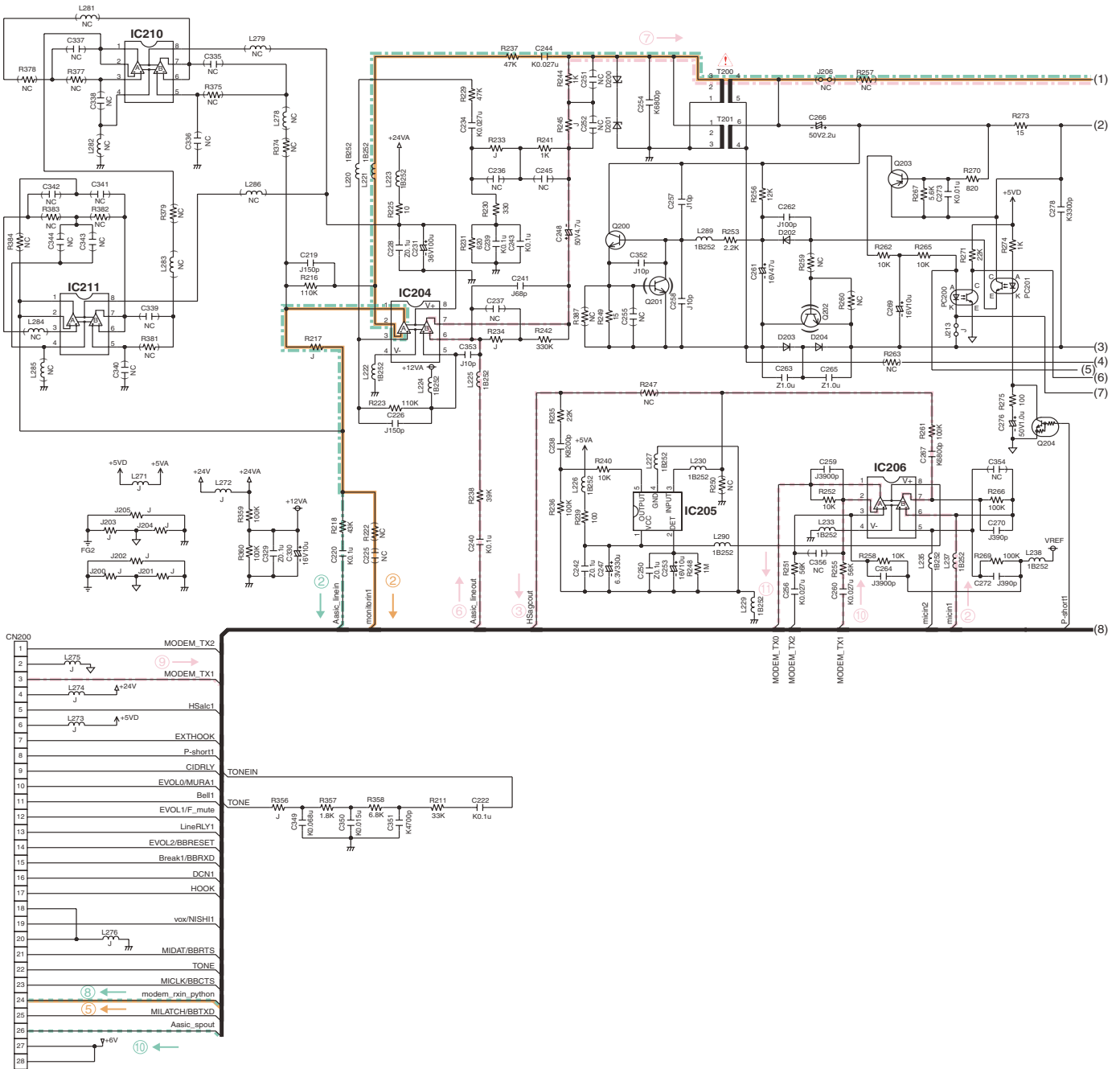
KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS SCHEMATIC DIAGRAM (Digital Unit 03) (1/2)





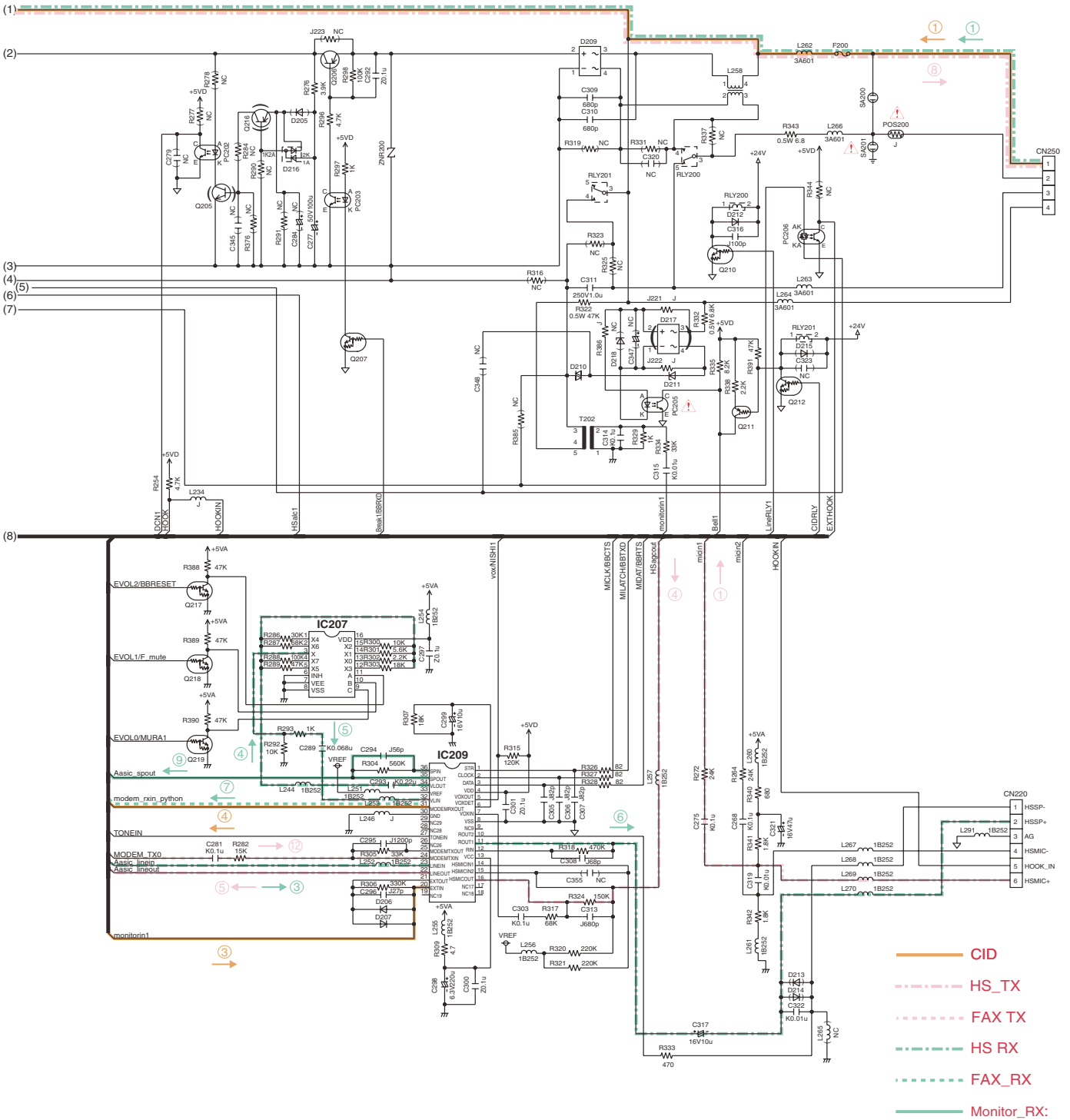
KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS SCHEMATIC DIAGRAM (Digital Unit 03) (2/2)

# 16.4. ANALOG BOARD



- CID RX: ① ~ ⑤
- - - HS TX: ① ~ ⑧
- - - FAX TX: ⑨ ~ ⑫, ⑥ ~ ⑧
- - - HS RX: ① ~ ⑥
- - - FAX RX: ① ~ ②, ⑦, ⑧
- Monitor\_RX: ① ~ ⑤, ⑨, ⑩

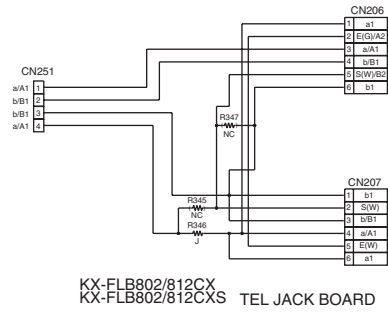
KX-FLB802CX/KX-FLB802CXS  
 KX-FLB812CX/KX-FLB812CXS ANALOG BOARD (1/2)



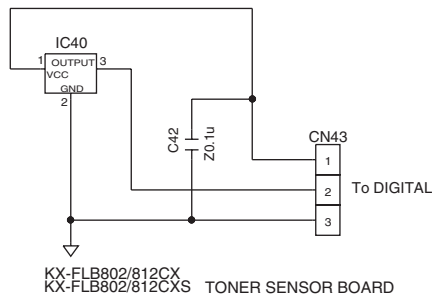
NC: No Components

KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS ANALOG BOARD (2/2)

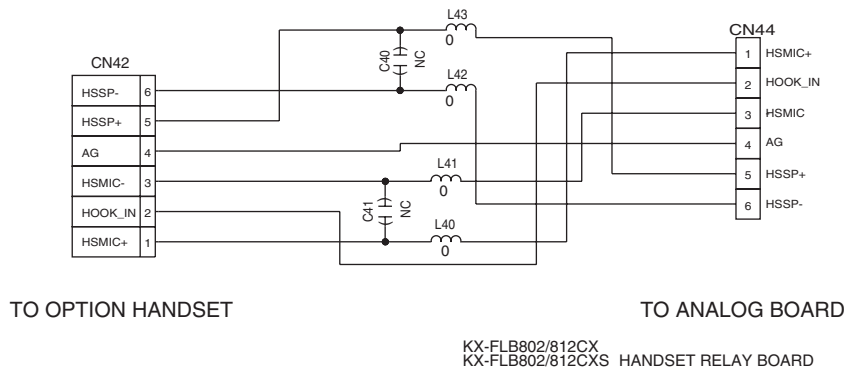
## 16.5. TEL JACK BOARD



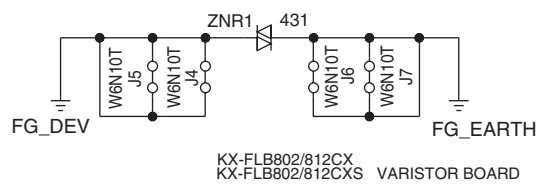
## 16.6. TONER SENSOR BOARD



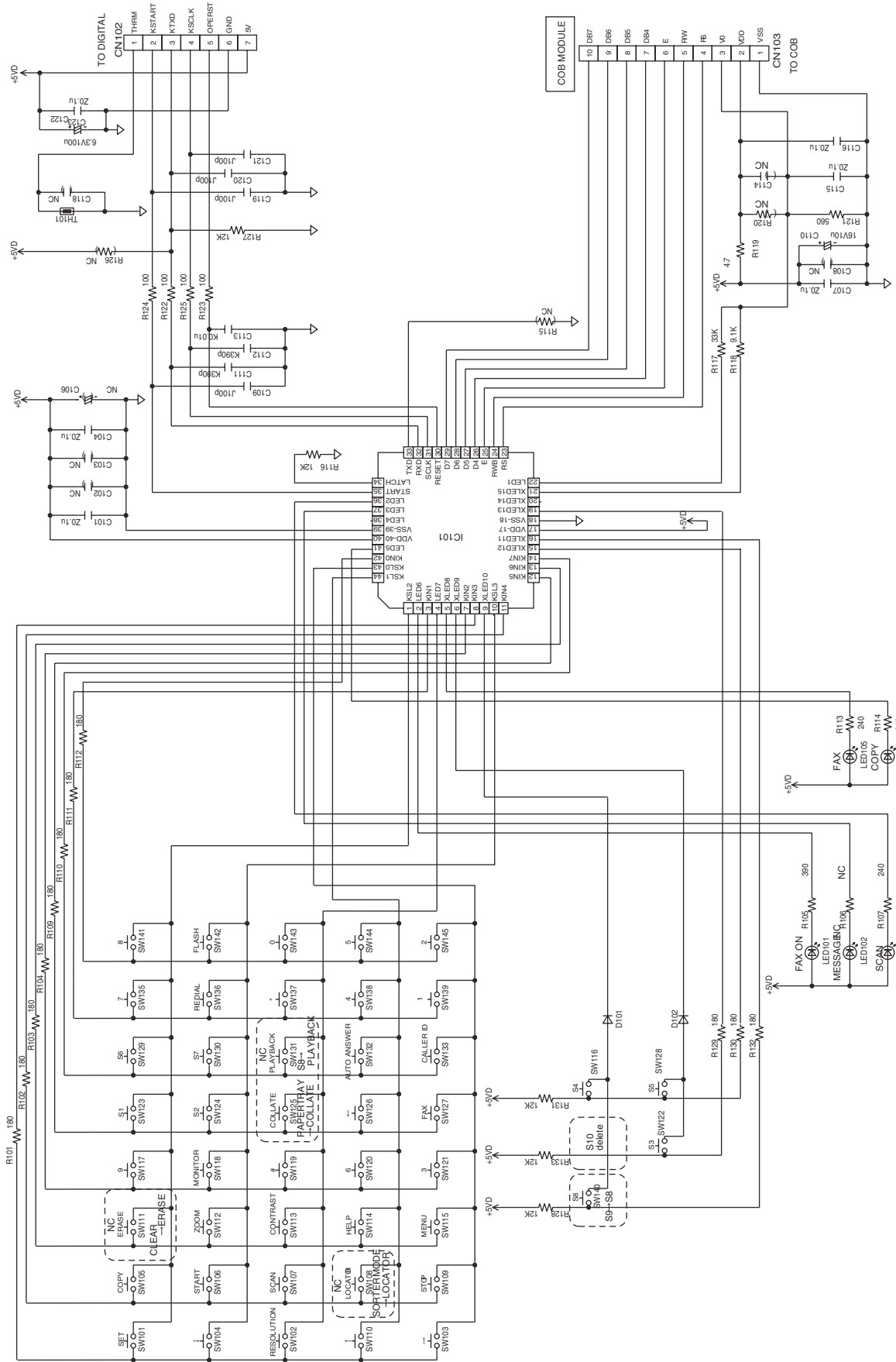
## 16.7. HANDSET RELAY BOARD



## 16.8. VARISTOR BOARD

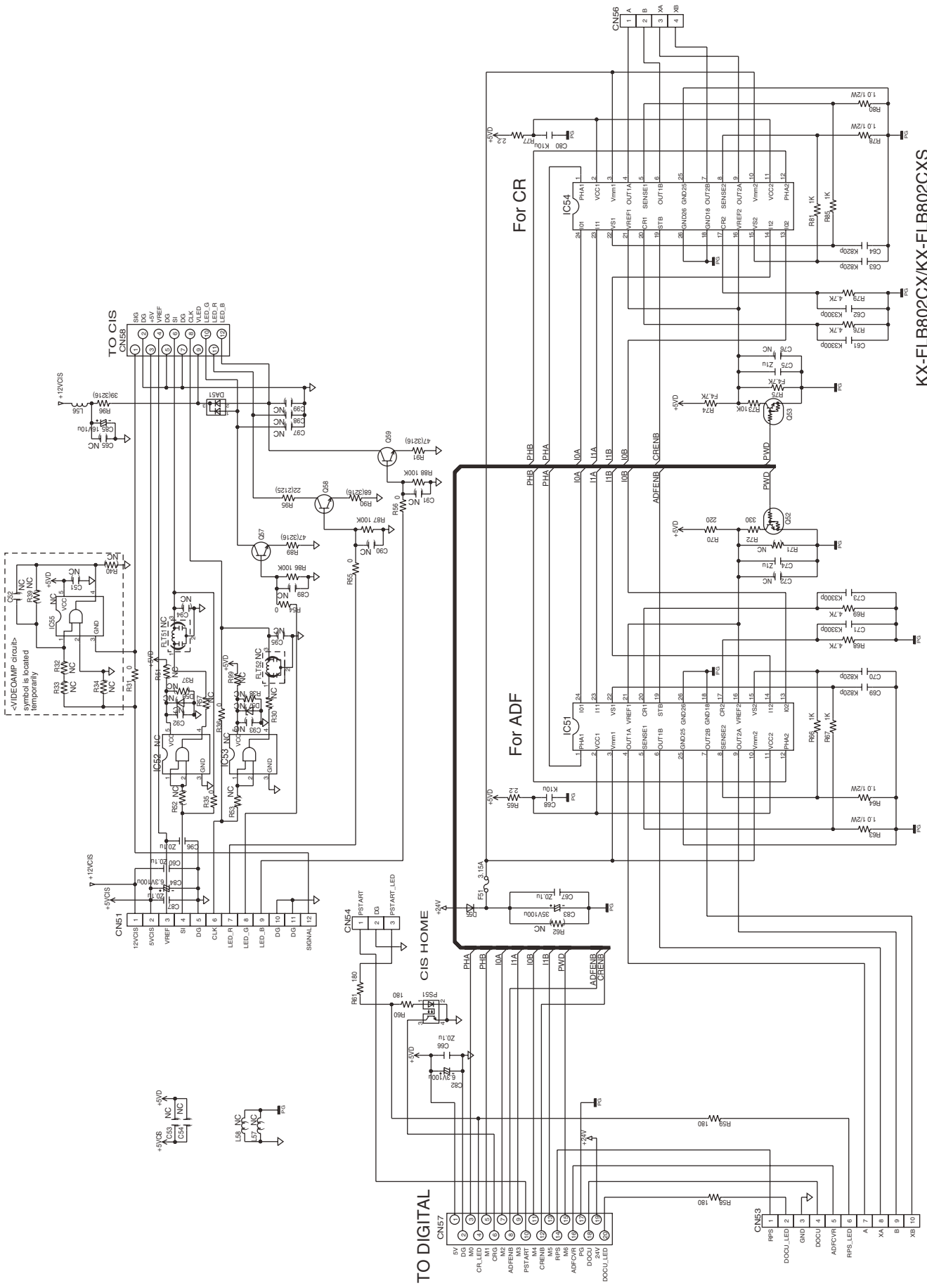


# 16.9. OPERATION BOARD



KX-FLB802CX/KX-FLB812CX  
KX-FLB812CX/KX-FLB812CXS OPERATION BOARD

# 16.10. FLATBED BOARD

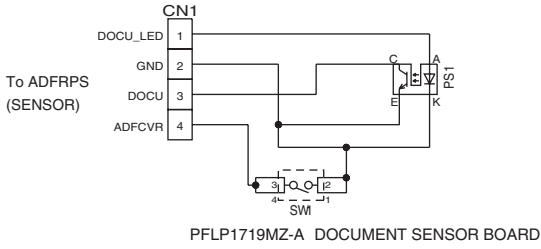


KX-FLB802CX/KX-FLB812CX  
KX-FLB812CX/KX-FLB812CXS

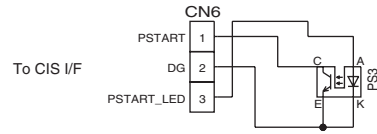
TO ADF TYUUKI

# 16.11. SENSOR BOARD

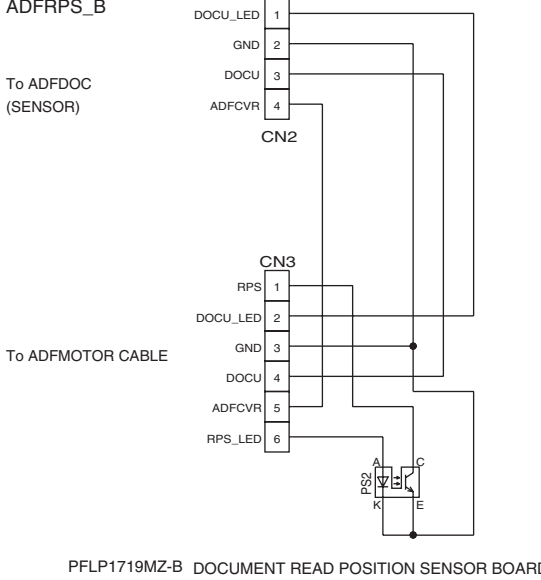
ADFDOC\_A



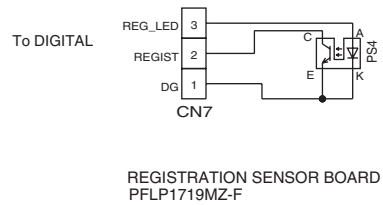
PSTART\_E



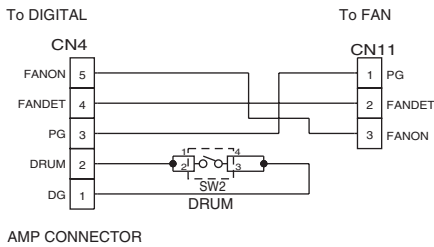
ADFRPS\_B



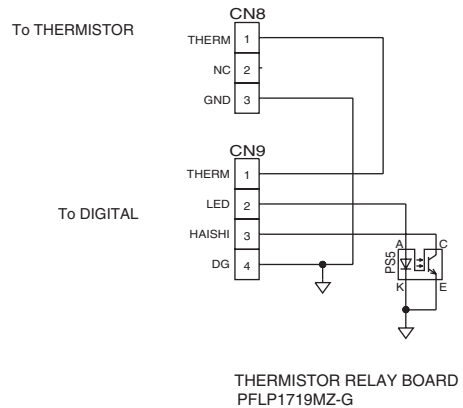
REGIST\_F



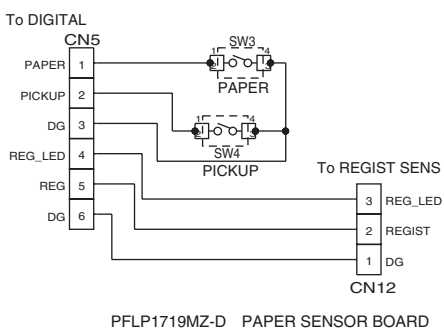
DRUM\_C



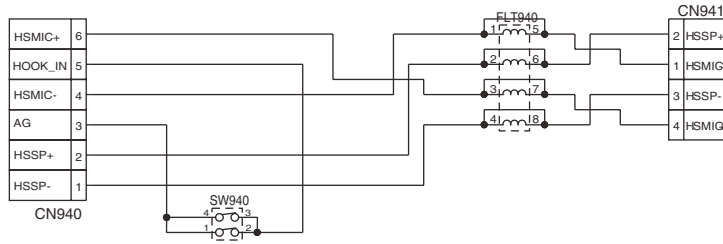
THERMISTOR\_G



PICK PAPER\_D



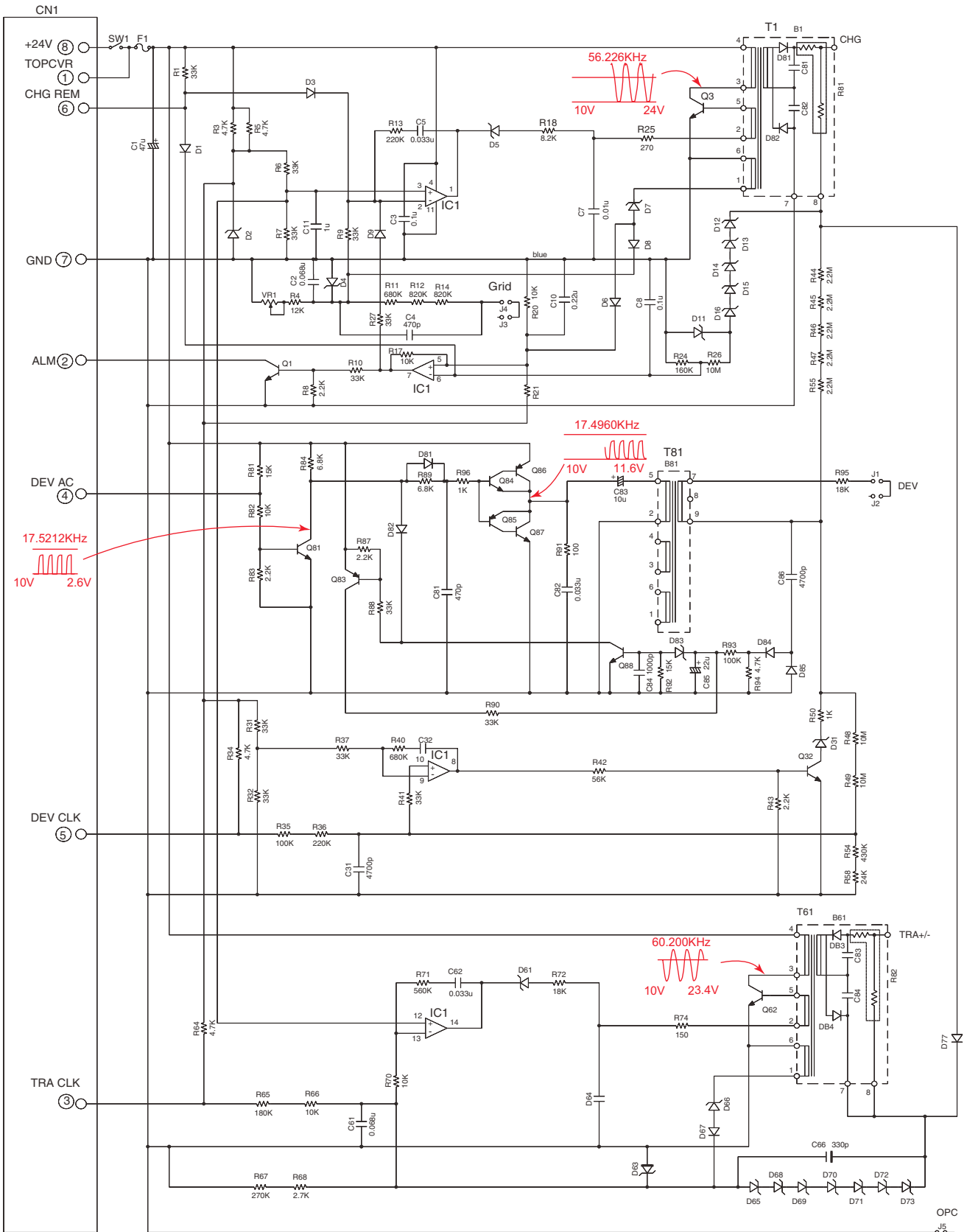
## 16.12. HANDSET BOARD (OPTION)



KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS HANDSET BOARD

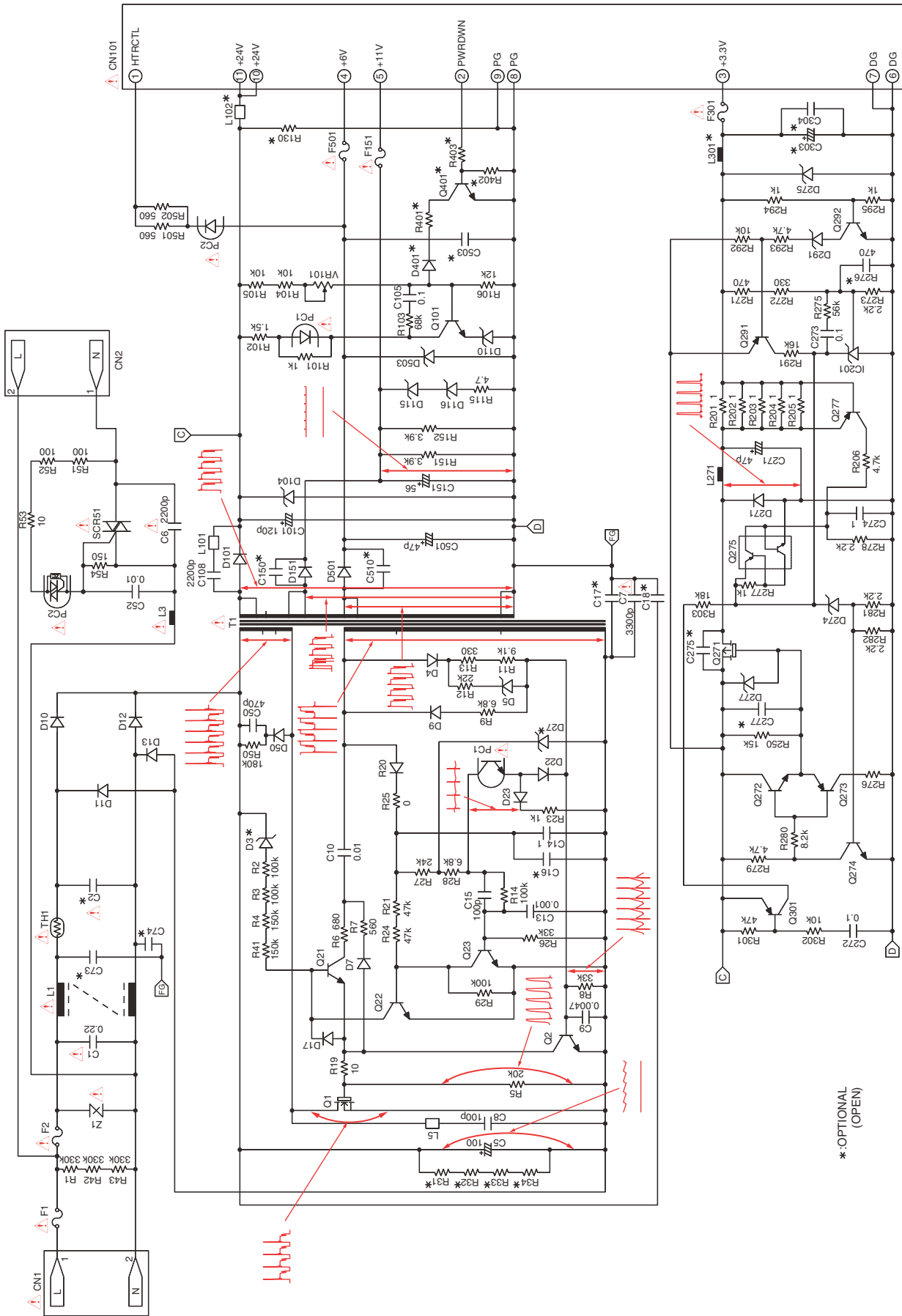


# 16.13. HIGH VOLTAGE POWER SUPPLY BOARD



KX-FLB802CX/KX-FLB802CXS  
KX-FLB812CX/KX-FLB812CXS POWER SUPPLY BOARD

# 16.14. LOW VOLTAGE POWER SUPPLY BOARD



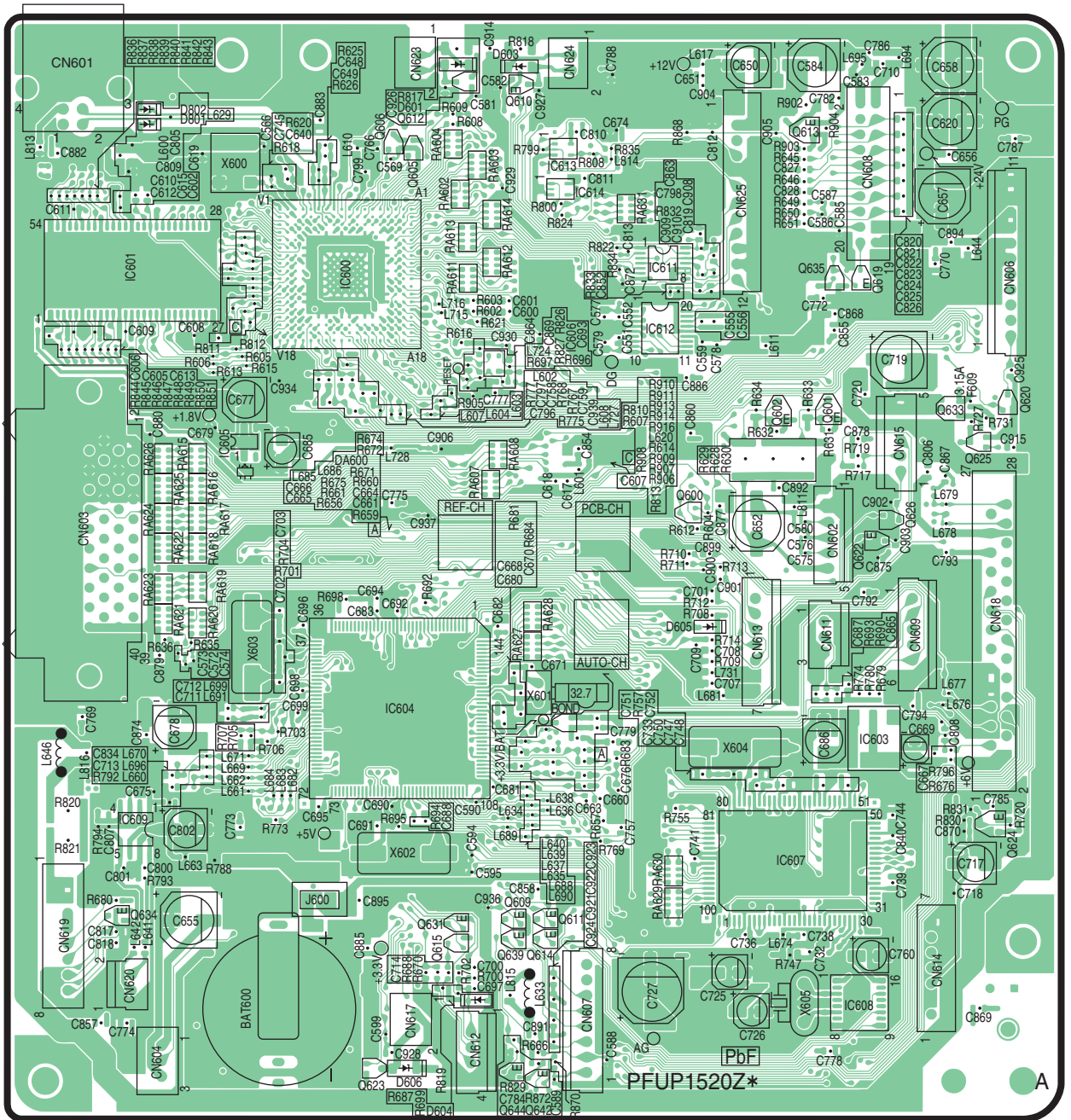
KX-FLB802CX / KX-FLB812CX  
KX-FLB802CXS / KX-FLB812CXS : LOW VOLTAGE POWER SUPPLY BOARD

\*:OPTIONAL (OPEN)

# 17 Printed Circuit Board

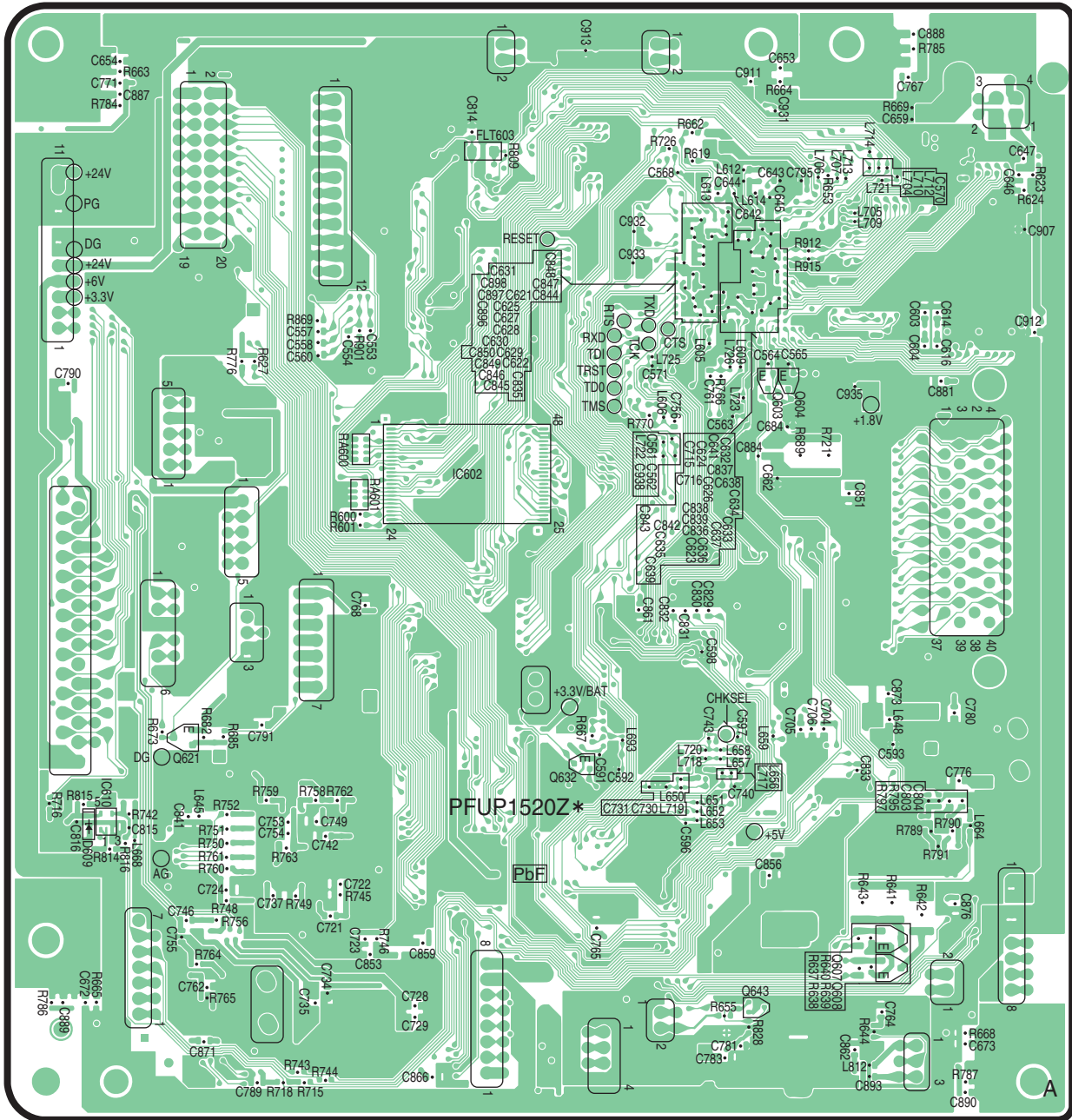
## 17.1. DIGITAL BOARD

### 17.1.1. DIGITAL BOARD: COMPONENT VIEW



KX-FLB802 / 812CX  
KX-FLB802 / 812CXS DIGITAL BOARD COMPONENT VIEW

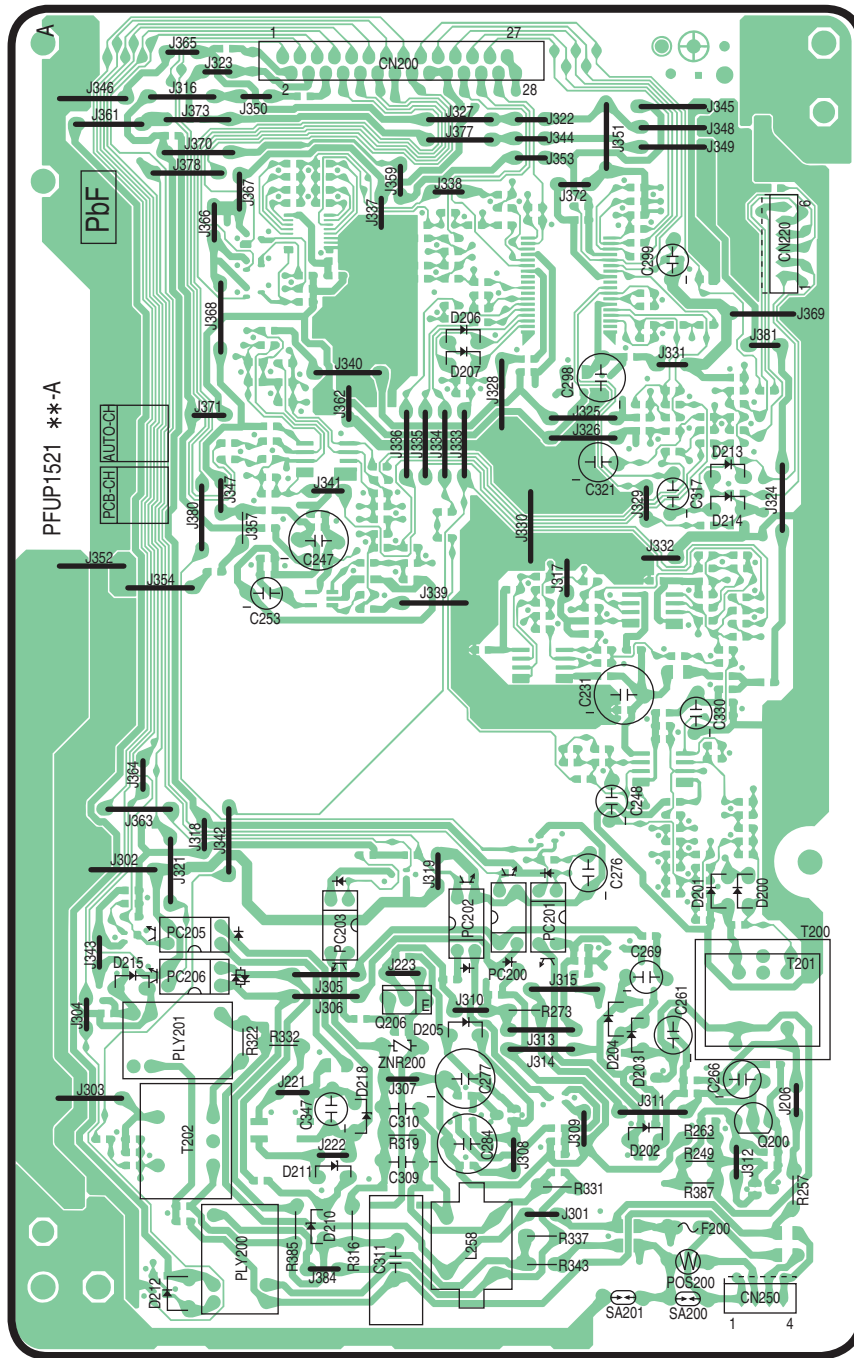
### 17.1.2. DIGITAL BOARD: BOTTOM VIEW



KX-FLB802/812CX/  
KX-FLB802/812CXS DIGITAL BOARD BOTTOM VIEW

## 17.2. ANALOG BOARD

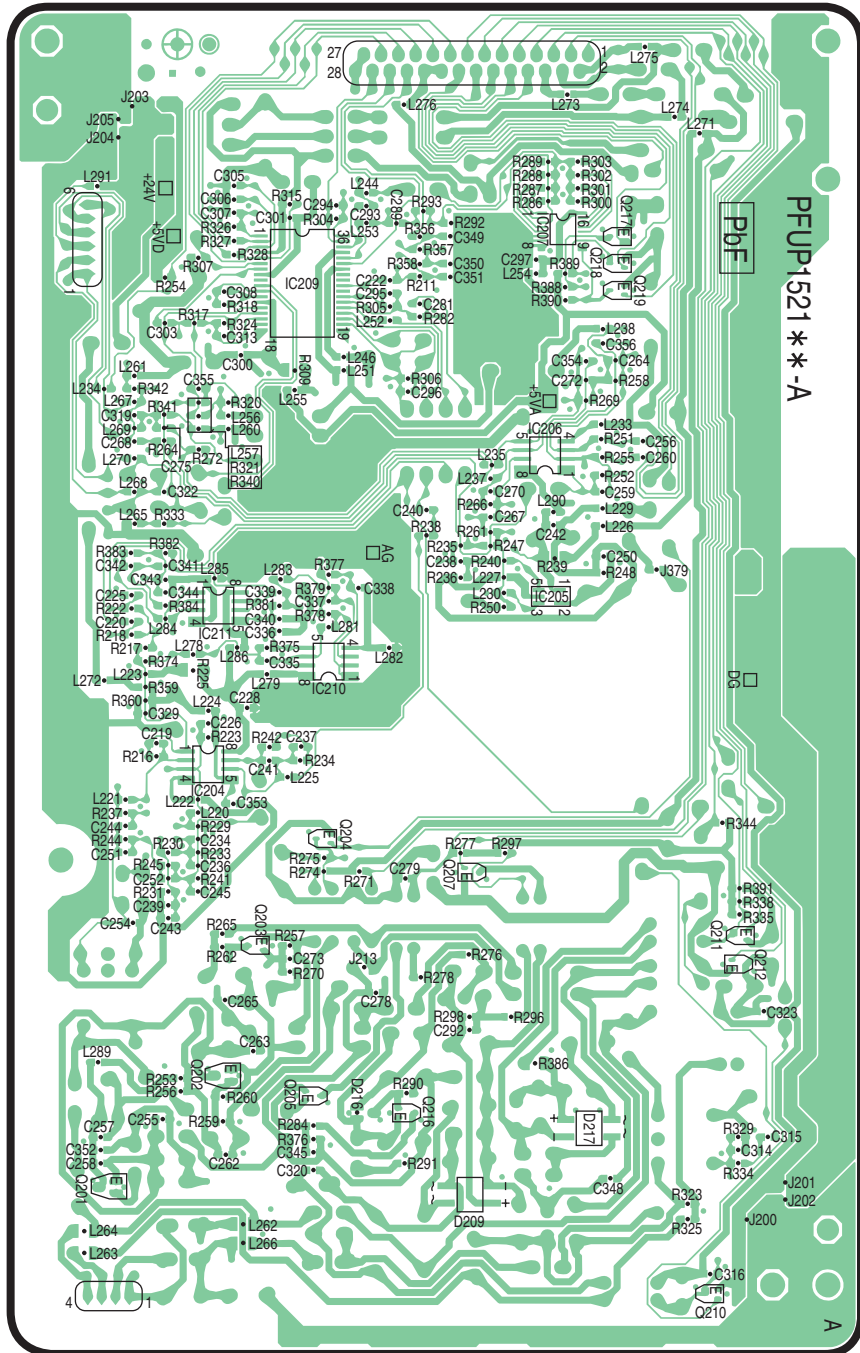
### 17.2.1. ANALOG BOARD: COMPONENT VIEW



KX-FLB802/812CX  
 KX-FLB802/812CXS ANALOG BOARD COMPONENT VIEW

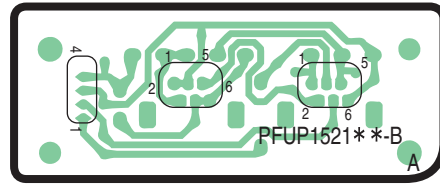
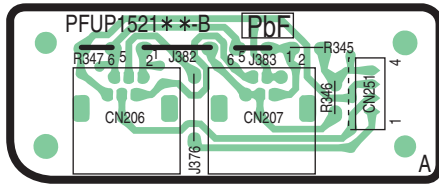


### 17.2.2. ANALOG BOARD: BOTTOM VIEW



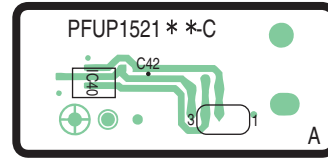
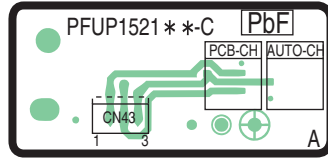
KX-FLB802/812CX  
KX-FLB802/812CXS ANALOG BOARD BOTTOM VIEW

### 17.3. TEL JACK BOARD



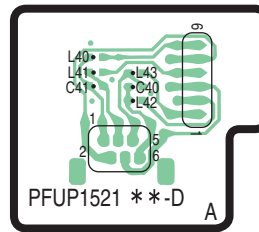
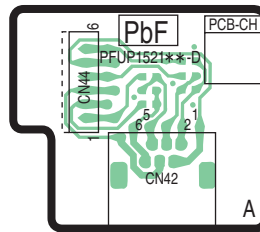
KX-FLB802/812CX  
KX-FLB802/812CXS TEL JACK BOARD

### 17.4. TONER SENSOR BOARD



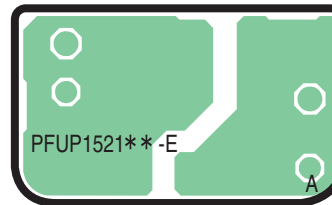
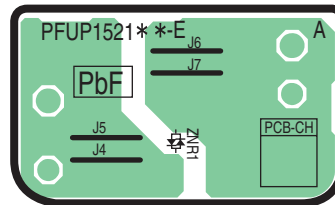
KX-FLB802/812CX  
KX-FLB802/812CXS TONER SENSOR BOARD

### 17.5. HANDSET RELAY BOARD



KX-FLB802/812CX  
KX-FLB802/812CXS HANDSET RELAY SENSOR BOARD

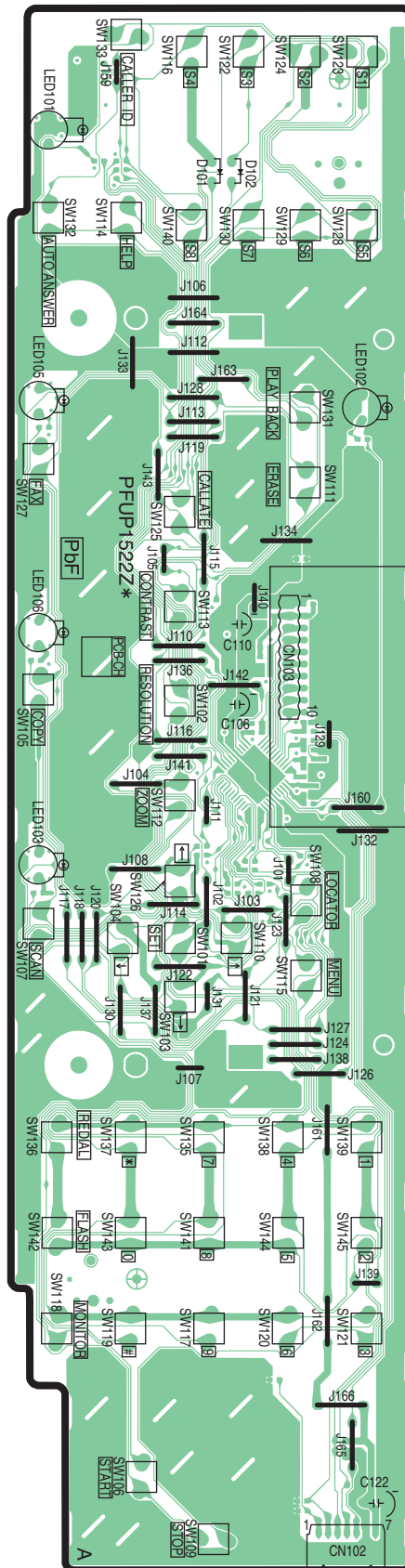
### 17.6. VARISTOR BOARD



KX-FLB802/812CX  
KX-FLB802/812CXS VARISTOR BOARD

## 17.7. OPERATION BOARD

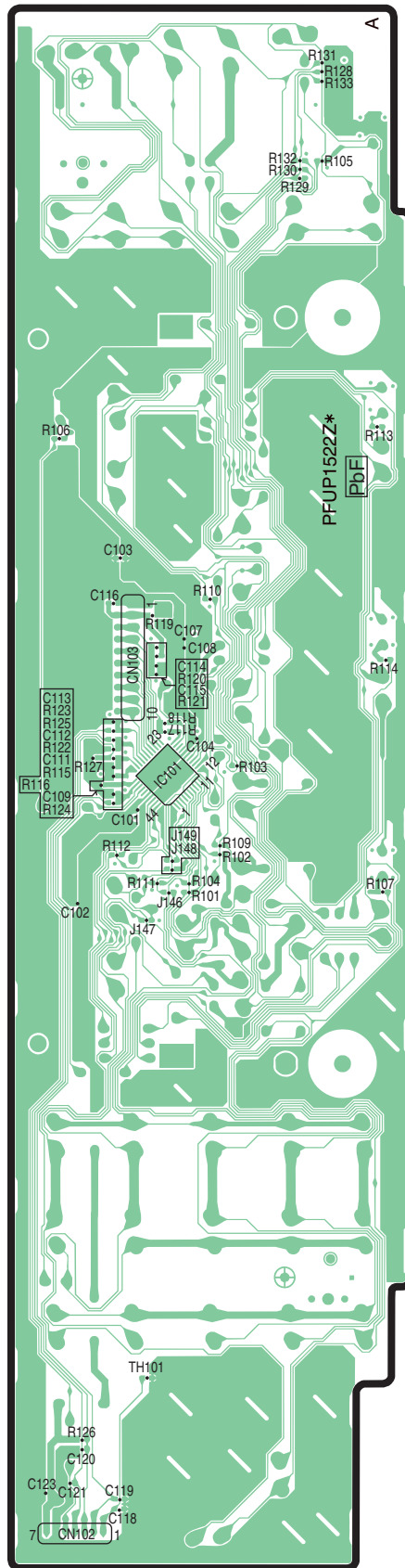
### 17.7.1. OPERATION BOARD: COMPONENT VIEW



OPERATION BOARD COMPONENT VIEW  
 KX-FLB802/812CX  
 KX-FLB802/812CXS



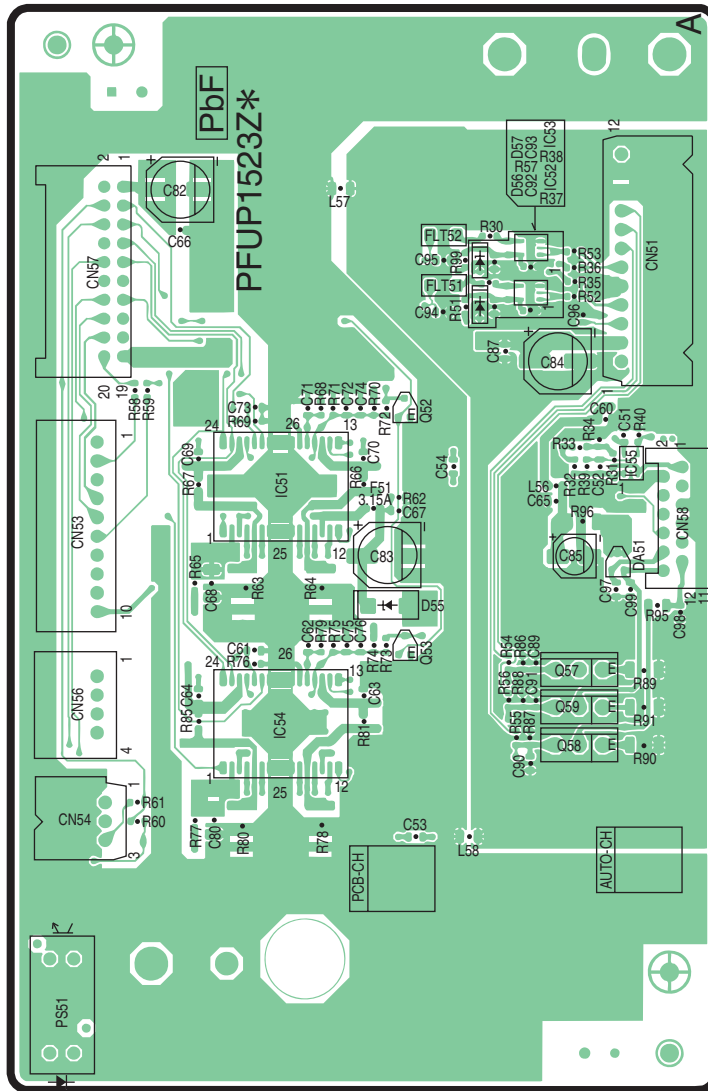
### 17.7.2. OPERATION BOARD: BOTTOM VIEW



OPERATION BOARD BOTTOM VIEW  
 KX-FLB802/812CX  
 KX-FLB802/812CXS

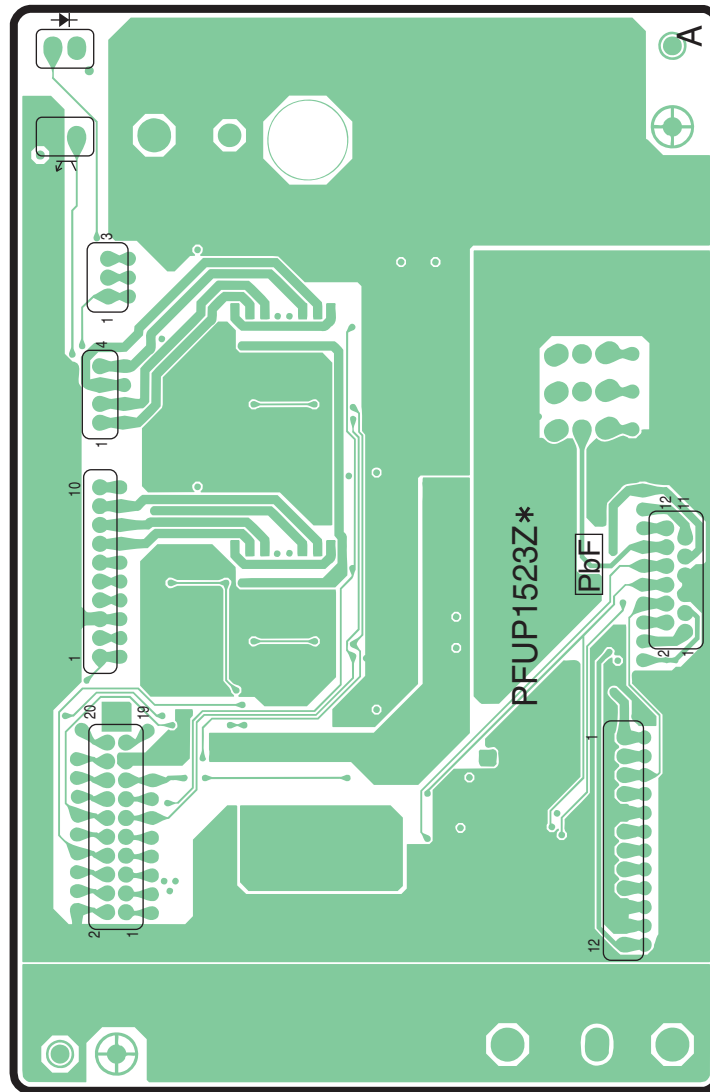
## 17.8. SCANNER I/F BOARD

### 17.8.1. SCANNER I/F BOARD: COMPONENT VIEW



SCANNER I/F BOARD COMPONENT VIEW  
 KX-FLB802/812CX  
 KX-FLB802/812CXS

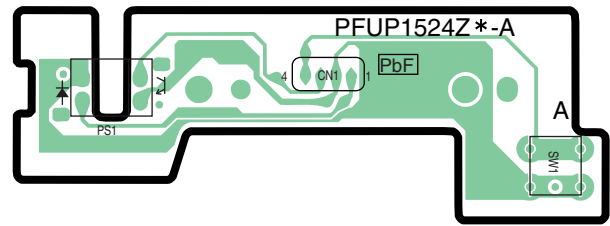
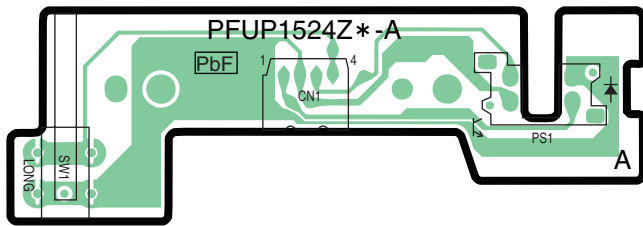
### 17.8.2. SCANNER I/F BOARD: BOTTOM VIEW



SCANNER I/F BOARD BOTTOM VIEW  
KX-FLB802/812CX  
KX-FLB802/812CXS

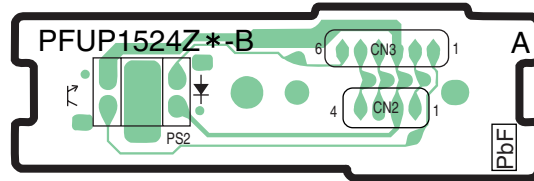
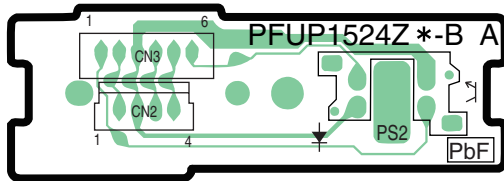
## 17.9. SENSOR BOARD

### 17.9.1. DOCUMENT SENSOR BOARD



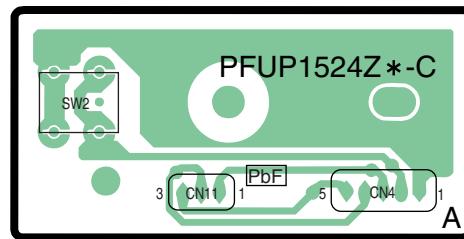
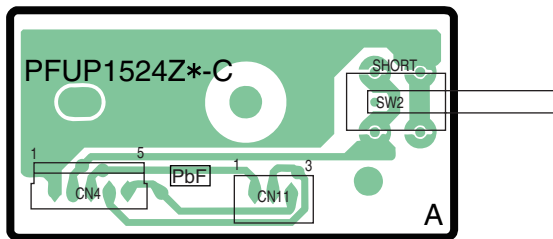
KX-FLB802/812CX  
KX-FLB802/812CXS DOCUMENT SENSOR BOARD

### 17.9.2. READ POSITION SENSOR BOARD



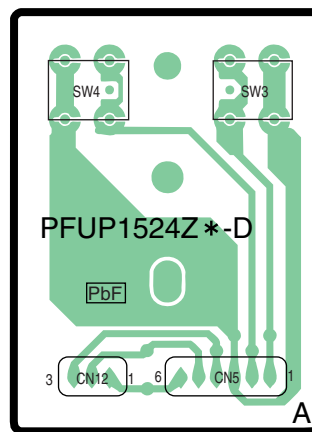
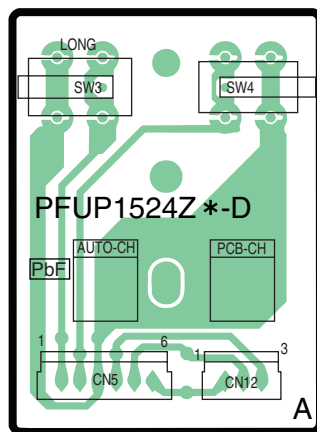
KX-FLB802/812CX  
KX-FLB802/812CXS READ POSITION SENSOR BOARD

### 17.9.3. DRUM SENSOR BOARD



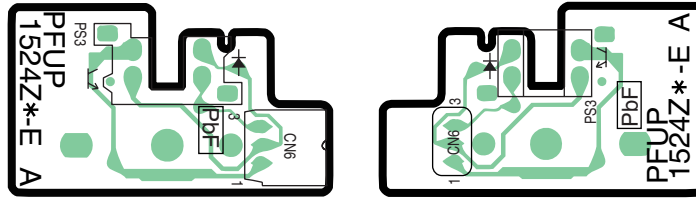
KX-FLB802/812CX  
KX-FLB802/812CXS DRUM SENSOR BOARD

### 17.9.4. PAPER SENSOR BOARD



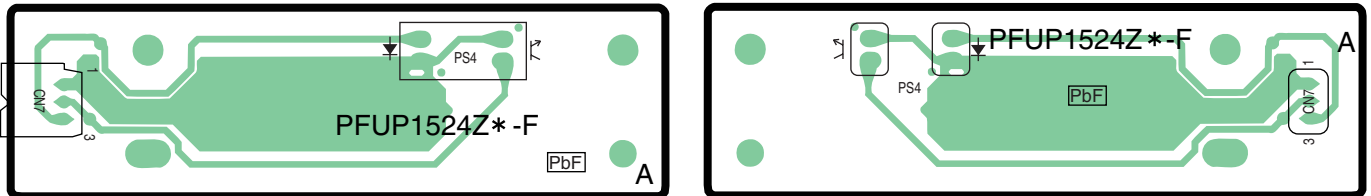
KX-FLB802/812CX  
KX-FLB802/812CXS PAPER SENSOR BOARD

### 17.9.5. PRINT TIMING SENSOR BOARD



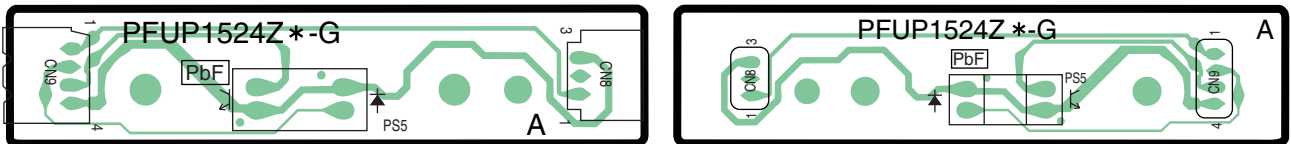
KX-FLB802/812CX  
KX-FLB802/812CXS PRINT START SENSOR BOARD

### 17.9.6. REGISTRATION & MANUAL PAPER SENSOR BOARD



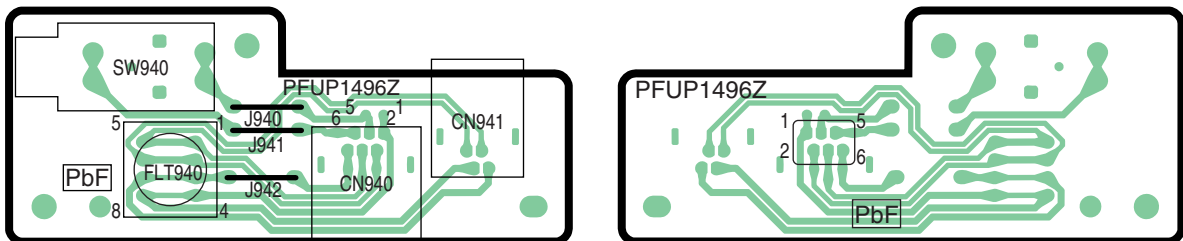
KX-FLB802/812CX  
KX-FLB802/812CXS REGISTRATION SENSOR BOARD

### 17.9.7. THERMISTOR BOARD



KX-FLB802/812CX  
KX-FLB802/812CXS THERMISTOR BOARD

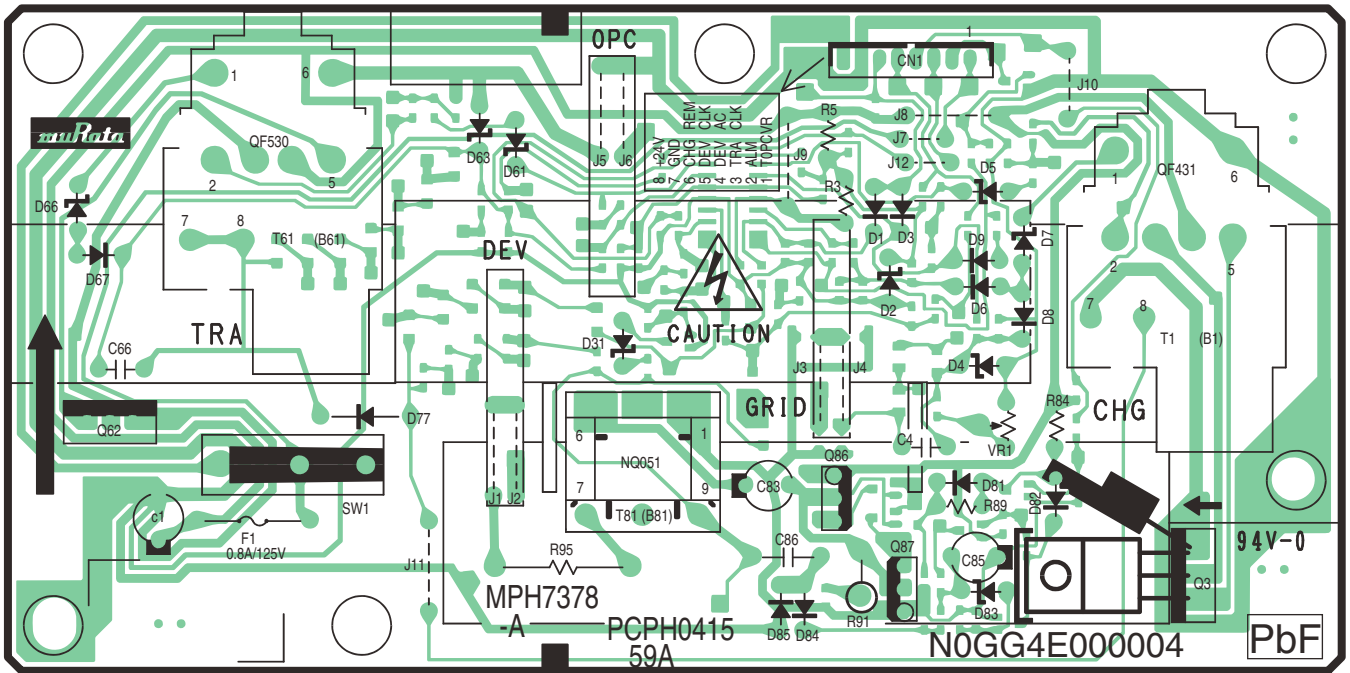
### 17.10. HANDSET BOARD



KX-FLB802/812CX  
KX-FLB802/812CXS: HANDSET BOARD

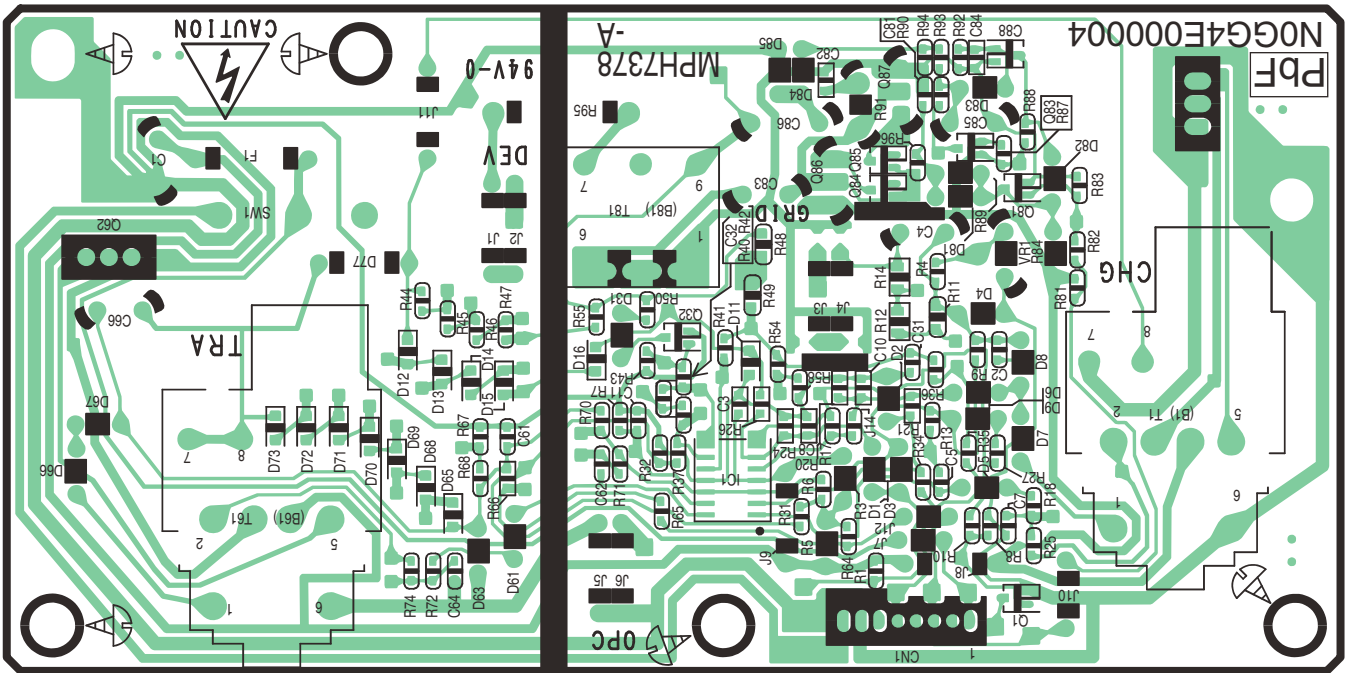
# 17.11. HIGH VOLTAGE POWER SUPPLY BOARD

## 17.11.1. COMPONENT VIEW



KX-FBL802CX/KX-FLB802CXS  
 KX-FLB812CX/KX-FLB812CXS : HIGH VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

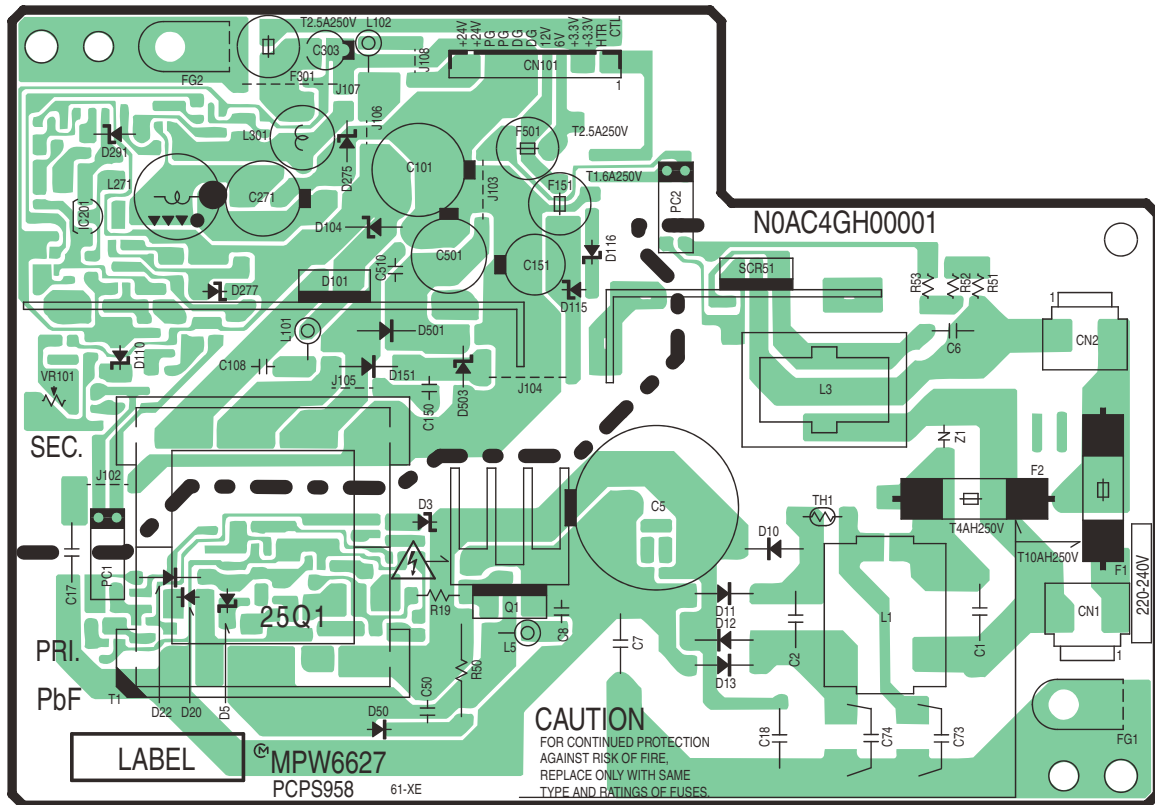
## 17.11.2. BOTTOM VIEW



KX-FBL802CX/KX-FLB802CXS  
 KX-FLB812CX/KX-FLB812CXS : HIGH VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

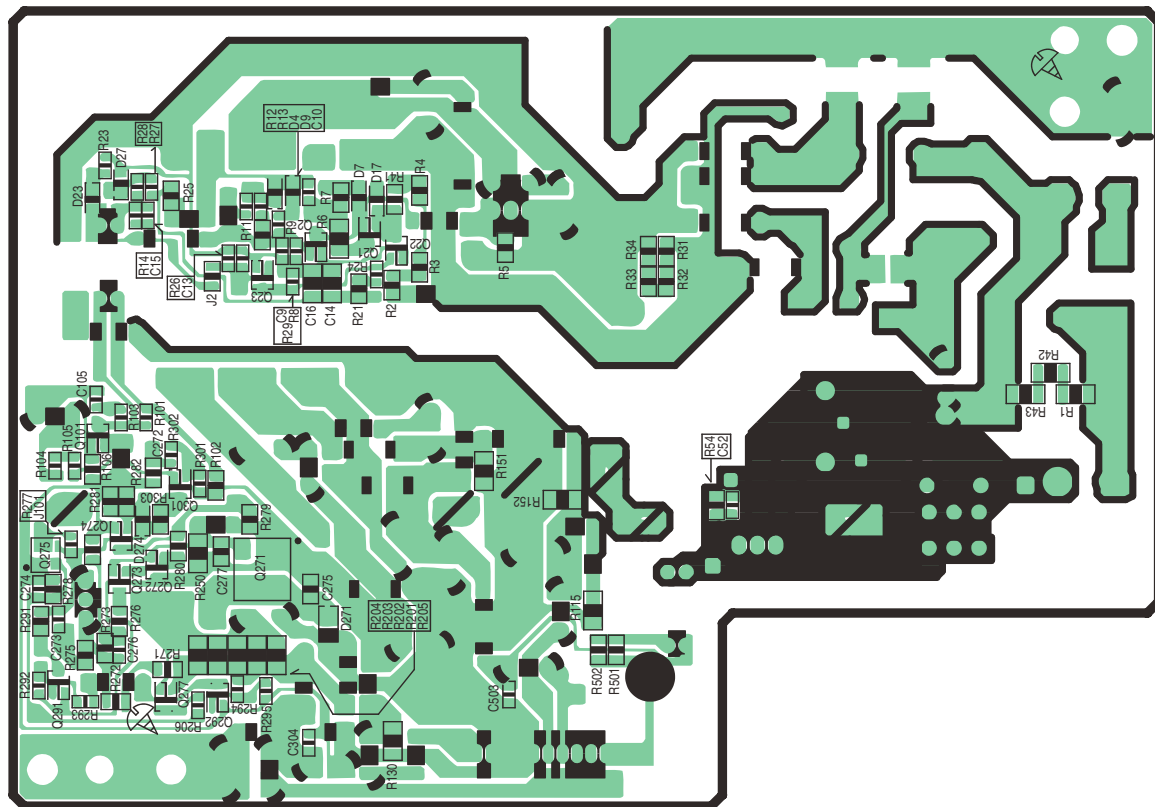
# 17.12. LOW VOLTAGE POWER SUPPLY BOARD

## 17.12.1. COMPONENT VIEW



KX-FBL802CX/KX-FLB802CXS  
 KX-FLB812CX/KX-FLB812CXS : LOW VOLTAGE POWER SUPPLY BOARD (COMPONENT VIEW)

## 17.12.2. BOTTOM VIEW

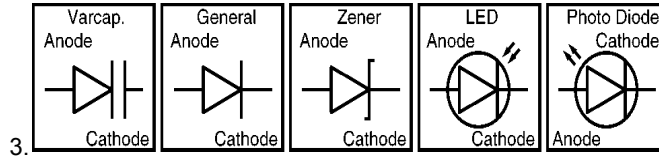


KX-FBL802CX/KX-FLB802CXS  
 KX-FLB812CX/KX-FLB812CXS : LOW VOLTAGE POWER SUPPLY BOARD (BOTTOM VIEW)

# 18 Appendix Information of 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

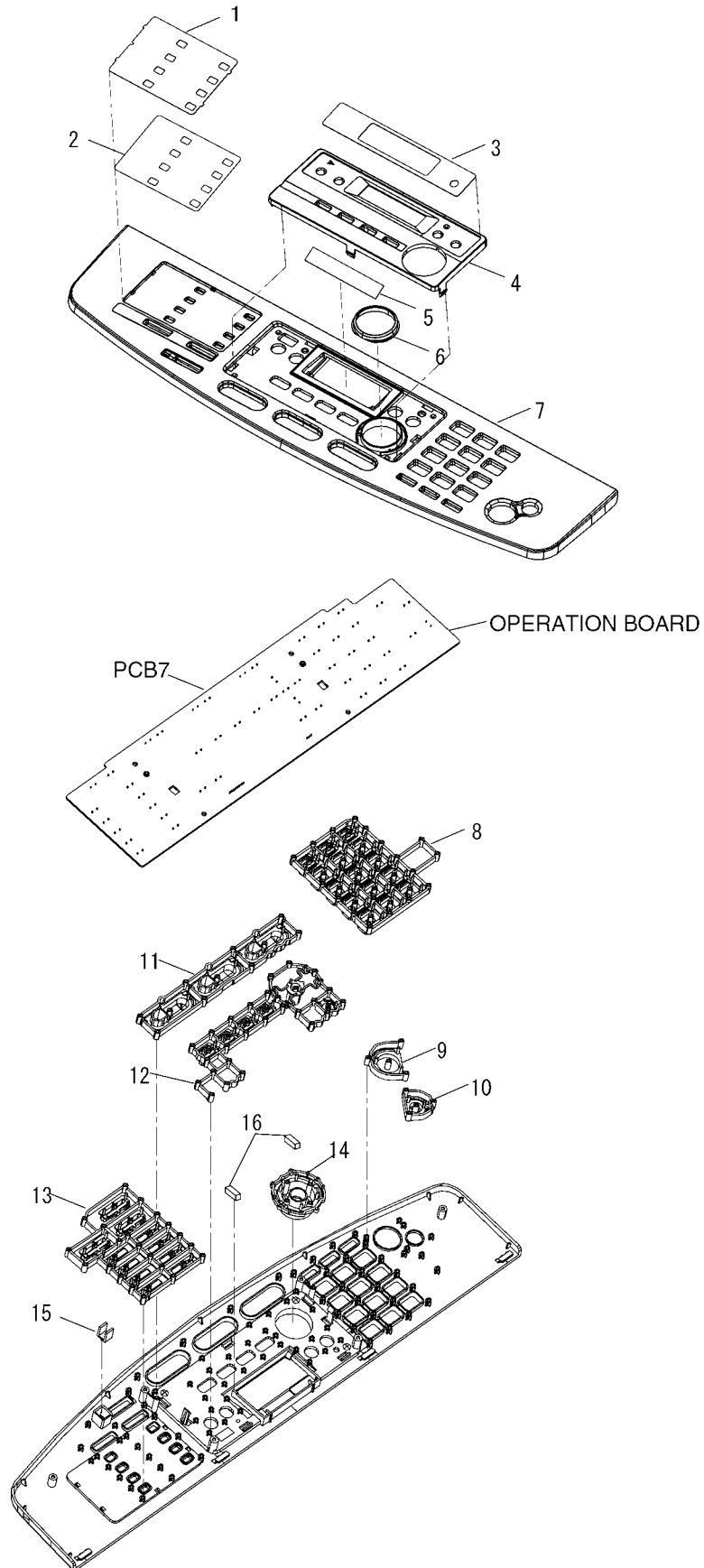
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.



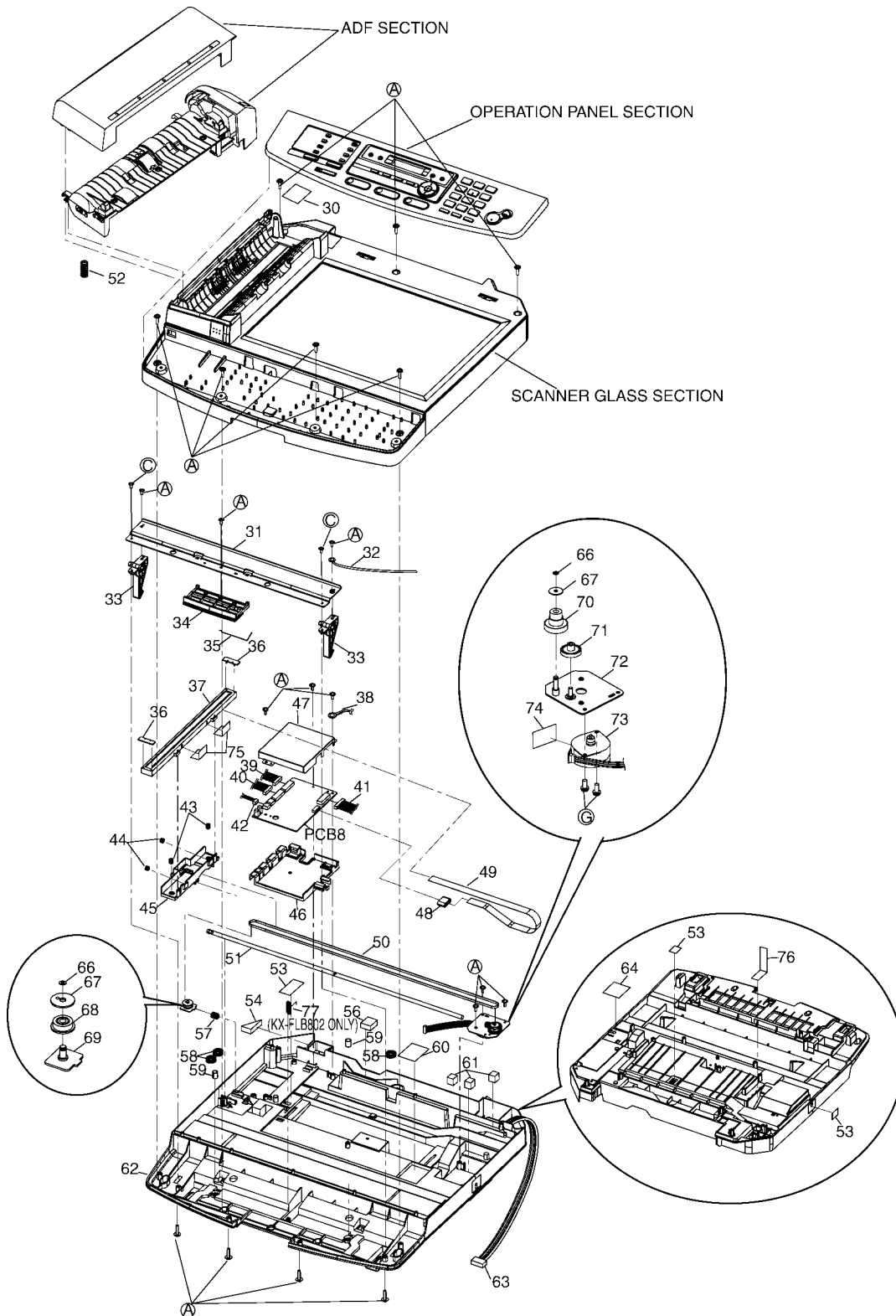
# 19 Exploded View and Replacement Parts List

## 19.1. CABINET, MECHANICAL AND ELECTRICAL PARTS LOCATION

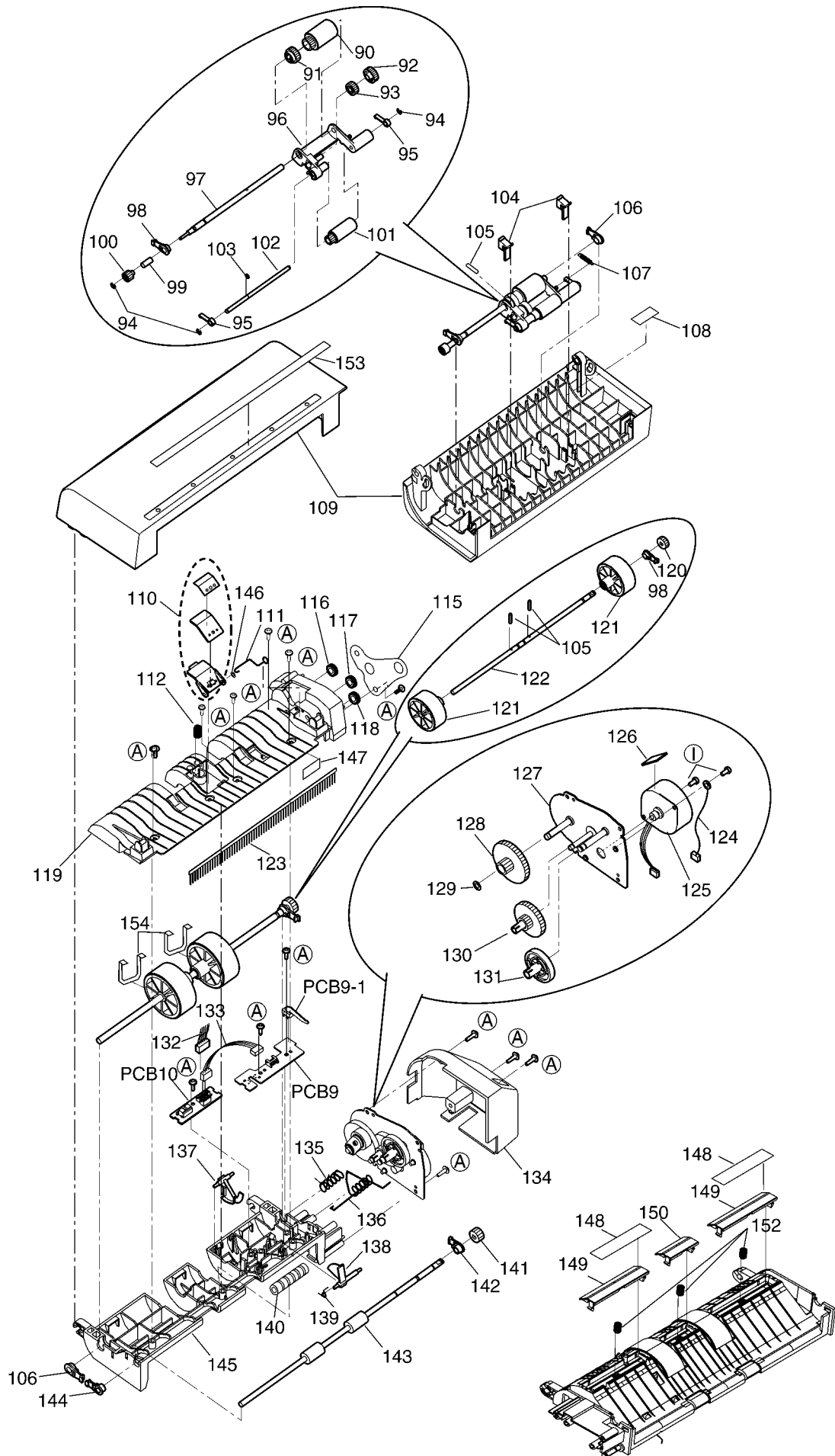
### 19.1.1. OPERATION PANEL SECTION



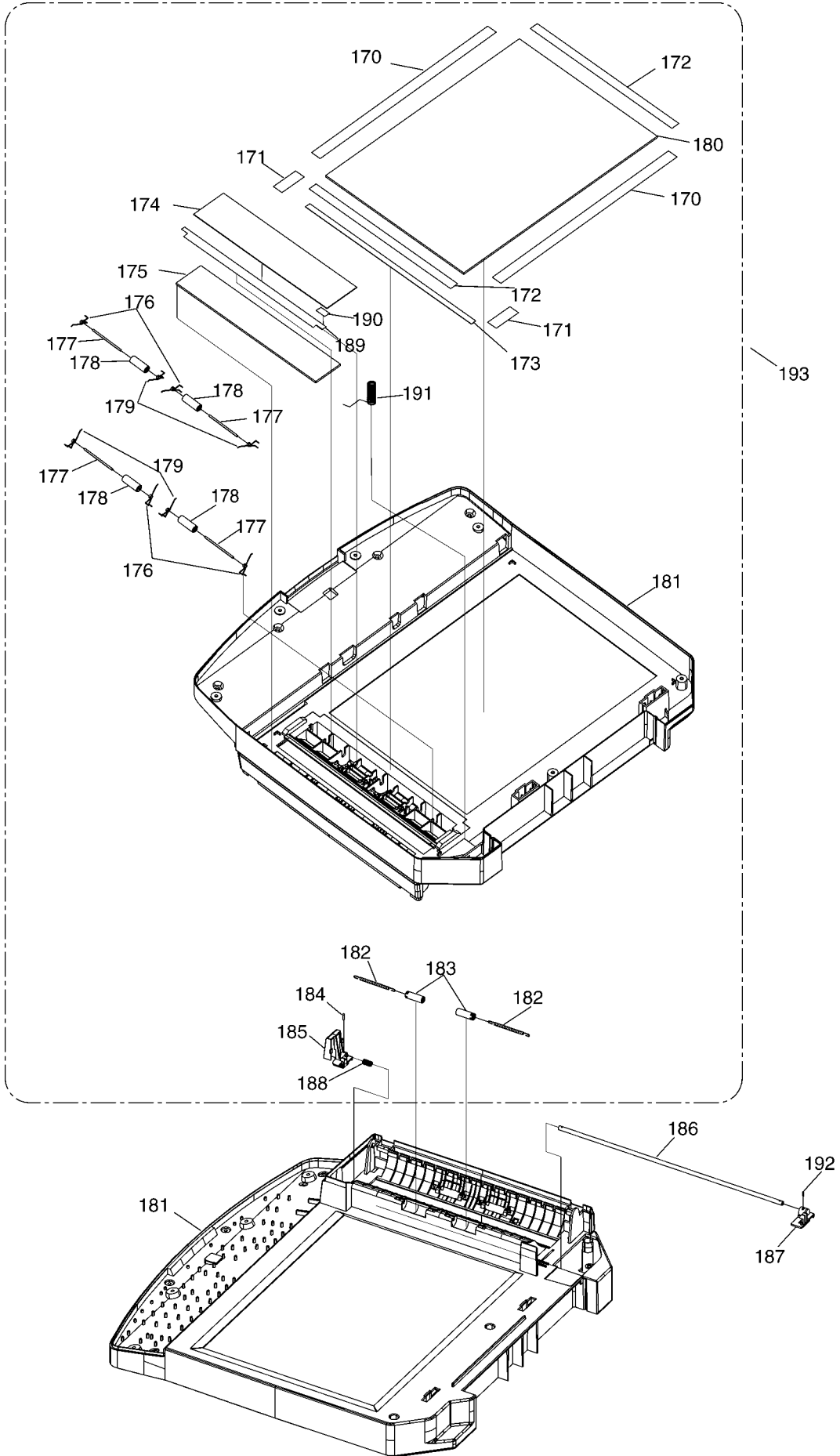
### 19.1.2. RINTER COVER SECTION (1)



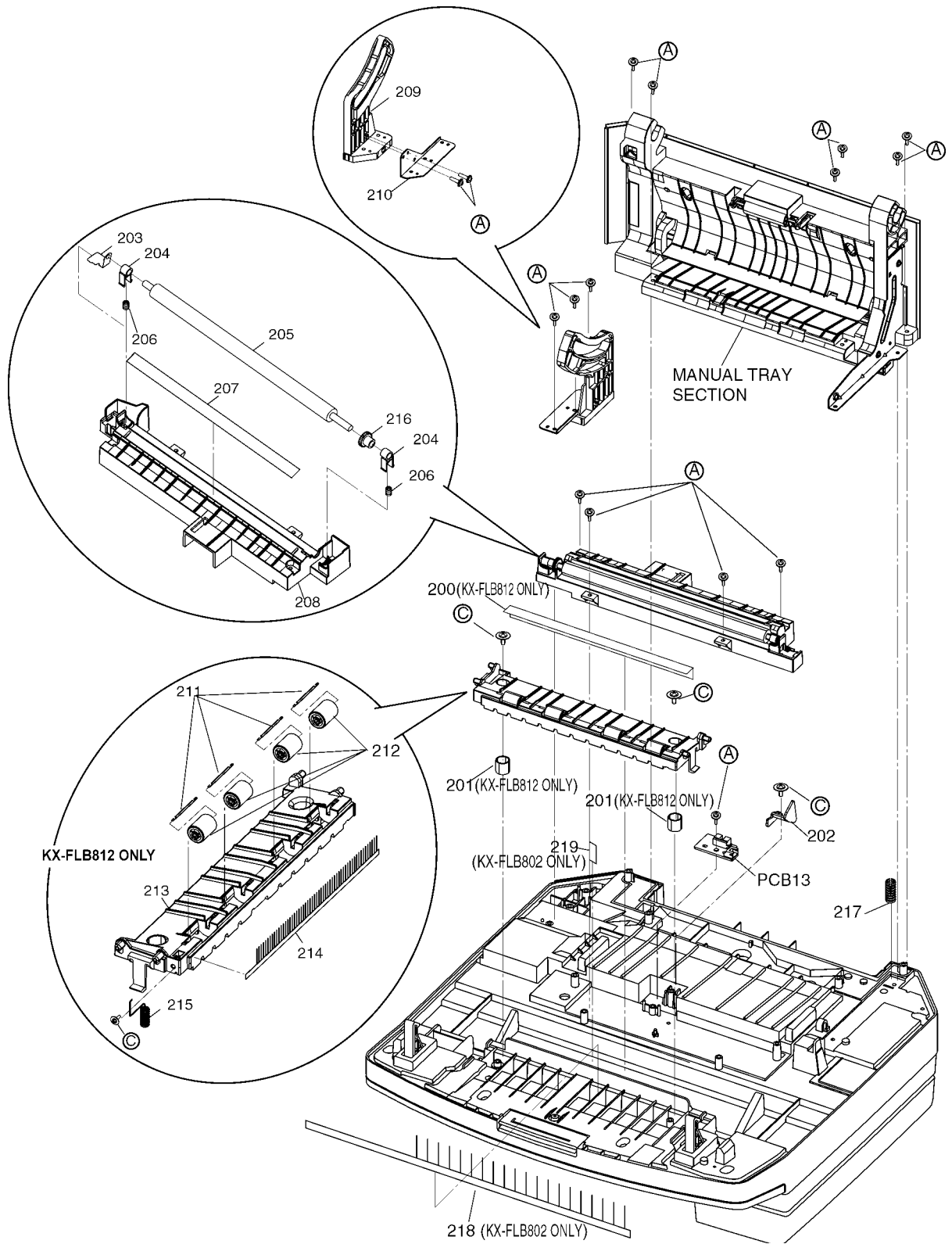
### 19.1.3. ADF SECTION



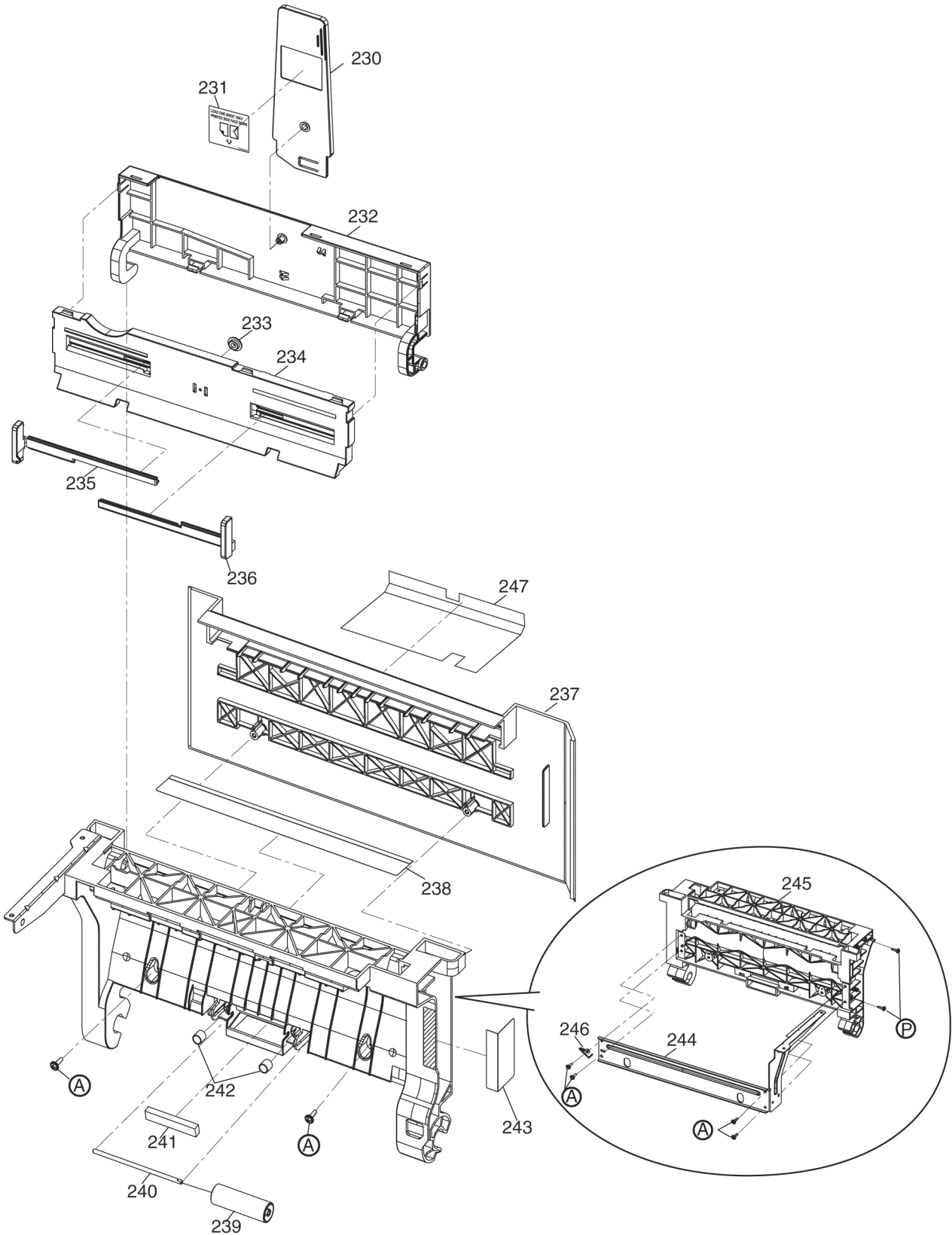
### 19.1.4. PRINT COVER SECTION (2)



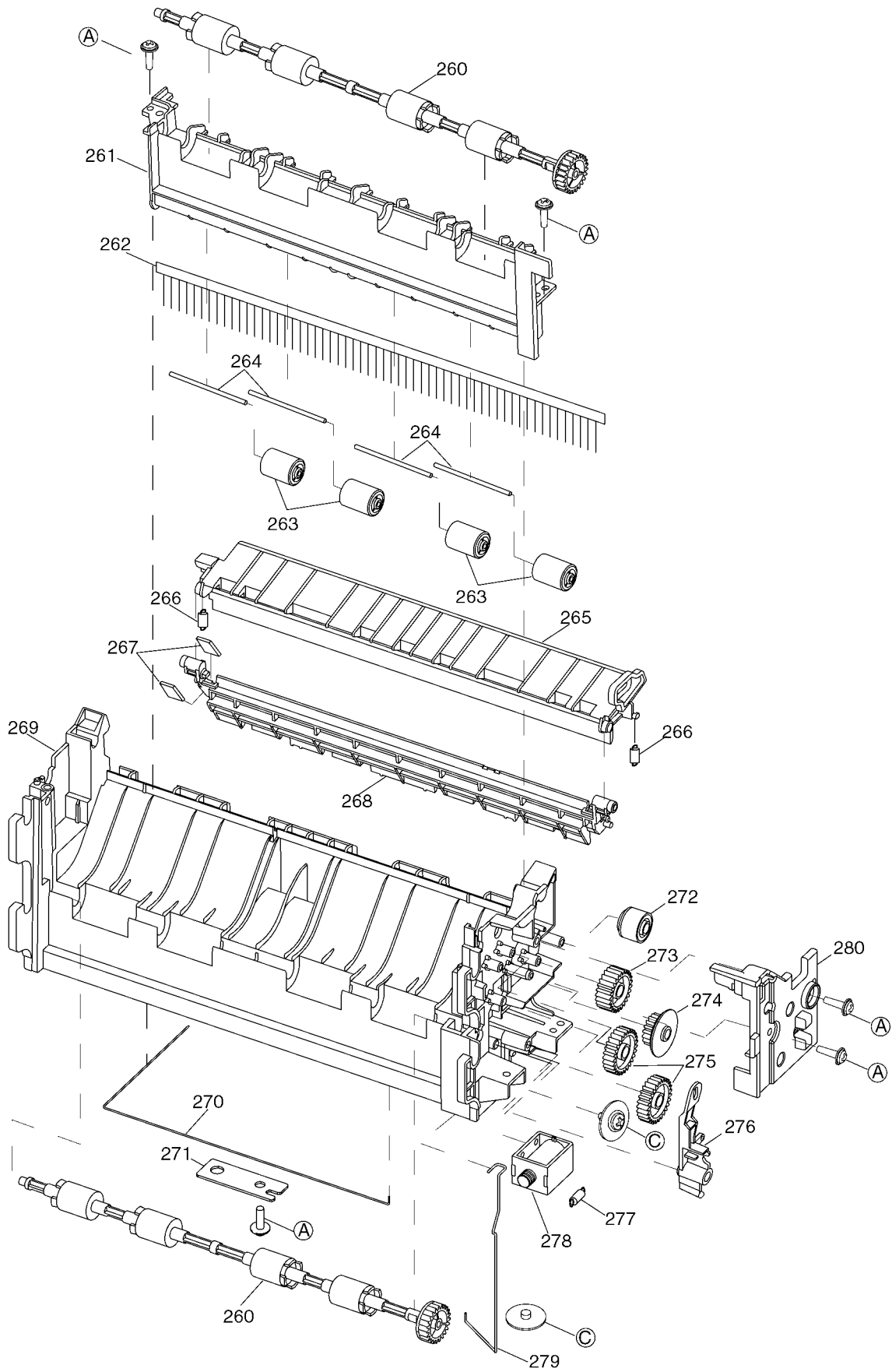
### 19.1.5. PRINTER COVER SECTION (3)



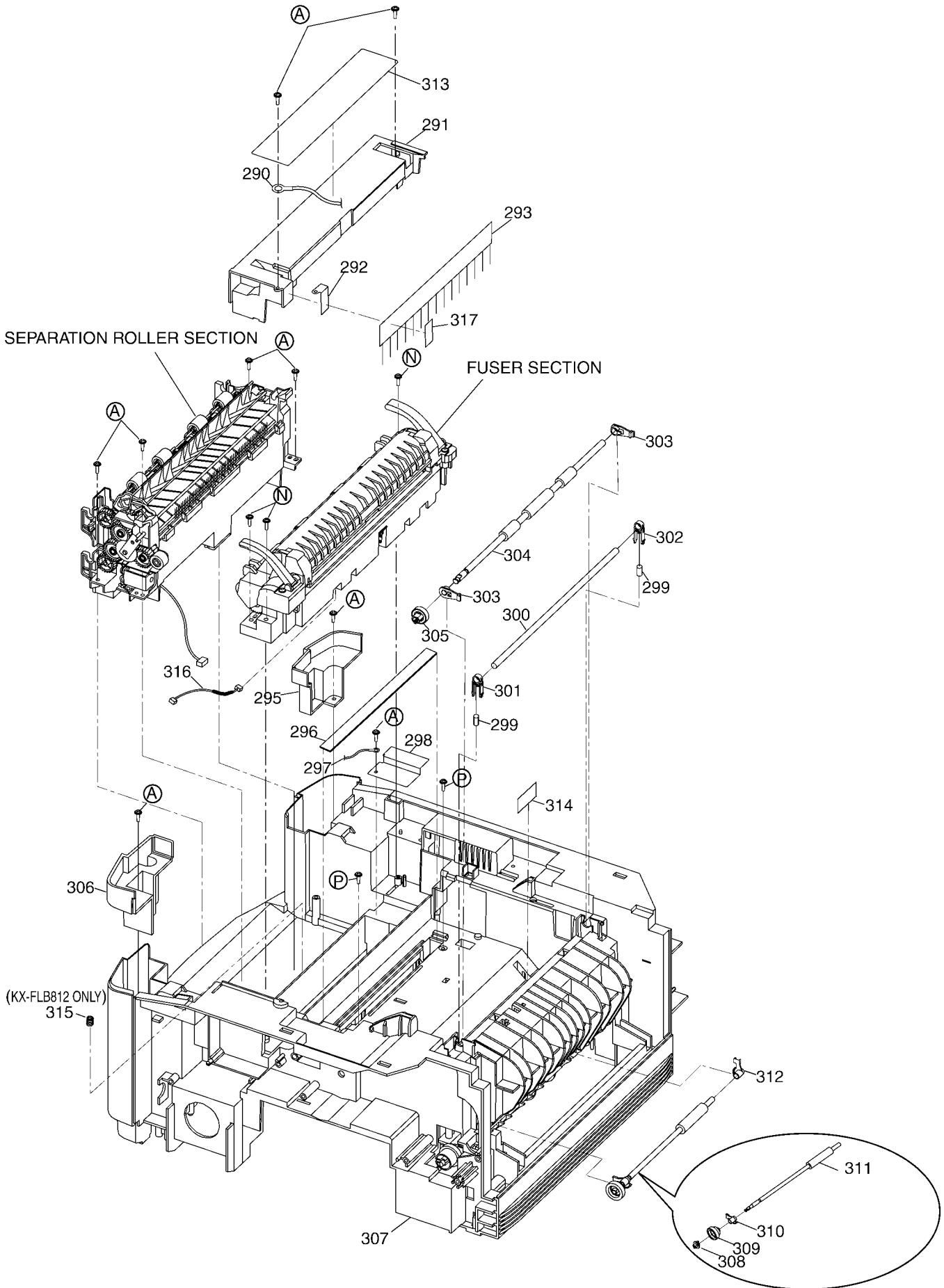
### 19.1.6. MANUAL TRAY SECTION



### 19.1.7. SEPARATION ROLLER SECTION (KX-FLB802only)

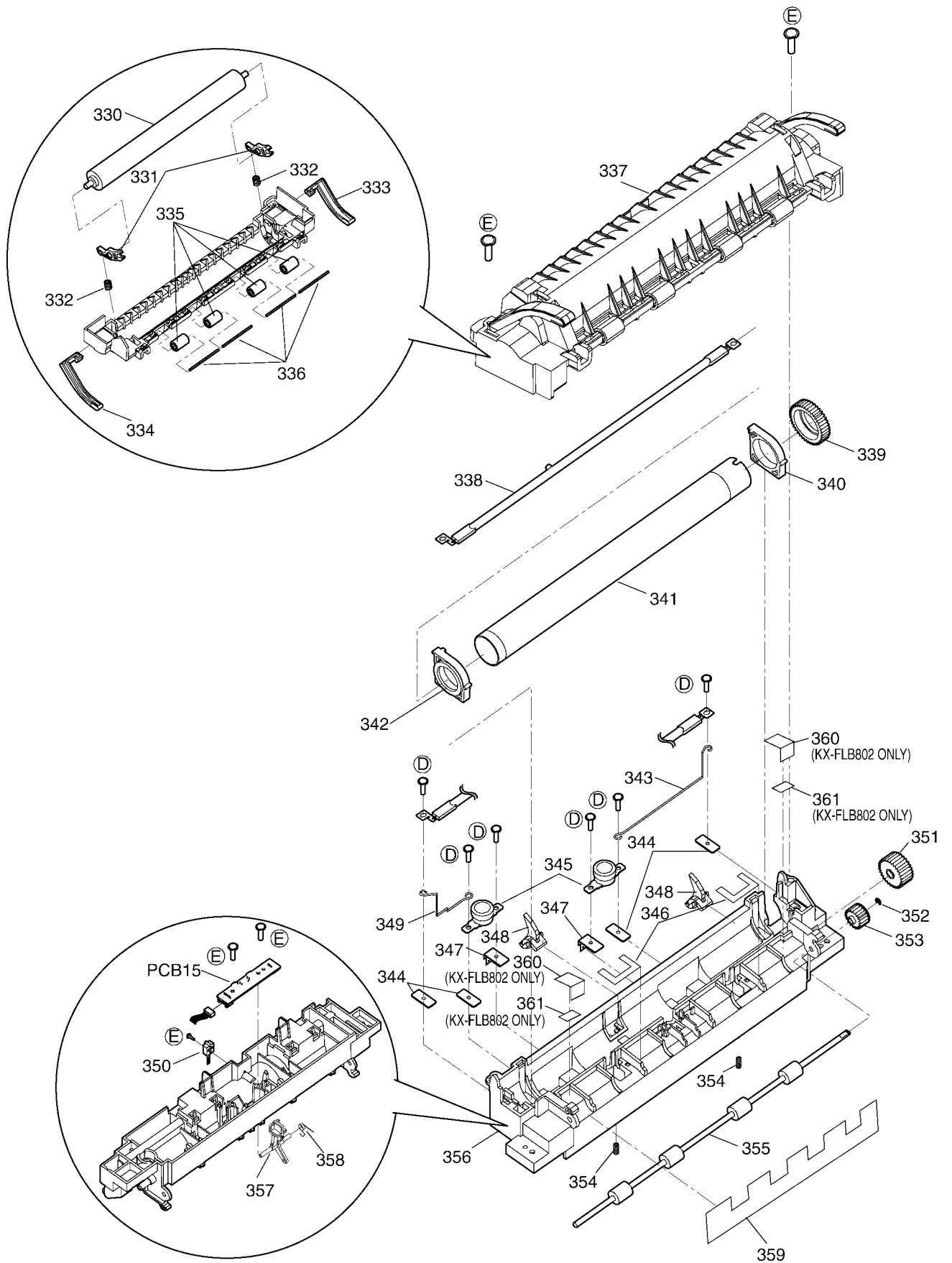


### 19.1.8. UPPER CABINET SECTION

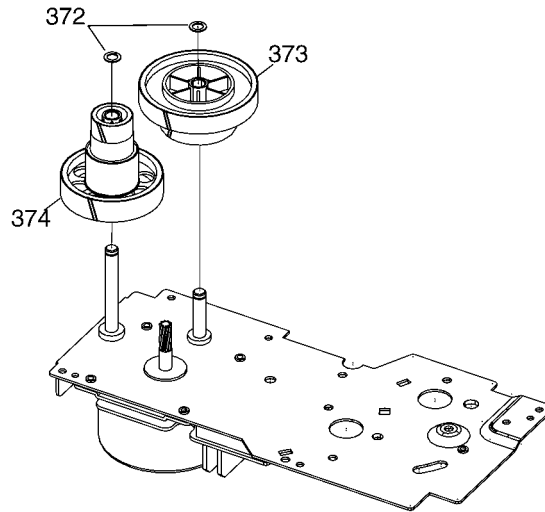
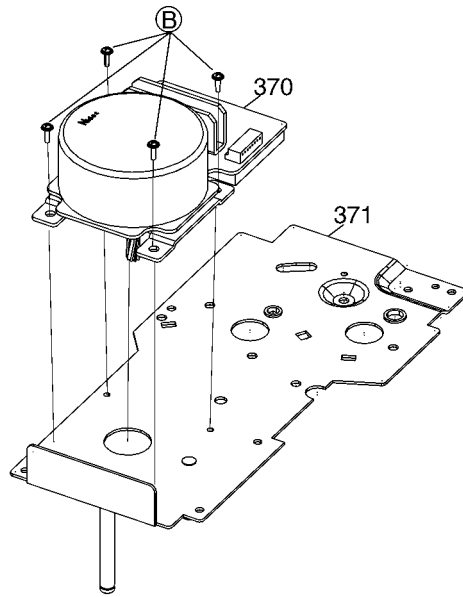




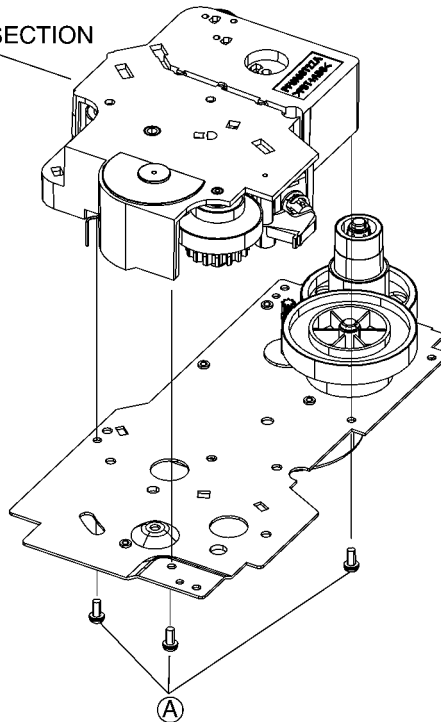
### 19.1.9. FUSER SECTION



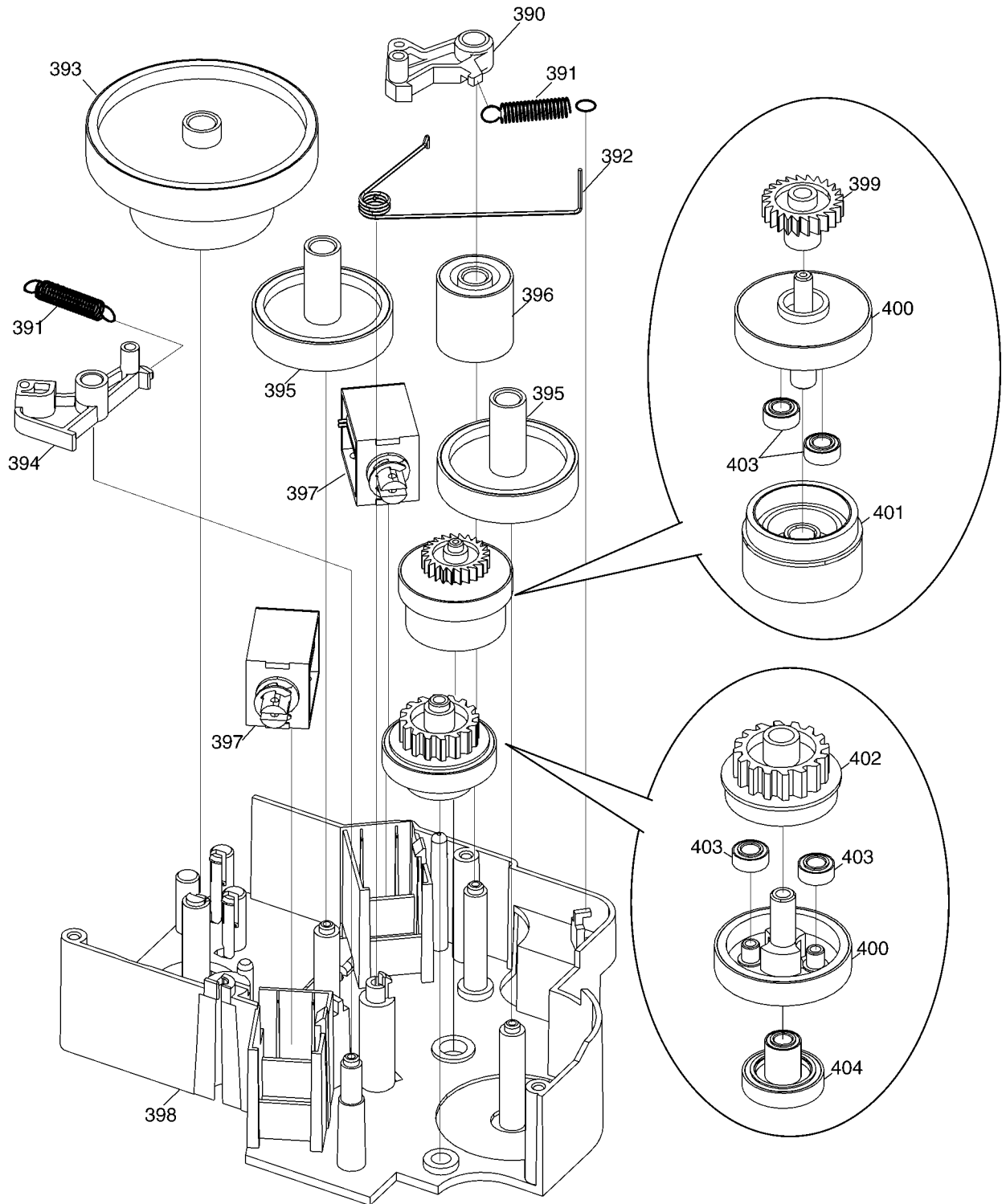
### 19.1.10. MOTOR SECTION



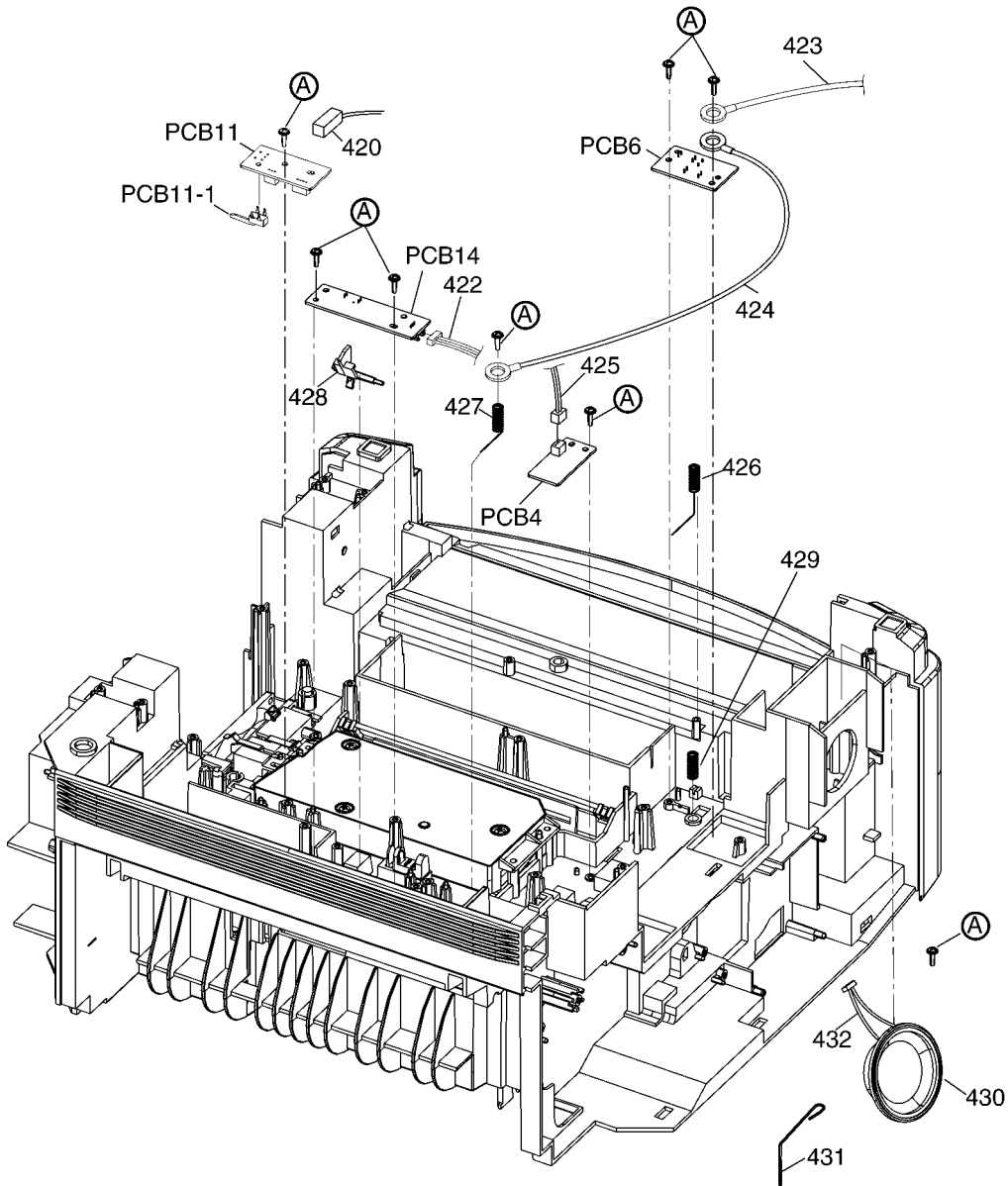
#### GEAR CHASIS SECTION



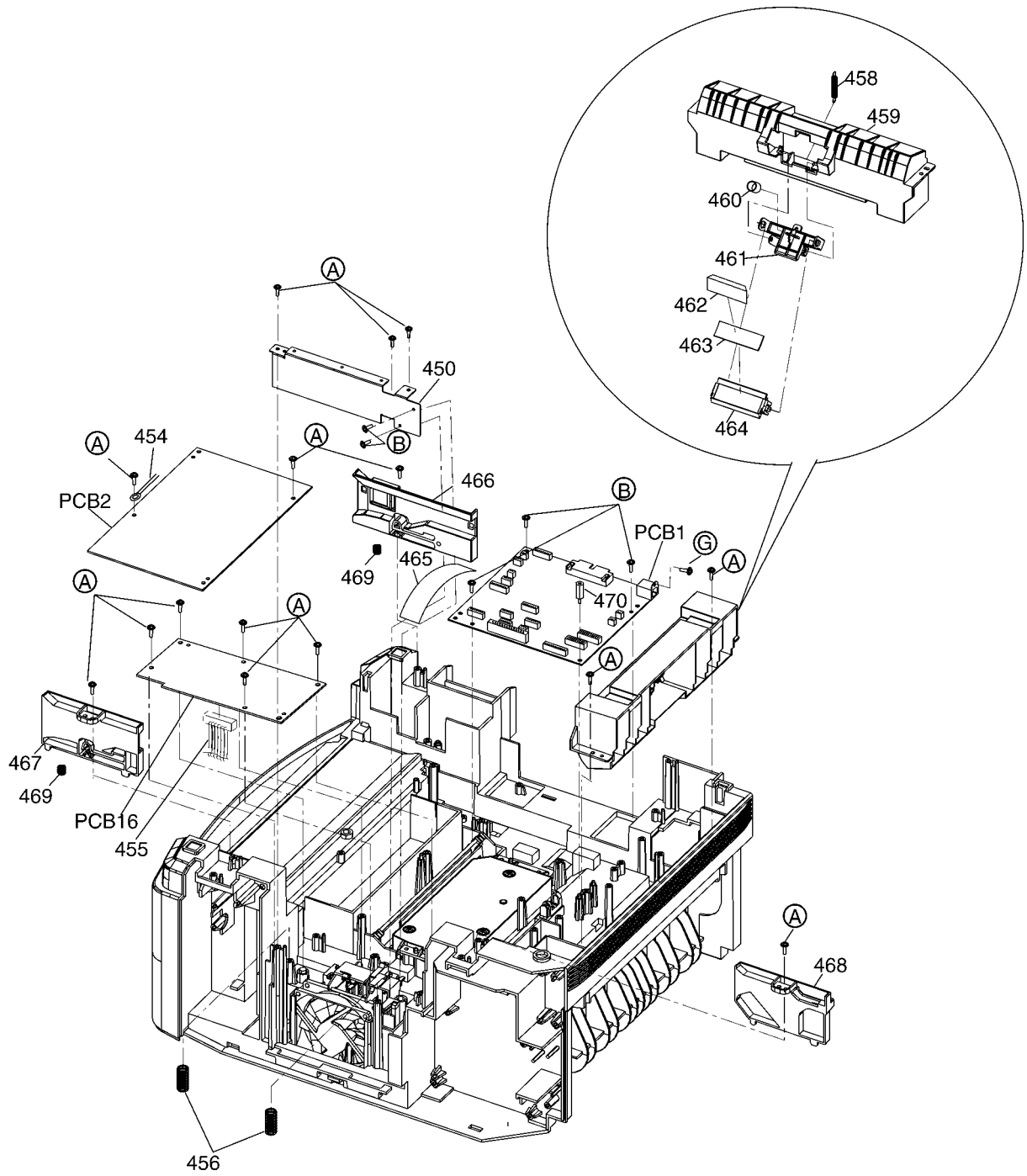
### 19.1.11. GEAR SECTION



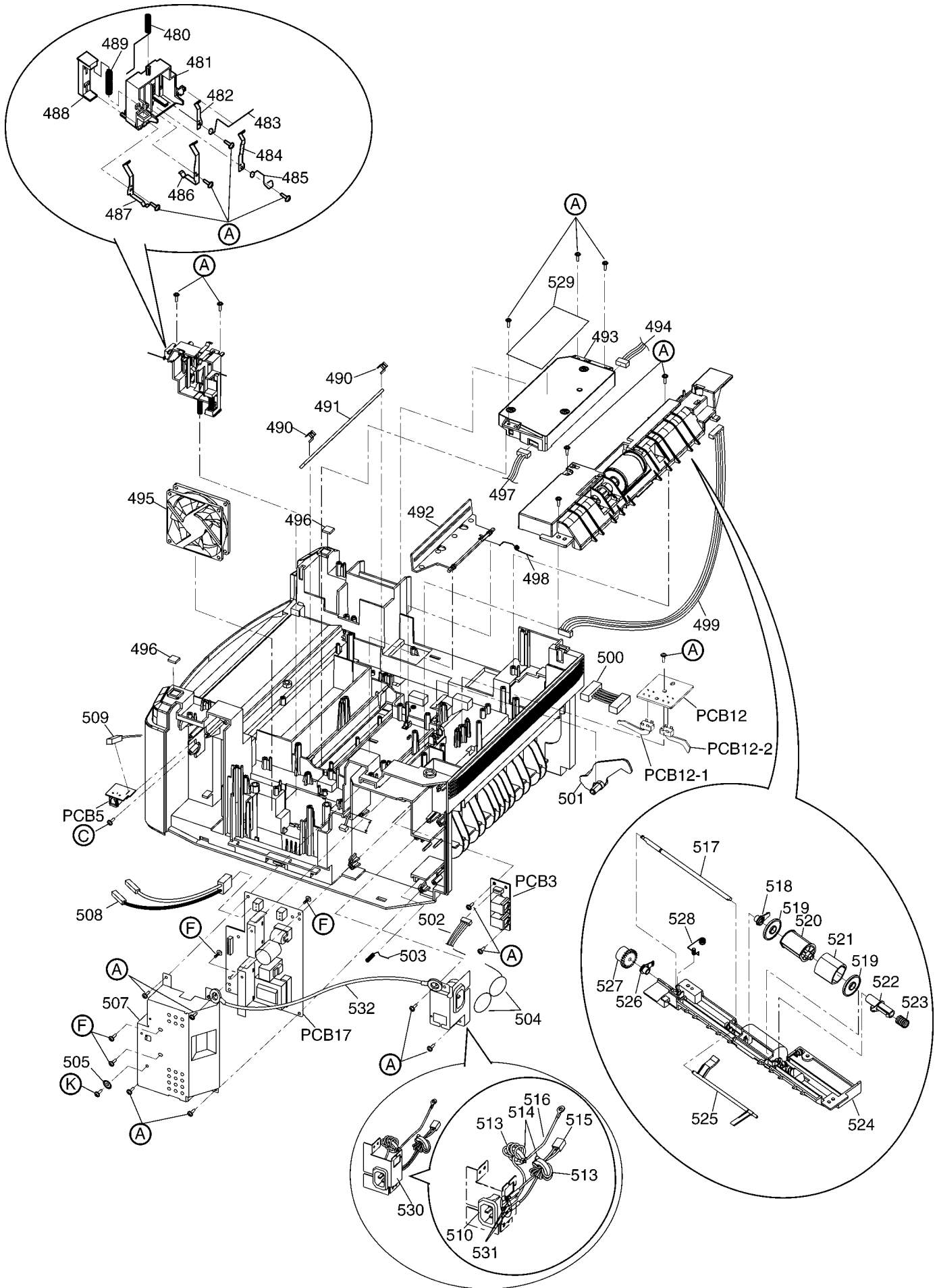
### 19.1.12. LOWER CABINET SECTION (1)



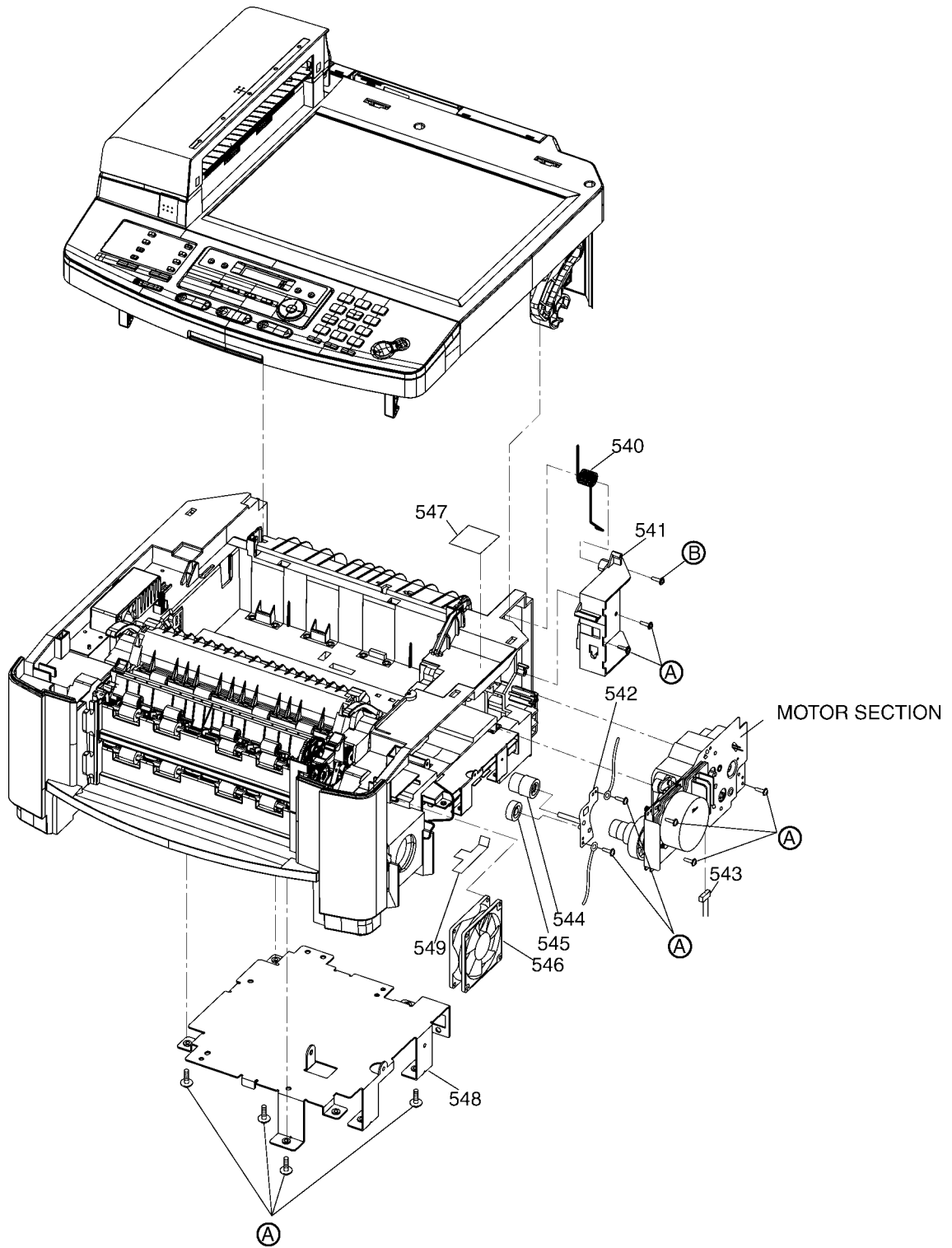
### 19.1.13. LOWER CABINET SECTION (2)



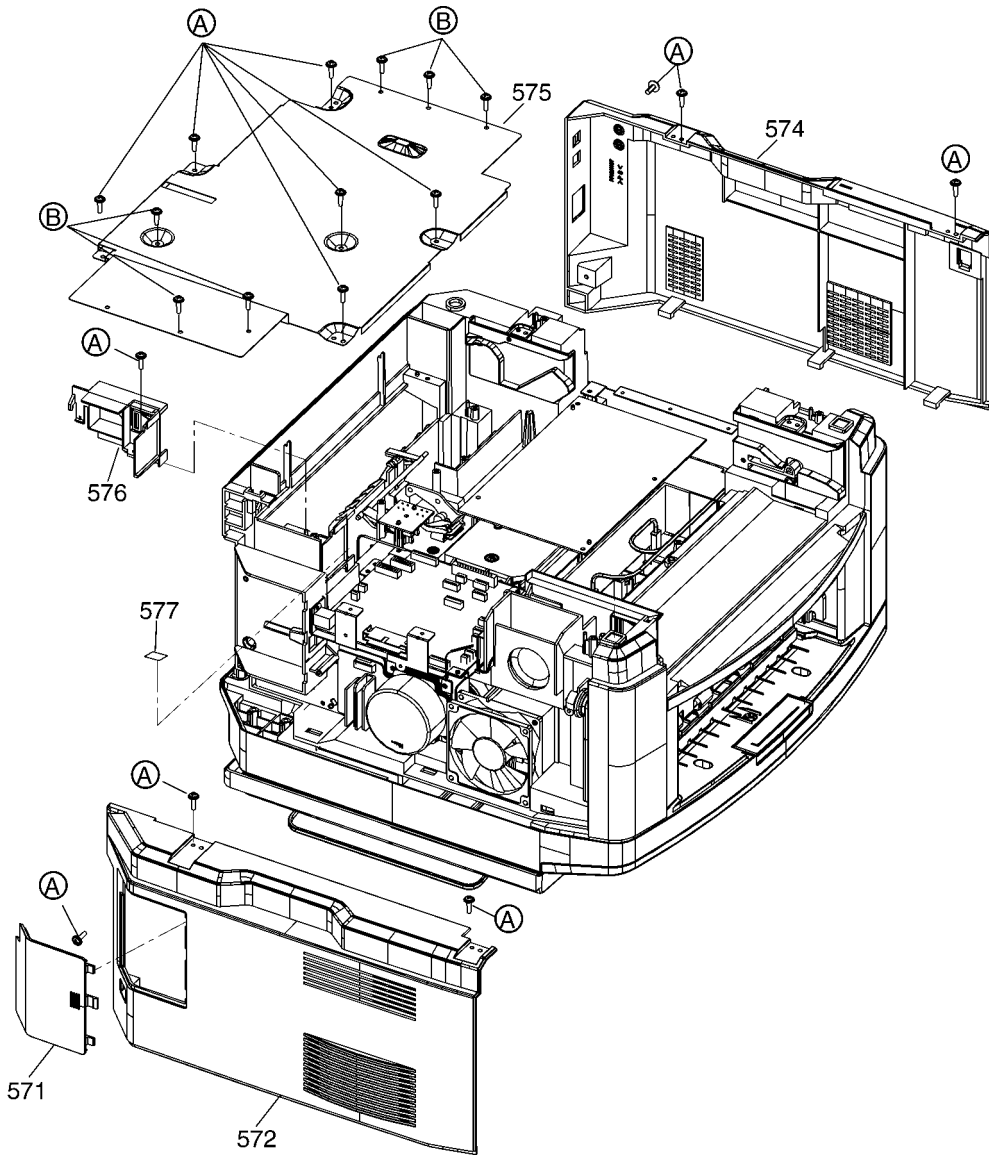
### 19.1.14. LOWER CABINET SECTION (3)



### 19.1.15. MAIN CABINET

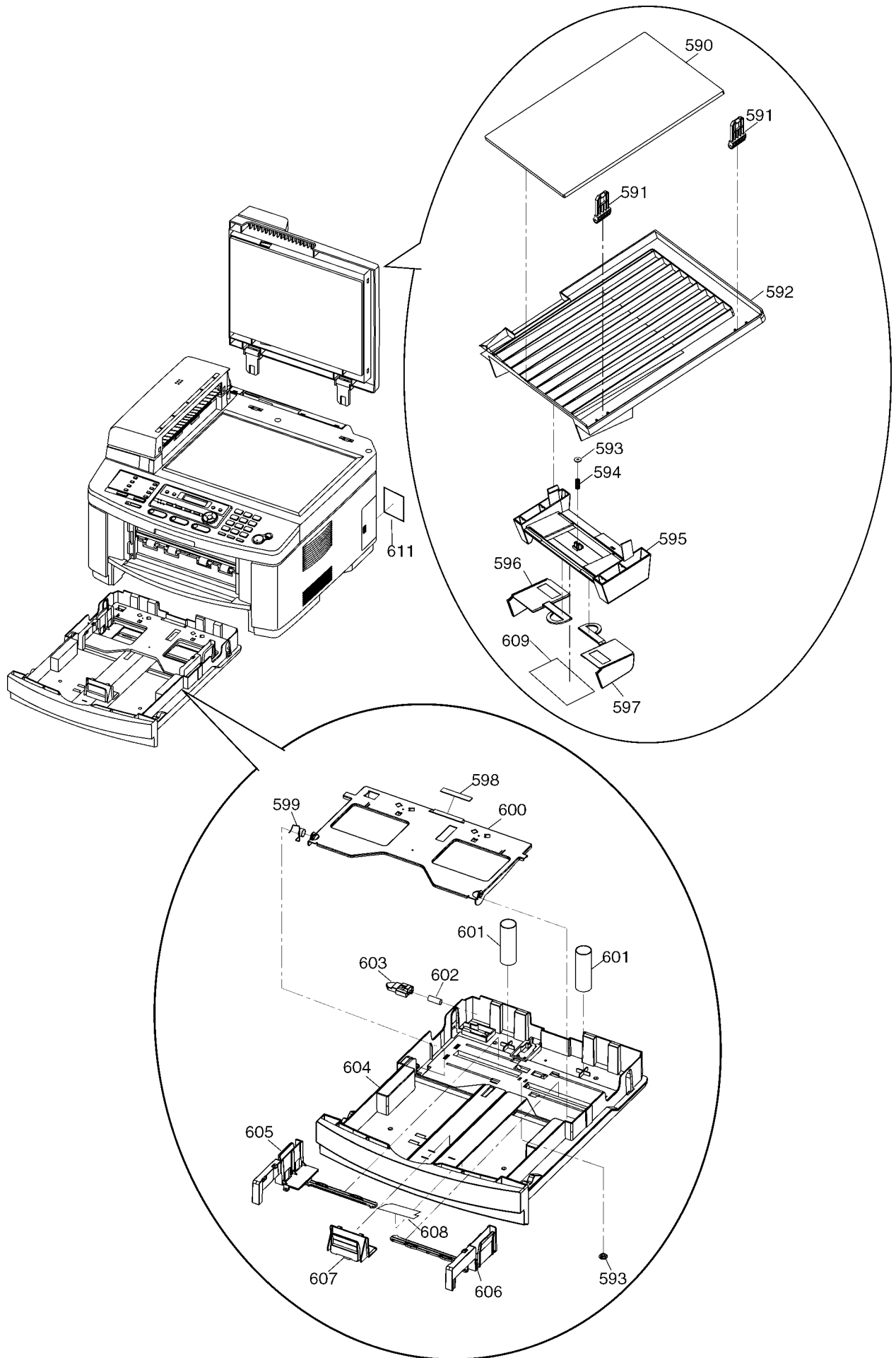


### 19.1.16. LOWERSIDE CABINET

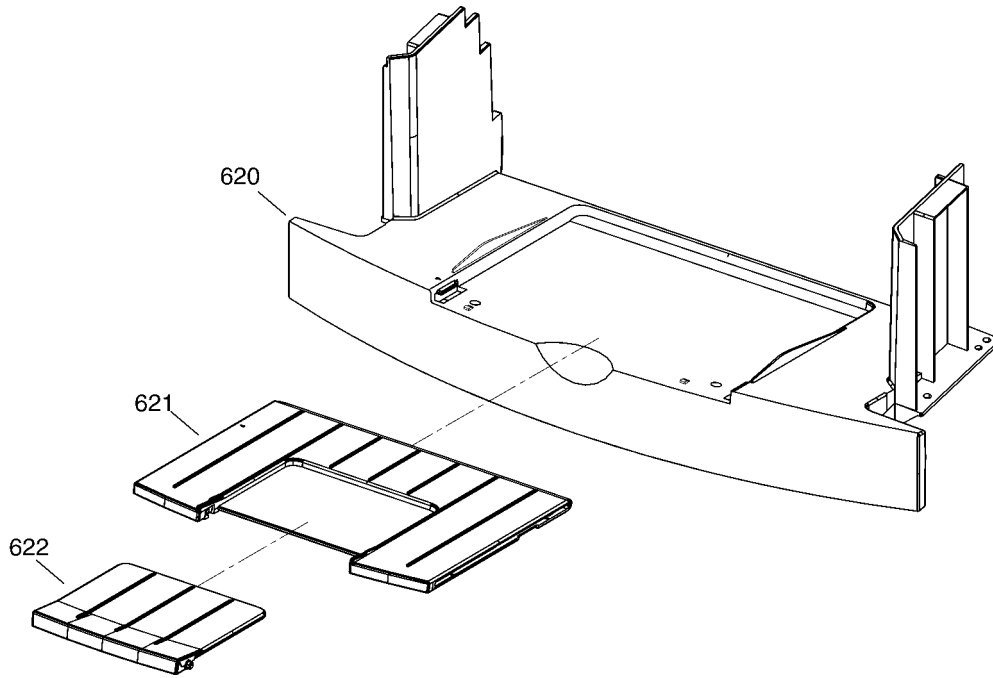




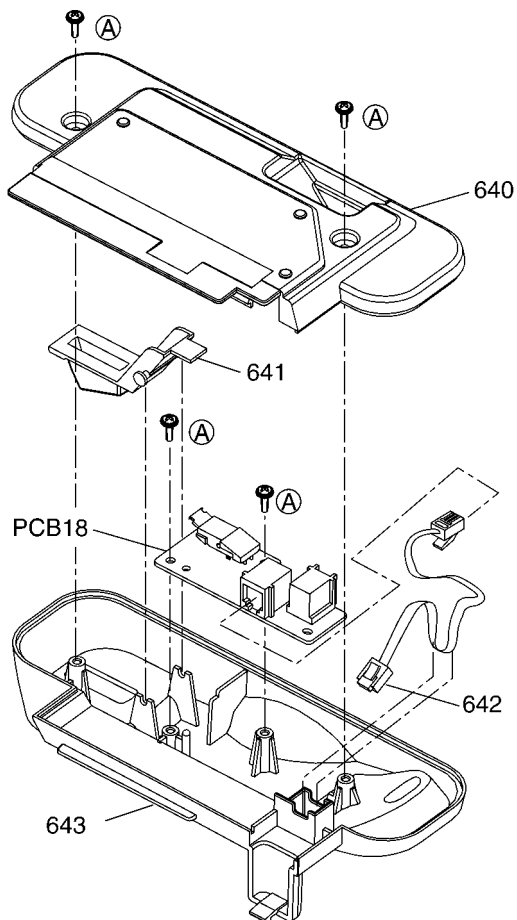
### 19.1.17. CASSETTE DOCUMENT TRAY



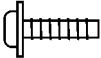

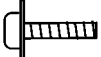






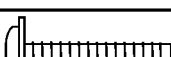
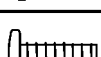
### 19.1.18. TRAY SECTION



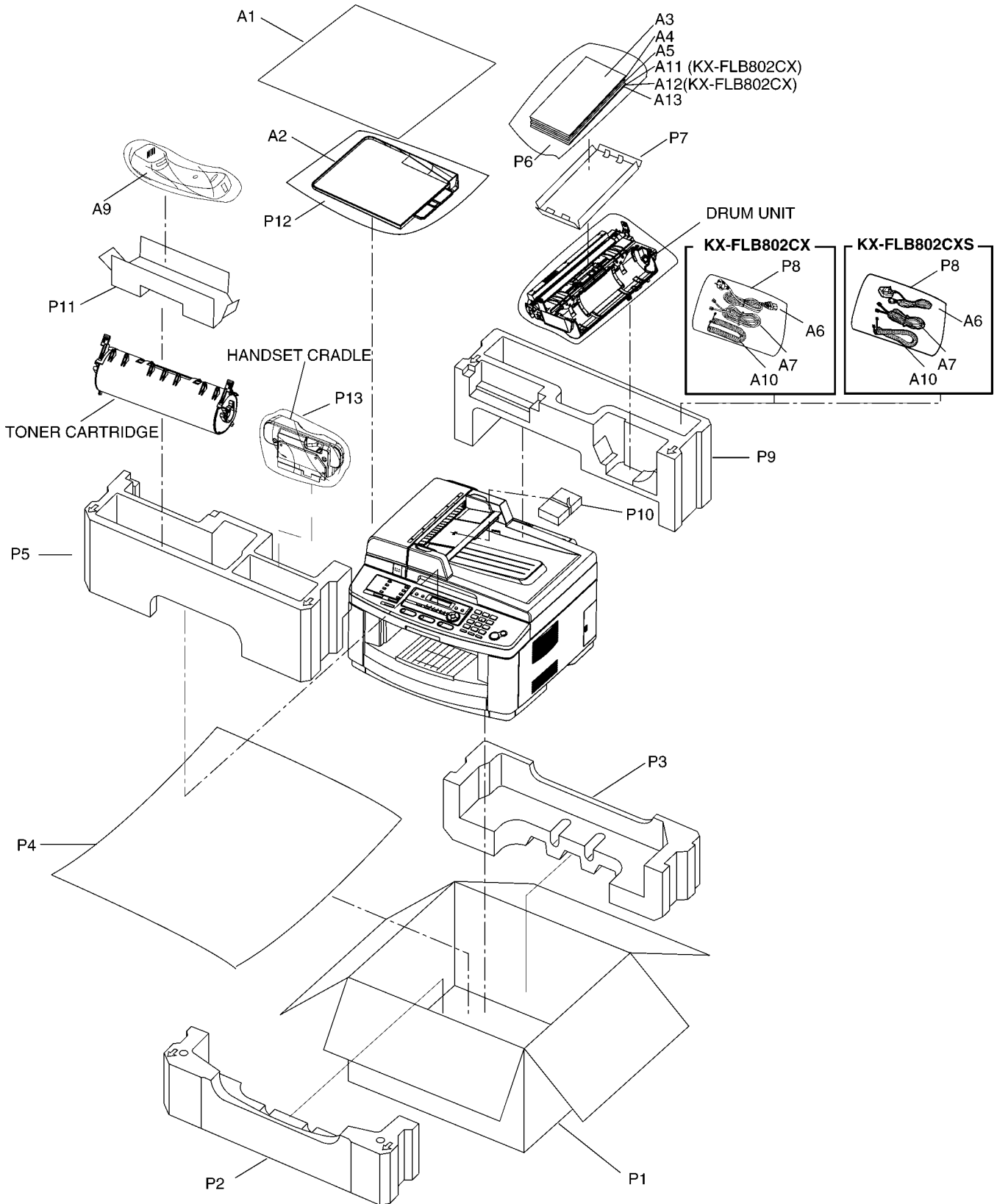
### 19.1.19. HANDSET CRADLE SECTION



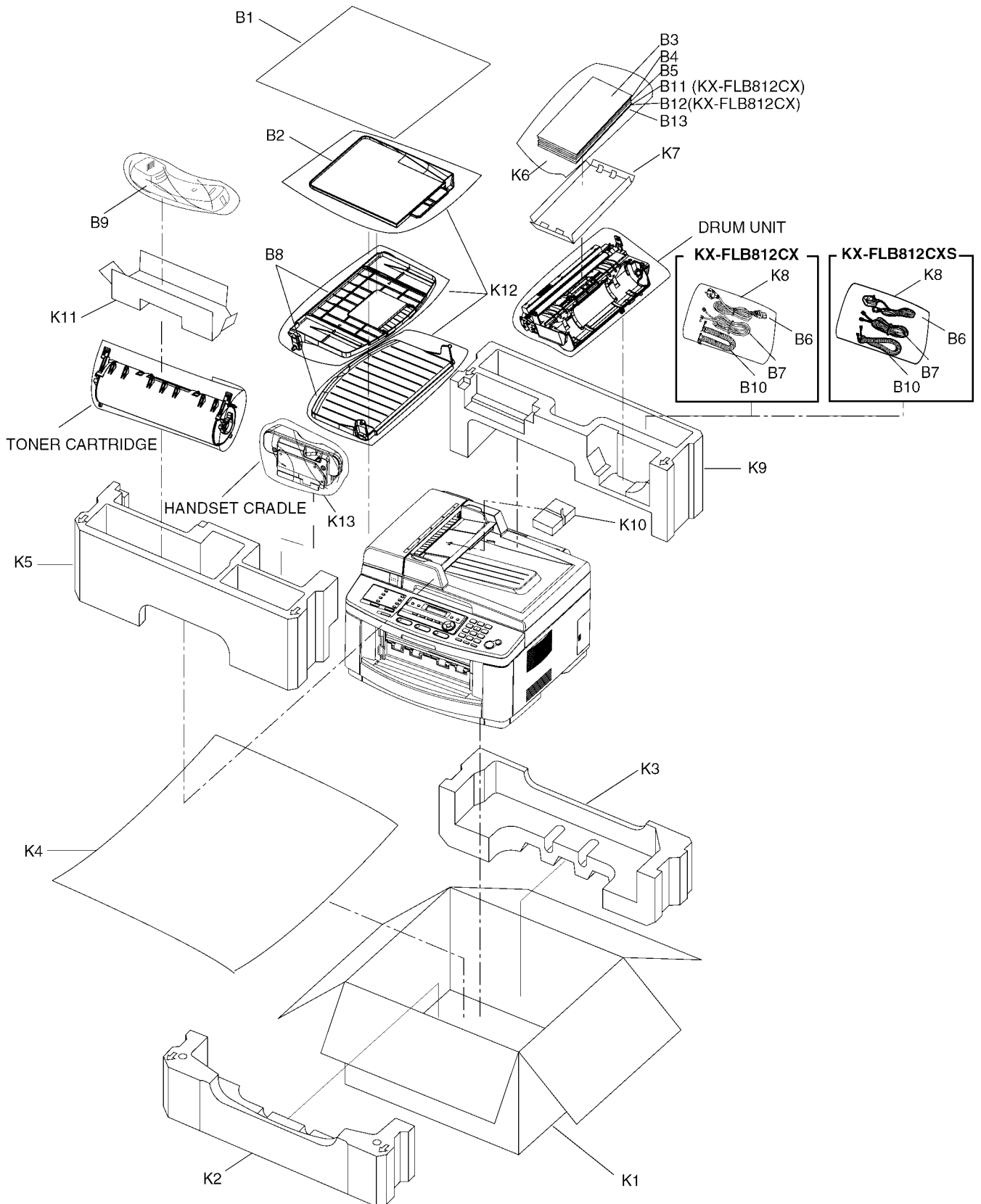
### 19.1.20. ACTUAL SIZE OF SCREWS AND WASHER

	Parts No.	Illustration
Ⓐ	XTW3+10PFJ7	
Ⓑ	XTW3+6LFJ7	
Ⓒ	XTW3+W10PFJ	
Ⓓ	XYC3+FF8FJ	
Ⓔ	XTW3+12PFJ7	
Ⓕ	XTW3+6LFJ	
Ⓖ	XYN3+C6FJ	
Ⓘ	XYC3+CF6FJ	
Ⓚ	XSB4+6FJ	
Ⓝ	XTW3+20PFJ	
Ⓟ	XTB3+10GFJ	

### 19.1.21. ACCESSORIES AND PACKING MATERIALS(KX-FLB802)



### 19.1.22. ACCESSORIES AND PACKING MATERIALS (KX-FLB812)



## 19.2. REPLACEMENT PARTS LIST

RTL (Retention Time Limited)

Notes:

- The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing parts and product retention.

After the end of this period, the assembly 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
------------	------------	---------	------	------	------

\*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	

### 19.2.1. CABINET AND ELECTRICAL PARTS

#### 19.2.1.1. OPERATION PANEL SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
1	PFGV1020Z	TRANSPARENT PLATE	
2	PFGD1055Z	CARD	
3	PFGP1330Z	PANEL (KX-FLB802)	
3	PFGP1336Z	PANEL (KX-FLB812)	PC-V2
4	PFGG1277Z1	GRILLE	PS-HB
5	PFGV1016Z	CASE/COVER	
6	PFGX1022Z	ORNAMENT	ABS-HB
7	PFGG1301v1	PANEL (KX-FLB802)	PS-HB
7	PFGG1276v1	PANEL (KX-FLB812)	PS-HG
8	PFBX1240Z2	PUSH BUTTON	ABS-HB
9	PFBC1157Z1	PUSH BUTTON	ABS-HB
10	PFBC1158Z1	PUSH BUTTON	ABS-HB
11	PFBX1243Z2	PUSH BUTTON	ABS-HB

Ref. No.	Part No.	Part Name & Description	Remarks
12	PFBX1250Z1	PUSH BUTTON	ABS-HB
13	PFBX1249Z1	PUSH BUTTON	ABS-HB
14	PFBC1143Z2	PUSH BUTTON	ABS-HB
15	PFGE1023Z1	COVER	ABS-HB
16	PFHE1279Z	SPONGE	ABS-HB

#### 19.2.1.2. PRINT COVER SECTION (1)

Ref. No.	Part No.	Part Name & Description	Remarks
30	PFHX1922Z	PLASTIC PARTS	
31	PFMD1096Z	COVER	
32	WLL20YG82M3M	LEAD WIRE	
33	PFDE1271Z	ARM	POM-HB
34	PFBS1002Z1	KNOB	ABS-HB
35	PFUS1690Z	LEAF SPRING	
36	PFHR1532Z	SPACER	POM-HB
37	N2GAYY000001	IMAGE SENSOR	
38	PFSE1038Z	LEAD WIRE	
39	PFJS20M02Z	CORD, 20P	
40	PFJS10N89Z	CORD, 10P	
41	PFJS12N91Z	CORD, 12P	
42	PFJS03N80Z	CORD, 3P	
43	PFUS1642Y	COIL SPRING	
44	PFUS1344Z	COIL SPRING	
45	PFDC1004Z	MECHANISM CASE	POM-HB
46	PFUV1091Z	COVER	PS-V0
47	PFUV1092Z	CASE/COVER	
48	PFLB1K002	INSULATOR	
49	PFJE1068Z	CORD	
50	PFDV1003Z	ROUND BELT	
51	PFDF1144Z	SHAFT	
52	PFUS1757Z	SPRING POPUP ADF	
53	PFHX1884Z	SHEET	
54	PFHE1217Z	FELT PARTS	
55	NOT USED		
56	PFHE1216Z	FELT PARTS	
57	PFUS1345Z	COIL SPRING	
58	PQLB1E1	INSULATOR	
59	PFUS1650Z	COIL SPRING	
60	PFHX1965Z	CASE/COVER	
61	PFHE1215Z	FELT PARTS	
62	PFKM1186Z1	CABINET BODY	PS-HB
63	PFJS07N87Z	CORD, 7P	
64	PFHX1885Z	MAGNETIC SHIELD	
65	NOT USED		
66	PFNPD031054C	WASHER	
67	PFDE1170Z	PULLEY	POM-HB
68	PFDE1169Z	PULLEY	POM-HB
69	PFMH1104Z	METAL PARTS	
70	PFDE1168Z	PULLEY	POM-HB
71	PFDG1238Z	GEAR	POM-HB
72	PFMH1179Z	CHASSIS	
73	L6HAYYYK0001	DC MOTOR	
74	PFHX1851Z	INDICATION PLATE-LABEL	
75	PFHX2000Z	WATER SHIELD PARTS	
76	PFHX2013Z	PLASTIC PARTS	
77	PFUS1691Z	COIL SPRING (KX-FLB802 ONLY)	

#### 19.2.1.3. ADF SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
90	PFDR1065Z	ROLLER	POM-HB
91	PFDG1413Z	GEAR	POM-HB
92	PFDG1417Z	GEAR	POM-HB
93	PFDG1416Z	GEAR	POM-HB
94	XUC2FJP	RETAINING RING	
95	PFDE1244Z	LEVER	POM-HB
96	PFHR1479Z	ROLLER	POM-HB
97	PFDF1126Z	SHAFT	
98	PFDJ1044Y	SPACER	

Ref. No.	Part No.	Part Name & Description	Remarks
99	PFUS1325Z	COIL SPRING	
100	PFDG1455X	GEAR	POM-HB
101	PFDR1064Z	ROLLER	POM-HB
102	PFDF1125Z	SHAFT	
103	XUC3FJP	RETAINING RING	
104	PFDE1247X	LEVER	POM-HB
105	PFDF1095Z	SHAFT	
106	PFDJ1044Z	SPACER	POM-HB
107	PFUS1624Y	COIL SPRING	
108	PFHG1222Z	RUBBER PARTS	
109	PFKV1105X1	COVER	PS-HB
110	PFZCFLB851M	CHASSIS	
111	PFUS1627Y	BAR SPRING	
112	PFUS1620Z	COIL SPRING	
113	NOT USED		
114	NOT USED		
115	PFMH1195Y	METAL PARTS	
116	PFDG1297Z	GEAR	POM-HB
117	PFDG1245Z	GEAR	POM-HB
118	PFDG1177Z	GEAR	POM-HB
119	PFUV1080W	COVER	PS-HB
120	PFDG1410Z	GEAR	POM-HB
121	PFDR1063X	ROLLER	PS-HB
122	PFDF1138Y	SHAFT	
123	PFJV1006Z	METAL PARTS	
124	PFSE1037Z	LEAD WIRE	
125	L6HAYYYK0002	DC MOTOR	
126	PFHX1851Z	INDICATION PLATE-LABEL	
127	PFMH1160Z	CHASSIS	
128	PFDG1409Z	GEAR	POM-HB
129	PFNPD041065C	SPACER	
130	PFDG1408Z	GEAR	POM-HB
131	PFDG1414Z	GEAR	POM-HB
132	PFJS10N92Z	JACK/SOCKET, 10P	
133	PFJS04N37Z	CONNECTOR, 4P	
134	PFKV1106Y1	COVER	PS-HB
135	PFUS1625Y	COIL SPRING	
136	PFUS1626Y	COIL SPRING	
137	PFDE1264Z	LEVER	POM-HB
138	PFDE1242Z	LEVER	POM-HB
139	PFUS1629Z	TORSION SPRING	
140	PFDR1062Z	ROLLER	POM-HB
141	PFDG1415Y	GEAR	POM-HB
142	PFDJ1083Y	SPACER	POM-HB
143	PFDN1084Z	ROLLER	
144	PFDJ1083Z	SPACER	POM-HB
145	PFUE1037Z	CHASSIS	PC+ABS-HB
146	PFNPB031054	SPACER	
147	PFHX1937Z	SHEET	
148	PFHX1964Z	CASE/COVER	
149	PFDE1266Z	LEVER	PC-HB
150	PFDE1265Z	LEVER	PC-HB
151	NOT USED		
152	PFUS1646Z	COIL SPRING	
153	PFQT2488Z	INDICATION LABEL	
154	PFHX1938Y	CASE	
155	NOT USED		

#### 19.2.1.4. PRINT COVER SECTION (2)

Ref. No.	Part No.	Part Name & Description	Remarks
170	PFHE1185Z	TAPE	
171	PFHE1184Z	TAPE	
172	PFHE1183Z	TAPE	
173	PFHX1796Z	PLASTIC PARTS	
174	PFHX1923Z	PLASTIC PARTS	
175	PF0G1009Z	TRANSPARENT PLATE	
176	PFUS1701Z	COIL SPRING	
177	PFDF1145Z	SHAFT	
178	PFDR1073Z	ROLLER	POM-HB
179	PFUS1700Z	COIL SPRING	

Ref. No.	Part No.	Part Name & Description	Remarks
180	PF0G1011Z	TRANSPARENT PLATE	
181	PFKM1184Z1	CABINET BODY	PS-HB
182	PFUS1643Z	COIL SPRING	
183	PFDR1066Z	ROLLER	POM-HB
184	XPL12A8WUW	KEY-PIN	
185	PFHR1533Z1	CLAMPER	ABS-HB
186	PFDF1146Z	SHAFT	
187	PFHR1534Z	CLAMPER	ABS-HB
188	PFUS1644Z	COIL SPRING	
189	PFHX2001Z	PLASTIC PARTS	
190	PFHX1937Z	SHEET	
191	PFUS1754Z	COIL SPRING	
192	XPL12A8WUW	KEY PIN	
193	PFZXFLB801M	COVER	

#### 19.2.1.5. PRINT COVER SECTION (3)

Ref. No.	Part No.	Part Name & Description	Remarks
200	PFHX1956Z	GUIDE (KX-FLB812 only)	
201	PFUS1651Z	TORSIONSPRING (KX-FLB812 only)	
202	PFDE1231Z	LEVER	POM-HB
203	PFMH1159Z	METAL PARTS	
204	PFDJ1042Z	SPACER	POM-HB
205	PFDS1019Z	ROLLER	
206	PFUS1269Y	COIL SPRING	
207	PFHX1518Z	PLASTIC PARTS	
208	PFUG1018Y	GUIDE	PS-HB
209	PFUE1038Z	ARM	POM-HB
210	PFMH1182Z	ARM	
211	PFUS1689Z	COILSPRING (KX-FLB812 only)	
212	PFDR1069Z	ROLLER (KX-FLB812 only)	POM-HB
213	PFUG1031Z1	GUIDE (KX-FLB812 only)	ABS-HB
214	PFJV1012Z	METAL PARTS (KX-FLB812 only)	
215	PFUS1741Z	COILSPRING (KX-FLB812 only)	
216	PFDG1294Z	GEAR	POM-HB
217	PFUS1753Z	COIL SPRING	
218	PFJV1011Z	BRUSH (KX-FLB802 only)	
219	PFHX1937Z	SHEET (KX-FLB802 only)	

#### 19.2.1.6. MANUAL TRAY

Ref. No.	Part No.	Part Name & Description	Remarks
230	PFKS1137Z1	TRAY	PS-HB
231	PFQT2644Z	INDICATION PLATE-LABEL	
232	PFKV1134Z1	COVER	S PS-HB
233	PFDG1015Y	GEAR	POM-HB
234	PFKS1136Z1	TRAY	PS-HB
235	PFKR1079Z1	GUIDE	ABS-HB
236	PFKR1080Z1	GUIDE	ABS-HB
237	PFKV1133Z1	TRAY	PS-HB
238	PFHX1915Z	CASE/COVER	
239	PFDR1076Z	ROLLER	
240	PFDF1128Z	SHAFT	
241	PFHR1538Z	CABINET ACCESSORY	
242	PFUS1658Z	COIL SPRING	
243	PFHX1910Z	PLASTIC PARTS	
244	PFMD1098Z	ANGLE	
245	PFKV1132Z	COVER	ABS+GF2 0%-HB
246	WLL20YG30M3M	LEAD WIRE	
247	PFHX2027Z	SHEET	

#### 19.2.1.7. SEPARATION ROLLER SECTION (KX-FLB812 ONLY)

Ref. No.	Part No.	Part Name & Description	Remarks
260	PFDR1074Z	ROLLER	

Ref. No.	Part No.	Part Name & Description	Remarks
261	PFKE1049Z1	GUIDE	PS-HB
262	PFJV1010Z	METAL PARTS	
263	PFDR1069Z	ROLLER	POM-HB
264	PFUS1568Z	BAR SPRING	
265	PFUG1033Z	GUIDE	
266	PFUS1648Z	TORSION SPRING	
267	PFHR1563Z	FELT PARTS	
268	PFUG1032Z	GUIDE	ABS-HB
269	PFKE1048Z1	PARTING PLATE	ABS-HB
270	PFUS1739Z	BAR SPRING	
271	PFMH1181Z	METAL PARTS	
272	PFDG1198Z	GEAR	POM-HB
273	PFDG1395Z	GEAR	POM-HB
274	PFDG1456Z	GEAR	POM-HB
275	PFDG1398Z	GEAR	POM-HB
276	PFDE1268Z	LEVER	POM-HB
277	PFUS1649Z	COIL SPRING	
278	L9AAAYB0001	ERECTROMAGNETIC COIL	
279	PFUS1687Z	BAR SPRING	
280	PFHR1648Z	SIDE COVER EJECT	

### 19.2.1.8. UPPER CABINET SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
290	WLL20YW06M3M	LEAD WIRE	
291	PFUE1025Y	GUIDE	ABS-HB
292	PFSE1025Z	CONNECTOR	
293	PFJV1009Z	METAL PARTS	
294	NOT USED		
295	PFKV1150Z	COVER	PS-HB
296	PF0G1006Z	MIRROR	
297	WLL20YG15M3M	LEAD WIRE	
298	PFMH1203Z	METAL PARTS	
299	PFUS1613Z	COIL SPRING	
300	PFDF1137Z	SHAFT	
301	PFDJ1086Y	SPACER	POM-HB
302	PFDJ1086Z	SPACER	POM-HB
303	PFDJ1044Z	SPACER	POM-HB
304	PFDN1080Z	ROLLER	
305	PFDG1420Z	GEAR	POM-HB
306	PFKV1151Z	COVER	PS-HB
307	PFKM1185Z1	CABINET BODY	PS-V0
308	PFDE1251Z	SPACER	POM-HB
309	PFDG1419Z	GEAR	POM-HB
310	PFDJ1085Y	SPACER	POM-HB
311	PFDN1079Z	ROLLER	
312	PFDJ1085Z	SPACER	POM-HB
313	PFQT2660Z	LABEL CAUSION	
314	PFQT2663Y	INDICATION LABEL	
315	PFUS1688Z	COIL SPRING (KX-FLB812 ONLY)	
316	PFJS04M10Z	CORD, 4P	
317	PFHX1937Z	SHEET	

### 19.2.1.9. FUSER SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
330	PFDS1025Z	ROLLER	
331	PFDJ1087Z	SPACER	
332	PFUS1426Z	COIL SPRING	
333	PFHR1495Z	LEVER	PBT-GF30-V0
334	PFHR1496Z	LEVER	PBT-GF30-V0
335	PFDR1069Z	ROLLER	POM-HB
336	PFUS1568Z	BAR SPRING	
337	PFUA1068Y	CHASSIS	PBT+ABS-GF30-V0
338	A4DP7K000001	HALOGEN LAMP	
339	PFDG1421Z	GEAR	PPS-V0
340	PFDJ1089Z	SPACER	

Ref. No.	Part No.	Part Name & Description	Remarks
341	PFDS1015Y	ROLLER	
342	PFDJ1088Z	SPACER	
343	PFJT1031Z	TERMINAL-TERMINAL PLATE	
344	PFMH1085Z	METAL PARTS	
345	K0BDB0000073	THERMOSTAT	
346	PFHX1881Z	SPACER	
347	PFJT1032Z	TERMINAL-TERMINAL PLATE	
348	PJHR9224Z	SPACER	
349	PFJT1030Z	TERMINAL-TERMINAL PLATE	
350	PFRT003	THERMISTOR	S
351	PFDG1423Z	GEAR	POLY-MIDE-V0
352	XUC2FJP	RETAINING RING	
353	PFDG1422Z	GEAR	POM-HB
354	PFUS1640Z	COIL SPRING	
355	PFDR1096Z	ROLLER (KX-FLB802)	
355	PFDR1068Z	ROLLER (KX-FLB812)	
356	PFUA1067Z	CHASSIS	PBT+ABS-GF30-V0
357	PFDE1269Z	LEVER	PBT-V0
358	PFUS1686Z	COIL SPRING	
359	PFHX1921Z	COVER	
360	PFHX2025Z	SHEET (KX-FLB802 ONLY)	
361	PFHX2034Z	SHEET (KX-FLB802 ONLY)	

### 19.2.1.10. MOTOR SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
370	L6CCKGE0005	DC MOTOR	
371	PFMD1094Z	CHASSIS	
372	PFNPD052080	SPACER	
373	PFDG1388Z	GEAR	POM-HB
374	PFDG1400Z	GEAR	POM-HB

### 19.2.1.11. GEAR SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
390	PFDE1235Z	LEVER	POM-HB
391	PFUS1561Z	COIL SPRING	
392	PFUS1692Z	LEAF SPRING	
393	PFDG1389Z	GEAR	POM-HB
394	PFDE1267Z	LEVER	POM-HB
395	PFDG1390Z	GEAR	POM-HB
396	PFDG1391Z	GEAR	POM-HB
397	L9AAACEB0008	ERECTROMAGNETIC COIL	
398	PFUA1072Z	CHASSIS	PBT+ABS-V1
399	PFDG1406Z	GEAR	POM-HB
400	PFDG1402Z	GEAR	POM-HB
401	PFDG1404Z	GEAR	POM-HB
402	PFDG1405Z	GEAR	POM-HB
403	PFDG1403Z	GEAR	POM-HB
404	PFDG1401Z	GEAR	POM-HB

### 19.2.1.12. LOWER CABINET SECTION (1)

Ref. No.	Part No.	Part Name & Description	Remarks
420	PFJS05N84Z	JACK/SOCKET, 5P	
421	NOT USED		
422	PFJS03N81Z	CONNECTOR, 3P	
423	WLL20YG15M3M	LEAD WIRE	
424	WLL20YG27M3M	LEAD WIRE	
425	PFJS03N82Z	CONNECTOR, 3P	
426	PFUS1693Z	COIL SPRING	
427	PFUS1612Z	COIL SPRING	
428	PFDE1252Z	LEVER	POM-HB
429	PFUS1639Z	COIL SPRING	
430	L0AA05A00048	SPEAKER	



Ref. No.	Part No.	Part Name & Description	Remarks
431	PFUS1502Z	TORSION SPRING	
432	PFJS02N79Z	LEAD WIRE, 2P	

### 19.2.1.13. LOWER CABINET SECTION (2)

Ref. No.	Part No.	Part Name & Description	Remarks
450	PFMD1101Z	CHASSIS	
451	NOT USED		
452	NOT USED		
453	NOT USED		
454	PQHM112Z	CLAMBER	
455	PFJS08N88Z	CORD, 8P	
456	PFUS1600Z	COIL SPRING	
457	NOT USED		
458	PFUS1685Z	COIL SPRING	
459	PFHR1536Z	GUIDE	ABS-HB
460	PFUS1609Z	LEAF SPRING	
461	PFHR1537Z	ARM	ABS-HB
462	PFHX1924Y	SHEET PAPER	
463	PFHG1155Z	RUBBER PARTS	
464	PFHR1493X	SHEET PAPER	ABS-HB
465	PFJE1093Z	LEAD WIRE	
466	PFUG1027Z	GUIDE	ABS-HB
467	PFUG1028Z	GUIDE	ABS-HB
468	PFUG1030Z	GUIDE	ABS-HB
469	PFUS1654Z	COIL SPRING	
470	PFHD1034Z	SCREW	

### 19.2.1.14. LOWER CABINET SECTION (3)

Ref. No.	Part No.	Part Name & Description	Remarks
480	PFUS1597Z	COIL SPRING	
481	PFUE1035Y	CHASSIS	PS-5V
482	PFUS1576Z	BAR SPRING	
483	PFUS1599Y	BAR SPRING	
484	PFUS1577Z	LEAF SPRING	
485	PFUS1598Y	BAR SPRING	
486	PFUS1574Z	LEAF SPRING	
487	PFUS1575Z	LEAF SPRING	
488	PFUE1034Y	LEVER	PS-HB
489	PFUS1451Z	COIL SPRING	
490	PFUS1028Z	LEAF SPRING	
491	PFOM1006Z	MIRROR	
492	PFUE1036Z	PLASTIC PARTS	PS-HB
493	LPA1604K	PC BOARD W/COMPONENT	△
494	PFJS05N23Z	CONNECTOR, 5P	
495	L6FAYYYK0001	DC MOTOR	
496	PFHA1001Z	RUBBER PARTS	
497	PFJS07M09Z	CONNECTOR, 7P	
498	PFUS1592Z	TORSION SPRING	
499	PFJS11N90Z	CONNECTOR, 11P	
500	PFJS06N86Z	CONNECTOR, 6P	
501	PFDE1270Z	LEVER	POM-HB
502	PFJS04N83Z	CONNECTOR, 4P	
503	PFUS1694Z	TORSION SPRING	
504	JKG00000001	INSULATOR	
505	XWC4BFJ	WASHER	
506	NOT USED		
507	PFMD1103Z	COVER	
508	PFJS02M07Y	CONNECTOR, 2P	
509	PFJS06N85Z	CONNECTOR, 6P	
510	PQJP3A3Z	JACK/SOCKET	
511	NOT USED		
512	NOT USED		
513	PQLB1E1	INSULATOR	
514	PQHR945Z	BAND	
515	PFJS02P02Z	CONNECTOR, 2P	
516	WLR18YK39CM4	LEAD WIRE	
517	PFDF1148Z	SHAFT	
518	PFDJ1084Z	SPACER	POM-HB

Ref. No.	Part No.	Part Name & Description	Remarks
519	PFDR1067Z	PULLEY	POM-HB
520	PFDE1246Z	ANGLE	POM-HB
521	PFDN1048Z	ROLLER	
522	PFDJ1098Z	SPACER	POM-HB
523	PFUS1610Z	COIL SPRING	
524	PFUG1020Y	GUIDE	PS-V0
525	PFDE1250Z	LEVER	POM-HB
526	PFDJ1084Y	SPACER	POM-HB
527	PFDG1418Z	GEAR	POM-HB
528	PFUS1657Z	TORSION SPRING	
529	PFQT2643Z	INDICATION LABEL	
530	PFMH1180Z	CHASSIS	
531	PQMX10010Z	INSULATOR	
532	WLL20YW06M3M	LEAD WIRE	

### 19.2.1.15. MAIN CABINET SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
540	PFUS1647Z	LEAF SPRING	
541	PFKV1131X1	COVER	PS-V0
542	PFMH1157Z	CHASSIS	
543	PFJS08M08Z	CORD, 8P	
544	PFDG1395Z	GEAR	POM-HB
545	PFDG1396Z	GEAR	POM-HB
546	L6FAYYYK0001	DC MOTOR	
547	PFQT2807Z	LABEL, CAUTION DUMPER	
548	PFMD1093Z	CHASSIS	
549	PFHX1970Z	SHEET PAPER	

### 19.2.1.16. LOWER SIDE CABINET

Ref. No.	Part No.	Part Name & Description	Remarks
570	NOT USED		
571	PFKK1043Z1	DOOR-LID	PS-HB
572	PFKM1187Z1	CABINET BODY	PS-V0
573	NOT USED		
574	PFKM1188Z1	CABINET BODY	PS-V0
575	PFMD1095Z	COVER	
576	PFUG1029Z	GUIDE	ABS-HB
577	PFHX1985Z	SHEET PAPER	

### 19.2.1.17. CASSETTE DOCUMENT TRAY SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
590	PFHR1481Z	COVER	PS-HB
591	PFHR1480Z	HINGE-STAY	POM-HB
592	PFKV1130Z1	COVER	PS-HB
593	PFDG1015Y	GEAR	POM-HB
594	PFUS1622Z	COIL SPRING	
595	PFKE1043Y1	GUIDE	PS-HB
596	PFKR1084Z1	GUIDE	ABS-HB
597	PFKR1083Z1	GUIDE	ABS-HB
598	PFHG1245Z	RUBBER PARTS	
599	PFUS1655Z	LEAF SPRING	
600	PFMD1097Z	CHASSIS	
601	PFUS1656Z	TORSION SPRING	
602	PFUS1608Z	TORSION SPRING	
603	PFHR1491Z	CHASSIS	POM-HB
604	PFKS1138Z1	TRAY	PS-HB
605	PFKR1093Z	LEVER	ABS-HB
606	PFKR1094Z	LEVER	ABS-HB
607	PFKR1085Y	LEVER	POM-HB
608	PFQT2652Z	LABEL CASSETTE CAUTION	
609	PFQT2661E	LABEL CAUTION	
610	NOT USED		
611	PFGT3079Z-M	NAME PLATE (KX-FLB802)	
611	PFGT3078Z-M	NAME PLATE (KX-FLB812)	

### 19.2.1.18. TRAY SECTION (KX-FLB802 ONLY)

Ref. No.	Part No.	Part Name & Description	Remarks
620	PFKS1134Z1	TRAY	PS-HB
621	PFKS1132Z1	TRAY	PS-HB
622	PFKS1133Z1	TRAY	PS-HB

### 19.2.2. HANDSET CRADLE SECTION

Ref. No.	Part No.	Part Name & Description	Remarks
640	PFKF1085Y1	CABINET COVER	S
641	PFBH1032Z1	PUSH BUTTON	S
642	PFJA06B002Z	CORD	
643	PFKM1181X1	CABINET BODY	S

### 19.2.3. ACCESSORIES AND PACKING MATERIALS

• KX-FLB802

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PFQW2446Z	INSTRUCTION BOOK	
A2	PFKS1117Y1	TRAY	S
A3	PFJKFLB851Z	MEMORY PARTS	
A4	PFQX2364Z	INSTRUCTION BOOK	
A5	PFQW2403Z	INSTRUCTION BOOK	
A6	PFJA03A010Z	POWER CORD (KX-FLB802CX)	
A6	K2CT3EH00005	POWER CORD (KX-FLB802CXS)	
A7	PFJA02B002Y	CORD	
A8	NOT USED		
A9	PFJXE1041Z	HANDSET	
A10	PFJA1029Z	CORD	
A11	PFQW2404Z	INSTRUCTION BOOK (KX-FLB802CX)	
A12	PFQW2405Z	INSTRUCTION BOOK (KX-FLB802CX)	
A13	PFQW2402Z	INSTRUCTION BOOK	
P1	PFPK3051Z-M	PACKING CASE (KX-FLB802CX)	S
P1	PFPK3147Z-M	PACKING CASE (KX-FLB802CXS)	S
P2	PFPN1418Z	CUSHION	
P3	PFPN1419Z	CUSHION	
P4	PFPP1041Z	PROTECTION COVER	
P5	PFPN1416Z	CUSHION	
P6	XZB32X45A04	PROTECTION COVER	
P7	PFPPD1306Z	CUSHION	
P8	XZB20X35A04	PROTECTION COVER	
P9	PFPN1417Z	CUSHION	
P10	PFPB1001Z	CUSHION	
P11	PFPPD1309Z	CUSHION	
P12	PFPH1046Z	PROTECTION COVER	
P13	XZB20X30A04	PROTECTION COVER	

• KX-FLB812

Ref. No.	Part No.	Part Name & Description	Remarks
B1	PFQW2447Z	INSTRUCTION BOOK	
B2	PFKS1117Y1	TRAY	S
B3	PFJKFLB851Z	MEMORY PARTS	
B4	PFQX2364Z	INSTRUCTION BOOK (KX-FLB812CX)	
B5	PFQW2403Z	INSTRUCTION BOOK	
B6	PFJA03A010Z	POWER CORD (KX-FLB812CX)	
B6	K2CT3EH00005	POWER CORD (KX-FLB812CXS)	
B7	PFJA02B002Y	CORD	
B8	PFZXFLB811M	TRAY	
B9	PFJXE1041Z	HANDSET	
B10	PFJA1029Z	CORD	

Ref. No.	Part No.	Part Name & Description	Remarks
B11	PFQW2404Z	INSTRUCTIONBOOK (KX-FLB812CX)	
B12	PFQW2405Z	INSTRUCTIONBOOK (KX-FLB812CX)	
B13	PFQW2402Z	INSTRUCTION BOOK	
K1	PFPK3053Z-M	PACKING CASE (KX-FLB812CX)	S
K1	PFPK3153Z-M	PACKING CASE (KX-FLB812CXS)	
K2	PFPN1418Z	CUSHION	
K3	PFPN1419Z	CUSHION	
K4	PFPP1041Z	PROTECTION COVER	
K5	PFPN1416Z	CUSHION	
K6	XZB32X45A04	PROTECTION COVER	
K7	PFPPD1306Z	CUSHION	
K8	XZB20X35A04	PROTECTION COVER	
K9	PFPN1417Z	CUSHION	
K10	PFPB1001Z	CUSHION	
K11	PFPPD1309Z	CUSHION	
K12	PFPH1046Z	PROTECTION COVER	
K13	XZB20X30A04	PROTECTION COVER	

### 19.2.4. DIGITAL BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PFWP1LB802CX	DIGITAL BOARD ASS'Y (RTL) (KXFLB802CX / 802CXS)	
PCB1	PFWP1LB812CX	DIGITAL BOARD ASS'Y (RTL) (KX-FLB812CX / 812CXS)	
		(IC)	
IC600	C1ZBZ0002831	IC	
IC601	C3ABRG000037	IC	S
IC602	PFWILB802CX1	IC (ROM) (KX-FLB802CX/802CXS)	
IC602	PFWILB812CX1	IC (ROM) (KX-FLB812CX/812CXS)	
IC603	C0CBADD00010	IC	
IC604	C1ZBZ0002767	IC	
IC605	C0DBAFF00019	IC	
IC606	C0EBE0000124	IC	
IC607	C5CB00000057	IC	
IC608	C1CB00001985	IC	
IC609	C1BB00000129	IC	△
IC610	C0JBAA000362	IC	
IC611	C0JBAA000244	IC	
IC612	C1DB00001173	IC	
IC613	C0JBAA000362	IC	
IC614	C0JBAA000362	IC	
		(TRANSISTORS)	
Q600	B1ABDF000025	TRANSISTOR (SI)	
Q601	2SB1197KQ	TRANSISTOR (SI)	S
Q602	2SB1197KQ	TRANSISTOR (SI)	S
Q603	PQVTD143Z106	TRANSISTOR (SI)	S
Q604	PQVTD143Z106	TRANSISTOR (SI)	S
Q605	PQVTD143Z106	TRANSISTOR (SI)	S
Q606	PQVTD143Z106	TRANSISTOR (SI)	S
Q607	2SB1197KQ	TRANSISTOR (SI)	S
Q608	2SB1197KQ	TRANSISTOR (SI)	S
Q609	PQVTD143Z106	TRANSISTOR (SI)	S
Q610	2SD1820A	TRANSISTOR (SI)	
Q611	PQVTD143Z106	TRANSISTOR (SI)	S
Q612	2SD1820A	TRANSISTOR (SI)	
Q613	2SB1197KQ	TRANSISTOR (SI)	S
Q614	PQVTD143Z106	TRANSISTOR (SI)	S
Q615	PQVTDTA143ZU	TRANSISTOR (SI)	S
Q619	PQVTDTA143ZU	TRANSISTOR (SI)	S
Q620	PQVTD143Z106	TRANSISTOR (SI)	S
Q621	2SB1197KQ	TRANSISTOR (SI)	S
Q622	PQVTD143Z106	TRANSISTOR (SI)	S
Q623	2SD1820A	TRANSISTOR (SI)	
Q624	2SB1197KQ	TRANSISTOR (SI)	S
Q625	PQVTD143Z106	TRANSISTOR (SI)	S
Q626	PQVTD143Z106	TRANSISTOR (SI)	S
Q631	PQVTD143Z106	TRANSISTOR (SI)	S
Q632	PQVTD143Z106	TRANSISTOR (SI)	S
Q633	B1CHND000004	TRANSISTOR (SI)	
Q634	PQVTD143Z106	TRANSISTOR (SI)	S
Q635	PQVTD143Z106	TRANSISTOR (SI)	S

Ref. No.	Part No.	Part Name & Description	Remarks
Q639	PQVTD143Z106	TRANSISTOR (SI)	S
Q642	PQVTD143Z106	TRANSISTOR (SI)	S
Q644	PQVTD143Z106	TRANSISTOR (SI)	S
D601	PQVDRLS73T	DIODE (SI)	S
D603	PQVDRLS73T	DIODE (SI)	S
D606	PQVDRLS73T	DIODE (SI)	S
D609	B0BC2R5A0006	DIODE (SI)	S
DA600	MA141WK	DIODE (SI)	S
		(BATTERY)	
BAT600	BR2032/1HF1	LITHIUM BATTERY	△ S
		(CAPACITORS)	
C551	ECUV1C104KBV	0.1	
C552	ECUV1C104KBV	0.1	
C553	ERJ3GEY0R00	0	
C554	ECUV1C104KBV	0.1	
C555	ECUV1C103KBV	0.01	
C556	ECUV0J105KBV	1	
C557	ECUV1C104KBV	0.1	
C558	ECUV1C104KBV	0.1	
C559	ECUV1C104KBV	0.1	
C560	ECUV1C104KBV	0.1	
C563	ECJ0EC1H470J	47p	
C566	ECJ0EF1C104Z	0.1	
C571	ECJ0EC1H470J	47p	
C573	ECJ0EC1H150J	15p	
C575	ECJ0EB1E102K	0.001	
C576	ECJ0EF1C104Z	0.1	
C577	FLJ0J1060006	10	
C578	FLJ0J1060006	10	
C579	FLJ0J1060006	10	
C580	ECJ0EB1E102K	0.001	
C583	ECJ0EF1C104Z	0.1	
C584	F2G0J1010014	100	
C585	ECJ0EB1E102K	0.001	
C586	ECJ0EB1E102K	0.001	
C587	ECJ0EB1E102K	0.001	
C588	ECJ0EF1C104Z	0.1	
C589	ECJ0EF1C104Z	0.1	
C590	ECJ0EB1H471K	470p	
C591	ECJ0EB1H471K	470p	
C592	ECJ0EB1H471K	470p	
C593	ECJ0EB1E472K	0.0047	
C594	ECJ0EB1H471K	470p	
C595	ECJ0EB1H471K	470p	
C596	ECJ0EB1H471K	470p	
C597	ECJ0EB1E102K	0.001	
C598	ECJ0EB1H471K	470p	
C603	ECUV1H150JCV	15p	
C604	ECUV1H150JCV	15p	
C605	ECUV1C104ZFB	0.1	
C606	ECUV1C103KBV	0.01	
C607	ECUV1C103KBV	0.01	
C608	ECJ0EF1C104Z	0.1	
C609	ECUV1C104ZFB	0.1	
C610	ECUV1C103KBV	0.01	
C611	ECUV1C104ZFB	0.1	
C612	ECUV1C104ZFB	0.1	
C613	ECUV1C104ZFB	0.1	
C614	ECUV1H150JCV	15p	
C615	ECUV1H150JCV	15p	
C616	ECUV1H150JCV	15p	
C617	ECUV1H270JCV	27p	
C618	ECUV1C104ZFB	0.1	
C619	ECUV1C104ZFB	0.1	
C620	F2G1V1010017	0.1	
C621	ECJ0EF1C104Z	0.1	
C622	ECJ0EC1H270J	27p	
C623	ECJ0EF1C104Z	0.1	
C624	ECJ0EC1H270J	27p	
C625	ECJ0EF1C104Z	0.1	
C626	ECJ0EC1H270J	27p	
C627	ECJ0EF1C104Z	0.1	
C628	ECJ0EC1H270J	27p	

Ref. No.	Part No.	Part Name & Description	Remarks
C629	ECJ0EF1C104Z	0.1	
C630	ECJ0EC1H270J	27p	
C631	ECJ0EF1C104Z	0.1	
C632	ECJ0EC1H270J	27p	
C633	ECJ0EF1C104Z	0.1	
C634	ECJ0EC1H270J	27p	
C635	ECJ0EF1C104Z	0.1	
C636	ECJ0EF1C104Z	0.1	
C637	ECJ0EF1C104Z	0.1	
C638	ECJ0EF1C104Z	0.1	
C639	ECJ0EF1C104Z	0.1	
C640	ECJ1VC1H221J	220p	
C641	ECJ0EF1C104Z	0.1	
C642	ECUV1C104ZFB	0.1	
C643	ECUV1C104ZFB	0.1	
C644	ECUV1C104ZFB	0.1	
C645	ECJ0EF1C104Z	0.1	
C646	ECUV1A105ZFB	1	
C647	ECUV1C104ZFB	0.1	
C648	ECUV1H070CCV	7p	
C649	ECUV1H070CCV	7p	
C650	F2G1C4700026	47	
C651	ECUV1C104ZFB	0.1	
C652	F2G1V1010017	100	
C655	F2G1V1010017	100	
C656	ECJ1VF1H104Z	0.1	
C657	F2G1V1010017	100	
C658	F2G1V1010017	100	
C660	ECUV1H102KBV	0.001	
C661	ECUV1C473KBV	0.047	
C662	ECUV1C104ZFB	0.1	
C663	ECUV1C473KBV	0.047	
C664	ECUV1H102KBV	0.001	
C665	ECUV1H102KBV	0.001	
C666	ECUV1C104KBV	0.1	
C667	ECUV1A105KBV	1	
C668	ECUV1C105KBV	1	
C670	ECUV1H220JCV	22p	
C671	ECUV1H180JCV	18p	
C673	ECJ1VF1H104Z	0.1	
C674	ECUV1A105KBV	1	
C676	ECUV1C473KBV	0.047	
C677	F2G0J1010042	100	
C678	F2G0J1010042	100	
C679	ECUV1C104ZFB	0.1	
C680	ECUV1C104ZFB	0.1	
C681	ECUV1C104ZFB	0.1	
C682	ECUV1C104ZFB	0.1	
C683	ECUV1A105KBV	1	
C684	ECUV1C104ZFB	0.1	
C685	F2G0J4700032	47	
C686	F2G1C4700026	47	
C687	ECUV1H102KBV	0.001	
C688	ECUV1H070DCV	7p	
C689	ECUV1A334KBV	0.33	
C690	ECUV1C104ZFB	0.1	
C691	ECUV1H070CCV	7p	
C692	ECUV1C104ZFB	0.1	
C693	ECUV1C104KBV	0.1	
C694	ECUV1C104ZFB	0.1	
C695	ECUV1C104ZFB	0.1	
C696	ECUV1C104ZFB	0.1	
C697	ECUV1H102KBV	0.001	
C698	ECUV1C104ZFB	0.1	
C699	ECUV1C104ZFB	0.1	
C700	ECUV1H102KBV	0.001	
C701	ECJ1VC1H181J	180p	
C702	ECUV1H070DCV	7p	
C703	ECUV1H060DCV	6p	
C704	ECUV1C104ZFB	0.1	
C705	ECUV1C104ZFB	0.1	
C707	ECUV1H102KBV	0.001	
C708	ECUV1H102KBV	0.001	

Ref. No.	Part No.	Part Name & Description	Remarks
C709	ECUV1H102KBV	0.001	
C710	ECUV1H102KBV	0.001	
C711	ECUV1H102KBV	0.001	
C712	ECUV1H102KBV	0.001	
C713	ECUV1H102KBV	0.001	
C714	ECUV1C473KBV	0.047	
C715	ECJ0EF1C104Z	0.1	
C716	ECJ0EF1C104Z	0.1	
C717	F2G0J1010042	100	
C718	ECUV1C104ZFV	0.1	
C719	F2G1V1010017	100	
C720	ECJ1VF1H104Z	0.1	
C721	ECUV1H222KBV	0.0022	
C722	ECUV1H222KBV	0.0022	
C723	ECUV1H330JCV	33p	
C724	ECUV1H100JCV	10p	
C725	F2G0J4700032	47	
C726	F2G0J4700032	47	
C727	F2G0J3310015	330	
C728	ECUV1A105ZFV	1	
C729	ECUV1C104ZFV	0.1	
C730	ECJ0EB1H101K	100p	
C731	ECJ0EB1H101K	100p	
C732	ECUV1C104ZFV	0.1	
C733	ECUV1A105ZFV	1	
C734	ECUV1A105KBV	1	
C735	ECUV1A105KBV	1	
C736	ECUV1C104ZFV	0.1	
C737	ECUV1C104ZFV	0.1	
C738	ECUV1C104ZFV	0.1	
C739	ECUV1C104ZFV	0.1	
C740	ECJ0EB1H101K	100p	
C741	ECUV1C104ZFV	0.1	
C742	ECUV1C104ZFV	0.1	
C743	ECJ0EB1H101K	100p	
C744	ECUV1C104ZFV	0.1	
C746	ECUV1C104KBV	0.1	
C747	ECUV1C104ZFV	0.1	
C748	ECUV1C104ZFV	0.1	
C749	ECUV1C104ZFV	0.1	
C750	ECUV1C104ZFV	0.1	
C751	ECUV1H180JCV	18p	
C752	ECUV1H180JCV	18p	
C753	ECUV1H102KBV	0.001	
C754	ECUV1A105ZFV	1	
C755	ECUV1C104KBV	0.1	
C756	ECUV1H332KBV	0.0033	
C757	ECUV1H102KBV	0.001	
C758	ECUV1H102KBV	0.001	
C759	ECUV1H102KBV	0.001	
C760	F2G1C1000014	10	
C761	ECUV1H102KBV	0.001	
C762	ECUV1C104ZFV	0.1	
C763	ECUV1C104ZFV	0.1	
C764	ECUV1C104ZFV	0.1	
C765	ECUV1C104ZFV	0.1	
C766	ECUV1C104ZFV	0.1	
C767	ECUV1C104ZFV	0.1	
C768	ECUV1C104ZFV	0.1	
C769	ECUV1C104ZFV	0.1	
C770	ECUV1C104ZFV	0.1	
C771	ECUV1C104ZFV	0.1	
C772	ECUV1C104ZFV	0.1	
C773	ECUV1C104ZFV	0.1	
C774	ECUV1C104ZFV	0.1	
C775	ECUV1C104ZFV	0.1	
C776	ECUV1C104ZFV	0.1	
C777	ECUV1C104ZFV	0.1	
C778	ECUV1C104ZFV	0.1	
C779	ECUV1C104ZFV	0.1	
C780	ECUV1C104ZFV	0.1	
C781	ECUV1C104ZFV	0.1	
C782	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C783	ECUV1C104ZFV	0.1	
C784	ECUV1C104ZFV	0.1	
C785	ECUV1C104ZFV	0.1	
C786	ECUV1C104ZFV	0.1	
C787	ECUV1C104ZFV	0.1	
C788	ECUV1C104ZFV	0.1	
C789	ECUV1C104ZFV	0.1	
C790	ECUV1C104ZFV	0.1	
C791	ECUV1C104ZFV	0.1	
C792	ECUV1C104ZFV	0.1	
C793	ECUV1C104ZFV	0.1	
C794	ECUV1C104ZFV	0.1	
C795	ECUV1C104ZFV	0.1	
C796	ECUV1H102KBV	0.001	
C797	ECUV1H102KBV	0.001	
C798	ECJ0EF1C104Z	0.1	
C799	ECUV1C104ZFV	0.1	
C800	ECJ1VC1H681J	680p	
C801	ECJ1VC1H681J	680p	
C802	F2G0J1010042	100	
C803	ECUV1A105ZFV	1	
C804	ECUV1A105ZFV	1	
C805	ECUV1C104ZFV	0.1	
C806	ECJ1VF1H104Z	0.1	
C807	ECUV1H222KBV	0.0022	
C808	ECUV1C473KBV	0.047	
C809	ECUV1C104ZFV	0.1	
C810	ECUV1C104ZFV	0.1	
C811	ECUV1C104ZFV	0.1	
C812	ECUV1H101JCV	100p	
C813	ECJ0EB1H102K	0.001	
C814	ECUV1H220JCV	22p	
C815	ECUV1H100JCV	10p	
C816	ECUV1C104ZFV	0.1	
C817	ECJ1VC1H181J	180p	
C818	ECJ1VC1H181J	180p	
C820	ECUV1H102KBV	0.001	
C821	ECUV1H102KBV	0.001	
C822	ECUV1H102KBV	0.001	
C823	ECUV1H102KBV	0.001	
C824	ECUV1H102KBV	0.001	
C825	ECUV1H102KBV	0.001	
C826	ECUV1H102KBV	0.001	
C827	ECUV1H102KBV	0.001	
C828	ECUV1H102KBV	0.001	
C829	ECUV1H101JCV	100p	
C830	ECUV1H101JCV	100p	
C831	ECUV1H101JCV	100p	
C832	ECUV1H101JCV	100p	
C833	ECUV1H101JCV	100p	
C834	ECUV1H101JCV	100p	
C835	ECJ0EF1C104Z	0.1	
C836	ECJ0EF1C104Z	0.1	
C837	ECJ0EF1C104Z	0.1	
C838	ECJ0EF1C104Z	0.1	
C839	ECJ0EF1C104Z	0.1	
C840	ECUV1C104ZFV	0.1	
C841	ECUV1C104ZFV	0.1	
C842	ECJ0EF1C104Z	0.1	
C843	ECJ0EF1C104Z	0.1	
C844	ECJ0EF1C104Z	0.1	
C845	ECJ0EF1C104Z	0.1	
C846	ECJ0EF1C104Z	0.1	
C847	ECJ0EF1C104Z	0.1	
C848	ECJ0EF1C104Z	0.1	
C849	ECJ0EF1C104Z	0.1	
C850	ECJ0EF1C104Z	0.1	
C851	ECUV1C104ZFV	0.1	
C853	ECUV1C104ZFV	0.1	
C854	ECUV1C104ZFV	0.1	
C855	ECUV1C104ZFV	0.1	
C856	ECUV1C104ZFV	0.1	
C857	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C858	ECUV1C104ZFB	0.1	
C859	ECUV1C104ZFB	0.1	
C860	ECUV1C104ZFB	0.1	
C861	ECUV1C104ZFB	0.1	
C862	ECUV1C104ZFB	0.1	
C863	ECUV1C104ZFB	0.1	
C864	ECUV1C104ZFB	0.1	
C865	ECUV1C104ZFB	0.1	
C866	ECUV1C104ZFB	0.1	
C867	ECUV1C104ZFB	0.1	
C868	ECUV1C104ZFB	0.1	
C869	ECUV1C104ZFB	0.1	
C870	ECUV1C104ZFB	0.1	
C871	ECUV1C104ZFB	0.1	
C873	ECUV1C104ZFB	0.1	
C874	ECUV1C104ZFB	0.1	
C875	ECUV1C104ZFB	0.1	
C876	ECUV1C104ZFB	0.1	
C877	ECUV1C104ZFB	0.1	
C878	ECUV1C104ZFB	0.1	
C879	ECUV1C104ZFB	0.1	
C880	ECUV1C104ZFB	0.1	
C881	ECUV1C104ZFB	0.1	
C882	ECUV1C104ZFB	0.1	
C883	ECUV1C104ZFB	0.1	
C884	ECUV1C104ZFB	0.1	
C885	ECUV1C104ZFB	0.1	
C886	ECUV1C104ZFB	0.1	
C888	ECJ1VF1H104Z	0.1	
C891	ECJ1VF1H104Z	0.1	
C892	ECJ1VF1H104Z	0.1	
C893	ECJ1VF1H104Z	0.1	
C894	ECJ1VF1H104Z	0.1	
C895	ECJ1VF1H104Z	0.1	
C896	ECJ0EF1C104Z	0.1	
C897	ECJ0EF1C104Z	0.1	
C898	ECJ0EF1C104Z	0.1	
C899	ECUV1H561KBV	560p	
C900	ECUV1H561KBV	560p	
C901	ECUV1H561KBV	560p	
C902	ECUV1H331JCV	330p	S
C903	ECUV1H331JCV	330p	S
C904	ECUV1E103KBV	0.01	
C905	ECUV1C103KBV	0.01	
C906	ECUV1C104ZFB	0.1	
C907	ECUV1C104ZFB	0.1	
C908	ECUV1H102KBV	0.001	
C909	ECUV1H102KBV	0.001	
C910	ECUV1H102KBV	0.001	
C911	ECUV1H102KBV	0.001	
C912	ECUV1H102KBV	0.001	
C914	ECUV1H102KBV	0.001	
C915	ECUV1H102KBV	0.001	
C926	ECUV1H101JCV	100p	
C927	ECUV1H101JCV	100p	
C929	ECJ0EB1E102K	0.001	
C930	ECJ0EB1E102K	0.001	
C931	ECJ0EB1E102K	0.001	
C932	ECUV1H102KBV	0.001	
C933	ECUV1H102KBV	0.001	
C934	ECJ0EB1E102K	0.001	
C935	ECJ0EB1E102K	0.001	
C936	ECJ0EC1H470J	47p	
C937	ECJ0EC1H470J	47p	
C938	ECJ0EC1H470J	47p	
		(CONNECTORS & JACK)	
CN601	K1FA104B0034	JACK	
CN602	K1KA05A00452	CONNECTOR_5p	
CN604	K1KA03AA0193	CONNECTOR_3p	
CN606	K1KA11A00158	CONNECTOR_11p	
CN607	K1KA08A00440	CONNECTOR_8p	
CN608	K1KA20A00322	CONNECTOR_20p	
CN609	K1KA06A00428	CONNECTOR_6P	

Ref. No.	Part No.	Part Name & Description	Remarks
CN611	K1KA03A00495	CONNECTOR, 3P	
CN612	K1KA04A00527	CONNECTOR, 4P	
CN613	K1KA07A00257	CONNECTOR, 7P	
CN614	K1KA07AA0193	CONNECTOR, 7P	
CN615	K1KA05A00364	CONNECTOR, 5P	
CN617	K1KA02AA0193	CONNECTOR, 2P	
CN618	K1MN28AA0019	CONNECTOR, 28P	
CN619	K1KA08AA0193	CONNECTOR, 8P	
CN620	K1KA02A00587	CONNECTOR, 2P	
CN623	K1KA02AA0193	CONNECTOR, 2P	
CN624	K1KA02AA0193	CONNECTOR, 2P	
CN625	K1KA12A00315	CONNECTOR, 12P	
		(FUSE)	
F609	K5H312200002	FUSE	
		(CERAMIC FILTERS)	
L601	PFVF1B601ST	CERAMIC FILTER	S
L610	PFVF1B252SDT	CERAMIC FILTER	S
L641	PFVF1B601ST	CERAMIC FILTER	S
L642	PFVF1B601ST	CERAMIC FILTER	S
L648	PFVF1B601ST	CERAMIC FILTER	S
L681	PFVF1B252SDT	CERAMIC FILTER	S
L731	PFVF1B252SDT	CERAMIC FILTER	S
		(COILS)	
L602	J0JCC0000278	COIL	
L603	J0JCC0000278	COIL	
L604	J0JCC0000278	COIL	
L605	J0JCC0000278	COIL	
L606	J0JCC0000278	COIL	
L607	J0JCC0000278	COIL	
L608	J0JCC0000278	COIL	
L609	J0JCC0000278	COIL	
L634	J0JCC0000278	COIL	
L635	J0JCC0000278	COIL	
L636	J0JCC0000278	COIL	
L637	J0JCC0000278	COIL	
L638	J0JCC0000278	COIL	
L639	J0JCC0000278	COIL	
L640	J0JCC0000278	COIL	
L650	J0JCC0000278	COIL	
L651	J0JCC0000278	COIL	
L652	J0JCC0000278	COIL	
L653	J0JCC0000278	COIL	
L656	J0JCC0000278	COIL	
L657	J0JCC0000278	COIL	
L658	J0JCC0000278	COIL	
L659	J0JCC0000278	COIL	
L660	J0JCC0000278	COIL	
L661	J0JCC0000278	COIL	
L662	J0JCC0000278	COIL	
L669	J0JCC0000278	COIL	
L670	J0JCC0000278	COIL	
L671	J0JCC0000278	COIL	
L674	PQLQR2KA20T	COIL	S
L676	J0JCC0000278	COIL	
L677	J0JCC0000278	COIL	
L678	J0JCC0000278	COIL	
L679	J0JCC0000278	COIL	
L682	J0JCC0000278	COIL	
L683	J0JCC0000278	COIL	
L684	J0JCC0000278	COIL	
L685	J0JCC0000278	COIL	
L686	J0JCC0000278	COIL	
L688	J0JCC0000278	COIL	
L689	J0JCC0000278	COIL	
L690	J0JCC0000278	COIL	
L691	J0JCC0000278	COIL	
L693	J0JCC0000278	COIL	
L696	J0JCC0000278	COIL	
L699	J0JCC0000278	COIL	
L707	J0JCC0000278	COIL	
L712	J0JCC0000278	COIL	
L713	J0JCC0000278	COIL	
L714	J0JCC0000278	COIL	

KX-FLB802CX/KX-FLB812CX/KX-FLB802CXS/KX-FLB812CXS

Ref. No.	Part No.	Part Name & Description	Remarks
L715	J0JCC0000278	COIL	
L716	J0JCC0000278	COIL	
L721	J0JCC0000278	COIL	
L722	J0JCC0000278	COIL	
L723	J0JCC0000278	COIL	
L724	J0JCC0000278	COIL	
L725	J0JCC0000278	COIL	
L726	J0JCC0000278	COIL	
L727	J0JCC0000278	COIL	
L728	J0JCC0000278	COIL	
L814	J0JBC0000045	COIL	
		(COMPONENTS PARTS)	
L633	EXCELDR35	COMPONENTS PART	
L646	EXCELDR35	COMPONENTS PART	
		(IC FILTERS)	
FLT603	JOMAB0000005	IC FILTER	
L600	J0JGC0000020	IC FILTER	
L611	J0JGC0000020	IC FILTER	
L612	J0JGC0000020	IC FILTER	
L613	J0JGC0000020	IC FILTER	
L614	J0JGC0000020	IC FILTER	
L617	J0JGC0000020	IC FILTER	
L644	J0JGC0000020	IC FILTER	
L668	J0JCC0000277	IC FILTER	
L694	J0JGC0000020	IC FILTER	
L695	J0JGC0000020	IC FILTER	
L811	J0JGC0000020	IC FILTER	
L812	J0JGC0000020	IC FILTER	
L813	J0JGC0000020	IC FILTER	
		(RESISTORS)	
L620	ERJ2GEJ101	100	
L645	ERJ3GEY0R00	0	
L663	ERJ3GEY0R00	0	
L664	ERJ3GEY0R00	0	
L704	ERJ2GEJ101	100	
L705	ERJ2GEJ101	100	
L706	ERJ2GEJ101	100	
L709	ERJ2GEJ101	100	
L710	ERJ2GE0R00	0	
R600	ERJ3GEYJ103	10k	
R601	ERJ3GEYJ103	10k	
R602	ERJ3GEY0R00	0	
R603	ERJ3GEY0R00	0	
R604	ERJ3GEYJ472	4.7k	
R605	ERJ2GEJ220	22	
R606	ERJ2GEJ220	22	
R607	ERJ2GE0R00	0	
R608	ERJ3GEYJ330	33	
R609	ERJ3GEYJ330	33	
R612	ERJ3GEYJ102	1k	
R613	ERJ2GEJ220	22	
R614	ERJ2GEJ220	22	
R615	ERJ2GEJ220	22	
R616	ERJ3GEYJ103	10k	
R618	ERJ2GEJ101	100	
R619	ERJ3EKF1501	0	
R620	ERJ3EKF3091	0	
R621	ERJ3GEYJ103	10k	
R623	ERJ3GEYJ823	82k	
R624	ERJ3GEYJ104	100k	
R625	ERJ3EKF40R2	0	
R626	ERJ3EKF40R2	0	
R627	ERJ3GEYJ563	56k	
R628	ERJ12YJ471	470	
R629	ERJ12YJ390	39	
R630	ERJ12YJ471	470	
R631	ERJ3GEYJ103	10k	
R632	ERJ3GEYJ103	10k	
R633	PQ4R10XJ822	8.2k	S
R634	PQ4R10XJ822	8.2k	S
R635	ERJ3GEYJ330	33	
R636	ERJ3GEYJ473	47k	
R637	PQ4R10XJ822	8.2k	S

Ref. No.	Part No.	Part Name & Description	Remarks
R638	PQ4R10XJ822	8.2k	S
R639	ERJ3GEYJ103	10k	
R640	ERJ3GEYJ103	10k	
R641	ERJ12YJ471	470	
R642	ERJ12YJ390	39	
R643	ERJ12YJ471	470	
R644	ERJ3GEYJ563	56k	
R645	ERJ3GEYJ563	56k	
R646	ERJ3GEYJ223	22k	
R649	ERJ3GEYJ223	22k	
R650	ERJ3GEYJ332	3.3k	
R651	ERJ3GEYJ563	56k	
R653	ERJ3GEYJ102	1k	
R656	ERJ3GEYJ562	5.6k	
R657	ERJ3GEYJ562	5.6k	
R659	ERJ3GEYJ562	5.6k	
R660	ERJ3GEYJ562	5.6k	
R661	ERJ3GEYJ562	5.6k	
R662	ERJ3GEYJ102	1k	
R663	ERJ3GEYJ100	10	
R664	ERJ3GEYJ100	10	
R665	ERJ3GEYJ100	10	
R666	ERJ3GEYJ472	4.7k	
R667	ERJ3GEYJ101	100	
R668	ERJ3GEYJ100	10	
R669	ERJ3GEY0R00	0	
R670	ERJ3GEYJ181	180	
R671	ERJ3GEYJ221	220	
R672	ERJ3GEYJ122	1.2k	
R673	ERJ3GEYJ181	180	
R674	ERJ3GEYJ102	1k	
R675	ERJ3GEYJ102	1k	
R676	ERJ3GEY0R00	0	
R679	ERJ3GEYJ223	22k	
R680	ERJ3GEYJ563	56k	
R681	ERJ3GEYJ334	330k	
R682	ERJ3GEYJ222	2.2k	
R683	ERJ3GEYJ562	5.6k	
R684	ERJ3GEYJ475	4.7M	
R685	ERJ3GEYJ222	2.2k	
R687	ERJ3GEYJ223	22k	
R688	ERJ3GEYJ562	5.6k	
R689	ERJ12YJ2R2	2.2	
R690	ERJ3GEYJ563	56k	
R692	ERJ3GEYJ472	4.7k	
R693	ERJ3GEYJ562	5.6k	
R694	ERJ3GEYJ102	1k	
R695	ERJ3GEYJ105	1M	
R696	ERJ3GEYJ103	10k	
R697	ERJ2GEJ103	10k	
R698	ERJ3GEY0R00	0	
R701	ERJ3GEYJ561	560	
R702	ERJ3GEYJ102	1k	
R703	ERJ3GEYJ101	100	
R704	ERJ3GEYJ105	1M	
R706	ERJ3GEYJ101	100	
R707	ERJ3GEYJ101	100	
R708	ERJ3EKF1802	18k	
R710	ERJ3GEYJ101	100	
R711	ERJ3GEYJ101	100	
R712	ERJ3GEYJ181	180	
R713	ERJ3GEYJ102	1k	
R714	ERJ3GEYJ102	1k	
R715	ERJ3GEYJ101	100	
R716	ERJ3GEYJ222	2.2k	
R717	ERJ3GEYJ101	100	
R718	ERJ3GEYJ472	4.7k	
R719	ERJ3GEYJ473	47k	
R720	ERJ3GEYJ472	4.7k	
R721	ERJ12YJ2R2	2.2	
R726	ERJ3GEYJ102	1k	
R727	ERJ3GEYJ393	39k	
R731	ERJ3GEYJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R742	ERJ3GEYJ101	100	
R743	ERJ3GEYJ101	100	
R744	ERJ3GEYJ101	100	
R745	ERJ3GEYJ473	47k	
R746	ERJ3GEYJ472	4.7k	
R747	ERJ6GEY0R00	0	
R748	ERJ3GEYJ101	100	
R749	ERJ3GEYJ753	75k	
R750	ERJ3GEYJ101	100	
R751	ERJ3GEYJ101	100	
R752	ERJ3GEYJ101	100	
R755	ERJ3GEYJ103	10k	
R756	ERJ3GEYJ472	4.7k	
R757	ERJ3GEYJ102	1k	
R758	ERJ3GEYJ244	240k	
R759	ERJ3GEYJ103	10k	
R760	ERJ3GEYJ101	100	
R761	ERJ3GEYJ101	100	
R762	ERJ3GEYJ472	4.7k	
R763	ERJ6GEY0R00	0	
R764	ERJ3GEYJ103	10k	
R765	ERJ3GEYJ100	10	
R766	ERJ3GEYJ562	5.6k	
R767	ERJ3GEYJ562	5.6k	
R768	ERJ3GEYJ562	5.6k	
R769	ERJ3GEYJ562	5.6k	
R770	ERJ3GEYJ563	56k	
R773	ERJ3GEYJ103	10k	
R774	ERJ3GEYJ332	3.3k	
R775	ERJ3GEYJ562	5.6k	
R776	ERJ3GEYJ332	3.3k	
R777	ERJ3GEYJ562	5.6k	
R780	ERJ3GEYJ332	3.3k	
R788	PQ4R18XJ100	10	S
R791	ERJ3GEYJ154	150k	
R792	ERJ3GEYJ103	10k	
R793	ERJ3GEYJ124	120k	
R794	ERJ3GEYJ103	10k	
R795	ERJ3GEYJ102	1k	
R796	ERJ3GEYJ103	10k	
R799	ERJ2GE0R00	0	
R800	ERJ3GEY0R00	0	
R808	ERJ2GEJ470	47	
R809	ERJ2GEJ330	33	
R810	ERJ2GEJ470	47	
R811	ERJ2GEJ470	47	
R812	ERJ2GEJ470	47	
R813	ERJ2GEJ470	47	
R814	ERJ3GEYJ101	100	
R815	ERJ3GEYJ220	22	
R817	ERJ8GEYJ2R2	2.2	
R818	ERJ8GEYJ2R2	2.2	
R819	ERJ8GEYJ2R2	2.2	
R820	ERJ12RQJR22	0.22	
R821	ERJ12RQJR22	0.22	
R822	ERJ2GEJ471	470	
R826	ERJ3GEYJ103	10k	
R827	ERJ3GEYJ103	10k	
R829	ERJ3GEYJ103	10k	
R830	ERJ3GEY0R00	0	
R832	ERJ2GEJ471	470	
R833	ERJ2GEJ471	470	
R834	ERJ2GEJ471	470	
R836	ERJ2GEJ470	47	
R837	ERJ2GEJ470	47	
R838	ERJ2GEJ470	47	
R839	ERJ2GEJ470	47	
R840	ERJ2GEJ470	47	
R841	ERJ2GEJ470	47	
R842	ERJ2GEJ470	47	
R843	ERJ2GEJ470	47	
R844	ERJ2GEJ470	47	
R845	ERJ2GEJ470	47	

Ref. No.	Part No.	Part Name & Description	Remarks
R846	ERJ2GEJ470	47	
R847	ERJ2GEJ470	47	
R848	ERJ2GEJ470	47	
R849	ERJ2GEJ470	47	
R850	ERJ2GEJ470	47	
R851	ERJ2GEJ470	47	
R868	ERJ3GEYJ471	470	
R870	ERJ3GEYJ473	47k	
R872	ERJ3GEYJ332	3.3k	
R901	ERJ3GEY0R00	0	
R902	ERJ8GEY0R00	0	
R903	ERJ3GEYJ222	2.2k	
R904	ERJ3GEYJ472	4.7k	
R905	ERJ3GEYJ103	10k	
R906	ERJ2GEJ470	47	
R907	ERJ2GEJ470	47	
R908	ERJ2GEJ470	47	
R909	ERJ2GEJ470	47	
R910	ERJ2GEJ470	47	
R911	ERJ2GEJ470	47	
R912	ERJ2GEJ470	47	
R913	ERJ2GEJ470	47	
R914	ERJ2GEJ470	47	
R915	ERJ2GEJ470	47	
R916	ERJ2GEJ470	47	
		(COMPONENTS PARTS)	
RA600	EXB38V473JV	RESISTOR ARRAY	
RA601	EXB38V473JV	RESISTOR ARRAY	
RA602	D1H83304A010	RESISTOR ARRAY	S
RA603	D1H83304A010	RESISTOR ARRAY	S
RA604	D1H83304A010	RESISTOR ARRAY	S
RA607	EXRV8V470JV	RESISTOR ARRAY	S
RA608	EXRV8V470JV	RESISTOR ARRAY	S
RA611	D1H83304A010	RESISTOR ARRAY	S
RA612	D1H83304A010	RESISTOR ARRAY	S
RA613	D1H83304A010	RESISTOR ARRAY	S
RA614	D1H83304A010	RESISTOR ARRAY	S
RA615	D1H83304A010	RESISTOR ARRAY	S
RA616	D1H83304A010	RESISTOR ARRAY	S
RA617	D1H83304A010	RESISTOR ARRAY	S
RA618	D1H83304A010	RESISTOR ARRAY	S
RA619	D1H83304A010	RESISTOR ARRAY	S
RA620	D1H83304A010	RESISTOR ARRAY	S
RA621	EXB38V473JV	RESISTOR ARRAY	
RA622	EXB38V473JV	RESISTOR ARRAY	
RA623	EXB38V473JV	RESISTOR ARRAY	
RA624	EXB38V473JV	RESISTOR ARRAY	
RA625	EXB38V473JV	RESISTOR ARRAY	
RA626	EXB38V473JV	RESISTOR ARRAY	
RA627	D1H83304A010	RESISTOR ARRAY	S
RA628	D1H83304A010	RESISTOR ARRAY	S
RA629	EXB38V101JV	RESISTOR ARRAY	
RA630	EXB38V101JV	RESISTOR ARRAY	
RA631	EXB38V220JV	RESISTOR ARRAY	
		(CRYSTAL OSCILLATORS)	
X600	H1A4805B0022	CRYSTAL OSCILLATOR	
X601	H0A327200096	CRYSTAL OSCILLATOR	
X602	H0J222500002	CRYSTAL OSCILLATOR	
X603	H0J250500055	CRYSTAL OSCILLATOR	
X604	H0J282500008	CRYSTAL OSCILLATOR	
X605	H2A419400008	CRYSTAL OSCILLATOR	

## 19.2.5. ANALOG BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PFLP1716CX-A	ANALOG BOARD ASS'Y (RTL) (ICs)	△
IC204	C0ABEB000075	IC	
IC205	AN6123MS	IC	
IC206	C0ABEB000083	IC	
IC207	C0JBAR000386	IC	
IC209	AN6384SBE1V	IC	S

KX-FLB802CX/KX-FLB812CX/KX-FLB802CXS/KX-FLB812CXS

Ref. No.	Part No.	Part Name & Description	Remarks
		(TRANSISTORS)	
Q200	B1AAKL000006	TRANSISTOR (SI)	
Q203	2SB1218ARL	TRANSISTOR (SI)	
Q204	PQVTDTC143E	TRANSISTOR (SI)	S
Q206	B1CCBR000001	TRANSISTOR (SI)	
Q207	PQVTDTC143E	TRANSISTOR (SI)	S
Q210	PQVTDTC143E	TRANSISTOR (SI)	S
Q211	UN5110	TRANSISTOR (SI)	S
Q212	PQVTDTC143E	TRANSISTOR (SI)	S
Q217	PQVTDTC143E	TRANSISTOR (SI)	S
Q218	PQVTDTC143E	TRANSISTOR (SI)	S
Q219	PQVTDTC143E	TRANSISTOR (SI)	S
		(DIODES)	
D200	MA4056	DIODE (SI)	S
D201	MA4056	DIODE (SI)	S
D202	1SS133	DIODE (SI)	S
D203	1SS133	DIODE (SI)	S
D204	1SS133	DIODE (SI)	S
D206	1SS133	DIODE (SI)	S
D207	1SS133	DIODE (SI)	S
D209	B0EDER000009	DIODE (SI)	
D210	MA4056	DIODE (SI)	S
D211	MA4056	DIODE (SI)	S
D212	1SS133	DIODE (SI)	S
		(CAPACITORS)	
C219	ECJ1VC1H151J	150p	
C220	ECUV1C104KBV	0.1	
C222	ECUV1C104KBV	0.1	
C226	ECJ1VC1H151J	150p	
C228	ECUV1C104ZFB	0.1	
C231	ECEA1VKA101	100	S
C234	ECUV1C273KBV	0.027	
C238	ECJ1VB1H822K	0.0082	
C239	ECUV1C104KBV	0.1	
C240	ECUV1C104KBV	0.1	
C241	ECUV1H680JCV	68p	
C242	ECUV1C104ZFB	0.1	
C243	ECUV1C104KBV	0.1	
C244	ECUV1C273KBV	0.027	
C247	ECEA0JK331	330	S
C250	ECUV1C104ZFB	0.1	
C254	ECJ1VB1H682K	0.0068	
C256	ECUV1C273KBV	0.027	
C257	ECUV1H100JCV	10p	
C258	ECUV1H100JCV	10p	
C259	ECJ1VB1H392K	0.0039	
C260	ECUV1C273KBV	0.027	
C261	ECEA1CK470	47	S
C262	ECUV1H101JCV	100p	
C263	ECUV1A105ZFB	1	
C264	ECJ1VB1H392K	0.0039	
C265	ECUV1A105ZFB	1	
C267	ECJ1VB1H682K	0.0068	
C268	ECUV1C104KBV	0.1	
C270	ECUV1H391JCV	390p	
C272	ECUV1H391JCV	390p	
C273	ECUV1H103KBV	0.01	
C275	ECUV1C104KBV	0.1	
C276	ECEA1HKS010	1	S
C277	pFCALHYK101M	100p	S
C278	ECUV1H332KBV	0.0033	
C281	ECUV1C104KBV	0.1	
C289	ECUV1C683KBV	0.068	
C292	ECUV1C104ZFB	0.1	
C293	ECUV1A224KBV	0.22	
C294	ECUV1H560JCV	56p	
C295	ECUV1H122KBV	0.0012	
C296	ECUV1H270JCV	27p	
C297	ECUV1C104ZFB	0.1	
C298	ECEA0JK221	220	S
C300	ECUV1C104ZFB	0.1	
C301	ECUV1C104ZFB	0.1	
C303	ECUV1C104KBV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C305	ECUV1H820JCV	82p	
C306	ECUV1H820JCV	82p	
C307	ECUV1H820JCV	82p	
C308	ECJ1VC1H680J	68p	
C309	ECKD2H681KB	680p	S
C310	ECKD2H681KB	680p	S
C313	ECJ1VC1H681J	680p	
C314	ECUV1H104KBV	0.1	
C315	ECUV1H103KBV	0.01	
C316	ECUV1H101JCV	100p	
C319	ECUV1H103KBV	0.01	
C321	ECEA1CK470	47	S
C322	ECUV1H103KBV	0.01	
C329	ECUV1C104ZFB	0.1	
C349	ECUV1C683KBV	0.068	
C350	ECUV1H153KBV	0.015	
C351	ECJ1VB1H472K	0.0047	
C352	ECUV1H100JCV	10p	
C353	ECUV1H100JCV	10p	
C248	F2A1H4R70014	4.7	
C253	F2A1C1000030	10	
C266	F2A1H2R20016	2.2	
C269	F2A1C1000030	10	
C299	F2A1C1000030	10	
C311	F0C2E105A146	14	S
C317	F2A1C1000030	10	
C330	F2A1C1000030	10	
		(CONNECTORS & JACKS)	
CN200	K1MN28AA0019	CONNECTOR, 28P	
CN220	K1KA06A00428	CONNECTOR, 6P	
CN250	K1KA04A00527	CONNECTOR, 4P	
		(FUSE)	
F200	K5G102A00041	FUSE	
		(CERAMIC FILTERS)	
J379	PFVF1B252SDT	CERAMIC FILTER	S
L220	PFVF1B252SDT	CERAMIC FILTER	S
L221	PFVF1B252SDT	CERAMIC FILTER	S
L222	PFVF1B252SDT	CERAMIC FILTER	S
L223	PFVF1B252SDT	CERAMIC FILTER	S
L224	PFVF1B252SDT	CERAMIC FILTER	S
L225	PFVF1B252SDT	CERAMIC FILTER	S
L226	PFVF1B252SDT	CERAMIC FILTER	S
L227	PFVF1B252SDT	CERAMIC FILTER	S
L229	PFVF1B252SDT	CERAMIC FILTER	S
L230	PFVF1B252SDT	CERAMIC FILTER	S
L233	PFVF1B252SDT	CERAMIC FILTER	S
L235	PFVF1B252SDT	CERAMIC FILTER	S
L237	PFVF1B252SDT	CERAMIC FILTER	S
L238	PFVF1B252SDT	CERAMIC FILTER	S
L244	PFVF1B252SDT	CERAMIC FILTER	S
L251	PFVF1B252SDT	CERAMIC FILTER	S
L252	PFVF1B252SDT	CERAMIC FILTER	S
L253	PFVF1B252SDT	CERAMIC FILTER	S
L254	PFVF1B252SDT	CERAMIC FILTER	S
L255	PFVF1B252SDT	CERAMIC FILTER	S
L256	PFVF1B252SDT	CERAMIC FILTER	S
L257	PFVF1B252SDT	CERAMIC FILTER	S
L260	PFVF1B252SDT	CERAMIC FILTER	S
L261	PFVF1B252SDT	CERAMIC FILTER	S
L267	PFVF1B252SDT	CERAMIC FILTER	S
L268	PFVF1B252SDT	CERAMIC FILTER	S
L269	PFVF1B252SDT	CERAMIC FILTER	S
L270	PFVF1B252SDT	CERAMIC FILTER	S
L289	PFVF1B252SDT	CERAMIC FILTER	S
L290	PFVF1B252SDT	CERAMIC FILTER	S
L291	PFVF1B252SDT	CERAMIC FILTER	S
		(COILS)	
L258	PFLE003	COIL	S
L262	PQLQR1E32A07	COIL	S
L263	PQLQR1E32A07	COIL	S
L264	PQLQR1E32A07	COIL	S
L266	PQLQR1E32A07	COIL	S
		(PHOTO ELECTRIC TRANSDUCERS)	



Ref. No.	Part No.	Part Name & Description	Remarks
PC200	0N3131SKU	PHOTO COUPLER	S
PC201	0N3131SKU	PHOTO COUPLER	S
PC203	B3PAB0000058	PHOTO COUPLER	△ S
PC205	B3PAA0000425	PHOTO COUPLER	
		(RESISTORS)	
R211	ERJ3GEYJ333	33k	
R216	ERJ3GEYJ114	110k	
R218	ERJ3GEYJ433	43k	
R223	ERJ3GEYJ114	110k	
R225	PQ4R18XJ100	10	S
R229	ERJ3GEYJ473	47k	
R230	ERJ3GEYJ331	330	
R231	ERJ3GEYJ621	620	
R235	ERJ3GEYJ223	22k	
R236	ERJ3GEYJ104	100k	
R237	ERJ3GEYJ473	47k	
R238	ERJ3GEYJ393	39k	
R239	PQ4R18XJ101	100	S
R240	ERJ3GEYJ103	10k	
R241	ERJ3GEYJ102	1k	
R242	ERJ3GEYJ334	330k	
R244	ERJ3GEYJ102	1k	
R248	ERJ3GEYJ105	1M	
R249	ERDS2TJ150	15	S
R251	ERJ3GEYJ563	56k	
R252	ERJ3GEYJ103	10k	
R253	ERJ3GEYJ222	2.2k	
R254	ERJ3GEYJ472	4.7k	
R255	ERJ3GEYJ563	56k	
R256	ERJ3GEYJ123	12k	
R258	ERJ3GEYJ103	10k	
R261	ERJ3GEYJ104	100k	
R262	ERJ3GEYJ103	10k	
R264	ERJ3GEYJ243	24k	
R265	ERJ3GEYJ103	10k	
R266	ERJ3GEYJ104	100k	
R267	ERJ3GEYJ562	5.6k	
R269	ERJ3GEYJ104	100k	
R270	ERJ3GEYJ821	820	
R271	ERJ3GEYJ223	22k	
R272	ERJ3GEYJ243	24k	
R273	ERDS2TJ150	15	S
R274	ERJ3GEYJ102	1k	
R275	ERJ3GEYJ101	100	
R276	ERJ3GEYJ392	3.9k	
R282	ERJ3GEYJ153	15k	
R286	ERJ3GEYJ303	30k	
R287	ERJ3GEYJ683	68k	
R288	ERJ3GEYJ104	100k	
R289	ERJ3GEYJ473	47k	
R292	ERJ3GEYJ103	10k	
R293	ERJ3GEYJ102	1k	
R296	ERJ3GEYJ472	4.7k	
R297	ERJ3GEYJ102	1k	
R298	ERJ3GEYJ104	100k	
R300	ERJ3GEYJ103	10k	
R301	ERJ3GEYJ562	5.6k	
R302	ERJ3GEYJ222	2.2k	
R303	ERJ3GEYJ183	18k	
R304	ERJ3GEYJ564	560k	
R305	ERJ3GEYJ333	33k	
R306	ERJ3GEYJ334	330k	
R307	ERJ3GEYJ183	18k	
R309	PQ4R18XJ47	4.7	S
R315	ERJ3GEYJ124	120k	
R317	ERJ3GEYJ683	68k	
R318	ERJ3GEYJ474	470k	
R320	ERJ3GEYJ224	220k	
R321	ERJ3GEYJ224	220k	
R322	ERDS1TJ473	47k	S
R324	ERJ3GEYJ154	150k	
R326	ERJ3GEYJ820	82	
R327	ERJ3GEYJ820	82	

Ref. No.	Part No.	Part Name & Description	Remarks
R328	ERJ3GEYJ820	82	
R329	ERJ3GEYJ102	1k	
R332	ERDS1TJ682	6.8k	S
R333	ERJ3GEYJ471	470	
R334	ERJ3GEYJ333	33k	
R335	ERJ3GEYJ822	8.2k	
R338	ERJ3GEYJ222	2.2k	
R340	ERJ3GEYJ681	680	
R341	ERJ3GEYJ182	1.8k	
R342	ERJ3GEYJ182	1.8k	
R343	ERDS1TJ6R8	6.8	S
R357	ERJ3GEYJ182	1.8k	
R358	ERJ3GEYJ682	6.8k	
R359	ERJ3GEYJ104	100k	
R360	ERJ3GEYJ104	100k	
R388	ERJ3GEYJ473	47k	
R389	ERJ3GEYJ473	47k	
R390	ERJ3GEYJ473	47k	
R391	ERJ3GEYJ473	47k	
J200	ERJ3GEYOR00	0	
J201	ERJ3GEYOR00	0	
J202	ERJ3GEYOR00	0	
J203	ERJ3GEYOR00	0	
J204	ERJ3GEYOR00	0	
J205	ERJ3GEYOR00	0	
J213	ERJ8GEYOR00	0	
L234	ERJ3GEYOR00	0	
L246	ERJ3GEYOR00	0	
L271	ERJ3GEYOR00	0	
L272	ERJ3GEYOR00	0	
L273	ERJ3GEYOR00	0	
L274	ERJ3GEYOR00	0	
L275	ERJ3GEYOR00	0	
L276	ERJ3GEYOR00	0	
R217	ERJ3GEYOR00	0	
R233	ERJ3GEYOR00	0	
R234	ERJ3GEYOR00	0	
R245	ERJ3GEYOR00	0	
R356	ERJ3GEYOR00	0	
R386	ERJ8GEYOR00	0	
		(RELAY)	
RLY200	PFLS003Z	RELAY	S
		(TRANSFORMERS)	
T201	PFLT8E003	TRANSFORMER	S
T202	G4A1A0000172	TRANSFORMER	
		(VARISTORS)	
SA200	PFRZRA311P6T	VARISTOR (SURGE ABSORBER)	S
SA201	J0LS00000024	VARISTOR (SURGE ABSORBER)	
ZNR200	ERZVA7D151	VARISTOR	

## 19.2.6. TEL JACK BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB3	PFLP1716CX-B	TEL JACK BOARD ASS'Y (RTL)	
		(CONNECTOR & JACKS)	
CN251	K1KA04A00527	CONNECTOR, 4P	
CN206	K2LB1YYB0002	JACK	
CN207	K2LB1YYB0002	JACK	

## 19.2.7. TONER SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB4	PFLP1716MZ-C	TONER SENSOR BOARD ASS'Y (RTL)	
		(PHOTO ELECTRIC TRANSDUCER)	
IC40	B4ABC0000001	PHOTO ELECTRIC TRANSDUCER	
		(CONNECTOR)	
CN43	K1KA03A00495	CONNECTOR, 3P	
		(CAPACITOR)	

Ref. No.	Part No.	Part Name & Description	Remarks
C42	ECUV1C104ZEV	0.1	

### 19.2.8. HANDSET RELAY BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB5	PFLP1716MZ-D	HANDSETBOARD ASS'Y (RTL)	
		(JACK)	
CN42	PQJJ1TC5Z	JACK	S
		(CONNECTOR)	
CN44	K1KA06A00428	CONNECTOR, 6P	
		(RESISTORS)	
L40	ERJ3GEY0R00	0	
L41	ERJ3GEY0R00	0	
L42	ERJ3GEY0R00	0	
L43	ERJ3GEY0R00	0	

### 19.2.9. VARISTOR BOARD PART

Ref. No.	Part No.	Part Name & Description	Remarks
PCB6	PFLP1716MZ-E	VARISTOR SENSOR BOARD ASS'Y (RTL)	
		(VARISTOR)	
ZNR1	PFRV431NS05K	VARISTOR	

### 19.2.10. OPERATION BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB7	PFLP1717MZ	OPERATION BOARD ASS'Y (RTL)	
		(IC's)	
IC101	C1ZBZ0002089	IC	
		(DIODES)	
D101	1SS133	DIODE (SI)	S
D102	1SS133	DIODE (SI)	S
LED101	PQVDR325CA47	DIODE (SI)	S
		(CAPACITORS)	
C101	ECUV1C104ZEV	0.1	
C104	ECUV1C104ZEV	0.1	
C107	ECUV1C104ZEV	0.1	
C113	ECUV1H103KBV	0.01	
C115	ECUV1C104ZEV	0.1	
C116	ECUV1C104ZEV	0.1	
C122	ECEA1CK101	100	S
C110	ECEA1CKS100	0	S
C123	ECUV1C104ZEV	0.1	
C109	ECUV1H101JCV	100p	
C119	ECUV1H101JCV	100p	
C120	ECUV1H101JCV	100p	
C121	ECUV1H101JCV	100p	
C111	ECUV1H391JCV	390p	
C112	ECUV1H391JCV	390p	
		(RESISTORS)	
R116	ERJ3GEYJ123	12k	
R127	ERJ3GEYJ123	12k	
R128	ERJ3GEYJ123	12k	
R131	ERJ3GEYJ123	12k	
R133	ERJ3GEYJ123	12k	
R117	ERJ3GEYJ333	33k	
R118	ERJ3GEYJ912	9.1k	
R101	ERJ3GEYJ181	180	
R102	ERJ3GEYJ181	180	
R103	ERJ3GEYJ181	180	
R104	ERJ3GEYJ181	180	
R105	ERJ3GEYJ391	390	
R107	ERJ3GEYJ241	240	
R109	ERJ3GEYJ181	180	
R110	ERJ3GEYJ181	180	
R111	ERJ3GEYJ181	180	

Ref. No.	Part No.	Part Name & Description	Remarks
R112	ERJ3GEYJ181	180	
R113	ERJ3GEYJ241	240	
R114	ERJ3GEYJ241	240	
R119	ERJ3GEYJ4R7	4.7	S
R121	ERJ3GEYJ561	560	S
R122	ERJ3GEYJ101	100	
R123	ERJ3GEYJ101	100	
R124	ERJ3GEYJ101	100	
R125	ERJ3GEYJ101	100	
R129	ERJ3GEYJ181	180	
R130	ERJ3GEYJ181	180	
R132	ERJ3GEYJ181	180	
J146	ERJ3GEY0R00	0	
J147	ERJ3GEY0R00	0	
J148	ERJ3GEY0R00	0	
J149	ERJ3GEY0R00	0	
		(CONNECTOR)	
CN102	K1KA07B00118	CONNECTOR, 7P	
		(LIQUID CRYSTAL DISPLAY)	
CN103	L5DAAF000001	LIQUID CRYSTAL DISPLAY	
		(LEDS)	
LED103	B3ABA0000633	LED	
LED105	B3ABA0000633	LED	
LED106	B3ABA0000633	LED	
		(SWITCHES)	
SW101	EVQ11Y05B	SWITCH	
SW102	EVQ11Y05B	SWITCH	
SW103	EVQ11Y05B	SWITCH	
SW104	EVQ11Y05B	SWITCH	
SW105	EVQ11Y05B	SWITCH	
SW106	EVQ11Y05B	SWITCH	
SW107	EVQ11Y05B	SWITCH	
SW109	EVQ11Y05B	SWITCH	
SW110	EVQ11Y05B	SWITCH	
SW112	EVQ11Y05B	SWITCH	
SW113	EVQ11Y05B	SWITCH	
SW114	EVQ11Y05B	SWITCH	
SW115	EVQ11Y05B	SWITCH	
SW116	EVQ11Y05B	SWITCH	
SW117	EVQ11Y05B	SWITCH	
SW118	EVQ11Y05B	SWITCH	
SW119	EVQ11Y05B	SWITCH	
SW120	EVQ11Y05B	SWITCH	
SW121	EVQ11Y05B	SWITCH	
SW122	EVQ11Y05B	SWITCH	
SW123	EVQ11Y05B	SWITCH	
SW124	EVQ11Y05B	SWITCH	
SW125	EVQ11Y05B	SWITCH	
SW126	EVQ11Y05B	SWITCH	
SW127	EVQ11Y05B	SWITCH	
SW128	EVQ11Y05B	SWITCH	
SW129	EVQ11Y05B	SWITCH	
SW130	EVQ11Y05B	SWITCH	
SW132	EVQ11Y05B	SWITCH	
SW133	EVQ11Y05B	SWITCH	
SW135	EVQ11Y05B	SWITCH	
SW136	EVQ11Y05B	SWITCH	
SW137	EVQ11Y05B	SWITCH	
SW138	EVQ11Y05B	SWITCH	
SW139	EVQ11Y05B	SWITCH	
SW140	EVQ11Y05B	SWITCH	
SW141	EVQ11Y05B	SWITCH	
SW142	EVQ11Y05B	SWITCH	
SW143	EVQ11Y05B	SWITCH	
SW144	EVQ11Y05B	SWITCH	
SW145	EVQ11Y05B	SWITCH	
		(THERMISTOR)	
TH101	D4CC11030019	THERMISTOR	

## 19.2.11. SCANNER BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB8	PFLP1718MZ	SCANNER I/F BOARD ASS'Y (RTL)	
		(IC's)	
IC51	COGBF0000026	IC	
IC54	COGBF0000026	IC	
		(TRANSISTORS)	
Q52	PQVTD143Z106	TRANSISTOR (SI)	S
Q53	PQVTD143Z106	TRANSISTOR (SI)	S
Q57	2SD1991A	TRANSISTOR (SI)	
Q58	2SD1991A	TRANSISTOR (SI)	
Q59	2SD1991A	TRANSISTOR (SI)	
		(DIODES)	
D55	BOJCN000009	DIODE (SI)	
DA51	MA142WKTX	DIODE (SI)	S
		(CAPACITORS)	
C60	ECUV1C104ZEV	0.1	
C61	ECUV1H332KBV	0.0033	
C62	ECUV1H332KBV	0.0033	
C63	ECUV1H821KBV	820p	
C64	ECUV1H821KBV	821p	
C66	ECUV1C104ZEV	822p	
C67	ECJ1VF1H104Z	823p	
C68	ECUV0J106KB	824p	
C69	ECUV1H821KBV	825p	
C70	ECUV1H821KBV	826p	
C71	ECUV1H332KBV	0.0033	
C73	ECUV1H332KBV	0.0033	
C74	ECUV1A105ZEV	1	
C75	ECUV1A105ZEV	1	
C80	ECUV0J106KB	10	
C82	F2G0J1010014	100	
C83	F2G1V1010017	100	
C84	F2G0J1010014	100	
C85	F2G1C1000014	10	
C87	ECUV1C104ZEV	0.1	
C96	ECUV1C104ZEV	0.1	
		(CONNECTORS)	
CN51	K1KA12B00138	CONNECTOR, 12P	
CN53	K1KA10BA0062	CONNECTOR, 10P	
CN54	K1KA03B00201	CONNECTOR, 3P	
CN56	K1KA04BA0061	CONNECTOR, 4P	
CN57	K1KA20B00159	CONNECTOR, 20P	
CN58	K1MN12BA0222	CONNECTOR, 12P	
		(FUSE)	
F51	K5H312200002	FUSE	
		(COIL)	
L56	PQLQR2KA20T	COIL	S
		(PHOTO ELECTRIC TRANSDUCER)	
PS51	PFVIRM574SL	PHOTO SENSOR	S
		(RESISTORS)	
R31	ERJ3GEY0R00	0	
R35	ERJ3GEY0R00	0	
R36	ERJ3GEY0R00	0	
R54	ERJ3GEY0R00	0	
R55	ERJ3GEY0R00	0	
R56	ERJ3GEY0R00	0	
R58	ERJ3GEYJ181	180	
R59	ERJ3GEYJ181	180	
R60	ERJ3GEYJ181	180	
R61	ERJ3GEYJ181	180	
R63	ERJ12RQG1R0	1	
R64	ERJ12RQG1R0	1	
R65	ERJ3GEYJ2R2	2.2	
R66	ERJ3GEYJ102	1k	
R67	ERJ3GEYJ102	1k	
R68	ERJ3GEYJ472	4.7k	
R69	ERJ3GEYJ472	4.7k	
R70	ERJ3GEYJ221	220	
R72	ERJ3GEYJ331	330	
R73	ERJ3GEYJ103	10k	
R76	ERJ3GEYJ472	4.7k	

Ref. No.	Part No.	Part Name & Description	Remarks
R77	ERJ3GEYJ2R2	2.2	
R78	ERJ12RQG1R0	1	
R79	ERJ3GEYJ472	4.7k	
R80	ERJ12RQG1R0	1	
R81	ERJ3GEYJ102	1k	
R85	ERJ3GEYJ102	1k	
R86	ERJ3GEYJ104	100k	
R87	ERJ3GEYJ104	100k	
R88	ERJ3GEYJ104	100k	
R89	PQ4R18XJ470	47	S
R90	ERJ8GEYJ680	68	
R91	PQ4R18XJ470	47	S
R95	PQ4R10XJ220	22	S
R96	ERJ8GEYJ390	39	

## 19.2.12. DOCUMENT SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB9	PFWP2LB801M	DOCUMENT SENSOR BOARD ASS'Y (RTL)	
PCB9-1	PFSH1A005Z	SWITCH (SW1)	
		(CONNECTOR)	
CN1	K1KA04B00225	CONNECTOR, 4P	
		(PHOTO ELECTRIC TRANSDUCER)	
PS1	CNA1006N	PHOTO SENSOR	

## 19.2.13. DOCUMENT READ POSITION SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB10	PFLP1719MZ-B	READ POSITION SENSOR BOARD ASS'Y (RTL)	
		(CONNECTORS)	
CN2	K1KA04A00527	CONNECTOR, 4P	
CN3	K1KA06A00452	CONNECTOR, 6P	
		(PHOTO ELECTRIC TRANSDUCER)	
PS2	CNA1006N	PHOTO SENSOR	

## 19.2.14. DRUM SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB11	PFWP3LB801M	DRUM SENSOR BOARD ASS'Y (RTL)	
PCB11-1	PFSH1A02Z	SWITCH (SW2)	
		(CONNECTORS)	
CN4	K1KA05A00452	CONNECTOR, 5P	
CN11	K1KA03AA0193	CONNECTOR, 3P	

## 19.2.15. PAPER SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB12	PFWP4LB801M	PAPER SENSOR BOARD ASS'Y (RTL)	
PCB12-1	PFSH1A005Z	SWITCH (SW3)	
PCB12-2	PFSH1A003Z	SWITCH (SW4)	
		(CONNECTORS)	
CN5	K1KA06A00428	CONNECTOR, 6P	
CN12	K1KA03A00495	CONNECTOR, 3P	

### 19.2.16. PRINT START SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB13	PFLP1719MZ-E	PRINT START SENSOR BOARD ASS'Y (RTL)	
		(CONNECTOR)	
CN6	K1KA03B00201	CONNECTOR, 3P	
		(PHOTO ELECTRIC TRANSDUCER)	
PS3	CNA1006N	PHOTO SENSOR	

### 19.2.17. REGISTRATION SENSOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB14	PFLP1719MZ-F	REGISTRATION SENSOR BOARD ASS'Y (RTL)	
		(CONNECTOR)	
CN7	K1KA03B00201	CONNECTOR, 3P	
		(PHOTO ELECTRIC TRANSDUCER)	
PS4	PFVIRM574SL	PHOTO SENSOR	S

### 19.2.18. THERMISTOR BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB15	PFLP1719MZ-G	THERMISTOR RELAY BOARD ASS'Y (RTL)	
		(CONNECTORS)	
CN8	K1KA03BA0012	CONNECTOR, 3P	
CN9	K1KA04B00225	CONNECTOR, 4P	
		(PHOTO ELECTRIC TRANSDUCER)	
PS5	PFVIRM574SL	PHOTO SENSOR	S

### 19.2.19. HIGH VOLTAGE POWER BOARD

Ref. No.	Part No.	Part Name & Description	Remarks
PCB16	N0GG4E000004	HIGH VOLTAGE BOARD ASS'Y (RTL)	△
		(IC)	
IC1	NJM2902N	IC	
		(TRANSISTORS)	
Q1	2SD1819A	TRANSISTOR (SI)	
Q3	2SD2137A	TRANSISTOR (SI)	
Q32	PFEU032GC002	TRANSISTOR (SI)	S
Q62	2SD2137A	TRANSISTOR (SI)	
Q81	2SC4081R	TRANSISTOR (SI)	
Q83	2SB1218A	TRANSISTOR (SI)	
Q84	2SC4081R	TRANSISTOR (SI)	
Q85	2SB1218A	TRANSISTOR (SI)	
Q86	2SA2073	TRANSISTOR (SI)	
Q87	2SC5826	TRANSISTOR (SI)	
Q88	2SC4081R	TRANSISTOR (SI)	
		(DIODES)	
D1	1SS133	DIODE (SI)	
D2	PFVDMTZJ5R6B	DIODE (SI)	S
D3	1SS133	DIODE (SI)	
D4	PFVDMTZJ39A	DIODE (SI)	S
D5	PFVDMTZJ7R5A	DIODE (SI)	S
D6	1SS133	DIODE (SI)	
D7	PFVDMTZJ12B	DIODE (SI)	S
D8	1SS133	DIODE (SI)	
D9	1SS133	DIODE (SI)	
D11	PFVDRD150S	DIODE (SI)	S
D12	PFVDRD120S	DIODE (SI)	S
D13	PFVDRD120S	DIODE (SI)	S
D14	PFVDRD150S	DIODE (SI)	S

Ref. No.	Part No.	Part Name & Description	Remarks
D15	PFVDRD150S	DIODE (SI)	S
D16	PFVDRD150S	DIODE (SI)	S
D31	PFVDMTZJ39A	DIODE (SI)	S
D61	PFVDMTZJ7R5A	DIODE (SI)	S
D63	PFVDMTZJ39A	DIODE (SI)	S
D65	PFVDRD150S	DIODE (SI)	S
D66	PFVDMTZJ13C	DIODE (SI)	S
D67	1SS133	DIODE (SI)	
D68	PFVDRD150S	DIODE (SI)	S
D69	PFVDRD150S	DIODE (SI)	S
D70	PFVDRD150S	DIODE (SI)	S
D71	PFVDRD150S	DIODE (SI)	S
D72	PFVDRD150S	DIODE (SI)	S
D73	PFVDRD150S	DIODE (SI)	S
D77	PFVDESJA5703	DIODE (SI)	S
D81	1SS133	DIODE (SI)	
D82	1SS133	DIODE (SI)	
D83	PFVDMTZJ5R6B	DIODE (SI)	S
D84	1SS133	DIODE (SI)	
D85	1SS133	DIODE (SI)	
		(CAPACITORS)	
C1	ECA1VM470	47p	
C2	PFCKDB11C683	0.068	S
C3	PFCKDF11H104	0.1	S
C4	PFCKDB33A471	470p	S
C5	PFCKDB11H333	0.033	S
C7	PFCKD8BH103	0.01	S
C8	PFCKDB11E104	0.1	S
C10	PFCKDB11C224	0.22	S
C11	PFCKD10J105	1	S
C31	PFCKDB11H472	0.0047	S
C32	PFCKDB31H104	0.1	S
C61	PFCKDB11C683	0.068	S
C62	PFCKDB11H333	0.033	S
C64	PFCKD8BH103	0.01	S
C66	PFCKDB33D331	330p	S
C81	PFCKD2C1H471	470p	S
C82	PFCKDB11H333	0.033	S
C83	ECA1HM100	10p	
C84	PFCKDB11H102	0.001	S
C85	ECEA1VKA220	22	
C86	PFCKDB33A472	0.0047	S
		(CONNECTOR)	
CN1	K1KA08A00440	CONNECTOR, 8P	
		(RESISTORS)	
R1	ERJ3GEYF333	33k	△ S
R3	ERDS2TJ472	4.7k	
R4	ERJ3GEYJ123	12k	
R5	ERDS2TJ472	4.7k	
R6	ERJ3GEYF333	33k	
R7	ERJ3GEYF333	33k	
R8	ERJ3GEYJ222	2.2k	
R9	ERJ3GEYF333	33k	
R10	ERJ3GEYF333	33k	
R11	ERJ3GEYF684	680k	
R12	ERJ3GEYJ824	820k	
R13	ERJ3EKF2203	220k	S
R14	ERJ3GEYJ824	820k	
R17	ERJ3GEYJ103	10k	
R18	ERJ3GEYJ822	8.2k	
R20	ERJ3GEYJ103	10k	
R21	ERJ3GEYJ123	12k	
R24	ERJ3GEYF164	160k	
R25	ERJ3GEYJ271	270	
R26	ERJ3GEYF106	10M	
R27	ERJ3GEYF333	33k	
R31	ERJ3GEYF333	33k	
R32	ERJ3GEYF333	33k	
R34	ERJ3GEYJ472	4.7k	
R35	ERJ3GEYF104	100k	
R36	ERJ3EKF2203	20k	S
R37	ERJ3GEYF333	33k	
R40	ERJ3GEYJ684	680k	

Ref. No.	Part No.	Part Name & Description	Remarks
R41	ERJ3GEYF333	33k	
R42	ERJ3GEYJ563	56k	
R43	ERJ3GEYJ222	2.2k	
R44	ERJ3GEYJ225	2.2M	
R45	ERJ3GEYJ225	2.2M	
R46	ERJ3GEYJ225	2.2M	
R47	ERJ3GEYJ225	2.2M	
R48	ERJ6GEYJ106	10M	
R49	ERJ6GEYJ106	10M	
R50	ERJ3GEYJ102	1k	
R54	ERJ3GEYF434	430k	
R55	ERJ3GEYJ225	2.2M	
R58	ERJ3GEYF243	24k	
R64	ERJ3GEYJ472	4.7k	
R65	ERJ3GEYF184	180k	
R66	ERJ3GEYJ103	10k	
R67	ERJ3GEYF274	270k	
R68	ERJ3GEYJ272	2.7k	
R70	ERJ3GEYJ103	10k	
R71	ERJ3GEYJ564	560k	
R72	ERJ3GEYJ183	18k	
R74	ERJ3GEYJ151	150	
R81	ERJ3GEYJ153	15k	
R82	ERJ3GEYJ103	10k	
R83	ERJ3GEYJ222	2.2k	
R84	ERDS2TJ682	6.8k	
R87	ERJ3GEYJ222	2.2k	
R88	ERJ3GEYF333	33k	
R89	ERDS2TJ682	6.8k	
R90	ERJ3GEYF333	33k	
R91	ERG1SJ101	100	
R92	ERJ3GEYJ153	15k	
R93	ERJ3GEYF104	100k	
R94	ERJ3GEYJ472	4.7k	
R95	ERG1SJ183	18k	
R96	ERJ3GEYJ102	1k	
		(FUSE)	
F1	MCRF0800FB	FUSE	△
		(SWITCH)	
SW1	SS3FLP3D	MICRO SWITCH	△
		(TRANSFORMER)	
T1	MSH2AQF431	TRANSFORMER	△
T61	MSH2AQF530	TRANSFORMER	△
T81	MSH9ANQ051	TRANSFORMER	△
		(VARIABLE RESISTOR)	
VR1	ECNCYAA03B53	VARIABLE RESISTOR	S

## 19.2.20. LOW VOLTAGE POWER BOARD

Ref. No.	Part No.	Part Name & Description	Remarks
PCB17	N0AC4GH00001	LOW VOLTAGE POWER BOARD ASS'Y (RTL)	△
		(ICs)	
IC201	PFVITA76431S	IC	S
		(TRANSISTORS)	
Q1	2SK3742	TRANSISTOR (SI)	
Q101	2SC4081	TRANSISTOR (SI)	
Q2	2SC4097	TRANSISTOR (SI)	
Q21	2SC4081	TRANSISTOR (SI)	
Q22	2SC4081	TRANSISTOR (SI)	
Q23	2SC4081	TRANSISTOR (SI)	
Q271	PFVTFDS6685	TRANSISTOR (SI)	S
Q272	2SC4081	TRANSISTOR (SI)	
Q273	2SA1576	TRANSISTOR (SI)	
Q274	2SC4081	TRANSISTOR (SI)	
Q275	PFVTPX4601	TRANSISTOR (SI)	S
Q277	2SA1576	TRANSISTOR (SI)	
Q291	2SA1576	TRANSISTOR (SI)	
Q292	2SC4081	TRANSISTOR (SI)	
Q301	2SA1576	TRANSISTOR (SI)	
		(DIODES)	

Ref. No.	Part No.	Part Name & Description	Remarks
D10	PSVDERA1506	DIODE (SI)	S
D101	PFVDYG911S2	DIODE (SI)	S
D104	PFVDTZPT8130	DIODE (SI)	S
D11	PSVDERA1506	DIODE (SI)	S
D110	PFVDHVS7L	DIODE (SI)	S
D115	PFVDMTZJ6R8	DIODE (SI)	S
D116	PFVDMTZJ6R8	DIODE (SI)	S
D12	PSVDERA1506	DIODE (SI)	S
D13	PSVDERA1506	DIODE (SI)	S
D151	PFVDERB83006	DIODE (SI)	S
D17	MA111	DIODE (SI)	
D20	PFVDERA9102	DIODE (SI)	S
D22	1SS133	DIODE (SI)	
D23	MA111	DIODE (SI)	
D271	PFVDEC31QS04	DIODE (SI)	S
D274	MA8047	DIODE (SI)	
D275	PFVDHZ4	DIODE (SI)	S
D277	PFVDMTZJ5R1	DIODE (SI)	S
D291	PFVDMTZJ22	DIODE (SI)	S
D4	MA111	DIODE (SI)	
D5	MTZJ12	DIODE (SI)	
D50	PFVDERA2210	DIODE (SI)	S
D501	PFVDERB83006	DIODE (SI)	S
D503	PFVDHZ9	DIODE (SI)	S
D7	MA111	DIODE (SI)	
D9	MA111	DIODE (SI)	
		(CAPACITORS)	
C13	PFCKDB11H102	0.001	S
C101	PFCKD35VB122	0.0012	S
C9	PFCKDB11H472	0.0047	S
C10	PFCKD8BH103	0.01	S
C52	PFCKD8BH103	0.01	S
C105	PFCKDB31H104	0.1	S
C272	PFCKDBBH104	0.1	S
C273	PFCKDB31H104	0.1	S
C1	PFCKDLE224M	0.22	S
C14	PFCKDB31H105	1	S
C15	PFCKD2C1H101	100p	S
C271	PFCEA16ZL470	47p	S
C501	PFCEA16ZL470	47p	S
C8	PFCKD1X3D470	47p	S
C108	DEBB33A222	2200p	
C151	35ZL56M	56	
C274	GR188B10J105	1	S
C5	KMQ450VB100M	100	
C50	DEHR33A471	470p	
C6	PFCKD2E3K222M	2200p	S
C7	DE1E3KX332	3300p	
		(COILS)	
L1	PFLE143F20A	COIL	S
L101	BL02RN1R2N1A	COIL	
L271	PFLE560182N	COIL	S
L3	SN8SP-404JA	COIL	
L5	BL02RN1R2N1A	COIL	
		(CONNECTORS)	
CN1	PQJP2D98Z	CONNECTOR, 2P	S
CN101	B11B-EH	CONNECTOR, 11P	
CN2	PQJP2D98Z	CONNECTOR, 2P	S
		(FUSES)	
F1	PFBA0215010	FUSE	S
F151	HTM1R6A	FUSE	
F2	PFBAS5054R0A	FUSE	S
F301	HTM2R5A	FUSE	
F501	HTM2R5A	FUSE	
		(PHOTO ELECTRIC TRANSDUCERS)	
PC1	PS2581AL1	PHOTO COUPLER	
PC2	PFVITLP363	PHOTO COUPLER	S
		(RESISTORS)	
R1	PQ4R18XJ334	330k	S
R101	ERJ3GEYJ102	1k	
R102	PQ4R10XJ152	1.5k	S
R103	ERJ3GEYJ683	68k	
R104	ERJ3GEYJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R105	PQ4R10XJ103	10k	S
R106	ERJ3GEYJ123	12k	
R11	PQ4R10XJ912	9.1k	S
R115	PQ4R18XJ4R7	4.7	S
R12	ERJ3GEYJ223	22k	
R13	ERJ3GEYJ331	330	
R14	ERJ3GEYJ104	100k	
R151	PQ4R18XJ392	3.9k	S
R152	PQ4R18XJ392	3.9k	S
R19	ERDS2TJ100	10	
R2	PQ4R10XJ104	100k	S
R201	ERJ8GEYJ1R0	1	
R202	ERJ8GEYJ1R0	1	
R203	ERJ8GEYJ1R0	1	
R204	ERJ8GEYJ1R0	1	
R205	ERJ8GEYJ1R0	1	
R206	PQ4R18XJ472	4.7k	S
R21	ERJ6GEJ473	47k	
R23	ERJ3GEYJ102	1k	
R24	ERJ3GEYJ473	47k	
R250	PQ4R18XJ153	15k	S
R26	ERJ3GEYJ333	33k	
R27	ERJ3GEYJ243	24k	
R271	PQ4R10XJ471	470	S
R272	PQ4R10XJ331	330	S
R273	PQ4R10XJ222	2.2k	S
R275	PQ4R10XJ563	56k	S
R276	PQ4R10XJ471	470	S
R277	ERJ3GEYJ102	1k	
R278	PQ4R10XJ222	2.2k	S
R279	PQ4R10XJ472	4.7k	S
R28	ERJ3GEYJ682	6.8k	
R280	PQ4R10XJ822	8.2k	S
R281	PQ4R10XJ222	2.2k	S
R282	PQ4R10XJ222	2.2k	S
R29	ERJ3GEYJ104	100k	
R291	ERJ6GEYJ163	16k	
R292	ERJ3GEYJ103	10k	
R293	PQ4R18XJ472	4.7k	S
R294	ERJ3GEYJ102	1k	
R295	ERJ3GEYJ102	1k	
R3	PQ4R10XJ104	100k	S
R301	ERJ3GEYJ473	47k	
R302	ERJ3GEYJ103	10k	
R303	PQ4R10XJ183	18k	S
R4	PQ4R10XJ154	150k	S
R41	PQ4R10XJ154	150k	S
R42	PQ4R18XJ334	330k	S
R43	PQ4R18XJ334	330k	S
R5	PQ4R10XJ203	20k	S
R50	ERG2DJ184	180k	
R501	PQ4R10XJ561	560	S
R502	PQ4R10XJ561	560	S
R51	ERDS2TJ101	100	
R52	ERDS2TJ101	100	
R53	PFRDT26A100	10	S
R54	PQ4R10XJ151	150	S
R6	PQ4R18XJ681	680	S
R7	PQ4R10XJ561	560	S
R8	ERJ3GEYJ333	33k	
R9	ERJ3GEYJ682	6.8k	
J101	ERJ6GEY0R00	0	
J2	ERJ6GEY0R00	0	
R25	ERJ6GEY0R00	0	
		(OTHERS)	
SCR51	TM1261I	COMPONENTS PARTS	
T1	PFLT25Q1	TRANSFORMER	S
TH1	NTPAA5R1	THERMISTOR	
VR101	ECNCYAA03B53	VARIABLE RESISTOR	S
Z1	PFRZCENC751	VARISTOR	S

### 19.2.21. HOOK SWITCH BOARD

Ref. No.	Part No.	Part Name & Description	Remarks
PCB18	PFLP1696MZ	HOOK SWITCH BOARD (RTL)	
		(JACKS)	
CN940	PQJJ1TC5Z	JACK	S
CN941	K2LA104B0019	JACK	
		(SWITCH)	
SW940	ESE14A211	SWITCH	

### 19.2.22. EXTENTION USB CABLE KIT

Ref. No.	Part No.	Part Name & Description	Remarks
—	PFWAFLB851M	EXTENTION USB CABLE KIT	

### 19.2.23. FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
EC1	PQZZ6K14Z	EXTENSIONCORD_6P	
EC2	PQZZ7K11Z	EXTENSIONCORD_7P	
EC3	PQZZ7K5Z	EXTENSIONCORD_7P	
EC4	PQZZ2K1Z	EXTENSIONCORD_2P	
EC5	PQZZ8K15Z	EXTENSIONCORD_8P	
EC6	PQZZ4K7Z	EXTENSIONCORD_4P	
EC7	PQZZ3K5Z	EXTENSIONCORD_3P	
EC8	PQZZ8K18Z	EXTENSIONCORD_8P	
EC9	PQZZ5K6Z	EXTENSIONCORD_5P	
EC10	PFZZ12K6Z	EXTENSIONCORD_12P	N
EC11	PFZZ20K1Z	EXTENSIONCORD_20P	N
EC12	PFZZ11K13Z	EXTENSIONCORD_11P	
EC13	PQZZ28F1Z	EXTENSIONCORD_28P	

YF(Q)  
KXFLB802/KXFLB812