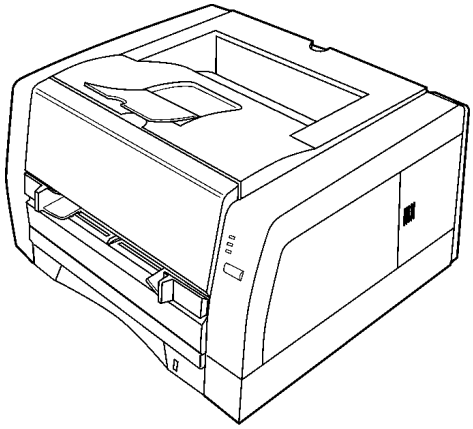
ORDER NO.KM60111624C0
G0

# Service Manual

## Laser Printer

SD

## KX-P7105
## KX-P7110



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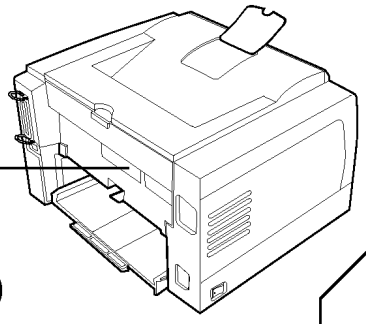
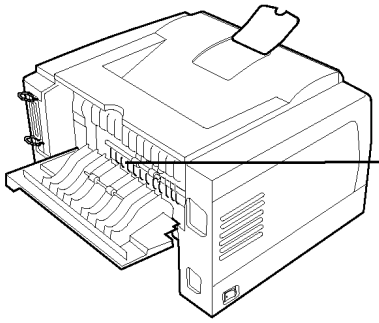
## ⚠WARNING

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

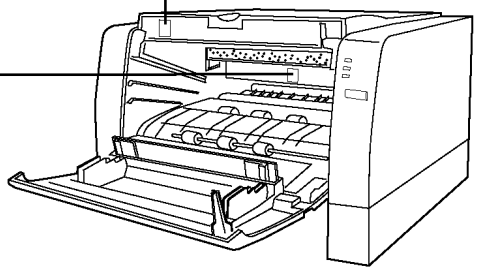

(Only for 220-240 V equipment)



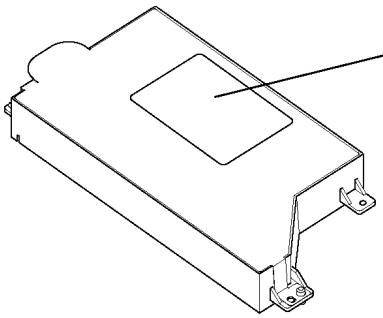
**CAUTION**
HOT SURFACE INSIDE

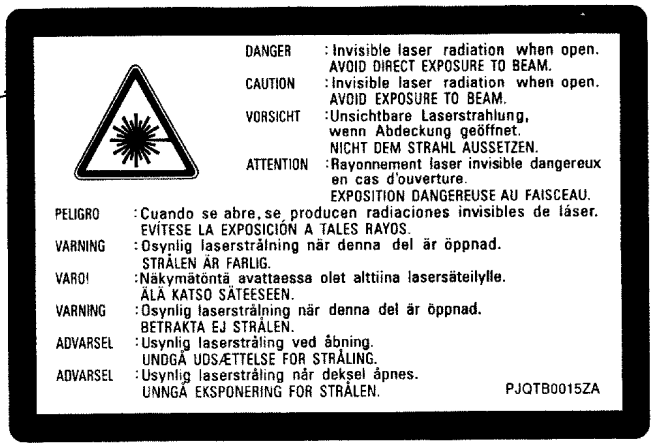


**CAUTION**
HOT SURFACE



## Laser Scanning Unit (LSU)






**Laser diode properties**

| | |
|---|---|
| Laser output | : 5 mW max |
| Wavelength | : 785 nm |
| Emission duration | : Continuous |

## Caution

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

## IMPORTANT SAFETY NOTICE

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

# CONTENTS

# 1 Introduction

## 1.1. Specifications

### 1.1.1. Printer

Specifications are subject to change without notice.

| | | | |
|---|---|---|---|
| Printer | CPU | NEC V850E1 100MHz 32bit RISC | |
| | Printing Method | Semiconductor Laser | |
| | Print Speed | 14 ppm (pages per minute) maximum (A4 size plain paper, simplex printing, 5% image area)<br>15 *1 ppm maximum (Letter size plain paper, simplex printing, 5% image area)<br>*1 Maximum print speed is 14.6 ppm. | |
| | Resolution | 300 x 300 dpi (dots per inch), 600 x 600 dpi, 1200 x 600 dpi | |
| | Paper Feed | Media tray (universal cassette): up to 250 sheets of paper [75 g/m$^2$ (20 lbs.)]<br>Manual feed: 1 sheet<br>2nd feeder (option): up to 550 sheets of paper [75 g/m$^2$ (20 lbs.)] | |
| | Paper Output | Up to 150 sheets of paper [ 75 g/m$^2$ (20 lbs.)] | |
| | Emulation | PCL6*2, PostScript Level 2*2 (option) | |
| | Memory | 16 MB standard (max. 48 MB) | |
| | Operating Environment | 10 to 32.5°C ( 50 to 90.5°F ), 20 to 80% RH | |
| | Storage Environment | 0 to 35°C ( 32 to 95°F ), 10 to 80% RH | |
| | Warm Up Time | Less than 25 seconds [at 22°C (71.6°F), 50% RH] | |
| | Dimensions | 399 (W) x 390.5 (D) x 254 (H) mm [ 15.7" x 15.4" x 10" ] | |
| | Mass (Weight ) | Approx. 10 Kg {22 lbs} (with consumables) | |
| | Voltage | 120V ± 10% | |
| | Frequency | 60 Hz | |
| | Power Consumption | Printing (average): 345 W or less<br>Stand-by (average): 80 W or less<br>Power saving (When the fan stops): 11 W or less<br>Meets ENERGY STAR® power conservation requirements. | |
| | Noise Level | Printing : 49 dBA<br>Standby : 37 dBA | |
| | Density Control | Variable | |
| | Fusing System | Heat and Pressure Rollers | |
| | Photoreceptor | Organic Photoconductor ( OPC ) | |
| | Development Process | One component non magnetic development | |
| | Consumables/Life | Starter Toner Cartridge (provided with printer) | 2,000 pages average *3 |
| | | Toner Cartridge | 4,000 pages average *3 |
| | | OPC Drum Unit | 20,000 pages average *3 |

*2 The available fonts or print may differ from the genuine software because they are not genuine software of HP or Adobe.

*3 Average life at 5% image area with repetitive printing of 10 pages (Letter/A4 size, single sided printing, default density).
5% image area means that the black area within the printing area is 5%. Printing 10% image area continuously will reduce the life of the toner to about half as compared to printing 5% image area.

## 1.1.2. Paper

Specifications are subject to change without notice.

| | | | |
|---|---|---|---|
| Paper | Basic Weight | 60 to 105 g/m $^2$ (16 to 28 pounds ) | |
| | Thickness | 3.7 to 7.5 mils (1 mil = 1/1000" ) | |
| | Moisture Content | 4% to 6% | |
| | Smoothness | 100 to 300 Sheffield | |
| | Acid Content | 5.5 PH minimum | |
| | Fusing Compatibility | Must not scorch, melt, offset material, or release hazardous emissions when heated to 200°C (392°F) for 0.1 second | |
| | Cutting Dimensions | ±0.0313 inch of normal, corners 90°±4° | |
| | Grain | Long again | |
| | Cut Edge Conditions | Cut with sharp blades, no paper dust | |
| | Ash Content | Not to exceed 10% | |
| | Curl | No allowable curl toward side to be printed | |
| | Packing | Polyaminated moisture proof ream wrap | |
| | Paper Size | Letter | 216 x 279 mm ( 8.5" x 11" ) |
| | | A4 | 210 x 297 mm ( 8.27" x 11.7" ) |
| | | Legal | 216 x 356 mm ( 8.5" x 14" ) |
| | | B5 | 176 x 250 mm ( 6.92" x 9.84" ) |
| | | Executive | 184 x 267 mm ( 7.25" x 10.5" ) |
| | | A5* | 148.5 x 210 mm ( 5.85" x 8.27" ) |
| | | A6* | 105 x 148.5 mm ( 4.13" x 5.85" ) |
| | Envelope Size*[1] | Envelope #9 | 98 x 225 mm ( 3.87" x 8.87" ) |
| | | Envelope #10 | 105 x 241 mm ( 4.12" x 9.5" ) |
| | | International DL | 110 x 220 mm ( 4.33" x 8.66" ) |
| | | International C5 | 162 x 229 mm ( 6.38" x 9.01" ) |
| | | Monarch | 98 x 191 mm ( 3.87" x 7.5" ) |

*[1] Duplex printing cannot be performed with A5, A6 size paper or envelope.

Types of paper to avoid.

- Extremely smooth or shiny paper or paper that is highly textured
- Coated paper
- Acid paper
- Letterhead imprinted with low temperature or thermography. These materials may transfer onto the fusing roller and cause damage. Any pre-printed paper should use inks compatible with 200°C (392°F) for 0.1 second.
- Damaged or wrinkled paper, or paper with irregularities such as tabs, staples, etc.
- Multipart forms or carbonless paper
- Paper with a cotton and/or fiber content over 25%
- Ink jet media (paper, transparency, etc.) (It may transfer onto the fuser unit's roller and cause damage.)

## 1.1.3. Interface, Options, Accessories, and Supplies

| | | | |
|---|---|---|---|
| Interface | Parallel (Bi-directional) | Connector Type | IEEE P1284-B (36PIN Anphenol) Connector |
| | | Cable | Use a shielded cable 2 meters (6.6 feet) or less in length. |
| | USB | Connector Type | "B Type" Connector |
| | | Cable | Use a full-speed shielded cable 5 meters (16.4 feet) or less in length. |
| | Network (100 Base TX / 10 Base T) (KX-P7110 only) | Connector Type | RJ-45 Connector |
| | | Cable | Use category 5 shielded twisted pair cable. |
| Options, Accessories, and Supplies | KX-PDP7 | Toner Cartridge ( 4,000 page life ) | |
| | KX-PDM7 | OPC Drum Unit ( 20,000 page life ) | |
| | KX-PEM12 | 16 MB RAM Board | |
| | KX-PEM13 | 32 MB RAM Board | |
| | KX-PPSU5 | Upgrade Kit ( for PostScript ) | |
| | KX-PMF3 | 2nd Feeder | |

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## 1.1.4. Others

### 1.1.4.1. About Media

Available Media and Media Size

| Media | Media size | Media tray | Manual feed | Duplex print | 2nd feeder (option) |
|---|---|---|---|---|---|
| Paper Cotton paper | Letter | ○ | ○ | ○*1 | ○*1 |
| | A4 | ○ | ○ | ○*1 | ○*1 |
| | Legal | ○ | ○ | ○*1 | ○*1 |
| | B5 | ○ | ○ | ○*1 | ○*1 |
| | Executive | ○ | ○ | ○*1 | ○*1 |
| | A5 | ○ | ○ | X | X |
| | A6 | ○ | ○ | X | X |
| Available media size*2 | Max. | 216 X 356 mm (8.5" X 14") | 216 X 356 mm (8.5" X 14") | 216 X 356 mm (8.5" X 14") | 216 X 356 mm (8.5" X 14") |
| | Min. | 105 X 148.5 mm (4.1" X 5.9") | 76.2 X 127 mm (3" X 5") | 182 X 257 mm (7.2" X 10.1") | 182 X 257 mm (7.2" X 10.1") |
| Transparency | Letter | ○ | ○ | X | X |
| | A4 | ○ | ○ | X | X |
| Label | Letter | X | ○ | X | X |
| | A4 | X | ○ | X | X |
| Envelope | #9 | ○ | ○ | X | X |
| | #10 | ○ | ○ | X | X |
| | Monarch | ○ | ○ | X | X |
| | DL | ○ | ○ | X | X |
| | C5 | ○ | ○ | X | X |

○: supported X: not supported

*1 Cotton paper cannot be used for duplex printing and printing from 2nd feeder.

*2 When printing a document on a custom size paper, print it using the application software that page size can be set to a custom size. At that time set the paper size to letter or A4 for the printer's media size setting.

Available Paper Weights and Capacity

| | Media | Media tray | Manual feed | 2nd feeder (option) |
|---|---|---|---|---|
| Paper weights | Plain paper | 60 - 105 g/m$^2$ (16 - 28 lbs.) | 60 - 105 g/m$^2$ (16 - 28 lbs.) | 60 - 105 g/m$^2$ (16 - 28 lbs.) |
| | Thick paper | X | 106 - 165 g/m$^2$ (29 - 44 lbs.) | X |
| | Envelope | 90 g/m$^2$ (24 lbs.) | 90 g/m$^2$ (24 lbs.) | X |
| Paper capacity | Paper | 250 sheets [75 g/m$^2$ (20 lbs.)] | 1 sheet | 550 sheets [75 g/m$^2$ (20 lbs.)] |
| | Transparency | 20 sheets | 1 sheet | X |
| | Label | X | 1 sheet | X |
| | Envelope | 30 sheets | 1 sheet | X |

**Note:**
Automatic duplex printing can be only performed on plain paper [75 - 90 g/m$^2$ (20 - 24 lbs.)] from the media tray or 2nd feeder (option).

Recommended Media

| Media | Media size | Recommended media |
|---|---|---|
| Paper | Letter | Xerox 4024 DP paper 75 g/m$^2$ (20 lbs.) |
| | A4 | Xerox paper 80 g/m$^2$ |
| Transparency | Letter / A4 | 3M CG3300 |
| Label | Letter | Avery 5160 – 5163, Avery 5660 – 5663 |
| | A4 | Avery L7159 – L7164 |
| Recycled paper*1 | Letter | Multi Use 20 lbs., 24 lbs. |
| | A4 | —— |

*1 When using recycled paper, select Paper for Media Type on the Page Setup tab.

Transparency:

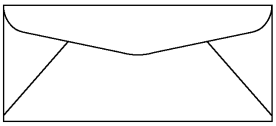
- To avoid damaging the printer, do not use ink jet transparencies.
- Transparencies and adhesive material used on labels should be stable at 205°C ( 400°F ), the printer's maximum temperature.
- Re-using transparencies that have been fed through the printer once ( for example, after jams or if the transparency is ejected without being printed ) can reduce the life of the consumables and paper path components.
- When using transparencies, and if the print quality is poor, check to ensure the correct side is being printed.

Labels:

- With any label stock, the labels must completely cover the backing material.

Envelope:

It is recommended that you purchase only high quality envelopes with diagonal seams, as shown in the diagram below:



High quality envelopes have the following characteristics:

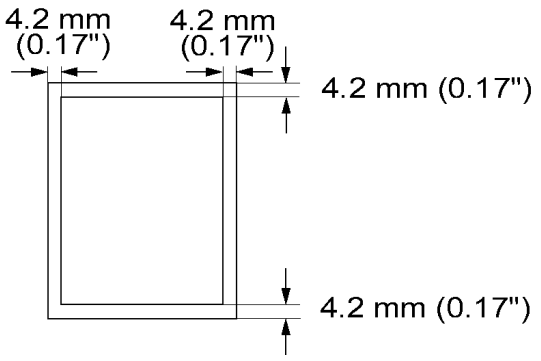
- A thin, sharply creased leading edge
- Paper weight of 90 g/m$^2$ ( 24 lbs. )
- Flat, free of curls, wrinkles, nicks, etc.

**Note:**

Wrinkles may occur in some case, even when using high quality envelopes.

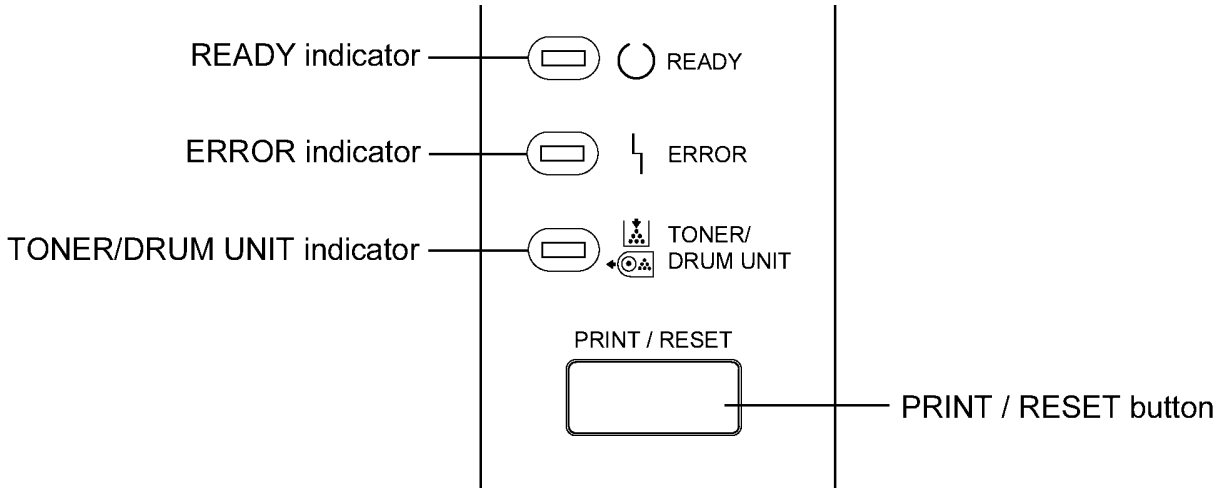
## 1.1.4.2. Margins and Print Area

The image ( print area ) is printed a bit smaller than the media size. 4.2 mm ( 0.17" ) is required for top, bottom and side margins. It may be needed to adjust the print margins in the application software to match the allowable printarea.



# 1.2. Indicators

## 1.2.1. Printer Panel




## 1.2.2. Indicators

Three indicators show the following printer's status.

For detailed information on the printer status and recovery, see Section 9.1.

| READY | ERROR | TONER/ DRUM UNIT | Printer Status |
|---|---|---|---|
| ■ | ■ | ■ | Printer is warming up (three indicators light one after another). |
| ■ | □ | □ * | Printer is ready for printing or in the sleep mode. |
| □ | ■ | □ | Internal Error occurs. - - ->Turn the printer off and back on again.<br>If the problem persists, service by an Authorized Panasonic Center is required. |
| ▲ | □ | □ * | Printer is receiving data or data remains in printer's memory. |
| □ | ▲ | □ | Printer recoverable errors (media jam, media empty, etc.) occurred. |
| □ | ▲ | ■ | Toner is empty. |
| | | | Drum unit is not installed in the printer. |
| | | | Life cycle of the drum unit has expired. |
| □ * | □ | ▲ | Drum unit is wearing out. |
| | | | Toner is low. |

■ : on

□ : off

▲ : blinking

* The status varies depending on the condition.

## 1.2.3. PRINT / RESET Button

The printer executes the following action depending on the printer status by pressing this button.

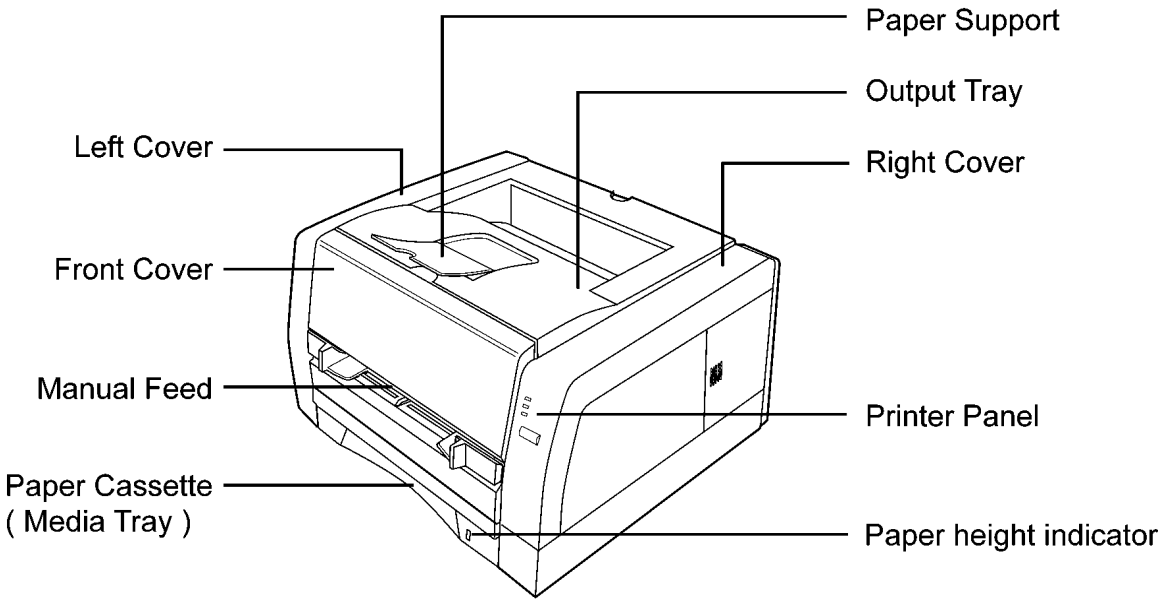
| READY | ERROR | TONER/ DRUM UNIT | Printer Status |
|---|---|---|---|
| ▭ | ▬ | ▭ | To recover from the error status (overrun or memory overflow), press the **PRINT / RESET** button **less than 5 seconds**. |
| | | | To clear the remaining data, press the **PRINT / RESET** button **more than 5 seconds** until the ERROR and READY indicator blinks fast, then release it. The remaining data will be cleared. |
| ▬ | ▭ | ▭* | To print the configuration page, press the **PRINT / RESET** button **less than 5 seconds**. |
| | | | To print the demo page, press the **PRINT / RESET** button **more than 5 seconds** until the ERROR indicator blinks fast, then release it. The ERROR indicator is turned off and the demo page will be printed. |
| ▬ | ▭ | ▭* | To print the remaining data, press the **PRINT / RESET** button **less than 5 seconds**. |
| | | | To clear the remaining data, press the **PRINT / RESET** button **more than 5 seconds** until the ERROR and READY indicator blinks fast, then release it. The remaining data will be cleared. |

▬ : on
▭ : off
▬ : blinking

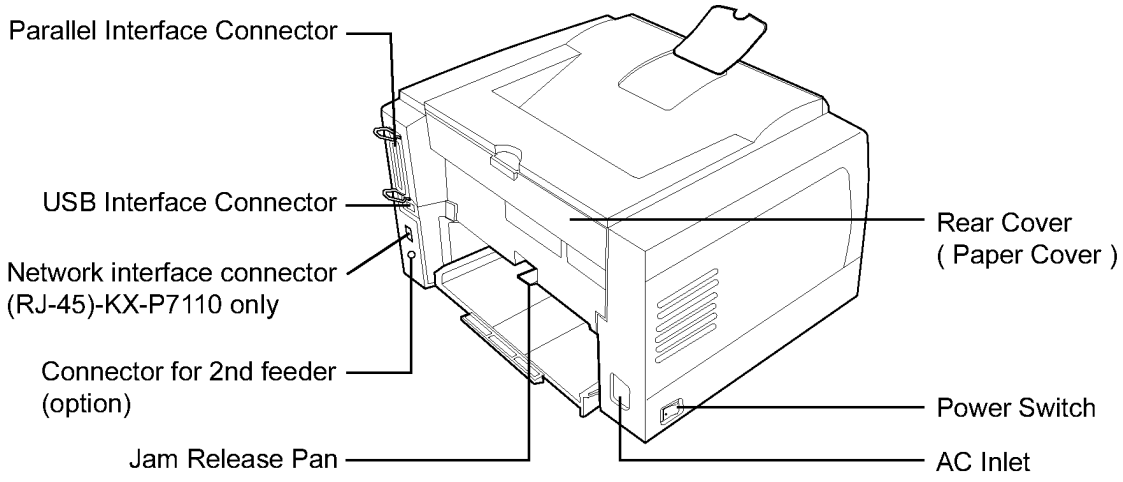
* The status varies depending on the printer's condition.

## 1.3. Parts Identification

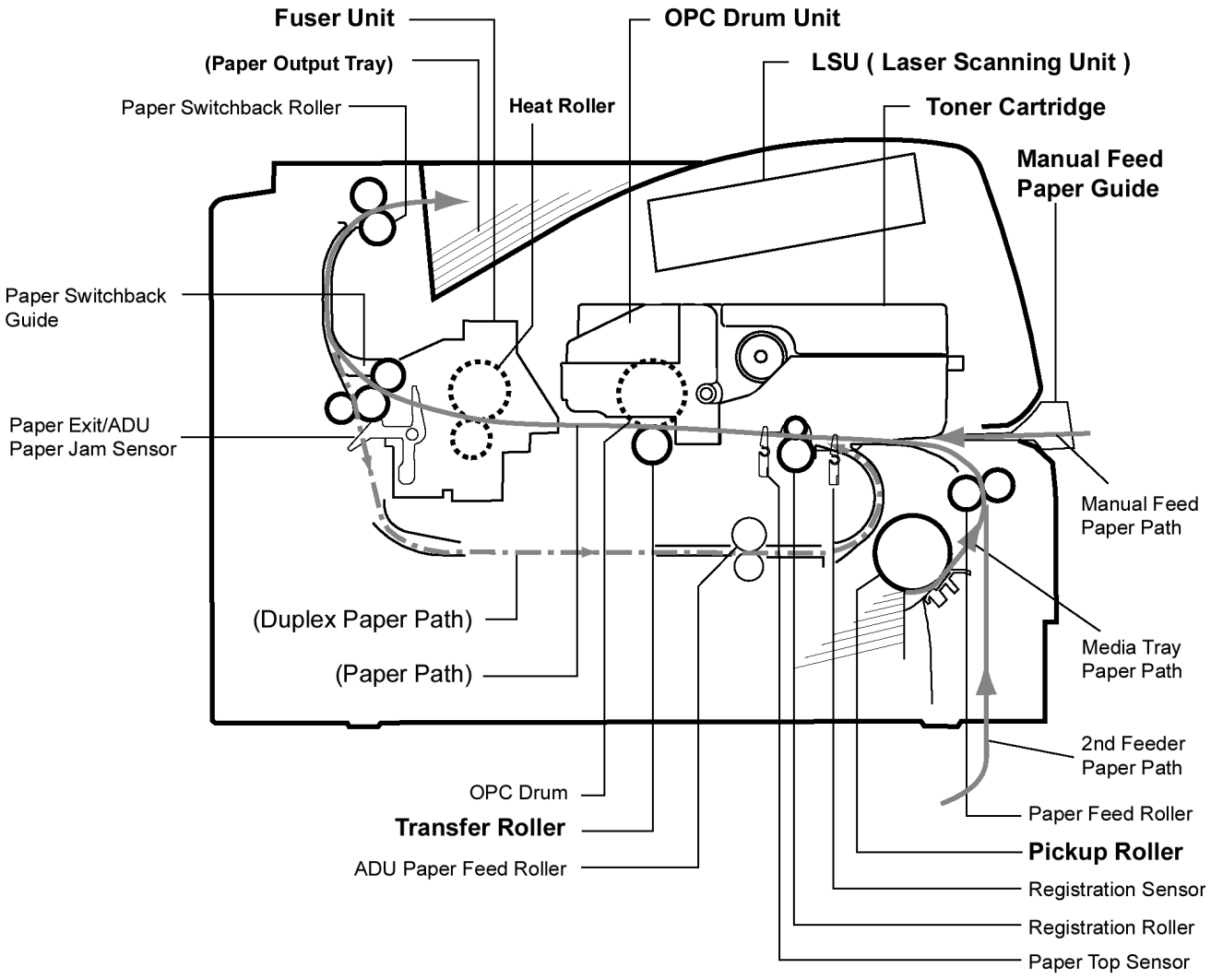
### 1.3.1. Front Side View



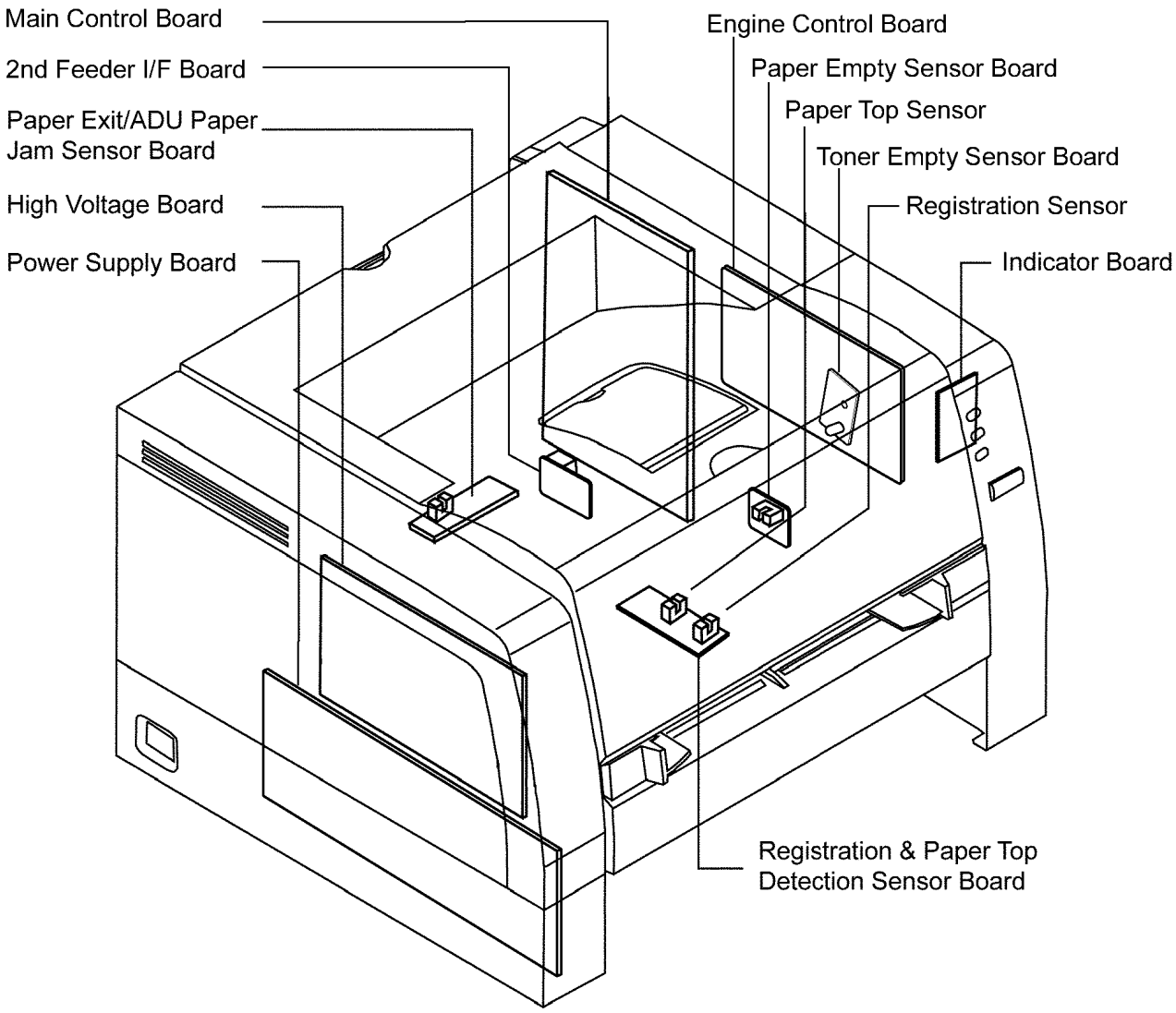

### 1.3.2. Rear Side View



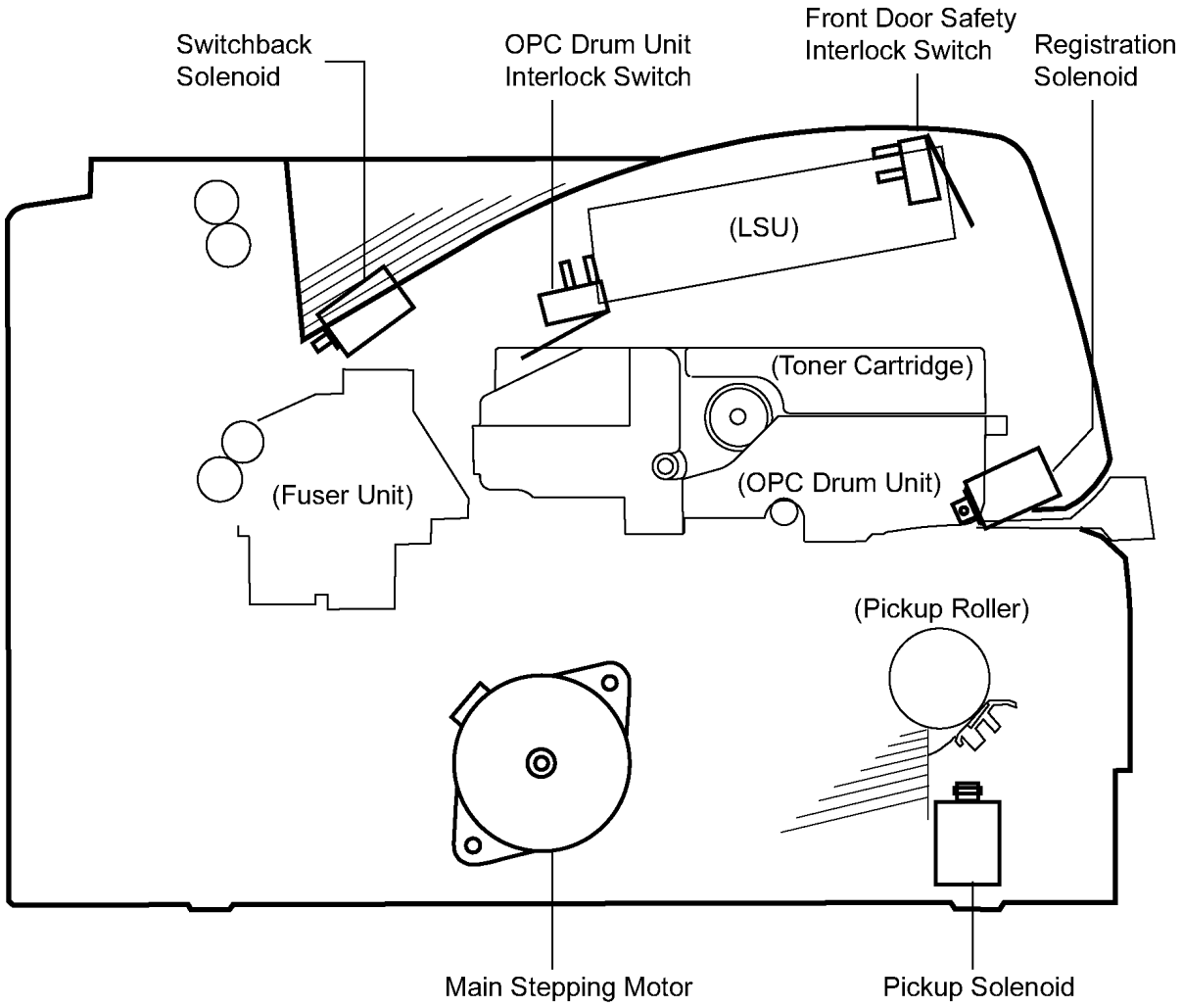
# 1.4. Component Layout and Paper Path



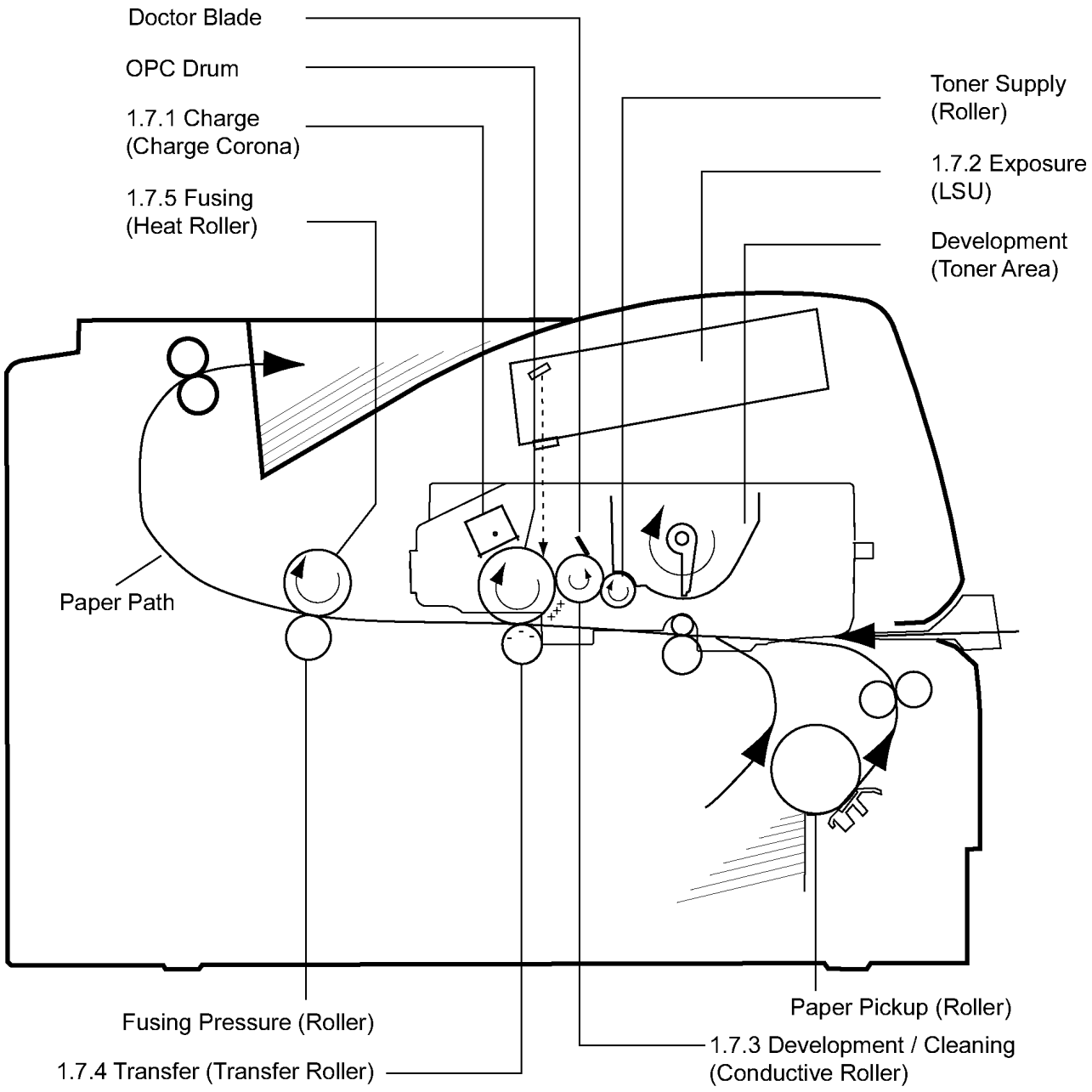
## 1.5. Electrical Components and Sensor Boards



## 1.6. Switches and Solenoids



# 1.7. Print Process




## 1.7.1. Charge

The charge corona applies a high, uniform positive charge to the surface of the organic photoconductor ( OPC ) drum. The charge level is approximately 900 VDC and remains because the OPC drum has a high electrical resistance when concealed in darkness.

## 1.7.2. Exposure

The laser beam passes through the collimator lens, is reflected by the polygon mirror, and is focused onto the drum after passing through an image-forming ( f−θ ) lens and a reflectionmirror. Wherever the laser beam strikes the drum, the positive charge dissipates. A latent electrical image of two different voltages potentials, which corresponds to the original page, is formed on the OPC drum.

## 1.7.3. Development / Cleaning

**Development:**

Non-magnetic toner is supplied to the conductive roller by the toner supply roller. The toner on the conductive roller is positively charged by friction with the toner supply roller, and the doctor blade ensures a thin layer on the surface of theconductive roller. Wherever the conductive roller touches the drum, the positively charged toner is attracted to the latent image on the drum, and the latent image is converted to a visible toner image. A bias voltage of approx. 350 VDC is appliedto the conductive roller to achieve maximum print quality.

**Cleaning:**

After transfer, residual toner remains on the drum surface, and for next printing, the residual toner reaches to the development area via charge and exposure. The charge level of the OPC corresponds to the white background is +900VDC, andthe bias voltage of the conductive roller is approx. +350VDC. Therefor the positively charged residual toner on the OPC drum is attracted and collected to the conductive roller. The charge level of OPC after exposure is +100VDC. So,the printing area of the OPC is cleaned.

## 1.7.4. Transfer

As the paper is fed between the drum and the transfer roller, a high negative charge is applied to the back of the paper. The positive toner particles are then attracted from the drum surface to the paper. After transfer, the paper is separatedfrom the drum surface by the curvature of the drum.

## 1.7.5. Fusing

The paper passes through the fuser rollers and is subjected to heat and pressure. The fusing temperature is approximately 190°C ( 382.5°F ), and the pressure is approximately 0.36kg/cm ( 3.53N/cm ). This bonds,or fuses, the toner into the paper.

# 1.8. Paper Feed

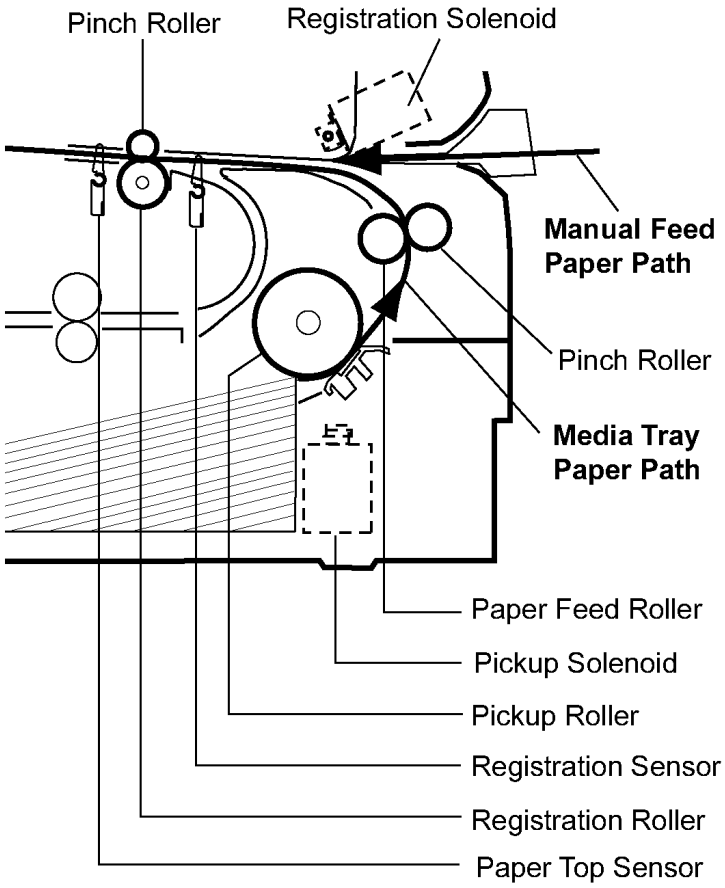
**Media Tray**

The main motor drives the pickup roller after the pickup solenoid is energized, which engages the pickup roller clutch and feeds a sheet of paper. The paper is pushed to the paper feed roller, which overdrives the paper slightly causing a buckleto ensure the paper is aligned with the stationary registration roller.

While triggering the registration sensor notifying the CPU paper is ready to feed. The paper at this point is the same as manual feed.

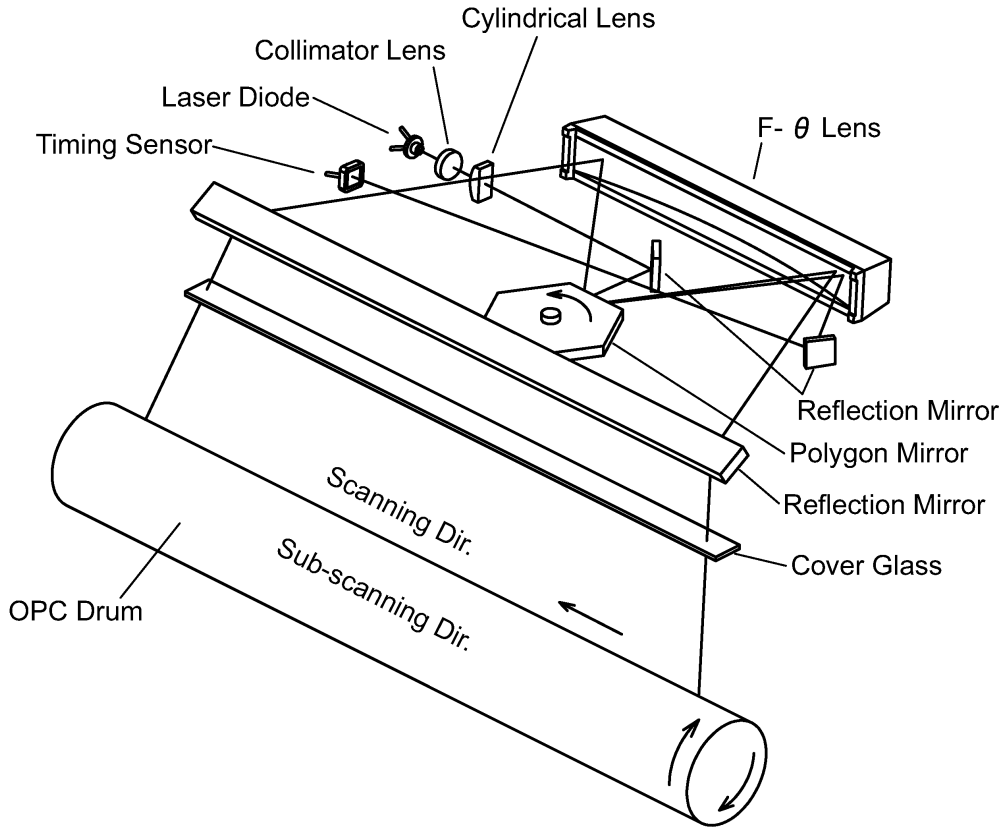
**Manual Feed**

When paper is inserted, it activates the registration sensor. At the proper time, the CPU energizes the registration solenoid that allows the registration roller to rotate, feeding paper to the top sensor.



# 1.9. Laser Scan Unit ( Exposure )

## 1.9.1. Operation Theory

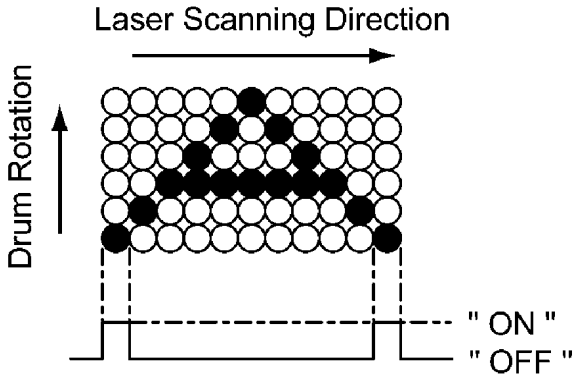



The light beam from the laser diode ( light source ) is modulated by the digital signal (nVIDEO) and converted to parallel light waves by the collimator lens. The beam is then sent to the rotating polygon mirror (polygon scanner), where it is reflectedthrough the f−θ lens and then focused onto the OPC drum surface. The diameter of the beam is about 80 µm, and the light moves across the surface of the OPC drum in the scanning directionof right to left. As the drum rotates ( sub-scans ), a static image is formed where the laser beam touches the drum surface.

The laser beam is also deflected to the timing sensor. This sensor controls the start timing of scanning on the drum, providing a consistent left margin. The CPU uses the timing sensor to detect abnormal signals.

## 1.9.2. Laser Beam

The laser beam is pulsed on and off by the digital signal (nVIDEO) to form a latent image of two different voltage potentials on the drum, as shown below.




Turn Laser Beam ON and OFF corresponding with the images.

● : Laser Beam-"ON" (Drum discharged)

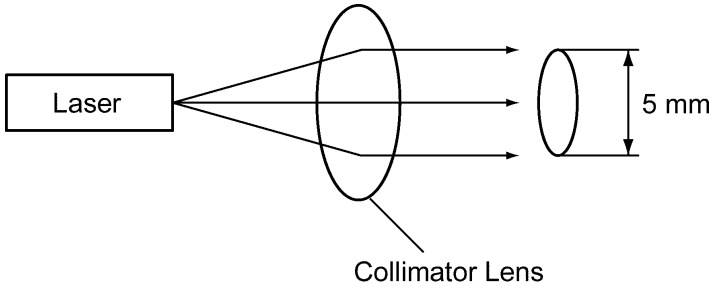
○ : Laser Beam-"OFF"

**Laser Diode Specification**

| Item | Minimum | Standard | Maximum | |
|---|---|---|---|---|
| Oscillation Wavelength | 770 | 785 | 800 | nm |
| Output Light Power (OPC Drum Surface) | 0.315 | 0.350 | 0.385 | mW |

## 1.9.3. Collimator Lens

The collimator lens converts light from the laser diode to parallel light. This aids in scanning and provides better convergence to a dot.




## 1.9.4. Polygon Scanner

The polygon scanner consists of a 6-sided mirror directly driven by a brushless DC motor at a rate 20,078.74 rpm. The laser beam is reflected across the OPC drum by the mirror faces and produces the scan. One mirror face is equal to one main scan.This unit features stable line scanning speed, precision mirror surface reflection angle, reflect-free surfaces, and instant start.

**Polygon Scanner Specifications**

| Item | Specification | |
|---|---|---|
| Mirror | 6 | faces |
| Revolution | 20,078.74 | rpm |

## 1.9.5. Cylindrical Lens and f-θ Lens

Each of the polygon mirror surfaces has a slight imperfection. This prevents the beam from scanning the OPC drum surface at the constant interval in the sub-scan direction. The cylindrical lens and f-θ lens are used for correcting this uneven laser scanning.

## 1.9.6. f-θ Lens

This lens ensures that the beam scans across the surface of the OPC drum at a constant rate. The beam is refracted to parallel light as it passes through the lens to ensure that the dots at the edge of the drum and at the center of the drum areequally spaced. This lens also provides a set focal length for laser beam.

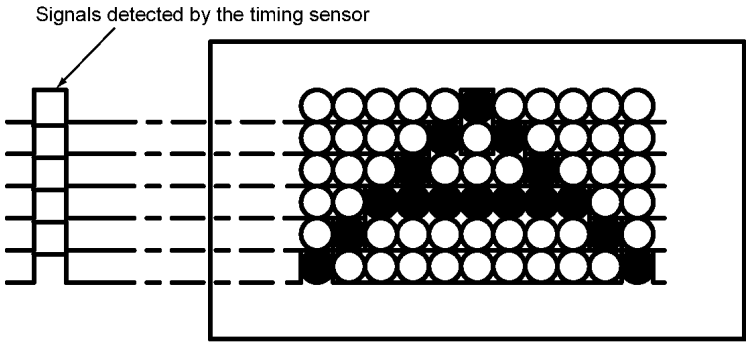
f-θ

**Specifications**

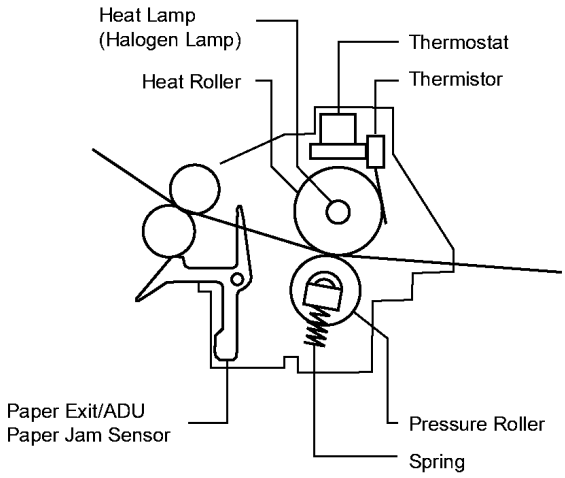
| Item | Specification | |
|---|---|---|
| Scanning Width | 207.43 | mm |
| Focusing Light Spot Size | 80 x 90 | µm |

## 1.9.7. Timing Sensor

This sensor detects the laser beam and determines the start timing for scanning. A pin photodiode is used as the timing sensor.



# 1.10. Fuser Unit




A 600W heat lamp ( halogen lamp ) heats the surface of the teflon-coated heat roller to approximately 190°C ( 374°F ), a thermistor monitors the heat roller temperature, and the CPU controls the ON/OFF timing of the lamp.

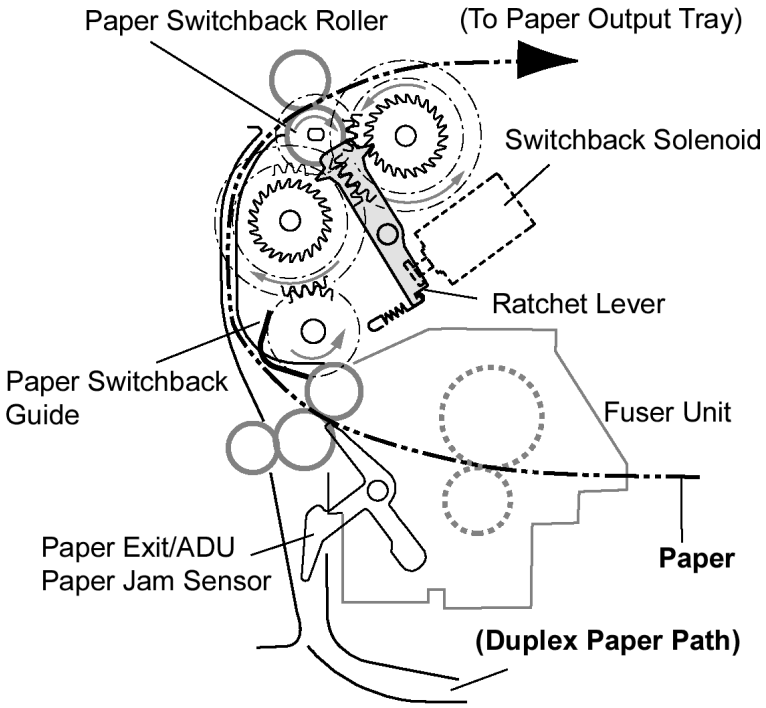
The thermostat is mounted 2.5mm away from the heat roller. If the ambient temperature reaches 180°C ( 356°F ), the thermostat is opened, and power is removed from the heat lamp. The surface of the thermostat is not as hot as thatof the heat roller. When the thermostat opens, the surface of the heat roller may reach 200°C ( 382°F ), and the system displays E30. If the thermistor opens, the system displays E32. If by chance the thermostat malfunctions a thermalfuse opens.

The pressure roller is kept in contact with the heat roller through 2 pressure springs, which apply a pressure of approximately 0.36 kg/cm ( 3.56 N/cm ). Drive is supplied from the main motor via intermediate gears.

# 1.11. Paper Ejection and Paper Switchback

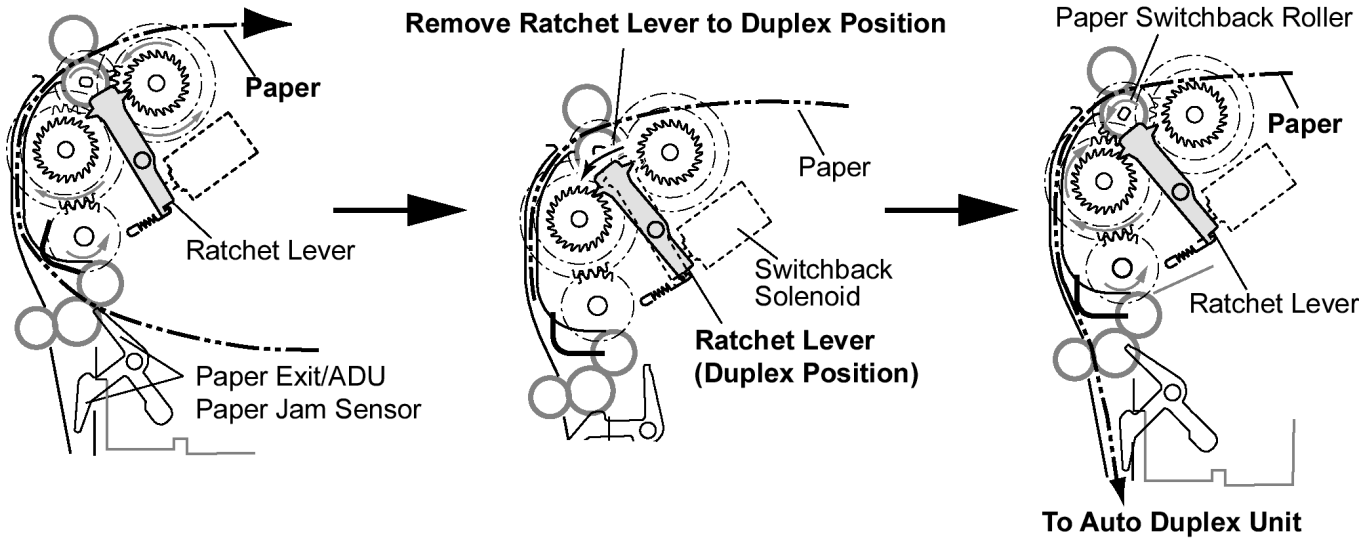
**A. Normal Printing Mode ( Not Duplex Mode )**

After fusing, paper is fed to the output tray by the switchback roller and switchback pinch roller. The paper exit/ADU paper jam sensor detects paper. If paper does not arrive at the sensor within a predetermined period of time, “Jamat A” is displayed, and if paper remains at the sensor beyond a predetermined period, “Jam at B” is displayed on the computer screen. Paper is ejected face down and stored in the output tray.




**B. Duplex Mode**

After fusing, paper is fed to the output tray by the switchback roller and switchback pinch roller. The paper exit/ADU paper jam sensor detects paper. If paper does not arrive at the sensor within a predetermined period of time, “Jamat A” is displayed on the computer screen. At the specified time after the sensor detects the bottom of paper, the switchback roller rotates in reverse direction, turning on the switchback solenoid to move the ratchet lever to Duplex Position.As a result, the paper is fed to the development area through the Auto Duplex Unit ( ADU ) ( see section 1.4 Component Layout and Paper Path ). If paper remains at the sensor beyond a predetermined period, “Jam at E” is displayed.Paper is ejected face down and stored in the output tray.



# 2 Installation, Setup, and Repacking

## 2.1. Installation Requirements

### 2.1.1. Environment

1. Temperature Range :10 °C - 32.5 °C ( 50 °F - 90.5 °F ) ( Temperature fluctuation ± 10 °C per hour or less )
2. Humidity Range :20% RH - 80% RH ( Humidity fluctuation ± 20 °C per hour or less )
3. Printer Weight :10 kg ( 22 lbs. )
4. Place the unit on a stable, level surface.
5. Do not install the unit under the following conditions.
   a. Extremely high or low temperature
   b. Extremely high or low humidity
   c. Direct exposure to sunlight
   d. Areas of high dust concentration
   e. Areas of poor ventilation
   f. Areas exposed to chemical fumes
   g. Areas with extreme vibration
   h. Directly in air conditioning flow

### 2.1.2. Ventilation Requirements

Ventilation space is needed around the printer, more than 20 mm ( 0.8” ) between the printer and a wall.

## 2.2. Setup

### 2.2.1. Removing the Packing Material

1. Remove the printer from the plastic bag.
2. Remove all adhesive tape from the printer.

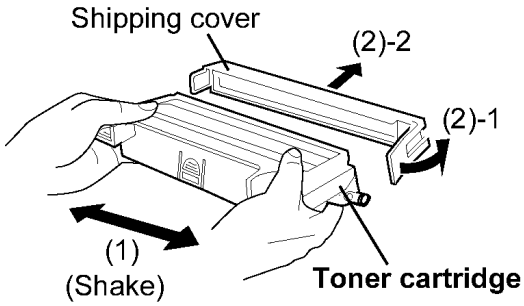
**Note:**

Please do not throw away the packing materials. They may be required to ship or transport the printer. To provide optimum print quality, the unit must be kept upright and level at all times.

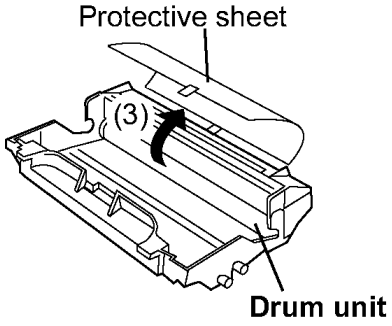
### 2.2.2. Installing the Toner Cartridge and Drum Unit

(1) Shake the toner cartridge.

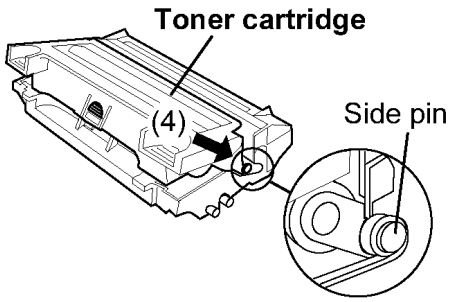
(2) Remove the shipping cover.




(3) Remove the protective sheet from the drum unit.



(4) Insert the side pins of the toner cartridge into the slots of the drum unit.

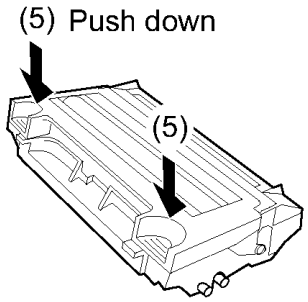


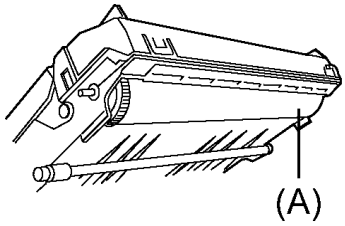

(5) Push down the toner cartridge as shown to lock in place.

**Note:**

To prevent any damage to the drum unit,

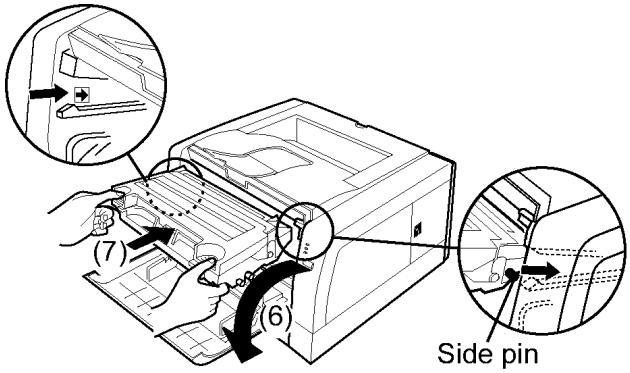
- Do not touch the black drum surface ( A ).
- Do not expose to light for more than 5 minutes.
- Do not expose to direct sunlight.



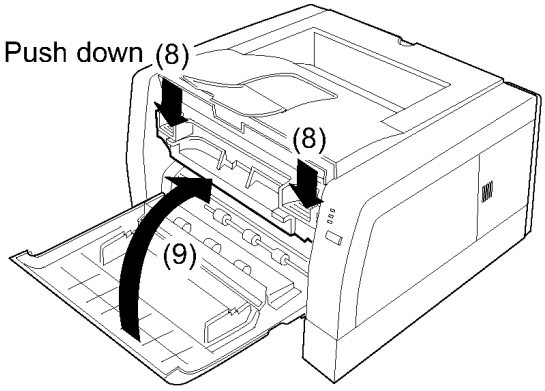

(6) Open the front door.

(7) Insert the drum unit into the printer [insert the side pins of the drum unit into the groove (label ➔ )].




(8) Push down as shown to lock in place.

(9) Close the front door.

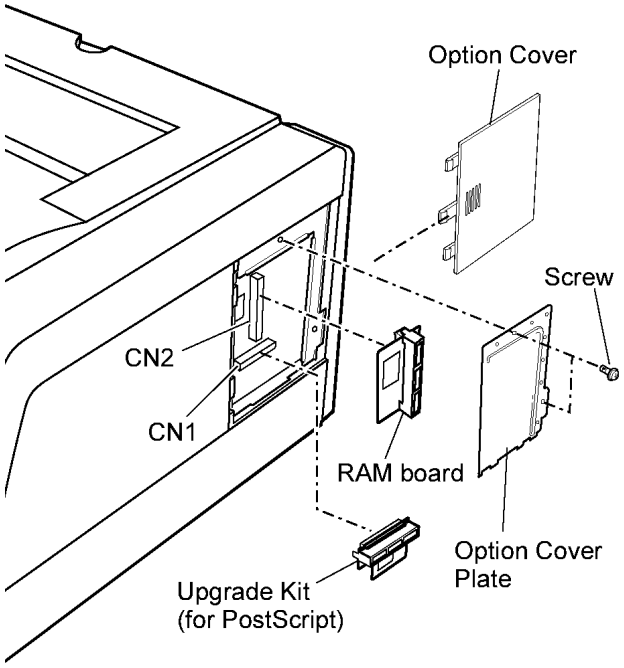


## 2.2.3. Installing the Upgrade Kit (for PostScript) or RAM Board

Upgrade Kit (for PostScript) (KX-PPSU5) and RAM Board (KX-PEM12 or KX-PEM13) are Options.

(1) Remove the Option Cover and Option Cover Plate (2 screws).

(2) Install Upgrade Kit (for PostScript) in CN1 or RAM Board in CN2.



## 2.3. Repacking

Prepare the unit before shipping.

**Note:**

It is highly recommended that users keep the original carton and **ALL** packing materials. Please follow these instructions when transporting or shipping the printer.

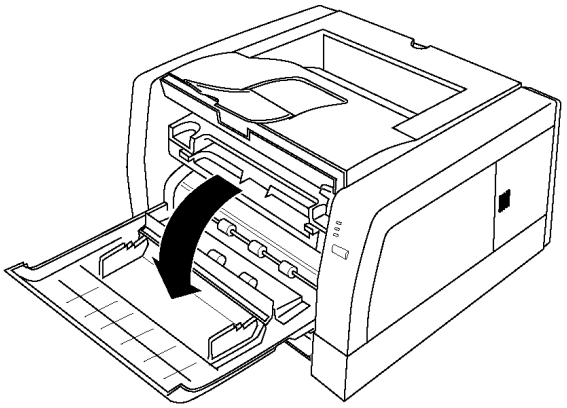
- The printer weights about 10 kg {22 lbs}.
- Please use the original carton and all of the original packing materials.
- Improper repacking of the printer may result in a service charge to remove spilled toner.
- Since the printer uses dry toner, extreme care must be taken when handling. The printer should be handled in the upright ( vertical ) position.
- Do not ship with drum unit installed in printer.

**Material Required**

– Original cartons and packing materials
– Newspaper or drop cloth
– Shipping tape and scissors

(1) Turn off the printer, remove the power cord and all interface cables.

(2) Open the front cover.

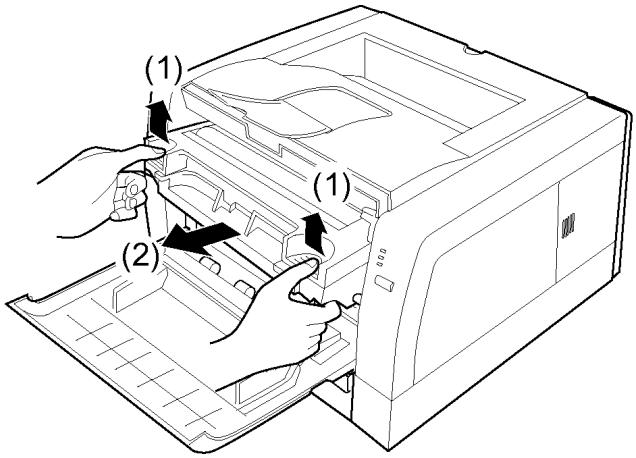


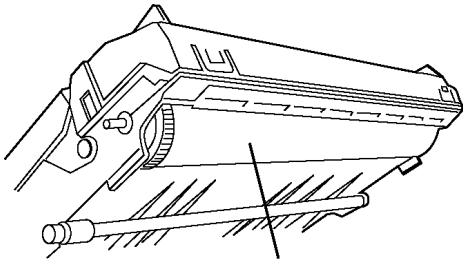
(3) Lift the drum unit up ( 1 ) and slide it out of the printer ( 2 ).

- To avoid possible toner spillage, it is recommended to place the drum unit on newspaper or a drop cloth.

**Caution:**

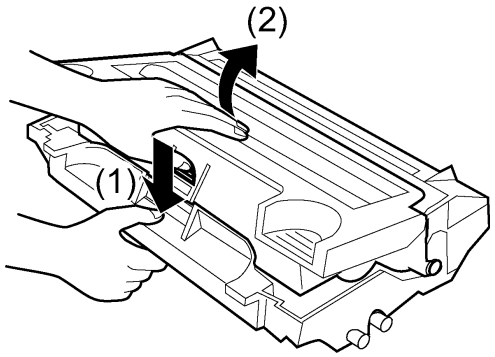
- To prevent any damage to the drum unit, observe the following precautions;
  – Do not touch the black drum surface illustrated below.
  – Do not expose the drum unit to light for more than 5 minutes.
  – Do not expose the drum unit to direct sunlight.
  – Do not keep the drum unit near dust or dirt.
  – Do not place the drum unit in a high humid area.



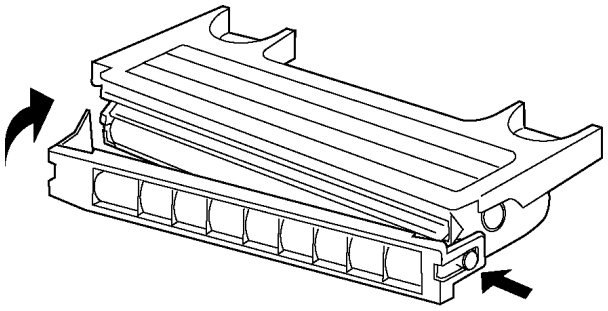



Black drum

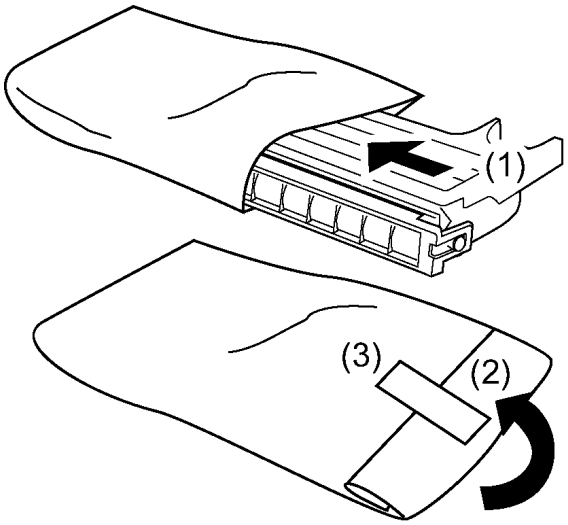
(4) While pushing the drum unit ( 1 ), lift the toner cartridge up ( 2 ).



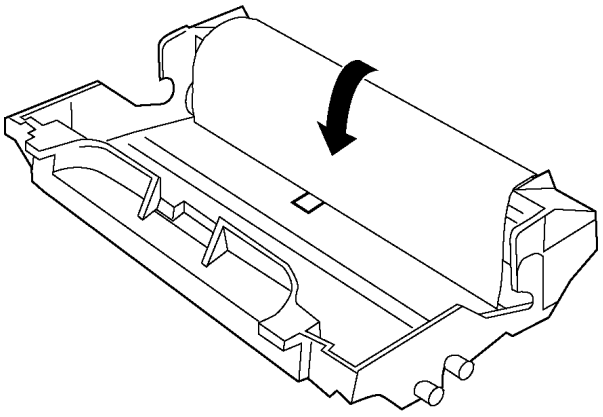

(5) Replace the shipping cover on the toner cartridge.



(6) Insert the toner cartridge into a plastic bag (1), seal the end of the bag tightly (2), and tape closed (3).




(7) Wrap the drum unit with the protective sheet to protect the drum surface.



(8) Insert the drum unit into a plastic bag and seal the end of the bag tightly.

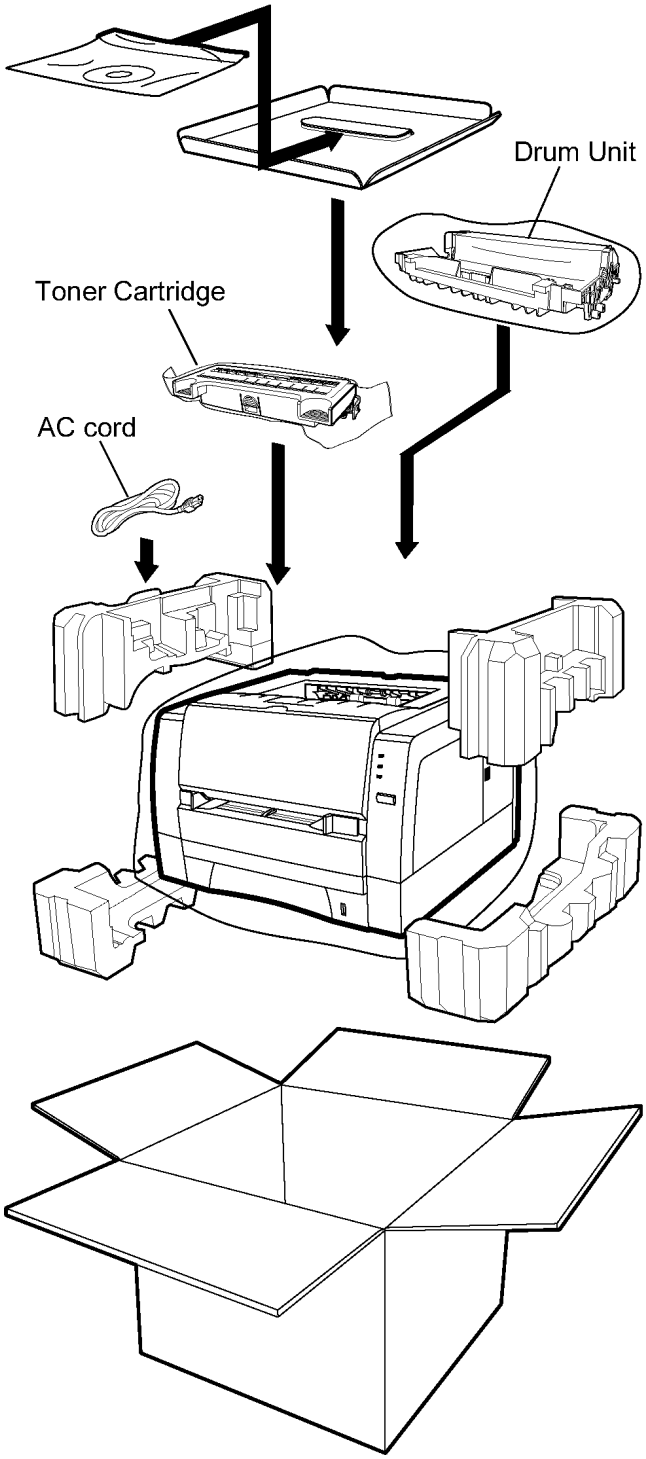
(9) Wipe off any loose toner in and around the printer.

**Note:**

- If a toner vacuum is available, it is the best tool for cleaning spilled toner. Do not use a standard office or home vacuum; the toner **will not** be retained by typical vacuum dust collectors.

(10) Close the front cover.

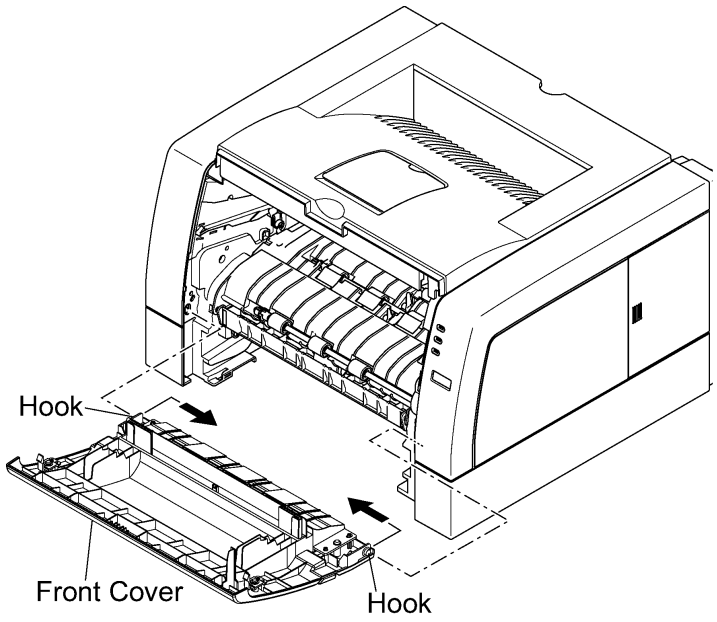
(11) Repack the printer in the box as shown.



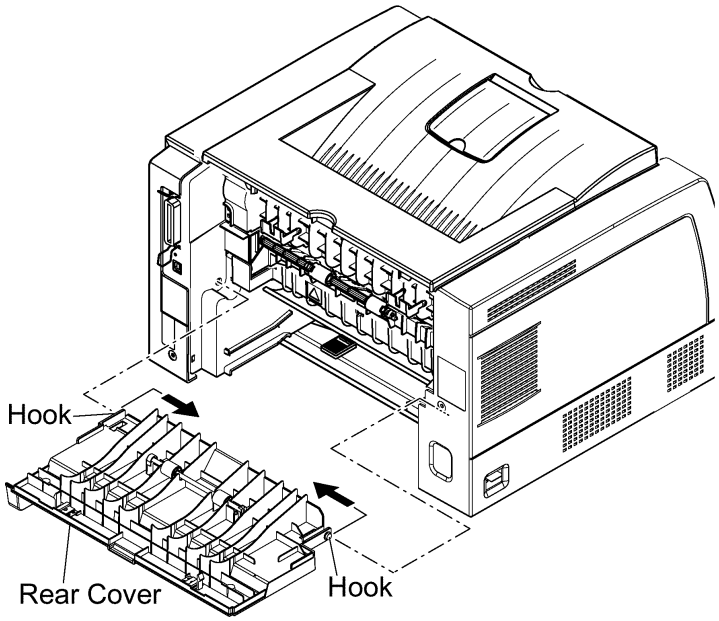
# 3 Removal and Replacement Procedures

## 3.1. Front and Rear Covers

(1) Remove the Front Cover by releasing the hooks.




(2) Remove the Rear Cover by releasing the hooks.

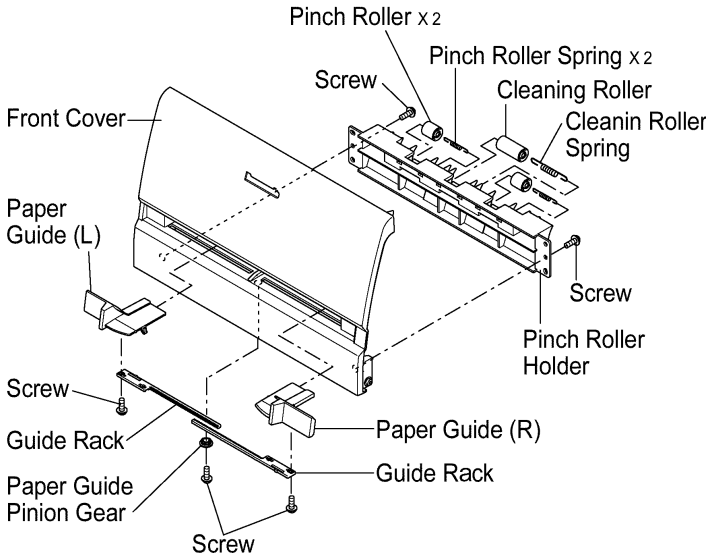


### 3.1.1. Front Cover Disassembly

(1) Remove the Pinch Roller Holder Assembly ( 2 screws ).

(2) Remove the Paper Guide Pinion Gear ( 1 screws ).

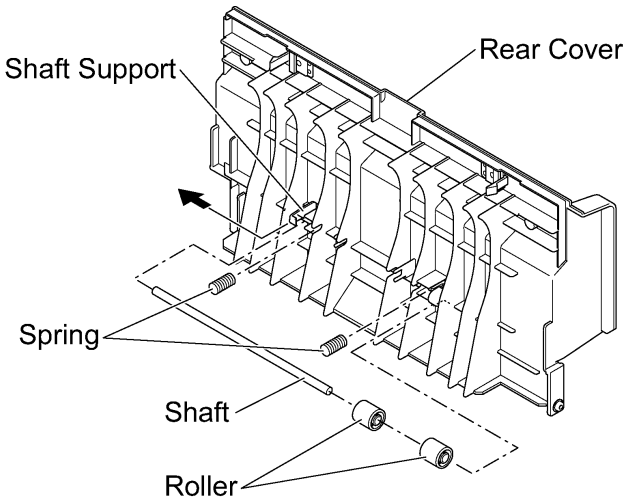
(3) Remove the Guide Racks ( 2 screw ).




### 3.1.2. Rear Cover Disassembly

(1) Release the Shaft from the hook by pushing the shaft support in the arrow direction.

(2) Separate the Shaft, 2 Rollers and 2 Springs.



# 3.2. Right, Left and Top Covers

## 3.2.1. Right Cover

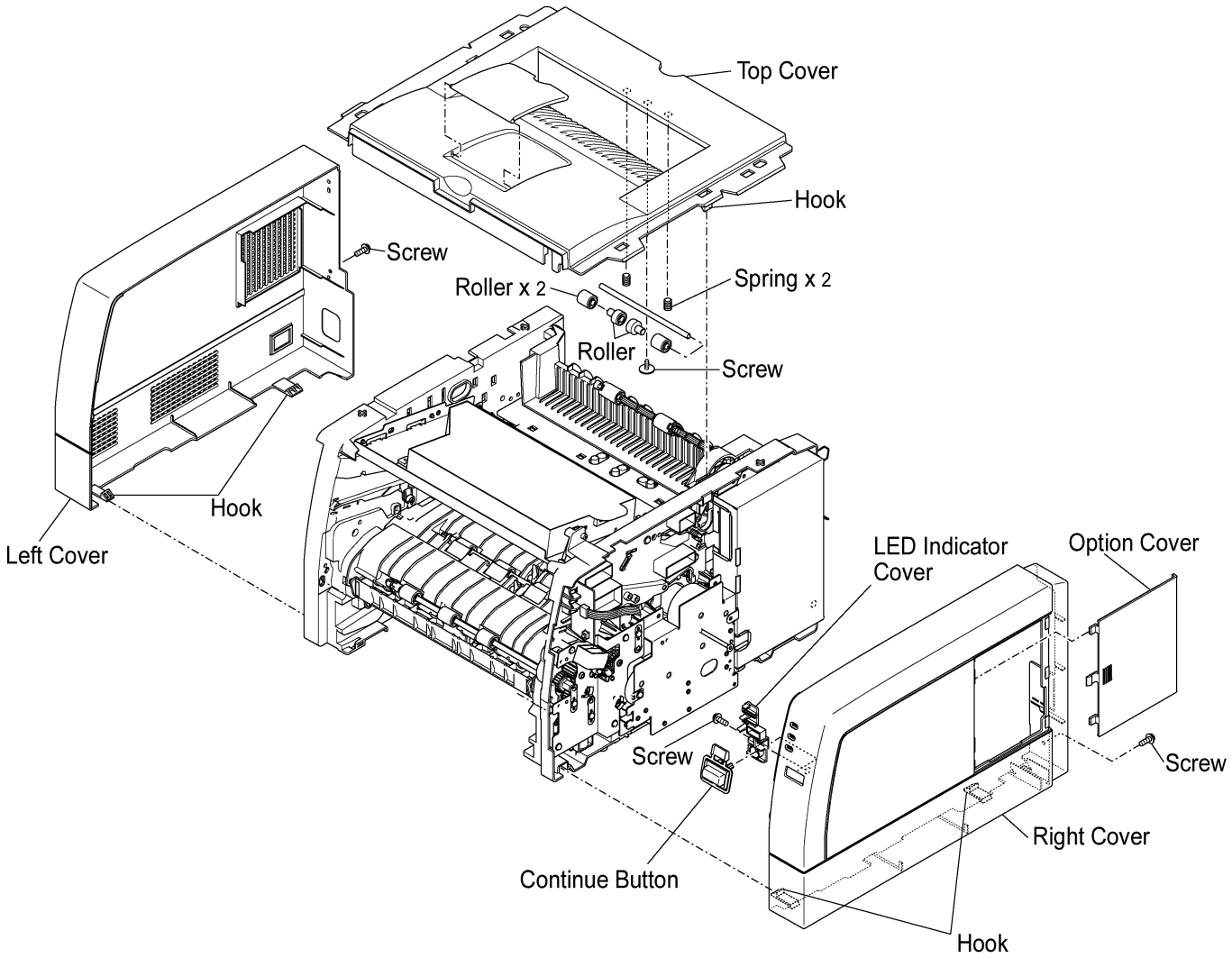
1. Remove the screw.
2. Release the 2 hooks from the bottom side of printer.
3. Remove the Right Cover.
4. Remove the LED Indicator Cover and Continue Button ( 1 screw ).

## 3.2.2. Left Cover

1. Remove the screw.
2. Release the 2 hooks from the bottom side of printer.
3. Remove the Left Cover.

## 3.2.3. Top Cover

1. Release the 2 hooks from both sides of the printer.
2. Remove the Top Cover.

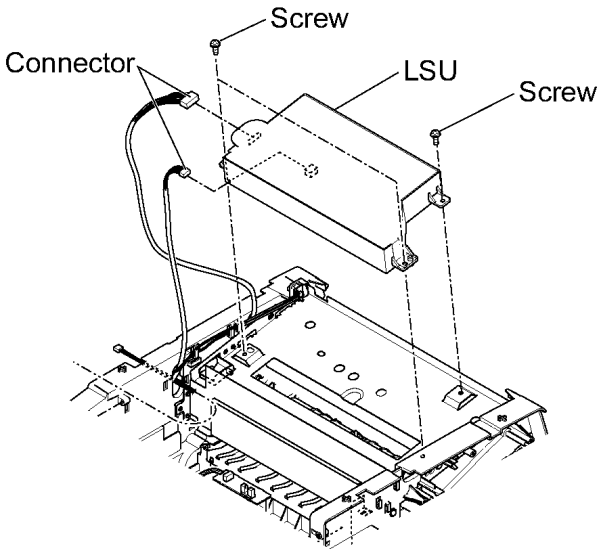


## 3.3. Laser Scanning Unit ( LSU )

Before handling, remove the Right, Left and Top Covers ( see Section 3.2 ).

(1) Remove the 3 screws.

(2) Disconnect the 2 connectors from the LSU.



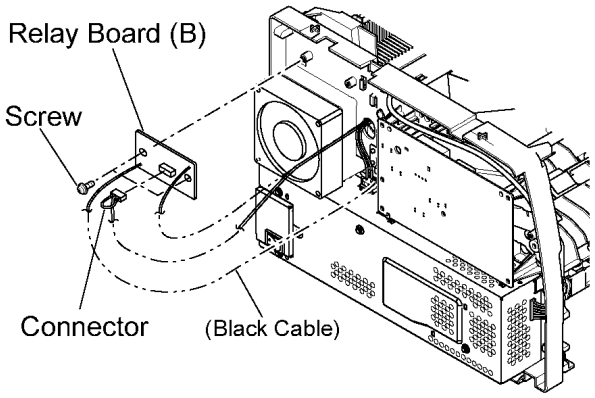

## 3.4. Relay Board (B)

Before handling, remove the Left Cover ( see Section 3.2 ).

(1) Remove the connector from the Relay Board ( B ).

(2) Remove the 2 screws.

(3) Remove the Relay Board (B).



# 3.5. High Voltage Board and Power Supply Unit

Before handling, remove the Left Cover ( see Section 3.2 ).

## 3.5.1. High Voltage Board

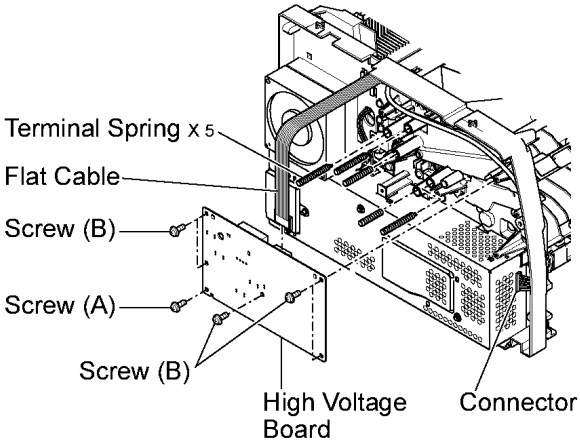
(1) Remove the screw ( A ) and 5 screws ( B ).

**Caution :**

**Screw ( A ) is different from screws ( B ). When reinstalling the screw, return it to the original position.**

(2) Disconnect the Flat Cable from the High Voltage Board.

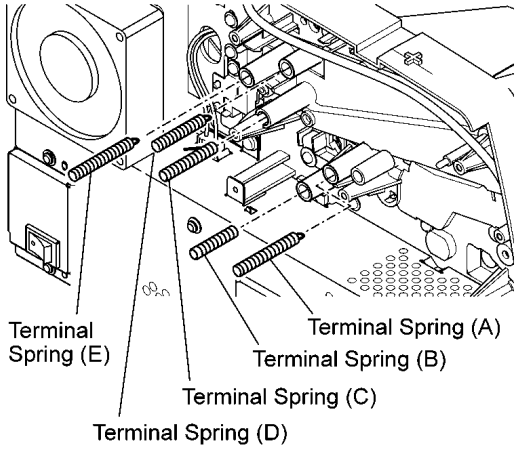
(3) Remove the High Voltage Board, be careful that High Voltage Terminal Springs are not dropped from the printer and lost.

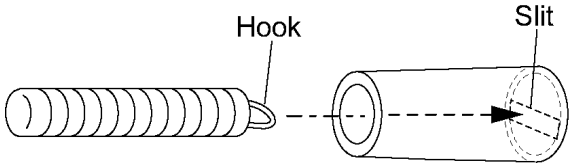


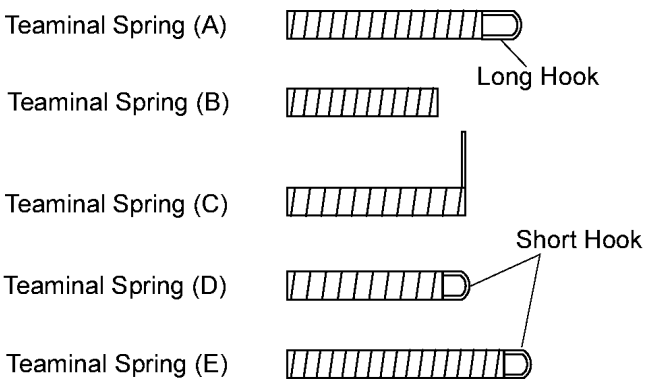

(4) Remove the 5 High Voltage Terminal Springs.

**Caution :**

**When reinstalling the High Voltage Terminal Springs, all springs must be returned to the original position. And the hook of Spring ( A ), ( D ), ( E ) are set into the slits as shown in the following figure.**



## 3.5.2. Power Supply Unit

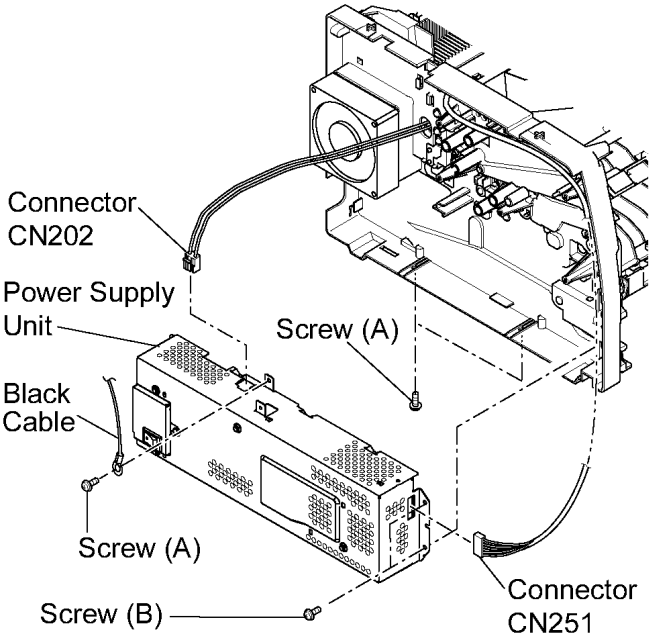
(1) Disconnect the 2 connectors.

(2) Remove the 3 screws ( A ) and 2 screws ( B ).

**Caution :**

**The screw ( A ) differs from the screw ( B ). When reinstalling the screw, return it to the original position.**

(3) Remove the Power Supply Unit.



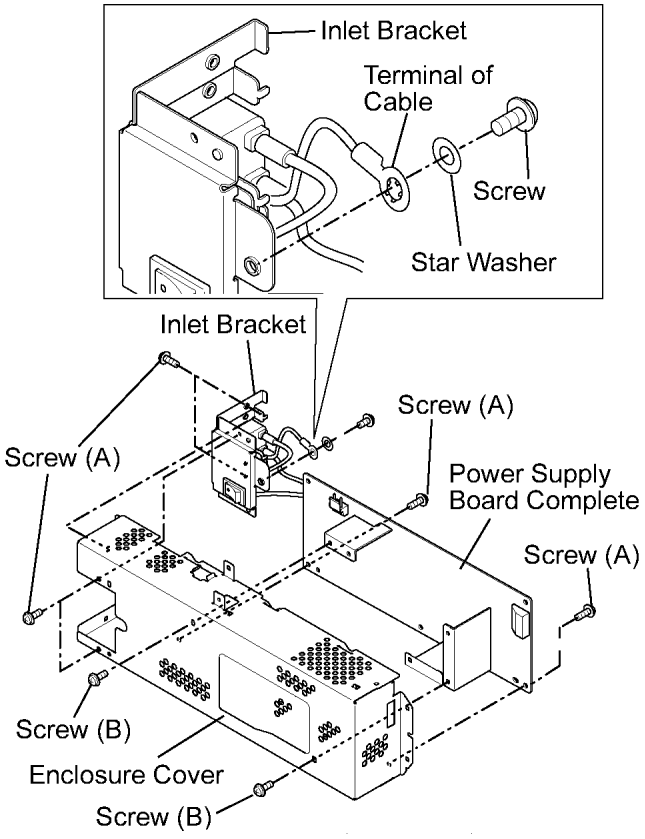

## 3.5.3. Power Supply Unit Disassembly

(1) Remove the Inlet Bracket with Power Lead Wire Assembly {4 screws ( A )}.

**Caution :**

When reinstalling the terminal of cable, it must be attached tooth side as shown to fix it certainly.

(2) Remove the Enclosure Cover {2 screws ( A ) and 2 screws ( B )}.

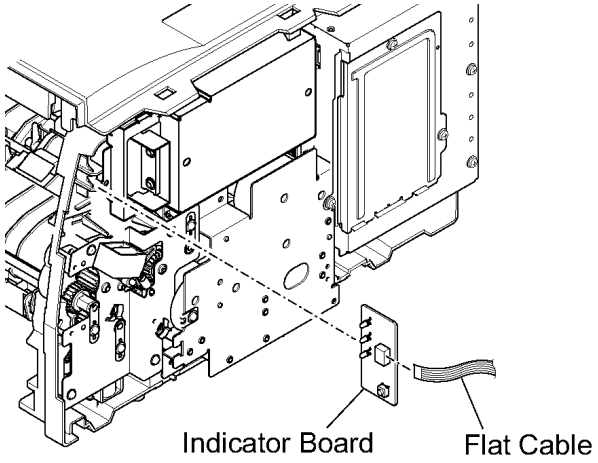


## 3.6. Indicator Board

Before handling, remove the Right Cover ( see Section 3.2 ).

(1) Remove the Indicator Board.

(2) Disconnect the Flat Cable from the Indicator Board.



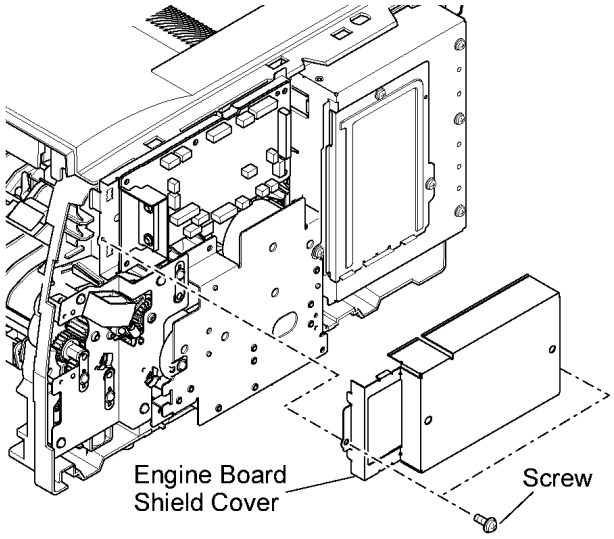

## 3.7. Engine Control Board and Toner Empty Sensor Board

Before handling, remove the Right Cover ( see Section 3.2 ).

### 3.7.1. Engine Control Board

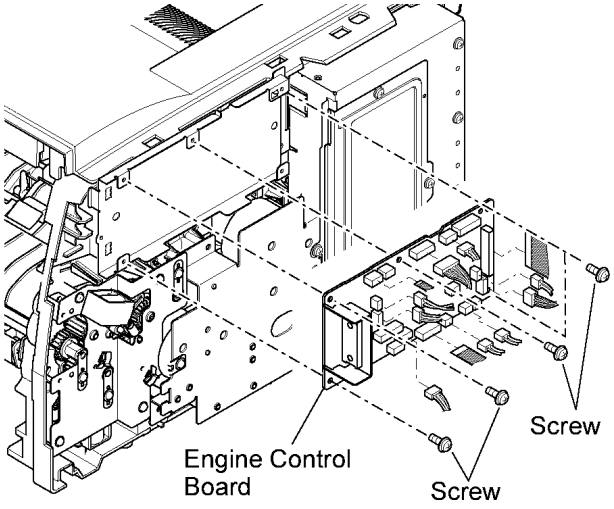
(1) Remove the 2 screws.

(2) Remove the Engine Board Shield Cover.




(3) Disconnect the 13 connectors and 4 Flat Cables.

(4) Remove the Engine Control Board ( 5 screws ).



## 3.7.2. Toner Empty Sensor Board

(1) Remove 2 screws ( A ) and 2 screws ( B ).

**Caution :**

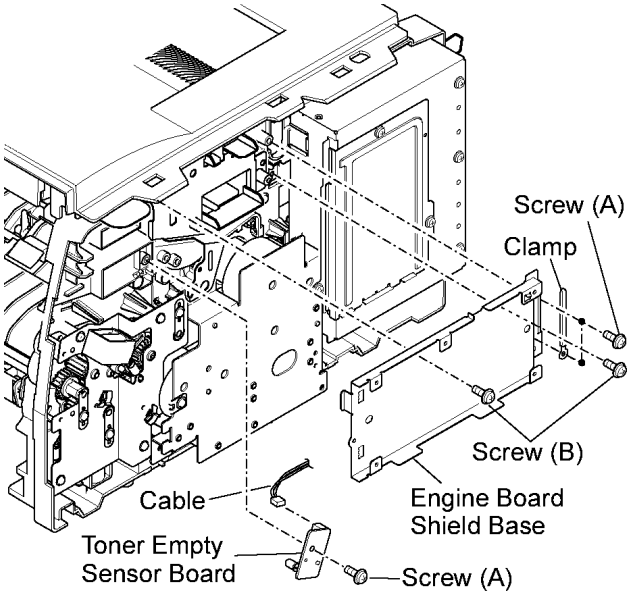
**Screw ( A ) is different from screw ( B ). When reinstalling the screw ( A ), return it to the original position.**

(2) Remove the Engine Board Shield Base.

(3) Remove the screw (A).

(4) Remove the Toner Empty Sensor Board.

(5) Disconnect the connector CN451.



# 3.8. 2nd Feeder I / F Board and Main Control Board

Before handling, perform the following steps A - B :

A. Remove the Right Cover ( see Section 3.2 ).

B. Remove the Engine Board Shield Cover and disconnect the Flat Cable from CN001 (see Section 3.7.1).

## 3.8.1. 2nd Feeder I / F Board and Main Control Board

(1) Disconnect the connector ( CN 452 ).

(2) Remove the 2nd Feeder I/F Board ( 1 screw ).

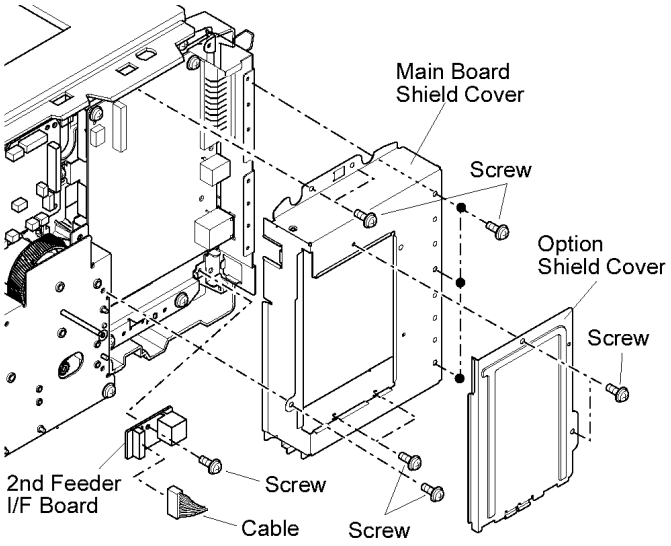
(3) Remove the Option Shield Cover ( 2 screws ).

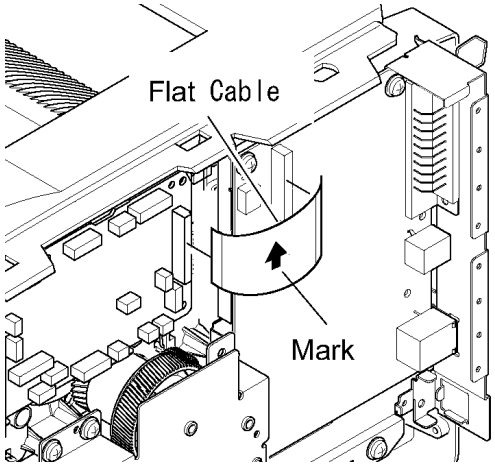
(4) Remove the 8 screws.

(5) Remove the Main Board Shield Cover.

**Caution:**

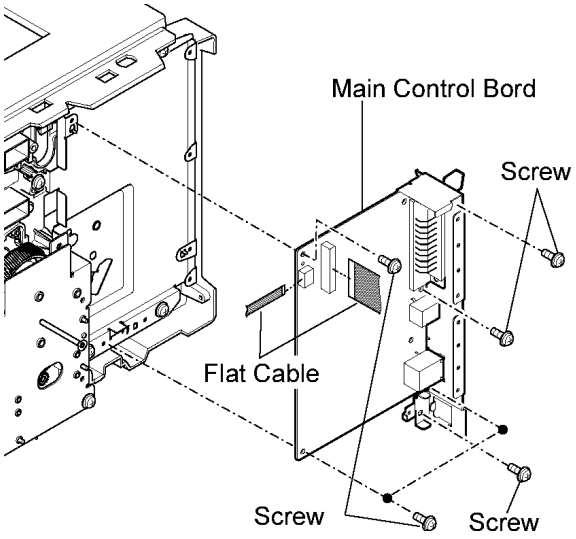
- **Remove or install the Main Board Shield Cover with care to prevent damage to surface of Flat Cable from the edge of Main Board Shield Cover.**
- **When reinstalling the Flat Cable, set the mark on the Flat Cable as shown in following figure.**




(6) Disconnect the 2 Flat Cables.

(7) Remove the Engine Control Board ( 6 screws ).



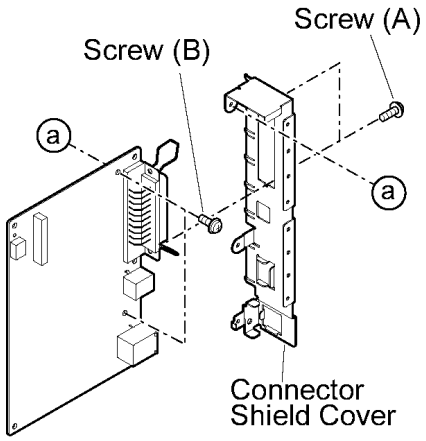
### 3.8.2. Main Control Board Disassembly

(1) Remove 2 screws ( A ) and 2 screws ( B ).

(2) Remove the Connector Shield Cover.

**Caution:**

**For KX-P7110 only, when replacing the Connector Shield Cover, remove the Mac ID Label from the original Connector Shield Cover and stick it on the new Connector Shield Cover.**




## 3.9. Fuser Drive Gear

Before handling, perform the following steps A - C :

A. Remove the Right Cover ( see Section 3.2 ).

B. Remove the Engine Control Board and Engine Board Shield Base ( see Section 3.7.1 and Section 3.7.2 ).

C. Remove the 2nd Feeder I/F Board and Main Control Board ( see Section 3.8 ).

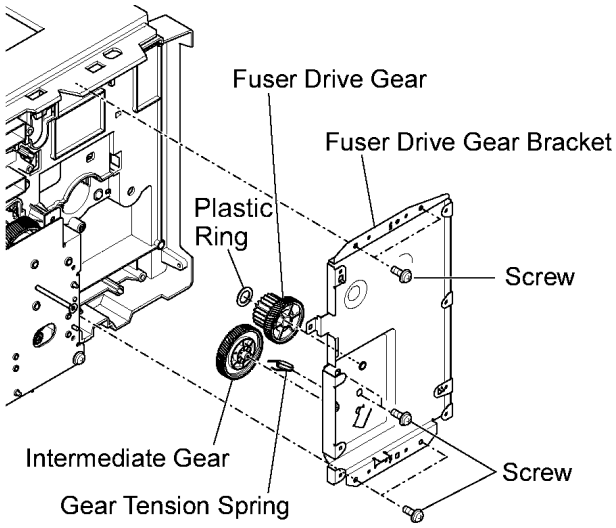
(1) Remove 6 screws.

(2) Remove the Fuser Drive Gear Bracket.

(3) Remove the Fuser Drive Gear and Intermediate Gear.

**Caution:**

**Be careful not to lose the plastic ring behind the Fuser Drive Gear.**




## 3.10. Fan Motor

Before handling, perform the following steps A - B :

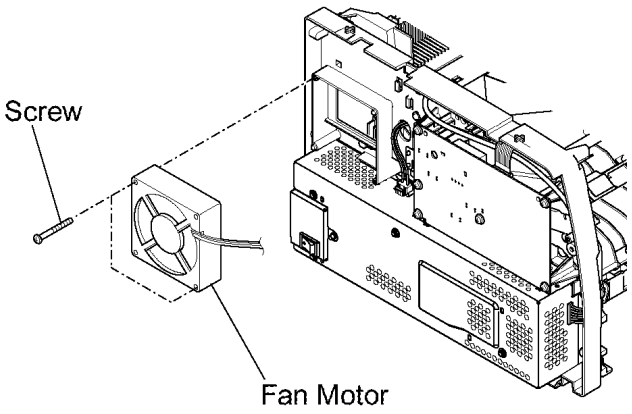
A. Remove the Right and Left Covers ( see Section 3.2 ).

B. Remove the Engine Board Shield Cover ( see Section 3.7.1 ).

(1) Remove the 2 screws.

(2) Remove the Fan Motor.

(3) Disconnect connector CN 018 on the Engine Control Board.



# 3.11. Gear Support Bracket, Relay Board ( A ), Motor, Drive Gear Unit and Paper Empty Sensor Board

Before handling, perform the following steps A - C :

A. Remove the Right Cover ( see Section 3.2 ).

B. Remove the Engine Board Shield Cover ( see Section 3.7.1 ).

C. Remove the Main Board Shield Cover ( see Section 3.8.1 ).

## 3.11.1. Gear Support Bracket

(1) Disconnect the connector CN012 from the Engine Control Board.

(2) Remove screw ( A ) and 4 screws ( B ).

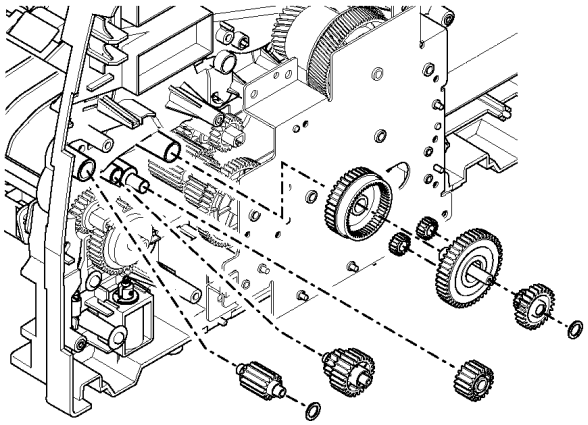
**Caution:**

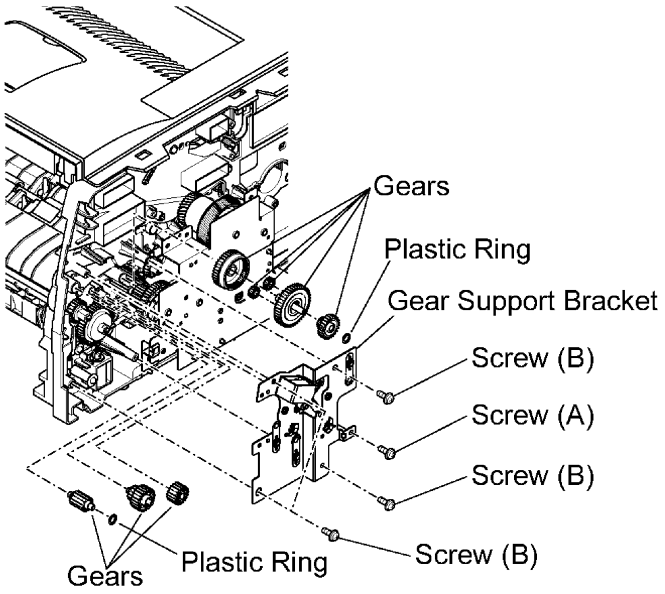
Screw (A) is different from screw (B). When reinstalling the screw, return it to the original position.

(3) Remove the Gear Support Bracket and solenoid.

(4) If necessary, remove the 8 gears from the chassis.

8 Gears Location






## 3.11.2. Relay Board ( A ), Drive Gear Unit and Motor

(1) Disconnect the connector CN017 from the Engine Control Board.

(2) Remove the screw (A).

(3) Remove the cable from the Drive Gear Unit.

(4) Remove the screw (A ) and 5 screws (B).

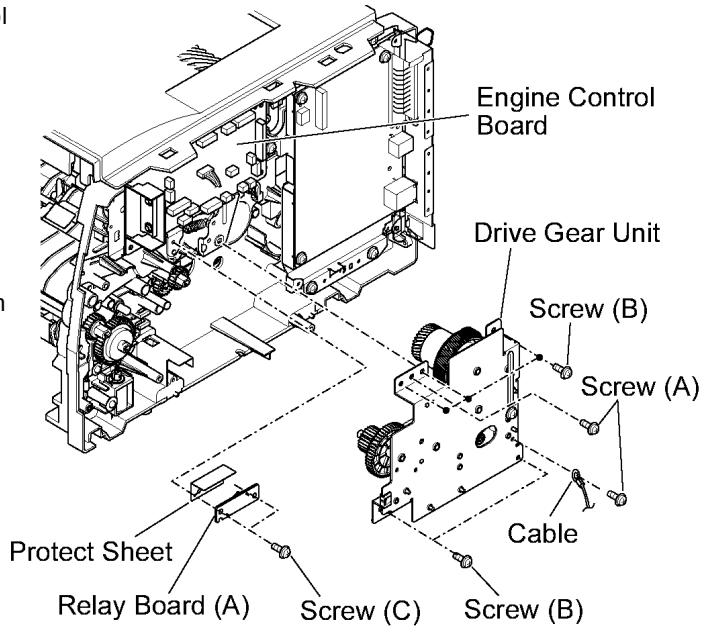
**Caution:**

The screw (A) differs from the screw (B). When reinstalling the screw, return it to the original position.

(5) Remove the Drive Gear Unit.

(6) Remove the 2 screws (C).

(7) Remove the Relay Board ( A ).



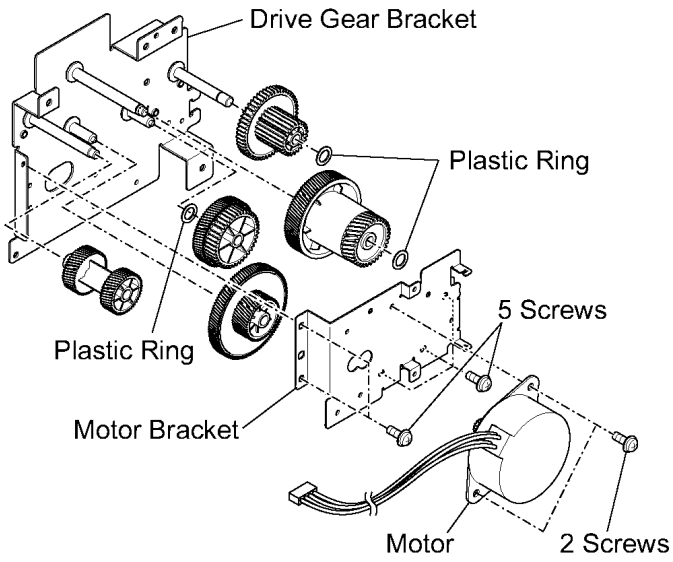
### 3.11.3. Drive Gear Unit Disassembly

(1) Remove the Motor ( 2 screws ) from the Drive Gear Unit.

(2) Remove the 5 screws.

(3) Remove the Motor Bracket.

(4) All gears can be removed after removing the plastic ring.

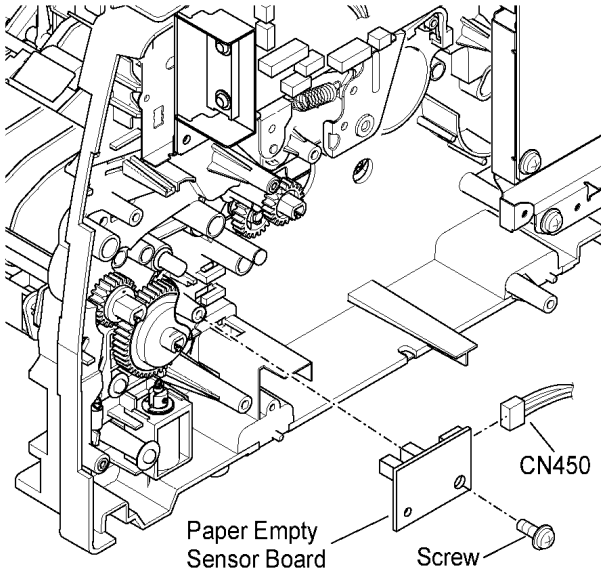



### 3.11.4. Paper Empty Sensor Board

(1) Remove the screw.

(2) Remove the Paper Empty Sensor Board.

(3) Disconnect connector CN 450.



# 3.12. Upper Exit Roller Holder

Before handling, perform the following steps A - B :

A. Remove the Right, Left and Top Covers ( see Section 3.2 ).

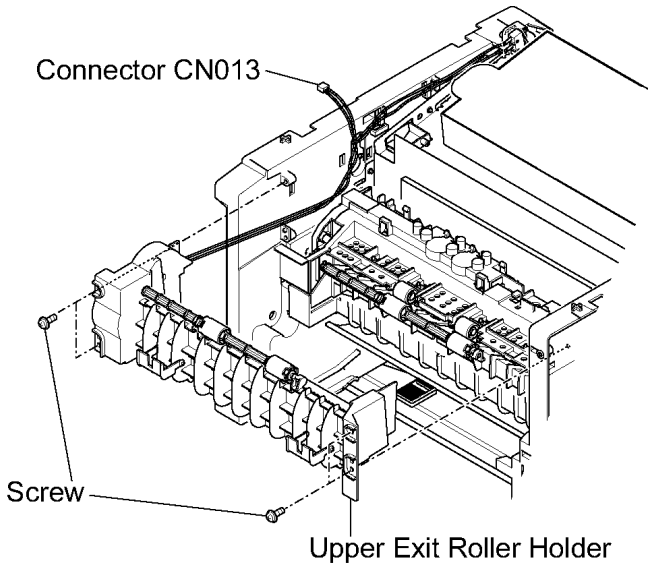
B. Remove the Engine Board Shield Cover ( see Section 3.7.1 ).

## 3.12.1. Upper Exit Roller Holder

(1) Remove the 4 screws.

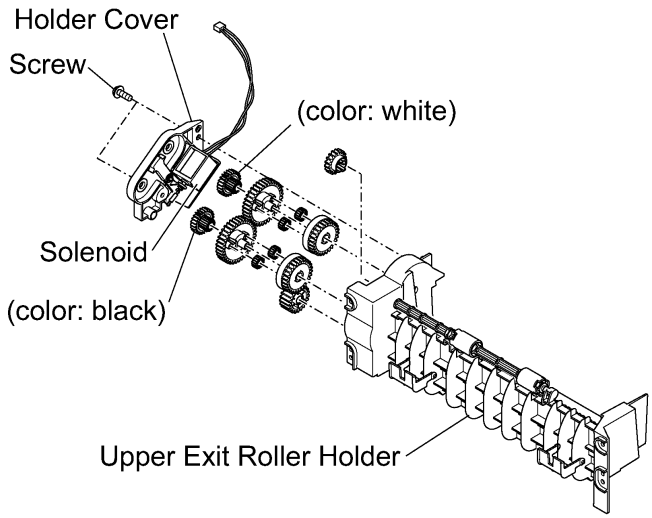
(2) Separate the Upper Exit Roller Holder.

(3) Disconnect connector CN013 on the Engine Control Board.




### 3.12.1.1. Upper Exit Roller Holder Disassembly

1. Remove the 2 screws.
2. Separate the Holder Cover with solenoid from the Upper Exit Roller Holder.
3. Remove the gears from the roller holder.



# 3.13. Fuser Unit

Before performing the following steps, remove the upper Exit Roller Holder ( see Section 3.12 ).

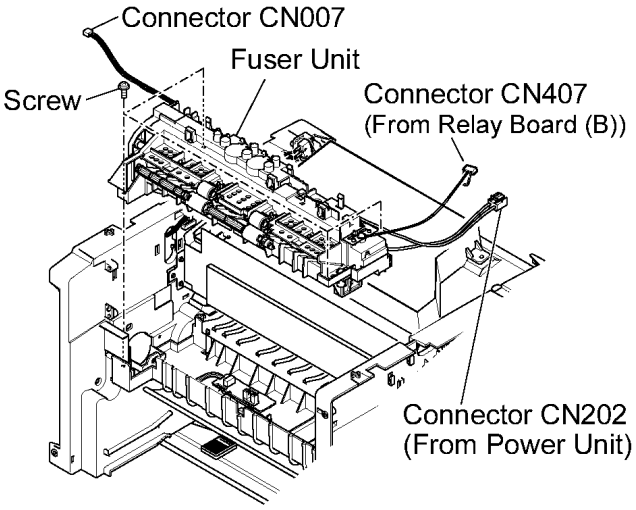
(1) Disconnect connector CN007 on the Engine Control Board.

(2) Disconnect the connector CN202 from the Power Supply Unit.

(3) Disconnect the connector CN407 from the Relay Board (B).

(4) Remove the 4 screws.

(5) Remove the Fuser Unit.




## 3.13.1. Fuser Unit Disassembly

(1) Remove the Lower Exit Roller Gear.

(2) Remove the 2 black screws.

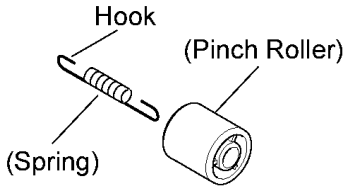
(3) Separate the Heat Roller Holder from the Fuser Unit Base.

(4) Remove the Pressure Roller, 2 bushings, 2 springs and Lower Exit Roller from the Heat Roller Holder.

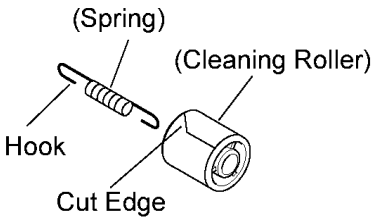
(5) If necessary, remove the Pinch Rollers and Cleaning Rollers.

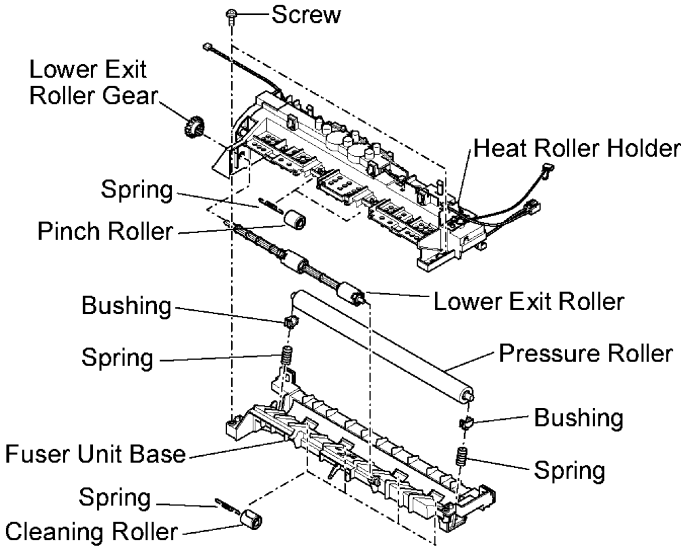
**Caution:**

- **When reinstalling the Pinch Roller and Spring, the spring hook is attached upward to prevent any damage to the printing media as shown following figure.**




- **When reinstalling the Cleaning Roller and Spring, the spring hook is attached downward and the cut edge of the cleaning roller is located as shown following figure to prevent any damage to the Pressure Roller.**

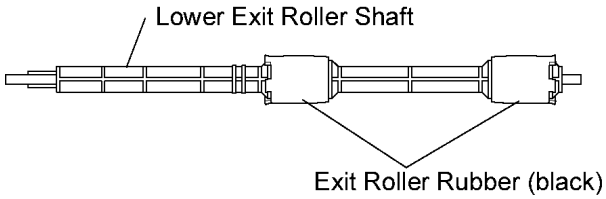


**Note:**

When reinstalling the exit roller rubber to the lower exit roller shaft, ensure it is installed as shown in figure-( A ).

**Figure - ( A )**




## 3.13.2. Heat Lamp

(1) Remove the Side Fuser Cover ( 2 screws ).

(2) Remove the screw ( A ) and screw ( B ) from the ends of Heat Lamp Terminals.

(3) Slide out the Heat Lamp.

**Caution:**

- **Do not touch the heat lamp with your fingers.**

  **a. It may be hot.**

  **b. The oil and dirt from your fingers will contaminate the surface, which will result in damaging the heat lamp when it is turned on.**
- **When reinstalling the heat lamp, set the terminal of the heat lamp in the center of the Heat Roller to prevent from shorting, or shock, fire or other hazards may occur. {see figure ( A )}**
- **When reinstalling the Heat Lamp, the terminal cable must be attached at the rivet side as shown to fix them certainly. {see figure ( B )}**

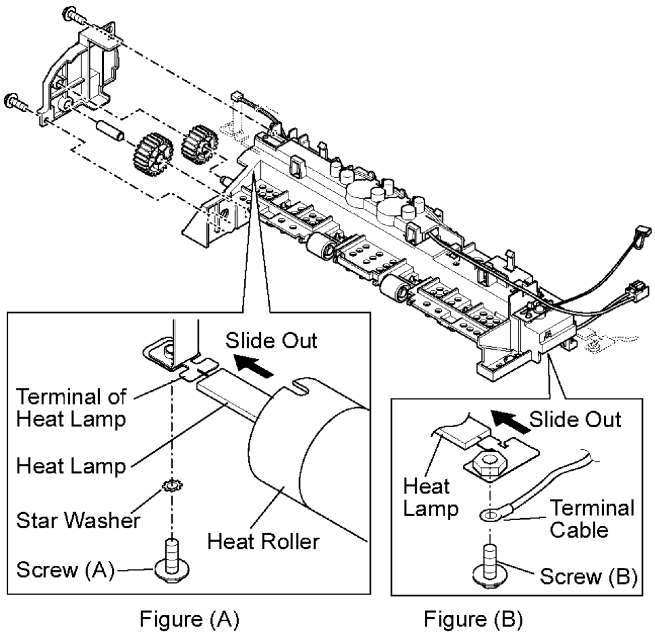


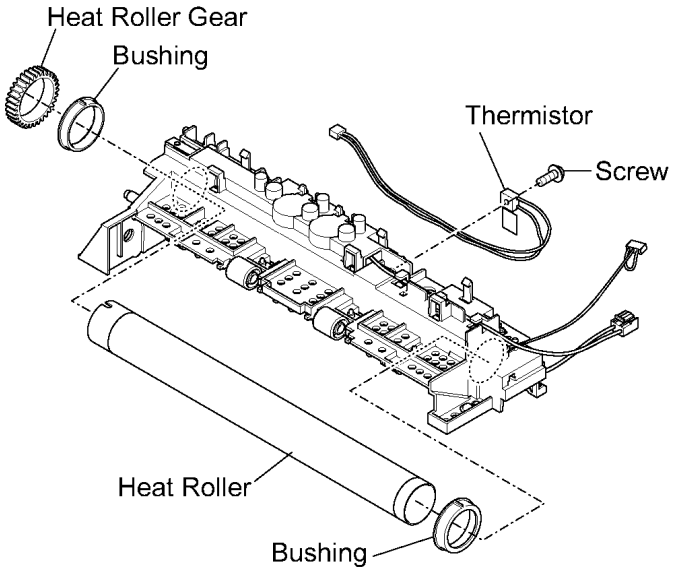

Figure (A) Figure (B)

## 3.13.3. Heat Roller

(1) Remove the screw and Thermistor.

(2) Remove the Heat Roller Gear and Bushing.

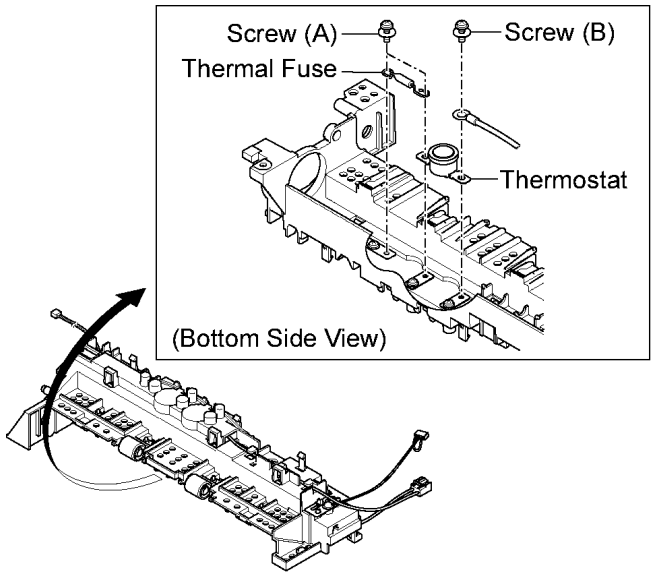
(3) Remove the Heat Roller with care to prevent scratching or damage to the surface of the Heat Roller.



## 3.13.4. Thermostat

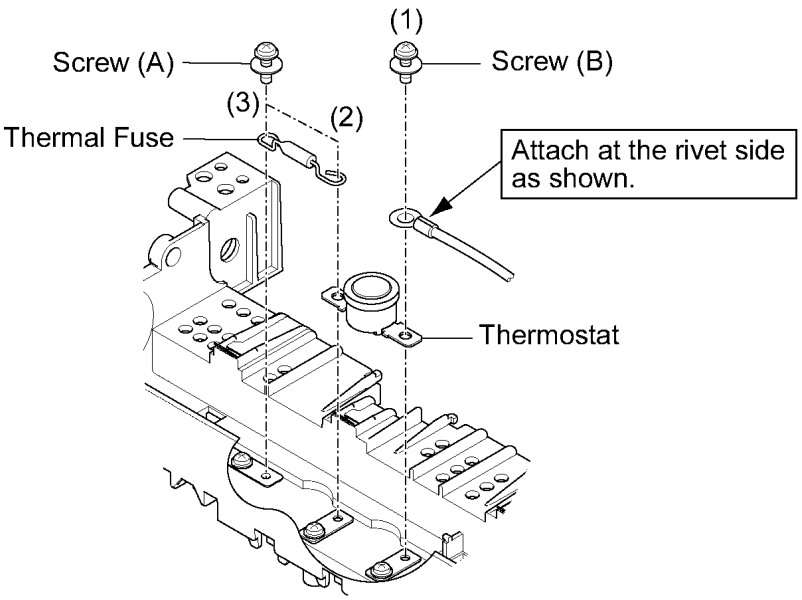
(1) Remove the 2 screw ( A ) and Thermal Fuse.

(2) Remove the screw ( B ) and Thermostat.



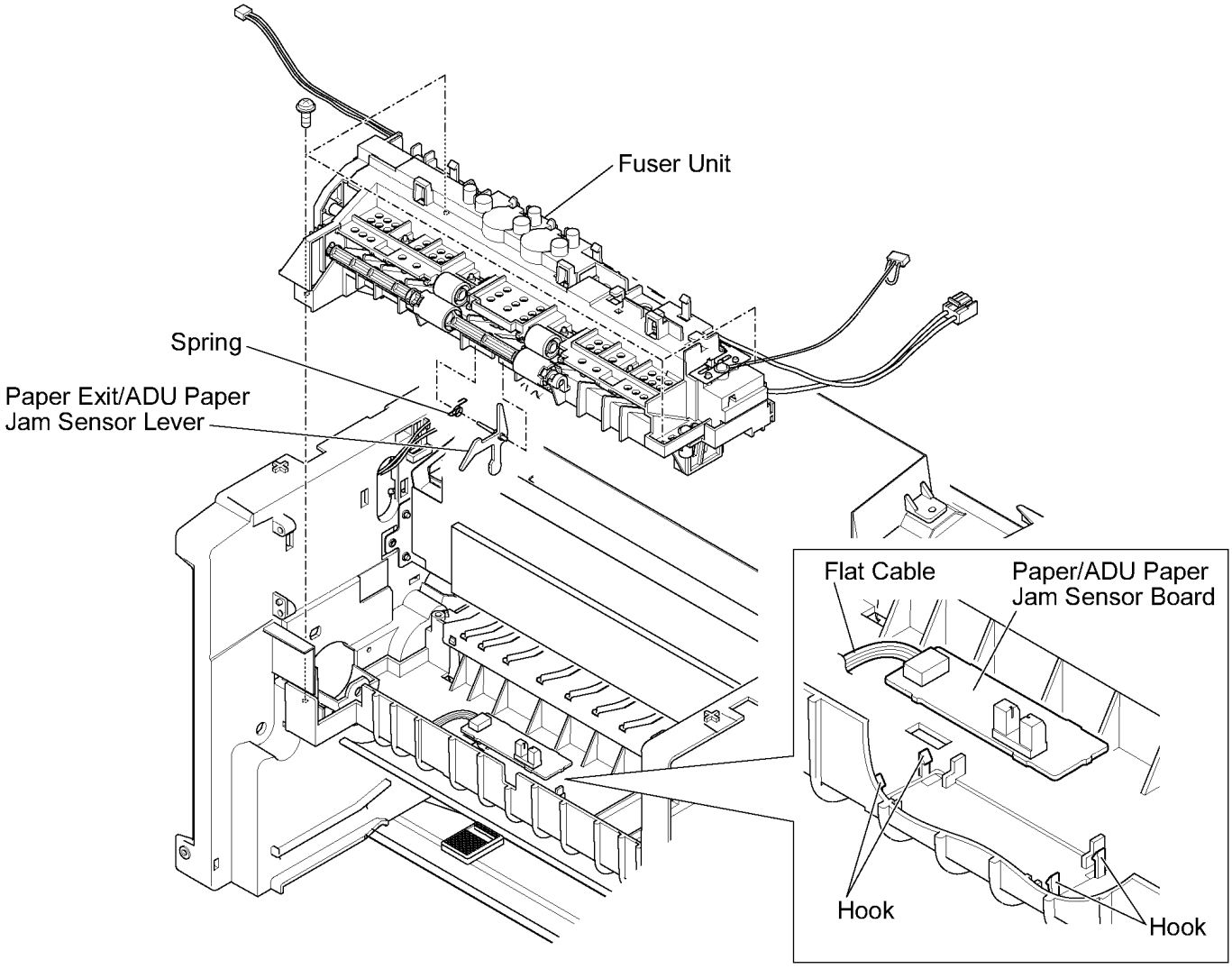

**Caution :**

- **When reinstalling the thermostat, both end terminals must be positioned under the terminals of thermal fuse and lead wire as shown in the following figure, or thermostat cannot properly measure the surface temperature of the heat roller becausethe distance between the surface of heat roller and thermostat may change.**
- **When reinstalling the thermal fuse and thermostat, the screws must be tightened in order (1), (2), (3) to position them correctly as shown in the following figure.**



## 3.13.5. Paper Exit / ADU Paper Jam Sensor Lever and Paper Exit / ADU Paper Jam Sensor Board

1. Remove the Fuser Unit ( see section 3.13 ).
2. Remove the Paper Exit/ADU Paper Jam Sensor Lever with spring.
3. Disconnect the flat cable.
4. Remove the Paper/ADU Paper Jam Sensor Board by releasing the hooks.



# 3.14. Pickup, Paper Feed, Registration and Transfer Rollers

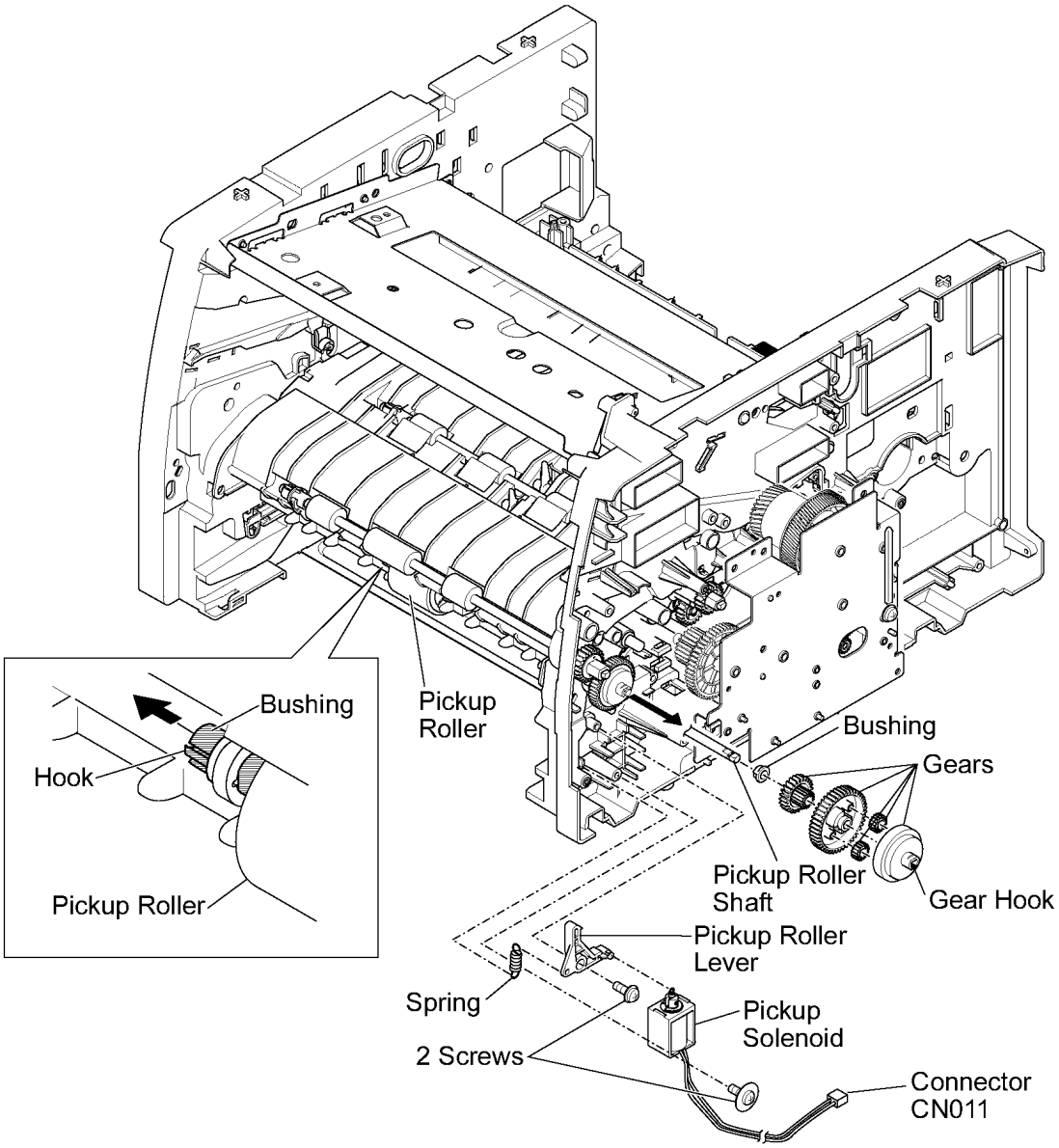
Before handling, perform the following steps A - B :

A. Remove the Gear Support Bracket and 8 gears ( see Section 3.11.1 ).

B. Remove the Front Cover ( see Section 3.1 ).

## 3.14.1. Pickup Roller and Pickup Solenoid

1. Release the bushing hook and slide out the bushing.
2. Slide the Pickup Roller Shaft with gears in the arrow direction, then remove the Pickup Roller.
3. If necessary, remove the Pickup Roller Gears and bushing by releasing the gear hook from the Pickup Roller Shaft. Then, remove the Pickup Roller Shaft.
4. Disconnect the connector CN011 from the Engine Control Board.
5. The Pickup Roller Lever and Pickup Solenoid and spring can be removed from the chassis frame by removing the 2 screws.



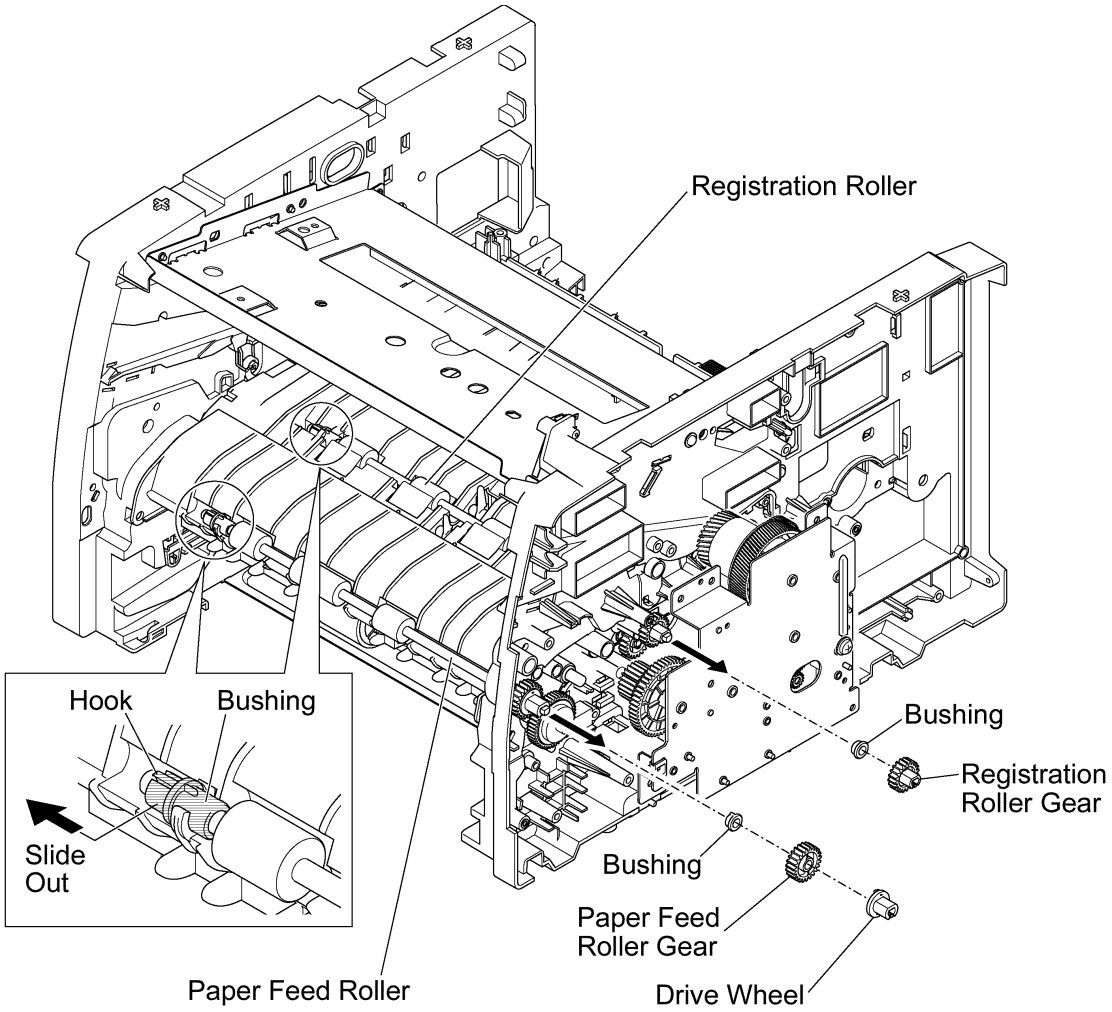
## 3.14.2. Paper Feed Roller / Registration Roller

### 3.14.2.1. Paper Feed Roller

1. Slide out the bushing from the Paper Feed Roller Shaft.
2. Remove the Paper Feed Roller Gear and Drive Wheel by releasing the hook from the Paper Feed Roller Shaft. Then, remove the Paper Feed Roller Shaft.

### 3.14.2.2. Registration Roller

1. Slide out the bushing from the Registration Roller Shaft.
2. Remove the Registration Roller Gear by releasing the gear hook from the Registration Roller Shaft. Then, remove the Registration Roller Shaft.



# 3.15. Transfer Roller Assembly

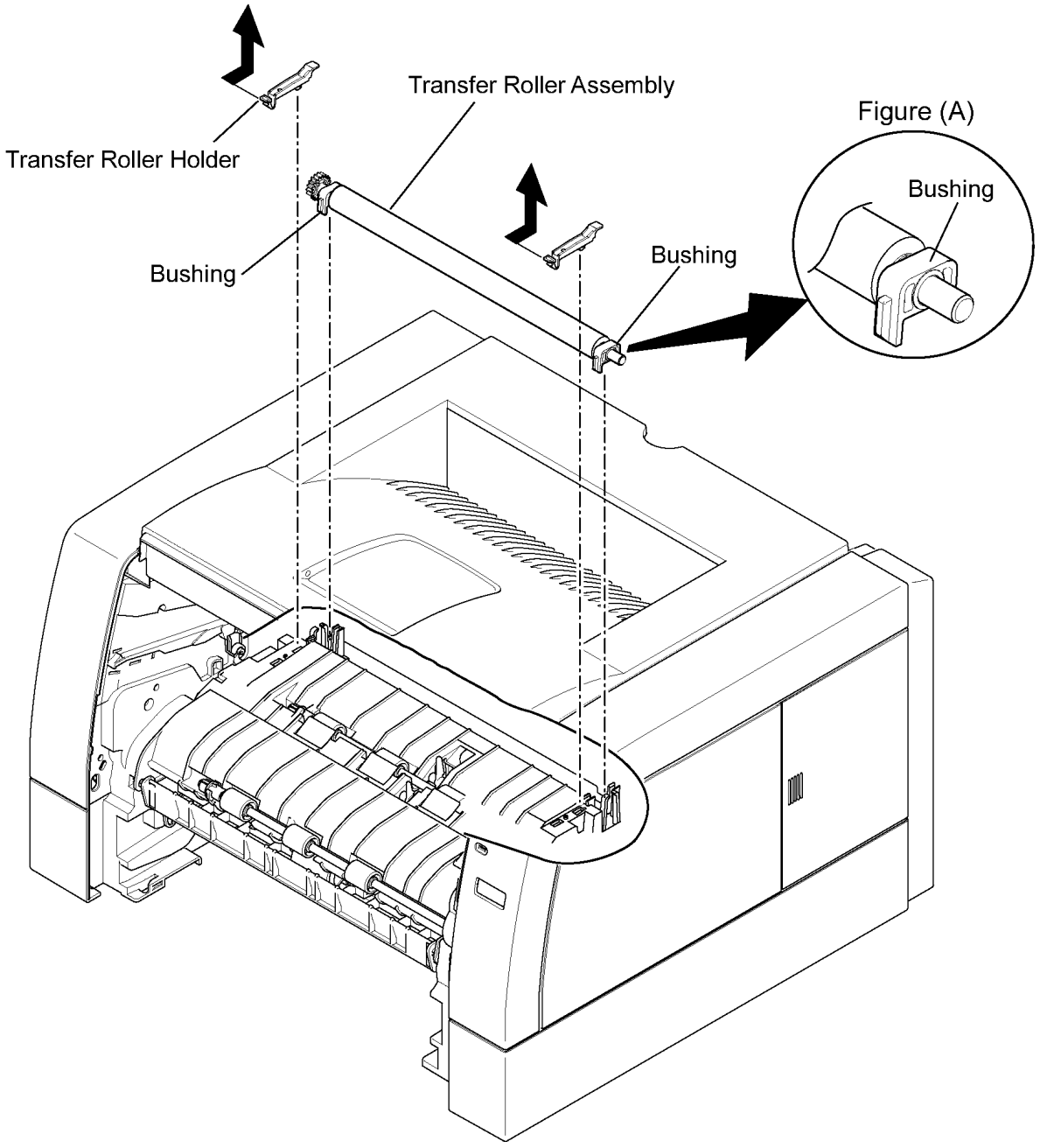
Before handling, perform the following step.

A. Remove the Front Cover ( see Section 3.1 ).

1. Remove the 2 Transfer Roller Holders.
2. Remove the Transfer Roller Assembly by pulling up it.

**Caution:**

- **Do not touch the surface of Transfer Roller to prevent any print quality problems.**
- **When reinstalling the Transfer Roller Assembly, the bushings are set as shown in the figure (A).**



# 3.16. Auto Duplex Unit, ADU Registration Roller and ADU Pinch Roller

Before handling, perform the following steps A-B :

A. Remove the Paper Cassette and OPC Drum Unit.

**B. Place the printer up side down.**

## 3.16.1. Auto Duplex Unit ( ADU )

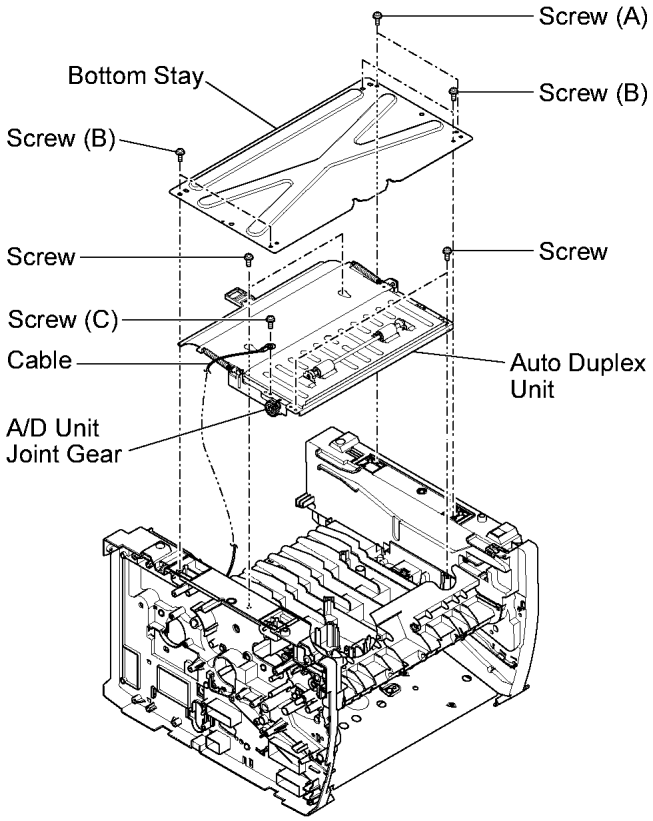
(1) Remove the 2 screws ( A ) and 4 screws ( B ).

**Caution:**

Screw ( A ) is different from screws ( B ). When reinstalling the screw ( A ), return it to the original position.

(2) Remove the Bottom Stay.

(3) Remove the Auto Duplex Unit with care to prevent damage to the A/D Unit Joint Gear {4 screws and screws (C)}.



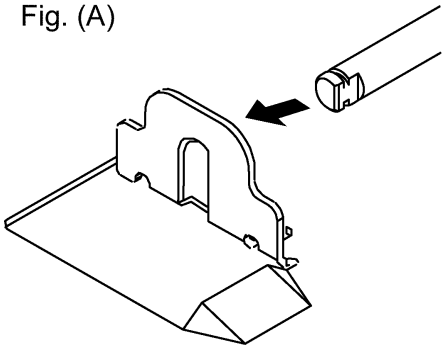

### 3.16.1.1. Auto Duplex Pinch and Registration Rollers

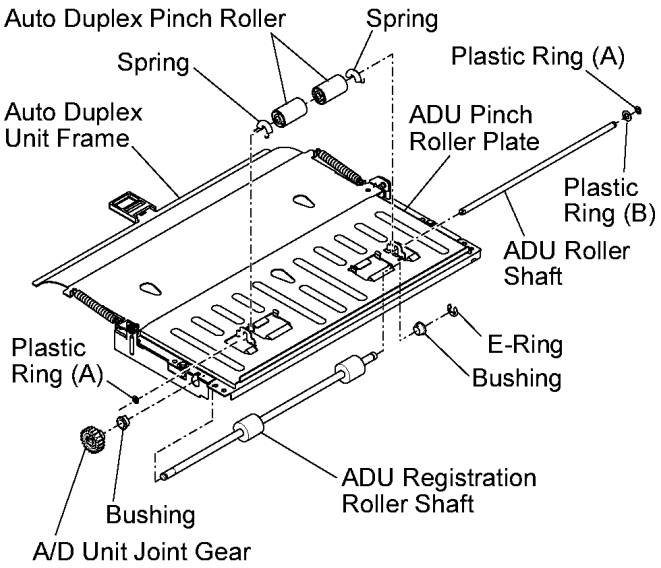
1. Remove the 3 plastic rings and 2 springs.
2. Remove the A/D Roller Shaft and 2 Auto Duplex Pinch Rollers.
3. Remove the E-ring.
4. Remove the A/D Unit Joint Gear from the ADU Registration Roller Shaft. The Registration Roller Shaft and 2 bushings can be remove from the Auto Duplex Unit frame.

**Note:**

When reinstalling the A/D Rollers Shaft to ADU Pinch Roller Plate, ensure that it is installed as shown in Fig. ( A ).

Fig. (A)



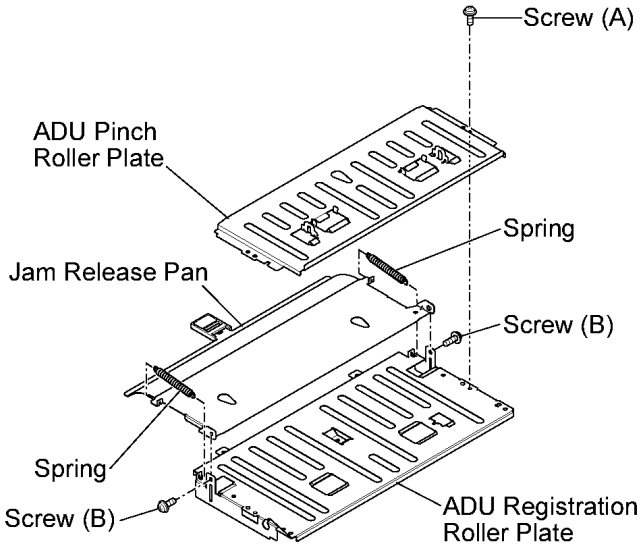


## 3.16.1.2. Auto Duplex Disassembly

1. The ADU Pinch Roller Plate can be separated from the Registration Roller Plate by removing the screw ( A ).
2. The ADU Jam Release Pan can be separated from the Registration Roller Plate by removing the 2 screws ( B ) and 2 springs.

**Caution:**

The screw (A) differs from the screw (B). When reinstalling the screw, return it to the original position.



# 3.17. Registration Sensor Lever, Paper Top Detection Sensor Lever and Registration & Paper Top Detection Sensor Board

Before handling, perform the following steps A - D :

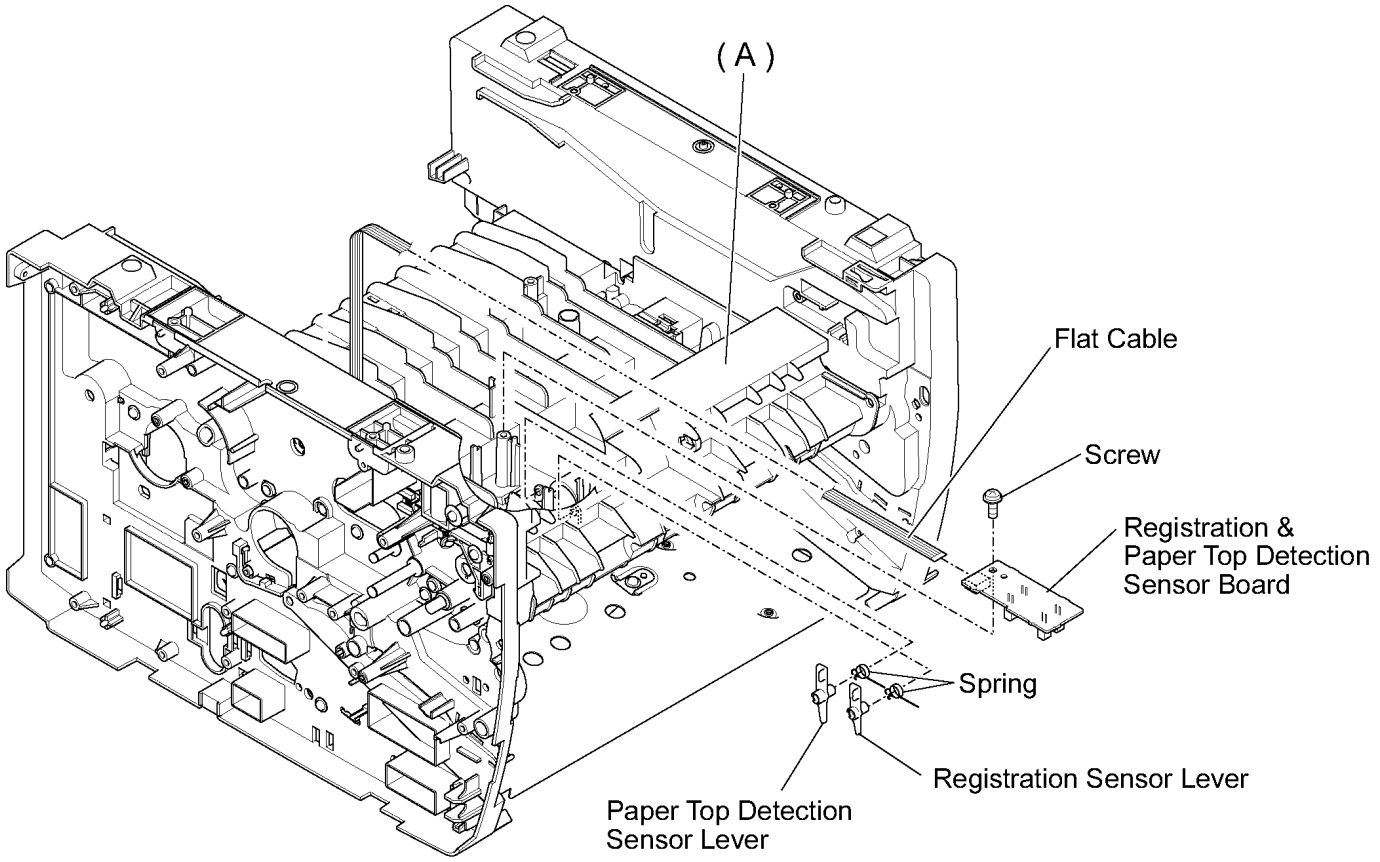
A. Remove the Paper Cassette and OPC Drum Unit.

B. Remove the Left and Right Covers ( see Sections 3.2 ).

C. Place the printer upside down.

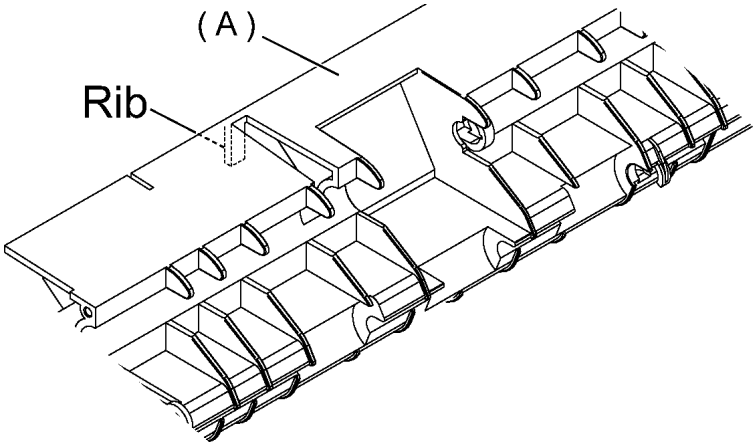
D. Remove the Auto Duplex Unit ( see Section 3.16 ).

1. Remove the screw, and disconnect the flat cable.
2. Remove the Registration & Paper Top Detection Sensor Board.
3. Remove the Registration Sensor Lever by releasing the lever axis from the projection.
4. Remove the Paper Top Detection Sensor Lever by releasing the lever axis from the chassis.



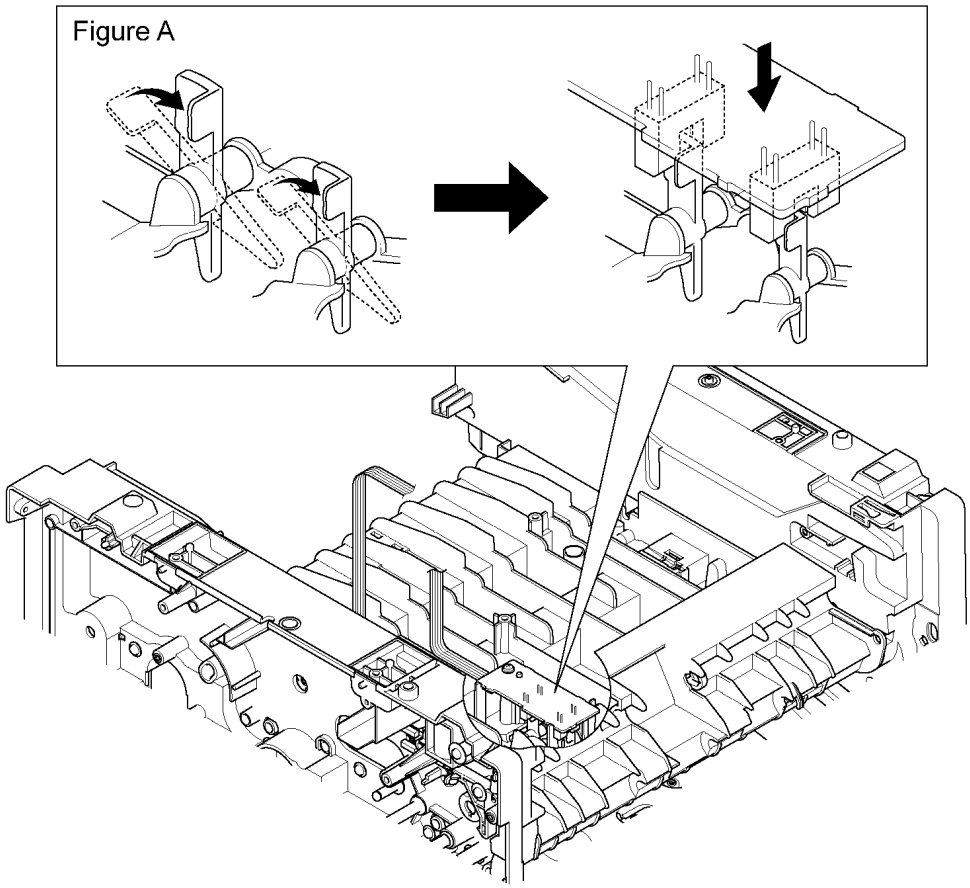

**Caution :**

**When removing or installing the Registration Sensor Lever, Paper Top Detection Sensor Lever and Registration & Paper Top Detection Sensor Board, take care to prevent damage to the rib of parts ( A )**.



**Caution :**

**When reinstalling the Registration Sensor Lever, Paper Top Detection Sensor Lever and Registration & Paper Top Detection Sensor Board, the Registration Sensor and Paper Top Detection Sensor Levers must be positioned as shown in thefollowing figure ( A ).**



# 3.18. Paper Empty Sensor Lever

Before handling, perform the following steps A - D :

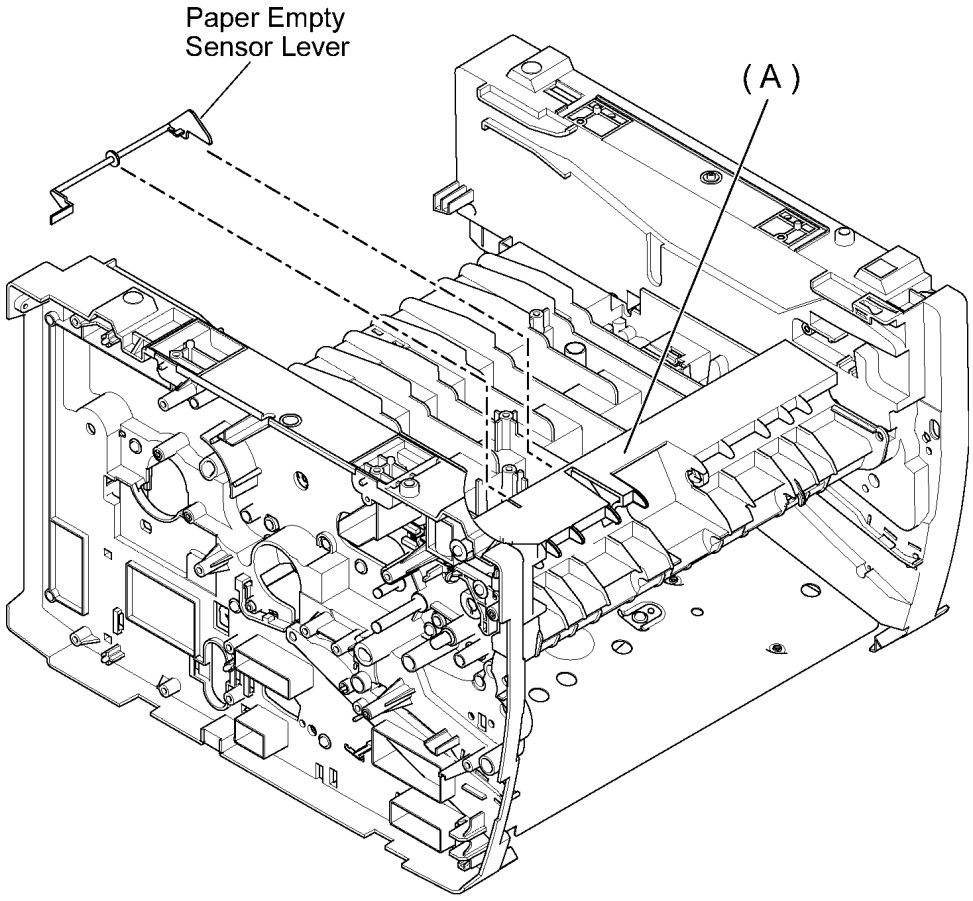
A. Remove the Paper Cassette and OPC Drum Unit.

B. Remove the Left and Right Covers ( see Sections 3.2 ).

C. Place the printer upside down.

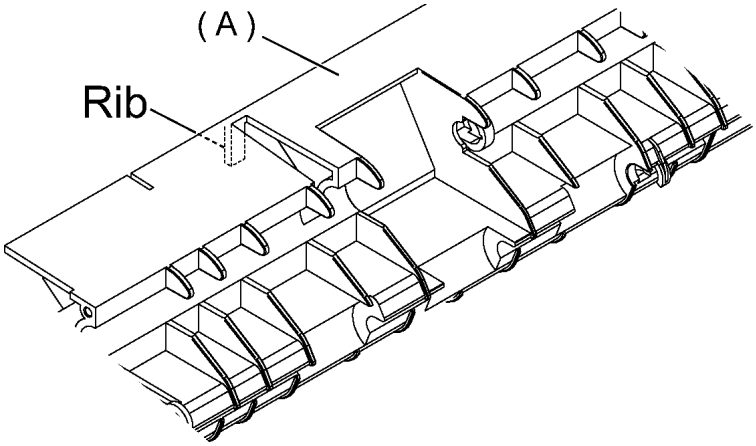
D. Remove the Auto Duplex Unit ( see Section 3.16 ).

1. Remove the Paper Empty Sensor Lever.




**Caution :**

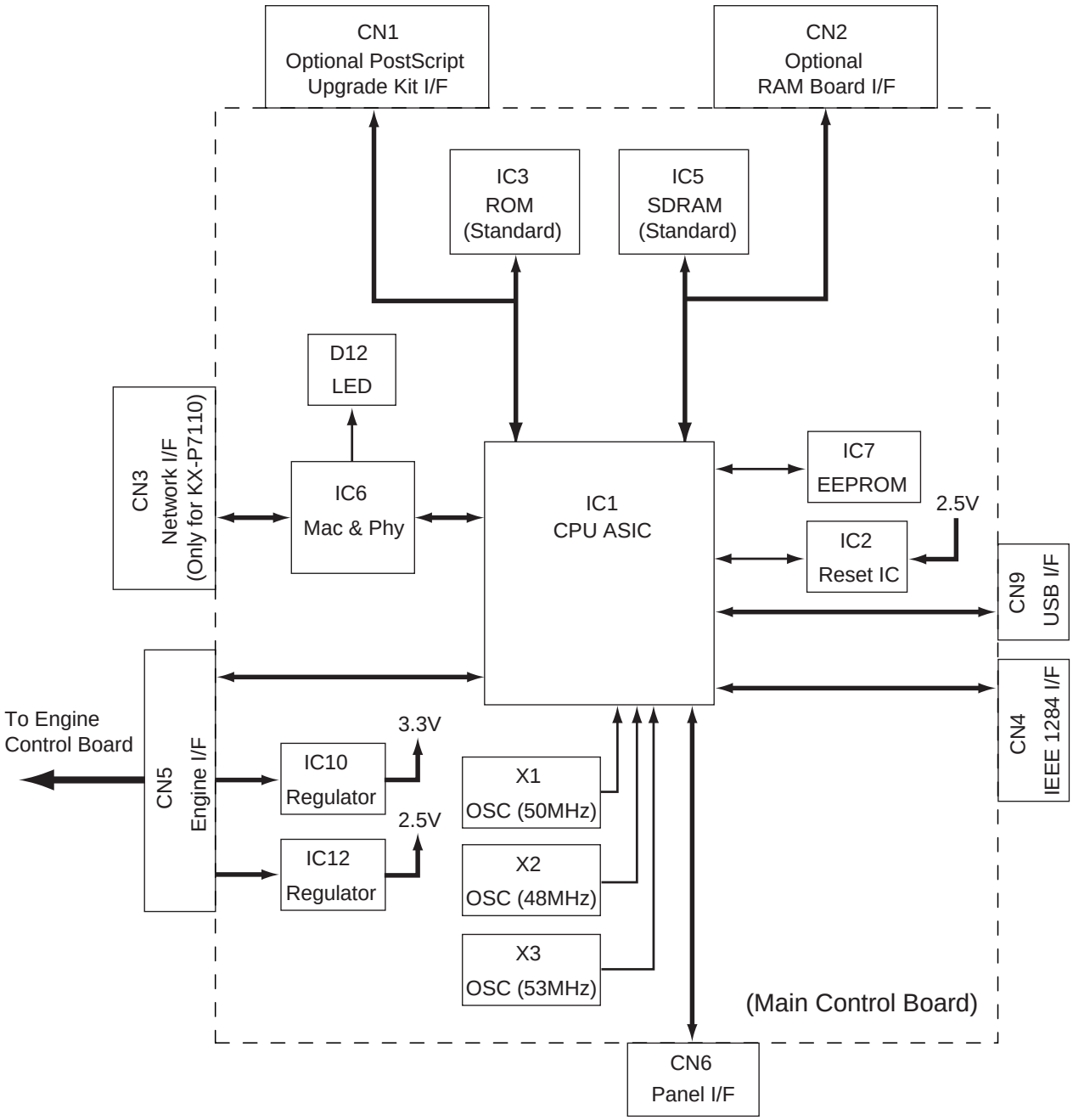
**When reinstalling the Paper Empty Sensor Lever, take care to prevent damage to the rib of parts ( A )**.



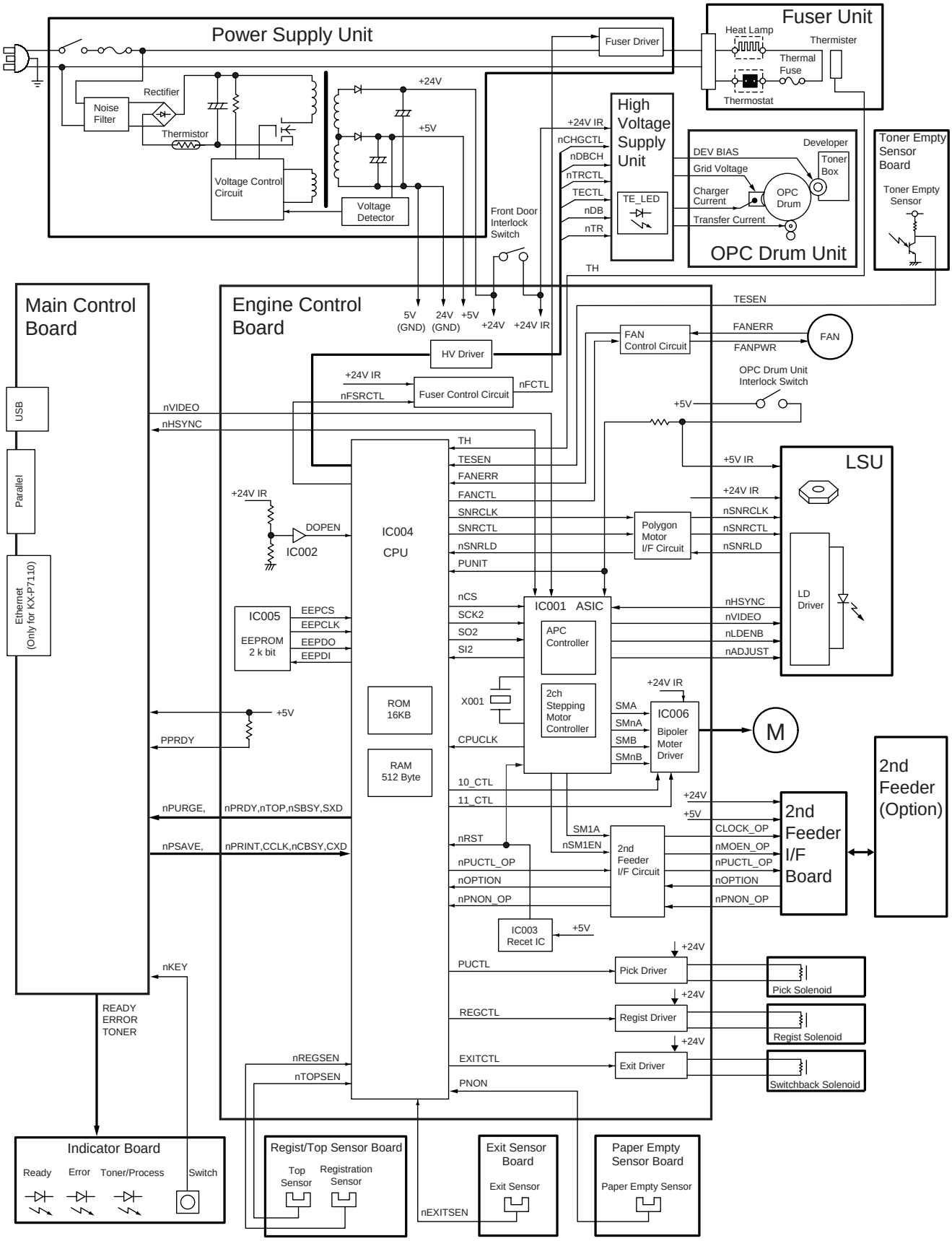
# 4 Electronic Circuit Description and Diagrams

## 4.1. Block Diagram

### 4.1.1. Main Control Board Block Diagram

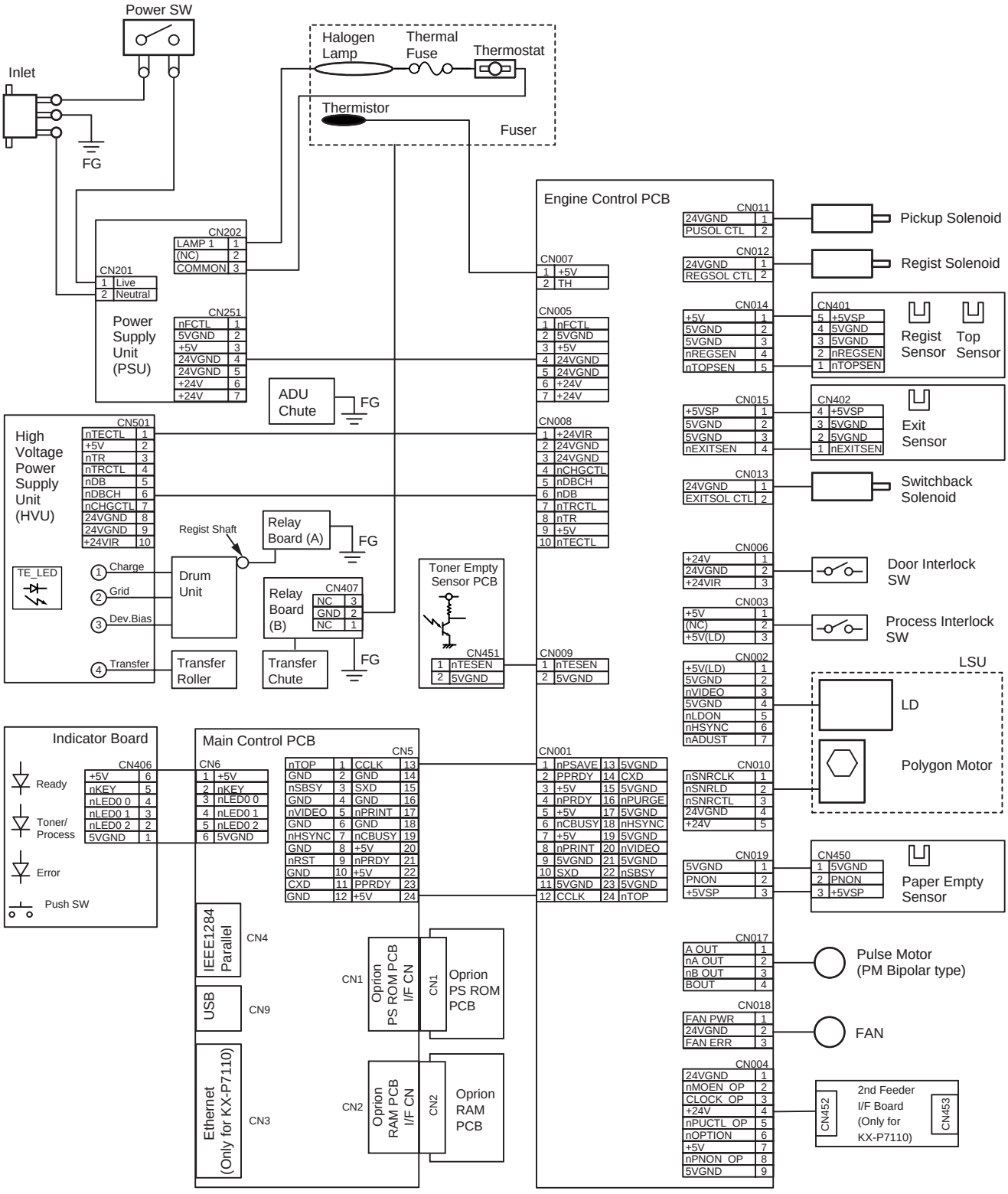


## 4.1.2. Engine Control Block Diagram



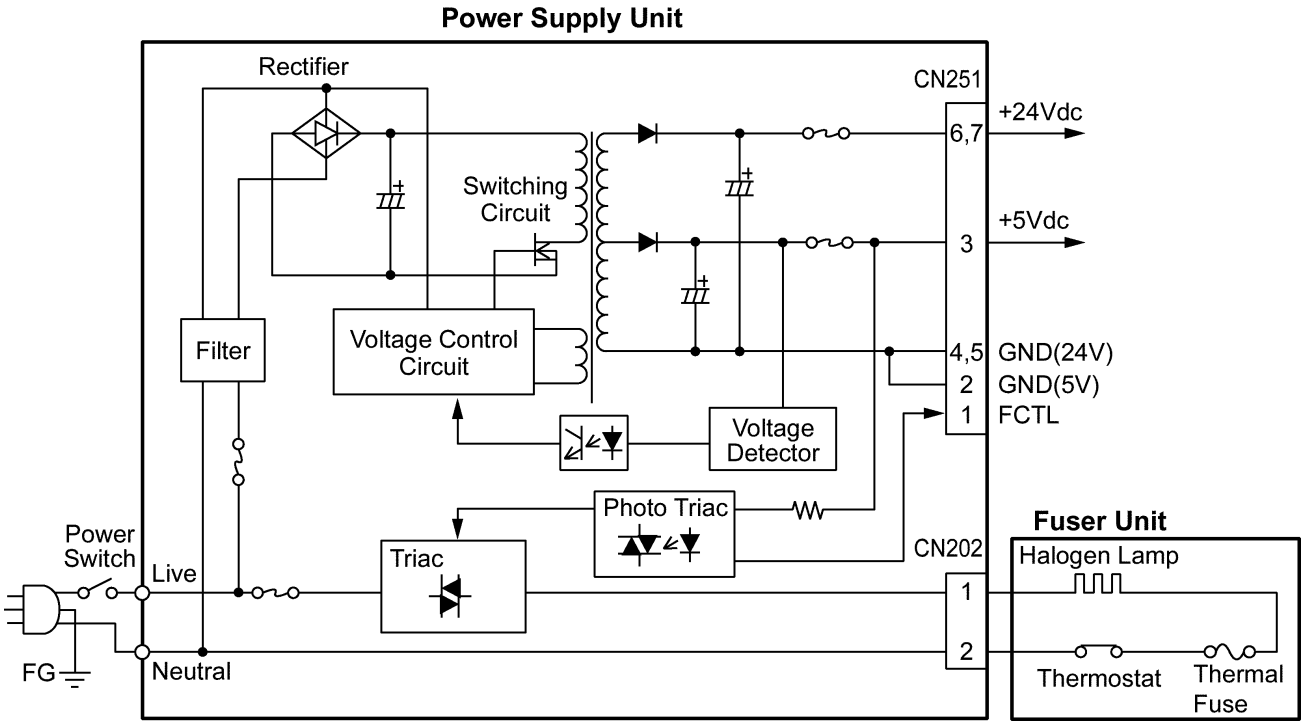
# 4.2. Connection Diagram

## Connection Diagram



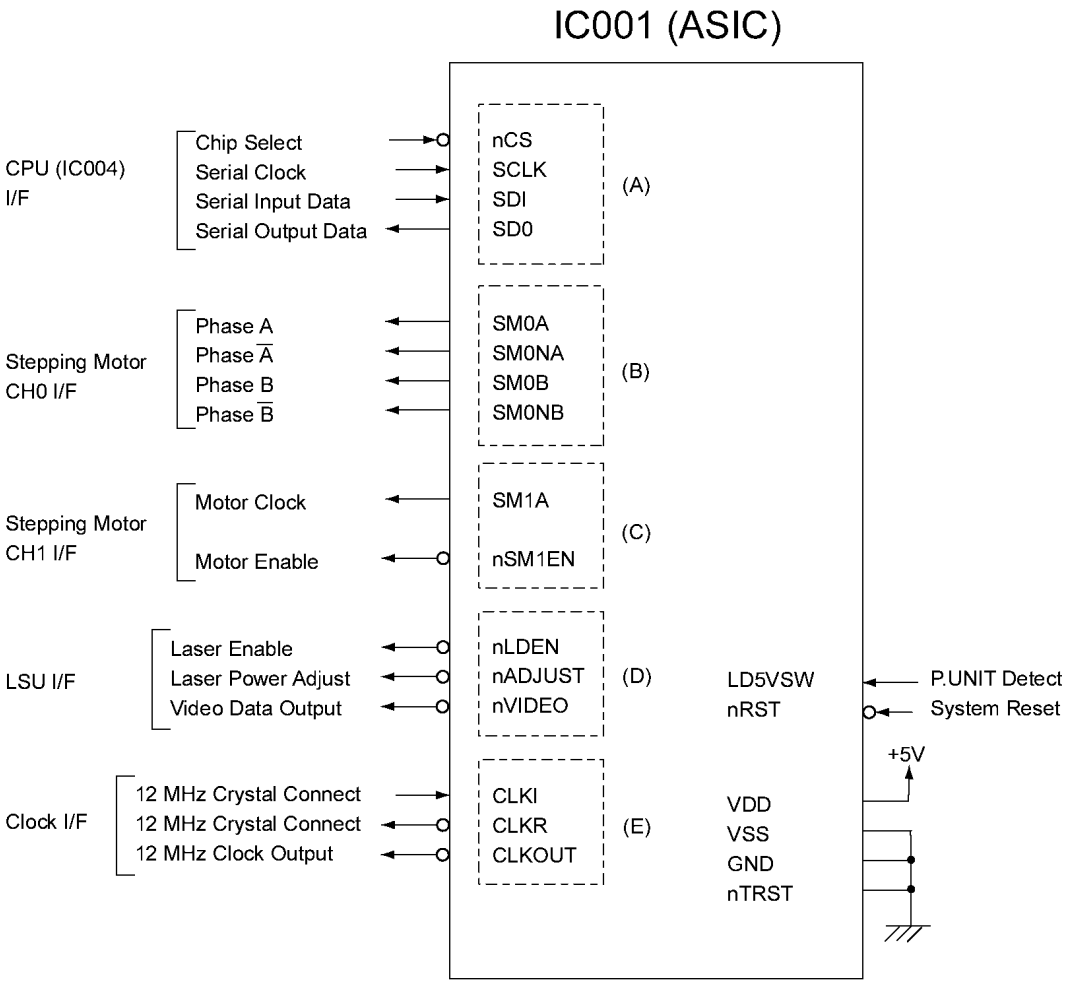
## 4.3. Power Supply

The power supply circuit generates +5Vdc and +24Vdc. It also supplies AC Voltage to the halogen heat lamp in the fuser unit.



# 4.4. Engine Control Board

## 4.4.1. ASIC ( KME )




(A) This block is the serial communication interface with the Engine CPU ( IC004 ).

(B) This block is the Stepping Motor Controller ( CH0 ) to control the main motor.

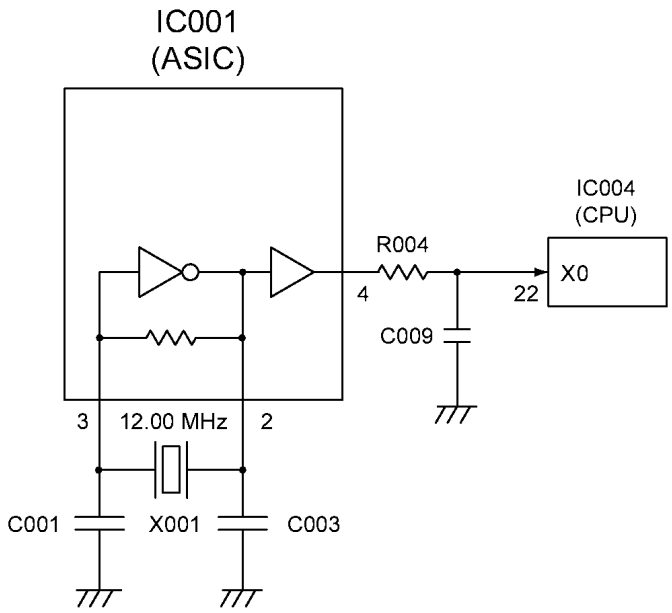
(C) This block is the Stepping Motor Controller ( CH1 ) to control the 2nd Feeder motor.

(D) This block is the LSU Controller, and it consists of laser enable, power adjust and video data.

(E) This block generates 12 MHz clock signal and supply to the peripheral devices.

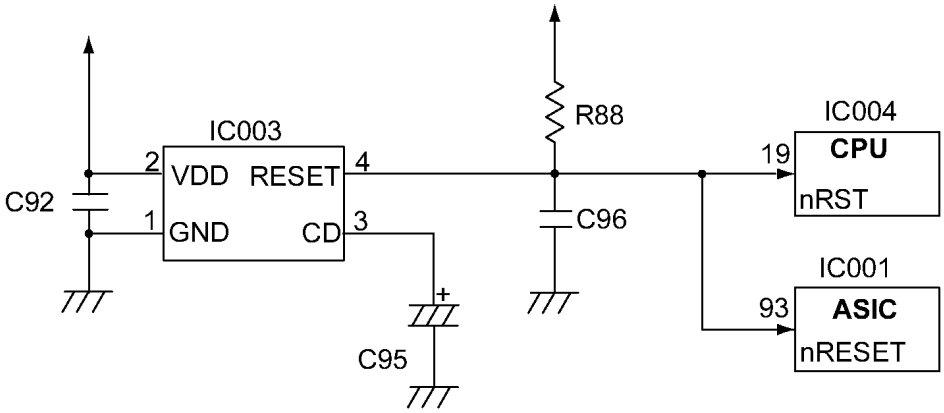
## 4.4.2. Clock Circuit

The system clock ( 12.00MHz ) is generated by IC001 and X001, and it is supplied to the CPU ( IC004 ).

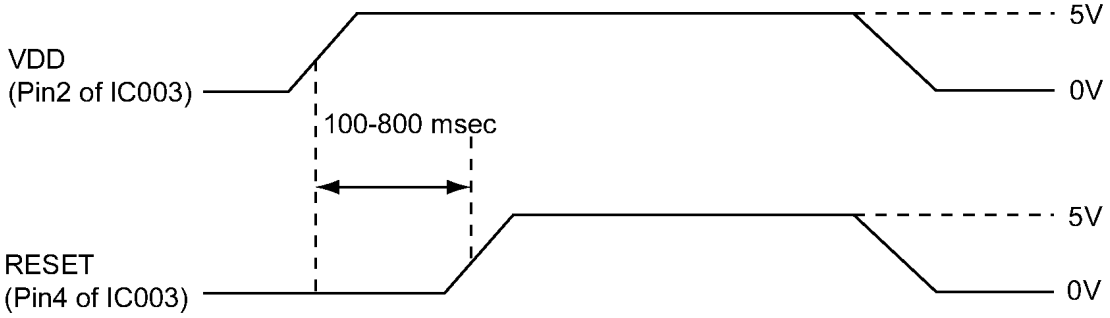



## 4.4.3. Reset Circuit

Reset signal is generated when the power is turned on. The reset circuit initializes the CPU ( IC004 ), the ASIC ( IC001 ). Approximately 100~800 msec after turning on the power, pin4 of IC003 goes high.



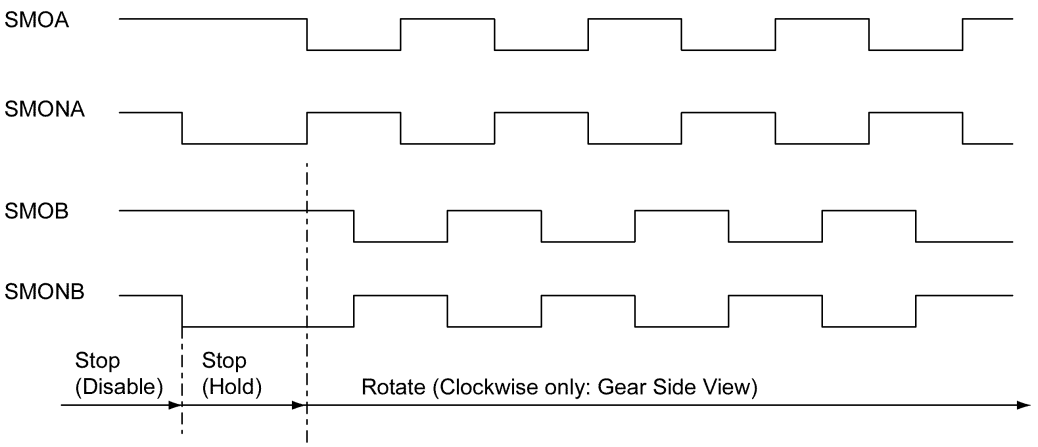

Timing Chart



## 4.4.4. Main Motor Drive Circuit

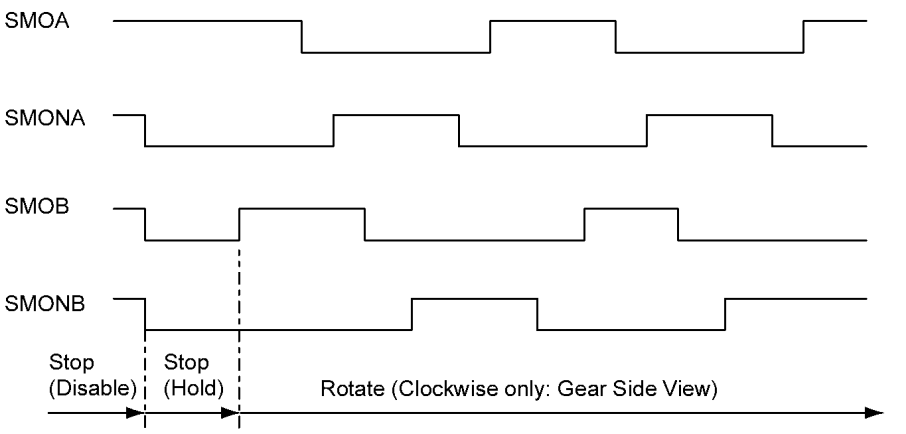
The main motor ( 2-phase stepping motor ) is driven by IC006 ( bipolar constant current driver ). The SMOA, SMONA, SMOB and SMONB signals shown below are used to control motor direction. when the signals are output as shown below, the main motor rotates.

Full Speed Mode ( 2 phase excitation ):

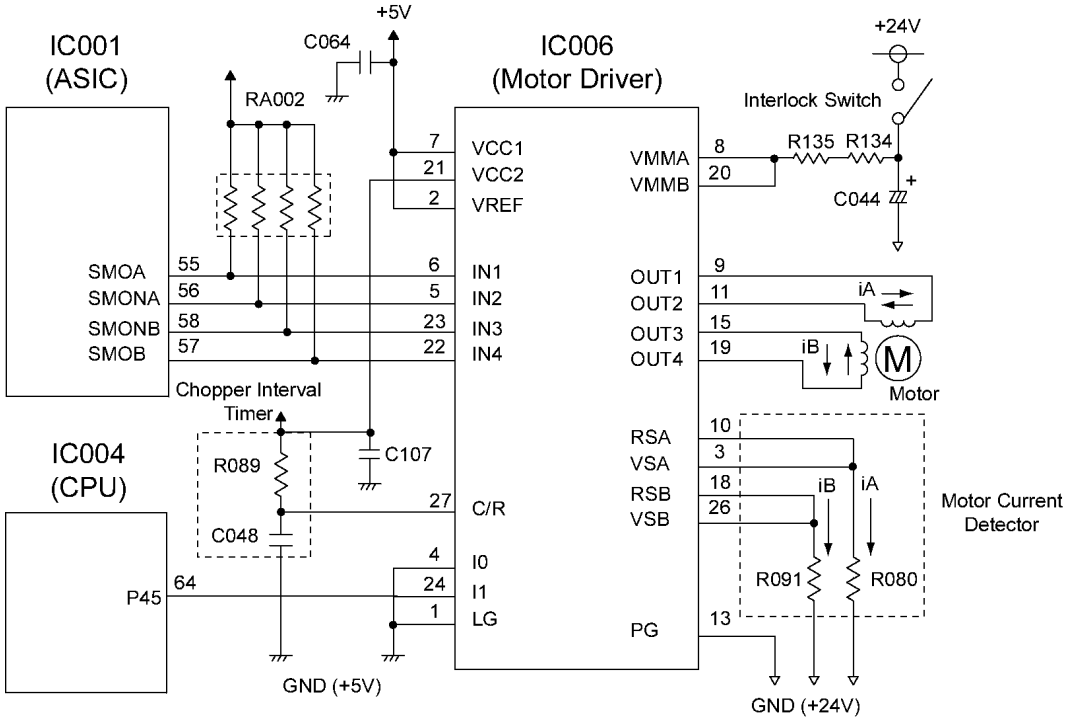



Note: If motor rotates CCW direction, Toner Cartridge and OPC Drum Unit will be damaged.

Half speed Mode ( 1-2 phase ( half step ) excitation ):




Note: If motor rotates CCW direction, Toner Cartridge and OPC Drum Unit will be damaged.



Motor Driver True Table

| IN 1 or 4 | IN 2 or 3 | OUT 1 or 4 | OUT 2 or 3 |
|---|---|---|---|
| L | L | OFF | OFF |
| L | H | L | H |
| H | L | H | L |
| H | H | OFF | OFF |

**Note:**

Motor Current will be cut off in case of “OFF” condition above.

Motor Driver True Table for Current Chopping Level

| I0 | I1 | Current ratio |
|---|---|---|
| L | L | 100% |
| L | H | 33% |

Motor Drive Mode

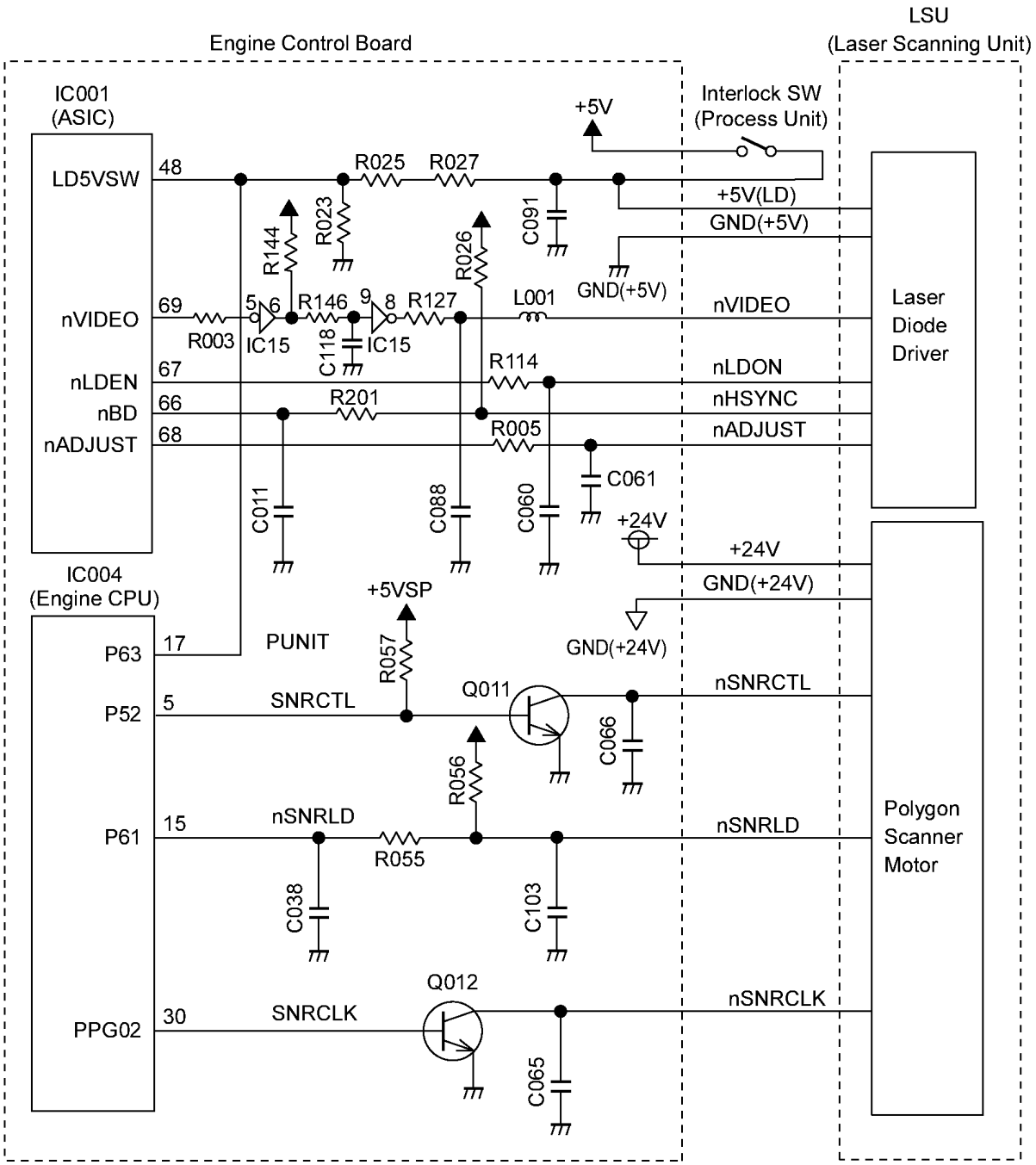
| Mode | Speed | Current ratio |
|---|---|---|
| 1st Hold for rotating | Stop | 33% |
| Warm Up | Full | 100% |
| Printing (Plain Paper / Transparency) | Full | 100% |
| Printing (Other Media) | Half | 100% |
| Manual Feed (Catching a Paper) | Full | 100% |
| If printing Data is more than approx. 2.5MB | Half | 100% |
| Last Hold after rotating | Stop | 100% |
| Stand by / Ready / Sleep / Error | Stop | OFF |

## 4.4.5. Laser Scanning Unit Control Circuit

The laser unit consists of laser drive circuit and scanner motor drive circuit.

Laser control signals are as follows.

| | |
|---|---|
| nVIDEO: | This is actual data being printed. |
| nLDON: | When the nLDON signal is low, the laser unit is activated.<br>When front door is opened, the laser unit is deactivated. |
| nHSYNC: | This is a horizontal synchronizing signal sent from a timing sensor ( laser beam detect sensor ) which detects horizontal position of the laser beam across drum. |
| nADJUST: | When the nADJUST signal is low, APC ( Auto Power Control ) is activated. |
| nSNRCTL: | This is a control signal for the scanner motor. |
| nSNRLD: | The scanner motor speed is maintained at approx. 20K rpm by a PLL ( Phase Locked Loop ).<br>While the scanner motor rotates ( approx. 20K rpm ), nSNRLD is low. |
| nSNRCLK: | This is a reference clock of the scanner motor ( approx. 2KHz ). |



## 4.4.6. Fuser Temperature Control Circuit

The fuser temperature is controlled by IC004 ( Engine CPU ). IC004 has an analog to digital ( A/D ) converter ( AN0-AN7 ). Thermistor TH is connected to IC004 ( AN0 ). When IC004 ( Pin31 ) is low, Q010 is turned off. And Q4 is turned on.Then Heat lamp inside fuser unit is turned on.

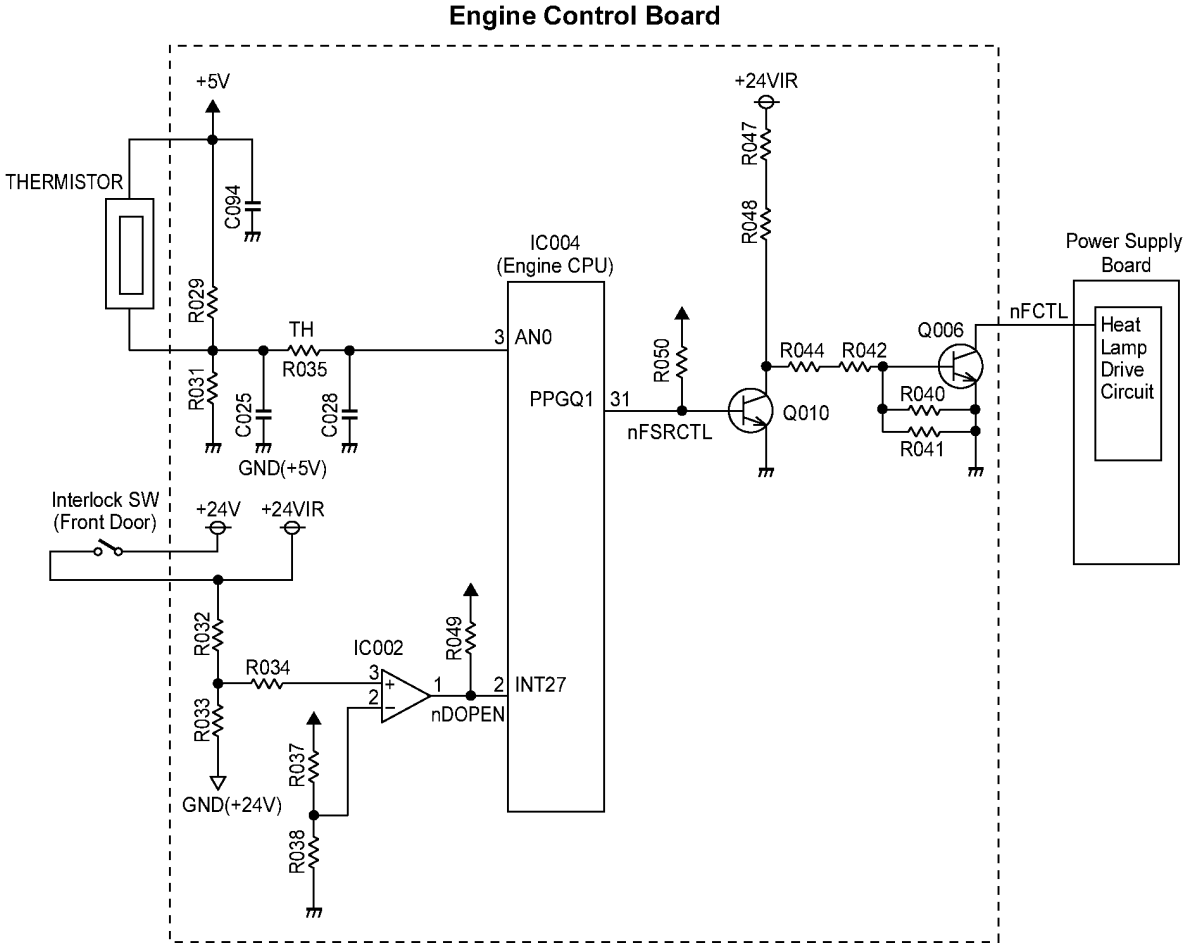
Abnormal temperature detection circuit consists of the following 2 sub-sections.

1. Abnormally Low Temperature Detection

   Abnormally low temperature is detected by IC004 ( Engine CPU ) programming.

2. Abnormally High Temperature Detection

   Abnormally high temperature is detected by IC004 ( Engine CPU ) programming. When front door is opened, the fuser lamp is shut off.



## 4.4.7. High Voltage Control Circuit

**IMPORTANT SAFETY NOTICE**

1. Do not attempt to repair this power supply unit. This supply requires proper calibration after any component replacement. Failure to do so may result in component damage, shock fire or other hazard.
2. High voltage is present on the board. Use caution when measuring voltage levels.

1. Charge Control Circuit

   This circuit consists of a DC-DC converter, which boosts +24V to approximately +5.4kV ( constant current approx. +300µA ) for the charge corona. nCHGCTL signal controls the charge output. If the signal goes low,the output is turned on.

2. Grid Circuit

   When the charge circuit is activated ( when the signal nCHGCTL is low ), this circuit is activated and approximately +900V is generated on the grid.

3. Development Bias Control Circuit

   When the charge circuit is activated ( when the signal nCHGCTL is low ), this circuit is activated.

   This voltage is changed between +100V and +500V in accordance with the PWM ( Pulse Width Modulation ) signal nDB when the signal nDBCH is low. Also approximately - 150V is generated when signal nDB and nDBCH is high.

4. Transfer Control Circuit

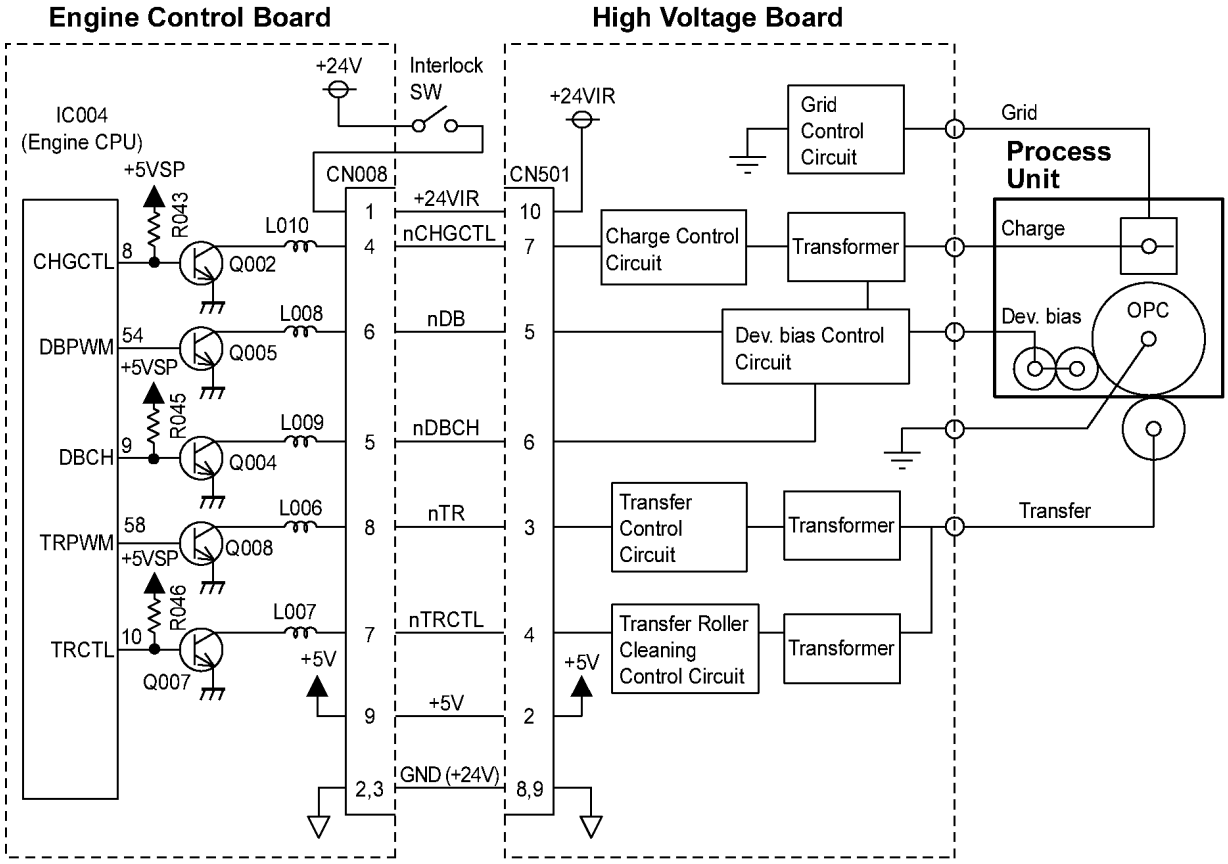
   This circuit consists of a DC-DC converter, which boosts +24V to -400V — -3000V ( constant current ).

   This current is changed between -4µA and -20µA in accordance with the PWM ( Pulse Width Modulation ) signal nTR when the signal nTRCTL is high.

5. Transfer Roller Cleaning Control Circuit

   This circuit consists of a DC-DC converter, which boosts +24V to +1500V.

   This voltage is generated when signal nTR is high and nTRCTL is low.

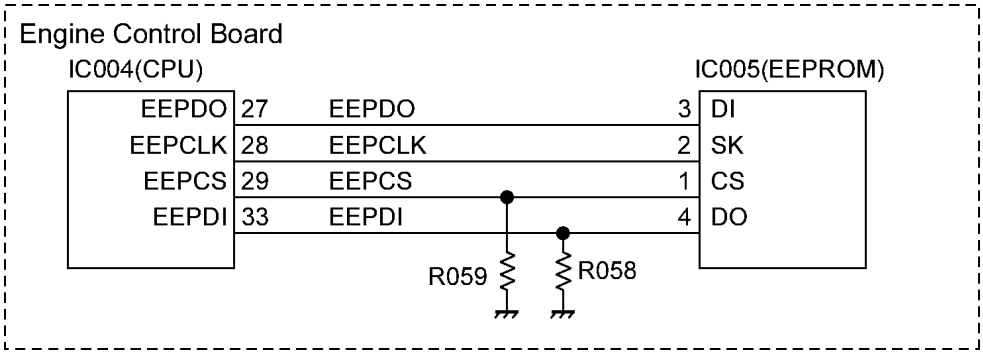



## 4.4.8. EEPROM Control Circuit

This printer has 2kbit EEPROM ( IC005 ). Page Count Data, Calibration Data, etc. are saved on the IC.

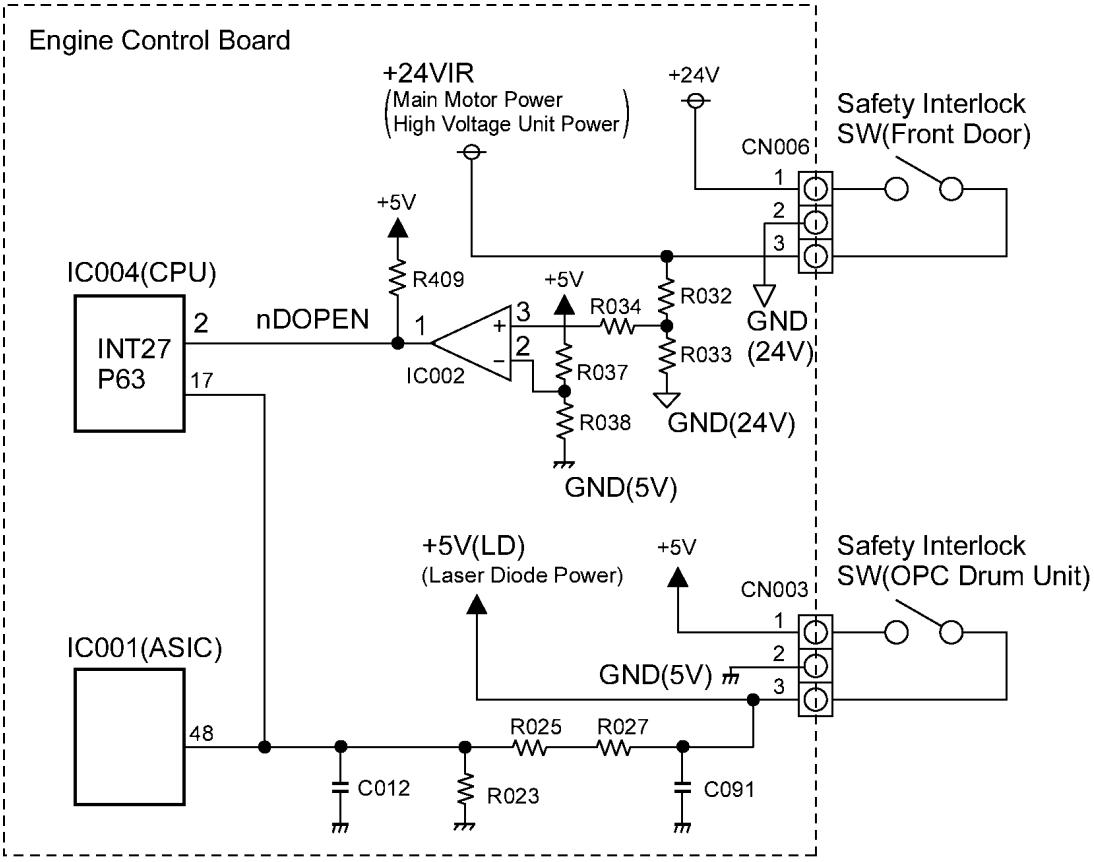
The EEPROM control signals are explained as follows.

| | |
|---|---|
| EEPCS: | This is the chip select signal. |
| EEPCLK: | This is the serial data transfer clock. |
| EEPDO: | This is the serial data from CPU ( IC004 ) to EEPROM ( IC005 ). |
| EEPDI: | This is the serial data from EEPROM ( IC005 ) to CPU ( IC004 ). |



## 4.4.9. Safety Interlock SW

This printer has two safety interlock switches: front door safety interlock switch, and an OPC drum unit safety interlock switch. +24V power is supplied to the front door safety interlock switch. When the front door is opened, the frontdoor safety interlock switch is opened and shuts off the main motor driver power and the high voltage unit power. As a result, the comparator output at pin1 of IC9 is changed from a high level to a low level. IC004 ( CPU ) receives this signal andturns off the main motor control signal, the laser scanning unit, etc. When the OPC drum unit is not installed, the OPC drum unit safety interlock switch is opened and shuts off the +5V power for the laser diode. IC004 ( CPU ) and IC001 (ASIC ) receive this +5V power condition and turn off the main motor control signal, the laser control signals, etc.

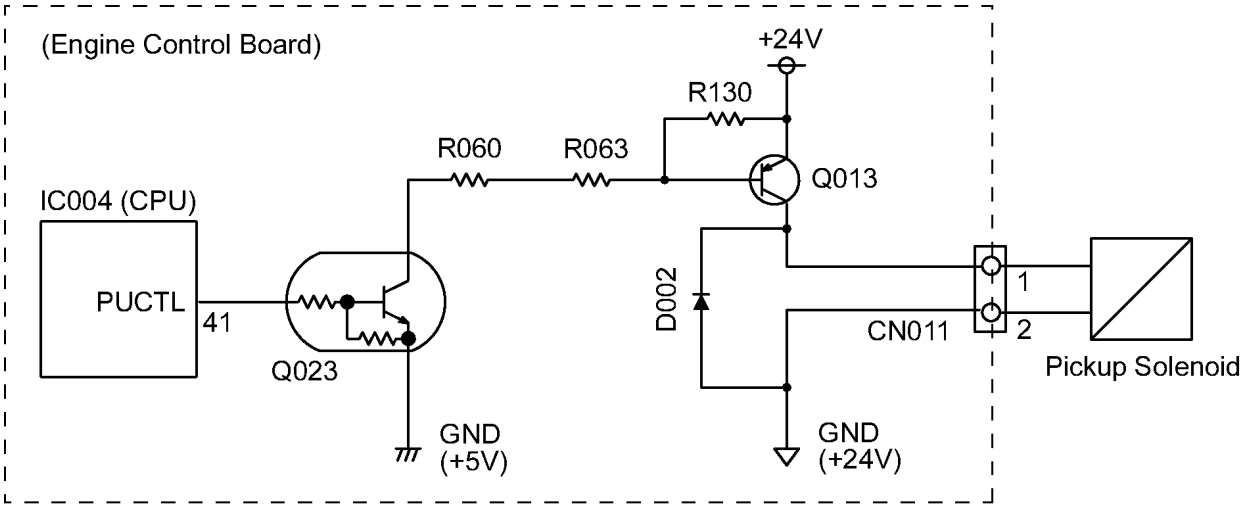


## 4.4.10. Solenoids Control Circuit

This printer has three solenoids: pickup solenoid, registration solenoid and a switchback solenoid.

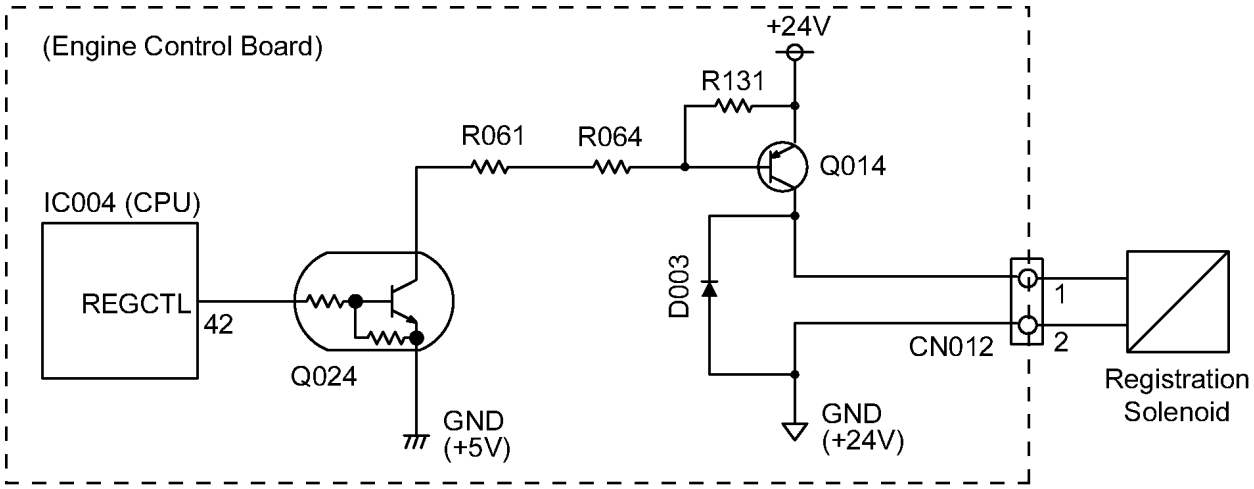
### 4.4.10.1. The Pickup Control Solenoid Drive Circuit

The pickup solenoid is used for picking up the media from the media tray. The CPU IC004 outputs high level PUCTL signal from pin41 to the transistor Q023. The transistor Q023 and Q013 are turned on and supplies +24V power to the solenoid.



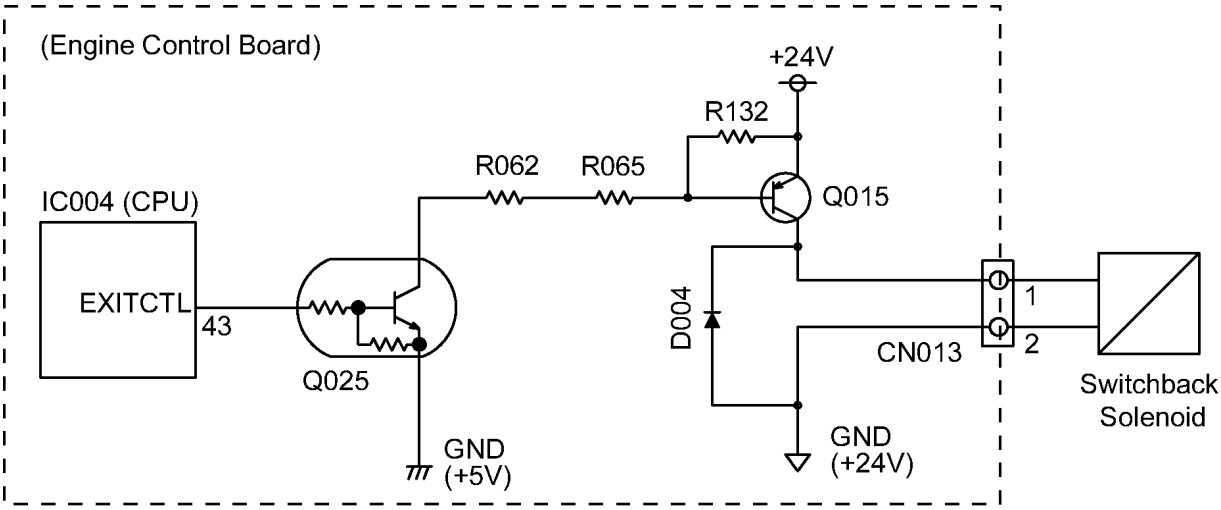

### 4.4.10.2. The Registration Solenoid Driver Circuit

The registration solenoid is used for controlling Registration Roller rotation. The CPU IC004 outputs high level REGCTL signal from pin42 to the transistor Q024. The transistor Q024 and Q014 are turned on and supplies +24V power to thesolenoid.



## 4.4.10.3. The Switchback Solenoid Drive Control Circuit

The switchback solenoid is used for controlling media switchback when the printer is auto duplex printing. The CPU IC11 outputs high level EXITCTL signal from pin43 to the transistor Q025. The transistor Q025 and Q015 are turned on and supplies +24Vpower to the solenoid.

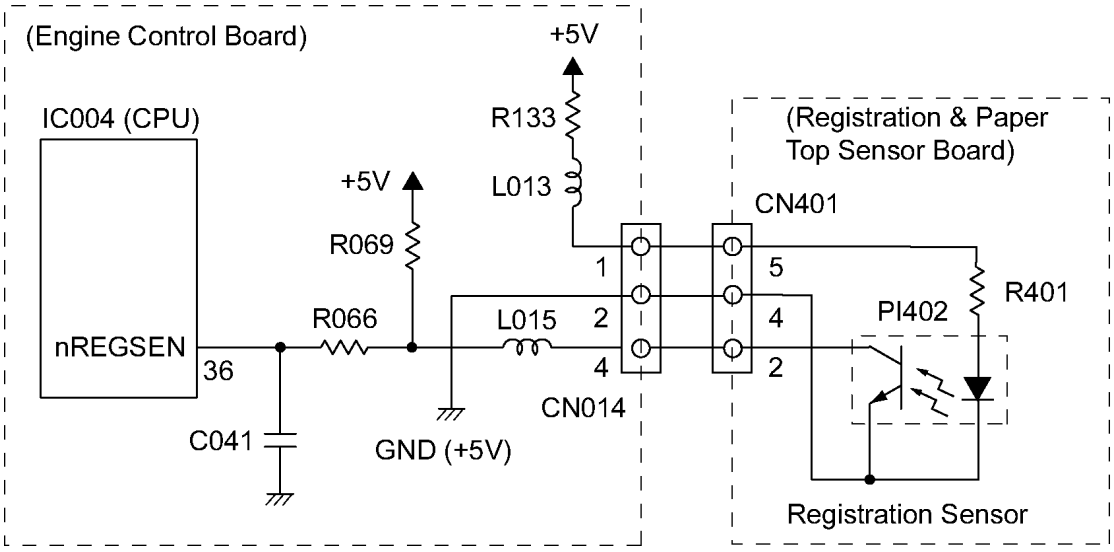


## 4.4.11. Sensors Circuit

The printer has three photo sensors: Registration sensor, Top sensor and Exit sensor.

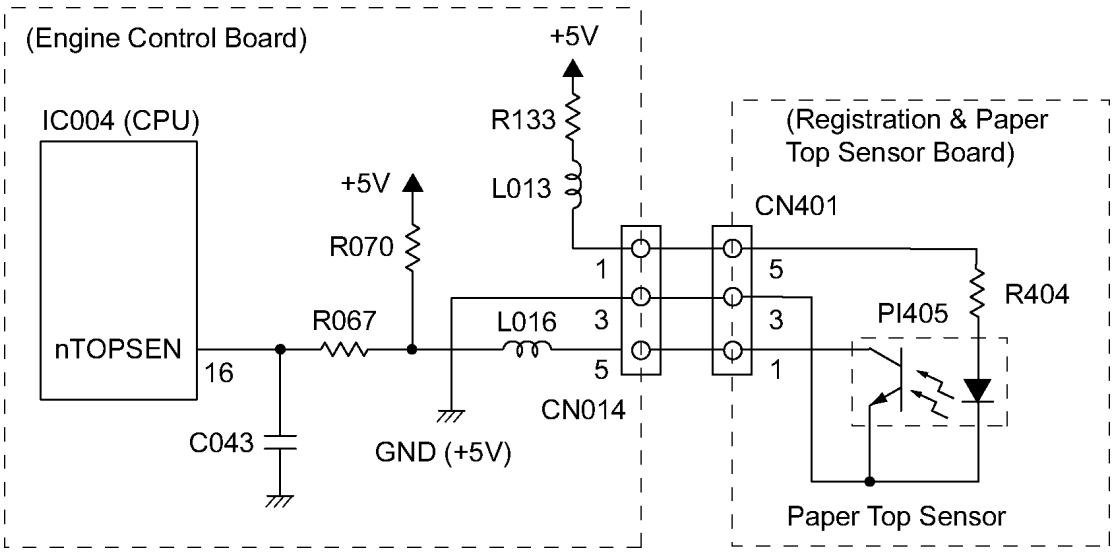
### 4.4.11.1. Registration Sensor Circuit

Registration sensor detects that the media is in front of the Registration Roller. When the registration sensor detects the media, nREGSEN signal changes from high level to low level.



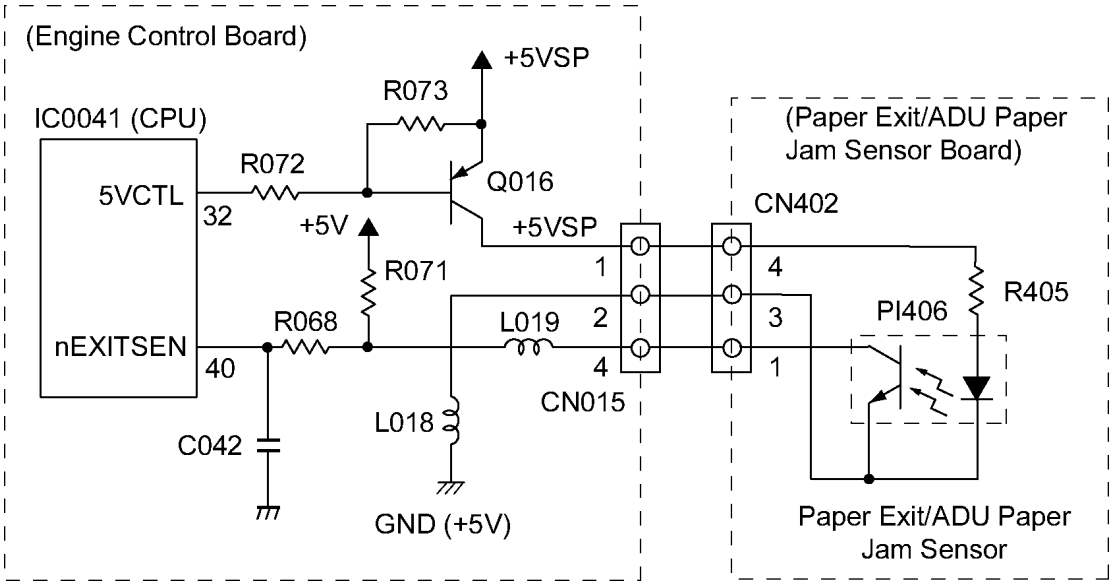

### 4.4.11.2. Top Sensor Circuit

Top sensor detects that the media has past the Registration Roller. When the top sensor detects the media, nTOPSEN signal changes from high level to low level. This nTOPSEN signal is used for printing start trigger and Top Margin Adjustment.



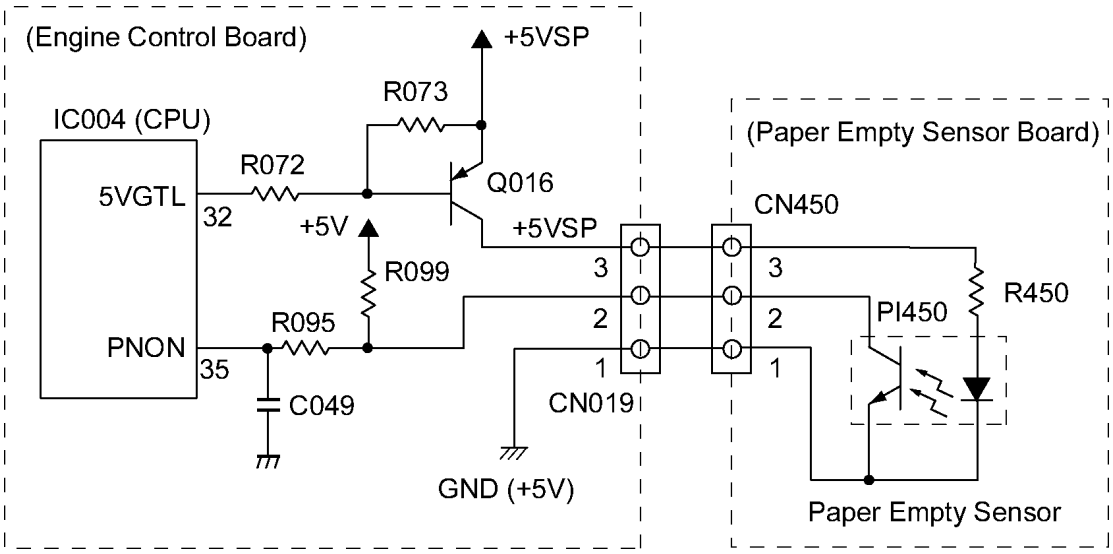
### 4.4.11.3. Exit Sensor Circuit

Exit sensor detects that the media is at the rear of the Fuser Roller ( Exit of the printer ). When the exit sensor detects the media, nEXITSEN signal changes from high level to low level. +5VSP is the power of the photo sensors. When the5VCTL signal at pin32 of IC004 ( CPU ) is low level, the transistor Q016 is turned on. This supplies +5V power to the photo sensors.



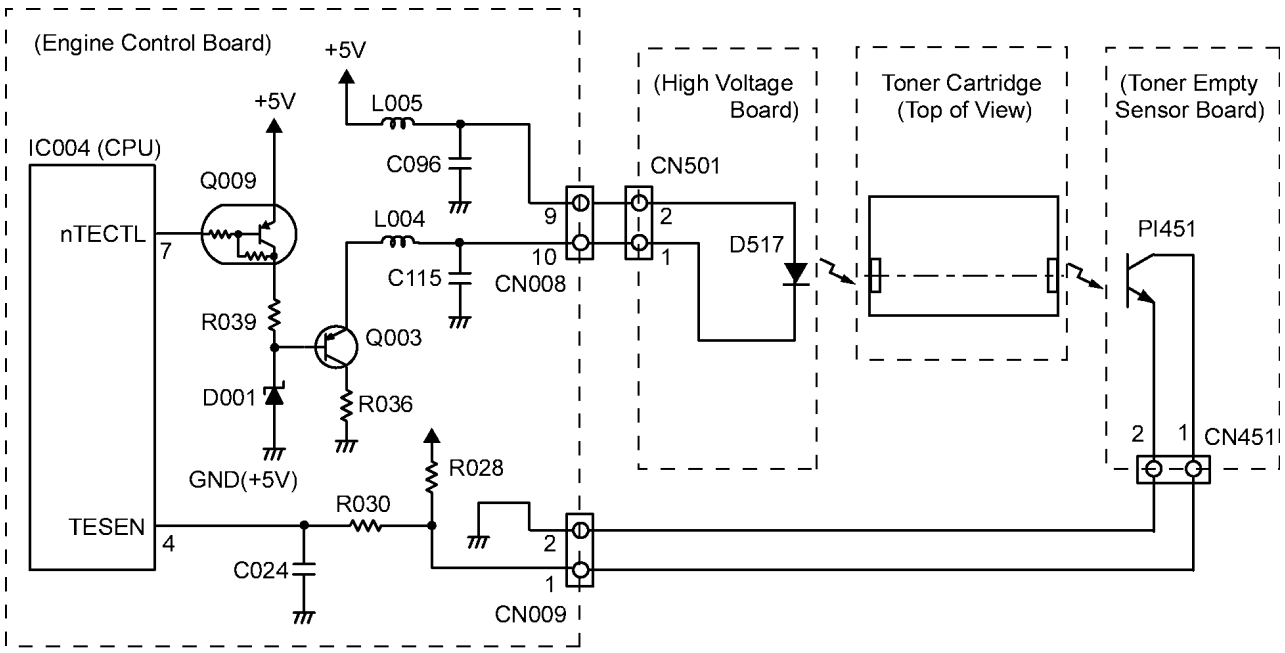

### 4.4.11.4. Paper Empty Sensor Circuit

Paper sensor detects that the media is at the Paper Cassette or not. When the media is set in the Paper Cassette, PNON signal becomes low level. +5VSP is the power of the photo sensors. When the 5VCTL signal at pin32 of IC004 ( CPU ) islow level, the transistor Q016 is turned on. This supplies +5V power to the photo sensors.



## 4.4.11.5. Toner Empty Sensor Circuit

Toner empty sensor detects the shortage of toner. IC004 ( CPU ) sends the nTECTL ( pin7, IC004 ) signal to Q009. When the nTECTL is low level, transistors Q009 and Q003 are turned on. and LED D517 emits light. If the toner is shorted ( empty ),the light from LED D517 passes through the lens of the Toner Cartridge. When the photo transistor PI451 receives the light, the PI451 is turned on, and the TESEN ( pin4, IC004 ) signal becomes low.




## 4.4.12. Fan Control Circuit

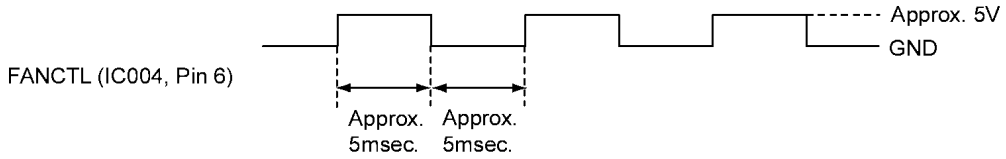
**FANCTL:**

1. Full Power Mode

   When FANCTL signal ( pin 6, IC004 ) is high, pin 7 of IC002 goes high, transistors Q018 and Q020 are turned on. This supplies +24V Power to Fan motor and rotates the Fan.

2. Reducing Power Mode ( Quiet Mode )

   Pulse signal ( see below ) is output from pin 6 of IC004.




This pulse signal is integrated by R137 and C108. Voltage of ( A ) is stabilized at approx. 2V. Pin 6 of IC002 is 0V.

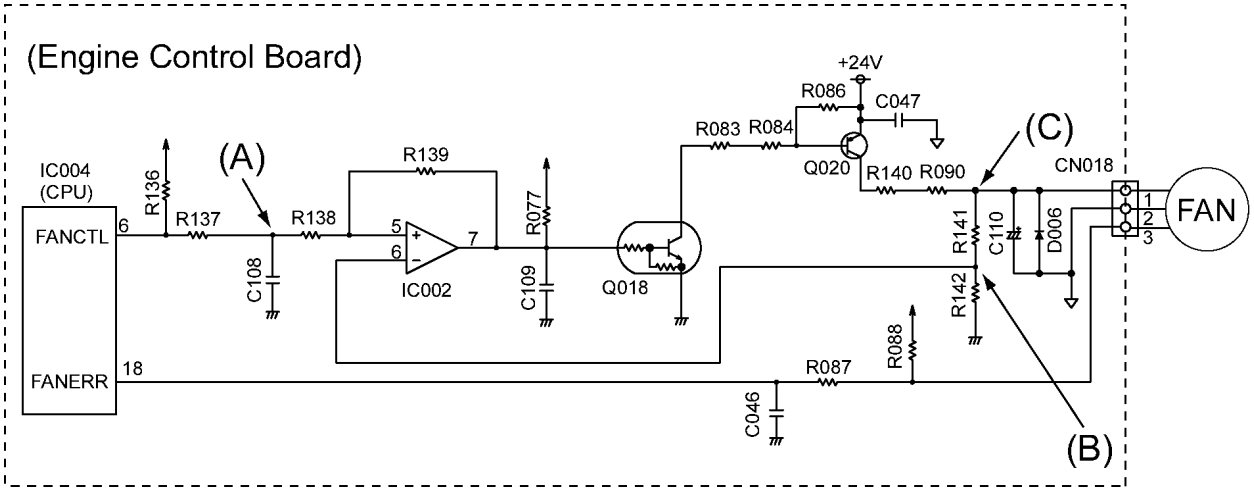
When the voltage of ( B ) is lower than the voltage of ( A ), pin 7 of IC002 goes high, Q018 and Q020 are turned on, then the voltage of ( B ) increases. When the voltage of ( B ) is higher than ( A ), pin 7 of IC002 goes low, Q018 and Q020 areturned off, then voltage of ( B ) decreases. Thus the voltage of ( B ) is controlled almost same as the voltage of ( A ) ( = approx. 2V ). Since the resistor network of R141 and R142 divide the voltage of ( C ) into 1/8, the voltageof ( C ) is controlled approx. 16V ( = 2V x 8 ).

FAN Control Mode

| Mode | FAN Power |
|---|---|
| Warm Up | Full |
| Printing | Full |
| Others | Reduced |

**FANERR:**

This signal is used for detecting whether the rotation of fan motor is proper or not. When the fan motor is not rotating properly or is locked, this signal becomes a high and inputted into pin18 of IC004.




## 4.4.13. 2nd Feeder I / F Circuit

The 2nd Feeder control signals are explained as follows.

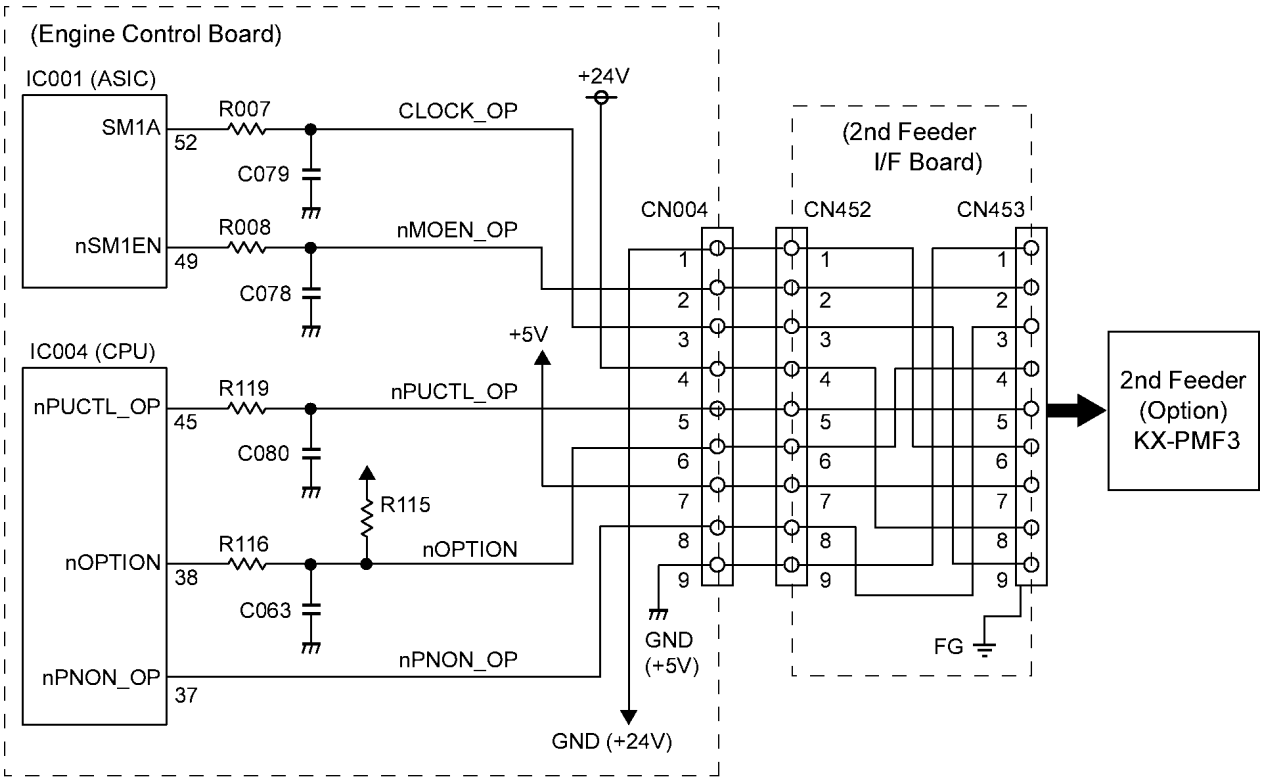
CLOCK_OP: This is the clock signal. 2nd Feeder Board generates motor drive signals for 2nd Feeder Motor from this clock signal.

nMOEN_OP: This is the control signal for 2nd Feeder Motor. When IC001 sends the low level nMOEN_OP signal, the 2nd Feeder Motor is rotated.

nPUCTL_OP: This is the control signal for the pickup solenoid in the 2nd Feeder. When IC004 sends the low level nPUCTL_OP signal, the pickup solenoid is activated.

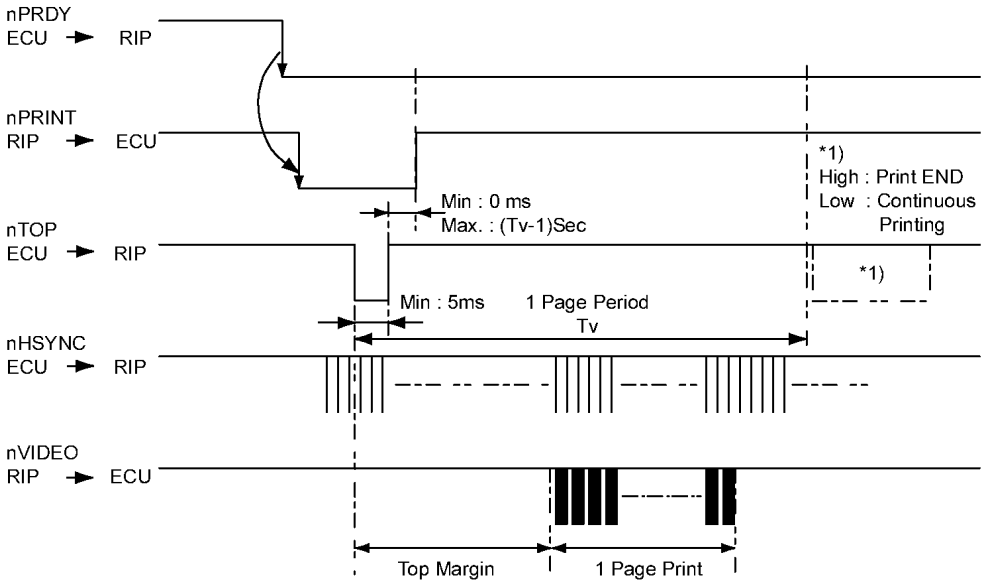
nOPTION: This is the detection signal whether the 2nd Feeder is connected to the printer or not. When the 2nd Feeder is connected to the printer, the nOPTION signal becomes low level.

nPNON_OP: This is the detection signal whether the media is at the 2nd Feeder Paper Cassette or not. When the media is set in the 2nd Feeder Paper Cassette, nPNON_OP signal becomes low level.

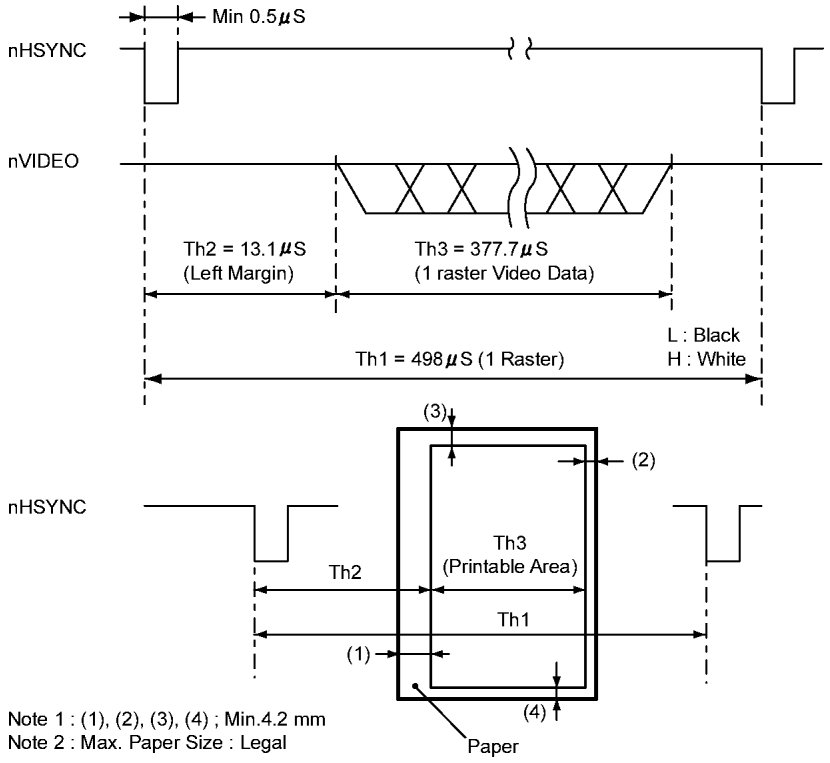


## 4.4.14. Timing Chart

### 4.4.14.1. Vertical Print Timing




### 4.4.14.2. Horizontal Print Timing ( Relationship between nHSYNC and Video Signal )



# 4.5. Main Control Board

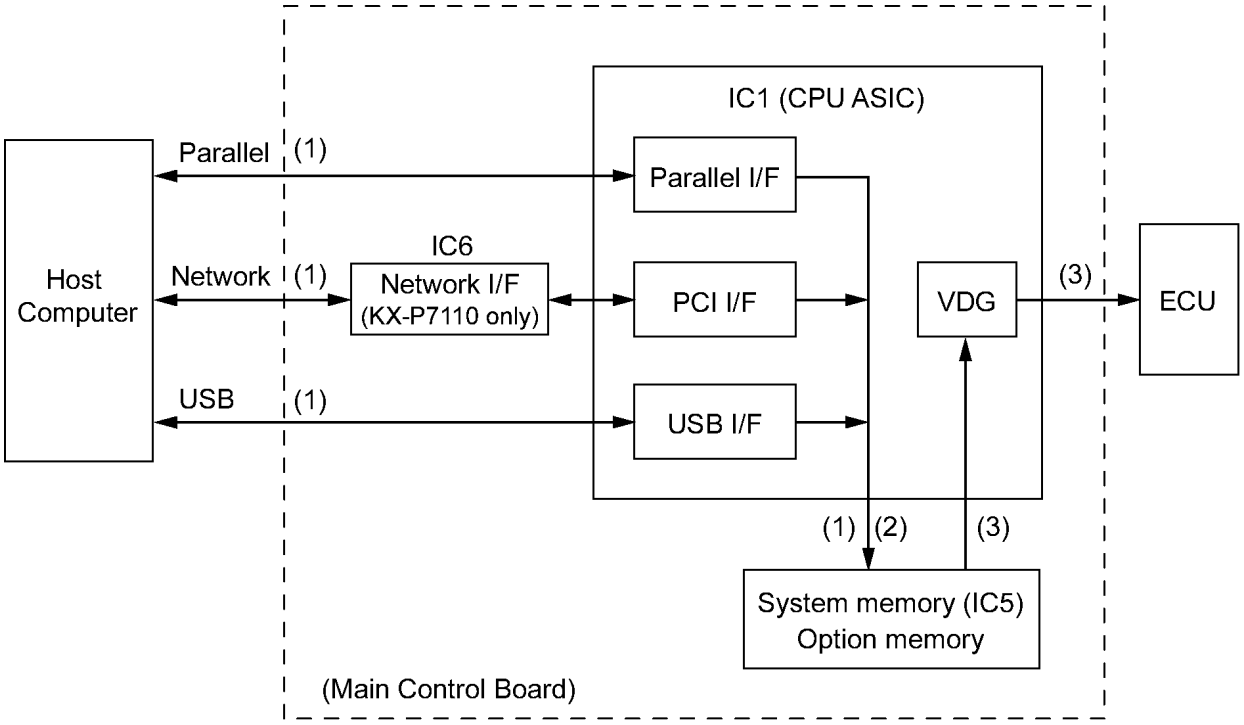
## 4.5.1. Data Flow

The following indicates the data flow when communicating with the host computer using these interfaces.

(1) The print data transfer by the host computer is received by Parallel I/F, USB I/F or Network I/F ( for KX-P7110 only ) controlled by CPU ASIC ( IC1 ), and stored in the system memory.The system memory is also controlled by the CPU ASIC ( IC1 )

(2) The print data stored in the system memory is analyzed and rendered into an image ( ex. the arrangement and generation of fonts and images ) by CPU ASIC ( IC1 ), and the image data is stored in the system memory.

(3) The image data stored in the memory is converted into video data by the CPU ASIC ( IC1 ) internal Video Data Generator ( VDG ) and the video data is outputted to the ECU ( Engine Control Unit ) in responseto requests.

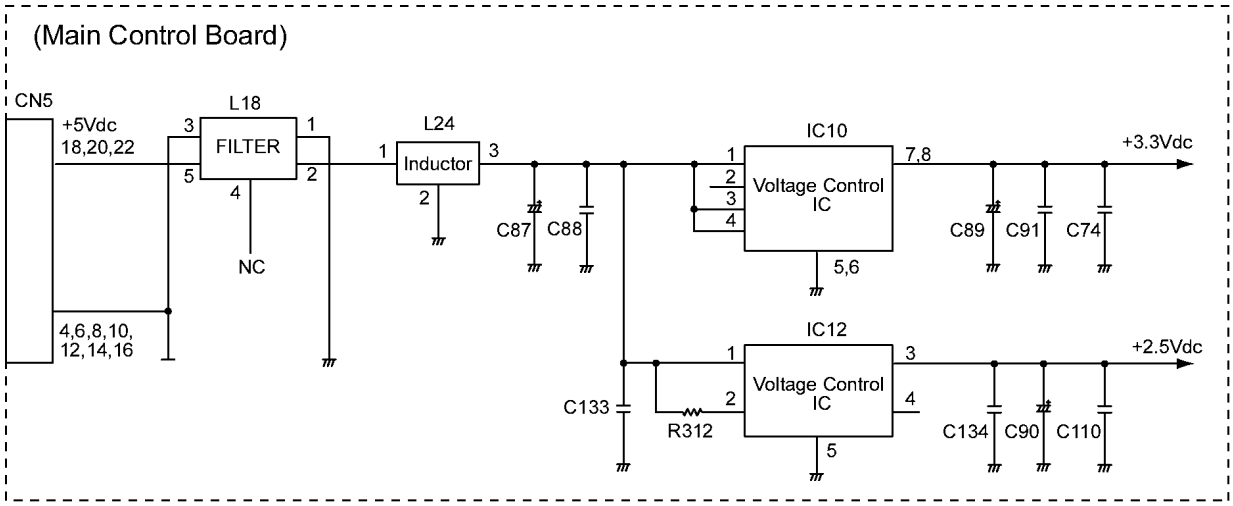


## 4.5.2. Power Supply

There are some circuits in the main control board that are operated by +3.3V or +2.5V.

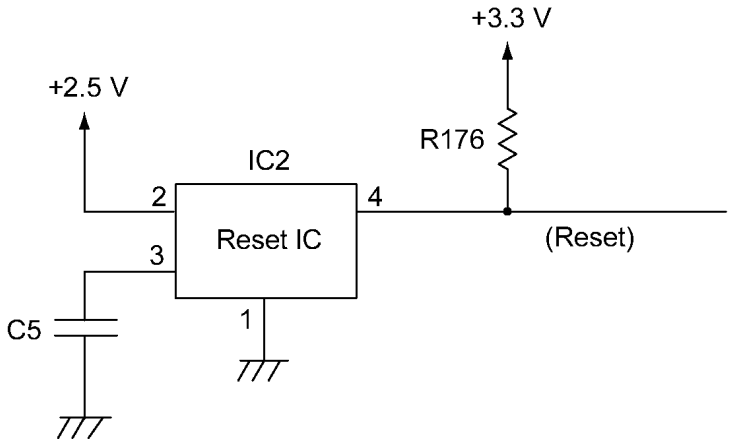
IC10 converts the voltage from +5V to +3.3V.

IC12 converts the voltage from +5V to +2.5V.

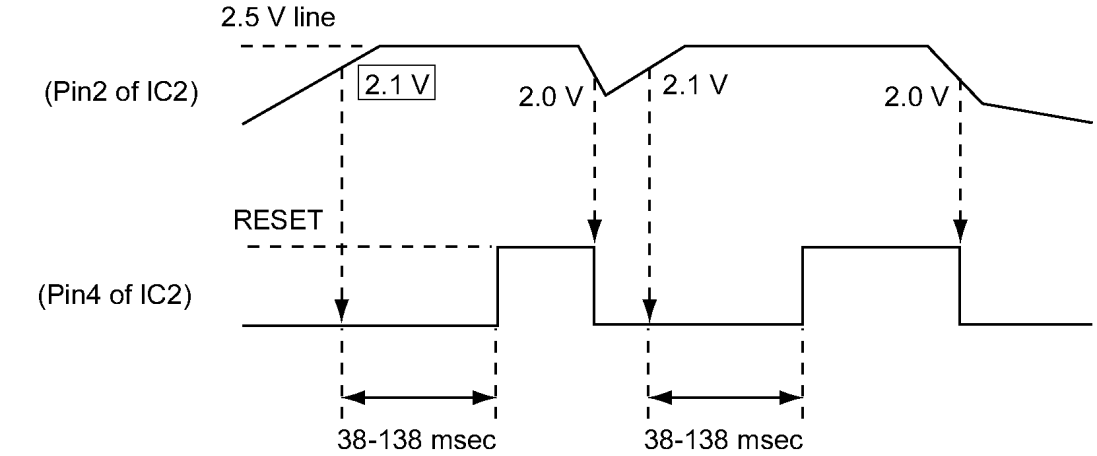



## 4.5.3. Reset Circuit

IC2 is RESET control IC. IC2 output reset signal wave on pin4, after it find the voltage of 2.5V line. If it is equal 2.1V, pin4 output " H " level after delay time. When power sw is turned on, reset timing is 38-138ms.

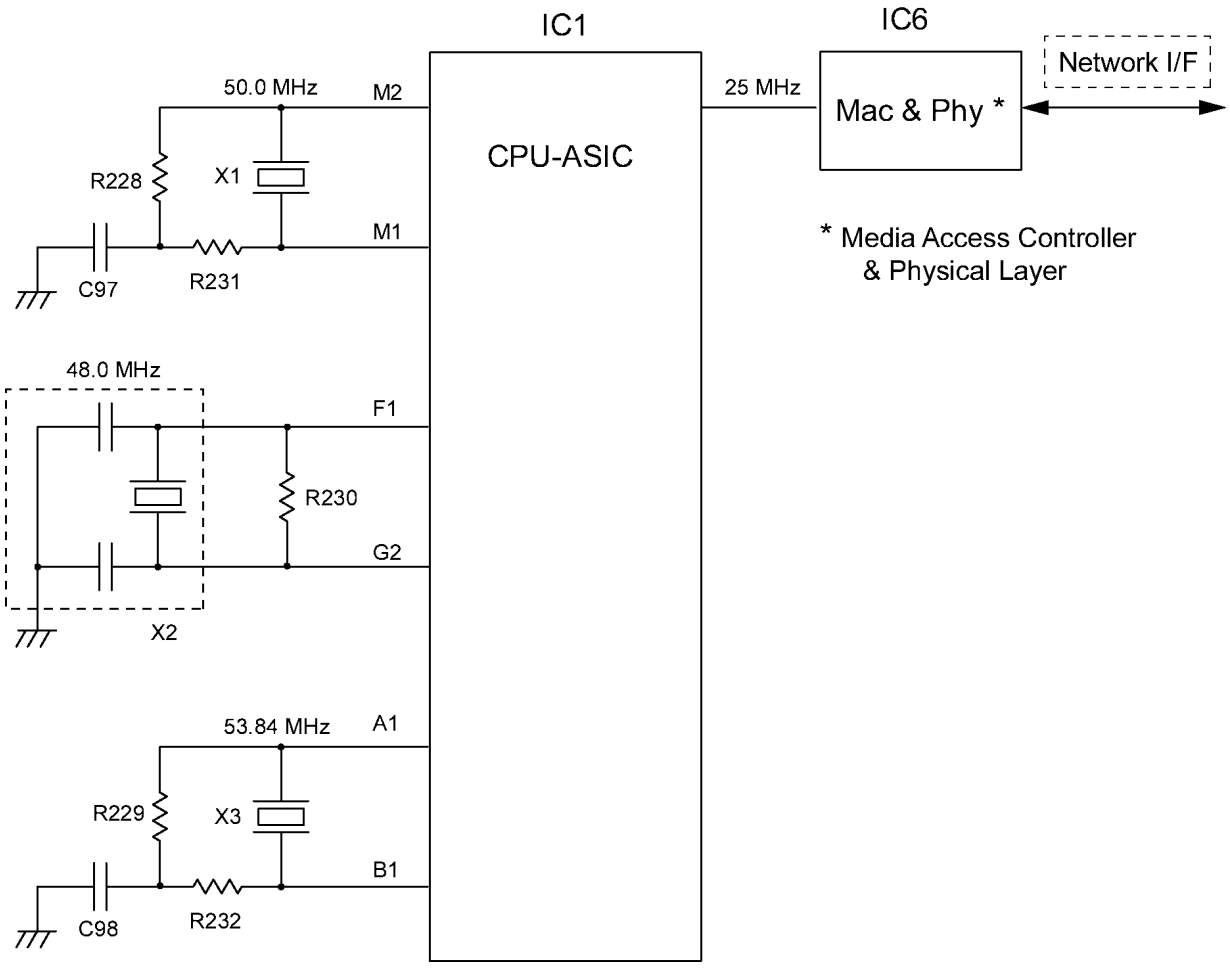



Timing Chart



## 4.5.4. Clock Circuit

50MHz-CLK is for system ( CPU, memory and ROM control ) and for Network I/F communication. 48MHz-CLK is for USB controller. 53.84MHz-CLK is for Engine I/F communication.



## 4.5.5. CPU ASIC ( IC1 ) overview

The CPU_ASIC ( IC 1) is a high-performance integrated printer processor that combines a CPU core, a bit block transfer (BitBLT) controller, a video data generator(VDG), and numerous printer controller features on a single chip.

The CPU_ASIC has the function macro modules as follows.

- CPU
- SDRAM I/F
- ROM I/F
- VDG
- BitBLT
- USB I/F
- PCI I/F (for Network I/F)
- Timer
- IO I/F
- IEEE1284 I/F

The CPU_ASIC controls the following functions.

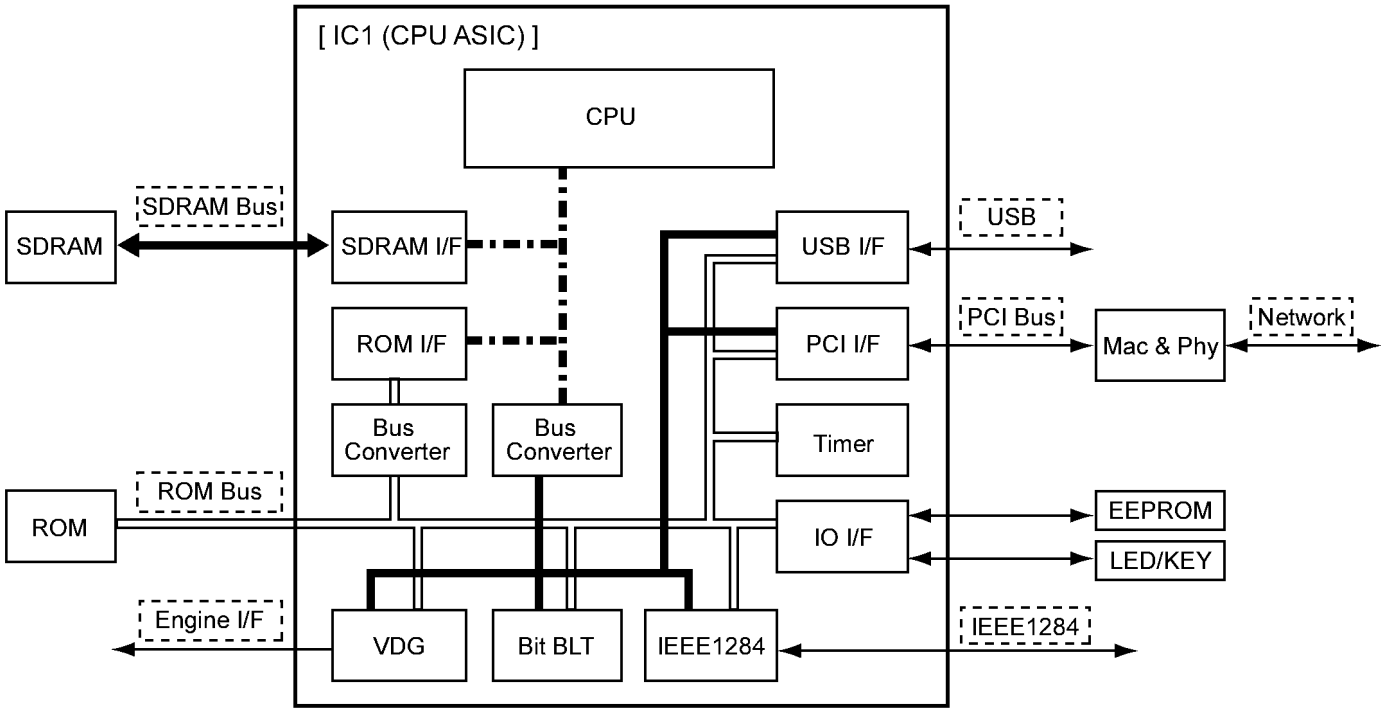
- Process the print data from host PC
- Initialization and control of Memories (ROM/Flash/SDRAM)
- Control the Interface (USB/ IEEE1284/ PCI/ Engine) port
- Control of LED and detection of key on the front panel

The CPU_ASIC ( IC1) has the following three types of external bus interface for connection with peripheral devices.

- ROM Bus
- SDRAM Bus
- PCI Bus

The ROM Bus, which operates asynchronously with the CPU clock, is to be used for connection with the Mask ROM or the Flash ROM devices (IC3, Option ROM CN) and controls the devices directly. The SDRAM Bus, which is synchronized with the CPU clock (100MHz),is the bus to be used for connection with the SDRAM Devices (IC5, Option RAM CN) and controls the devices directly. The PCI Bus, which is synchronized with the 1/4 CPU clock (25MHz), is the bus to be used for connection with the Mac & Phy (MediaAccess Controller & Physical Layer) device (IC6).

The Block Diagram of CPU_ASIC(IC1) is as follows.



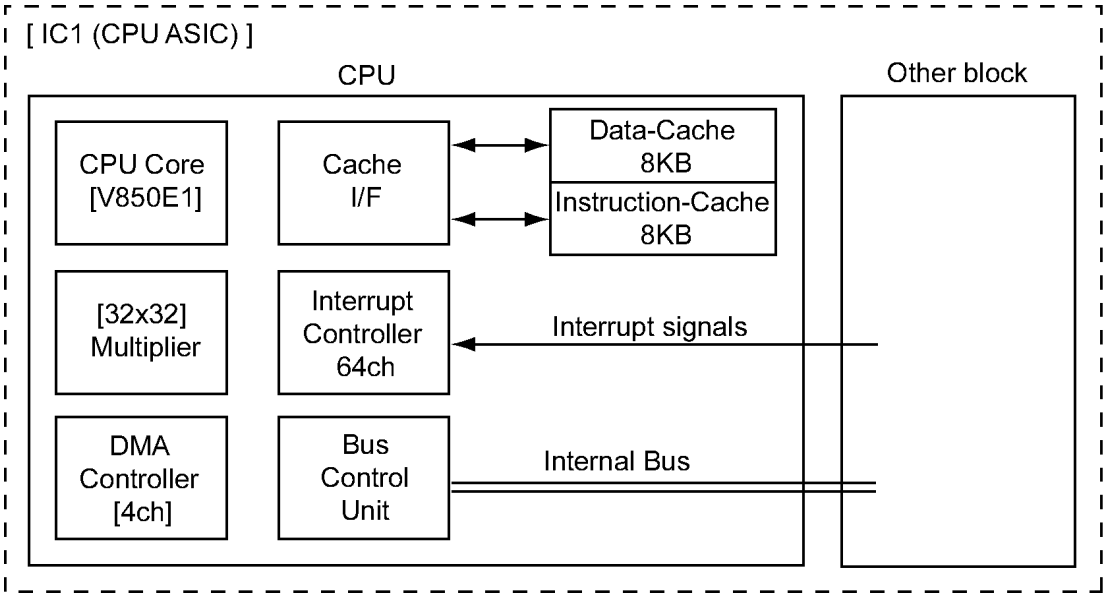
## 4.5.5.1. CPU

The CPU is equipped with the “V850E1”, which is a RISC type CPU that utilizes a five-stage pipeline technique.

In addition, to increase the speed of multiplication processing, the CPU contains an on-chip high-speedhardware multiplier capable of executing 32-bit x 32-bit operations.

The features of the CPU are as follows.

1. 100MHz 32bit RISC CPU core
2. Multiply-Accumulate hardware (32x32) and a barrel shifter (32bits/clock)
3. 5-stage pipeline
4. 8KB 2ways set associative instruction cache and 8KB 2ways set associative data cache
5. Includes INTC and DMAC (memory to memory transfer)

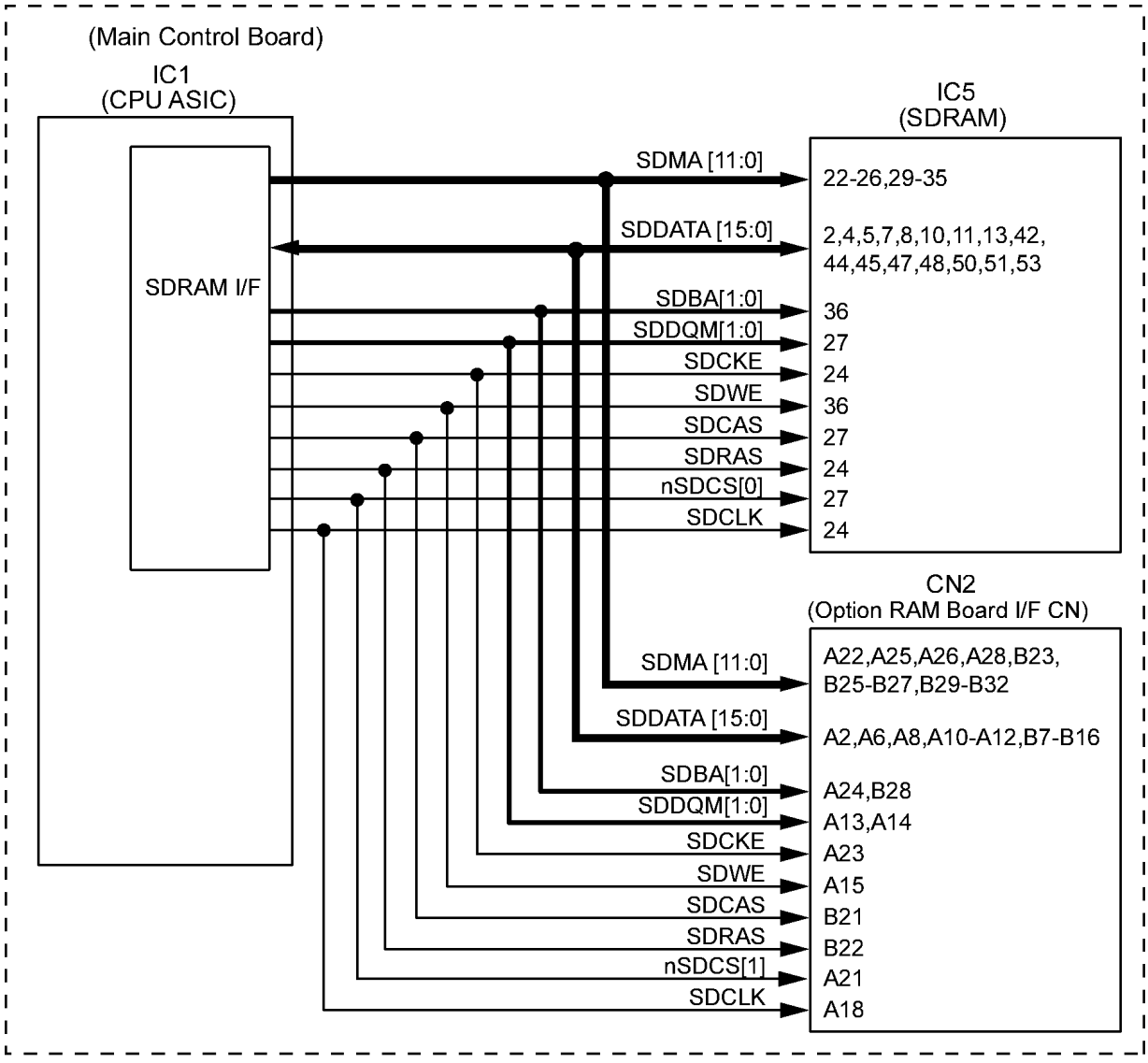


## 4.5.5.2. SDRAM I/F

The CPU ASIC ( IC1 ) integrates a high-performance memory controller. The SDRAM I/F, which is the basic macro in CPU ASIC ( IC1 ) for controlling external SDRAM devices.

The control signals of SDRAM devices are as follows.

| | |
|---|---|
| SDMA [11:0]: | These signals constitute the external SDRAM address bus. |
| SDDATA [15:0]: | These signals constitute a bidirectional data bus for external SDRAM. |
| SDBA [1:0]: | These signals constitute the external SDRAM Bank address. |
| SDDQM [1:0]: | These are the data mask output signals for external SDRAM. |
| SDCKE: | This is the clock enable output signal for external SDRAM. |
| SDWE: | This is the data write enable output signal for external SDRAM. |
| SDCAS: | This is the column address strobe output signal for external SDRAM. |
| SDRAS: | This is the row address strobe output signal for external SDRAM. |
| nSDCS [0]: | These are the chip select output signals for the standard SDRAM device. |
| nSDCS [1] | These are the chip select output signals for optional SDRAM devices. |
| SDCLK: | This is the synchronization clock output signal for external SDRAM. |

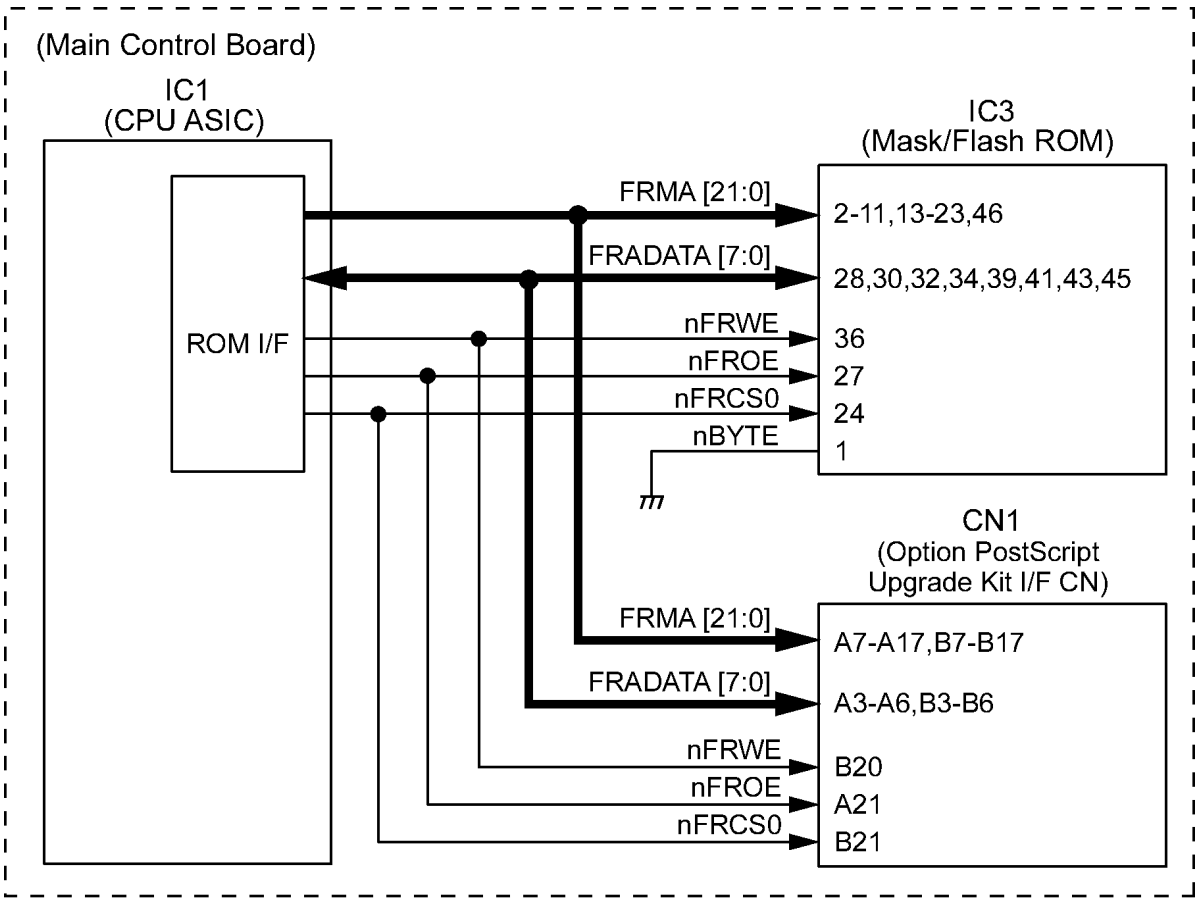


### 4.5.5.3. ROM I/F

The ROM I/F, which is the basic macro in CPU ASIC ( IC1 ) for controlling external memory devices ( Mask ROM, Flash ROM ).

The control signals of ROM devices are as follows.

| | |
|---|---|
| FRMA [21:0]: | These signals constitute the external ROM address bus. |
| FRDATA [7:0]: | These signals constitute a bidirectional data bus for external ROM. |
| nFRWE: | This is the write strobe output signal for making external Flash ROM active. |
| nFROE: | This is the output enable signal for Mask ROM or Flash ROM. |
| nFRCS0: | This is the chip select output signal for standard the Mask ROM or the Flash ROM. |
| FRCS1: | This is the chip select output signal for optional the Mask ROM or the Flash ROM. |

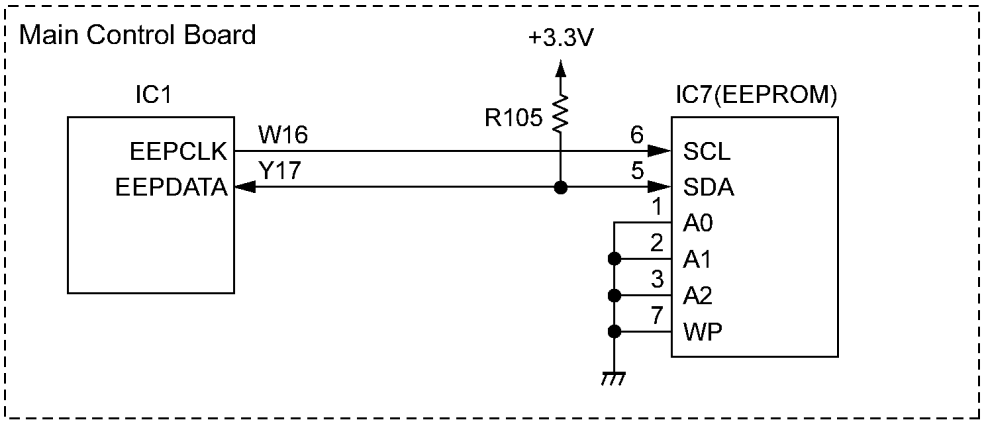


## 4.5.5.4. EEPROM Control Circuit

This printer has 32kbit (KX-P7110) or 4kbit (KX-P7105) EEPROM ( IC7 ). EEPROM is saved the Page Count Data, Carribration Data, etc.

The EEPROM control signals are explained as follows.

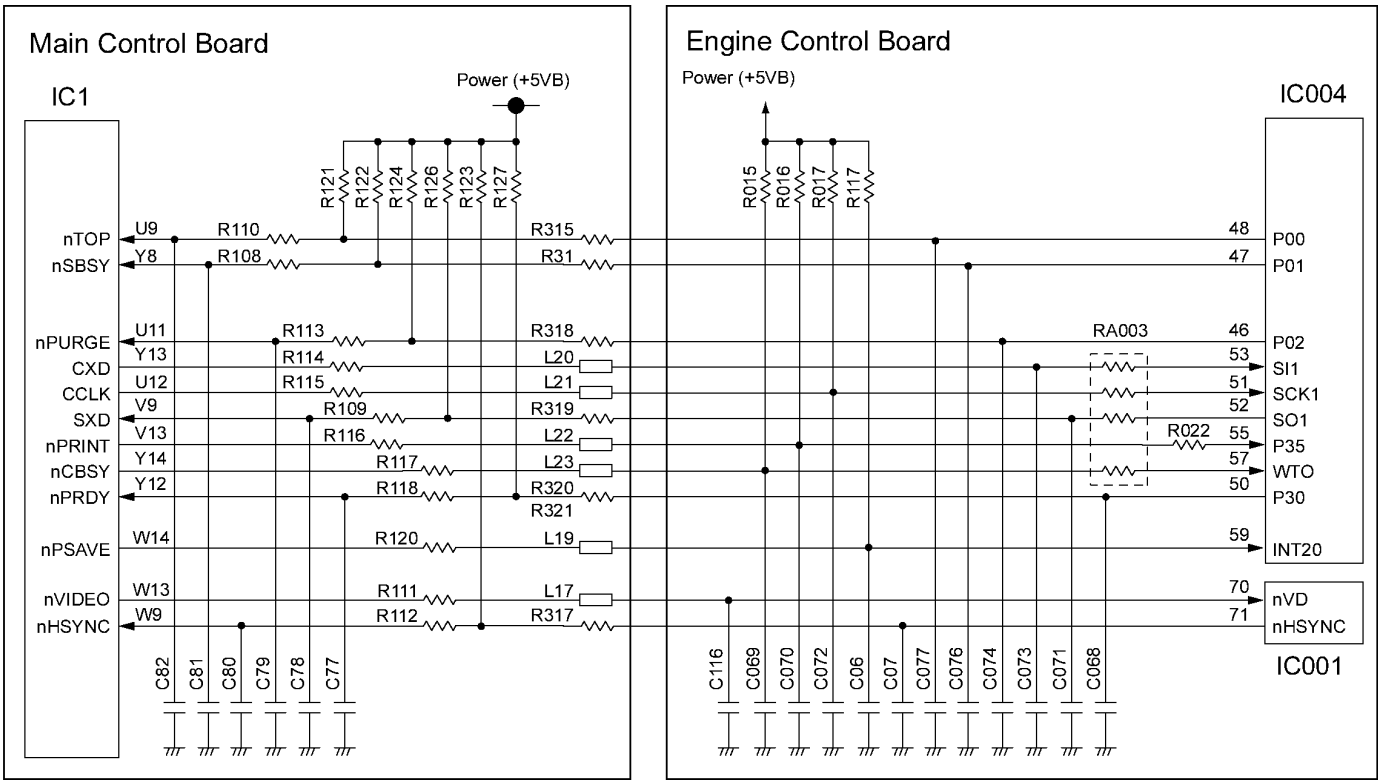
EEPCLK: This is the serial data transfer clock.
EEPDATA: The bidirectional serial data/address signal is used to transfer all data into and out of the device.

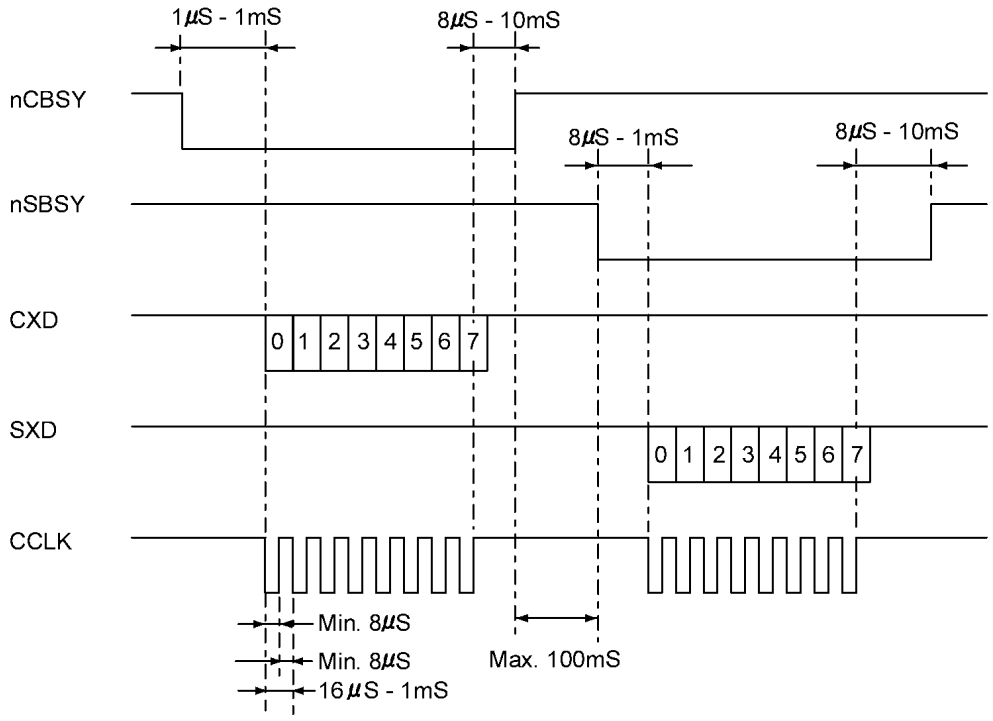


## 4.5.5.5. Internal Engine I/F (Main Board - Engine Board)

The communication I/F signal between Main Board and Engine Board in Main Board is as follows.

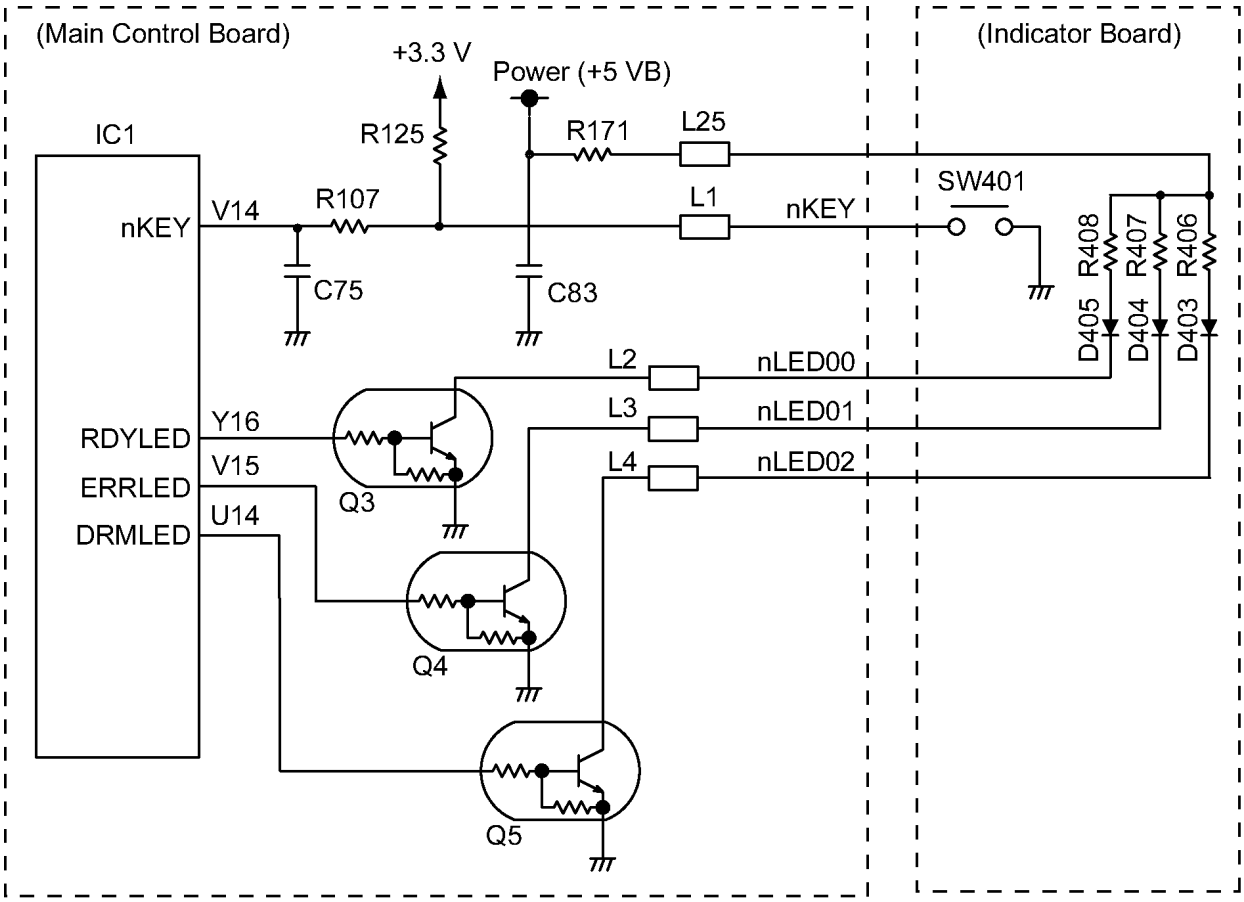
| | |
|---|---|
| nPRDY: | Engine status is ready for communication. |
| nTOP: | A vertical synchronous signal which indicates the home position in a recording sheet. |
| nHSYNC: | A horizontal synchronous signal which indicates the home position of horizontal laser scanning. |
| nPRINT: | After receiving this signal from main control CPU, the engine starts printing. In other words, print request. |
| nVIDEO: | Video image data which modulate laser beam. |
| nPURGE: | Paper purge signal which asserted when the paper exit to the tray. |
| nPSAVE: | Engine power save command signal. |
| CXD: | Serial command data from main board to engine board. |
| SXD: | Serial Status data from engine board to main board. |
| nCBSY: | Data transfer busy signal from main board to engine board. |
| nSBSY: | Data transfer busy signal from engine board to main board. |
| CCLK: | Communication clock for those serial data. ( main board assert ) |






## 4.5.5.6. Operation Panel Circuit

Panel LEDs and panel switch status are controlled by IC1.



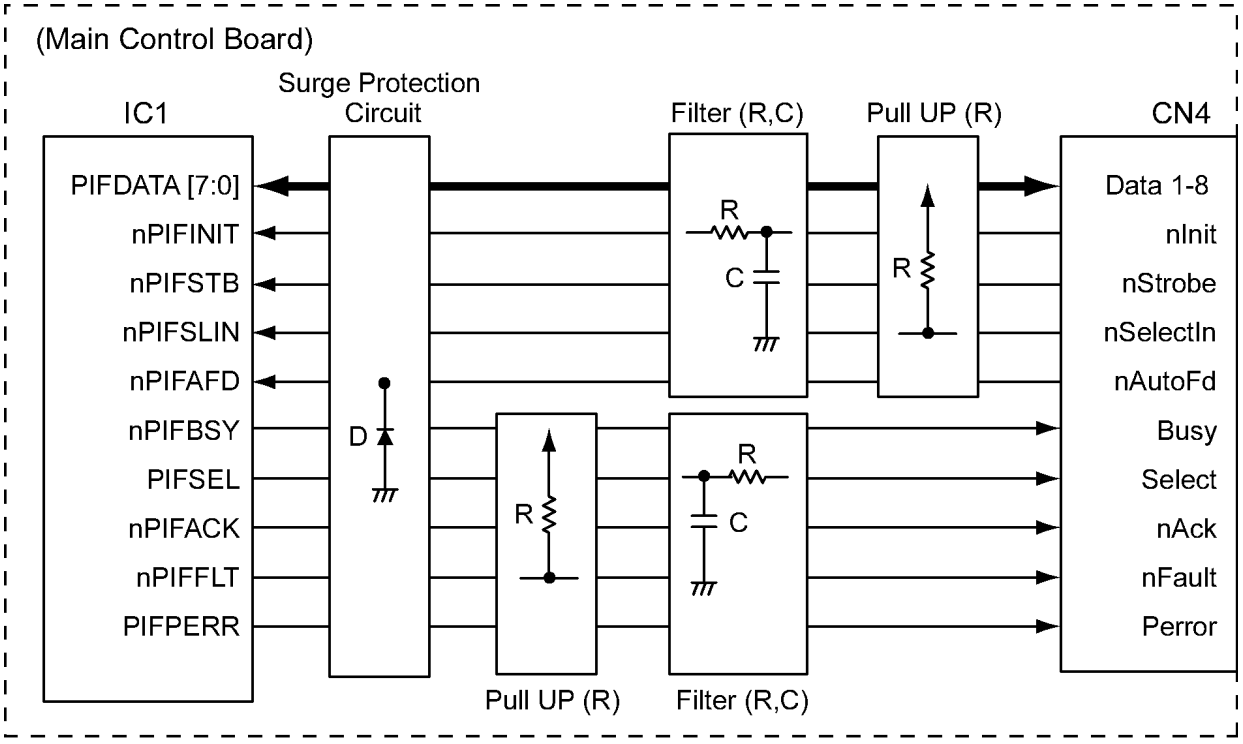
## 4.5.5.7. Parallel I/F

Data are received and transmitted by the IEEE1284 controller contained in IC1 between the host computer and the IEEE1284 I/F.

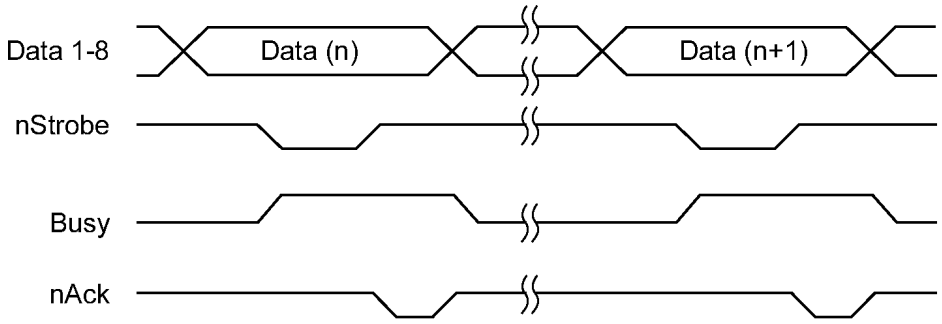
The data and control lines used in conformance to the IEEE1284 standard are connected to the IC1 through the filter composed of a resistor and a capacitor, as shown in the figure below.

A diode for surge protection and a Pull UP resistor are connected to each signal line. The voltage level between the IC1 and the connector is 5V.

The data and the timing of the control lines in the compatible mode are shown as an example of a timing chart below.




Compatible mode Timing Chart

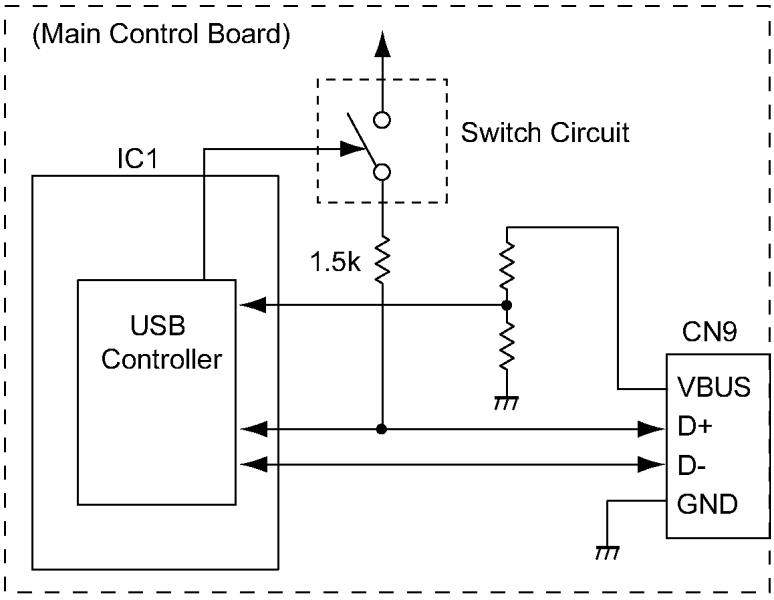


## 4.5.5.8. USB I/F

USB (Universal Serial Bus) I/F is composed of IC1 built-in USB Controller.

The USB controller is a USB 1.1 compliant device controller, that supports Full-speed (12Mbps). This controller includes USB serial Interface engine, USB transceiver, FIFOs, control/status registers and Interface circuit for built-in CPU.Supported transfer modes are control transfer and bulk transfer. The connection of IC1 and USB connector (CN9) is shown below.

USB data receive process is following. IC1 receives data from host and USB controller analyze an attribute of the data. If it is a control command, the controller sends corresponding data back. If it is a print data, it is stored in FIFO. Afterthat, USB controller reports CPU to receive a data with an interrupt. If the data is a print data, USB controller reads data from FIFO and transfers to system memory with internal DMA controller.

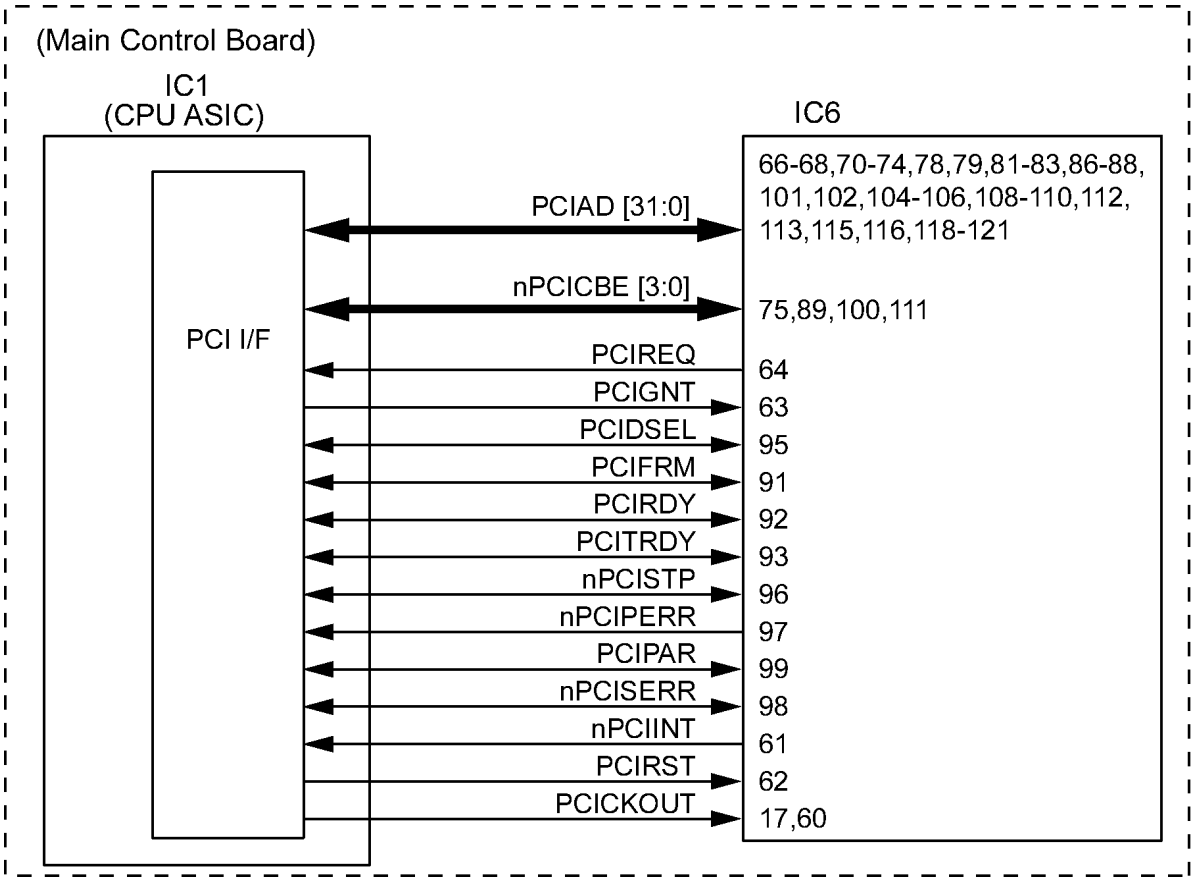


## 4.5.5.9. PCI I/F

The CPU ASIC (IC1) integrates a PCI Bus interface. The PCI I/F is the basic macro in CPU ASIC (IC1) for controlling the Mac&Phy (IC6) that is a single-chip 10/100 Mb/s, via the PCI bus.

The control signals of the PCI I/F are as follows.

| | |
|---|---|
| PCIAD [31:0]: | These signals constitute the external Multiplexed address and data PCI bus. |
| nPCICBE [3:0]: | During the address phase these signals define the “bus command”. During the data phase these pins indicate which byte lanes contain valid data. |
| PCIREQ: | This signal indicates that the IC6 requests the ownership of the bus to the CPU ASIC (IC1). |
| PCIGNT: | This signal indicates that the CPU ASIC (IC 1) grants ownership of the bus to the IC6. |
| PCIFRM: | This signal indicates the beginning and duration of a bus transaction. |
| PCIDSEL: | This signal is the PCI Bus ID select signal. |
| PCIRDY: | This signal indicates to be ready to complete the current data phase transaction. |
| PCITRDY: | This signal indicates to be ready to complete the current data phase transaction. |
| nPCISTP: | This signal indicates to request to stop the current transaction. |
| nPCIPERR: | This signal indicates a parity error. |
| PCIPAR: | This signal indicates even parity across PCIAD[31-0] and nPCICBE[3-0]. |
| nPCISERR: | This signal is asserted low during address parity errors and system errors. |
| nPCIINT: | This signal is asserted low when an interrupt condition occurs. |
| PCIRST: | This signal is the PCI Bus Reset signal. |
| PCICKOUT: | This signal is the PCI Bus clock which provides timing for all bus phases. |



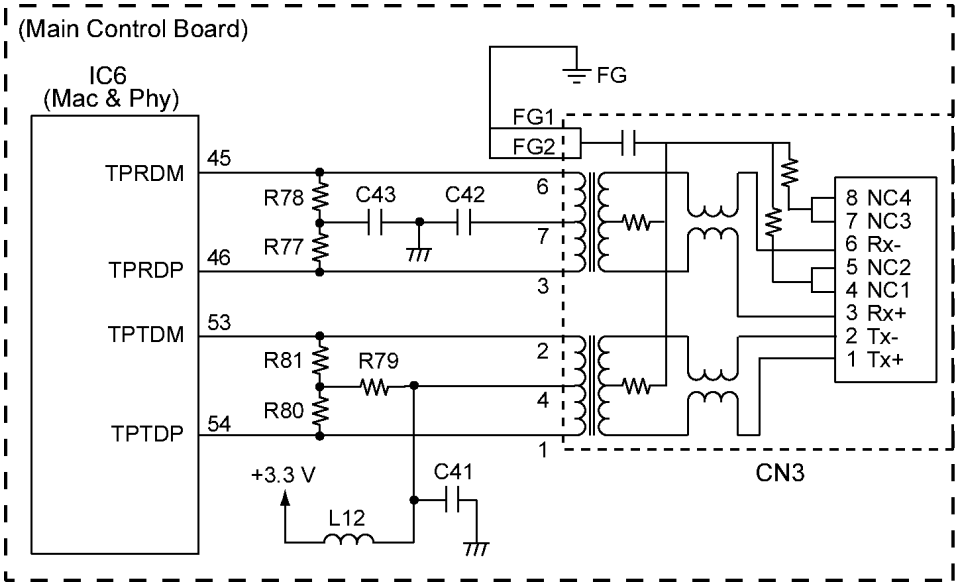
### 4.5.5.10. Network I/F ( only for KX-P7110 )

The Network I/F is composed of the Mac&Phy (IC6) that is a single-chip 10/100 Mb/s Ethernet Controller. The Mac&Phy has a full featured physical layer device with integrated PMD (Physical Medium Dependent)sub-layers to support both 10BASE-T and 100BASE-TX Ethernet protocols.

The control signals of the Network I/F are as follows.

TPRDM, TPRDP: Receive Data;
Differential common input buffer. This differential common input can be configured to accept either 100BASE-TX or 10BASE-T signaling.

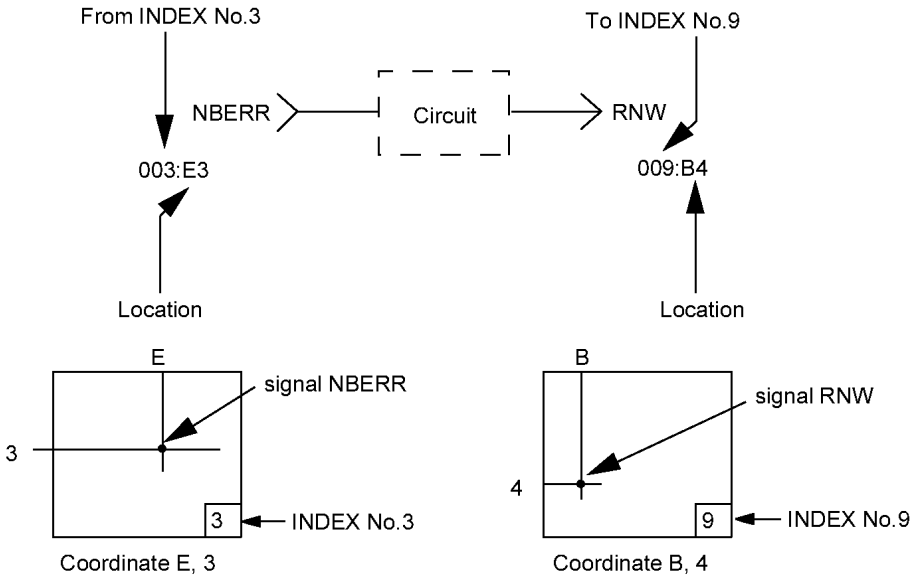
TPTDM, TPTDP: Transmit Data;
Differential common output driver. This differential common output is configurable to either 10BASE-T or 100BASE-Txsignaling.



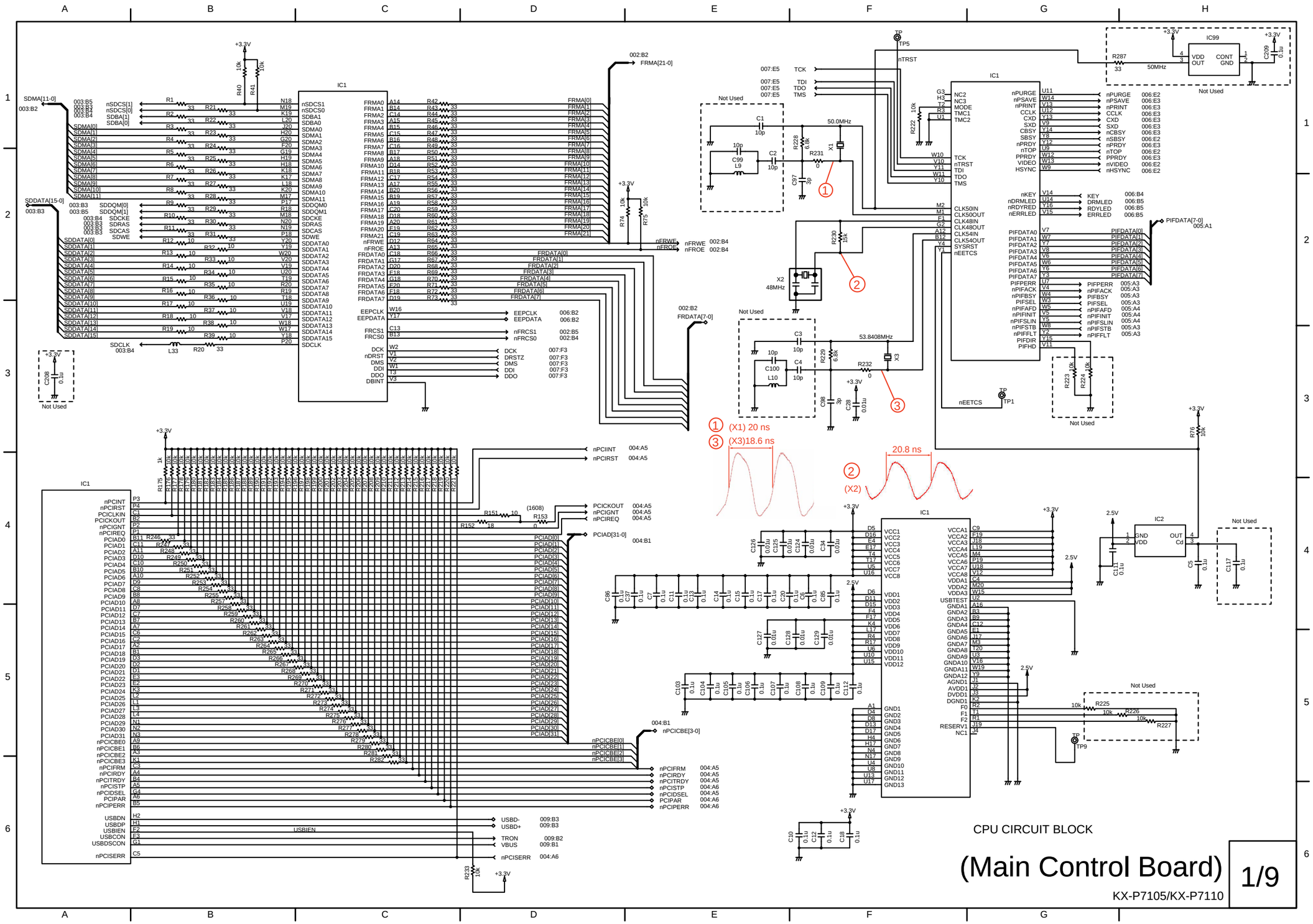

# 5 Schematic Diagram

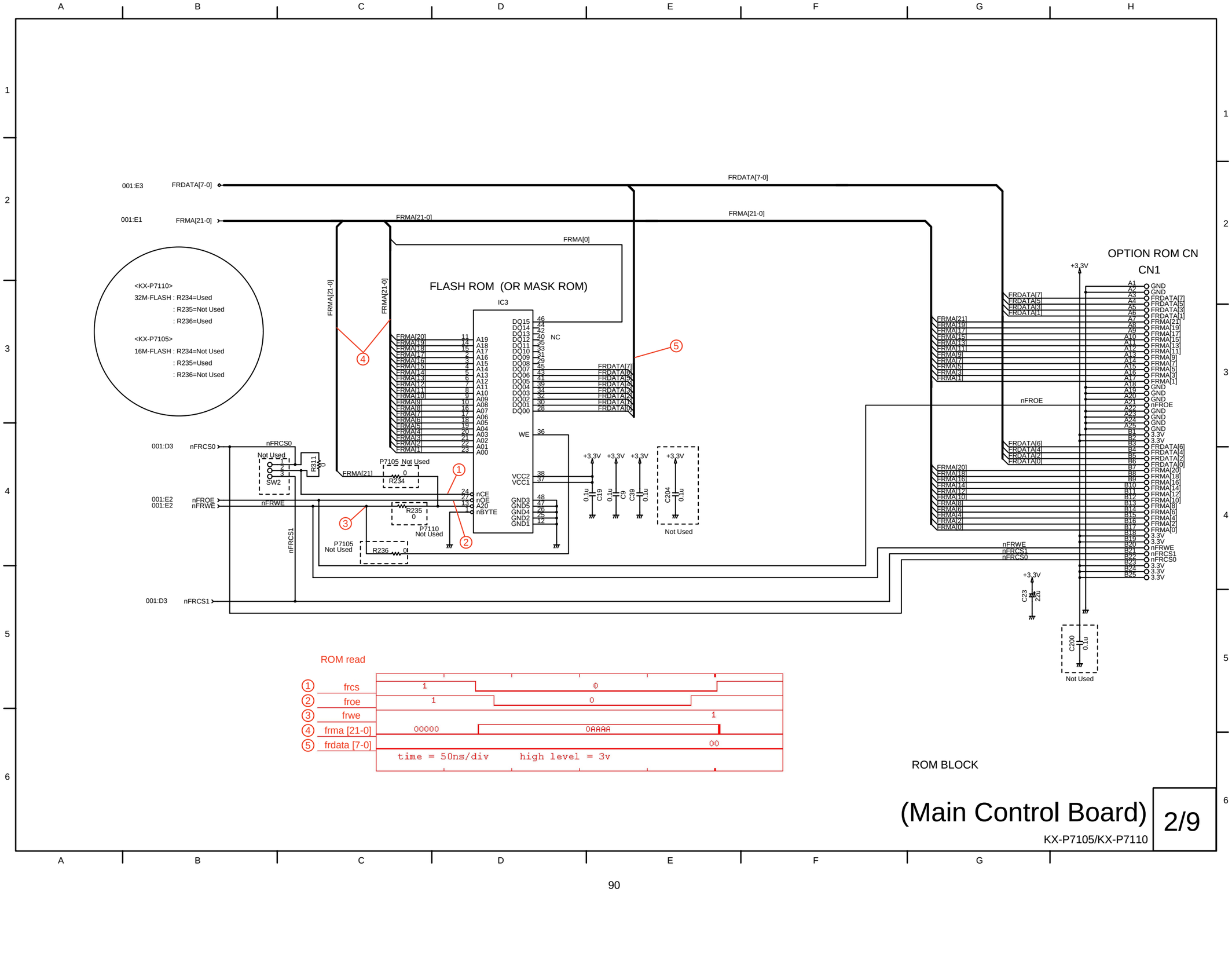
Individual circuit diagrams are used in this section for ease of explanation. When a signal or circuit involves more than one diagram, a code number provides easy location of the continued circuit. This number indicatesthe schematic number and location coordinates, as shown in the following examples:

003:E3=Schematic No.3 Coordinates E3
009:B4=Schematic No.9 Coordinates B4

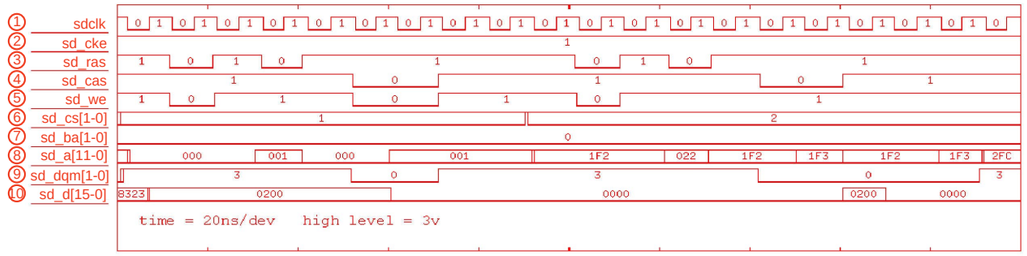


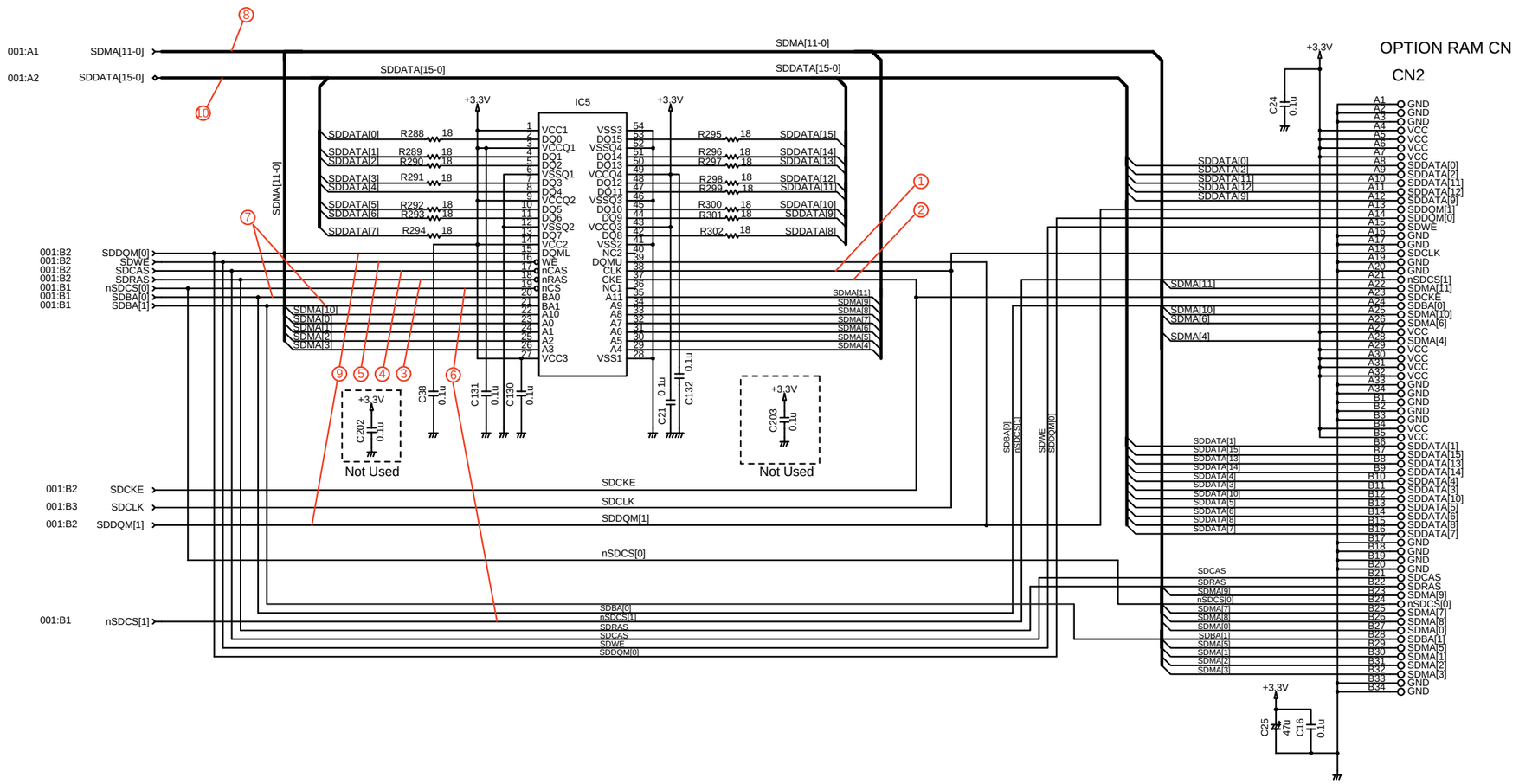
# 5.1. Main Control Board




FRDATA[7-0]
FRMA[21-0]
FRMA[0]
001:E3
001:E1
<KX-P7110>
32M-FLASH : R234=Used
: R235=Not Used
: R236=Used
<KX-P7105>
16M-FLASH : R234=Not Used
: R235=Used
: R236=Not Used
FLASH ROM (OR MASK ROM)
IC3
NC
WE
nCE
nOE
A20
nBYTE
VCC2
VCC1
GND3
GND5
GND4
GND2
GND1
001:D3
nFRCS0
Not Used
SW2
R311
0
P7105 Not Used
R234
0
001:E2
nFROE
nFRWE
R235
0
P7110
Not Used
P7105
Not Used
R236
0
nFRCS1
001:D3
nFRCS1
+3,3V
0.1u
C19
C9
C39
C204
Not Used
OPTION ROM CN
CN1
nFROE
nFRWE
nFRCS1
nFRCS0
C23
22u
C200
0.1u
Not Used
ROM read
frcs
froe
frwe
frma [21-0]
frdata [7-0]
time = 50ns/div
high level = 3v
ROM BLOCK
(Main Control Board)
KX-P7105/KX-P7110
2/9

SDRAM

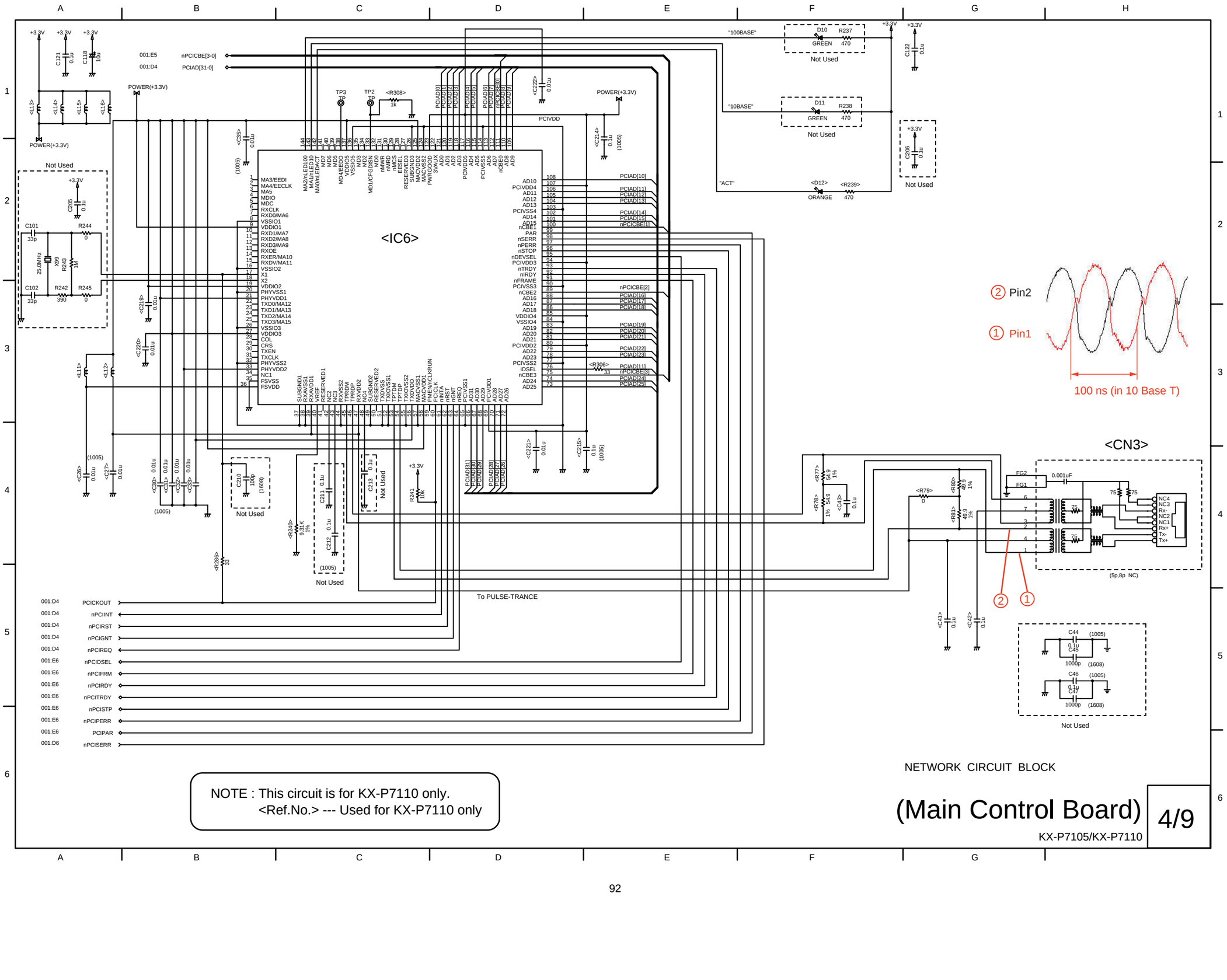


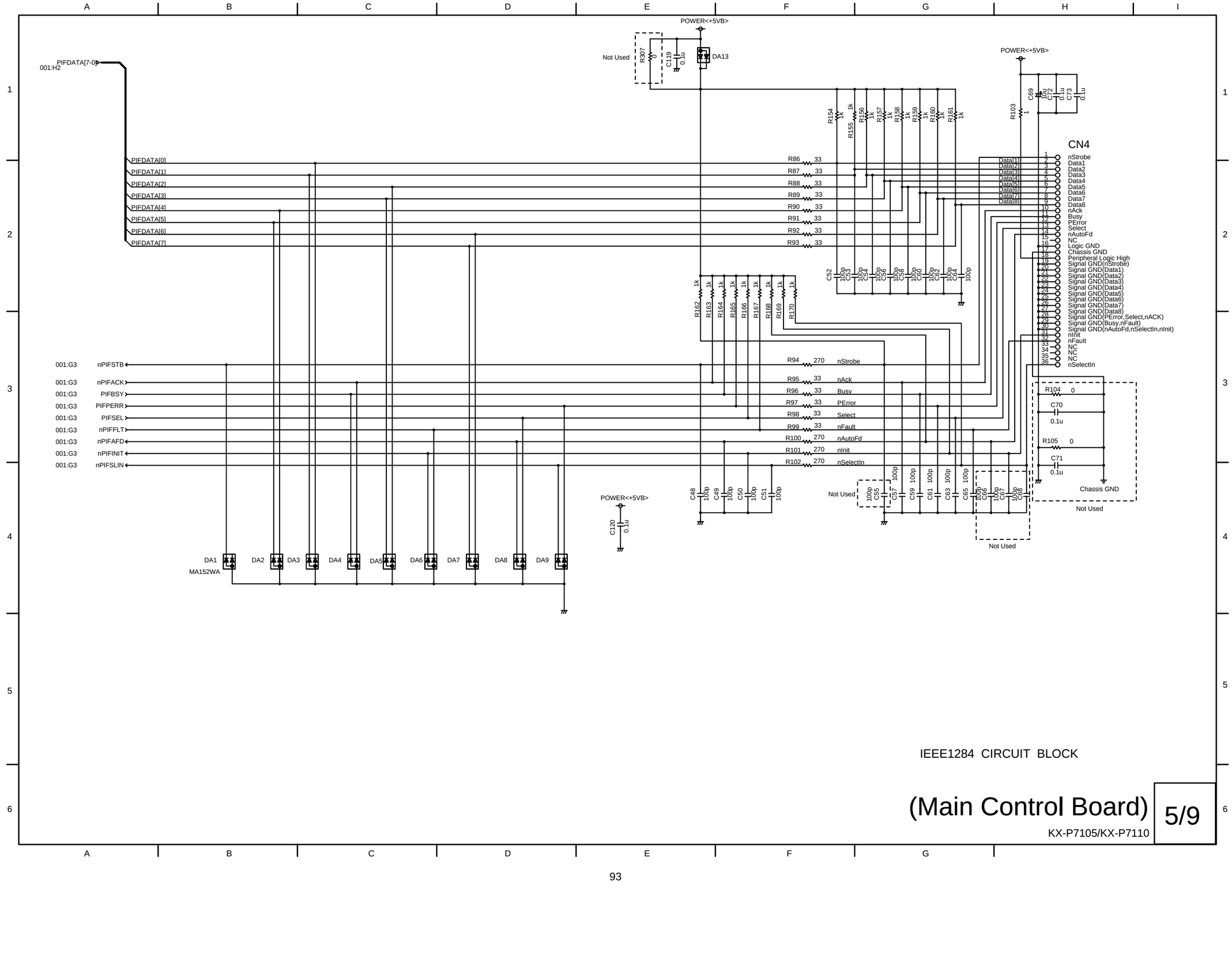




(Main Control Board)

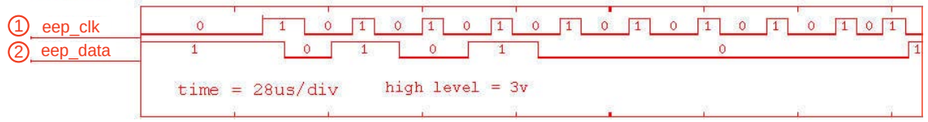
KX-P7105/KX-P7110

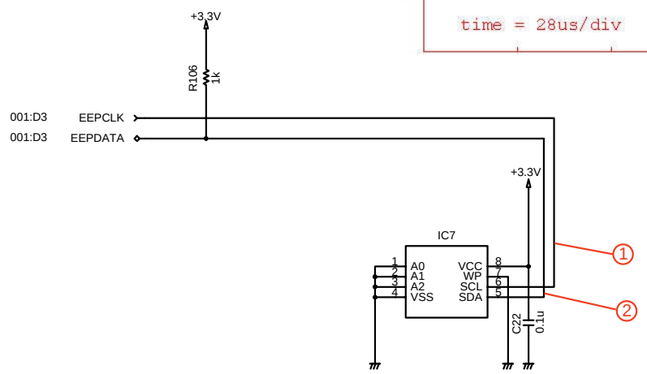
3/9

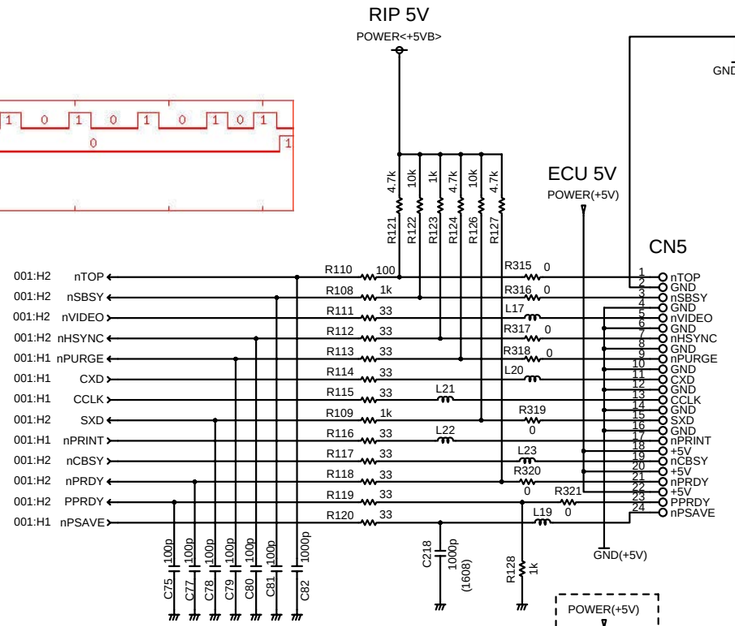

<IC6>
<CN3>
"100BASE"
"10BASE"
"ACT"
D10 R237 GREEN 470
D11 R238 GREEN 470
D12 R239 ORANGE 470
Not Used
POWER(+3.3V)
PCIVDD
001:E5 nPCICBE[3-0]
001:D4 PCIAD[31-0]
To PULSE-TRANCE
Pin2
Pin1
100 ns (in 10 Base T)
NETWORK CIRCUIT BLOCK
NOTE : This circuit is for KX-P7110 only.
<Ref.No.> --- Used for KX-P7110
(Main Control Board)
KX-P7105/KX-P7110
4/9


POWER<+5VB>
Not Used
R307
C119
0.1u
DA13
001:H2
PIFDATA[7-0]
PIFDATA[0]
PIFDATA[1]
PIFDATA[2]
PIFDATA[3]
PIFDATA[4]
PIFDATA[5]
PIFDATA[6]
PIFDATA[7]
R86 33
R87 33
R88 33
R89 33
R90 33
R91 33
R92 33
R93 33
R154 1k
R155 1k
R156 1k
R157 1k
R158 1k
R159 1k
R160 1k
R161 1k
R162 1k
R163 1k
R164 1k
R165 1k
R166 1k
R167 1k
R168 1k
R169 1k
R170 1k
C52 100p
C53 100p
C54 100p
C55 100p
C56 100p
C58 100p
C60 100p
C62 100p
C64 100p
C66 100p
R103 1
C69 100u
C72 0.1u
C73 0.1u
CN4
nStrobe
Data1
Data2
Data3
Data4
Data5
Data6
Data7
Data8
nAck
Busy
PError
Select
nAutoFd
NC
Logic GND
Chassis GND
Peripheral Logic High
Signal GND(nStrobe)
Signal GND(Data1)
Signal GND(Data2)
Signal GND(Data3)
Signal GND(Data4)
Signal GND(Data5)
Signal GND(Data6)
Signal GND(Data7)
Signal GND(Data8)
Signal GND(PError,Select,nACK)
Signal GND(Busy,nFault)
Signal GND(nAutoFd,nSelectIn,nInit)
nInit
nFault
NC
NC
NC
nSelectIn
001:G3 nPIFSTB
001:G3 nPIFACK
001:G3 PIFBSY
001:G3 PIFPERR
001:G3 PIFSEL
001:G3 nPIFFLT
001:G3 nPIFAFD
001:G3 nPIFINIT
001:G3 nPIFSLIN
R94 270 nStrobe
R95 33 nAck
R96 33 Busy
R97 33 PError
R98 33 Select
R99 33 nFault
R100 270 nAutoFd
R101 270 nInit
R102 270 nSelectIn
R104 0
C70 0.1u
R105 0
C71 0.1u
Chassis GND
Not Used
C48 100p
C49 100p
C50 100p
C51 100p
Not Used
C55 100p
C57 100p
C59 100p
C61 100p
C63 100p
C65 100p
C67 100p
C68 100p
Not Used
POWER<+5VB>
C120 0.1u
DA1
MA152WA
DA2
DA3
DA4
DA5
DA6
DA7
DA8
DA9
IEEE1284 CIRCUIT BLOCK
(Main Control Board)
KX-P7105/KX-P7110
5/9

EEPROM



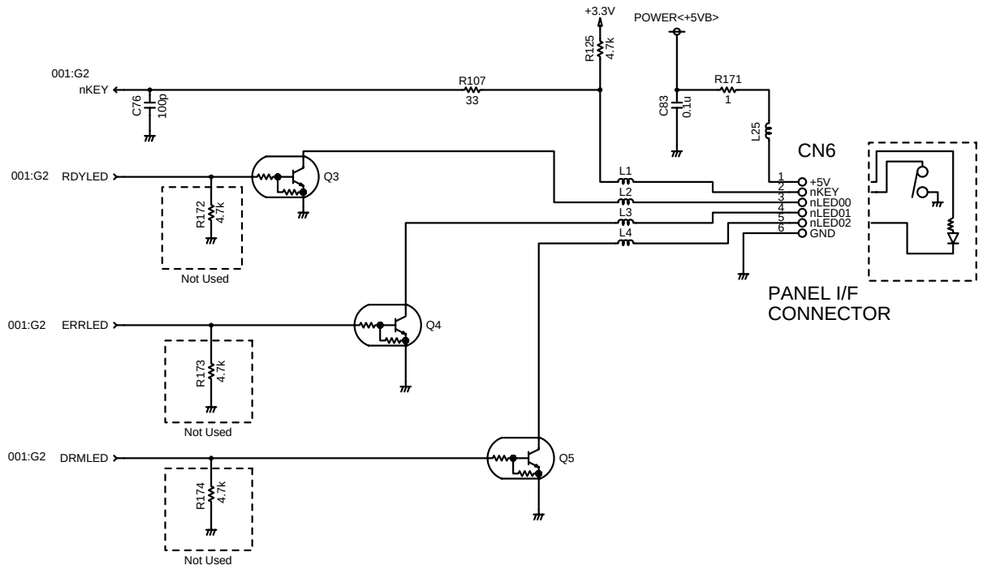




CN5

ENGINE I/F CONNECTOR

1 nTOP
2 GND
3 nSBSY
4 GND
5 nVIDEO
6 GND
7 nHSYNC
8 GND
9 nPURGE
10 GND
11 CXD
12 GND
13 CCLK
14 GND
15 SXD
16 GND
17 nPRINT
18 +5V
19 nCBSY
20 +5V
21 nPRDY
22 +5V
23 PPRDY
24 nPSAVE




ENGINE I/F, EEPROM, PANEL I/F CIRCUIT BLOCK

(Main Control Board)

KX-P7105/KX-P7110

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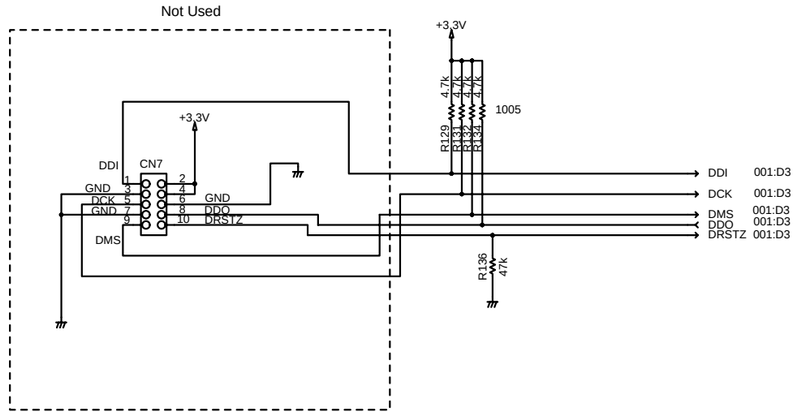
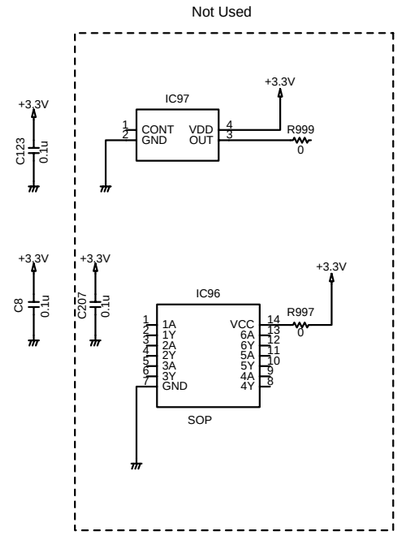
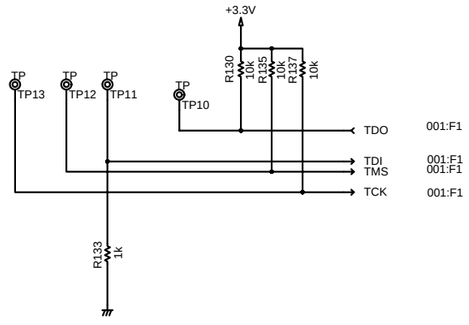
## ICE CONNECTOR




## JTAG




CPU ICE & JTAG CIRCUIT BLOCK

(Main Control Board) 7/9

KX-P7105/KX-P7110

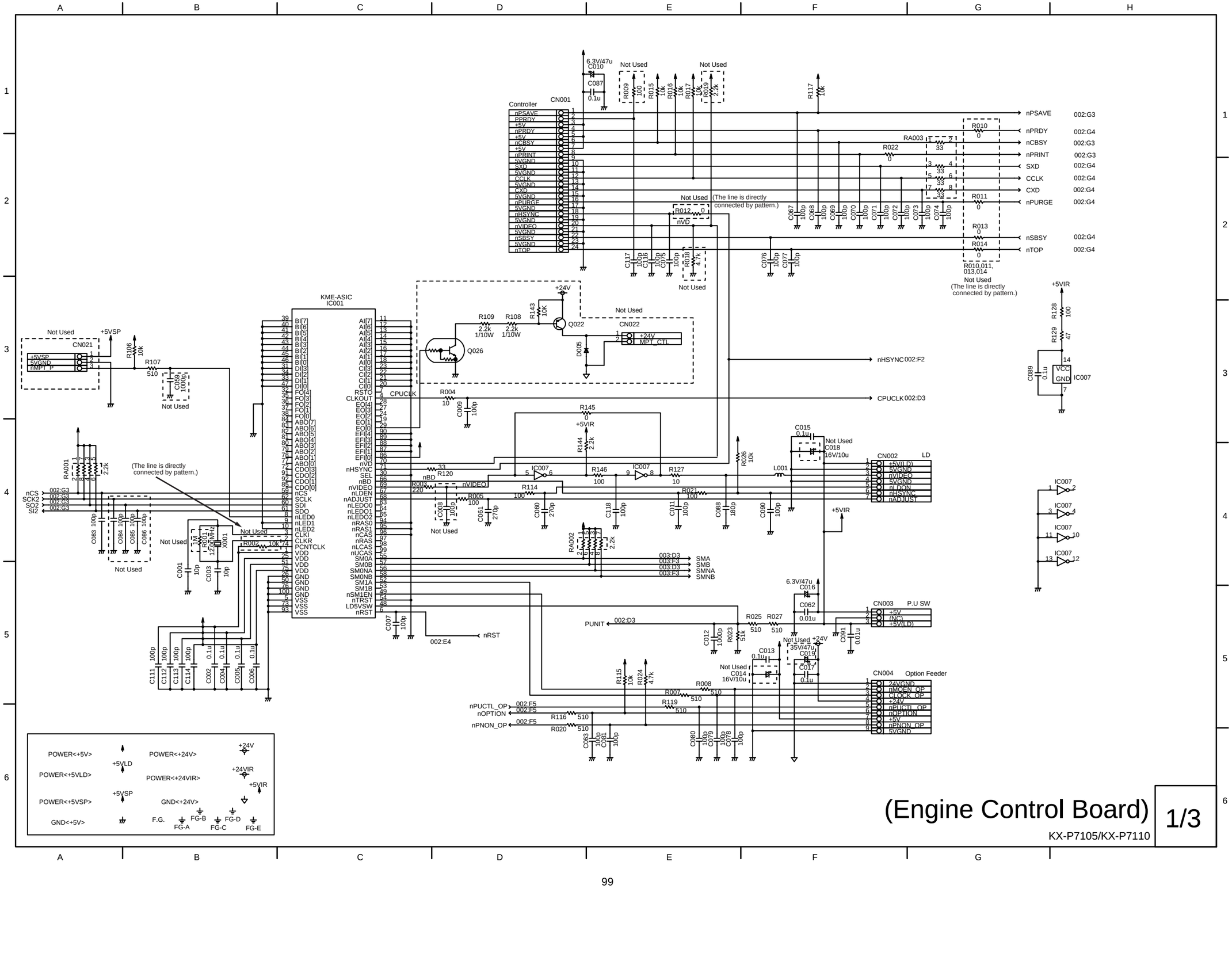
POWER(+5V)
FROM ECU 5V
C216
6800p
GND(+5V)
Not Used
L18
B1
NC
B2
A1
A2
GND(+5V)
FROM ECU GND
RIP PCB GND
L24
POWER<+5VB>
C87
470u
C88
0.1u
C135
0.1u
Not Used
RIP PCB 5V
TP
TP6
Not Used
D2
IC10
IN1
NC
IN2
CTL
VOUT2
VOUT1
GND2
GND1
C89
470u
C91
0.1u
TP
TP7
+3.3V
C36
0.01u
470u
Not Used
C74
0.1u
Not Used
D3
IC13
IN
GND
OUT
R313
C136
22u
R314
C223
0.1u
C92
0.1u
C133
0.1u
C90
470u
TP
TP8
2.5V
C217
0.015u
C94
47u
Not Used
C110
0.1u
IC12
Vin
ON/OFF
GND
Vout
NC
R312
6.8k
C134
0.1u
Not Used
C114
0.1u
R303
0
C115
0.1u
R304
0
C116
0.1u
R305
0
Not Used
+3.3V
C201
0.1u
Power Regulator Circuit
(Main Control Board)
KX-P7105/KX-P7110
8/9

USB CIRCUIT BLOCK

(Main Control Board) 9/9

KX-P7105/KX-P7110

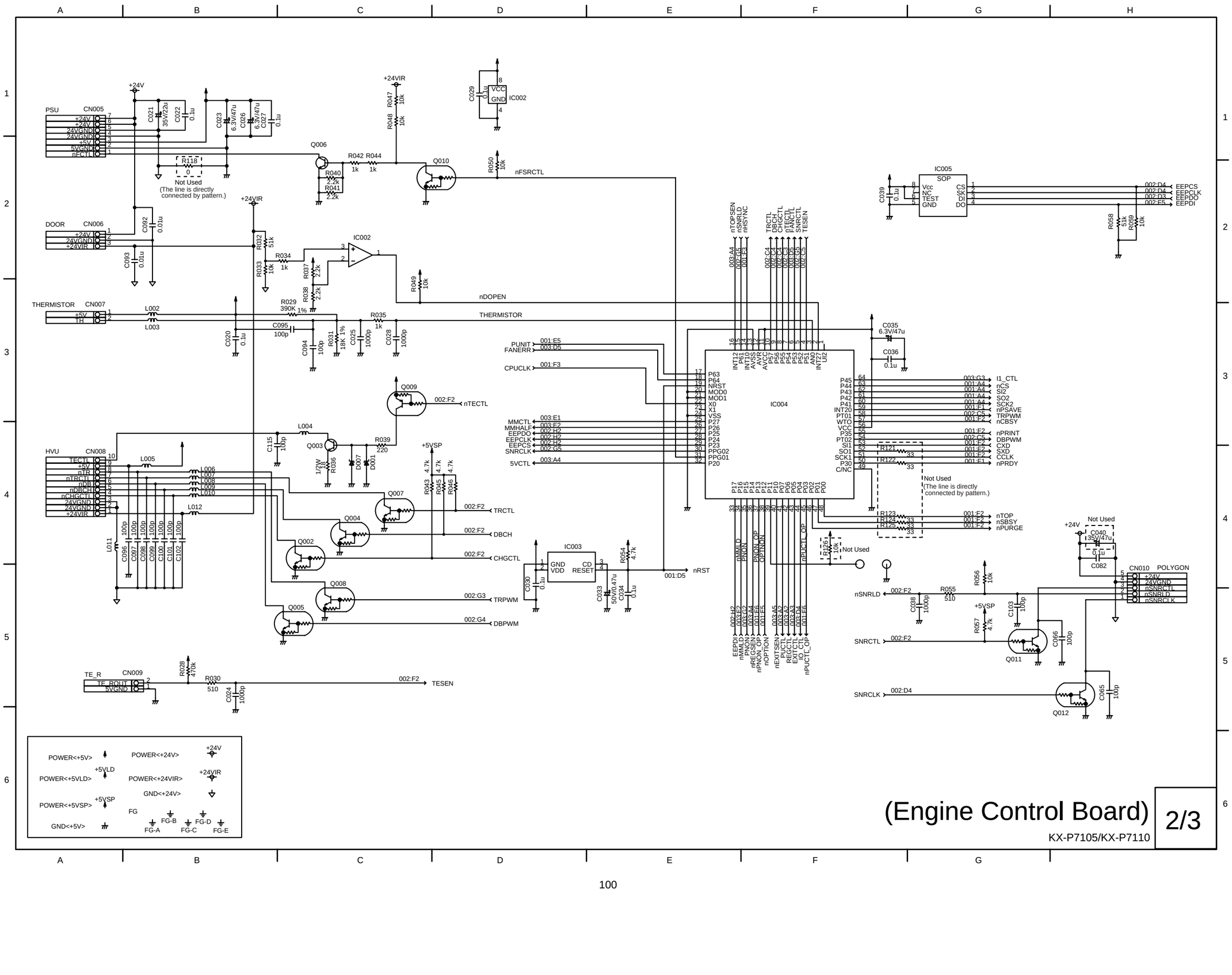
## 5.2. Engine Control Board




# (Engine Control Board)

KX-P7105/KX-P7110

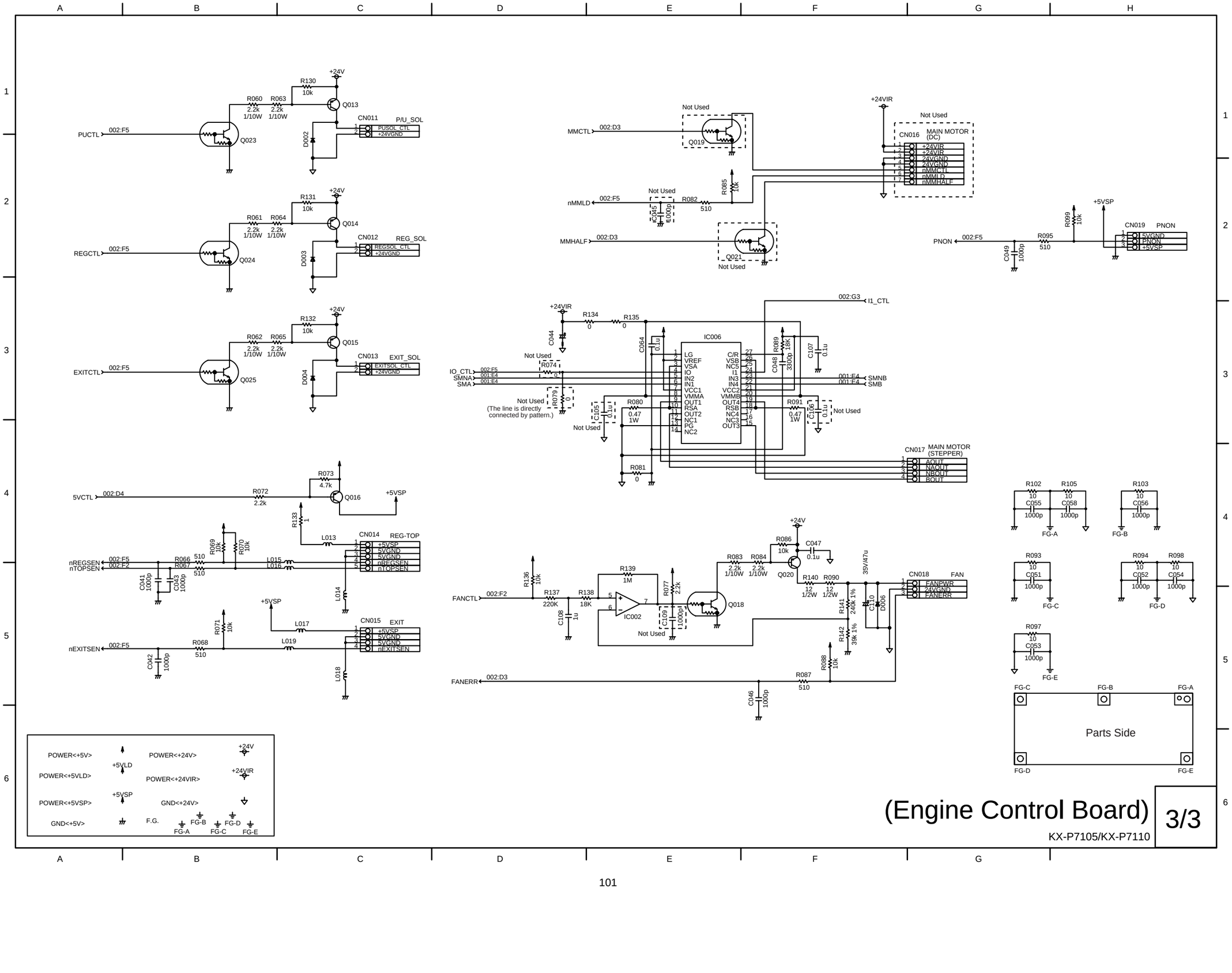
1/3




# (Engine Control Board)

KX-P7105/KX-P7110

2/3



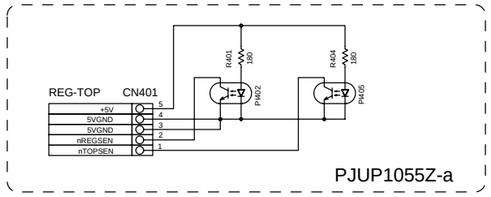

# (Engine Control Board)

KX-P7105/KX-P7110

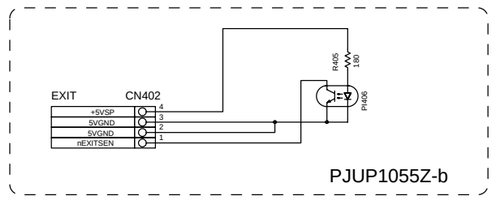
3/3

## 5.3. Sensors, Indicator and Relay Boards

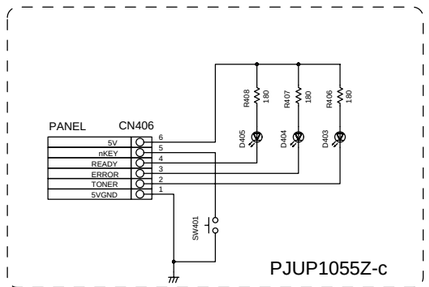
JAM SENSOR(REGISTRATION,TOP)



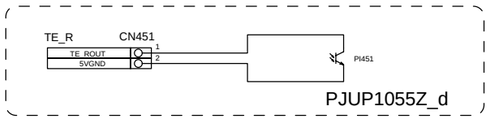

JAM SENSOR(EXIT)




INDICATOR

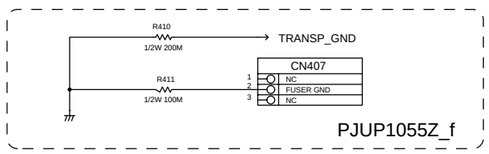



TONER EMPTY SENSOR(R)




RESISTOR RELAY PCB a


RESISTOR RELAY PCB b



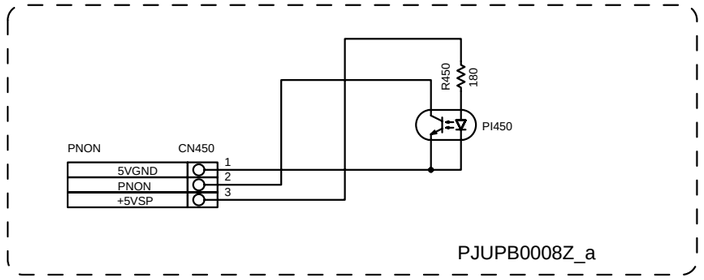

(Sensors, Indicator and Relay Boards)

KX-P7105/KX-P7110

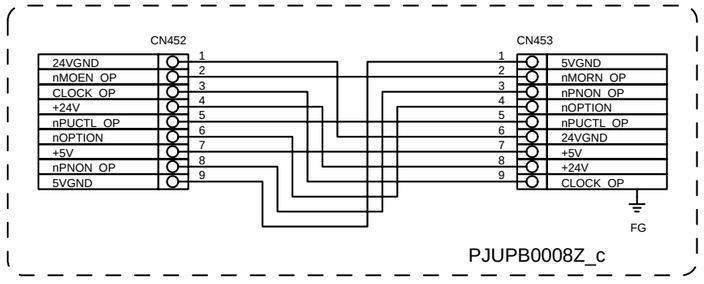
1/1

## 5.4. Paper Empty Sensor Board and 2nd Feeder I / F Board

Paper Empty Sensor Board




2nd Feeder I/F Board




(Paper Empty Sensor Board, 2nd Feeder I/F Board)

KX-P7105/KX-P7110

1/1

# 6 Explanation of Connectors

## 6.1. Main Control Board

### 6.1.1. CN1 ( Optional PostScript Upgrade Kit I / F Connector )

CN1 (Optional PostScript Upgrade Kit I/F Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| A1 | GND | Ground | --- |
| A2 | GND | Ground | --- |
| A3 | FRDATA[7] | ROM Data 7 | IN/OUT |
| A4 | FRDATA[5] | ROM Data 5 | IN/OUT |
| A5 | FRDATA[3] | ROM Data 3 | IN/OUT |
| A6 | FRDATA[1] | ROM Data 1 | IN/OUT |
| A7 | FRMA[21] | ROM Address 21 | OUT |
| A8 | FRMA[19] | ROM Address 19 | OUT |
| A9 | FRMA[17] | ROM Address 17 | OUT |
| A10 | FRMA[15] | ROM Address 15 | OUT |
| A11 | FRMA[13] | ROM Address 13 | OUT |
| A12 | FRMA[11] | ROM Address 11 | OUT |
| A13 | FRMA[9] | ROM Address 9 | OUT |
| A14 | FRMA[7] | ROM Address 7 | OUT |
| A15 | FRMA[5] | ROM Address 5 | OUT |
| A16 | FRMA[3] | ROM Address 3 | OUT |
| A17 | FRMA[1] | ROM Address 1 | OUT |
| A18 | GND | Ground | --- |
| A19 | GND | Ground | --- |
| A20 | NC | N.C. | --- |
| A21 | nFROE | ROM Output Enable | OUT |
| A22 | NC | N.C. | --- |
| A23 | NC | N.C. | --- |
| A24 | GND | Ground | --- |
| A25 | GND | Ground | --- |
| B1 | 3.3V | +3.3V | --- |
| B2 | 3.3V | +3.3V | --- |
| B3 | FRDATA[6] | ROM Data 6 | IN/OUT |
| B4 | FRDATA[4] | ROM Data 4 | IN/OUT |
| B5 | FRDATA[2] | ROM Data 2 | IN/OUT |
| B6 | FRDATA[0] | ROM Data 0 | IN/OUT |
| B7 | FRMA[20] | ROM Address 20 | OUT |
| B8 | FRMA[18] | ROM Address 18 | OUT |
| B9 | FRMA[16] | ROM Address 16 | OUT |
| B10 | FRMA[14] | ROM Address 14 | OUT |
| B11 | FRMA[12] | ROM Address 12 | OUT |
| B12 | FRMA[10] | ROM Address 10 | OUT |
| B13 | FRMA[8] | ROM Address 8 | OUT |
| B14 | FRMA[6] | ROM Address 6 | OUT |
| B15 | FRMA[4] | ROM Address 4 | OUT |
| B16 | FRMA[2] | ROM Address 2 | OUT |
| B17 | FRMA[0] | ROM Address 0 | OUT |
| B18 | 3.3V | +3.3V | --- |
| B19 | 3.3V | +3.3V | --- |
| B20 | nFRWE | Flash ROM Write Enable | OUT |
| B21 | nFRCS1 | ROM Chip Select 1 | OUT |
| B22 | NC | N.C. | --- |
| B23 | NC | N.C. | --- |
| B24 | 3.3V | +3.3V | --- |
| B25 | 3.3V | +3.3V | --- |

### 6.1.2. CN2 ( Optional RAM Connector )

## CN2 (Optional RAM Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| A1 | GND | Ground | --- |
| A2 | GND | Ground | --- |
| A3 | GND | Ground | --- |
| A4 | VCC | +3.3V | --- |
| A5 | VCC | +3.3V | --- |
| A6 | VCC | +3.3V | --- |
| A7 | VCC | +3.3V | --- |
| A8 | SDDATA[0] | SDRAM Data 0 | IN/OUT |
| A9 | SDDATA[2] | SDRAM Data 2 | IN/OUT |
| A10 | SDDATA[11] | SDRAM Data 11 | IN/OUT |
| A11 | SDDATA[12] | SDRAM Data 12 | IN/OUT |
| A12 | SDDATA[9] | SDRAM Data 9 | IN/OUT |
| A13 | SDDQM[1] | SDRAM Data Mask 1 | IN/OUT |
| A14 | SDDQM[0] | SDRAM Data Mask 0 | IN/OUT |
| A15 | SDWE | SDRAM Write Enable | OUT |
| A16 | GND | Ground | --- |
| A17 | GND | Ground | --- |
| A18 | SDCLK | SDRAM Clock | OUT |
| A19 | GND | Ground | --- |
| A20 | GND | Ground | --- |
| A21 | nSDCS[1] | SDRAM Chip Select 1 | OUT |
| A22 | SDMA[11] | SDRAM Address 11 | OUT |
| A23 | SDCKE | SDRAM Clock Enable | OUT |
| A24 | SDBA[0] | SDRAM Bank Address 0 | OUT |
| A25 | SDMA[10] | SDRAM Address 10 | OUT |
| A26 | SDMA[6] | SDRAM Address 6 | OUT |
| A27 | VCC | +3.3V | --- |
| A28 | SDMA[4] | SDRAM Address 4 | OUT |
| A29 | VCC | +3.3V | --- |
| A30 | VCC | +3.3V | --- |
| A31 | VCC | +3.3V | --- |
| A32 | VCC | +3.3V | --- |
| A33 | GND | Ground | --- |
| A34 | GND | Ground | --- |
| B1 | GND | Ground | --- |
| B2 | GND | Ground | --- |
| B3 | GND | Ground | --- |
| B4 | VCC | +3.3V | --- |
| B5 | VCC | +3.3V | --- |
| B6 | SDDATA[1] | SDRAM Data 1 | IN/OUT |
| B7 | SDDATA[15] | SDRAM Data 15 | IN/OUT |
| B8 | SDDATA[13] | SDRAM Data 13 | IN/OUT |
| B9 | SDDATA[14] | SDRAM Data 14 | IN/OUT |
| B10 | SDDATA[4] | SDRAM Data 4 | IN/OUT |

CN2

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| B11 | SDDATA[3] | SDRAM Data 3 | IN/OUT |
| B12 | SDDATA[10] | SDRAM Data 10 | IN/OUT |
| B13 | SDDATA[5] | SDRAM Data 5 | IN/OUT |
| B14 | SDDATA[6] | SDRAM Data 6 | IN/OUT |
| B15 | SDDATA[8] | SDRAM Data 8 | IN/OUT |
| B16 | SDDATA[7] | SDRAM Data 7 | IN/OUT |
| B17 | GND | Ground | --- |
| B18 | GND | Ground | --- |
| B19 | GND | Ground | --- |
| B20 | GND | Ground | --- |
| B21 | SDCAS | SDRAM Column Address Strobe | OUT |
| B22 | SDRAS | SDRAM Raw Address Strobe | OUT |
| B23 | SDMA[9] | SDRAM Address 9 | OUT |
| B24 | nSDCS[0] | N.C. | OUT |
| B25 | SDMA[7] | SDRAM Address 7 | OUT |
| B26 | SDMA[8] | SDRAM Address 8 | OUT |
| B27 | SDMA[0] | SDRAM Address 0 | OUT |
| B28 | SDBA[1] | SDRAM Bank Address 1 | OUT |
| B29 | SDMA[1] | SDRAM Address 1 | OUT |
| B30 | SDMA[5] | SDRAM Address 5 | OUT |
| B31 | SDMA[3] | SDRAM Address 3 | OUT |
| B32 | SDMA[2] | SDRAM Address 2 | OUT |
| B33 | GND | Ground | --- |
| B34 | GND | Ground | --- |

### 6.1.3. CN3 ( Network Connector )

CN3 (Network Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | Tx+ | Transmit Differential Data+ | OUT |
| 2 | Tx- | Transmit Differential Data- | OUT |
| 3 | Rx+ | Receive Differential Data+ | IN |
| 4 | FG | Frame Ground | --- |
| 5 | NC | N.C. | --- |
| 6 | Rx- | Transmit Differential Data- | IN |
| 7 | FG | Frame Ground | --- |
| 8 | NC | N.C. | --- |

### 6.1.4. CN4 ( IEEE 1284 I / F Connector )

CN4 (IEEE 1284 I/F Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nStrobe | Strobe | IN |
| 2 | Data 1 | Data 1 | IN / OUT |
| 3 | Data 2 | Data 2 | IN / OUT |
| 4 | Data 3 | Data 3 | IN / OUT |
| 5 | Data 4 | Data 4 | IN / OUT |
| 6 | Data 5 | Data 5 | IN / OUT |
| 7 | Data 6 | Data 6 | IN / OUT |
| 8 | Data 7 | Data 7 | IN / OUT |
| 9 | Data 8 | Data 8 | IN / OUT |
| 10 | nAck | Acknowledge | OUT |
| 11 | Busy | Busy | OUT |
| 12 | PError | Paper Error | OUT |
| 13 | Select | Select | OUT |
| 14 | nAutoFd | Autofeed | IN |
| 15 | NC | N.C. | --- |
| 16 | Logic GND | Signal Ground | --- |
| 17 | Chassis GND | Frame Ground | --- |
| 18 | Peripheral Logic High | +5V | --- |
| 19 | Signal GND | Signal Ground | --- |
| 20 | Signal GND | Signal Ground | --- |
| 21 | Signal GND | Signal Ground | --- |
| 22 | Signal GND | Signal Ground | --- |
| 23 | Signal GND | Signal Ground | --- |
| 24 | Signal GND | Signal Ground | --- |
| 25 | Signal GND | Signal Ground | --- |
| 26 | Signal GND | Signal Ground | --- |
| 27 | Signal GND | Signal Ground | --- |
| 28 | Signal GND | Signal Ground | --- |
| 29 | Signal GND | Signal Ground | --- |
| 30 | Signal GND | Signal Ground | --- |
| 31 | nInit | Initiative | IN |
| 32 | nFault | Fault | OUT |
| 33 | NC | N.C. | --- |
| 34 | NC | N.C. | --- |
| 35 | NC | N.C. | --- |
| 36 | nSelect In | Select In | IN |

### 6.1.5. CN5 ( Engine I / F Connector )

CN5 (Engine I/F Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nTOP | Paper Top | IN |
| 2 | GND | Ground | --- |
| 3 | nSBSY | Status Busy | IN |
| 4 | GND | Ground | --- |
| 5 | nVIDEO | Video Data | OUT |
| 6 | GND | Ground | --- |
| 7 | nHSYNC | Horizontal Synchronization | IN |
| 8 | GND | Ground | --- |
| 9 | nPURGE | Paper Purge | IN |
| 10 | GND | Ground | --- |
| 11 | CXD | Command Serial Data | OUT |
| 12 | GND | Ground | --- |
| 13 | CCLK | Serial I/F Clock | OUT |
| 14 | GND | Ground | --- |
| 15 | SXD | Status Serial Data | IN |
| 16 | GND | Ground | --- |
| 17 | nPRINT | Print Start | OUT |
| 18 | +5V | +5V | --- |
| 19 | nCBSY | Command Busy | OUT |
| 20 | +5V | +5V | --- |
| 21 | nPRDY | Printer Ready | IN |
| 22 | +5V | +5V | --- |
| 23 | PPRDY | (not used , fixed in 0V) | IN |
| 24 | nPSAVE | Power Save | OUT |

### 6.1.6. CN6 ( Front Panel Connector )

CN6 (Front Panel Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5V | +5V | OUT |
| 2 | KEY | Key Input | IN |
| 3 | LEDO0 | Ready LED (Green) | OUT |
| 4 | LEDO1 | ERROR LED (Red) | OUT |
| 5 | LEDO2 | TONER LED (Yellow) | OUT |
| 6 | GND | Ground | --- |

### 6.1.7. CN9 ( USB I / F Connector )

CN9 (USB I/F Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | VBUS | +5V | --- |
| 2 | D- | USB Differential Data- | IN/OUT |
| 3 | D+ | USB Differential Data+ | IN/OUT |
| 4 | GND | Ground | --- |
| 5 | FG | Frame Ground | --- |
| 6 | FG | Frame Ground | --- |
| 7 | FG | Frame Ground | --- |
| 8 | FG | Frame Ground | --- |

## 6.2. Engine Control Board

### 6.2.1. CN001 ( Video Interface )

CN001 (Video Interface)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nPSAVE | Power Save | IN |
| 2 | PPRDY | (not used , fixed in 0V) | OUT |
| 3 | +5V | +5V | --- |
| 4 | nPRDY | Printer Ready | OUT |
| 5 | +5V | +5V | --- |
| 6 | nCBSY | Command Busy | IN |
| 7 | +5V | +5V | --- |
| 8 | nPRINT | Print Start | IN |
| 9 | 5VGND | GND | --- |
| 10 | SXD | Status Serial Data | OUT |
| 11 | 5VGND | GND | --- |
| 12 | CCLK | Serial I/F Clock | IN/OUT |
| 13 | 5VGND | GND | --- |
| 14 | CXD | Command Serial Data | IN |
| 15 | 5VGND | GND | --- |
| 16 | nPURGE | Paper Purge | OUT |
| 17 | 5VGND | GND | --- |
| 18 | nHSYNC | Horizontal Synchronization | OUT |
| 19 | 5VGND | GND | --- |
| 20 | nVIDEO | Video Data | IN |
| 21 | 5VGND | GND | --- |
| 22 | nSBSY | Status Busy | OUT |
| 23 | 5VGND | GND | --- |
| 24 | nTOP | Paper Top | OUT |

### 6.2.2. CN002 ( LSU Control Signals )

CN002 (LSU Control Signals)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5V (LD) | +5V thru Process Interlock SW | OUT |
| 2 | 5VGND | ------ | --- |
| 3 | nVIDEO | Video Signal | OUT |
| 4 | 5VGND | ----- | --- |
| 5 | nLDON | LD Light Enable | OUT |
| 6 | nHSYNC | Horizontal Sync Signal (BD) | IN |
| 7 | nADJUST | LSU APC timing | OUT |

### 6.2.3. CN003 ( OPC Drum Unit Interlock SW )

CN003 (OPC Drum Unit Interlock Switch)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5V | +5V | OUT |
| 2 | 5VGND | --- | --- |
| 3 | +5V (LD) | +5V thru Process Unit Interlock SW | IN |

### 6.2.4. CN004 ( 2nd Feeder )

CN004 (2nd Feeder)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 24VGND | --- | --- |
| 2 | nMOEN_OP | 2nd Feeder Motor Control | OUT |
| 3 | CLOCK_OP | CLOCK | OUT |
| 4 | +24V | +24V | OUT |
| 5 | nPUCTL_OP | 2nd Feeder Paper Pickup Control | OUT |
| 6 | nOPTION | 2nd Feeder Detection | IN |
| 7 | +5V | +5V | OUT |
| 8 | nPNON_OP | 2nd Feeder Paper Empty | IN |
| 9 | 5VGND | --- | --- |

### 6.2.5. CN005 ( PSU-MAIN Connector )

CN005 (PSU-MAIN Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nFCTL | Fuser ON/OFF Control | OUT |
| 2 | 5VGND | GND | --- |
| 3 | +5V | +5V Power Source (PSU) | IN |
| 4 | 24VGND | GND | --- |
| 5 | 24VGND | GND | --- |
| 6 | +24V | +24V Power Source (PSU) | IN |
| 7 | +24V | +24V Power Source (PSU) | IN |

### 6.2.6. CN006 ( Door + 24V Interlock SW )

CN006 (Door +24V Interlock SW)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +24V | +24V Power Source | OUT |
| 2 | 24VGND | GND | --- |
| 3 | 24VIR | 24V through Door Interlock SW | IN |

### 6.2.7. CN007 ( THERMISTOR )

CN007 (Thermistor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5V | --- | OUT |
| 2 | TH | Thermistor | IN |

### 6.2.8. CN008 ( HVU-MAIN Connector )

CN008 (HVU-MAIN Connector)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +24VIR | --- | OUT |
| 2 | 24VGND | --- | --- |
| 3 | 24VGND | --- | --- |
| 4 | nCHGCTL | Charge Control (on/off) | OUT |
| 5 | nDBCH | Developer Charge (+/- change) | OUT |
| 6 | nDB | Developer (+ voltage PWM Pulse) | OUT |
| 7 | nTRCTL | Transfer Control(+/- change) | OUT |
| 8 | nTR | Transfer (- voltage PWM Pulse) | OUT |
| 9 | +5V | --- | OUT |
| 10 | nTECTL | Toner Empty LED Control | OUT |

### 6.2.9. CN009 ( Toner Empty Sensor )

CN009 (Toner Empty Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | TE_ROUT | Toner Empty Sensor | IN |
| 2 | +5VGND | GND | --- |

### 6.2.10. CN010 ( Polygon Motor )

CN010 (Polygon Motor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nSNRCLK | Scanner Clock | OUT |
| 2 | nSNRLD | Scanner Lock | IN |
| 3 | nSNRCTL | Scanner Control | OUT |
| 4 | 24VGND | ------ | --- |
| 5 | +24V | ------ | OUT |

### 6.2.11. CN011 ( Pickup Solenoid )

CN011 (Pickup Solenoid)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | PUSOL_CTL | Pick Up Solenoid Control | OUT |
| 2 | +24VGND | ------ | --- |

### 6.2.12. CN012 ( Registration Solenoid )

CN012 (Registration Solenoid)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | REGSOL_CTL | Registration Solenoid Control | OUT |
| 2 | +24VGND | ------ | --- |

### 6.2.13. CN013 ( Switchback Solenoid )

CN013 (Switchback Solenoid)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | EXITSOL_CTL | Switchback Solenoid Control | OUT |
| 2 | +24VGND | ------ | --- |

### 6.2.14. CN014 ( REG-TOP Sensor )

CN014 (REG-TOP Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5V | +5V | OUT |
| 2 | 5VGND | GND | --- |
| 3 | 5VGND | GND | --- |
| 4 | nREGSEN | REGISTLATION Sensor | IN |
| 5 | nTOPSEN | TOP Sensor | IN |

### 6.2.15. CN015 ( EXIT Sensor )

CN015 (EXIT Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | +5VSP | +5V (Power Save Controlled) | OUT |
| 2 | 5VGND | GND | --- |
| 3 | 5VGND | GND | --- |
| 4 | nEXITSEN | EXIT Sensor | IN |

### 6.2.16. CN017 ( MAIN Motor )

CN017 (Main Motor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | AOUT | MOTOR_A | IN / OUT |
| 2 | nAOUT | MOTOR_$\overline{A}$ | IN / OUT |
| 3 | nBOUT | MOTOR_$\overline{B}$ | IN / OUT |
| 4 | BOUT | MOTOR_B | IN / OUT |

### 6.2.17. CN018 ( FAN Control )

CN018 (Fan Control)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | FANPWR | +24V Fan Power | OUT |
| 2 | 24VGND | GND | --- |
| 3 | FANERR | Fan Error Signal (H: Fan Error Occur) | IN |

### 6.2.18. CN019 ( Paper Empty Sensor )

CN019 (Paper Empty Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 5VGND | GND | --- |
| 2 | PNON | Paper Empty Sensor | OUT |
| 3 | +5VSP | +5V (Power Save Controlled) | IN |

## 6.3. Registration & Paper Top Sensor Board

### 6.3.1. CN401 ( REG-TOP Sensor )

CN401 (REG-TOP Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nTOPSEN | TOP Sensor | OUT |
| 2 | nREGSEN | Registration Sensor | OUT |
| 3 | 5VGND | GND | --- |
| 4 | 5VGND | GND | --- |
| 5 | +5V | +5V | IN |

## 6.4. Paper Exit / ADU Paper Jam Sensor Board

### 6.4.1. CN402 ( EXIT Sensor )

CN402 (EXIT Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | nEXITSEN | EXIT Sensor | OUT |
| 2 | 5VGND | GND | --- |
| 3 | 5VGND | GND | --- |
| 4 | +5VSP | +5V (Power Save Controlled) | IN |

## 6.5. Indicator Board

### 6.5.1. CN406 ( to Main Board CN6 )

CN406 (to Main Board CN6)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 5VGND | --- | --- |
| 2 | nLEDO2 | Toner/Process LED (Yellow) | IN |
| 3 | nLEDO1 | ERROR LED (Red) | IN |
| 4 | nLEDO0 | Ready LED (Green) | IN |
| 5 | nKEY | Key Input | OUT |
| 6 | +5V | --- | IN |

## 6.6. Relay Board ( B )

### 6.6.1. CN407 ( Fuser GND )

CN407 (Fuser GND)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | NC | ------ | --- |
| 2 | Fuser GND | Fuser GND | --- |
| 3 | NC | ------ | --- |

## 6.7. Paper Empty Sensor Board

### 6.7.1. CN450 ( Paper Empty Sensor )

CN450 (Paper Empty Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 5VGND | GND | --- |
| 2 | PNON | Paper Empty Sensor | OUT |
| 3 | +5VSP | +5V (Power Save Controlled) | IN |

## 6.8. Toner Empty Sensor Board

### 6.8.1. CN451 ( Toner Empty Sensor )

CN451 (Toner Empty Sensor)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | TE_ROUT | Toner Empty Sensor | OUT |
| 2 | +5VGND | GND | --- |

# 6.9. 2nd Feeder I / F Board

## 6.9.1. CN452 ( to Engine Control Board CN004 )

CN452 (to Engine Control Board CN004)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 24VGND | --- | --- |
| 2 | nMOEN_OP | 2nd Feeder Motor Control | IN |
| 3 | CLOCK_OP | CLOCK | IN |
| 4 | +24V | +24V | IN |
| 5 | nPUCTL_OP | 2nd Feeder Paper Pickup Control | IN |
| 6 | nOPTION | 2nd Feeder Detection | OUT |
| 7 | +5V | +5V | IN |
| 8 | nPNON_OP | 2nd Feeder Paper Empty | OUT |
| 9 | 5VGND | --- | --- |

## 6.9.2. CN453 ( to 2nd Feeder )

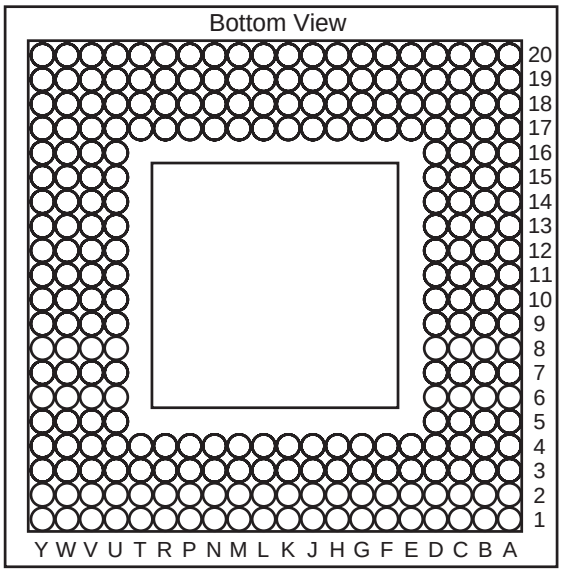
CN453 (to 2nd Feeder)

| Pin No. | Signal Name | Description | Direction |
|---|---|---|---|
| 1 | 5VGND | --- | --- |
| 2 | nMOEN_OP | 2nd Feeder Motor Control | OUT |
| 3 | nPNON_OP | 2nd Feeder Paper Empty | IN |
| 4 | nOPTION | 2nd Feeder Detection | IN |
| 5 | nPUCTL_OP | 2nd Feeder Paper Pickup Control | OUT |
| 6 | 24VGND | --- | --- |
| 7 | +5V | +5V | OUT |
| 8 | +24V | +24V | OUT |
| 9 | CLOCK_OP | CLOCK | OUT |

# 7 Component Reference Guide

## 7.1. Main Control Board

### 7.1.1. IC1 ( Main Control CPU )




IC1 (Main Control CPU)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| A1 | GND1 | - | Ground |
| B1 | PCIAD[18] | In/Out | PCI Address and Data 18 |
| C1 | PCICKIN | In | PCI Clock Input |
| D1 | PCIAD[21] | In/Out | PCI Address and Data 21 |
| E1 | GNDA5 | - | Ground |
| F1 | CLK48IN | In | USB Clock Input |
| G1 | USBDSCON | In | USB Disconnect |
| H1 | USBD_P | In/Out | USB Differencial Data + |
| J1 | AGND1 | - | Ground |
| K1 | nPCICBE[3] | In | PCI Command and Bus Enable 3 |
| L1 | PCIAD[26] | In/Out | PCI Address and Data 26 |
| M1 | CLK50OUT | Out | CPU Clock Output |
| N1 | PCIAD[29] | In/Out | PCI Address and Data 29 |
| P1 | nPCIREQ | In | PCI Request |
| R1 | F2 | In | PLL Frequency set 2 |
| T1 | F1 | In | PLL Frequency set 1 |
| U1 | TMC2 | Out | Test Control Output |
| V1 | NDRST | In | RCU Reset |
| W1 | DDI | In | RCU Data Input |
| Y1 | nEETCS | Out | EET Chip Select |
| Y2 | nPIFFLT | Out | Parallel I/F Fault |
| Y3 | PIFDATA[7] | In/Out | Parallel I/F Data 7 |
| Y4 | nSYSRST | In | System Reset |
| Y5 | nPIFSLIN | In | Parallel I/F Select In |
| Y6 | PIFDATA[6] | In/Out | Parallel I/F Data 6 |
| Y7 | PIFDATA[2] | In/Out | Parallel I/F Data 2 |
| Y8 | nSBSY | In | Status Busy |
| Y9 | GNDA12 | - | Ground |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| B18 | FRMA[11] | Out | Flash/Mask ROM Address 11 |
| B17 | FRMA[8] | Out | Flash/Mask ROM Address 8 |
| B16 | FRMA[6] | Out | Flash/Mask ROM Address 6 |
| B15 | FRMA[4] | Out | Flash/Mask ROM Address 4 |
| B14 | FRMA[1] | Out | Flash/Mask ROM Address 1 |
| B13 | nFRCS[0] | Out | Flash/Mask ROM Chip Select 0 |
| B12 | CLK54OUT | Out | Engine Clock Output |
| B11 | PCIAD[0] | In/Out | PCI Address and Data 0 |
| B10 | PCIAD[5] | In/Out | PCI Address and Data 5 |
| B9 | GNDA3 | - | Ground |
| B8 | PCIAD[9] | In/Out | PCI Address and Data 9 |
| B7 | PCIAD[13] | In/Out | PCI Address and Data 13 |
| B6 | nPCICBE[1] | In/Out | PCI Command and Bus Enable 1 |
| B5 | nPCIPERR | In/Out | PCI Parity Error |
| B4 | nPCITRDY | In/Out | PCI Target Ready |
| B3 | GNDA2 | - | Ground |
| C3 | nPCIFRM | In/Out | PCI Frame |
| D3 | PCIAD[19] | In/Out | PCI Address and Data 19 |
| E3 | PCIAD[22] | In/Out | PCI Address and Data 22 |
| F3 | USBCON | Out | USB Connect |
| G3 | N.C | - | N.C |
| H3 | N.C | - | N.C |
| J3 | DVDD1 | - | +2.5V |
| K3 | PCIAD[24] | In/Out | PCI Address and Data 24 |
| L3 | PCIAD[27] | In/Out | PCI Address and Data 27 |
| M3 | GNDA7 | - | Ground |
| N3 | PCIAD[31] | In/Out | PCI Address and Data 31 |
| P3 | nPCIINT | In | PCI Interrupt |

IC1

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| Y10 | TMS | In | Boundary Scan Mode |
| Y11 | TDI | In | Boundary Scan Data Input |
| Y12 | nPRDY | In | Printer Engine Ready |
| Y13 | CXD | Out | Command Data |
| Y14 | nCBSY | Out | Command Data Busy |
| Y15 | PIFDIR | Out | Parallel I/F Data Buffer Direction |
| Y16 | nRDYLED | Out | Ready LED ON/OFF |
| Y17 | EEPDATA | In/Out | EEPROM Data |
| Y18 | SDMD[15] | In/Out | SDRAM Data 15 |
| Y19 | SDMD[1] | In/Out | SDRAM Data 1 |
| Y20 | SDMD[0] | In/Out | SDRAM Data 0 |
| W20 | SDMD[2] | In/Out | SDRAM Data 2 |
| V20 | SDMD[3] | In/Out | SDRAM Data 3 |
| U20 | SDMD[5] | In/Out | SDRAM Data 5 |
| T20 | GNDA8 | - | Ground |
| R20 | SDMD[7] | In/Out | SDRAM Data 7 |
| P20 | SDCLK | Out | SDRAM Clock |
| N20 | SDRAS | Out | SDRAM Row Address Strobe |
| M20 | VDDA2 | - | +2.5V |
| L20 | SDBA[0] | Out | SDRAM Bank Address 0 |
| K20 | SDMA[10] | Out | SDRAM Address 10 |
| J20 | SDMA[0] | Out | SDRAM Address 0 |
| H20 | SDMA[1] | Out | SDRAM Address 1 |
| G20 | SDMA[2] | Out | SDRAM Address 2 |
| F20 | SDMA[3] | Out | SDRAM Address 3 |
| E20 | FRDATA[5] | In/Out | Flash/Mask ROM Data 5 |
| D20 | FRDATA[2] | In/Out | Flash/Mask ROM Data 2 |
| C20 | FRMA[17] | Out | Flash/Mask ROM Address 17 |
| B20 | FRMA[14] | Out | Flash/Mask ROM Address 14 |
| A20 | FRMA[19] | Out | Flash/Mask ROM Address 19 |
| A19 | FRMA[16] | Out | Flash/Mask ROM Address 16 |
| A18 | FRMA[9] | Out | Flash/Mask ROM Address 9 |
| A17 | FRMA[13] | Out | Flash/Mask ROM Address 13 |
| A16 | GNDA12 | - | Ground |
| A15 | FRMA[3] | Out | Flash/Mask ROM Address 3 |
| A14 | FRMA[0] | Out | Flash/Mask ROM Address 0 |
| A13 | nFROE | Out | Flash/Mask ROM Output Enable |
| A12 | CLK54IN | In | Engine Clock Input |
| A11 | PCIAD[2] | In/Out | PCI Address and Data 2 |
| A10 | PCIAD[6] | In/Out | PCI Address and Data 6 |
| A9 | nPCICBE[0] | In/Out | PCI Command and Byte Enable 0 |
| A8 | PCIAD[10] | In/Out | PCI Address and Data 10 |
| A7 | PCIAD[14] | In/Out | PCI Address and Data 14 |
| A6 | PCIPAR | In/Out | PCI Parity |
| A5 | nPCISTP | In/Out | PCI Stop |
| A4 | nPCIRDY | In/Out | PCI Initiator Ready |
| A3 | nPCICBE[2] | In/Out | PCI Command and Byte Enable 2 |
| A2 | PCIAD[17] | In/Out | PCI Address and Data 17 |
| B2 | PCICKOUT | Out | PCI Clock Output |
| C2 | PCIAD[16] | In/Out | PCI Address and Data 16 |
| D2 | PCIAD[20] | In/Out | PCI Address and Data 20 |
| E2 | PCIAD[23] | In/Out | PCI Address and Data 23 |
| F2 | USBIEN | In | USB Enable |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| R3 | TMC1 | In | Test Control Input |
| T3 | DDO | Out | RCU Data Output |
| U3 | GNDA9 | - | Ground |
| V3 | DBIN | In | RCU Interrupt |
| V4 | nPIFACK | Out | Parallel I/F Acknowledge |
| V5 | nPIFINIT | In | Parallel I/FInitialize |
| V6 | PIFDATA[4] | In/Out | Parallel I/F Data 4 |
| V7 | PIFDATA[0] | In/Out | Parallel I/F Data 0 |
| V8 | PIFDATA[3] | In/Out | Parallel I/F Data 3 |
| V9 | SXD | In | Status Data |
| V10 | TRST | In | Boundary Scan Test Reset |
| V11 | PIFHD | Out | Parallel I/F High Drive |
| V12 | VCCA8 | - | +3.3V |
| V13 | nPRINT | Out | Print Page |
| V14 | nKEY | In | Key Sence |
| V15 | nERRLED | Out | Error LED ON/OFF |
| V16 | GNDA10 | - | Ground |
| V17 | SDMD[12] | In/Out | SDRAM Data 12 |
| V18 | SDMD[11] | In/Out | SDRAM Data 11 |
| U18 | VCCA7 | - | +3.3V |
| T18 | SDMD[9] | In/Out | SDRAM Data 9 |
| R18 | SDDQM[1] | Out | SDRAM Data Mask 1 |
| P18 | SDWE | Out | SDRAM Write Enable |
| N18 | nSDCS[1] | Out | SDRAM Chip Select 1 |
| M18 | SDCKE | Out | SDRAM Clock Enable |
| L18 | SDMA[9] | Out | SDRAM Address 9 |
| K18 | SDMA[7] | Out | SDRAM Address 7 |
| J18 | VCCA3 | - | +3.3V |
| H18 | SDMA[6] | Out | SDRAM Address 6 |
| G18 | FRDATA[4] | In/Out | Flash/Mask ROM Data 4 |
| F18 | FRDATA[6] | In/Out | Flash/Mask ROM Data 6 |
| E18 | FRDATA[3] | In/Out | Flash/Mask ROM Data 3 |
| D18 | FRMA[18] | Out | Flash/Mask ROM Address 18 |
| C18 | FRDATA[0] | In/Out | Flash/Mask ROM Data 0 |
| C17 | FRMA[12] | Out | Flash/Mask ROM Address 12 |
| C16 | FRMA[7] | Out | Flash/Mask ROM Address 7 |
| C15 | FRMA[5] | Out | Flash/Mask ROM Address 5 |
| C14 | FRMA[2] | Out | Flash/Mask ROM Address 2 |
| C13 | nFRCS[1] | Out | Flash/Mask ROM Chip Select 1 |
| C12 | GNDA4 | - | Ground |
| C11 | PCIAD[1] | In/Out | PCI Address and Data 1 |
| C10 | PCIAD[4] | In/Out | PCI Address and Data 4 |
| C9 | VCCA1 | - | +3.3V |
| C8 | PCIAD[8] | In/Out | PCI Address and Data 8 |
| C7 | PCIAD[12] | In/Out | PCI Address and Data 12 |
| C6 | PCIAD[15] | In/Out | PCI Address and Data 15 |
| C5 | nPCISERRZ | In | PCI System Error |
| C4 | VDDA1 | - | +2.5V |
| D4 | GND2 | - | Ground |
| E4 | VCC3 | - | +3.3V |
| F4 | VDD4 | - | +2.5V |
| G4 | nPCIDSEL | In/Out | PCI Device Select |
| H4 | GND6 | - | Ground |

IC1

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| G2 | CLK48OUT | Out | USB Clock Output |
| H2 | USBD_N | In/Out | USB Differential Data - |
| J2 | AVDD1 | - | +2.5V |
| K2 | DGND1 | - | Ground |
| L2 | PCIAD[25] | In/Out | PCI Address and Data 25 |
| M2 | CLK50IN | In | CPU Clock Input |
| N2 | PCIAD[30] | In/Out | PCI Address and Data 30 |
| P2 | nPCIGNT | Out | PCI Grant |
| R2 | F0 | In | PLL Frequency set 0 |
| T2 | MODE | In | PLL Test Mode |
| U2 | USB_TEST | - | Ground |
| V2 | DMS | In | RCU Mode Select |
| W2 | DCK | In | RCU Clock |
| W3 | PIFSEL | In | Parallel I/F Select |
| W4 | nPIFBSY | Out | Parallel I/F Busy |
| W5 | nPIFAFD | In | Parallel I/F Auto Feed |
| W6 | PIFDATA[5] | In/Out | Parallel I/F Data 5 |
| W7 | PIFDATA[1] | In/Out | Parallel I/F Data 1 |
| W8 | nPIFSTB | In | Parallel I/F Strobe |
| W9 | nHSYNC | In | Horizontal Synchronization |
| W10 | TCK | In | Boundary Scan Test Clock |
| W11 | TDO | Out | Boundary Scan Data Output |
| W12 | PPRDY | In | Printer Engine Power Ready |
| W13 | nVIDEO | Out | Video Data |
| W14 | nPSAVE | Out | Power Save |
| W15 | VDDA3 | - | +2.5V |
| W16 | EEPCLK | Out | EEPROM Clock |
| W17 | SDMD[14] | In/Out | SDRAM Data 14 |
| W18 | SDMD[13] | In/Out | SDRAM Data 13 |
| W19 | GNDA11 | - | Ground |
| V19 | SDMD[4] | In/Out | SDRAM Data 4 |
| U19 | SDMD[10] | In/Out | SDRAM Data 10 |
| T19 | SDMD[6] | In/Out | SDRAM Data 6 |
| R19 | SDMD[8] | In/Out | SDRAM Data 8 |
| P19 | VCCA6 | - | +3.3V |
| N19 | SDCAS | Out | SDRAM Column Address Strobe |
| M19 | nSDCS[0] | Out | SDRAM Chip Select 0 |
| L19 | VCCA4 | - | +3.3V |
| K19 | SDBA[1] | Out | SDRAM Bank Address 1 |
| J19 | RESERV3 | - | Reserve |
| H19 | SDMA[5] | Out | SDRAM Address 5 |
| G19 | SDMA[4] | Out | SDRAM Address 4 |
| F19 | VCCA2 | - | +3.3V |
| E19 | FRMA[20] | Out | Flash/Mask ROM Address 20 |
| D19 | FRDATA[7] | In/Out | Flash/Mask ROM Data 7 |
| C19 | FRMA[21] | Out | Flash/Mask ROM Address 21 |
| B19 | FRMA[15] | Out | Flash/Mask ROM Address 15 |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| J4 | N.C | - | N.C |
| K4 | VDD6 | - | +2.5V |
| L4 | PCIAD[28] | In/Out | PCI Address and Data 28 |
| M4 | VCCA5 | - | +3.3V |
| N4 | GND8 | - | Ground |
| P4 | nPCIRST | Out | PCI Reset |
| R4 | VDD8 | - | +2.5V |
| T4 | VCC5 | - | +3.3V |
| U4 | GND10 | - | Ground |
| U5 | VCC7 | - | +3.3V |
| U6 | VDD10 | - | +2.5V |
| U7 | PIFPERR | Out | Parallel I/F Printer Error |
| U8 | GND11 | - | Ground |
| U9 | nTOP | In | Paper Top |
| U10 | VDD11 | - | +2.5V |
| U11 | nPURGE | In | Paper Purge |
| U12 | CCLK | Out | Communication Clock |
| U13 | GND12 | - | Ground |
| U14 | nDRMLED | Out | Drum LED ON/OFF |
| U15 | VDD12 | - | +2.5V |
| U16 | VCC8 | - | +3.3V |
| U17 | GND13 | - | Ground |
| T17 | VCC6 | - | +3.3V |
| R17 | VDD9 | - | +2.5V |
| P17 | SDDQM[0] | Out | SDRAM Data Mask 0 |
| N17 | GND9 | - | Ground |
| M17 | SDMA[11] | In/Out | SDRAM Data 11 |
| L17 | VDD7 | - | +2.5V |
| K17 | SDMA[8] | In/Out | SDRAM Data 8 |
| J17 | GNDA6 | - | Ground |
| H17 | GND7 | - | Ground |
| G17 | FRDATA[1] | In/Out | Flash/Mask ROM Data 1 |
| F17 | VDD5 | - | +2.5V |
| E17 | VCC4 | - | +3.3V |
| D17 | GND5 | - | Ground |
| D16 | VCC2 | - | +3.3V |
| D15 | VDD3 | - | +2.5V |
| D14 | FRMA[10] | Out | Flash/Mask ROM Address10 |
| D13 | GND4 | - | Ground |
| D12 | nFRWE | Out | Flash ROM Write Enable |
| D11 | VDD2 | - | +2.5V |
| D10 | PCIAD[3] | In/Out | PCI Address and Date 3 |
| D9 | PCIAD[7] | In/Out | PCI Address and Date 7 |
| D8 | GND3 | - | Ground |
| D7 | PCIAD[11] | In/Out | PCI Address and Date 11 |
| D6 | VDD1 | - | +2.5V |
| D5 | VCC1 | - | +3.3V |

## 7.1.2. IC2 ( Reset IC )

IC2 (Reset IC)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | GND | - | Ground |
| 2 | VDD | - | +2.5V |
| 3 | OUT | Out | Reset Pulse Output |
| 4 | Cd | In | Reset Time Set |

## 7.1.3. IC3 ( Flash / Mask ROM )

IC3 (Flash/Mask ROM)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | nBYTE | In | nBYTE/Word Mode Selection |
| 2 | A16 | In | Address 16 |
| 3 | A15 | In | Address 15 |
| 4 | A14 | In | Address 14 |
| 5 | A13 | In | Address 13 |
| 6 | A12 | In | Address 12 |
| 7 | A11 | In | Address 11 |
| 8 | A10 | In | Address 10 |
| 9 | A09 | In | Address 9 |
| 10 | A08 | In | Address 8 |
| 11 | A19 | In | Address 19 |
| 12 | GND1 | - | Ground |
| 13 | A20 | In | Address 20 |
| 14 | A18 | In | Address 18 |
| 15 | A17 | In | Address 17 |
| 16 | A07 | In | Address 7 |
| 17 | A06 | In | Address 6 |
| 18 | A05 | In | Address 5 |
| 19 | A04 | In | Address 4 |
| 20 | A03 | In | Address 3 |
| 21 | A02 | In | Address 2 |
| 22 | A01 | In | Address 1 |
| 23 | A00 | In | Address 0 |
| 24 | nCE | In | Chip Enable |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 25 | GND2 | - | Ground |
| 26 | GND4 | - | Ground |
| 27 | nOE | In | Output Enable |
| 28 | DQ00 | In/Out | Data 0 |
| 29 | DQ08 | - | N.C. |
| 30 | DQ01 | In/Out | Data 1 |
| 31 | DQ09 | - | N.C. |
| 32 | DQ02 | In/Out | Data 2 |
| 33 | DQ10 | - | N.C. |
| 34 | DQ03 | In/Out | Data 3 |
| 35 | DQ11 | - | N.C. |
| 36 | nWE | In | Write Enable |
| 37 | VCC1 | - | +3.3V |
| 38 | VCC2 | - | +3.3V |
| 39 | DQ04 | In/Out | Data 4 |
| 40 | DQ12 | - | N.C. |
| 41 | DQ05 | In/Out | Data 5 |
| 42 | DQ13 | - | N.C. |
| 43 | DQ06 | In/Out | Data 6 |
| 44 | DQ14 | - | N.C. |
| 45 | DQ07 | In/Out | Data 7 |
| 46 | DQ15 | In/Out | Mode Select |
| 47 | GND5 | - | Ground |
| 48 | GND3 | - | Ground |

## 7.1.4. IC5 ( RAM )

IC5 (RAM)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | VCC1 | - | +3.3V |
| 2 | DQ0 | In/Out | Data 0 |
| 3 | VCCQ1 | - | +3.3V |
| 4 | DQ1 | In/Out | Data 1 |
| 5 | DQ2 | In/Out | Data 2 |
| 6 | VSSQ1 | - | Ground |
| 7 | DQ3 | In/Out | Data 3 |
| 8 | DQ4 | In/Out | Data 4 |
| 9 | VCCQ2 | - | +3.3V |
| 10 | DQ5 | In/Out | Data 5 |
| 11 | DQ6 | In/Out | Data 6 |
| 12 | VSSQ2 | - | Ground |
| 13 | DQ7 | In/Out | Data 7 |
| 14 | VCC2 | - | +3.3V |
| 15 | DGML | In | Data Mask Lower Byte |
| 16 | nWE | In | Write Enable |
| 17 | nCAS | In | Column Address Strobe |
| 18 | nRAS | In | Row Address Strobe |
| 19 | nCS | In | Chip Select |
| 20 | A13 | In | Address 13 |
| 21 | A12 | In | Address 12 |
| 22 | A10 | In | Address 10 |
| 23 | A0 | In | Address 0 |
| 24 | A1 | In | Address 1 |
| 25 | A2 | - | Address 2 |
| 26 | A3 | In | Address 3 |
| 27 | VCC3 | - | +3.3V |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 28 | VSS1 | - | Ground |
| 29 | A4 | In | Address 4 |
| 30 | A5 | In | Address 5 |
| 31 | A6 | In | Address 6 |
| 32 | A7 | In | Address 7 |
| 33 | A8 | In | Address 8 |
| 34 | A9 | In | Address 9 |
| 35 | A11 | In | Address 11 |
| 36 | NC1 | - | N.C. |
| 37 | CKE | In | Clock Enable |
| 38 | CLK | - | Clock |
| 39 | DQMU | In | Data Mask Upper Byte |
| 40 | NC2 | - | N.C. |
| 41 | VSS2 | - | Ground |
| 42 | DQ8 | - | Data 8 |
| 43 | VCCQ3 | - | +3.3V |
| 44 | DQ9 | In/Out | Data 9 |
| 45 | DQ10 | In/Out | Data 10 |
| 46 | VSSQ3 | - | Ground |
| 47 | DQ11 | In/Out | Data 11 |
| 48 | DQ12 | In/Out | Data 12 |
| 49 | VCCQ4 | - | +3.3V |
| 50 | DQ13 | In/Out | Data 13 |
| 51 | DQ14 | In/Out | Data 14 |
| 52 | VSSQ4 | - | Ground |
| 53 | DQ15 | In/Out | Data 15 |
| 54 | VSS3 | - | GND |

## 7.1.5. IC6 ( LAN IC )

IC6 (LAN IC)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | MA3/EEDI | Out | BIOS ROM/Flash Address 3/ EEPROM Data In |
| 2 | MA4/EECLK | Out | BIOS ROM/Flash Address 4/ EEPROM Clock |
| 3 | MA5 | Out | BIOS ROM/Flash Address 5 |
| 4 | MDIO | In/Out | Management Data I/O |
| 5 | MDC | Out | Management Data Clock |
| 6 | RXCLK | In | Receive Clock |
| 7 | RXD0/MA6 | In/Out | Receive Data 0/ BIOS ROM Address 6 |
| 8 | VSSIO1 | - | Ground |
| 9 | VDDIO1 | - | +3.3V |
| 10 | RXD1/MA7 | In/Out | Receive Data 1/ BIOS ROM Address 7 |
| 11 | RXD2/MA8 | In/Out | Receive Data 2/ BIOS ROM Address 8 |
| 12 | RXD3/MA9 | In/Out | Receive Data 3/ BIOS ROM Address 9 |
| 13 | RXOE | Out | Receive Output Enable |
| 14 | RXER/MA10 | In/Out | Receive Error/ BIOS ROM Address 10 |
| 15 | RXDV/MA11 | In/Out | Receive Data Valid/ BIOS ROM Address 11 |
| 16 | VSSIO2 | - | Ground |
| 17 | X1 | In | Crystal/Oscillator Input |
| 18 | X2 | Out | Crystal Output |
| 19 | VDDIO2 | - | +3.3V |
| 20 | PHYVSS1 | - | Ground |
| 21 | PHYVDD1 | - | +3.3V |
| 22 | TXD0/MA12 | Out | Transmit Data 0/ BIOS ROM Address 12 |
| 23 | TXD1/MA13 | Out | Transmit Data 1/ BIOS ROM Address 13 |
| 24 | TXD2/MA14 | Out | Transmit Data 2/ BIOS ROM Address 14 |
| 25 | TXD3/MA15 | Out | Transmit Data 3/ BIOS ROM Address 15 |
| 26 | VSSIO3 | - | Ground |
| 27 | VDDIO3 | - | +3.3V |
| 28 | COL | In | Collision Detect |
| 29 | CRS | In | Carrier Sense |
| 30 | TXEN | Out | Transmit Enable |
| 31 | TXCLK | In | Transmit Clock |
| 32 | PHYVSS2 | - | Ground |
| 33 | PHYVDD2 | - | +3.3V |
| 34 | NC1 | - | N.C. |
| 35 | FSVSS | - | Ground |
| 36 | FSVDD | - | +3.3V |
| 37 | SUBGND1 | - | Ground |
| 38 | RXAVSS1 | - | Ground |
| 39 | RXAVDD1 | - | +3.3V |
| 40 | VREF | In | Bandgap Reference |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 41 | RESERVED1 | - | Reserved |
| 42 | NC2 | - | N.C. |
| 43 | NC3 | - | N.C. |
| 44 | RXVSS2 | - | Ground |
| 45 | TPRDM | In | Receive Differential Data - |
| 46 | TPRDP | In | Receive Differential Data + |
| 47 | RXVDD2 | - | +3.3V |
| 48 | NC4 | - | N.C. |
| 49 | SUBGND2 | - | Ground |
| 50 | RESERVED2 | - | Reserved |
| 51 | TXDVSS | - | Ground |
| 52 | TXIOVSS1 | - | Ground |
| 53 | TPTDM | Out | Transmit Differential Data - |
| 54 | TPTDP | Out | Transmit Differential Data + |
| 55 | TXIOVSS2 | - | Ground |
| 56 | TXDVDD | - | +3.3V |
| 57 | MACVSS1 | - | Ground |
| 58 | MACVDD1 | - | +3.3V |
| 59 | PMEN/ nCLKRUN | In/Out | Power Management Event/ Clock Run Function |
| 60 | PCICLK | In | Clock |
| 61 | nINTA | Out | Interrupt A |
| 62 | nRST | In | Reset |
| 63 | nGNT | In | Grant |
| 64 | nREQ | Out | Request |
| 65 | PCIVSS1 | - | Ground |
| 66 | AD31 | In/Out | Address and Data 31 |
| 67 | AD30 | In/Out | Address and Data 30 |
| 68 | AD29 | In/Out | Address and Data 29 |
| 69 | PCIVDD1 | - | +3.3V |
| 70 | AD28 | In/Out | Address and Data 28 |
| 71 | AD27 | In/Out | Address and Data 27 |
| 72 | AD26 | In/Out | Address and Data 26 |
| 73 | AD25 | In/Out | Address and Data 25 |
| 74 | AD24 | In/Out | Address and Data 24 |
| 75 | nCBE3 | In/Out | Bus Command/Byte Enable 3 |
| 76 | IDSEL | In | Initialization Device Select |
| 77 | PCIVSS2 | - | Ground |
| 78 | AD23 | In/Out | Address and Data 23 |
| 79 | AD22 | In/Out | Address and Data 22 |
| 80 | PCIVDD2 | - | +3.3V |
| 81 | AD21 | In/Out | Address and Data 21 |
| 82 | AD20 | In/Out | Address and Data 20 |
| 83 | AD19 | In/Out | Address and Data 19 |
| 84 | VSSIO4 | - | Ground |
| 85 | VDDIO4 | - | +3.3V |
| 86 | AD18 | In/Out | Address and Data 18 |
| 87 | AD17 | In/Out | Address and Data 17 |
| 88 | AD16 | In/Out | Address and Data 16 |
| 89 | nCBE2 | In/Out | Bus Command/Byte Enable 2 |
| 90 | PCIVSS3 | - | Ground |
| 91 | nFRAME | In/Out | Frame |

IC6

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 92 | nIRDY | In/Out | Initiator Ready |
| 93 | nTRDY | In/Out | Target Ready |
| 94 | PCIVDD3 | - | +3.3V |
| 95 | nDEVSEL | In/Out | Device Select |
| 96 | nSTOP | In/Out | Stop |
| 97 | nPERR | In/Out | Parity Error |
| 98 | nSERR | In/Out | System Error |
| 99 | PAR | In/Out | Parity |
| 100 | nCBE1 | In/Out | Bus Command/Byte Enable 1 |
| 101 | AD15 | In/Out | Address and Data 15 |
| 102 | AD14 | In/Out | Address and Data 14 |
| 103 | PCIVSS4 | - | Ground |
| 104 | AD13 | In/Out | Address and Data 13 |
| 105 | AD12 | In/Out | Address and Data 12 |
| 106 | AD11 | In/Out | Address and Data 11 |
| 107 | PCIVDD4 | - | +3.3V |
| 108 | AD10 | In/Out | Address and Data 10 |
| 109 | AD9 | In/Out | Address and Data 9 |
| 110 | AD8 | In/Out | Address and Data 8 |
| 111 | nCBE0 | In/Out | Bus Command/Byte Enable 0 |
| 112 | AD7 | In/Out | Address and Data 7 |
| 113 | AD6 | In/Out | Address and Data 6 |
| 114 | PCIVSS5 | - | Ground |
| 115 | AD5 | In/Out | Address and Data 5 |
| 116 | AD4 | In/Out | Address and Data 4 |
| 117 | PCIVDD5 | - | +3.3V |
| 118 | AD3 | In/Out | Address and Data 3 |
| 119 | AD2 | In/Out | Address and Data 2 |
| 120 | AD1 | In/Out | Address and Data 1 |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 121 | AD0 | In/Out | Address and Data 0 |
| 122 | 3VAUX | In | PCI Auxiliary Voltage Sense |
| 123 | PWRGOOD | In | PCI Bus Power Good |
| 124 | MACVSS2 | - | Ground |
| 125 | MACVDD2 | - | +3.3V |
| 126 | SUBGND3 | - | Ground |
| 127 | RESERVED3 | - | Reserved |
| 128 | EESEL | Out | EEPROM Chip Select |
| 129 | nMCS | Out | BIOS ROM /Flash Chip Select |
| 130 | nMRD | Out | BIOS ROM /Flash Read |
| 131 | nMWR | Out | BIOS ROM /Flash Write |
| 132 | MD0 | In/Out | BIOS ROM /Flash Data Bus 0 |
| 133 | MD1/ nCFGDIS | In/Out | BIOS ROM /Flash Data Bus 1/ Configuration Dissable |
| 134 | MD2 | In/Out | BIOS ROM /Flash Data Bus 2 |
| 135 | MD3 | In/Out | BIOS ROM /Flash Data Bus 3 |
| 136 | VSSIO5 | - | Ground |
| 137 | VDDIO5 | - | +3.3V |
| 138 | MD4/EEDO | In/Out | BIOS ROM /Flash Data Bus 4/ EEPROM Data Out |
| 139 | MD5 | In/Out | BIOS ROM /Flash Data Bus 5 |
| 140 | MD6 | In/Out | BIOS ROM /Flash Data Bus 6 |
| 141 | MD7 | In/Out | BIOS ROM /Flash Data Bus 7 |
| 142 | MA0/ nLEDACT | Out | BIOS ROM /Flash Address 0/ TX/RX Activity |
| 143 | MA1/ nLED10 | Out | BIOS ROM /Flash Address 1/ 10Mb/s Link |
| 144 | MA2/ nLED100 | Out | BIOS ROM /Flash Address 2/ 100Mb/s Link |

### 7.1.6. IC7 ( EEPROM )

IC7 (EEPROM)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | A0 | In | Device Address 0 |
| 2 | A1 | In | Device Address 1 |
| 3 | A2 | In | Device Address 2 |
| 4 | VSS | - | Ground |
| 5 | SDA | In/Out | Serial Data/ Address |
| 6 | SCL | In | Serial Clock |
| 7 | WP | In | Write Protect |
| 8 | VCC | - | +3.3V |

### 7.1.7. IC10 ( Regulator )

IC10 (Regulator)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | IN | In | 5V Input |
| 2 | NC | - | N.C. |
| 3 | IN | In | 5V Input |
| 4 | Vc | In | ON/OFF Control |
| 5 | GND | - | Ground |
| 6 | GND | - | Ground |
| 7 | Vout | Out | 3.3V Output |
| 8 | Vout | Out | 3.3V Output |

### 7.1.8. IC12 ( Regulator )

IC12 (Regulator)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | $V_{IN}$ | In | 5V Input |
| 2 | Vc | In | ON/OFF Control |
| 3 | Vo | Out | 2.5V Output |
| 4 | NC | - | N.C. |
| 5 | GND | - | Ground |

# 7.2. Engine Control Board

## 7.2.1. IC001 ( ASIC )

IC001 (ASIC)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | VDD | - | +5V |
| 2 | CLKR | OUT | Crystal Connect (12MHz) |
| 3 | CLKI | IN | Crystal Connect (12MHz) |
| 4 | CLKOUT | OUT | 12MHz Clock Output |
| 5 | VSS | - | GND |
| 6 | NRST | IN | System Reset |
| 7 | RSTO | - | N.C |
| 8 | nLED0 | - | (not used) |
| 9 | nLED1 | - | GND |
| 10 | nLED2 | - | GND |
| 11 | AI7 | - | GND |
| 12 | AI6 | - | GND |
| 13 | AI5 | - | GND |
| 14 | AI4 | - | GND |
| 15 | AI3 | - | GND |
| 16 | AI2 | - | GND |
| 17 | AI1 | - | GND |
| 18 | AI0 | - | GND |
| 19 | EO1 | - | N.C |
| 20 | CI0 | - | GND |
| 21 | CI1 | - | GND |
| 22 | CI2 | - | GND |
| 23 | CI3 | - | GND |
| 24 | EO2 | - | N.C |
| 25 | VDD | - | +5V |
| 26 | GND | - | GND |
| 27 | EO3 | - | N.C |
| 28 | EO4 | - | N.C |
| 29 | EO0 | - | (not used) |
| 30 | SEL | - | GND |
| 31 | DI3 | - | GND |
| 32 | FO4 | - | N.C |
| 33 | DI1 | - | GND |
| 34 | DI2 | - | GND |
| 35 | FO3 | - | N.C |
| 36 | FO2 | - | N.C |
| 37 | FO1 | - | N.C |
| 38 | FO0 | - | N.C |
| 39 | BI7 | - | GND |
| 40 | BI6 | - | GND |
| 41 | BI5 | - | GND |
| 42 | BI4 | - | GND |
| 43 | BI3 | - | GND |
| 44 | BI2 | - | GND |
| 45 | BI1 | - | GND |
| 46 | BI0 | - | GND |
| 47 | DI0 | - | GND |
| 48 | LD5VSW | IN | Drum Unit Detect Switch Status |
| 49 | nSM1EN | OUT | Stepping Motor CH1 Enable |
| 50 | GND | - | GND |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 51 | VDD | - | +5V |
| 52 | SM1A | OUT | 2nd Feeder Clock |
| 53 | SM1B | - | N.C |
| 54 | nTRST | - | GND |
| 55 | SM0A | OUT | Stepping Motor CH0 Phase A |
| 56 | SM0NA | OUT | Stepping Motor CH0 Phase A |
| 57 | SM0B | OUT | Stepping Motor CH0 Phase B |
| 58 | SM0NB | OUT | Stepping Motor CH0 Phase B |
| 59 | nCS | IN | Serial I/F Chip Select |
| 60 | SDI | IN | Serial Input Data |
| 61 | SDO | OUT | Serial Output Data |
| 62 | SCLK | IN | Serial Clock |
| 63 | nLEDO0 | - | N.C |
| 64 | nLEDO1 | - | N.C |
| 65 | nLEDO2 | - | N.C |
| 66 | nBD | IN | Laser Beam Detect of LSU |
| 67 | nLDEN | OUT | Laser Enable |
| 68 | nADJUST | OUT | Laser Power Adjust |
| 69 | nVIDEO | OUT | Video Data Output |
| 70 | nVD | IN | Video Data Input |
| 71 | nHSYNC | OUT | Hsync |
| 72 | CDO3 | - | N.C |
| 73 | VSS | - | GND |
| 74 | PCNTCLK | IN | Pull Up |
| 75 | VDD | - | +5V |
| 76 | GND | - | GND |
| 77 | ABO0 | - | N.C |
| 78 | ABO1 | - | N.C |
| 79 | ABO2 | - | N.C |
| 80 | ABO3 | - | N.C |
| 81 | ABO4 | - | N.C |
| 82 | ABO5 | - | N.C |
| 83 | ABO6 | - | N.C |
| 84 | ABO7 | - | N.C |
| 85 | CDO0 | - | N.C |
| 86 | EFI0 | - | +5V |
| 87 | EFI1 | - | GND |
| 88 | EFI2 | - | GND |
| 89 | EFI3 | - | GND |
| 90 | EFI4 | - | GND |
| 91 | CDO2 | - | N.C |
| 92 | CDO1 | - | N.C |
| 93 | VSS | - | GND |
| 94 | nRAS0 | - | GND |
| 95 | nRAS1 | - | GND |
| 96 | nCAS | - | GND |
| 97 | nRAS | - | N.C |
| 98 | nLCAS | - | N.C |
| 99 | nUCAS | - | N.C |
| 100 | GND | - | GND |

### 7.2.2. IC002 ( Comparators )

IC002 (Comparators)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | A OUTPUT | Out | Comparator A Output |
| 2 | A -INPUT | In | Comparator A-Input |
| 3 | A +INPUT | In | Comparator A+Input |
| 4 | GND | - | GND |
| 5 | B+INPUT | In | Comparator B+Input |
| 6 | B -INPUT | In | Comparator B-Input |
| 7 | B OUTPUT | Out | Comparator B Output |
| 8 | VCC | - | +5V |

### 7.2.3. IC003 ( Reset IC )

IC003 (Reset IC)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | GND | - | GND |
| 2 | VDD | - | +5V |
| 3 | CD | - | Delay Capacitor |
| 4 | RESET | Out | Reset Signal |

## 7.2.4. IC004 ( Engine Control CPU )

IC004 (Engine Control CPU)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | UI2 | - | (not used) |
| 2 | INT27 | In | Door open signal |
| 3 | AN0 | In | Thermistor voltage detect |
| 4 | P51 | In | TESEN |
| 5 | P52 | Out | Scanner motor control signal |
| 6 | P53 | Out | Fan motor control signal |
| 7 | P54 | Out | Toner Empty LED control signal |
| 8 | P55 | Out | Charger control signal |
| 9 | P56 | Out | Dev. bias channel signal |
| 10 | P57 | Out | Transfer bias control signal |
| 11 | AVCC | - | +5V |
| 12 | AVR | - | +5V |
| 13 | AVSS | - | GND |
| 14 | INT10 | In | Hsync signal |
| 15 | P61 | In | Scanner motor lock signal |
| 16 | INT12 | In | Top sennsor signal |
| 17 | P63 | In | Process unit detection signal |
| 18 | P64 | In | Fan motor error signal |
| 19 | nRST | In | System reset |
| 20 | MOD0 | - | GND |
| 21 | MOD1 | - | GND |
| 22 | X0 | In | System clock |
| 23 | X1 | - | N.C. |
| 24 | VSS | - | GND |
| 25 | P27 | - | (not used) |
| 26 | P26 | - | (not used) |
| 27 | P25 | Out | EEPROM data out |
| 28 | P24 | Out | EEPROM clock |
| 29 | P23 | Out | EEPROM chip select |
| 30 | PPGO2 | Out | Scanner motor clock |
| 31 | PPGO1 | Out | Fuser contorl signal |
| 32 | P20 | Out | +5V contorl signal |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 33 | P17 | In | EEPROM data in |
| 34 | P16 | - | (not used) |
| 35 | P15 | In | Paper empty signal |
| 36 | P14 | In | Resist seneor signal |
| 37 | P13 | In | 2nd Feeder paper empty signal |
| 38 | P12 | In | 2nd Feeder detection signal |
| 39 | P11 | In | EEPROM initialize signal |
| 40 | P10 | In | Exit sensor signal |
| 41 | P07 | Out | Pick up control signal |
| 42 | P06 | Out | Resist control signal |
| 43 | P05 | Out | Exit control signal |
| 44 | P04 | Out | Motor I0 control signal |
| 45 | P03 | Out | 2nd Feeder pickup control signal |
| 46 | P02 | Out | Purge signal |
| 47 | P01 | Out | Status busy signal |
| 48 | P00 | Out | Top signal |
| 49 | NC | - | GND |
| 50 | P30 | Out | Printer ready signal |
| 51 | SCK1 | In | Communication clock |
| 52 | SO1 | Out | Status data signal |
| 53 | SI1 | In | Command data signal |
| 54 | PTO2 | Out | Dev. bias PWM signal |
| 55 | P35 | In | Print signal |
| 56 | VCC | - | +5V |
| 57 | WTO | In | Command busy signal |
| 58 | PTO1 | Out | Transfer bias PWM signal |
| 59 | INT20 | In | Power save signal |
| 60 | P41 | Out | Serial clock |
| 61 | P42 | Out | Serial data out |
| 62 | P43 | In | Serial data in |
| 63 | P44 | Out | Chip select |
| 64 | P45 | Out | Motor I1 control signal |

## 7.2.5. IC005 ( EEPROM )

IC005 (EEPROM)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | CS | In | Chip Select Signal |
| 2 | SK | In | Serial Clock |
| 3 | DI | In | Data Input |
| 4 | DO | Out | Data Output |
| 5 | GND | - | GND |
| 6 | TEST | - | Test terminal (not used) |
| 7 | NC | - | N.C. |
| 8 | VCC | - | +5 V |

## 7.2.6. IC006 ( Motor Drive IC )

IC006 (Motor driver IC)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | LG | - | GND |
| 2 | VREF | - | +5V |
| 3 | VSA | In | Voltage detector (A) |
| 4 | I0 | In | Output current ratio control signal |
| 5 | IN2 | In | Phase signal (nA) input |
| 6 | IN1 | In | Phase signal (A) input |
| 7 | VCC1 | - | +5V |
| 8 | VMMA | - | +24V |
| 9 | OUT1 | Out | Phase signal (A) output |
| 10 | RSA | Out | Motor current output (A) |
| 11 | OUT2 | Out | Phase signal (nA) output |
| 12 | NC1 | - | N.C. |
| 13 | PG | - | GND |
| 14 | NC2 | - | N.C. |

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 15 | OUT3 | Out | Phase signal (nB) output |
| 16 | NC3 | - | N.C. |
| 17 | NC4 | - | N.C. |
| 18 | RSB | Out | Motor current output (B) |
| 19 | OUT4 | Out | Phase signal (B) output |
| 20 | VMMB | - | +24V |
| 21 | VCC2 | - | +5V |
| 22 | IN4 | In | Phase signal (B) input |
| 23 | IN3 | In | Phase signal (nB) input |
| 24 | I1 | In | Output current ratio control signal |
| 25 | NC5 | - | N.C. |
| 26 | VSB | In | Voltage detector (B) |
| 27 | C/R | - | C,R connection for choping frequency |

## 7.2.7. IC007 ( Inverters )

IC007 (Inverters)

| Pin No. | Symbol | In/Out | Function |
|---|---|---|---|
| 1 | 1A | In | A(In) / Y(Out): L → H, H → L |
| 2 | 1Y | Out | |
| 3 | 2A | In | |
| 4 | 2Y | Out | |
| 5 | 3A | In | |
| 6 | 3Y | Out | |
| 7 | GND | - | GND |
| 8 | 4Y | Out | A(In) / Y(Out): L → H, H → L |
| 9 | 4A | In | |
| 10 | 5Y | Out | |
| 11 | 5A | In | |
| 12 | 6Y | Out | |
| 13 | 6A | In | |
| 14 | VCC | - | +5V |

# 8 Preventative Maintenance

## 8.1. General

The preventative maintenance ( PM ) schedule is every 2,000 impressions. Adhering to this schedule will ensure maximum print quality and reduce machine downtime and service calls.

## 8.2. Recommended Tools

The following tools are recommended.

1. Toner vacuum cleaner
2. Blower brush
3. Cleaning alcohol
4. Cleaning cotton
5. Cotton swabs

## 8.3. Recommended Cleaning

1. Remove the OPC Drum Unit.

**Caution :**

**When the OPC Drum Unit is removed, keep it covered to prevent light shock. Do not touch the black OPC drum surface.**

2. Vacuum the inside of the machine after removing the OPC Drum Unit. Temporarily store the OPC Drum Unit in the protective bag.
3. Clean the rollers ( feed roller, pickup roller ) with alcohol.

**Caution :**

**Do not use thinner or solvents; they will damage rubber and plastic components.**

4. Clean the corona with a blower brush.
5. Clean the LSU cover glass with a dry lint-free cloth.

# 8.4. Maintenance Tables

## 8.4.1. User Maintenance

Replace these items according to the following schedule :

(x 1000 pages)

| Item | Service | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 180 |
| Toner Cartridge *1 | R | R | R | R | R | R | R | R | R | R | R | R | R |
| OPC Drum Unit *1 | | | | | R | | | | | R | | | |

R: Replace

*1 Refer to Section 1.1.3 for the Model No. of Supplies.

When print is faded or indicators show the following status, the replacement of a supply is needed.

| Printer components | Indicators: ERROR | Indicators: TONER/ DRUM UNIT | Message of printer status display | Average life |
|---|---|---|---|---|
| Toner cartridge *3 | off | off | Low Toner<br>Charge the toner cartridge. | — |
| | on | on | Toner Empty<br>Replace the toner cartridge. | 4,000 pages *1, *2 |
| OPC Drum unit *3 | off | off | Change Drum Unit<br>Charge the drum unit. | — |
| | on | on | Drum Unit Worn out<br>Replace the drum unit. | 20,000 pages |

on : on
off : off
blinking : blinking

*1 Refer to Section 8.4.2.1.

*2 The toner cartridge provided with the printer is a starter kit toner cartridge, which has less toner. (The page life expectancy is 2,000 pages.)

*3 Refer to Section 1.1.3 for the Model No. of Supllies.

## 8.4.2. Service Maintenance

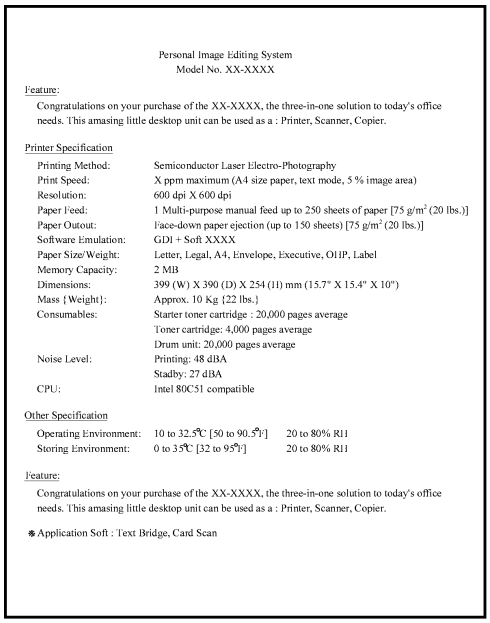
### 8.4.2.1. Maintenance Cycle

The following table shows the service cycle of the main parts.

| Item | Average Life | Service (x 1000 pages) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 18 | 36 | 54 | 72 | 90 | 108 |
| Fuser Unit | 90,000 pages *1 | | | | | R | |
| Transfer Roller | 90,000 pages *1 | | | | | R | |
| Retard Pad Assembly | 90,000 pages | | | | | R | |

R: Replace (Service Man Replaceable)

*1 Average life is based on an average of 5% coverage of the printable area and standard density when the recommended media is used ( refer to Example: 5% coverage ). The life of a toner cartridge is varied dependingon the coverage, temperature, humidity or media etc. So the average life cannot be assured. Continuously printing 10% coverage of the printable area will reduce the life of the toner to about half as compared to printing 5% coverage.



Personal Image Editing System
Model No. XX-XXXX

Feature:
Congratulations on your purchase of the XX-XXXX, the three-in-one solution to today's office needs. This amasing little desktop unit can be used as a : Printer, Scanner, Copier.

Printer Specification

| | |
|---|---|
| Printing Method: | Semiconductor Laser Electro-Photography |
| Print Speed: | X ppm maximum (A4 size paper, text mode, 5 % image area) |
| Resolution: | 600 dpi X 600 dpi |
| Paper Feed: | 1 Multi-purpose manual feed up to 250 sheets of paper [75 g/m² (20 lbs.)] |
| Paper Outout: | Face-down paper ejection (up to 150 sheets) [75 g/m² (20 lbs.)] |
| Software Emulation: | GDI + Soft XXXX |
| Paper Size/Weight: | Letter, Legal, A4, Envelope, Executive, O1IP, Label |
| Memory Capacity: | 2 MB |
| Dimensions: | 399 (W) X 390 (D) X 254 (11) mm (15.7" X 15.4" X 10") |
| Mass {Weight}: | Approx. 10 Kg {22 lbs.} |
| Consumables: | Starter toner cartridge : 20,000 pages average<br>Toner cartridge: 4,000 pages average<br>Drum unit: 20,000 pages average |
| Noise Level: | Printing: 48 dBA<br>Stadby: 27 dBA |
| CPU: | Intel 80C51 compatible |

Other Specification

| | | |
|---|---|---|
| Operating Environment: | 10 to 32.5℃ [50 to 90.5℉] | 20 to 80% RH |
| Storing Environment: | 0 to 35℃ [32 to 95℉] | 20 to 80% RH |

Feature:
Congratulations on your purchase of the XX-XXXX, the three-in-one solution to today's office needs. This amasing little desktop unit can be used as a : Printer, Scanner, Copier.

※Application Soft : Text Bridge, Card Scan

### 8.4.2.2. Lubrication

Lubricate the following parts when they are replaced or cleaned :

| Part | Lubrication Point |
|---|---|
| Fuser Unit | Drive Gear, Intermediate Gear, Gear shaft |
| Main Chassis | Drive Gear, Gear Shaft |

Refer to the part list for locations.

### 8.4.2.3. Recommended Lubrication

Lubricate the following parts when they are replaced or cleaned :

| Part Number | Name | Main Part |
|---|---|---|
| PJOL-HP500 | Grease | Drive Gear |
| GL-YM-103 | Grease | OPC Gear<br>Fuser Gear |
| PJOL-GE676 | Grease | Feed Roller |
| PJOL-948P | Oil | Roller Shaft |

## 8.4.3. Counter Reset

You are able to reset the counter of the following items, when they are replaced.

| Item | Counter Reset |
|---|---|
| OPC Drum Unit (KX-PDM7) | Press the **PRINT/RESET** button more than 20 seconds. (The error indicator will go off.) |

# 9 Troubleshooting

## 9.1. Self-Diagnostic Indicators

The printer indicates error conditions using the ON, OFF and blinking states of the Ready, Error and Toner/Drum unit LED indicators.

The printer status and error code are displayed on the printer status display on the host computer screen. The Status Display software must be installed on the computer.

### 9.1.1. Printer Status

| LED Indicator | Printer Status Display | Possible Cause | Recovery |
|---|---|---|---|
| READY<br>ERROR<br>TONER/ DRUM UNIT | Power Off or Cable Problem or Printer Busy | The printer is off. | Turn the power on or check that cable is installed correctly. |
| | | The printer cable is not installed correctly. | |
| | | The cable is damaged. | |
| | | While printing from other PC. | |
| READY<br>ERROR<br>TONER/ DRUM UNIT | Warming Up | Printer is warming up (three indicators light one after another). | No action. |
| READY<br>ERROR<br>* TONER/ DRUM UNIT | Ready | Printer is ready printing or in the sleep mode. | No action. |
| | Ready (Sleep) | | |
| READY<br>ERROR<br>* TONER/ DRUM UNIT | Printing | Printer is receiving data printing. | No action. |

: on

: off

: blinking

* The status varies depending on the condition.

### 9.1.2. Paper Jam

| LED Indicator | Printer Status Display | Possible Cause | Recovery |
|---|---|---|---|
| READY<br>ERROR<br>TONER/ DRUM UNIT | Manual Feed Empty | Media tray is empty. | Load media in the manual feed. |
| | Jam at A, B, C, D, E, OP, STD | Media Jam has occurred. | Remove the jammed media, then open the front cover and close it. (See Section 9.5.) |

## 9.1.3. User Error

| LED Indicator | Printer Status Display | Possible Cause | Recovery |
|---|---|---|---|
| READY □<br>ERROR ☼<br>TONER/ DRUM UNIT □ | Front Cover Open | Front cover is open. | Close the front cover. |
| | All Media Tray Empty | Media Tray is empty. | Load media in the media tray. |
| | Media Tray Empty | | |
| | Overrun | Overrun has occurred and cannot execute the current print job. | Press the **PRINT / RESET** button (less than 5 seconds) to delete the current print job.<br>( It is improved if Option RAM is added.) |
| | Memory Overflow | RAM overflow has occurred and cannot execute the current print job. | |
| READY □*<br>ERROR □<br>TONER/ DRUM UNIT ☼ | Low Toner | The toner is low. | Replace the toner cartridge soon. |
| | Change Drum Unit | Drum unit is wearing out. | Replace the drum unit soon, then press the **PRINT / RESET** button more than 20 seconds.<br>(The error indicator will go off.) |
| READY □<br>ERROR ☼<br>TONER/ DRUM UNIT ■ | Toner Empty | The toner is empty. | Replace the toner cartridge now. |
| | Drum Unit Missing | Drum unit is not installed. | Install the drum unit. |
| | Drum Unit Worn out | Drum unit is worn out. | Replace the drum unit now, then press the **PRINT / RESET** button more than 20 seconds.<br>(The error indicator will go off.) |

■ : on

□ : off

☼ : blinking

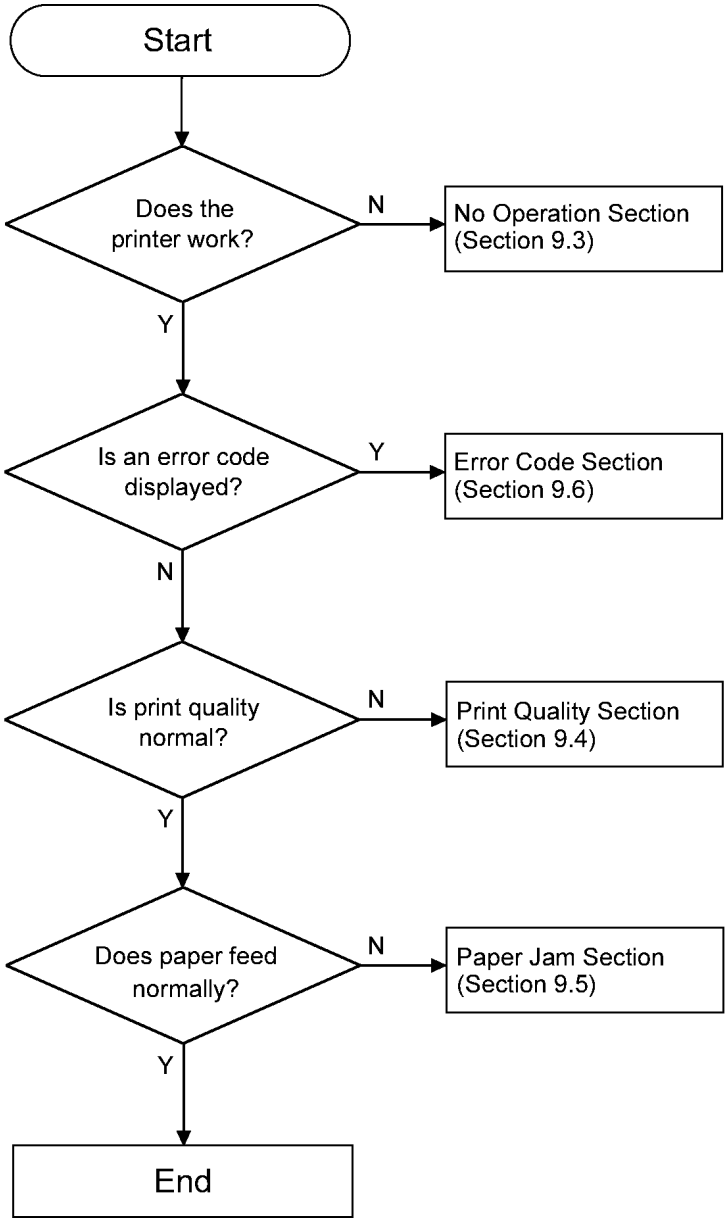
* The status varies depending on the condition.

## 9.1.4. Call for Service

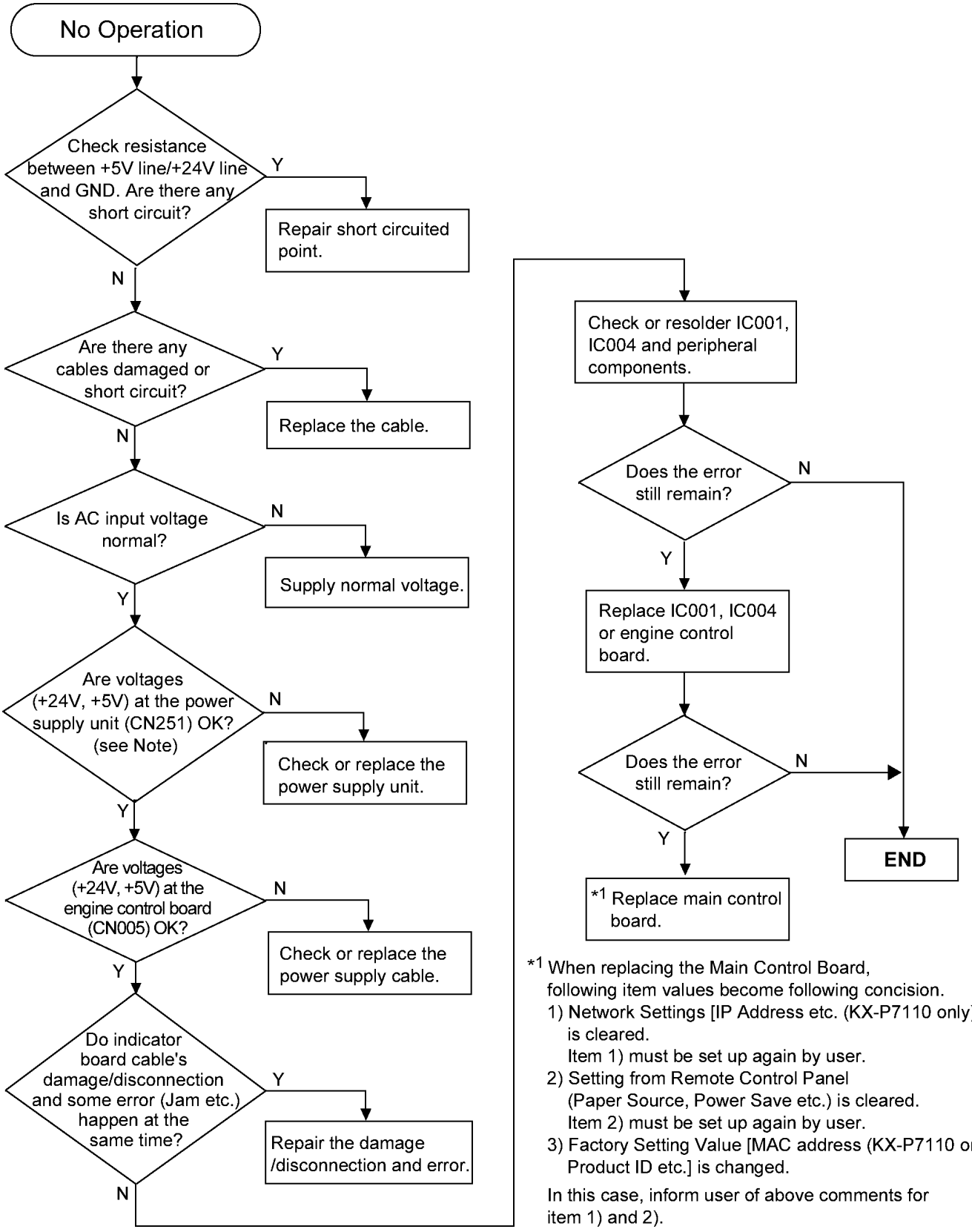
| LED Indicator | Printer Status Display | Possible Cause | Recovery |
|---|---|---|---|
| ▭ READY<br>▬ ERROR<br>▭ TONER/ DRUM UNIT | Call for Service (Code : E20) | Scanner Motor is not rotating properly. Or HSYNC Signal is not detected. | See Section 9.6.1. |
| | Call for Service (Code : E30) | Fuser temperature is over correct range. | See Section 9.6.2. |
| | Call for Service (Code : E31) | 1.Fuser temperature does not reach to 100℃ within 30 sec., or it is less than 155℃ during warm up.<br>2.Fuser temperature does not return to target temperature within 30 sec. after becoming lower than the target. | See Section 9.6.3. |
| | Call for Service (Code : E32) | Fuser thermistor is disconnected or open. | See Section 9.6.4. |
| | Call for Service (Code : E50) | Fan Motor is not rotating properly. | See Section 9.6.5. |
| | Call for Service (Code : E54) | Controller CPU program ROM checksum error occurred at power on. | See Section 9.6.6. |
| | Call for Service (Code : E71) | Read/Write error of EEPROM | See Section 9.6.7. |
| | Call for Service (Code : E73) | Parity error occurs or no response comes back from engine CPU. | See Section 9.6.8. |
| | Call for Service (Code : E81) | Controller RAM check error has occurred at power on. | See Section 9.6.9. |
| | Call for Service (Code : E90) | Controller EEPROM check error has occurred. | See Section 9.6.10. |
| | Call for Service (Code : E91) | USB I/F check error has occurred. | See Section 9.6.11. |
| | Call for Service (Code : E96) | Network I/F check error has occurred. | See Section 9.6.12. |

▬ : on
▭ : off

## 9.2. Initial Troubleshooting Flowchart



## 9.3. No Operation



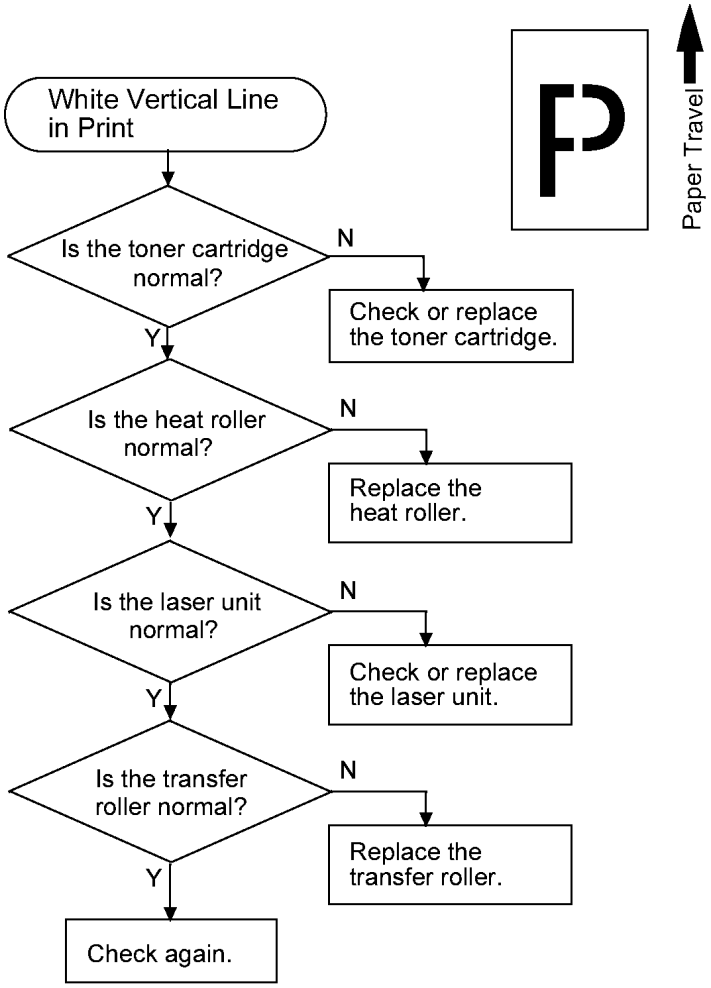

*1 When replacing the Main Control Board, following item values become following concision.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.

In this case, inform user of above comments for item 1) and 2).

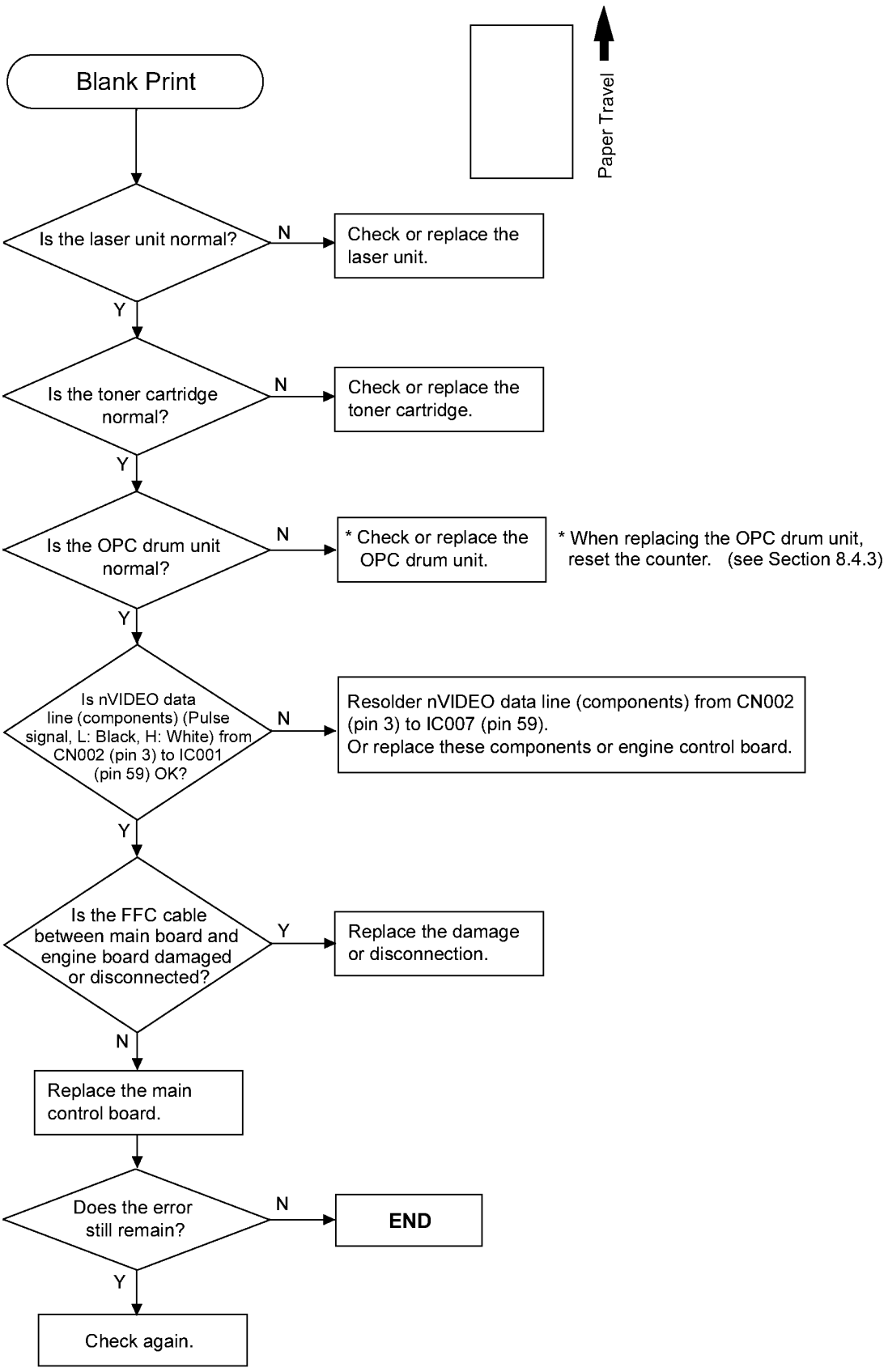
Note:
If cable between PSU (power supply unit) and main control board is disconnected, proper voltage will not come out from PSU.
If you check PSU only without the connection, connect 50Ω between +5V and GND (+5V). Proper voltage [approx +5V (approx 4.75V - approx 5.25V) and approx +24V (approx 21.6V - approx 27.6V)] will come out from PSU.

# 9.4. Print Quality

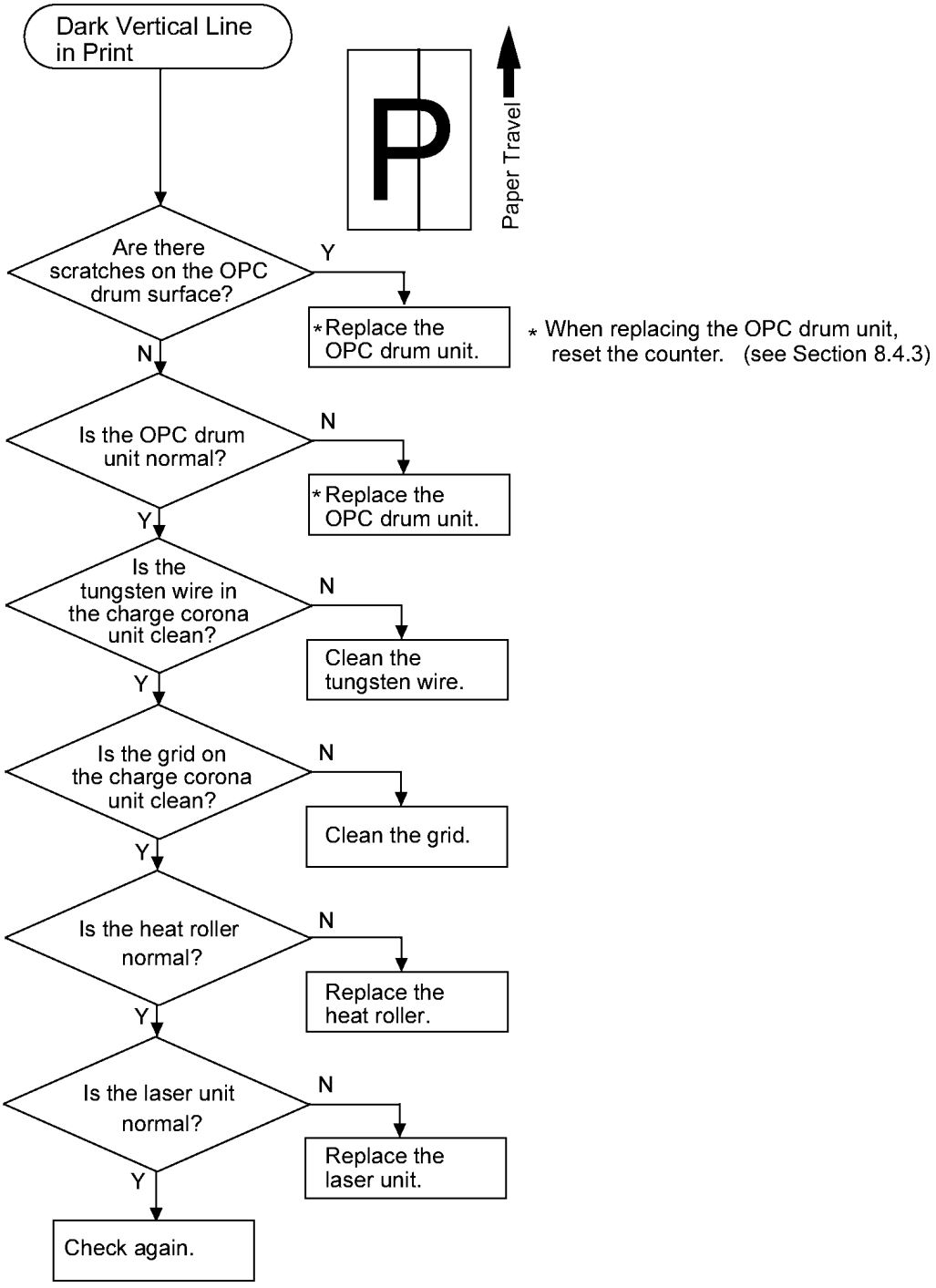
## 9.4.1. White Vertical Line in Print



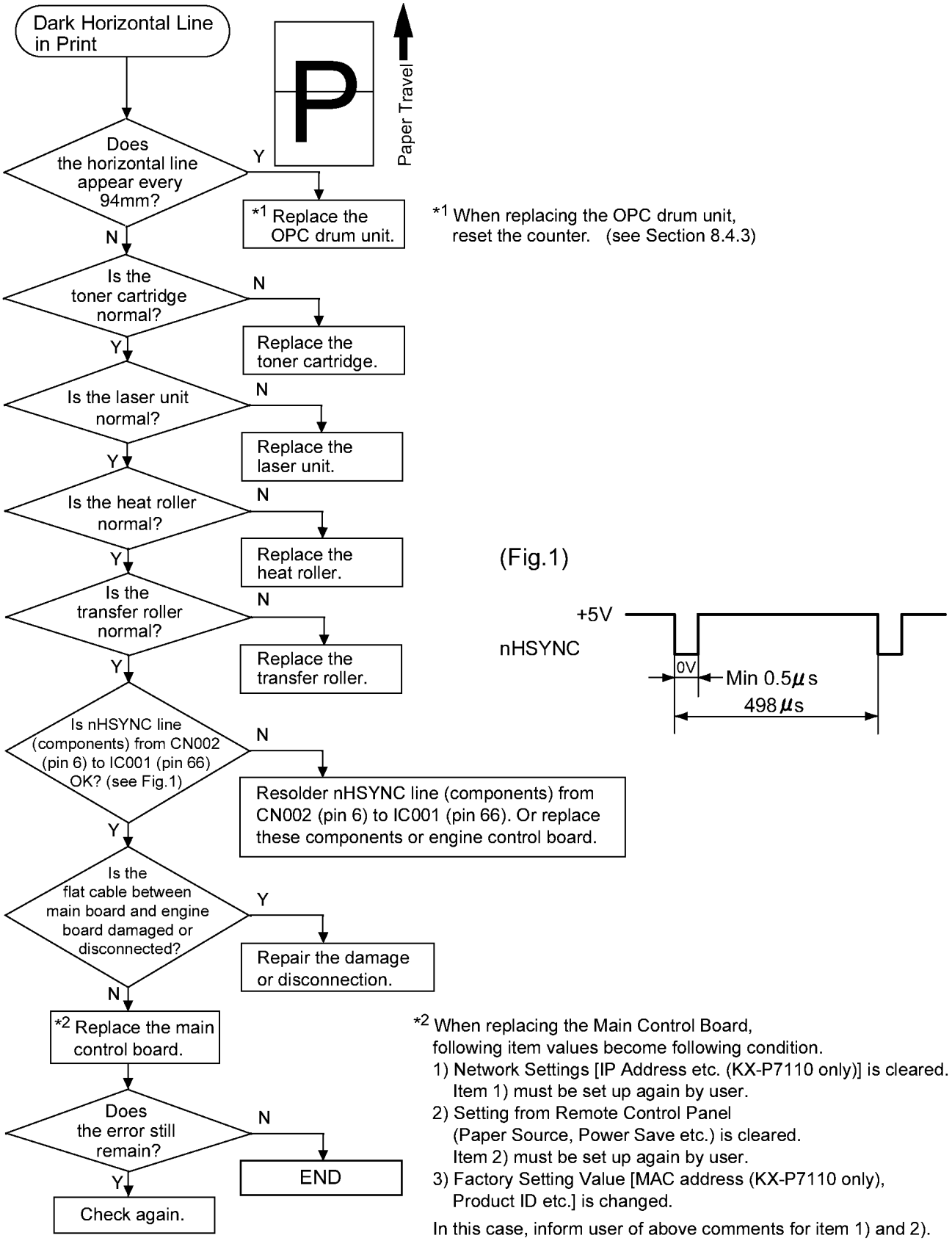
## 9.4.2. Blank Print



## 9.4.3. Dark Vertical Line in Print



## 9.4.4. Dark Horizontal Line in Print




*1 When replacing the OPC drum unit, reset the counter. (see Section 8.4.3)

(Fig.1)

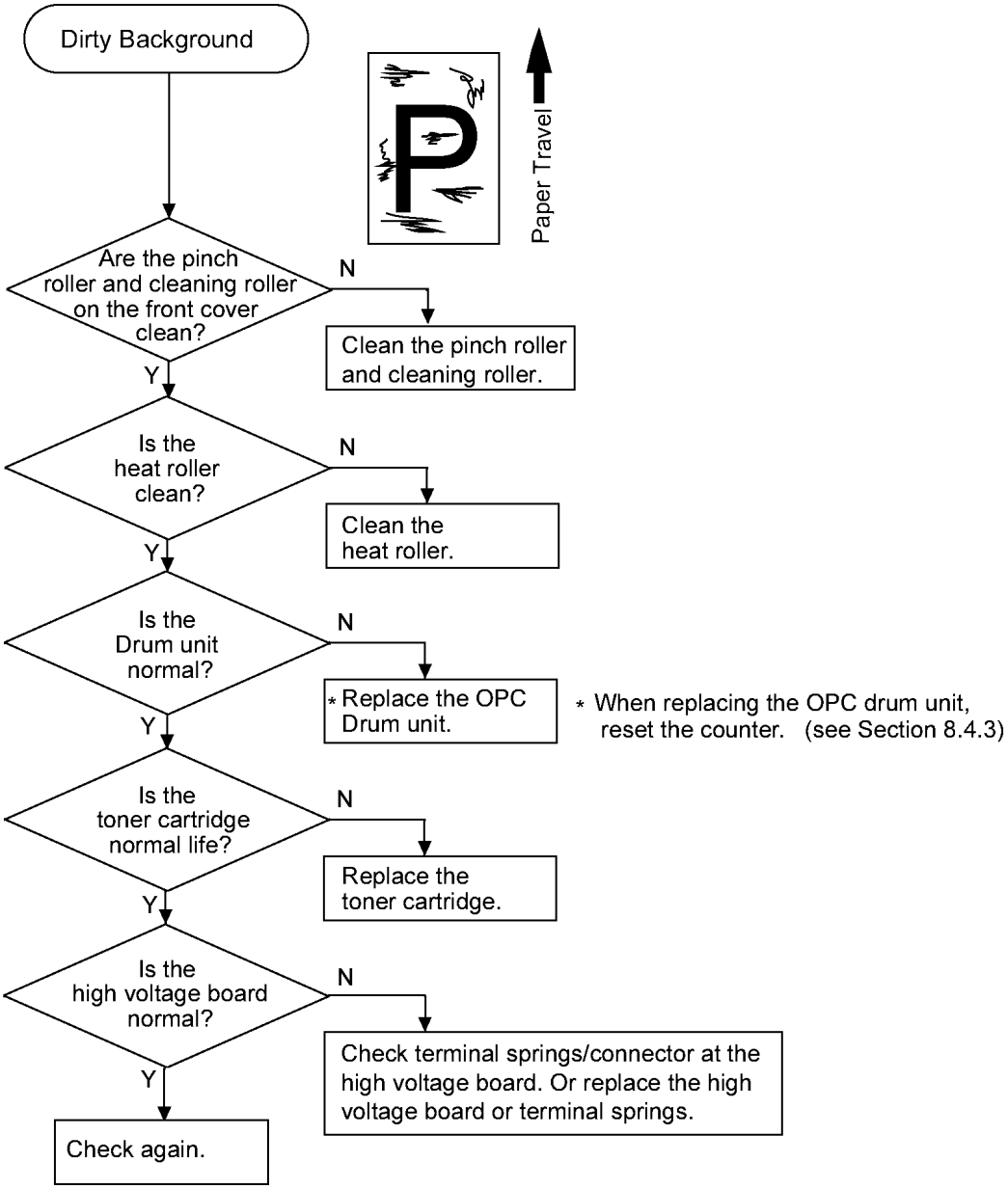



*2 When replacing the Main Control Board, following item values become following condition.

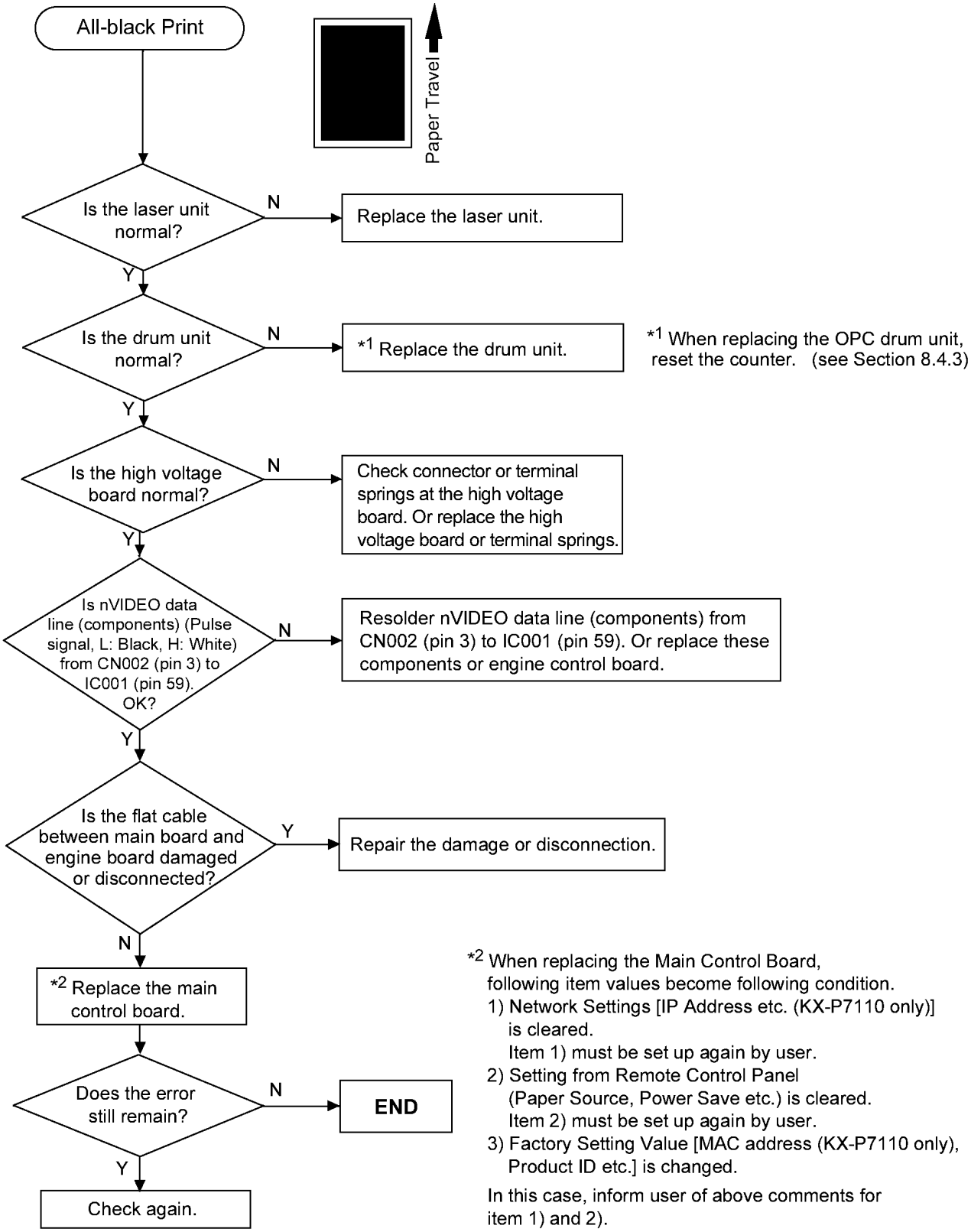
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared. Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared. Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.

In this case, inform user of above comments for item 1) and 2).

## 9.4.5. Dirty Background



## 9.4.6. All-black Print



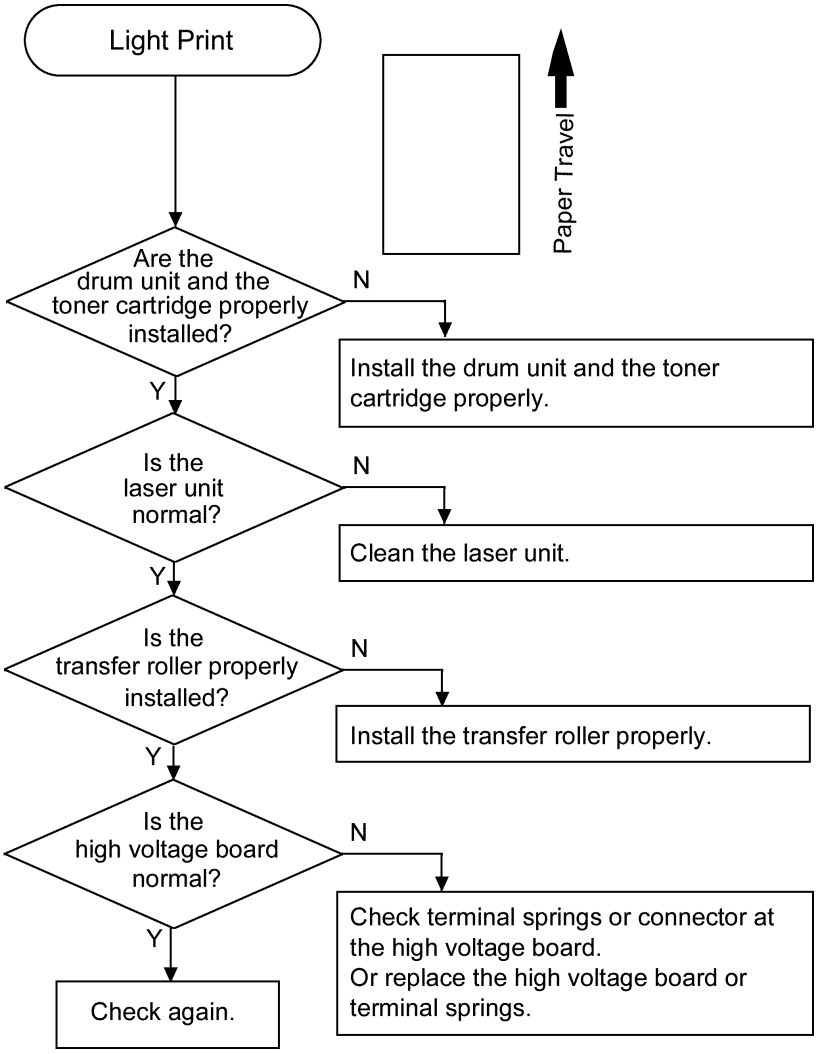

*1 When replacing the OPC drum unit, reset the counter. (see Section 8.4.3)

*2 When replacing the Main Control Board, following item values become following condition.

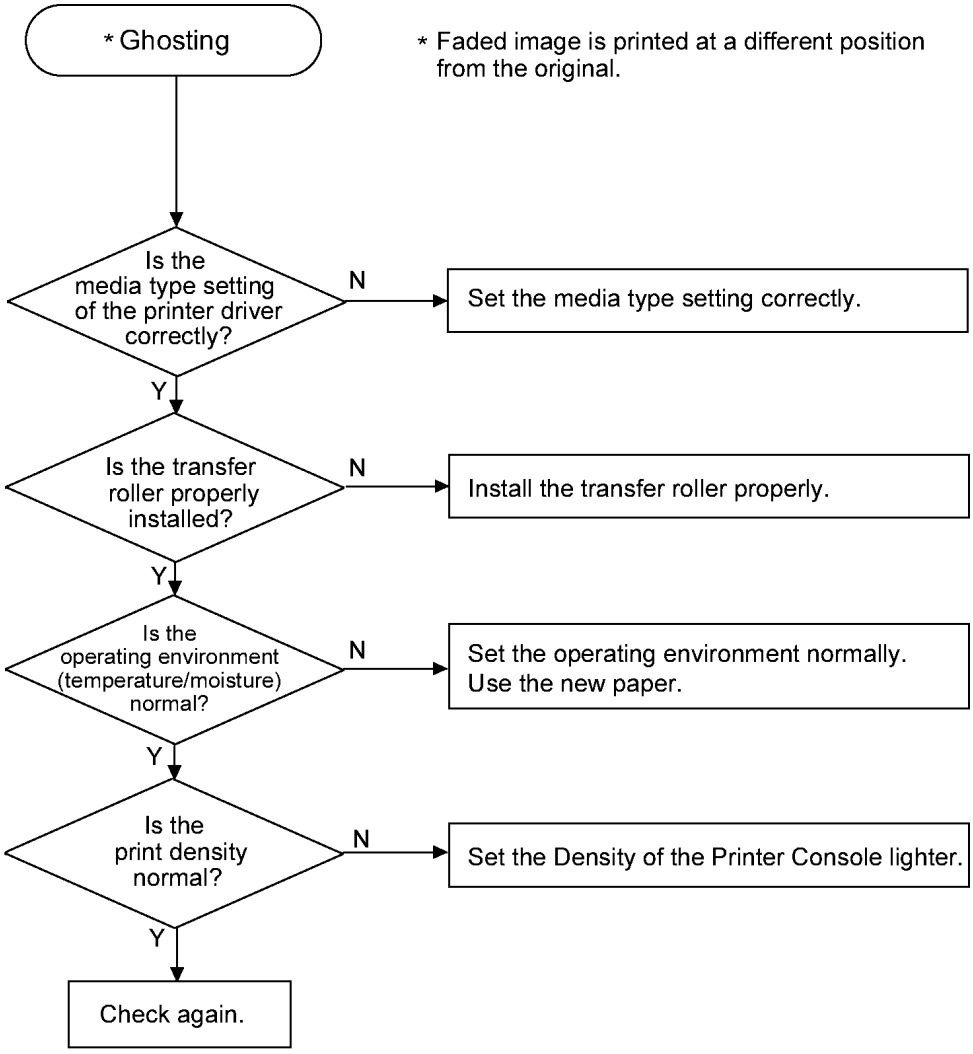
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
   Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
   Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.

In this case, inform user of above comments for item 1) and 2).

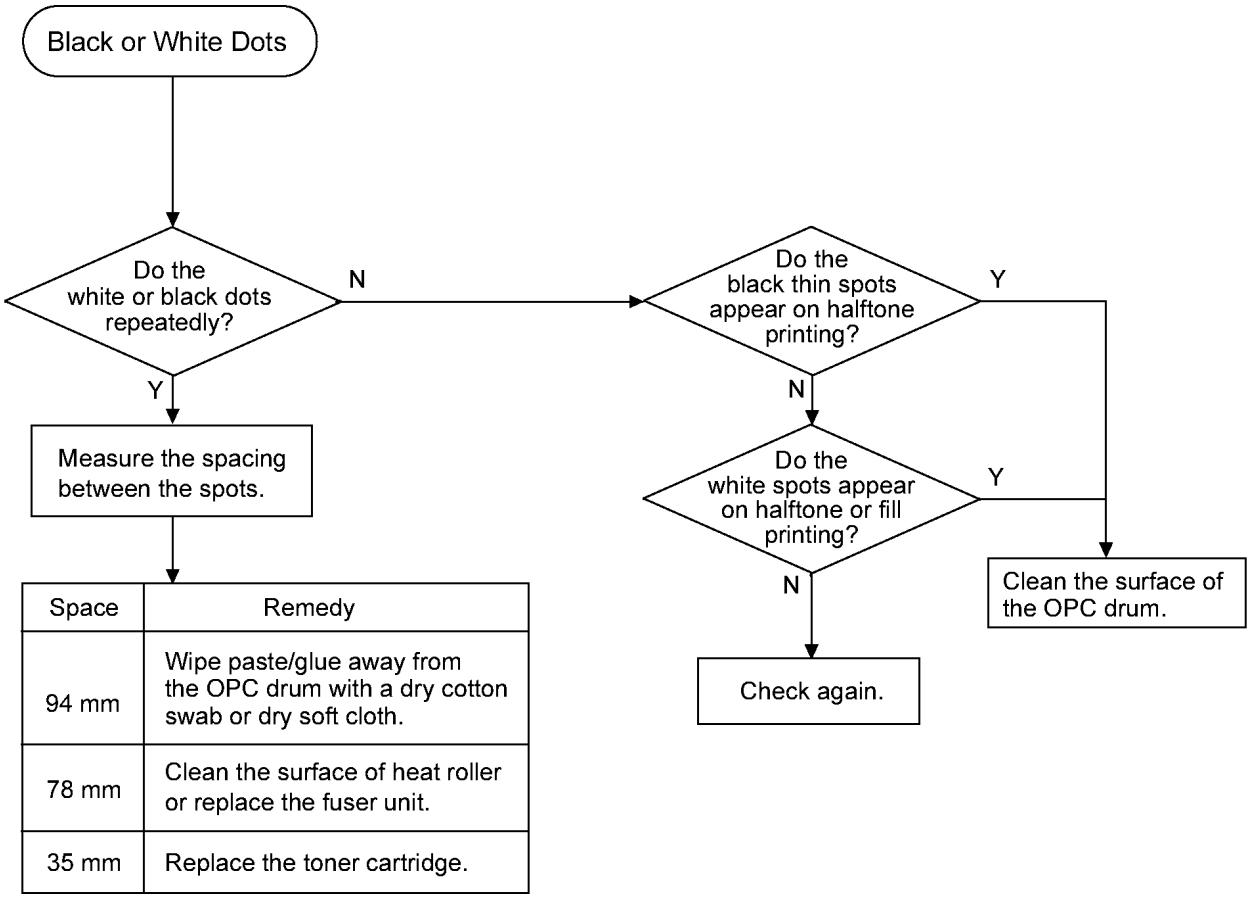
## 9.4.7. Light Print



## 9.4.8. Ghosting

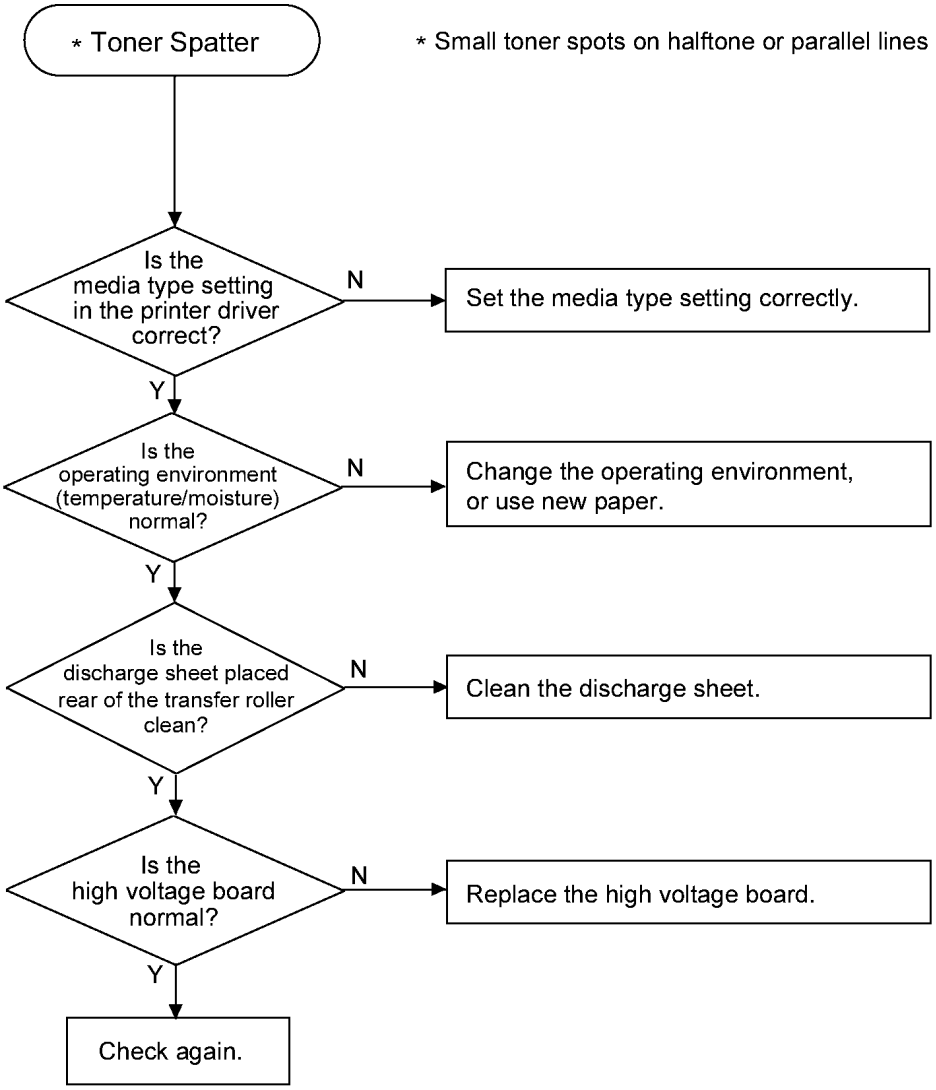


## 9.4.9. Black or White Dots




| Space | Remedy |
|---|---|
| 94 mm | Wipe paste/glue away from the OPC drum with a dry cotton swab or dry soft cloth. |
| 78 mm | Clean the surface of heat roller or replace the fuser unit. |
| 35 mm | Replace the toner cartridge. |

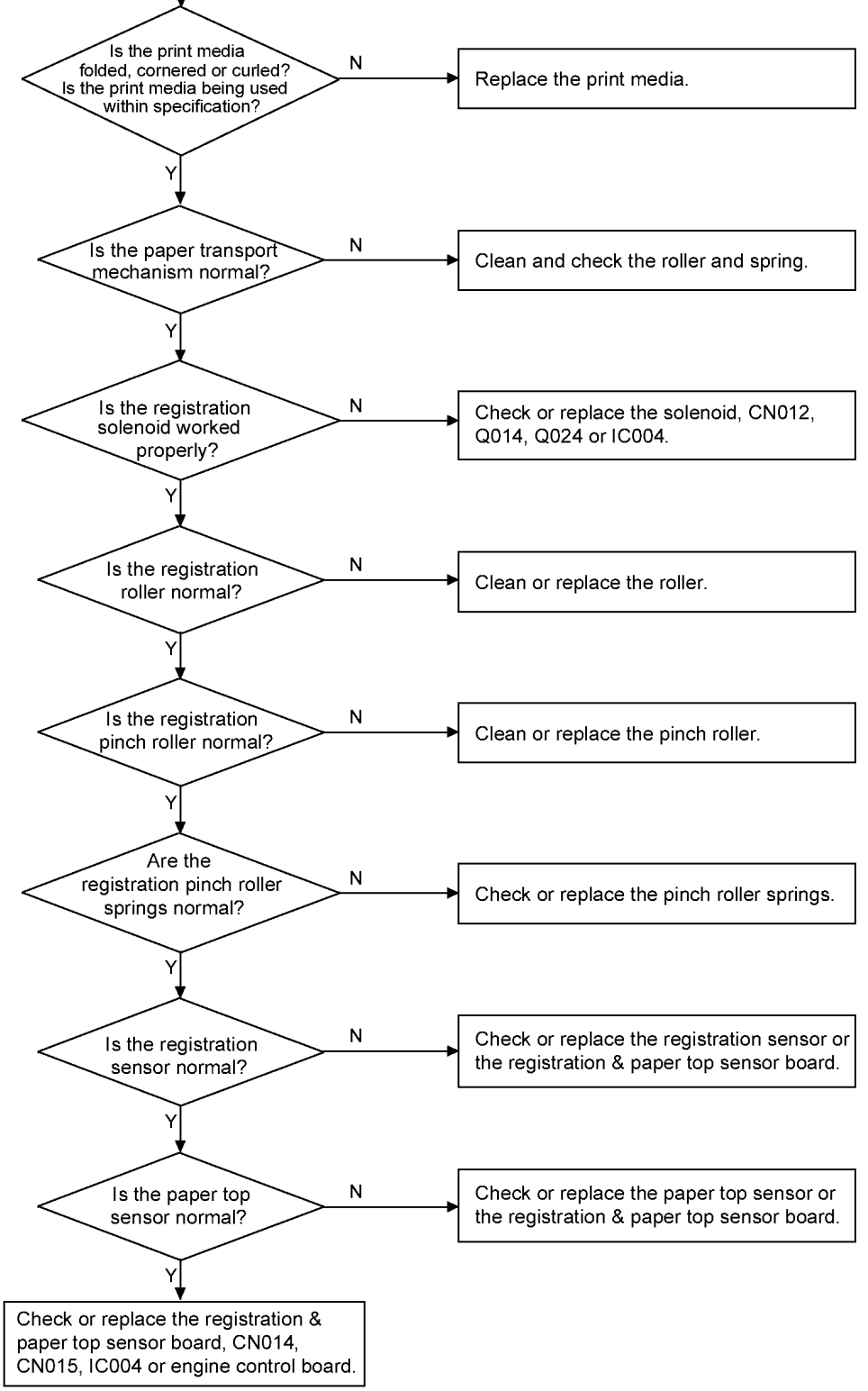
## 9.4.10. Toner Spatter



# 9.5. Paper Jam

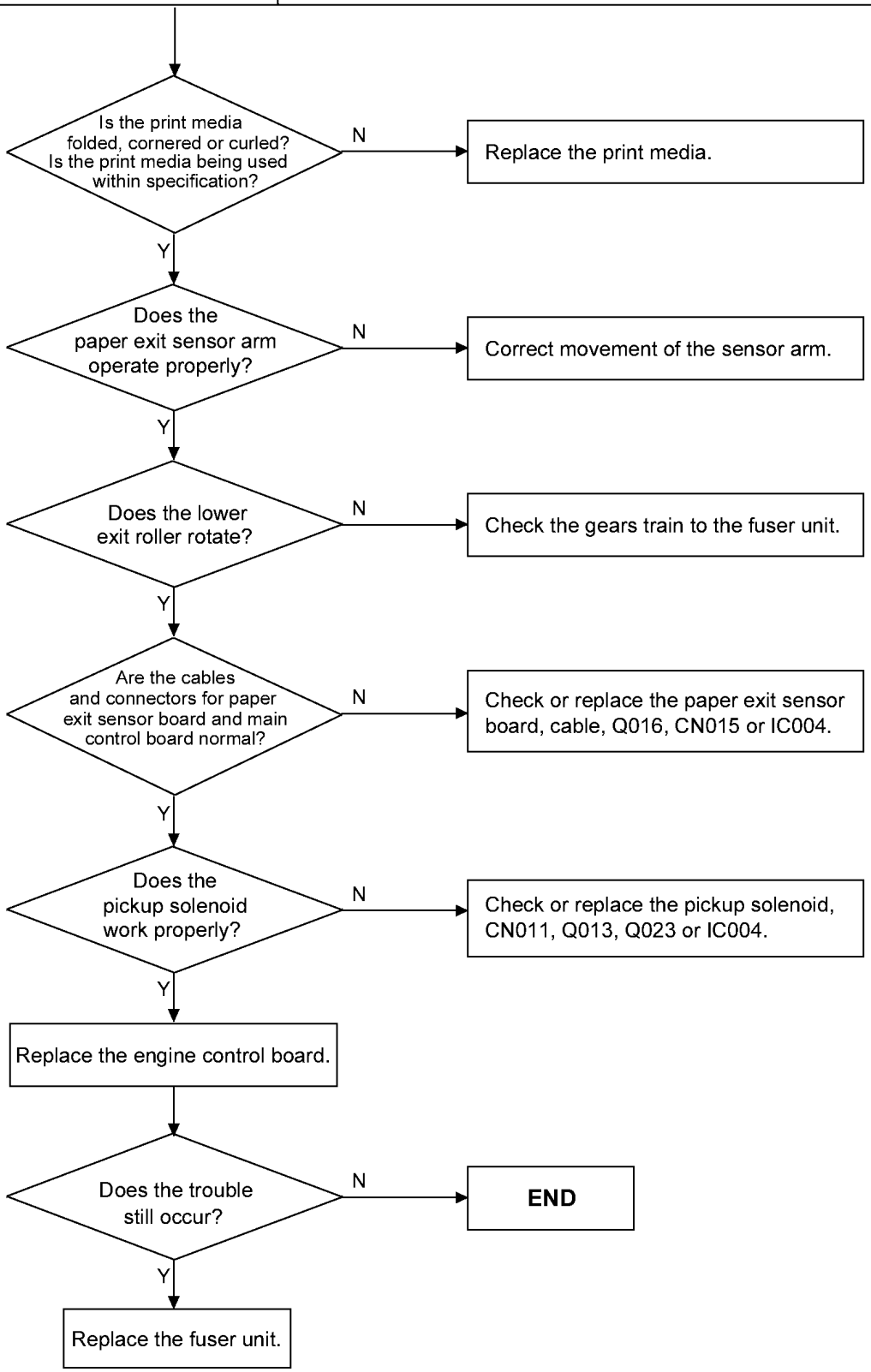
## 9.5.1. Jam at A

| PC Message | Possible Cause |
|---|---|
| Jam at A | The paper exit/ADU sensor did not sense print media. |



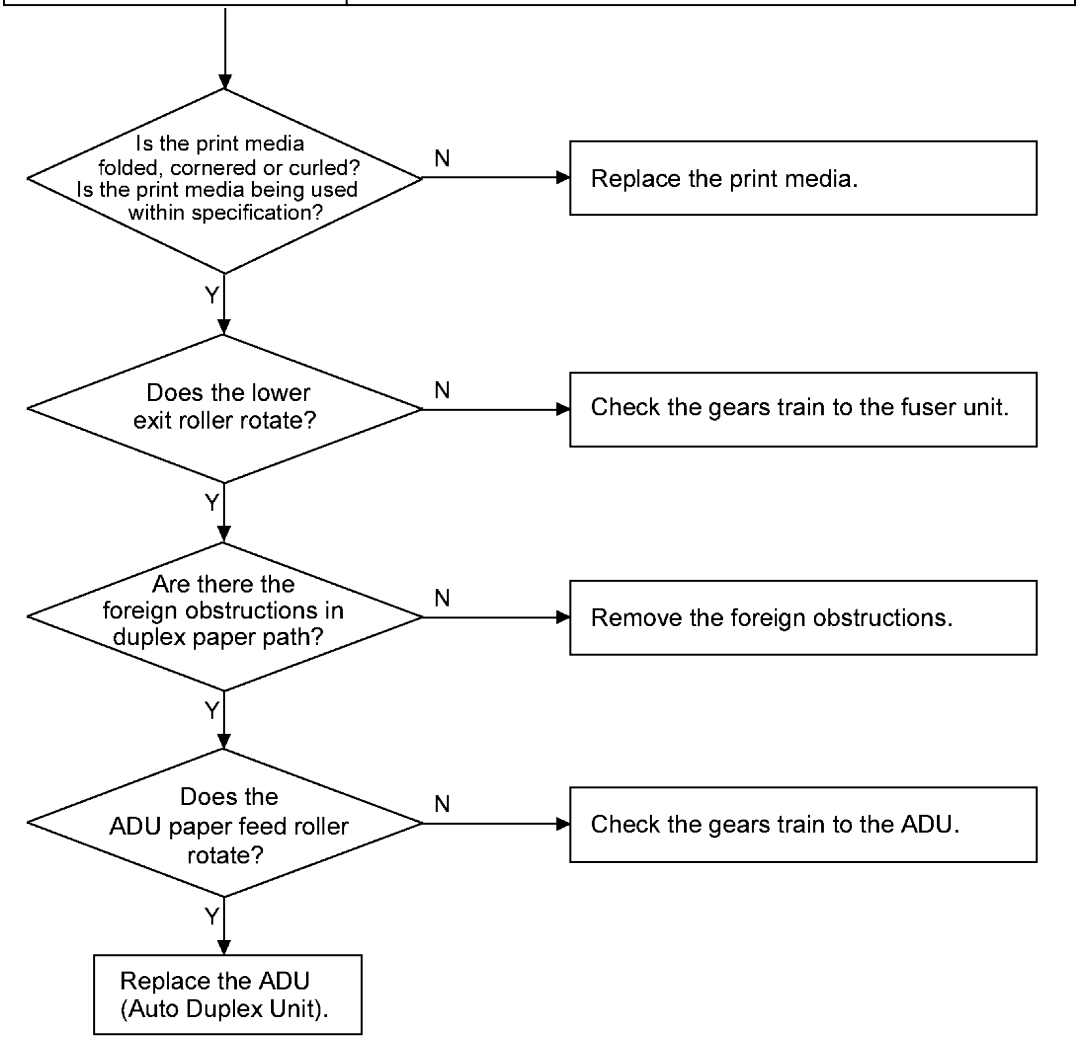
## 9.5.2. Jam at B

| PC Message | Possible Cause |
|---|---|
| Jam at B | Print media remains on the paper exit sensor too long. |



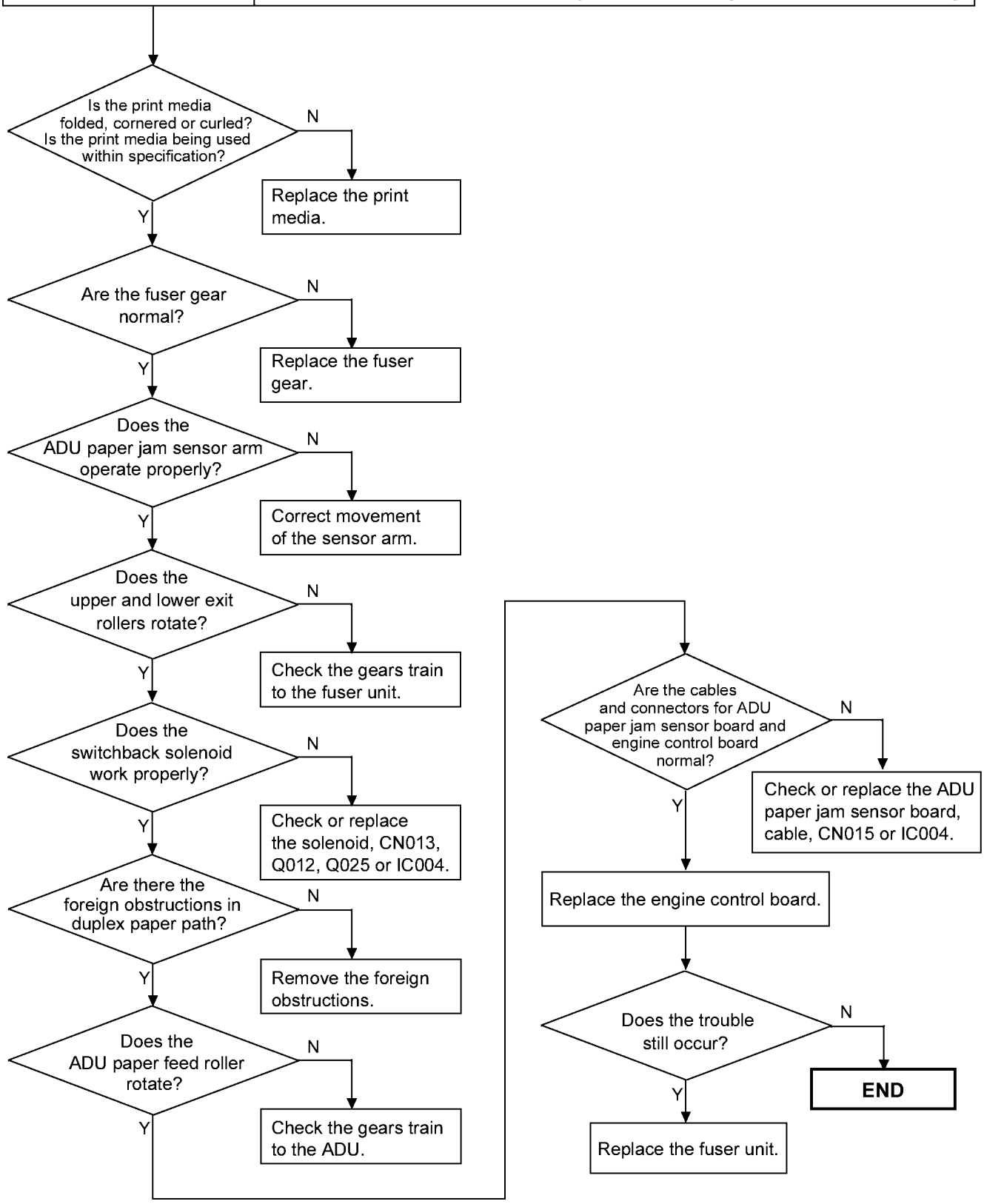
## 9.5.3. Jam at C

| PC Message | Possible Cause |
|---|---|
| Jam at C | The registration sensor did not sense print media on the Auto Duplex printing. |



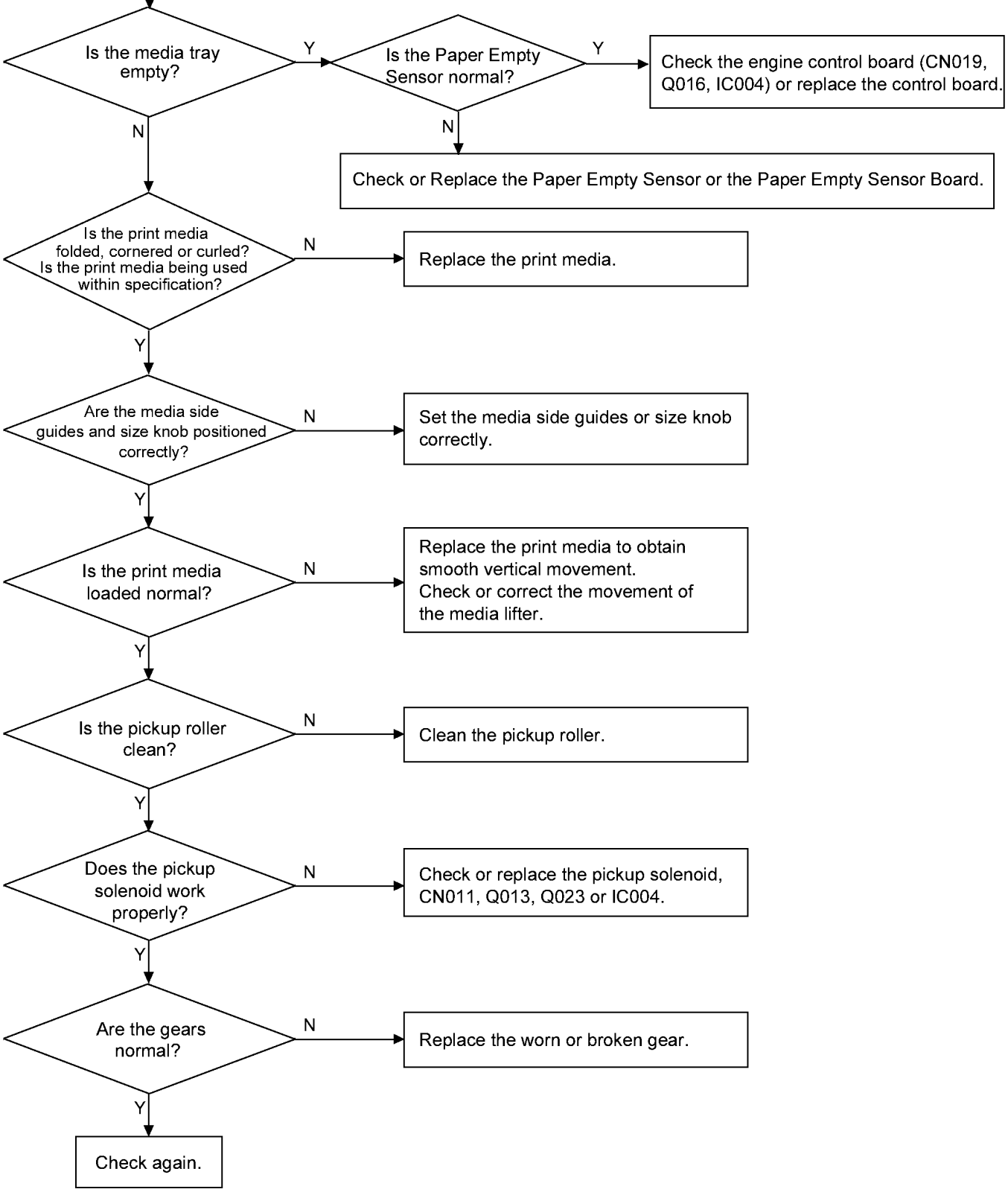
## 9.5.4. Jam at D, E

| PC Message | Possible Cause |
|---|---|
| Jam at D | The ADU paper jam sensor did not sense print media on the Auto Duplex printing. |
| Jam at E | Print media remains on the ADU paper jam sensor too long on the Auto Duplex printing. |



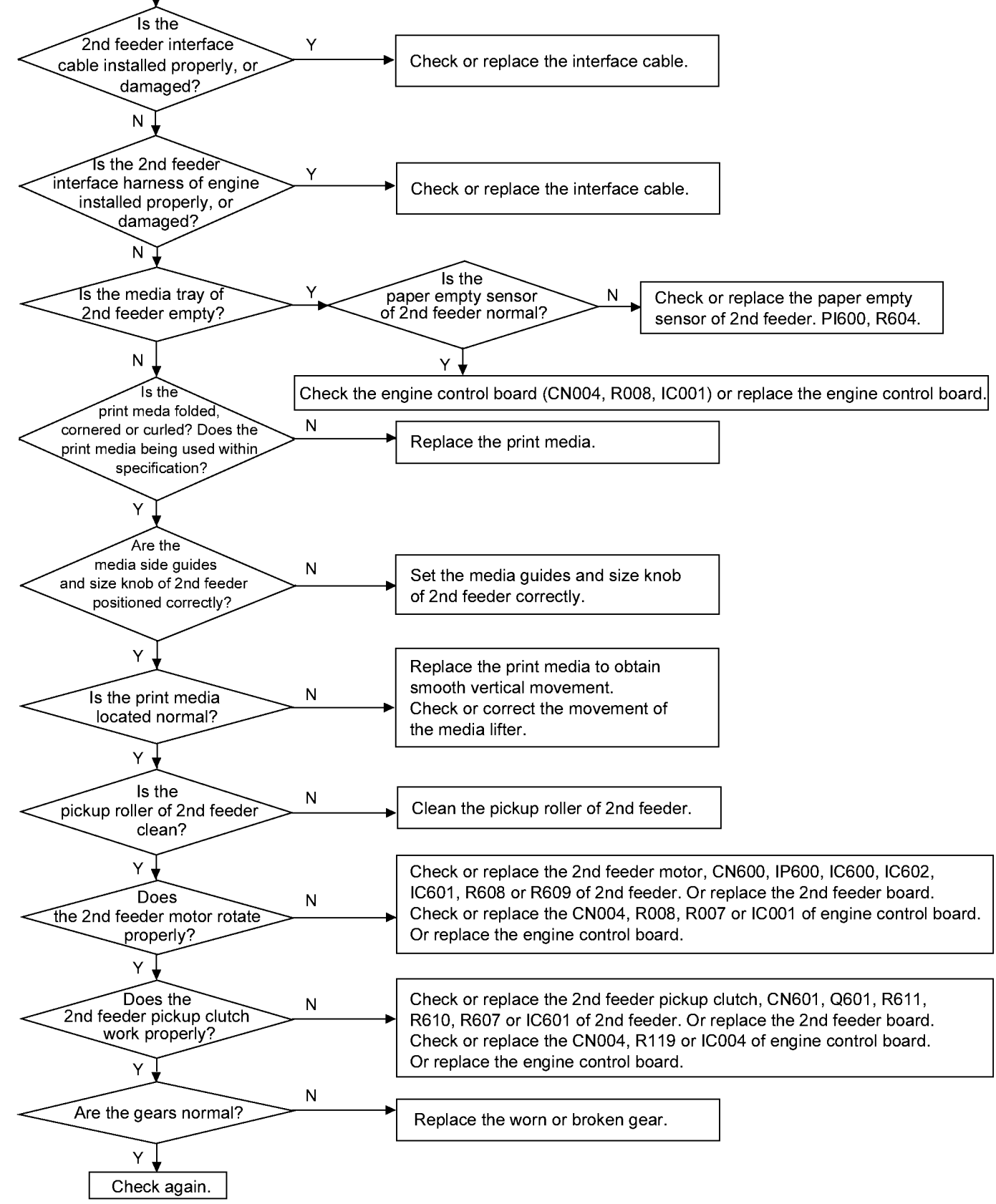
## 9.5.5. Jam at STD

| PC Message | Possible Cause |
|---|---|
| Jam at STD | The registration sensor did not sense print media, or the Paper Empty Sensor did not work properly. |



## 9.5.6. Jam at OP

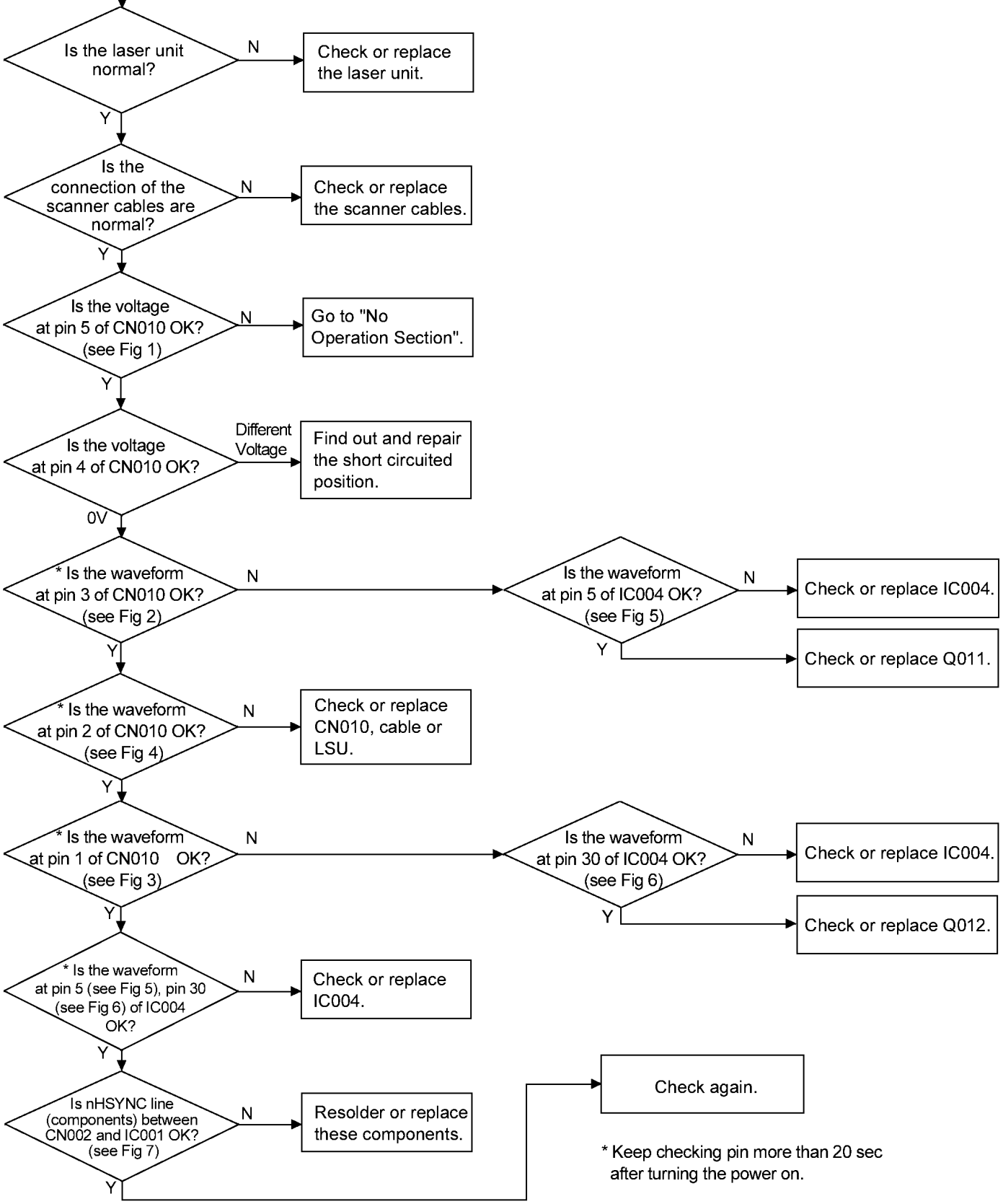
| PC Message | Possible Cause |
|---|---|
| Jam at OP | The registration sensor did not sense print media from 2nd feeder, or the paper empty sensor of 2nd feeder did not work properly. |



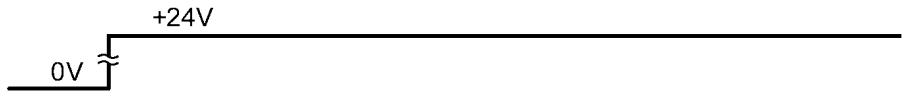
# 9.6. Call Service

## 9.6.1. E20

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E20) | Scanner motor speed is not locked within 5 seconds after scanner motor starts. Or HSYNC Signal is not detected. |



(Fig.1) +24V
(pin 5 of CN010)



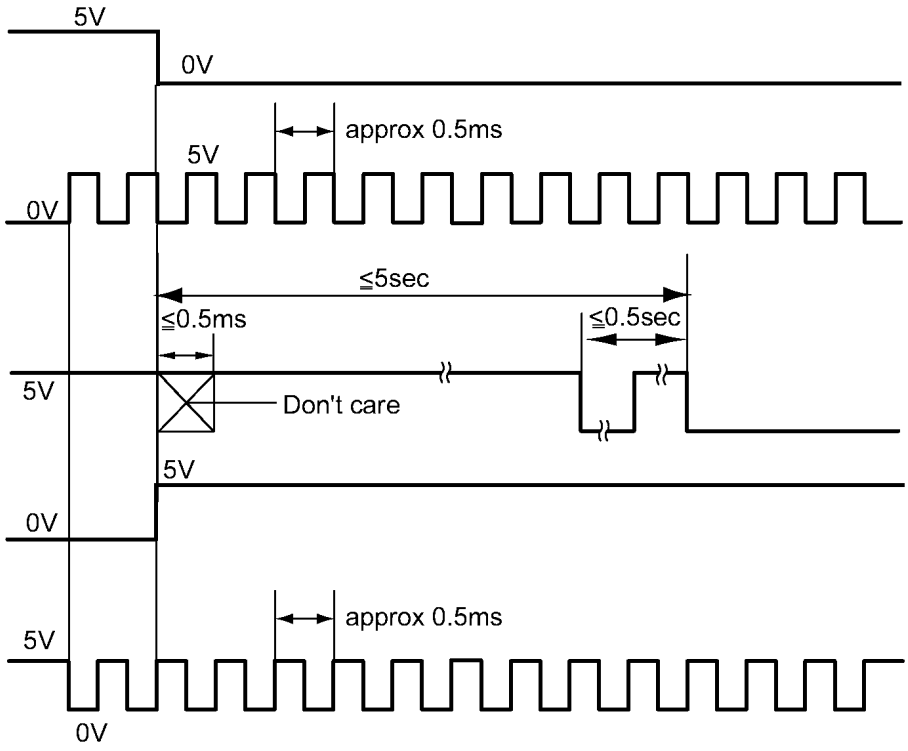

(Fig.2) nSNRCTL
(pin 3 of CN010)

(Fig.3) nSNRCLK
(pin 1 of CN010)

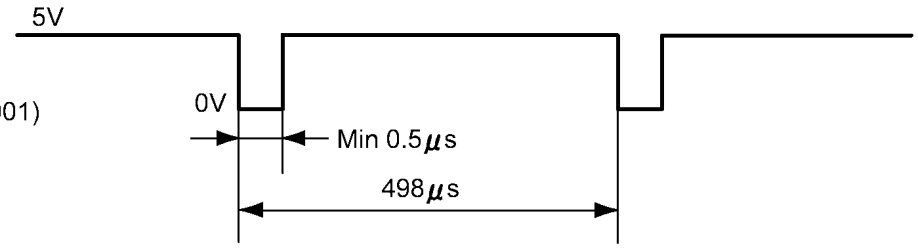
(Fig.4) nSNRLD
(pin 2 of CN010)

(Fig.5) SNRCTL
(pin 5 of IC004)

(Fig.6) SNRCLK
(pin 30 of IC004)

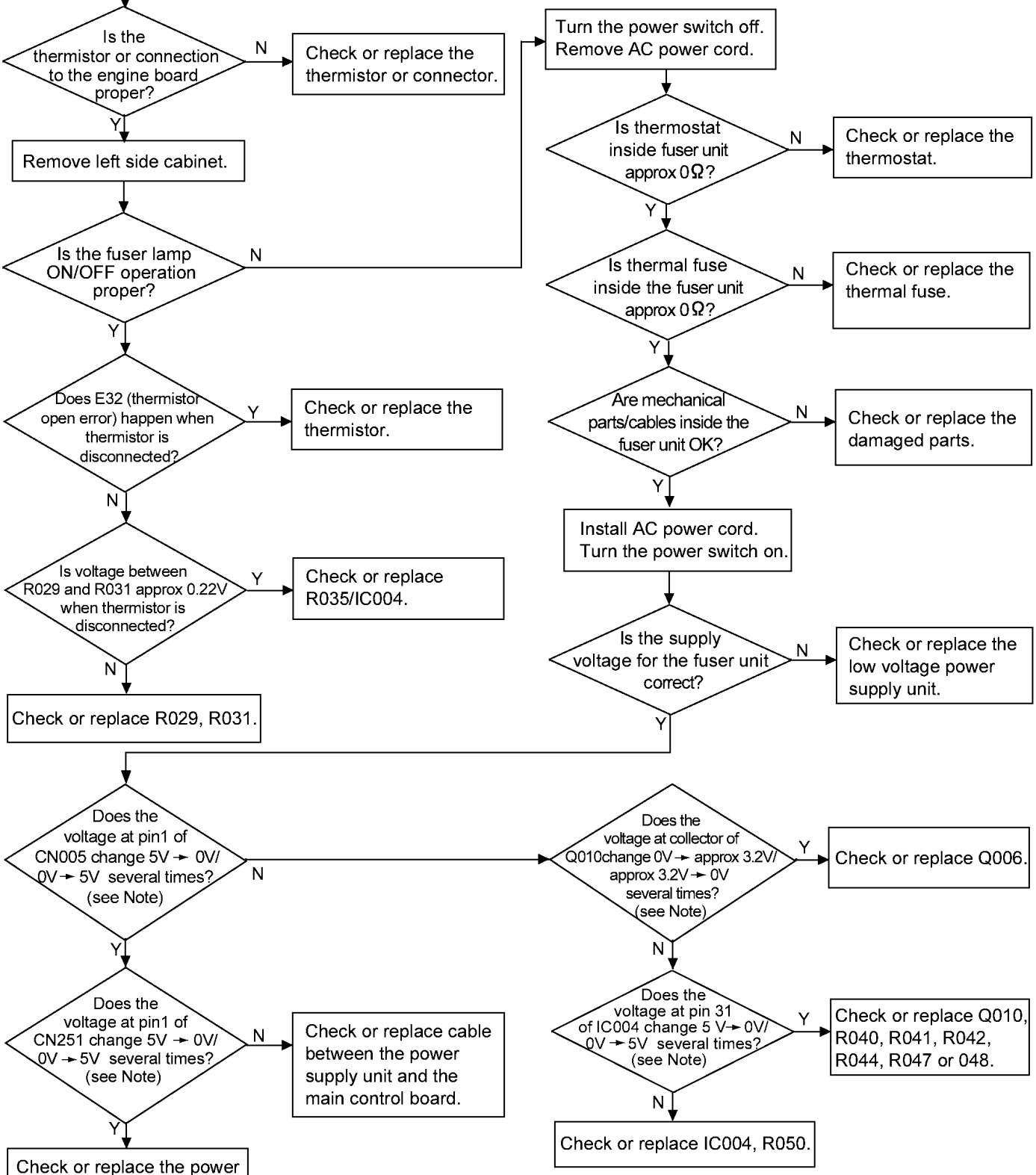



(Fig.7) nHSYNC
(pin 6 of CN002
and pin 66 of IC001)



## 9.6.2. E30

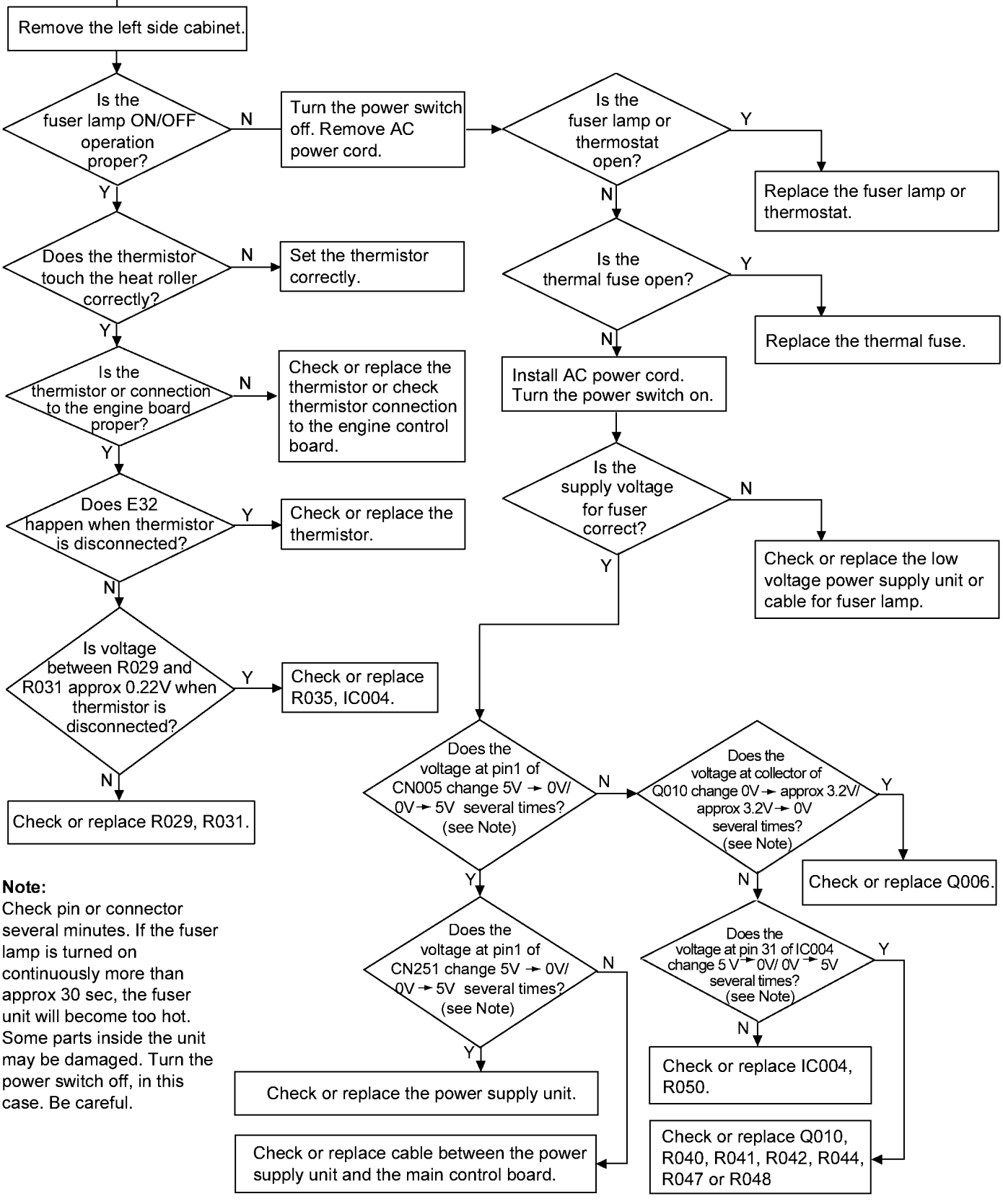
| PC Message | Possible Cause |
|---|---|
| Call for Service<br>(Code : E30) | Fuser temperature is over 215°C.<br>(Fuser over heat had happened.) |




**Note:**
Check pin or connector several minutes. If the fuser lamp is turned on continuously more than approx 30 sec, the fuser unit will become too hot. Some parts inside the unit may be damaged. Turn the power switch off, in this case. Be careful.

## 9.6.3. E31

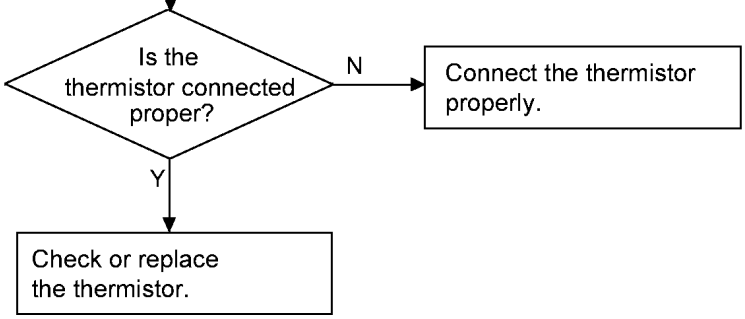
| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E31) | • Fuser temperature does not reach 100°C within 30 sec, or it is less than 155°C during warm up.<br>• Fuser temperature does not return to target temperature within 30 sec after becoming lower than the target. |




**Note:**
Check pin or connector several minutes. If the fuser lamp is turned on continuously more than approx 30 sec, the fuser unit will become too hot. Some parts inside the unit may be damaged. Turn the power switch off, in this case. Be careful.

## 9.6.4. E32

| PC Message | Possible Cause |
|---|---|
| Call for Service<br>(Code : E32) | Fuser thermistor is disconnected or open. |



## 9.6.5. E50

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E50) | Fan motor is not rotating properly. |

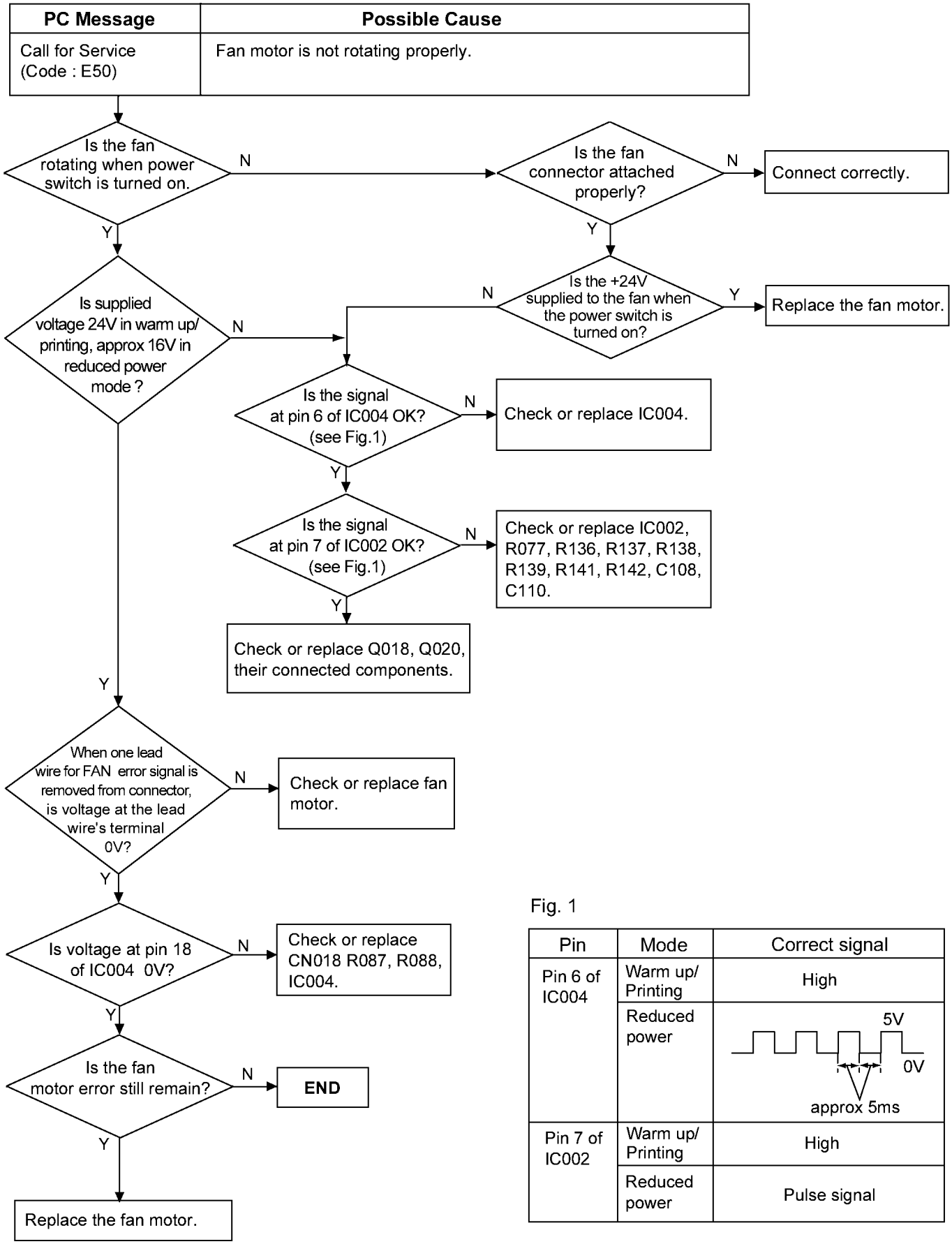
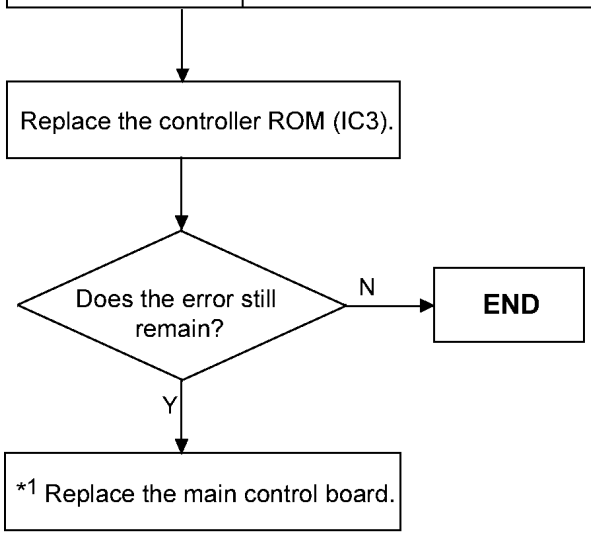



Fig. 1

| Pin | Mode | Correct signal |
|---|---|---|
| Pin 6 of IC004 | Warm up/ Printing | High |
| | Reduced power |  |
| Pin 7 of IC002 | Warm up/ Printing | High |
| | Reduced power | Pulse signal |

## 9.6.6. E54

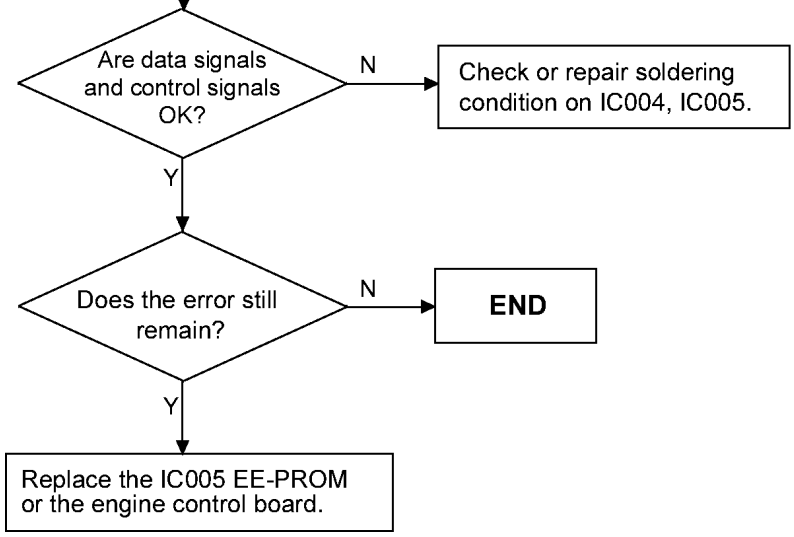
| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E54) | Controller CPU program ROM checksum error has occurred. |




*1 When replacing the Main Control Board,
following item values become following condition.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.
In this case, inform user of above comments for item 1) and 2).

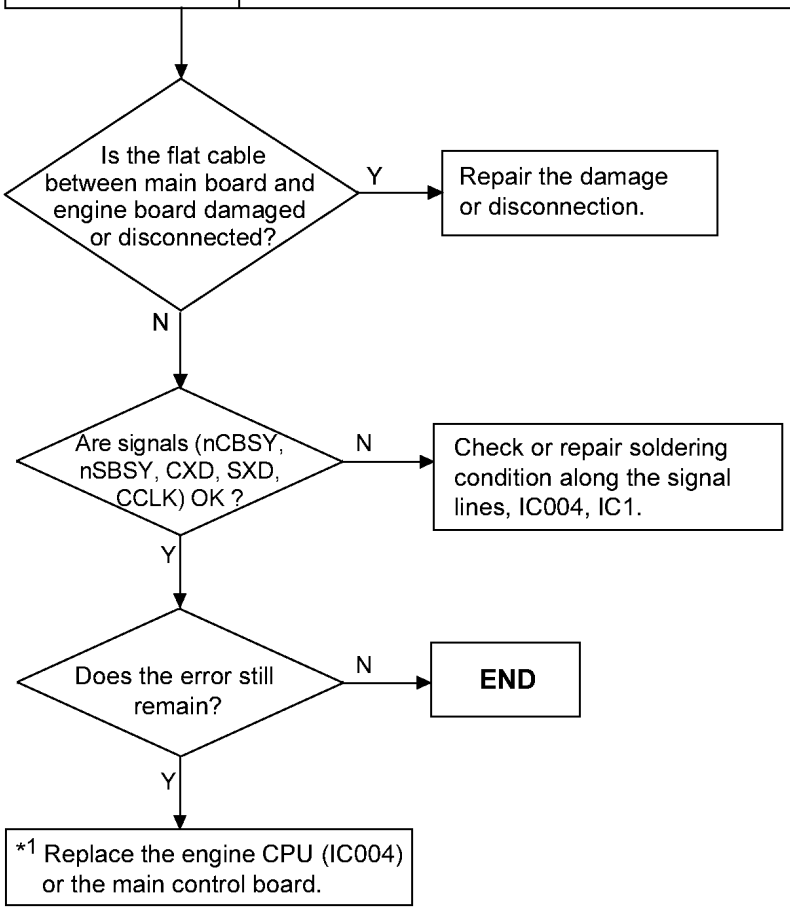
## 9.6.7. E71

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E71) | Engine EE-PROM Read/Write error has occurred. |



## 9.6.8. E73

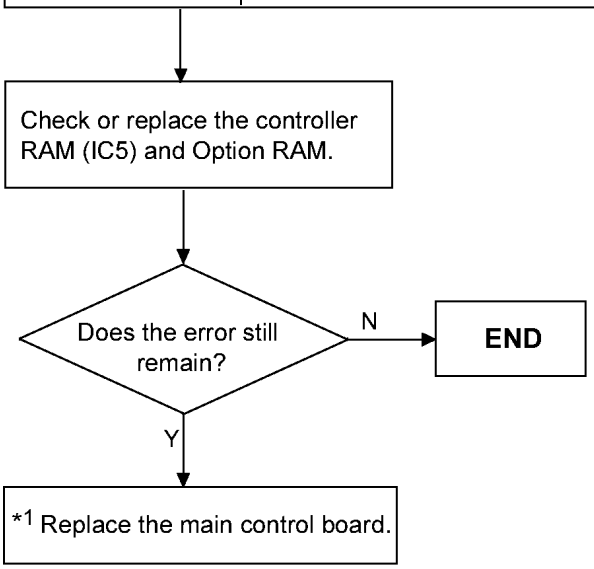
| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E73) | Parity error occurs or no response comes back from the engine CPU. |




*1 When replacing the Main Control Board,
following item values become following condition.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.
In this case, inform user of above comments for item 1) and 2).

## 9.6.9. E81

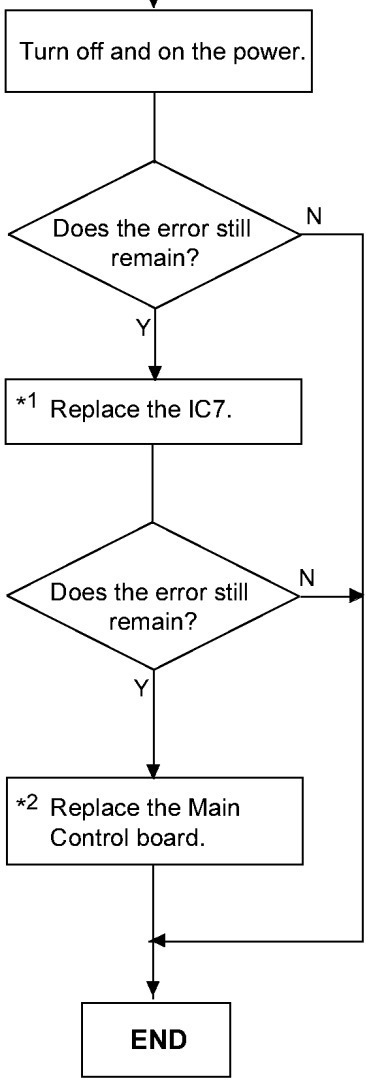
| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E81) | Controller RAM check error has occurred. |




*1 When replacing the Main Control Board,
following item values become following condition.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.
In this case, inform user of above comments for item 1) and 2).

## 9.6.10. E90

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E90) | Controller EEPROM check error has occurred. |

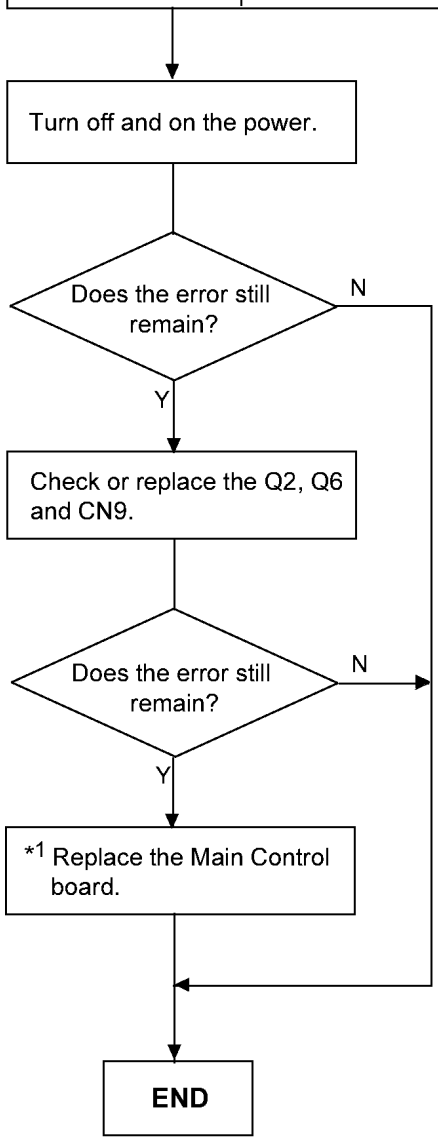



*1 When replacing IC7, following item values are deleted.
1) Network Settings [IP Address etc. (KX-P7110 only)]
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.)
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.]
Item 3) must be set up again by software tool by repair technician.
Refer to the "Read me" of software tool for the way of setting.
In this case, inform user of above comments for item 1) and 2).

*2 When replacing the Main Control Board,
following item values become following condition.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.
In this case, inform user of above comments for item 1) and 2).

## 9.6.11. E91

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E91) | USB I/F check error has occurred. |

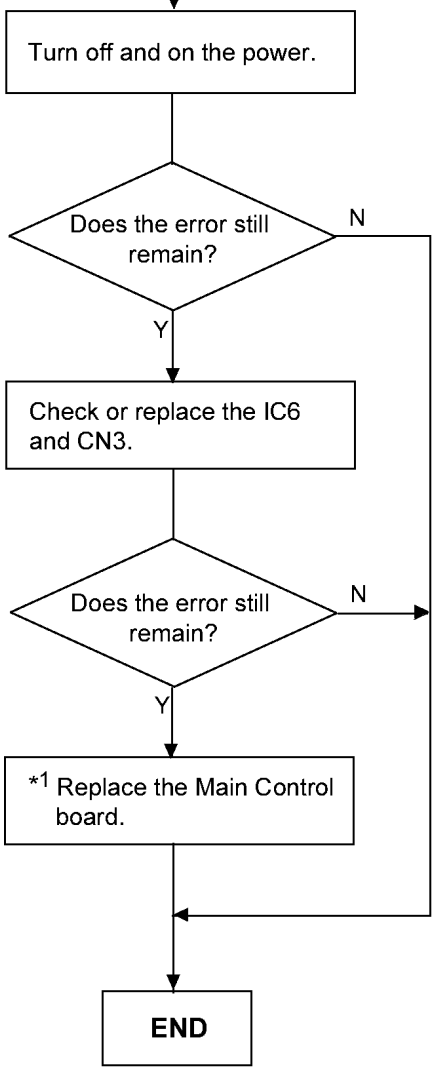



*1 When replacing the Main Control Board, following item values become following condition.
1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.

In this case, inform user of above comments for item 1) and 2).

## 9.6.12. E96

| PC Message | Possible Cause |
|---|---|
| Call for Service (Code : E96) | Network I/F check error has occurred. |




*1 When replacing the Main Control Board,
following item values become following condition.

1) Network Settings [IP Address etc. (KX-P7110 only)] is cleared.
   Item 1) must be set up again by user.
2) Setting from Remote Control Panel (Paper Source, Power Save etc.) is cleared.
   Item 2) must be set up again by user.
3) Factory Setting Value [MAC address (KX-P7110 only), Product ID etc.] is changed.

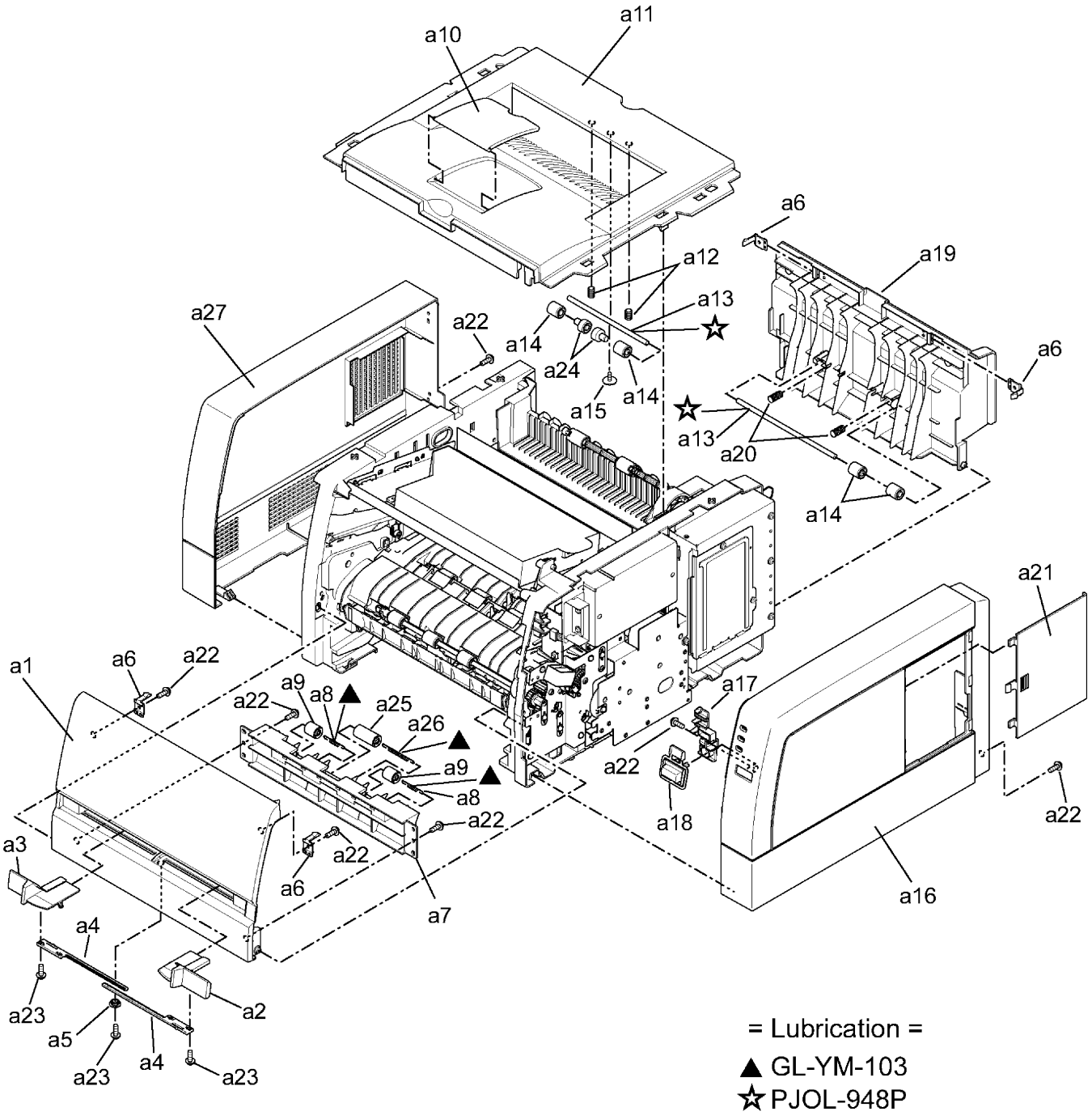
In this case, inform user of above comments for item 1) and 2).

# 10 Replacement Parts List with Lubrication Guide

**Notes:**

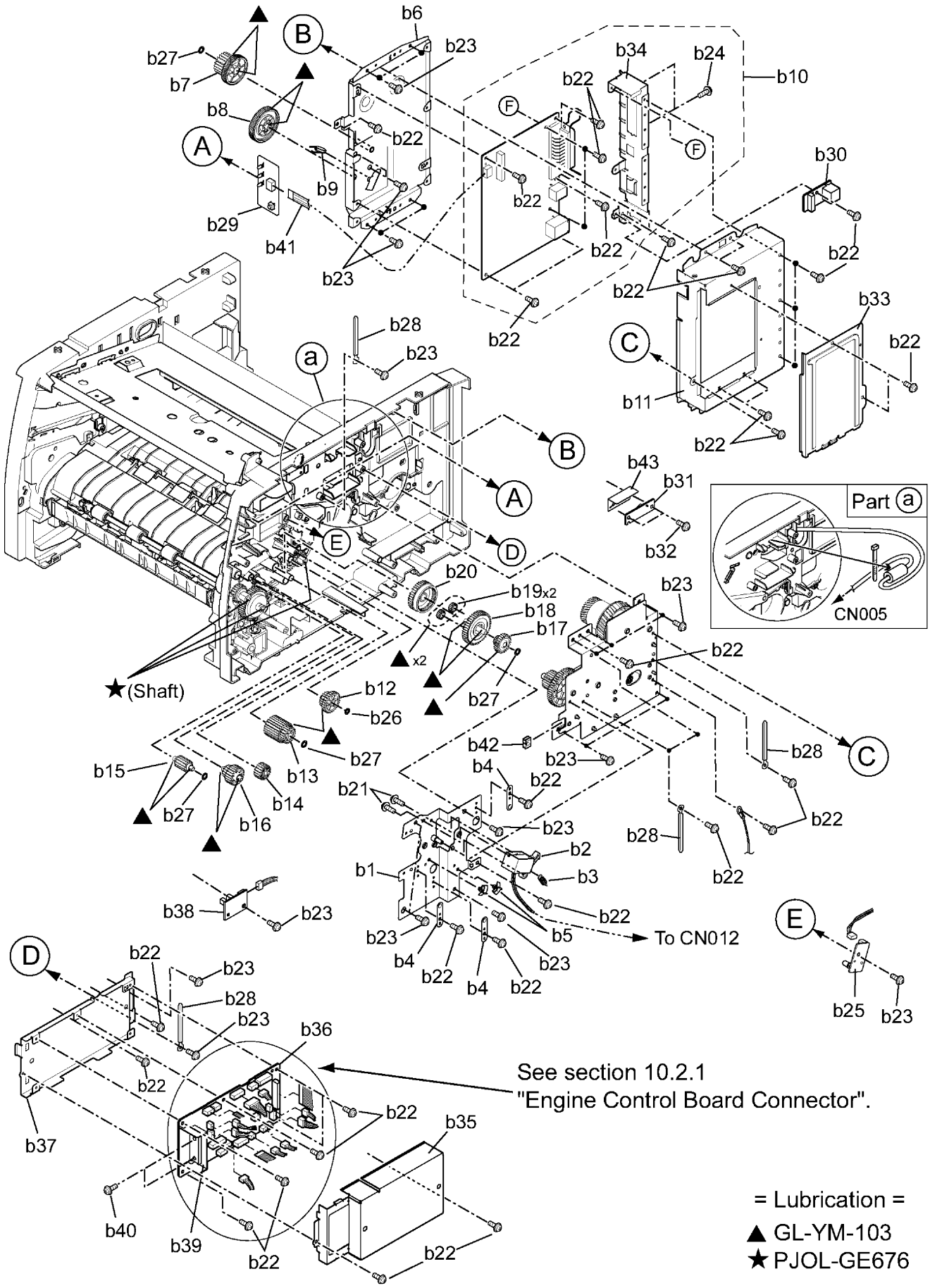
1. Important safety notice.
   Components identified by ⚠ have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. The S mark is for service standard parts and may differ from production parts.
3. The marking (RTL) indicates 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 part and product retention. After the end of this period, the assembly will no longer be available.

## 10.1. Exterior



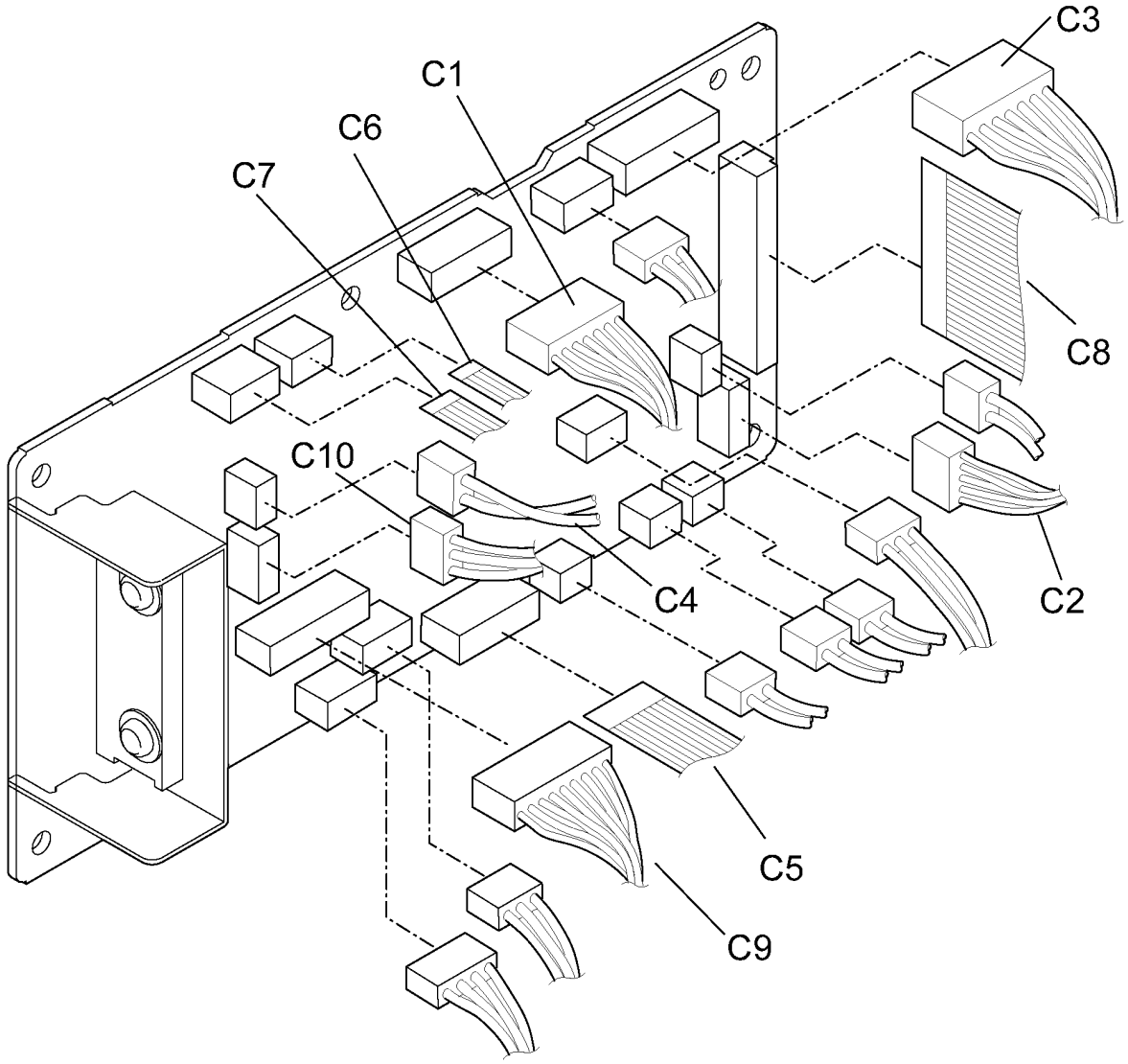
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| a1 | PJYKP7105M | Front Cover Assembly for KX-P7105 only | KX-P7105 only |
| | PJYKP7110M | Front Cover Assembly for KX-P7110 only | KX-P7110 only |
| a2 | PJHRB0043Z | Paper Guide (R) | |
| a3 | PJHRB0044Z | Paper Guide (L) | |
| a4 | PJHRB0045Z | Guide Rack | |
| a5 | PJHRB0046Z | Paper Guide Pinion Gear | |
| a6 | PJBAB0011Z | Hook | |
| a7 | PJYKP7100M | Pinch Roller Holder Assembly | |
| a8 | PJDSB0034Z | Pinch Roller Spring | |
| a9 | PJDRB0017Z | Pinch Roller | |
| a10 | PJKEB0012Z | Paper Support | |
| a11 | PJYFP7100M | Top Cover Assembly | |
| a12 | PJDSB0019Z | Spring | |
| a13 | PJDFB0008Z | Roller Shaft | |
| a14 | PJDRB0017Z | Roller | |
| a15 | PJHE5065Z | Screw | |
| a16 | PJYK1P7105 | Right Cover Assembly for KX-P7105 only | KX-P7105 only |
| | PJYK1P7110 | Right Cover Assembly for KX-P7110 only | KX-P7110 only |
| a17 | PJBAB0008Z | LED Indicator Cover | |
| a18 | PJBCB0002Z | Continue Button | |
| a19 | PJKEB0010Y | Rear Cover for KX-P7105 only | KX-P7105 only |
| | PJKEB0010X | Rear Cover for KX-P7110 only | KX-P7110 only |
| a20 | PJDSB0112Z | Spring | |
| a21 | PJKEB0013Z | Option Cover | |
| a22 | XTW3+8S | Screw 3 x 8 mm | |
| a23 | XTW26+8S | Screw 2.6 x 8 mm | |
| a24 | PJDRB0059Z | SUB Roller | |
| a25 | PJDRB0066Z | Cleaning Roller | |
| a26 | PJDSB0145Z | Cleaning Roller Spring | |
| a27 | PJYK1P7100M | Left Cover Assembly | |

## 10.2. Right Side Parts



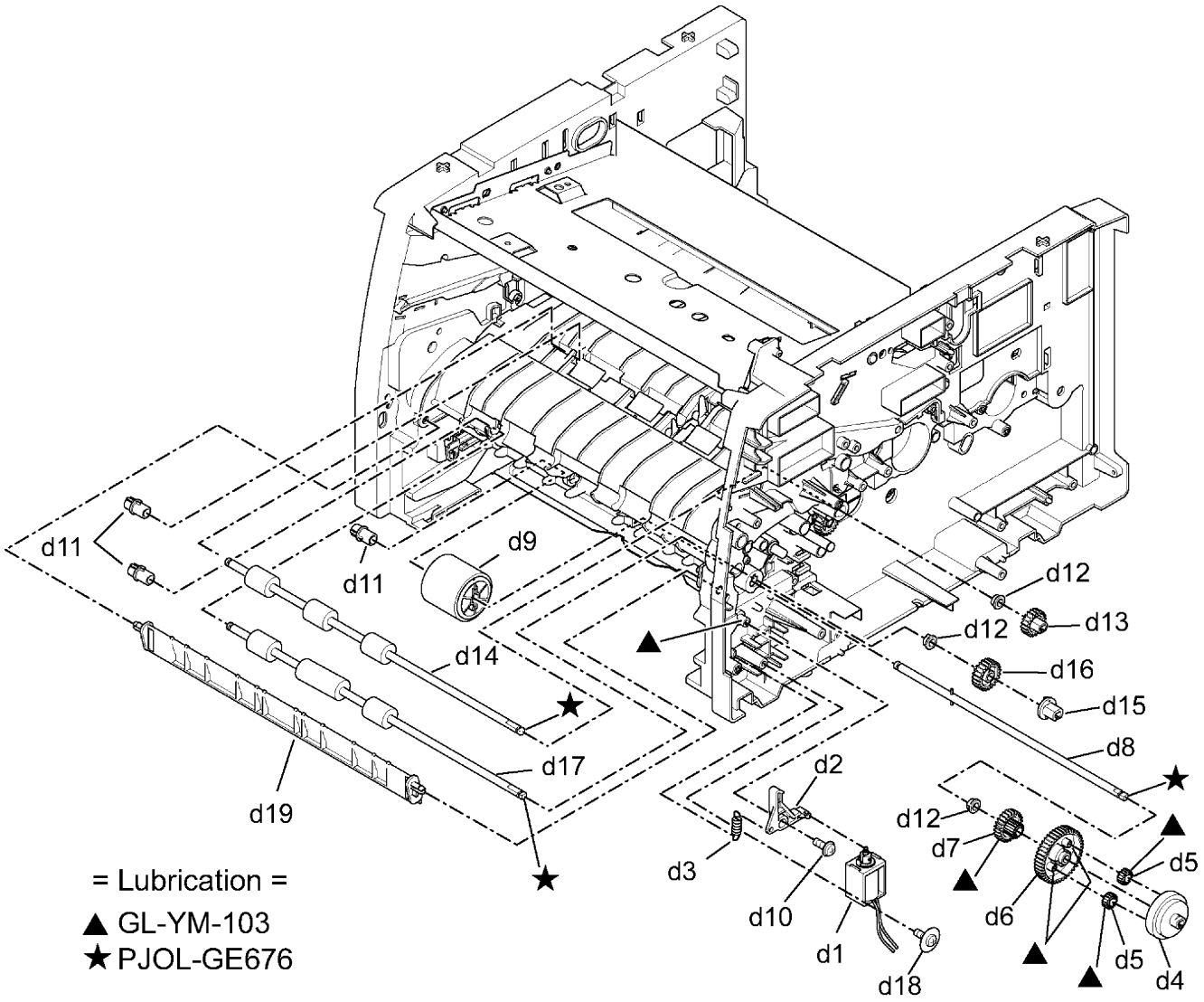
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| b1 | PJZC2P7100M | Gear Support Bracket | |
| b2 | PJWMP7100M | Registration Solenoid Assembly | |
| b3 | PJDSB0038Z | Registration Lever Spring | |
| b4 | PJUSB0025Z | Earth Spring | |
| b5 | PJHRB0327Z | Clamp | |
| b6 | PJZHP7105M | Fuser Drive Gear Bracket | |
| b7 | PJDGB0051Z | Fuser Drive Gear | |
| b8 | PJDGB0050Z | Fuser Intermediate Gear | |
| b9 | PJDSB0039Z | Gear Tension Spring | |
| b10 | PJWPP7105M | Main Control Board Complete for KX-P7105 only | KX-P7105 only. RTL |
| | PJWPP7110M | Main Control Board Complete for KX-P7110 only | KX-P7110 only. RTL |
| b11 | PJWCP7105M | Main Board Shield Cover Assembly | |
| b12 | PJDGB0052Z | ADU Drive Gear | |
| b13 | PJDGB0070Z | Registration Drive Gear | |
| b14 | PJDGB0072Z | Idle Gear Z19 | |
| b15 | PJDGB0071Z | Double Teeth Gear | |
| b16 | PJDGB0073Z | Idle Gear Z14 | |
| b17 | PJDGB0028Z | Ratchet Gear | |
| b18 | PJDGB0043Z | Registration Arm Gear | |
| b19 | PJDGB0029Z | Planetary Gear Z18 | |
| b20 | PJDGB0042Z | Registration Internal Gear | |
| b21 | XYN3+F5 | Screw 3 x 5 mm | |
| b22 | XTW3+6L | Screw 3 x 6 mm | |
| b23 | XTW3+8S | Screw 3 x 8 mm | |
| b24 | XSN3+6 | Screw 3 x 6 mm | |
| b25 | PJWP3P7100M | Toner Empty Sensor Board Complete | RTL |
| b26 | PJNW4111Z | Plastic Ring | |
| b27 | PJNW525Z | Plastic Ring | |
| b28 | PJMDB0156Z | Clamp | |
| b29 | PJWP4P7100M | Indicator Board | RTL |
| b30 | PJWP3P7105M | 2nd Feeder I/F Board Complete | RTL |
| b31 | PJWP5P7100M | Relay Board (A) Complete | RTL |
| b32 | XYC3+FF8C | Screw 3 x 8 mm | |
| b33 | PJMCB0058Z | Option Shield Cover | |
| b34 | PJMCB0059Z | Connector Shield Cover | |
| b35 | PJMCB0061Z | Engine Board Shield Cover | |
| b36 | PJWP1P7105M | Engine Control Board Complete | RTL |
| b37 | PJWC1P7105M | Engine Board Shield Base Assembly | |
| b38 | PJWP2P7105M | Paper Empty Sensor Board Complete | RTL |
| b39 | PJMYB0003Z | Heat Sink | |
| b40 | XTW3+8L | Screw 3 x 8 mm | |
| b41 | PJWW4P7105M | Indicator Flat Cable | |
| b42 | PJHRA0316Z | Edge Guard | |
| b43 | PJHRB0468Z | Protect Sheet | |

## 10.2.1. Engine Control Board Connector



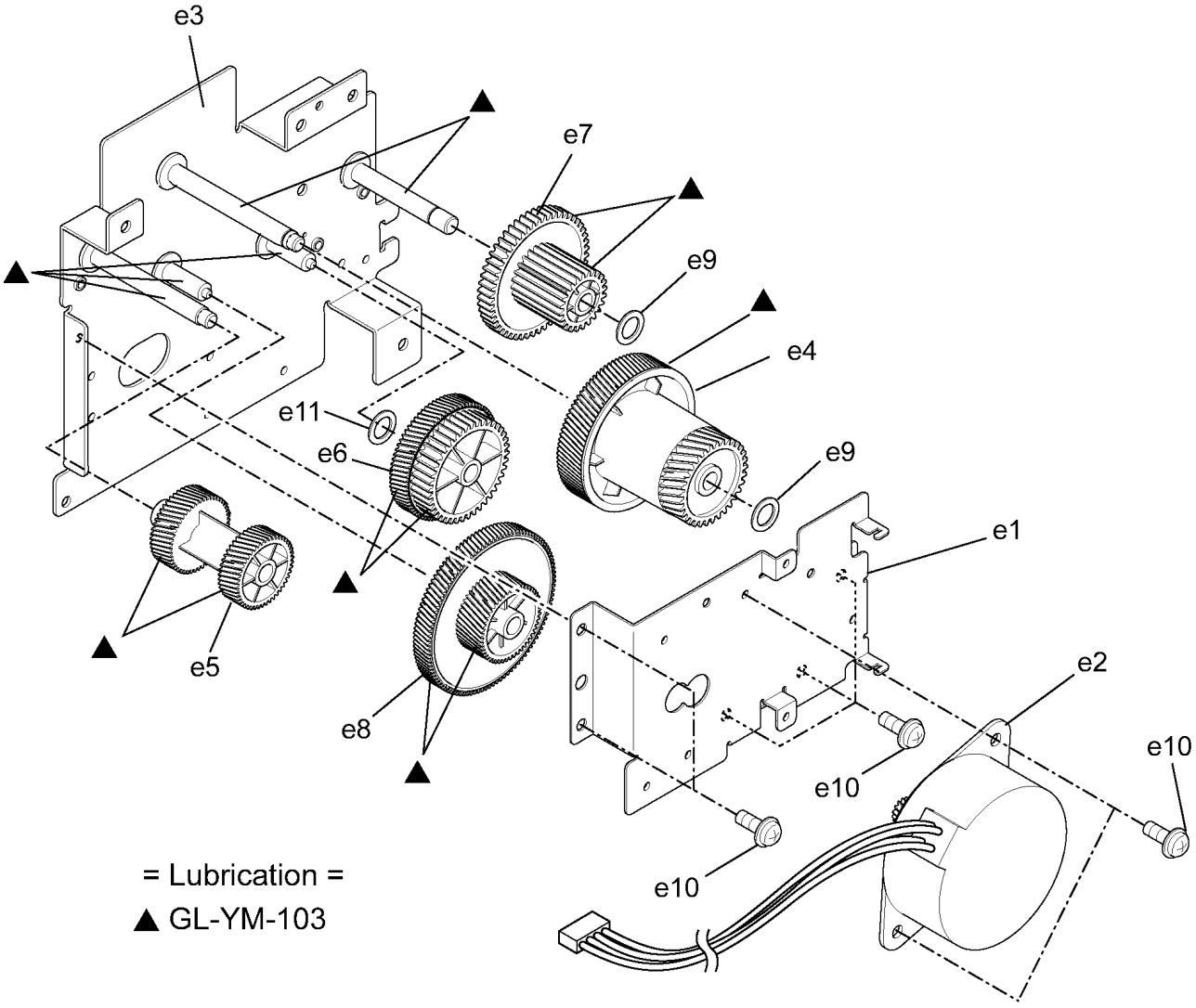

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| c1 | PJJRML0016Z | Cable (from LSU) |
| c2 | PJJRML0017Z | Cable (from Polygon Motor) |
| c3 | PJJRML0001Y | Cable (from Power Supply Unit) |
| c4 | PJJRML0011Z | Cable (from Toner Empty Sensor Board) |
| c5 | PJWWP7105M | Flat Cable (from High Voltage Board) |
| c6 | PJWW1P7105M | Flat Cable (from Exit Sensor Board) |
| c7 | PJWW3P7105M | Flat Cable (from Reg/Top Sensor Board) |
| c8 | PJWW2P7105M | Flat Cable (from Main Control Board) |
| c9 | PJJRML0014Z | Cable (from 2nd Feeder I/F Board) |
| c10 | PJJRML0015Z | Cable (from Paper Empty Sensor Board) |

## 10.2.2. Pickup Roller and Paper Feed Roller



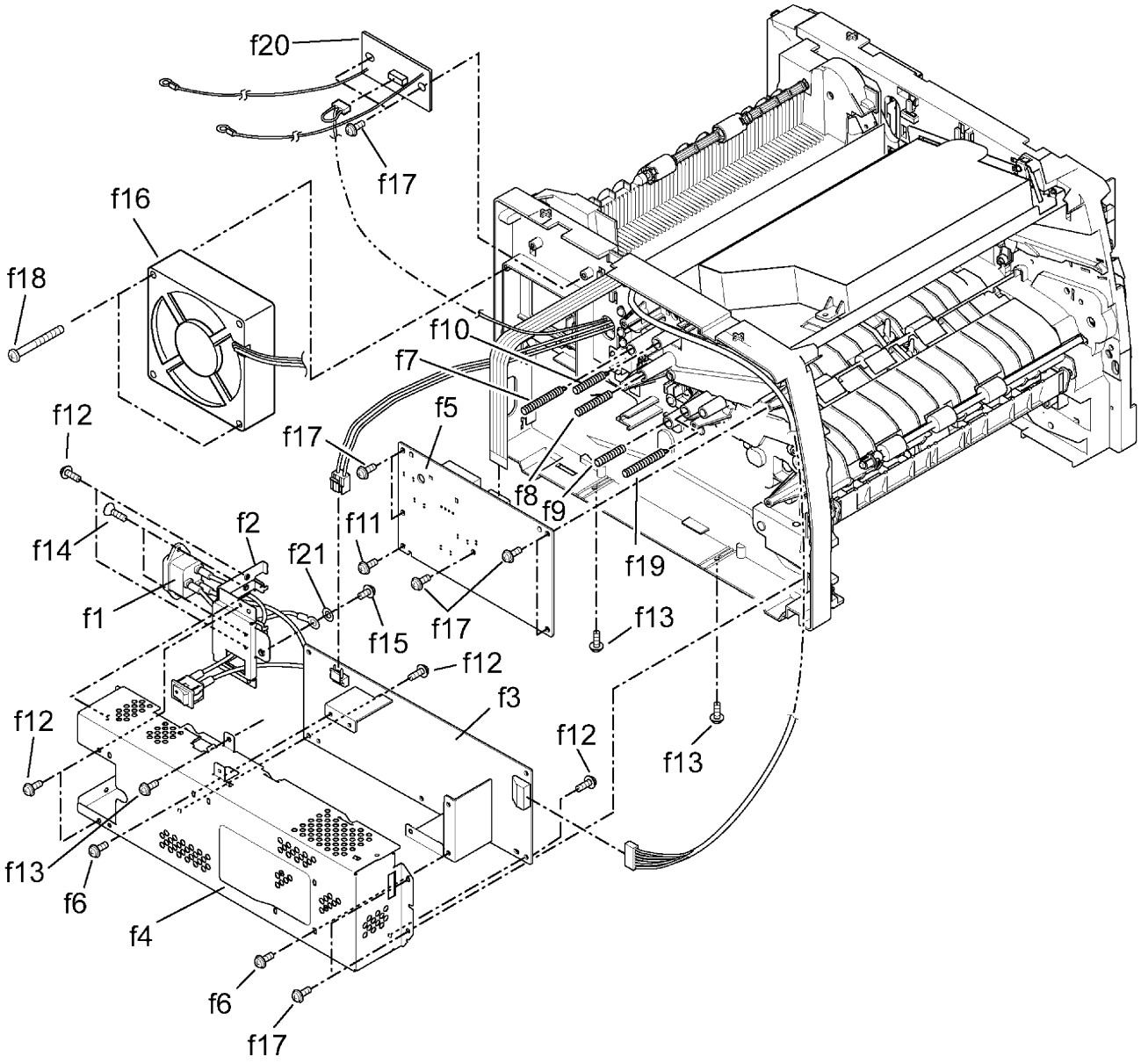

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| d1 | PJWM1P7100M | Pickup Solenoid Assembly |
| d2 | PJZE1P7100M | Pickup Lever Assembly |
| d3 | PJDSB0038Z | Pickup Spring |
| d4 | PJDGB0040Z | Pickup Internal Gear |
| d5 | PJDGB0029Z | Planetary Gear |
| d6 | PJDGB0041Z | Pickup Arm Gear |
| d7 | PJDGB0027Z | Ratchet Gear |
| d8 | PJZFP7100M | Pickup Roller Shaft |
| d9 | PJZRP7100M | Pickup Roller Assembly |
| d10 | XTW3+U8S | Screw 3 x 8 mm |
| d11 | PJDJB0019Z | Bushing |
| d12 | PJDJ05041RZ | Bushing |
| d13 | PJDGB0038Z | Registration Roller Gear |
| d14 | PJDRB0021Z | Registration Roller |
| d15 | PJHRB0070Z | Drive Wheel |
| d16 | PJDGB0039Z | Paper Feed Roller Gear |
| d17 | PJDRB0022Z | Paper Feed Roller |
| d18 | PJHE5065Z | Screw |
| d19 | PJHRB0072Z | Sub. Paper Guide |

## 10.2.3. Motor and Drive Gear Unit



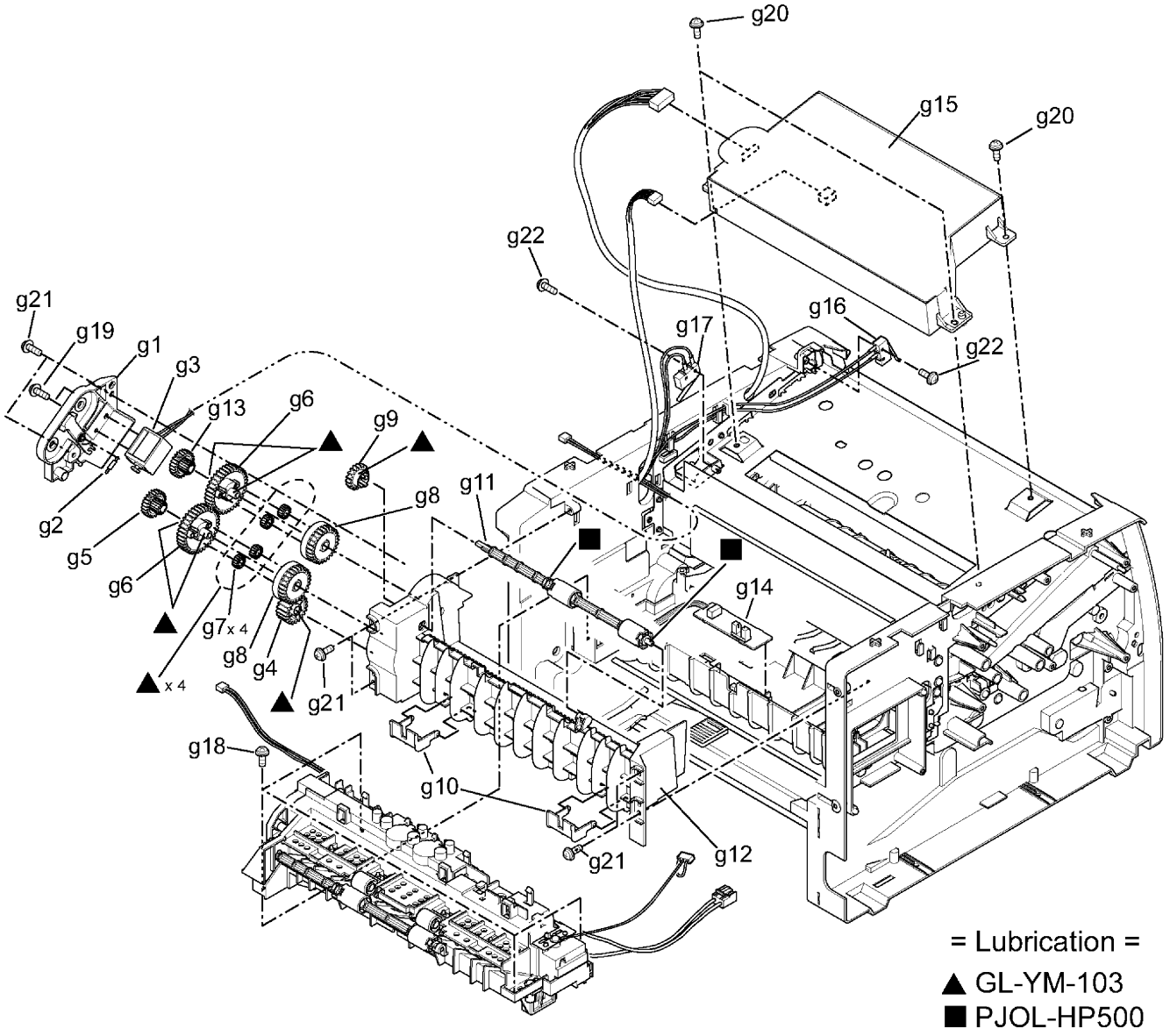

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| e1 | PJMDB0032Z | Motor Bracket |
| e2 | PJJQP5566Z | Motor |
| e3 | PJZHP7100M | Drive Gear Bracket Assembly |
| e4 | PJDGB0048Z | OPC Gear ( A ) |
| e5 | PJDGB0049Z | Fuser Gear |
| e6 | PJDGB0056Z | Registration Gear ( A ) |
| e7 | PJDGB0069Z | Registration Gear ( B ) |
| e8 | PJDGB0047Z | OPC Gear ( B ) |
| e9 | PJNW525Z | Plastic Ring |
| e10 | XTW3+6L | Screw 3 x 6 mm |
| e11 | PJNW620Z | Plastic Ring |

# 10.3. Left Side Parts ( Power Supply Unit and High Voltage Board )



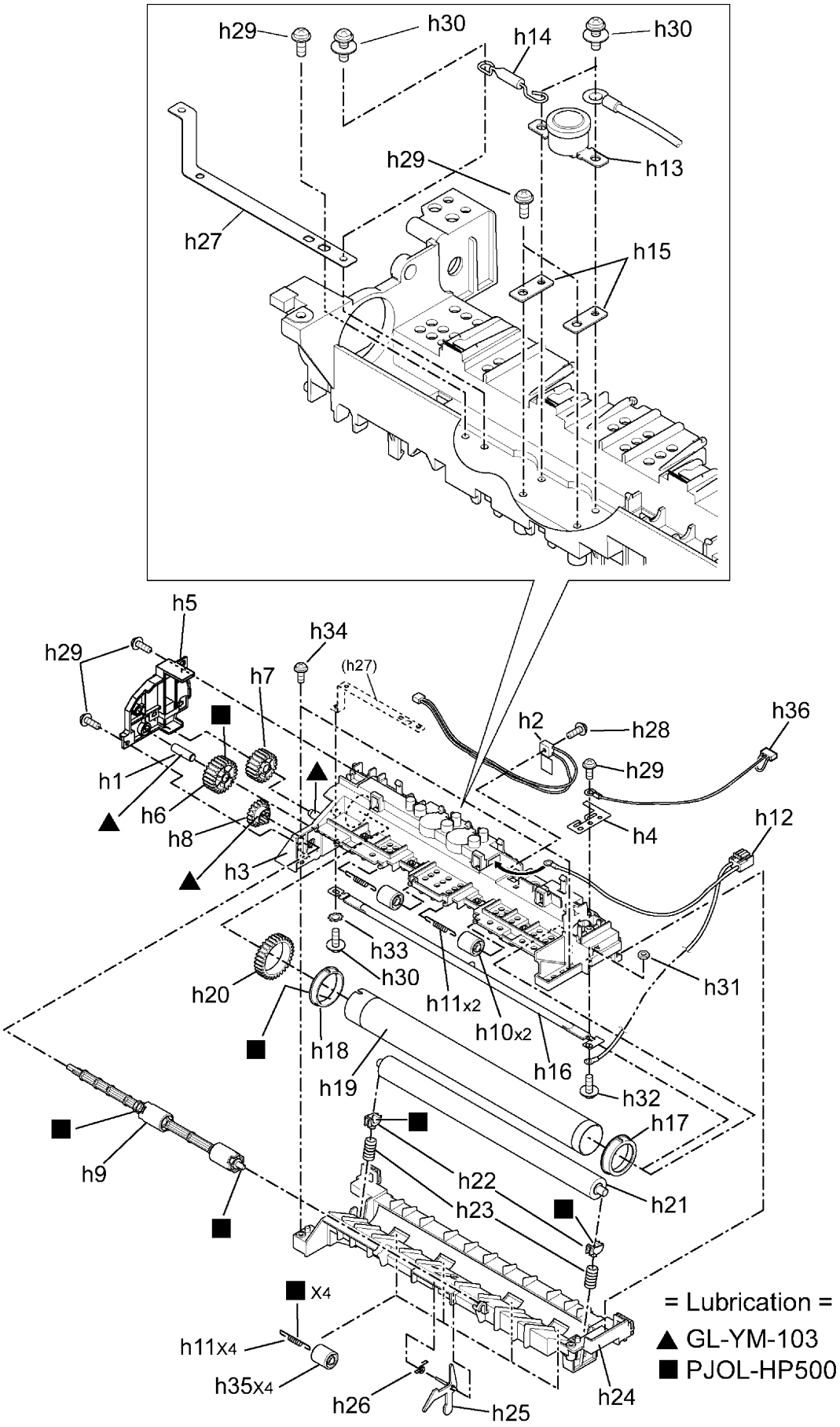

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| f1 | PJWSP7100M | Power Lead Wire Assembly | ⚠ |
| f2 | PJMCB0042Z | Inlet Bracket | |
| f3 | PJLP1S60Z | Power Supply Board Complete | ⚠ Non-Repairable |
| f4 | PJMCB0004Z | Enclosure Cover | |
| f5 | PJWP7P7100M | High Voltage Board Complete | ⚠ Non-Repairable |
| f6 | XYN3+F8 | Screw 3 x 8 mm | |
| f7 | PJDSB0033Z | Grid Spring | |
| f8 | PJDSB0009Z | OPC Spring | |
| f9 | PJDSB0013Z | Transfer Roller Bias Spring | |
| f10 | PJDSB0148Z | Charge Spring | |
| f11 | XYC3+FF8C | Screw 3 x 8 mm | |
| f12 | XTW3+6L | Screw 3 x 6 mm | |
| f13 | XTW3+8L | Screw 3 x 8 mm | |
| f14 | XTS3+6F | Screw 3 x 6 mm | |
| f15 | XSN4+W6 | Screw 4 x 6 mm | |
| f16 | PJJQD8060Z | Fan Motor | |
| f17 | XTW3+8S | Screw 3 x 8 mm | |
| f18 | PJNEB0008Z | Screw | |
| f19 | PJDSB0149Z | Deve Spring | |
| f20 | PJWP6P7100M | Relay Board (B) Complete | RTL |
| f21 | XWC4B | Star Washer | |

# 10.4. Rear and Top Side Parts



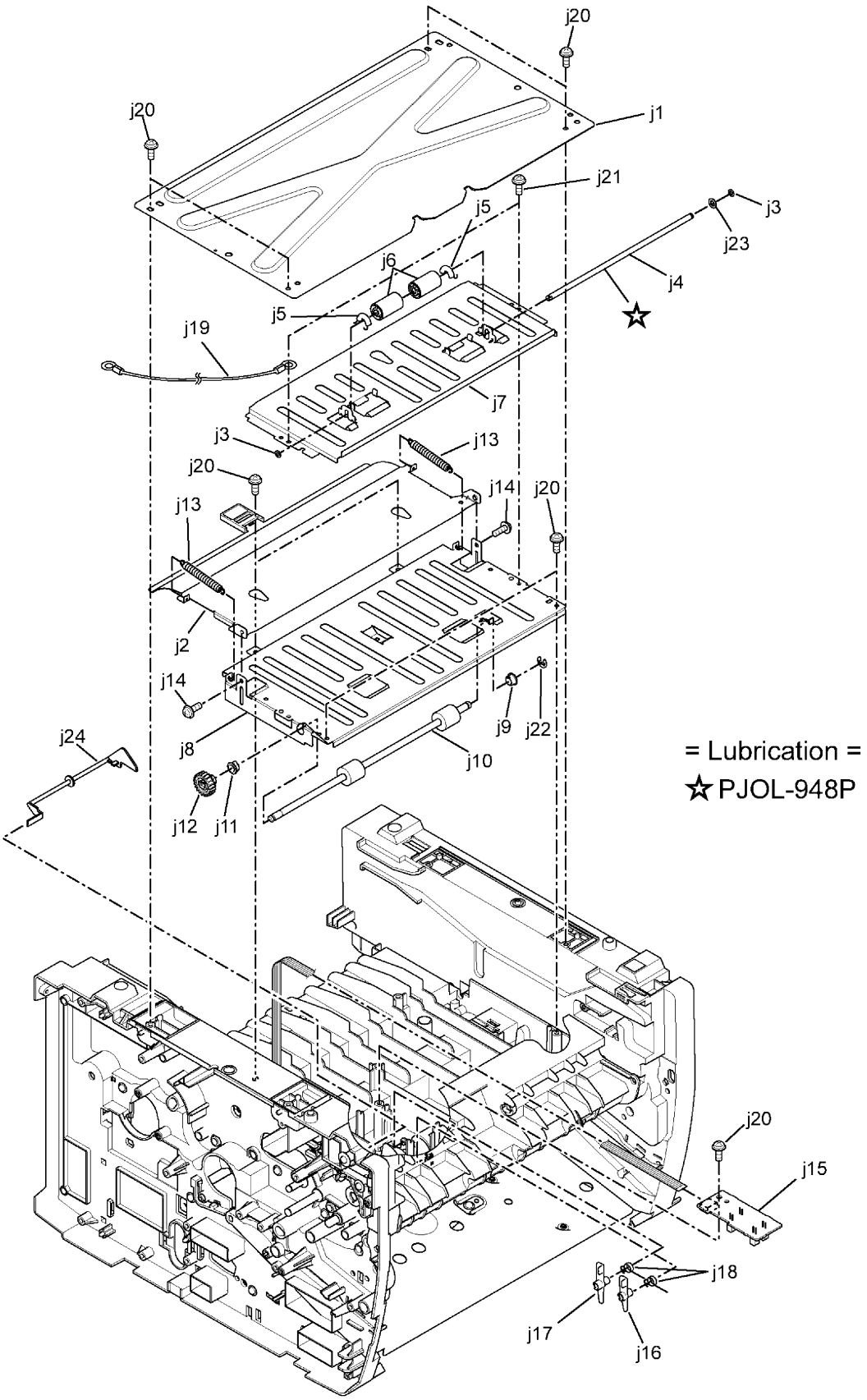

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| g1 | PJZC1P7100M | Upper Exit Roller Holder Cover Assembly | |
| g2 | PJDSB0016Z | Ratchet Spring | |
| g3 | PJDPB0001Z | Upper Exit Roller Solenoid with Plunger | |
| g4 | PJDGB0024Z | Upper Exit Roller Drive Gear Z21 | |
| g5 | PJDGB0027Z | Black Ratchet Gear | |
| g6 | PJDGB0026Z | Upper Exit Roller Drive Gear Z36 | |
| g7 | PJDGB0029Z | Planetary Gear | |
| g8 | PJDGB0025Z | Internal Gear | |
| g9 | PJDGB0022Z | Upper Exit Roller Drive Gear | |
| g10 | PJHRB0024Z | Paper Guide | |
| g11 | PJZR2P7100M | Upper Exit Roller Assembly (gray roller) | |
| g12 | PJHRB0019Z | Upper Exit Roller Holder | |
| g13 | PJDGB0028Z | Ratchet Gear | |
| g14 | PJWP2P7100M | Paper Exit/ADU Paper Jam Sensor Board | RTL |
| g15 | PJWEP7100M | LSU ( Laser Scanning Unit ) | ⚠ |
| g16 | PJWSP7105M | Front Door Safety Interlock Switch | |
| g17 | PJWS2P7100M | OPC Drum Unit Interlock Switch | |
| g18 | XTW3+12S | Screw 3 x 12 mm | |
| g19 | XSN3+4 | Screw 3 x 4 mm | |
| g20 | XYC3+FF8C | Screw 3 x 8 mm | |
| g21 | XTW3+8S | Screw 3 x 8 mm | |
| g22 | XTB2+12J | Screw 2 x 12 mm | |

## 10.4.1. Fuser Unit



| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| h1 | PJDFB0122Z | Fuser Drive Shaft |
| h2 | PJRTS10Z | Thermistor |
| h3 | PJZCP7100M | Heat Roller Holder Assembly |
| h4 | PJMDB0019Z | Fuser Earth |
| h5 | PJZC3P7100M | Side Fuser Cover Assembly |
| h6 | PJDGB0023Z | Fuser Gear Z24 |
| h7 | PJDGB0024Z | Fuser Gear Z21 |
| h8 | PJDGB0022Z | Lower Exit Roller Gear |
| h9 | PJZR3P7100M | Lower Exit Roller Assembly (black roller) |
| h10 | PJDRB0017Z | Pinch Roller |
| h11 | PJDSB0018Z | Pinch Roller Spring (A) |
| h12 | PJJRML0009Z | Fuser Cable |
| h13 | PJSE180003Z | Thermostat |
| h14 | PJXE10M16901 | Thermal Fuse |
| h15 | PJMDB0018Z | Lead Wire Plate |
| h16 | PJAH06009Z | Heat Lamp ( Halogen Lamp ) |
| h17 | PJDJB0008Z | Heat Roller Bushing ( L ) |
| h18 | PJDJB0009Z | Heat Roller Bushing ( R ) |
| h19 | PJDRB0011Z | Heat Roller |
| h20 | PJDGB0021Z | Heat Roller Gear |
| h21 | PJDRB0012Z | Pressure Roller |
| h22 | PJDJB0010Z | Pressure Roller Bushing |
| h23 | PJDSB0014Z | Pressure Roller Spring |
| h24 | PJHRB0018Z | Fuser Unit Base |
| h25 | PJHRB0022Z | Paper Exit/ADU Paper Jam Sensor Lever |
| h26 | PJDSB0015Z | Paper Exit/ADU Paper Jam Sensor Lever Spring |
| h27 | PJMDB0017Z | Lead Wire Plate |
| h28 | XTW3+12S | Screw 3 x 12 mm |
| h29 | XTW3+8S | Screw 3 x 8 mm |
| h30 | XYC3+FF8C | Screw 3 x 8 mm |
| h31 | XNG3B | Nut |
| h32 | XYN3+F8 | Screw 3 x 8 mm |
| h33 | XWC3B | Star Washer |
| h34 | XTW3+12SFZ | Screw 3 x 12 mm (black) |
| h35 | PJZR1P7100M | Cleaning Roller Assembly |
| h36 | PJJTCF006Z | Cable |

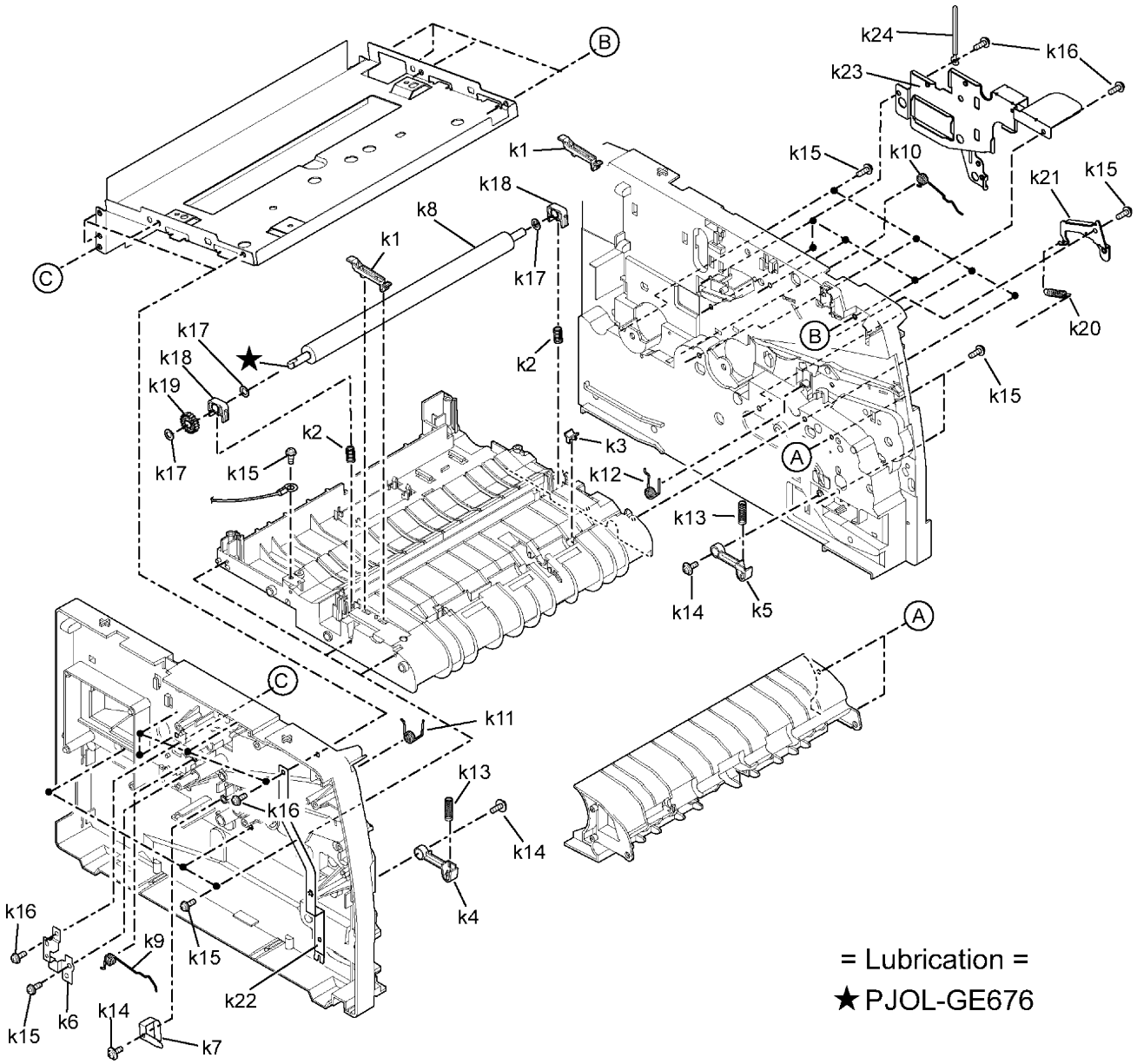
# 10.5. Bottom Side Parts




| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| j1 | PJUAB0024Z | Bottom Stay | |
| j2 | PJZUP7100M | Jam Release Pan with Knob | |
| j3 | PJNW317Z | Plastic Ring | |
| j4 | PJDFB0009Z | A/D Roller Shaft | |
| j5 | PJDSB0041Z | Pinch Roller Spring | |

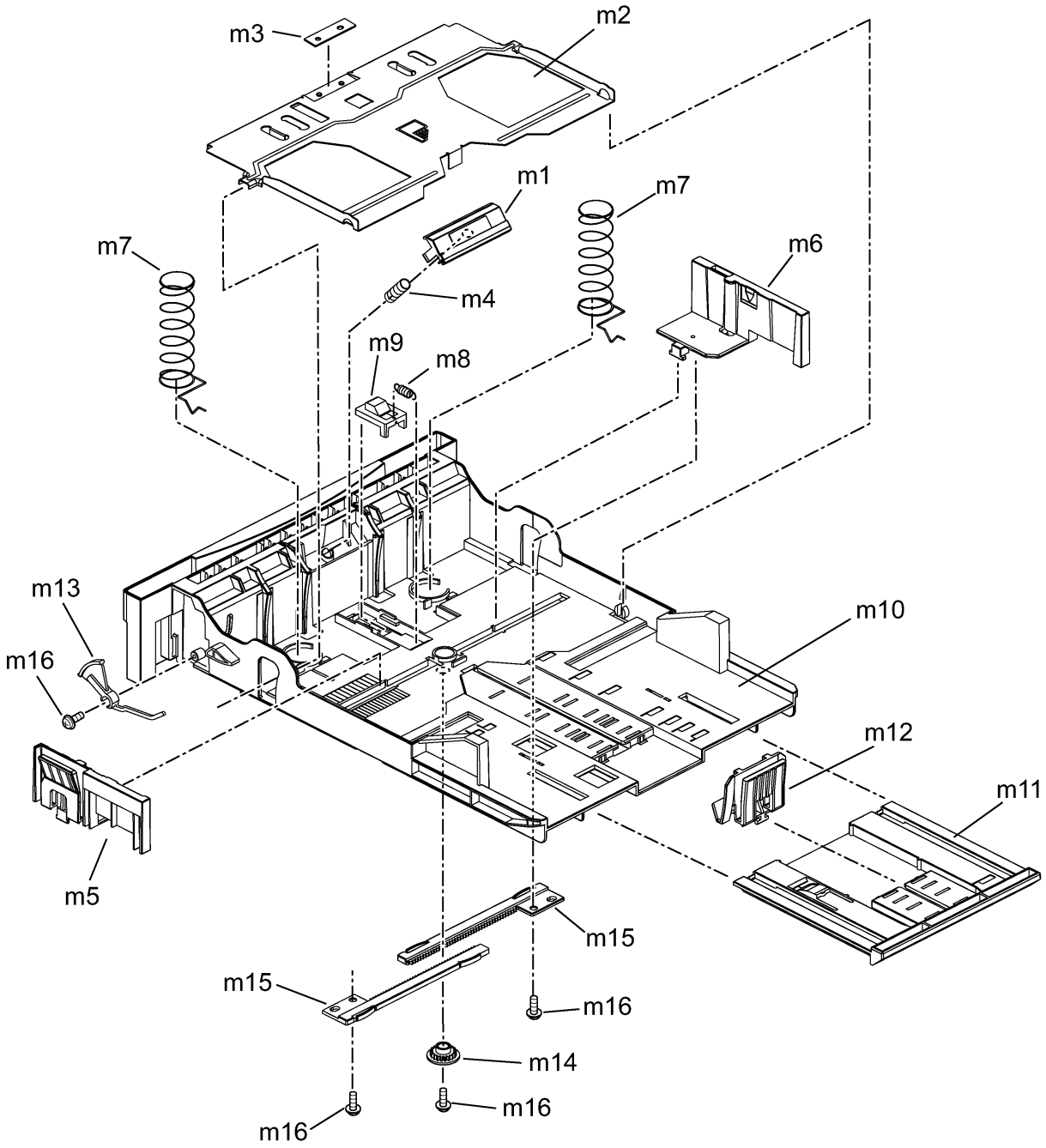
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| j6 | PJDRB0018Z | Auto Duplex Pinch Roller | |
| j7 | PJMDB0020Z | ADU Pinch Roller Plate | |
| j8 | PJUAB0005Y | ADU Registration Roller Plate | |
| j9 | PJDJ05041RZ | Bushing | |
| j10 | PJDRB0014Z | ADU Registration Roller Shaft | |
| j11 | PJDJ05011CZ | Bushing | |
| j12 | PJDGB0030Z | A/D Unit Joint Gear | |
| j13 | PJDSB0017Z | Spring | |
| j14 | PJNEB0003Y | Screw | |
| j15 | PJWP1P7100M | Registration & Paper Top Sensor Board Complete | RTL |
| j16 | PJHRB0075Z | Registration Sensor Lever | |
| j17 | PJHRB0076Z | Paper Top Sensor Lever | |
| j18 | PJDSB0035Z | Registration Spring | |
| j19 | PJJTCC014Z | Cable | |
| j20 | XTW3+8S | Screw 3 x 8 mm | |
| j21 | XTW3+6L | Screw 3 x 6 mm | |
| j22 | XUC4VW-V | E-ring | |
| j23 | PJNW410Z | Plastic Ring | |
| j24 | PJHRB0320Z | Paper Empty Sensor Lever | |

# 10.6. Mechanical Base



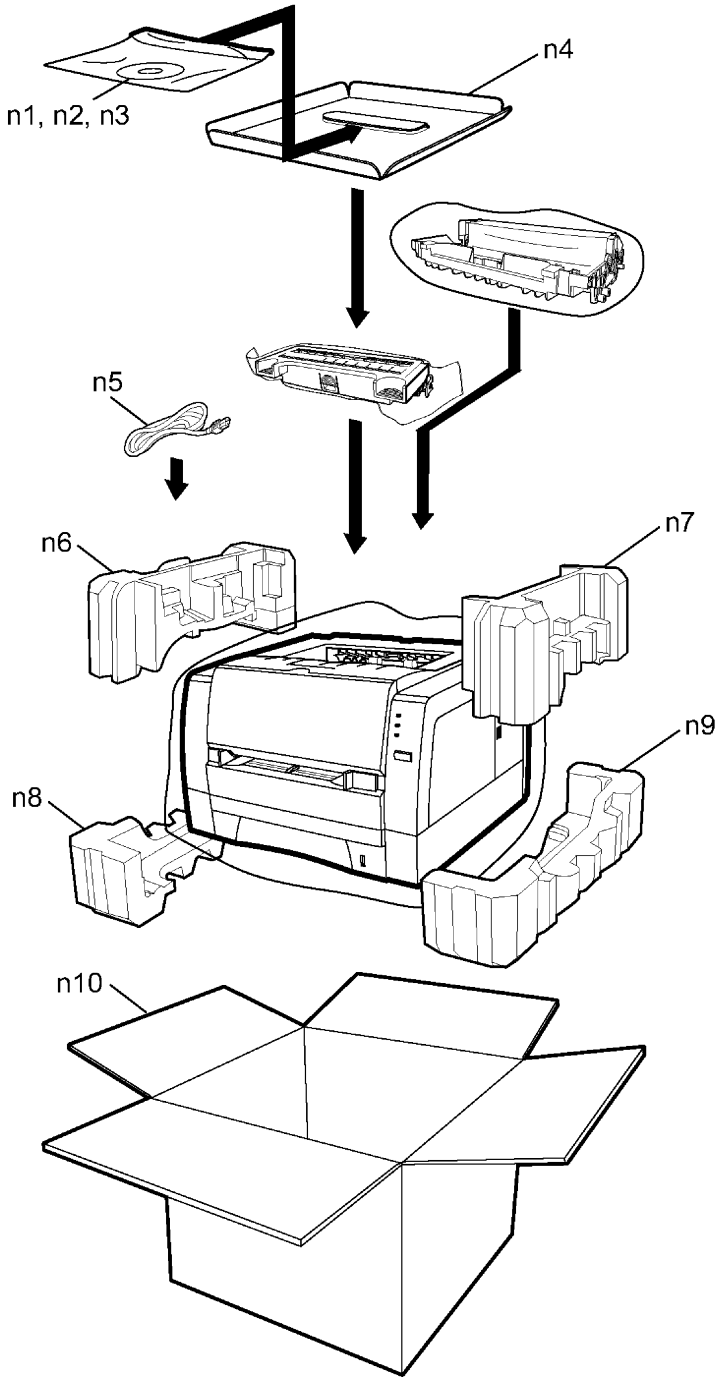

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| k1 | PJHRB0324Z | Transfer Roller Holder |
| k2 | PJDSB0040Z | Transfer Spring |
| k3 | PJDJB0020Z | U Bearing |
| k4 | PJHRB0038Z | Pressure Arm (L) |
| k5 | PJHRB0037Z | Pressure Arm (R) |
| k6 | PJUSB0011Z | Earth Plate |
| k7 | PJUSB0008Z | Transfer Roll Bias Plate |
| k8 | PJDRB0024Z | Transfer Roller |
| k9 | PJDSB0026Z | OPC Spring (L) |
| k10 | PJDSB0008Z | OPC Spring (R) |
| k11 | PJDSB0043Z | Resist Spring (L) |
| k12 | PJDSB0010Z | Resist Spring (R) |
| k13 | PJDSB0024Z | Cassette Guide Spring |
| k14 | XTW3+U8S | Screw 3 x 8 mm |
| k15 | XTW3+8S | Screw 3 x 8 mm |
| k16 | XTW3+6L | Screw 3 x 6 mm |
| k17 | PJNW525Z | Plastic Ring |
| k18 | PJHRB0078Z | Bushing |
| k19 | PJDGB0057Z | Transfer Gear |
| k20 | PJDSB0038Z | Registration Lever Spring |
| k21 | PJMCB0071Z | Relay Plate |
| k22 | PJMCB0070Z | Earth Plate (1) |
| k23 | PJMCB0068Z | Earth Plate (2) |
| k24 | PJMDB0156Z | Clamp |

# 10.7. Media Tray ( Paper Cassette )




| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| m1 | PJZEP7100M | Retard Pad Assembly |
| m2 | PJMDB0026Z | Media Lifter |
| m3 | PJHSB0007Z | Friction Pad |
| m4 | PJDSB0021Z | Retard Pad Spring |
| m5 | PJHRB0031Z | Media Side Guide (R) |
| m6 | PJHRB0032Z | Media Side Guide (L) |
| m7 | PJDSB0022Z | Friction Spring |
| m8 | PJDSB0020Z | Stopper Spring |
| m9 | PJHRB0034Z | Stopper |
| m10 | PJYMP7100M | Cassette Base Assembly |
| m11 | PJHRB0030Z | Cassette Extension Tray |
| m12 | PJHRB0033Z | Media Size Knob |
| m13 | PJHRB0307Z | Indicator |
| m14 | PJDG50133Z | Pinion Gear |
| m15 | PJHRB0036Z | Rack |
| m16 | XTW3+U8S | Screw 3 x 8 mm |

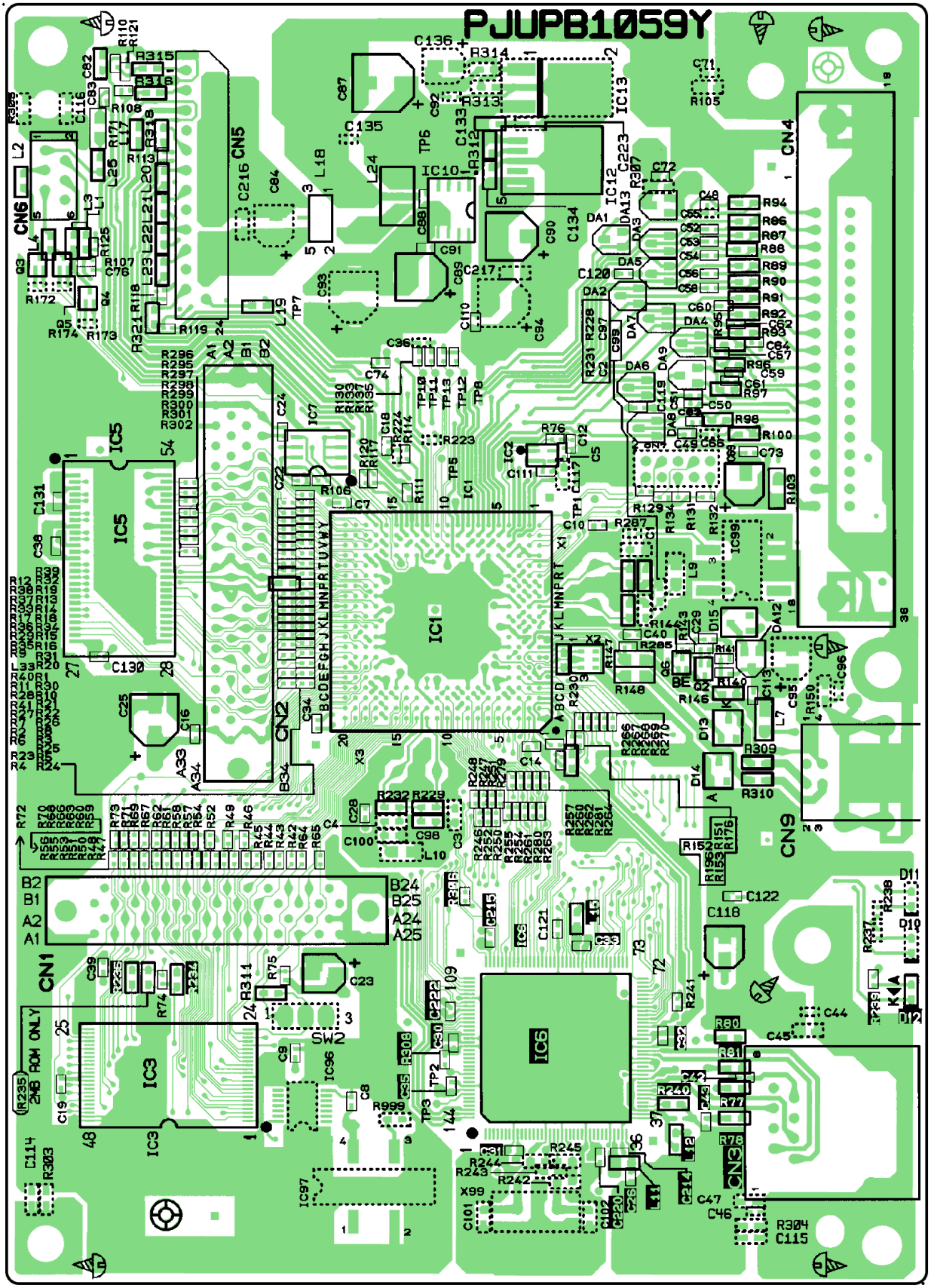
## 10.8. Packing



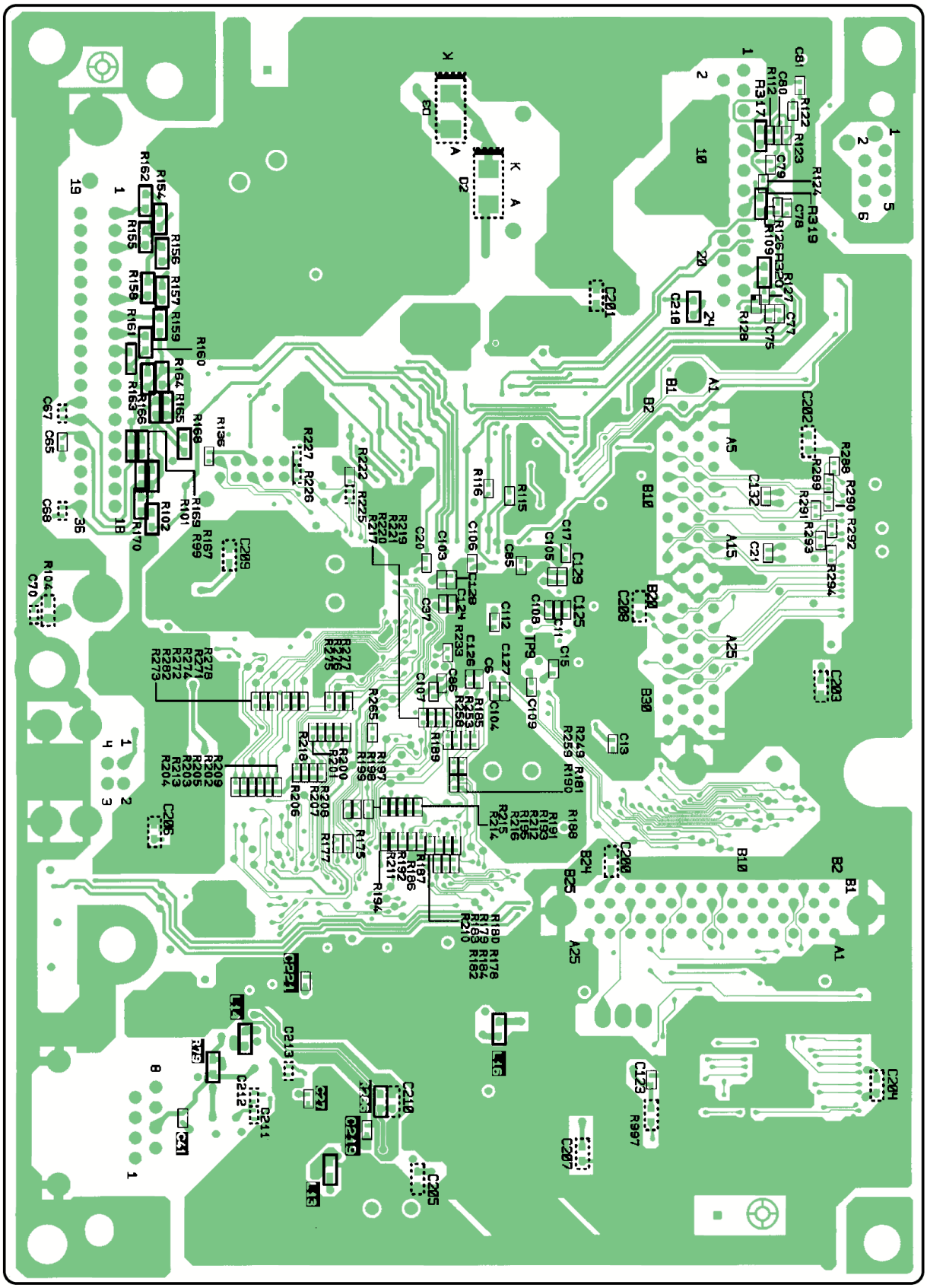

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| n1 | PJWRP7105M | CD-ROM | |
| n2 | PJQQB0003Z | Setup Guide ( English ) | |
| n3 | PJQQB0010Z | Setup Guide (Network) for KX-P7110 only | KX-P7110 only |
| n4 | PJPNB0026Z | Pad for CD-ROM | |
| n5 | PFJA1030Z | Power Cord | ⚠ |
| n6 | PJPNB0024Z | Top Pad (L) | |
| n7 | PJPNB0025Z | Top Pad (R) | |
| n8 | PJPNB0030Z | Bottom Pad (L) | |
| n9 | PJPNB0031Z | Bottom Pad (R) | |
| n10 | PJPGB0027Z | Carton Box for KX-P7105 only | KX-P7105 only |
| | PJPGB0033Z | Carton Box for KX-P7110 only | KX-P7110 only |

# 10.9. Main Control Board

**Component Side View**



## Parts Side View



## 10.9.1. ICs

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| IC1 | C1DB00000732 | IC (Main CPU) | |
| IC2 | C0EBD0000119 | IC (Reset IC) | |
| IC3 | PJWIP7105M | IC (Main ROM) | KX-P7105 Only |
| | PJWIP7110M | IC (Main ROM) | KX-P7110 Only |
| IC5 | C3ABQG000007 | IC (SDRAM) | |
| IC6 | C1DB00000818 | IC (MAC Controller) | KX-P7110 Only |
| IC7 | C3EBEC000032 | IC (EEPROM) | KX-P7105 Only |
| | C3EBHC000014 | IC (EEPROM) | KX-P7110 Only |
| IC10 | C0DBZGG00004 | IC (Regulator) | |
| IC12 | C0DBZFG00009 | IC (Regulator) | |

## 10.9.2. Capacitors

All capacitor values are in microfarads unless otherwise noted.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C5-C22 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C23 | ECEV1CA220WR | Electrolytic / 22 / 16V | |
| C24 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C25 | ECEV0JA470S | Electrolytic (SMD) / 47 / 6.3V | |
| C26 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | KX-P7110 Only |
| C27-C29 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | |
| C30-C33 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | KX-P7110 Only |
| C34 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | |
| C35 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | KX-P7110 Only |
| C37-C39 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C40 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | |
| C41 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C42/C43 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | KX-P7110 Only |
| C48-C54 | ECJ0EB1H101K | Ceramic / 100P / 50V | |
| C56-C65 | ECJ0EB1H101K | Ceramic / 100P / 50V | |
| C69 | ECEV1CA100SR | Aluminum Electrolytic Capacitor (SMD) | |
| C72-C74 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C75-C81 | ECJ0EB1H101K | Ceramic / 100P / 50V | |
| C82 | ECJ1VB1H102M | Ceramic / 1000P / 50V | |
| C83/C85/C86 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C87 | ECEV1CA470S | Aluminum Electrolytic Capacitor (SMD) | |
| C88 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C89/C90 | ECEV0JA470S | Electrolytic (SMD) / 47 / 6.3V | |
| C91 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C97/C98 | ECJ1VC1H030J | Ceramic / 3P / 50V | |
| C103-C113 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C118 | ECEV1CA100SR | Aluminum Electrolytic Capacitor (SMD) | |
| C119-C123 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C124-C129 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | |
| C130-C132 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | |
| C133/C134 | ECUV1C104ZFV | Ceramic / 0.1 / 16V | |
| C214/C215 | ECJ0EF1C104Z | Ceramic / 0.1 / 16V | KX-P7110 Only |
| C218 | ECJ1VB1H102M | Ceramic / 1000P / 50V | |
| C219/C221 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | |
| C220/C222 | ECJ0EF1H103Z | Ceramic / 0.01 / 50V | KX-P7110 Only |

## 10.9.3. Resistors

All resistor values are in OHMs.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R1-R11 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R12-R19 | ERJ2GEJ100X | Chip Resistor / 10 (1/16W) | |
| R20-R31 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R32-R39 | ERJ2GEJ100X | Chip Resistor / 10 (1/16W) | |
| R40/R41 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R42-R73 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R74-R76 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R77/R78 | ERJ3EKF54R9V | Chip Resistor / 54.9 (1/16W) | KX-P7110 Only |
| R79 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | KX-P7110 Only |
| R80-R81 | ERJ3EKF49R9V | Chip Resistor / 49.9 (1/16W) | KX-P7110 Only |
| R86-R93 | ERJ3GEYJ330 | Chip Resistor / 33 (1/16W) | |
| R94 | ERJ3GEYJ271 | Chip Resistor / 270 (1/16W) | |
| R95-R99 | ERJ3GEYJ330 | Chip Resistor / 33 (1/16W) | |
| R100-R102 | ERJ3GEYJ271 | Chip Resistor / 270 (1/16W) | |
| R103 | ERJ6GEYJ1R0V | Chip Resistor / 1.0 (1/10W) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R106 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R107 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R108-R109 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R110 | ERJ2GEJ101X | Chip Resistor / 100 (1/16W) | |
| R111-R120 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R121 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R122 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R123 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R124/R125 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R126 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R127 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R128 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R129 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R130 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R131/R132 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R133 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R134 | ERJ2GEJ472X | Chip Resistor / 4.7K (1/16W) | |
| R135 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R136 | ERJ2GEJ473X | Chip Resistor / 47K (1/16W) | |
| R137 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R140 | ERJ2GEJ184X | Chip Resistor / 180K (1/16W) | |
| R141 | ERJ2GEJ334X | Chip Resistor / 330K (1/16W) | |
| R143-R144 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R146 | ERJ3GEYJ152 | Chip Resistor / 1.5K (1/16W) | |
| R147-R148 | ERJ6ENF22R0V | Chip Resistor / 22 (1/10W) | |
| R151 | ERJ2GEJ100X | Chip Resistor / 10 (1/16W) | |
| R152 | ERJ2GEJ180X | Chip Resistor / 18 (1/16W) | |
| R153 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | |
| R154-R170 | ERJ3GEYJ102 | Chip Resistor / 1K (1/16W) | |
| R171 | ERJ6GEYJ1R0V | Chip Resistor / 1.0 (1/10W) | |
| R175 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | |
| R176-R222 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R228/R229 | ERJ3GEYJ682 | Chip Resistor / 6.8K (1/16W) | |
| R230 | ERJ3GEYJ153 | Chip Resistor / 15K (1/16W) | |
| R231/R232 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | |
| R233 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R234 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | KX-P7110 Only |
| R235 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | KX-P7105 Only |
| R236 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | KX-P7110 Only |
| R239 | ERJ2GEJ471X | Chip Resistor / 470 (1/16W) | KX-P7110 Only |
| R240 | ERJ3EKF9311V | Chip Resistor / 9.31K (1/16W) | KX-P7110 Only |
| R241 | ERJ2GEJ103X | Chip Resistor / 1K (1/16W) | |
| R246-R255 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R257-R282 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | |
| R285 | ERJ2GEJ473X | Chip Resistor / 47K (1/16W) | |
| R286 | ERJ3GEYJ330 | Chip Resistor / 33 (1/16W) | KX-P7110 Only |
| R288-R302 | ERJ2GEJ180X | Chip Resistor / 18 (1/16W) | |
| R306 | ERJ2GEJ330X | Chip Resistor / 33 (1/16W) | KX-P7110 Only |
| R308 | ERJ2GEJ102X | Chip Resistor / 100 (1/16W) | KX-P7110 Only |
| R309-R311 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | |
| R312 | ERJ3GEYJ682 | Chip Resistor / 6.8K (1/16W) | |
| R315-R321 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) | |

## 10.9.4. Transistor and Diodes

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D12 | LNJ808R8ERA | Orange LED | KX-P7110 Only |
| D13-D15 | PJVZB5R6BC06 | Diode | |
| DA1-DA9 | PJVDMA152WA | Diode | |
| DA12 | PJVDDAN217 | Diode | |
| DA13 | PJVDMA152WA | Diode | |
| Q2 | 2SA1774C3R | Transistor | |
| Q3-Q6 | B1GBCFJJ0031 | Transistor | |

## 10.9.5. Connectors

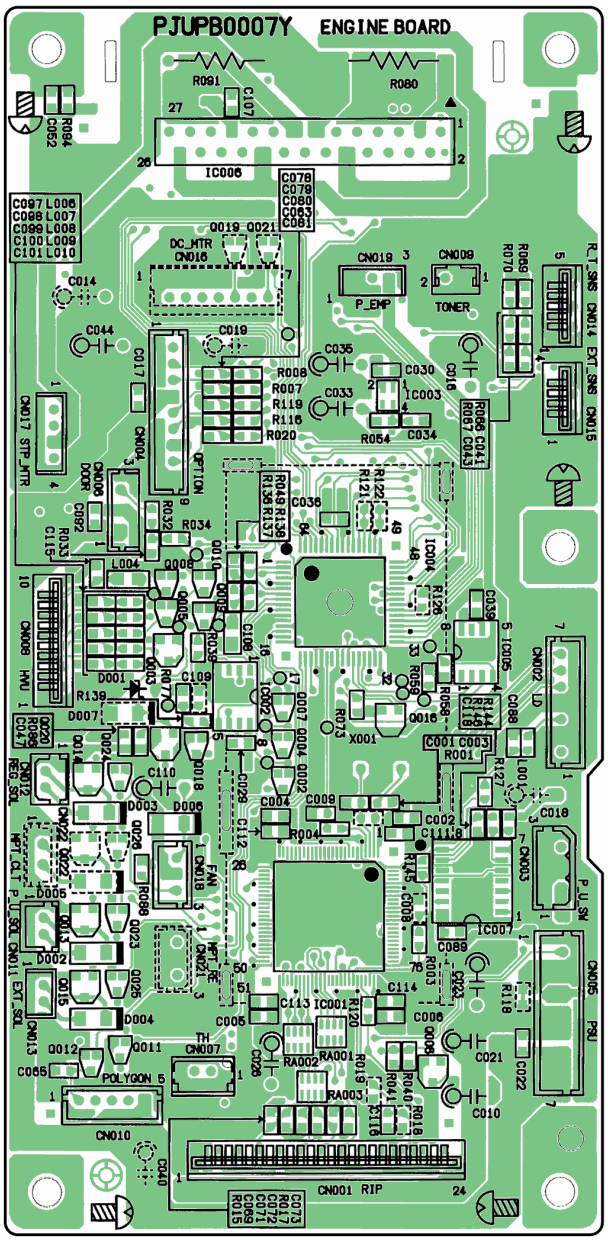
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| CN1 | PJJS881Y | Connector | |
| CN2 | K1KB68A00020 | Connector | |
| CN3 | N5HBZ0000002 | LAN Connector | KX-P7110 Only |
| CN4 | PJJS754Z | Connector (for Centronics Interface) | |
| CN5 | 24FE-BT-VK-N | Connector (for Engine Board) | |
| CN6 | 06FE-BT-VK-N | Connector (for Indicator Board) | |
| CN9 | PJJS04EZ03Z | Connector (for USB Interface) | |

## 10.9.6. Others

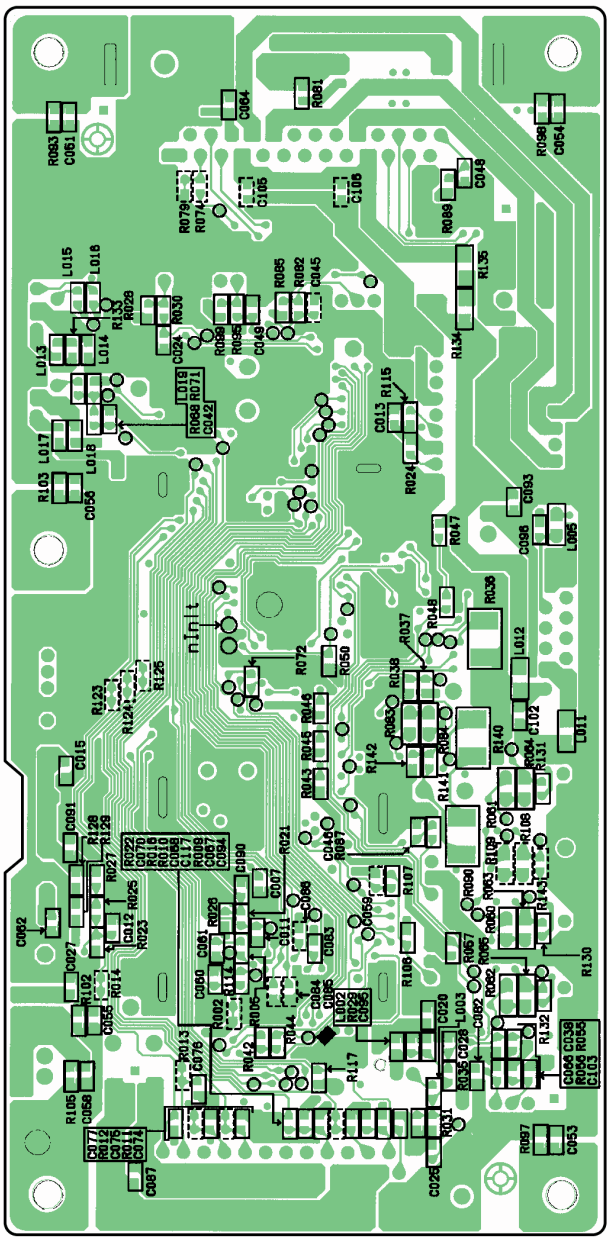
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| L1-L4 | PJLQ471H19B | Coil | |
| L7 | PJCZF331DBB1 | Chip EMIFIL | |
| L11-L15 | J0JCC0000144 | Chip EMIFIL | KX-P7110 Only |
| L16 | J0JCC0000144 | Chip EMIFIL | |
| L17 | PJLQ471H19B | Coil | |
| L18 | G1BYYYG00009 | Coil | |
| L19-L23 | PJLQ471H19B | Coil | |
| L24 | J0HABK000002 | EMIFIL | |
| L25 | PJLQ471H19B | Coil | |
| L33 | J0JEC0000005 | Chip EMIFIL | |
| X1 | H0D500500002 | Crystal Unit | |
| X2 | H2D480500002 | Crystal Unit | |
| X3 | H0D538500002 | Crystal Unit | |

# 10.10. Engine Control Board

Componente Side View




Parts Side View



## 10.10.1. ICs

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| IC001 | PJVANG0022Z | IC (KME-ASIC) |
| IC002 | PJVINJM2903M | IC (Comparator) |
| IC003 | PST3642UR | IC (Reset) |
| IC004 | PJWI1P7105M | IC (Engine CPU) |
| IC005 | PJWVP7100M | IC (EEPROM) |
| IC006 | MTD2003B4101 | IC (Motor Driver) |
| IC007 | PJVI74LS04MR | IC (Inverter) |

## 10.10.2. Capacitors

All capacitor values are in microfarads unless otherwise noted.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| C001 | ECUX1H100DCV | Ceramic / 10p / 50V |
| C002 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C003 | ECUX1H100DCV | Ceramic / 10p / 50V |
| C004-C006 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C007/C009 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C010 | ECEA0JKA470 | Electrolytic / 47 / 6.3V |
| C011 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C012 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C013/C105 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C017 | ECJ1VF1H104Z | Ceramic / 0.1 / 50V |
| C020 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C022 | ECJ1VF1H104Z | Ceramic / 0.1 / 50V |
| C023 | ECEA0JKA470 | Electrolytic / 47 / 6.3V |
| C024/C025 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C026 | ECEA0JKA470 | Electrolytic / 47 / 6.3V |
| C027 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C028 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C029/C030 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C033 | ECEA1HKR47 | Electrolytic / 0.47 / 50V |
| C034 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C035 | ECEA0JKA470 | Electrolytic / 47 / 6.3V |
| C036 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C038 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C039 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C040 | ECEA1HGE470 | Electrolytic / 47 / 50V |
| C041-C043 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C044 | ECEA1HGE470 | Electrolytic / 47 / 50V |
| C046 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C047 | ECJ1VF1H104Z | Ceramic / 0.1 / 50V |
| C048 | ECUX1H332KBV | Ceramic / 3300p / 50V |
| C049 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C051-C056 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C058 | ECUV1H102KBV | Ceramic / 1000p / 50V |
| C060/C61 | ECUV1H271JCV | Ceramic / 270p / 50V |
| C062 | ECUX1H103KBV | Ceramic / 100P / 50V |
| C063 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C064 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C065-C081 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C082 | ECJ1VF1H104Z | Ceramic / 0.1 / 50V |
| C083 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C087 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C088 | ECUV1H181JCV | Ceramic / 180p / 50V |
| C089 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C090 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C091-C093 | ECUX1H103KBV | Ceramic / 0.01 / 50V |
| C094-C103 | ECUV1H101JCV | Ceramic / 100p / 50V |
| C107 | ECUV1C104ZFV | Ceramic / 0.1 / 16V |
| C108 | ECJ2VF1C105Z | Ceramic / 1 / 16V |
| C110 | ECEA1HGE470 | Electrolytic / 47 / 50V |
| C111-C118 | ECUV1H101JCV | Ceramic / 100p / 50V |

## 10.10.3. Resistors

All resistor values are in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R003 | ERJ3GSYJ221V | Chip Resistor / 220 (1/16W) |
| R004 | ERJ3GSYJ100V | Chip Resistor / 10 (1/16W) |
| R005 | ERJ3GSYJ101V | Chip Resistor / 100 (1/16W) |
| R007/R008 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R015-R017 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R020 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R021 | ERJ3GSYJ101V | Chip Resistor / 100 (1/16W) |
| R022 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) |
| R023 | ERJ3GSYJ513V | Chip Resistor / 51k (1/16W) |
| R024 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R025 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R026 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R027 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R028 | ERJ3GSYJ474V | Chip Resistor / 470k (1/16W) |
| R029 | ERJ3EKF3903V | Chip Resistor / 390k (1/16W) |
| R030 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R031 | ERJ3EKF1802V | Chip Resistor / 18k (1/16W) |
| R032 | ERJ3GSYJ513V | Chip Resistor / 51k (1/16W) |
| R033 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R034/R035 | ERJ3GSYJ102V | Chip Resistor / 1k (1/16W) |
| R036 | ERJ12YJ180H | Chip Resistor / 18 (1/2W) |
| R037/R038 | ERJ3GSYJ222V | Chip Resistor / 2.2k (1/16W) |
| R039 | ERJ3GSYJ221V | Chip Resistor / 220 (1/16W) |
| R040/R041 | ERJ3GSYJ222V | Chip Resistor / 2.2k (1/16W) |
| R042 | ERJ3GSYJ102V | Chip Resistor / 1k (1/16W) |
| R043 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R044 | ERJ3GSYJ102V | Chip Resistor / 1k (1/16W) |
| R045/R046 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R047-R050 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R054 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R055 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R056 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R057 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R058 | ERJ3GSYJ513V | Chip Resistor / 51k (1/16W) |
| R059 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R060-R065 | ERJ6GEYJ222 | Chip Resistor / 2.2k (1/10W) |
| R066-R068 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R069-R071 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R072 | ERJ3GSYJ222V | Chip Resistor / 2.2k (1/16W) |
| R073 | ERJ3GSYJ472V | Chip Resistor / 4.7k (1/16W) |
| R077 | ERJ3GSYJ222V | Chip Resistor / 2.2k (1/16W) |
| R080 | ERX1SGR47P | Metal / 0.47 (1W) |
| R081 | ERJ3GSYJ0R0V | Chip Resistor / 0 (1/16W) |
| R082 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R083/R084 | ERJ6GEYJ222 | Chip Resistor / 2.2k (1/10W) |
| R085/R086 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R087 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R088 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R089 | ERJ3GSYJ183V | Chip Resistor / 18k (1/16W) |
| R090 | ERJ12YJ120H | Chip Resistor / 12 (1/2W) |
| R091 | ERX1SGR47P | Metal / 0.47 (1W) |
| R093/R094 | ERJ3GSYJ100V | Chip Resistor / 10 (1/16W) |
| R095 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R097/R098 | ERJ3GSYJ100V | Chip Resistor / 10 (1/16W) |
| R099 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R102/R103/R105 | ERJ3GSYJ100V | Chip Resistor / 10 (1/16W) |
| R106 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R107 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R114 | ERJ3GSYJ101V | Chip Resistor / 100 (1/16W) |
| R115 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R116 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R117 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R119 | ERJ3GSYJ511V | Chip Resistor / 510 (1/16W) |
| R120 | ERJ3GSYJ330V | Chip Resistor / 33 (1/16W) |
| R127 | ERJ3GSYJ100V | Chip Resistor / 10 (1/16W) |
| R128 | ERJ3GSYJ101V | Chip Resistor / 100 (1/16W) |
| R129 | ERJ3GSYJ470V | Chip Resistor / 47 (1/16W) |
| R130-R132 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R133 | ERJ3GSYJ1R0V | Chip Resistor / 1.0 (1/16W) |
| R134/R135 | ERJ6GEYJ0R0V | Chip Resistor / 0 (1/10W) |

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R136 | ERJ3GSYJ103V | Chip Resistor / 10k (1/16W) |
| R137 | ERJ3GSYJ224V | Chip Resistor / 220k (1/16W) |
| R138 | ERJ3GSYJ183V | Chip Resistor / 18k (1/16W) |
| R139 | ERJ3GSYJ105V | Chip Resistor / 1M (1/16W) |
| R140 | ERJ12YJ120H | Chip Resistor / 12 (1/2W) |
| R141 | ERJ3EKF2403V | Chip Resistor / 240k (1/16W) |
| R142 | ERJ3GSYJ393V | Chip Resistor / 39k (1/16W) |
| R144 | ERJ3GSYJ222V | Chip Resistor / 2.2k (1/16W) |
| R146 | ERJ3GSYJ101V | Chip Resistor / 100 (1/16W) |
| RA001/RA002 | EXBV8V222JV | Resistor Array |
| RA003 | EXBV8V330JV | Resistor Array |

## 10.10.4. Transistor and Diodes

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| D001 | PJVDHZS2C2TD | Diode |
| D002-D004 | PJVDJS132C01 | Diode |
| D006 | PJVDJS132C01 | Diode |
| Q002 | PJVTIRANBAD3 | Transistor |
| Q003 | 2SC2411KR | Transistor |
| Q004/Q005 | PJVTIRANBAD3 | Transistor |
| Q006 | 2SC2412KR | Transistor |
| Q007/Q008 | PJVTIRANBAD3 | Transistor |
| Q009 | PJVIDTA114EU | Transistor |
| Q010-Q012 | PJVTIRANBAD3 | Transistor |
| Q013-Q016 | 2SA1036KR | Transistor |
| Q018 | PJVTIRANBAD3 | Transistor |
| Q020 | 2SA1036KR | Transistor |
| Q023-Q025 | PJVTIRANBAD3 | Transistor |

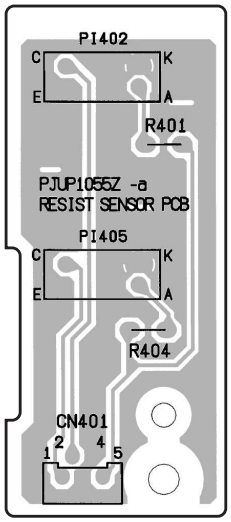
## 10.10.5. Connectors

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| CN001 | 24FE-BT-VK-N | Connector (for Main Board) |
| CN002 | PBB7B-PH | Connector (for LSU) |
| CN003 | PJJP03AK01Z | Connector (for 5V Interlock Switch) |
| CN004 | B9B-PH-K-S | Connector |
| CN005 | B7B-XH-A | Connector (for Power Supply) |
| CN006 | B3B-EH | Connector (Door Switch) |
| CN007 | PJJP475Z | Connector (for Thermistor) |
| CN008 | 10FE-BT-VK-N | Connector (for High Voltage Board) |
| CN009 | 6-173981-2 | Connector (for Toner Empty Sensor) |
| CN010 | PBB5B-PH | Connector (for Polygon Motor) |
| CN011 | PBB2B-PH | Connector (for Pickup Solenoid) |
| CN012 | 53014-0210 | Connector (for Registration Solenoid) |
| CN013 | PJJP469Z | Connector |
| CN014 | 05FE-BT-VK-N | Connector (for Reg/Top Sensor) |
| CN015 | 04FE-BT-VK-N | Connector (for Exit Sensor) |
| CN017 | PJJP468Z | Connector |
| CN018 | PBB3B-PH | Connector (for DC Fan Motor) |
| CN019 | 53253-0310 | Connector |

## 10.10.6. Others

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| L001 | PJLQ91Z | Beads Inductor(SMD) |
| L002/L003 | J0JBC0000007 | Beads Inductor(SMD) |
| L004/L005 | PJLQ108Z | Bead Inductor |
| L006-L010 | J0JBC0000007 | Beads Inductor(SMD) |
| L011/L012 | PJLQ108Z | Bead Inductor |
| L013-L019 | J0JBC0000007 | Beads Inductor(SMD) |
| X001 | HC49U12.0MHZ | X´tal |

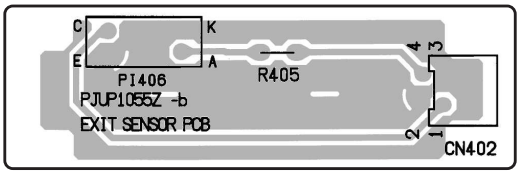
## 10.11. Registration & Paper Top Detection Sensor Board




All resistor values are in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R401/R404 | ERDS2TJ181T | Resistor / 180 (1/4W) |
| PI402/PI405 | LTH301-07P5M | Photo-interrupter |
| CN401 | 05FE-ST-VK-N | Connector |
| 1 | PJUP1055Z-A | Bare PCB |

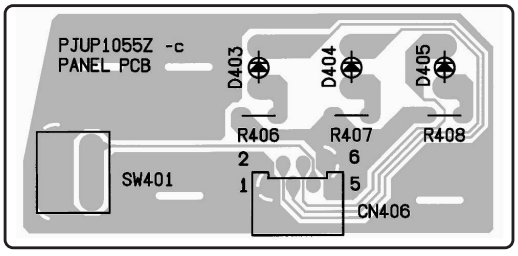
## 10.12. Paper Exit / ADU Paper Jam Sensor Board




Resistor values is in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R405 | ERDS2TJ181T | Resistor / 180 (1/4W) |
| PI406 | LTH301-07P5M | Photo-interrupter |
| CN402 | 04FE-ST-VK-N | Connector |
| 1 | PJUP1055Z-B | Bare PCB |

## 10.13. Indicator Board

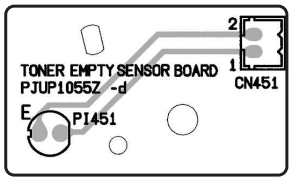



All resistor values are in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R406-R408 | ERDS2TJ181T | Resistor / 180 (1/4W) |
| D403 | LTL4251N-081 | LED (Yellow) |
| D404 | LTL4221N-081 | LED (Red) |
| D405 | LTL4231N-081 | LED (Green) |
| SW401 | SPN-02-5.0 | Switch |
| CN406 | 06FE-ST-VK-N | Connector |

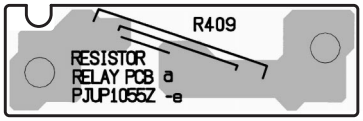
| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| 1 | PJUP1055Z-C | Bare PCB |

## 10.14. Toner Empty Sensor Board




| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| PI451 | B3HA00000029 | Photo Transistor |
| CN451 | 6-173981-2 | Connector |
| 1 | PJUP1055Z-D | Bare PCB |

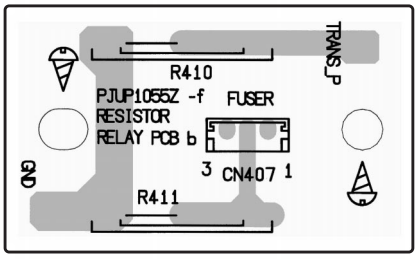
## 10.15. Relay Board (A)




Resistor value is in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R409 | D1AB5006A002 | Resistor / 500M (1/2W) |
| 1 | PJUP1055Z-E | Bare PCB |

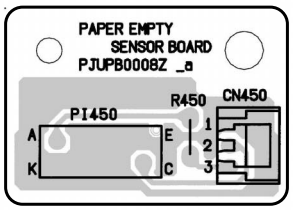
## 10.16. Relay Board (B)




Resistor values are in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R410 | D1AB2006A002 | Resistor / 200M (1/2W) |
| R411 | D1AB1006A002 | Resistor / 100M (1/2W) |
| CN407 | B3B-EH | Connector (Door Switch) |
| 1 | PJJTCT001Z | Cable |
| 2 | PJJTCT002Z | Cable |
| 3 | PJUP1055Z-F | Bare PCB (4UP) |

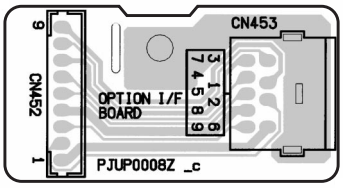
## 10.17. Paper Empty Sensor Board




Resistor value is in OHMs.

| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| R450 | ERDS2TJ181T | Resistor / 180 (1/4W) |
| PI450 | LTH301-07P5M | Photo-interrupter |
| CN450 | 53254-0310 | Connector |
| 1 | PJUPB0008Z-A | Bare PCB (7UP) |

## 10.18. 2nd Feeder I / F Board




| Ref. No. | Part No. | Part Name & Description |
|---|---|---|
| CN452 | B9B-PH-K-S | Connector |
| CN453 | MDS9S3SS1001 | MINI-DIN Connector |
| 1 | PJUPB0008Z-C | Bare PCB (7UP) |