



# **SERVICE MANUAL**

**Including Parts Information**

# Model 7820

JANUARY 2003

CSM-7820



**KONICA BUSINESS TECHNOLOGIES, INC.**



**7820**  
**SERVICE MANUAL**

**JANUARY 2003**

## **IMPORTANT NOTICE**

Because of the possible hazards to an inexperienced person servicing this equipment, as well as the risk of damage to the equipment, Konica Business Technologies strongly recommends that all servicing be performed by Konica-trained service technicians only.

Changes may have been made to this equipment to improve its performance after this service manual was printed. Accordingly, Konica Business Technologies, Inc., makes no representations or warranties, either expressed or implied, that the information contained in this service manual is complete or accurate. It is understood that the user of this manual must assume all risks or personal injury and/or damage to the equipment while servicing the equipment for which this service manual is intended.

Corporate Publications Department

# SAFETY PRECAUTIONS

## Installation Environment

Safety considerations usually are directed toward machine design and the possibility of human error. In addition, the environment in which a machine is operated must not be overlooked as a potential safety hazard.

Most electrical equipment is safe when installed in a normal environment. However, if the environment is different from what most people consider to be normal, it is conceivable that the combination of the machine and the room air could present a hazardous combination. This is because heat (such as from fusing units) and electrical arcs (which can occur inside switches) have the ability to ignite flammable substances, including air.

**When installing a machine, check to see if there is anything nearby which suggests that a potential hazard might exist.** For example, a laboratory might use organic compounds which, when they evaporate, make the room air volatile. Potentially dangerous conditions might be seen or smelled. *The presence of substances such as cleaners, paint thinners, gasoline, alcohol, solvents, explosives, or similar items should be cause for concern.*

If conditions such as these exist, take appropriate action, such as one of the following suggestions.

- Determine that the environment is controlled (such as through the use of an exhaust hood) so that an offending substance or its fumes cannot reach the machine.
- Remove the offending substance.
- Install the machine in a different location.

The specific remedy will vary from site to site, but the principles remain the same. To avoid the risk of injury or damage, be alert for changes in the environment when performing subsequent service on any machine, and take appropriate action.

## Unauthorized Modifications

Konica equipment has gained a reputation for being reliable products. This has been attained by a combination of outstanding design and a knowledgeable service force.

The design of the equipment is extremely important. It is the design process that determines tolerances and *safety margins* for mechanical, electrical, and electronic aspects. It is not reasonable to expect individuals not involved in product engineering to

know what effect may be caused by altering any aspect of the machine's design. Such changes have the potential of degrading product performance and reducing safety margins.

For these reasons, *installation of any modification not specifically authorized by Konica Business Machines U.S.A., Inc., is strictly prohibited.*

The following list of prohibited actions is not all-inclusive, but demonstrates the intent of this policy.

- Using an extension cord or any unauthorized power cord adapter.
- Installing any fuse whose rating and physical size differs from that originally installed.
- Using wire, paper clips, solder, etc., to replace or eliminate any fuse (including temperature fuses).
- Removing (except for replacement) any air filter.
- Defeating the operation of relays by any means (such as wedging paper between contacts).
- Causing the machine to operate in a fashion other than as it was designed.
- Making any change which might have a chance of defeating built-in safety features.
- Using any unspecified replacement parts.

## General Safety Guidelines

This equipment has been examined in accordance with the laws pertaining to various product safety regulations prior to leaving the manufacturing facility to protect the operators and service personnel from injury. However, as with any operating device, components will break down through the wear-and-tear of everyday use, as will additional safety discrepancies be discovered. For this reason, it is important that the technician periodically performs safety checks on the equipment to maintain optimum reliability and safety.

The following checks, not all-inclusive, should be made during each service call:

**CAUTION:** Avoid injury. Ensure that the equipment is disconnected from its power source before continuing.

- Look for sharp edges, burrs, and damage on all external covers and copier frame.
- Inspect all cover hinges for wear (loose or broken).
- Inspect cables for wear, frays, or pinched areas.

- Ensure that the power cord insulation is not damaged (no exposed electrical conductors).
- Ensure that the power cord is properly mounted to the frame by cord clamps.
- Check the continuity from the round lug (GND) of the power cord to the frame of the copier – ensure continuity. An improperly grounded machine can cause an electrically-charged machine frame.

## **Safeguards During Service Calls**

Confirm that all screws, parts, and wiring which are removed during maintenance are installed in their original positions.

- When disconnecting connectors, do not pull the wiring, particularly on AC line wiring and high voltage parts.
- Do not route the power cord where it is likely to be stepped on or crushed.
- Carefully remove all toner and dirt adhering to any electrical units or electrodes.
- After part replacement or repair work, route the wiring in such a way that it does not contact any burrs or sharp edges.
- Do not make any adjustments outside of the specified range.

## **Applying Isopropyl Alcohol**

Care should be exercised when using isopropyl alcohol, due to its flammability. When using alcohol to clean parts, observe the following precautions:

- Remove power from the equipment.
- Use alcohol in small quantities to avoid spillage or puddling. Any spillage should be cleaned up with rags and disposed of properly.
- Be sure that there is adequate ventilation.
- Allow a surface which has been in contact with alcohol to dry for a few minutes to ensure that the alcohol has evaporated completely before applying power or installing covers.

## **Summary**

It is the responsibility of every technician to use professional skills when servicing Konica products. There are no short cuts to high-quality service. Each piece of equipment must be thoroughly inspected with respect to safety considerations as part of every routine service call. The operability of the copier, and more importantly, the safety of those who operate or service the equipment, are directly dependent upon the conscientious effort of each and every technician.

Remember...when performing service calls, use good judgment (have a watchful eye) to identify safety hazards or potential safety hazards that may be present, and correct these problem areas as they are identified – the safety of those who operate the equipment as well as those who service the copier depend on it!

# PREFACE

This manual describes the procedures of the maintenance of the 7820 printers.

The document is produced for maintenance personnel use. For details on the procedures for handling the 7820 printers, see its user documentation.

- Note!**
- The descriptions in this manual are subject to change without prior notice.
  - In preparing the document, efforts have been made to ensure that the information in it is accurate. However, errors may be crept into the document. Konica assumes no responsibility for any damage resulting from, or claimed to be the results of, those repairs, adjustments or modifications to the printers which are made by users using the manual.
  - The parts used for the printers are sensitive and, if handled improperly, may be damaged. It is strongly recommended that the products are maintained by maintenance men registered with Konica.

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# 1. CONFIGURATIONS

## 1.1 System Configuration

Figure 1-1 shows the system configuration of the 7820 printers.

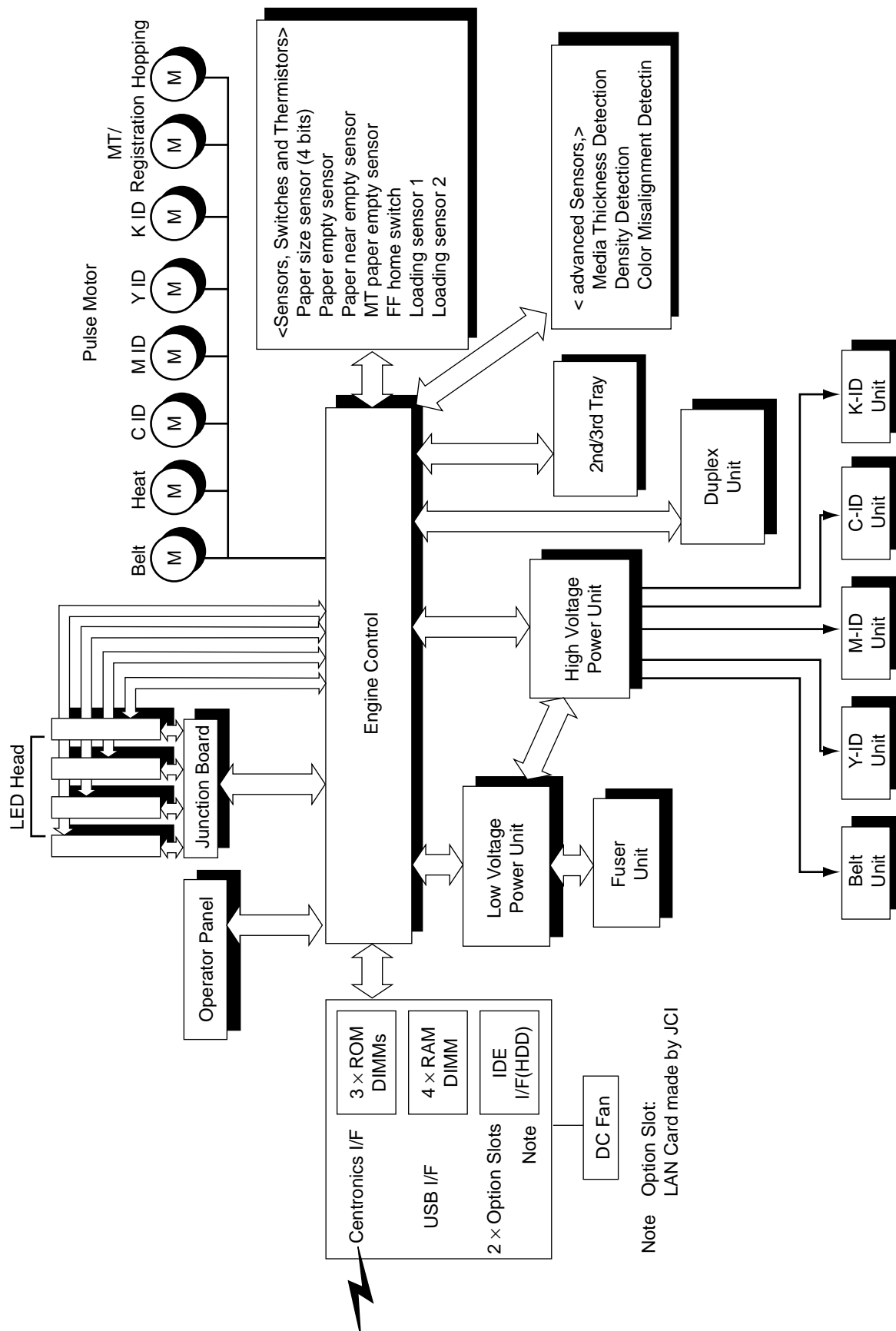


Figure 1-1

## 1.2 Printer Configuration

The inside of the printers is composed of the followings:

- Electrophotographic Processor
- Paper Paths
- Controller Block (CU and PU)
- Operator Panel
- Power Units (High Voltage Unit and Low Voltage Unit)

Figure 1-2 shows the printer configuration.

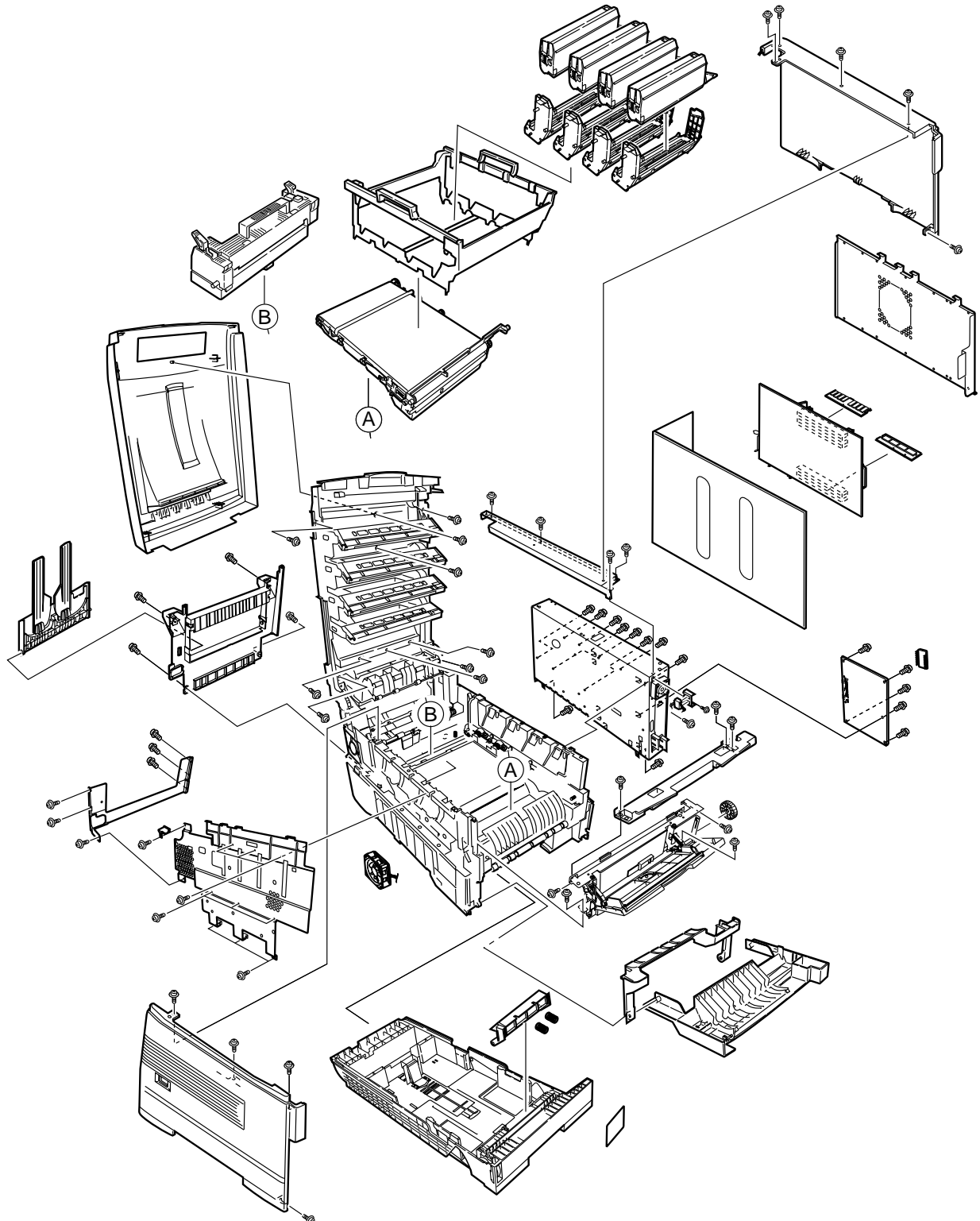
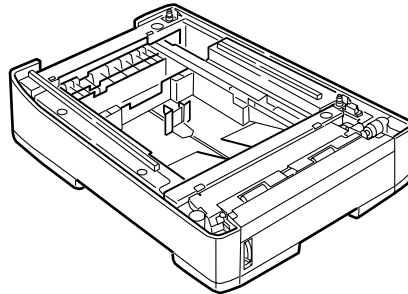


Figure 1-2

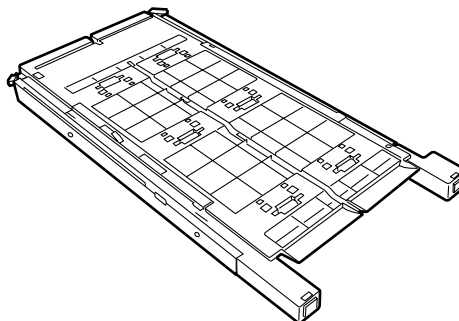
## 1.3 Option Configuration

The followings are available as options on the 7820 printers.

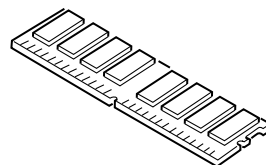
- (1) 2nd Tray/ 3rd Tray



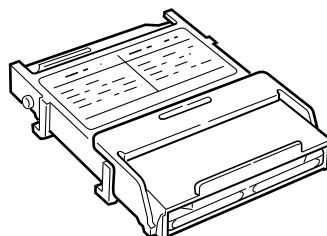
- (2) Duplex Unit



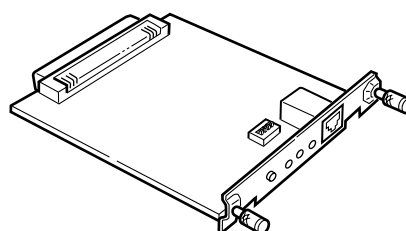
- (3) Expansion Memory 64/128/256/512 MB



- (4) Internal Hard Disk



- (5) Ethernet Board



## 1.4 Specifications

(1) External Dimensions	Height: 430mm   Width: 430mm   Length: 620mm		
(2) Weight	42 kg		
(3) Papers	Type:	Ordinary paper, Transparencies (Recommended: MLOHP01)	
	Size:	Postal card, Legal 13" or 14", Executive, A4, A5, B5, A6 (Only the 1st tray and the front feeder support A6 and postal-card sizes.)	
	Weight:	1st tray 55 kg to 151 kg (64 to 176g/m <sup>2</sup> )	
	Front feeder	55 kg to 172 kg (64 to 203g/ m <sup>2</sup> )	
(4) Print Speed	Color:	20 pages per minute (Transparency: 8 pages per minute)	
	Monochrome:	24 pages per minute (Transparency: 12 pages per minute)	
	Postal Card, Label, Thick Paper:	12 pages per minute	
(5) Resolution	600 × 600 dots per inch 1200 × 1200 dots per inch		
(6) Power Input	115 - 127 V , 220 - 240 V		
(7) Power Consumption	Peak:	1500W	Normal Operation: 500W (5% duty)
	Idle:	150W	Power Saving Mode: 45W or less
(8) Frequency	50Hz or 60Hz ±2Hz		
(9) Noise	Operation:	56 dB (Without second tray)	
	Standby:	45 dB	
	Power Saving:	43 dB	
(10) Consumable Life	Toner Cartridge:	5,000 pages (5% duty) (each of Y, M, C and K)	
	Large-Capacity Toner Cartridge:	10,000 pages (5% duty) (each of Y, M, C and K)	
	Image Drum:	30,000 pages (5% duty, Continuous printing) (each of Y, M, C and K)	
(11) Parts Replaced Periodically	Fuser Unit Assy:	Every 60,000 pages	
	Belt Cassette Assy:	Equivalent of 60,000 pages (3 pages/job)	

(12) Temperatures and Relative Humidities

Temperature

Temperature Condition

	Temperature (°F)	Temperature (°C)	Remark
Operation	50 to 89.6	10 to 32	17 to 27°C (Temperatures to assure full color print quality)
Non-Operation	32 to 109.4	0 to 43	Power-off
Storage (Max. One Year)	-14 to 109.4	-10 to 43	With drum and toner
Transport (Max. One Month)	-20 to 122	-29 to 50	With drum and without toner
Transport (Max. One Month)	-20 to 122	-29 to 50	With drum and toner

Humidity

Humidity Condition

	Relative Humidity (%)	Max. Wet-Bulb Temperature(°C)	Remark
Operation	20 to 80	25	50 to 70% (Humidities to assure full color print quality)
Non-Operation	10 to 90	26.8	Power-off
Storage	10 to 90	35	
Transport	10 to 90	40	

(13) Printer Life 600,000 pages (on a A4-size basis) or five years

## 2. OPERATION DESCRIPTION

The 7820 printers, tandem color electrophotographic page printers, adopt technologies such as an LED array, OPC, dry single-component non-magnetic developing, roller transfer and heat-compression fusing. A black-writing printing method by shedding light on print areas is used.

Figure 2-1-1(600dpi),2-1-2(1200dpi) provides the block diagram of the printers.

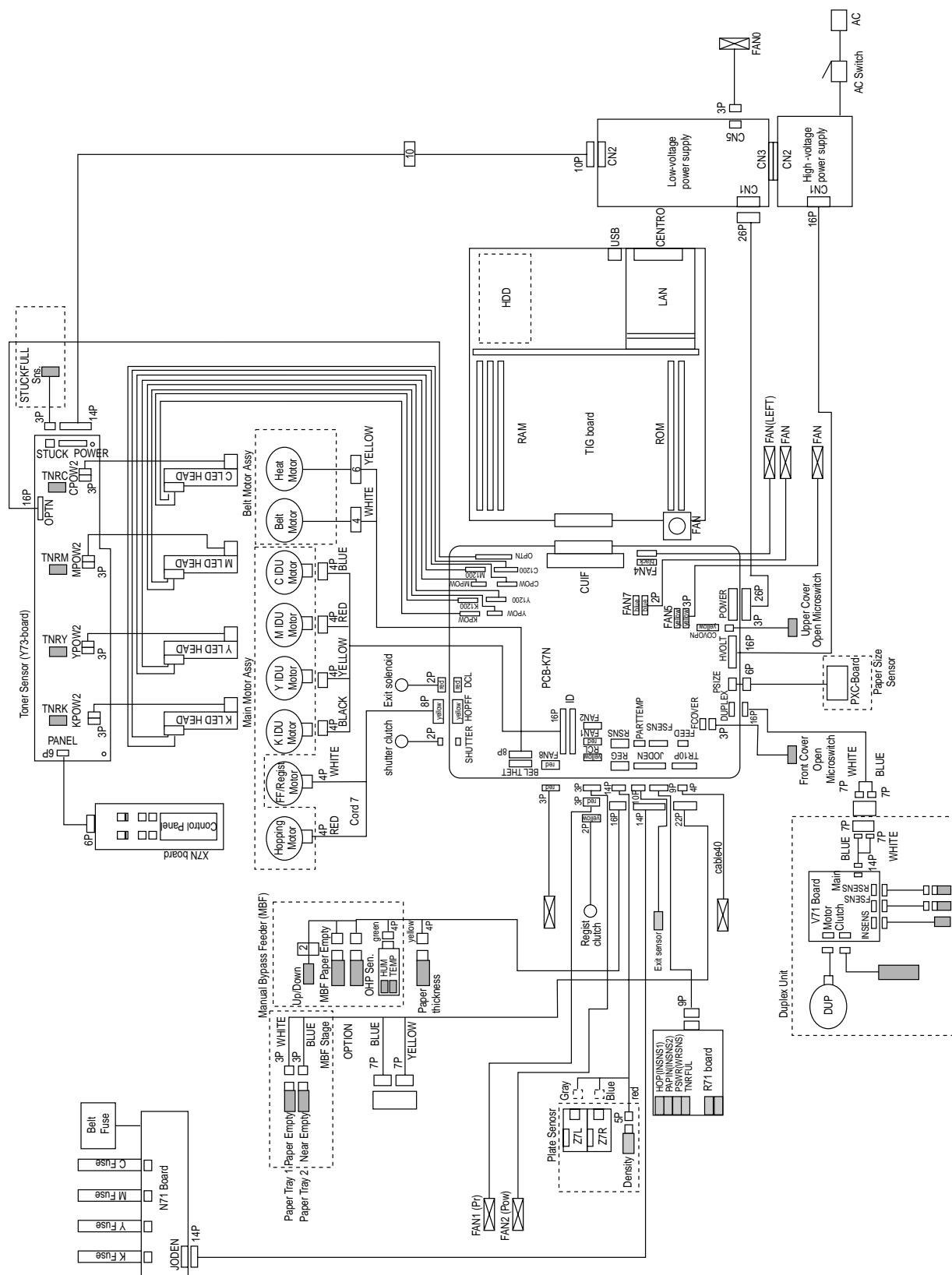


Figure 2-1-1 600dpi



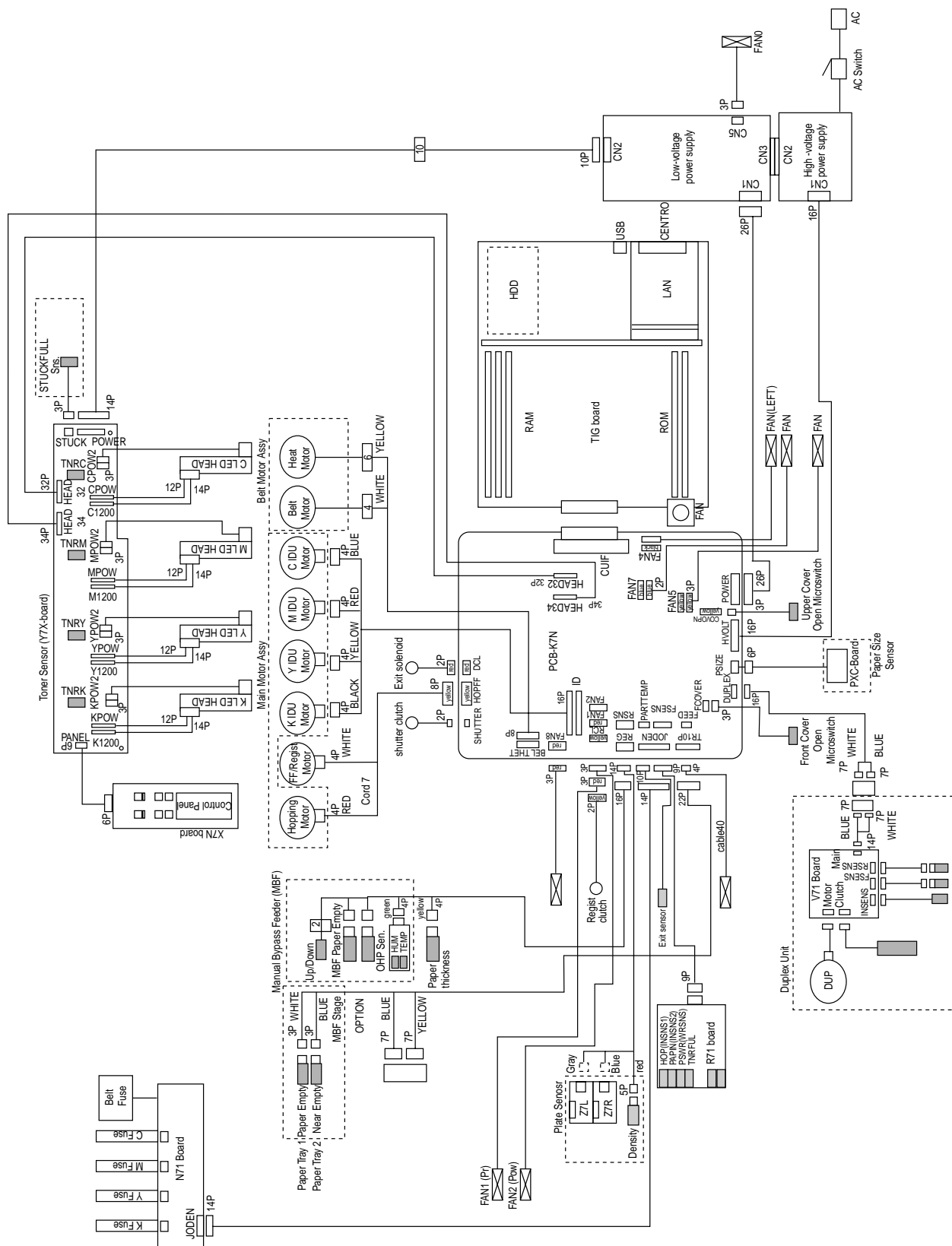


Figure 2-1-2 1200dpi

## 2.1 Main Board (TIG PWB)

Figure 2-2 provides the block diagram of the main control board (TIG PWB).

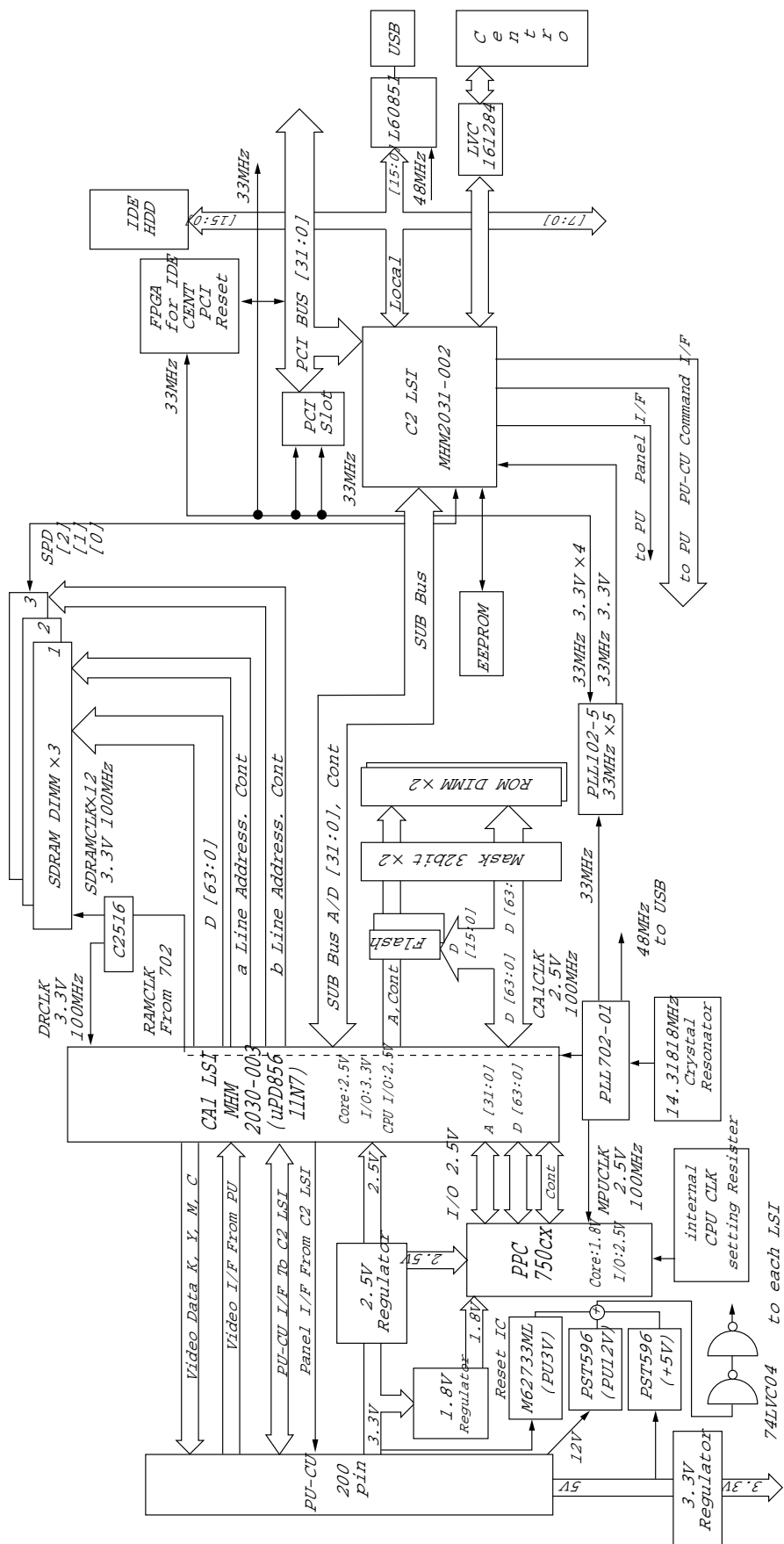


Figure 2-2

- (1) CPU  
The CPU is PowerPC750Cxe, a 64-bit bus RISC processor, which inputs an 100-MHz CLK (= BUS CLK), and operates at 450MHz that is 4.5 times the input.
- (2) Cache  
PPC750Cxe has its cache only inside of it.  
Speed: Same as CPU Core CLK speed  
Capacity:  
Primary Cache: 32 K bytes in D-cache capacity, 32 K bytes in I-cache capacity  
Secondary Cache: 256 K bytes
- (3) ROM  
ROM is to be inserted into the two 168 pin DIMM slots. The slot A is for program ROM and the slot B is for Japanese kanji fonts. The slot C is not assigned.
- (4) RAM  
RAM is to be inserted into the three 168 pin DIMM slots. The DIMMs must be fitted in descending labeled type No. order into the slots 1, 3, 2 and 4.  
SDRAM DIMM Specifications:  
Speed: PC133 or more  
Capacity: 64/128/256/512 MB  
Configuration: Without parity. Without ECC. SPD information is required.
- (5) EEPROM  
EEPROM, an 8-pin DIP package, is to be inserted into the IC socket. The EEPROM is of 16 Kbits for 3.3V power supply, and settings for controlling the controller block are stored in it.
- (6) Flash ROM  
A 4Mbyte flash ROM is surface-mounted on the TIG board. The flash ROM is composed of four 2048k-by-16bit chips, and fonts and macros can be stored in it.
- (7) Memory Control LSI (CAI)  
A 696-pin BGA package ASIC made by NEC. The chip mainly controls a CPU I/F, memory, video data compression and decompression, and a PU-video I/F.
- (8) Interface Control LSI (C2)  
A BGA package ASIC made by Toshiba, which controls a PU command I/F, operator panel I/F, IDE I/F, Centronics I/F, USB I/F, PCI I/F, EEPROM and a SPD (SDRAM DIMM) I/F.
- (9) IDE HDD  
An IDE connector is surface-mounted on the board to which an IDE HDD assembled using exclusive molds will be connected. The IDE HDD is used for storing font data, spooling edited video data and registering form data.
- (10) PCI Bus Option  
Two PCI I/F slots are provided for option board use. The bus, which uses an Oki Data original connector, can accept an Ethernet board.
- (11) Host Interface  
Standard: Centronics two-way parallel I/F (IEEE-1284-compliant)  
USB (USB1.1-compliant)  
Additional Board: (connected to PCI BUS)  
Ethernet Board

## 2.2 Engine Controller Board (K7N PWB)

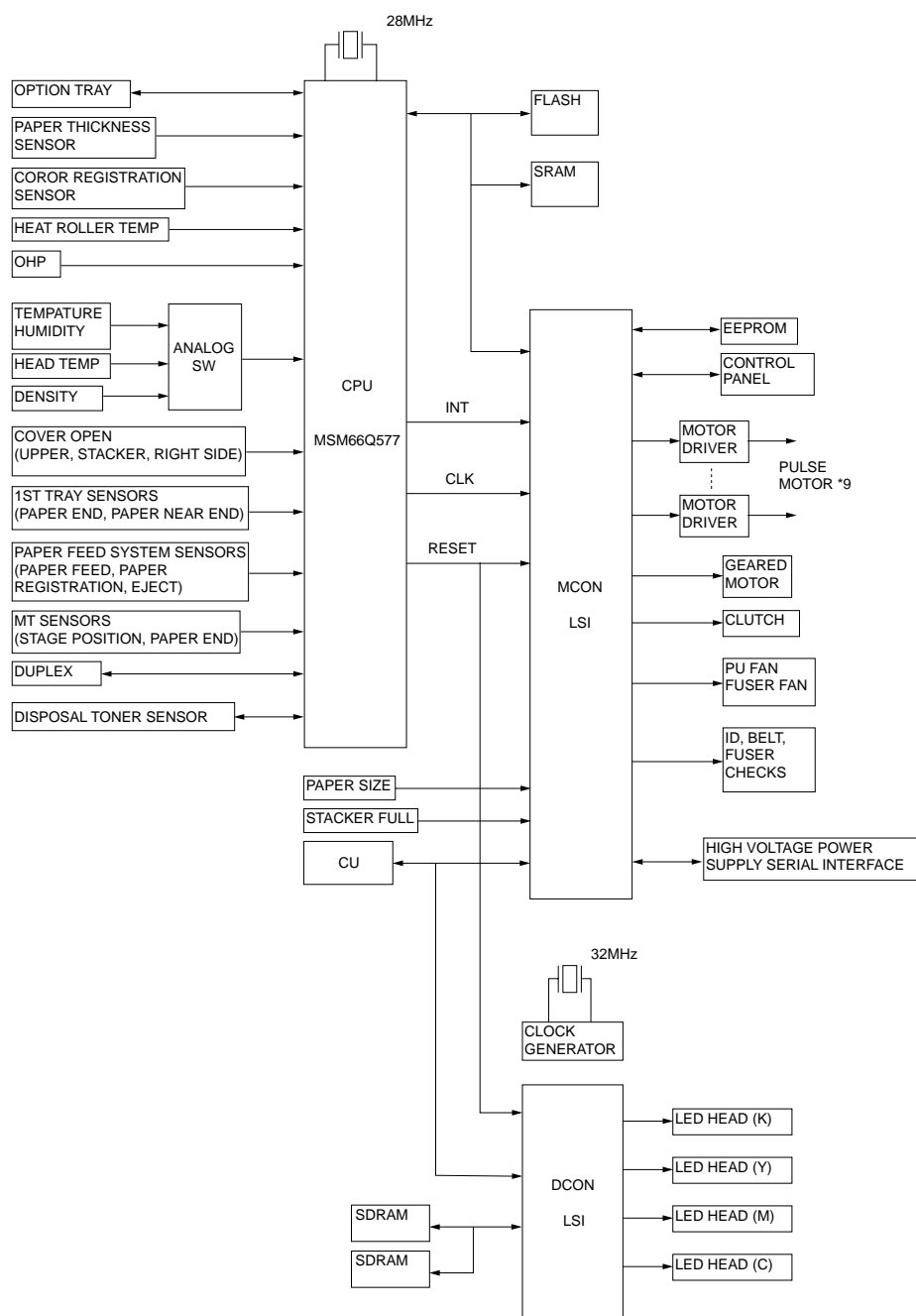


Figure 2-3

The engine control block (PU) is controlled by the engine controller board (K71 PWB) which consists of a CPU (MSM66Q577), general LSI chip, flash ROM, EEPROM, pulse motor drivers and a video memory (see Figure 2-3).

(1) CPU

This, a 16-bit CPU with an AD converter (OKI MSM66Q577), controls the entire system.

(2) General LSI

This LSI (UPD65454GD-241-LML, UPD65946GD-137-LML), which is contained in the printer engine control block, incorporates 4 megabits of video memory and has functions such as engine-controller interfacing, LED interfacing, motor control, sensor input, video memory control, main scan color misalignment correction, skew correction and high-voltage power supply control.

- (3) MCON LSI  
This LSI is used for import of SENSORS and the controls of Pulse Motors, Clutches, FANs and High Voltage Power Supply.
- (4) Flash ROM  
The flash ROM (29F800-70) is of 8-Mbits, and PU programs are stored in it.
- (5) EEPROM  
The EEPROM (NM93C66N-NW) is of 4-Kbits, and mounted on the board with an IC socket. Correction values are stored in it.
- (6) Pulse Motor Driver  
The pulse motor driver (A2919SLBTR, A3955SLBTR, MTD2005) drives the eight pulse motors to revolve the ID and transport media.
- (7) SRAM  
This SRAM (628100LG-55L) is used as working memory of the CPU.
- (8) SDRAM  
This SRAM (56V16160T) is used as data memory of the DCON LSI.

## 2.3 Power Units

There are a low voltage power unit consists of an AC filter circuit, low voltage power circuit and heater driver circuit, and a high voltage power unit organizes a high voltage power circuit.

### (1) Low Voltage Power Unit

This circuit generates the following voltages:

Output Voltage	Use for
+5 V	LED head
+5 V	Logic circuit power supply, PU CPU
+34 V	Motor, drive voltage and power supply voltage for high voltage power supply
+12 V	High voltage power supply, Media Thickness Sensor power supply

### (2) High Voltage Power Unit

This circuit generates the following voltages of not less than +34V, which are required for electrophotographic process, according to control sequences from the controller board.

Output	Voltage	Use for	Remark
CH	-1000V to 1.4KV+/-50V	Voltage to charging roller	
DB	-50 to -300V/ +300V	Voltage to developing roller	
SB	-300V to -450V/ 0V	Voltage to toner supplying roller	
TR	C: 0KV to 7KV K,Y,M: 0KV to 6KV	Voltage to transfer roller	Variable

## 2.4 Mechanical Processes

Figure 2-4 shows the mechanical processes of the 7820 printers.

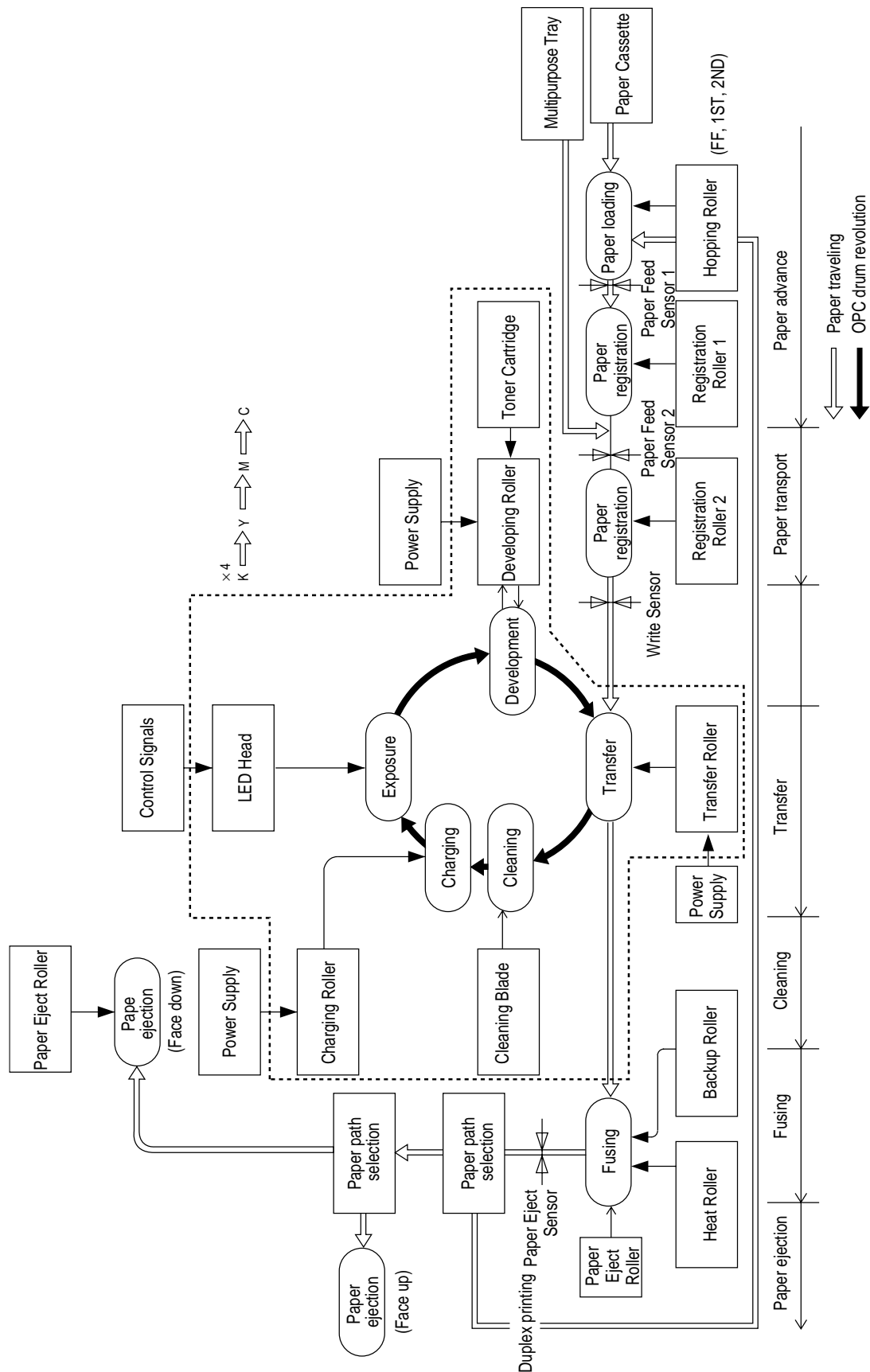


Figure 2-4

## 2.4.1 Electrophotographic process

### (1) Electrophotographic process

The following is the outline of electrophotographic process:

#### ① Charging

DC voltage is applied to the charging roller and the surface of the OPC drum is negatively and evenly charged.

#### ② Exposure

The LED head, under image signals, emits light to the negatively charged surface of the OPC drum. The radiated portions of the drum surface attenuate in negative charge according to the intensity of the light and, based on the surface potentials, a latent electrostatic image is formed on the drum surface.

#### ③ Development

Negatively charged toner contacts the OPC drum and by electrostatic force adheres to the latent electrostatic image to form a clear image on the drum surface.

#### ④ Transfer

Placed on the surface of the OPC drum, paper is positively, or opposite to the polarity of the toner, charged by the transfer roller on its back to transfer the toner image to the paper.

#### ⑤ Cleaning

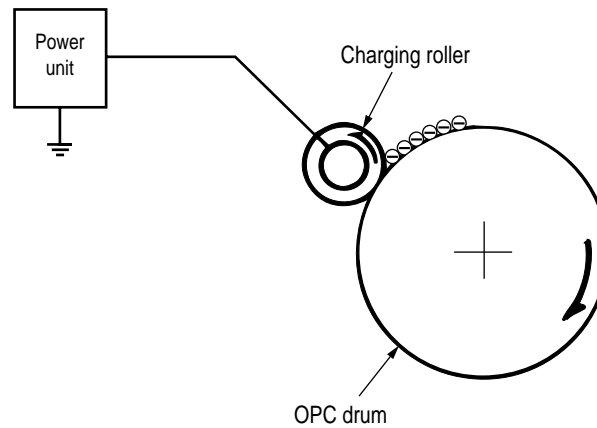
The cleaning blade removes residual toner from the OPC drum after the transfer.

#### ⑥ Fusing

The toner image on the paper is fused into place through the application of heat and pressure to it.

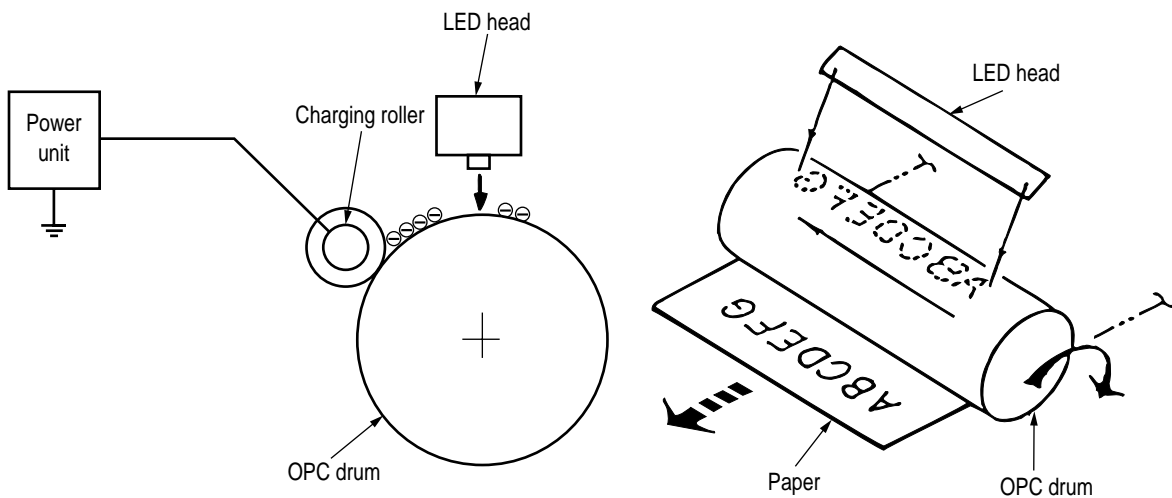
(2) Charging

Negative DC voltage is applied to the charging roller contacting the surface of the OPC drum.



(3) Exposure

The negatively charged surface of the OPC drum is radiated with light from the LED head. The negative charge of the radiated portions of the drum surface attenuates in response to the intensity of the light and a latent electrostatic image responsive to the potentials of the surface is formed on the drum surface.

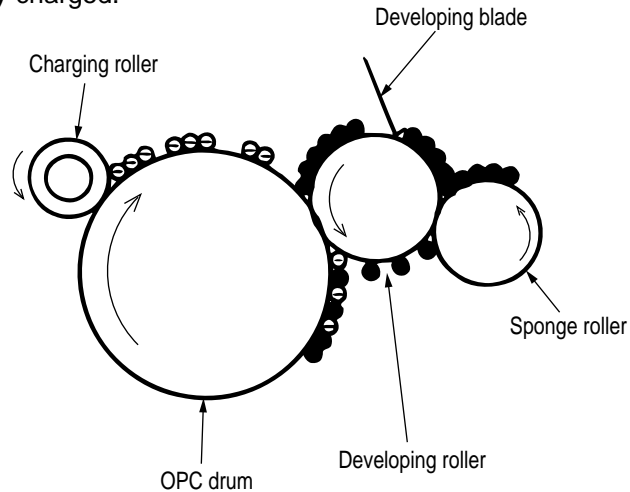




(4) Development

By the adhesion of toner to the latent electrostatic image on the drum surface, the image is changed to an image of its toner. The development is processed at the contact portion between the OPC drum and the developing roller.

- ① The sponge roller causes toner to adhere to the developing roller. The toner becomes negatively charged.



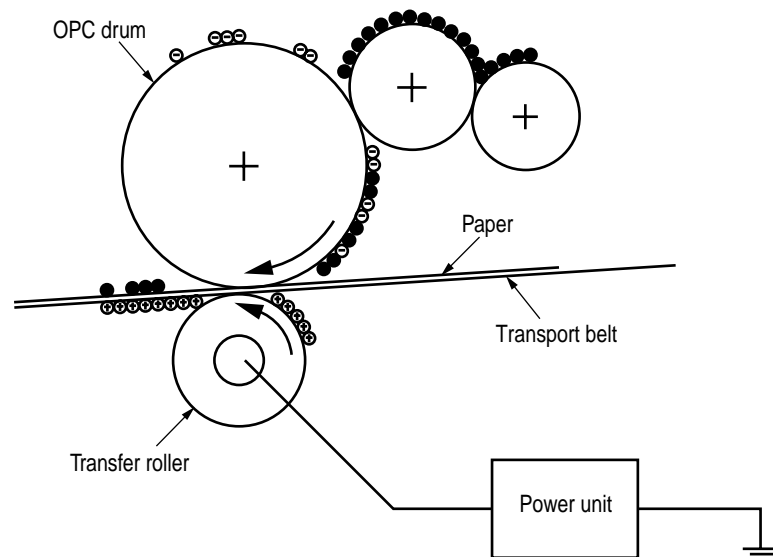
- ② The developing blade removes excess toner from the developing roller and a thin layer of toner remains and forms on the developing roller.
- ③ The toner is drawn by the latent electrostatic image at the contact portion between the OPC drum and the developing roller. The latent electrostatic image on the drum surface is made visible with the toner.

(5) Transfer

The transfer roller, which is made of conductive sponge, presses paper against the surface of the OPC drum and brings the paper into intimate contact with the drum surface.

The paper is placed on the drum surface, and positively (opposite to the charge of the toner) charged by the transfer roller on its back.

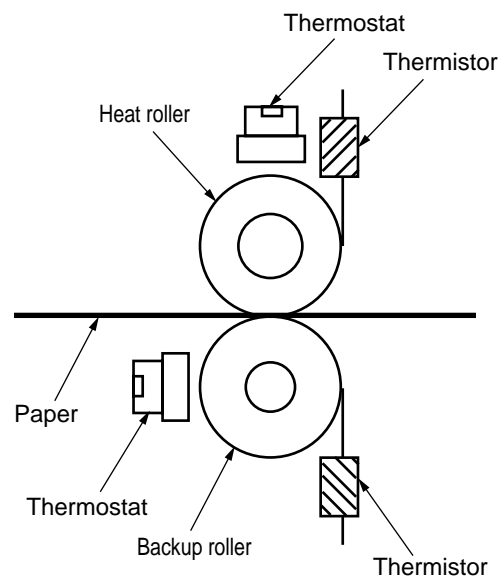
Applying positive high voltage from the power supply to the transfer roller moves the positive charge induced by the transfer roller to the paper surface at the contact portion between the transfer roller and the paper, the paper surface drawing the negatively charged toner from the drum surface.



(6) Fusing

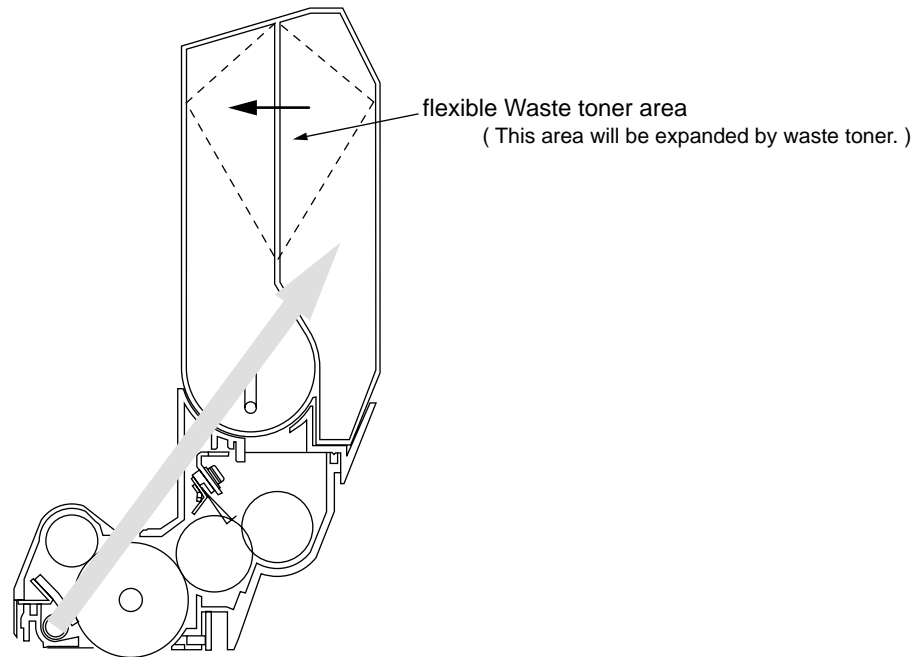
When passing through between the heat roller and the backup roller, the toner image transferred to the paper is fused into place by the application of heat and pressure to it.

The built-in upper and lower halogen lamps of 700 watts and 500 watts heat the Teflon coated heat roller. The fusing temperature is controlled by the sum of the temperature detected by the thermistor moving over the heat roller surface and the temperature detected by the thermistor moving over the backup roller surface. For safety, a thermostat is provided and, when the heat roller temperature rises by a fixed degree or more, becomes open to cut off voltage supply to the heater. The backup roller is being pressed against the heater by the pressure springs on both sides.



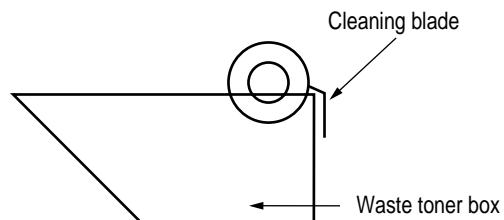
(7) Cleaning

Non-fused, residual toner on the OPC drum is scraped with the cleaning blade and collected in the waste toner area of the toner cartridge.



(8) Cleaning

Residual toner on the transfer belt is scraped with the cleaning blade and collected in the waste toner box of the transfer belt unit.



## 2.4.2 Paper running process

Figure 2-5 shows the traveling of paper in the 7820 printers.

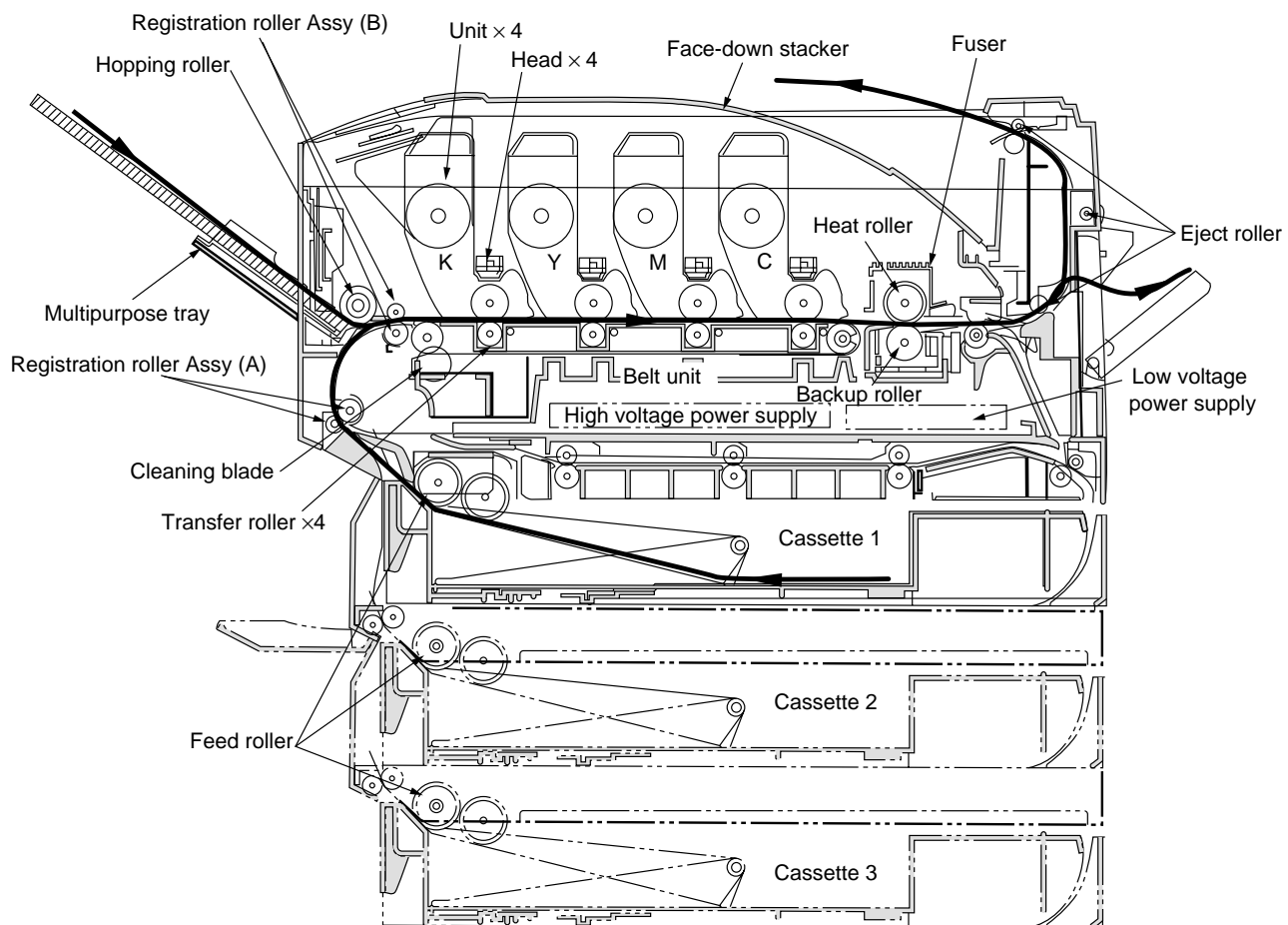


Figure 2-5 Paper Paths

(1) Paper Feed from Tray

1. The running of the feed motor in the arrow direction (a) drives the feed roller and the nudger roller. This operation feeds paper from the tray.
2. After the beginning of the paper turns the entrance cassette sensor on, the paper is advanced a fixed length. When the paper beginning reaches the registration roller Assy (A), the feed motor stops.
3. The running of the registration motor in the arrow direction (b), which synchronizes with the above paper advance operation, drives the registration roller Assy (B) and the electromagnetic clutch. The registration roller Assy (A) moves with the operation of the electromagnetic gear when the paper beginning touches the registration roller Assy (A), where the feed motor does not run. The feed roller idles via the built-in one-way clutch and the nudger roller idles because the planet gear is disengaged.
4. The registration motor transports the paper until the paper end passes through the entrance belt sensor.

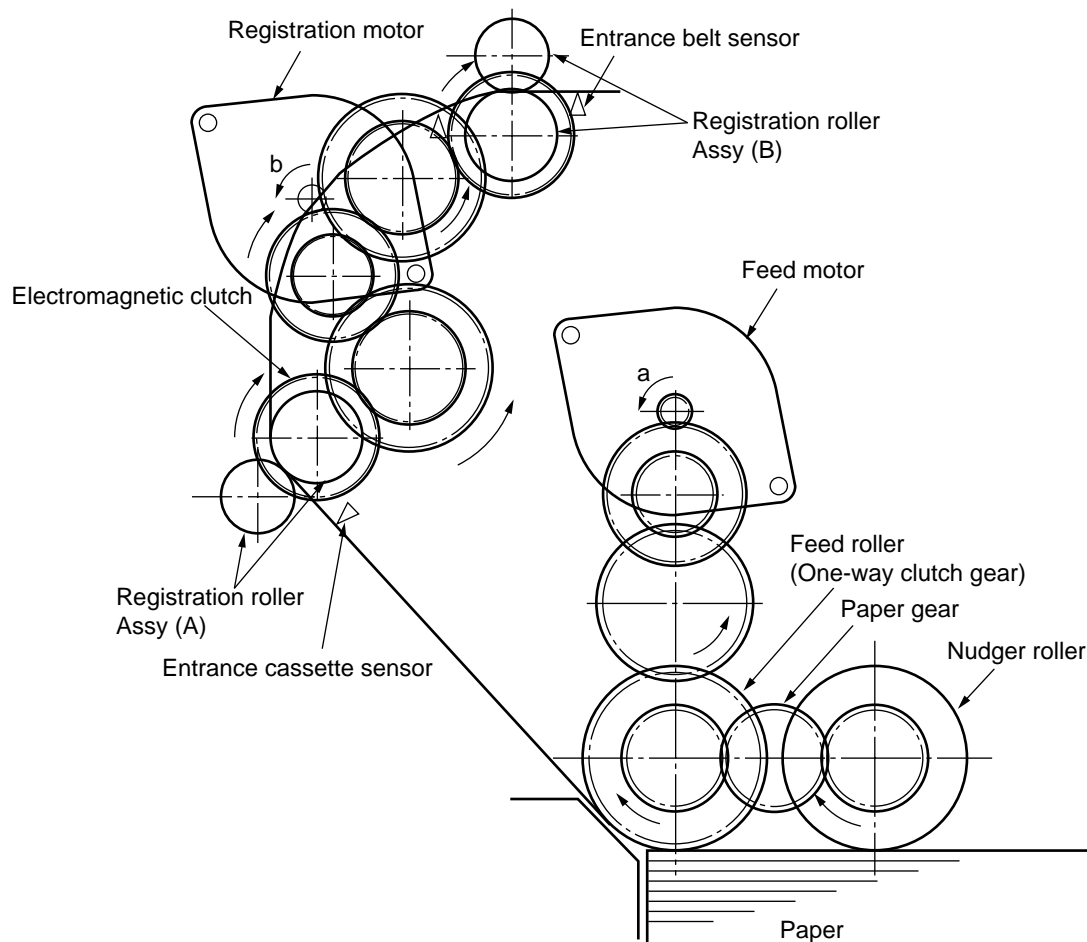


Figure 2-6

(2) Paper Feed from Multipurpose Tray (MT)

1. The release lever usually pushes down the hopping plate to a position that turns microswitch on (Figure 2-7-a).
2. The running of the motor in the (a) direction drives the MT feed roller and turns the cam. The cam pushes the release lever and the hopping plate picks up paper sent out by the MT feed roller (Figure 2-7-b), where the registration roller Assy (B) does not move because its one-way clutch gear (1) idles.
3. After the paper beginning turns the entrance sensor on, the paper is forwarded a fixed length. The paper stops when its beginning reaches the registration roller Assy (B).
4. At the same time, the cam pushes down the hopping plate. The release lever that has been placed in its original position by the spring locks the hopping plate (Figure 2-7-c).
5. After the completion of the paper feed operation, the registration motor runs in the arrow direction (b) to drive the registration roller Assy (B), where the one-way clutch gear (2) does not allow the MT feed roller to move.

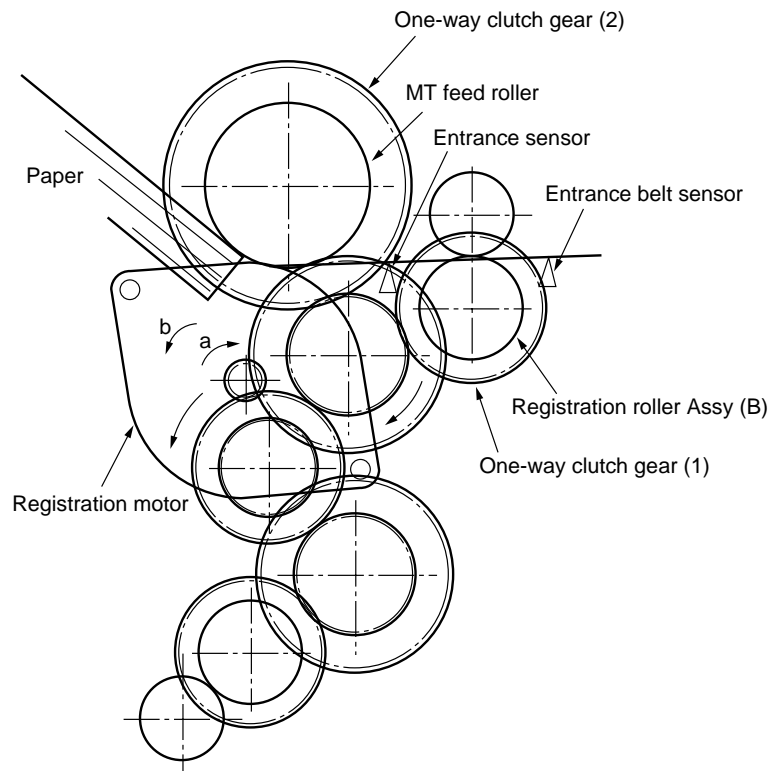


Figure 2-7

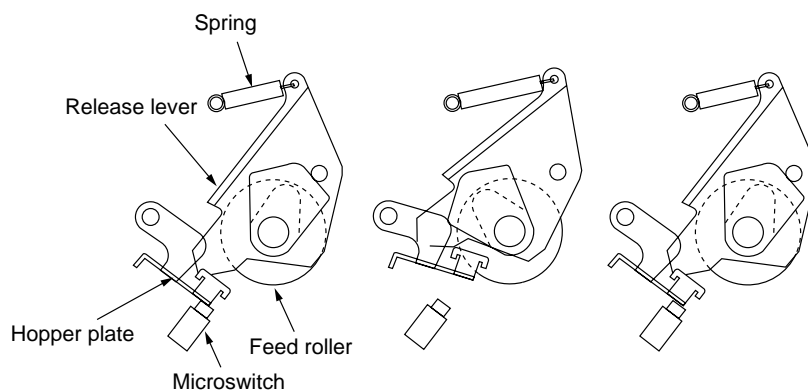


Figure 2-7-a

Figure 2-7-b

Figure 2-7-c

### (3) Transport Belt

1. The running of the transport belt motor in the arrow direction (a) drives the transport belt. The belt unit sits with one transport roller immediately below each color's drum, and the transport belt between them. By the application of a fixed voltage, the transport belt and the transport roller feed paper on the transport belt into the fuser unit, transferring a toner image on each color's drum.

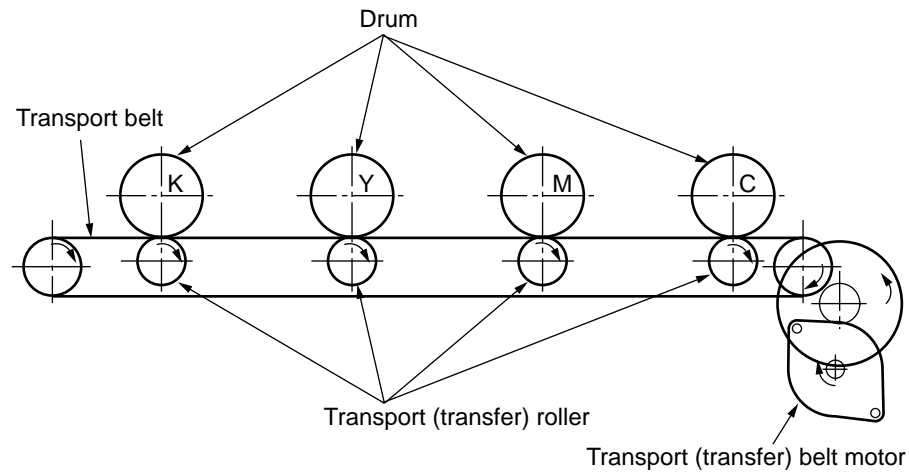


Figure 2-8

#### (4) Driving and Up-and-Down Movements of I/D Unit

1. The I/D unit driving and up-and-down movements are effected by a single-pulse motor. The running of the main motor in the arrow direction (a) turns the lever 1 to the left. Then, the lever 2 that was lifted by the lever 1 lowers to move down the I/D unit. After the up/down sensor is turned off (Figure 2-9-d), specified downward pulsing places the I/D unit in its lowest position, or equivalently, printing position (Figures 2-9-a and 2-9-c). The drum gear engages with the driving gear and starts revolving to transfer an image on the drum to running paper, where the one-way gear idles upon placement of the lever in its lowest position.
2. With the running of the main motor in the arrow direction (b), the lever 1 pushes up the I/D unit via the lever 2. After the up/down sensor is activated (Figure 2-9-d), the lever 1 lifts the I/D unit to a specified level and stops to keep space to an extent between the drum and the transport belt (Figures 2-9-c and 2-9-e). The drum gear is not engaged with the driving gear and does not revolve.
3. When the two pins of the up/down sensor are pushed up by the I/D unit, and touches and electrically connected to the plate above the pins, the sensor recognizes the on state. When the two pins are pushed down by the I/D unit, and separated and insulated from the plate, the sensor recognizes the off state. The installation of the I/D unit can also be verified by recognizing the off state of the up/down sensor.

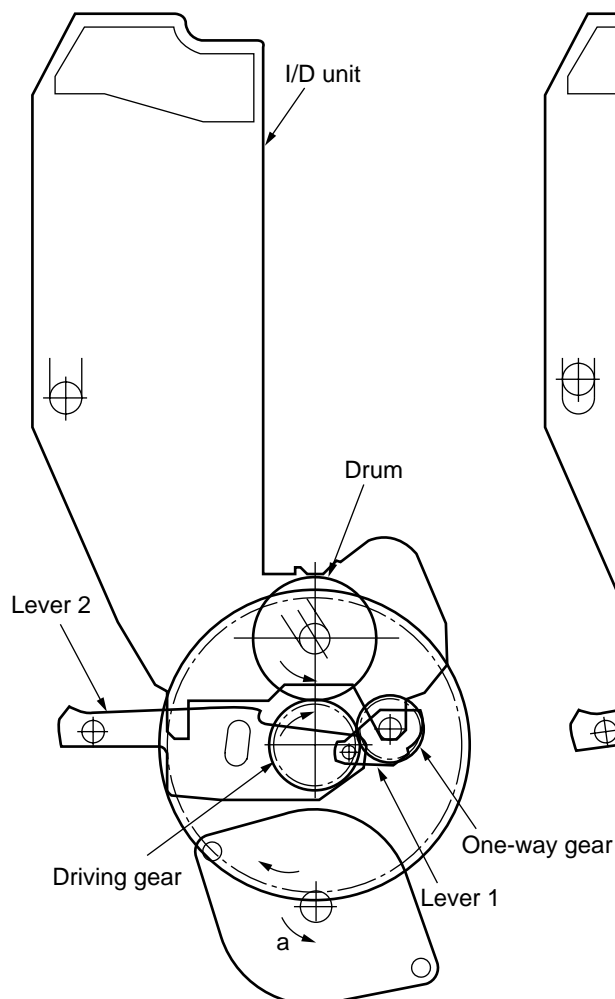


Figure 2-9-a

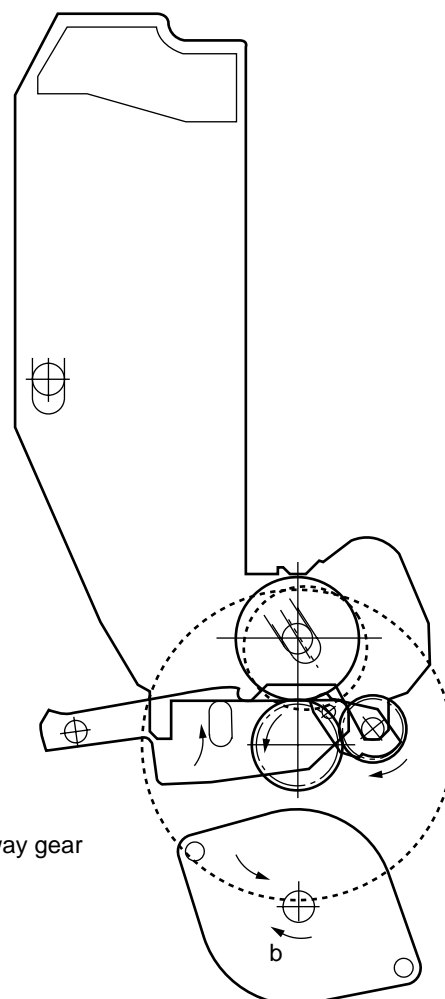


Figure 2-9-b



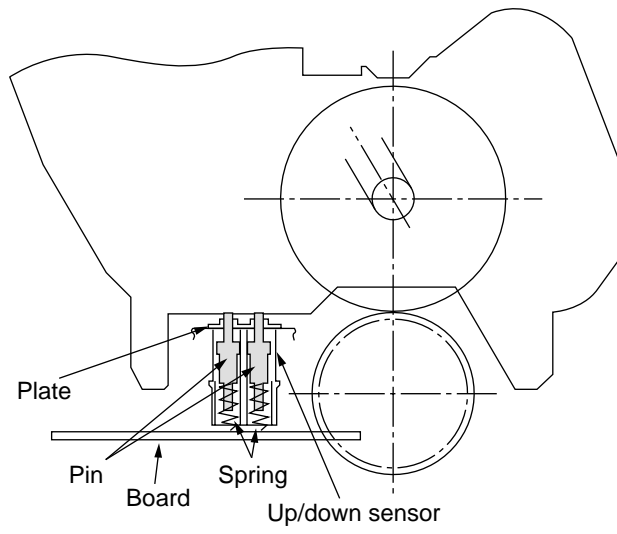


Figure 2-9-c

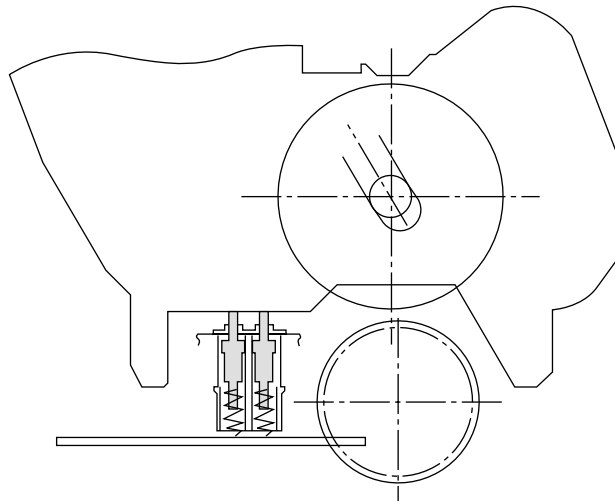


Figure 2-9-d

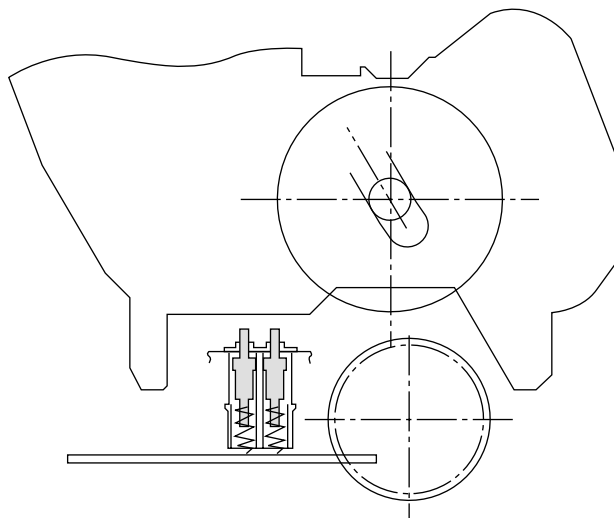


Figure 2-9-e

(5) Fuser Unit and Paper Ejection

1. A single-pulse motor drives the fuser unit and the eject rollers. In response to the running of the heat motor in the arrow direction (a), the heat roller turns. This roller fuses a toner image to paper by heat and pressure.
2. At the same time, the four eject rollers move to eject the paper.
3. The ejection path is switched back and forth between the route to the face-up stacker and the route to the face-down stacker as follows. When the face-up stacker opens, the paper separator inclines in the direction that guides the paper to the face-up stacker. When the face-up stacker closes, the paper separator inclines in the direction that sends the paper to the face-up stacker.

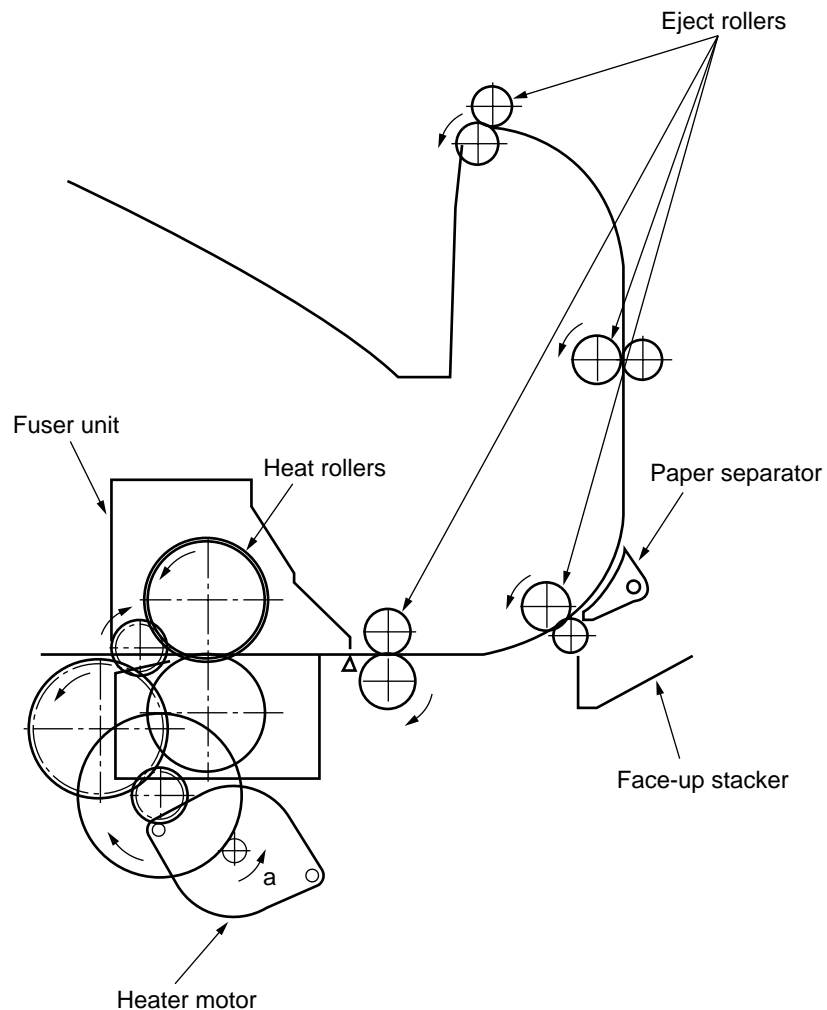


Figure 2-10

(6) Duplex Unit

1. When the duplex unit receives an instruction from the printer to print on both sides of a sheet of paper, the solenoid opens the separator after the completion of one side printing of a sheet of paper sent from the tray. The path is switched to that to the duplex unit. At this time, as the roller (1) turns in the direction of the arrow "a," the paper is retracted on the rear of the cassette.
2. When fixed time has elapsed after the paper beginning passes through the duplex-in sensor, the rollers reverse and the roller (1) turns in the direction of the arrow "b" to feed the paper into the duplex unit. After that, the paper passes through the rollers (2), (3) and (4), and ejected with the other side printed, and fed again into the printer.

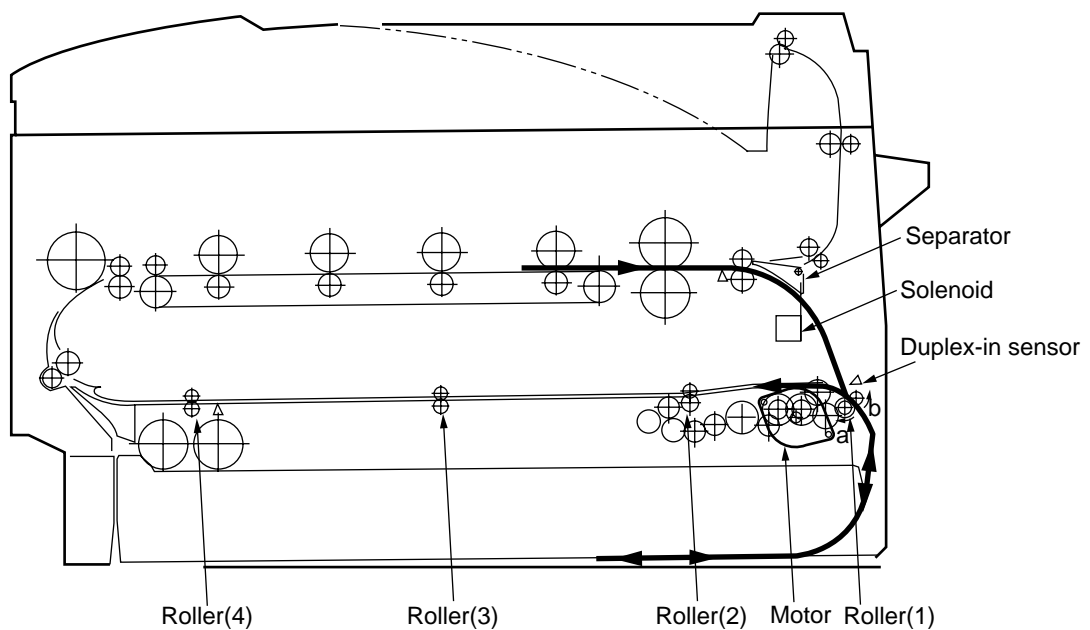
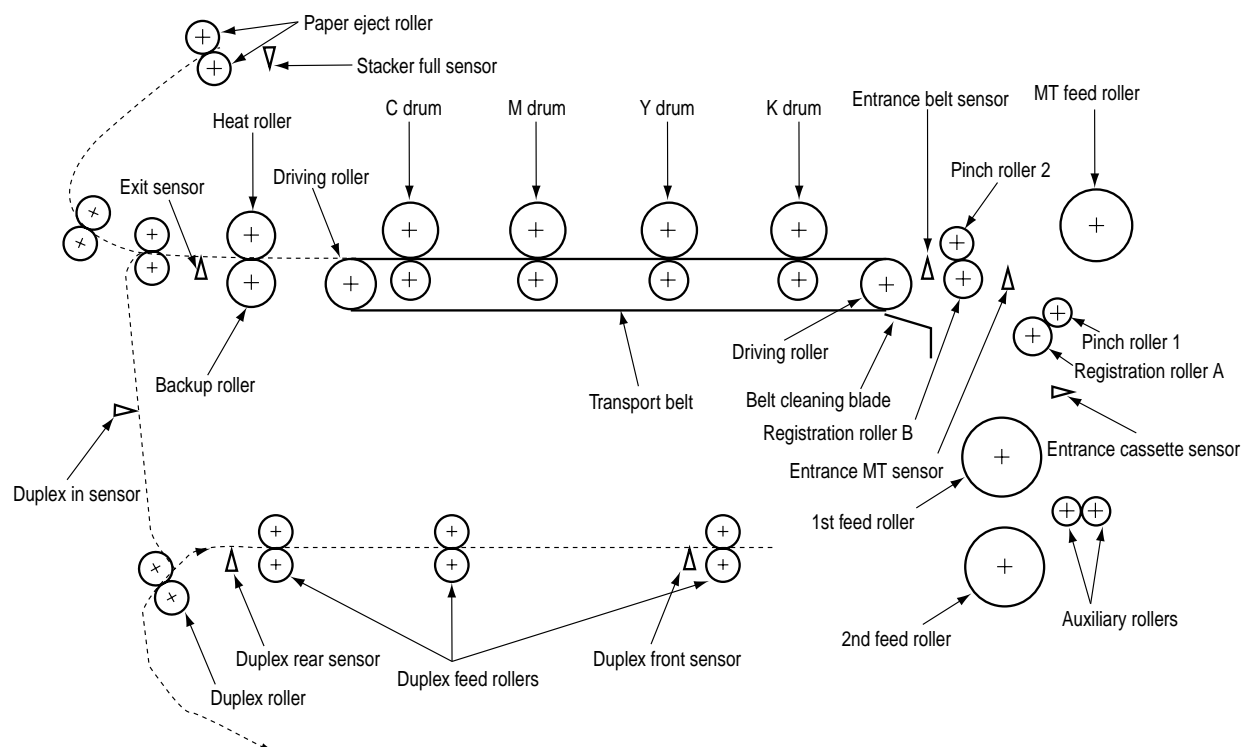


Figure 2-11

## 2.5 Sensor

### 2.5.1 Paper related sensors



Sensor	Function	Sensor status
Entrance MT sensor	Detects the beginning of incoming paper to determine the timing for switching from hopping to transport.	ON : Paper is present.
Entrance Cassette sensor		OFF : Paper is absent.
Entrance Belt sensor	Detects the beginning of transported paper and, based on the time taken until the paper beginning reaches the sensor, determines the paper length.	ON : Paper is present. OFF : Paper is absent.
Exit sensor	Detects the beginning and end of paper to determine the paper ejection timing.	ON : Paper is present. OFF : Paper is absent.
Duplex In sensor	Detects the beginning of paper that enters into the duplex unit, to determine the time taken until the reversed rollers turn in forward direction.	ON : Paper is present. OFF : Paper is absent.
Duplex Rear sensor	Detects the beginning of reversed paper in the duplex unit.	ON : Paper is present. OFF : Paper is absent.
Duplex Front sensor	Detects the end of reversed paper in the duplex unit to determine the paper ejection timing.	ON : Paper is present. OFF : Paper is absent.
Stacker Full sensor	Detects the face-down stacker full of paper.	ON : Stacker is full. OFF : Stacker is empty.

## 2.5.2 Other sensors

- ① Paper Empty sensor  
This sensor checks whether the paper cassette is empty.
- ② Paper Near sensor  
This sensor checks whether the paper cassette is near empty.
- ③ MT Paper Empty sensor  
This sensor checks whether paper exists in the front feeder.
- ④ MT Hopping switch  
This microswitch checks whether the front feeder table is in the up position or in the down position.
- ⑤ Paper Size switch  
This sensor detects the size of paper in the paper cassette.
- ⑥ ID Up/Down sensor (one for each of colors, Y, M, C and K)  
This sensor checks whether the ID unit is in the up position or in the down position.
- ⑦ Toner K, Y, M and C sensors  
These sensors check whether the waste toner cartridges are full by measuring the time interval between regular opening movements of toner sensors' respective levers.
- ⑧ Temperature sensor  
See section 2.7 (Transfer Control Responds to Environmental Changes).
- ⑨ Humidity sensor  
See section 2.7 (Transfer Control Responds to Environmental Changes).
- ⑩ OHP sensor  
This sensor detects the presence or the absence of transparencies.
- ⑪ Alignment sensor  
Upon correction of color misalignment, this sensor reads the alignment pattern printed at the right and left ends of the transfer belt (see section 2.13).
- ⑫ Density sensor  
This sensor measures the density of the pattern for density measurement printed on the transfer belt.
- ⑬ Media thickness sensor  
This sensor detects whether the thickness of media.
- ⑭ Waste toner sensor  
This sensor checks whether the waste toner is full in the belt waste toner box.

## 2.6 Color Misalignment Correction

The 7820, which is equipped with plural ID units and LED heads, causes color misalignment. The mechanically occurred color misalignment is automatically corrected as follows:

- (1) Color alignment to be corrected
  - ① Color misalignment in X-axis direction (Positional error caused by LED head)
  - ② Color misalignment in slanting direction (Positional error caused by LED head)
  - ③ Color misalignment in Y-axis direction (Positional error caused by I/D unit and LED head)
- (2) Correcting
 

A preset pattern to detect color misalignment is printed on the belt. The reflection sensor reads the printed pattern, each color's misalignment value is sensed and its correction value is determined. The correction value is used each color's (Cyan, Magenta and Yellow) writing timing in comparison with that of Black.

## 2.7 Transfer Control Responds to Environmental Changes (Room Temperatures and Relative Humidities)

The 7820 printers measure the room temperature and the relative humidity using their room temperature sensors and humidity sensors. An optimum transfer voltage under each measurement environment is calculated to perform real-time control on printing with its optimum voltage.

Environment sensing table

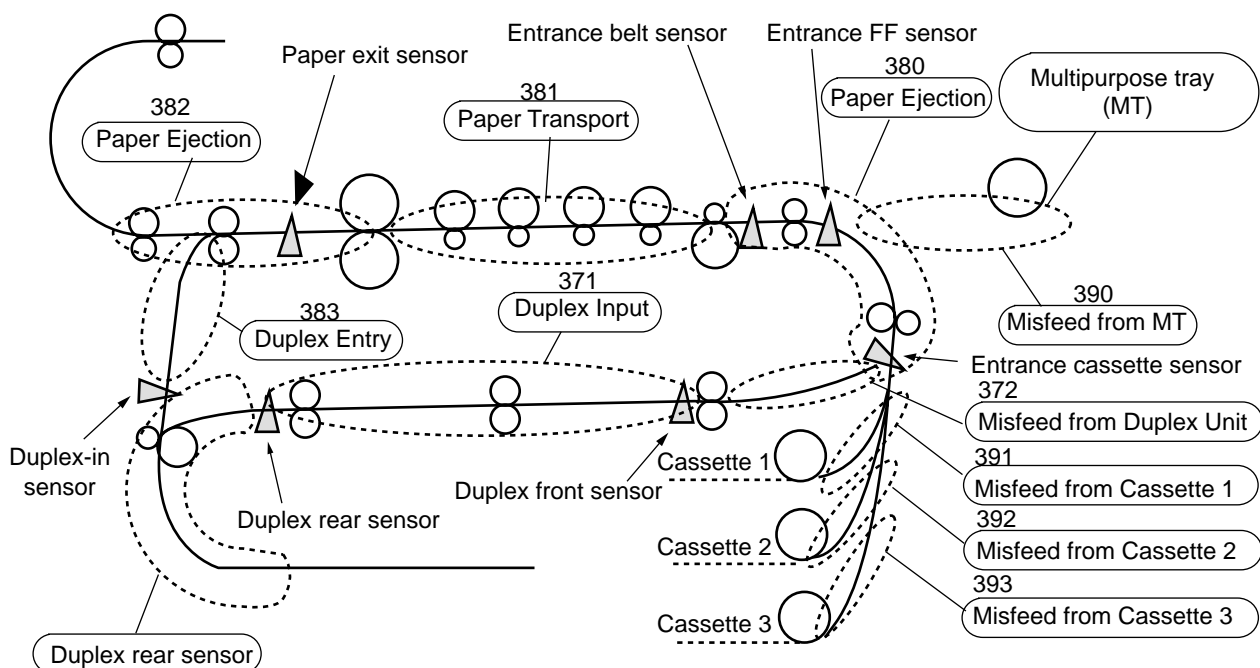
			Humidity (%)															
	Value Read by Sensor		15	15	25	25	35	35	45	45	55	55	65	65	75	75	85	85
	Value Read by Sensor	Value Read by Sensor Register Value	1E(H)	1E(H)	33(H)B(H)	47(H)B(H)	5C(H)B(H)	70(H)B(H)	85(H)B(H)	99(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)
Temperature (°C)	5	59(H)	8	8	8	7	7	7	7	7	7	7	7	7	6	6	6	6
	5	10 16B(H)	19E(H)	8	8	8	7	7	7	6	6	6	6	6	5	5	5	5
	10	15 19E(H)	1D1(H)	8	8	7	7	6	6	5	5	5	5	5	4	4	4	4
	15	20 1D1(H)	204(H)	8	7	7	6	5	5	4	4	4	4	4	3	3	3	3
	20	25 204(H)	236(H)	7	7	6	5	4	4	4	3	3	3	3	3	2	2	2
	25	30 236(H)	265(H)	7	6	6	4	4	4	3	3	3	3	3	2	2	2	2
	30	35 265(H)	290(H)	7	6	5	4	2	2	2	1	1	1	1	1	1	1	1
	35	40 290(H)	2B9(H)	6	6	4	2	2	1	1	1	1	1	1	1	1	1	1
	40	2B9(H)		6	5	4	2	1	1	1	1	1	1	1	1	1	1	1

			Humidity (%)															
	Value Read by Sensor		15	15	25	25	35	35	45	45	55	55	65	65	75	75	85	85
	Value Read by Sensor	Value Read by Sensor Register Value	1E(H)	1E(H)	33(H)B(H)	47(H)B(H)	5C(H)B(H)	70(H)B(H)	85(H)B(H)	99(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)	AB(H)B(H)
Temperature (°C)	5	59(H)																
	5	10 16B(H)	19E(H)															
	10	15 19E(H)	1D1(H)		L/L													
	15	20 1D1(H)	204(H)															
	20	25 204(H)	236(H)	N/L1	N/L1	N/L2		N/N										
	25	30 236(H)	265(H)	N/L1		N/L2	N/N							H/H	H/H	H/H		
	30	35 265(H)	290(H)		H/L								H/H	H/H	H/H			
	35	40 290(H)	2B9(H)	H/L					H/H									
	40	2B9(H)																

## 2.8 Paper Jam Detection

The 7820 detects paper jams after power-on and during printing. When a paper jam occurs, the printing operation is immediately suspended. After the cover is opened and the jammed paper is removed, closing the cover resumes the printing.

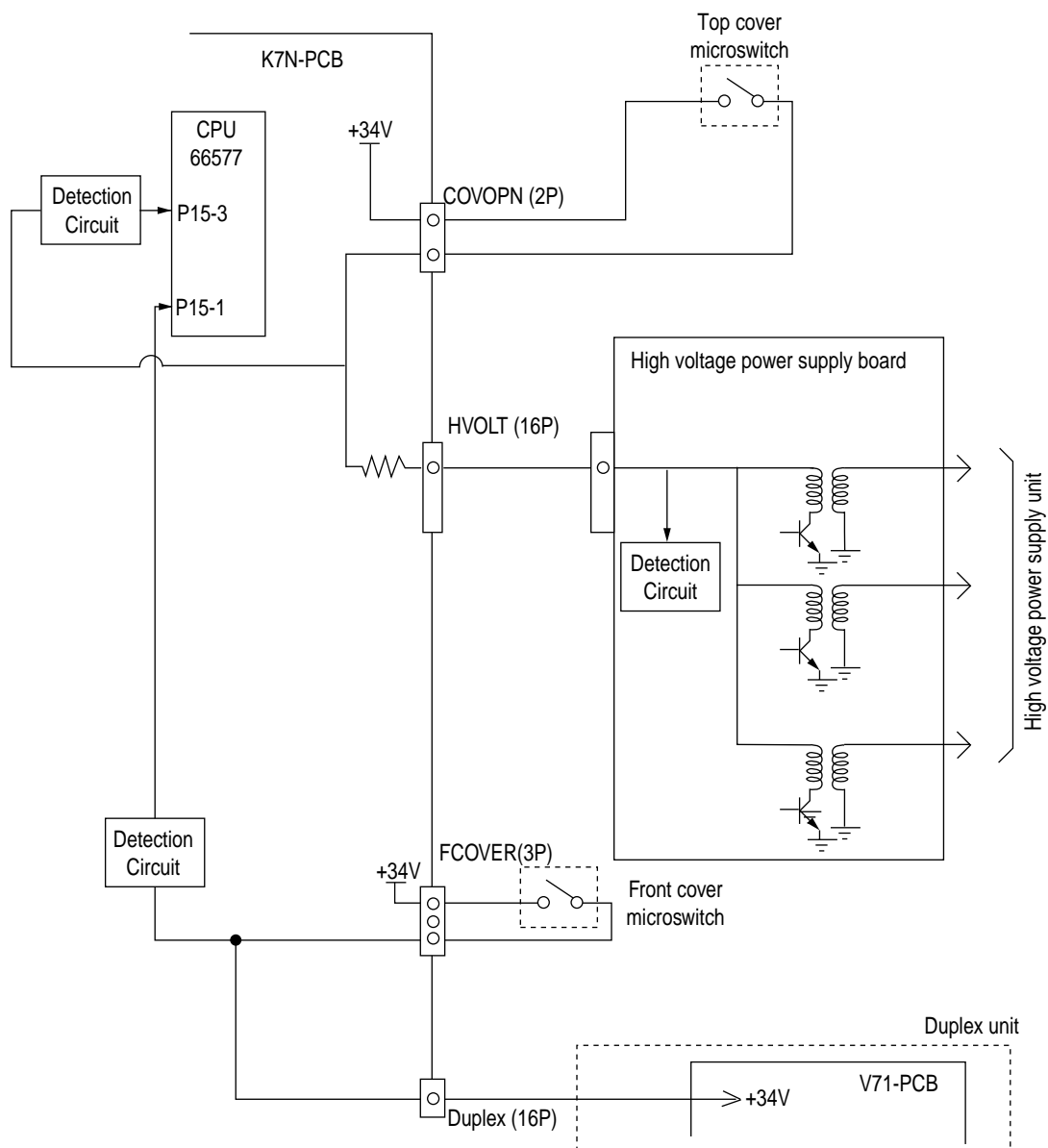
LCD message (Error Code)	ERROR	Error Condition
400,401	Paper Size Error	The entrance cassette sensor has not turned off within fixed time after its turn-on. Loading of multiple sheets of paper has been detected.
372	Misfeed from Duplex Transport Assembly	Paper could not be loaded from the duplex transport assembly.
390	Misfeed from Multipurpose Tray (MT)	Paper could not be loaded from the MT.
391-393	Misfeed from Cassette 1, 2 or 3	Paper could not be loaded from the cassette 1, 2 or 3.
370	Duplex Paper	The duplex rear sensor has not turned on during the paper reversing operation of the duplex unit.
383	Reversing Jam Duplex Unit Entrance	The duplex-in sensor has not turned on during the paper loading in the duplex unit.
371	Paper Jam Duplex Unit Paper	The duplex front sensor has not turned on during the operation.
382	Input Jam Paper Ejection Jam	The paper exit sensor has not detected the end of paper within fixed time after the detection of the beginning of it. The paper exit sensor has not turned off since its turn-on.
381	Paper Transport Jam	The paper exit sensor has not turned on while paper is running on the belt.
380	Loading Jam	Paper has not reached the entrance belt sensor or the MT sensor after the completion of the hopping.
490	MT Paper Empty	There is no paper in the multipurpose tray.
491-493	Cassette 1, 2 or 3 Paper Empty	There is no paper in the cassette 1, 2, or 3.



## 2.9 Cover-Open

When the top cover of the printer is open, the cover-open microswitch turns off to cut the high voltage power and output of not less than 34V. At the same time, the CPU receives CVOPN signals for indicating the status of the microswitch to handle the cover-open.

When the front cover is open, the microswitch also turns off and the 34V power to the duplex unit is cut. The CPU receives FCOVER signals for indicating the status of the microswitch to handle cover-open.

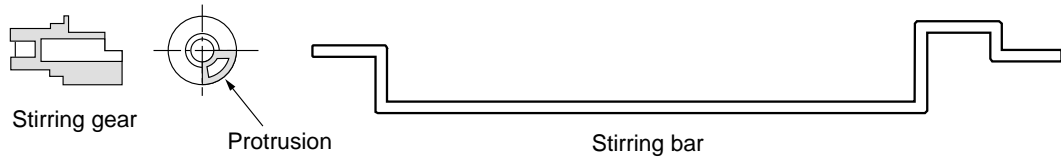




## 2.10 Toner Low Detection

- Structure

The toner low detection device consists of the stirring gear that revolves at a constant speed, the stirring bar, and the magnet on the stirring bar. The stirring bar turns in synchronization with the protrusion of the stirring gear.

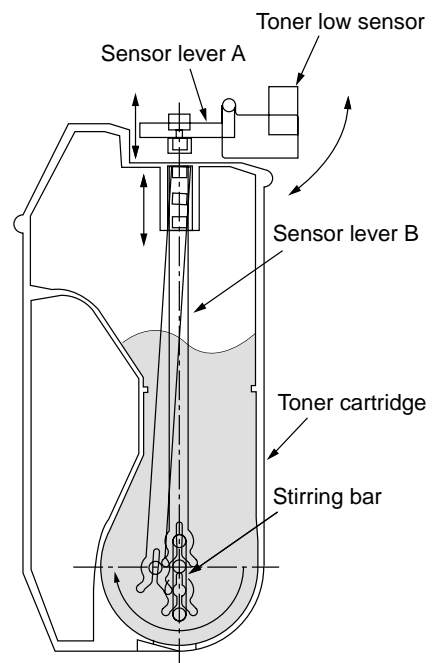


- Detection

A toner low condition is detected by measuring the contact time between the sensor lever magnet and the stirring bar.

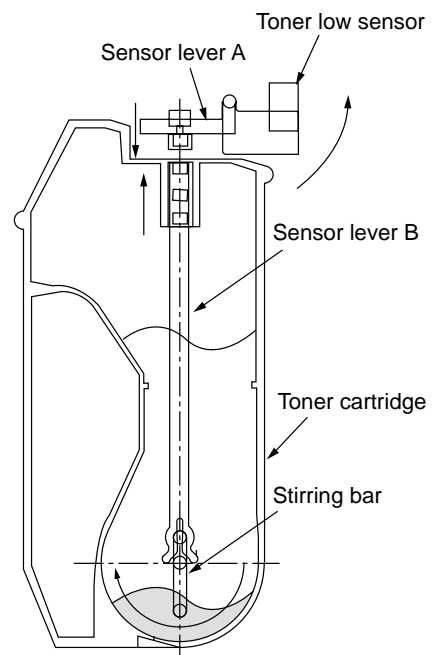
### Toner Full Condition

- The stirring bar turns in synchronization with the stirring gear.
- Even when the stirring bar magnet is placed in its highest position, the stirring bar turns by the force of the stirring gear because the opposite side of the bar is placed in toner.

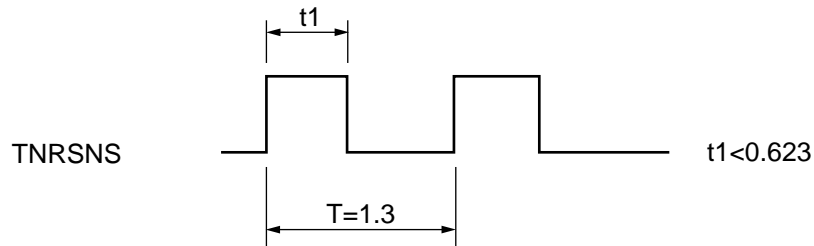


### Toner Low Condition

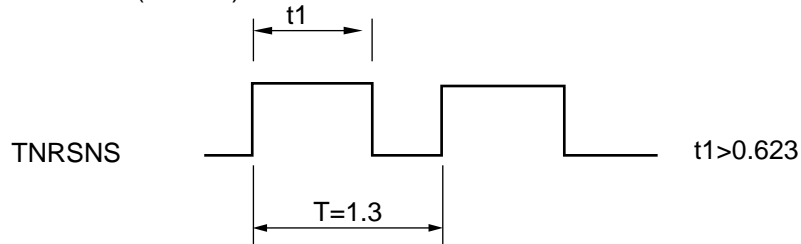
- The stirring bar reaches its highest position, then falls to its lowest position under its own weight because of the absence of toner resistance on the opposite side. In this situation, the bar-magnet contact time becomes long. By measuring the time, a toner low condition is detected.



#### Toner Full Condition (20PPM)



#### Toner Low Condition (20PPM)



- When the toner low condition is detected 20 consecutive times, toner low is determined. (The toner low message is displayed when about 500 A4 sheets at 5% density have been printed after toner low had been detected.)
- When the toner full condition is detected 10 consecutive times, toner low is removed.
- When the toner sensor remains unchanged for more than 15 cycles of 1.3 seconds, the toner sensor alarm is activated.
- The toner sensor does not perform the detection while the drum motor is not running.

## 2.11 Page Size Detection

Via the cam moves jointly with the paper guide of the paper cassette, the four tab pieces are driven according to the set position of the paper guide.

Upon installation of the paper cassette, the microswitch detects the condition of the tab pieces and the paper size is recognized.

State of Microswitch				Paper Size
SW1	SW2	SW3	SW4	
0	1	1	1	Letter
0	1	0	1	Executive
0	0	1	1	A4
1	1	1	0	Legal 14
1	0	1	1	Legal 13
1	1	0	1	B5
1	1	0	0	A5
1	0	0	1	A6

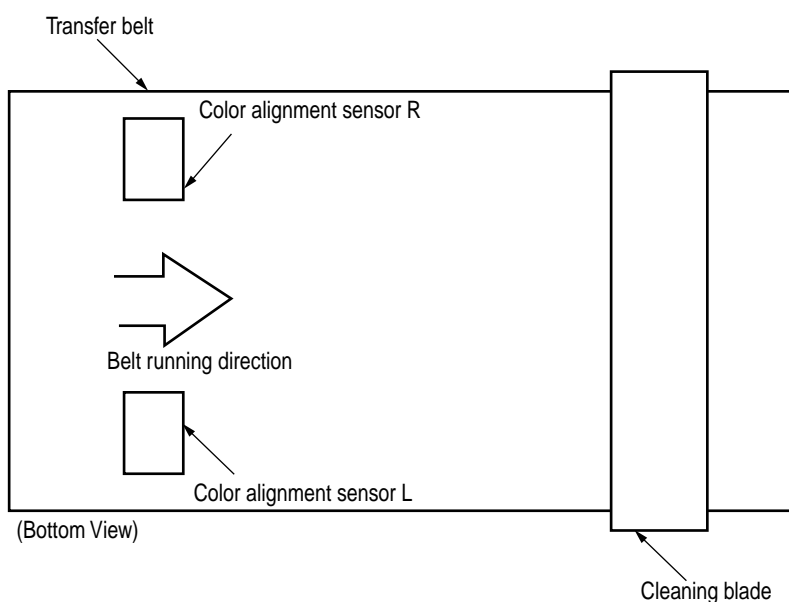
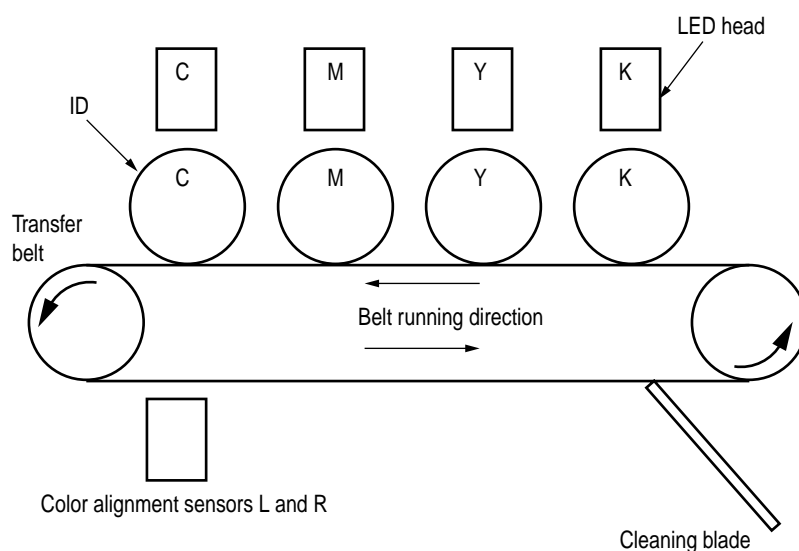
## 2.12 Operation at Power-on

### 2.12.1 Self-diagnostic test

- (1) Initial test  
The followings are automatically performed at power-on.
  - (a) ROM check
  - (b) RAM check
  - (c) EEPROM check
  - (d) Flash ROM check
- (2) ROM check  
ROM is checked by calculating a HASH value.
- (3) RAM check
  - (a) RAMs are by type. Out-of-specification RAM is judged as an error.
  - (b) The order of mounted RAMs is checked. Out-of-standard order is judged as an error.
  - (c) Each slot's RAM is checked by read-after-write operation.
- (4) EEPROM check  
Specific data stored at a fixed address of EEPROM is checked..
- (5) Flash ROM check  
The flash ROM format is checked. Unformatted ROM is formatted after read-after-write checking.
- (6) Option unit check  
Before the printer goes into the operation mode, the presence of the option units (e.g., the HDD, NIC, option trays and duplex unit) is checked.

## 2.13 Color Misalignment Detection

Reflection-type optical sensors for detecting color misalignment (Z71-PCB) are mounted on the belt at the right and left ends, respectively, in front of the toner scraping (cleaning) blade which is at the back of the belt unit. The color misalignment detection pattern is printed on the belt at each of the right and left ends and, by reading the patterns by the reflection-type optical sensors, the misalignment amounts are measured with respect to Black to determine correction values. Then, the misalignment in main-scanning, sub-scanning and slanting directions is corrected. These operations are performed at power-on, at cover-close, after two hours idling and every 400 pages.



## 2.14 Version Read of Units Replaced Periodically

The version of each of the I/D, fuser unit and belt unit which are replaced periodically is determined whether it is new or previous according to whether the fuse in it is conducting or out of conduction. When the fuse is conducting, the unit is decided that it is new. The “new” or “previous” judgment is performed at power-on and at cover-close. The life counter of every new unit is reset and the “new” or “previous” judging purpose fuse in the unit is cut.

## 2.15 Life Count for Units Replaced Periodically

The life of each of the I/D, fuse unit and belt unit which are replaced periodically is counted as shown in the following table:

Unit Name	Condition	Action
I/D (Image Drum Cartridge)	The number of drum revolutions is counted, on a letter paper length + continuous-printing paper interval basis. End of Life: Time when a distance equivalent to pages of 20K is printed (3P/J).	Printing stops, but 500 pages can be printed after cover open and close operation.
Toner Cartridge	The number of dots printed is counted. The used amount is determined based on the counter value (See section 2.16). End of Life: Time when toner low occurs.	Printing stops, but 20 pages can be printed after turning the power on again or after opening and closing the cover.
Belt Unit	The number of drum revolutions is counted, on a letter paper length + continuous-printing paper interval basis. The count of one is performed every time when one page is passed. End of Life: Time when: (1) the counter value reaches 60K; or (2) the count of 2000 is reached after belt waste toner near full is detected.	Printing stops, but 20 pages can be printed after turning the power on again or after opening and closing the cover.
Fuser Unit	The count of one is performed every time when one page is passed. End of Life: Time when the counter value reaches 60K.	Warning (the unit can still be used).
Feed Roller Components	The count of one is performed every time when one page is passed. End of Life (as Guide): Time when the counter value reaches 120K (the time varies depending on operating conditions).	None.

## 2.16 Toner Consumption Detection

The used toner amount is detected by counting the number of dots printed. After toner low is detected, when the equivalent of 800 pages on A4 and 5% duty is reached, toner-empty occurs. After turning the power on again, or opening and closing the cover, 20 pages can be printed.

### 3. PARTS REPLACEMENT

This section describes the procedure for replacing the parts, assemblies and units in the field. The replacing procedure is given for detachment. To attach, use the reverse procedure.

#### 3.1 Precautions in Replacing Parts

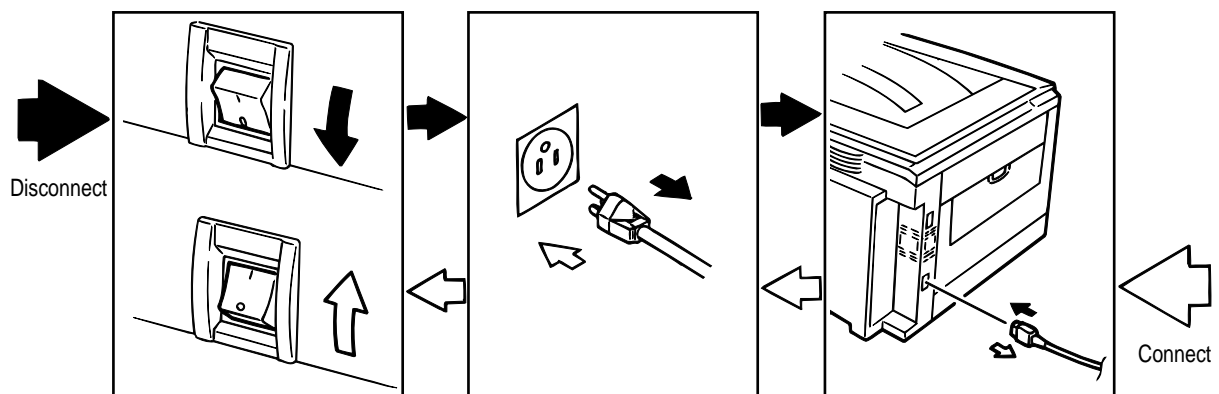
(1) Before replacing the parts, be sure to remove the AC cable and the interface cable.

(a) To remove the AC cable, always use the following procedure.

- i) Flip the power switch of the printer off (to "O").
- ii) Pull the AC inlet plug of the AC cable out of the AC receptacle.
- iii) Remove the AC cable and the interface cable from the printer.

(b) To connect the printer again, always use the following procedure.

- i) Connect the AC cable and the interface cable to the printer.
- ii) Insert the AC inlet plug into the AC receptacle.
- iii) Flip the power switch of the printer on (to "I").



(2) Do not disassemble the printer so long as it operates properly.

(3) Minimize the disassembly. Do not detach parts other than those shown in the replacing procedure.

(4) For maintenance, use designated tools.

(5) Follow the order instructed to disassemble the printer. Incorrect order may damage the parts.

(6) Small parts such as screws and collars tend to get lost, so temporarily place and fix them in their original positions.

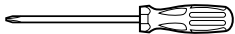
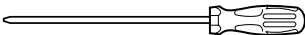

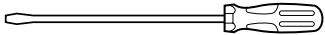
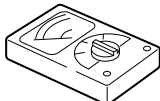
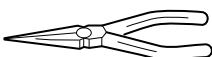


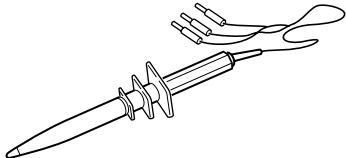
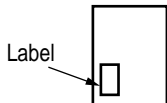
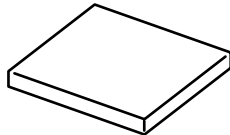

(7) When handling ICs and circuit boards such as microprocessors, ROMs and RAMs, do not use gloves that likely to have static.

(8) Do not place the printed circuit boards directly on the printer or the floor.

[Maintenance Tools]

Table 3-1 lists tools necessary to replace the printed circuit boards and the units.

Table 3-1 Maintenance Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-200 Philips screwdriver, Magnetized	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		LED Head cleaner P/N 4PB4083-2248P001	1	Cleans LED head	
9		High voltage probe	1		
10		Transparency sheet ( thickness premeasured) 42404301	1	Adjustment for Media Thickness sensor	
11		Stage height adjustment jig 42423701	1	Adjustment for Media Thickness sensor	
12		⊖Microdriver 2.0mm	1	Adjustment for Lever adjust (Media Thickness)	

3.2 Parts layout

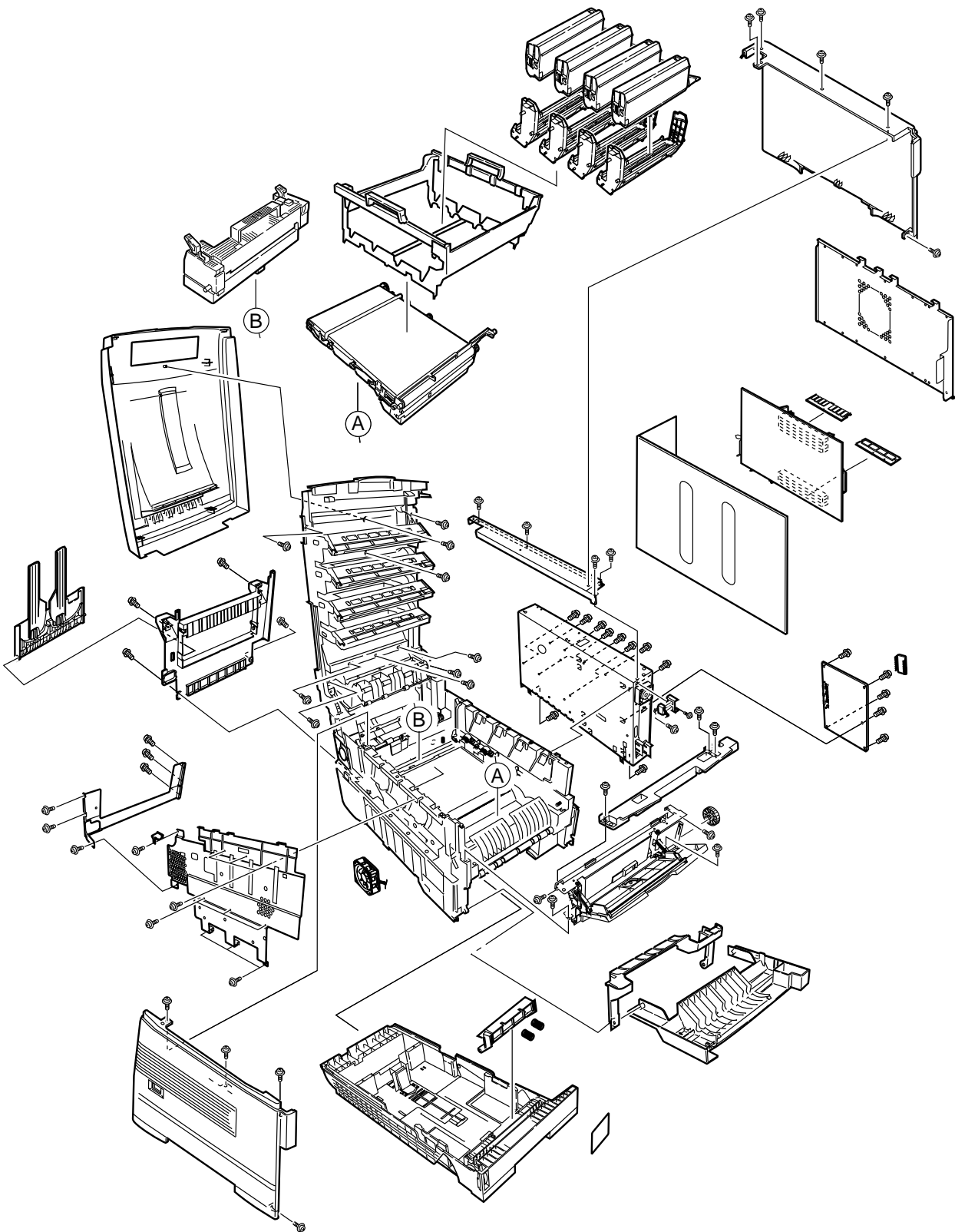


Figure 3-1



[Top Cover Assy]

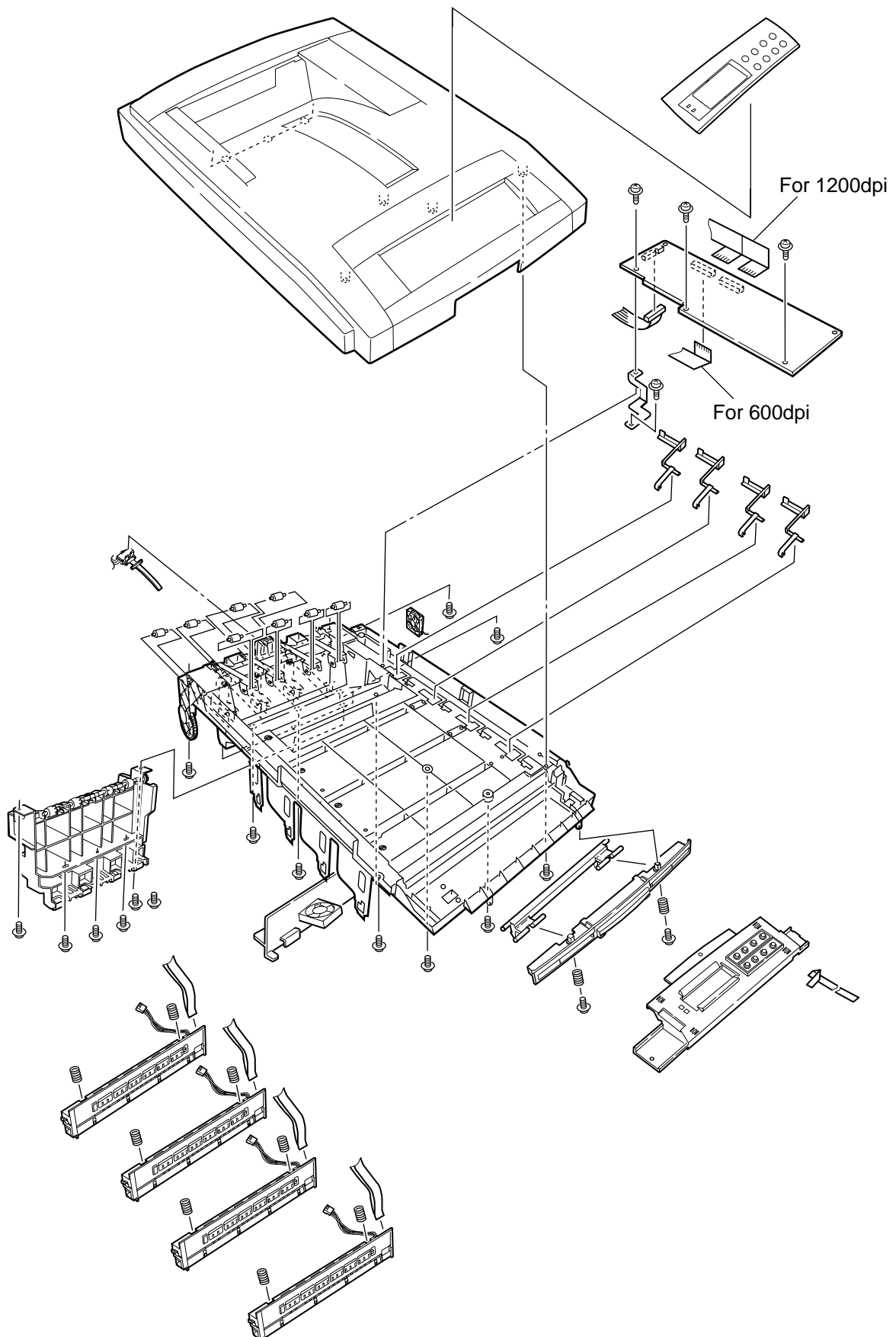


Figure 3-2

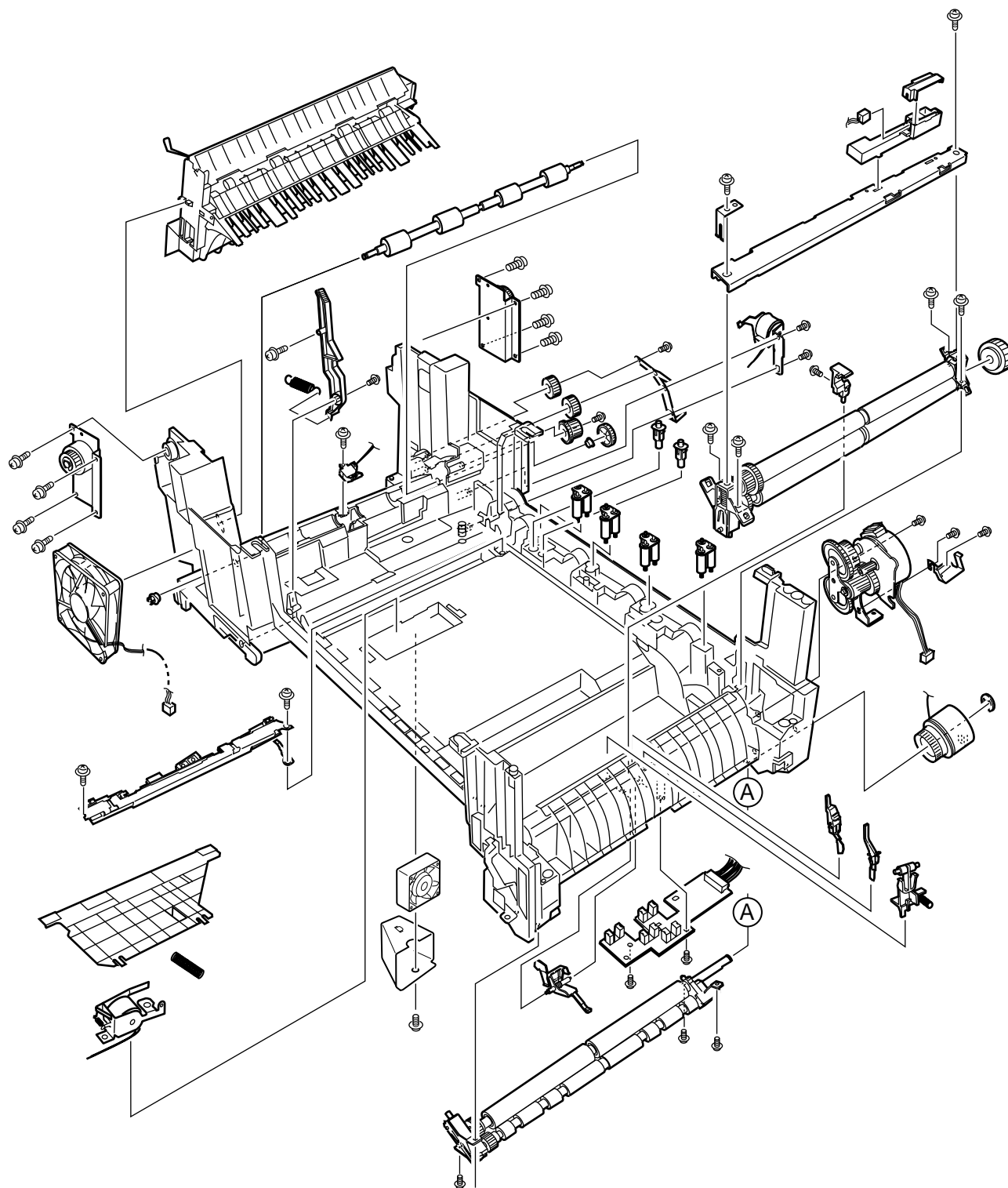


Figure 3-3

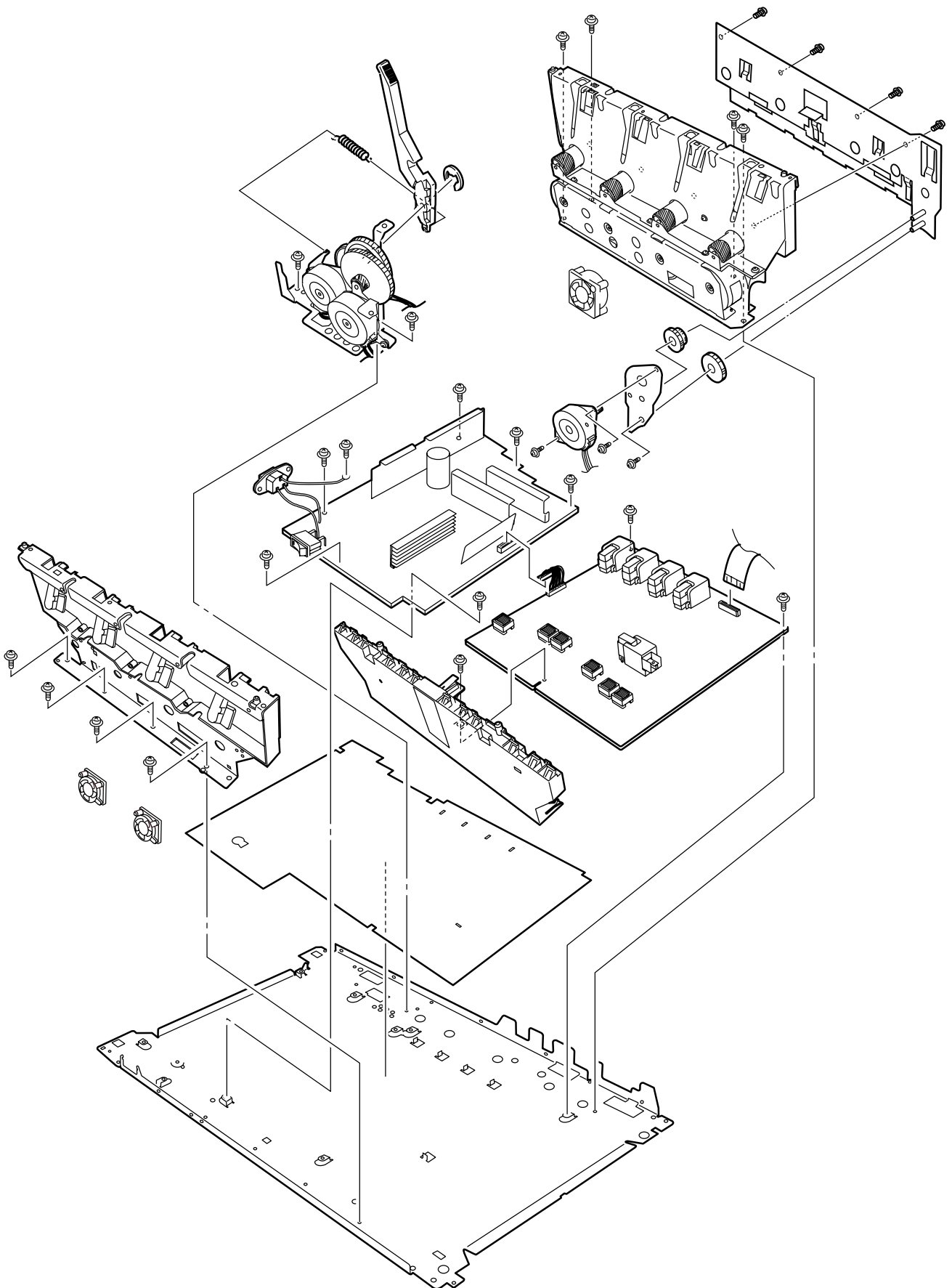


Figure 3-4

[Cassette Guide Assy (L),(R)]

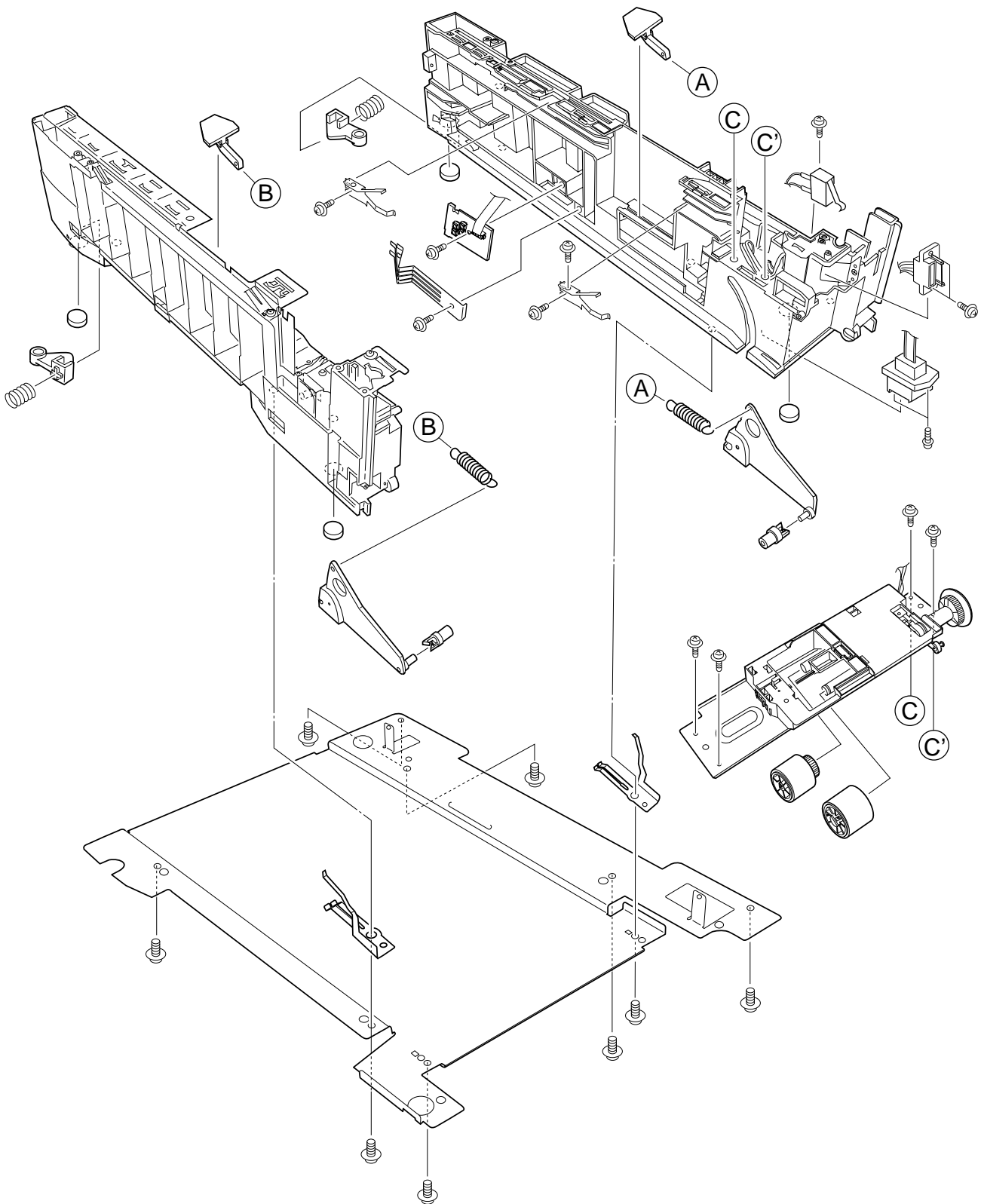


Figure 3-5

[Duplex Unit]

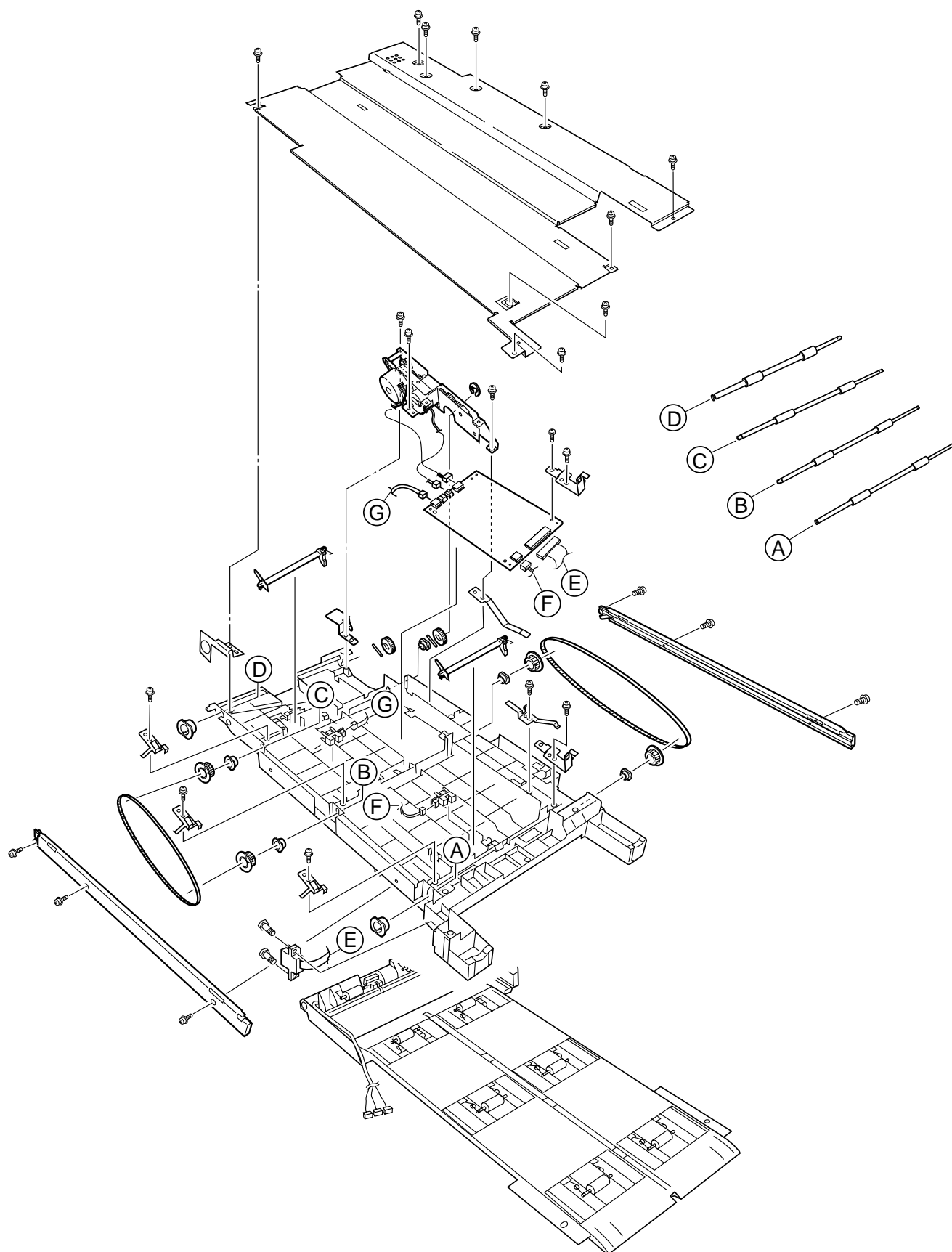
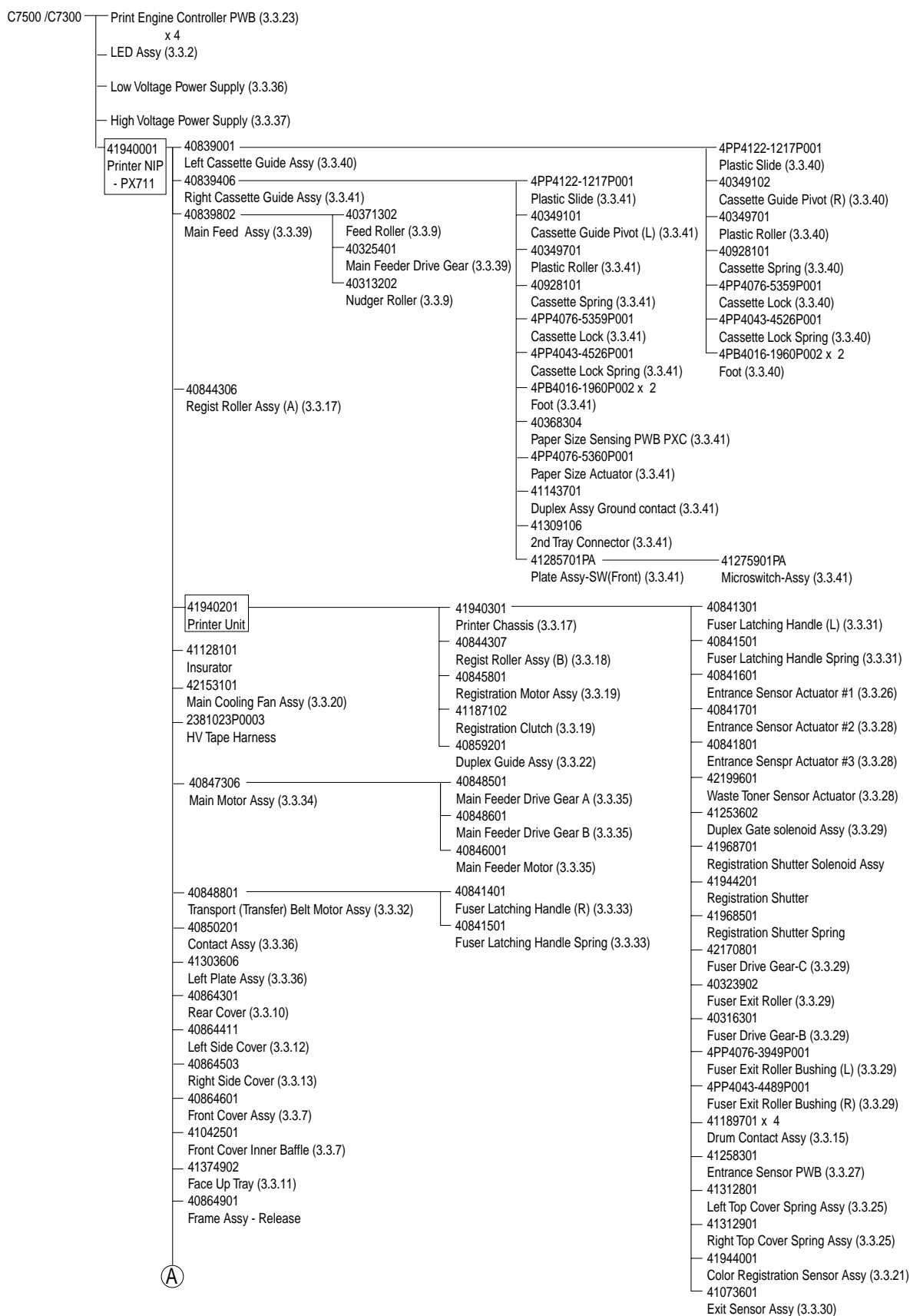
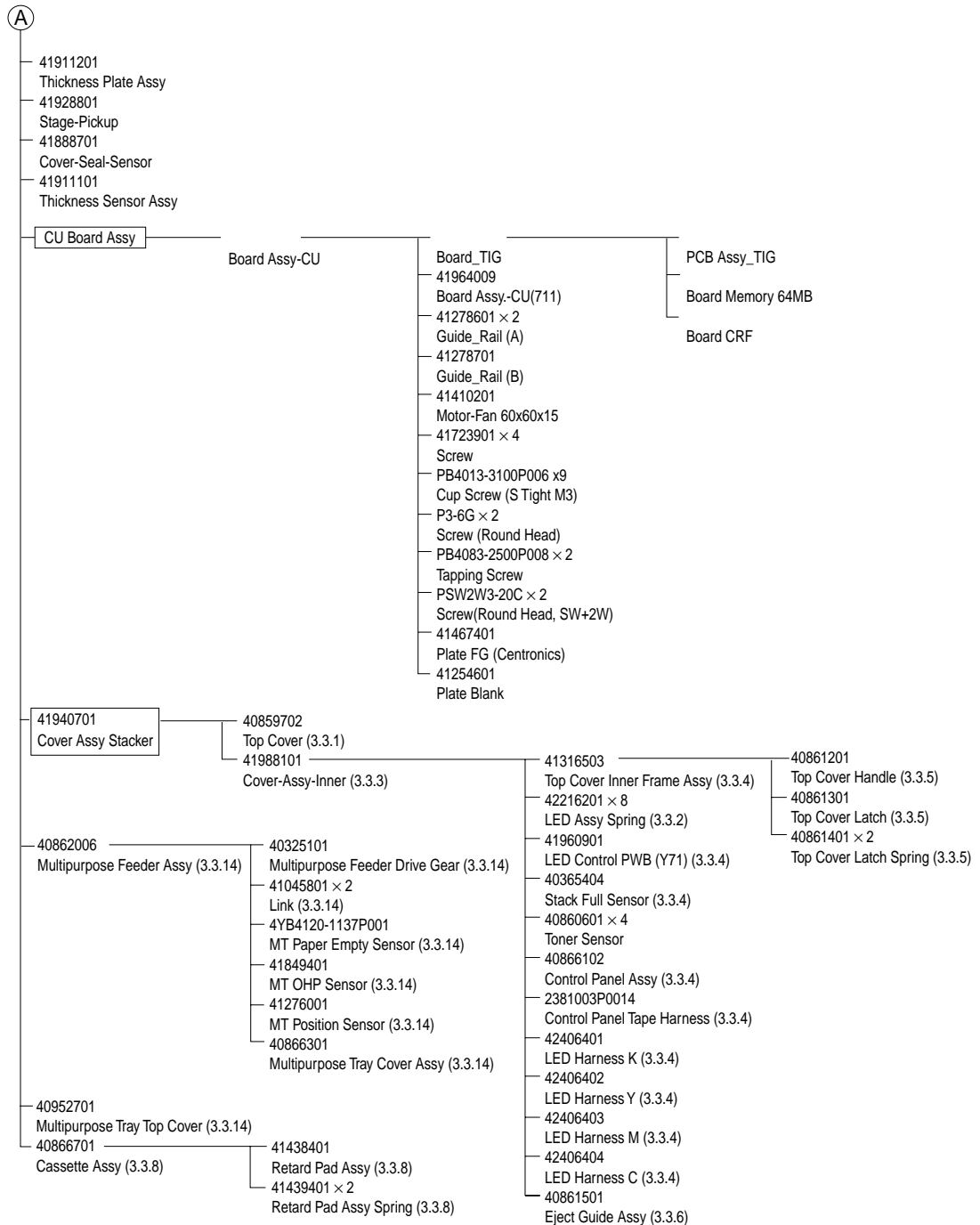


Figure 3-6

### 3.3 Replacing Parts

This section describes how to replace the parts and assemblies shown in the following disassembling system diagram.





### 3.3.1 Top Cover

- (1) Open the Top Cover assy.
- (2) Remove the nine screws ① to detach the top cover ②.

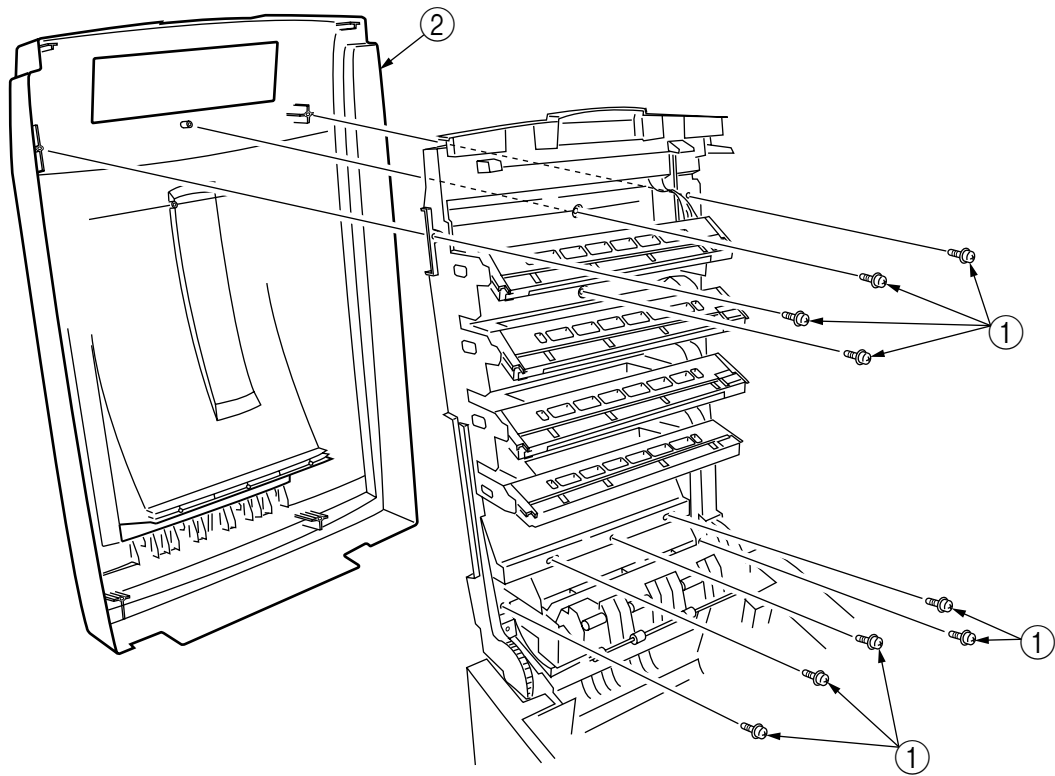


Figure 3-3-1 Top Cover



### 3.3.2 LED Head/ LED Assy Spring

- (1) Open the top cover ①.
- (2) Remove the three cables, and unhook the LED Head ② at two places to demount it (the two springs ③ become detached together with the LED Head ②).

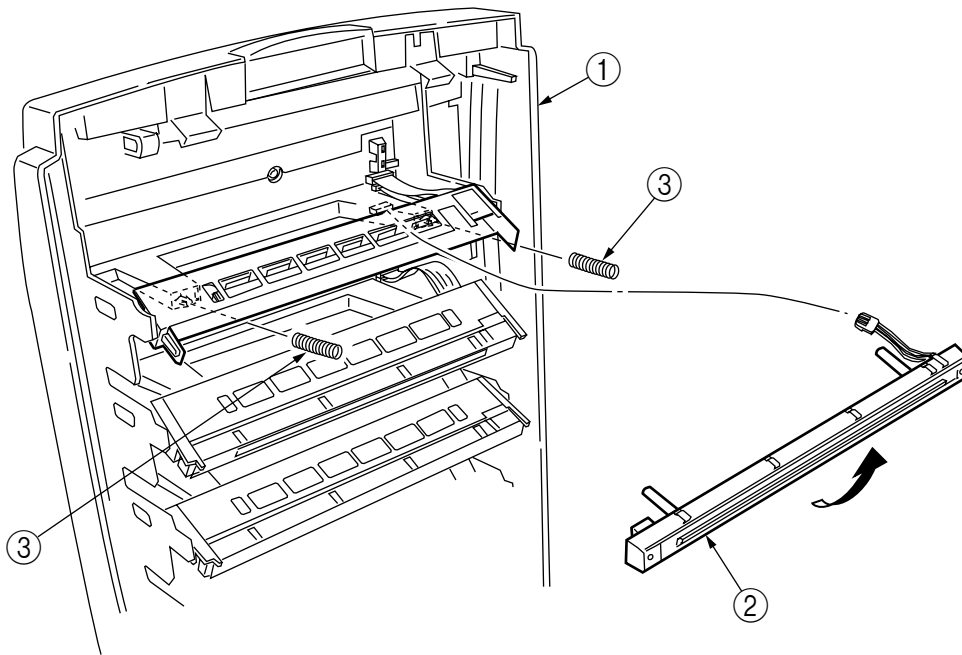


Figure 3-3-2 LED Head/ LED Assy Spring

### 3.3.3 Top Cover Unit

- (1) Remove the top cover (see section 3.3.1).
- (2) Remove the rear cover (see section 3.3.10).
- (3) Remove the left side cover (see section 3.3.12).
- (4) Remove the right side cover (see section 3.3.13).
- (5) Remove the shield plates A and B (see section 3.3.22), and unplug the connector to separate the top cover.
- (6) Disengage the top cover unit ① at two places to detach it.

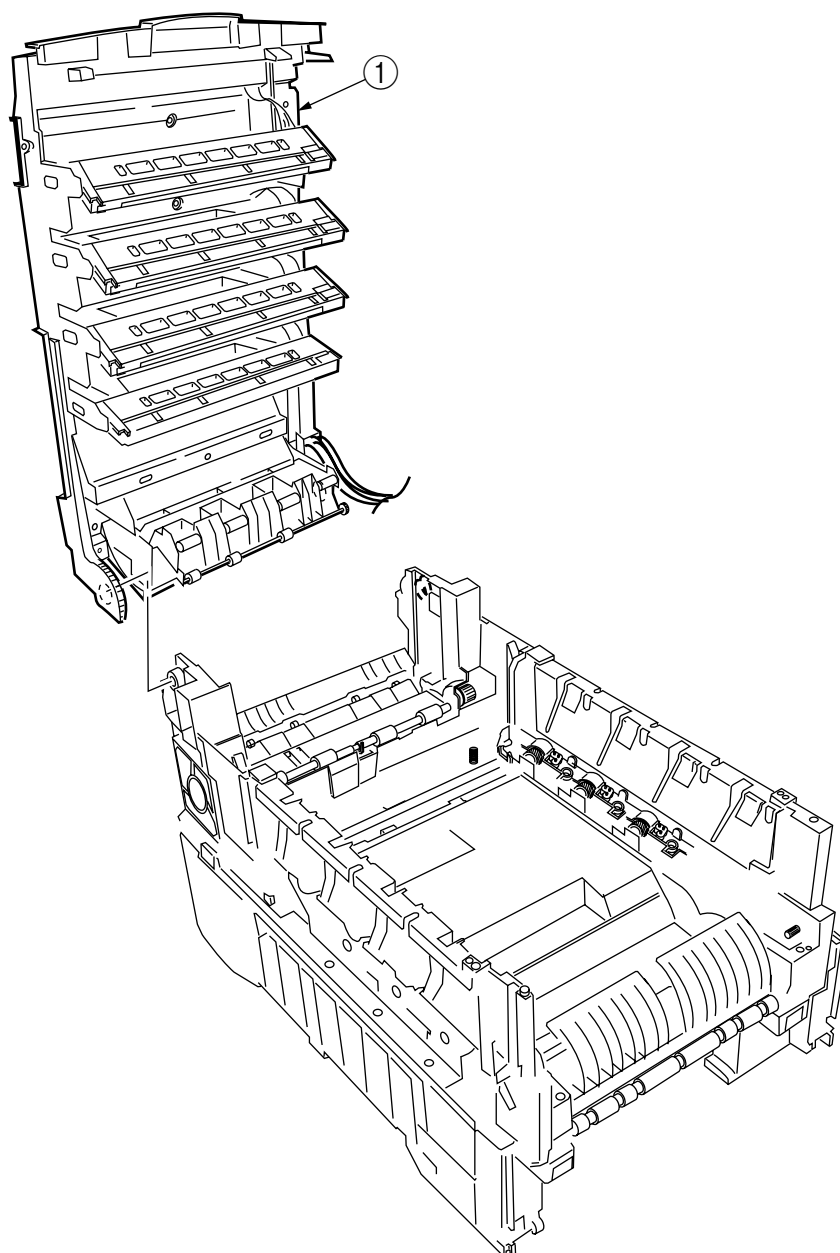


Figure 3-3-3 Top Cover Unit

### 3.3.4 Control Panel Assy/ Control Panel Bezel/ LED Control PWB/ Toner Sensors/ Stacker Full Sensor/ Control Panel/ Control Panel Tape Harness/ Eject Rollers

- (1) Remove the control panel Assy ①.
- (2) Detach the control panel tape harness ②.
- (3) Remove the top cover unit (see section 3.3.3).
- (4) Unscrew the six screws ③ to remove the earth plate ④.
- (5) Remove the two screws ⑤, unhook all the connectors ⑥ and demount the LED control PWB ⑦.
- (6) Disengage the four claws to demount the toner sensor ⑧.
- (7) Demount the stacker full sensor ⑨.
- (8) Demount the exit rollers ⑪.
- (9) Detach the LED harnesses, K, Y, M and C ⑫.
- (10) Detach the top cover inner frame Assy ⑬.

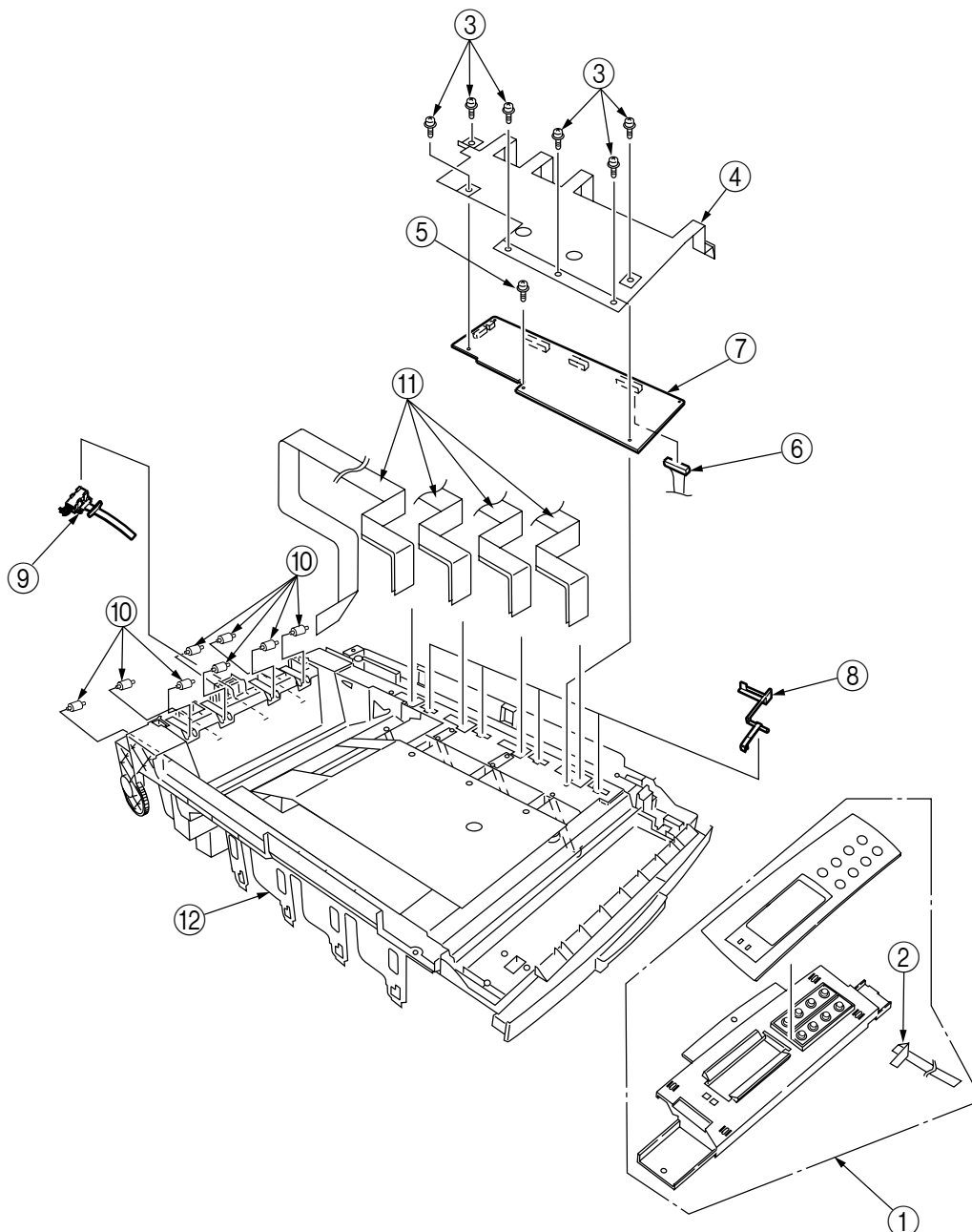


Figure 3-3-4 Control Panel Assy/ Control Panel Bezel/ LED Control PWB/ Toner Sensors/ Stacker Full Sensor/ Control Panel/ Control Panel Tape Harness/ Eject Rollers

### 3.3.5 Top Cover Handle/ Top Cover Latch/ Top Cover Latch Spring

- (1) Remove the two screws ① to detach the top cover handle ② and disengage the top cover latch ③ (at the same time, the two top cover latch springs ④ become detached).

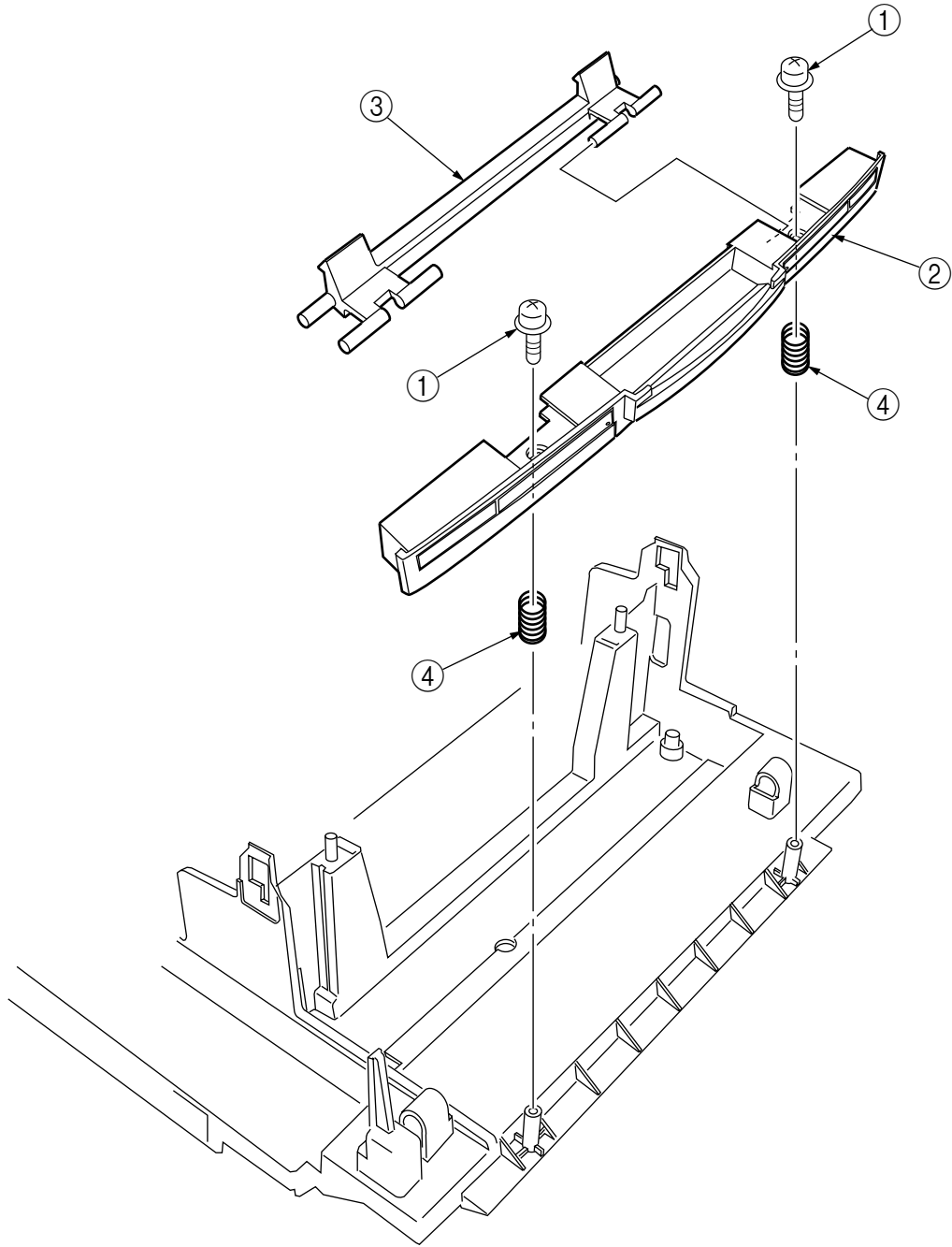


Figure 3-3-5 Top Cover Handle/ Tope Cover Latch/ Top Cover Latch Spring

### 3.3.6 Eject Guide Assy

- (1) Remove the five screws ① to detach the eject guide Assy ②.

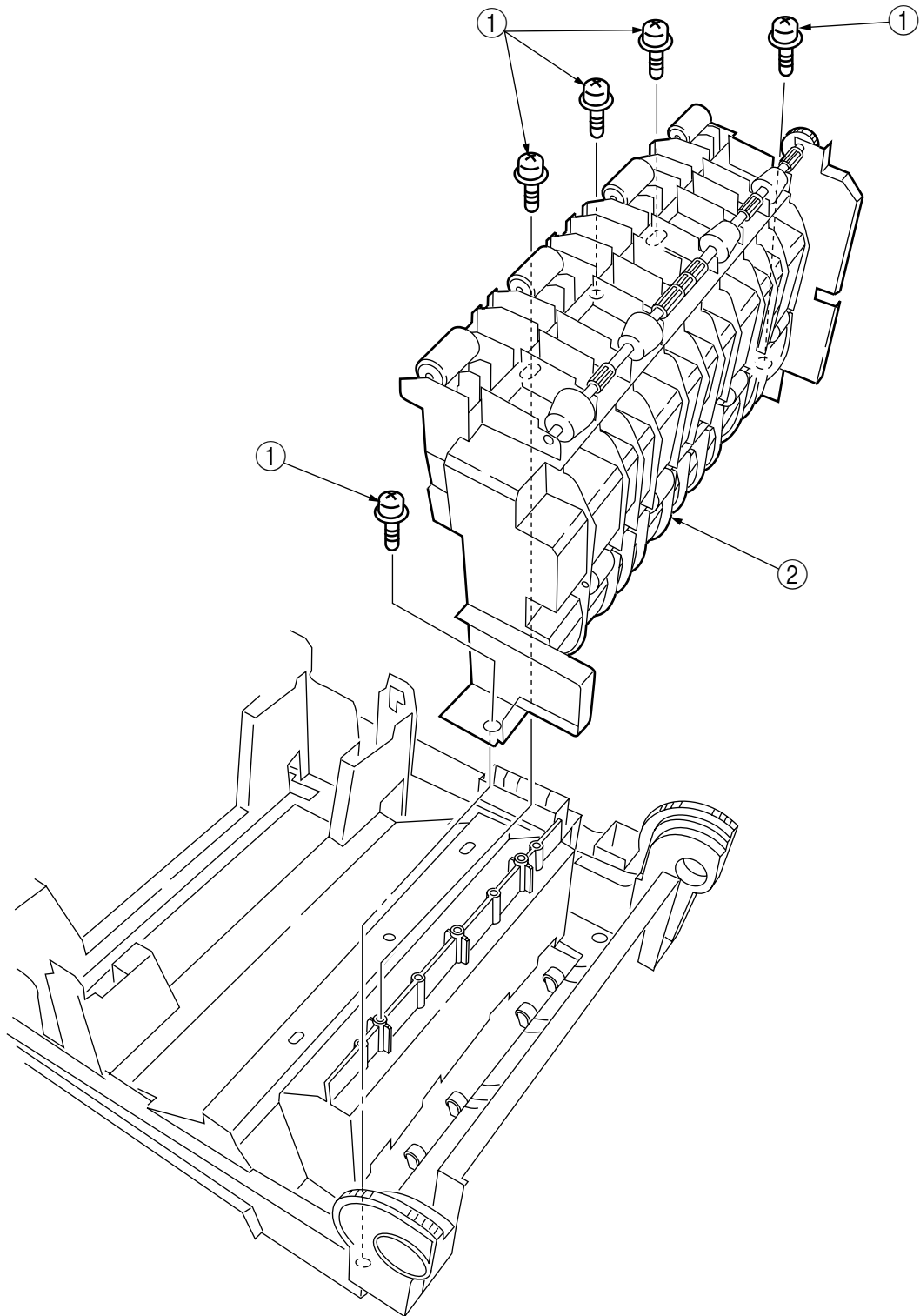


Figure 3-3-6 Eject Guide Assy

### 3.3.7 Cassette Assy/ Front Cover Assy/ Front Cover Inner Baffle

- (1) Detach the cassette Assy ①.
- (2) Open the front cover ②, and disengage it at two places to detach it.
- (3) Detach the front cover inner baffle ③.

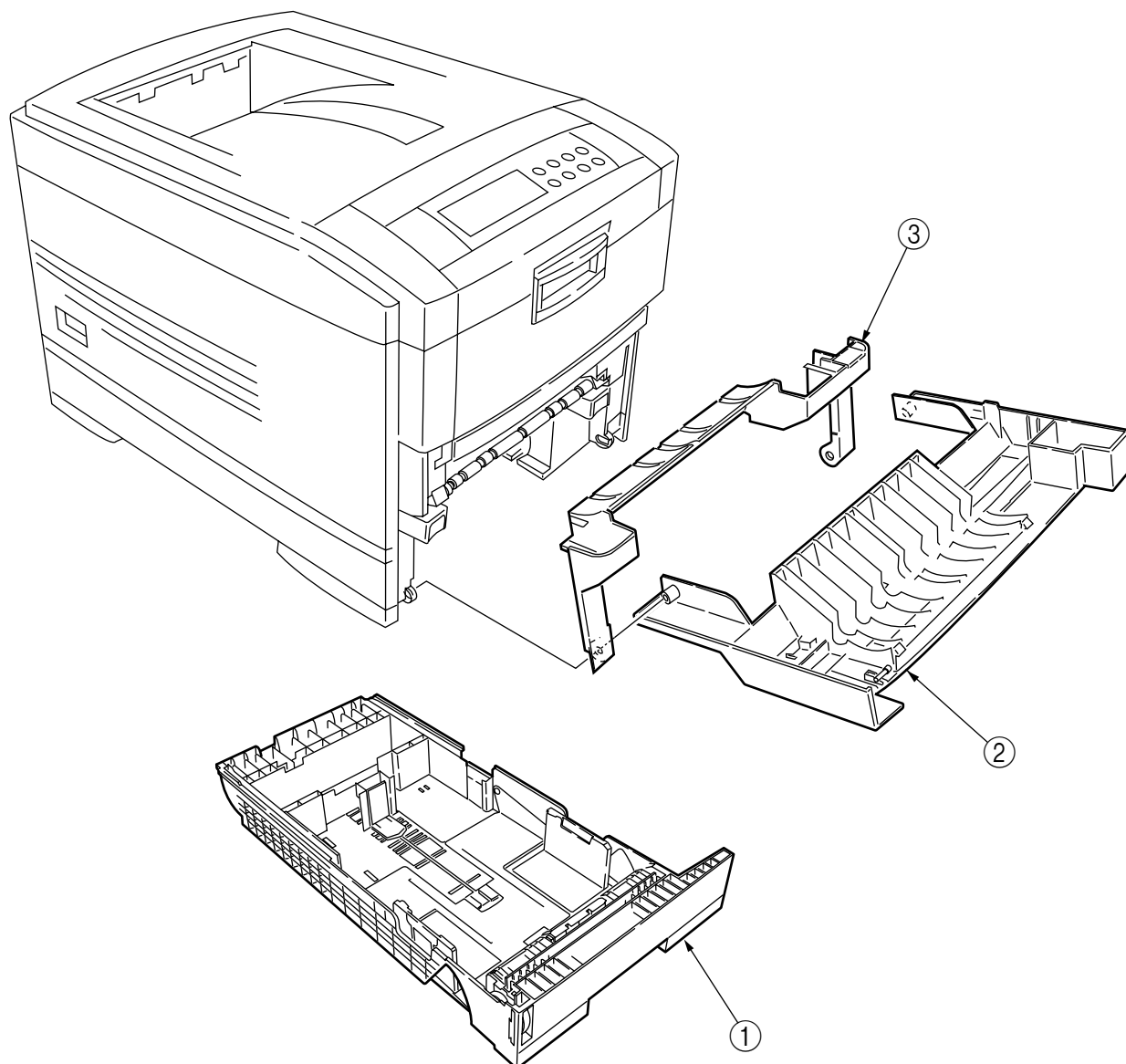


Figure 3-3-7 Cassette Assy/ Front Cover Assy/ Front Cover Inner Baffle

### 3.3.8 Retard Pad Assy/ Retard Pad Assy Spring

- (1) Remove the cassette ①.
- (2) Detach the retard pad Assy ② (at the same time, the spring ③ becomes detached).

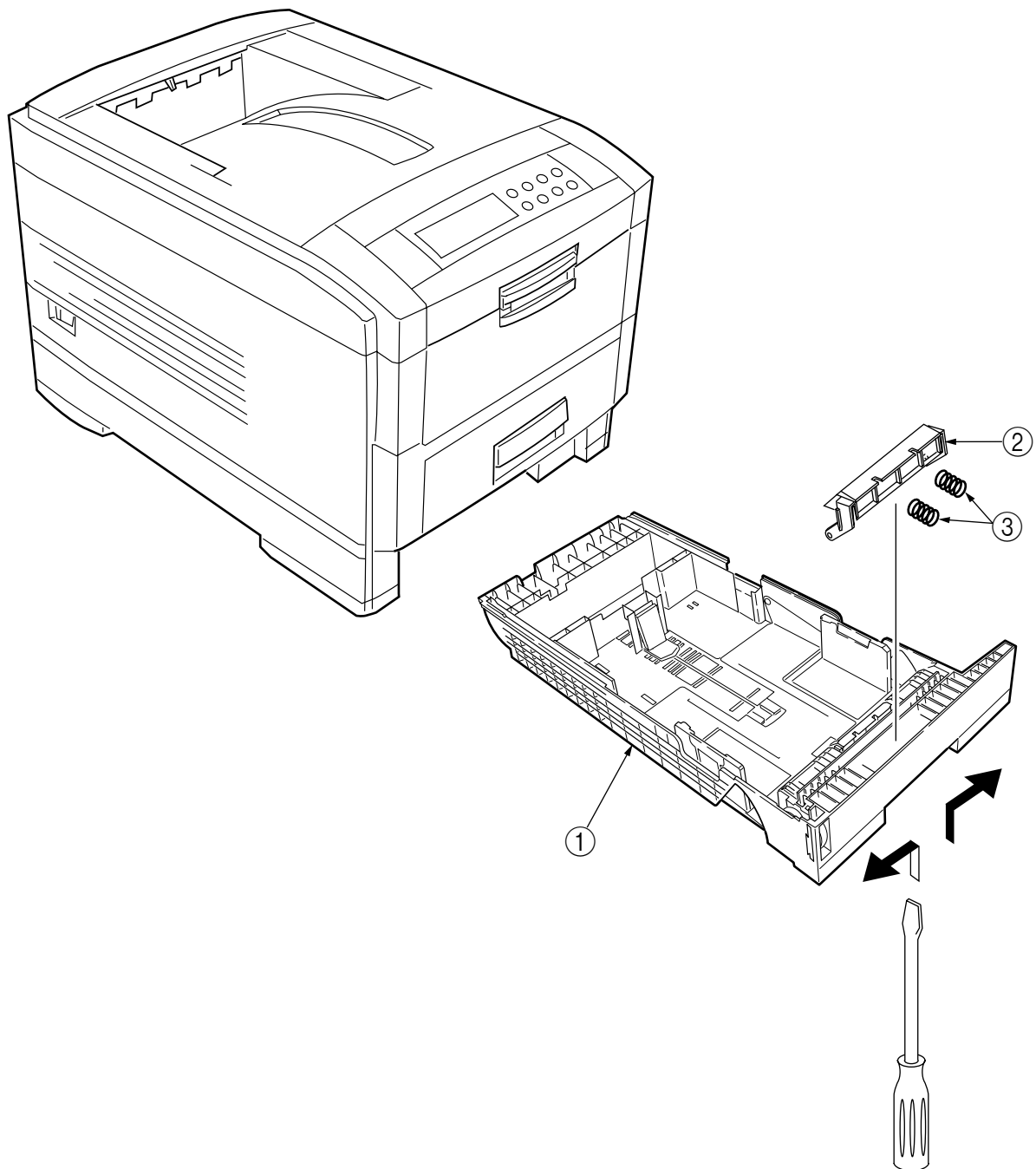


Figure 3-3-8 Retard Pad Assy/ Retard Pad Assy Spring

### 3.3.9 Feed Roller and Nudger Roller

- (1) Remove the cassette.
- (2) Unlatch and demount the feed roller ①.
- (3) Unlatch and demount the nudger roller ②.

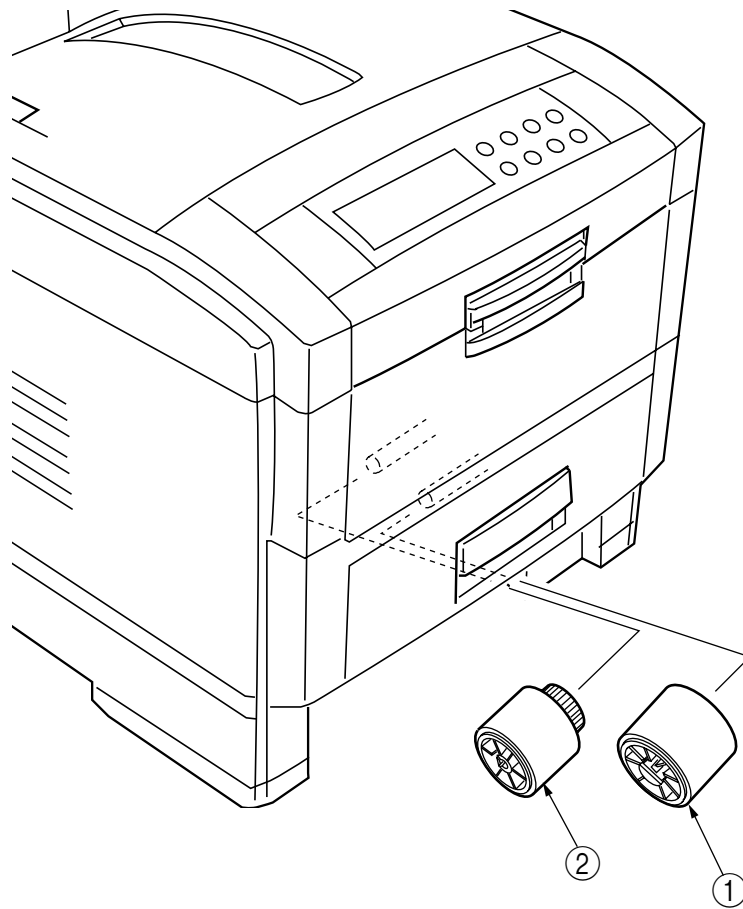


Figure 3-3-9 Feed Roller and Nudger Roller



### 3.3.10 Rear Cover

- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the four screws ① to detach the rear cover ②.

**Note!** When attaching the rear cover, take care not to allow the spring ③ to get caught in parts.

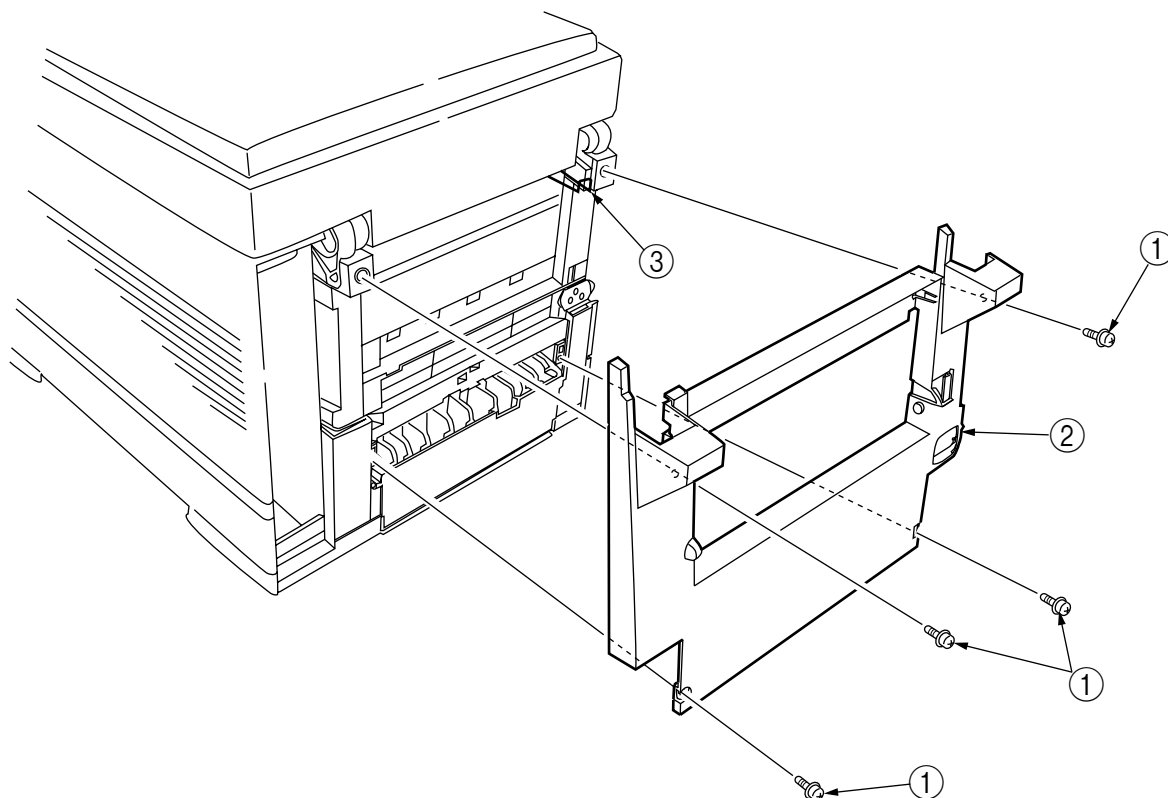


Figure 3-3-10 Rear Cover

### 3.3.11 Face-Up Tray

- (1) Open the face-up tray ① in the arrow direction, and disengage it at two places to detach it.

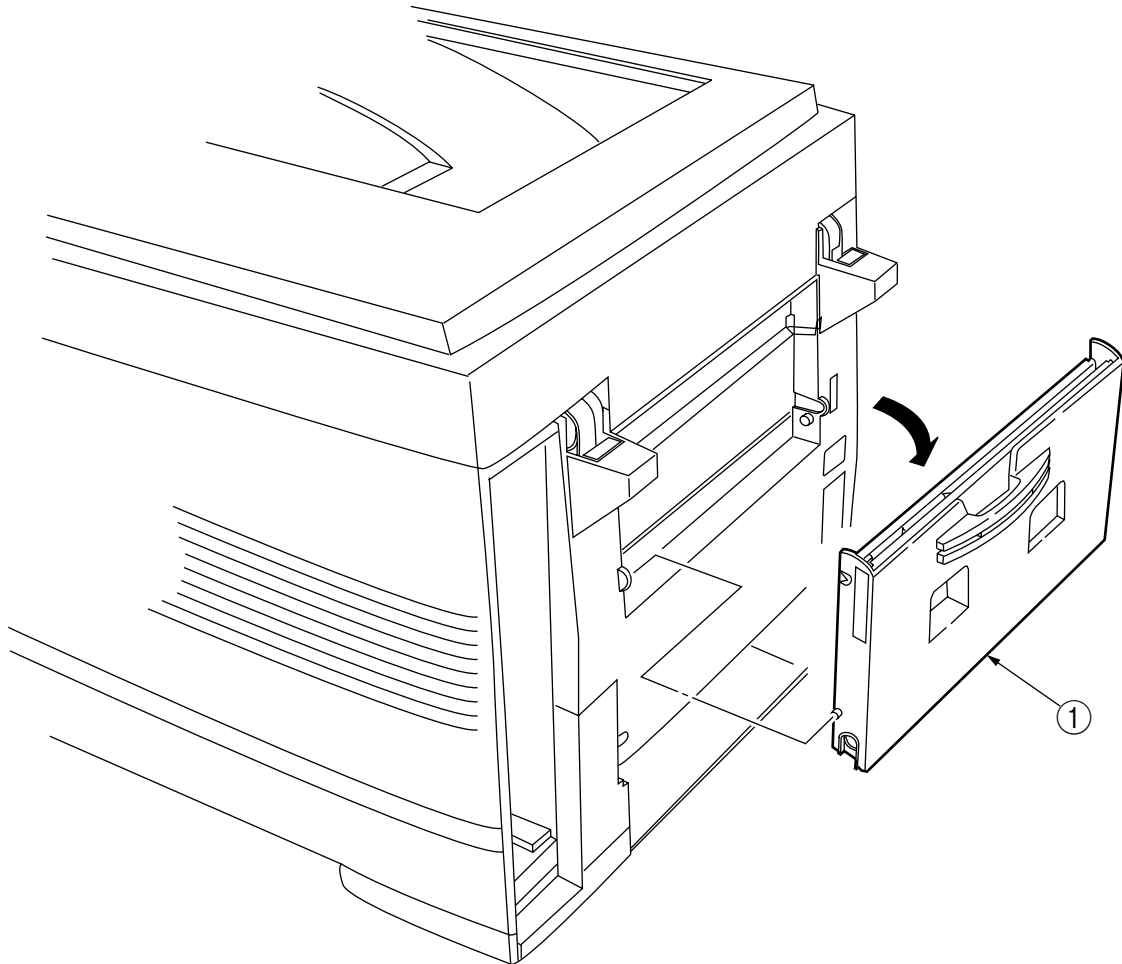


Figure 3-3-11 Face-Up Tray

### 3.3.12 Left Side Cover

- (1) Open the top cover ①.
- (2) Open the front cover ② and undo the screw ③.
- (3) Remove the four screws ④ to detach the left side cover ⑤.

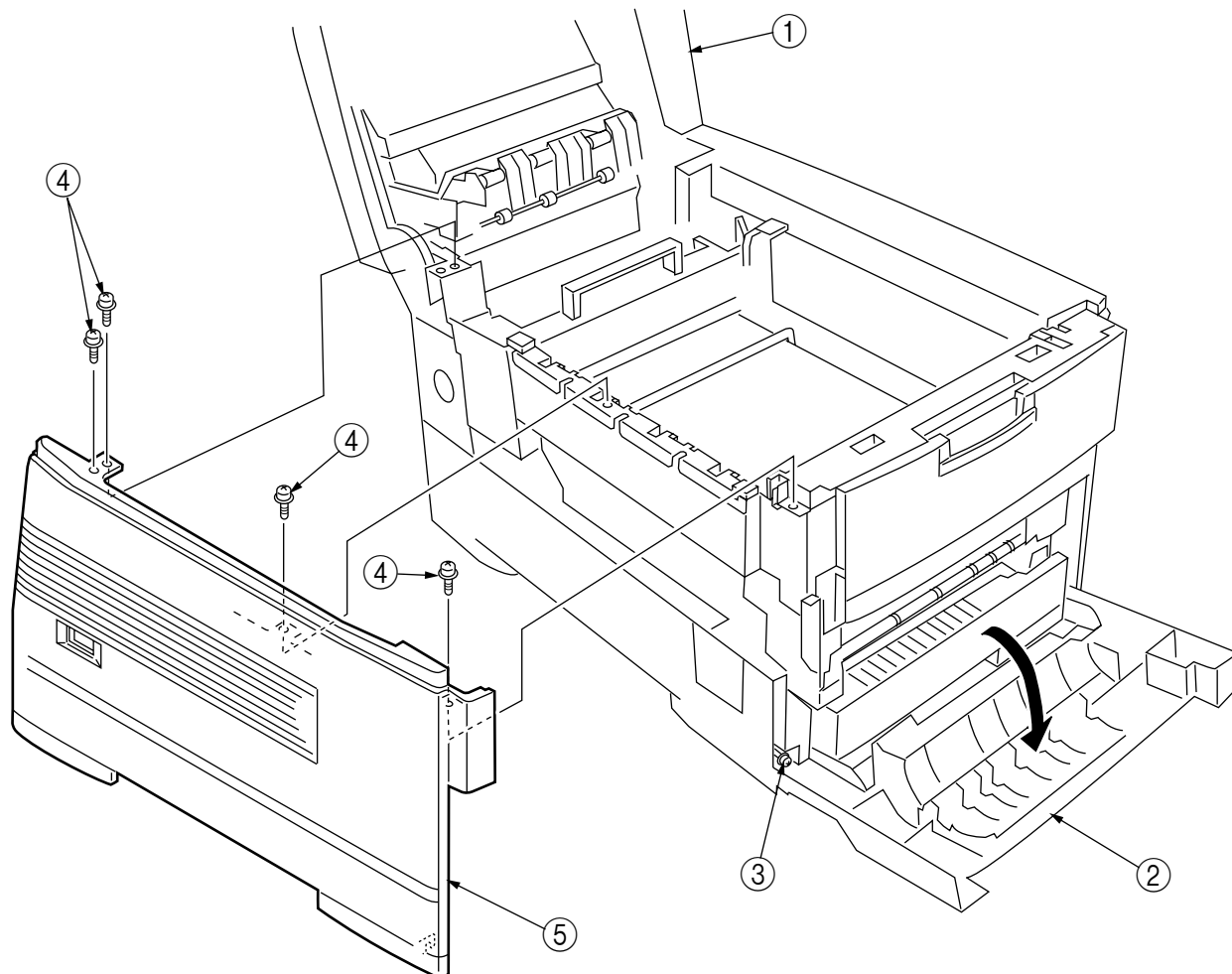


Figure 3-3-12 Left Side Cover

### 3.3.13 Right Side Cover

- (1) Open the top cover ①.
- (2) Open the front cover ② and undo the screw ③.
- (2) Remove the four screws ④ to detach the right side cover ⑤.

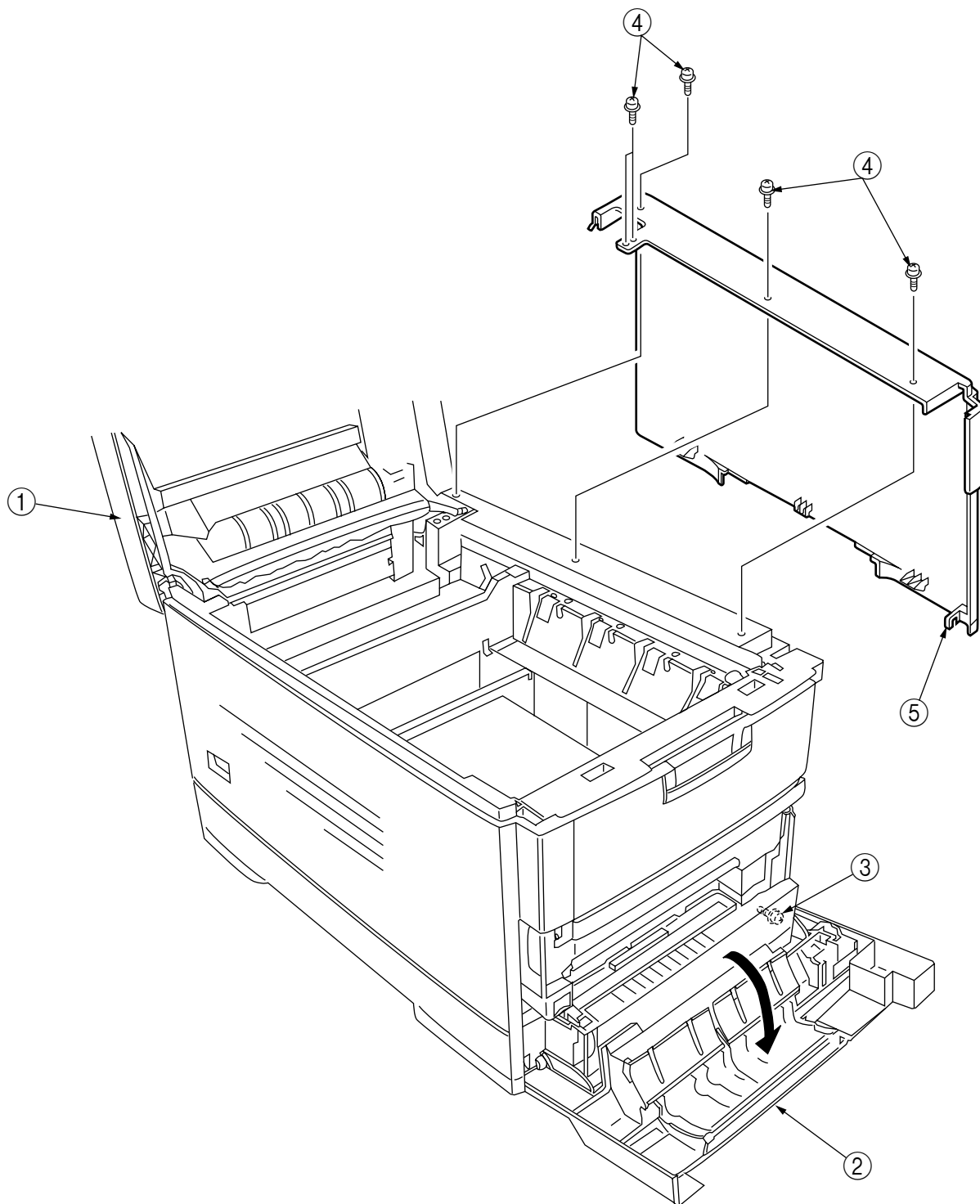


Figure 3-3-13 Right Side Cover

### 3.3.14 Multipurpose Tray Assy/ Multipurpose Tray Cover Assy/ Links/ Multipurpose Tray Top Cover/ Multipurpose Tray Drive Gear

- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the right side cover (see section 3.3.13).
- (3) Remove the left plate Assy (see section 3.3.22).
- (4) Remove the three screws ① to detach the multipurpose tray top cover ②.
- (5) Remove the three screws ③ (two of them are black) and the connector to detach the multipurpose tray ④.
- (6) Disengage ① and ② at both sides of the assembly to detach the multipurpose tray cover Assy ⑤ (at the same time, the links ⑥ become detached).
- (7) Unhook and detach the multipurpose tray drive gear ⑦.

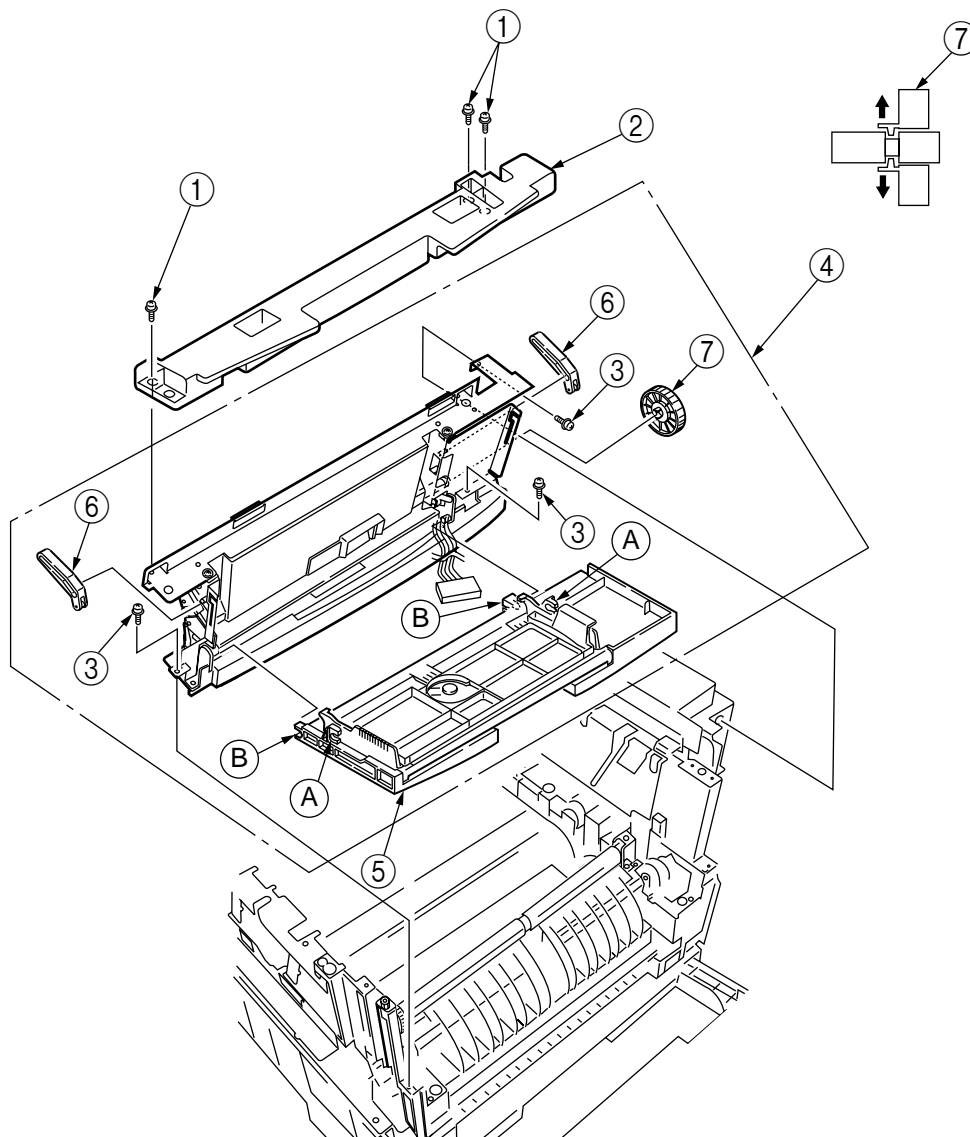


Figure 3-3-14 Multipurpose Tray Assy/ Multipurpose Tray Cover Assy/ Links/ Multipurpose Tray Top Cover/ Multipurpose Tray Drive Gear

### 3.3.15 Drum Contact Assys

- (1) Insert a flatblade screwdriver between the printer case and the drum contact Assy ① to demount the drum contact Assy ①.

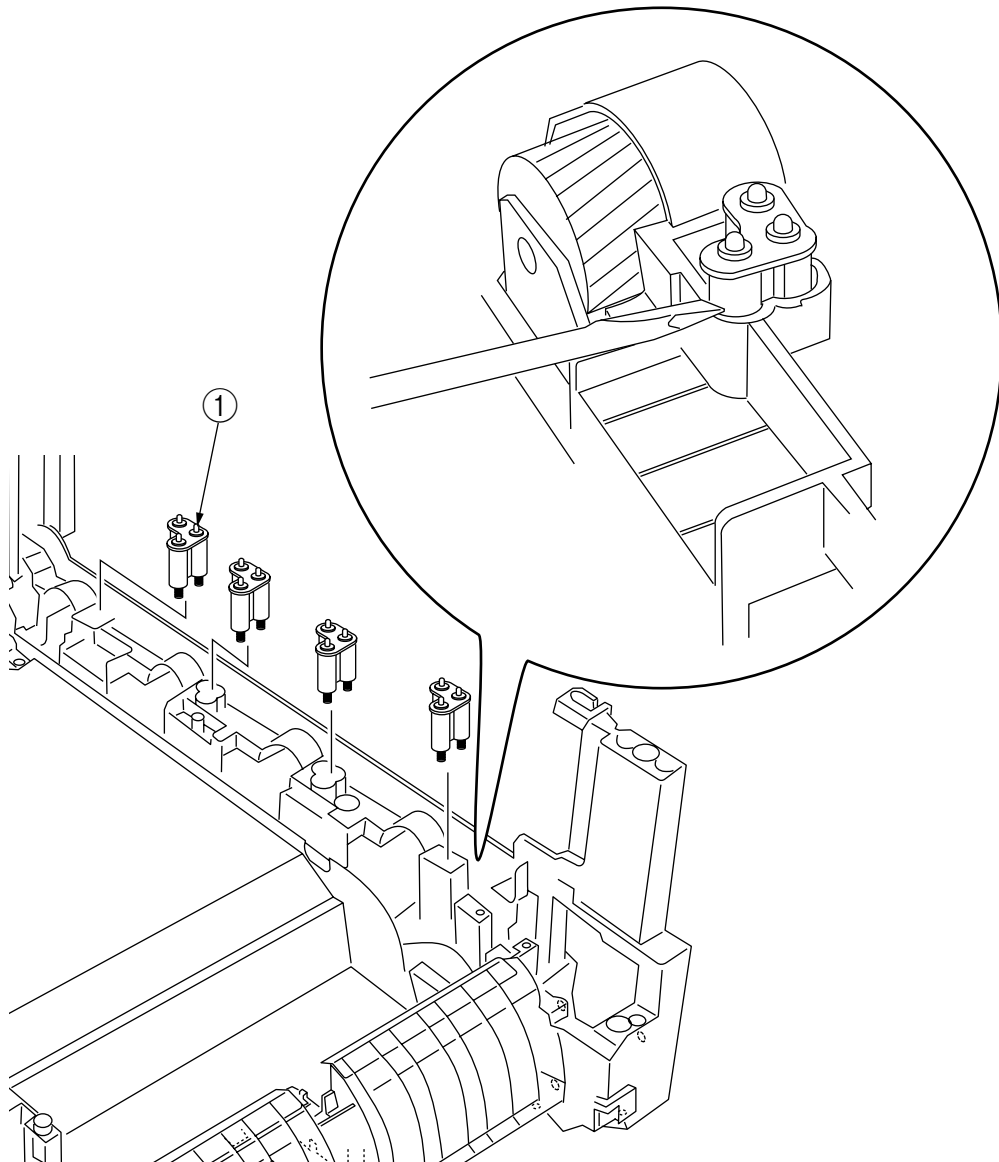


Figure 3-3-15 Drum Contact Assys

### 3.3.16 Media Thickness Sensor Assy

- (1) Detach the Cover Seal Sensor ① and the Thickness Sensor Connector ②.
- (2) Remove the two screws ③ to demount the Media Thickness Assy.
- (3) Insert a microdriver(-) between the Thickness Plate Assy ④ and Thickness Sensor Assy ⑤ to demount the Thickness Sensor Assy ⑤

**Note!** When attaching the Media Thickness Assy, adjust [Spin lever adjust by microdriver(-)] the position of lever (White).

The upper surface of the lever be in agreement with a datum level. (Adjustment range 0/-0.5mm)

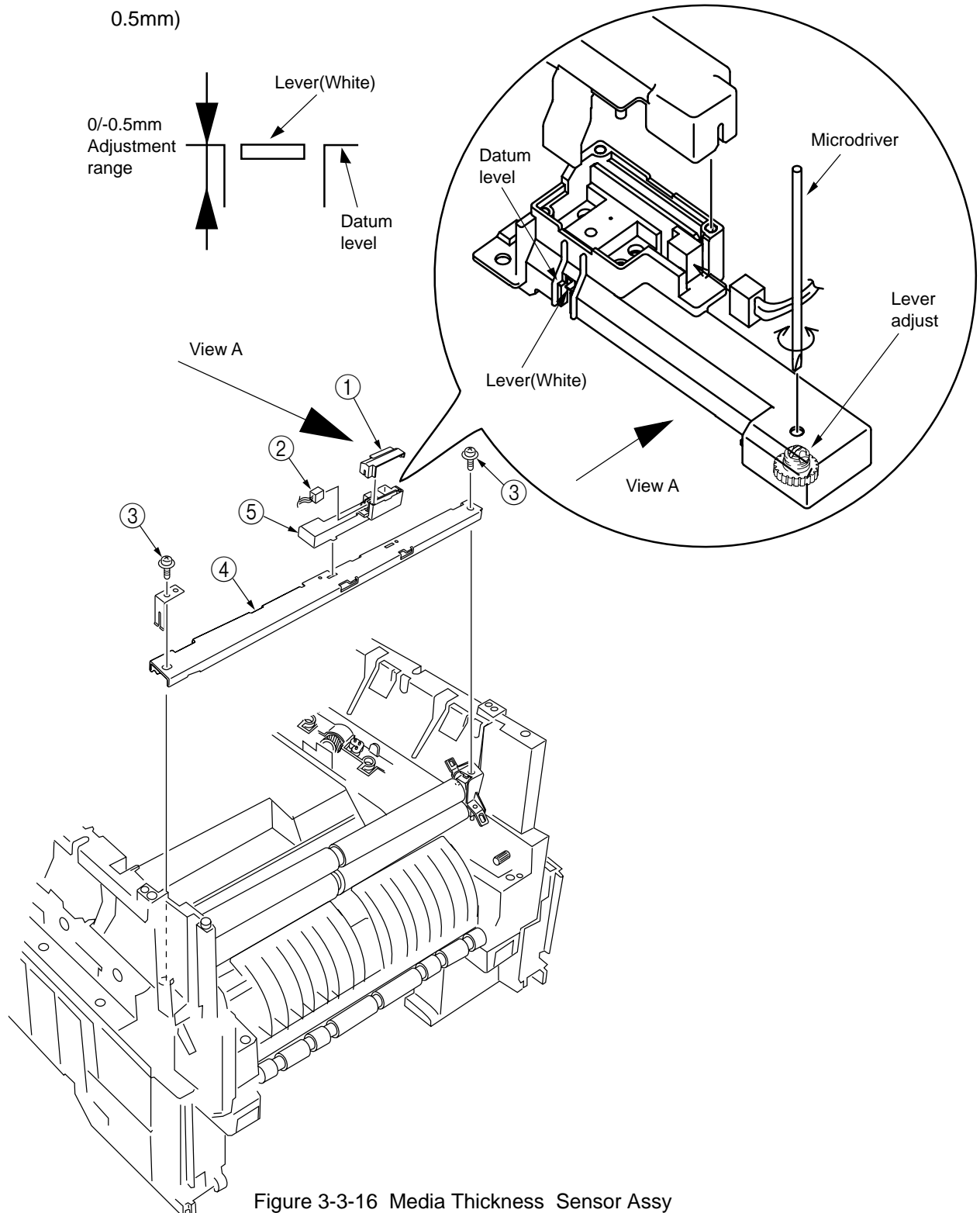


Figure 3-3-16 Media Thickness Sensor Assy

### 3.3.17 Registration Roller Assy (A)/ Registration Drive Gear (A)

- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the right side cover (see section 3.3.13).
- (3) Remove the multipurpose tray (see section 3.3.14).
- (4) Remove the Media Thickness Sensor Assy. (see section 3.3.16).
- (5) Remove the screw ① of the Pickup Stage ②.
- (6) Remove the four screws ③ to demount the registration roller Assy (A) ④ and the Pickup Stage ②.
- (7) Remove the E ring ⑤ to detach the registration gear (A) ⑥.

**Note!** When attaching the pickup stage ②, place the stage height adjustment jig between the pressure roller and the registration roller and, until the top surface of the pickup stage reaches the jig, move the pickup stage toward the jig.

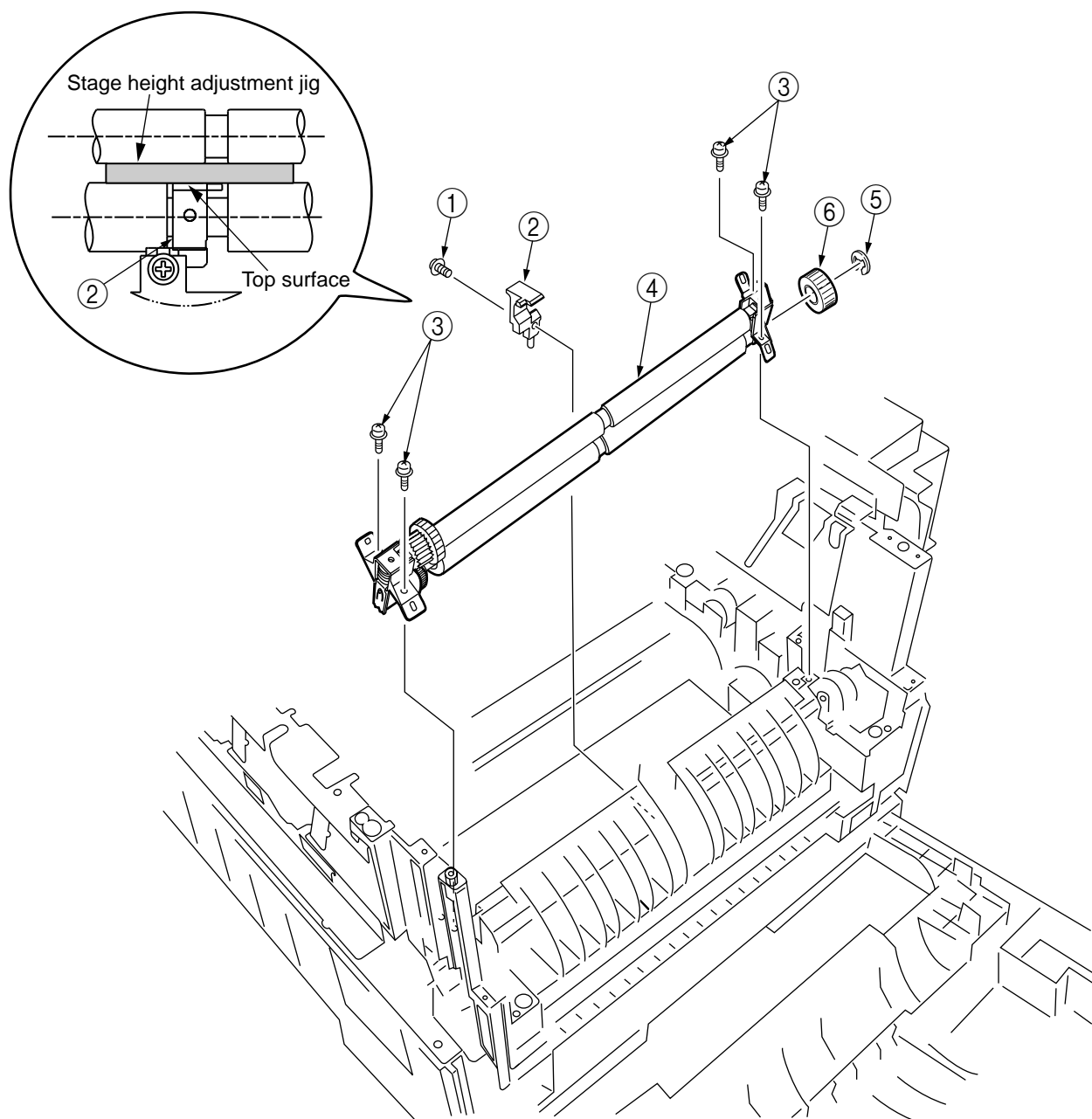


Figure 3-3-17 Registration Roller Assy (A)/ Registration Driver Gear (A)



### 3.3.18 Registration Roller Assy (B)

- (1) Remove the cassette Assy.
- (2) Open the front cover.
- (3) Remove the right side cover (see section 3.3.13).
- (4) Remove the left plate Assy (see section 3.3.22).
- (5) Remove the registration clutch (see section 3.3.18).
- (7) Unscrew the four screws ①, and pull out the registration Assy (B) ① in the arrow direction.

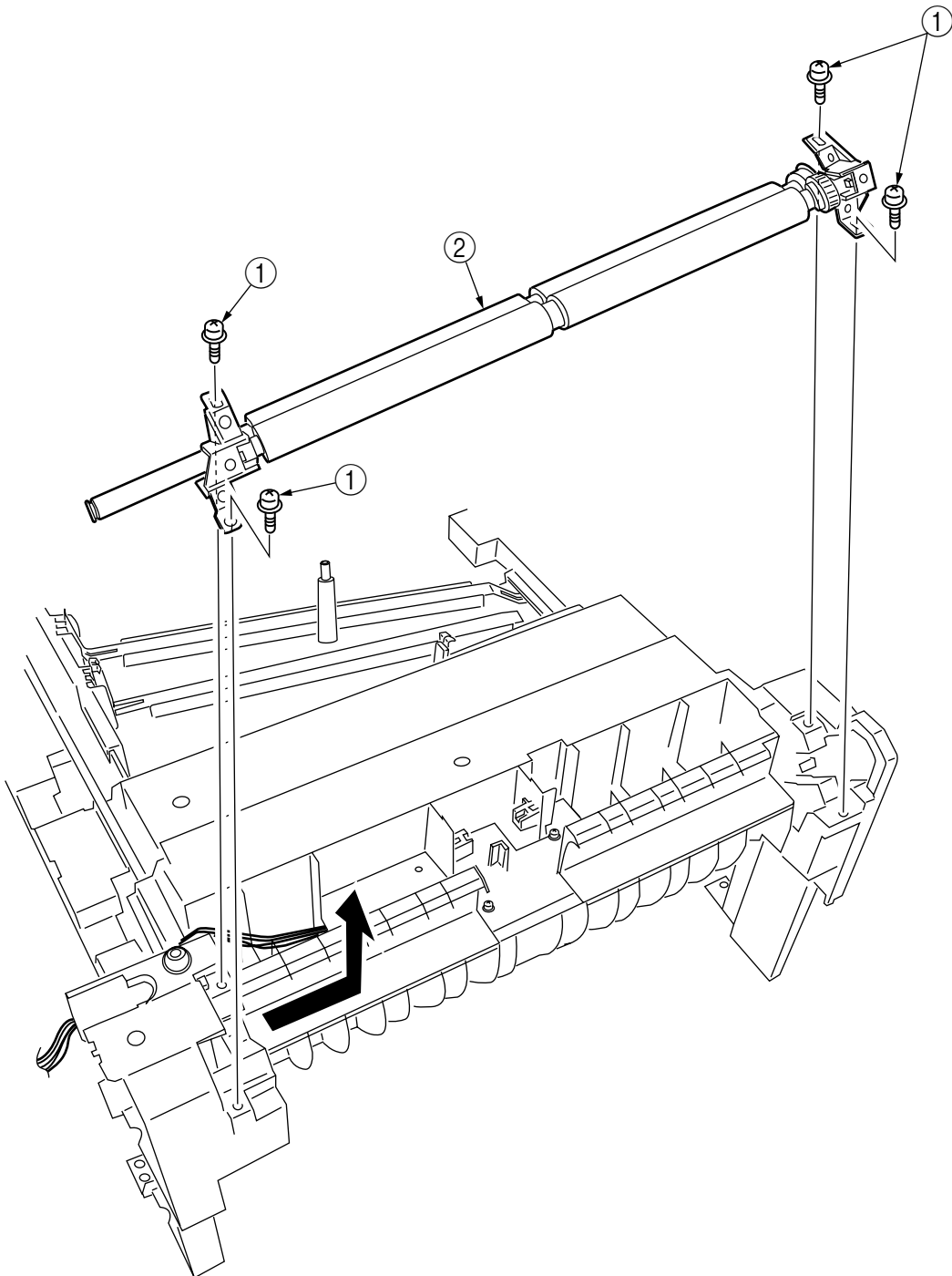


Figure 3-3-18 Registration Roller Assy (B)

### 3.3.19 Registration Clutch and Registration Motor Assy

- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the left plate Assy (see section 3.3.22).
- (3) Remove the connector and the E ring ①, then remove the two screws ②, the earth ③ and the registration clutch ④.
- (4) Remove the connector to remove the two screws ⑤ and the registration motor Assy ⑥.

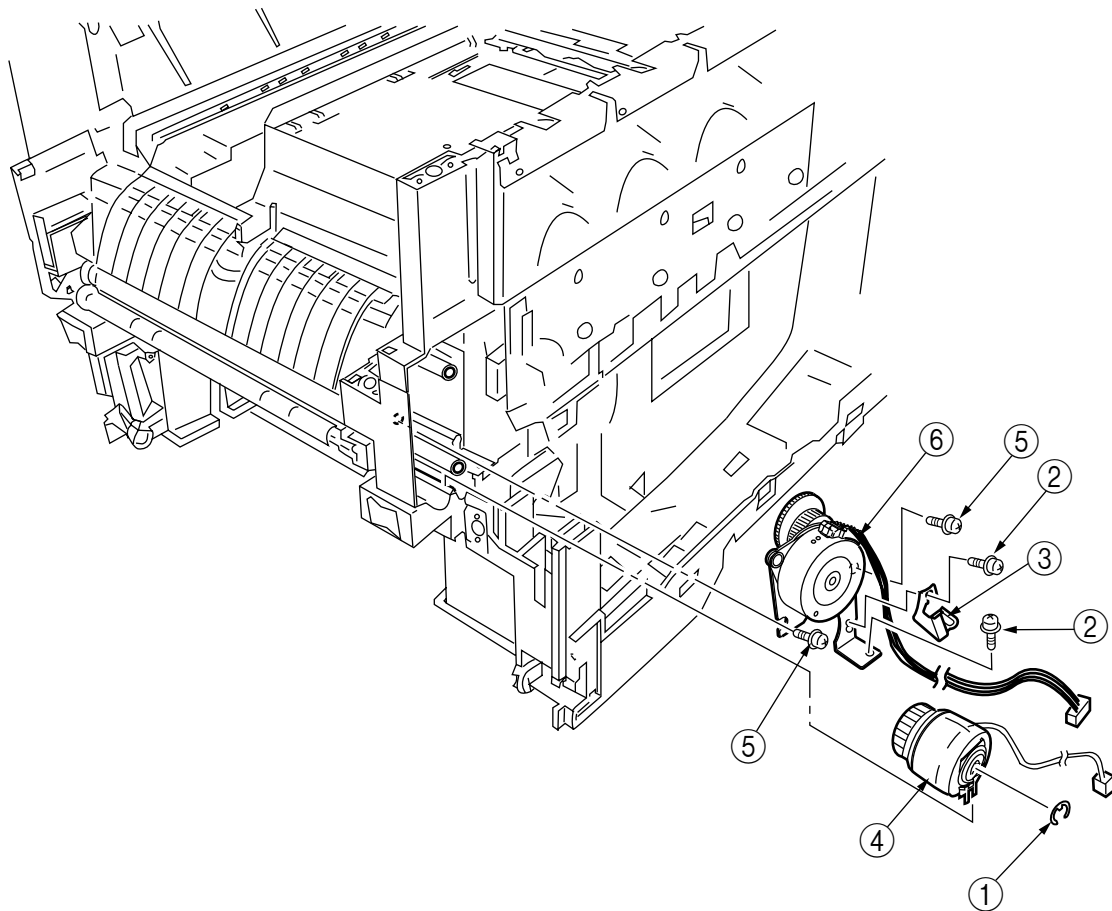


Figure 3-3-19 Registration Clutch and Registration Motor Assy

### 3.3.20 Main Cooling Fan

- (1) Unhook the connector (1), and remove the screw (2) and the cooling fan (3).

**Note!** When attaching the cooling fan, observe its correct orientation.

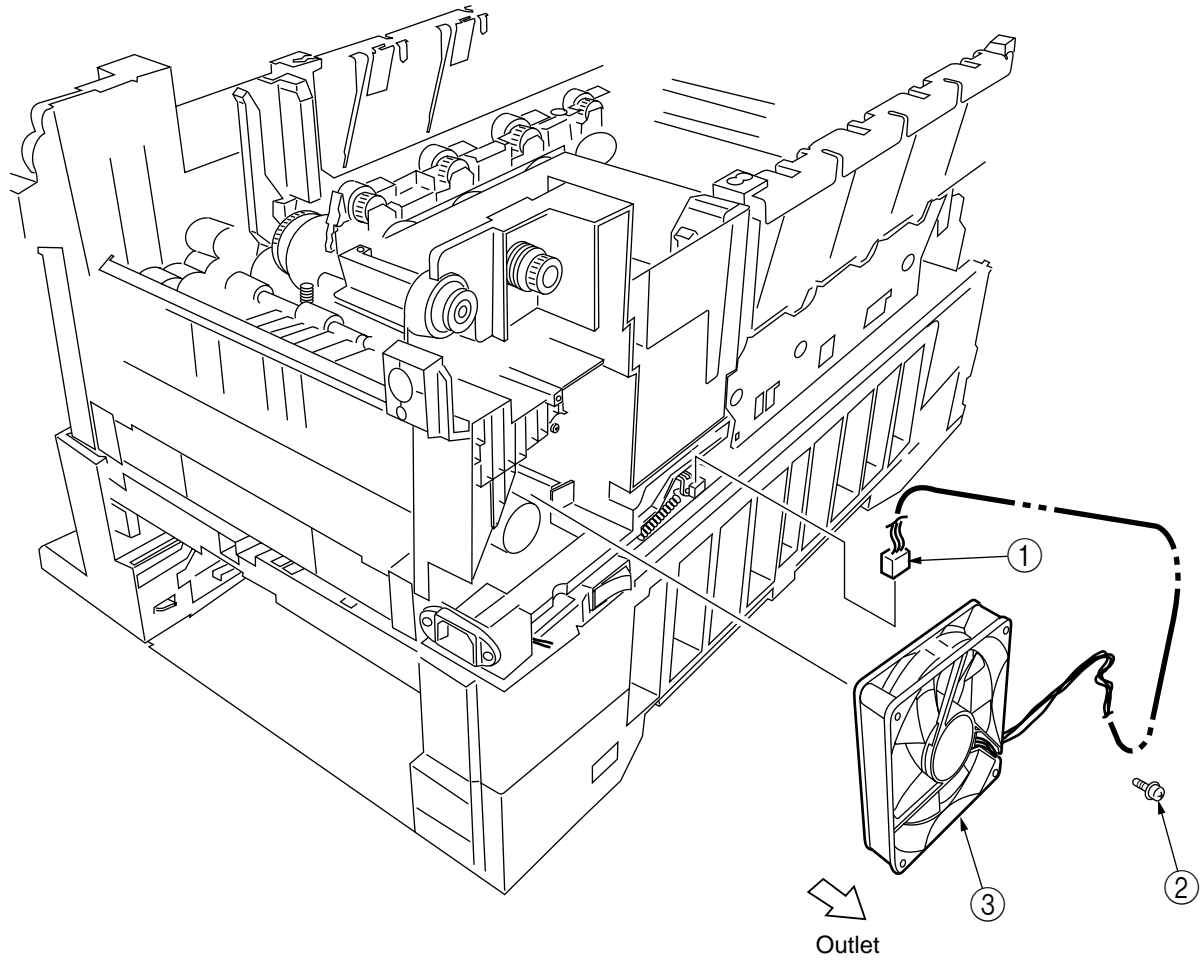


Figure 3-3-20 Main Cooling Fan

### 3.3.21 Color Registration Sensor Assy

- (1) Remove the two screws ① and the two connectors to demount the color registration sensor Assy ②.
- (2) Remove the earth plate B ③.

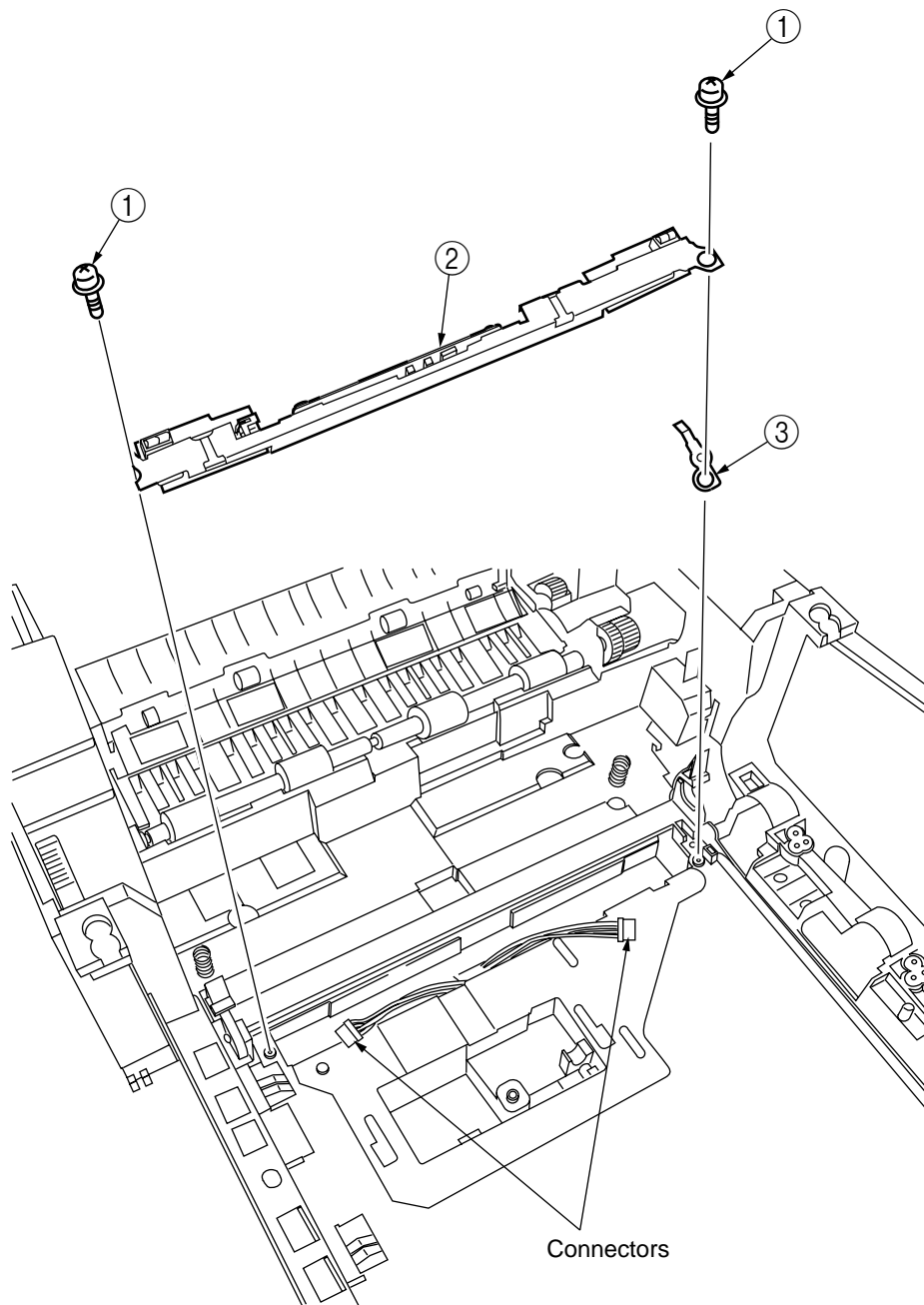


Figure 3-3-21 Color Registration Sensor Assy

### 3.3.22 Duplex Guide Assy

- (1) Unlatch and demount the duplex guide ①.

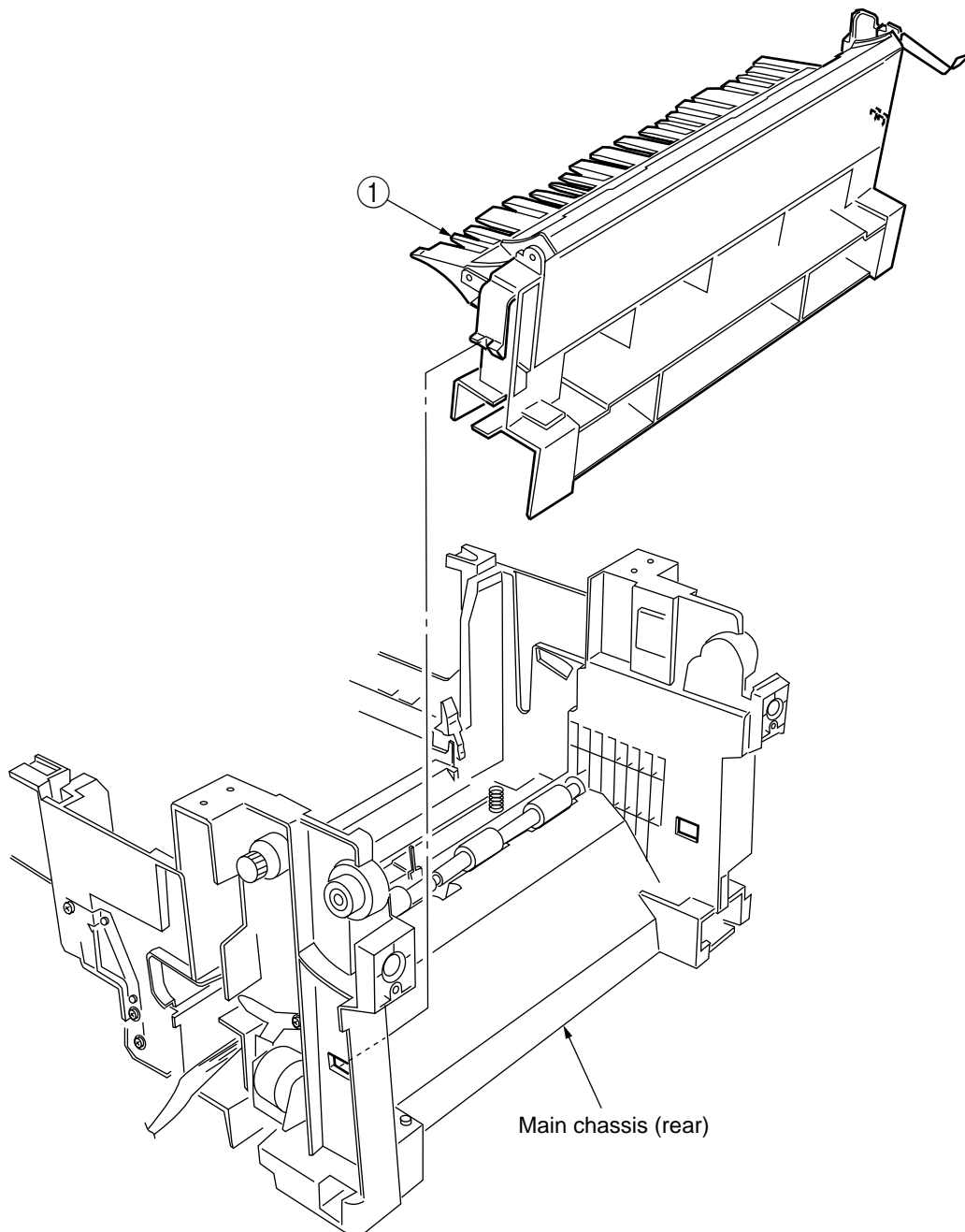


Figure 3-3-22 Duplex Guide Assy

### 3.3.23 Electrical Chassis Cooling Fan

- (1) Unscrew the four screws ① to remove the plate A ②.
- (2) Unscrew the four screws ③ to remove the shield plate B ④.
- (3) Remove the printer engine controller PWB (see section 3.3.30).
- (4) Unscrew the eleven screws ⑤ to remove the shield plate ⑥.
- (5) Unscrew the two screws ⑦ to demount the electrical chassis cooling fan ⑧.

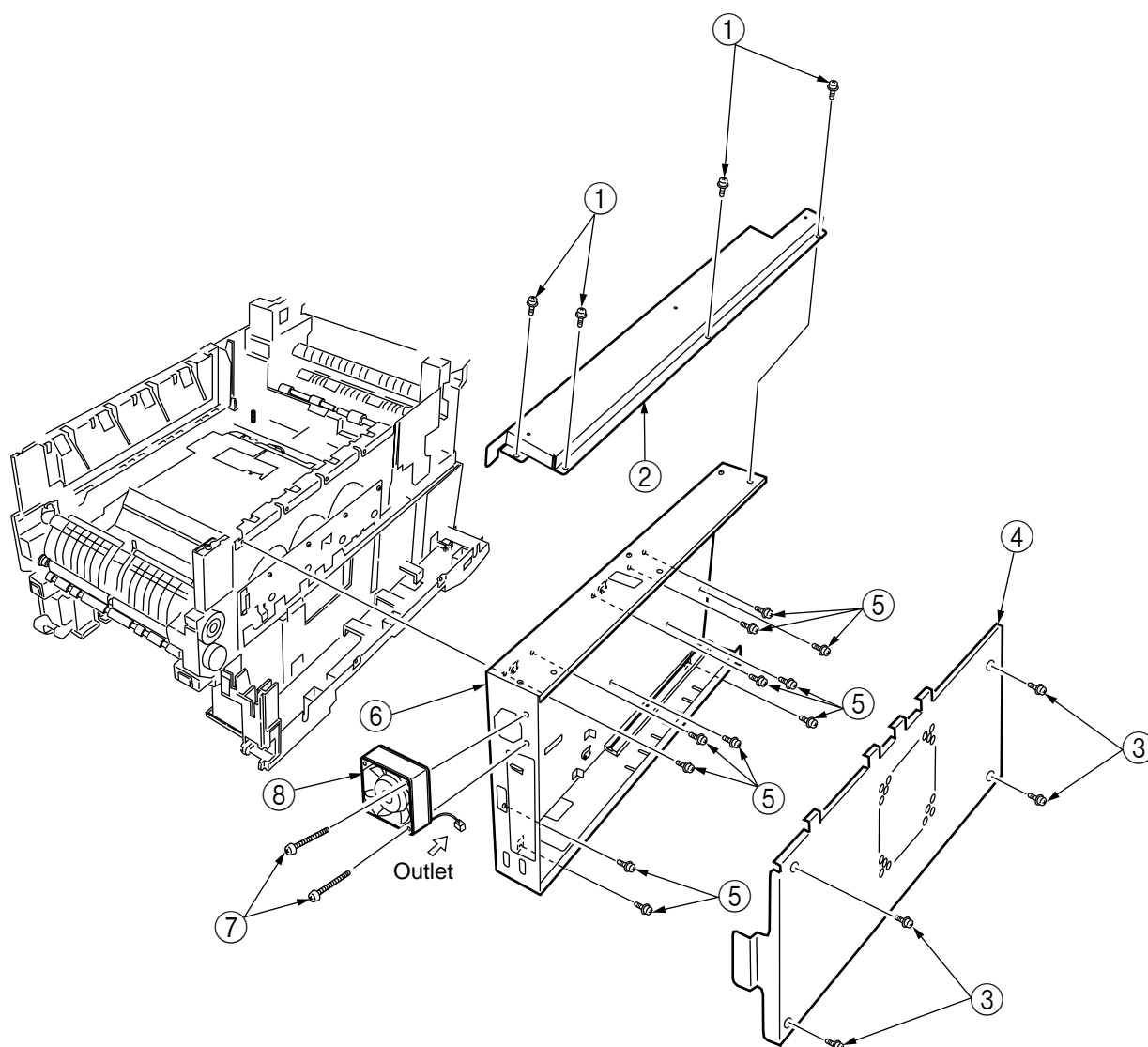


Figure 3-3-23 Electrical Chassis Cooling Fan

### 3.3.24 Printer Engine Controller PWB

- (1) Remove the right side cover (see section 3.3.13).
- (2) Remove the left plate Assy (see section 3.3.22).
- (3) Remove the five screws ① and all the connectors to demount the printer engine controller PWB ②.

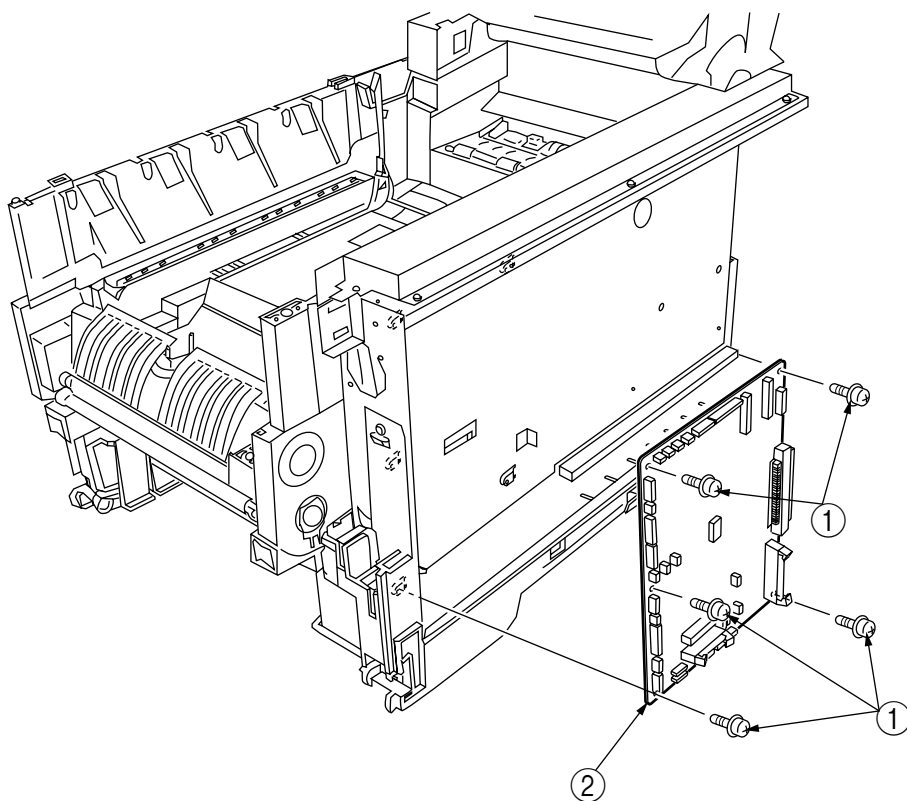


Figure 3-3-24 Printer Engine Controller PWB

### 3.3.25 Printer Unit Chassis

- (1) Unscrew the two screws ① and remove the AC inlet ②.
- (2) Unscrew the four black screws ③ and five screws ④ to detach the printer unit chassis ⑤.
- (3) Unscrew the four black screws ⑥ and remove the left top cover spring Assy ⑦.
- (4) Unscrew the four black screws ⑧ and remove the right top cover spring Assy ⑨.

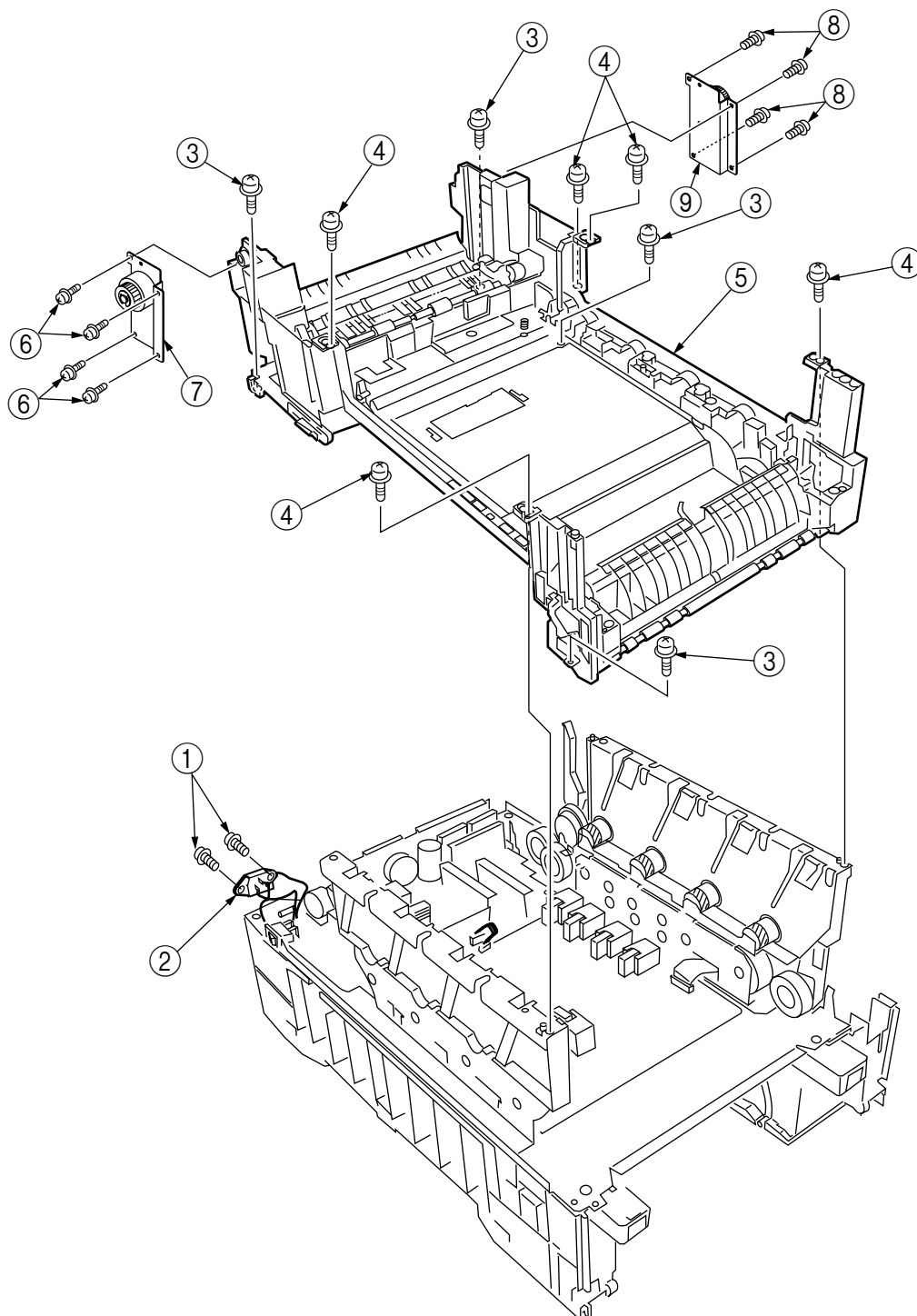


Figure 3-3-25 Pinter Unit Chassis



### 3.3.26 Entrance Cassette Sensor Actuator

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Turn over the main chassis.
- (3) Remove the two clamps with tweezers to demount the entrance cassette sensor actuator ①.

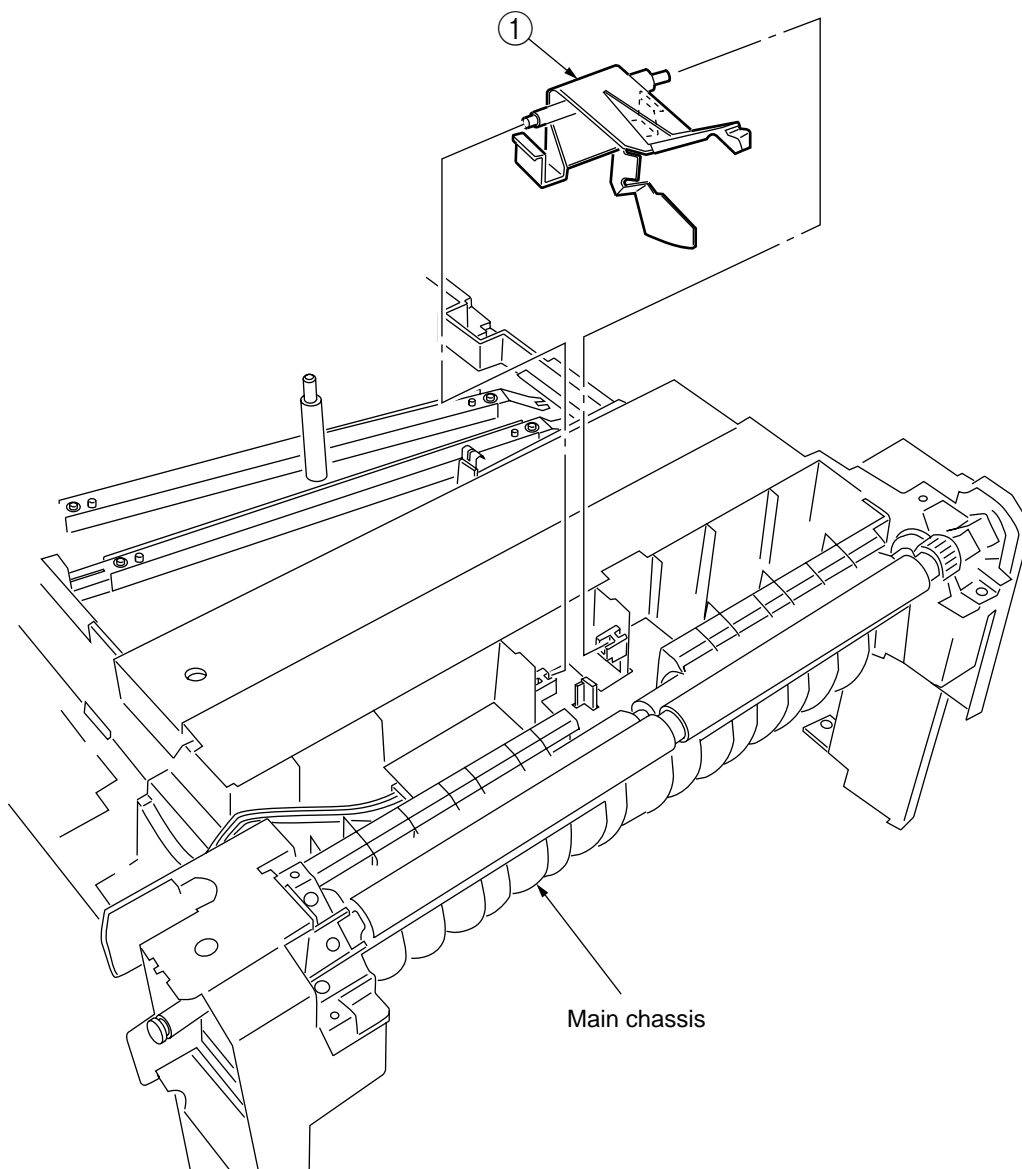


Figure 3-3-26 Entrance Cassette Sensor Actuator

### 3.3.27 Entrance Sensor PWB

- (1) Remove the registration roller Assy (B) (see section 3.3.17).
- (2) Remove the two screws ① to demount the entrance sensor PWB ②.

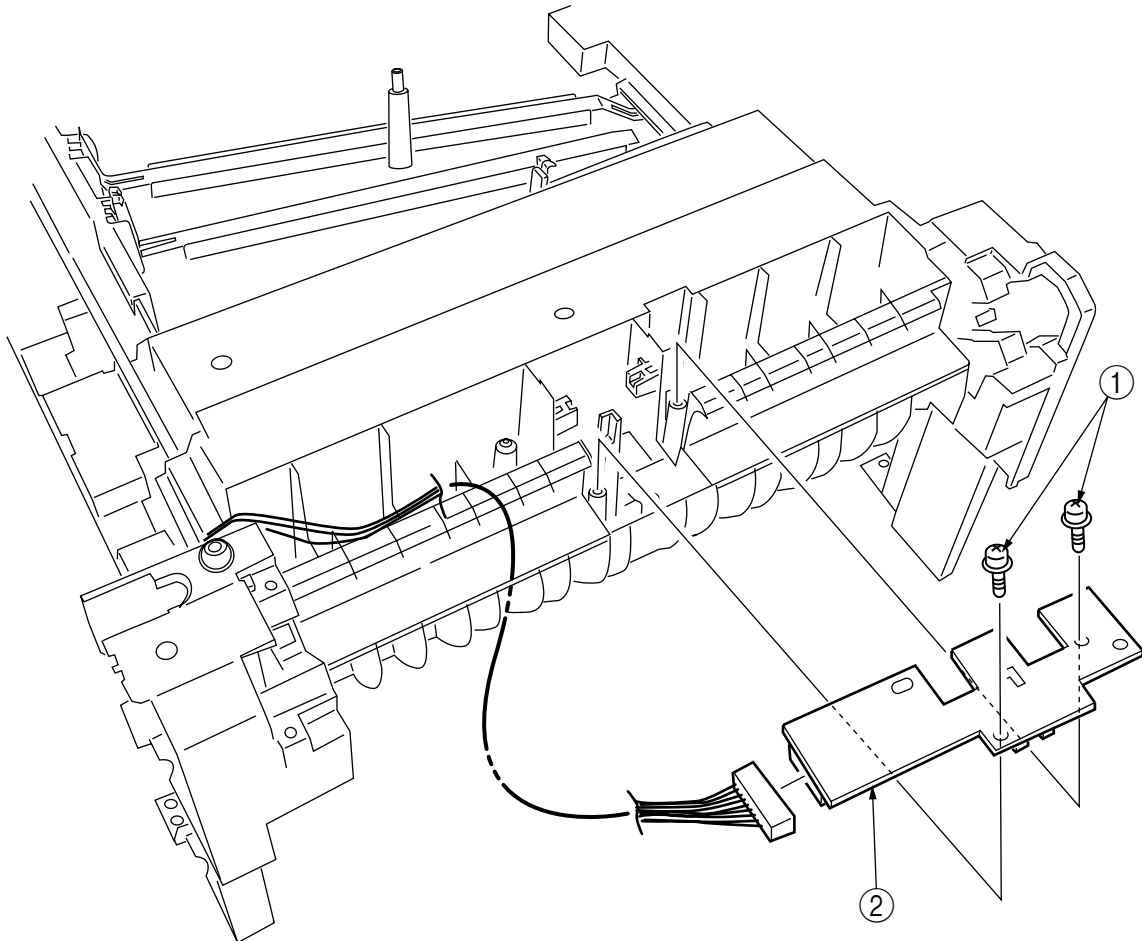


Figure 3-3-27 Entrance Sensor PWB

### 3.3.28 Entrance MT Sensor Actuator / Entrance Belt Sensor Actuator / Entrance Waste Chassis Sensor Actuator

- (1) Remove the entrance sensor PWB (R71) (see section 3.3.26).
- (2) Unlatch and detach the entrance MT sensor actuator ①.
- (3) Unlatch and detach the entrance belt actuator ②.
- (4) Release the latch and remove the Entrance Waste Chassis Sensor Actuator ③.

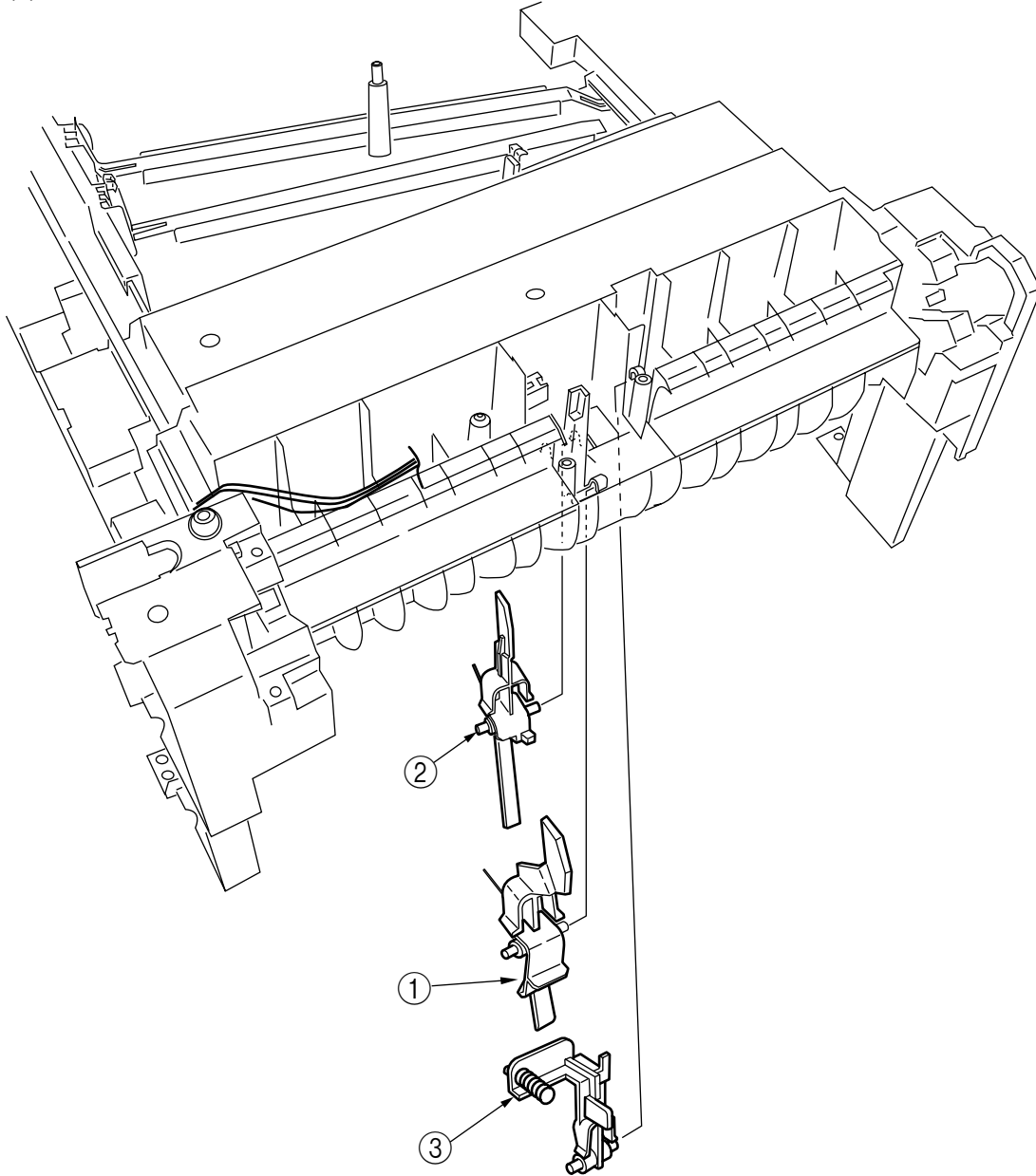


Figure 3-3-28 Entrance MT Sensor Actuator / Entrance Belt Sensor Actuator / Entrance Waste Chassis Sensor Actuator

### 3.3.29 Fuser Exit Roller

- (1) Unscrew the two screws ① to remove the duplex gate solenoid Assy ②.
- (2) Unscrew the screw ③ to remove the fuser exit roller contact ④.
- (3) Remove the fuser drive gear -A ⑤ and fuser drive gear -A ⑥.
- (4) Unscrew the screw ⑦ to remove the fuser drive gear -C ⑧.
- (5) Unlatch and detach the fuser drive gear -B ⑨ and fuser exit roller bush (R) ⑩.
- (6) Unlatch and detach the fuser exit roller bush (L) ⑪ and fuser exit roller ⑫.

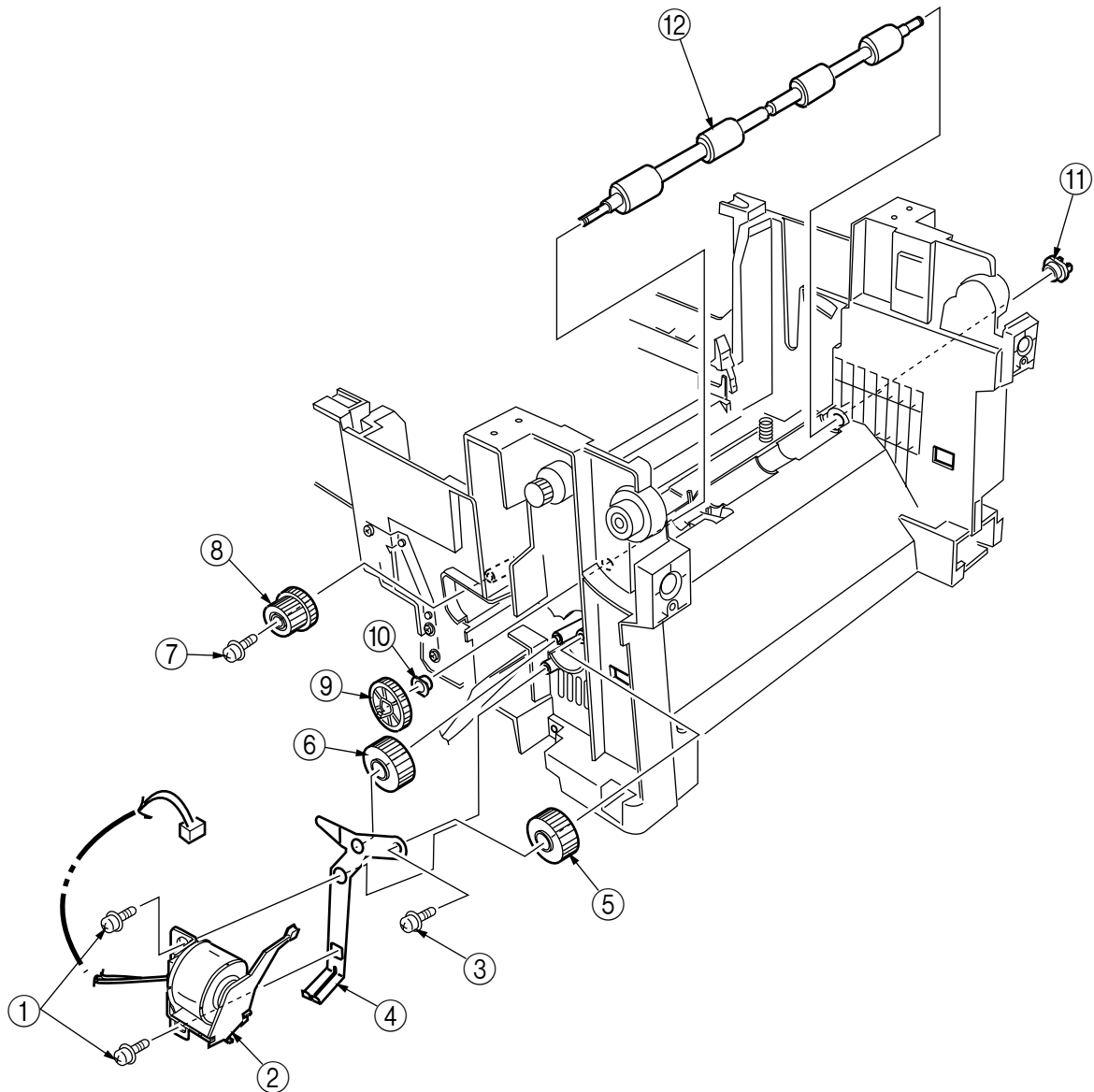


Figure 3-3-29 Fuser Exit Roller

### 3.3.30 Exit Sensor Assy

- (1) Remove the fuser exit roller (see section 3.3.28).
- (2) Remove the screw ① and connector to demount the (red and blue) exit sensor Assy ②.

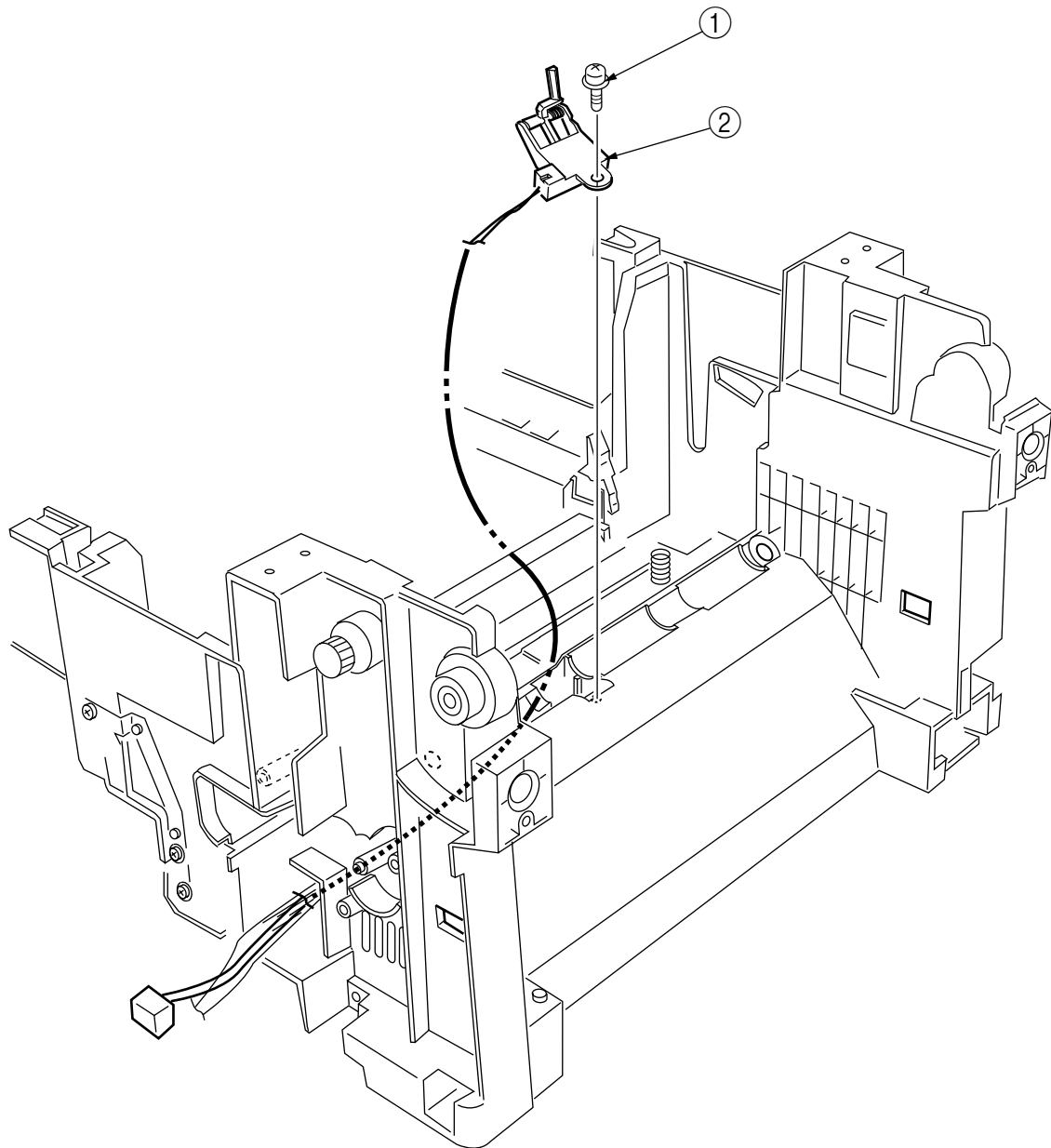


Figure 3-3-30 Exit Sensor Assy

### 3.3.31 Fuser Latching Handle (L)

- (1) Remove the latching handle spring ①.
- (2) Unscrew the screw ② to detach the fuser latching handle (L) ③.

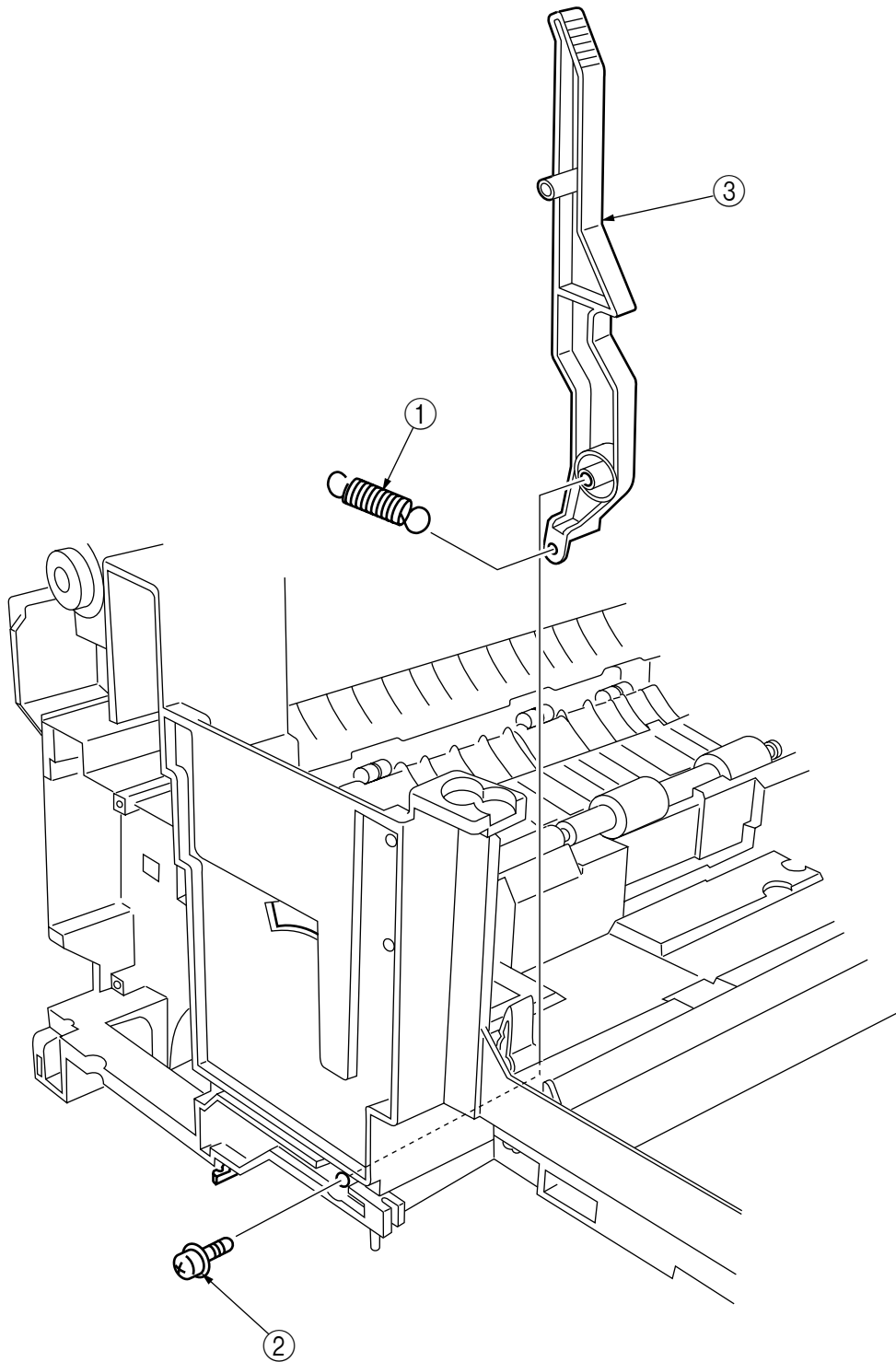


Figure 3-3-31 Fuser Latching Handle (L)

### 3.3.32 Belt Motor Assy

- (1) Remove the fuser latching handle (R) (see section 3.3.32).
- (2) Remove the two screws ① to detach the two connectors ②.
- (3) Demount the belt motor Assy ③.

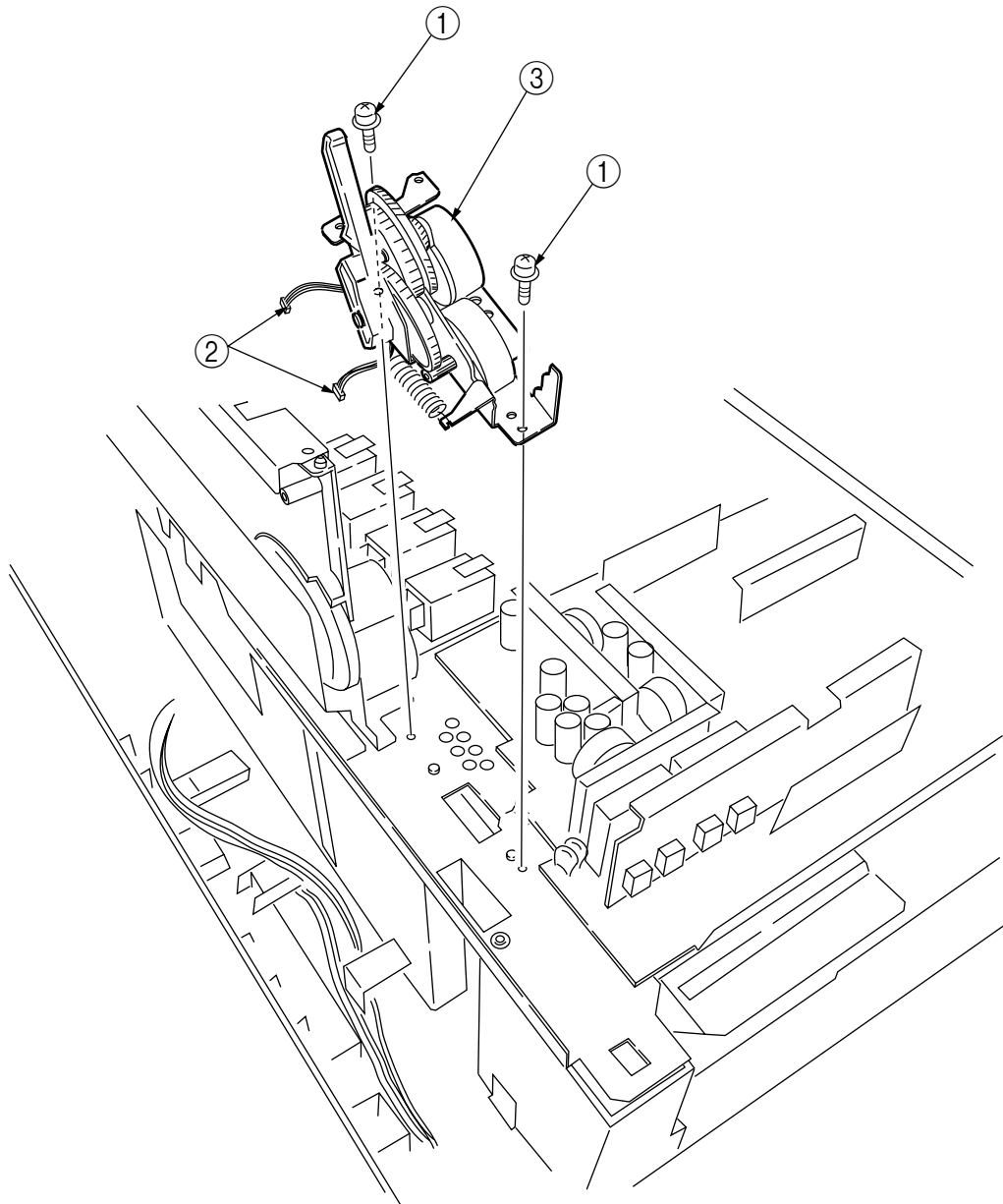


Figure 3-3-32 Belt Motor Assy

### 3.3.33 Fuser Latching Handle (R)

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the E ring ①.
- (3) Remove the fuser latching handle spring ② to detach the fuser latching handle (R) ③.

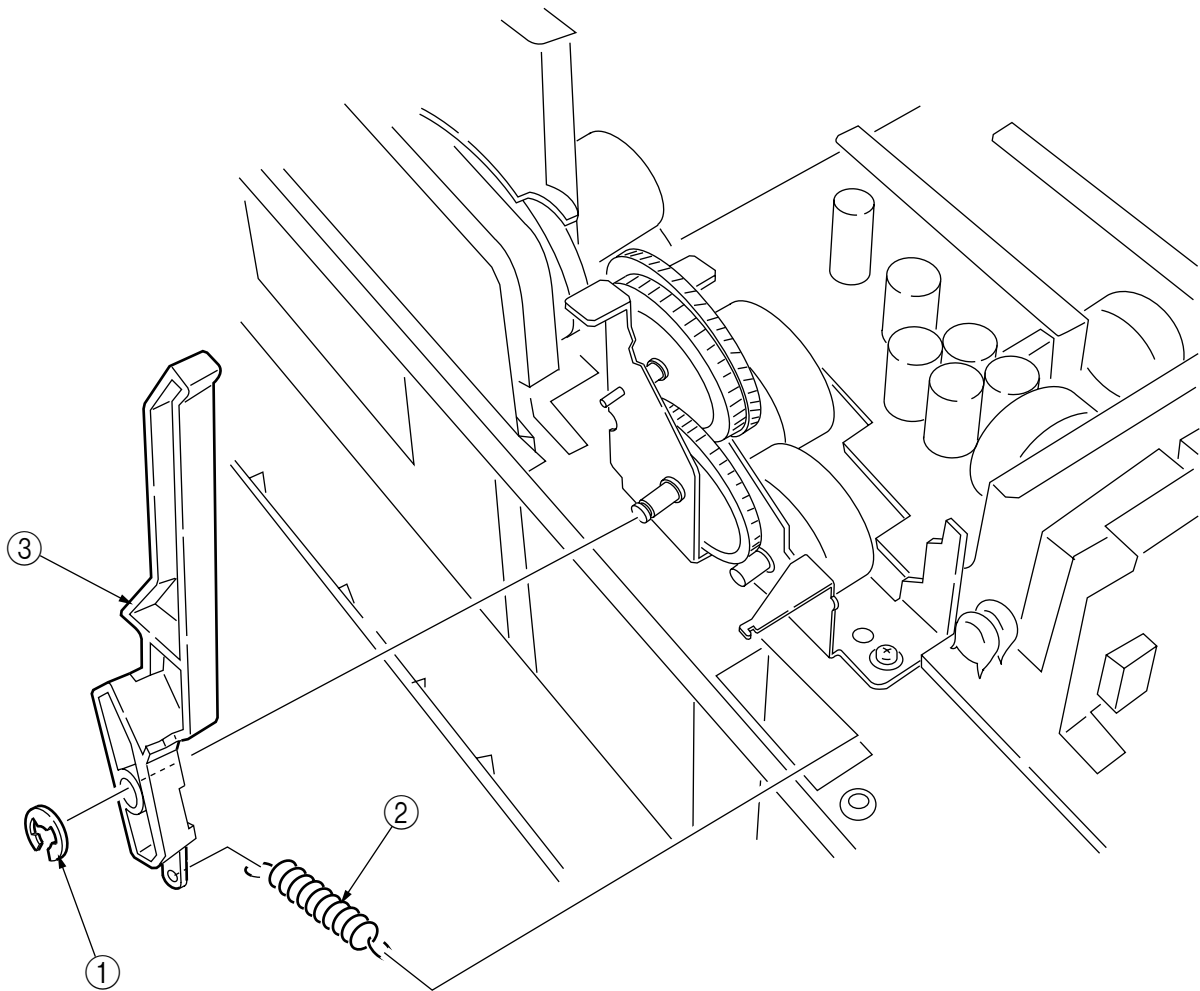


Figure 3-3-33 Fuser Latching Handle (R)



### 3.3.34 Main Motor Assy

- (1) Remove the belt motor Assy (see section 3.3.31).
- (2) Remove all the connectors.
- (3) Remove the four screws ① to demount the main motor Assy ②.

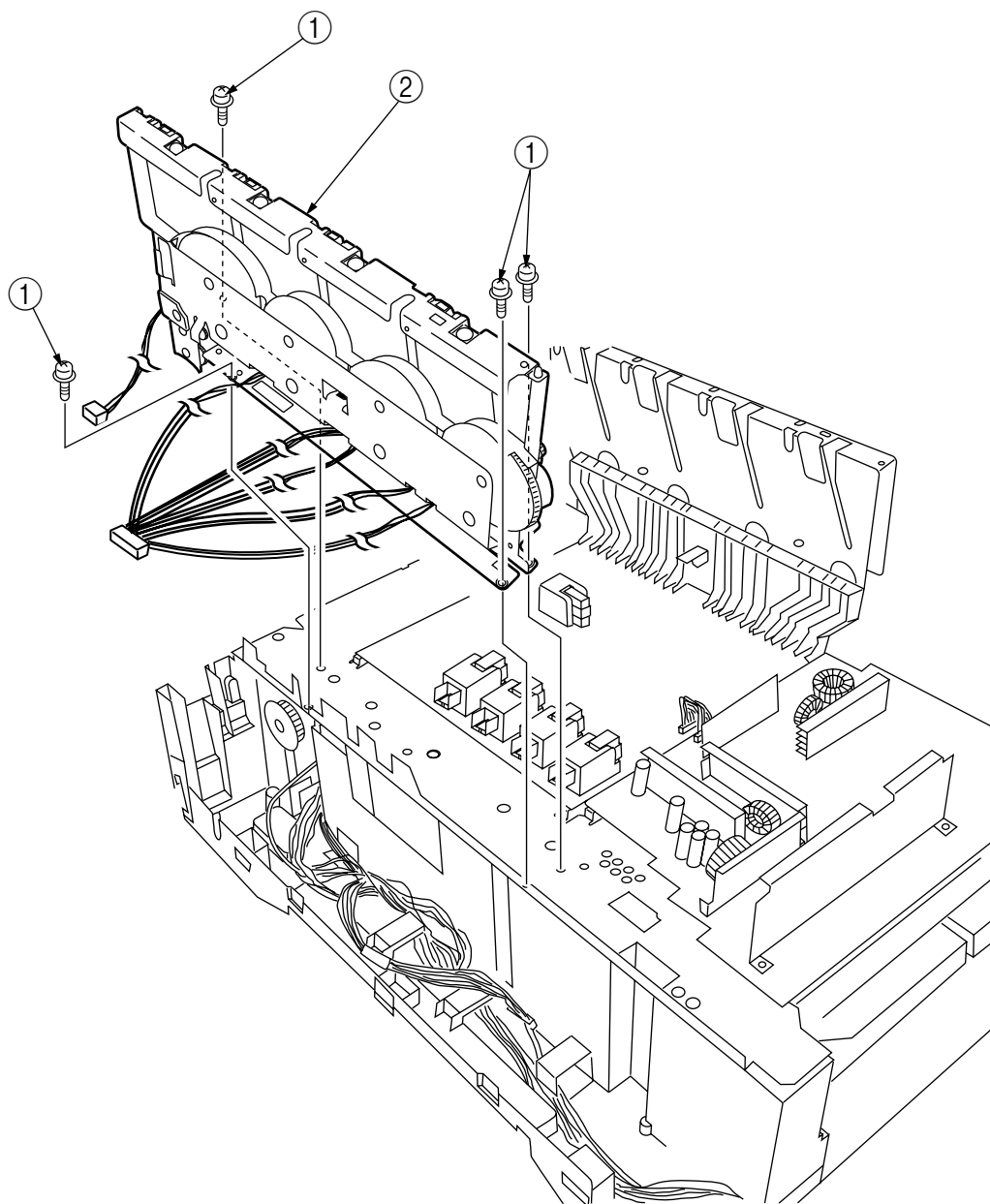


Figure 3-3-34 Main Motor Assy

### 3.3.35 Main Feeder Drive Motor

- (1) Remove the two screws ① to detach the main feeder drive motor ②.
- (2) Unscrew the screw ③ to remove the main feeder drive motor bracket ④.
- (3) Remove the main feeder drive motor gears A ⑤ and B ⑥.

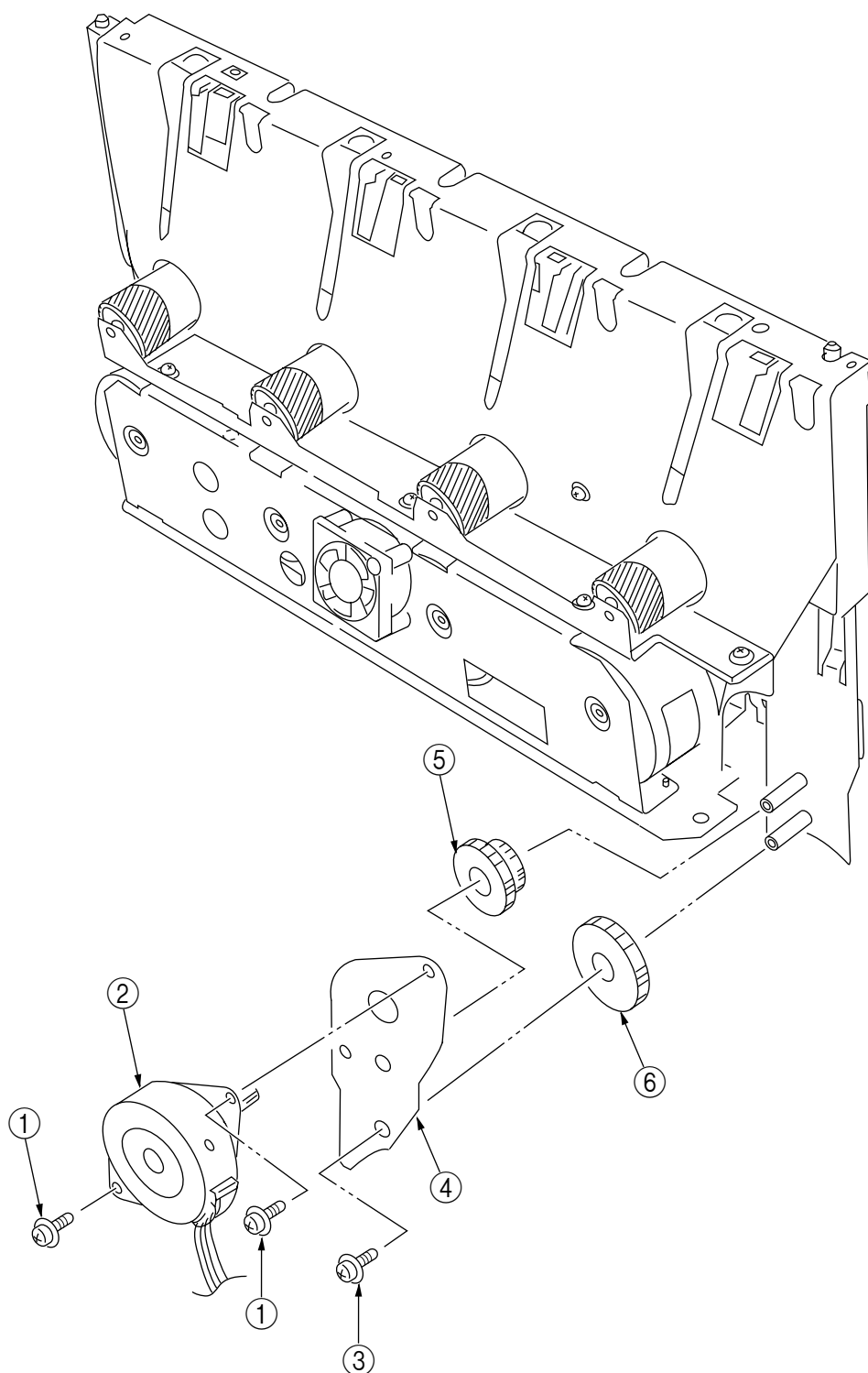


Figure 3-3-35 Main Feeder Drive Motor

### 3.3.36 Contact Assy/ Left Plate Assy

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the four screws ① to detach the left plate Assy ②.
- (3) Remove the screw ③ to detach the contact Assy ④.

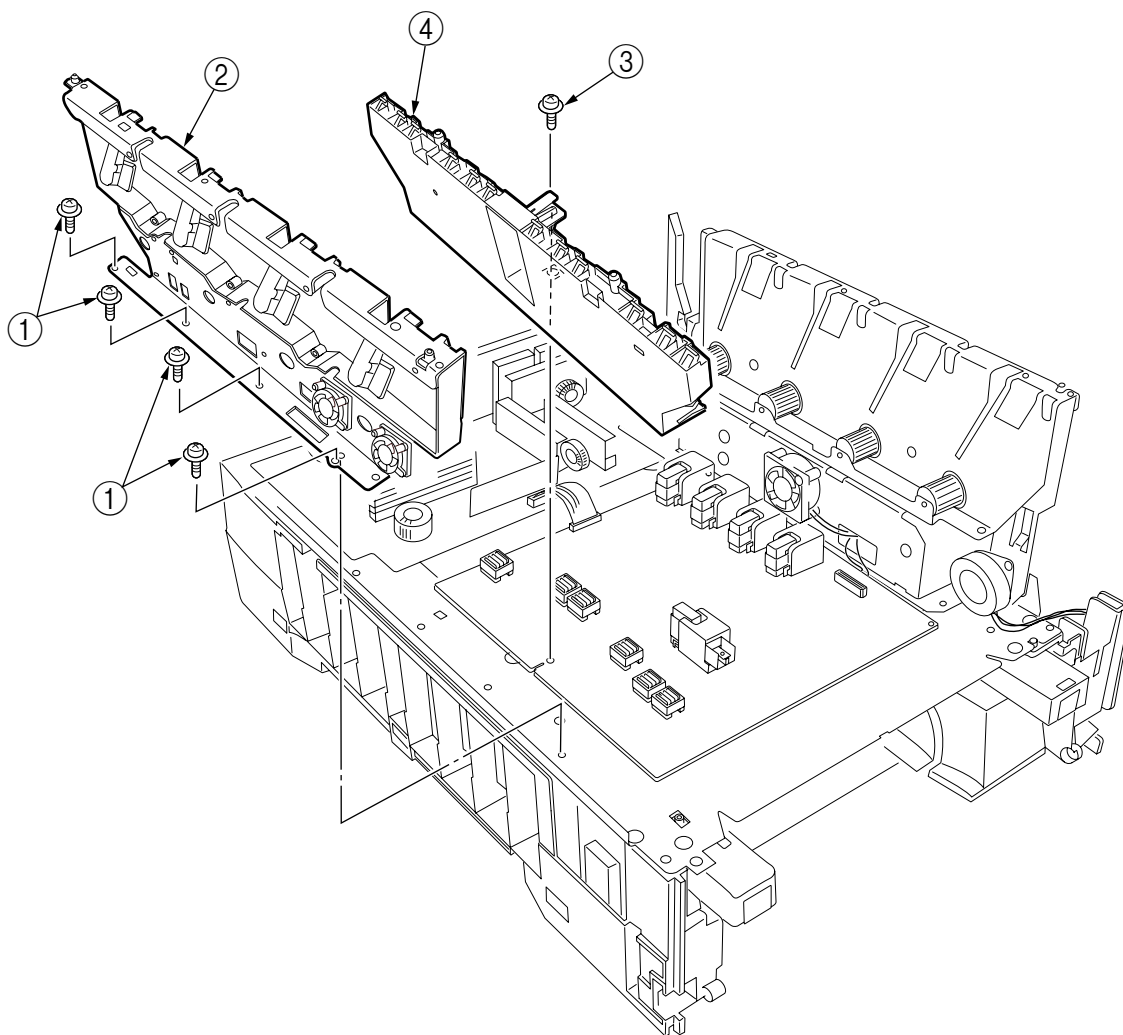


Figure 3-3-36 Contact Assy/ Left Plate Assy

### 3.3.37 Low Voltage Power Supply

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Unhook the connector ①.
- (3) Unscrew the screw ② to remove the earth cable ③.
- (4) Unscrew the six screws ④ to demount the low voltage power supply ⑤.

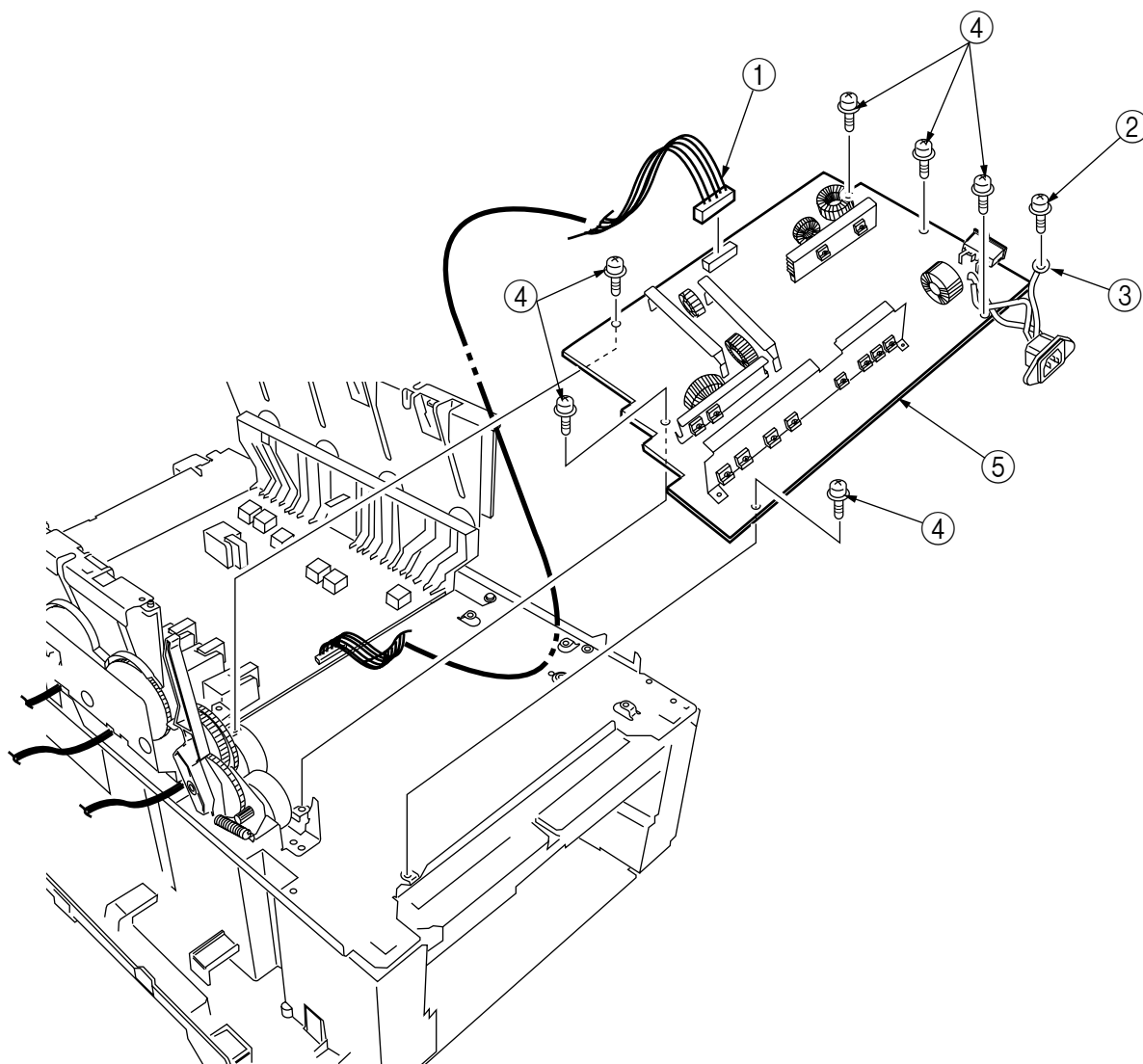


Figure 3-3-37 Low Voltage Power Supply

### 3.3.38 High voltage power supply

- (1) Remove the contact Assy (see section 3.3.35).
- (2) Unhook the connector of the high voltage power supply ①.
- (3) Remove the two screws ② to detach the high voltage power supply ① and the tape harness ③.

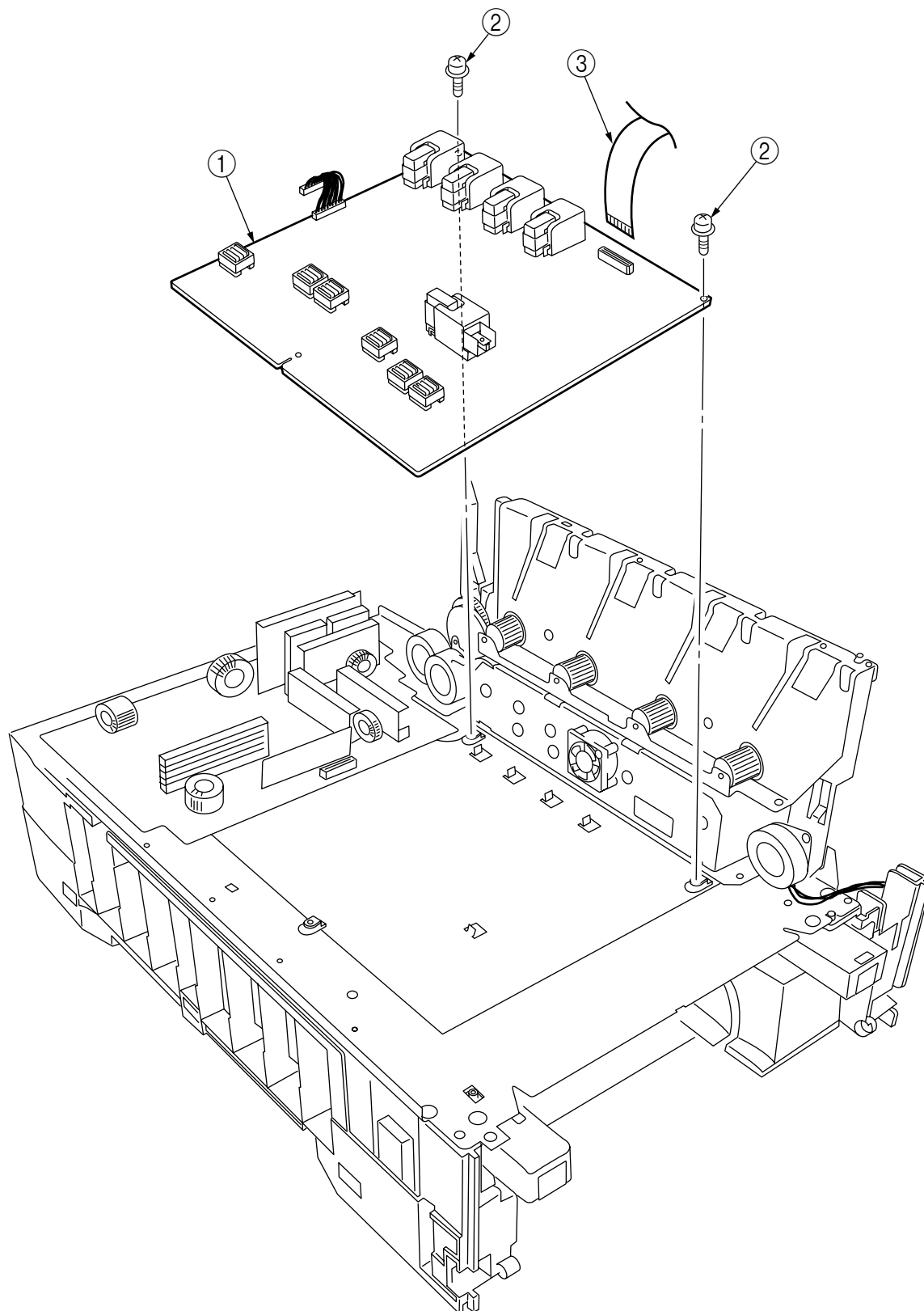


Figure 3-3-38 High Voltage Power Supply

### 3.3.39 Main Feed Assy

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the low voltage power supply and high voltage power supply (see sections 3.3.36 and 3.3.37).
- (3) Unscrew the five screws ① to remove the lower plate ②.
- (4) Unscrew the four screws ③ to demount the main feed Assy ④.
- (5) Unhook and remove the main feed drive gear ⑤.

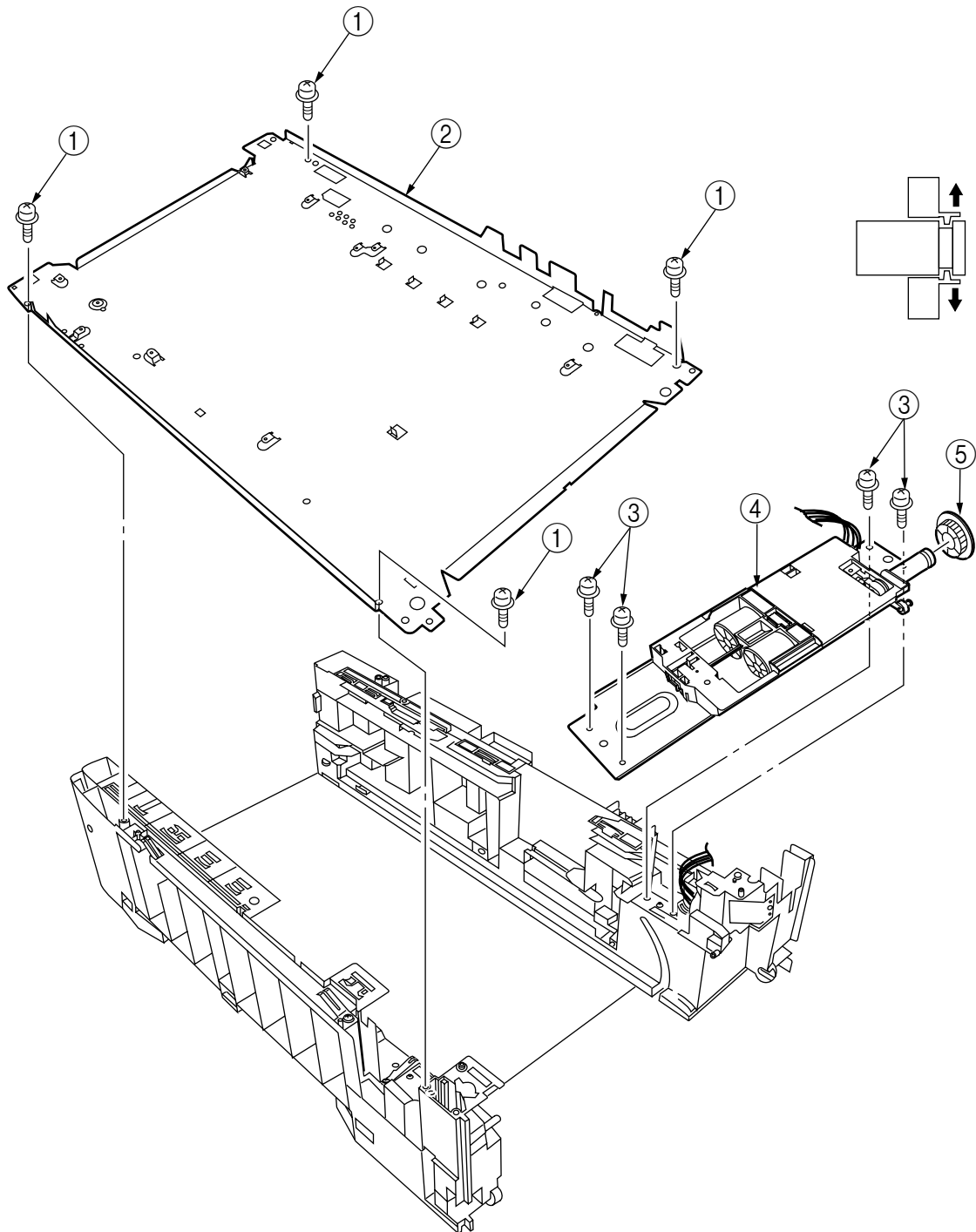


Figure 3-3-39 Main Feed Assy

### 3.3.40 Cassette/ Left Guide Assy

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the main feed Assy (see section 3.3.38).
- (3) Remove the three screws ① to detach the left cassette guide Assy ②. At the same time, the earth plate ③ becomes detached.
- (4) Remove the cassette lift spring ④, then remove the plastic slide ⑤, the cassette lift arm (L) ⑥ and the plastic roller ⑦.
- (5) Remove the two feet ⑧.
- (6) Remove the cassette lock spring ⑨, then remove the cassette lock ⑩.

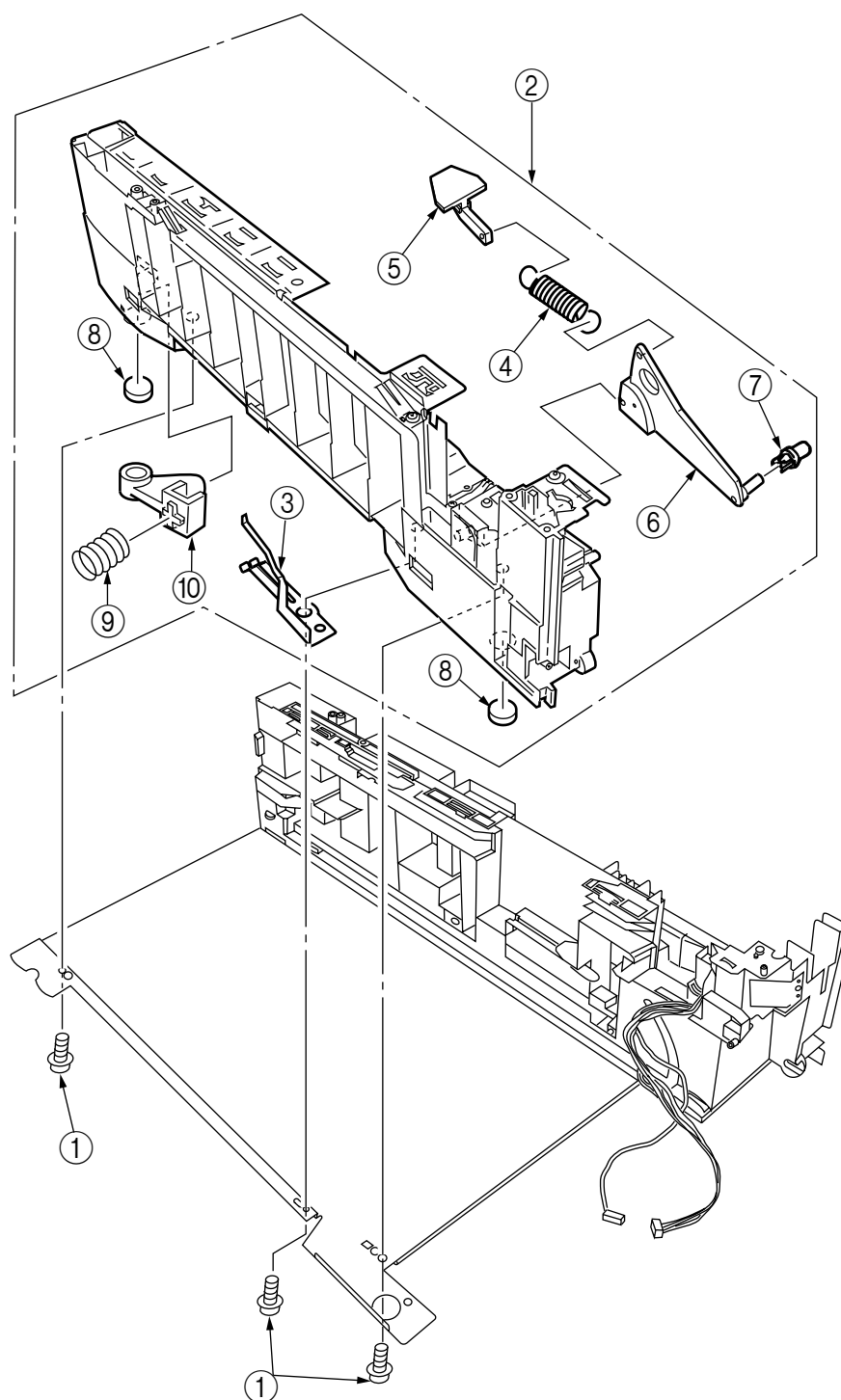


Figure 3-3-40 Cassette/ Left Guide Assy

### 3.3.41 Cassette/ Right Guide Assy

- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the main feed Assy (see section 3.3.38).
- (3) Remove the five screws ① to detach the right cassette guide Assy ②. At the same time, the earth plate ③ becomes detached.
- (4) Remove the cassette lift spring ④, then detach the plastic slide ⑤, the cassette lift arm (L) ⑥ and the plastic roller ⑦.
- (5) Unscrew the screw ⑧ to remove the paper size actuator ⑨.
- (6) Unscrew the screw ⑩ to remove the paper size sensing PWB ⑪ in the downward direction.
- (7) Remove the two feet ⑫.
- (8) Remove the cassette lock spring ⑬, then remove the cassette lock ⑭.
- (9) Unscrew the two screws ⑮ to remove the 2nd tray connector ⑯.
- (10) Unscrew the screw ⑰, then remove the duplex Assy ground contact ⑱.

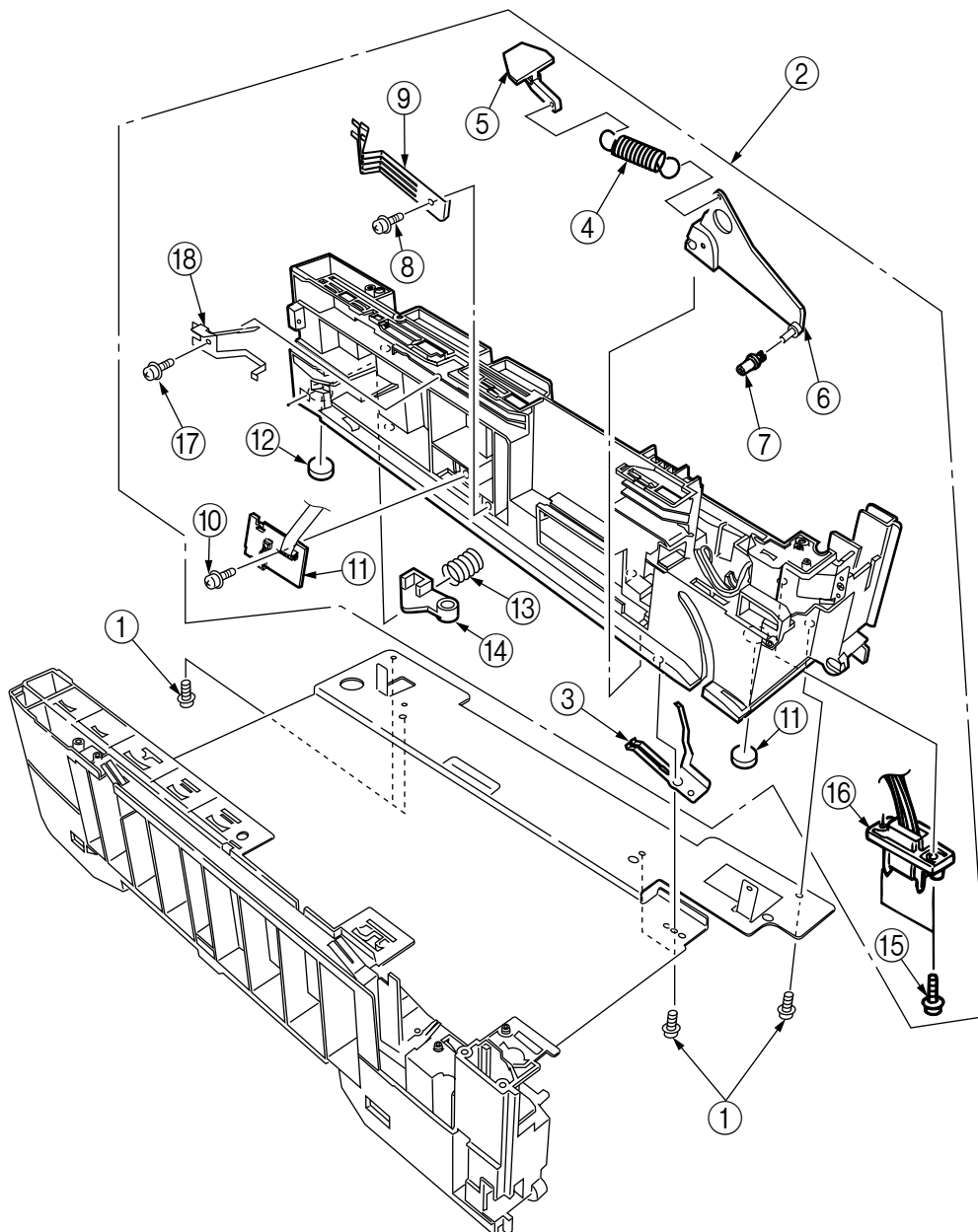


Figure 3-3-41 Printer Tray/ Right Guide Assy



### 3.3.42 Fuser Unit

- (1) Open the top cover ①.
- (2) Push the right and left fuser levers (blue) ② in the arrow direction to detach the fuser unit ③.

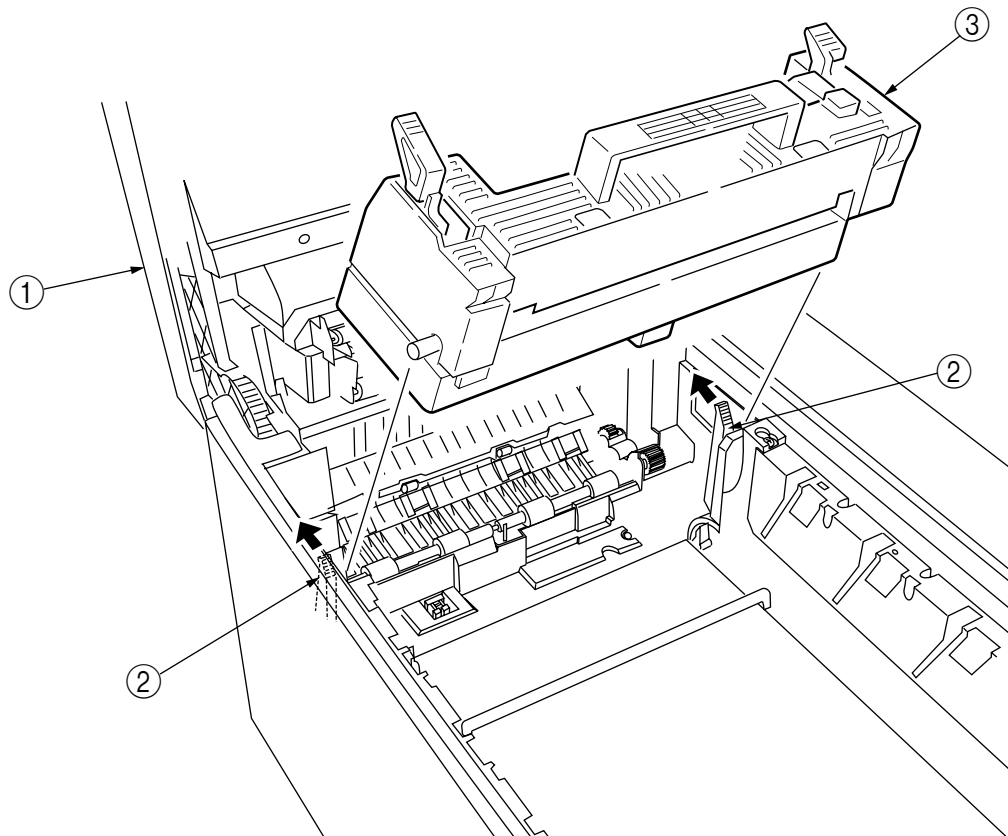


Figure 3-3-42 Fuser Unit

### 3.3.43 Belt Unit

- (1) Open the top cover ①.
- (2) Remove the I/D unit.
- (3) Push the lever (blue) ② in the arrow direction, raise the handle (blue) ③ and detach the belt unit ④.

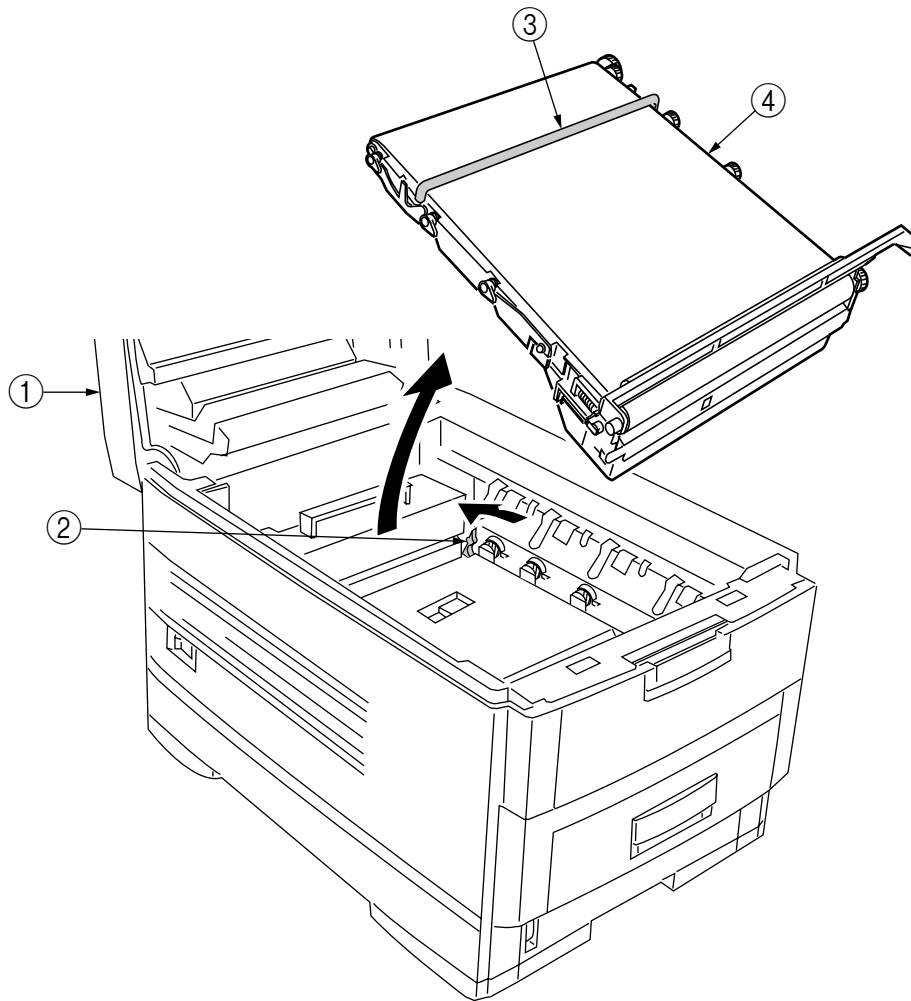


Figure 3-3-43 Belt Unit

### 3.3.44 Duplex Unit

- (1) Remove the cassette Assy, the front cover Assy and the front cover inner baffle.
- (2) Unlatch the rear at the right and left, and pull the duplex unit ① toward the front.

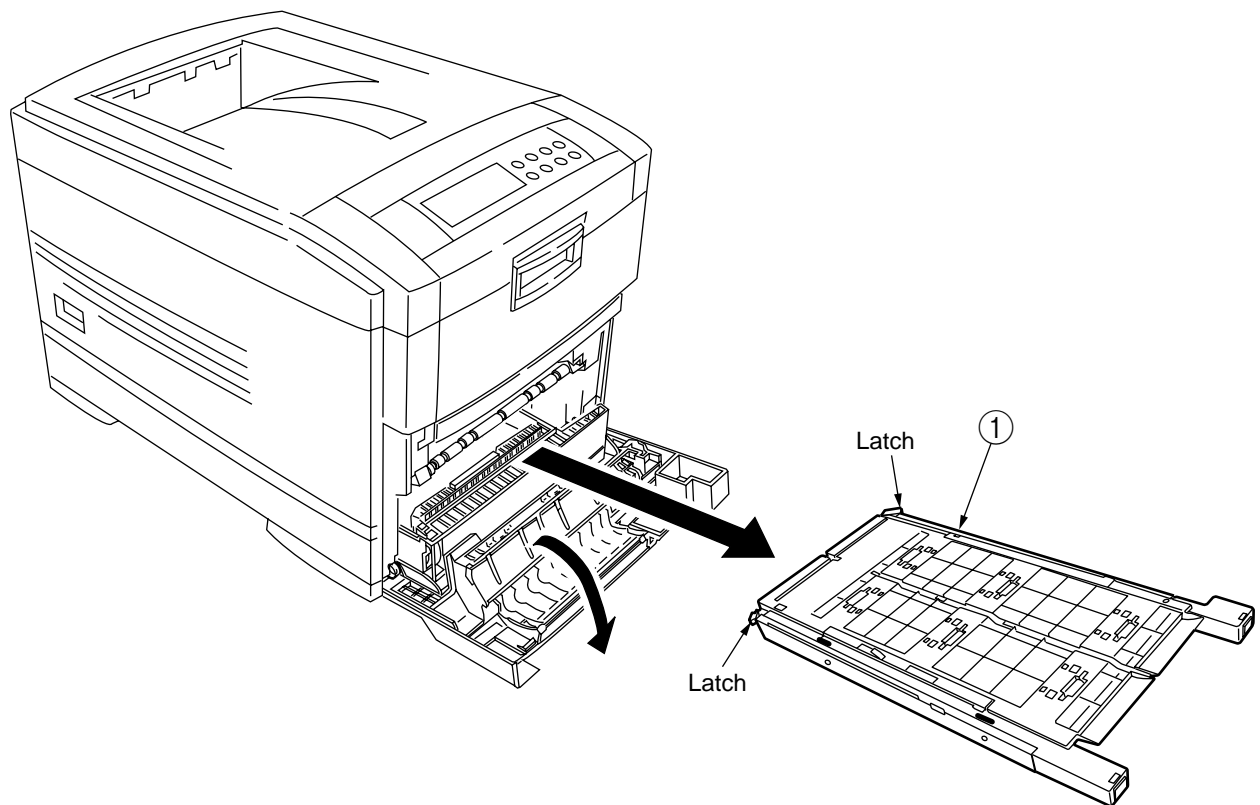


Figure 3-3-44 Duplex Unit

### 3.3.45 Guide Rails (L) and (R)

- (1) Remove the duplex unit (see section 3.3.43).
- (2) Remove the six screws ① to detach the guide rails (L) ② and (R) ③.

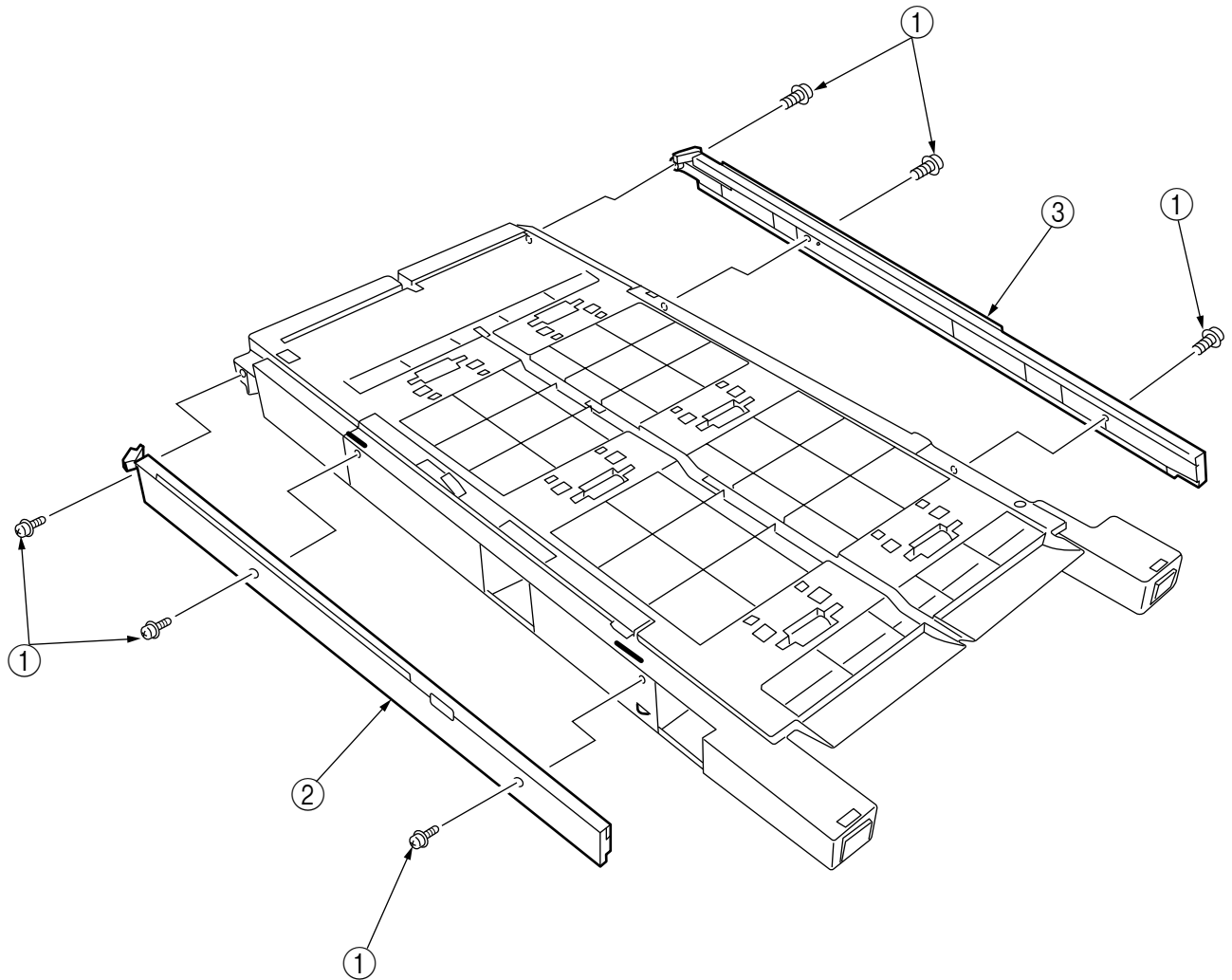


Figure 3-3-45 Guide Rail (L), (R)

### 3.3.46 Duplex Transport Assembly

- (1) Turn over the duplex transport Assy.
- (2) Unscrew the three screws ① and five screws ② to detach the plate ③.
- (3) Unplug the connector and detach the mold Assy ④.
- (4) Detach the two actuators ⑤.
- (5) Unscrew the screws ⑥ and ⑦ to remove the earth ⑧.
- (6) Unhook the connector and disengage the two claws to detach PCB-MOP ⑨.
- (7) Unplug the cable and, warping the claw, detach the transport sensor.
- (8) Unscrew the two screws to detach the cord duplex connector Assy.
- (9) Unscrew the screw ⑩ to remove the earth ⑪.
- (10) Unscrew the screw ⑫ to remove the earth ⑬.
- (11) Unscrew the screw ⑭ to remove the earth ⑮.
- (12) Detach the bush ⑯, gear ⑰ and bush ⑱, then detach the roller ⑲.
- (13) Unscrew the screw ⑳ to remove the earth ㉑.
- (14) Detach the gear ㉒ and bush ㉓. At the same time, the mini pitch belt ㉔ becomes detached.
- (15) Detach the gear ㉕ and bush ㉖, then detach the roller ㉗. At the same time, the mini pitch belt ㉘ becomes detached.
- (16) Unscrew the screw ㉙ to remove the earth ㉚.
- (17) Remove the E ring ㉛ and three screws ㉜ to detach the motor Assy ㉝. At the same time, the earth ㉞ becomes detached.
- (18) Detach the gear ㉟ and bush ㊱.
- (19) Detach the gear ㊲, knock-pin ㊳ and bush ㊴, then detach the roller ㊵.
- (20) Detach the bush ㊶, gear ㊷, knock-pin ㊸ and bush ㊹, then detach the roller ㊺. At the same time, the earths ㊻ and ㊼ become detached.
- (21) Detach the idle roller shaft and the idle roller, then detach the idle roller springs (eight springs).
- (22) Remove the cable of the duplex transport sensor Assy from the claw of the cover-upper. Disengage the claw, then detach the sensor.

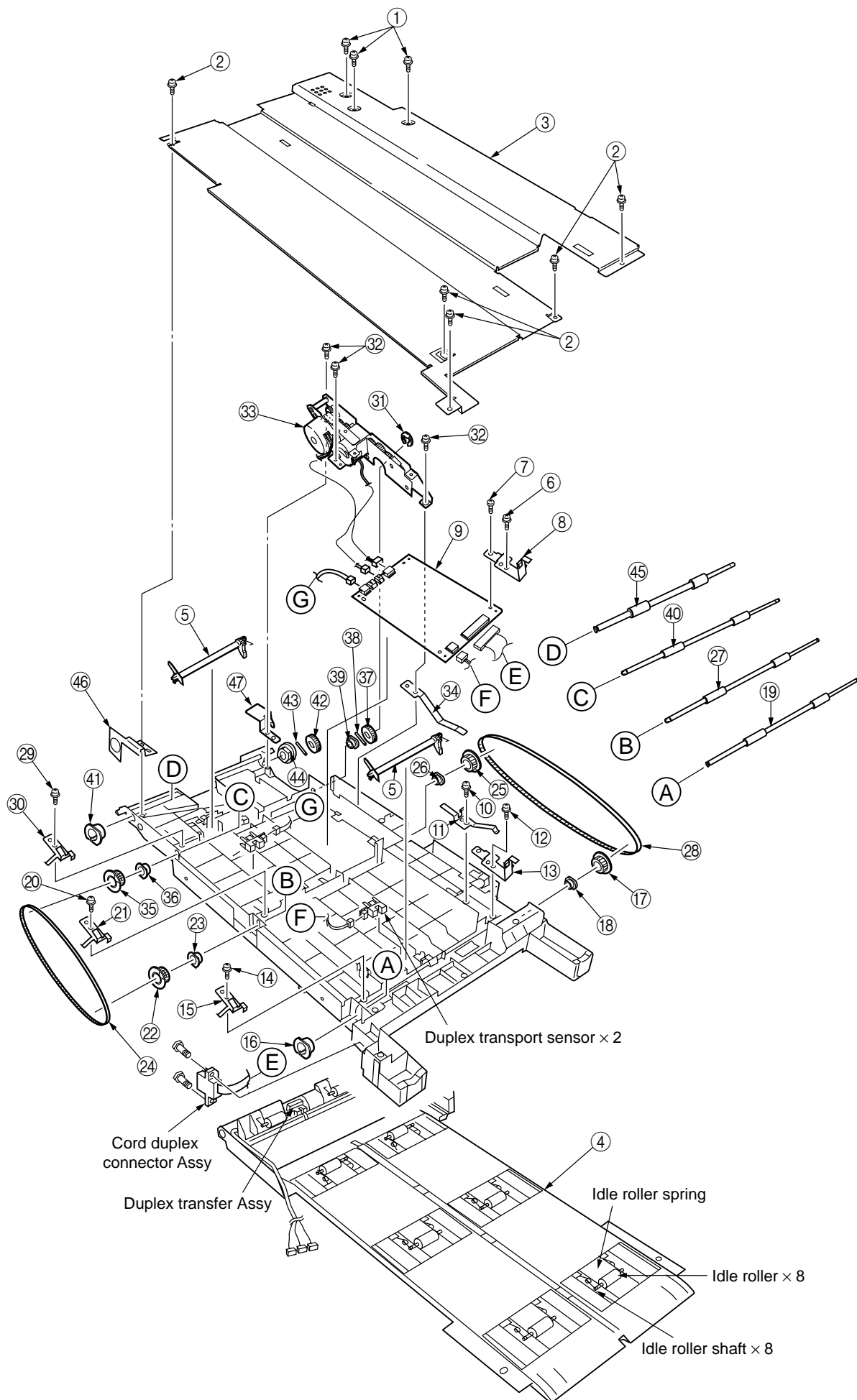


Figure 3-3-46 Duplex Transport Assembly

### 3.3.47 CU Assy

- (1) Pulling out Controller Board
  1. Undo the two screws ①.
  2. Pull the controller board ② out.
  3. Place the controller board ② on a flat table.
- (2) Detaching Fan
  1. Remove the connector ③.
  2. Remove the two screws ④.
  3. Detach the fan ⑤.

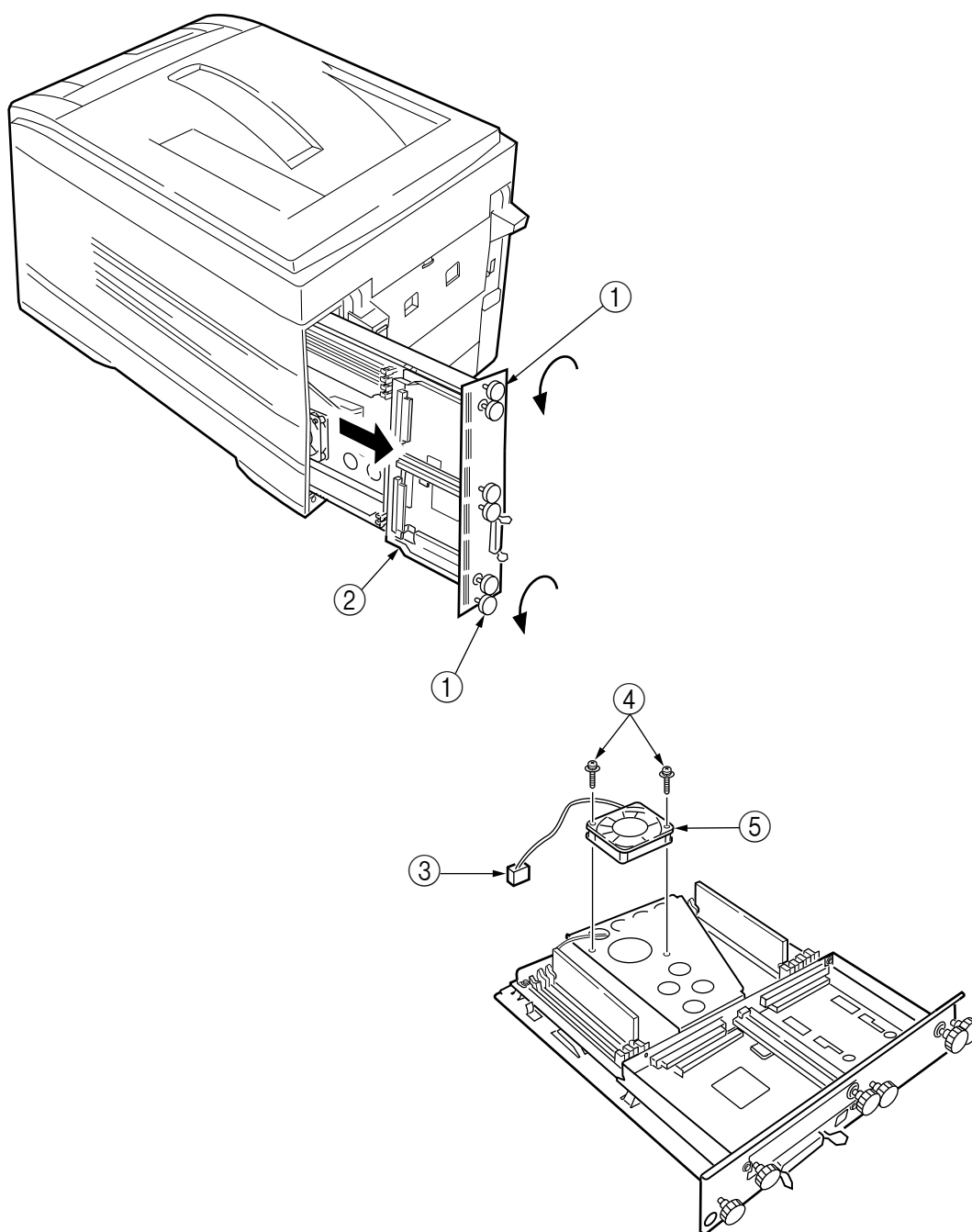


Figure 3-3-47 CU Assy (1/2)

### (3) Demounting TIG Board

1. Remove the three screws ⑥ and screw ⑦ to detach the fan bracket ⑧.
2. Remove the screw ⑨ and four screws ⑩ to detach the plate support ⑪ and the guide rail A⑫.
3. Remove the two screws ⑬ to detach the guide rail B⑭.
4. Remove the two screws ⑮ and two screws ⑯ and the plate-FG(Centro)⑰, then demount the SWA board ⑱.

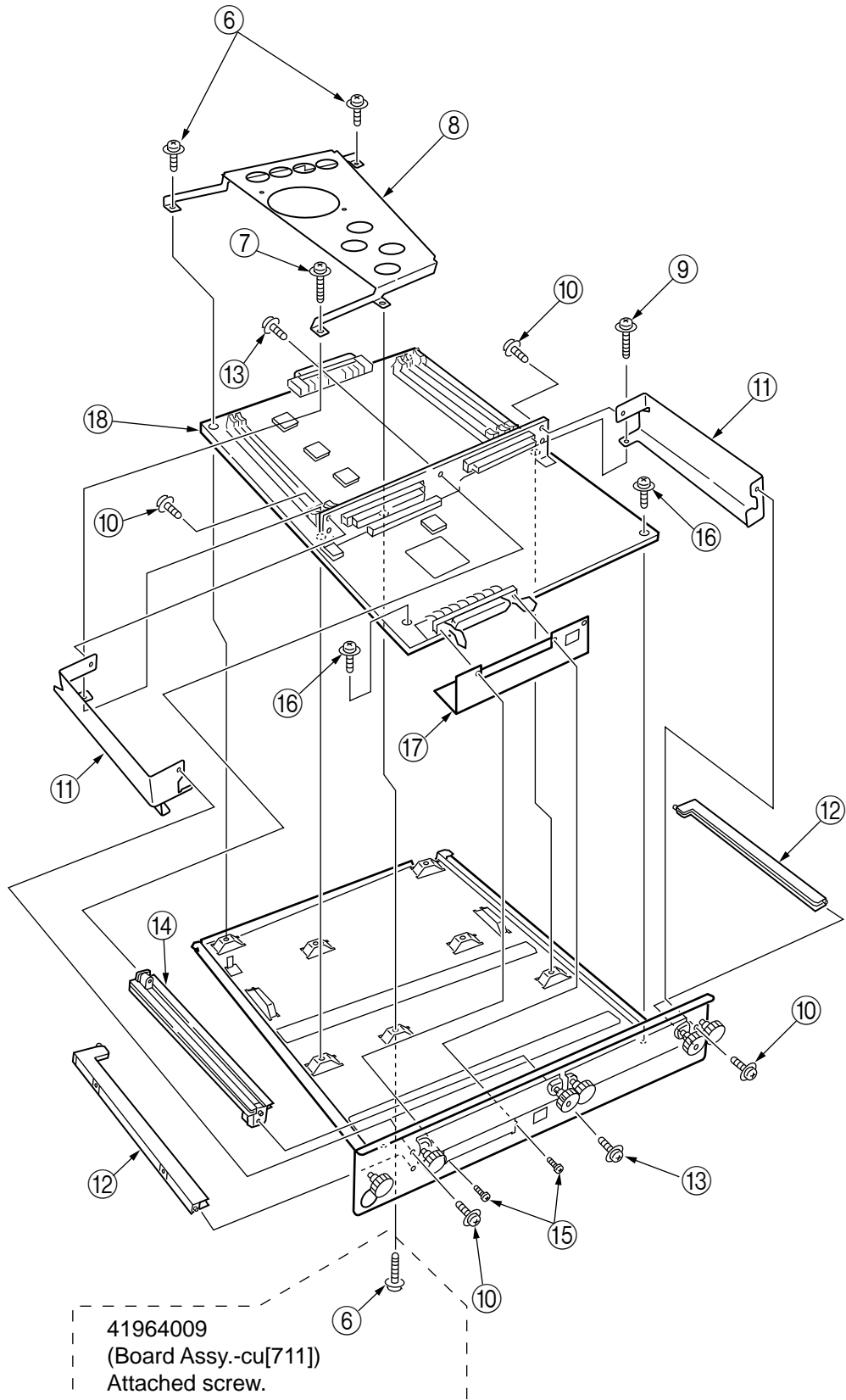


Figure 3-3-47 CU Assy (2/2)



## 4. ADJUSTMENT

This device is adjusted by key input from the operator panel.

Other than the general menu, this device supports a maintenance menu. Select the menu that matches your objective.

### 4.0 System Maintenance MENU

The printer enters this mode when you turn on the power supply switch while holding down the [Menu]+[Item]+[Value]+[Cancel] (0+1+6+7)switches.

**Note:** This menu is not disclosed to end-users because changes can be made to brand/destination, etc.

Table 4-0 (1/2) Maintenance Menu display Table

Category	Item(1st Line)	Value(2nd Line)	DF	Functions
OKIUSER	OKIUSER	ODA OEL APS JP1 JPOEM1 OEMA OEML	*	Sets Brand JPOEM1: Japan OEM OEMA: Overseas OEM for A4 default OEML: Overseas OEM for Letter default Boots up automatically when the Menu is existed.
CONFIGURATION MENU	ENGINE SPEED	HIGH LOW	*	For swithing the engine speed between the overseas 16/24PPM model and the 20/24PPM model. (Valid only for PX711 600dpi Head) HIGH: 20/24PPM model (C7300) LOW : 16/24PPM model (C7100) Reboots automatically as the menu is exited.  note: This function for PX713 is ignored.
	HIGH RESOLUTION	ENABLE DISABLE	*	Not used. note: Don't change the setting value.
ENG STATUS PRINT	ENG STATUS PRINT	EXECUTE		Selecting by the Select switch, then pressing the On-line switch will prompt initialization and printing Engine information.
TEST PRINT MENU	TEST PRINT MENU	ENABLE DISABLE	*	Switches ENABLE and DISABLE to display the TEST PRINT MENU category in the User Menu. ( See "ID Check Pattern" section. )
PAGE CNT PRINT	PAGE CNT PRINT	ENABLE DISABLE	*	Sets printing or not printing the total page count in PRINT MENU MAP.
PERSONALITY	PCL	ENABLE DISABLE	*	Cange the default PDL for each brand.
	IBM PPR III XL	ENABLE DISABLE	*	PDLs that are disabled in this Menu will not be displayed on User Menu or Adomin Menu's PERSONALITY.
	EPSON FX	ENABLE DISABLE	*	When print data in the PDL language set to DISABLE is received, the printer will display INVALID DATA and discard received data. (HP-GL/2 is under development, and there is no plan to implement as yet in the product. )
	Adobe Postscript	ENABLE DISABLE	*	The PDF function requires Adobe Postscript; thus, switching ON/OFF of PDF alone is disabled.
	HP-GL/2	ENABLE DISABLE	*	(Setting Adobe Postscript on DISABLE will set the PDF function to DISABLE as well. )
	PCL XL	ENABLE DISABLE	*	On the PX711/713, neither Adobe Postscript nor PDF can be set to DISABLE. (They are to be always set to ENABLE for use. Even if they are set to DISABLE, the printer processes the data it receives. This item is incorporated only in the menu ahead of time for future extension. )
	PDF	ENABLE DISABLE	*	

Table 4-0 (2/2) Maintenance Menu display Table

Category	Item(1st Line)	Value(2nd Line)	DF	Functions
NETWORK				The details depend on Network. ( Not used )
DIAGNOSTIC MODE XX.XX.XX				Enters engine self-diagnostic mode. The display in place of xx.xx varies among the PU version. (The display within this category depends on the Engine Maintenance specs.)

Switch operations and LCD displays in Engine Self-diagnostic Mode depend on the instructions from the Engine F/W; hence, they are different from the operation spec in the Controller F/W.

Engine Self-diagnostic Mode is executable even if the Controller board is removed.

For details, see the Engine Unit spec as needed.

#### 4.0.1 ID Check Pattern Printing ( " TEST PRINT MENU " item )

This pattern can be used for the cause investigation (specifying of color(C,M,Y,K) of the problem item, the confirmation of the periodicity) of the following problem that it originated in ID, the LED head. It is composed of CMYK color 20% duty each of the patterns (print 2 pages).

Operation: (Press switch)

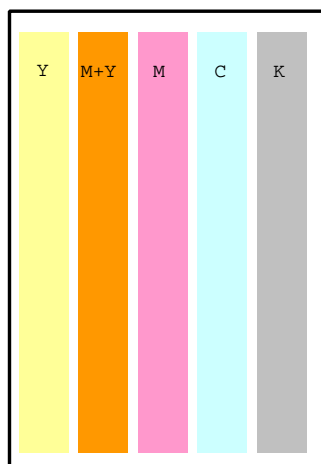
Without HDD: "0" - "0" - "3" - "3"

With HDD : "0" - "0" - "0" - "3" - "3"

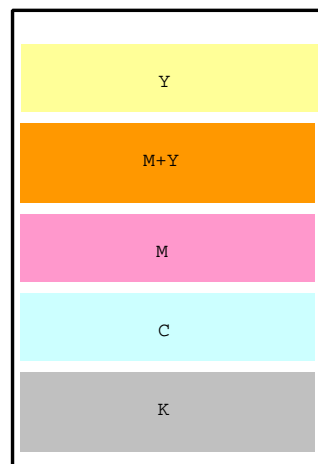
- Vertical Black/White Lines
- Vertical Black/White Bands
- Horizontal Black/White Lines
- Horizontal Black/White Bands

Print pattern:

Page.1



Page.2



## 4.1 Maintenance Mode and Functions

### 4.1.1 Maintenance menu

A maintenance menu category is located in the general menu category.  
The following items are those that can be set with this menu.

## Maintenance Menu

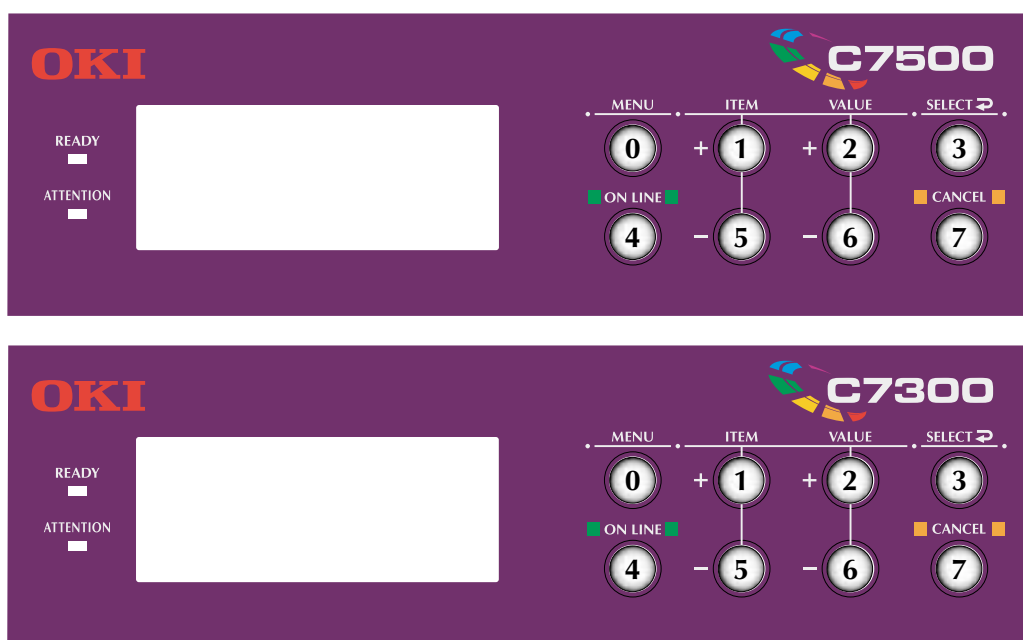
Category	Item(1st Line)	Value(2nd Line)	DF	Functions
MAINTENANCE MENU	EEPROM reset	EXECUTE	*	Resets EEPROM for CU.
	SAVE MENU Save menu setting	EXECUTE	*	Saves current menu setting. A message asking Are you sure? and a choice of YES/NO will appear.
	RESTORE MENU Return to saved menu setting	EXECUTE	*	Changes setting to the stored menu setting. (Displayed only when a menu setting is stored.) <i>NOTE:</i> Stored in CU Flash (directly attached). In HDD if HDD exists.
	POWER SAVE Power save function	Enabled Disabled	*	Enables or disables the power save mode. The time to switch to Power Save Enable can be changed with the Power Save Delay Time Item in the System Configuration Menu.
	Normal paper black setting	0 +1 +2 -2 -1	*	Normal Paper/Black Print Used for fine adjustment when scratches or dots are notable on print results. Decrement if the highly-dense print portion seems dispersed or scattered with white dust. Increment if the print result seems faint.
	Normal paper color setting	0 +1 +2 -2 -1	*	Normal Paper/Color Print Used for fine adjustment when scratches or dots are notable on print results. Decrement if the highly-dense print portion seems dispersed or scattered with white dust. Increment if the print result seems faint.
	OHP paper black setting	0 +1 +2 -2 -1	*	OHP/Black Print Used for fine adjustment when scratches or dots are notable on print results. Decrement if the highly-dense print portion seems dispersed or scattered with white dust. Increment if the print result seems faint.
	OHP paper color setting	0 +1 +2 -2 -1	*	OHP/Color Print Used for fine adjustment when scratches or dots are notable on print results. Decrement if the highly-dense print portion seems dispersed or scattered with white dust. Increment if the print result seems faint.

#### 4.1.2 Engine maintenance mode

Three modes from Level 1 to Level 3 are in the engine maintenance mode. Level 1 is a mode that checks the media transport and basic movement of the print system. Level 2 checks the counter for consumables and tests the correcting function of color displacement, and is a mode that does not require special knowledge. Level 3, on the other hand, requires special knowledge for handling the process parameter setting and is contained in the independent experimental element of PU. Basically, levels other than Level 1 should not be used.

##### 4.1.2.1 Operator panel

The description for operations related to self-diagnosis is made presuming the arrangement of the operator panel shown below.



##### 4.1.2.2 Normal self-diagnostic mode (Level 1)

Items in the normal self-diagnostic mode menu are listed below.

- Switch scan test
- Motor & clutch test
- Executing test pattern
- NVM initialization
- Consumables counter display
- Consumables continuation counter display

#### 4.1.2.2.1 Entering self-diagnostic mode (Level 1)

1. The system maintenance menu mode is entered by turning the power ON while pressing the ①, ②, ③, and ④ keys simultaneously.
2. Press the ① key several times until [DIAGNOSTIC MODE] is displayed.

DIAGNOSTIC MODE	
XX.XX.XX	FACTORY/SHIPPING

3. The [XX.XX.XX] in [DISGNOSTIC MODE XX.XX.XX] that is displayed in the LCD display is the ROM version. The set value for FACTORY WORKING MODE is displayed in the right side of the bottom line. [SHIPPING] is normally set.
4. Proceed to each self-diagnosis step by pressing the ① or ⑤ key.  
(The menu item rotates by pressing the ①, ⑤ key.)

#### 4.1.2.2.2 Exiting the self-diagnostic mode

1. Turn the power OFF, then turn it on after ten seconds.

#### 4.1.2.3 Switch scan test

This self-diagnosis is used for checking the input sensor and switch.

1. Press the ① and ⑤ keys until the normal diagnostic mode is entered and [SWITCH SCAN] is displayed on the top line.  
(Key ① increments the test item and Key ⑤ decrements the test item.)

SWITCH SCAN

2. Press the ② and ⑥ keys until the SCAN number that corresponds to the unit subject to the following test listed in Table4-1. (Key ② increments the item and Key ⑥ decrements the item.)

SWITCH SCAN 00
1=H 2=L 3=H 4=L

3. The test starts by pressing the ③ key. The SWITCH SCAN number begins to blink and the number of the corresponding unit (1-4) is displayed along with the current status. Manipulate each unit (Fig 4-1). The items are displayed in the LCD that corresponds to each item. (The display differs for each sensor. See Table 4-1 for details.)
4. The SWITCH SCAN number reappears in the display status (blinking ceased) by pressing the ⑦ key.
5. Repeat Steps 2 to 4 as required.
6. Press the ④ key to end the test. (Status returns to that described in 1.)

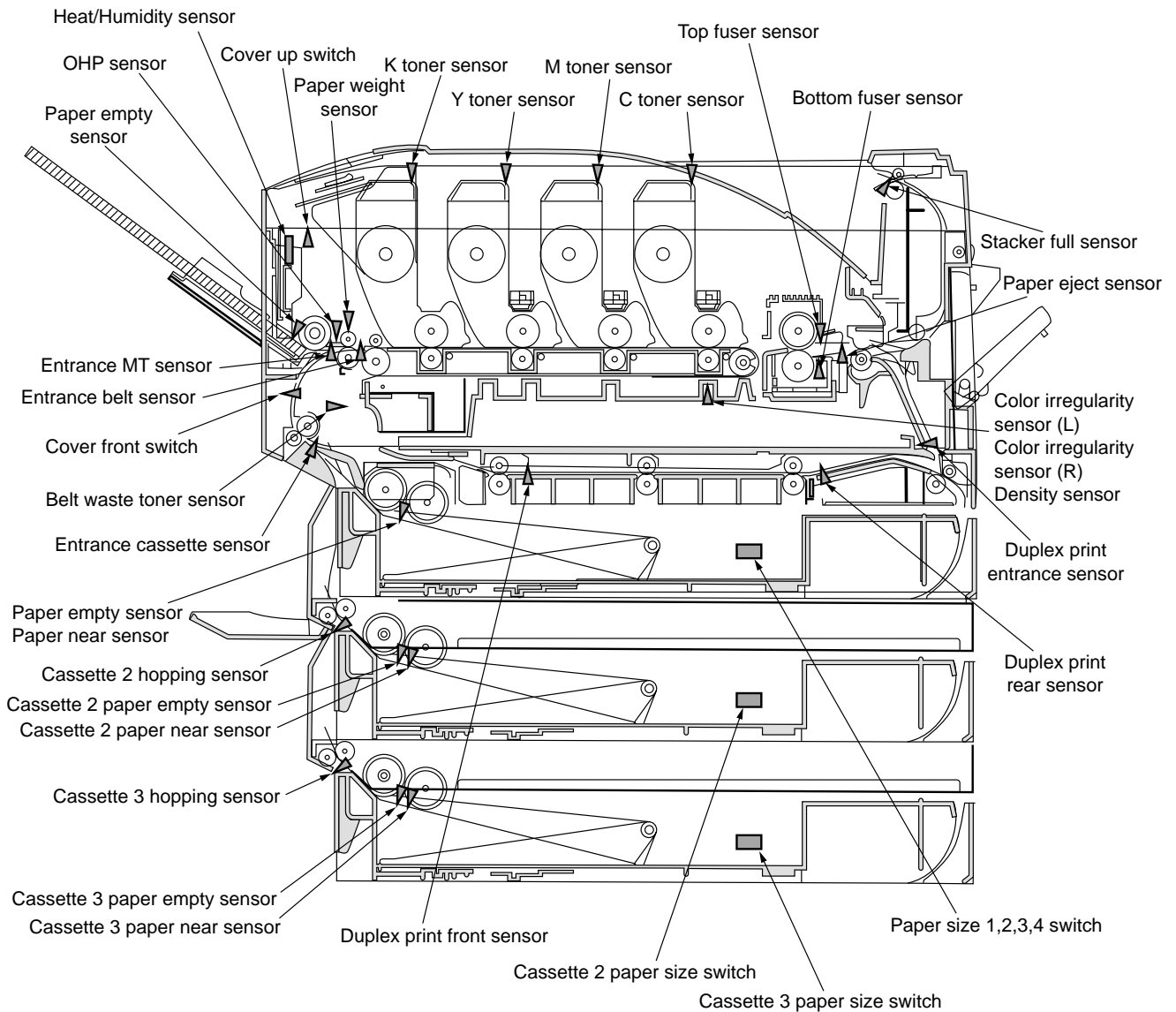


Figure 4-1 Switch Sensor Position

Table 4-1 SWITCH SCAN Details

SCAN ROW	NUMBER							
	1	Display	2	Display	3	Display	4	Display
SWITCH SCAN 00	Cassette 1 paper end sensor	Port level H,L	Cassette 1 paper near end sensor	Port level H,L	Entrance cassette sensor	Port level H,L	Entrance MT sensor	Port level H,L
SWITCH SCAN 01	Entrance belt sensor	Port level H,L	Eject sensor	Port level H,L	Stacker full sensor	Port level H,L	Belt waste toner	Port level H,L
SWITCH SCAN 02	K toner sensor	Port level H,L	C toner sensor	Port level H,L	M toner sensor	Port level H,L	Y toner sensor	Port level H,L
SWITCH SCAN 03	Upper cover SW	Port level H,L	Front cover SW	Port level H,L	-	-	-	-
SWITCH SCAN 04	-	-	-	-	-	-	-	-
SWITCH SCAN 05	-	-	-	-	-	-	-	-
SWITCH SCAN 06	MT hop switch	Port level H,L	MT paper empty SW	Port level H,L	-	-	OHP sensor	Port level H,L
SWITCH SCAN 07 (See Table 4-2)	Cassette 1 paper size SW	Port level H,L	Cassette 1 paper size 2 SW	Port level H,L	Cassette 1 paper size 3 SW	Port level H,L	Cassette 1 paper size 4 SW	Port level H,L
SWITCH SCAN 08	Color irregularity sensor	AD value ***H	Color displacement sensor (R)	AD value ***H	Density sensor	AD value ***H	Paper weight sensor	AD value ***H
SWITCH SCAN 09	Center sensor above fuser	AD value ***H	-	-	Center sensor below fuser	AD value ***H	-	-
SWITCH SCAN 10	Humidity sensor	AD value ***H	Temperature sensor	AD value ***H	-	-	-	-
SWITCH SCAN 11 (Option)	Duplex print entrance sensor	Port level H,L	Duplex print rear sensor	Port level H,L	-	-	Duplex print front sensor	Port level H,L
SWITCH SCAN 12 (Option)	Cassette 2 paper size 1 SW	Port level H,L	Cassette 2 paper size 2 SW	Port level H,L	Cassette 2 paper size 3 SW	Port level H,L	Cassette 2 paper size 4 SW	Port level H,L
SWITCH SCAN 13 (Option)	Cassette 2 paper empty sensor	Port level H,L	Cassette paper near end sensor	Port level H,L	-	-	-	-
SWITCH SCAN 14 (Option)	-	-	-	-	Cassette 2 hopping sensor (paper feed)	Port level H,L	-	-
SWITCH SCAN 15 (Option)	Cassette 3 paper size 1 SW	Port level H,L	Cassette 3 paper size 2 SW	Port level H,L	Cassette 3 paper size 3 SW	Port level H,L	Cassette 3 paper size 4 SW	Port level H,L
SWITCH SCAN 16 (Option)	Cassette 3 paper empty sensor	Port level H,L	Cassette 3 paper near end sensor	Port level H,L	-	-	-	-
SWITCH SCAN 17 (Option)	-	-	-	-	Cassette 3 hopping sensor (paper feed)	Port level H,L	-	-
SWITCH SCAN 24	Black head temperature	AD value ***H	Yellow head temperature	AD value ***H	Magenta head temperature	AD value ***H	Cyan head temperature	AD value ***H
SWITCH SCAN 25	Black ID up/down sensor	Port level H,L	Yellow ID up/down sensor	Port level H,L	Magenta ID up/down sensor	Port level H,L	Cyan ID up/down sensor	Port level H,L

Table 4-2 Paper Size Detection - Paper /Bit Correspondence Table

No.	Paper	1	2	3	4
[0]	No cassette	H	H	H	H
[1]	Letter-S	L	L	L	L
[2]	Legal13-S	H	L	H	H
[3]	A4-S	L	L	L	H
[4]	B5-S	L	L	H	H
[5]	Executive-S	L	L	H	L
[6]	A6-S	H	L	L	L
[7]	Not supported	—	—	—	—
[8]	Legal14-S	H	L	H	L
[9]	Not supported	—	—	—	—
[A]	Not supported	—	—	—	—
[B]	Not supported	—	—	—	—
[C]	A5-S	H	L	L	H
[D]	Not supported	—	—	—	—
[E]	Not supported	—	—	—	—
[F]	Not supported	—	—	—	—



#### 4.1.2.4 Motor clutch test

This self-diagnostic routine is used to test the motor and clutch.

1. Press the ① and ⑤ keys until the self-diagnostic (Level 1) mode is entered and [MOTOR & CLUTCH TEST] is displayed in the top line. (Key ① increments the test item and Key ⑤ decrements the test item.)
2. Press the ② and ⑥ keys until the section that corresponds to the unit subject to the next test in Table 4-2 is displayed in the top line of the display. (Key ② increments the item and Key ⑥ decrements the item.)

MOTOR & CLUTCH TEST
BLACK - ID MOTOR

3. The test starts by pressing the ③ key. The name of the unit begins to blink and the corresponding unit drives for 10 seconds. (See Fig 4-3.)

**Note:** The status returns to that described in 2 after driving 10 seconds, and the unit will start driving again by pressing the corresponding switch.

- The drive control conditions listed in Table 4-2 must be fulfilled in order to drive the corresponding unit. A unit cannot be driven without fulfilling the conditions, and if attempted, instructions will appear in the bottom display line.
  - For clutch solenoid, ON and OFF is repeated for normal print drive. (For those that cannot be driven independently due to their mechanism, drive with the motor.)
4. A driving unit is stopped by pressing the ⑦ key. (The display of the corresponding unit is maintained.)
  5. Repeat Steps 2 to 4 as required.
  6. Press the ④ key to end the test. (Status returns to that described in 1.)

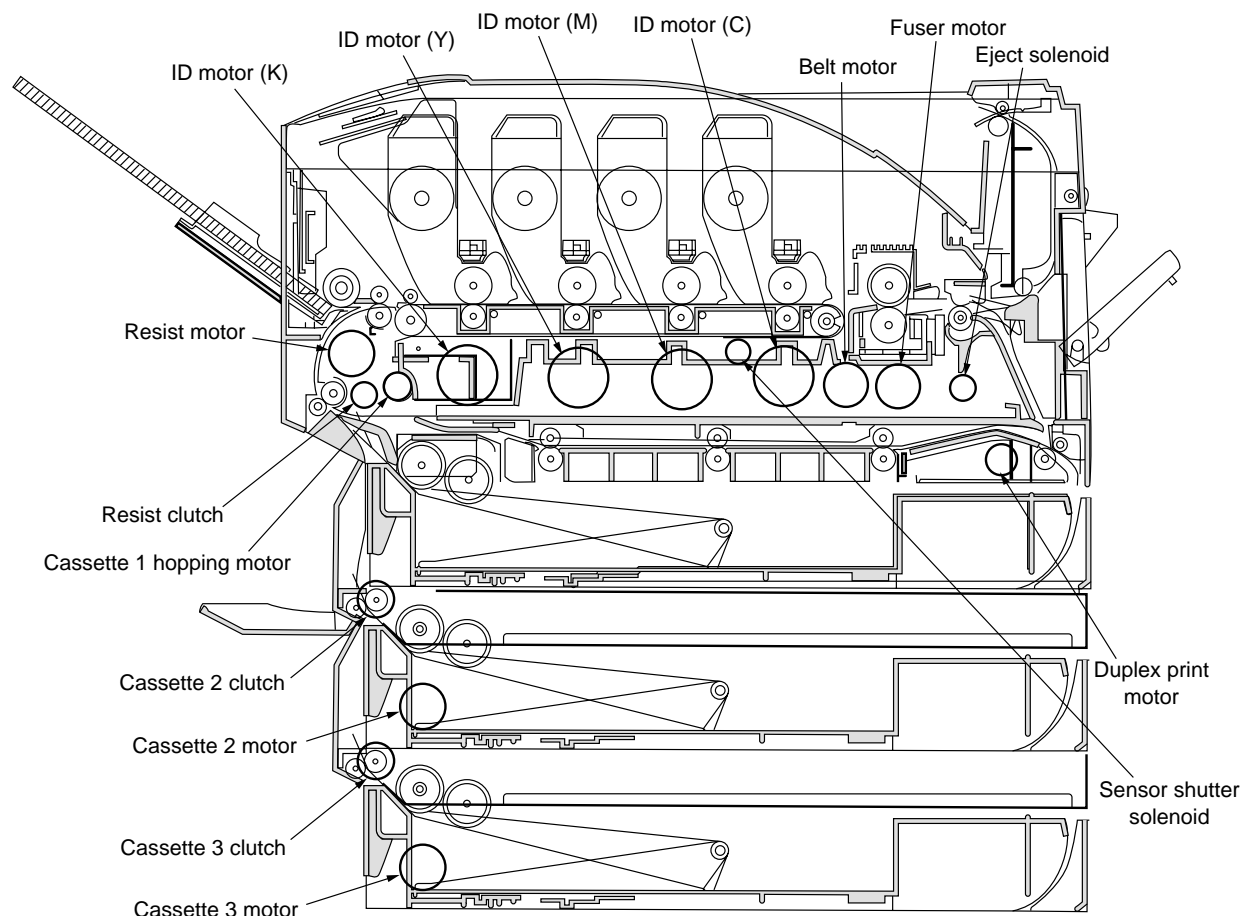


Figure 4-3

Table 4-2

Displayed Unit	Drive Restrictions	Restriction Display
ID motor (black)	Drive by removing all ID (yellow/black/magenta/cyan).	Remove ID
ID motor (yellow)		
ID motor (magenta)		
ID motor (cyan)		
Belt motor		
Fuser motor	-	-
Resist motor	-	-
Cassette 1 hopping motor	Drive by removing Cassette 1.	Remove Cassette 1
Resister clutch	-	-
Sensor shutter solenoid	-	-
Eject solenoid	-	-
Duplex print motor (option)	-	-
Duplex print clutch (option)	-	-
Cassette 2 motor (option)	Drive by removing Cassette 2.	Remove Cassette 2
Cassette 2 roller clutch (option)	-	-
Cassette 3 feeder motor (option)	Drive by removing Cassette 3.	Remove Cassette 3
Cassette 3 roller clutch (option)	-	-
ID UP/DOWN	-	-
FAN1 TEST (Power Source Fan)	-	-
FAN2 TEST (Control Unit Fan)	-	-


#### 4.1.2.5 Test print

This self-diagnostic routine is used to print the test patterns in the PU. The other test patterns are stored in the controller.

1. Press the ① and ⑤ keys until the self-diagnostic (Level 1) mode is entered and [TEST PRINT] is displayed in the top line. (Key ① increments the test item and Key ⑤ decrements the test item.)
2. The bottom line displays the setup items applied only for test print. Press the ② and ⑥ keys until the corresponding item is displayed. (Key ② increments the item and Key ⑥ decrements the item.)
3. When the ③ and ⑦ keys are pressed, the setup items appear in the top line and set values appear in the bottom line. The set value increments by pressing the ③ key and decrements by pressing the ⑦ key. (The value that is set at the end will be applied.) Repeat Step 3 as required.

TEST PATTERN
1

Display	Set Value	Function
PRINT EXECUTE	—	Press Key ③ to start print. / Press Key ⑦ to end print. (In page unit.)
TEST PATTERN	0	0: empty page 1-7: Refer to the following page (pattern print). 8-15: empty page
CASSET	TRAY1 TRAY2 TRAY3 FF	Set paper feed source.
PAGE	0000	Set number of pages to test print.
COLOR	ON OFF	Select color or monochrome.
DUPLEX	2 PAGES STACK OFF 1PAGES STACK	Perform duplex print with 2-page stack. Set duplex print to OFF. Perform duplex print with 1-page stack.

-  is the default. The set items are valid only in this test mode. (They will not be written in EEPROM.)

**Note:** Page setting: Key ① or ⑤ shifts the digits.

Color setting: The following indications appear in the panel when Key ① or ⑤ is pressed when set to [ON].

Print setting for each color:

Shifts by pressing Key ① or ⑤.

Switch between [ON] and [OFF] is set by pressing Key ③ or ⑦.

Panel indication returns by pressing Key ② or ⑥.

COLOR
Y:ON M:ON C:ON K:ON

4. Test print will be executed under the values set in Steps 2 and 3 by pressing the ③ key when [PRINT EXECUTE] is displayed in the bottom row of the display.

Press the ⑦ key to stop the test print.

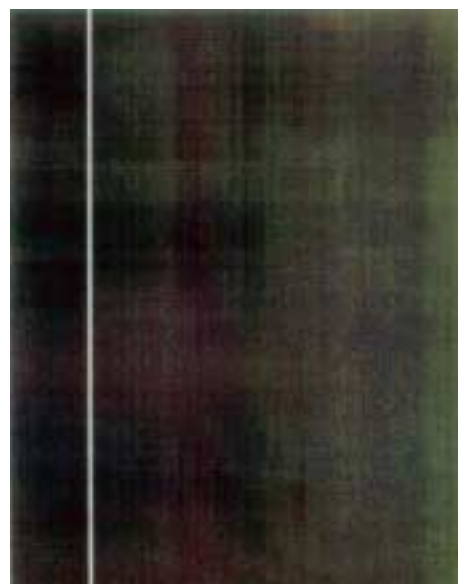
When an alarm indicated under Details in the table is detected at the start of test print or during test print, a message will appear in the panel display and the print operation will be interrupted. (Refer to “4.1.2.9 Panel display details” for details on errors.)

Print pattern

0, 8-15: Empty print



Pattern 1



Pattern 2



Pattern 3



Pattern 4



Pattern 5



Pattern 6



Pattern 7

- The following messages appear during print operation.

P=*** T=*** U=*** [ ### ]
H=***% L=*** [ ### ]

P: No. of test print pages (unit: page)  
 U: Temperature of top heater [Set value] (unit: Celsius)  
 L: Temperature of bottom heater [Set value] (unit: Celsius)  
 T: Environment temperature (unit: Celsius)  
 H: Environment humidity (unit: percent)

- The display changes by pressing the ③ key.

KTR=* . **KV YTR=* . **KV
MTR=* . **KV CTR=* . **KV

YTR, MTR, CTR, KTR are values of the set transfer voltage. (unit: KV)

- The display changes by pressing the ③ key.

KR=* . **KV YR=* . **KV
MR=* . **KV CR=* . **KV

YR, MR, CR, KR are transfer rollers of each color values of the set transfer voltage. (unit: KV)

5. Repeat Steps 2 to 4 as required.
6. Press the ④ key to end the test. (Status returns to that described in 1.)

#### 4.1.2.6 Initializing NVM

This self-diagnosis is used for initializing non-volatile memory.

1. Press the ① and ⑤ keys until the self-diagnostic (Level 1) mode is entered and [NV-RAM INITIAL] is displayed in the top line. (Key ① increments the item and Key ⑤ decrements the item.)
2. The bottom line displays the table number subject to initialization. There are three tables to initialize. Press the ② and ⑥ keys until the corresponding table number is displayed. (Key ② increments the table number and Key ⑥ decrements the table number.)

**Note:** Do not use Table 2.

NV-RAM INITIAL
TABLE 1

3. The [NV-RAM INITIAL] display blinks when the ③ key is pressed and all items in Table 4-3 will be initialized by pressing the key for 10 seconds continuously.
4. Press the ④ key to end the test. (Status returns to that described in 1.)

Table 4-3 (1/2) Items to Initialize in Table 2

Item to Initialize		Details	Initial Value	Unit
Drum counter	Black Yellow Magenta Cyan	Initialize internal counter since exchanging the drum.	0	-
Belt unit counter		Initialize internal counter since exchanging the belt unit.	0	-
Fuser unit counter		Initialize internal counter since exchanging the fuser unit.	0	-
Toner counter	Black Yellow Magenta Cyan	Initialize internal counter since recovering the toner error.	0	-

Table 4-3 (2/2) Items to Initialize in Table 2

Item to Initialize		Details	Initial Value	Unit
Color irregularity adjust point X axis	Yellow Magenta Cyan	Initialize X axis correction value for the LED head (yellow, magenta, cyan).	0	1/1200 inch
Color irregularity adjust point Y axis (L)	Yellow Magenta Cyan	Initialize Y axis (L) correction value for the LED head (yellow, magenta, cyan).	0	1/1200 inch
Color irregularity adjust point Y axis (R)	Yellow Magenta Cyan	Initialize Y axis (R) correction value for the LED head (yellow, magenta, cyan).	0	1/1200 inch
Engine parameter		Initialize all items set in Level 2 and 3 in the engine maintenance mode.		

#### 4.1.2.7 Displaying the consumables counter

This self-diagnosis is used for displaying the consumed status of consumables.

1. Press the ① and ⑤ keys until the normal self-diagnostic mode is entered and [CONSUMABLE STATUS] is displayed in the top line. (Key ① increments the item and Key ⑤ decrements the item.)
2. The consumed status of consumables is displayed by pressing the ② and ⑥ keys. (Keys ③ and ⑦ are invalid.)
3. Press the ④ key to end the test. (Status returns to that described in 1.)

Item	Top Display	Bottom Display	Format	Unit	Details
Fuser unit	FUSER UNIT	***** PRINTS	Decimal system	Printed sheets	Displays number of pages since installing a new fuser.
Belt unit	TR BELT UNIT	***** PRINTS	Decimal system	Printed sheets	Displays number of pages since installing a new drum unit.
ID unit - black	BLACK ID UNIT	***** IMAGES	Decimal system	Printed sheets	Displays number of rotations by converting to A4 3Page/Job since installing a new ID unit.
ID unit - yellow	YELLOW ID UNIT	***** IMAGES	Decimal system	Printed sheets	
ID unit - magenta	MAGENTA ID UNIT	***** IMAGES	Decimal system	Printed sheets	
ID unit - cyan	CYAN ID UNIT	***** IMAGES	Decimal system	Printed sheets	
Toner - black	BLACK TONER	***%	Decimal system	%	Displays amount of color toner used.
Toner - yellow	YELLOW TONER	***%	Decimal system	%	
Toner - magenta	MAGENTA TONER	***%	Decimal system	%	
Toner - cyan	CYAN TONER	***%	Decimal system	%	

#### 4.1.2.8 Displaying the consumables continuation counter

This self-diagnosis is used for displaying the continuous status of a consumable.

Continuous status of a consumable is the total count of a consumable that is not initialized even upon being replaced. The consumed amount is counted continuously.

1. Press the ① and ⑤ keys until the normal self-diagnostic mode is entered and the continuous status of a consumable is displayed in the top line. (Key ① increments the item and Key ⑤ decrements the item.)
2. The total consumed amount of a consumable is displayed by pressing the ② and ⑥ keys. (Keys ③ and ⑦ are invalid.)
3. Press the ④ key to end the test. (Status returns to that described in 1.)

Item	Top Display	Bottom Display	Format	Unit	Details
Total sheets fed	TOTAL SHEETS FEED	***** PRINTS	Decimal system	Printed sheets	Total number of fed sheets including passed paper.
Print - black	BLACK IMPRESSIONS	***** IMAGES	Decimal system	Printed sheets	Displays number of printed sheets for each color ID.
Print - yellow	YELLOW IMPRESSIONS	***** IMAGES	Decimal system	Printed sheets	
Print - magenta	MAGENTA IMPRESSIONS	***** IMAGES	Decimal system	Printed sheets	
Print - cyan	CYAN IMPRESSIONS	***** IMAGES	Decimal system	Printed sheets	



#### 4.1.2.9 Panel display details

##### Panel display

Panel Display	Details
BLANCE ERROR	Balance error
BELT LIFE OVER	Belt life over
BELT REFLECTION ERROR	Belt reflection error
BELT UNIT FUSE CUT ERROR	Belt unit fuse cut error
BLACK DENSITY CALIB ERROR	Black density calibration error
BLACK DENSITY SENSOR ERROR	Black density sensor error
BLACK DRUM LIFE OVER	Black drum life over
BLACK DRUM NEAR LIFE	Black drum life warning
BLACK DRUM UNIT FUSE CUT ERROR	Black drum unit fuse cut error
BLACK DRUM UP/DOWN ERROR	Black drum up/down error
BLACK IRREGULAR ERROR	Black detect range out error
BLACK LED HEAD ERROR	Black LED head error
BLACK REGISTRATION ERROR(PX711)	Black irregularity error
BLACK REGISTRATION OUT HORIZONTAL	Abnormal color irregularity registration value detected in black sub-scan registration
BLACK REGISTRATION OUT LEFT	Black registration range out error (left)
BLACK REGISTRATION OUT RIGHT	Black registration range out error (right)
BLACK SENSOR ERROR LEFT	Black left sensor error
BLACK SENSOR ERROR RIGHT	Black right sensor error
BLACK TONER EMPTY	Black toner empty
BLACK TONER LOW	Black toner low
BLACK TONER SENSOR ERROR	Black toner sensor error
BLACK ID DENSITY ERROR 1	Black ID density error 1
BLACK ID DENSITY ERROR 2	Black ID density error 2
CALIBRATION CHIP ERROR	CALIBRATION CHIP ERROR
CALIBRATION ERROR	CALIBRATION ERROR
COLOR DENSITY CALIB ERROR	COLOR DENSITY CALIB ERROR
COLOR DENSITY SENSOR ERROR	COLOR DENSITY SENSOR ERROR
COOLING DOWN	COOLING DOWN
CUSTOM DIAGNOSTICS MODE	CUSTOM DIAGNOSTICS MODE
CYAN DRUM LIFE OVER	CYAN DRUM LIFE OVER
CYAN DRUM NEAR LIFE	CYAN DRUM NEAR LIFE
CYAN DRUM UNIT FUSE CUT ERROR	CYAN DRUM UNIT FUSE CUT ERROR
CYAN DRUM UP/DOWN ERROR	CYAN DRUM UP/DOWN ERROR
CYAN IRREGULAR ERROR	CYAN DETECT VALUE ERROR
CYAN LED HEAD ERROR	CYAN LED HEAD ERROR
CYAN REGISTRATION ERROR	CYAN COLOR IRREGULARITY ERROR
CYAN REGISTRATION OUT HORIZONTAL	Abnormal color irregularity registration value detected in cyan sub-scan registration
CYAN REGISTRATION OUT LEFT	CYAN REGISTRATION OUT LEFT
CYAN REGISTRATION OUT RIGHT	CYAN REGISTRATION OUT RIGHT
CYAN SENSOR ERROR LEFT	CYAN SENSOR ERROR LEFT
CYAN SENSOR ERROR RIGHT	CYAN SENSOR ERROR RIGHT
CYAN TONER EMPTY	CYAN TONER EMPTY
CYAN TONER LOW	CYAN TONER LOW
CYAN TONER SENSOR ERROR	CYAN TONER SENSOR ERROR
CYAN ID DENSITY ERROR 1	CYAN ID DENSITY ERROR 1
CYAN ID DENSITY ERROR 2	CYAN ID DENSITY ERROR 2
DIAGNOSTICS MODE	DIAGNOSTICS MODE
DISPOSAL TONER FULL	DISPOSAL TONER FULL
DISPOSAL TONER NEAR FULL	DISPOSAL TONER NEAR FULL

Panel Display	Details
DRIVE MOTOR OVER HEAT	DRIVE MOTOR OVER HEAT
DUPLEX I/F ERROR	DUPLEX I/F ERROR
DUPLEX TYPE MISMATCH	DUPLEX TYPE MISMATCH
DUPLEX UNIT OPEN(PX713)	DUPLEX UNIT OPEN(PX713)
ENGINE BOARD FAN MOTOR ERROR	ENGINE BOARD FAN MOTOR ERROR
ENGINE CONTROL ERROR	ENGINE CONTROL ERROR
ENGINE EEPROM ERROR	ENGINE EEPROM ERROR
ENGINE EEPROM MISSING	ENGINE EEPROM MISSING
ENGINE LIFE OVER	ENGINE LIFE OVER
ENGINE RAM ERROR	ENGINE RAM ERROR
ENGINE ROM ERROR	ENGINE ROM ERROR
ENGINE SRAM ERROR	ENGINE SRAM ERROR
ENV TEMP SENSOR ERROR	ENV TEMP SENSOR ERROR
FACE-UP STACKER OPEN	FACE-UP STACKER OPEN
FLASH HARDWARE ERROR	FLASH HARDWARE ERROR
FLASH SOFTWARE ERROR	FLASH SOFTWARE ERROR
FRONT COVER OPEN(PX711)	FRONT COVER OPEN(PX711)
FUSER LIFE OVER	FUSER LIFE OVER
FUSER UNIT FAN MOTOR ERROR	FUSER UNIT FAN MOTOR ERROR
FUSER UNIT FUSE CUT ERROR	FUSER UNIT FUSE CUT ERROR
FUSER UNIT MISMATCH	FUSER UNIT MISMATCH
HOPPING ERROR DUPLEX	HOPPING ERROR DUPLEX
HOPPING ERROR MULTI PURPOSE FEEDER	HOPPING ERROR MULTI PURPOSE FEEDER
HOPPING ERROR TRAY1	HOPPING ERROR TRAY1
HOPPING ERROR TRAY2	HOPPING ERROR TRAY2
HOPPING ERROR TRAY3	HOPPING ERROR TRAY3
HOPPING ERROR TRAY4	HOPPING ERROR TRAY4
HOPPING ERROR TRAY5	HOPPING ERROR TRAY5
HUMIDITY SENSOR DEW ERROR	HUMIDITY SENSOR DEW ERROR
HUMIDITY SENSOR ERROR	HUMIDITY SENSOR ERROR
INFEED:DUPLEX	Duplex hopping error
INFEED:MP-FEEDER	MP feeder hopping error
INFEED:TRAY1	Tray 1 hopping error
INFEED:TRAY2	Tray 2 hopping error
INFEED:TRAY3	Tray 3 hopping error
INFEED:TRAY4	Tray 4 hopping error
INFEED:TRAY5	Tray 5 hopping error
INITIALIZING	Controlling initialization upon power ON
INITIALIZING	Controlling initialization upon cover open/close
INITIALIZING DENSITY ADJUST	Controlling adjustment of auto density
INITIALIZING REGISTRATION ADJUST	Controlling adjustment of auto color irregularity
INPATH:DUPLEX ENTRY	Duplex internal jam
INPATH:DUPLEX INPUT	Duplex transport jam
INPATH:DUPLEX REVERSAL	Duplex reversal unit jam
INPATH:EXIT	Ejection jam
INPATH:FEED	Feed jam
INPATH:TRANSPORT	Transport jam
JAM DUPLEX ENTRY	Duplex internal jam
JAM DUPLEX INPUT	Duplex transport jam
JAM DUPLEX REVERSAL	Duplex reversal unit jam
JAM EXIT	Ejection jam
JAM FEED	Feed jam

Panel Display	Details
JAM TRANSPORT	Transport jam
JOB OFFSET HOME ERROR(PX713)	JOB OFFSET HOME ERROR(PX713)
LED HEAD OVER HEAT	LED HEAD OVER HEAT
LIFT ERROR TRAY1(PX713)	LIFT ERROR TRAY1(PX713)
LIFT ERROR TRAY2(PX713)	LIFT ERROR TRAY2(PX713)
LIFT ERROR TRAY3(PX713)	LIFT ERROR TRAY3(PX713)
LIFT ERROR TRAY4(PX713)	LIFT ERROR TRAY4(PX713)
LIFT ERROR TRAY5(PX713)	LIFT ERROR TRAY5(PX713)
LIFT UP TRAY1(PX713)	LIFT UP TRAY1(PX713)
LIFT UP TRAY2(PX713)	LIFT UP TRAY2(PX713)
LIFT UP TRAY3(PX713)	LIFT UP TRAY3(PX713)
LIFT UP TRAY4(PX713)	LIFT UP TRAY4(PX713)
LIFT UP TRAY5(PX713)	LIFT UP TRAY5(PX713)
LOWER HEATER HIGH TEMPER	LOWER HEATER HIGH TEMPER
LOWER HEATER LOW TEMPER	LOWER HEATER LOW TEMPER
LOWER HEATER OPEN ERROR	LOWER HEATER OPEN ERROR
LOWER HEATER SHORT ERROR	LOWER HEATER SHORT ERROR
MAGENTA DRUM LIFE OVER	MAGENTA DRUM LIFE OVER
MAGENTA DRUM NEAR LIFE	MAGENTA DRUM NEAR LIFE
MAGENTA DRUM UNIT FUSE CUT ERROR	MAGENTA DRUM UNIT FUSE CUT ERROR
MAGENTA DRUM UP/DOWN ERROR	MAGENTA DRUM UP/DOWN ERROR
MAGENTA IRREGULAR ERROR	MAGENTA IRREGULAR ERROR
MAGENTA LED HEAD ERROR	MAGENTA LED HEAD ERROR
MAGENTA REGISTRATION ERROR	MAGENTA REGISTRATION ERROR
MAGENTA REGISTRATION OUT HORIZONTAL	Abnormal color irregularity registration value detected in magenta sub-scan registration
MAGENTA REGISTRATION OUT LEFT	MAGENTA REGISTRATION OUT LEFT
MAGENTA REGISTRATION OUT RIGHT	MAGENTA REGISTRATION OUT RIGHT
MAGENTA SENSOR ERROR LEFT	MAGENTA SENSOR ERROR LEFT
MAGENTA SENSOR ERROR RIGHT	MAGENTA SENSOR ERROR RIGHT
MAGENTA TONER EMPTY	MAGENTA TONER EMPTY
MAGENTA TONER LOW	MAGENTA TONER LOW
MAGENTA TONER SENSOR ERROR	MAGENTA TONER SENSOR ERROR
MAGENTA ID DENSITY ERROR 1	MAGENTA ID DENSITY ERROR 1
MAGENTA ID DENSITY ERROR 2	MAGENTA ID DENSITY ERROR 2
MAILBOX I/F ERROR(PX711)	MAILBOX I/F ERROR(PX711)
MISSING BELT UNIT	MISSING BELT UNIT
MISSING BLACK DRUM	MISSING BLACK DRUM
MISSING CYAN DRUM	MISSING CYAN DRUM
MISSING FUSER UNIT	MISSING FUSER UNIT
MISSING MAGENTA DRUM	MISSING MAGENTA DRUM
MISSING YELLOW DRUM	MISSING YELLOW DRUM
MULTI PURPOSE FEEDER STAGE POSITION	MULTI PURPOSE FEEDER STAGE POSITION
PAPER END MULTI PURPOSE FEEDER	PAPER END MULTI PURPOSE FEEDER
PAPER END TRAY1	PAPER END TRAY1
PAPER END TRAY2	PAPER END TRAY2
PAPER END TRAY3	PAPER END TRAY3
PAPER END TRAY4	PAPER END TRAY4
PAPER END TRAY5	PAPER END TRAY5
PAPER NEAR END MULTI PURPOSE FEEDER	PAPER NEAR END MULTI PURPOSE FEEDER
PAPER NEAR END TRAY1	PAPER NEAR END TRAY1
PAPER NEAR END TRAY2	PAPER NEAR END TRAY2
PAPER NEAR END TRAY3	PAPER NEAR END TRAY3

Panel Display	Details
PAPER NEAR END TRAY4	PAPER NEAR END TRAY4
PAPER NEAR END TRAY5	PAPER NEAR END TRAY5
PAPER PILE OUT OF TRAY	Paper transport error
PAPER SIZE ERROR	PAPER SIZE ERROR
POWER SUPPLY FAN MOTOR ERROR	PU fan motor error
POWER SUPPLY LSI ERROR	POWER SUPPLY LSI ERROR
PROCESS CONTROL OFF	PROCESS CONTROL OFF
PROCESS WAIT MODE	Adjusting color irregularity / density (upon starting from CU)
PUNCH BOX NOT EXISTING(PX713)	PUNCH BOX NOT EXISTING(PX713)
PUNCH DUST OVERFLOW(PX713)	PUNCH DUST OVERFLOW(PX713)
REGISTRATION SENSOR CALIBRATION ERROR	REGISTRATION SENSOR CALIBRATION ERROR
R-SIDE COVER OPEN(PX713)	R-SIDE COVER OPEN(PX713)
SHUTTER ERROR1	Density adjustment shutter error 1
SHUTTER ERROR2	Density adjustment shutter error 2
STACKER FULL BOTTOM BIN(PX713)	STACKER FULL BOTTOM BIN(PX713)
STACKER FULL FACE DOWN	STACKER FULL FACE DOWN
STACKER FULL MAIL BOX1(PX711)	STACKER FULL MAIL BOX1(PX711)
STACKER FULL MAIL BOX2(PX711)	STACKER FULL MAIL BOX2(PX711)
STACKER FULL TOP BIN(PX713)	STACKER FULL TOP BIN(PX713)
THICKNESS ADJUSTING	THICKNESS ADJUSTING
THICKNESS NON-PAPER AD ERROR	AD out of regulated value error (upon no media)
THICKNESS PAPER THICKNESS ERROR	Media thickness out of range error
THICKNESS SNS AD ERROR	Sensor output difference out of range error (upon no media)
THICKNESS THICK_PAPER ERROR	Speed adjustment error
TOP COVER OPEN	TOP COVER OPEN
TRAY1 TYPE MISMATCH	TRAY1 TYPE MISMATCH
TRAY2 COVER OPEN(PX713)	TRAY2 COVER OPEN(PX713)
TRAY2 I/F ERROR	TRAY2 I/F ERROR
TRAY2 TYPE MISMATCH	TRAY2 TYPE MISMATCH
TRAY3 COVER OPEN(PX713)	TRAY3 COVER OPEN(PX713)
TRAY3 I/F ERROR	TRAY3 I/F ERROR
TRAY3 TYPE MISMATCH	TRAY3 TYPE MISMATCH
TRAY4 COVER OPEN(PX713)	TRAY4 COVER OPEN(PX713)
TRAY4 I/F ERROR	TRAY4 I/F ERROR
TRAY4 TYPE MISMATCH	TRAY4 TYPE MISMATCH
TRAY5 COVER OPEN(PX713)	TRAY5 COVER OPEN(PX713)
TRAY5 I/F ERROR	TRAY5 I/F ERROR
TRAY5 TYPE MISMATCH	TRAY5 TYPE MISMATCH
UPPER HEATER HIGH TEMPER	UPPER HEATER HIGH TEMPER
UPPER HEATER LOW TEMPER	UPPER HEATER LOW TEMPER
UPPER HEATER OPEN ERROR	UPPER HEATER OPEN ERROR
UPPER HEATER SHORT ERROR	UPPER HEATER SHORT ERROR
WARMING UP	WARMING UP
YELLOW DRUM LIFE OVER	YELLOW DRUM LIFE OVER
YELLOW DRUM NEAR LIFE	YELLOW DRUM NEAR LIFE
YELLOW DRUM UNIT FUSE CUT ERROR	YELLOW DRUM UNIT FUSE CUT ERROR
YELLOW DRUM UP/DOWN ERROR	YELLOW DRUM UP/DOWN ERROR
YELLOW IRREGULAR ERROR	YELLOW IRREGULAR ERROR
YELLOW LED HEAD ERROR	YELLOW LED HEAD ERROR
YELLOW REGISTRATION ERROR	YELLOW REGISTRATION ERROR
YELLOW REGISTRATION OUT HORIZONTAL	Abnormal color irregularity registration value detected in magenta sub-scan registration
YELLOW REGISTRATION OUT LEFT	YELLOW REGISTRATION OUT LEFT

Panel Display	Details
CYAN REGISTRATION OUT RIGHT	CYAN REGISTRATION OUT RIGHT
CYAN SENSOR ERROR LEFT	CYAN SENSOR ERROR LEFT
CYAN SENSOR ERROR RIGHT	CYAN SENSOR ERROR RIGHT
CYAN TONER EMPTY	CYAN TONER EMPTY
CYAN TONER LOW	CYAN TONER LOW
CYAN TONER SENSOR ERROR	CYAN TONER SENSOR ERROR
CYAN ID DENSITY ERROR 1	CYAN ID DENSITY ERROR 1
CYAN ID DENSITY ERROR 2	CYAN ID DENSITY ERROR 2

#### Details of jam error display

Panel Display	Details
INFEED:TRAY1	Tray 1 hopping error
INFEED:TRAY2	Tray 2 hopping error
INFEED:TRAY3	Tray 3 hopping error
INFEED:TRAY4	Tray 4 hopping error
INFEED:TRAY5	Tray 5 hopping error
INFEED:MP-FEEDER	MP feeder hopping error
INFEED:DUPLEX	Duplex hopping error
INPATH:DUPLEX INPUT	Duplex transport jam
INPATH:DUPLEX ENTRY	Duplex internal jam
INPATH:REVERSAL	Duplex reversal unit jam
INPATH:FEED	Feed jam
INPATH:TRANSPORT	Transport jam
INPATH:EXIT	Ejection jam

INFEED: Data on paper remaining at paper feed slot.

INPATH: Data on paper remaining in paper path.

#### 4.1.3 Various print jobs with single printer unit attached with a controller

##### Menu map print

Prints program version, configuration of the control unit, and other printer configuration and setting.

Operation: (Press switch)

Without HDD : "0" → "3" → "3"

With HDD : "0" → "0" → "3" → "3"

##### File list print

Prints a file list stored in the HDD or Flash ROM.

Operation: (Press switch)

Without HDD : "0" → "3" → "1" → "3"

With HDD : "0" → "0" → "3" → "1" → "3"

##### Font list print (PCL)

Prints a font list for PCL.

Operation: (Press switch)

Without HDD : "0" → "3" → "1" → "1" → "3"

With HDD : "0" → "0" → "3" → "1" → "1" → "3"

##### Font list print (PS)

Prints a font list for PS.

Operation: (Press switch)

Without HDD : "0" → "3" → "1" → "1" → "1" → "3"

With HDD : "0" → "0" → "3" → "1" → "1" → "1" → "3"

##### Demo print

Prints a demo pattern for each subject installed in the ROM.

Operation: (Press switch)

Without HDD : "0" → "3" → "1" → "1" → "1" → "1" → "3"

With HDD : "0" → "0" → "3" → "1" → "1" → "1" → "1" → "3"

##### Ethernet self-diagnostic print

If an Ethernet board is installed, perform self-diagnosis by pressing the Ethernet board SW for two seconds or longer and print the result.

## 4.2 Adjustment After Replacing Parts

The following describes the adjustments that are required after each part replacement. Adjustment and correction of color registration are always required for each part replacement.

Replaced Part	Adjustment
LED Head	Not required
Drum Cartridge (Y, M, C, K)	Not required.
Fuser Unit	Not required.
Belt Cassette Assy	Not required.
PU (K7N Board)	Re-mounting the EEPROM used on the board before the replacement. *Note
CU (TIG board)	Re-mounting the EEPROM used on the board before the replacement. *Note
Shutter	Setting the correction value of the calibration chip for detecting density.
Media Thickness Sensor Assy	Adjusting paper thickness detection sensitivity and checking media thickness detection value setting.

\* Note:1. When the EEPROM of PU (K7N board) is replaced to a new one, color balance must be adjusted.

\* Note: 2. When the EEPROM of CU (TIG board) is replaced to a new one, the Destination Setting must be adjusted.

### 4.2.1 Precautions in replacing the engine control board

When replacing the engine control board (K7N PWB), remove the EEPROM from the old board and mount it on a new board (for errors other than those of engine EEPROM).

When SERVICE CALL xxx (Engine EEPROM Error) is displayed on the operator panel, the EEPROM must be replaced with a new one. In this case, perform the operation described in section 4.2.2.

### 4.2.2 Precautions in replacing EEPROM

When the EEPROM is not removed from the board and placed on the new board at the time of engine control board (K7N PWB) replacement, or when the EEPROM is replaced with a new one, the Version Read function (fuse cut) described in section 2.14 disabled. The printer must be switched from the factory mode to the shipping mode using the following procedure.

Item	Contents	Count
Fuser	Life count of the fuser	Value in which the number of printed pages is converted to the number of Letter paper after installing a new fuser unit.
Transfer Belt	Life count of the transfer belt	Value in which the number of printed pages is converted to the number of Letter paper after installing a new fuser unit.
Black Imaging Drum Cyan Imaging Drum Magenta Imaging Drum Yellow Imaging Drum	Life count of the imaging drums for each color	Value in which the number of rotations is converted to the number of Letter paper after installing a new ID unit.
Black Toner Cyan Toner Magenta Toner Yellow Toner	Count of the used toner amount for each color	Count of the number of printed dots.
Total Sheets Feed	Life count of the printer	Total number of printed pages.
Black Impressions Cyan Impressions Magenta Impressions Yellow Impressions	Total number of printed pages	Number of printed pages after installing a new ID unit.

#### 4.2.3 Replacing EEPROM after replacing the TIG board

When replacing the TIG board, remove EEPROM from the board used by the user and set it to the replaced board. (This is to pass on the user set contents and font install data to the new board.) Furthermore, if the user's EEPROM cannot be used due to damages, use the EEPROM on the new board. In this case, the new board and EEPROM should be set with destinations.

#### 4.2.4 Destination Setting (Checking Method: Printing Demo Page)

The destination setting of each main control board, which takes on ODA by default, must be set, at the time of printer shipment, to correspond to the destination of the printer equipped with the board.

1. Japan indirect sales, ODA, OEL and APS maintenance boards are to be shipped with the destination setting left at its default.



#### 4.2.5 Recovery Flash ROM data on TIG board

A 4MB Flash ROM that enables a user to register an arbitrary file is installed on the TIG board. When a TIG board has to be replaced, print a file list of the information menu and check the registered files before replacing the board.

Re-register necessary files when the TIG board is replaced.

### 4.3 Adjusting the Density

The auto density adjust mode is set to [Auto] when the printer is delivered, however, problems may occur upon using the printer if the mode is set to [Manual]. Perform the procedure when the density is improper.

**Note:** Perform the task when the printer is not in operation. Do not perform during warm-up.

- (1) Press ⑩ several times and display [Color Menu].
- (2) Press ① or ⑤ and display [Density Adjust/Start].
- (3) Press ③.

The auto density adjustment will begin.

#### 4.4 Paper Thickness Detection Sensitivity Adjustment and Media Thickness Detection Value Check

##### Outline:

The sensitivity of a micro displacement sensor used for detecting media thickness varies from one to another. Therefore, to ascertain the sensitivity in advance, check the output value of the sensor by passing media of known thickness through the printer equipped with the sensor. The sensitivity is fixed based on the output value.

Adjustments must be made when the paper thickness sensor, the registration roller and the PU board are replaced.

By passing, from the multipurpose tray, four sheets of paper whose thickness has been measured with a micrometer (MDQ-30M, MDQ-30), the correction value for media thickness sensitivity is automatically set with the first three sheets. Check the media thickness detection value with the fourth sheet.

Media: Transparency (42404301)

Paper thickness difference: Within  $\pm 10\mu\text{m}$

Inputting the density of the calibration chip for density detection

- (1) Write the calibration target adjustment value (last 2 digits in the barcode, refer to the figure below) indicated on the shutter label.

The adjustment value of the shutter must be reset when Sheet Color, density sensor, or PU sensor is replaced.

## 5. REGULAR MAINTENANCE

### 5.1 Parts Replaced Regularly

Users are recommended to replace parts periodically according to the table below. (Print quality cannot be assured and damages may occur, when the parts are not replaced.)

Part Name	Time of Replacement	Condition for Replacement	Adjustment (after replacement)
Large toner cartridge	When [Fill Toner] is displayed.	10,000 pages are printed.	
Toner cartridge	When [Fill Toner] is displayed.	5,000 pages are printed.	
ID	When [Drum Life] is displayed.	20,000 pages are printed. (3P/J)	
Fuser unit	When [Fuser Life] is displayed.	60,000 pages are printed.	
Belt unit	When [Belt Life] is displayed.	60,000 pages are printed.	
Feed Roller Components	When non-feeding of paper is frequent (a proper paper amount is loaded).	120,000 pages are printed (this is given as a guide).	

Parts are replaced periodically by users.

### 5.2 Cleaning

Clean the internal and external sections of the printer with waste and a small vacuum cleaner as required.

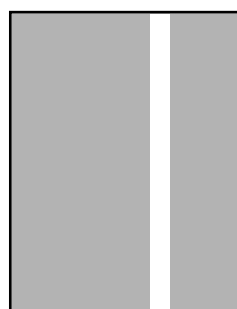
**Note:** Do not touch the image drum terminals, the LED lens array, and the LED head connector.

### 5.3 Cleaning the LED Lens Array

Clean the LED head array while white bands or lines (white-out, faint print) appear in the vertical direction on a printed page.

**Note:** Be sure to clean the LED lens array with the LED lens array cleaner. (the LED head cleaner is packed together with the toner cartridge.)

White band, white stripe  
(Void or light printing)



### 5.4 Cleaning the Pick-up Roller

Clean the pick-up roller if lines appear in the vertical direction on the printed page.

**Note:** Use a soft cloth in order to avoid scratching the roller surface.

## **6. TROUBLESHOOTING PROCEDURES**

### **6.1 Precautions before troubleshooting**

- (1) Confirm the basic inspection items described in the user manual.
- (2) Obtain as much information regarding the problem from the user as possible.
- (3) Check the printer in a condition close to that upon generating the problem.

### **6.2 Precautions before handling an abnormal image**

- (1) Confirm that the environment for using this printer is appropriate.
- (2) Confirm that consumables (toner, drum cartridge) are replaced appropriately.
- (3) Confirm that paper is accurate. Refer to paper specifications.
- (4) Confirm that the drum cartridge is set appropriately.

### **6.3 Precautions upon handling an abnormal image**

- (1) Do not touch or allow foreign objects to contact the OPC drum surface.
- (2) Do not expose the OPC drum to direct sunlight.
- (3) Do not touch the fuser unit as it is heated significantly.
- (4) Do not expose the image drum to light for longer than five minutes in room temperature.

## 6.4 Preparing for Troubleshooting

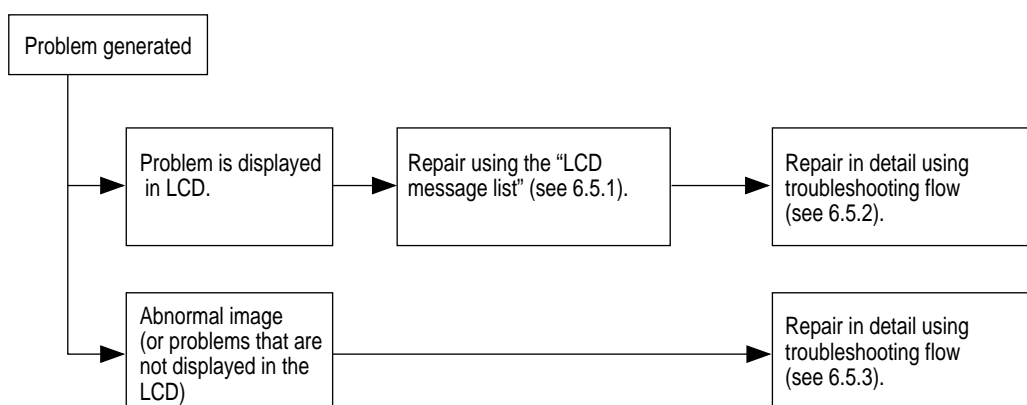
### (1) Operator panel display

Problems that occur with the printer are indicated in the LCD.

Apply proper remedies according to the message indicated in the LCD.

## 6.5 Troubleshooting Procedure

Confirm the problem in the following method when the printer generates a problem.



### 6.5.1 LCD message list

When the printer detects a non-recoverable error, the following service call error is displayed in the LCD.

Service call

nnn: error

**Note:** nnn is an error code.

When [Service call] is displayed, error information that corresponds to the error code appears in the bottom line in the LCD. Error codes, their definitions and remedies are described in Table 6-1-1.

Table 6-1-1 Operator Alarm (1/6)

Message	Cause	Error Description		Solutions
Service Call 001: Error ~ 011: Error	CPU Exception	Does error display reappear? Does error display reappear?	Yes Yes	Turn power OFF and ON. Replace TIG board. (Replace EEPROM)
Service Call 020: Error	CU ROM Hash Check Error 1	Is program ROM DIMM set properly? Is error recovered by replacing program ROM DIMM?	No Yes No	Reset program ROM DIMM. Replace program ROM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 030: Error	CU Slot1 DIMM RAM Check Error	Is subject RAM DIMM set properly? Is error recovered by replacing subject ROM DIMM?	No Yes No	Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 031: Error	CU Slot2 DIMM RAM Check Error	Is subject RAM DIMM set properly? Is error recovered by replacing subject ROM DIMM?	No Yes No	Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 032: Error	CU Slot3 DIMM RAM Check Error	Is subject RAM DIMM set properly? Is error recovered by replacing subject ROM DIMM?	No Yes No	Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 035: Error	Slot1 RAM Spec Error. The CU RAM Slot1 DIMM specification is not supported.	Is RAM DIMM genuine? Is subject RAM DIMM gap setting proper? Is error recovered by replacing subject ROM DIMM?	No No Yes No	Use genuine RAM DIMM. Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 036: Error	Slot2 RAM Spec Error. The CU RAM Slot2 DIMM specification is not supported.	Is RAM DIMM genuine? Is subject RAM DIMM gap setting proper? Is error recovered by replacing subject ROM DIMM?	No No Yes No	Use genuine RAM DIMM. Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 037: Error	Slot3 RAM Spec Error. The CU RAM Slot3 DIMM specification is not supported.	Is RAM DIMM genuine? Is subject RAM DIMM gap setting proper? Is error recovered by replacing subject ROM DIMM?	No No Yes No	Use genuine RAM DIMM. Reset subject RAM DIMM. Replace RAM DIMM. Replace TIG board. (Replace EEPROM)
Service Call 040: Error	CU EEPROM Error	Is error recovered by replacing EEPROM on CU board?	Yes No	Replace EEPROM. (Recover user environment.) Replace TIG board. (Replace EEPROM)
Service Call 041: Error	CU Flash Error Flash ROM error on CU board.	Does error display reappear?	Yes	Replace TIG board. (Replace EEPROM.)

Table 6-1-1 Operator Alarm (2/6)

Message	Cause	Error Description		Solutions
Service Call 042: Error ~ 044: Error	Flash File SYSTEM Error	Failed access to Flash set directly on CU board.		Press ①, ③, ⑤, ⑥ to turn power ON, release buttons when [FLASH FORMAT] appears, wait until [ON-LINE] (2sec) and replace TIG board if symptom does not change.
Service Call 048: Error	CU ROM for PS+PCL was set in Non-PS device.	Is proper program ROM set?	Yes No	Replace program ROM DIMM. Replace with proper program ROM DIMM.
Service Call 049: Error	CU type mismatch CU ROM does not match with the device.	Is proper program ROM set?	Yes No	Replace program ROM DIMM. Replace with proper program ROM DIMM.
Service Call 050: Error	Operater Panel Error	Does error display reappear?	Yes	Refer to no LCD display flow chart.
Service Call 051: Error	CU Fan Error Abnormal CPU cooling fan on CU board.	Is connector set properly on CU board?  Is error recovered by replacing fan?	No Yes No	Connect properly. Replace fan. Replace TIG board. (Replace EEPROM.)
Service Call 063: Error	Network comm. Error Abnormal H/W I/F between CU-NIC.	Is network board set properly?  Is error recovered by replacing network board?	No Yes No	Set properly. Replace Network. Replace TIG board. (Replace EEPROM.)
Service Call 065: Error	NIC Combination Error	Is proper Network board for the model set?	Yes No	Replace NIC card. Replace with proper Network board (MLETB11, etc.).
Service Call 070: Error	CANT_HAPPEN PS firmware fault detected.	Confirm that error is recovered by turning power OFF/ON.	No	Replace TIG board. (Replace EEPROM.)
Service Call 072: Error	Engine communication error I/F error between PU-CU.	Is CU assembly set properly?  Is error recovered by replacing TIG board?	No Yes No	Set properly. Replace TIG board. (Replace EEPROM.) Replace PU board.
Service Call 073: Error ~ 075: Error	Video overrun detect	Is CU assembly set properly? Is error recovered by replacing TIG board?	No Yes	Set properly. Replace TIG board. (Replace EEPROM.)
Service Call 102: Error	Error in engine RAM read/write detected at power ON.	Does error reoccur?	Yes	Replace engine control board (K7N).
Service Call 103: Error	Error in engine SRAM read/write detected at power ON.	Does error reoccur?	Yes	Replace engine control board (K7N).
Service Call 104: Error	Error in engine EEPROM check total detected at power ON.	Does error reoccur?	Yes	Replace engine control board (K7N).
Service Call 105: Error	EEPROM not detected at power ON.	Does EEPROM exist? Does error reoccur?	Yes Yes	Check for EEPROM and set if not found. Replace engine control board (K7N).
Service Call 106: Error	Error in engine control logic detected at power ON.	Does error reoccur?	Yes	Replace engine control board (K7N).
Service Call 107: Error	Engine ROM check sum error.	Does error reoccur? Is error recovered by reloading PU F/W?	Yes No	Reload PU I/F. Replace engine control board (K7N).



Table 6-1-1 Operator Alarm (3/6)

Message	Cause	Error Description		Solutions
Service Call 110: Error ~ 116: Error 110: Envelope Feeder 111: Duplex unit 112: 2nd Tray 113: 3rd Tray 114: 4th Tray 115: 5th Tray 116: Finisher	Option unit for different model detected.	Is a proper option unit for the printer set?	Yes No	Set proper option unit. Check connections and turn power ON. If error is not recovered, replace the unit.
Service Call 120: Error	PU unit fan motor error.	1) Is fan in PU unit operating? 2) Error reoccurs after replacing fan motor.	No Yes Yes	Replace fan motor. Replace engine control board (K7N). Replace engine control board (K7N).
Service Call 121: Error	High-voltage power supply I/F error.	Is cable between PU board and high-voltage power LSI connected properly?	No Yes	Connect properly. Replace high-voltage power supply. Check improper connections for high-voltage.
Service Call 122: Error	Low-voltage power supply fan error. Low-voltage power supply temperature error.	1) Is fan in low-voltage power supply unit operating? 2) Error reoccurs after replacing fan motor.	No Yes Yes	Replace fan motor. Replace low-voltage power supply. Replace low-voltage power supply.
Service Call 123: Error	Improper environment humidity detected by sensor.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace humidity sensor.
Service Call 124: Error	Improper environment temperature detected by sensor.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace humidity sensor.
Service Call 125: Error	Error detected at MT home position.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace MT.
Turn power OFF and wait 126: Dew error	Sensor dew error.	Sensor dew error detected.		Turn ON power after a while.
Service Call 130: Error	Temperature rise detected at LED head.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes Yes	Leave alone for 30 min. Turn power OFF. Leave for 30 min., then turn power ON. Replace LED head.
Service Call 131: Y Head 132: M Head 133: C Head 134: K Head	Same unit not detected upon power ON or opening cover.	1) Is error message displayed? 2) Is LED head properly set? 3) Does error reoccur?	Yes No Yes	Confirm that LED head is set properly. Turn power ON again. Replace LED head assembly.
Service Call 140: Y ID 141: M ID 142: C ID 143: K ID	Error detected at proper ID position.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn power ON again. Replace drum assembly.
Service Call 150: Y 151: M 152: C 153: K	When a fuse could not be disconnected in the ID unit.	Is ID unit set properly?	Yes	Check cable connections and replace engine board.
Service Call 154: Error	When belt unit fuse cannot be disconnected.	Is belt unit set properly?	Yes	Check cable connections and replace engine board.
Service Call 155: Error	When fuser unit fuse cannot be disconnected.	Is fuser unit set properly?	Yes	Check cable connections and replace engine board.

Table 6-1-1 Operator Alarm (4/6)

Message	Cause	Error Description		Solutions
Service Call 160: Y Toner 161: M Toner 162: C Toner 163: K Toner	Error detected by toner sensor.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Replace toner sensor or assembly (Y71-PWB). Same as above.
Service Call 170: Error 171: Error 174: Error 175: Error	Short circuit in fuser thermistor or open detected (high temp. or low temp.)	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace thermistor and turn power OFF. Leave aside for 30 min.
Service Call 172: Error 176: Error	Thermistor indicates high-temperature error.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace thermistor and turn power OFF. Leave aside for 30 min.
Service Call 173: Error 177: Error	Thermistor indicates low-temperature error.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace thermistor and turn power OFF. Leave aside for 30 min.
Service Call 179: Error	Wrong fuser standard.	1) Does fuser match with model and power voltage? 2) Error reoccurs after setting fuser properly.	No Yes Yes	Set proper fuser. Check if fuser is set properly. Replace fuser.
Service Call 180: Error ~ 186: Error	Communication disability with option unit detected by engine.	1) Is error message displayed? 2) Does error reoccur?	Yes Yes	Turn ON power again. Replace option unit.
Service Call 187: Error	Communication with control panel disabled.	Is cable properly connected to control panel?	No Yes	Connect properly. Replace control panel and cable.
Close cover 310: Top cover open	Printer engine cover open.	1) Check if top cover is open. 2) Check if cover switch is proper.	Yes Yes No	Close top cover. Close side cover. Replace cover switch.
Reset fuser 320: Fuser error	Same unit not detected upon power ON or opening cover.	1) Is error message displayed? 2) Is fuser unit set properly? 3) Does error reoccur?	Yes No Yes	Check if fuser is set properly. Reset fuser and turn ON power again. Replace fuser unit assembly.
Turn power OFF and wait 321: MOTOR OVERHEAT	Printer cannot be used temporarily due to motor overheat.			Turn ON power after a while.
Open/close cover 323: Paper thickness error	Sensor output out of range with no media. (Only for Factory Mode)	1) Are foreign objects mixed in sensor? 2) Does printer recover when detecting paper thickness by opening/closing tray? 3) Does printer recover by power OFF/ON.	Yes No	Remove foreign objects. Normal.
Open/close cover 324: Paper thickness error	Sensor output gap out of range with no media. (Only for Factory Mode)	1) Are foreign objects mixed in sensor? 2) Does printer recover when detecting paper thickness by opening/closing tray? 3) Does printer recover by power OFF/ON.	Yes No	Remove foreign objects. Normal.
Open/close cover 325: Paper thickness error	Media detect value out of range.	1) Is different media type mixed in? 2) Is media being double fed?	Yes	Remove foreign objects.
Open/close cover 326: Paper thickness error	U-Heavy mode media detect value out of range.	Is different media type mixed in?	Yes	Remove foreign objects.

Table 6-1-1 Operator Alarm (5/6)

Message	Cause	Error Description		Solutions
Reset belt 330: Belt error	Same unit not detected upon power ON or closing cover.	1) Is error message displayed? 2) Is belt unit set properly? 3) Does error reoccur?	Yes No Yes	Check set condition of belt unit. Reset belt unit and turn power ON again. Replace belt unit assembly.
Reset drum 330~343: Drum error	Same as above.	1) Is error message displayed? 2) Is image drum set properly? 3) Does error reoccur?	Yes No Yes	Check set condition of ID. Turn power ON again. Replace ID unit assembly.
Set new drum 350: Yellow drum life 351: Magenta drum life 352: Cyan drum life 353: Black drum life	ID unit life.	Right after replacing ID unit?	Yes No	Check ID unit life. Replace ID unit.
Set new fuser 354: Fuser life	Fuser life (occurs when fuser life continuation is OFF).	Right after replacing fuser?	Yes No	Check fuser life. Replace fuser.
Set new belt 355: Belt life	Belt life notified (alarm). Print N-count by opening and closing cover.	Right after replacing belt?	Yes No	Check belt life. Replace belt.
Set new belt 356: Belt life	Waste toner belt life notified (alarm). Print N-count by opening and closing cover. N=20	Right after replacing belt?	Yes No	Check belt life. Replace belt.
Set duplex unit 360: Duplex unit is open.	When duplex unit is removed from printer.	Does error recover by resetting duplex unit?	Yes No	Normal. Replace duplex unit or engine board.
Check DUPLEX 370: Paper jam	Paper jam detected after paper rotated in duplex unit.	Check paper jam in duplex unit.	Yes No	Remove jammed paper. Check/replace duplex unit.
Check DUPLEX 371: Paper jam	Paper jam during paper feed from duplex unit.	Check paper jam in duplex unit.	Yes No	Remove jammed paper. Check/replace duplex unit.
Check DUPLEX 372: Paper jam		Check miss-feed in duplex unit.	Yes No	Remove miss-fed paper and close cover. Check/replace duplex unit.
Open front cover 380: Paper jam	Paper jam during paper feed from cassette 1, 2, 3, 4 or 5.	Check miss-feed in duplex unit.	Yes No	Remove miss-fed paper and set cassette. Check/replace cassette 1, 2, 3, 4, or 5.
Open top cover 381: Paper jam	Paper jam detected between black ID and fuser	1) Check paper jam between yellow ID and fuser. 2) Check fuser unit load.	Yes No	Remove jammed paper. Replace fuser unit.
Open top cover 382: Paper jam	Paper jam detected in fuser or during paper ejection from fuser.	1) Check paper jam in fuser and between yellow ID and fuser. 2) Check if paper ejection switch is proper.	Yes No	Remove jammed paper. Replace paper ejection switch.
Open top cover 383: Paper jam	Paper jam detected when paper started to enter duplex print unit.	Check paper jam in duplex unit or at entrance.	Yes No	Remove jammed paper. Check/replace duplex unit.

Table 6-1-1 Operator Alarm (6/6)

Message	Cause	Error Description		Solutions
Open top cover 389: Paper jam	Jam generated in paper path.	Open front cover and check jammed paper.	Yes	Remove jammed paper.
Check MP tray 390: Paper jam	Paper jam during paper feed from MT.	Check for miss-fed paper around MT cassette.	Yes No	Remove miss-fed paper and close cover. Check/replace MT.
Check tray * 391~395: Paper jam	Paper jam detected between cassette and black ID.	1) Check jammed paper between cassette and yellow ID. 2) Check if paper entry switch is normal.	Yes No	Remove jammed paper. Replace entry switch.
Open top cover 400: Paper size error	Non-set paper (45mm or above) detected by printer engine.	1) Is paper custom size? 2) Is paper standard size?	Yes Yes No	No treatment required. Adjust paper size guide in cassette. Replace paper size board (PXC PWB).
Refill toner 410: Yellow 411: Magenta 412: Cyan 413: Black	Certain toner is almost empty.	1) Selected toner cartridge is almost empty. 2) Check if selected toner cartridge is normal.	Yes No	Replace with new toner kit. Replace selected toner sensor.
Remove paper 480: Stacker full	Paper ejection stacker is full.	1) Check if stacker is full. 2) Check if stacker full sensor is operating properly.	Yes No	Remove paper from stacker. Replace stacker full sensor.
Set *** 490: No paper in MP tray (* stands for A4 B4, etc.)	No paper in selected cassette. cassette is not set, or paper ran out in cassette being used.	1) Check if paper is empty in MT. 2) Check if paper-end sensor is operating properly.	Yes No	Set paper in MT. Replace paper-end sensor.
Set *** 491~495: No paper in * tray (* stands for A4 B4, etc.)	Paper empty in cassette 1, 2, 3, 4, or 5.	1) Check if paper is empty in selected cassette. 2) Check if paper-end sensor is operating properly.	Yes No	Set paper in selected cassette. Replace the corresponding paper-end sensor.
Replace fuser	Fuser counter exceeded life.	1) Is error message displayed? 2) Was fuser unit just replaced?	Yes No	Check fuser unit life. Replace fuser immediately or at next maintenance.
Paper in * tray nearly empty	Paper near end detected.	Are only few papers remaining in tray? (approx. 30 sheets or less)	Yes No	Refill paper. Check paper near end sensor.
Disk operation error	Cannot write in HDD.	Is faulty operation being applied?	No Yes	Check manual operation. HDD abnormality. Replace HDD.

## 6.5.2 Preparing for troubleshooting

### (1) Operator panel display

Problems that are generated in this device are indicated in the LCD.

Apply proper measures according to the message displayed in the LCD.

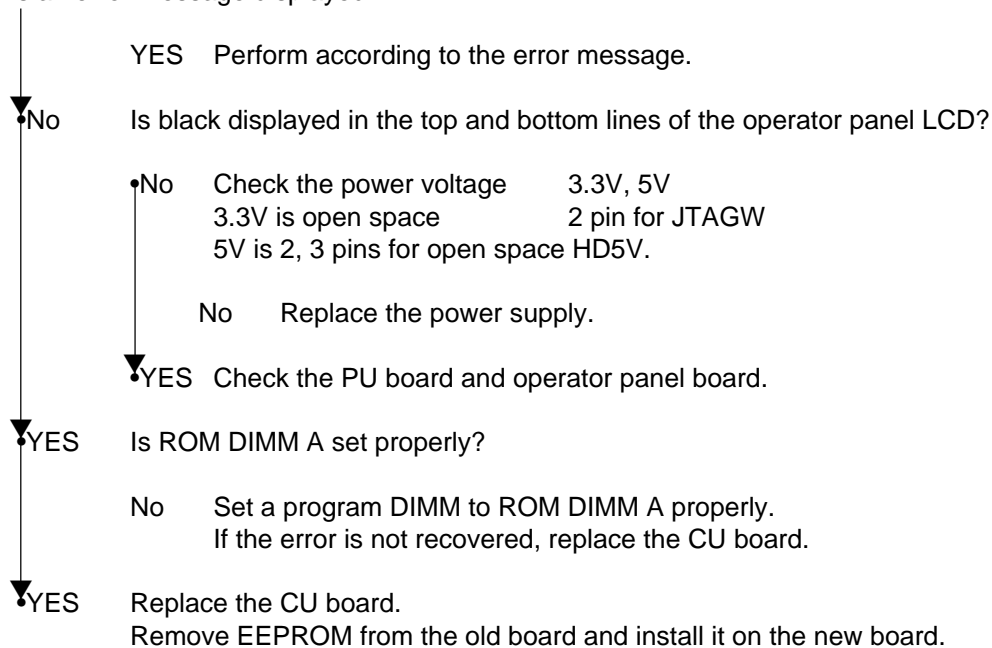
No.	Problem	Flow Chart No.
1	The printer does not function properly after power ON.	①
2	Jam error Feed jam (1st tray) Feed jam (multipurpose tray) Path jam Exit jam Duplex jam	②-1 ②-2 ②-3 ②-4 ②-5
3	Paper size error	③
4	I/D up/down error	④
5	Fuser unit error	⑤
6	Fan motor error	⑥

**Note:** When changing the engine board (K7N PWB), remove the EEPROM chip from the old board and install it on the newly replaced board

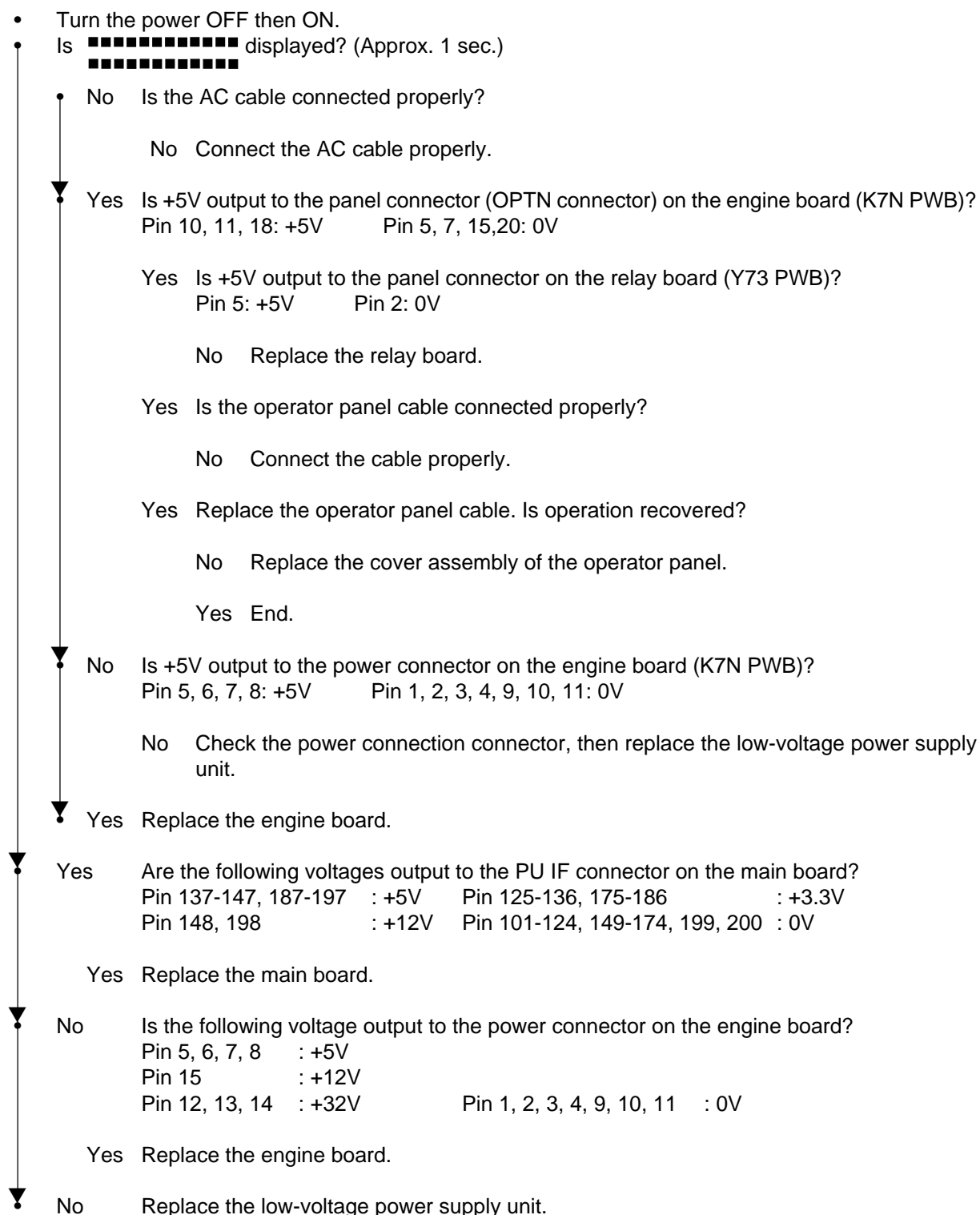
### (2) CU assembly troubleshooting

No operation

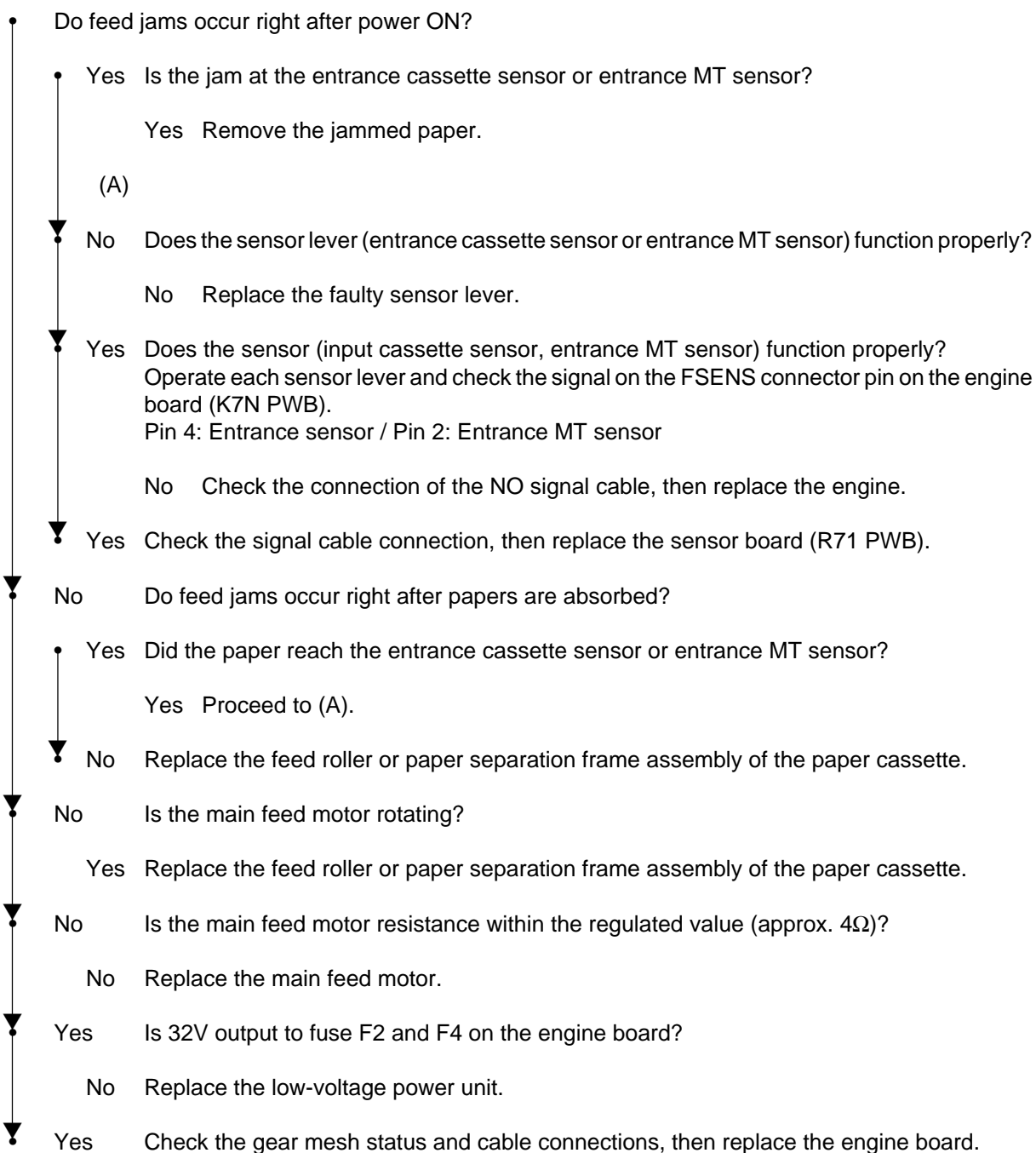
Is an error message displayed?



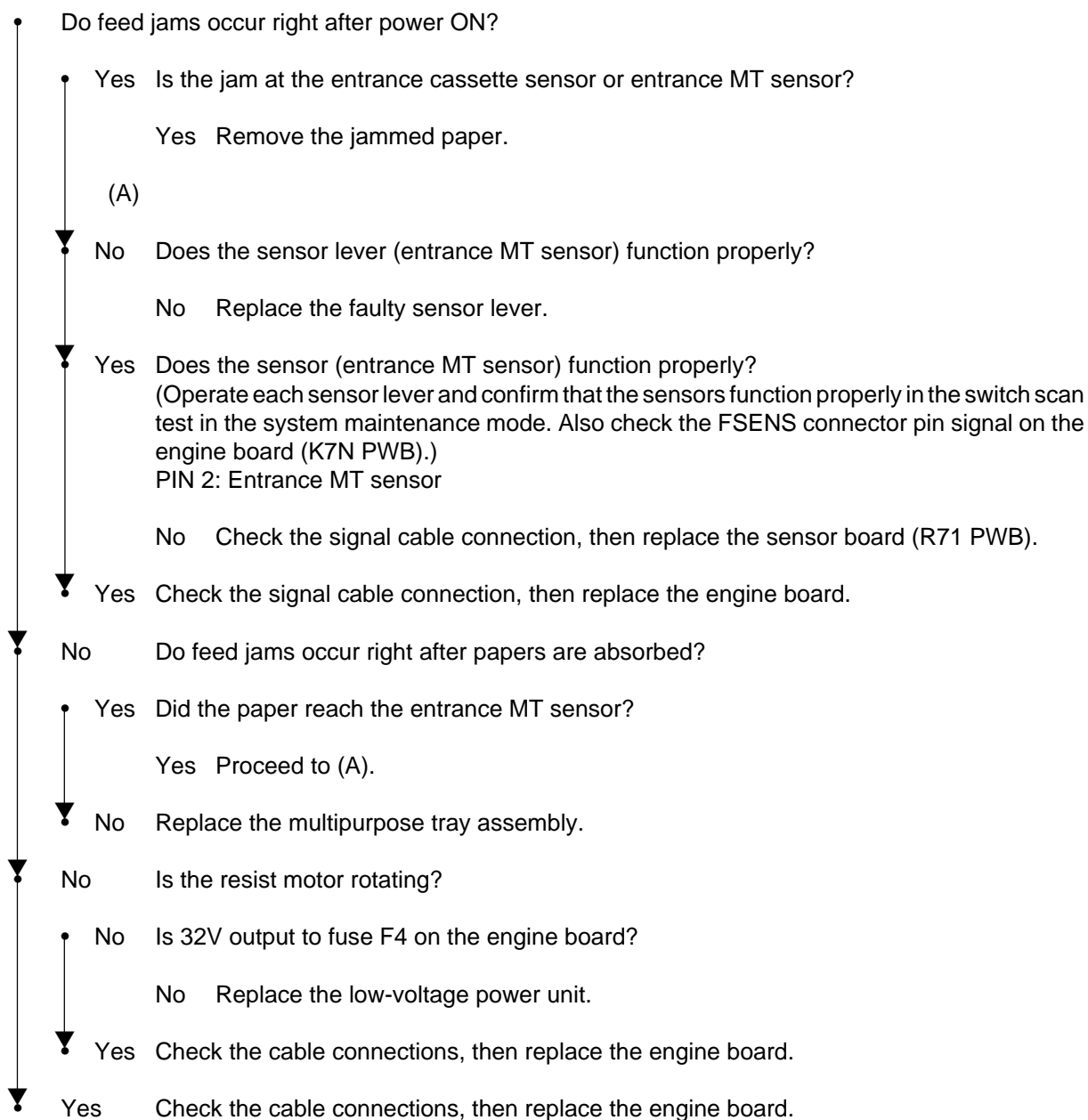
① The printer does not function properly after power ON.



## ②-1 Feed jam (1st tray)

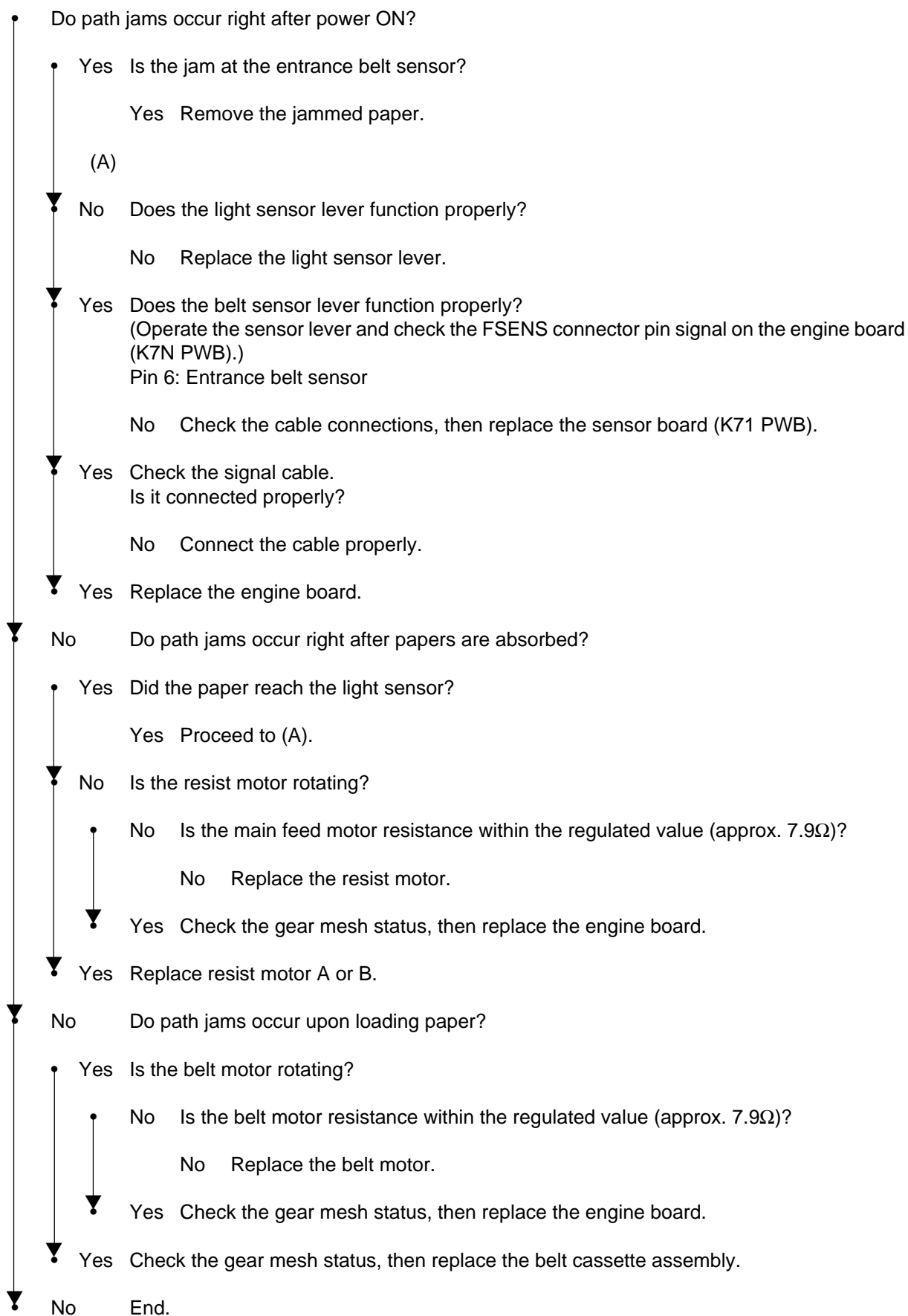


## ②-2 Feed jam (multipurpose tray)

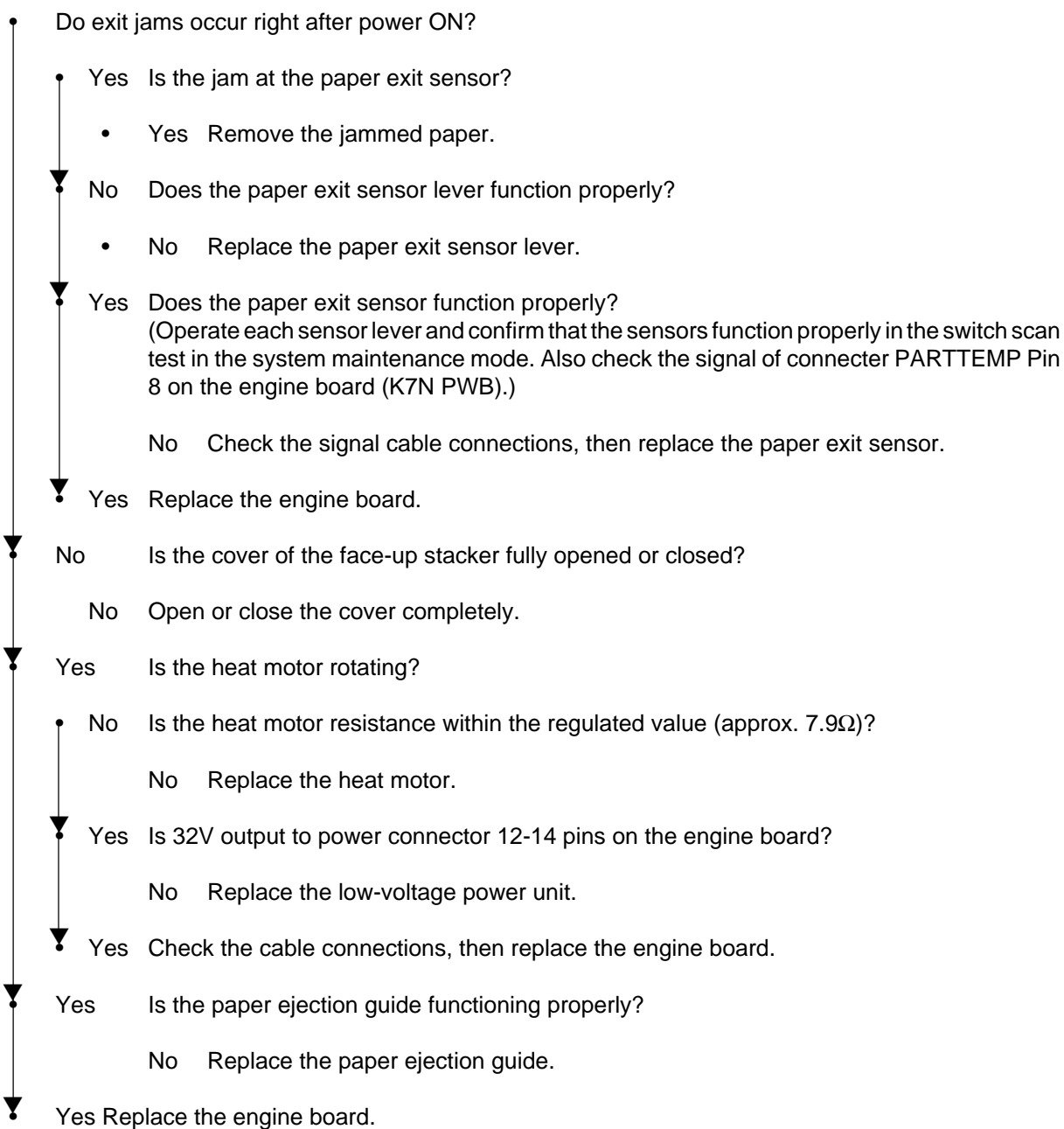




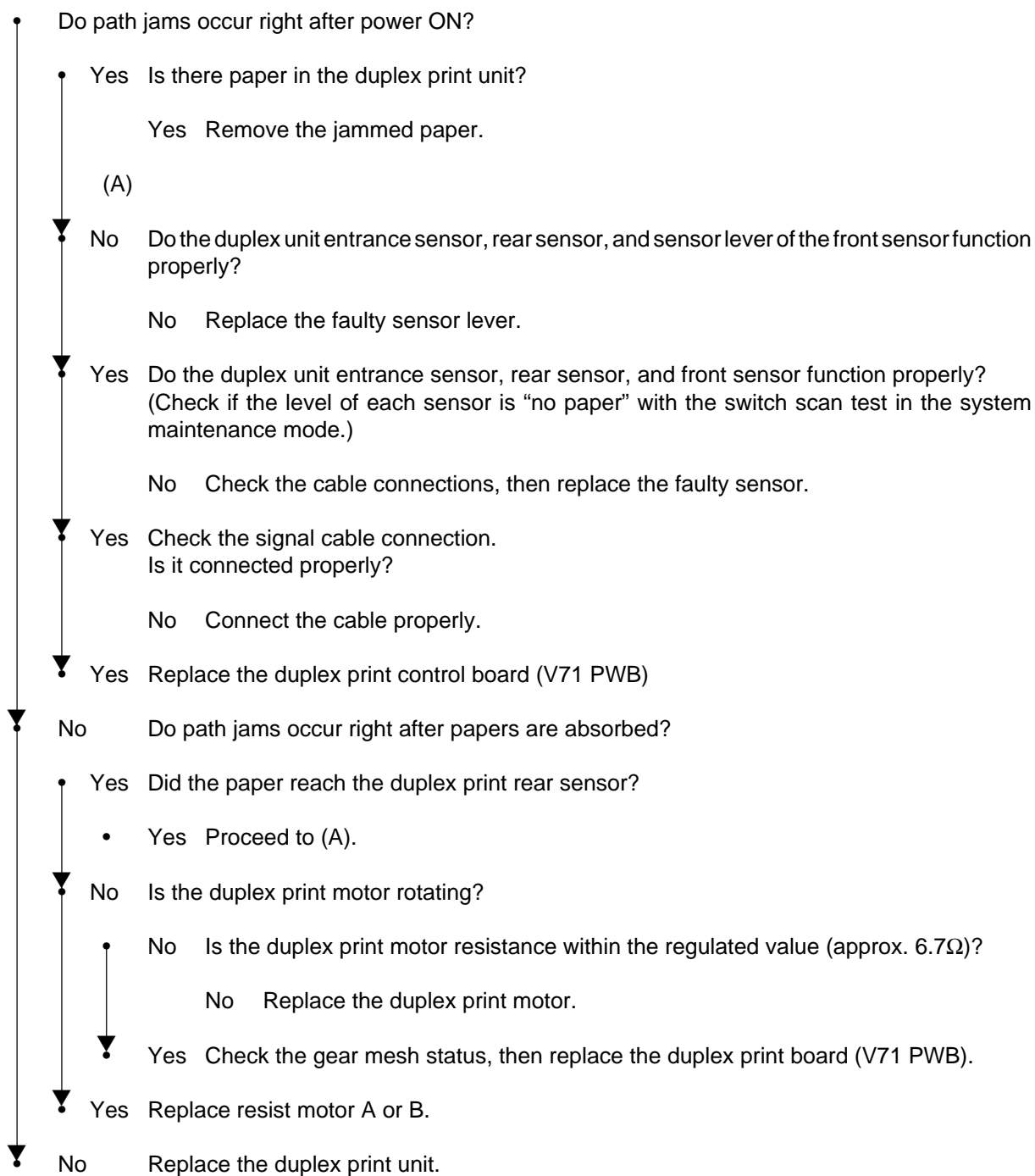
## ②-3 Path jam



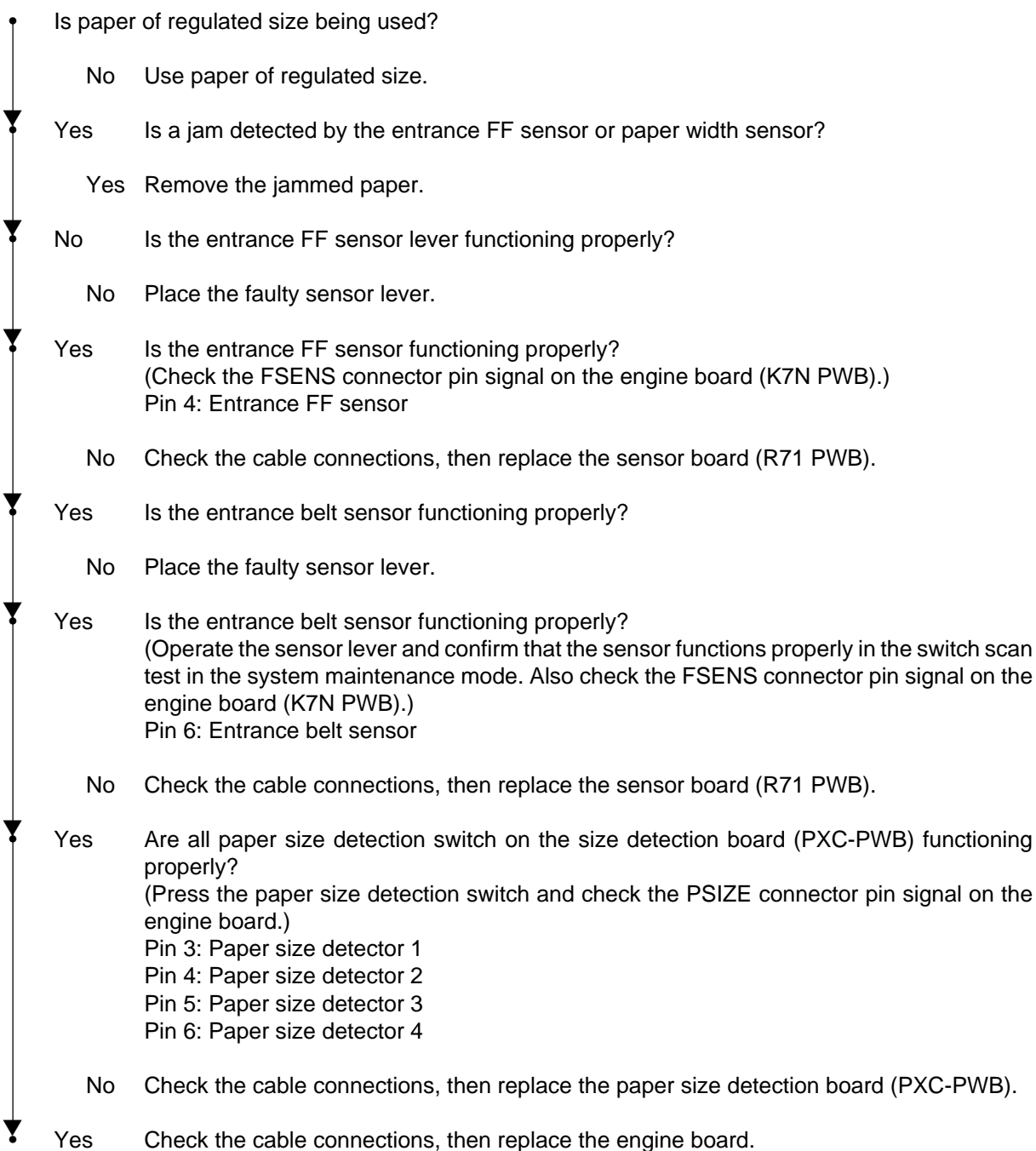
## ②-4 Exit jam



## ②-5 Duplex jam



③ Paper size error



④ Up/Down movement error of the image drum unit (ID)

- Turn the printer OFF, then turn it ON after a few seconds.

• Are all ID drums rotating properly during print operation?

- No Is the ID motor resistance within the regulated value (approx. 8.6Ω)?

No Replace the faulty IDU motor.

- Yes Is 32V output to F3 and F5 on the engine board?

No Replace the low-voltage power unit.

- Yes Check the cable connections, then replace the engine board.

• Yes Is the IDU sensor terminal functioning properly?

No Check the gear mesh status and sensor terminal function, then replace the gear or sensor terminal.

• Yes Is the ID sensor terminal functioning properly?  
(Check the JODEN connector pin signal on the driver board (K7N PXB).)

Pin 12 : IDU sensor - yellow

Pin 2 : IDU sensor - magenta

Pin 4 : IDU sensor - cyan

Pin 14 : IDU sensor - black

Are all at 5V level or 0V level?

No Replace the connection board (N71 PWB).

• Yes Check the cable connection between the connection board (N71 PWB) and engine board (K7N PWB), then replace the engine board.

## ⑤ Fuser unit error

• Do fuser errors occur right after power ON?

(A)

• Yes Is the heat roller thermister disconnected or generating a short circuit? (See Fig. 6-1)  
(Approx. 190k-980k $\Omega$  in room temperature of 0-43 degrees Celsius.)

• Yes Replace the fuser unit.

• No Is the back-up roller thermister disconnected or generating a short circuit? (See Fig. 6-1)  
(Approx. 190k-980k $\Omega$  in room temperature of 0-43 degrees Celsius.)

• Yes Replace the fuser unit.

• No

• No Does a fuser unit error occur approx. three minutes after power ON?

• No Proceed to (A).

• Is the heater in the fuser unit turned ON? (Is it hot?)

• Yes Replace the engine board.

• No Replace the fuser unit.

• No Is AC voltage output between CN1 connector pin 1 and pin 3 in the low-voltage power unit?

• No Replace the low-voltage power unit.

• Yes Replace the fuser unit.

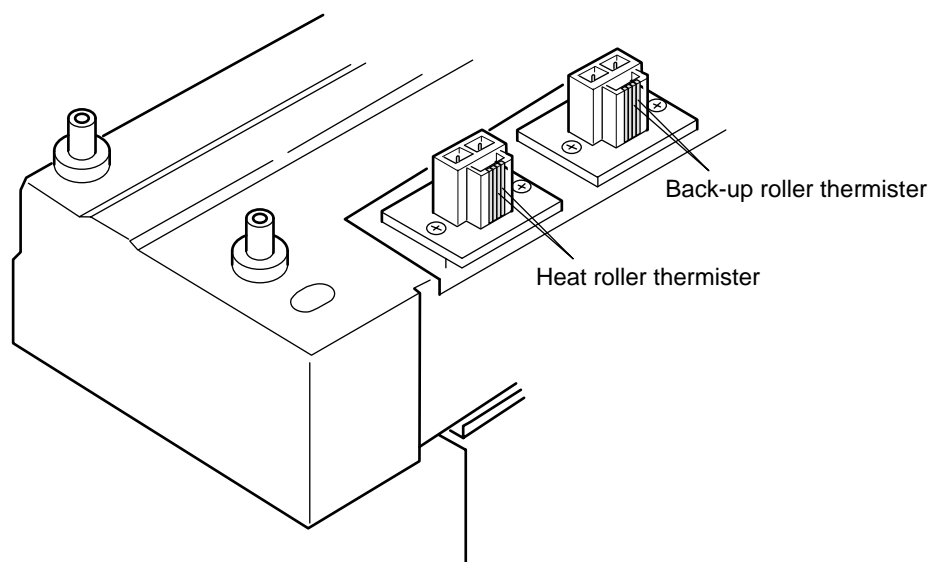
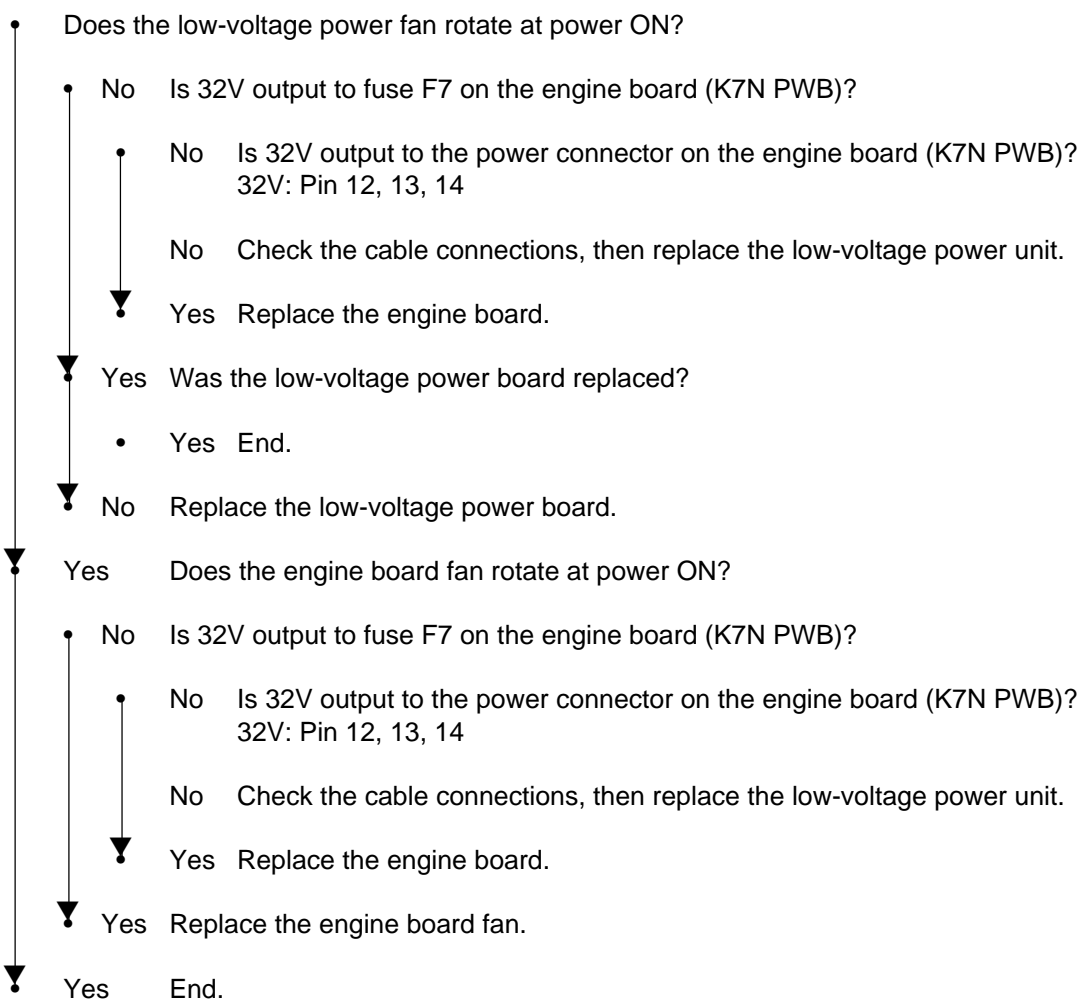


Figure 6.1

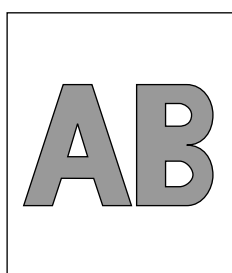
⑤ Motor fan error



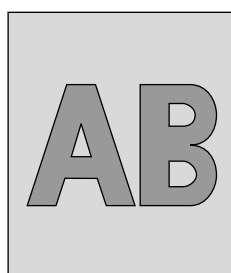
### 6.5.3 Troubleshooting for abnormal images

Apply remedies according to the following table when printed images are abnormal as shown below.

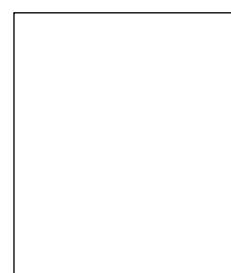
Abnormal Image	Flowchart No.
The entire image is faint or the color is irregular. (Figure 6.2- <b>A</b> )	①
The white portion is dirty. (Figure 6.2- <b>B</b> )	②
A white page is output. (Figure 6.2- <b>C</b> )	③
Streaks or solid lines appear in the vertical direction. (Black line, color line / black streak, color streak) (Figure 6.2- <b>D</b> )	④
White solid lines / streaks or blurred color lines / streaks appear in the vertical direction. (Figure 6.2- <b>E</b> )	⑤
Faulty fusing (image blurs or scatters when touched)	⑥
Consistent abnormality (Figure 6.2- <b>E</b> )	⑦
Color detachment	⑧
Color irregularity	⑨
Different color compared with the original.	⑩



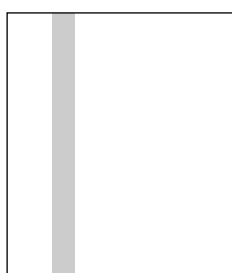
① Faint or blurred



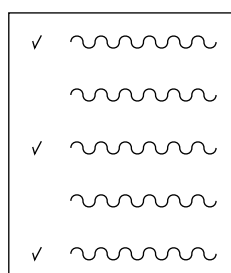
② Dirty white portion



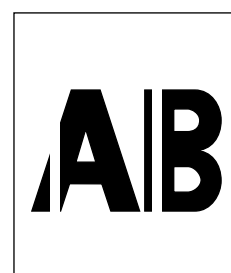
③ All white



④ Vertical lines/streaks



⑤ Consistent abnormality

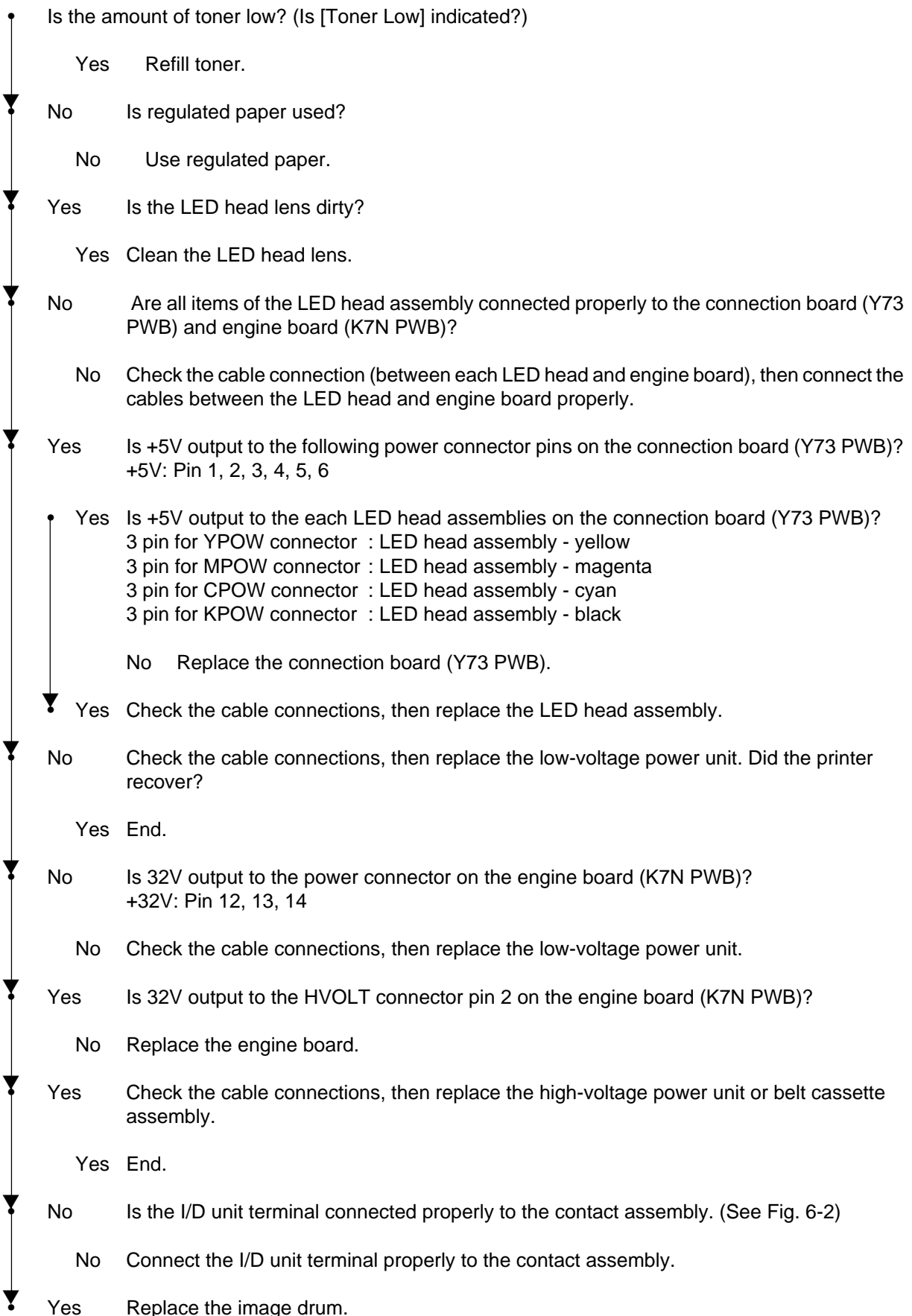


⑥ Vertical white lines/streaks

Figure 6.2

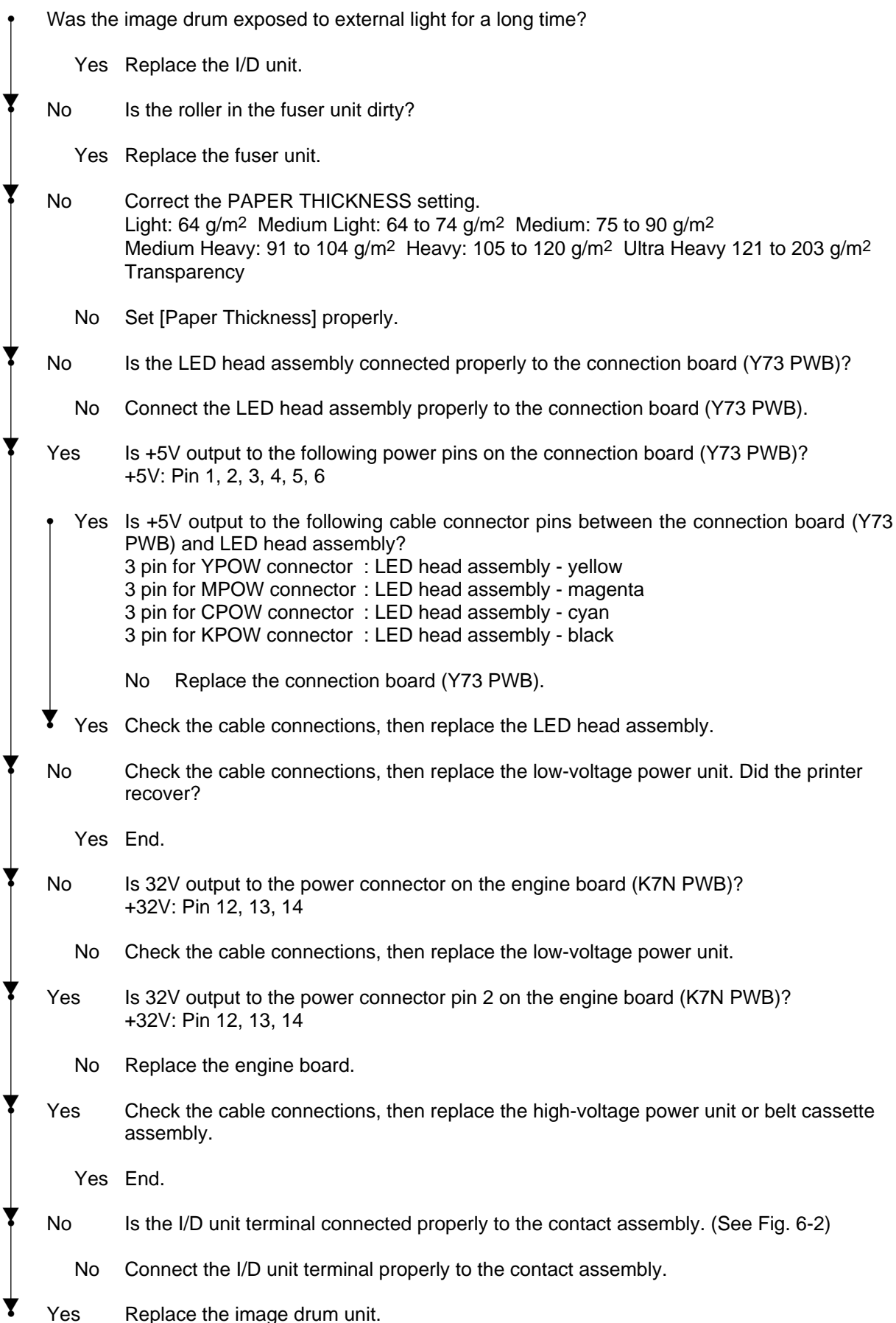


① An image is generally faint or the color is irregular. (Fig 6-2 ①A)



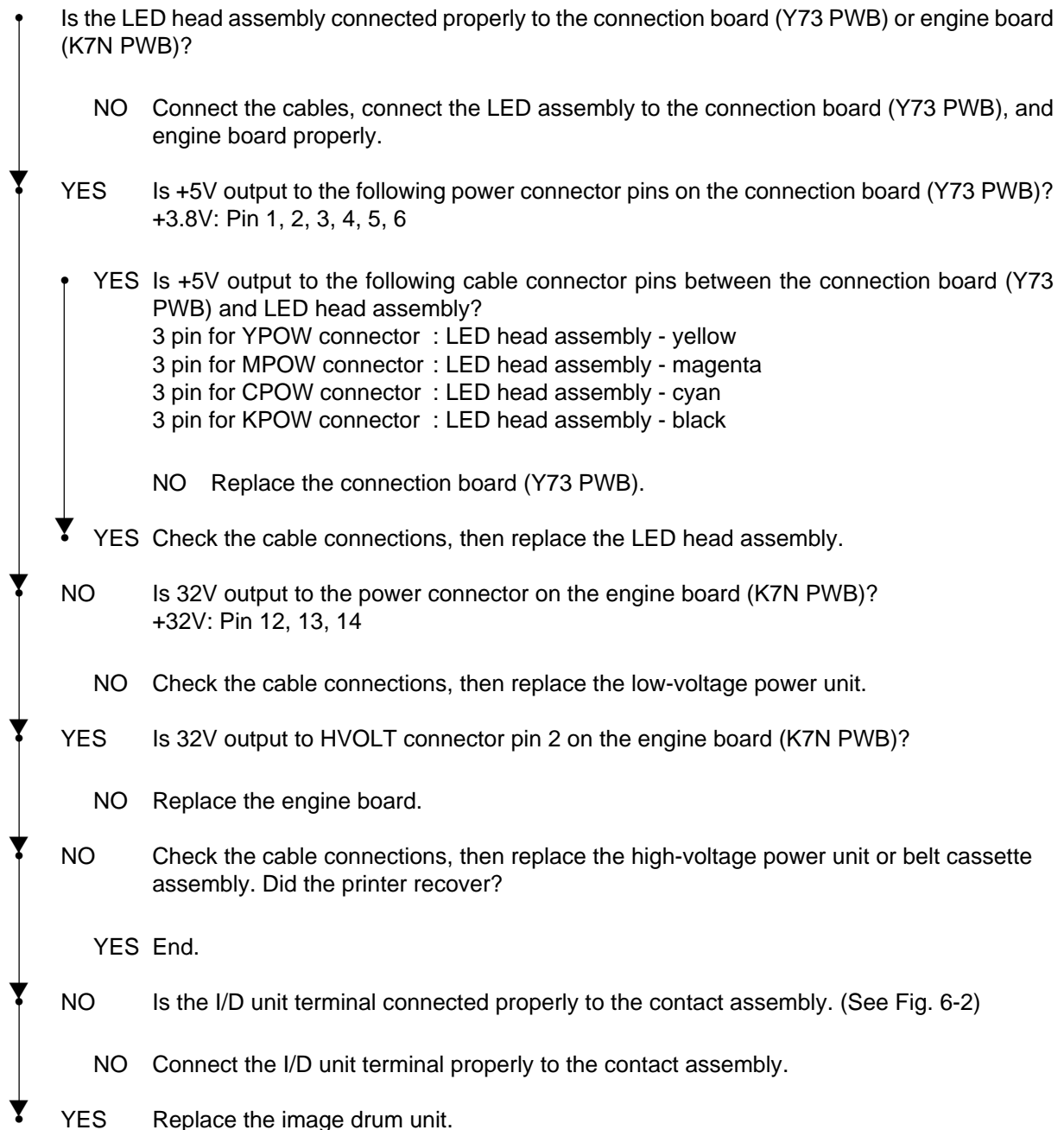
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

② Dirty Background. (Fig. 6-2 ③)



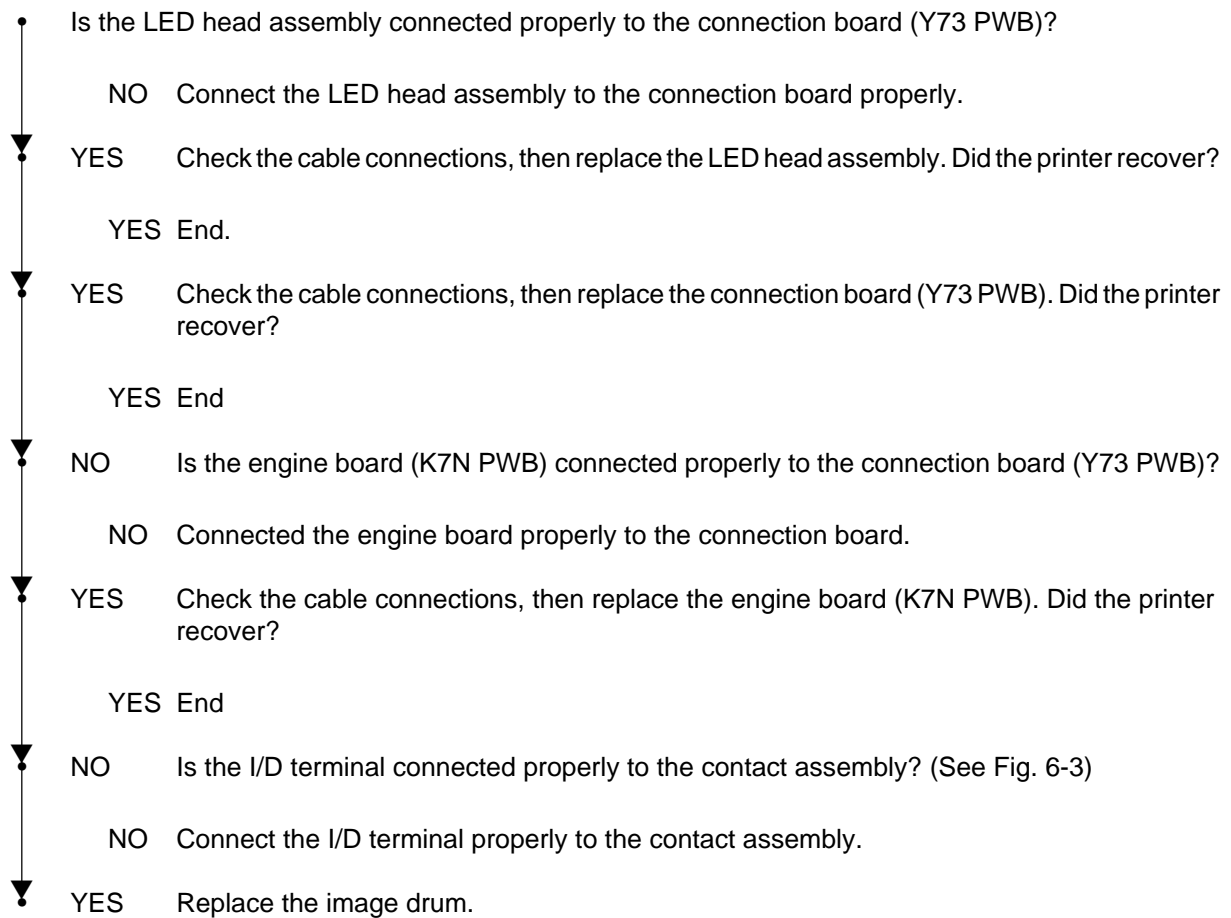
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

③ White page (Fig 6-2 ©)



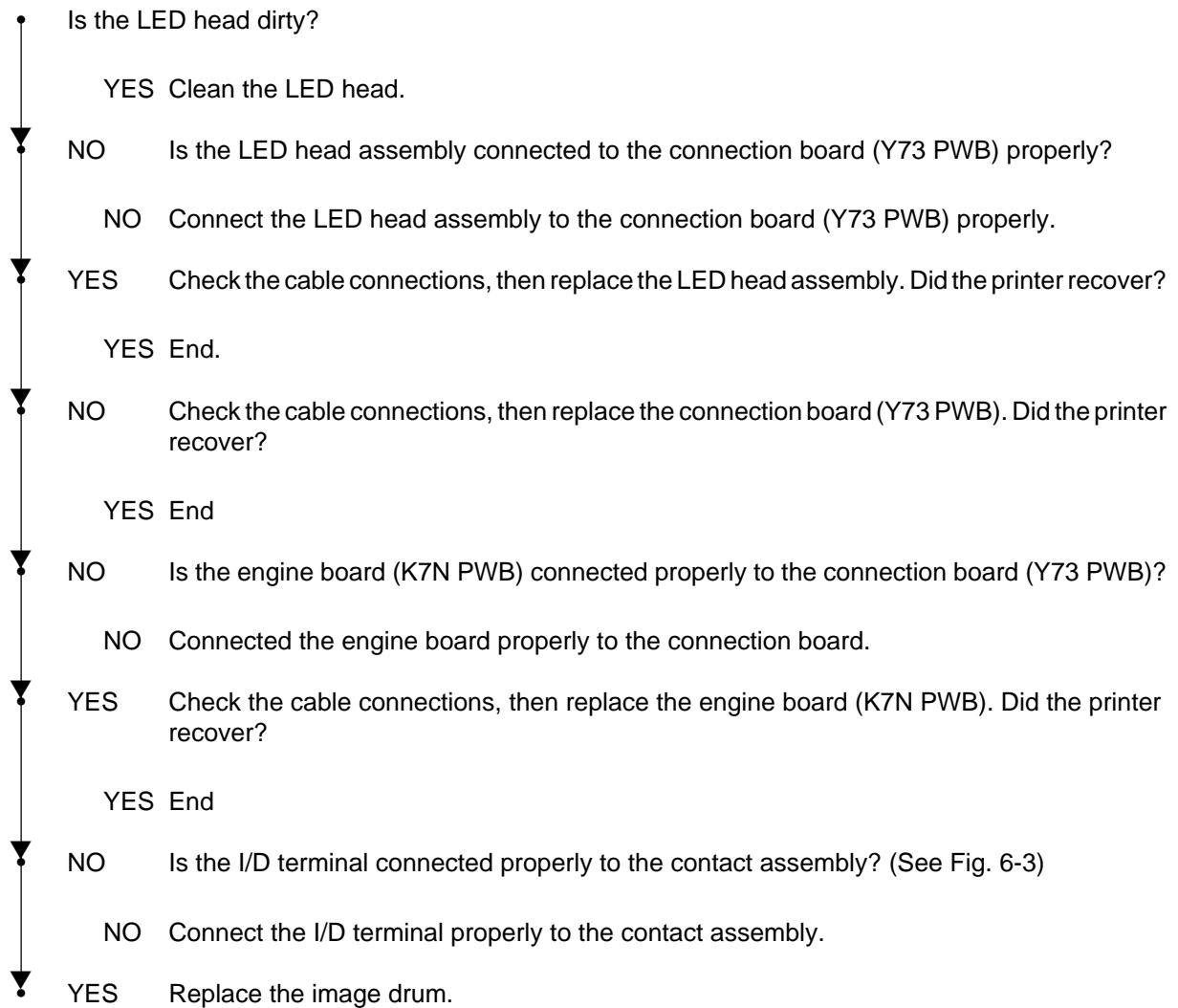
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

- ④ Solid lines or streaks appear in the vertical direction. (Black lines, color lines / black streaks, color streaks) (Fig. 6-2 ㉔)



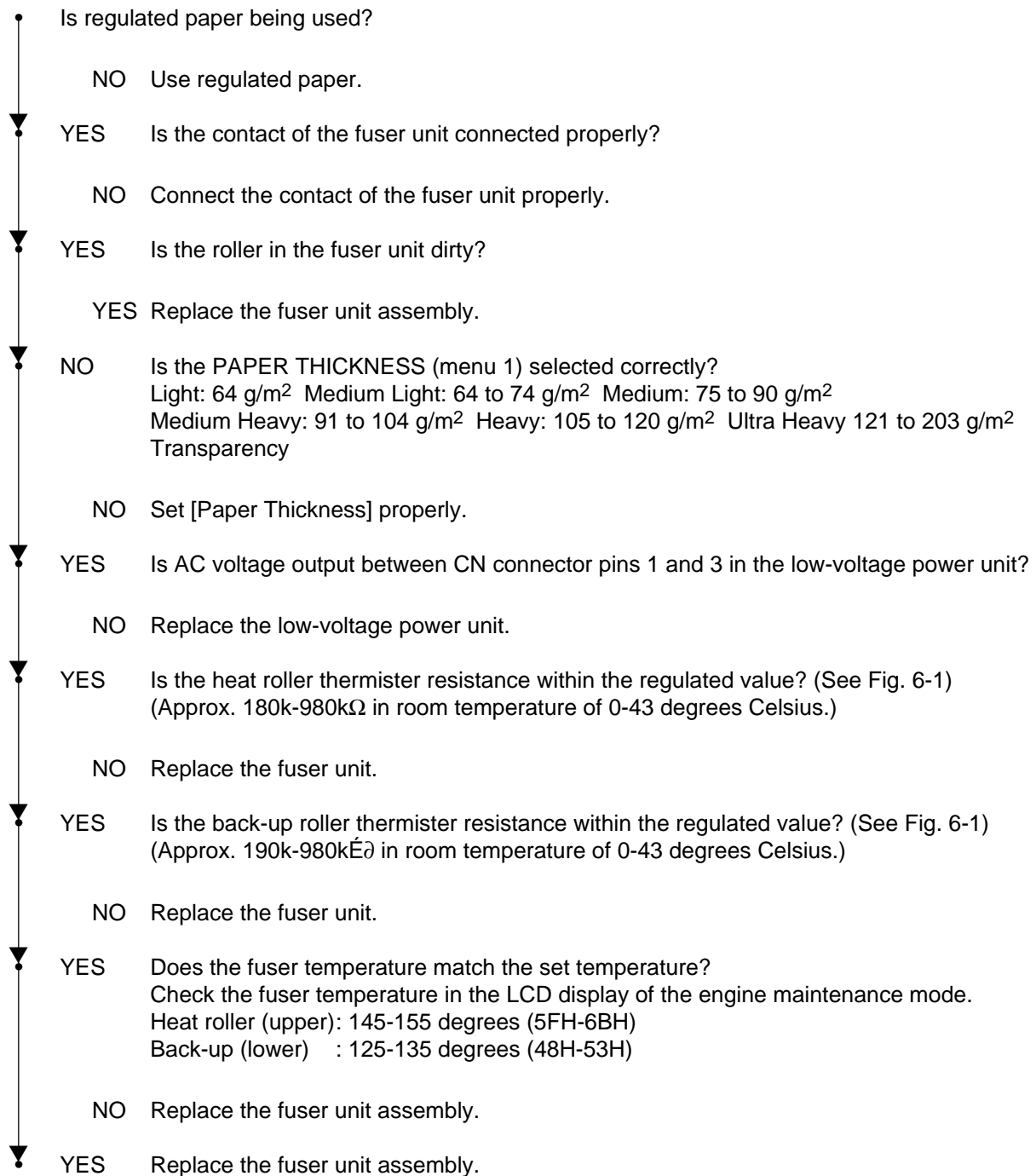
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

⑤ Thick white lines / streaks or blurred color lines / streaks appear in the vertical direction (Fig. 6-2 ㊦)



**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

⑥ Poor Fusing (Ink spreads or peels when touched with fingers)



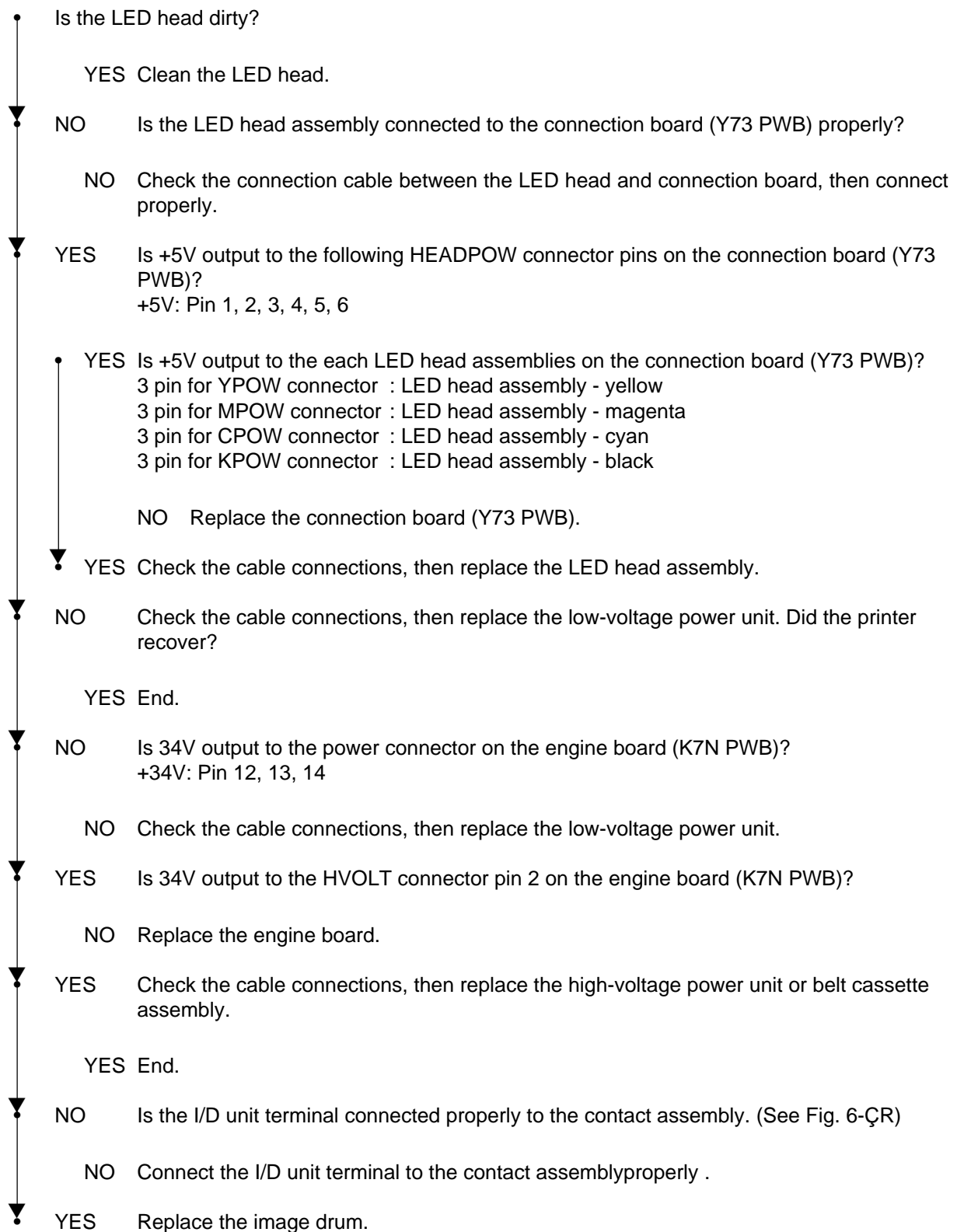
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

⑦ Consistent abnormality (Figure 6.2-⑤)

Consistency	Problem	Remedy
94.2 mm	Image Drum	Replace the ID unit.
63.6 mm	Developing Roller	Replace the ID unit.
57.8 mm	Toner Supply Roller	Replace the ID unit.
44.0 mm	Charge Roller	Replace the ID unit.
113.1 mm	Fuser Roller (Upper)	Replace the fuser unit.
	Fuser Roller (Lower)	Replace the fuser unit.
57.8 mm	Transfer Roller	Replace the belt cassette assembly.

**Note:** The life counter for the I/D unit, fuser unit, and belt cassette unit is reset automatically when the unit is replaced.

⑧ Color detaches.



**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.



⑨ Color irregularity

• [Toner Low] is displayed.

YES Refill toner. Did the printer recover?

YES End.



NO Perform the color irregularity test in the engine maintenance mode.  
Method: Enter the self-diagnostic mode (Level 1) in the engine maintenance mode.

DIAGNOSTIC MODE
XX.XX.XX

Press the ① and ④ keys and enter the self-diagnostic mode (Level 2).

ENGINE DIAG LEVEL2

Press the ① key three times and display [REG ADJUST TEST].

REG ADJUST TEST

Press the ② key once and display [REG ADJUST EXECUTE].

REG ADJUST EXECUTE

Press the ③ key and execute auto adjustment for color irregularity. (The motor will start to rotate and adjustment for color irregularity will begin.)



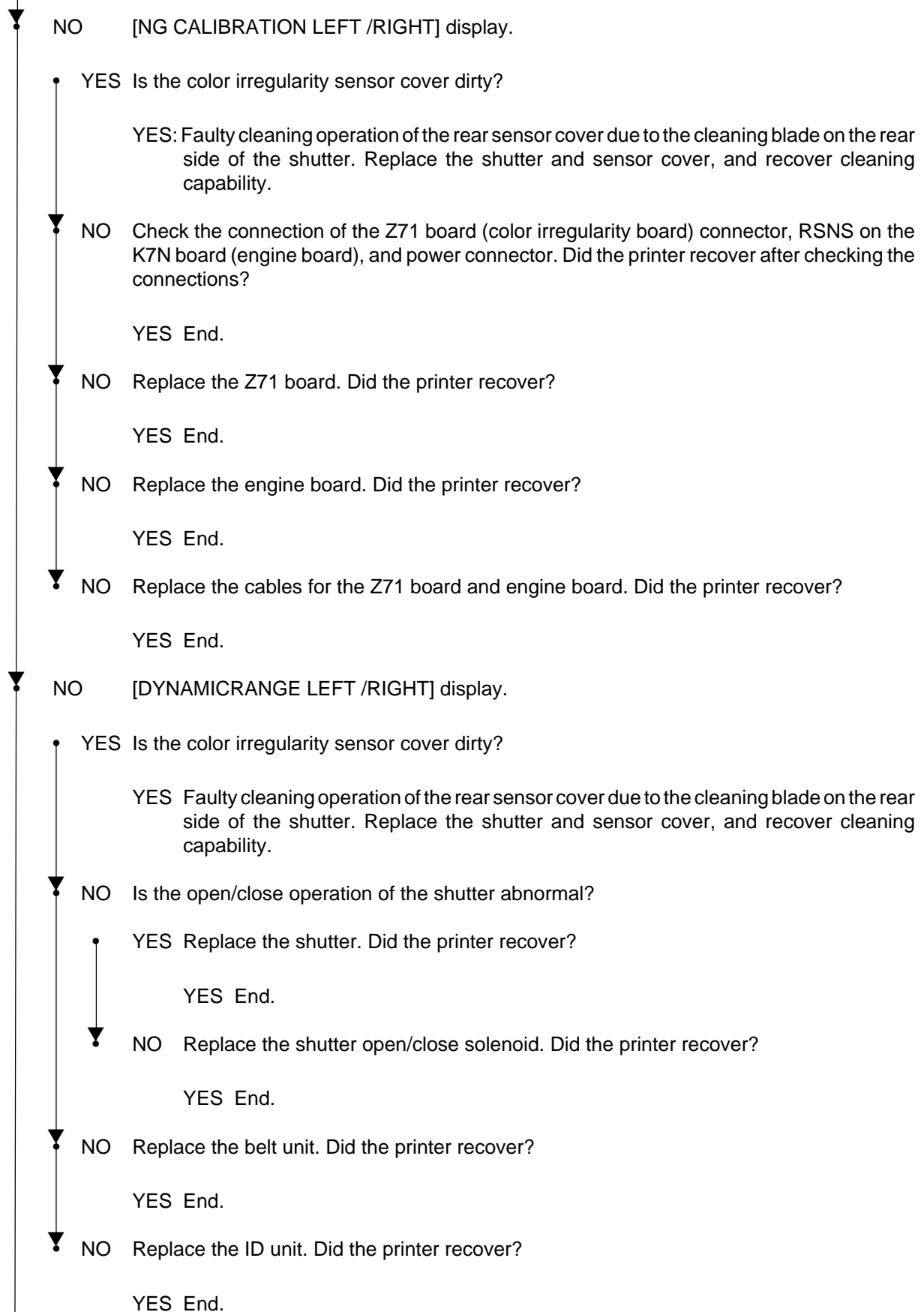
[OK] is displayed immediately with executing color irregularity adjustment. (Motor does not rotate.)

YES Error other than color irregularity has generated. Did color irregularity recover after the error was released?

YES End.

(A)

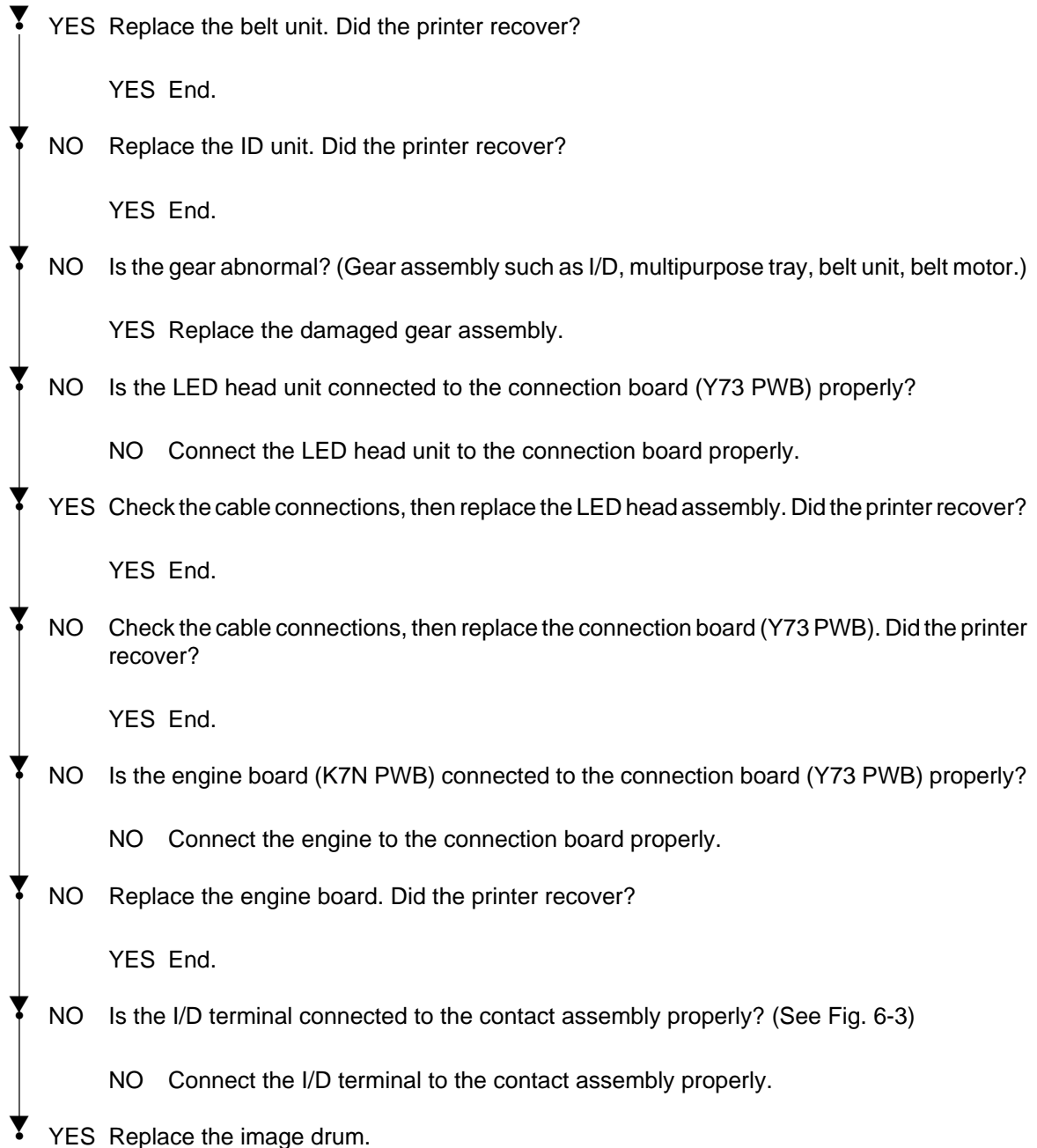
(A)



(B)

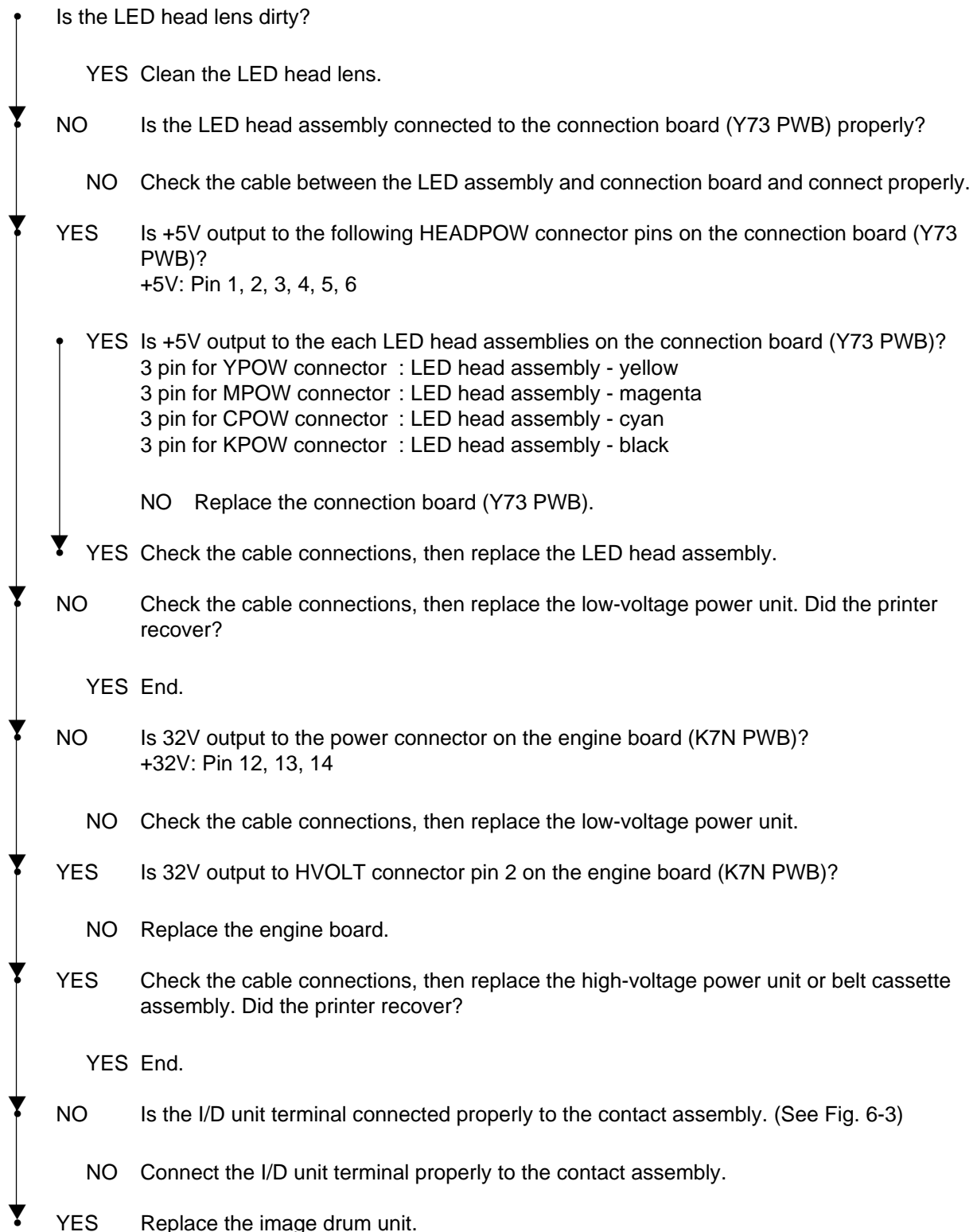
(B)

- [Yellow/Magenta/Cyan Left/Right/Horizontal] display



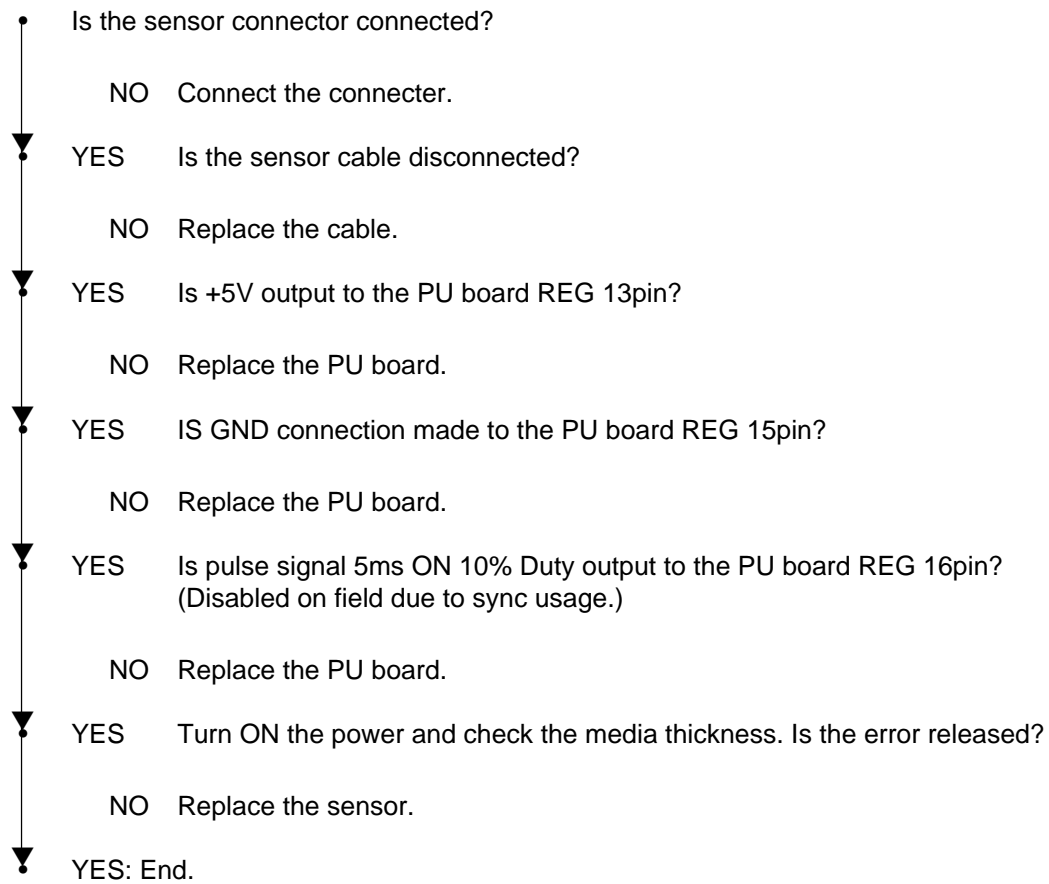
**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

⑩ Color irregularity compared with the original



**Note:** 1. Remove EEPROM from the old board and set it on the new board upon replacing the engine board (K7N PWB).  
2. If EEPROM is not replaced, refer to section 4.2.2.

⑪ Paper thickness error (Err Code 323, 324)



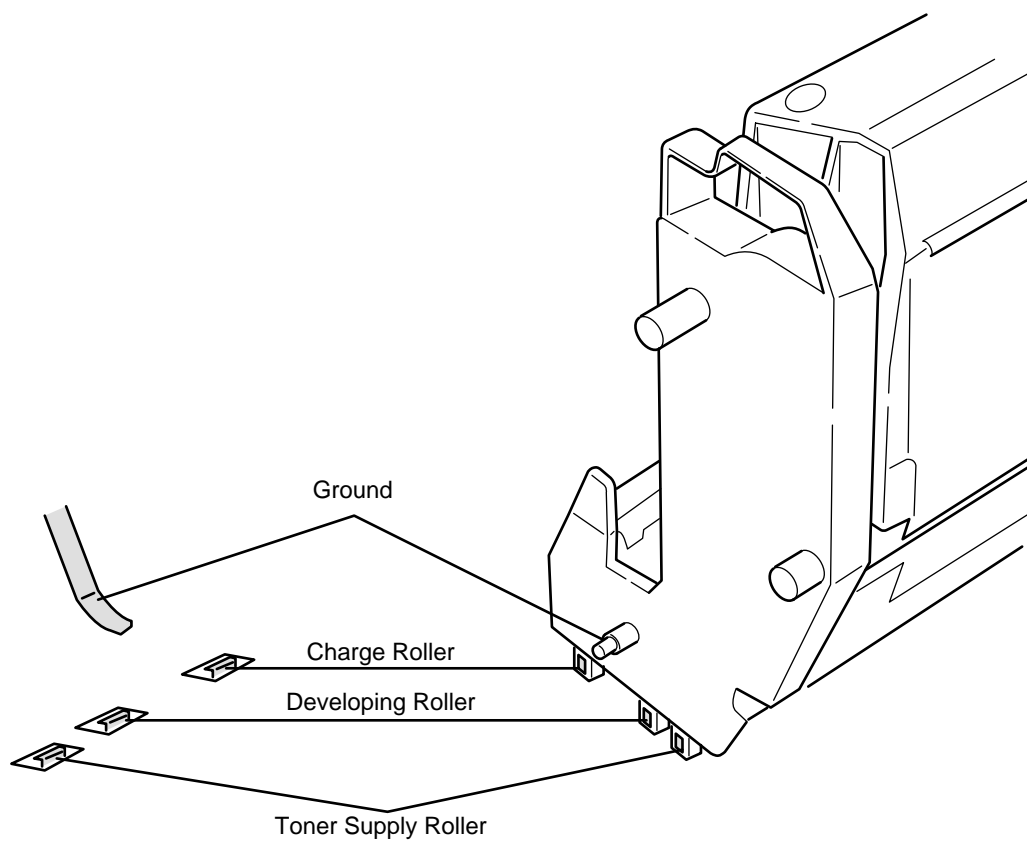


Figure 6.3

## 6.6 Fuse check

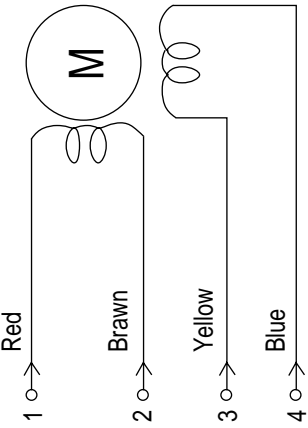
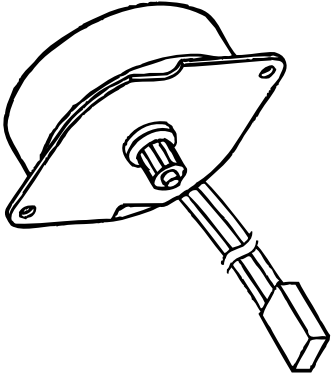
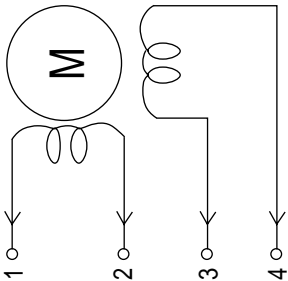
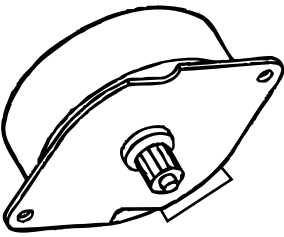
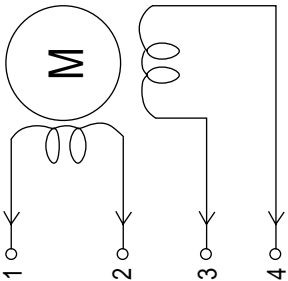
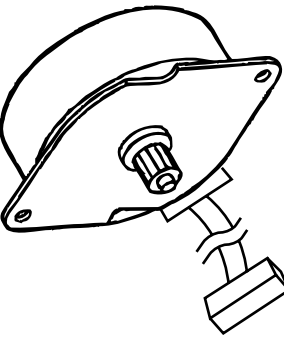
When it is occurred bellow errors, check these fuses on Print Engine Controller PWB (K7N-PWB).

Table 6-6 Fuse Error

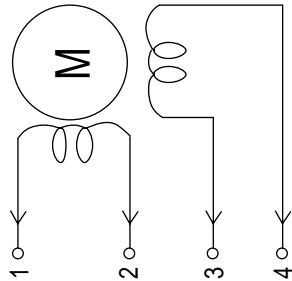
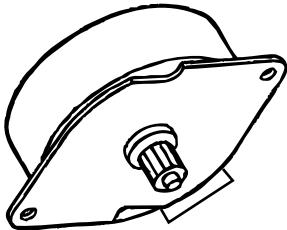
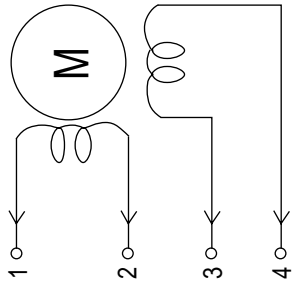
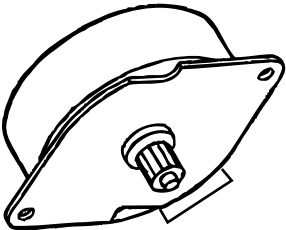
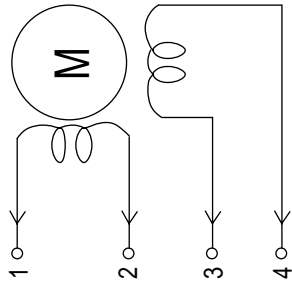
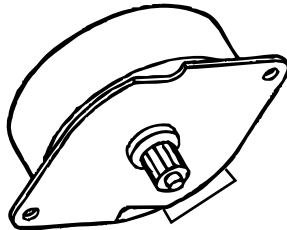
Fuse Name	Error Description	Insert Point
<b>F1</b>	2nd or 3rd TRY Hopping Error	Option TRY 34V
<b>F2</b>	MID UP/DOWN Error	MID,Hopping Motor Driver
<b>F3</b>	Fuse Cut Error	YID,Fuser Motor Driver JODEN-board
<b>F4</b>	JAM	KID,Registraiton Motor Driver
<b>F5</b>	CID UP/DOWN Error	CID,Belt Motor Driver
<b>F6</b>	POEWR OFF	5V Sensor
<b>F7</b>	PU FAN Error FAN Clutch	JobOff Motor Driver
<b>F8</b>	Cover Open	Cover Open Switch

7. CONNECTION DIAGRAM

7.1 Resistance Checks

Unit	Circuit Diagram	Illustration	Resistance
Transport Belt Motor			Between pins 1 and 2: 7.9Ω Between pins 3 and 4: 7.9Ω
Main Motor (Y)			Between pins 1 and 2: 8.6Ω Between pins 3 and 4: 8.6Ω
Main Motor (M)			Between pins 1 and 2: 8.6Ω Between pins 3 and 4: 8.6Ω



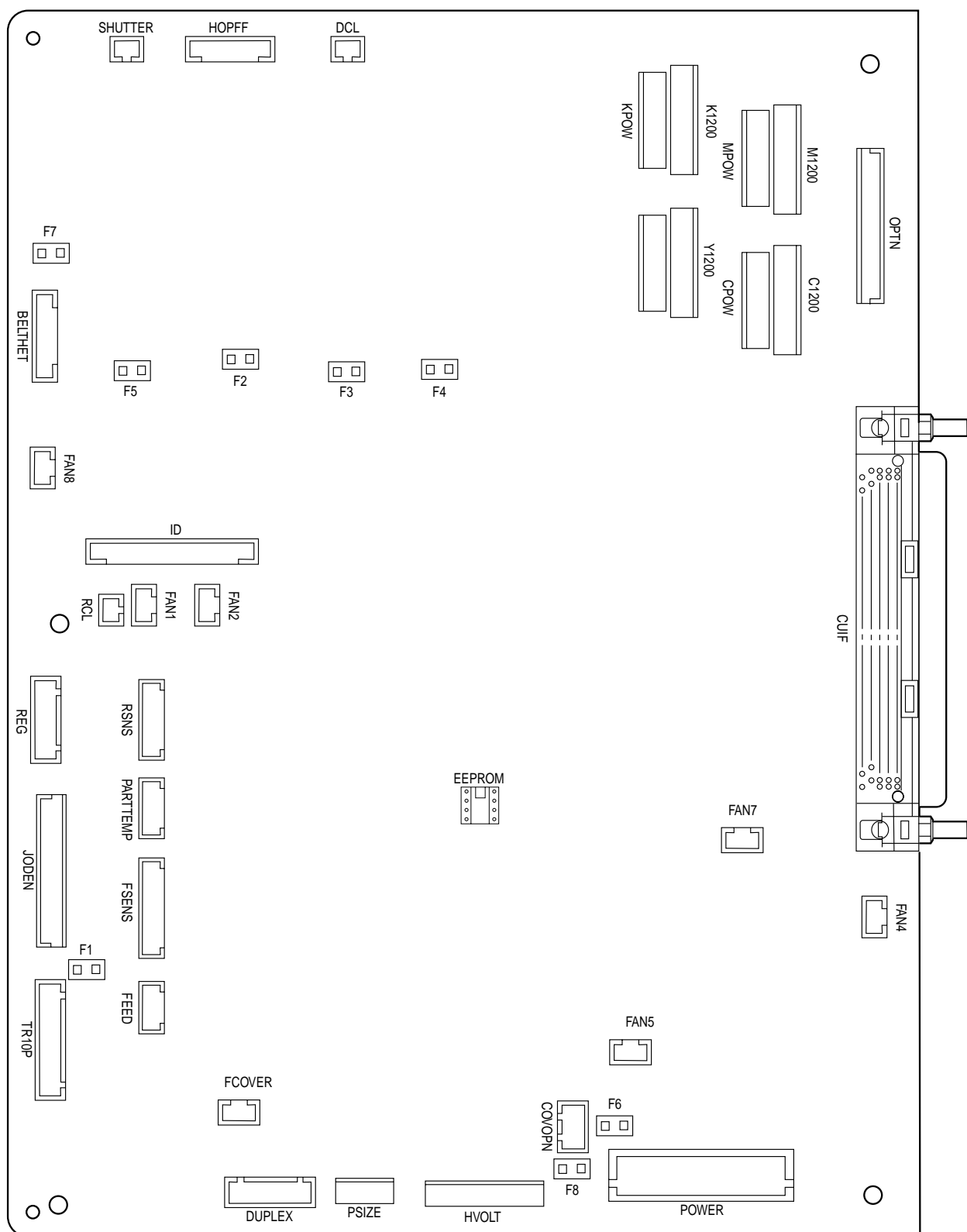
Unit	Circuit Diagram	Illustration	Resistance
Main Motor (C)			<p>Between pins 1 and 2: <math>8.6\Omega</math>  Between pins 3 and 4: <math>8.6\Omega</math></p>
Main Motor (K)			<p>Between pins 1 and 2: <math>8.6\Omega</math>  Between pins 3 and 4: <math>8.6\Omega</math></p>
Registration Motor			<p>Between pins 1 and 2: <math>7.9\Omega</math>  Between pins 3 and 4: <math>7.9\Omega</math></p>

Unit	Circuit Diagram	Illustration	Resistance
Fuser Motor	<p>Red Brown Yellow Blue</p> <p>1 2 3 4</p>		<p>Between pins 1 and 2: <math>7.9\Omega</math> Between pins 3 and 4: <math>7.9\Omega</math></p>
Feeder Motor	<p>1 2 3 4</p>		<p>Between pins 1 and 2: <math>7.9\Omega</math> Between pins 3 and 4: <math>7.9\Omega</math></p>
Duplex Motor	<p>1 2 3 4</p>		<p>Between pins 1 and 2: <math>6.7\Omega</math> Between pins 3 and 4: <math>6.7\Omega</math></p>

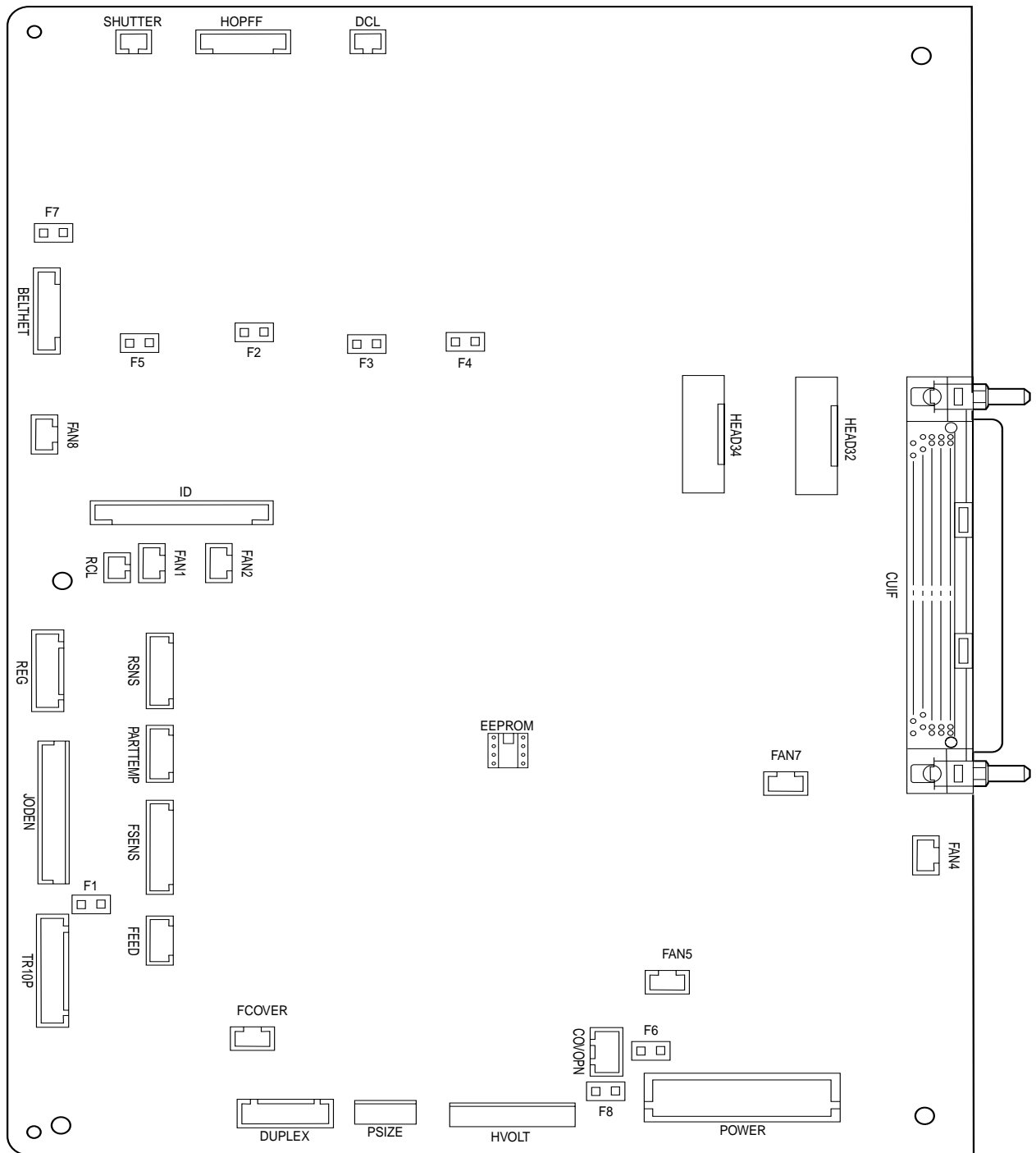
Unit	Circuit Diagram	Illustration	Resistance
Fuser Unit	<p>① Upper roller  Heater  Thermostat ①  Thermistor  a o  b o  c o  d o  e o  f o</p> <p>② Backup roller  Heater  Thermostat ②  Thermistor  a o  b o  c o  d o  e o  f o</p>	<p>1. Upper roller side  a  b  c  d  e  f</p> <p>2. Backup roller side</p>	<p>1. Upper Roller Side  Between pins "a" and "b":  Between pins "c" and "d": 363k (at 25°C)  Between pins "e" and "f": Open</p> <p>2. Backup Roller Side  Between pins "a" and "b":  Between pins "c" and "d": 363k (at 25°C)  Between pins "e" and "f": 0 or open</p>

## 7.2 Program/Font ROM Layouts

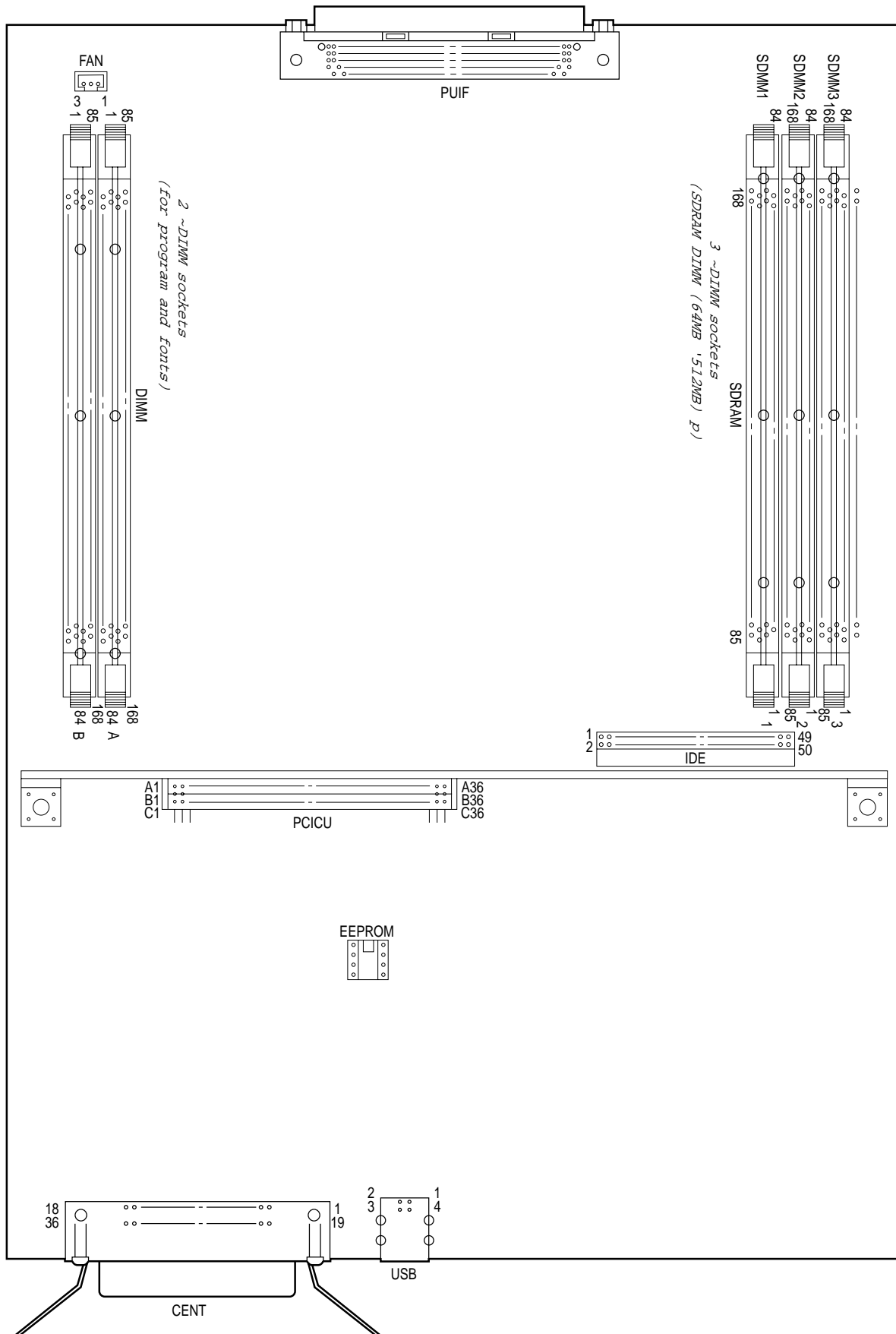
- (1) Print Engine Controller PWB  
a) (K7N PWB : 600dpi)



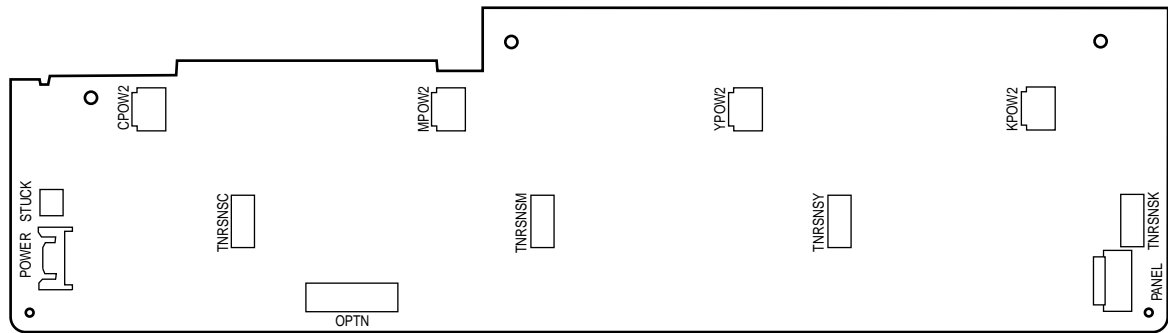
b) (K7N PWB : 1200dpi)



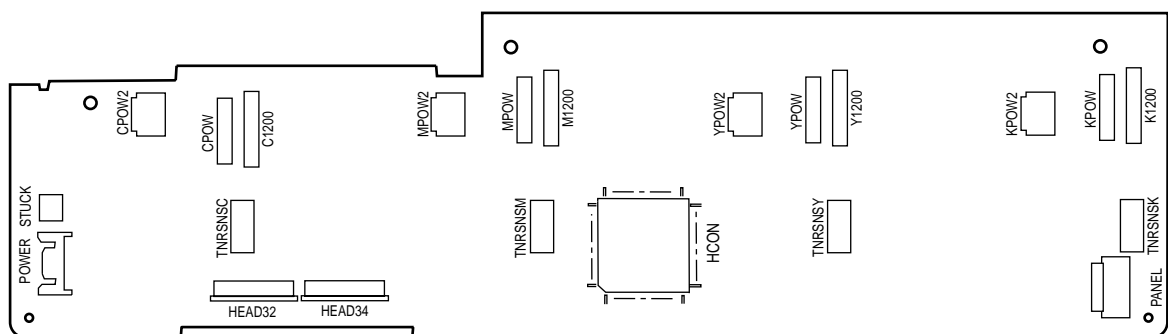
## (2) Main Controller PWB



(3) LED Control PWB  
a) (Y73-1 PWB:600dpi)



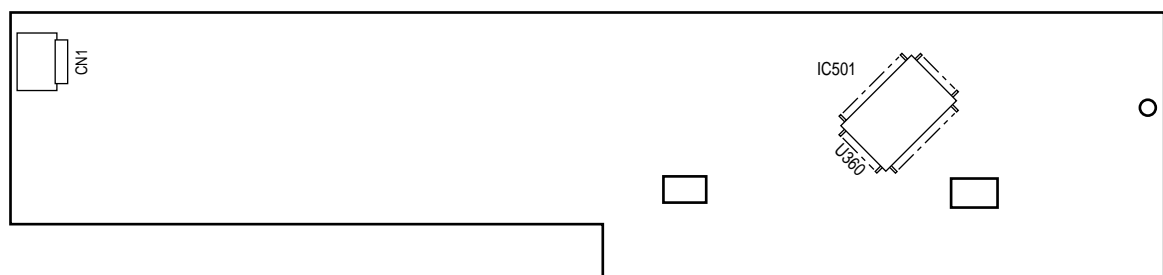
b) (Y7X-1 PWB:1200dpi)



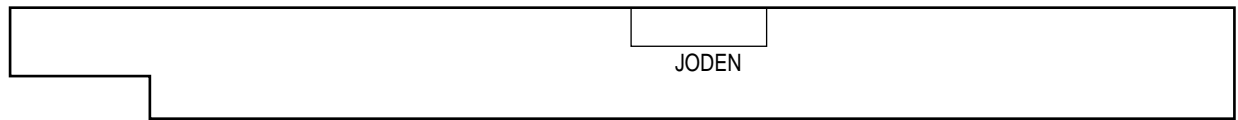
(4) Duplex Control PWB (V71--N PWB)



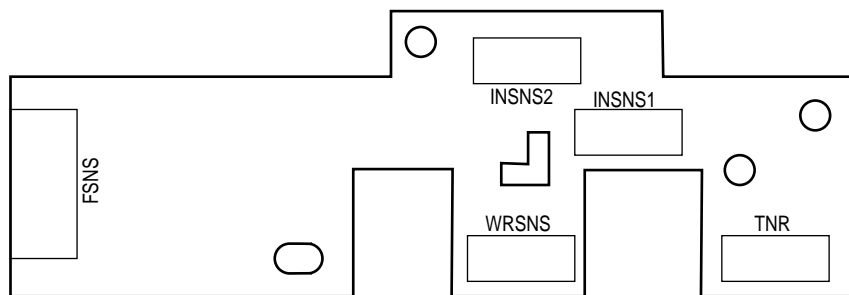
(5) Control Panel PWB (X7N PWB)



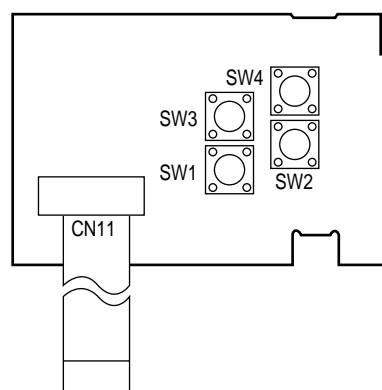
(6) N71 PWB



(7) Entrance Sensor PWB (R71 PWB)

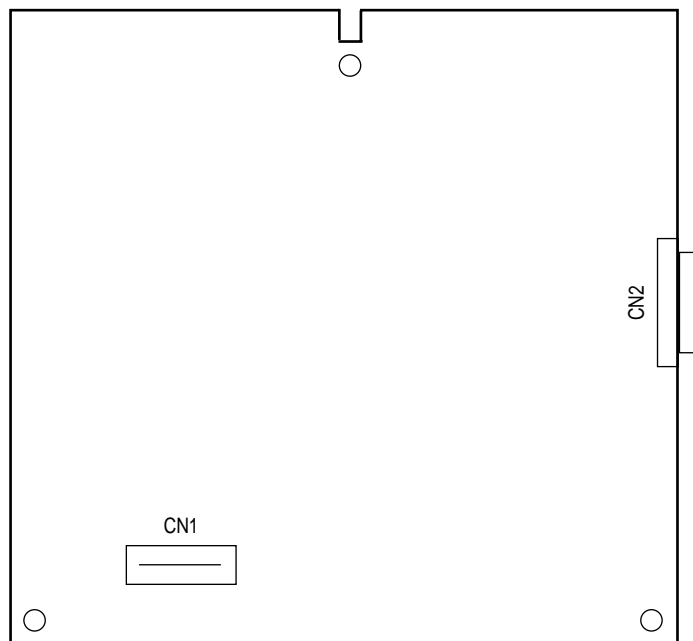


(8) Paper Size Sensing PWB (PXC PWB)

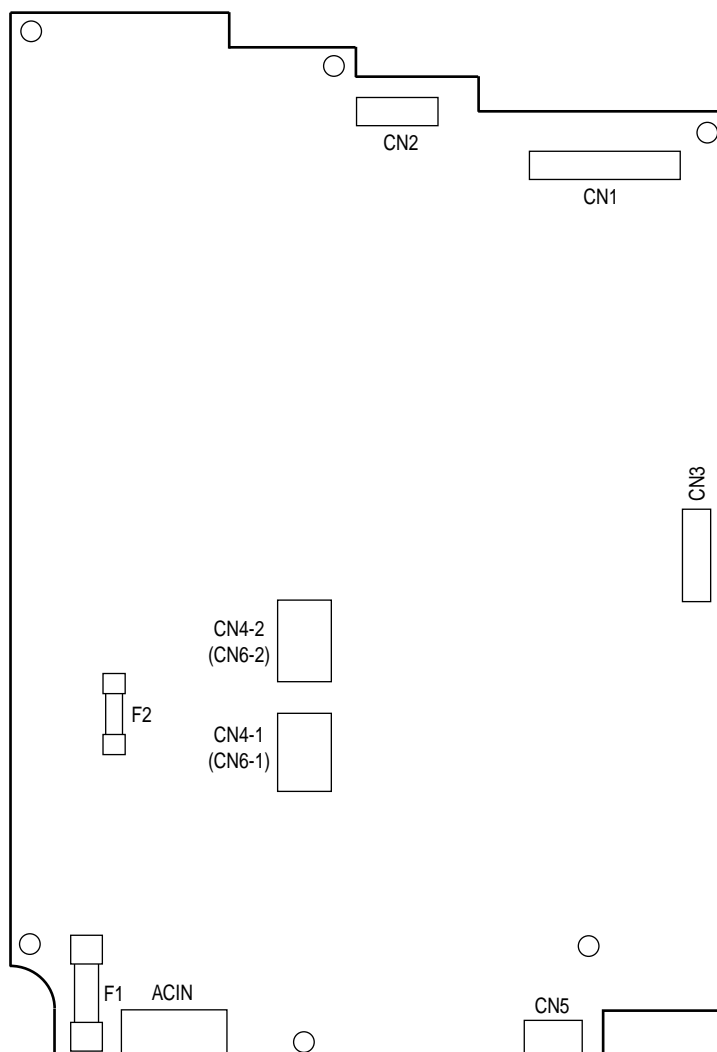




(9) High voltage power supply PWB



(10) Low voltage power supply PWB



## 8. PARTS LIST

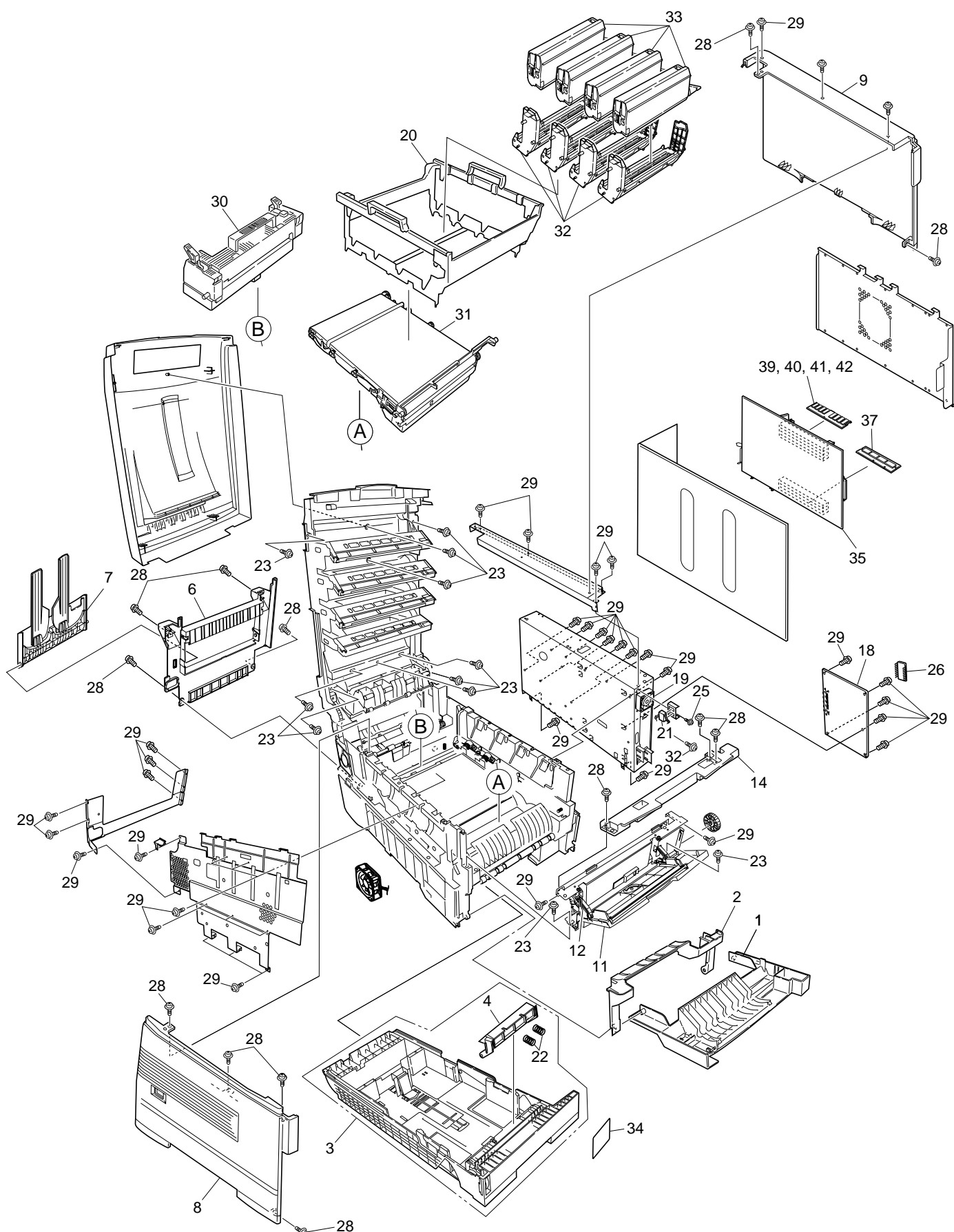


Figure 8-1-1/3

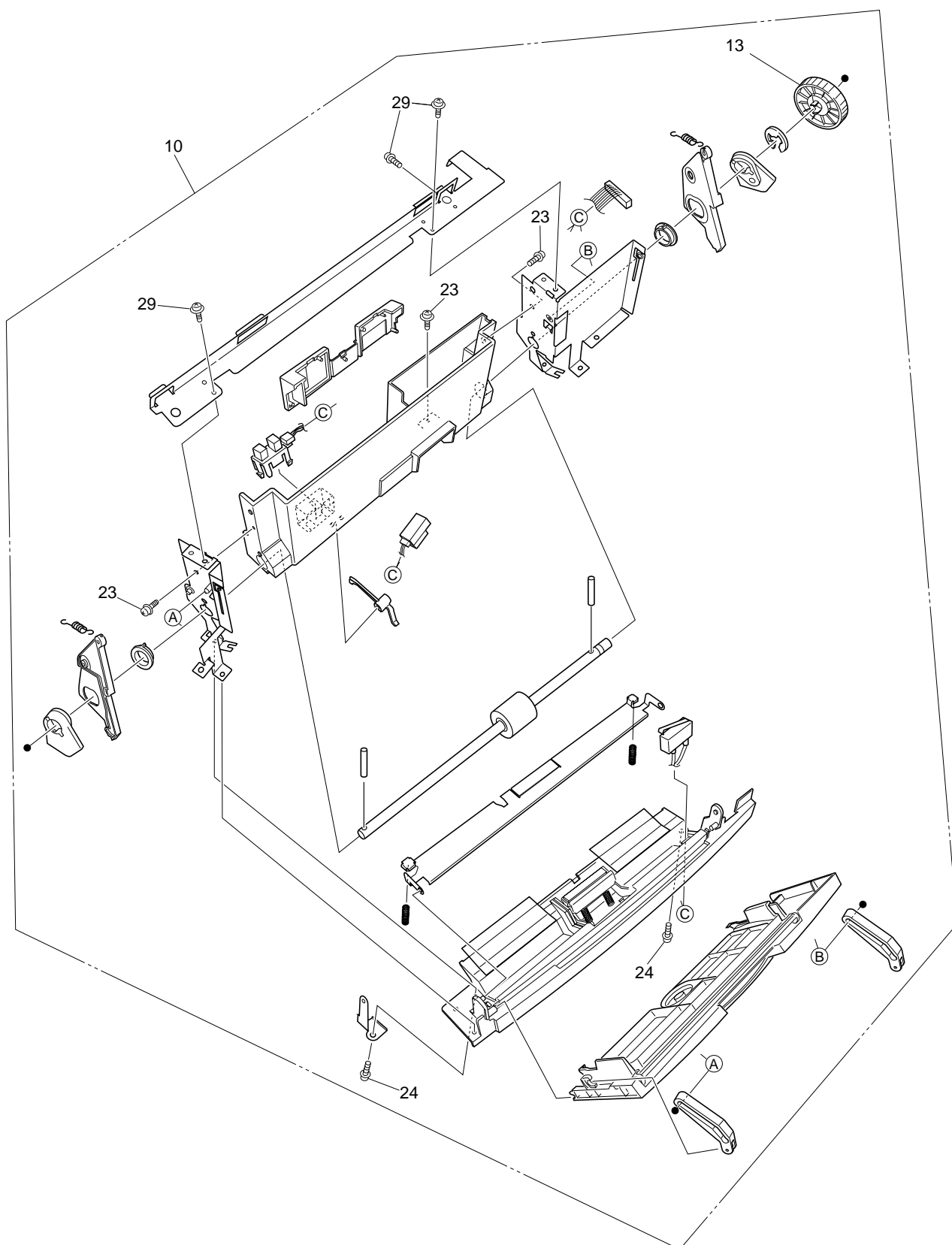


Figure 8-1-2/3

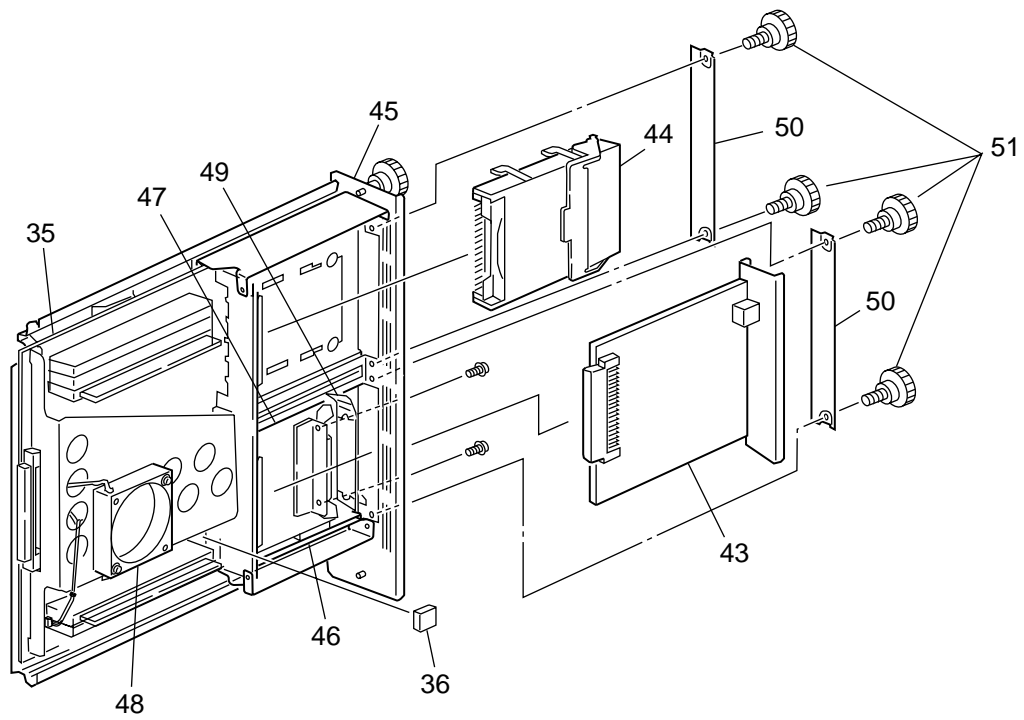


Figure 8-1-3/3

Table 8-1-1/3

## Main Assembly

No.	Patrs No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	40864601	Front Cover Assy	1	3	6	12	
2	41042501	Front Cover Inner Baffle	1	3	6	12	
3	40866701	Cassette Assy	1	3	6	12	
4	41438401	Retard Pad Assy	1	3	6	12	
5							
6	40864301	Rear Cover	1	3	6	12	
7	41374902	Face Up Stacker Assy	1	3	6	12	
8	40864411	Left Side Cover	1	3	6	12	
9	40864503	Right Side Cover	1	3	6	12	
10	40862006	Multipurpose Tray Assy	1	3	6	12	
11	40866301	Multipurpose Tray Cover Assy	1	3	6	12	
12	41045801	Link	2	6	12	24	
13	40325101	Multipurpose Tray Drive Gear	1	3	6	12	
14	40952701	Multipurpose Tray Top Cover	1	3	6	12	
15							
16							
17							
18	41960404	Print Engine Controller PWB (K7N)	1	3	6	12	1200dpi
	41960402	Print Engine Controller PWB (K7N)	1	3	6	12	600dpi
19	40197102	Electrical Chassis Cooling Fan	1	3	6	12	
20	40864901	CRU Basket Assembly	1	3	6	12	
21	41275701	Upper Cover Open Switch	1	3	6	12	
22	41439401	Retard Pad Assy Springs	2	6	12	24	
23	4PB4083-2500P008	Screw (T3×8)	14	-	-	-	
24	4PB4013-3100P008	Screw (M3×8)	2	-	-	-	
25	PSW2-8C	Screw (M2×8)	1	-	-	-	
26	8162303M0001	EEPROM	1	3	6	12	
27							
28	4PB4083-2500P010	Screw (T3×10)	13	-	-	-	
29	4PB4013-3100P006	Screw (M3×6)	42	-	-	-	
30	41945601	Fuser-Unit	1	-	-	-	ODA(120V)
	41945603	Fuser-Unit	1	-	-	-	OEL/APS
	41945607	Fuser-Unit	1	-	-	-	ODA(230V)

Table 8-1-2/3

No.	Patrs No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
31	41945501	Belt-Unit	1	-	-	-	ODA
	41945503	Belt-Unit	1	-	-	-	OEL/APS
32	41962801	ID-Y	1	-	-	-	ODA
	41962802	ID-M	1	-	-	-	ODA
	41962803	ID-C	1	-	-	-	ODA
	41962804	ID-K	1	-	-	-	ODA
	41962805	ID-Y	1	-	-	-	OEL
	41962806	ID-M	1	-	-	-	OEL
	41962807	ID-C	1	-	-	-	OEL
	41962808	ID-K	1	-	-	-	OEL
	41962809	ID-Y	1	-	-	-	APS
	41962810	ID-M	1	-	-	-	APS
	41962811	ID-C	1	-	-	-	APS
	41962812	ID-K	1	-	-	-	APS
33	41963001	Toner-Cartridge_Type_C2_Y (10K)	1	-	-	-	ODA
	41963002	Toner-Cartridge_Type_C2_M (10K)	1	-	-	-	ODA
	41963003	Toner-Cartridge_Type_C2_C (10K)	1	-	-	-	ODA
	41963004	Toner-Cartridge_Type_C2_K (10K)	1	-	-	-	ODA
	41963005	Toner-Cartridge_Type_C2_Y (10K)	1	-	-	-	OEL
	41963006	Toner-Cartridge_Type_C2_M (10K)	1	-	-	-	OEL
	41963007	Toner-Cartridge_Type_C2_C (10K)	1	-	-	-	OEL
	41963008	Toner-Cartridge_Type_C2_K (10K)	1	-	-	-	OEL
	41963009	Toner-Cartridge_Type_C2_Y (10K)	1	-	-	-	APS
	41963010	Toner-Cartridge_Type_C2_M (10K)	1	-	-	-	APS
	41963011	Toner-Cartridge_Type_C2_C (10K)	1	-	-	-	APS
	41963012	Toner-Cartridge_Type_C2_K (10K)	1	-	-	-	APS
	41963201	Toner-Cartridge_Type_C2_Y (5K)	1	-	-	-	ODA
	41963202	Toner-Cartridge_Type_C2_M (5K)	1	-	-	-	ODA
	41963203	Toner-Cartridge_Type_C2_C (5K)	1	-	-	-	ODA
	41963204	Toner-Cartridge_Type_C2_K (5K)	1	-	-	-	ODA
	41963205	Toner-Cartridge_Type_C2_Y (5K)	1	-	-	-	OEL
	41963206	Toner-Cartridge_Type_C2_M (5K)	1	-	-	-	OEL
	41963207	Toner-Cartridge_Type_C2_C (5K)	1	-	-	-	OEL
	41963208	Toner-Cartridge_Type_C2_K (5K)	1	-	-	-	OEL

Table 8-1-3/3

No.	Pats No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
33	41963209	Toner-Cartridge_Type_C2_Y(5K)	1	-	-	-	APS
	41963210	Toner-Cartridge_Type_C2_M(5K)	1	-	-	-	APS
	41963211	Toner-Cartridge_Type_C2_C(5K)	1	-	-	-	APS
	41963212	Toner-Cartridge_Type_C2_K(5K)	1	-	-	-	APS
34	41377401	Plate-Indicator	1	3	6	12	
35	41884009	PCB Assy TIG-3	1	3	6	12	600dpi/1200dpi
36	8164323M0000	EEPROM(CU)	1	3	6	12	
37	42277502	Board-CRF (PX711(1200))	1	3	6	12	C7500(PS/PCL)
	42277506	Board-CRF (PX711(600))	1	3	6	12	C7300(PS/PCL)
38							
39	41437446	Board-Memory 64MB	1	3	6	12	ODA
	41437441	Board-Memory 64MB	1	3	6	12	OEL
	41437436	Board-Memory 64MB	1	3	6	12	APS
40	41437447	Board-Memory 128MB	1	3	6	12	ODA
	41437442	Board-Memory 128MB	1	3	6	12	OEL
	41437437	Board-Memory 128MB	1	3	6	12	APS
41	41437448	Board-Memory 256MB	(1)	(3)	(6)	(12)	ODA
	41437443	Board-Memory 256MB	(1)	(3)	(6)	(12)	OEL
	41437438	Board-Memory 256MB	(1)	(3)	(6)	(12)	APS
42	41437449	Board-Memory 512MB	(1)	(3)	(6)	(12)	ODA
	41437444	Board-Memory 512MB	(1)	(3)	(6)	(12)	OEL
	41437439	Board-Memory 512MB	(1)	(3)	(6)	(12)	APS
43	41705103	Ok i LAN 6200e +	(1)	(3)	(6)	(12)	ODA
	41997101	Ok i LAN 7300e/MLETB11	(1)	(3)	(6)	(12)	ODA/OEL/APS
44	41376019	10GB HDD	(1)	(3)	(6)	(12)	ODA/OEL/APS
45	41964009	Board Assy.-CU (711)	1	3	6	12	Without RomRam
46	41278601	Guide-Rail(A)	2	6	12	28	
47	41278701	Guide-Rail(B)	1	3	6	12	
48	41410201	Motor-Fan	1	3	6	12	For CU
49	41467401	Plate-FG(Centro)	1	3	6	12	
50	41254601	Plate-Blank	2	6	12	28	
51	41723901	Screw	4	-	-	-	
52	1050003C0006	TFC-20/TFT-102010	1	3	6	12	Core LAN cable

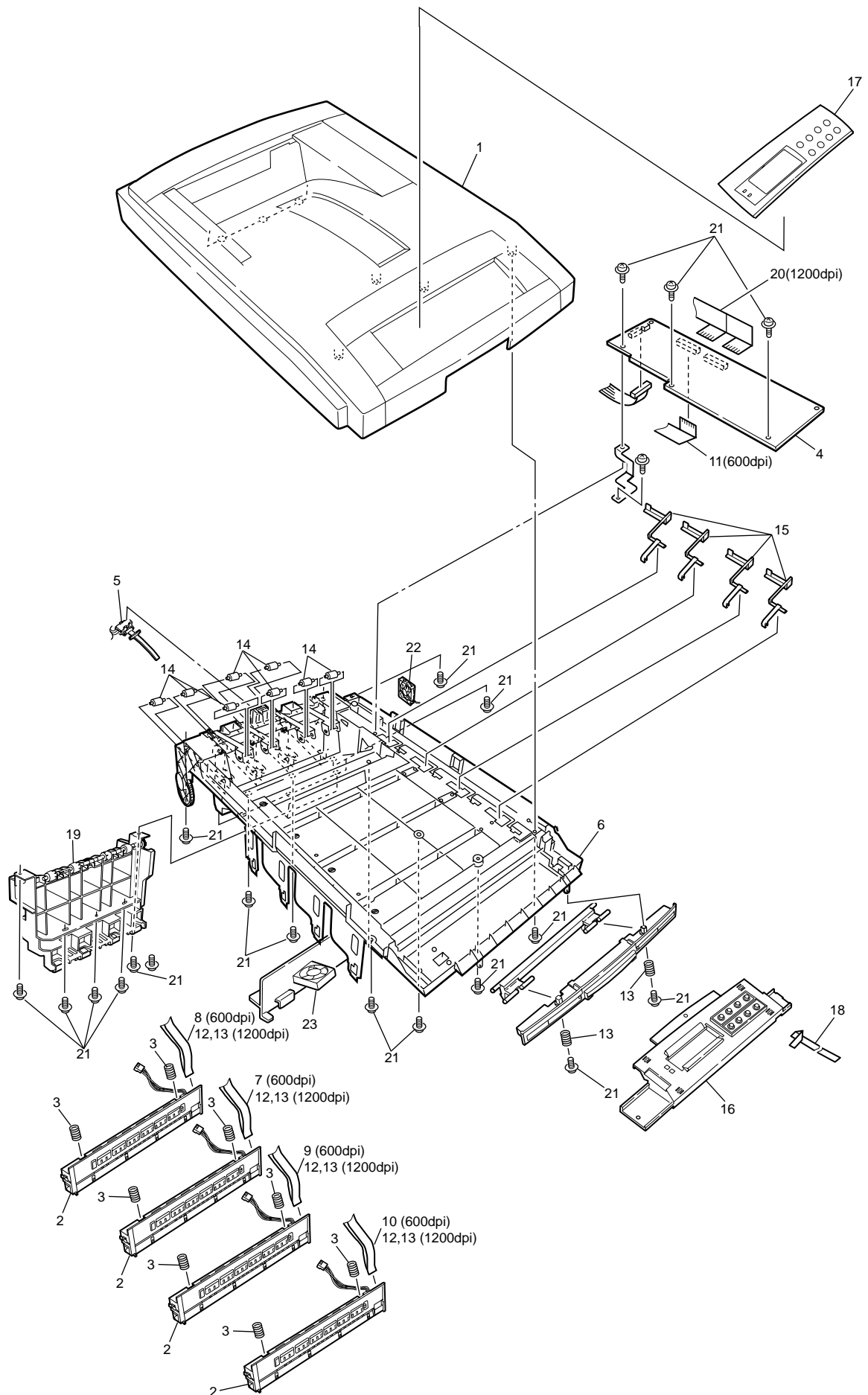


Figure 8-2



# Top Cover Assembly

Table 8-2

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	40859702	Top Cover	1	3	6	12	
2	41929301	LED Assy (1200dpi)	4	12	24	48	
	41971001	LED Assy (600dpi)	4	12	24	48	
3	42216201	LED Assy Spring	8	24	48	96	
4	41960901	LED Control PWB (Y73)	1	3	6	12	600dpi
	42124801	LED Control PWB (Y7X)	1	3	6	12	1200dpi
5	40365404	Stacker Full Sensor	1	3	6	12	600dpi
	40365405	Stacker Full Sensor	1	3	6	12	1200dpi
6	41316503	Top Cover Inner Frame Kit	1	3	6	12	
7	42406403	LED Harness M	1	3	6	12	600dpi
8	42406404	LED Harness C	1	3	6	12	600dpi
9	42406402	LED Harness Y	1	3	6	12	600dpi
10	42406401	LED Harness K	1	3	6	12	600dpi
11	41593101	LED Control PWB Tape Harness	1	3	6	12	600dpi
12	2381021P0021	LED Harness 14	4	12	24	48	1200dpi
13	2381021P0020	LED Harness 12	4	12	24	48	1200dpi
14	41765601	Eject Roller	8	24	48	96	
15	40860602	Toner Sensor	4	12	24	48	
16	40866102	Control Panel Assy	1	3	6	12	
17	42237802	Control Panel Bezel	1	3	6	12	600dpi(OEL/APS)
	42237803	Control Panel Bezel	1	3	6	12	1200dpi(OEL/APS)
	42237807	Control Panel Bezel	1	3	6	12	600dpi(ODA)
	42237808	Control Panel Bezel	1	3	6	12	1200dpi(ODA)
18	2381003P0014	Control Panel Tape Harness	1	3	6	12	
19	40861501	Eject Guide Assy	1	3	6	12	
20	42167601	Cord Assy Head	1	3	6	12	1200dpi
21	4PB4083-2500P008	Screw (T3×8)	19	-	-	-	
22	40197106	Fuse Fan 60	1	3	6	12	
23	41469007	ID cooling Fan	1	3	6	12	

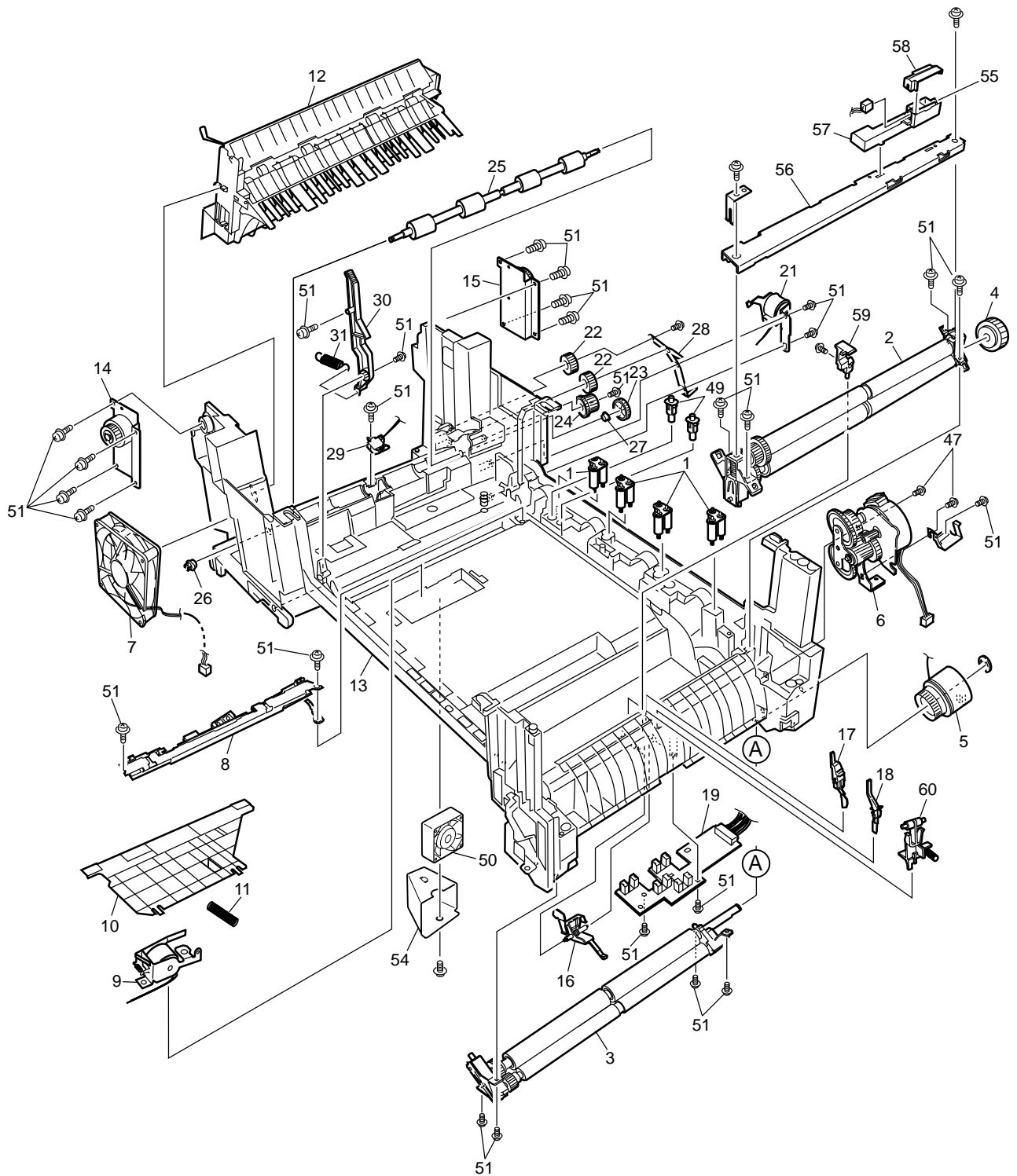


Figure 8-3-1/2

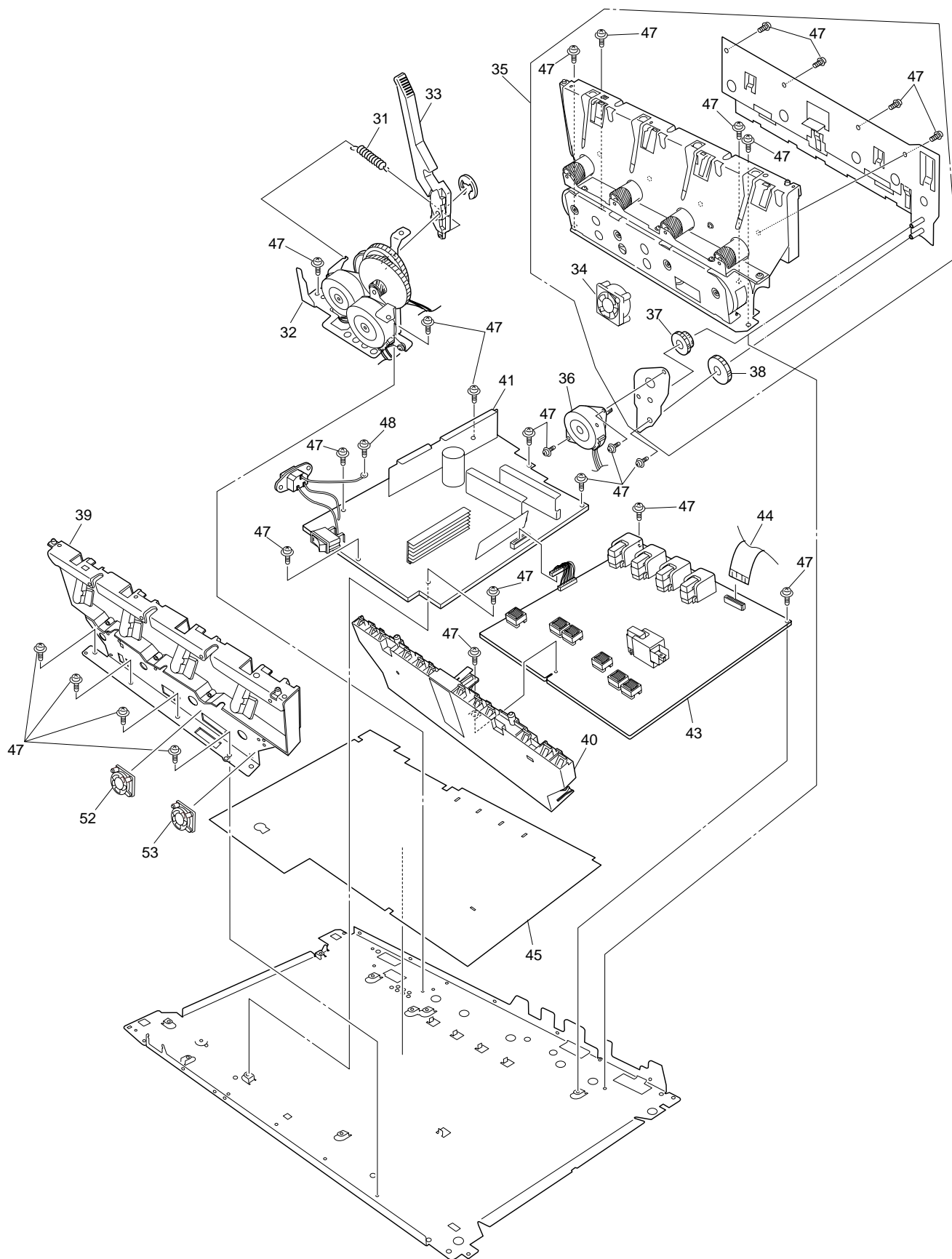


Figure 8-3-2/2

Table 8-3-1/2

# Printer Unit Chassis

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	41189701	Drum contact Assy	4	12	24	48	
2	40844306	Registration Roller Assy (A)	1	3	6	12	
3	40844303	Registration Roller Assy (B)	1	3	6	12	
4	40845401	Registration Drive Gear (A)	1	3	6	12	
5	41187102	Registration Clutch	1	3	6	12	
6	40845801	Registration Motor Assy	1	3	6	12	
7	42153101	Main Cooling Fan	1	3	6	12	
8	41944001	Color Registration Sensor Assy	1	3	6	12	
9	41968701	Registration Shutter Solenoid	1	3	6	12	
10	41944201	Registration Shutter	1	3	6	12	
11	41968501	Registration Shutter Spring	1	3	6	12	
12	40859201	Duplex Guide Assy	1	3	6	12	
13	41940301	Printer Unit Chassis	1	3	6	12	
14	41312801	Left Top Cover Spring Assy	1	3	6	12	
15	41312901	Right Top Cover Spring Assy	1	3	6	12	
16	40841601	Entrance Sensor Actuator #1	1	3	6	12	
17	40841701	Entrance Sensor Actuator #2	1	3	6	12	
18	40841801	Entrance Sensor Actuator #3	1	3	6	12	
19	41258301	Entrance Sensor PWB (R71)	1	3	6	12	
20							
21	41253602	Duplex Gate Solenoid Assy	1	3	6	12	
22	40842401	Fuser Drive Gear -A	2	6	12	24	
23	40316301	Fuser Drive Gear -B	1	3	6	12	
24	42170801	Fuser Drive Gear -C	1	3	6	12	
25	40323902	Fuser Exit Roller	1	3	6	12	
26	4PP4076-3949P001	Fuser Exit Roller Bushing (L)	1	3	6	12	
27	4PP4043-4489P001	Fuser Exit Roller Bushing (R)	1	3	6	12	
28	40842501	Fuser Exit Roller Contact	1	3	6	12	
29	41073601	Exit Sensor Assy	1	3	6	12	
30	40841301	Fuser Latching Handle (L)	1	3	6	12	
31	40841501	Fuser Latching Handle Springs	2	6	12	24	
32	40848801	Belt Motor Assy	1	3	6	12	
33	40841401	Fuser Latching Handle (R)	1	3	6	12	
34	41469004	ID Motor Fan	1	3	6	12	
35	40847306	Main Motor Assy	1	3	6	12	

Table 8-3-2/2

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
36	40846001	Main Feeder Drive Motor	1	3	6	12	
37	40848501	Main Feeder Drive Gear (A)	1	3	6	12	
38	40848601	Main Feeder Drive Gear (B)	1	3	6	12	
39	41303606	Left Plate Assy	1	3	6	12	
40	40850201	Contact Assy	1	3	6	12	
41	41862901	Power-Unit AC-DC-switching(115V)	1	3	6	12	ODA(120V)
	41870701	Power-Unit AC-DC-switching(230V)	1	3	6	12	ODA(230V)/OEL/APS
42							
43	42046801	Power-Unit (high-voltage)	1	3	6	12	
44	2381023P0003	HV Tape Harness	1	3	6	12	
45	41128101	Power Supply Insulator	1	3	6	12	
46							
47	4PB4013-3100P006	Screw (M3×6)	26	-	-	-	
48	PSW4-8C	Screw (M4×8)	1	-	-	-	
49	41346301	Transfer Contact Assy	2	6	12	24	
50	41469006	Power Cooling Fan	1	3	6	12	
51	4PB4083-2500P008	Screw (T3×8)	29	-	-	-	
52	41469005	HV Fan	1	3	6	12	
53	41469003	Belt Fan	1	3	6	12	
54	42309801	Film Duct	1	3	6	12	
55	5632001P0001	Thickness Sensor	1	3	6	12	
56	41911201	Thickness Plate Assy	1	3	6	12	
57	41911101	Thickness Sensor Assy	1	3	6	12	
58	41888701	Cover Seal Sensor	1	3	6	12	
59	41928801	Pickup Stage	1	3	6	12	
60	42199601	Waste Toner Sensor Actuator	1	3	6	12	

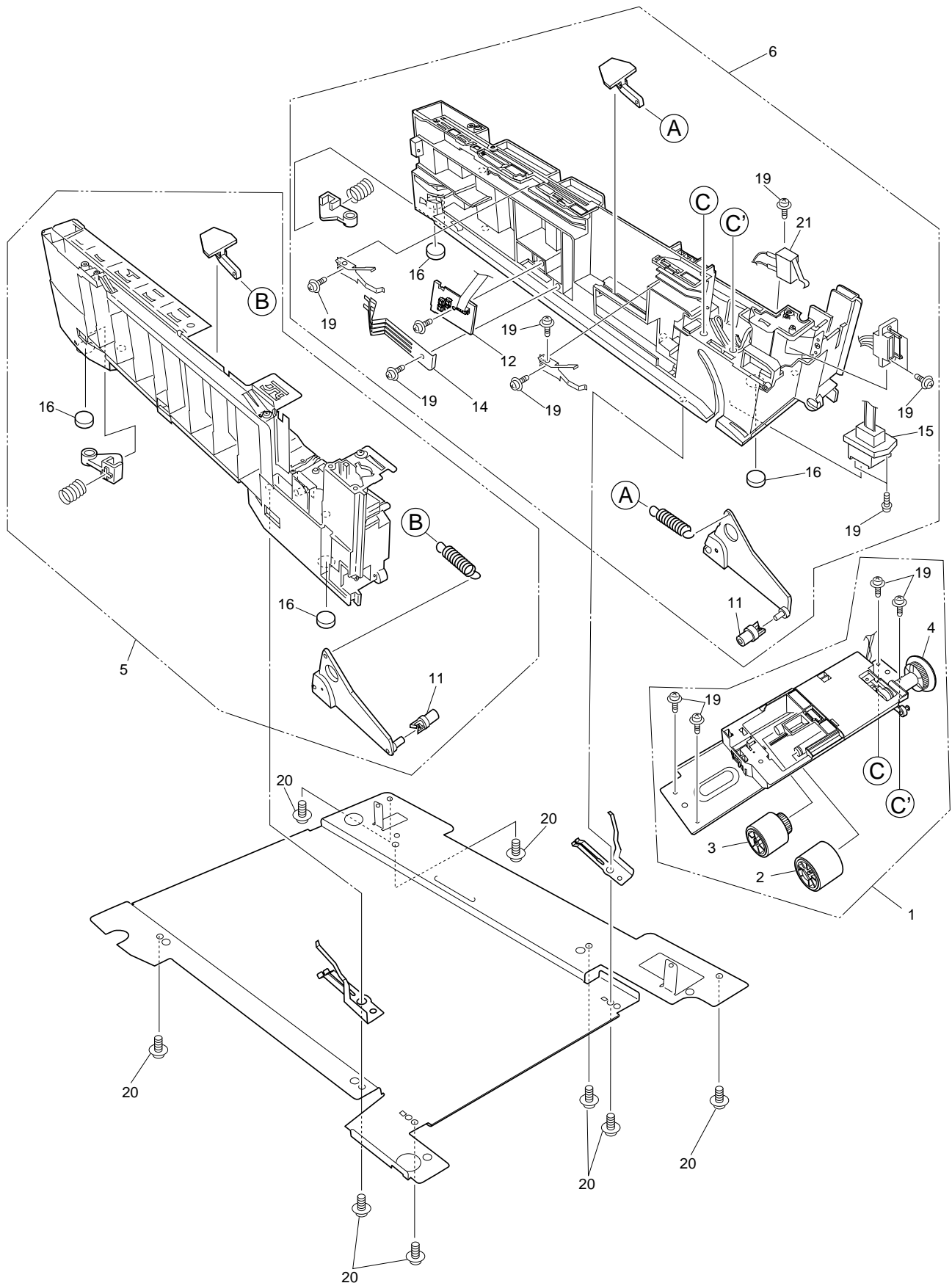


Figure 8-4

Table 8-4

# Paper Tray Guide

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	40839802	Main Feed Assy	1	3	6	12	
2	40371302	Feed Roller	1	3	6	12	
3	40313202	Nudger Roller	1	3	6	12	
4	40325401	Main Feeder Drive Gear	1	3	6	12	
5	40839001	Left Cassette Guide Assy	1	3	6	12	
6	40839406	Right Cassette Guide Assy	1	3	6	12	
7							
8							
9							
10							
11	40349701	Plastic Roller	2	6	12	24	
12	40368304	Paper Size Sensing PWB PXC	1	3	6	12	
13							
14	4PP4076-5360P001	Paper Size Actuator	1	3	6	12	
15	41309106	2nd Tray Connector	1	3	6	12	
16	4PB4016-1960P004	Foot	4	12	24	48	
17							
18							
19	4PB4083-2500P008	Screw (T3×8)	13	-	-	-	
20	4PB4083-5670P002	Screw (T4×10)	8	-	-	-	
21	41275901	Front Cover Open Switch	1	3	6	12	

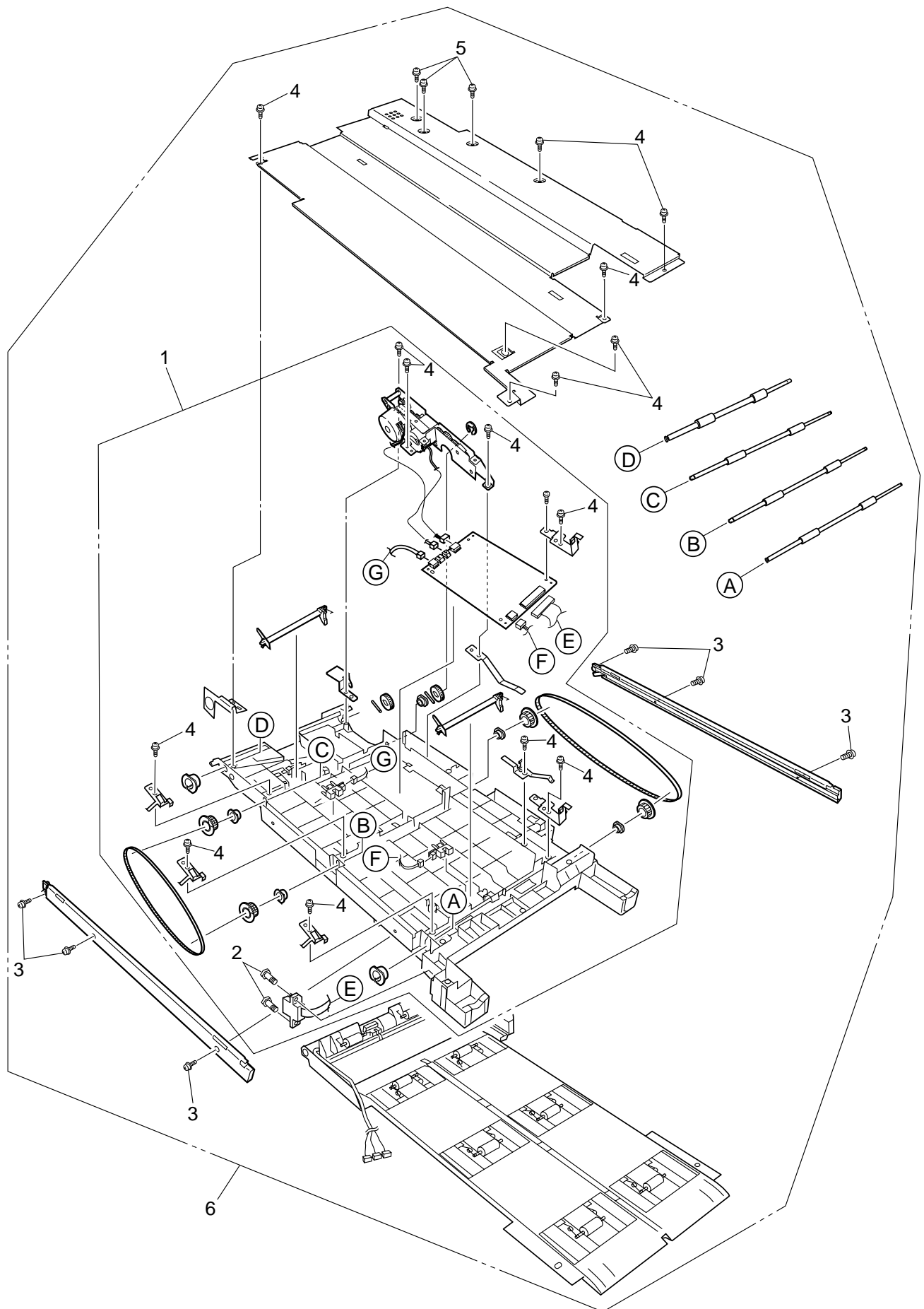


Figure 8-5



Table 8-5

# Duplex Unit

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	41946501	Duplex Transport Assy	1	3	6	12	
2	4PB4043-4718P001	Screw (SP3×10)	2	-	-	-	
3	4PB4083-2500P010	Screw (T3×10)	6	-	-	-	
4	4PB4083-2500P008	Screw (T3×8)	15	-	-	-	
5	4PB4013-3100P006	Screw (M3×6)	3	-	-	-	
6	41945301	Duplex Unit	1	-	-	-	ODA
	41945303	Duplex Unit	1	-	-	-	OEL
	41945307	Duplex Unit	1	-	-	-	APS

## APPENDIX A INTERFACE SPECIFICATIONS

### 1. Parallel Interface Specifications

#### 1.1 Parallel Interface

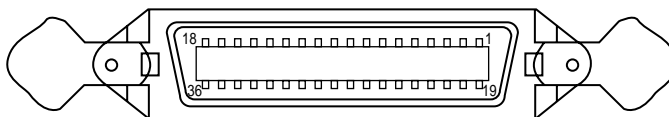
Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits: Compatibility mode, 4bits: Nibble mode, 9 bits: ECP mode

#### 1.2 Parallel Interface Connector and Cable

##### 1) Connector

Printer side: 36-pin receptacle  
Type 57LE-40360-12 (D56) (made by Daiichi Denshi) or equivalent

Cable side: 36-pin plug  
Type 57FE-30360-20N (D8) (made by Daiichi Denshi) or equivalent



Connector Pin Arrangement Viewed from Cable Side

##### 2) Cable

Cable length: 1.8 m max.  
(A shielded cable composed of twisted pair wires is recommended for noise prevention.)

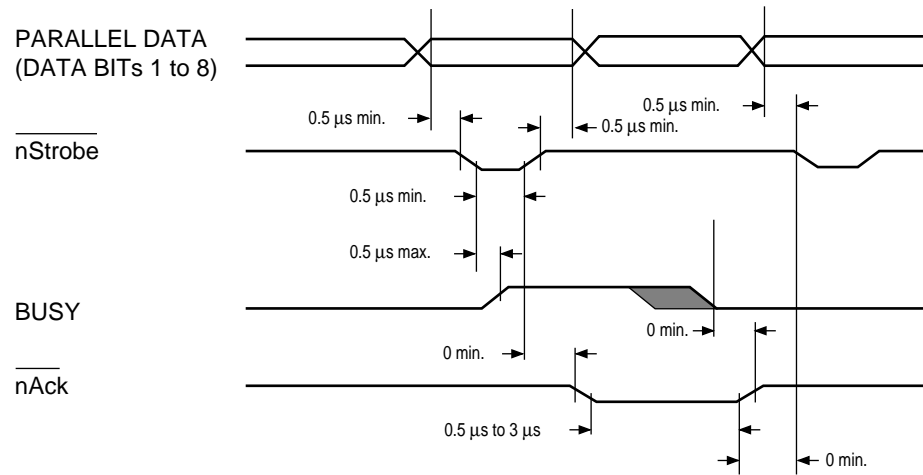
#### 1.3 Parallel Interface Level

LOW: 0 V to +0.8 V  
HIGH: +2.4 V to 5.0 V

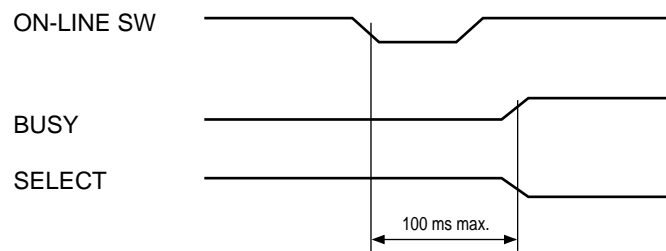
## 1.4 Timing Charts

### Compatible mode

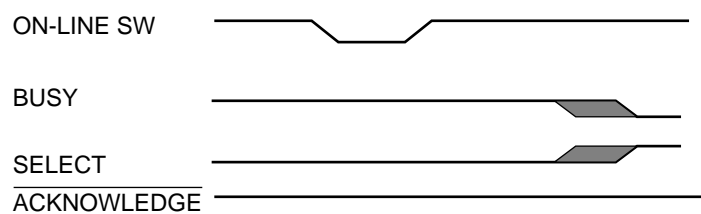
#### a) Data receiving timing



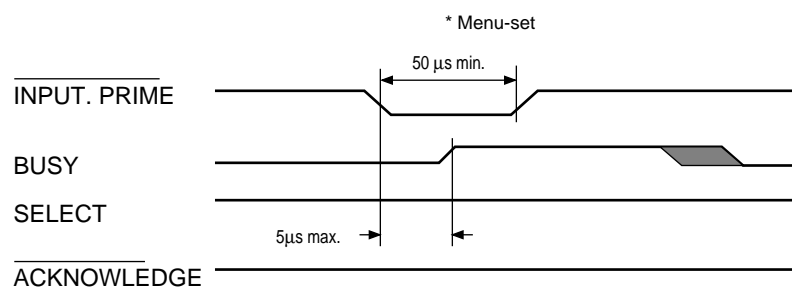
#### b) On-line (off-line switching timing by ON-LINE SW)



#### c) Off-line (on-line switching timing by ON-LINE SW)



#### d) nlnit timing (invalid by default)



## 1.5 Parallel I/F Signals

Table 8-1 shows interface signal names and pin numbers.

Table 8-1 Signals

Pin No.	Signal Name	Signal Direction	Functions
1	Nstrobe (HostClk)	→PR	Pulse for reading data in at trailing edge.
2	DATA 1	→PR	8-bit parallel data. Each signal is HIGH when data is logical 1 and LOW when it is logical 0.
3	DATA 2		
4	DATA 3		
5	DATA 4		
6	DATA 5		
7	DATA 6		
8	DATA 7		
9	DATA 8		
10	nAck (PtrClk)	←PR	Indicates the completion of data reception.
11	Busy (PtrBusy)	←PR	Indicates whether the printer is ready for receiving data. Data cannot be received while the signal is HIGH.
12	PError (AckDataReq)	←PR	Indicates paper error when held HIGH.
13	Select (Xflag)	←PR	HIGH without exception when the parallel interface is enabled.
14	NAutoFd (HostBusy)	→PR	Used in bidirectional communication.
15	-		Unassigned.
16	GND		Signal ground.
17	FG		Chassis ground.
18	+5V	←PR	Used for supplying +5V. Power cannot be supplied to the outside of the printer.
19	GND		Signal ground.
~			
30			
31	NInit (nInit)	→PR	Initializes the printer when held LOW.
32	NFault (nDataAvail)	←PR	LOW during alarm.
33	GND		Signal ground.
34	-		Unassigned.
35	HILEVEL	←PR	Pulled up to +5V at 3.3KΩ inside the printer.
36	Nselectin (IEEE 1284 active)	→PR	Used in bidirectional communication. Low without exception in compatible mode.

**Note:** Parenthesized signal names are used in nibble mode.

Only functions in compatible mode are listed.

The C9300/C9500 series of printers supports the IEEE std 1284-1994 nibble mode.

Note that, when used with personal computers or cables that do not comply with the standards, the printers may exhibit unpredictable behavior.

## 2. Universal Serial Bus (USB) Interface Specifications

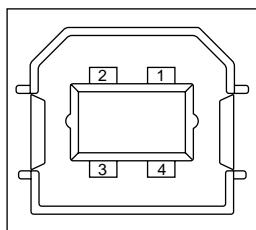
### 2.1 USB Interface

- (1) Basic specifications  
Conforms to USB specification, revision 1.1.
- (2) Transmission mode  
Full speed (max. 12 Mbps + 0.25%)
- (3) Power Control  
Self-power device

### 2.2 USB Interface Connector and Cable

- (1) Connector  
Printer side: Type B receptacle  
Upstream port  
USB-4R-D14T-1 (made by JST) or equivalent

Connector pin layout



Cable side: Type B plug

- (2) Cable  
Cable length: 5 m max. (cable compliant with USB specification, revision 1.1)  
(A shielded cable must be used.)

### 2.3 USB Interface Signals

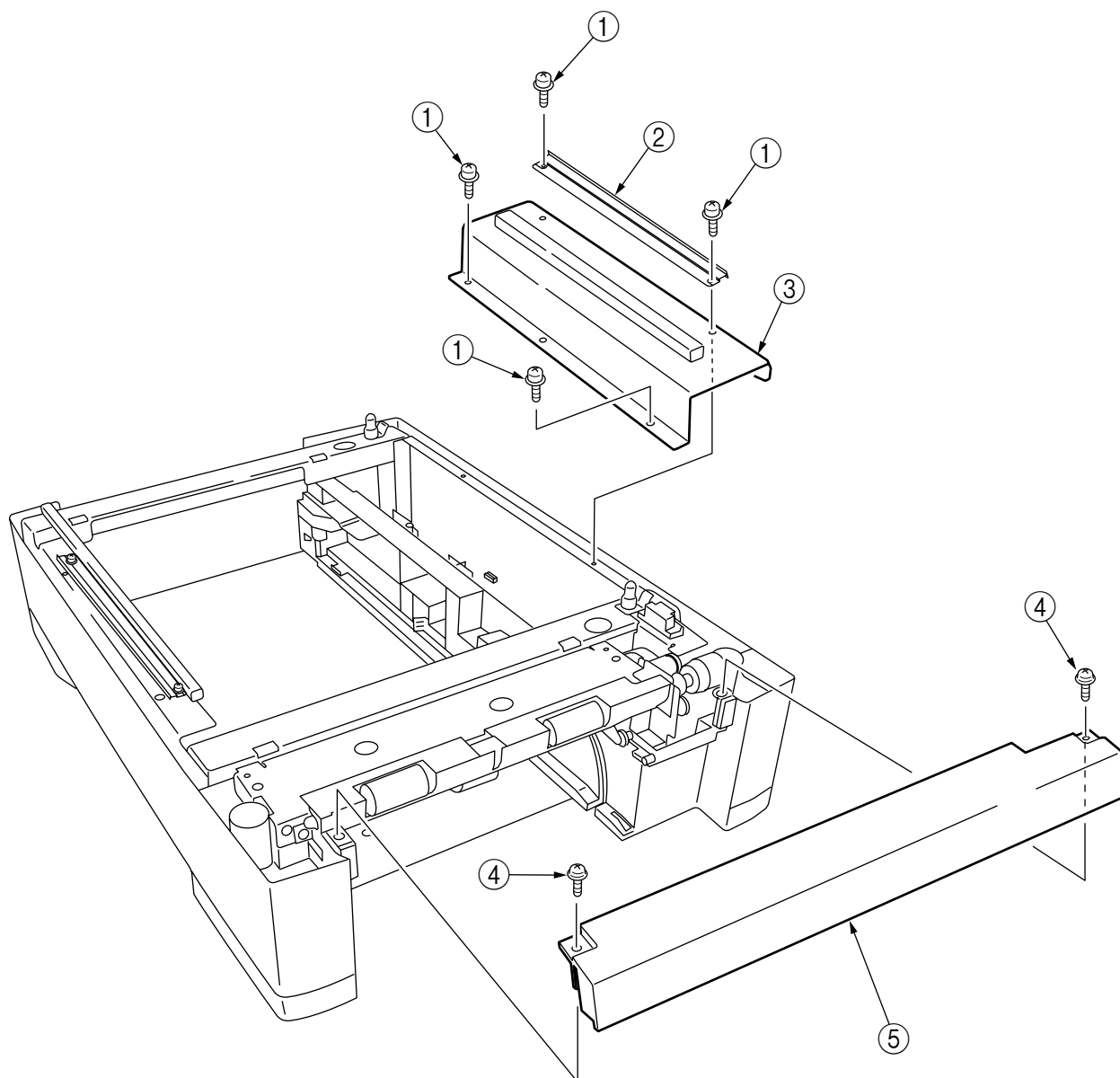
	R1	Function
1	Vbus	Power Supply (+5V) (red)
2	D -	Data transmission (white)
3	D +	Data transmission (green)
4	GND	Signal ground (black)
Shell	Shield	

## APPENDIX B 2ND/3RD TRAY MAINTENANCE

### 1. Parts Replacement

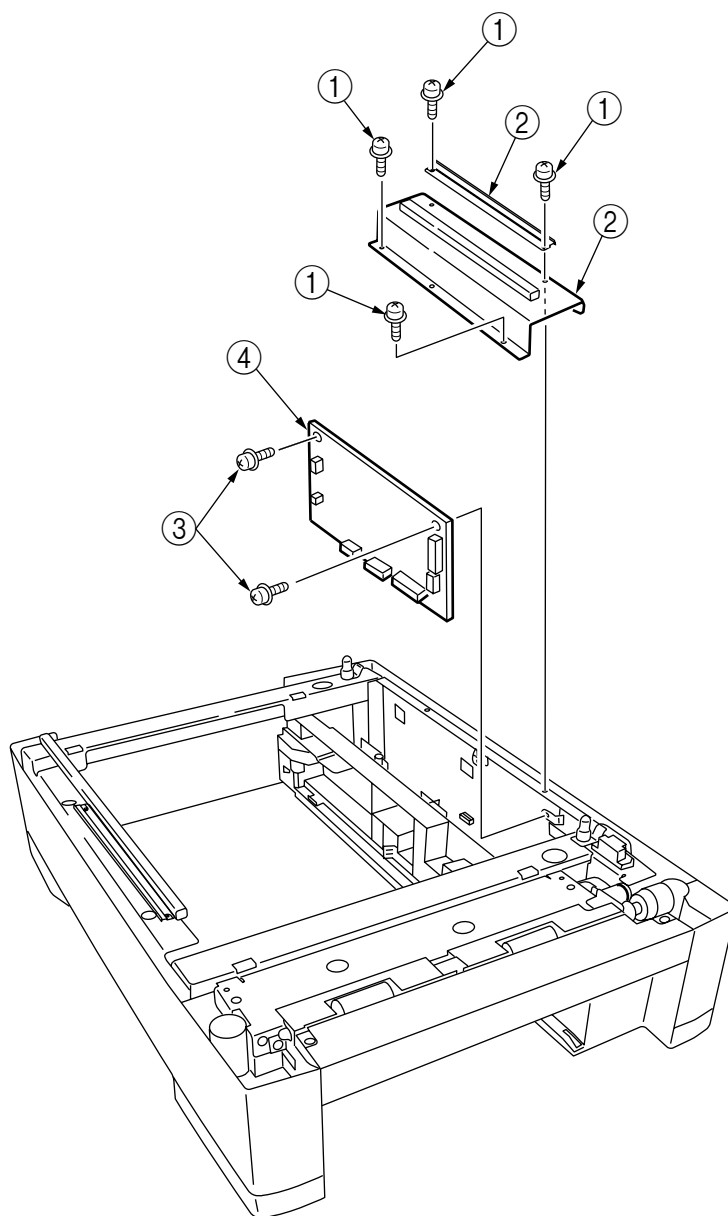
#### 1.1 Cover Idle Roller Assy

- (1) Unscrew the four screws ① to remove the cover side ② and the plate cover PCB ③.
- (2) Unscrew the two screws ④ to demount the cover idle roller Assy ⑤.



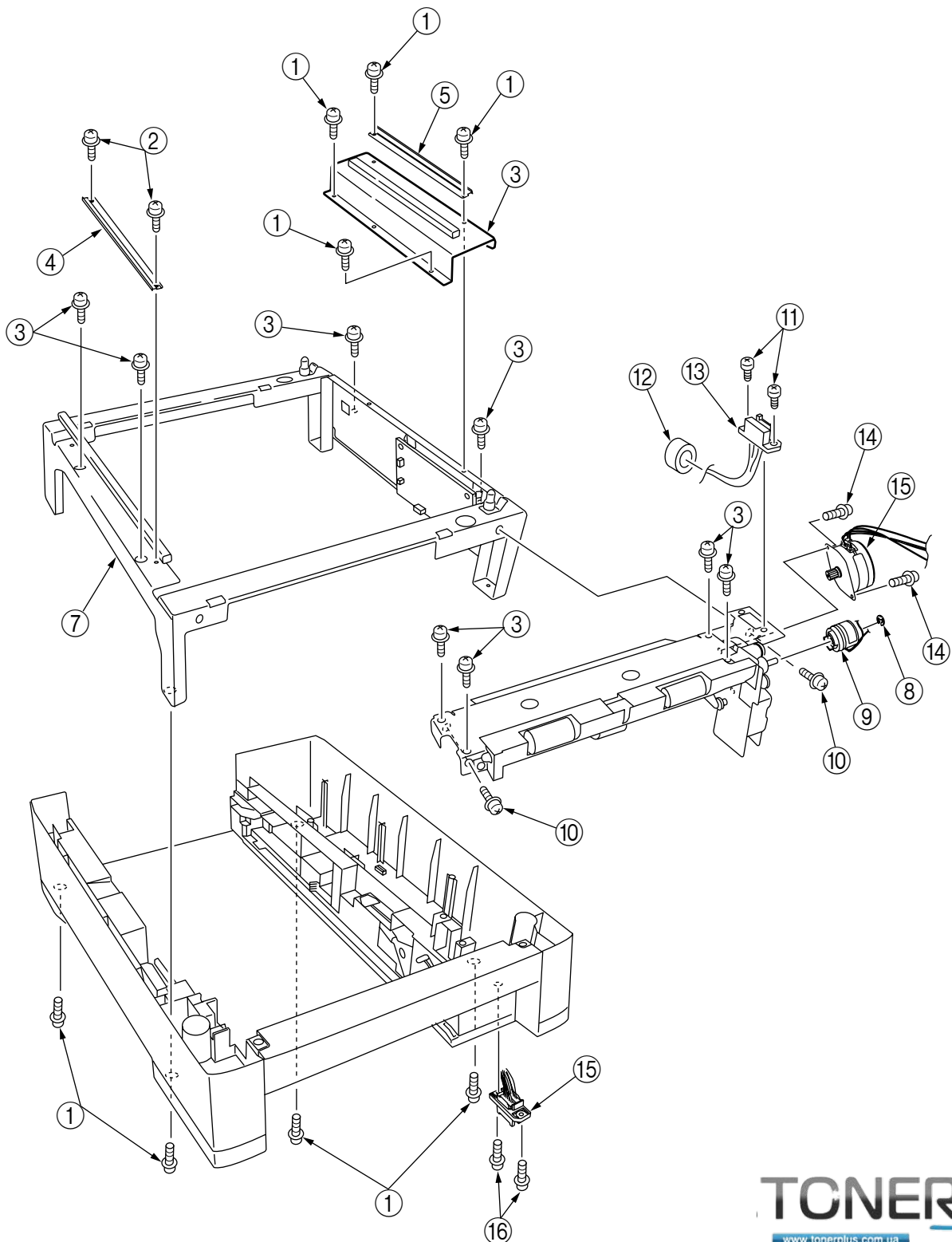
## 1.2 PCB

- (1) Unscrew the four screws ① to remove the plate cover PCB ②.
- (2) Remove the connectors (at seven places) and the two screws ③, then demount the board ④.



### 1.3 Feeder Drive Assy

- (1) Remove the four screws ①, six screws ② and the eight screws ③.
- (2) Remove the cover sides ④ and ⑤, the plate cover PCB ⑥ and the frame hopping Assy ⑦.
- (3) Remove the E ring ⑧, the clutch ⑨ and the two screws ⑩.
- (4) Unscrew the two screws ⑪ to remove the core ⑫ and the connector ⑬.
- (5) Unscrew the two screws ⑭, then detach the motor ⑮.
- (6) Unscrew the tow screws ⑯ to remove the connector ⑰.





## 2. 7820 2nd/3rd Tray PARTS LIST

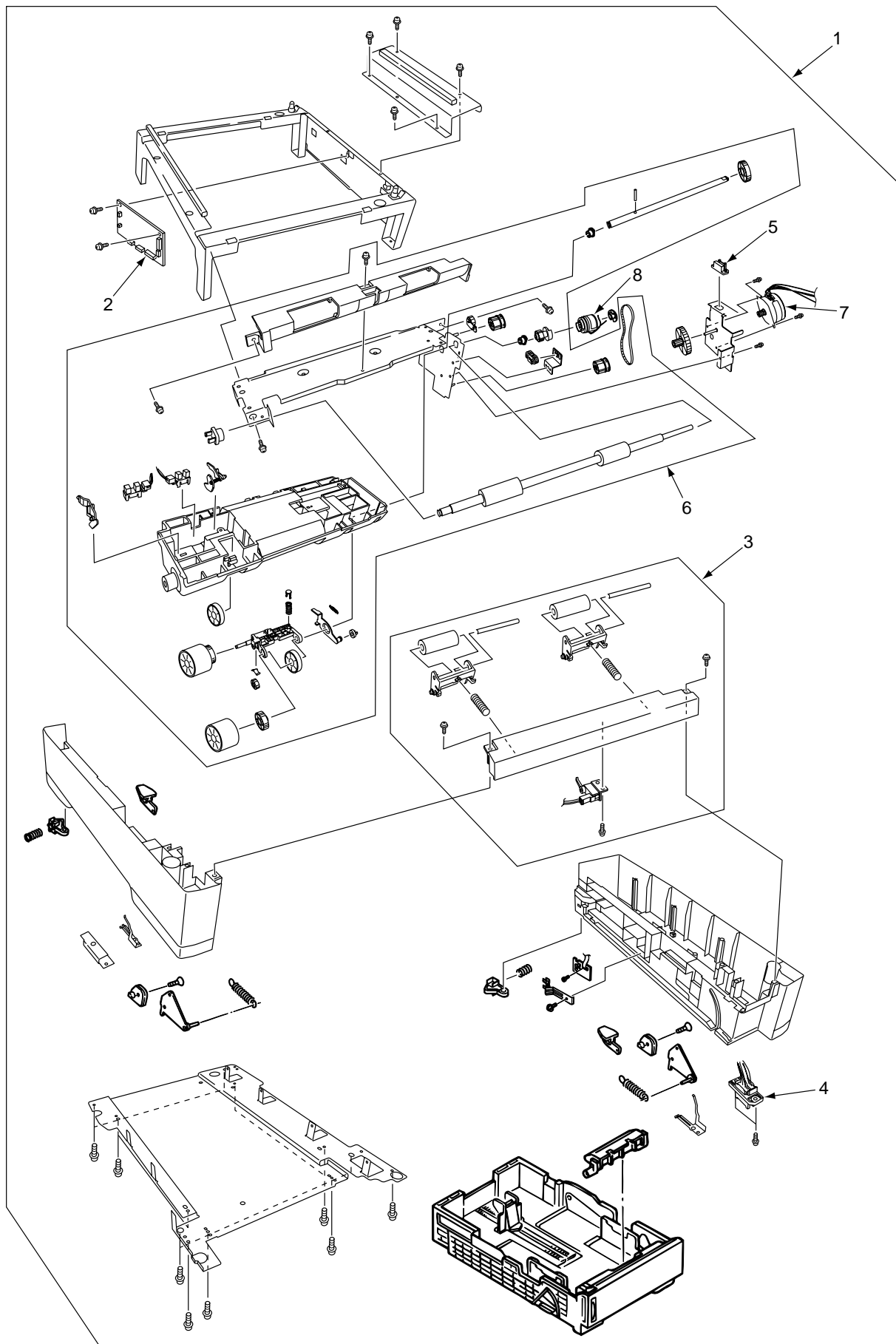


Table 2-1 7820 2nd/3rd Tray

No.	Parts No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	41945401	2nd/3rd Tray 500Sheet Feeder Assembly	1	-	-	-	ODA
	41945403	2nd/3rd Tray 500Sheet Feeder Assembly	1	-	-	-	OEL
	41945407	2nd/3rd Tray 500Sheet Feeder Assembly	1	-	-	-	APS
2	41780305	Board-V7X	1	3	6	12	
3	41400501	Idler Roller Assembly	1	3	6	12	
4	41462301	Lower Connector W/harness	1	3	6	12	
5	41462201	Upper Connector W/harness	1	3	6	12	
6	41398103	Feeder Drive Assembly	1	3	6	12	
7	42107701	Feeder Motor	1	3	6	12	
8	41859201	Feder Cluch	1	3	6	12	
9	41829101	Connector Protector	1	3	6	12	

## APPENDIX C 7820 SERIES ERROR MESSAGES

### 1. Error Messages

(Caution) \* : Raise in the factory mode only.

\*\* : Not raise in the standard config machines.

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
300	POWER OFF/ON 300:NETWORK ERROR	OFF	Blink	A network error is occurring.	
310	CLOSE COVER 310:UPPER COVER OPEN	OFF	Blink	The cover is open.	
311	CLOSE COVER 311:SIDE COVER OPEN	OFF	Blink	The cover is open.(PX711)	
311	CLOSE COVER 311:SIDE COVER OPEN	OFF	Blink	The cover is open.(PX713)	
312	CLOSE COVER 312:TRAY2 COVER OPEN	OFF	Blink	The cover is open.	
313	CLOSE COVER 313:TRAY3 COVER OPEN	OFF	Blink	The cover is open.	
314	CLOSE COVER 314:TRAY4 COVER OPEN	OFF	Blink	The cover is open.	
315	CLOSE COVER 315:TRAY5 COVER OPEN	OFF	Blink	The cover is open.	
320	CHECK FUSER UNIT 320:FUSER UNIT MISSING	OFF	Blink	The fuser unit is not correctly installed	
321	POWER OFF AND WAIT FOR A WHILE 321:MOTOR OVERHEAT	OFF	Blink	Motor (Driver LSD) overheat error	
323	OPEN AND CLOSE COVER 323:PAPER THICK ERROR	OFF	Blink	A Sensor output at Medea Empty is outside the spec.(factory mode only raise)	Anomalies with Media Weight Detection sensor.
324	OPEN AND CLOSE COVER 324:PAPER THICK ERROR	OFF	Blink	The difference among Sensor outputs is outside the spec.(factory mode only raise)	
325	OPEN AND CLOSE COVER 325:PAPER THICK ERROR	OFF	Blink	Media detected values are outside the spec.	
326	OPEN AND CLOSE COVER 326:PAPER THICK ERROR	OFF	Blink	Media detected values in U-Heavy Mode are outside the spec.	
327 *	DOWNLOAD CHIP DATA 327:DENSITY CALIBRATION CHIP ERROR	OFF	Blink	Density Adjustment's calibration chip correction errorOmission of factory default setting. To prevent setting mistake.Error that does not occur at user level.Displayed only in Factory Mode.	

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
330	CHECK BELT UNIT 330:BELT UNIT MISSING	OFF	Blink	The belt unit is not correctly installed.	
340	CHECK IMAGE DRUM 340:YELLOW DRUM MISSING	OFF	Blink	The drum is not correctly installed.	
341	CHECK IMAGE DRUM 340:MAGENTA DRUM MISSING	OFF	Blink		
342	CHECK IMAGE DRUM 340:CYAN DRUM MISSING	OFF	Blink		
343	CHECK IMAGE DRUM 340:BLACK DRUM MISSING	OFF	Blink		
350	INSTALL NEW IMAGE DRUM 350:YELLOW DRUM LIFE	OFF	Blink	The life of the drum (Alarm) Warning status takes effect at Cover Open/Close, while allowing 500 pages printing at maximum	
351	INSTALL NEW IMAGE DRUM 351:MAGENTA DRUM LIFE	OFF	Blink		
352	INSTALL NEW IMAGE DRUM 352:CYAN DRUM LIFE	OFF	Blink		
353	INSTALL NEW IMAGE DRUM 353:BLACK DRUM LIFE	OFF	Blink		
355	INSTALL NEW BELT UNIT 355:BELT UNIT LIFE	OFF	Blink	Notifies the transfer belt has reached its life.This is the error displayed based on the counter to indicate that the belt has reached its life, and printing will stop.	
356	INSTALL NEW BELT UNIT 356:BELT UNIT LIFE	OFF	Blink	Notifies the transfer belt has reached its life.This is the error to indicate that the belt has reached its life because the waste toner has filled up the container, and printing will stop.	
360	INSTALL DUPLEX UNIT 360:DUPLEX UNIT OPEN	OFF	Blink	Duplex unit is open (removed). When this error is detected, printing stops.(PX713 only)	
361	REMOVE FINISHER 361:PAPER JAM	OFF	Blink	Jam has occurred nearby FINISHER unit.(Only install the FINISHER unit) 361:Before Input 362:Input Area 363:Regist Roller 364:Invert Path 365:Invert Stack 366:Output Bin1 Exit 367:Output Bin2 Exit	
362	REMOVE FINISHER 362:PAPER JAM	OFF	Blink		
363	REMOVE FINISHER 363:PAPER JAM	OFF	Blink		
364	REMOVE FINISHER 364:PAPER JAM	OFF	Blink		
365	REMOVE FINISHER 365:PAPER JAM	OFF	Blink		
366	REMOVE FINISHER 366:PAPER JAM	OFF	Blink		
367	REMOVE FINISHER 367:PAPER JAM	OFF	Blink		

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
370	CHECK DUPLEX 370:PAPER JAM	OFF	Blink	Jam has occurred nearby DUPLEX unit.(Duplex Reversal)	
371	CHECK DUPLEX 371:PAPER JAM	OFF	Blink	Jam has occurred nearby DUPLEX unit.(Duplex Input)	
372	CHECK DUPLEX 372:PAPER JAM	OFF	Blink	Jam has occurred nearby DUPLEX unit.(Duplex Missfeed)	
380	OPEN FRONT COVER 380:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(PX711)	
380	OPEN FRONT COVER 380:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(PX713)	
381	OPEN UPPER COVER 381:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(Transport)	
382	OPEN UPPER COVER 382:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(Exit)	
383	OPEN UPPER COVER 383:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(Duplex Entry)	
389	OPEN UPPER COVER 389:PAPER JAM	OFF	Blink	Jam has occurred in paper path.(Others)	
390	CHECK MPTRAY 390:PAPER JAM	OFF	Blink	Paper jam occurred during paper feeding from each tray.	
391	CHECK TRAY1 391:PAPER JAM	OFF	Blink		
392	CHECK TRAY2 392:PAPER JAM	OFF	Blink		
393	CHECK TRAY3 393:PAPER JAM	OFF	Blink		
394	CHECK TRAY4 394:PAPER JAM	OFF	Blink		
395	CHECK TRAY5 395:PAPER JAM	OFF	Blink		
400	OPEN UPPER COVER 400:PAPER SIZE ERROR	OFF	Blink	Inappropriate size paper was fed from a tray. Check the paper in the tray or check for Multiple-feed. Open and close the cover to perform recovery printing, and continue.	
401	OPEN UPPER COVER 401:PAPER MULTI FEED	OFF	Blink	Warns that inappropriate long paper has been fed from the tray. Check whether Multi-feed has happened. Recovery Print takes place at Cover Open/Close, allowing the operation to continue.	

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
410	INSTALL NEW TONER 410:YELLOW TONER EMPTY	OFF	Blink	Toner of (Yellow/Magenta/Cyan/Black) ends. Warning status takes effect at Cover Open/Close, while allowing printing at least 20 pages	
411	INSTALL NEW TONER 411:MAGENTA TONER EMPTY	OFF	Blink		
412	INSTALL NEW TONER 412:CYAN TONER EMPTY	OFF	Blink		
413	INSTALL NEW TONER 413:BLACK TONER EMPTY	OFF	Blink		
420	INSTALL ADDITIONAL MEMORY 420: MEMORY OVERFLOW	OFF	Blink	Memory capacity overflows due to the following reason. Press ON-LINE switch so that it continues. Install expansion RAM or decrease the data amount. - Too much print data in a page. - Too much Macro data. - Too much DLL data. - After frame buffer compress	
430	INSTALL PAPER CASSETTE 430:TRAY1 MISSING	OFF	Blink	The tray cassette of paper to which printing is intended is removed, and paper cannot be fed.	
431	INSTALL PAPER CASSETTE 431:TRAY2 MISSING	OFF	Blink		
432	INSTALL PAPER CASSETTE 432:TRAY3 MISSING	OFF	Blink		
433	INSTALL PAPER CASSETTE 433:TRAY4 MISSING	OFF	Blink		
434	INSTALL PAPER CASSETTE 434:TRAY5 MISSING	OFF	Blink		
440	INSTALL PAPER CASSETTE 440:TRAY1 OPEN	OFF	Blink	The tray cassette that is a paper path for the paper to be printed to is removed.(PX711 only)	
441	INSTALL PAPER CASSETTE 441:TRAY2 OPEN	OFF	Blink		
442	INSTALL PAPER CASSETTE 442:TRAY3 OPEN	OFF	Blink		
443	INSTALL PAPER CASSETTE 443:TRAY4 OPEN	OFF	Blink		
440	INSTALL PAPER CASSETTE 440:TRAY1 OPEN	OFF	Blink	The tray cassette that is a paper path for the paper to be printed to is removed.(PX711 only)	
441	INSTALL PAPER CASSETTE 441:TRAY2 OPEN	OFF	Blink		
442	INSTALL PAPER CASSETTE 442:TRAY3 OPEN	OFF	Blink		
443	INSTALL PAPER CASSETTE 443:TRAY4 OPEN	OFF	Blink		Not raise (TRAY4:not configuration)

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
450	REMOVE THE PAPER 450:TRAY1 UNSUITABLE SIZE	OFF	Blink	Paper that cannot be used in the tray is set. (It takes a while until the status appears after you have closed the tray and the lever lifted.)	
451	REMOVE THE PAPER 451:TRAY2 UNSUITABLE SIZE	OFF	Blink		
452	REMOVE THE PAPER 452:TRAY3 UNSUITABLE SIZE	OFF	Blink		
453	REMOVE THE PAPER 453:TRAY4 UNSUITABLE SIZE	OFF	Blink		
454	REMOVE THE PAPER 454:TRAY5 UNSUITABLE SIZE	OFF	Blink		
460	CHANGE PAPER TO mmmmmmmmm/ppppppp 460:MPTRAY MEDIA MISMATCH	OFF	Blink	The size of paper or media type in the tray does not match the print data. Load mmmmm/ppppp paper in the tray (It takes a while until the status disappears after you have closed the tray and the lever lifted.)  mmmmm : Paper Size (A4 , . ,B5 ,A6) pppp	
	CHANGE PAPER TO mmmmmmmmm/ppppppp 460:MPTRAY SIZE MISMATCH	OFF	Blink		
461	CHANGE PAPER TO mmmmmmmmm/ppppppp 461:TRAY1 MEDIA MISMATCH	OFF	Blink		
	CHANGE PAPER TO mmmmmmmmm/ppppppp 461:TRAY1 SIZE MISMATCH	OFF	Blink		
462	CHANGE PAPER TO mmmmmmmmm/ppppppp 462:TRAY2 MEDIA MISMATCH	OFF	Blink		
	CHANGE PAPER TO mmmmmmmmm/ppppppp 462:TRAY2 SIZE MISMATCH	OFF	Blink		
463	CHANGE PAPER TO mmmmmmmmm/ppppppp 463:TRAY3 MEDIA MISMATCH	OFF	Blink		
	CHANGE PAPER TO mmmmmmmmm/ppppppp 463:TRAY3 SIZE MISMATCH	OFF	Blink		
464	CHANGE PAPER TO mmmmmmmmm/ppppppp 464:TRAY4 MEDIA MISMATCH	OFF	Blink		
	CHANGE PAPER TO mmmmmmmmm/ppppppp 464:TRAY4 SIZE MISMATCH	OFF	Blink		

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
465	CHANGE PAPER TO mmmmmmmmm/ppppppp 465:TRAY5 MEDIA MISMATCH	OFF	Blink	The size of paper or media type in the tray does not match the print data. Load mmmmm/ppppp paper in the tray (It takes a while until the status disappears after you have closed the tray and the lever lifted.)	
	CHANGE PAPER TO mmmmmmmmm/ppppppp 465:TRAY5 SIZE MISMATCH	OFF	Blink		
469 **	(Reserved : for FRONT FEEDER)	OFF	Blink	mmmmm : Paper Size (A4 , . ,B5 ,A6) pppp	
	(Reserved : for FRONT FEEDER)	OFF	Blink		
471	CHECK STAPLER CARTRIDGE 471:STAPLER CARTRIDGE MISSING	OFF	Blink	The stapler cartridge of Finisher unit is removed	
472	CHECK PUNCH CHIP BOX 472:PUNCH CHIP BOX MISSING	OFF	Blink	The punch chip box of Finisher unit is removed	
473	INSTALL FINISHER 473:FINISHER IS REMOVED	OFF	Blink	The finisher unit is removed	
480	REMOVE THE PAPER 480:STACKER FULL	OFF	Blink	Stacker-full is occurring in the upper part of the printer.	
481	REMOVE THE PAPER 481:FINISHER STACKER FULL	OFF	Blink	Stacker-full in the finisher is occurring.	
482	REMOVE THE PAPER 482:FINISHER STACKER FULL	OFF	Blink	Stacker-full in the finisher is occurring.	
490	LOAD mmmmmmmmm 490:MPTRAY EMPTY	OFF	Blink	Printing request is issued to the empty tray. Load mmmmmmmmm paper. (It takes a while until the status disappears after you have closed the tray and the lever lifted.)  mmmmmmmmmm : Paper Size (A4 ,,,B5, A6 )	
491	LOAD mmmmmmmmm 491:TRAY1 EMPTY	OFF	Blink		
492	LOAD mmmmmmmmm 492:TRAY2 EMPTY	OFF	Blink		
493	LOAD mmmmmmmmm 493:TRAY3 EMPTY	OFF	Blink		
494	LOAD mmmmmmmmm 494:TRAY4 EMPTY	OFF	Blink		
495	LOAD mmmmmmmmm 495:TRAY5 EMPTY	OFF	Blink		
499 **	(Reserved : for FRONT FEEDER)	OFF	Blink		
500	SET mmmmmm ON MPTRAY AND PUSH ON-LINE SWITCH	Light	OFF	Manual paper feed is required. Manually insert the paper shown by mmmmm. mmmmmmmmmm :Paper Size (A4 ,,,B5, A6 )	



Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
520	CHECK PAPER CASSETTE 520:TRAY1 LIFT UP ERROR	OFF	Blink	Print request was made to Tray1~5, to which Tray Lift Up Error has occurred. Lift Up Retry will take place when the tray is removed and put back in. (PX713 only)	
521	CHECK PAPER CASSETTE 521:TRAY2 LIFT UP ERROR	OFF	Blink		
522	CHECK PAPER CASSETTE 522:TRAY3 LIFT UP ERROR	OFF	Blink		
523	CHECK PAPER CASSETTE 523:TRAY4 LIFT UP ERROR	OFF	Blink		
524	CHECK PAPER CASSETTE 524:TRAY5 LIFT UP ERROR	OFF	Blink		
530	REMOVE EXCESS PAPER 530:TRAY1 OVERFILLED	OFF	Blink	Print request was made to Tray 1~5, which has been detected to have too much paper. This status will be cleared when excess paper is removed from that tray and the tray is put back in. (PX713 only)	
531	REMOVE EXCESS PAPER 531:TRAY2 OVERFILLED	OFF	Blink		
532	REMOVE EXCESS PAPER 532:TRAY3 OVERFILLED	OFF	Blink		
533	REMOVE EXCESS PAPER 533:TRAY4 OVERFILLED	OFF	Blink		
534	REMOVE EXCESS PAPER 534:TRAY5 OVERFILLED	OFF	Blink		

## 2. Error Messages : Related to Color, Media Detect

(Caution) \* : Raise in the factory mode only.

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
	— COLOR ADJUSTING	Varies	Varies	Executing Auto Color Adjusting	
	— DENSITY ADJUSTING	Varies	Varies	Executing Auto Density Adjustment	
	— MEDIA WEIGHT DETECTING	Varies	Varies	Detecting media weight.	
	— YELLOW TONER SENSOR ERROR	Varies	Light	Something is wrong with the toner sensor. When the Engine setting is Shipping mode, displayed in a combination of other message in the first line. If the engine setting is Factory mode, error display appears as mentioned later	
	— MAGENTA TONER SENSOR ERROR	Varies	Light		
	— CYAN TONER SENSOR ERROR	Varies	Light		
	— BLACK TONER SENSOR ERROR	Varies	Light		
	— NON PAPER SENSE ERROR	Varies	Light	A Sensor output at Paper Empty is outside the spec. Prints according to the Media Weight MEDIUM when this error occurs	
	— PAPER SENSE ERROR	Varies	Light	The difference in Sensor outputs is outside the spec. (The weight is beyond the recognizable limits.) At Error, Prints according to the Media Weight MEDIUM	
*	BELT REFLEX ERROR	Varies	Light	Belt Reflex Check Error.Error that does not occur at user level.Displayed only in FactoryMode.	
*	DENSITY SHUTTER ERROR2	Varies	Light	Density Adjustment Shutter Error 2.Error that does not occur at user level.Displayed only in FactoryMode.	
*	DENSITY SHUTTER ERROR1	Varies	Light	Density Adjustment Shutter Error 1.Error that does not occur at user level.Displayed only in FactoryMode.	
*	DENSITY COLOR CALIBRATION ERROR	Varies	Light	Density Adjustment Color Calibration Error.Error that does not occur at user level.Displayed only in FactoryMode.	

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
*	DENSITY COLOR SENSOR ERROR	Varies	Light	Density Adjustment Color Sensor Error.Error that does not occur at user level.Displayed only in FactoryMode.	
*	DENSITY BLACK CALIBRATION ERROR	Varies	Light	Density Adjustment Black Calibration Error.Error that does not occur at user level.Displayed only in FactoryMode.	
*	DENSITY BLACK SENSOR ERROR	Varies	Light	Density Adjustment Black Sensor Error.Error that does not occur at user level.Displayed only in FactoryMode.	
*	— YELLOW IMAGE DRUM SMEAR ERROR	Varies	Light	Density Adjustment C/M/Y/K ID ERROR 2. Smear due to the ID failure.	
*	— MAGENTA IMAGE DRUM SMEAR ERROR	Varies	Light		
*	— CYAN IMAGE DRUM SMEAR ERROR	Varies	Light		
*	— BLACK IMAGE DRUM SMEAR ERROR	Varies	Light		
*	— YELLOW LOW DENSITY ERROR	Varies	Light	Density Adjustment C/M/Y/K ID ERROR. LED out of focus is assumed.	
*	— MAGENTA LOW DENSITY ERROR	Varies	Light		
*	— CYAN LOW DENSITY ERROR	Varies	Light		
*	— BLACK LOW DENSITY ERROR	Varies	Light		
*	REGISTRATION ERROR1	Varies	Light	Registration Error.This is not user-level error.	
*	SENSOR CALIBRATION ERROR	Varies	Light	Sensor Calibration Error.This is not user-level error.	
*	REGISTRATION ERROR2	Varies	Light	Gamma error(Yellow) This is not user-level error.	
*	REGISTRATION ERROR3	Varies	Light	Gamma error(Magenta) This is not user-level error.	
*	REGISTRATION ERROR4	Varies	Light	Gamma error(Cyan) This is not user-level error.	
*	REGISTRATION ERROR5	Varies	Light	Gamma error(Black) This is not user-level error.	
*	REGISTRATION SENSOR ERROR2	Varies	Light	Registration Sensor Error(Yellow) This is not user-level error.	

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
*	REGISTRATION SENSOR ERROR3	Varies	Light	Registration Sensor Error(Magenta) This is not user-level error.	
*	REGISTRATION SENSOR ERROR4	Varies	Light	Registration Sensor Error(Cyan) This is not user-level error.	
*	REGISTRATION SENSOR ERROR5	Varies	Light	Registration Sensor Error(Black) This is not user-level error.	
	PRESS ONLINE SW COULD NOT STAPLE/PUNCH.TOO THICK PAPER	Varies	Varies	Staple/Punch could not be executed because the media was too thick. This appears when the media too thick to be stapled/punched has been detected. Detection of Transparency falls under this category. Pressing the ONLINE key will clear the message. (R	
	PRESS ONLINE SW COULD NOT DUPLEX. TOO THICK PAPER	Varies	Varies	Could not perform Duplex printing because the paper is too thick. Displays when paper is detected to be too thick for Duplex printing. The message will disappear when the ONLINE key is pressed.	

### 3. Warning Messages : Related to Usage, Media)

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
	— ttttt NEAR END	Varies	Varies	The paper in the selected tray is near end.	
	— YELLOW TONER LOW	Varies	Light	Toner amount is low. Displayed in a combination of other message in the first line. In case of MENU hLOW TONER=STOP, h ATTENTION LED blinks and the printer shifts to OFF Line. When ON-LINE switch is pressed, printing can continue until TONER EMPTY.	
	— MAGENTA TONER LOW	Varies	Light		
	— CYAN TONER LOW	Varies	Light		
	— BLACK TONER LOW	Varies	Light		
	— YELLOW DRUM NEAR LIFE	Varies	Light	The life of the drum (warning). Displayed in a combination of other message in the first line. The printer stops at the point when it reaches the drum life (Shifts to error, OFF-LINE.)	
	— MAGENTA DRUM NEAR LIFE	Varies	Light		
	— CYAN DRUM NEAR LIFE	Varies	Light		
	— BLACK DRUM NEAR LIFE	Varies	Light		
	— FUSER UNIT NEAR LIFE	Varies	Light	Notifies the fuser unit is near its life.	
	— BELT UNIT NEAR LIFE	Varies	Light	Notifies the belt unit is near its life. This is a warning; thus, printing will not stop.	
	— CHANGE FUSER UNIT	Varies	Light	Notifies the life of the fuser unit (warning). Displayed in a combination of other message in the first line. Warning only (No Life error)	
	— ttttt EMPTY	Varies	Varies	ttttt: The tray is empty. Treated as Warning until printing to the empty tray is designated.	ttttt:TRAY1~5,MPTRAY
	— ttttt LIFT UP ERROR	Varies	Varies	Lift Up Error has occurred to tttttt Tray. That tray is treated "Paper Empty" as a result, and printing from that tray becomes disabled. (This sometimes occurs only to PX713.)	ttttt:TRAY1~5
	— ttttt OVERFILLED	Varies	Varies	Displays that there is too much paper in Tray tttttt. This is a warning; thus, printing will not stop. (This sometimes occurs only to PX713.)	ttttt:TRAY1~5

#### 4. Warning Messages : Job Account

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
	FILE ACCESSING	Varies	Varies	Accessing the File System (HDD/FLASH) on the CU board.	
	CANCELLING(USER DENIED)	Blink	Varies	Job cancellation due to no print permit. (Related to JobAccount)1. A job received from a user who is denied printing.2. A color job received from a user who is denied color printing.	
	CANCELLING(BUFFER FULL)	Blink	Light	Indicates that a job has been cancelled because the printer area where the logs are stored has been used up and also "Cancel job" is specified as an operation at the time of Log Full. (Related to JobAccount)	
	— INVALID ID.JOB REJECTED	Varies	Light	Notifies users that jobs have been cancelled because they are not permitted for printing. (Related to JobAccount). Stays displayed until the ON LINE key is pressed.	
	— LOG BUFFER FULL.JOB REJECTED	Varies	Light	Notifies users that jobs have been cancelled because the buffer is full. (Related to JobAccount.)Stays displayed until the ON LINE key is pressed.	

## 5. Other Warning

(Caution) \* : Raise in the factory mode only.

Err Code	LCD Messages	LED Ready	LED Atten	Description	Comments
	DISK FILE SYSTEM IS FULL	Varies	Light	Disk-full is occurring. Because this is a temporary warning, it remains until the end of the job and disappears	
	DISK IS WRITE PROTECTED	Varies	Light	An attempt to write in a read-only file was done. Because this is a temporary warning, it remains until the end of the job and disappears.	
	DISK FILE OPERATION FAILED nnn	Varies	Light	Operation that does not involve a disk is available. nnn: An identifier to Error type (For details, see the Error table provided in the subsequent chapter.)	See right table
	JOB OFFSET HOME ERROR	Varies	Light	Job Offset Home Position Sensor ErrorThe Job Offset function becomes disabled, however, printing can continue.	
*	PU FLASH ERROR	Varies	Light	Error occurred while writing over the PU firmware(This does not occur at user level.)	
	COLLATE FAIL:TOO MANY PAGES	Varies	OFF	The data of MOPY is memory-full.	

In case of occurrence of Disk Operation Error, error numbers will be displayed according to individual errors as follows:

Errors	LCD Display	PJL Status Code
GENERAL ERROR	DISK FILE OPERATION FAILED 0	32000
VOLUME NOT AVAILABLE	DISK FILE OPERATION FAILED 1	32001
DISK FULL	DISK FILESYSTEM IS FULL	32002
FILE NOT FOUND	DISK FILE OPERATION FAILED 3	32003
NO FREE FILE DESCRIPTORS	DISK FILE OPERATION FAILED 4	32004
INVALID NUMBER OF BYTES	DISK FILE OPERATION FAILED 5	32005
FILE ALREADY EXISTS	DISK FILE OPERATION FAILED 6	32006
ILLEGAL NAME	DISK FILE OPERATION FAILED 7	32007
CANT DEL ROOT	DISK FILE OPERATION FAILED 8	32008
NOT FILE	DISK FILE OPERATION FAILED 9	32009
NOT DIRECTORY	DISK FILE OPERATION FAILED 10	32010
NOT SAME VOLUME	DISK FILE OPERATION FAILED 11	32011
READ ONLY	DISK FILE OPERATION FAILED 12	32012
ROOT DIR FULL	DISK FILE OPERATION FAILED 13	32013
DIR NOT EMPTY	DISK FILE OPERATION FAILED 14	32014
BAD DISK	DISK FILE OPERATION FAILED 15	32015
NO LABEL	DISK FILE OPERATION FAILED 16	32016
INVALID PARAMETER	DISK FILE OPERATION FAILED 17	32017
NO CONTIG SPACE	DISK FILE OPERATION FAILED 18	32018
CANT CHANGE ROOT	DISK FILE OPERATION FAILED 19	32019
FD OBSOLETE	DISK FILE OPERATION FAILED 20	32020
DELETED	DISK FILE OPERATION FAILED 21	32021
NO BLOCK DEVICE	DISK FILE OPERATION FAILED 22	32022
BAD SEEK	DISK FILE OPERATION FAILED 23	32023
INTERNAL ERROR	DISK FILE OPERATION FAILED 24	32024
WRITE ONLY	DISK FILE OPERATION FAILED 25	32025
WRITE PROTECTED	DISK IS WRITE PROTECTED	32026