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C7000 Series Color LED Page Printer



SERVICE MANUAL

This manual describes the procedures for the maintenance of the C7000 Series of printers. The document is produced for maintenance personnel use. For details on the procedures for handling the C7000 Series of printers, see its user documentation.

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Preface

This manual describes the procedures for the maintenance of the C7000 Series of printers.

The document is produced for maintenance personnel use. For details on the procedures for handling the C7000 Series of printers, see its user documentation.

Notes!

- 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, there may be errors in the document. Oki Data 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 electrostatic sensitive and, if handled improperly, may be damaged. It is strongly recommended that the products be maintained by Oki Data Authorized Repair Centers Oki Data.



1.1 System Configuration

Figure 1-1 shows the system configuration of the C7000 Series of printers.

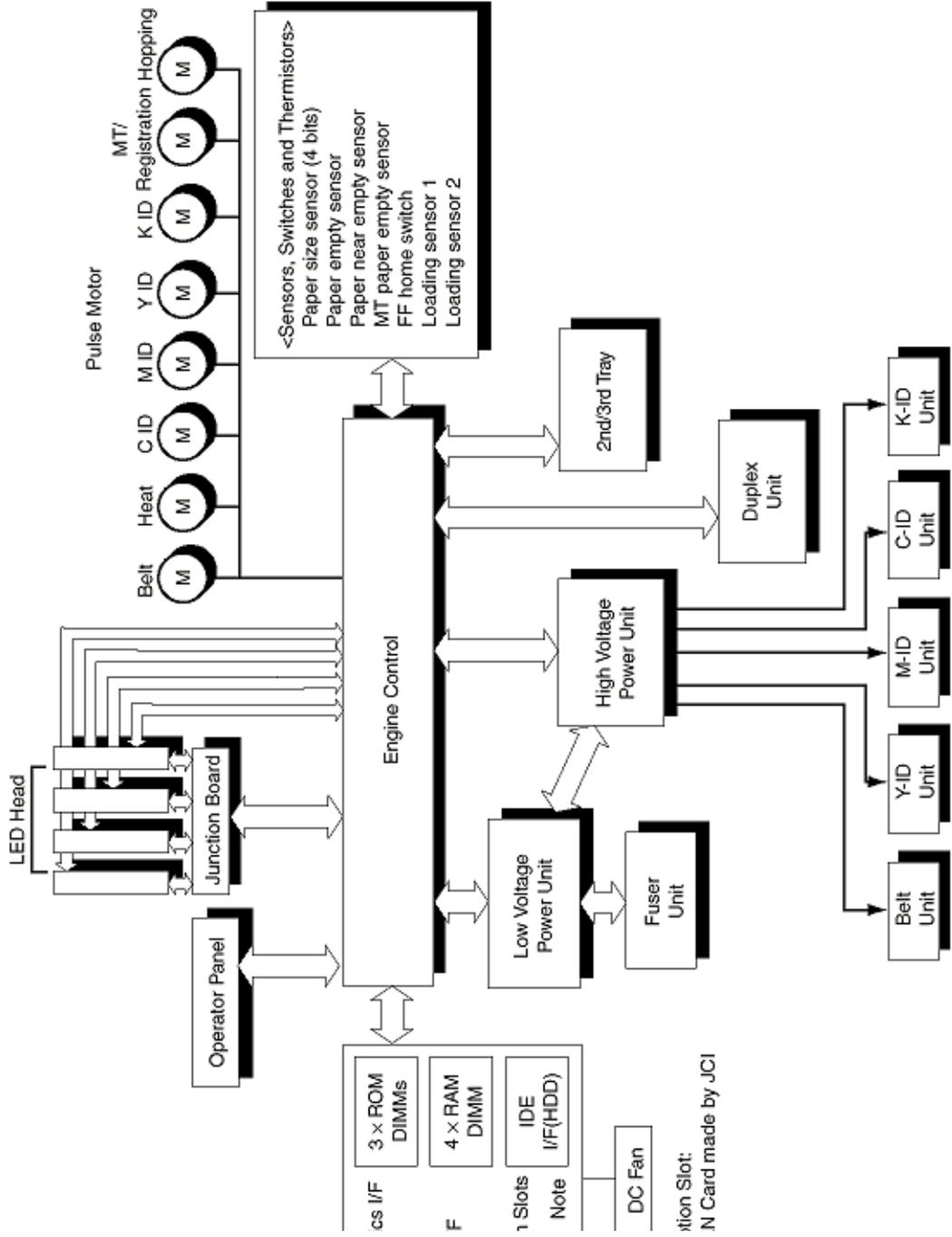


Figure 1-1

tion Slot:
N Card made by JCI

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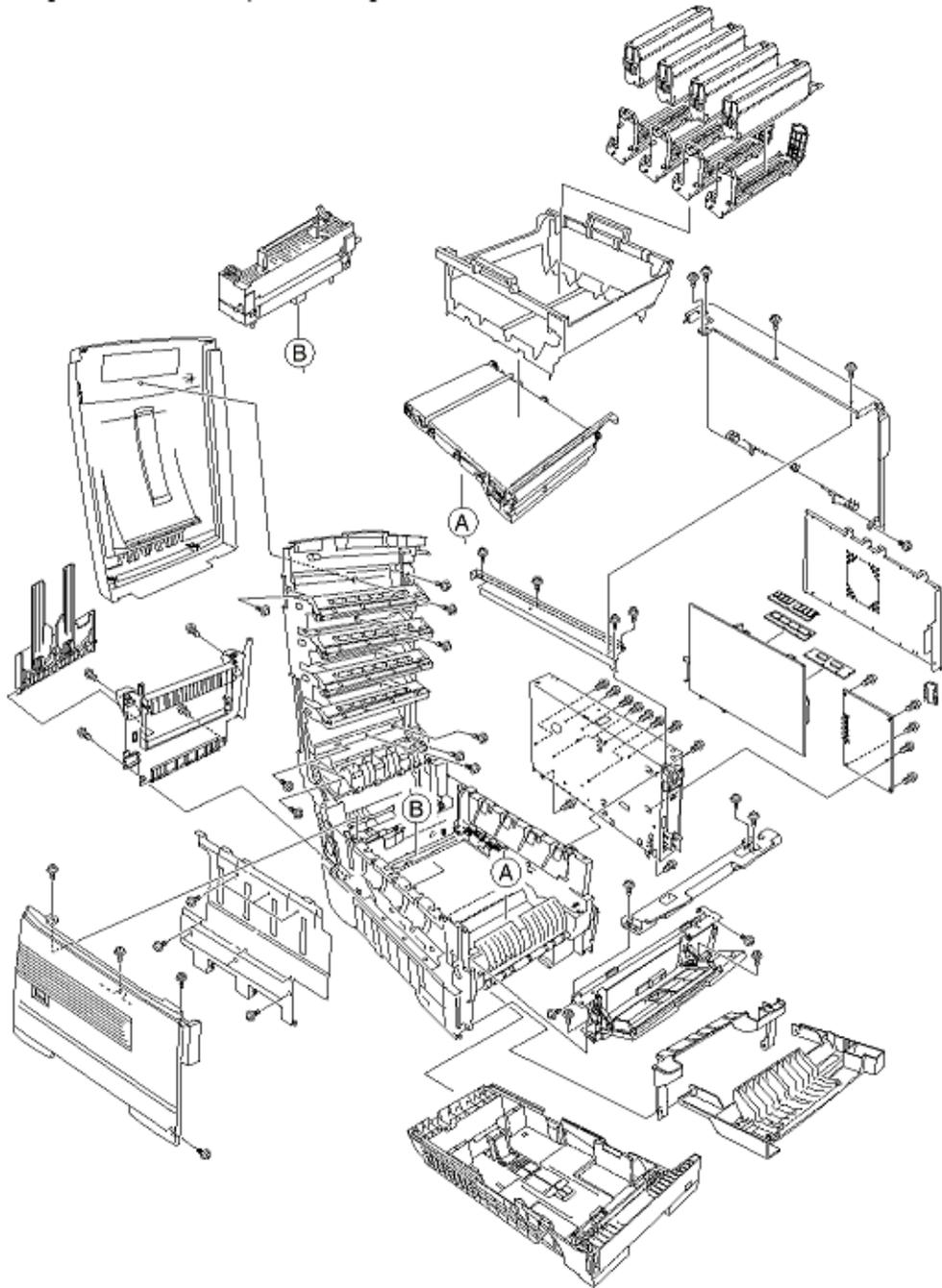


1.2 Printer Configuration

The inside of the printer is composed of the following:

- 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.



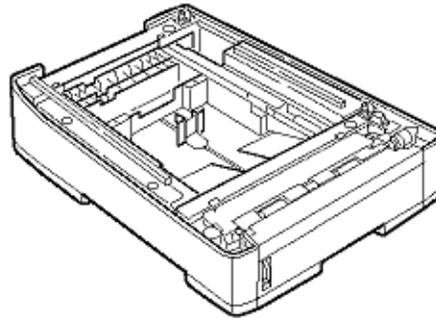
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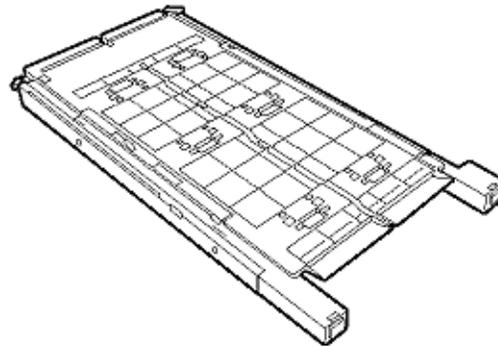
1.3 Option Configuration

The following options are available for the C7000 Series of printers.

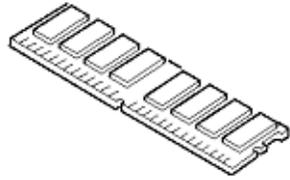
- (1) 2nd Tray / 3rd Tray



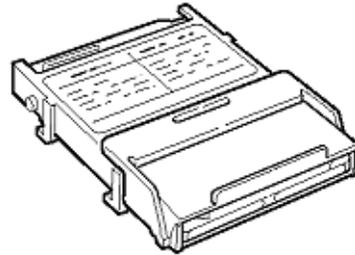
- (2) Duplex Unit



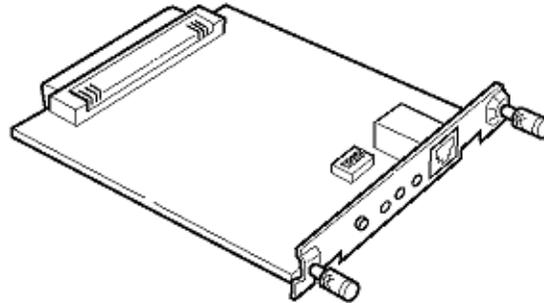
- (3) Expansion Memory
64/128/256 MB



(4) Internal Hard Disk



(5) OkiLAN 6200e NIC





1.4 Specifications

(1)	External Dimensions	Height: 16.9 in. Width: 16.9 in. Length: 24.4 in.
(2)	Weight	92.5 lbs.
(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 90 kg (64 to 105g/m ²) Front feeder 55 kg to 140 kg (64 to 163g/ m ²)
(4)	Print Speed	Color: 12 pages per minute (Transparency: 5 pages per minute) Monochrome: 20 pages per minute (Transparency: 12 pages per minute) Postal Card, Label, Thick Paper: 8 pages per minute
(5)	Resolution	(C7200) = 600 x 600 -/- (C7400) 1200 x 1200 dots per inch
(6)	Power Input	100VAC ±10%
(7)	Power Consumption	Peak: 1300W Normal Operation: 400W (5% duty) Idle: 110W Power Saving Mode: 45W or less
(8)	Frequency	50Hz or 60Hz ±2%
(9)	Noise	Operation: 54 dB (Without second tray) Standby: 45 dB Power Saving: 43 dB
(10)	Consumable Life	Toner Cartridge: 10,000 pages (5% duty) (each of Y, M, C and K)

Image Drum: 30,000 pages (Continuous printing)
(each of Y, M, C and K)

- (11) Parts Replaced Periodically Fuser Unit Assy: Every 60,000 pages
Transfer Belt Assy: Equivalent of 60,000 pages (3 pages/job)
- (12) Temperatures and Relative Humidities

Temperature

Temperature conditions			
	Fahrenheit	Celsius	Remarks
Operating	50 to 89.6	10 to 32	17 to 27 Celsius (Temperatures to assure full color print quality)
Non-operating	32 to 109.4	0 to 43	Power off
Storage (1 year max.)	-14 to 109.4	-10 to 43	with drum and toner
Delivery (1 month max.)	-20 to 122	-29 to 50	with drum and without toner
Delivery (1 month max.)	-20 to 122	-29 to 50	with drum and toner

Humidity

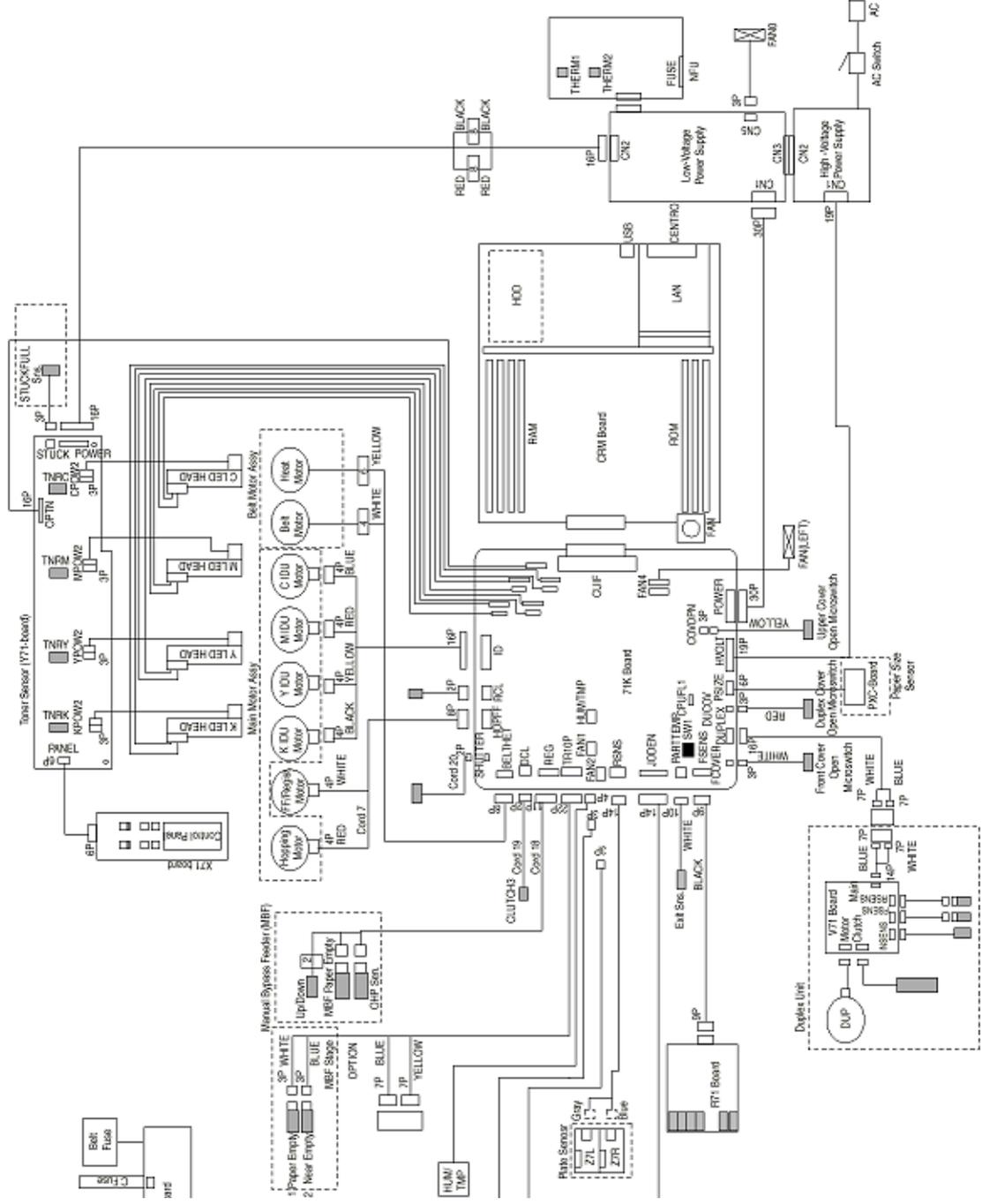
Humidity condition			
	Fahrenheit	Celsius	Remarks
Operating	20 to 80	25	50% to 70% (for assurance of full-color printout quality)
Non-operating	10 to 90	26.8	Power off
Storage	10 to 90	35	
Delivery	10 to 90	40	

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



2.0 Operation

The C7000 Series of 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.

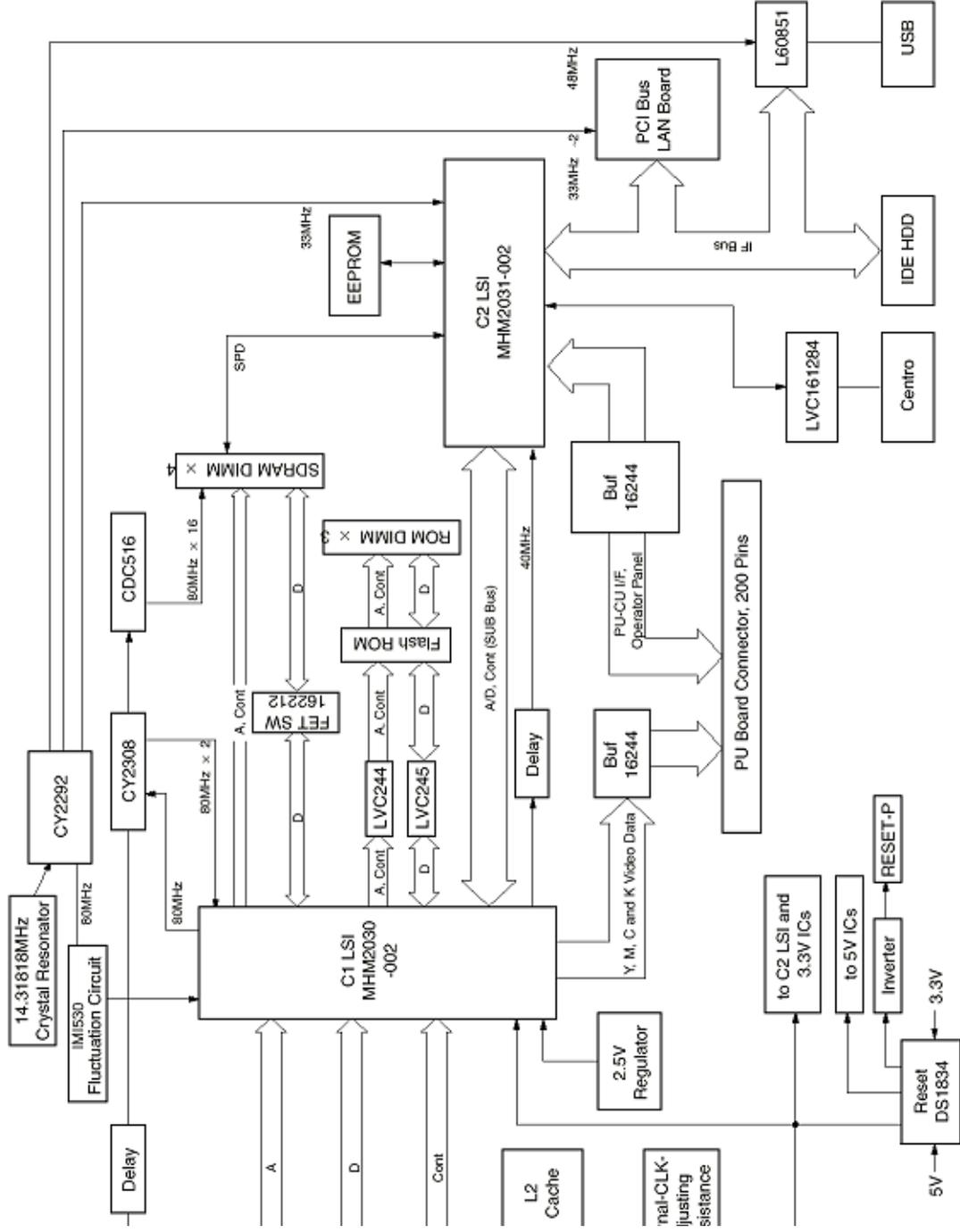


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2.1 Main board (CRM PWB)

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



- (1) **CPU**
The CPU is PowerPC750, a 64-bit bus RISC processor, which inputs an 80-MHz CLK (=BUS CLK), and operates at 400MHz that is five times the input.
- (2) **Secondary Cache SRAM**
SRAM is included as secondary cache of the CPU on the board.
- (3) **ROM**
ROM is to be inserted into the three 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 four 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: PC100 or more
Capacity: 64/128/256 MB
Configuration: Without parity. Without ECC. SPD information is required. Number of chips contained = 8 or 16.
- (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 2-Mbyte flash ROM is surface-mounted on the CRM board. The flash ROM is composed of four 256-k-by-16bit chips, and fonts and macros can be stored in it.
- (7) **Memory control LSI (C1)**
A 696-pin BGA package ASIC made by NEC, which is equipped with a cooling heat sink and 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

Additional Board: (connected to PCI BUS) / Ethernet Board

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2.2 Engine Controller Board (K71 PWB)

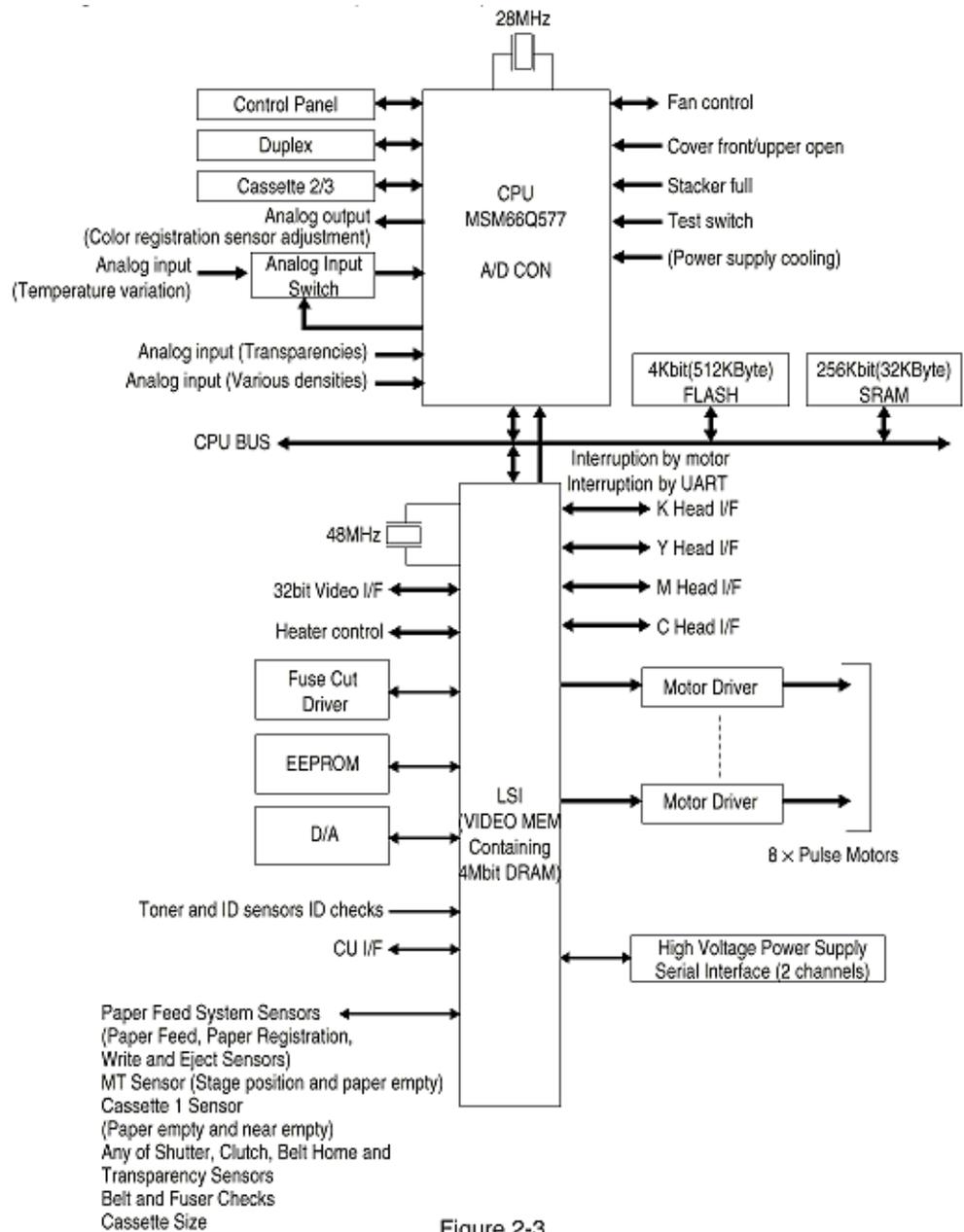


Figure 2-3

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 2-4).

(1) CPU

This, a 16-bit CPU with an AD converter containing 126-Kbyte ROM (OKI MSM66Q577), controls the entire system.

(2) General LSI

This LSI (MG63P011-001LA), which is contained in the printer engine control block, has 4 Mbits of video memory, and functions such as controller-engine video interfacing, LED interfacing, motor control, sensor input, video memory control, main scan color misalignment correction, skew correction and high voltage power supply control.

(3) Flash ROM

The flash ROM (29F400-70) is of 4-Mbits, and PU programs are stored in it.

(4) EEPROM

The EEPROM (NM93C66N-NW) is of 4-Kbits, and mounted on the board with an IC socket. Correction values are stored in it.

(5) Pulse Motor Driver

The pulse motor driver (A2919SLBTR, A2918SWV) drives the eight pulse motors to revolve the EP and transport media.

(6) SRAM

This SRAM (62256LFP-7LL) is used as working memory of the CPU.



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 supply circuit.

This circuit generates the following voltages.

Output voltage	Use
+3.8 V	CU LSI
+3.8 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	OP Amp, High voltage power supply

(2) High voltage power supply circuit

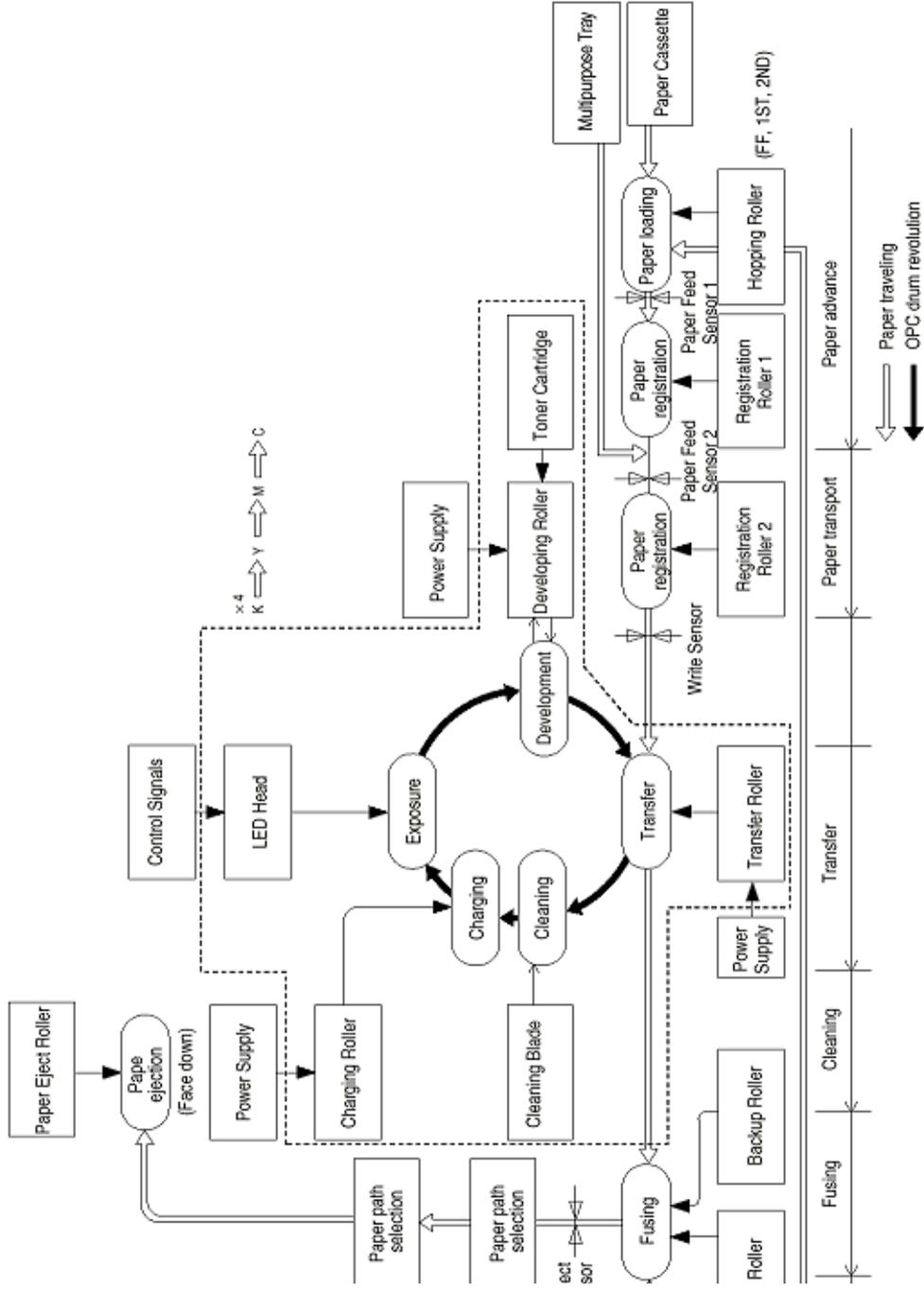
This circuit generates the following voltages of not less than +34V, which are required for electrophotographic process, according to control sequences from the controller board.

Output	Voltage	Use	Remarks
CH	-900V to 1.4KV	Voltage to charging roller	
DB	-100 to 400V/ +300V	Voltage to developing roller	
SB	Y, M, C, and K: -100V to -700V	Voltage to toner supply roller	
TR	0Kv to 7KV	Voltage to transfer roller	Variable



2.4 Mechanical Processes

Figure 2-4 shows the mechanical processes of the C7000 Series of printers.



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2.4.1 Electrophotographic process

- (1) **Electrophotographic processes**
- (2) **Charging**
- (3) **Exposure**
- (4) **Developing**
- (5) **Transfer**
- (6) **Fusing**
- (7) **Cleaning - waste toner area**
- (8) **Cleaning - transfer belt**



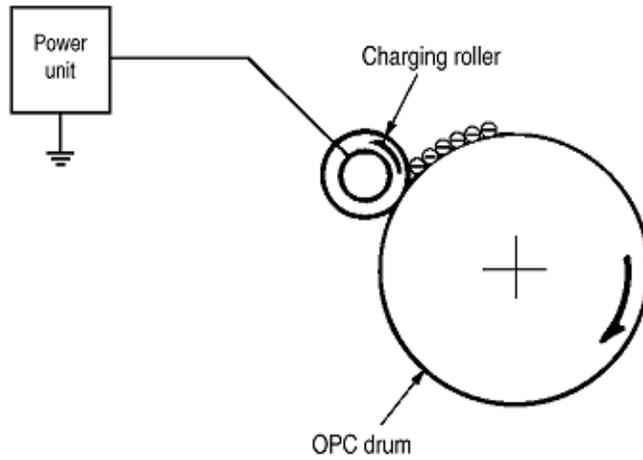
(1) Electrophotographic processes

- (1) **Electrophotographic processes** - 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

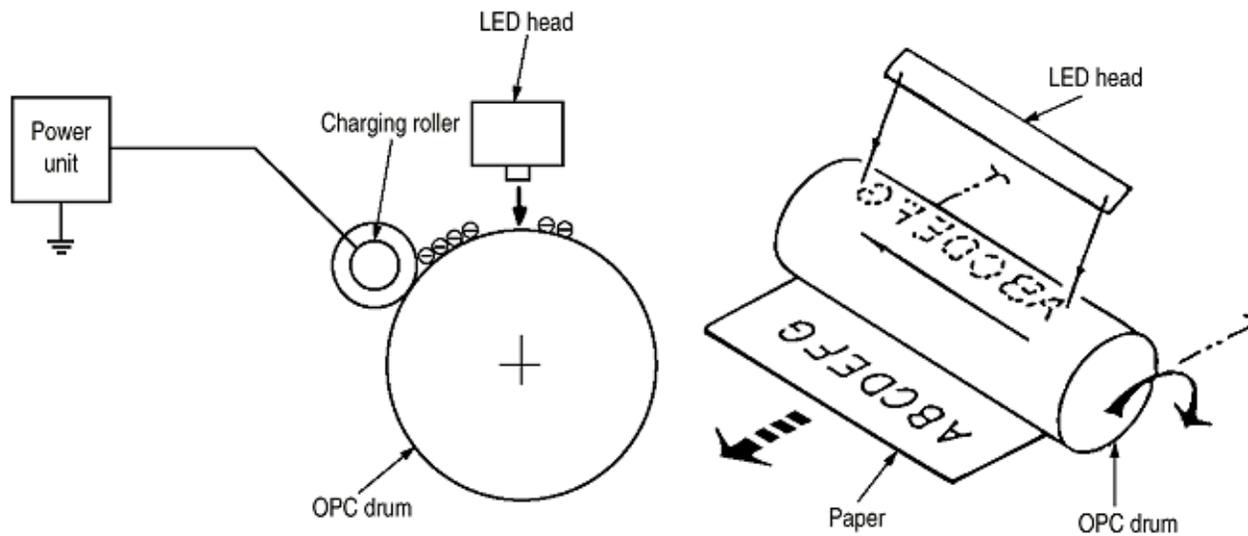
- (2) **Charging** - Negative DC voltage is applied to the charging roller contacting the surface of the OPC drum.





(3) Exposure

(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.

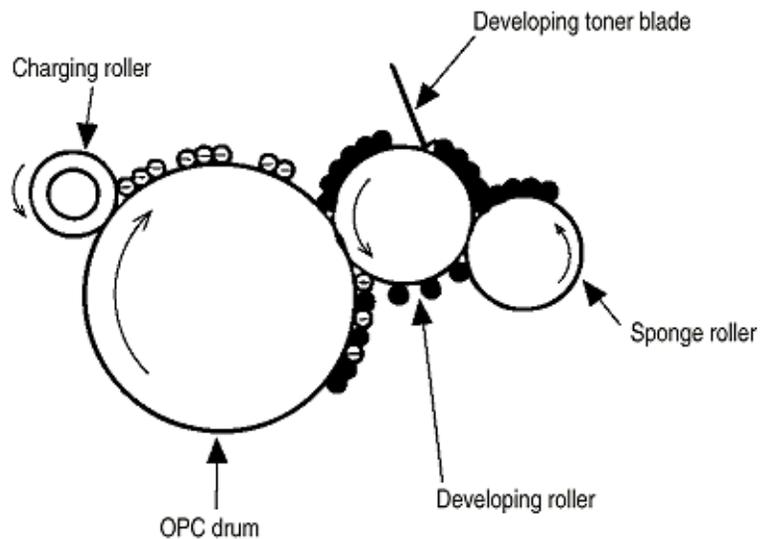




(4) Developing

(4) Developing - 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.

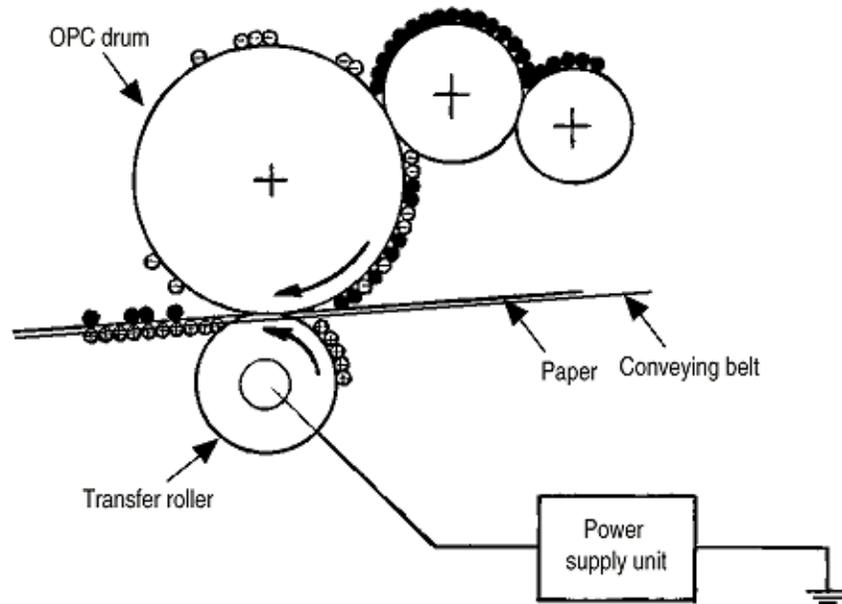
(3) The toner is drawn by the latent electrostatic image at the contact portion between the OPC drum and the developing roller. The latent electrostatic image on the drum surface is made visible with the toner.



(5) Transfer

(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.

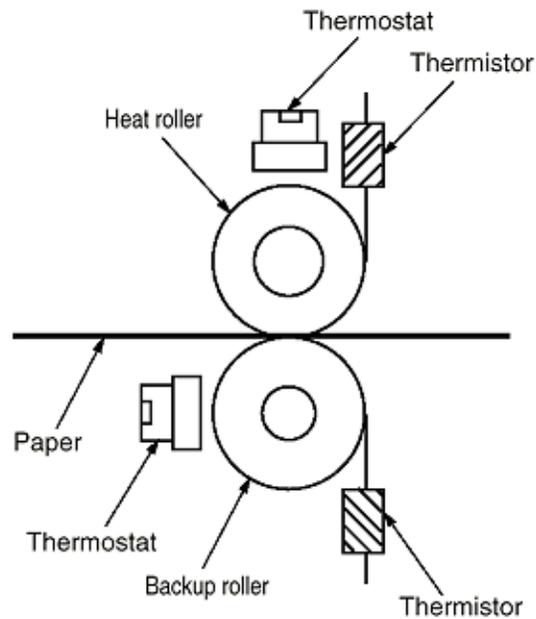
Applying positive high voltage from the power supply to the transfer roller moves the positive charge induced by the transfer roller to the paper surface at the contact portion between the transfer roller and the paper, the paper surface drawing the negatively charged toner from the drum surface.





(6) Fusing

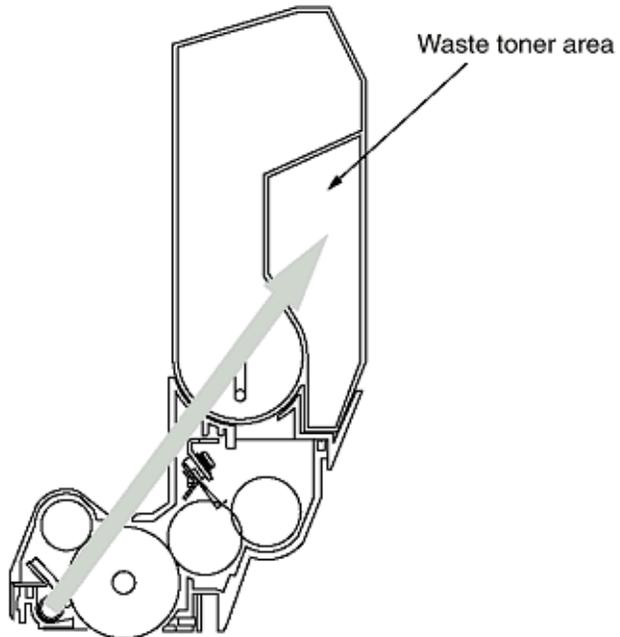
(6) Fusing - When passing through between the heat roller and the backup roller, the toner image transferred to the paper is fused into place by the application of heat and pressure to it. The built-in upper and lower halogen lamps of 700 watts and 500 watts heat the Teflon coated heat roller. The fusing 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 - waste toner area

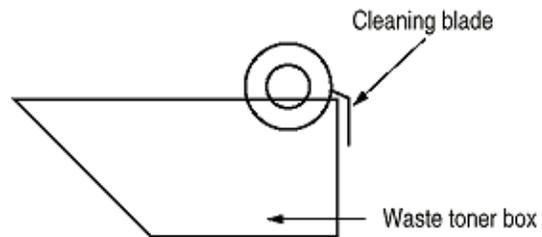
(7) Cleaning - Non-fused, residual toner on the OPC drum is scraped with the cleaning blade and collected in the waste toner area of the toner cartridge.





(8) Cleaning - transfer belt

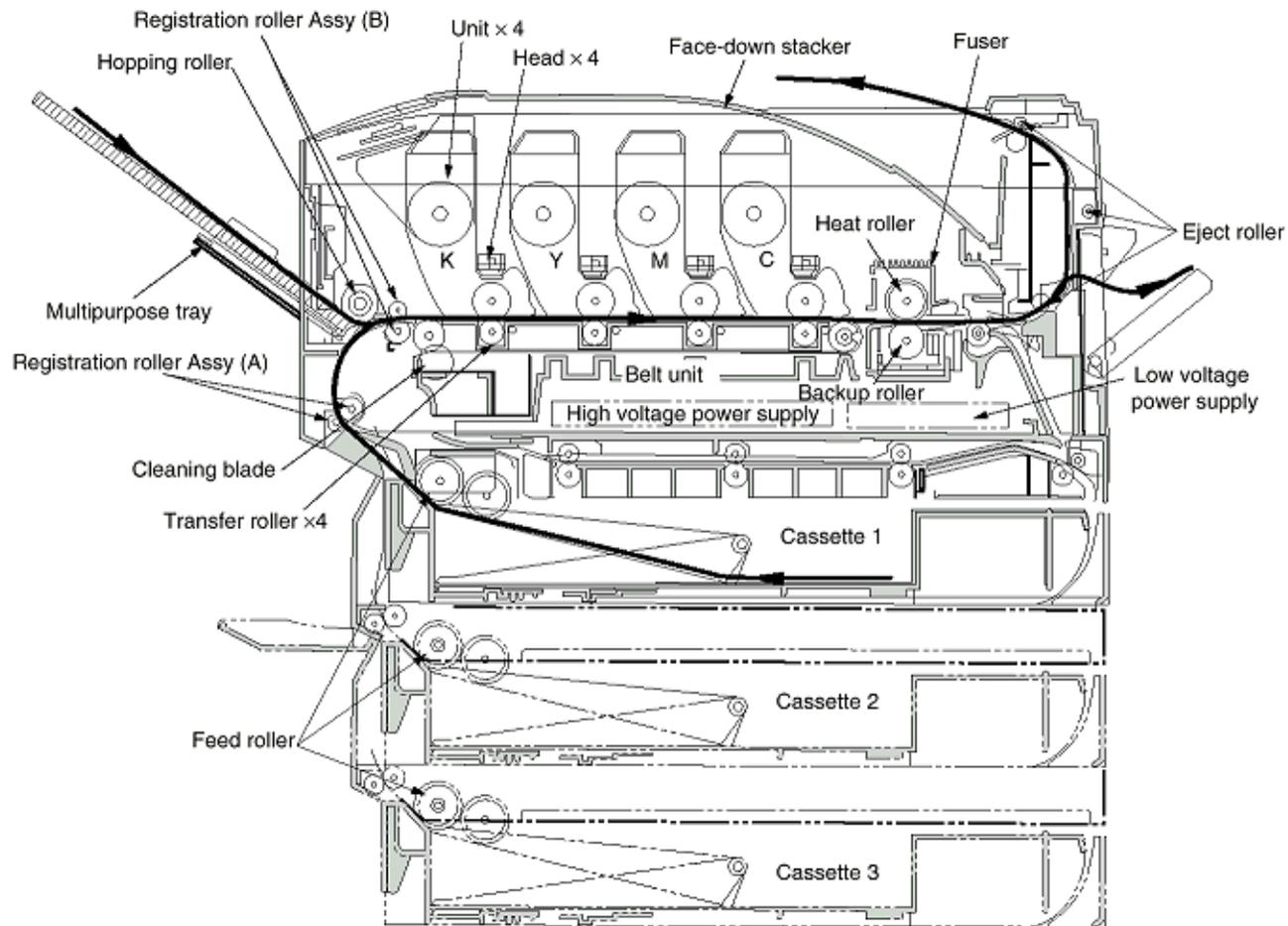
(8) Cleaning - Residual toner on the transfer belt is scraped with the cleaning blade and collected in the waste toner box of the transfer belt unit.





2.4.2 Paper running process

Figure 2-5 shows the traveling of paper in the C7000 Series of printers.



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(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.

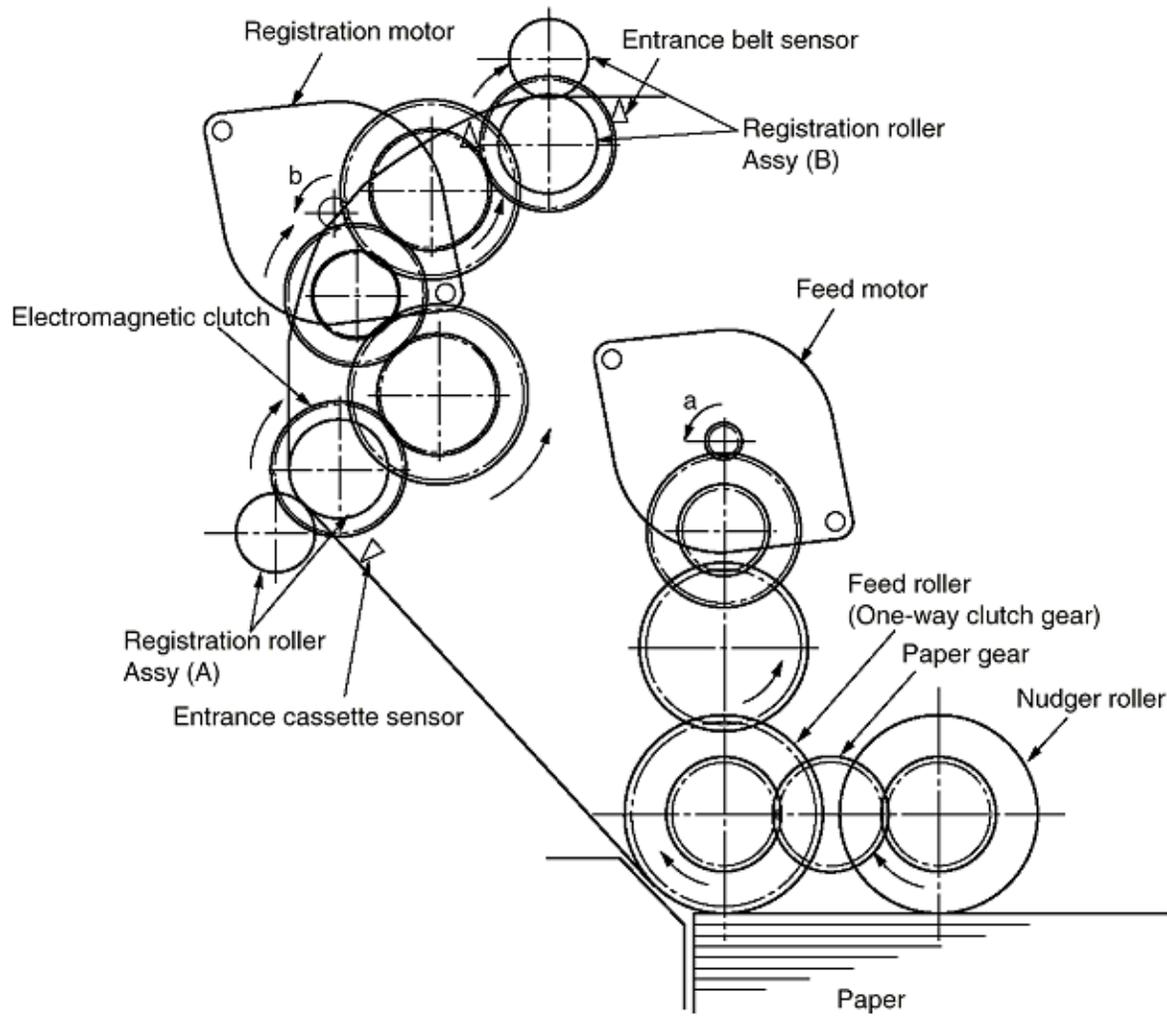


Figure 2-6

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(2) Paper Feed from Multi-Purpose 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.

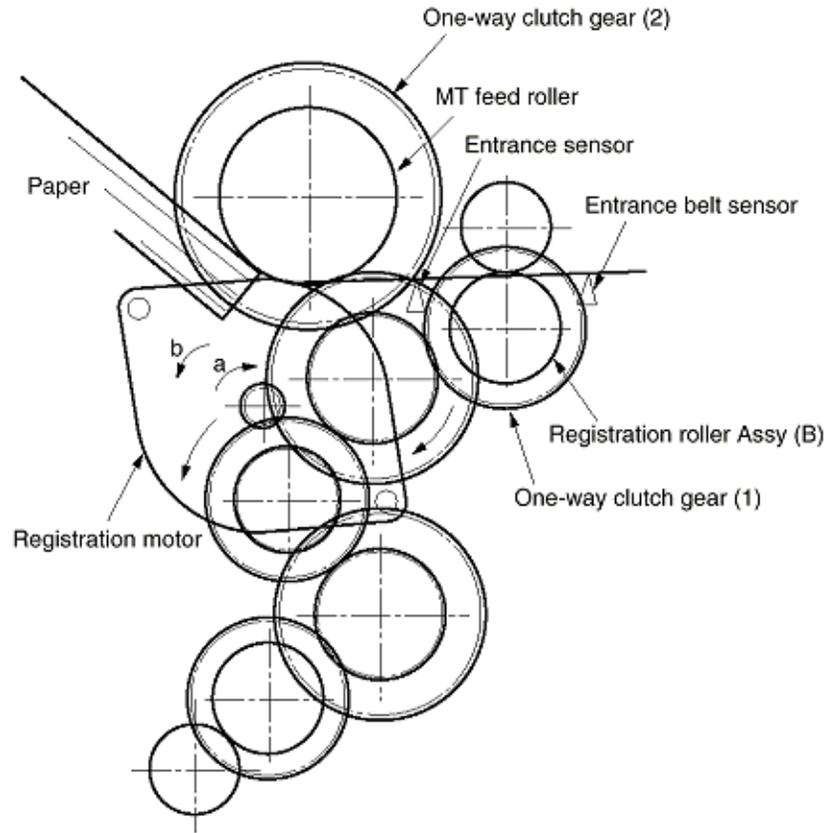


Figure 2-7

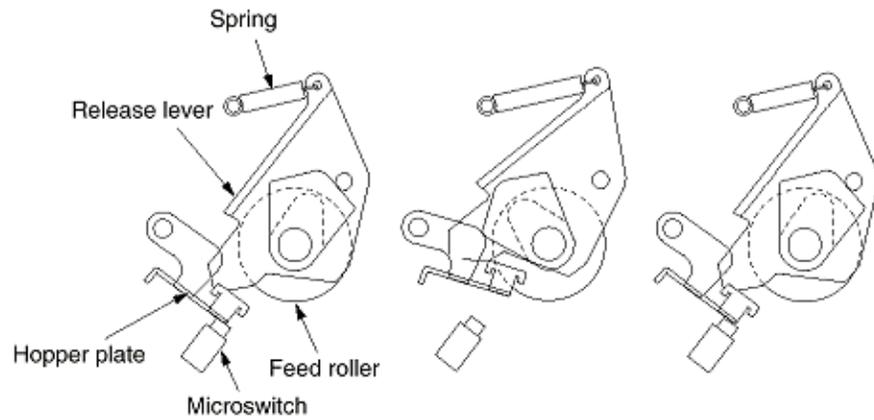


Figure 2-7-a

Figure2-7-b

Figure 2-7-c

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(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.

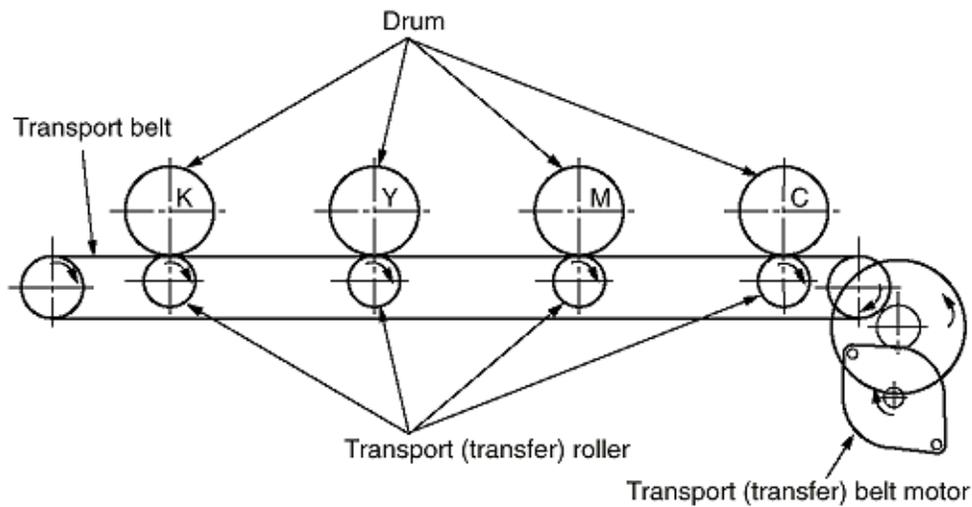


Figure 2-8



(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.

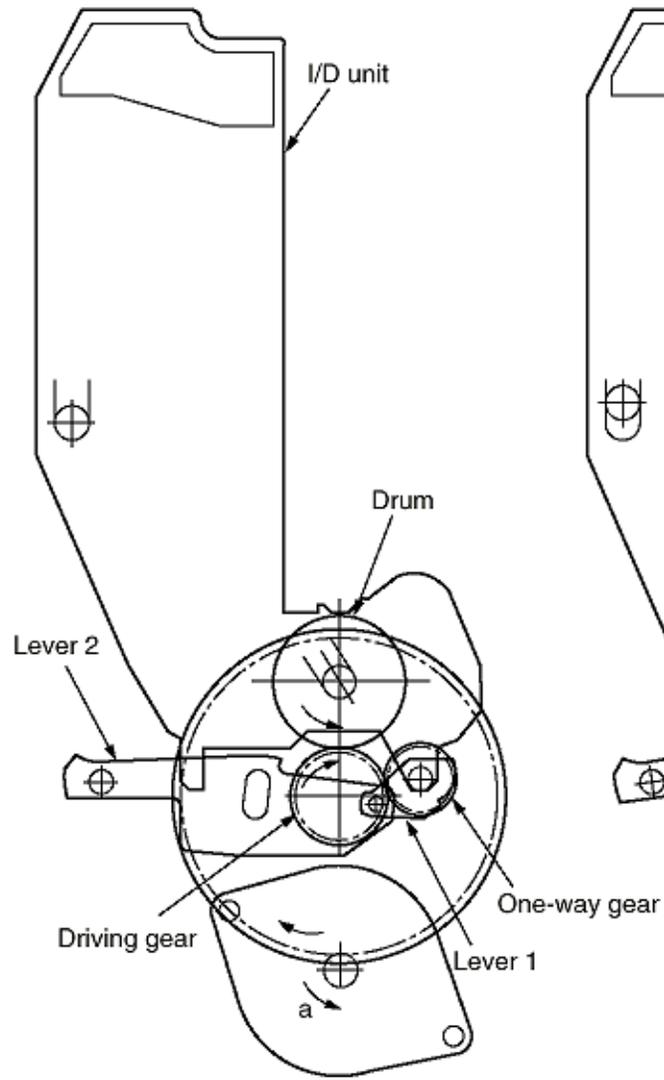


Figure 2-9-a

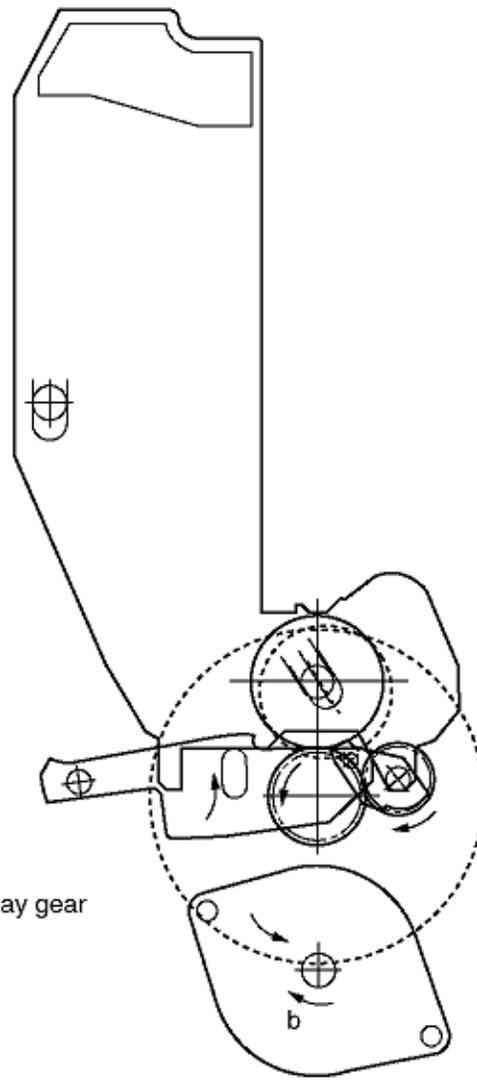


Figure 2-9-b

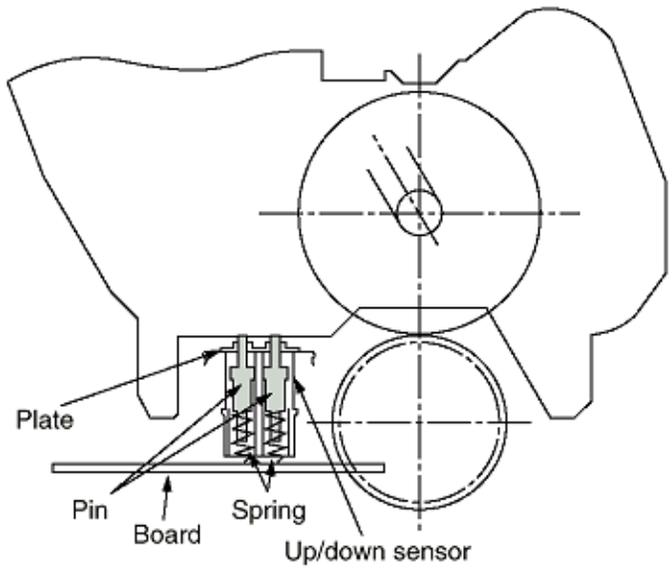


Figure 2-9-c

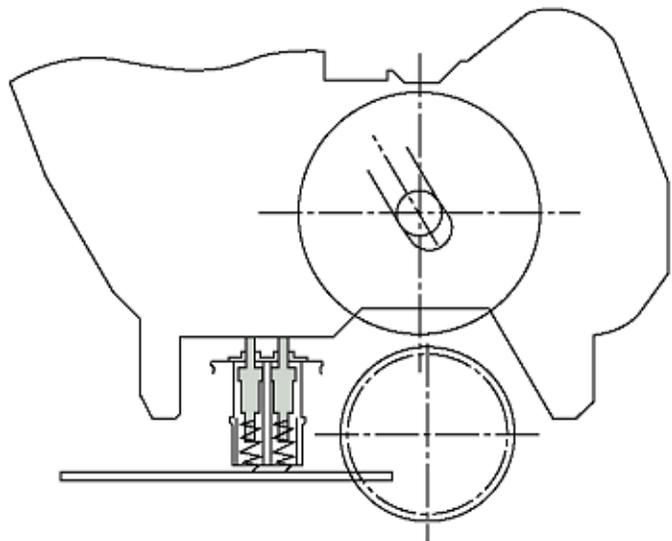


Figure 2-9-d





(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.

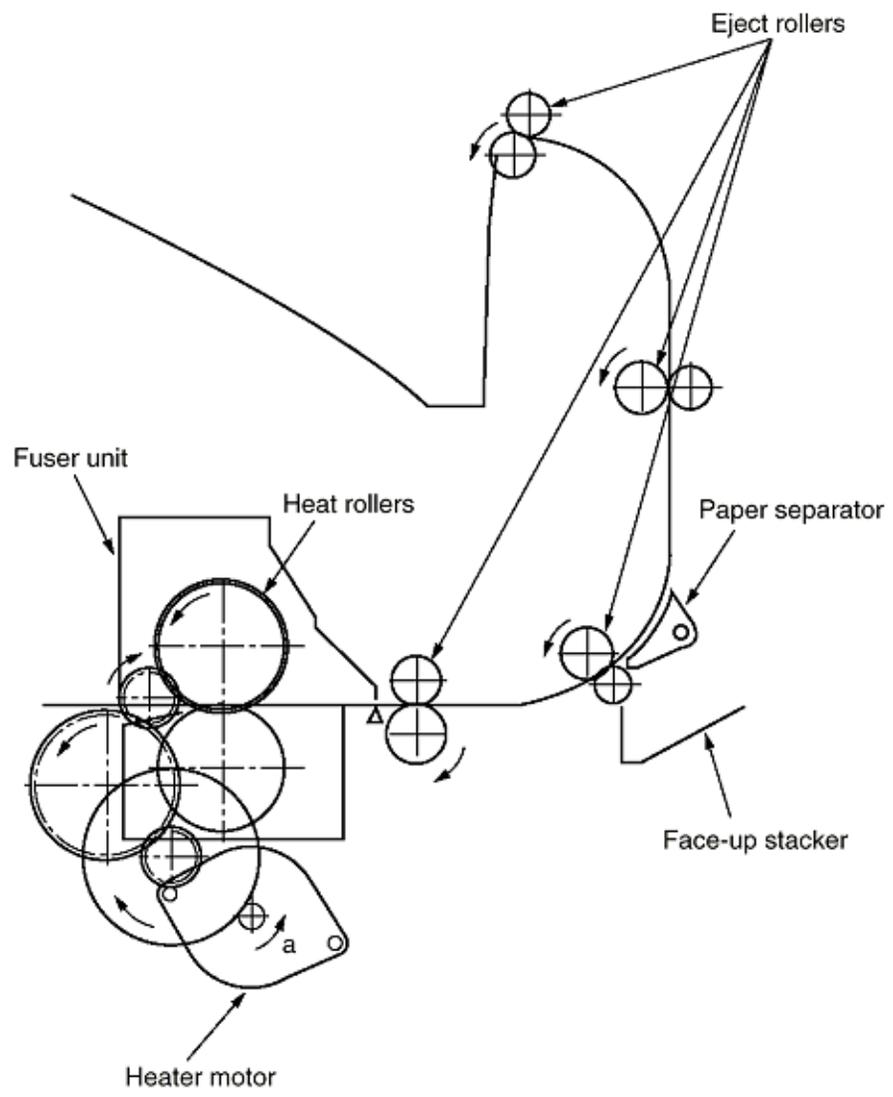


Figure 2-10

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(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.

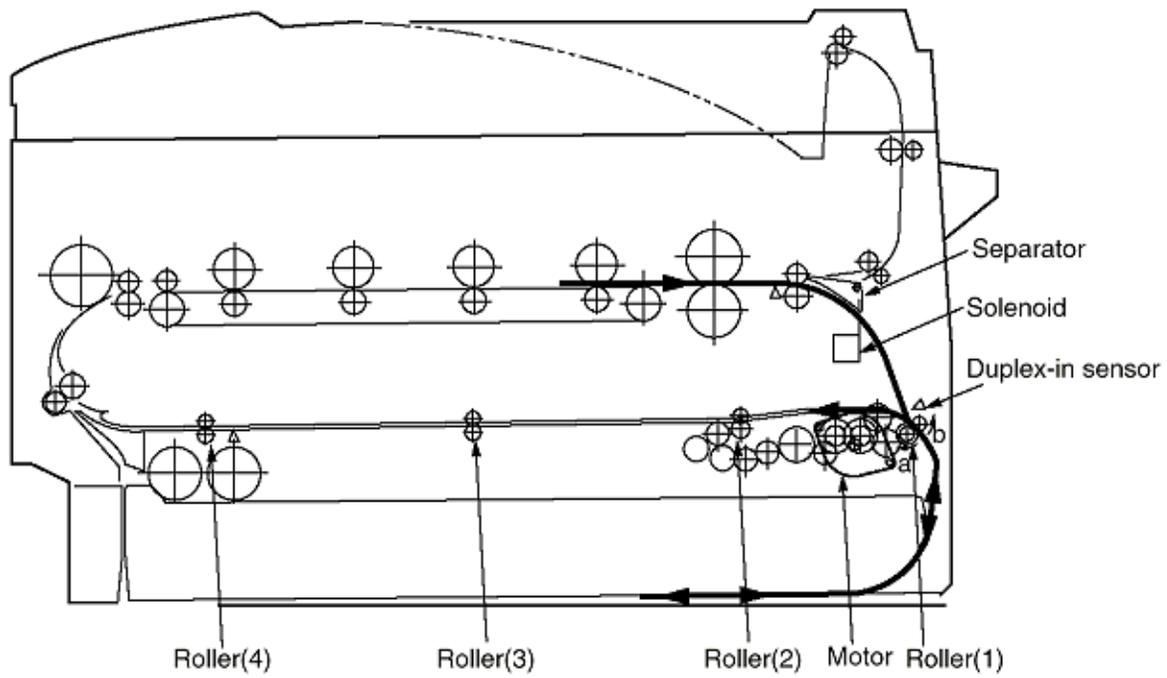


Figure 2-11



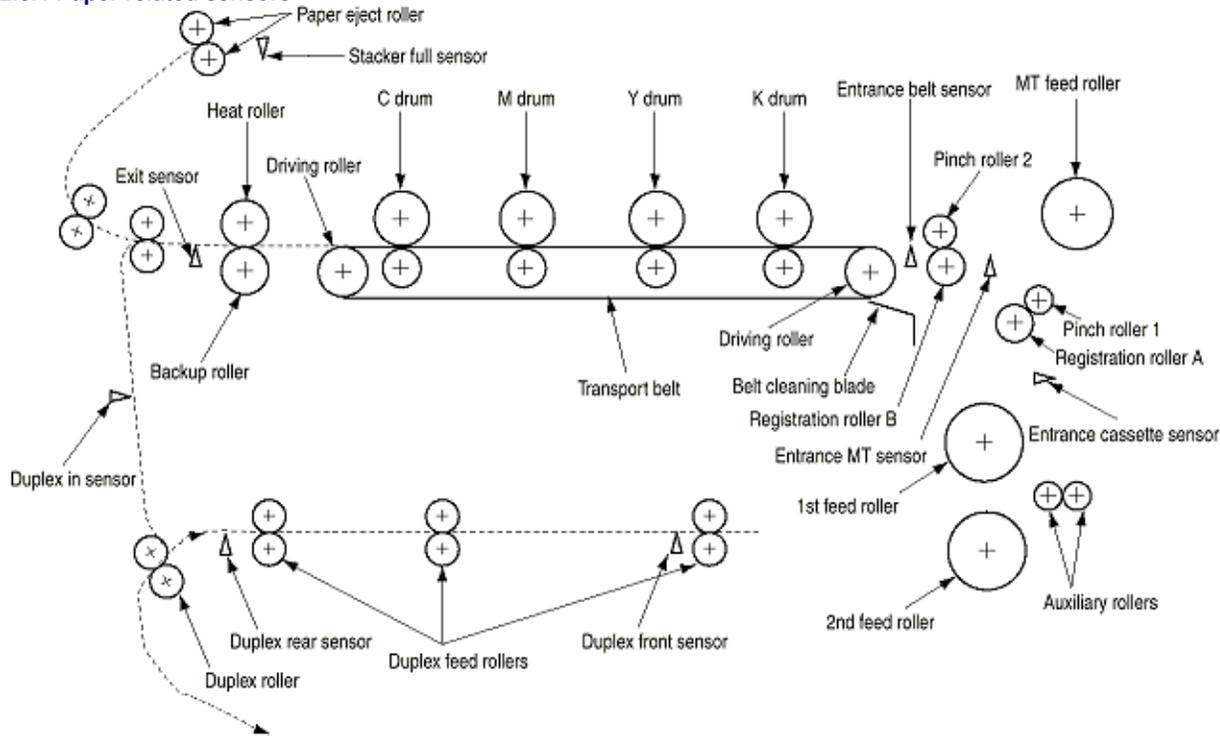
2.5 Sensor

2.5.1 Paper related sensors

2.5.2 Other sensors



2.5.1 Paper related sensors



Sensor	Function	Sensor status
Entrance MT sensor Entrance Cassette sensor	Detects the beginning of incoming paper to determine the timing for switching from hopping to transport.	ON: paper is present. 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 reverses 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.

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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).

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2.6 Color Misalignment Correction

Each of the C7000 Series of printers is equipped with 4 ID units and LED heads, which can cause color misalignment. This 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 Temperature and Relative Humidities)

The C7000 Series of 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.

Environmental 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 Register Value	1E (H)	1E (H)	33 (H)	47 (H)	47 (H)	5C (H)	5C (H)	70 (H)	70 (H)	85 (H)	85 (H)	99 (H)	99 (H)	AB (H)	AB (H)	
Temperature (°C)	5	59 (H)	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	
	5 10	168 (H)	19E (H)	8	8	8	7	7	7	7	6	6	6	5	5	5	5	
	10	15	19E (H)	1D1 (H)	8	8	7	7	7	6	5	5	5	4	4	4	4	
	15	25	1D1 (H)	204 (H)	8	7	7	6	5	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	2	2	
	25	31	236 (H)	265 (H)	7	6	6	4	4	3	3	2	2	2	2	2	2	
	30	35	265 (H)	290 (H)	7	6	5	4	2	2	1	1	1	1	1	1	1	
	35	41	290 (H)	2B9 (H)	6	6	4	2	2	2	2	1	1	1	1	1	1	
	40		2B9 (H)	6	5	4	2	2	2	2	2	1	1	1	1	1	1	

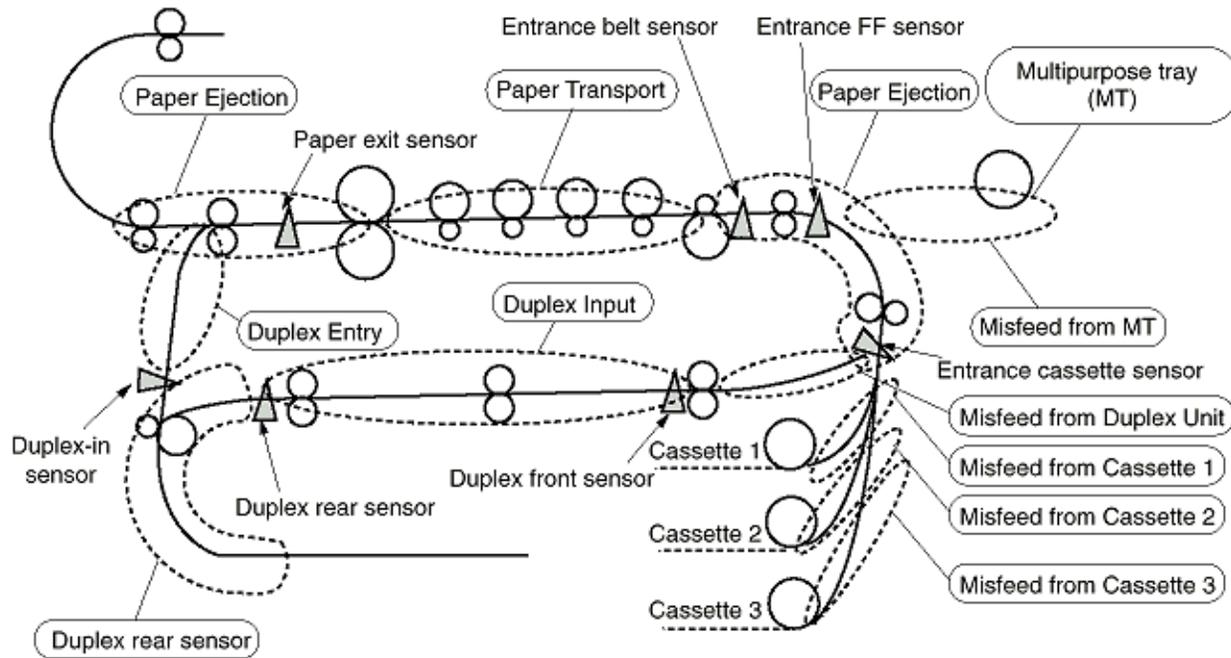
		Humidity (%)																
		Value Read by Sensor	15	15	25	25	35	35	45	45	55	55	65	65	75	75	85	85
		Value Read by Sensor Register Value	1E (H)	1E (H)	33 (H)	47 (H)	47 (H)	5C (H)	5C (H)	70 (H)	70 (H)	85 (H)	85 (H)	99 (H)	99 (H)	AB (H)	AB (H)	
Temperature (°C)	5	59 (H)																
	5 10	168 (H)	19E (H)															
	10	15	19E (H)	1D1 (H)														
	15	25	1D1 (H)	204 (H)														
	20	25	204 (H)	236 (H)	N/L													
	25	31	236 (H)	265 (H)	N/L	N/L				N/M								
	30	35	265 (H)	290 (H)		N/L			N/M									
	35	41	290 (H)	2B9 (H)	N/L				N/M									
	40		2B9 (H)						N/M									



2.8 Paper Jam Detection

The C7000 Series of printers detect 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.

Classification / Belt	ERROR	Error Condition
STSOP/7	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.
SSTOP/5 OPJAM/6 OPFEED/4	Misfeed from Duplex Transport Assembly	Paper could not be loaded from the duplex transport assembly.
SSTOP/5 OPJAM/6 OPFEED/3	Misfeed from Multi-Purpose Tray (MT)	Paper could not be loaded from the MT.
SSTOP/5 OPJAM/6 OPFEED/2,1,0	Duplex Paper Reversing Jam	The duplex rear sensor has not turned on during the paper reversing operation of the duplex unit.
STSOP/5 OPJAM/5	Duplex Unit Entrance Paper Jam	The duplex-in sensor has not turned on during the paper loading in the duplex unit.
STSOP/5 OPJAM/3	Duplex Unit Paper Input Jam	The duplex front sensor has not turned on during the operation.
STSOP/5 OPJAM/2	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.
STSOP/5 OPJAM/1	Paper Transport Jam	The paper exit sensor has not turned on while paper is running on the belt.
STSOP/5 OPJAM/0	Loading Jam	Paper has not reached the entrance belt sensor or the MT sensor after the completion of the hopping.
STSOP/4 OPAP/3	MT Paper Empty	There is no paper in the multi-purpose tray.
STSOP/4 OPAP/2,1,0	Cassette 1, 2, or 3 Paper Empty	There is no paper in the cassette 1, 2, or 3.

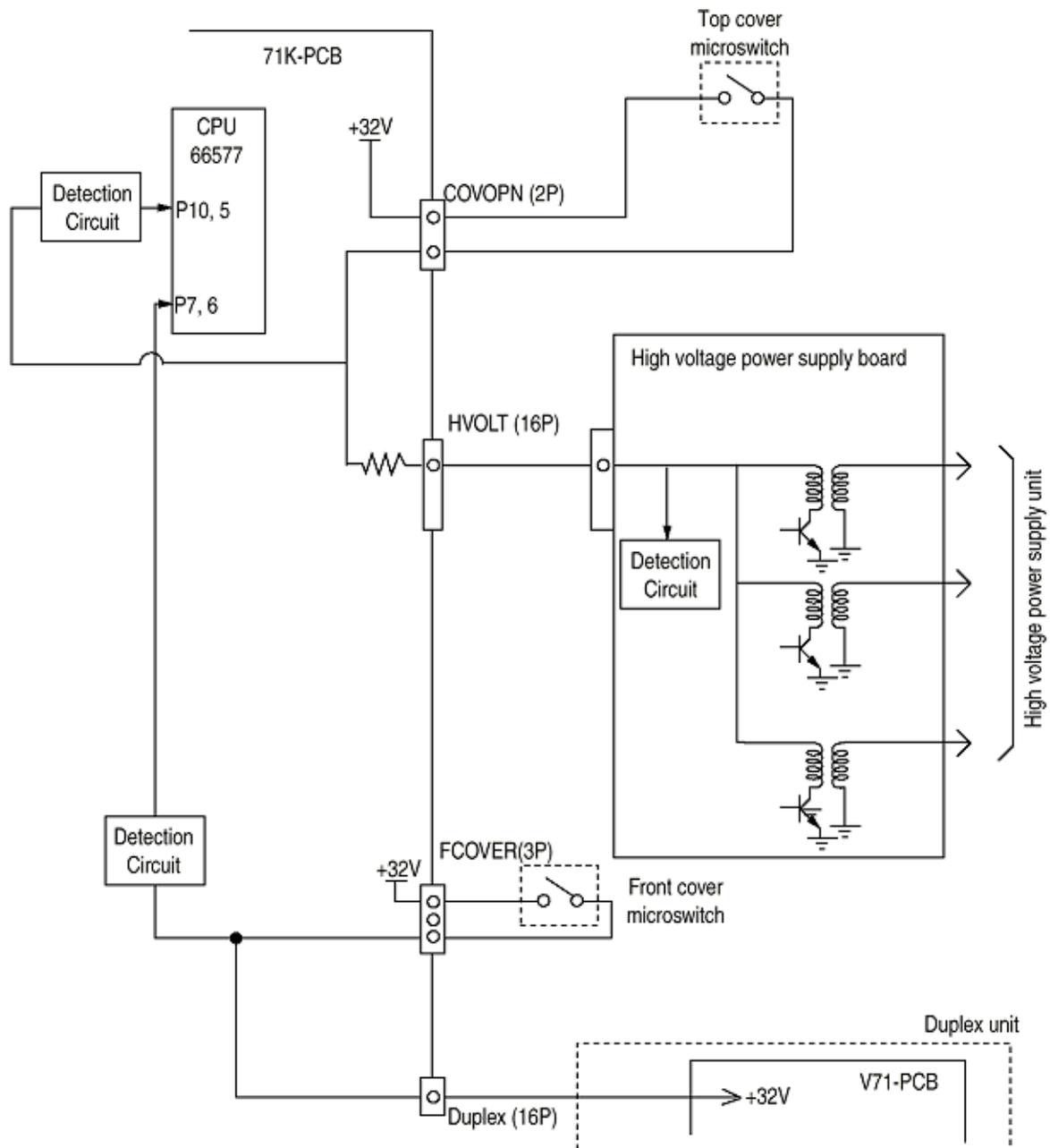




2.9 Cover-Open

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 32V. 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 32V power to the duplex unit is cut. The CPU receives FCOVER signals for indicating the status of the microswitch to handle cover-open.



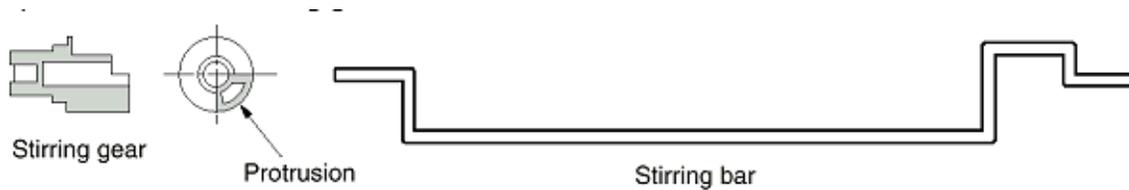
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2.10 Toner Low Detection

- 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.

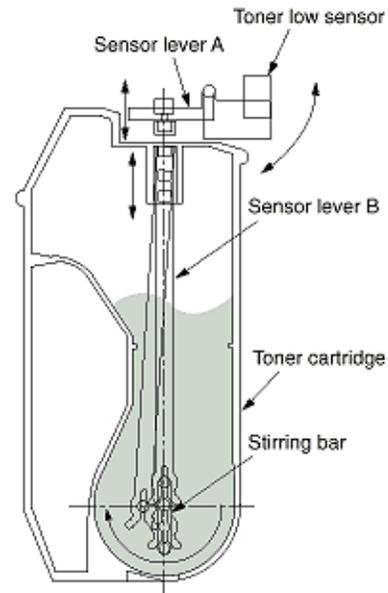


- Detection

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

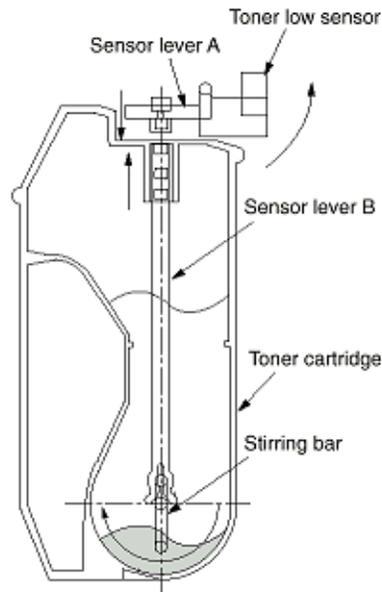
Full Toner Condition

- The stirring bar rotates 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.

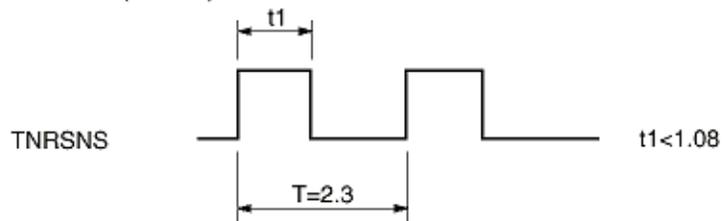


Toner Low Condition

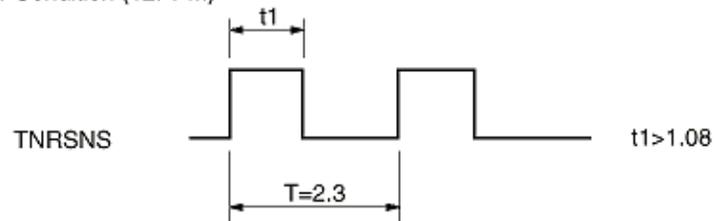
The stirring bar reaches its highest position, then falls to its lowest position under its own weight because of the absence of toner resistance on the opposite side. In this situation, the bar-magnet contact time becomes long. By measuring the time, a toner low condition is detected.



Toner Full Condition (12PPM)



Toner Low Condition (12PPM)



- 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 2.3 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 MICROSWITCHES

SW1	SW2	SW3	SW4	Paper size
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.

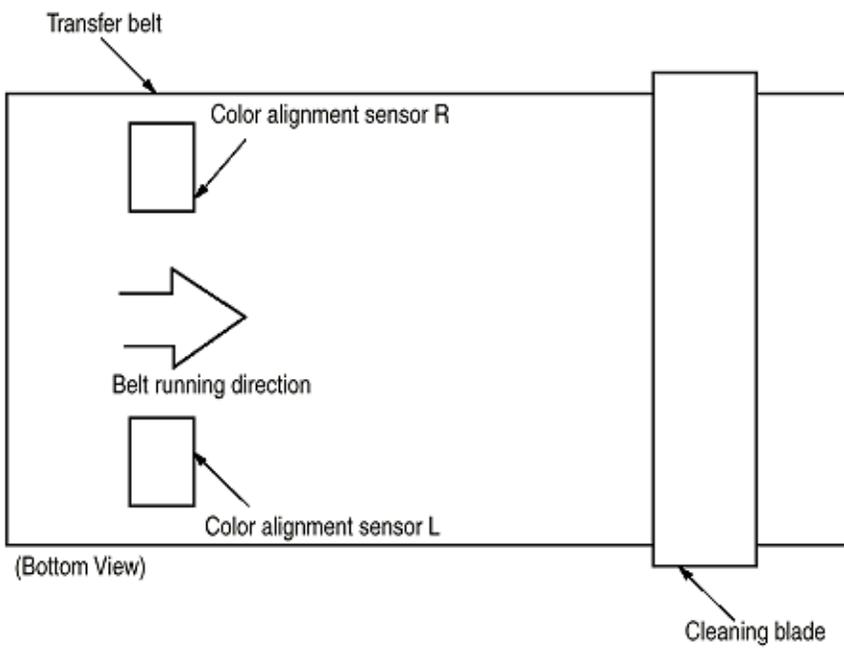
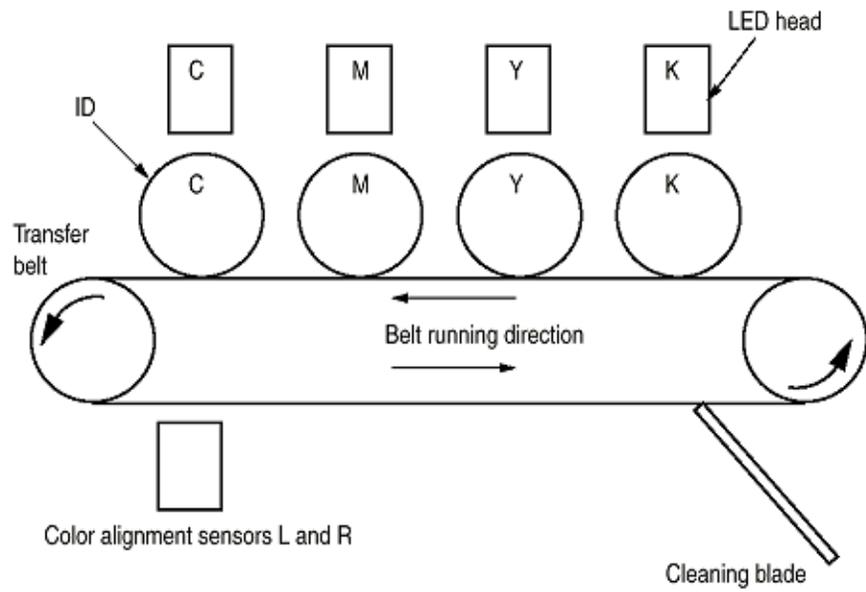
(6) Option unit check

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 and every 200 pages.



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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). Warning (the unit can still be used).	Warning (the unit can still be used).
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.	Do not use the unit anymore.
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 the counter value reaches 60K. Warning (the unit can still be used).	Warning (the unit can still be used).
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).



2.16 Toner Consumption Detection

The used toner amount is detected by counting the number of dots printed. The counting starts after toner low is removed. The sum of the counted values is stored in EEPROM. Upon detection of toner low, the amount used is forcedly set to 8%. After that, when the equivalent of pages of 1K on A4 and 5% duty is reached, toner-empty occurs and the printing stops.



3.0 Precaution in Replacing Parts

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

3.2 Parts layout

3.3 Replacing Parts



3.1 Precaution in Replacing Parts

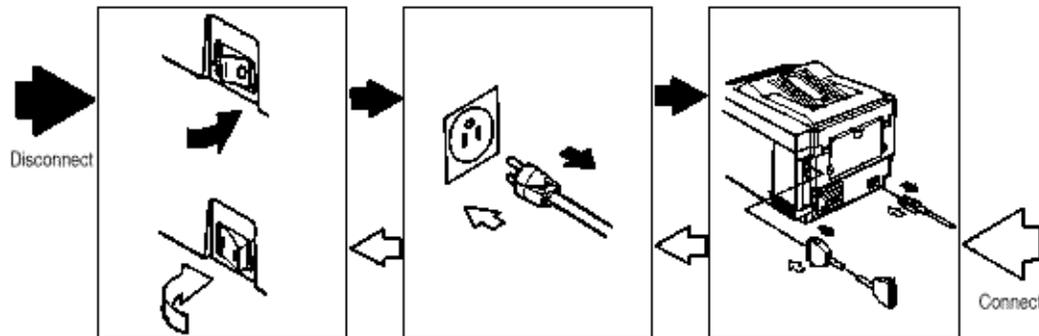
(1) **Before starting parts replacement, remove the AC cable and interface cable.**

(a) Removing the AC cable

- i) Turn off ("o") the power switch of the printer.
- ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.
- iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnecting the AC cable

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



- (2) Do not disassemble the printer, if operating normally.
- (3) Do not remove unnecessary parts: try to keep disassembly to a minimum.
- (4) Use specified service tools.
- (5) When disassembling, follow the determined sequence. Otherwise, parts may be damaged.
- (6) Since screws, collars and other small parts are likely to be lost, they should temporarily be

attached to the original positions.

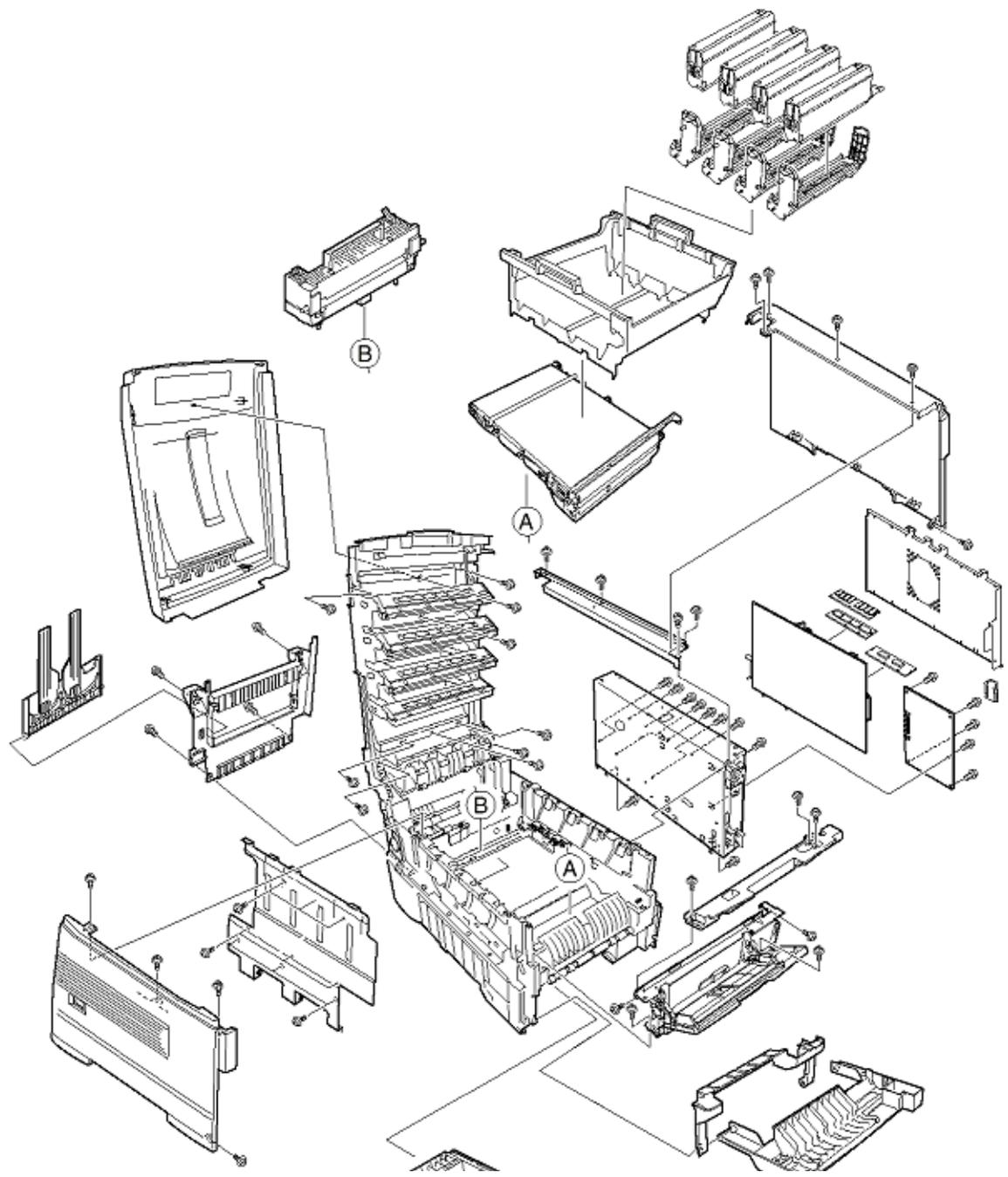
(7) When handling ICs such as microprocessors, ROM and RAM, and circuit boards, follow standard electrostatic procedures.

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

No.	Service Tools	Tools	Qty	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 51802901	1	Cleans LED head	



3.2 Parts Layout



[Top Cover Assy}

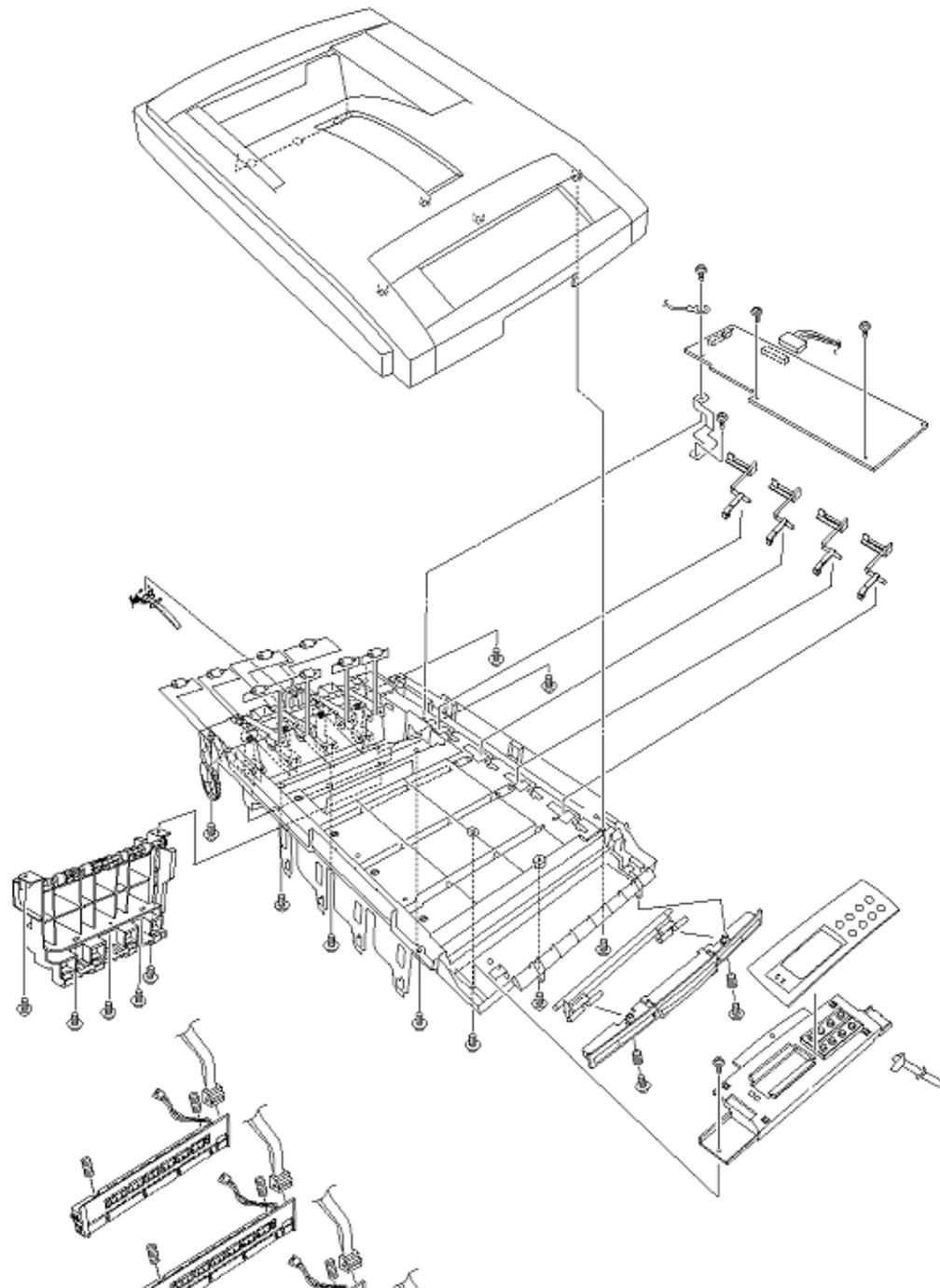
[Printer Unit]

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

[Duplex Unit]



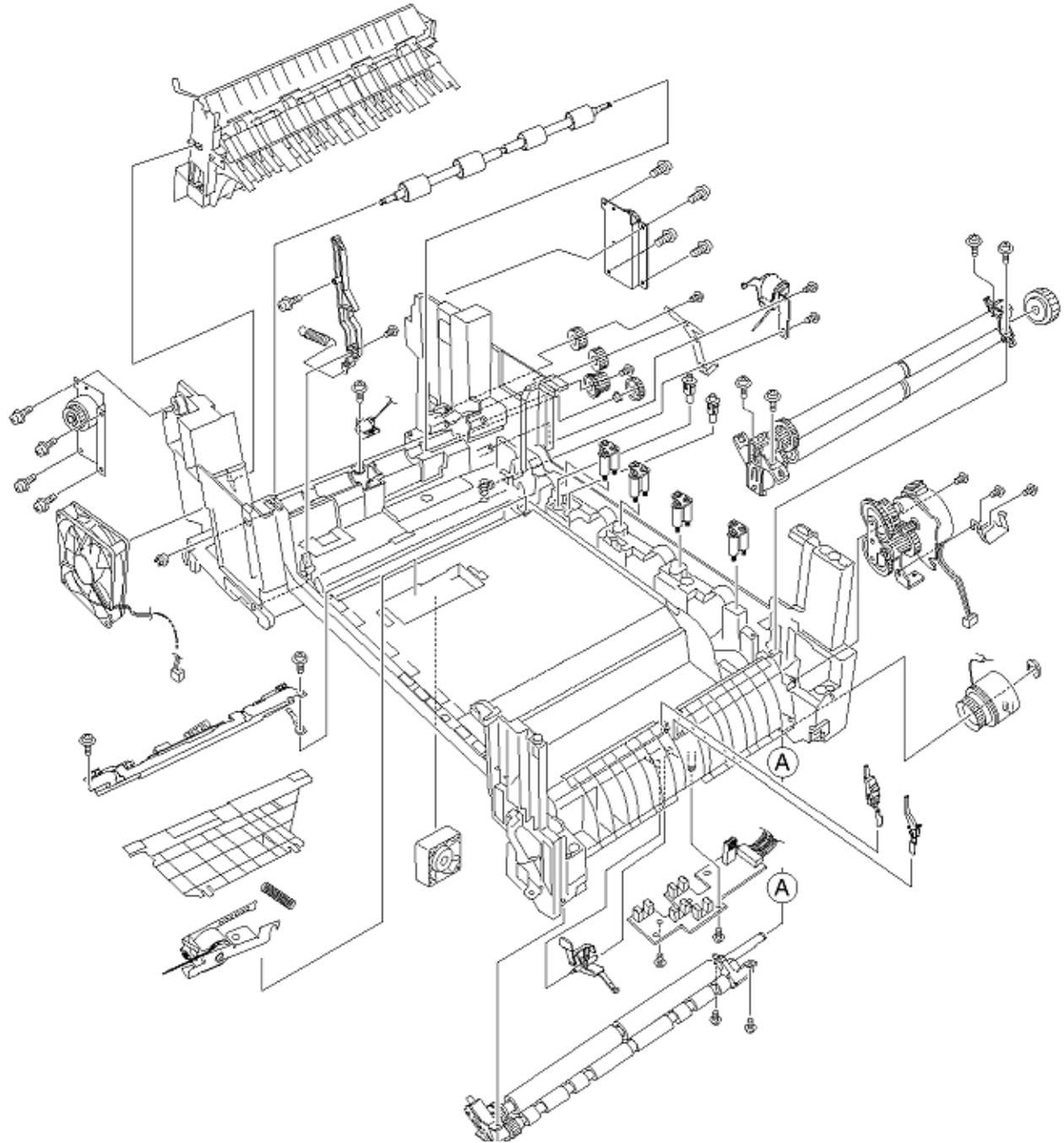
Top Cover Assy



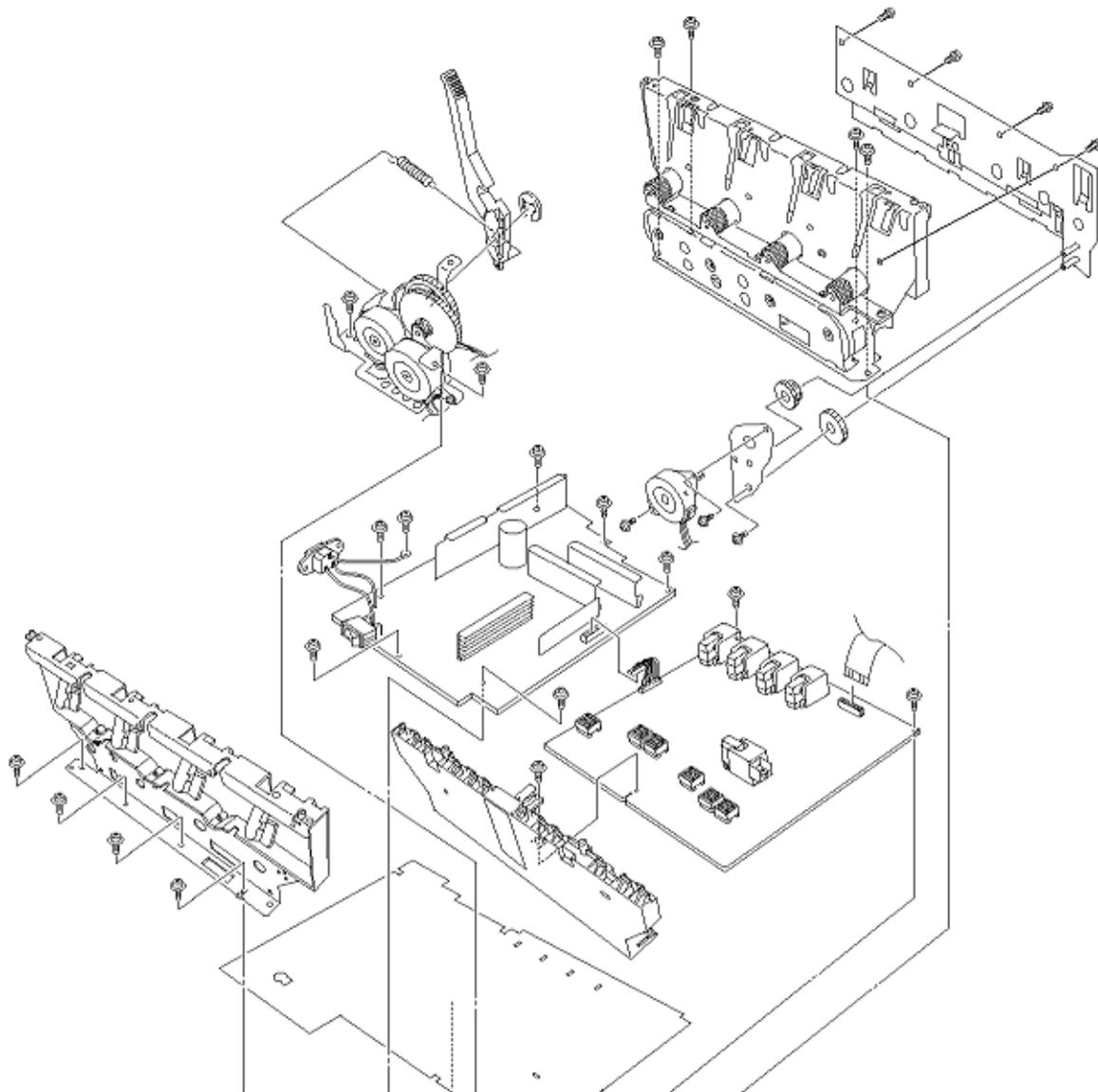
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Printer Unit
[Printer Unit 1/2]



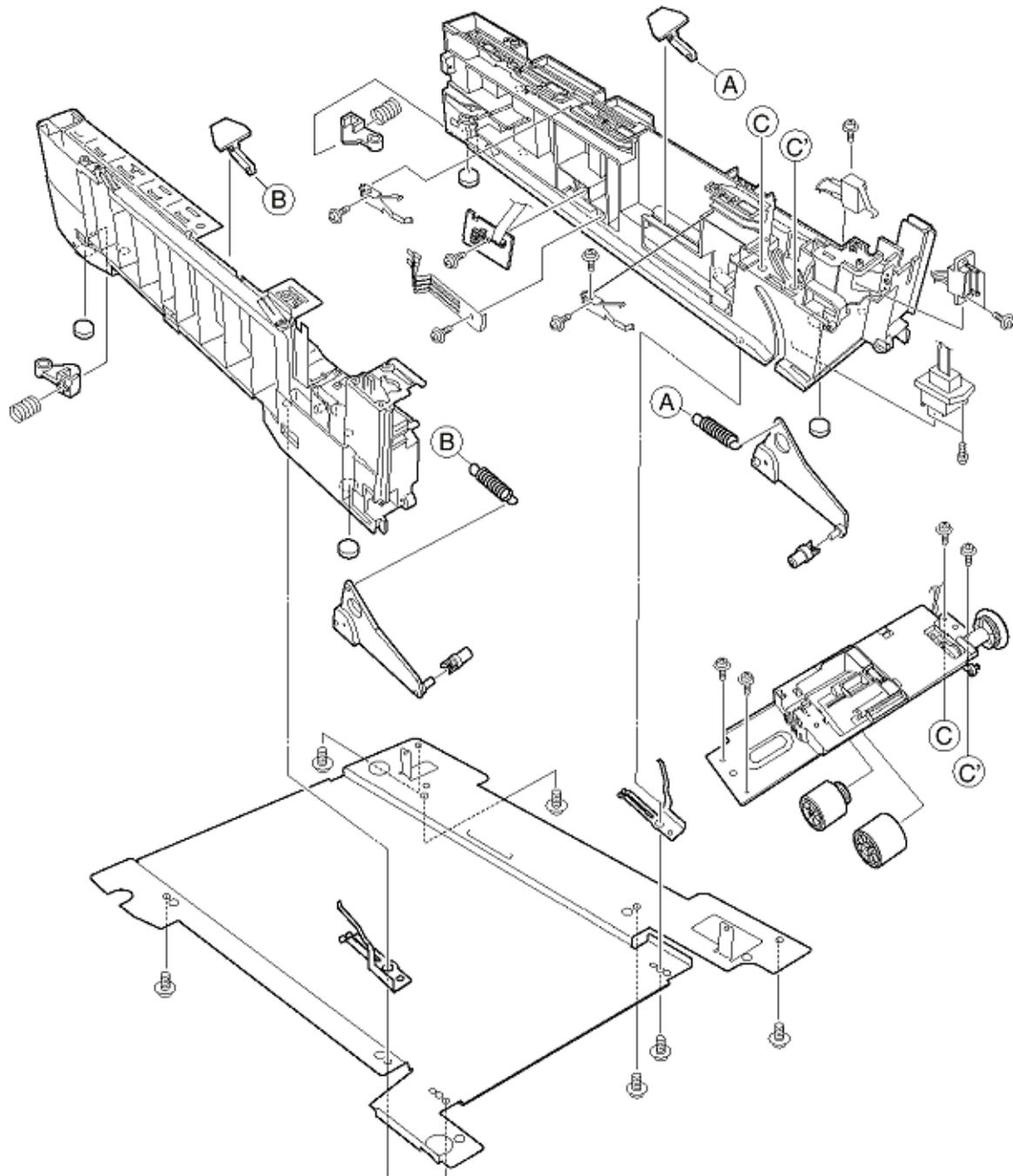
Printer Unit 2/2]



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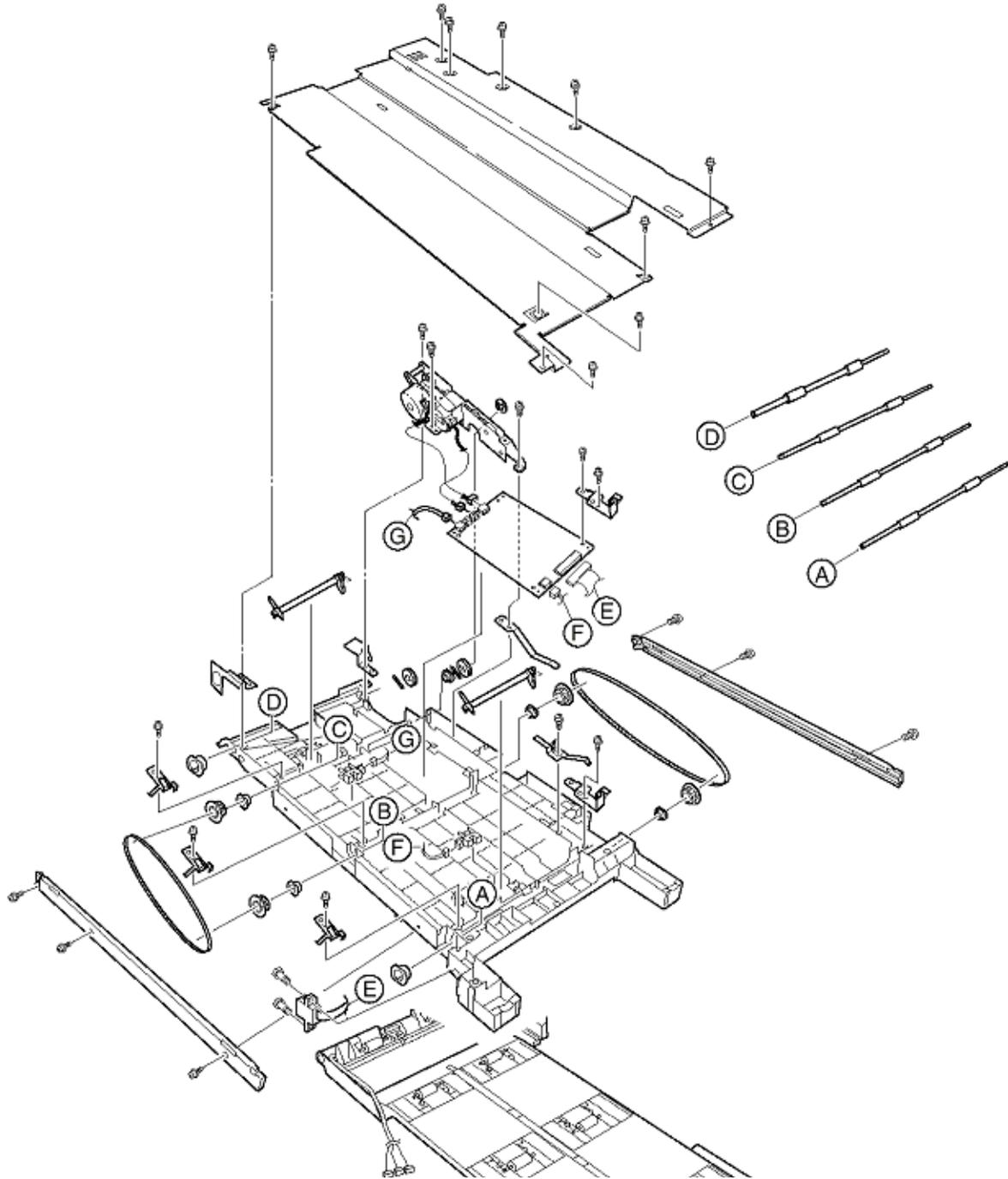
Cassette Guide Assy (L), (R)



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Duplex Unit





3.3 Replacing Parts

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

3.3.1 Top Cover

3.3.2 LED assy / LED assy Spring

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

3.3.5 Top Cover handle / Top cover Latch / Top Cover Latch Spring

3.3.6 Eject Guide Assy

3.3.7 Cassette Assy / Front Cover Assy / Front Cover Inner Battle

3.3.8 Retard Pad Assy/ Retard Pad Assy Spring

3.3.9 Feed Roller and Nudger Roller

3.3.10 Rear Cover

3.3.11 Face-Up Tray

3.3.12 Left Side Cover

3.3.13 Right Side Cover

3.3.14 Multi-purpose Tray Assy / Multi-purpose Tray Cover Assy / Links / Multi-purpose Tray Top Cover / Multi-purpose Tray Drive gear

3.3.15 Drum Contact Assys

3.3.16 Registration Roller Assy (A) / Registration Drive Gear (A)

3.3.17 Registration Roller Assy (B)

3.3.18 Registration Clutch and Registration Motor Assy

3.3.19 Main Cooling Fan

3.3.20 Color Registration Sensor Assy

3.3.21 Duplex Guide Assy

3.3.22 Electrical Chassis Cooling Fan

3.3.23 Printer Engine Controller PWB

3.3.24 Printer Unit Chassis

3.3.25 Entrance Cassette Sensor Actuator

3.3.26 Entrance Sensor PWB

3.3.27 Entrance MT Sensor Actuator and Entrance Belt Sensor Actuator

3.3.28 Fuser Exit Roller

3.3.29 Exit Sensor Assy

3.3.30 Fuser Latching Handle (L)

3.3.31 Belt Motor Assy

3.3.32 Fuser Latching Handle (R)

3.3.33 Main Motor Assy

3.3.34 Main Feeder Drive Motor

3.3.35 Contact Assy / Left Plate Assy

3.3.36 Low Voltage Power Supply

3.3.37 High Voltage Power Supply

3.3.38 Main Feed Assy

3.3.39 Cassette / Left Guide Assy

3.3.40 Cassette / Right Guide Assy

3.3.41 Fuser Unit

3.3.42 Belt Unit

3.3.43 Duplex Unit

3.3.44 Guide Rails (L) and (R)

3.3.45 Duplex Transport Assembly

3.3.46 CU Assy

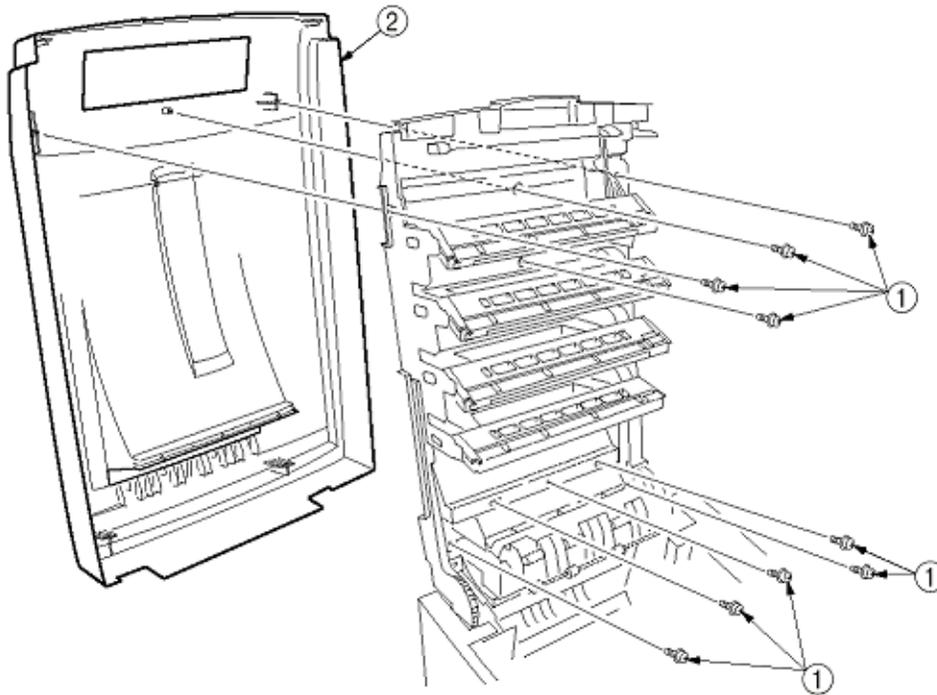
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3.3.1 Top Cover

(1) Open the Top Cover assy.

(2) Remove the nine screws (1) to detach the top cover (2).



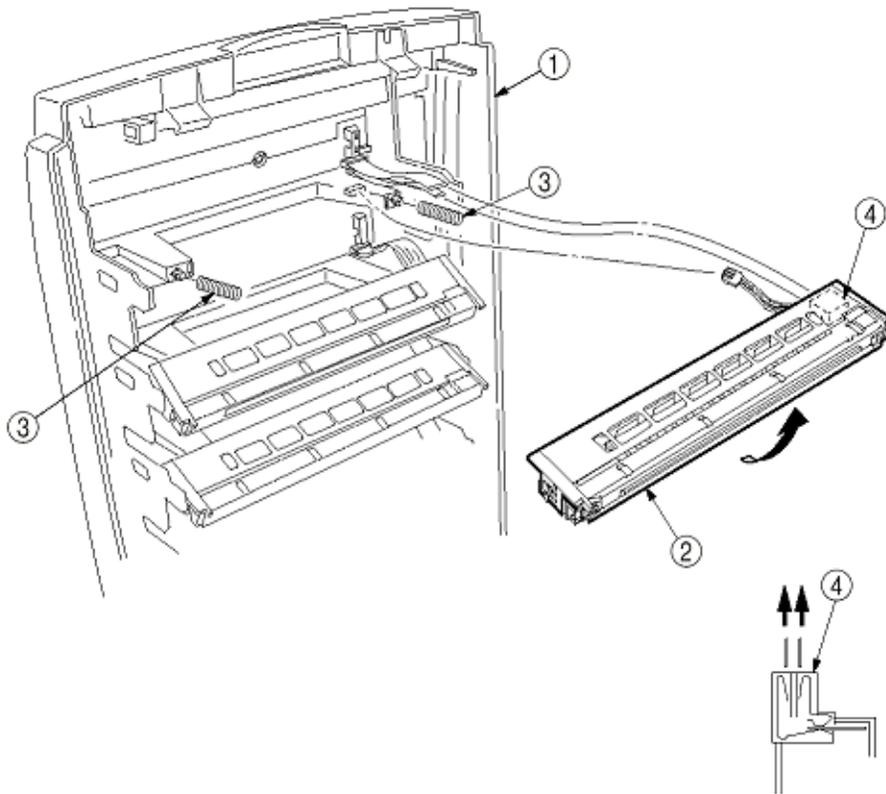


3.3.2 LED Assy / LED Assy Spring

(1) Open the top cover (1).

(2) Remove the three cables, and unhook the LED Assy (2) at two places to demount it (the two springs (3) become detached together with the LED Assy (2)).

(3) Remove the LED connector (4). When assembling, attach the LED connector (4) to the LED head and insert the flat cable into it.

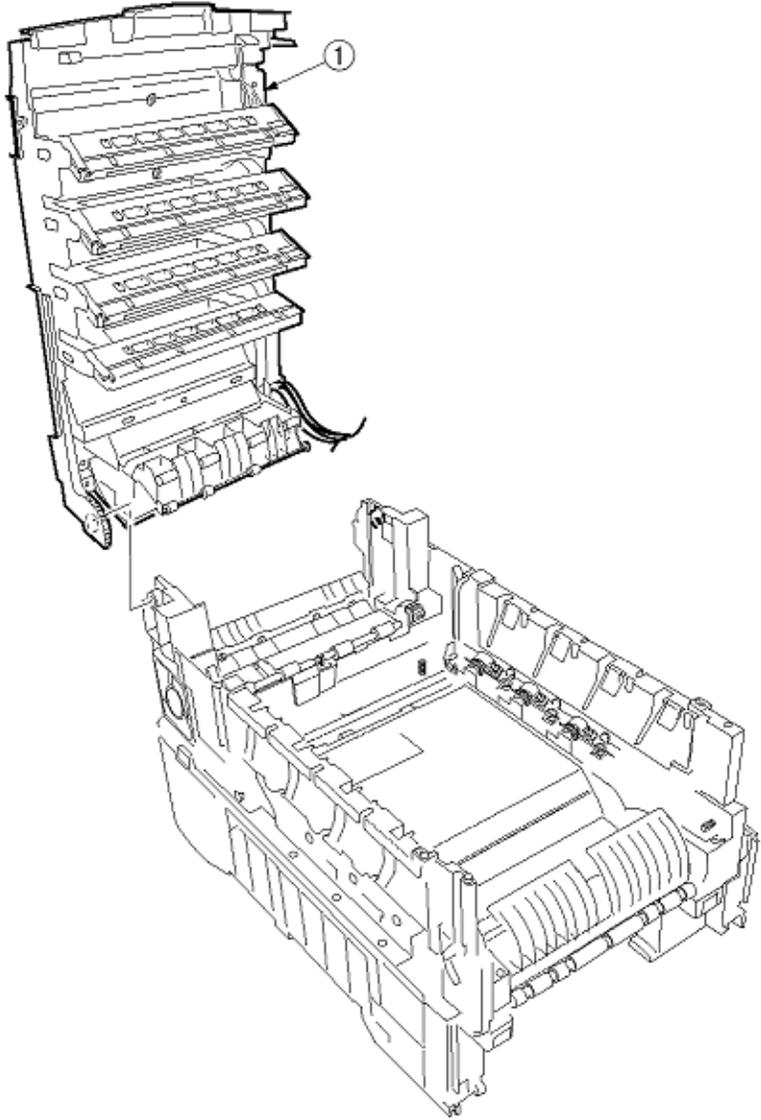


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3.3.3 Top Cover Unit

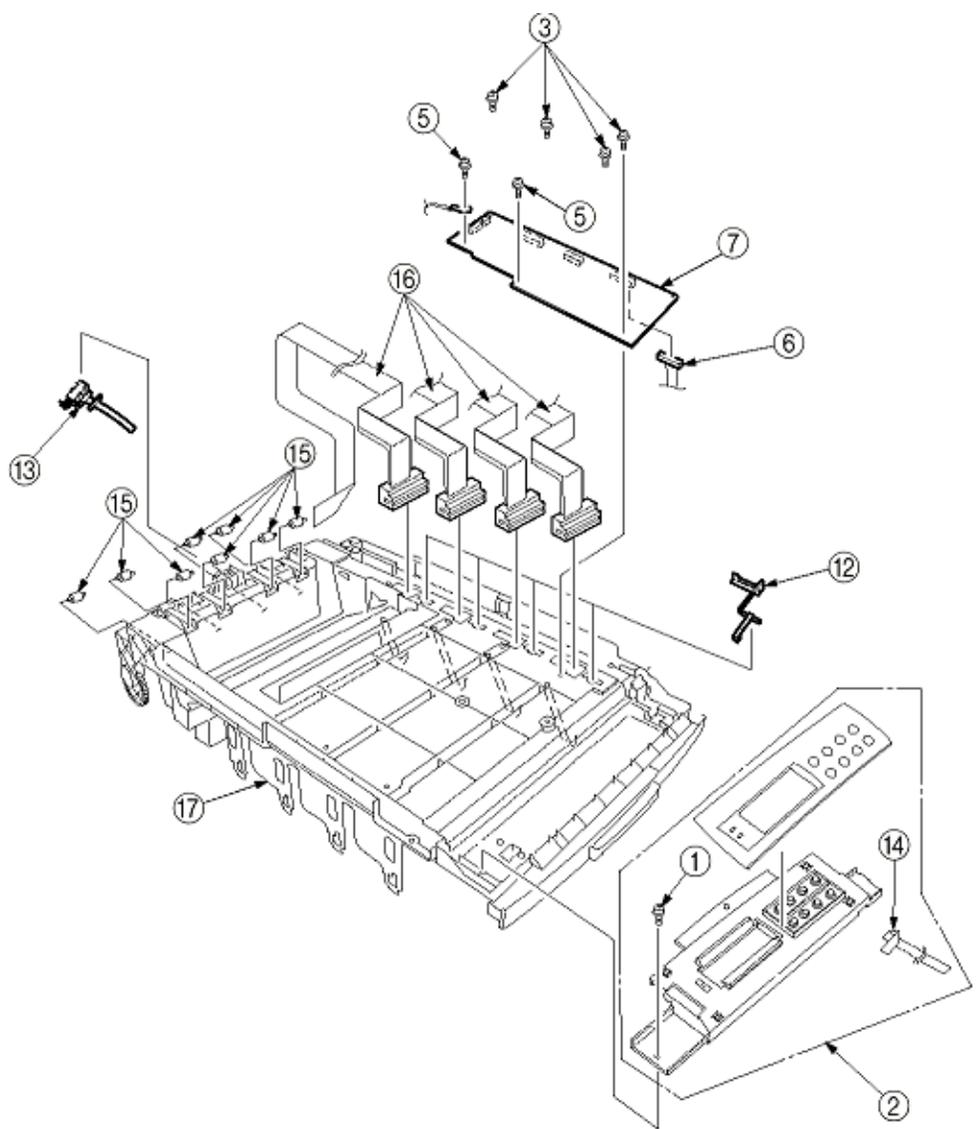
- (1) Remove the top cover (see section 3.3.1).
- (2) Remove the rear cover (see section 3.3.10).
- (3) Remove the left side cover (see section 3.3.12).
- (4) Remove the right side cover (see section 3.3.13).
- (5) Remove the shield plates A and B (see section 3.3.22), and unplug the connector to separate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





**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**

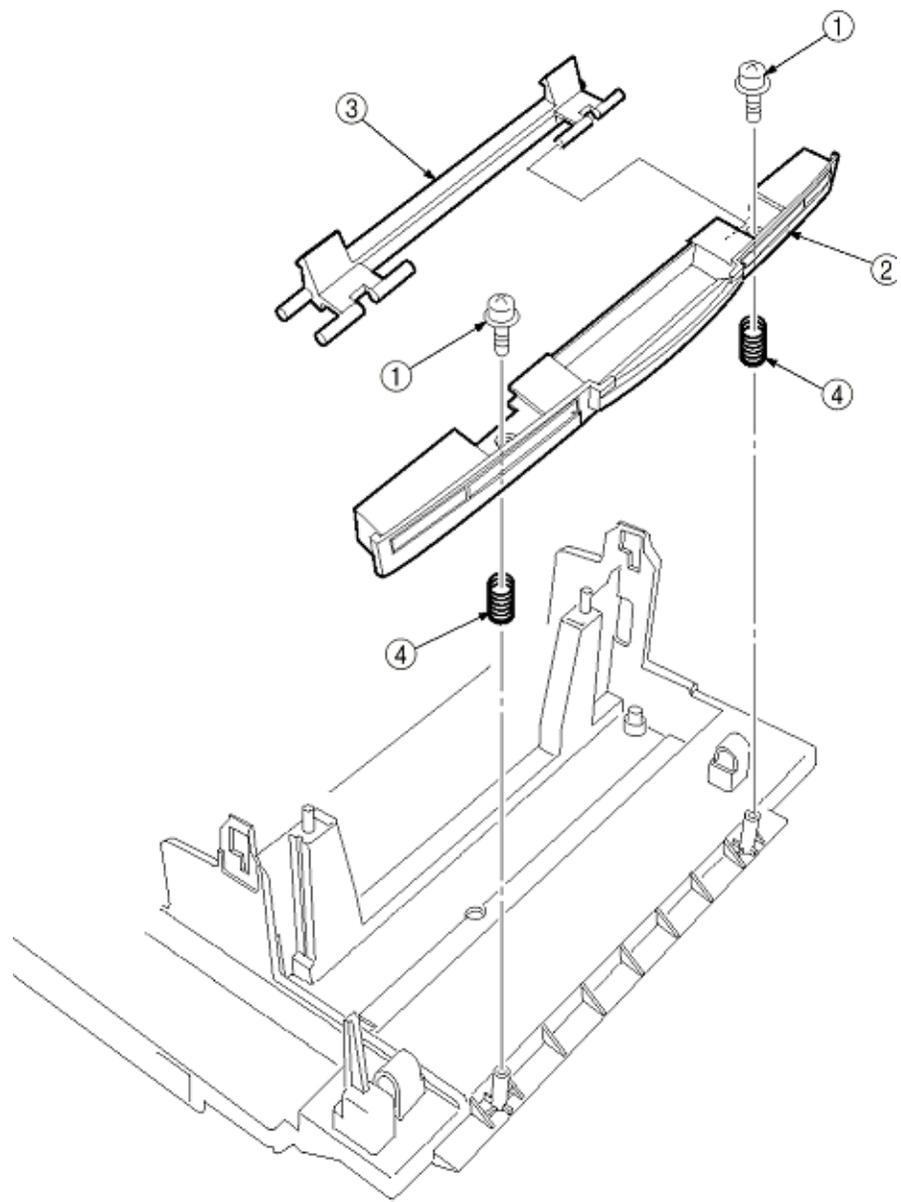
- (1) Detach the control panel bezel placed in the control panel Assy (2).
- (2) Remove the screw (1) to demount the control panel Assy (2).
- (3) Detach the control panel tape harness (14).
- (4) Remove the top cover unit (see section 3.3.3).
- (5) Unscrew the four screws (3) to remove the earth plate (4).
- (6) Remove the two screws (5), unhook all the connectors (6) and demount the LED control PWB (7).
- (7) Remove the screw (8).
- (8) Disengage the four claws to demount the toner sensor .
- (9) Demount the stacker full sensor (12).
- (10) Demount the exit rollers (15).
- (11) Detach the LED harnesses, K, Y, M and C (16).
- (12) Detach the top cover inner frame Assy (17).





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).

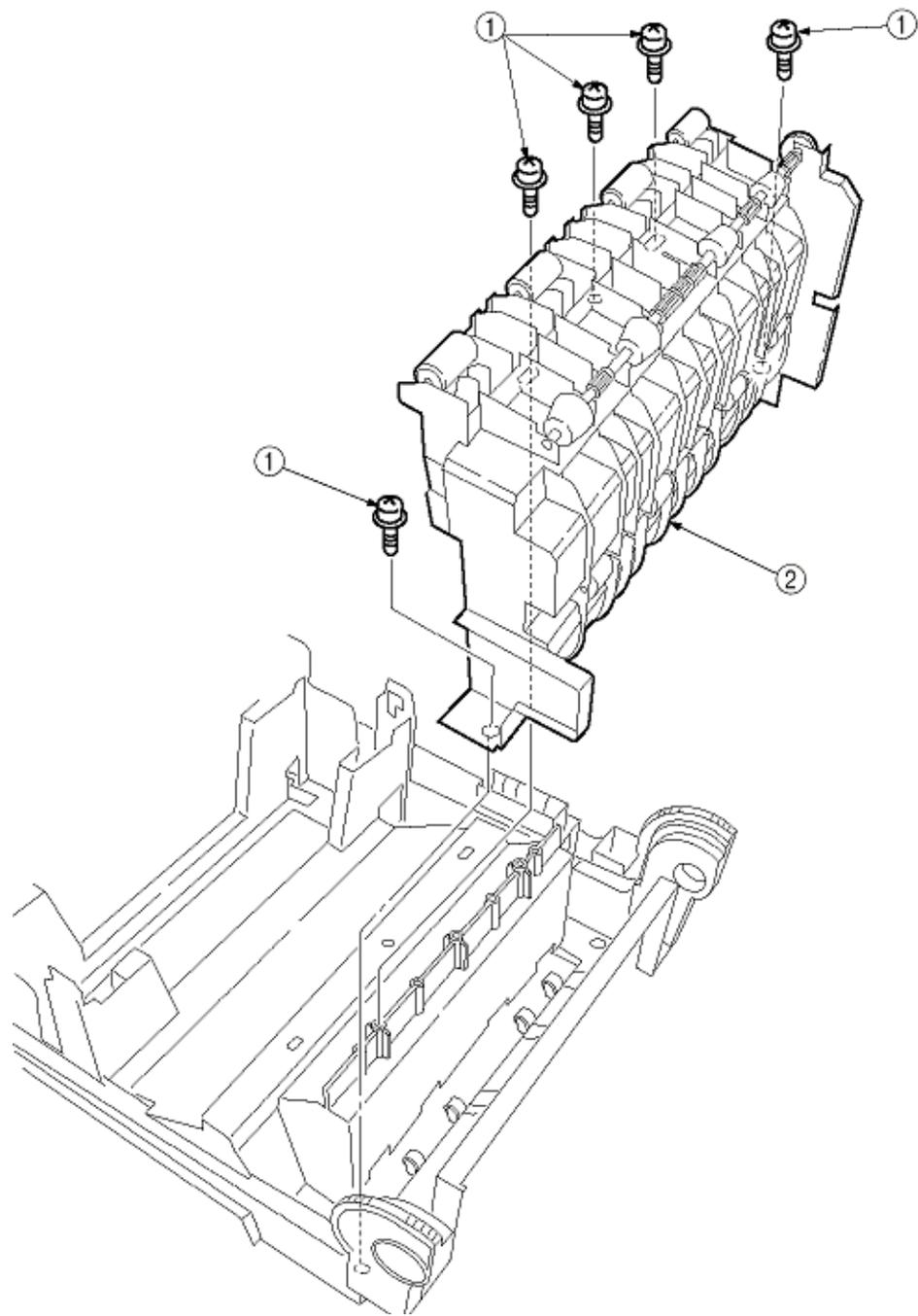


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3.3.6 Eject Guide Assy

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

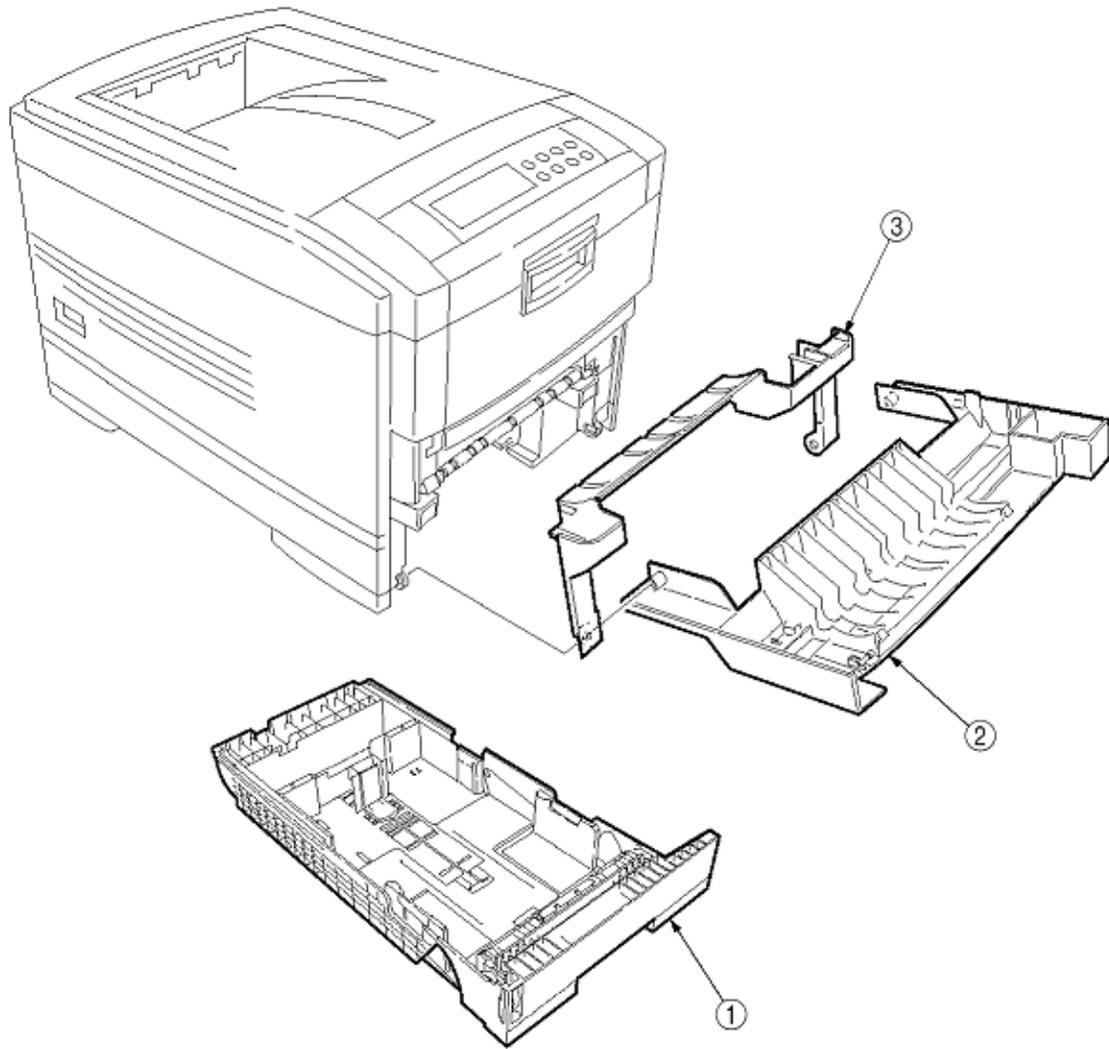


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3.3.7 Cassette Assy / Front Cover Assy / Front Cover Inner Baffle

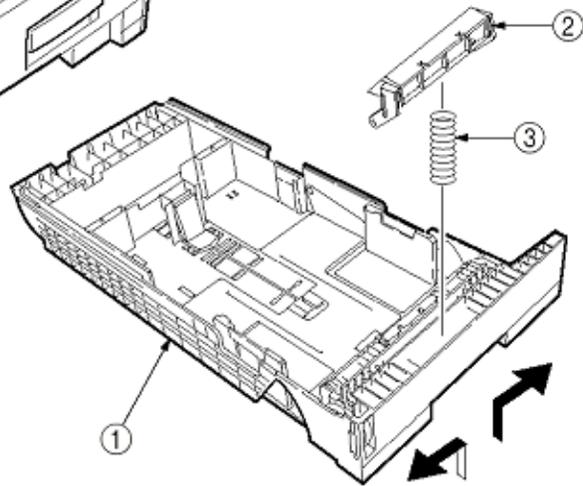
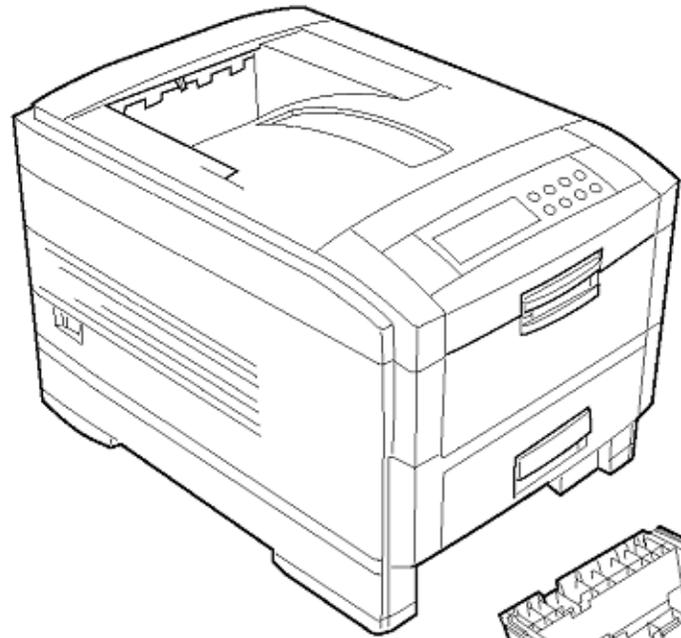
- (1) Detach the cassette assy (1).
- (2) Open the front cover (2), and disengage it at two places to detach it.
- (3) Detach the front cover inner baffle (3).





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).

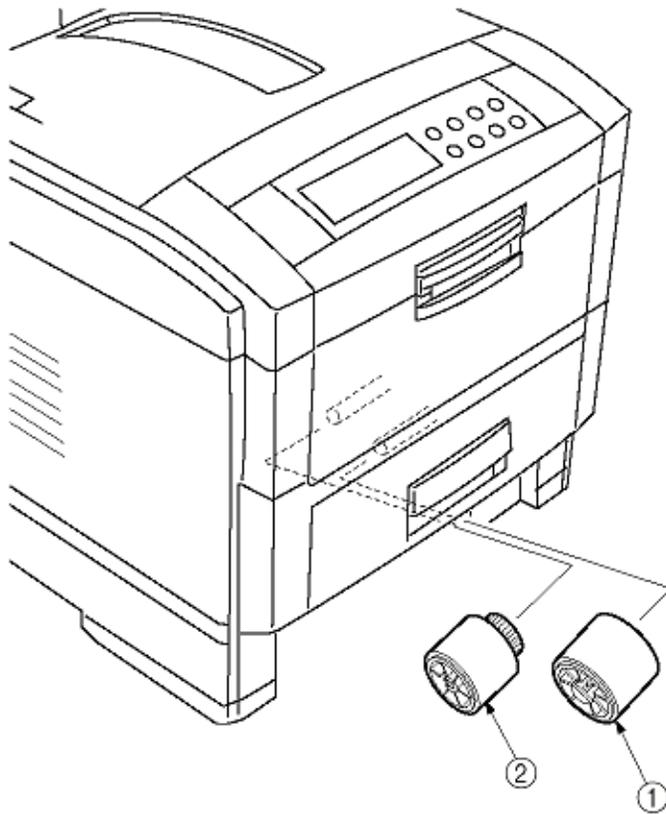


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3.3.9 Feed Roller and Nudger Roller

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



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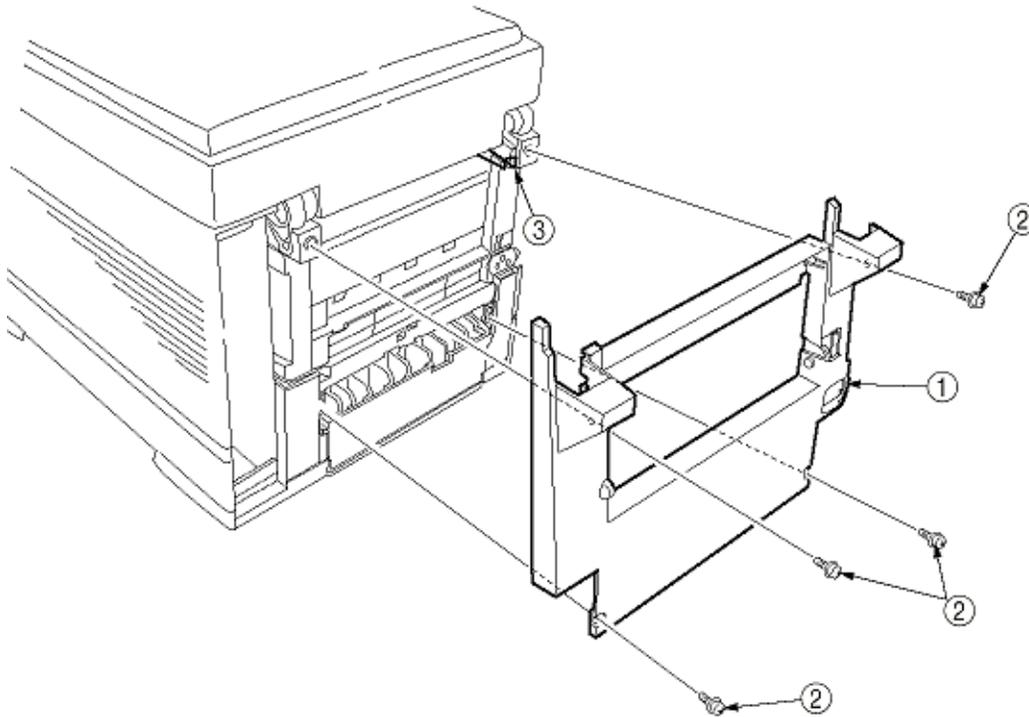


3.3.10 Rear Cover

(1) Remove the left side cover (see section 3.3.12).

(2) Remove the four screws (2) to detach the rear cover (1).

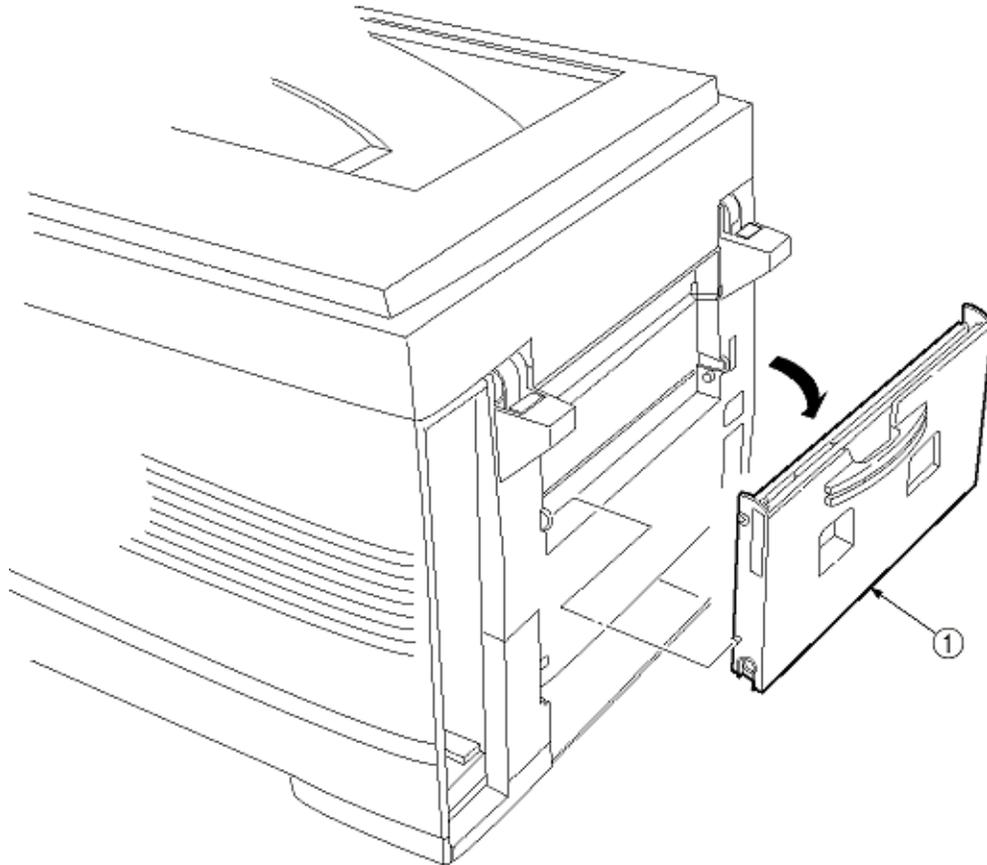
Note: When attaching the rear cover, take care not to allow the spring (3) to get caught in parts.





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.

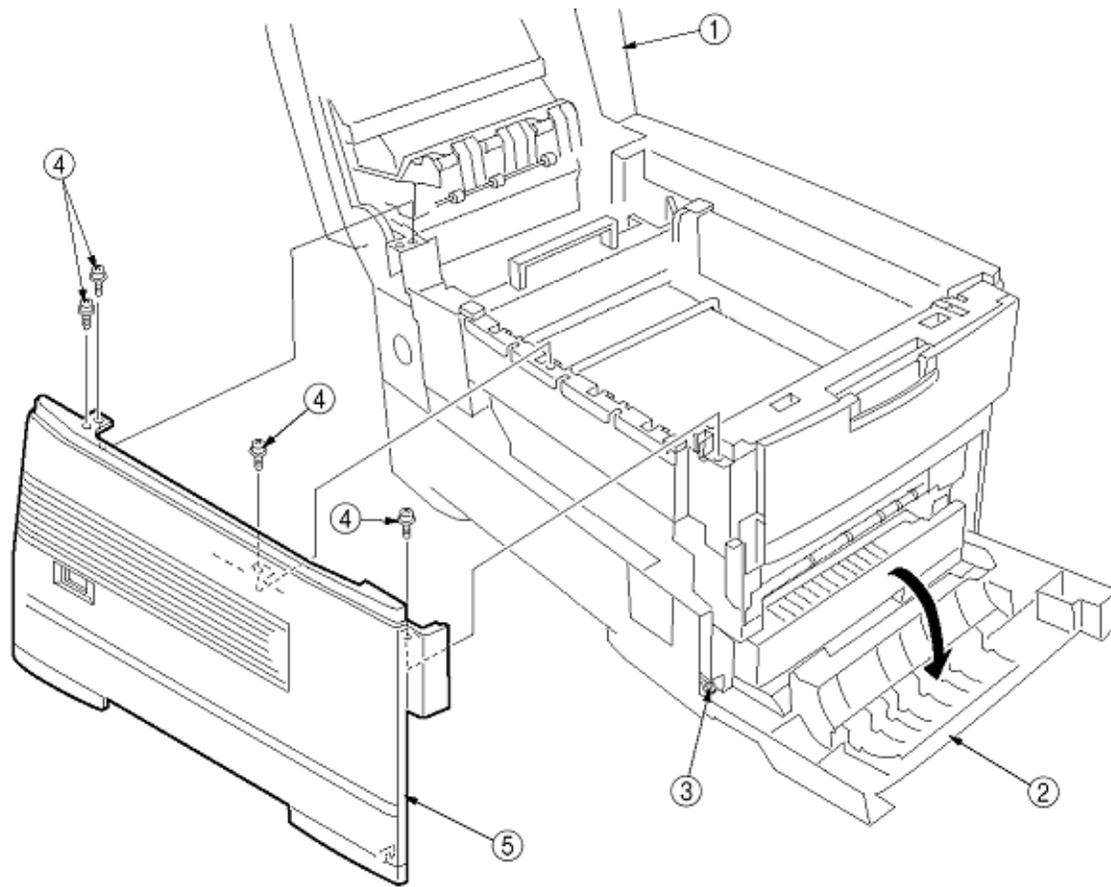


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3.3.12 Left Side Cover

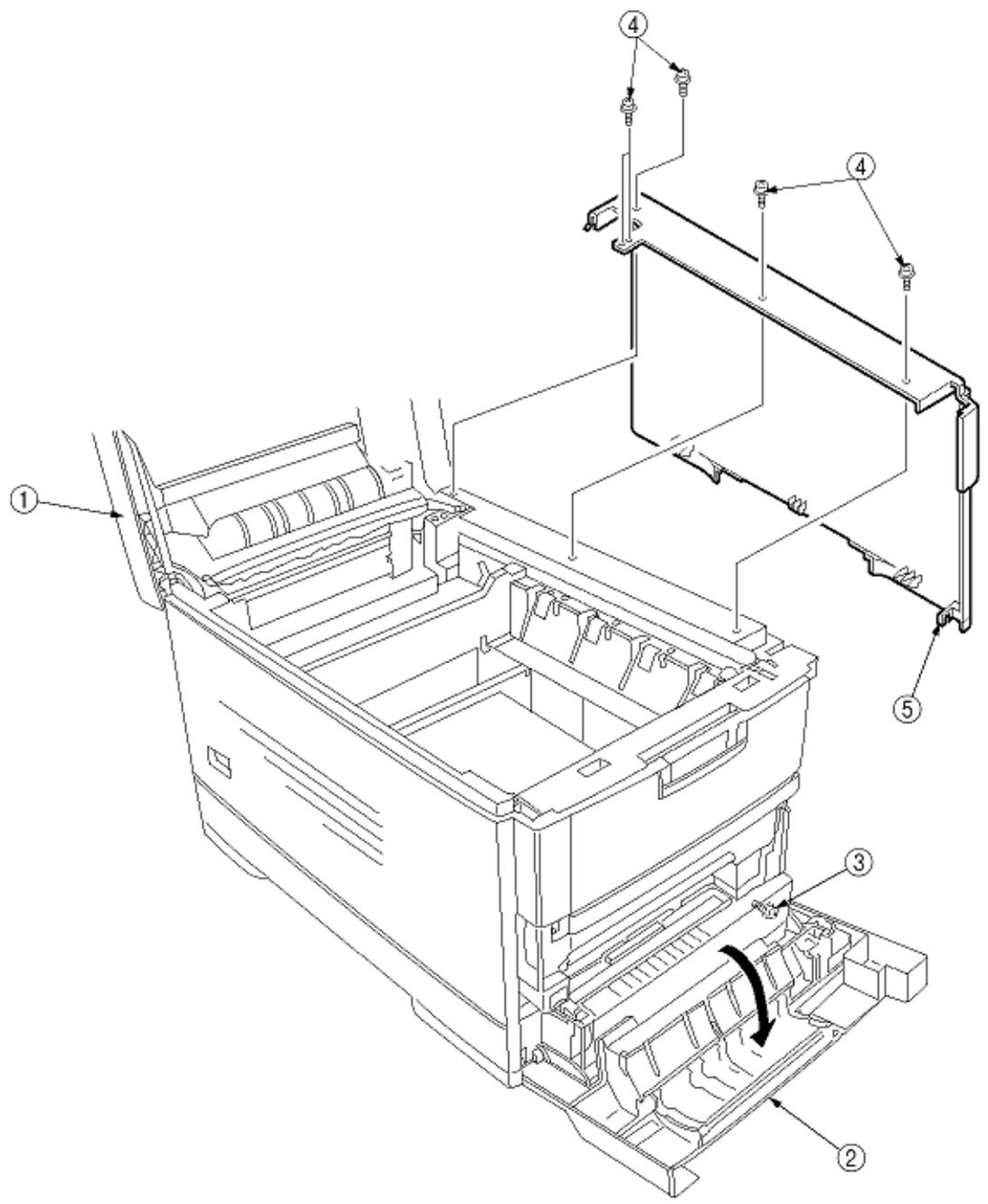
- (1) Open the top cover (1).
- (2) Open the front cover (2) and undo the screw (3).
- (3) Remove the four screws (4) to detach the left side cover (5).





3.3.13 Right 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 right side cover (5).



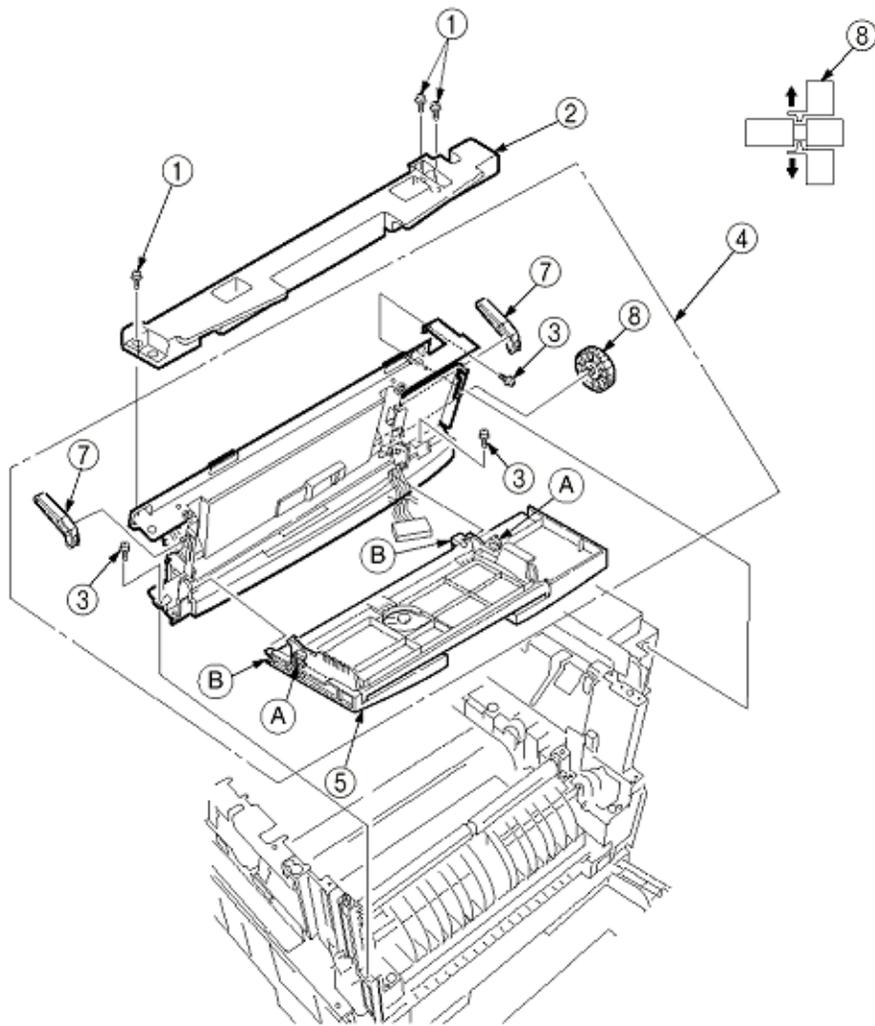
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3.3.14 Multi-purpose Tray Assy / Links

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

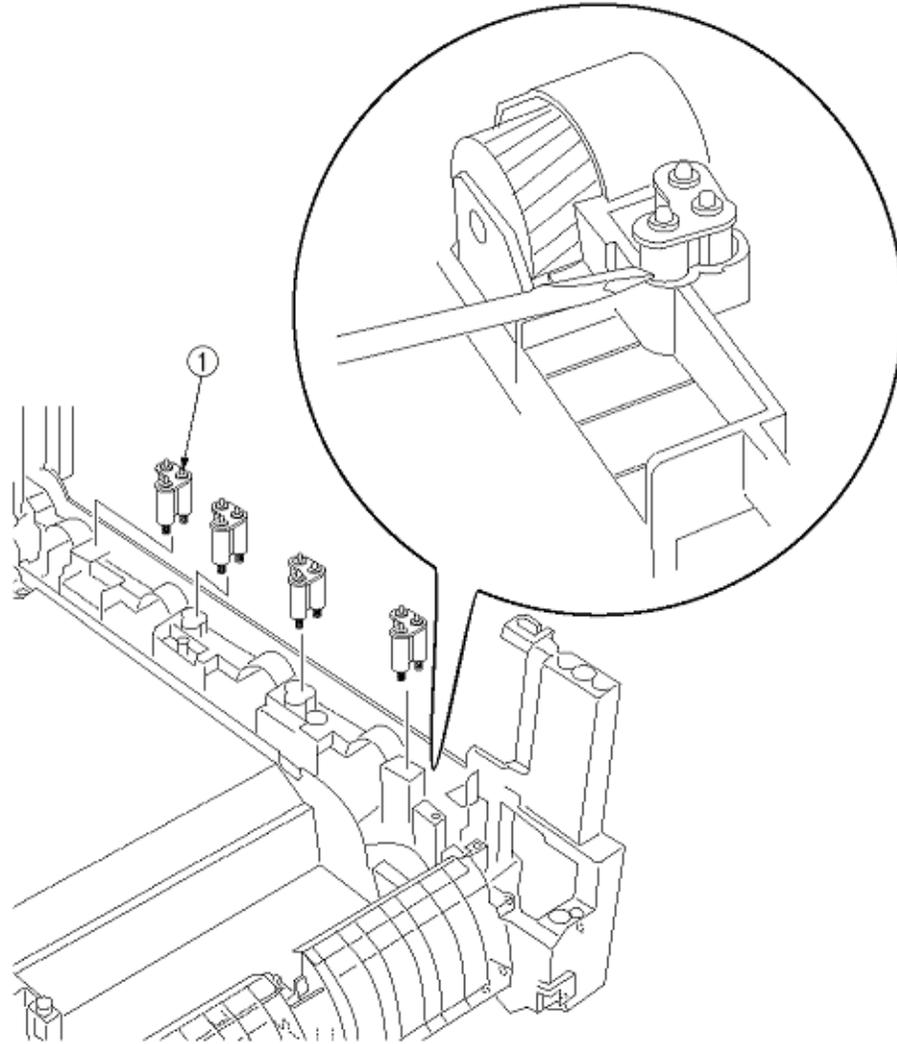
- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the right side cover (see section 3.3.13).
- (3) Remove the left plate Assy (see section 3.3.22).
- (4) Remove the three screws (1) to detach the multipurpose tray top cover (2).
- (5) Remove the three screws (3) (two of them are black) and the connector to detach the multipurpose tray (4).
- (6) Disengage A and B at both sides of the assembly to detach the multipurpose tray cover Assy (5) (at the same time, the links (7) become detached).
- (7) Unhook and detach the multipurpose tray drive gear (8).





3.3.15 Drum Contact Assys

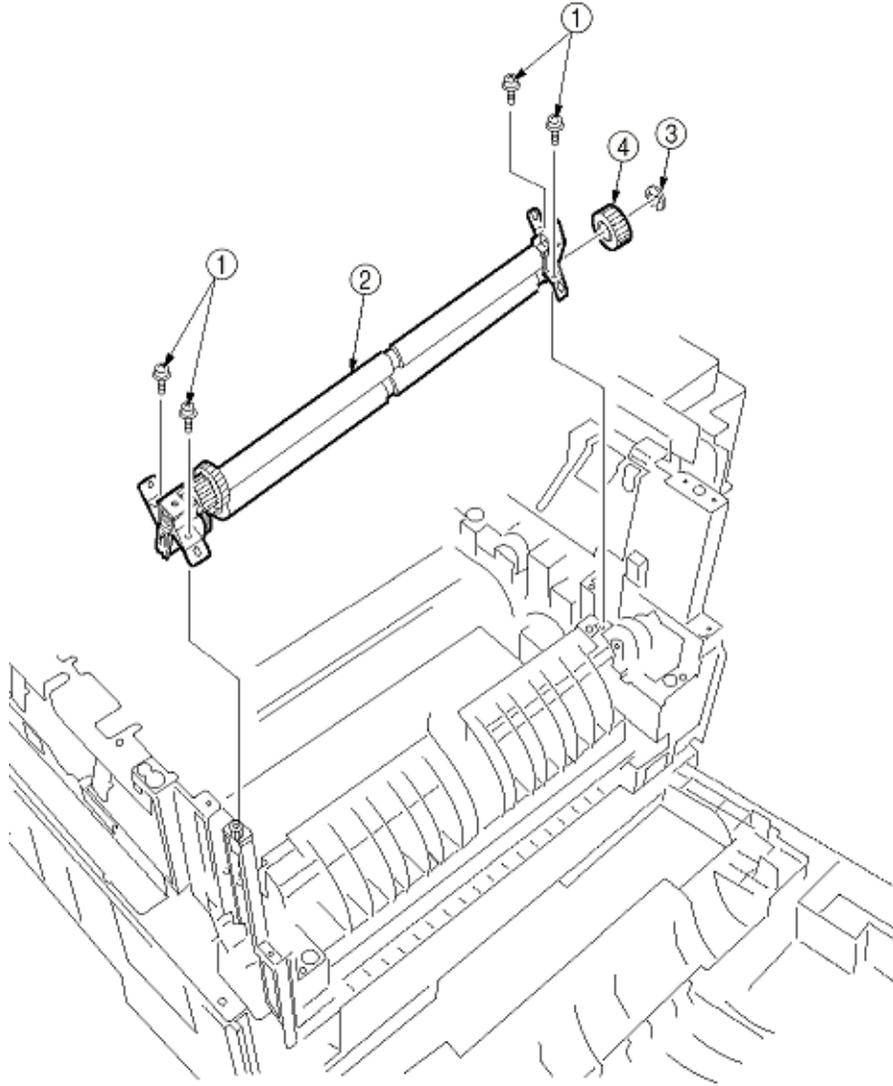
(1) Insert a flatblade screwdriver between the printer case and the drum contact assy (1) to demount the drum contact assy (1).





3.3.16 Registration Roller Assy (A) / Registration Drive Gear (A)

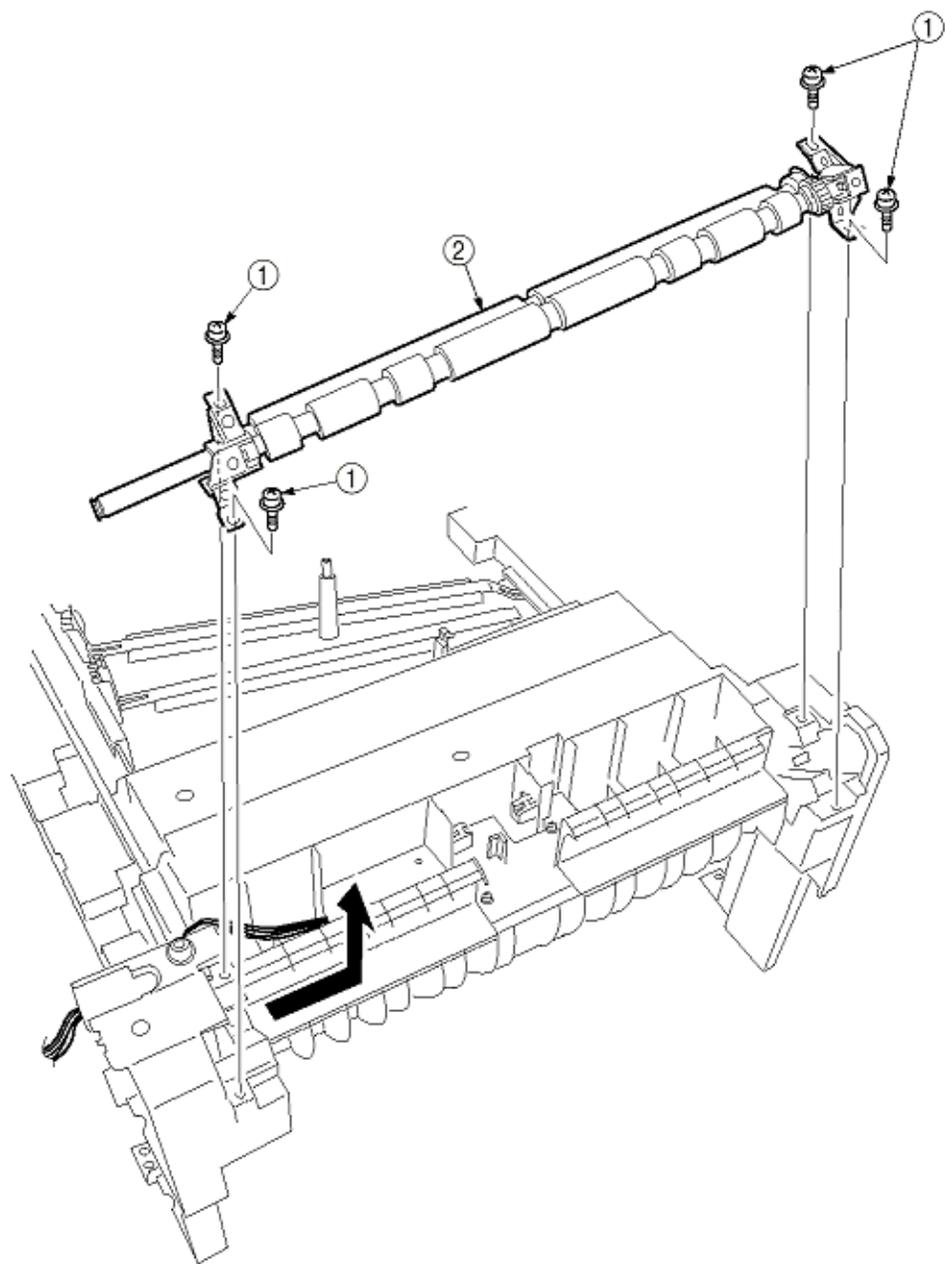
- (1) Remove the left side cover (see section 3.3.12).
- (2) Remove the right side cover (see section 3.3.13).
- (3) Remove the multipurpose tray (see section 3.3.14).
- (4) Remove the four screws (1) to demount the registration roller Assy (A) (2).
- (5) Remove the E ring (3) to detach the registration gear (A) (4).





3.3.17 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).
- (6) Unscrew the four screws (1), and pull out the registration Assy (B) (1) in the arrow direction.

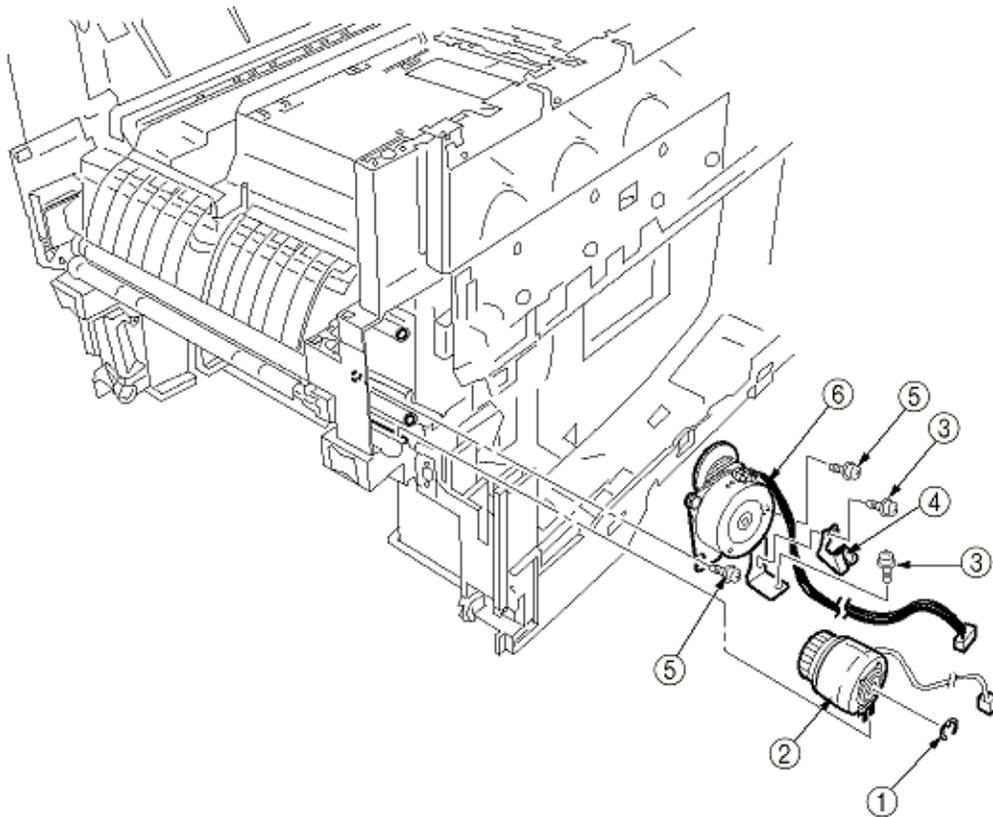


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3.3.18 Registration Clutch and Registration Motor Assy

- (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 (3), the earth (4) and the registration clutch (2).
- (4) Remove the connector to remove the two screws (5) and the registration motor Assy (6).



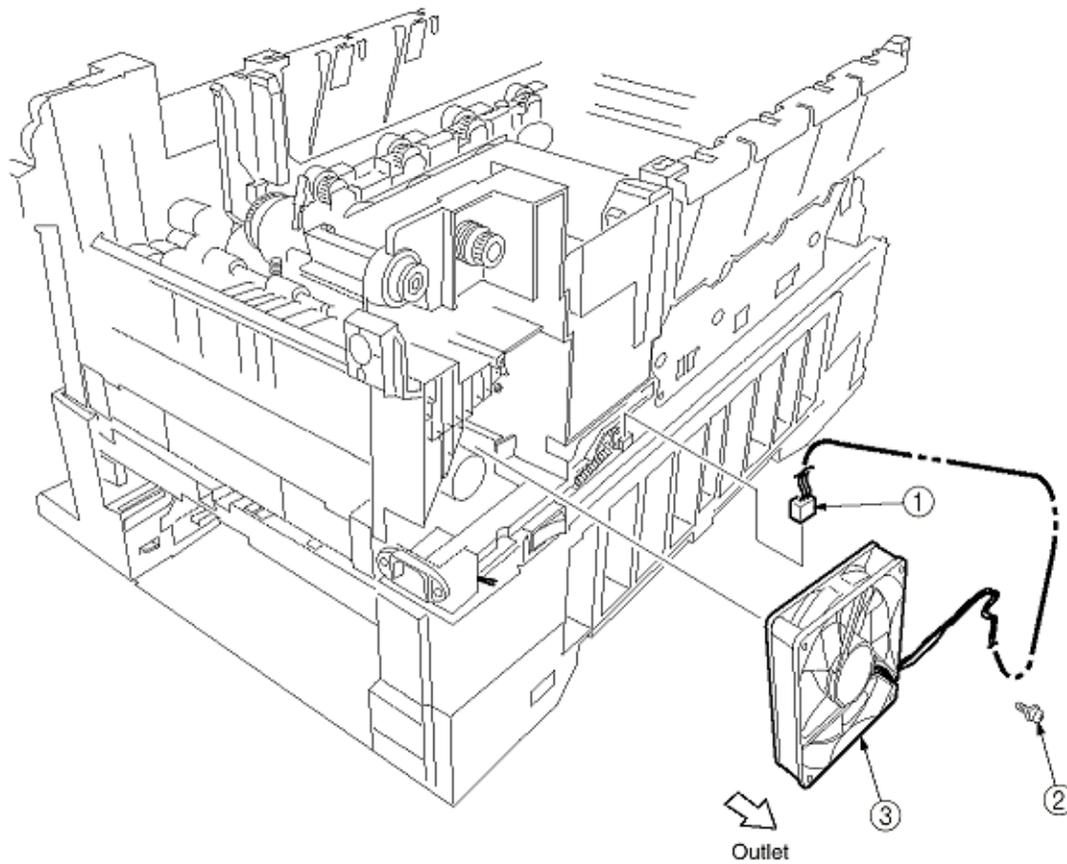
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3.3.19 Main Cooling Fan

(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.

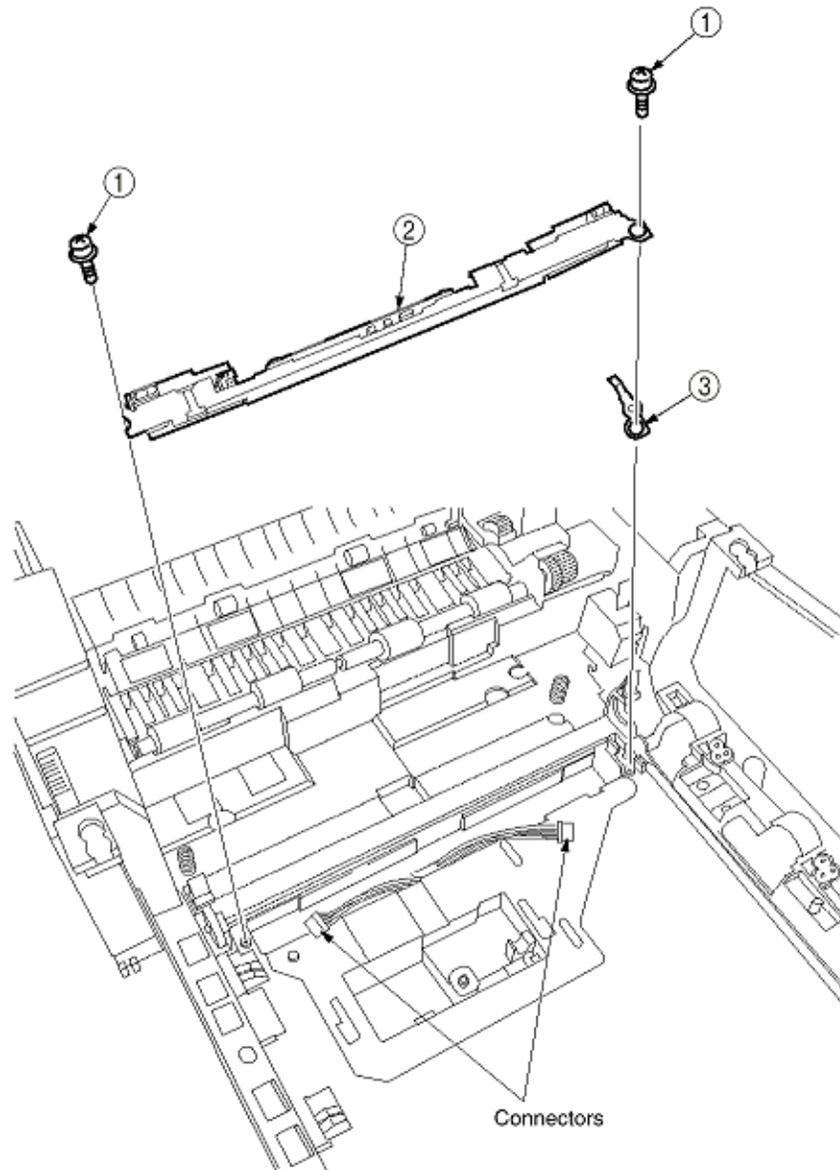


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3.3.20 Color Registration Sensor Assy

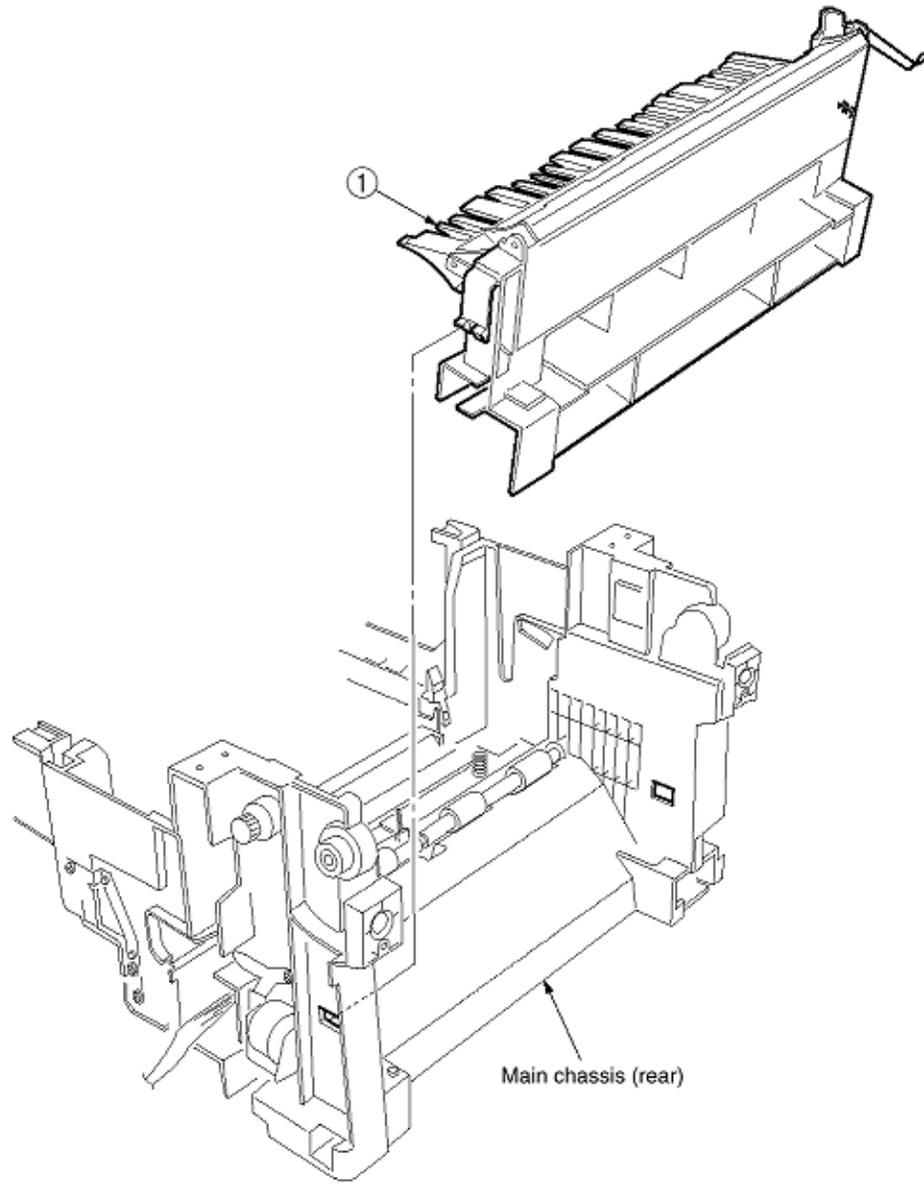
- (1) Remove the two screws (1) and the two connectors to demount the color registration sensor assy (2).
- (2) Remove the earth plate B (3).





3.3.21 Duplex Guide Assy

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

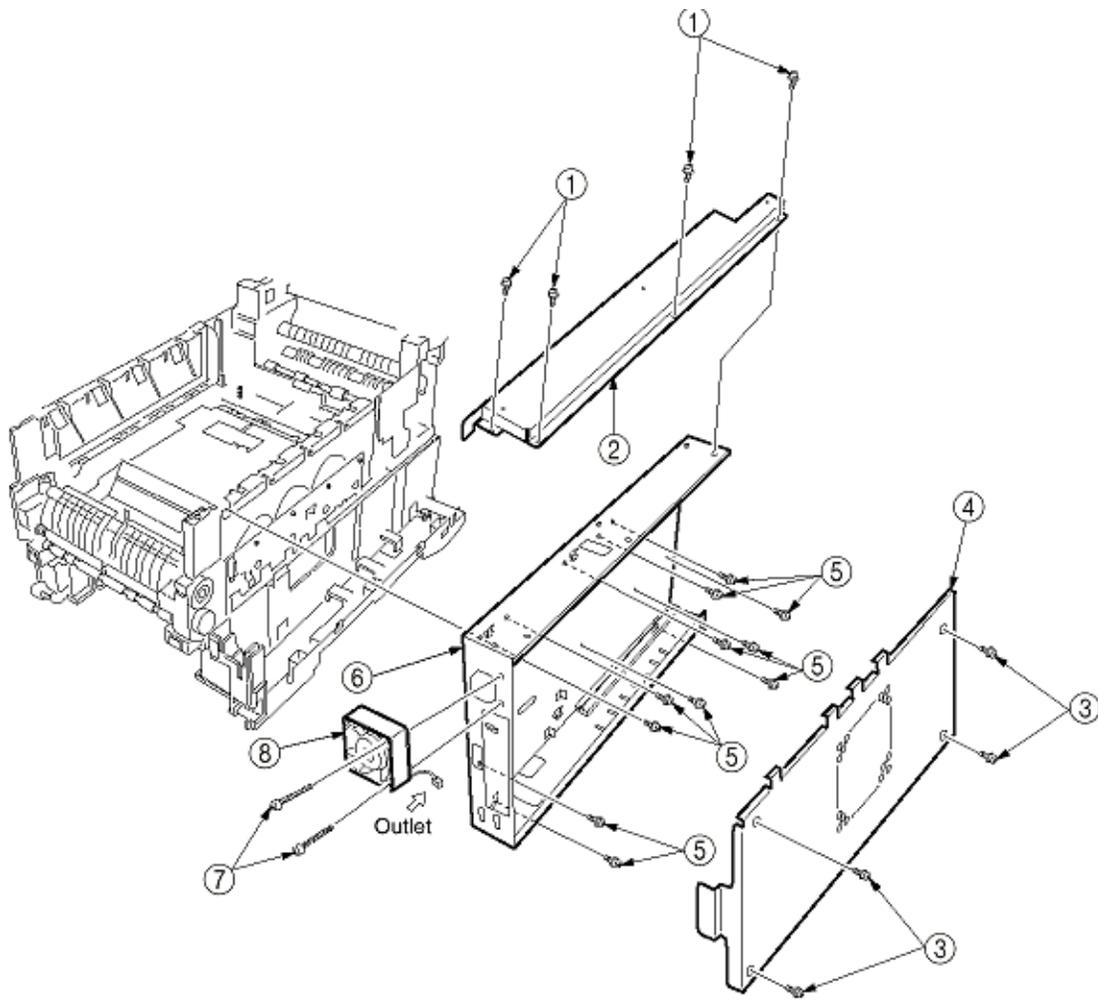


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3.3.22 Electrical Chassis Cooling Fan

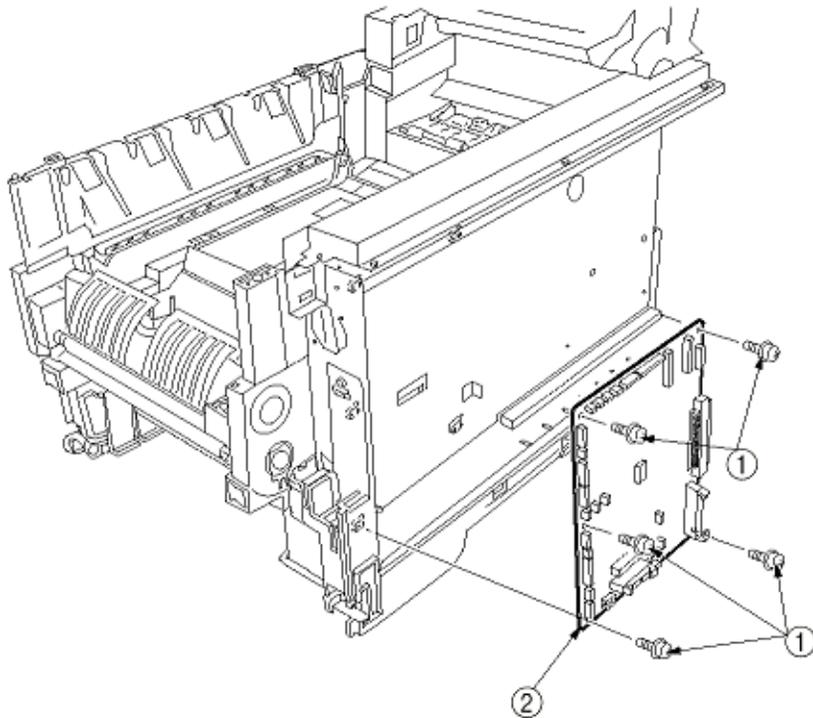
- (1) Unscrew the screws (1) to remove the plate A (2).
- (2) Unscrew the screws (3) to remove the shield plate B (4).
- (3) Remove the printer engine controller PWB (see section 3.3.30).
- (4) Unscrew the screws (5) to remove the shield plate (6).
- (5) Unscrew the screws (7) to demount the electrical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





3.3.23 Printer Engine Controller PWB

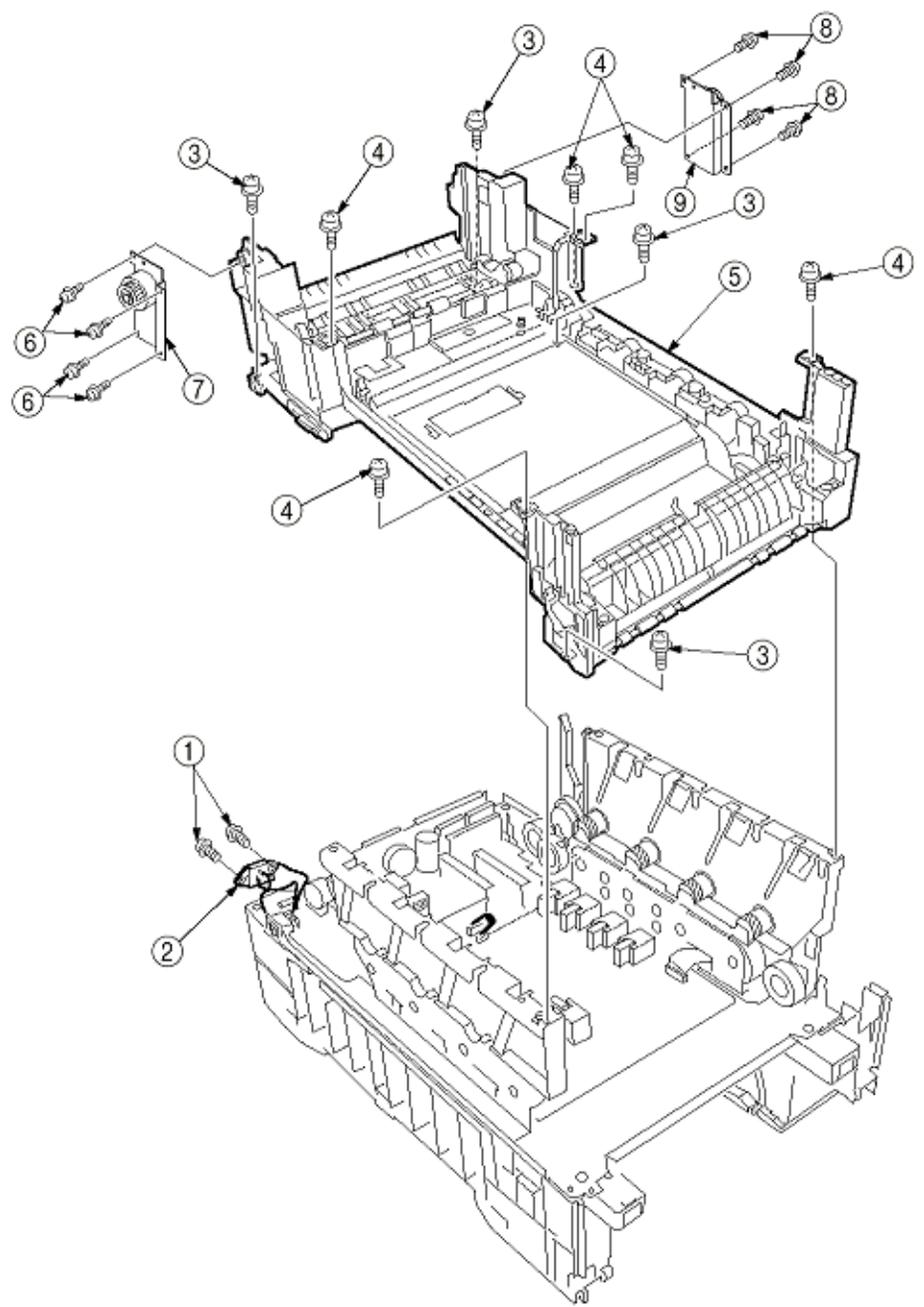
- (1) Remove the right side cover (see section 3.3.13).
- (2) Remove the left plate Assy (see section 3.3.22).
- (3) Remove the five screws (1) and all the connectors to demount the printer engine controller PWB (2).





3.3.24 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).

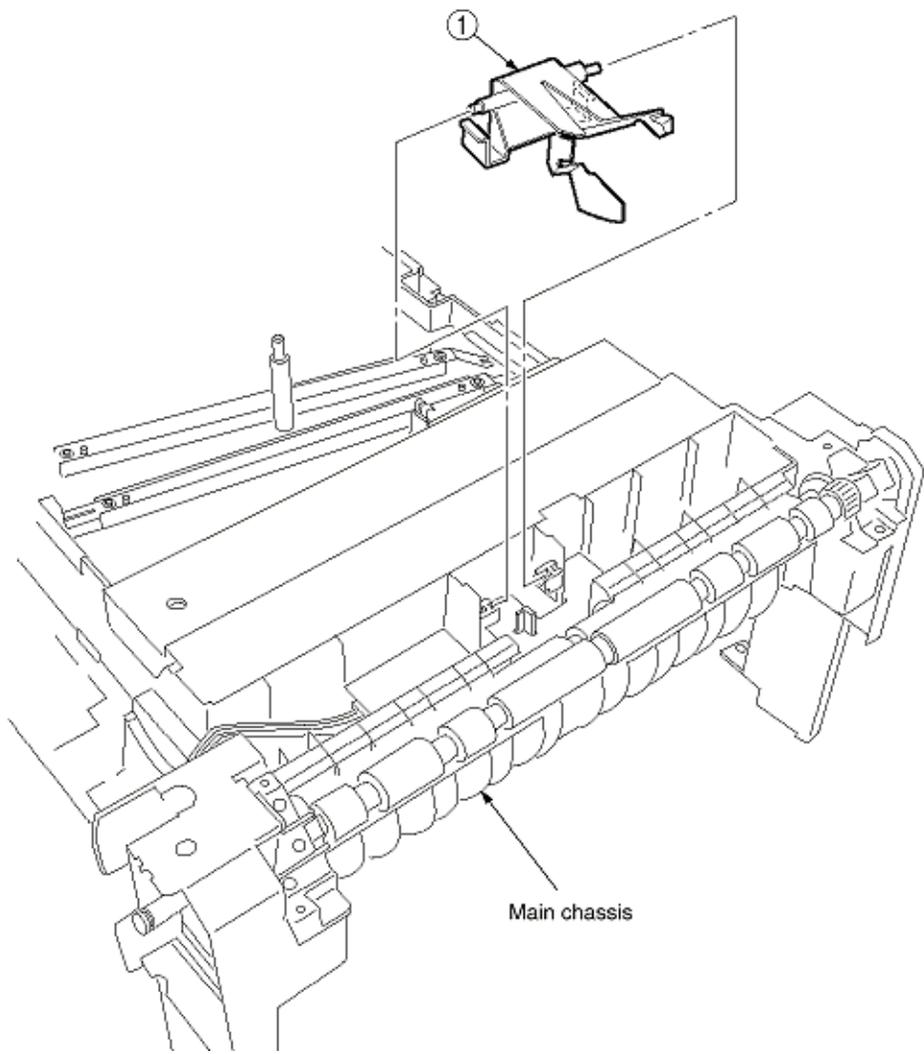


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3.3.25 Entrance Cassette Sensor Actuator

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

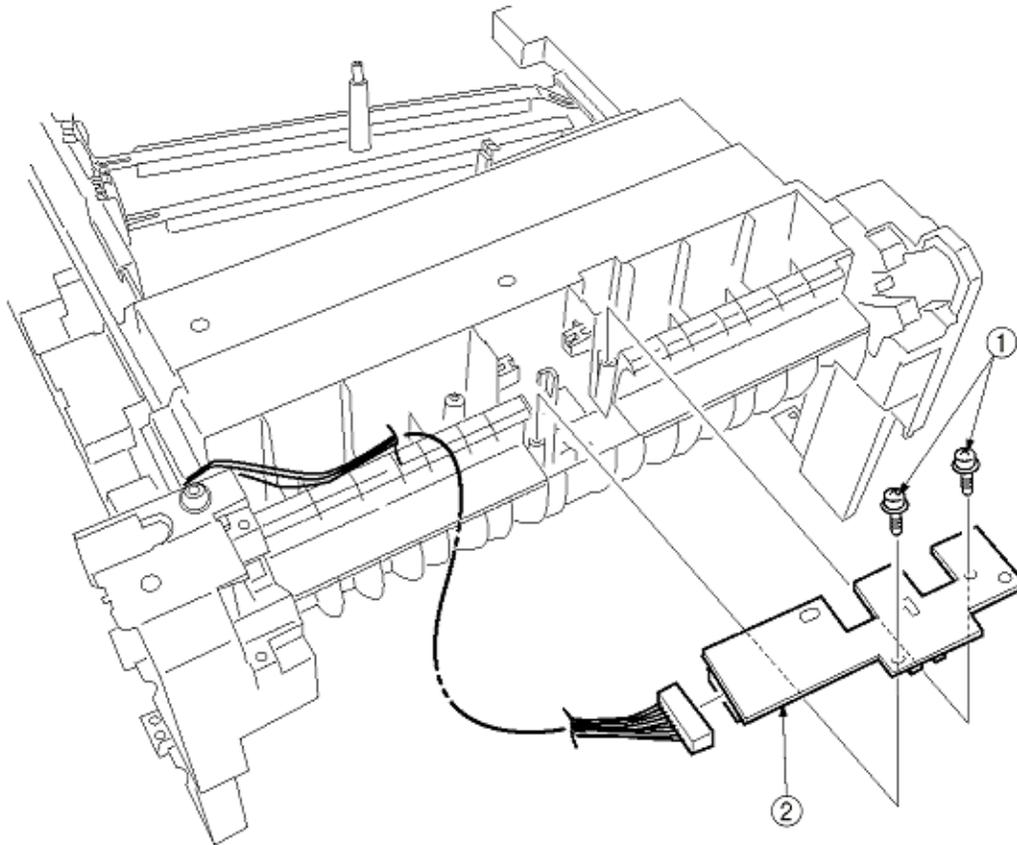


Main chassis



3.3.26 Entrance Sensor PWB

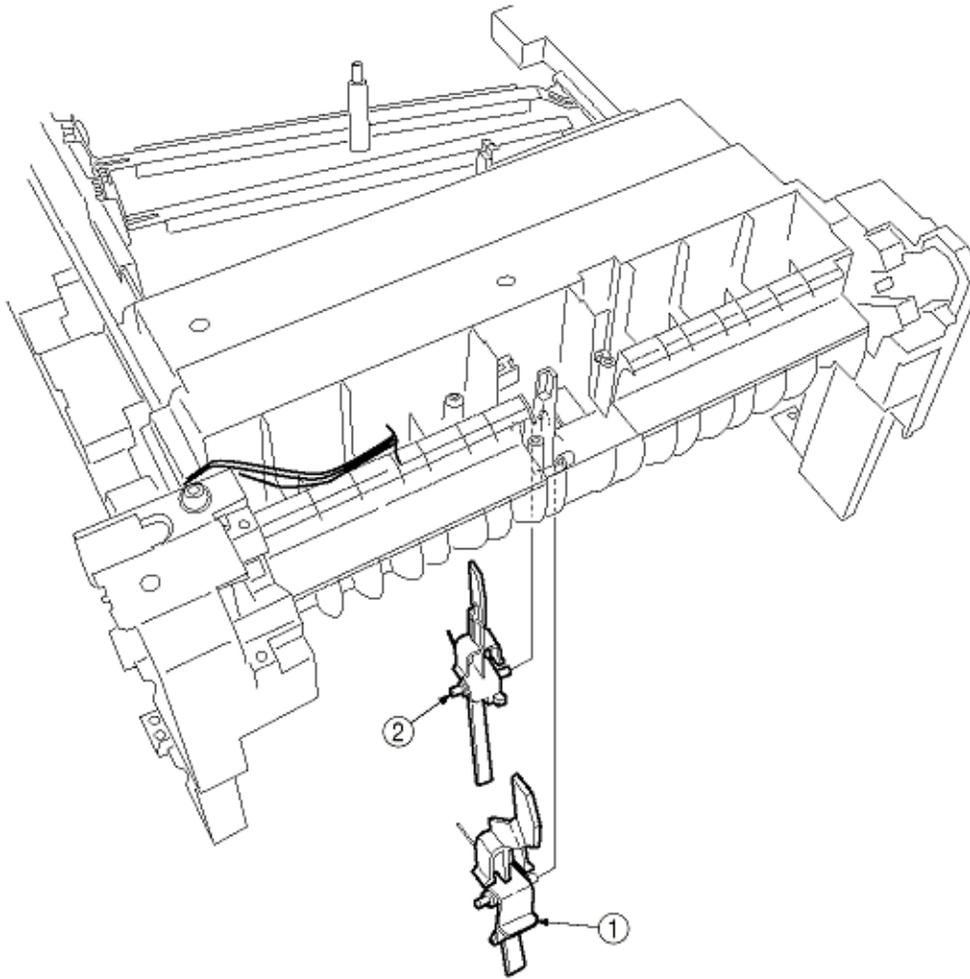
- (1) Remove the registration roller assb (B) (see section 3.3.17).
- (2) Remove the two screws (10 to detach the entrance sensor PWB (2).





3.3.27 Entrance MT Sensor Actuator and Entrance Belt Sensor Actuator

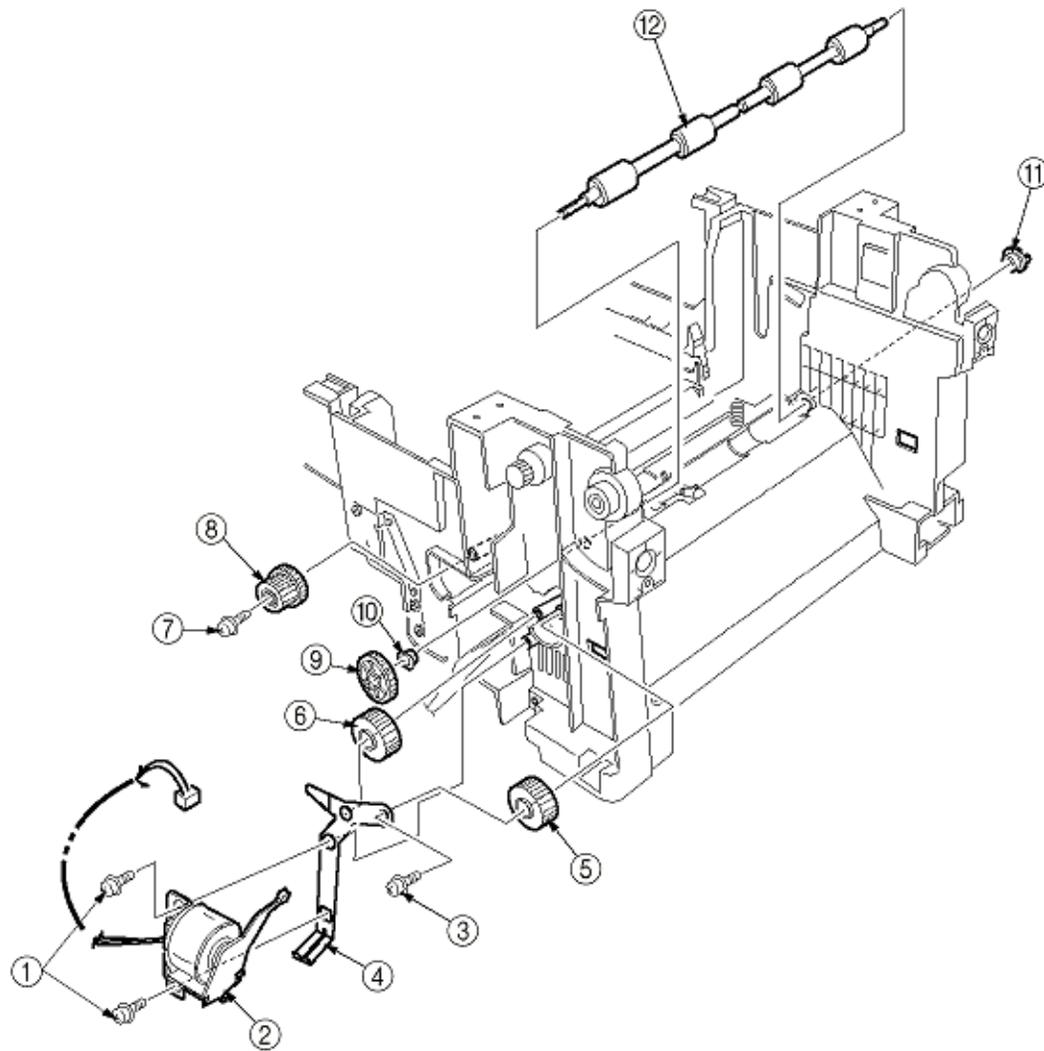
- (1) Remove the entrance sensor PWB (R71) (see section 3.3.26).
- (2) Unlatch and detach the entrance MT sensor actuator (1).
- (3) Unlatch and detach the entrance belt actuator (2).





3.3.28 Fuser Exit Roller

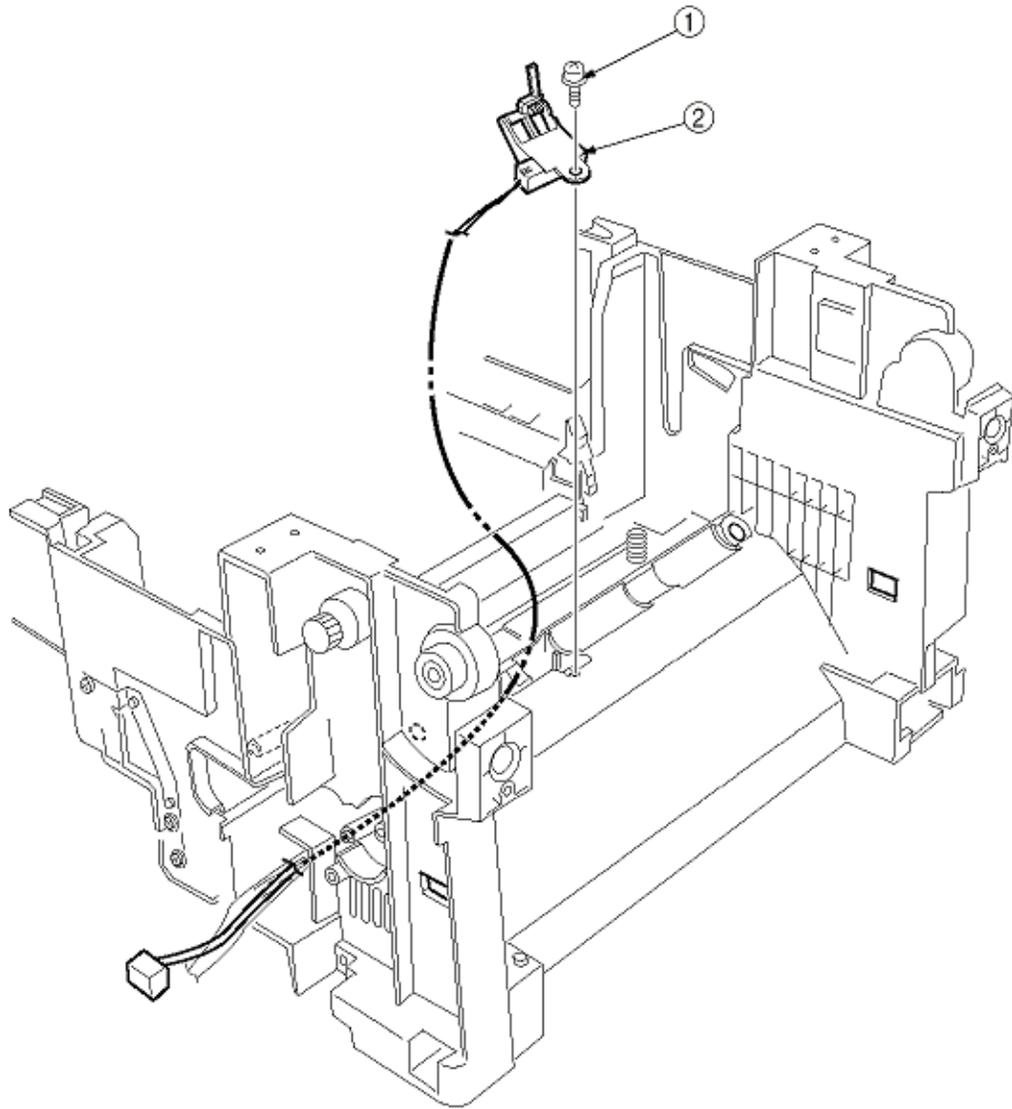
- (1) Unscrew the two screws (1) to remove the duplex gate solenoid Assy (2).
- (2) Unscrew the screw (3) to remove the fuser exit roller contact (4).
- (3) Remove the fuser drive gear -A (5) and fuser drive gear -A (6).
- (4) Unscrew the screw (7) to remove the fuser drive gear -C (8).
- (5) Unlatch 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).





3.3.29 Exit Sensor Assy

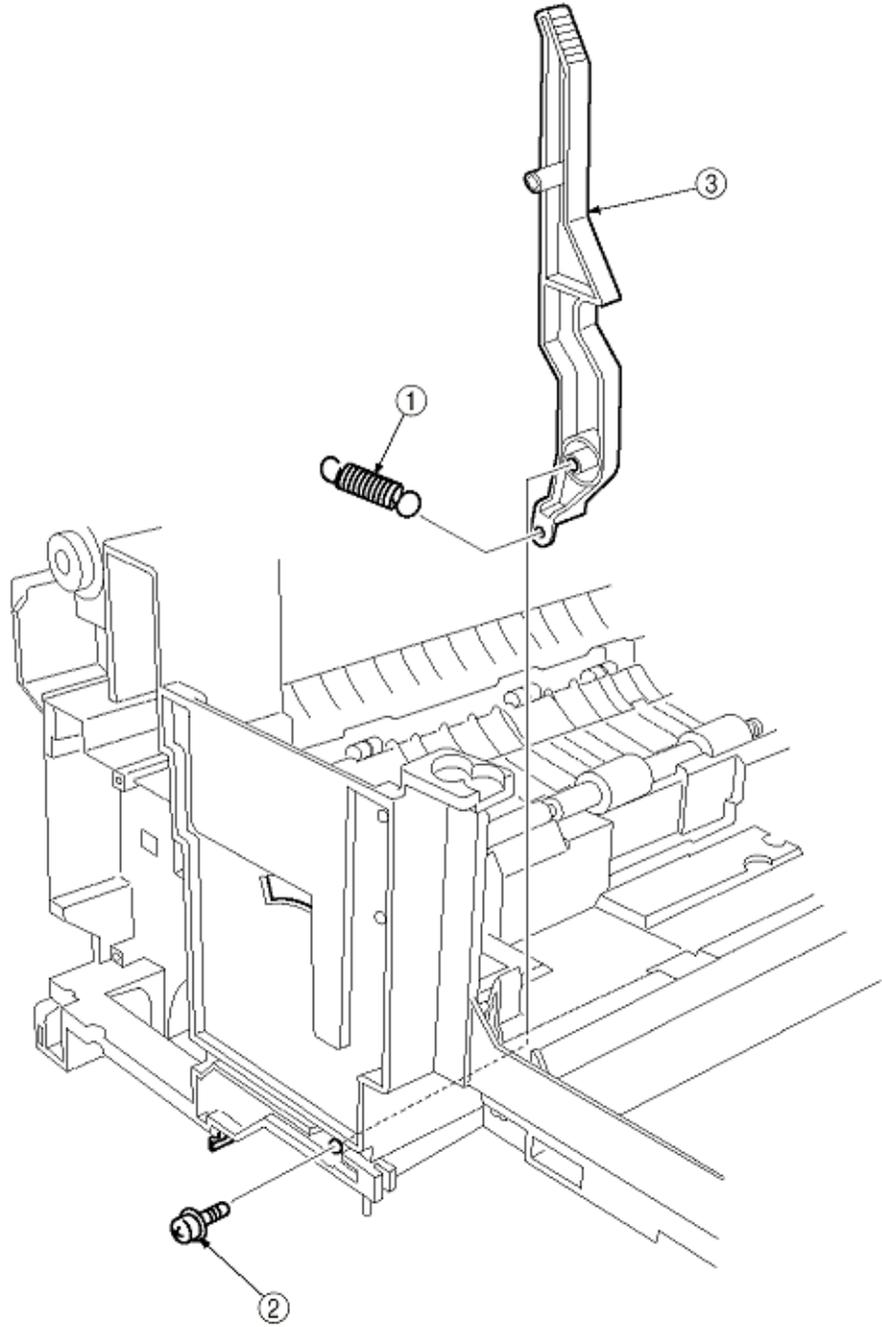
- (1) Remove the fuser exit roller (see section 3.3.28).
- (2) Remove the screw (1) and connector to detach the (red and blue) exit sensor assy (2).





3.3.30 Fuser Latching Handle (L)

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

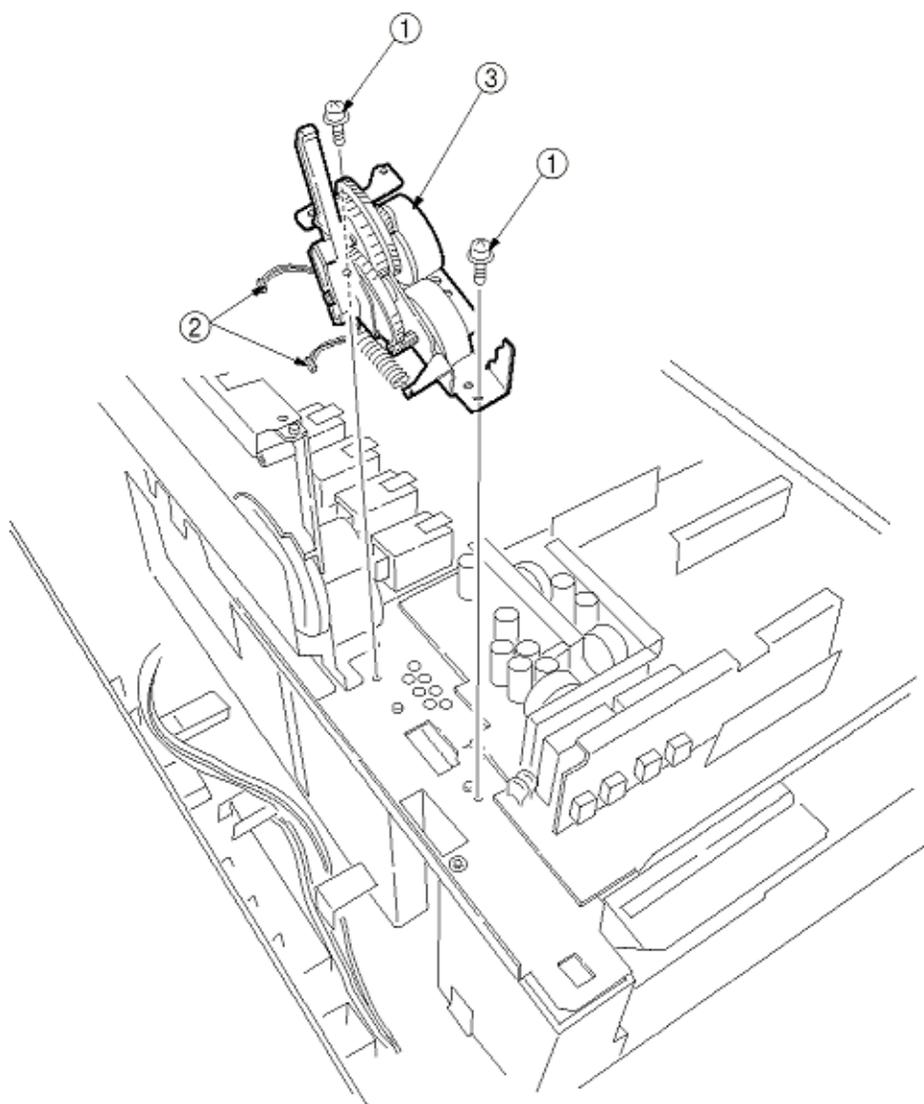


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3.3.31 Belt Motor Assy

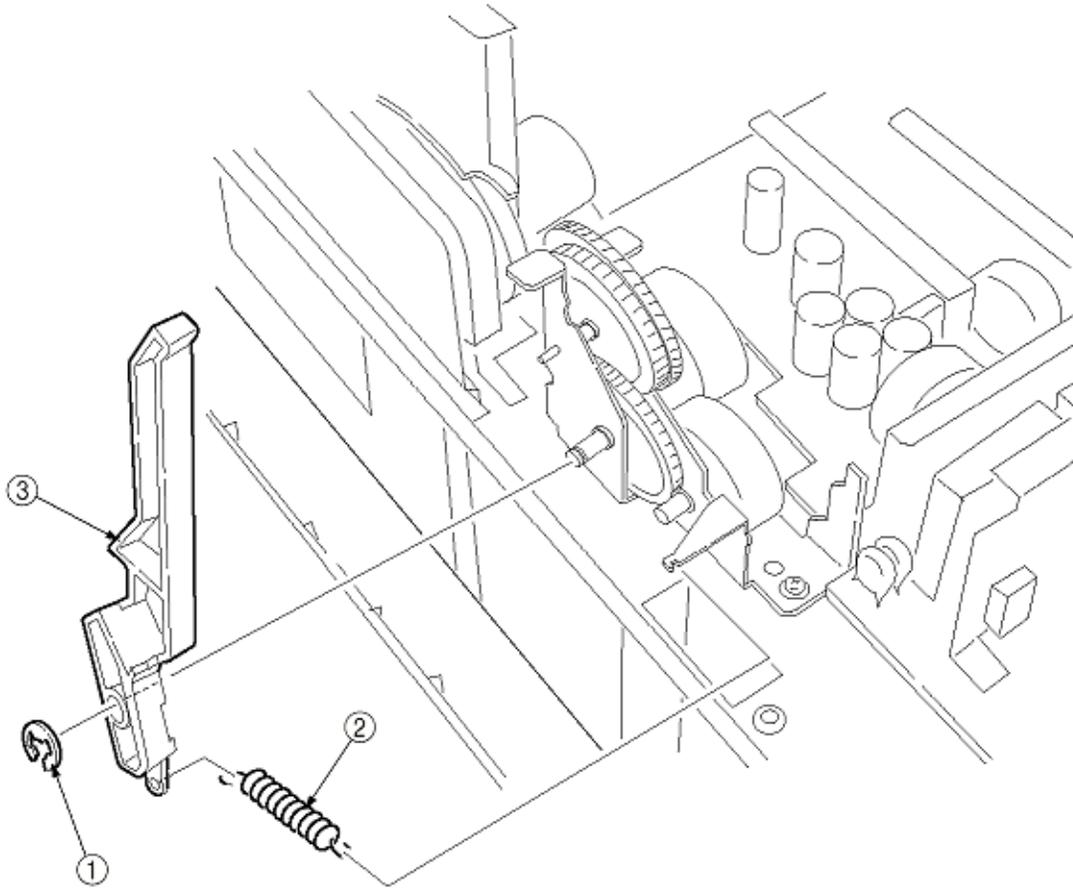
- (1) Remove the fuser latching handle (R) (see section 3.3.32).
- (2) Remove the two screws (1) to detach the two connectors (2).
- (3) Detach the belt motor Assy (3).





3.3.32 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).

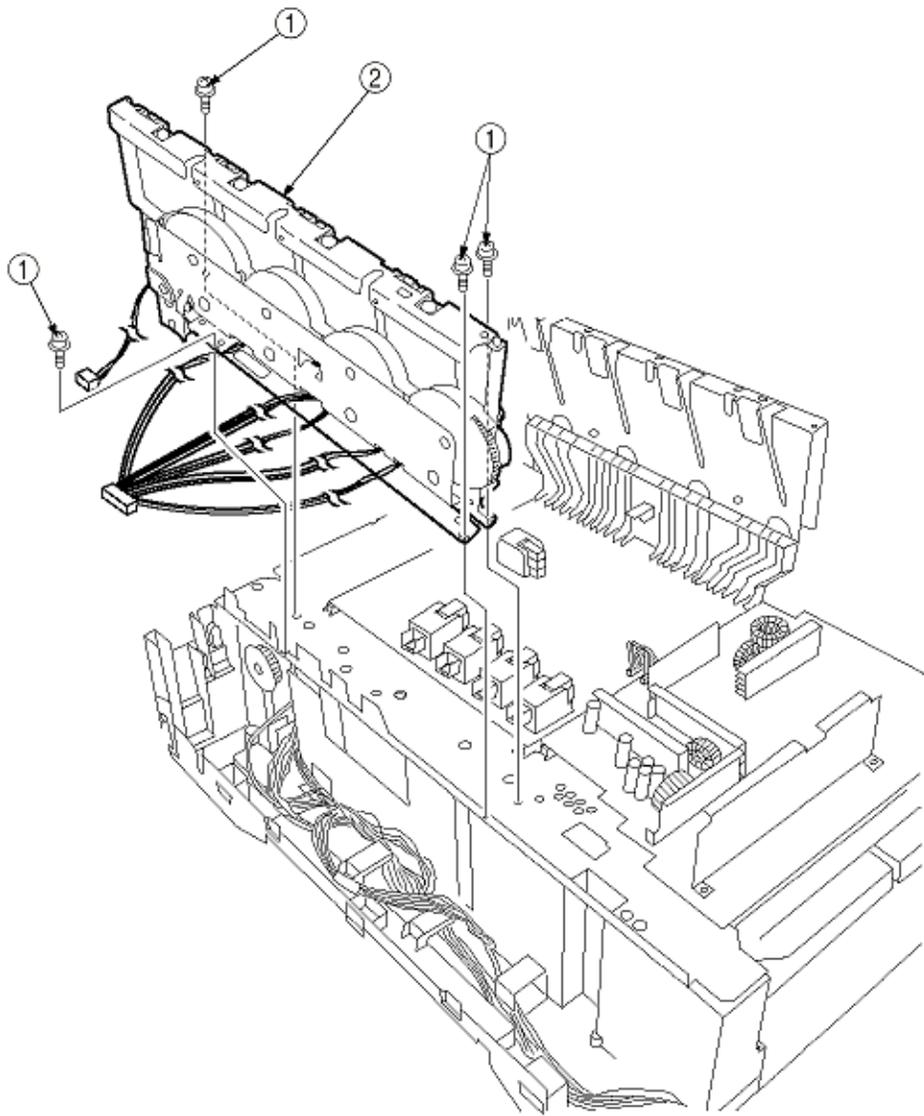


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3.3.33 Main Motor Assy

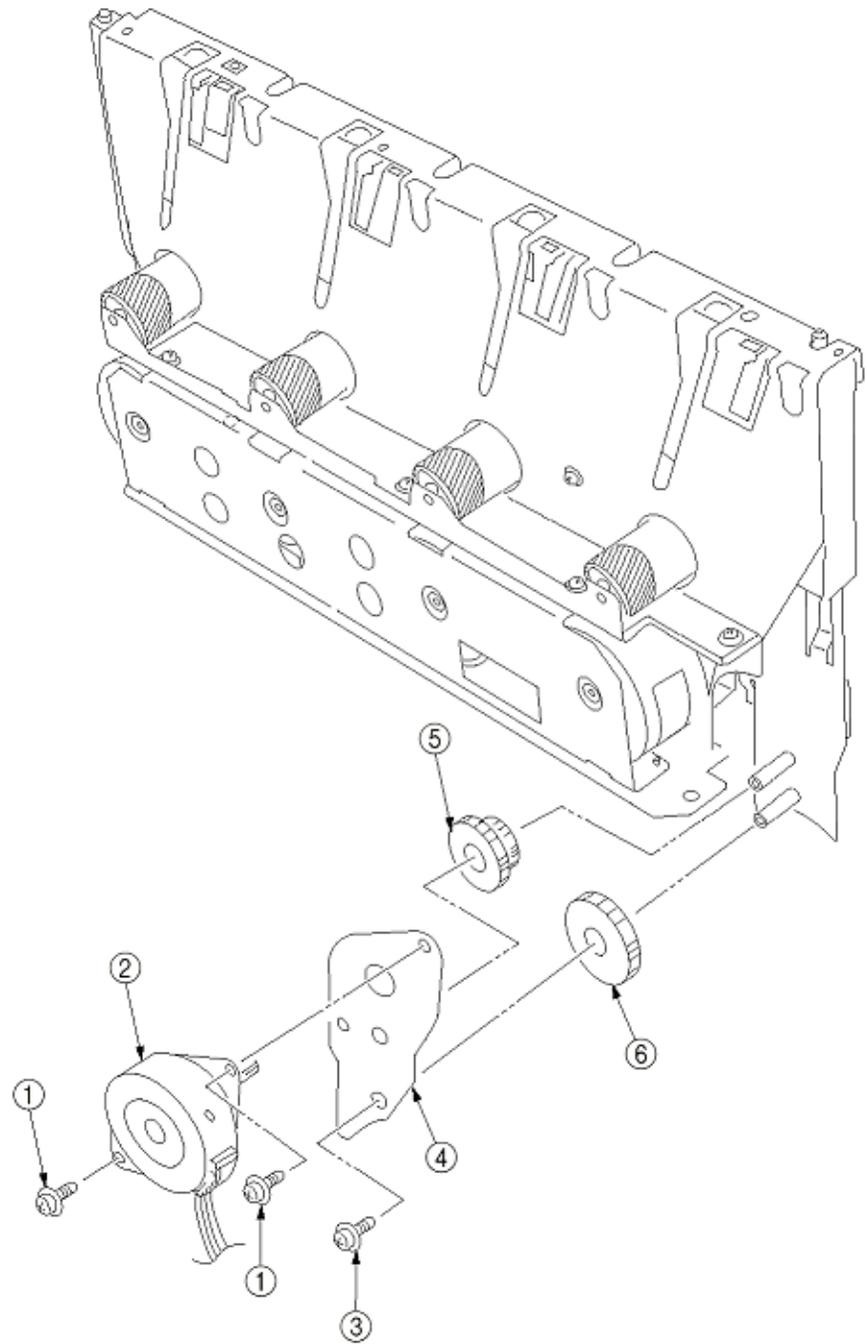
- (1) Remove the belt motor assy (see section 3.3.31).
- (2) Remove all the connectors.
- (3) Remove the four screws (1) to detach the main motor assy (2).





3.3.34 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).

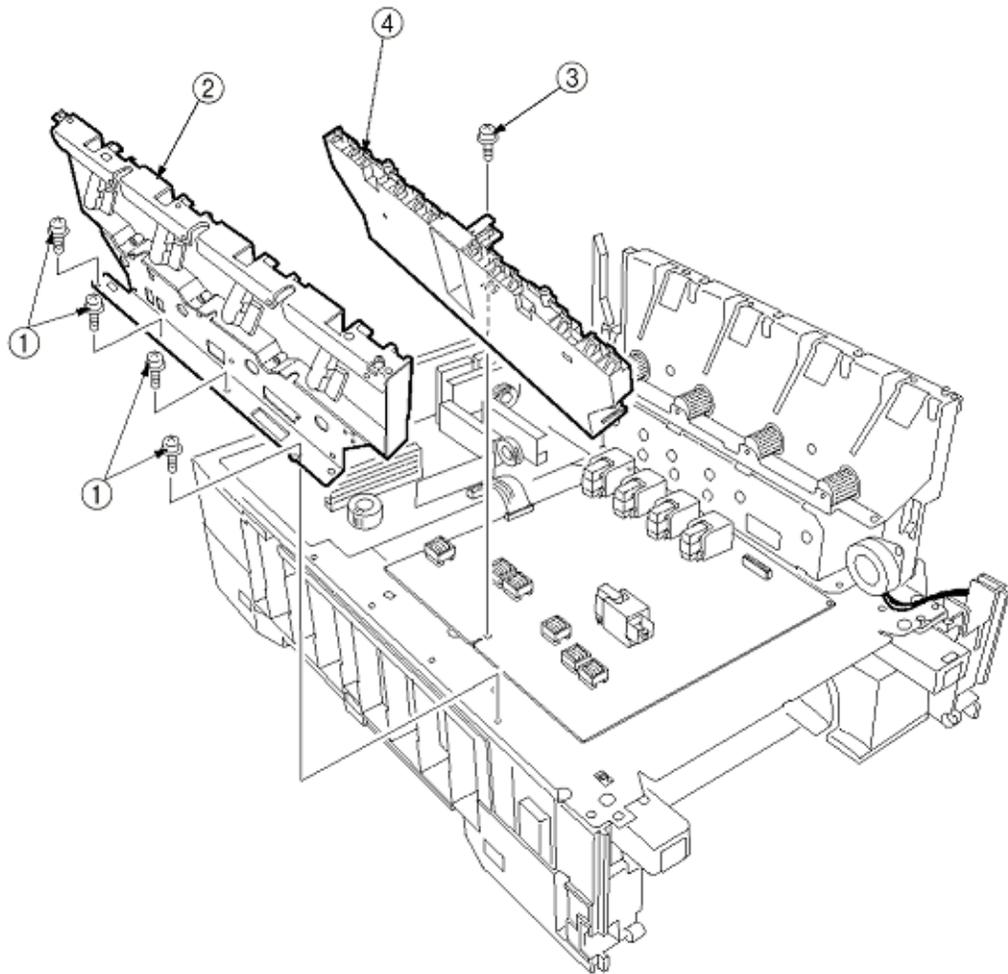


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3.3.35 Contact Assy / Left Plate Assy

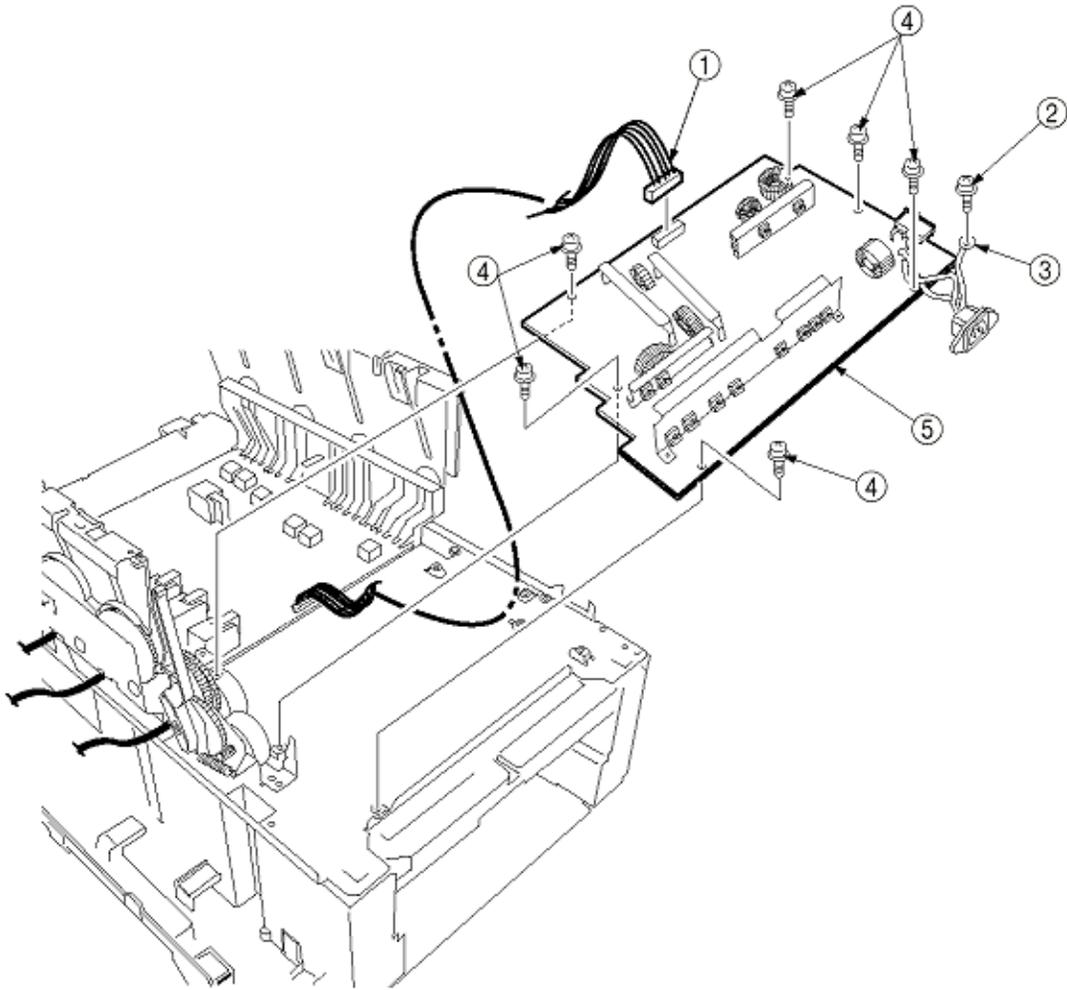
- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the four screws (1) to detach the left plate Assy (2).
- (3) Remove the screw (3) to detach the contact Assy (4).





3.3.36 Low Voltage Power Supply

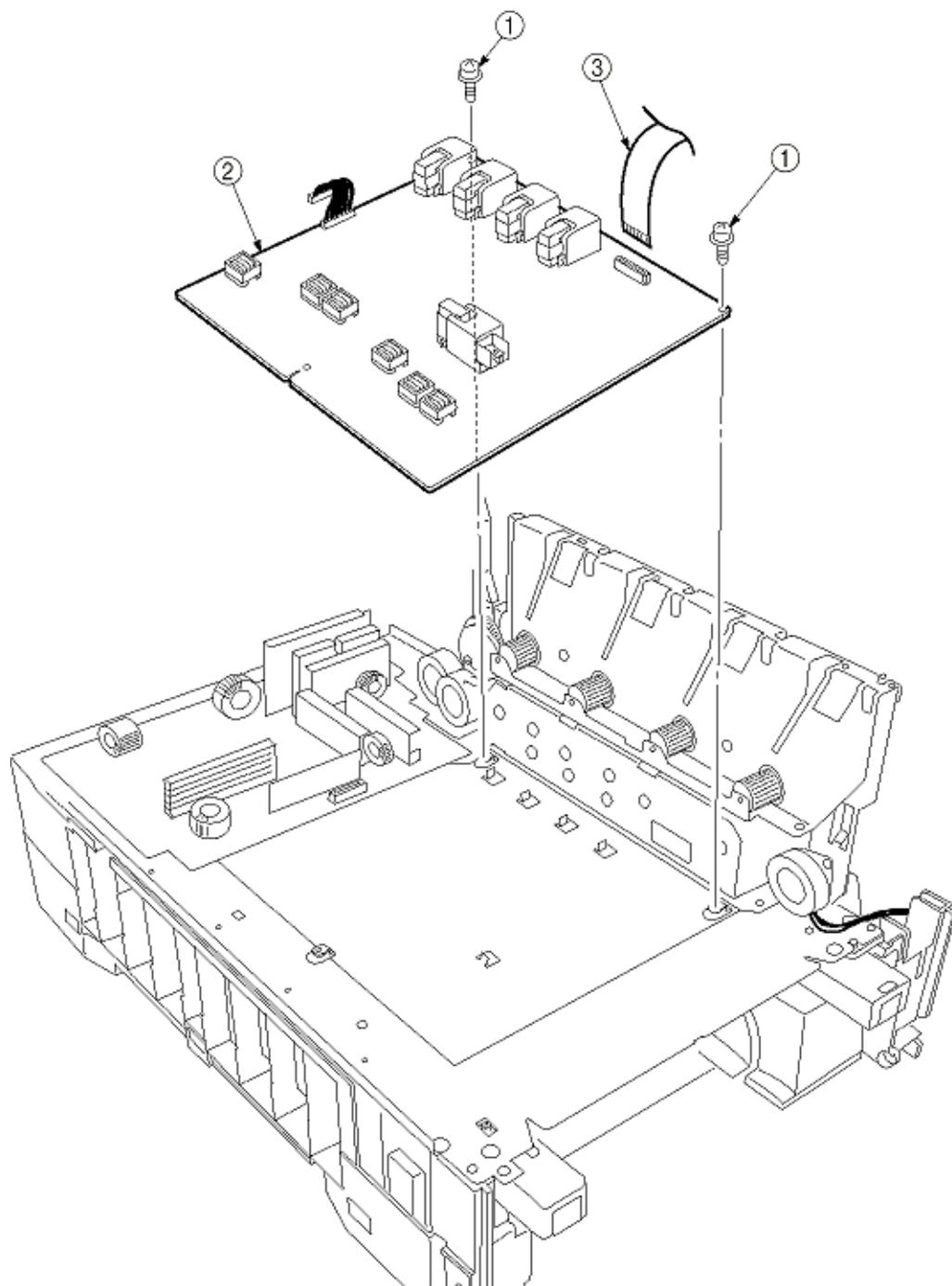
- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Unhook the connector (1).
- (3) Unscrew the screw (2) to remove the earth cable (3).
- (4) Unscrew the six screws (4) to detach the low voltage power supply (5).





3.3.37 High Voltage Power Supply

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

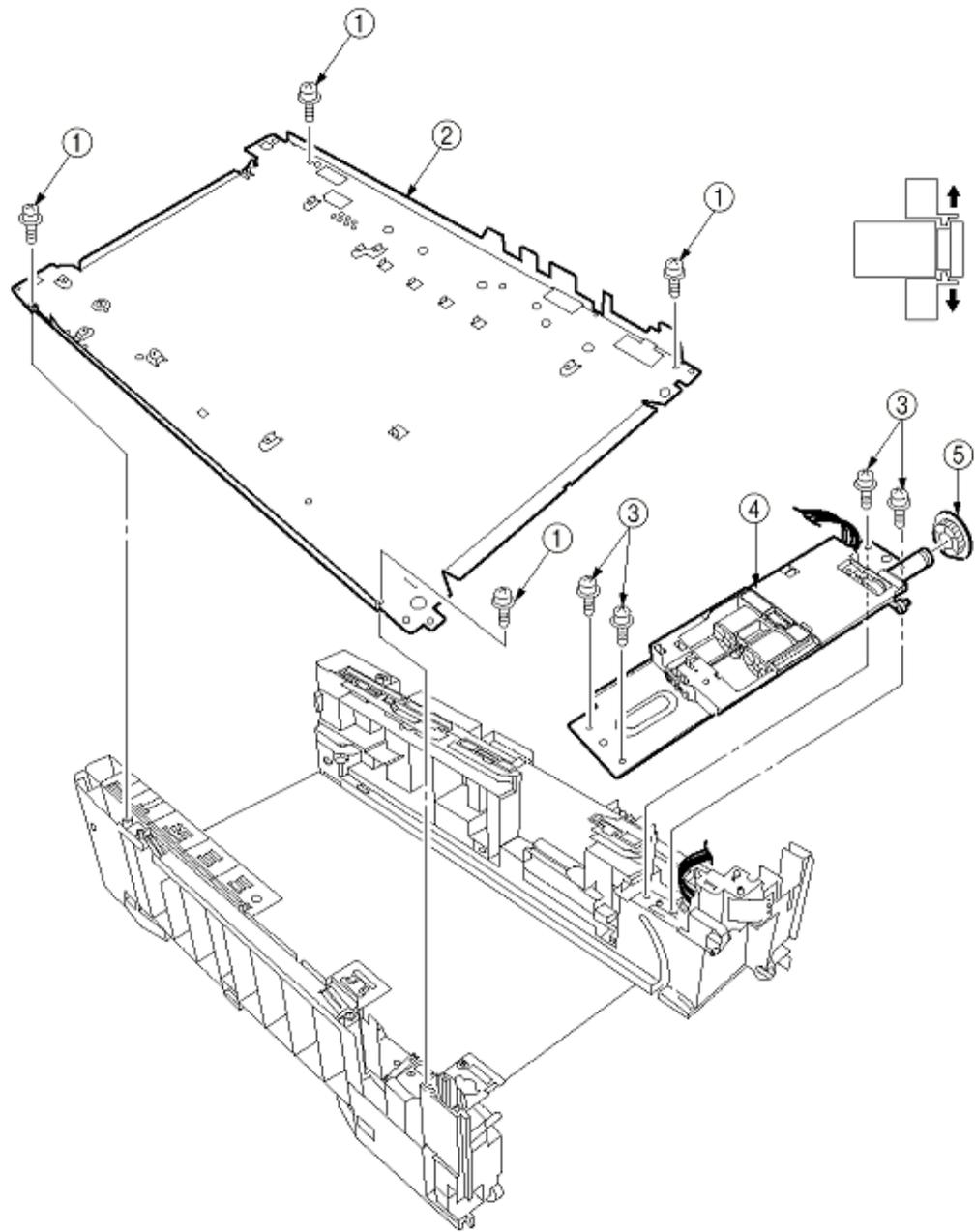


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3.3.38 Main Feed Assy

- (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 detach the main feed Assy (4).
- (5) Unhook and remove the main feed drive gear (5).

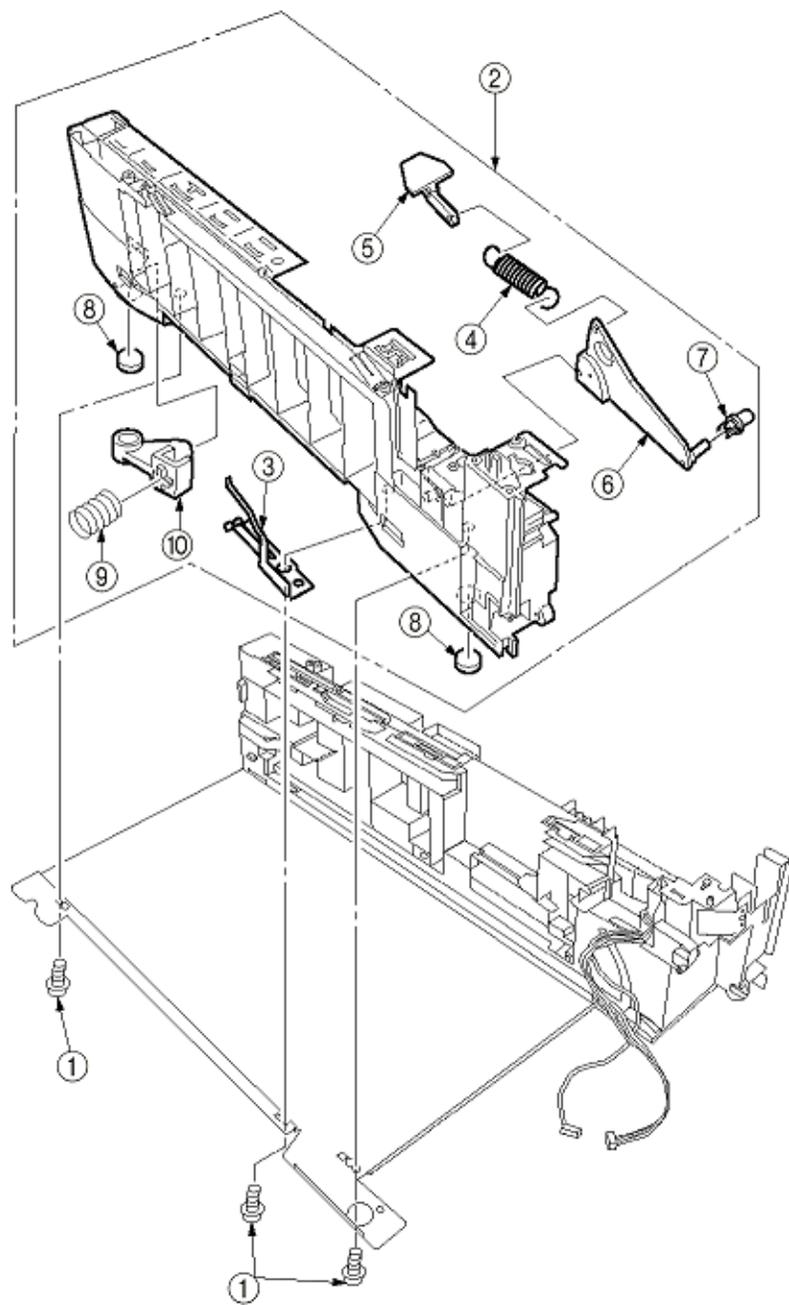


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3.3.39 Cassette / Left Guide Assy

- (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).

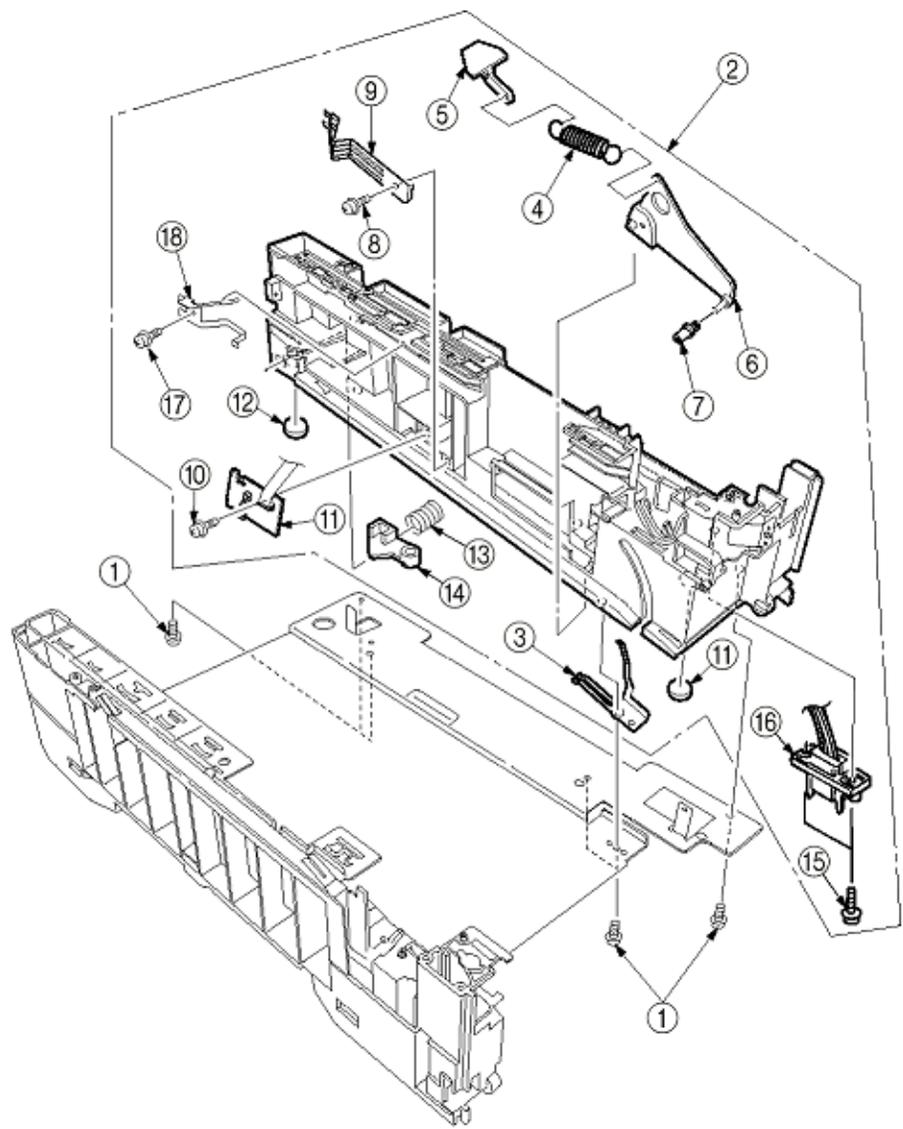


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3.3.40 Cassette / Right Guide Assy

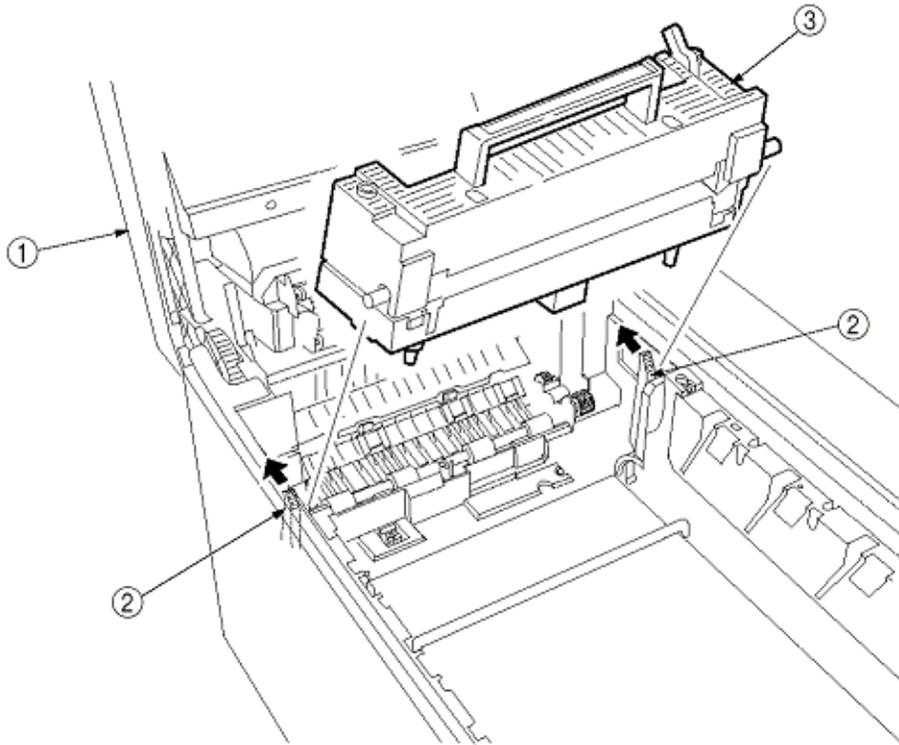
- (1) Remove the printer unit chassis (see section 3.3.24).
- (2) Remove the main feed Assy (see section 3.3.38).
- (3) Remove the five screws (1) to detach the right cassette guide Assy (2). At the same time, the earth plate (3) becomes detached.
- (4) Remove the cassette lift spring (4), then detach 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).





3.3.41 Fuser Unit

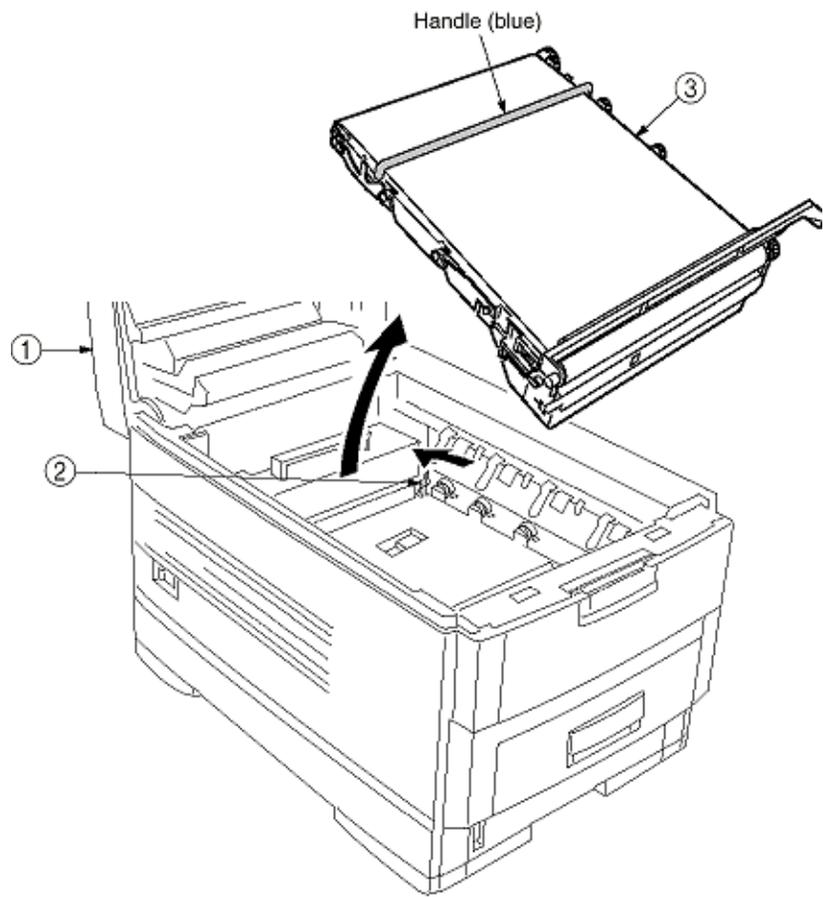
- (1) Open the top cover (1).
- (2) Push the right and left fuser levers (blue) (2) in the arrow direction to detach the fuser unit (3).





3.3.42 Belt Unit

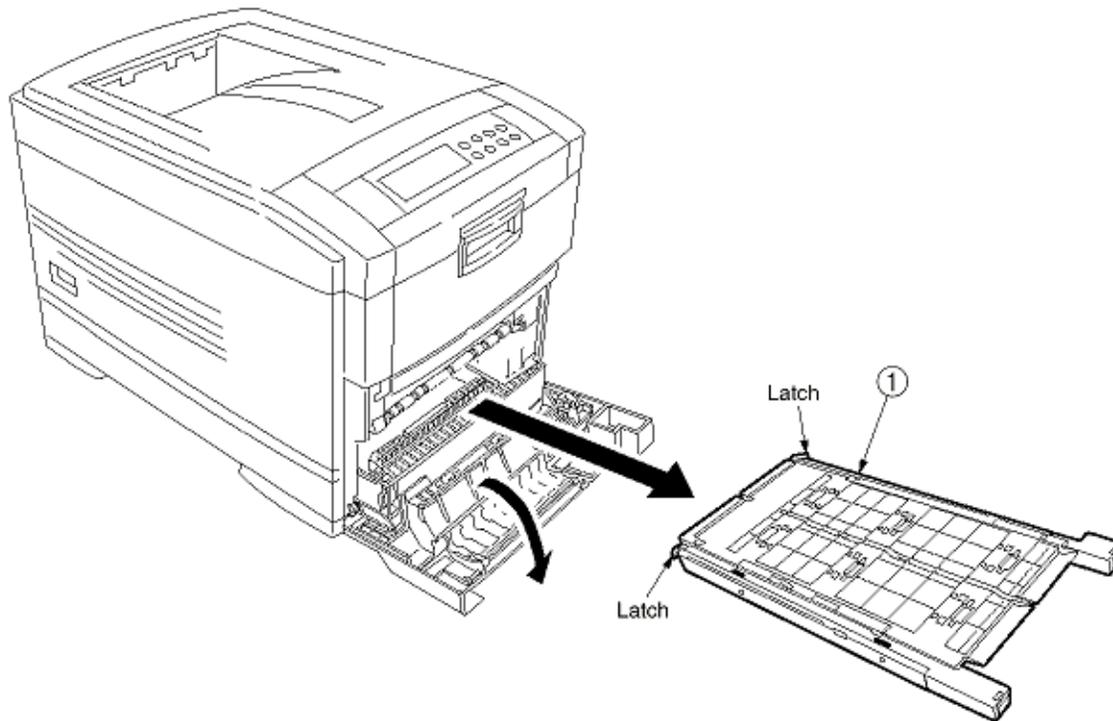
- (1) Open the top cover (1).
- (2) Remove the I/D unit.
- (3) Push the lever (blue) (2) in the arrow direction, raise the handle (blue) and detach the belt unit (3).





3.3.43 Duplex Unit

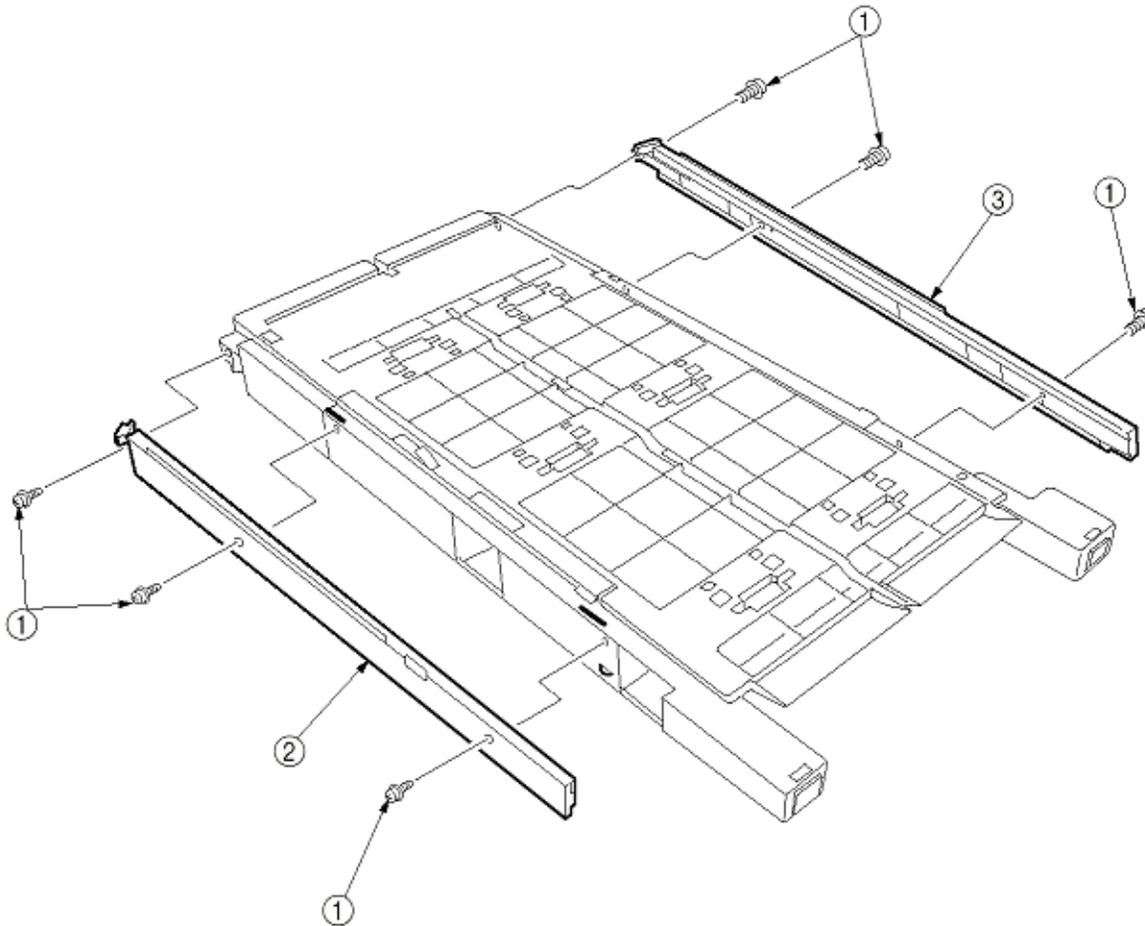
- (1) Remove the cassette Assy, the front cover Assy and the front cover inner baffle.
- (2) Unlatch the rear at the right and left, and pull the duplex unit 1 toward the front.





3.3.44 Guide Rails (L) and (R)

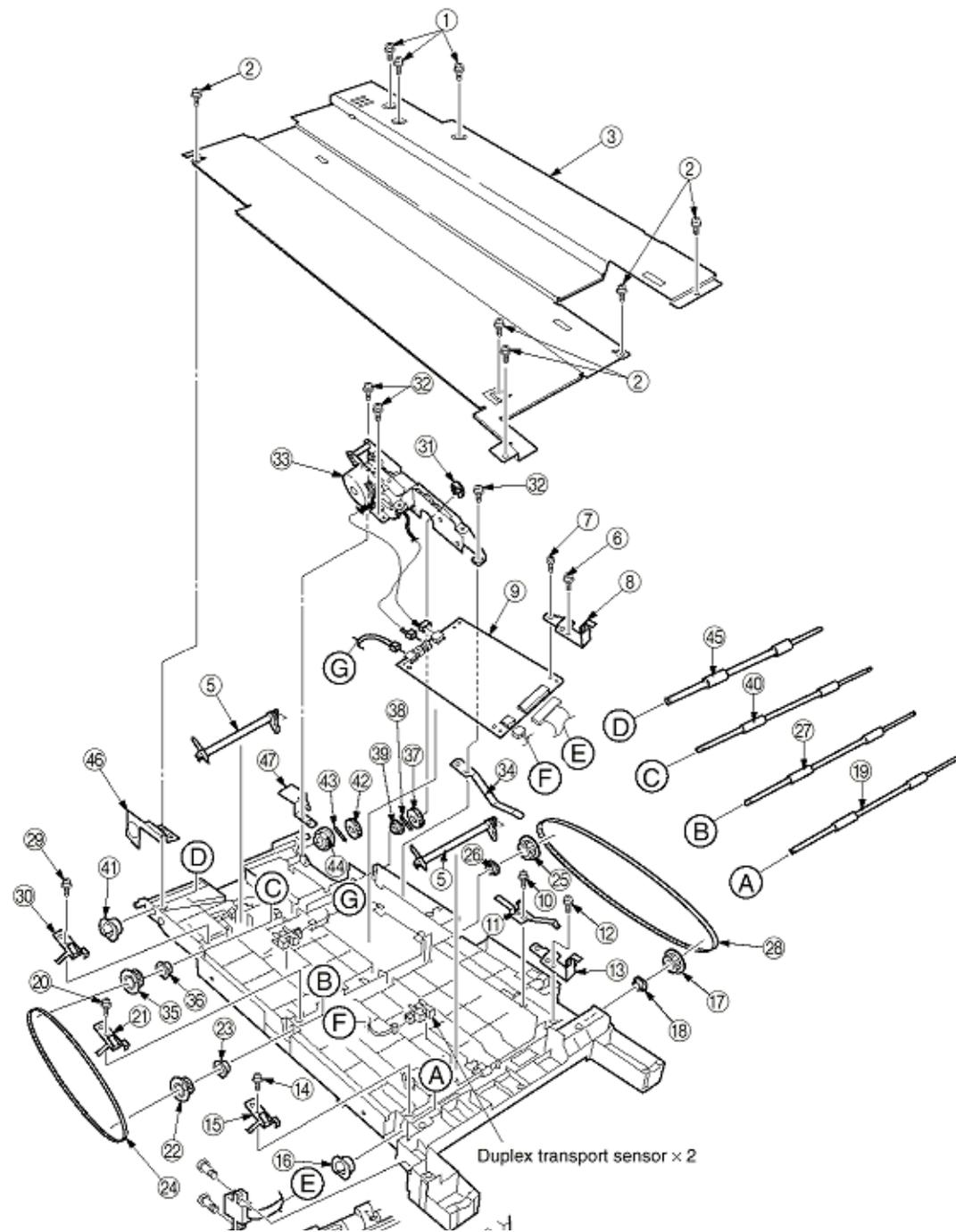
- (1) Remove the duplex unit (see section 3.3.43).
- (2) Remove the six screws 1 to detach the guide rails (L) 2 and (R) 3.





3.3.45 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 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 (27) 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 earth's (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.



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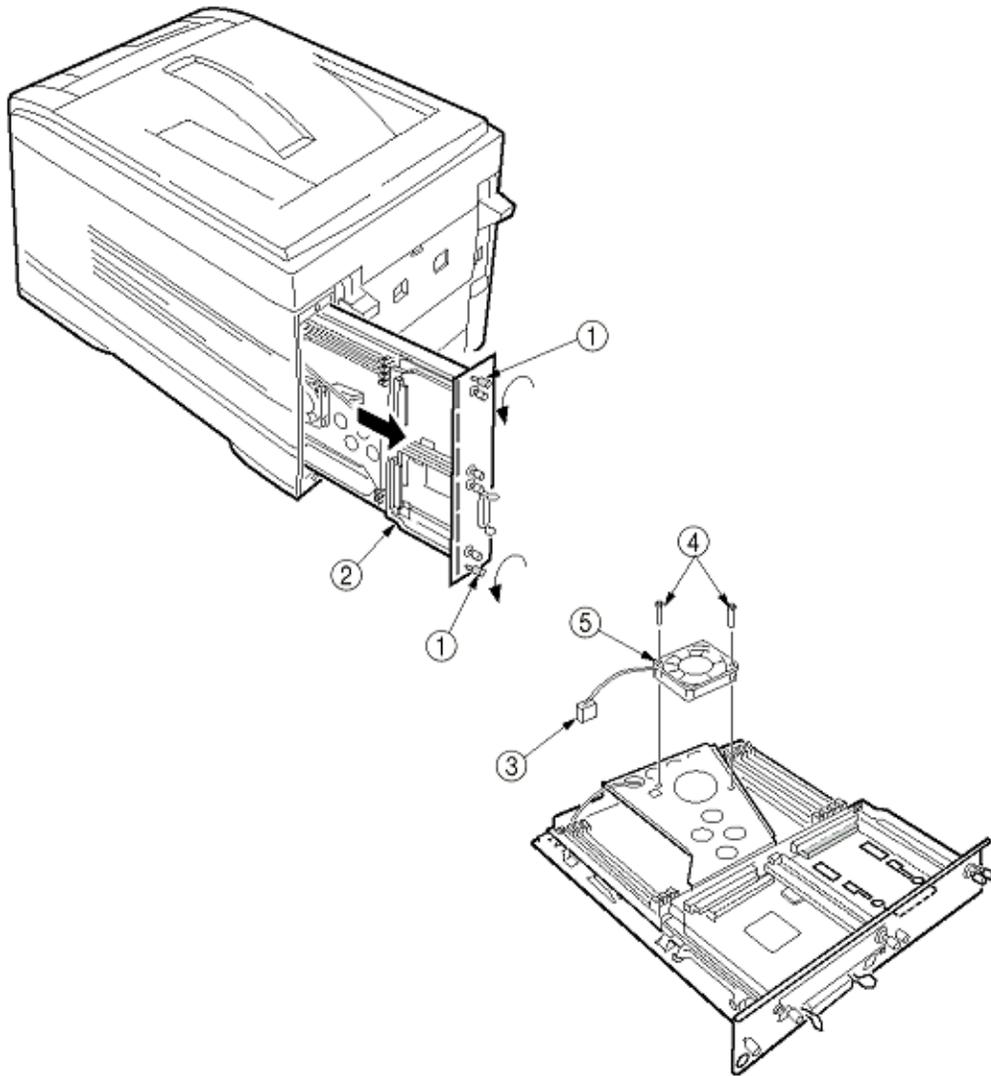
3.3.46 CU Assy

(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.

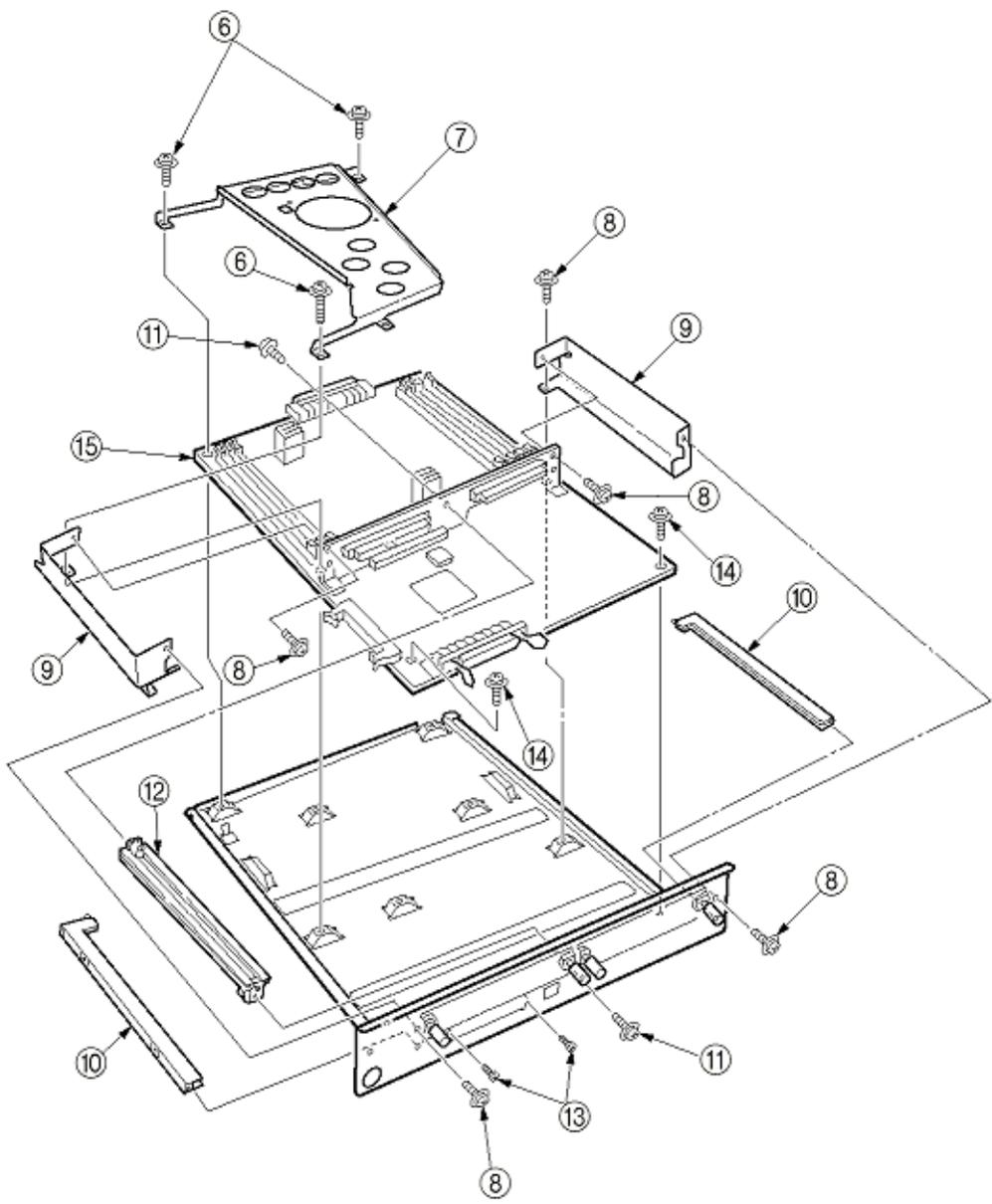
(2) Detaching Fan

1. Remove the connector 3.
2. Remove the two screws 4.
3. Detach the fan 5.



(3) Removing the CRM Board

1. Unscrew the four screws (6) to remove the fan bracket (7).
2. Unscrew the four screws (8) to remove the plate support (9) and the guide rail A (10).
3. Unscrew the two screws (11) to remove the guide rail (11) .
4. Unscrew the two screws (12) and three screws (14), then detach the CRM board (15).



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4.0 Adjustments

Adjustments on the C7000 Series of printers are made by key entry on the operator panel. In addition to a standard menu, there is a maintenance menu in each printer. Select the one that serves the purpose of intended adjustment.



4.1 Maintenance Modes and Their Functions

4.1.1 Maintenance Menu

4.1.2 Engine Maintenance Menu

4.1.3 CRM Board Adjustments



4.1.1 Maintenance Menu

The following menu category includes the maintenance menu category. The following can be set from this menu.

Category	Item (1st Line)	Value (2nd Line)	DF	Functions
Maintenance Menu	Power Save Mode	Enabled Disabled	*	Sets the Power Save Mode enabled/disabled. The shift time to enable the Power Save mode can be changed according to the POWER SAVE SHIFT TIME item of SYSTEM CONFIG. MENU.
	Normal Paper Back Setting	0 +1 +2 -2 -1	*	Implements fine adjustment of BLACK printing on normal paper when unclear characters or spots are often found on print results. With dispersed or snowed printing in the part at high-density, decrease the value. With unclear printing, increase the value.
	Normal Paper Color Setting	0 +1 +2 -2 -1	*	Implements fine adjustment of COLOR printing on normal paper when unclear characters or spots are often found on the print result. With dispersed or snowed printing in the part at high-density, decrease the value. With unclear printing, increase the value.
	Transparency Black Setting	0 +1 +2 -2 -1	*	Implements fine adjustment of BLACK printing on Transparency when unclear characters or spots are often found on the print result. With dispersed or snowed printing in the part at high-density, decrease the value. With unclear printing, increase the value.
	Transparency Color Setting	0 +1 +2 -2 -1	*	Implements fine adjustment of COLOR printing on Transparency when unclear characters or spots are often found on the print result. With dispersed or snowed printing in the part at high-density, decrease the value. With unclear printing, increase the value.

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4.1.2 Engine maintenance mode

The engine maintenance mode includes three modes, levels 1 to 3. The level 1 aims to assist in checking the media transport systems and the basic operations of printing systems etc. The level 2, which sets the consumable counter and tests the color registration adjustment function, does not require relatively special knowledge. Working with the level 3, including process parameter setting, takes expertise and the level contains PU individual experimental elements. Basically do not use items other than those in the level 1.

4.1.2.1 Operator Panel

4.1.2.2 General self-diagnosis mode (level 1)

4.1.2.3 Switch scan test

4.1.2.4 Motor and clutch test

4.1.2.5 Test Printing

4.1.2.6 NVM initialization

4.1.2.7 Consumable counter display

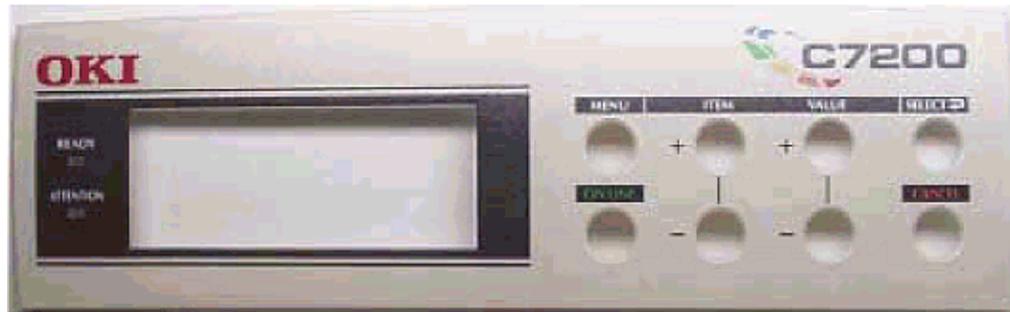
4.1.2.8 Consumable counter display - continuous

4.1.2.9 Error Messages and their Details



4.1.2.1 Operator panel

Operational descriptions about the self-diagnosis are premised on the following operator panel layout.



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4.1.2.2 General self-diagnosis mode (level 1)

Following is the menu of the general self-diagnosis mode.

- Switch Scan Test
- LED Head Test
- Motor and Clutch Tests
- Test Pattern Execution
- NVM Initialization
- Consumable Counter Display
- Consumable Counter Display - Continuous

4.1.2.2.1 Entering self-diagnosis mode (level 1)

4.1.2.2.2 Exiting self-diagnosis mode



4.1.2.2.1 Entering self-diagnosis mode (level 1)

1. Detach the main controller board.
2. While holding the 1 11 11 and 4 44 44 keys down at the same time, turn the power on to enter this mode.

ENGINE DIAG MODE	XX.XX

3. "ENGINE DIAG MODE XX.XX" appears in the upper display. XX.XX shows the version of ROM.
4. Go to each self-diagnosis step by using the 1 11 11 and 5 55 55 keys (pressing 1 11 11 and 5 55 55 keys rotates the menu items).



4.1.2.2.2 Exiting self-diagnosis mode

1. While "ENGINE DIAG MODE XX.XX" is displayed, press the (0) key, or turn the power off and, after ten seconds, on again.



4.1.2.3 Switch scan test

This self-diagnosis is used when the input sensor and the switch are checked.

1. Enter the general diagnosis mode, and press and hold the (1) and (5) keys down until "SWITCH SCAN" appears on the upper display (the (1) key increments a test item and the (5) key decrements a test item).

SWITCH SCAN

2. Table 4-1 lists SCAN numbers. Hold the (2) and (6) keys down until the SCAN number for a unit to be tested shows up on the upper display (the (2) key increments a test item and the (6) key decrements a test item).

3. In response to the press of the (3) key, the test starts, the SWITCH SCAN number begins blinking, then the corresponding unit number (any of 1 to 4) and the current status are displayed.

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

Operate the units (Figure 4-1). Their respective liquid crystal displays are provided (Displays vary by sensor. See Table 4-1 for details).

4. When the (7) key is touched, the SWITCH SCAN number goes back to an indication view (stops blinking).
5. Repeat steps 2 through 4 as required.
6. To end the test, press the (4) key (the display is restored to the view of step 1).

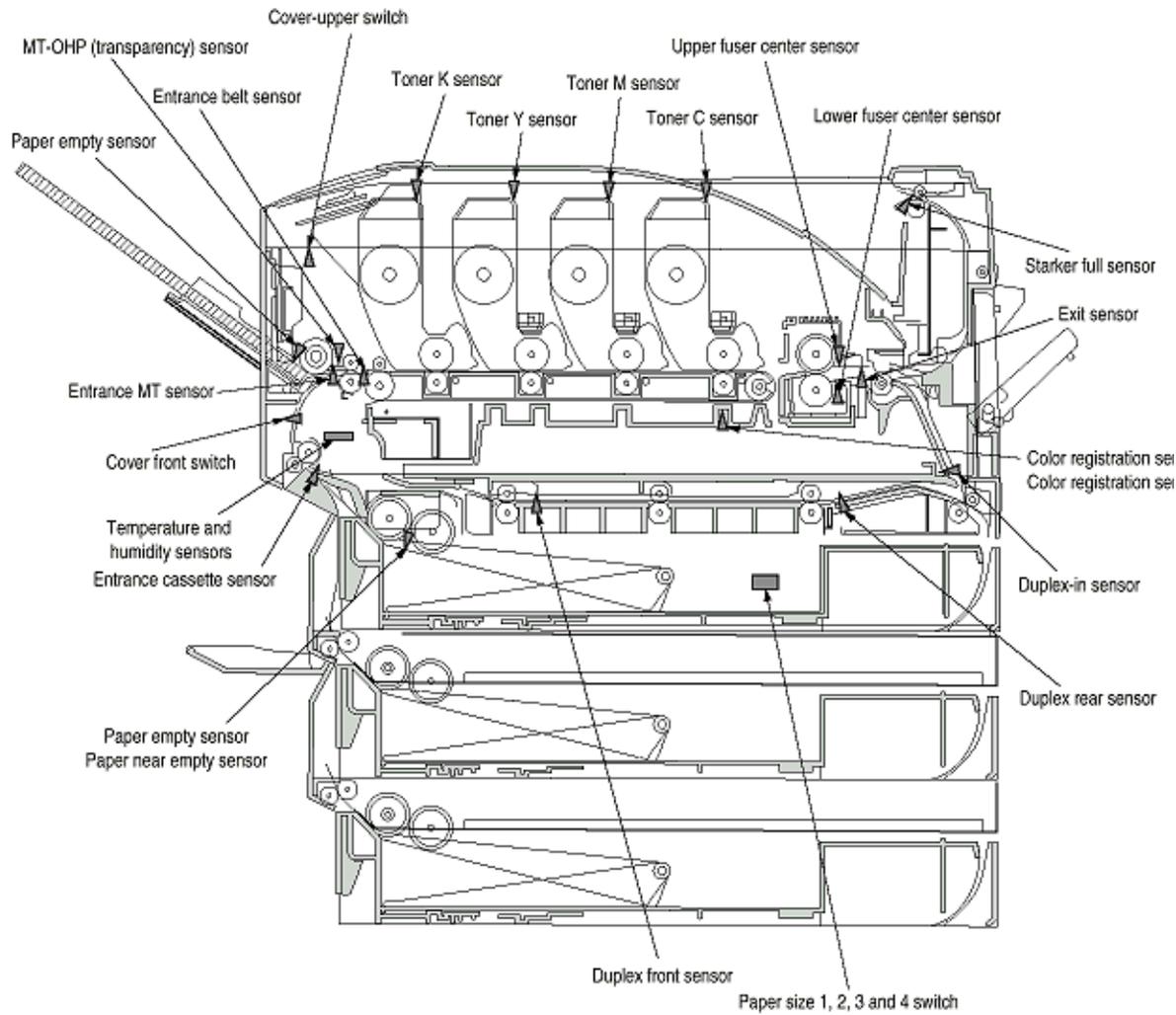


Table 4-1 Detailed SWITCH SCAN

		No.			
	Display	2	3	4	Display
Empty	Port level H, L	Cassette 1 Paper Near Empty Sensor	Entrance Cassette Sensor	Entrance MT Sensor	Port level H, L
sensor	Port level H, L	Exit Sensor	Stacker Full Sensor	.	Port level H, L
	Port level H, L	Toner-C Sensor	Toner-M Sensor	Toner-Y Sensor	Port level H, L
th	Port level H, L	Upper Cover Switch	.	.	Port level H, L
	-	.	.	.	-
	-	.	.	.	-
h	Port level H, L	MT Paper Empty Switch	.	MT Transparency Sensor	Port level H, L
Size	Port level H, L	Cassette 1 Paper Size 2 Switch	Cassette 1 Paper Size 3 Switch	Cassette 1 Paper Size 4 Switch	Port level H, L
1	AD value ***H	Color Registration Sensor (R)	.	.	Port level H, L
ter	AD value ***H	.	Lower Fuser Center Sensor	.	AD value ***H
	AD value ***H	Temperature Sensor	.	.	-
	Port level H, L	Duplex Rear Sensor	.	Duplex Front Sensor	Port level H, L
Size 1	Port level H, L	Cassette 2 Paper Size 2 Switch	Cassette 2 Paper Size 3 Switch	Cassette 2 Paper Size 4 Switch	Port level H, L
Empty	Port level H, L	Second Paper Near Empty Sensor	.	.	Port level H, L
	-	.	Cassette 2 Hopping Sensor (Paper feed)	.	Port level H, L
Size 1	Port level H, L	Cassette 3 Paper Size 2 Switch	Cassette 3 Paper Size 3 Switch	Cassette 3 Paper Size 4 Switch	Port level H, L
Empty	Port level H, L	Cassette 3 Paper Near Empty Sensor	.	.	Port level H, L
	-	.	Cassette 3 Hopping Sensor (Paper feed)	.	Port level H, L
	-	.	.	.	-
	-	.	.	.	-
	-	.	.	.	-
	-	.	.	.	-

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4.1.2.4 Motor and clutch test

This self-check routine is used for testing the motor and clutch.

1. Go to the self-diagnosis (level 1) mode, and hold the (1) and (5) keys down until the upper display of "MOTOR & CLUTCH TEST" is brought up (the (1) key increments a test item and the (6) key decrements a test item).
2. Hold the (2) and (6) keys down and wait for the display for a unit to be tested to appear on the lower line (the (2) key increments a test item and the (6) key decrements a test item). Corresponding displays are listed in Table 4-2.

MOTOR & CLUTCH TEST
BLACK - ID MOTOR

3. Pressing the (3) key starts the test, the unit name blinks, then the corresponding unit is driven for 10 seconds (refer to Figure 4-3).

Note! The view of step 2 is restored after 10-second driving and, with the press of the corresponding switch again, the unit is driven again.

- Driving corresponding units subject to the constraints listed in Table 4-2. The driving and activating out of the constraints are disabled and the constraints appear on the lower display.
 - The clutch solenoids must repeat on-off operations in normal printing driving (units that cannot be driven singly from a viewpoint of their mechanical structures must be driven in combination with the motor).
4. Use the (7) key to stop the drive of the unit (the corresponding unit display remains the same).
 5. Repeat the cycle of steps 2 though 4 as the case may be.
 6. Pressing the (4) key ends the tests (the display is restored to step 1).

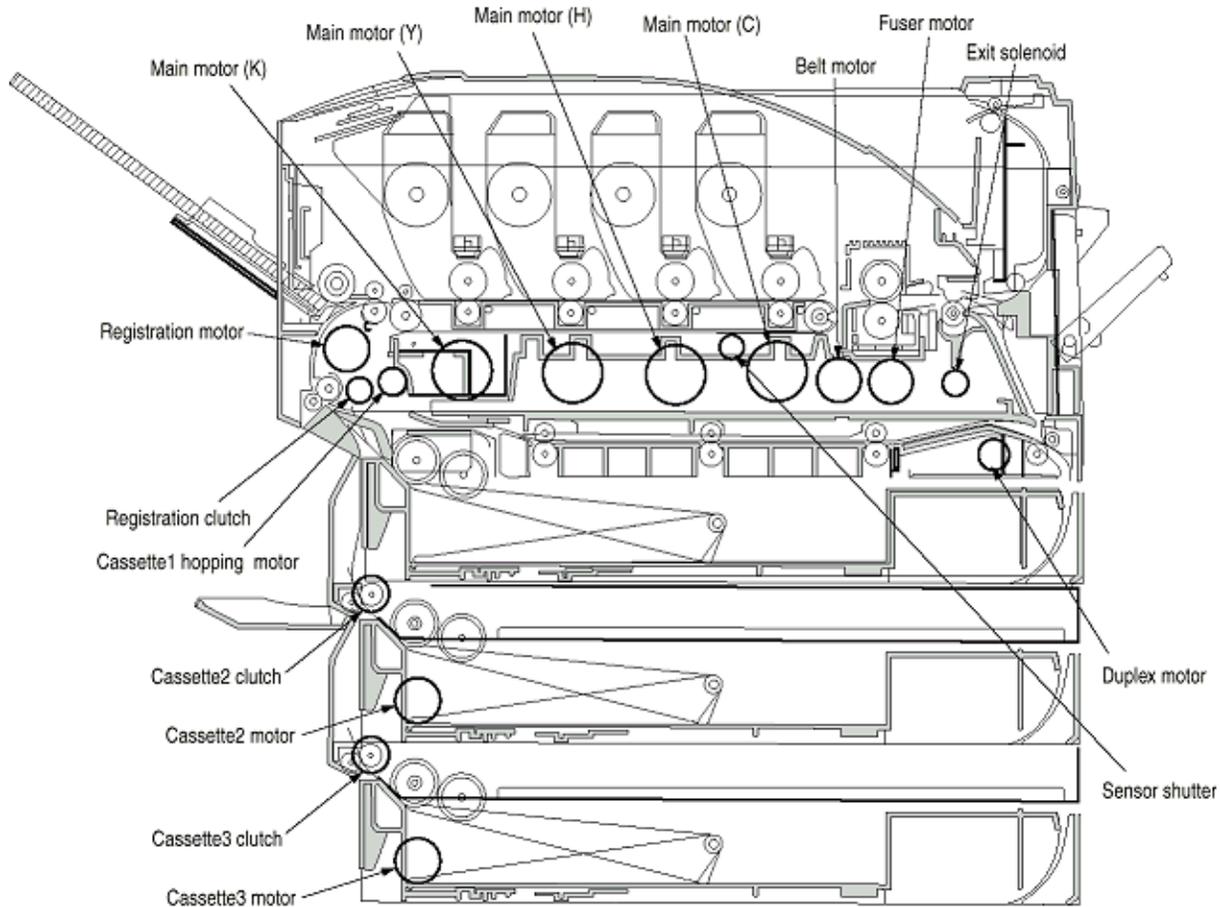


Figure 4-3

Unit Name Display	Driving Constraints	Constraints Display
BLACK-ID MOTOR	Remove all the IDs (B, Y, M and C) to drive the unit.	REMOVE ID
YELLOW-ID MOTOR	Remove all the IDs (B, Y, M and C) to drive the unit.	REMOVE ID
MAGENTA-ID		
MOTOR	Remove all the IDs (B, Y, M and C) to drive the unit.	REMOVE ID
CYAN-ID MOTOR	Remove all the IDs (B, Y, M and C) to drive the unit.	REMOVE ID
BELT MTOR	Remove all the IDs (B, Y, M and C) to drive the unit.	REMOVE ID
FUSER MOTOR	-	-

REGISTRATION MOTOR	-	-
MAIN FEEDER MOTOR	Remove the cassette 1 to drive the unit.	EXIT TRAY1 CASSETTE
REGISTRATION CLUTCH	-	-
SENSOR SHUTTER	-	-
EXIT SOLENOID	-	-
DUP MOTOR (OPTION)	-	-
DUP REAR CLUTCH (OPTION)	-	-
CASSETTE 2 MOTOR (OPTION)	Remove the cassette 2 to drive the unit.	EXIT TRAY2 CASSETTE
CASSETTE2 FEED ROLLER (OPTION)	-	-
CASSETTE3 FEEDER MOTOR (OPTION)	Remove the cassette 3 to drive the unit.	EXIT TRAY3 CASSETTE
CASSETTE3 ROLLER CLUTCH (OPTION)	-	-
ID UP/DOWN	-	-
FAN1 TEST (POWER UNIT FAN)	-	-
FAN2 TEST (CONTROL BLOCK FAN)	-	-



4.1.2.5 Test printing

This self-diagnostic routine is used when the internal test patterns of the PU are printed. Other test patterns are stored in the controller.

1. Go to the self-diagnosis (level 1) mode, and hold the (1) and (5) keys down until "TEST PRINT" comes into view in the upper display (the (1) key is for test item increment and the (5) key for test item decrement).
2. On the lower display, setting items applicable only to the test printing appear. Hold the (2) and (6) keys down until a target item is displayed (the (2) key is for item increment and the (6) key for item decrement). When the setting for the item is not required (left at its default), go to step 5.
3. With the press of the (3), (7), the setting item and its setting are displayed on the upper and lower parts, respectively.

Pressing the (3) key increments a setting. Pressing the (7) key decrements a setting. (The last displayed setting is applied.) Repeat step 3 as necessary.

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

Display	Setting	Function
PRINT EXECUTE	-	Starts printing at the press of + key / Ends printing at the press of - key
TEST PATTERN (TBD)	1	Selects one of printing patterns: 1: LED Head Drive Pattern 2: Color Registration Adjust Pattern 3: Reserved
	2	
	3	
CASSET	TRAY1	Selects a paper-loading end. Note: When the loading end is set to NONE, only the heater and drivable motors operate without the IDs and belt being driven.
	TRAY2	
	TRAY3	
	FF	
	NONE	
COLOR	ON	Selects between color-monochrome printings.
	OFF	
FUSER	ON	Selects between hater-on and off.
	OFF	
DUPLEX	ON	Selects between duplex-on and -off. Prints on both sides of one sheet of paper and then on the second sheet when ON is selected.
	OFF	

- A value in the shaded section is initial. The set values are applicable only to this test mode (No writing into EEPROM is performed.)
- When the (3) key is pressed, with "PRINT EXECUTE" on the lower display after step 2, the test printing is executed using the values designated in steps 2 and 3. Pressing the (7) key suspends the test printing.
- The following messages are showing at warm-up and during printing.

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

P: Number of Sheets Printed for Test (in prints)
 U: Upper-Heater Temperature Measurement [Set Value] (in units of °C)
 L: Lower-Heater Temperature Measurement [Set Value] (in units of °C)
 T: Environmental Temperature Measurement (in units of °C)
 H: Environmental Humidity Measurement (in units of %)

- The display is changed at the press of the 3 33 33 key.

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

YTR, MTR, CTR and KTR mean the transfer voltage settings for colors (in KV).

- The display is changed at the press of the 3 33 33 key.

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

YR, MR, CR and KR are the transfer voltage measurements for transfer roller colors (in KV).

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

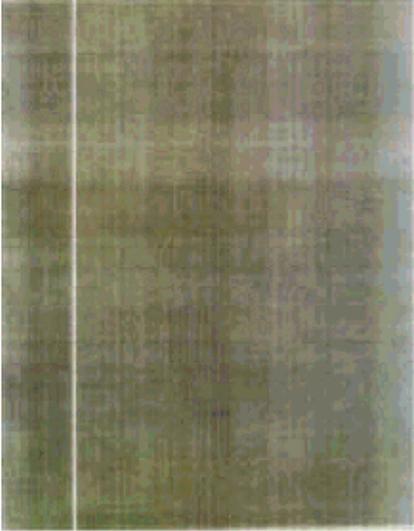
4. While "PRINT EXECUTE" is indicated in the lower display after the Item 2 procedure, press Key (3) to start test printing with the values set in Item 2 and 3 procedures.

To suspend test printing, press Key 7 77 77.

At the start of or during test printing, if any alarm listed under the Detail column in the table specified below is found, the corresponding alarm message appears on the operator panel and test printing is suspended. (For error details, see Sec. 4.1.2.9 Error Messages and their Details.)

Print Patterns:

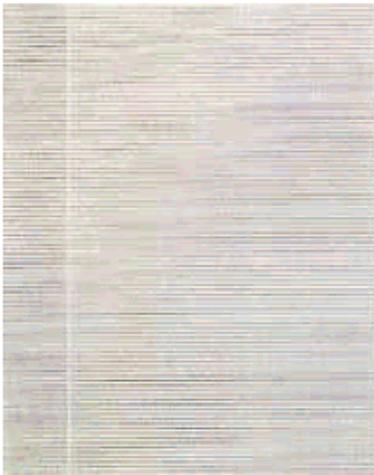
Patterns 0, 8 ~15: Blank paper output



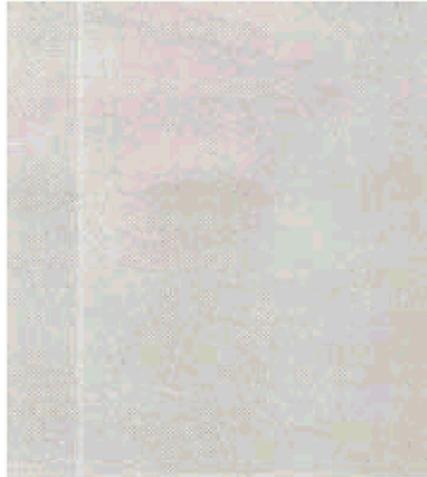
Pattern 1



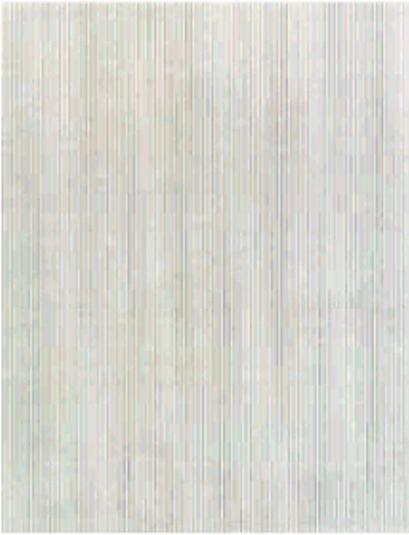
Pattern 2



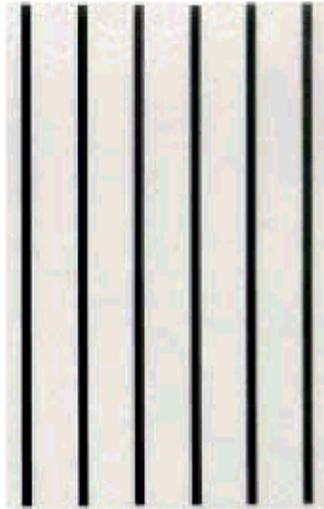
Pattern 3



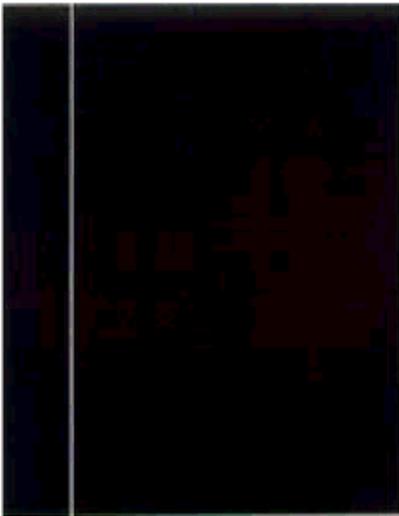
Pattern 4



Pattern 5



Pattern 6



Pattern 7

5. Steps 2 through 4 to be repeated on an as needed basis.

6. Touch the (4) key to end the test (the display is restored to step 1).

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4.1.2.6 NVM initialization

The self-diagnosis is used to initialize non-volatile memory.

1. Enter the self-diagnosis (Level 1) mode, and continue to press the (1) and (5) keys until "NV-RAM INITIAL" appears on the upper display (the (1) key is for test item increment and the (5) key for test item decrement).
2. The table No. to be initialized appears. There are two tables to be initialized. Hold the (2) and (6) keys down until a target table No. shows up (the (2) key is for table No. increment and the (6) key for table No. decrement).

NV-RAM INITIAL
TABLE 1

3. The upper "NV-RAM INITIAL" starts blinking upon pressing the (3) key, and all the items in Table 4-3 are initialized by holding the key down for 10 seconds.
4. Press the (4) key to end the test (the display of step 1 is restored).

Initialization Item		Detail	Initial Value	Unit
Drum Counter	Black Yellow Magenta Cyan	Initializes the internal counter after the replacement of each drum.	0	-
Belt Unit Counter		Initializes the internal counter after the replacement of the belt unit.	0	-
Fuser Unit Counter		Initializes the internal counter after the replacement of the fuser unit.	0	-
Toner Counter	Black Yellow Magenta Cyan	Initializes the internal counter after the recovery from each toner low error.	0	-

Initialization Item		Detail	Initial Value	Unit
Registration Set.	Yellow LED	Initializes the X-axis correction value for	0	1/1200

Point x-axis	Magenta LED Cyan LED	the LED head (Yellow/Magenta/Cyan).		inch
Registration Set. Point y-axis (Left)	Yellow LED Magenta LED Cyan LED	Initializes the Y-axis left-correction value for the LED head (Yellow/Magenta/Cyan).	0	1/1200 inch
Registration Set Point y-axis (Right)	Yellow LED Magenta LED Cyan LED	Initializes the Y-axis right-correction value for the LED head (Yellow/Magenta/Cyan).	0	1/1200 inch
Engine Parameter		Initializes all the items that have been set using levels 2 and 3.		

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4.1.2.7 Consumable Counter Display

The self-diagnosis is used to indicate the consumable consumption status.

1. After entering the general self-diagnosis mode, hold the (1) and (5) keys down until "CONSUMABLE STATUS" appears on the upper display (the (1) key is for test item increment and the (5) key for test item decrement).
2. By pressing the (2) and (6) keys, the consumption status of the consumables comes into view item by item (the press of the (3) and (7) keys is invalid).
3. Pressing the (4) key ends the test (the display of step 1 is restored).

Item	Upper Display	Lower Display	Format	Unit	Detail
Fuser Unit	FUSER UNIT	***** IMAGES	DEC	Image	Shows the number of sheets fed after the installation of a new fuser unit to date.
Belt Unit	TR BELT UNIT	***** IMAGES	DEC	Image	Shows the number of sheets fed after the installation of a new belt unit to date.
Black ID Unit	BLACK ID UNIT	***** IMAGES	DEC	Image	Converts the number of revolutions of each color's ID unit after the installation of that unit to date into a count in letter (A4) size paper sheets and shows it.
Yellow ID Unit	YELLOW ID UNIT	***** IMAGES	DEC	Image	Shows the remaining amount of each color's toner.
Magenta ID Unit	MAGENTA ID UNIT	***** IMAGES	DEC	Image	
Cyan ID Unit	CYAN ID UNIT	***** IMAGES	DEC	Image	
Black Toner	BLACK TONER	***%	DEC	%	
Yellow Toner	YELLOW TONER	***%	DEC	%	
Magenta Toner	MAGENTA TONER	***%	DEC	%	
Cyan Toner	CYAN TONER	***%	DEC	%	



4.1.2.8 Consumable Counter Display - Continuos

The self-diagnosis is used to indicate the consumable life-cycle consumption status.

The consumable life-cycle consumption status, a count not initialized even after the replacement of a consumable, is counted without break.

1. Enter the general self-diagnosis mode, and the (1) and (5) keys down until the upper display "PRINTER STATUS" appears (the (1) key is for item increment and the (5) key for item decrement).
2. When the (2) and (6) keys are pressed, the life-cycle consumption status of the consumables shows up item by item (the press of the (3) and (7) keys is invalid).
3. Pressing the (4) key ends the test (flips back to the display of 1).

Item	Upper Display	Lower Display	Format	Unit	Detail
Total Number of Sheets Fed	TOTAL SHEETS FED	***** PRINTS	DEC	Prints	Shows the number of sheets fed, including blank paper. Converts the total number of revolutions of each color's ID into a count in letter paper sheets to set it.
Black Impressions	BLACK IMPRESSIONS	***** IMAGES	DEC	Image	
Yellow Impressions	YELLOW IMPRESSIONS	***** IMAGES	DEC	Image	
Magenta Impressions	MAGENTA IMPRESSIONS	***** IMAGES	DEC	Image	
Cyan Impressions	CYAN IMPRESSIONS	***** IMAGES	DEC	Image	



4.1.2.9 Error Messages and their Details

Error Message	Details
<i>BLACK DRUM UP/DOWN ERROR</i>	<i>Black ID up/down error</i>
<i>BLACK DRUM UNIT FUSER CUT ERROR</i>	<i>Black ID unit fuse cut error</i>
<i>BLACK TONER SENSOR ERROR</i>	<i>Black toner sensor error</i>
<i>BLACK LED HEAD ERROR</i>	<i>Black LED head error</i>
<i>BLACK TONER LOW</i>	<i>Black toner is low</i>
<i>BLACK TONER EMPTY</i>	<i>Black toner is empty</i>
<i>BLACK DRUM LIFE OVER</i>	<i>Black ID life is over</i>
<i>BALANCE ERROR</i>	<i>Balance error</i>
<i>BELT LIFE OVER</i>	<i>Belt life is over</i>
<i>BELT UNIT FUSE CUT ERRORS</i>	<i>Belt unit fuse cut error</i>
<i>BELT REFLECTION ERROR</i>	<i>Belt reflection error</i>
<i>BRK INST EXECUTE</i>	<i>BRK instruction is executed</i>
<i>CYAN DRUM UP/DOWN ERROR</i>	<i>Cyan ID up/down error</i>
<i>CYAN DRUM UNIT FUSE CUT ERROR</i>	<i>Cyan ID unit fuse cut error</i>
<i>CYAN TONER SENSOR ERROR</i>	<i>Cyan toner sensor error</i>
<i>CYAN LED HEAD ERROR</i>	<i>Cyan LED head error</i>
<i>CYAN IRREGULAR ERROR</i>	<i>Cyan detected value error</i>
<i>CYAN REGISTRATION OUT RIGHT</i>	<i>Cyan out-of-registration value error (Right)</i>
<i>CYAN REGISTRATION OUT LEFT</i>	<i>Cyan out-of-registration value error (Left)</i>
<i>CYAN SENSOR ERROR RIGHT</i>	<i>Cyan right sensor error</i>
<i>CYAN SENSOR ERROR LEFT</i>	<i>Cyan left sensor error</i>
<i>CYAN TONER LOW</i>	<i>Cyan toner is low</i>
<i>CYAN TONER EMPTY</i>	<i>Cyan toner is empty</i>
<i>CYAN DRUM LIFE OVER</i>	<i>Cyan ID life is over</i>
<i>CU FAN MOTOR ERROR</i>	<i>CU fan motor error</i>
<i>CALIBRATION ERROR</i>	<i>Calibration error</i>
<i>CUSTOM DIAGNOSTICS MODE</i>	<i>Custom diagnostic mode</i>
<i>DUPLEX I/F ERROR</i>	<i>Duplex unit I/F error</i>
<i>DISPOSAL TONER SENSOR ERROR</i>	<i>DISPOSAL TONER sensor error</i>
<i>DISPOSAL TONER NEARFULL</i>	<i>Waste toner container is near full</i>
<i>DISPOSAL TONER FULL</i>	<i>Waste toner container is full</i>
<i>DIAGNOSTICS MODE</i>	<i>Engine diagnostic mode</i>

<i>EEPROM SUM CHECK ERROR</i>	<i>EEPROM sum check error</i>
<i>EEPROM TIMEOUT</i>	<i>EEPROM timeout error</i>
<i>ENV TEMP SENSOR ERROR</i>	<i>ENV TEMP sensor error</i>
<i>ENGINE LIFE OVER</i>	<i>Engine life error</i>
<i>F/W LOST CONTROL</i>	<i>F/W has lost its control</i>
<i>FRONT FEEDER STAGE POSITION</i>	<i>Front feeder stage position error</i>
<i>FRONT COVER OPEN</i>	<i>Front cover is open</i>
<i>FUSER LIFE OVER</i>	<i>Fuser life is over</i>
<i>FUSER UNIT FUSE CUT ERROR</i>	<i>Fuser unit fuse cut error</i>
<i>FLASH SOFTWARE ERROR</i>	<i>FLASH software error</i>
<i>FLASH HARDWARE ERROR</i>	<i>FLASH hardware error</i>
<i>HUMIDITY SENSOR ERROR</i>	<i>Humidity sensor error</i>
<i>HOPPING ERROR TRAY1</i>	<i>Tray1 hopping error</i>
<i>HOPPING ERROR TRAY2</i>	<i>Tray2 hopping error</i>
<i>HOPPING ERROR TRAY3</i>	<i>Tray3 hopping error</i>
<i>HOPPING ERROR FRONT FEEDER</i>	<i>Front feeder hopping error</i>
<i>HOPPING ERROR DUPLEX</i>	<i>Duplex unit hopping error</i>
<i>HOPPING ERROR TRAY4 (PX703)</i>	<i>Tray4 hopping error</i>
<i>HOPPING ERROR TRAY5 (PX703)</i>	<i>Tray5 hopping error</i>
<i>INPATH: FEED</i>	<i>Feed jam</i>
<i>INPATH: TRANSPORT</i>	<i>Transport jam</i>
<i>INPATH: EXIT</i>	<i>Exit jam</i>
<i>INPATH: DUPLEX INPUT</i>	<i>Duplex unit input jam</i>
<i>INPATH: DUPLEX ENTRY</i>	<i>Duplex unit entry jam</i>
<i>INPATH: DUPLEX REVERSAL</i>	<i>Duplex unit reversal jam</i>
<i>INFEED: TRAY1</i>	<i>Tray1 hopping error</i>
<i>INFEED: TRAY2</i>	<i>Tray2 hopping error</i>
<i>INFEED: TRAY3</i>	<i>Tray3 hopping error</i>
<i>INFEED: FRONT FEEDER</i>	<i>Front feeder hopping error</i>
<i>INFEED: DUPLEX</i>	<i>Duplex unit hopping error</i>
<i>INFEED: TRAY4 (PX703)</i>	<i>Tray4 hopping error</i>
<i>INFEED: TRAY5 (PX703)</i>	<i>Tray5 hopping error</i>
<i>INITIALIZING</i>	<i>Initializing after turning on the printer</i>
<i>INITIALIZING</i>	<i>Initializing after a cover is opened / closed</i>
<i>INITIALIZING REGISTRATION ADJUST</i>	<i>Initializing after automatic color-registrat</i>
<i>JAM FEED</i>	<i>Feed jam</i>
<i>JAM TRANSPORT</i>	<i>Transport jam</i>
<i>JAM EXIT</i>	<i>Exit jam</i>
<i>JAM DUPLEX INPUT</i>	<i>Duplex unit input jam</i>
<i>JAM DUPLEX ENTRY</i>	<i>Duplex unit entry jam</i>

JAM DUPLEX REVERSAL	Duplex unit reversal jam
LOWER HEATER LOW TEMPER	Lower heater low-temperature error
LOWER HEATER HIGH TEMPER	Lower heater high-temperature error
LOWER HEATER OPEN ERROR	Lower heater thermistor open-circuit error
LOWER HEATER SHORT ERROR	Lower heater thermistor short-circuit error
LED HEAD OVER HEAT	LED head overheat error
LEFT LOWER COVER OPEN	Left lower cover is open
LEFT UPPER COVER OPEN	Left upper cover is open
MISSING ERROR	Part missing error
FINISHER I/F ERRORS	Finisher I/F error
MISSING BELT UNIT	Belt unit is not mounted
MISSING FUSER UNIT	Fuser unit is not mounted
MISSING BLACK DRUM	Black ID is not mounted
MISSING CYAN DRUM	Cyan ID is not mounted
MISSING MAGENTA DRUM	Magenta ID is not mounted
MISSING YELLOW DRUM	Yellow ID is not mounted
MAGENTA DRUM UP/DOWN ERROR	Magenta ID up/down error
MAGENTA DRUM UNIT FUSER CUT ERROR	Magenta ID unit fuse cut error
MAGENTA TONER SENSOR ERROR	Magenta toner sensor error
MAGENTA LED HEAD ERROR	Magenta LED head error
MAGENTA IRREGULAR ERROR	Magenta detected value error
MAGENTA REGISTRATION OUT LEFT	Magenta out-of-registration value error (Left)
MAGENTA REGISTRATION OUT RIGHT	Magenta out -of-registration value error (Right)
MAGENTA SENSOR ERROR LEFT	Magenta left sensor error
MAGENTA SENSOR ERROR RIGHT	Magenta right sensor error
MAGENTA TONER LOW	Magenta toner is low
MAGENTA TONER EMPTY	Magenta toner is empty
MAGENTA DRUM LIFE OVER	Magenta ID life is over
OPECODE TRAP ERROR	Operation cord trap error
POWER LSI ERROR	Power unit LSI error
PANEL I/F ERROR	Operator panel I/F error
PU FAN MOTOR ERROR	PU fan motor error
PAPER SIZE ERROR	Paper size error
PAPER END SELECTED TRAY	No paper is left in the selected tray
PAPER END TRAY1	No paper is left in Tray1
PAPER END TRAY2	No paper is left in Tray2
PAPER END TRAY3	No paper is left in Tray3
PAPER END FRONT FEEDER	No paper is left at Front Feeder
PAPER END TRAY4 (PX703)	No paper is left in Tray4
PAPER END TRAY5 (PX703)	No paper is left in Tray5

PAPER NEAR END TRAY1	<i>Paper is going out in Tray1</i>
PAPER NEAR END TRAY2	<i>Paper is going out in Tray2</i>
PAPER NEAR END TRAY3	<i>Paper is going out in Tray3</i>
PAPER NEAR END FRONT FEEDER	<i>Paper is going out at Front Feeder</i>
PAPER NEAR END TRAY4 (PX703)	<i>Paper is going out in Tray4</i>
PAPER NEAR END TRAY5 (PX703)	<i>Paper is going out in Tray5</i>
RAM ERROR	<i>RAM error</i>
ROM SUM CHECK ERROR	<i>ROM sum check error</i>
SRAM ERROR	<i>SRAM error</i>
STACKER FULL	<i>Stacker is full</i>
STACKER FULL FACE DOWN	<i>Facedown stacker is full</i>
TRAY2 I/F ERROR	<i>Tray2 I/F error</i>
TRAY3 I/F ERROR	<i>Tray3 I/F error</i>
TRAY4 I/F ERROR (PX703)	<i>Tray4 I/F error</i>
TRAY5 I/F ERROR (PX703)	<i>Tray5 I/F error</i>
TOP COVER OPEN	<i>Top cover is open</i>
UPPER HEATER LOW TEMPER	<i>Upper heater low-temperature error</i>
UPPER HEATER HIGH TEMPER	<i>Upper heater high-temperature error</i>
UPPER HEATER OPEN ERROR	<i>Upper heater thermistor open-circuit error</i>
UPPER HEATER SHORT ERROR	<i>Upper heater thermistor short-circuit error</i>
WARMING UP	<i>Warming up</i>
WDT ERROR	<i>Watchdog timer timeout error</i>
YELLOW DRUM UP/DOWN ERROR	<i>Yellow ID up/down error</i>
YELLOW DRUM UNIT FUSE CUT ERROR	<i>Yellow ID unit fuse cut error</i>
YELLOW TONER SENSOR ERROR	<i>Yellow toner sensor error</i>
YELLOW LED HEAD ERROR	<i>Yellow LED head error</i>
YELLOW IRREGULAR ERROR	<i>Yellow detected value error</i>
YELLOW REGISTRATION OUT LEFT	<i>Yellow out-of-registration value error (Left)</i>
YELLOW REGISTRATION OUT RIGHT	<i>Yellow out-of-registration value error (Right)</i>
YELLOW SENSOR ERROR LEFT	<i>Yellow left sensor error</i>
YELLOW SENSOR ERROR RIGHT	<i>Yellow right sensor error</i>
YELLOW TONER LOW	<i>Yellow toner is low</i>
YELLOW TONER EMPTY	<i>Yellow toner is empty</i>
YELLOW DRUM LIFE OVER	<i>Yellow ID life is over</i>
INPATH: FEED	<i>Feed jam</i>
INPATH: TRANSPORT	<i>Transport jam</i>
INPATH: EXIT	<i>Exit jam</i>
INPATH: DUPLEX INPUT	<i>Duplex unit input jam</i>
INPATH: DUPLEX ENTRY	<i>Duplex unit entry jam</i>
INPATH: REVERSAL	<i>Duplex unit reversal jam</i>

<i>INFEED: TRAY1</i>	<i>Tray1 hopping error</i>
<i>INFEED: TRAY2</i>	<i>Tray2 hopping error</i>
<i>INFEED: TRAY3</i>	<i>Tray3 hopping error</i>
<i>INFEED: FRONT FEEDER</i>	<i>Front feeder hopping error</i>
<i>INFEED: DUPLEX</i>	<i>Duplex unit hopping error</i>
<i>INFEED: TRAY4 (PX703)</i>	<i>Tray4 hopping error</i>
<i>INFEED: TRAY5 (PX703)</i>	<i>Tray5 hopping error</i>

INPATH --- Information of paper that stays on the paper path

INFEED --- Information of paper that stays at the paper entrance



4.1.3 CRM board adjustments

Destination Setting:

The CRM board, a main board, is a common ROM among destinations. When using the board for maintenance, its destination must be set using the system maintenance mode. Placing Printer in System Maintenance Mode: (Not on view of users)

1. While holding the (2) and (6) keys down, turn the power on.
2. Continue to press the (3) and (7) keys to select a value to be set, and press SELECT to fix the value.

Set Values and Destinations

Set Value	ODA	OEL	APS	JP1	JPOEM	OEMA	OEML
Destination	ODA	OEL	APS	Japan	Japan OEM	OEM	OEM
Remark	LETTER inch	A4 millimeter	A4	A4 millimeter	A4 millimeter		

Model Name Setting:

The CU program automatically determines and switches between following printer specifications (LED head width, LED head resolution, presence or absence of Japanese fonts (Heisei fonts, Morisawa fonts)).

LED Head Width	Resolution	With Kanji fonts		Without Kanji fonts
		Two Heisei fonts	Five Morisawa fonts	ODA / OEL / ASP
A4	600 dpi	ML3010c		OKI C7200
	1200 dpi	/	/	OKI C7400
A3	600 dpi	ML3020c	/	OKI C9200
	1200 dpi	ML3050c	/	OKI C9400

EEPROM Initialization

To initialize the EEPROM, enter the maintenance mode and select the EEPROM RESET item after the general start-up.

4.1.3.1 Short plug settings

4.1.3.2 Printings singly using controller-equipped printer



4.1.3.1 Short plug settings

The CRM board has five short plugs that can be set as follows:

Short Plug (WE1, 3, 5 and 7)

Sets flash ROM DIMM to connect WE signals.

(1-2 Short: Disconnects WE signals; 2-3 Short: Connects WE signals.)

Factory 2-3 Short Setting: Re-programmable flash ROM DIMM.

Short Plug (DIMM2)

Configures the banks of the ROM DIMM slot B.

(1-2 Short: For 1-Bank DIMM; 2-3 Short: For 2-Bank DIMM)

A 1-bank DIMM (dual-sided 1 bank) is only a prototype and, in production-run printers, does not exist.



4.1.3.2 Printing Menu Reports

Menu Map Printing

The program versions, the controller block configuration and other configurations and settings of the printer are printed.

Operation: (Press of Switches)

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

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

File List Printing

A list of files stored on a HDD or in ROM is printed.

Operation: (Press of Switches)

Without HDD: "0" --> "3" --> "1" --> "3"

With HDD: "0" --> "0" --> "3" --> "1" --> "3"

Font List Printing (PCL)

A list of PCL fonts is printed.

Operation: (Press of Switches)

Without HDD: "0" --> "3" --> "1" --> "1" --> "3"

With HDD: "0" --> "0" --> "3" --> "1" --> "1" --> "3"

Font List Printing (PS)

A list of PS fonts is printed.

Operation: (Press of Switches)

Without HDD: "0" --> "3" --> "1" --> "1" --> "1" --> "3"

With HDD: "0" --> "0" --> "3" --> "1" --> "1" --> "3"

Demo Printing

The demo patterns for destinations stored in ROM are printed.

Operation: (Press of Switches)

Without HDD: "0" --> "3" --> "1" --> "1" --> "1" --> "3"

With HDD: "0" --> "0" --> "3" --> "1" --> "1" --> "1" --> "1" --> "3"

Ethernet Board Self-Diagnostic Printing

When the printer is equipped with an Ethernet board, holding down the SW on the Ethernet board for two seconds or more runs self-diagnostics and prints its result.

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4.2 Adjustments after Parts Replacement

Adjustments to be implemented after each part replacement is described below. Adjustment and correction of color registration are always required for each part replacement.

Replaced Part	Adjustment
LED Head	Color balance adjustment.
Drum Cartridge (Y, M, C, K)	Color balance adjustment.
Fuser Unit	Not required.
Belt Cassette Assy	Not required.
PU (K71 Bord)	Re-mounting the EEPROM used prior to the replacement *Note
CU (CRM Board)	Re-mounting the EEPROM used prior to the replacement *Note

Note: When the EEPROM of the PU (K71 Board) is replaced to a new one, color balance must be adjusted.

4.2.1 Precautions in replacing engine controller board

4.2.2 Precautions in replacing EEPROM

4.2.3 EEPROM replacement after CRM board replacement



4.2.1 Precautions in replacing engine controller board

When replacing the engine controller board (71K PWB), remove the EEPROM from the board and mount it on a new board (for errors other than those of engine EEPROM).

When the "SERVICE CALL XX" (an engine EEPROM error) message is displayed on the operator panel, the EEPROM must be replaced with 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 controller board (71K PWB)) replacement, or when the EEPROM is replaced with new one, the version read (fuse cut) function shown in Section 2.14 is disabled. The printer must be switched from the factory mode to the shipping mode using the following setting procedure:

Changing the setting using operator panel

1. Remove the main controller board.
2. While holding the (1) and (4) keys down, turn the power on to enter the engine maintenance mode (level 1).
3. With "ENGINE DIAG MODE XX.XX" on the display, press the (2) and (4) keys to enter the engine maintenance mode (level 3).
4. Press the (1) and (5) keys until "LOCAL PARAMETER SET" appears on the upper display.
5. Press the (2) and (6) keys until "FACTORY WORKING MODE" appears.
6. While "FACTORY WORKING MODE" is being displayed, use the (3) and (7) keys to select a setting value.
7. Select "SHIPPING MODE" (fuse cut enabled), press the (3) and (7) keys in combination. Then, the mode name stops blinking and the set value is registered.

The life information on the belt, toner, IDs etc. is cleared due to replacement of the EEPROM. Take note that an error occurs in the each unit's life count until the unit is replaced. Following is counts cleared after the replacement of the EEPROM.

Item	Count	Description of Count
Fuser	Fuser Life	A value in letter paper sheets converted from the number of sheets fed after the installation of a new fuser unit.
Transfer Belt	Transfer Belt Life	A value in letter paper sheets converted from the number of sheets fed after the installation of a new belt unit.
Black Imaging Drum Cyan Imaging Drum Magenta Imaging Drum Yellow Imaging Drum	Each Imaging Drum Life	A value in letter paper sheets converted from the installation of a new ID unit.
Black Toner Cyan Toner Magenta Toner Yellow Toner	Toner Consumption	The number of dots printed.
Total Sheets Feed	Printer Life	The total number of page printed.

Black Impressions Cyan Impressions Magenta Impressions Yellow Impressions	Total number of Pages Printed	The number of pages printed after the installation of a new ID unit.
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4.2.3 EEPROM replacement after CRM board replacement

To replace the CRM board, remove the EEPROM on the board and include the EEPROM on a newly installed board (to allow a new board to inherit user-defined settings and font installation information).

When the user's EEPROM is unusable due to its problem, use the new one on the new board, where the destination of the new board must be set. See Section 4.1.3 "CRM board adjustments" for the setting procedure.



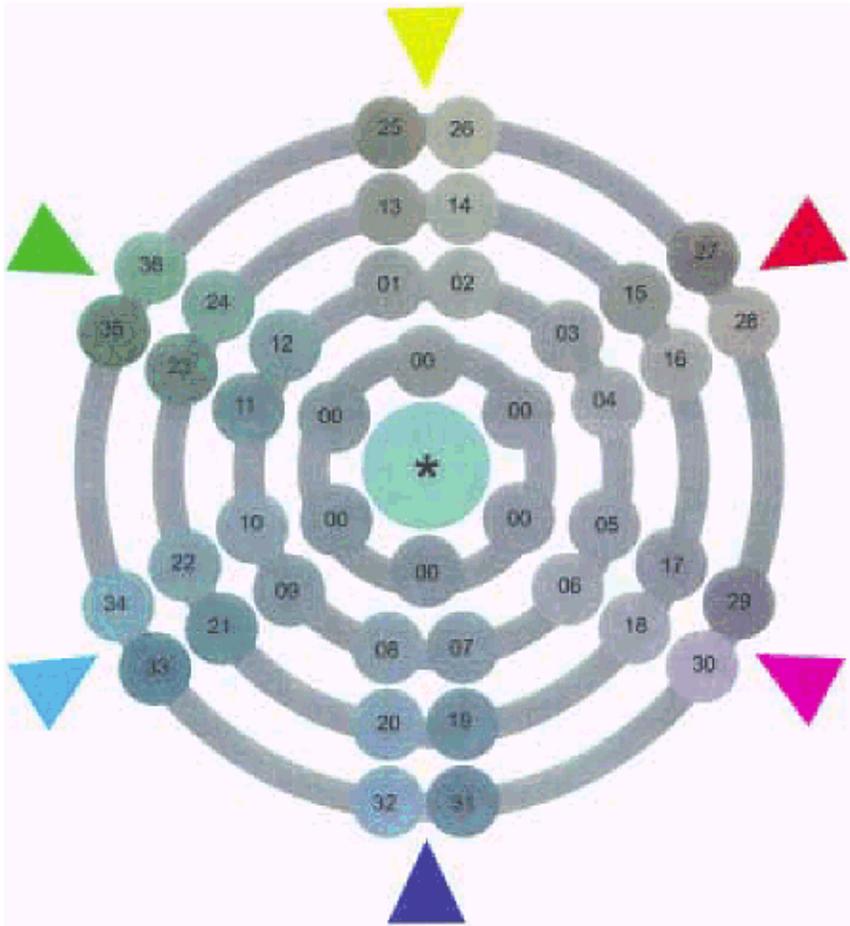
4.3 Color Balance Adjustment

Color balance has been adjusted appropriately when a printer is shipped from the plant. However, it may be out of the appropriate balance during use. In such a case, color balance should be modified.

Note: Density of each color depends on each other. Therefore, adjustment must be repeated several times to reach the correct color balance.

- (1) Set A4 papers in the tray specified on the operator panel.
- (2) Press (0) several times to display [COLOR MENU].
- (3) Press (1) or (5) to display [COLOR BALANCE CORRECTION/PATTERN PRINT].
- (4) Press (3) to start test printing.
- (5) Press (1) to display [COLOR BALANCE CORRECTION/RESET].
- (6) Choose the number of the color closest to the [()] part on the test pattern. If the selected color is [00], the color balance is correct and no adjustment is required. If it is not [00], the color balance should be adjusted in the procedures below.
- (7) Press (2) or (6) several times to display the value selected in Step (6).
- (8) Press 3 33 33 to start test printing.
- (9) Repeat the steps (6)~(8) to approximate the color at the [()] part on the test pattern to [00] as much as possible.
- (10) Press (4) to display [ON LINE].

No.	Part No.	Name	Qty	Recommended Qty per Year			Remarks
1	41304501	2nd/3rd Tray 500 Sheet Feeder Assy	1	-	-	-	ODA
	41304503	2nd/3rd Tray 500 Sheet Feeder Assy	1	-	-	-	OEL/APS
2	41780302	Feeder control PWB	1	-	-	-	
3	41400502	Cover-Front OP Assy	1	-	-	-	
4	41462301	Lower Connector w/harness	1	-	-	-	
5	41462201	Upper Connector w/harness	1	-	-	-	
6	41581101	Feeder Drive Assy	1	-	-	-	
7	40366501	Feeder Motor	1	-	-	-	
8	41401001	Feeder Clutch	1	-	-	-	



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5.0 Periodic Maintenance

5.1 Parts Replaced Periodically

5.2 Cleaning

5.3 Cleaning LED Lens Array

5.4 Cleaning Pickup Roller



5.1 Parts Replaced Periodically

It is recommended that the following parts be periodically replaced, as specified, by users (when they are not replaced, the print quality is not assured and printer problems may result).

Parts Name	Time of Replacement	Condition for Replacement	Adjustment after Replacement
Toner Cartridge	Time when "TONER LOW" is displayed.	10,000 pages are printed.	None
I/D Unit	ID Time when "CHANGE XXX DRUM" is displayed.	20,000 pages are printed (3 pages per job).	Perform color balance
Fuser Unit	Fuser Unit Time "CHANGE FUSER UNIT" is displayed.	60,000 pages are printed.	None
Transfer Belt Unit	Belt Unit Time when "CHANGE BELT UNIT" is displayed.	60,000 pages are printed.	None

Note: The above periodical parts replacement is performed by users.



5.2 Cleaning

Clean the inside and outside of the printer with waste and a small vacuum cleaner (hand cleaner) as the case may be.

Caution! Do not touch the terminals of the image drums, the LED lens array and the LED head connector.

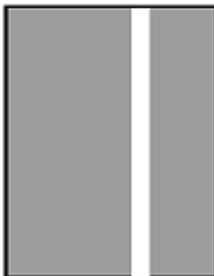


5.3 Cleaning LED Lens Array

While white belts or lines (voids, light areas) run the length of a printed page, clean the LED lens array.

Caution! Be sure to use the LED head cleaner to clean the LED lens array (The LED head cleaner is packed together with the toner cartridge).

White belt, White line (Void, Light area)





5.4 Cleaning Pickup Roller

When lines run the length of a printed paper, clean the pick up roller.

Caution! Use a soft cloth so as not to damage the roller surface.



6.1 Before Troubleshooting

- (1) Check the basic check items covered in the user's manual.
- (2) Obtain as much information about problems from users as you can.
- (3) Perform inspections in conditions close to those in which problems occurred.



6.2 Checking before Troubleshooting Image Problems

- (1) Is the printer's operating environment correct?
- (2) Have the consumables (toner, drum cartridges) been properly replaced?
- (3) Is the correct media being used? Refer to the media specification.
- (4) Are the image drum cartridges correctly installed?



6.3 Precautions in Troubleshooting Image Problems

- (1) Do not touch the surface of the OPC drum with hands or allow foreign matter to contact it.
- (2) Do not expose the OPC drum to direct sunlight.
- (3) Do not touch the fuser unit with hands as it is hot.
- (4) Do not expose the image drums to light for five minutes or more at room temperature.



6.4 Preparation for Troubleshooting

(1) Control panel display

The failure status of the printer is provided on the LCD (liquid crystal display) of the operator panel.

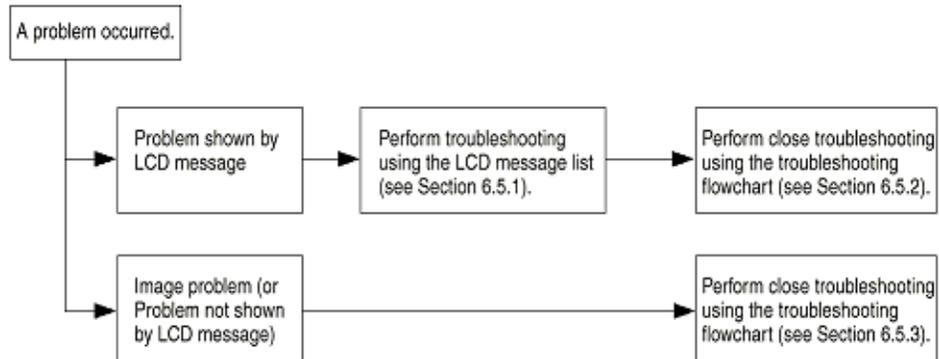
Take appropriate corrective actions according to messages appeared on the LCD.



6.5 Troubleshooting

When problems occur in the printer, troubleshoot them using the following procedure:

6.5.1 LCD messages list





6.5.1 LCD messages list

When detects unrecoverable errors, the printer provides the following service call error message:

Service Call
nnn : Error

Note! nnn is an error code.

While a service call appears, an error code accompanied by its error information is shown on the lower LCD. Error codes, their meanings and actions to be taken are listed in Table 6-1-1.

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

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



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

Message	Cause	Error Description		Solutions
Service Call 001: Error ~ 011: Error	CPU Exception	Is the error message displayed again? Is the error message displayed again?	Yes Yes	Turn the printer off/on. Replace the CRM board. (The EEPROM needs replacement).
Service Call 020: Error	CU ROM Hash Check Error 1	Is the program ROM DIMM installed properly? Can the printer recover from the error by replacing the program ROM DIMM?	No Yes No	Re-install the program ROM DIMM. Replace the program ROM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 030: Error	CU Slot 1 DIMM Ram Check Error	Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No Yes No	Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 031: Error	CU Slot2 DIMM RAM Check Error	Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No Yes No	Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 032: Error	CU Slot3 DIMM RAM Check Error	Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No Yes No	Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 033: Error	CU Slot4 DIMM RAM Check Error	Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No Yes No	Reinstall the concerned RAM DIMM. Replace the RAM DIMM.

				Replace the CRM board. (The EEPROM needs replacement).
Service Call 034: Error	RAM Configuration Error. The CU RAM installation order was not followed.	Is the installation order followed? Can the printer recover from the error by replacing the RAM DIMMs?	No Yes No	Correct the installation order. Replace the RAM DIMMs. Replace the CRM board. (The EEPROM needs replacement).
Service Call 035: Error	Slot1 RAM Spec. Error. The CU RAM Slot1 DIMM specification is not supported.	Is the RAM DIMM a genuine part? Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No No Yes No	Use a genuine RAM DIMM. Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 036: Error	Slot2 AM Spec Error. The CU RAM Slot2 DIMM specification is not supported.	Is the RAM DIMM a genuine part? Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No No Yes No	Use a genuine RAM DIMM. Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 037: Error	Slot3 RAM Spec. Error. The CU RAM Slot3 DIMM specification is not supported.	Is the RAM DIMM a genuine part? Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No No Yes No	Use a genuine RAM DIMM. Reinstall the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 038: Error	Slot4 RAM Spec. Error. The CU RAM Slot4 DIMM specification is not supported.	Is the RAM DIMM a genuine part? Is the concerned RAM DIMM installed properly? Can the printer recover from the error by replacing the RAMM DIMM?	No No Yes No	Use a genuine RAM DIMM. Re-install the concerned RAM DIMM. Replace the RAM DIMM. Replace the CRM board. (The EEPROM needs replacement).
Service Call 040: Error	CU EEPROM Error	Can the printer recover from the error by replacing the EEPROM on the CU board?	Yes No	Replace the EEPROM. (Settings of the user must be restored on the new). Replace the CRM

				board. (The EEPROM needs replacement).
Service Call 041: Error	U Flash Error. On-CU-board Flash ROM Error	Does the error message appear again?	Yes	Replace the CRM board. (The EEPROM needs replacement).
Service Call 050: Error	Operator Panel Error	Does the error message appear again?	Yes	See the flowchart for the problems with no LCD message displayed.
Service Call 051: Error	CU Fan Error. On-CU-board CPU Cooling Fan Problem	Is the on-Cu-board connector connected properly? Can the printer recover from the error by replacing the fan?	No Yes No	Connect the connector properly. Replace the fan. Replace the CRM board. (The EEPROM needs replacement).
Service Call 063: Error	Network Comm. Error. CU - NIC H/W I/F Problem	Is the network board installed properly? Can the printer recover from the error by replacing the network board?	No Yes No	Install the network board properly? Replace the network board. Replace the CRM board. (The EEPROM needs replacement)
Service Call 070: Error	CANT_HAPPEN. PS F/W Problem Detection	Is it recovered by turning the printer off/on.	No	Replace the CRM board. (The EEPROM needs replacement).
Service Call 072: Error	Engine Communication Error PU - CU I/F Error	Is the CU Assy installed properly? Can the printer recover from the error by replacing the CRM board?	No Yes	Install the CU Assy properly. Replace the CRM board. (The EEPROM needs replacement).
Service Call 073: Error ~ 075: Error	Video Overrun Detect	Is the CU Assy installed properly? Can the printer recover from the error by replacing the CRM board?	No Yes	Install the CU Assy properly. Replace the CRM board. (The EEPROM needs replacement).
Service Call 100/101: Error	Error detected at Engine ROM Checksum when turned on.	Does the error repeat?	No Yes	Replace the PU board. Replace the engine control board (71K).
Service Call 102: Error	Error detected at Engine RAM Read/Write when turned on.	Does the error repeat?	Yes	Replace the engine control board (71K).
Service Call 103: Error	Error detected at Engine SRAM	Does the error repeat?	Yes	Replace the engine control board (71K).

	Read/Write when turned on.			
Service Call 104: Error	Error detected at Engine EEPROM Checksum when turned on.	Does the error repeat?	Yes	Replace the engine control board (71K).
Service Call 105: Error	EEPROM not detected when turned on.	No EEPROM? Does the error repeat?	Yes Yes	Confirm the existence of EEPROM. Without it mount an EEPROM. Replace the engine control board (71K).
Service Call 106: Error	Error detected at Engine Control Logic.	Does the error repeat?	Yes	Replace the engine control board (71K).
Service Call 120: Error ~ 122 Error	Error detected at the Power unit cooling fan in the Controller cavity.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the fan motor.
Service Call 123: Error	Inappropriate ambient RH detected by a sensor	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the RH sensor.
Service Call: 124 Error	Inappropriate ambient temp. detected by a sensor.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the temperature sensor.



6.5.2 LCD Preparation for Troubleshooting

1) Display on operation panel

The failure status of the printer is provided on the LCD (liquid crystal display) of the operator panel.

Perform appropriate troubleshooting according to messages on the LCD.

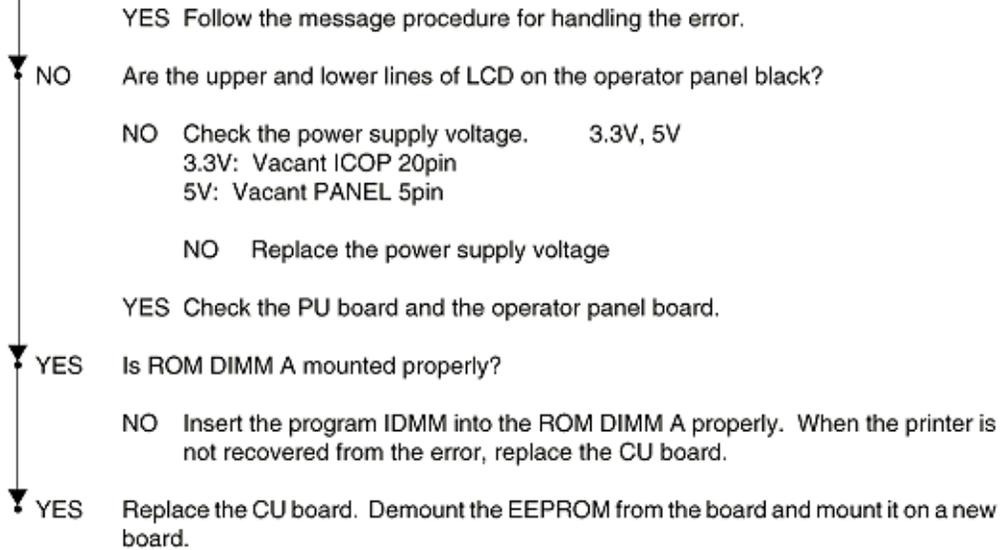
No.	Failure	Flowchart Number
1	Printer Malfunction after Turn-on	1
2	JAM Error	
	Loading Jam (1st tray)	2-1
	Paper Loading Jam (Multi-purpose Tray)	2-2
	Paper Feed Jam	2-3
	Paper Exit Jam 2-4	2-4
	DUPLEX Jam	2-5
3	Paper Size Error	3
4	Image Drum Unit Up/Down Operation Error	4
5	Fuser Unit Error	5
6	Fan Motor Error	6

Note: When replacing the engine board (71K PWB), uninstall the EEPROM chip on the board and install it on the new board.

(2) CU Assy troubleshooting

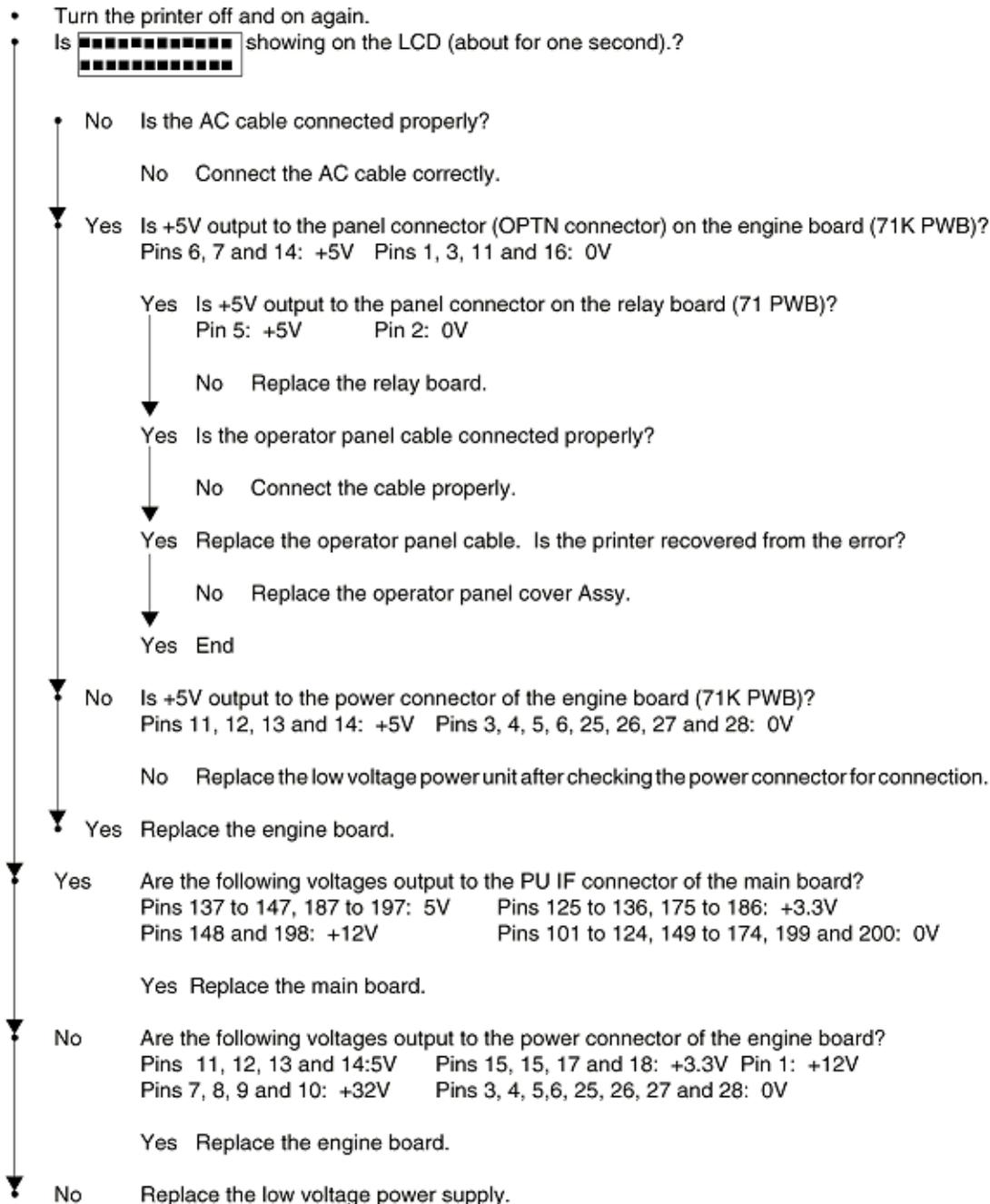
The CU Assy does not operate.

Is the error message displayed?





(1) The printer does not operate properly after power-on.



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(2) Jams

2-1 Paper Loading Jam (1st Tray)

2-2 Paper Loading Jam (Multi-Purpose Tray)

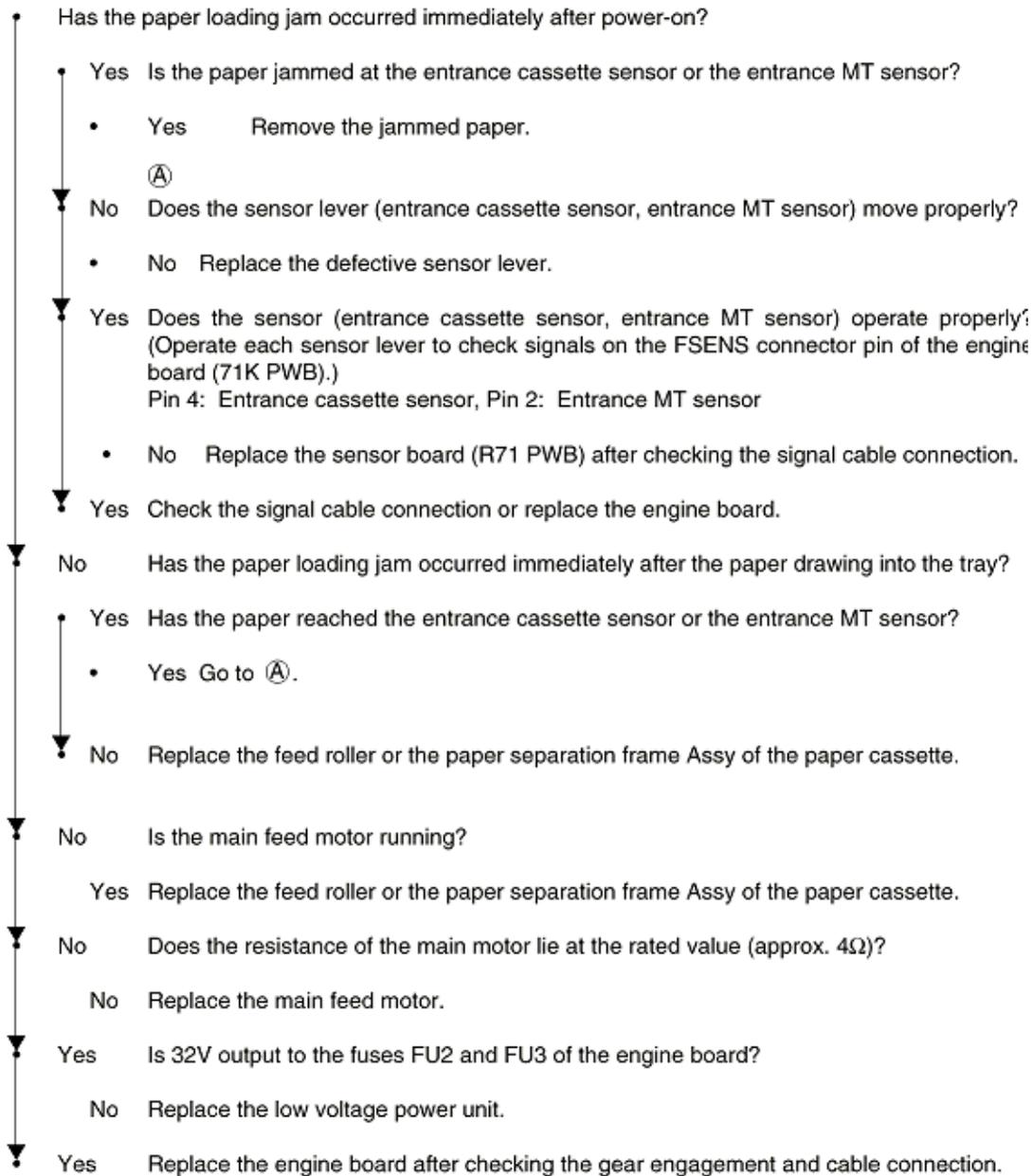
2-3 Paper feed jam

2-4 Paper exit jam

2-5 Duplex Jam



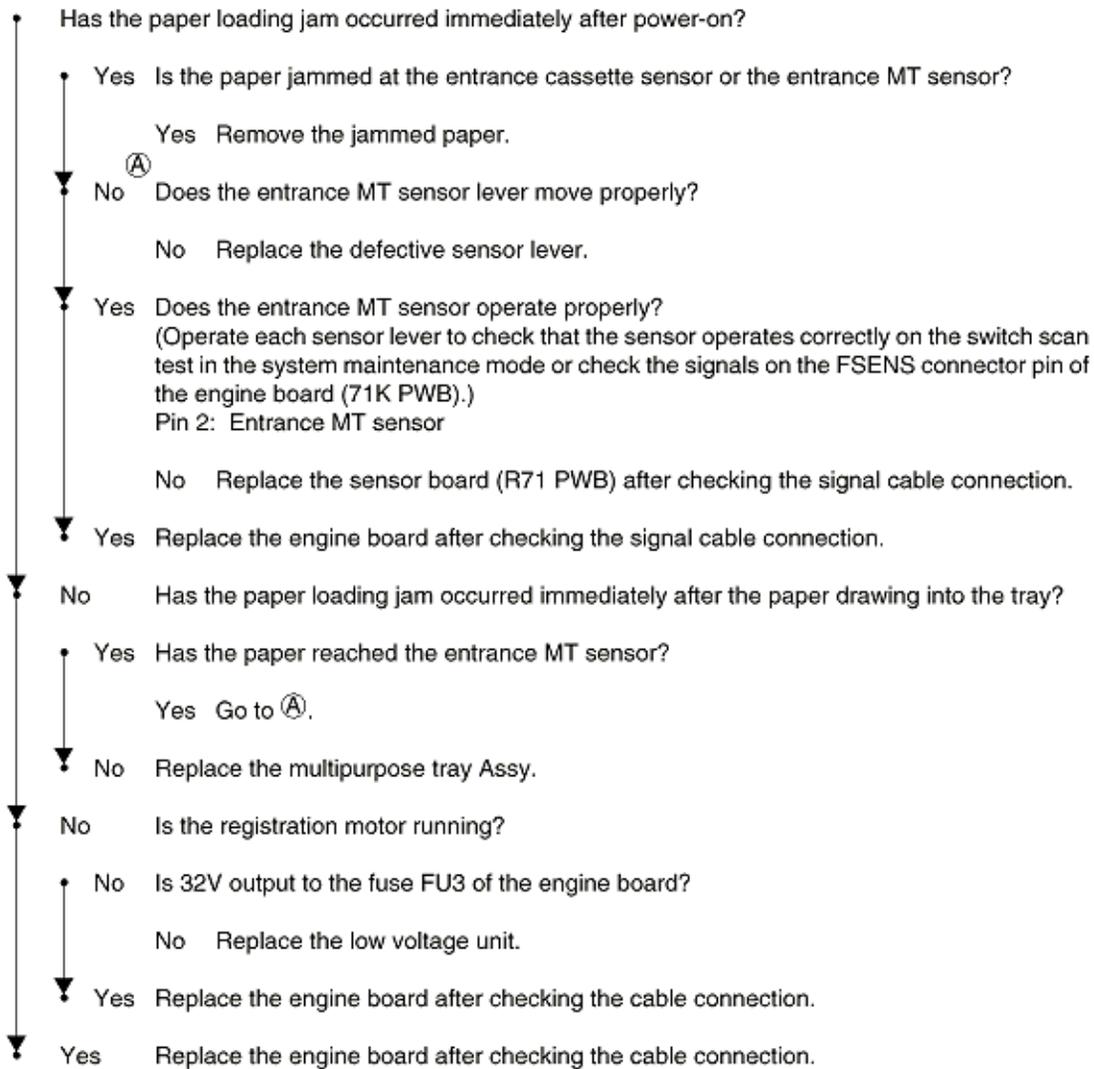
(2)-1 Paper Loading Jam (1st Tray)



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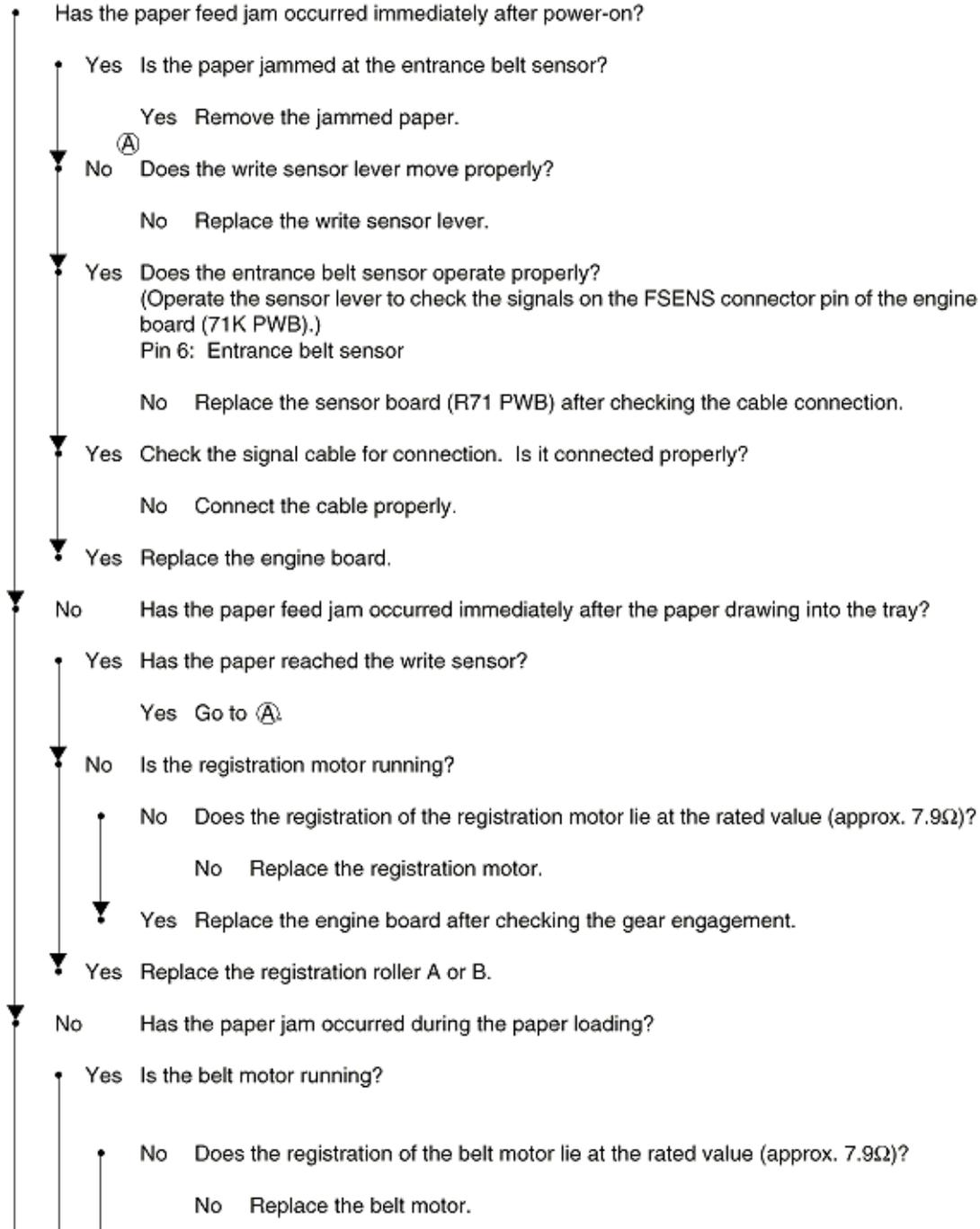


(2)-2 Paper Loading Jam (Multi-Purpose Tray)





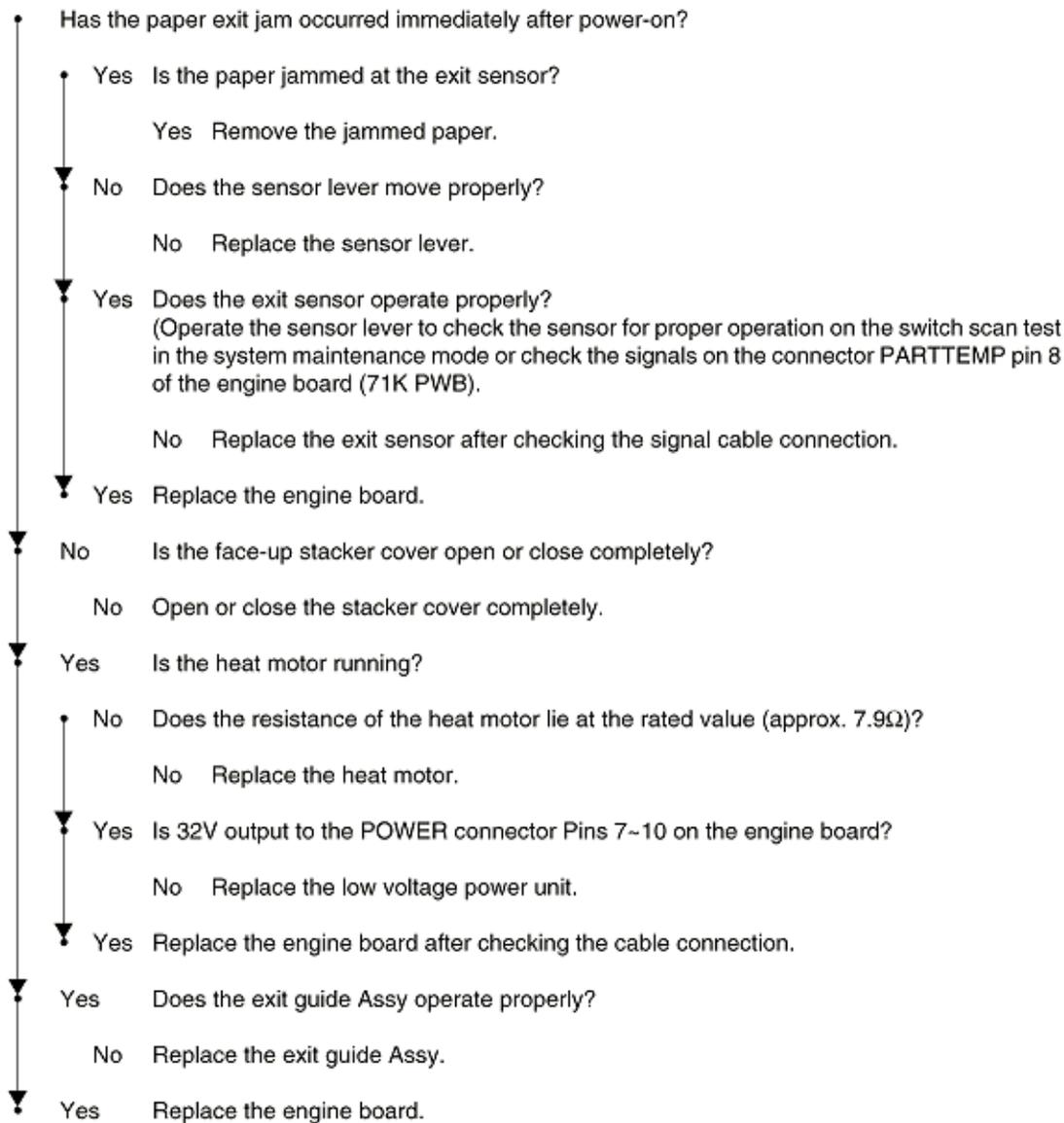
(2)-3 Paper feed jam



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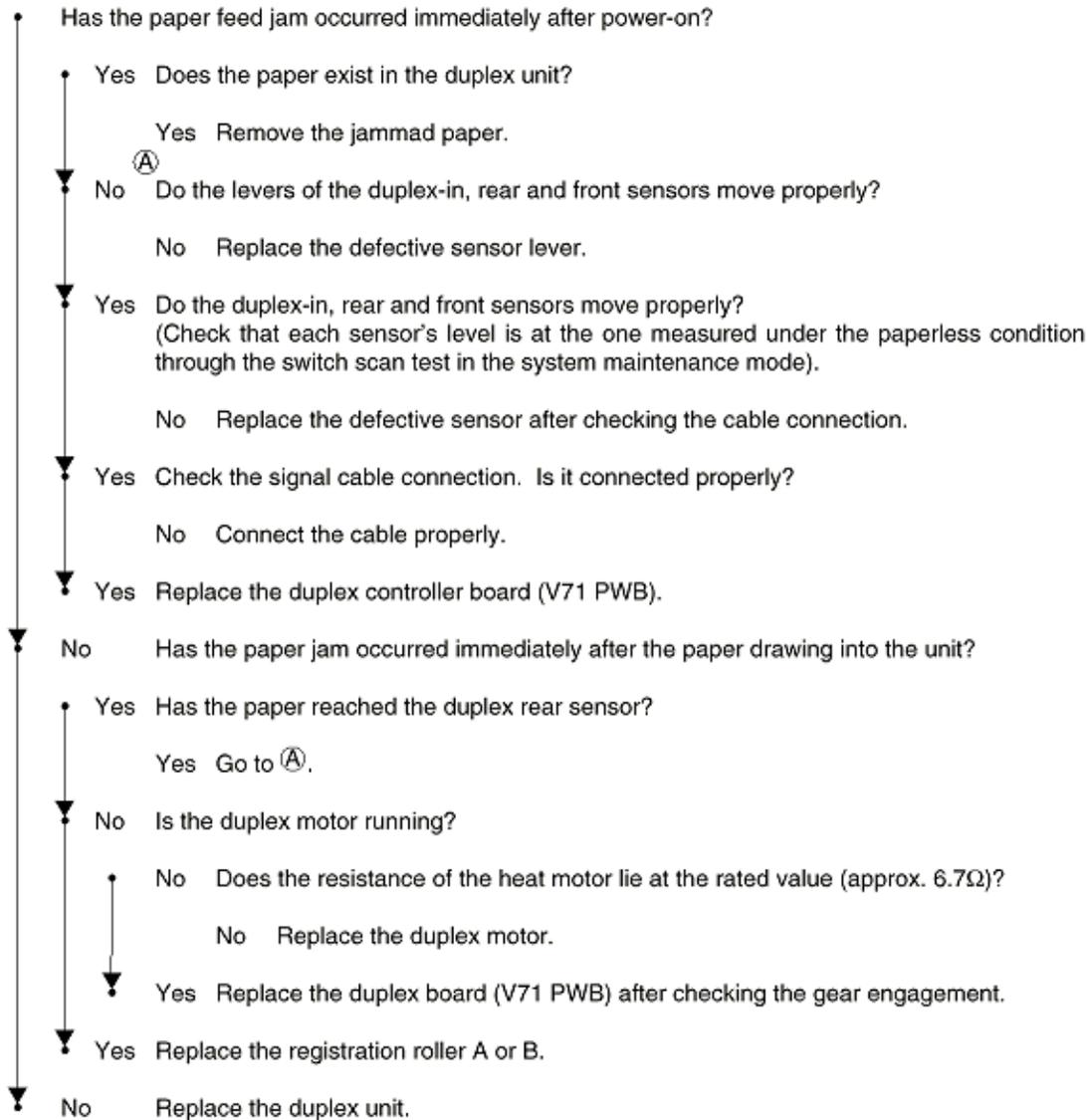


(2)-4 Paper Exit Jam





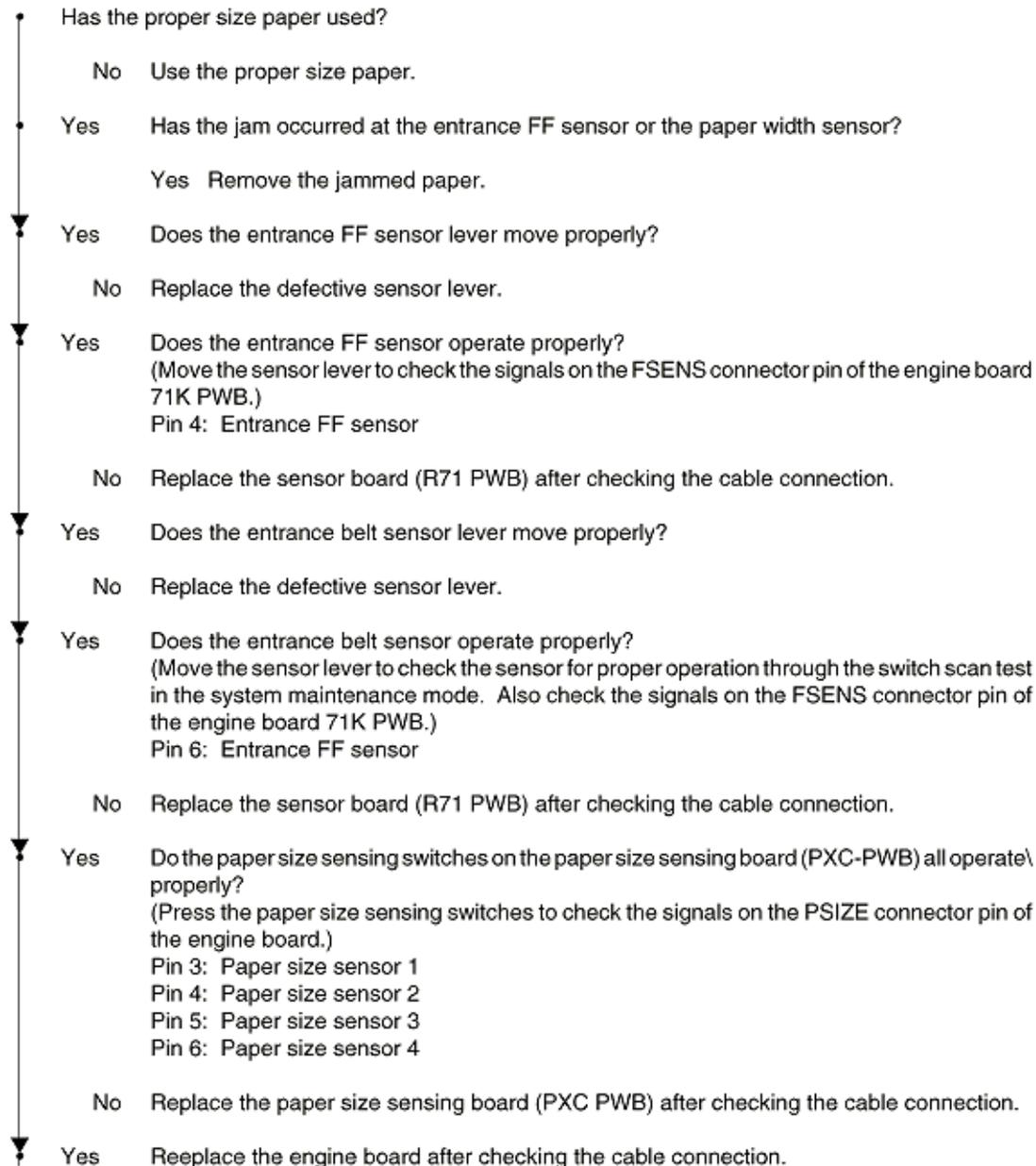
(2)-5 Duplex Jam





(3) Paper Size Error

③ Paper Size Error



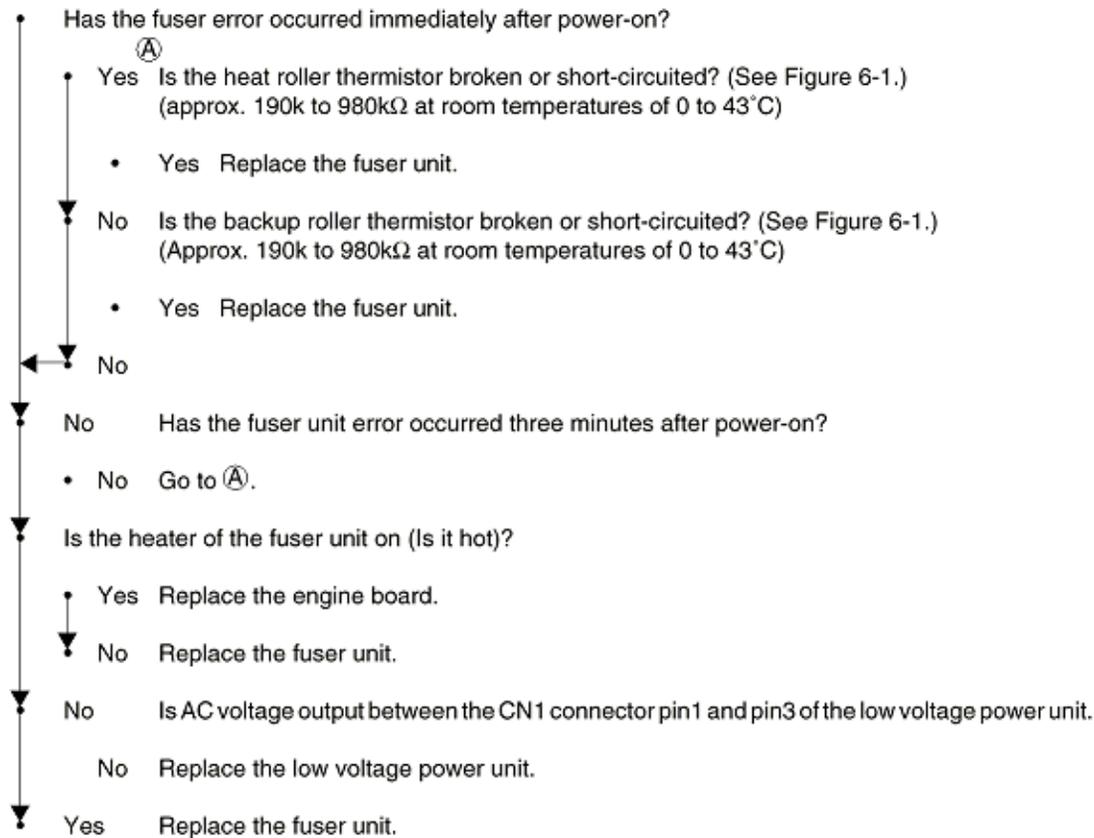


(4) Image Drum Unit (ID) Up-and-Down Operation Error

- Turn the printer off and, after a few seconds, on again.
- Are all the ID drums revolving properly during printing?
 - No Does the resistance of the ID motor lie at the rated value (approx. 4.0Ω)?
 - No Replace the defective IDU motor.
 - ▼ Yes Is 32V output to F3 and F5 of the engine board?
 - No Replace the low voltage power unit.
 - ▼ Yes Replace the engine board after checking the cable connection.
 - ▼ Yes Do the IDU sensor terminals operate properly?
 - No Replace the defective gear or sensor terminals after checking the gear engagement and the sensor terminal operation.
 - ▼ Yes Does the ID sensor lever move properly?
(Check the signals on the JODEN connector pin of the driver board (71K PWB).)
Pin 12: IDU sensor Yellow
Pin 2: IDU sensor Magenta
Pin 4: IDU sensor Cyan
Pin 14: IDU sensor Black
Do all lie at 5V level or 0V level?
 - No Replace the connection board (N71 PWB).
 - ▼ Yes Replace the engine board after checking the cable connection between connection board (N71 PWB) and the engine board (71K PWB).



(5) Fusing Unit Error



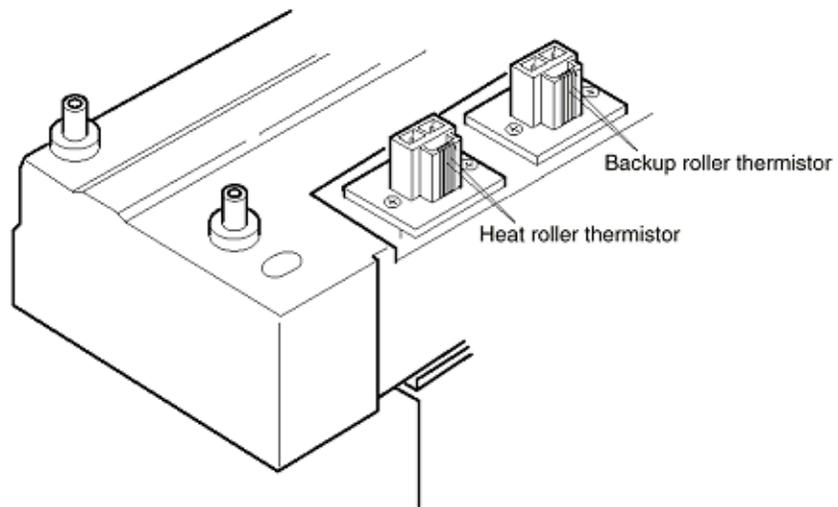
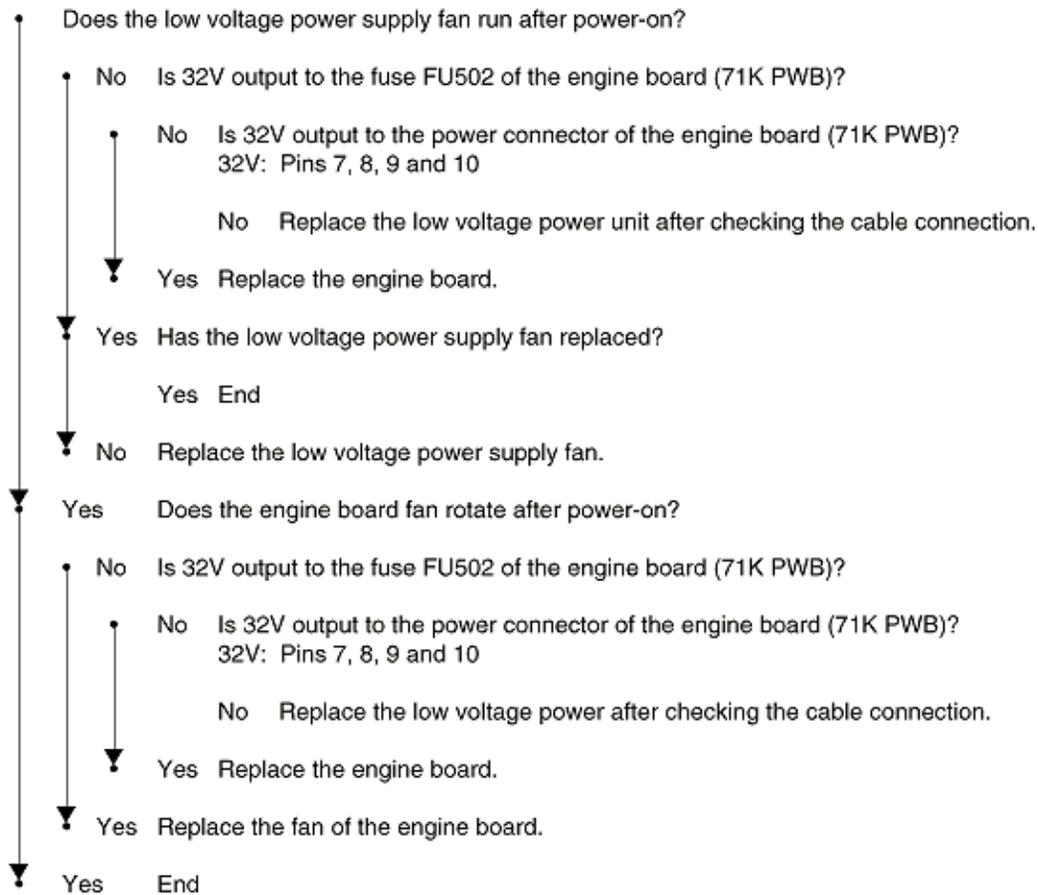


Figure 6-1



(6) Motor Fan Error

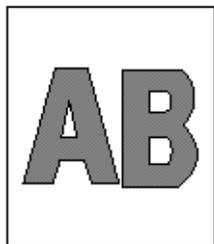




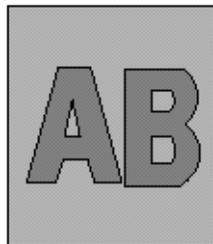
6.5.3 Troubleshooting image problems

When the printout images are not satisfactory, follow the troubleshooting steps listed below.

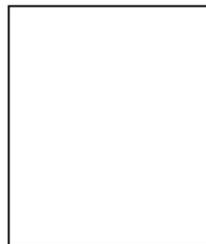
Printout problem	Flowchart No.
Light or faded image on whole page, or color misalignment on whole page (Figure 6-2 A)	(1)
Dirty background (Figure 6-2 B)	(2)
Blank page (Figure 6-2 C)	(3)
Vertical belt or line (black or color belt, or black or color line) (Figure 6-2 D)	(4)
Vertical white belt or line, or uneven-color belt or line (Figure 6-2 F)	(5)
Poor fusing (ink spreads or peels when touched with fingers).	(6)
Defective image of regular interval (Figure 6-2 E).	(7)
Missing image	(8)
Color misalignment	(9)
Color different from original one	(10)
Figure 6-3	Figure 6-3



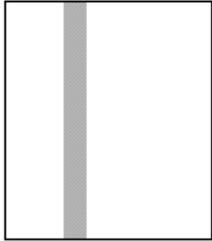
(A) Light or faded image on whole page



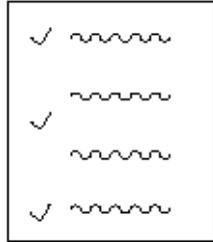
(B) Dirty background



(C) Blank



(D) Vertical black belt or line



(E) Defective image of regular interval



(F) Vertical white belt or line

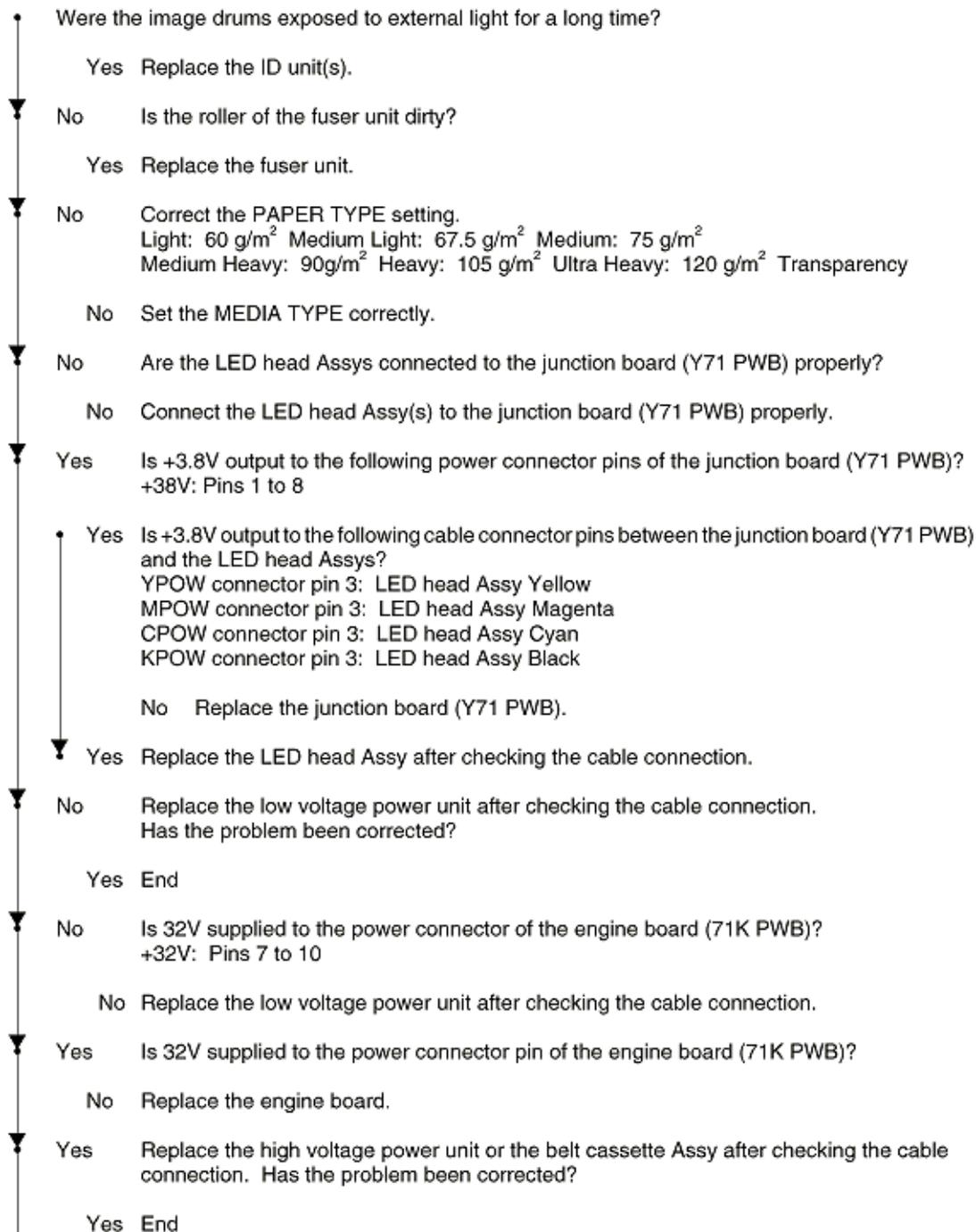


(1) Light or Faded Image on Whole Page, or Color Misalignment on Whole Page (Figure 6-2 A)

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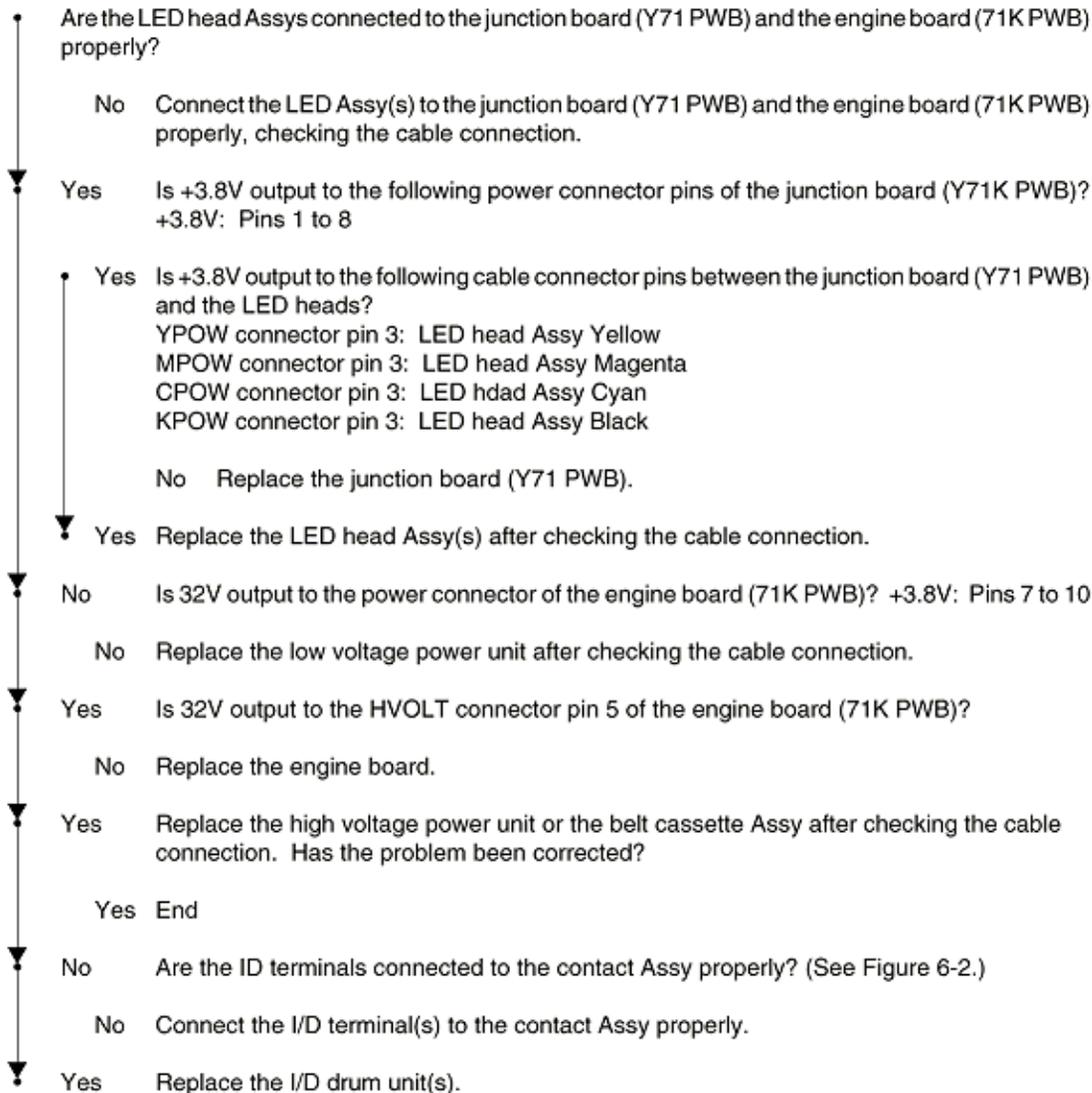
(2) Dirty Background (Figure 6-2 B)



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(3) Blank Page (Figure 6-2 C)



- Notes:**
1. When replacing the engine board (71K PWB), demount the EEPROM from the board and mount it on a new board.
 2. When the EEPROM is not replaced, see Section 4.2.2.

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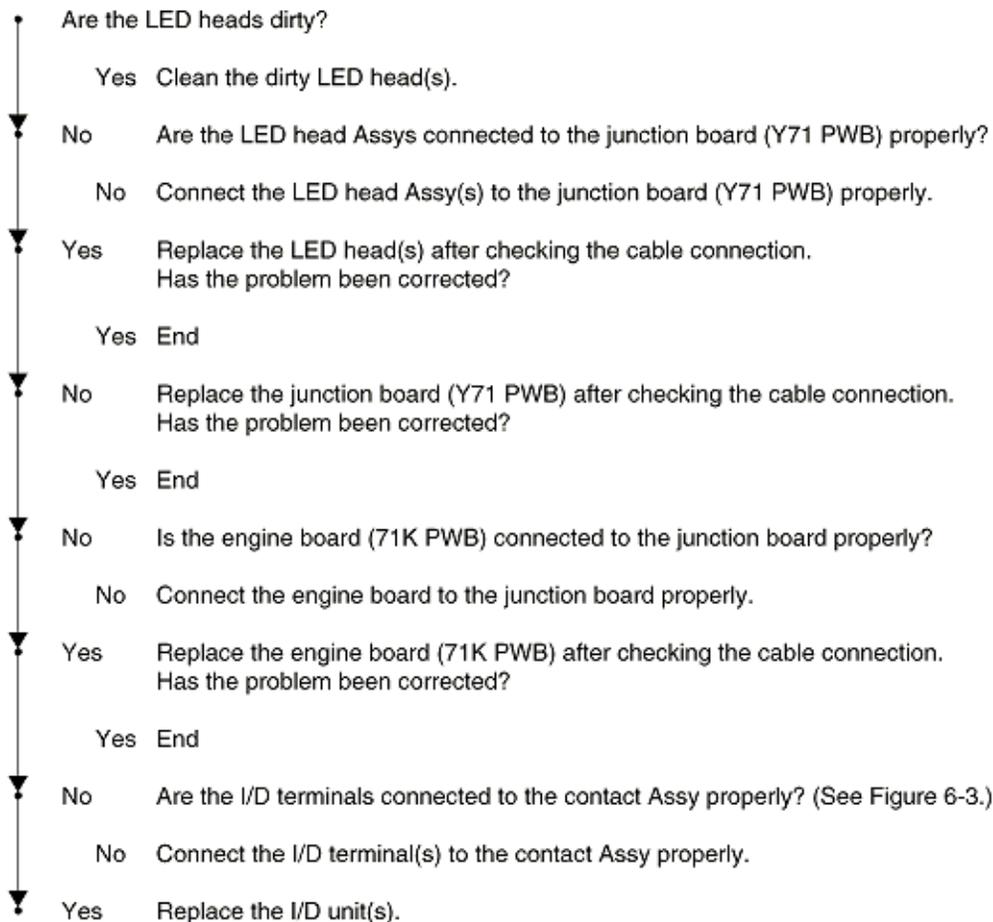
(4) Vertical Belt or Line (Black or Color Belt, or Black or Color Line) (Figure 6-2 D)

- Are the LED head Assys connected to the junction board (Y71 PWB) properly?
 - ▼ No Connect the LED head Assy(s) to the junction board properly.
 - ▼ Yes Replace the LED head Assy(s) after checking the cable connection.
Has the problem been corrected?
 - ▼ Yes End
 - ▼ No Replace the junction board (Y71 PWB) after checking the cable connection.
Has the problem been corrected?
 - ▼ Yes End
 - ▼ No Is the engine board (71K PWB) connected to the junction board (Y71 PWB) properly?
 - ▼ No Connect the engine board to the junction board properly.
 - ▼ Yes Replace the engine board (71K PWB) after checking the cable connection.
Has the problem been corrected?
 - ▼ Yes End
 - ▼ No Are the I/D terminals connected to the contact Assy properly? (See Figure 6-3.)
 - ▼ No Connect the I/D terminal(s) to the contact Assy properly.
 - ▼ Yes Replace the I/D unit(s).

- Notes:**
1. When replacing the engine board (71K PWB), demount the EEPROM from the board and mount it on a new board.
 2. When the EEPROM is not replaced, see Section 4.2.2.



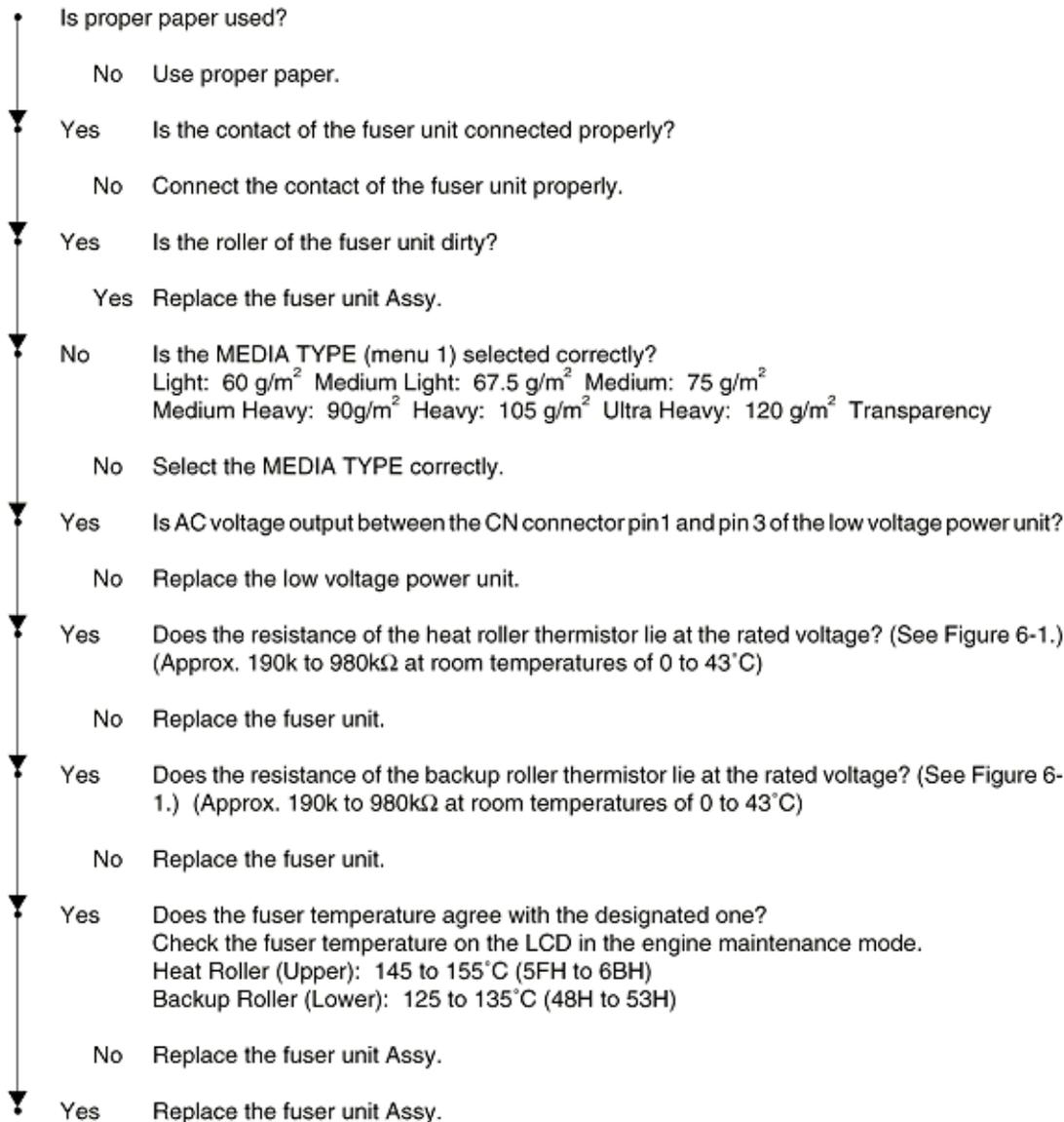
(5) Vertical White Belt or Line, or Uneven-Color Belt or Line (Figure 6-2 F)



- Notes:**
1. When replacing the engine board (71K PWB), demount the EEPROM from the board and mount it on a new board.
 2. When the EEPROM is not replaced, see Section 4.2.2.



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



- Notes:** 1. When replacing the engine board (71K PWB), demount the EEPROM from the board and mount it on a new board.
2. When the EEPROM is not replaced, see Section 4.2.2.

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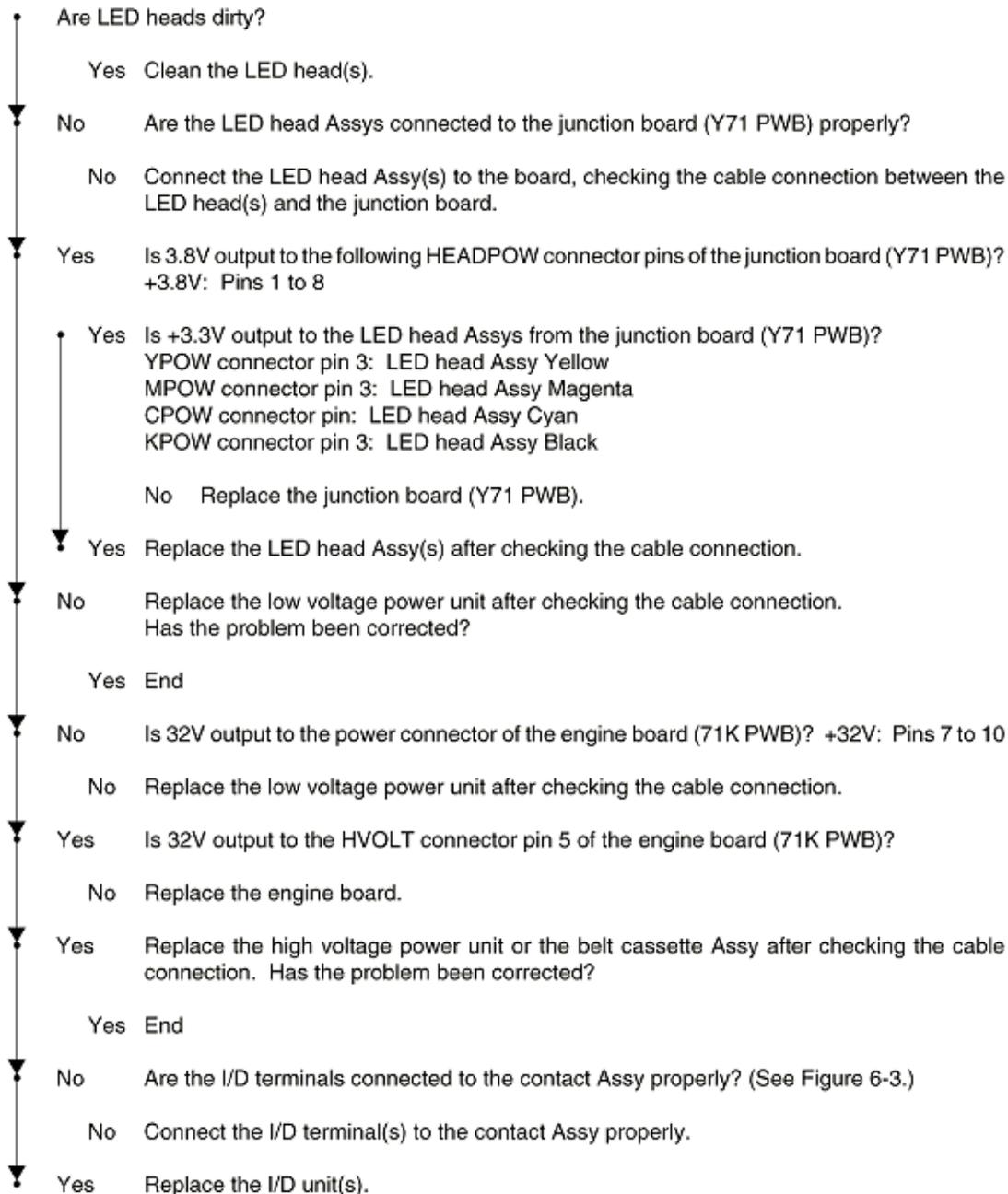
(7) Defective Image of Regular Interval (See Figure 6-2 E)

Interval	Problem	Troubleshooting
3.709 inches	Image Drum	Replace the image drum unit.
2.504 inches	Developing Roller	Replace the image drum unit.
2.276 inches	Toner Supply Roller	Replace the image drum unit.
1.732 inches	Charging Roller	Replace the image drum unit.
4.453 inches	Fuser Upper Roller	Replace the fuser unit.
4.453 inches	Fuser Lower Roller	Replace the fuser unit.
2.276 inches	Transfer Roller	Replace the belt Assy

Note! The life counters of the I/D units, fuser unit and belt cassette unit are automatically reset upon replacement of the units, respectively.



(8) Missing Image



Notes: 1. When replacing the engine board (71K PWB), demount the EEPROM from the board and

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(9) Color Misalignment

Is the color menu of the user menu mode "Automatic Color-Registration Adjustment" OFF?

Yes Make it on. Recovered?

Yes End

No "TONER LOW" is displayed.

Yes Replenish toner. Recovered?

Yes End

No Execute the color registration test in the engine maintenance mode.
Procedures: Enter the self-diagnostic mode (Level 1) of the engine maintenance mode.

```
DIAGNOSTIC MODE
```

```
XX.XX.XX
```

Press Keys (0) and (4) to enter the self-diagnostic mode (Level 2).

```
ENGINE DIAG LEVEL2
```

Press Key (1) three times to display "REG ADJUST TEST".

```
REG ADJUST TEST
```

Press Key (2) once to display "REG ADJUST EXECUTE".

```
REG ADJUST EXECUTE
```

Press Key (3) to execute automatic color-registration adjustment.
(The motor starts rotating to adjust color-registration.)

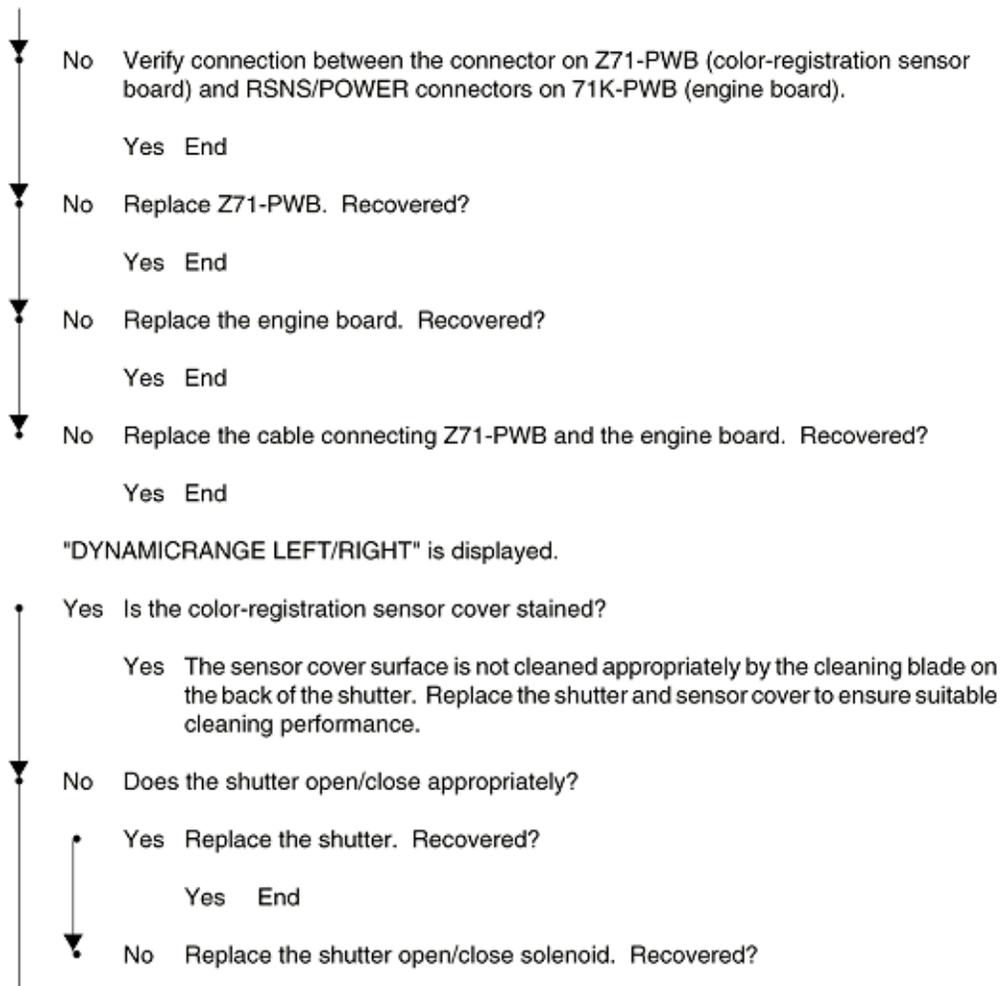
Color registration was not adjusted (that is, the motor did not rotate) and "OK" was displayed immediately.

Yes Some error other than color misalignment has occurred. After recovering from the error, has the color registration become normal?

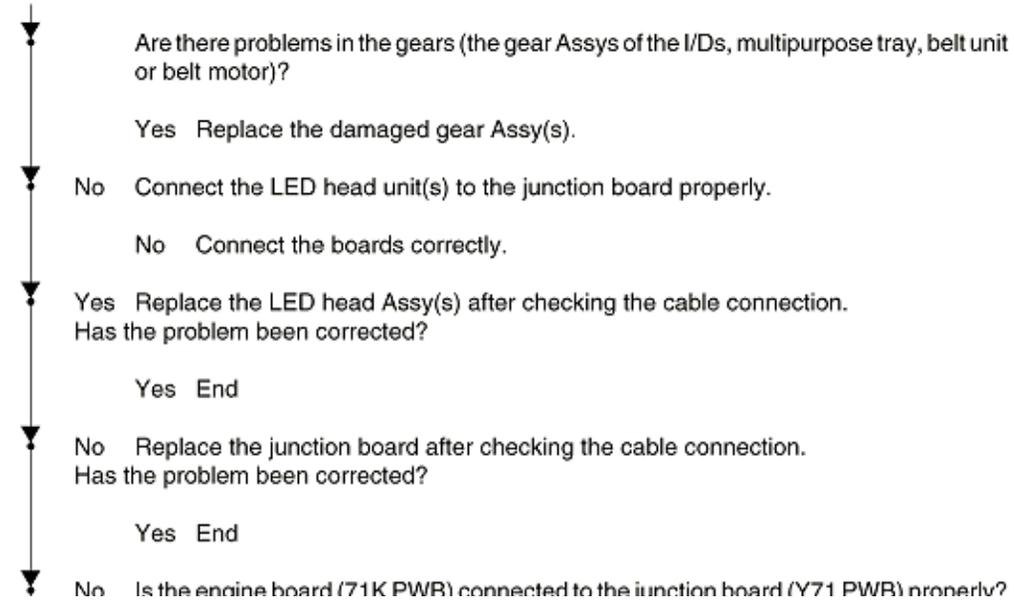
Yes End

No "NO CALIBRATION LEFT/RIGHT" is displayed

(A)



(B)



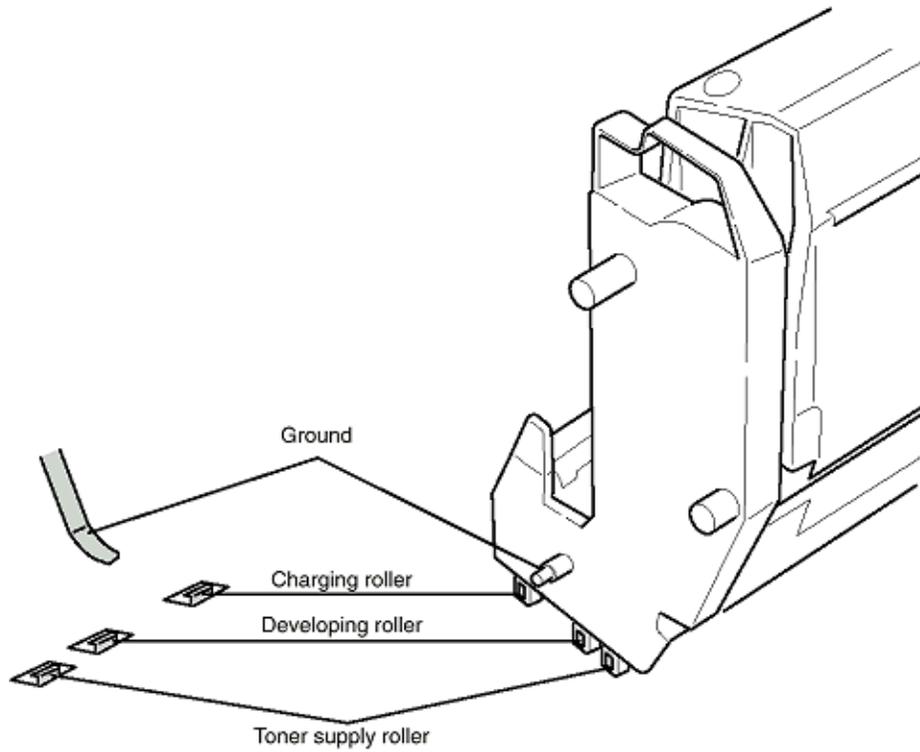


(10) Color Different from Original One

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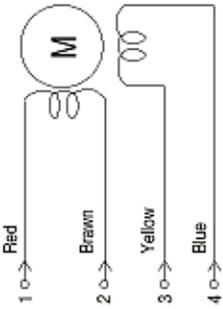
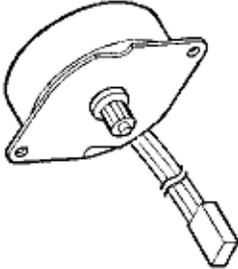
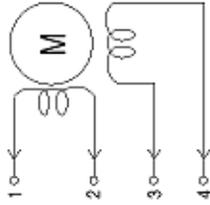
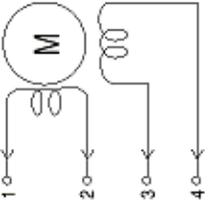


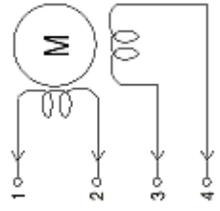
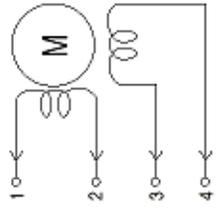
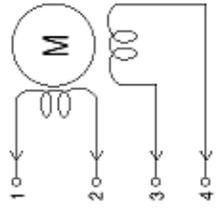
Figure 6-3

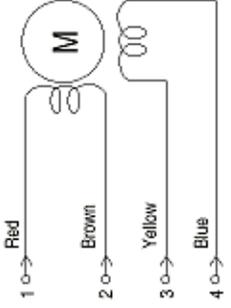
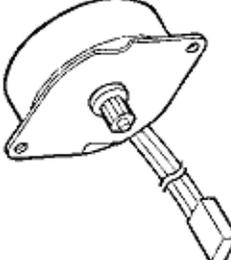
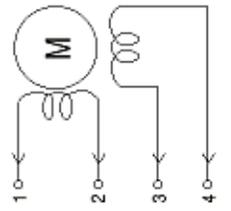
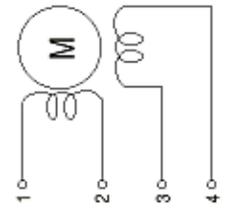




7.1 Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Transport Bell Motor			<p>Between pins 1 and 2: 7.9Ω Between pins 3 and 4: 7.9Ω</p>
Main Motor (Y)			<p>Between pins 1 and 2: 4Ω Between pins 3 and 4: 4Ω</p>
Main Motor (M)			<p>Between pins 1 and 2: 4Ω Between pins 3 and 4: 4Ω</p>

Unit	Circuit Diagram	Illustration	Resistance
Main Motor (C)			Between pins 1 and 2: 4Ω Between pins 3 and 4: 4Ω
Main Motor (K)			Between pins 1 and 2: 4Ω Between pins 3 and 4: 4Ω
Registration Motor			Between pins 1 and 2: 7.9Ω Between pins 3 and 4: 7.9Ω

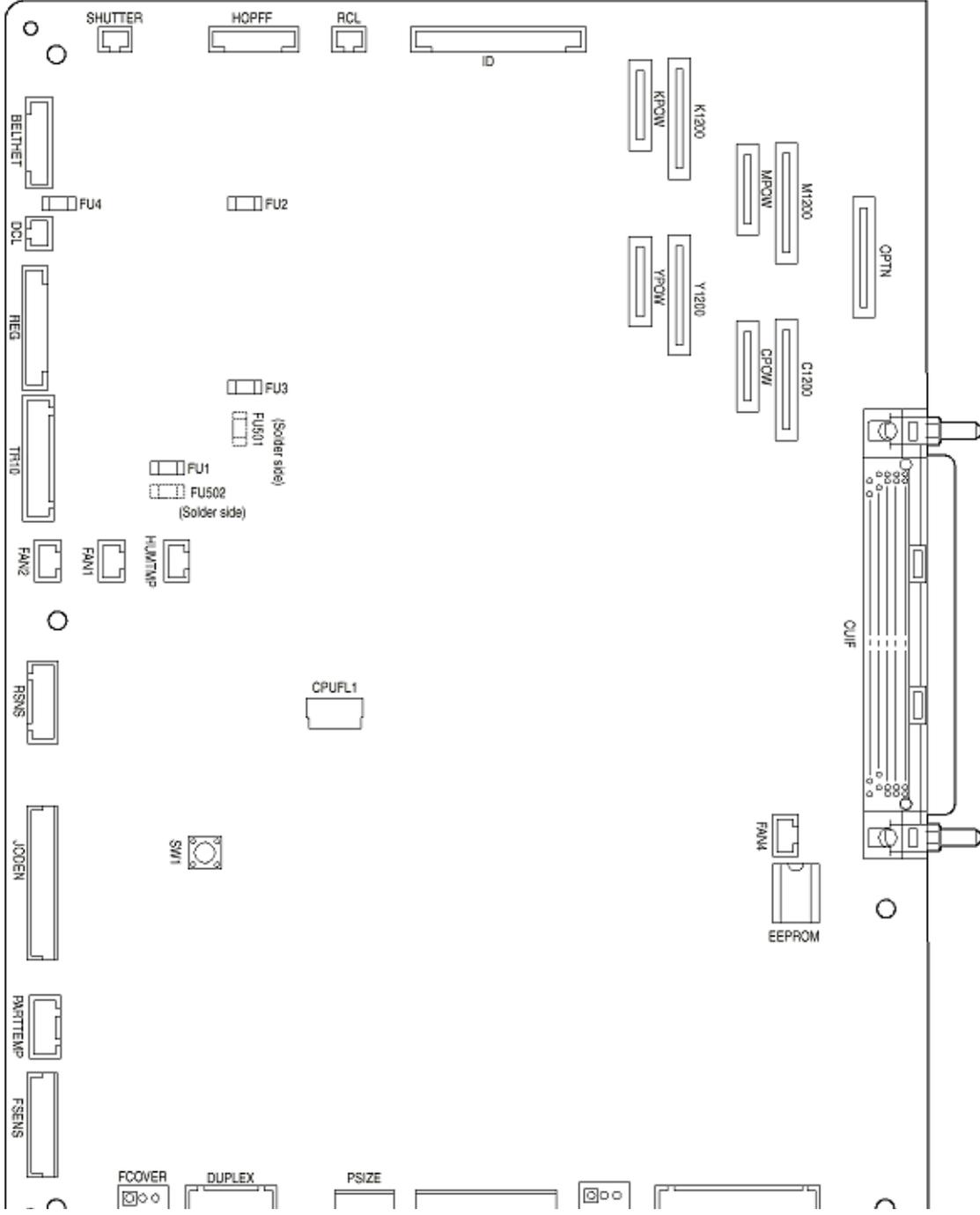
Unit	Circuit Diagram	Illustration	Resistance
Fusar Motor			<p>Between pins 1 and 2: 7.9Ω Between pins 3 and 4: 7.9Ω</p>
Feeder Motor			<p>Between pins 1 and 2: 7.9Ω Between pins 3 and 4: 7.9Ω</p>
Duplex Motor			<p>Between pins 1 and 2: 6.7Ω Between pins 3 and 4: 6.7Ω</p>

Unit	Circuit Diagram	Illustration	Resistance
Main Cooling Fan Low Voltage Power Unit			
Electrical Chassis Cooling Fan			
Fuser Unit			<p>1. Upper Roller Side Between pins "a" and "b": Between pins "c" and "d": Open Between pins "e" and "f": 363kΩ (at 25°C)</p> <p>2. Backup Roller Side Between pins "a" and "b": Between pins "c" and "d": 0Ω or open Between pins "e" and "f": 363kΩ (at 25°C)</p>



7.2 Program/Font ROM Location

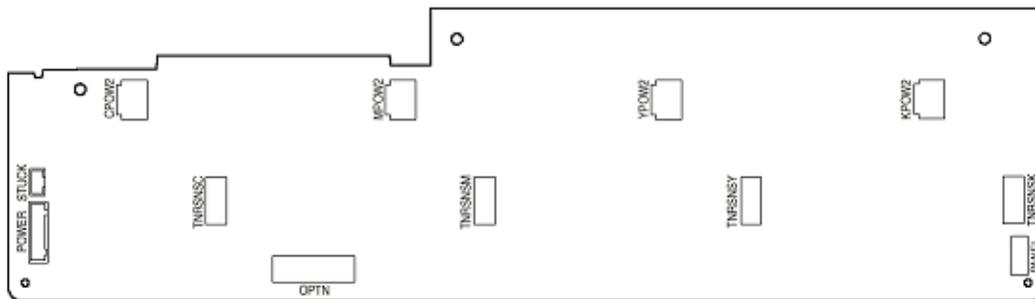
(1) Printer Engine Controller PWB (71K-PWB)



(2) Main Controller PWB

Note! The option SDRAM DIMMs must be inserted in descending order of the parenthesized type No. appeared on the label of each DIMM into the slots 1, 3, 2 and 4 (see the user documentation for details).

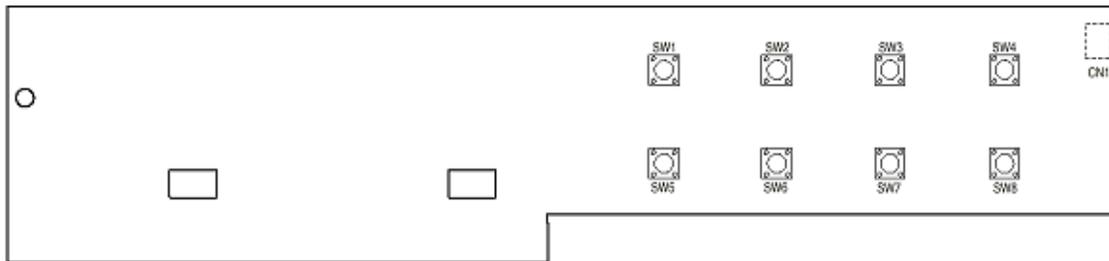
(3) LED Control PWB (Y71-PWB)



(4) Duplex Control PWB (V71-PWB)



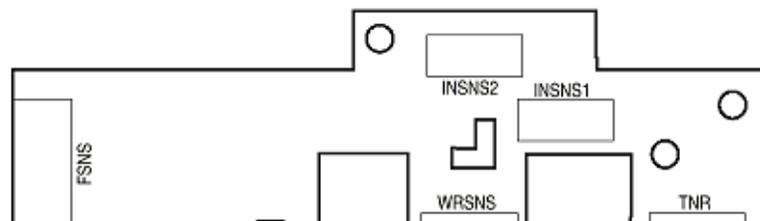
(5) Control Panel PWB (X71-PWB)

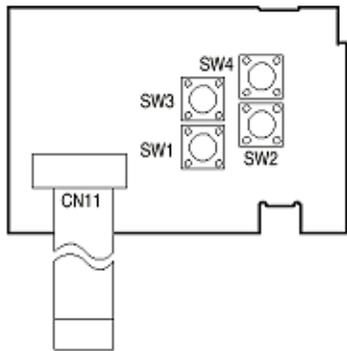


(6) N71-PWB



(7) Entrance Sensor PWB (R71-PWB)







Main Assembly - Figure 8-2

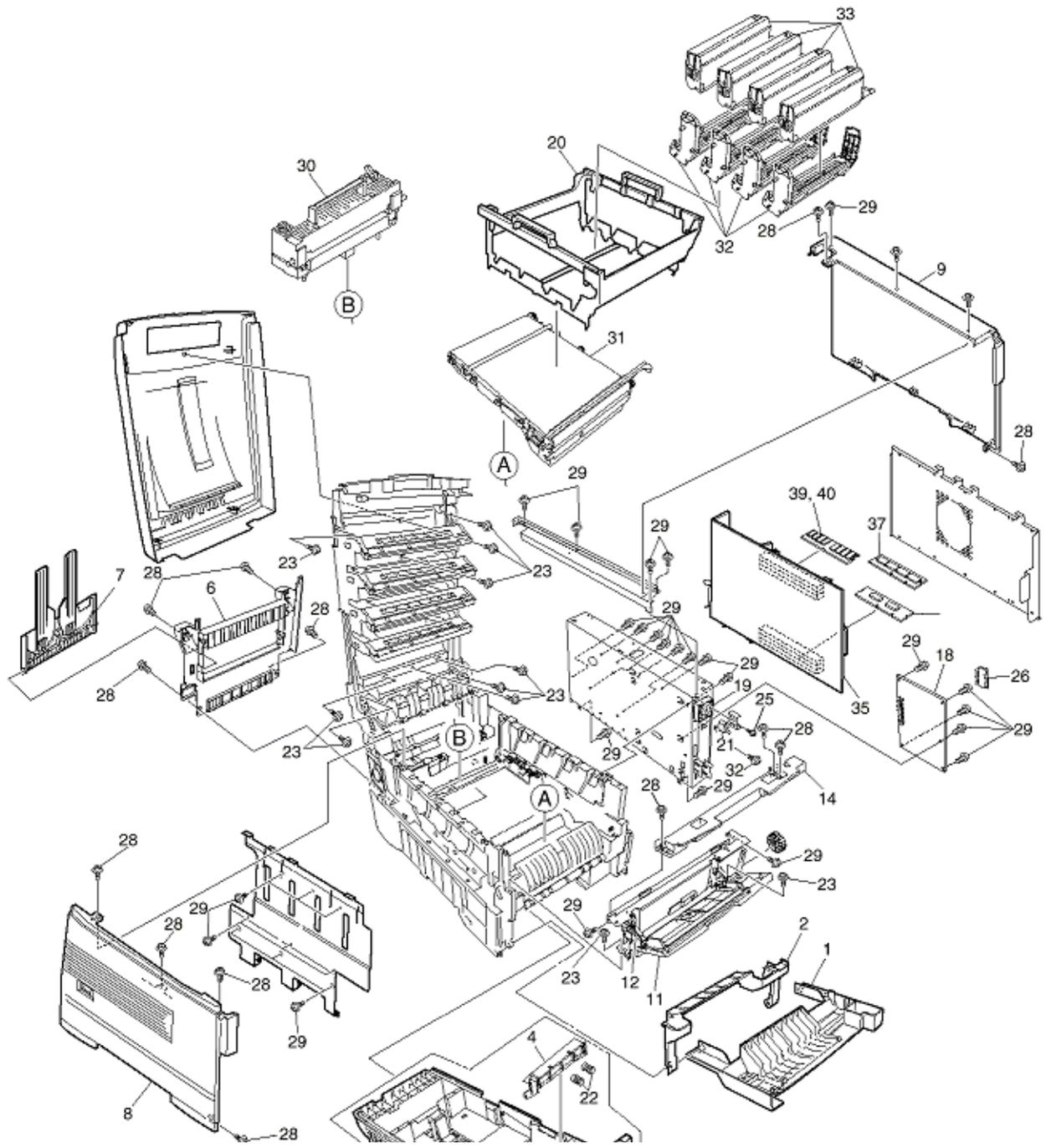


Figure 8-1-1/3

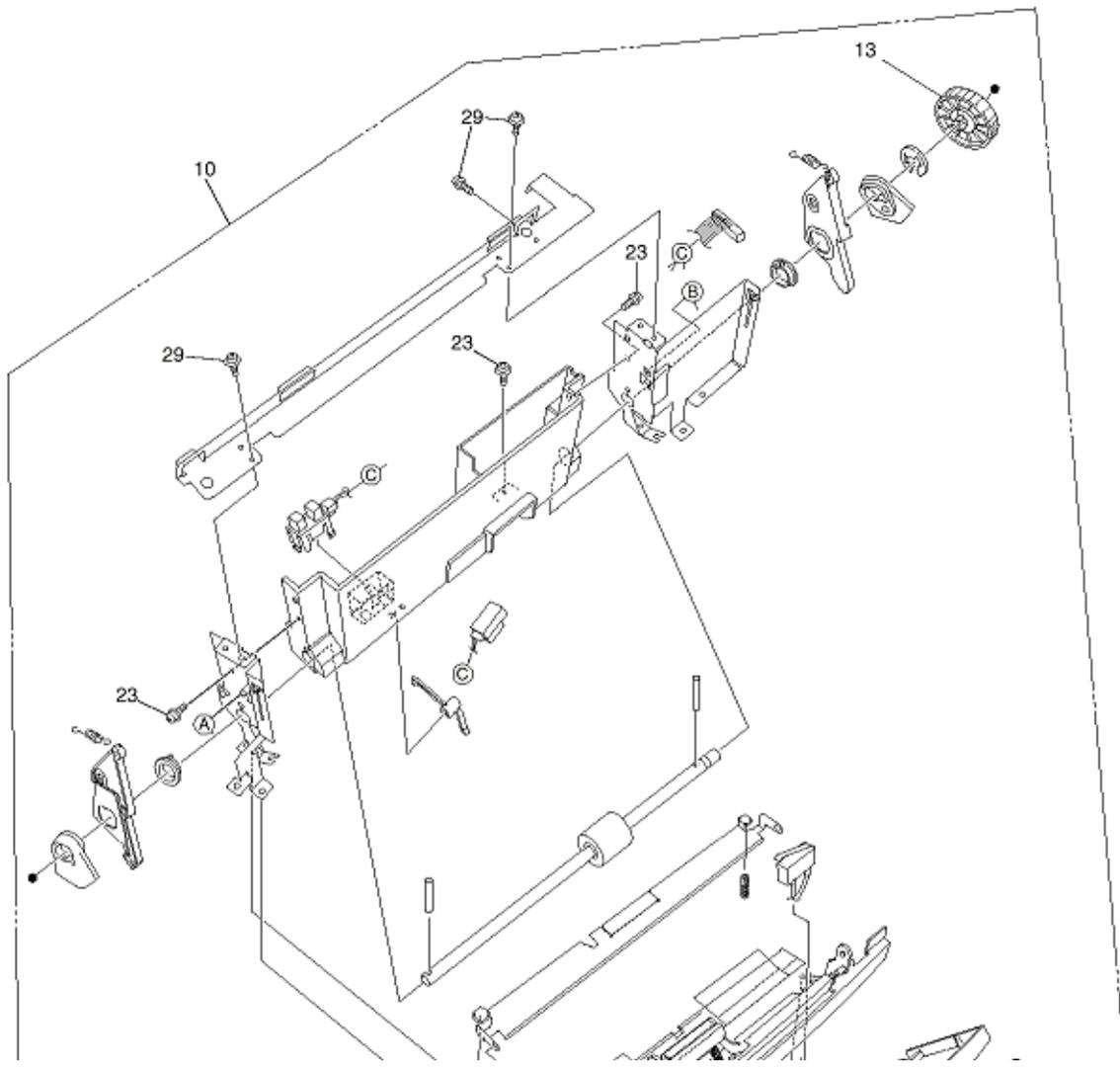


Figure 8-1-2/3

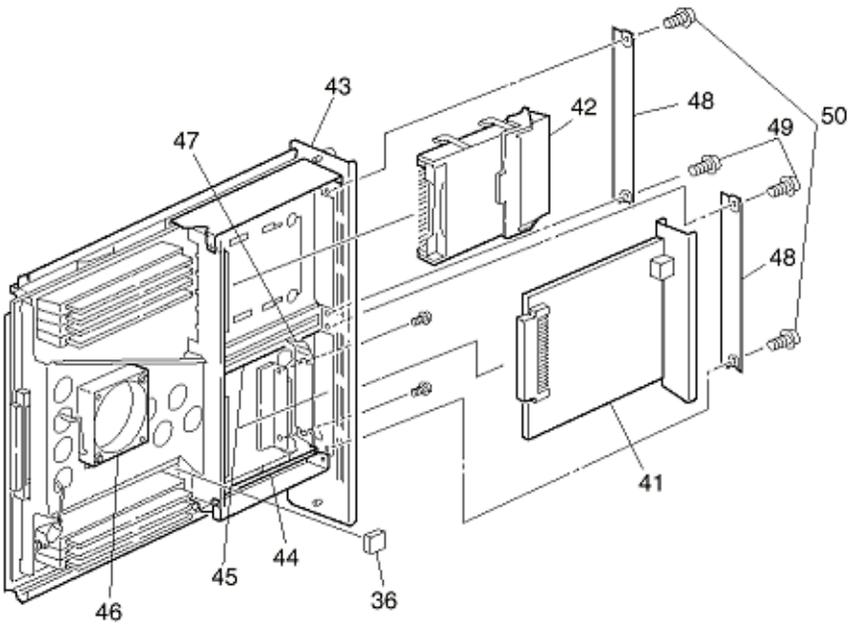


Figure 8-1-3/3



Main Assembly - Table 8-1 (1/3)

No.	Part #	Name	Qty	Remarks
1	40864601	Front Cover Assy	1	
2	41042501	Front Cover Inner Baffle	1	
3	40866701	Cassette Assy	1	
4	41438401	Retard Pad Assy	1	
5			1	
6	40864301	Rear Cover	1	
7	41374902	Face Up Stacker Assy	1	
8	40864401	Left Side Cover	1	
9	40864501	Right Side Cover	1	
10	40862001	Multi-Purpose Tray Assy	1	
11	40866301	Multi-Purpose Tray Cover Assy	1	
12	41045801	Link	2	
13	40325101	Multi-Purpose Tray Drive Gear	1	
14	40952701	Multi-Purpose Tray Top Cover	1	
15				
16				
17				
18	41256204	Print Engine Controller PWB (71K)	1	1200 dpi
18	41256206	Print Engine Controller PWB (71K)	1	600 dpi
19	40197101	Electrical Chassis Cooling Fan	1	
20	40864901	CRU Basket Assy	1	
21	41275701	Upper Cover Open Switch	1	
22	41439401	Retard Pad Assy Springs	2	
23		Screw (T3x3)	14	
24		Screw (M3x8)	2	
25		Screw (M2x8)	2	
26		EEPROM	1	
27				
28		Screw (T3x10)	13	
29		Screw (M3x6)	42	
30	41304001	Fuser - Unit 120V	1	120V
30	41304003	Fuser - Unit 230V	1	230V



Main Assembly - Table 8-1 (2/3)

No.	Part #	Name	Qty	Remarks
32	41304105	Image Drum - Yellow	1	
	41304106	Image Drum - Magenta	1	
	41304107	Image Drum - Cyan	1	
	41304108	Image Drum - Black	1	
33	41304205	Toner - Yellow	1	
	41304206	Toner - Magenta	1	
	41304207	Toner - Cyan	1	
	41304208	Toner - Black	1	

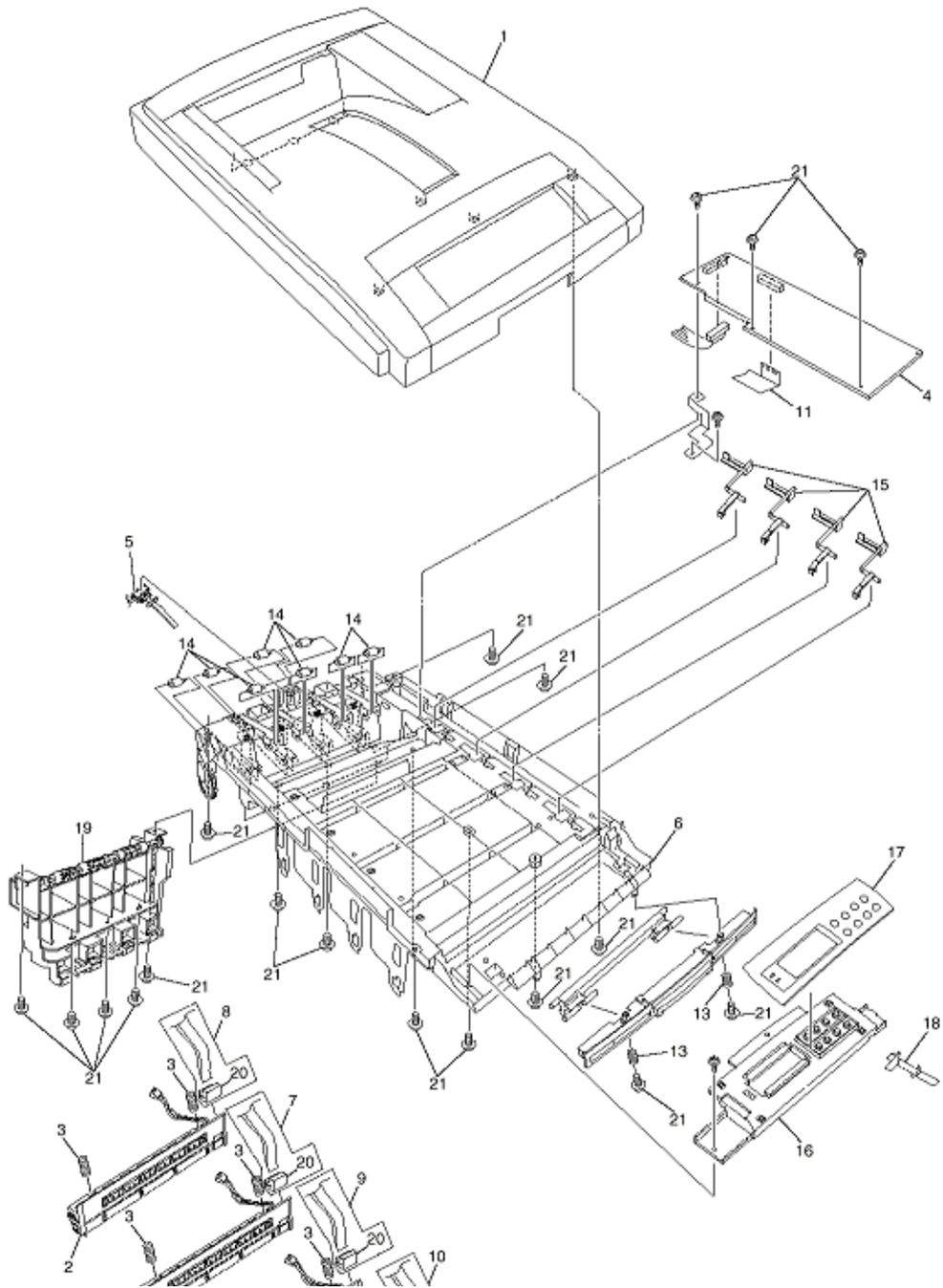


Main Assembly - Table 8-1 (3/3)

No.	Part #	Name	Qty	Remarks
34	41377401	Plate - Indicator	1	
35	41356009	PCB Assy - CRM	1	
36		EEPROM (CU)	1	
37	41469503	Board - TNY	1	
38				
39	41437418	Board - Memory 64MB	1	1200 dpi
40	41437419	Board - Memory 128MB	1	1200 dpi Duplex
41				
42	41376005	HDD Assy	1	Option
43	41286901	Plate Shield	1	
44	41278601	Guide - Rail (A)	2	
45	41278701	Guide - Rail (B)	1	
46	41410201	Motor - Fan	1	
47	41467401	Plate - FG (Centro)	1	
48	41254601	Plate - Blank	2	
49	41278401	Screw	2	
50	41723901	Screw	2	



Top Cover Assembly - Figure 8-2



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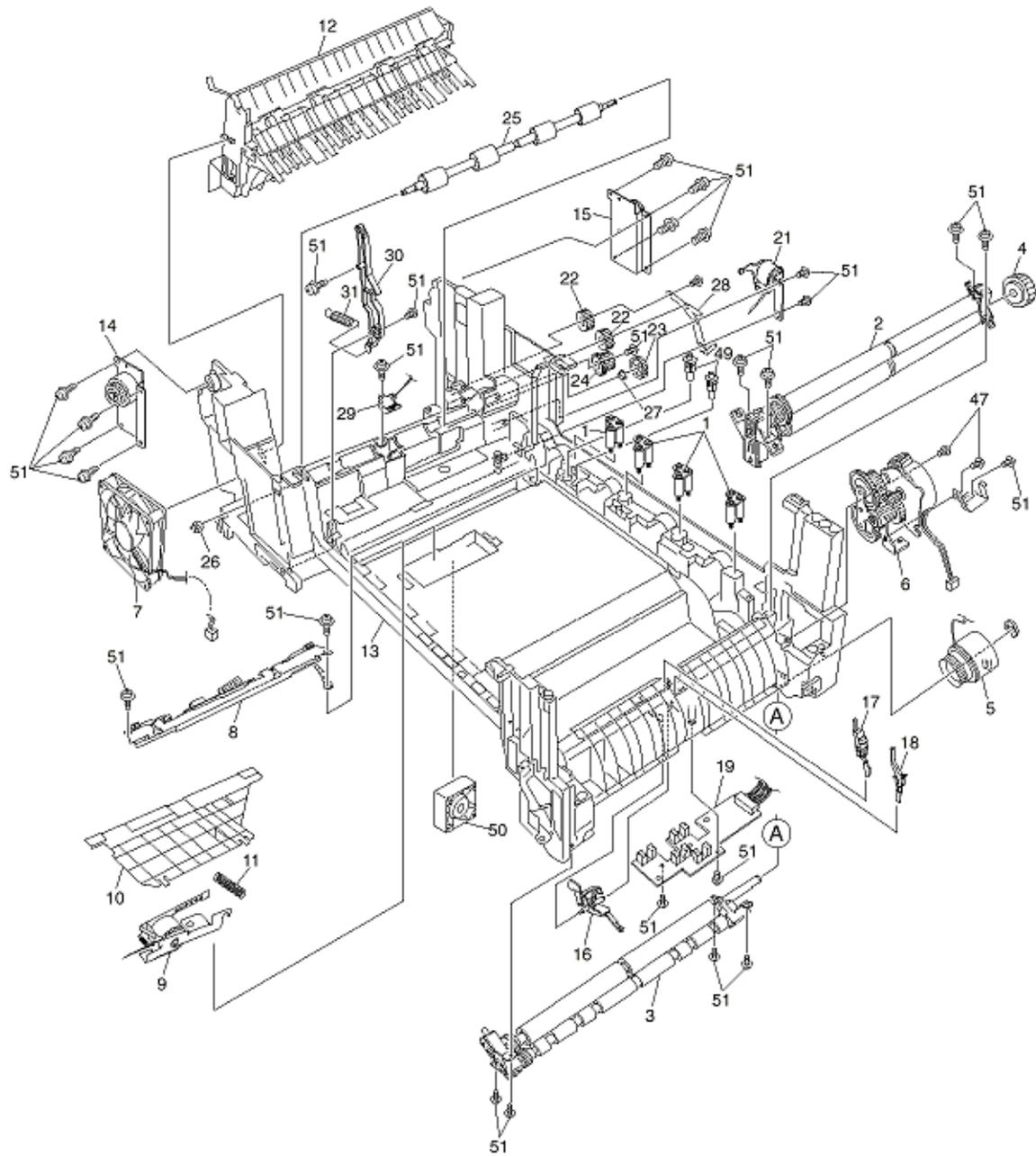


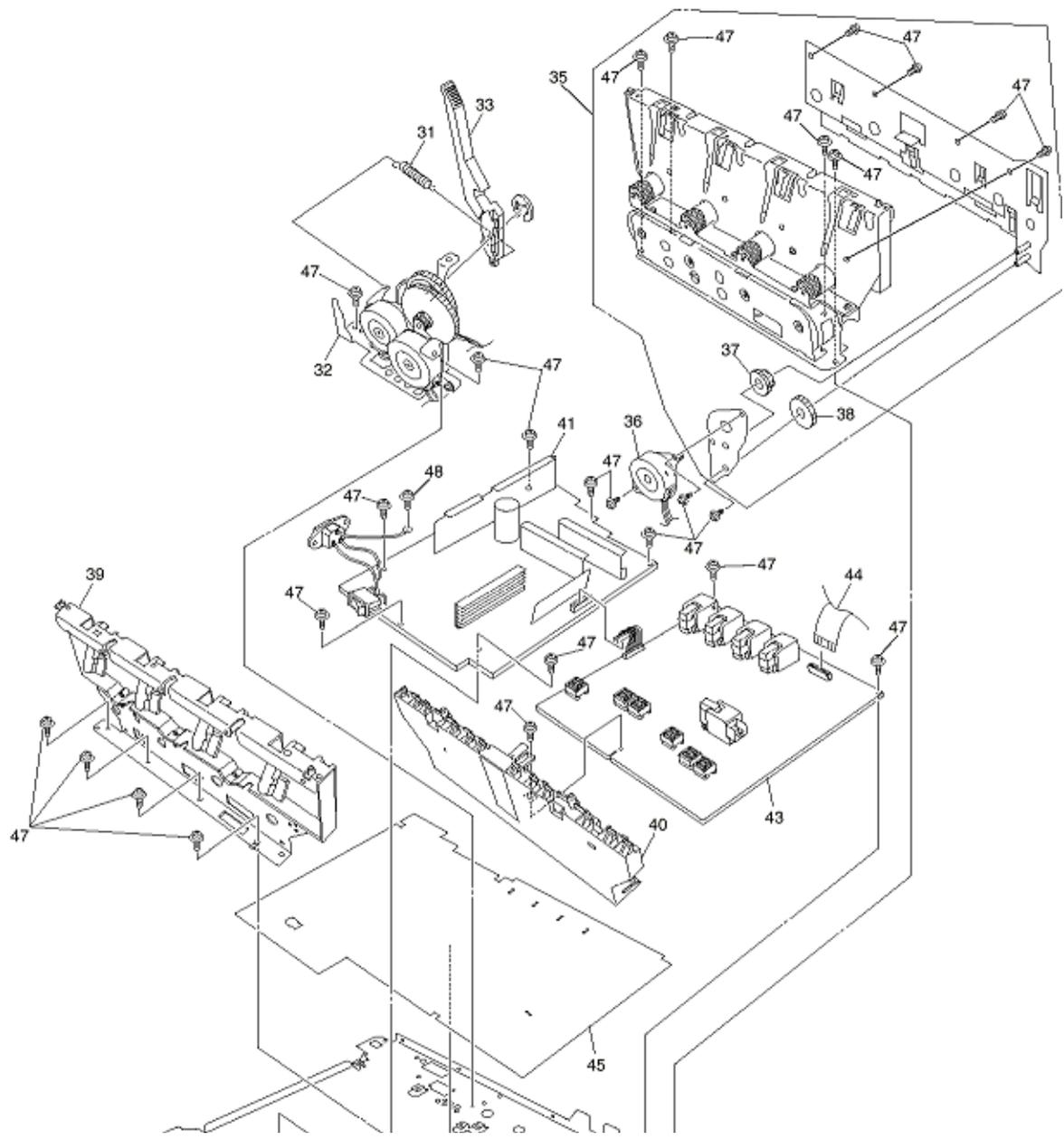
Top Cover Assembly - Table 8-2

No.	Part #	Name	Qty	Remarks
1	40859701	Top Cover	1	
2	41072401	LED Assy (1200 dpi)	4	1200 dpi
2	41072402	LED Assy (600 dpi)	4	600 dpi
3	40861001	LED Assy Spring	8	
4	41257901	LED Control PWB (Y71)	1	
5	40365404	Stacker Full Sensor	1	
6	41316501	Top Cover Inner Frame Kit	1	
7	41309603	LED Harness M	1	
8	41309604	LED Harness C	1	
9	41309602	LED Harness Y	1	
10	41309601	LED Harness K	1	
11	41593101	LED Control PWB Tape Harness	1	
12				
13				
14	40316701	Eject Roller	8	
15	40860601	Toner Sensor	4	
16	40866101	Control Panel Assy	1	
17	40866201	Control Panel Bezel (600 dpi)	1	600 dpi
18	40866202	Control Panel Bezel (1200 dpi)	1	1200 dpi
19	40861501	Eject Guide Assy	1	
20		26 pin LED Connector	4	
21		Screw (T3x8)	19	



Printer Unit Chassis Figure 8-3





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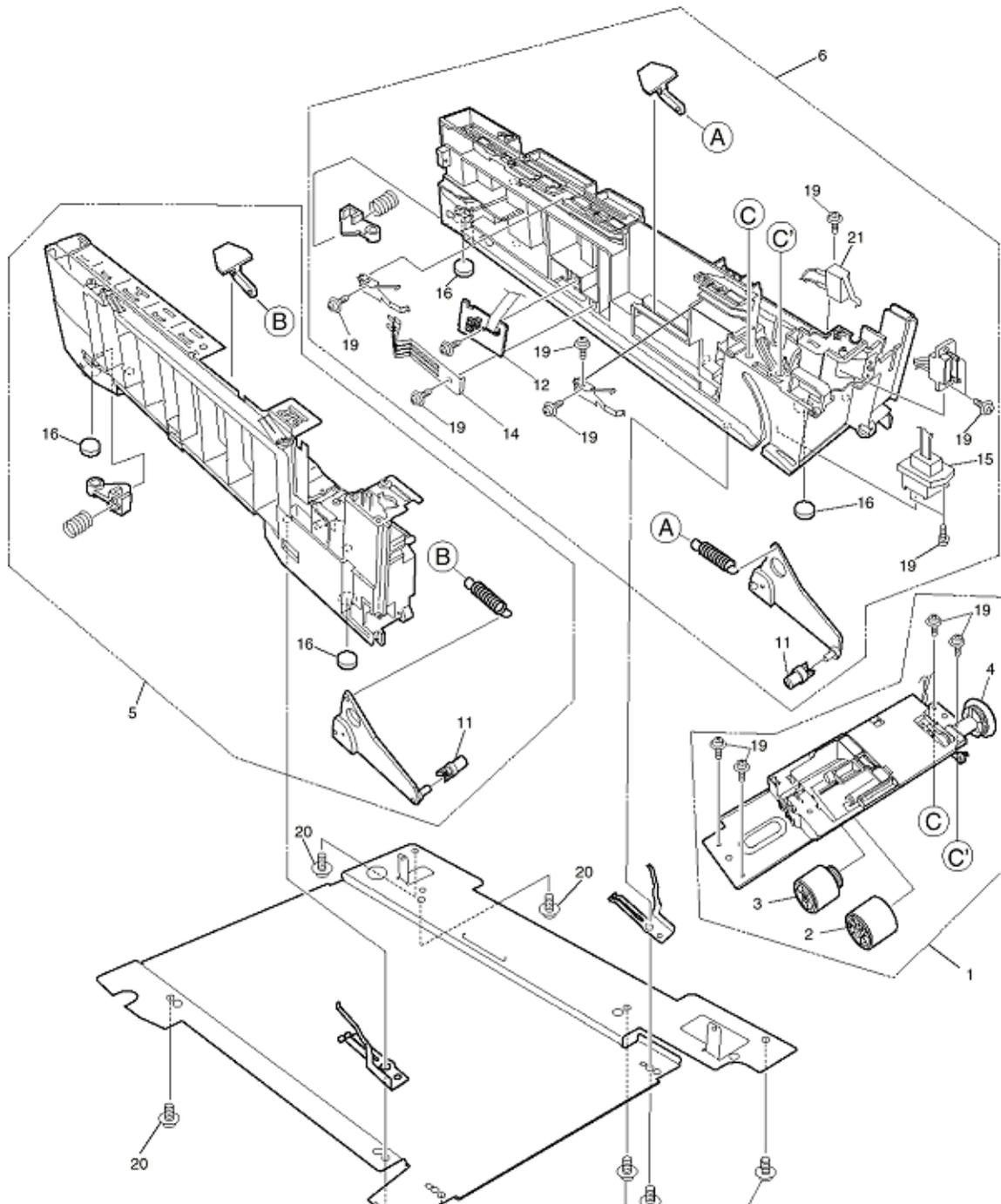
Printer Unit Chassis - Table 8-3

No.	Part #	Name	Qty	Remarks
1	41189701	Drum Contact Assy	4	
2	40844301	Registration Roller Assy (A)	1	
3	40844303	Registration Roller Assy (B)	1	
4	40845401	Registration Drive Gear	1	
5	41187101	Registration Clutch	1	
6	40845801	Registration Motor Assy	1	
7		Main Cooling Fan	1	
8	41346801	Color Registration Sensor Assy	1	
9	41253701	Registration Shutter Solenoid	1	
10	41275201	Registration Shutter	1	
11	41275301	Registration Shutter Spring	1	
12	40859201	Duplex Guide Assy	1	
13	40841101	Printer Unit Chassis	1	
14	41312801	Left Top Cover Spring Assy	1	
15	41312901	Right Top Cover Spring Assy	1	
16	40841601	Entrance Sensor Actuator #1	1	
17	40841701	Entrance Sensor Actuator #2	1	
18	40841801	Entrance Sensor Actuator #3	1	
19	41258301	Entrance Sensor PWB (R71)	1	
20				
21	41253601	Duplex Gate Solenoid Assy	1	
22	40842401	Fuser Drive Gear - A	2	
23	40316301	Fuser Drive Gear - B	1	
24	41067201	Fuser Drive Gear - C	1	
25	40323901	Fuser Exit Roller	1	
26		Fuser Exit Roller Bushing (L)	1	
27		Fuser Exit Roller Bushing (R)	1	
28	40842501	Fuser Exit Roller Contact	1	
29	41073601	Exit Sensor Assy	1	
30	40841301	Fuser Latching Handle (L)	1	
31	40841501	Fuser Latching Handle Springs	1	
32	40848801	Belt Motor Assy	1	

33	40841401	Fuser Latching Handle (R)	1	
34				
35	40847301	Main Motor Assy	1	
36	40846001	Main Feeder Drive Motor	1	
37	40848501	Main Feeder Drive Gear A	1	
38	40848601	Main Feeder Drive Gear B	1	
39	41303601	Left Plate Assy	1	
40	40850201	Contact Assy	1	
41	40737401	Power - Unit AC - DC switching (115V)	1	
41	40737501	Power - Unit AC - DC switching (230V)	1	
42				
43	40737601	Power - Unit (high-voltage)	1	
44		HV Tape Harness	1	
45	41128101	Power Supply Insulator	1	
46				
47		Screw (M3x6)	26	
48		Screw (M4x8)	1	
49	41346301	Transfer Contact Assy	2	
50	41469001	Power Cooling Fan	1	
51		Screw (T3x8)	29	



Paper Tray Guide - Figure 8-4



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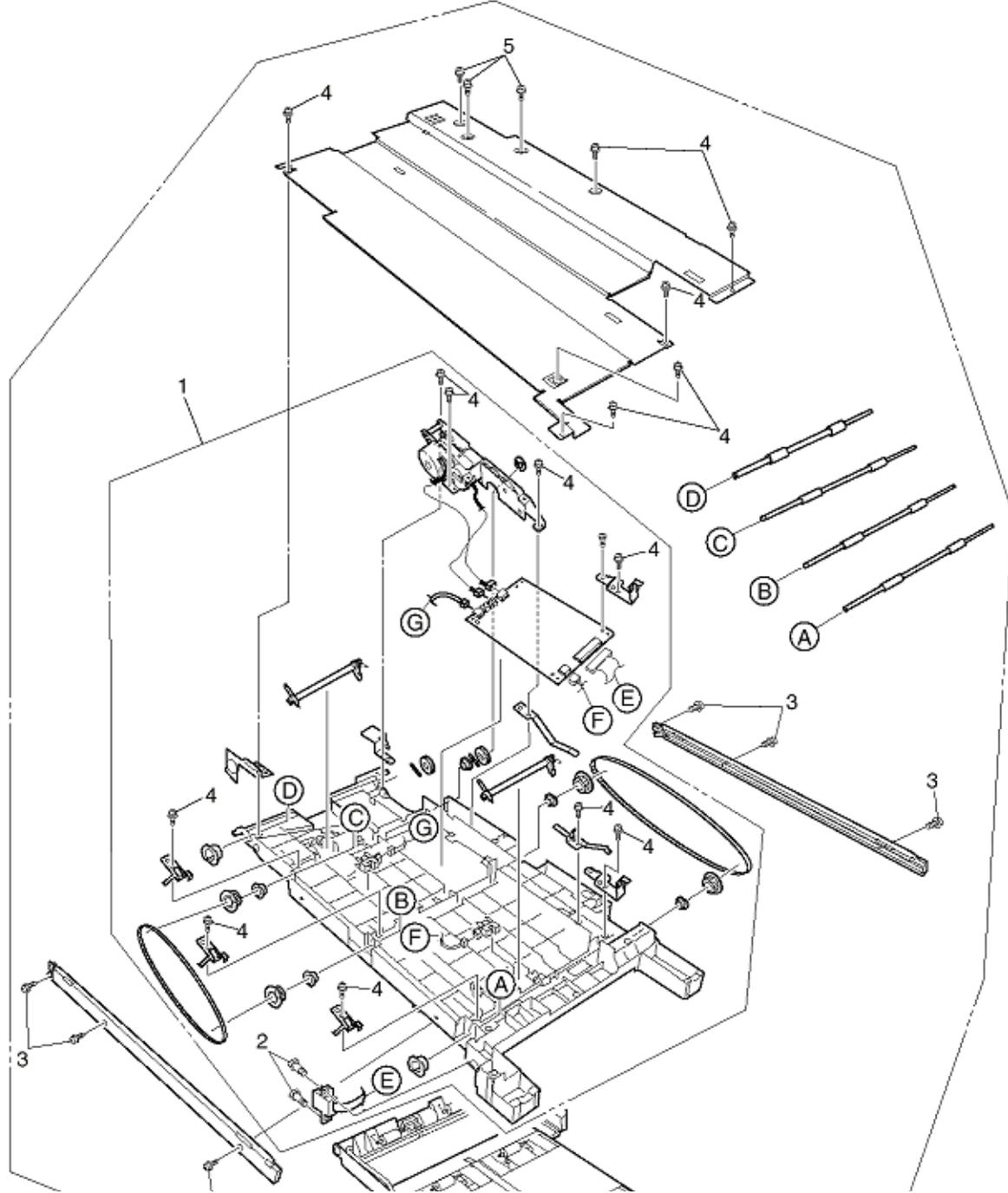


Paper Tray Guide - Table 8-4

No.	Part #	Name	Qty	Remarks
1	40839801	Main Feed Assy	1	
2	40371301	Feed Roller	1	
3	40313201	Nudger Roller	1	
4	40325401	Main Feeder Drive Gear	1	
5	40839001	Left Cassette Guide Assy	1	
6	40839401	Right Cassette Guide Assy	1	
7				
8				
9				
10				
11	40349701	Plastic Roller	2	
12	40368304	Paper Size Sensing PWB PXC	1	
13				
14		Paper Size Actuator	1	
15	41309301	2nd Tray Connector	1	
16		Foot	4	
17				
18				
19		Screw (T3x8)	13	
20		Screw (T4x10)	8	
21	41275901	Front Cover Open Switch	1	



Duplex Unit - Figure 8-5



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Duplex Unit - Table 8-5

No.	Part #	Name	Qty	Remarks
1	41305301	Duplex Transport Assy	1	
2		Screw (SP3x10)	2	
3		Screw (T3x10)	6	
4		Screw (T3x8)	15	
5		Screw (M3x6)	3	
6	70037201	Duplex Unit	1	



Centronics Parallel Interface

1) Connector

- Printer side : 36-pin receptacle
(single port) Type 57RE-40360-830B-D29A (made by Daiichi Denshi), or equivalent
- Cable side : 36-pin plug
Type 57-30360 (made by Daiichi Denshi) or equivalent
Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

- Cable length : 6 ft (1.8 m) max.

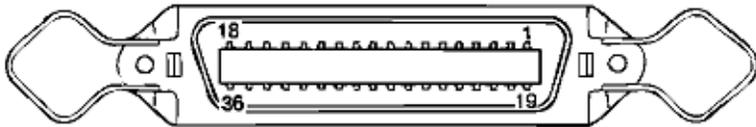
(A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Cable is not supplied with the printer.

3) Table of Parallel I/F Signals

Pin No.	Signal name	Signal direction	Functions
1	DATA STROBE	→ PR	Parallel data sampling strobe
2	DATA BIT - 1		
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4	→ PR	Parallel input data
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	ACKNOWLEDGE	← PR	Completion of data input or end of functioning
11	BUSY	← PR	During print processing or during alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	Auto Feed	→ PR	Request to change Mode
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19			
⋮	0V Signal ground		Signal ground
30			
31	INPUT PRIME	→ PR	Initializing signal
32	FAULT	← PR	End of paper or during alarm
33	0V		Signal ground
34	-		(Not used)

- Connector pin arrangement



4) Signal Level

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

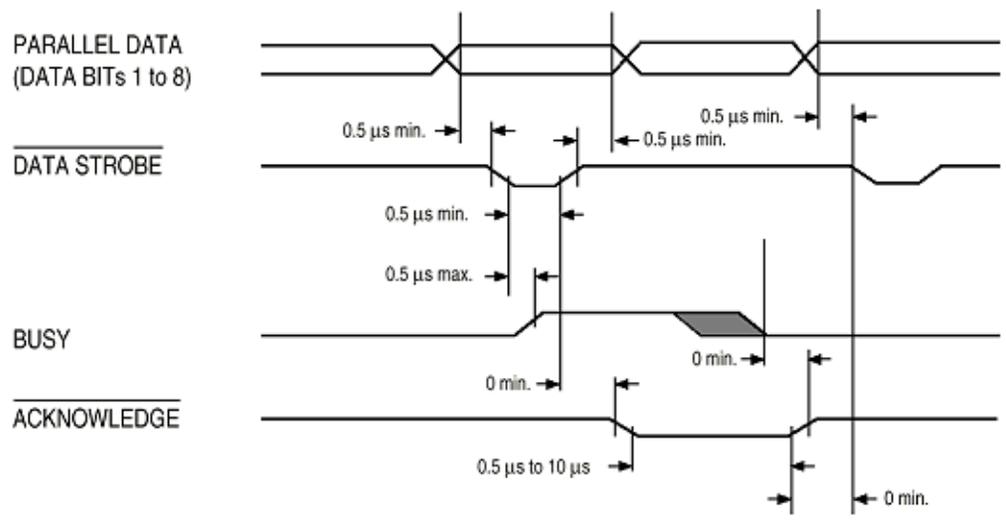
5) Specifications

Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits Compatibility mode, 4 bits: Nibble mode, 9 bits: ECP mode
Control	Handshaking control is performed in each mode. Data received from the host is stored in the receive buffer. Busy control is performed. Signal lead control is performed.

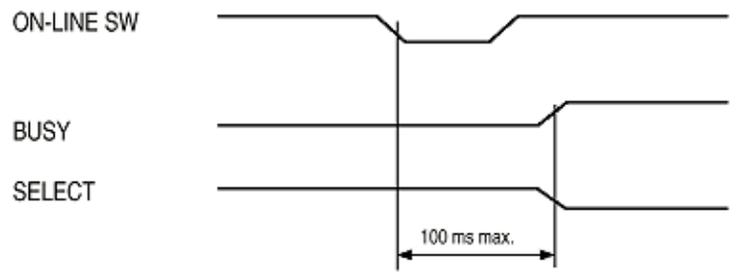
6) Timing Charts

- Compatible mode

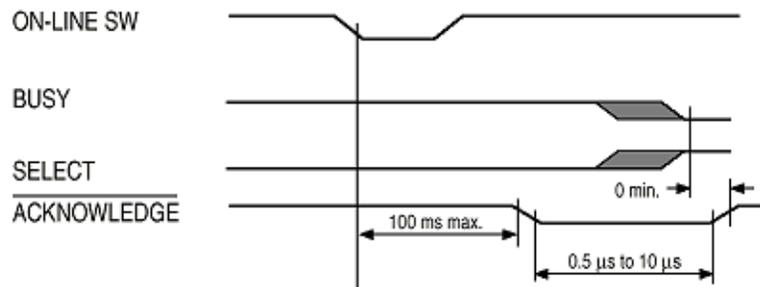
a) Data receiving timing



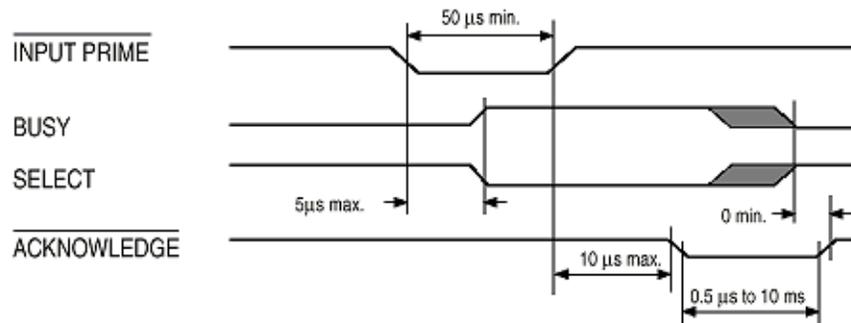
b) On-line (off-line switching timing by ON-LINE SW)



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



d) nInit timing (when set to the effective INPUT PRIME signal)



- Nibble mode
Conforms to IEEE 1284 specification compliant
- ECP mode
Conforms to IEEE 1284 specification compliant



1. Parts Replacement

1.1 Cover Idle Roller Assy

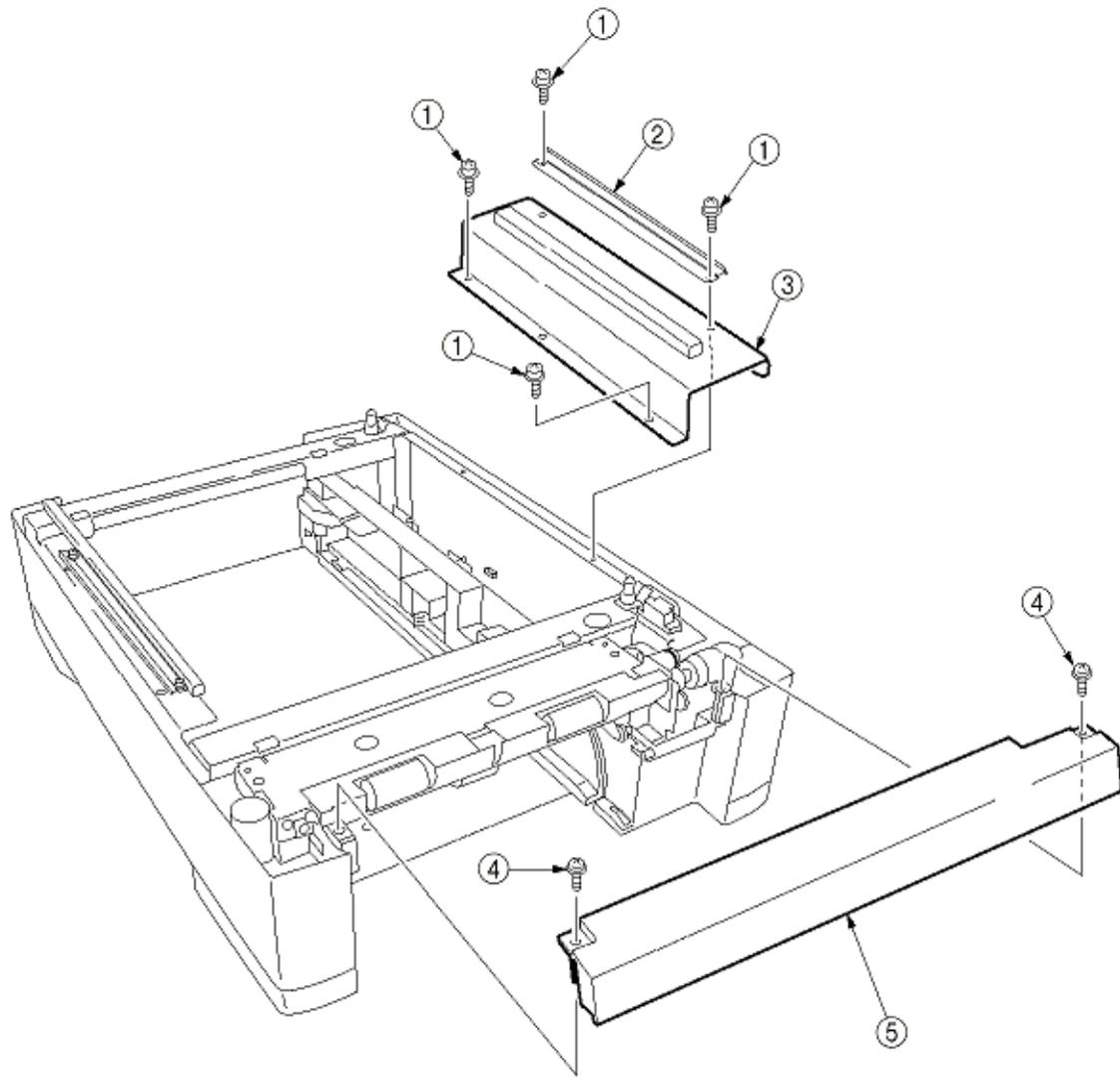
1.2 PCB

1.3 Feeder Drive Assy



1.1 Cover Idle Roller Assy

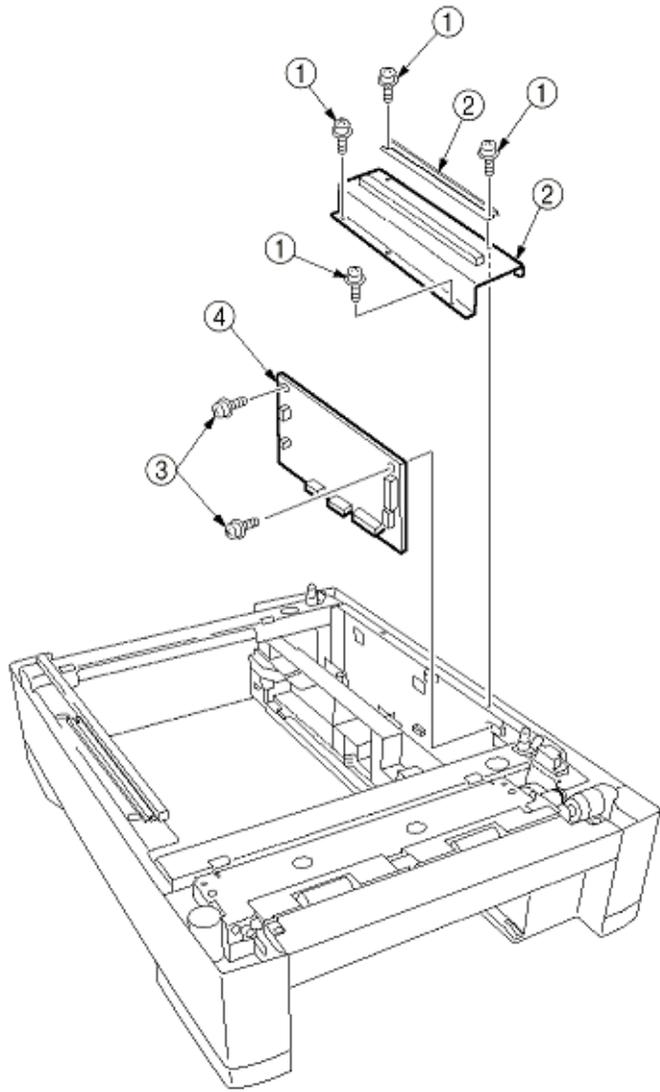
- (1) Unscrew the four screws (1) to remove the cover side (2) and the plate cover PCB (3).
- (2) Unscrew the two screws (4) to demount the cover idle roller Assy (5).





1.2 PCB

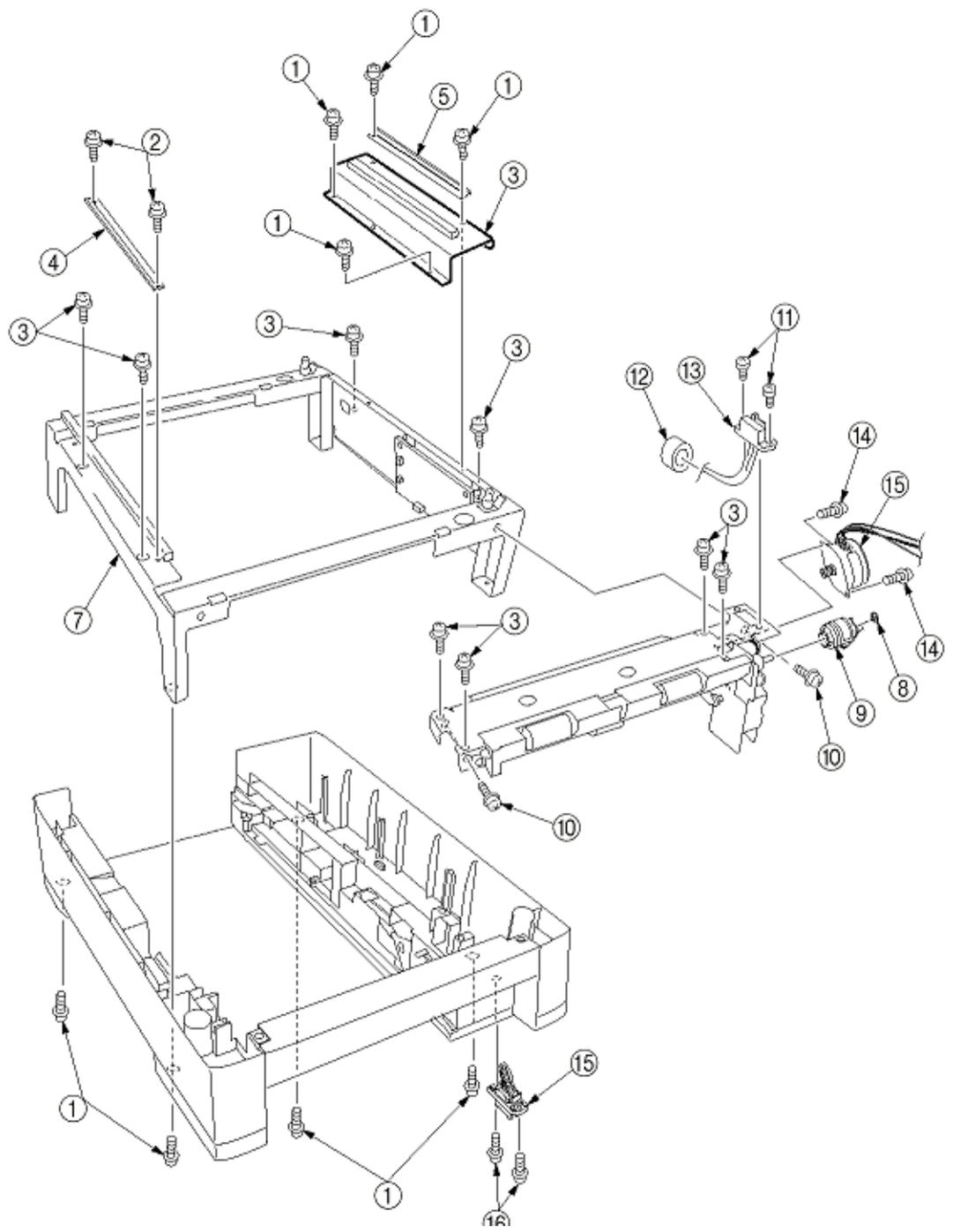
- (1) Unscrew the four screws (1) to remove the plate cover PCB (2).
- (2) Remove the connectors (at seven places) and the two screws (3), then demount the board (4).





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).



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2. C7000 2nd/3rd Tray Parts List

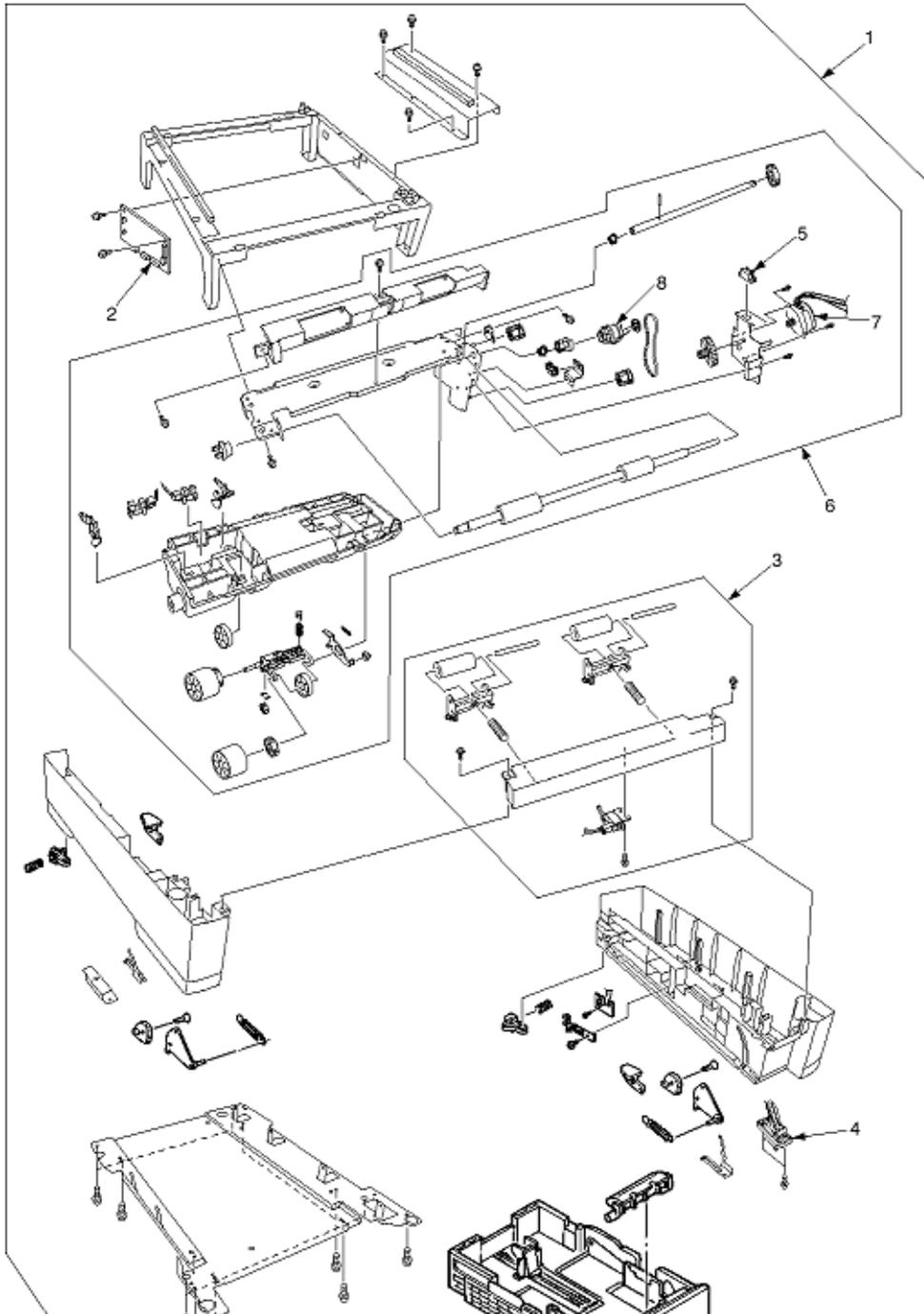




Table 6-1-1 Operator Alarms (2/2)

Message	Cause	Error Description		Solutions
Service Call 125: Error	Error detected at the MT home position.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the MT.
Service Call 130: Error	Temperature rise at the LED head detected.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off the printer leave it for 30 mins. and then turn it on again. Replace the LED heat unit.
Service Call 131: Error ~ 134 Error	No LED heat unit detected when turning on the printer or closing the cover.	1) Is the error message displayed? 2) Is the LED head mounted properly? 3) Does the error repeat?	Yes Yes Yes	Verify the installation of the LED head. Turn off/on the printer. Replace the LED head Assy.
Service Call 140: Error ~ 142: Error	Error detected with the D located at appropriate position.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the Drum Assy.
Service Call 150: Error ~ 153: Error	Fuse in the ID unit has not been blown.	Is the ID unit mounted properly?	Yes	Confirm the cable connection, or replace the Engine board.
Service Call 154: Error	Fuse in the Belt unit has not been blown.	Is the Belt unit mounted properly?	Yes	Confirm the cable connection, or replace the Engine board.
Service Call 155: Error	Fuse in the Fuser unit has not been blown.	Is the Fuser unit mounted properly?	Yes	Confirm the cable connection, or replace the Engine board.
Service Call 160: Error ~ 163: Error	Error detected by Toner sensor.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Replace Toner sensor or Assy (Y71-PWB). Same as the above.
Service Call 170: Error 171: Error 174: Error 175: Error	Short or open circuit detected at the Fuser Thermistor. (H or L temperature error)	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the Thermistor and turn off the printer. Leave it for 30 mins.

Service Call 172: Error 176: Error	High temperature error detected at Thermistor.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the Thermistor and turn off the printer. Leave it for 30 mins.
Service Call 173: Error 177: Error	Low temperature error detected at Thermistor.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the Thermistor or heater and turn off the printer.
Service Call 181: Error ~ 186: Error	Communication failures with an option unit detected by Engine	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes	Turn off/on the printer. Replace the option unit.
Close Cover 310: CCCC CoverOpen (*=A4,B4, etc)	Printer engine cover is open.	1) Is the error message displayed? 2) Does the error repeat?	Yes Yes No	Close the Top cover. Close the Side cover. Replace the Cover switch.
Check Fuser 320: Fuser Error	No Fuser unit detected when turning on the printer or closing the cover.	1) Is the error message displayed? 2) Is the Fuser unit mounted properly? 3) Does the error repeat?	Yes No Yes	Confirm the existence of the unit. Re-install the Fuser unit and turn off/on the printer. Replace the Fuser unit Assy.
Check Belt: 330 Belt Error	No Belt unit detected when turning on the printer or closing the cover.	1) Is the error message displayed? 2) Is the Belt unit mounted properly/ 3) Does the error repeat?	Yes No Yes	Confirm the existence of the unit. Re-install the Belt unit and turn off/on the printer. Replace the Belt unit Assy.
Check Drum 340-343: Drum Error	No ID unit detected when turning on the printer or closing the cover.	1) Is the error message displayed? 2) Is the ID unit mounted properly? 3) Does the error repeat?	Yes No Yes	Confirm the existence of the unit. Re-install the ID unit and turn off/on the printer. Replace the ID unit Assy.
Install New Drum 350: Y Drum Life 351: M Drum Life 352: C Drum Life 353: K Drum Life	End of the ID unit life, more copies printed.	Is it displayed after the ID unit replacement?	Yes No	Confirm the life of the ID unit. Replace the ID unit.
Install Duplex Unit 360: No Duplex unit	The Duplex unit is removed from the printer	Recovered if the Duplex unit is inserted again?	Yes No	Normal. Replace the Duplex unit or Engine board.
Check DUPLEX 370: Paper Jam	Paper jam detected after	1) Is a paper jammed in the Duplex unit?	Yes No	Remove the jammed paper. Check the

	paper reverse in the Duplex unit.			Duplex unit, or replace it.
Check DUPLEX 371: Paper Jam	Paper jam detected at the Duplex unit	1) Is a paper jammed in the Duplex unit?	Yes No	Remove the paper jam. Check the Duplex unit, or replace it.
Check DUPLEX 372: Paper Jam	Paper jam detected during paper feed from the Duplex unit	1) Does misfeed occur in the Duplex unit?	Yes No	Remove the misfed paper and close the cover. Check the Duplex unit, or replace it.
Open Side Cover 380: Paper Jam	Paper jam during paper feed from the Cassette 1, 2, 3, 4 or 5.	1) Does misfeed occur in the specified cassette?	Yes No	Remove the jammed paper and install the cassette. Check the cassette 1, 2, 3, 4, or 5 or replace it.
Open Stacker Cover 381: Paper Jam	Paper jam detected between the B ID and Fuser	1) Is a paper jammed between the Y ID and Fuser? 2) Is the load on the Fuser unit normal?	Yes NO	Remove the jammed paper. Replace the Fuser unit.
Open Stacker Cover 382: Paper Jam	Paper jam detected in the Fuser unit or between the Fuser and paper ejection.	1) Is a paper jammed in the Fuser unit or between Y ID and Fuser unit? 2) Is the Paper eject switch working normally?	Yes No	Remove the jammed paper. Replace the Fuser unit.
Open Stacked Cover 383: Paper Jam	Paper jam detected on paper entering the Duplex unit.	1) Is paper jammed at the entrance of the Duplex unit or in the unit?	Yes No	Remove the jammed paper and close. Check the Duplex unit, or replace it.
Check MP Tray 390: Paper Jam	Paper jam during paper feed from the MP tray	1) Does misfeed occur around the MP Tray?	Yes No	Remove the misfed paper and close the cover. Check the MP Tray, or replace it.
Check Tray * 391 ~ 395: Paper Jam	Paper jam detected between a cassette and B ID.	1) Is a paper jammed around the cassette or between B ID and cassette. 2) Does the Paper entry switch operate normally?	Yes No	Remove the jammed paper. Replace the Paper entry switch.
Open Stacker Cover 400: Paper Size Error	Paper in a size different (45 mm or more) from the specification detected at the Printer engine.	1) Is the paper in a custom size? 2) Is the paper in the standard size?	Yes Yes No	No action required. Adjust the Paper size guide of the cassette. Replace the Paper size board.
Toner Low	Toner in one of	1) Is the specified toner cartridge	Yes	Replace it with a new

410: Yellow 411: Magenta 412: Cyan 413: Black	the four colors is running short.	almost empty? 2) Does the Toner sensor of the specified cartridge operate normally?	No	toner kit. Replace the Toner sensor for the specified color.
Remove Printed Papers 480: Stacker Full	The stacker for ejected papers is full.	1) Is the stacker full? 2) Does the Stacker full sensor operate normally?	Yes No	Remove papers from the stacker. Replace the Stacker full sensor.
Load *** Papers 490: No paper in the MP Tray (***=A4,B5 etc)	The specified cause has no paper or is removed. Or, the cassette being used for printing has no more paper.	1) No paper in MT? 2) Does the Paper out sensor operate normally?	Yes No	Load papers in MT. Replace the Paper out sensor.
Load *** Papers 491 ~ 495: NO paper in the Tray * (**=A4, B5 etc)	No paper in the Cassette 1, 2, 3, 4 or 5 detected.	1) No paper in the specified cassette? 2) Does the Paper out sensor operate normally?	Yes No	Load papers in the specified cassette. Replace the Paper out sensor of the specified cassette.
Replace Belt	The belt counter has reached the life value.	1) Is the error message displayed? 2) Does the error occur soon after Belt unit replacement?	Yes No	Check the belt life. Replace the Belt unit immediately or at the next maintenance.
Replace Fuser	The fuser counter has reached the life value.	1) Is the error message displayed? 2) Does the error occur soon after Fuser unit replacement?	Yes No	Check the fuser life. Replace the Fuser unit immediately or at the next maintenance.
Job Offset Home Error	The Job offset assy does not operate or cannot detect the home position.	Does the Job offset assy operate normally?	Yes No	Replace the job offset sensor. Replace the Job offset motor or Engine board.
Running Short of Paper in Tray *	Running short of paper detected	Does only small amount of papers (approx. 30 sheets or less) remain?	Yes No	Load papers. Check the Paper near end sensor.
Disc Operation Error	HDD can not be written.	Is the operating procedure correct?	No Yes	Confirm the procedure in the manual. Replace the HDD as it is broken.