

Service Manual

LBP7200 Series
LBP7200Cdn

The Canon logo, consisting of the word "Canon" in a bold, sans-serif typeface.

Feb 4 2009

Application

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Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

In the diagrams,  represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow  indicates the direction of the electric signal.

The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

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Chapter 1 PRODUCT DESCRIPTION

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1.1 Features

1.1.1 Feature

1. Small and low-cost printer
The printer uses a flat in-line cartridge method for the first time in the small printer. This lowers the height and reduces the printer size. The printer uses the transfer pad and the separation roller to reduce the parts expenses.
2. Intermediate transfer method
The intermediate transfer method transfers toner images to the Intermediate Transfer Belt (ITB) and transfers the images in four colors onto the print media at once. It realizes a stabilized color-print on various media without being affected by the primary transfer operation.
3. Improved usability
The printer improves usability by using the pullout cartridge and the front side accessibility to the media. This small-sized printer is user-friendly on the space of the desktop.

1.2 Product Specifications

1.2.1 Product Specifications

Body installation method	Desktop page printer
Photosensitive medium	OPC drum
Charging method	Roller charging
Exposure method	Laser scanning
Development method	Contact development
Transfer method	Intermediate Transfer Belt (ITB)
Separation method	Curvature
Pickup method	Cassette: simple retard method Manual feed tray : pad separation method
Drum cleaning method	rubber blade
Transfer cleaning method	Cleaning brush + roller method (drum electrostatic collection)
Fixing method	On-demand fixing
Delivery method	Face-down
Contrast adjustment function	Auto
Toner level detection function	Available
Toner type	Non-magnetic single-component dry toner
Warm-up time	19 seconds or less -May vary depending on the usage conditions, such as the availability of the optional accessories and installation environment. -Approximately 220 seconds when the printer is turned on after a toner cartridge is replaced.
Image margin (Leading edge)	5.0+1.5/-1.5mm
Image margin (Trailing edge)	5.0+1.5/-1.5mm
Image margin (Left/right)	5.0+1.0/-1.0mm
Number of gradations	16 gradations
Printing resolution	600dpi x 600dpi
First print time	Black and white printing: 15 seconds or less Color printing: 15 seconds or less -May vary depending on the output environment.
Print speed (A4)	Black and white printing: 20 ppm Color printing: 20 ppm -The print speed may drop depending on the settings for the paper size, paper type, number of pages printed, and fixing mode setting. -If the printer is used continuously for an extended period of time, the internal temperature of the printer may increase, activating a safety mechanism and pausing printing temporarily.
Cassette paper size	Standard sizes: A4, B5, A5, Legal, Letter, Executive, Statement, Foolscap, 16K, Envelope DL, Envelope COM10, Envelope C5, and Envelope B5 Custom paper sizes: 100.0 to 215.9 mm wide and 148.0 to 355.6 mm long
Multifeeder paper size	Standard sizes: A4, B5, A5, Legal, Letter, Executive, Statement, Foolscap, 16K, Envelope DL, Envelope COM10, Envelope C5, Envelope B5, Envelope Monarch, and Index Card Custom paper sizes: 76.2 to 215.9 mm wide and 127.0 to 355.6 mm long
Cassette paper type	Plain paper (60 to 90g/m ²), Heavy paper (86 to 263g/m ²), Label, Coated paper (120 to 220g/m ²), Envelope
Multifeeder tray paper type	Plain paper (60 to 90g/m ²), Heavy paper (86 to 263g/m ²), Transparency, Label, Coated paper (120 to 220g/m ²), Envelope
Cassette capacity	Approx. 250 sheets (80 g/m ²)
Multifeeder tray capacity	Approx. 50 sheets (80 g/m ²)
Delivery tray stack	Approx. 125 sheets (80 g/m ²)
Memory	Standard: 16MB, option: none
Hard disk	Standard: none, option: none

Interface	USB: Hi-Speed USB/USB Network: Shared 10BASE-T/100BASE-TX (RJ-45) Full duplex/Half duplex
Auto gradation correction	available(A4, B5, Legal, Letter, Executive, and Foolscap)
Operating environment (Temperature range)	10 to 30 deg
Operating environment (Humidity range)	Operating environment Temperature range: 10 to 30 deg C (50 to 86 deg F) Humidity range: 20 to 80 % RH (no condensation)
Noise	Lwad (declared A-weighted sound power level (1 B = 10 dB)) During standby: Background noise level During operation: 7 B or less Sound pressure level (bystander position) During standby: Background noise level During operation: 56 dB (A) or less (Declared noise emission in accordance with ISO 9296)
Power supply rating	120 to 127 V (±10%), 50/60 Hz (±2 Hz) 220 to 240 V (±10%), 50/60 Hz (±2 Hz)
Power consumption (Maximum)	1,070 W or less
Power consumption	Average during operation Approx. 405 W (120 to 127V)/ Approx. 395 W (220 to 240V) Average during standby Approx. 18.5 W (120 to 127V)/ Approx. 20.5 W (220 to 240V) Average during sleep mode Approx. 7 W (120 to 127V)/ Approx. 7.5 W (220 to 240V)
Dimensions	409 (W) x 490 (W) x 331(H) mm
Weight	Printer unit (excluding toner cartridges): Approx. 22.0 kg Option Csette: 4.0Kg

1.3 Detailed Specifications

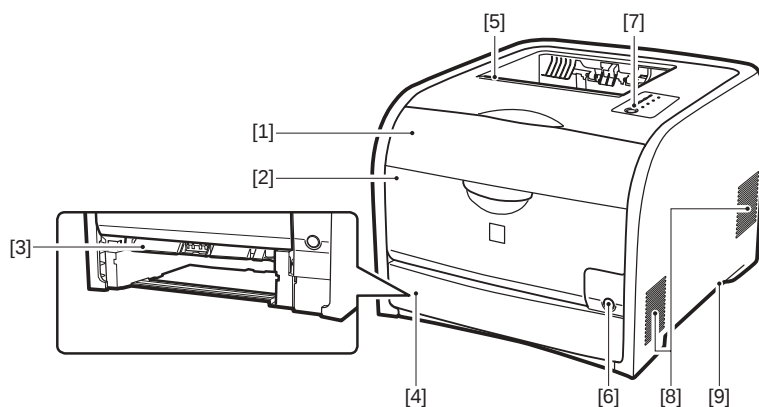
1.3.1 Print Speed

T-1-1

Unit: prints/min								
Name in the driver (grammage)	speed	Paper Size	Single-sided			Double-sided		
			Manual feed tray	Cassette	Option cassette	Manual feed tray	Cassette	Option cassette
Plain paper (70 to 90g/m2) plain paper L (60 to 74g/m2) heavy paper 1 (86 to 119g/2) heavy paper2 (120 to 129g/2)	1/1	A4	16.0	20.0	20.0	9.1	10.0	10.0
		LTR	16.6	21.0	21.0	9.2	10.3	10.3
		LGL	14.1	17.1	17.1	8.5	9.2	9.2
Heavy paper 3 (130 to 163g/2)	1/2	A4	7.4	9.7	9.7	4.5	4.5	4.5
		LTR	7.4	9.9	9.9	4.6	4.5	4.5
		LGL	6.5	8.3	8.3	4.2	4.2	4.2
Coat paper1 (120 to 130g/m2) Coat paper2 (155 to 165g/m2)Coat paper3 (210 to 220g/m2) Glossy paper	1/3	A4	5.0	6.5	6.5	3.0	3.0	3.0
		LTR	5.0	6.9	6.9	3.0	3.0	3.0
		LGL	4.4	5.6	5.6	2.8	3.0	3.0
Envelope	1/2	Com10	5.4	7.6	7.6	-	-	-
Envelope H	1/3	-	4.2	4.2	4.2	-	-	-
Labels	1/2	A4	7.6	9.7	9.7	-	-	-
Transparency	1/3	A4	5.0	-	-	-	-	-

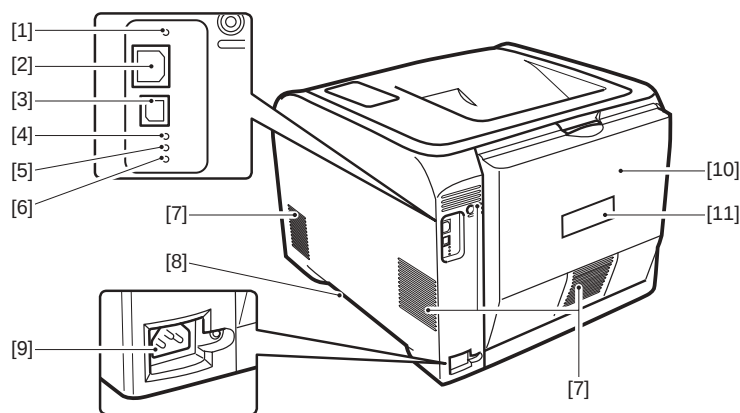
1.4 Name of Parts

1.4.1 External View



F-1-1

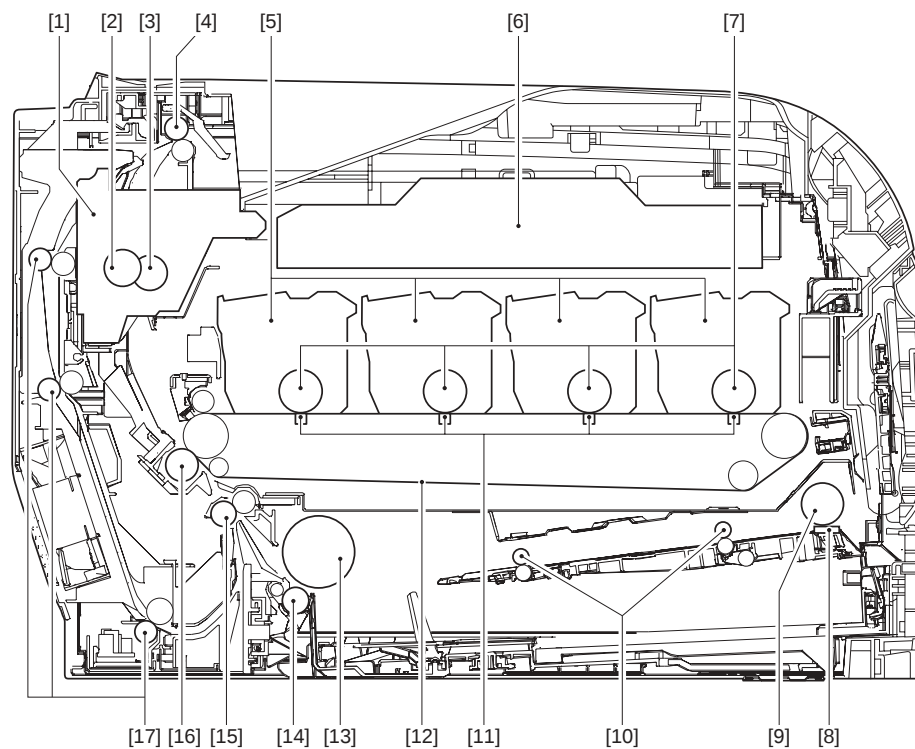
- | | |
|-------------------------------|-------------------|
| [1] Front Cover | [6] Power Switch |
| [2] Manual Feed Tray | [7] Control Panel |
| [3] Manual Feed Feeding Guide | [8] Delivery Tray |
| [4] Pickup Cassette | [9] Carry Grip |
| [5] Delivery Tray | |



F-1-2

- | | |
|-----------------------|----------------------------------|
| [1] Reset button | [7] Airway |
| [2] LAN connector | [8] Carry Grip |
| [3] USB connector | [9] Power Code Outlet |
| [4] 100 lamp (green) | [10] Rear Cover |
| [5] LNK lamp (green) | [11] Standard rating-plate label |
| [6] ERR lamp (orange) | |

1.4.2 Cross Sectional View



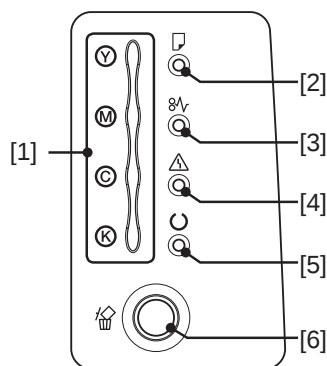
F-1-3

T-1-2

- | | | | |
|-----|---------------------------|------|-----------------------------------|
| [1] | Cross Sectional View | [10] | Multi tray feed roller |
| [2] | Pressure roller | [11] | Primary transfer pad |
| [3] | Fixing sleeve | [12] | ITB Unit |
| [4] | Fixing sleeve | [13] | Cassette pickup roller |
| [5] | Cartridge | [14] | Cassette separation roller |
| [6] | Laser scanner unit | [15] | Registration roller |
| [7] | Photosensitive drum | [16] | Secondary transfer roller |
| [8] | Multi tray separation pad | [17] | Duplex feed roller (Duplex model) |
| [9] | Multi tray pickup roller | | |

1.5 Using the Machine

1.5.1 Control Panel



F-1-4

T-1-3

Functions of the LEDs

Name	Status	Description
[1] Toner Indicator	Blinking	Printing cannot be performed because a toner cartridge needs to be replaced, or a toner cartridge is not installed properly.
	On	A toner cartridge needs to be replaced.
[2] Paper Source Indicator	Blinking	There is no paper or paper of the correct size is not loaded.
[3] Paper Jam Indicator	Blinking	A paper jam has occurred and printing cannot be performed.
[4] Alarm Indicator	Blinking	An error has occurred and printing cannot be performed.
	On	A service error has occurred.
[5] Ready Indicator	Blinking	The printer is busy printing, warming up, or cleaning.
	On	The printer is ready to print.
[6] Cancel Job Indicator	Blinking	A job is being canceled.
	On	The Cancel Job key has been pressed.

Functions of the Control Panel Keys

T-1-4

Name	Function
[6] Cancel Job Key	Press this key to cancel the job that is currently being printed or a job with an error.

1.6 Safety

1.6.1 Safety of the Laser Light

Laser beam radiation may pose a danger to the human body. A laser scanner mounted on the machine is sealed with the protection housing and external cover to prevent the laser beam from leaking to the outside. The laser beam never leaks out of the scanner as far as users operate the machine normally.

The following warnings are given to comply with Safety Principles (EN60950).

Laserstrahlen können für den menschlichen Körper gefährlich sein. Aus diesem Grund ist das optische Lasersystem mit einem Schutzgehäuse und einer Außenabdeckung dicht verschlossen und hat eine Struktur, die keine Laserstrahlen nach außen dringen lässt. Unter der Voraussetzung, dass der Benutzer dieses Gerät normal bedient, ist ein Austritt von Laserstrahlen daher ausgeschlossen.

1.6.2 Safety of Toner

1. Toner in General

Toner is a non-toxic material made up of plastic, iron, and small amounts of dye.



Do not throw toner into fire. Doing so can lead to explosion.

2. Contact with Toner

- Toner on the skin or clothes must be removed using dry tissue and then washed with water.
- The use of warm water must be avoided, doing so will cause the toner to turn gel-like and to permanently fuse with the fibers of the clothes.
- Contact with vinyl must also be avoided, as toner can readily react.

3. Store of Copy/Print Output

- Be sure to use transparency cases for storing copy/print output.
- Do not use transparency cases made from polyvinyl chloride materials. If the copied surface contacts to the case, toner on the surface of the output dissolves and the output may adhere to the case.

1.6.3 Handling the Laser Unit

When servicing the area around the laser assembly, be sure to turn off the main power.

If you must service while the power is turned on, be sure to keep the followings:

- Do not use a screwdriver or tools that have a high level of reflectance in the laser path.
- Remove watches and rings before starting the work. (They can reflect the laser beam, possibly hitting the eye.)

The machine's covers that can reflect laser light are identified by means of a warning label (Figure). If you must detach a cover showing the label, be sure to take extra caution during the work.

The following warnings are given to comply with Safety Principles (EN60950).

Handhabung des Laserteils

Bei Servicearbeiten am oder in der Nähe des Laserteils zuerst das Hauptgerät abschalten.

Bei Servicearbeiten, die unbedingt bei eingeschaltetem Gerät durchgeführt werden müssen, auf jeden Fall die folgenden Vorsichtsmaßnahmen beachten.

- Keine stark reflektierenden Schraubenzieher oder ähnliche Werkzeuge direkt in den Lichtpfad des Laserstrahls bringen.
- Vor Beginn der Arbeit Uhren, Ringe und ähnliche Gegenstände abnehmen. (Reflektierte Laserstrahlen könnten sonst in die Augen geraten.)

Abdeckungen, die möglicherweise Laserstrahlen reflektieren, haben in der auf dem Bild gezeigten Position einen Aufkleber. Bei Servicearbeiten auf der Innenseite von Abdeckungen mit Aufkleber ist besondere Vorsicht erforderlich.

F-1-5



At disassembly/installation procedure, make sure to follow the instruction below to proceed.

1. Be sure to unplug the power code before disassembly/installation.

1. Be sure to unplug the power cord before disassembly/installation.
2. At installation, follow the procedure in the reverse order of disassembly unless otherwise instructed.
3. Be careful of the screw type (length, diameter) and corresponding part.
4. To check the electrical conductivity, washer equipped screw is used to attach the grounding wire and the varistor etc. When attaching them, be sure to use this screw.
5. In principle, do not operate the machine without any part.
6. Be sure not to unscrew the screw with painting at disassembly.

Chapter 2 TECHNICAL REFERENCE

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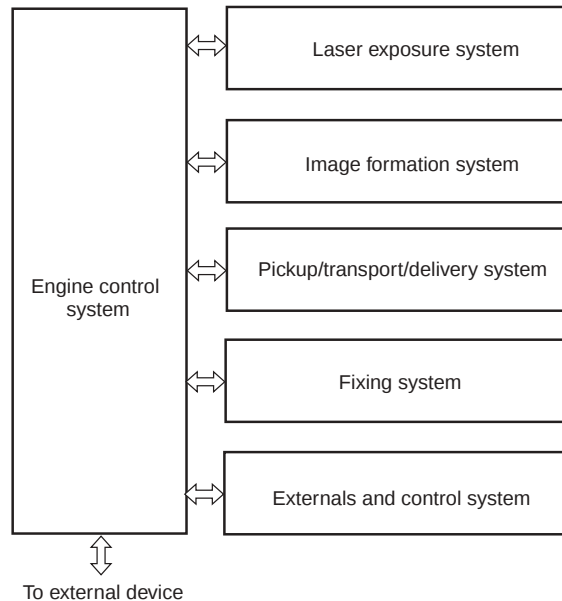
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2.1 Functional Configuration

2.1.1 Outline

The machine may be broadly divided into the following 6 functional blocks: engine control system, laser exposure system, image formation system, pickup/transport/delivery system, fixing system, and externals/auxiliary control system.



F-2-1

2.2 Basic Sequence

2.2.1 Basic Sequence of Operation

The operational sequence of the printer is controlled by the DC controller in the engine control system.

Table describes periods, durations and operations for each period of a print operation from the printer is turned on until the motors stop rotating.

T-2-1

Period	Duration	Operation
WAIT	From the time the power switch is turned on, the door is closed or the Sleep mode is released until the printer gets ready for a print operation	Brings the printer to printable condition The printer performs the following during this period: - Detects the pressure roller pressurized status - Detects the presence of each cartridge and unit - Determines the homeposition of the development unit - Cleans the ITB - Completes any required calibration, such as color misregistration and image stabilization control
STBY (Standby)	From the end of WAIT or LSTR period until either the print command is received from the main controller or the power switch is turned off	Maintains the printer in printable condition The printer performs the following during this period: - Enters Sleep mode when the main controller sends a sleep command - Completes any required calibration, such as color misregistration control and image stabilization control, when the main controller sends a command
INTR (Initial rotation period)	From the time the print command is received from the main controller during STBY period until the temperature of the fixing unit reaches the targeted temperature	Starts up each high-voltage bias, laser scanner unit and fixing unit for preparing a print operation
PRINT	From the end of INTR period until the last media completes the fixing operation	Forms the image on the photosensitive drum based on the video signals from the main controller, transfers and fuses the toner image to the print media The printer performs color misregistration control and image stabilization control at a specified print interval after the printer is turned on
LSTR (Last rotation period)	From the end of PRINT period until the motors stop rotating	Moves the last printed sheet out of the printer and stops the laser scanner unit operation and high-voltage biases The printer enters INTR period as soon as the LSTR period is completed if another print command is received from the main controller

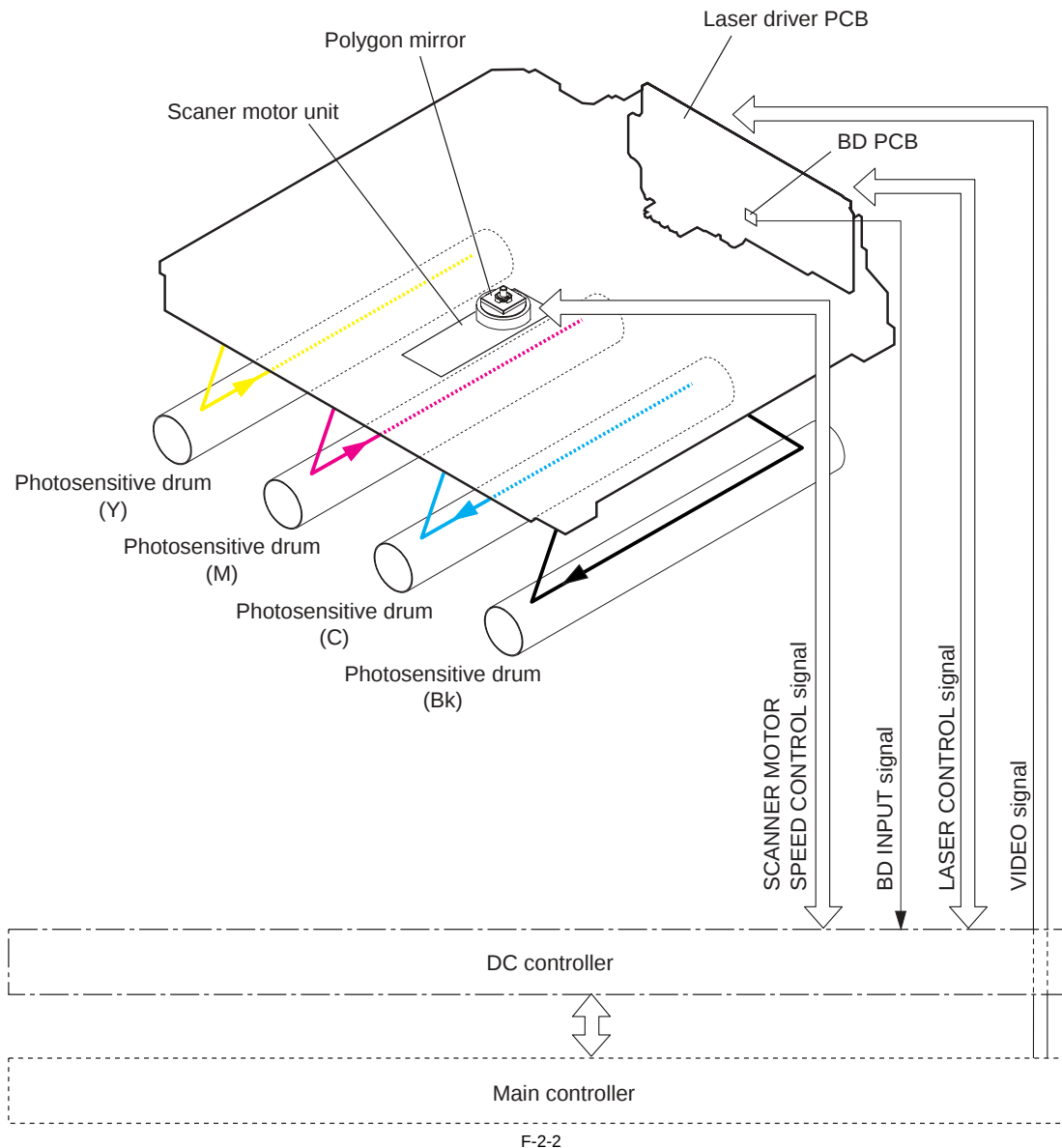
2.3 LASER EXPOSURE SYSTEM

2.3.1 Overview/Configuration

2.3.1.1 Outline

The laser scanner system forms the latent image on the photosensitive drum according to the VIDEO signals sent from the main controller.

The main components of the laser scanner unit are the laser driver and the scanner motor unit and are controlled by the signals sent from the DC controller.



F-2-2

2.3.2 Laser Scanner Motor Control

2.3.2.1 Fault Detection

1. Scanner motor failure
 - The scanner motor does not reach a specified rotation within a specified period after starting-up the laser scanner motor.
 - The rotation of the scanner motor is out of specified range for a specified period during scanner motor drive.
2. BD failure
 - The BD interval is detected at out of a specified value during a print operation.

2.4 IMAGE FORMATION SYSTEM

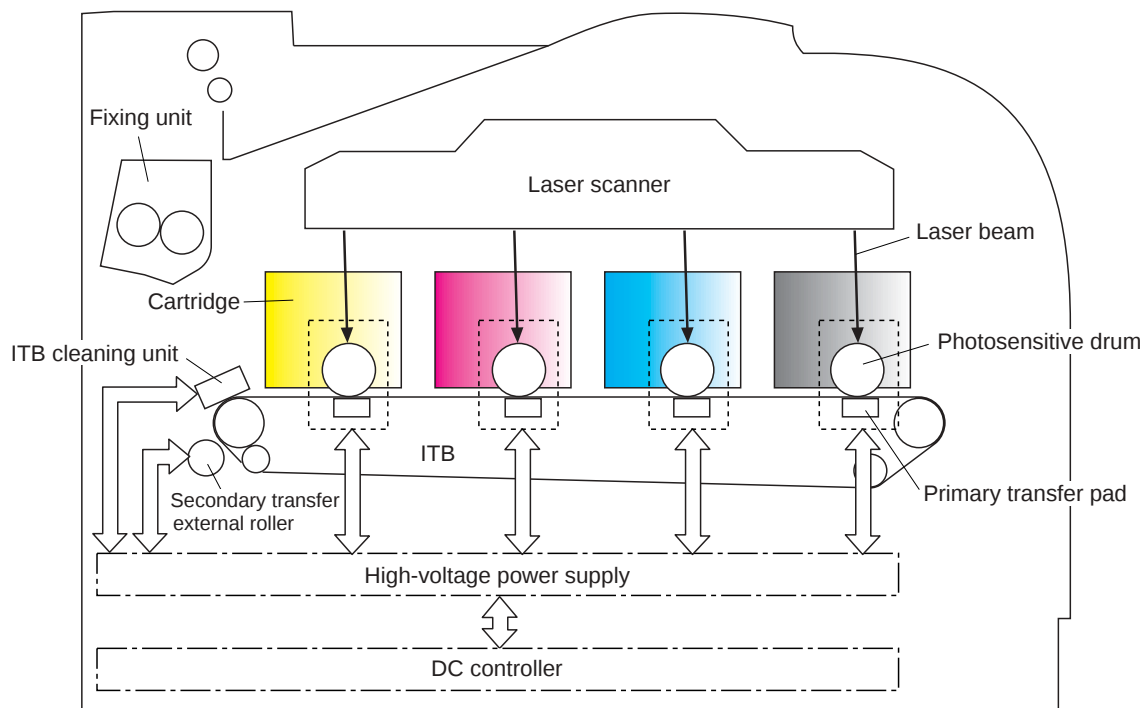
2.4.1 Overview/Configuration

2.4.1.1 Outline

The image-formation system is the central hub of the printer. It forms the toner image on the media. The following are the main components of the image-formation system:

- Four cartridges
- ITB
- Laser scanner unit
- Fixing unit

The DC controller controls the laser scanner unit and high-voltage power supply to form the toner image on the photosensitive drums according to the VIDEO signals. The image is transferred to the print media through the ITB and fixed.

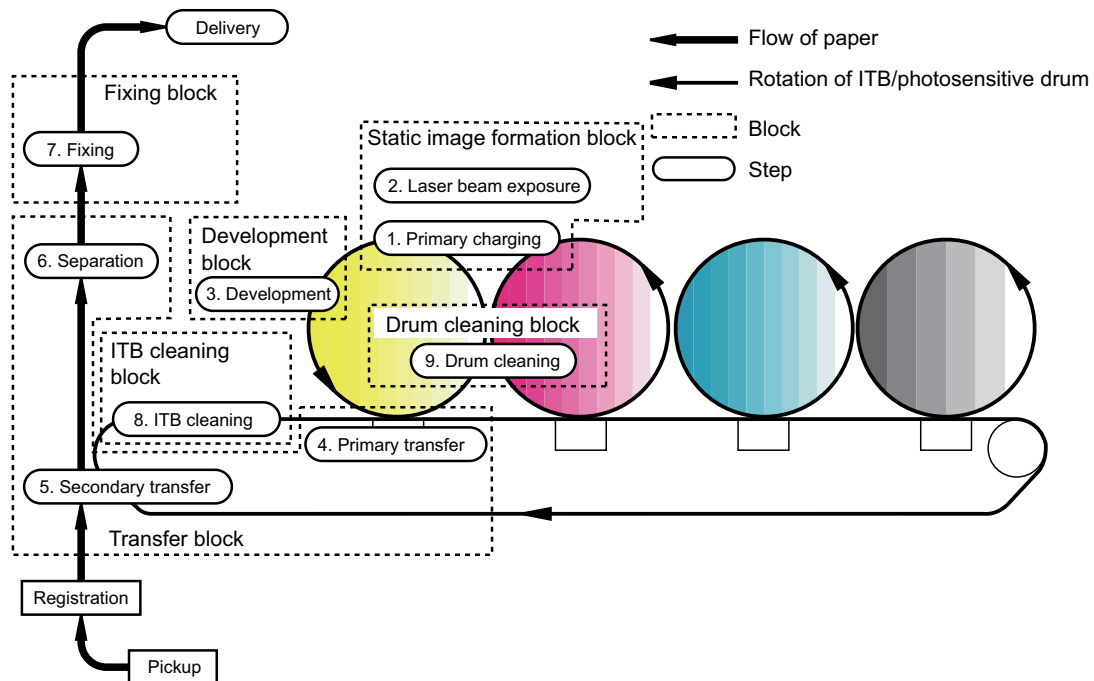


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2.4.1.2 Image-formation Process

The image-formation process consists of the following nine steps divided among six functional blocks:

- Step 1: Primary charging
- Step 2: Laser-beam exposure
- Step 3: Development
- Step 4: Primary transfer
- Step 5: Secondary transfer
- Step 6: Separation
- Step 7: Fixing
- Step 8: ITB cleaning
- Step 9: Drum cleaning



F-2-4

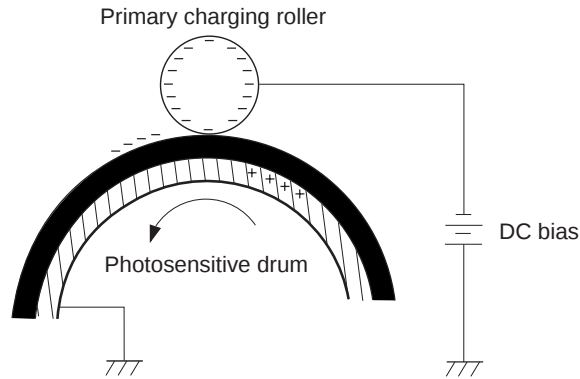
2.4.1.3 Latent image formation block

During the two steps that comprise this block, an invisible latent image is formed on the photosensitive drum.

- Step 1: Primary charging

To prepare for latent image formation, the surface of the photosensitive drum is charged with a uniform negative potential.

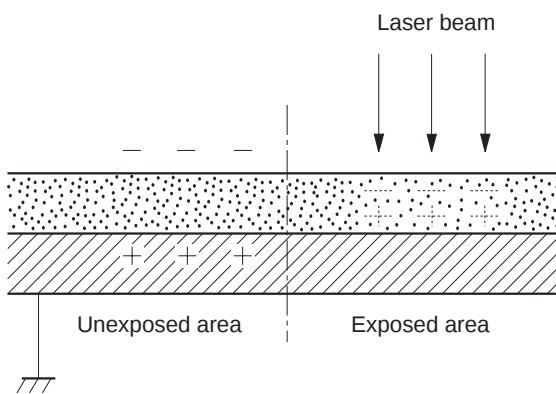
The primary charging roller charges the photosensitive drum directly. The DC negative bias is applied to the primary charging roller to keep a negative potential on the drum surface.



F-2-5

Step 2: Laser-beam exposure

The laser beam scans the photosensitive drum to neutralize the negative charge on portions of the drum surface. An electrostatic latent image forms where the negative charge was neutralized.



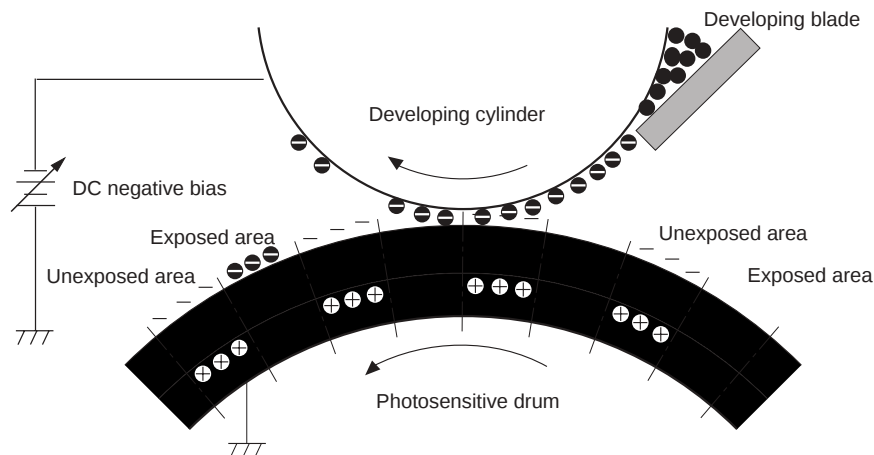
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2.4.1.4 Development block

Toner adheres to the electrostatic latent image on the photosensitive drum, which becomes visible.

Step 3: Development

Toner acquires a negative charge from the friction that occurs when the developing cylinder rotates against the developing blade. When the negatively charged toner comes in contact with the drum, it adheres to the latent image because the drum surface has a higher potential.



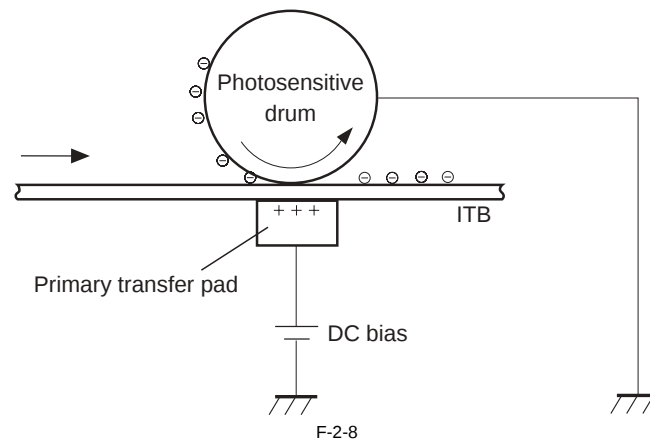
F-2-7

2.4.1.5 Transfer block

During the three steps that comprise this block, a toner image on the photosensitive drum is transferred to the print media through the ITB.

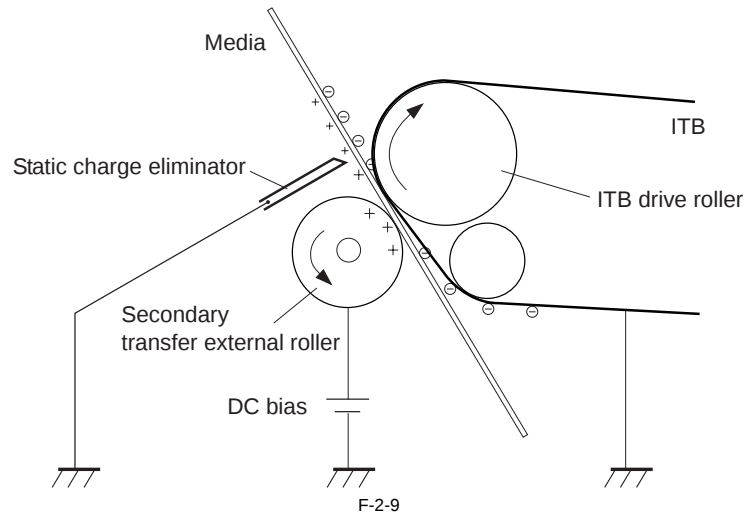
Step 4: Primary transfer

The toner image on the photosensitive drum is transferred to the ITB. The DC positive bias is applied to the primary transfer pad. The negatively charged toner transfers to the ITB from the drum surface.



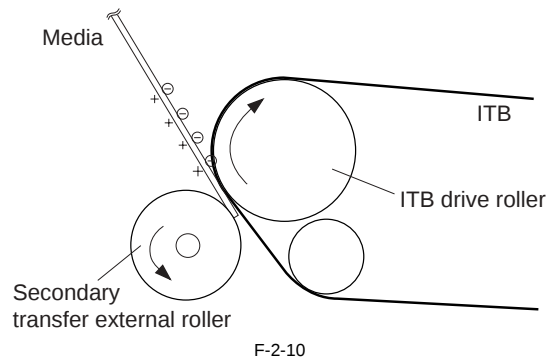
Step 5: Secondary transfer

The toner image on the ITB is transferred to the print media. The DC positive bias is applied to the secondary transfer roller. As the media passes between the secondary transfer roller and the ITB, the toner image is transferred to the media.



Step 6: Separation

The elasticity of the print media and the curvature of the ITB drive roller cause the media to separate from the ITB.

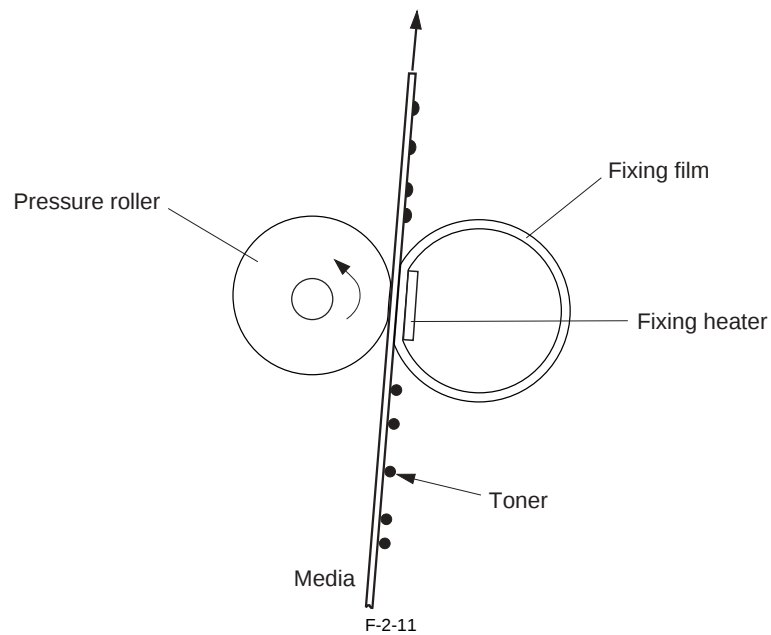


2.4.1.6 Fixing block

The toner image is fixed onto the print media.

Step 7: Fixing

The printer uses an on-demand fixing method to fix the toner image onto the media. The toner image is permanently affixed to the print media by the heat and pressure.



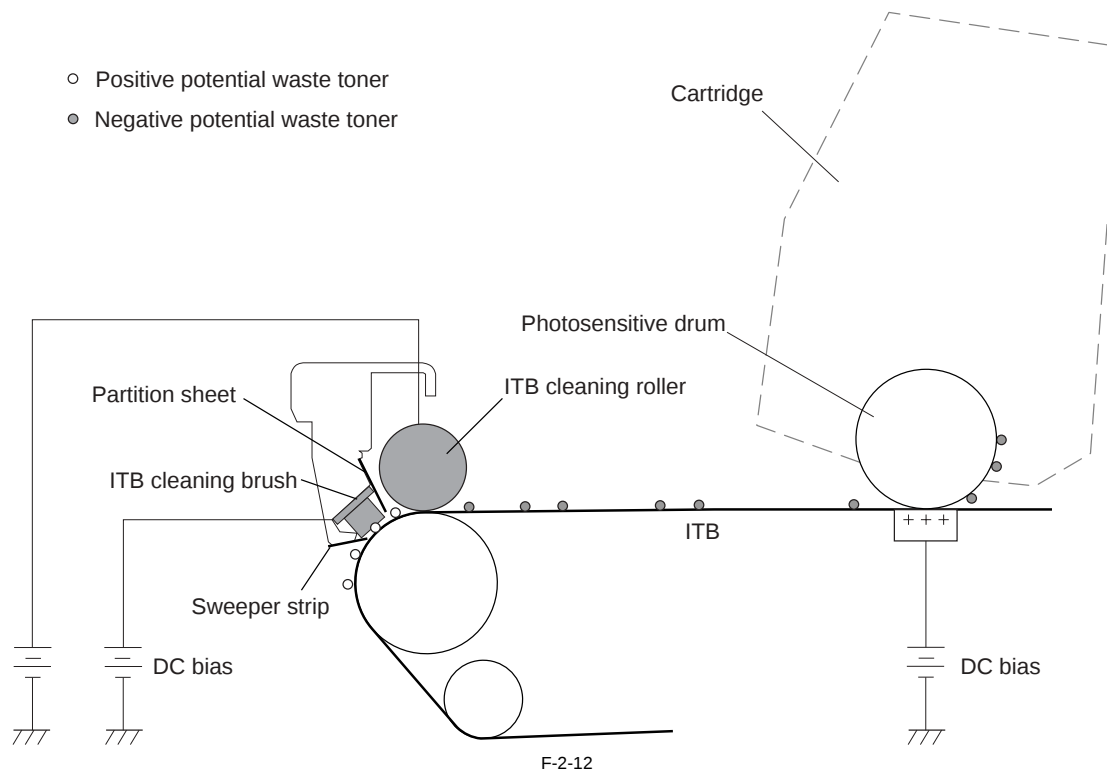
2.4.1.7 ITB cleaning block

The residual (waste) toner is cleared from the ITB surface.

Step 8: ITB cleaning

The ITB cleaning roller and the cleaning brush are applied with DC positive bias to charge the residual toner positive.

As the primary transfer pad is also applied with DC positive bias, the positively charged residual toner is reverse transferred to the photosensitive drum from the ITB surface.



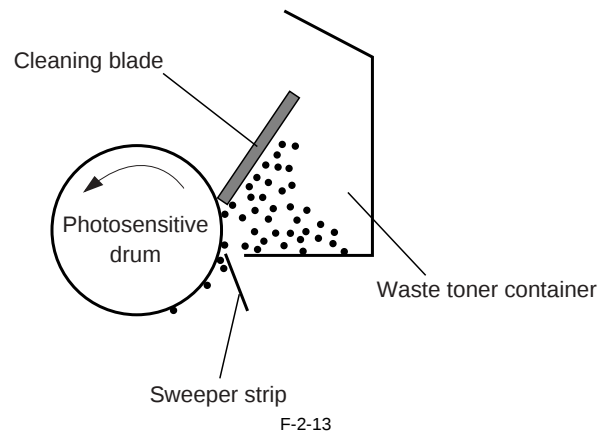
- Positive potential waste toner
- Negative potential waste toner

2.4.1.8 Photosensitive drum cleaning block

The waste toner is cleared from the photosensitive drum surface.

Step 9: Drum cleaning

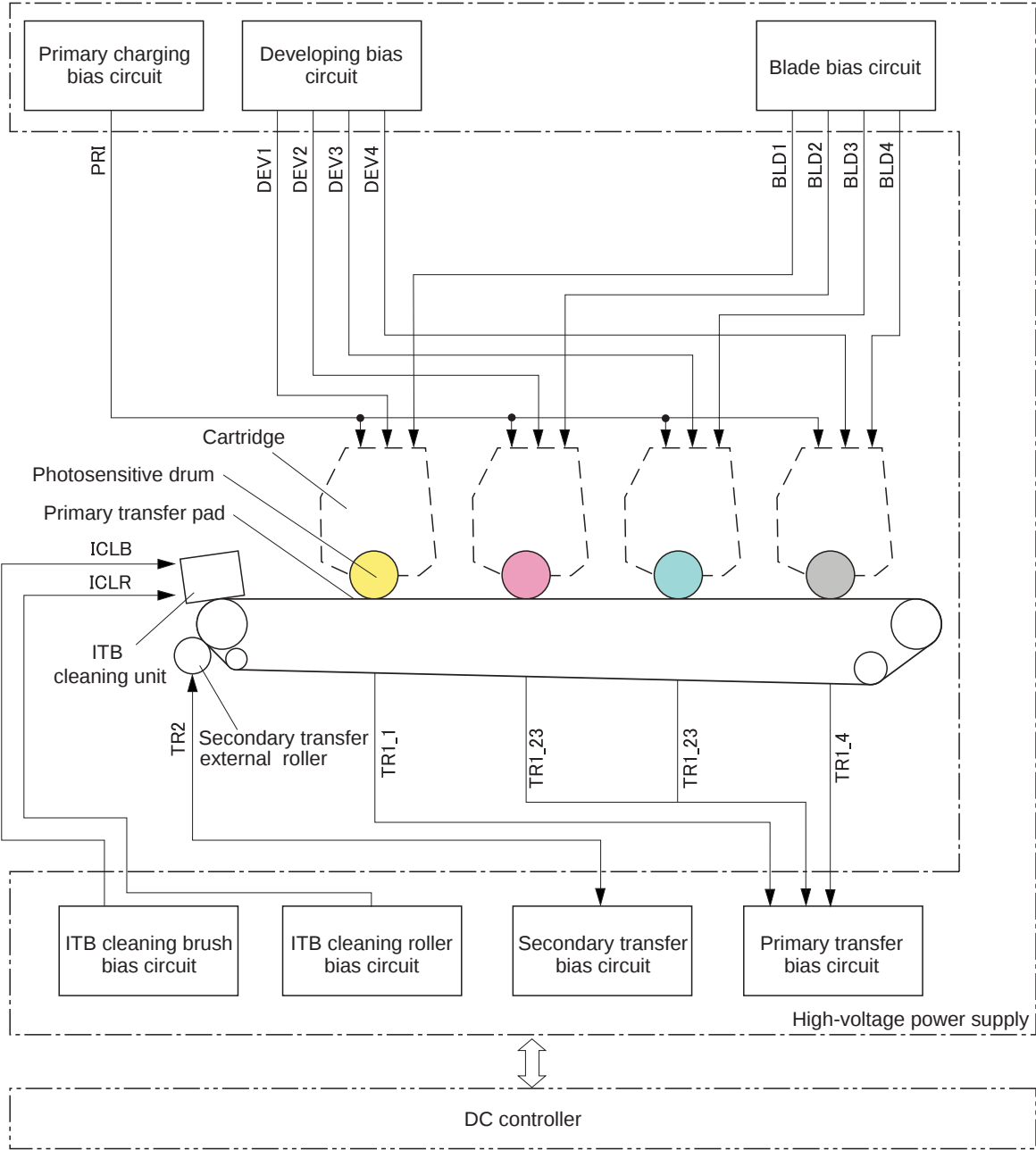
The cleaning blade scrapes the waste toner off the surface of the photosensitive drum. The waste toner is deposited in the waste toner container.



2.4.2 High-Voltage Control

2.4.2.1 Outline

The high-voltage power supply generates the high-voltage biases that are applied to the primary charging roller, developing roller, primary transfer pad, secondary transfer roller and ITB cleaning unit. The DC controller controls the high-voltage power supply to generate high-voltage biases.



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2.4.3 Image Stabilization Control

2.4.3.1 Overview of the Image Stabilization Control Mechanism

The machine uses its image stabilization control mechanism to prevent lowering of image quality (e.g., in the form of a faulty image) otherwise caused by changes in the environment or deterioration of the photosensitive drum or toner.
The machine's image stabilization control mechanism may be any of 3 types: Image density corrective control (D-max control), Image halftone corrective control (D-half control), Color Misregistration Corrective Control.

2.4.3.2 Image density correction control (D-max control)

This control is to stabilize the image density of the printer engine.
If the prescribed condition is met, DC controller PCB performs D-max control in the following procedure.
1. Measure the each density detection pattern made on the ITB.
2. According to the measured density of each pattern, controls the primary charge bias and developing bias to get the appropriate density.
The following is the conditions that trigger the image density correction control
- When the power is ON
At power ON, Out-of-Register Colors Correction is suspended until the initial print process is completed and the machine is ready or until 15 min passes after the power ON. The time setting can be changed from Option > Device Settings > Startup Settings in printer status window.

T-2-2

Startup Settings	Calibration	Out-of-Register Colors Correction	Remarks
Execute Later	Performed 15 minutes later	Performed 15 minutes later	Default

Execute Immediately (Level 1)	Performed 15 minutes later	Execute Immediately	
Execute Immediately (Level 2)	Execute Immediately	Execute Immediately	

- During toner cartridge replacement
- After a specified sheet number printing (200 sheets)
- If there is major environment change
- after the printing is completed, or 300 minutes after Image density correction control (D-max control)
- If there is calibration execution instruction from user.

MEMO:

- When the calibration is executed, sheet counter reading and elapsed time timer are cleared.
- Calibration is not executed in sleep mode.

2.4.3.3 Image gradation correction control (D-half control)

This is a control that main controller PCB executes the gradation correction based on result of the halftone density measurement that is executed by DC controller PCB.

After D-max control, DC controller PCB and main controller PCB execute the D-half control in the following procedure.

1. DC controller PCB measures the each color density detection pattern on ITB that is made by the appropriate primary charge bias that is determined at D-max control and developing bias, and sends the density data to main controller PCB.
2. Main controller PCB executes the gradation correction to realize the ideal halftone image based on the data.

2.4.3.4 Color displacement correction control

This control is to correct the color displacement that appears due to the variation of laser scanner unit or toner cartridge.

The following objects are controlled by this color displacement correction.

- Write start position in main scanning direction
- Magnification in main scanning direction
- Write start position in sub scanning direction

When one of the following conditions is met, DC controller PCB controls the color displacement/density sensor and displacement sensor.

- At power ON

At power ON, Out-of-Register Colors Correction is suspended until the initial print process is completed and the machine is ready or until 15 min passes after the power ON. The time setting can be changed from Option > Device Settings > Startup Settings in printer status window.

T-2-3

Startup Settings	Calibration	Out-of-Register Colors Correction	Remarks
Execute Later	Performed 15 minutes later	Performed 15 minutes later	Default
Execute Immediately (Level 1)	Performed 15 minutes later	Execute Immediately	
Execute Immediately (Level 2)	Execute Immediately	Execute Immediately	

- When closing the door after toner cartridge replacement
- After a specified sheet number printing (150 sheets)
- 60 minutes after the power is turned ON
- 240 minutes after the printing is completed, or 240 minutes after color displacement adjustment control execution
- If there is major environment change

MEMO:

- When the calibration is executed, sheet counter reading and elapsed time timer are cleared.
- Calibration is not executed in sleep mode.

The following is the sequences of this control.

- 1) DC controller calculates the degree of each color displacement by the color displacement detection pattern made on ITB and sends the color displacement information to main controller.
 - 2) Main controller controls the each color video signal according the color displacement data and adjusts the write start position in main scanning direction, the magnification in main scanning direction and the write start position in sub scanning direction.
- At printer engine side, DC controller PCB also controls the scanner motor speed to correct the color displacement in sub scanning direction.

**Scanning magnification**

This indicates the image size in the main scanning direction.

Since this machine is equipped with the independent photosensitive drum for each color, the photosensitive drum position differs due to the toner cartridge variation and that leads to the laser wave length difference. Thus, image range differs depending on a color in main scanning direction so that the color displacement occurs at the edge of the image.

2.4.4 Drum Cartridge

2.4.4.1 Developing roller engagement/disengagement control

The developing cylinder engagement/disengagement control engages the required developing cylinder with the photosensitive drum according to the print mode, full-color mode or monochrome mode.

The necessary developing cylinder is engaged with the photosensitive drum only when required, preventing a deterioration of the drums and making maximum use of the life.

The engagement/disengagement of the developing cylinder is controlled by the DC controller rotating the main motor and changing the direction of the developing disengagement cam. The DC controller controls the developing cylinder state, whether engaged or disengaged, by counting the main motor rotation after it detects the signal from the developing homeposition sensor.

All four colors' developing cylinders disengage from the photosensitive drums when the printer is turned on and when a print operation is completed. All four colors' developing cylinders engage with the photosensitive drums when the full-color mode is designated. Only black's developing cylinder engages with the photosensitive drum when the monochrome mode is designated.

The DC controller determines an abnormality of the developing cylinder engagement/disengagement function and notifies the main controller when it does not sense the signal from the developing homeposition sensor for a specified period during the developing cylinder engagement/disengagement operation.

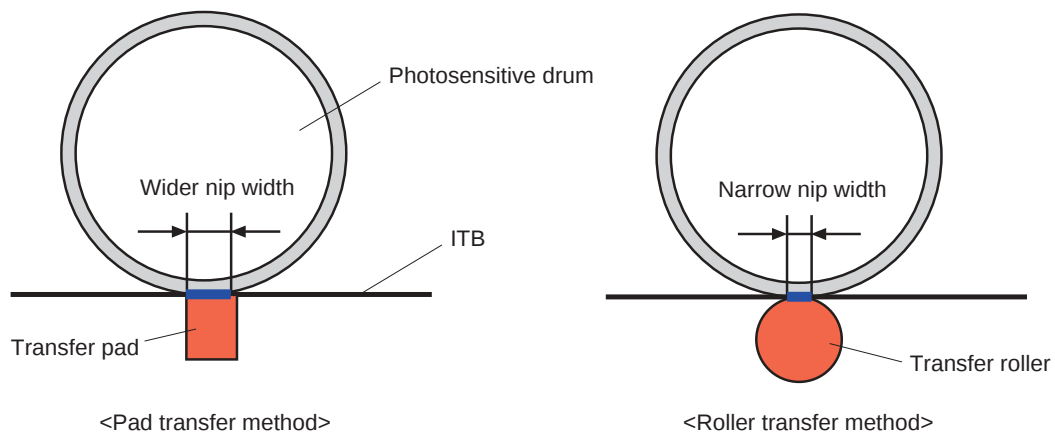
2.4.5 Transfer Unit

2.4.5.1 Pad transfer

The printer has a pad transfer method for the primary transfer operation.

The pad transfer method stabilizes an image compared to the conventional separation roller method. The features for the pad transfer method are as follows:

The wider nip width between the transfer pad and the photosensitive drum improves the transfer performance.



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2.5 Pickup/Feeding/Delivery System

2.5.1 Overview/Configuration

2.5.1.1 Overview

In the pickup/feeding system, each type of feeding roller is configured in the part where printing paper feeding and pickup are conducted. The main configuration for pickup/feeding system is as the following.

<Pickup slot>

- Cassette
- Manual feed pickup slot

<Delivery slot>

- Face down tray

<Feeding system motor>

- Drum motor (M1)
- Registration motor (M3)
- Fixing motor (M4)
- Pickup motor (M5)

<Pickup system solenoid>

- Manual feed tray pickup solenoid (SL1)
- Cassette pickup solenoid (SL2)
- Duplex reversal solenoid (SL5)

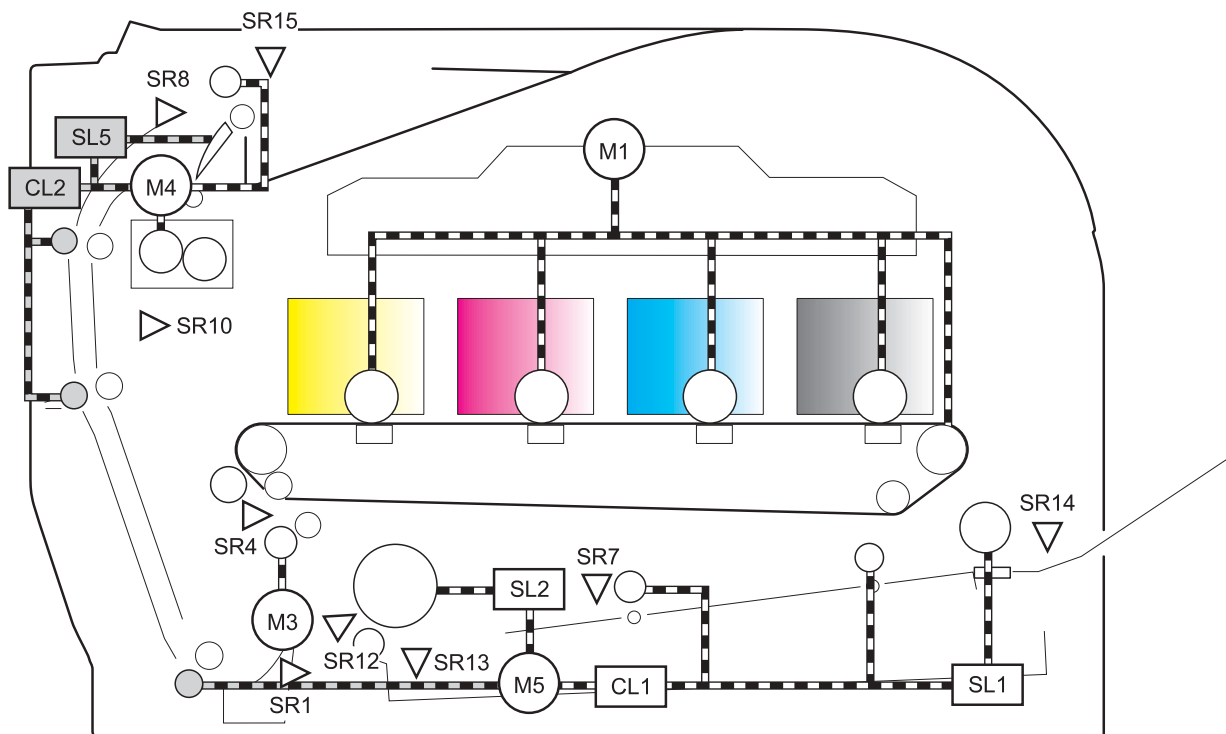
<Feeding system clutch>

- Manual feeding tray feeding clutch (CL1)
- Duplex delivery clutch (CL2)

<Feeding system sensor>

- Registration sensor (SR4)
- Manual feed tray pre-registration sensor (SR7)
- Fixing delivery sensor (SR8)
- Fixing loop sensor (SR10)
- Pre-registration sensor (SR12)
- Cassette paper sensor (SR13)
- Manual feed paper sensor (SR14)
- Delivery full sensor (SR15)

The following are the outline figure for each motor, solenoid, and sensor.



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Name		Signal name	Driver
Drum motor	M1	Drum motor driver signal	DC Controller
Registration motor	M3	Registration motor driver signal	DC Controller
Fixing motor	M4	Fixing motor driver signal	DC Controller
Pickup motor	M5	Pickup motor driver signal	DC Controller

Name		Signal name	Driver
Manual feed trayPickup solenoid	SL1	Manual feed trayPickup solenoid control signal	DC Controller
Cassette pickup solenoid	SL2	Cassette pickup solenoid driver signal	DC Controller
Duplex reversal solenoid	SL5	Duplex reversal solenoid driver signal	DC Controller
Paper feederPre-registration sensor	SR1	Paper feeder pre-registration detection signal	DC Controller
Registration sensor	SR4	Registration detection signal	DC Controller
Manual feed trayPre-registration sensor	SR7	Manual feed tray Pre-registration detection signal	DC Controller
Fixing delivery sensor	SR8	Fixing delivery detection signal	DC Controller
Fixing loop sensor	SR10	Fixing loop detection signal	DC Controller
Pre-registration sensor	SR12	Pre-registration detection signal	DC Controller
Cassette paper sensor	SR13	Cassette paper detection signal	DC Controller
Manual feedPaper sensor	SR14	Manual feed paper detection signal	DC Controller
Delivery full sensor	SR15	Delivery full detection signal	DC Controller
Manual feed trayFeeding clutch	CL1	Manual feed trayFeeding clutch control signal	DC Controller
Duplex feeding clutch	CL2	Duplex feeding clutch control signal	DC Controller

2.5.2 Detecting Jams

2.5.2.1 Jam Detection Outline

2.5.2.1.1 Outline

The following is the detection sensors for paper, to detect whether there is paper or not, and whether the paper is properly fed.

- Registration detection sensor
- Multi manual feed tray pre registration detection sensor
- Fixing delivery detection sensor
- Loop detection sensor
- Pre-registration detection sensor
- Cassette paper detection sensor
- Multi manual feed tray paper detection sensor
- Delivery full detection sensor
- Paper feeder pre-registration detection sensor

The following is the jam that detected by the host machine.

1. Pickup delay jam
2. Pickup stationary jam
3. Fixing delivery delay jam
4. Delivery stationary jam
5. Fixing wrapping-over jam
6. Inside stationary jam.
7. Duplex re-pickup jam.
8. Door open jam.

2.5.2.2 Delay Jams

2.5.2.2.1 Pickup delay jam 1

If the registration sensor (SR4) cannot detect the paper leading edge after the image format starts until the re-pickup is started.

2.5.2.2.2 Pickup delay jam 2

The manual feed tray pre-registration sensor (SR7) cannot detect the paper leading edge within a specified time after manual feed tray pickup starts.

2.5.2.2.3 Fixing delivery delay jam

The fixing delivery sensor (SR8) cannot detect the paper leading edge within a specified time after the re-pickup starts.

The delivery full sensor (SR15) cannot detect the paper leading edge within a specified time after the registration sensor (SR4) detects the paper trailing edge.

2.5.2.3 Stationary Jams

2.5.2.3.1 Pickup stationary jam

If the registration sensor (SR4) cannot detect the paper trailing edge after the re-pickup is started.

2.5.2.3.2 Fixing delivery stationary jam

If within a specified time after the registration sensor (SR4) detects the paper trailing edge, the fixing delivery sensor (SR8) cannot detect the paper trailing edge.

2.5.2.4 Other Jams

2.5.2.4.1 Fixing wrapping-up jam

If the fixing delivery sensor (SR8) cannot detect the paper, after it detects paper leading edge until the fixing delivery stationary starts the detection.

2.5.2.4.2 Inside stationary jam 1

If during power ON/door close, paper feeder pre-registration sensor (SR1)/registration sensor (SR4)/manual feed tray registration sensor (SR7)/fixing delivery sensor (SR8)/fixing loop sensor (SR10)/pre-registration sensor (SR12)/cassette paper sensor (SR13) detect paper.

2.5.2.4.3 Inside stationary jam 4

If before/after printing, paper feeder pre-registration sensor (SR1)/registration sensor (SR4)/manual feed tray registration sensor (SR7)/fixing delivery sensor (SR8)/fixing loop sensor (SR10)/pre-registration sensor (SR12) detect paper.

2.5.2.4.4 Duplex re-pickup jam

If the registration sensor (SR4) cannot detect the paper leading edge in a specified time after reversal starts.

2.5.2.4.5 Door open jam

During printing, if each sensor detects paper when the door-open is detected.

2.5.3 Cassette Pickup

2.5.3.1 Separation Roller Method

The printer has a separation roller method to prevent multiple sheets of media from entering the printer.

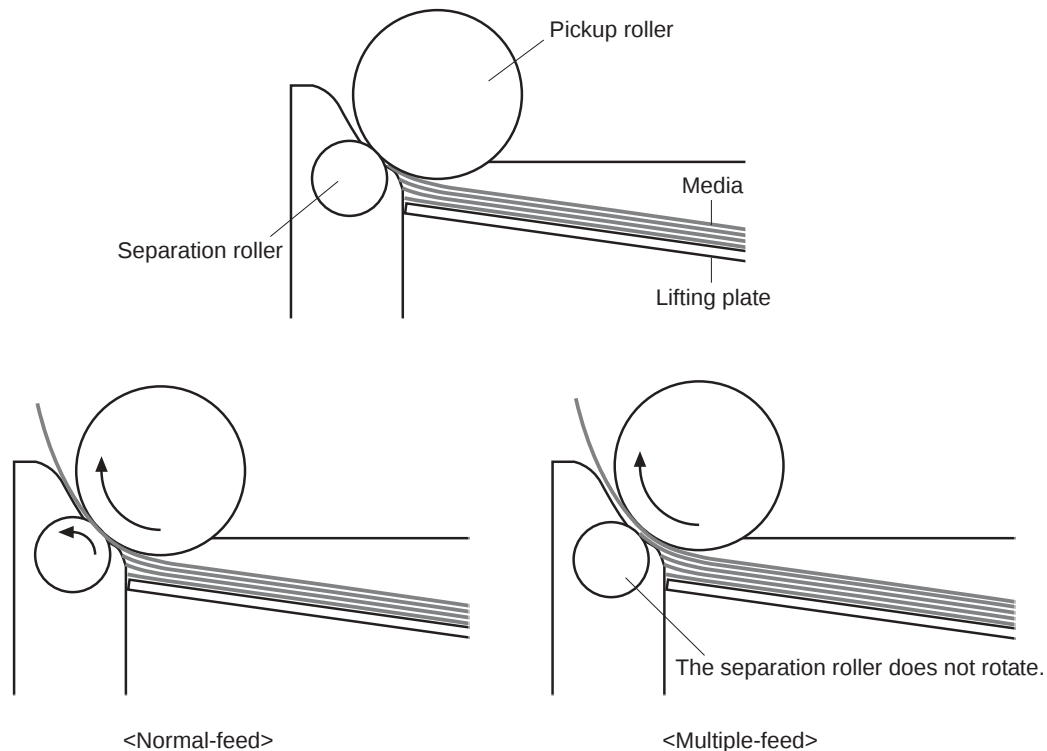
The paper separation roller follows the rotational direction of the pick-up roller because it does not have its own driving force.

- Normal-feed

The separation roller is driven by the pickup roller through a sheet of print media. That is, the separation roller rotates in the media feed direction.

- Multiple-feed

The low friction force between the sheets weakens the rotational force from the pickup roller. The separation roller is limited its rotational force and it does not rotate with such weak driving force from the pickup roller. As the separation roller does not rotate, the multiple sheets are not fed to the printer.



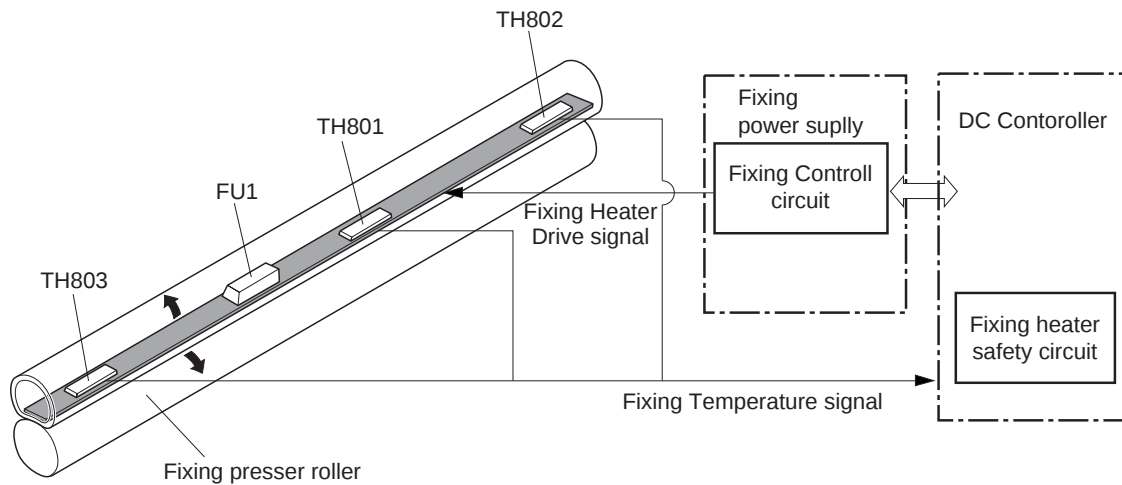
F-2-17

2.6 FIXING UNIT SYSTEM

2.6.1 Overview/Configuration

2.6.1.1 Outline

The fixing power supply controls the temperature in the fixing unit. The printer uses an on-demand fixing method.



F-2-18

- Heater (H801): Heats the fixing film
- Thermistor (T802): Detects the fixing film temperature (Contact type)
- Thermal fuse (FU1): Prevents the fixing heater temperature from rising abnormally high

The thermal fuse is located at the center of the fixing heater.

If the temperature of the fixing heater rises abnormally high, the thermal fuse blows to interrupt power supply to the fixing heater.

These temperature controls in the fixing unit are performed by the fixing control circuit and the fixing heater safety circuit according to the commands from the DC controller.

2.6.2 Various Control Mechanisms

2.6.2.1 Controlling the Speed of the Fixing Unit

2.6.2.1.1 The speed control of small size paper (throughput down control)

This is a control to prevent the abnormal temperature rising of the fixing heater end side when printing continuously using less than A4 size width paper.

If the paper width is less 210 mm (A4 size) is printed continuously, it adjusts the number of the sheets printed, spread the pickup interval and slow the throughput.

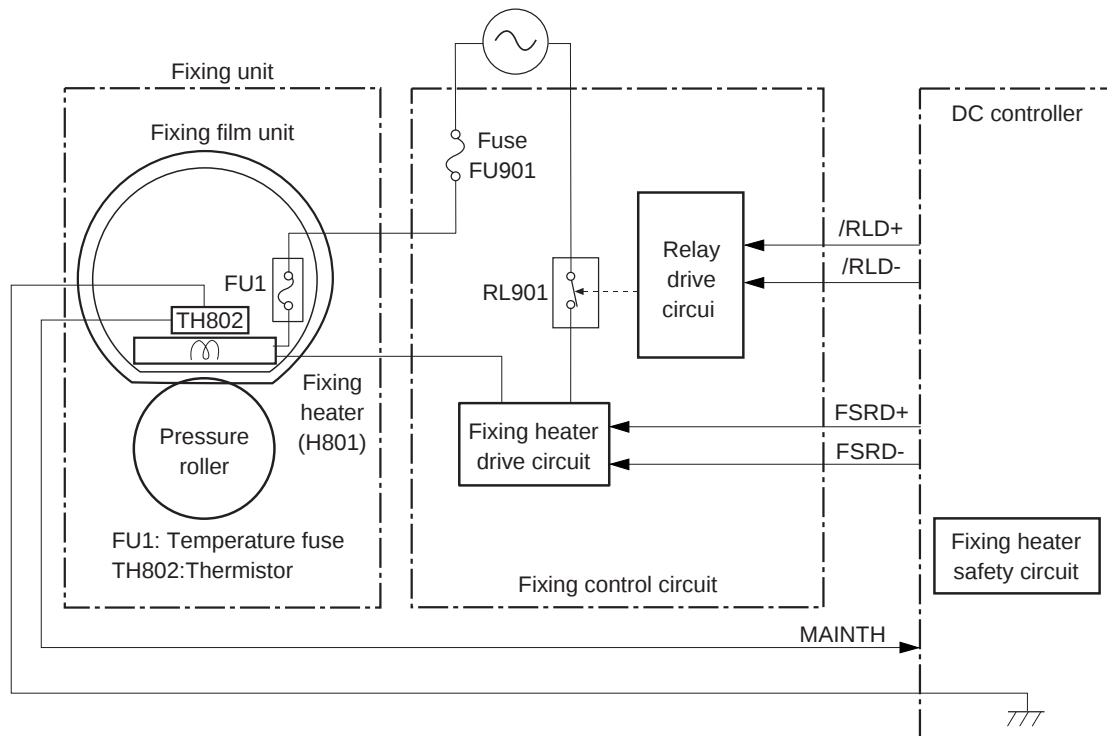
T-2-5

Setting on the driver	Paper type	Paper size	Print speed (ppm)
Normal paper	Normal paper (75 to 90g/m2)	A4	20.0 < 10.0 < 6.6 < 5.0 < 3.3
		LTR	21.0 < 10.2 < 6.7 < 5.0 < 3.3
		LGL	14.1 < 9.2 < 6.3 < 4.7 < 3.2
Normal paper L	Thin paper (60 to 74g/m2)	A4	20.0 < 10.0 < 6.6 < 5.0 < 3.3
		LTR	21.0 < 10.2 < 6.7 < 5.0 < 3.3
		LGL	14.1 < 9.2 < 6.3 < 4.7 < 3.2
Heavy paper 1	Thick paper (86 to 119g/m2)	A4	20.0 < 10.0 < 6.6 < 5.0 < 3.3
		LTR	21.0 < 10.3 < 6.7 < 5.0 < 3.2
		LGL	14.1 < 9.2 < 6.3 < 4.7 < 3.2
Heavy paper 2	Thick paper (120 to 128g/m2)	A4	20.0 < 10.0 < 6.6 < 5.0 < 3.3
		LTR	21.0 < 10.3 < 6.7 < 5.0 < 3.2
		LGL	14.1 < 9.2 < 6.3 < 4.7 < 3.2
Heavy paper 3	Thick paper (129 to 163g/m2)	A4	9.7 < 6.0 < 4.9 < 3.9 < 2.8
		LTR	9.9 < 6.2 < 5.0 < 4.0 < 2.8
		LGL	8.3 < 5.4 < 4.5 < 3.7 < 2.7
Coat paper 1	Coat paper (120 to 130g/m2)	A4	6.5 < 4.9 < 3.9 < 3.3 < 2.4
		LTR	6.9 < 5.1 < 4.0 < 3.3 < 2.5
		LGL	5.6 < 4.3 < 3.6 < 3.0 < 2.3
Coat paper 2	Coat paper (155 to 165g/m2)	A4	6.5 < 4.9 < 3.9 < 3.3 < 2.4
		LTR	6.9 < 5.1 < 4.0 < 3.3 < 2.5
		LGL	5.6 < 4.3 < 3.6 < 3.0 < 2.3
Coat paper 3	Coat paper (210 to 220g/m2)	A4	6.5 < 4.9 < 3.9 < 3.3 < 2.4
		LTR	6.9 < 5.1 < 4.0 < 3.3 < 2.5
		LGL	5.6 < 4.3 < 3.6 < 3.0 < 2.3

2.6.2.2 Fixing Temperature Control

2.6.2.2.1 Fixing temperature control

The fixing control circuit brings the fixing heater temperature at the targeted temperature.



F-2-19

The DC controller monitors the FIXING HEATER TEMPERATURE (MAINTH) signal and sends the FIXING HEATER DRIVE (FSRD+, FSRD-) signals according to the detected temperature. The fixing heater drive circuit controls the fixing heater depending on the signals so that the heater remains at the targeted temperature.

1) Warm up temperature control

This control is to warm up the fixing heater until the fixing temperature reaches the required fixing temperature.

Warm up temperature differs depending on the elapsed time from the previous print, paper type or environment.

2) Print temperature control

This control is to keep the fixing sleeve temperature at a targeted temperature during printing.

Target temperature of fixing sleeve differs, depending on the paper type.

3) Paper interval temperature control

This control is to bring the fixing heater temperature lower than the fixing temperature at paper interval to prevent the pressure roller from overheating during continuous printing in low speed mode at paper interval.

Temperature during paper interval is changed corresponding to the distance and paper type.

2.6.3 Protective Functions

2.6.3.1 Protective function

The protective function detects an abnormal temperature rise of the fixing unit and interrupts power supply to the fixing heater.

The following three protective components prevent an abnormal temperature rise of the fixing heater:

- DC controller
- Fixing heater safety circuit
- Thermal fuse

1) DC controller

The DC controller monitors the detected temperature of the thermistor located at the center of the fixing heater. The DC controller sets the FIXING HEATER DRIVE (FSRD+, FSRD-) signals to inactive and releases the relay to interrupt power supply to the fixing heater under the following condition:

- Thermistor: 230 deg C or higher

2) Fixing heater safety circuit

The fixing heater safety circuit monitors the detected temperature of the thermistor located at the center of the fixing heater. The fixing heater safety circuit releases the relay to interrupt power supply to the fixing heater under the following condition:

- Thermistor: 240 deg C or higher

3) Thermal fuse

When the temperature of the fixing heater rises abnormally high and the detected temperature of the thermal fuse is the following condition, the fuse blows to interrupt power supply to the fixing heater:

- Thermal fuse: 226 deg C or higher

2.6.3.2 Fixing unit failure detection

The DC controller determines a fixing unit failure, sets the FIXING HEATER DRIVE (FSRD+, FSRD-) signals to inactive, releases the relay to interrupt power supply to the fixing heater and notifies the main controller of a fixing unit failure when it encounters the following conditions:

1) Start-up failure

- If the detected temperature of the thermistor does not reach 40 deg C within a specified period from the heater energization during the wait period.

- If the detected temperature of the thermistor does not reach 70 deg C within a specified period after it once reaches 40 deg C after the heater energization during the wait period.
- If the detected temperature of the thermistor does not reach the targeted temperature within a specified period under the heater temperature control during the initial rotation period.
- 2) Abnormal low temperature
 - If the detected temperature of the thermistor is kept 100 deg C or lower for a specified period under the heater temperature control during the print period.
- 3) Abnormal high temperature
 - If the detected temperature of the thermistor is kept 230 deg C or higher for a specified period.
- 4) Fixing heater drive circuit failure
 - If the specified count of the ZERO CROSSING signal is not detected within a specified period after the printer is turned on.
 - If the ZERO CROSSING signal is not detected for a specified period during the print period after the signal is once detected after the printer is turned on.

2.7 EXTERNAL AND CONTROLS SYSTEM

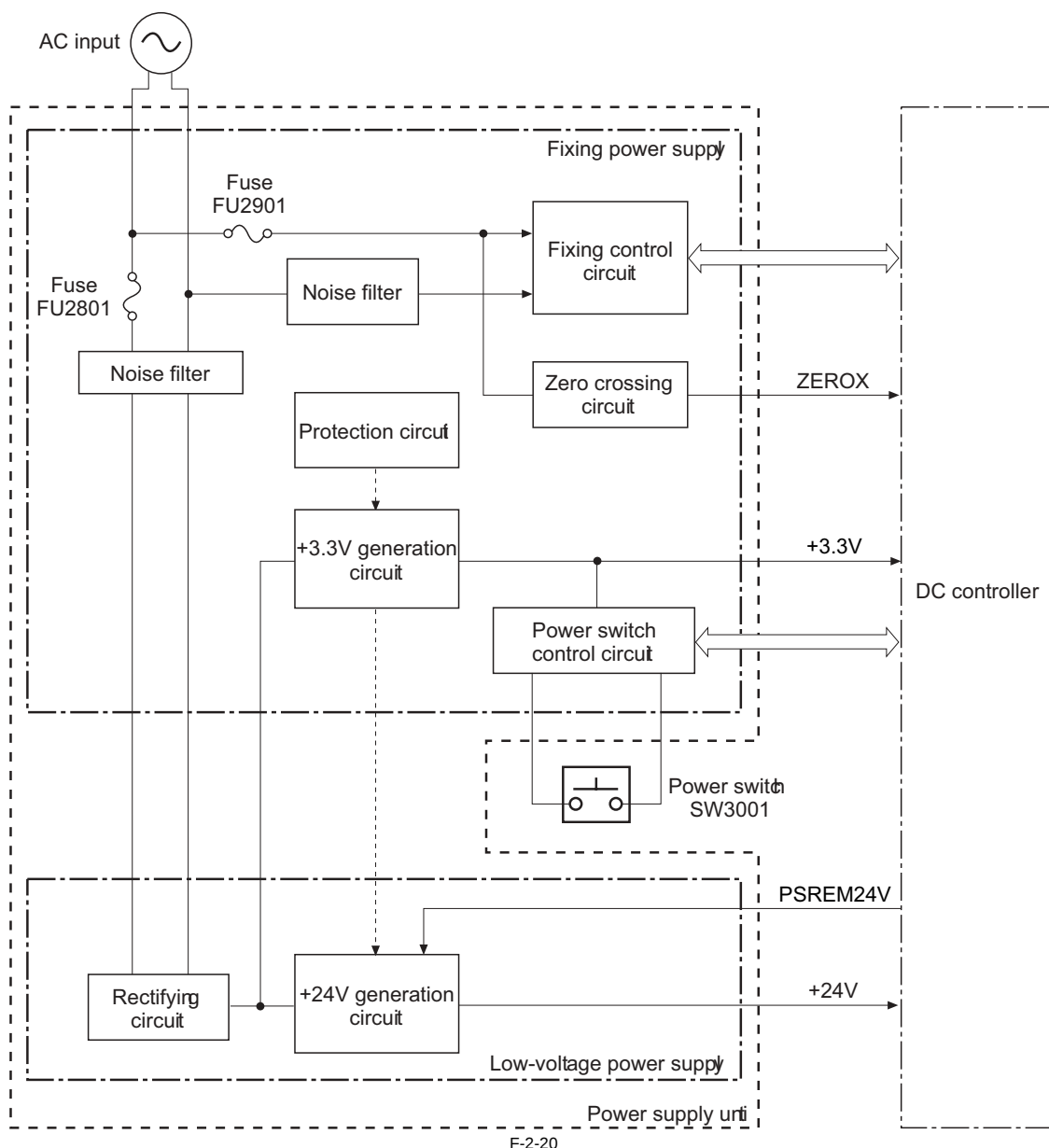
2.7.1 Power Supply

2.7.1.1 Power Supply

2.7.1.1.1 Low-voltage power supply

The low-voltage power supply and the fixing power supply convert AC power from the power receptacle into DC power to cover the DC loads.

- Low-voltage power supply:
 - Generates DC power required in the printer
- Fixing power supply:
 - Supplies AC power to the low-voltage power supply
 - Controls the fixing heater temperature in the fixing unit



For low pressure power, insert the AC power in the inlet, switch the power ON, and it will start. The AC power generates +3.3V in the fixing power, +24V in the

low pressure power, and supplies to the host machine.

2.7.1.2 Other Function

2.7.1.2.1 Protective function

The low-voltage power supply has a protective function against overcurrent and overvoltage to prevent failures in the power supply circuit. If there flows an overcurrent or overvoltage, the low-voltage system automatically cuts off the output voltage. If the DC voltage is not being supplied from the low-voltage power supply, turn off the power switch and unplug the AC power cord. Do not turn the power switch on again until the root cause is found.

In addition, two fuses in the fixing power supply protect against overcurrent. If overcurrent flows into the AC line, the fuses blow and cut off the AC power.

2.7.1.2.2 Power-save mode

The power-save mode reduces power consumption of the printer.

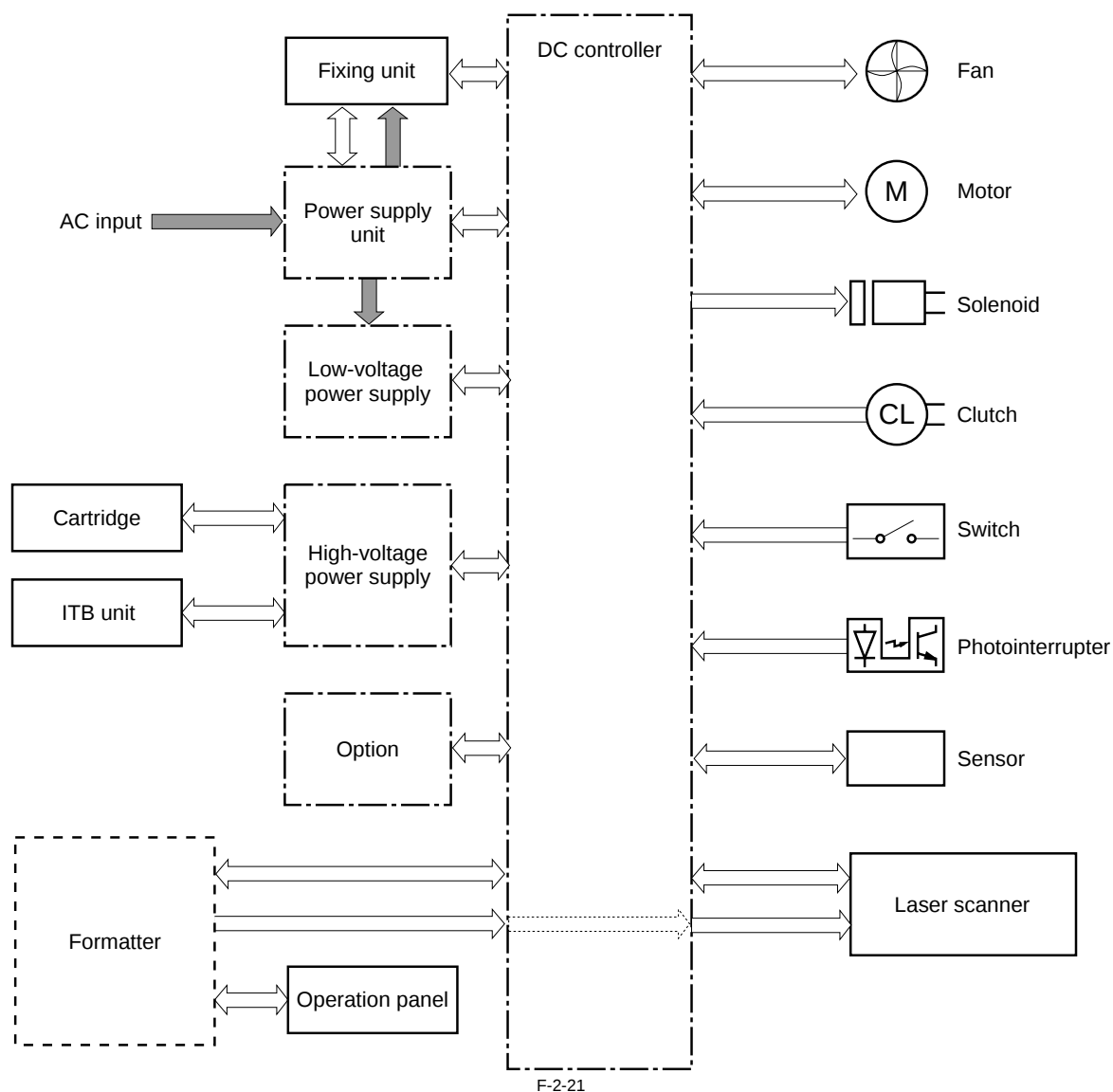
When the low-voltage power supply receives the POWER SAVE (REM24V) signal from the DC controller, it stops the power supply from the +24V generation circuit.

2.8 ENGINE CONTROL SYSTEM

2.8.1 Construction

2.8.1.1 Outline

The DC controller controls the operational sequence of the printer.



T-2-6

Symbol for component		Name
Motor	M1	Drum motor
	M2	Developing motor
	M3	Registration motor
	M4	Fixing motor
	M5	Pickup motor
	M7	Scanner motor
FAN	FM1	Fixing/Fixing power supply cooling fan
	FM2	Duplex cooling fan
Solenoid	SL1	Bypass tray pickup solenoid
	SL2	Cassette pickup solenoid
	SL3	Developing separation solenoid
	SL5	Duplex reversal solenoid
	SL6	Paper feeder pickup solenoid
Sensor	SR1	Paper feeder pre-registration detection sensor
	SR2	Front door open/close sensor
	SR3	Paper feeder paper detection sensor
	SR4	Registration detection sensor
	SR6	Developing HP sensor
	SR7	Bypass tray pre registration detection sensor
	SR8	Fixing delivery sensor
	SR9	Fixing pressure release sensor
	SR10	Fixing loop sensor
	SR12	Pre-registration detection sensor
	SR13	Cassette paper detection sensor
	SR14	Bypass paper detection sensor
	SR15	Delivery full sensor
	SR16	ITB pressure release sensor
Clutch	CL1	Bypass tray feeding clutch
	CL2	Duplex feeding clutch

2.8.1.2 Motor control

The printer has four motors. The motors are used for the media feeding and image formation.

T-2-7

Name		Driving parts	Failure detection
Drum motor	M1	Photosensitive drum, ITB	Available
Developing motor	M2	Developing printer, developing disengagement assembly	Available
Registration motor	M3	Registration roller	NA
Fixing motor	M4	Pressure roller, delivery roller, duplex feeding roller	Available
Pickup motor	M5	Pickup roller, multi manual feed feeding roller, multi manual feed pickup roller	NA

2.8.1.3 Safety

The printer detects the door open and close status by monitoring the door open detection sensors. The DC controller stops driving the motors and solenoids if the sensor detects a door open.

2.8.2 Main Controller

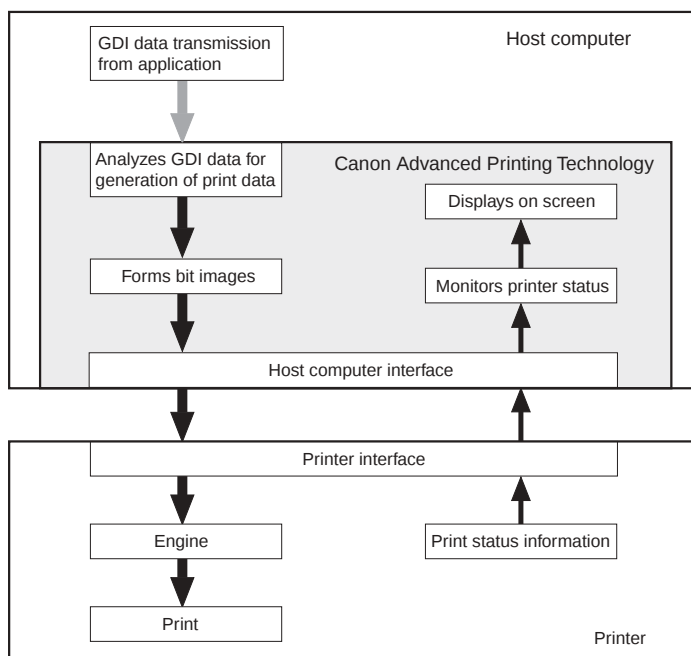
2.8.2.1 Outline

The main controller receives print information from external devices (e.g., host computer) by way of interface cables. The information contains a CAPT command used to communicate printer status and printer-specific characteristics and dot data, which is the result of conversion of print data by the host computer. The data is sent to the DC controller circuit for control of laser diode activation.

If properly connected with a bi-directional interface, an external device may be used to check the printer status.

When printing is executed in a Microsoft Windows or Macintosh environment, CAPT (Canon Advanced Printing Technology) serves to reduce processing speed and enhance the ease of operation to provide a user-friendly printing environment. To that end, CPU is designed for the following:

- The print data from the application is turned into dot data and sent to the printer without conversion into the printer's page description language (PDL).
- The printing environment may be checked and set on the host computer display by responding to dialog boxes.
- The printer status is indicated on the host computer screen: print end time, print paper movement, error status.

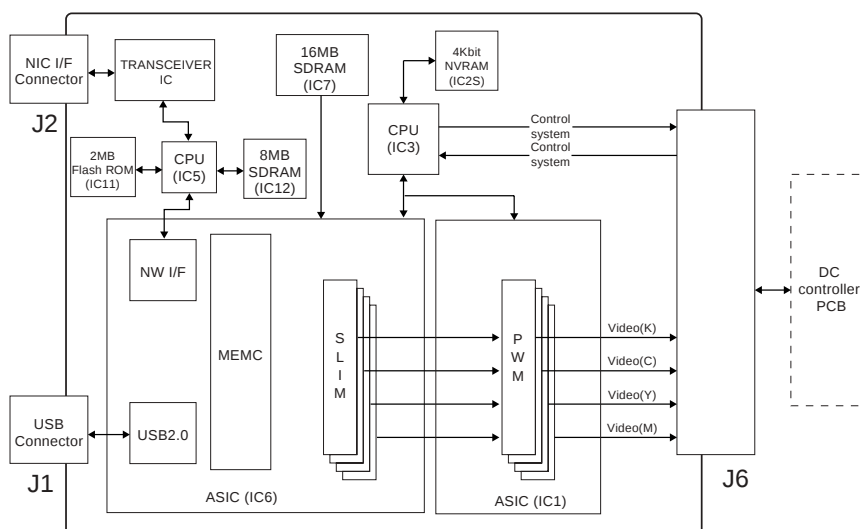


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**GDI (graphics device interface)**

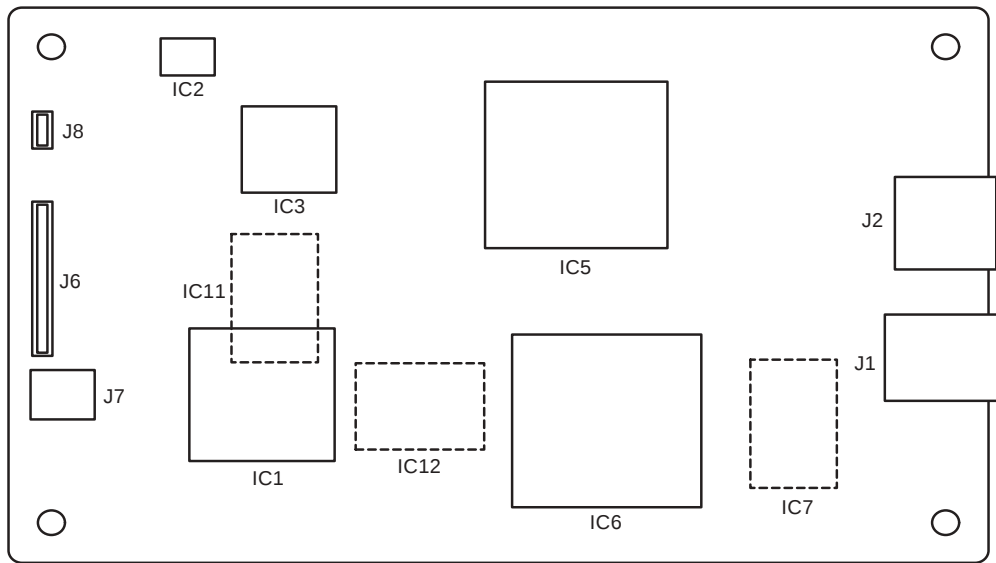
It is a graphical interface used in a Windows environment for printing and screen display (also for the application being in use).

2.8.2.2 Overview of the Block

F-2-23

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No.	Name	Description
IC1	ASIC	handle the image data
IC3	CPU	Controls the board.
IC5	CPU	Control the network
IC6	ASIC	Serves as an IC for USB device controller, memory controller, main controller, and NIC interface controller.
IC7	SDRAM	Retains image data.
IC11	Flash ROM	Network system order firmware storage
IC12	SDRAM	Retains image data.
IC2S	NVRAM	Serves to retain image data.



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Chapter 3 DISASSEMBLY AND ASSEMBLY

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3.1 EXTERNAL AND CONTROLS SYSTEM

3.1.1 Rear Cover

3.1.1.1 Removing rear cover

- 1) Open the rear cover assembly [1].



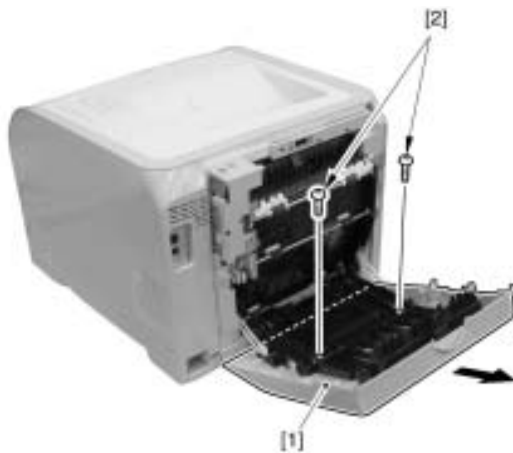
F-3-1

- 2) Close the duplex feeding assembly [1].



F-3-2

- 3) Remove the rear cover [1] in the arrow direction.
- 2 screws [2]



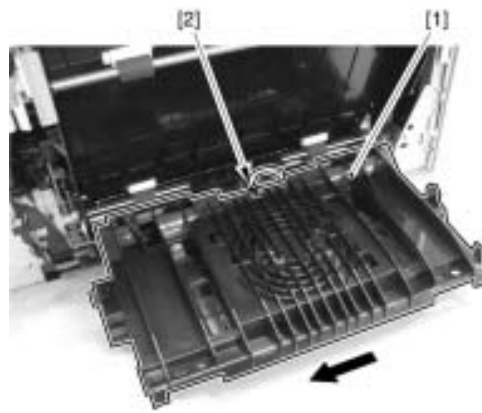
F-3-3

3.1.1.2 Pre-procedure for removing rear cover lib unit

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]
- 4) Remove the rear cover. (page 3-1)Reference[Removing rear cover]
- 5) Remove the lower rear cover. (page 3-1)Reference[Removing lower rear cover]

3.1.1.3 Removing rear cover lib unit

- 1) Remove the rear cover lib unit [1] in the arrow direction.
- 1 connector [2].



F-3-4

3.1.2 Rear Upper Cover

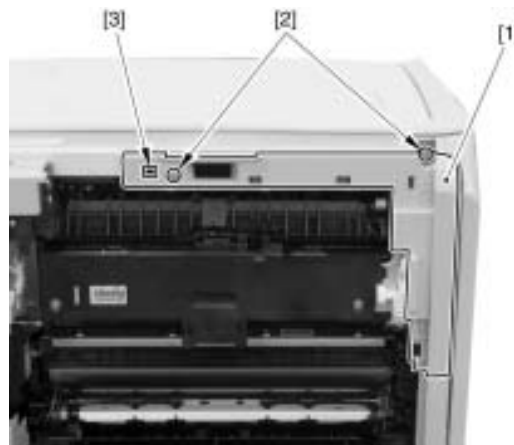
3.1.2.1 Removing upper rear cover (left)

- 1) Open the rear cover assembly [1].



F-3-5

- 2) Remove the upper rear cover (left) [1].
- 2 screws [2]
- 1 claw [3]



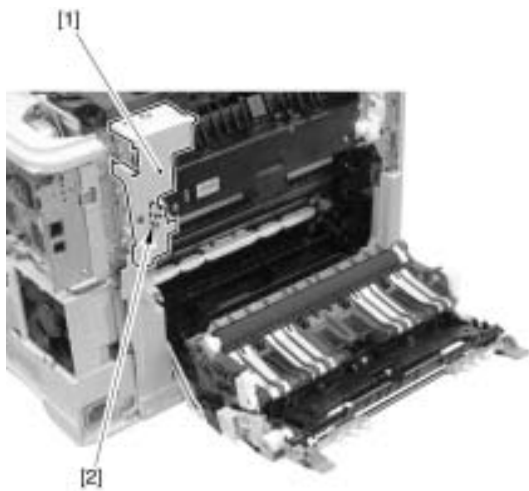
F-3-6

3.1.2.2 Pre-procedure for removing lower rear cover

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]
- 4) Remove the rear cover. (page 3-1)Reference[Removing rear cover]

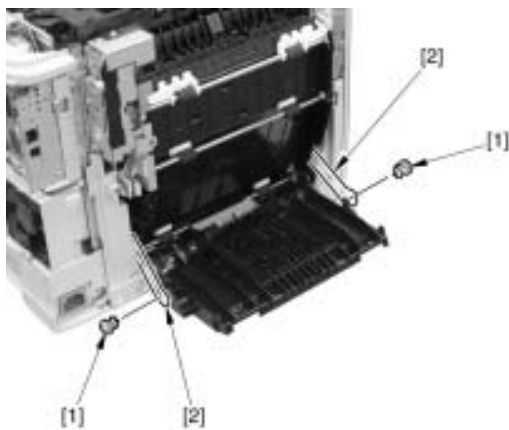
3.1.2.3 Removing lower rear cover

- 1) Remove the upper rear cover (right) [1].
- 1 claw [2]



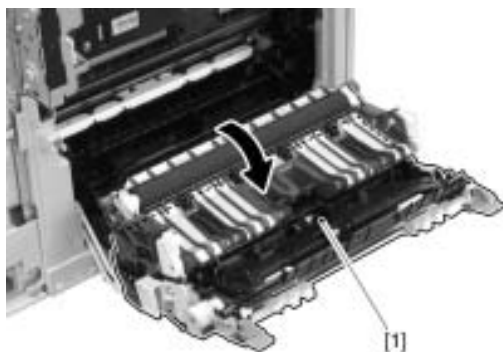
F-3-7

2) Remove 2 stoppers [1] and then 2 link arms [2].



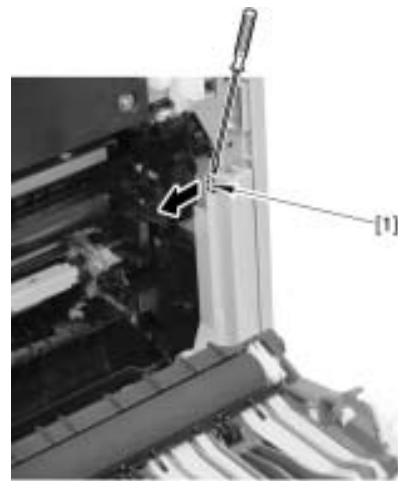
F-3-8

3) Open the duplex feeding unit [1].



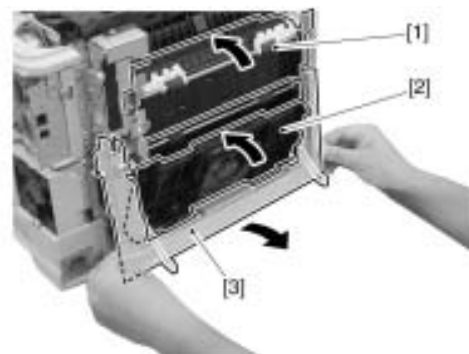
F-3-9

4) Remove 2 claws [1] on the lower rear cover using a flat head screwdriver.



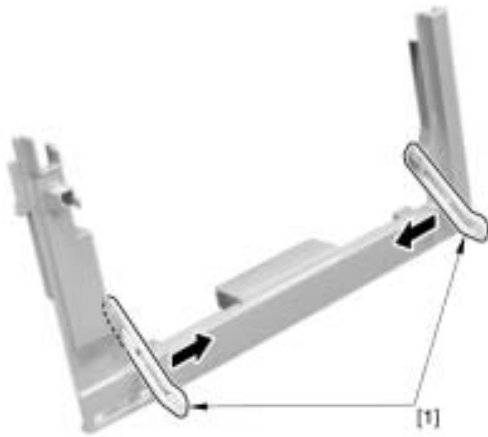
F-3-10

5) Close the duplex feeding unit [1] and rear cover lib unit [2], and remove the lower rear cover [3] in the arrow direction.



F-3-11

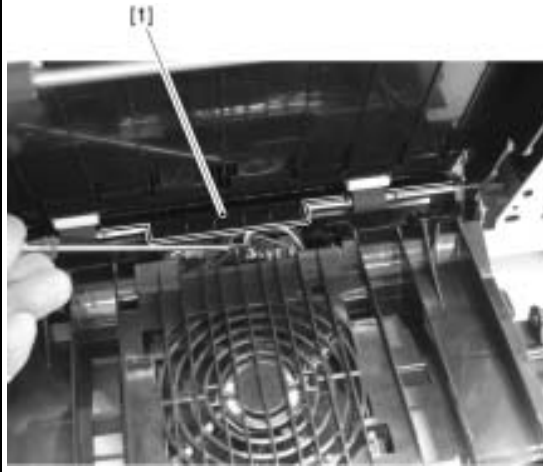
6) Remove 2 link arms [1] from the lower rear cover.



F-3-12

CAUTION: Point to note for assembling

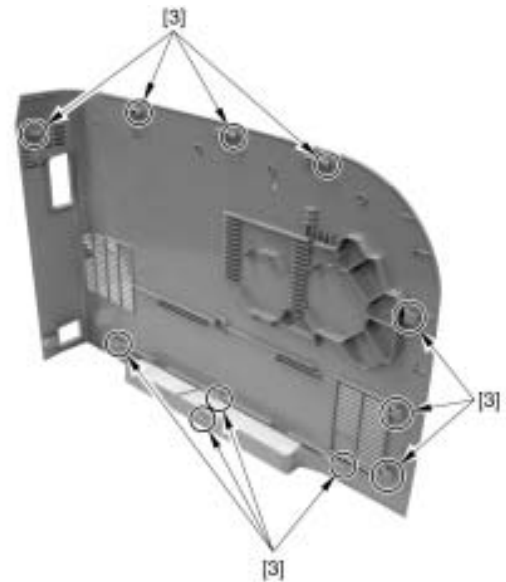
When you assemble the lower rear cover, be sure to fit the cable under the guide plate [1].

**3.1.3 Right Cover****3.1.3.1 Removing right cover**

- 1) Remove the right cover [1].
 - 2 screws [2]
 - 11 claws [3]



F-3-13



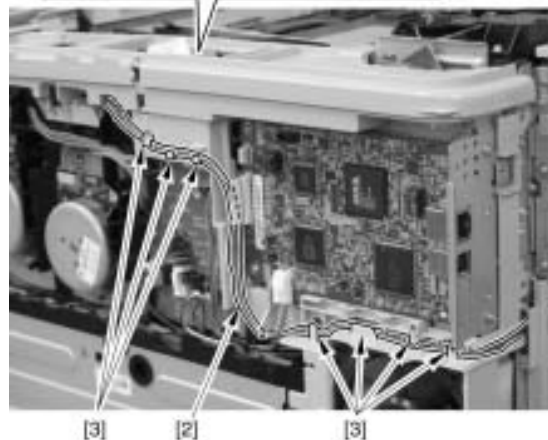
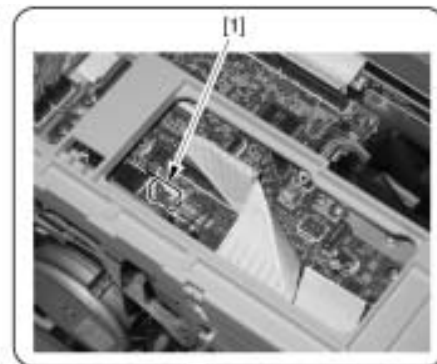
F-3-14

3.1.3.2 Pre-procedure for removing right frame cover

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]

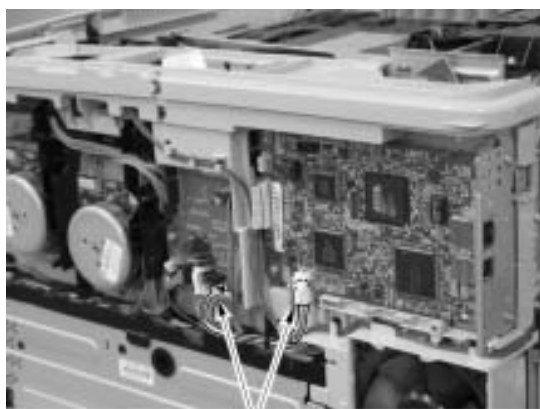
3.1.3.3 Removing right frame cover

- 1) Remove 1 connector [1], and remove the cable [2] from the guide [3].



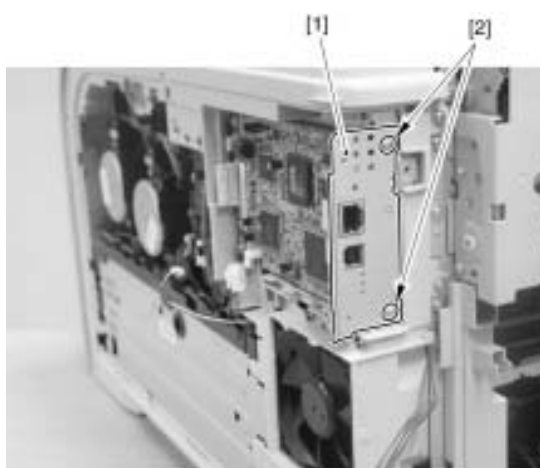
F-3-15

- 2) Remove 2 connectors [1].



F-3-16

- 3) Remove the sheet metal [1].
- Remove 2 screws [2].



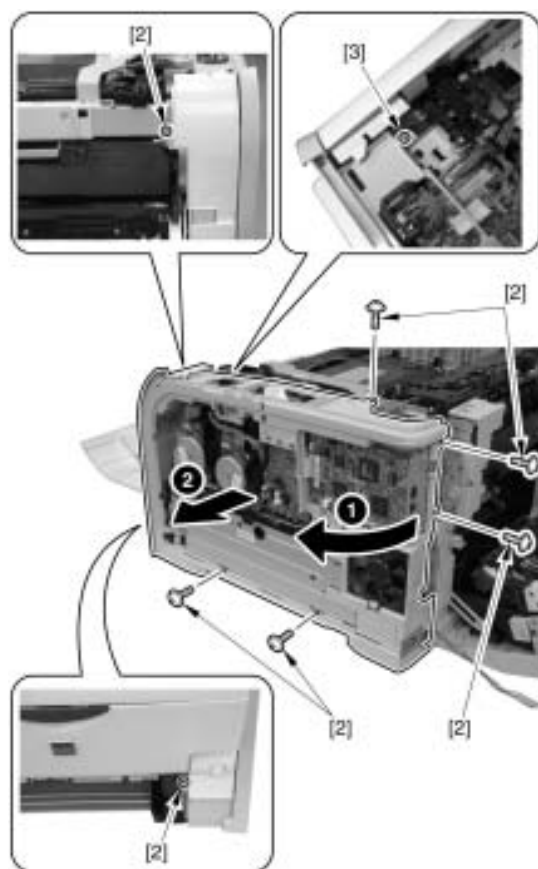
F-3-17

- 4) Pull out the cassette.
5) Open the front cover [1].



F-3-18

- 6) Remove the right frame cover [1] in the arrow direction.
- 7 screws [2] (Remove)
- 1 screw [3] (Loosen)



F-3-19

3.1.4 Left Cover

3.1.4.1 Pre-procedure for removing left cover

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left).(page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover.(page 3-5)Reference[Removing upper cover]

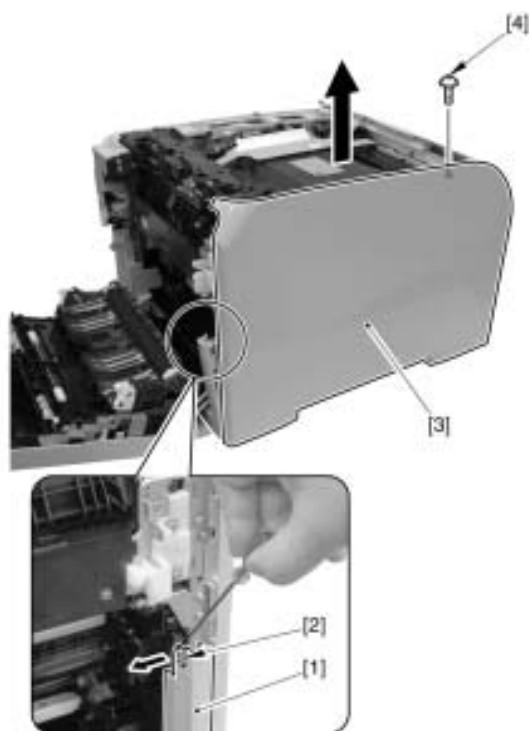
3.1.4.2 Removing left cover

- 1) Remove the cassette [1].



F-3-20

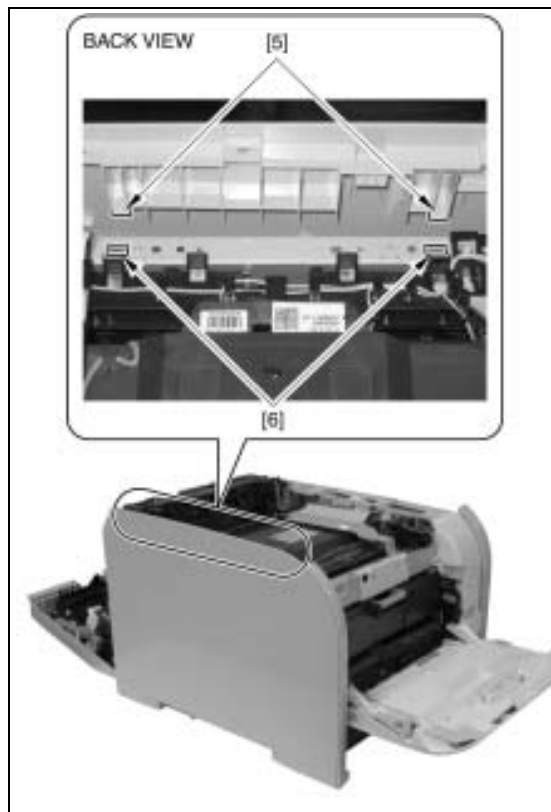
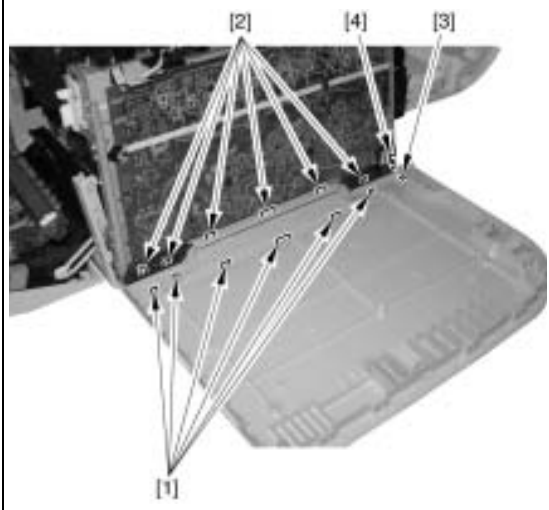
- 2) Remove 1 claw [2] on the lower rear cover and remove the left cover [3] in the arrow (upward) direction.
- 1 screw [4]



F-3-21

MEMO:

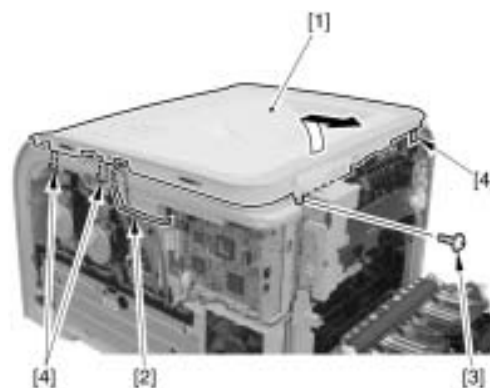
- Align the 6 claws [1] to the 6 protruded parts [2] on the main unit.
- Align the protrusion [3] on the cover to the notch [4] on the frame of the main unit.
- Align 2 upper protrusions [5] to 2 holes [6] on the left plate, and assemble the cover downward.

**3.1.5 Upper Cover****3.1.5.1 Pre-procedure for removing upper cover**

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]

3.1.5.2 Removing upper cover

- 1) Remove the upper cover [1] in the arrow direction.
 - 1 flat cable [2]
 - 1 screw [3]
 - 3 claws [4]



F-3-22

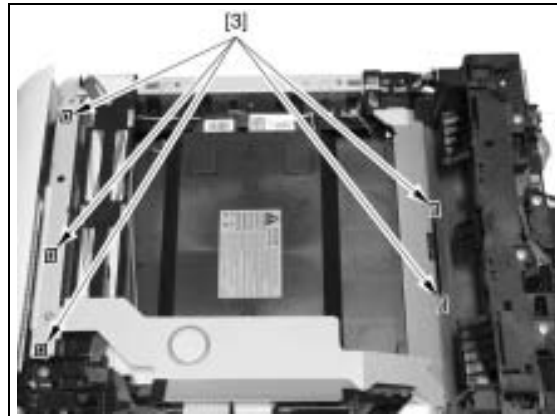
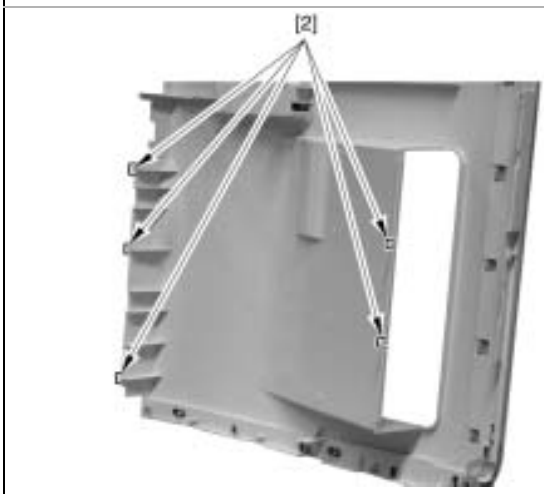
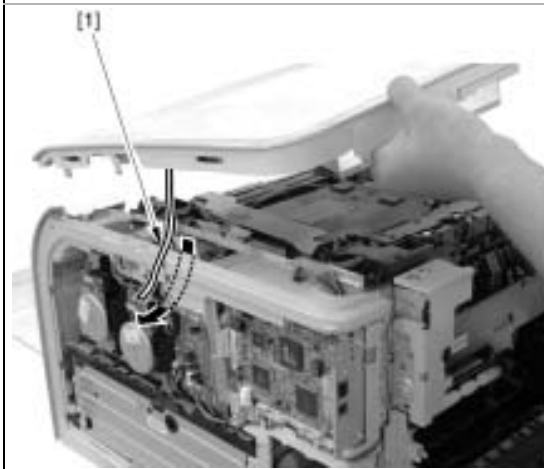
MEMO:

When removing the upper cover for removing other units, it is not necessary to remove the control panel.

- 2) Remove the control panel [1] from the upper cover.
 - 2 claws [2]

**CAUTION: Point to note for assembling**

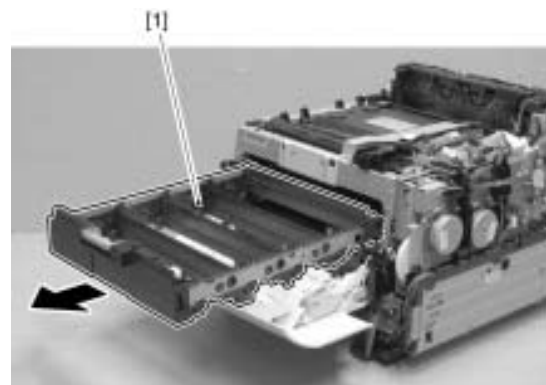
Pull out the flat cable [1] of the upper cover unit to the outside, and align and insert the 5 claws [2] to the holes [3] on the main unit.

**3.1.6 Front Cover****3.1.6.1 Pre-procedure for removing front cover**

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the left cover. (page 3-4) Reference [Removing left cover]
- 5) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

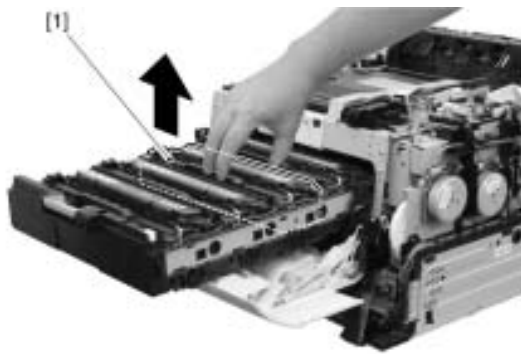
3.1.6.2 Removing front cover

- 1) Pull out the cartridge tray [1] to the front until it stops.



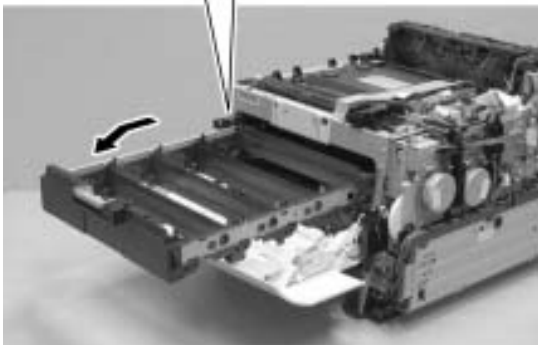
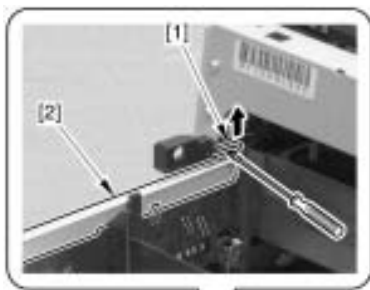
F-3-24

- 2) Take out the cartridge [1]. (All of YMCK)



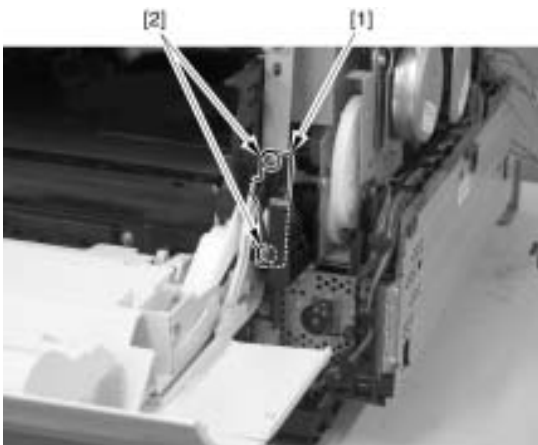
F-3-25

- 3) Press the stopper [1] at the rear left in the arrow direction, and remove the cartridge tray [2] as pulling its left side to the front.



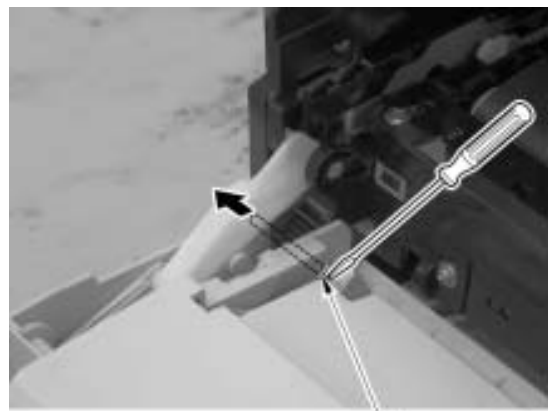
F-3-26

- 4) Remove the bearing retainer [1].
- 2 screws [2]

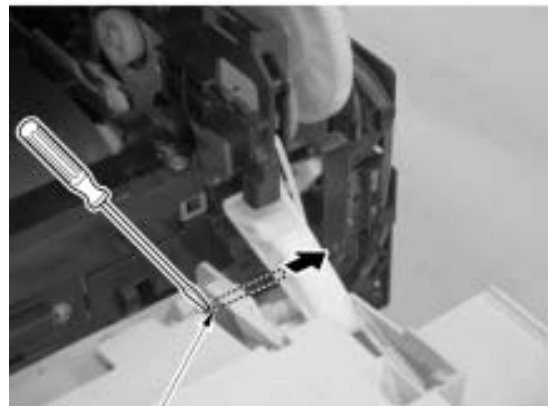


F-3-27

- 5) Push out the pin [1] to the outside using a precision flat-blade driver and remove it. (2 locations)



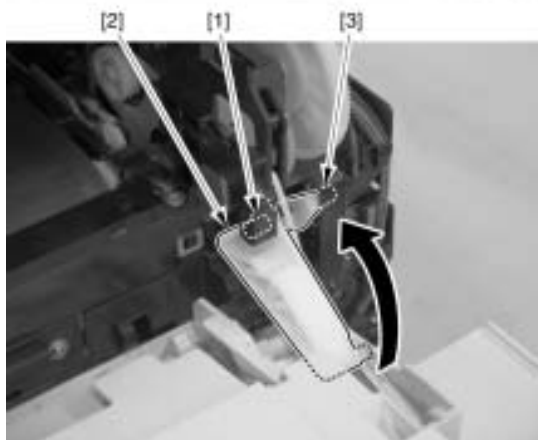
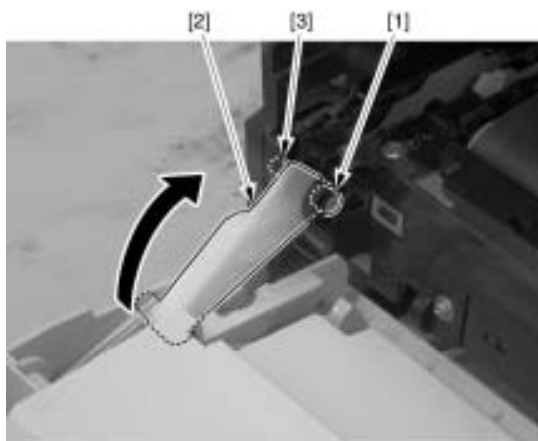
[1]



[1]

F-3-28

- 6) Remove the protruded part [1] of the link, rotate the link [2] in the arrow direction, and remove it. (2 locations)



F-3-29

7) Remove the front cover [1].



F-3-30

3.1.7 Drive Unit

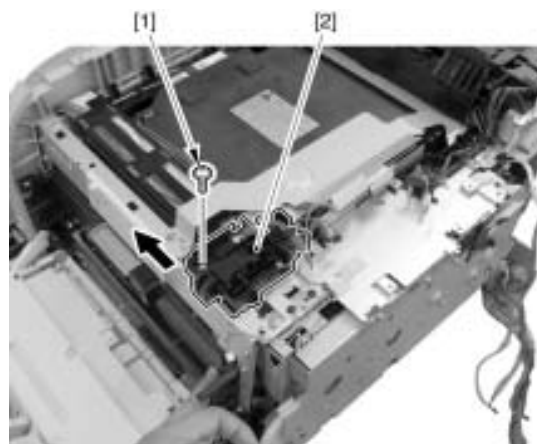
3.1.7.1 Pre-procedure for removing drive unit

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]
- 5) Remove the power supply unit. (page 3-13) Reference [Removing power supply unit]
- 6) Remove the drum motor. (page 3-19) Reference [Removing drum motor]
- 7) Remove the developing motor. (page 3-19) Reference [Removing developing motor]
- 8) Remove the DC controller PCB. (page 3-10) Reference [Removing DC controller PCB]
- 9) Remove the driver PCB. (page 3-12) Reference [Removing driver PCB]
- 10) Remove the relay PCB. (page 3-10) Reference [Removing relay PCB]

11) Remove fixing motor. (page 3-32) Reference [Removing fixing motor]

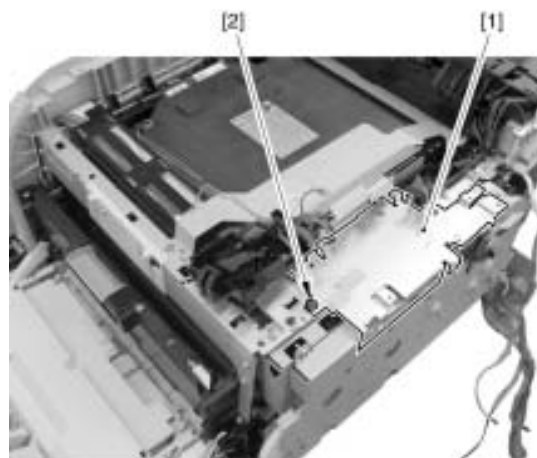
3.1.7.2 Removing drive unit

- 1) Remove the cable guide [1] in the arrow direction.
- 1 screw [2]



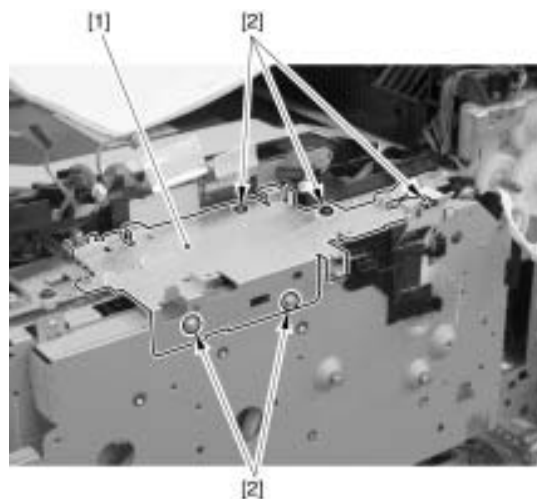
F-3-31

- 2) Remove 1 mounting screw [2] of the sheet metal [1].



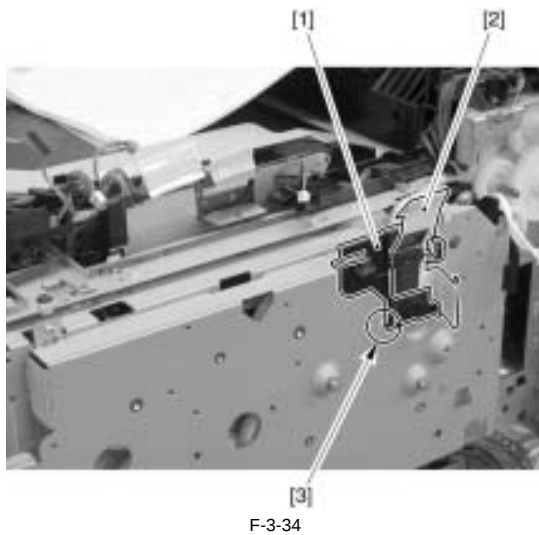
F-3-32

- 3) Remove the sheet metal [1].
- 5 screws [2]

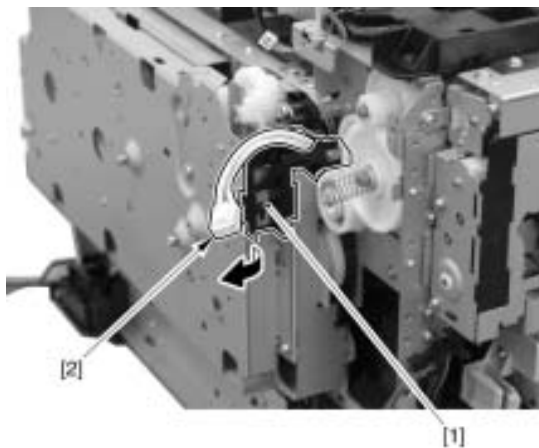


F-3-33

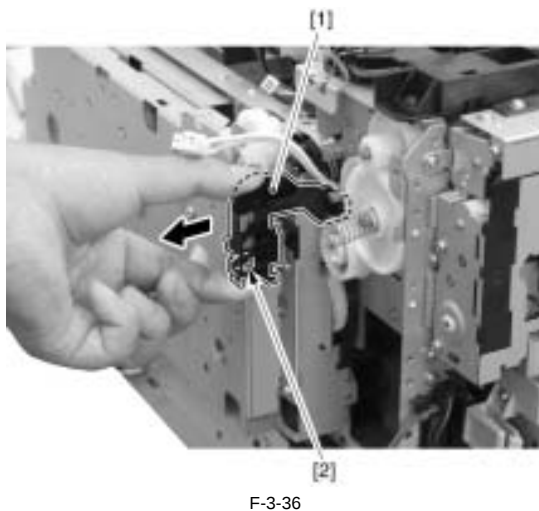
- 4) Remove the cable guide [1] and flat cable [2] at the same time.
- 1 claw [3]



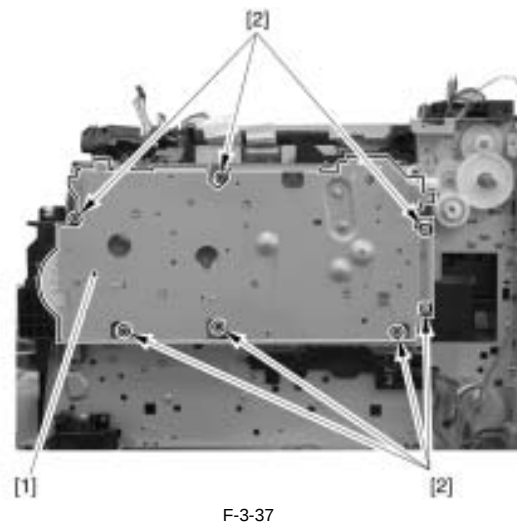
- 5) Remove the cable [2] from the cable guide [1].



- 6) Remove the cable guide [1] in the arrow direction.
- 1 claw [2]

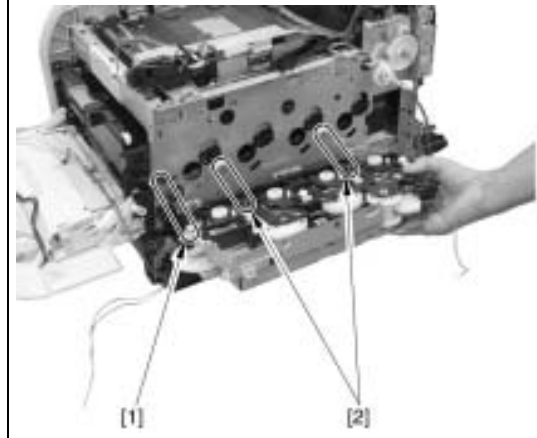


- 7) Remove the drive unit [1].
- 7 screws [2]



CAUTION: Point to note for assembling

- The link arm on the drive unit must be engaged with the protrusion on the frame.
- 2 protrusions on the drive unit must be inserted into the holes on the frame.



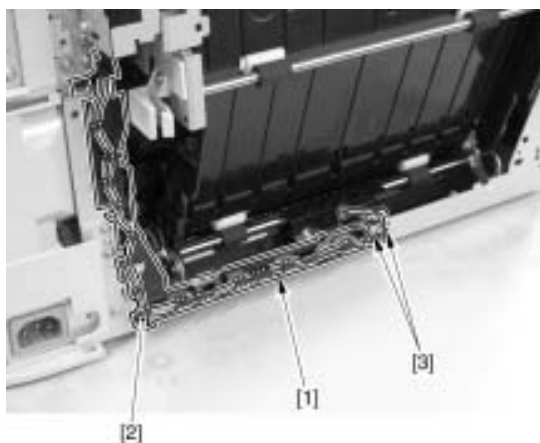
3.1.8 Duplexing Drive Unit

3.1.8.1 Pre-procedure for removing duplex reverse drive unit

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]
- 4) Remove the left cover. (page 3-4) Reference[Removing left cover]
- 5) Remove the rear cover. (page 3-1) Reference[Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference[Removing lower rear cover]
- 7) Remove the rear cover lib unit. (page 3-1) Reference[Removing rear cover lib unit]

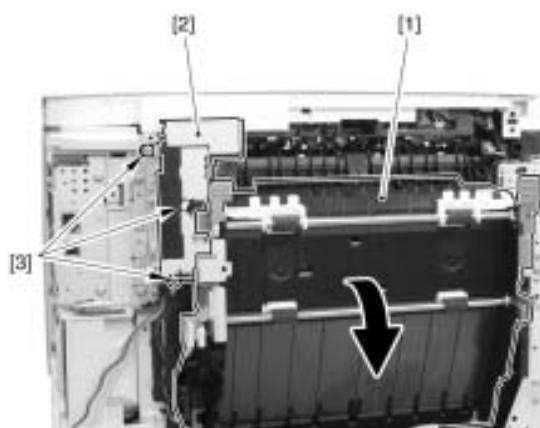
3.1.8.2 Removing duplex reverse drive unit

- 1) Remove the cable [1] from the cable guide [2].
- 2 connectors [3]



F-3-38

- 2) Open the duplex feeding unit [1] and remove the duplex reverse drive unit [2].
- 3 screws [3]



F-3-39

3.1.9 Operation Panel Unit

3.1.9.1 Pre-procedure for removing control panel

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]

3.1.9.2 Removing control panel

- 1) Remove the control panel [1].
- 2 claws [2] (Use a flat-blade driver.)



F-3-40

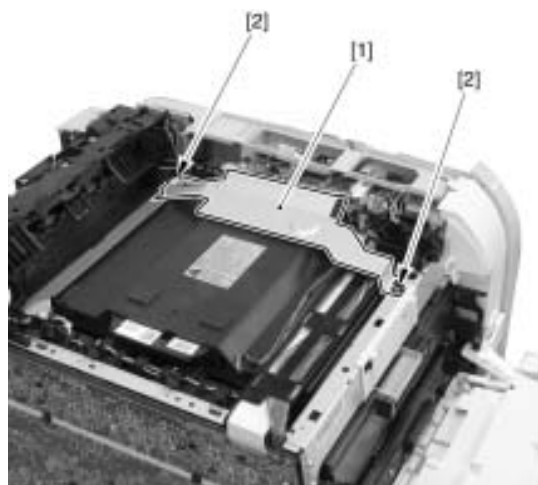
3.1.10 DC Controller PCB

3.1.10.1 Pre-procedure for removing DC controller PCB

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]

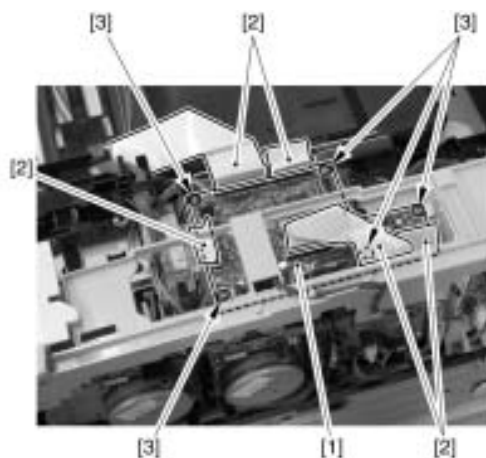
3.1.10.2 Removing DC controller PCB

- 1) Remove the cable cover plate [1].
- 2 screws [2]



F-3-41

- 2) Remove the DC controller PCB [1].
- 5 flat cables [2]
- All connectors on the PCB (8 connectors)
- 5 screws [3]



F-3-42

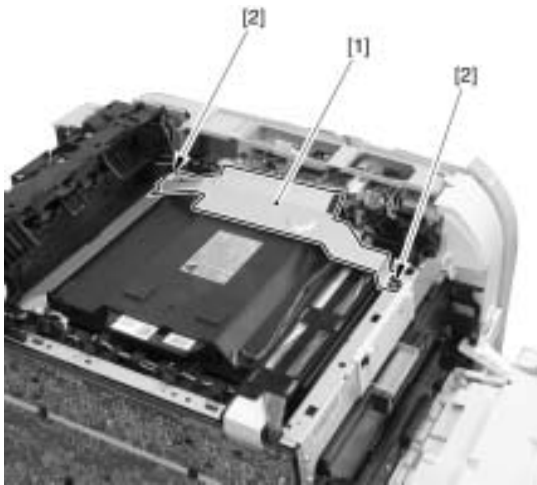
3.1.11 Connecting PCB

3.1.11.1 Pre-procedure for removing relay PCB

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]

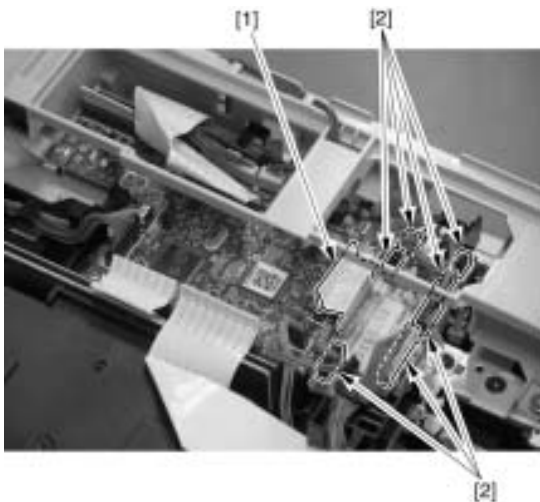
3.1.11.2 Removing relay PCB

- 1) Remove the cable cover plate [1].
- 2 screws [2]



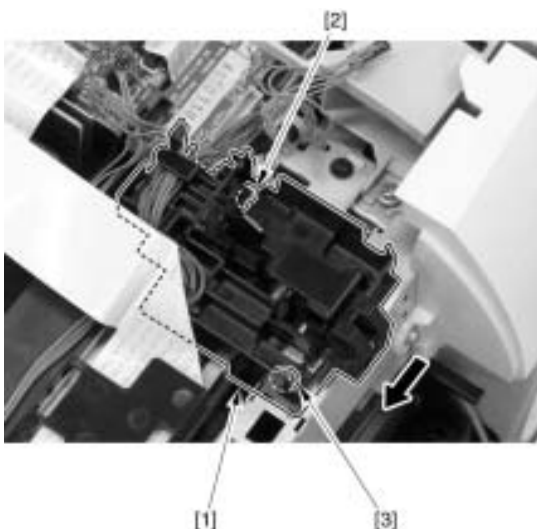
F-3-43

- 2) Remove 1 flat cable [1] and 7 connectors [2] on the PCB.



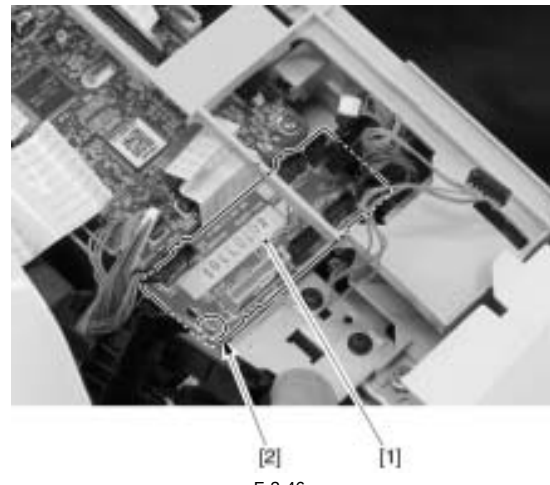
F-3-44

- 3) Move the cable guide [1].
- 1 connector [2]
- 1 screw [3]



F-3-45

- 4) Remove the relay PCB [1].
- 1 screw [2]



F-3-46

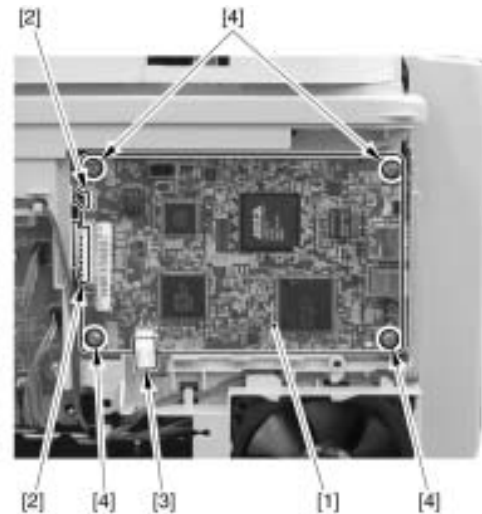
3.1.12 Main Controller PCB

3.1.12.1 Pre-procedure for removing main controller PCB

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]

3.1.12.2 Removing main controller PCB

- 1) Remove the main controller PCB [1].
- 2 flat cables [2]
- 1 connector [3]
- 4 screws [4]



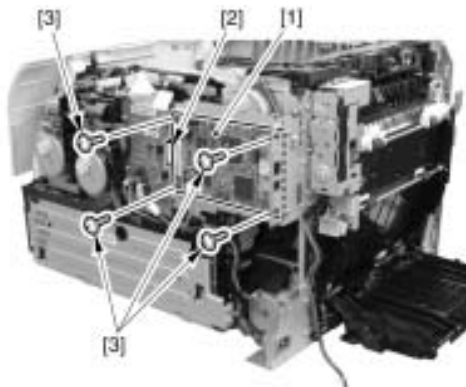
F-3-47

3.1.12.3 Pre-procedure for removing sub power supply PCB

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
2) Remove the upper rear cover (left). (page 3-1) Reference[Removing upper rear cover (left)]
3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]
4) Remove the right frame cover. (page 3-3) Reference[Removing right frame cover]
5) Remove the lower rear cover. (page 3-1) Reference[Removing lower rear cover]

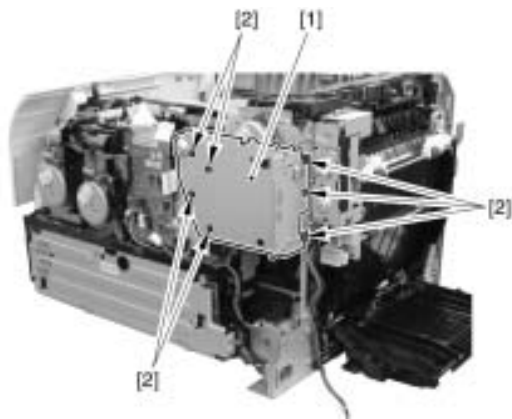
3.1.12.4 Removing sub power supply PCB

- 1) Remove the main controller PCB [1].
- 1 flat cable [2]
- 4 screws [3]



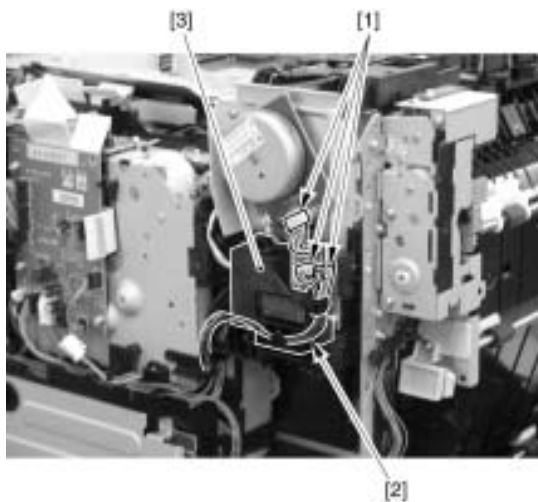
F-3-48

- 2) Remove the sheet metal [1] of the main controller PCB.
- 7 screws [2]



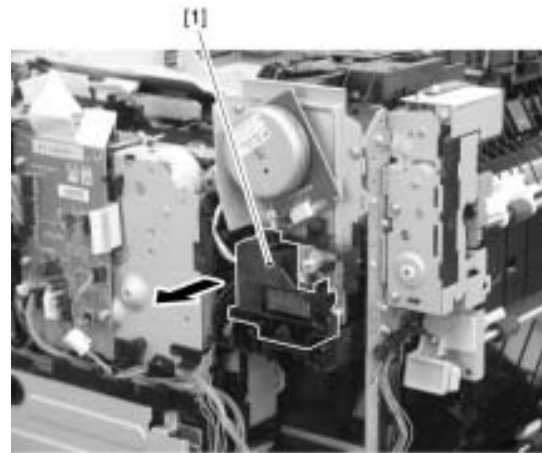
F-3-49

- 3) Remove 3 connectors [1], and remove the cable [2] from the cable guide [3].



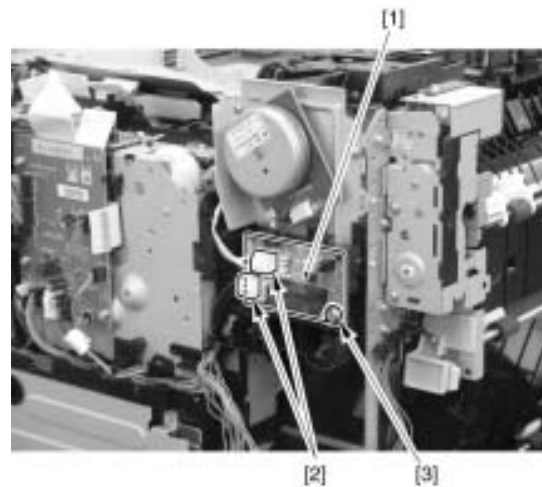
F-3-50

- 4) Remove the cable guide [1].



F-3-51

- 5) Remove the sub power supply PCB [1].
- 2 connectors [2]
- 1 screw [3]



F-3-52

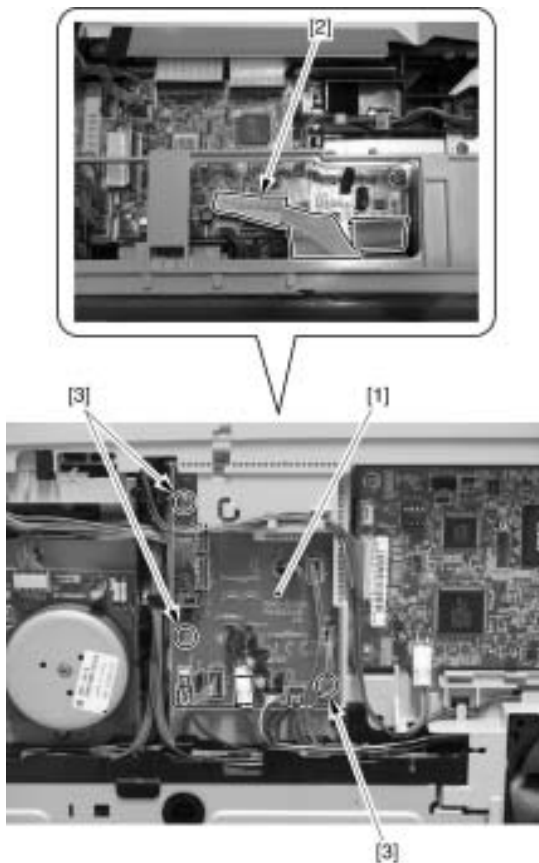
3.1.13 Driver PCB

3.1.13.1 Pre-procedure for removing driver PCB

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]

3.1.13.2 Removing driver PCB

- 1) Remove the driver PCB [1].
- 1 flat cable [2]
- All connectors on PCB (11 connectors)
- 3 screws [3]



F-3-53

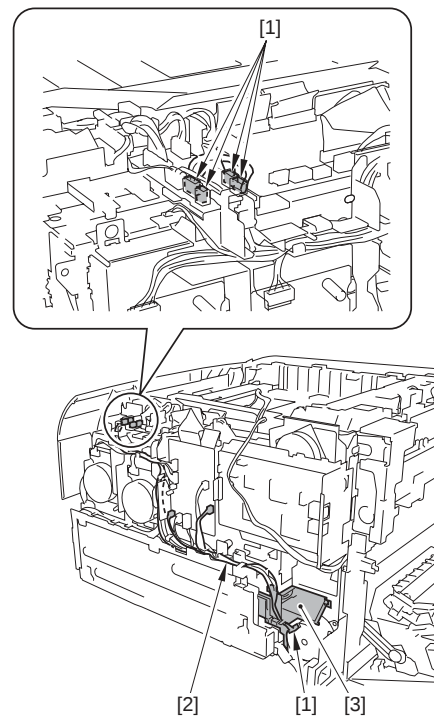
3.1.14 Power Supply Board

3.1.14.1 Pre-procedure for removing power supply unit

- 1) Remove the right cover.(page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left).(page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover.(page 3-5)Reference[Removing upper cover]
- 5) Remove the right frame cover.(page 3-3)Reference[Removing right frame cover]

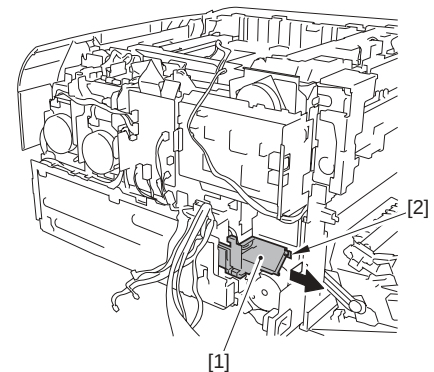
3.1.14.2 Removing power supply unit

- 1) After removing 7 connectors [1], remove the cable [2] from the cable guide [3].



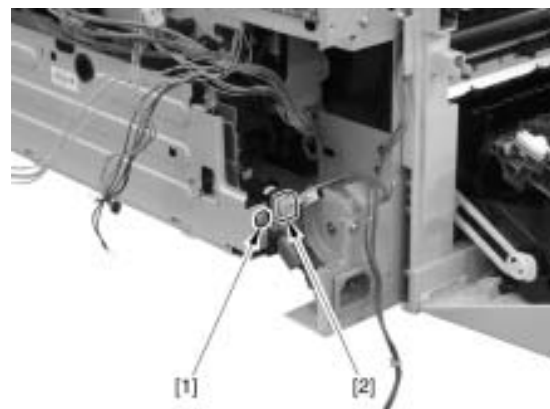
F-3-54

- 2) Remove the cable guide [1] in the arrow direction.
- 1 boss [2]



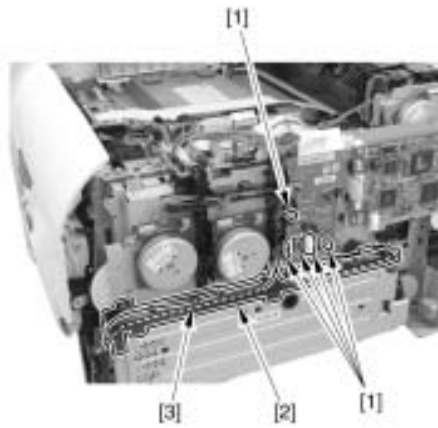
F-3-55

- 3) Remove 1 screw [1] and 1 connector [2].



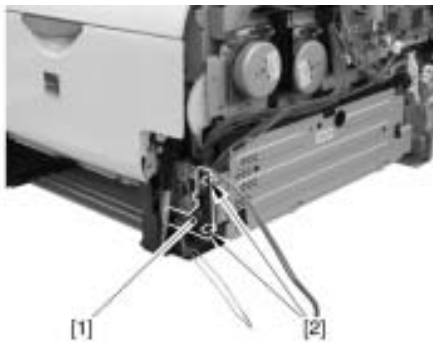
F-3-56

- 4) After removing 5 connectors [1], remove the cable [3] from the cable guide [2].



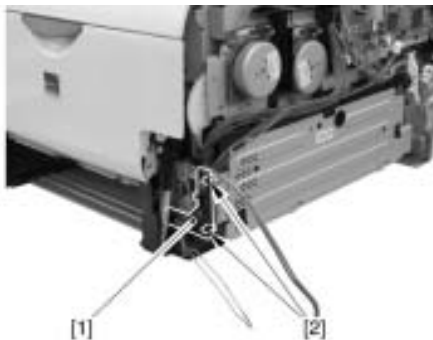
F-3-57

- 5) Remove the cable guide [1].
- 2 claws [2]



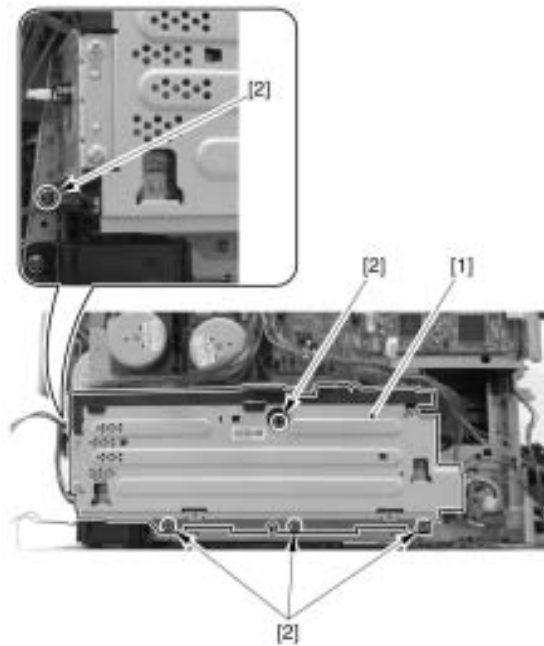
F-3-58

- 6) Remove 1 screw [1] and 1 switch cap [2].



F-3-59

- 7) Remove the power supply unit [1].
- 5 screws [2]

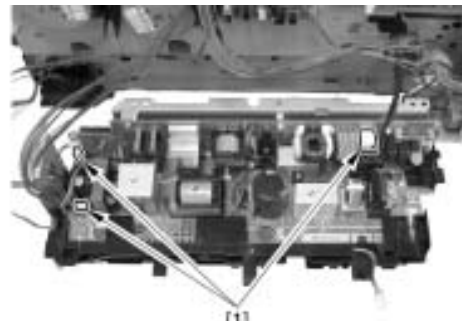


F-3-60

CAUTION:

Since the connector is connected to the power unit, do not pull it out forcibly.

- 8) Remove 3 connectors [1] from the power supply unit.



F-3-61

3.1.15 High-voltage PCB**3.1.15.1 Pre-procedure for removing high voltage power supply PCB**

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover. (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]
- 4) Remove the left cover. (page 3-4)Reference[Removing left cover]

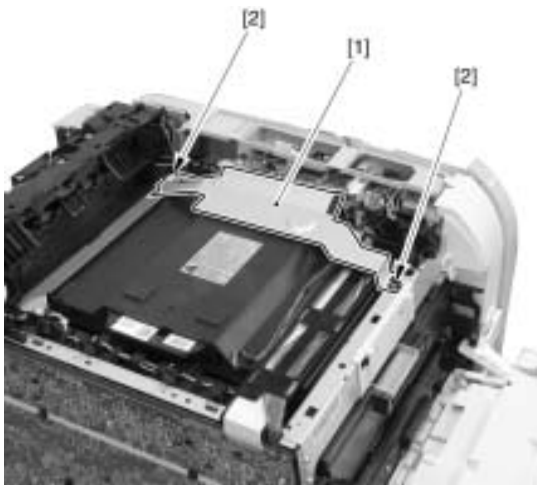
3.1.15.2 Removing high voltage power supply PCB

- 1) Open the front cover [1].



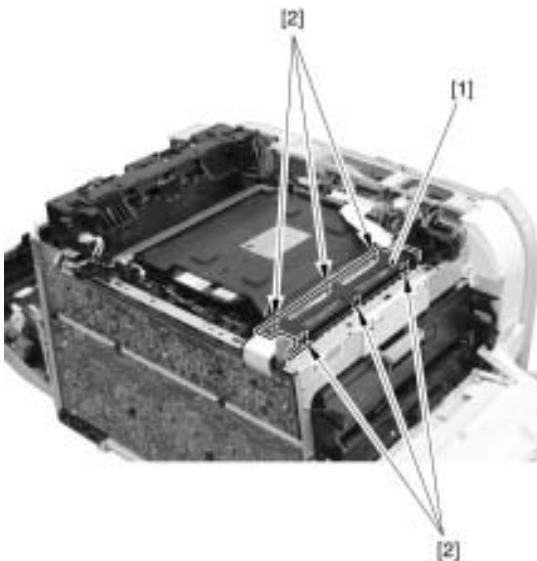
F-3-62

- 2) Remove the cable cover plate [1].
- 2 screws [2]



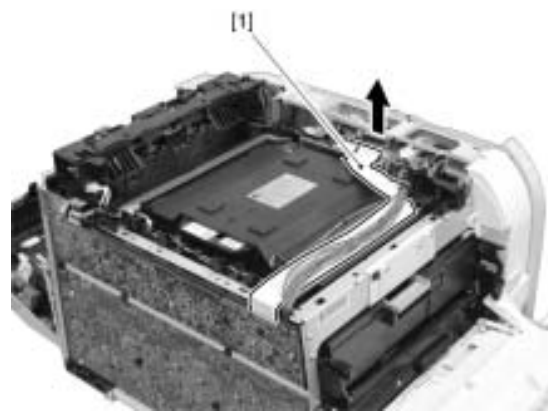
F-3-63

- 3) Remove the guide plate [1].
- 6 claws [2]



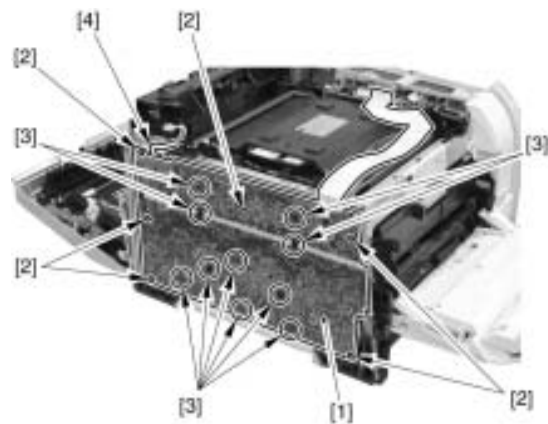
F-3-64

- 4) Remove the flat cable [1].



F-3-65

- 5) Remove the high voltage power supply PCB [1].
- 6 screws [2]
- 10 claws [3]
- 1 connector [4]



F-3-66

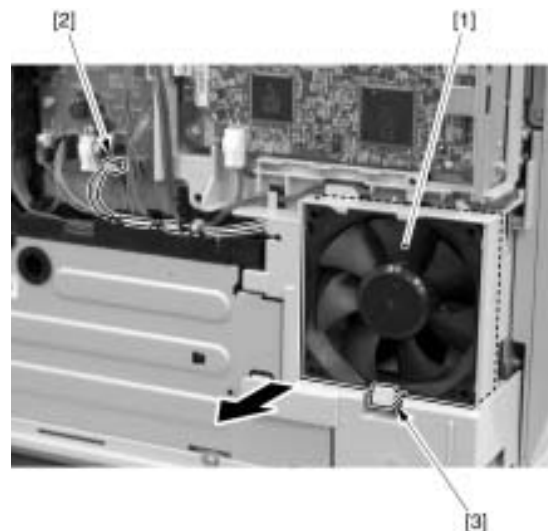
3.1.16 Fan

3.1.16.1 Pre-procedure for removing fan (1)

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]

3.1.16.2 Removing fan (1)

- 1) Remove the fan (1) [1].
- 1 connector [2]
- 1 claw [3]



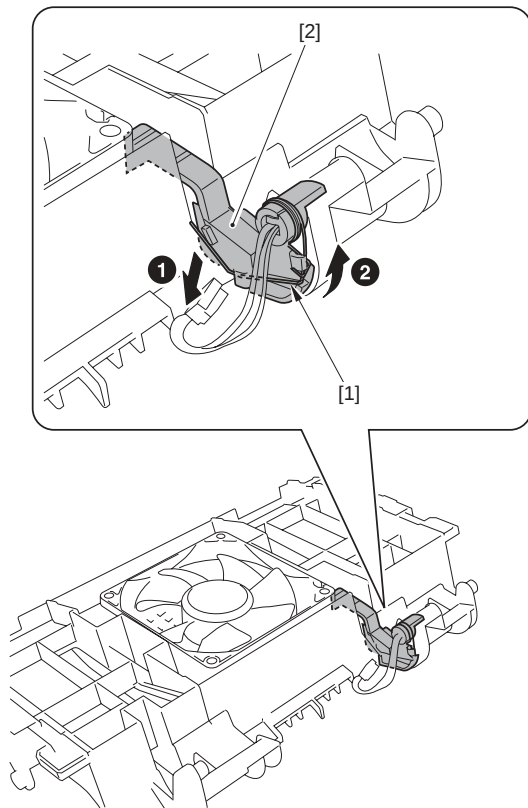
F-3-67

3.1.16.3 Pre-procedure for removing duplex feeding fan

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]
- 4) Remove the rear cover. (page 3-1)Reference[Removing rear cover]
- 5) Remove the lower rear cover. (page 3-1)Reference[Removing lower rear cover]
- 6) Remove the rear cover lib unit. (page 3-1)Reference[Removing rear cover lib unit]

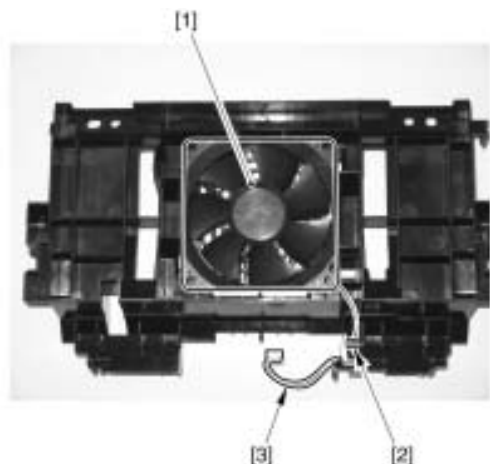
3.1.16.4 Removing duplex feeding fan

- 1) Remove the spring [1] in the arrow direction and remove the cable guide cover [2].



F-3-68

- 2) After removing the cable [1] from the guide [2], remove the duplex feeding fan [3].



F-3-69

3.2 LASER EXPOSURE SYSTEM

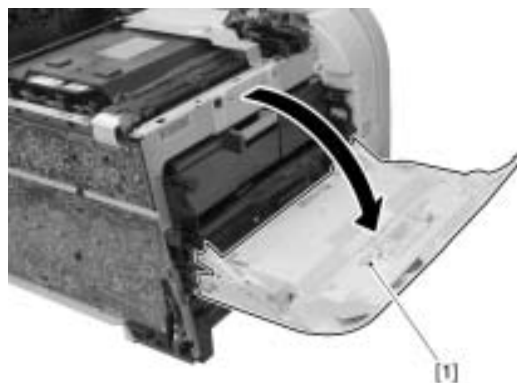
3.2.1 Laser Scanner Unit

3.2.1.1 Pre-procedure for removing laser scanner unit

- 1) Remove the right cover. (page 3-3)Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1)Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5)Reference[Removing upper cover]
- 4) Remove the left cover. (page 3-4)Reference[Removing left cover]
- 5) Remove the rear cover. (page 3-1)Reference[Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1)Reference[Removing lower rear cover]
- 7) Remove the rear cover lib unit. (page 3-1)Reference[Removing rear cover lib unit]
- 8) Remove the duplex reverse drive unit. (page 3-9)Reference[Removing duplex reverse drive unit]
- 9) Remove the delivery unit. (page 3-32)Reference[Removing fixing motor]

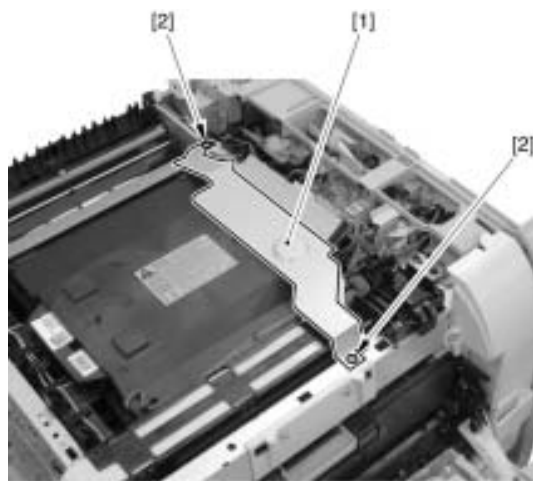
3.2.1.2 Removing laser scanner unit

- 1) Open the front cover [1].



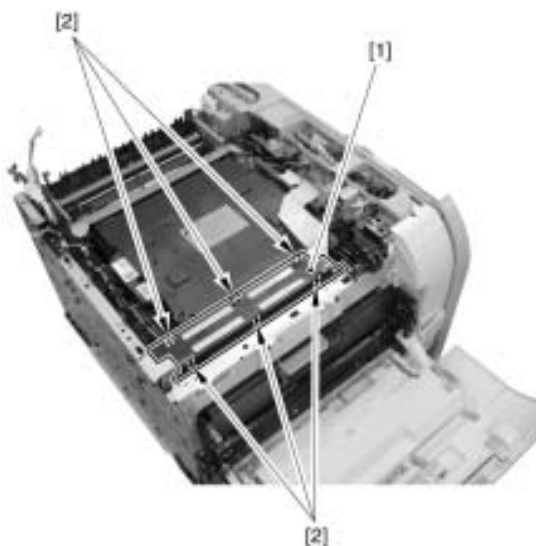
F-3-70

- 2) Remove the cable cover plate [1].
- 2 screws [2]



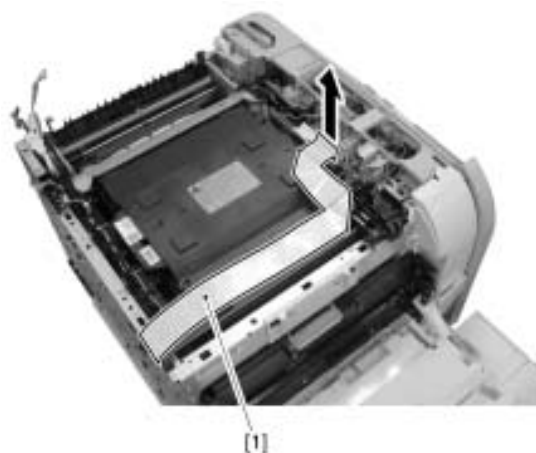
F-3-71

- 3) Remove the guide plate [1].
- 6 claws [2]



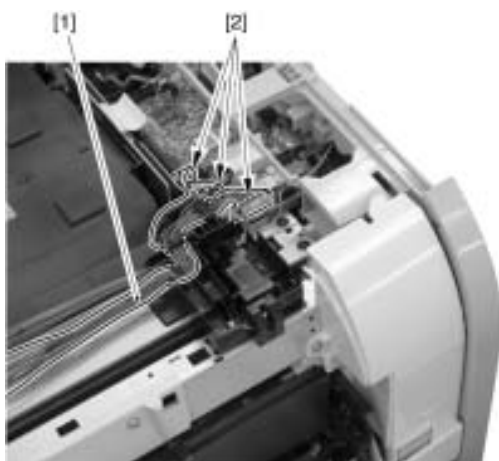
F-3-72

4) Remove the flat cable [1].



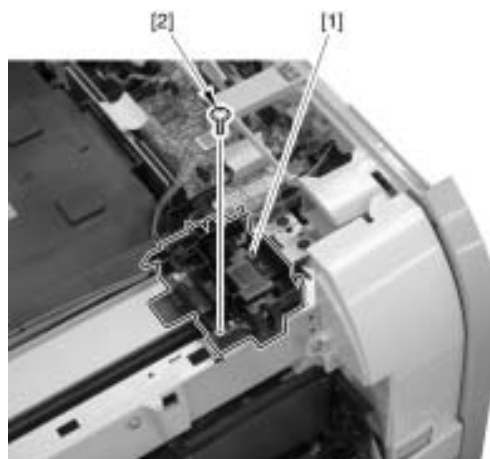
F-3-73

5) Remove the cable [1].
- 3 connectors [2]

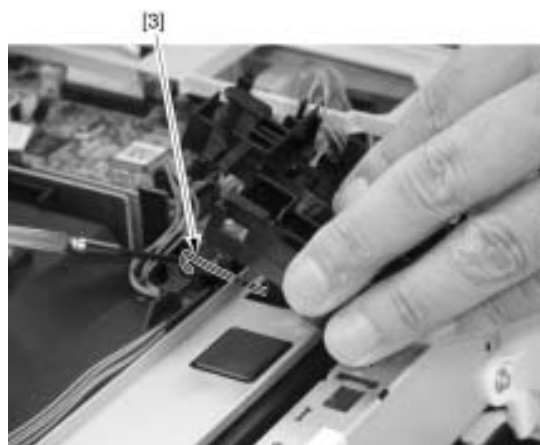


F-3-74

6) Remove the cable guide [1].
- 1 screw [2]
- 1 spring [3]



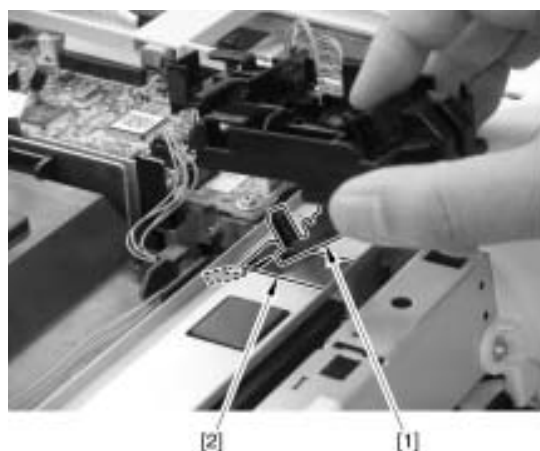
F-3-75

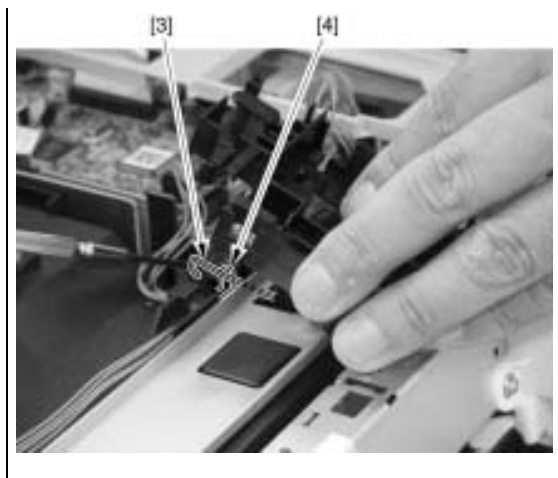


F-3-76

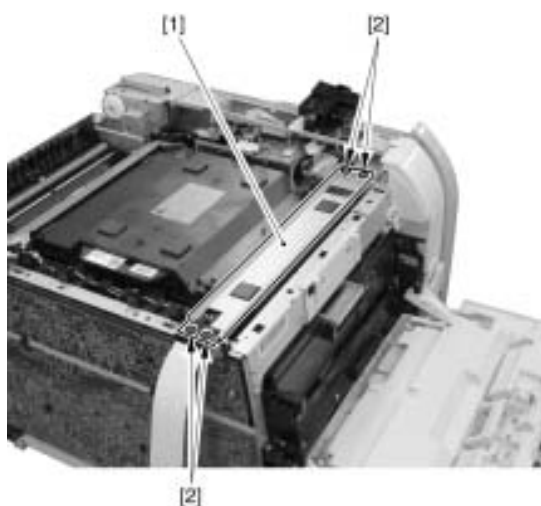
CAUTION: Point to note for assembling the cable guide

When assembling the cable guide, insert the flag section [1] of the cable guide into the hole [2] on the sheet metal, and hook the spring [3] on the flag [4] of the laser scanner.



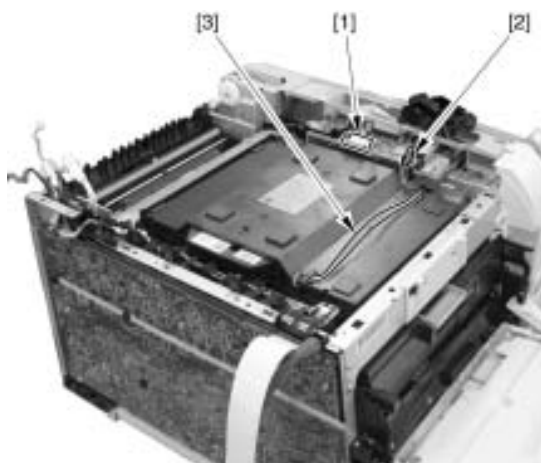


- 7) Remove the sheet metal [1].
- 4 screws [2]



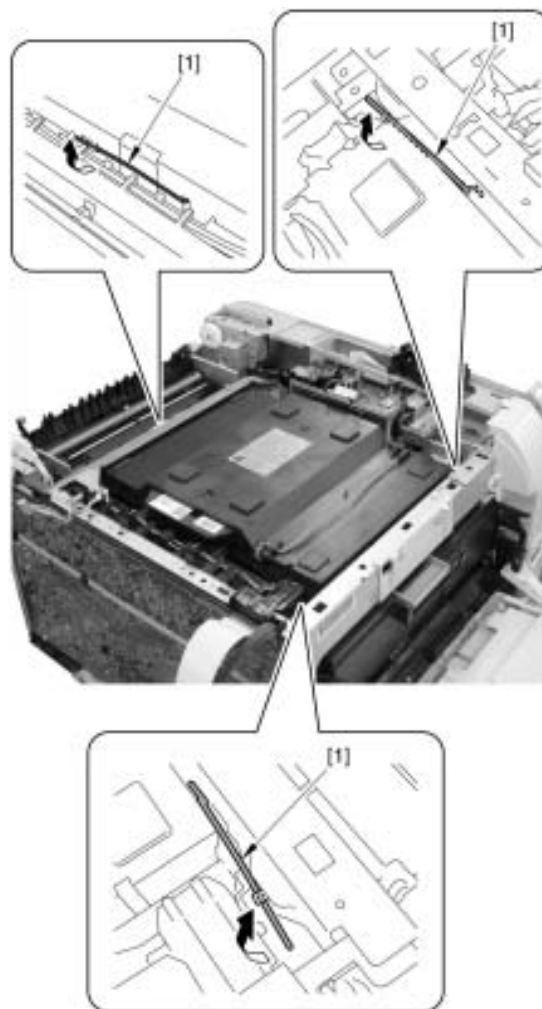
F-3-77

- 8) Remove 1 flat cable [1] and 1 connector [2], and then remove the cable [3] from the guide.



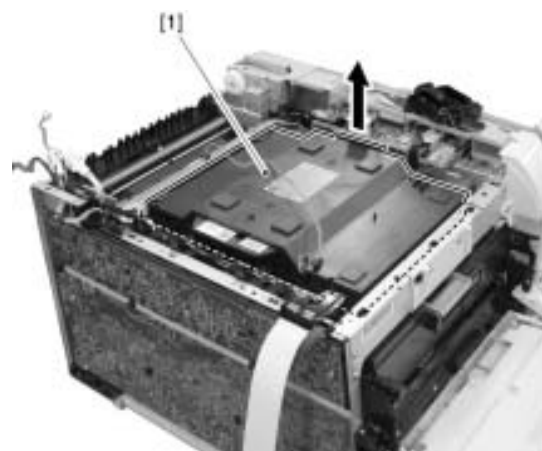
F-3-78

- 9) Remove 3 springs [1].



F-3-79

- 10) Remove the laser scanner unit [1].



F-3-80

CAUTION:
When removing the laser scanner unit, be careful not to drop it. Do not to disassemble the laser scanner unit.

3.3 IMAGE FORMATION SYSTEM

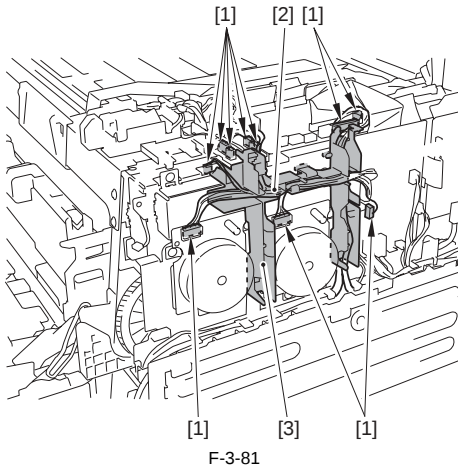
3.3.1 Drum/ITB Motor

3.3.1.1 Pre-procedure for removing drum motor

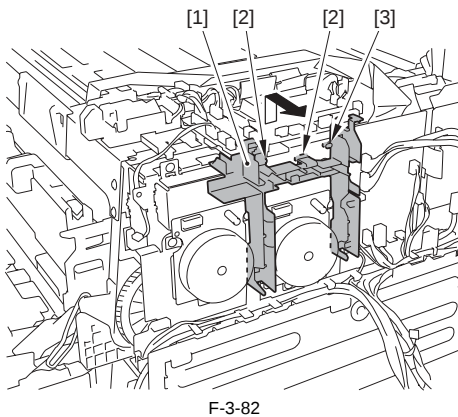
- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

3.3.1.2 Removing drum motor

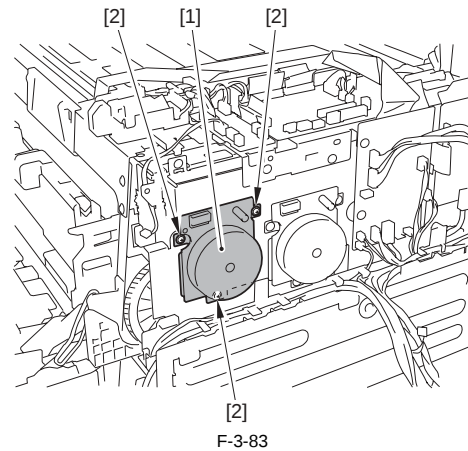
- 1) Remove 10 connectors [1], and then remove the cable [2] from the cable guide [3].



- 2) Remove the cable guide [1]. (From top to front direction)
 - 1 claw [2]
 - 2 protrusions [3]



- 3) Remove the drum motor [1].
 - 3 screws [2]



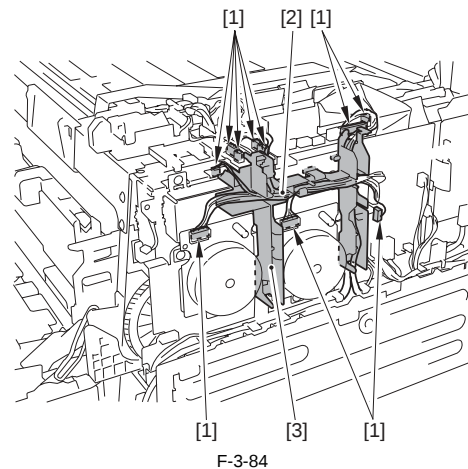
3.3.2 Developing Rotary Motor

3.3.2.1 Pre-procedure for removing developing motor

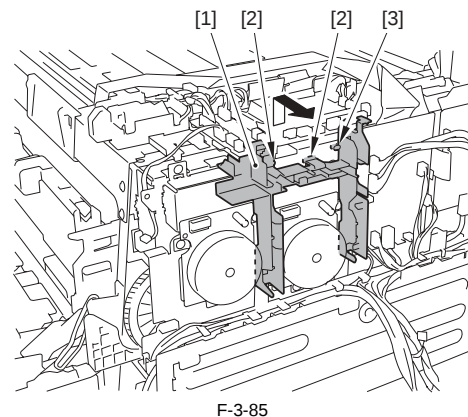
- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover. (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

3.3.2.2 Removing developing motor

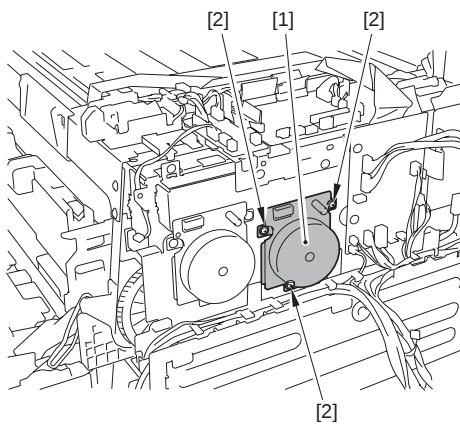
- 1) Remove 10 connectors [1], and then remove the cable [2] from the cable guide [3].



- 2) Remove the cable guide [1].
 - 2 claws [2]
 - 1 protrusion [3]



- 3) Remove the developing motor [1].
 - 3 screws [2]



F-3-86

3.3.3 ITB Unit

3.3.3.1 Removing ITB unit

- 1) Open the rear cover [1].



F-3-87

- 2) Remove the cassette [1].



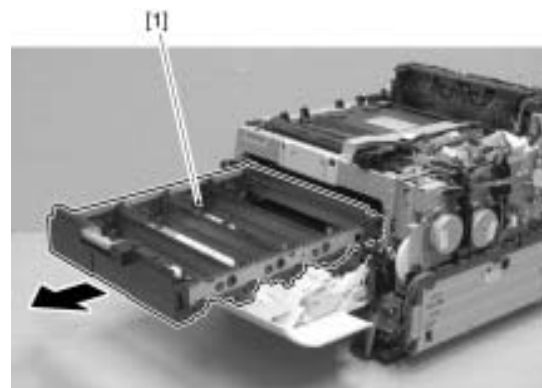
F-3-88

- 3) Open the front cover [1].



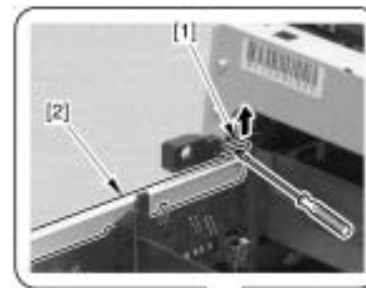
F-3-89

- 4) Pull out the cartridge tray [1] to the front until it stops.



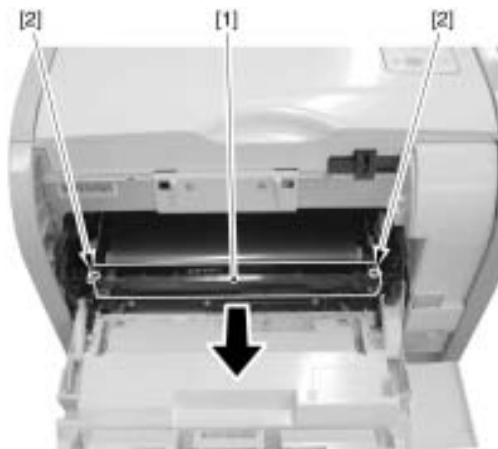
F-3-90

- 5) Press the stopper [1] at the rear left in the arrow direction, and remove the cartridge tray [2] as pulling its left side to the front.



F-3-91

- 6) Remove the RD sensor unit [1] to the front.
- 2 screws [2]



F-3-92

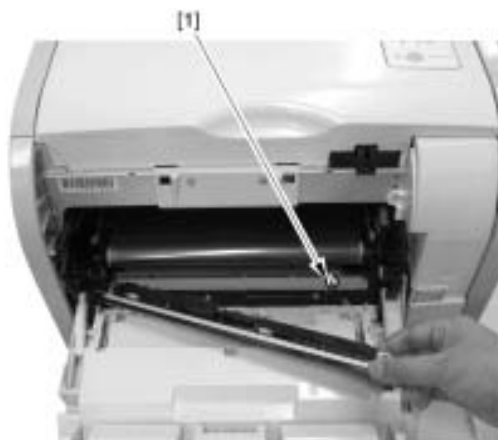
CAUTION:

Further pull out the RD sensor unit [1] to the front so as not to damage the belt when removing the ITB unit.



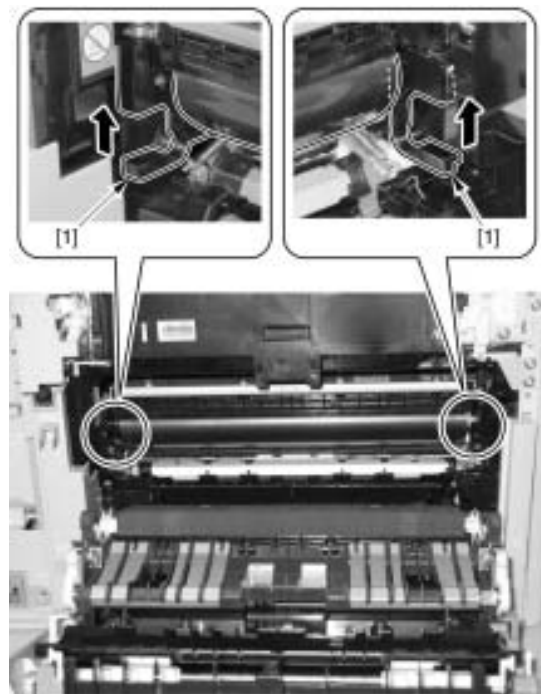
F-3-93

- 7) Remove the connector [1].



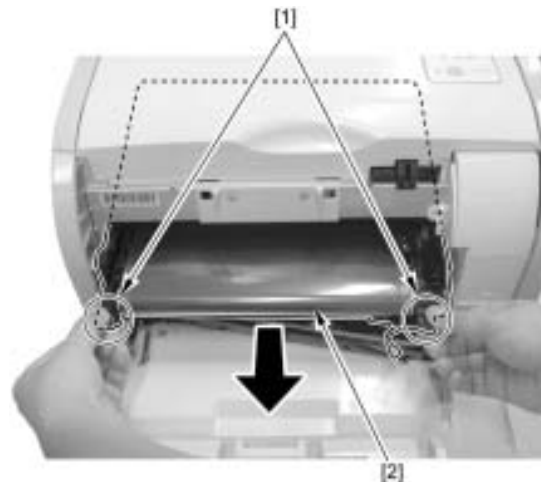
F-3-93

- 8) Move two handles [1] of the ITB at the rear side of the main unit in the arrow direction.



F-3-94

- 9) Hold two handles [1] of the ITB at the front side of the main unit and remove the ITB unit [2] in the arrow direction.



F-3-95

CAUTION:

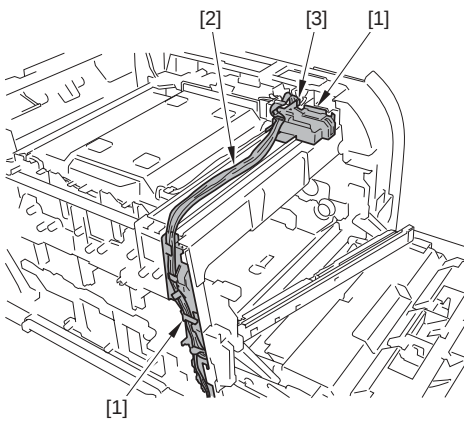
Be careful not to touch the belt when you remove the ITB unit.

3.3.4 RD Sensor Unit**3.3.4.1 Pre-procedure for removing RD sensor unit**

- 1) Remove the ITB unit. (page 3-20) Reference [Removing ITB unit]
- 2) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 3) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 4) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 5) Remove the left cover. (page 3-4) Reference [Removing left cover]
- 6) Remove the high voltage power supply PCB. (page 3-14) Reference [Removing high voltage power supply PCB]

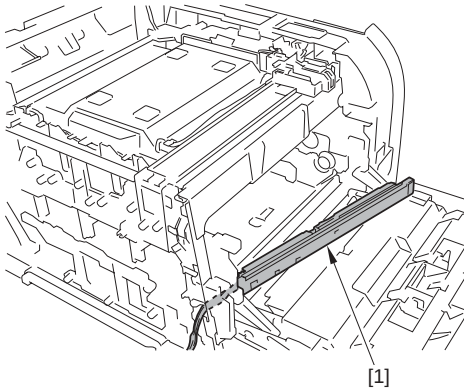
3.3.4.2 Removing RD sensor unit

- 1) Remove the cable [2] from the cable guide [1].
- 1 connector [3]



F-3-96

2) Remove the RD sensor unit [1].



F-3-97

CAUTION:

When you pass the cable of the RD sensor unit to the hole on the side plate, be careful not to damage the cable.

3.4 PICKUP/FEEDING/DELIVERY SYSTEM

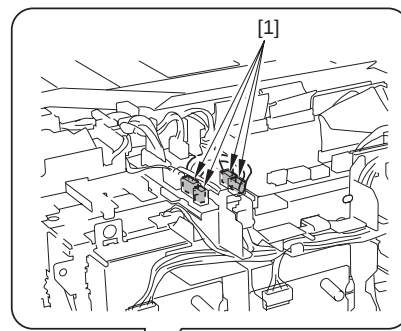
3.4.1 Pickup Motor

3.4.1.1 Pre-procedure for removing pick-up motor

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

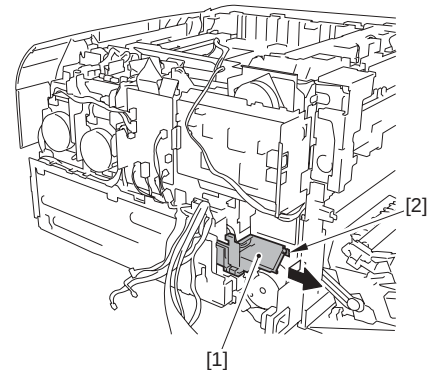
3.4.1.2 Removing pick-up motor

- 1) Remove 7 connectors [1], and then remove the cable [2] from the cable guide [3].



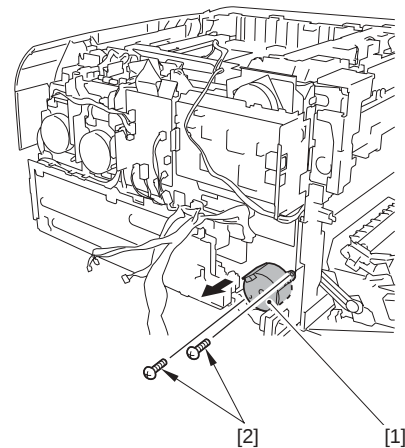
F-3-98

- 2) Remove the cable guide [1] in the arrow direction.
- 1 boss [2]



F-3-99

- 3) Remove the pick-up motor [1] in the arrow direction.
- 2 screws [2]



F-3-100

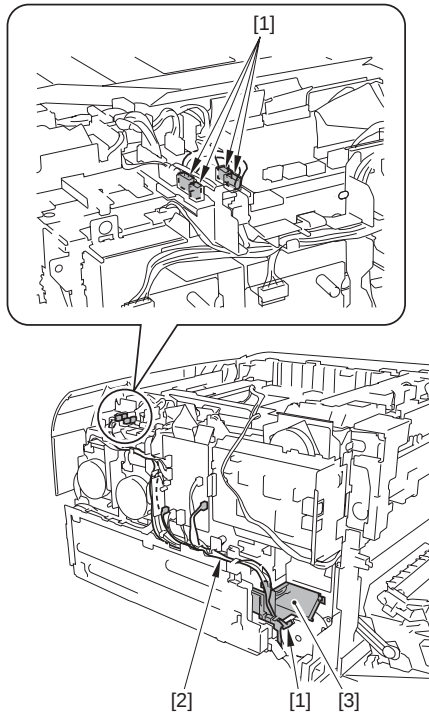
3.4.2 Pickup Unit

3.4.2.1 Pre-procedure for removing pick-up unit

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

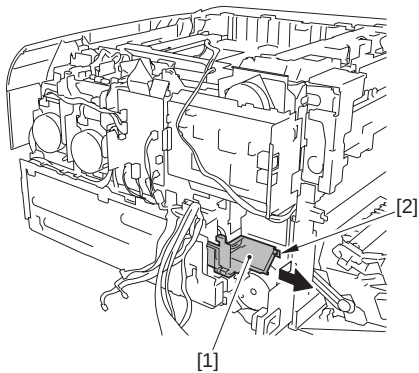
3.4.2.2 Removing pick-up unit

- 1) After removing 7 connectors [1], remove the cable [2] from the cable guide [3].



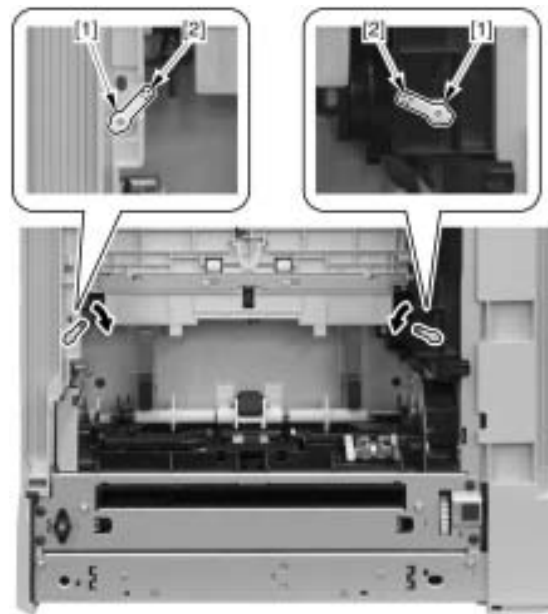
F-3-101

- 2) Remove the cable guide [1] in the arrow direction.
- 1 boss [2]



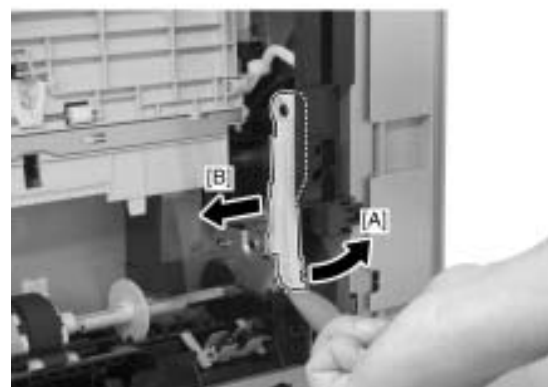
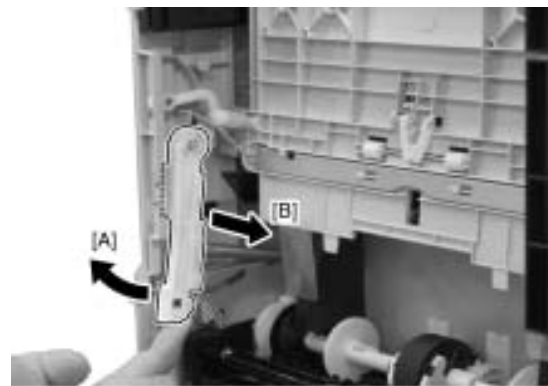
F-3-102

- 3) Turn two stoppers [1] inward and remove them.
- 2 bosses [2]



F-3-103

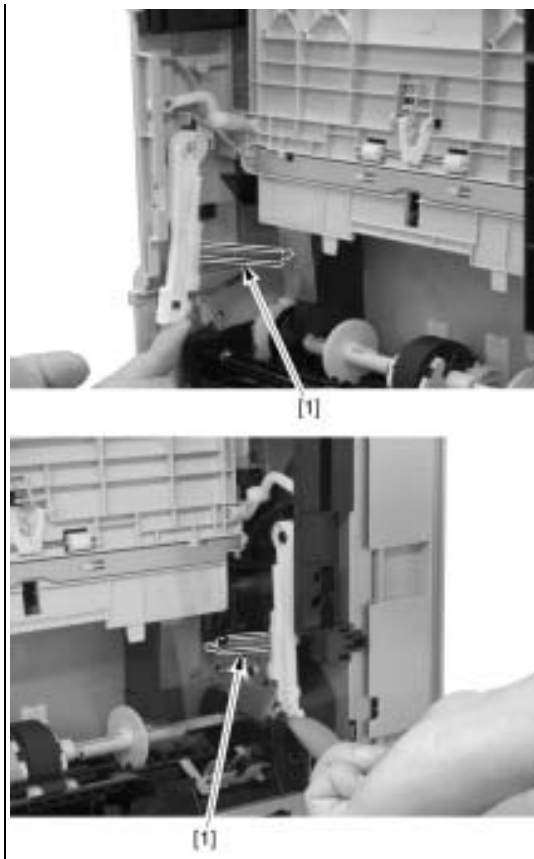
- 4) After moving two arms [1] in the direction of the arrow [A], move them to the direction of the arrow [B] and remove them.



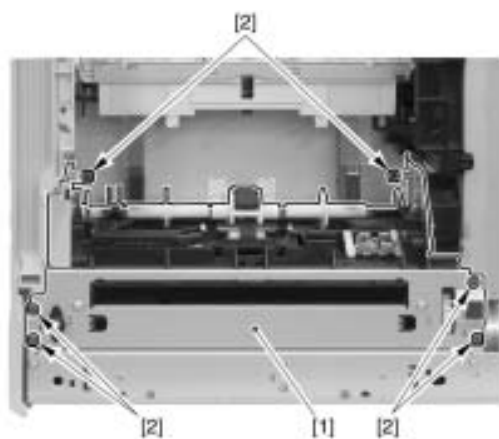
F-3-104

Caution:

When you remove the arms, the spring [1] might come off, and therefore you should be careful not to lose it.



- 5) Remove the pick-up unit [1].
- 6 screws [2]



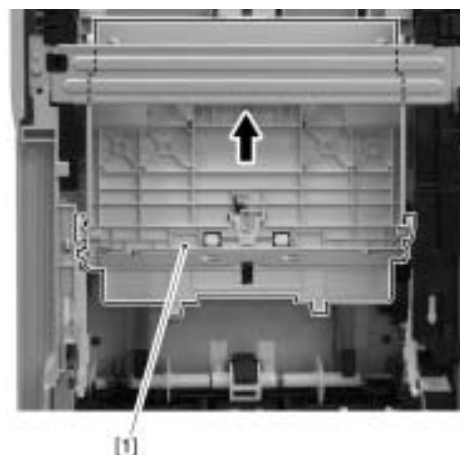
F-3-105

Caution:

Do not damage the cables of the pick-up assembly with the frame, etc. when you removing it.

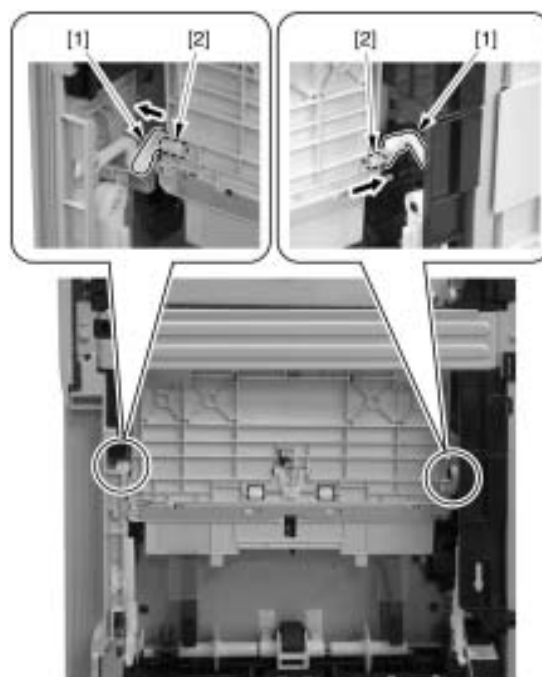
3.4.2.3 Removing MP tray pick-up unit

- 1) Stand the main unit upright so that you can access its bottom face.
- 2) Move the MP tray pick-up unit [1] in the arrow direction.



F-3-106

- 3) Remove 2 links [1] at the left and right sides from the bearing part [2] of the MP tray pick-up unit.

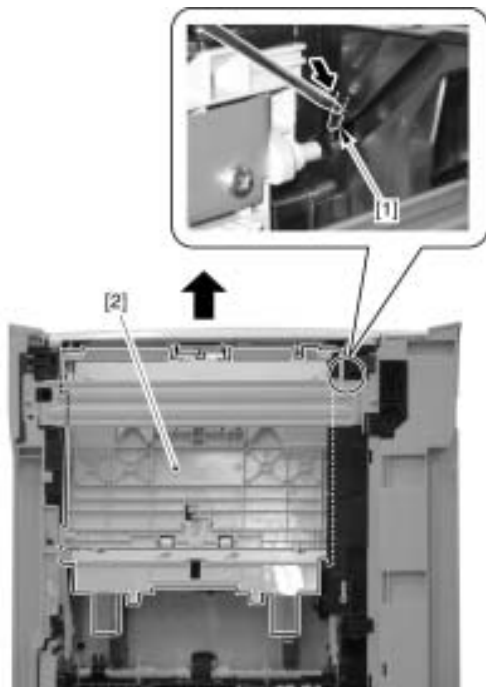


F-3-107

CAUTION:

When you remove the MP tray pick-up unit, the link parts become unengaged, and therefore you should be careful not to lose the links.

- 4) Press a flat-blade screwdriver to the stopper [1], pull out the MP tray pick-up unit [2] upward, and remove it.



F-3-108

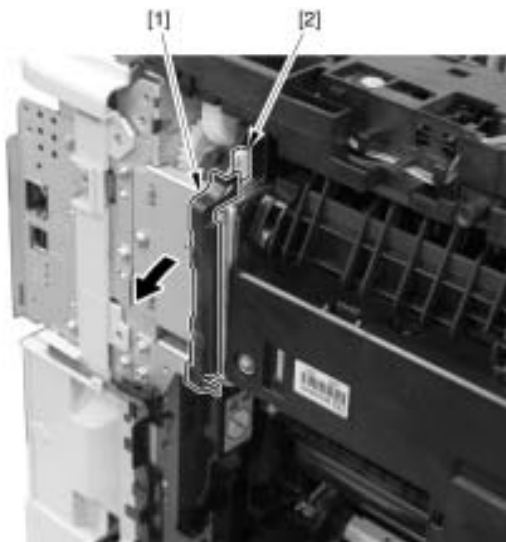
3.4.3 Delivery Unit

3.4.3.1 Pre-procedure for removing delivery unit

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the left cover. (page 3-4) Reference [Removing left cover]
- 5) Remove the rear cover. (page 3-1) Reference [Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference [Removing lower rear cover]
- 7) Remove the rear cover lib unit. (page 3-1) Reference [Removing rear cover lib unit]
- 8) Remove duplex reverse drive unit. (page 3-9) Reference [Removing duplex reverse drive unit]

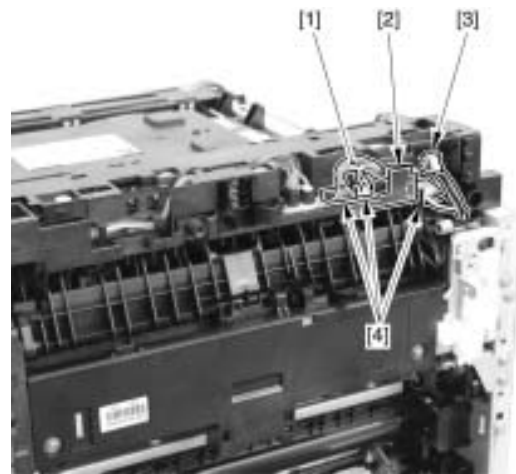
3.4.3.2 Removing delivery unit

- 1) Move the cable guide [1] and remove the connector [2].



F-3-109

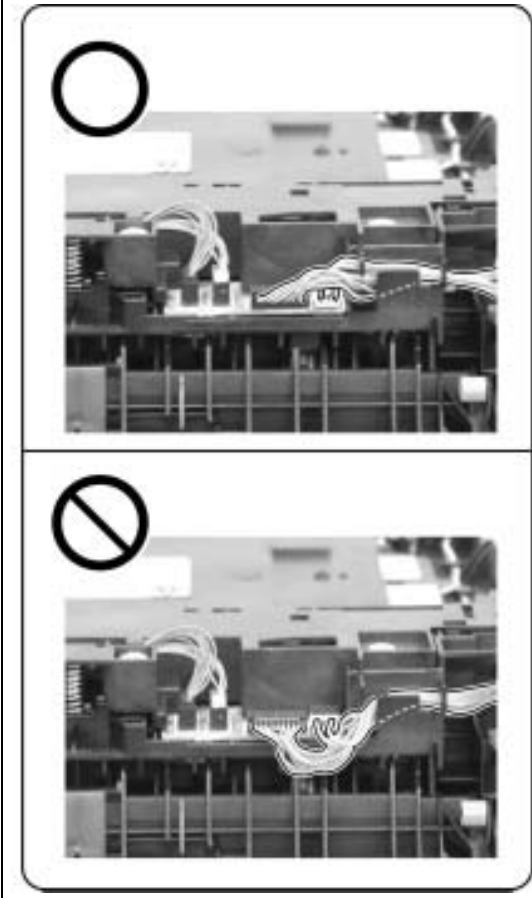
- 2) Remove the cable [1] from the cable guide [2].
 - 1 wire saddle [3]
 - 3 connectors [4]



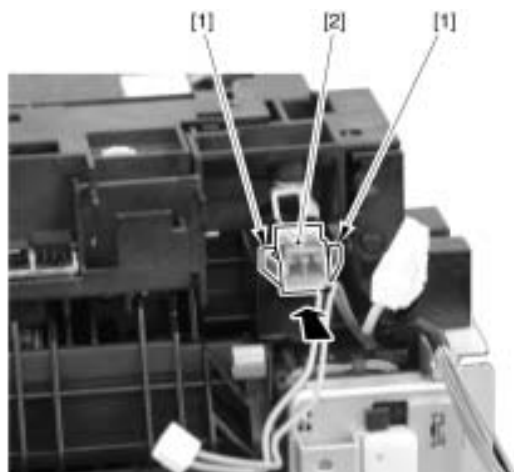
F-3-110

CAUTION:

When you assemble the delivery unit, be sure to place the cable in the correct position as shown in the figure.

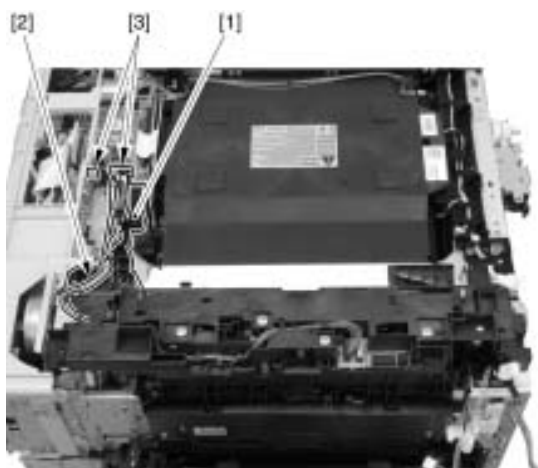


- 3) Release two claws [1] and remove the connector [2].



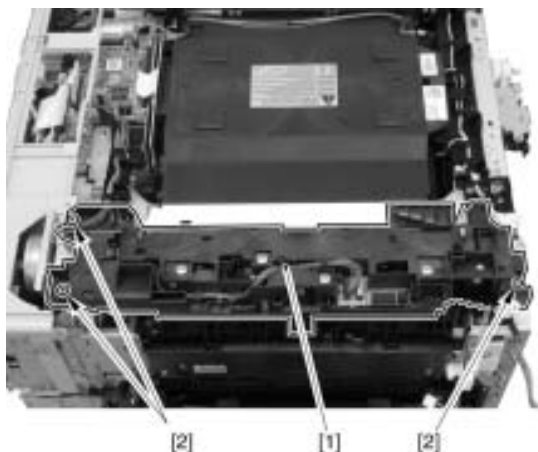
F-3-111

- 4) Remove the cable [2] from the cable guide [1].
- 2 connectors [3]



F-3-112

- 5) Remove the delivery unit [1].
- 3 screws [2]



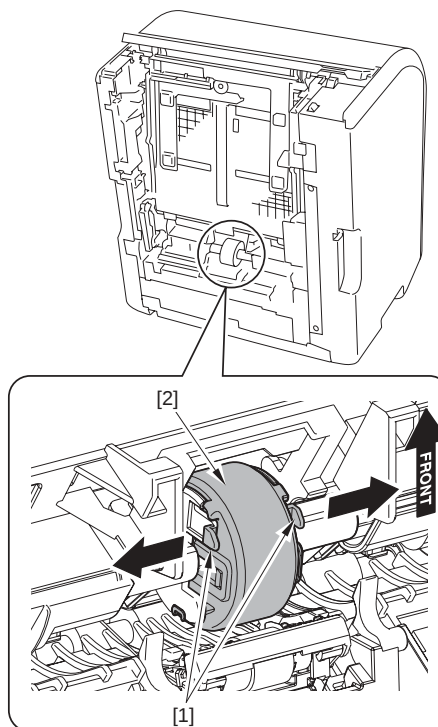
F-3-113

3.4.4 Cassette Pickup Roller

3.4.4.1 Removing cassette pick-up roller

- 1) Connect the equipment to a PC and make the setting of the driver.
- 2) Turn on the power and then display the printer driver window.
- 3) Display the status window from the driver window.
- 4) Enter the password (*28*) from the keyboard.
- 5) Service Mode is displayed in the "Option" menu of the status window.
- 6) Select Replace Service Parts > Pick-up Roller Position shift.
- 7) Put the backside of the printer main body facing downside, and raise it.

- 8) The pick-up roller automatically rotates to the replacement position.
- 9) Remove the cassette.
- 10) Open two protruded parts [1] in the arrow direction and remove the pick-up roller [2].



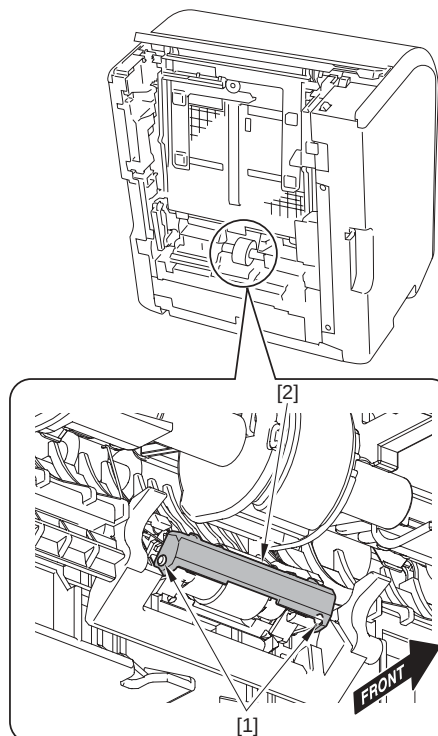
F-3-114

- 11) After replacing the pick-up roller, turn the power OFF and ON.

3.4.5 Cassette Separation Roller

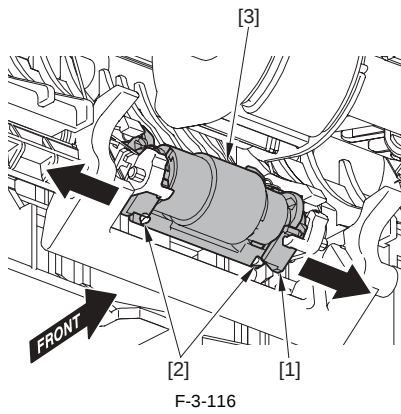
3.4.5.1 Removing cassette separation roller

- 1) Remove the cassette.
- 2) Remove two protruded parts [1] and then remove the cover [2].



F-3-115

- 3) Open the holder [1] in the arrow direction, release the protruded part [2] of the separation roller, and remove the separation roller assembly [3].

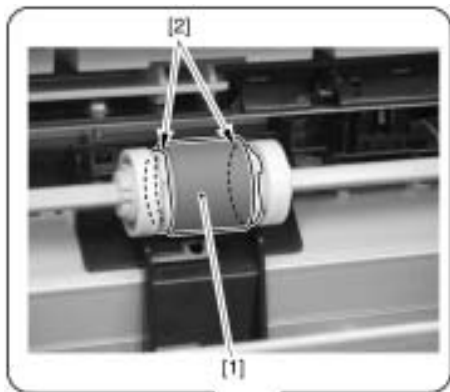


F-3-116

3.4.6 Manual Pickup Roller

3.4.6.1 Removing MP tray pick-up roller

- 1) Remove the MP tray pick-up roller [1].
- 2 claws [2]

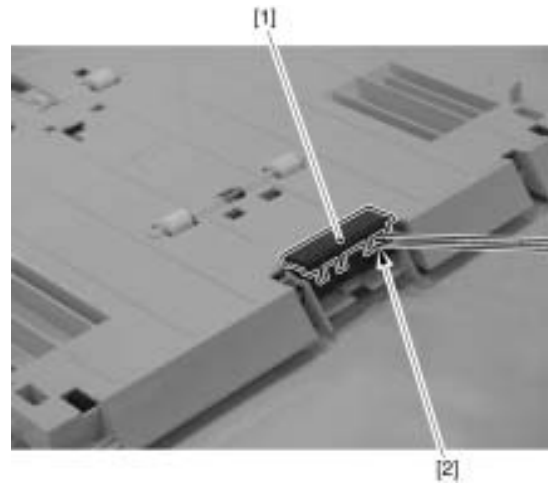


F-3-117

3.4.7 Manual Separation Pad

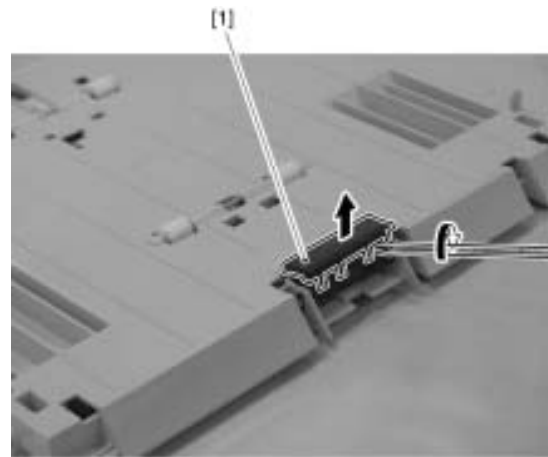
3.4.7.1 Removing MP tray separation pad

- 1) Insert a precision screwdriver into the space [2] between the MP tray separation pad [1] and pad holder.



F-3-118

- 2) Turn the precision screwdriver and remove the MP tray separation pad [1] in the arrow direction.



F-3-119

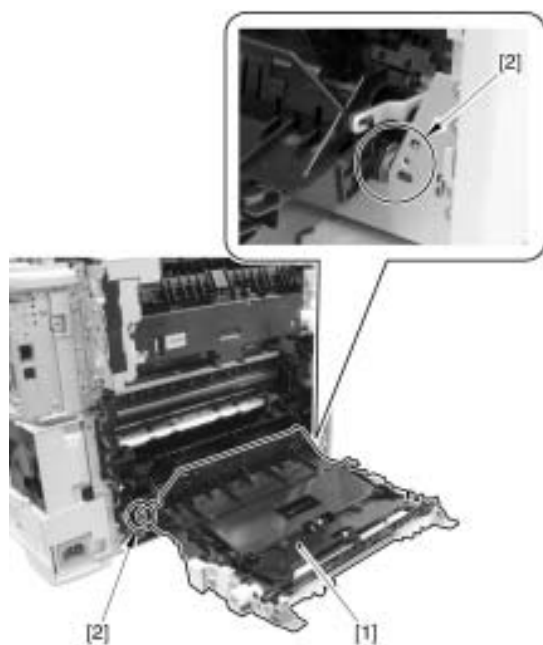
3.4.8 Duplexing Feeding Unit

3.4.8.1 Pre-procedure for removing duplex feeding unit

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]
- 4) Remove the secondary transfer feeding unit. (page 3-28) Reference[Removing secondary transfer feeding unit]
- 5) Remove the rear cover. (page 3-1) Reference[Removing rear cover]
- 5) Remove the lower rear cover. (page 3-1) Reference[Removing lower rear cover]

3.4.8.2 Removing duplex feeding unit

- 1) Open the duplex feeding unit [1] and then remove it.
- 2 bearings [2]



F-3-120

- 2) Remove the link [1] from the duplex feeding unit.

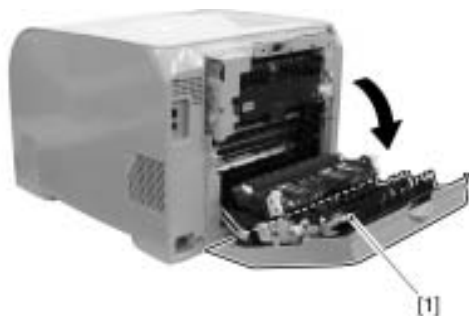


F-3-121

3.4.9 Secondary Transfer Feeding Unit

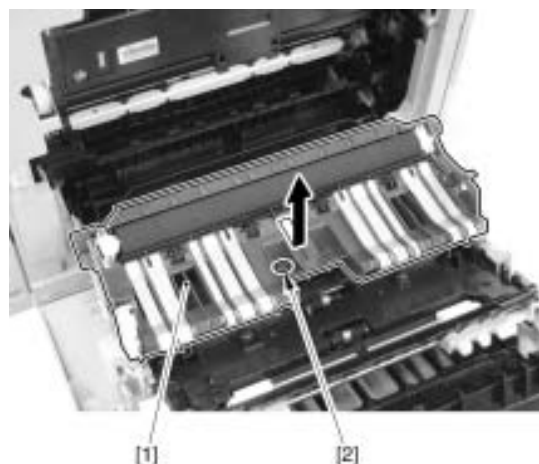
3.4.9.1 Removing secondary transfer feeding unit

- 1) Open the rear cover [1].



F-3-122

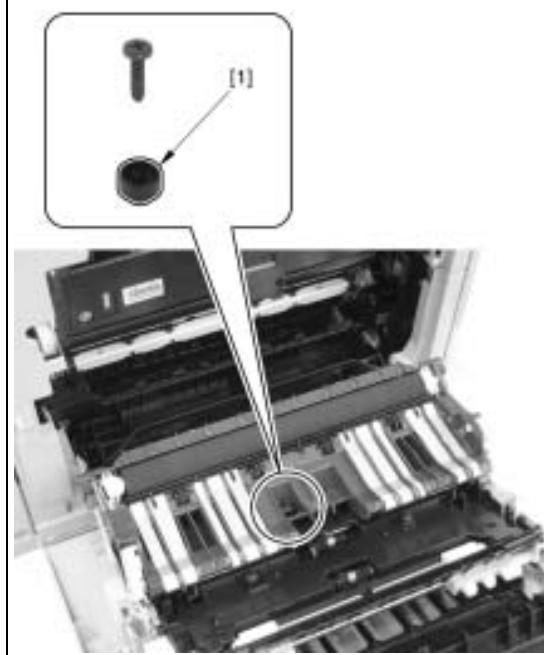
- 2) Remove the secondary transfer feeding unit [1] in the arrow direction.
- 1 screw [2]



F-3-123

CAUTION:

When you remove the screw, the guide cap [1] is also detached, and therefore you should be careful not to lose it.



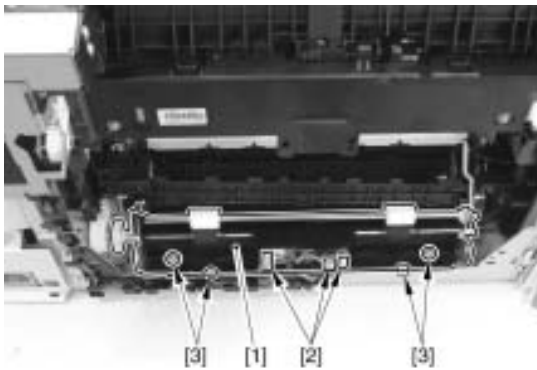
3.4.10 Re-Pickup Guide Unit

3.4.10.1 Pre-procedure for removing re-pick-up guide unit

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]
- 4) Remove secondary transfer feeding unit. (page 3-28) Reference[Removing secondary transfer feeding unit]
- 5) Remove the rear cover. (page 3-1) Reference[Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference[Removing lower rear cover]
- 7) Remove duplex feeding unit. (page 3-27) Reference[Removing duplex feeding unit]

3.4.10.2 Removing re-pick-up guide unit

- 1) Remove the re-pick-up guide unit [1].
- 3 connectors [2]
- 4 screws [3]



F-3-124

3.5 FIXING SYSTEM

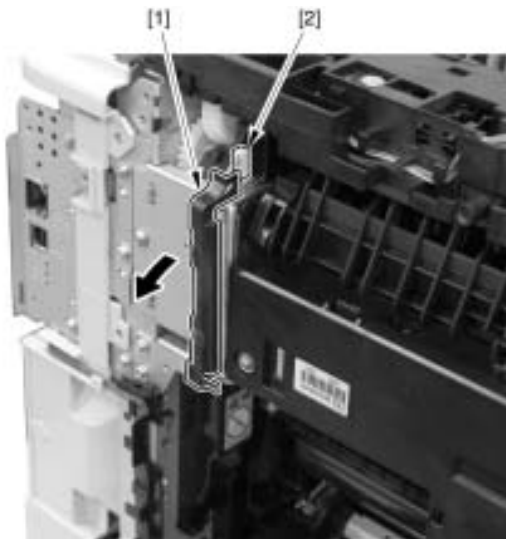
3.5.1 Fixing Assembly

3.5.1.1 Pre-procedure for removing fixing unit

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the left cover. (page 3-4) Reference [Removing left cover]
- 5) Remove the rear cover. (page 3-1) Reference [Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference [Removing rear cover]
- 7) Remove the rear cover lib unit. (page 3-1) Reference [Removing rear cover lib unit]
- 8) Remove duplex reverse drive unit. (page 3-9) Reference [Removing duplex reverse drive unit]

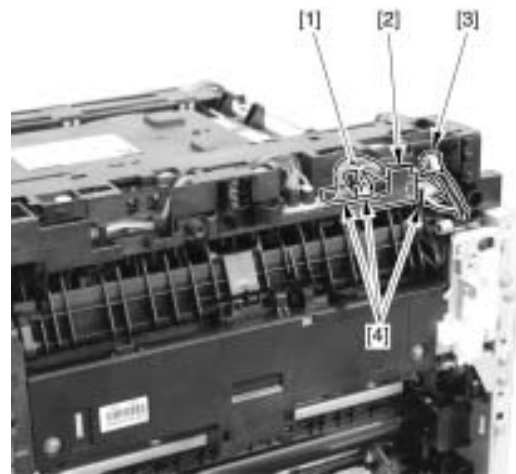
3.5.1.2 Removing fixing unit

- 1) Remove the cable guide [1] and then remove the connector [2].



F-3-125

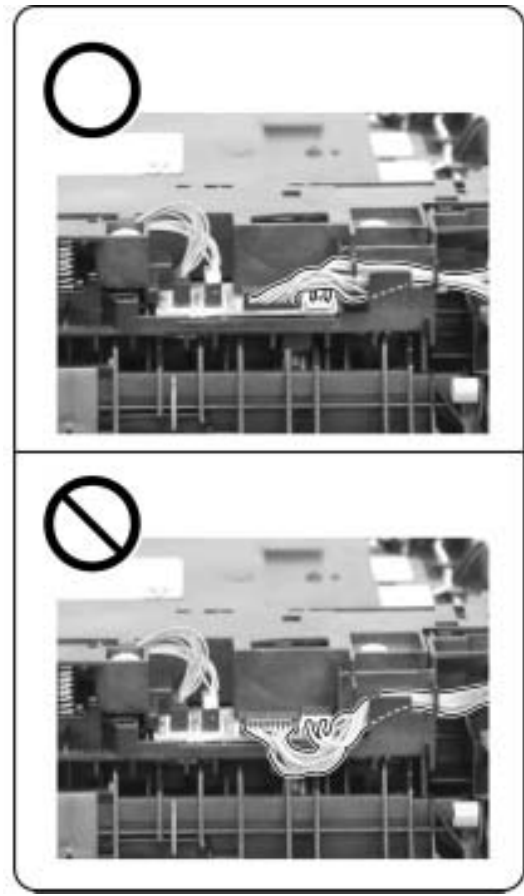
- 2) Remove the cable [1] from the cable guide [2].
 - 1 wire saddle [3]
 - 3 connectors [4]



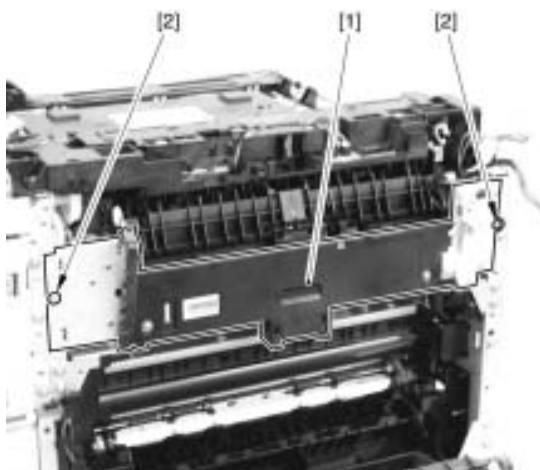
F-3-126

CAUTION:

When you assemble the fixing unit, be sure to place the cable in the correct position as shown in the figure.



- 3) Remove the fixing unit [1].
 - 2 screws [2]



F-3-127

3.5.2 Fixing Film Unit

3.5.2.1 Pre-procedure for removing fixing film unit

- 1) Remove the right cover. (page 3-9) Reference [Removing duplex reverse drive unit]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the left cover. (page 3-1) Reference [Removing rear cover]
- 5) Remove the rear cover. (page 3-1) Reference [Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference [Removing lower rear cover]
- 7) Remove the rear cover lib unit. (page 3-1) Reference [Removing rear cover lib unit]
- 8) Remove duplex reverse drive unit. (page 3-9) Reference [Removing duplex reverse drive unit]
- 9) Remove fixing unit. (page 3-29) Reference [Removing fixing unit]

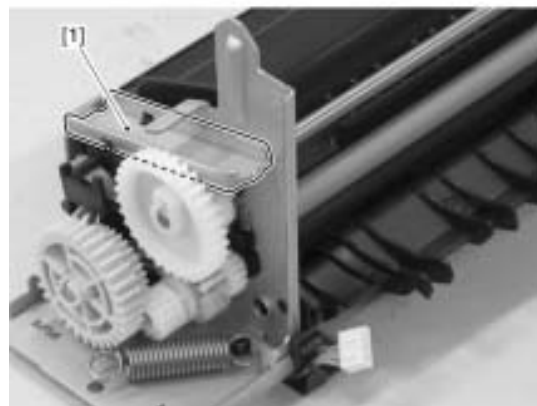
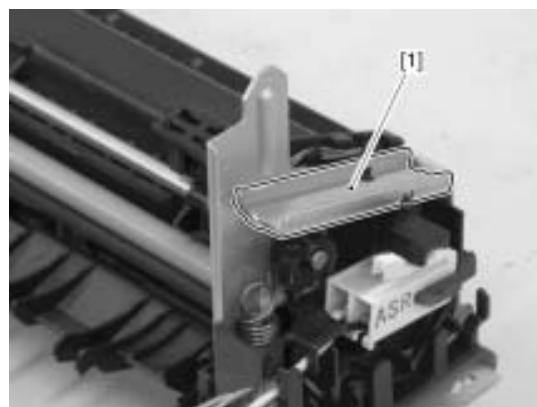
3.5.2.2 Removing fixing film unit

- 1) Remove the pressure springs [1] at the left and right sides.



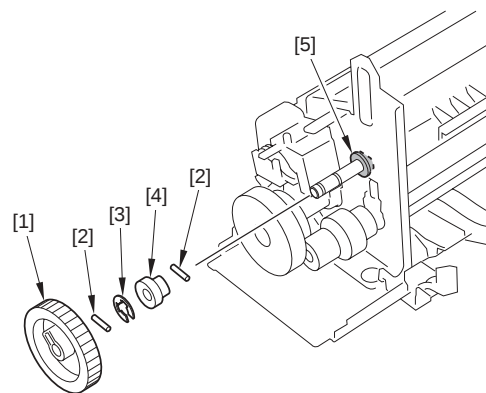
F-3-128

- 2) Remove the pressure plates [1] at the left and right sides.



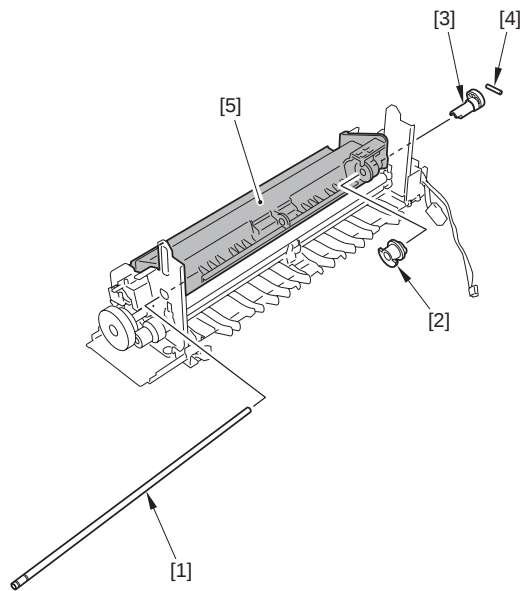
F-3-129

- 3) Remove the gear [1], 2 parallel pins [2], E-ring [3], cam [4], and bushing [5].



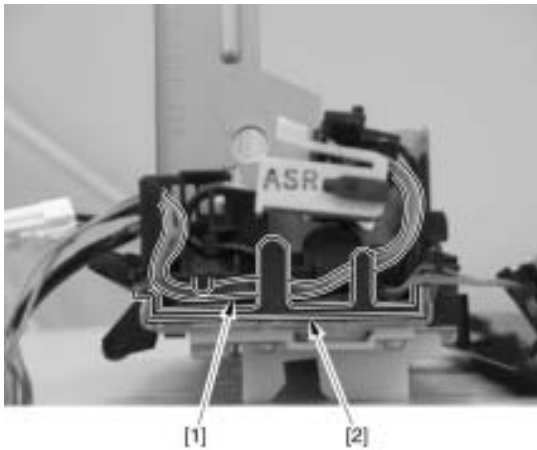
F-3-130

- 4) After removing the shaft [1], sensor flag [2], cam [3], and parallel pin [4], remove the guide plate [4].



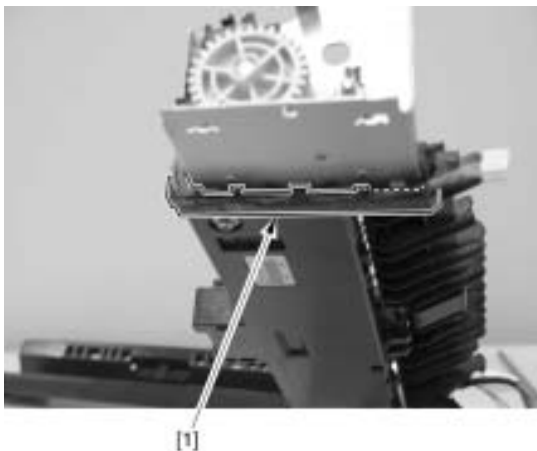
F-3-131

5) Remove the cable [1] from the cable guide [2].



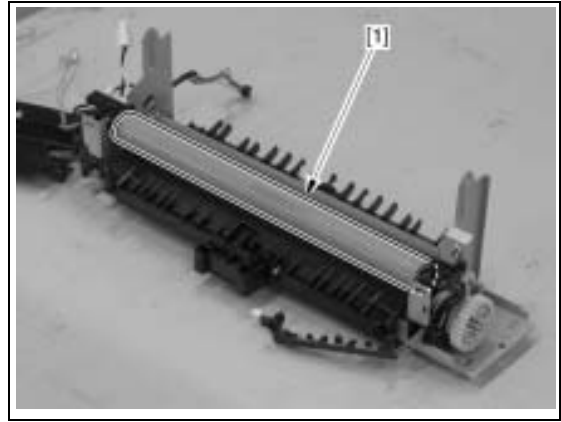
F-3-132

6) Remove the cable guide [1].

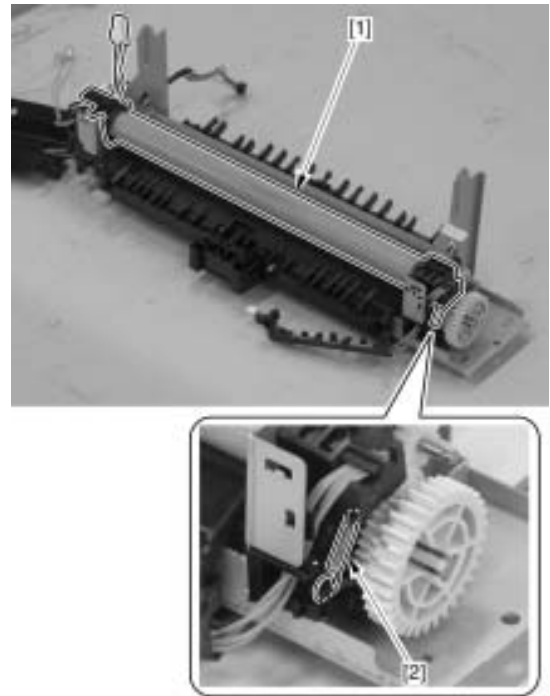


F-3-133

CAUTION:
When you disassemble or assemble the fixing film unit, do not touch or damage the fixing film [1].



7) Remove the fixing film unit [1].



F-3-134

CAUTION:
Since the spring is very small, you should be careful not to lose it when removing it.

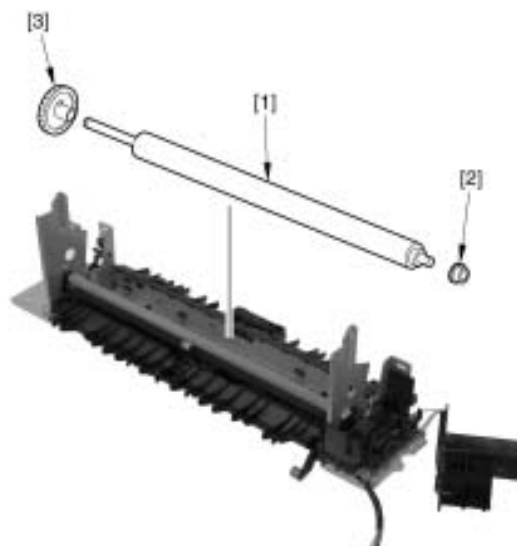
3.5.3 Fixing Pressure Roller

3.5.3.1 Pre-procedure for removing fixing pressure roller

- 1) Remove the right cover. (page 3-3) Reference[Removing right cover]
- 2) Remove the upper rear cover. (left). (page 3-1) Reference[Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference[Removing upper cover]
- 4) Remove the rear cover. (page 3-4) Reference[Removing left cover]
- 5) Remove the rear cover. (page 3-1) Reference[Removing rear cover]
- 6) Remove the lower rear cover. (page 3-1) Reference[Removing lower rear cover]
- 7) Remove the rear cover lib unit. (page 3-1) Reference[Removing rear cover lib unit]
- 8) Remove duplex reverse drive unit. (page 3-9) Reference[Removing duplex reverse drive unit]
- 9) Remove fixing unit. (page 3-29) Reference[Removing fixing unit]
- 10) Remove fixing film unit. (page 3-30) Reference[Removing fixing film unit]

3.5.3.2 Removing fixing pressure roller

- 1) Remove the fixing pressure roller [1].
 - 2 bushings [2]
 - 1 gear [3]



F-3-135

CAUTION:

Do not touch the surface of the fixing pressure roller.

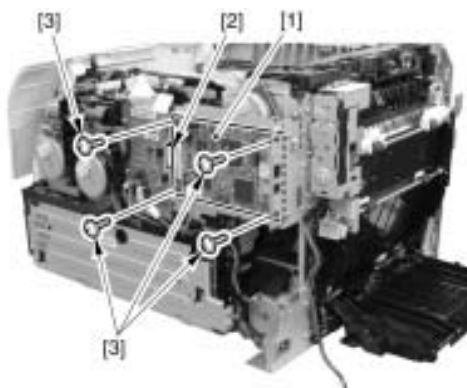
3.5.4 Fixing Motor

3.5.4.1 Pre-procedure for removing fixing motor

- 1) Remove the right cover. (page 3-3) Reference [Removing right cover]
- 2) Remove the upper rear cover (left). (page 3-1) Reference [Removing upper rear cover (left)]
- 3) Remove the upper cover. (page 3-5) Reference [Removing upper cover]
- 4) Remove the right frame cover. (page 3-3) Reference [Removing right frame cover]

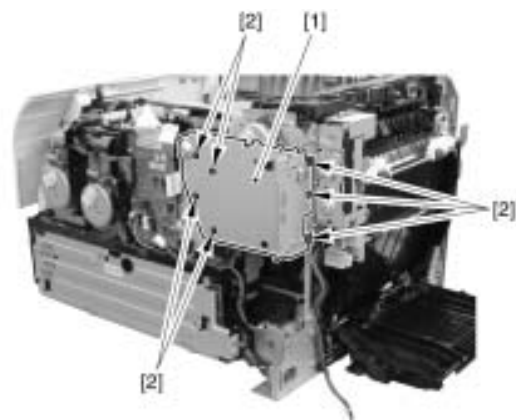
3.5.4.2 Removing fixing motor

- 1) Remove the main controller PCB [1].
 - 1 flat cable [2]
 - 4 screws [3]



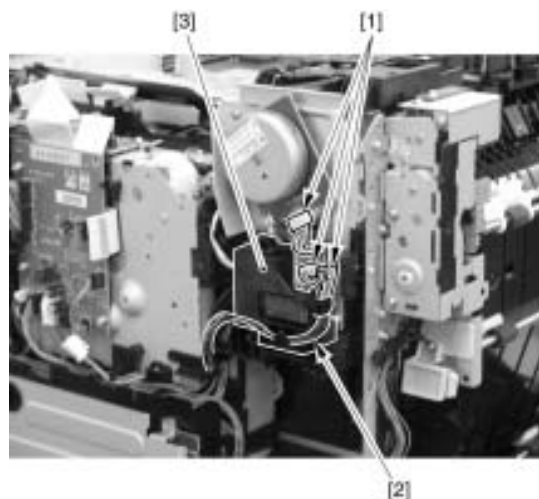
F-3-136

- 2) Remove the sheet metal [1] of the main controller PCB.
 - 7 screws [2]



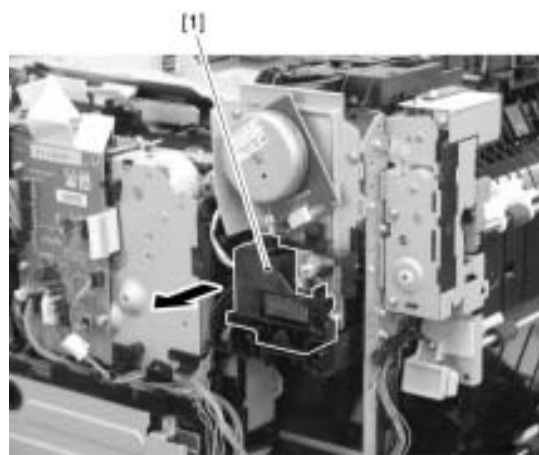
F-3-137

- 3) Remove three connectors [1], and remove the cable [2] from the cable guide [3].



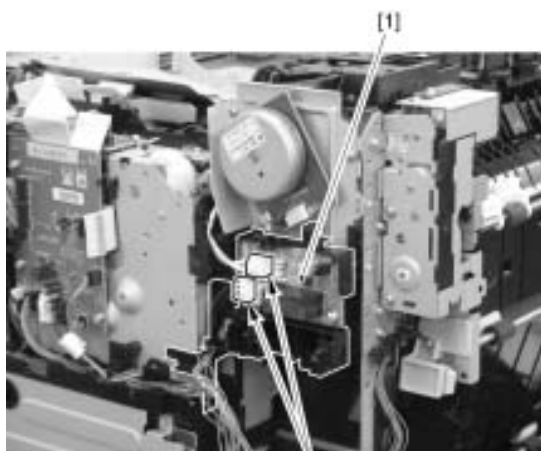
F-3-138

- 4) Remove the cable guide [1].



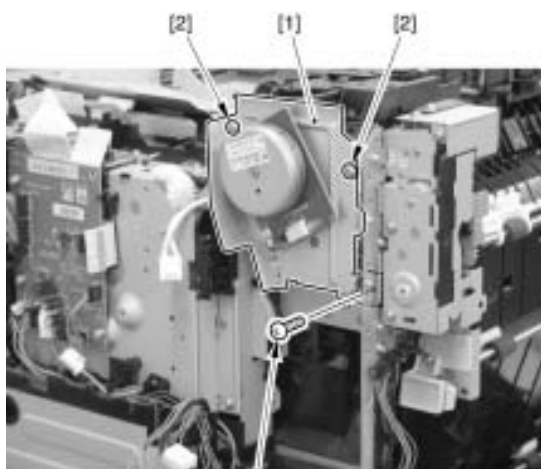
F-3-139

- 5) Remove the sub power supply PCB unit [1].
 - 2 connectors [2]



F-3-140

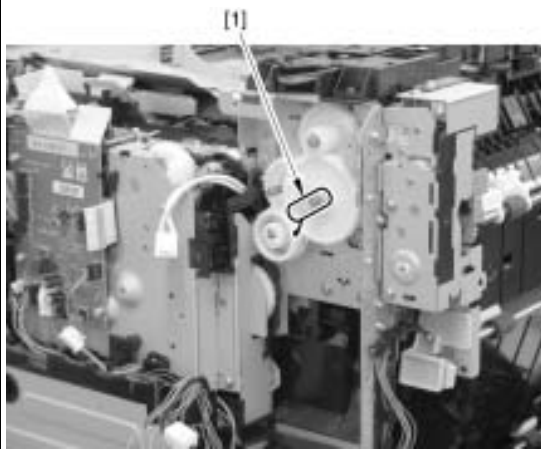
- 6) Remove the fixing motor unit [1].
- 3 screws [2]



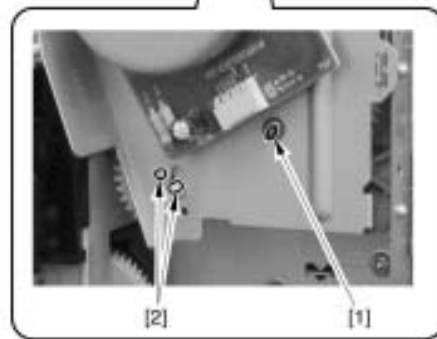
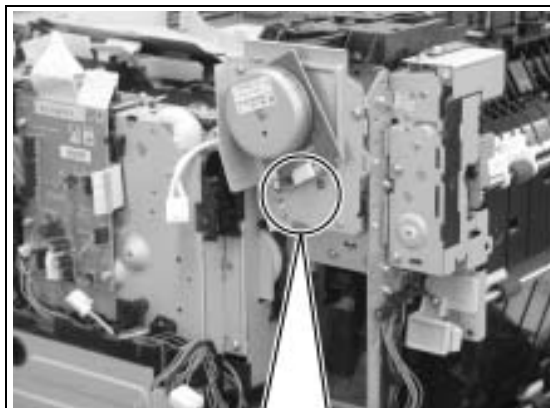
F-3-141

CAUTION:

When you remove the fixing motor unit, do not lose the spring [1] at the rear side.

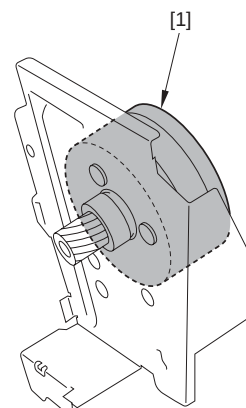
**CAUTION: Point to note for assembling**

Be sure to assemble the unit in a way that the tip [1] of the spring and the protruded parts [2] of the gear can be seen from the holes on the sheet metal.

**MEMO:**

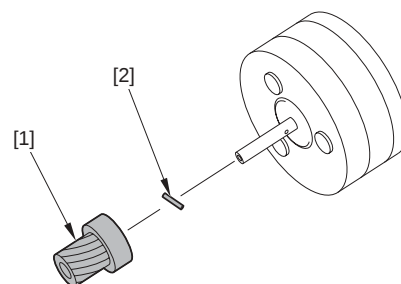
When removing the fixing motor unit for removing other units, it is not necessary to remove the fixing motor.

- 7) Remove the fixing motor [1].
- 3 screws [2]



F-3-142

- 8) Remove the gear [1] and pin [2] from the fixing motor.



F-3-143

Chapter 4 MAINTENANCE AND INSPECTION

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4.1 Periodically Replaced Parts

4.1.1 Periodically Replaced Parts

The machine does not have parts that require periodical replacement.

4.2 Consumables

4.2.1 Life Expectancy of Consumable Parts

No consumable parts are required in this printer.

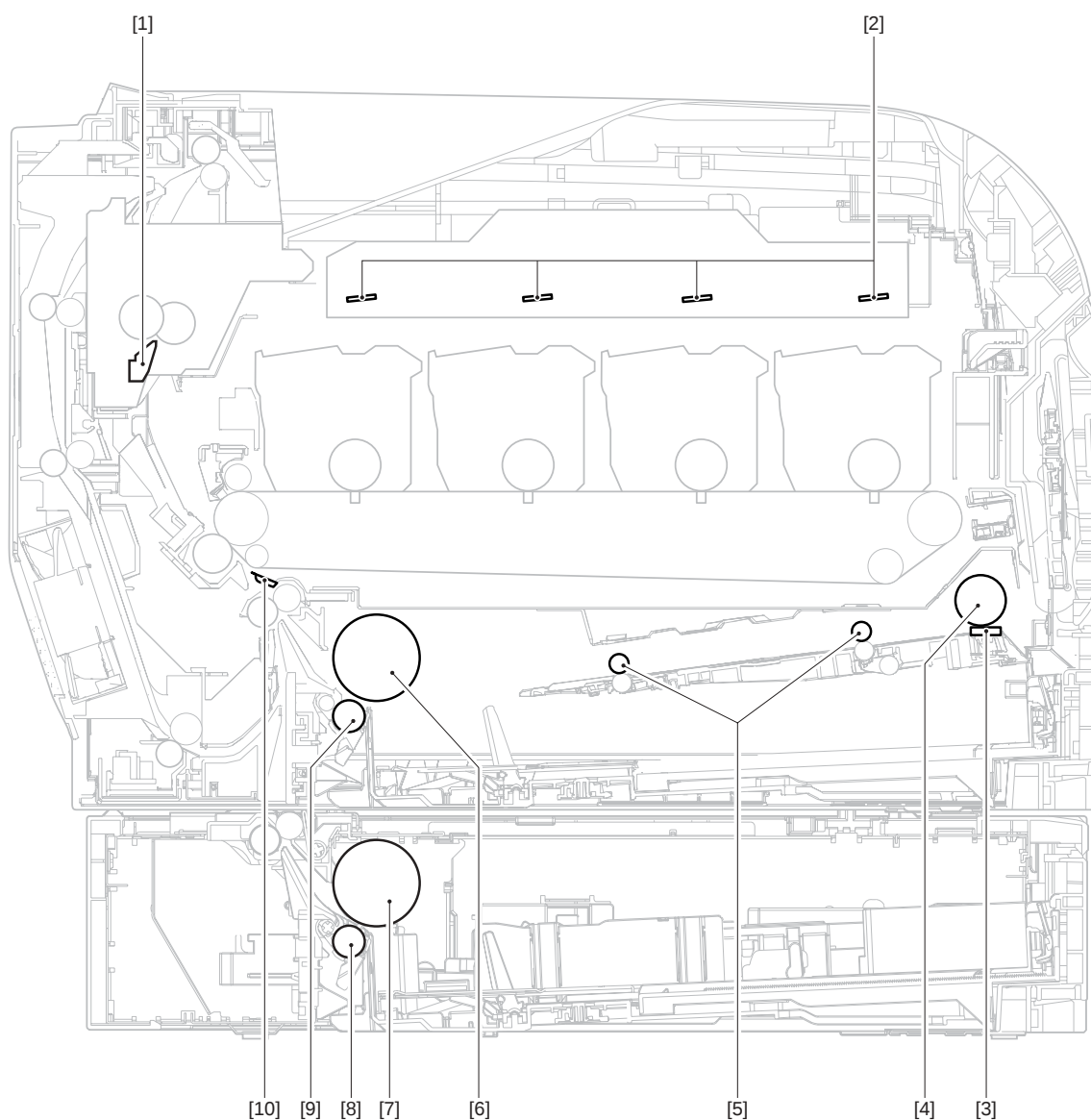
4.3 Periodical Service

4.3.1 Periodic Service

The printer has no parts that require periodic servicing.

4.4 Cleaning

4.4.1 Cleaning method



F-4-1

Components		Cleaning method
[1]	Pre-fixing guide	Wipe with a lint-free cloth. If dirt cannot be removed, dampen the lint-free cloth with alcohol.

[2]	Laser beam window glass	Wipe with a lint-free cloth.
[3]	Multi tray separation pad	Wipe with a lint-free cloth. If dirt cannot be removed, dampen the lint-free cloth with alcohol.
[4]	Multi tray pickup roller	
[5]	Multi tray feed roller	
[6]	Cassette pickup roller	
[7]*	PF pickup roller	
[8]*	PF separation roller	
[9]	Cassette separation roller	Wipe with a lint-free cloth.
[10]	Upper registration guide	

* paper feeder

Chapter 5 TROUBLESHOOTING

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5.1 MEASUREMENT AND ADJUSTMENT

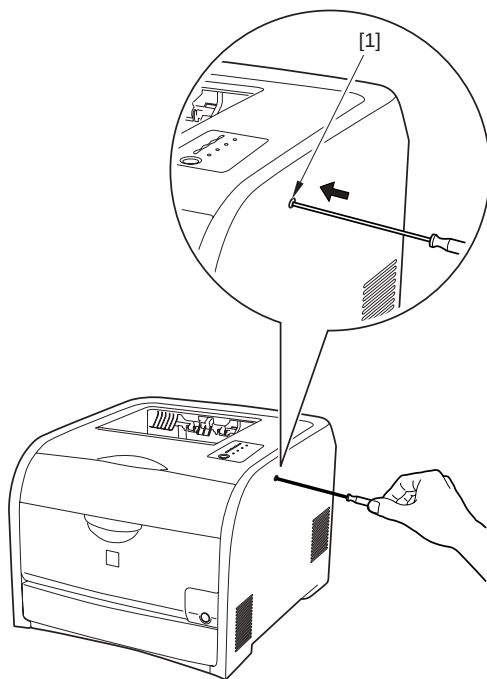
5.1.1 Test Print

5.1.1.1 Test Print

Test Print is an object used to check whether this equipment works properly or not.

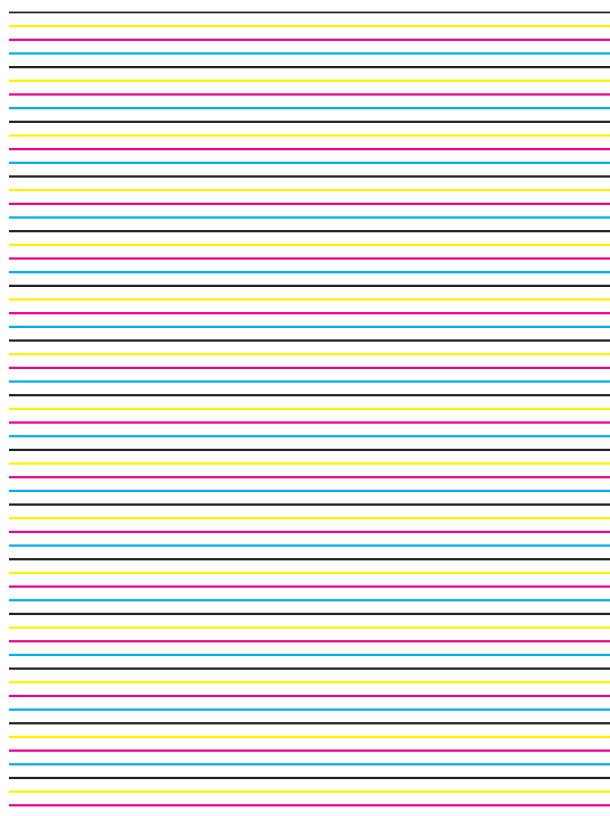
Execute engine test print, as the following steps.

1. Turn ON the power, and when this equipment has turned to 'standby', press test print switch [1] located in the right side.



F-5-1

2. Engine test print will be executed, and one page of the horizontal line pattern as the below figure will be printed.



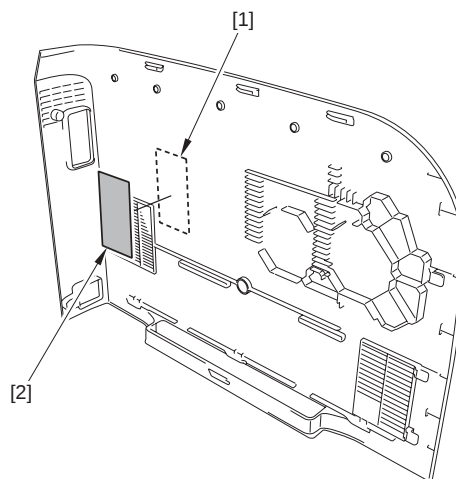
F-5-2

5.1.2 Adjustment of Laser Exposure System

5.1.2.1 After Replacing the laser scanner unit

When replacing the laser unit, enter the value described on the label included in the scanner unit into the following service mode.

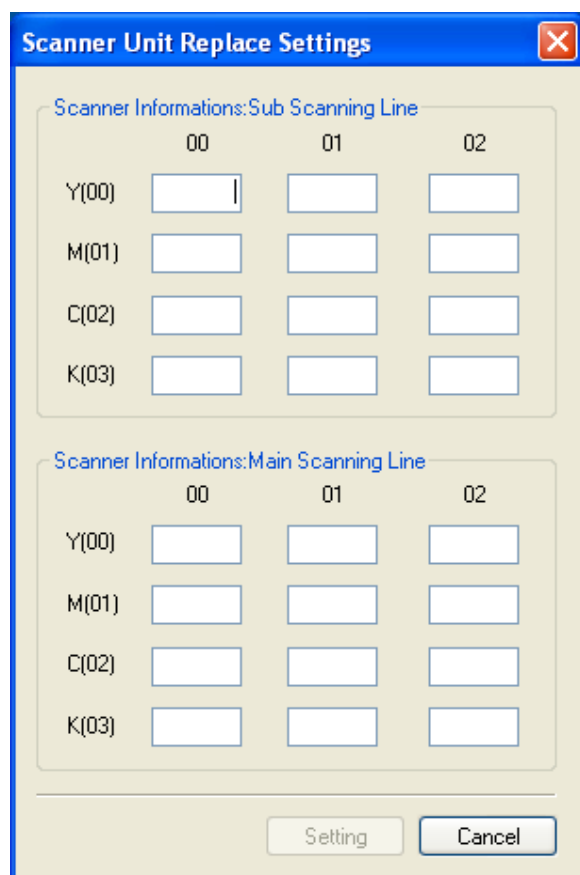
After entry, put the label [2] inside the right cover [1].



F-5-3

How to transit to the service mode

1. After the power ON, display the printer driver screen.
2. Change the display from the driver screen to status window.
3. Enter the password "*28*" with keyboards.
4. Select: Option menu > Service mode > Service parts replacement > Scanner unit replace settings from the status window.



Scanner Unit Replace Settings

Scanner Informations: Sub Scanning Line

	00	01	02
Y(00)			
M(01)			
C(02)			
K(03)			

Scanner Informations: Main Scanning Line

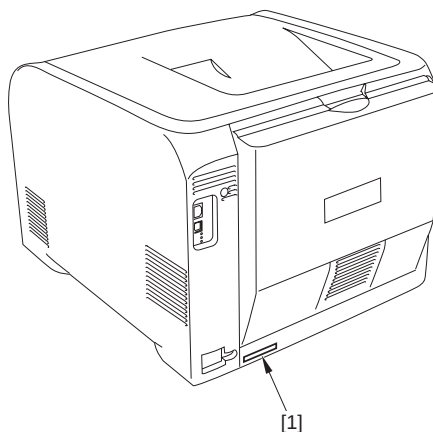
	00	01	02
Y(00)			
M(01)			
C(02)			
K(03)			

Setting Cancel

F-5-4

! The information in the NVRAM on the DC controller PCB is saved in the NVRAM (IC2S) as backup data. When replacing the NVRAM, perform the same operation as replacing the main controller PCB and execute the following item; Option Menu > Service Mode > Printer Information settings > DCON data back up.

5) Put the MAC address label that is included with the main controller PCB (service part) onto the MAC address label on the back of the host machine.



F-5-5

5.1.3 Adjustment of Electrical Components

5.1.3.1 After Replacing the DC controller PCB

The information in the NVRAM on the DC controller PCB is saved as backup data in the NVRAM on the main controller PCB. Executing Printer Setting Restoration in service mode recovers the backup data in the NVRAM on the DC controller PCB.

When replacing the DC controller PCB, execute recovery of backup data, color displacement correction, and calibration in service mode.

1) Execute Option Menu > Service Mode > Printer Information settings > Printer Setting Restoration.

T-5-1



After executing the printer recovery setting, wait completion of the processing for approx. 15 sec.

- 2) Turn off/on the power supply of the host machine.
- 3) Start the Status window.
- 4) Execute Option Menu > Utility > Out-of-Register Colors Correction.
- 5) Execute Option Menu > Utility > Calibration.

5.1.3.2 After Replacing the Main Controller PCB

The settings and management data of host machine is saved in the NVRAM (IC2S) of the main controller PCB. When replacing the main controller PCB, be sure to move the NVRAM from the old PCB and to the new PCB. After moving the NVRAM, execute color displacement correction and calibration.

- 1) Turn on the power supply of the host machine.
- 2) Start the Status window.
- 3) Execute Option Menu > Utility > Out-of-Register Colors Correction in the status window.
- 4) Execute Option Menu > Utility > Calibration in the status window.

5.2 SERVICE TOOLS

5.2.1 Standard Tools

The table below lists the standard tools required for servicing the printer.

T-5-3

No.	Tool name	Tool No.	Remark
1	Tool case	TKN-0001	With a clip 0.02 to 0.3 mm 0 to 600 g for checking the cassette spring pressure
2	Jumper wire	TKN-0069	
3	Clearance gauge	CK-0057	
4	Compression spring scale	CK-0058	
5	Phillips screwdriver	CK-0101	M4, M5 Length : 363 mm
6	Phillips screwdriver	CK-0104	M3, M4 Length: 155 mm M4, M5 Length: 191 mm M4, M5 Length: 85 mm
7	Phillips screwdriver	CK-0105	
8	Phillips screwdriver	CK-0106	
9	Flat-blade screwdriver	CK-0111	
10	Precision flat-blade screwdriver set	CK-0114	6-piece set
11	Allen wrench set	CK-0151	5-piece set M4 Length: 107 mm
12	File, fine	CK-0161	
13	Allen (hex) screwdriver	CK-0170	
14	Diagonal cutting pliers	CK-0201	
15	Needle-nose pliers	CK-0202	Applied to the axis ring Employed to measure 150 mm
16	Pliers	CK-0203	
17	Retaining ring pliers	CK-0205	
18	Crimper	CK-0218	
19	Tweezers	CK-0302	100cc 500SH/PKG
20	Ruler	CK-0303	
21	Mallet, plastic head	CK-0314	
22	Brush	CK-0315	
23	Penlight	CK-0327	30cc 30cc
24	Plastic bottle	CK-0327	
25	Lint-free paper	CK-0336	
26	Oiler	CK-0349	
27	Plastic jar	CK-0351	FY9-2032
28	Digital multi-measure	FY9-2032	

5.2.2 Solvents and Oils

T-5-4

No.	Type	Purpose	Remark
1	Alcohol	Cleaning: Plastic Rubber Metal part Oil stain Toner stain	- Keep away from flame - Purchase locally
2	Grease	Apply between gear and shaft	- SHELL TELLUS 68 (Showa Shell Sekiyu K.K.) - Tool No. CK-8003
3	Lubricant	Apply to gear	- MOLYKOTE® EM-50L (Dow Corning Corporation) - Tool No. HY9-0007

T-5-5

	To clean the external covers, use a cloth moistened with water (well wrung).
---	--

5.3 ERROR CODE

5.3.1 Error Code

T-5-6

Code	Detection	Remedy
E000	Failure in fixing assembly start-up.	Failure in fixing assembly start-up
	If increasing temperature is not detected by main thermistor after current distribution to the heater is started. Cause Open circuit in the main thermistor, disconnection in the fixing heater, failure in DC controller PCB	- Check the connectors of fixing assembly, DC controller PCB, and fixing power supply assembly. - Replace the fixing film unit - Replace the fixing power unit - Replace the DC controller PCB

Code	Detection	Remedy
E001	Abnormal high temperature in fixing assembly	
	0000 If abnormal high temperature is detected by main thermistor. Cause Failure in sub thermistor, failure in DC controller PCB.	- Check the connectors of fixing assembly and DC controller PCB - Replace the fixing film unit - Replace the fixing power unit - Replace the DC controller PCB
	0001 If abnormal high temperature is detected by sub thermistor (caused by sub thermistor). Cause Failure in sub thermistor, failure in DC controller PCB	- Check the connectors of fixing assembly and DC controller PCB - Replace the fixing film unit - Replace the fixing power unit - Replace the DC controller PCB
E003	Abnormal low temperature in fixing assembly	
	0000 If decreasing temperature is detected after the main thermistor reaches a specified temperature. Cause Failure in fixing power unit, open circuit in the main thermistor, failure in DC controller PCB.	- Check the connectors of fixing assembly and DC controller PCB - Replace the fixing film unit - Replace the fixing power unit - Replace the DC controller PCB
	0001 If decreasing temperature is detected after the sub thermistor reaches a specified temperature. (cause by sub thermistor) Cause Failure in fixing power unit, open circuit in the sub thermistor, failure in DC controller PCB.	- Check the connectors of fixing assembly and DC controller PCB - Replace the fixing film unit - Replace the fixing power unit - Replace the DC controller PCB
E004	Error in fixing current drive circuit.	
	Zero cross signal is not detected within specified time. Cause Failure in fixing control circuit assembly.	- Check the connectors of fixing assembly and DC controller PCB - Replace the fixing power unit
E012	Error in ITB motor activation.	
	0000 The cycle of ITB motor speed detection signal does not move in the specified cycle after ITB motor drive is started. Cause Failure in ITB motor, failure in DC controller PCB	- Check the connectors of ITB motor and DC controller PCB - Replace the ITB motor - Replace the DC controller PCB
	0001 If the ITB motor speed detection signal comes off the specified cycle after it turned once to the specified cycle. Cause Failure in ITB motor, failure in DC controller PCB.	
E014	Error in fixing motor drive.	
	0000 The cycle of fixing motor speed detection signal does not move in the specified cycle after fixing motor drive is started. Cause Failure in fixing motor, failure in DC controller PCB	- Check the connectors of ITB motor and DC controller PCB - Replace the ITB motor - Replace the DC controller PCB
	0001 If the fixing motor speed detection signal comes off the specified cycle after it turned once to the specified cycle. Cause Failure in fixing motor, failure in DC controller PCB.	
E015	Error in the developing disengagement movement.	
	0001 For engagement/disengagement movement of the developing roller, the change on the signal condition of the the developing home position sensor cannot be detected within specified time after main motor rotates. Cause Failure in developing home position sensor, failure in main motor, failure in DC controller PCB.	- Check the connectors of the developing home position sensor, main motor, and DC controller PCB. - Replace the developing home position sensor - Replace the main motor - Replace the DC controller PCB
E020	Error in density sensor	
	Insufficient light receiving during image density detection. Cause Soiling in density detection sensor, failure in density detection sensor, failure in DC controller PCB, failure in toner cartridge.	- Check the connectors of the DC controller PCB. - Replace the ITB unit - Replace the DC controller PCB - Replace the toner cartridge
E021	Error in developing motor	
	1003 Developing motor does not rotate. Cause Failure in developing motor, failure in DC controller PCB.	- Check the connectors of developing motor, DC controller PCB - Replace the developing motor - Replace the DC controller PCB
	2003 The cycle of developing motor speed detection signal does not move in the specified cycle after developing motor drive is started. Cause Failure in developing motor, failure in DC controller PCB	- Check the connectors of developing motor, DC controller PCB - Replace the developing motor - Replace the DC controller PCB
E052	Error in duplex unit detection	
	Can not detect duplex unit. Cause Error in the connection of duplex unit.	- Check the connectors of duplex unit and DC controller PCB - Replace the DC controller PCB
E066	Error in the environment detection sensor	
	Error in the environment detection sensor Cause Failure in environment detection sensor, failure in DC controller PCB	- Check the connectors of the environment detection sensor and DC controller PCB - Replace the environment detection sensor - Replace the DC controller PCB
E070	Error in ITB/TOP sensor	
	Error in ITB/TOP sensor Cause Failure in ITB/TOP sensor, failure in DC controller PCB	- Check the connectors of the ITB unit and DC controller PCB - Replace the ITB - Replace the DC controller PCB
E078	Error in primary transfer disengagement.	

Code	Detection	Remedy
	Primary transfer disengagement system can not work properly. Cause Breakdown in disengagement system, failure in ITB tension sensor, failure in pickup motor, failure in DC controller PCB.	- Check the disengagement system - Check the connectors of ITB tension sensor, pick up motor, and DC controller PCB - Replace the ITB tension sensor
E100	Error in scanner motor, laser unit, and BD.	
	0000 Breakdown in yellow scanner assembly. Cause Failure in laser scanner unit, failure in DC controller PCB.	- Check the connectors of the laser scanner unit and DC controller PCB - Replace the laser scanner unit - Replace the DC controller PCB
	0001 Breakdown in magenta scanner assembly. Cause Failure in laser scanner unit, failure in DC controller PCB.	
	0002 Breakdown in cyan scanner assembly. Cause Failure in laser scanner unit, failure in DC controller PCB.	
	0003 Breakdown in black scanner assembly. Cause Failure in laser scanner unit, failure in DC controller PCB.	
E110	Error in first artificial BD adjustment	
	If scanner does not become "Ready" after the artificial BD control is started.	- Replace the laser scanner unit - Replace the DC controller PCB
E194	Error in CPR sensor	
	If CPR sensor is judged error. Cause Soiling in density detection sensor, failure in density detection sensor, failure in DC controller PCB, failure in toner cartridge.	- Check the connector of DC controller PCB - Replace the ITB unit - Replace the DC controller PCB - Replace the toner cartridge
E196	Error in DCON ROM	
	Failure in ROM update of DC controller PCB	- Replace the DC controller PCB
	0001 Can not access to DC controller NVRAM Cause Failure in DC controller PCB	- Replace the DC controller PCB
E197	Engine communication error	
	0001 Error between DC controller PCB and main controller PCB. Cause Failure in connection between PCB, failure in DC controller PCB, failure in controller PCB.	- Check the connection of the connector of the DC controller PCB and controller PCB - Replace the DC controller PCB - Replace the controller PCB
E198	Breakdown in DC controller memory	
	Breakdown in DC controller memory Cause Failure in DC controller PCB	- Replace the DC controller PCB
E747	EEPROM error	
	EEPROM error Cause Failure in main controller PCB	- Replace the main controller PCB
E805	Error in duplex cooling fan	
	0005 Duplex cooling fan can not rotate the specified number of rotations. Cause Failure in duplex cooling fan, failure in DC controller PCB	- Check the connectors of duplex cooling fan and DC controller PCB - Replace the duplex cooling fan
E806	Error in power supply cooling fan	
	Power cooling fan can not rotate the specified number of rotations. Cause Failure in power supply cooling fan, failure in DC controller PCB	- Check the connectors of power supply cooling fan and DC controller PCB - Replace the power cooling fan
E808	Error in low voltage power supply.	
	If printer detects a breakdown in low voltage power supply. Cause Breakdown in low pressure power supply, failure in DC controller PCB	- Check the connectors of power unit and DC controller PCB - Replace the power unit
E840	Error in pressure release system.	
	Control home position (in pressured condition) cannot function after the home position control is started. Cause Failure in fixing drive assembly, failure in fixing pressure release cam.	- Replace the fixing drive assembly - Replace the fixing pressure release cam

5.4 Version Up

5.4.1 Outline

5.4.1.1 Overview of Version Upgrading

This equipment does not correspond to version upgrading using SST (service support tool).

Replace the PCB in the case of version upgrading of firmware for the DC controller PCB and the main controller PCB.

5.5 Service Mode

5.5.1 Outline

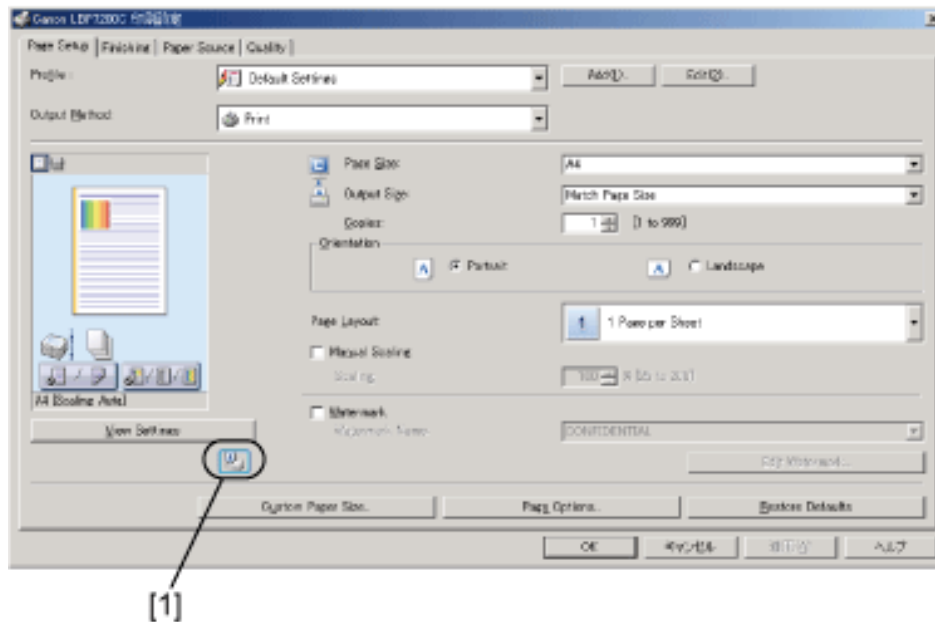
5.5.1.1 Outline

The machine is equipped with service mode to enable the service person to check its condition. On a PC, enter the appropriate ID from the keyboard to add a special menu to the Printer Status Window screen.

But, if “Manager Mode” is displayed in the option menu, it will be displayed on the below of the “Manager Mode”.

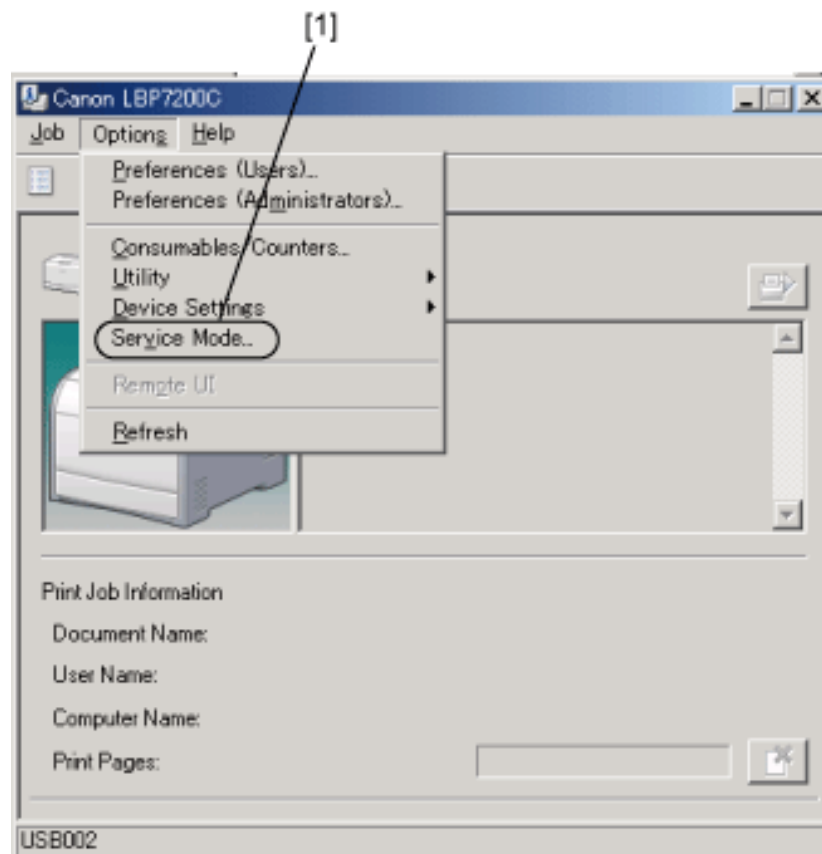
Starting Service Mode

1. Turn on the power so that the Printer Driver screen appears.
2. On the Drive screen, bring up the Status window [1].

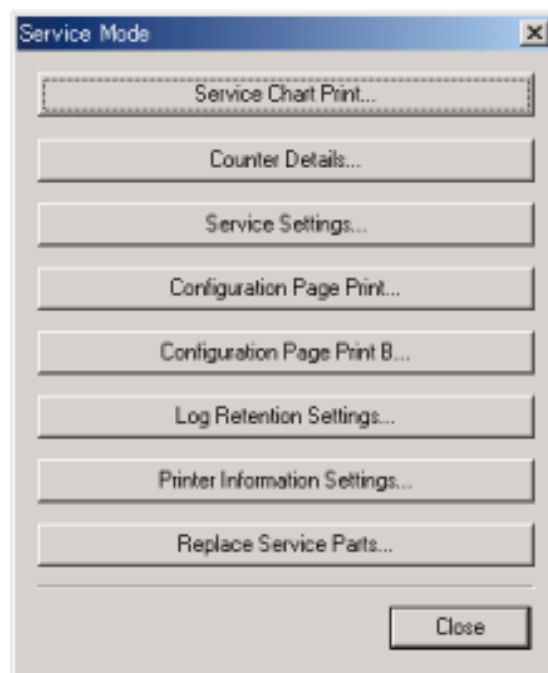


F-5-6

3. Enter the appropriate password (*28*) from the keyboard.
4. See that service mode [1] has appeared on the Option menu of the Status Window screen.



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F-5-8

5.5.2 Service Mode Table

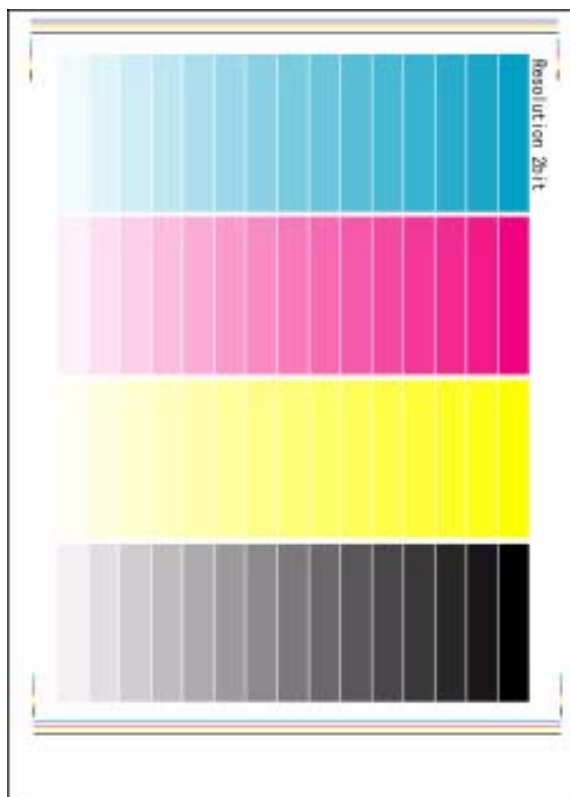
5.5.2.1 Service Mode List

T-5-7

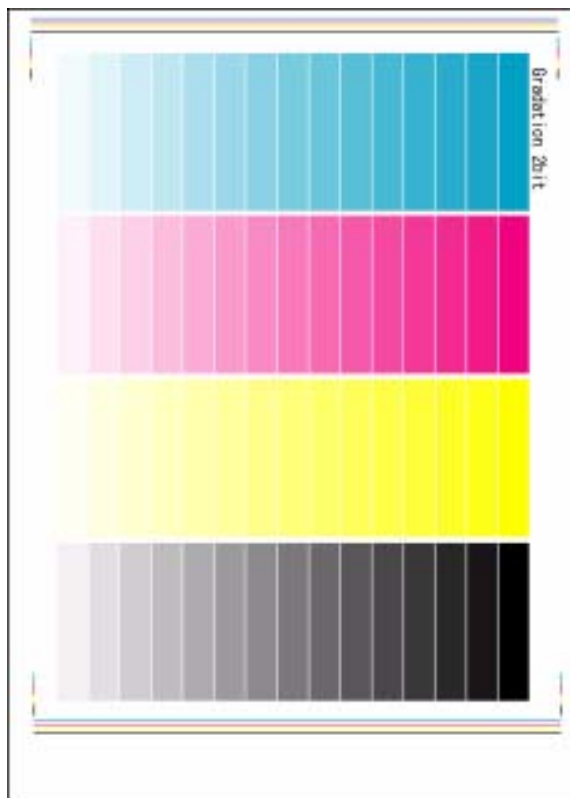
Group		Description	Setting range/ Reference
Service Chart Print		Output from the service chart print 1 (CMYK17 gradation patch data)	A4, page 4
		Output from the service chart print 2 (CMYK256 gradation patch data)	A4, page 8
Counter detail		Display the entire printing sheets of the toner cartridge of each toner	
Service setting	Primary transfer bias	Set the offset value of the primary transfer bias. Decrease the setting value if the reversal icon memory (reverse ghost) occurs.	-5 to +5 (o*)
	Secondary transfer bias	Set the offset value of the secondary transfer bias - Increase the setting value (effective for toner splash/polka dot image) - Decrease the setting value (effective for white spots/coarse image in half tone)	Front : -5 to +5 (o*) Back : -5 to +5 (o*)
	Developing bias	Set the offset value of the developing bias - Increase the setting value (effective for foggy image) - Decrease the setting value (effective for thin density)	-5 to +5 (o*)
	ICL bias	Set the offset value of the ITB cleaning bias. If the setting value is increased, it will improve the poor cleaning.	-5 to +5 (o*)
	Fixing temperature	Set the fixing temperature - To improve the fixing, set the offset value of the fixing temperature adjustment.	-2 to +2 (o*)
Printer status print		Output of the printer status print	Same as utility menu > Printer status print
Status print B		Status print B	
Log save setting		Output of the log file. For trouble analysis. This is not used in normal service.	
Printer information settings	Printer setting restore	Backup data of NVRAM of the DC controller saved in the NVRAM of the main controller, will be re-written in the NVRAM of the DC controller. After replacing the DC controller PCB, execute this mode, the backup data in the NVRAM of the main controller will be copied to NVRAM of the DC controller.	
	Backup of DCON data information	The information on the NVRAM DC controller PCB will be backed up to the NVRAM of the main controller. After replacing the NVRAM of the main controller PCB, execute this mode, perform the backup for the data of the NVRAM of the DC controller.	
	Initialization of CPR information of EEPROM	Clear the value of horizontal scanning direction registration value of the inner RAM during DC controller PCB replacement.	
Service parts replacement	Scanner unit replacement setting	When replacing the laser scanner, input the value written in the label on the service parts package. Record the inputted value in the NVRAM of the DC controller PCB.	
	Movement to replacement home position of the pickup roller	During pickup roller replacement, move the pickup roller to the possible position for replacement.	

5.5.2.2 Service Chart Print 1

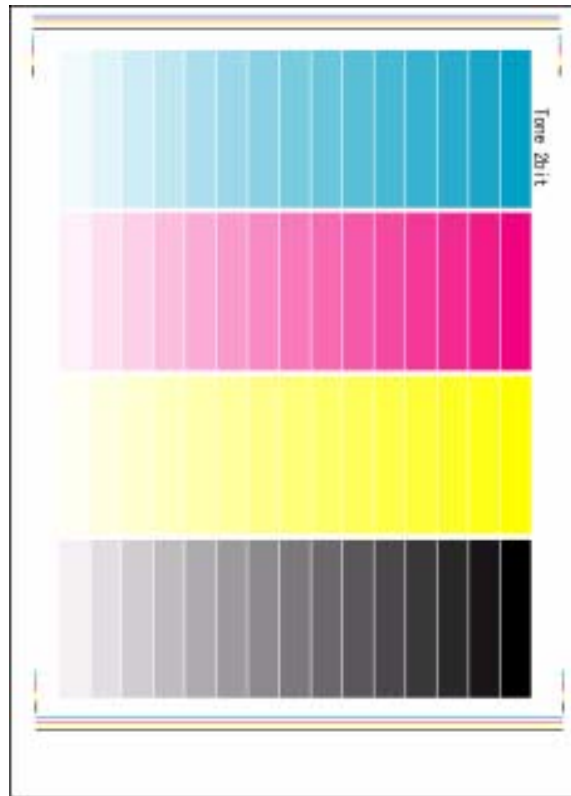
Use Service Chart Print 1 to check image density and color tint.



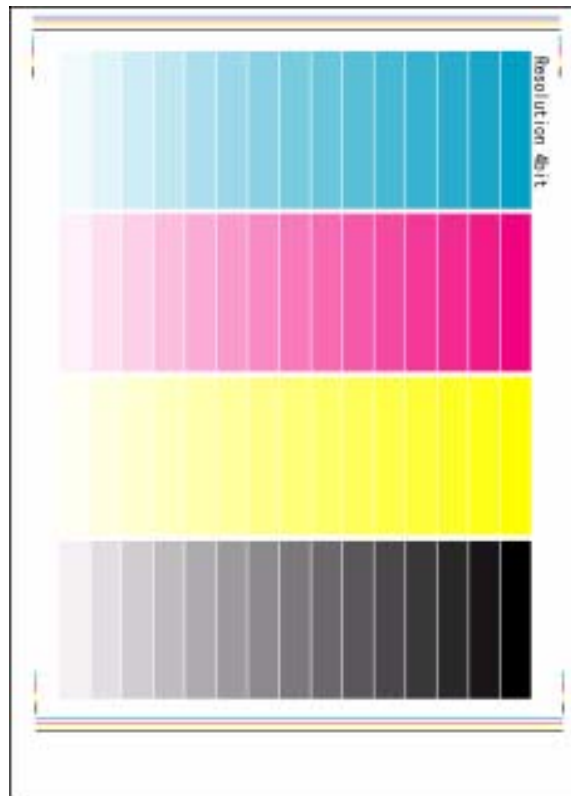
F-5-9



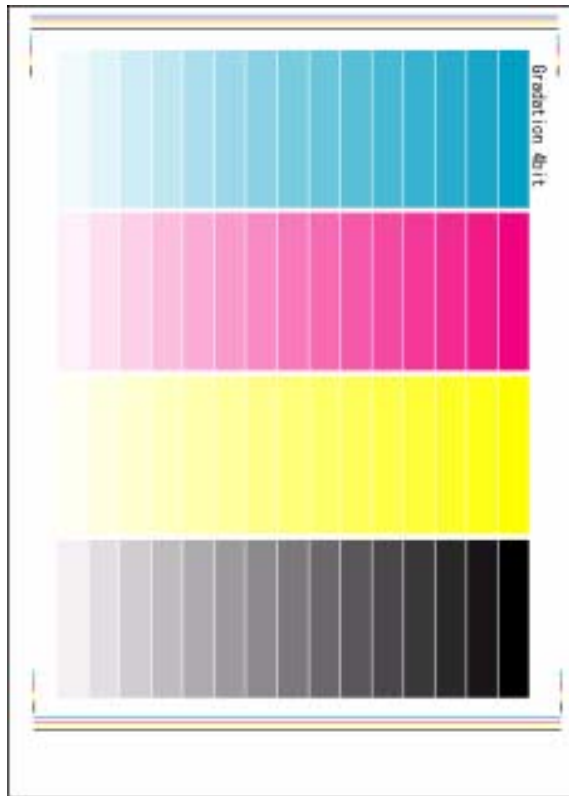
F-5-10



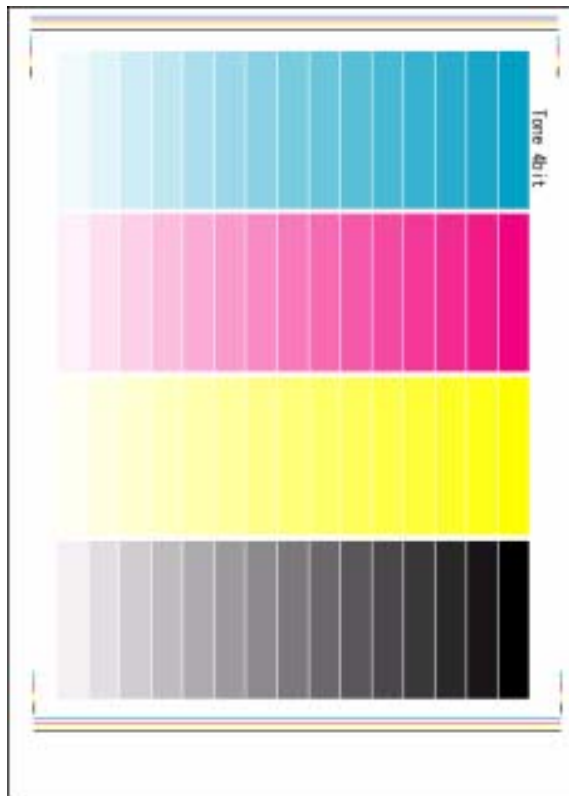
F-5-11



F-5-12



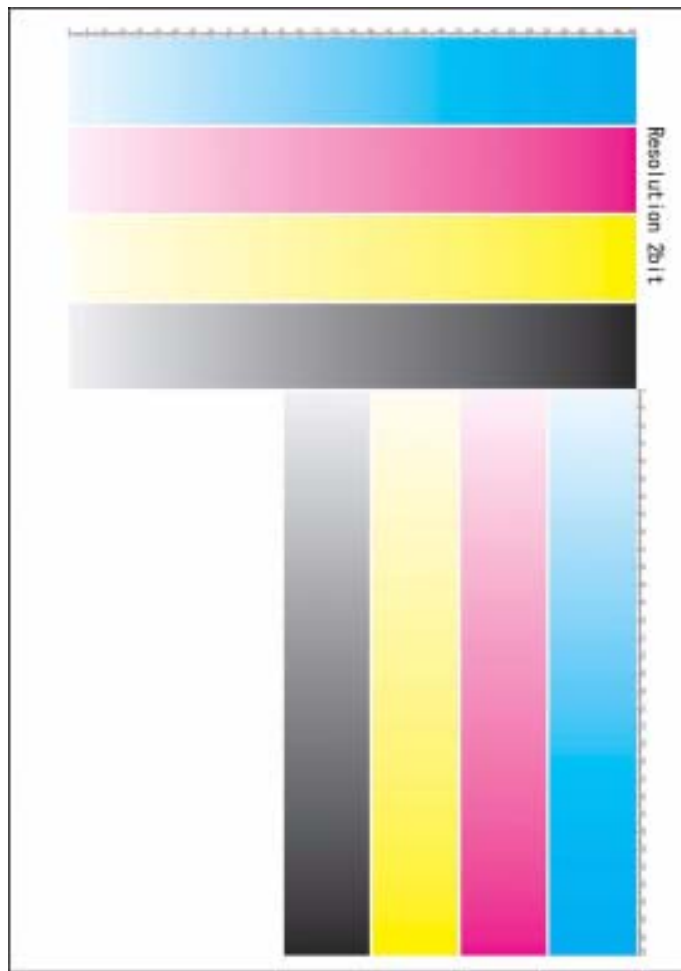
F-5-13



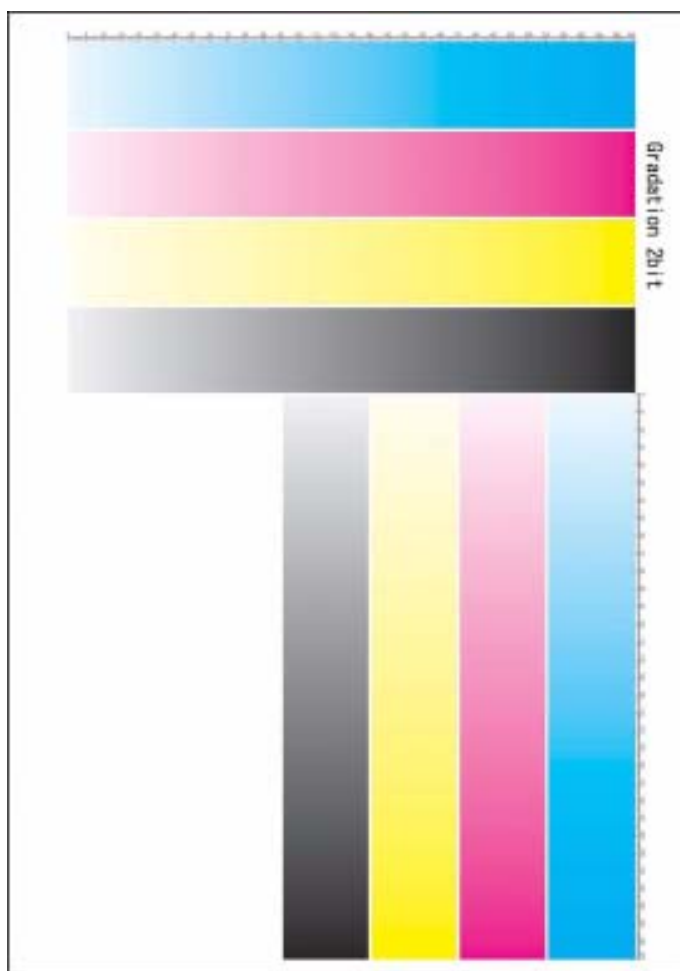
F-5-14

5.5.2.3 Service Chart Print 2

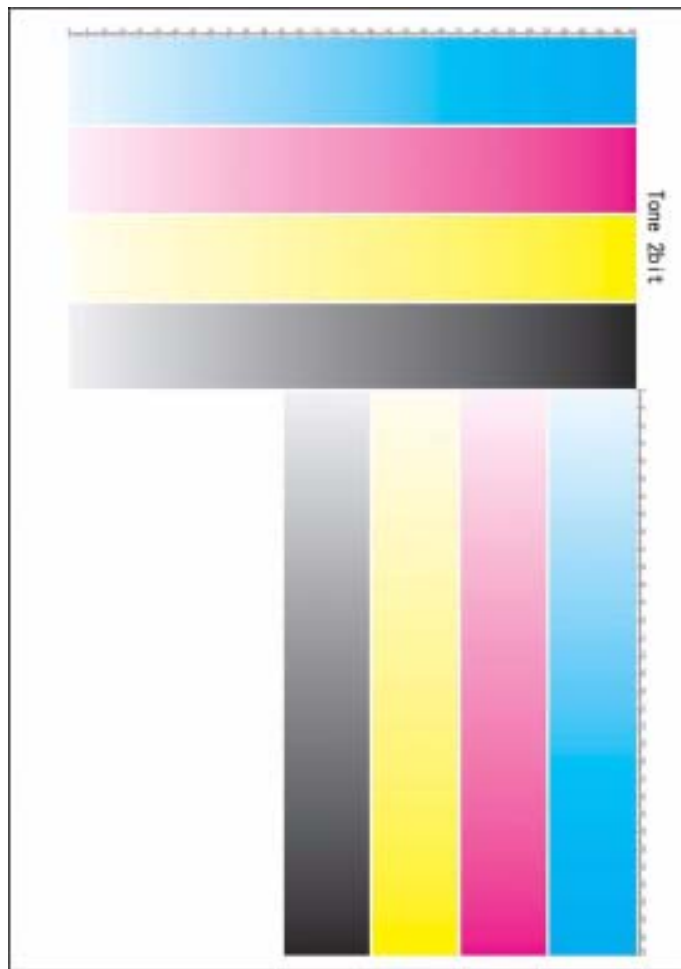
Use Service Chart Print 2 to check image density and color tint.



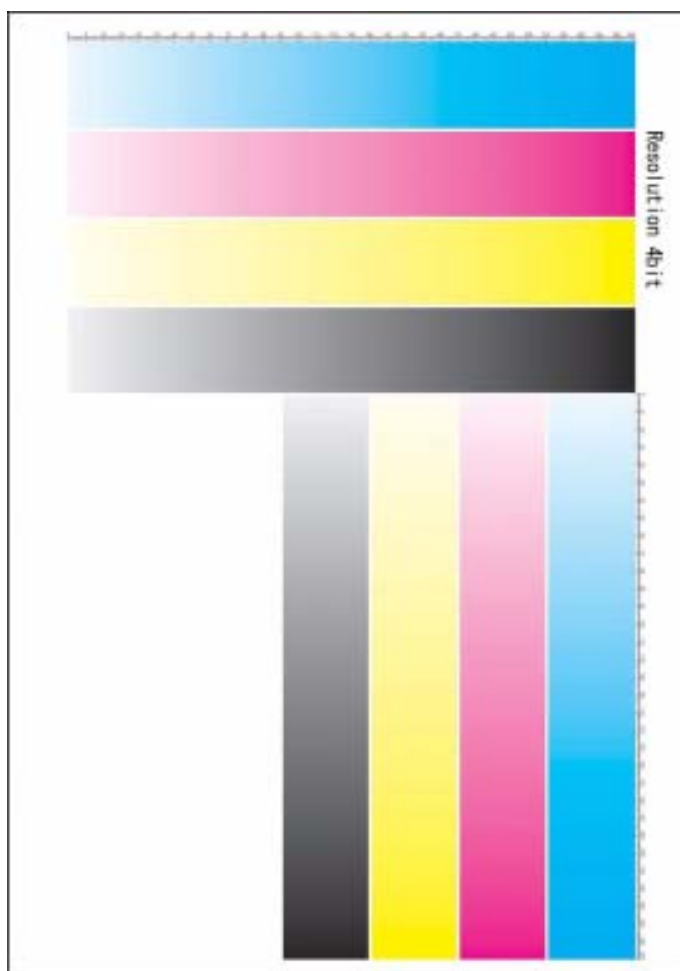
F-5-15



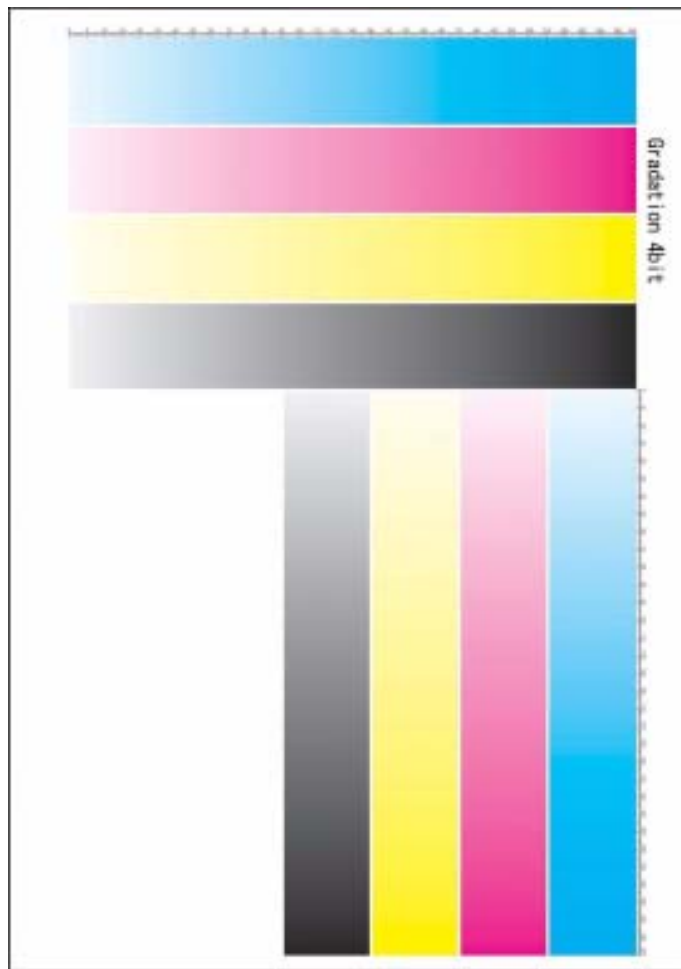
F-5-16



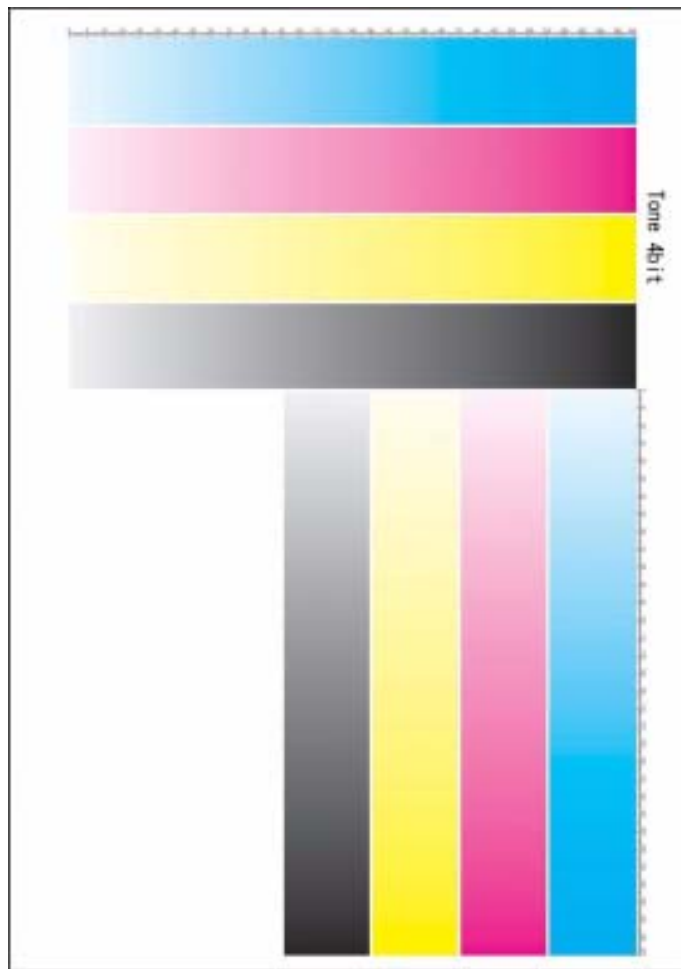
F-5-17



F-5-18



F-5-19



F-5-20

5.5.2.4 Print Status Print

Configuration Page shows a list of device setting items.
The sample page is attached below.



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5.5.2.5 Status Print B

In Configuration Page (status window > "Utility" menu), calibration log and scanner bending information are added.

LOG NO 0001: Calibration log

00: Cyan
01: Magenta
02: Yellow
03: Black

LOG NO 0002: Scanner bending information

Line: Toner color (00: Yellow, 01: Magenta, 02: Cyan, 03: black)
Column: 3 points location information (00: Left, 01: Center, 02: Right)
Block 1: Bending information in sub scanning direction
Block 2: Bending information in main scanning direction
Block 3: Bending information of ITB unit



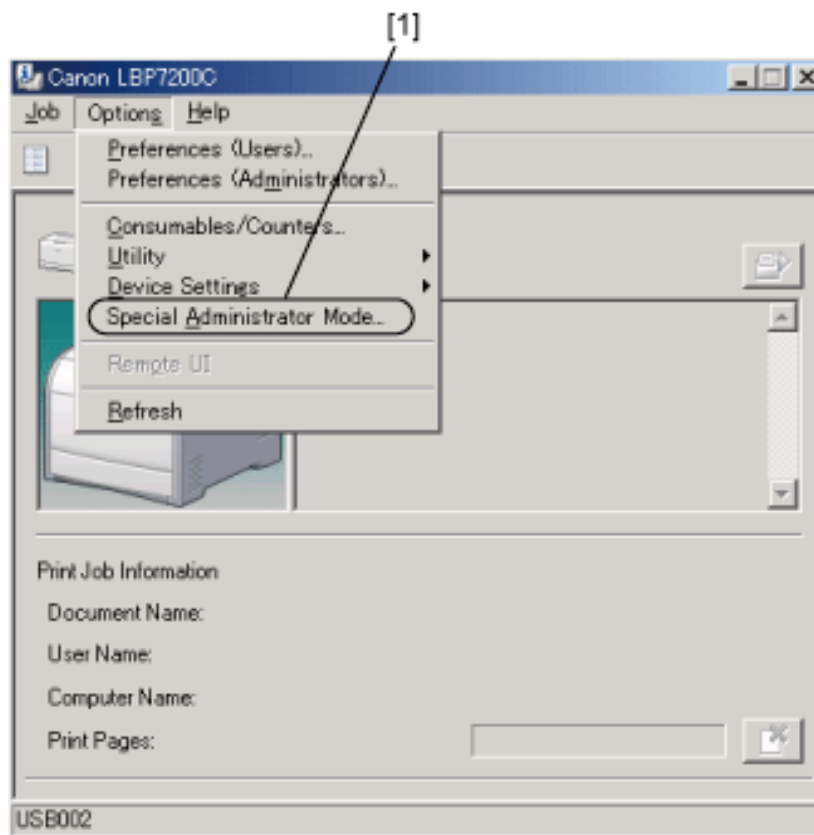


[1]

F-5-23

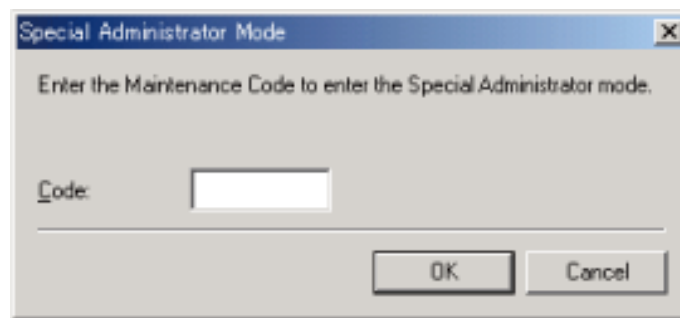
3. Using keyboard, enter the password (369*).

4. The Special Administrator Mode[1] will appear in the "option" menu in the status window screen.



F-5-24

5. Enter the maintenance code, and press OK.



F-5-25

5.6.1.3 Menu List

T-5-8

Maintenance code	Mode name	Item	Setting
0711	Log Retention Log	Store Internal Log	ON/OFF*1, destination path name *2
		Store Operation Message Log	ON/OFF*1, destination path name *2
		Store User Log	ON/OFF*1, destination path name *2
0874	Display Status on Print Queue*3		ON/OFF*1
0931	Fix USB Serial Number*4		ON/OFF*1

*1 default

*2 The directory is the following folder in the root of the drive where Windows is installed.

Windows 2000/XP

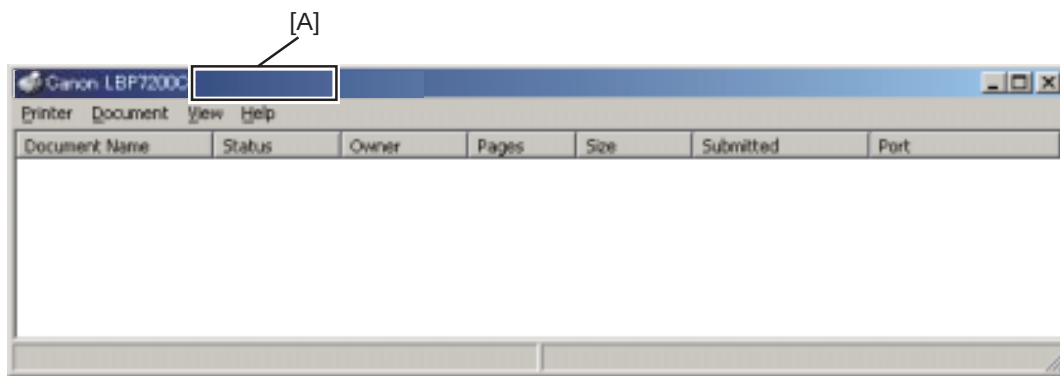
Windows Vista: User\Public

Printer internal log profile: <Model name>_<Port Name>.ENG (e.g C:\Document and Settings\All Users\LBP7200C_USB003.ENG)

Action message log profile : CAPTMSG.LOG (e.g C:\Document and Settings\All Users\CAPTMSG.LOG)

User Log Profile: CAPTUSER.LOG (e.g C:\Document and Settings\All Users\CAPTUSER.LOG)

*3 Turn ON this setting, and simple status will appear in the [A] in the printer status window (PSW). And, status notification will also be available on the status display utility other than CAPT standard PSW.



F-5-26

*4 Use the fixed USB serial number by specifying the same number to the USB serial number for multiple printers so that multiple printers can be used by the same printer driver (icon).

Chapter 6 APPENDIX

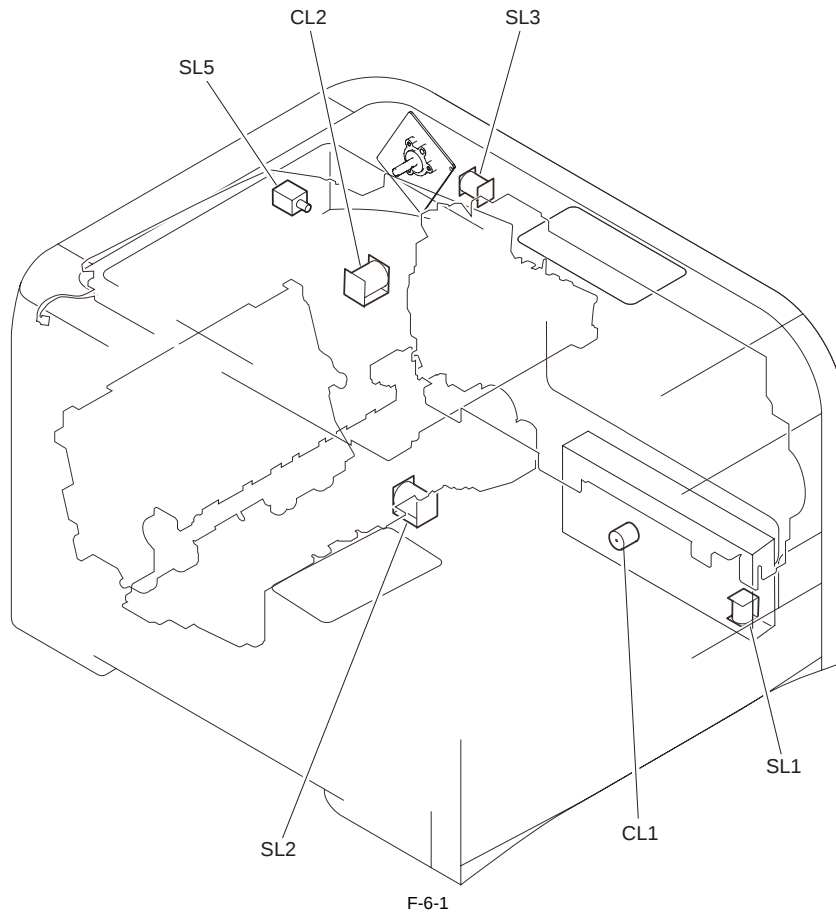
Contents

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6.1.4 PCBs	6-4
6.1.4.1 PCBs.....	6-4

6.1 OUTLINE OF ELECTRICAL COMPONENTS

6.1.1 Clutch/Solenoid

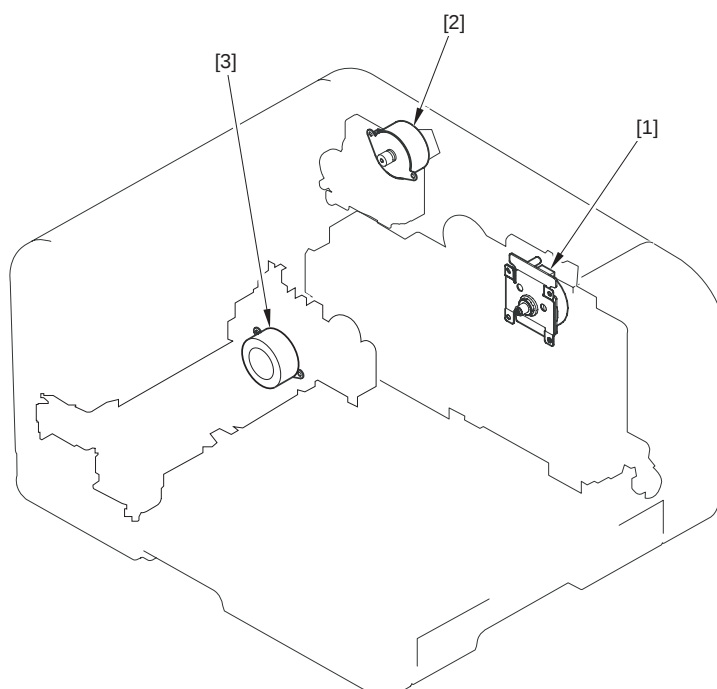
6.1.1.1 Cluth/Solenoid



Symbol for component		Name
Clutch	CL1	Manual feed tray feeding clutch
	CL2	Duplex feeding clutch
Solenoid	SL1	Manual feed tray pickup solenoid
	SL2	Cassette pickup solenoid
	SL3	Developing separation solenoid
	SL5	Duplex reversal solenoid
	SL6	Paper feeder pickup solenoid

6.1.2 Motor/Fan

6.1.2.1 Motor/Fan

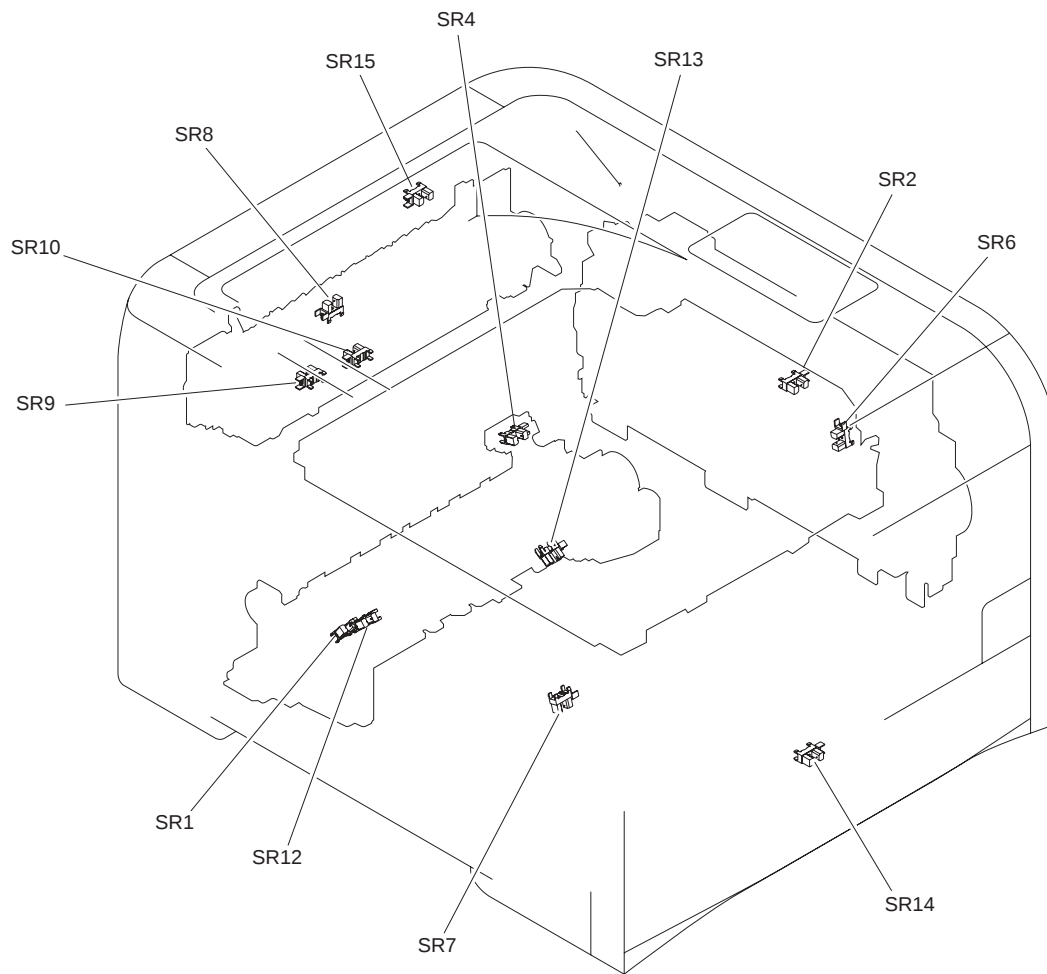


F-6-2

Symbol for component		Name
Motor	M1	Drum motor
	M2	Developing motor
	M3	Registration motor
	M4	Fixing motor
	M5	Pickup motor
	M7	Scanner motor
FAN	FM1	Fixing/Fixing power supply cooling fan
	FM2	Duplex cooling fan

6.1.3 Sensor

6.1.3.1 Sensor

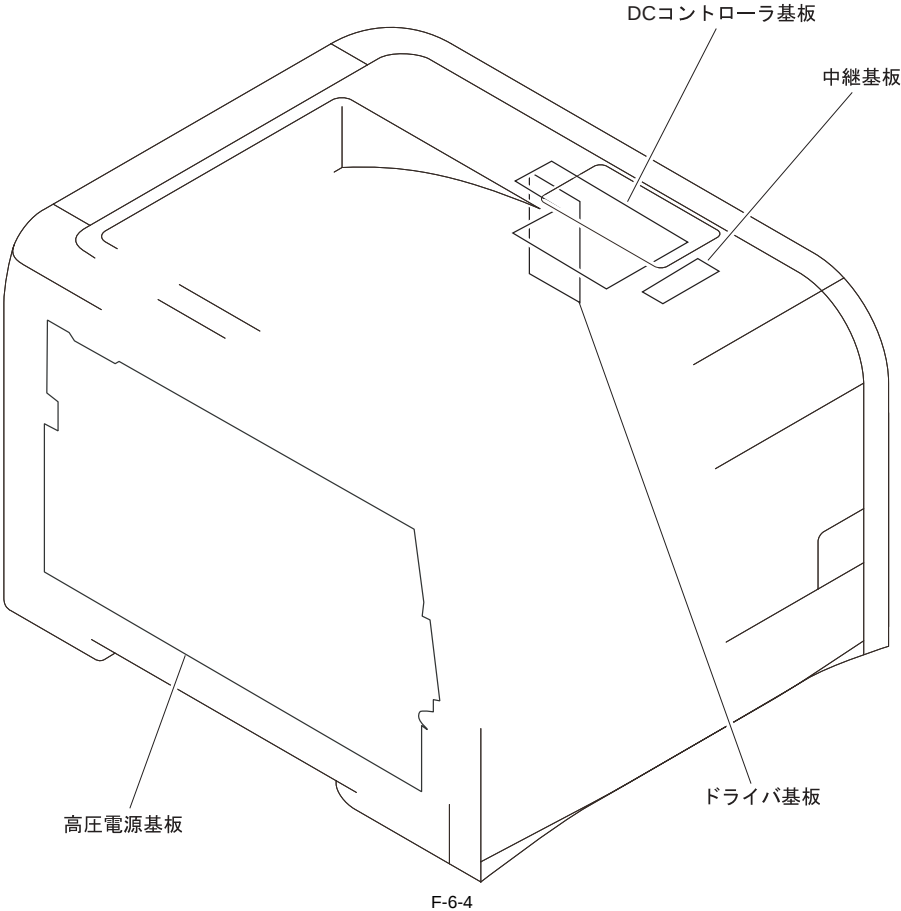


F-6-3

Notation	Name	Notation	Name
SR1	Paper feeder pre-registration detection sensor	SR9	Fixing pressure release sensor
SR2	Front door open/close sensor	SR10	Fixing loop sensor
SR3	Paper feeder paper detection sensor	SR12	Pre-registration detection sensor
SR4	Registration detection sensor	SR13	Cassette paper detection sensor
SR6	Developing HP sensor	SR14	Bypass paper detection sensor
SR7	Bypass tray pre registration detection sensor	SR15	Delivery full sensor
SR8	Fixing delivery sensor	SR16	ITB pressure release sensor

6.1.4 PCBs

6.1.4.1 PCBs



Name
DC Controller PCB
Fixing power supply PCB
High-voltage power supply PCB
Main Controller PCB

Feb 5 2009

Canon