

# Service Manual

LBP3300 Series  
**LBP3300**

**Canon**












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# Symbols Used



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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 4 MAINTENANCE AND INSPECTION

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## Chapter 1 PRODUCT DESCRIPTION

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## 1.1 Features

### 1.1.1 Feature

#### 1. Compact, high-speed and high-resolution printer

Regardless of its compact size that enables an installation on side of desks, this printer realizes the printing speed of 21 pages per minute in letter-size paper with the resolution of 600 dpi.

#### 2. Short wait time and low power consumption

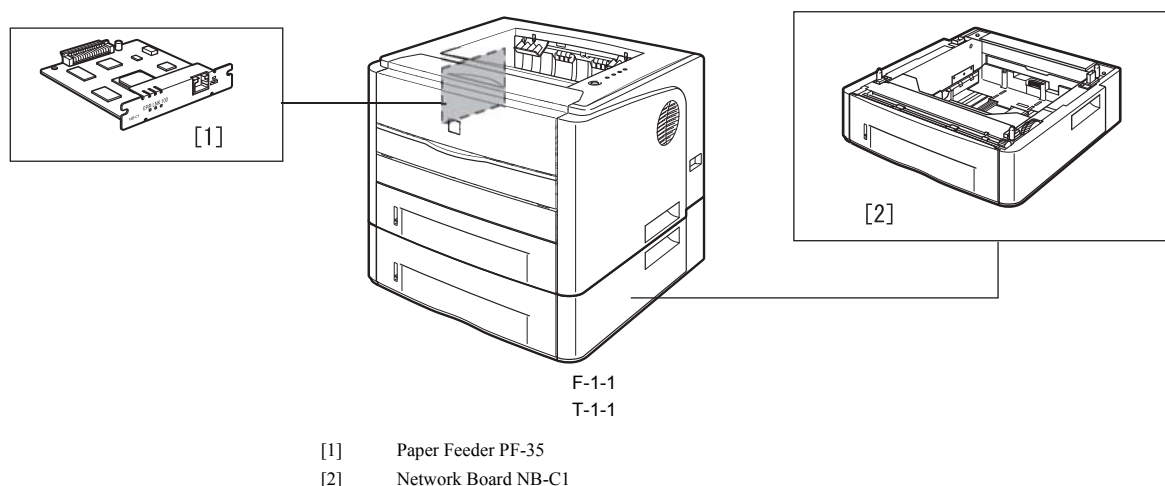
The printer utilizes the on-demand fixing method that turns on the heater only during print operations. This shortens wait time, and enables low power consumption during stand by period.

#### 3. Automatic duplex printing

The printer enables an automatic duplex printing by installing the duplexing unit as a standard equipment in the printer.

## 1.2 System Construction

### 1.2.1 System Construction



## 1.3 Product Specifications

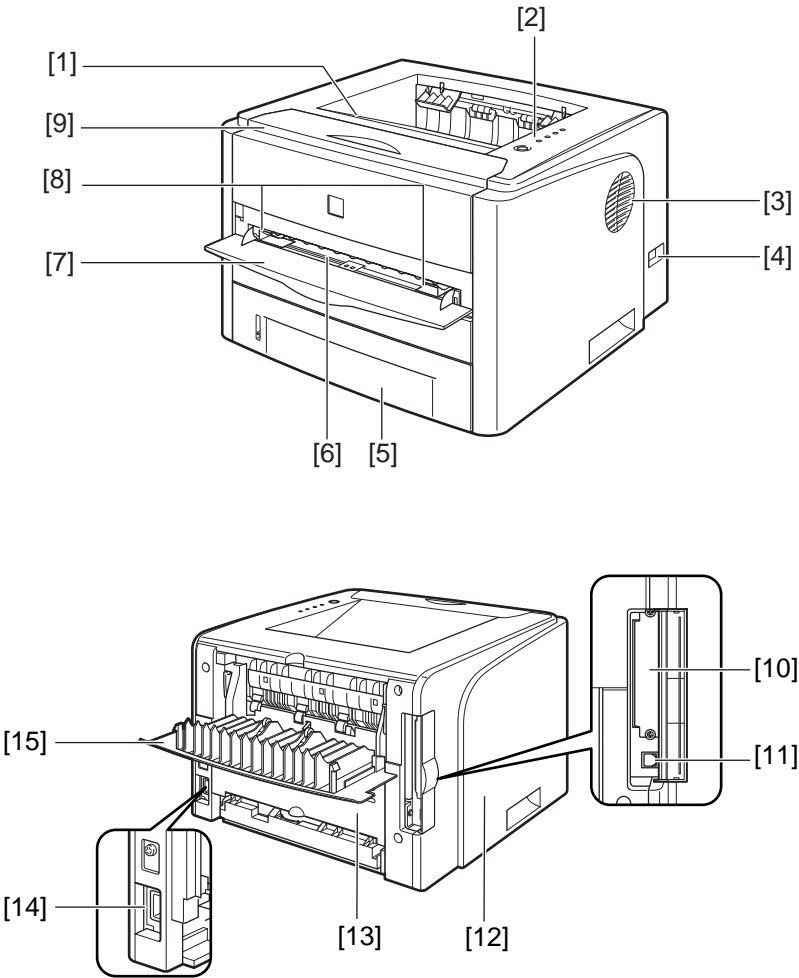
### 1.3.1 Product Specifications

Body installation method	desktop page printer
Photosensitive medium	OPC drum
Exposure method	semiconductor laser
Development method	Toner projection development
Transfer method	by roller
Separation method	by curvature
Cassette pickup method	by pad
Multifeeder pickup method	by pad
Drum cleaning method	by blade
Fixing method	on-demand
Delivery method	face-down/face-up
Toner supply type	by toner cartridge about 6000 prints (A4, single-sided; at 5% image ratio)
Warm-up time	in standby: 0 sec (at power-on: 10 sec or less)
Print area	top: 5 mm; bottom: 5 mm; left/right: 5 mm (if envelope, top, bottom, left, right: 10 mm)
Printing resolution	600dpi
First print time	9 sec or less (approx.; A4)
Print speed (A4)	21 pages/min (approx.)
Cassette paper size	A4, B5, A5, Legal, Letter, Executive
Multi-purpose paper size	A4, B5, A5, Legal, Letter, Executive, Envelope DL, Envelope COM10, Envelope C5, Envelope Monarch, Index Card, Custom Paper Size (width 76.2 to 215.9 mm, length 127.0 to 355.6 mm)
Cassette paper type	plain paper (64 to 90 g/m <sup>2</sup> ), heavy paper (91 to 120 g/m <sup>2</sup> ), recycled paper,
Multi-purpose paper type	plain paper (64 to 90 g/m <sup>2</sup> ), heavy paper (91 to 163 g/m <sup>2</sup> ), recycled paper, transparency, label paper, envelop (DL, COM10, C5, Monarch, B5)
Cassette capacity	250 sheets (approx.; plain paper, 64 g/m <sup>2</sup> )
Multi-purpose capacity	1 sheet
Delivery tray stack	65sheets (Face-down) /1sheet(Face-up Output Slot)
Memory	8 MB (internal; no optional memory available)

Operating environment (Temperature range)	10 to 32.5 deg C
Operating environment (Humidity range)	20% to 80% RH
Noise	52.8 dB or less (during printing; based on ISO9296; announced noise emission)
Power supply rating	AC100V±10% (50/60Hz ±2Hz)
Power consumption (Maximum)	790W or less (approx.; 20 deg C; for input of rated power supply; including peak value lasting 1 sec or more)
Dimensions	370 (W) x 375 (D) x 258 (H)mm
Weight	printer: Approx;11kg; toner cartridge: Approx;0.8kg(2.5K)
Option	paper feeder

1.4 Name of Parts

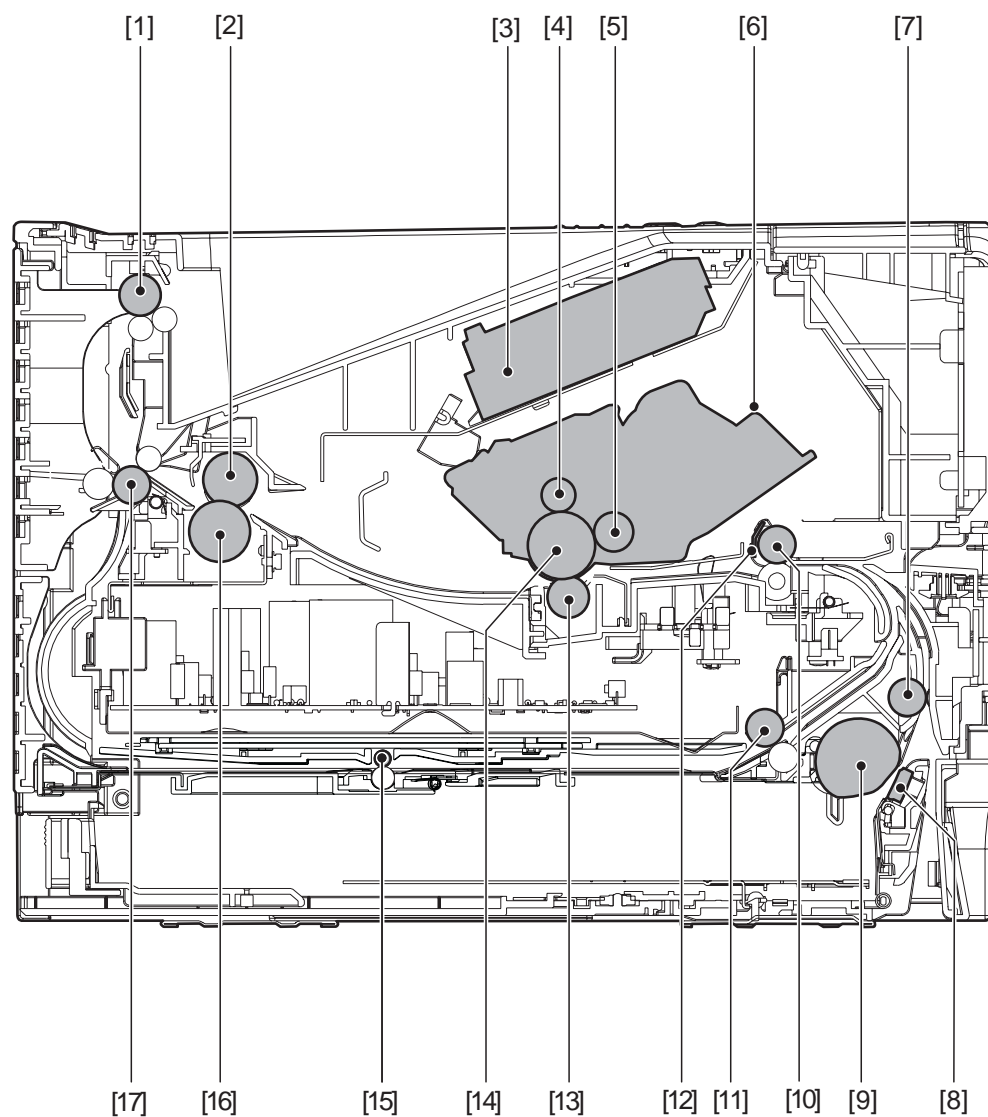
1.4.1 External View



F-1-2

- [1] Face-down Output Tray
- [2] Control Panel
- [3] Right cover
- [4] Power Switch
- [5] Paper Cassette
- [6] Manual Feed Slot
- [7] Manual Feed Slot Cover
- [8] Paper Guides
- [9] Front Cover
- [10] Expansion Slot
- [11] USB Connector
- [12] Left cover
- [13] Duplex Unit Cover
- [14] Power Socket
- [15] Output Selection Cover

## 1.4.2 Cross Sectional Views

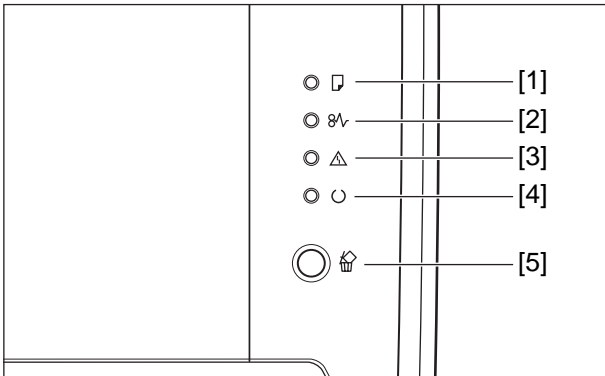


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- |                               |                               |
|-------------------------------|-------------------------------|
| [1] Face-down delivery roller | [10] Registration roller      |
| [2] Fixing film unit          | [11] Duplex pick-up roller    |
| [3] Laser/scanner unit        | [12] Registration shutter     |
| [4] Primary charging roller   | [13] Transfer charging roller |
| [5] Developing cylinder       | [14] Photosensitive drum      |
| [6] Toner cartridge           | [15] Duplex feed roller       |
| [7] Feed roller               | [16] Pressure roller          |
| [8] Separation pad            | [17] Face-up delivery roller  |
| [9] Pick-up roller            |                               |

1.5 Using the Machine

1.5.1 Control Panel



F-1-4

[1] Load Paper Indicator	On	There is no paper in any paper source.
	Blinking	No paper or paper of an inappropriate size s loaded
[2] Paper Jam Indicator	Blinking	A paper jam is occurring, disabling printing.
[3] Alarm Indicator	On	Service call is occurring.
	Blinking	An error is occurring, disabling printing.
[4]Ready Indicator	On	The printer is ready to print.
	Blinking	The printer is busy performing some kind of processing or operation, such as printing, warming up, cleaning, or pausing a job.
[5] Cancel Job Key/Cancel Job Indicator		Pressing this key enables the cancellation of the jobs in which an error is occurring and those in progress. The indicator comes on while pressing the key. The indicator blinks while a job is in the cancellation process.

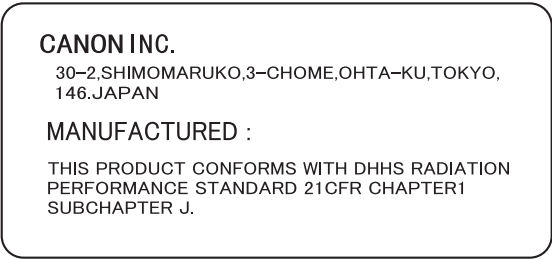
1.6 Safety

1.6.1 Safety of Laser Light

Laser light can prove to be hazardous to the human body. The machine's laser unit is fully enclosed in a protective housing and external covers so that its light will not escape outside as long as the machine is used normally.

1.6.2 Regulations Under the Center for Devices and Radiological Health (CDRH)

The CDRH of the US Food and Drug Administration put into effect regulations governing the sale of laser products in the US on August 2, 1976. These regulations apply to all laser products produced on and after August 1, 1976, and a laser product cannot be sold unless it has been certified to comply with the regulations. The following is the label used to indicate that the product has been certified under the regulations, and all laser products sold in the US must bear the label.



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1.6.3 Safety of Toner

The machine's toner is a non-toxic material composed of plastic, iron, and small amounts of dye.



Do not put the toner into fire. It may explode.

Toner on the Skin or Clothes

- 1. If your skin or clothes came into contact with toner, use dry tissue to remove the toner, and then wash with water.
- 2. Do not use warm or hot water, which will cause the toner to jell, permanently fusing it with the fibers of the clothes.
- 3. Do not bring toner into contact with vinyl material. They are likely to react with each other.

1.6.4 Handling the Laser Unit

The laser scanner unit emits invisible laser light inside it. If exposed to laser light, the human eye can irreparably be damaged. Never attempt to disassemble the laser scanner unit. (It is not designed for servicing in the field). The covers around the laser scanner unit are identified by the following label.

	<b>DANGER</b> – Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
	<b>CAUTION</b> – INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
	<b>ATTENTION</b> – RAYONNEMENT LASER INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
	<b>VORSICHT</b> – UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
	<b>ATTENZIONE</b> – RADIAZIONE LASER INVISIOLE IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
	<b>PRECAUCION</b> – RADIACION LASER INVISIBLE CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.
<b>VARO!</b>	– AVATTAESSA OLET ALTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SATEESEEN.
<b>VARNING!</b>	– ÖSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.
<b>注意</b>	このカバーの内部では不可視レーザー光が放射されています。 レーザー光にさらされないようにしてください。

F-1-6



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## Chapter 2 TECHNICAL REFERENCE

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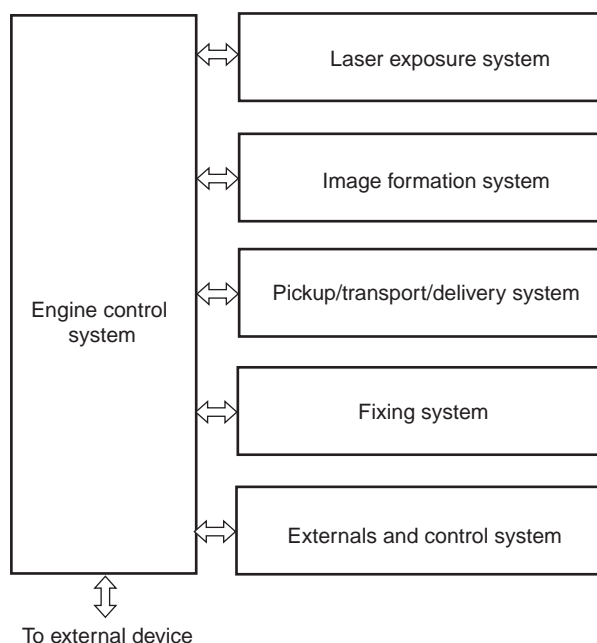
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## 2.1 Functional Configuration

### 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.



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## 2.2 Basic Sequence

### 2.2.1 Basic Operation Sequence

The operational sequences are controlled by the microprocessor on the engine controller PCB.

The table below describes the purposes of each period, from the power switch is turned ON until the print operation is completed, and the main motor stops. See the appendix for detailed timing chart.

T-2-1

Period	Purpose	Remarks
WAIT (WAIT period)	From the power switch is turned ON until the main motor initial drive is completed.	To clear the potential of drum surface and to clean the transfer charging roller. Detect the presence of cartridge.
STBY (STANDBY)	From the end of the WAIT period or the LSTR period until the pick-up command is input from the video controller. Or from the end of the LSTR period until the power switch is turned OFF.	To keep the printer ready to print.
INTR (INITIAL ROTATION period)	From the print command is input from the video controller until the pick-up solenoid is turned ON.	To stabilize the photosensitive drum sensitivity for preparation of printing.
PRINT (Print)	From the end of the INTR period until the primary high-voltage is turned OFF.	To form the image on the photosensitive drum according to the VIDEO signals (/VD01, VD01, /VD02, VD02) input from the video controller and transfer the toner image onto the print paper.
LSTR (LAST ROTATION period)	From the primary high-voltage is turned OFF until the main motor stops.	To deliver the last print paper completely out and clean the transfer charging roller. When the pick-up command is input from the video controller, the INTR period starts right after the LSTR period is completed.

### 2.2.2 Power-on sequence

The sequence from when the power switch is turned ON until it gets the STBY status is described in the following.

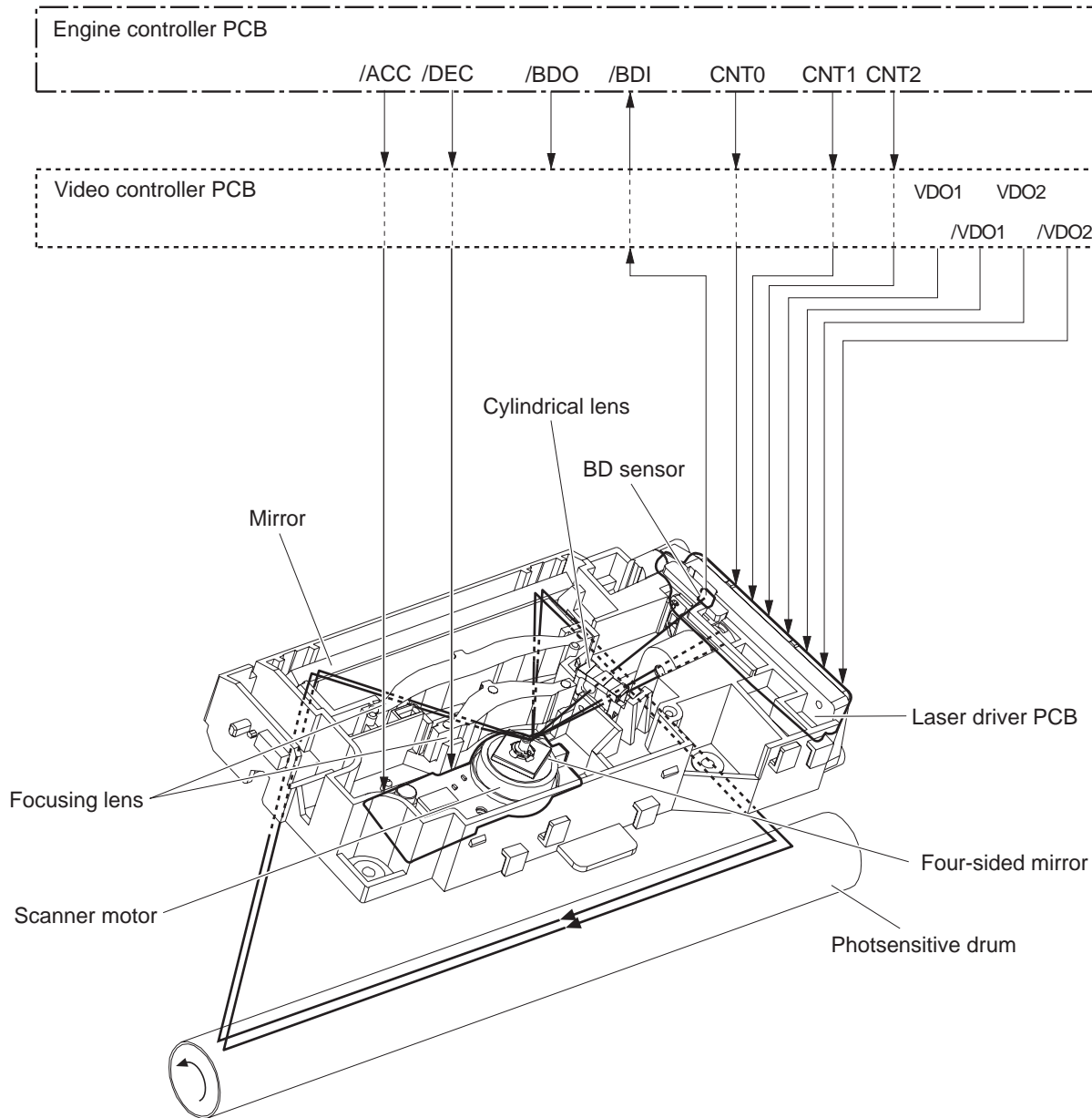
- 1) Power ON
- 2) CPU initialization
- 3) Video interface communication start
- 4) Residual paper in the printer check  
Check each sensor in the printer for any residual paper
- 5) Main motor initial drive
- 6) Fixing heater initial drive  
Drive the fixing heater to reach the targeted temperature of 100 deg C
- 7) Scanner motor initial drive
- 8) High-voltage control  
Detect the presence of cartridge and clean the transfer charging roller after the primary charging AC bias is turned ON
- 9) Failure/Abnormality check  
Detect the scanner failure, the fixing unit failure, and the door open during this period
- 10) Memory tag communication

## 2.3 LASER EXPOSURE SYSTEM

### 2.3.1 Overview/Configuration

#### 2.3.1.1 Outline

The laser/scanner system consists of the laser driver and the scanner motor etc. It is controlled by the signals sent from the engine controller and the video controller. The laser driver allows the laser diode to emit light according to the LASER CONTROL signals (CNT0, CNT1, CNT2) from the engine controller or the VIDEO signals (/VDO1, /VDO2, VDO1, VDO2) from the video controller.



F-2-2

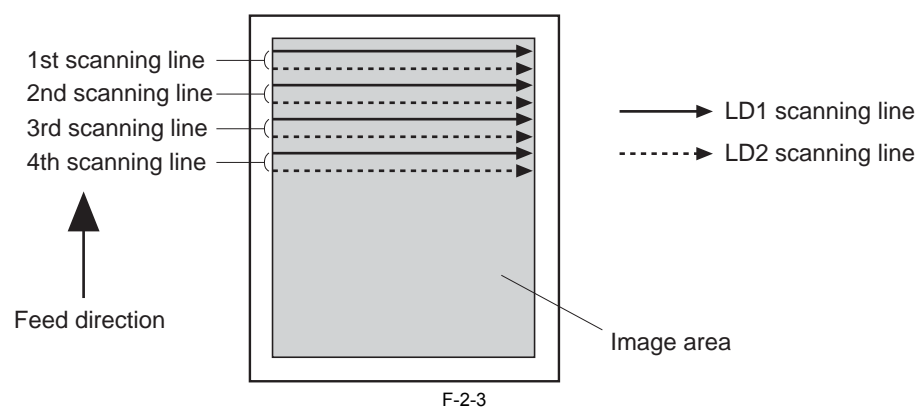
The laser/scanner unit of this printer utilizes a "twin beam method" (see Note). It scans two lines simultaneously with 2 laser diodes in order to realize a high-speed laser scanning.

The operational sequence of the laser/scanner unit is described below.

- 1) When the video controller sends a print command, the engine controller rotates the scanner motor in order to rotate the four-sided mirror.
- 2) When the scanner motor starts to rotate, the engine controller forces the laser to emit light with the LASER CONTROL signal and then it starts to control the scanner motor rotation.
- 3) The engine controller controls the scanner motor to rotate at a constant speed with the SCANNER MOTOR SPEED CONTROL signal.
- 4) The video controller sends the VIDEO signals to the laser driver PCB after the scanner motor rotation reaches its targeted speed.
- 5) The laser driver allows two laser diodes to emit light according to these signals.
- 6) The two laser beams pass through the collimator lens and the cylindrical lens to strike the four-sided mirror, which is rotating at a constant speed.
- 7) The laser beam reflected by the four-sided mirror focuses on the photosensitive drum passing through the focus lens and the reflective mirror at the front of the four-sided mirror.
- 8) When the four-sided mirror starts to rotate at prescribed speed, the laser beam on the photosensitive drum starts to scan the surface of the drum at its prescribed speed.
- 9) When the photosensitive drum rotates and the laser beam scans on the drum at each prescribed speed, the latent image is formed on the photosensitive drum.

#### Twin beam method

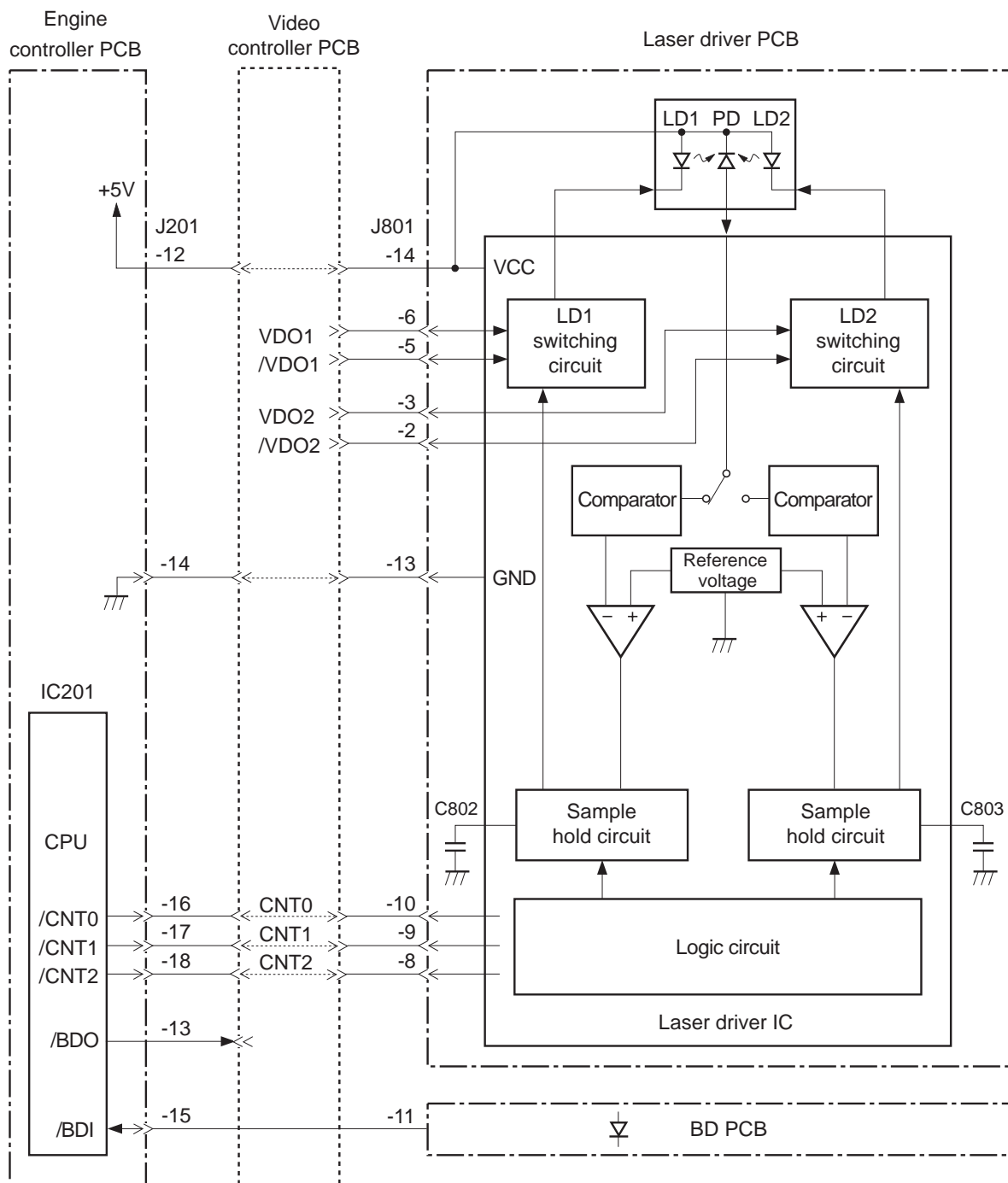
The laser unit unifies with two laser diodes (LD1, LD2). In one scanning operation, the two diodes (LD1, LD2) emit light to write two lines simultaneously. This enables a twofold printing with same printing speed.



### 2.3.1.2 Laser Control Circuit

The laser control controls the laser driver to turn the two laser diodes (LD1, LD2) ON/OFF according to the LASER CONTROL signals sent from the engine controller.

The circuit diagram of the laser control is illustrated below.



F-2-4

The DC controller sends the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2) and the LASER CONTROL signals (CNT0, CNT1, CNT2) to the logic circuit in the laser driver IC. The VIDEO signals are for image formation and the LASER CONTROL signals are for switching the operational modes of the laser. The laser driver IC controls the laser according to the combination of the CNT0, CNT1, and CNT2. The table below indicates combinations of the LASER CONTROL signals (CNT0, CNT1, CNT2).

T-2-2

Operation mode	CNT2	CNT1	CNT0	Remarks
Discharge mode	L	L	L	C802, C803 discharge
Data output mode	H	H	H	Used during normal printing
LD1 APC mode	L	H	L	Used during LD1 APC mode
LD2 APC mode	L	L	H	Used during LD2 APC mode
Force LD1, LD2 ON	H	L	L	Used during test printing
Force LD1, LD2 OFF	L	H	H	Used during image masking period

This control incorporates the LASER CONTROL signals for the following 4 controls:

- 1) Laser emission control
- 2) Automatic power control (APC)
- 3) Horizontal synchronization control
- 4) Image masking control

## 2.3.2 Controlling the Laser Activation Timing

### 2.3.2.1 Laser emission control

The laser emission control controls the laser diodes (LD1, LD2) to turn ON/OFF at constant light intensity according to the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2) from the video controller. When the LASER CONTROL signals (CNT0, CNT1, CNT2) are put into print mode, the laser driver turns the laser diodes ON/OFF according to the VIDEO signals.

### 2.3.2.2 Horizontal synchronous control

The horizontal synchronous control is to horizontally align the starting position of writing the image.

The following is the sequence of this control.

- 1) The DC controller puts the LASER CONTROL signal into LD1APCON mode or LD2APCON mode during the unblanking interval (see Note). Accordingly, the laser driver allows the laser diode (LD1, LD2) to emit light with APC.
- 2) Each laser beam is sent to the BD PCB in the scanning optical path of the laser beam.
- 3) The BD PCB detects these laser beams, generates BD INPUT signal (/BDI), and sends it to the DC controller.
- 4) The DC controller generates the HORIZONTAL SYNCHRONOUS signal (/BDO) based on the /BDI signal and sends the /BPO signal to the video controller.
- 5) The video controller outputs the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2) to the DC controller to horizontally align the starting position of writing the image, when it inputs the /BDO signal



#### Unblanking interval

The interval when a laser diode emits light in the non-image area.

## 2.3.3 Laser Control

### 2.3.3.1 Automatic power control (APC)

The automatic power control is to maintain the light intensity emitted from the laser diode to be constant.

There are two APCs, one is the initial APC (Note 1) and the other is the between-lines APC (Note 2). Both are controlled by the laser driver in the same way. The following is the sequence of this control.

- 1) When the LASER CONTROL signals (CNT0, CNT1, CNT2) put into the LD1APC mode, the laser driver allows the LD1 to emit light.
- 2) The light intensity of the LD1 is detected by the photo diode (PD) and it is converted from current to voltage. Then it is compared with the reference voltage (voltage equivalent to the target laser light intensity).
- 3) The laser driver controls the laser current until it reaches the voltage level of the LD1's targeted light intensity.
- 4) The LD1 is turned OFF forcefully when the LASER CONTROL signal puts into the force LD OFF mode. The laser driver stores the adjusted light intensity in C802.
- 5) After the light intensity adjustment of LD1 is completed, the LASER CONTROL signal puts into the LD2APCON mode and the laser driver allows the LD2 to emit light with APC. The laser light intensity of LD2 is adjusted and stored in C803 as same as LD1.



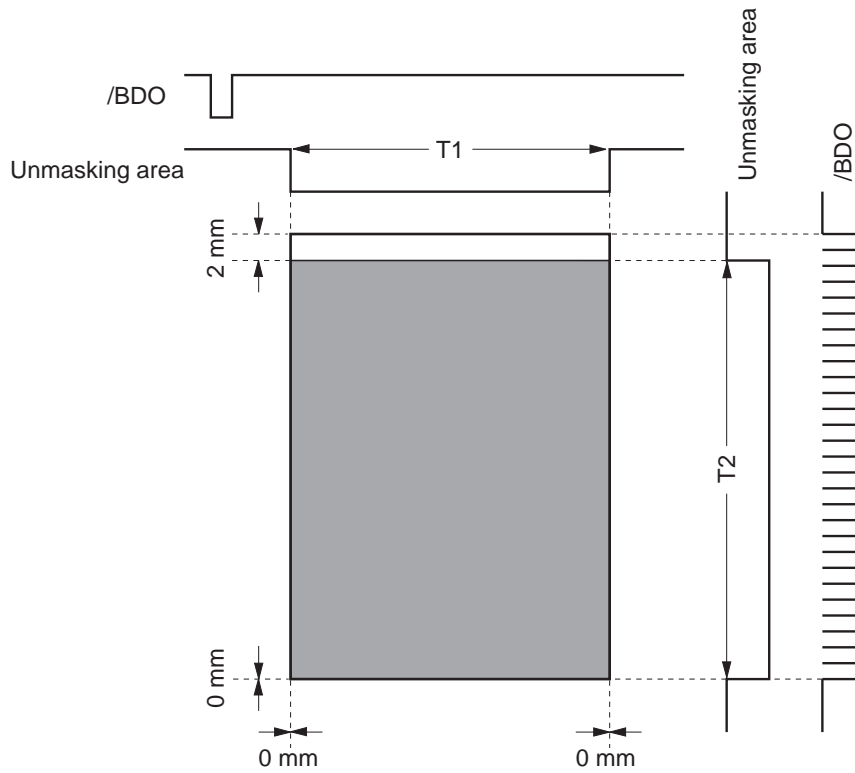
- 1) Initial APC  
Performed during the INTER period. It adjusts the laser light intensity by APC.
- 2) Between-lines APC  
Performed during the printing period. It adjusts the laser light intensity for one line before the line starts to be written.

### 2.3.3.2 Image masking control

The image masking control is to prevent a laser beam emission in the non-image area except during the unblanking interval.

The engine controller puts the LASER CONTROL signal into the Force LD OFF mode and turns the laser diodes (LD1, LD2) OFF forcefully, while the laser scans a non-image area except during the unblanking interval. This is called the image-masked status, and the laser diodes (LD1, LD2) do not emit light during this period even if the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2) are sent. The timing to start the image masking control depends on the paper size information sent from the video controller.

If the paper size measured by the top of page sensor (PS912) is smaller than the paper size information, the engine controller masks the image forcefully to prevent the transfer charging roller to be soiled.



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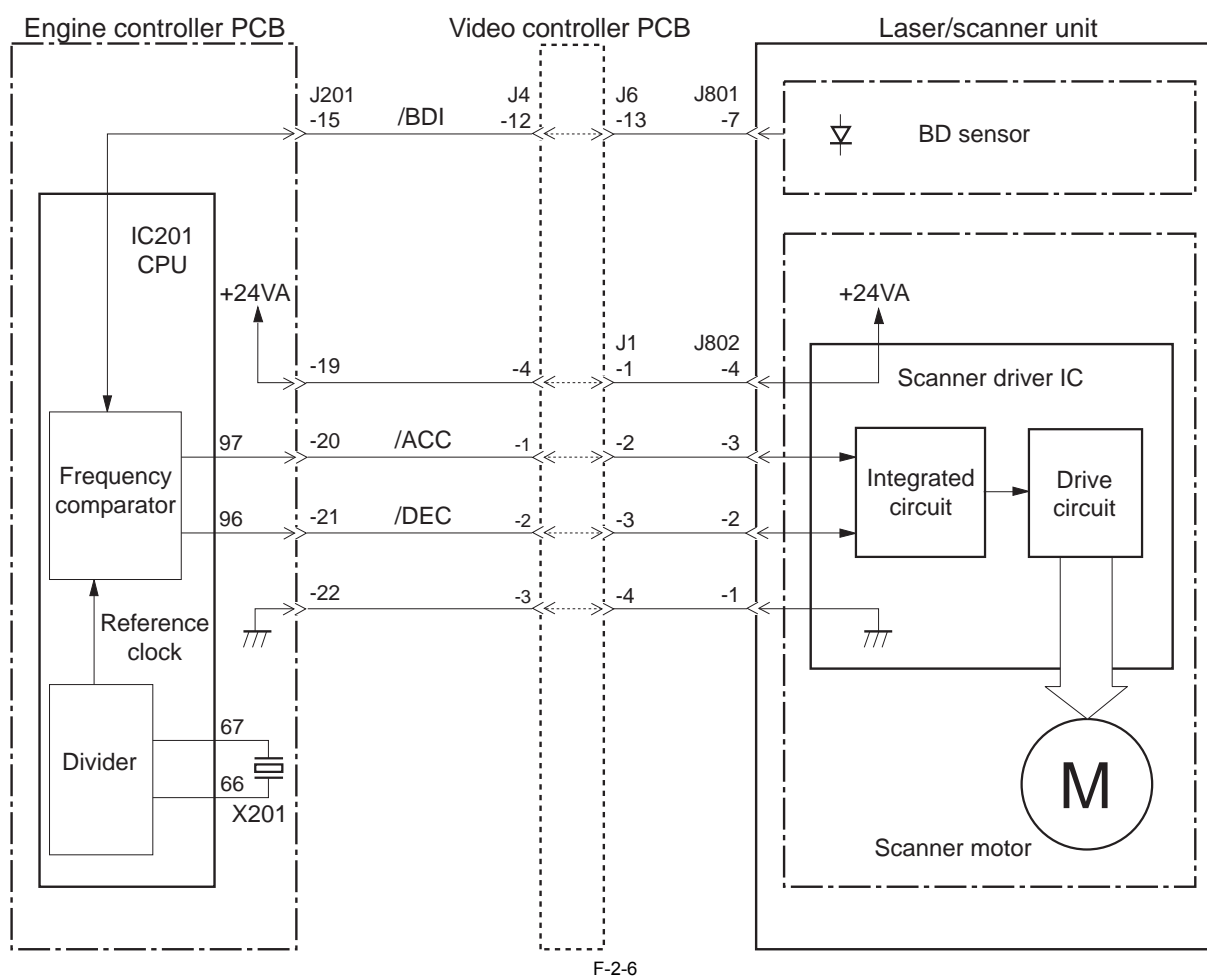
- 1) The shaded area indicates the area an image can be written by the laser beam.
- 2) T1 indicates the area of left /right outsides 0 mm of letter sized paper despite a paper size is specified or not.
- 3) T2 indicates the area of 2 mm behind the leading edge of the paper (where the /BDO signal starts to output) to the trailing edge.

### 2.3.4 Laser Scanner Motor Control

#### 2.3.4.1 Outline

The scanner motor control is to rotate the scanner motor in order to strike the laser beam at the correct position on the photosensitive drum. The circuit diagram of the scanner motor control is illustrated below.





### 2.3.4.2 Scanner motor speed control

The scanner motor is 3-phase DC brushless motor unified with the hole effect device and it is unified with the drive circuit.

When the printer is turned ON, the CPU (IC201) divides the oscillated frequency of the crystal oscillator (X201) and generates the reference clock.

The CPU puts the SCANNER MOTOR ACCELERATION signal (/ACC) into "L" and the DECELERATION signal (/DEC) into "H", when the print command is sent from the video controller.

Then the scanner driver IC rotates the scanner motor when the /ACC signal puts into "L". The scanner motor increases the rotational count only during the /ACC signal is "L".

The CPU allows the laser to emit light with APC during the scanner motor is rotating. Accordingly, the BD INPUT signal (/BDI) is sent to the CPU from the BD sensor via the video controller. The CPU compares the intervals between the /BDI signal and the reference clock with the frequency comparator in the CPU, and controls the rotational count of the scanner motor by controlling the /ACC signal until the rotational count reaches its prescribed count.

The CPU decreases the rotational count of the scanner motor by putting the SCANNER MOTOR DECELERATION signal (/DEC) into "L" and the ACCELERATION signal (/ACC) into "H" to stop the scanner motor.

### 2.3.4.3 Scanner motor failure detection

The CPU monitors the /BDI signal from the BD sensor via the video controller, and determines if the scanner motor rotates at its prescribed rotational count or not. The CPU determines the failure or the error and notifies it to the video controller under the following conditions.

#### 1) Scanner failure

When the /BDI signal is not detected within 1.5 sec. after the forced acceleration of the scanner motor is completed, it is detected for another 60 sec, and if the interval of the /BDI signal cannot be detected at specified amount during this period.

#### 2) BD failure

If the /BDI signal is not detected within 100msec. after the forced acceleration of the scanner motor. Or if the interval of the /BDI signal is not detected at a specified value for longer than 2 sec. continuously, after the scanner motor reaches its prescribed rotational count.

#### 3) BD error

If the /BDI signal is not detected in the prescribed interval during the CPU is outputting the /BD signal to the video controller.

Exceptional cases:

If the door open is detected within 200 msec. after the BD error is detected, the CPU does not notify the BD error to the video controller.

Also if the scanner failure or the BD failure is detected after the BD error is detected, the CPU releases the BD error.

## 2.4 IMAGE FORMATION SYSTEM

### 2.4.1 Overview/Configuration

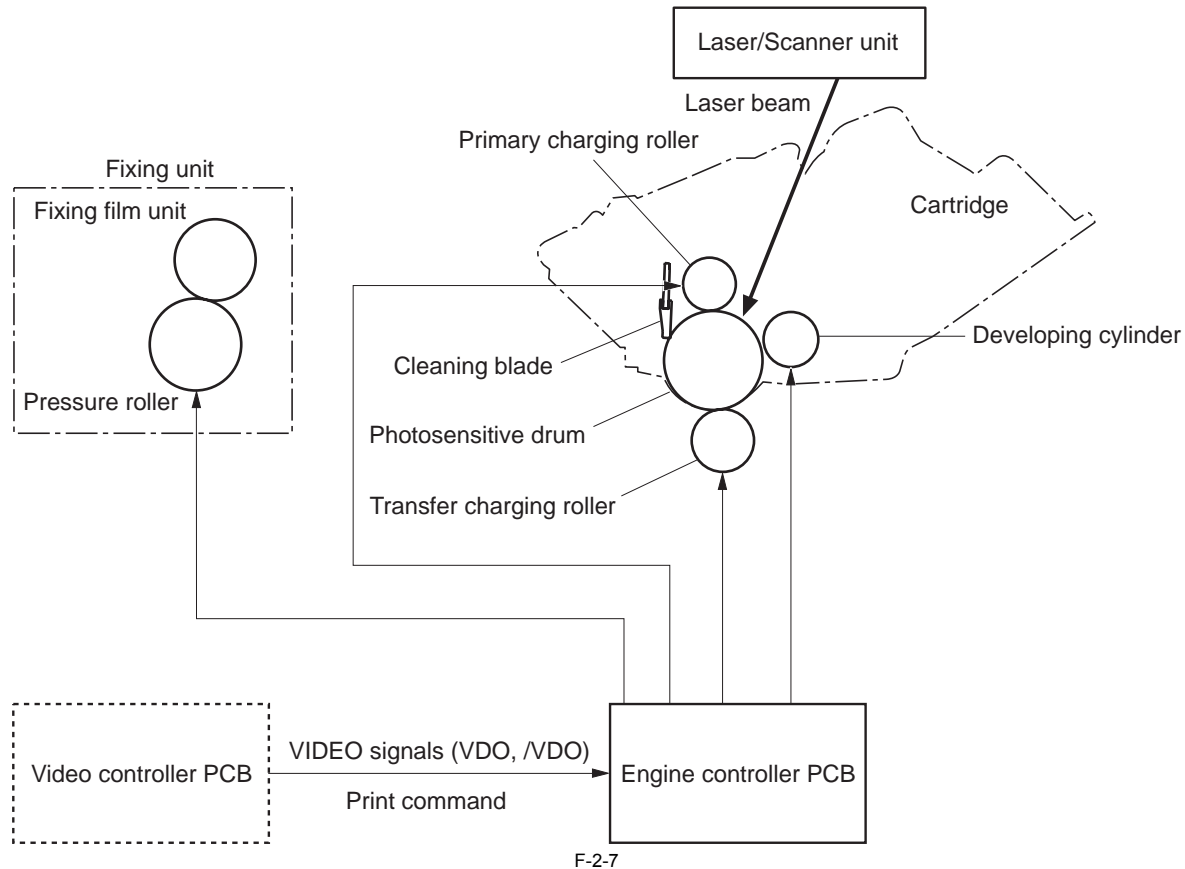
#### 2.4.1.1 Outline

The image formation system serves as the nerve center of the printer. It consists of the cartridge, the transfer charging roller, and the fixing unit etc.

When the engine controller receives print command from the video controller, it drives the main motor in order to rotate the followings: photosensitive drum, developing cylinder, primary charging roller, transfer charging roller and pressure roller.

The primary charging roller allows the surface of the photosensitive drum to charge evenness negative. At the same time, the laser beam, modulated by the VIDEO signals (VDO1, VDO2, /VDO1, /VDO2), is emitted onto the surface of photosensitive drum in order to format the latent image on the drum by the laser diode.

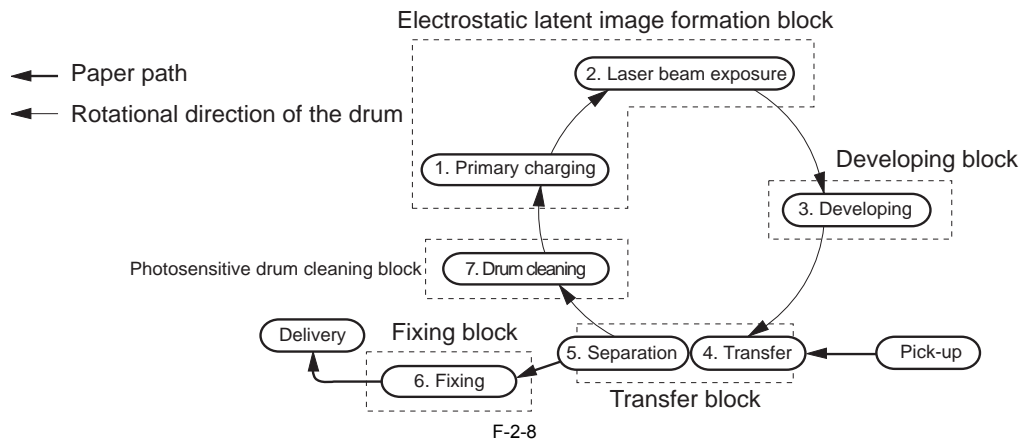
The latent image formed on the photosensitive drum is transferred into a visible image by the toner on the developing cylinder and the transfer charging roller transfers it onto a print paper. Then the transferred toner onto a paper becomes a permanent image by heat and pressure in the fixing unit. After the surface of the photosensitive drum is cleaned by the cleaning blade, the drum potential is uniformed by the primary charging roller to get ready for the next print.



### 2.4.1.2 Print Process

The principal process of the image formation is described in this paragraph.

The process can be broadly divided into 5 blocks with 7 steps. A toner image is formed on a print paper as it goes step by step in each block.



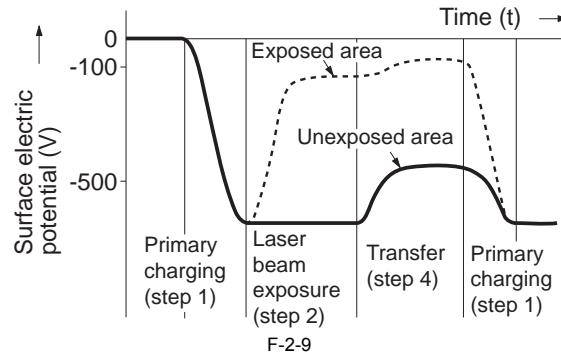
1. Electrostatic latent image formation block
  - Form an electrostatic latent image on the photosensitive drum.
  - Step 1: Primary charging (Charge the surface of the photosensitive drum uniformed negative potential)
  - Step 2: Laser beam exposure (Form an electrostatic latent image on the photosensitive drum)
2. Developing block
  - Make an electrostatic latent image on the photosensitive drum visible by applying the toner on.
  - Step 3: Development
3. Transfer block
  - Transfer a toner image on the photosensitive drum surface onto a print paper.
  - Step 4: Transfer (Transfer a toner on the photosensitive drum onto a print paper)
  - Step 5: Separation (Remove a paper from the photosensitive drum)
4. Fixing block
  - Fix a toner image on a print paper.
  - Step 6: Fixing
5. Photosensitive drum cleaning block
  - Clean the residual toner on the photosensitive drum.
  - Step 7: Drum cleaning

### 2.4.1.3 Electrostatic latent image formation block

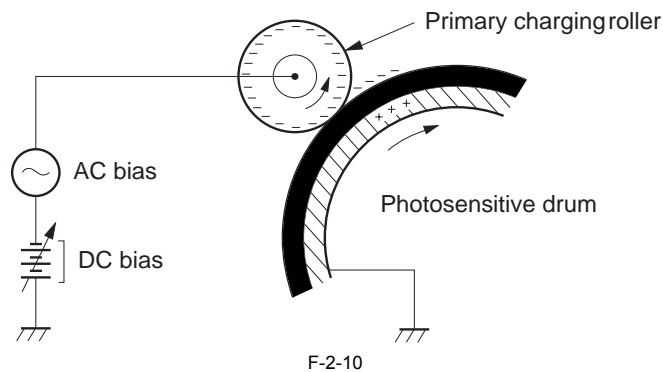
This block consists of two steps and forms an electrostatic latent image on the photosensitive drum.

When the last step in this block is complete, a negative electrical charge is remained in the unexposed drum surface area by the laser beam and it is removed from the exposed area.

The image with a negative charge on the drum is called an "electrostatic latent image" as it is invisible to the human eyes.



Step 1: Primary charging



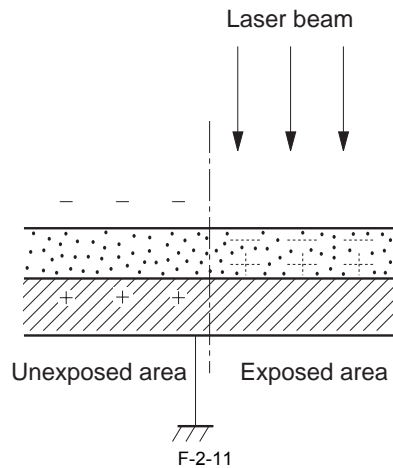
As a preparation to form a latent image, the surface of the photosensitive drum is charged a uniform negative potential in this step. The charging method of this printer is to charge directly to the drum surface.

The primary charging roller is made of a conductive rubber. To maintain the surface potential charged on the photosensitive drum uniformly, the DC bias and additional AC bias are combined.

This DC bias, interlocked to the developing DC bias, changes according to the IMAGE DENSITY INFORMATION signal from the video controller.

Step 2: Laser beam exposure

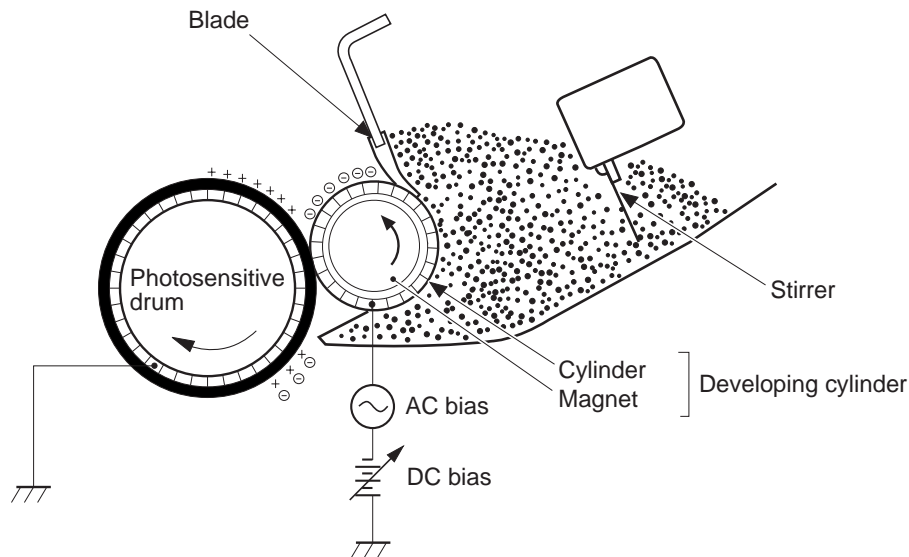
As the laser beam scans the photosensitive drum, the potential on the exposed area gets neutralized and this area forms the electrostatic latent image.



#### 2.4.1.4 Development block

The electrostatic latent image on the photosensitive drum surface is visualized by applying the toner in this process. This printer utilizes the projection development method by the single-component toner.

Step 3: Development



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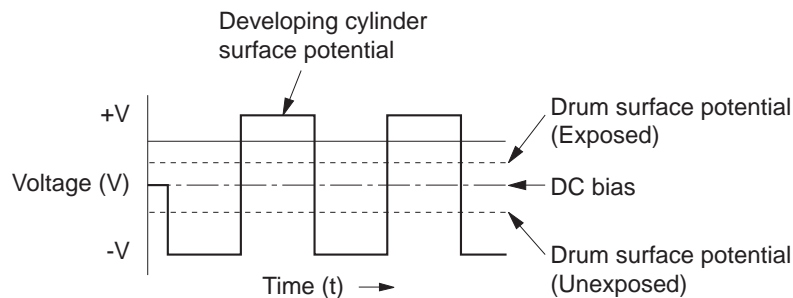
The exposed area on the photosensitive drum is indicated positive in figure despite of the fact that the actual potential on the drum is negative. This means that the potential of the photosensitive drum is higher than that of the cylinder relative to the potential of the cylinder.

The developing unit is structured by the developing cylinder, which consists the fixed magnet, the developing cylinder rotating around the magnet and the rubber blade.

The single-component developing material is called toner. The toner is mainly composed of magnetic particles and resin and it is caught onto the cylinder by the magnetic force. The toner is insulating property and it is charged negative potential by the friction force with the rotating cylinder.

The area of the photosensitive drum, where the laser beam exposed, has higher potential than the toner that is charged negatively on the cylinder. That is, when this area contacts the toner layer (negatively charged), the toner jumps onto the drum surface by the potential difference between the drum surface and the cylinder (higher potential on drum side).

This phenomenon is called the projection development and it visualizes the electrostatic latent image on the drum.



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The developing cylinder is applied the AC bias in order to make the toner jump easier onto the drum surface and improve the contrast of the output image.

The central voltage of the AC bias (1600Vp-p) changes according to the developing DC bias.

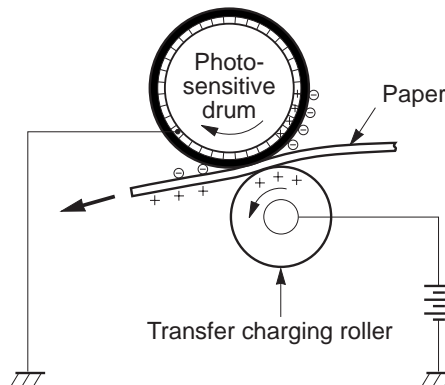
This printer enables to adjust the image density by changing the potential difference between the cylinder and the photosensitive drum according to changing the developing DC bias based

on the IMAGE DENSITY INFORMATION signal from the video controller.

#### 2.4.1.5 Transfer block

The transfer block transfers the toner image on the photosensitive drum onto a print paper.

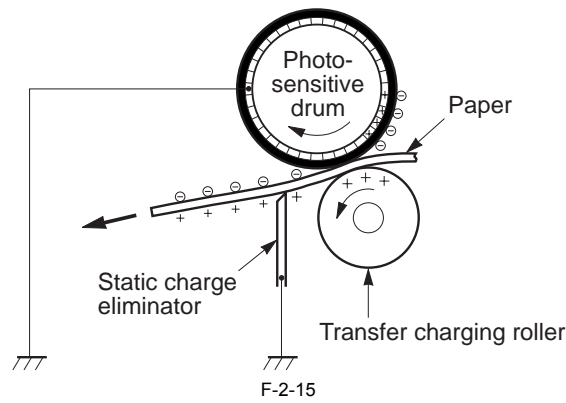
Step 4: Transfer



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The toner on the photosensitive drum surface is transferred onto a paper according to the positive charge from the back side of the paper. The transfer charging roller of this printer interlocks the photosensitive drum in order to improve the image quality.

Step 5: Separation

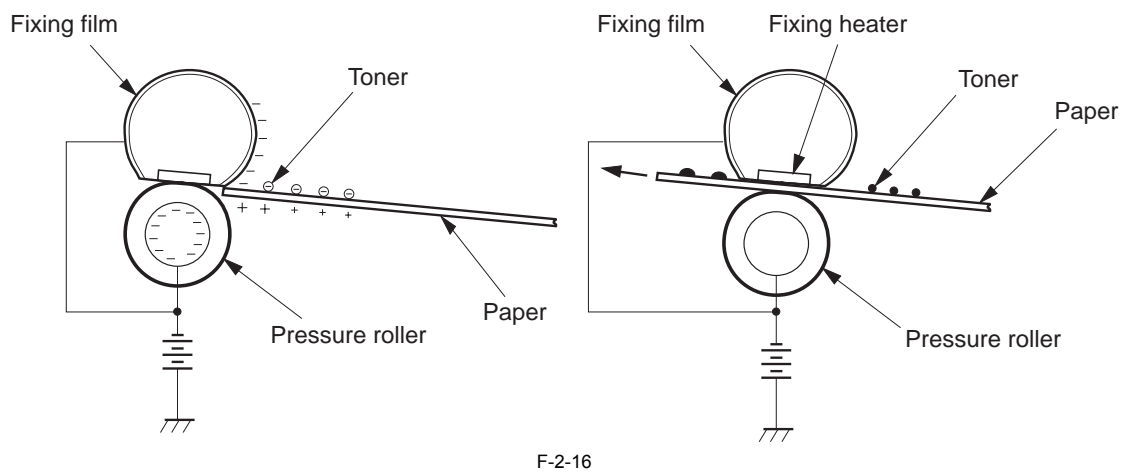


A print paper is separated from the drum by its elasticity. (Curvature Separation) The static charge on the back side of a print paper is decreased with the electrostatic eliminator after the transfer process in order to stable the feeding operation and prevent the crescent spots of printing image under the L/L environment.

#### 2.4.1.6 Fixing block

The toner image transferred onto a print paper through the transfer block can be smeared easily by hands since it is only attracted to the paper by the static electricity. The paper and the toner on it are fixed by pressure and fused by heat to be a permanent image in this block.

Step 6: Fixing

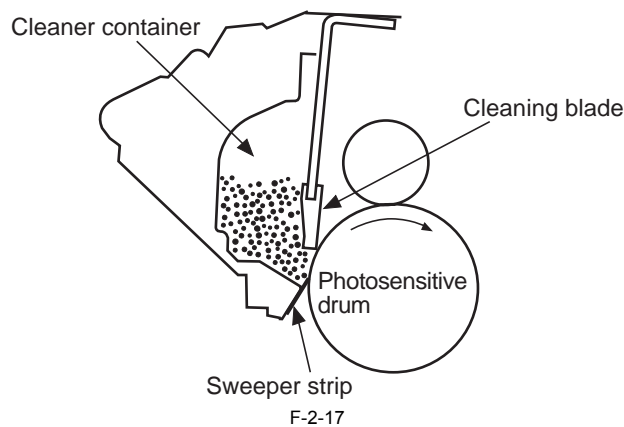


There is a possibility to splatter the toner when it is fixed because the toner image transferred onto a paper is attached by the positive charge from the back side of it. This printer applies the negative DC voltage to the fixing film through the pressure roller, so that the negative charge is flown to the front side of a print paper from the fixing film before it comes to the fixing heater. It results that the transferred toner is held stronger onto the paper and it is prevented from splattering. This printer utilizes the on-demand fixing method with the lower heat capacity fixing film, which warms up quickly and does not require the power supply during standby period. The feature of this method is that the wait period is shorter than 10 sec. and thus energy-saving. The fixing film is a sleeve shaped film made from the polyamide and the fluorine coats its surface to prevent the offset.

#### 2.4.1.7 Photosensitive drum cleaning block

In the transfer block, not all toner is transferred from the photosensitive drum onto a print paper but some remains on the drum. The drum cleaning block cleans the surface of the photosensitive drum in order to keep a clear image in the following prints.

Step 7: Drum cleaning



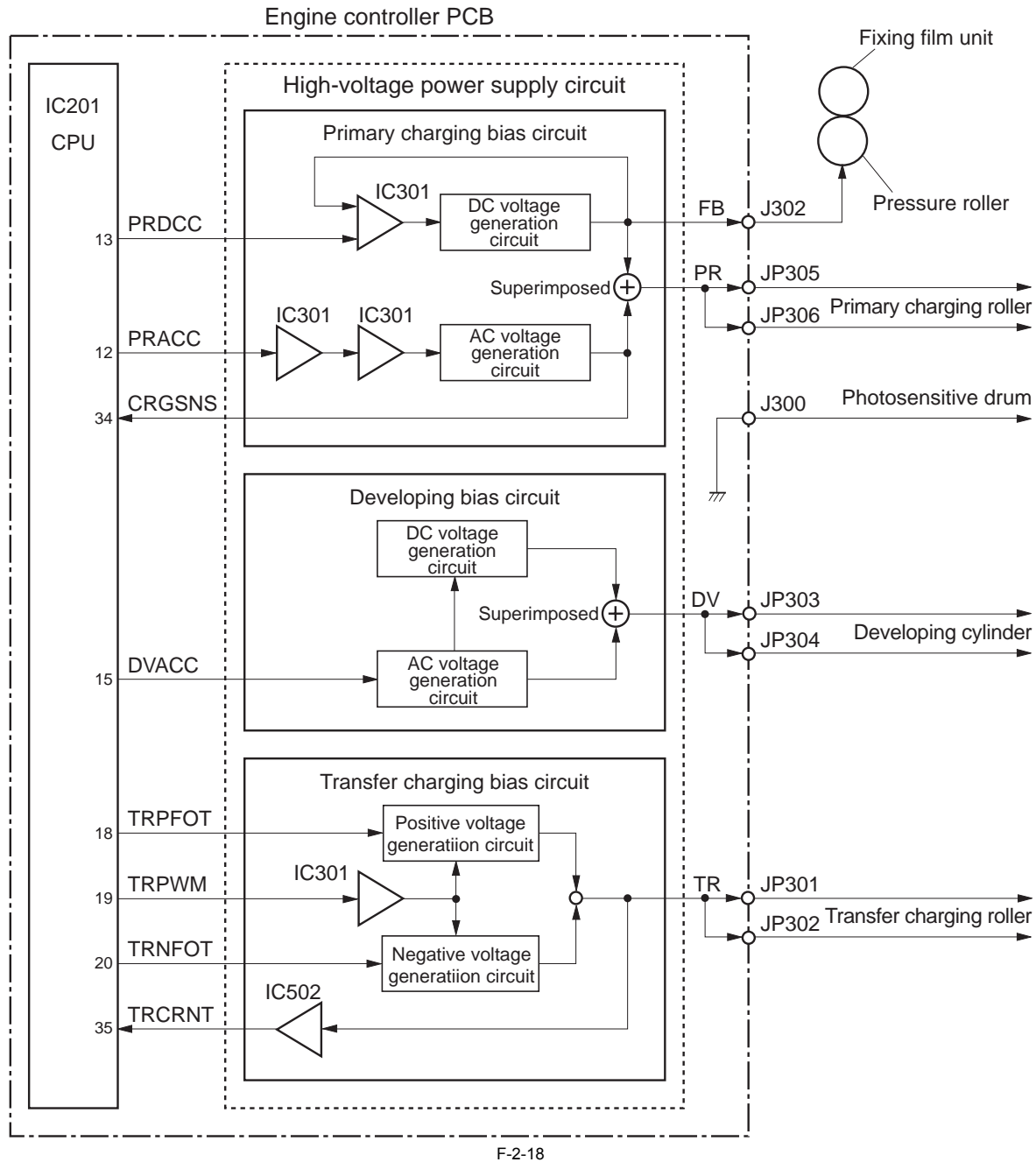
The cleaning blade scrapes off the leftover toner on the drum surface to be got ready for the next print. The waste toner is kept in the cleaner container.

### 2.4.2 High-Voltage Control

#### 2.4.2.1 Outline

The high-voltage power supply circuit generates the high-voltage required for the image formation. It consists of the primary charging bias circuit, the developing bias circuit, and the transfer charging bias circuit.

The primary charging bias circuit generates the negative DC voltage and AC voltage. They are superimposed and applied to the primary charging roller. The circuit also applies the negative DC voltage to the fixing film unit through the pressure roller. In addition, this circuit detects the presence of cartridge. The developing bias circuit generates negative DC voltage and AC voltage. They are superimposed and applied to the developing cylinder. The transfer charging bias circuit generates positive or negative DC voltage and applies the positive or negative DC voltage to the transfer charging roller. These circuits are controlled by the commands from the CPU (IC201) on the engine controller. The following section describes each generation circuit.



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#### 2.4.2.2 Primary charging bias generation

The primary charging bias (PR) is generated according to two signals output from the CPU: the PRIMARY CHARGING DC BIAS DRIVE signal (PRDCC) and the PRIMARY CHARGING AC BIAS DRIVE signal (PRACC).

The PRDCC signal is a clock signal to generate the DC bias and the primary charging DC bias is generated according to this signal. The PRACC signal is a clock signal to generate the AC bias and the primary charging AC bias is generated according to this signal. The superimposed voltage of primary charging AC and the primary charging DC biases is applied to the primary charging roller.

The primary DC bias changes with the developing DC bias in response to the image density information sent from the video controller.

#### 2.4.2.3 Developing bias generation

The developing bias (DV) is generated according to the DEVELOPING AC BIAS DRIVE signal (DVACC) output from the CPU.

The DVACC signal is a clock signal to generate the AC bias and the developing AC bias is generated according to this signal. The developing DC bias is generated according to the developing AC bias generated in the developing AC bias generation circuit. The superimposed voltage of the developing DC bias and the developing AC bias is applied to the developing cylinder.

The developing DC bias changes with the primary charging DC bias, in response to the image density information sent from the video controller.

#### 2.4.2.4 Transfer charging bias generation

The transfer bias (TR) is generated by three signals output from the CPU: the TRANSFER POSITIVE BIAS DRIVE signal (TRPFOT), the TRANSFER NEGATIVE BIAS DRIVE signal (TRNFOT), and the TRANSFER OUTPUT SWITCHING signal (TRPWM).

The TRPFOT signal is a clock signal to generate the positive bias and the transfer positive bias is generated according to this signal. The TRNFOT signal is a clock signal to generate the negative bias and the transfer negative bias is generated according to this signal. The voltage of either the transfer positive bias or the transfer

negative bias is applied to the transfer charging roller.

The CPU controls a constant current control by switching the values of the TRPWM signal in response to the TRANSFER CURRENT FEEDBACK signal (TFRAD) sent from the transfer charging bias circuit.

The transfer charging roller is applied with the cleaning bias, the between-sheets bias, and the print bias according to each print sequence.

Cleaning bias:

The cleaning bias is to transfer the toner adhered to the transfer charging roller onto the photosensitive drum during the warm-up or the last rotation sequence.

The transfer negative bias is applied to the transfer charging roller to operate.

Between-sheets bias:

The between-sheets bias is to prevent the residual toner on the photosensitive drum from adhering to the transfer charging roller during the between-sheets in continuous printing.

Infinitesimal transfer positive bias is applied to the transfer charging roller.

Print bias:

The print bias is to transfer the toner on the photosensitive drum surface onto print paper during the print sequence. The transfer positive bias is applied to the transfer charging roller.

#### 2.4.2.5 Fixing bias generation

The fixing bias is generated by dividing up the voltage of the primary charging DC bias, in order to avoid the toner particles adhering to the fixing film and to avoid making smeared images at the trailing edge. The fixing bias applies the bias to the fixing film through a core bar and a rubber ring of the pressure roller at the timing of that the primary charging DC bias is applied to the primary charging roller.

#### 2.4.2.6 Cartridge presence detection

The CPU detects the presence of cartridge by checking the voltage of the CARTRIDGE DETECTION signal (CRGSNS), which is a feed back signal of the primary charging AC bias.

The primary charging bias circuit detects the voltage value of the primary charging AC bias applied to the primary charging roller, and feeds back the CRGSNS signal to the CPU, when the PRIMARY CHARGING AC BIAS DRIVE signal (PRACC) is output from the CPU and primary charging AC bias is output from the AC generation circuit.

The CPU detects the presence of cartridge by checking the voltage of the CRGSNS signal at the timing of the primary charging AC bias is output during the wait period.

## 2.5 PICKUP AND FEEDING SYSTEM

### 2.5.1 Overview/Configuration

#### 2.5.1.1 Outline

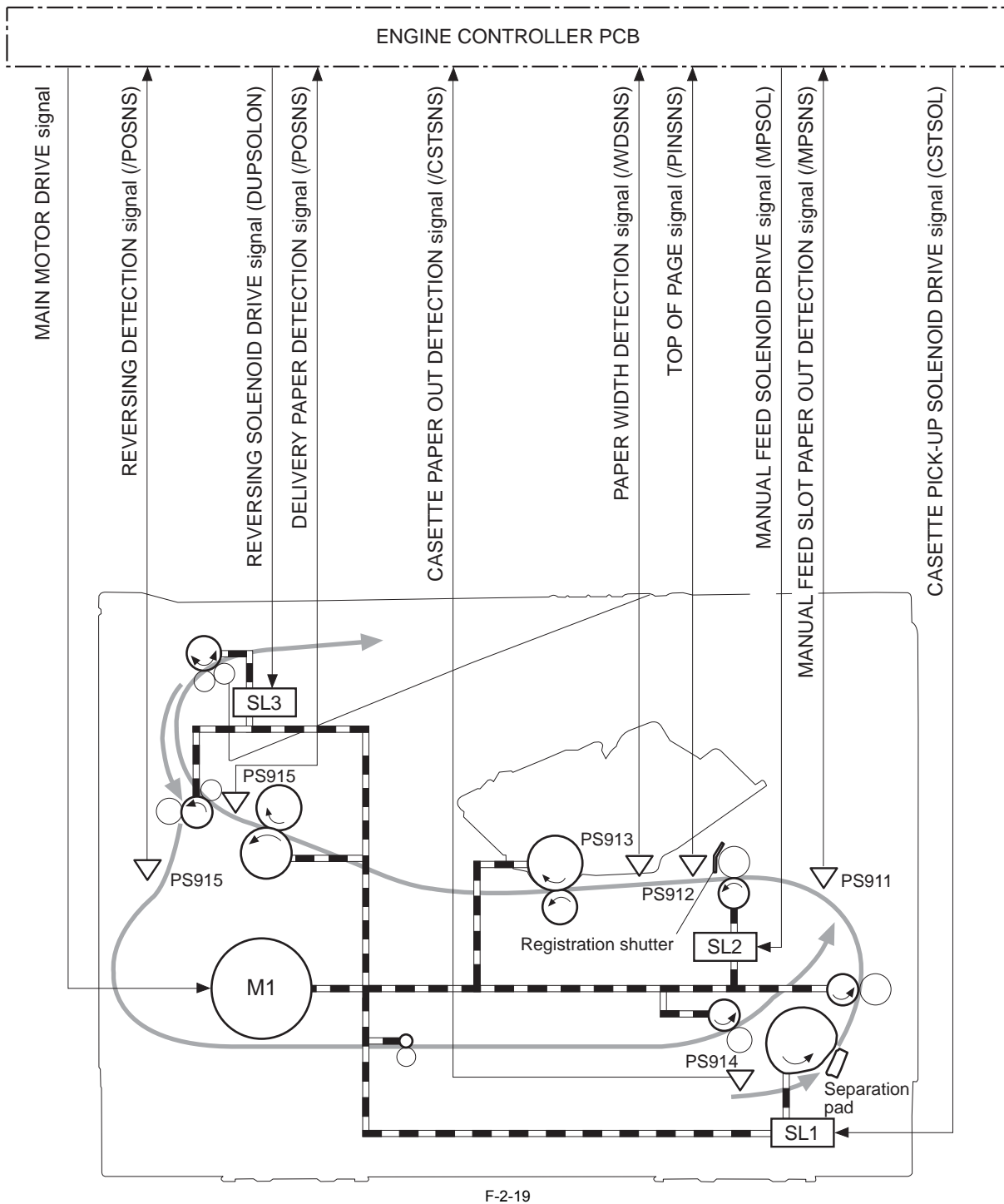
The pick-up/feed system picks up and feeds a print paper, and it consists of various feed rollers.

This printer has two pick-up slots; the cassette and the manual feed slot, and two delivery slots; face-down tray and face-up delivery slot.

The engine controller controls 1 motor and 3 solenoids in order to drive each feed roller.

There are two paper detection sensors (delivery sensor and reversing sensor are the same but 2 sensor flags) in the feeding path of a print paper. The sensors detect the print paper arrival or pass. If the sensors cannot detect the paper arrival/pass within the prescribed time, the CPU on the engine controller determines a jam and notifies it to the video controller.

The paper detect sensor detects the presence of print paper in the cassette and manual feed slot. Also the top of page sensor detects the paper length, and the paper width detection sensor detects the paper width.



M1: Main Motor  
 SL1: Cassette pick-up solenoid  
 SL2: Manual feed solenoid  
 SL3: Reversing solenoid

## 2.5.2 Detecting Jams

### 2.5.2.1 Jam Detection Outline

#### 2.5.2.1.1 Outline

This printer is provided the following paper detection sensors to detect the presence of the paper and whether the paper feed is operated normally or not. 0011-2465

1: Top of page sensor (PS912)

2: Delivery sensor/Reversing sensor (PS915)

The CPU determines a paper jam by checking whether the paper is present at the sensor or not at the checking timing. The check timing is stored in the memory of the CPU.

If the CPU determines the jam, it stops the print operation and notifies it to the video controller.



## 2.5.2.2 Delay Jams

### 2.5.2.2.1 Pick-up delay jam

0011-2466

The printer performs the retry control, which executes pick-up operation twice, in order to relief the pick-up delay jam caused by pick-up error. When the top of page sensor (PS912) cannot detect the leading edge of the paper within approx. 2.7 sec. (3.4 sec. for the optional cassette) after when the pick-up solenoid (SL1) is turned ON, the CPU retries the pick-up operation twice. The CPU determines a pick-up delay jam, when the top of page sensor (PS912) cannot detect the leading edge again within another approx. 2.7 sec. (3.4 sec. for the optional cassette).

### 2.5.2.2.2 Delivery delay jam

0011-2468

The CPU determines the delivery delay jam, when the leading edge of the paper does not reach the delivery sensor (PS915) within approx. 1.8 sec. after when the top of page sensor (PS912) detects the leading edge.

### 2.5.2.2.3 Reversing delay jam

0011-2472

The CPU starts the reversing delay jam detection after it determined no wrapping jam. The CPU determines the reversing delay jam, when the delivery sensor (PS915) does not detect the absence of paper at all within approx. 0.6 sec. after when the top of page sensor (PS912) detects the trailing edge of the paper.

## 2.5.2.3 Stationary Jams

### 2.5.2.3.1 Pick-up stationary jam

0011-2467

The CPU determines the pick-up stationary jam, when the top of page sensor (PS912) cannot detect the trailing edge of the paper within approx. 3.1 sec. after detecting the leading edge.

### 2.5.2.3.2 Delivery stationary jam

0011-2471

The CPU starts the delivery stationary jam detection after it determined no wrapping jam. The CPU determines the delivery stationary jam, when the delivery sensor (PS915) does not detect the absence of the paper within approx. 1.8 sec. at all after the top of page sensor (PS912) detected the trailing edge

### 2.5.2.3.3 Reversing stationary jam

0011-2473

The CPU determines the reversing stationary jam, when the top of page sensor (PS912) does not detect the trailing edge of the paper within approx. 2.9 sec. after when the reversing sensor (PS915) detects the leading edge of the paper.

## 2.5.2.4 Other Jams

### 2.5.2.4.1 Wrapping jam

0011-2469

The CPU starts the wrapping jam detection after it determined no delivery delay jam. The CPU determines the wrapping jam, when the delivery sensor (PS915) detects the absence of paper after 0.1 sec. after when the delivery sensor (PS915) detects the leading edge of the paper, and within approx. 1.4 sec. after when the top of page sensor (PS912) detects the trailing edge of the paper.

### 2.5.2.4.2 Start-up residual jam

0011-2474

The CPU determines the start-up residual jam, when the top of page sensor (PS912) or the delivery sensor/reversing sensor (PS915) detects a print paper upon the initial rotation period is started.

### 2.5.2.4.3 Door open jam

0011-2475

The CPU determines the door open jam, when the top of page sensor (PS912) or the delivery sensor/reversing sensor (PS915) detects a paper upon the door open is detected.

## 2.5.3 Cassette Pickup

### 2.5.3.1 Cassette pick-up

The cassette pick-up picks a print paper in the cassette up one by one into the printer. The cassette paper out detection sensor detects the presence of print paper in the cassette. The inclined wall separation and the pad separation are utilized to prevent a multiple-feed of paper. The cassette pick-up operation is explained in the following.

- 1) The engine controller rotates the main motor (M1) when the video controller inputs the print command.
- 2) When the initial rotation gets ready (Note), the cassette pick-up solenoid (SL1) turns ON for approx. 0.2 sec. Accordingly, the rotation of the main motor is transferred to the pick-up roller to be rotated.
- 3) The print paper is at the position to be picked up by the lifting plate, which pushed up according to the spring force. One print paper is picked up by the pick-up roller rotation and fed into a printer. At that time, the multiple-fed paper is removed by the inclined wall separation and the pad separation.



#### Initial rotation ready

A condition of the main motor drives, the fixing unit temperature reaches a prescribed temperature, and the scanner motor reaches its prescribed rotational count after a specified time interval.

## 2.5.4 Multi-purpose Pickup

### 2.5.4.1 Manual feed

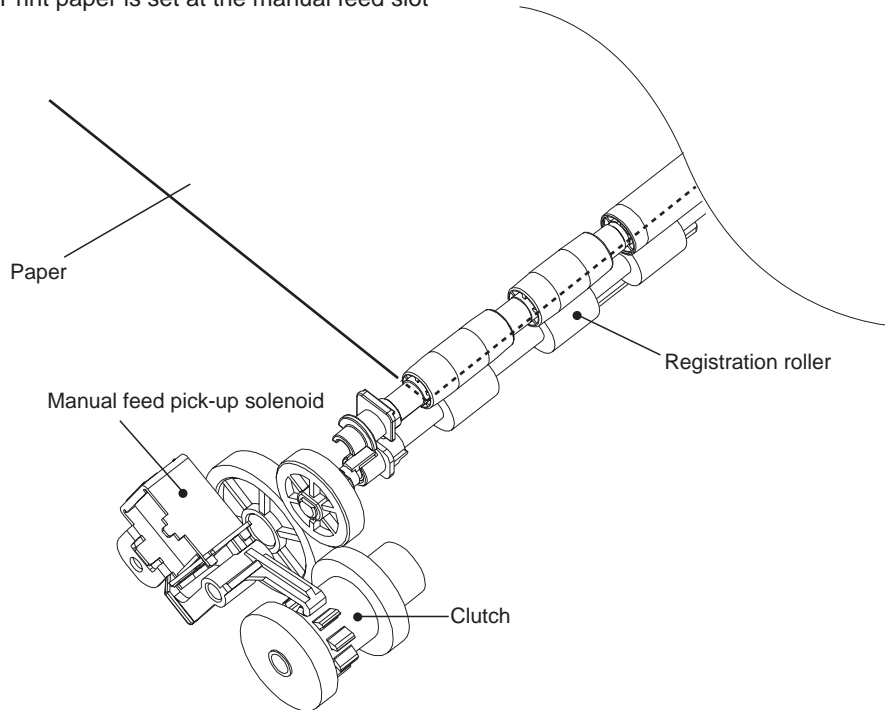
The manual feed picks one paper, inserted from the manual feed slot, up and feeds it into a printer. There is not a pick-up roller in the manual-feed slot of this printer. The registration roller substitutes as the pick-up roller. The manual feed slot paper out detection sensor detects a print paper set at manual feed slot.

The manual feed pick-up operation is explained in the following.

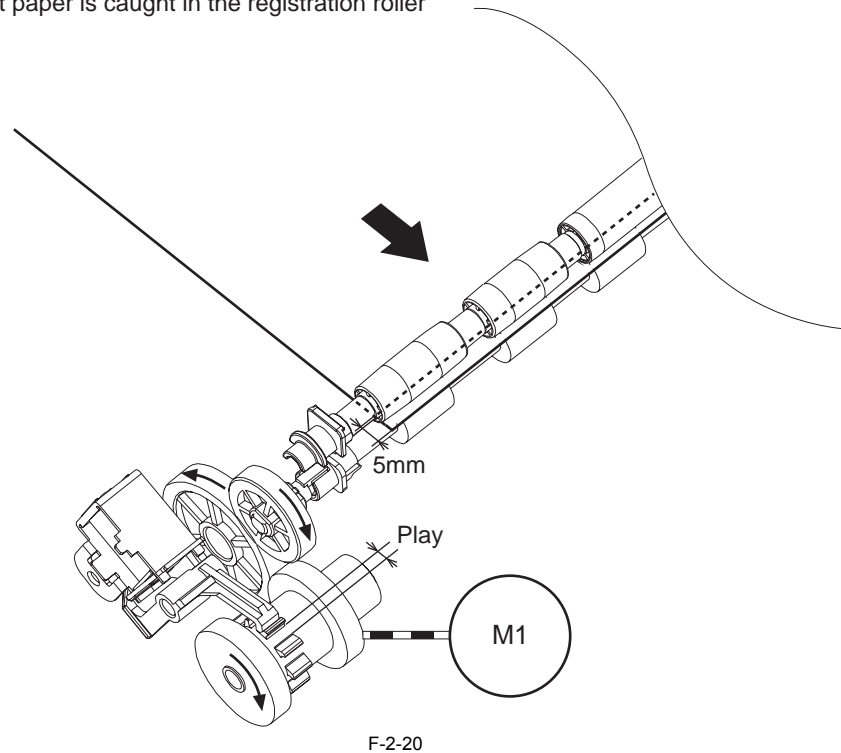
- 1) When a paper is set in the manual feed slot at stand by status, the engine controller turns the manual feed solenoid (SL2) ON to fix the registration roller.
- 2) The engine controller drives the main motor (M1) for 1 sec. under the situation of the registration roller is fixed.
- 3) After the SL2 is turned ON the registration roller rotates for the play, because the clutch is given a play. This allows a paper to be fed for approx. 5mm and caught in the registration rollers.
- 4) A paper set at the manual feed slot is fed into a printer by the drive of the registration roller according to the above operational sequence.

Only one paper intermittent print is available from the manual feed slot to operate above pick-up method.

- Print paper is set at the manual feed slot



- Print paper is caught in the registration roller

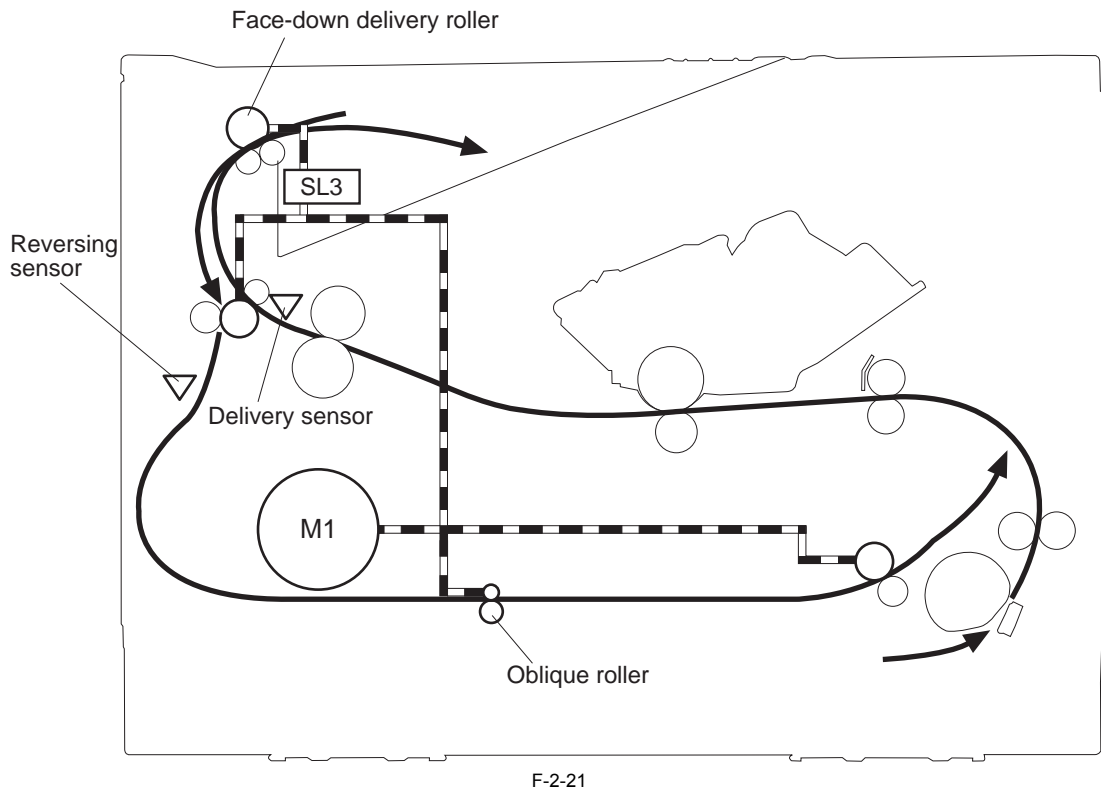


F-2-20

## 2.5.5 Duplex Feeding

### 2.5.5.1 Outline

This printer operates the duplex printing by switching the printing side of the paper. That is, after one side is printed, the print paper is fed to the face-down tray once and re-fed into the duplex feed unit. The paper path of the duplex printing is illustrated below.



### 2.5.5.2 Operation

The duplex feed unit is driven by the main motor (M1).

When the first side of print paper is printed, the paper is once fed to the face-down tray.

The engine controller turns the reversing solenoid (SL3) ON after approx. 0.16 sec. from when the delivery sensor (PS915) detects the trailing edge of the print paper. It results that the delivery roller rotates reversely and feeds the print paper into the duplex feed unit.

Then the engine controller turns the SL3 OFF at same time of that the reversing sensor (PS915) detects the trailing edge of the paper.

The oblique roller feeds the print paper as its right side edge contacts with the standard plate.

It allow the paper to be compensated its skew and fed to the registration roller from the duplex feed unit.

Then the second side of the paper is printed and the paper is delivered to the face-down tray.

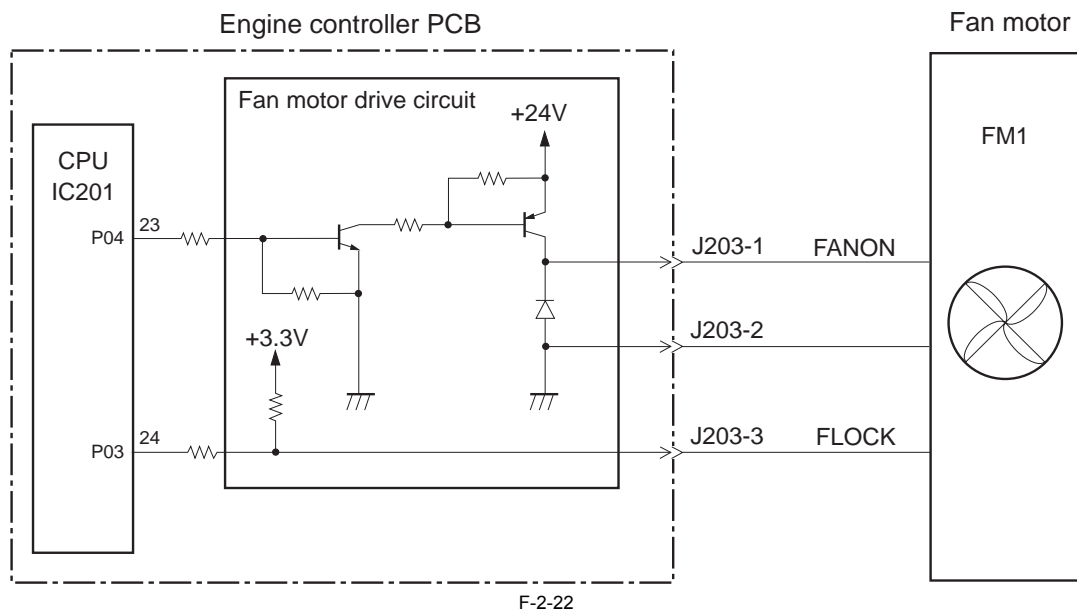
## 2.6 EXTERNAL AND CONTROLS SYSTEM

### 2.6.1 Fan

#### 2.6.1.1 Fan motor control

The fan motor control drives the fan motor according to the commands from the CPU.

The control circuit of the fan motor is illustrated below.



The fan motor is a DC brushless motor unified with the hall effect device and it prevents rising in the temperature inside the printer.

The CPU (IC201) turns the pick-up solenoid OFF at the start of print operation. At the same time it puts the FAN MOTOR DRIVE signal (FANON) into "H" and rotates the fan motor. Once the fan motor reaches at its prescribed rotational count, the FAN LOCK signal (FLOCK) is put

into "L". When the FLOCK indicates "L", the CPU determines the fan rotates normally. After the print operation is completed and the main motor stops, the CPU rotates the fan motor for approx. 30 sec. and puts the FANON into "L" to stop the fan motor.

The CPU determines the fan motor failure and notifies it to the video controller under the following condition.

1) The FAN LOCK signal (FLOCK) indicates "H" for more than approx. 10 sec. continuously during the fan motor is rotating.

## **2.6.2 Power Supply**

### **2.6.2.1 Power Supply**

#### **2.6.2.1.1 Low-voltage Power Supply Circuit**

0011-2504

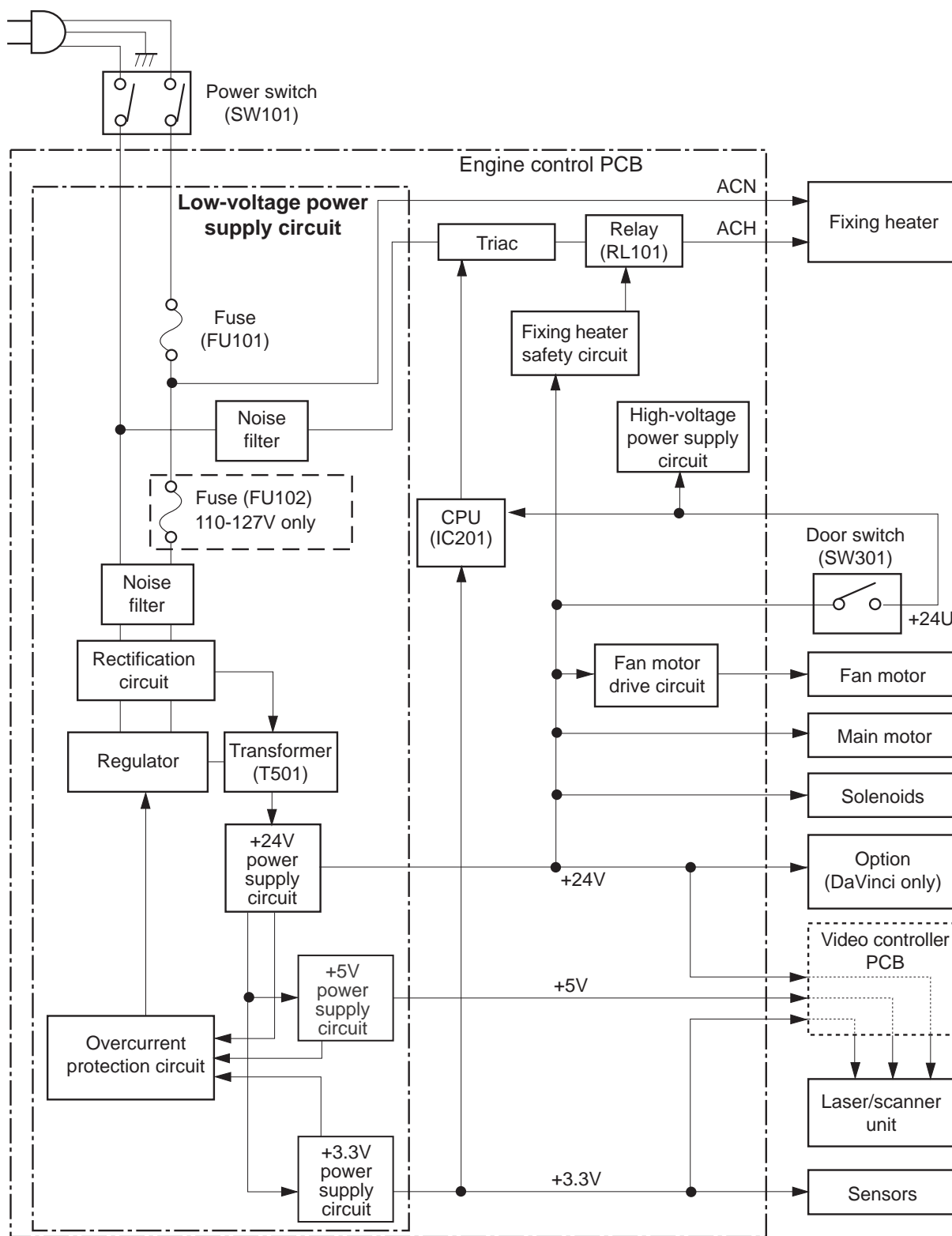
The low-voltage power supply circuit converts the AC power supply input from the inlet into the DC power supply and supplies to each load.

The AC power is supplied to the low-voltage power supply circuit in the engine controller when the printer switch is turned ON.

This supplied AC power is converted in this circuit into +24VDC, +5VDC, and +3.3VDC, which are required inside the printer. The +24VDC is supplied to drive the load systems; such as the main motor, the scanner motor, and the solenoids etc, the high-voltage power supply circuit, and the options. The +5V is supplied to the laser and the video controller. The +3.3V is supplied to

the sensors and the ICs inside the engine controller PCB.

The +24VDC is divided into +24V and +24U. The +24V is supplied from the low-voltage power supply circuit at all time, and the +24U is interrupted when the door switch (SW301) is turned OFF according to the cartridge cover open. The +24U is supplied to the high-voltage power supply circuit on the engine controller. It also functions as the DOOR OPEN DETECTION signal and the CPU detects the door open using this signal.



## 2.6.2.2 Protective Functions

### 2.6.2.2.1 Protective function

0011-2505

The low-voltage power supply circuit utilizes the overcurrent protective function to prevent the power supply circuit failure. It automatically interrupts the output voltage when the overcurrent occurs due to a short-circuit at the load side.

If the overcurrent protective function is activated and the DC voltage is not output from this circuit, be sure to turn the printer OFF, rectify the problem at the faulty loads and then turn the printer ON again.

Be sure to wait for more than approx. 2 min. to turn the printer ON again from when the power is turned OFF.

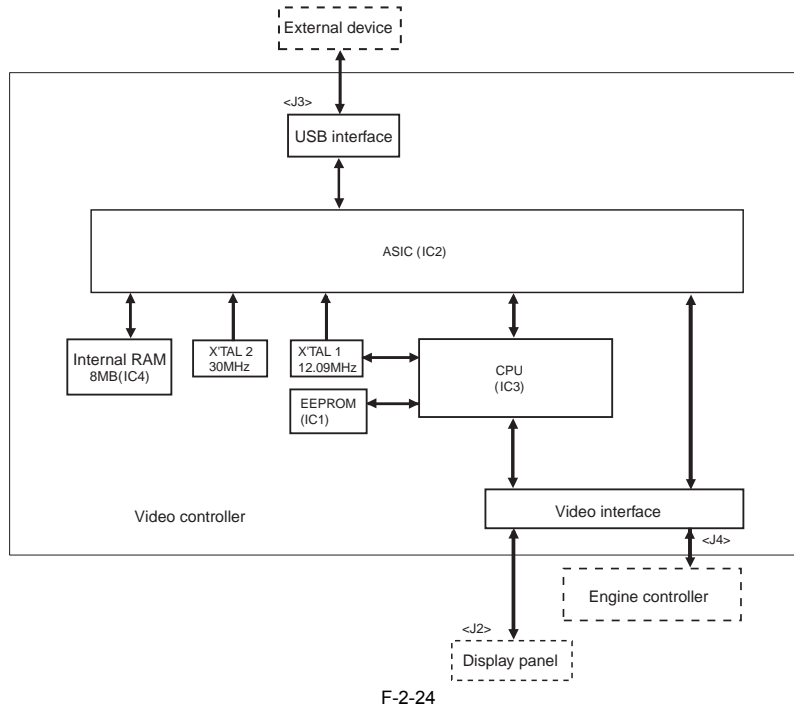
This circuit contains the fuse 1 (FU101) and the fuse 2 (FU102: 110-127V only). The fuses burn and interrupt the power supply if the overcurrent flows in the AC line.

## 2.7 ENGINE CONTROL SYSTEM

### 2.7.1 Video Controller

#### 2.7.1.1 Outline

The video controller receives print information from an external device (e.g., host computer) through an interface cable. The print information includes the CAPT command used to communicate printer status and unique information and dot data, which is the result of conversion of resource type print data by the host computer. The dot data is sent to the engine controller for control of the activation of the laser diode. The external device can check the status of the printer unit by means of a bi-directional interface.



#### 2.7.1.2 Outline of Operation by Block

##### 1. EEPROM (IC1)

It possesses 128 bytes of memory, permitting writing of data and erasing of it electrically. It is used to retain parameters of the printer unit that must remain unchanged (e.g., USB serial number, printing environment; these parameters are retained when the power is turned off/on).

##### 2. ASIC (IC2)

It has the following functions:

1. controls the input/output of the internal RAM.
2. controls the timing at which dot pattern data is sent to the engine controller.
3. decompresses the image data that has been compressed.

##### 3. CPU (IC3)

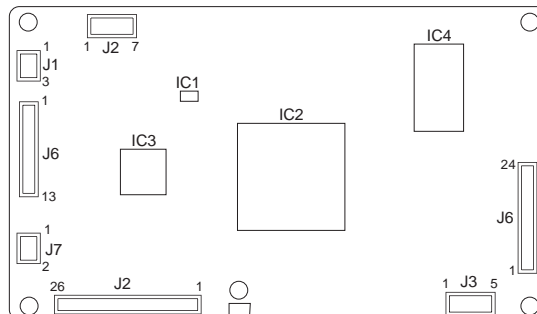
It has the following functions:

1. processes the serial commands of the video interface.
2. transmits and receives the CAPT command through the USB interface.
3. controls the display panel interface.

##### 4. DRAM (IC4)

It possesses 8 MB of memory, and has the following function:

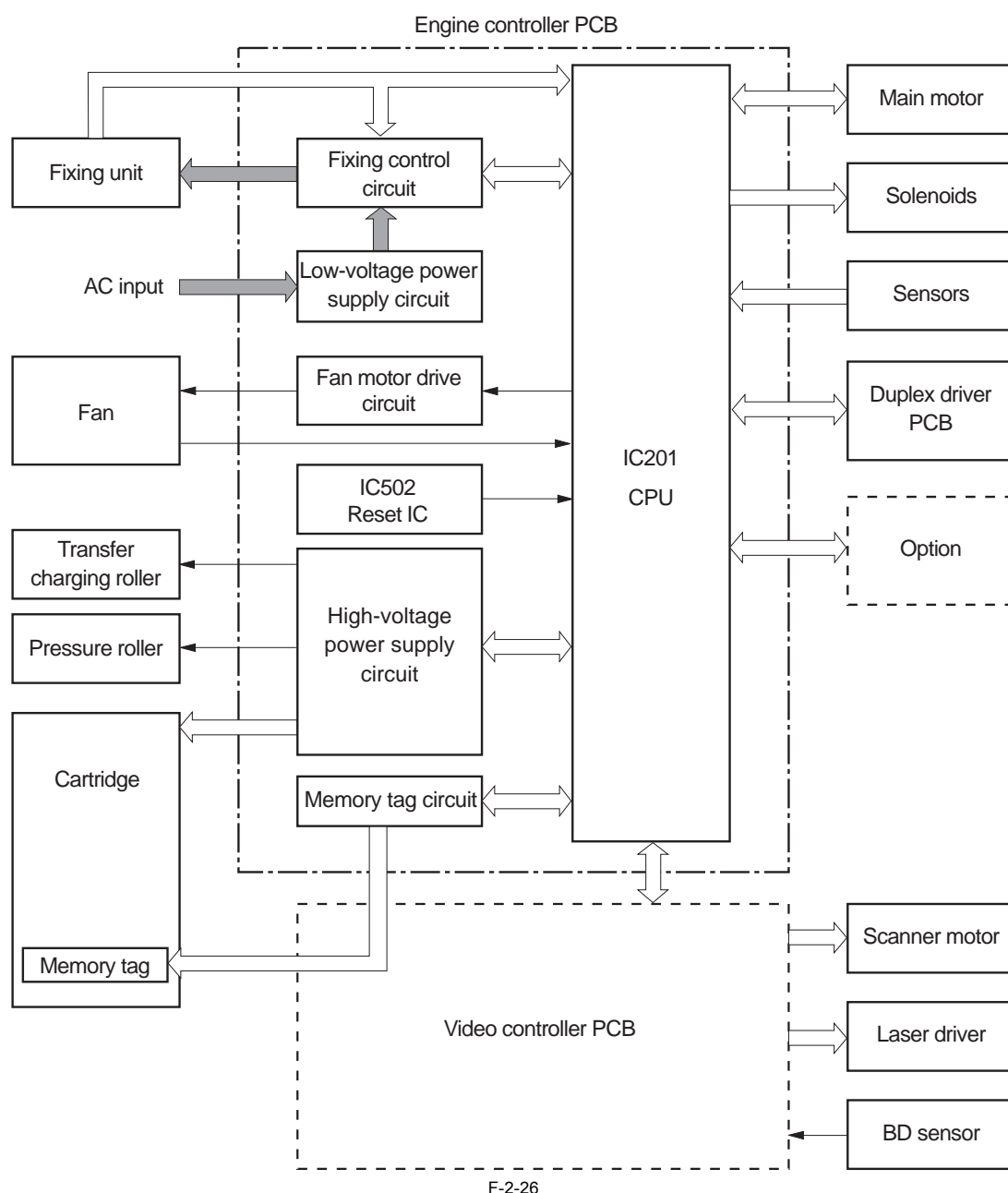
1. temporarily retains the dot data (reception buffer) that has been converted from image data.



### 2.7.2 Engine Controller

#### 2.7.2.1 Outline

The engine controller circuit controls the operational sequences of the printer. It consists of the memory tag circuit, the fixing control circuit, the high-voltage power supply circuit, the low-voltage power supply circuit, and the fan motor drive circuit. The block diagram of this circuit is illustrated below and each circuit is described in the following.



a. CPU (IC201)

The CPU uses one 8-bit single-chip microprocessor IC.

It is a single-chip type CPU with built-in ROM and RAM. The CPU controls the following printer operations according to the control programs stored in the ROM.

- 1) Printer sequence
- 2) Communications with the video controller
- 3) High-voltage power supply circuit
- 4) Laser/ scanner
- 5) Sensors
- 6) Loads (motor, solenoid etc.)
- 7) Fixing control circuit
- 8) Duplex driver PCB
- 9) Option

b. Reset IC (IC502)

The IC502 monitors the +3.3V and resets the CPU when the power switch is turned ON.

c. Memory tag circuit

The memory tag circuit reads/writes the data into/on the memory tag inside a cartridge according to the command from the CPU (IC201).

d. Fixing control circuit

The fixing control circuit controls the temperature of the fixing unit according to the command from the CPU (IC201).

e. High-voltage power supply circuit

The high-voltage power supply circuit generates the high-voltage power supply according to the command from the CPU (IC201).

f. Low-voltage power supply circuit

The low-voltage power supply circuit generates the DC power supply required by the printer when the power switch is turned ON.

g. Fan motor drive circuit

The fan motor drive circuit drives the fan motor according to the command from the CPU (IC201).

## 2.8 FIXING UNIT/DELIVERY SYSTEM

### 2.8.1 Overview/Configuration

#### 2.8.1.1 Outline

The fixing/delivery unit fixes the toner onto a print paper and delivers it to the delivery tray.

The operation of the fixing/delivery unit is explained in the following.

1) The print paper fed from the pick-up/feed unit is fused the toner by the fixing film and the pressure roller.

2) The print paper delivered from the fixing unit is delivered to the face-down delivery tray or the face-up delivery slot.

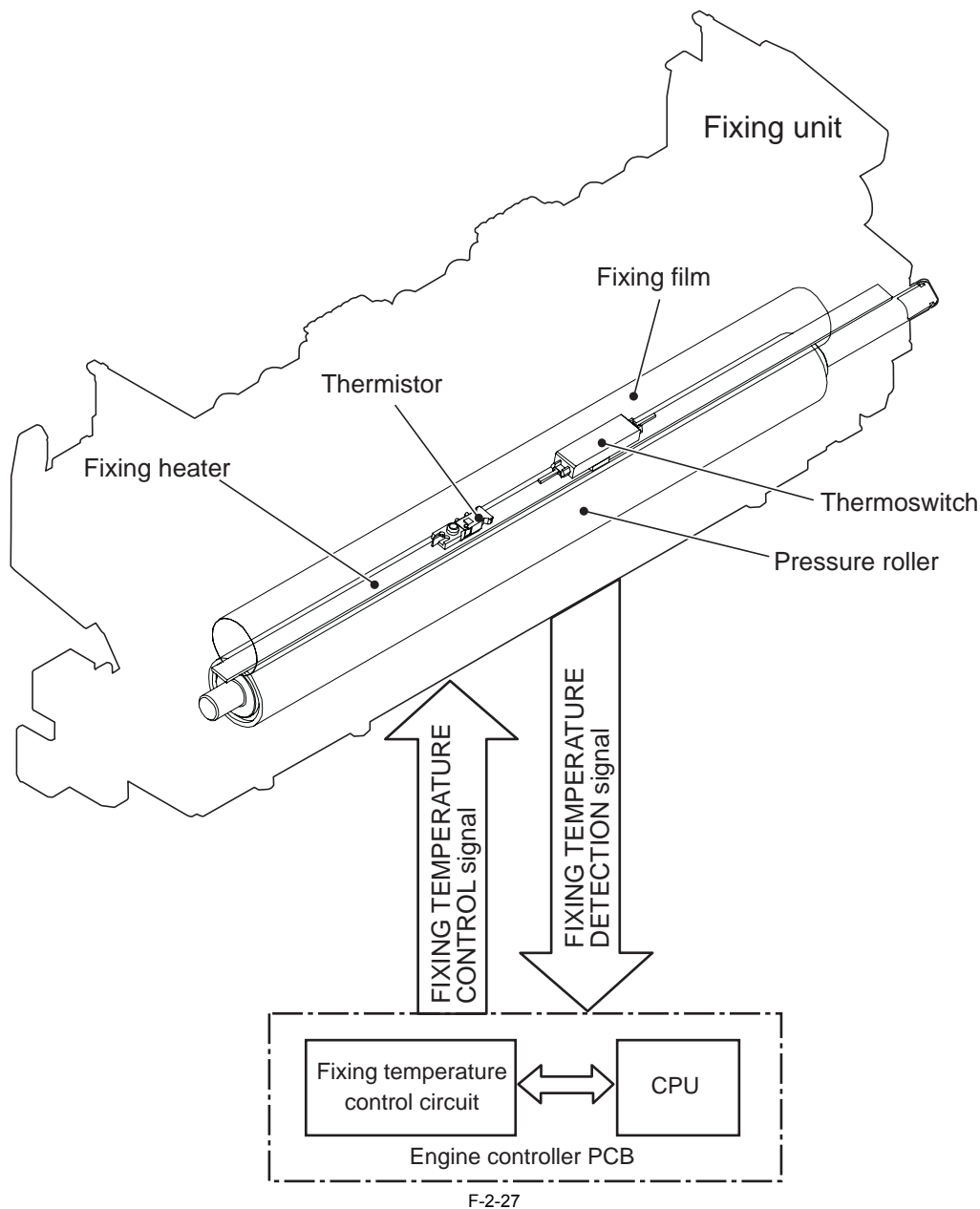
When the engine controller detects that the heater temperature reaches 55 deg C after the last rotation is completed, it drives the main motor for 100msec. and dislocates the nip part. This prevents the toner adhering to the pressure roller.

The fixing unit of this printer utilizes the on-demand fixing method. It is structured as shown below.

- Heater:  
This fixing unit incorporates one heater.  
Fixing heater (H1): To heat the fixing film (ceramic heater)
- Thermistor:  
This fixing unit incorporates one thermistor.  
Thermistor (TH1): Sit almost at the center of the fixing film. (contact type)  
To control the temperature of the fixing film
- Thermal switch:  
Thermoswitch (TP1): Sit almost at the center of the fixing film (contact type)  
If the temperature of the heater rises abnormally high, the contact gets broken and cuts off the AC voltage supply to the fixing heater to interrupt the power supply to the heater.

The temperature control of the fixing unit incorporated as above is operated by the fixing temperature control circuit according to the command from the CPU (IC201) on the DC controller.

The followings describe the each circuit and function of the temperature control of the fixing unit.



F-2-27



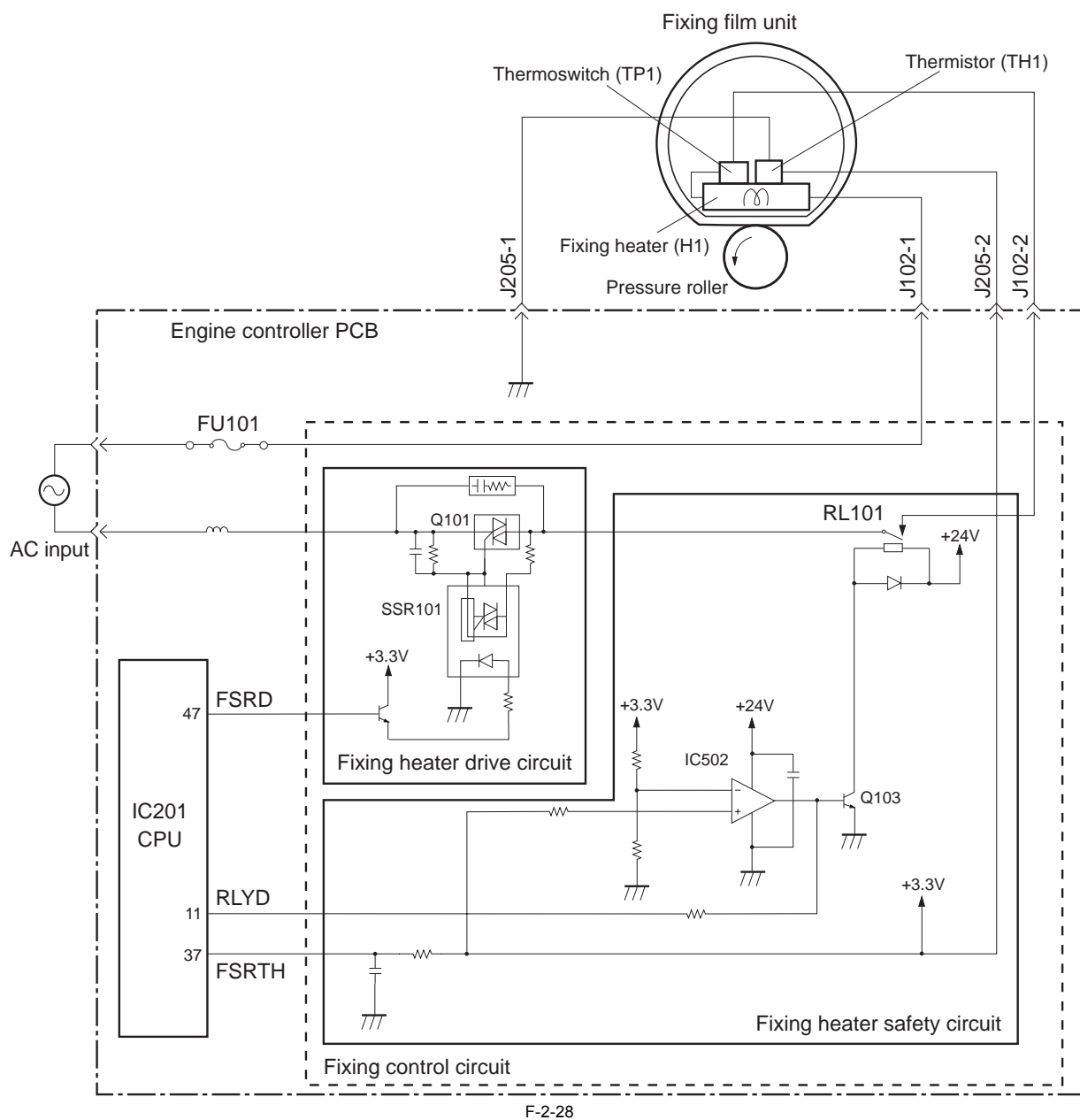
## 2.8.2 Various Control Mechanisms

### 2.8.2.1 Fixing Temperature Control

#### 2.8.2.1.1 Fixing temperature control

0011-2488

The fixing temperature control detects the surface temperature of the fixing heater. It controls the drive signals of the fixing heater and maintains its temperature at the targeted temperature.



F-2-28

The temperature control of the fixing heater is performed by the following four modes.

1) Initial temperature control

This control initializes the temperature of the fixing heater at the normal targeted temperature after the print command is input to the engine controller.

2) Normal temperature control

This control maintains the temperature of the fixing heater at the normally targeted temperature during print operation.

The target temperature may be any of 7 settings, used according to the selected fixing mode. Any of these modes is selected according to the settings of the driver and such parameters as paper size and the number of printouts.

The following shows the relationship between the paper type setting and the fixing mode in relation to the fixing target temperature:

T-2-3

Paper type selected for driver	Fixing target temperature
Plain paper	195 to 190 deg C
Plain paper L	180 to 160 deg C
Heavy paper 1	210 to 200 deg C
Heavy paper 2	210 to 200 deg C
Transparency	190 to 185 deg C
Envelop	205 to 195 deg C
Label	210 to 200 deg C

3) Between-sheets temperature control

This control maintains the temperature of the fixing heater below the normally targeted temperature during the continuous printing in order to prevent the

temperature rise of between-sheets.

The temperature of the fixing heater is detected by the thermistor (TH1) on the fixing heater.

If the surface temperature rises, the resistance value of the thermistor decreases, which allows the voltage of the FIXING HEATER TEMPERATURE signal (FSRTH) to decrease.

The CPU (IC201) on the engine controller monitors the voltage of the FSRTH signal. It outputs the FIXING HEATER DRIVE signal (FSRD) depends on the voltage and turns the phototriac coupler (SSR101) ON/OFF to maintain the temperature at specified temperature. The CPU starts the fixing heater temperature control to rise the temperature at 100 deg C once the power switch is turned ON. This brings the grease melt enough, because the viscosity of the grease in the fixing unit is high, and prevents the fixing film from the breakage. This control is not operated if the temperature is over 100 deg C when the power switch is turned ON.

4) down sequence; during continuous printing so as to prevent overheating of the edges of the heater.

In this control, the CPU of the engine controller checks the length and width of paper; if the size of the paper matches a specific set of conditions, the machine is shifted to long narrow mode (Note) or small paper mode regardless of the settings of the driver.

In this mode, the CPU forces the printing speed to decrease conversely increasing the distance between sheets, thereby increasing the sensitivity of the thermistor located in the middle of the fixing heater and, consequently, preventing the edges of the heater from overheating.

The following shows the relationship between the printing speed and the conditions used to make a shift to this mode:

T-2-4

Down-sequence mode	Paper length	Paper width	Printing speed (ppm)
Small size paper mode	272mm or less	-	10-->6-->4
Long narrow paper mode	272mm or more	197mm or more	4



The term "long narrow paper" refers to a type of paper that is narrow in width and long in length.

## 2.8.2.2 Protective Functions

### 2.8.2.2.1 Protective function

0011-2493

The printer utilizes the following three protective functions to prevent the abnormal temperature rise of the fixing heater.

- CPU
- Fixing heater safety circuit
- Thermoswitch

#### 1) Protective function by the CPU

The CPU constantly monitors the voltage of the thermistor. The CPU interrupts a power supply to the fixing heater when the fixing temperature abnormally exceeds the specified value.

The CPU puts the FIXING HEATER DRIVE signal (FSRD) into "L" and turns the phototriac coupler (SSR101) OFF to interrupt the power supply to the fixing heater, when the temperature of the fixing heater rises abnormally high and the voltage of the thermistor is lower than approx. 0.9 V (equivalent to 220 deg C).

#### 2) Protective function by the fixing heater safety circuit

The fixing heater safety circuit constantly monitors the voltage of the thermistor. This circuit interrupts a power supply to the fixing heater regardless of the commands from the CPU when the fixing temperature abnormally exceeds the specified value.

The comparator (IC501) outputs "L" and the transistor (Q103) is turned OFF, when the temperature of the fixing heater rises abnormally high and the thermistor voltage gets under approx. 0.5 V (equivalent to 280 deg C). Then the relay (RL101) is turned OFF, regardless of the RELAY DRIVE signal (RLYD) output from the CPU, in order to interrupt the power supply to the fixing heater.

#### 3) Protective function by the thermoswitch

The contact point of the thermoswitch gets broken and the AC voltage supply to the fixing heater is cut off, when the temperature of the fixing heater rises abnormally high and the temperature of the thermoswitch exceeds approx. 230 deg C. It results in the interruption of the power supply to the fixing heater.

### 2.8.2.2.2 failure detection

0011-2494

If the printer meets any of following conditions, the CPU determines the fixing unit failure and notifies it to the video controller.

- 1) The temperature of the fixing unit does not exceed 45 deg C within 1.39 sec. after the temperature control is started.
- 2) The temperature of the fixing unit does not reach the targeted temperature -10 deg C within 63 sec. after the wait sequence is started.
- 3) The fixing unit temperature is monitored every 5 msec., and the temperature exceeds 220 deg C for 30 times continuously.
- 4) The thermistor voltage is monitored every 5 msec., and the temperature is lower than 100 deg C during the normal temperature control or lower than 55 deg C during the between-sheets temperature control or the cleaning mode for 240 times continuously.
- 5) The temperature of the fixing unit is monitored every 200 msec., and the counter reaches 150 by the following sequences; +1 to the counter if the temperature is -100 deg C below of its targeted temperature, -1 to the counter if the temperature is -100 deg C over of its targeted temperature.
- 6) The temperature of the thermistor is detected every 5 msec. during the control and it shows under 20 deg C for 100 times continuously after the temperature of the fixing unit exceeds 50 deg C at least once.

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## Chapter 3 DISASSEMBLY AND ASSEMBLY

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## 3.1 EXTERNAL AND CONTROLS SYSTEM

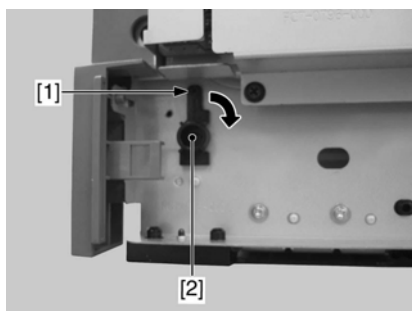
### 3.1.1 Rear Cover

#### 3.1.1.1 Preparation for removing the rear cover unit.

- 1) Detach the left cover. [\(page 3-1\)](#)Reference[Detaching the left cover]
- 2) Detach the right cover. [\(page 3-1\)](#)Reference[Detaching the right cover]

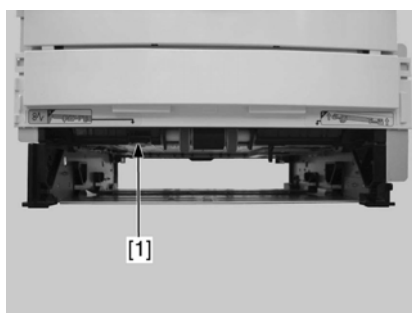
#### 3.1.1.2 Removing the rear cover unit.

- 1) Release the claw [1] and turn the hinge [2] in 90 degrees clockwise to remove.



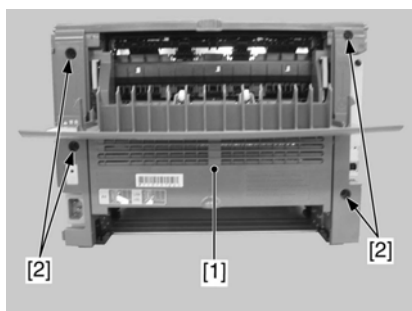
F-3-1

- 2) Push the lever [1] of duplexing unit and open it.



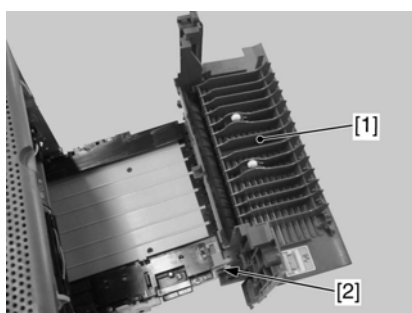
F-3-2

- 3) Pull out the rear cover unit [1] and the duplexing unit together.  
- 4 screws [2]



F-3-3

- 4) Remove the rear cover unit [1].  
- A boss [2]



F-3-4

### 3.1.2 Right Cover

#### 3.1.2.1 Detaching the right cover

- 1) Open the front cover [1].



F-3-5

- 2) Detach the right cover [1].  
- 3 claws [2]



F-3-6

### 3.1.3 Left Cover

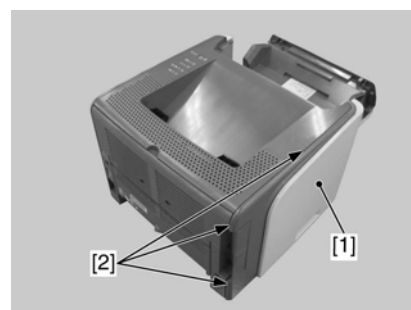
#### 3.1.3.1 Detaching the left cover

- 1) Open the front cover [1].



F-3-7

- 2) Detach the left cover [1].  
- 3 claws [2]



F-3-8

### 3.1.4 Upper Cover

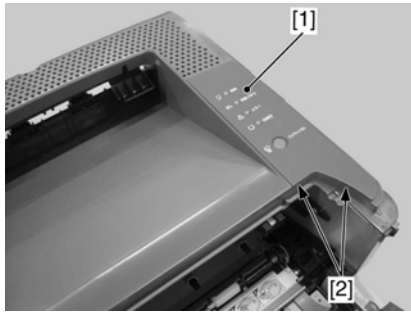
#### 3.1.4.1 Preparation for detaching the upper cover unit

- 1) Detach the left cover. [\(page 3-1\)](#)Reference[Detaching the left cover]
- 2) Detach the right cover. [\(page 3-1\)](#)Reference[Detaching the right cover]
- 3) Detach the rear cover. [\(page 3-1\)](#)Reference[Removing the rear cover unit.]



### 3.1.4.2 Detaching the upper cover unit

- 1) Detach the control panel [1]
  - 2 claws [2]
  - A connector [3]



F-3-9

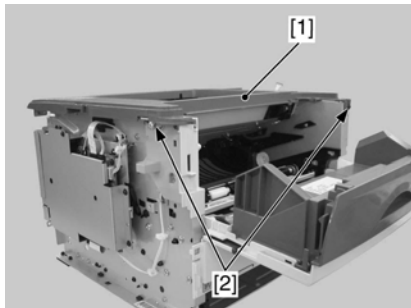


F-3-10

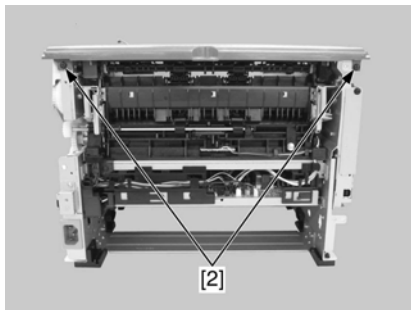


When detaching the control panel, be sure not to lift it up too much after releasing the claws as a connector is connected to the panel.

- 2) Detach the upper cover [1].
  - 4 screws [2]



F-3-11



F-3-12

### 3.1.5 Front Cover

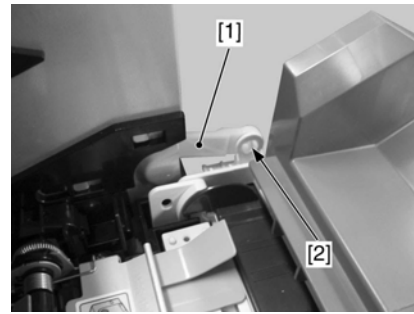
#### 3.1.5.1 Preparation for removing the front cover unit

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]

#### 3.1.5.2 Removing the front cover unit

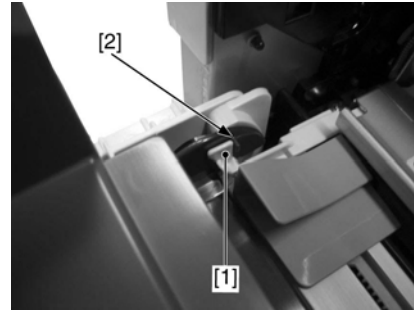
- 1) Remove the cartridge arm [1].

- A screw [2]



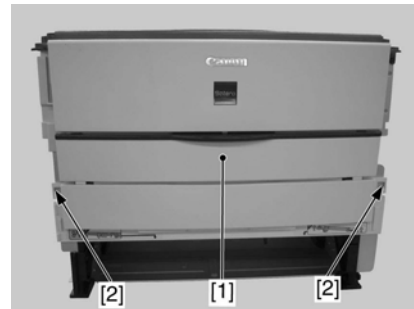
F-3-13

- 2) Move the arm [1] to release from the boss [2].



F-3-14

- 3) Remove the front cover unit [1].
  - 2 claws [2]



F-3-15

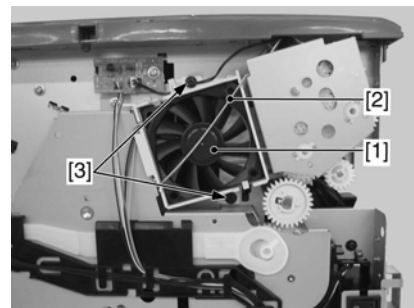
### 3.1.6 Main Drive Unit

#### 3.1.6.1 Preparation for removing the main drive assembly

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]

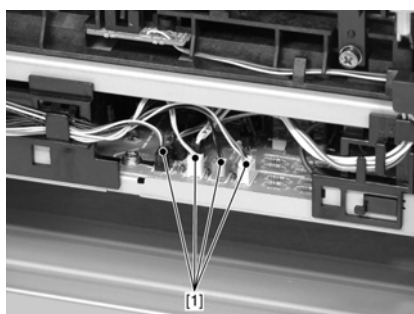
#### 3.1.6.2 Removing the main drive assembly

- 1) Remove the fan unit [1].
  - A piece of wire [2]
  - 2 screws [3]



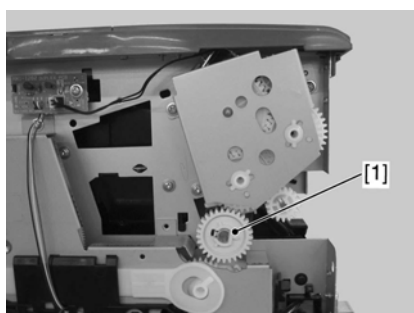
F-3-16

- 2) Disconnect four connectors [1] to release from harness guide.



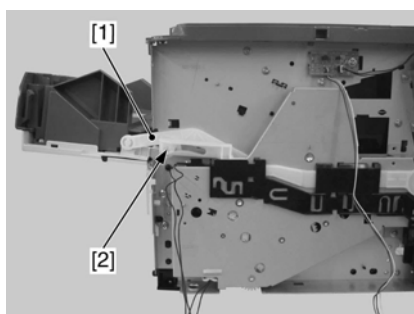
F-3-17

- 3) Disengage the gear [1].



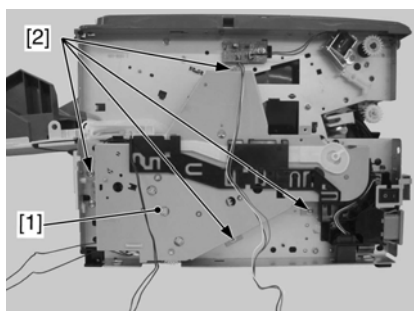
F-3-18

- 4) Release the cartridge arm [1].  
- A claw [2]



F-3-19

- 5) Remove the main drive assembly.  
- 4 screws [2]



F-3-20

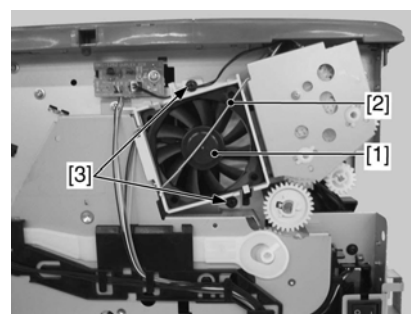


The gear of the main drive assembly is not fixed to the sheet metal. Therefore, be careful that they do not come apart when removing the assembly.

### 3.1.7 Duplexing Drive Unit

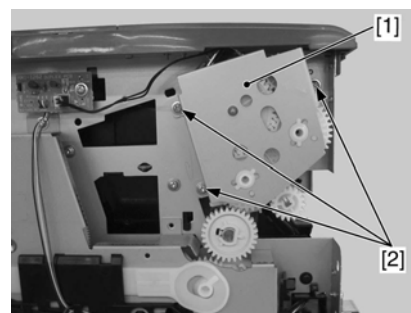
#### 3.1.7.1 Removing the duplexing drive assembly

- 1) Detach the right cover. (page 3-1) Reference[Detaching the right cover]
- 2) Remove the fan assembly [1].  
- A piece of wire [2]  
- 2 screws [3]



F-3-21

- 3) Remove the duplexing drive assembly [1].  
- 3 screws [2]



F-3-22

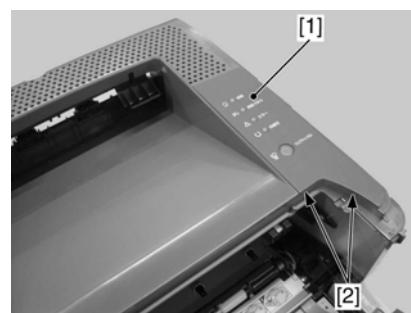


The gear of the duplexing drive assembly is not fixed to the sheet metal. Therefore, be careful that they do not come apart when removing the assembly.

### 3.1.8 Operation Panel Unit

#### 3.1.8.1 Detaching the control panel

- 1) Detach the control panel [1]  
- 2 claws [2]  
- A connector [3]



F-3-23



F-3-24



When detaching the control panel, be sure not to lift it up too much after releasing the claws as a connector is connected to the panel.

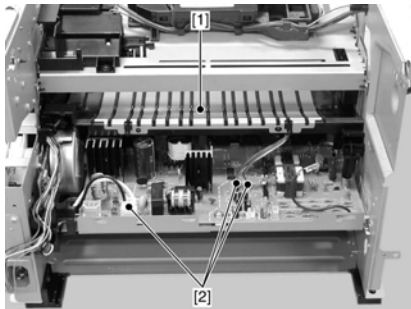
### 3.1.9 Engine controller board

#### 3.1.9.1 Preparation for removing the engine controller PCB

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2)Reference[Detaching the upper cover unit]
- 5) Remove the video controller PCB. (page 3-5)éQèý[ÉrÉfÉiÉrÉiÉgÉçÄ[ÉääÖðHäÖi-ÇÄéÊäOÇµ]
- 6) Remove the USB PCB. (page 3-5)éQèý[USBäÖðHäÖi-ÇÄéÊäOÇµ]
- 7) Remove the fixing assembly. (page 3-8)Reference[Removing the fixing assembly]
- 8) Remove the door switch unit. (page 3-5)Reference[Removing the door switch]

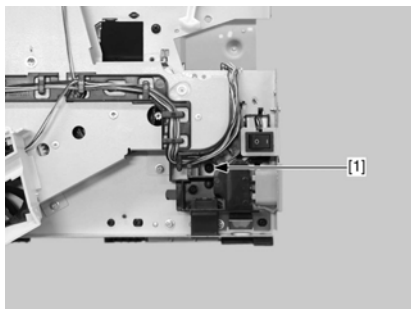
#### 3.1.9.2 Removing the engine controller PCB

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



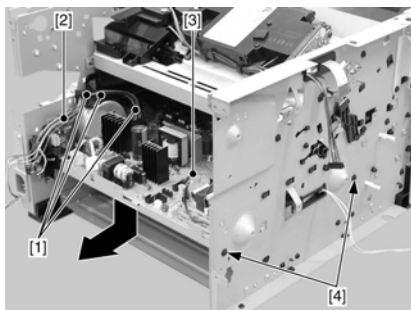
F-3-25

- 2) Unscrew a screw [1] at the right side of main body.



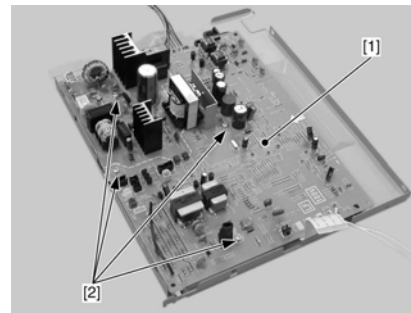
F-3-26

- 3) Release the harness [2] from the harness guide [1].
- 4) Open the main body frame slightly to both sides, lower the engine controller assembly [3], and pull it out to remove.  
- 2 screws [4]



F-3-27

- 5) Remove the engine controller PCB [1].  
- 4 screws [2]

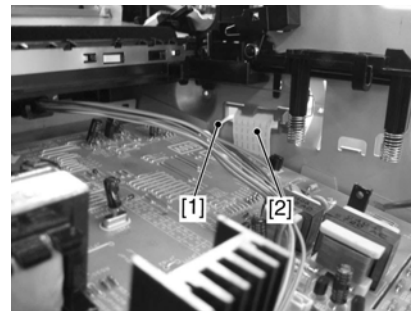


F-3-28



#### Note when mounting the engine controller PCB

When mounting the engine controller PCB, be sure to run the harness [1] and the flat cable [2] through the hole of sheet metal beforehand.



F-3-29

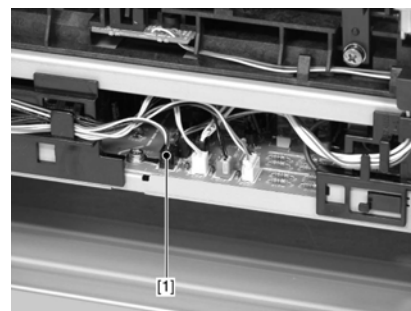
### 3.1.10 Duplexing Driver Board

#### 3.1.10.1 Preparation for removing the duplexing driver PCB

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]

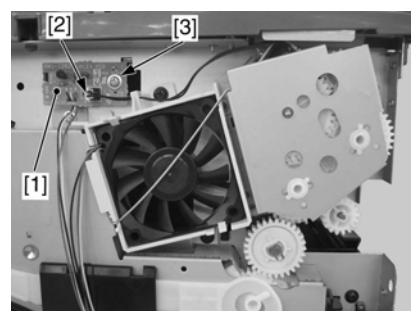
#### 3.1.10.2 Removing the duplexing driver PCB

- 1) Disconnect a connector [1] to release it from the harness guide.



F-3-30

- 2) Remove the duplexing driver PCB [1].  
- A connector [2]  
- A screw [3]

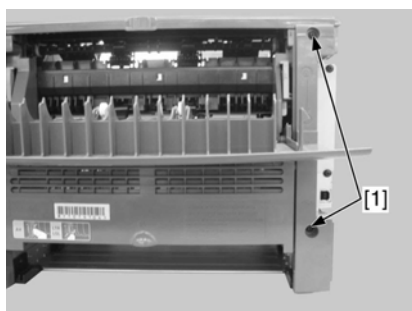


F-3-31

### 3.1.11 Video Controller Board

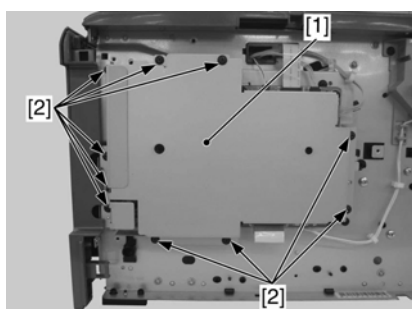
#### 3.1.11.1 Removing the video controller PCB

- 1) Detach the left cover. [\(page 3-1\)](#) Reference[Detaching the left cover]
- 2) Unscrew two screws [1] of the rear cover.



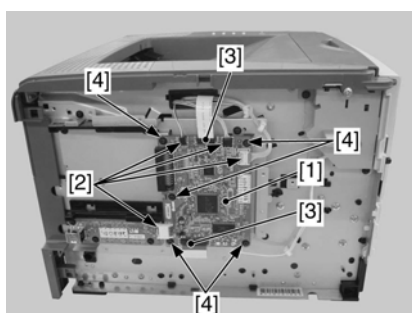
F-3-32

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



F-3-33

- 4) Remove the video controller PCB [1].  
- 4 connectors [2]  
- 2 flat cables [3]  
- 5 screws [4]



F-3-34

### 3.1.12 USB Board

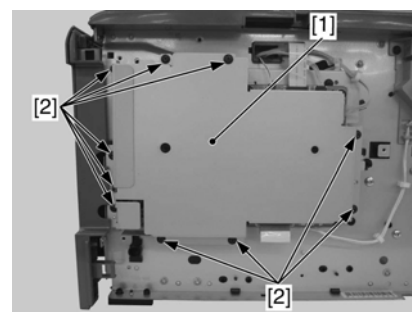
#### 3.1.12.1 Removing the USB PCB

- 1) Detach the left cover. [\(page 3-1\)](#) Reference[Detaching the left cover]
- 2) Unscrew two screws [1] of the rear cover.



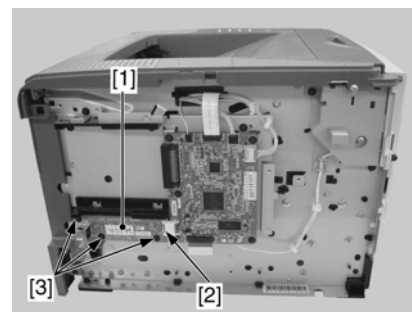
F-3-35

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



F-3-36

- 4) Remove the USB PCB [1].  
- A connector [2]  
- 3 screws [3]

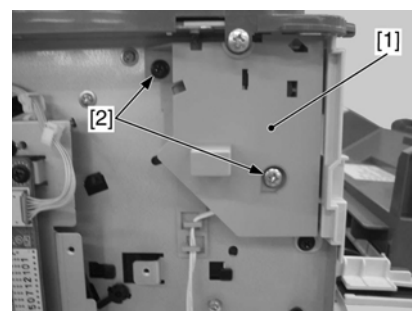


F-3-37

### 3.1.13 Door Switch

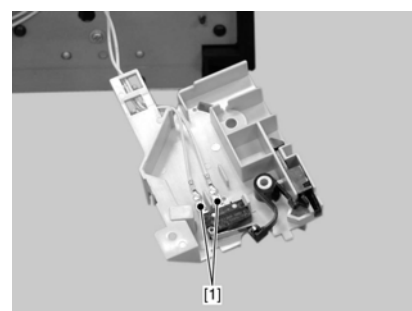
#### 3.1.13.1 Removing the door switch

- 1) Detach the left cover. [\(page 3-1\)](#) Reference[Detaching the left cover]
- 2) Remove the door switch [1].  
- 2 screws [2]



F-3-38

- 3) Disconnect two connectors [1].



F-3-39

### 3.1.14 Main Body Fan

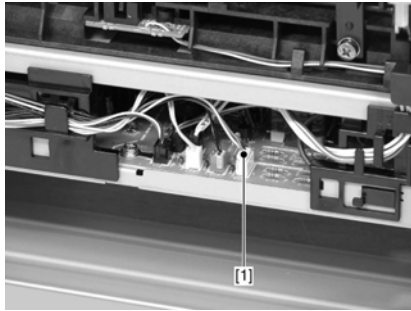
#### 3.1.14.1 Preparation for removing the fan

- 1) Detach the left cover. [\(page 3-1\)](#) Reference[Detaching the left cover]
- 2) Detach the right cover. [\(page 3-1\)](#) Reference[Detaching the right cover]
- 3) Detach the rear cover. [\(page 3-1\)](#) Reference[Removing the rear cover unit.]



### 3.1.14.2 Removing the fan

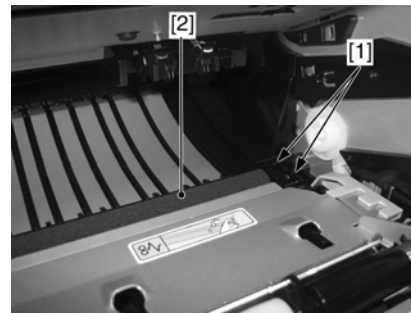
- 1) Disconnect the connector [1] and release it from the harness guide.
  - A connector [1]



F-3-40

- 2) Remove the fan [1].
  - A piece of wire [2]
  - 2 claws [3]

F-3-41



F-3-44



When assembling / disassembling the transfer corona roller, be sure to hold the shaft or shaft support of the roller. Do not hold the sponge.

## 3.2 LASER EXPOSURE SYSTEM

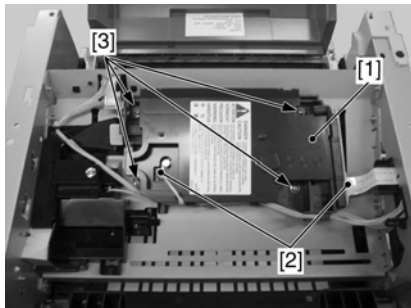
### 3.2.1 Laser Scanner Unit

#### 3.2.1.1 Preparation for removing the laser scanner unit

- 1) Detach the left cover. (page 3-1) Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1) Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1) Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2) Reference[Detaching the upper cover unit]

#### 3.2.1.2 Removing the laser scanner unit

- 1) Remove the laser scanner unit [1].
  - 2 connectors [2]
  - 4 screws [3]



F-3-42

## 3.3 IMAGE FORMATION SYSTEM

### 3.3.1 Transfer Charging Roller

#### 3.3.1.1 Removing the transfer corona roller

- 1) Open the front cover [1].



F-3-43

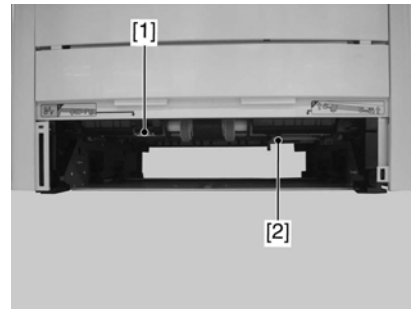
- 2) Lift up two claws [1] of the shaft support and slide out the transfer corona roller [2] to right.

## 3.4 PICKUP AND FEEDING SYSTEM

### 3.4.1 Cassette Pickup Roller

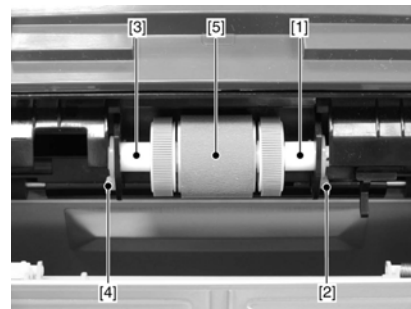
#### 3.4.1.1 Cassette pick-up roller

- 1) Pull out the cassette.
- 2) Push the lever [1] to open the duplexing unit [2].



F-3-45

- 3) Remove the right hinge [1].
  - A claw [2]
- 4) Remove the left hinge [3].
  - A claw [4]
- 5) Remove the pick-up roller [5].



F-3-46

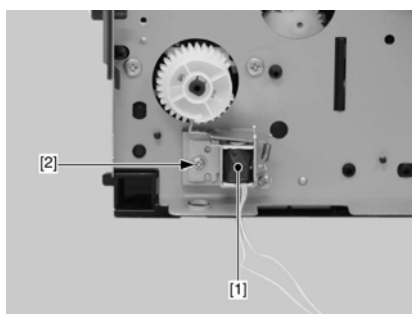
### 3.4.2 Cassette Pickup solenoid

#### 3.4.2.1 Preparation for removing the cassette pick-up solenoid

- 1) Detach the left cover. (page 3-1) Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1) Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1) Reference[Removing the rear cover unit.]
- 4) Remove the main drive assembly. (page 3-2) Reference[Removing the main drive assembly]

#### 3.4.2.2 Removing the cassette pick-up solenoid

- 1) Remove the cassette pick-up solenoid [1].
  - A screw [2]

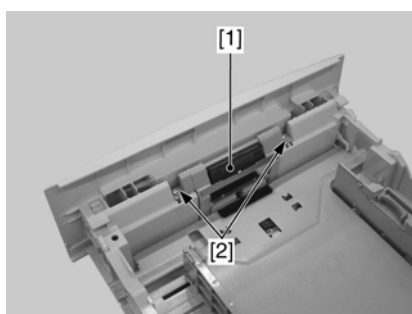


F-3-47

### 3.4.3 Cassette Separation Pad

#### 3.4.3.1 Removing the separation pad

- 1) Pull out the cassette.
- 2) Remove the separation pad [1].  
- 2 screws [2]



F-3-48

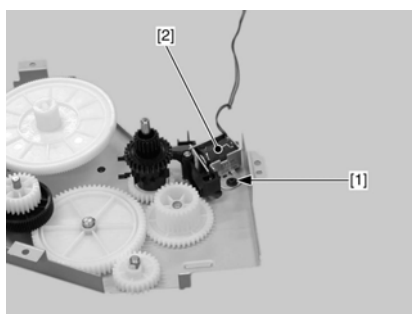
### 3.4.4 Multi-purpose Pickup Solenoid

#### 3.4.4.1 Preparation for removing the manual pick-up solenoid

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]
- 4) Remove the main drive assembly. (page 3-2)Reference[Removing the main drive assembly]

#### 3.4.4.2 Removing the manual pick-up solenoid

- 1) Remove the manual pick-up solenoid [1].  
- A screw [2]



F-3-49

### 3.4.5 Registration Roller

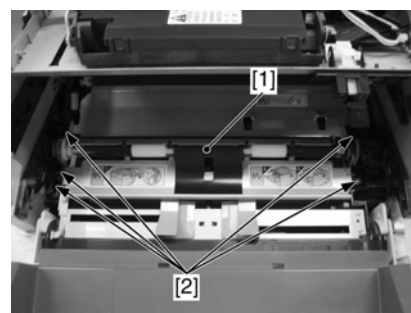
#### 3.4.5.1 Preparation for removing the registration roller

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2)Reference[Detaching the upper cover unit]

#### 3.4.5.2 Removing the registration roller

- 1) Remove the registration roller [1].

- 5 screws [2]



F-3-50

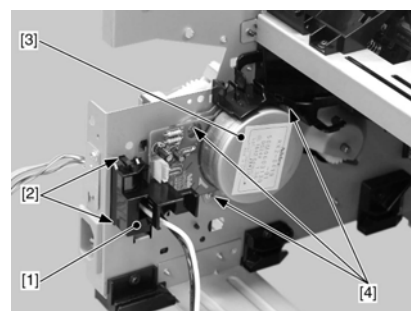
### 3.4.6 Main Motor

#### 3.4.6.1 Preparation for removing the main motor

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2)Reference[Detaching the upper cover unit]
- 5) Remove the video controller PCB. (page 3-5)Reference[Removing the video controller PCB]
- 6) Remove the USB PCB. (page 3-5)Reference[Removing the USB PCB]
- 7) Remove the fixing assembly. (page 3-8)Reference[Removing the fixing assembly]
- 8) Remove the engine controller PCB. (page 3-4)Reference[Removing the engine controller PCB]

#### 3.4.6.2 Removing the main motor

- 1) Release two claws of the harness guide [1].
- 2) Remove the main motor [3] and the harness guide.  
- 3 screws [4]



F-3-51

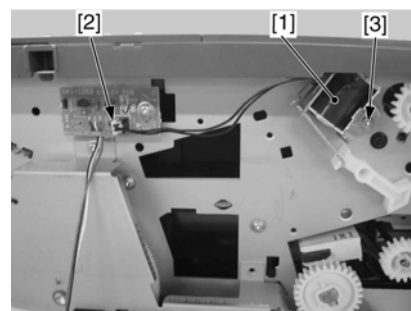
### 3.4.7 Reversal Solenoid

#### 3.4.7.1 Preparation for removing the reverse solenoid

- 1) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 2) Remove the duplexing drive assembly. (page 3-3)Reference[Removing the duplexing drive assembly]

#### 3.4.7.2 Removing the reverse solenoid

- 1) Remove the reverse solenoid [1].  
- A connector [2]  
- 3 screws [3]



F-3-52

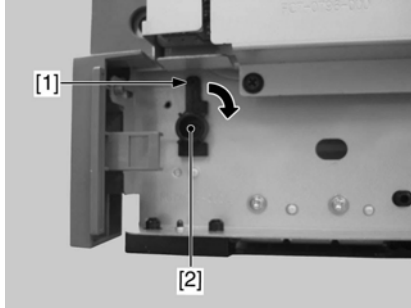
### 3.4.8 Duplexing Unit

#### 3.4.8.1 Preparation for removing the duplexing unit

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]

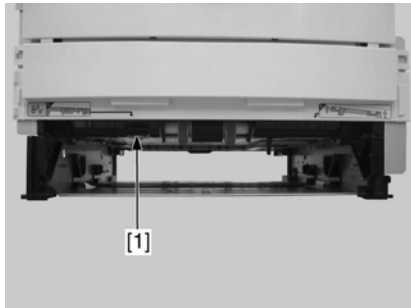
#### 3.4.8.2 Removing the duplexing unit

- 1) Release the claw [1] and turn the hinge [2] in 90 degrees clockwise to remove.



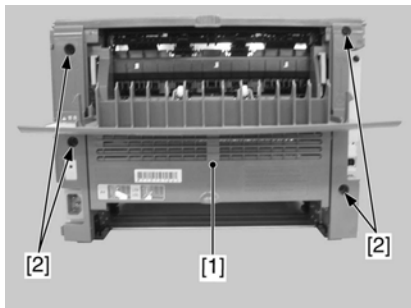
F-3-53

- 2) Push the lever [1] of the duplexing unit to open the unit.



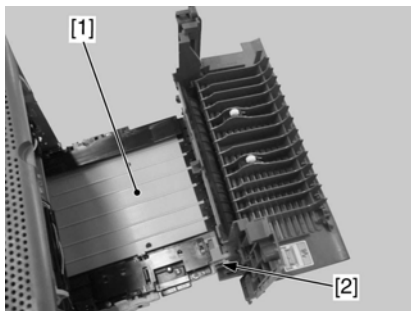
F-3-54

- 3) Pull out the rear cover [1] and the duplexing unit.  
- 4 screws [2]



F-3-55

- 4) Remove the duplexing unit [1].  
- A boss [2]



F-3-56

### 3.5 FIXING SYSTEM

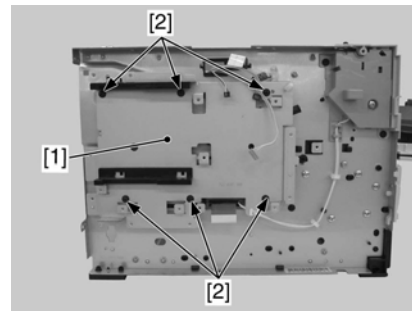
#### 3.5.1 Fixing Unit

##### 3.5.1.1 Preparation for removing the fixing assembly

- 1) Detach the left cover. (page 3-1)Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1)Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1)Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2)Reference[Detaching the upper cover unit]
- 5) Remove the video controller PCB. (page 3-5)Reference[Removing the video controller PCB]
- 6) Remove the USB PCB. (page 3-5)Reference[Removing the USB PCB]

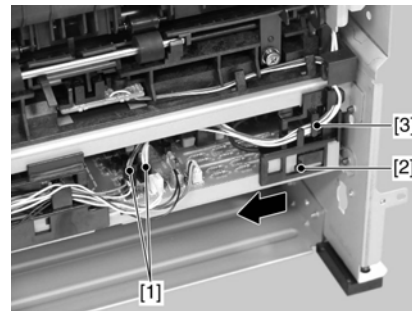
##### 3.5.1.2 Removing the fixing assembly

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



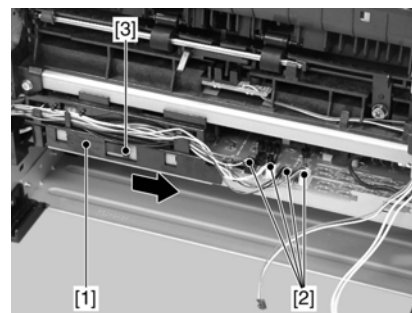
F-3-57

- 2) Slide out the harness guide [1] to left.  
- 2 connectors [2]  
- A claw [3]



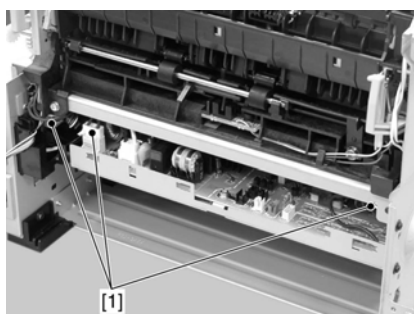
F-3-58

- 3) Slide out the harness guide [1] to right.  
- 4 connectors [2]  
- A claw [3]



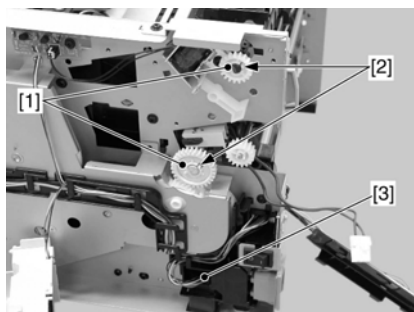
F-3-59

- 4) Disconnect 3 connectors [1].



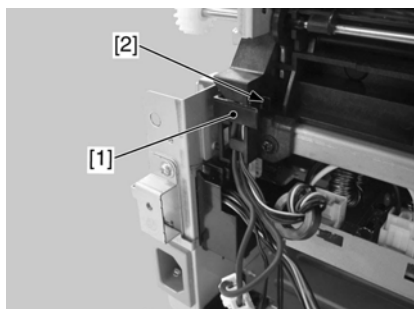
F-3-60

- 5) Disengage two gears [1].  
- 2 claws [2]
- 6) Disconnect a connector [3].



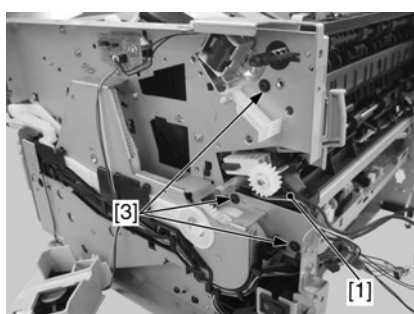
F-3-61

- 7) Remove the harness retainer [1].  
- A claw [2]

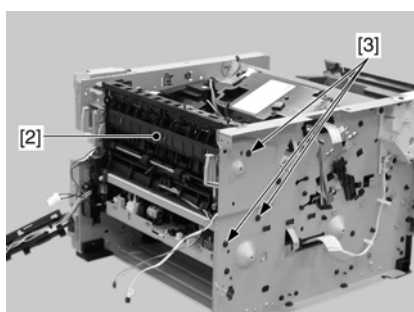


F-3-62

- 8) Release the harness [1] from the guide and remove the fixing assembly.  
- 6 screws [3]



F-3-63



F-3-64

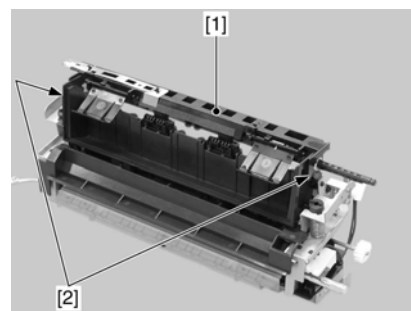
## 3.5.2 Fixing Film Unit

### 3.5.2.1 Preparation for removing the fixing film unit

- 1) Detach the left cover. (page 3-1) Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1) Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1) Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2) Reference[Detaching the upper cover unit]
- 5) Remove the video controller PCB. (page 3-5) Reference[Removing the video controller PCB]
- 6) Remove the USB PCB. (page 3-5) Reference[Removing the USB PCB]
- 7) Remove the fixing assembly. (page 3-8) Reference[Removing the fixing assembly]

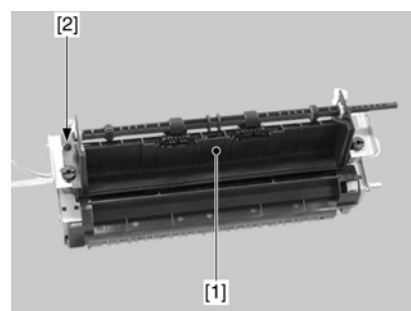
### 3.5.2.2 Removing the fixing film

- 1) Remove the paper holder [1].  
- 2 claws [2]



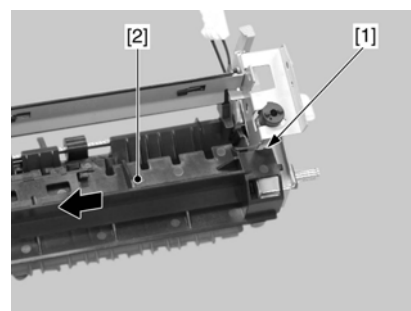
F-3-65

- 2) Remove the delivery roller [1].  
- A screw [2]



F-3-66

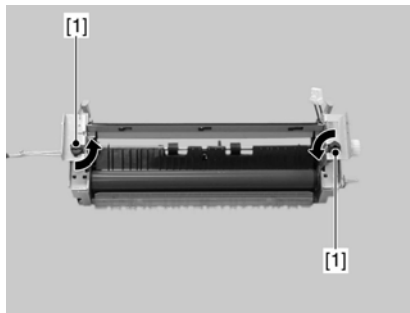
- 3) Slide in the direction of arrow, release the claw [1], and remove the fixing inlet guide [2].



F-3-67

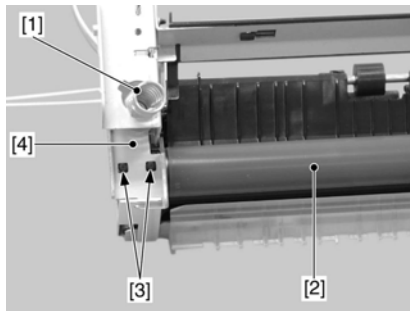
- 4) Push down the spring retainer [1], turn it in 90 degrees in the direction of arrow, and remove it.



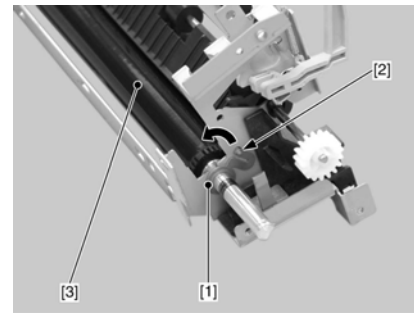


F-3-68

- 5) Remove the spring [1].
- 6) Remove the fixing film.
  - 4 Bosses [3] (2 each at right and left)
  - 2 pressure plates [4] (Right and left)



F-3-69



F-3-71

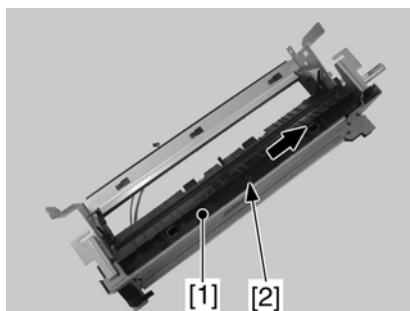
### 3.5.3 Fixing Pressure Roller

#### 3.5.3.1 Preparation for removing the fixing pressure roller

- 1) Detach the left cover. (page 3-1) Reference[Detaching the left cover]
- 2) Detach the right cover. (page 3-1) Reference[Detaching the right cover]
- 3) Detach the rear cover. (page 3-1) Reference[Removing the rear cover unit.]
- 4) Detach the upper cover. (page 3-2) Reference[Detaching the upper cover unit]
- 5) Remove the video controller PCB. (page 3-5) Reference[Removing the video controller PCB]
- 6) Remove the USB PCB. (page 3-5) Reference[Removing the USB PCB]
- 7) Remove the fixing assembly. (page 3-8) Reference[Removing the fixing assembly]
- 8) Remove the fixing film. (page 3-9) Reference[Removing the fixing film]

#### 3.5.3.2 Removing the fixing pressure roller

- 1) Slide out the fixing inlet guide (lower) [1] in the direction of arrow.
  - A screw [2]



F-3-70

- 2) Turn the shaft support [1] in the direction of arrow to remove.
  - A claw [2]
- 3) Remove the pressure roller [3].

---

## 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.

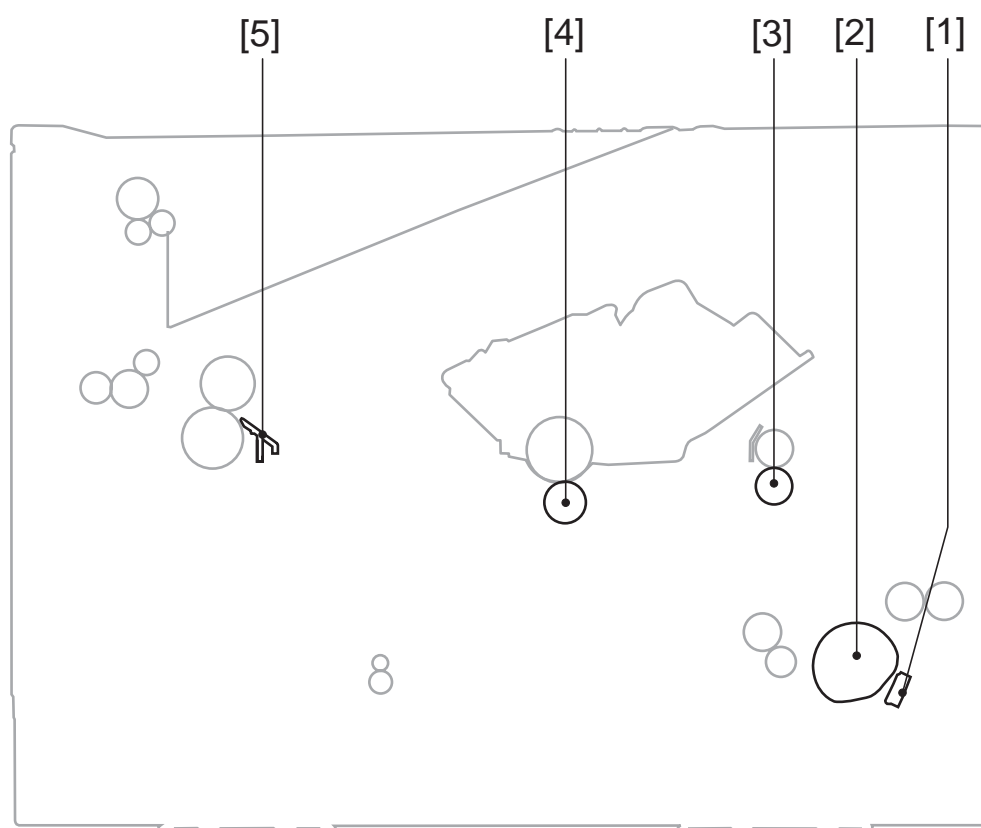
## 4.3 Periodical Service

### 4.3.1 Periodic Service

No periodic services are required to this printer.

## 4.4 Cleaning

### 4.4.1 Cleaning During Service Visit



F-4-1

**1. Separation pad**

Wipe the rubber part with the dry lint-free paper.

**2. Pick up roller**

Wipe with the dry lint-free paper.

**3. Feed roller**

Wipe with the dry lint-free paper.

**4. Transfer charging roller**

The transfer charging roller is not to be touched or cleaned. If cleaning is unavoidable, do not touch the roller and do not contaminate the roller with solvent or oil. Clean with dry lint free paper. Do not use water or solvent. Make

**5. Fixing inlet guide**

Wipe with the dry lint-free paper.



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## Chapter 5 TROUBLESHOOTING

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## 5.1 MEASUREMENT AND ADJUSTMENT

### 5.1.1 Test Print

#### 5.1.1.1 Test Print

This test print is conducted in order to check if the printer engine works normally.

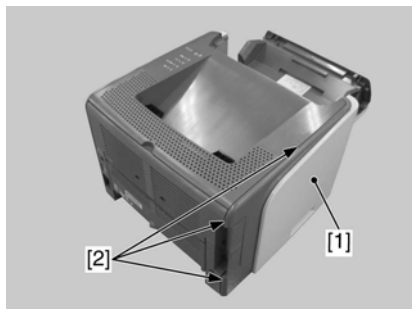
When this test printing is made, the test print pattern (horizontal lines) is printed as shown below.

While the printer is in STBY period press the test print switch located on the left side of the printer once and one page of engine test pattern is printed. The test pattern can be printed continuously if the switch is held down.

Accessing the Test Print Switch

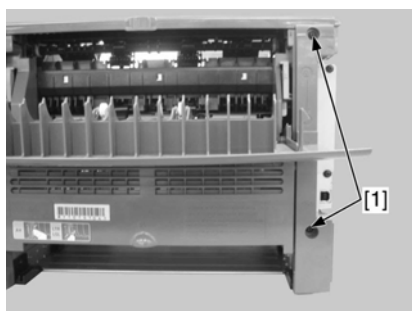
- 1) Detach the left cover [1].

- 3 claws [2]



F-5-1

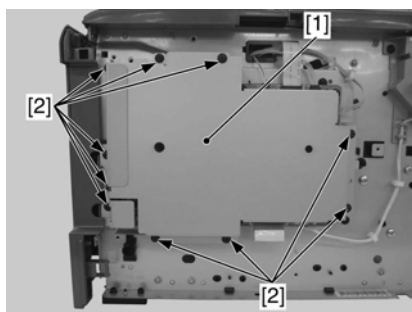
- 2) Unscrew two screws [1] of the rear cover.



F-5-2

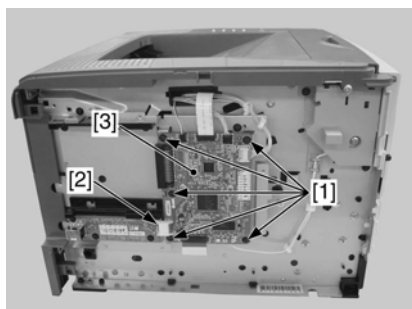
- 3) Remove the sheet metal [1].

- 10 screws [2]



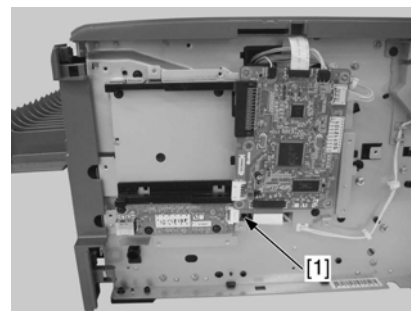
F-5-3

- 4) Remove 5 screws [1] and the connector [2], and slide the video controller PCB [3] to the upper side.



F-5-4

- 5) Insert a tool such as a driver into the guide hole [1] and press the Test Print switch.



F-5-5

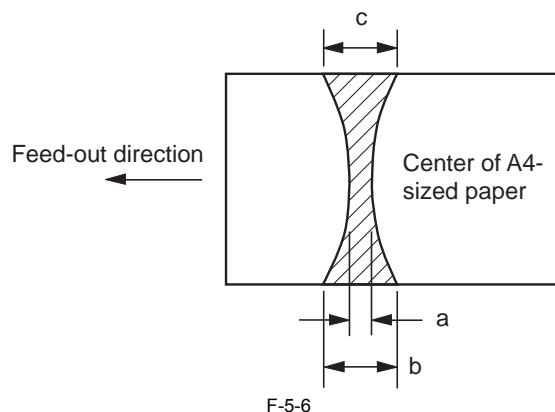
### 5.1.2 Mechanical Adjustment

#### 5.1.2.1 Checking the Nip Width (fixing pressure roller)

The nip width of the fixing unit is not adjustable in this printer, however, the incorrect nip width may cause the faulty fixing.

Follow the procedures below to check the nip width.

- 1) Make a solid black print of A4 size using an EP cartridge, and take the print to the customer's site.
  - 2) Place the solid black print, with the printed side facing down, in the manual feed tray of the printer.
  - 3) Open the face-up cover and perform face-up delivery.
  - 4) Press the test print switch.
  - 5) Turn OFF the printer when the leading edge of the paper is fed to the face-up delivery tray.
- Wait for 10 seconds, and then push down the jam removal lever of the fixing unit to pull out the paper from the printer
- 6) Measure the width of the glossy band across the paper and check that it meets the requirements.
    - Center (a): 5.6 mm to 9.0 mm
    - Right and left (b, c): 5.6 mm to 9.0 mm (Measure the 10 mm point from the paper edge)



F-5-6

## 5.2 SERVICE TOOLS

### 5.2.1 Standard Tools

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

T-5-1

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  M4, M5 Length : 363 mm
2	Jumper wire	TKN-0069	
3	Clearance gauge	CK-0057	
4	Compression spring scale	CK-0058	
5	Phillips screwdriver	CK-0101	M3, M4 Length: 155 mm M4, M5 Length: 191 mm M4, M5 Length: 85 mm
6	Phillips screwdriver	CK-0104	
7	Phillips screwdriver	CK-0105	
8	Phillips screwdriver	CK-0106	
9	Flat-blade screwdriver	CK-0111	6-piece set
10	Precision flat-blade screwdriver set	CK-0114	
11	Allen wrench set	CK-0151	5-piece set
12	File, fine	CK-0161	
13	Allen (hex) screwdriver	CK-0170	M4 Length: 107 mm
14	Diagonal cutting pliers	CK-0201	
15	Needle-nose pliers	CK-0202	
16	Pliers	CK-0203	Applied to the axis ring
17	Retaining ring pliers	CK-0205	
18	Crimper	CK-0218	Employed to measure 150 mm
19	Tweezers	CK-0302	
20	Ruler	CK-0303	
21	Mallet, plastic head	CK-0314	100cc 500SH/PKG
22	Brush	CK-0315	
23	Penlight	CK-0327	
24	Plastic bottle	CK-0327	
25	Lint-free paper	CK-0336	30cc 30cc
26	Oiler	CK-0349	
27	Plastic jar	CK-0351	
28	Digital multi-measure	FY9-2032	

### 5.2.2 Special Tools

No special tools are required for servicing this printer other than the standard tools.

### 5.2.3 Solvent/Oil List

T-5-2

No.	Name	Uses	Components	Remarks
1	Ethyl alcohol	Cleaning: oil and toner stains	C2H5-OH	- Purchase locally - Flammable: keep away from flame
2	Lubricant	Apply to gears and between gear and shaft.	Special oil Special solid lubricating material Lithium soap	- Tool No. HY9-0007 (20g tube)
3	Electricity grease	Apply to grounding plate	High performance grease	- Electricity grease - Tool No. CK-8007



Do not use alcohol to wipe external covers. Use a moist cloth (well wrung) to clean them.

## 5.3 ERROR CODE TABLE

### 5.3.1 Error Code

T-5-3

Error code	Major cause/detection	Remedy
E000	The Fixing heater has a fault.	- Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the engine controller PCB.
E100	The scanner assembly has a fault.	- Check the connector of the laser scanner assembly. - Replace the laser scanner assembly. - Replace the engine controller PCB.
E197	There is an engine communication error.	- Replace the engine controller PCB.
E747	There is a fault in the video controller memory.	- Replace the video controller PCB.
E805	The fan has a fault.	- Replace the fan. - Replace the engine controller PCB.

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## Chapter 6 APPENDIX

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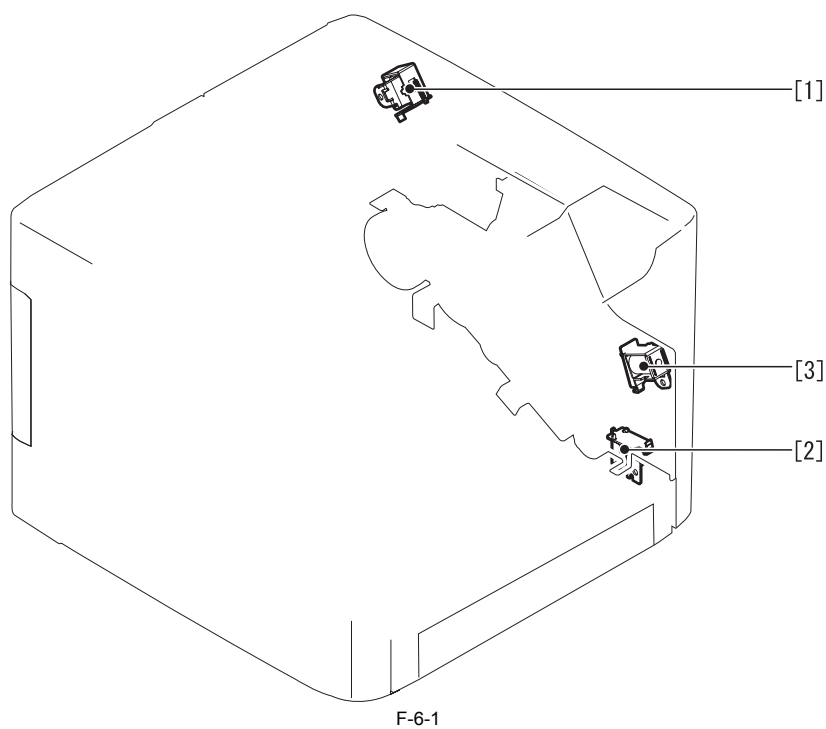




## 6.1 OUTLINE OF ELECTRICAL COMPONENTS

### 6.1.1 Clutch/Solenoid

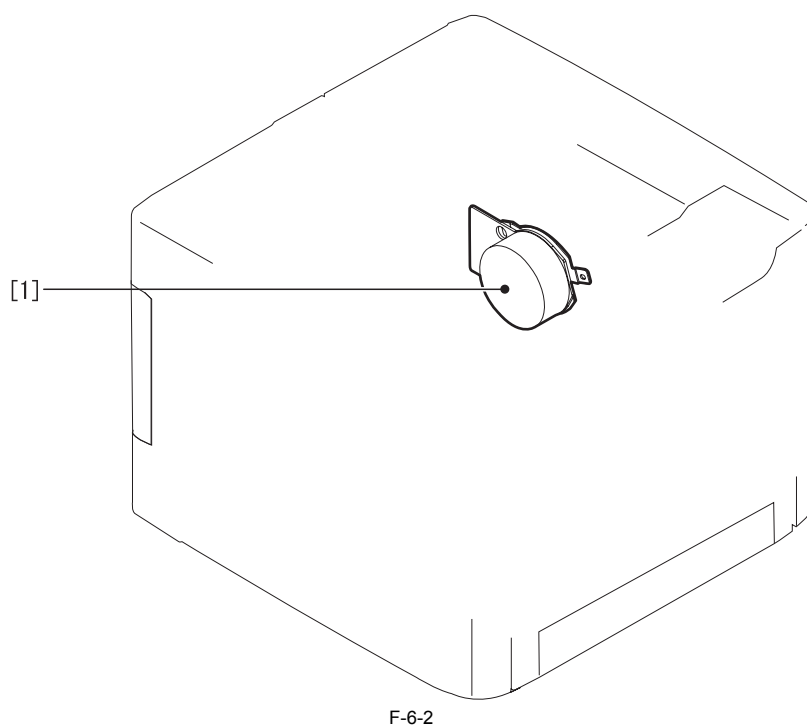
#### 6.1.1.1 Solenoid



- [1] Reversal solenoid
- [2] Cassette pick-up solenoid
- [3] Manual feed pick-up solenoid

### 6.1.2 Motor

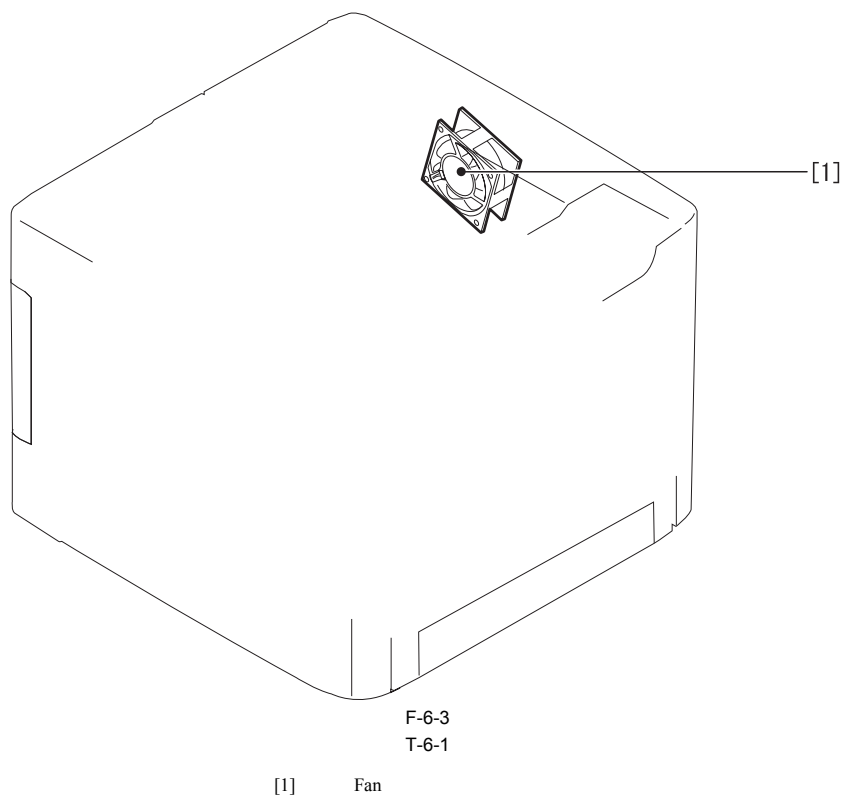
#### 6.1.2.1 Motor



- [1] Main motor

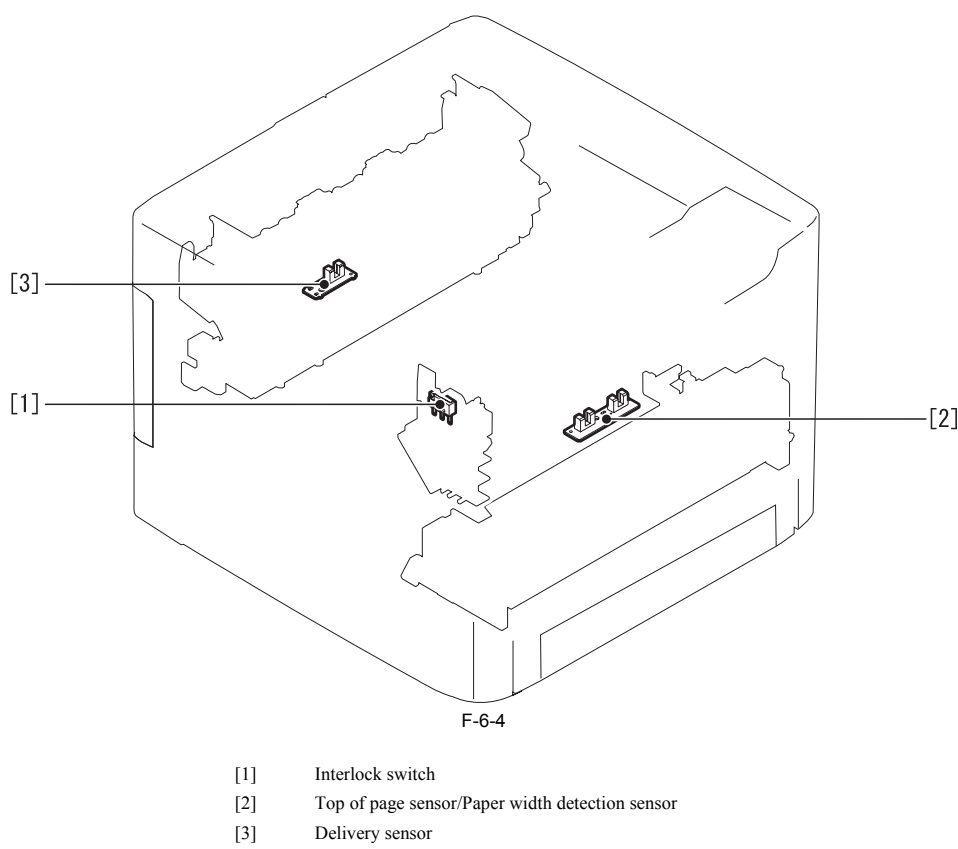
6.1.3 Fan

6.1.3.1 Fan



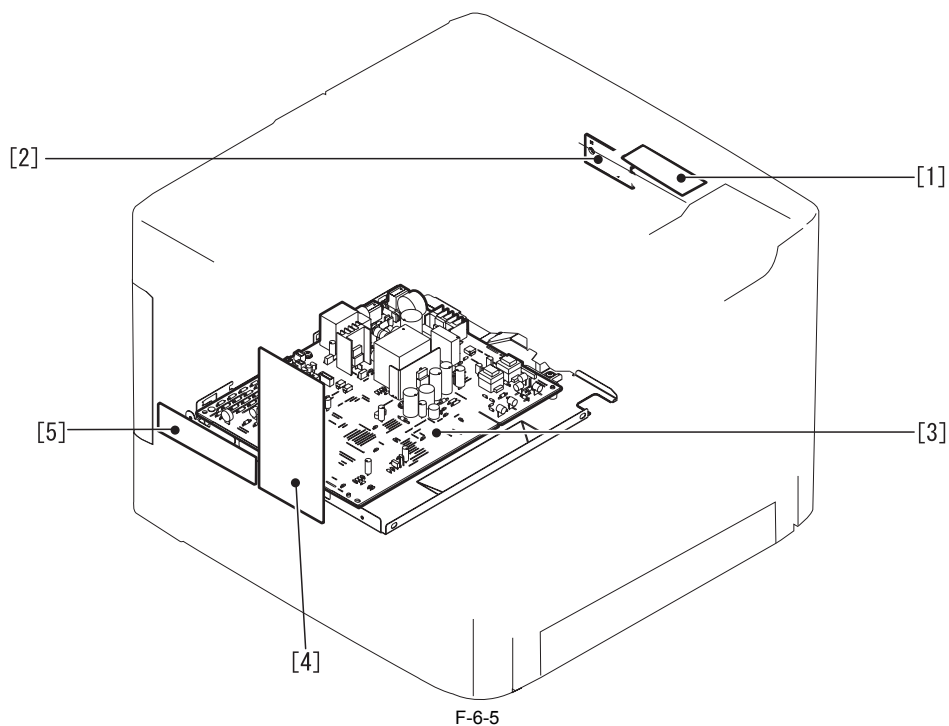
6.1.4 Sensor

6.1.4.1 Sensor



## 6.1.5 PCBs

### 6.1.5.1 PCB



- [1] Display PCB
- [2] Duplexing driver PCB
- [3] Engine controller PCB
- [4] Video controller PCB
- [5] USB connector PCB



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**Canon**

# **General Timing Chart / General Circuit Diagram**

**LBP3300 Series**  
**LBP3300**

**Canon**





## IMPORTANT

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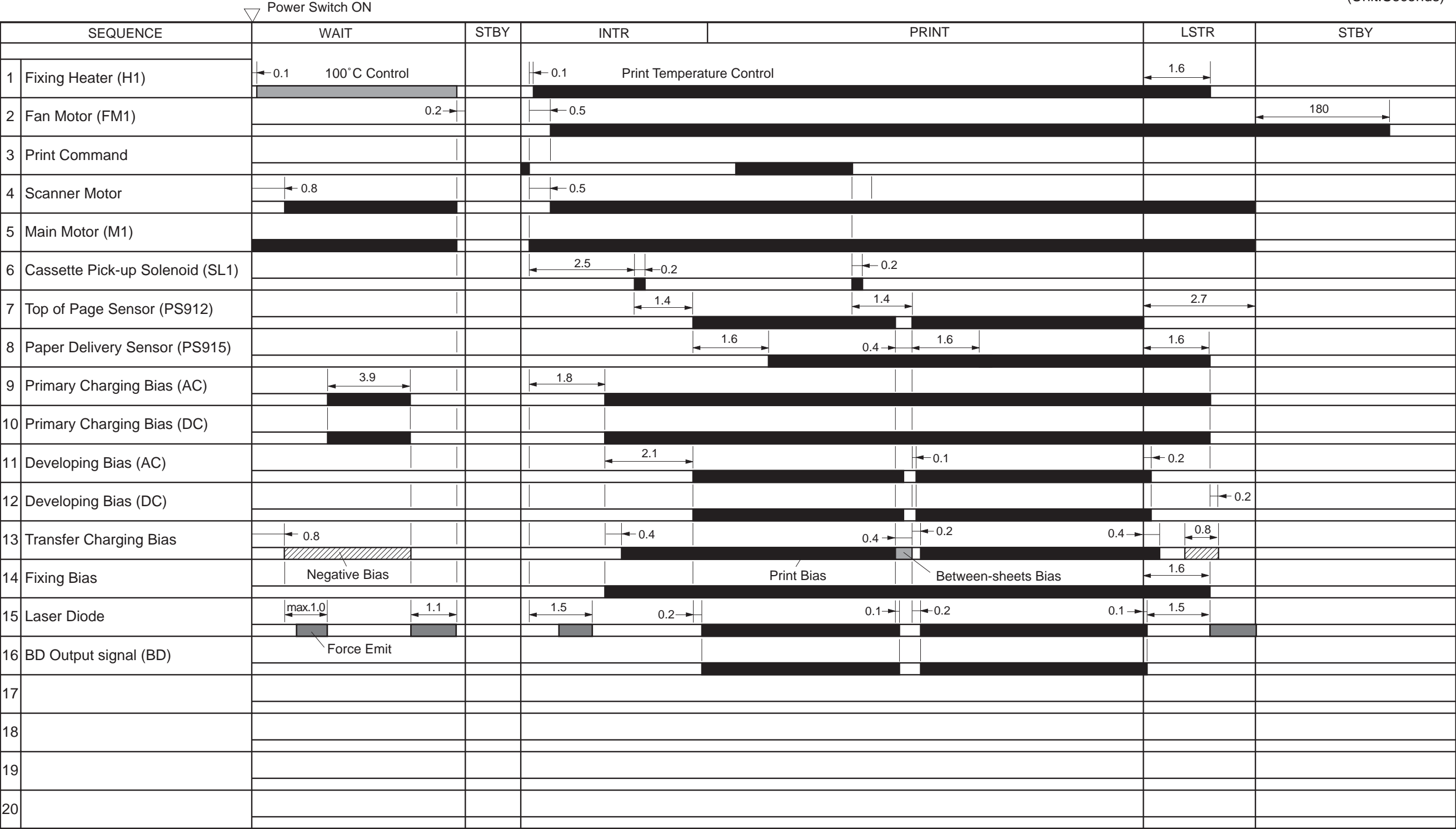
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    Signal Names ..... 3  
    General Circuit Diagram ..... 4



1 General Timing Chart  
Timing chart for two consecutive prints on A4 paper

•Timing chart for two consecutive prints on A4 paper (Cassette feed) (Unit:Seconds)



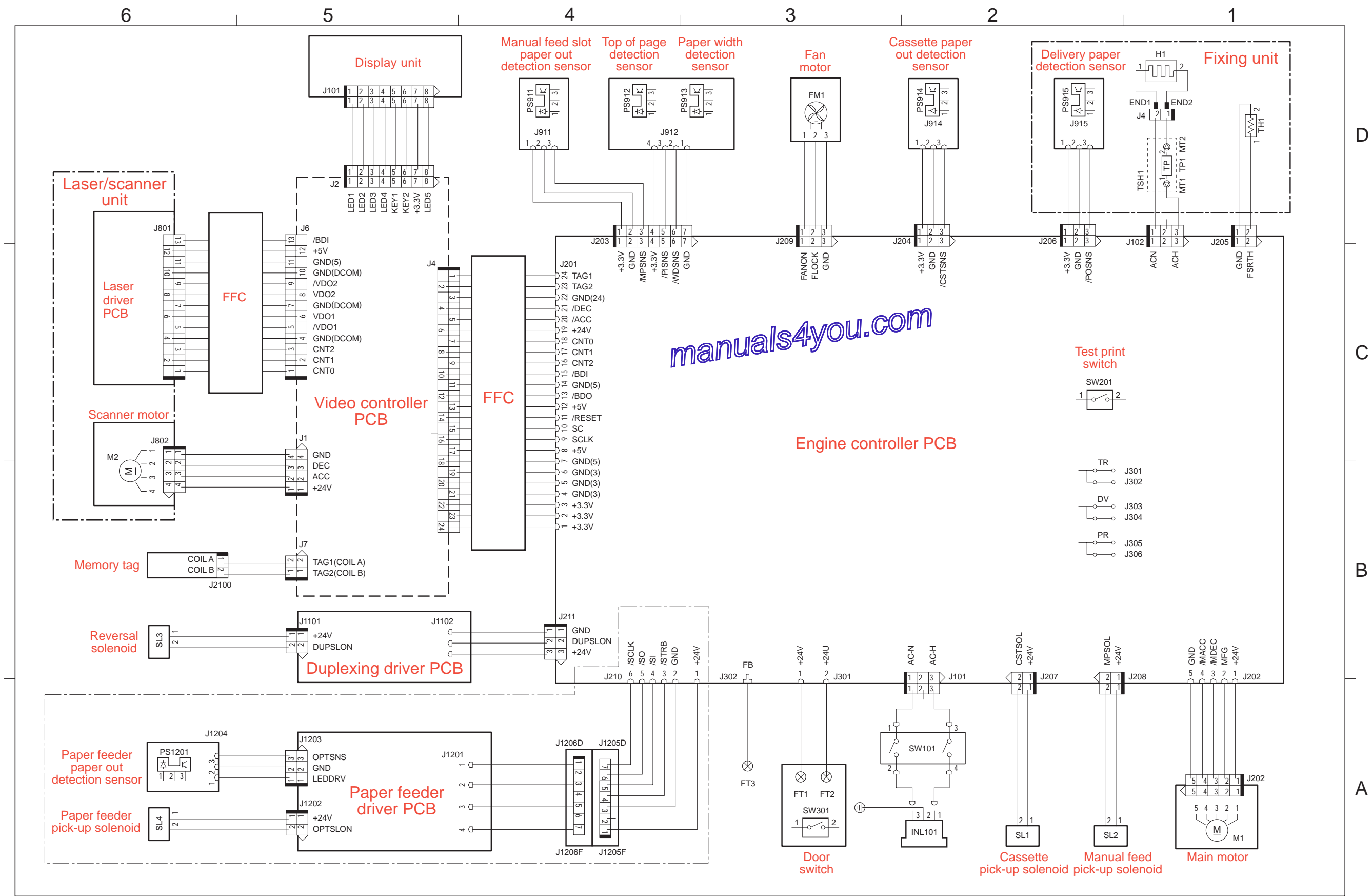
F-1-1



T-2-1

Abbreviation	Signal name
/ACC	SCANNER MOTOR ACCELERATION signal
/BDI	BD INPUT signal
/BDO	BD OUTPUT signal
/CSTSNS	CASSETTE PAPER OUT DETECTION signal
/DEC	SCANNER MOTOR DECELERATION signal
/MACC	MAIN MOTOR ACCELERATION signal
/MDEC	MAIN MOTOR DECELERATION signal
/MPSNS	MANUAL FEED SLOT PAPER OUT DETECTION signal
/PISNS	TOP OF PAGE signal
/POSNS	REVERSING DETECTION signal
/RESET	RESET signal
/SCLK	SERIAL CLOCK signal
/SI	SERIAL DATA signal
/SO	SERIAL DATA signal
/STRB	STROBE signal
/WDSNS	PAPER WIDTH DETECTION signal
CNT0	LASER CONTROL signal
CNT1	LASER CONTROL signal
CNT2	LASER CONTROL signal
CSTSOL	CASSETTE PICK-UP SOLENOID DRIVE signal
DUPSOL	REVERSING SOLENOID DRIVE signal
FANON	FAN MOTOR DRIVE signal
FLOCK	FAN LOCK signal
FSRTH	FIXING HEATER TEMPERATURE signal
MFG	MAIN MOTOR SPEED DETECTION signal
MPSOL	MANUAL FEED SOLENOID DRIVE signal
SC	STATUS COMMAND signal
SCLK	SERIAL CLOCK signal
TAG1	MEMORY TAG COMMUNICATION signal
TAG2	MEMORY TAG COMMUNICATION signal





F-2-1

Jan 19 2006

**Canon**

# Portable Manual

LBP3300 Series  
**LBP3300**

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




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# Symbols Used



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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 Maintenance and Inspection

## 1.1 Periodically Replaced Parts

### 1.1.1 Periodically Replaced Parts

The machine does not have parts that require periodical replacement.

## 1.2 Durables and Consumables

### 1.2.1 Life Expectancy of Consumable Parts

No consumable parts are required in this printer.

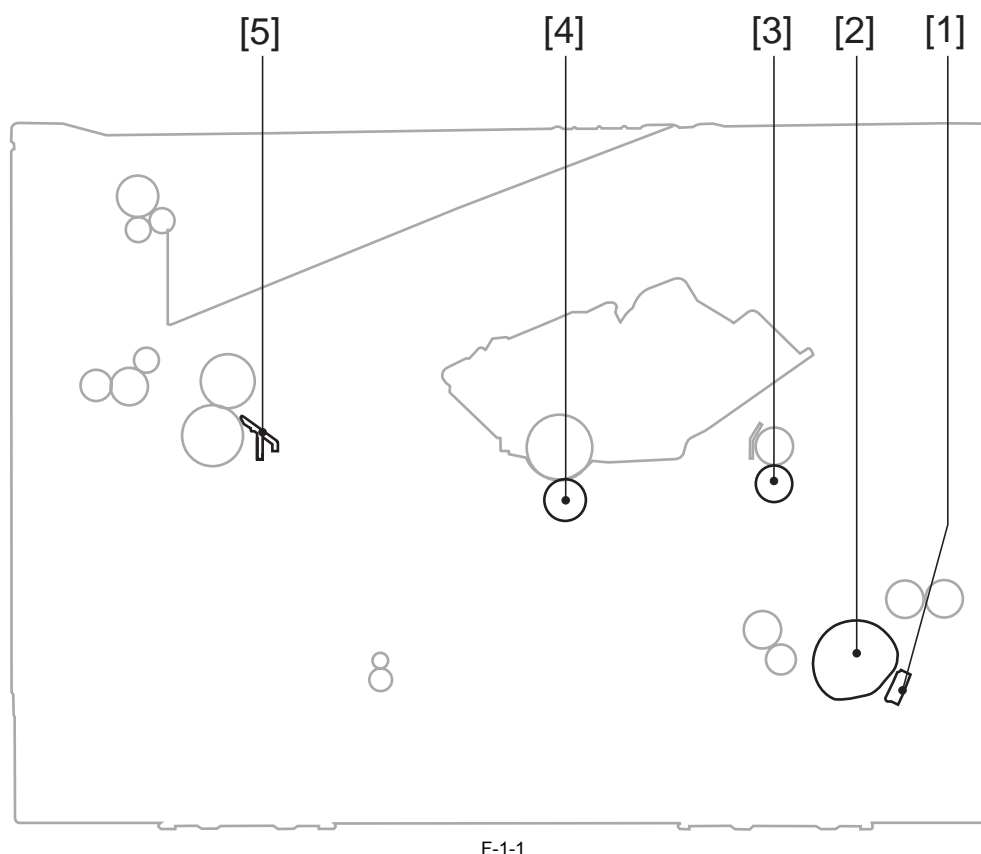
## 1.3 Scheduled Servicing Basic Procedure

### 1.3.1 Periodic Service

No periodic services are required to this printer.

## 1.4 Cleaning

### 1.4.1 Cleaning During Service Visit



F-1-1

#### 1. Separation pad

Wipe the rubber part with the dry lint-free paper.

#### 2. Pick up roller

Wipe with the dry lint-free paper.

#### 3. Feed roller

Wipe with the dry lint-free paper.

#### 4. Transfer charging roller

The transfer charging roller is not to be touched or cleaned. If cleaning is unavoidable, do not touch the roller and do not contaminate the roller with solvent or oil. Clean with dry lint free paper. Do not use water or solvent. Make

#### 5. Fixing inlet guide

Wipe with the dry lint-free paper.

## 1.5 Service Tools

### 1.5.1 Standard Tools

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

T-1-1

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  M4, M5 Length : 363 mm
2	Jumper wire	TKN-0069	
3	Clearance gauge	CK-0057	
4	Compression spring scale	CK-0058	
5	Phillips screwdriver	CK-0101	
6	Phillips screwdriver	CK-0104	M3, M4 Length: 155 mm M4, M5 Length: 191 mm M4, M5 Length: 85 mm  6-piece set
7	Phillips screwdriver	CK-0105	
8	Phillips screwdriver	CK-0106	
9	Flat-blade screwdriver	CK-0111	
10	Precision flat-blade screwdriver set	CK-0114	
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	
16	Pliers	CK-0203	Applied to the axis ring  Employed to measure 150 mm
17	Retaining ring pliers	CK-0205	
18	Crimper	CK-0218	
19	Tweezers	CK-0302	
20	Ruler	CK-0303	
21	Mallet, plastic head	CK-0314	100cc 500SH/PKG
22	Brush	CK-0315	
23	Penlight	CK-0327	
24	Plastic bottle	CK-0327	
25	Lint-free paper	CK-0336	
26	Oiler	CK-0349	30cc 30cc
27	Plastic jar	CK-0351	
28	Digital multi-measure	FY9-2032	

### 1.5.2 Special Tools

No special tools are required for servicing this printer other than the standard tools.

### 1.5.3 Solvent/Oil List

T-1-2

No.	Name	Uses	Components	Remarks
1	Ethyl alcohol	Cleaning: oil and toner stains	C2H5-OH	- Purchase locally - Flammable: keep away from flame
2	Lubricant	Apply to gears and between gear and shaft.	Special oil Special solid lubricating material Lithium soap	- Tool No. HY9-0007 (20g tube)
3	Electricity grease	Apply to grounding plate	High performance grease	- Electricity grease - Tool No. CK-8007



Do not use alcohol to wipe external covers. Use a moist cloth (well wrung) to clean them.

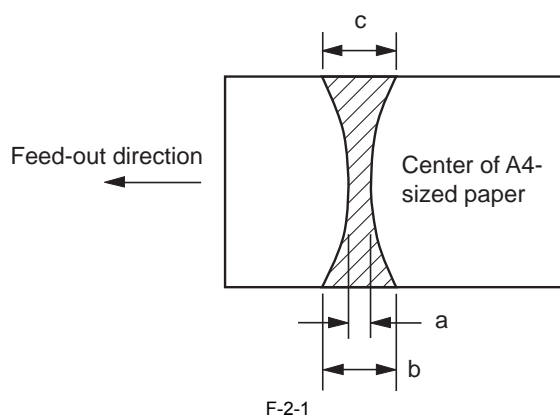
# Chapter 2 Standards and Adjustments

## 2.1 Mechanical Adjustment

### 2.1.1 Checking the Nip Width (fixing pressure roller)

The nip width of the fixing unit is not adjustable in this printer, however, the incorrect nip width may cause the faulty fixing. Follow the procedures below to check the nip width.

- 1) Make a solid black print of A4 size using an EP cartridge, and take the print to the customer's site.
  - 2) Place the solid black print, with the printed side facing down, in the manual feed tray of the printer.
  - 3) Open the face-up cover and perform face-up delivery.
  - 4) Press the test print switch.
  - 5) Turn OFF the printer when the leading edge of the paper is fed to the face-up delivery tray.
- Wait for 10 seconds, and then push down the jam removal lever of the fixing unit to pull out the paper from the printer
- 6) Measure the width of the glossy band across the paper and check that it meets the requirements.
    - Center (a): 5.6 mm to 9.0 mm
    - Right and left (b, c): 5.6 mm to 9.0 mm (Measure the 10 mm point from the paper edge)





# Chapter 3 Error Code

## 3.1 Error Code Table

### 3.1.1 Error Code

T-3-1

Error code	Major cause/detection	Remedy
E000	The Fixing heater has a fault.	<ul style="list-style-type: none"> <li>- Check the connector of the fixing film unit.</li> <li>- Replace the fixing film unit.</li> <li>- Replace the engine controller PCB.</li> </ul>
E100	The scanner assembly has a fault.	<ul style="list-style-type: none"> <li>- Check the connector of the laser scanner assembly.</li> <li>- Replace the laser scanner assembly.</li> <li>- Replace the engine controller PCB.</li> </ul>
E197	There is an engine communication error.	<ul style="list-style-type: none"> <li>- Replace the engine controller PCB.</li> </ul>
E747	There is a fault in the video controller memory.	<ul style="list-style-type: none"> <li>- Replace the video controller PCB.</li> </ul>
E805	The fan has a fault.	<ul style="list-style-type: none"> <li>- Replace the fan.</li> <li>- Replace the engine controller PCB.</li> </ul>





# Chapter 4 Service Mode

## 4.1 Test Print

### 4.1.1 Test Print

This test print is conducted in order to check if the printer engine works normally.

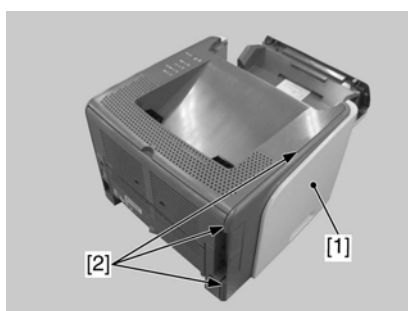
When this test printing is made, the test print pattern (horizontal lines) is printed as shown below.

While the printer is in STBY period press the test print switch located on the left side of the printer once and one page of engine test pattern is printed. The test pattern can be printed continuously if the switch is held down.

Accessing the Test Print Switch

1) Detach the left cover[1].

- 3 claws [2]



F-4-1

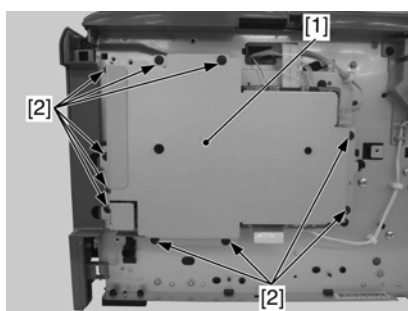
2) Unscrew two screws [1] of the rear cover.



F-4-2

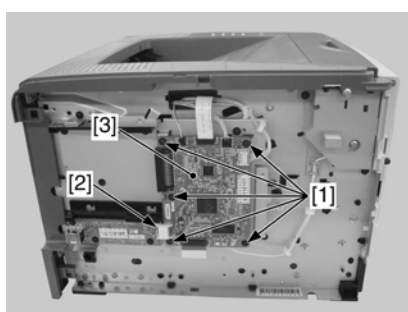
3) Remove the sheet metal [1].

- 10 screws [2]



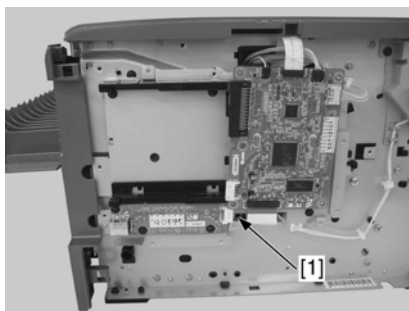
F-4-3

4) Remove 5 screws [1] and the connector [2], and slide the video controller PCB [3] to the upper side.



F-4-4

5) Insert a tool such as a driver into the guide hole [1] and press the Test Print switch.

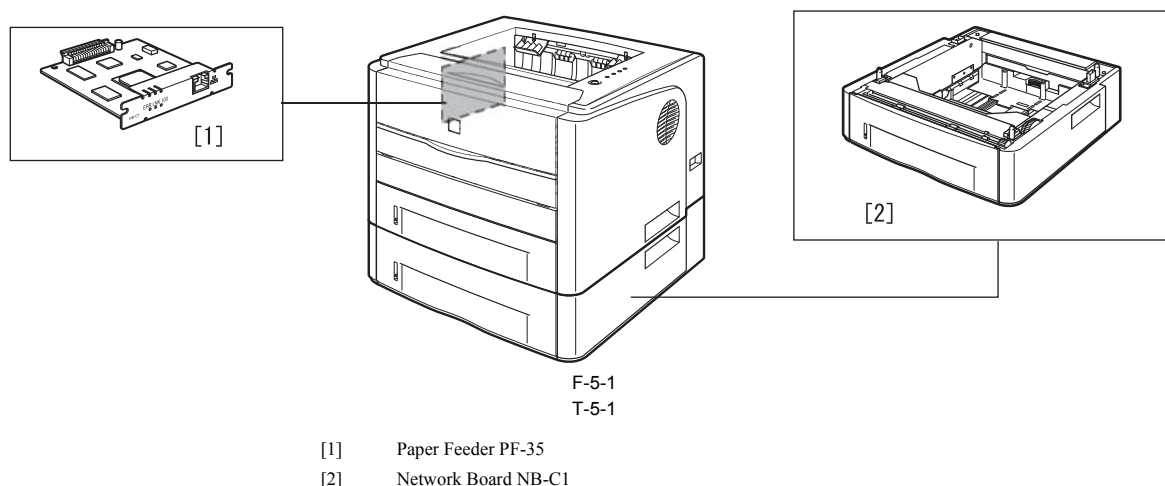


F-4-5

# Chapter 5 System Construction

## 5.1 System Construction

### 5.1.1 System Construction



## 5.2 Product Specifications

### 5.2.1 Product Specifications

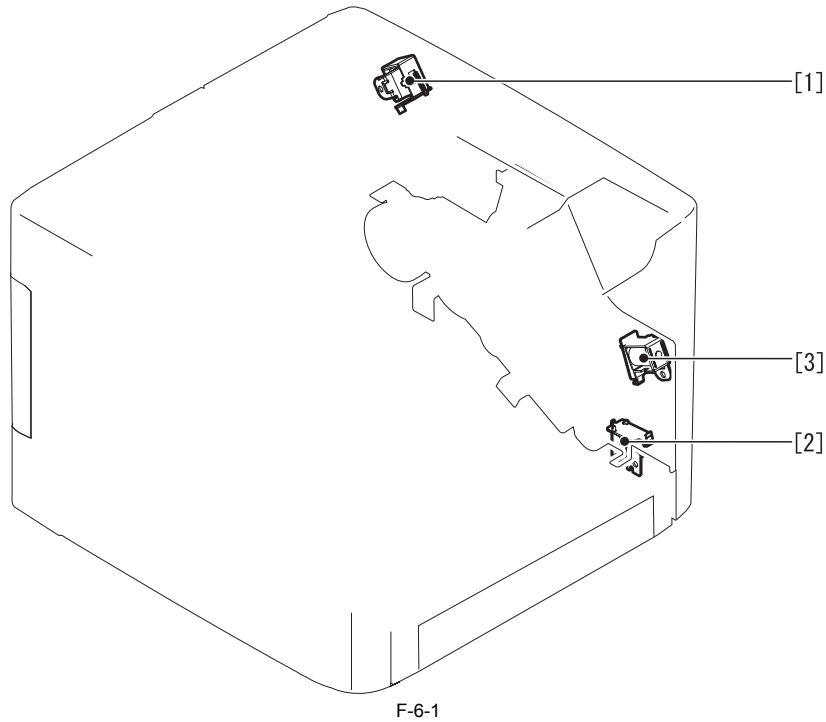
<b>Body installation method</b>	desktop page printer
<b>Photosensitive medium</b>	OPC drum
<b>Exposure method</b>	semiconductor laser
<b>Development method</b>	Toner projection development
<b>Transfer method</b>	by roller
<b>Separation method</b>	by curvature
<b>Cassette pickup method</b>	by pad
<b>Multifeeder pickup method</b>	by pad
<b>Drum cleaning method</b>	by blade
<b>Fixing method</b>	on-demand
<b>Delivery method</b>	face-down/face-up
<b>Toner supply type</b>	by toner cartridge about 6000 prints (A4, single-sided; at 5% image ratio)
<b>Warm-up time</b>	in standby: 0 sec (at power-on: 10 sec or less)
<b>Print area</b>	top: 5 mm; bottom: 5 mm; left/right: 5 mm (if envelope, top, bottom, left, right: 10 mm)
<b>Printing resolution</b>	600dpi
<b>First print time</b>	9 sec or less (approx.; A4)
<b>Print speed (A4)</b>	21 pages/min (approx.)
<b>Cassette paper size</b>	A4, B5, A5, Legal, Letter, Executive
<b>Multi-purpose paper size</b>	A4, B5, A5, Legal, Letter, Executive, Envelope DL, Envelope COM10, Envelope C5, Envelope Monarch, Index Card, Custom Paper Size (width 76.2 to 215.9 mm, length 127.0 to 355.6 mm)
<b>Cassette paper type</b>	plain paper (64 to 90 g/m <sup>2</sup> ), heavy paper (91 to 120 g/m <sup>2</sup> ), recycled paper,
<b>Multi-purpose paper type</b>	plain paper (64 to 90 g/m <sup>2</sup> ), heavy paper (91 to 163 g/m <sup>2</sup> ), recycled paper, transparency, label paper, envelop (DL, COM10, C5, Monarch, B5)
<b>Cassette capacity</b>	250 sheets (approx.; plain paper, 64 g/m <sup>2</sup> )
<b>Multi-purpose capacity</b>	1 sheet
<b>Delivery tray stack</b>	65sheets (Face-down) /1sheet(Face-up Output Slot)
<b>Memory</b>	8 MB (internal; no optional memory available)
<b>Operating environment (Temperature range)</b>	10 to 32.5 deg C
<b>Operating environment (Humidity range)</b>	20% to 80% RH
<b>Noise</b>	52.8 dB or less (during printing; based on ISO9296; announced noise emission)

<b>Power supply rating</b>	AC100V±10% (50/60Hz ±2Hz)
<b>Power consumption (Maximum)</b>	790W or less (approx.; 20 deg C; for input of rated power supply; including peak value lasting 1 sec or more)
<b>Dimensions</b>	370 (W) x 375 (D) x 258 (H)mm
<b>Weight</b>	printer: Approx;11kg; toner cartridge: Approx;0.8kg(2.5K)
<b>Option</b>	paper feeder

# Chapter 6 Outline of Components

## 6.1 Clutch/Solenoid

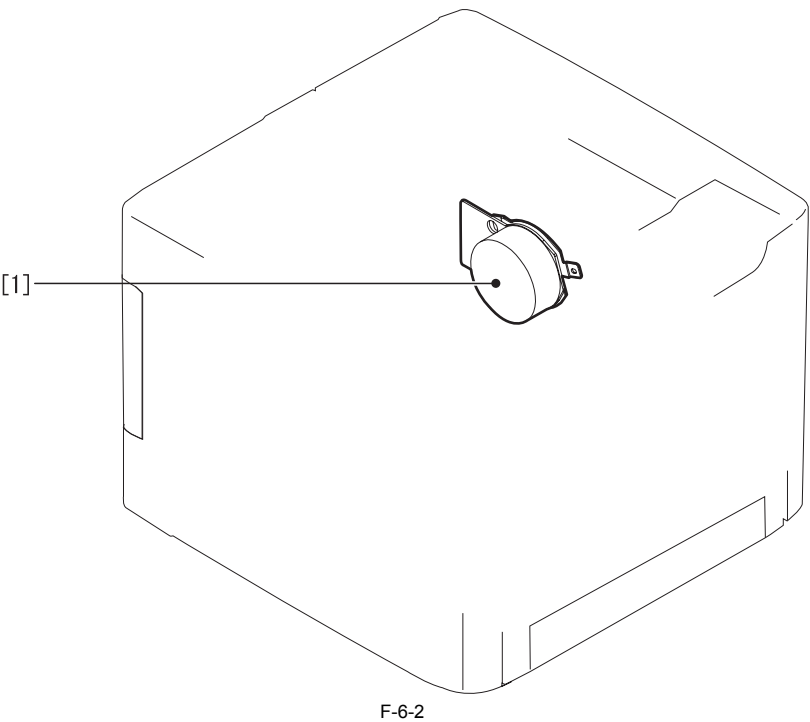
### 6.1.1 Solenoid



- [1] Reversal solenoid
- [2] Cassette pick-up solenoid
- [3] Manual feed pick-up solenoid

## 6.2 Motor

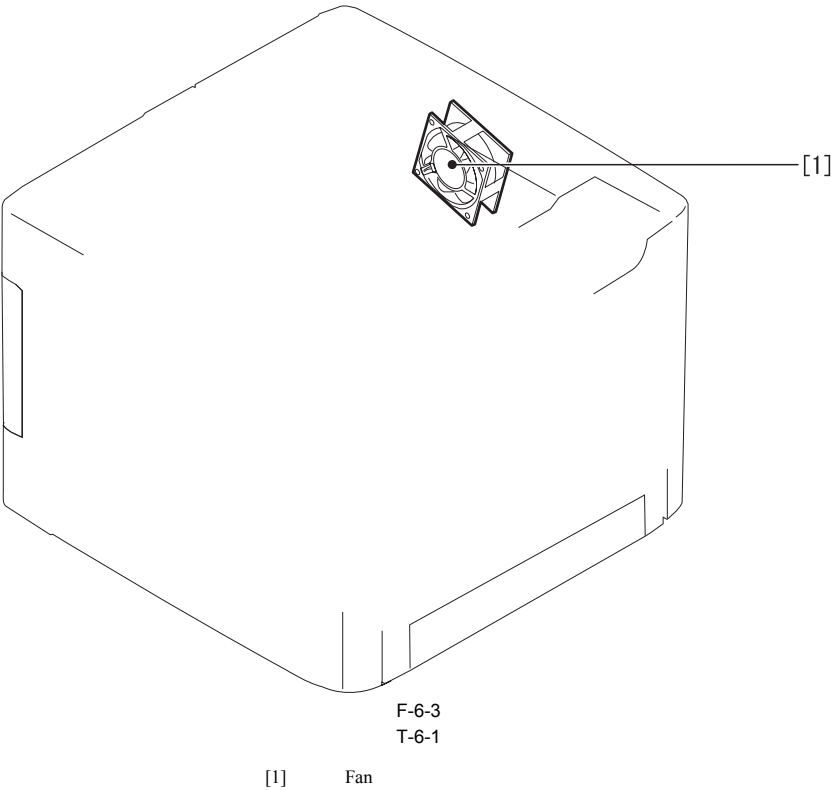
### 6.2.1 Motor



[1] Main motor

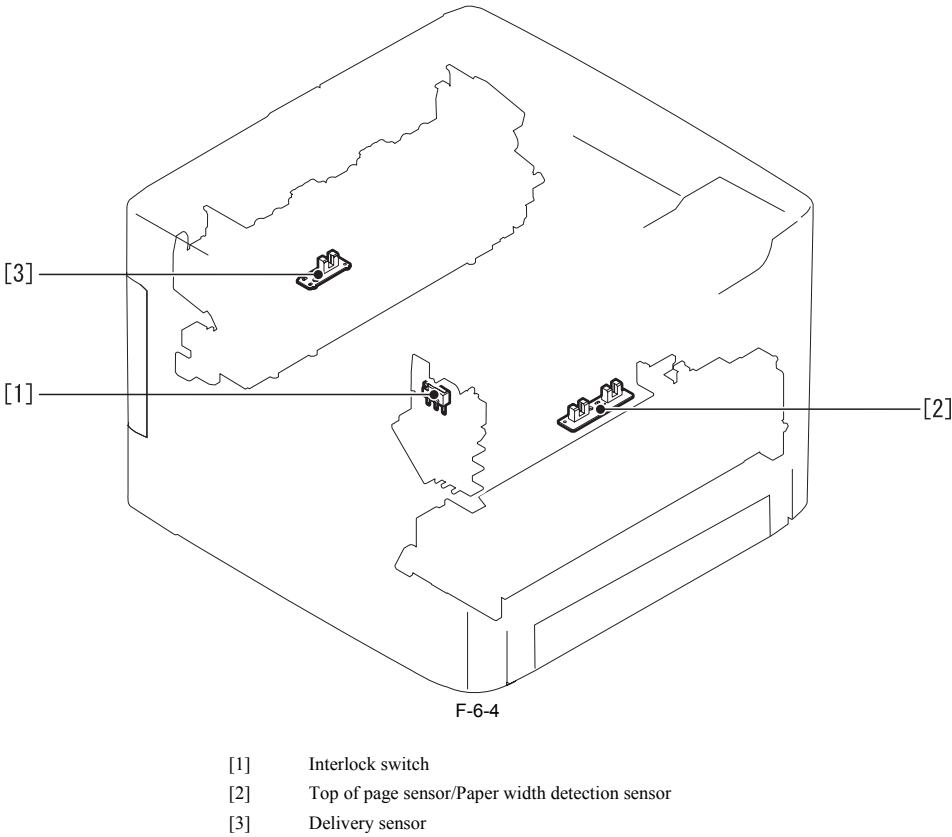
6.3 Fan

6.3.1 Fan



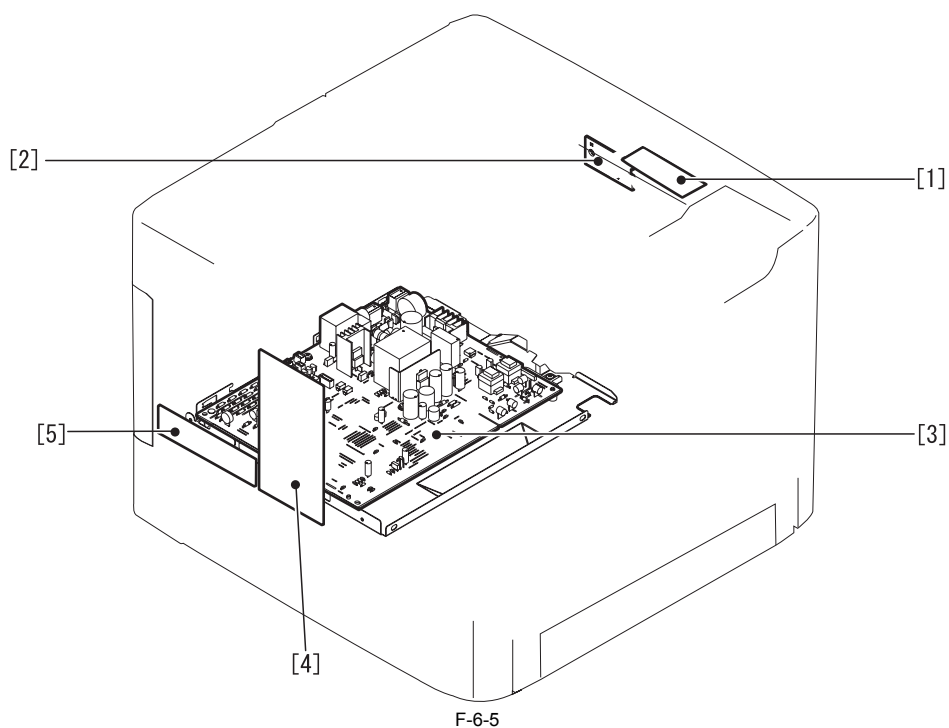
6.4 Sensor

6.4.1 Sensor



## 6.5 PCBs

### 6.5.1 PCB



- [1] Display PCB
- [2] Duplexing driver PCB
- [3] Engine controller PCB
- [4] Video controller PCB
- [5] USB connector PCB





# **PARTS CATALOG**

**LBP3300**

**Canon**

**Jan 20 2006**





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FC5-4820-000	100 - 1	FM2-6715-000	100 - 13	RC1-3620-000	101 - 25
FC7-0779-000	100 - 2	FM2-6716-000	100 - 11	RC1-3621-000	810 - 24
FC7-0780-000	100 - 4	FM2-6717-000	810 -	RC1-3622-000	810 - 25
FC7-0781-000	100 - 3	FM2-6718-000	810 -	RC1-3623-000	810 - 26
FC7-0782-000	100 - 16	FM2-6719-000	110 -	RC1-3624-000	810 - 27
FC7-0783-000	100 - 17	FM2-8283-000	110 - 1	RC1-3628-000	810 - 30
FC7-0792-000	104 - 4	FM2-8285-000	102 - 34	RC1-3630-000	810 - 31
FC7-0793-000	104 - 5	FM2-9333-000	104 - 6	RC1-3633-000	810 - 32
FC7-0797-000	104 - 8	FM2-9334-000	104 - 6	RC1-3635-000	810 - 33
FC7-0799-000	103 - 4	FM2-9335-000	104 - 6	RC1-3665-000	101 - 2
FC7-0800-000	103 - 6	NPN	001 -	RC1-3666-000	102 - 11
FC7-0803-000	100 - 18	NPN	100 -	RC1-3667-000	102 - 12
FC7-0804-000	100 - 18	NPN	101 -	RC1-3702-000	103 - 7
FC7-0805-000	100 - 18	NPN	102 -	RC1-3708-000	103 - 8
FC7-0806-000	103 - 5	NPN	104 -	RC1-3728-000	102 - 13
FC7-0809-000	100 - 5	RA0-1090-000	810 - 5	RC1-3731-020	101 - 8
FC7-0810-000	100 - 6	RA0-1189-000	810 - 6	RC1-3773-000	102 - 14
FC7-0811-000	100 - 25	RB2-2895-000	101 - 15	RC1-3824-000	102 - 29
FC7-0812-000	100 - 14	RB2-2896-000	101 - 16	RC1-3827-000	102 - 15
FC7-1514-000	104 - 8	RC1-3470-000	101 - 18	RC1-3844-000	102 - 16
FC7-1517-000	100 - 22	RC1-3471-000	101 - 19	RC1-3850-000	102 - 30
FC7-1518-000	100 - 21	RC1-3472-000	101 - 20	RC1-3851-000	100 - 8
FC7-1521-000	100 - 3	RC1-3481-000	101 - 21	RC1-3852-000	102 - 17
FC7-1523-000	100 - 24	RC1-3482-000	101 - 22	RC1-6217-000	100 - 1
FC7-3046-000	100 - 24	RC1-3537-000	102 - 1	RH9-1162-000	104 - 9
FC7-3047-000	101 - 3	RC1-3539-020	102 - 2	RH9-1163-000	104 - 10
FC7-3048-000	810 - 35	RC1-3540-020	102 - 3	RH9-1164-000	104 - 9
FC7-3050-000	100 - 21	RC1-3544-020	102 - 4	RH9-1166-000	104 - 9
FK2-1906-000	102 - 31	RC1-3546-000	101 - 1	RH9-1169-000	104 - 9
FK2-2860-000	001 - 1	RC1-3550-000	102 - 5	RK2-0418-000	104 - 1
FK2-2861-000	001 - 1	RC1-3551-000	102 - 6	RK2-0420-000	101 - 5
FK2-3466-000	001 - 1	RC1-3552-000	102 - 7	RK2-0424-000	104 - 2
FM2-6187-000	100 - 15	RC1-3561-000	102 - 8	RK2-0428-000	102 - 18
FM2-6188-000	101 - 7	RC1-3562-000	102 - 9	RK2-1302-000	104 - 11
FM2-6189-000	103 - 1	RC1-3580-000	102 - 10	RK2-1315-000	104 - 9
FM2-6190-000	300 -	RC1-3603-000	810 - 7	RK2-1316-000	104 - 9
FM2-6191-000	300 - 1	RC1-3604-000	810 - 8	RL1-0527-000	101 - 4
FM2-6192-000	300 - 2	RC1-3605-000	810 - 9	RL1-0540-000	101 - 17
FM2-6194-000	100 - 19	RC1-3606-000	810 - 10	RM1-1242-030	110 - 1
FM2-6195-000	102 - 32	RC1-3607-000	810 - 11	RM1-1243-030	110 - 1
FM2-6196-000	100 - 20	RC1-3608-000	810 - 12	RM1-1247-000	102 - 33
FM2-6644-000	104 - 7	RC1-3609-020	810 - 13	RM1-1249-000	104 - 3
FM2-6700-000	100 - 9	RC1-3610-000	810 - 14	RM1-1251-000	810 - 1
FM2-6701-000	100 - 10	RC1-3611-000	810 - 15	RM1-1262-000	102 - 23
FM2-6702-000	102 - 24	RC1-3612-000	810 - 16	RM1-1283-000	103 - 2
FM2-6703-000	810 - 3	RC1-3613-000	810 - 17	RM1-1286-000	101 - 11
FM2-6704-000	810 - 3	RC1-3614-000	810 - 18	RM1-1291-000	810 - 4
FM2-6707-000	300 - 6	RC1-3615-000	810 - 19	RM1-1295-000	300 - 3
FM2-6708-000	100 - 15	RC1-3616-000	810 - 20	RM1-1296-000	300 - 4
FM2-6709-000	100 - 15	RC1-3617-000	810 - 21	RM1-1297-020	300 - 5
FM2-6712-000	101 - 13	RC1-3618-000	810 - 22	RM1-1299-020	250 -
FM2-6714-000	100 - 12	RC1-3619-000	810 - 23	RM1-1300-030	110 -

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RM1-1302-000	251 -				
RM1-1303-000	251 - 1				
RM1-1304-000	251 - 2				
RM1-1313-000	360 -				
RM1-1314-000	360 - 1				
RM1-1317-020	360 - 3				
RM1-1318-000	360 - 4				
RM1-1319-000	360 - 2				
RM1-1321-000	102 - 25				
RM1-1462-030	110 -				
RM1-1470-050	102 - 26				
RM1-1471-000	103 - 3				
RU5-0330-000	810 - 34				
RU5-0331-000	101 - 14				
RU5-0332-000	101 - 6				
RU5-2140-000	810 - 2				
RU5-2323-000	101 - 23				
RU5-2335-000	102 - 19				
RU5-2337-000	102 - 20				
RU5-8243-000	100 - 7				
VS1-7258-007	102 - 28				
XA9-1420-000	101 - 24				
XA9-1422-000	810 - 28				
XA9-1495-000	101 - 10				
XA9-1495-000	102 - 27				
XA9-1495-000	104 - 12				
XA9-1503-000	101 - 9				
XA9-1503-000	102 - 21				
XA9-1503-000	104 - 13				
XA9-1503-000	810 - 29				
XA9-1504-000	100 - 23				
XA9-1504-000	101 - 26				
XA9-1504-000	102 - 22				
XA9-1648-000	104 - 14				
XB2-6400-607	104 - 501				
XB4-7300-809	810 - 501				
XB4-7401-005	100 - 501				
XB4-7401-005	101 - 501				
XB4-7401-005	102 - 501				
XB4-7401-005	103 - 501				

# LBP3300

## LBP3300

<b>100V JP</b>	<b>F14-8301-000</b>
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<b>120V</b>	<b>F14-8331-000</b>
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<b>230V CN</b>	<b>F14-8351-000</b>
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<b>230V EUR/UK/ ASIA/AU</b>	<b>F14-8391-000</b>
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FIGURE A  
ASSEMBLY LOCATION DIAGRAM

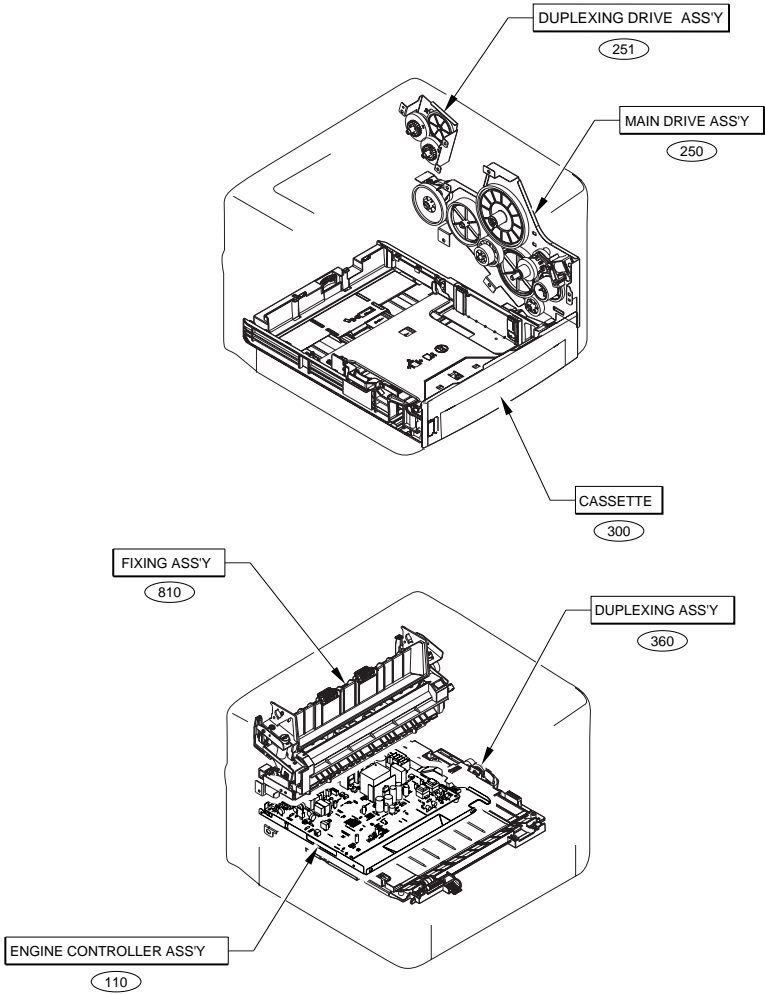


FIGURE 001  
DISK UNIT

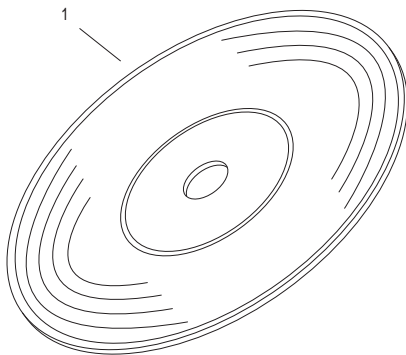


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.001	NPN		RF	DISK UNIT		
1	FK2-2860-000		1	CD-ROM, USER SOFTWARE	English/French/Italia/ German/Spanish/Russian	
1	FK2-3466-000		1	CD-ROM, USER SOFTWARE	Japanese	
1	FK2-2861-000		1	CD-ROM, USER SOFTWARE	Simplified Chinese/ Korean/Portuguese	

FIGURE 100  
EXTERNAL COVERS, PANELS, ETC.

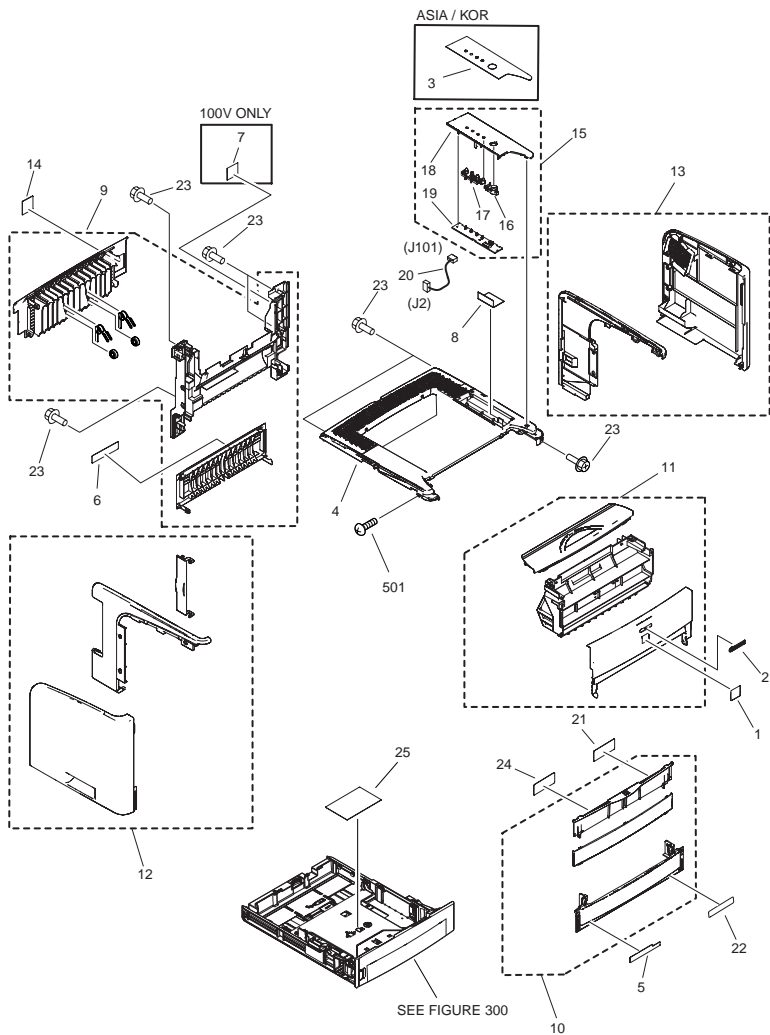


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.100	NPN		RF	EXTERNAL COVERS, PANELS, ETC.		
1	FC5-4820-000		1	EMBLEM, SATERA	100V	
1	RC1-6217-000		1	EMBLEM, LASER SHOT	120/230V	
2	FC7-0779-000		1	PLATE, LOGO		

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
3	FC7-0781-000		1	SHEET, CONTROL PANEL	ASIA	
3	FC7-1521-000		1	SHEET, CONTROL PANEL	KOR	
4	FC7-0780-000		1	COVER, TOP		
5	FC7-0809-000		1	LABEL, RELEASE LEVER CONTROL		
6	FC7-0810-000		1	LABEL, DUPLEXING SIZE CONTROL		
7	RU5-8243-000		1	LABEL, EARTH CONNECT	100V ONLY	
8	RC1-3851-000		1	SHEET, LIGHT-BLOCKING		
9	FM2-6700-000		1	REAR COVER ASS'Y		
10	FM2-6701-000		1	FRONT COVER ASS'Y		
11	FM2-6716-000		1	CARTRIDGE COVER ASS'Y		
12	FM2-6714-000		1	LEFT COVER ASS'Y		
13	FM2-6715-000		1	RIGHT COVER ASS'Y		
14	FC7-0812-000		1	LABEL, FIXING PRESSURE RELEASE		
15	FM2-6709-000		1	CONTROL PANEL ASS'Y	CN	
15	FM2-6708-000		1	CONTROL PANEL ASS'Y	EUR/UK/ASIA/AU	
15	FM2-6187-000		1	CONTROL PANEL ASS'Y	JP	
16	FC7-0782-000		1	KEY TOP, STOP		
17	FC7-0783-000		1	GUIDE, LIGHT		
18	FC7-0805-000		1	PANEL, CONTROL	CN	
18	FC7-0804-000		1	PANEL, CONTROL	EUR/UK/ASIA/AU	
18	FC7-0803-000		1	PANEL, CONTROL	JP	
19	FM2-6194-000		1	DISPLAY PCB ASS'Y		
20	FM2-6196-000		1	CABLE, PANEL	J2,101	
21	FC7-3050-000		1	LABEL, PAPER SIZE	100V	
21	FC7-1518-000		1	LABEL, PAPER SIZE	120/230V	
22	FC7-1517-000		1	LABEL, CLOSE PREVENTION		
23	XA9-1504-000		7	SCREW,RS,M3X8		
24	FC7-1523-000		1	LABEL, FEED CAUTION	100/120V	
24	FC7-3046-000		1	LABEL, FEED CAUTION	230V	
25	FC7-0811-000		1	LABEL, PAPER CONTROL		
501	XB4-7401-005		1	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE 101  
INTERNAL COMPONENTS 1

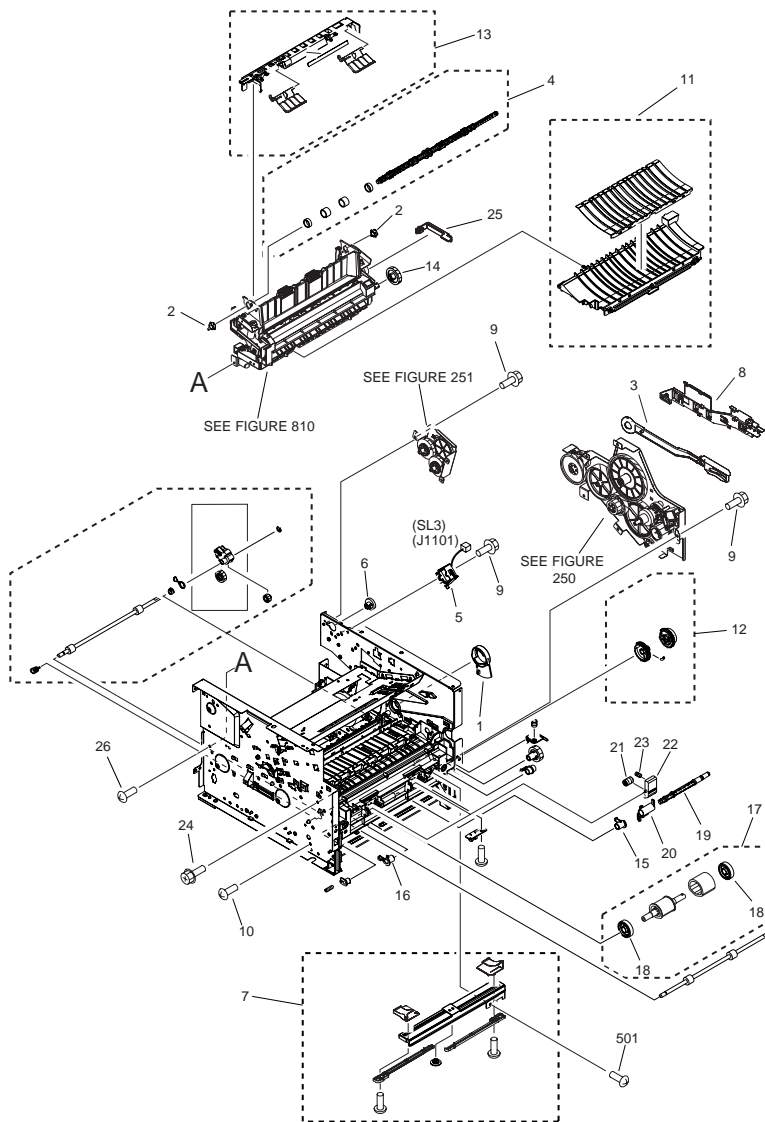


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.101	NPN		RF	INTERNAL COMPONENTS 1		
1	RC1-3546-000		1	CAM, RIGHT		





FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
2	RC1-3665-000		2	BUSHING	SL3 J1101	
3	FC7-3047-000		1	LINK, GEAR RELEASE		
4	RL1-0527-000		1	ROLLER, FACE-DOWN		
5	RK2-0420-000		1	SOLENOID		
6	RU5-0332-000		1	GEAR, 19T		
7	FM2-6188-000		1	MANUAL PAPER FEED ASS'Y		
8	RC1-3731-020		1	GUIDE, DC CABLE, 2		
9	XA9-1503-000		12	SCREW, TAP, M3X6		
10	XA9-1495-000		1	SCREW, RS, M3X6		
11	RM1-1286-000		1	PAPER FEED GUIDE ASS'Y		
12	RM1-1301-000		1	PAPER PICK-UP GEAR ASS'Y		
13	FM2-6712-000		1	PAPER RETAINING ASS'Y		
14	RU5-0331-000		1	GEAR, 29T		
15	RB2-2895-000		1	BUSHING, RIGHT		
16	RB2-2896-000		1	BUSHING, LEFT		
17	RL1-0540-000		1	ROLLER, PAPER PICK-UP		
18	RC1-3470-000		2	ROLLER, PAPER PICK-UP IDLER		
19	RC1-3471-000		1	SHAFT, PAPER PICK-UP DRIVE		
20	RC1-3472-000		1	FLAG, PAPER SENSING		
21	RC1-3481-000		2	ROLLER, IDLER		
22	RC1-3482-000		2	ARM, IDLER ROLLER		
23	RU5-2323-000		2	SPRING, COMPRESSION		
24	XA9-1420-000		1	SCREW, W/WASHER, M3X8		
25	RC1-3620-000		1	COVER, FIXING CABLE		
26	XA9-1504-000		5	SCREW,RS,M3X8		
501	XB4-7401-005		4	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE 102  
INTERNAL COMPONENTS 2

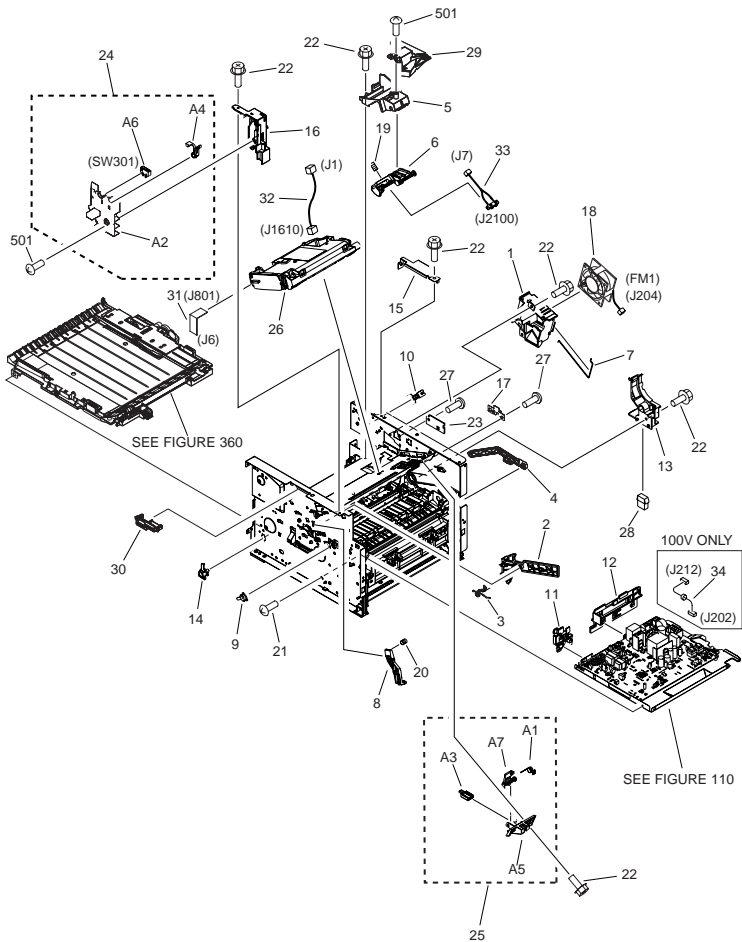


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.102	NPN		RF	INTERNAL COMPONENTS 2		
1	RC1-3537-000		1	HOLDER, FAN		
2	RC1-3539-020		1	GUIDE, CARTRIDGE, LEFT UPPER		
3	RC1-3540-020		1	SPRING, TORSION		
4	RC1-3544-020		1	ARM, CAM		

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
5	RC1-3550-000		1	HOLDER, TAG ARM	FM1 J204	
6	RC1-3551-000		1	ARM, TAG		
7	RC1-3552-000		1	ROD, GROUNDING		
8	RC1-3561-000		1	ARM, LOCK		
9	RC1-3562-000		1	BUSHING		
10	RC1-3580-000		1	STOPPER		
11	RC1-3666-000		1	GUIDE, THERMISTOR CABLE		
12	RC1-3667-000		1	GUIDE, DC CABLE, 1		
13	RC1-3728-000		1	HOLDER, DRAWER		
14	RC1-3773-000		1	BUSHING		
15	RC1-3827-000		1	SHIELD, DUPLEXING SOLENOID		
16	RC1-3844-000		1	GUIDE, CARTRIDGE, FRONT		
17	RC1-3852-000		1	PLATE, OPTION GROUNDING		
18	RK2-0428-000		1	FAN		
19	RU5-2335-000		1	SPRING, COMPRESSION		
20	RU5-2337-000		1	SPRING, COMPRESSION		
21	XA9-1503-000		10	SCREW, TAP, M3X6		
22	XA9-1504-000		3	SCREW,RS,M3X8		
23	RM1-1262-000		1	DUPLEX DRIVER PCB ASS'Y		
24	FM2-6702-000		1	INTERLOCK ASS'Y		
25	RM1-1321-000		1	SHUTTER LINK ASS'Y		
26	RM1-1470-050		1	SCANNER ASS'Y		
27	XA9-1495-000		?	SCREW, RS, M3X6		
28	VS1-7258-007		1	CONNECTOR, DRAWER		
29	RC1-3824-000		1	DUCT		
30	RC1-3850-000		1	GUIDE, FLEXIBLE FLAT CABLE		
31	FK2-1906-000		1	CABLE, LASER	J6,801	
32	FM2-6195-000		1	CABLE, SCANNER MOTOR	J1,1610	
33	RM1-1247-000		1	CABLE, MEMORY TAG	J7,2100	
34	FM2-8285-000		1	CABLE, MAIN MOTOR	100V ONLY	
501	XB4-7401-005		17	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE 103  
INTERNAL COMPONENTS 3

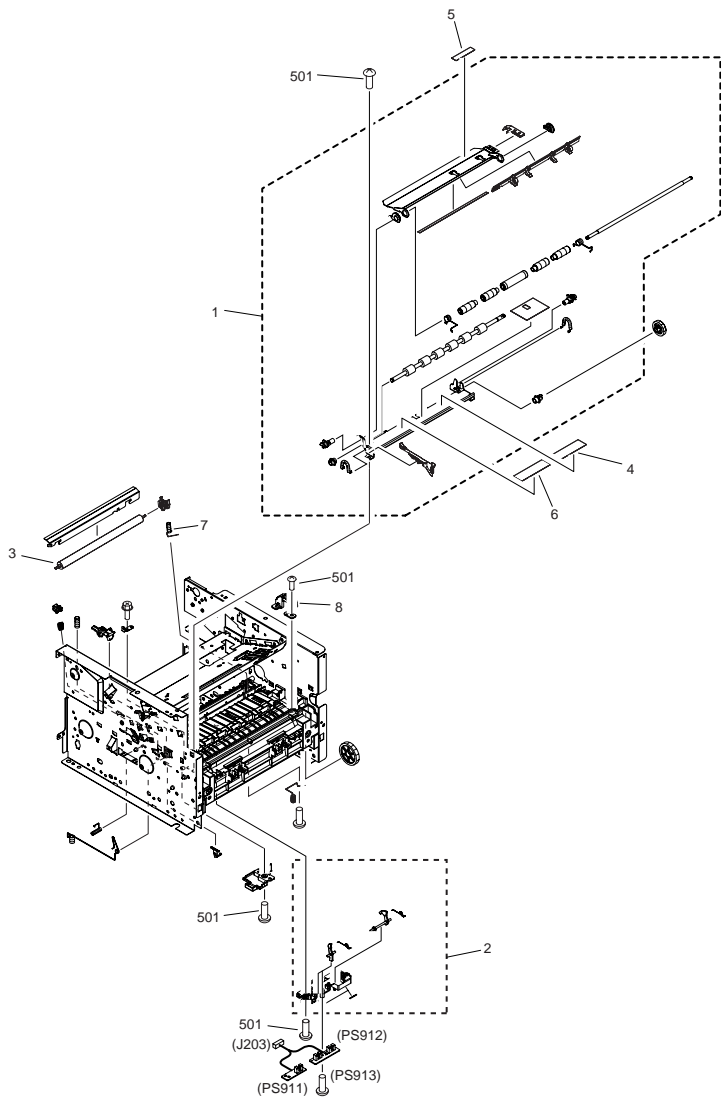


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
1	FM2-6189-000		1	REGISTRATION ASS'Y		
2	RM1-1283-000		1	TOP SENSOR ASS'Y		
3	RM1-1471-000		1	ROLLER, TRANSFER		

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
4	FC7-0799-000		1	LABEL, CLEAR JAM		
5	FC7-0806-000		1	LABEL, TRANSFER GUIDE OPEN		
6	FC7-0800-000		1	LABEL, FIXING PRESSURE RELEASE		
7	RC1-3702-000		1	SPRING, TRANSFER, RIGHT		
8	RC1-3708-000		1	COVER, REGISTRATION GEAR		
501	XB4-7401-005		9	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE 104  
INTERNAL COMPONENTS 4

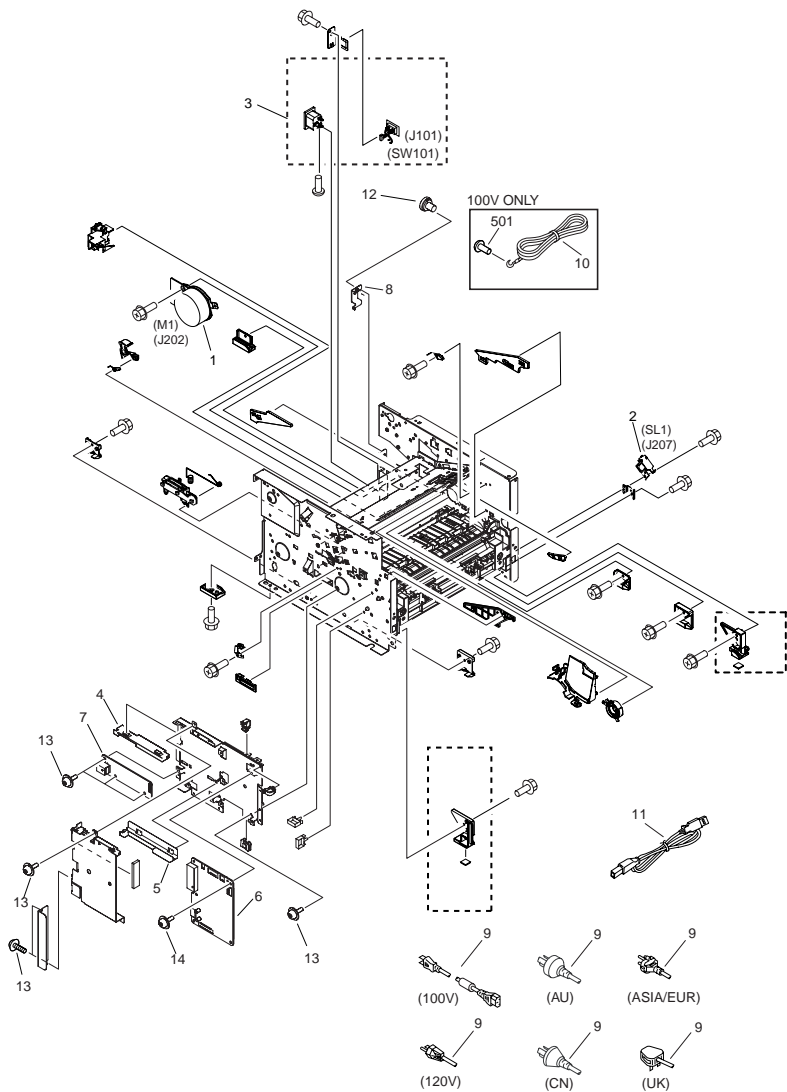


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.104	NPN		RF	INTERNAL COMPONENTS 4		
1	RK2-0418-000		1	MOTOR, DC	M1 J202	
2	RK2-0424-000		1	SOLENOID	SL1 J207	

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
3	RM1-1249-000		1	INLET/SWITCH CABLE ASS'Y		
4	FC7-0792-000		1	RAIL, NIC, UPPER		
5	FC7-0793-000		1	RAIL, NIC, LOWER		
6	FM2-9333-000		1	VIDEO CONTROLLER PCB ASS'Y	100V	
6	FM2-9334-000		1	VIDEO CONTROLLER PCB ASS'Y	CN	
6	FM2-9335-000		1	VIDEO CONTROLLER PCB ASS'Y	EXCEPT CN	
7	FM2-6644-000		1	USB BOARD PCB ASSEMBLY		
8	FC7-0797-000		1	PLATE, GROUNDING	100V	
8	FC7-1514-000		1	PLATE, GROUNDING	120/230V	
9	RH9-1162-000		1	CORD, POWER, 100V	100V	
9	RH9-1164-000		1	CORD, POWER, 120V	120V	
9	RK2-1315-000		1	CORD, POWER, 230V	ASIA/EUR	
9	RH9-1169-000		1	CORD, POWER, 230V	AU	
9	RH9-1166-000		1	CORD, POWER, 230V	CN	
9	RK2-1316-000		1	CORD, POWER, 230V	UK	
10	RH9-1163-000		1	WIRE, GROUNDING	100V ONLY	
11	RK2-1302-000		1	CABLE, USB HOST POWER SUPPLY	CN/ASIA	
12	XA9-1495-000		1	SCREW, RS, M3X6		
13	XA9-1503-000		19	SCREW, TAP, M3X6		
14	XA9-1648-000		4	SCREW, TP, M3X8		
501	XB2-6400-607		1	SCREW, W/WASHER, M4X6 (S)	100V ONLY	

FIGURE 110  
ENGINE CONTROLLER ASS'Y

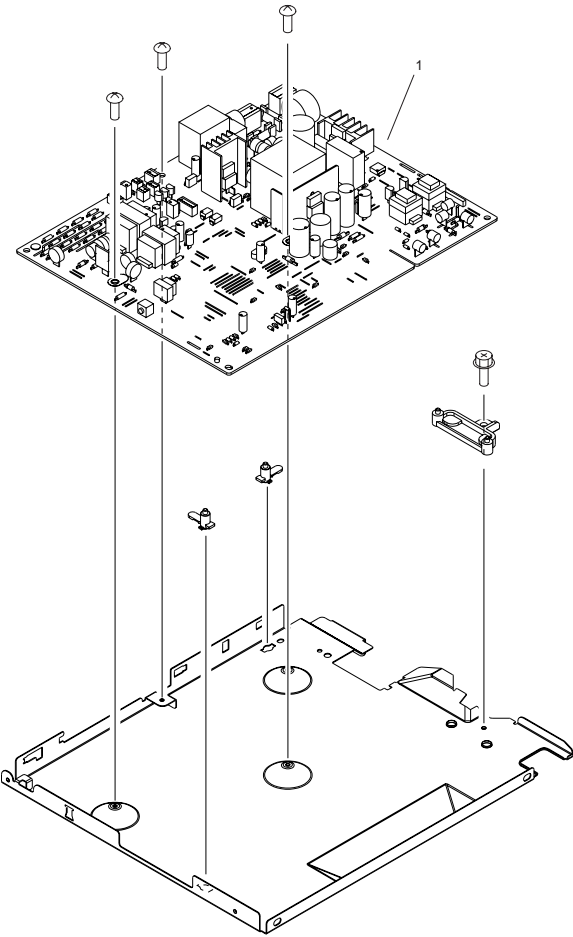


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	S V C
Fig.110	FM2-6719-000		1	ENGINE CONTROLLER ASS'Y	100V	
Fig.110	RM1-1300-030		1	ENGINE CONTROLLER ASS'Y	120V	
Fig.110	RM1-1462-030		1	ENGINE CONTROLLER ASS'Y	230V	
1	FM2-8283-000		1	ENGINE CONTROLLER PCB ASS'Y	100V	
1	RM1-1242-030		1	ENGINE CONTROLLER PCB ASS'Y	120V	
1	RM1-1243-030		1	ENGINE CONTROLLER PCB ASS'Y	230V	



FIGURE 250  
MAIN DRIVE ASS'Y

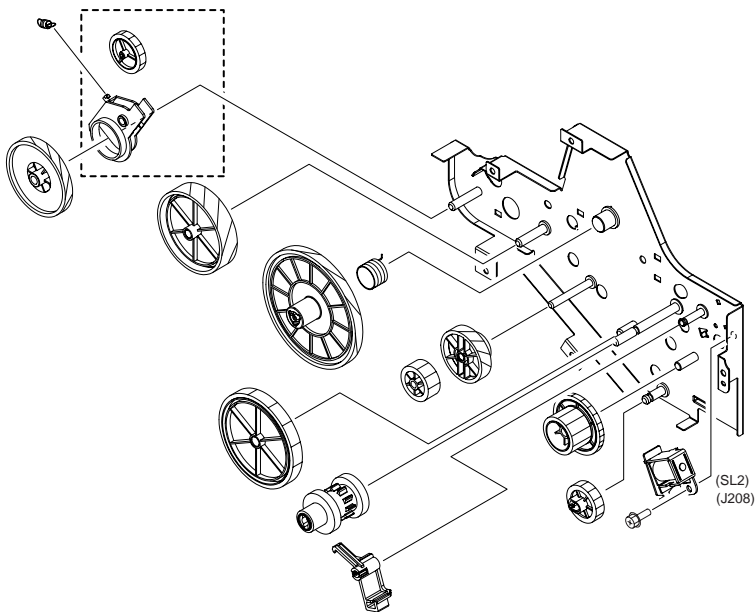


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS	SVC
Fig.250	RM1-1299-020		1	MAIN DRIVE ASS'Y		

FIGURE 251  
DUPLEXING DRIVE ASS'Y

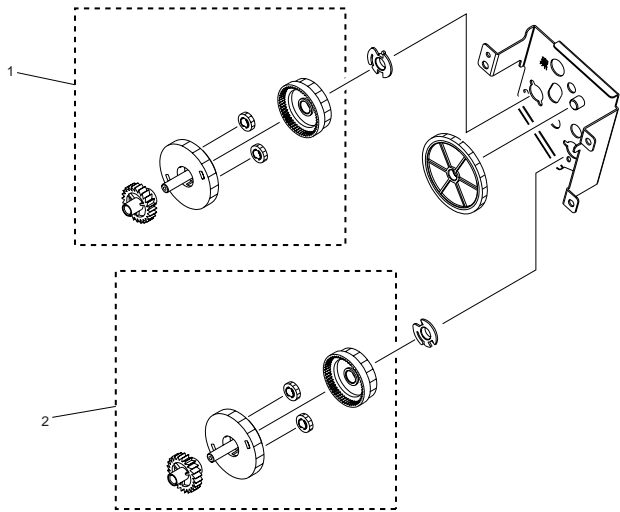


FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
Fig.251	RM1-1302-000		1	DUPLEXING DRIVE ASS'Y		
1	RM1-1303-000		1	NORMAL ROTATION DRIVE ASS'Y		
2	RM1-1304-000		1	REVERSE ROTATION DRIVE ASS'Y		

FIGURE 300  
CASSETTE

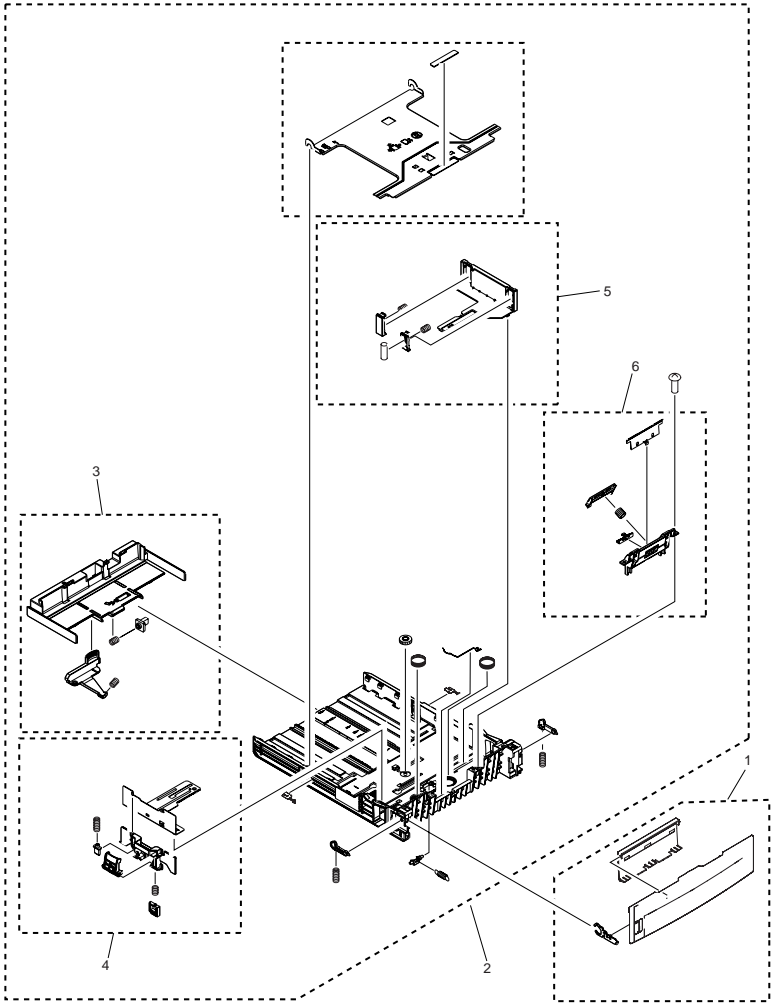


FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
Fig.300	FM2-6190-000		1	CASSETTE		
1	FM2-6191-000		1	CASSETTE COVER ASS'Y		
2	FM2-6192-000		1	CASSETTE BODY ASS'Y		
3	RM1-1295-000		1	BACK END LIMIT ASS'Y		
4	RM1-1296-000		1	LEFT PAPER SIDE END ASS'Y		

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
5	RM1-1297-020		1	RIGHT PAPER SIDE END ASSY		
6	FM2-6707-000		1	SEPARATION PAD ASS'Y		

FIGURE 360  
DUPLEXING ASS'Y

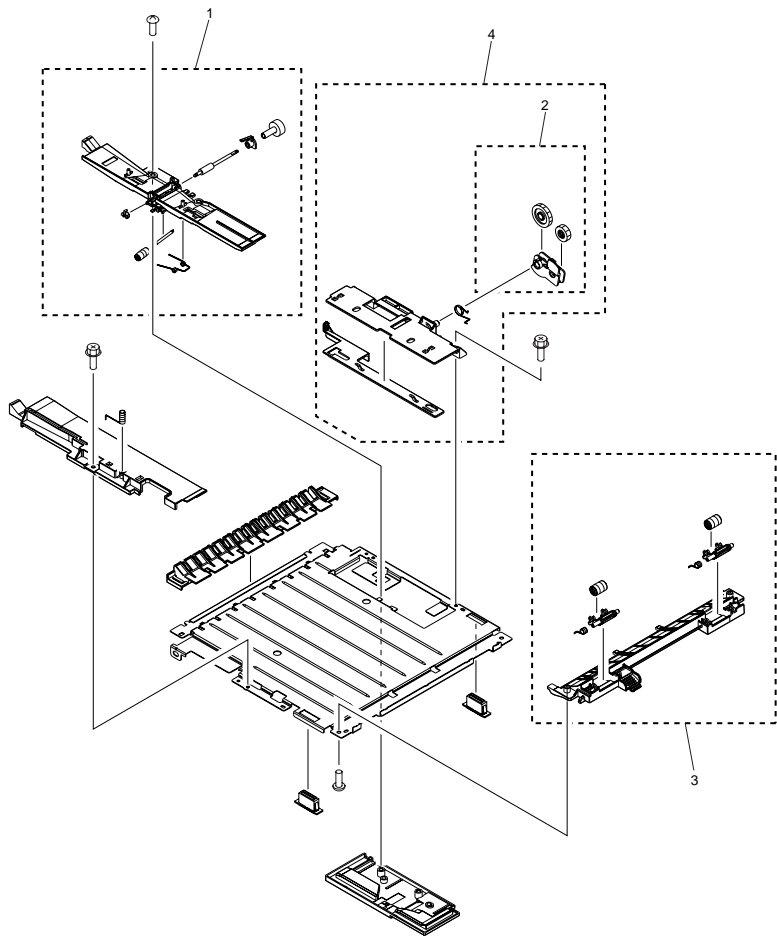


FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
Fig.360	RM1-1313-000		1	DUPLEXING ASS'Y		
1	RM1-1314-000		1	STANDARD GUIDE ASS'Y		
2	RM1-1319-000		1	DUPLEX PENDULUM ASS'Y		
3	RM1-1317-020		1	DUPLEXING OUTLET GUIDE ASS'Y		
4	RM1-1318-000		1	SIZE CHANGE ASS'Y		

FIGURE 810  
FIXING ASS'Y

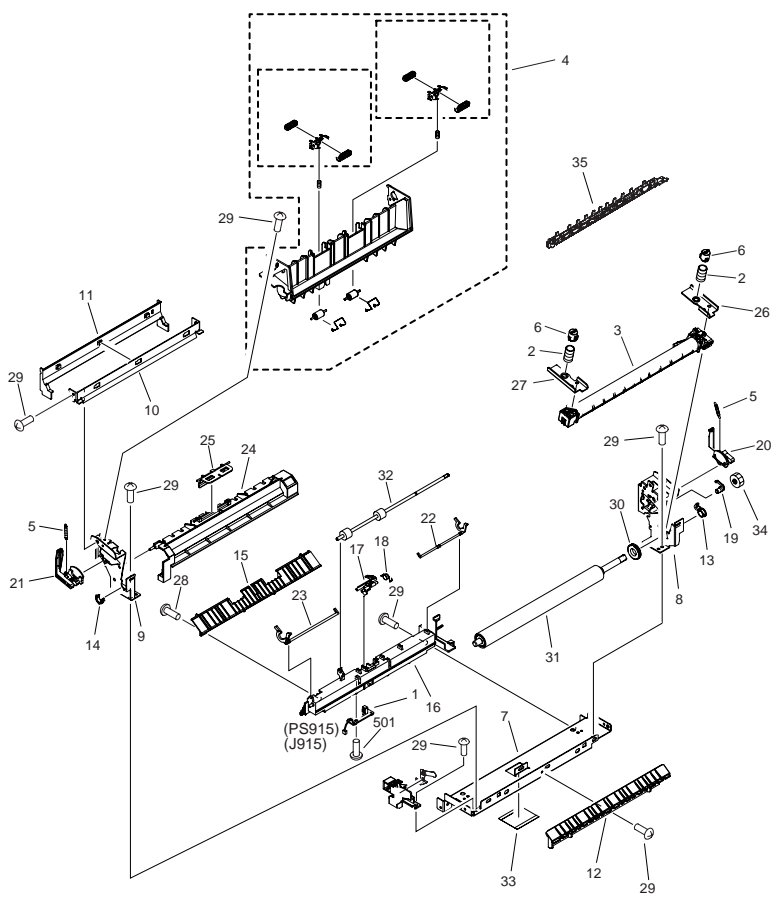


FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
Fig.810	FM2-6717-000		1	FIXING ASS'Y	100/120V	
Fig.810	FM2-6718-000		1	FIXING ASS'Y	230V	
1	RM1-1251-000		1	DELIVERY SENSOR PCB ASS'Y	PS915 J915	
2	RU5-2140-000		2	SPRING, COMPRESSION		
3	FM2-6703-000		1	FILM GUIDE ASS'Y	100/120V	
3	FM2-6704-000		1	FILM GUIDE ASS'Y	230V	
4	RM1-1291-000		1	DELIVERY FRAME ASS'Y		
5	RA0-1090-000		2	SPRING, TENSION		
6	RA0-1189-000		2	RETAINER, SPRING		
7	RC1-3603-000		1	FRAME, FIXING		
8	RC1-3604-000		1	SIDE PLATE, FIXING, RIGHT		
9	RC1-3605-000		1	SIDE PLATE, FIXING, LEFT		
10	RC1-3606-000		1	PLATE, FIXING REINFORCEMENT		
11	RC1-3607-000		1	GUIDE, FIXING, UPPER		
12	RC1-3608-000		1	GUIDE, FIXING ENTRANCE		
13	RC1-3609-020		1	BUSHING		
14	RC1-3610-000		1	BUSHING		
15	RC1-3611-000		1	GUIDE, PAPER SEPARATE, LOWER		
16	RC1-3612-000		1	HOLDER, SEPARATE LOWER GUIDE		
17	RC1-3613-000		1	FLAG, PAPER DELIVERY SENSOR		
18	RC1-3614-000		1	SPRING, TORSION		
19	RC1-3615-000		1	BUSHING		
20	RC1-3616-000		1	LEVER, PRESSURE RELEASE, RIGHT		
21	RC1-3617-000		1	LEVER, PRESSURE RELEASE, LEFT		
22	RC1-3618-000		1	LEVER, PRESS.RELEASE SENSOR, R		
23	RC1-3619-000		1	LEVER, PRESS.RELEASE SENSOR, L		
24	RC1-3621-000		1	COVER, FIXING		
25	RC1-3622-000		1	FLAG, INTERTWINE PREVENTION		
26	RC1-3623-000		1	PLATE, PRESSURE, RIGHT		
27	RC1-3624-000		1	PLATE, PRESSURE, LEFT		
28	XA9-1422-000		1	SCREW, WWASHER, M4X12		
29	XA9-1503-000		10	SCREW, TAP, M3X6		

FIGURE & KEY NO.	PARTS NUMBER	R A N K	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	S V C
30	RC1-3628-000		1	RING, CONDUCTIVE RUBBER		
31	RC1-3630-000		1	ROLLER, PRESSURE		
32	RC1-3633-000		1	ROLLER, FACE-UP		
33	RC1-3635-000		1	SHEET, FIXING BOTTOM SHEET		
34	RU5-0330-000		1	GEAR, 17T		
35	FC7-3048-000		1	GUIDE, FILM		
501	XB4-7300-809		1	SCREW, TAP, BINDING HEAD, M3X8		



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