Service Manual

LBP3310/3370 Series

Canon

Jan 25 2008

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

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Caution

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

Symbols Used

This documentation uses the following symbols to indicate special information:

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

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▭▮▮▮▭ represents the path of mechanical drive; where a signal name accompanies the symbol , the arrow ⟶ indicates the direction of the electric signal.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.
2. In the digital circuits, '1'is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low".(The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.
All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

Contents

Chapter 1 PRODUCT DESCRIPTION

Contents

1.1 Features

1.1.1 Feature

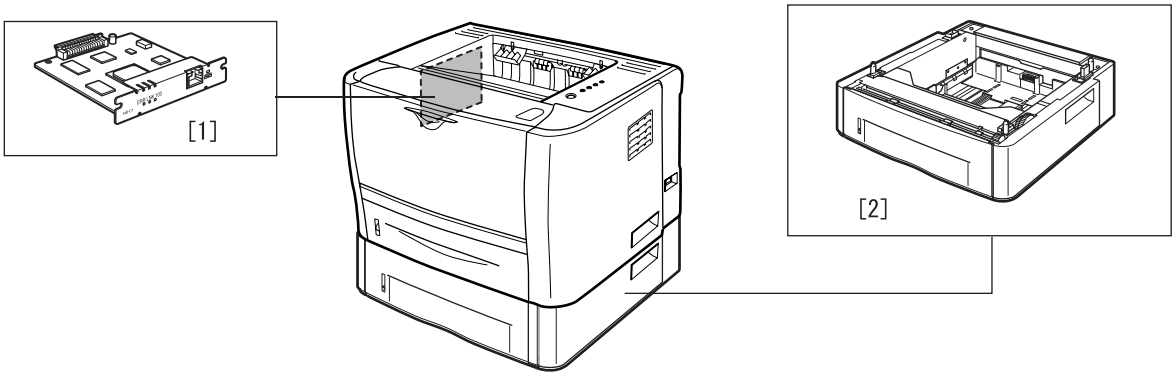
LBP3370 / LBP3310

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

LBP3310



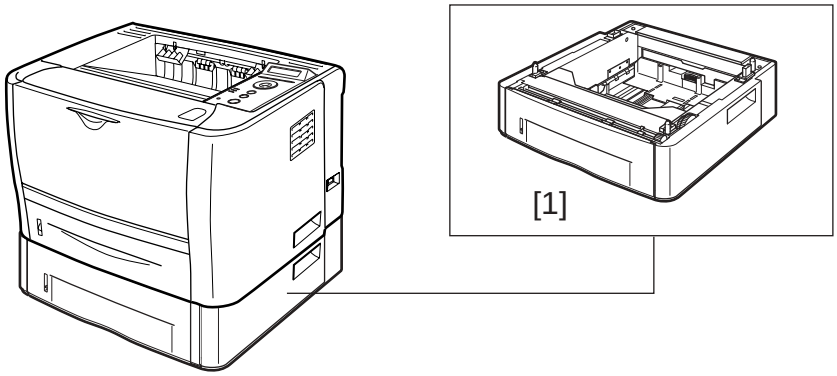
F-1-1
T-1-1

[1] Network Board NB-C2

[2] Paper Feeder PF-35P

1.2.2 System Construction

LBP3370



F-1-2
T-1-2

[1] Paper Feeder PF-35P

1.3 Product Specifications

1.3.1 Product Specifications

LBP3310

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 3k cartridge: about 3000 prints 7k cartridge: about 7000 prints (A4, single-sided; at 5% image ratio)
Warm-up time	in standby: 0 sec (at power-on: 8 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	6.5 sec or less (approx.; A4)
Print speed (A4)	26 pages/min (approx.)
Cassette paper size	Standard sizes A4, B5, A5, Legal, Letter, Executive Custom sizes Width 148.0 to 215.9 mm; Length 210.0 to 355.6 mm
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/m2), heavy paper (91 to 120 g/m2), recycled paper,
Multi-purpose paper type	plain paper (64 to 90 g/m2), heavy paper (91 to 163 g/m2), recycled paper, transparency, label paper, envelop (DL, COM10, C5, Monarch, B5)
Cassette capacity	250 sheets (approx.; plain paper, 64 g/m2)
Multi-purpose capacity	50 sheets (approx.; plain paper, 64 g/m2)
Delivery tray stack	Face-down output tray: approx. 125 sheets (64 g/m2) Face-up output slot: 1 sheet
Duplex method	Auto duplexing
Interface	Standard : USB2.0, Option : 10Base-T/100Base-TX
Memory	8 MB (internal; no optional memory available)
Hard disk	standard : none, option : none
Operating environment (Temperature range)	10 to 32.5 deg C
Operating environment (Humidity range)	20% to 80% RH
Noise	55 dB or less (during printing; based on ISO9296; announced noise emission)
Power supply rating	AC120V±10% (50/60Hz ±2Hz) AC230V±10% (50/60Hz ±2Hz)
Power consumption (Maximum)	120V: 845W or less 230V: 909W or less (approx.; 20 deg C; for input of rated power supply; including peak value lasting 1 sec or more)
Power consumption	120V Average suring operation: approx. 386W Average suring standby: approx. 4W 230V Average suring operation: approx. 382W Average suring standby: approx. 4W
Dimensions	399.7 (W) x 378.6 (D) x 258 (H)mm
Weight	printer: Approx;11.2kg (excluding the toner cartridge); toner cartridge: Approx,0.8kg(3K cartridge), Approx,1.0kg(7K cartridge)
Option	paper feeder

1.3.2 Product Specifications

LBP3370

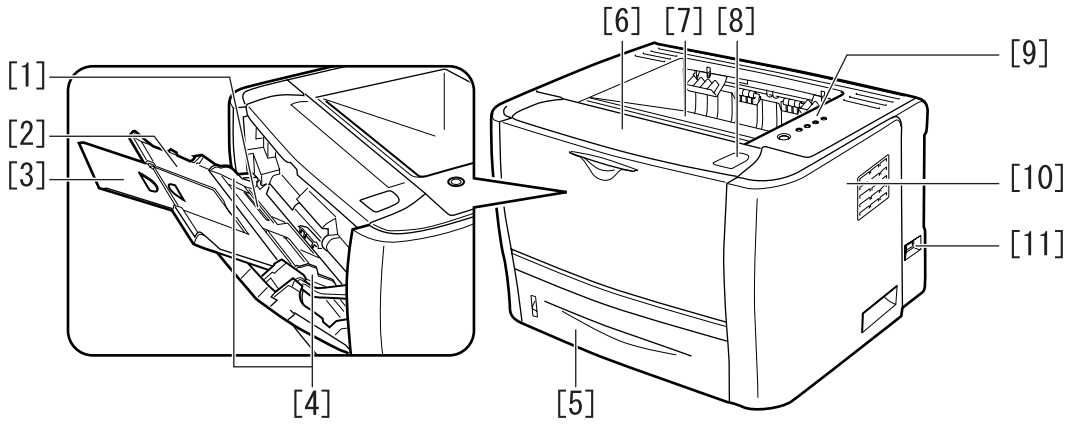
Body installation method	desktop page printer
Photosensitive medium	OPC drum
Exposure method	semiconductor laser
Development method	Toner projection development

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 3k cartridge: about 3000 prints 7k cartridge: about 7000 prints (A4, single-sided; at 5% image ratio)
Warm-up time	in standby: 0 sec (at power-on: 9 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	6.5 sec or less (approx.; A4)
Print speed (A4)	26 pages/min (approx.)
Cassette paper size	Standard sizes A4, B5, A5, Legal, Letter, Executive Custom sizes Width 148.0 to 215.9 mm; Length 210.0 to 355.6 mm
Multi-purpose paper size	Standard sizes A4, B5, A5, Legal, Letter, Executive, Envelope DL, Envelope COM10, Envelope C5, Envelope Monarch, Envelope B5, Index Card, Statement, 16K Custom sizes Width 76.2 to 215.9 mm; Length 127.0 to 355.6 mm
Cassette paper type	plain paper (64 to 90 g/m2), heavy paper (91 to 120 g/m2), recycled paper
Multi-purpose paper type	plain paper (64 to 90 g/m2), heavy paper (91 to 163 g/m2), recycled paper, transparency, label paper, envelop (DL, COM10, C5, Monarch, B5)
Cassette capacity	250 sheets (approx.; plain paper, 64 g/m2)
Multi-purpose capacity	50 sheets (approx.; plain paper, 64 g/m2)
Delivery tray stack	Face-down output tray: approx. 125 sheets (64 g/m2) Face-up output slot: 1 sheet
Duplex method	Auto duplexing
Interface	Standard : USB2.0, 10Base-T/100Base-TX
Memory	8 MB (internal; no optional memory available)
Hard disk	standard : none, option : none
Operating environment (Temperature range)	10 to 32.5 deg C
Operating environment (Humidity range)	20% to 80% RH
Noise	55 dB or less (during printing; based on ISO9296; announced noise emission)
Power supply rating	AC230V±10% (50/60Hz ±2Hz)
Power consumption (Maximum)	950W or less (approx.; 20 deg C)
Power consumption	Average suring operation: approx. 403W Average suring standby: approx. 9W
Dimensions	399.7 x 378.6 x 267 mm
Weight	printer: Approx;11.4kg (excluding the toner cartridge); toner cartridge: Approx,0.8kg(3K cartridge), Approx,1.0kg(7K cartridge)
Option	paper feeder

1.4 Name of Parts

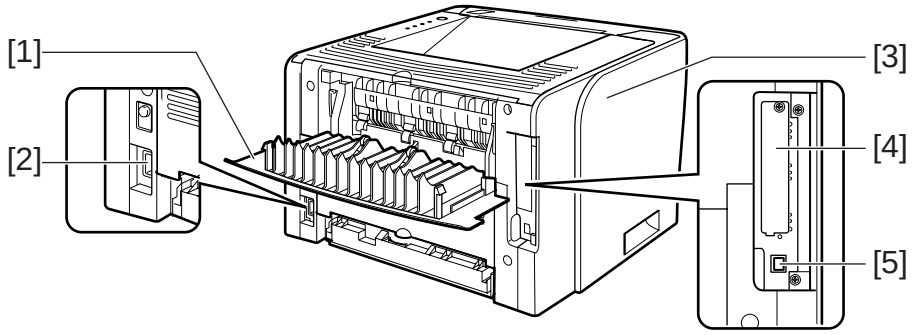
1.4.1 External View

LBP3310



F-1-3

[1] Manual feeder tray
[2] Sub tray
[3] Extension tray
[4] Paper guide
[5] Paper Cassette
[6] Front Cover
[7] Face-down Output Tray
[8] Open Button
[9] Control Panel
[10] Right cover
[11] Power Switch

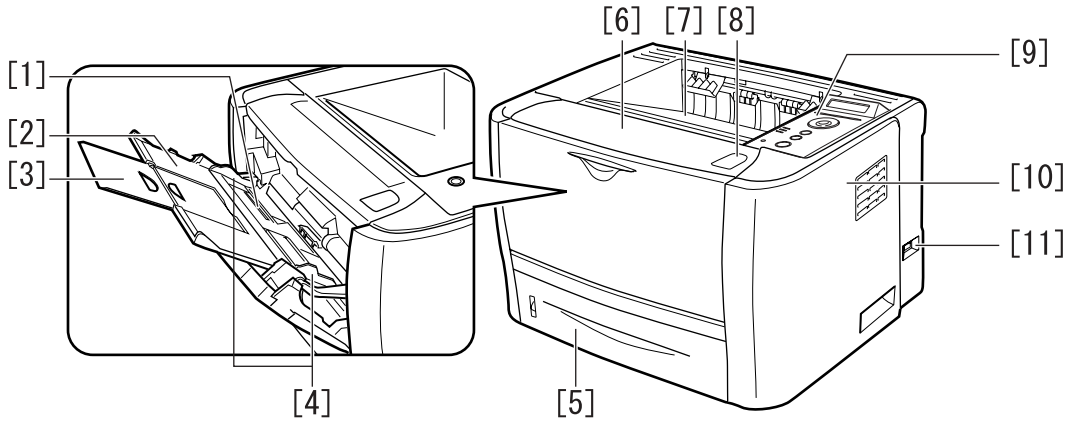


F-1-4

[1] Face-up Output Tray
[2] Power Socket
[3] Left cover
[4] Expansion Slot
[5] USB Connector

1.4.2 External View

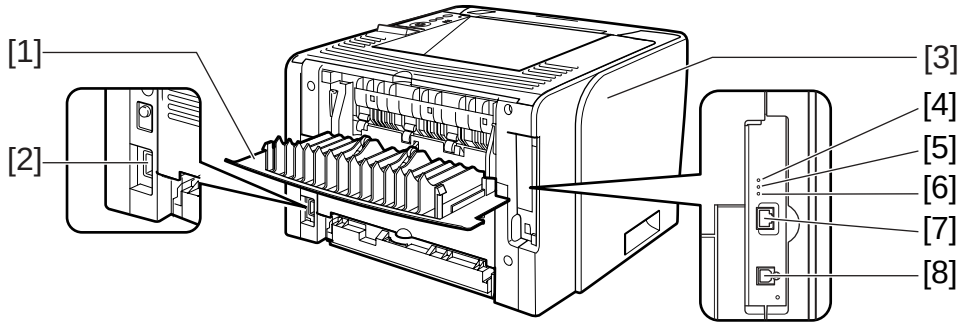
LBP3370



F-1-5

[1] Manual feeder tray
[2] Sub tray
[3] Extension tray
[4] Paper guide
[7] Face-down Output Tray
[8] Open Button
[9] Control Panel
[10] Right cover

[5] Paper Cassette
[6] Front Cover
[11] Power Switch

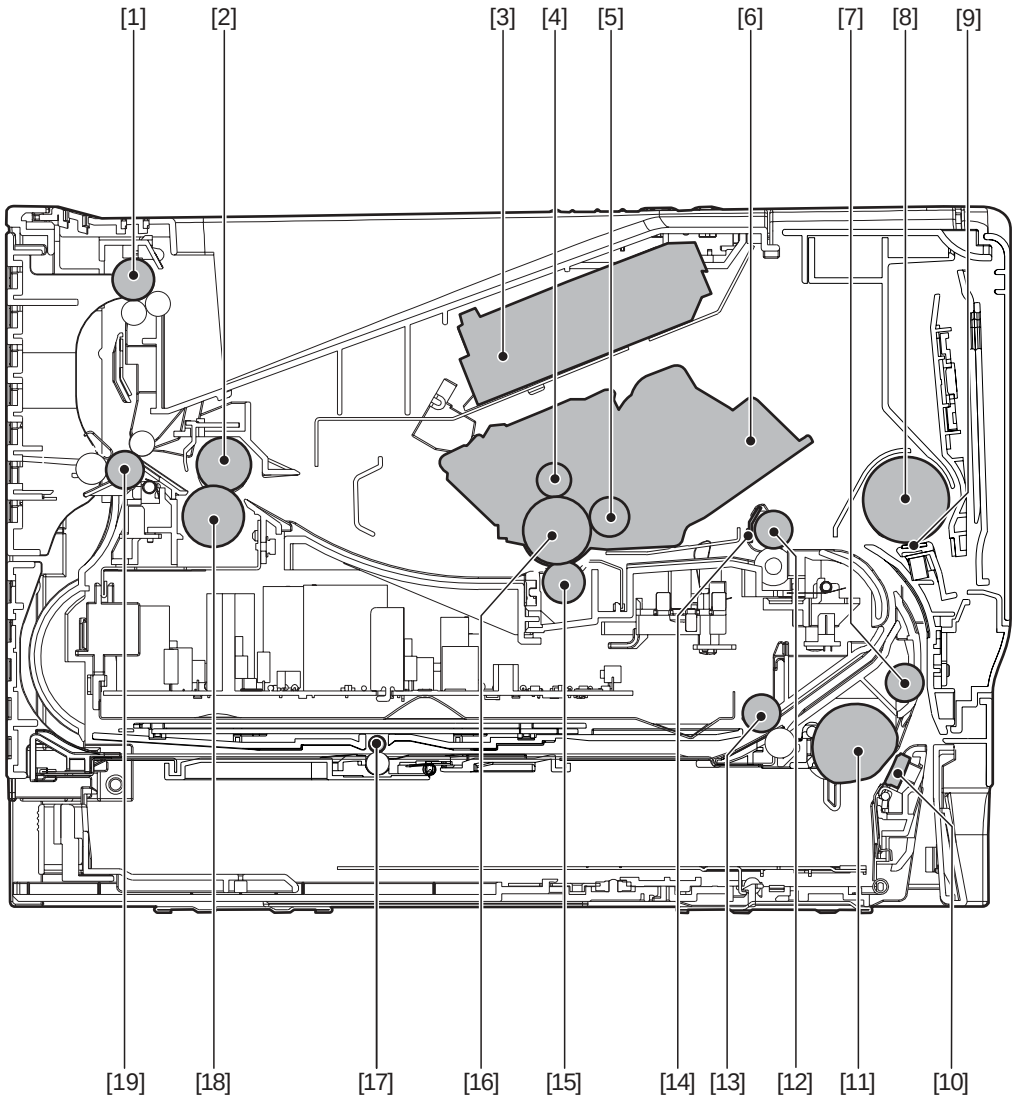


F-1-6

[1] Face-up Output Tray
[2] Power Socket
[3] Left Cover
[4] 100 Indicatotor
[5] 10 Indicatotor
[6] TX/RX Indicatotor
[7] LAN Connector
[8] USB Connector

1.4.3 Cross Sectional Views

LBP3370 / LBP3310



F-1-7

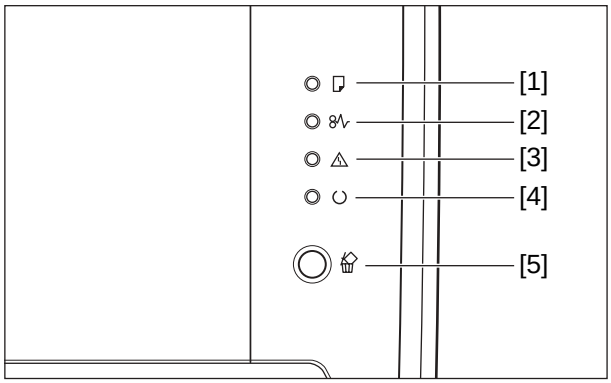
[1] Face-down delivery roller
[2] Fixing film unit
[11] Pick-up roller
[12] Registration roller

[3] Laser/scanner unit
[4] Primary charging roller
[5] Developing cylinder
[6] Toner cartridge
[7] Feed roller
[8] Manual pickup roller
[9] Manual separation pad
[10] Separation pad
[13] Duplex pick-up roller
[14] Registration shutter
[15] Transfer charging roller
[16] Photosensitive drum
[17] Duplex feed roller
[18] Pressure roller
[19] Face-up delivery roller

1.5 Using the Machine

1.5.1 Control Panel

LBP3310

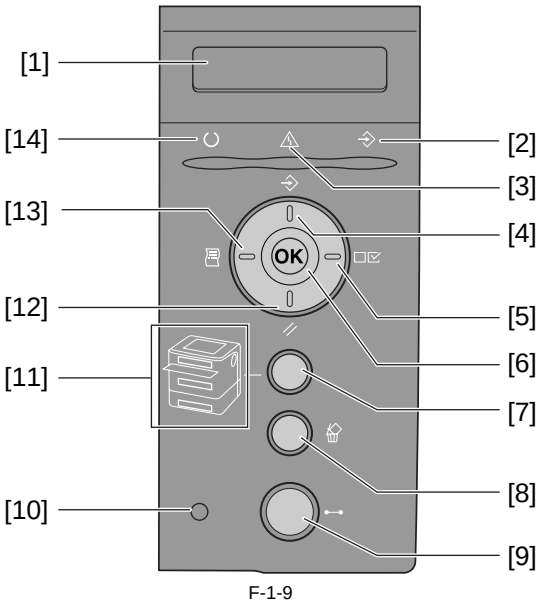


F-1-8

[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.

1.5.2 Control Panel

LBP3370



F-1-9

[1] Display
Displays the printer status, messages, the items and setting values of the menu functions.
[2] Job Indicator (Green)
On:
The printer is receiving print data, or any print data remains in the printer memory.
Blinking:
The printer is processing print data.
Off:
There is no print data in the printer memory.
[3] Message Indicator (Orange)
On:
The printer cannot print because a problem has occurred in the printer.
(If the printer has entered Power Save Mode 1 when it is offline, only the Message indicator (orange) and Power indicator (green) are on.)
Off:
The printer is in a normal state.
[4] Job Key
On offline:
Does not function when the printer is offline.
On online:
Displays the JOB menu.
On menu operation:
Goes back to the previous menu (Goes back up the hierarchy).
[5] Settings Key
On offline:
Displays the SETUP menu.
On online:
Displays the SETUP menu. However, the USER MAIN. options cannot be specified when the printer is online.
On menu operation:
(green) are on.)
Displays the next right item in the menu. Increases the setting value.
[6] OK Key
On offline:
Does not function when the printer is offline.
On online:
Does not function when the printer is online.
On menu operation:
Goes to the next menu (Goes down the hierarchy). In a lowest menu level (When a setting value is displayed), determines the setting value.
[7] Feeder Selection Key
On offline:
Displays the SELECT FEEDER menu.
On online:
Displays the SELECT FEEDER menu.
On menu operation:
Does not function.
[8] Cancel Job Key
On offline:
Cancels the job when the Job indicator is on or blinking. Does not function when the Job indicator is off.
On online:
Cancels the job when the Job indicator is on or blinking. Does not function when the Job indicator is off.
[9] Online Key/Online Indicator (Green)
Turns on (online)/off (offline) the connection to the computer.
This key also has the function that, when an error has occurred, releases the printer from the error temporarily and continues the paused job. However, depending on the error, you may not be able to cancel it out.
The Online indicator under the Online key indicates the following printer status with its status.
On:
Online (The printer can receive print data from the computer.)
Off:
Offline (The printer cannot receive print data from the computer.)
However, if the printer has entered Power Save Mode, the (Online) indicator is off even when the printer is online.
[10] Power Indicator (Green)
On:
The printer is ON.
Off:
The printer is OFF.
[11]Paper Source Indicators (Green)
On:
The indicator for the currently selected paper source comes on.
Blinking:
There is no paper in the currently selected paper source, or the paper cassette is not set.
Off:
No paper source is selected. No paper cassette including the optional one or paper feeder is set.
[12] Reset Key
On offline:
Displays the RESET menu.
On online:
Displays the RESET menu.
On menu operation:
Goes to the next menu (Goes down the hierarchy).
In a lowest menu level (When a setting value is
displayed), determines the setting value.
[13] Utility Key
On offline:
Does not function when the printer is offline.
On online:
Displays the UTILITY menu.
On menu operation:
Displays the next left item in the menu. Decreases the setting value.
[14] Ready Indicator (Green)
On:
The printer is ready to print. (If the printer has entered Power Save Mode 1 when it is online, only the Ready indicator (green) and Power indicator (green) are on.)
Blinking:
The printer is performing a self-diagnostic test. The printer is in a warm-up state.

Off:
The printer cannot print.

Chapter 2 TECHNICAL REFERENCE

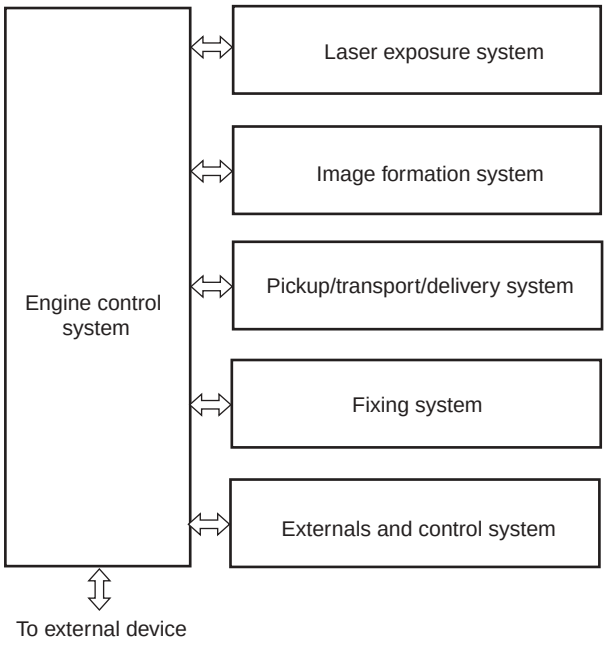
Contents

2.1 Functional Configuration

2.1.1 Outline

LBP3370 / LBP3310

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



F-2-1

2.2 Basic Sequense

2.2.1 Basic Operation Sequence

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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

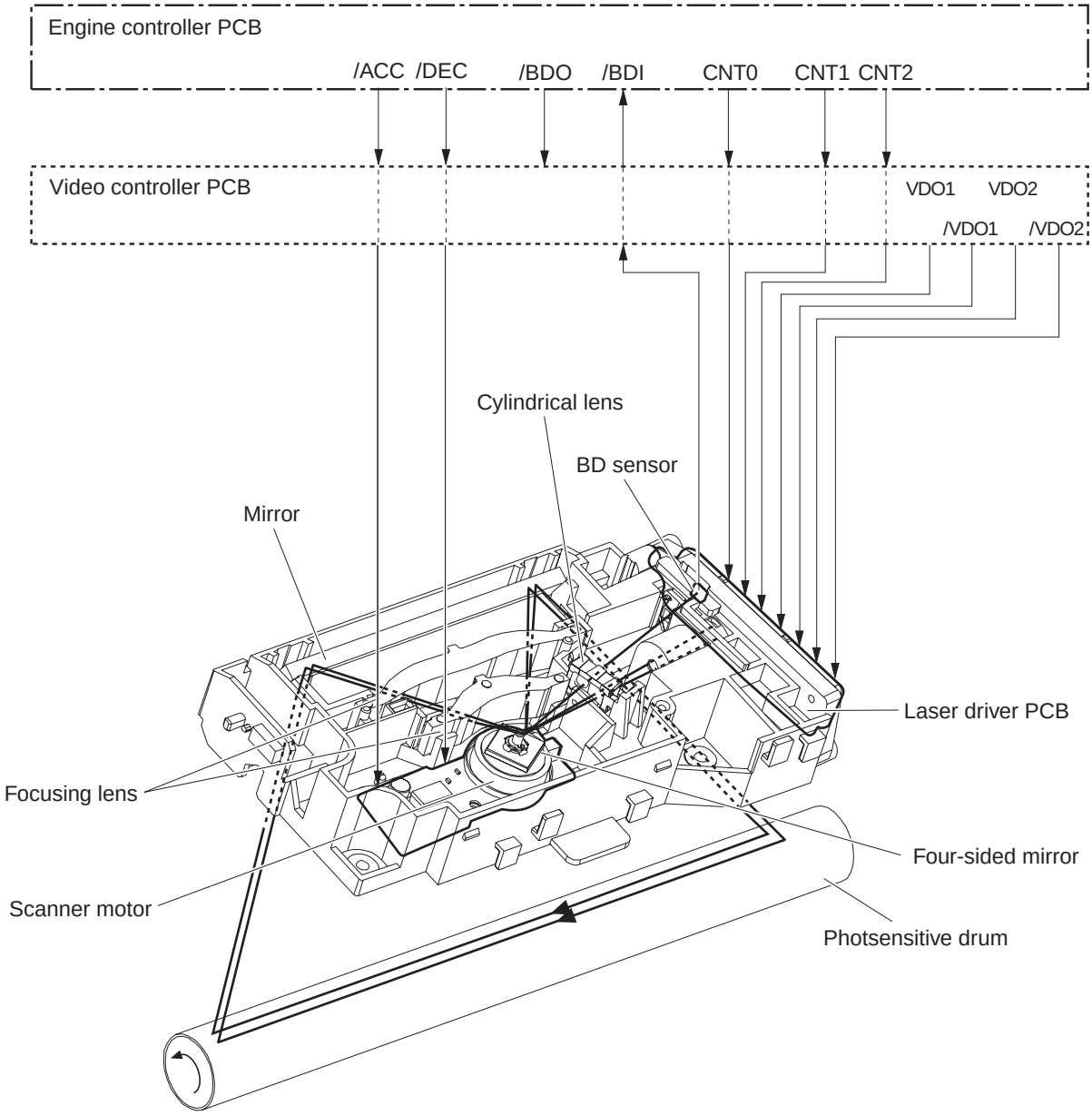
2.3 LASER EXPOSURE SYSTEM

2.3.1 Overview/Configuration

2.3.1.1 Outline

LBP3370 / LBP3310

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.

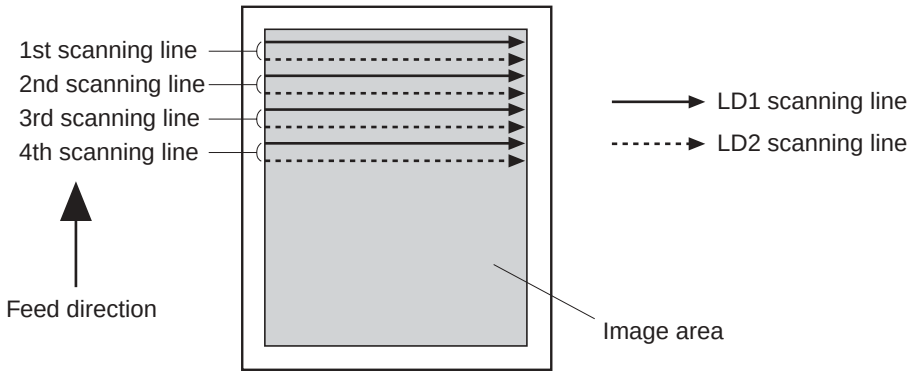


F-2-2

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.



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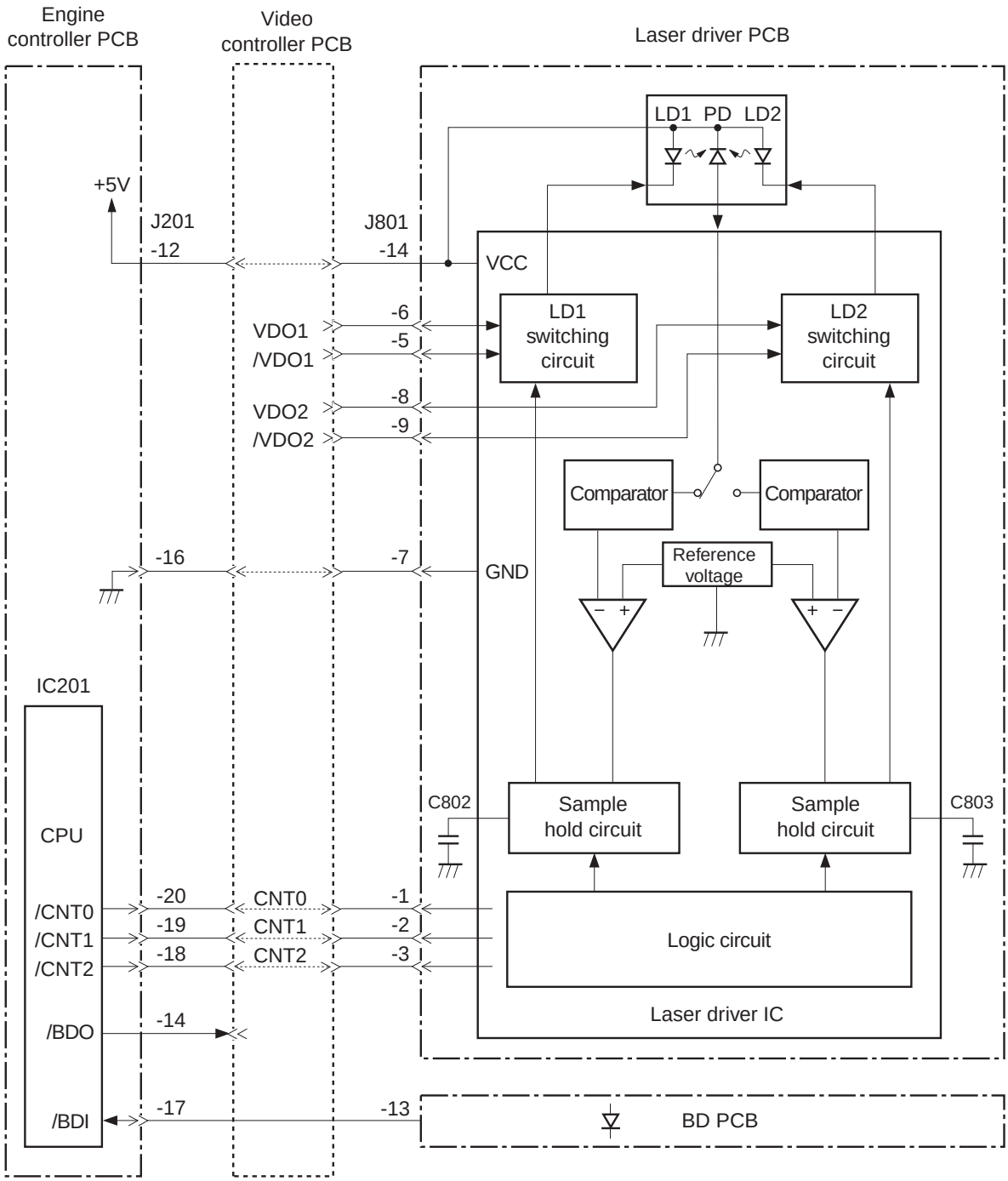
2.3.1.2 Laser Control Circuit

LBP3370 / LBP3310

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).

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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

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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)

LBP3370 / LBP3310

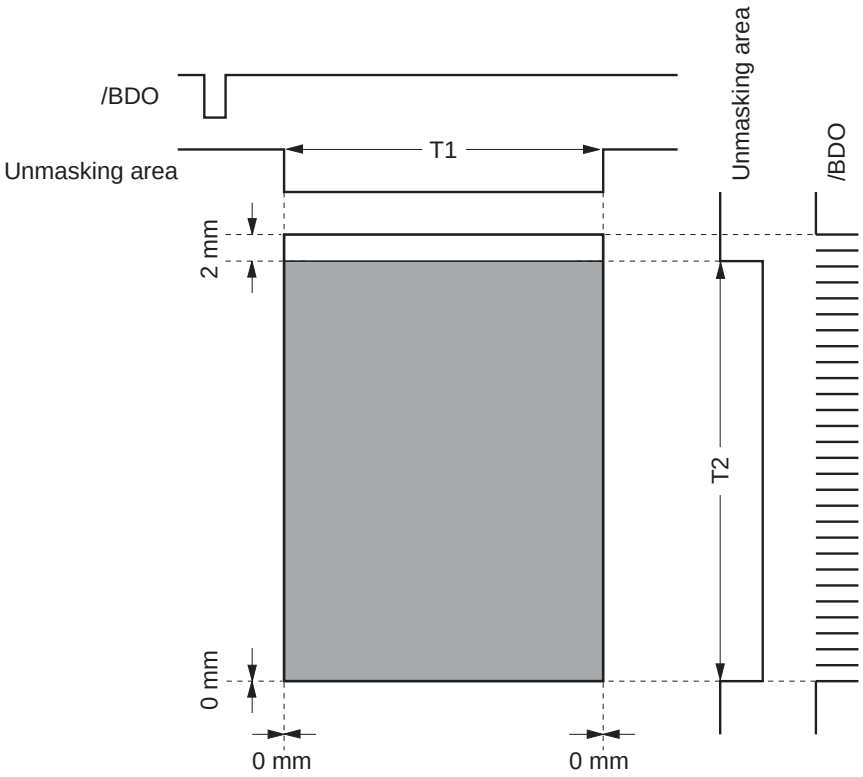
The automatic power control is to maintain the light intensity emitted from the laser diode to be constant.
There are two APCs, one is the initial APC (Note 1) and the other is the between-lines APC (Note 2). Both are controlled by the laser driver in the same way. The following is the sequence of this 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

LBP3370 / LBP3310

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.



F-2-5

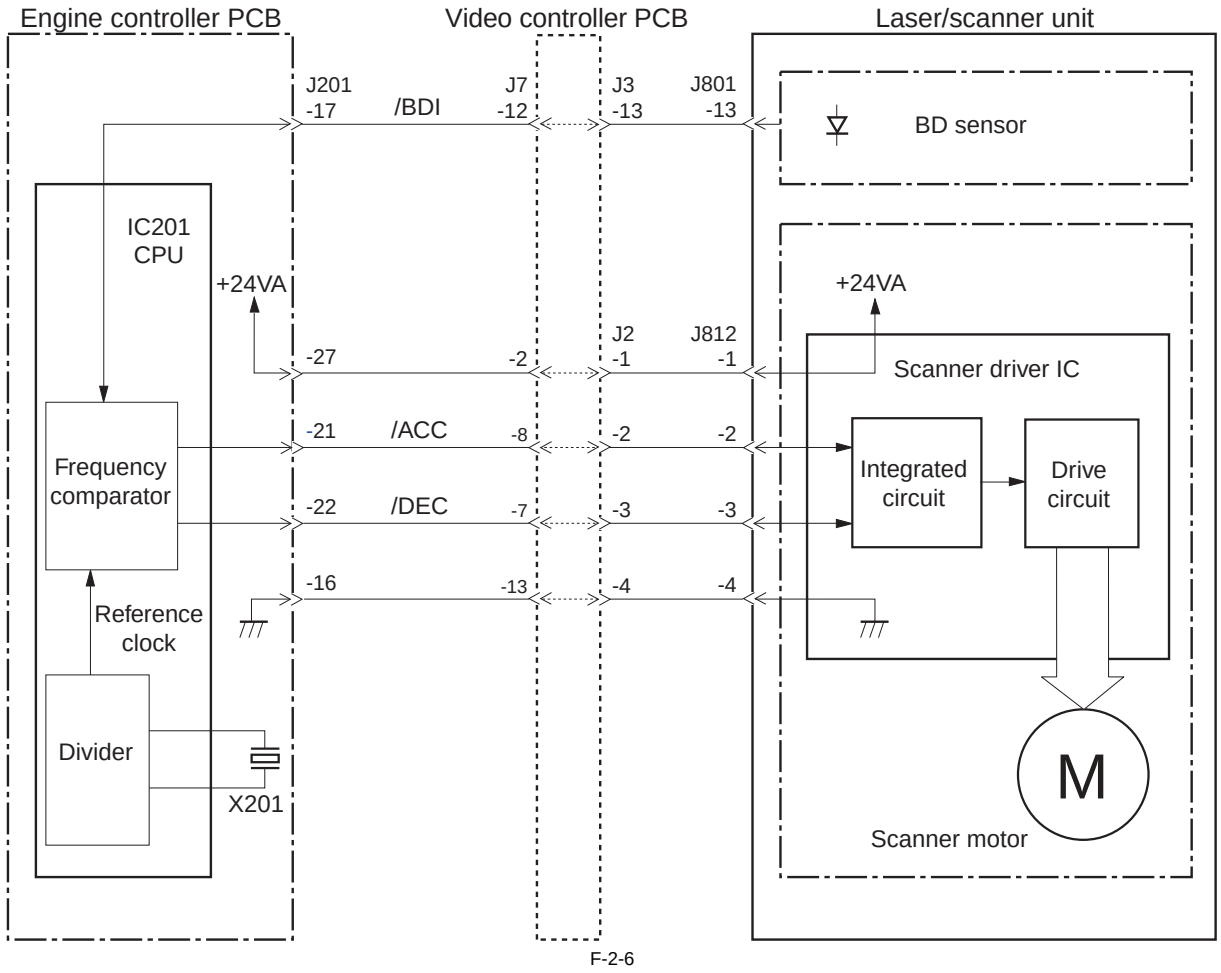
1) The shaded area indicates the area an image can be written by the laser beam.
2) T1 indicates the area of left /right outsides 0 mm of letter sized paper despite a paper size is specified or not.
3) T2 indicates the area of 2 mm behind the leading edge of the paper (where the /BDO signal starts to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

2.3.4 Laser Scanner Motor Control

2.3.4.1 Outline

LBP3370 / LBP3310

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.



F-2-6

2.3.4.2 Scanner motor speed control

LBP3370 / LBP3310

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 DECRELATION signal (/DEC) into "L" and the ACCELERATION signal (/ACC) into "H" to stop the scanner motor.

2.3.4.3 Scanner motor failure detection

LBP3370 / LBP3310

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 0.9 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

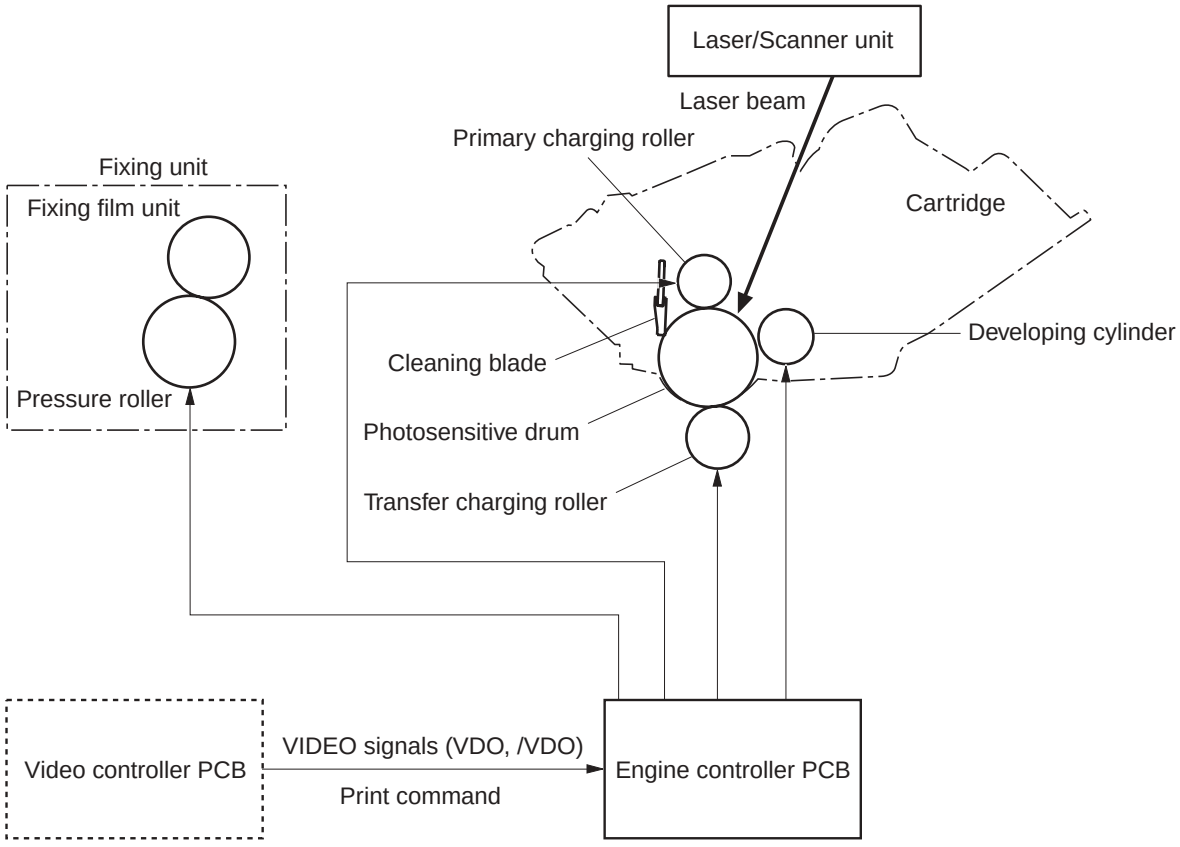
2.4.1 Overview/Configuration

2.4.1.1 Outline

LBP3370 / LBP3310

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.

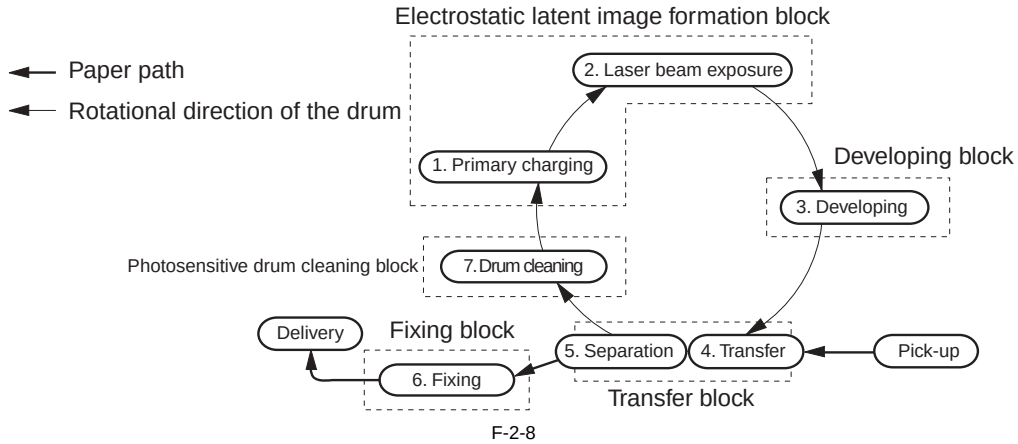


F-2-7

2.4.1.2 Print Process

LBP3370 / LBP3310

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.



F-2-8

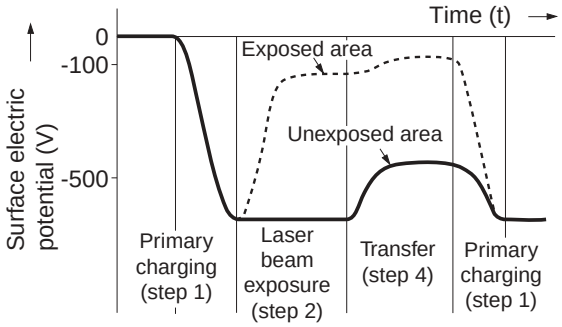
1. Electrostatic latent image formation block
   Form an electrostatic latent image on the photosensitive drum.
   Step 1: Primary charging (Charge the surface of the photosensitive drum uniformed negative potential)
   Step 2: Laser beam exposure (Form an electrostatic latent image on the photosensitive 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

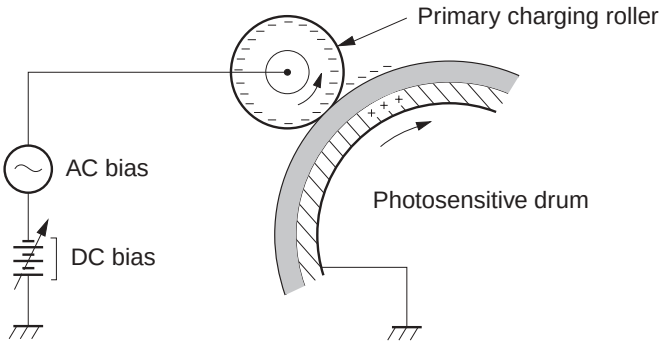
LBP3370 / LBP3310

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.



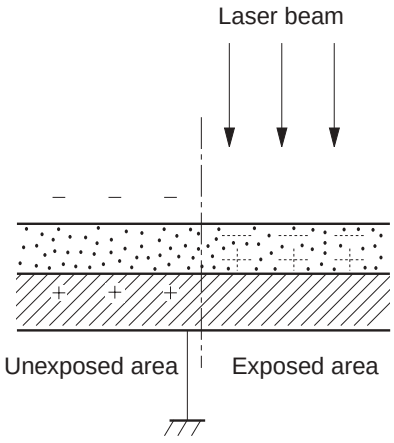
F-2-9

Step 1: Primary charging



F-2-10

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.

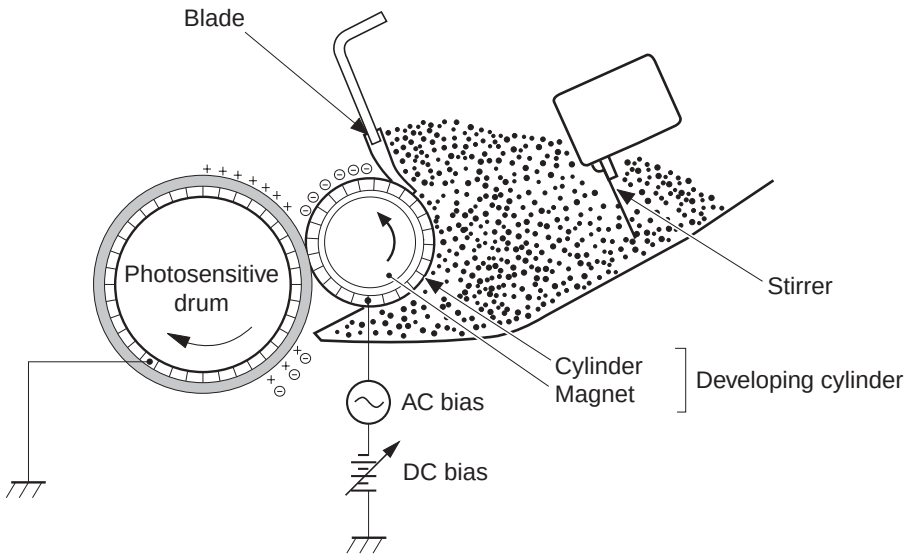


F-2-11

2.4.1.4 Development block

LBP3370 / LBP3310

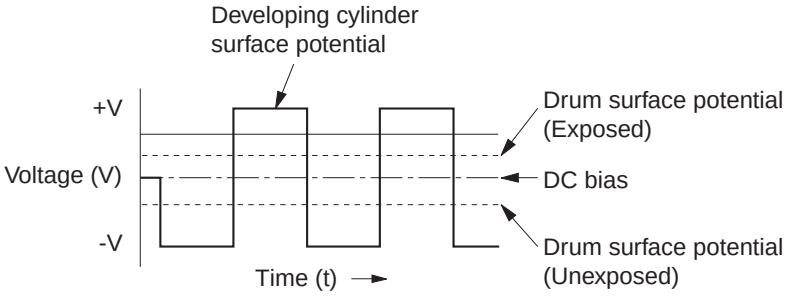
The electrostatic latent image on the photosensitive drum surface is visualized by applying the toner in this process. This printer utilizes the projection development method by the single-component toner.
Step 3: Development



F-2-12

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.



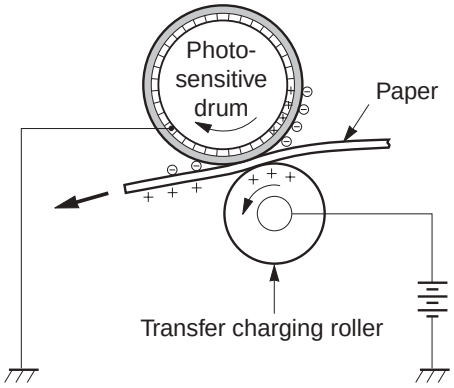
F-2-13

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

LBP3370 / LBP3310

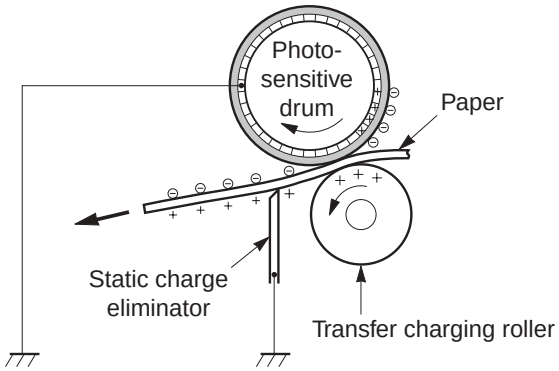
The transfer block transfers the toner image on the photosensitive drum onto a print paper.
Step 4: Transfer



F-2-14

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



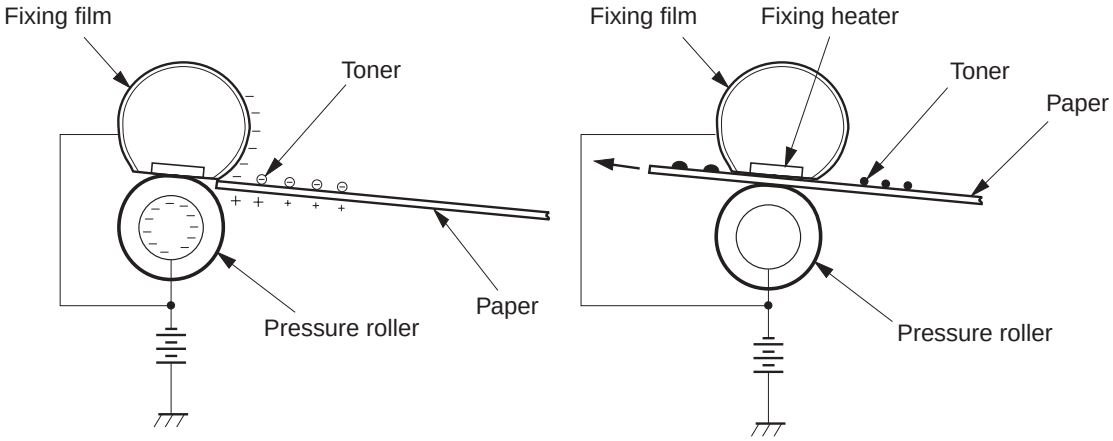
F-2-15

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

LBP3370 / LBP3310

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



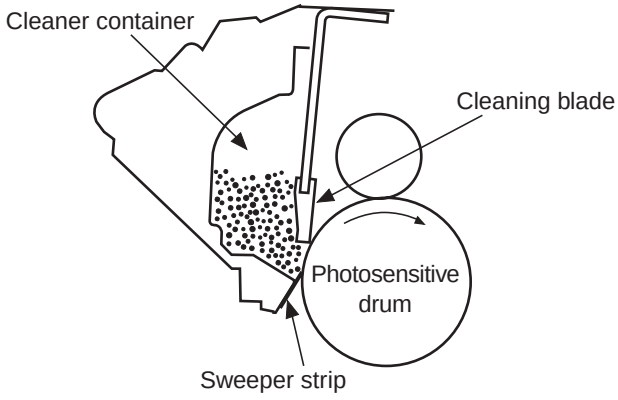
F-2-16

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

LBP3370 / LBP3310

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



F-2-17

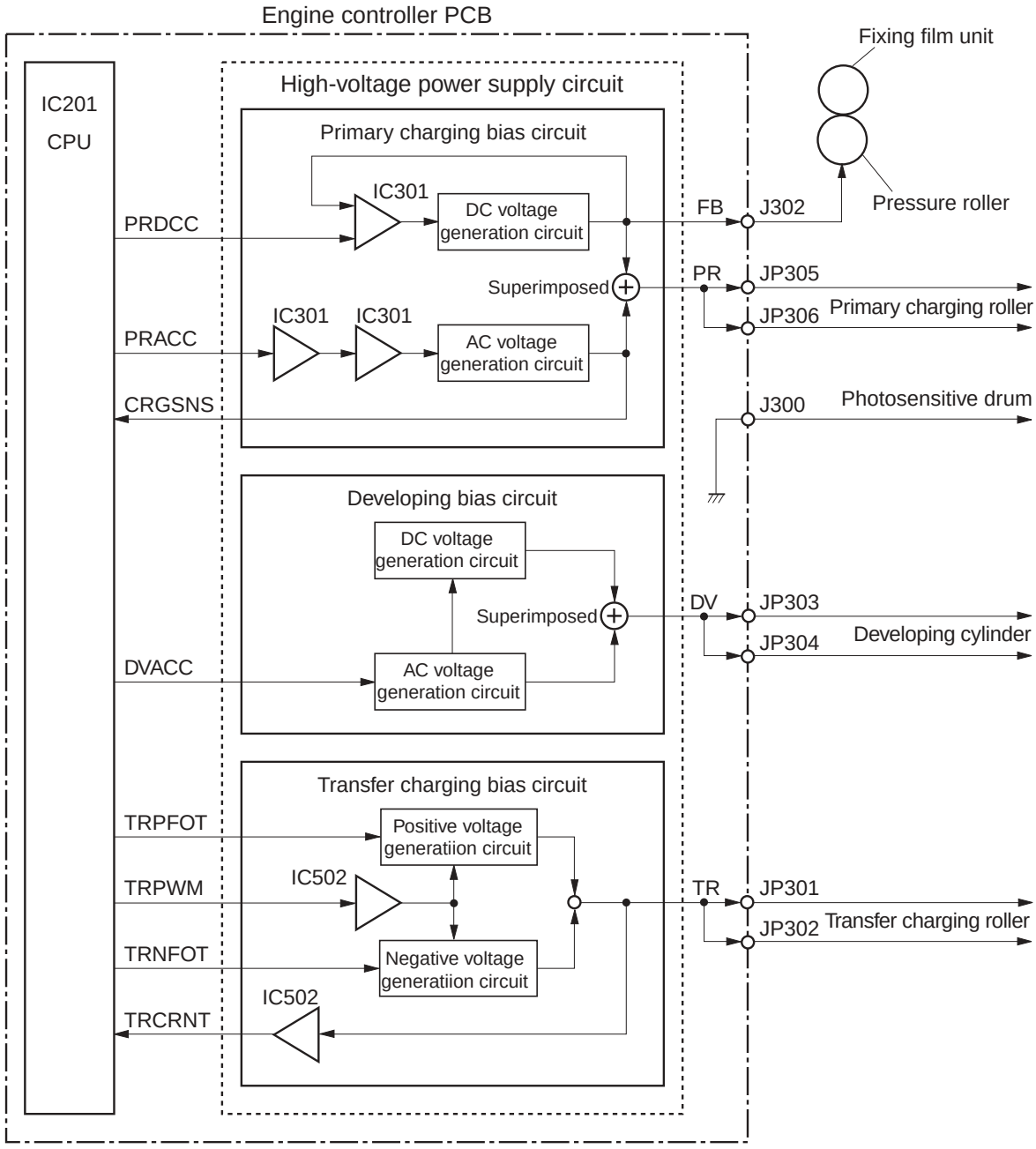
The cleaning blade scrapes off the leftover toner on the drum surface to be got ready for the next print. The waste toner is kept in the cleaner container.

2.4.2 High-Voltage Control

2.4.2.1 Outline

LBP3370 / LBP3310

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.



F-2-18

2.4.2.2 Primary charging bias generation

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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 CURRET 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 equence.
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

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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.

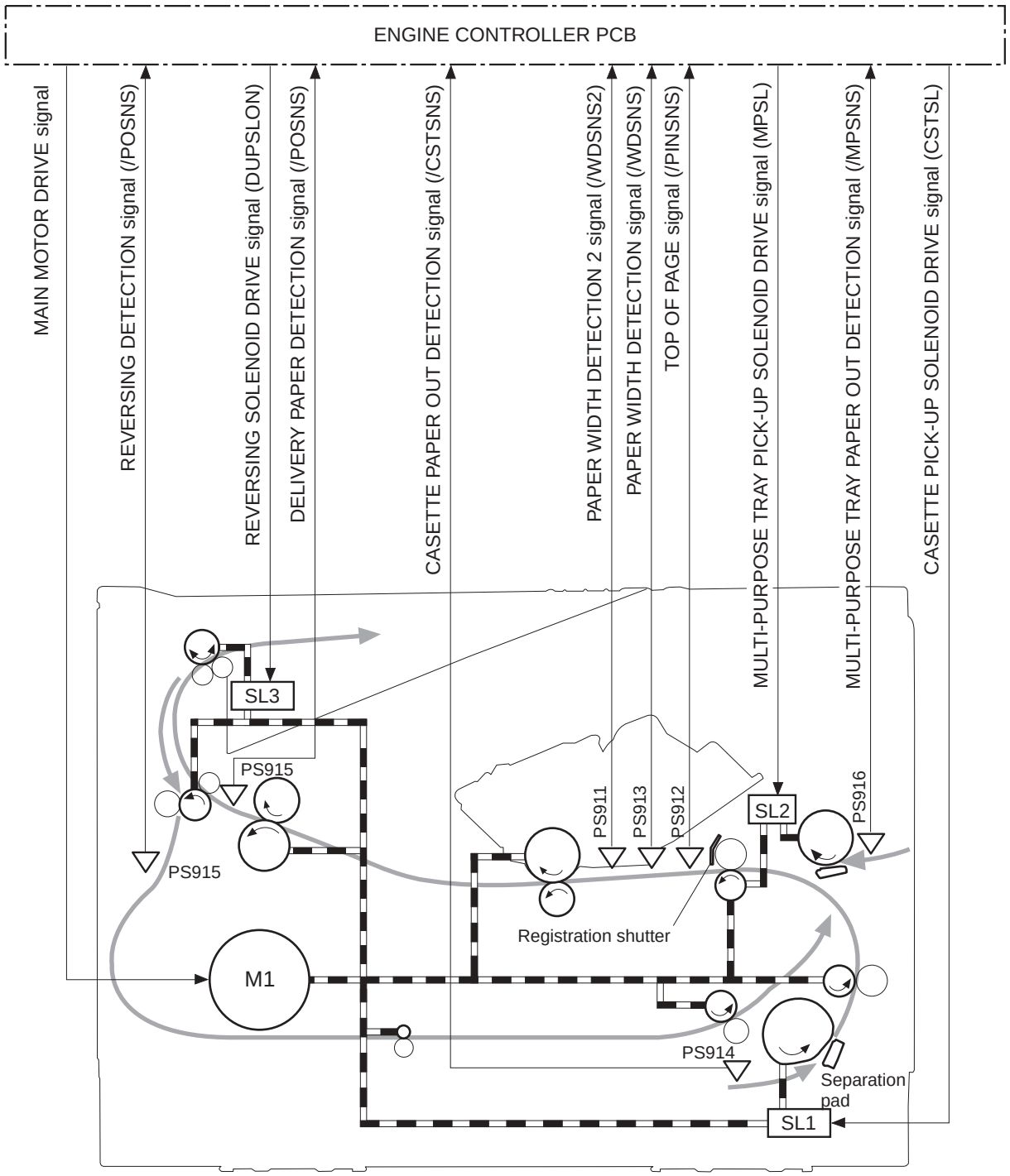
2.5 PICKUP AND FEEDING SYSTEM

2.5.1 Overview/Configuration

2.5.1.1 Outline

LBP3370 / LBP3310

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.



F-2-19

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

0018-3122

LBP3370 / LBP3310

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

0018-3123

LBP3370 / LBP3310

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. 2.4 sec. (1.9 sec. for the MPT, 3.0 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. 2.4 sec. (1.9 sec. for the MPT, 3.0 sec. for the optional cassette).

2.5.2.2.2 Delivery delay jam

0018-3124

LBP3370 / LBP3310

The CPU determines the delivery delay jam, when the leading edge of the paper does not reach the delivery sensor (PS915) within approx. 1.4 sec. after when the top of page sensor (PS912) detects the leading edge.

2.5.2.2.3 Reversing delay jam

0018-3125

LBP3370 / LBP3310

The CPU starts the reversing delay jam detection after it determined no wrapping jam.
The CPU determines the reversing delay jam, when the reversing sensor (PS915) does not detect the leading edge of the reversed paper within approx. 1.3 sec. after when the delivery sensor (PS915) detects the trailing edge of the paper.

2.5.2.3 Stationary Jams

2.5.2.3.1 Pick-up stationary jam

0018-3126

LBP3370 / LBP3310

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. 3.9 sec. after detecting the leading edge.

2.5.2.3.2 Delivery stationary jam

0018-3127

LBP3370 / LBP3310

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. 1.5 sec. at all after the top of page sensor (PS912) detected the trailing edge.

2.5.2.3.3 Reversing stationary jam

0018-3128

LBP3370 / LBP3310

The CPU determines the reversing stationary jam, when the reversing sensor (PS912) does not detects the trailing edge of the paper within approx. 2.5 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

0018-3129

LBP3370 / LBP3310

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) detests the leading edge of the paper, and within approx. 1.1 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

0018-3130

LBP3370 / LBP3310

The CPU determines the start-up residual jam, when the top of page sensor (PS912) or the delivery sensor/reversing sensor (PS915), the paper width sensor (PS913), or the paper width sensor 2 (PS911) detects a print paper upon the initial rotation period is started.

2.5.2.4.3 Door open jam

0018-3131

LBP3370 / LBP3310

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

LBP3370 / LBP3310

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. 0.15 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 Fees pick-ip

LBP3370 / LBP3310

The manual feeder mechanism feeds the sheet of paper placed in the manual feeder slot to the inside of the machine.
The presence/absence of paper placed at the slot is checked by the manual feeder paper sensor.
A separation pad is used to prevent multiple feeding.
The following is the sequence of operation the machine uses to pick up paper:

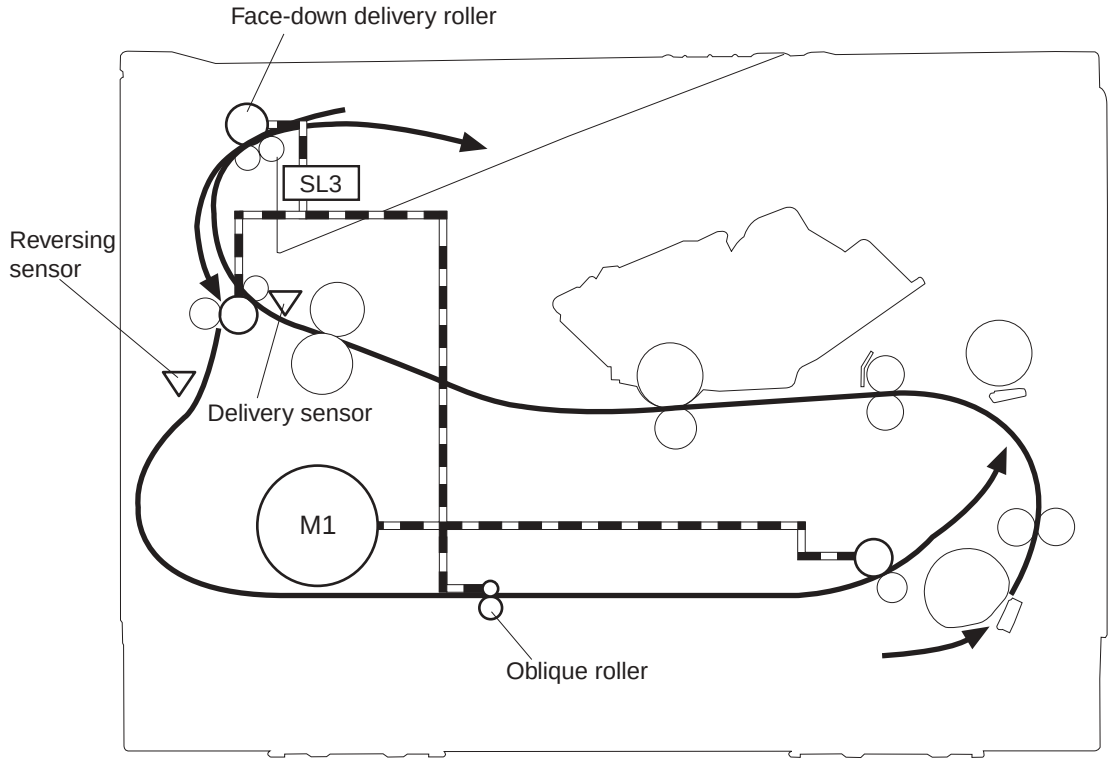
1.When the print command arrives from the video controller, the engine controller turns on the main motor (M1).
2.When the machine enters an initial rotation ready state, the manual feeder pickup solenoid (SL1) goes on for about 0.14 sec.
3.The rotation of the manual feeder pickup roller moves the print paper into the machine, with the separation pad making sure that no more than a single sheet of paper is fed inside.

2.5.5 Duplex Feeding

2.5.5.1 Outline

LBP3370 / LBP3310

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.



F-2-20

2.5.5.2 Operation

LBP3370 / LBP3310

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. 0.13 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 trailimg 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.

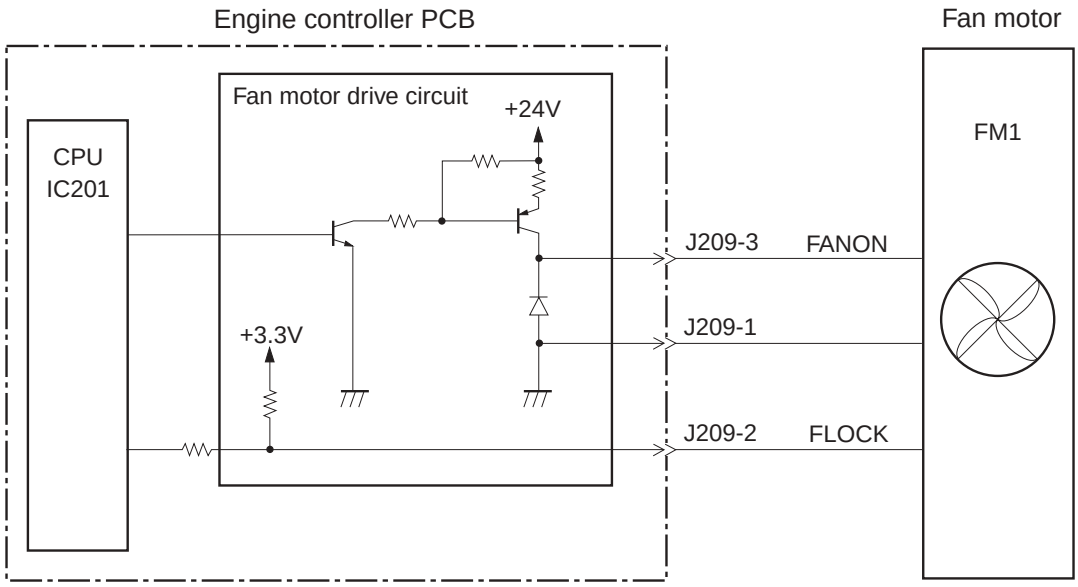
2.6 EXTERNAL AND CONTROLS SYSTEM

2.6.1 Fan

2.6.1.1 Fan motor control

LBP3370 / LBP3310

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.



F-2-21

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

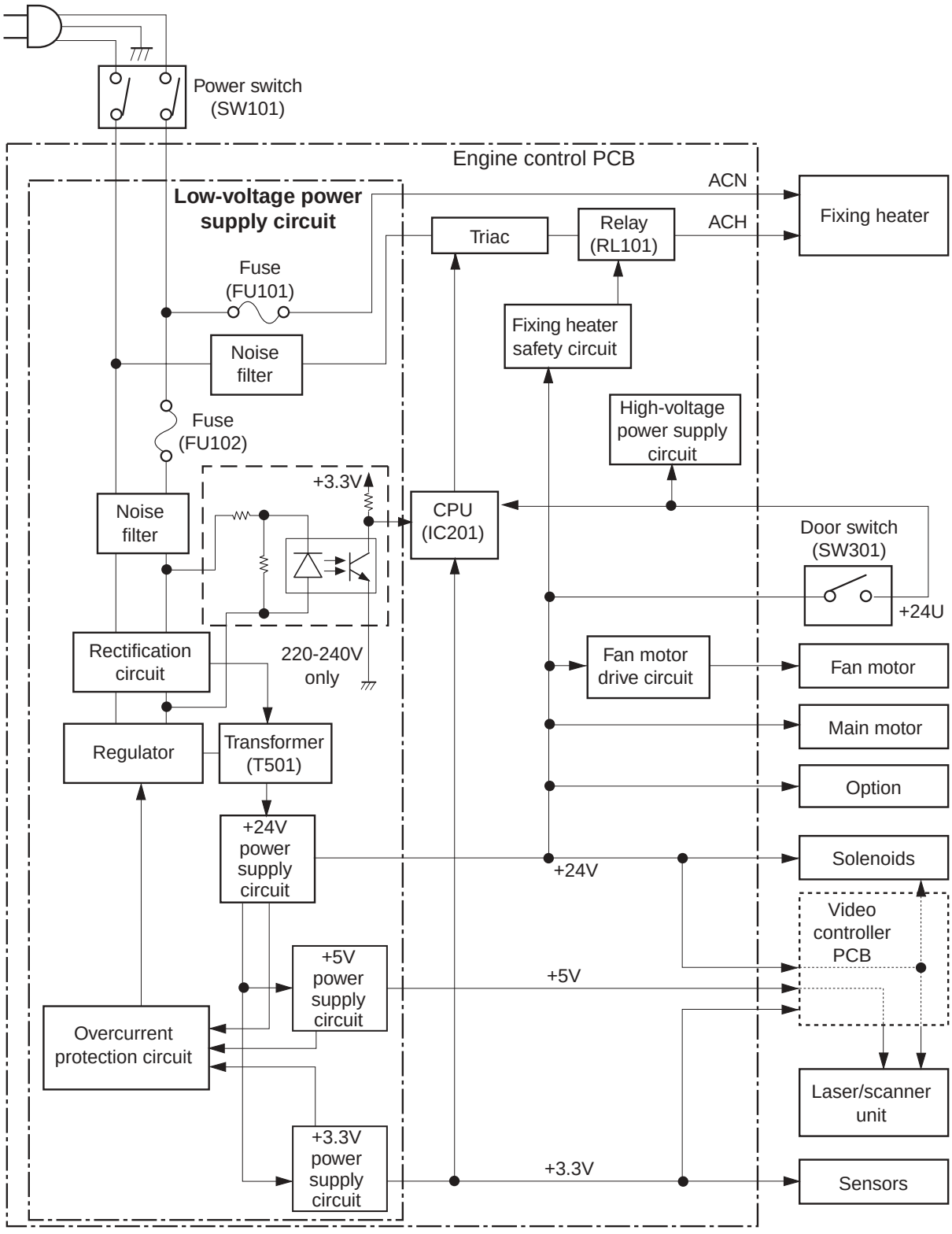
2.6.2.1 Power Supply

2.6.2.1.1 Low-voltage Power Supply Circuit

0018-3142

LBP3370 / LBP3310

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.



F-2-22

2.6.2.2 Protective Functions

2.6.2.2.1 Protective function

0018-3143

LBP3370 / LBP3310

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.

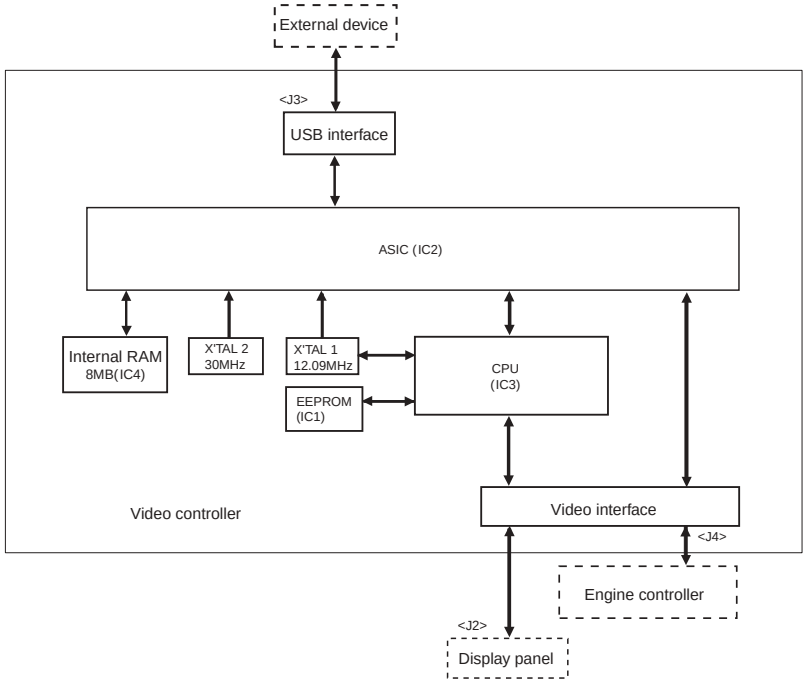
2.7 ENGINE CONTROL SYSTEM

2.7.1 Video Controller

2.7.1.1 Outline

LBP3310

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.



F-2-23

2.7.1.2 Outline of Operation by Block

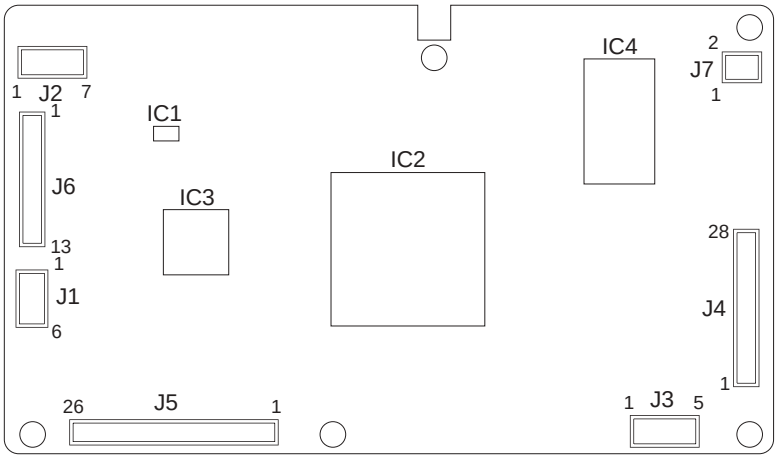
LBP3310

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.

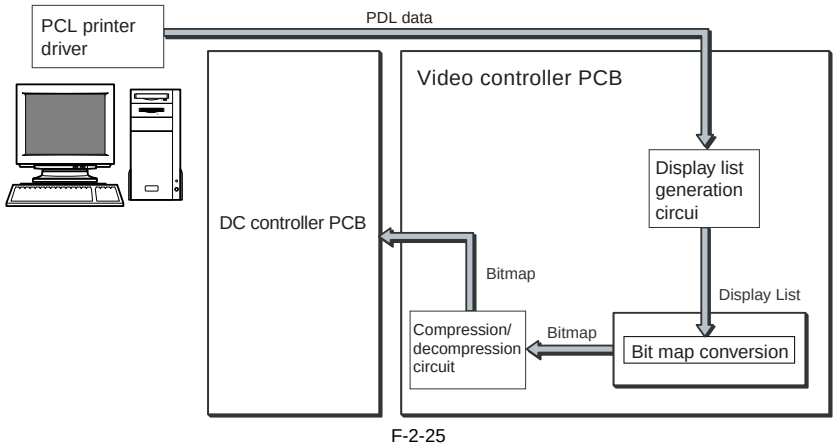


F-2-24

2.7.1.3 Overview

LBP3370

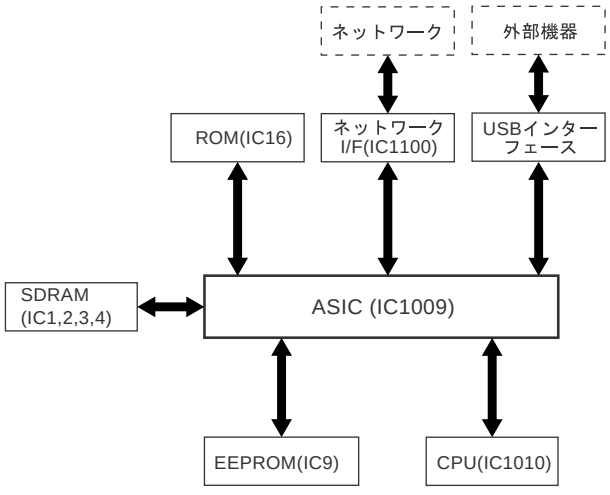
The video controller receives print information from external devices (e.g., host computer) through interface cables.
Such print information contains commands used to exchange printer status and unique information as well as PDL data.
The PDL data is converted into a display list by the display list generation circuit, and turned into bitmap data for output to the DC controller. A check may be made on the printer status using an external device.



F-2-25

2.7.1.4 Outline of Operation by Block

LBP3370

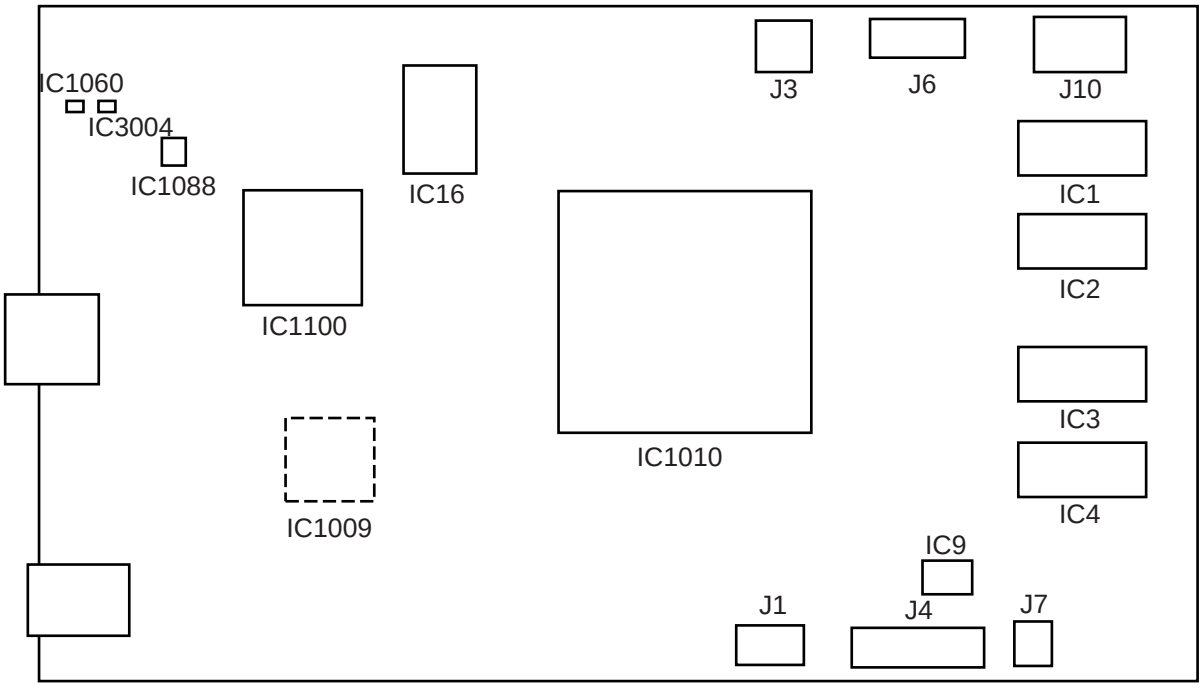


F-2-26

T-2-3

No.	Name	Description

IC1	SDRAM	Retains image data.
IC2		
IC3		
IC4		
IC9	EEPROM	EEPROM for storage of various parameters
IC16	Flash ROM	ROM for storage of programs
IC1009	ASIC	system control
IC1010	CPU	system control
IC1088	EEPROM	EEPROM for MAC address
IC3004	Reset IC	system reset
IC1060		



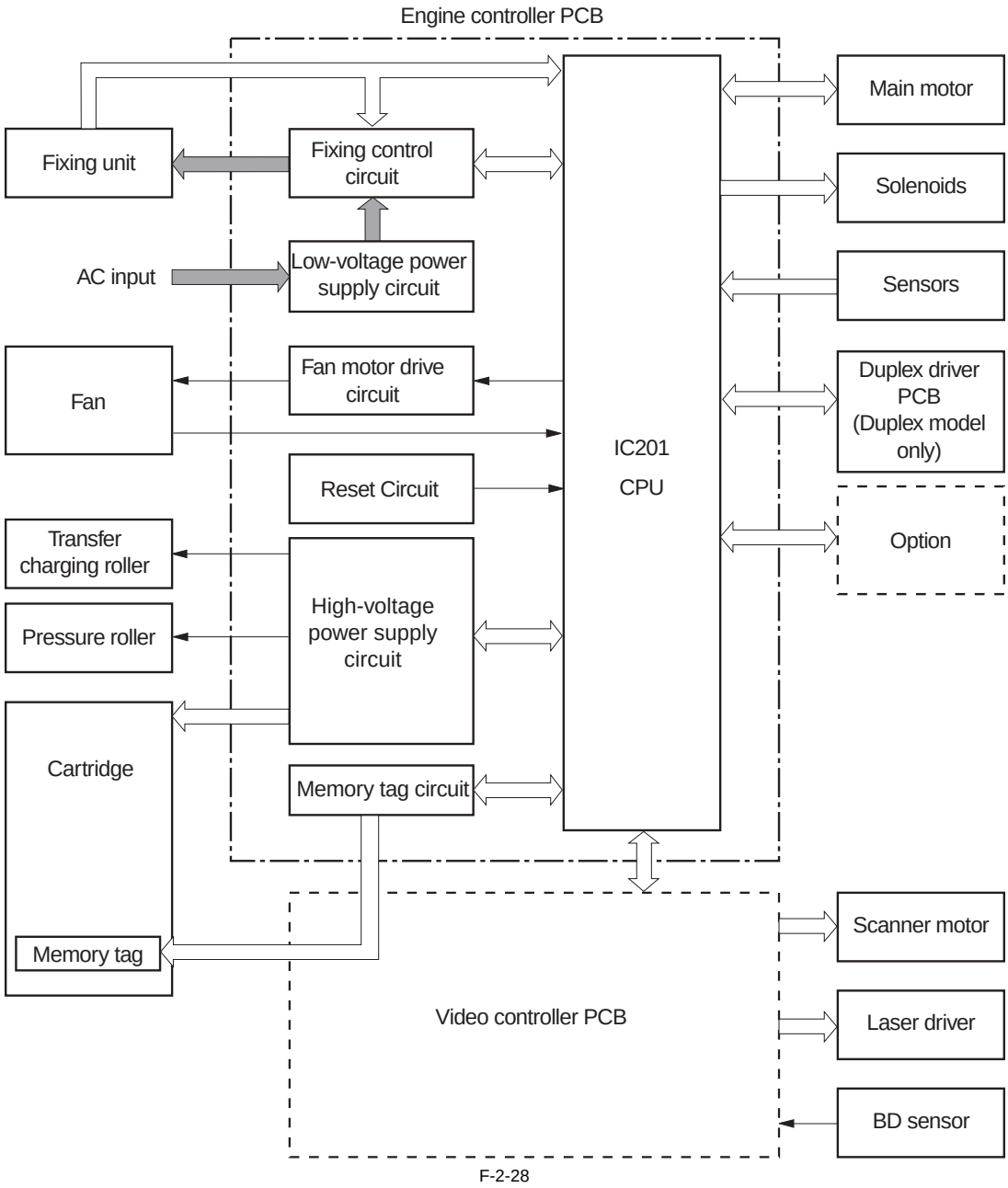
F-2-27

2.7.2 Engine Controller

2.7.2.1 Outline

LBP3370

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.



F-2-28

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 (Duplex model only)
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

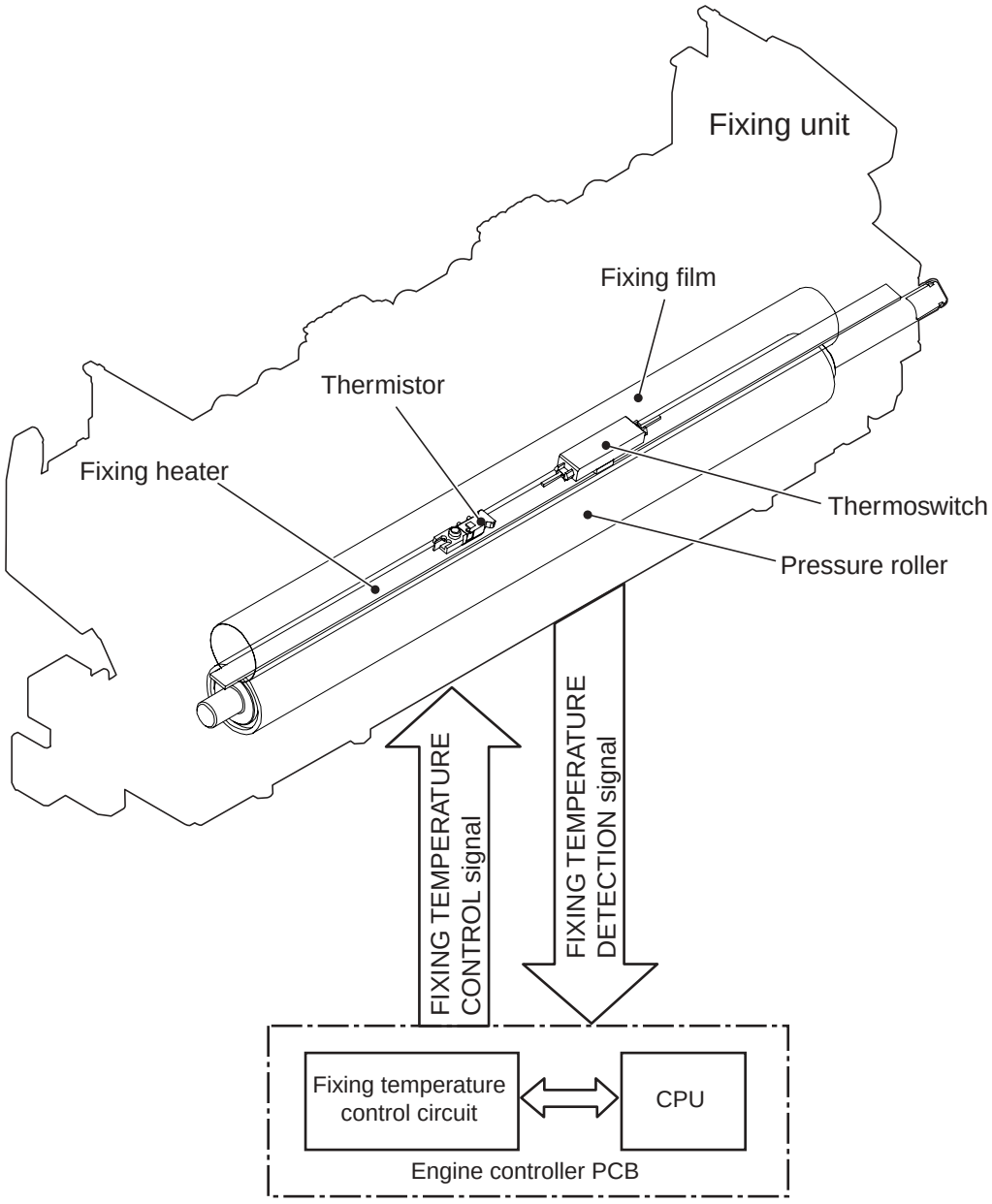
LBP3370 / LBP3310

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 50 deg C after the last rotation is completed, it drives the main motor for 50 msec. 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-2-29

2.8.2 Various Control Mechanisms

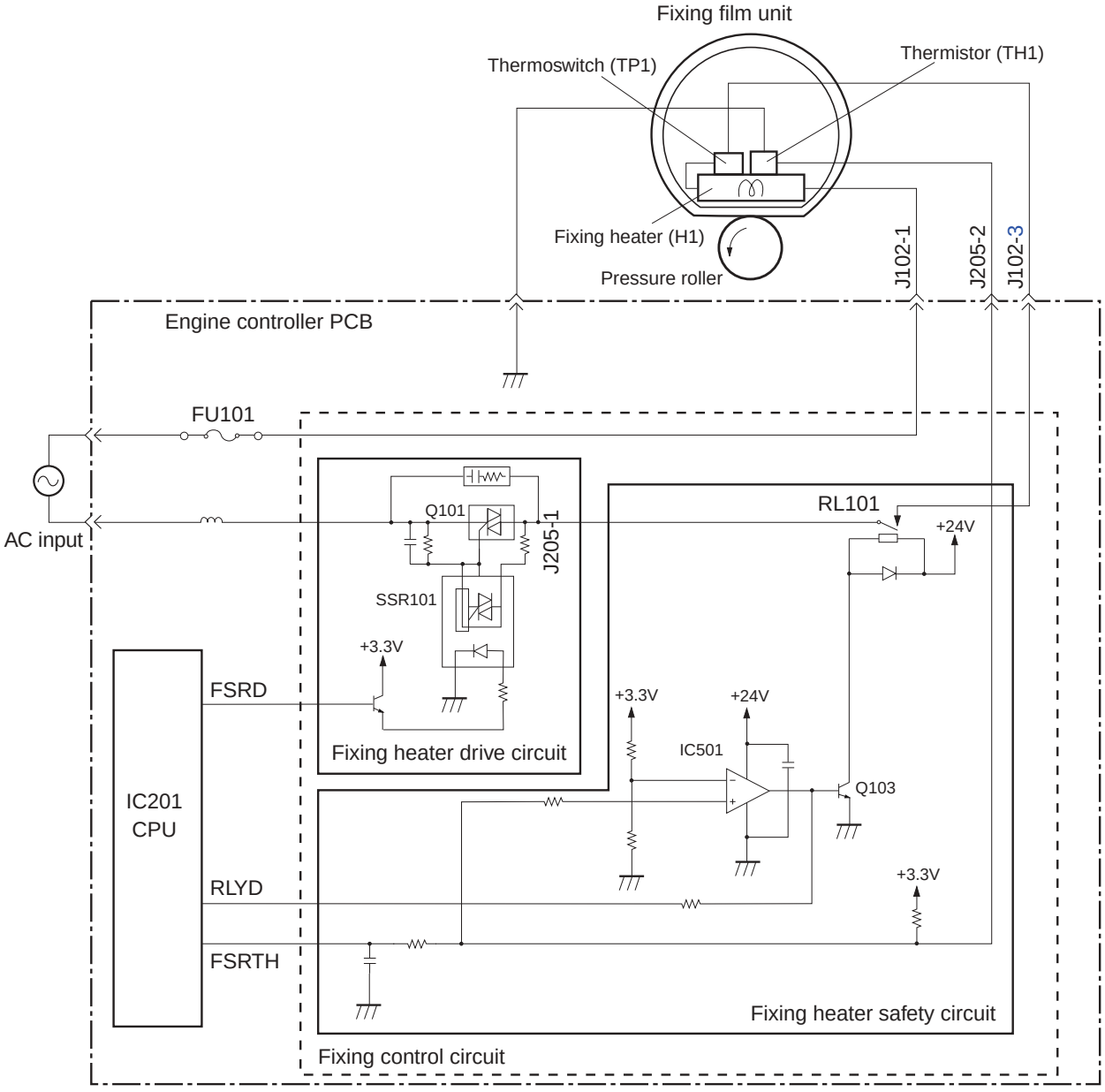
2.8.2.1 Fixing Temperature Control

2.8.2.1.1 Fixing temperature control

0018-3137

LBP3370 / LBP3310

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-2-30

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-2-4

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

Paper type selected for driver	Fixing target temperature
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 betweensheets.
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-2-5

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

0018-3139

LBP3370 / LBP3310

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

0018-3140

LBP3370 / LBP3310

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.

Chapter 3 DISASSEMBLY AND ASSEMBLY

Contents

3.1 EXTERNAL AND CONTROLS SYSTEM

3.1.1 Rear Cover

3.1.1.1 Preparation for removing the rear cover unit

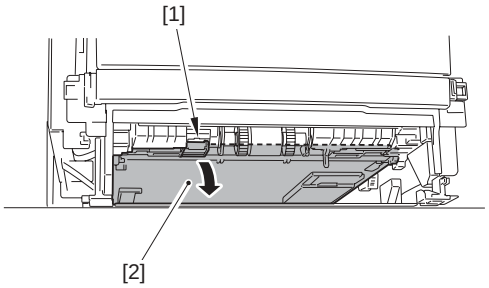
LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)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

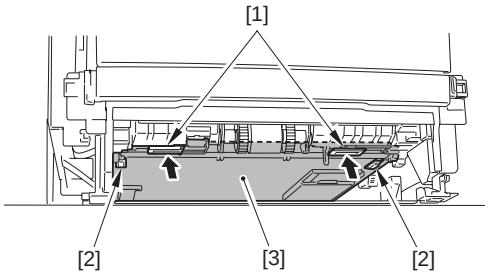
LBP3370 / LBP3310

1) Press the lever [1] of the duplexing unit to release the duplexing unit [2].

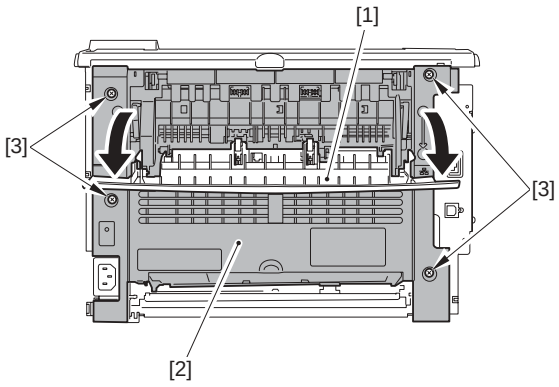


F-3-1

Points to note when attaching
Lift the 2 levers [1] of the duplexing unit and press the magnets [2] on the both ends against the main body to attach the duplexing unit [3].

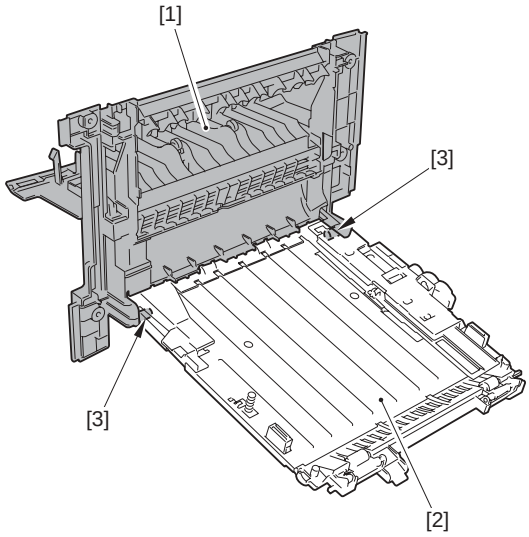


2) Open the rear cover [1] .
3) Detach the rear cover unit [2] together with the duplexing unit.
- 4 screws [3]



F-3-2

4) Detach the rear cover unit [1] from the duplexing unit [2].
- 2 bosses [3]



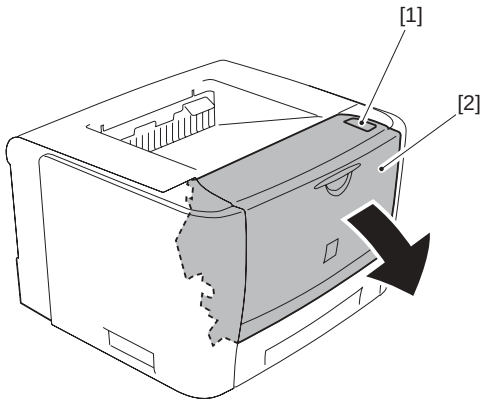
F-3-3

3.1.2 Right Cover

3.1.2.1 Detaching the right cover

LBP3370 / LBP3310

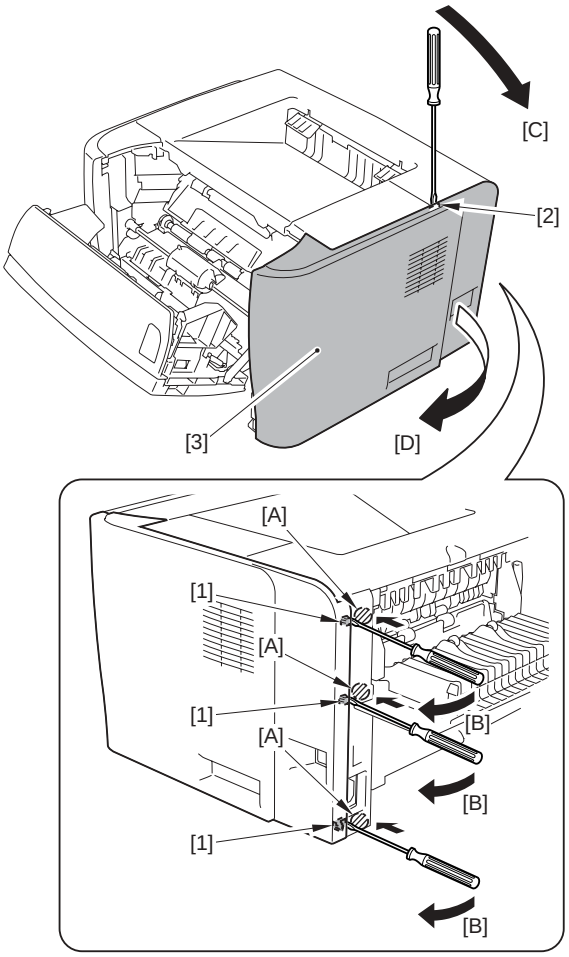
1) Remove the cassette.
2) Press the release button [1] to open the front cover [2].



F-3-4

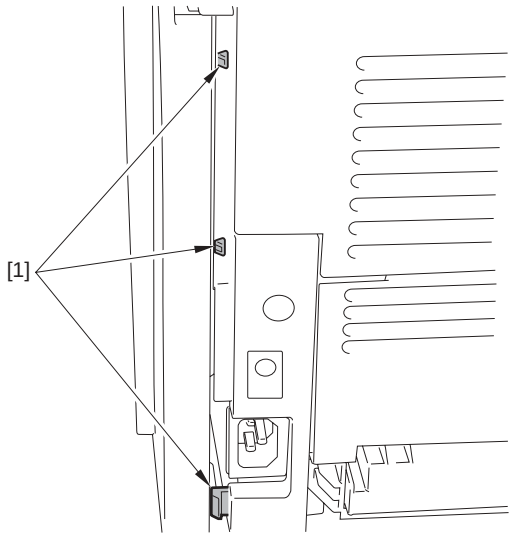
3) Repeat the steps 4) and 5) below to disengage the 3 claws [1] of the right cover from the bottom to the top.
4) Fit the blade edge of flat-blade screwdriver to the claw [1] of the right cover through the gap with the rear cover.
5) Press [A] of the rear cover to the rear direction and move down the driver to the direction of [B] to disengage the claw [1] of the right cover.

6) Fit the blade edge of flat-blade screwdriver to the claw [2] of the right cover through the gap with the upper cover. Move down the driver to the direction of [C] to disengage the claw [2] and open the right cover [3] to the direction of [D] to detach.

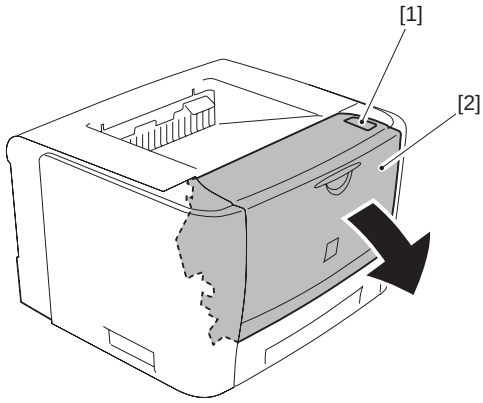


F-3-5

MEMO:
The figure below shows the locations of the 3 claws to be disengaged when detaching the right cover.



2) Press the release button [1] to open the front cover [2].



F-3-6

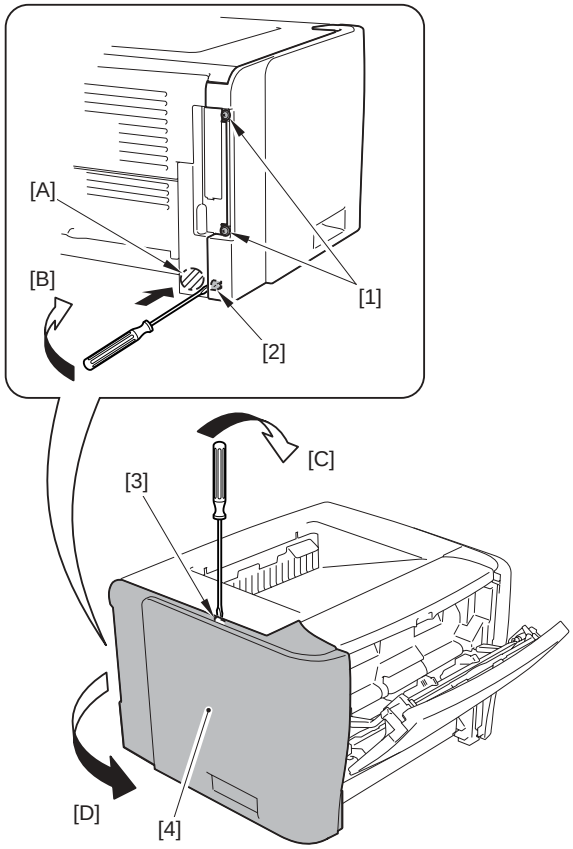
3) Remove the 2 screws [1] and fit the blade edge of flat-blade screwdriver to the claw [2] of the left cover through the gap with the rear cover.
4) Press [A] of the rear cover to the rear direction and move down the driver to the direction of [B] to disengage the claw [2] of the left cover.
5) Fit the blade edge of flat-blade screwdriver to the claw [3] of the left cover through the gap with the upper cover. Move down the driver to the direction of [C] to disengage the claw [3] and open the left cover [4] to the direction of [D] to detach.

3.1.3 Left Cover

3.1.3.1 Detaching the left cover

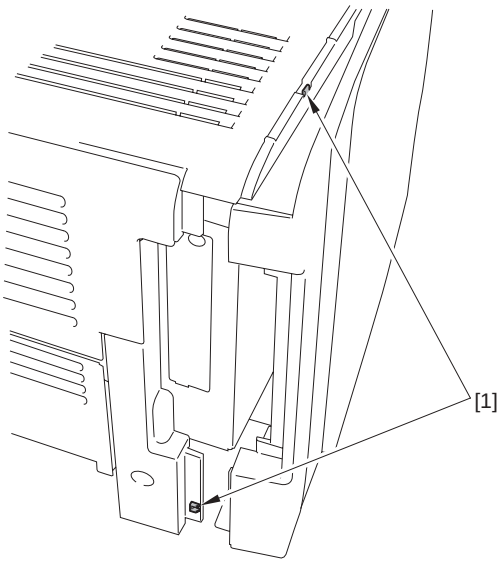
LBP3370 / LBP3310

1) Remove the cassette.



F-3-7

MEMO:
The figure below shows the locations of 2 claws [1] to be disengaged when detaching the left cover.



3.1.4 Upper Cover

3.1.4.1 Preparation for detaching the upper cover unit

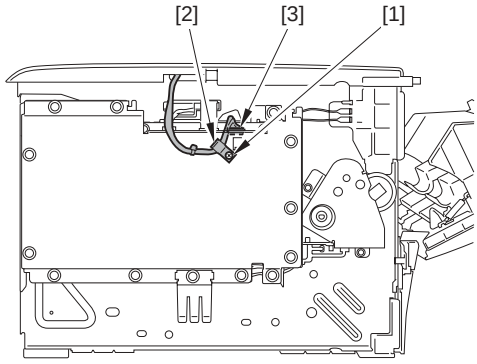
LBP3370 / LBP3310

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

3.1.4.2 Detaching the upper cover

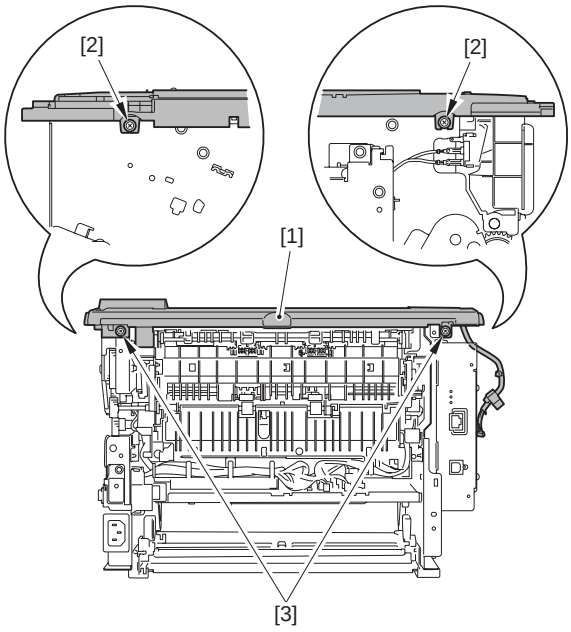
LBP3310

1) Remove the parts below.
- 1 screw [1]
- 1 clamp [2]
- 1 connector [3]



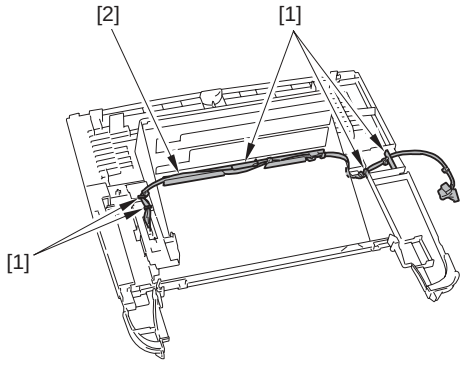
F-3-8

2) Detach the upper cover unit [1] together with the control panel.
- 2 screws [2] (to be loosened)
- 2 screws [3]



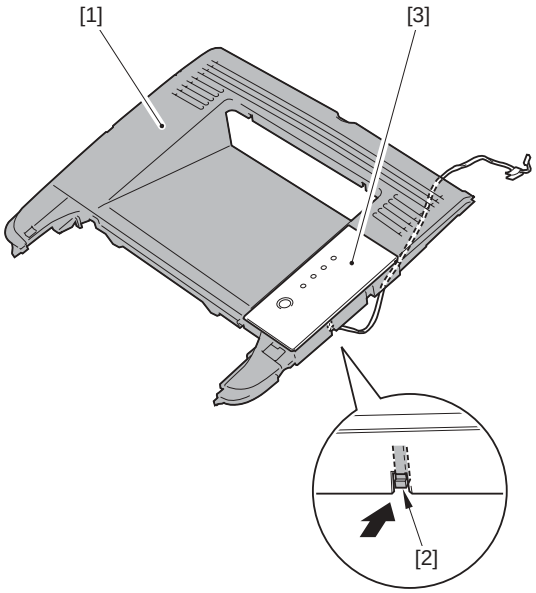
F-3-9

3) Free the harness [2] from the guide [1].



F-3-10

4) Detach the upper cover [1].
- 1 claw [2]
- 1 control panel [3]

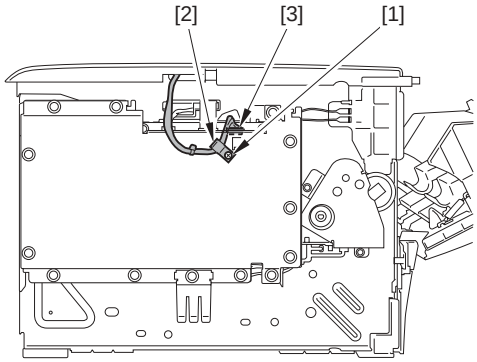


F-3-11

3.1.4.3 Detaching the upper cover

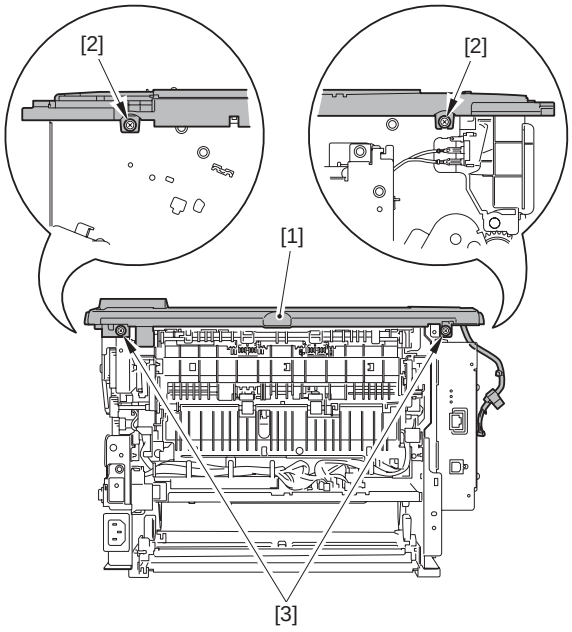
LBP3370

1) Remove the parts below.
- 1 screw [1]
- 1 clamp [2]
- 1 connector [3]



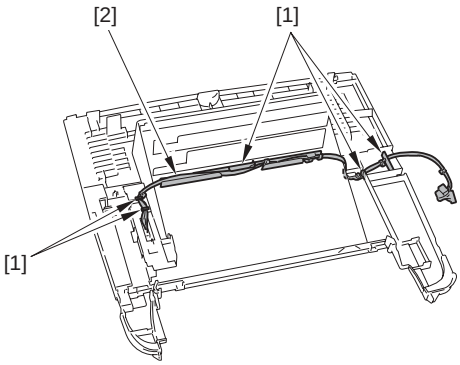
F-3-12

2) Detach the upper cover unit [1] together with the control panel.
- 2 screws [2] (to be loosened)
- 2 screws [3]



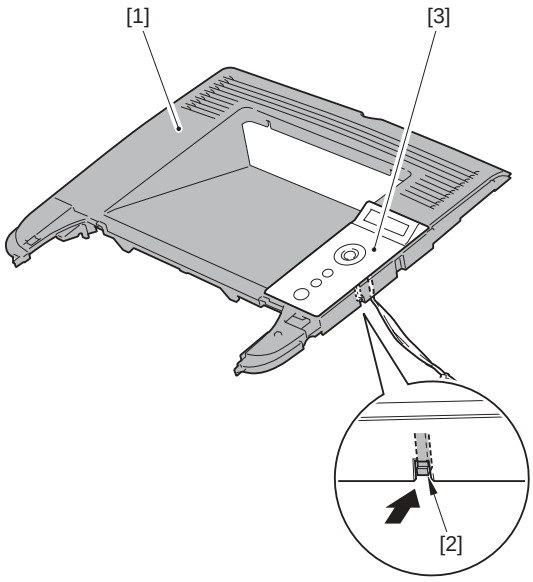
F-3-13

3) Free the harness [2] from the guide [1].



F-3-14

4) Detach the upper cover [1].
- 1 claw [2]
- 1 control panel [3]



F-3-15

3.1.5 Front Cover

3.1.5.1 Preparation for detaching the front cover unit

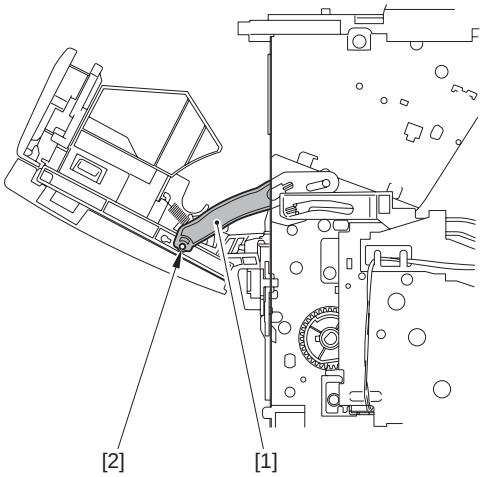
LBP3370 / LBP3310

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

3.1.5.2 Detaching the front cover unit

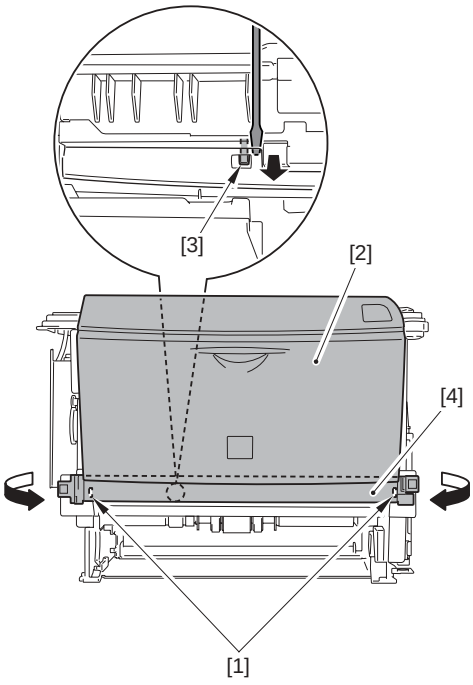
LBP3370 / LBP3310

1) Remove the cartridge arm [1].
   - 1 boss [2]



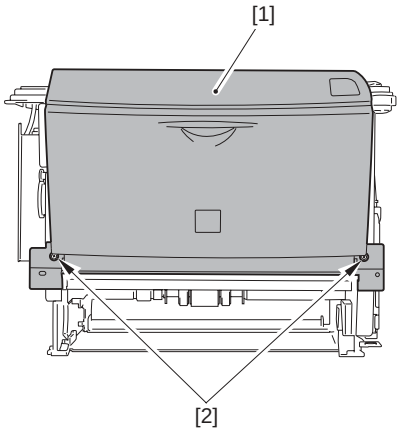
F-3-16

2) Remove the 2 claws [1], slightly open the front cover [2] to disengage the claw [3], and detach the front cover (lower) [4].



F-3-17

3) Detach the front door unit [1].
   - 2 screws [2]



F-3-18

3.1.6 Main Drive Unit

3.1.6.1 Preparation for removing the main drive assembly

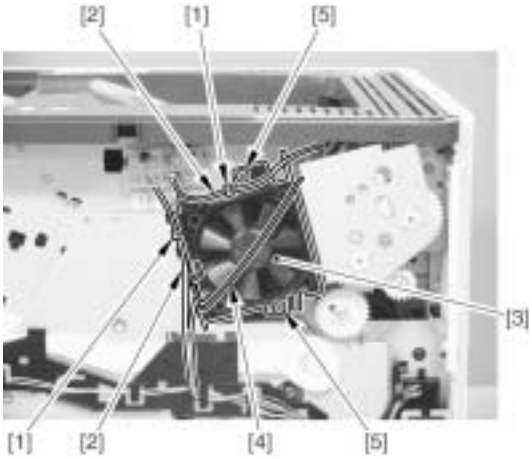
LBP3370 / LBP3310

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

3.1.6.2 Removing the main drive assembly

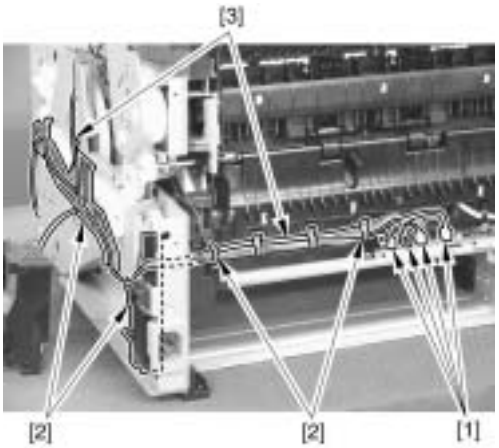
LBP3370 / LBP3310

1) Free the 2 harnesses [2] from the guide [1].
2) Remove the fan assembly [3].
   - 1 rod [4]
   - 2 screws [5]



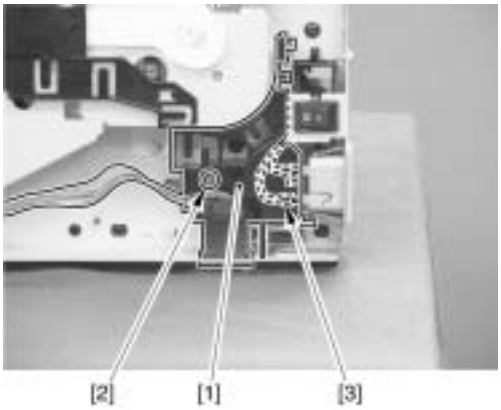
F-3-19

3) Disconnect the 4 connectors [1] and free the harness [3] from the guide [2].



F-3-20

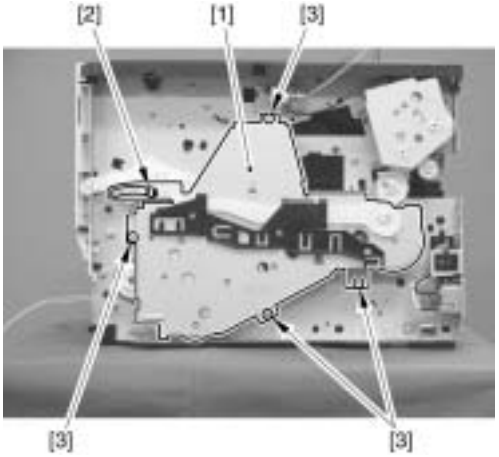
4) Remove the harness guide [1].
- 1 screw [2]



F-3-21

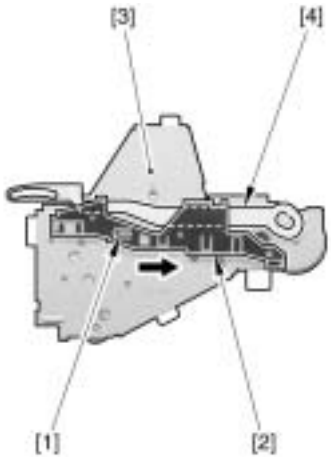
Points to note when attaching
Do not catch the power cable [3] with the AC inlet socket between the harness guide [1] and the frame side plate.

5) Remove the main drive assembly (together with the harness guide and the cartridge arm)[1].
- 1 claw [2]
- 4 screws [3]



F-3-22

6) Disengage the claw [1] to remove the harness guide [2] to the direction of the arrow.
7) Remove the cartridge arm [4] from the main drive assembly [3].



F-3-23

Gears of the main drive assembly are not fixed on the plate. Remove with care not to make them fall apart.

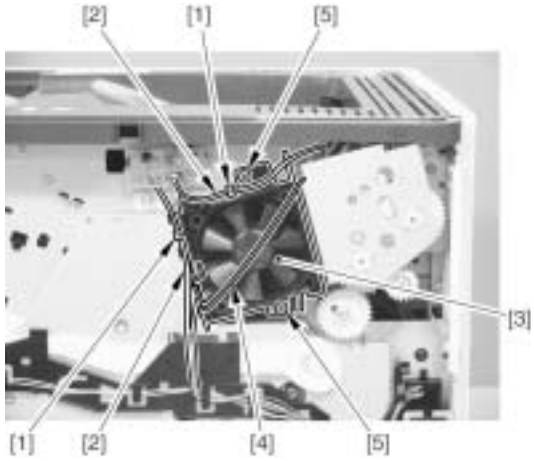
3.1.7 Duplexing Drive Unit

3.1.7.1 Removing the duplexing drive assembly

LBP3370 / LBP3310

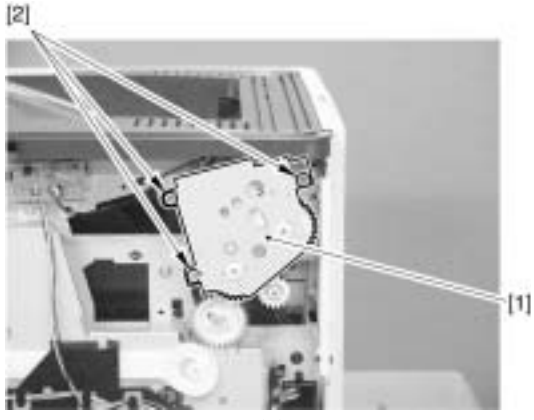
1) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
2) Free the 2 harnesses [2] from the guide [1].
3) Remove the fan assembly [3].

- 1 rod [4]
- 2 screws [5]



F-3-24

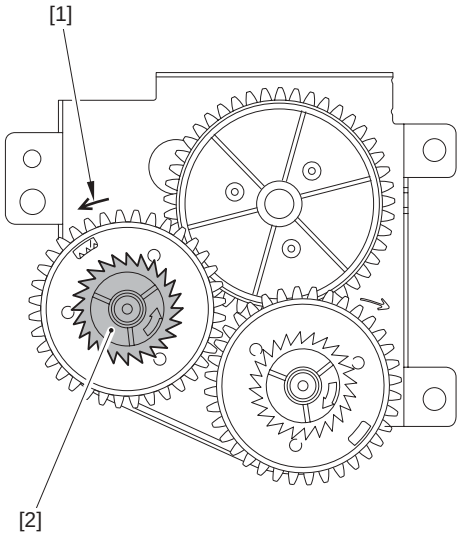
4) Remove the duplexing drive assembly [1].
- 3 screws [2]



F-3-25

Gears of the duplexing drive assembly are not fixed on the plate. Remove with care not to make them fall apart.

Points to note when attaching
Be sure to install the black gear [2] to the side where a left-direction arrow [1] is marked.



3.1.8 Operation Panel Unit

3.1.8.1 Preparation for detaching the control panel

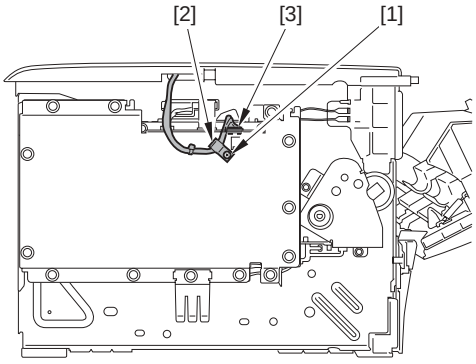
LBP3370 / LBP3310

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

3.1.8.2 Detaching the control panel

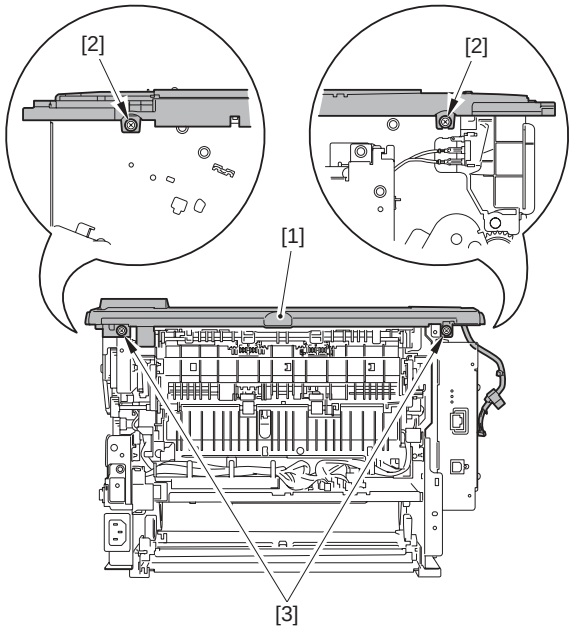
LBP3310

1) Remove the parts below.
- 1 screw [1]
- 1 clamp [2]
- 1 connector [3]



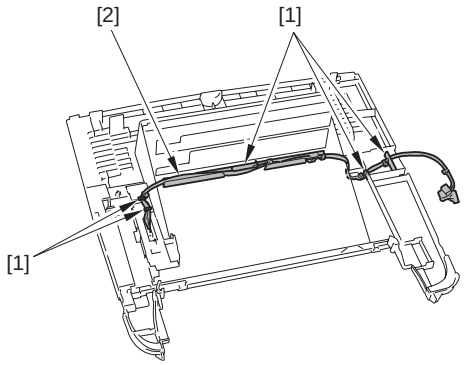
F-3-26

2) Detach the upper cover unit [1] together with the control panel.
- 2 screws [2] (to be loosened)
- 2 screws [3]



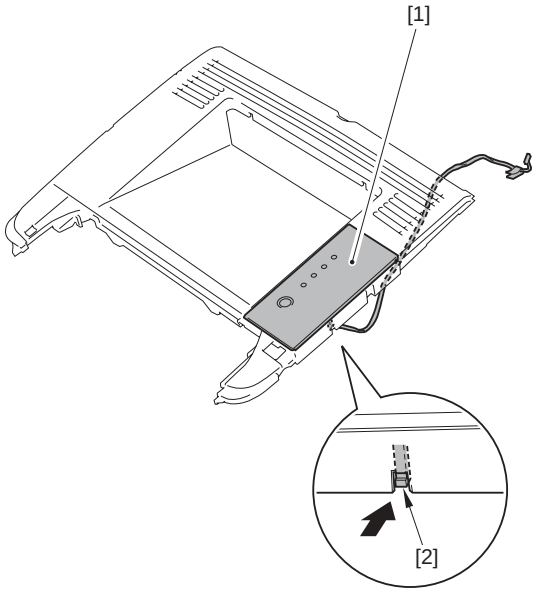
F-3-27

3) Free the harness [2] from the guide [1].



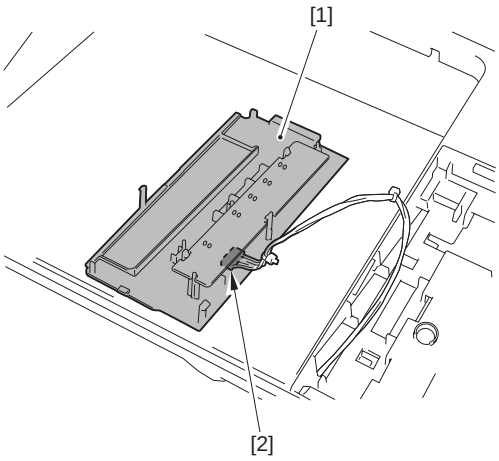
F-3-28

4) Detach the control panel [1].
- 1 claw [2]



F-3-29

5) Detach the control panel [1].
- 1 connector [2]

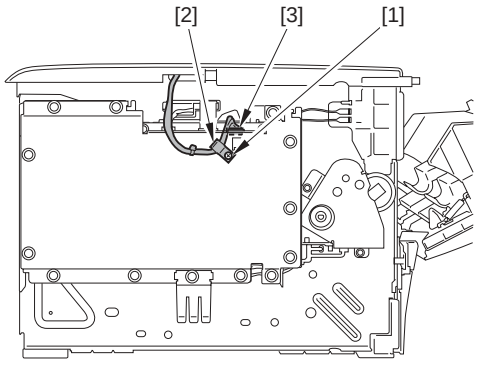


F-3-30

3.1.8.3 Detaching the control panel

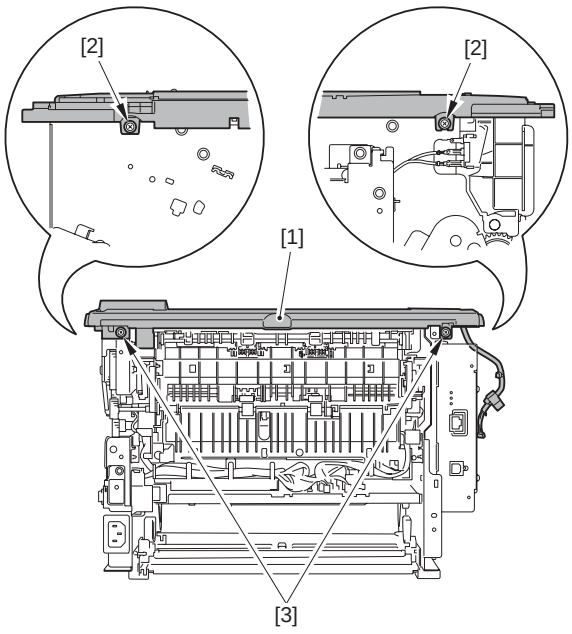
LBP3370

1) Remove the parts below.
   - 1 screw [1]
   - 1 clamp [2]
   - 1 connector [3]



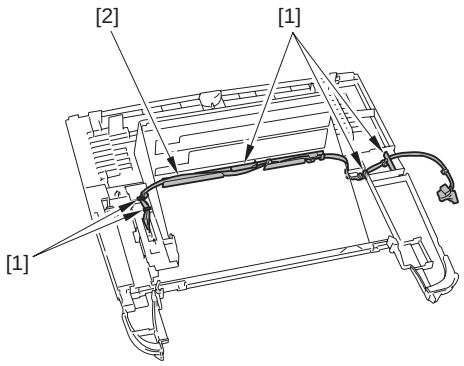
F-3-31

2) Detach the upper cover unit [1] together with the control panel.
   - 2 screws [2] (to be loosened)
   - 2 screws [3]



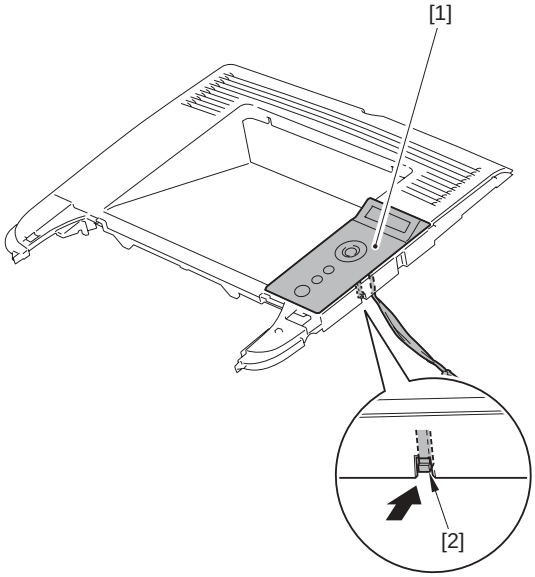
F-3-32

3) Free the harness [2] from the guide [1].



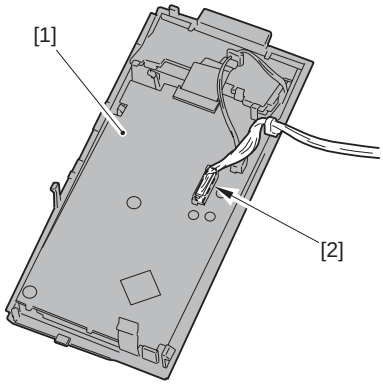
F-3-33

4) Detach the control panel [1].
   - 1 claw [2]



F-3-34

5) Detach the control panel [1].
   - 1 connector [2]



F-3-35

3.1.9 Engine controller board

3.1.9.1 Preparation for removing the engine controller PCB

LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

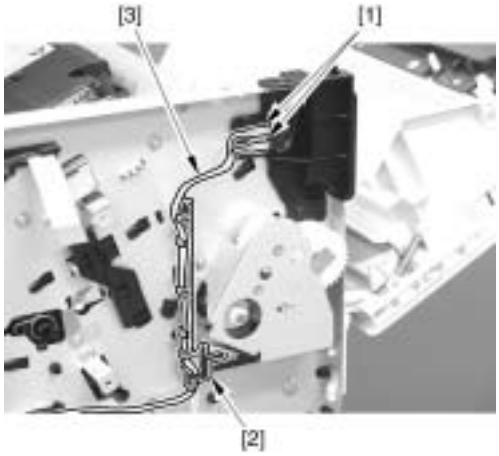
5) Remove the duplexing drive assembly.(page 3-6)Reference [Removing

the duplexing drive assembly]
6) Remove the video controller PCB.(page 3-10)Reference LBP3310 [Removing the video controller PCB](page 3-11)Reference LBP3370 [Removing the video controller PCB]
7) Remove the fixing assembly.(page 3-17)Reference LBP3310 [Removing the fixing assembly](page 3-18)Reference LBP3370 [Removing the fixing assembly]

3.1.9.2 Removing the engine controller PCB

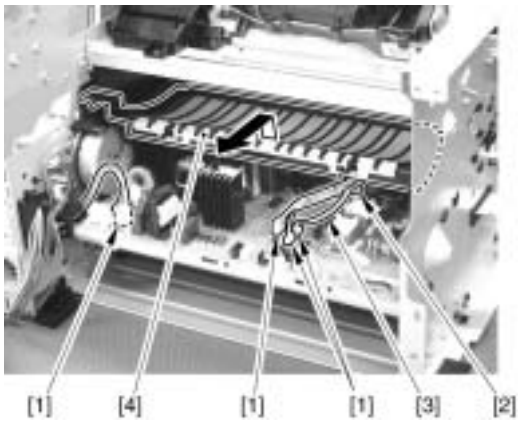
LBP3370 / LBP3310

1) Disconnect the 2 connectors [1] and free the harness [3] from the guide [2].



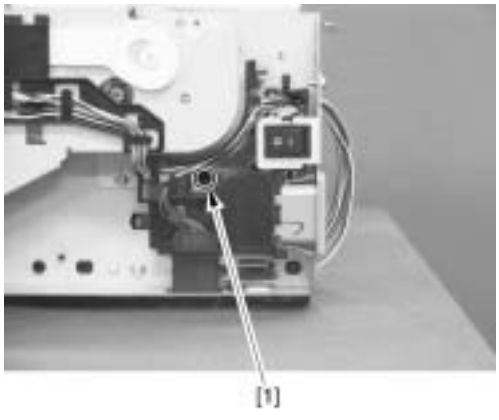
F-3-36

2) Disconnect the 4 connectors [1] and free the harness [3] from the guide [2].
3) Lift the guide [4] to remove it to the forward direction.



F-3-37

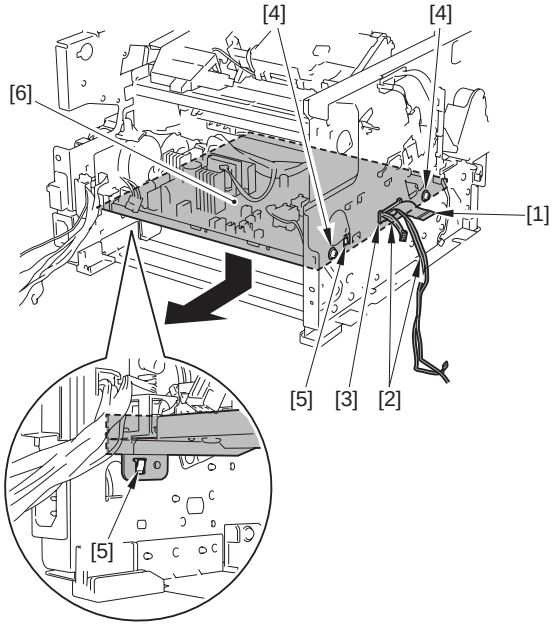
4) Remove the screw [1].



F-3-38

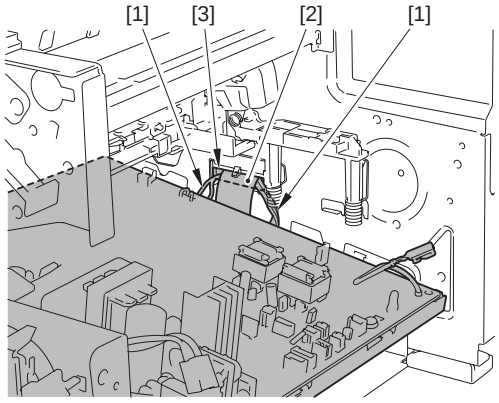
5) Guide the flat cable [1] and the 3 harnesses [2] through the hole [3] on the left side plate to the inward direction.
6) Remove the 2 screws [4].
7) Slightly open the main body frame to both sides and disengage the 2 hooks [5] on the right and left side plates.
8) Move down the engine controller unit [6] to the direction of the arrow and remove it to the forward direction.

> ⚠ Slide out the engine controller unit with care not to damage the flat cable [1].

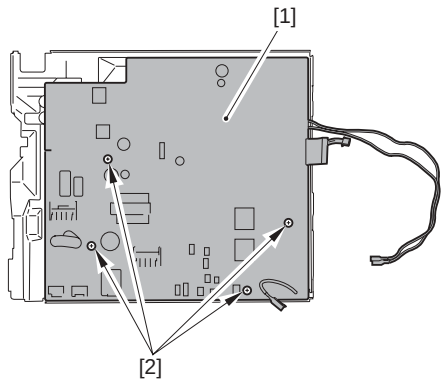


F-3-39

> ⚠ **Points to note when attaching**
> Once the engine controller unit is attached, it is hard to guide the harnesses [1] and flat cable [2] through the hole [3] on the plate. Be sure to guide the harnesses and the flat cable through the plate hole prior to attaching the unit.



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



F-3-40

3.1.10 Duplexing Driver Board

3.1.10.1 Preparation for removing the duplexing driver PCB

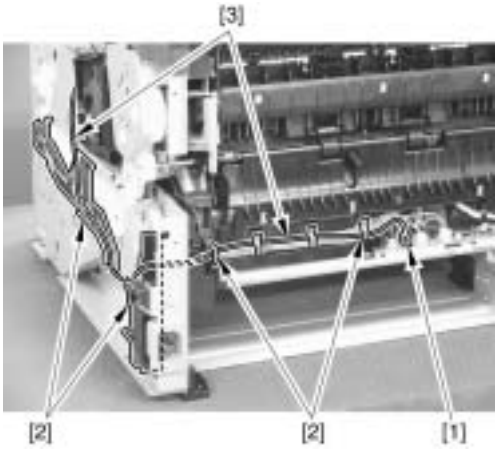
LBP3370 / LBP3310

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

3.1.10.2 Removing the duplexing driver PCB

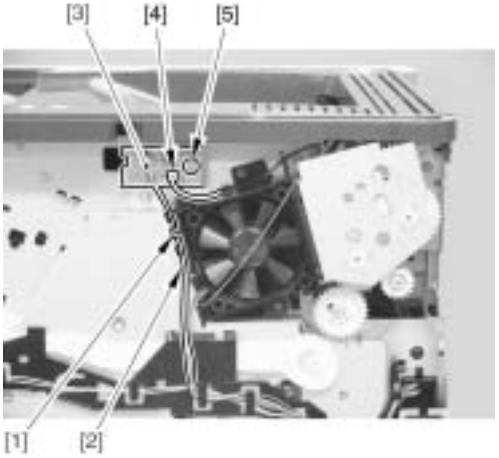
LBP3370 / LBP3310

1) Disconnect the connector [1].
2) Free the harness [3] from the guide [2].



F-3-41

3) Free the harness [2] from the guide [1].
4) Remove the duplexing driver PCB [3].
   - 1 connector [4]
   - 1 screw [5]



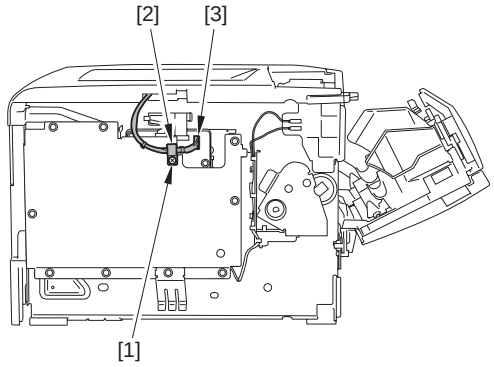
F-3-42

3.1.11 Video Controller Board

3.1.11.1 Removing the video controller PCB

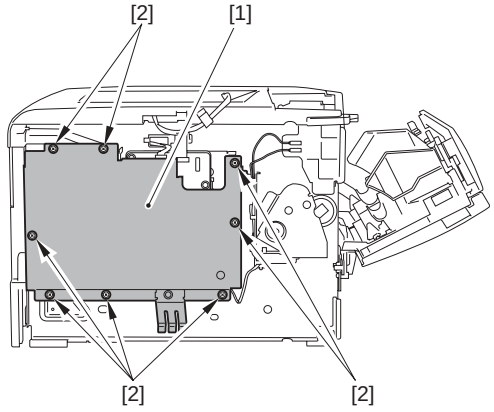
LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Remove the parts below.
   - 1 screw [1]
   - 1 clamp [2]
   - 1 connector [3]



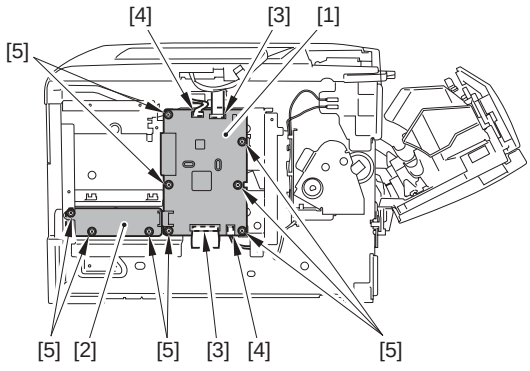
F-3-43

3) Remove the plate [1].
   - 8 screws [2]



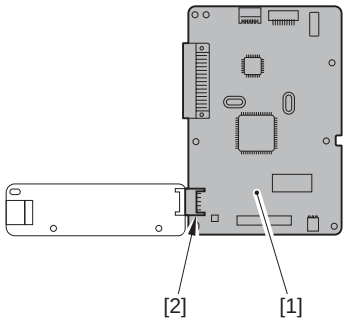
F-3-44

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



F-3-45

5) Detach the video controller PCB [1].
   - 1 connector [2]

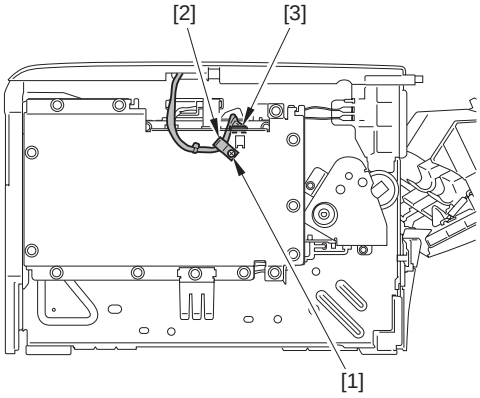


F-3-46

3.1.11.2 Removing the video controller PCB

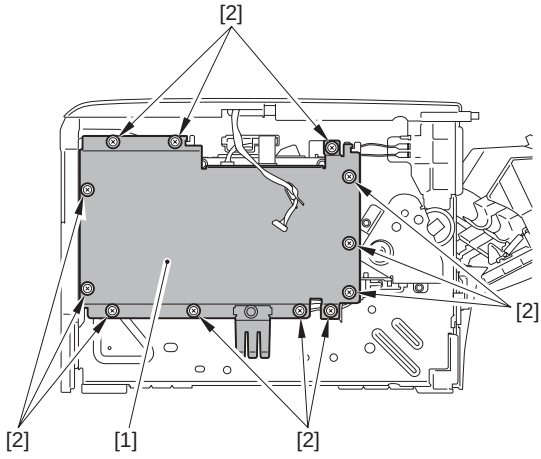
LBP3370

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Remove the parts below.
- 1 screw [1]
- 1 clamp [2]
- 1 connector [3]



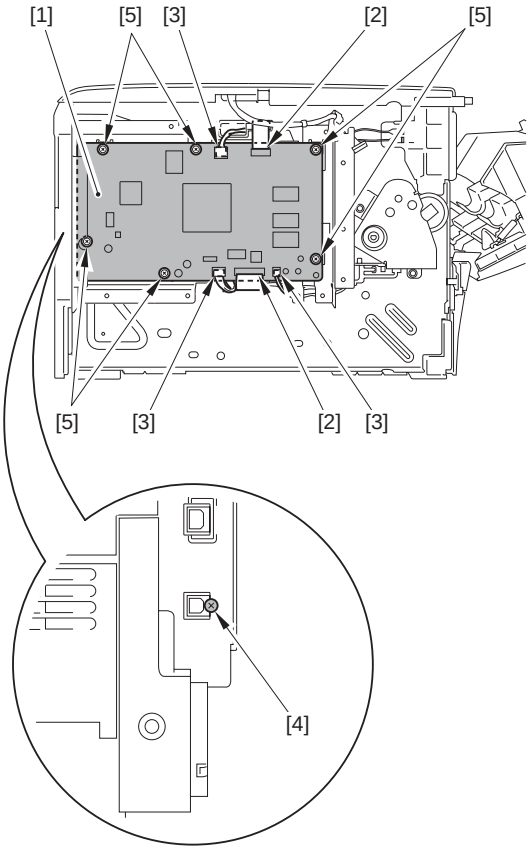
F-3-47

3) Remove the plate [1].
- 12 screws [2]



F-3-48

4) Remove the video controller PCB [1].
- 2 flat cables [2]
- 3 connectors [3]
- 1 screw (binding) [4]
- 6 screws (TP) [5]



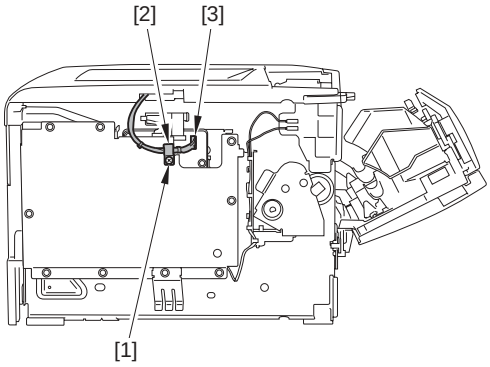
F-3-49

3.1.12 USB Board

3.1.12.1 Removing the USB PCB

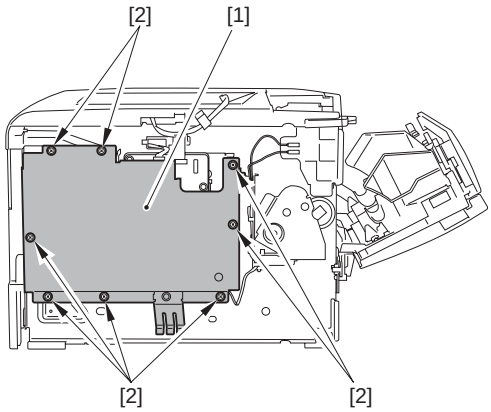
LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Remove the parts below.
- 1 screw [1]
- 1 clamp [2]
- 1 connector [3]



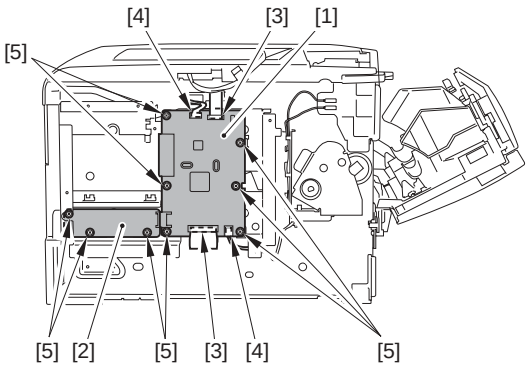
F-3-50

3) Remove the plate [1].
- 8 screws [2]



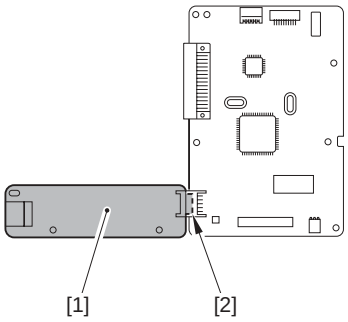
F-3-51

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



F-3-52

5) Detach the USB PCB [1].
- 1 connector [2]



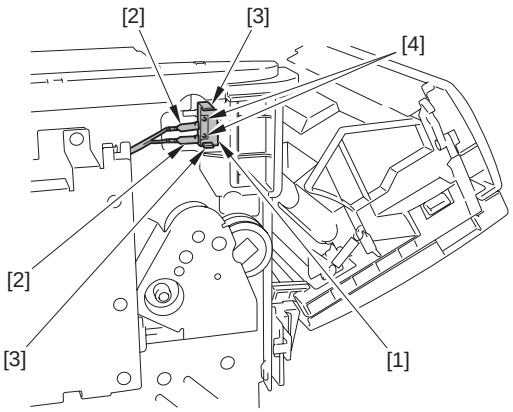
F-3-53

3.1.13 Door Switch

3.1.13.1 Removing the door switch

LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Remove the door switch [1].
- 2 connectors [2]
- 2 claws [3]
- 2 bosses [4]



F-3-54

3.1.14 Main Body Fan

3.1.14.1 Preparation for removing the fan

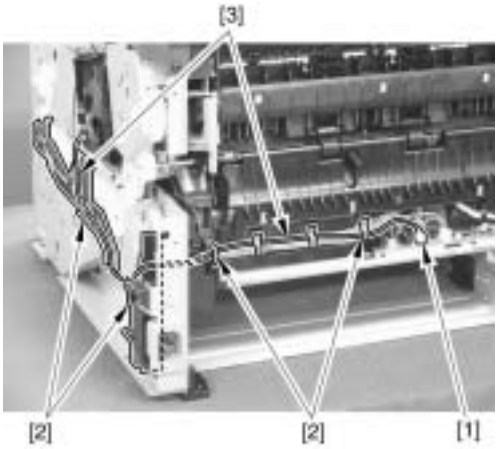
LBP3370 / LBP3310

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

3.1.14.2 Removing the fan

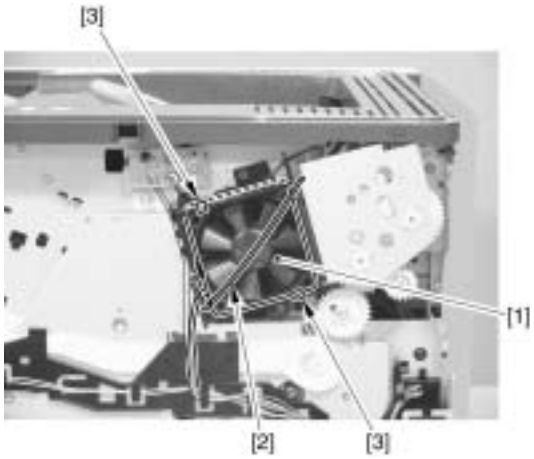
LBP3370 / LBP3310

1) Disconnect the connector [1].
2) Free the harness [3] from the guides [2].



F-3-55

3) Remove the fan [1].
- 1 rod [2]
- 2 claws [3]



F-3-56

3.2 LASER EXPOSURE SYSTEM

3.2.1 Laser Scanner Unit

3.2.1.1 Preparation for removing the laser scanner unit

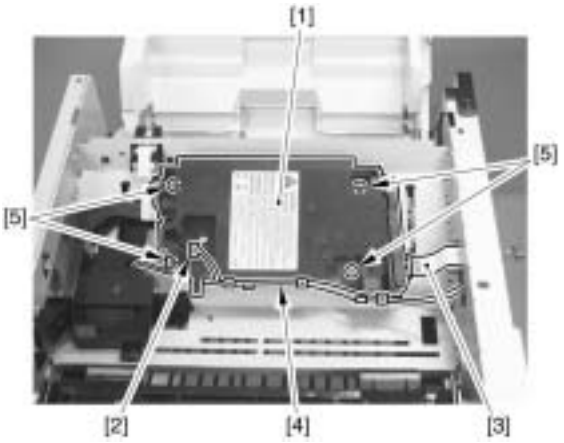
LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

3.2.1.2 Removing the laser scanner unit

LBP3370 / LBP3310

1) Remove the laser scanner unit [1].
- 1 connector [2]
- 1 flat cable [3]
- 1 harness [4]
- 4 screws [5]



F-3-57

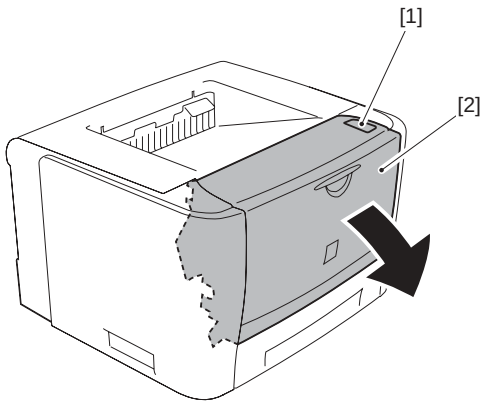
3.3 IMAGE FORMATION SYSTEM

3.3.1 Transfer Charging Roller

3.3.1.1 Removing the transfer charging roller

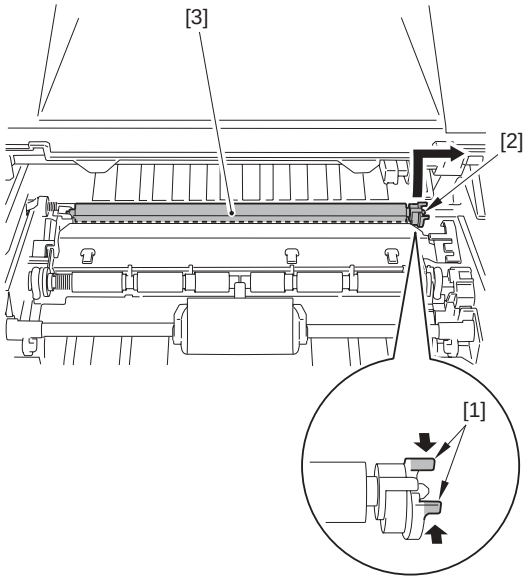
LBP3370 / LBP3310

1) Press the release button [1] to open the front cover [2].



F-3-58

2) Pinch the 2 claws [1] on the bushing and move the transfer charging roller [3] together with the bushing [2] to the direction of the arrow to remove.



F-3-59

When assembling / disassembling the transfer charging roller, hold the shaft or bushing of the transfer charging roller and do not touch the sponge parts.

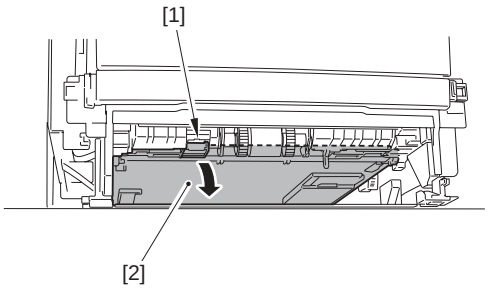
3.4 PICKUP AND FEEDING SYSTEM

3.4.1 Cassette Pickup Roller

3.4.1.1 Removing the cassette pickup roller

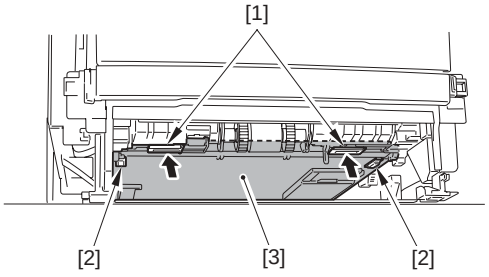
LBP3370 / LBP3310

1) Remove the cassette.
2) Press the lever [1] of the duplexing unit to release the duplexing unit [2].



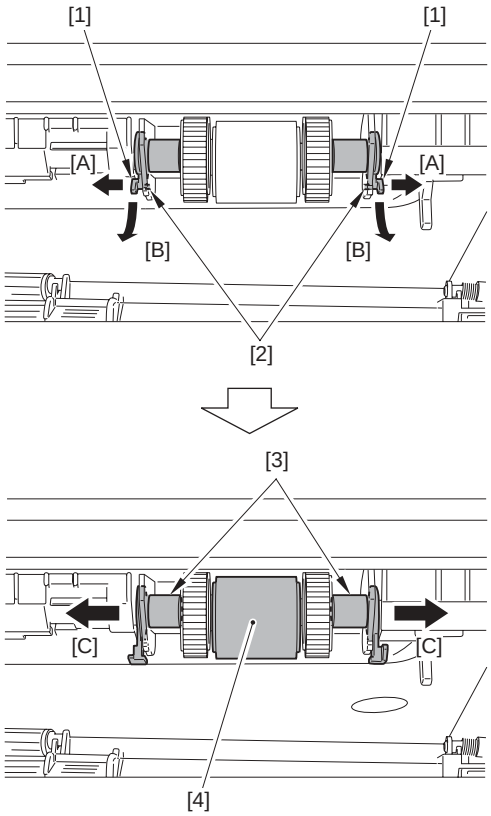
F-3-60

Points to note when attaching
Lift the 2 levers [1] of the duplexing unit and press the magnets [2] on the both ends against the main body to attach the duplexing unit [3].



3) Pull the 2 protrusions [1] of the hinge to the direction of the arrow [A], turn to the direction of the arrow [B] and disengage the 2 bosses [2].

4) Shift the 2 hinges [3] to the direction of the arrow [C] to remove the pickup roller [4].



F-3-61

3.4.2 Cassette Pickup solenoid

3.4.2.1 Preparation for removing the cassette pickup solenoid

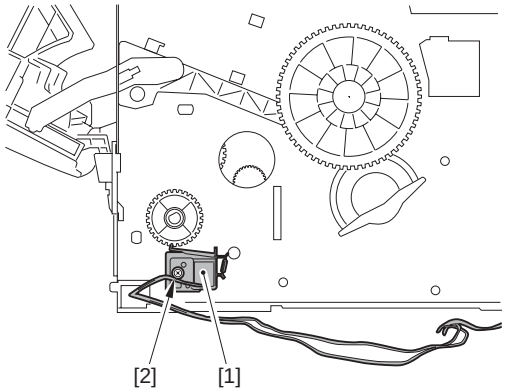
LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Remove the main drive assembly.(page 3-5)Reference [Removing the main drive assembly]

3.4.2.2 Removing the cassette pickup solenoid

LBP3370 / LBP3310

1) Remove the cassette pickup solenoid [1].
- 1 screw [2]



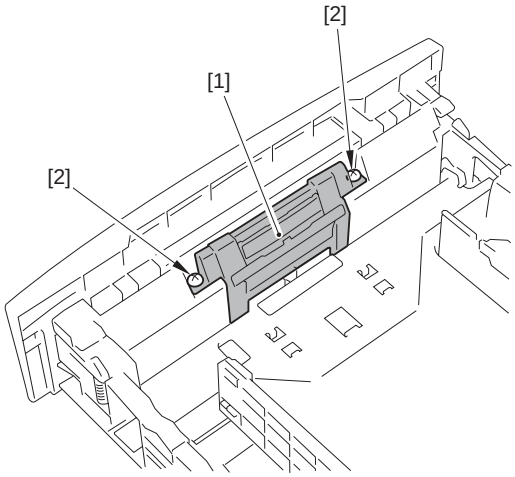
F-3-62

3.4.3 Cassette Separation Pad

3.4.3.1 Removing the cassette separation pad

LBP3370 / LBP3310

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



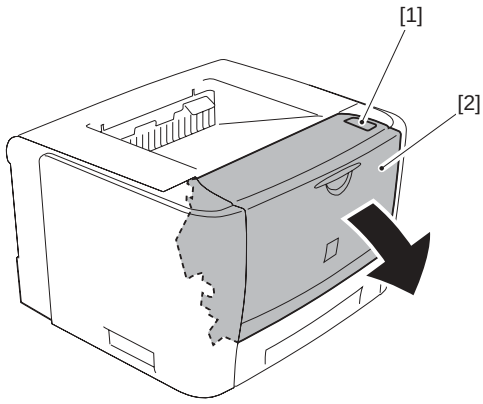
F-3-63

3.4.4 Manual Pickup Roller

3.4.4.1 Removing the manual pickup roller

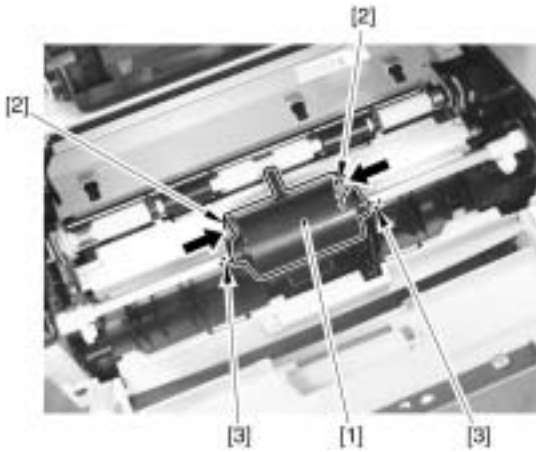
LBP3370 / LBP3310

1) Press the release button [1] to open the front cover [2].



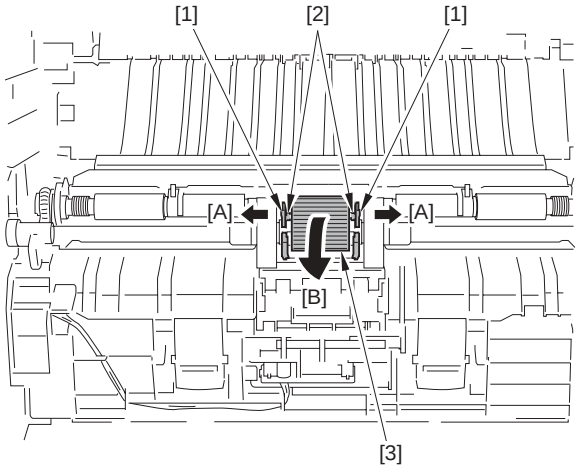
F-3-64

2) While pressing both sides [2] of the roller cover [1] to the direction of the arrow (to disengage the claw [3]), lift the roller cover to remove.



F-3-65

3) Pull the 2 protrusions [1] of the hinge to the direction of the arrow [A], disengage the 2 bosses [2] and turn the manual feeder pickup roller [3] to the direction of the arrow [B] to remove.



F-3-66

3.4.5 Manual Separation Pad

3.4.5.1 Preparation for removing the manual separation pad

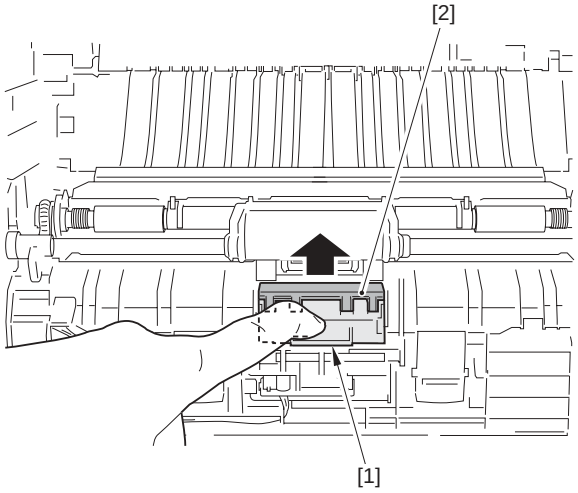
LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Detach the front cover unit.(page 3-5)Reference [Detaching the front cover unit]

3.4.5.2 Removing the manual separation pad

LBP3370 / LBP3310

1) While pushing down the mounting part [1] of the separation pad, remove the separation pad [2] to the upward direction.



F-3-67

3.4.6 Registration Roller

3.4.6.1 Preparation for removing the registration roller

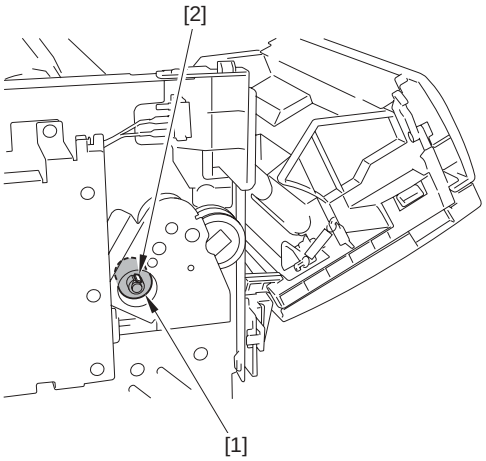
LBP3370 / LBP3310

1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

3.4.6.2 Removing the registration roller

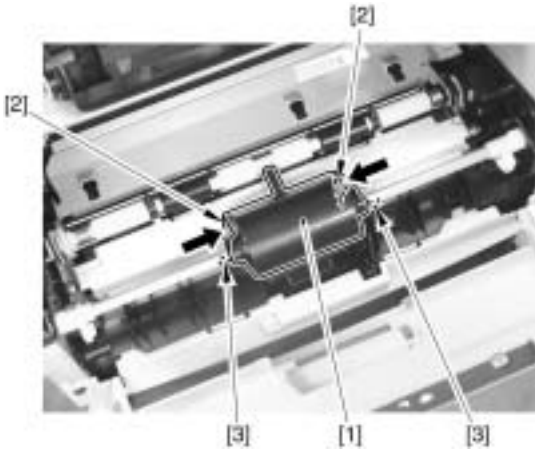
LBP3370 / LBP3310

1) Remove the gear [1].
- 1 claw [2]



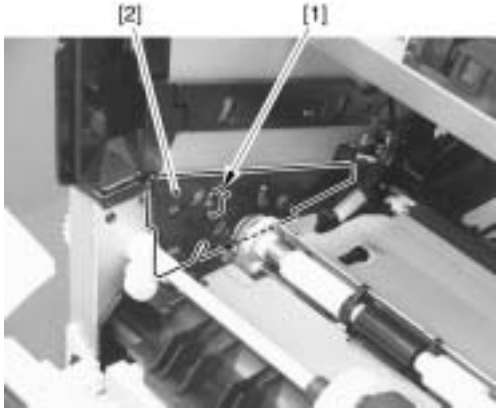
F-3-68

2) While pressing the sides [2] of the roller cover [1] to the direction of the arrow (to disengage the claw [3]), lift the roller cover to remove.



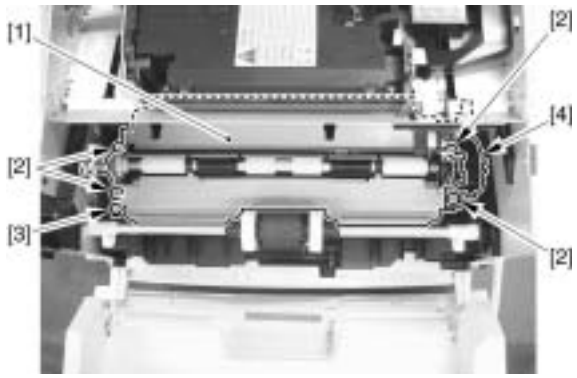
F-3-69

3) Disengage the claw [1] to the forward direction and lift the guide [2] to remove.



F-3-70

4) Remove the registration roller [1].
- 4 screws [2]
- 1 screw (W sems) [3]
- 1 gear cover [4]



F-3-71

3.4.7 Main Motor

3.4.7.1 Preparation for removing the main motor

LBP3370 / LBP3310

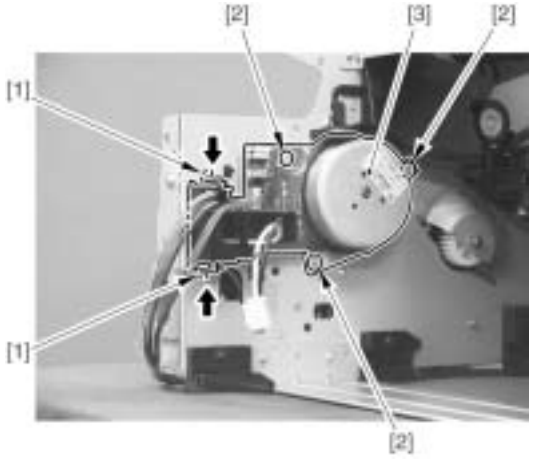
1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

5) Remove the duplexing drive assembly.(page 3-6)Reference [Removing the duplexing drive assembly]
6) Remove the video controller PCB.(page 3-10)Reference LBP3310 [Removing the video controller PCB](page 3-11)Reference LBP3370 [Removing the video controller PCB]
7) Remove the fixing assembly.(page 3-17)Reference LBP3310 [Removing the fixing assembly](page 3-18)Reference LBP3370 [Removing the fixing assembly]
8) Remove the engine controller unit.(page 3-9)Reference [Removing the engine controller PCB]

3.4.7.2 Removing the main motor

LBP3370 / LBP3310

1) Disengage the 2 claws [1] to the direction of the arrow, remove the 3 screws [2] and remove the main motor [3] together with the harness guide.



F-3-72

3.4.8 Reversal Solenoid

3.4.8.1 Preparation for removing the reverse solenoid

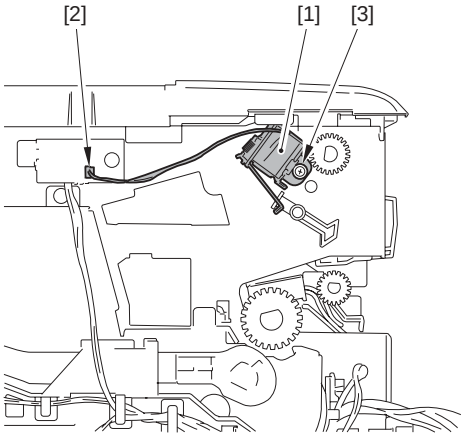
LBP3370 / LBP3310

1) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
2) Remove the duplexing drive assembly(page 3-6)Reference [Removing the duplexing drive assembly]

3.4.8.2 Removing the reverse solenoid

LBP3370 / LBP3310

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



F-3-73

3.4.9 Duplexing Unit

3.4.9.1 Preparation for removing the duplexing unit

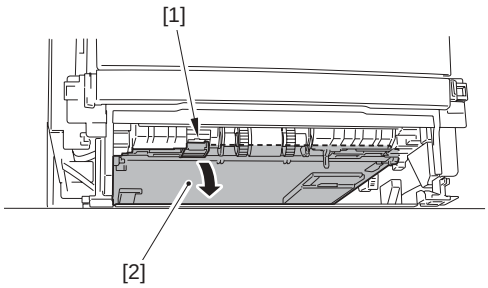
LBP3370 / LBP3310

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

3.4.9.2 Removing the duplexing unit

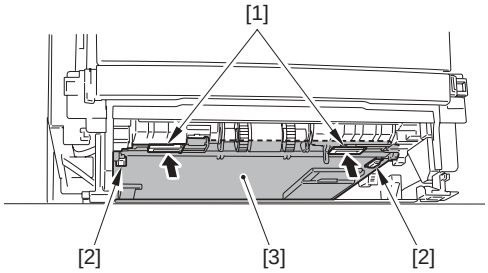
LBP3370 / LBP3310

1) Press the lever [1] of the duplexing unit to release the duplexing unit [2].

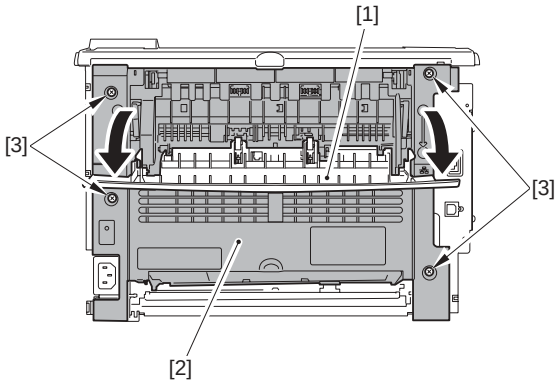


F-3-74

Points to note when attaching
Lift the 2 levers [1] of the duplexing unit and press the magnets [2] on the both ends against the main body to attach the duplexing unit [3].

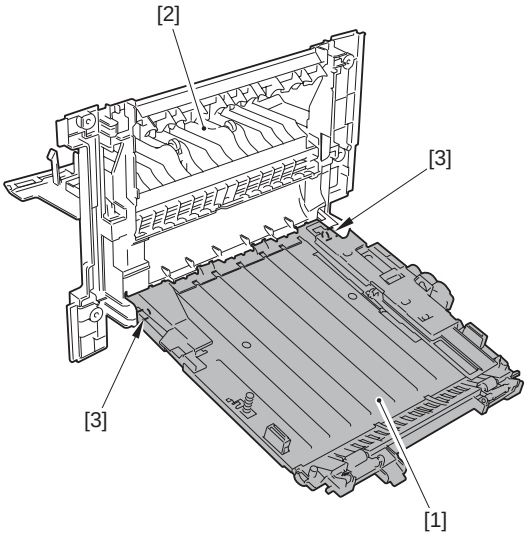


2) Open the rear cover [1] .
3) Detach the rear cover unit [2] together with the duplexing unit.
- 4 screws [3]



F-3-75

4) Detach the duplexing unit [1] from the rear cover unit [2].
- 2 bosses [3]



F-3-76

3.5 FIXING SYSTEM

3.5.1 Fixing Unit

3.5.1.1 Preparation for removing the fixing assembly

LBP3370 / LBP3310

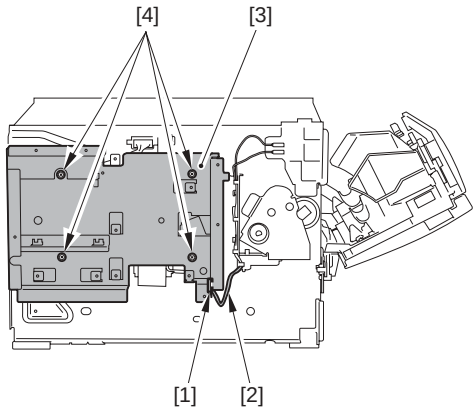
1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

5) Remove the duplexing drive assembly.(page 3-6)Reference [Removing the duplexing drive assembly]
6) Remove the video controller PCB.(page 3-10)Reference LBP3310 [Removing the video controller PCB](page 3-11)Reference LBP3370 [Removing the video controller PCB]

3.5.1.2 Removing the fixing assembly

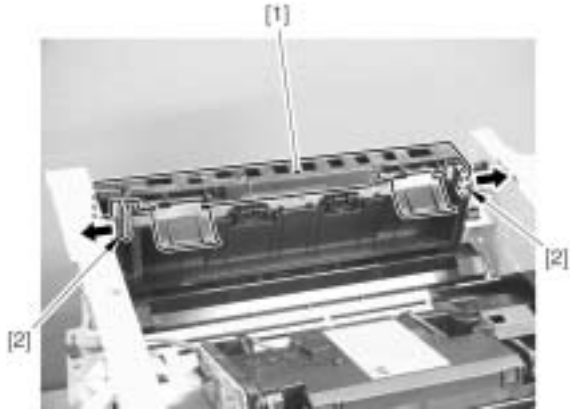
LBP3310

1) Free the harness [2] from the edge saddle [1].
2) Remove the plate [3].
- 4 screw [4]



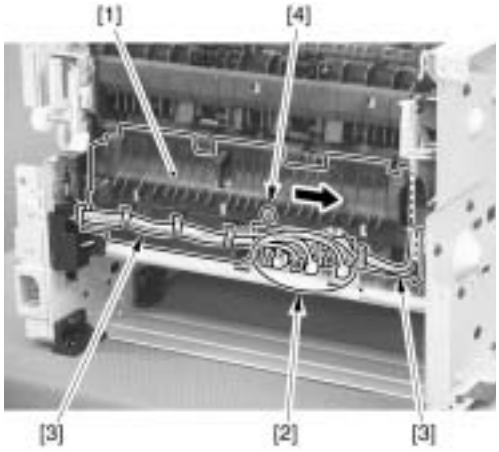
F-3-77

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



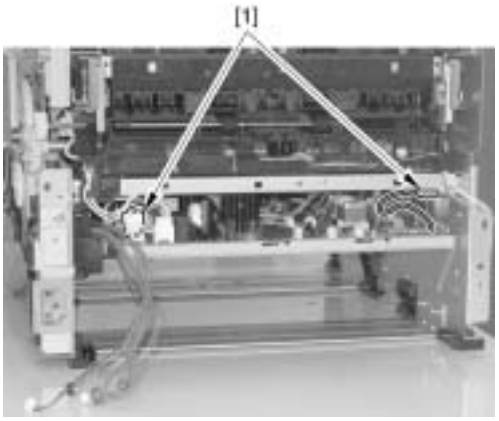
F-3-78

4) Move the guide [1] to the direction of the arrow to remove.
- 7 connectors [2]
- harness [3]
- 1 screw [4]



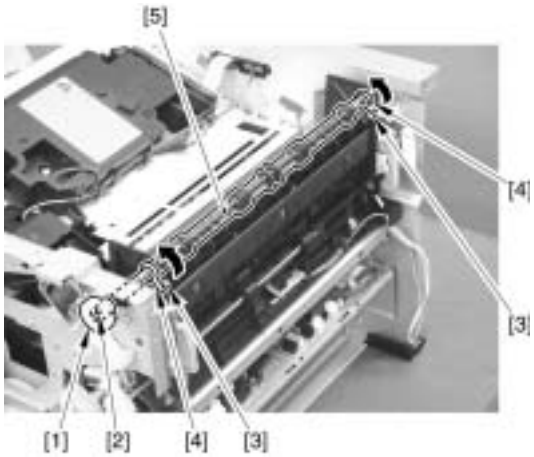
F-3-79

5) Disconnect the 2 connectors [1].



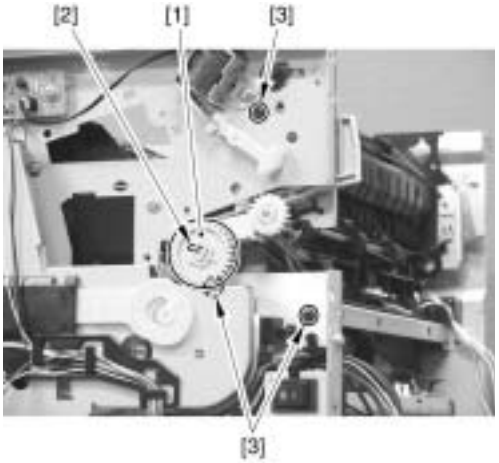
F-3-80

6) Remove the gear [1].
   - 1 claw [2]
7) Remove the 2 bosses [3], turn the 2 bushings [4] to the direction of the arrow and remove the delivery roller [5].



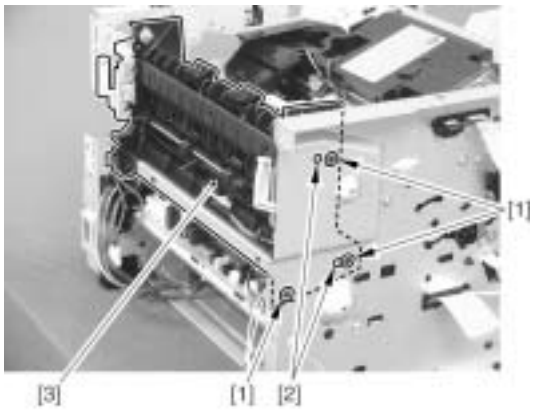
F-3-81

8) Remove the gear [1].
   - 1 claw [2]
9) Remove the 3 screws [3].



F-3-82

10) Remove the 3 screws [1].
11) Slightly open the main body frame to both sides and remove the 2 bosses [2] on the right and left side plates to remove the fixing assembly [3].

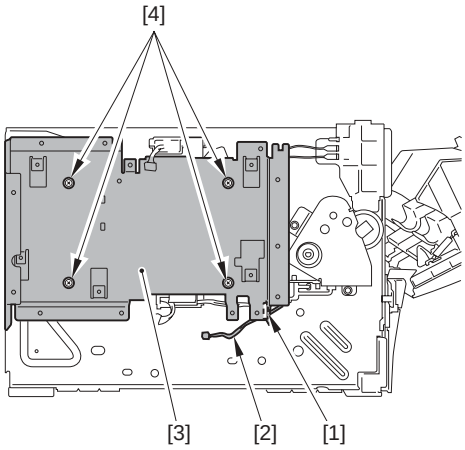


F-3-83

3.5.1.3 Removing the fixing assembly

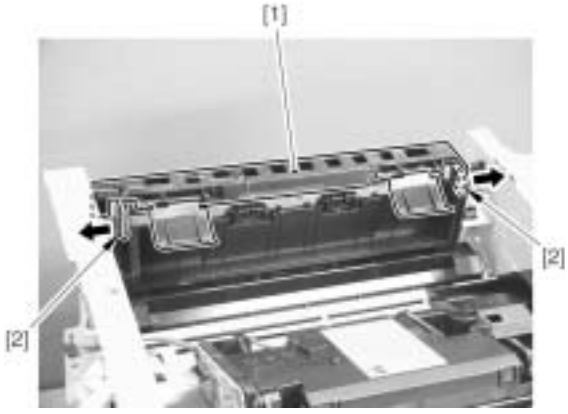
LBP3370

1) Free the harness [2] from the edge saddle [1].
2) Remove the plate [3].
   - 4 screw [4]



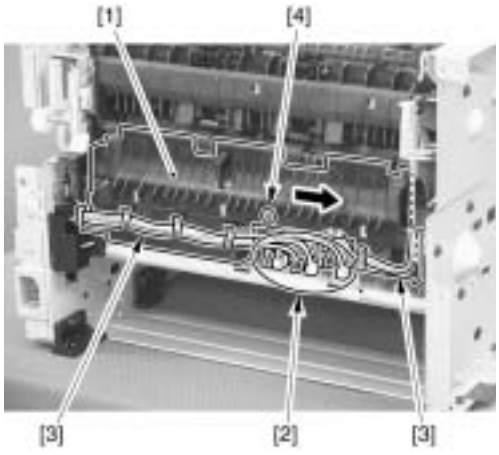
F-3-84

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



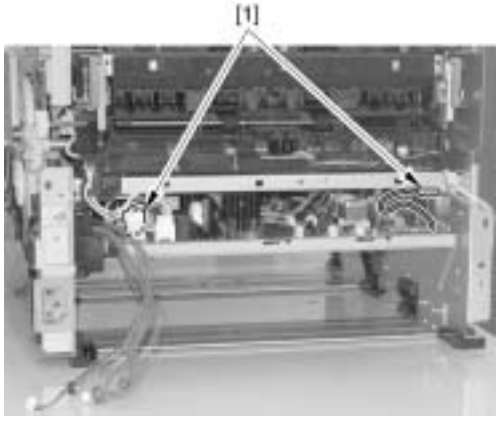
F-3-85

4) Move the guide [1] to the direction of the arrow to remove.
   - 7 connectors [2]
   - harness [3]
   - 1 screw [4]



F-3-86

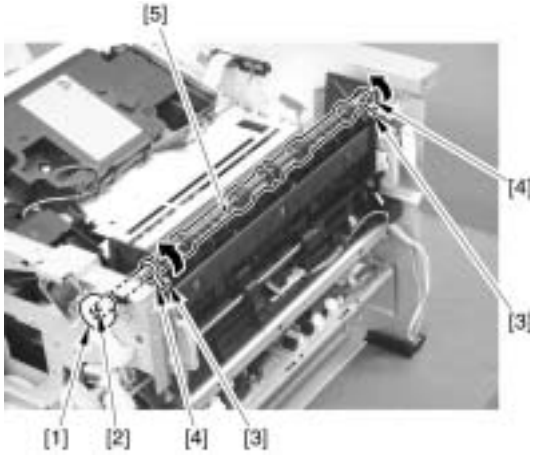
5) Disconnect the 2 connectors [1].



F-3-87

6) Remove the gear [1].
- 1 claw [2]

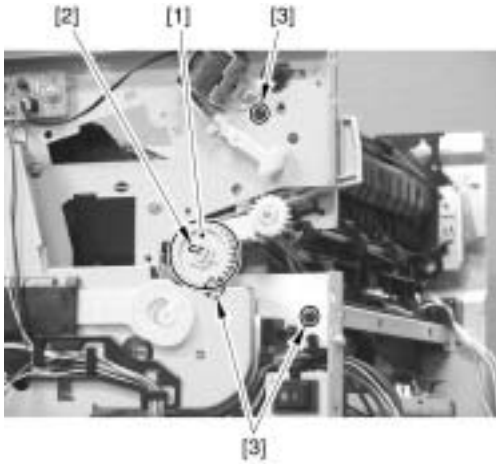
7) Remove the 2 bosses [3], turn the 2 bushings [4] to the direction of the arrow and remove the delivery roller [5].



F-3-88

8) Remove the gear [1].
- 1 claw [2]

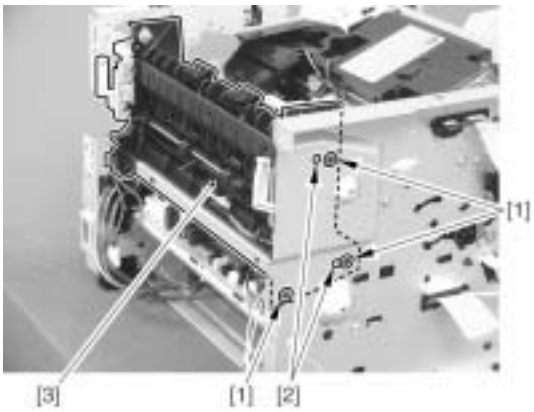
9) Remove the 3 screws [3].



F-3-89

10) Remove the 3 screws [1].

11) Slightly open the main body frame to both sides and remove the 2 bosses [2] on the right and left side plates to remove the fixing assembly [3].



F-3-90

3.5.2 Fixing Film Unit

3.5.2.1 Preparation for removing the fixing film unit

LBP3370 / LBP3310

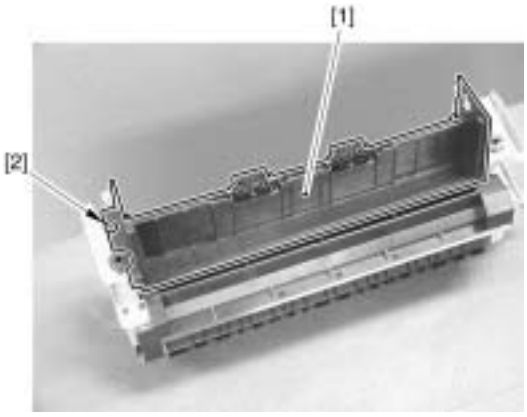
1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

5) Remove the duplexing drive assembly.(page 3-6)Reference [Removing the duplexing drive assembly]
6) Remove the video controller PCB.(page 3-10)Reference LBP3310 [Removing the video controller PCB](page 3-11)Reference LBP3370 [Removing the video controller PCB]
7) Remove the fixing assembly.(page 3-17)Reference LBP3310 [Removing the fixing assembly](page 3-18)Reference LBP3370 [Removing the fixing assembly]

3.5.2.2 Removing the fixing film unit

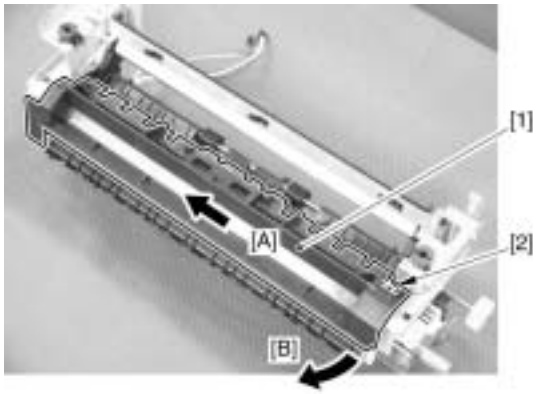
LBP3370 / LBP3310

1) Remove the delivery frame unit [1].
- 1 screw [2]



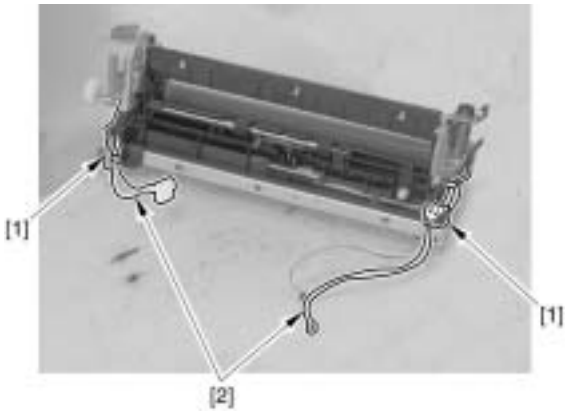
F-3-91

2) Shift the fixing inlet guide [1] to the direction of the arrow [A], remove the boss [2] and move the guide to the direction of the arrow [B] to remove.



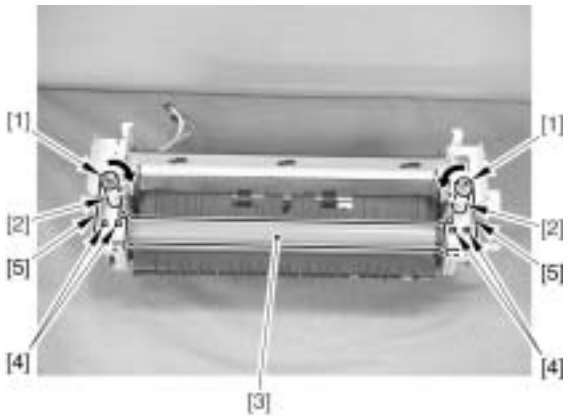
F-3-92

3) Free the harness [2] from the 2 guides [1].



F-3-93

4) Push down the 2 spring retainers [1] and make a 90-degree turn to the direction of the arrow to remove.
5) Remove the 2 springs [2].
6) Remove the fixing film unit [3].
- 4 bosses [4]
- 2 pressure plates [5]



F-3-94

3.5.3 Fixing Pressure Roller

3.5.3.1 Preparation for removing the fixing pressure roller

LBP3370 / LBP3310

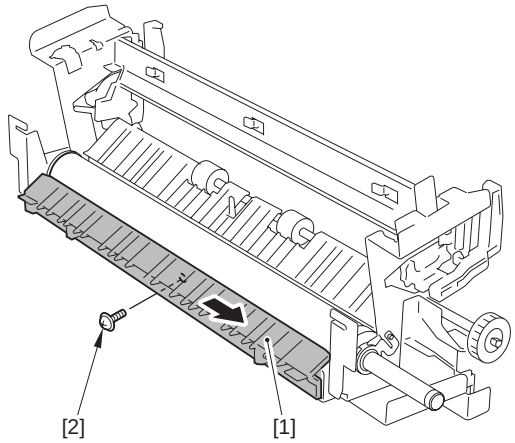
1) Detach the left cover.(page 3-2)Reference [Detaching the left cover]
2) Detach the right cover.(page 3-1)Reference [Detaching the right cover]
3) Remove the rear cover unit.(page 3-1)Reference [Removing the rear cover unit]
4) Detach the upper cover unit.(page 3-3)Reference LBP3310 [Detaching the upper cover](page 3-4)Reference LBP3370 [Detaching the upper cover]

5) Remove the duplexing drive assembly.(page 3-6)Reference [Removing the duplexing drive assembly]
6) Remove the video controller PCB.(page 3-10)Reference LBP3310 [Removing the video controller PCB](page 3-11)Reference LBP3370 [Removing the video controller PCB]
7) Remove the fixing assembly.(page 3-17)Reference LBP3310 [Removing the fixing assembly](page 3-18)Reference LBP3370 [Removing the fixing assembly]
8) Remove the fixing film unit.(page 3-19)Reference [Removing the fixing film unit]

3.5.3.2 Removing the fixing pressure roller

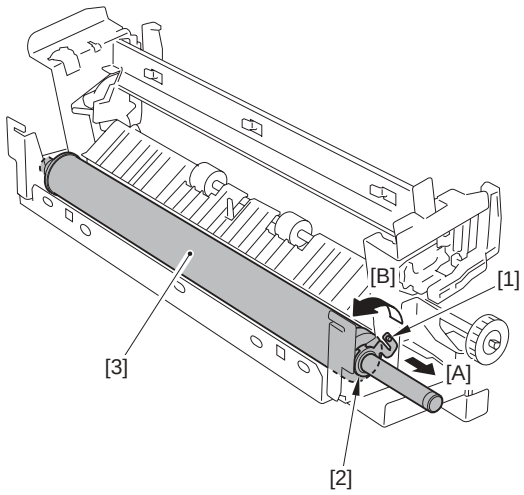
LBP3370 / LBP3310

1) Move the fixing inlet lower guide [1] to the direction of the arrow to remove.
- 1 screw [2]



F-3-95

2) Disengage the boss [1] of the bushing to the direction of the arrow [A], turn the bushing [2] to the direction of the arrow [B] and remove it to the forward direction.
3) Remove the pressure roller [3].



F-3-96

Chapter 4 MAINTENANCE AND INSPECTION

Contents

4.1 Periodically Replaced Parts

4.1.1 Periodically Replaced Parts

LBP3370 / LBP3310

The machine does not have parts that require periodical replacement.

4.2 Consumables

4.2.1 Life Expectancy of Consumable Parts

LBP3370 / LBP3310

No consumable parts are required in this printer.

4.3 Periodical Service

4.3.1 Periodic Service

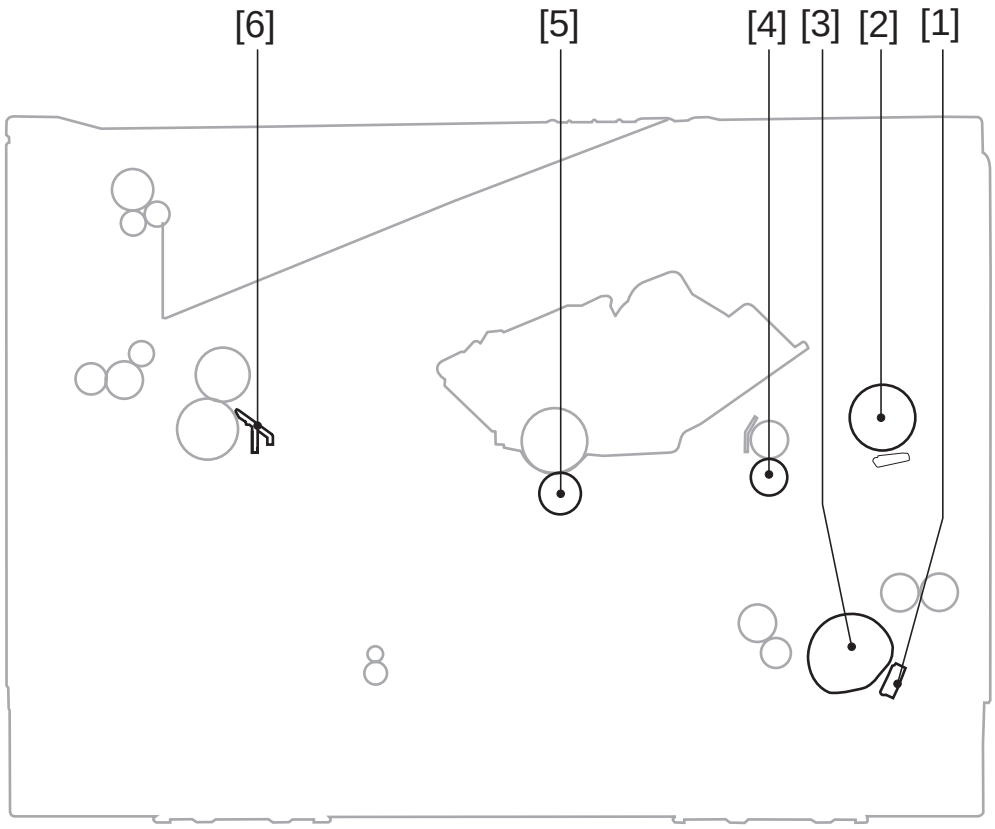
LBP3370 / LBP3310

No periodic services are required to this printer.

4.4 Cleaning

4.4.1 Cleaning During Service Visit

LBP3370 / LBP3310



F-4-1

1. Separation pad
Wipe the rubber part with the dry lint-free paper.
2. Munual feed pick-up roller
Wipe with the dry lint-free paper.
3. Pick up roller
Wipe with the dry lint-free paper.
4. Feed roller
Wipe with the dry lint-free paper.
5. 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
6. Fixing inlet guide
Wipe with the dry lint-free paper.

Chapter 5 TROUBLESHOOTING

Contents

5.1 MEASUREMENT AND ADJUSTMENT

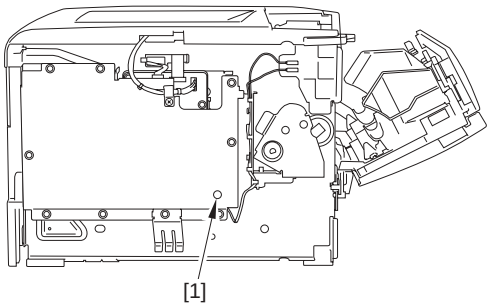
5.1.1 Test Print

5.1.1.1 Test Print

LBP3310

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]. (page 3-2)[Detaching the left cover]
2) Insert a tool such as a driver into the guide hole [1] and press the Test Print switch.



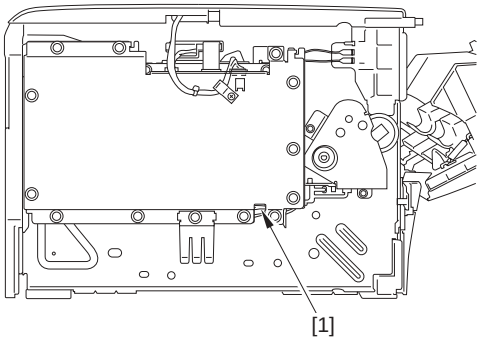
F-5-1

5.1.1.2 Test Print

LBP3370

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]. (page 3-2)[Detaching the left cover]
2) Insert a tool such as a driver into the guide hole [1] and press the Test Print switch.



F-5-2

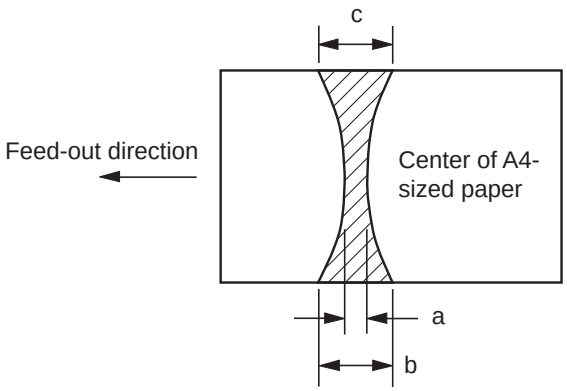
5.1.2 Mechanical Adjustment

5.1.2.1 Checking the Nip Width (fixing pressure roller)

LBP3370 / LBP3310

The nip width of the fixing unit is not adjustable in this printer, however, the incorrect nip widthmay 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-5-3

5.2 SERVICE TOOLS

5.2.1 Standard Tools

LBP3370 / LBP3310

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	
2	Jumper wire	TKN-0069	With a clip
3	Clearance gauge	CK-0057	0.02 to 0.3 mm
4	Compression spring scale	CK-0058	0 to 600 g for checking the cassette spring pressure
5	Phillips screwdriver	CK-0101	M4, M5 Length : 363 mm
6	Phillips screwdriver	CK-0104	M3, M4 Length: 155 mm
7	Phillips screwdriver	CK-0105	M4, M5 Length: 191 mm
8	Phillips screwdriver	CK-0106	M4, M5 Length: 85 mm
9	Flat-blade screwdriver	CK-0111	
10	Precision flat-blade screwdriver set	CK-0114	6-piece set
11	Allen wrench set	CK-0151	5-piece set
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	
17	Retaining ring pliers	CK-0205	Applied to the axis ring
18	Crimper	CK-0218	
19	Tweezers	CK-0302	
20	Ruler	CK-0303	Employed to measure 150 mm
21	Mallet, plastic head	CK-0314	
22	Brush	CK-0315	
23	Penlight	CK-0327	
24	Plastic bottle	CK-0327	100cc
25	Lint-free paper	CK-0336	500SH/PKG
26	Oiler	CK-0349	30cc
27	Plastic jar	CK-0351	30cc
28	Digital multi-measure	FY9-2032	

5.2.2 Special Tools

LBP3370 / LBP3310

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

5.3 ERROR CODE TABLE

5.3.1 Error Code

LBP3310

T-5-2

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.
E001	Fixing error high temperature	- Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the engine controller PCB.
E003	Fixing low temperature	- Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the engine controller PCB.
E004	Fixing assembly drive assembly circuit error	- Replace the engine controller PCB.
E014	The Feed motor has a fault.	- Check the connector of the main motor. - Replace the main motor assembly. - 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. - Replace the video controller PCB.
E197	The is an engine communication error.	- Replace the engine controller PCB.

Error code	Major cause/detection	Remedy
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.

5.3.2 Error Code

LBP3370

T-5-3

Code	Description	Remedial action
E000	Fixing fault	
0000	Condition The temperature of the fixing unit does not reach the targeted temperature -10 deg C within 63 sec. after the wait sequence is started. Cause The fixing film unit is faulty. The engine controller PCB is faulty.	- Replace the fixing film unit. - Replace the engine controller PCB.
E001	Fixing error high temperature	
0000	Condition The fixing unit temperature is monitored every 5 msec., and the temperature exceeds 220 deg C for 30 times continuously. Cause The main thermistor is faulty. The engine controller PCB is faulty.	- Replace the fixing film unit. - Replace the engine controller PCB.
E003	Fixing low temperature	
0000	Condition 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. Cause The main thermistor is faulty. The engine controller PCB is faulty. The connector is in poor contact. The harness is faulty.	- Replace the fixing film unit. - Replace the engine controller PCB.
E004	Fixing assembly drive assembly circuit error	
0000	Condition Zero cross signal cannot be detected for specified time or longer. Cause Fixing control circuit assembly is faulty.	- Replace the engine controller PCB.
E014	Main motor error	
0000	Condition A motor ready state does not start 4 msec or more after the motor has been started. Cause The drum motor is faulty. The engine controller PCB is faulty.	- Replace the main motor. - Replace the engine controller PCB.
E06F	EEPROM errer	
0068	EEROM errer Cause The video controller PCB is faulty. (EEPROM errer)	- Replace the video controller PCB
E100	BD error Cause The laser scanner unit is faulty. The engine controller PCB is faulty.	
0000	BD error During constant speed rotation, the cycle of the BD signal deviates for 2 sec or more from a specific cycle.	- Replace the laser scanner unit. - Replace the engine controller PCB.
E602	It fails in the download of the firmware.	
0002	Downloading of the controller firmware ends in failure.	- Download the controller firmware again. - Replace the video controller board by new one.
E604	Error in lacking of memory capacity	
0000	Lack of memory capacity	- Remove and insert the expanded memory - Replace the expanded memory to the correct one - Replace the video controller PCB
E733	Printer-related communication error	
0000	At a time other than power-on, an error has occurred in the communication between engine controller and video controller (caused by the engine controller).	- Turn off and then back on the power. - Replace the engine controller board.
0004	Undefined command error	
E744	Illegal ID code during controller firmware download	
1000	It is detected that the USB product ID sent at downloading of the controller firmware and the product ID of bootrom written in ROM do not match.	- Download the controller firmware again. - Replace the video controller board by new one.
E760	Error in software program for video controller	

Code	Description	Remedial action
0000	Fault of software program for the video controller	- Download the correct firmware for the video controller - Replace the video controller PCB
E805	Fan error	
0000	Fixing fan error Cause The fan is faulty. The engine controller PCB is faulty.	- Replace the fan. - Replace the engine PCB.

5.3.3 A4-XX_ERROR

LBP3370

T-5-4

Number field	Description	Remedial action
A4-00 to 06	There is a fault in the software program of the video controller.	- Turn off and then back on the power. - Replace the video controller board.

5.3.4 A5-XX_ERROR

LBP3370

T-5-5

Number field	Description	Remedial action
A5-00 to 07	A fault has occurred in image processing within the controller.	1. Turn off and then back on the power. 2. If remedy 1 above fails, increase the memory. 3. If remedy 2 above fails, replace the controller board.

5.3.5 A7-XX_ERROR

LBP3370

T-5-6

Number field	Description	Remedial action
A7-00	There is an error in the software program of the video controller.	1. Turn off and then back on the power. 2. If remedy 1 above fails, replace the controller board.

5.3.6 D7-XX_ERROR

LBP3370

T-5-7

Number field	Description	Remedial action
D7-00,01	A fault has occurred the firmware of the PCL translator.	1. Turn off and then on the power. 2. If remedy 2 above fails, replace the controller board.

5.3.7 D8-XX_ERROR

LBP3370

T-5-8

Number field	Description	Corrective action
D8-00 TO 0C	A fault has occurred in the firmware of the LIPS LX (BLD) translator.	1) Turn on the power. 2) If step 1 fails, replace the controller board.

5.4 Version Up

5.4.1 Overview of Upgrading Work

LBP3370

The machine's system software may be upgraded using a PC to which the Service Support Tool (SST) has been installed.

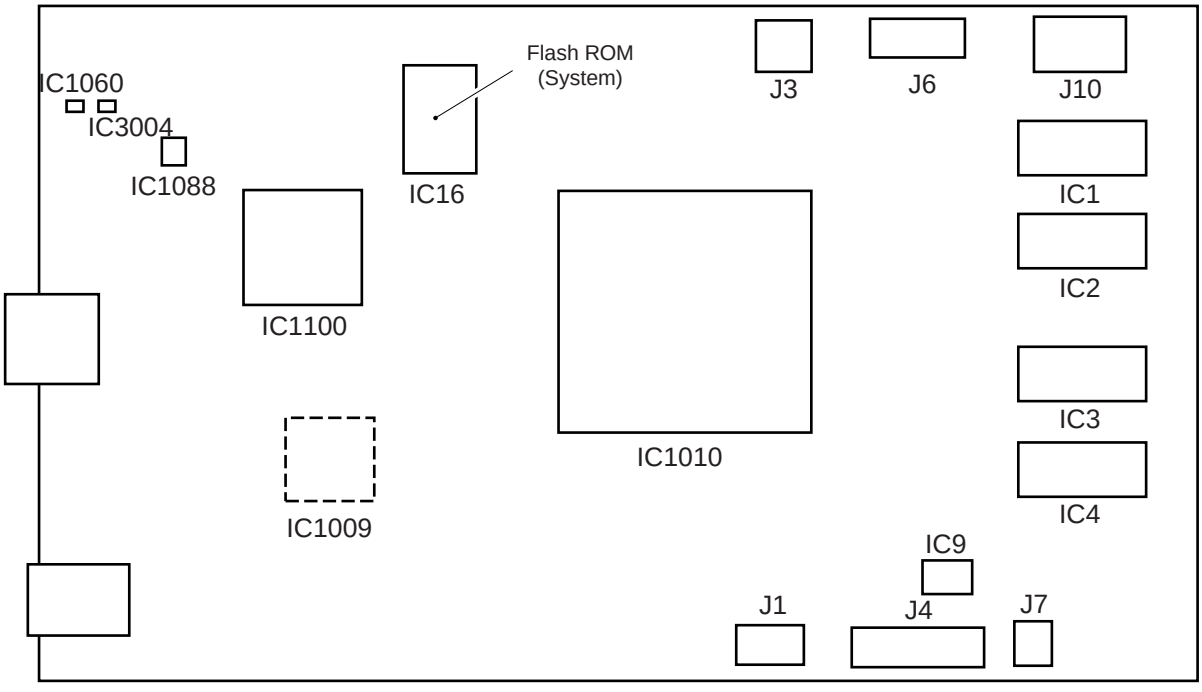
5.4.2 Construction of Firmware

LBP3370

The following shows the composition of the machine's firmware:

T-5-9

Firmware	Function	Location	Remarks
cont	Controls overall machine operation.	Video controller board	Soldered to flash ROM (IC16)

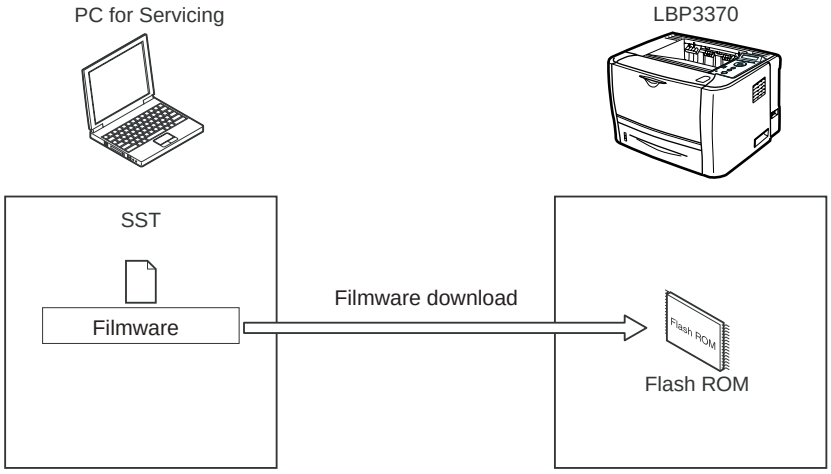


F-5-4

5.4.3 Outline of the Service Support Tool

LBP3370

The service support tool (SST, hereafter) provides the following functions:

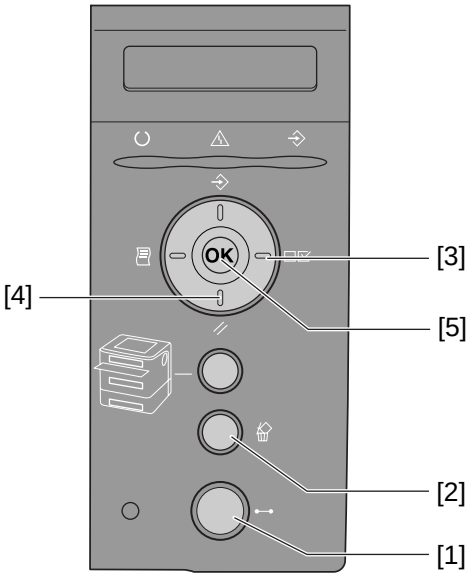


F-5-5

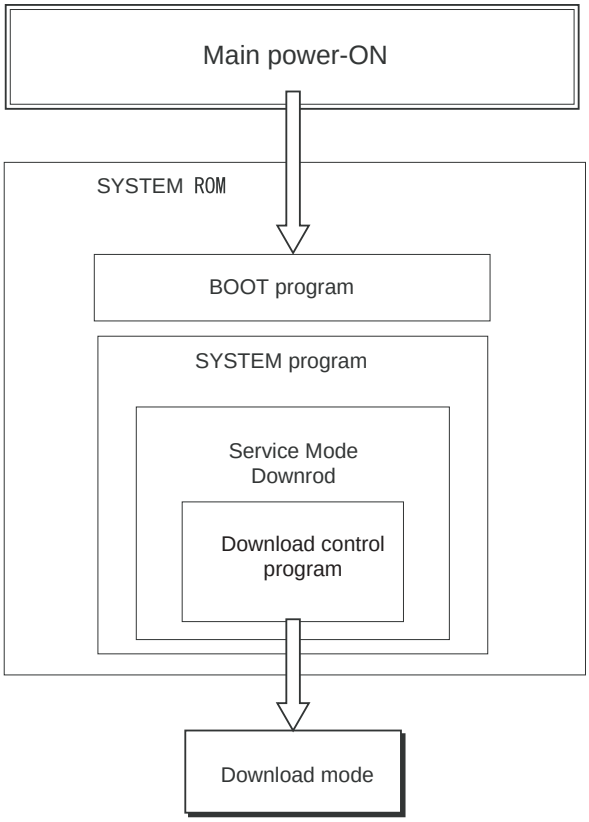
MENO:
The machine does not support uploading/downloading of the SST's backup mechanism.

The machine does not support uploading/downloading of the SST's backup mechanism.
To use the SST, put the machine in download mode:
Shifting to Download Mode

1. While holding down on the Online key (1) and the cancel job key (2), turn on the power.
2. Press the settings key (3) several times; when 'SERVICE MODE' is indicated, press the reset key (4) to start service mode.
3. Press the setttings key (3) several times; when 'F/W UPDATE GR' is indicated, press the reset key (4).
4. Press the setttings key (3) several times; when 'USB' is indicated, press the reset key (4).
5. When 'OK?' is indicated, press the OK key (5) to start download mode.



F-5-6



F-5-7

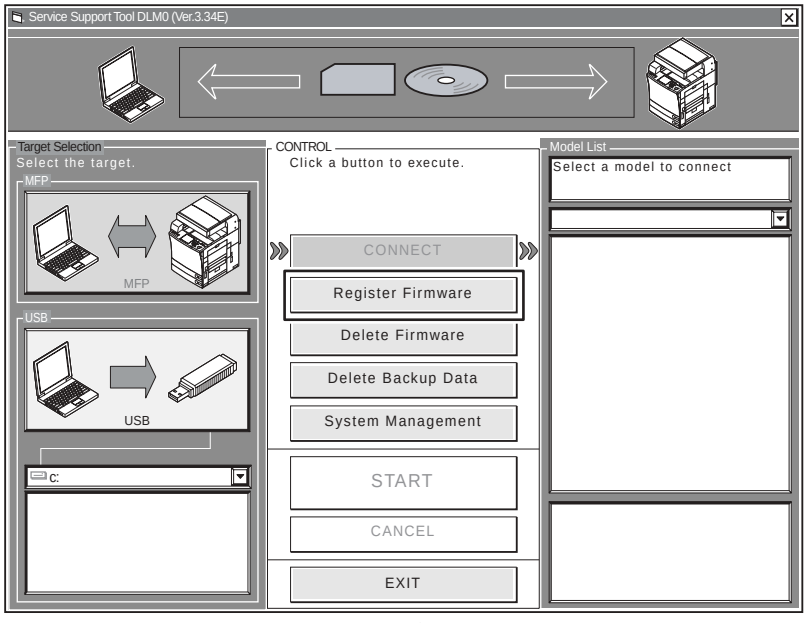
5.4.4 Registering the Firmware

LBP3370

Copy the firmware from the system CD to the SST.

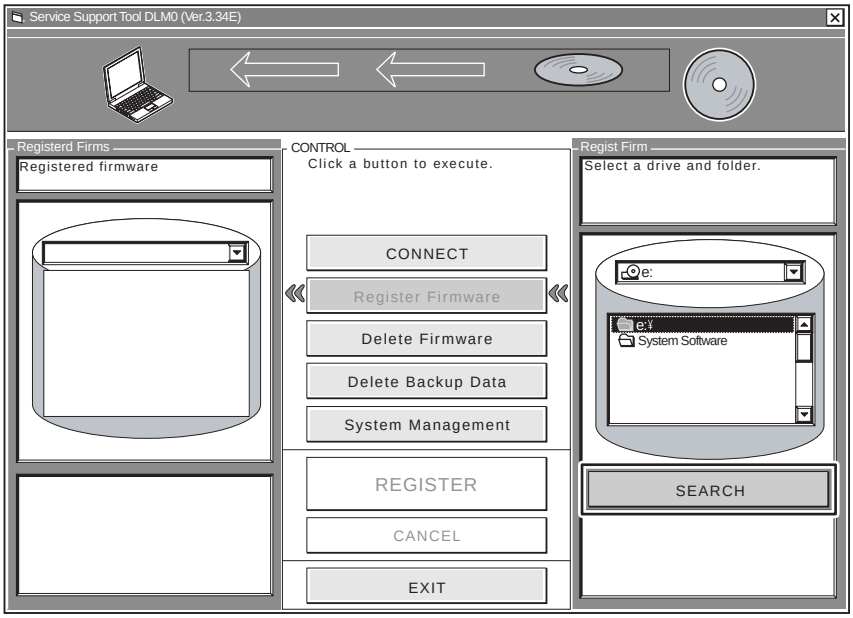
[Making Preparations]
Items to Prepare
- PC to which SST v3.34 or later has been installed
- system CD for the LBP3370

[Copying the Firmware]
1) Start up the PC.
2) Set the system CD in the PC.
3) Start up the SST.
4) Click [Register Firmware].



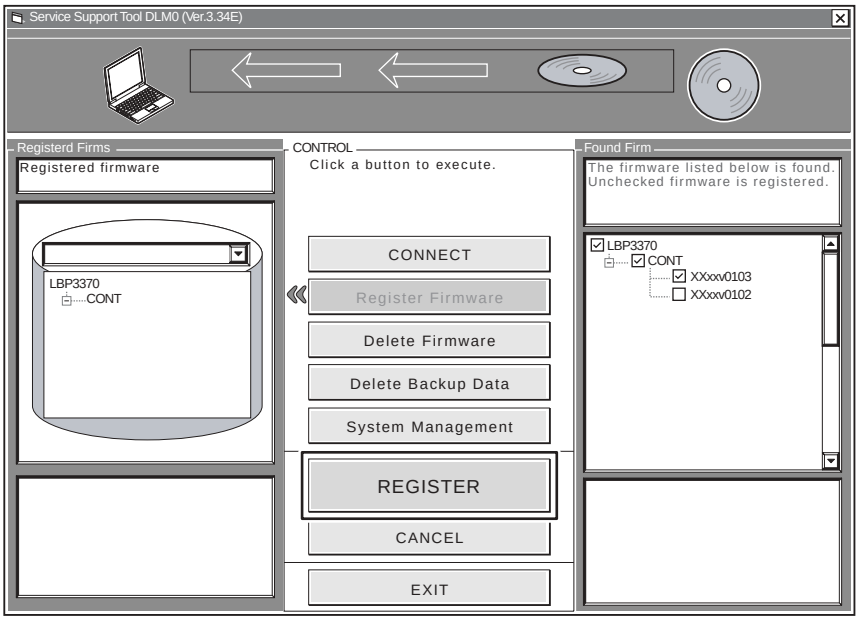
F-5-8

5) Select the drive in which you have set the system CD, and click [search].



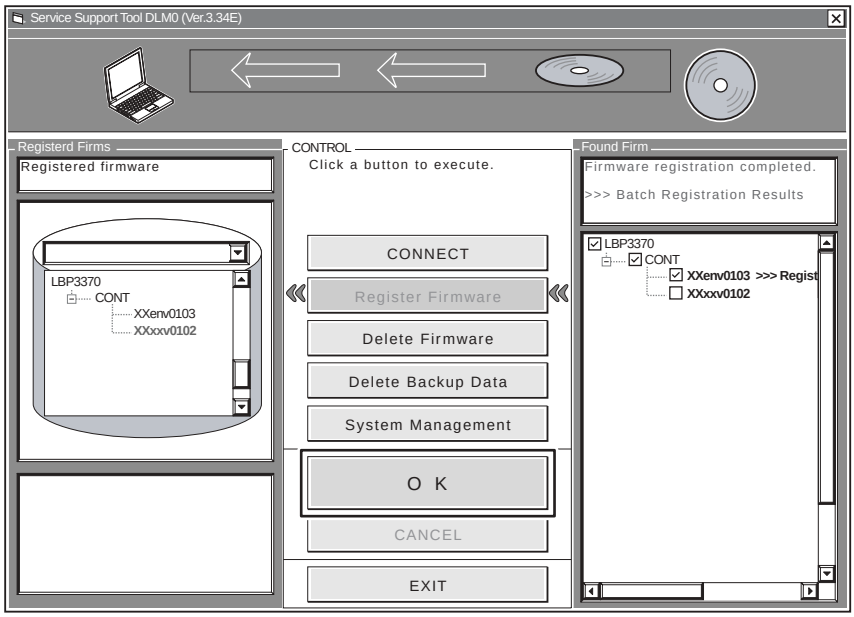
F-5-9

6) See that a list has appeared indicating the software found on the system CD. Deselect (by removing the check mark) from those folders and system software files you do not need; then, click [REGISTER].



F-5-10

7) When the result of copying the system software has appeared, click [OK].



F-5-11

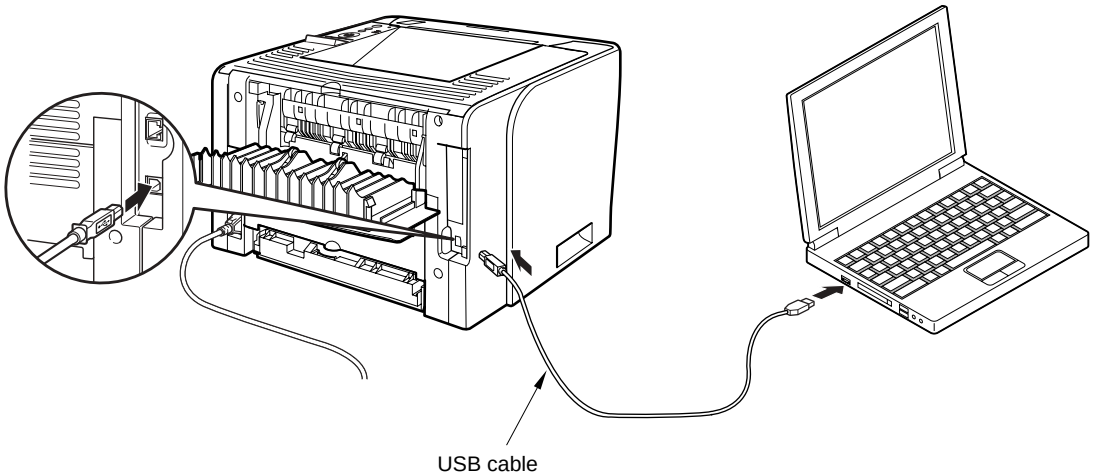
5.4.5 Making Connections

LBP3370

Connect the PC to the machine.

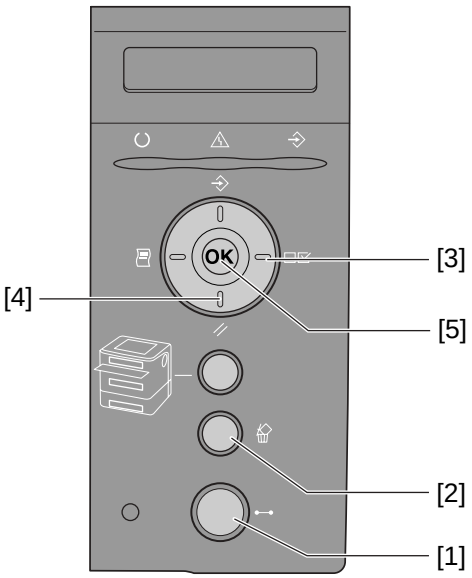
[Making Preparations]
Items to Prepare
- PC to which SSTv3.34 or higher and LBP3370 firmware have been installed
- USB cable (USB1.1,USB2.0)

[Procedure]
1) Start up the PC.
2) Connect the machine and the PCB with a USB cable.



F-5-12

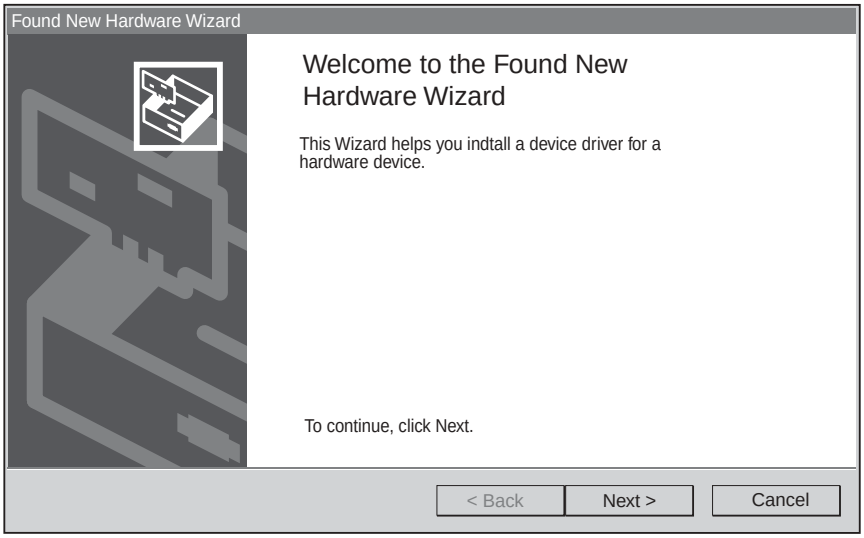
4) Turn on the main power as follows to start download mode.
1. While holding down on the Online key (1) and the cancel job key (2), turn on the power.
2. Press the settings key (3) several times; when 'SERVICE MODE' is indicated, press the reset key (4) to start service mode.
3. Press the setttings key (3) several times; when 'F/W UPDATE GR' is indicated, press the reset key (4).
4. Press the setttings key (3) several times; when 'USB' is indicated, press the reset key (4).
5. When 'OK?' is indicated, press the OK key (5) to start download mode.



F-5-13

MEMO:

The New Hardware Wizard appears on the PC screen. Click [cancel].



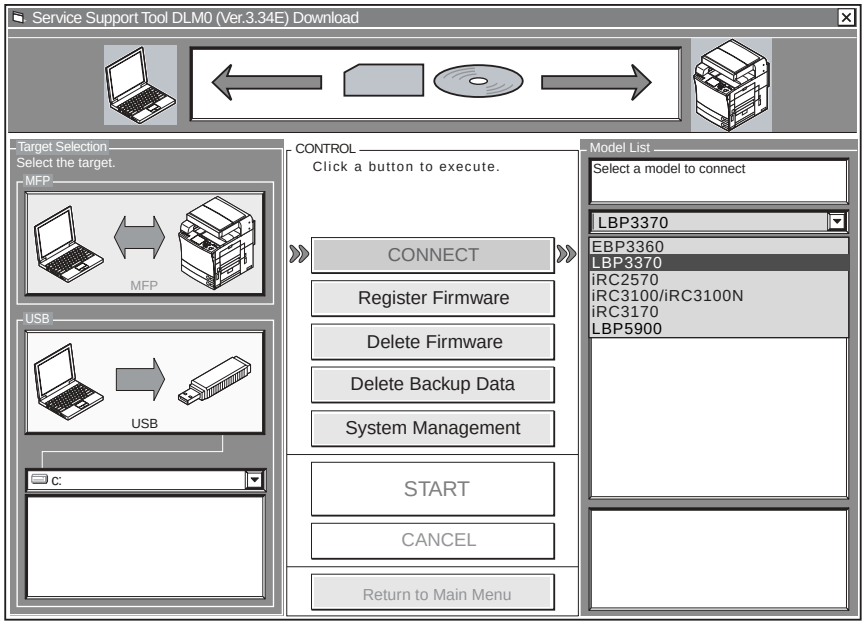
F-5-14

5) Start up the SST.

5.4.6 The down load procedure of the system

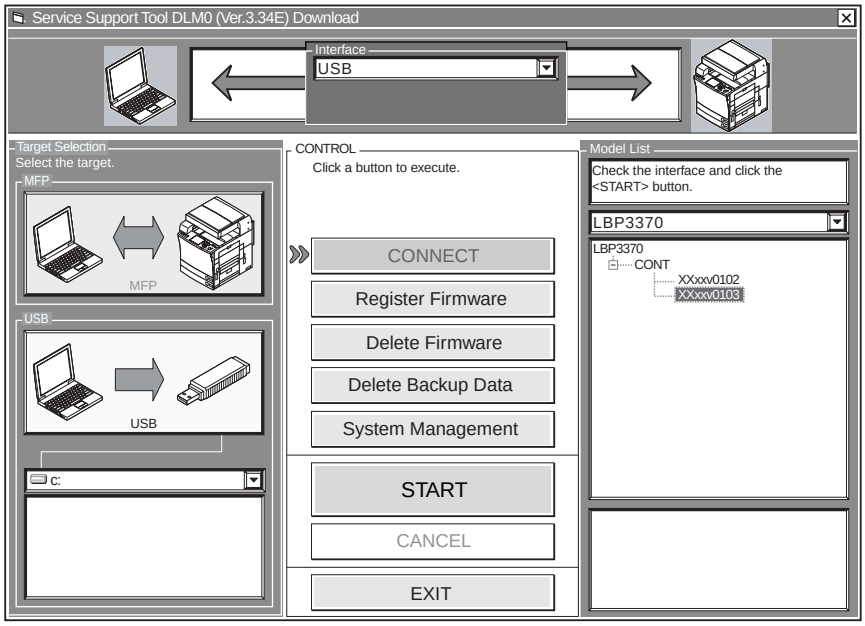
LBP3370

1) Select the model to connect. (LBP3370)



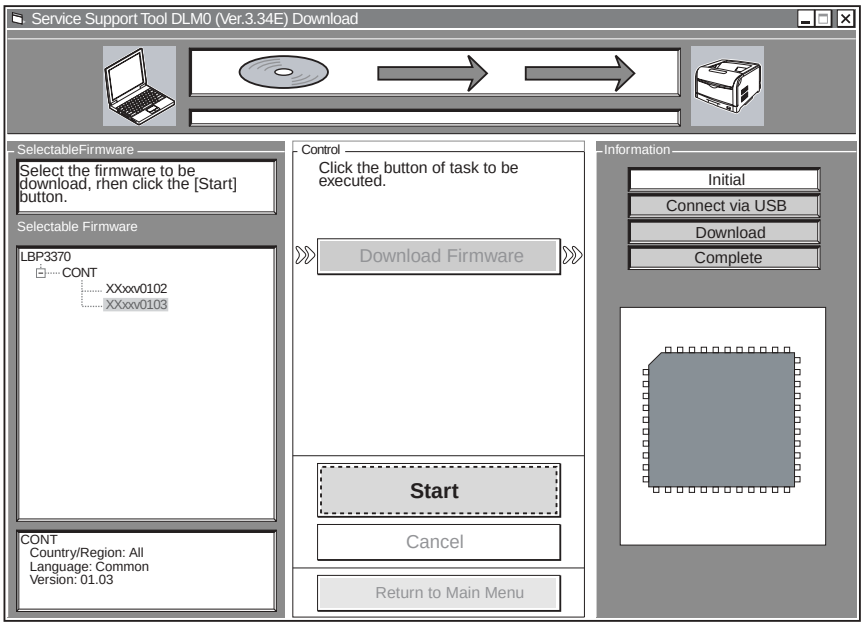
F-5-15

2) Select 'CONT' (LBP3370), and click [start].



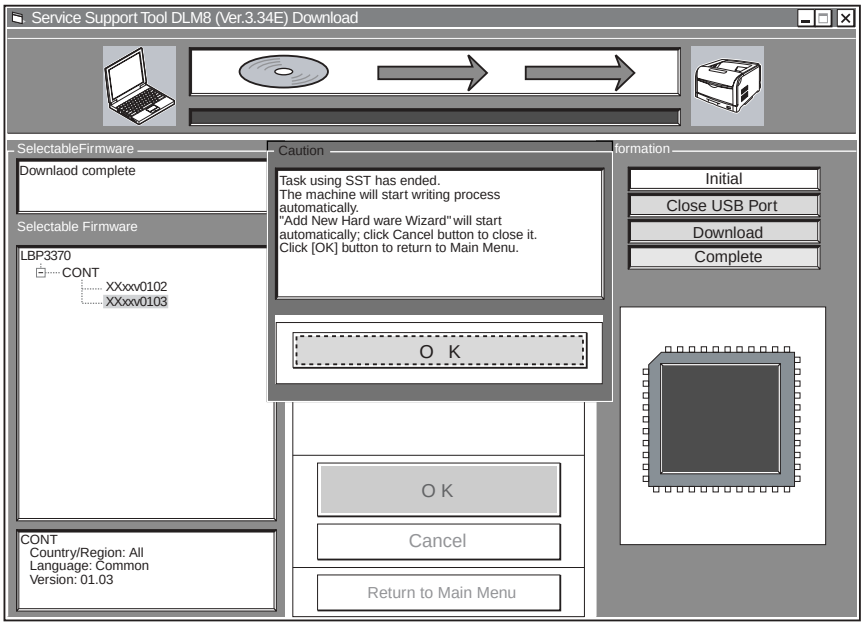
F-5-16

3) Select the version to download, and click [start].



F-5-17

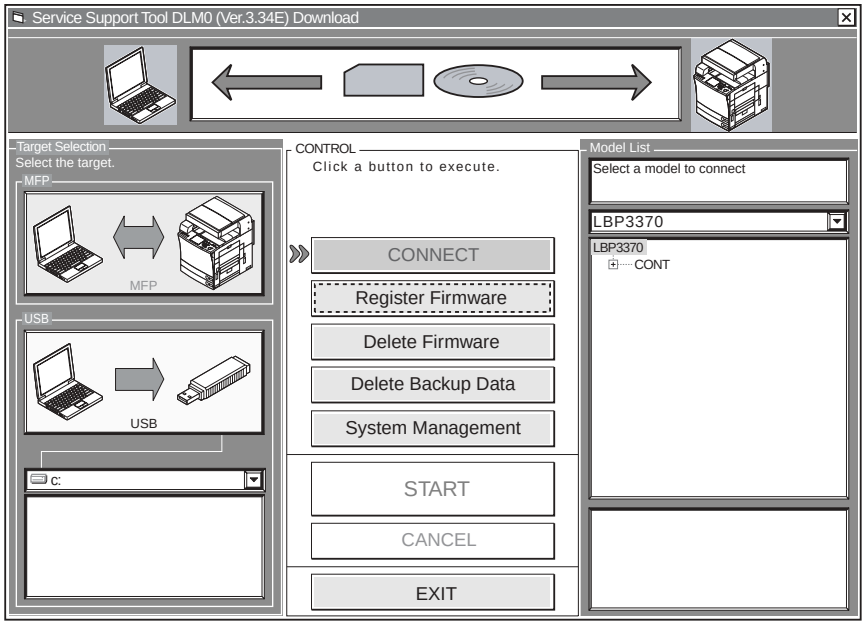
4) When the result of downloading is indicated, click [OK].



F-5-18

The end of work with the SST does not mean the end of work to be performed on the machine. Be sure not to turn off the machine until it indicates '00 ready'.
It takes about 1 min from when [start] is clicked to when '00 ready' is indicated.
If interrupted while writing the program to its memory, the machine may fail to start up.

5) Click [EXIT].



F-5-19

After Downloading
The new version will not be effective unless the power has been turned off and then back on.

5.5 Service Mode

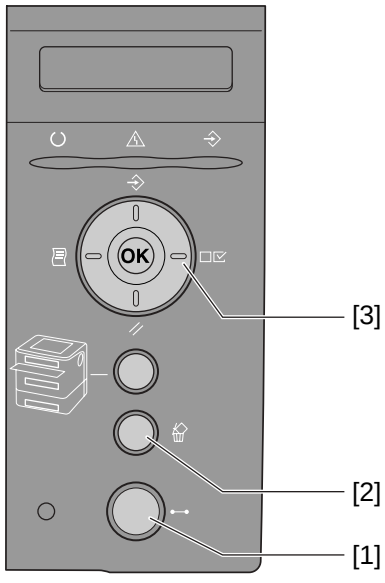
5.5.1 PCL

5.5.1.1 Overview

LBP3370

Shifting to Service Mode

1. While holding down the online key (1) and the cancel job key (2), turn on the power.
2. Press the setting key (3) so that 'service mode' is indicated.
3. Press the OK key so that the group name appears. (Use the down arrow key to move to the next item.)



F-5-20

5.5.1.2 Service Mode

LBP3370

T-5-10

Service mode > Function gr.			
Item		**Description**	**Settings**
ECONF	EXPORT	The equipment setting data is exported.	GENERAL/DEPEND/SECURITY/ALL
	INPORT	The import does the equipment setting data.	----

T-5-11

Service mode > Log gr.		
Item	**Description**	**Settings**
SYSTEM LOG	sets the system log mechanism	on*/off

T-5-12

Service mode > F/W update gr.		
Item	**Description**	**Settings**
USB	executes upgrading of the controller firmware* (only if USB)	----
NETWORK	executes upgrading of the controller firmware	----

T-5-13

Service mode > Network gr.			
Item		**Description**	**Settings**
DNSTrans		Determine the priority of protocol (IPv4/IPv6) used for DNS inquiry based on the DNStrans value.	IPv4/IPv6*
FTP SYSLOG		Use it to set the various system log file acquisition functions.	on/off*
JOB SERIALIZE		sets the connector serialization mechanism	on/off*
SNMP	canon_admin	Restrict the SNMP access regarding the internally obtained community name (administrative privilege).	Off/ReadOnly/ReadWrite*
	canon_user	Restrict the SNMP access regarding the internally obtained community name (user privilege).	Off/ReadOnly/ReadWrite*
TCP DELAYED ACK		Enabled/disabled switch for Delayed Ack function Turning the switch to 0 disables the delayed Ack function of TCP.	on*/off
WOLtrans		Protocol setting for sleep recovery Determine protocols for sleep recovery in accordance with the WOL (Wake On LAN) trans value.	1 to 3 1*: wsd&snmp 2: wsd&cpca 3: cpca&snmp

Chapter 6 APPENDIX

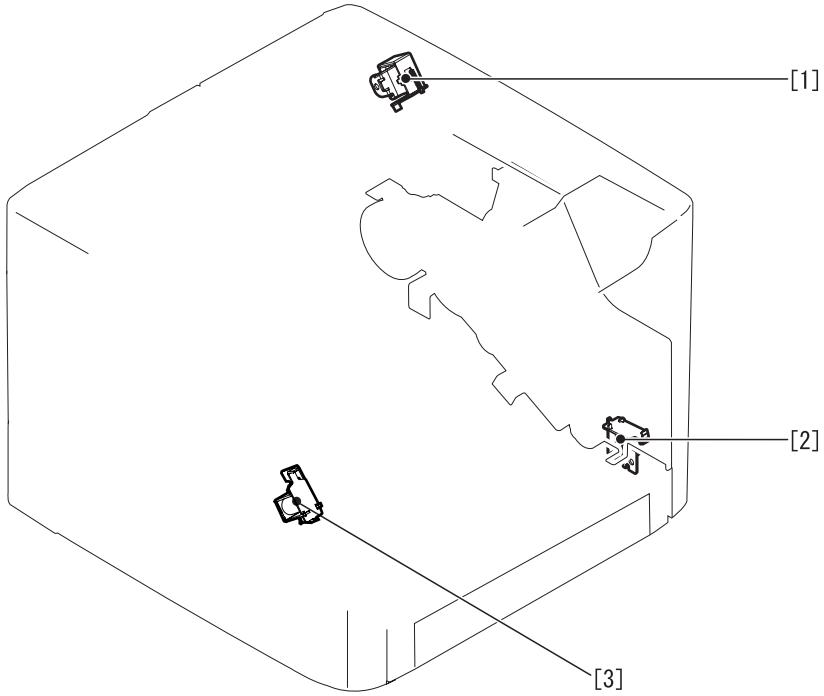
Contents

6.1 OUTLINE OF ELECTRICAL COMPONENTS

6.1.1 Clutch/Solenoid

6.1.1.1 Solenoid

LBP3370 / LBP3310



F-6-1

[1] Reversal solenoid

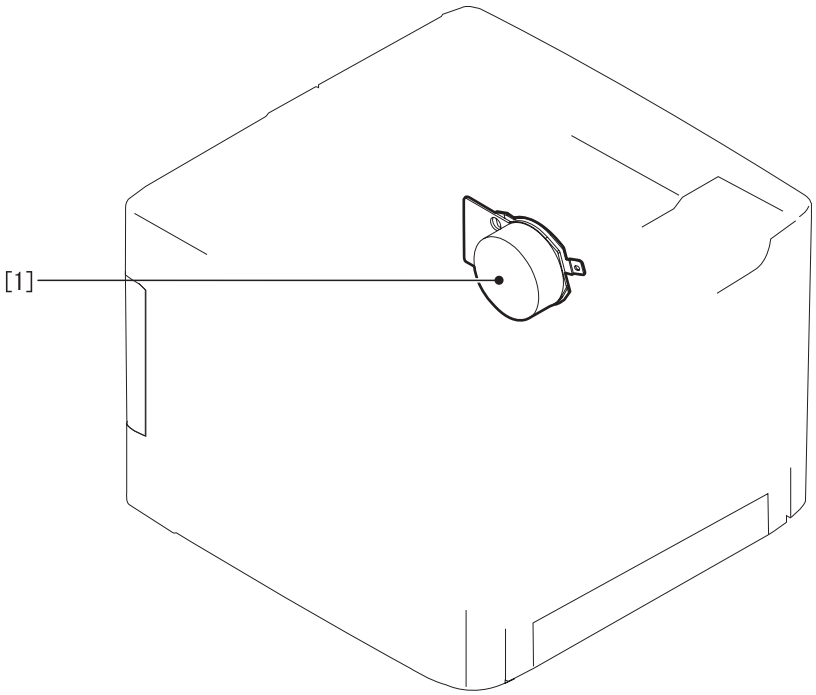
[2] Cassette pick-up solenoid

[3] Manual feed pick-up solenoid

6.1.2 Motor

6.1.2.1 Motor

LBP3370 / LBP3310



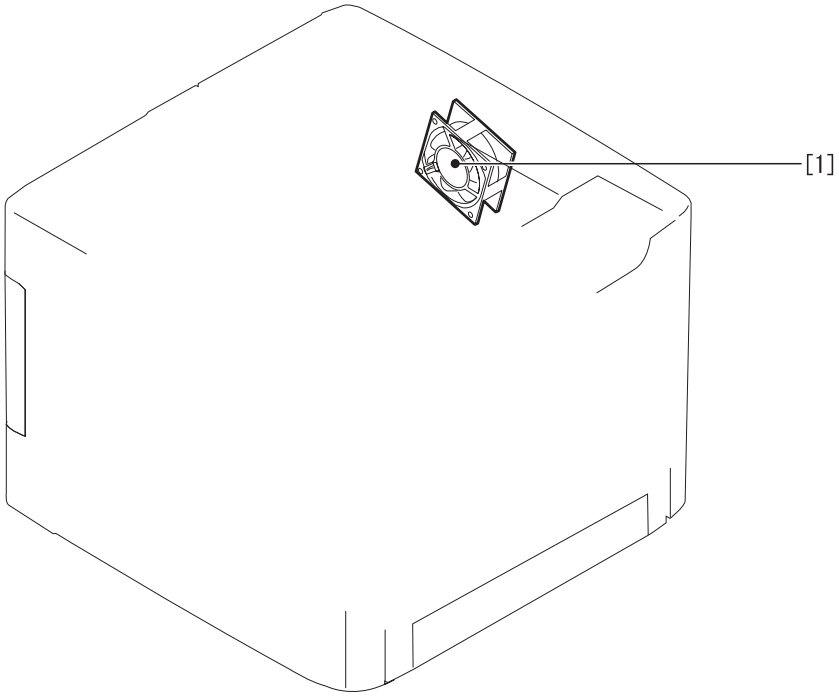
F-6-2

[1] Main motor

6.1.3 Fan

6.1.3.1 Fan

LBP3370 / LBP3310



F-6-3

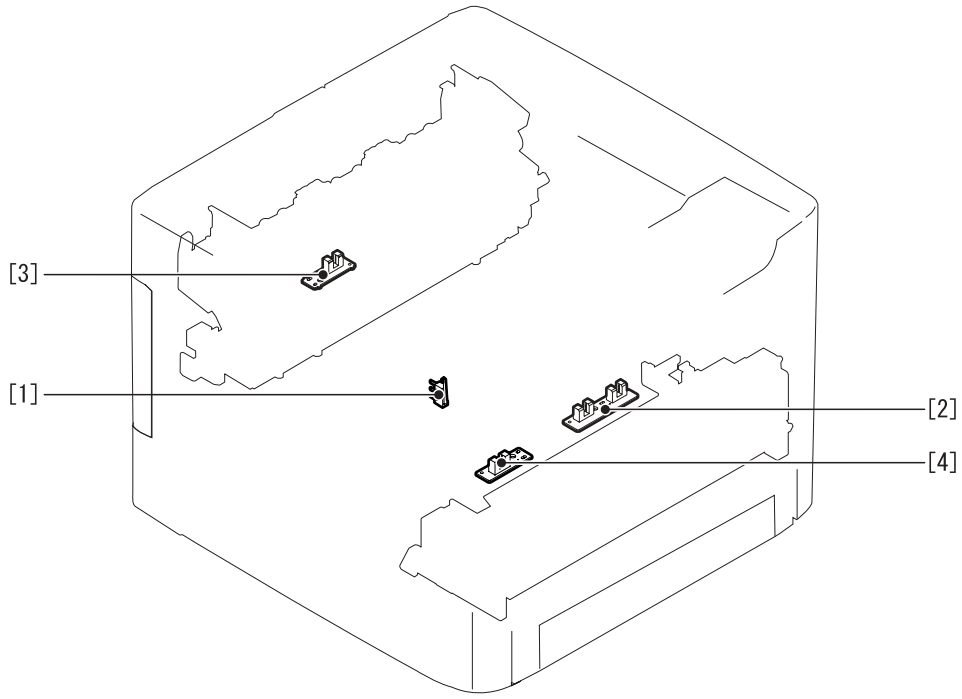
T-6-1

[1] Fan

6.1.4 Sensor

6.1.4.1 Sensor

LBP3370 / LBP3310



F-6-4

[1] Interlock switch

[2] Top of page sensor/Paper width detection sensor

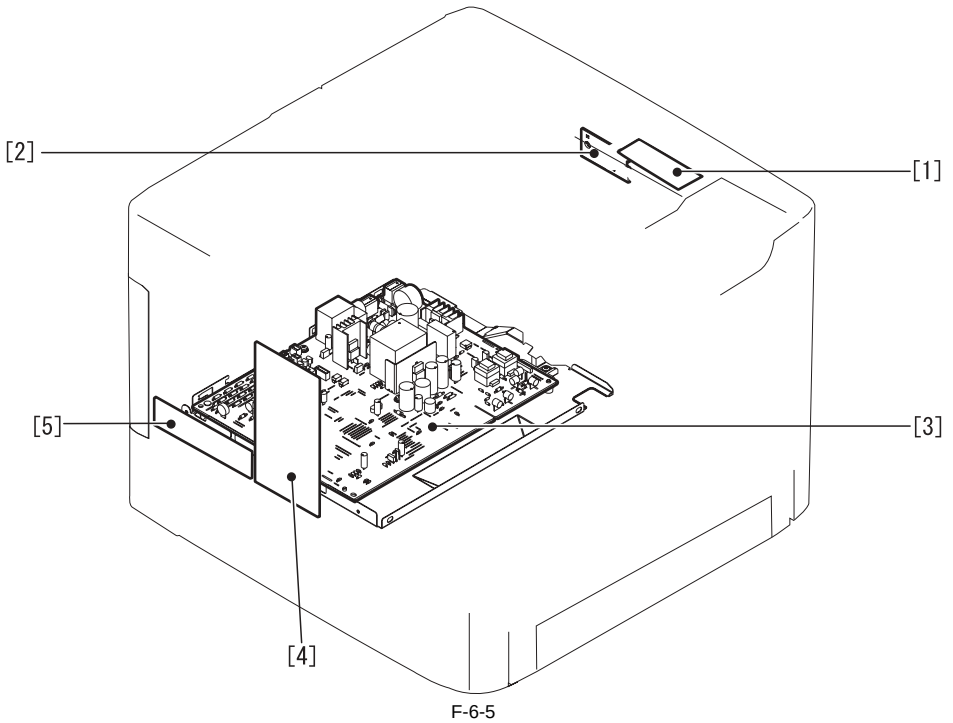
[3] Delivery sensor

[4] Paper width detection sensor 2

6.1.5 PCBs

6.1.5.1 PCB

LBP3370 / LBP3310



F-6-5

[1] Display PCB

[2] Duplexing driver PCB

[3] Engine controller PCB

[4] Video controller PCB

[5] USB conector PCB

PARTS CATALOG

LBP3310/LBP3370

Canon

Jan 24 2008

PREFACE

This Parts Catalog contains listings of parts used

Diagrams are provided with the listings to aid the service technician in identifying clearly, the item to be orderd.
Whenever ordering parts, consult this Parts Catalog for all of the information pertaining to each item. Be sure to include, in the Parts Request, the full item description, the item part number, and the quantity.

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FC7-0496-000	100 - 1	FM3-3586-000	100 - 2	RC1-3489-000	300 - 3
FC7-0797-000	102 - 15	FM3-3587-000	810 -	RC1-3490-000	300 - 12
FC7-0806-000	104 - 2	FM3-3588-000	810 -	RC1-3492-000	300 - 5
FC7-0810-000	100 - 17	FM3-3589-000	300 -	RC1-3507-000	300 - 7
FC7-0812-000	100 - 16	FM3-3590-000	300 - 9	RC1-3508-000	300 - 13
FC7-1514-000	102 - 33	FM3-3591-000	102 - 1	RC1-3535-000	103 - 28
FC7-3192-000	100 - 14	FM3-3592-000	101 -	RC1-3541-000	105 - 22
FC7-3206-000	102 - 34	FM3-3593-000	101 -	RC1-3542-000	105 - 25
FC8-0061-000	100 - 3	FM3-3594-000	101 - 1	RC1-3543-000	105 - 24
FC8-0065-000	101 - 4	FM3-3595-000	101 - 6	RC1-3546-000	103 - 18
FC8-0067-000	100 - 6	FM3-3596-000	100 - 10	RC1-3561-000	105 - 26
FC8-0073-000	101 - 8	FM3-3599-000	100 - 4	RC1-3562-000	105 - 15
FC8-0074-000	101 - 9	FM3-3600-000	100 - 4	RC1-3563-000	104 - 24
FC8-0082-000	100 - 12	FM3-3601-000	100 - 4	RC1-3565-000	104 - 22
FC8-0083-000	100 - 13	FM3-3602-000	100 - 4	RC1-3580-000	103 - 17
FC8-0084-000	103 - 6	FM3-3608-000	110 -	RC1-3604-000	810 - 12
FC8-0085-000	102 - 35	FM3-3612-000	101 -	RC1-3605-000	810 - 32
FC8-0086-000	102 - 36	FM3-3613-000	101 -	RC1-3606-000	810 - 37
FC8-0097-000	101 - 4	FM3-4204-000	102 - 2	RC1-3607-000	810 - 36
FC8-0103-000	101 - 10	FM3-4282-000	101 -	RC1-3611-000	810 - 27
FC8-0104-000	101 - 11	FM3-4283-000	110 -	RC1-3613-000	810 - 26
FC8-0105-000	101 - 11	FM3-4284-000	110 -	RC1-3614-000	810 - 25
FC8-0106-000	300 - 2	FM3-4302-000	110 - 1	RC1-3615-000	810 - 10
FC8-0107-000	104 - 6	FM3-4341-000	100 - 11	RC1-3616-000	810 - 8
FC8-0108-000	104 - 5	FM3-4344-000	100 - 11	RC1-3617-000	810 - 31
FC8-0109-000	100 - 19	FM3-4539-000	102 - 13	RC1-3618-000	810 - 24
FC8-0110-000	100 - 18	NPN	001 -	RC1-3619-000	810 - 28
FC8-0113-000	101 - 9	NPN	100 -	RC1-3622-000	810 - 35
FC8-0115-000	101 - 4	NPN	102 -	RC1-3623-000	810 - 3
FC8-0116-000	101 - 4	NPN	103 -	RC1-3624-000	810 - 4
FK2-6894-000	001 - 1	NPN	104 -	RC1-3625-000	810 - 19
FK2-6895-000	001 - 1	NPN	105 -	RC1-3627-000	810 - 20
FK2-6896-000	001 - 1	RA0-1068-000	105 - 9	RC1-3628-000	810 - 13
FK2-6897-000	001 - 1	RA0-1090-000	810 - 5	RC1-3633-000	810 - 33
FK2-6898-000	001 - 1	RA0-1189-000	810 - 1	RC1-3665-000	102 - 30
FK2-7116-000	001 - 1	RB2-2895-000	102 - 20	RC1-3668-000	102 - 5
FK2-7117-000	001 - 1	RB2-2896-000	102 - 23	RC1-3695-000	104 - 21
FK2-7118-000	001 - 1	RB2-2897-020	102 - 8	RC1-3698-000	104 - 1
FK2-7119-000	001 - 1	RC1-0944-000	105 - 16	RC1-3700-000	104 - 17
FL2-8044-000	100 - 8	RC1-0950-000	105 - 32	RC1-3702-000	104 - 13
FM2-6192-000	300 - 10	RC1-3456-000	103 - 30	RC1-3708-000	104 - 7
FM2-6194-000	100 - 5	RC1-3457-000	103 - 32	RC1-3719-000	105 - 29
FM2-6644-000	102 - 37	RC1-3459-000	103 - 23	RC1-3727-000	103 - 40
FM2-6703-000	810 - 7	RC1-3461-000	105 - 5	RC1-3736-000	104 - 11
FM2-6704-000	810 - 7	RC1-3462-000	105 - 23	RC1-4198-000	300 - 4
FM2-6707-000	300 - 1	RC1-3463-000	105 - 21	RC2-0295-000	810 - 18
FM2-8329-000	100 - 5	RC1-3470-000	102 - 21	RC2-0296-000	810 - 16
FM2-8337-000	100 - 4	RC1-3471-000	102 - 18	RC2-0297-000	810 - 11
FM2-8342-000	100 - 15	RC1-3472-000	102 - 19	RC2-0298-000	810 - 30
FM2-8344-000	100 - 4	RC1-3477-000	101 -	RC2-0299-000	810 - 15
FM2-8345-000	100 - 4	RC1-3481-000	102 - 25	RC2-0300-000	810 - 34

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RC2-0311-000	100 - 7	RK2-1302-000	103 - 44	RU5-2324-000	300 - 11
RC2-0323-010	102 - 31	RK2-1315-000	103 - 43	RU5-2327-000	300 - 8
RC2-0334-000	105 - 10	RK2-1567-000	103 - 33	RU5-2335-000	103 - 4
RC2-0335-000	105 - 7	RK2-1587-000	105 - 11	RU5-2337-000	105 - 27
RC2-0339-000	105 - 3	RK2-1589-000	103 - 11	RU5-2338-000	104 - 23
RC2-0340-000	105 - 13	RK2-2692-000	103 - 43	RU5-2894-000	102 - 17
RC2-0342-000	105 - 30	RL1-0517-000	103 - 29	RU5-2895-000	101 - 7
RC2-0344-000	104 - 16	RL1-0518-000	105 - 6	RU5-2898-000	102 - 10
RC2-0346-000	103 - 25	RL1-0522-020	300 - 16	RU5-2901-000	810 - 2
RC2-0349-000	103 - 10	RL1-0527-000	102 - 32	RU5-8243-000	100 - 20
RC2-0350-000	103 - 12	RL1-0540-000	102 - 22	VS1-7258-007	103 - 15
RC2-0351-000	103 - 37	RL1-1524-000	102 - 11	XA9-1420-000	104 - 20
RC2-0354-000	103 - 2	RL1-1525-000	105 - 34	XA9-1422-000	104 - 12
RC2-0356-000	104 - 27	RL1-1531-000	105 - 19	XA9-1422-000	810 - 29
RC2-0357-000	104 - 30	RM1-1251-000	810 - 22	XA9-1469-000	102 - 4
RC2-0358-000	104 - 25	RM1-1262-000	103 - 9	XA9-1495-000	103 - 7
RC2-0359-000	104 - 29	RM1-1283-000	104 - 10	XA9-1495-000	105 - 12
RC2-0384-000	104 - 19	RM1-1288-000	101 -	XA9-1503-000	102 - 29
RC2-0386-000	105 - 33	RM1-1291-000	810 - 38	XA9-1503-000	103 - 31
RC2-0387-000	105 - 31	RM1-1295-000	300 - 15	XA9-1503-000	810 - 6
RC2-0388-000	105 - 36	RM1-1296-000	300 - 14	XA9-1504-000	100 - 21
RC2-0392-000	103 - 3	RM1-1297-020	300 - 17	XA9-1504-000	103 - 1
RC2-0396-000	103 - 13	RM1-1301-000	102 - 7	XA9-1504-000	104 - 9
RC2-0397-000	103 - 35	RM1-1321-000	104 - 8	XA9-1504-000	105 - 4
RC2-0405-000	103 - 21	RM1-4159-000	104 - 14	XA9-1561-000	103 - 26
RC2-0406-000	103 - 20	RM1-4162-000	102 - 12	XA9-1648-000	103 - 42
RC2-0410-000	103 - 19	RM1-4163-000	103 - 5	XB1-2300-605	102 - 503
RC2-0414-000	102 - 9	RM1-4164-000	103 - 36	XB2-6400-607	103 - 502
RC2-0415-000	102 - 14	RM1-4168-000	103 - 14	XB2-7400-606	103 - 501
RC2-0416-000	103 - 34	RM1-4169-000	103 - 39	XB4-5300-609	100 - 501
RC2-0419-000	102 - 16	RM1-4244-000	104 - 4	XB4-7300-805	101 - 501
RC2-0420-000	105 - 35	RM1-4245-000	104 - 15	XB4-7300-809	102 - 502
RC2-0421-000	101 - 5	RM1-4253-000	250 -	XB4-7300-809	104 - 502
RC2-0422-000	101 - 3	RM1-4255-000	251 -	XB4-7300-809	810 - 21
RC2-0423-000	105 - 20	RM1-4256-000	251 - 1	XB4-7401-005	102 - 501
RC2-0424-000	105 - 28	RM1-4257-000	251 - 2	XB4-7401-005	104 - 501
RC2-0425-000	105 - 1	RM1-4258-000	360 -	XB4-7401-005	300 - 501
RC2-0426-000	103 - 27	RM1-4262-000	103 - 41		
RC2-0427-000	105 - 2	RM1-4263-000	102 - 3		
RC2-0428-000	103 - 24	RM1-4268-000	101 - 2		
RC2-0429-000	810 - 23	RM1-4275-000	105 - 8		
RC2-0431-000	810 - 17	RM1-4279-000	104 - 28		
RC2-1568-000	103 - 16	RU5-0320-000	104 - 3		
RC2-1569-000	102 - 6	RU5-0328-000	300 - 6		
RH9-1164-000	103 - 43	RU5-0330-000	810 - 9		
RH9-1166-000	103 - 43	RU5-0331-000	102 - 27		
RH9-1169-000	103 - 43	RU5-0332-000	102 - 28		
RH9-1171-000	103 - 45	RU5-0927-000	105 - 17		
RK2-0381-000	103 - 38	RU5-0928-000	105 - 18		
RK2-0420-000	103 - 8	RU5-0929-000	104 - 18		
RK2-0424-000	103 - 22	RU5-2144-000	104 - 26		

LBP3310/LBP3370(Parts Catalog)

Satera LBP3310

100V	**F15-1811-000**	**LXMA**

LASER SHOT LBP3310

120V	**F15-1831-000**	**LXNA**
230V ASIA	**F15-1841-000**	**LXQA**
230V AUS	**F15-1841-000**	**LXSA**
230V CN	**F15-1851-000**	**LXRA**

i-SENSYS LBP3310

230V EUR	**F15-1891-000**	**LXPA**

LASER SHOT LBP3370

230V ASIA	**F15-1941-000**	**LYAA**
230V AUS	**F15-1941-000**	**LYCA**
230V CN	**F15-1951-000**	**LYBA**

i-SENSYS LBP3370

230V EUR	**F15-1991-000**	**LXYA**

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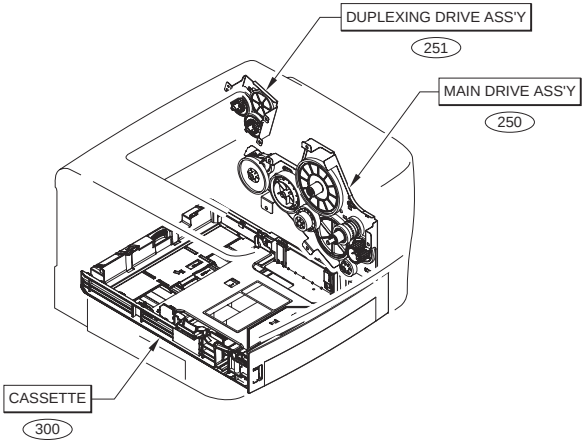
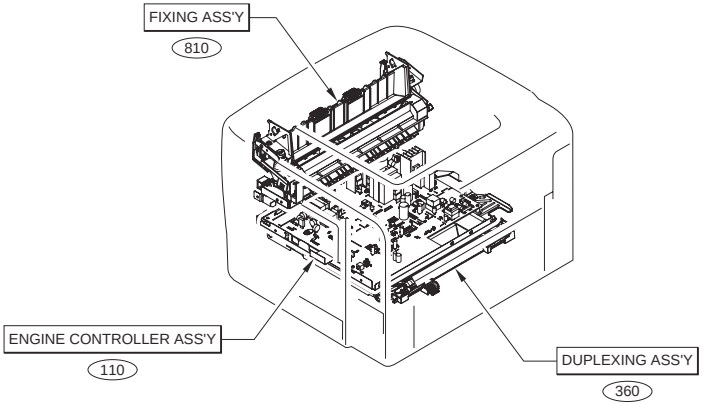
FIGURE A
ASSEMBLY LOCATION DIAGRAM





No.	Model Name(English)	Model Name(Japanese)
1	PAPER FEEDER PF-35/35P	PAPER FEEDER PF-35/35P

FIGURE 001
ACCESSORIES

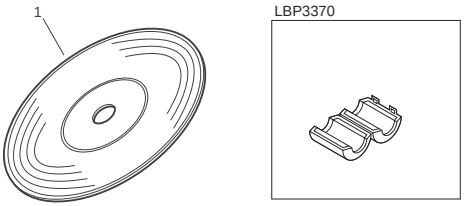


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.001	NPN		RF	ACCESSORIES		
1	FK2-6894-000		1	CD-ROM, USER SOFTWARE	LBP3310Japanese	
1	FK2-6895-000		1	CD-ROM, USER SOFTWARE	LBP3310English/French/ Italian/German/Spanish/ Russian	
1	FK2-6896-000		1	CD-ROM, USER SOFTWARE	LBP3310English/German/ Portuguese	
1	FK2-6897-000		1	CD-ROM, USER SOFTWARE	LBP3310English	
1	FK2-6898-000		1	CD-ROM, USER SOFTWARE	LBP3310English/Spanish/ Simplified Chinese/ Korean/Portuguese/Thai	
1	FK2-7116-000		1	CD-ROM, USER SOFTWARE	LBP3370English/French/ German/Italian/Spanish/ Russian	
1	FK2-7117-000		1	CD-ROM, USER SOFTWARE	LBP3370Dutch/Danish/ Norwegian/Finnish/ Swedish/Polish	
1	FK2-7118-000		1	CD-ROM, USER SOFTWARE	LBP3370English/Spanish/ Simplified Chinese/Korean	
1	FK2-7119-000		1	CD-ROM, USER SOFTWARE	LBP3370English	

FIGURE 100
EXTERNAL COVERS, PANELS, ETC.

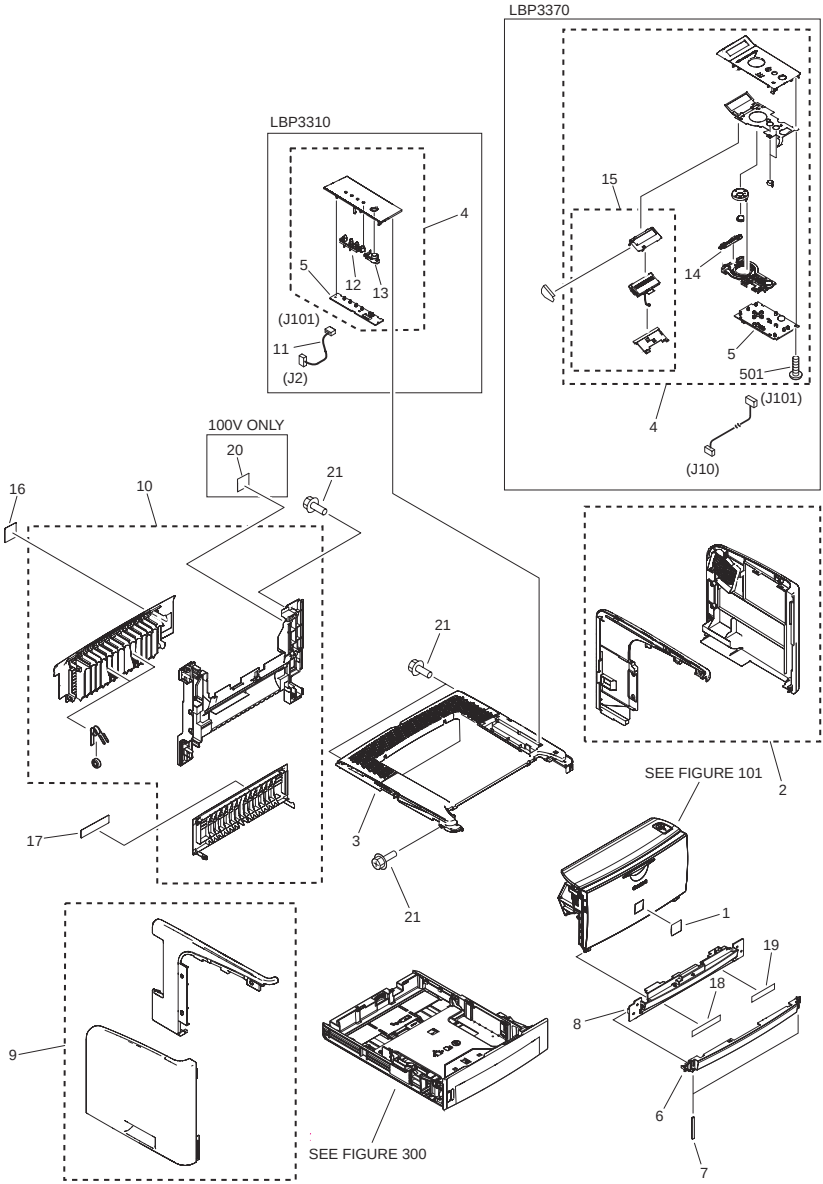


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.100	NPN		RF	EXTERNAL COVERS, PANELS, ETC.		
1	FC5-5256-000		1	EMBLEM	100V	
1	FC7-0496-000		1	EMBLEM	120V/230V	
2	FM3-3586-000		1	RIGHT COVER ASS'Y		
3	FC8-0061-000		1	COVER, TOP		
4	FM3-3599-000		1	CONTROL PANEL ASS'Y	LBP3310 LXMA	
4	FM3-3600-000		1	CONTROL PANEL ASS'Y	LBP3310 LXNA,LXPA	
4	FM3-3601-000		1	CONTROL PANEL ASS'Y	LBP3310 LXQA,LXSA	
4	FM3-3602-000		1	CONTROL PANEL ASS'Y	LBP3310 LXRA	
4	FM2-8337-000		1	CONTROL PANEL ASS'Y	LBP3370 LXYA	
4	FM2-8345-000		1	CONTROL PANEL ASS'Y	LBP3370 LYAA,LYCA	
4	FM2-8344-000		1	CONTROL PANEL ASS'Y	LBP3370 LYBA	
5	FM2-6194-000		1	DISPLAY PCB ASS'Y	LBP3310	
5	FM2-8329-000		1	DISPLAY PCB ASS'Y	LBP3370	
6	FC8-0067-000		1	COVER, FRONT UPPER		
7	RC2-0311-000		2	SHEET, NOISE ABSORB		
8	FL2-8044-000		1	COVER, FRONT LOWER		
9	FM3-3585-000		1	LEFT COVER ASS'Y		
10	FM3-3596-000		1	REAR COVER ASS'Y		
11	FM3-4341-000		1	CABLE, PANEL	LBP3310	
11	FM3-4344-000		1	CABLE, PANEL	LBP3370	
12	FC8-0082-000		1	GUEDE, LIGHT	LBP3310	
13	FC8-0083-000		1	KEYTOP, JOB/CANCEL	LBP3310	
14	FC7-3192-000		1	GUEDE, LIGHT	LBP3370	
15	FM2-8342-000		1	LCD COVER UNIT	LBP3370	
16	FC7-0812-000		1	LABEL, FIXING PRESSURE RELEASE		
17	FC7-0810-000		1	LABEL, DUPLEXING SIZE CONTROL		
18	FC8-0110-000		1	LABEL, DUPLEXING RELEASE LEVER		
19	FC8-0109-000		1	LABEL, PREVENTION		
20	RU5-8243-000		1	LABEL, EARTH CONNECT	100V	
21	XA9-1504-000		8	SCREW,RS,M3X8		
501	XB4-5300-609		2	SCREW,P,M3X6	LBP3370	

FIGURE 101
CARTRIDGE DOOR ASS'Y

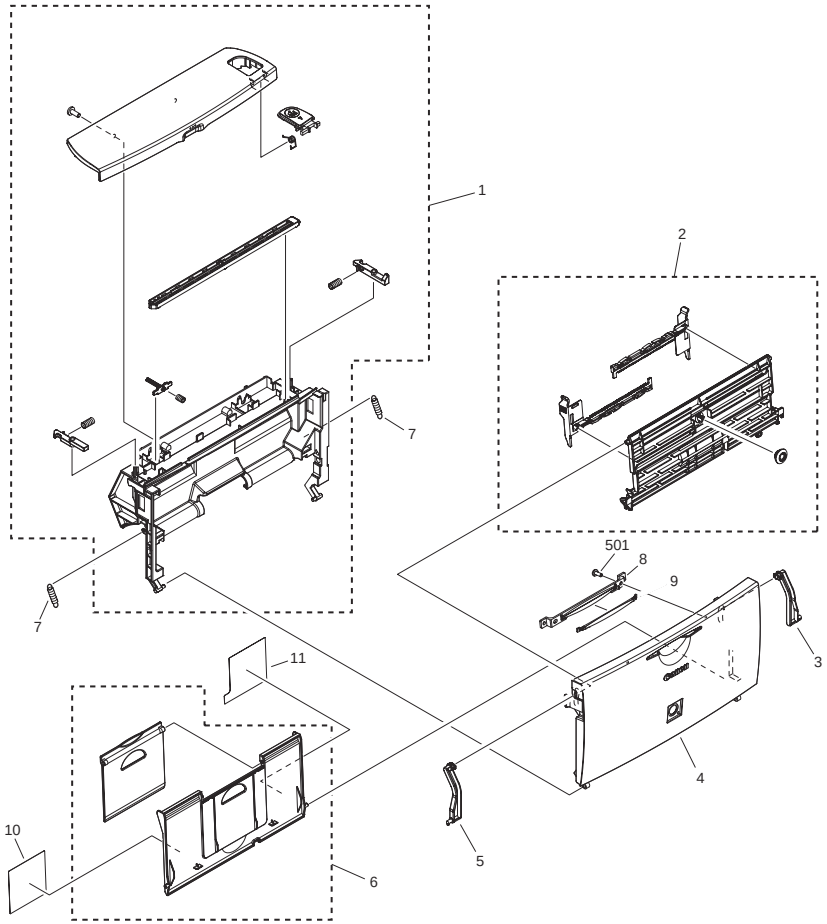


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.101	FM3-3592-000		1	CARTRIDGE DOOR ASS'Y	LBP3310 LXMA	
Fig.101	FM3-3593-000		1	CARTRIDGE DOOR ASS'Y	LBP3310 LXPA	
Fig.101	FM3-4282-000		1	CARTRIDGE DOOR ASS'Y	LBP3310 LXNA,LXQA,LXSA,LXRA	
Fig.101	FM3-3613-000		1	CARTRIDGE DOOR ASS'Y	LBP3370 LXYA	
Fig.101	FM3-3612-000		1	CARTRIDGE DOOR ASS'Y	LBP3370 LYAA,LYCA,LYBA	
1	FM3-3594-000		1	INNER COVER ASS'Y		
2	RM1-4268-000		1	MP LIFTING PLATE ASS'Y		
3	RC2-0422-000		1	HINGE, MULTI-PURPOSE, RIGHT		
4	FC8-0065-000		1	COVER, MULTI-PURPOSE	LBP3310 LXMA,LXNA,LXQA,LXSA, LXRA	
4	FC8-0097-000		1	COVER, MULTI-PURPOSE	LBP3310 LXPA	
4	FC8-0115-000		1	COVER, MULTI-PURPOSE	LBP3370 LYAA,LYCA,LYBA	
4	FC8-0116-000		1	COVER, MULTI-PURPOSE	LBP3370 LXYA	
5	RC2-0421-000		1	HINGE, MULTI-PURPOSE, LEFT		
6	FM3-3595-000		1	EXPANSION TRAY ASS'Y		
7	RU5-2895-000		2	SPRING, TENSION		
8	FC8-0073-000		1	MOUNT, HANDLE		
9	FC8-0074-000		1	HANDLE	LBP3310	
9	FC8-0113-000		1	HANDLE	LBP3370	
10	FC8-0103-000		1	LABEL, PRINT INSTRUCTION		
11	FC8-0104-000		1	LABEL, PAPER SIZE	100V	
11	FC8-0105-000		1	LABEL, PAPER SIZE	120V/230V	
501	XB4-7300-805		2	SCREW, TP, BH3X8, S		
	RC1-3477-000		1	ROLLER,PAPER FEEDEF		
	RM1-1288-000		1	PAPER RE-PICK UP ASS'Y		

FIGURE 102
INTERNAL COMPONENTS 1

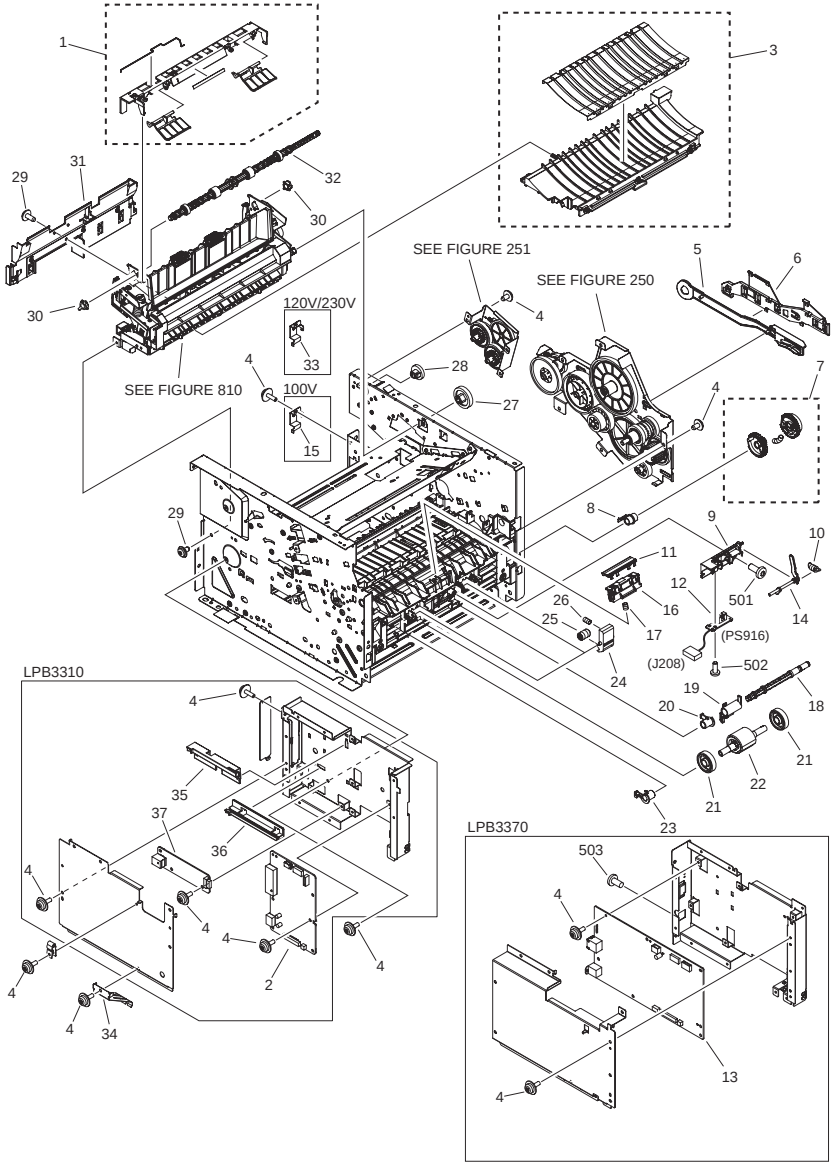


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.102	NPN		RF	INTERNAL COMPONENTS 1		
1	FM3-3591-000		1	PAPER RETAINING ASS'Y		
2	FM3-4204-000		1	VIDEO CONTROLLER PCB ASS'Y	LBP3310	
3	RM1-4263-000		1	PAPER FEED GUIDE ASS'Y		
4	XA9-1469-000		26	SCREW, TP,M3X6		
5	RC1-3668-000		1	LINK, GEAR RELEASE		
6	RC2-1569-000		1	GUIDE, CABLE		
7	RM1-1301-000		1	PAPER PICK-UP GEAR ASS'Y		
8	RB2-2897-020		1	BUSHING		
9	RC2-0414-000		1	HOLDER, M.P. SENSOR		
10	RU5-2898-000		1	SPRING, TENSION		
11	RL1-1524-000		1	PAD, M.P. SEPARATION		
12	RM1-4162-000		1	M.P. SENSOR PCB ASS'Y		
13	FM3-4539-000		1	VIDEO CONTROLLER PCB ASS'Y	LBP3370	
14	RC2-0415-000		1	FLAG, M.P. SENSOR		
15	FC7-0797-000		1	PLATE, GROUNDING	100V	
16	RC2-0419-000		1	BASE, SEPARATION PAD		
17	RU5-2894-000		1	SPRING, COMPRESSION		
18	RC1-3471-000		1	SHAFT, PAPER PICK-UP DRIVE		
19	RC1-3472-000		1	FLAG, PAPER SENSING		
20	RB2-2895-000		1	BUSHING, RIGHT		
21	RC1-3470-000		2	ROLLER, PAPER PICK-UP IDLER		
22	RL1-0540-000		1	ROLLER, PAPER PICK-UP		
23	RB2-2896-000		1	BUSHING, LEFT		
24	RC1-3482-000		2	ARM, IDLER ROLLER		
25	RC1-3481-000		2	ROLLER, IDLER		
26	RU5-2323-000		2	SPRING, COMPRESSION		
27	RU5-0331-000		1	GEAR, 29T		
28	RU5-0332-000		1	GEAR, 19T		
29	XA9-1503-000		2	SCREW, TAP, M3X6		
30	RC1-3665-000		2	BUSHING		
31	RC2-0323-010		1	GUIDE, REVERSE		

FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
32	RL1-0527-000		1	ROLLER, FACE-DOWN		
33	FC7-1514-000		1	PLATE, GROUNDING	120V/230V	
34	FC7-3206-000		1	PLATE, GROUNDING		
35	FC8-0085-000		1	RAIL, NIC, UPPER	LBP3310	
36	FC8-0086-000		1	RAIL, NIC, LOWER	LBP3310	
37	FM2-6644-000		1	USB BOARD PCB ASSEMBLY	LBP3310	
501	XB4-7401-005		AR	SCREW,TAPPING,TRUSS HEAD,M4X10		
502	XB4-7300-809		1	SCREW, TAP, BINDING HEAD, M3X8		
503	XB1-2300-605		1	SCREW, MACHINE M3X6		

FIGURE 103
INTERNAL COMPONENTS 2

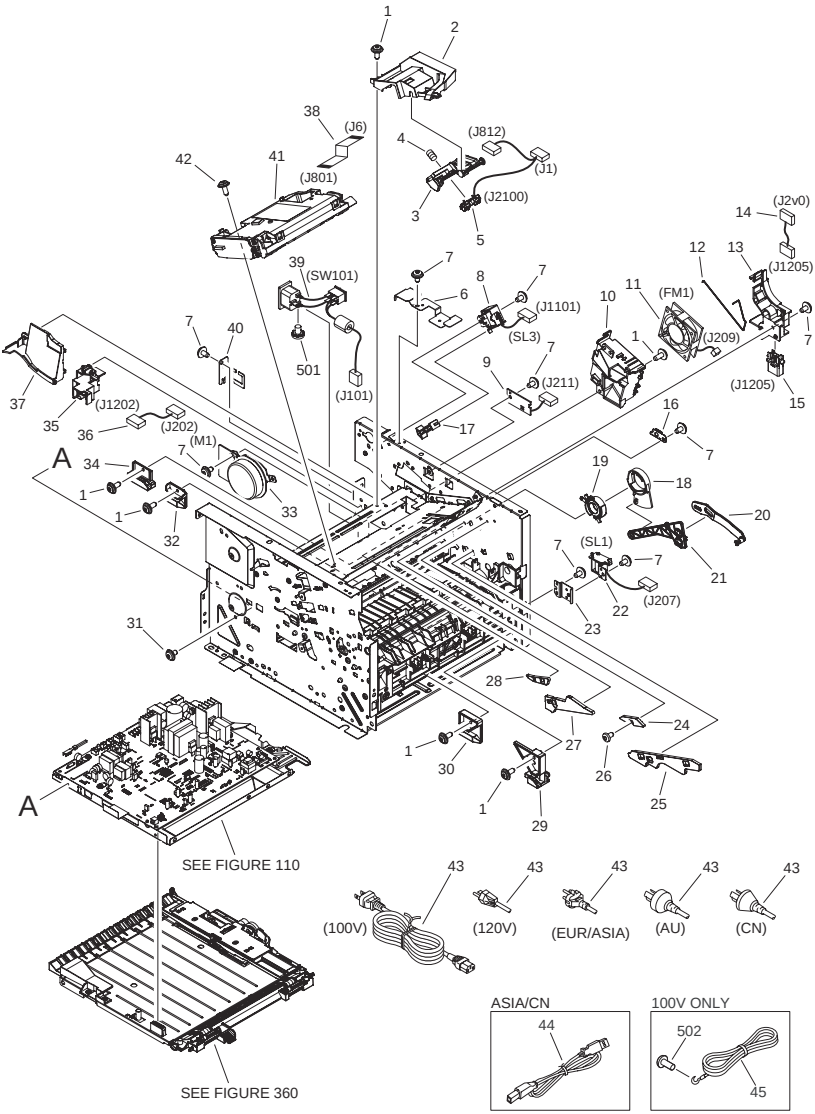


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.103	NPN		RF	INTERNAL COMPONENTS 2		
1	XA9-1504-000		8	SCREW,RS,M3X8		
2	RC2-0354-000		1	DUCT		
3	RC2-0392-000		1	ARM, TAG		
4	RU5-2335-000		1	SPRING, COMPRESSION		
5	RM1-4163-000		1	CABLE, MEMORY TAG		
6	FC8-0084-000		1	SHIELD, SOLENOID		
7	XA9-1495-000		10	SCREW, RS, M3X6		
8	RK2-0420-000		1	SOLENOID	SL3	
9	RM1-1262-000		1	DUPLEX DRIVER PCB ASS'Y		
10	RC2-0349-000		1	HOLDER, FAN		
11	RK2-1589-000		1	FAN	FM1	
12	RC2-0350-000		1	ROD, GROUNDING		
13	RC2-0396-000		1	HOLDER, DRAWER CONNECTOR		
14	RM1-4168-000		1	CABLE ASS'Y		
15	VS1-7258-007		1	CONNECTOR, DRAWER		
16	RC2-1568-000		1	PLATE, GROUNDING		
17	RC1-3580-000		1	STOPPER		
18	RC1-3546-000		1	CAM, RIGHT		
19	RC2-0410-000		1	CAM		
20	RC2-0406-000		1	ARM, LINK		
21	RC2-0405-000		1	ARM, CAM		
22	RK2-0424-000		1	SOLENOID	SL1	
23	RC1-3459-000		1	PLATE, SOLENOID HOLDER		
24	RC2-0428-000		1	GUIDE, SHUTTER, FRONT		
25	RC2-0346-000		1	GUIDE, CRG., RIGHT LOWER		
26	XA9-1561-000		1	SCREW, RS, M3X6		
27	RC2-0426-000		1	GUIDE, CRG., RIGHT UPPER		
28	RC1-3535-000		1	GUIDE, SHUTTER, REAR		
29	RL1-0517-000		1	GUIDE, CASSETTE, RIGHT FRONT		
30	RC1-3456-000		1	GUIDE, CASSETTE,RIGHT CENTER 1		
31	XA9-1503-000		3	SCREW, TAP, M3X6		

FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
32	RC1-3457-000		1	GUIDE, CASSETTE,RIGHT CENTER 2		
33	RK2-1567-000		1	MOTOR, DC	M1	
34	RC2-0416-000		1	GUIDE, CASSETTE, RIGHT REAR		
35	RC2-0397-000		1	GUIDE, CABLE		
36	RM1-4164-000		1	CABLE ASS'Y		
37	RC2-0351-000		1	DUCT		
38	RK2-0381-000		1	CABLE, FLEXIBLE FLAT, 13P		
39	RM1-4169-000		1	INLET/SWITCH CABLE ASS'Y		
40	RC1-3727-000		1	HOLDER, SWITCH		
41	RM1-4262-000		1	SCANNER ASS'Y		
42	XA9-1648-000		4	SCREW, TP, M3X8		
43	RK2-2692-000		1	CORD, POWER, 230V	100V	
43	RH9-1164-000		1	POWER CORD	120V	
43	RK2-1315-000		1	CORD, POWER, 230V	EUR/ASIA	
43	RH9-1169-000		1	POWER CORD	AU	
43	RH9-1166-000		1	POWER CORD	CN	
44	RK2-1302-000		1	CABLE, USB HOST POWER SUPPLY	ASIA/CN	
45	RH9-1171-000		1	WIRE, GROUNDING	100V	
501	XB2-7400-606		1	SCREW, TOOTHED WASHER, M4X6		
502	XB2-6400-607		1	SCREW, W/WASHER, M4X6 (S)	100V	

FIGURE 104
INTERNAL COMPONENTS 3

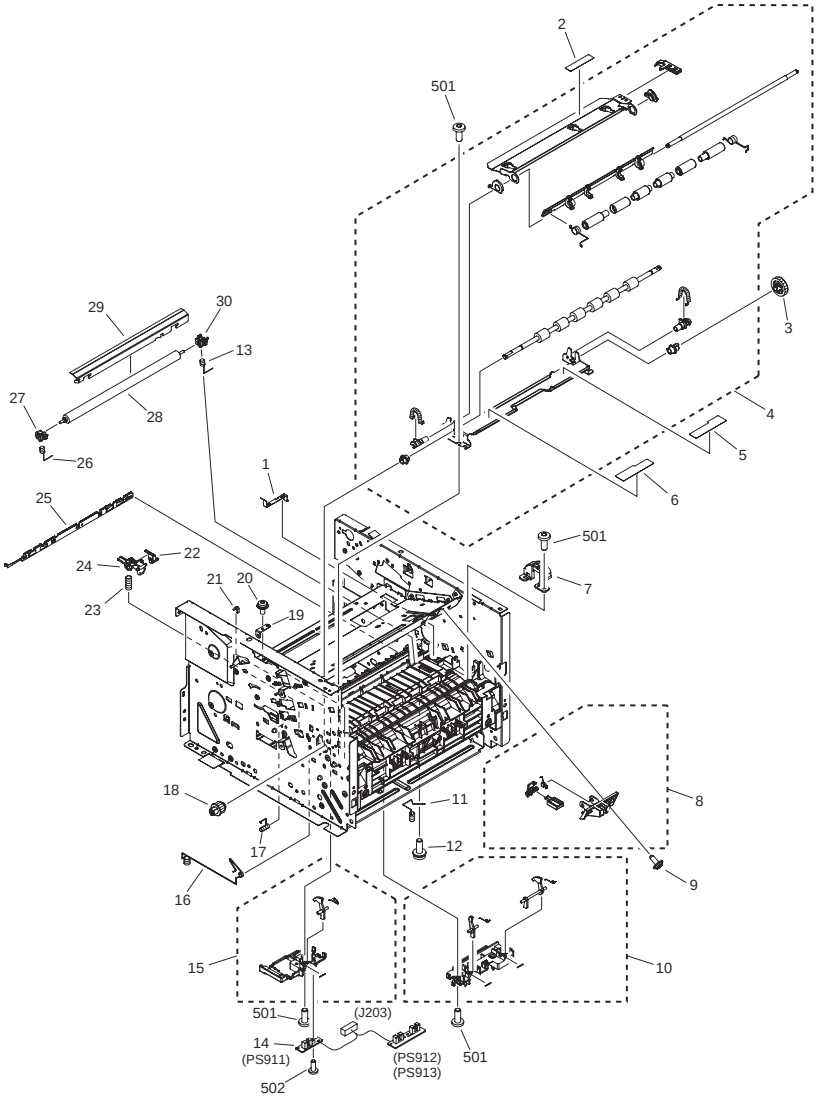


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.104	NPN		RF	INTERNAL COMPONENTS 3		
1	RC1-3698-000		1	PLATE, TRANSFER GROUNDING		
2	FC7-0806-000		1	LABEL, TRANSFER GUIDE OPEN		
3	RU5-0320-000		1	GEAR, 33T		
4	RM1-4244-000		1	REGISTRATION ASS'Y		
5	FC8-0108-000		1	LABEL, JAM CLEARING		
6	FC8-0107-000		1	LABEL, FIXING PRESSURE RELEASE		
7	RC1-3708-000		1	COVER, REGISTRATION GEAR		
8	RM1-1321-000		1	SHUTTER LINK ASS'Y		
9	XA9-1504-000		1	SCREW,RS,M3X8		
10	RM1-1283-000		1	TOP SENSOR ASS'Y		
11	RC1-3736-000		1	SPRING, COMPRESSION		
12	XA9-1422-000		1	SCREW, W/WASHER, M4X12		
13	RC1-3702-000		1	SPRING, TRANSFER, RIGHT		
14	RM1-4159-000		1	PAPER SENSOR PCB ASS'Y		
15	RM1-4245-000		1	PAPER WIDTH SENSOR ASS'Y		
16	RC2-0344-000		1	SPRING, CONTACT		
17	RC1-3700-000		1	SPRING, GROUNDING		
18	RU5-0929-000		1	GEAR, 14T		
19	RC2-0384-000		1	PLATE, REGISTRATION GROUNDING		
20	XA9-1420-000		1	SCREW, W/WASHER, M3X8		
21	RC1-3695-000		1	SHEET, REGISTRATION DAMPER		
22	RC1-3565-000		1	PLATE, DRUM GROUNDING		
23	RU5-2338-000		1	SPRING, COMPRESSION		
24	RC1-3563-000		1	COVER, DRUM		
25	RC2-0358-000		1	ELIMINATOR, STATIC CHARGE		
26	RU5-2144-000		1	SPRING, COMPRESSION		
27	RC2-0356-000		1	BUSHING		
28	RM1-4279-000		1	ROLLER, TRANSFER		
29	RC2-0359-000		1	GUIDE, TRANSFER FRONT		
30	RC2-0357-000		1	BUSHING		
501	XB4-7401-005		7	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
502	XB4-7300-809		2	SCREW, TAP, BINDING HEAD, M3X8		

FIGURE 105
INTERNAL COMPONENTS 4

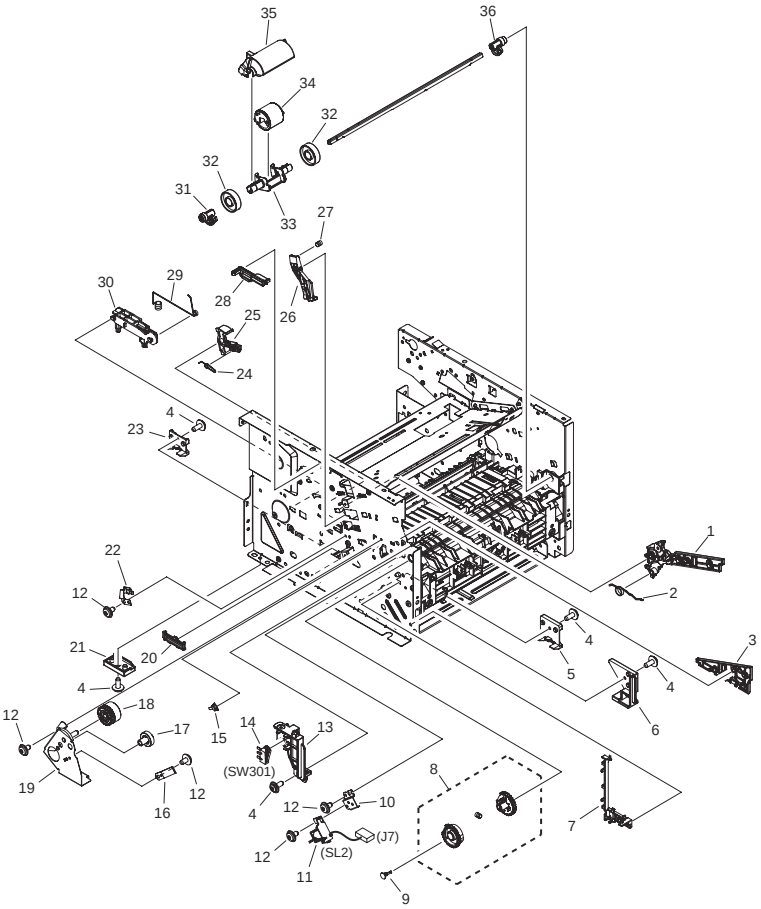


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.105	NPN		RF	INTERNAL COMPONENTS 4		
1	RC2-0425-000		1	GUIDE, CRG., LEFT UPPER		
2	RC2-0427-000		1	SPRING, TORSION		
3	RC2-0339-000		1	GUIDE, CRG., LEFT LOWER		
4	XA9-1504-000		5	SCREW,RS,M3X8		
5	RC1-3461-000		1	GUIDE, CASSETTE, LEFT CENTER 1		
6	RL1-0518-000		1	GUIDE, CASSETTE, LEFT FRONT		
7	RC2-0335-000		1	GUIDE, M.P. CABLE		
8	RM1-4275-000		1	PAPER PICK-UP GEAR ASS'Y		
9	RA0-1068-000		1	CAP, CONTINUITY		
10	RC2-0334-000		1	HOLDER, M.P. SOLENOID		
11	RK2-1587-000		1	SOLENOID		
12	XA9-1495-000		5	SCREW, RS, M3X6		
13	RC2-0340-000		1	GUIDE, CARTRIDGE, FRONT		
14	RK2-0534-000		1	MICROSWITCH		
15	RC1-3562-000		1	BUSHING		
16	RC1-0944-000		1	SPRING, GROUNDING		
17	RU5-0927-000		1	GEAR, 19T		
18	RU5-0928-000		1	GEAR, 26T		
19	RL1-1531-000		1	SIDE PLATE, M.P. DRIVE		
20	RC2-0423-000		1	GUIDE, F.F.C.		
21	RC1-3463-000		1	GUIDE, CASSETTE, LEFT REAR		
22	RC1-3541-000		1	PLATE, DRUM GROUNDING		
23	RC1-3462-000		1	GUIDE, CASSETTE, LEFT CENTER 2		
24	RC1-3543-000		1	SPRING, TORSION		
25	RC1-3542-000		1	LEVER, CARTRIDGE CONTACT		
26	RC1-3561-000		1	ARM, LOCK		
27	RU5-2337-000		1	SPRING, COMPRESSION		
28	RC2-0424-000		1	GUIDE, F.F.C.		
29	RC1-3719-000		1	SPRING, CONTACT		
30	RC2-0342-000		1	HOLDER, CONTACT		
31	RC2-0387-000		1	CAM, M.P., LEFT		

FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
32	RC1-0950-000		2	ROLLER		
33	RC2-0386-000		1	HOLDER, PAPER PICK-UP ROLLER		
34	RL1-1525-000		1	ROLLER, M.P. PAPER PICK-UP		
35	RC2-0420-000		1	COVER, PAPER PICK-UP ROLLER		
36	RC2-0388-000		1	CAM, M.P., RIGHT		

FIGURE 110
ENGINE CONTROLLER ASS'Y

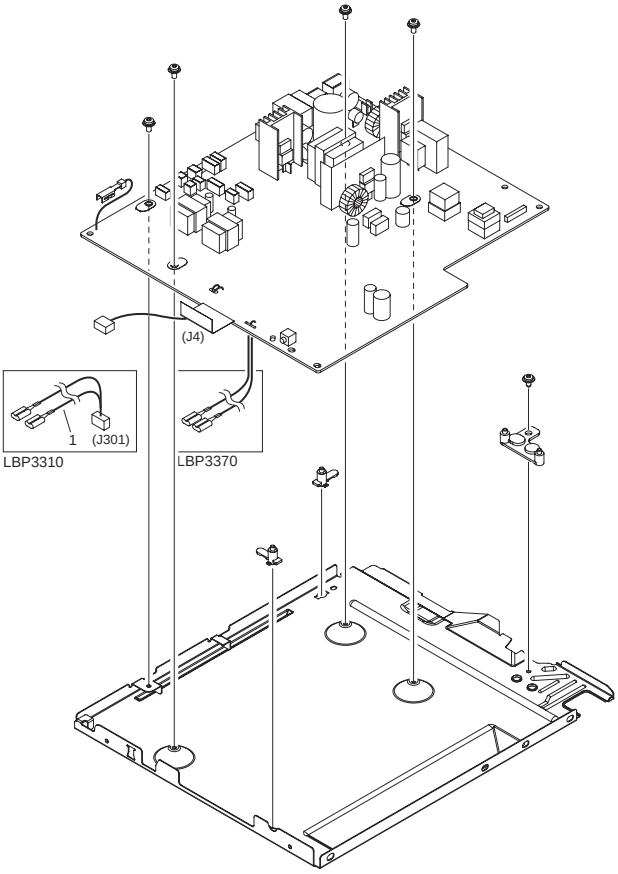


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.110	FM3-4283-000		1	ENGINE CONTROLLER ASS'Y	LBP3310 100/120V	
Fig.110	FM3-4284-000		1	ENGINE CONTROLLER ASS'Y	LBP3310 230V	
Fig.110	FM3-3608-000		1	ENGINE CONTROLLER ASS'Y	LBP3370	
1	FM3-4302-000		1	CABLE, DOOR SW	LBP3310	

FIGURE 250
MAIN DRIVE ASS'Y

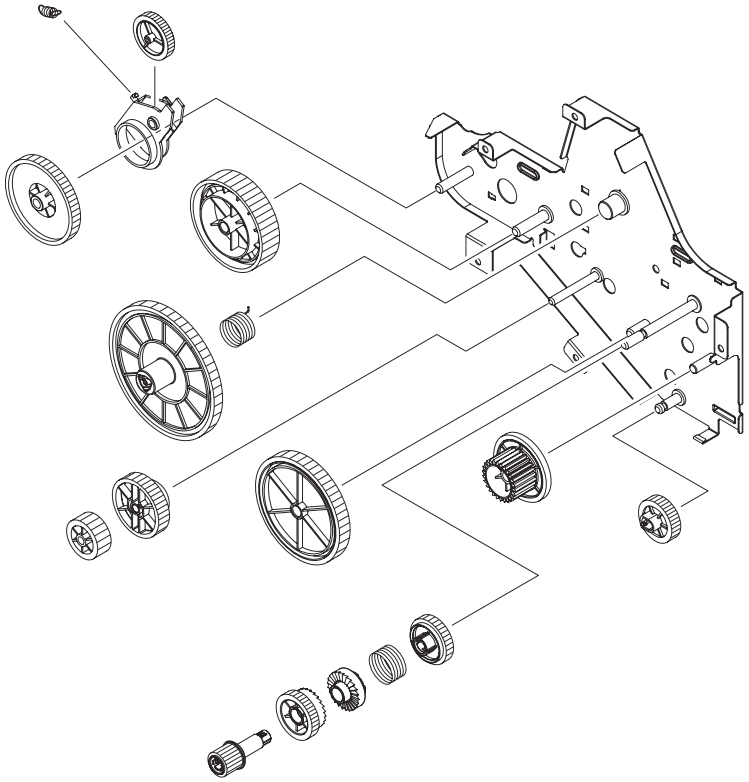


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.250	RM1-4253-000		1	MAIN DRIVE ASS'Y		

FIGURE 251
DUPLEXING DRIVE ASS'Y

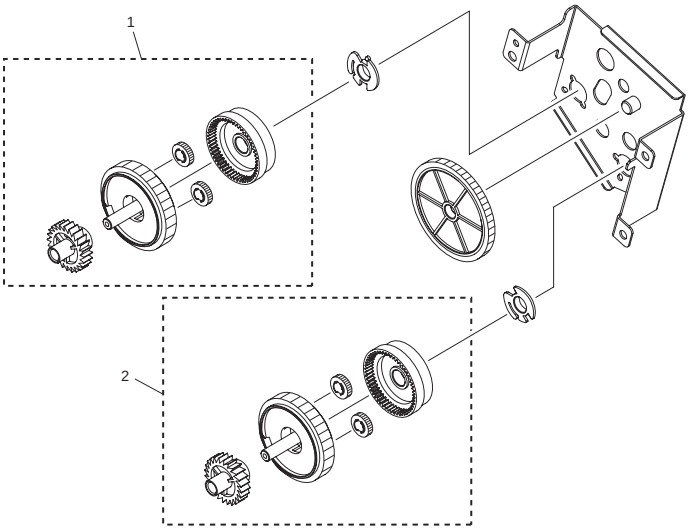


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.251	RM1-4255-000		1	DUPLEXING DRIVE ASS'Y		
1	RM1-4256-000		1	NORMAL ROTATION DRIVE ASS'Y		
2	RM1-4257-000		1	REVERS ROTATION DRIVE ASS'Y		

FIGURE 300
CASSETTE

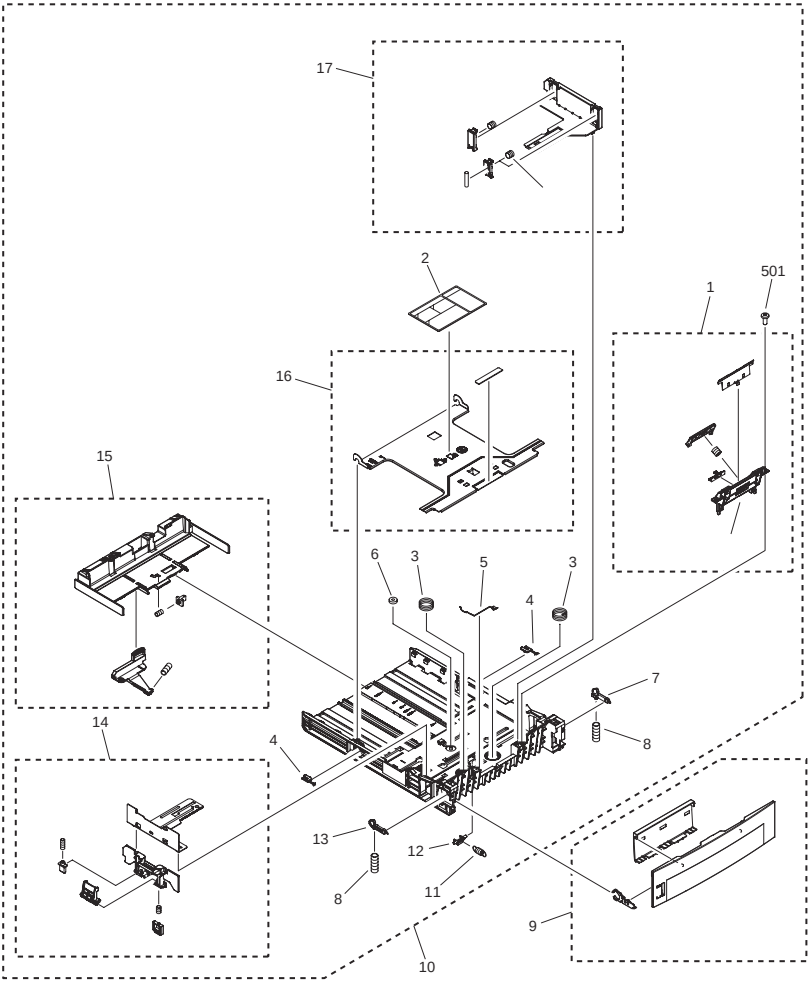


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.300	FM3-3589-000		1	CASSETTE		
1	FM2-6707-000		1	SEPARATION PAD ASS'Y		
2	FC8-0106-000		1	LABEL, PAPER EXCHANGE		
3	RC1-3489-000		2	SPRING, COMPRESSION		
4	RC1-4198-000		2	STOPPER, CLAW		
5	RC1-3492-000		1	SPRING, GROUNDING		
6	RU5-0328-000		1	GEAR, 10T		
7	RC1-3507-000		1	STOPPER, CASSETTE, RIGHT		
8	RU5-2327-000		2	SPRING, COMPRESSION		
9	FM3-3590-000		1	CASSETTE COVER ASS'Y		
10	FM2-6192-000		1	CASSETTE BODY ASS'Y		
11	RU5-2324-000		1	SPRING, TENSION		
12	RC1-3490-000		1	LOCK, LIFTER PLATE		
13	RC1-3508-000		1	STOPPER, CASSETTE, LEFT		
14	RM1-1296-000		1	LEFT PAPER SIDE END ASS'Y		
15	RM1-1295-000		1	BACK END LIMIT ASS'Y		
16	RL1-0522-020		1	PLATE, LIFTER		
17	RM1-1297-020		1	RIGHT PAPER SIDE END ASS'Y		
501	XB4-7401-005		2	SCREW,TAPPING,TRUSS HEAD,M4X10		

FIGURE 360
DUPLEXING PAPER FEED ASS'Y

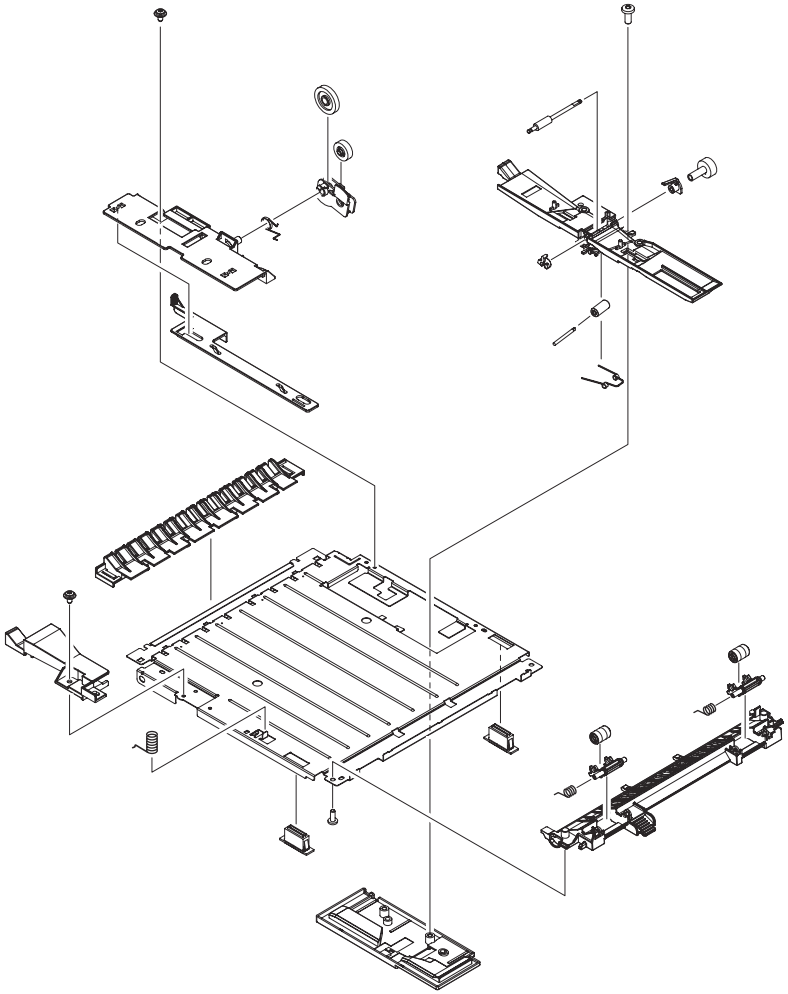


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.360	RM1-4258-000		1	DUPLEXING PAPER FEED ASS'Y		

FIGURE 810
FIXING ASS'Y

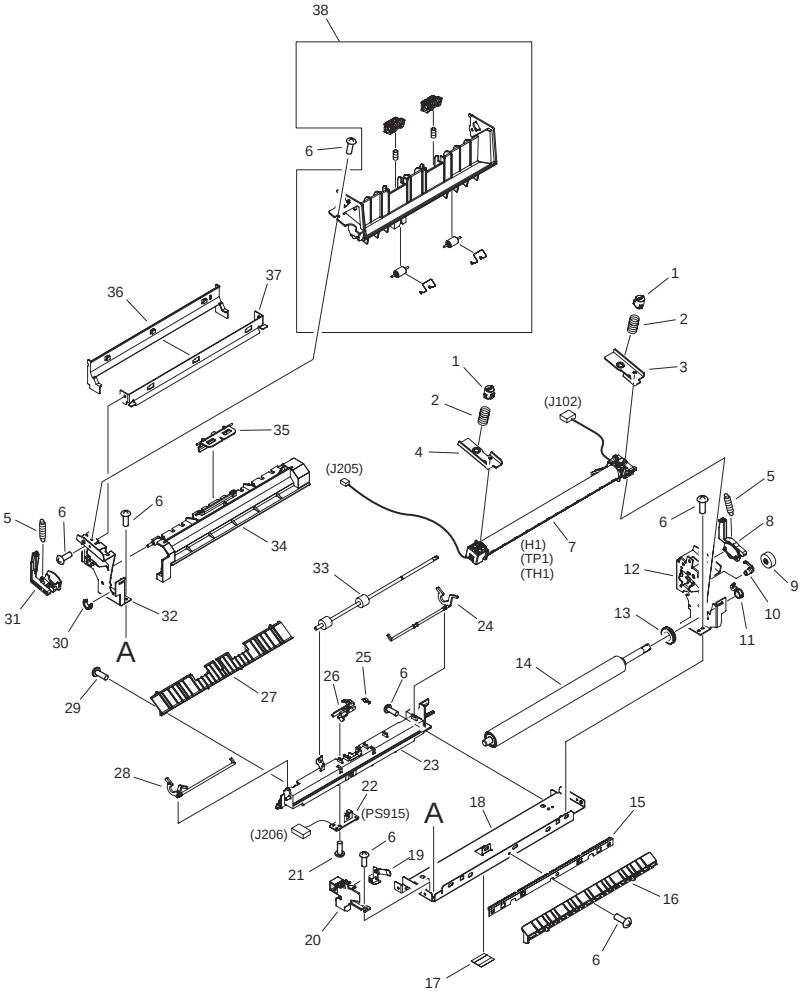


FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
Fig.810	FM3-3587-000		1	FIXING ASS'Y	100V/120V	
Fig.810	FM3-3588-000		1	FIXING ASS'Y	230V	
1	RA0-1189-000		2	RETAINER, SPRING		
2	RU5-2901-000		2	SPRING, COMPRESSION		
3	RC1-3623-000		1	PLATE, PRESSURE, RIGHT		
4	RC1-3624-000		1	PLATE, PRESSURE, LEFT		
5	RA0-1090-000		2	SPRING, TENSION		
6	XA9-1503-000		10	SCREW, TAP, M3X6		
7	FM2-6703-000		1	FILM GUIDE ASS'Y	100V/120V	
7	FM2-6704-000		1	FILM GUIDE ASS'Y	230V	
8	RC1-3616-000		1	LEVER, PRESSURE RELEASE, RIGHT		
9	RU5-0330-000		1	GEAR, 17T		
10	RC1-3615-000		1	BUSHING		
11	RC2-0297-000		1	BUSHING		
12	RC1-3604-000		1	SIDE PLATE, FIXING, RIGHT		
13	RC1-3628-000		1	RING, CONDUCTIVE RUBBER		
14	RC2-0303-000		1	ROLLER, PRESSURE		
15	RC2-0299-000		1	NEEDLE, FIXING STATIC CHARGE		
16	RC2-0296-000		1	GUIDE, FIXING ENTRANCE		
17	RC2-0431-000		1	SHEET, FIXING BOTTOM SHEET		
18	RC2-0295-000		1	FRAME, FIXING		
19	RC1-3625-000		1	SPRING, COMPRESSION		
20	RC1-3627-000		1	HOLDER, LEAF SPRING		
21	XB4-7300-809		1	SCREW, TAP, BINDING HEAD, M3X8		
22	RM1-1251-000		1	DELIVERY SENSOR PCB ASS'Y		
23	RC2-0429-000		1	HOLDER, SEPARATE LOWER GUIDE		
24	RC1-3618-000		1	LEVER, PRESS.RELEASE SENSOR, R		
25	RC1-3614-000		1	SPRING, TORSION		
26	RC1-3613-000		1	FLAG, PAPER DELIVERY SENSOR		
27	RC1-3611-000		1	GUIDE, PAPER SEPARATE, LOWER		
28	RC1-3619-000		1	LEVER, PRESS.RELEASE SENSOR, L		
29	XA9-1422-000		1	SCREW, W/WASHER, M4X12		

FIGURE & KEY NO.	PARTS NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/ REMARKS	SVC
30	RC2-0298-000		1	BUSHING		
31	RC1-3617-000		1	LEVER, PRESSURE RELEASE, LEFT		
32	RC1-3605-000		1	SIDE PLATE, FIXING, LEFT		
33	RC1-3633-000		1	ROLLER, FACE-UP		
34	RC2-0300-000		1	COVER, FIXING		
35	RC1-3622-000		1	FLAG, INTERTWINE PREVENTION		
36	RC1-3607-000		1	GUIDE, FIXING, UPPER		
37	RC1-3606-000		1	PLATE, FIXING REINFORCEMENT		
38	RM1-1291-000		1	DELIVERY FRAME ASS'Y		

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